TM 9-2320-211-20-3-1

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

TECHNICAL MANUAL

VOLUME 3 OF 3

PART 1 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 1 General Maintenance Information

Chapter 2 Engine System

Chapter 3 Clutch System

Chapter 4 Fuel System

Chapter 5 Exhaust System

Chapter 6 Cooling System

Chapter 7 Electrical System

Chapter 8 Transmission System

Chapter 9 Transmission Transfer System

Chapter 10 Propeller Shafts

Chapter 11 Front and Rear Axles

Chapter 12 Brake System

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

DECEMBER 1980

TECHNICAL MANUAL
NO.9-2320-2U-20-3-1

TECHNICAL ORDER
NO. 36A12-1C-422-1-l

TM 9-2320-211-20-3-1

C1

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., *30 May 1990*

TECHNICAL MANUAL
VOLUME 3 OF 3
PART 1 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

TM 9-2320-211-20-3-1, 10 December 1980, is changed as follows:

1. Remove old pages and insert new pages as indicated below.

2. New or changed information is indicated by a vertical bar in the margin of the page.

Remove Page	Insert Page
iii and iv	iii and iv
4-9 and 4-10	4-8.1 through 4-10

3. File this change sheet in front of this publication for reference purposes.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General United States Army
The Adjutant General

By Order of the Secretary of the Air Force:

LARRY D. WELCH
General, United States Air Force
Chief of Staff

CHARLES C. McDONALD
General, United States Air Force
Commander, Air Force Logistics Command

Distribution:

To be distributed in accordance with DA Form 12-38-E, Operator maintenance requirements for TM 9-2320-211-20-3-1.

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 without 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 on set 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.

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.

Smoking, flames, sparks and glowing or hot objects are not allowed within 50 feet of work area during maintenance of fuel system components. Fuel can explode, causing injury to personnel and damage to equipment.

Voltage output of ignition unit used on manifold flame heaters can cause dangerous electrical shock. Do not touch any uninsulated or live connections until you make sure manifold heater switch is in OFF position.

WARNING - Cont

Use care when handling radiator. Sharp fins may cause injury to personnel.

Do not open filler cap if engine is hot. Pressure will blow out scalding fluid and vapor. Personnel can be badly burned.

Use rubber gloves, safety goggles, and rubber apron when working with cleaning compound. Do not spill cleaning compound on skin, clothing or truck. Cleaning compound contains strong acid and will cause serious burns to personnel and damage to equipment.

Be very careful when using jumper wire when testing electrical circuits. Shorting wire to ground can burn connector pins or wiring and can cause injury to personnel.

Starter weighs about 50 pounds. Be careful when lifting it into position. Hold starter up until mounting nut and lockwasher are tightened.

Retaining springs in light doors may snap out and cause injury to personnel. Cover spring with free hand while prying it off.

When working on batteries do not get electrolyte on personnel or equipment. Personnel may be badly burned and equipment may be damaged.

Wear rubber gloves and goggles while working with electrolyte to stop serious injury from battery acid.

When working on battery always take off ground terminal first or electrical damage may occur, causing injury to personnel and damage to equipment.

Be very careful not to short positive and negative battery posts against retainer. This could cause retainer to melt and battery to explode causing injury to personnel and damage to equipment.

Do not let wrench touch positive battery terminals and truck at same time. This would short circuit battery and cause arcing; wrench will get very hot and battery may explode. This could cause serious injury to personnel and damage to equipment.

Always wear leather gloves when handling winch cable to protect hands. Never let cable run through hands. Broken or rusty wires can cause injury to personnel.

Always jack up one wheel of the axle driven by propeller shaft being taken out. This is to keep personnel from being hurt by windup of shaft.

Jack up front wheel to unwind sprag unit before taking out transmission transfer case-to-front axle propeller shaft. This is to keep personnel from being hurt by windup of shaft.

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

Never work under truck with only one jack supporting truck. Truck may slip off jack. Weight of truck must be supported by trestles or support stands with capacity for weight of truck.

*TM 9-2320-211-20-3-1

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

TECHNICAL MANUAL
NO. 9-2320-211-20-3-1
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 1 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 9-2320-211-20-3-2, 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.

TABLE OF CONTENTS

Part 1 of 2

		Paragraph	Page
CHAPTER 1.	GENERAL MAINTENANCE INFORMATION		
	Scope	1-1	1-1
	General Maintenance	1-2	1-1
	Cleaning	1-3	1-1
	Painting	1-4	1-2
	Air System Leakage Test	1-5	1-2
	Special Tools and Equipment	1-6	1-2
	Torque Values	1-7	1-2
	Common Tools	1-8	1-2
	Safety Inspection and Testing of Lifting Devices	1-9	1-2
	Forms and Records	1-10	1-2
	Equipment Improvement Report and Maintenance Digest (EIR MD) and Equipment Improvement Report and Maintenance Summary (EIR MS)	1-11	1-2
	Reporting Improvement Recommendations	1-12	1-3
	Metric System	1-13	1-5
	Destruction to Prevent Enemy Use	1-14	1-5
	Description	1-15	1-5
	Identification and Tabulated Data	1-16	1-5
	Service (Upon Receipt of Materiel)	1-17	1-11
	Tools and Equipment	1-18	1-13
	Maintenance Repair Parts	1-19	1-13
	General Lubrication Instructions	1-20	1-13
	Administrative Storage	1-21	1-13
CHAPTER 2.	ENGINE SYSTEM GROUP MAINTENANCE		
Section 1.	Scope		2-1
	Equipment Items Covered	2-1	2-1
	Equipment Items Not Covered	2-2	2-1
Section II.	Valve Covers and Gaskets		2-1
	Intake and Exhaust Valve Adjustment	2-3	2-1
	Preliminary Procedure	2-3a	2-1
	Crankcase Breather Adapter Removal	2-3b	2-2
	Cylinder Head Covers Removal	2-3c	2-3
	Valve Adjustment	2-3d	2-4
	Cylinder Head Covers Replacement	2-3e	2-11
	Crankcase Breather Adapter Replacement	2-3f	2-12

TABLE OF CONTENTS-CONT

		Paragraph	Page
Section III.	Engine Lubrication System		2-13
	Oil Filter Element	2-4	2-13
	Removal	2-4a	2-13
	Replacement	2-4b	2-15
	Engine Crankcase Breather Tube Removal and Replacement	2-5	2-18
	Preliminary Procedure	2-5a	2-18
	Removal	2-5b	2-18
	Replacement	2-5C	2-19
CHAPTER 3.	CLUTCH SYSTEM GROUP MAINTENANCE		
Section I.	Scope		3-1
	Equipment Items Covered	3-1	3-1
	Equipment Items Not Covered	3-2	3-1
Section II.	Clutch Release Mechanism		3-1
	Clutch Pedal Linkage Adjustment	3-3	3-1
	Check	3-3a	3-2
	Adjustment	3-3b	3-3
	Clutch Pedal Linkage Removal and Replacement	3-4	3-8
	Preliminary Procedure	3-4a	3-8
	Removal	3-4b	3-8
	Replacement	3-4c	3-11
CHAPTER 4.	FUEL SYSTEM GROUP MAINTENANCE		
Section I.	Scope		4-1
	Equipment Items Covered	4-1	4-1
	Equipment Items Not Covered	4-2	4-1
Section II.	Fuel Pumps		4-1
	Fuel Supply Pump Removal and Replacement	4-3	4-1
	Preliminary Procedures	4-3a	4-1
	Removal	4-3b	4-2
	Replacement	4-3c	4-4
	Fuel Transfer Pump Removal and, Replacement	4-4	4-7
	Preliminary Procedure	4-4a	4-7
	Removal	4-4b	4-8
	Replacement	4-4c	4-8.1
	Fuel Pump (In-Tank) Bracket and Pump Assemblies	4-4.1	4-8.2
	Preliminary Procedures	4-4.1 a	4-8.2
	Removal	4-4.1b	4-8.4
	Replacement	4-4.1c	4-8.6
Section III.	Air Cleaner		4-10
	Air Filter Assembly Removal and Replacement	4-5	4-10
	Removal	4-5a	4-10
	Replacement	4-5b	4-11
	Air Cleaner Lines and Fittings Removal and Replacement	4-6	4-12
	Preliminary Procedures	4-6a	4-12
	Removal	4-6b	4-12
	Replacement	4-6c	4-16
	Air Filter Indicator Removal and Replacement	4-7	4-20

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Removal	4-7a	4-20
	Replacement	4-7b	4-21
Section IV.	Turbocharger		4-22
	Turbocharger Oil Inlet and Oil Drain Tubes Removal and Replacement	4-8	4-22
	Preliminary Procedures	4-8a	4-22
	Removal	4-8b	4-22
	Replacement	4-8c	4-24
Section V.	Fuel Tanks and Fuel Lines		4-26
	Fuel Tank Removal and Replacement	4-9	4-26
	Preliminary Procedure	4-9a	4-26
	Removal	4-9b	4-27
	Replacement	4-9C	4-32
	Fuel Tank Mounting Straps Removal, Repair and Replacement	4-10	4-36
	Preliminary Procedure	4- 10a	4-36
	Removal	4-10b	4-36
	Inspection	4-10c	4-37
	Replacement	4-10d	4-37
	Fuel Lines and Fittings Removal and Replacement	4-11	4-38
	Removal	4-11a	4-39
	Replacement	4-11b	4-49
Section VI.	Fuel Filters		4-59
	Fuel Filter Assemblies Removal and Replacement	4-12	4-59
	Preliminary Procedure	4-12a	4-59
	Removal	4-12b	4-59
	Replacement	4-12c	4-63
	Primary Fuel Filter Element Removal and Replacement	4-13	4-68
	Preliminary Procedure	4-13a	4-68
	Removal	4-13b	4-69
	Replacement	4-13c	4-70
	Secondary Fuel Filter Element Removal and Replacement	4-14	4-71
	Removal	4-14a	4-72
	Replacement	4-14b	4-73
	Final Fuel Filter Element Removal and Replacement (Late Model Trucks)	4-15	4-74
	Removal	4-15a	4-74
	Replacement	4-15b	4-76
	Final Fuel Filter Element Removal and Replacement (Early Model Trucks)	4-16	4-78
	Preliminary Procedure	4-16a	4-78
	Removal	4-16b	4-79
	Replacement	4-16c	4-80
	Air Bleed Low Pressure Fuel System	4-17	4-81
	Preliminary Procedure	4-17a	4-81

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Bleeding	4-17b	4-81
Section VII.	Engine Starting Aids		
	Manifold Heater Electric Fuel Supply Pump and Fuel Filter	4-18	4-85
	Preliminary Procedures	4-18a	4-85
	Removal	4-18b	4-85
	Replacement	4-18c	4-87
	Manifold Heater (Side Mounted) Fuel Pump Removal and Replacement	4-19	4-89
	Preliminary Procedure	4-19a	4-89
	Removal	4-19b	4-89
	Replacement	4-19c	4-91
	Manifold Heater (Top Mounted Covered) Fuel Filter Removal and Replacement	4-20	4-93
	Preliminary Procedure	4-20a	4-93
	Removal	4-20b	4-93
	Replacement	4-20c	4-94
	Manifold Heater (Side Mounted) Fuel Filter Removal and Replacement	4-21	4-95
	Preliminary Procedure	4-21a	4-95
	Removal	4-21b	4-95
	Replacement	4-21c	4-97
	Manifold Heater (Top Mounted Covered) Pump Lines and Fittings Removal and Replacement	4-22	4-99
	Preliminary Procedures	4-22a	4-99
	Removal	4-22b	4-99
	Cleaning	4-22c	4-104
	Replacement	4-22d	4-104
	Manifold Heater (Top Mounted Uncovered) Pump Lines and Fittings Removal and Replacement	4-23	4-109
	Preliminary Procedure	4-23a	4-109
	Removal	4-23b	4-110
	Cleaning	4-23c	4-116
	Inspection	4-23d	4-116
	Replacement	4-23e	4-117
	Manifold Heater (Side Mounted) Pump Lines and Fittings Removal and Replacement	4-24	4-124
	Preliminary Procedure	4-24a	4-124
	Removal	4-24b	4-124
	Replacement	4-24c	4-133
	Manifold Heater Nozzle and Valve Assembly Removal and Replacement	4-25	4-142
	Preliminary Procedure	4-25a	4-142
	Removal	4-25b	4-142
	Replacement	4-25c	4-143

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Manifold Heater (Side Mounted) Spark Plug and Nozzle Removal and Replacement. .	4-26	4-144
	Preliminary Procedures	4-26a	4-144
	Removal	4-26b	4-144
	Replacement	4-26c	4-145
	Manifold Heater Spark Plug Removal and Replacement	4-27	4-146
	Preliminary Procedure	4-27a	4-146
	Removal	4-27b	4-146
	Replacement	4-27c	4-147
	Manifold Heater (Top Mounted, Covered) Ignition Coil and Fuel Pump Removal and Replacement (Trucks with Engine LDS 465-1A)	4-28	4-148
	Preliminary Procedures	4-28a	4-148
	Removal	4-28b	4-148
	Replacement	4-28c	4-150
	Manifold Heater Igniton Unit Removal and Replacement	4-29	4-152
	Preliminary Procedures	4-29a	4-152
	Removal	4-29b	4-152
	Replacement	4-29c	5-153
	Manifold Heater (Side Mounted) Ignition Unit Removal and Replacement	4-30	4-154
	Preliminary Procedure	4-30a	4-154
	Removal	4-30b	4-154
	Replacement	4-30c	4-156
	Manifold Heater Wiring Harness Removal and Replacement	4-31	4-158
	Preliminary Procedures	4-31a	4-158
	Removal	4-31b	4-158
	Replacement	4-31c	4-159
Section VIII.	Accelerator and Throttle Control		4-160
	Engine Stop Cable Removal, Replacement and Adjustment	4-32	4-160
	Preliminary Procedures	4-32a	4-160
	Removal	4-32b	4-160
	Replacement	4-32c	4-162
	Adjustment	4-32d	4-164
	Hand Throttle Removal and Replacement	4-33	4-165
	Preliminary Procedure	4-33a	4-165
	Removal	4-33b	4-166
	Replacement	4-33c	4-167
	Accelerator Controls and Linkage Removal, Repair, Replacement, and Adjustment	4-34	4-168
	Preliminary Procedures	4-34a	4-168
	Removal	4-34b	4-168

TABLE OF CONTENTS -CONT

		Paragraph	Page
	Repair	4-34c	4-171
	Replacement	4-34d	4-171
	Adjustment	4-34e	4-175
CHAPTER 5.	EXHAUST SYSTEM GROUP MAINTENANCE		
Section I.	Scope		5-1
	Equipment Items Covered	5-1	5-1
	Equipment Items Not Covered	5-2	5-1
Section II.	Exhaust Pipes and Mufflers		5-1
	Horizontal Exhaust Pipe Removal, Repair and Replacement	5-3	5-1
	Preliminary Procedure	5-3a	5-1
	Removal	5-3b	5-2
	Inspection	5-3c	5-8
	Replacement	5-3d	5-8
	Vertical Exhaust Pipe	5-4	5-17
	Preliminary Procedure	5-4a	5-17
	Removal	5-4b	5-17
	Inspection and Repair	5-4c	5-19
	Replacement	5-4d	5-19
CHAPTER 6.	COOLING SYSTEM GROUP MAINTENANCE		
Section I.	Scope		6-1
	Equipment Items Covered	6-1	6-1
	Equipment Items Not Covered	6-2	6-1
Section II.	Radiator Assembly		6-1
	Engine Cooling Radiator Assembly Removal and Replacement	6-3	6-1
	Preliminary Procedures	6-3a	6-1
	Removal	6-3b	6-2
	Replacement	6-3c	6-6
	Radiator Cap with Chain Removal, Repair and Replacement	6-4	6-11
	Preliminary Procedure	6-4a	6-11
	Removal	6-4b	6-11
	Inspection and Repair	6-4c	6-12
	Replacement	6-4d	6-12
	Radiator Inlet Preformed Upper Hose Removal and Replacement	6-5	6-13
	Preliminary Procedures	6-5a	6-13
	Removal	6-5b	6-13
	Replacement	6-5c	6-14
	Radiator Outlet Preformed Lower Hose Removal and Replacement	6-6	6-15
	Preliminary Procedures	6-6a	6-15
	Removal	6-6b	6-16
	Replacement	6-6c	6-20

TABLE OF CONTENTS-CONT

		Paragraph	
	Hoses and Clamps Removal and Replacement	6-7	6-24
	Cooling System Hoses and Clamps	6-7a	6-24
	Crankcase Breather Tube Hose and Clamps	6- 7b	6-26
	Turbocharger Oil Drain Tube Hose and Clamps	6-7c	6-28
Section III.	Thermostat		6-30
	Flow Control Thermostat Removal and Replacement	6-8	6-30
	Preliminary Procedure	6-8a	6-30
	Removal	6-8b	6-30
	Replacement	6-8c	6-32
Section IV.	Water Pump		6-36
	Water Pump Removal and Replacement	6-9	6-36
	Preliminary Procedure	6-9a	6-36
	Removal	6-9b	6-36
	Replacement	6-9c	6-41
	Oil Cooler Water Inlet Tube Removal and Replacement	6-10	6-46
	Preliminary Procedures	6-10a	6-46
	Removal	6-10b	6-46
	Replacement	6-10c	6-47
Section V.	Fan Assembly and Related Parts		6-48
	Engine Cooling Fan Removal and Replacement	6-11	6-48
	Preliminary Procedure	6-11a	6-48
	Removal	6-llb	6-48
	Replacement	6-llc	6-51
	Fan Drive Belts Removal and Replacement	6-12	6-54
	Preliminary Procedure	6-12a	6-54
	Removal	6-12b	6-54
	Replacement and Adjustment	6-12c	6-56
Section VI.	Cooling System		6-59
	Cooling System Service	6-13	6-59
	Preliminary Procedure	6-13a	6-59
	Draining	6-13b	6-60
	Cleaning	6-13c	6-61
	Flushing	6-13d	6-64
	Neutralization	6-13e	6-75
	Filling	6-13f	6-81
CHAPTER 7.	ELECTRICAL SYSTEM GROUP MAINTENANCE		
Section I.	Scope		7-1
	Equipment Items Covered	7-1	7-1
	Equipment Items Not Covered	7-2	7-1
Section II.	Charging System		7-1
	Engine Generator Removal and Replacement	7-3	7-1
	Preliminary Procedure	7-3a	7-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Removal	7-3b	7-2
	Replacement	7-3c	7-9
	Engine Generator Regulator Removal and Replacement	7-4	7-20
	Preliminary Procedures	7-4a	7-20
	Removal	7-4b	7-20
	Replacement	7-4c	7-21
Section III.	Starting System		7-24
	Electric Engine Starter Assembly Removal and Replacement	7-5	7-24
	Preliminary Procedures	7-5a	7-24
	Removal	7- 5b	7-25
	Replacement	7-5c	7-29
	Functional Test	7-5d	7-33
	Starter Relay Assembly Removal and Replacement (Truck with LDS 465-1A Engine)	7-6	7-34
	Preliminary Procedures	7-6a	7-34
	Removal	7-6b	7-35
	Replacement	7-6c	7-36
Section IV.	Engine Safety Controls		7-37
	Stoplight Switch Assembly Removal and Replacement	7-7	7-37
	Removal	7-7a	7-37
	Replacement	7-7b	7-39
Section V.	Instrument Panel Components		7-41
	Light Switch Removal and Replacement	7-8	7-41
	Preliminary Procedure	7-8a	7-41
	Removal	7-8b	7-41
	Replacement	7-8c	7-43
	Rotary Switch Removal and Replacement	7-9	7-45
	Preliminary Procedure	7-9a	7-45
	Removal	7-9b	7-45
	Replacement	7-9c	7-48
	Fuel Transfer Pump Switch and Fuel Tank Switch Removal and Replacement	7-10	7-51
	Preliminary Procedure	7-10a	7-51
	Removal	7-10b	7-52
	Replacement	7-10c	7-55
	Windshield Wiper Pressure Regulating Valve Assembly Removal and Replacement	7-11	7-58
	Removal	7-11a	7-58
	Replacement	7-11b	7-60

TABLE OF CONTENTS-CONT

	Paragraph	Page
Instrument Panel Circuit Breaker Removal and Replacement	7-12	7-62
Removal	7-12a	7-62
Replacement	7-12b	7-63
Instrument Cluster Lamp Assemblies Removal, Replacement, and Functional Test	7-13	7-64
Preliminary Procedure	7-13a	7-64
Removal	7-13b	7-64
Replacement	7-13c	7-67
Functional Test	7-13d	7-70
Instruments and Gages Removal, Replacement, and Functional Test	7-14	7-71
Preliminary Procedure	7-14a	7-71
Removal	7-14b	7-71
Replacement	7-14c	7-72
Functional Test	7-14d	7-73
Instrument Cluster (With Speedometer and Tachometer) Removal and Replacement	7-15	7-74
Preliminary Procedure	7-15a	7-74
Removal	7-15b	7-74
Replacement	7-15c	7-80
Instrument Cluster (With Tachograph) Removal and Replacement	7-16	7-86
Preliminary Procedure	7-16a	7-86
Removal	7-16b	7-86
Replacement	7-16c	7-93
Engine Starter Switch Removal and Replacement	7-17	7-101
Preliminary Procedures	7-17a	7-101
Removal	7-17b	7-101
Replacement	7-17C	7-102
Electric Brake Lock and Electric Brake Lock Switch Removal and Replacement (Truck M543A2)	7-18	7-103
Preliminary Procedure	7-18a	7-103
Removal	7-18b	7-103
Replacement	7-18c	7-105
Manifold Heater Switch Removal and Replacement	7-19	7-107
Preliminary Procedure	7-19a	7-107
Removal	7-19b	7-107
Replacement	7-19C	7-108

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Auxiliary Power Socket Assembly Removal and Replacement	7-20	7-109
	Preliminary Procedure	7-20a	7-109
	Removal	7-20b	7-109
	Replacement	7-20c	7-110
	Instrument Panel Removal and Replacement	7-21	7-111
	Preliminary Procedures	7-21a	7-111
	Removal	7-21b	7-112
	Replacement	7-21c	7-121
Section VI.	Lighting System		7-131
	Headlamp Assembly Removal and Replacement	7-22	7-131
	Preliminary Procedure	7-22a	7-131
	Removal	7-22b	7-131
	Replacement	7-22c	7-135
	Headlight Assembly Removal, Repair and Replacement	7-23	7-139
	Preliminary Procedures	7-23a	7-139
	Removal	7-23b	7-140
	Cleaning, Inspection, and Repair.	7-23c	7-143
	Replacement	7-23d	7-144
	Headlight Adjustment	7-24	7-146
	Shielded Blackout Headlight Assembly Repair	7-25	7-155
	Preliminary Procedure	7-25a	7-155
	Removal of Sealed Beam	7-25b	7-155
	Replacement of Sealed Beam	7-25c	7-158
	Removal of Shielded Blackout Headlight Assembly	7-25d	7-161
	Replacement of Headlight Assembly	7-25e	7-164
	Special Lighting Marker Light Repair	7-26	7-167
	Removal	7-26a	7-167
	Replacement	7-26b	7-168
	Front Composite Light Assembly and Lamp (Late Models) Removal and Replacement	7-27	7-169
	Removal of Lamp	7-27a	7-169
	Replacement of Lamp	7-27b	7-170
	Removal of Front Composite Light Assembly	7-27c	7-171
	Replacement of Front Composite Light Assembly	7-27d	7-172
	Stoplight and Taillight Repair	7-28	7-173
	Preliminary Procedure	7-28a	7-173
	Removal of Lamp	7-28b	7-173
	Replacement of Lamp	7-28c	7-174
	Composite Taillight Assembly Repair	7-29	7-175
	Removal of Lamp	7-29a	7-175
	Replacement of Lamp	7-29b	7-176

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Removal of Composite Taillight Assembly	7-29c	7-177
	Replacement of Composite Taillight Assembly	7-29d	7-178
	Turn Signal and Blackout Marker Lamp and Light Assembly Removal and Replacement (Early Models)	7-30	7-179
	Removal of Lamp	7-30a	7-179
	Replacement of Lamp	7-30b	7-180
	Removal of Light Assembly	7-30C	7-181
	Replacement of Light Assembly	7-30d	7-183
	Electric Floodlight Removal and Replacement (Truck M543A2)	7-31	7-186
	Removal of Lamp	7-31a	7-186
	Replacement of Lamp	7-31b	7-188
	Removal of Electric Floodlight Assembly	7-31c	7-190
	Replacement of Electric Floodlight Assembly	7-31d	7-191
	Floodlight Housing Switch Removal, Repair, and Replacement (Truck M543A2)	7-32	7-192
	Preliminary Procedure	7-32a	7-192
	Removal	7-32b	7-192
	Cleaning, Inspection, and Repair	7-32c	7-193
	Replacement	7-32d	7-194
Section VII.	Gage Sending Units and Warning Switches		7-195
	Water Temperature Gage Sending Unit Removal and Replacement	7-33	7-195
	Preliminary Procedures	7-33a	7-195
	Removal	7-33b	7-195
	Replacement	7-33c	7-196
	Oil Pressure Gage Sending Unit Removal and Replacement	7-34	7-197
	Removal	7-34a	7-197
	Replacement	7-34b	7-198
	Fuel Gage Sending Unit Removal and Replacement	7-35	7-199
	Removal	7-35a	7-199
	Replacement	7-35b	7-200
	Low Air Pressure Warning Buzzer Removal and Replacement	7-36	7-201
	Preliminary Procedure	7-36a	7-201
	Removal	7-36b	7-201
	Replacement	7-36c	7-202
	Low Air Pressure Sending Unit Removal and Replacement	7-37	7-203
	Removal	7-37a	7-203
	Replacement	7-37b	7-204

TABLE OF CONTENTS-CONT

		Paragraph	Page
Section VIII.	Horn Assembly		7-205
	Horn Contact Button Removal and Replacement	7-38	7-205
	Preliminary Procedure	7-38a	7-205
	Removal	7-38b	7-205
	Replacement	7-38c	7-206
	Horn Solenoid Removal and Replacement (with Mounting Brackets)	7-39	7-207
	Preliminary Procedure	7-39a	7-207
	Removal	7-39b	7-207
	Replacement	7-39c	7-208
	Horn Solenoid (without Mounting Brackets) Removal and Replacement	7-40	7-210
	Preliminary Procedure	7-40a	7-210
	Removal	7-40b	7-210
	Replacement	7-40C	7-211
	Electric Air Horn Removal and Replacement.	7-41	7-212
	Preliminary Procedure	7-41a	7-212
	Removal	7-4lb	7-212
	Replacement	7-41C	7-213
Section IX.	Battery System		7-214
	Servicing the Batteries	7-42	7-214
	Preliminary Procedure	7-42a	7-214
	Specific Gravity Check	7-42b	7-214
	Cleaning the Batteries	7-42c	7-217
	Storage Batteries, Battery Retainer, Hook and Bolt Assembly, Battery Box, and Battery Cables Removal and Replacement	7-43	7-219
	Removal	7-43a	7-219
	Replacement	7-43b	7-225
	Disconnect and Reconnect Battery Ground Cable	7-44	7-233
	Disconnection	7-44a	7-233
	Reconnection	7-44b	7-235
Section X.	Chassis Harnesses		7-237
	Trailer Connector Harness Repair	7-45	7-237
	Disassembly	7-45a	7-237
	Inspection	7-45b	7-239
	Assembly	7-45C	7-239
	Intervehicular Electrical Receptacle Connector Removal, Repair, and Replacement (Truck M52A2)	7-46	7-241
	Removal	7-46a	7-241
	Repair	7-46b	7-243
	Replacement	7-46c	7-243

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Park and Warning Light Socket and Wiring Removal, Repair, and Replacement (Truck M543A2)	7-47	7-245
	Preliminary Procedures	7-47a	7-245
	Removal	7-47b	7-245
	Replacement	7-47c	7-247
Section XI.	Miscellaneous Items		7-249
	Turn Signal Control Removal, Repair and Replacement	7-48	7-249
	Removal	7-48a	7-249
	Repair	7-48b	7-250
	Replacement	7-48c	7-252
	Directional Signal Control Indicator Lamp Removal and Replacement	7-49	7-253
	Removal	7-49a	7-253
	Replacement	7-49b	7-255
	Turn Signal Flasher Assembly Removal and Replacement	7-50a	7-257
	Removal	7-50a	7-257
	Replacement	7-50b	7-258
	Warning Light Flasher Removal and Replacement	7-51	7-259
	Removal	7-51a	7-259
	Replacement	7-51b	7-260
	Headlight Dimmer Electrical Switch Removal and Replacement	7-52	7-261
	Preliminary Procedure	7-52a	7-261
	Removal	7-52b	7-261
	Replacement	7-52c	7-262
CHAPTER 8.	TRANSMISSION SYSTEM GROUP MAINTENANCE		
Section 1.	Scope		8-1
	Equipment Items Covered	8-1	8-1
	Equipment Items Not Covered	8-2	8-1
Section II.	Transmission Breather		8-1
	Transmission Breather Vent Removal and Replacement	8-3	8-1
	Preliminary Procedure	8-3a	8-1
	Removal	8-3b	8-2
	Replacement	8-3c	8-3
CHAPTER 9.	TRANSMISSION TRANSFER SYSTEM GROUP MAINTENANCE		
Section 1.	Scope		9-1
	Equipment Items Covered	9-1	9-1
	Equipment Items Not Covered	9-2	9-1
Section II.	Transmission Transfer Air System		9-1
	Transmission Transfer Case Air Pressure Relief Valve Removal and Replacement	9-3	9-1
	Removal	9-3a	9-2
	Cleaning	9-3b	9-3
	Replacement	9-3c	9-4

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Air Shift Lines and Connections Removal, Repair and Replacement	9-4	9-5
	Preliminary Procedures	9-4a	9-5
	Removal	9-4b	9-5
	Inspection and Repair	9-4c	9-7
	Replacement	9-4d	9-7
CHAPTER 10.	PROPELLER SHAFTS GROUP MAINTENANCE		
Section 1.	Scope		10-1
	Equipment Items Covered	10-1	10-1
	Equipment Items Not Covered	10-2	10-1
Section II.	Propeller Shaft Assemblies		10-1
	Jacking and Supporting Axle Housing	10-3	10-1
	Jacking and Supporting Front Axle Housing	10-3a	10-2
	Jacking and Supporting Rear Axle Housings	10-3b	10-3
	Removal of Rear Axle Housing Supports	10-3c	10-4
	Removal of Front Axle Housing Supports	10-3d	10-5
	Jacking and Supporting Truck Chassis	10-4	10-6
	Raising Front Chassis	10-4a	10-6
	Lowering Front Chassis	10-4b	10-7
	Raising Rear of Chassis (One Side)	10-4c	10-8
	Lowering Rear of Chassis (One Side)	10-4d	10-9
	Raising Rear of Chassis (Both Sides)	10-4e	10-10
	Lowering Rear of Chassis (Both Sides)	10-4f	10-11
	Transmission-to-Transmission Transfer Case Propeller Shaft Removal and Replacement	10-5	10-12
	Removal	10-5a	10-12
	Replacement	10-5b	10-14
	Transmission Transfer Case-to-Front Axle Propeller Shaft	10-6	10-18
	Removal	10-6a	10-18
	Replacement	10-6b	10-18
	Transmission Transfer Case-to-Forward Rear Axle Propeller Shaft (Without Center Bearing) Removal and Replacement (Trucks M51A2, M52A2, M54A2, M54A2C, and M543A2)	10-7	10-20
	Removal	10-7a	10-20
	Replacement	10-7b	10-22
	Transmission Transfer Case-to-Forward Rear Axle Propeller Shaft (With Center Bearing) Removal and Replacement (Truck M55A2)	10-8	10-24
	Removal	10-8a	10-24
	Replacement	10-8b	10-28

TABLE OF CONTENTS-CONT

	Paragraph	Page
Driveshaft Center Bearing Assembly Removal and Replacement (Truck M55A2)...	10-9	10-34
Removal	10- 9a	10-34
Replacement	10-9b	10-37
Forward Rear Axle-toRear Rear Axle Propeller Shaft Removal and Replacement...	10-10	10-40
Removal	10-10a	10-40
Replacement	10-10b	10-42
Power Takeoff-to-Front Propeller Shaft Removal and Replacement (Trucks with Front Winch)	10-11	10-44
Removal	10-11a	10-44
Replacement	10-11b	10-46
Power Divider-to-Rear Winch Propeller Shaft Removal and Replacement (Truck M543A2)	10-12	10-49
Removal	10-12a	10-49
Replacement	10-12b	10-58
Power Divider-to-Bevel Gearcase Propeller Shaft Removal and Replacement (Truck M543A2)	10-13	10-67
Removal	10-13a	10-67
Replacement	10-13b	10-74
Universal Joint Assembly Repair	10-14	10-81
Preliminary Procedure	10-14a	10-81
Repair	10-14b	10-82
Power Takeoff-to-Hydraulic Hoist Pump Propeller Shaft Removal and Replacement (Truck M51A2)	10-15	10-87
Removal	10-15a	10-87
Replacement	10-15b	10-90
CHAPTER 11. FRONT AND REAR AXLES GROUP MAINTENANCE		
Section I. Scope		11-1
Equipment Items Covered	11-1	11-1
Equipment Items Not Covered	11-2	11-1
Section II. Front and Rear Axle Housings		11-1
Front and Rear Axle Air Pressure Relief Valve Removal and Replacement	11-3	11-1
Removal	11-3a	11-2
Cleaning	11-3b	11-3
Replacement	11-3C	11-4
Section III. Steering Mechanism		11-5
Dust and Moisture Seal Boot Removal and Replacement	11-4	11-5
Removal	11-4a	11-5
Cleaning, Inspection, and Repair	11-4b	11-8
Replacement	11-4c	11-8

TABLE OF CONTENTS-CONT

		Paragraph	Page
Section IV.	Rear Axle		11-12
	Rear Axle Shaft Removal and Replacement	11-5	11-12
	Removal	11-5a	11-12
	Replacement	11-5b	11-13
CHAPTER 12.	BRAKE SYSTEM GROUP MAINTENANCE		
Section I.	Scope		12-1
	Equipment Items Covered	12-1	12-1
	Equipment Items Not Covered	12-2	12-1
Section II.	Handbrake Assembly and Related Parts		12-1
	Handbrake Lever Assembly Removed and Replacement	12-3	12-1
	Preliminary Procedures	12-3a	12-1
	Removal	12-3b	12-2
	Replacement	12-3C	12-4
	Handbrake Linkage Removal and Replacement	12-4	12-6
	Preliminary Procedures	12-4a	12-6
	Removal	12-4b	12-6
	Replacement	12-4C	12-10
	Handbrake Shoe Assembly Removal and Replacement	12-5	12-14
	Removal	12-5a	12-14
	Replacement	12-5b	12-18
	Handbrake Shoe Adjustment	12-6	12-23
	Minor Adjustment	12-6a	12-23
	Major Adjustment	12-6b	12-24
Section III.	Service Brakes		12-28
	Brakeshoe Assembly Removal and Replacement	12-7	12-28
	Preliminary Procedures	12-7a	12-28
	Removal	12-7b	12-29
	Replacement	12-7c	12-32
	Service Brakes Minor Adjustment	12-8	12-38
	Service Brakes Major Adjustment	12-9	12-40
Section IV.	Hydraulic Brake System		12-50
	Front and Rear Wheel Cylinder Removal and Replacement	12-10	12-50
	Preliminary Procedures	12-10a	12-50
	Removal	12-10b	12-50
	Replacement	12-10c	12-51
	Hydraulic Brake Master Cylinder Assembly Removal and Replacement	12-11	12-52
	Removal	12-11a	12-52
	Replacement	12-11b	12-56
	Hydraulic Lines, Fittings, and Hoses Removal and Replacement	12-12	12-60
	Removal	12-12a	12-61
	Replacement	12-12b	12-69

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Air Hydraulic Cylinder Removal and Replacement	12-13	12-77
	Preliminary Procedure	12-13a	12-77
	Removal	12-13b	12-77
	Replacement	12-13c	12-82
	Bleeding Service Brake System Using Bleeder Tank	12-14	12-87
	Connecting Bleeder Tank	12-14a	12-87
	Bleeding Master Cylinder	12-14b	12-90
	Bleeding Air-Hydraulic Cylinder	12-14c	12-92
	Bleeding Wheel Cylinders	12-14d	12-95
	Disconnecting Bleeder Tank	12-14e	12-97
	Bleeding Service Brake System Without Using Bleeder Tank	12-15	12-100
	Bleeding Master Cylinder	12-15a	12-100
	Bleeding Air Hydraulic Cylinder	12-15b	12-104
	Bleeding Wheel Cylinders	12-15c	12-108
Section V.	Mechanical Brake System		12-111
	Brake Pedal Assembly Removal and Replacement	12-16	12-111
	Preliminary Procedures	12-16a	12-111
	Removal	12-16b	12-111
	Replacement	12-16c	12-113
	Brake Pedal Pad Removal and Replacement	12-17	12-115
	Removal	12-17a	12-115
	Replacement	12-17b	12-116
Section VI.	Air Brake System		12-117
	Venting Air System Pressure	12-18	12-117
	Compressed Air Lines and Fittings Removal and Replacement	12-19	12-118
	Preliminary Procedures	12-19a	12-118
	Removal	12-19b	12-119
	Replacement	12-19c	12-126
	Air Supply Valve Assembly Removal and Replacement	12-20	12-133
	Preliminary Procedure	12-20a	12-133
	Removal	12-20b	12-134
	Replacement	12-20c	12-135
	Air Brake System Valves and Fittings (Typical) Removal and Replacement	12-21	12-136
	Preliminary Procedure	12-21a	12-136
	Removal	12-21b	12-136
	Replacement	12-21c	12-138
	Air Brake Hand Control Valve Removal and Replacement (Truck M52A2)	12-22	12-140
	Preliminary Procedure	12-22a	12-140
	Removal	12-22b	12-140
	Replacement	12-22c	12-142

TABLE OF CONTENTS-CONT

		Paragraph	Page
	Air Brake Reservoir Assembly Removal and Replacement	12-23	12-144
	Preliminary Procedure	12-23a	12-144
	Removal	12-23b	12-144
	Replacement	12-23c	12-150
	Air Tank Safety Valve Assembly	12-24	12-156
	Preliminary Procedure	12-24a	12-156
	Removal	12-24b	12-156
	Replacement	12-24c	12-157
Section VII.	Compressed Air System		12-158
	Power Driven Reciprocating Compressor Assembly Removal and Replacement	12-25	12-158
	Preliminary Procedures	12-25a	12-158
	Removal	12-25b	12-158
	Replacement	12-25c	12-160
	Air Compressor Service Removal and Replacement	12-26	12-163
	Preliminary Procedure	12-26a	12-163
	Removal	12-26b	12-163
	Disassembly and Service	12-26c	12-164
	Assembly	12-26d	12-165
	Replacement	12-26e	12-166
	Air Compressor Leak Test	12-27	12-167
	Preliminary Procedure	12-27a	12-167
	Test	12-27b	12-167
	Air Compressor Drive Belt Removal and Replacement	12-28	12-168
	Preliminary Procedures	12-28a	12-168
	Removal	12-28b	12-168
	Replacement and Adjustment	12-28c	12-169
	Air Compressor Governor Assembly Removal and Replacement (Late Model Trucks)	12-29	12-170
	Preliminary Procedures	12-29a	12-170
	Removal	12-29b	12-170
	Replacement	12-29c	12-172
	Air Compressor Governor Valve (Early Model Trucks) Removal and Replacement	12-30	12-174
	Preliminary Procedures	12-30a	12-174
	Removal	12-30b	12-175
	Cleaning Filter	12-30C	12-176
	Replacement	12-30d	12-177
Section VIII.	Trailer Brake Connections		12-178
	Hand Control Brake Valve Assembly Removal and Replacement (Truck M52A2)	12-31	12-178
	Removal	12-31a	12-178
	Replacement	12-31b	12-181

TABLE OF CONTENTS -CONT

		Paragraph	Page
	Air Brake Hoses Removal, Repair and Replacement	12-32	12-184
	Preliminary Procedure	12-32a	12-184
	Removal	12-32b	12-185
	Repair	12-32c	12-186
	Replacement	12-32d	12-191

Part 2 of 2

CHAPTER 1.3.	WHEEL SYSTEM GROUP MAINTENANCE	
Section I.	Scope	13-1
Section II.	Front Wheel Assembly	13-1
Section III.	Rear Wheel Assembly	13-45
Section IV.	Tires	13-73
CHAPTER 14.	STEERING SYSTEM GROUP MAINTENANCE	
Section I.	Scope	14-1
Section II.	Mechanical Steering Gear Assembly	14-1
Section III.	Steering Hoses, Lines, and Fittings	14-41
Section IV.	Steering Reservoir	14-47
CHAPTER 15.	FRAME AND TOWING ATTACHMENTS GROUP MAINTENANCE	
Section I.	Scope	15-1
Section II.	Frame Components	15-1
Section III.	Pintles and Towing Attachments	15-9
Section IV.	Spare Wheel Carrier	15-29
Section V.	Fifth Wheel Assembly	15-54
CHAPTER 16.	SPRINGS AND SHOCK ABSORBERS GROUP MAINTENANCE	
Section I.	Scope	16-1
Section II.	Springs	16-1
Section III.	Shock Absorbers	16-32
CHAPTER 17.	BODY, CAB, HOOD, AND HULL GROUP MAINTENANCE	
Section I.	Scope	17-1
Section II.	Body and Cab Components	17-1
Section III.	Windshield	17-12
Section IV.	Seats	17-14
Section V.	Stowage and Tool Boxes	17-24
Section VI.	Cargo Body Components	17-39
CHAPTER 18.	WINCH, HOIST, AND CRANE ASSEMBLIES GROUP MAINTENANCE	
Section I.	Scope	18-1
Section II.	Winch, Hoist, and Crane Assemblies	18-1
CHAPTER 19.	BODY ACCESSORY ITEMS GROUP MAINTENANCE	
Section I.	Scope	19-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
Section II.	Canvas Items and Related Parts		19-1
Section III.	Accessory Items		19-21
Section IV.	Data Plates		19-46
CHAPTER 20.	NONELECTRICAL GAGES GROUP MAINTENANCE		
Section I.	Scope		20-1
Section II.	Nonelectrical Gages Tachometer and Speedometer		20-1
CHAPTER 21.	MAINTENANCE OF MATERIAL USED IN CONJUNCTION WITH MAJOR ITEMS		
Section I.	Scope		21-1
Section II.	Winterization Kits		21-1
Section III.	Deep Water Fording Kits		21-86
Section IV.	Special Purpose Kits		21-88
APPENDIX A.	REFERENCES		A-1
INDEX			Index 1

LIST OF ILLUSTRATIONS

Figure	Title	Page
1-1.	Cylinder Head Nut Tightening Sequence	1-12
14-1.	Power Steering System	14-42
20-1.	Front and Back View of Tachograph Chart	20-62
20-2.	Tachograph Chart Divisions	20-63
20-4.	Stop and Go Recordings	20-67
20-5.	Distance Traveled Recordings	20-69
20-6.	Engine RPM Recordings	20-69
20-7.	Good Driving Speed Chart	20-70
20-8.	Bad Driving Speed Chart	20-71
20-9.	Good and Bad Driving Over Short Distances	20-72
20-10.	Driving Downhill without Gear Engaged	20-73
20-11.	Driving Uphill in Wrong Gear	20-74
20-12.	Driving Uphill in Correct Gear	20-74
20-13.	Driving Downhill in Wrong Gear	20-75
20-14.	Engine Run at Excessively High RPM	20-76
20-15.	Excessive Engine Idling	20-77
20-16.	Poor Cold Starting Procedure	20-78
20-17.	Good Cold Starting Procedure	20-78
20-18.	Speed Stylus Bent to Simulate Lower Speeds	20-79
20-19.	No Deflection of Speed and Distance Styluses	20-80
20-20.	All Recordings on Front Side of Chart Interrupted	20-81
20-21.	Trip Made Between Removal of Used Chart and Insertion of New Chart	20-81
20-22.	Superimposed Recordings	20-82
20-23.	Speed Recording Runs for Unusually Long Period at a Uniform Level	20-83
20-24.	All Styluses Give Vertical Recordings Due to Stoppage	20-84

CHAPTER 1

GENERAL MAINTENANCE INFORMATION

1-1. SCOPE. This manual contains the organizational maintenance instructions for the trucks listed below. This manual includes procedures for disassembly, cleaning, inspection, repair, test and adjustment as authorized by the maintenance allocation chart.

Truck, Cargo: 5 ton, 6x6, M54A2, M54A2C and M55A2
Truck, Dump: 5 ton, 6x6, M51A2
Truck, Tractor: 5 ton, 6x6, M52A2
Truck, Wrecker, Medium: 5 ton, 6x6, M543A2

Information is provided on maintenance of trucks which is beyond the scope of tools, equipment, personnel, or supplies normally available to operator or using organization.

1-2. GENERAL MAINTENANCE. The general maintenance and repair covered by other manuals and called out in this manual are as follows:

TM 9-214 Inspection, Care and Maintenance of Antifriction Bearings.
TM 9-237 Operators Manual: Welding Theory and Application.
FM 43-3 General Repair For Canvas and Webbing.
TM 9-247 Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals.
FM 43-2 Sheet Metal Work: Body, Fender, and Radiator Repairs.
TB 750-254 Radiator Test.
TM 43-0139 Painting Instructions For Field Use.
TB 43-0209 Color and Camouflage Painting of Marking of Military Vehicles, Construction Equipment and Materials Handling Equipment.
TB 43-0212 Purging, Cleaning and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks.
TB 43-0213 (Rustproofing)
TM 9-2300-422- 20 Security of Tactical Wheeled Vehicles.

1-3. CLEANING. All parts must be cleaned before inspection and assembly and after 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.

Clean inner and outer surfaces of metallic parts and all areas subject to oil or mease with dry cleaning solvent, type II (SD–2),- Fed. Spec P-D–680. Clean out sludge and gum with a stiff brush. Use steam cleaning to take off accumulated grease and dirt after dry cleaning solvent has been applied. Dry with clean rags. To clean bearings, refer to TM 9-214. The general cleaning covered by other manuals and references called out in this manual are as follows:

TM 9-208-1 Cleaning of Ordnance Material.
TM 9-247 Materials Used for Cleaning, Presenting, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals.
TM 9-214 Inspection, Care and Maintenance of Antifriction Bearings.

1-4. PAINTING. Instruction for the preparation of the material for painting, how to paint, and material to be used are in TM 9-213. Instructions for camouflage painting are contained in FM 5-20B. Stenciling and marking must be done periodically due to weathering or repainting. Instructions for marking military trucks is called out in TB 746-93-1.

1-5. AIR SYSTEM LEAKAGE TEST. The following procedures give instructions for checking the compressed air system for leaks. These instructions are of a general nature and are given here so that they do not have to be repeated throughout chapter 12.

a. With compressed air system filled, brush each air line and fitting with soapy water.

b. If air bubbles appear, line or fitting is leaking.

c. Tighten fitting just enough to stop leak and do steps a and b again.

d. If you still have a leak, remove and replace line or fitting.

1-6. SPECIAL TOOLS AND EQUIPMENT. Special tools and equipment are provided to make it easier to do particular maintenance tasks and to keep the truck in good repair. Table 1-1 lists the special tools and equipment and gives a reference to the maintenance paragraph where they are used and what they are used for.

1-7. TORQUE VALUES. Critical torque values for a particular component are given in the maintenance procedures. When torque values are not given, bolts, screws, and nuts are to be tightened as given in table 1-2.

1-8. COMMON TOOLS. In the maintenance procedures covered in this manual, specific wrench sizes have been given. However, due to modifications made to equipment in the field or in production at the factory, you may need different wrench sizes.

1-9. SAFETY INSPECTION AND TESTING OF LIFTING DEVICES. Refer to TB 43-0142 for safety inspection and testing of lifting devices used in this manual.

1-10. FORMS AND RECORDS. Maintenance forms, records, and reports which are to be used by maintenance presonnel at all levels are listed in and prescribed by TM S8-750.

1-11. EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE DIGEST (EIR MD) AND EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE SUMMARY (EIR MS). The quarterly Equipment Improvement Report and Maintenance Digest, TB 43-0001-39 series, contains valuable field information on the equipment covered in this manual. The information in the TB 43-0001-39 series is compiled from some of the Equipment Improvement Reports that you prepared on the vehicles covered in this manual. Many of these articles result from comments, suggestions, and improvement recommendations that you submitted to the EIR program. The TB 43-0001-39 series contains information on equipment improvements, minor alterations, proposed Modification Work Orders (MWO'S), warranties (if applicable), actions taken on some of your DA Form 2028's (Recommended Changes to Publications), and advance information on proposed changes that may affect this manual. In addition, the more maintenance significant

articles, including minor alterations, field-fixes, etc, that have a more permanent and continuing need in the field are republished in the Equipment Improvement Report and Maintenance Summary (EIR MS) for TARCOM Equipment (TM 43-0143). Refer to both of these publications (TB 43-0001-39 series and TM 43-0143) periodically, especially the TB 43-0001-39 series, for the most current and authoritative information on your equipment. The information will help you in doing your job better and will help in keeping you advised of the latest changes to this manual. Also refer to DA Pam 310-4, Index of Technical Publications, and Appendix A, References, of the manual.

Table 1-1. Special Tools and Equipment

Item	Part No.	National Stock No.	Reference Paragraph	Use
PRESSURE GAGE : OIL	3005456	4910-00-792-8304	18-21	Used to check valve bank pressure.
REMOVER , BEARING	7950127	5120-00-378-4301	14-10	Used to take spindle bearing sleeve off of spindle.
REMOVER AND REPLACER , BEARING	7950130	5120-00-795-0130	14-10	Used to take bearing out of sleeve.
REMOVER AND REPLACER , BEARING	7950129	5120-00-795-0129	14-10	Used to put spindle bearing sleeve on spindle.
WRENCH, PULLEY ADJUSTING: (air Compressor Pulley)	10935288	5120-00-070-7809	12-25 12-28	Used to adjust air compressor pulley.
WRENCH, SPANNER	11602326	5120-00-880-4264	18-19	Used to tighten lift cylinder packing nut.
WRENCH, WHEEL BEARING NUT	7076869	5120-00-378-3139	13-3 13-4 13-9 13-10 16-5	Used to take off and put on wheel bearing nut.

1-12. REPORTING IMPROVEMENT RECOMMENDATIONS. If your truck needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank Automotive Material Readiness Command, ATTN: DRSTA-MT, Warren, Michigan 48090. We'll send you a reply.

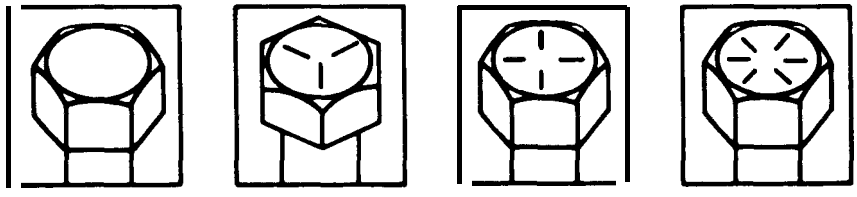
Table 1-2. Standard Torque Specifications

USAGE	MUCH USED	MUCH USED	USED AT TIMES	USED AT TIMES
CAPSCREW DIAMETER AND MINIMUM TENSILE STRENGTH PSI [KG/SQ CM]	To 1/2–69,000 [4850.7000] To 3/4–64,000 [4499.2000] To 1 –55,000 [3866.5000]	To 3/4–120,000 [8436.0000] To 1–115,000 [8084.5000]	To 5/8–140,000 [9842.0000] To 3/4–133,000 [9349.9000]	150,000 [10545.0000]
QUALITY OF MATERIAL	INDETERMINATE	MINIMUM COMMERCIAL	MEDIUM COMMERCIAL	BEST COMMERCIAL
SAE GRADE NUMBER	1 or 2	5	6 or 7	8

CAPSCREW HEAD MARKINGS

Manufacturer's marks may vary These are all SAE Grade 5 (3-line).





CAPSCREW BODY SIZE (INCHES)–(THREAD)	TORQUE FT-LB [KG M]	TORQUE FT-LB [KG M]	TORQUE FT-LB [KG M]	TORQUE FT-LB [KG M]
1/4 20	5 [0.6915]	8 [1.1064]	10 [1.3830]	12 [1.6596]
28	6 [0.8298]	10 [1.3830]		14 [1.9362]
5/16 18	11 [1.5213]	17 [2.3511]	19 [2.6277]	24 [3.3192]
-24	13 [1.7979]	19 [2.6277]		27 [3.7341]
3/8–16	18 [2.4894]	31 [4.2873]	34 [4.7022]	44 [6.0852]
24	20 [2.7660]	35 [4.8405]		49 [6.7767]
7/16–14	28 [3.8132]	49 [6.7767]	55 [7.6065]	70 [9.6810]
–20	30 [4.1490]	55 [7.6065		78 [10.7874]
1/2 13	39 [5.3937]	75 [10.3725]	85 [11.7555]	105 [14.5215]
20	41 [5.6703]	85 [11.7555]		120 [16.5960]
9/16-12	51 [7.0533]	110 [15.2130]	120 [16.5960]	155 [21.4365]
-18	55 [7.6065]	120 [16.5960]		170 [23.5110]
5/8-11	83 [11.4789]	150 [20.7450]	167 [23.0961]	210 [29.0430]
–18	95 [13.1385]	170 [23.5110]		240 [33.1920]
3/4–10	105 [14.5215]	270 [37.3410]	280 [38.7240]	375 [51.8625]
-16	115 [15.9045]	295 [40.7985]		420 [58.0860]
7/8–9	160 [22.1280]	395 [54.6285]	440 [60.8520]	605 [83.6715]
–14	175 [24.2025]	435 [60.1605]		675 [93.3525]
1–8	235 [32.5005]	590 [81.5970]	660 [91.2780]	910 [125.8530]
–14	250 [34.5750]	660 [91.2780]		990 [136.9170]

1. Always use the torque values listed above when specific specifications are not available

   Note: Do not use above values in place of those specified in the engine groups of this manual; special attention should be observed in case of SAE Grade 6, 7 and 8 capscrews.

2. The above is based on use of clean and dry threads.

3. Reduce torque by 10% when engine oil is used as a lubricant.

4. Reduce torque by 20% if new plated capscrews are used.

   Caution: Capscrews threaded into aluminum may require reductions in torque of 30% or more, unless inserts are used.

TA 113439

1-13. METRIC SYSTEM. The equipment/system described herein is nonmetric and does not require metric common or special tools. Therefore, metric units are not supplied. Tactical instructions, for sake of clarity, will also remain nonmetric.

1-14. DESTRUCTION TO PREVENT ENEMY USE. Follow procedures given in TM 750- 244-6 for destruction of Army material to prevent enemy use.

1-15. DESCRIPTION. The 5-ton, 6 x 6 series trucks covered in this manual are described in detail in TM 9-2320-211-10-1.

1-16. IDENTIFICATION AND TABULATED DATA.

a. Identification. Refer to TM 9-2320-211-10-1 for identification plates and additional data.

b. Tabulated Data.

(1) Engine.

Make	Continental LDS 465-1/ LDS 465-1A.
Type:	
Continental LDS 465-1 and 1A	Multifuel turbocharged, watercooled, compression-ignition.
Valves	valve-in-head
Cylinders	6 (in-line)
Firing order	1-5-3-6-2-4
Brake hp:	
Continental LDS 465-1 and 1A	175-180 at 2.600 rpm
Compression ratio:	
Continental LDS 465-1 and 1A	22.0: 1
Maximum torque:	
Continental LDS 465-1 and 1A:	
Gross	425 ft-lb at 2.000 rpm
Governed speed:	
Continental LDS 465-1 and 1A:	
No load	2.850-2.900 rpm
Idle speed:	
Continental LDS 465-l and lA	650-700 rpm
Specific fuel consumption (approx.)	5 miles per gallon

(2) Fuel system.

NOTE

During emergency combat conditions where no other fuel is available, JP - 5 aircraft turbine engine fuel is good to use in multifuel vehicles.

Fuel pump electrical:	
Model	10947358-3
Type	Electrical
Location	Inside fuel tank
Fuel transfer pump:	
Model	7748814
Type	Electric
Fuel delivery	Approx. 30 gal/hr
Fuel filter - primary:	
Models	8395476 (LDS 465-lA and 5638455 (LDS 465-1)
Types	Fluid Pressure (LDS 465-1) and Scraper (LDS 465-1, LDS 465-1A converted).
Elements	6280916 (LDS 465-1, 1A converted) and 8729068 (LDS 465-1, production).
Location	Left side frame
Fuel filters - (secondary and final):	
Models	10935475 (LDS 465-lA) and 8712440 (LDS 465-1).
Type	Replaceable element
Elements kit	5702776 (LDS 465-lA) and 8712439 (LDS 465-1).
Location	(1) Left side frame; (1) Left side engine (LDS 465-1); (2) Left-side engine (LDS 465-lA).
Fuel injection system:	
Make	American Bosch
Model	PSB6A
Type	Single plunger distributor type design with mechanical governor and fuel supply pump.

Injection nozzles (6):

Make	American Bosch
Model	ADB
Types	Multihole (LDS 465-1) and single hole (LDS 465-1A).

Type of fuel:

Fuel requirements	Temperature Limits
Grade DF2 fuel (of spec VV-F-800)	Do not use below +32°F
Grade DF1 fuel (of spec VV-F-800)	Do not use below -lO°F
Grade DFA fuel (of spec VV-F-800)	All temperatures
Gasoline (MIL-G-3056)	All temperatures (emergency use only)

Air induction system:

Air cleaner:

Model	7737120
Type	Dry
Location	Right fender
Cartridge	7737491
Servicing indicator	On rh instrument panel

Turbocharger:

Optional make	(Aireserch Industrial Division)
Make	Schwitzer Corp. 4LE-354.
Model	4-456 and 4D554 (Mack ENDT-673).
Type	Oil-cooled, exhaust-driven, blower compressor.

(3) Cooling system.

Thermostat	Opens at 180°F

Water pump:

Model	10889962
Type	Centrifugal impeller

Radiator:
Make 11640319
Type ..... Fin and tube
Pressure cap ..... 7 psi
Generator:
Model 1117495
Voltage (rated) ..... 24 volts
Generator regulator:
Model 1118606
Type ..... Vibrating
Voltage (rated) ..... 24 volts
Ground polarity ..... Negative
Voltage regulator:
Operating range (hot) ..... 27.29 volts at 120°F
Starter:
Make ..... Delco-Remy
Voltage ..... 24 volts

(4) Transmission.
Manufacturer ..... Spicer
Model 6352
Type ..... Synchromesh
Speeds forward 5
Speeds reverse 1
Gear ratios:
1st 7.31
2nd 4.08
3rd 2.41
4th 1.43
5th 1.00
Reverse 7.33

(5) Transfer case.
Manufacturer ..... Rockwell Standard
Model T-138

Ratios:
Rear output shaft:
Low range 2.024:1.00
High range 1.00:1.00
Front output shaft:
Low range 2.163:1.00
High range 1.068:1.00

(6) Axles,
Front:
Make ..... Rockwell Standard
Model FM240HX1
Gear ratio (all models except M139C) 6.443:1.00
Model M139C 10.26:1.00
Lubricant capacity 12-qt
Rear:
Make ..... Rockwell Standard
Model M204H
Gear ratio (all models) 6.443:1.00
Lubricant capacity 12-qt

(7) Brakes.
Service:
Type ..... Air-assisted hydraulic
Air compressor:
Make ..... Midland-Ross; Bendix-Westinghouse.
Type ..... 2-UE-7-l/4V.W.
Air reservoirs:
Make ..... Bendix-Westinghouse
Size ..... 7-inch diameter
Trailer ..... Full air

(8) Wheels and tires.
Tire size ..... 11:00 x 20
Wheels ..... Offset, disk-type

(9) Steering.

Steering gear:	
Make	Ross Gear and Tool Co.
Model	HP-70
Type	Hydraulic
Ratios:	
Extreme left	19:1
Center	22:1
Extreme right	19:1
Hydraulic oil reservoir:	
Make	International Harvester Co.
Model	IHC-101012R11
Capacity	8½ qt
Relief valve:	
Make	Pesco
Model	PS-05-2223-020-1
Hydraulic pump:	
Make	Vickers Inc.
Model	VTM
Type	Vane

(l0) Frame.

Type	Side rail
Channel dimensions (in.)	8x3x5/16

(11) Springs and shock absorbers.

Front springs:	
Make	Standard Steel Spring Co.
Manufacturer's number	SSS-9112A
Number of leaves	10
Length (under load)	50 in.
Width of leaves	3 in.
Rear springs:	
Make	Standard Steel Spring Co.
Manufacturer's number	SSS-9113
Number of leaves	13
Length	59¼ in.
Width of leaves	4 in.

Shock absorbers:	
Make	Deko Products Div.
Model	750-T
Manufacturer's number	DP-5516454
Type	Nonadjustable, doubleacting.
Location	Front only
(12) Cab.	
Capacity	three-man
ToP	tarpaulin
Windshield	two-piece

1-17. SERVICE UPON RECEIPT OF MATERIEL.

a. General. Refer to TM 9-2320-211-10-1 for operating instructions, break-in operating precautions, and break–in speeds. When needed, the truck operator will help organizational maintenance personnel when doing these services.

b. Inspecting and Servicing the Equipment.

(1) General procedures.

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.

(a) If any outside surfaces are coated with rust-preventive compound, remove it with dry cleaning solvent.

(b) Read DD Form 1397 (Processing and Reprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines), and follow all items checked on it. This tag should be tied to the steering wheel, shifting levers, or ignition switch.

(c) On processed materiel, when the engine has been stored for over 30 days, service the engine as given in TB ORD 392 by doing the following:

(1) Take out the injectors from each cylinder.

(2) Atomize spray 2 ounces of lubricating oil, (Military symbol PL Special) into each cylinder through the injector opening.

(3) After an interval of 15 minutes, turn the engine by hand or starter for about 30 seconds and put back the injectors.

NOTE

If the truck has been driven to the using organization, most or all of the above procedures should have been done.

(4) Follow the general procedures given in TM 9-2320-211-10-1.

(2) Specific procedures.

(a) Before starting the engine, takeoff the cylinder head covers. Tighten the cylinder head nuts, a little at a time, to the torque values given and in the sequence shown in figure 1-1.

NOTE

Letters TD are cast on block 11610199 near the engine date plate.

Block 10935254		Block 11610199	
1. 40 pound-feet	3. 110 pound-feet	1. 40 pound-feet	3. 110 pound-feet
2. 80 pound-feet	4. 130 pound-feet	2. 80 pound-feet	4. 130 pound-feet
			5. 157 pound-feet

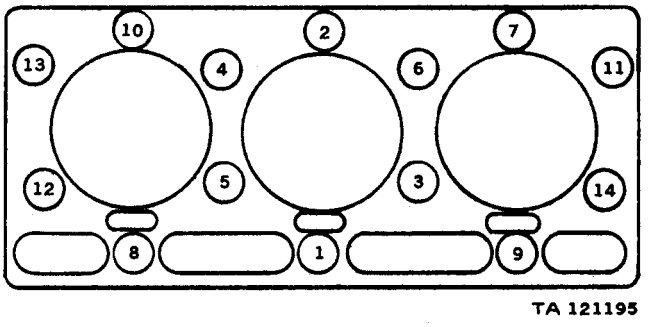


Figure 1-1. Cylinder Head Nut Tightening Sequence

(b) Warm up engine and retighten cylinder-head nuts to 130 pound-feet torque for 10935254 and 154 pound-feet torque for 11610199 in the sequence shown in figure 1-1.

NOTE

Do not use Alcoa thread lube on cylinder studs; use engine oil.

(c) Do this (6-month or 6,000 mile) preventive-maintenance service. Refer to volume 1 for these procedures.

(d) Grease or oil those points illustrated in the lubrication order regardless of interval, except the gear cases and engine. Check processing tag for gear case and engine oil. If the tag states that the oil is suitable for 500 miles of operation and is of the proper grade for local climate operation, check the level but do not change the oil.

(e) Schedule an S service on DD Form 314 (Preventive-Maintenance Schedule and Record (card)) and set up an oil change at 500 miles.

(f) If the truck is delivered with a dry-charged battery, have the battery charged. Refer to TM 9-6140-200-15.

(g) Check coolant in radator to see if solution is proper for local climate. Refer to table 1-3 for preparation of antifreeze solution.

Table 1-3. Guide for Preparation of Antifreeze Solution

Lowest expected ambient temperature (°F)	Ethylene-glycol (-60°F) inhibited (O-A-548, type 1)		
	Pints per gallon of coolant capacity (Notes 1, 2)	Specific gravity (68°F)	Arctic grade anti-freeze (-90°F) MIL-C-1175
+20	0.750	1.022	Freezing point of -90°F Issued ready for use and must not be mixed with any other liquid
+10	1.000	1.036	
0	1.375	1.047	
-l0	1.625	1.055	
-20	1.750	1.062	
-30	2.000	1.067	
-40	2.125	1.073	
-50	2.250		
-60	2.375		
Below -60	Use arctic grade antifreeze (-90°F)		

NOTES :

1. Includes heaters.
2. Proportions are in terms of ethylene-glycol per gallon and not pints of ethylene-glycol added to each gallon of water. For example, at -30°F a gallon of coolant contains two pints of ethylene-glycol and six pints of water (2 pints + 6 pints = 8 pints = 1 gallon).

1-18. TOOLS AND EQUIPMENT. Basic tools and repair parts issued or authorized for trucks covered in this manual are listed in the Basic Issue Items List, Appendix B of TM 9-2320-211-10-1.

1-19. MAINTENANCE REPAIR PARTS. Repair parts are supplied to Organizational Maintenance for the replacement of parts that are worn, broken, defective, or not usable. These parts are listed in TM 9-2320-211-20P.

1-20. GENERAL LUBRICATION INSTRUCTIONS. LO 9-2320-210-12 provides cleaning and lubrication procedures for trucks described in this manual. The instructions give types and grades of lubricants used, lube points or locations and frequency of lubrication as given in the maintenance allocation chart and lubrication order. If any of the petroleum fuels, lubricants, or preserving materials used are not giving proper service, report the item as given in TM 38-750.

1-21. ADMINISTRATIVE STORAGE. Refer to TM 740-90-1 for truck storage procedures.

CHAPTER 2

ENGINE SYSTEM GROUP MAINTENANCE

Section I. SCOPE

2-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for valves, covers and gaskets and the engine lubrication system for which there are authorized corrective maintenance tasks at the organizational maintenance level.

2-2. 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. VALVE COVERS AND GASKETS

2-3. INTAKE AND EXHAUST VALVE ADJUSTMENT.

TOOLS : 1/2-inch combination wrench
Feeler gages
Tire bar, pn 5120-00-277-4071
Flat-tip screwdriver
5/8-inch combination wrench
Torque wrench, O-200 pound inches capacity
Adapter, 3/8 to l/2-inch

SUPPLIES : Crankcase breather adapter gaskets (2)
Valve cover gasket (2)

PERSONNEL : Two

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

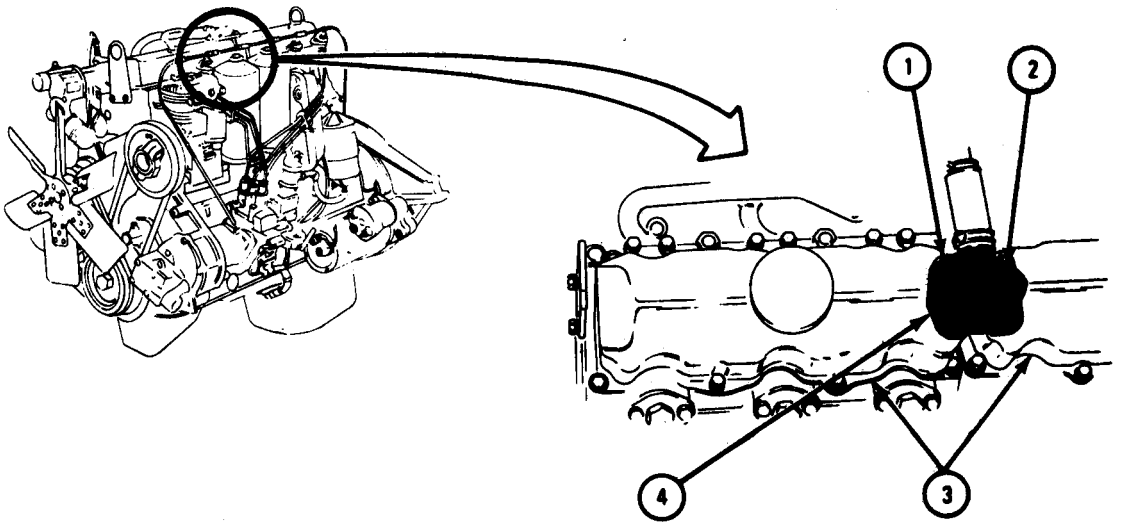
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Crankcase Breather Adapter Removal.

FRAME 1

1. Using 5/16-inch wrench, unscrew and take off four nuts with lockwashers (l).
2. Lift breather adapter (2) from cylinder head covers (3). Swing adapter clear of studs in cylinder head covers.
3. Take off and throw away two breather adapter gaskets (4).

END OF TASK



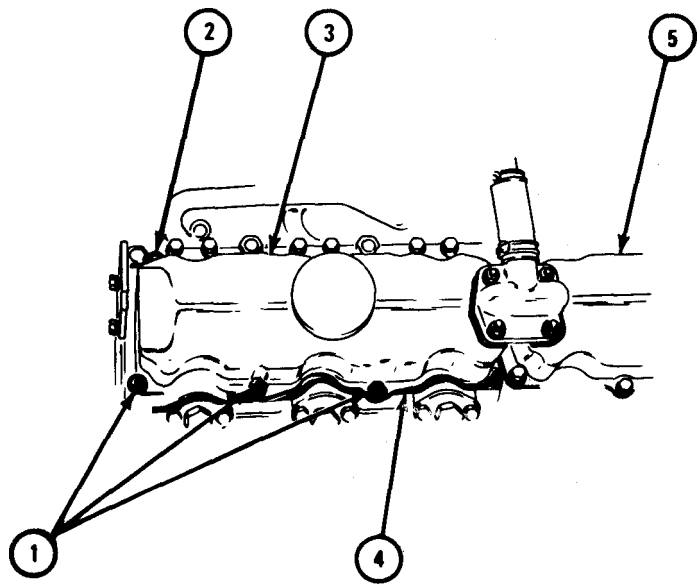
TA 054601

c. Cylinder Head Covers Removal.

FRAME 1

1. Using 1/2-inch wrench, unscrew and take off seven capscrews with flat washers (1).
2. Using 1/2-inch wrench, unscrew and take off self-locking nut with flat washer (2).
3. Take off front cylinder head cover (3). Take off and throw away cover gasket (4).
4. Do steps 1 through 3 again to take off rear cylinder head cover (5).

END OF TASK



TA 054602

d. Valve Adjustment.

Soldier A 1. Put transfer shift lever (1) in neutral position.

2. Put transmission gear shift lever (2) in 4th gear.

3. Pull out ENG STOP control (3) and turn to lock position. Refer to TM 9-2320-211-10.

4, Push START button (4) and let go quickly.

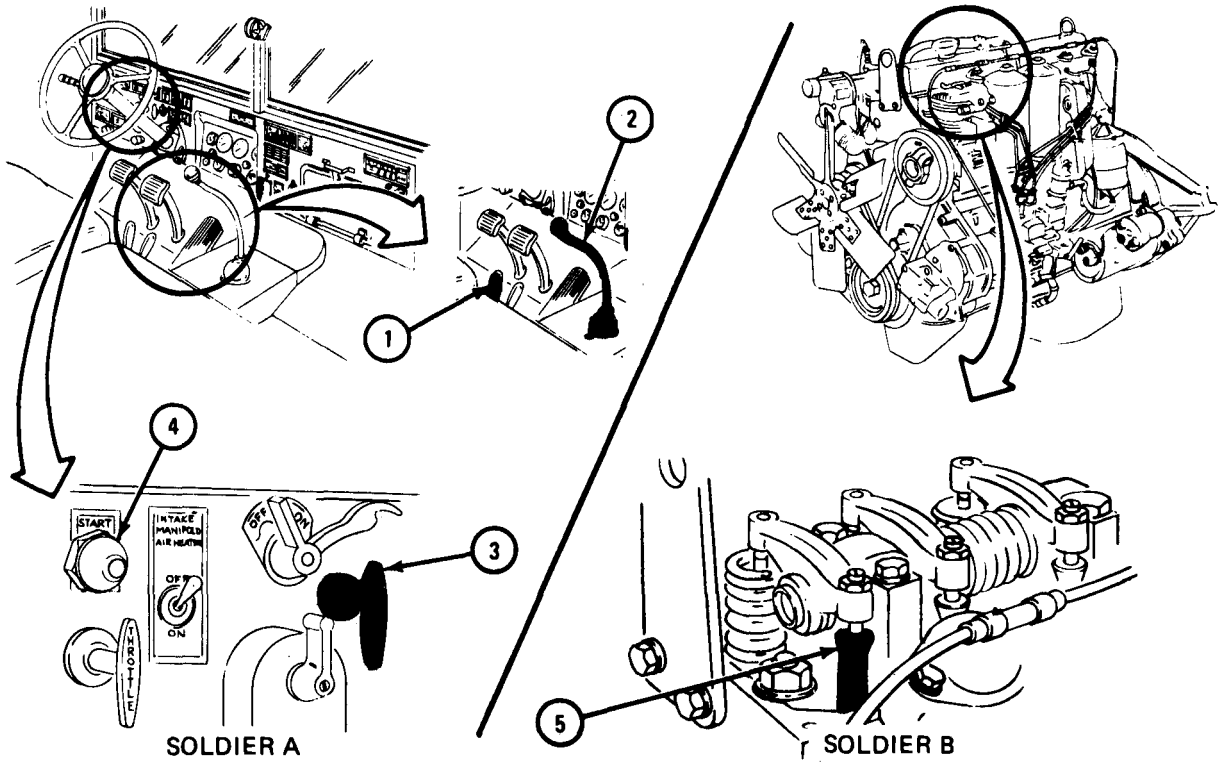
5. Do step 4 until soldier B says to stop.

NOTE

Cylinders are numbered from front of truck to rear. Intake valves are toward front of truck.

Soldier B 6. Watch cylinder no. 1 intake rocker arm pushrod (5). When pushrod is almost in its highest position, tell soldier A to stop.

GO TO FRAME 2



FRAME 2

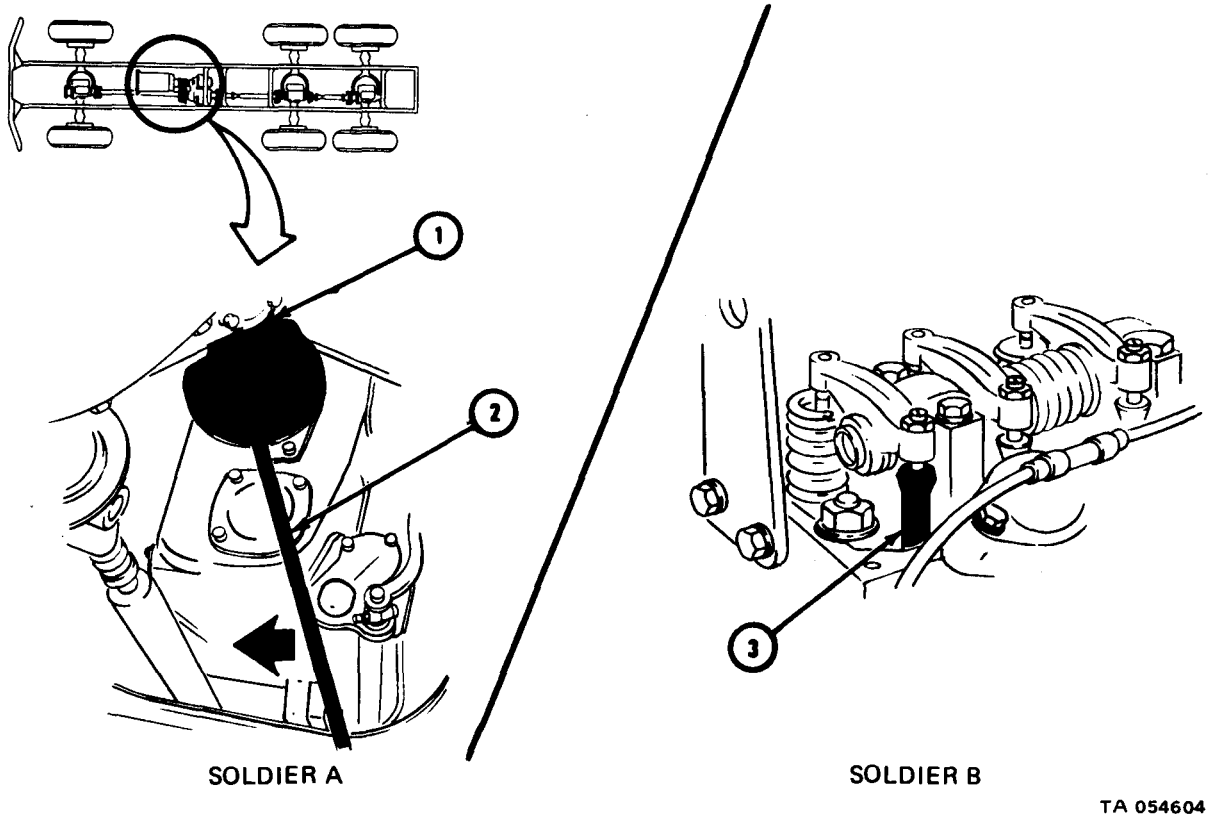
CAUTION

Turn transmission-to-transfer propeller shaft (1) only to right to prevent damage to equipment.

Soldier A 1. Working under truck using bar (2), turn transmission-to-transfer propeller shaft (1) to right until soldier B says to stop.

Soldier B 2. Watch cylinder no. 1 intake valve rocker arm pushrod (3). When pushrod is in its highest position, tell soldier A to stop.

GO TO FRAME 3



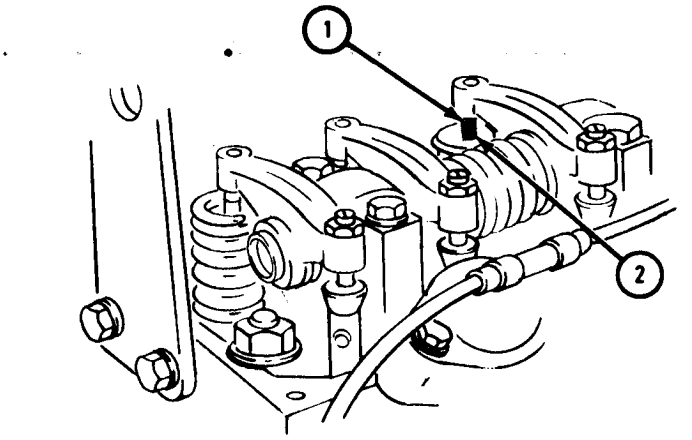
FRAME 3

NOTE

Cylinder no. 1 intake valve is now fully open. Intake valves for cylinder nos. 2, 3, and 6 and exhaust valves for cylinder nos. 1, 2, and 4 must be set in this position. Use O. 010-inch feeler gage for intake valves and 0. 025-inch feeler gage for exhaust valves.

1. Push feeler gage between rocker arm pad (1) and cylinder no. 2 intake valve stem (2).
2. Do step 1 for intake valve nos. 2, 3, and 6 and exhaust valve nos. 1, 2, and 4.

IF FEELER GAGE FIT IS NOT SNUG FOR ANY VALVE, GO TO FRAME 4.
IF FEELER GAGE FIT IS SNUG FOR ALL VALVES, GO TO FRAME 5



TA 054605

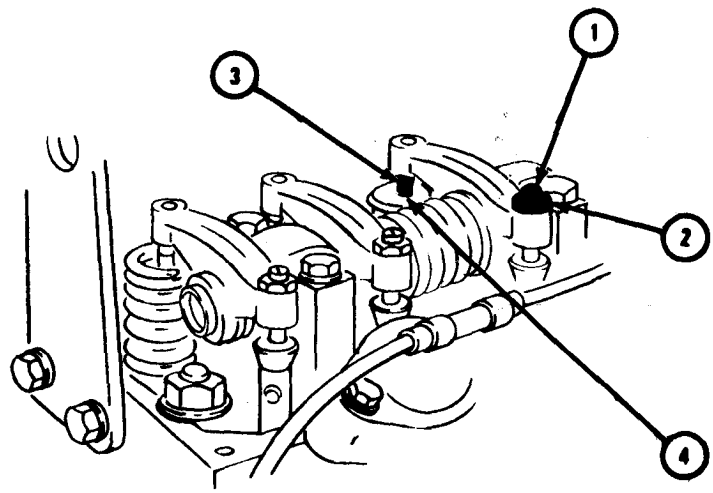
FRAME 3

NOTE

These steps must be done for any valve where feeler gage fit is not snug.

1. Using screwdriver to keep adjusting screw (1) from moving and using 5/8-inch wrench, loosen locknut (2).
2. Using screwdriver, turn adjusting screw (1) until feeler gage fit is snug between rocker arm pad (3) and valve stem (4).
3. Using screwdriver to keep adjusting screw (1) from moving and using 5/8-inch wrench, tighten locknut (2).

GO TO FRAME 5



TA 054606

FRAME 5

Soldier A 1. Put transmission gear shift lever (1) in neutral position.

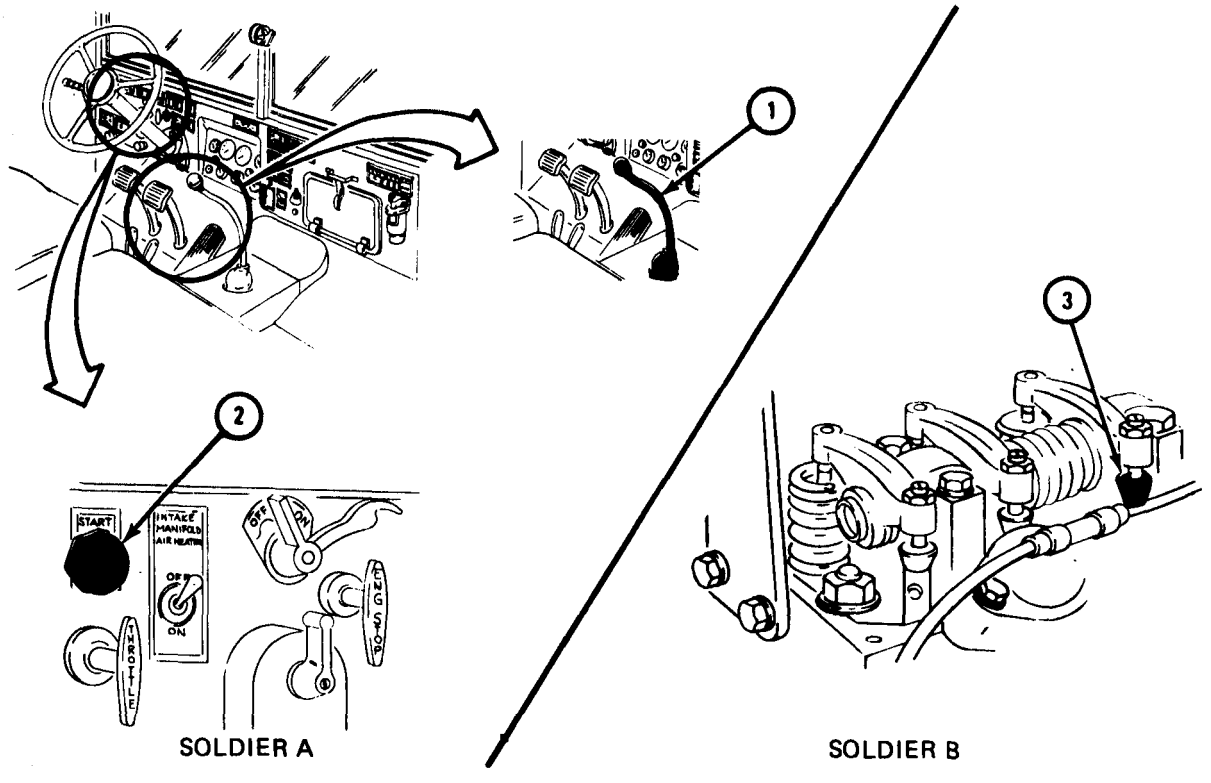
2. Push START button (2) and let go quickly.

3. Do step 2 until soldier B says to stop.

Soldier B 4. Watch cylinder no. 6 intake valve rocker arm pushrod (3). When pushrod is almost in its highest position, tell soldier A to stop.

Soldier A 5. Put transmission gear shift lever (1) in 4th gear.

GO TO FRAME 6



FRAME 6

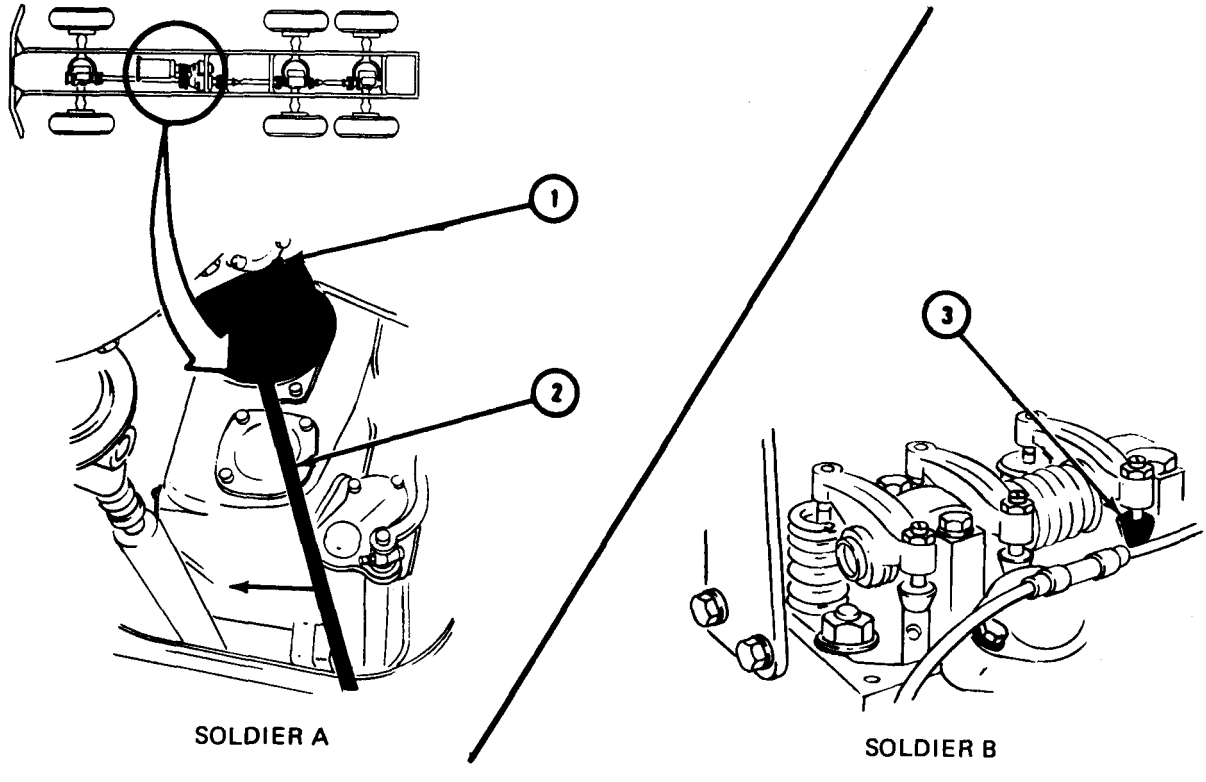
CAUTION

Turn transmission-to-transfer propeller shaft (1) only to right to prevent damage to equipment.

Soldier A
1. Working under truck using bar (2), turn transmission-to-transfer propeller shaft (1) to right until soldier B says to stop.

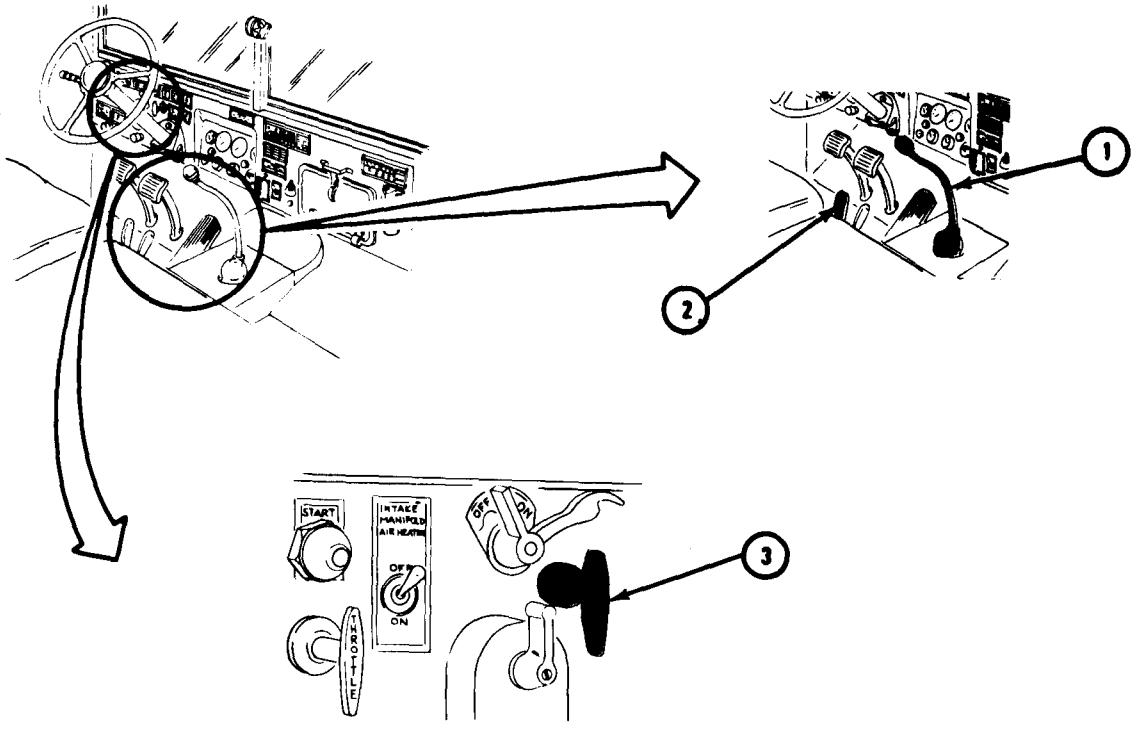
Soldier B
2. Watch cylinder no. 6 intake valve rocker arm pushrod (3). When pushrod is in its highest position, tell soldier-A to stop.
3. Set intake valve nos. 1, 4, and 5 and exhaust valve nos. 3, 5, and 6. Refer to para 2-3d, frames 3 and 4.

GO TO FRAME 7



1. Put transmisstion gear shift lever (1) in neutral position.
2. Put transfer shift lever (2) in HIGH position.
3. Unlock and push in ENG STOP control (3). Refer to TM 9-2320-211-10.

END OF TASK



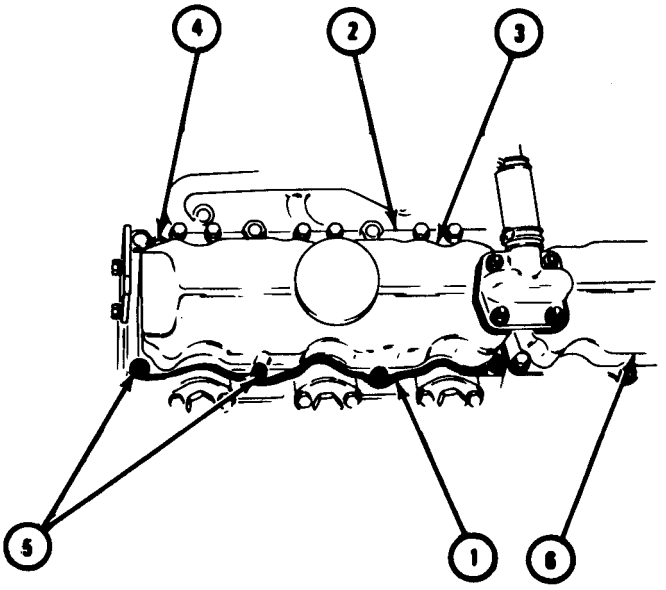
TA 054609

e. Cylinder Head Covers Replacement.

FRAME 1

1. Place gasket (1) on front cylinder head (2).
2. Mate front cylinder head cover (3) with front cylinder head (2).
3. Using l/2-inch wrench, screw on self-locking nut with flat washer (4).
4. Using l/2-inch wrench, screw on seven capscrews with flat washers (5).
5. Using torque wrench, tighten capscrews with flat washers (5) and self-locking nut with flat washer (4) to 30 to 60 pound-inches.
6. Do steps 1 through 5 again to put on rear cylinder head cover (6).

END OF TASK



TA 054610

Crankcase Breather Adapter Replacement.

FRAME 1

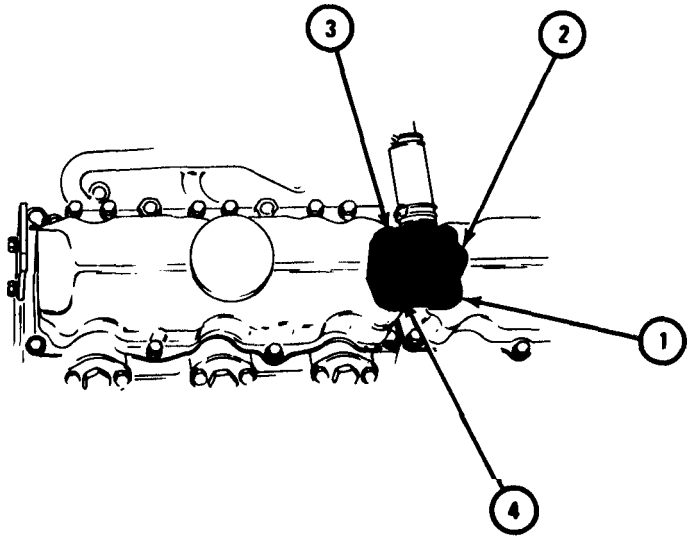
1. Place two gaskets (1) on breather adapter (2).
2. Mate breather adapter (2) with cylinder head cover studs (3).
3. Using l/2-inchwrench, screw on four nuts with lockwashers (4).
4. Using torque wrench, tighten four nuts with lockwashers (4) to 30 to 60 pound-inches.

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



TA 054611

Section III. ENGINE LUBRICATION SYSTEM

2-4. OIL FILTER ELEMENT REMOVAL AND REPLACEMENT.

TOOLS : 7/16-inch wrench
7/8-inch wrench
Needle nose pliers

SUPPLIES: Container
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Housing seal
Gasket
Filter element
Lubricating oil, ICE, OE/HDO, MIL-L-2104

PERSONNEL: One

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

NOTE
This task is the same for the two oil filter elements. This task is shown for the rear oil filter element.

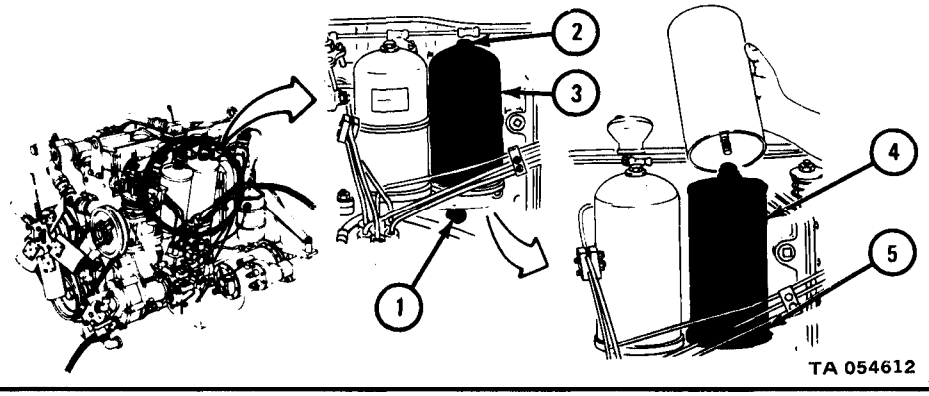
a. Removal.

FRAME 1

NOTE
If engine has been off for 15 minutes or more, do not drain oil from filter.

1. Using 7/16-inch wrench, unscrew and take out drain plug (1). Drain oil into container.
2. Using 7/8-inch wrench, unscrew center bolt (2) and take out center bolt and housing (3).
3. Take out filter element (4) and housing seal (5) and throw them away.

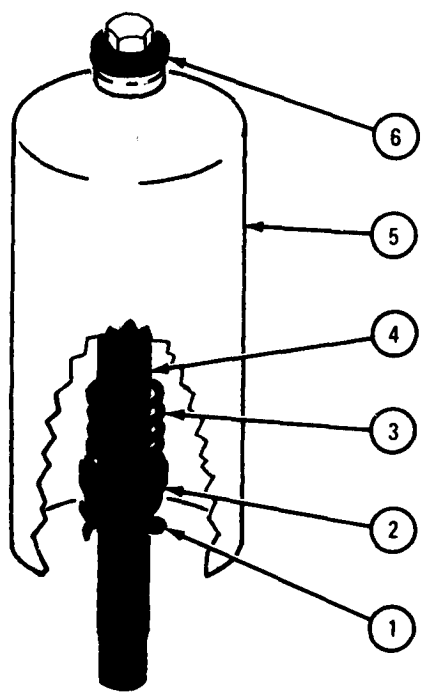
GO TO FRAME 2



FRAME 2

1. Using needle nose pliers, takeout cotter pin (l). Slide cup (2) and spring (3) off center bolt (4).
2. Pull center bolt (4) from housing (5) and take off gasket (6). Throw gasket away.

END OF TASK



TA 088870

b. Replacement.

FRAME 1

WARNING

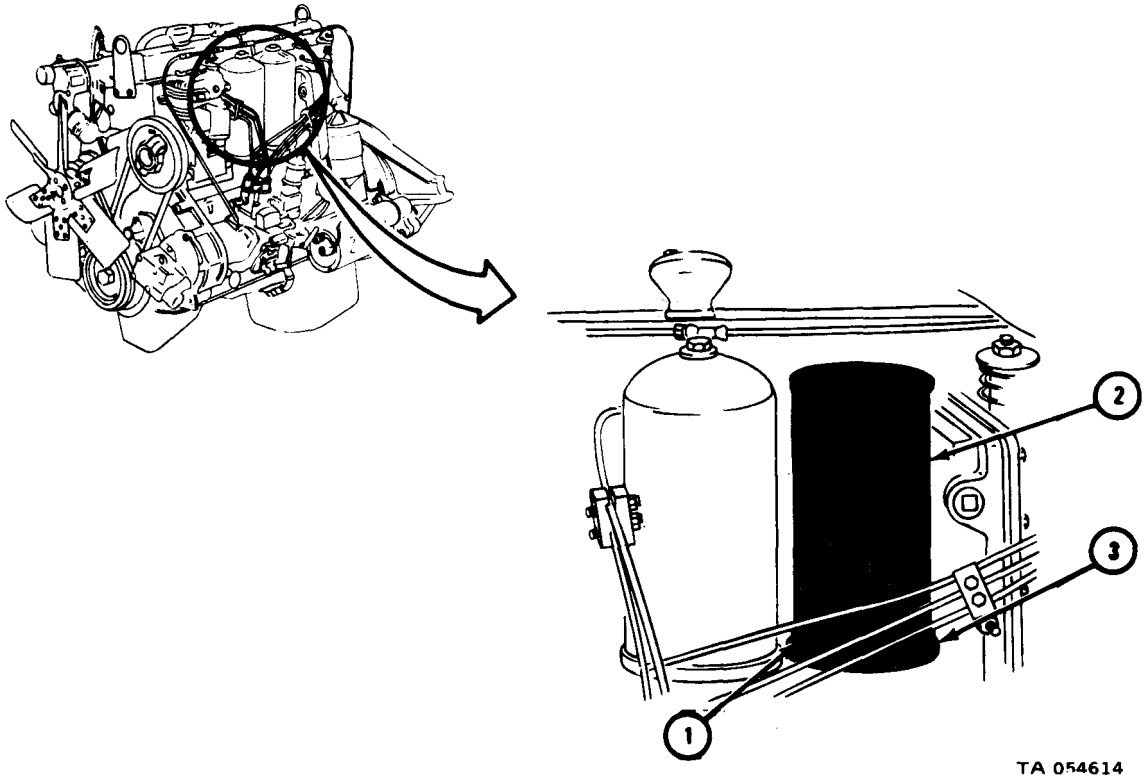
Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

Clean housing, center bolt, and base plate with dry cleaning solvent before putting in filter element.

1. Place housing seal (1) and filter element (2) on base plate (3).

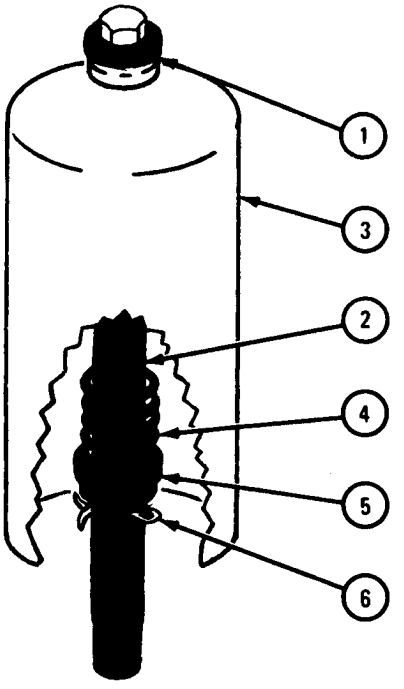
GO TO FRAME 2



FRAME 2

1. Put gasket (1) on center bolt (2).
2. Push center bolt (2) with gasket through hole in housing (3).
3. Push spring (4) and cup (5) on center bolt (2).
4. Using needle nose pliers, put cotter pin (6) through hole in center bolt and bend ends.

GO TO FRAME 3



TA 088871

FRAME 3

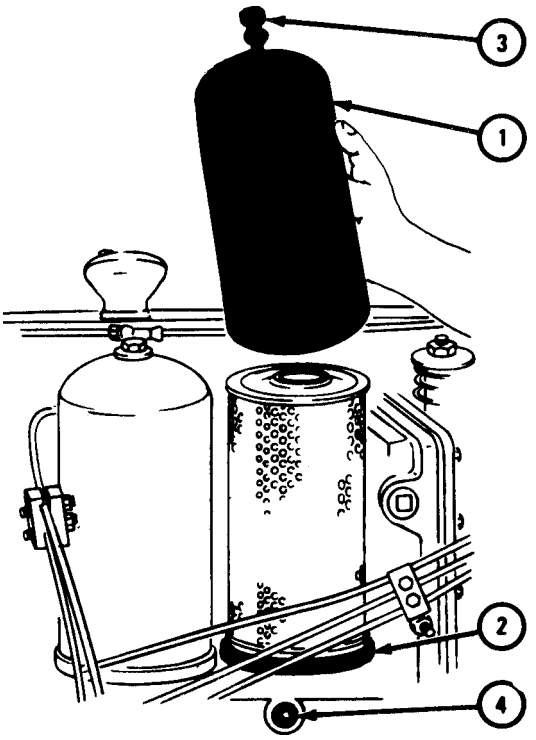
1. Join housing (1) to base plate (2) and using 7/8-inch wrench, screw in and tighten center bolt (3).
2. Using 7/16-inch wrench, screw in drain plug (4).

NOTE

Follow-on Maintenance Action Required:

1. Add oil to crankcase. Refer to LO 9-2320-211-12.
2. Start engine. Refer to TM 9-2320-211-10.
3. Check oil filter for leaks.
4. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 054616

2-5. ENGINE CRANKCASE BREATHER TUBE REMOVAL AND REPLACEMENT.

TOOLS : 7/16-inch wrench (2)
Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

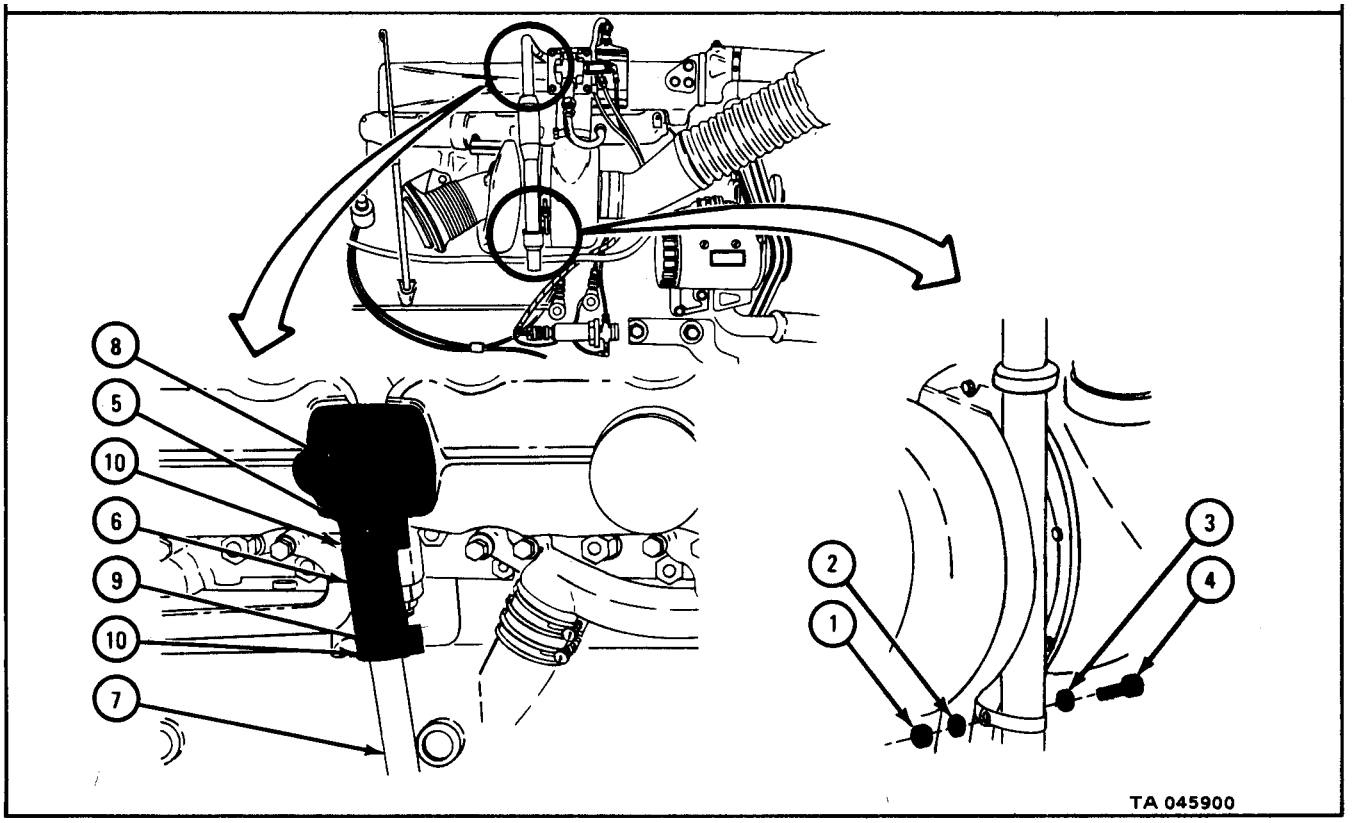
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using wrenches, unscrew and take off nut (l), lockwasher (2), flat washer (3), and capscrew (4).
2. Using screwdriver, loosen screw (5). Pull off hose (6) with crankcase breather tube (7) from breather tube adapter (8).
3. Using screwdriver, loosen screw (9) and takeoff hose (6) and two hose clamps (10).
4. Take off crankcase breather tube (7).

END OF TASK



Replacement.

FRAME 1

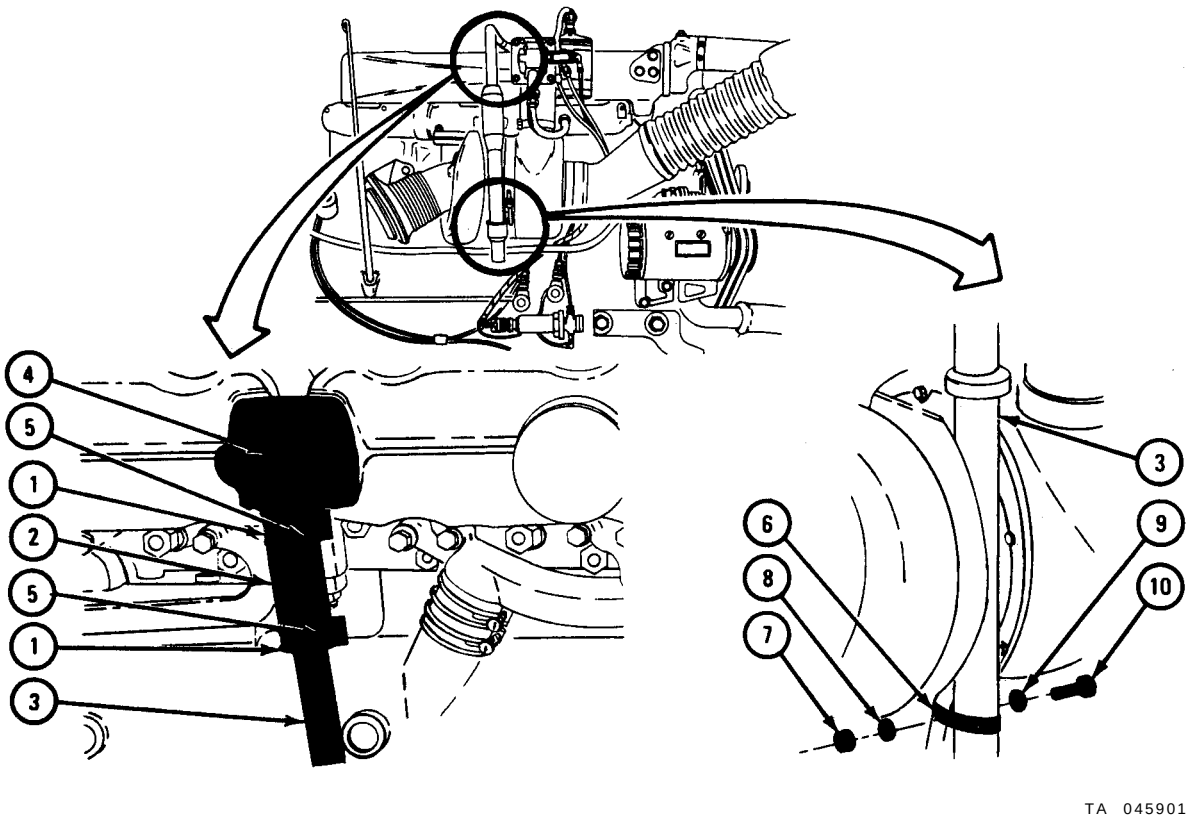
1. Slide two hose clamps (1) on hose (2).
2. Slide one end of hose (2) over crankcase breather tube (3) and other end of hose over breather tube adapter (4). Using screwdriver, tighten two screws (5).
3. Slide crankcase breather tube (3) through clamp (6).
4. Using wrenches, screw on and tighten nut (7), lockwasher (8), flat washer (9), and capscrew (10).

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



TA 045901

CHAPTER 3

CLUTCH SYSTEM GROUP MAINTENANCE

Section I. SCOPE

3-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the clutch release mechanism for which there are authorized corrective maintenance tasks at the organizational maintenance level.

3-2. 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. CLUTCH RELEASE MECHANISM

3-3. CLUTCH PEDAL LINKAGE ADJUSTMENT.

TOOLS : 3/4-inch open end wrench
11/16-inch open end wrench
5/8-inch open end wrench
Flat-tip screwdriver
6-inch ruler

SUPPLIES : Chalk

PERSONNEL : One

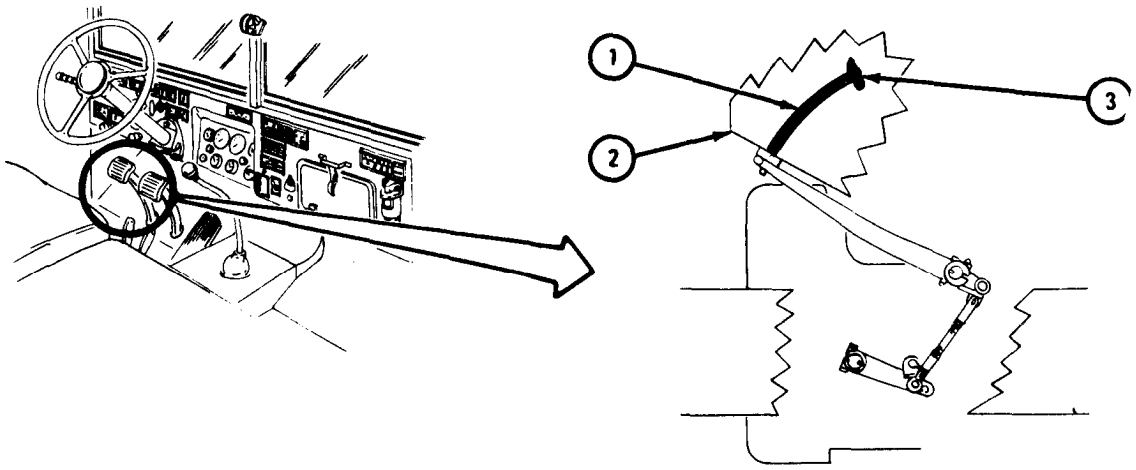
EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

a. Check.

FRAME 1

1. Using chalk, mark clutch pedal shaft (1) where shaft meets floor (2).
2. Using hand, push clutch pedal (3) down slowly until change in pressure is felt.
3. Holding clutch pedal (3) in that position, mark clutch pedal shaft (1) with chalk where shaft meets floor (2).
4. Let go of clutch pedal (3) and using 6-inch ruler, measure distance between chalk marks (free travel).
5. If free travel is between 1 1/2 inches and 2 inches, no adjustment is needed.
6. If free travel is less than 1 1/2 inches or more than 2 inches, do clutch pedal linkage adjustment. Refer to para 3-3b,

END OF TASK



TA 054617

Adjustment.

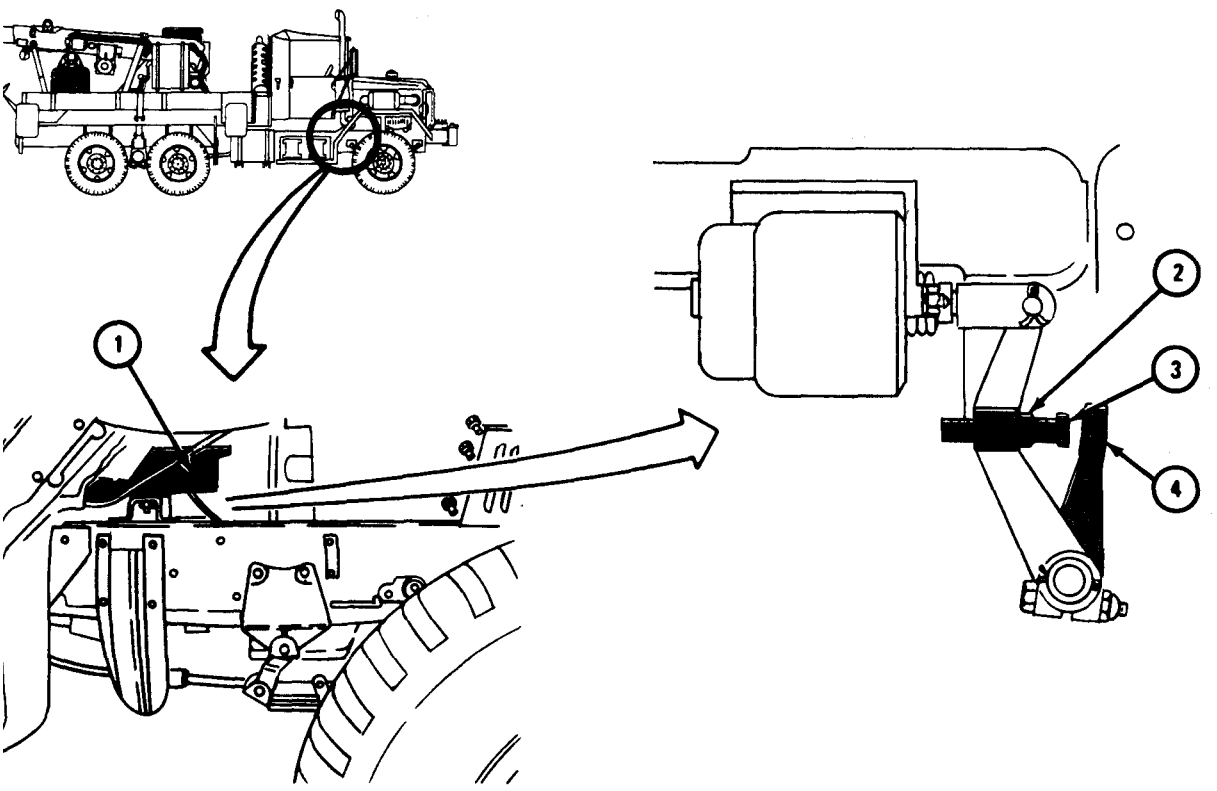
FRAME 1

NOTE

Do these steps for truck M543A2. For all other trucks, go to frame 2.

1. Working under right fender well, behind cab sill (1), using 11/16-inch wrench, loosen rotochamber linkage adjusting screw locknut (2).
2. Using 5/8-inch wrench, turn rotochamber linkage adjusting screw (3) all the way to the right. This will keep adjusting screw from touching clutch release inner lever (4).

GO TO FRAME 2

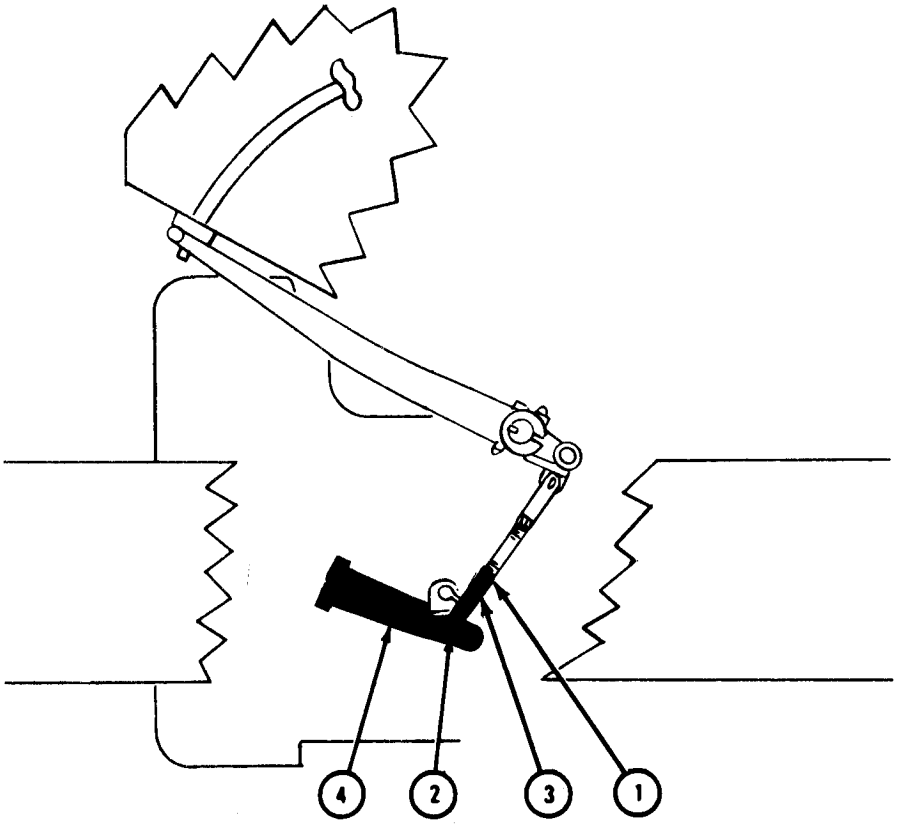


TA 054618

FRAME 2

1. Working undertrick, using 3/4-inch wrench, loosen adjusting rod locknut (l).
2. Using flat-tip screwdriver, pry adjusting rod clevis pin (2) out of adjusting rod clevis (3). Clevis pin does not come all the way out of clevis.
3. Pull adjusting rod clevis (3) away from release shaft remote control lever (4).

GO TO FRAME 3

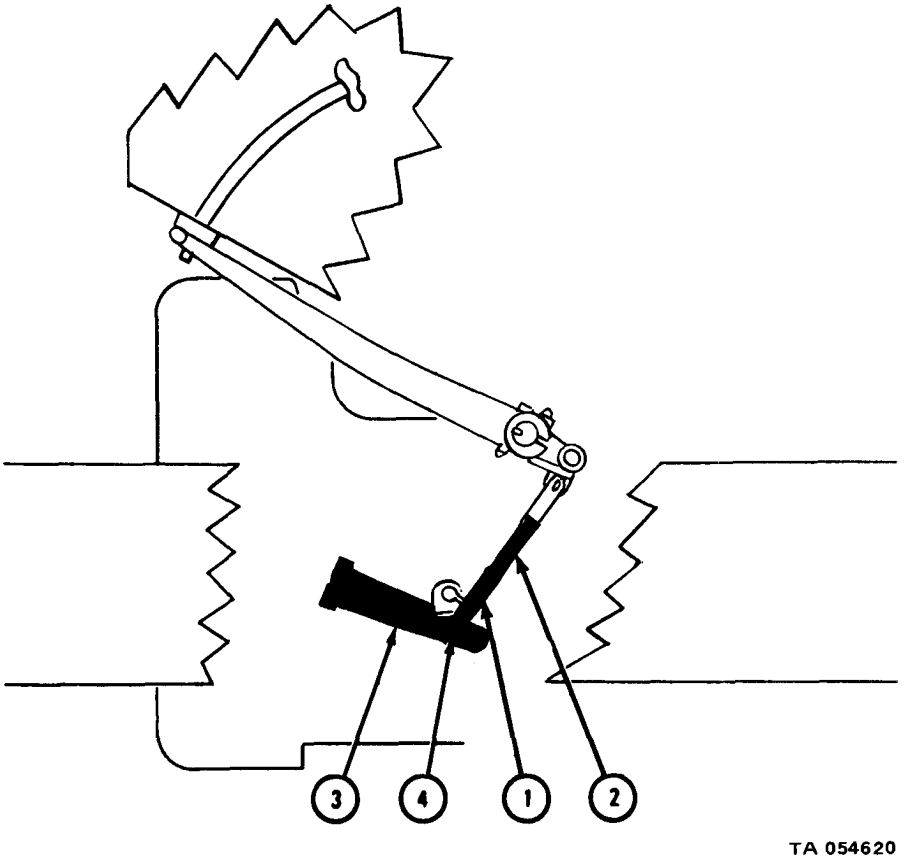


TA 054619

FRAME 3

1. Turn adjusting rod clevis (1) to the right to make adjusting rod (2) shorter for less free travel.
2. Turn adjusting rod clevis (1) to the left to make adjusting rod (2) longer for more free travel.
3. Mate adjusting rod clevis (1) with release shaft remote control lever (3).
4. Push adjusting rod clevis pin (4) into adjusting rod clevis (1).
5. Check free travel. Refer to para 3-3a.
6. Change length of adjusting rod (2) until free travel is within limits given.

IF FREE TRAVEL CANNOT BE PUT WITHIN LIMITS GIVEN, GO TO FRAME 4.
IF FREE TRAVEL IS WITHIN LIMITS GIVEN, GO TO FRAME 5

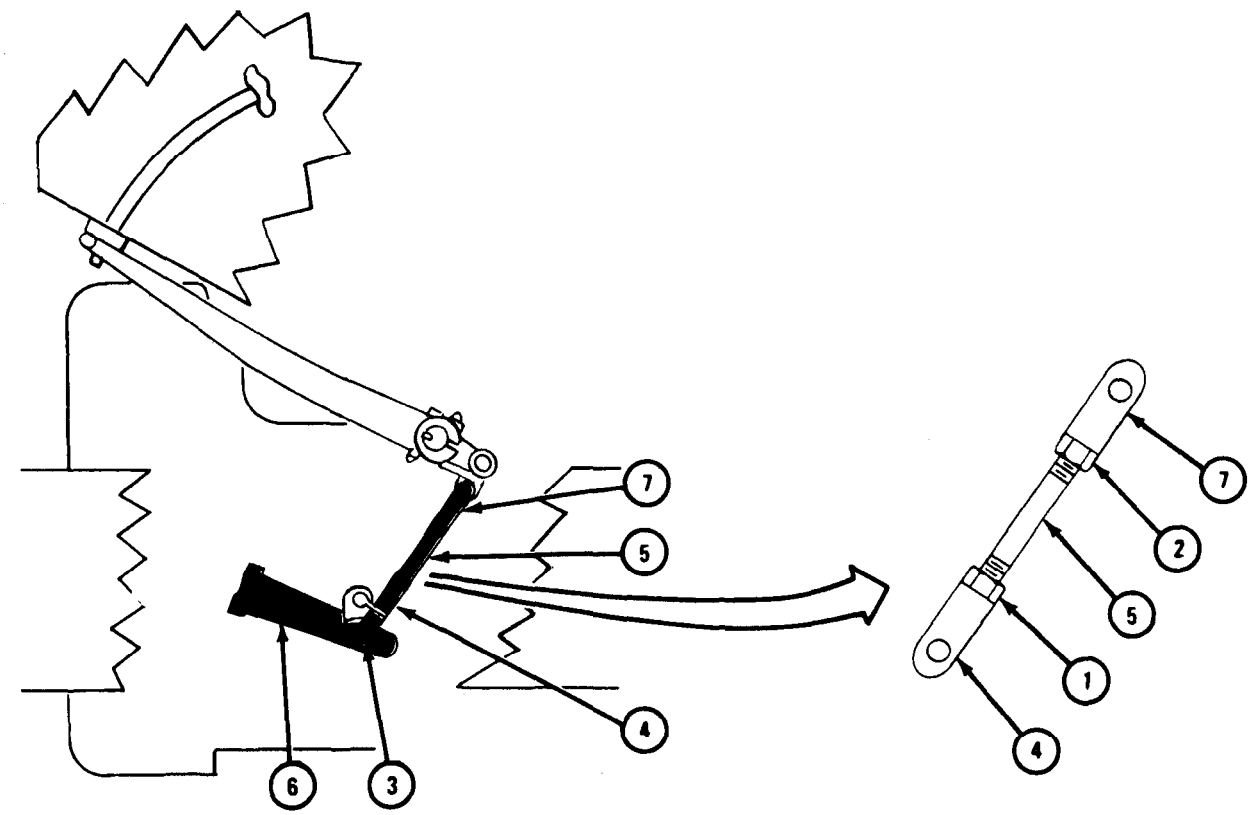


TA 054620

FRAME 4

1. Using 3/4-inch wrench, tighten adjusting rod locknut (l).
2. Using 3/4-inchwrench, loosen adjusting rod locknut (2).
3. Pull adjusting rod clevis pin (3) out of adjusting rod clevis (4). Clevis pin does not come all the way outofclevis.
4. Pull adjusting rod (5) away from release shaft remote control lever (6).
5. Turn adjusting rod (5) in or out of clevis (7) as needed to get correct free travel.
6. Mate adjusting rod clevis (4) with release shaft remote control lever (6).
7. Push adjusting rod clevis pin (3) into adjusting rod clevis (4).
8. Check free travel. Refer to para 3-3a.
9. Do steps 3 through 8 again to change length of adjusting rod until free travel is within limits given.
10. Using 3/4-inch wrench, tighten adjusting rod locknut (2).

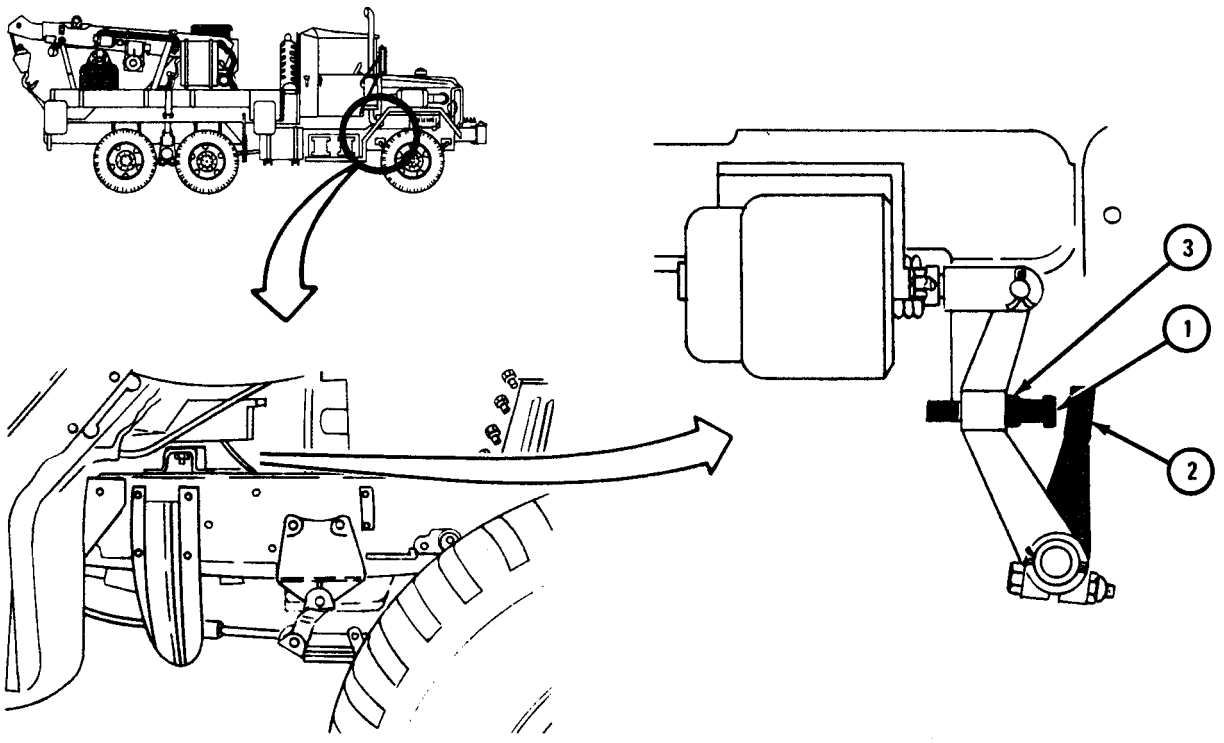
FOR TRUCKS M543A2, GO TO FRAME 5.
FOR ALL OTHER TRUCKS, END OF TASK



FRAME 5

1. For M543A2 trucks, working under right fender well, behind cab sill, using 5/8-inch wrench, turn adjusting screw (1) to the left until screw head is 3/32 inch to 1/4 inch from clutch release inner lever (2).
2. Using 11/16-inch wrenches, hold adjusting screw (1) and tighten adjusting screw locknut (3).

END OF TASK



TA 045864

3-4. CLUTCH PEDAL LINKAGE REMOVAL AND REPLACEMENT.

TOOLS : 9/16-inch wrench (2)
Spring hook
Brass punch
2-pound ballpeen hammer
Diamond point chisel

SUPPLIES : None

PERSONNEL: One

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

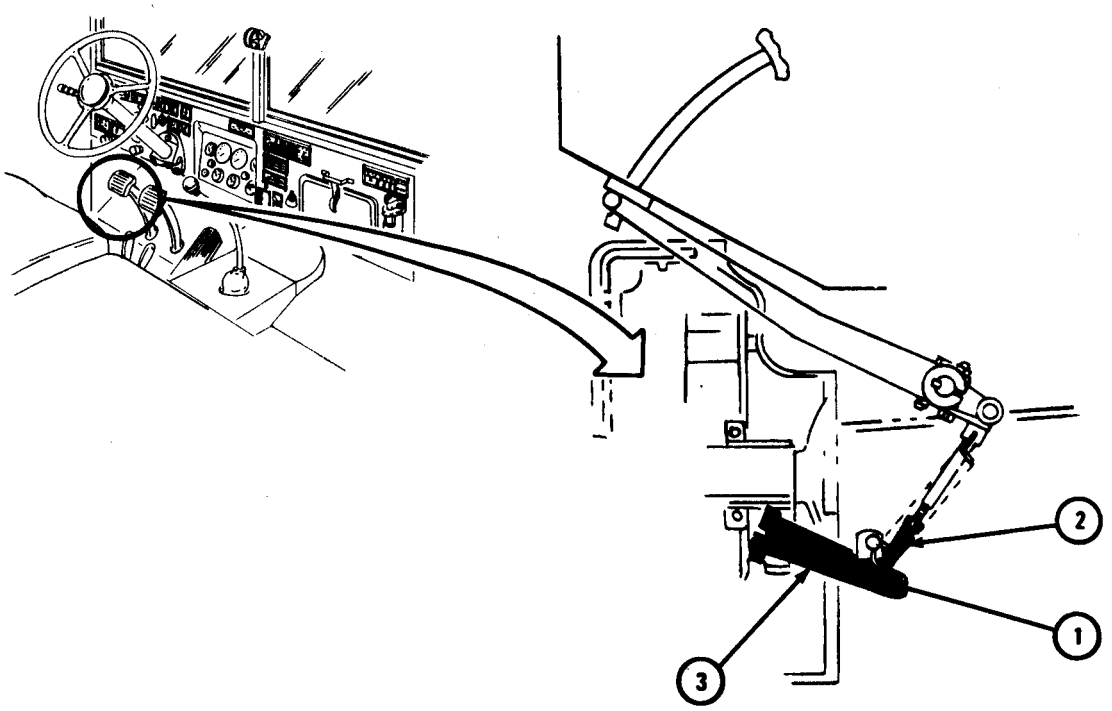
Preliminary Procedure. Take out front tunnel and toeboard. Refer to par17-5.

Removal.

FRAME 1

1. Pull adjusting rod clevis pin (1) from adjusting rod clevis (2). Clevis pin does not come all the way out of clevis.
2. Pull adjusting rod clevis (2) away from release shaft remote control lever (3).

GO TO FRAME 2

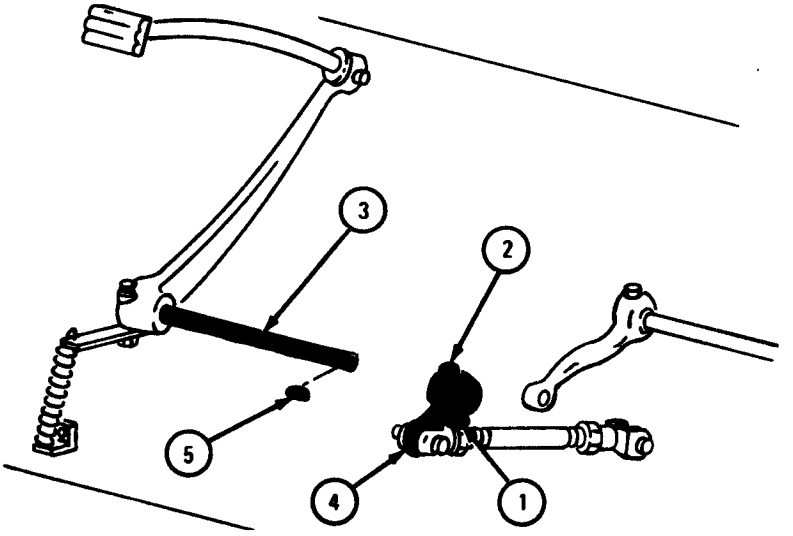


TA 054624

FRAME 2

1. Using 9/16-inch wrench, hold nut (l).
2. Using 9/16-inch wrench, unscrew and takeout screw (2) and nut (l).
3. Put diamond point chisel on shaft (3) next to shift lever (4).
4. Using ballpeen hammer, drive off pedal shift lever (4).
5. Take out woodruff key (5) from shaft (3).

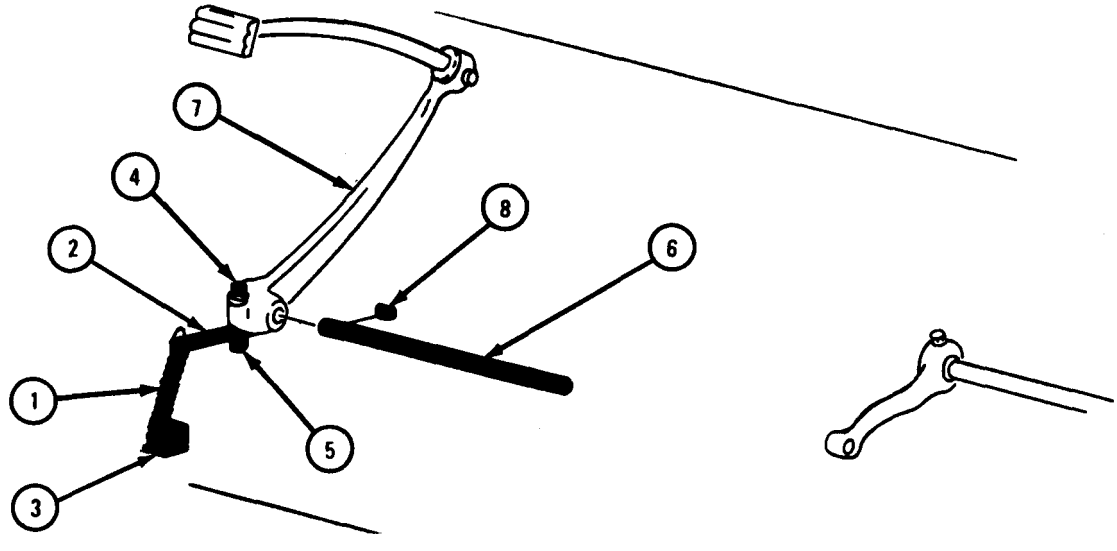
GO TO FRAME 3



TA 102186

1. Using spring hook, unhook clutch pedal return spring (1) from plate (2) and bracket (3).
2. Using 9/16-inch wrench, hold nut (4).
3. Using 9/16-inch wrench, unscrew and take out screw (5) and nut (4).
4. Using brass punch and ballpeen hammer, tap pedal shaft (6) out of clutch pedal lever (7).
5. Take out woodruff key (8).
6. Take out pedal shaft (6).
7. Take out clutch pedal lever (7).

END OF TASK



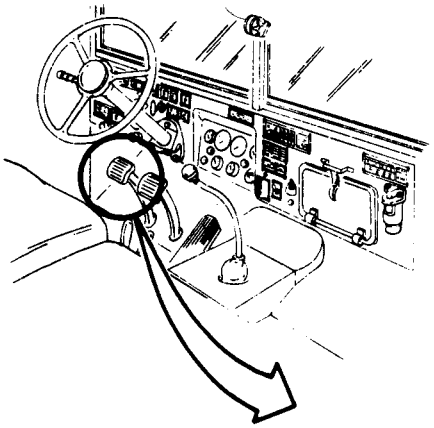
TA 102187

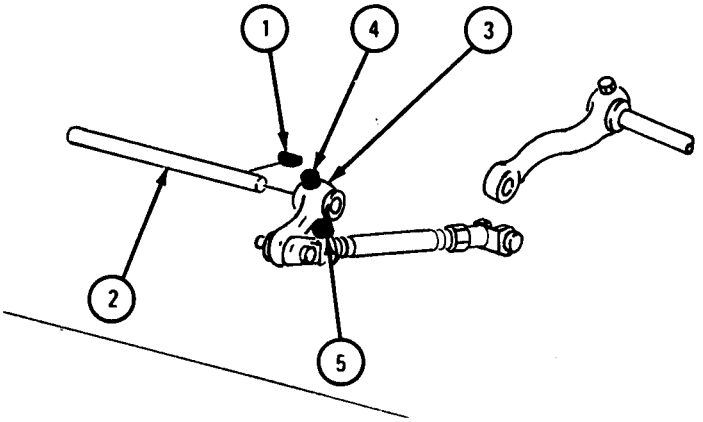
c. Replacement.

FRAME 1

1. Place woodruff key (1) in slot in pedal shaft (2).
2. Slide pedal shaft lever (3) onto end of pedal shaft (2).
3. Push screw (4) through hole in pedal shaft lever (3).
4. Using 9/16-inchwrench, hold nut (5).
5. Using 9/16-inch wrench, screw on and tighten screw (4).

GO TO FRAME 2



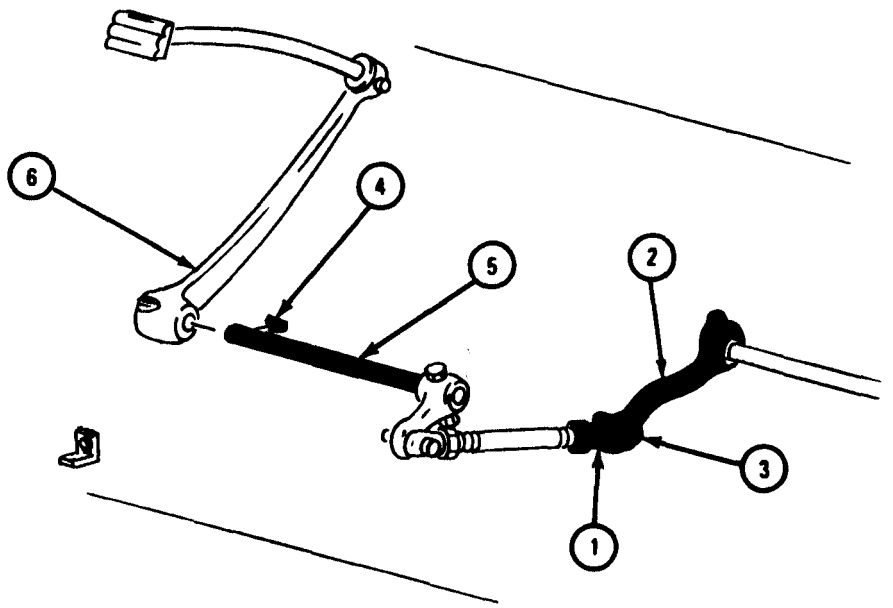


TA 102099

FRAME 2

1. Mate adjusting rod clevis (1) with release shaft remote control lever (2).
2. Push adjusting rod clevis pin (3) into adjusting rod clevis (l).
3. Place woodruff key (4) in slot in pedal shaft (5).
4. Push clutch pedal lever (6) onto end of pedal shaft (5).

GO TO FRAME 3

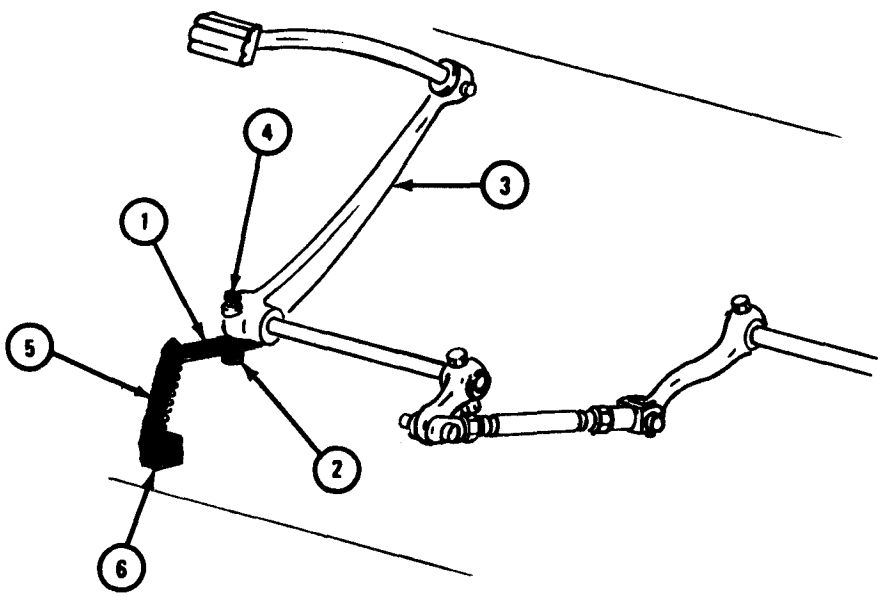


TA 054628

FRAME 3

1. Put plate (1) on screw (2) and push screw through hole in clutch pedal lever (3).
2. Using 9/16-inch wrench, hold nut (4).
3. Using 9/16-inch wrench, screw on and tighten screw (2).
4. Using spring hook, hook one end of clutch pedal return spring (5) to plate (1). Hook other end of spring to bracket (6).

END OF TASK



TA 054629

CHAPTER 4

FUEL SYSTEM GROUP MAINTENANCE

Section I. SCOPE

4-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for fuel pumps, air cleaner, turbocharger, fuel tanks and fuel lines, fuel filters, engine starting aids, and accelerator and throttle controls for which there are authorized corrective maintenance tasks at the organizational maintenance level.

4-2. 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. FUEL PUMPS

4-3. FUEL SUPPLY PUMP REMOVAL AND REPLACEMENT.

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

TOOLS : Cross-tip screwdriver (Phillips type)
Measuring tape
3/4-inch open end wrench
7/16-inch open end wrench

SUPPLIES : Intake pump gasket
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Liquid gasket cement, MIL-A- 46106A

PERSONNEL : One

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

a. Preliminary Procedures.

(1) Disconnect battery ground cable. Refer to para 7-44.

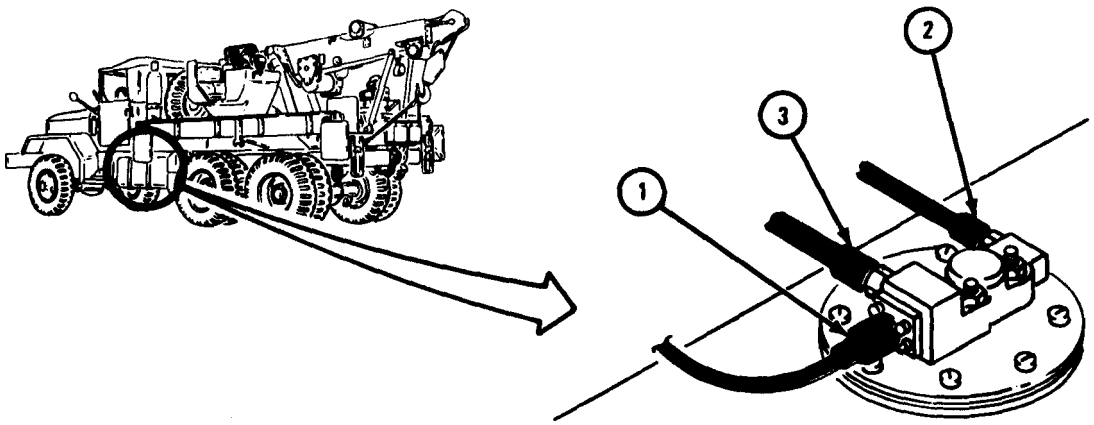
(2) If working on truck M543A2, remove fuel tank. Refer to para 4-9.

b. Removal.

FRAME 1

1. Pull off electrical connector (1).
2, Using 3/4-inch wrench, unscrew coupling and take off output line (2).
3, Using 7/16-inch wrench, unscrew coupling and takeoff vent line (3).

GO TO FRAME 2



FRAME 2

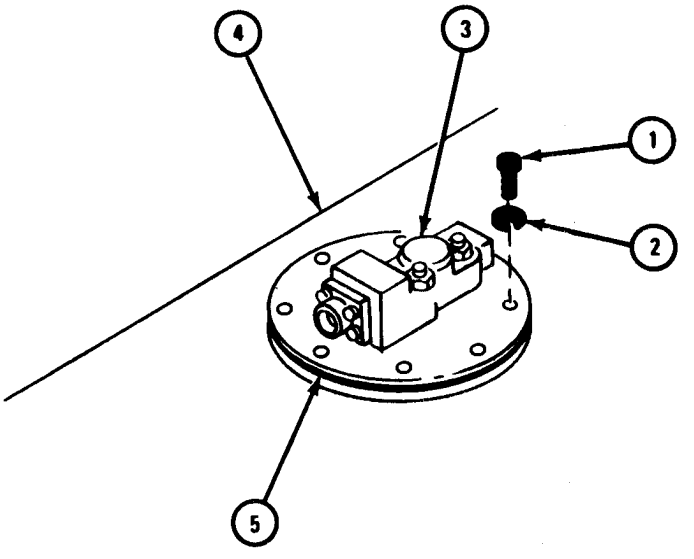
1. Using screwdriver, unscrew and take out 10 mounting screws (1) with lockwashers (2).

NOTE

Note positions of fittings on fuel supply pump (3) before taking it out so it can be put back in the same place.

2. Carefully lift out fuel supply pump (3). Do not scrape pump against edges of opening in fuel tank (4). Damage to electrical cable shield on pump could cause electrical failure.
3. Take off and throw away gasket (5).
4. Cover opening in fuel tank (4) to keep dirt and moisture from getting into fuel system.

END OF TASK



TA 054646

c. Replacement.

FRAME 1

NOTE

Put avery thin coating of liquid gasket cement on all fuel line fitting threads before putting fittings in place.

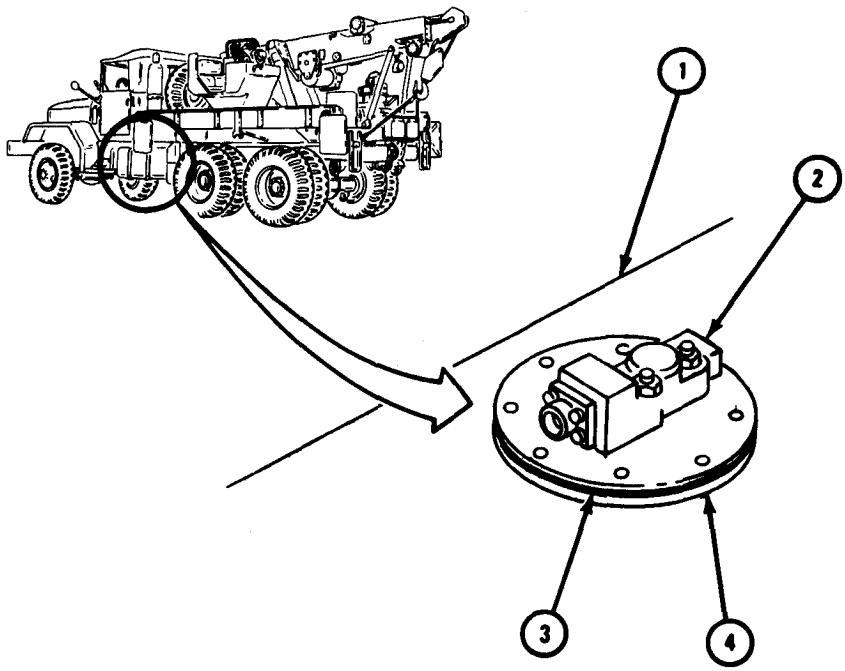
1. Take off cover from opening in fuel tank (1).

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.

2. Clean mating flanges of fuel supply pump (2) and fuel tank (1) with solvent.
3. Put gasket (3) on fuel tank mounting flange (4), dining holes.
4. Carefully put fuel supply pump (2) into fuel tank (1). Do not scrape pump against edges of fuel tank opening. Damage to electrical cable shield on pump could cause electrical failure.
5. Turn fuel supply pump (2) so fittings are in positions noted.

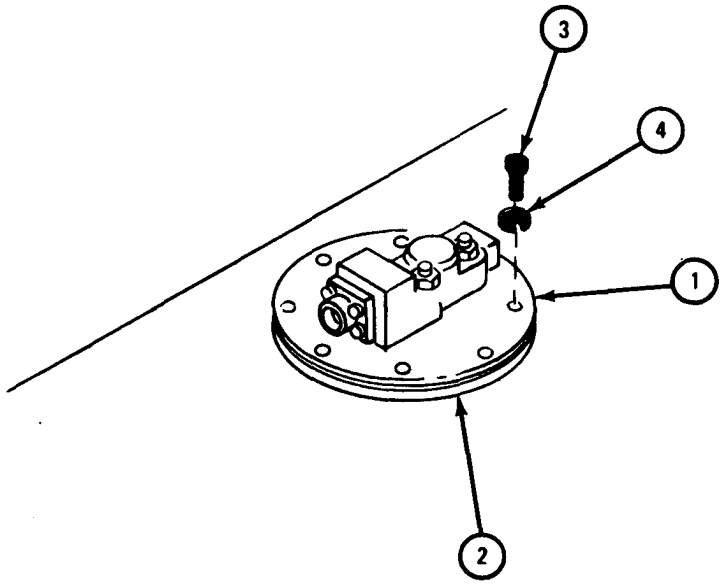
GO TO FRAME 2



FRAME 2

1. Line up holes in fuel supply mounting flange (1) with holes in fuel tank mounting flange (2).
2. Using screwdriver, screw in 10 screws (3) with lockwashers (4) into holes in fuel tank mounting flange (2). Tighten screws evenly.

GO TO FRAME 3



TA 054648

FRAME 3

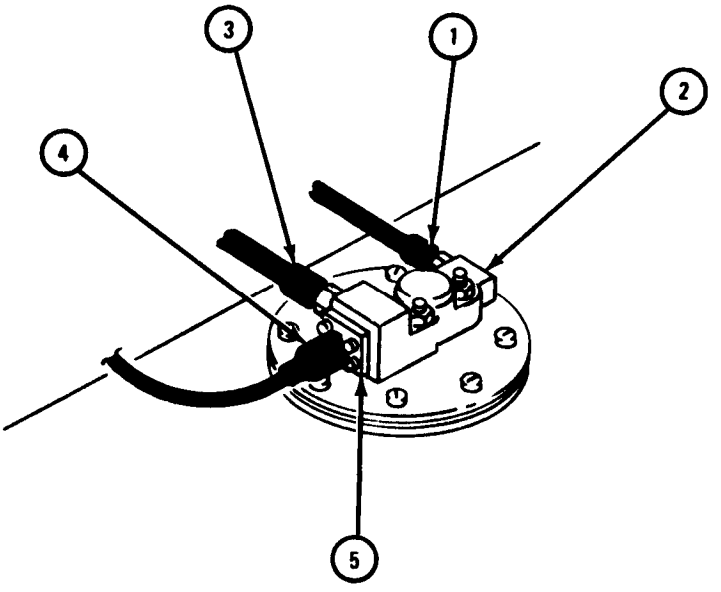
1. Using 3/4-inch wrench, screw in and tighten output line coupling (1) into fuel supply pump (2).
2. Using 7/16-inch wrench, screw in and tighten vent line coupling (3) into fuel supply pump (2).
3. Plug electrical connector (4) into receptacle (5).

NOTE

Follow-on Maintenance Action Required:

1. If working on truck M543A2, replace fuel tank. Refer to para 4-9.
2. Reconnect battery ground cable. Refer to para 7-44.
3. Bleed low pressure fuel lines. Refer to para 4-17.
4. Test fuel supply pump operation. Refer to TM 9-2320-211-10.

END OF TASK



TA 054649

4-4. FUEL TRANSFER PUMP REMOVAL AND REPLACEMENT.

WARNING

Smoking, sparks, or open flame are not allowed within 50 feet of work area during this task. Fuel could catch fire or explode, causing serious injury to personnel and damage to equipment.

TOOLS: 7/16-inch wrench (2)
5/8-inch wrench
3/4-inch wrench
l/2-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

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

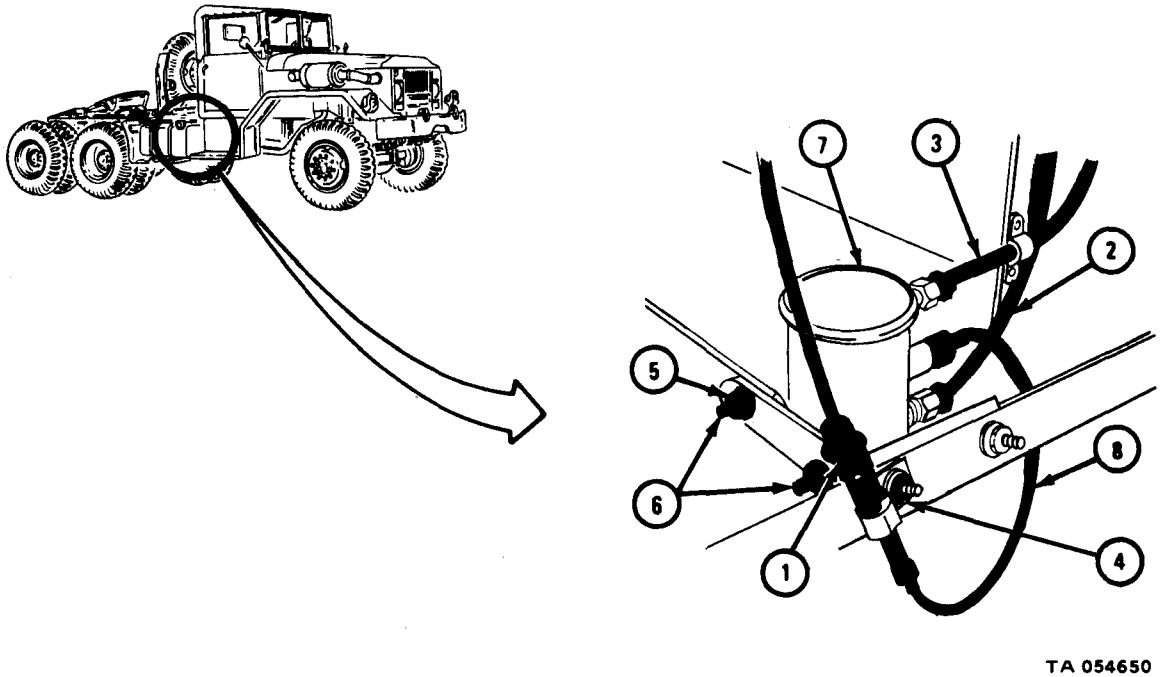
a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Pull off electrical connector (1).
2. Using 5/8-inch and 3/4-inch wrenches, unscrew coupling and take off fuel transfer pump inlet hose (2).
3. Using 5/8-inch and 3/4-inch wrenches, unscrew coupling and take off fuel transfer pump outlet hose (3).
4. Using l/2-inch wrenches, unscrew and take off nut (4).
5. Using 7/16-inch wrenches, unscrew and take off two nuts with washers (5). Take out two screws (6).
6. Takeout fuel transfer pump (7) with electric lead (8).

END OF TASK



TA 054650

c. Replacement.

FRAME 1

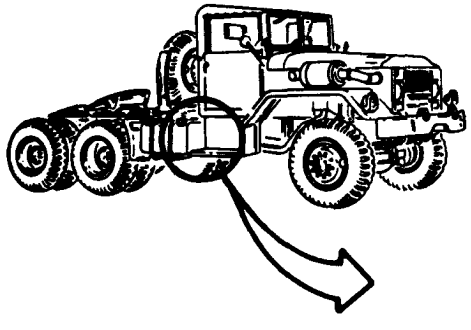
1. Line up holes in fuel transfer pump (1) with holes in bracket (2).
2. Place screws (3) through holes in fuel transfer pump (1) and bracket (2).
3. Using 7/16-inch wrenches, screw on and tighten nuts with washers (4).
4. Using 5/8-inch and 3/4-inch wrenches, screw on and tighten coupling on fuel transfer pump outlet hose (5).
5. Using 5/8-inch and 3/4-inch wrenches, screw on and tighten coupling fuel transfer pump inlet hose (6).
6. Put electric lead clamp (7) in place. Using l/2-inch wrenches, screw on and tighten nut (8).
7. Plug electrical connector (9) into receptacle (10).

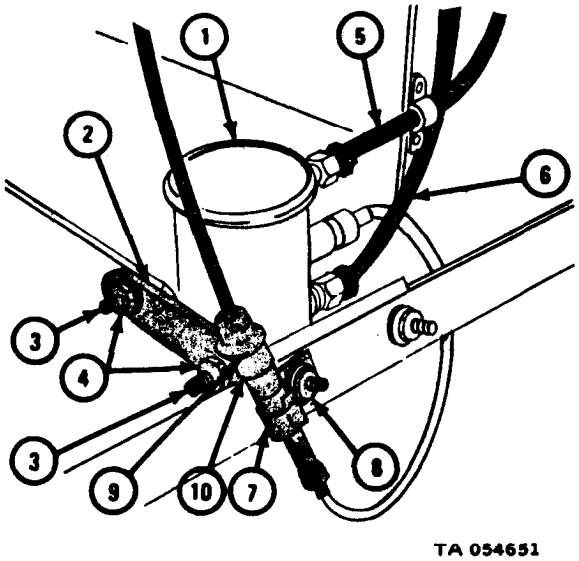
NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK





TA 054651

4-4.1 FUEL PUMP (IN-TANK) BRACKET AND PUMP ASSEMBLY REPAIR.

TOOLS: 7/16-inch wrench
5/8-inch wrench
3/4-inch wrench
l/2-inch wrench
Phillips screwdriver

SUPPLIES: Wire seal
Terminal cover gasket

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, parking brake set, engine off.

a. Preliminary Procedures.

WARNING

Be careful when using cleaning solutions and solvents. Do not expose skin to solvents or inhale their vapors. Many cleaning agents are toxic and contact with them or their vapors may cause illness or death. Wear protective clothing and devices and ensure adequate ventilation while using cleaning agents.

NOTE

After disassembly and before inspection, clean metal parts in clean diesel fuel or drycleaning solvent. Carefully blow out and dry each part with compressed air.

(1) Battery ground cable disconnected. Refer to para. 7-44.

(2) Fuel tank removed. Refer to para. 4-9.

(3) Fuel pump (in-tank) removed. Refer to para. 4-3.

(4) Inspect pump for cracks, distortion and warpage.

(5) Inspect cable for cuts, damage and continuity.

(6) Inspect tube assembly for cracks and other evidence of excessive wear in tube and for damage to swivel end.

(7) Check continuity of ground cable and inspect for cuts and other damage.

(8) Inspect welded and support parts for cracks, distortion and breakage.

(9) Inspect threaded parts for nicks, cross threading and excesive wear.

(10) Inspect polarizing pin, terminal pin assembly, connector housing and pin assembly and fuse block for nicks, cracks, distortion and other damage that would impair their use.

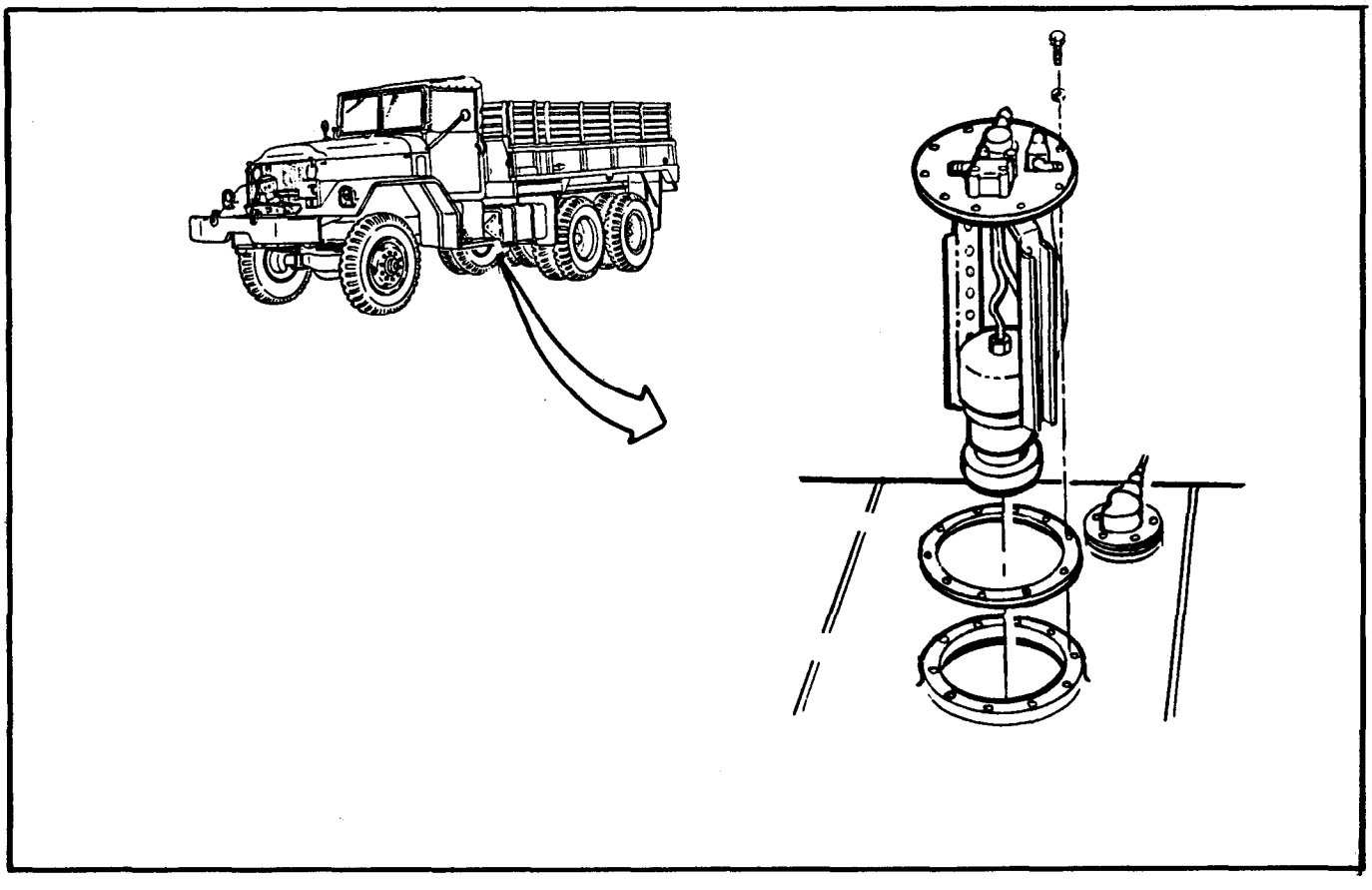
(11) Inspect other terminal assembly components for tears, cracks, hardening and other damage that would impair their use.

(12) Replace pump and electric cable assembly if continuity check of cable shows it to be grounded or if there is any evidence of damage that would impair its use.

(13) Repair dents or distortions. Weld cracks and breaks in metal parts where practical. Replace defective parts if badly damaged.

(14) Repair threaded parts with a thread chaser if practical or replace defective parts.

(15) Replace any other defective parts.

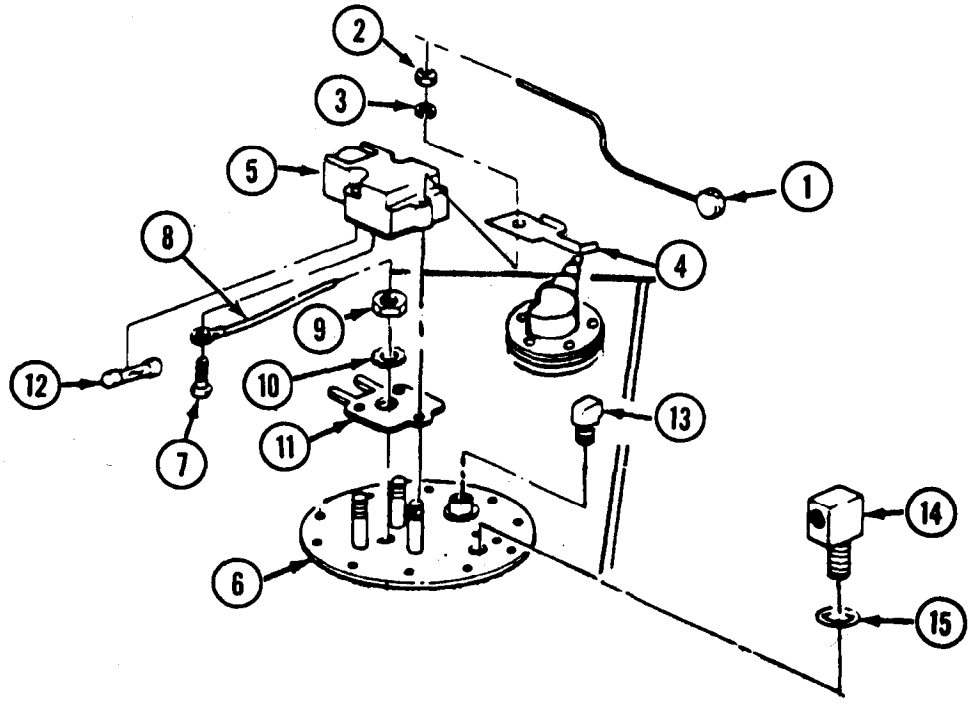


b. Removal

FRAME 1

1. Remove lead seal (1) by cutting wire, Discard lead seal (l).
2. Remove three nuts (2) and lockwashers (3), metal tab (4) (if present), and terminal cover (5) from plate and bracket (6). Discard lockwashers (3).
3. Remove screw (7) and disconnect pump wire (8) from terminal cover (5).
4. Remove nut (9), washer (10) and gasket(11) from fuel pump (8) wire. Discard gasket (11) and washer (10).
5. Remove fuse (12) from terminal cover (5).
6. Remove elbow (13) from plate and bracket (6).
7. Remove fitting (14) and "O" ring (15) from plate and bracket (6).

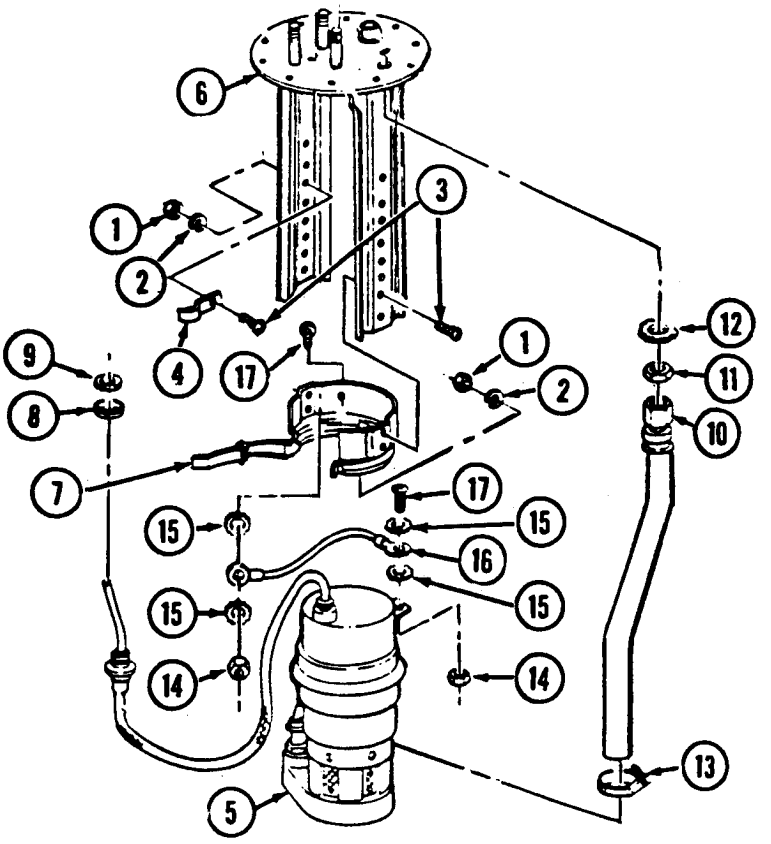
NOTE
Record location of mounting hardware for proper installation.



FRAME 2

1. Remove three nuts(1), washers (2), screws (3), clamp (4) and pump (5) wire from plate and bracket (6) and clamp assembly (7).
2. Remove recessed washer (8) and gasket (9) from pump (5) wire.
3. Remove hose assembly (10), nut (11) and washer (12) from plate and bracket (6).
4. Remove clamp (13) and hose assembly (10) from pump (5).
5. Remove nut (14), lockwasher (15), strap assembly (16), lockwasher (15), and screw (17) from pump (5). Discard lockwashers (15).

END OF TASK.

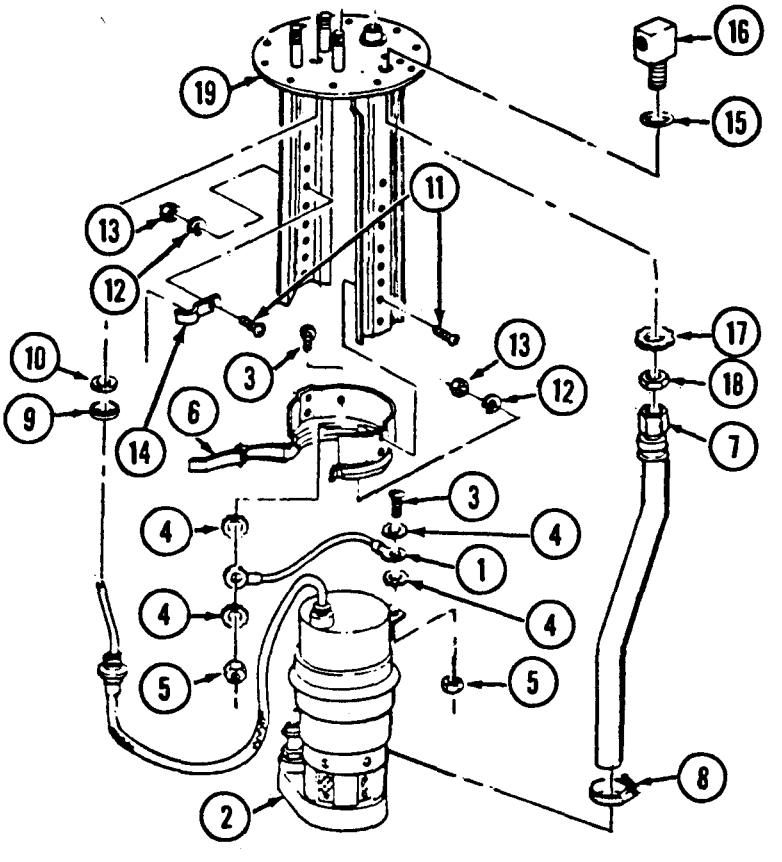


c. Replacement.

FRAME 1

1. Secure one end of strap assembly (1) to pump (2) with screw (3), two lockwashers (4) and nut (5).
2. Secure the other end of strap assembly(1) to clamp assembly (6) with screw (3), two lockwashers (4) and nut (5).
3. Install one end of hose assembly (7) on pump (2) and secure with clamp (8).
4. Install recessed washer (9) and gasket (10) on pump (2) wire.
5. Connect clamp assembly (6) to plate and bracket (19) with two screws (11), washers (12) and nuts (13),
6. Route pump (2) wire through plate and bracket (19) and secure with screw (11), clamp (14), washer (12) and nut (13).
7. Install "O" ring (15) on fitting (16).
8. Put threaded end of fitting(16) through hole on plate and bracket(19) and secure with washer (17) and nut (18).

GO TO FRAME 2



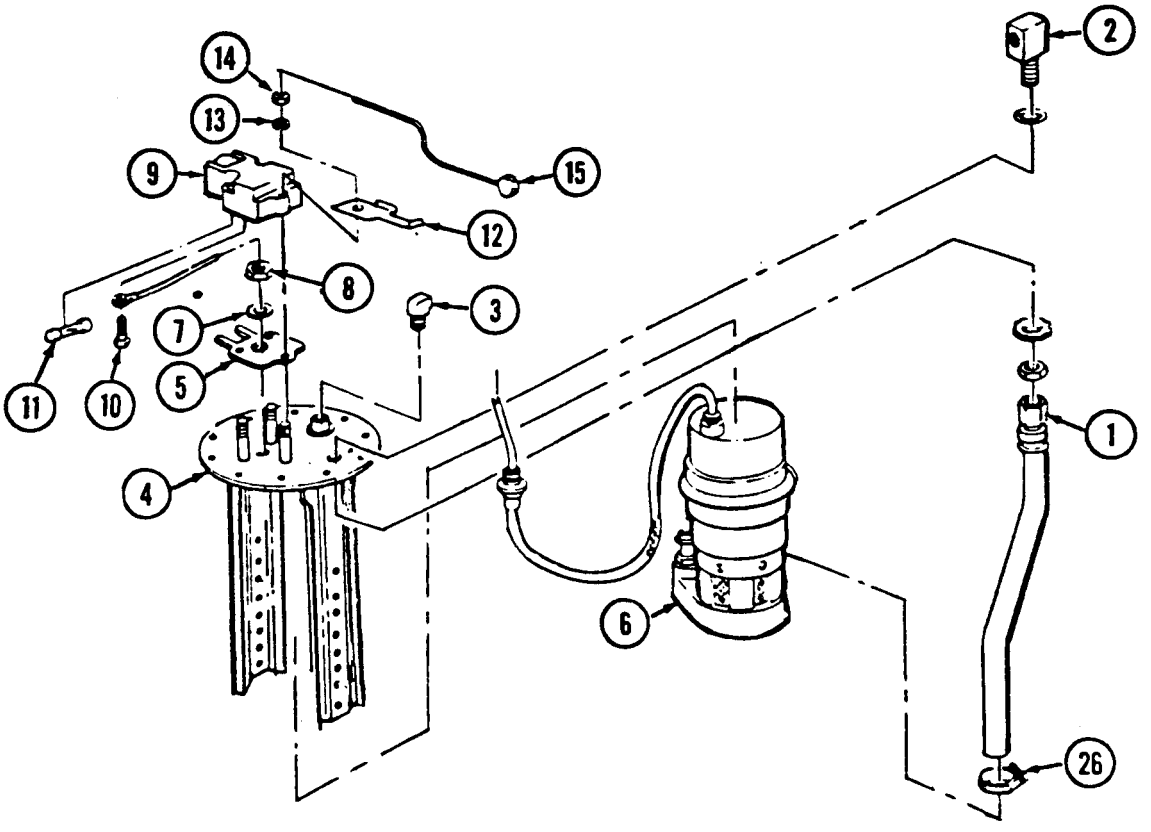
FRAME 2

1. Connect threaded end of hose (1) to threaded end of fitting (2).
2. Install elbow (3) on plate and bracket(4).
3. Position gasket (5) over fuel pump (6) wire coming through plate and bracket (4) and secure wire to plate and bracket (4) with washer (7) and nut (8).
4. Connect fuel pump (6) wire to terminal assembly (9) with screw (10) and install VA fuse (11) in terminal assembly (9).
5. Install terminal assembly (9) and tab (12) (if available) on three studs of plate and bracket (4). Secure with three lockwashers(13) and nuts (14).
6. **Install seal(15) and secure seal (15) by bending tab (12).**

NOTE
Follow-on Maintenance Action Required.

7. Install fuel pump assembly. Refer to paragraph 4-8.
8. Install fuel tank. Refer to paragraph 4-6.
9. Connect battery ground cable. Refer to paragraph 7-58.
10. Check fuel pump for proper operation.

END OF TASK



Section III. AIR CLEANER

4-5. AIR FILTER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
9/16-inchwrench (2)

SUPPLIES: None

PERSONNEL: One

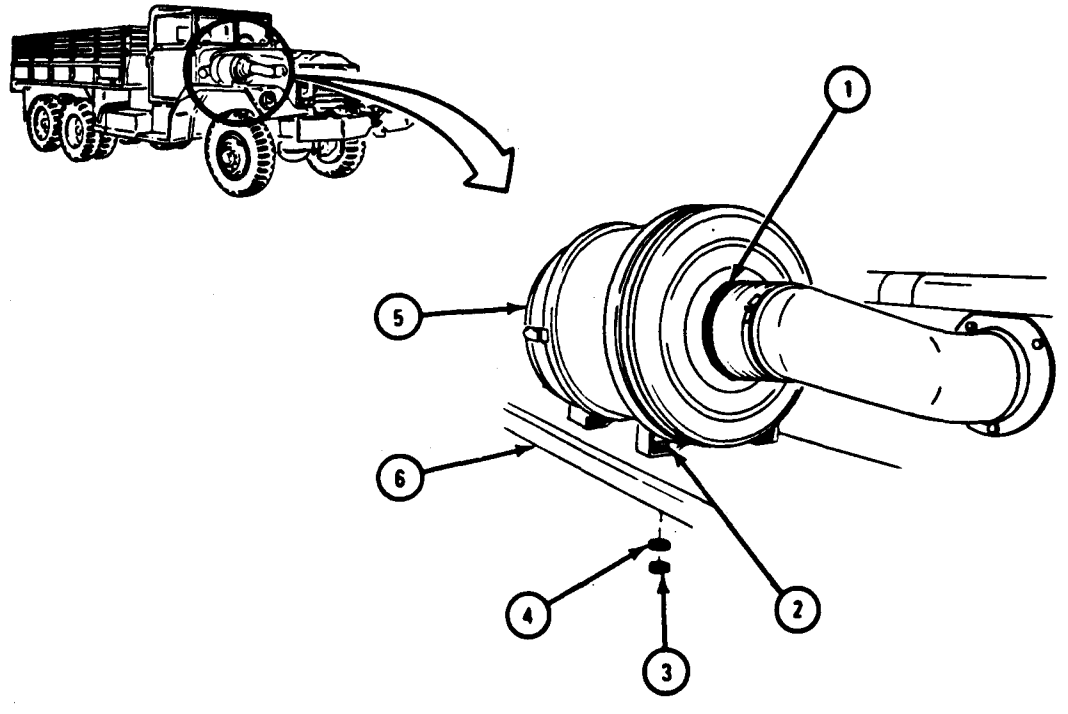
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using screwdriver, loosen screw in clamp (l).
2. Using 9/16-inch wrenches, unscrew and takeout four bolts (2) with nuts (3) and washers (4).
3. Slide air filter assembly(5) to the rear and lift it off fender (6).

END OF TASK



*U.S. GOVERNMENT PRINTING OFFICE: 1990 743-024/20092

c. Replacement.

FRAME 1

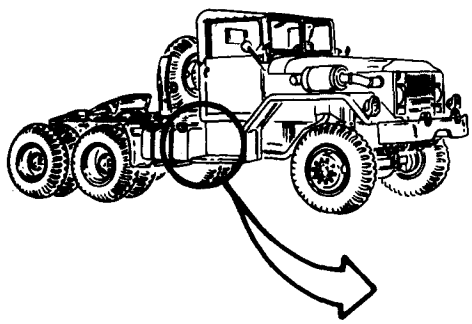
1. Lineup holes in fuel transfer pump (1) with holes in bracket (2).
2. Place screws (3) through holes in fuel transfer pump (1) and bracket (2).
3. Using 7/16-inch wrenches, screw on and tighten nuts with washers (4).
4. Using 5/8-inch and 3/4-inch wrenches, screw on and tighten coupling on fuel transfer pump outlet hose (5).
5. Using 5/8-inch and 3/4-inch wrenches, screw on and tighten coupling fuel transfer pump inlet hose (6).
6. Put electric lead clamp (7) in place. Using l/2-inch wrenches, screw on and tighten nut (8).
7. Plug electrical connector (9) into receptacle (l0).

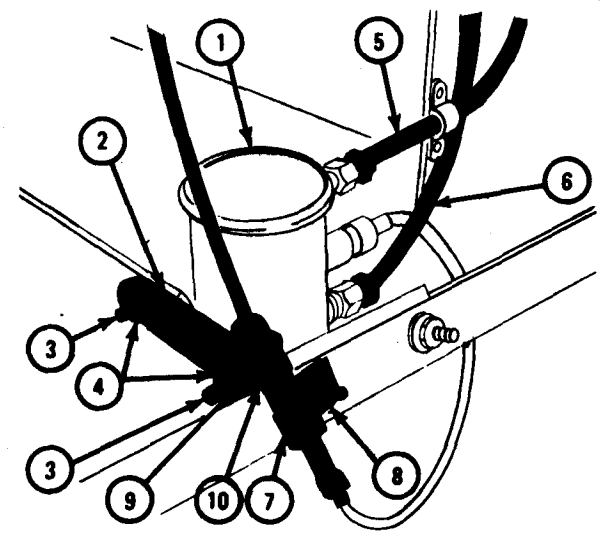
NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK





TA 054651

Section III. AIR CLEANER

4-5. AIR FILTER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
9/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

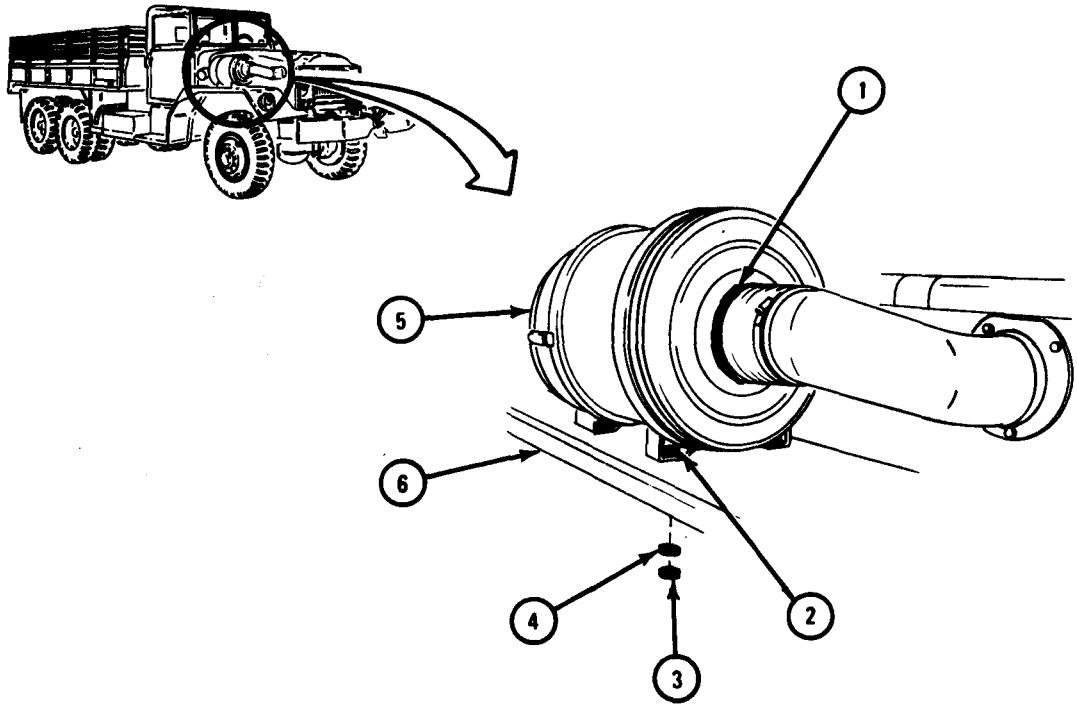
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using screwdriver, loosen screw in clamp (l).
2. Using 9/16-inchwrenches, unscrew and take out four bolts (2) with nuts (3) and washers (4).
3. Slide air filter assembly (5) to the rear and lift it off fender (6).

END OF TASK



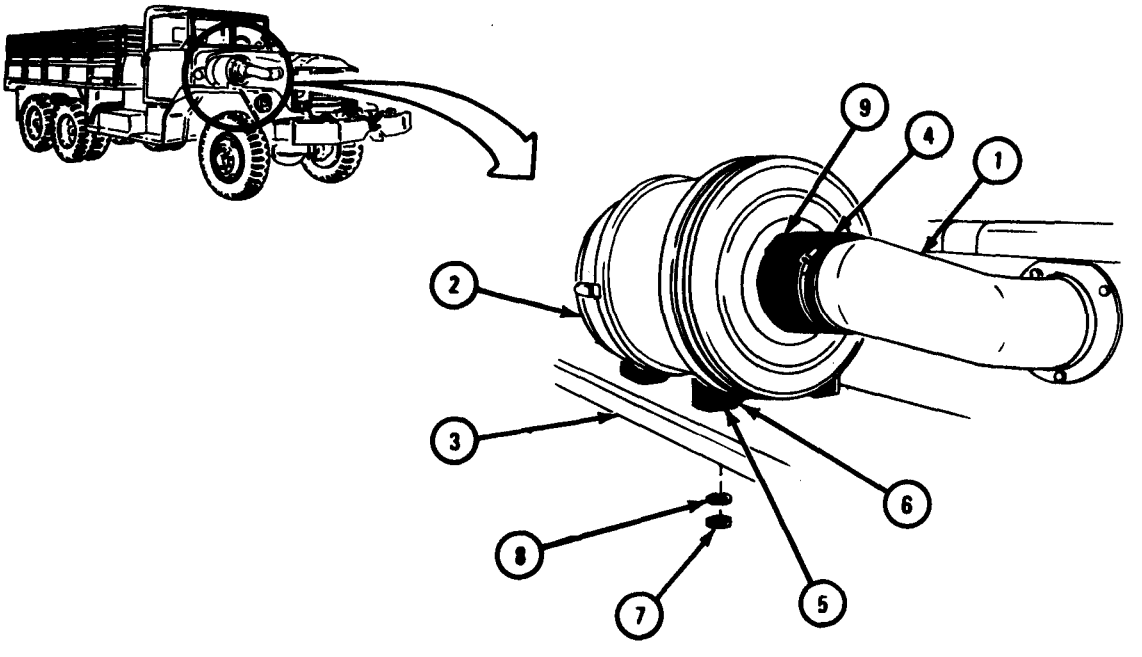
b. Replacement.

CAUTION

Make sure air intake tube (1) has nothing in it or turbocharger can be damaged.

1. Place air filter assembly (2) on fender (3) and slide into hose (4). Put four bolts (5) through holes in brackets (6) and fender.
2. Using 9/16-inch wrenches, screw on and tighten four nuts (7) with washers (8).
3. Using screwdriver, screw in and tighten hose clamp (9).

END OF TASK



TA 054631

4-6. AIR CLEANER LINES AND FITTINGS REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inch wrench
7/16-inch wrench (2)
Flat-tip screwdriver
Pipe wrench

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) Remove right access panel on fender. Refer to para 7-3.

b. Removal.

FRAME 1

NOTE

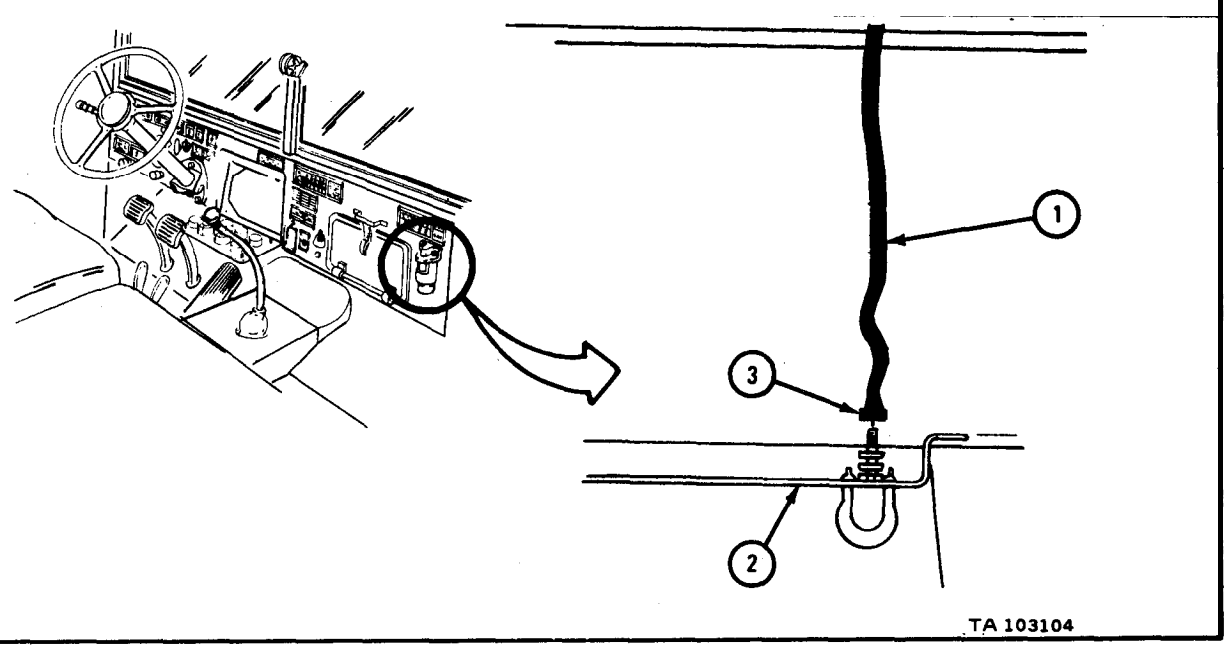
Depending on model of truck, tube (1) maybe either copper or plastic tubing.

1. Working behind the instrument panel (2), using 7/16-inch wrench, unscrew tube nut (3) and take out tube (l).

NOTE

If tube (l) is to be replaced, one end of the tube must be cut off to let it pass through the firewall.

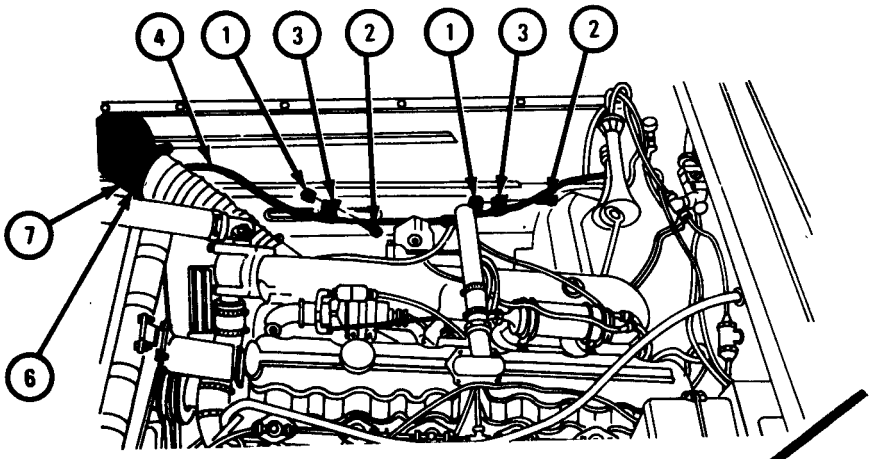
GO TO FRAME 2

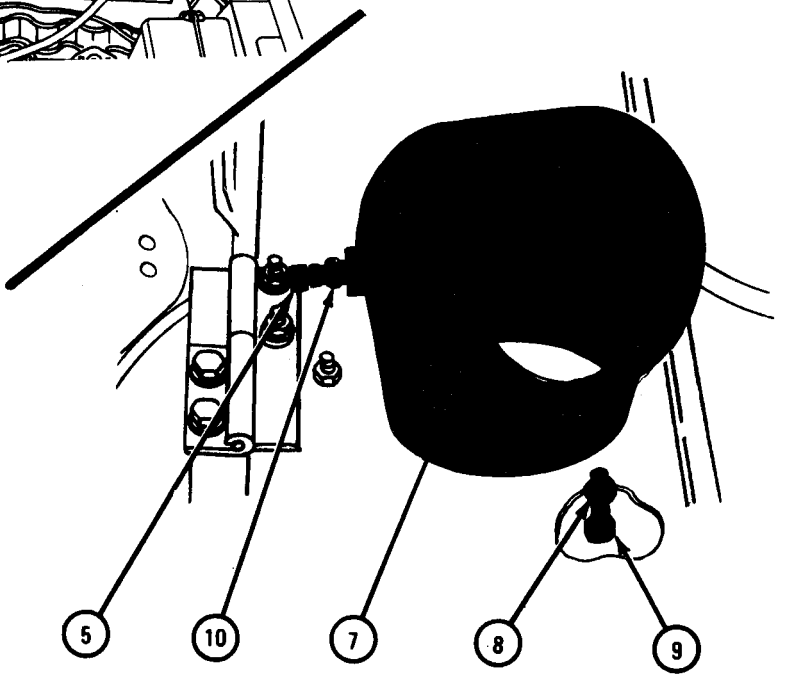


FRAME 2

1. Working under right front fender, using 7/16-inch wrenches, unscrew and take off two nuts (1), two screws (2), and two clamps (3) holding plastic tubing (4).
2. Using 7/16-inch and 9/16-inch wrenches, unscrew and take off plastic tubing (4) from vent line connector (5). Unscrew and take off connector (5).
3. Using screwdriver, loosen and take off clamp (6) from air tube (7).
4. Using 7/16-inch wrenches, unscrew and take off three nuts (8) and three screws (9).
5. Using pipe wrench, unscrew and take off adapter (10).

GO TO FRAME 3





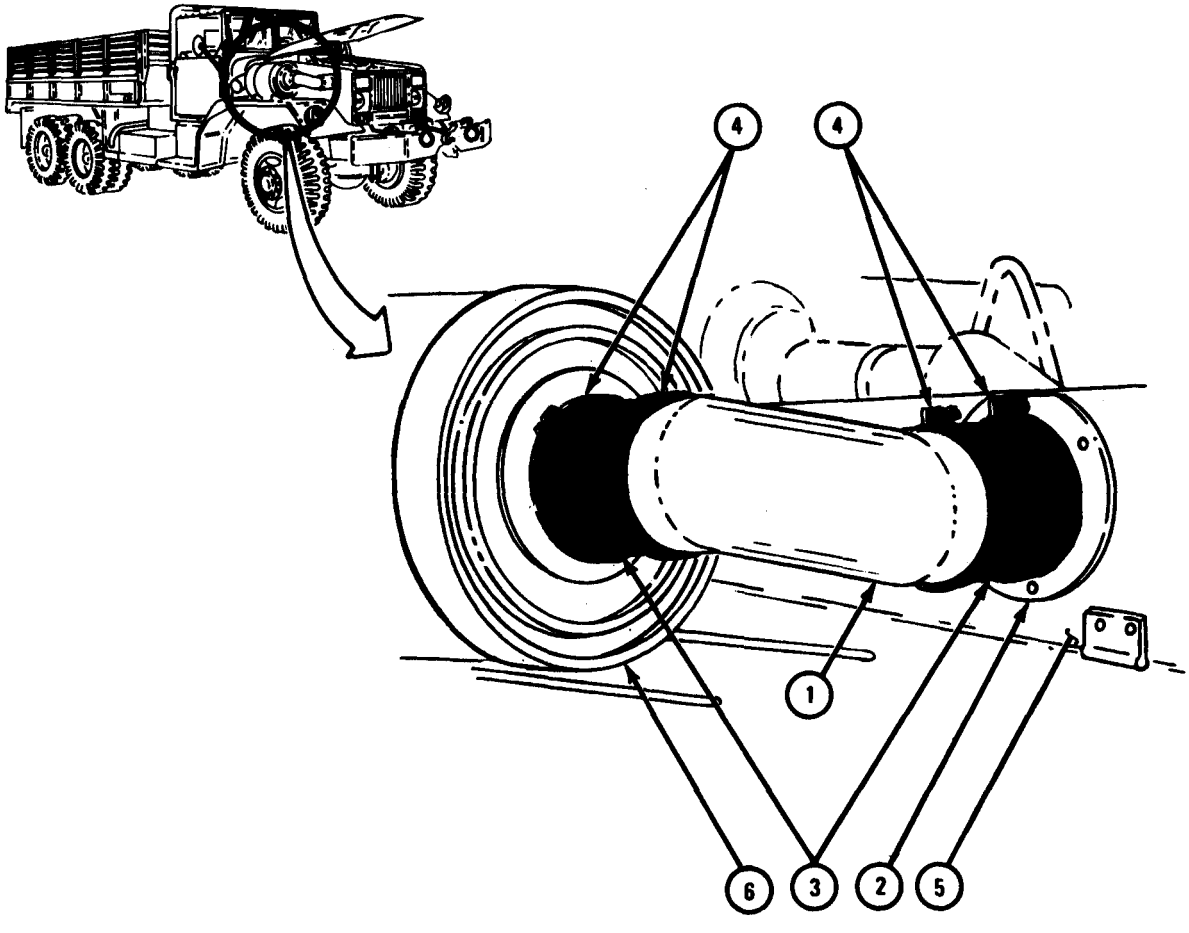
FRAME 3

NOTE

On late model trucks, tubes (1 and 2) are welded together to make a single tube, so there is no hose (3) at hood side panel.

1. Using screwdriver, loosen four clamps (4) at right side panel (5) and at air clamps (6).
2. Take out air tubes (1 and 2) and take off two hoses (3) and four clamps (4) from truck fender.

GO TO FRAME 4

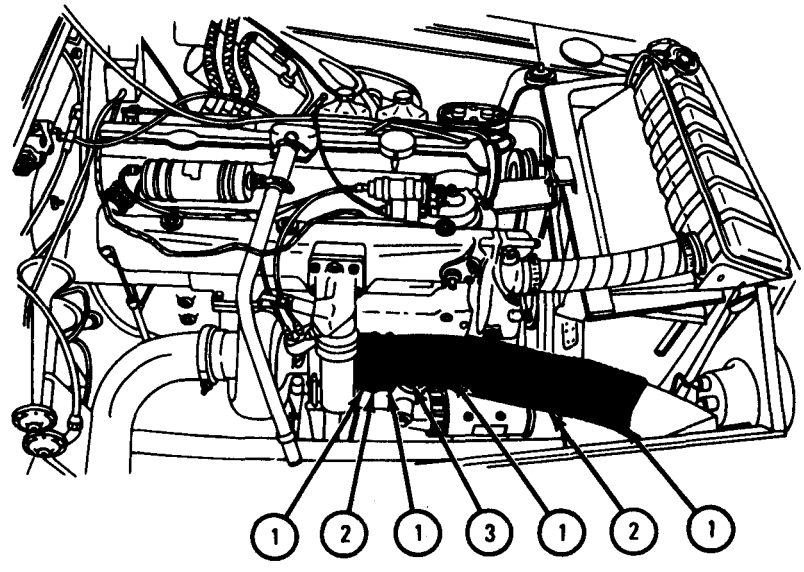


TA 103106

FRAME 4

1. Using screwdriver, loosen four clamps (1) and take out two hoses (2), four clamps, and inlet tube (3).

END OF TASK



TA 103107

c. Replacement.

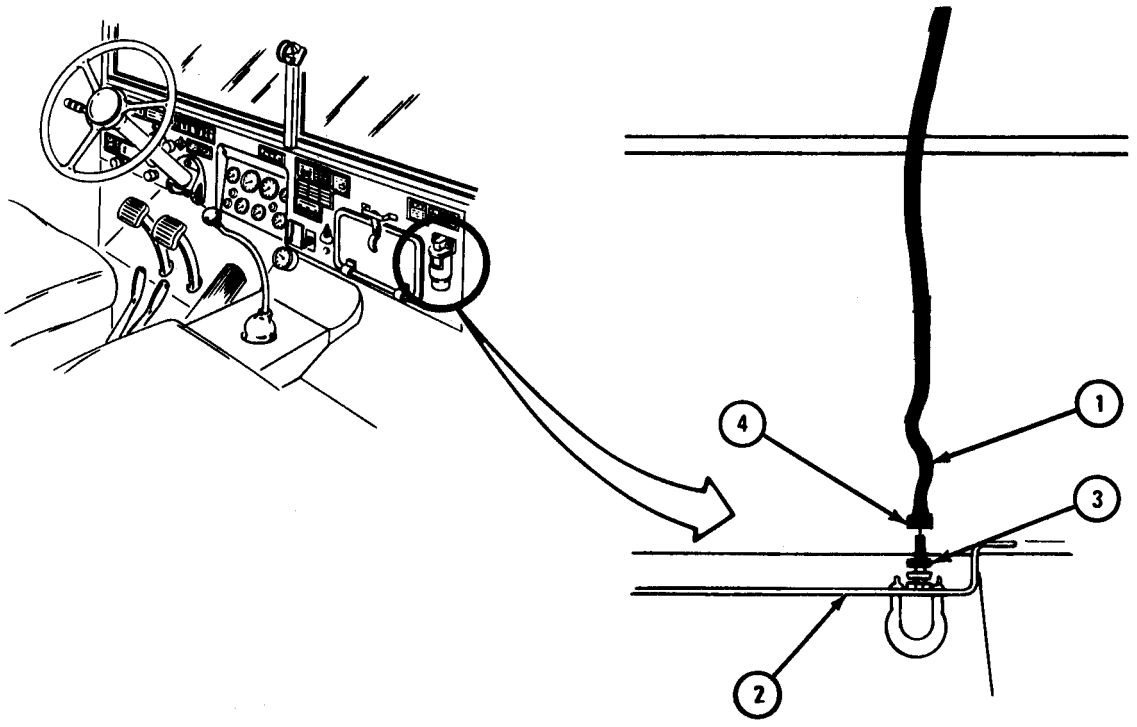
FRAME 1

NOTE

Depending on model of truck, tube (1) may be either one-piece copper or plastic tubing.

1. Working behind instrument panel (2), place end of tube (1) in air filter indicator fitting (3). Using 7/16-inch wrench, screw in and tighten tube nut (4).

GO TO FRAME 2

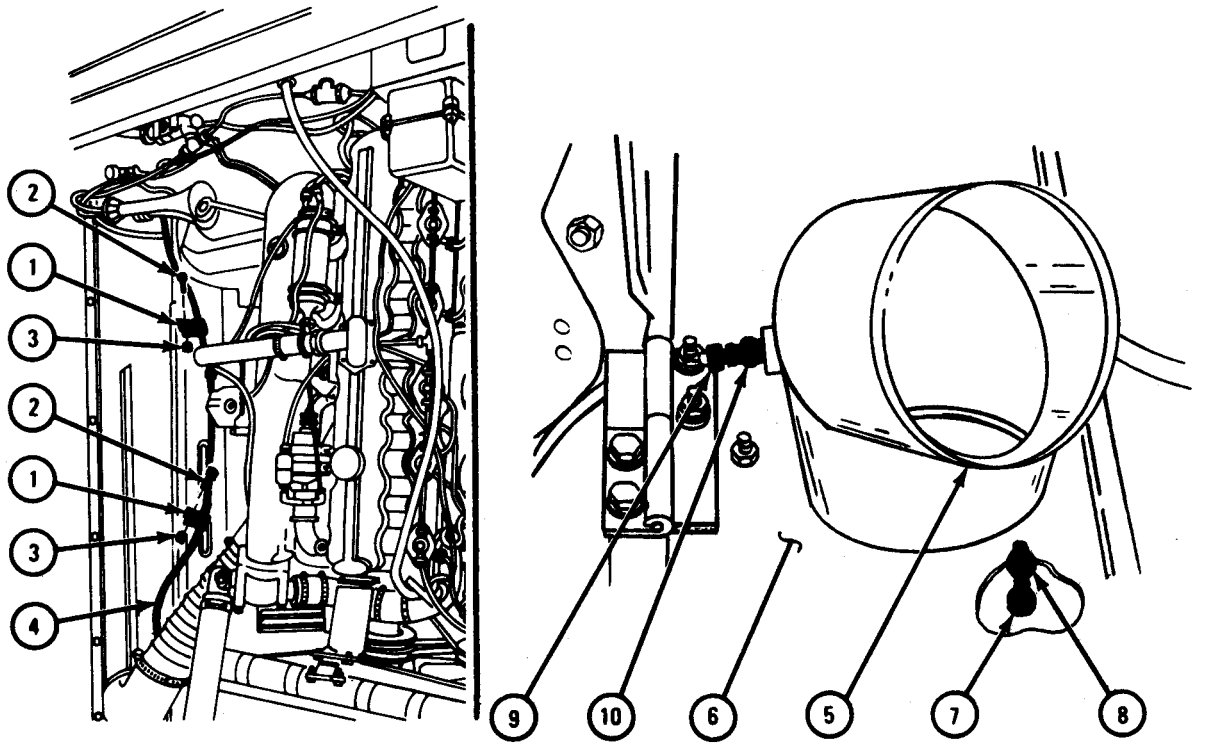


TA 103108

FRAME 2

1. Working under right front fender, aline two clamps (l), two screws (2), and two nuts (3) holding plastic tube (4). Using 7/16-inch wrenches, screw on and tighten two nuts (3).
2. Aline air tube (5) with right side panel (6). Using 7/16-inch wrenches, put on and tighten three screws (7) and three nuts (8).
3. Using 9/16-inch wrench, put in vent line connector (9),
4. Using 7/16-inch and 9/16-inch wrenches, screw on plastic tubing (4) to vent line connector (9).
5. Using pipe wrench, screw in and tighten adapter (10).

GO TO FRAME 3



TA 103109

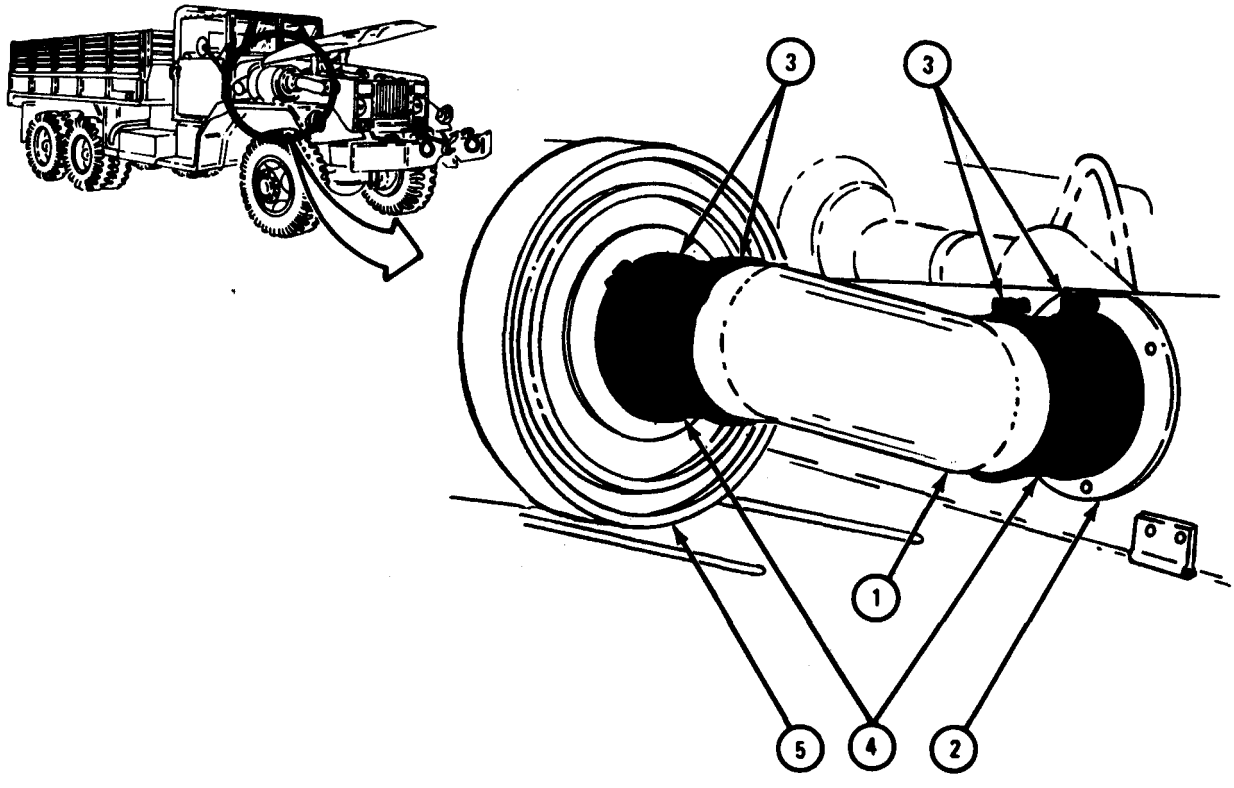
FRAME 3

NOTE

On late model trucks, tubes (l and 2) are welded together, so there is no hose at hood side panel.

1. Aline four clamps (3), two hoses (4) and air tubes (1 and 2) with air cleaner (5).
2. Using screwdriver, position and tighten four clamps (3).

GO TO FRAME 4



FRAME 4

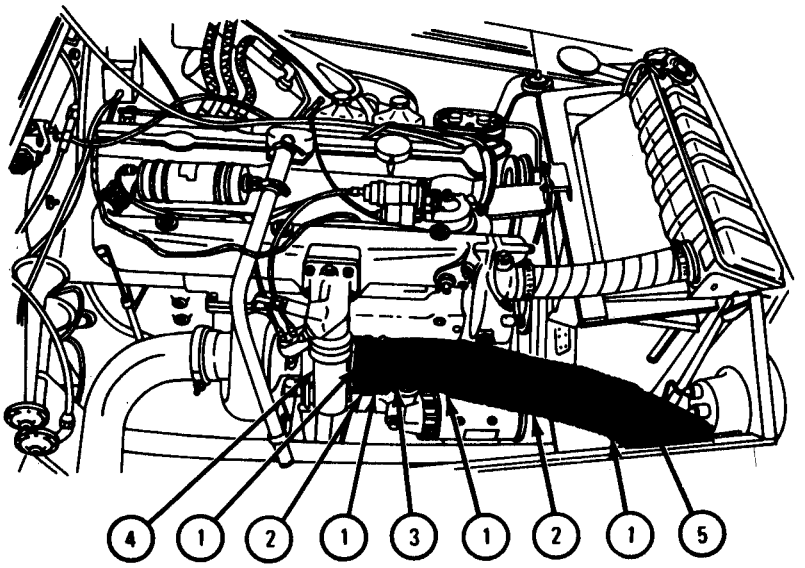
1. Aline four clamps (1), two tubes (2), and turbocharger inlet tube (3) with turbocharger (4) and connector (5).
2. Using screwdriver, position and tighten four clamps (1).

NOTE

Follow-on Maintenance Action Required:

1. Close hood. Refer to TM 9-2320-211-10.
2. Replace fender right access panel, Refer to para 7-3.

END OF TASK



TA 103111

4-7. AIR FILTER INDICATOR REMOVAL AND REPLACEMENT.

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

SUPPLIES : None

PERSONNEL: One

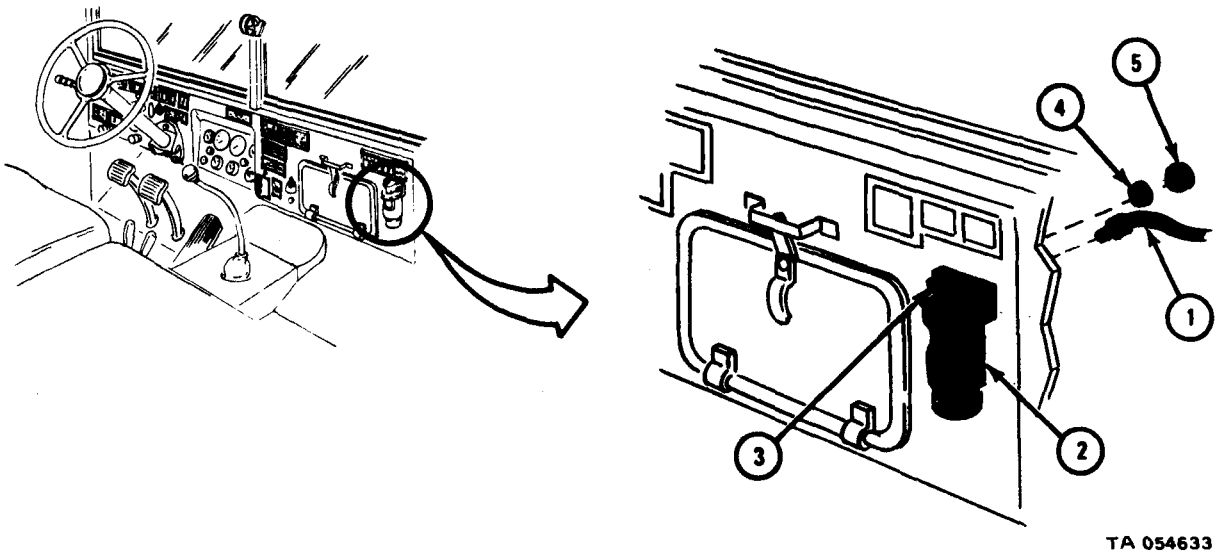
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Working behind instrument panel using 9/16-inch wrench, unscrew and take off hose (1) from air filter indicator (2).
2. Using 7/16-inch wrenches, unscrew and take out two cap screws (3) with flat washers (4) and self-locking nuts (5).
3. Take off air filter indicator (2) from instrument panel.

END OF TASK



b. Redacement.

FRAME 1

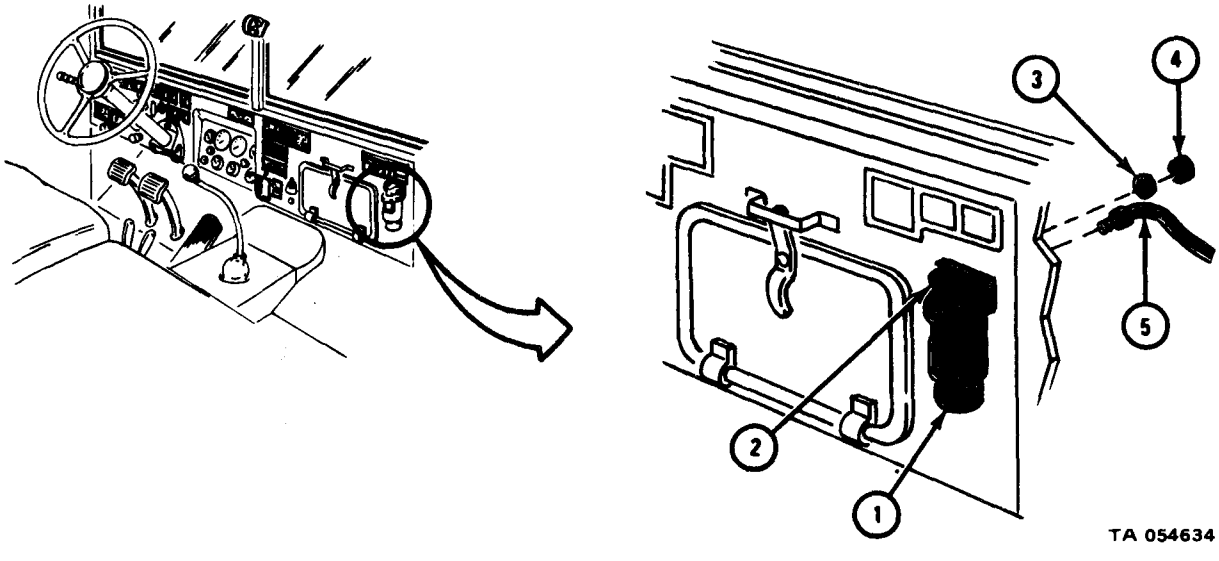
1. Line up holes in air filter indicator (1) with holes in instrument panel.
2. Using 7/16-inch wrenches, screw in and tighten two cap screws (2), flat washers (3), self-locking nuts (4).
3. Working behind instrument panel using 9/16-inch wrench, screw in hose (5) to air filter indicator (1).

NOTE

Follow-on Maintenance Action Required:

Check operation of sir filter indicator. Refer to TM 9-2320-211-10.

END OF TASK



Section IV. TURBOCHARGER

4-8. TURBOCHARGER OIL INLET AND OIL DRAIN TUBES REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
9/16-inch open end wrench
7/8-inch open end wrench

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

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

(2) Remove crankcase breather tube. Refer to para 2-5.

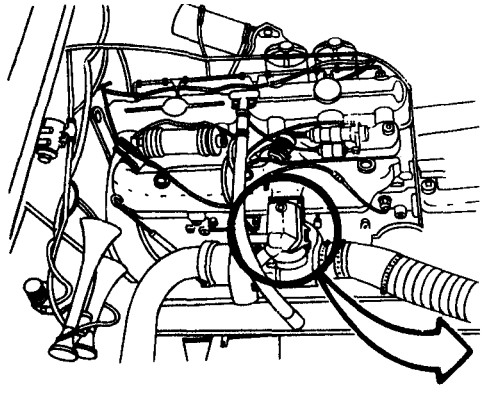
b. Removal.

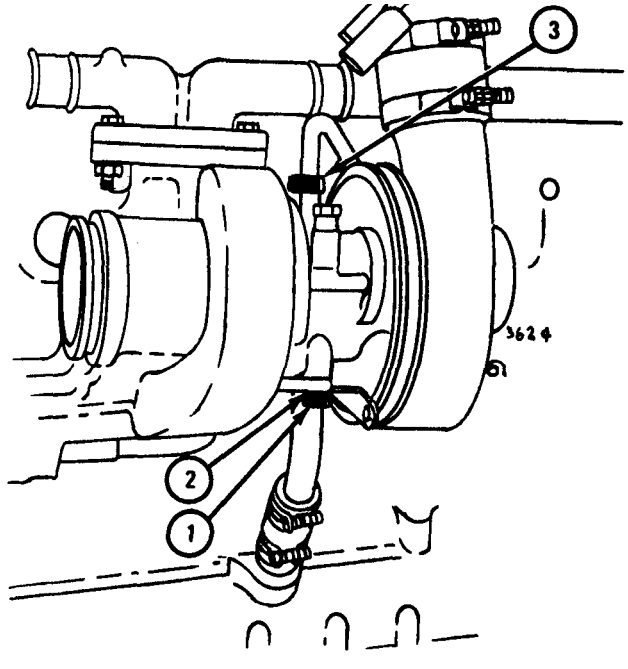
FRAME 1

1. Using 9/16-inch wrench, unscrew two capscrews (l). Take out two capscrews with washers (2).

2. Using 7/8-inch wrench, unscrew fitting (3),

GO TO FRAME 2



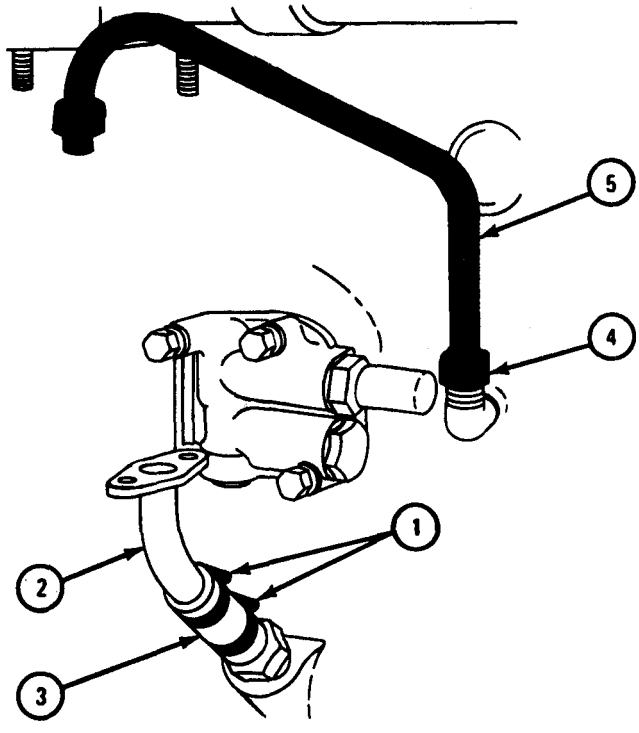


TA 103037

FRAME 2

1. Using screwdriver, unscrew two clamp screws (l). Take out drain tube (2) and hose (3).
2. Using 7/8-inch wrench, unscrew fitting (4). Take out oil inlet tube (5).

END OF TASK



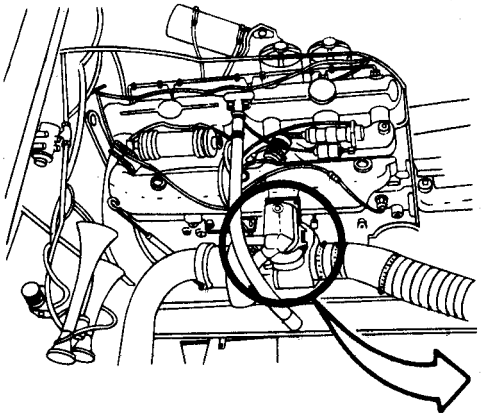
TA 103038

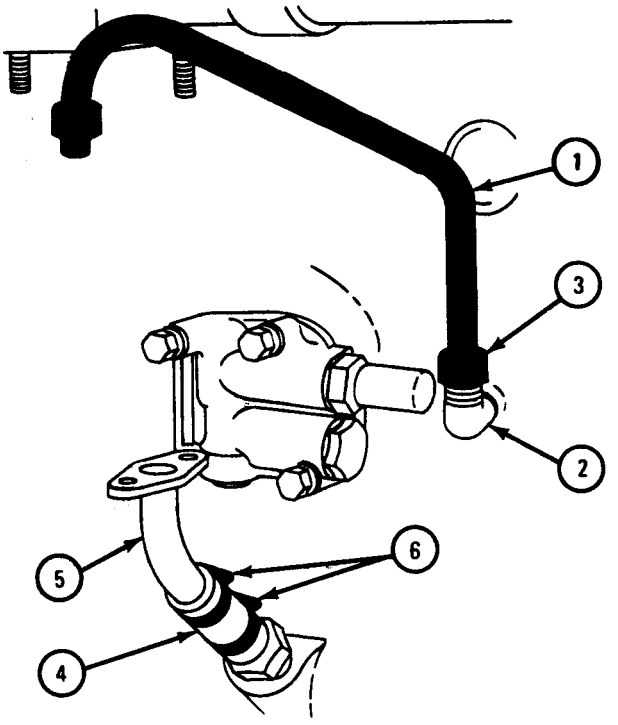
c. Replacement.

FRAME 1

1. Put tube (1) on fitting (2). Using 7/8-inch wrench, screw on and tighten fitting (3).
2. Put on hose (4) with tube (5). Using screwdriver, tighten two clamp screws (6).

GO TO FRAME 2





TA 103039

FRAME 2

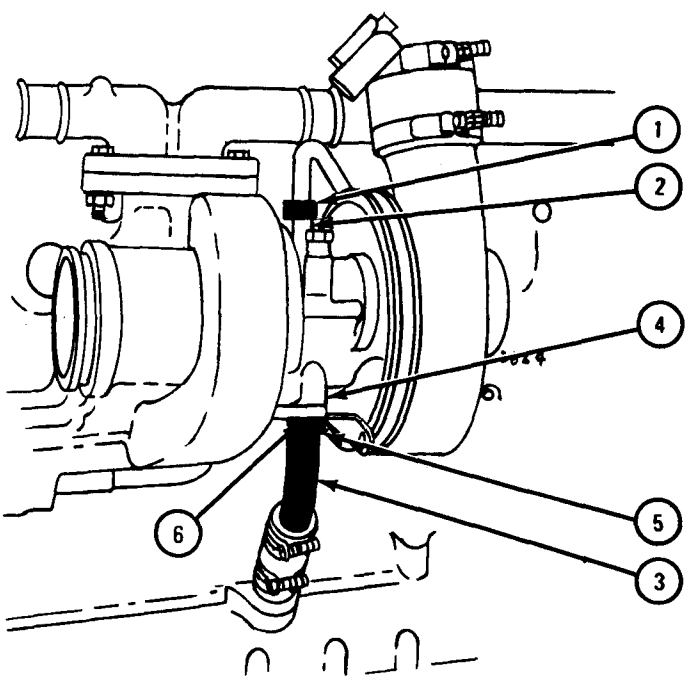
1. Using 7/8-inch wrench, screw fitting (1) on fitting (2).
2. Put drain tube (3) against turbocharger (4). Using 9/16-inch wrench, screw in two capscrews (5) with washers (6).

NOTE

Follow-on Maintenance Action Required:

1. Replace crankcase breather tube. Refer to para 2-5.
2. Start engine and check for oil leaks. Refer to TM 9-2320-211-10.
3. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 103040

Section V. FUEL TANKS AND FUEL LINES

4-9. FUEL TANK REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inch sockethead screw key (Allen wrench or equivalent)
5/8-inch wrench
3/4-inch wrench
9/16-inchwrench (2)
7/16-inchwrench
55 gallon drum (2)
5-gallon container

SUPPLIES: None

PERSONNEL: Two

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

WARNING

Smoking, sparks, or open flame are not allowed within 50 feet of work area during this task. Fuel can catch fire and explode, causing injury to personnel and damage to equipment.

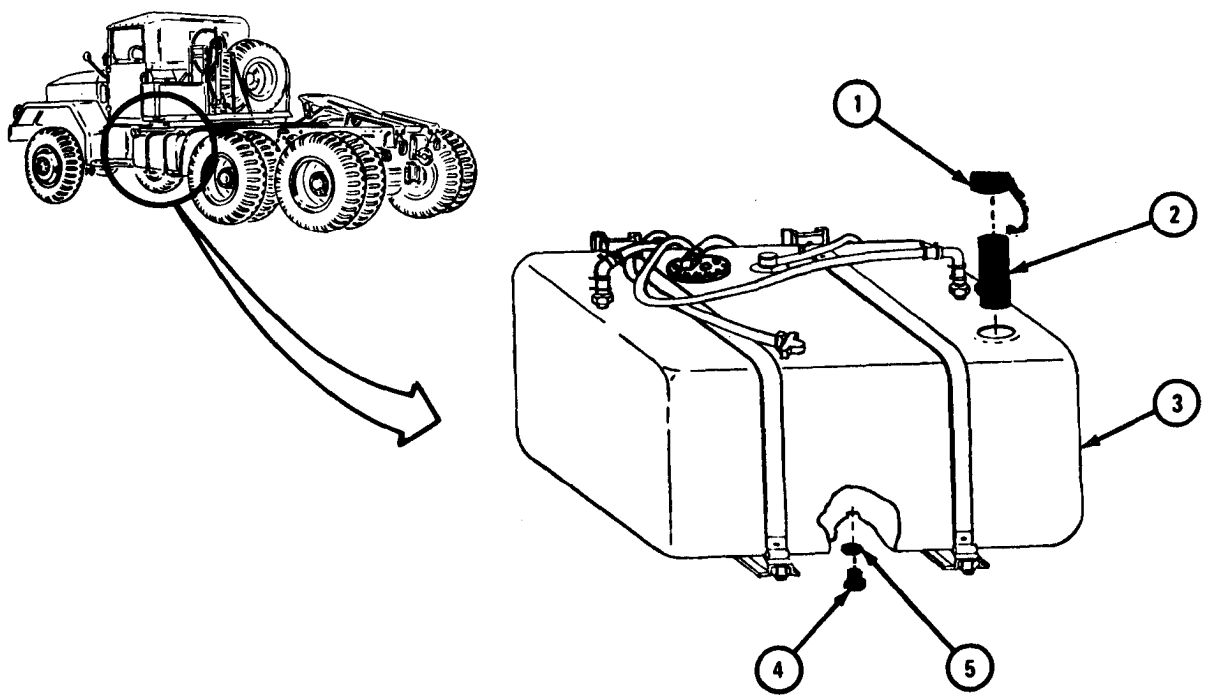
a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Unscrew and takeoff filler cap (l). Takeout filler tube (2).
2. Pump out fuel into 55-gallon drums.
3. Put back filler tube (2) and screw on filler cap (1).
4. Put container under drain plug (4) and using allen wrench, unscrew and take out drain plug (4) and gasket (5).
5. Drain rest of fuel out of fuel tank (3).
6. Using allen wrench, screw in and tighten drain plug (4) and gasket (5).
7. Put fuel in container in approved disposal area.

GO TO FRAME 2

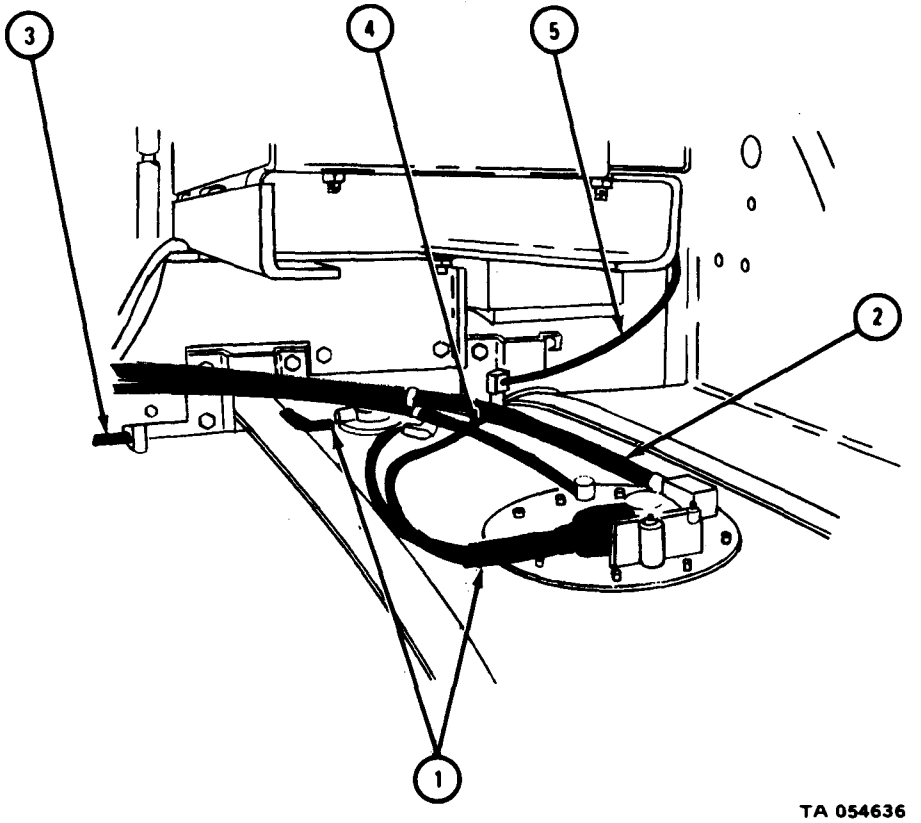


TA 054635

FRAME 2

1. Pull off two electrical connectors (1).
2. Using 3/4-inch wrench, unscrew coupling and take off fuel output line (2).
3. Using 5/8-inch wrench, unscrew coupling and take off fuel return line (3).
4. Using 7/16-inch wrench, unscrew coupling and take off vent line (4).
5. For trucks with two fuel tanks, using 5/8-inch wrench, unscrew coupling and take off fuel transfer line (5).

GO TO FRAME 3



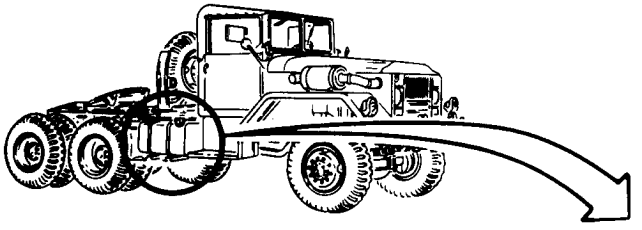
FRAME 3

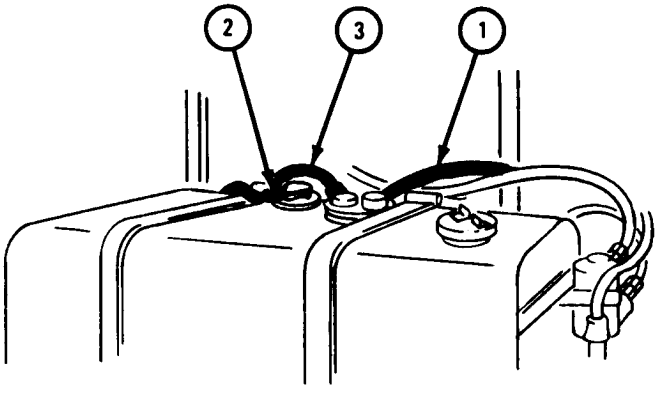
NOTE

For trucks with two fuel tanks, do these steps to take off fuel and electrical lines from auxiliary fuel tank.

1. Using 5/8-inch wrench, unscrew coupling and take off fuel transfer pump intake line (1).
2. Pull off electrical connector (2).
3. Using 7/16-inch wrench, unscrew coupling and take off vent line (3).

FOR TRUCKS WITH BRACED FUEL TANKS, GO TO FRAME 4.
FOR TRUCKS WITH FUEL TANKS NOT BRACED, GO TO FRAME 5





TA 054637

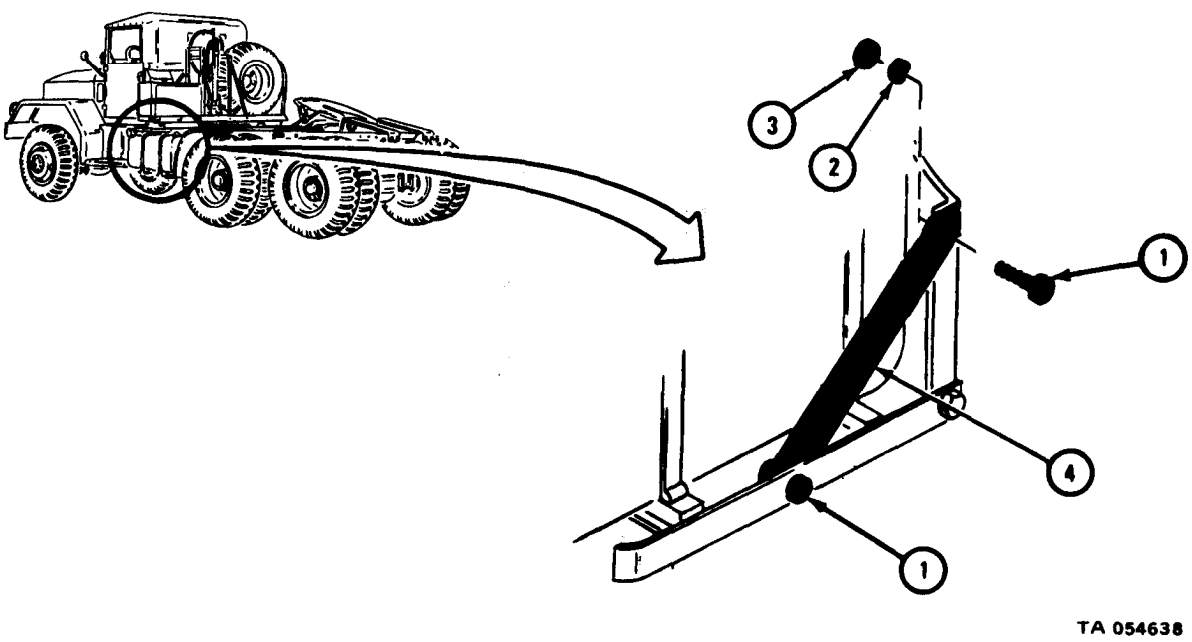
FRAME 4

NOTE

On trucks with braced fuel tank, brace (4) must be taken off before fuel tank can be taken off.

1. Using 9/16-inch wrenches, unscrew and take out two bolts (1) with washers (2) and nuts (3).
2. Take off brace (4).

GO TO FRAME 5



TA 054638

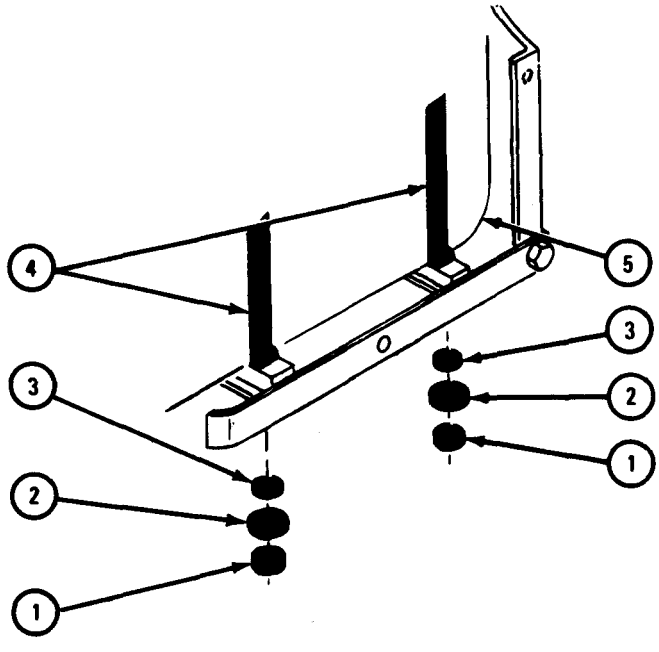
FRAME 5

1. Using 9/16 -inch wrench, unscrew and take off two nuts (1) with washers (2) snd cushions (3).
2. Lift up two straps (4).

Soldiers A and B

3. Lift fuel tank (5) off truck.

END OF TASK



TA 054639

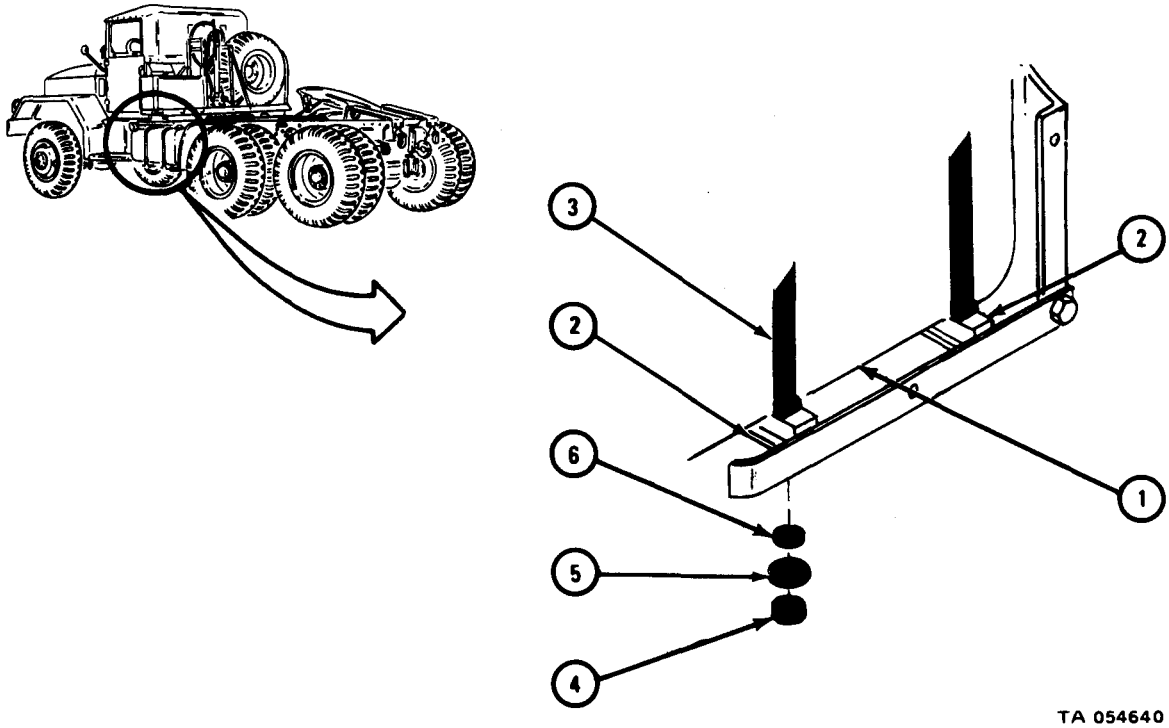
c. Replacement.

FRAME 1

Soldiers A andB

1. Lift up fuel tank (1) and place it on support rails (2).
2. Place end of straps (3) through holes in support rails (2).
3. Using 9/16-inch wrench, screw on and tighten two nuts (4) with washers (5) and cushions (6).

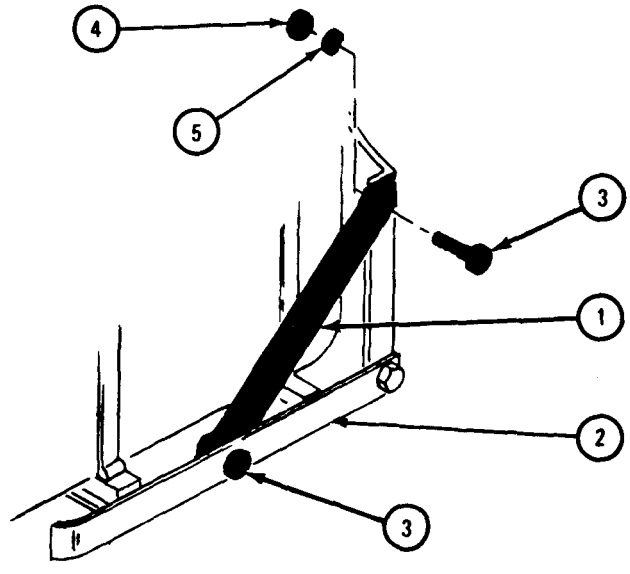
ON TRUCKS WITH BRACED FUEL TANKS, GO TO FRAME 2.
ON TRUCKS WITH TANKS NOT BRACED, GO TO FRAME 3



FRAME 2

1. Line up holes in brace (1) with holes in frame (2) and put two bolts (3) through holes.
2. Using 9/16-inch wrenches, screw on and tighten two nuts (4) with washers (5).

GO TO FRAME 3



TA 054641

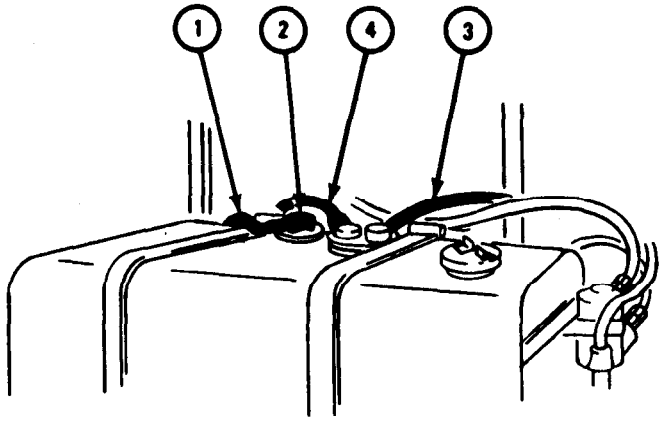
FRAME 3

NOTE

For trucks with only one fuel tank, go to frame 4.

1. Plug electrical connector (1) into receptacle (2).
2. Using 5/8-inch wrench, screw on and tighten coupling on fuel transfer pump intake line (3).
3. Using 7/16-inch wrench, screw on and tighten coupling on vent line (4).

GO TO FRAME 4



TA 054642

FRAME 4

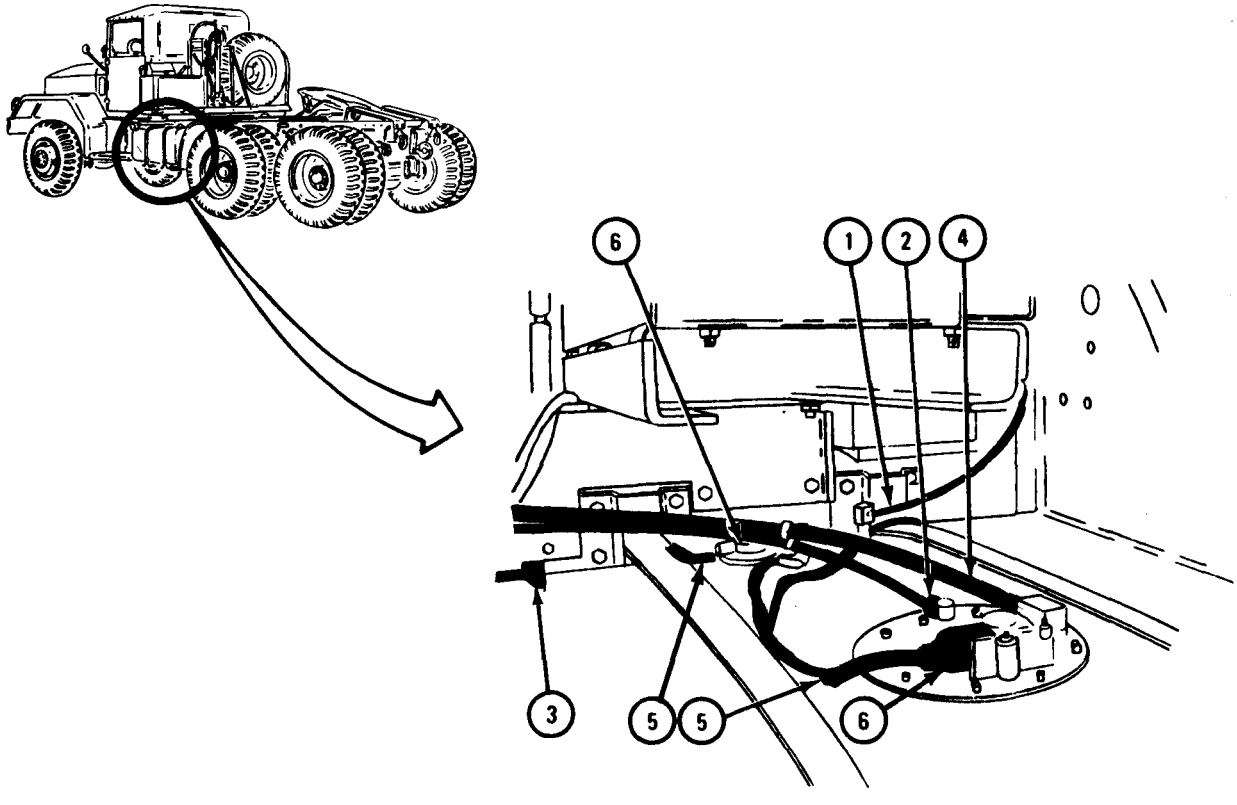
1. On trucks with two fuel tanks, using 5/8-inch wrench, screw on and tighten fuel transfer line coupling (l).
2. Using 7/16-inch wrench, screw on and tighten vent line coupling (2).
3. Using 5/8-inch wrench, screw on and tighten fuel return line coupling (3).
4. Using 3/4-inch wrench, screw on and tighten coupling on fuel output line (4).
5. Plug two electrical connectors (5) into receptacles (6).

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Fill fuel tank. Refer to TM 9-2320-211-10.
3. Start engine. Refer to TM 9-2320-211-10.
4. Check fuel tank and connections for leaks.
5. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 054643

4-10. FUEL TANK MOUNTING STRAPS REMOVAL, REPAIR AND REPLACEMENT.

NOTE

For trucks with two fuel tanks, this procedure shows the left fuel tank mounting straps. This task is the same for the right fuel tank mounting straps.

TOOLS: 9/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

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

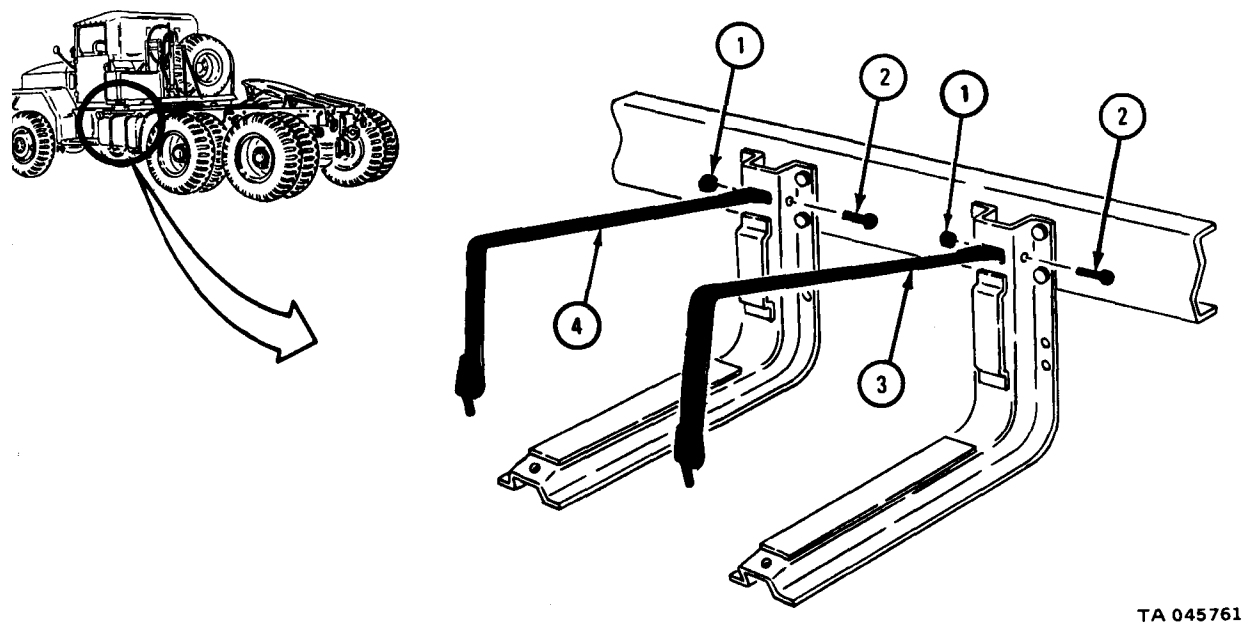
a. Preliminary Procedure. Remove fuel tank(s) . Refer to para 4-9.

b. Removal.

FRAME 1

1. Using 9/16-inch wrenches, unscrew and take off nut (1).
2. Take out bolt (2). Take off fuel tank mounting strap (3).
3. Do steps 1 and 2 again for fuel tank mounting strap (4).

END OF TASK



c. Inspection and Repair. Check fuel tank mounting straps to see if they are bent, broken or cracked. Check for loose rivets at looped ends or stripped or damaged stud threads. If strap is damaged, get a new one.

d. Replacement.

FRAME 1

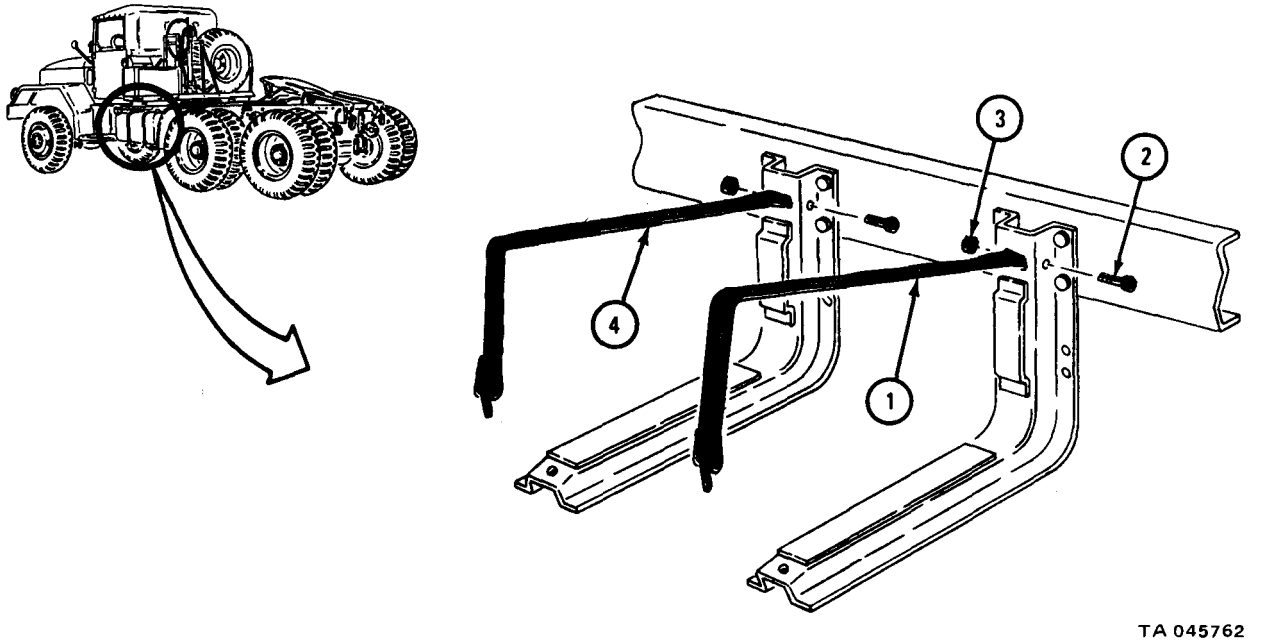
1. Put fuel tank mounting strap (1) in place and hold it.
2. Put screw (2) in place as shown.
3. Using 9/16-inch wrenches, screw on and tighten nut (3).
4. Do steps 1 through 3 again for fuel tank mounting strap (4).

NOTE

Follow-on Maintenance Action Required:

Replace fuel tank. Refer to para 4-9.

END OF TASK



TA 045762

4-11. FUEL LINES AND FITTINGS REMOVAL AND REPLACEMENT.

NOTE

Procedures given are typical and cover all the different types of installations that you will find on the trucks. Procedures do not show any one truck system. Refer to system schematic illustrations used as support diagrams for troubleshooting each system (Vol 2, Part 1, chapter 10).

TOOLS: 3/4-inch combination box and open end wrench
5/8-inch combination box and open end wrench
7/16-inch combination box and open end wrench (2)
1/2-inch combination box and open end wrench
9/16-inch combination box and open end wrench
11/16-inch combination box and open end wrench
Container

SUPPLIES: Sealer compound, type II, MIL-S-45180
Rags

PERSONNEL: One

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

WARNING

Smoking, flames, sparks and glowing or hot objects are not allowed within 50 feet of work area during maintenance of fuel system components. Fuel can explode, causing injury to personnel and damage to equipment.

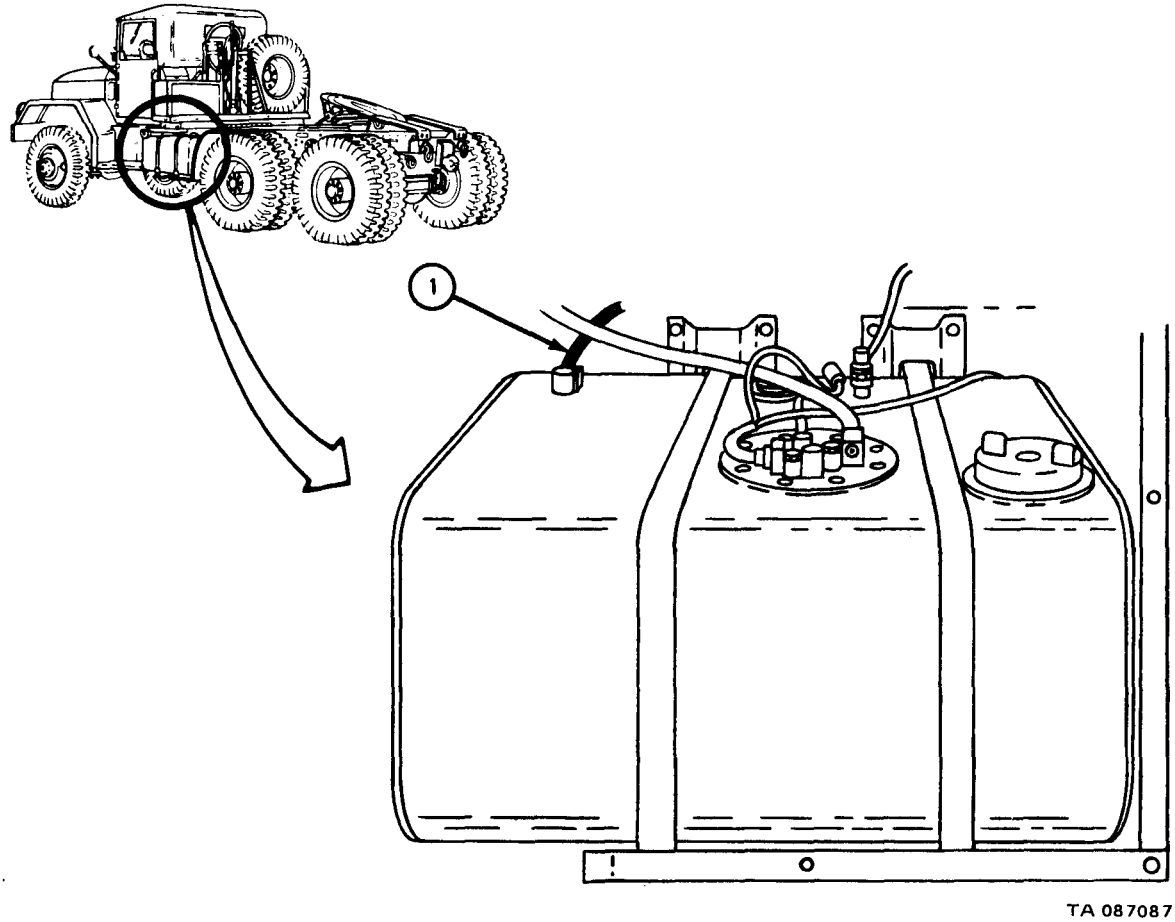
a. Removal.

(1) Air vent lines.

FRAME 1

1. Using 5/8-inch wrench, unscrew and take off vent line (l).

END OF TASK



(2) Air vent tubes and bushings.

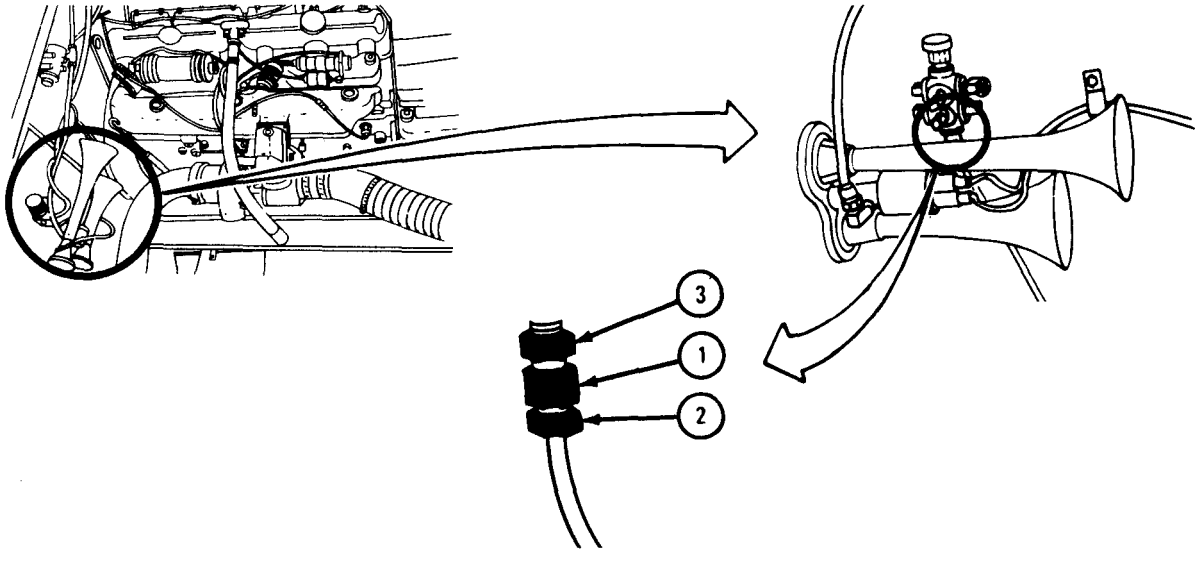
NOTE

The air vent tube from the air manifold to the tee assembly along the right side frame is used for this procedure.

FRAME 1

1. Open hood. Refer to TM 9-2320-211-10.
2. Using 1/2-inch open end wrench, hold connector (1). Using 7/16-inch combination box and open end wrench, unscrew and take off tube nut (2).
3. Using 5/8-inch open end wrench, hold bushing (3). Using 1/2-inch wrench, unscrew and take off connector (1).
4. Using 5/8-inch open end wrench, unscrew and take off bushing (3).

GO TO FRAME 2



TA 087094

FRAME 2

NOTE

If there is a plastic strap holding lines together, use cutting pliers and cut it off.

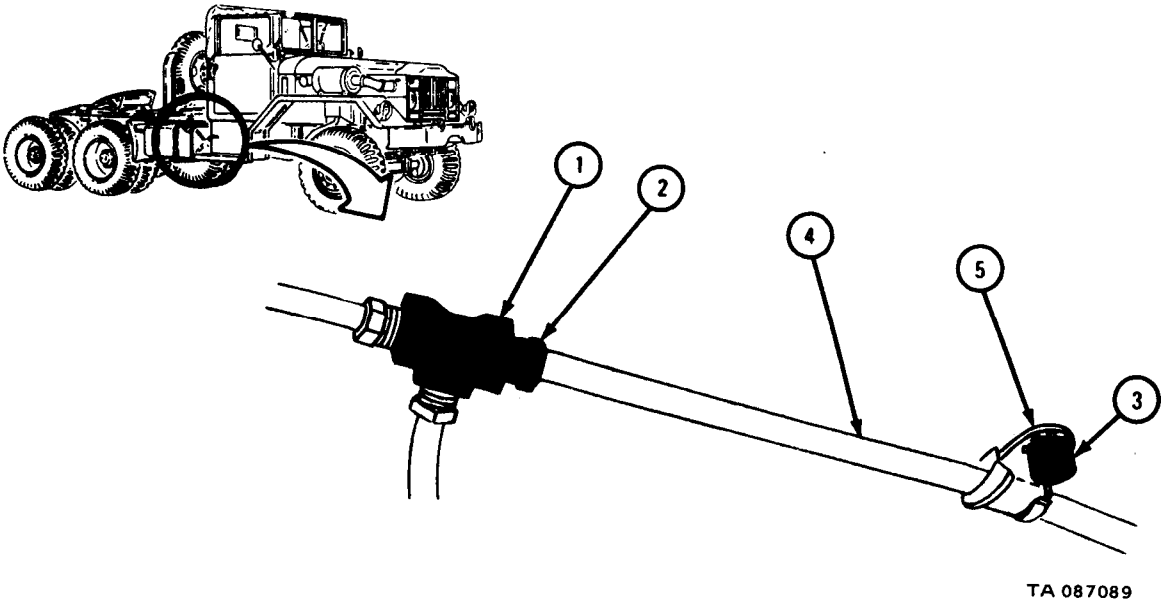
1. Using 9/16-inch open end wrench, hold tee fitting (1). Using 7/16-inch combination box and open end wrench, unscrew and take off tube nut (2).
2. Using 9/16-inch wrench, unscrew and take off capscrew (3).

NOTE

The number of clamps on any tube differs. Make sure all capscrews are out before taking tube off.

3. Take off tube (4) and spread open clamp. Take off clamp (5).

END OF TASK



TA 087089

(3) Fuel lines and clamps.

NOTE

The fuel line from the main tank to the transfer pump is used for this procedure.

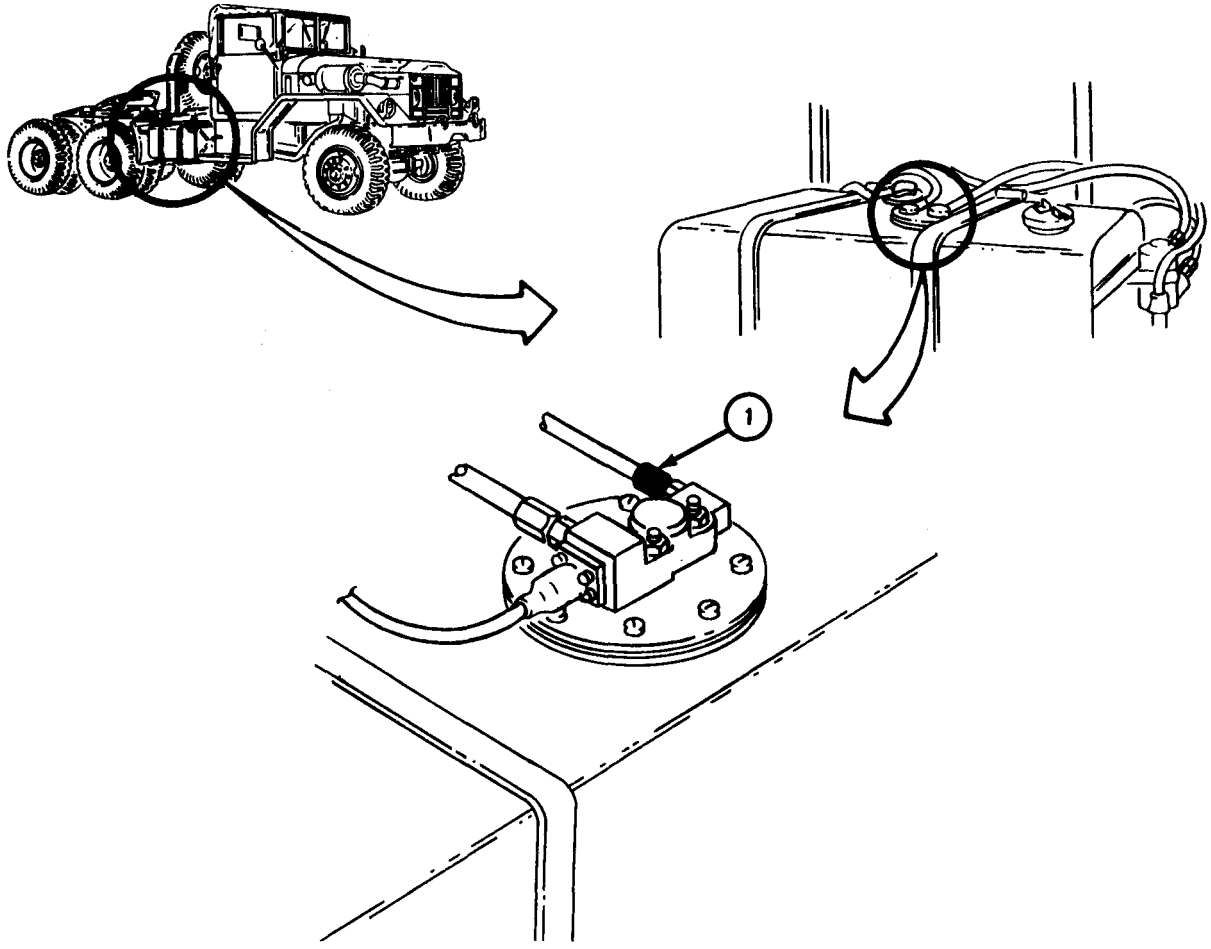
FRAME 1

1. Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (1).

NOTE

Use cutting pliers to cut any plastic straps holding lines together.

GO TO FRAME 2



TA087090

FRAME 2

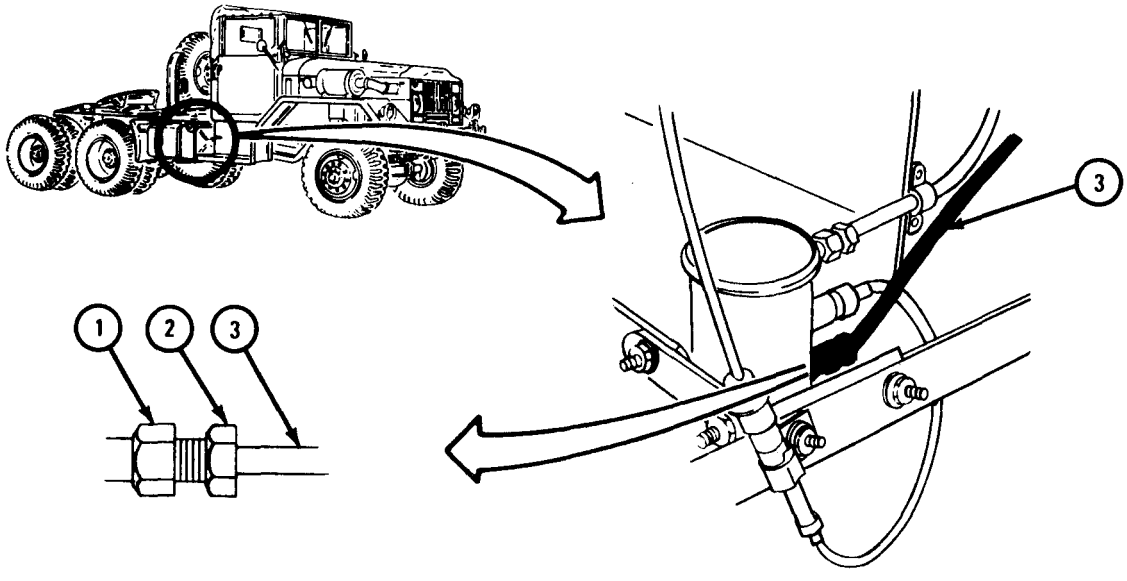
1. Using 3/4-inch open end wrench, hold adapter (l). Using 5/8-inch combinationbox and open end wrench, unscrew and take off tube nut (2).

NOTE

The number of clamps on any tube differs. Make sure all capscrews and nuts are off before taking tube out.

2. Take off tube (3).

END OF TASK



TA 087091

(4) Line fittings.

(a) Elbows.

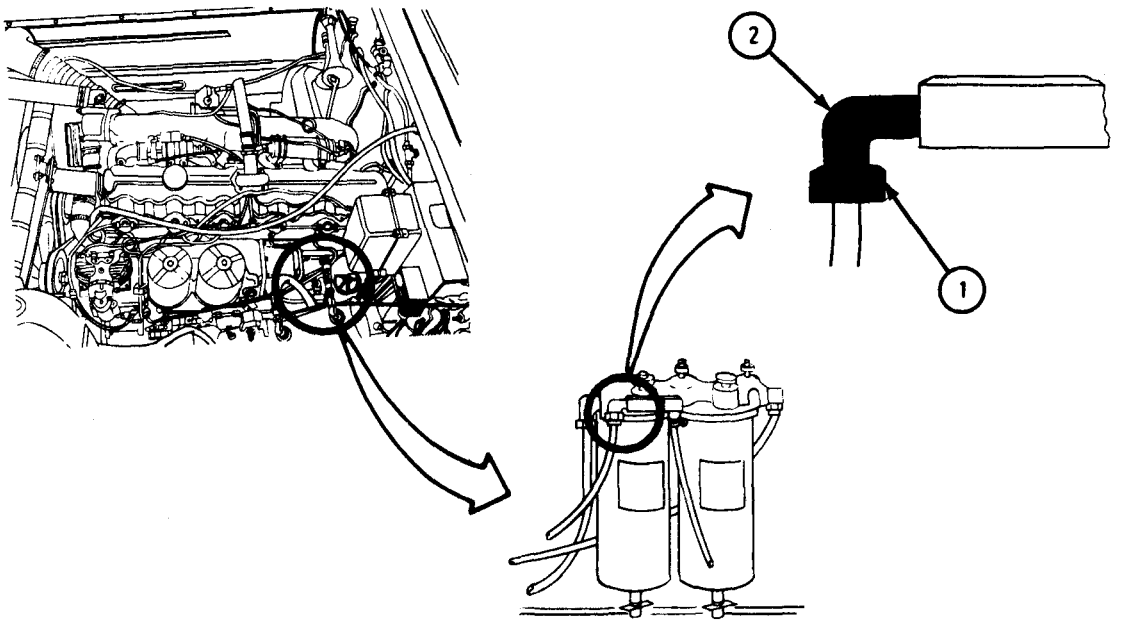
NOTE

The elbow at the final fuel filter assembly (late model trucks) is used for this procedure.

FRAME 1

1. Open hood and left side panel. Refer to TM 9-2320-211-10.
2. Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (1).
3. Using 9/16-inch open end wrench, unscrew and take off elbow (2) .

END OF TASK



TA 087092

(b) Air vent line fitting.

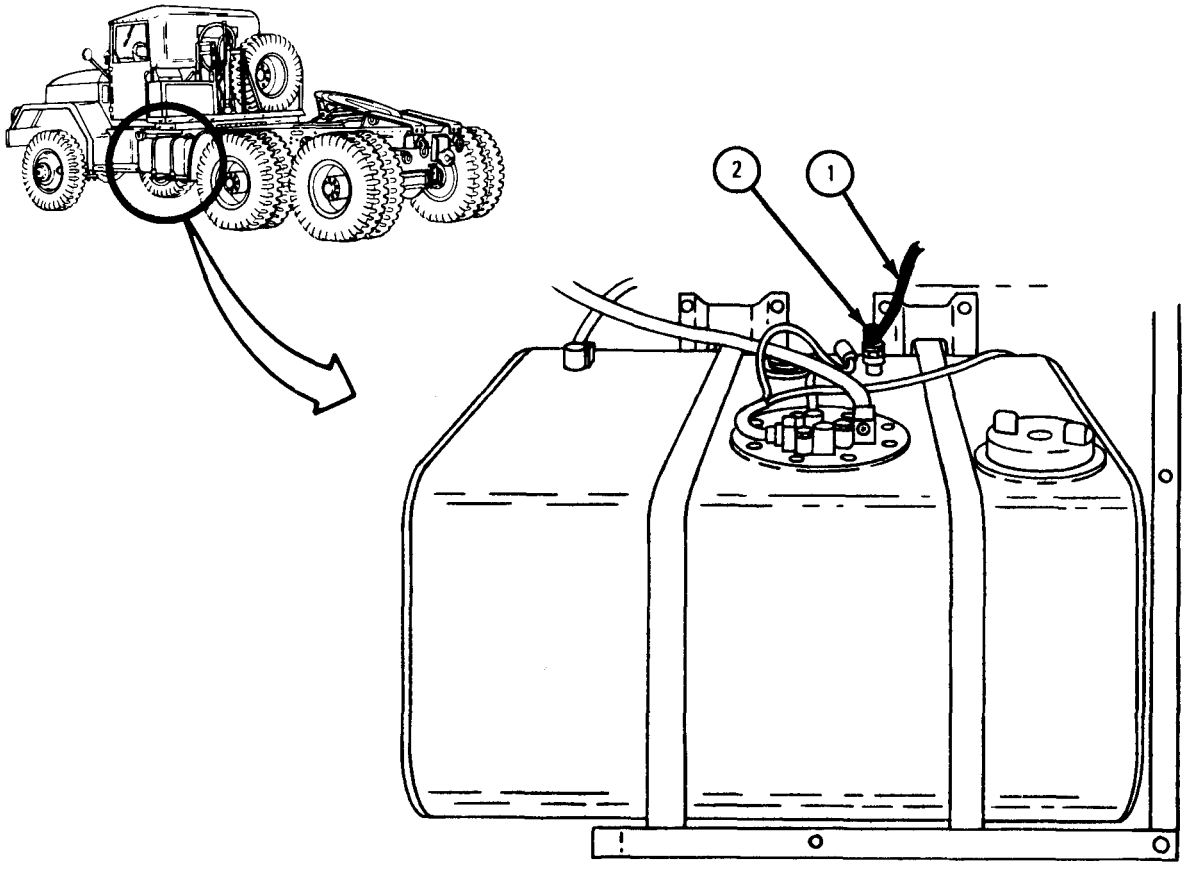
NOTE

The air vent line fitting on the fuel tank is used for this procedure.

FRAME 1

1. Using 5/8-inch wrench, unscrew and take off vent line (1).
2. Using 3/4-inch open end wrench, unscrew and take out fitting (2).

END OF TASK



(c) Adapter.

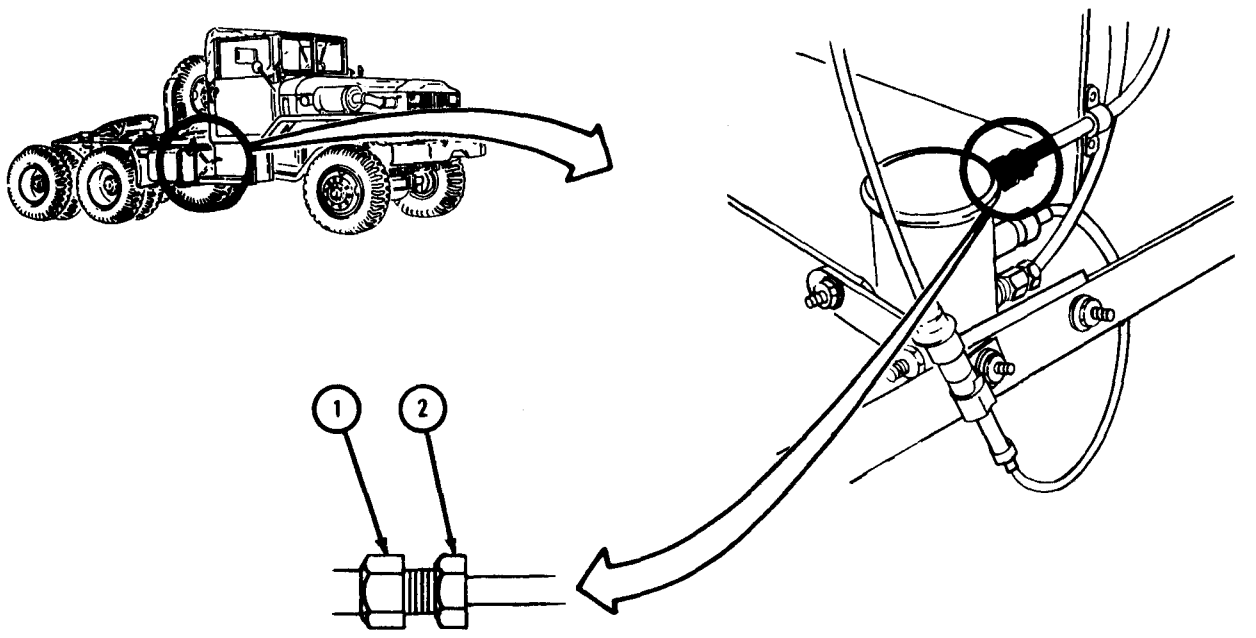
NOTE

The adapter at the fuel transfer pump is used for this procedure.

FRAME 1

1. Using 3/4-inch open end wrench, hold adapter (l). Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (2).
2. Using 3/4-inch openend wrench, unscrew and take off adapter (l).

END OF TASK



TA 087096

(d) Tee fitting.

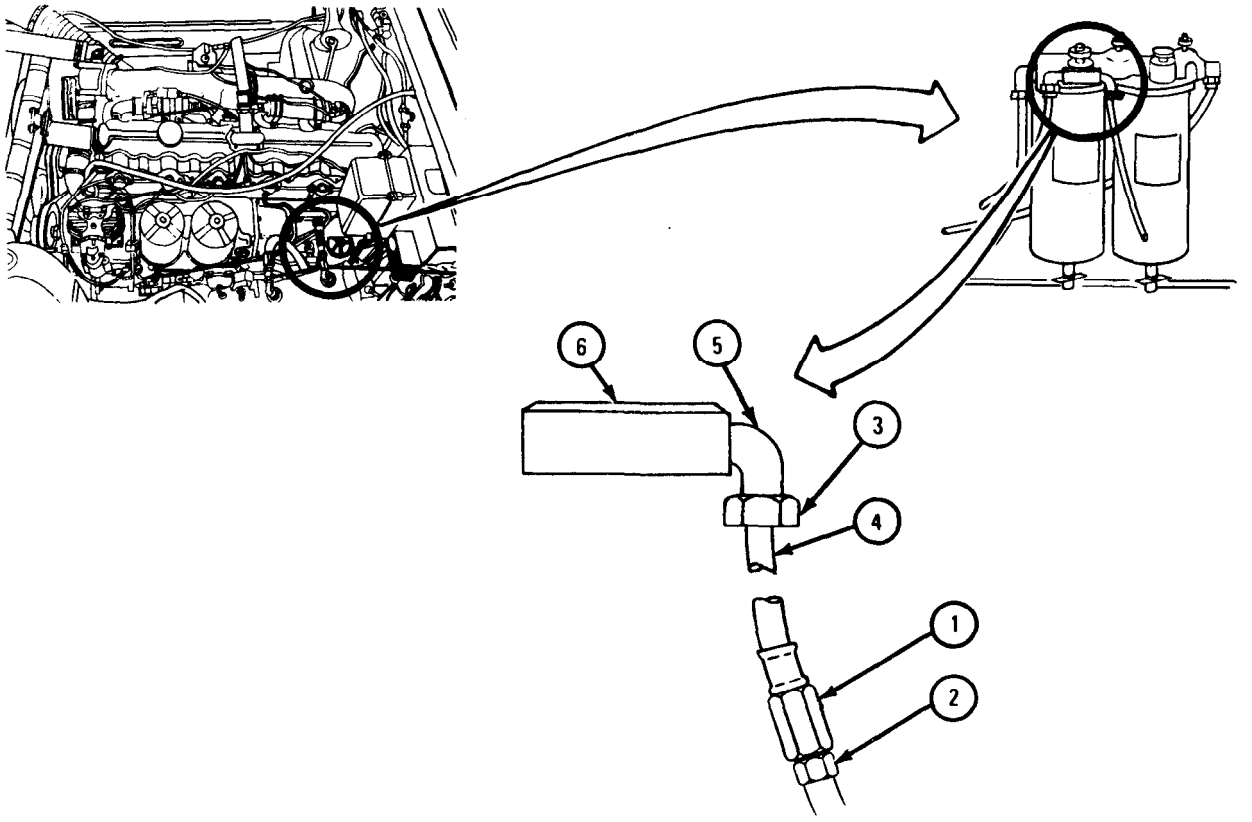
NOTE

The tee fitting at the final fuel filter assembly (late model trucks) is used for this procedure.

FRAME 1

1. Open hood and left side panel. Refer to TM 9-2320-211-10.
2. Using 3/4-inch wrench, hold hose coupling (1). Using 5/8-inch wrench, unscrew tube nut (2).
3. Using 3/4-inch wrench, unscrew hose coupling (3) and take off hose (4).
4. Using 11/16-inch wrench, unscrew and take off elbow (5).
5. Using 11/ 16-inch wrench, unscrew and take off tee fitting (6).

END OF TASK



TA 087097

(e) Fuel line nipples.

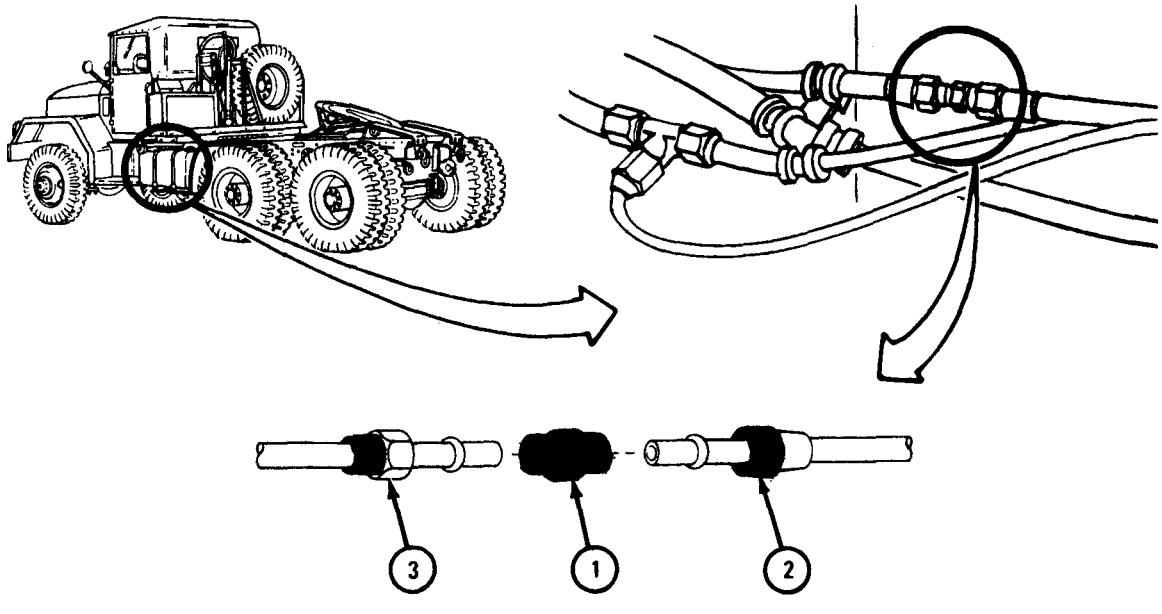
NOTE

The nipple on trucks with left side fuel tanks is used for this procedure.

FRAME 1

1. Using 9/16-inch open end wrench, hold adapter (1). Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (2) and tube nut (3).

END OF TASK



TA 087098

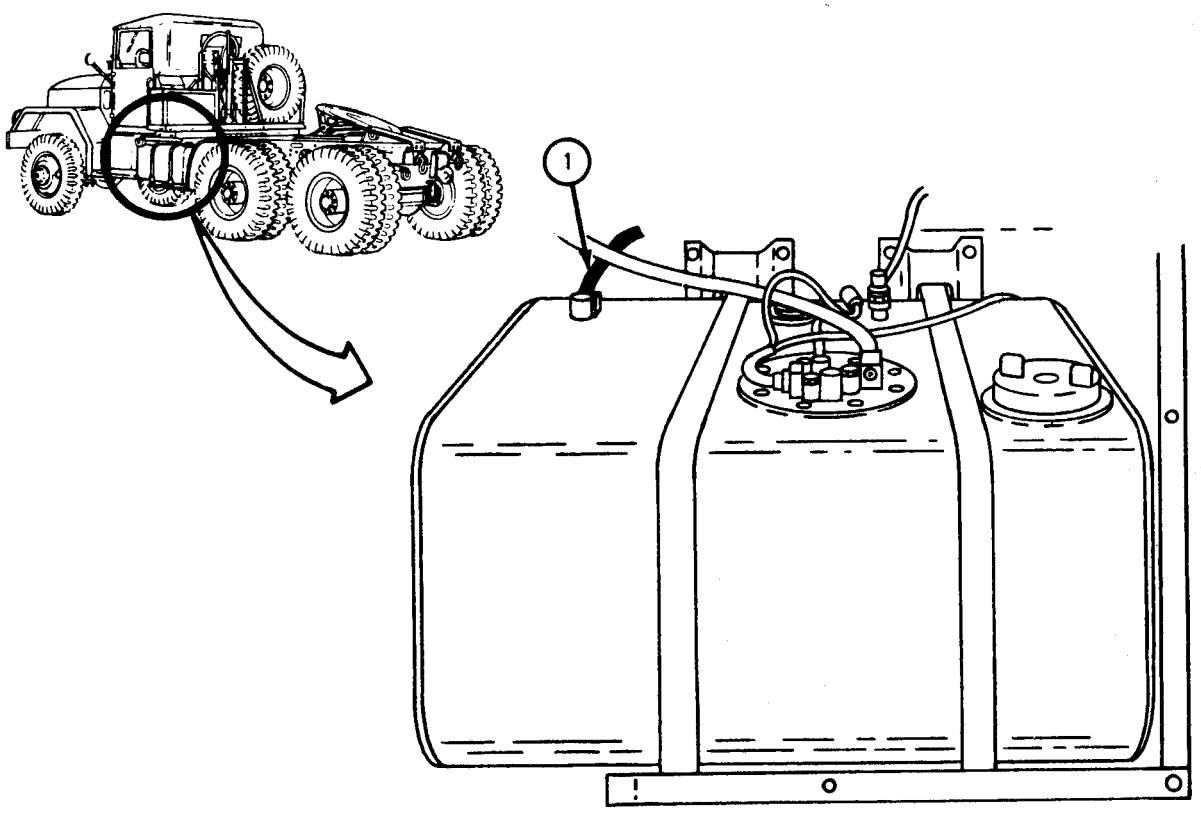
b. Replacement.

(1) Air vent lines.

FRAME 1

1. Using 5/8-inch wrench, screw in and tighten vent line (1).

END OF TASK



TA 087099

(2) Air vent tubes and clamps.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten enough to stop fuel from leaking.

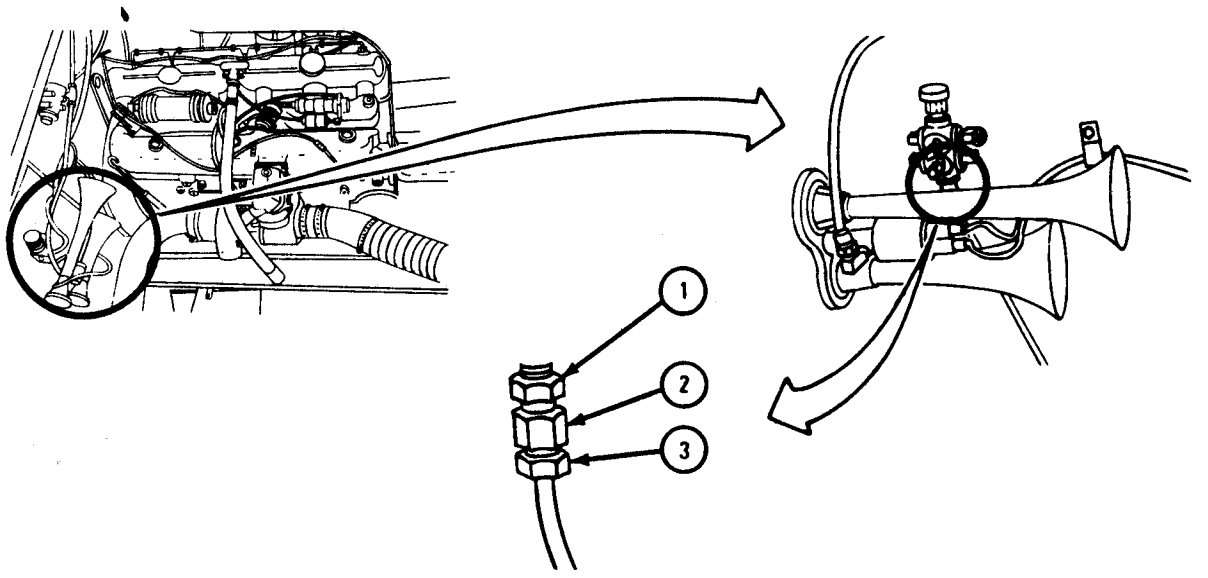
NOTE

The air vent tube from the air manifold to the tee fitting assembly along the right side is used for this procedure.

FRAME 1

1. Using 11/16-inch open end wrench, screw in and tighten adapter (1).
2. Using 1/2-inch open end wrench, screw in and tighten connector (2).
3. Using 1/2-inch open end wrench, hold connector (2). Using 7/16-inch combination box and open end wrench, screw in and tighten tube nut (3).

GO TO FRAME 2



TA 087088

FRAME 2

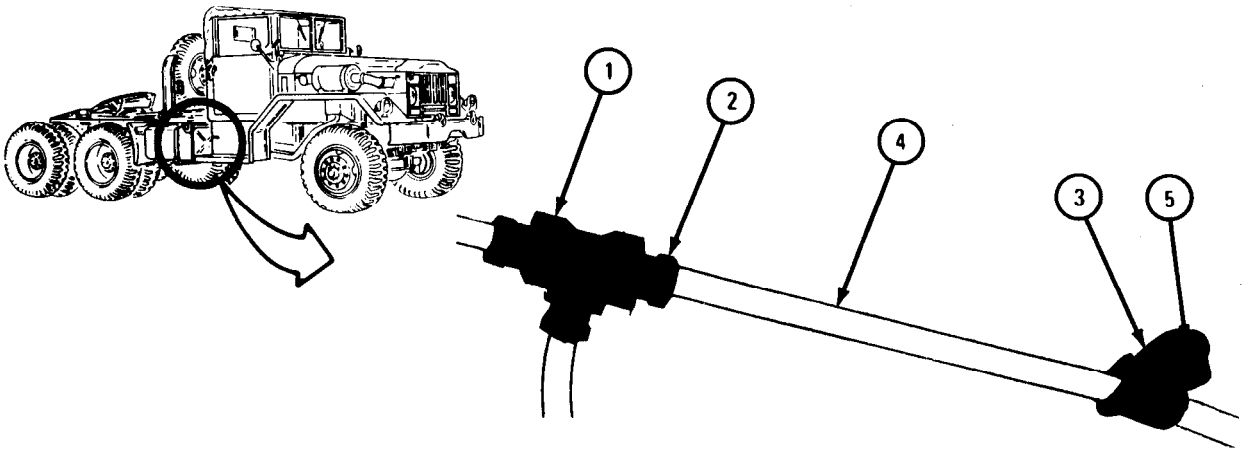
1. Using 9/16-inch open end wrench, hold tee fitting (l). Using 7/16-inch combination box and open end wrench, screw on and tighten tube nut (2).
2. Put clamp (3) on air vent tube (4).
3. Using 9/16-inch open end wrench, screw in and tighten capscrew (5).
4. If more than one clamp holds tube in place, do steps 2 and 3 again for each clamp.
5. Put on any plastic straps which were taken off.

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 9-2320-211-10.
4. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 105179

(3) Fuel lines and clamps.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten enough to stop fuel from leaking.

NOTE

The fuel line from the main tank to the transfer pump is used for this procedure.

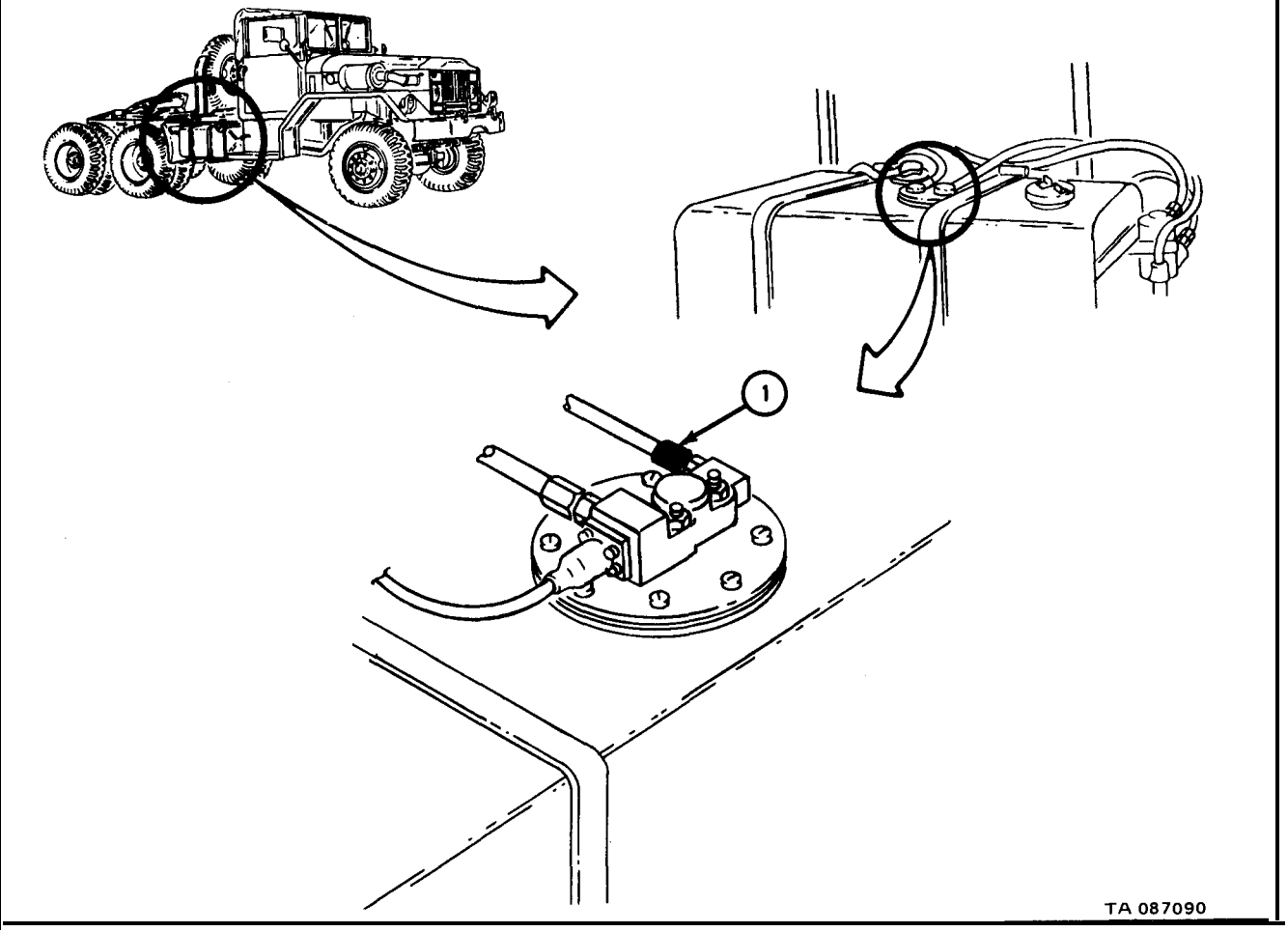
FRAME 1

1. Using 3/4-inch combination box and open end wrench, screw in and tighten tube nut (1).

NOTE

Put back any plastic straps which were taken off.

GO TO FRAME 2



FRAME 2

1. Position tube (1).
2. Using 3/4-inch open end wrench, hold adapter (2). Using 5/8-inch combination box and open end wrench, screw on and tighten tube nut (3).

NOTE

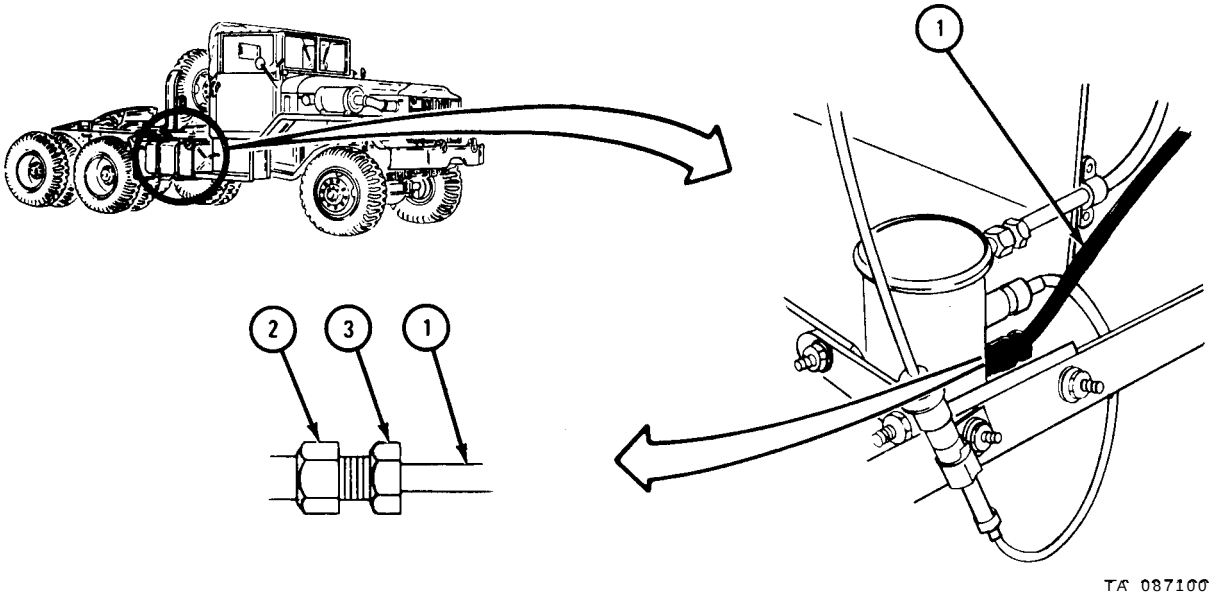
The number of clamps on any tube differs. Make sure all clamps are put back.

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



(4) Line fittings.

(a) Elbows.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten enough to stop fuel from leaking.

NOTE

The late elbow at the final fuel filter assembly (late model trucks) is used for this procedure.

FRAME 1

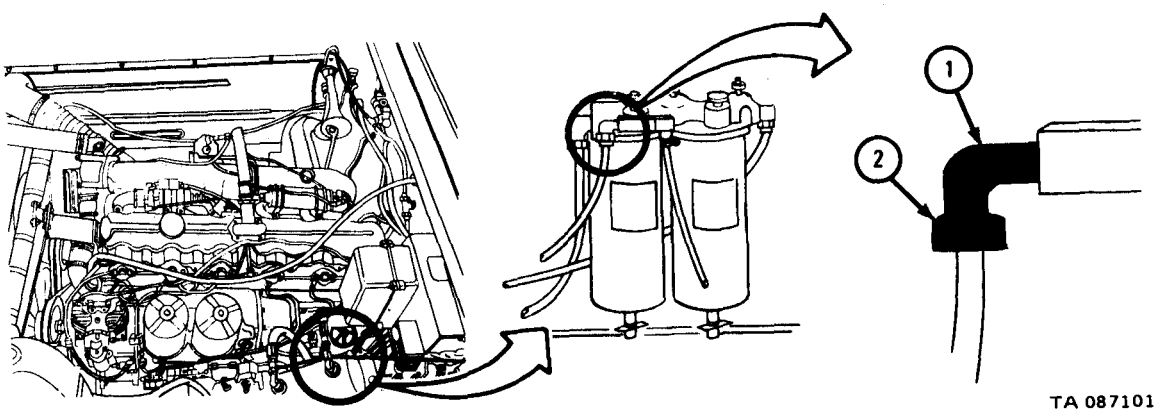
1. Using 9/16-inch open end wrench, screw on and tighten elbow (1).
2. Using 5/8-inch combination box and open end wrench, screw on and tighten tube nut (2).

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 9-2320-211-10.
4. Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



(b) Air vent line fitting.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten fittings enough to stop fuel from leaking.

NOTE

The air vent line fitting on the fuel tank is used for this procedure.

FRAME 1

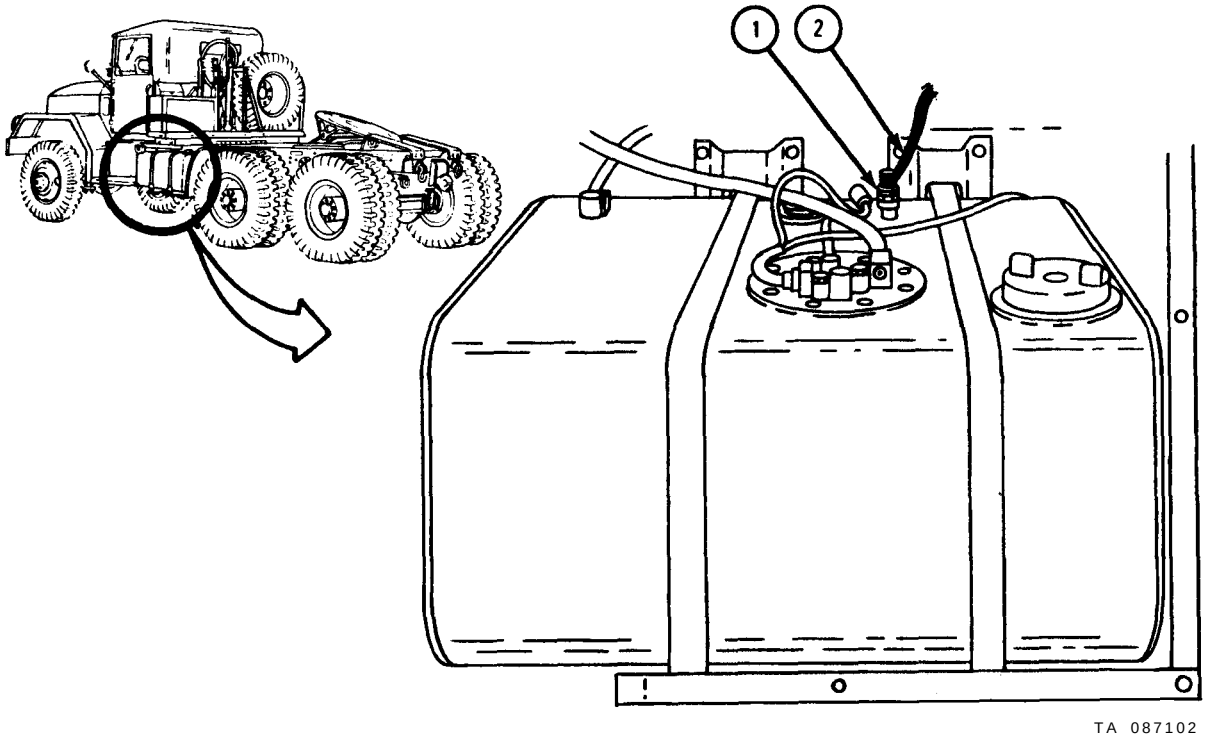
1. Using 3/4-inch open end wrench, screw on and tighten line fitting (1).
2. Using 5/8-inch wrench, screw on and tighten vent line (2).

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



(c) Adapter.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten enough to stop fuel from leaking.

NOTE

The adapter at the fuel transfer pump is used for this procedure.

FRAME 1

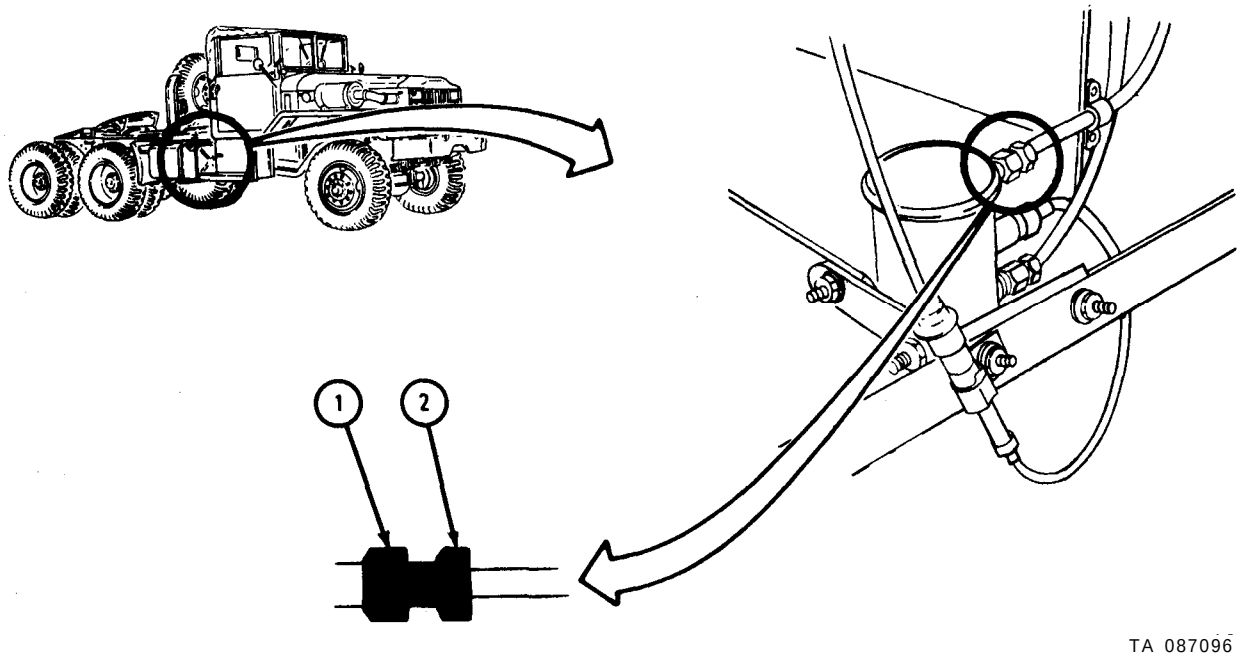
1. Using 3/4-inch open end wrench, screw in and tighten adapter (1).
2. Using 3/4-inch open end wrench, hold adapter (1). Using 5/8-inch combination box and open end wrench, screw on and tighten tube nut (2),

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 8-2320-211-10.

END OF TASK



TA 087096

(d) Tee fitting.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten enough to stop fuel from leaking.

NOTE

The tee fitting at the final fuel filter assembly (late model trucks) is used for this procedure.

FRAME 1

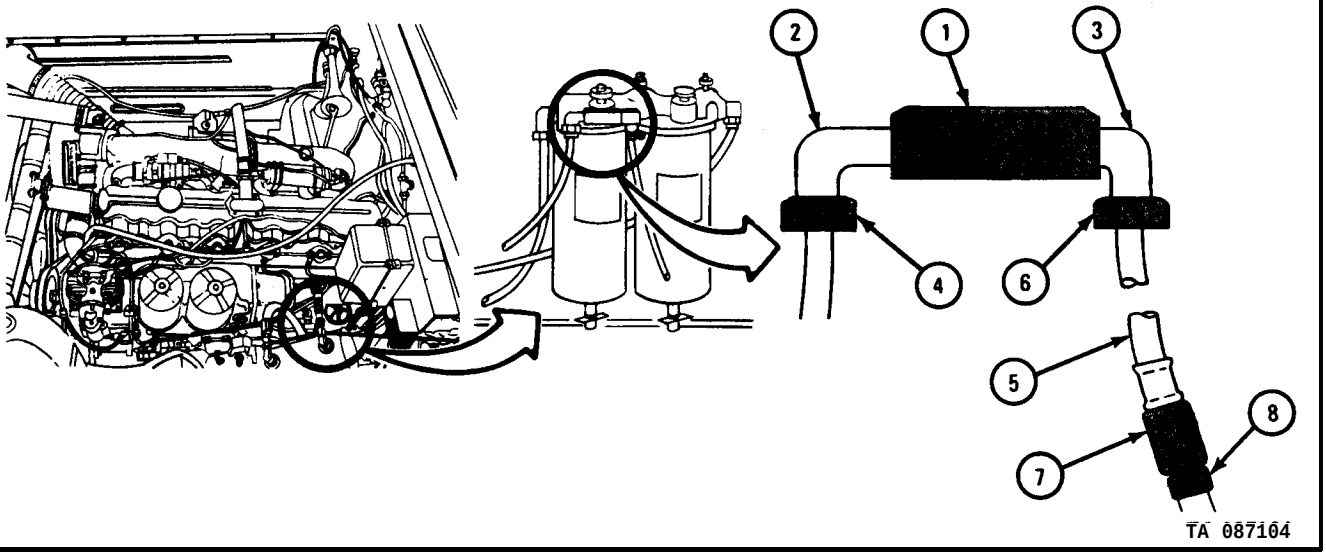
1. Using 11/16-inch wrench, screw in and tighten tee fitting (1).
2. Using 9/16-inch wrench, screw in and tighten elbow (2). Using 11/16-inch wrench, screw in and tighten elbow (3).
3. Using 5/8-inch wrench, screw in and tighten tube nut (4).
4. Put hose (5) in place and using 3/4-inch wrench, screw in and tighten hose nut (6).
5. Using 3/4-inch wrench, hold hose coupling (7) and screw in and tighten tube-nut (8).

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 9-2320-211-10.
4. Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



(e) Fuel line nipples.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Only tighten enough to stop fuel from leaking,

NOTE

The nipple on trucks with left side fuel tanks is used for this procedure.

FRAME 1

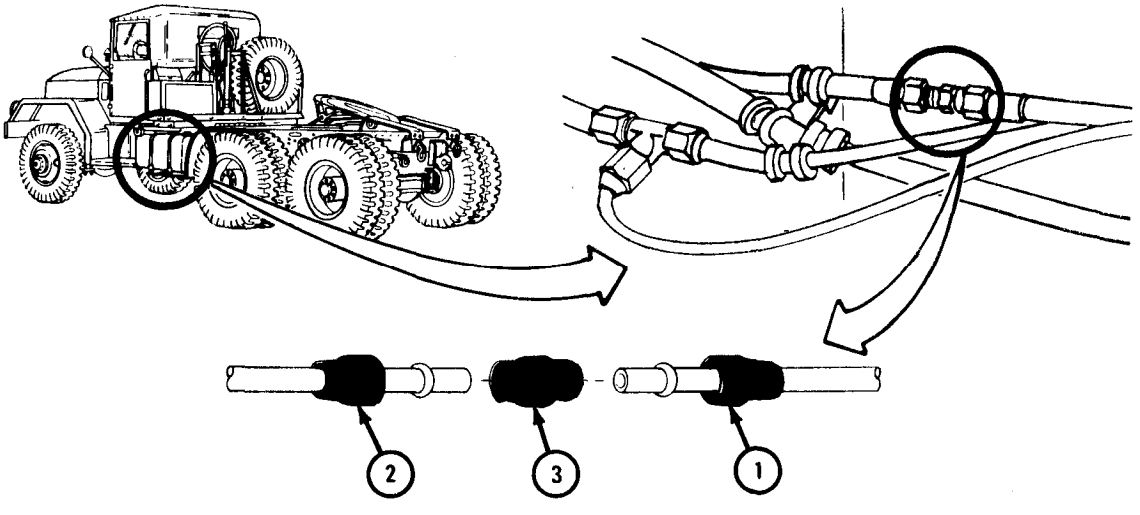
1. Screw two tube nuts (1 and 2) onto adapter (3) by hand.
2. Using 9/16-inch open end wrench, hold adapter (3).
3. Using 5/8-inch combination box and open end wrench, tighten two tube nuts (1 and 2).

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that fuel lines and fittings have no leaks.
3. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 087105

Section VI. FUEL FILTERS

4-12. FUEL FILTER ASSEMBLIES REMOVAL AND REPLACEMENT.

TOOLS: 1 l/8-inch wrench
9/16-inchwrench (2)
3/4-inch wrench
5/8-inch wrench
Flat-tip screwdriver
l-quart container

SUPPLIES: None

PERSONNEL: One

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

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

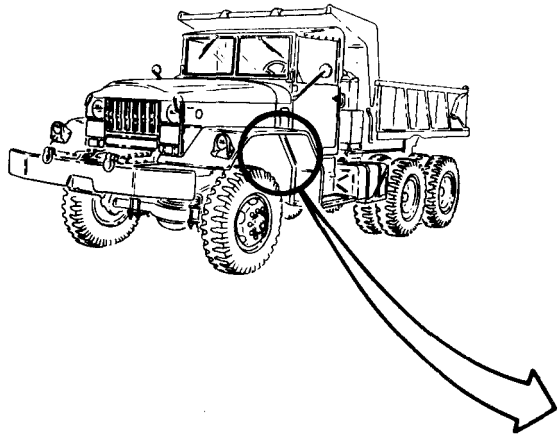
b. Removal.

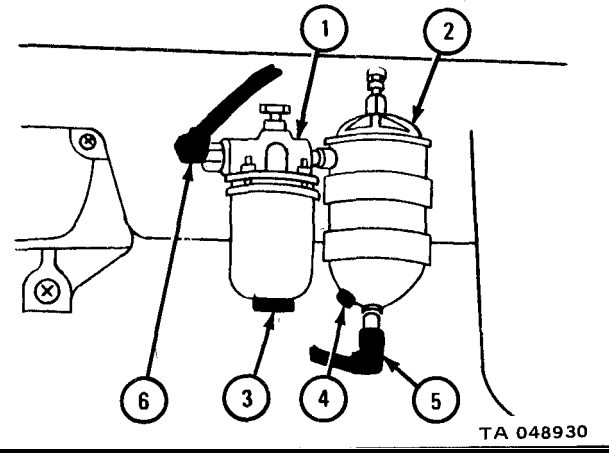
(1) Primary and secondary fuel filter assembly.

FRAME 1

1. Place container under primary fuel filter (1) and secondary fuel filter (2) assembly.
2. Using 1 1/8-inch and 3/4-inch wrenches, unscrew and take out drain plugs (3 and 4).
3. Let fuel drain out of filter assemblies (1 and 2) into container.
4. After fuel has drained out, using 1 1/8-inch and 3/4-inch wrenches, screw in drain plugs (3 and 4).
5. Using 3/4-inch wrench, unscrew and take off fitting (5).
6. Using 3/4-inch wrench, unscrew and take off fitting (6).

GO TO FRAME 2

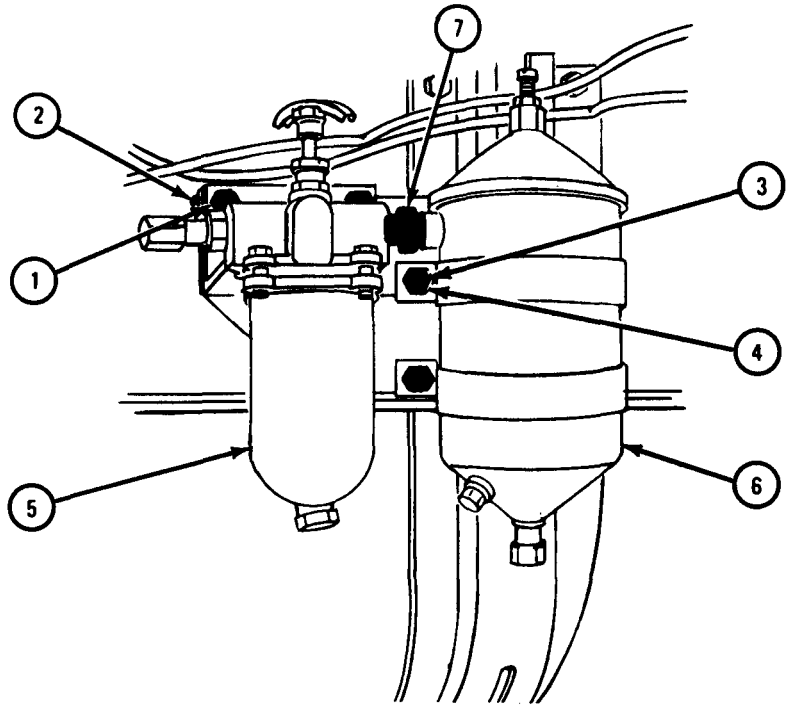




FRAME 2

1. Using 9/16-inch wrenches, unscrew and take out two screws (1) with nuts (2).
2. Using 9/16-inch wrenches, unscrew and take out four screws (3) with nuts (4),
3. Take out primary fuel filter (5) and secondary fuel filter (6) assembly.
4. Using 9/16-inch wrench, hold coupling (7) and unscrew primary filter (5) from secondary filter (6).
5. Take out container.

END OF TASK



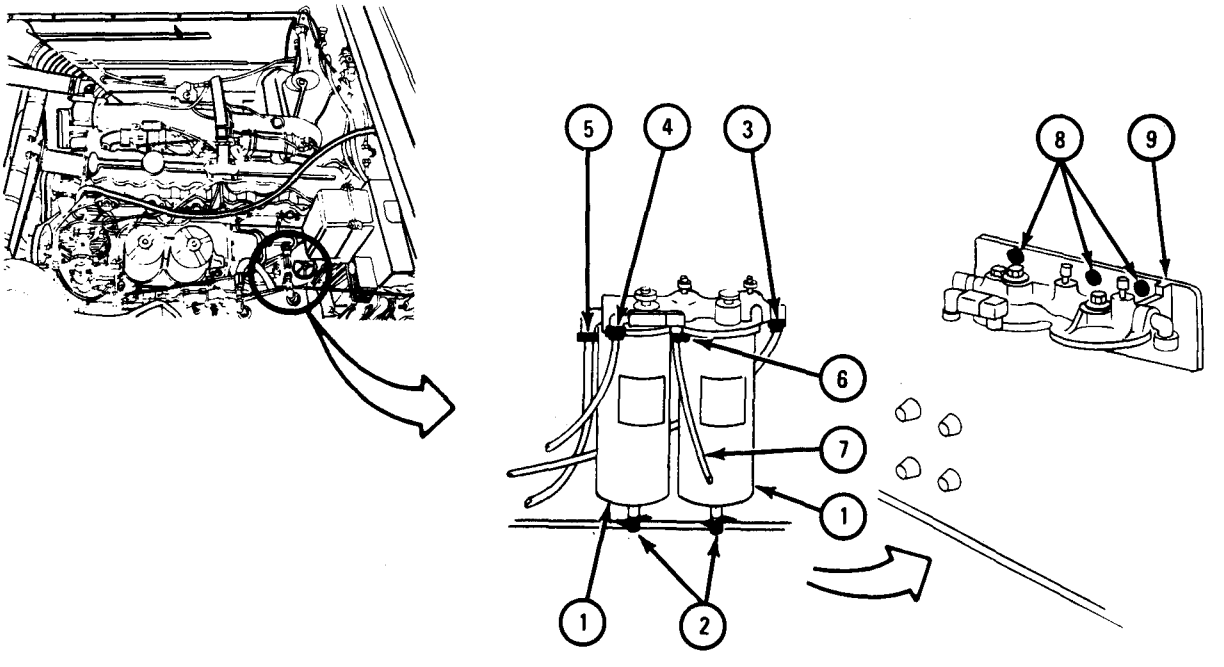
TA 048931

(2) Final fuel filter assembly (late model trucks).

FRAME 1

1. Put container under two final fuel filter housings (l).
2. Open drain cocks (2) by turning them to left.
3. Remove two final fuel filter housings with elements (l). Refer to para 4-15.
4. Using 5/8-inch Wrench, unscrew and take off three fittings (3, 4, and 5).
5. Using screwdriver, unscrew and takeoff clamp (6). Take off fuel line hose (7).
6. Using 9/16-inch wrench, unscrew and take off three nuts with lockwashers (8).
7. Takeout filter head assembly (9).
8. Take out container.

END OF TASK



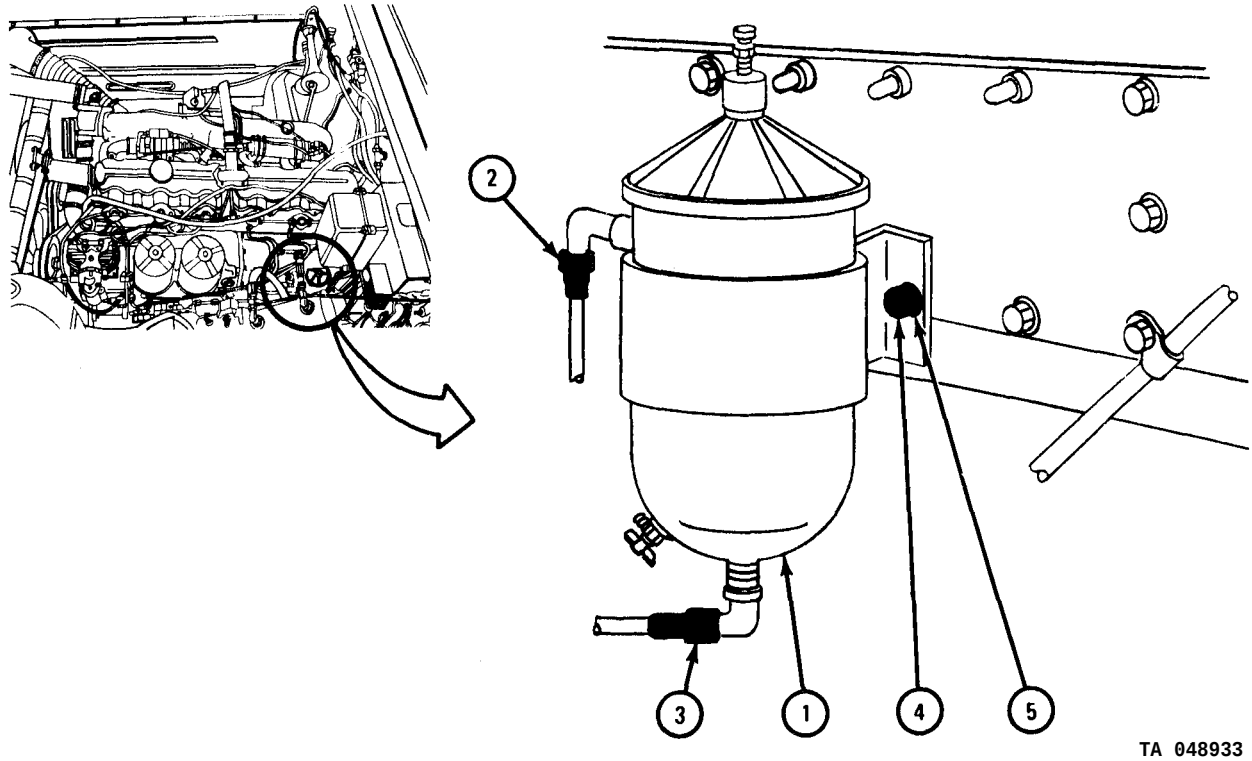
TA 048932

(3) Final fuel filter assembly (early model trucks).

FRAME 1

1. Put container under final fuel filter assembly (l).
2. Using 5/8-inch wrench, unscrew and take off fitting (2).
3. Using 5/8-inch wrench, unscrew and take off fitting (3).
4. Using 5/8-inch wrench, unscrew and take out two bolts (4) with washers (5).
5. Take out final fuel filter assembly (l).
6. Take out container.

END OF TASK



TA 048933

c. Replacement,

(1) Final fuel filter assembly (early model trucks).

FRAME 1

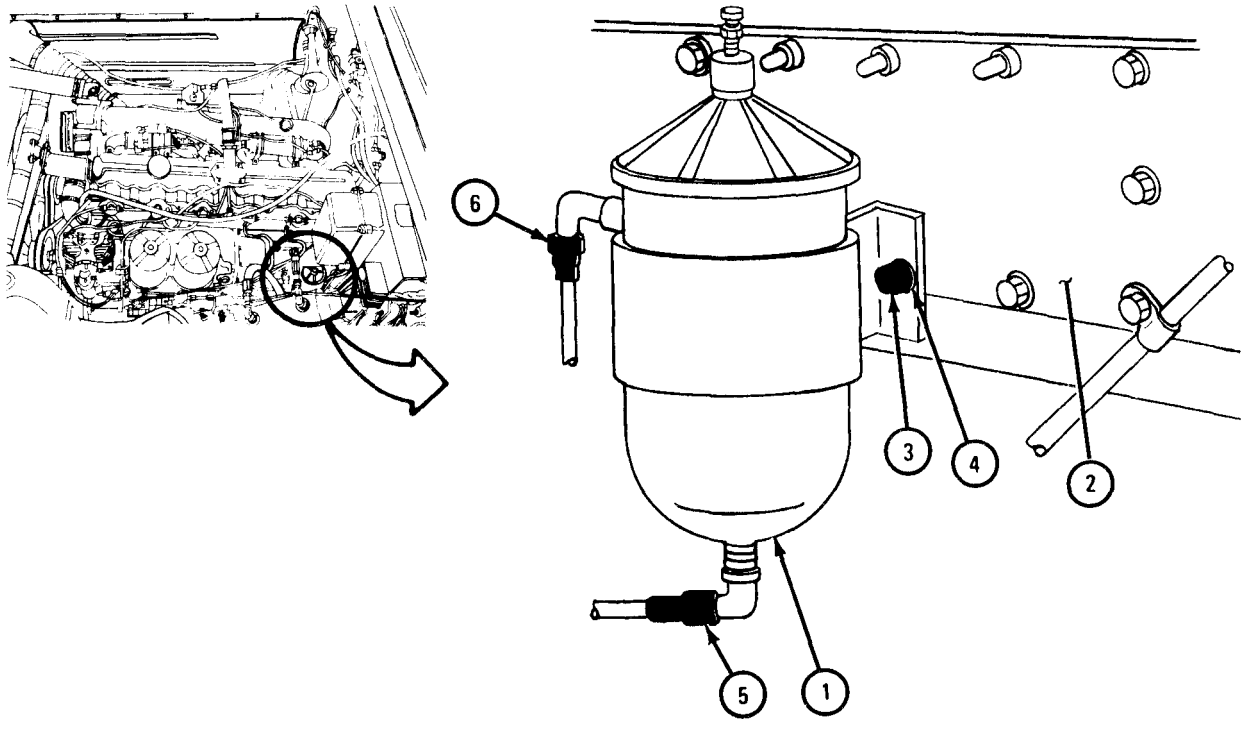
1. Aline holes in final fuel filter assembly (1) with holes in tappet chamber cover (2).
2. Using 5/8-inch wrench, screw in and tighten two bolts (3) with washers (4).
3. Using 5/8-inch wrench, screw on and tighten fitting (5).
4. Using 5/8-inch wrench, screw on and tighten fitting (6).

NOTE

Follow-on Maintenance Action Required:

1. Bleed air from fuel system. Refer to para 4-17.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 048934

(2) Final fuel filter assembly (late model trucks).

FRAME 1

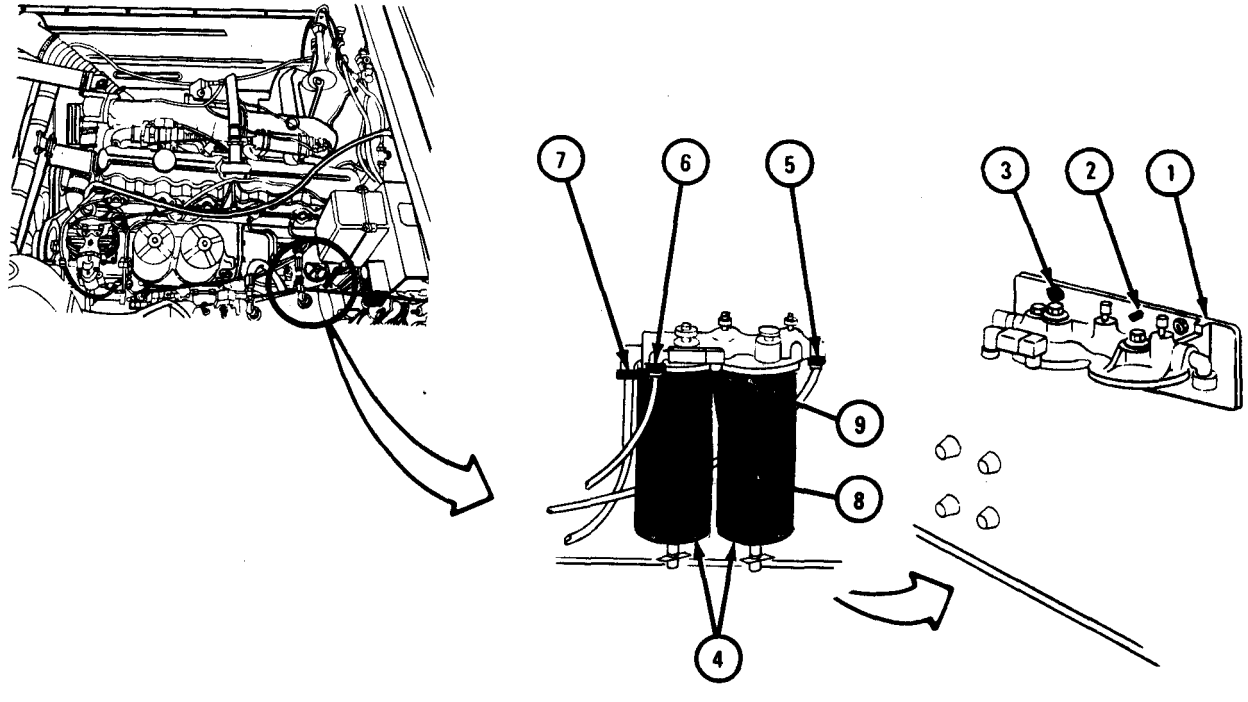
1. Put filter head assembly (1) in place on three studs (2).
2. Using 9/16-inchwrench, screw on and tighten three nuts with lockwashers (3).
3. Put on two filter housings with elements (4). Refer to para 4-15.
4. Using 5/8-inch wrench, screw on and tighten three fittings (5, 6, and 7).
5. Put on fuel line hose (8) and clamp (9). Using screwdriver, tighten screwin clamp.

NOTE

Follow-on Maintenance Action Required:

1. Bleed air from fuel system. Refer to para 4-17.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



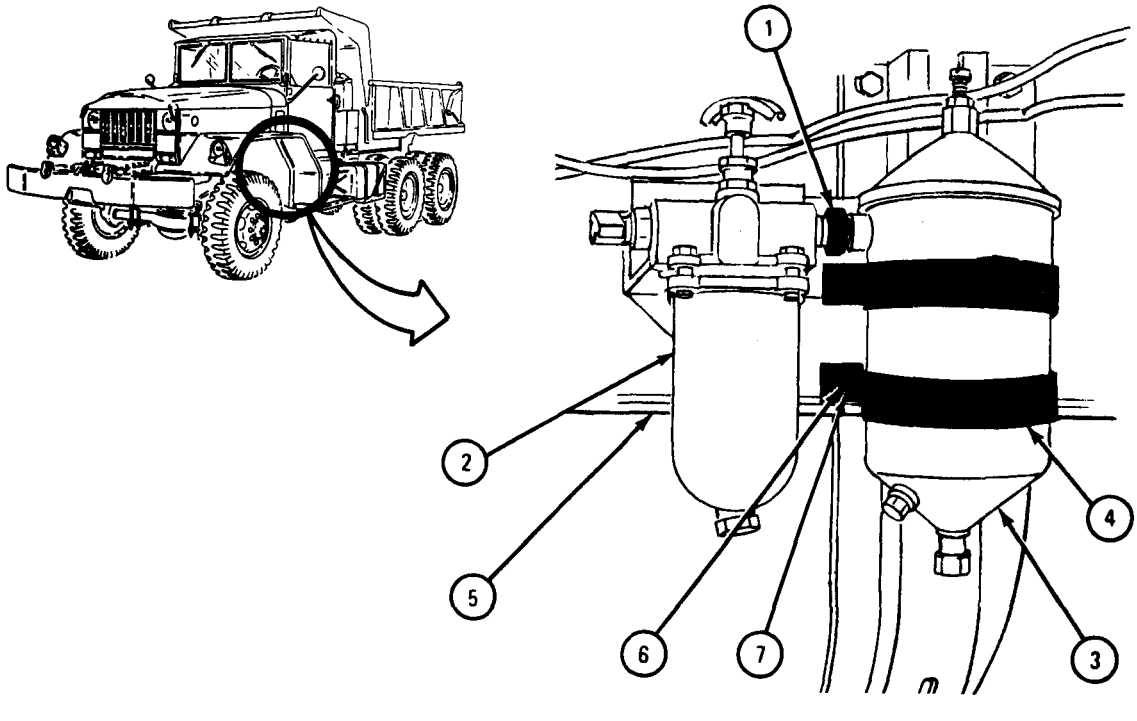
TA 048935

(3) Primary and secondary fuel filter assembly.

FRAME 1

1. Using 9/16-inch wrench, hold coupling (1) and screw in and tighten primary fuel filter (2) to secondary fuel filter (3).
2. Aline holes in secondary fuel filter brackets (4) with holes in truck frame (5).
3. Push four screws (6) through holes in secondary fuel filter brackets (4).
4. Screw on and finger tighten four nuts (7).

GO TO FRAME 2

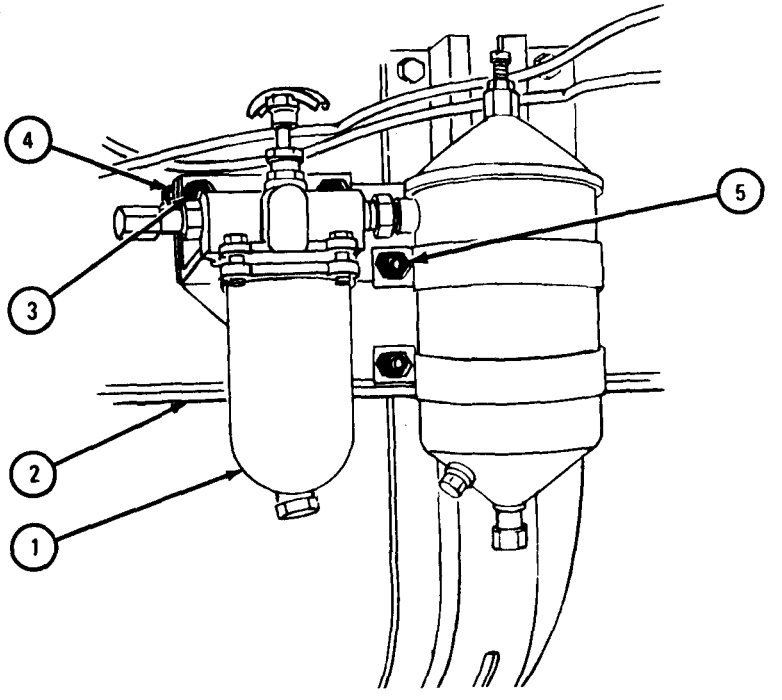


TA 048936

FRAME 2

1. Aline holes in primary fuel filter (1) with holes in truck frame (2).
2. Push two screws (3) through holes in primary fuel filter (l).
3. Using 9/16-inch wrench, screw on and tighten two nuts (4).
4. Using 9/16-inch wrench, tighten four nuts (5).

GO TO FRAME 3



TA 048942

FRAME 3

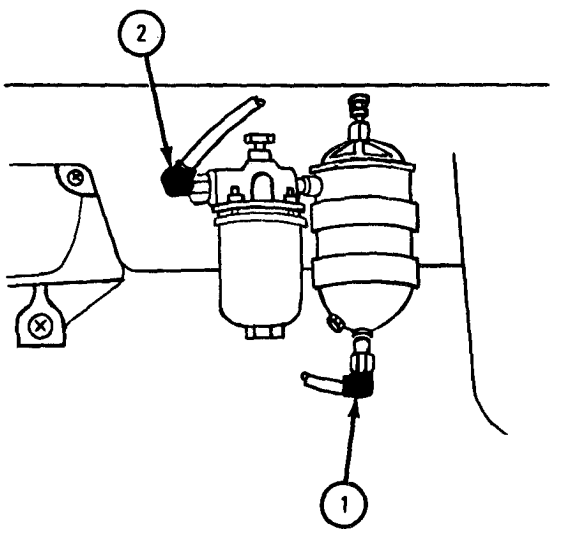
1. Using 3/4-inch wrench, screw on and tighten fitting (1).
2. Using 3/4-inch wrench, screw on and tighten fitting (2).

NOTE

Follow-on Maintenance Action Required:

1. Bleed air from fuel system. Refer to para 4-17.
2. Close hood. Refer to TM 2320-211-10.

END OF TASK



TA 048943

4-13. PRIMARY FUEL FILTER ELEMENT REMOVAL AND REPLACEMENT.

WARNING

Smoking, sparks, or open flame are not allowed within 50 feet of work area during this task. Fuel can burn and explode, causing injury to personnel and damage to equipment.

TOOLS: 7/16-inch open end wrench
1 1/8-inch open end wrench

SUPPLIES: l-gallon container
Filter housing gasket
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. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

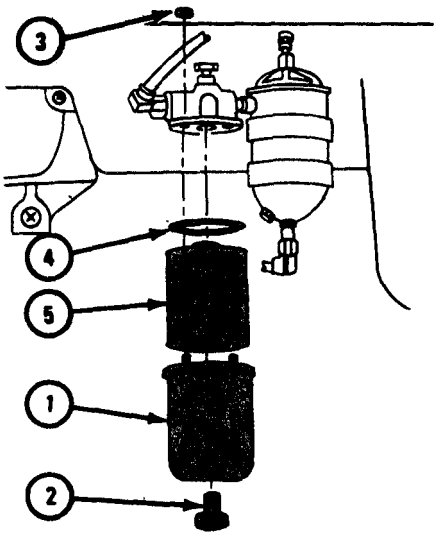
1. Place container under filter housing (l).
2. Using 1 l/8-inch wrench, unscrew and takeout drain plug (2).
3. When all fuel has drained from filter housing (1), using 7/16-inch wrench, unscrew and take off four nuts (3).
4. Pull down filter housing (1) and take out gasket (4). Throw away gasket.
5. Pull filter element (5) out of filter housing (1).
6. Take out container. Put fuel in approved disposal area.

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.

7. Clean filter element (5) and filter housing (1) with solvent.

END OF TASK



TA 054727

c. Replacement.

FRAME 1

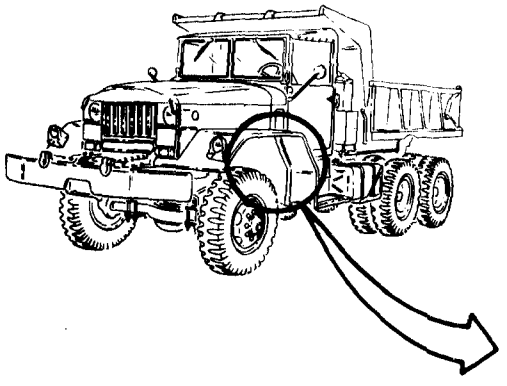
1. Put filter element (1) into filter housing (2).
2. Put gasket (3) in place and push studs (4) through holes in cover (5).
3. Using 7/16-inch wrench, screw on and tighten four nuts (6).
4. Using 1 l/8-inch wrench, screw in and tighten drain plug (7).

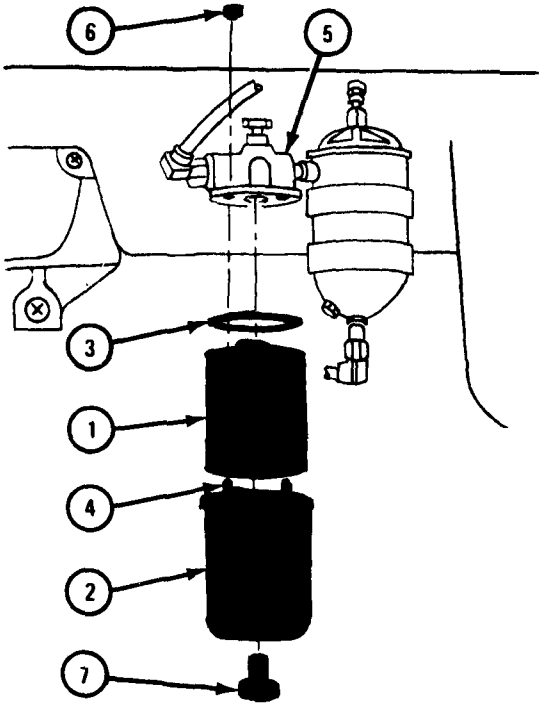
NOTE

Follow-on Maintenance Action Required:

1. Bleed air from fuel system. Refer to para 4-17.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK





TA 054728

4-14. SECONDARY FUEL FILTER ELEMENT REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench
7/8-inch wrench

SUPPLIES: l-gallon container
Filter housing cover gasket
Filter element
Solvent, dry cleaning, type 11 (SD-2), Fed. Spec P-D-680

PERSONNEL: One

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

a. Removal,

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

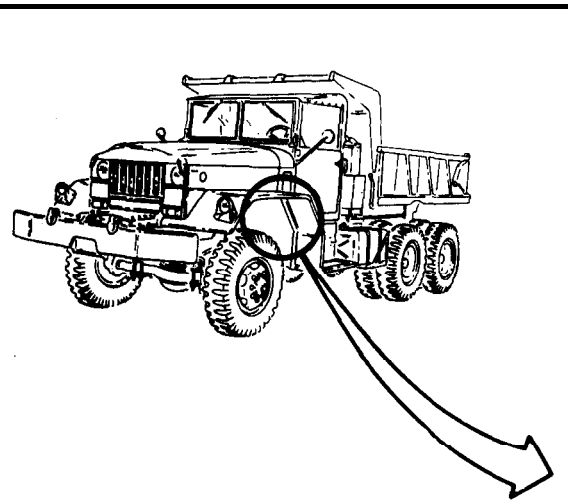
1. Place container under filter housing (1).
2. Using 3/4-inch wrench, unscrew and take out drain plug (2).
3. When all fuel has drained from filter housing (1), using 7/8-inch wrench, unscrew and take off nut (3).
4. Pull off filter housing cover (4) and take out gasket (5). Throw away gasket.
5. Pull filter element (6) out of filter housing (1). Throw element away.
6. Take out container. Put fuel in approved disposal area.

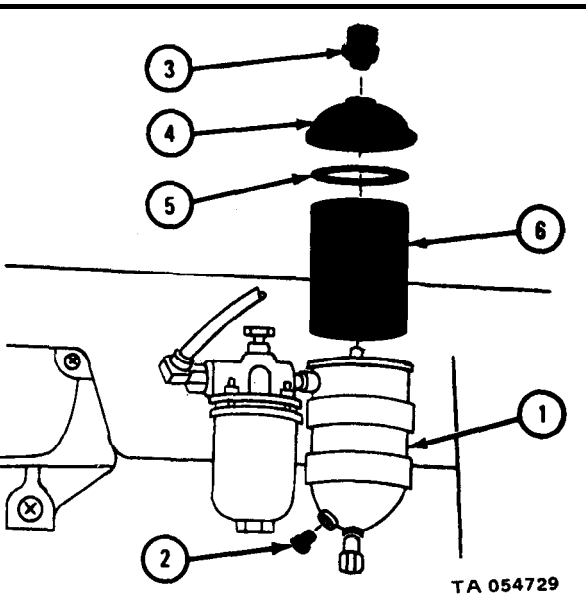
WARNING

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.

7. Clean filter housing (1) with solvent.

END OF TASK





b. Replacement.

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

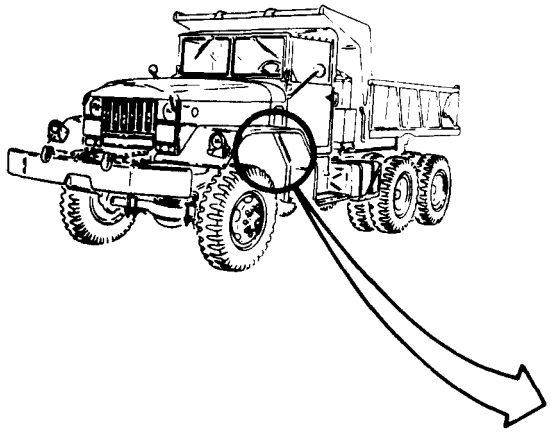
1. Put filter element (1) into filter housing (2).
2. Put gasket (3) in place and put on filter housing cover (4).
3. Using 7/8-inch wrench, screw in and tighten nut (5).
4. Using 3/4-inch wrench, screw in and tighten drain plug (6).

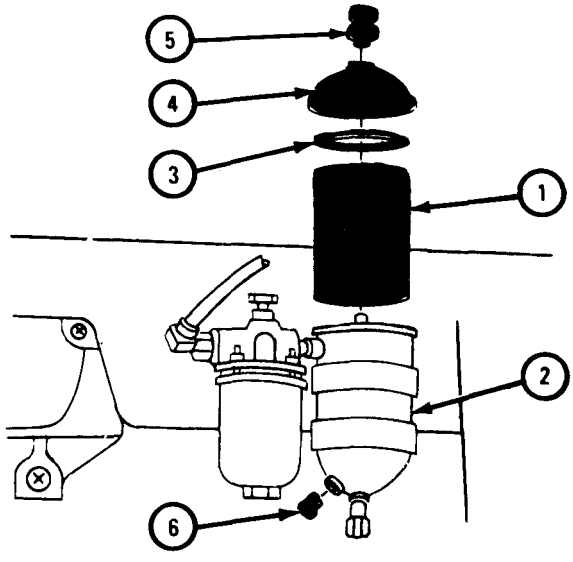
NOTE

Follow-on Maintenance Action Required:

1. Bleed air from fuel system. Refer to para 4-17.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK





TA 054730

4-15. FINAL FUEL FILTER ELEMENT REMOVAL AND REPLACEMENT (LATE MODEL TRUCKS).

TOOLS: 5/8-inch wrench
7/16-inch wrench
9/16-inch wrench
l-quart container

SUPPLIES: Filter element (2)
Fuel filter housing gasket (2)
Solvent, dry cleaning, typeII (SD-2), Fed. Spec P-D-680

PERSONNEL: One

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

a. Removal.

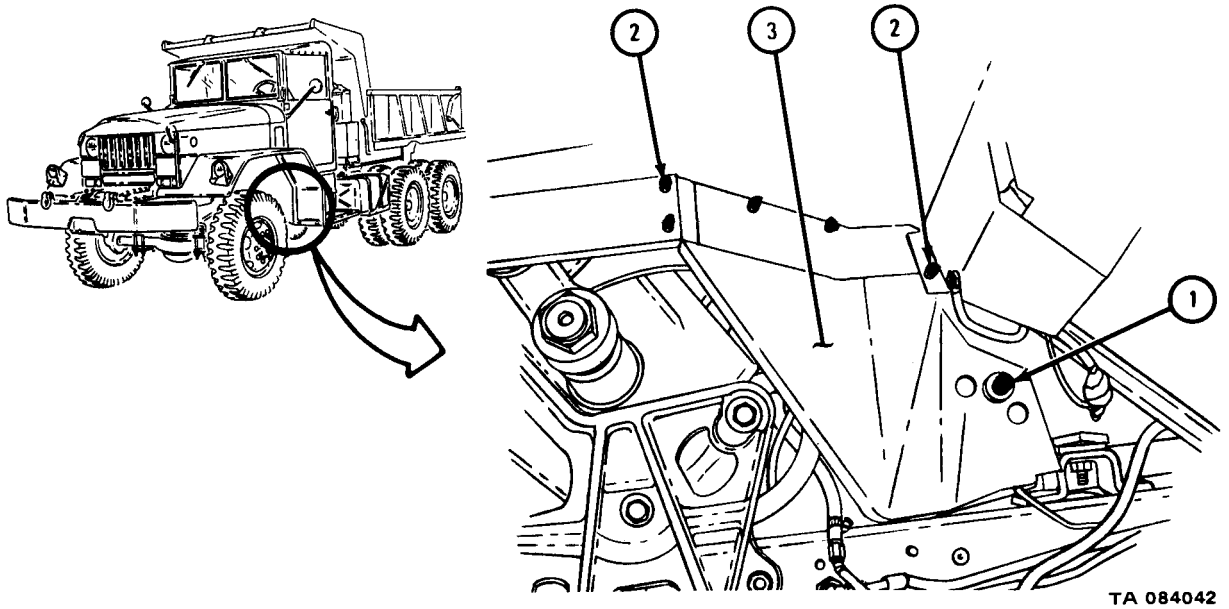
WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

1. Using 9/16-inch wrench, unscrew and take out screw (l).
2. Using 7/16-inch wrench, unscrew and take out five screws (2).
3. Take off stone shield (3).

GO TO FRAME 2



FRAME 2

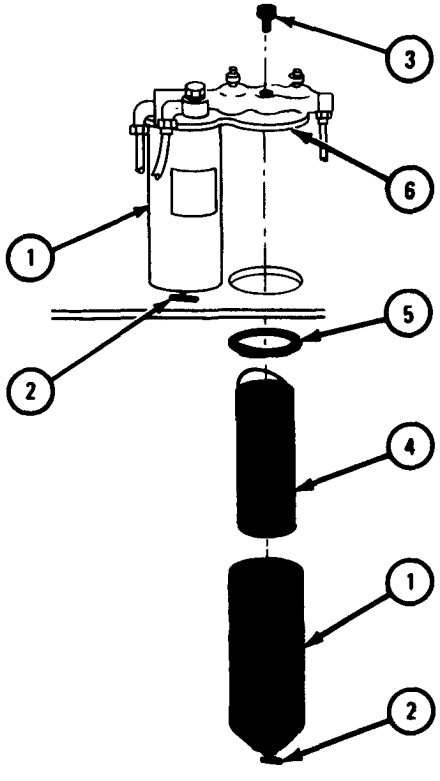
1. Place container under filter housings (l).
2. Open two drain cocks (2) by turning them to left.
3. When all fuel has drained out from filter housings (1), using 5/8-inch wrench, unscrew and take out two plugs (3).
4. Pull down and take out two filter housings (1).
5. Pull out two filter elements (4) from filter housings (1). Throw filter elements away.
6. Take out two gaskets (5) from filter head (6) and throw gaskets away.
7. Take out container. Put fuel in approved disposal area.

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.

8. Clean filter housings (1) with solvent.

END OF TASK



TA 054731

b. Replacement.

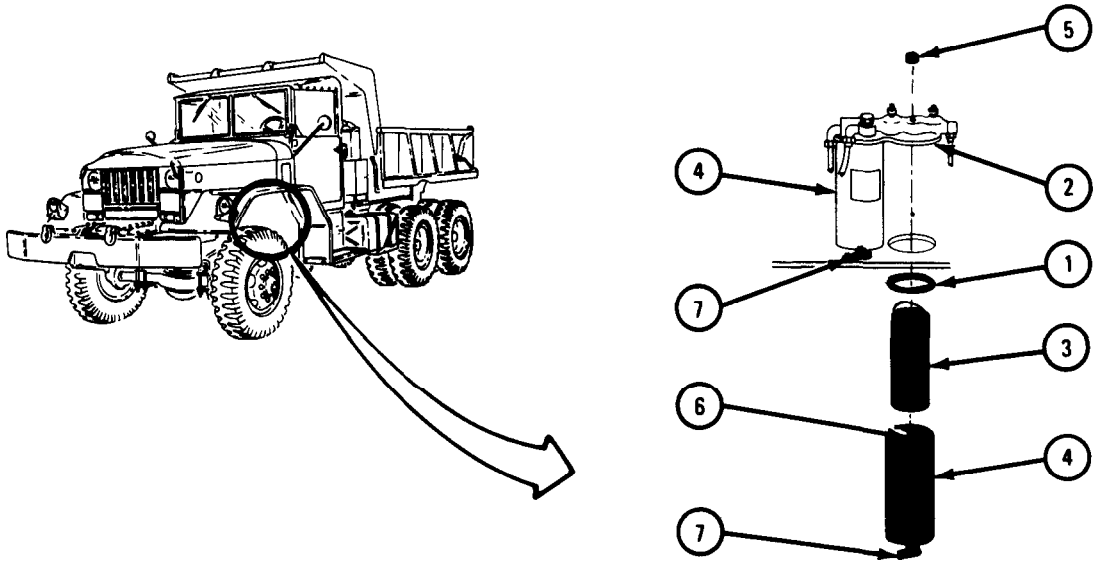
WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

1. Put two gaskets (1) in place in filter head (2).
2. Put two filter elements (3) in two filter housings (4) and place them near filter head (2).
3. Push two filter housings (4) up into filter head (2).
4. Using 5/8-inch wrench, screw on and tighten two plugs (5) on two bolts (6).
5. Close two drain cocks (7) by turning them to right.

GO TO FRAME 2



TA 054732

FRAME 2

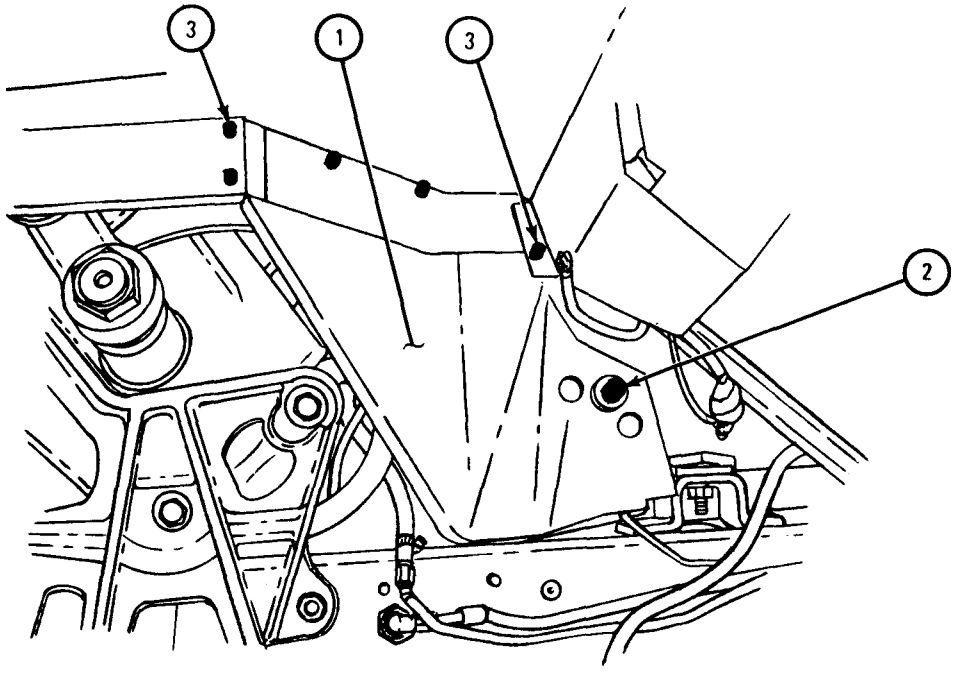
1. Put stone shield (1) in place.
2. Using 9/16-inch wrench, screw in and tighten screw (2).
3. Using 7/16-inch wrench, screw in and tighten five screws (3).

NOTE

Follow-on Maintenance Action Required:

Bleed air from fuel system. Refer to para 4-17.

END OF TASK



TA 084043

4-16. FINAL FUEL FILTER ELEMENT REMOVAL AND REPLACEMENT (EARLY MODEL TRUCKS).

TOOLS : General mechanics tool kit
l-quart cent airier

SUPPLIES : Filter housing cover gasket
Filter element
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. Open hood. Refer to, TM 9-2320-211-10.

b. Removal.

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

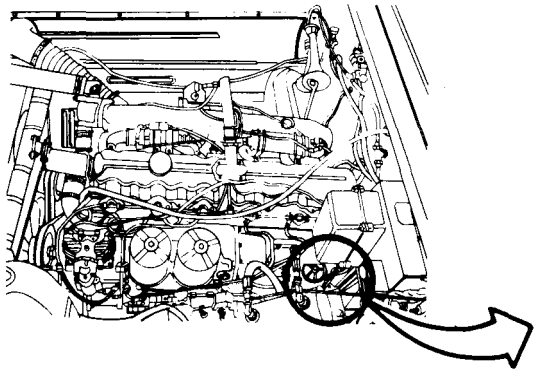
1. Place container under filter housing (1).
2. Using wrench, unscrew and take out drain plug (2).
3. When all fuel has drained from filter housing (1), using wrench, unscrew and take off nut (3).
4. Pull off filter housing cover (4) and take out gasket (5). Throw away gasket.
5. Pull filter element (6) out of filter housing (1). Throw filter element away.
6. Take out container. Put fuel in approved disposal area.

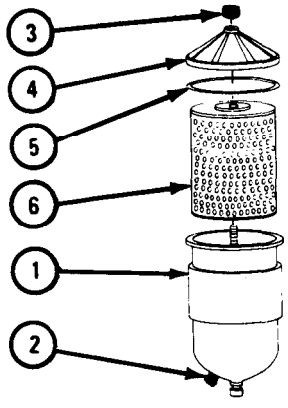
WARNING

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.

7. Clean filter housing (1) with solvent.

END OF TASK





TA 054733

c. Replacement.

WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

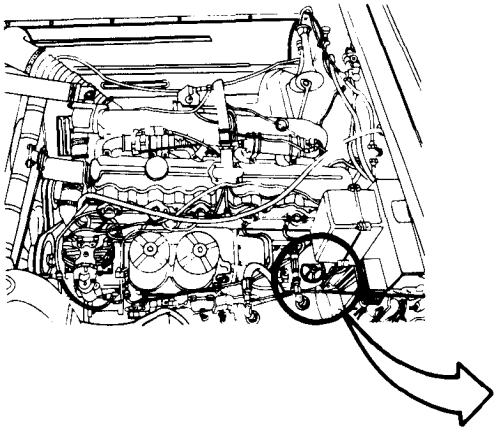
1. Put filter element (1) into filter housing (2).
2. Put gasket (3) in place and put on filter housing cover (4).
3. Using wrench, screw on and tighten nut (5).
4. Using wrench, screw in and tighten drain plug (6).

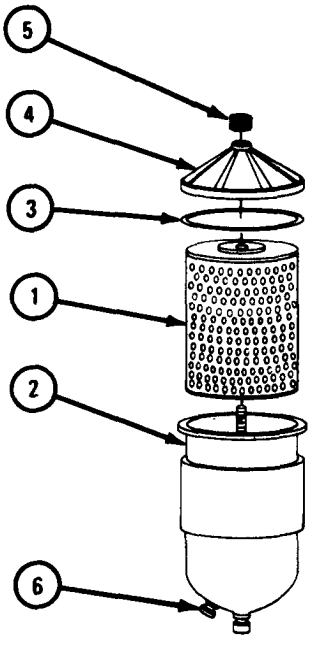
NOTE

Follow-on Maintenance Action Required:

1. Bleed air from fuel system. Refer to para 4-17.
2. Close hood. Refer to TM 9-2320-211-10.

3ND OF TASK





TA 054734

4-17. AIR BLEED LOW PRESSURE FUEL SYSTEM.

TOOLS : 7/16-inch wrench

SUPPLIES: l-quart container
Rags

PERSONNEL: One

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

Preliminary Procedure. Open hood and side panels. Refer to TM 9-2320-211-10.

b. Bleeding.

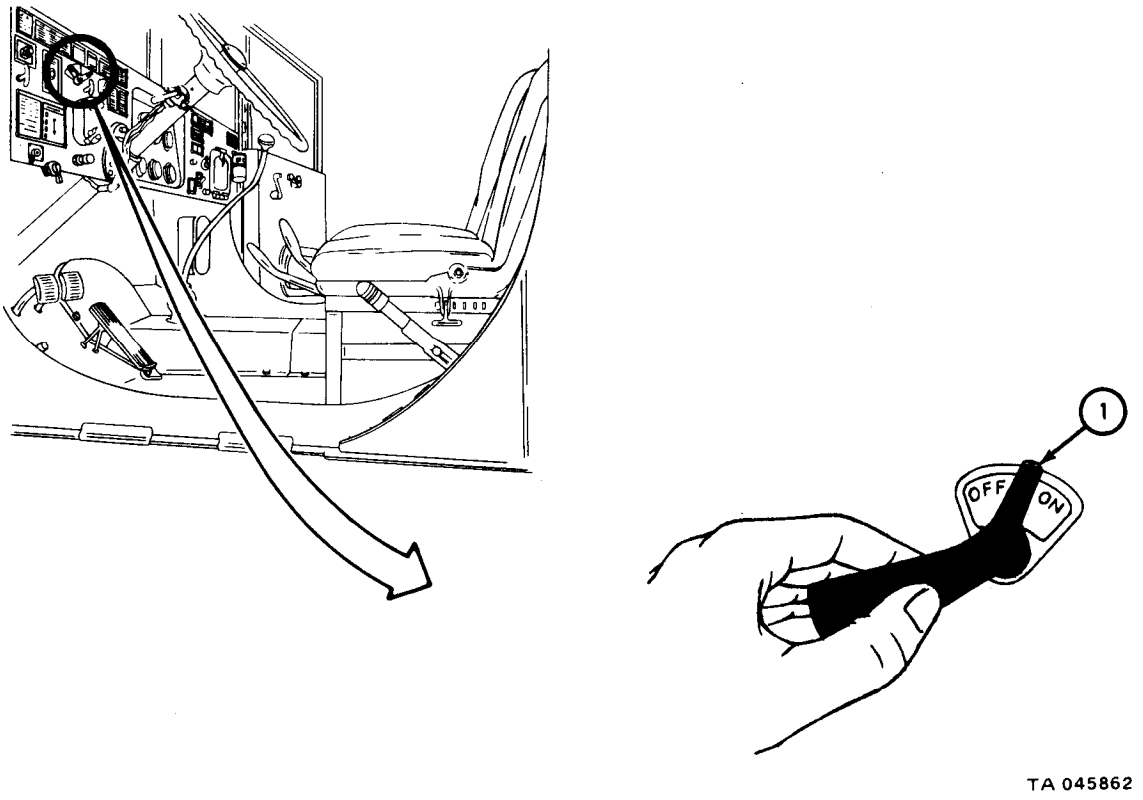
WARNING

Smoking, sparks or open flame are not allowed within 50 feet of work area during this task. Fire or explosion could occur, causing injury to personnel and damage to equipment.

FRAME 1

1. Turn ACCESSORY switch (1) on instrument panel to ON position.

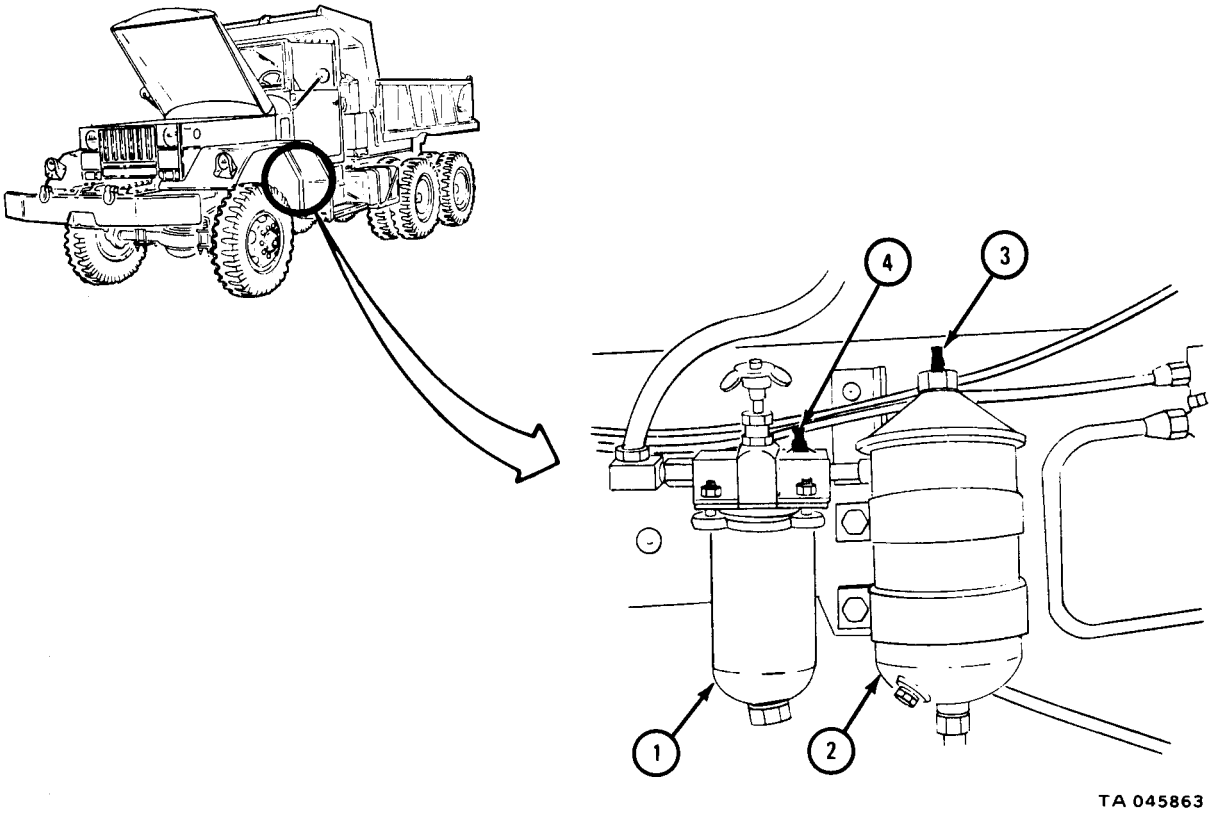
GO TO FRAME 2



FRAME 2

1. Place container under fuel filters (1 and 2) to catch fuel.
2. Using wrench, loosen bleeder valve (3). When fuel starts to flow out of bleeder valve, tighten bleeder valve.
3. Using wrench, loosen bleeder valve (4). When fuel starts to flow out of bleeder valve, tighten bleeder valve.
4. Using rag, wipe off fuel filters (1 and 2).
5. Take out container. Put fuel in approved disposal area.

FOR EARLY MODEL TRUCKS, GO TO FRAME 3.
FOR LATE MODEL TRUCKS, GO TO FRAME 4.



FRAME 3

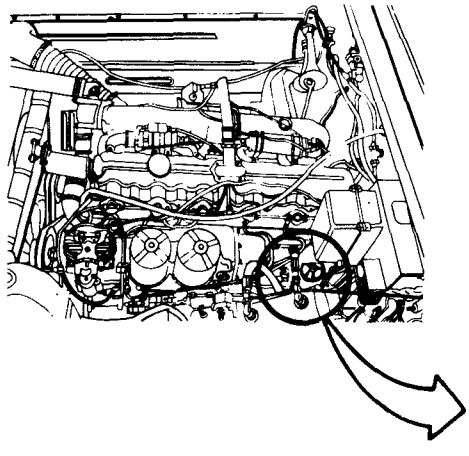
1. Place container under fuel filter (1) to catch fuel.
2. Using wrench, loosen bleeder valve (2). When fuel starts to flow out of bleeder valve, tighten bleeder valve.
3. Using rag, wipe off fuel filter (1).
4. Take out container. Put fuel in approved disposal area.
5. Turn ACCESSORY switch on instrument panel to OFF position.

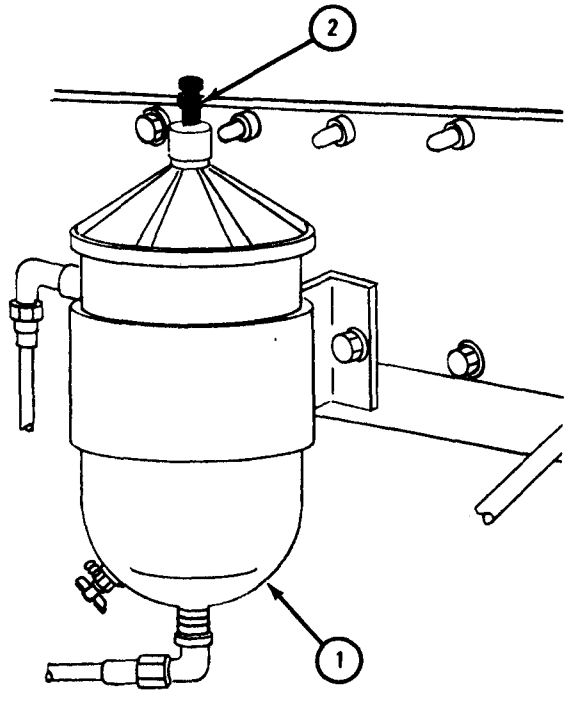
NOTE

Follow-on Maintenance Action Required:

Close hood and side panels. Refer to TM 9-2320-211-10.

END OF TASK





TA 045988

FRAME 4

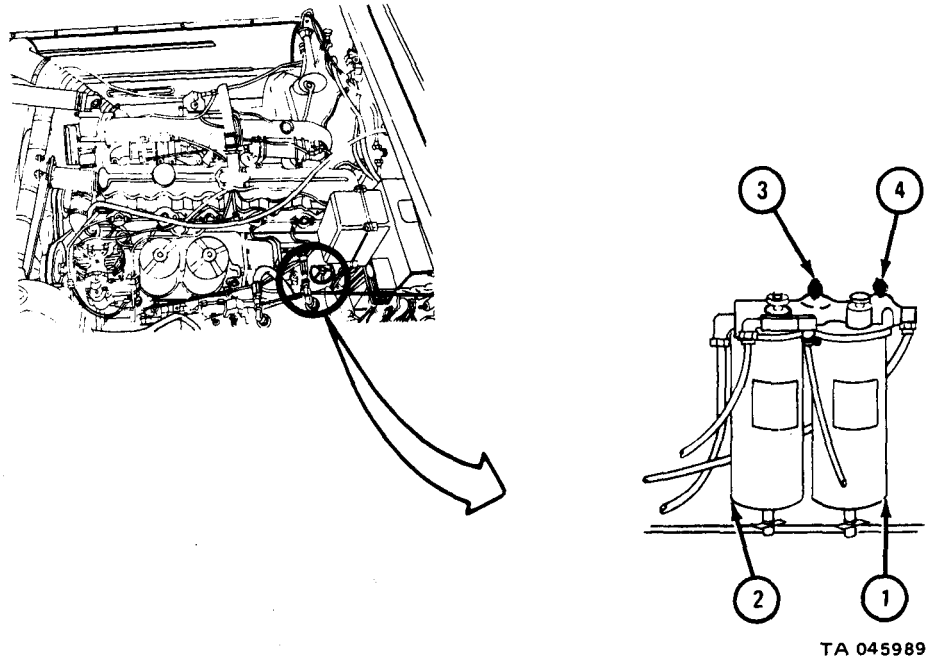
1. Place container under fuel filters (1 and 2) to catch fuel.
2. Using wrench, loosen bleeder valve (3). When fuel starts to flow out of bleeder valve, tighten bleeder valve.
3. Using wrench, loosen bleeder valve (4). When fuel starts to flow out of bleeder valve, tighten bleeder valve.
4. Using rag, wipe off fuel filters (1 and 2).
5. Take out container. Put fuel in approved disposal area.
6. Turn ACCESSORY switch on instrument panel to OFF position.

NOTE

Follow-on Maintenance Action Required:

Close hood and side panels. Refer to TM 9-2320-211-10.

END OF TASK



Section VII. ENGINE STARTING AIDS

4-18. MANIFOLD HEATER ELECTRIC FUEL SUPPLY PUMP AND FUEL FILTER REMOVAL AND REPLACEMENT.

TOOLS : 3/8-inch wrench
7/16-inch wrench
11/16-inch wrench
9/16-inchwrench (2)
72-inch socket wrench
Pliers

SUPPLIES: Clean rags

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 cable. Refer topara 7-44.

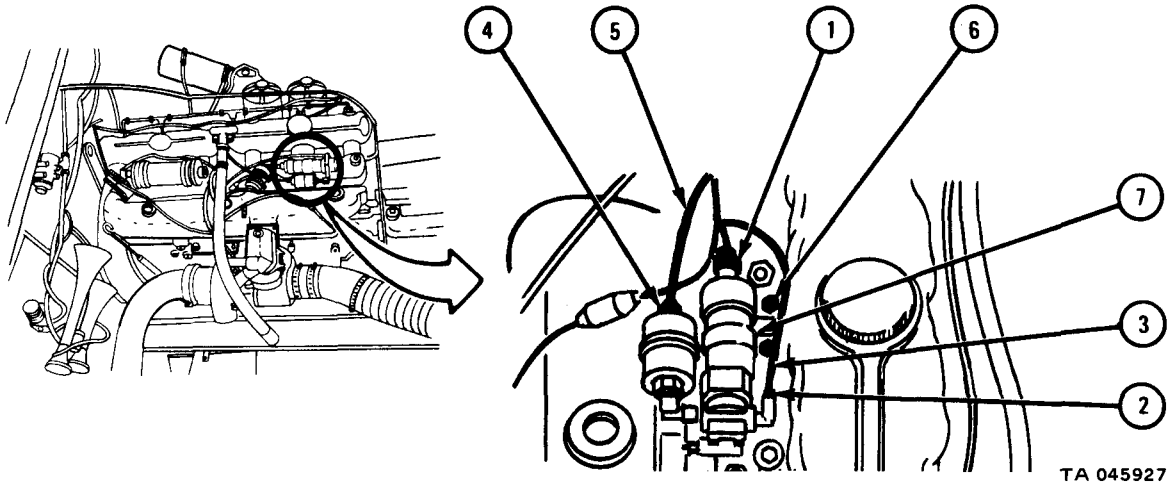
b. Removal.

NOTE

Use rags to catch fuel which may drip out of fuel lines and pump assembly.

1. Unscrew and take off electrical connector (l).
2. Using 3/8-inchwrench, unscrew and take off tube adapter (2) with tube (3).
3. Using7/16-inchwrench, unscrew and take off tube adapter (4) with tube (5).
4. Using l/2-inch socket wrench, unscrew and take out two screws with washers (6). Take out fuel pump and filter (7).

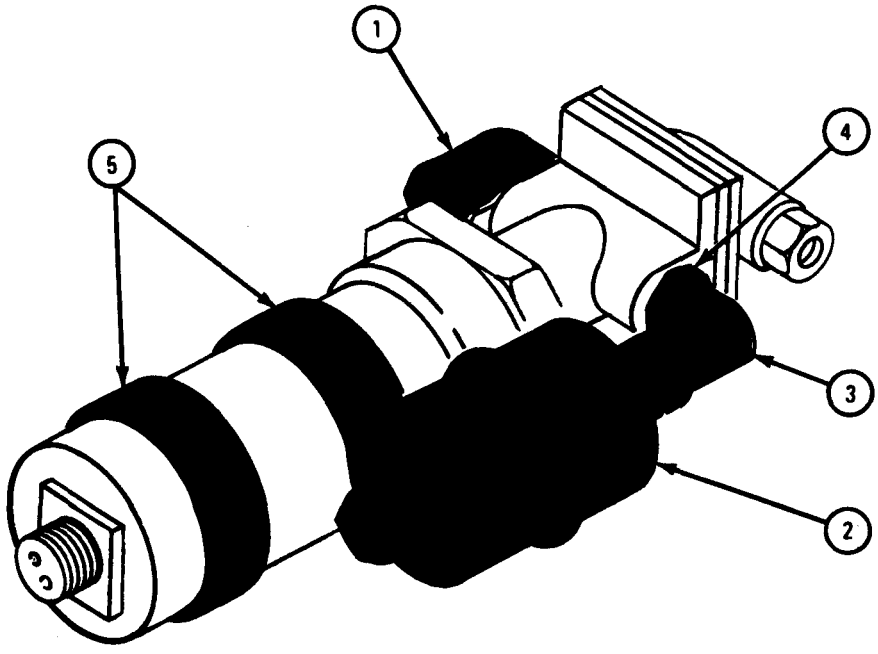
GO TO FRAME 2



FRAME 2

1. Using 3/8-inch wrench, unscrew and take off elbow (1).
2. Using 11/16-inch wrench, unscrew and take off fuel filter (2).
3. Using 9/16 -inch wrenches, unscrew and takeoff elbow(3).
4. Using 9/16-inch wrenches, unscrew and take off pipe coupling (4).
5. Slide off two clamps (5).

END OF TASK



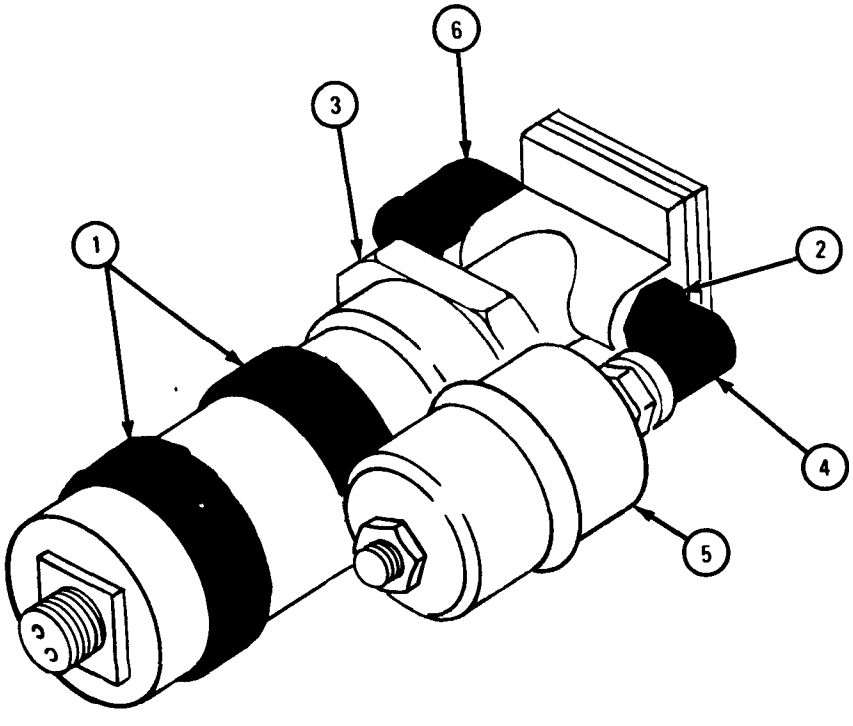
TA 045928

Replacement.

FRAME 11

1. Slide on two clamps (l).
2. Using 9/16-inch wrench, screw on and tighten pipe coupling (2) to fuel pump (3).
3. Using 9/16-inch wrenches, screw in and tighten elbow (4) to pipe coupling (2).
4. Using 11/16-inch wrench, screw on and tighten fuel filter (5) to elbow (4).
5. Using 3/8-inch wrench, screw in and tighten elbow (6).

GO TO FRAME 2



TA 045929

FRAME 2

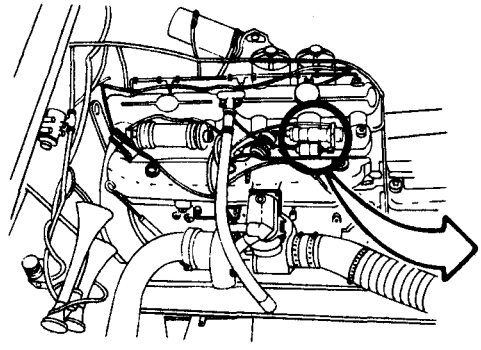
1. Put fuel filter (1) and fuel pump (2) in place. Aline holes in two clamps (3).
2. Using 1/2-inch socket wrench, screw in and tighten two screws with washers (4).
3. Using 7/16-inch wrench, screw on and tighten tube adapter (5) to filter (1).
4. Using 3/8-inch wrench, screw on and tighten tube adapter (6) to fuel pump (2).
5. Screw on and tighten electrical connector (7) to fuel pump (2).

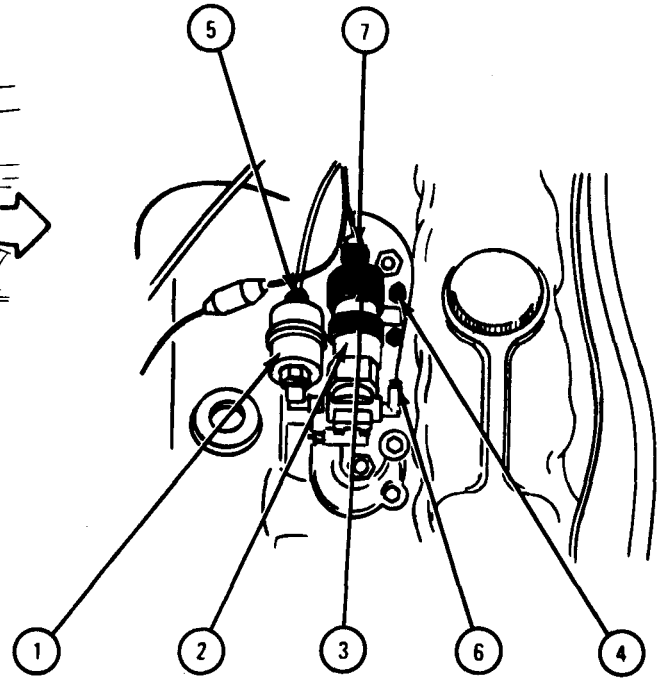
NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK





TA 045930

4-19. MANIFOLD HEATER (SIDE MOUNTED) FUEL PUMP REMOVAL AND REPLACEMENT.

TOOLS : 5/16-inch wrench
Flat-tip screwdriver
Slip joint pliers
7/16-inch wrench
3/8-inch wrench
Container

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.

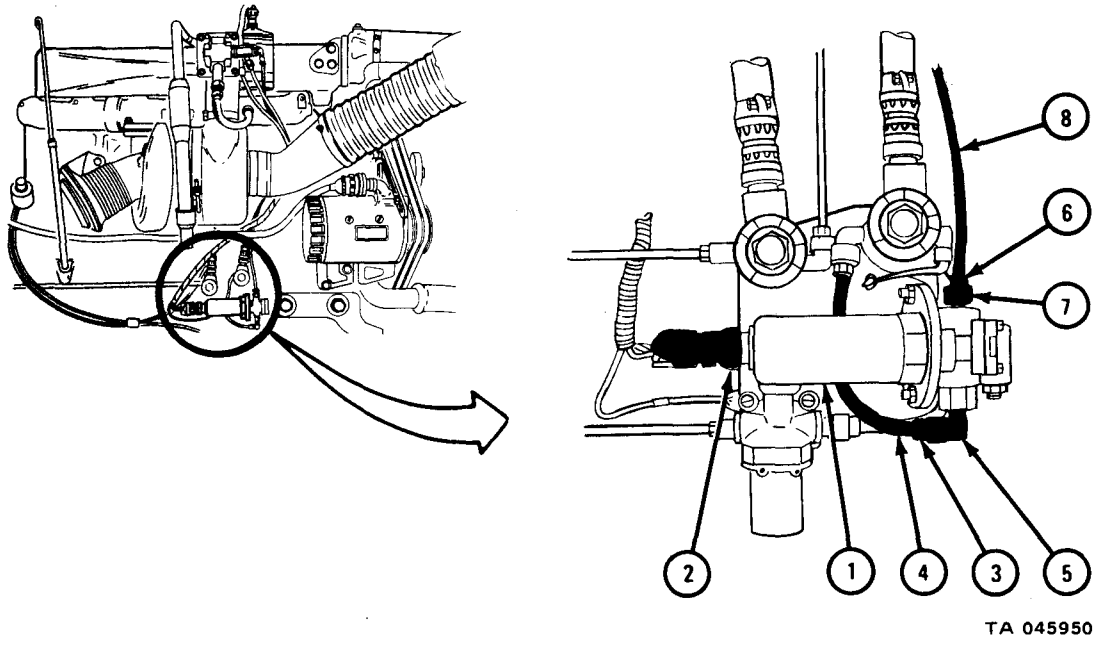
NOTE

Set manifold heater switch to OFF position.

FRAME 1

1. Put container under manifold heater fuel pump (l).
2. Using pliers, unscrew and take off electrical connector (2).
3. Using 7/16-inch wrench, unscrew coupling nut (3) and take out fuel tube (4) from elbow (5).
4. Using 5/16-inch and 7/16-inch wrenches, unscrew coupling nut (6) from union (7) and take out fuel tube (8) from union.

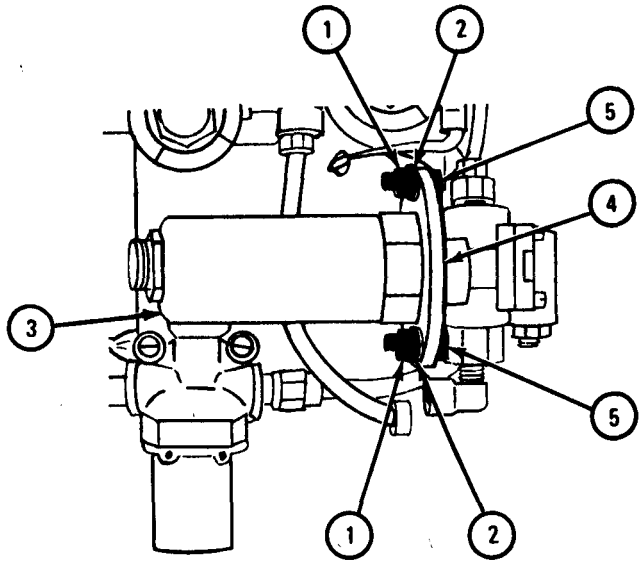
GO TO FRAME 2



FRAME 2

1. Using screwdriver and 3/8-inch wrench, unscrew andtakeoff two nuts (1) and two lockwashers (2).
2. Pull off pump (3) from mounting bracket (4) and take out two screws (5).

END OF TASK



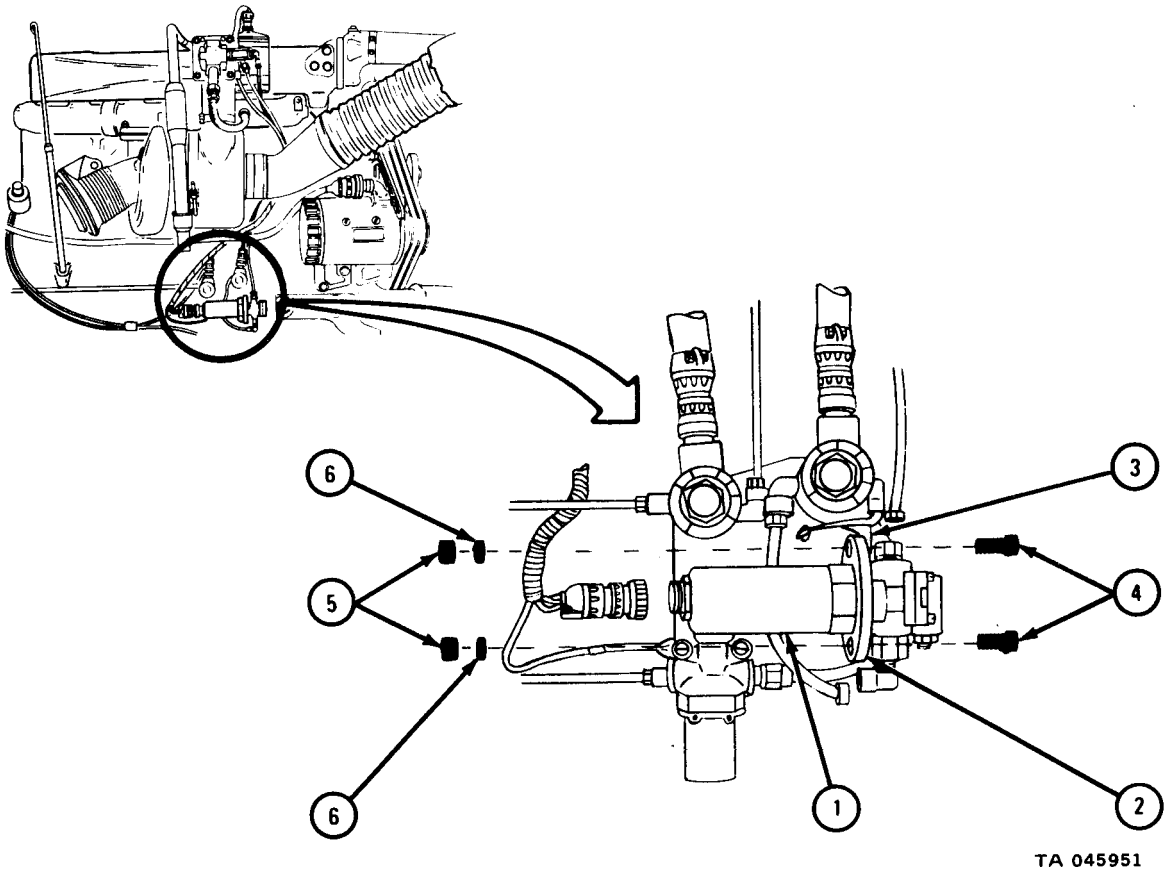
TA 047059

Replacement.

FRAME 1

1. Put pump (1) in place, alining holes in pump mounting flange (2) with holes in mounting bracket (3).
2. Put two screws (4) through holes in mounting bracket (3) and pump mounting flange (2).
3. Using screwdriver and 3/8-inch wrench, screw on and tighten two nuts (5) and lockwashers (6).

GO TO FRAME 2



TA 045951

FRAME 2

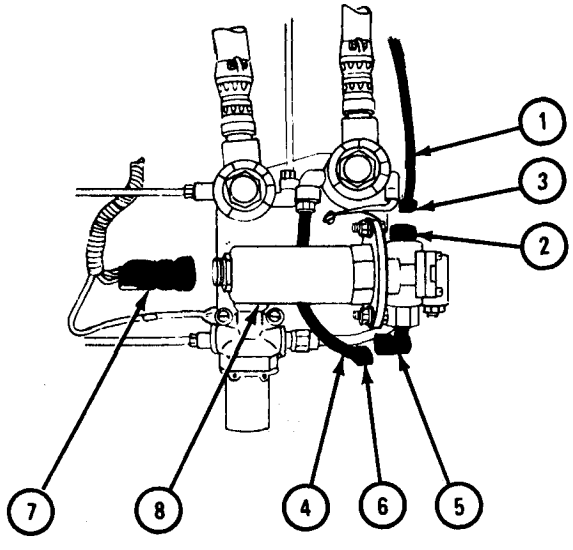
1. Using 7/16-inch and 3/8-inch wrenches, join fuel tube (1) to union (2) and screw on and tighten coupling nut (3).
2. Using 7/16-inch wrench, join fuel tube (4) to elbow (5) and screw on and tighten coupling nut (6).
3. Plug connector (7) into pump (8). Using pliers, screw in and tighten connector.

NOTE

Follow-on Maintenance Action Required:

1. Turn on engine manifold heater. Refer to TM 9-2320-211-10.
2. Check all manifold heater pump fuel lines and fittings for leaks. Check manifold heater operation.
3. Turn off engine manifold heater. Refer to TM 9-2320-211-10.
4. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 047061

4-20. MANIFOLD HEATER (TOP MOUNTED COVERED) FUEL FILTER REMOVAL AND REPLACEMENT.

TOOLS: General mechanic's tool kit

SUPPLIES: None

PERSONNEL: One

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

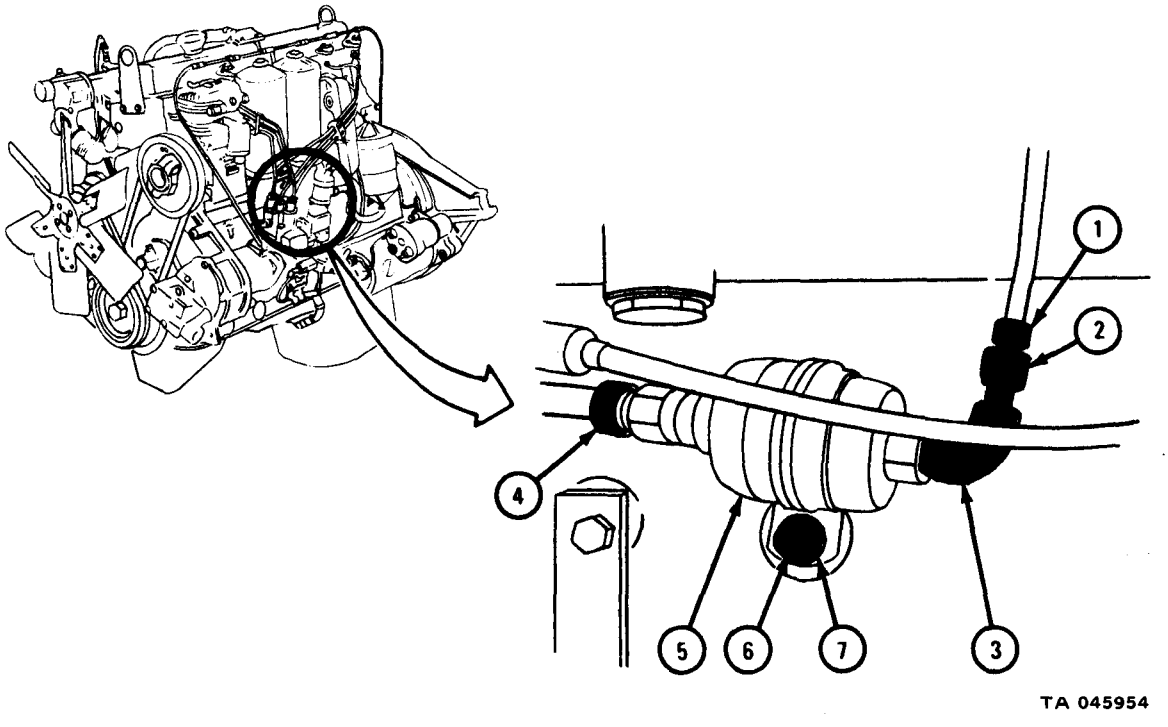
Preliminary Procedure. Open hood and left side panel. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using wrenches, unscrew tube fitting(l).
2. Using wrench, unscrew and takeout adapter (2).
3. Using wrench, unscrew and takeout elbow (3).
4. Using wrenches, unscrew and take off tube fitting(4).
5. Using wrench and holding filter (5), unscrew and take off capscrew (6) and lockwasher (7). Takeout fuel filter.

END OF TASK



c. Replacement.

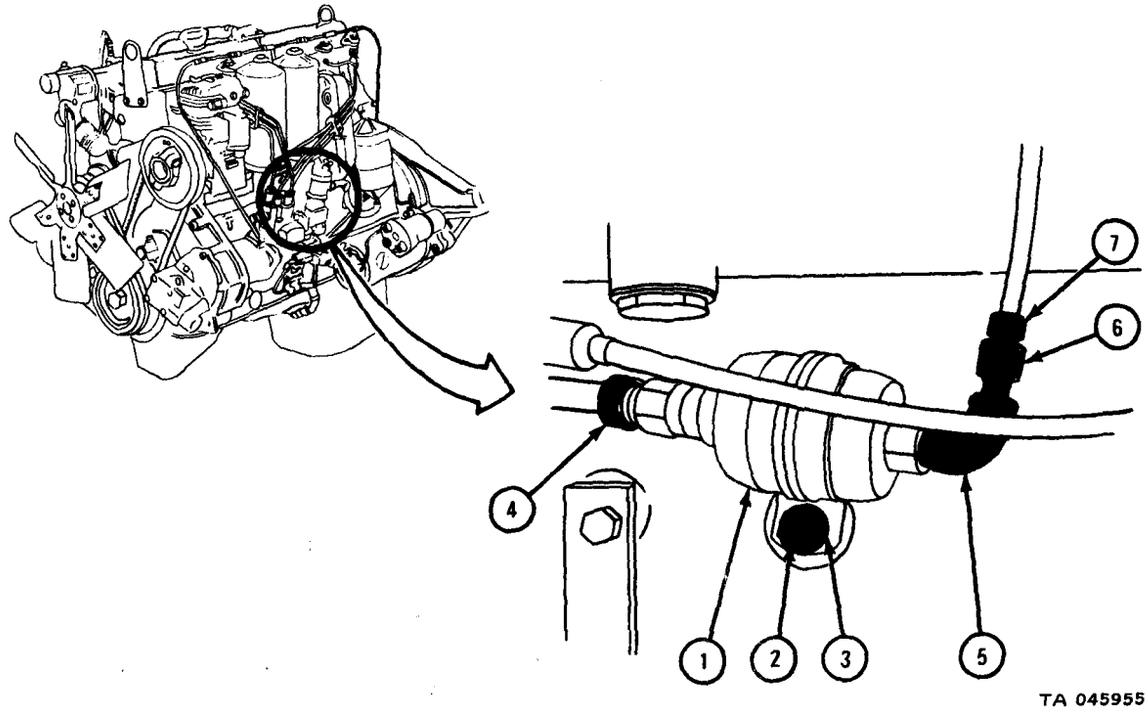
FRAME 1

1. Put filter (1) in place and dine screw hole.
2. Using wrench, screw in and tighten capscrew (2) and lockwasher (3).
3. Using wrenches, screw on and tighten tube fitting (4).
4. Using wrench, screw in and tighten elbow (5).
5. Using wrench, screw in and tighten adapter (6).
6. Using wrenches, screw in and tighten tube fitting (7).

NOTE

Follow-on Maintenance Action Required:
Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



4-21. MANIFOLD HEATER (SIDE MOUNTED) FUEL FILTER REMOVAL AND REPLACEMENT.

TOOLS : General mechanic's tool kit

SUPPLIES: None

PERSONNEL: One

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

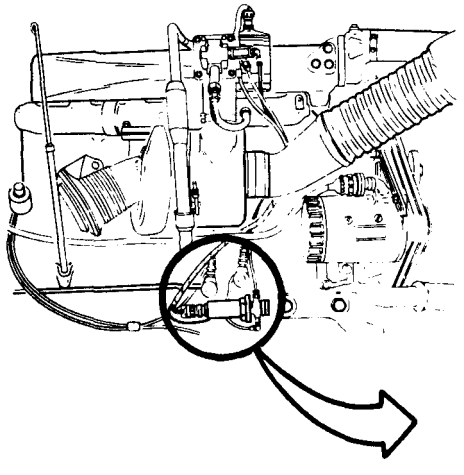
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

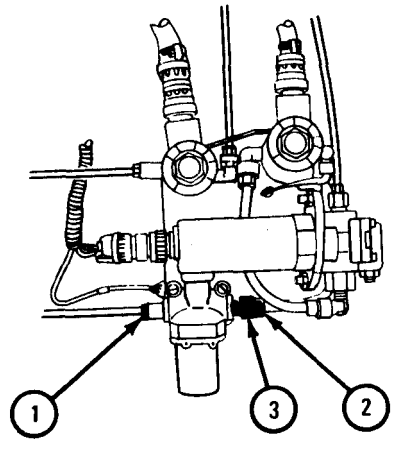
b. Removal.

FRAME 1

1. Pullout connector (l).
2. Using wrenches, unscrew and take off tube fitting (2).
3. Using wrench, unscrew and takeoff adapter (3).

GO TO FRAME 2



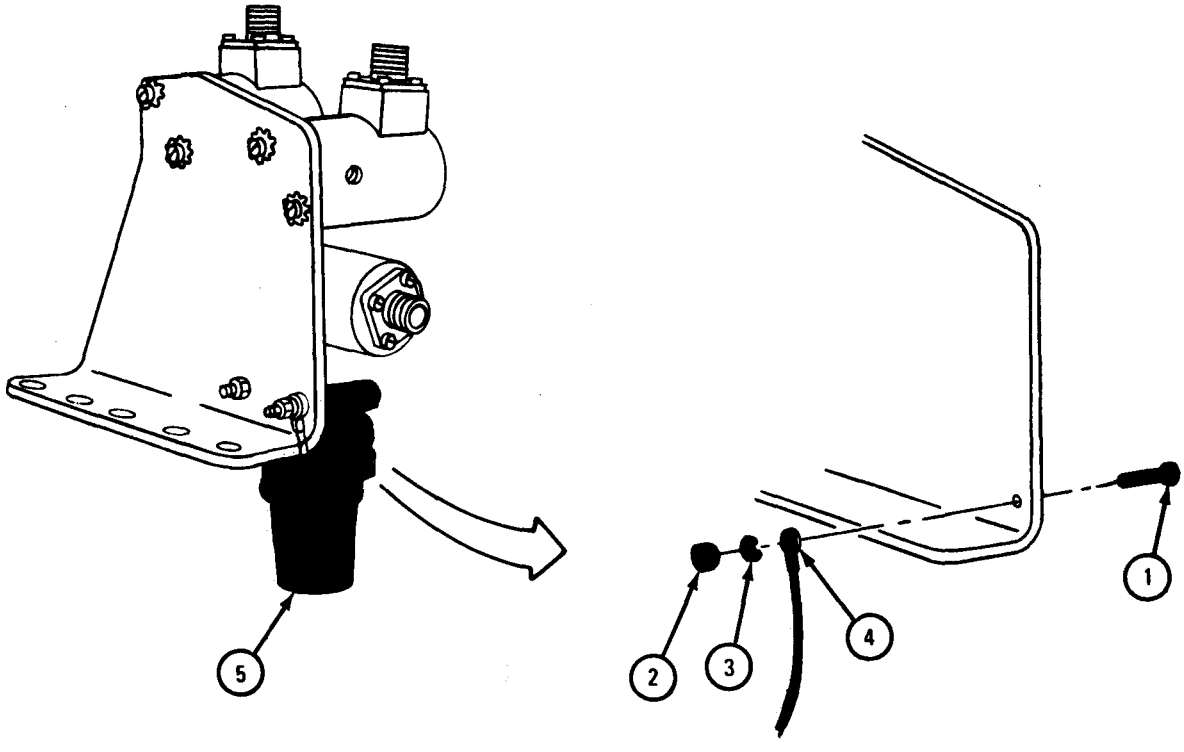


TA 045958

FRAME 2

1. Using flat-tip smewdriver and wrench, take off two screws (1) and nuts (2). Take off two washers (3) and ground wire (4).
2. Takeoff filter (5).

END OF TASK

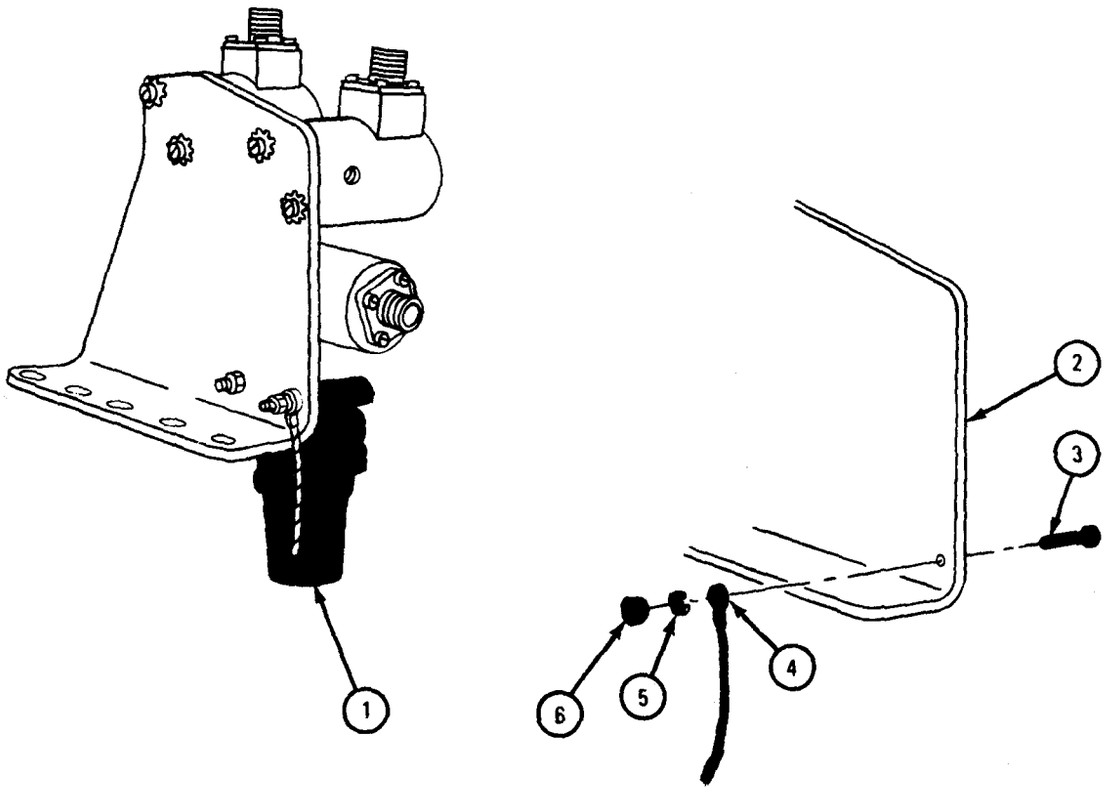


c. Replacement.

FRAME 1

1. Place filter (1) on bracket (2), alining screw holes. Put in two screws (3).
2. Put on ground wire (4) and two washers (5).
3. Using wrench and flat-tip screwdriver, screw on and tighten two nuts (6).

GO TO FRAME 2



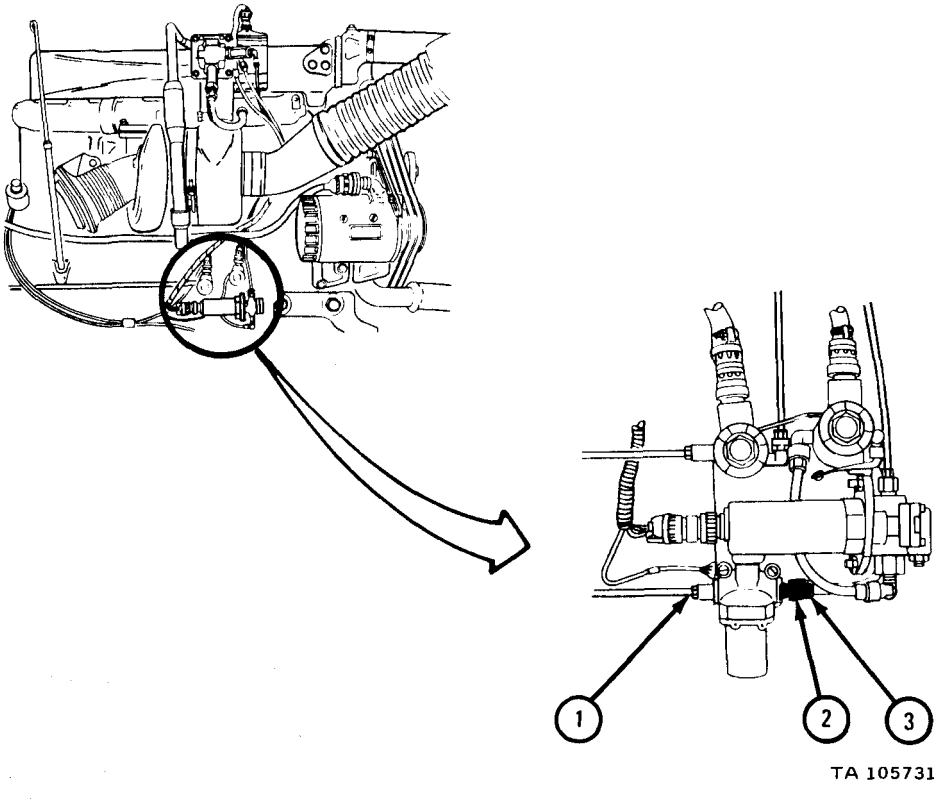
FRAME 2

1. Push in connector (l).
2. Using wrench, screw on and tighten adapter (2).
3. Using wrenches, screw on and tighten tube fitting (3).

NOTE

Follow-on Maintenance Action Required:
Close hood. Refer to TM 9-2320-211-10.

END OF TASK



4-22. MANIFOLD HEATER (TOP MOUNTED COVERED) PUMP LINES AND FITTINGS REMOVAL AND REPLACEMENT.

TOOLS : General mechanic's tool kit

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

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off and cold, handbrake set, manifold heater switch set to OFF position.

Preliminary Procedures. Open hood and left side panels. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

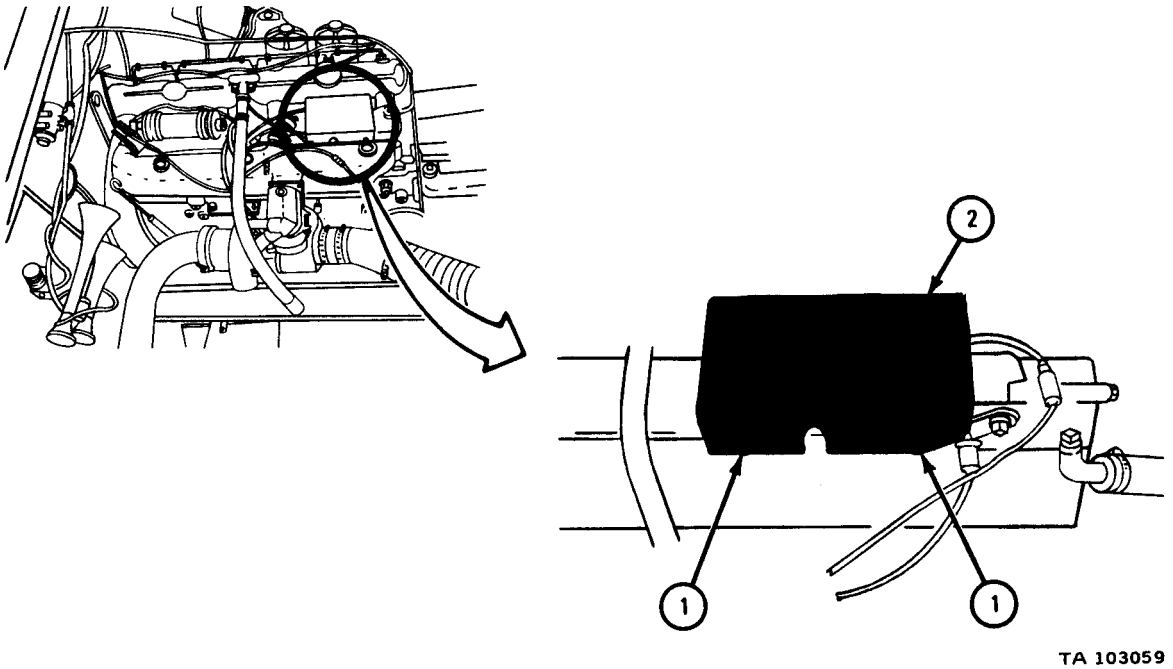
NOTE

Use rags and container to catch fuel which may drip out of fuel lines and pump assembly.

Tag all tubes so they can be put back in the same place.

1. Using l/2-inch wrench, unscrew and take out four capscrews (1).
2. Take off cover (2).

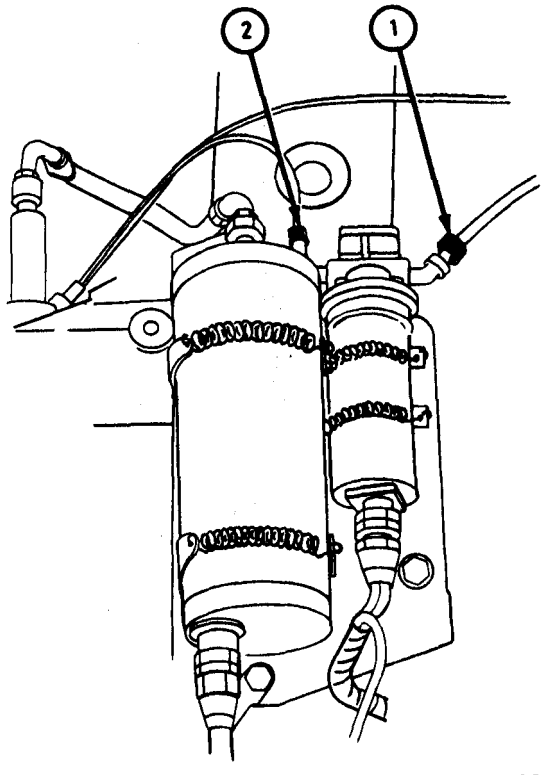
GO TO FRAME 2



FRAME 2

1. Using open end wrench, unscrew and takeoff tube fitting nut (l).
2. Using open end wrench, unscrew and take off tube fitting nut (2).

GO TO FRAME 3

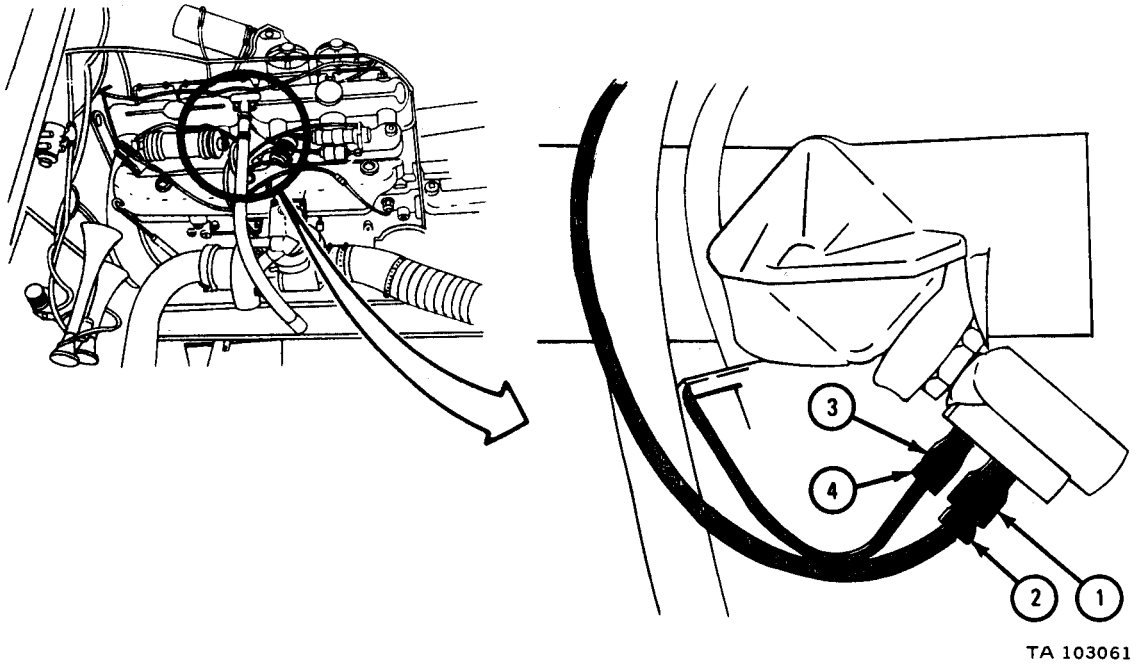


TA 103060

FRAME 3

1. Using 9/16-inch open end wrench, hold adapter (l). Using 7/16-inch open end wrench, unscrew and take out inverted nut and tube (2).
2. Using 9/16-inch wrench, unscrew and takeout adapter (l).
3. Using adjustable wrench, hold adapter(3). Using 3/8-inch open end wrench, unscrew and take out inverted nut and tube (4).
4. Using adjustable wrench, unscrew and takeout adapter (3).

GO TO FRAME 4

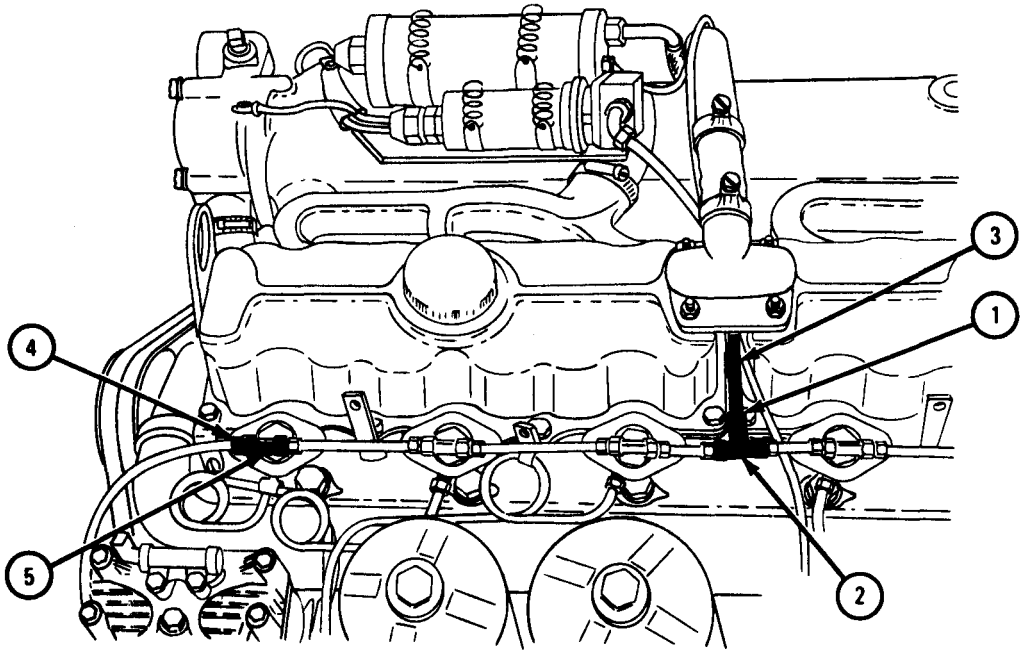


TA 103061

FRAME 4

1. Using open end wrench, unscrew and take off tube fitting nut (1) from tee fitting (2) on fuel return line (3).
2. Using open end wrench, unscrew and take off tube fitting nut (4) from fuel injector nozzle line tee fitting (5).

GO TO FRAME 5

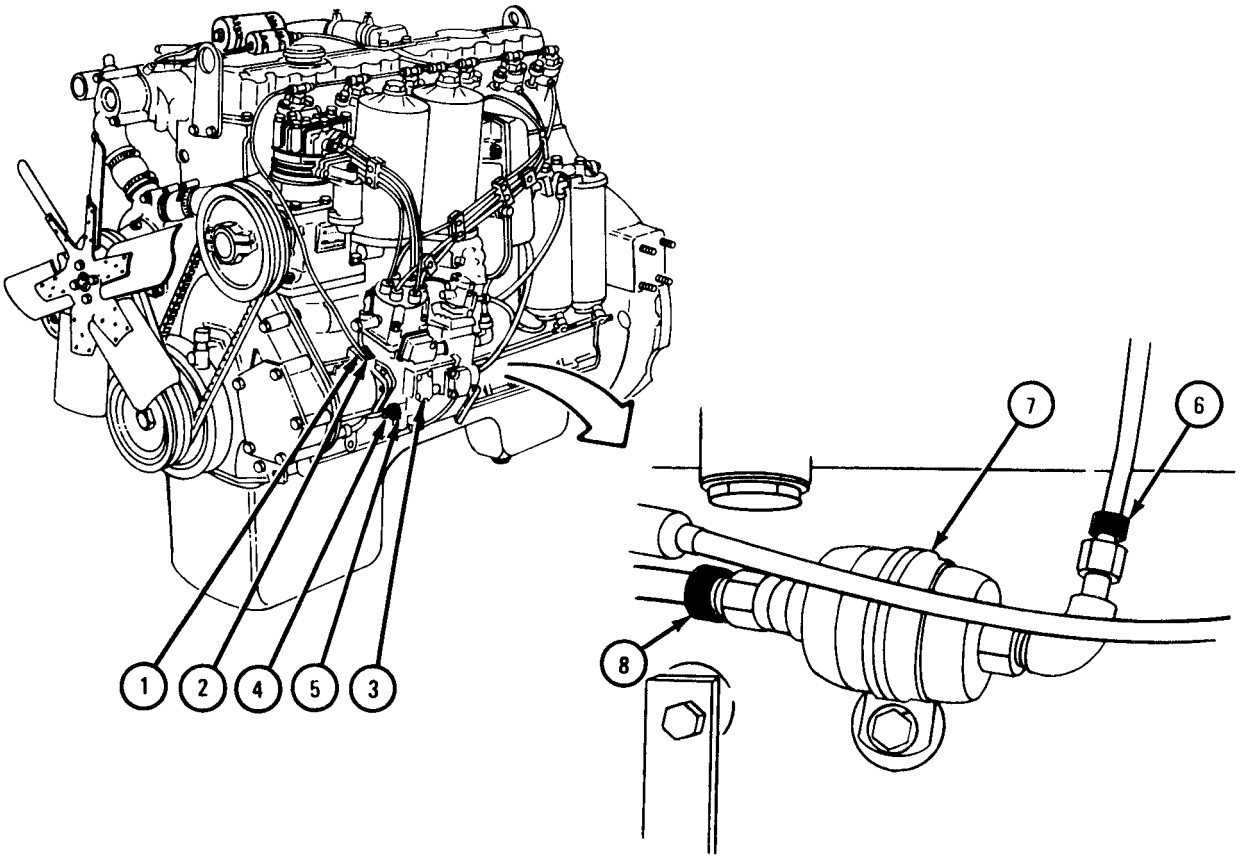


TA 103062

FRAME 5

1. Using open end wrench, unscrew and take off nut (1) from tee fitting (2) on fuel injector pump (3).
2. Using open end wrench, unscrew and take off nut (4) to fitting (5) on fuel injector pump (3).
3. Using open end wrench, unscrew and take off tube fitting nut (6) on fuel filter (7).
4. Using open end wrench, unscrew and take off fitting nut (8) on fuel filter (7).

END OF TASK



TA 103063

c. Cleaning. There are no special cleaning procedures needed. Refer to cleaning procedures given in para 1-3.

NOTE

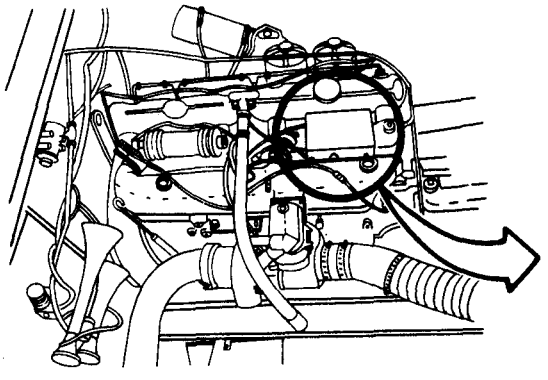
Get new parts for any damaged parts.

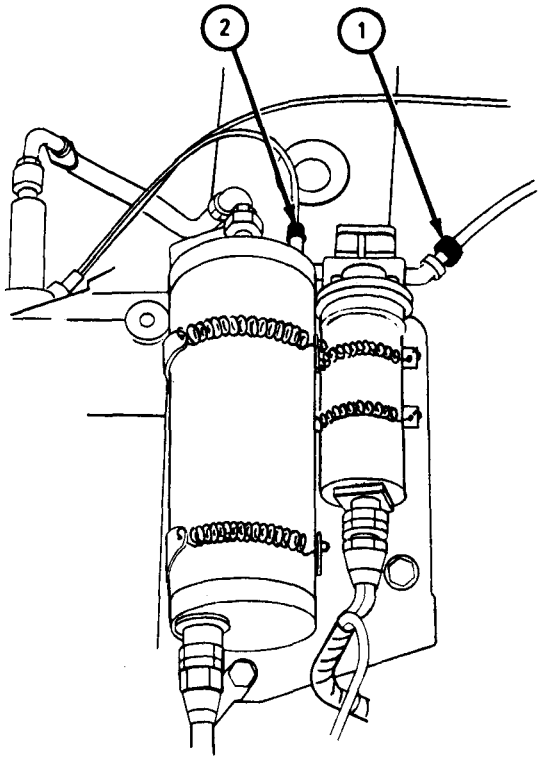
d. Replacement.

FRAME 1

1. Using open end wrench, screw on and tighten tube fitting nut (1).
2. Using open end wrench, screw on and tighten tube fitting nut (2).

GO TO FRAME 2



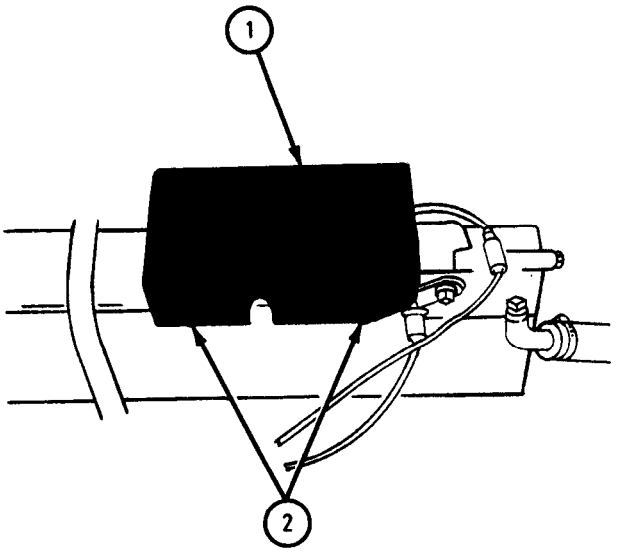


TA 103064

FRAME 2

1. Put cover (1) in place, alining screw holes.
2. Using l/2-inch wrench, screw on and tighten four capscrews (2).

GO TO FRAME 3

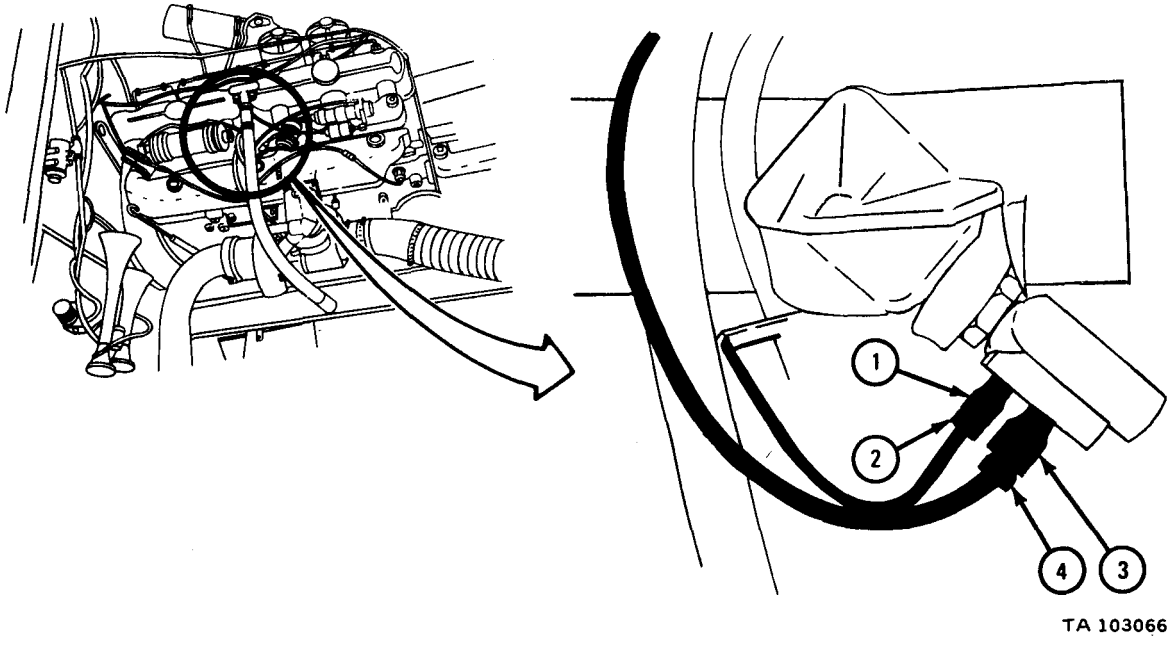


TA 103065

FRAME 3

1. Using adjustable wrench, screw in and tighten adapter (l).
2. Using 3/8-inch open end wrench, screw in and tighten inverted nut and tube (2).
3. Using 9/16-inch wrench, screw in and tighten adapter (3).
4. Using 7/16-inch open end wrench, screw in and tighten inverted nut and tube (4).

GO TO FRAME 4

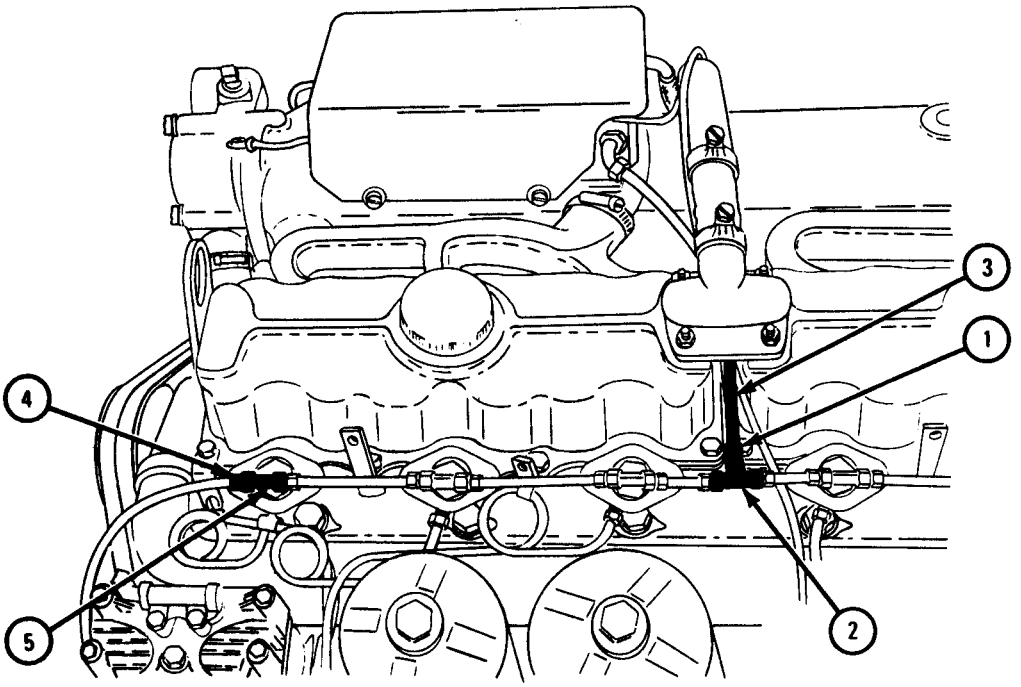


TA 103066

FRAME 4

1. Using open end wrench, screw on tube fitting nut (1) to tee fitting (2) on fuel return line (3).
2. Using open end wrench, screw on tube fitting nut (4) to fuel injector nozzle line tee fitting (5).

GO TO FRAME 5



TA 103067

FRAME 5

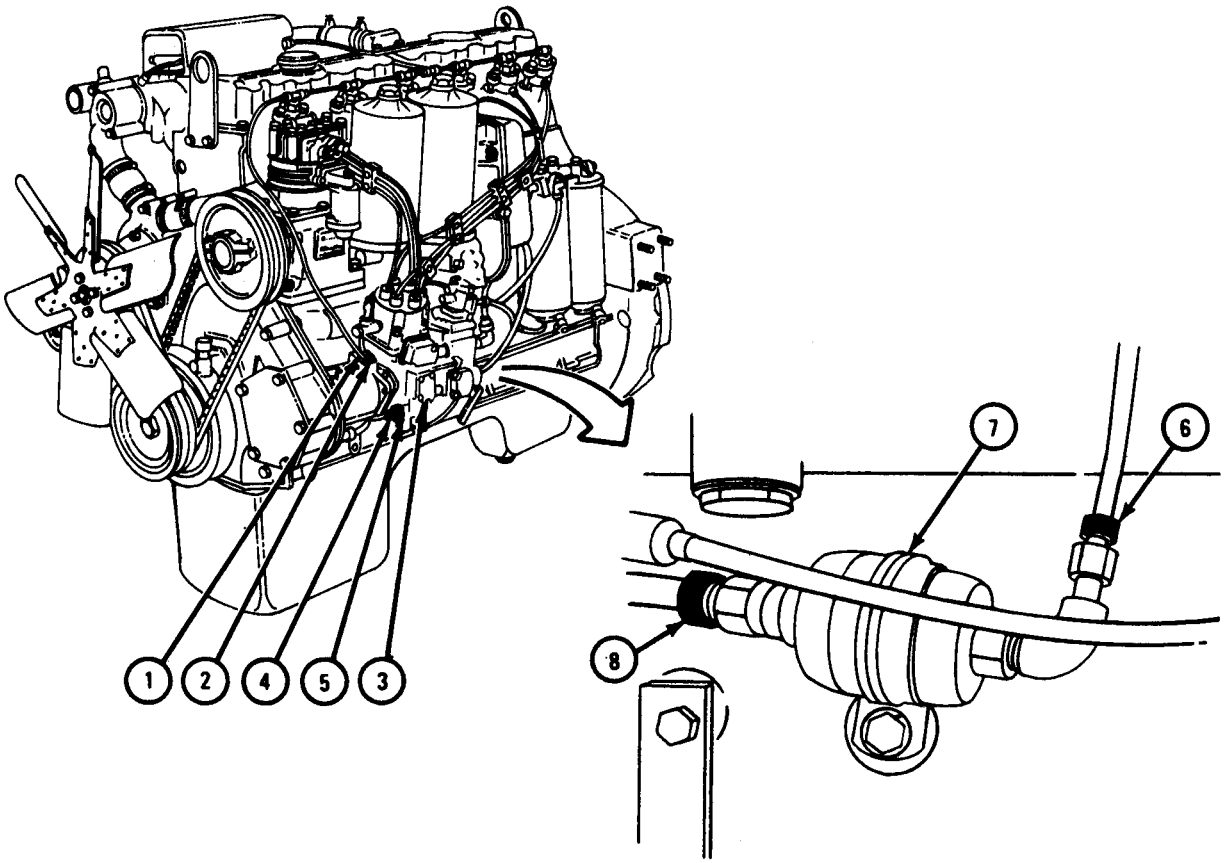
1. Using open end wrench, screw on nut (1) to tee fitting (2) on fuel injection pump (3).
2. Using open end wrench, screw on nut (4) to fitting (5) on fuel injection pump (3).
3. Using open end wrench, screw on tube fitting nut (6) on fuel filter (7).
4. Using open end wrench, screw on tube fitting nut (8) on fuel filter (7).
5. Take off all tags.

NOTE

Follow-on Maintenance Action Required:

Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



4-23. MANIFOLD HEATER (TOP MOUNTED UNCOVERED) PUMP LINES AND FITTINGS REMOVAL, REPAIR AND REPLACEMENT.

TOOLS: 11/16-inch open end wrench
9/16-inch open end wrench
7/16-inch open end wrench
3/8-inch open end wrench
Adjustable wrench
Stiff brush
l-pint container

SUPPLIES: Tags
Pipe caps
Clean rags
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Soap, P-S- 624H

PERSONNEL: One

EQUIPMENT CONDITION : Truck parked, engine off and cold, handbrake set, manifold heater switch set to OFF position.

Preliminary Procedure. Open hood and left side panel. Refer to TM 9-2320-211-10.

b. Removal.

NOTE

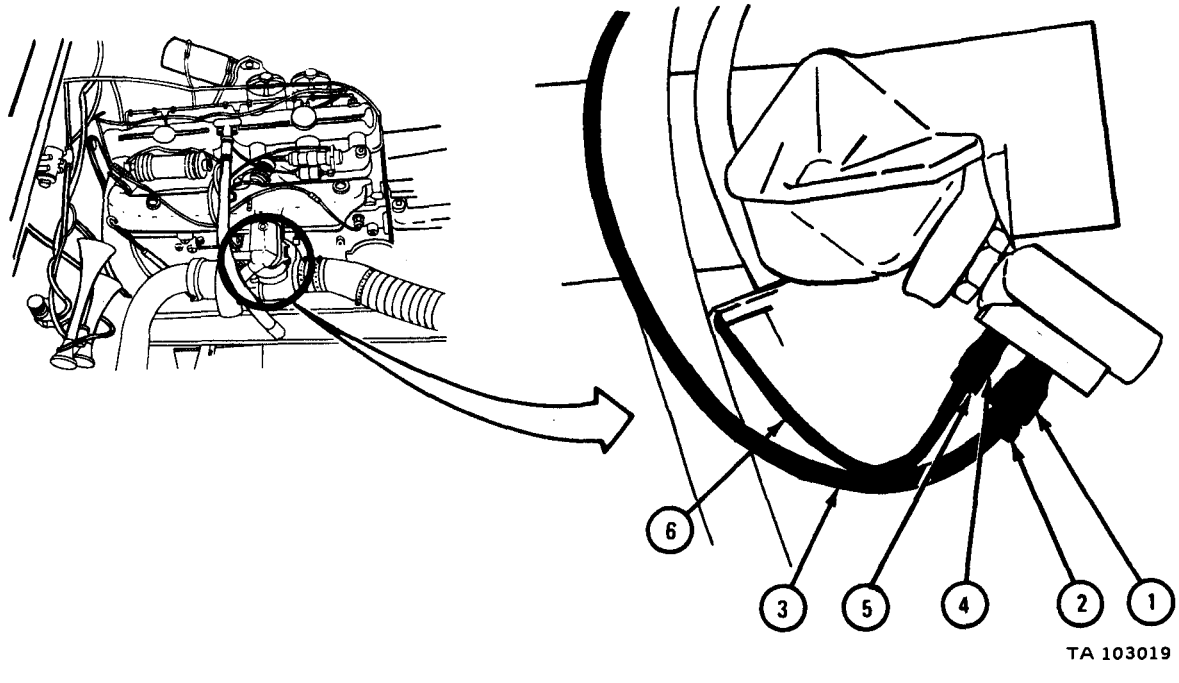
Use rags and container to catch fuel which may drip out of fuel tubes, pumps, and other parts of fuel system.

Tag all tubes so they can be put back in the same place.

FRAME 1

1. Using 9/16-inch open end wrench, hold adapter (1).
2. Using 7/16-inch open end wrench, unscrew and take out inverted nut (2) with tube (3).
3. Using 9/16-inch wrench, unscrew and takeout adapter (l).
4. Using adjustable wrench, hold adapter (4).
5. Using 3/8-inch open end wrench, unscrew and takeout inverted nut (5) with tube (6).
6. Using adjustable wrench, unscrew and takeout adapter (4).

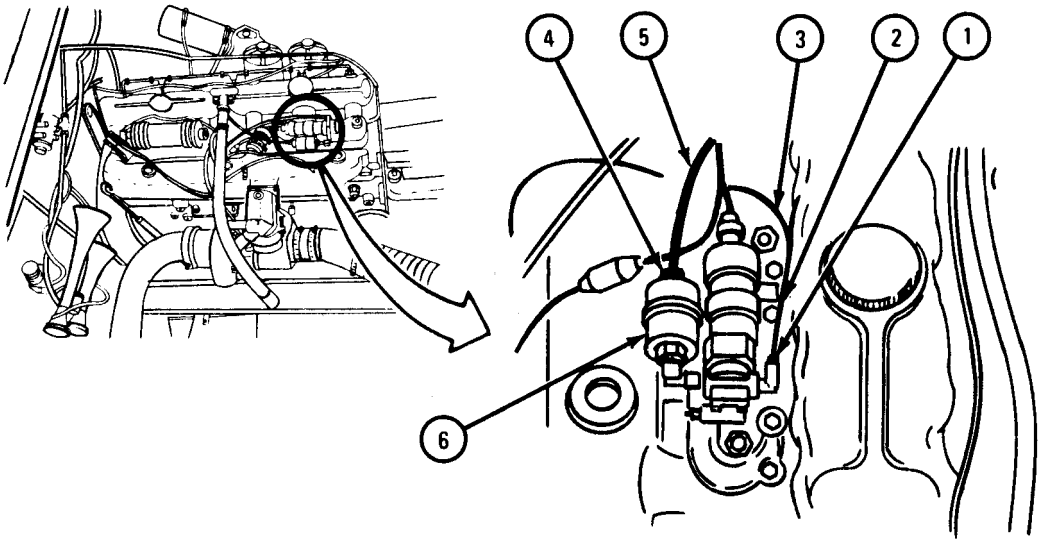
GO TO FRAME 2



FRAME 2

1. Using adjustable wrench, hold tube adapter (1). Using 3/8-inch open end wrench, unscrew and take off inverted nut (2) with tube (3).
2. Take out tube (3).
3. Using 3/8-inch wrench, loosen and take off tube adapter (1).
4. Using 7/16-inch open end wrench, loosen and take off inverted nut (4) with tube (5) from flame heater filter (6).

GO TO FRAME 3



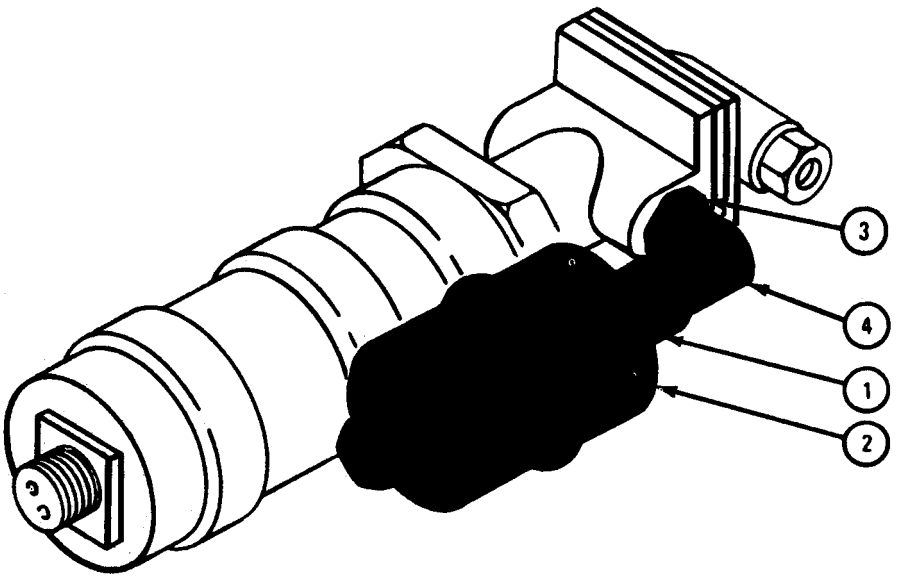
TA 103020

FRAME 3

1. Using 11/16-inch wrench, unscrew nut (1) and takeoff fuel filter (2).
2. Using 9/16-inch wrench, hold adapter (3). Using adjustable wrench, unscrew and takeoff elbow (4).

3; Using 9/16-inch wrench, takeout adapter (3).

GO TO FRAME 4

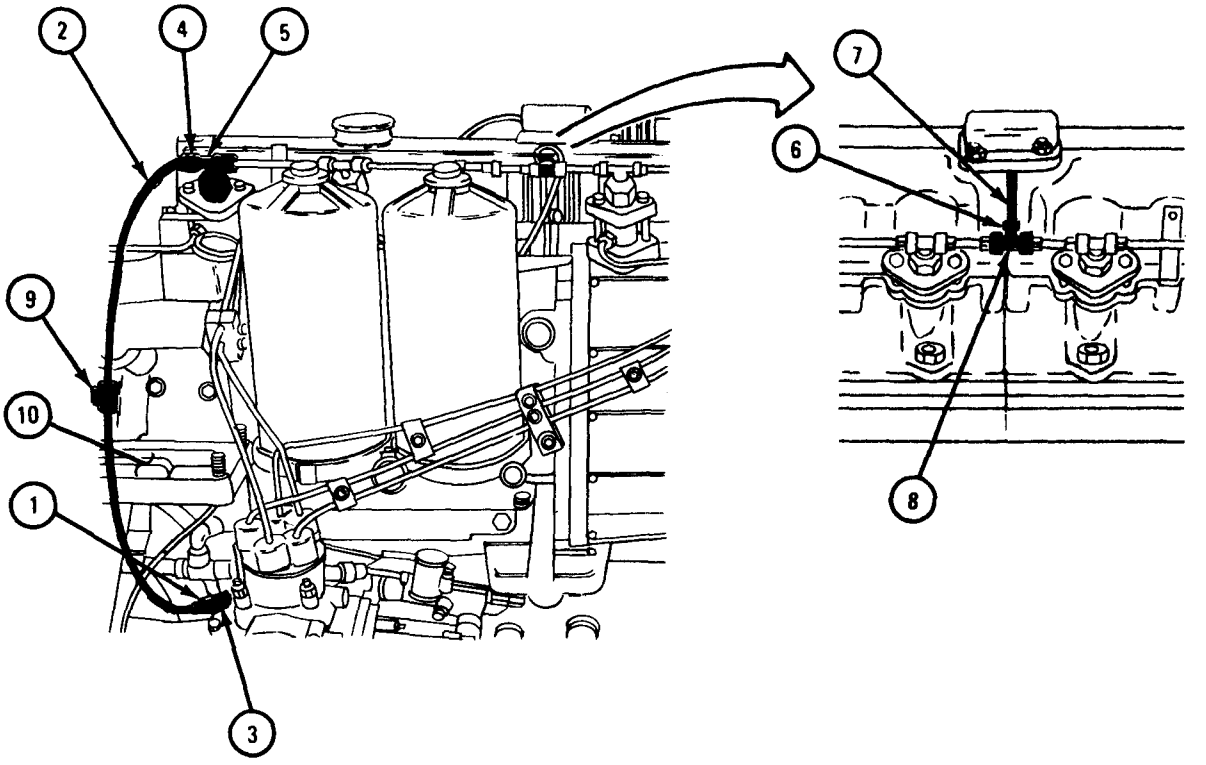


TA 103021

FRAME 4

1. Using 7/16-inch open end wrench, unscrew and take off inverted nut (1) with tube (2) from injection pump overflow valve tee fitting (3).
2. Using 7/16-inch open end wrench, unscrew and take off inverted nut (4) with tube (2) from fuel injector tee fitting (5).
3. Take out tube (2).
4. Using 7/16-inch open end wrench, unscrew and take off inverted nut (6) with tube (7) from fuel return tube tee fitting (8).
5. Using 1/2-inch wrench, unscrew and take out screw and clamp (9) from front of air compressor (10).
6. Take out tube (7).

GO TO FRAME 5

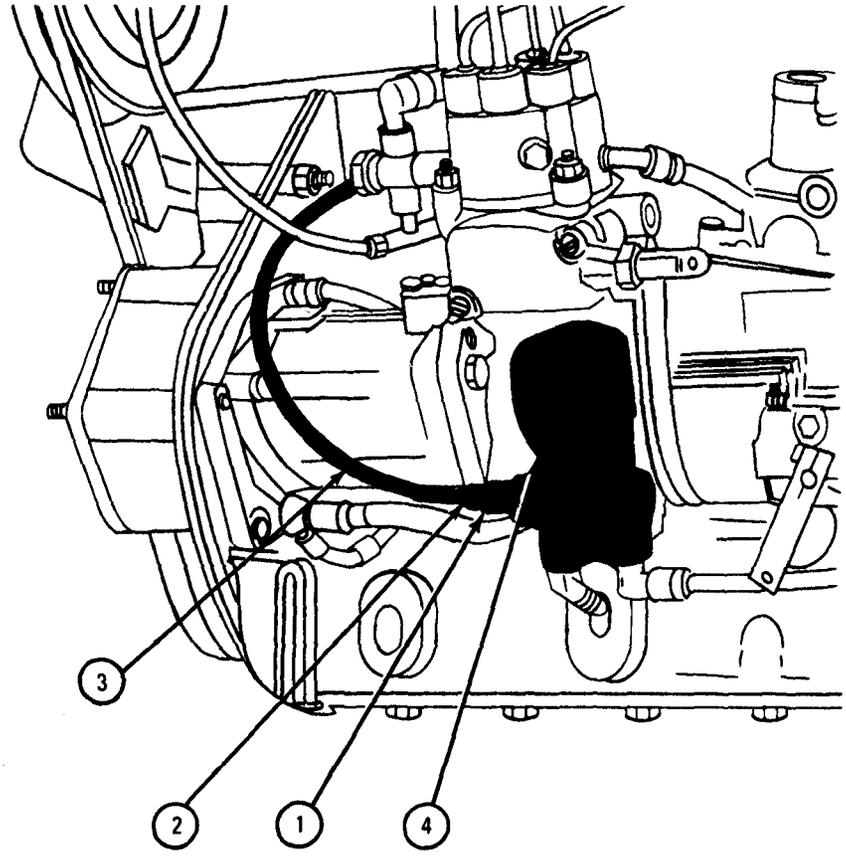


TA 103022

FRAME 5

1. Using adjustable wrench, hold adapter (1). Using 7/16-inch open end wrench, unscrew and take off inverted nut (2) with tube (3) from fuel transfer pump (4).

GO TO FRAME 6

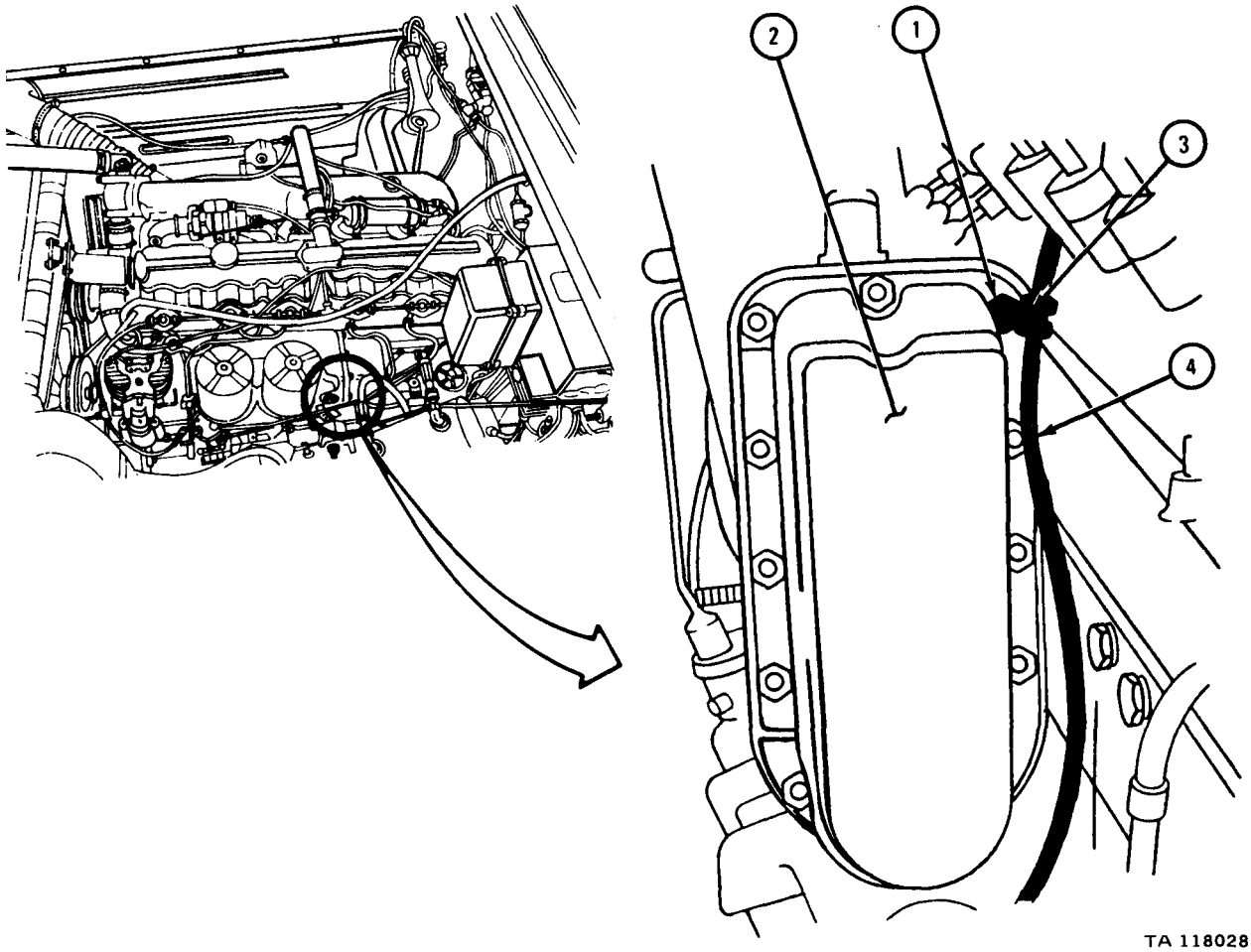


TA 103023

FRAME 6

1. Using 7/16-inch wrench, unscrew and take out nut (1) from oil cooler cover (2). Take off clamp (3).
2. Take out tube (4).
3. Cap eight flame heater fuel line open connections from which tubes and other parts have been taken out.

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.

(1) Clean inner and outer surfaces of metal parts with dry cleaning solvent.

(2) Clean fuel tubes with damp rag and soap.

(3) Take off sludge and gum with a stiff brush.

(4) Steam cleaning may be used to remove grease and dirt after dry cleaning solvent has been used.

(5) Dry with clean lint-free rags.

(6) Take off rust with a wire brush.

(7) Refer to para 1-3 for additional cleaning steps.

d. Inspection and Repair.

(1) Check all parts for damage.

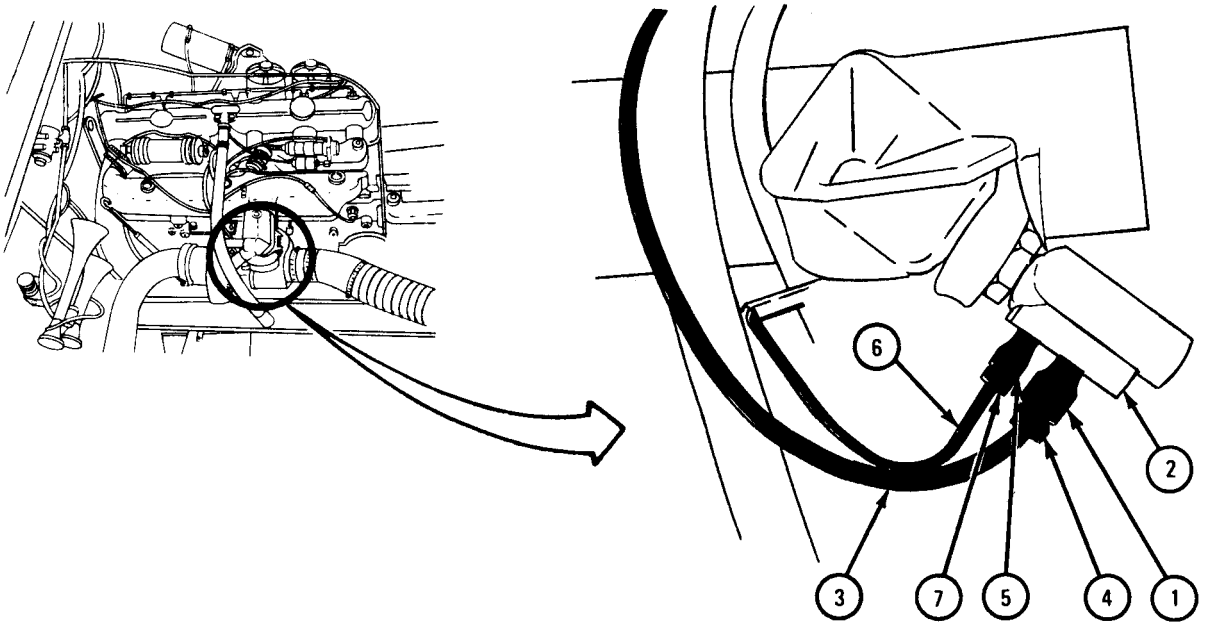
(2) Get new parts for all damaged parts.

e. Replacement.

FRAME 1

1. Take off caps from eight open flame heater fuel line connection fittings.
2. Using 9/16-inch wrench, screw in and tighten adapter (1) on flame heater nozzle and valve assembly (2).
3. Put end of tube (3) into adapter (1). Using 7/16-inch wrench, screw in and tighten inverted nut (4).
4. Using adjustable wrench, screw in and tighten adapter (5).
5. Put end of tube (6) into adapter (5). Using 3/8-inch wrench, screw in and tighten inverted nut (7).

GO TO FRAME 2

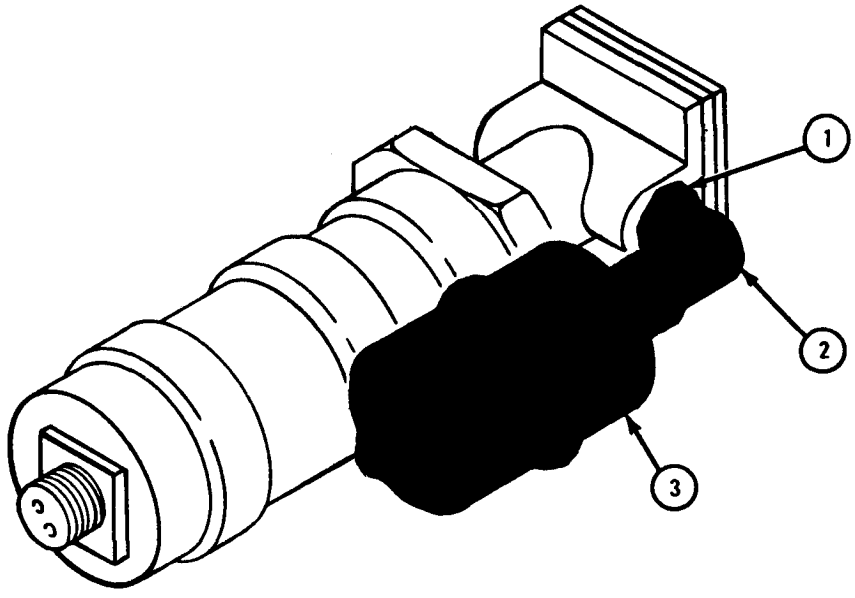


TA 103024

FRAME 2

1. Using 9/16-inch wrench, screw in adapter (l).
2. Using adjustable wrench, screw in and tighten elbow (2).
3. Using 11/16-inch wrench, screw on and tighten fuel filter (3).

GO TO FRAME 3

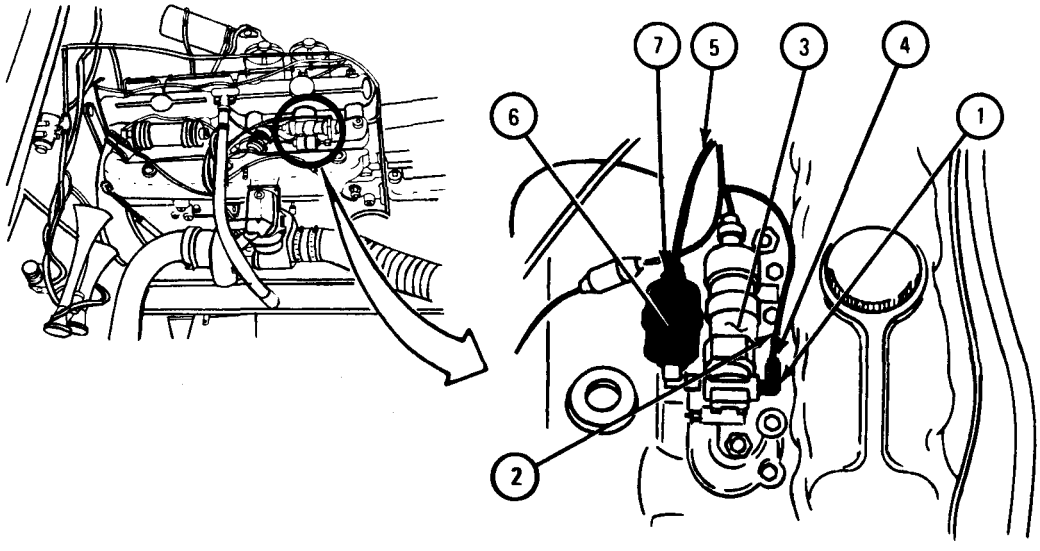


TA 103026

FRAME 3

1. Using adjustable wrench, screw in and tighten adapter (1).
2. Put end of tube (2) into adapter (1) on flame heater fuel pump (3). Using 3/8-inch open end wrench, screw on and tighten inverted nut (4).
3. Put end of tube (5) on fuel filter (6). Using 7/16-inch open end wrench, screw on and tighten inverted nut (7).

GO TO FRAME 4

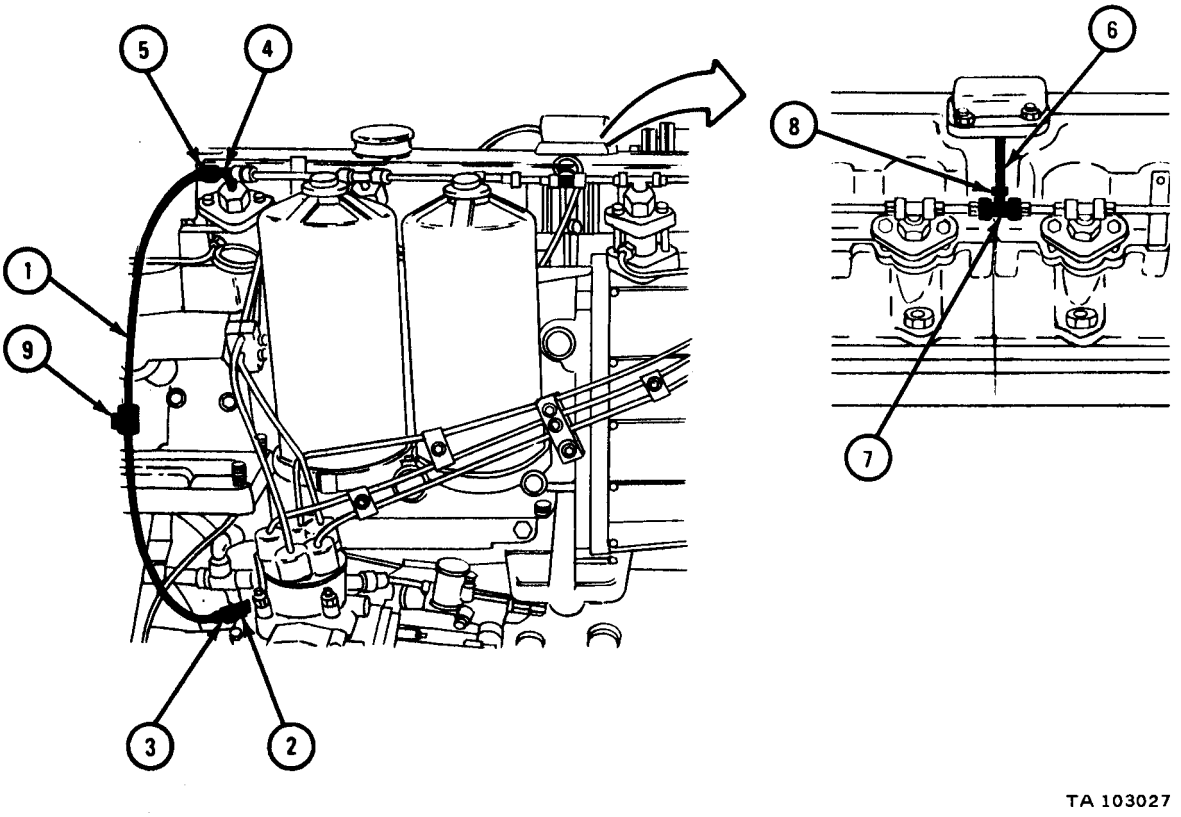


TA 103025

FRAME 4

1. Put end of tube (1) into injection pump overflow valve tee fitting (2). Using 7/16-inch open end wrench, screw on and tighten inverted nut (3).
2. Put other end of tube (1) into fuel injector tee fitting(4). Using 7/16-inch open end wrench, screw on and tighten inverted nut (5).
3. Put end of tube(6) into fuel return tube tee fitting (7). Using 7/16-inch open end wrench, screw on and tighten inverted nut (8).
4. Using l/2-inch wrench, screw in and tighten clamp and screw (9).

GO TO FRAME 5

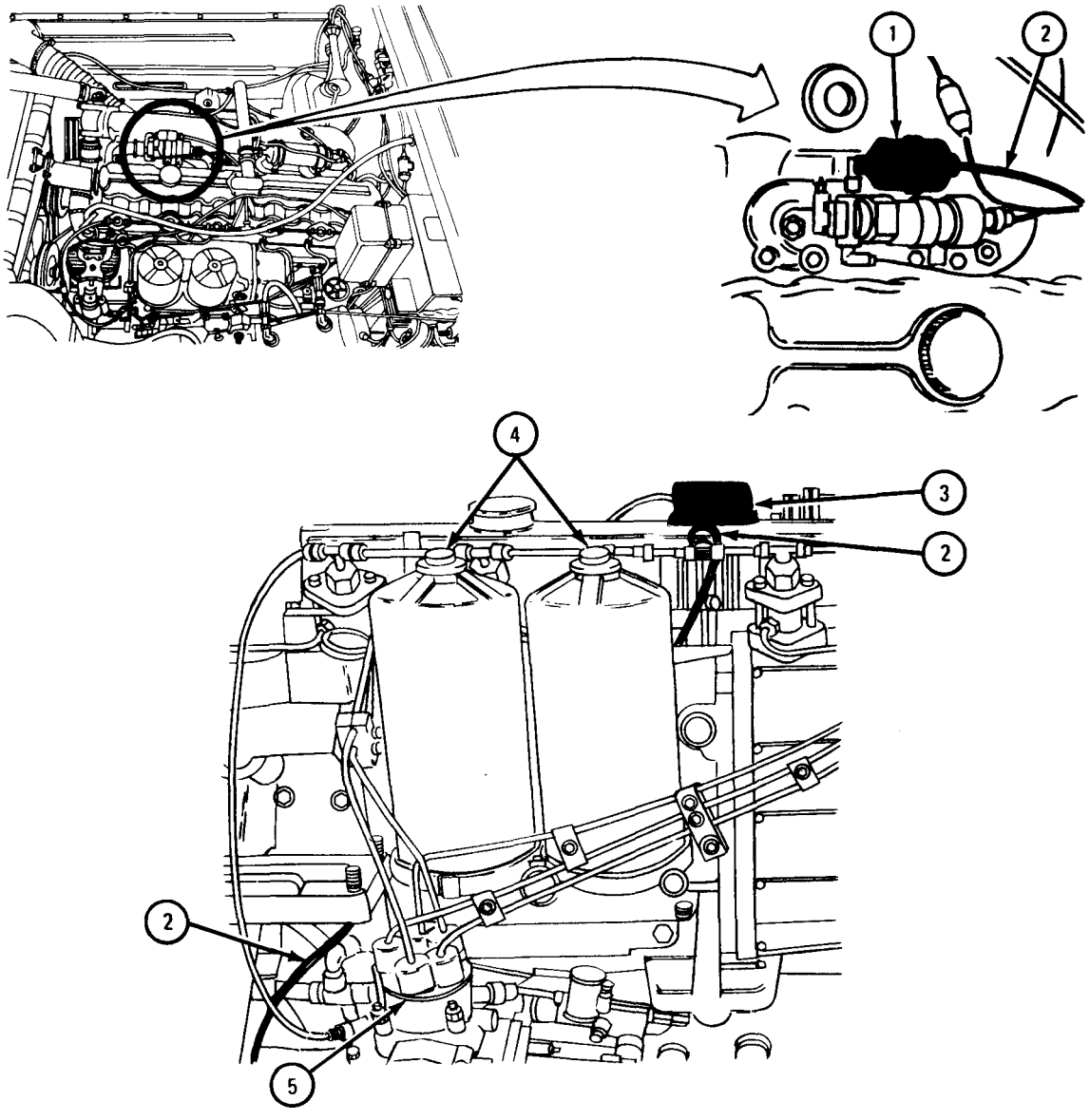


TA 103027

FRAME 5

1. Using tube from flame heater fuel pump filter (1), put end of tube (2) under crankcase breather tube (3).
2. Put tube (2) in back of oil filters (4) and out over fuel injection pump (5).

GO TO FRAME 6

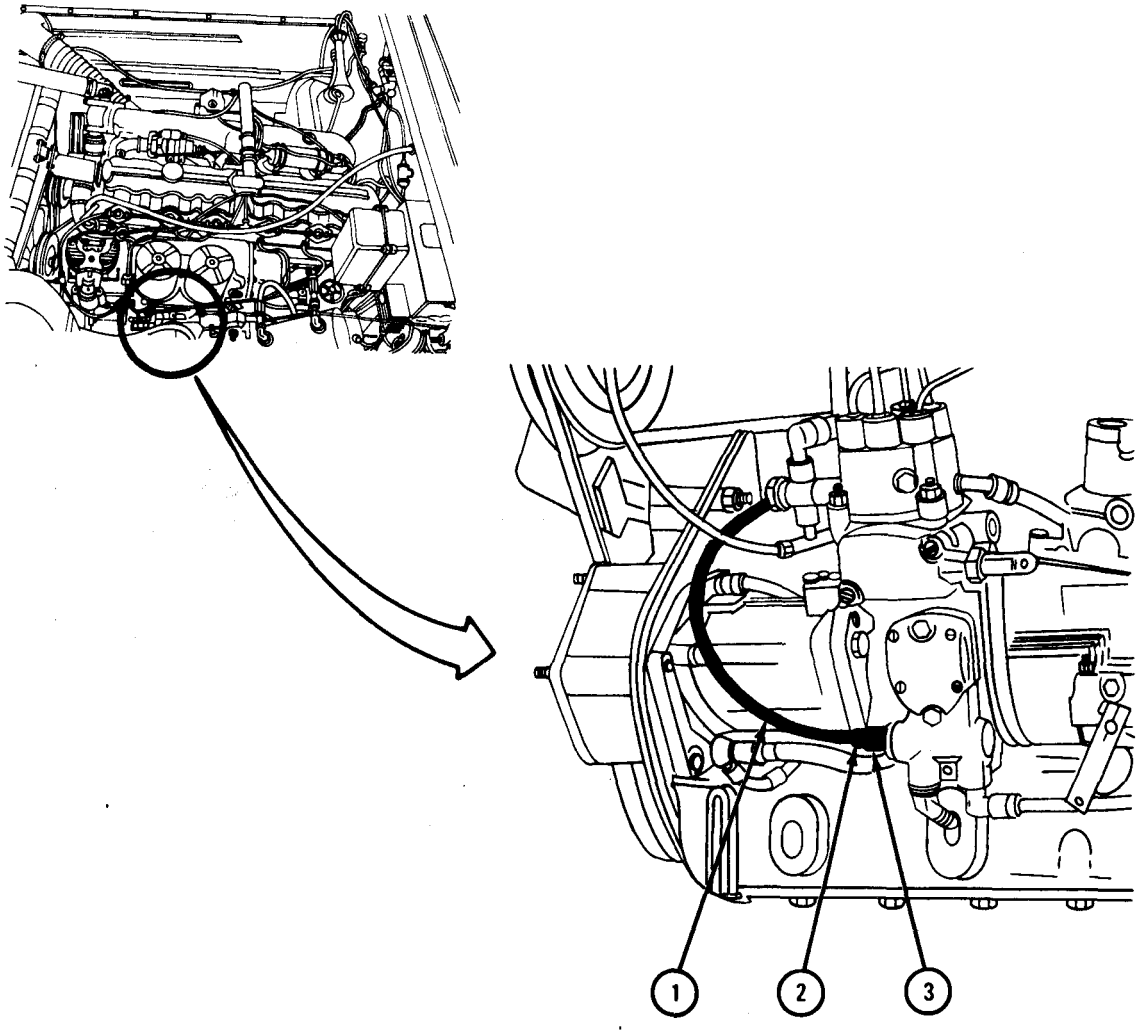


TA 105733

FRAME 6

1. Put end of tube (1) into fuel transfer pump adapter (2). Using 7/16-inch open end wrench, screw on and tighten inverted nut(3).

GO TO FRAME 7



FRAME 7

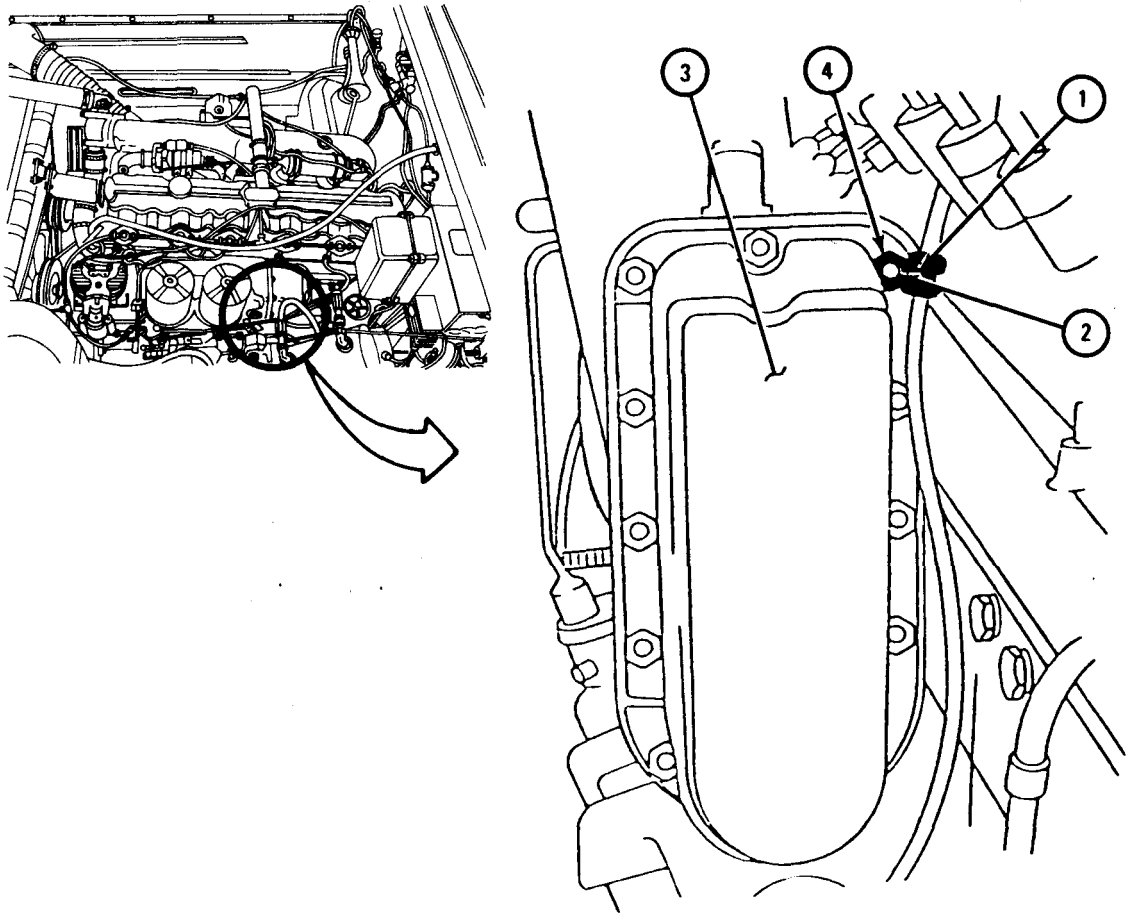
1. Put tube clamp (1) over stud (2) on oil cooler cover (3).
2. Using 7/16-inch wrench, screw in and tighten nut (4).
3. Take off all tags.

NOTE

Follow-on Maintenance Action Required:

1. Start engine and check for leaks. Refer to TM 9-2320-211-10.
2. Close right side and left side access panels. Refer to TM 9-2320-211-10.
3. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



4-24. MANIFOLD HEATER (SIDE-MOUNTED) PUMP LINES AND FITTINGS REMOVAL AND REPLACEMENT.

TOOLS: General mechanic's tool kit

SUPPLIES: Liquid gasket cement, MIL-A-46106A
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, manifold heater switch set to OFF position.

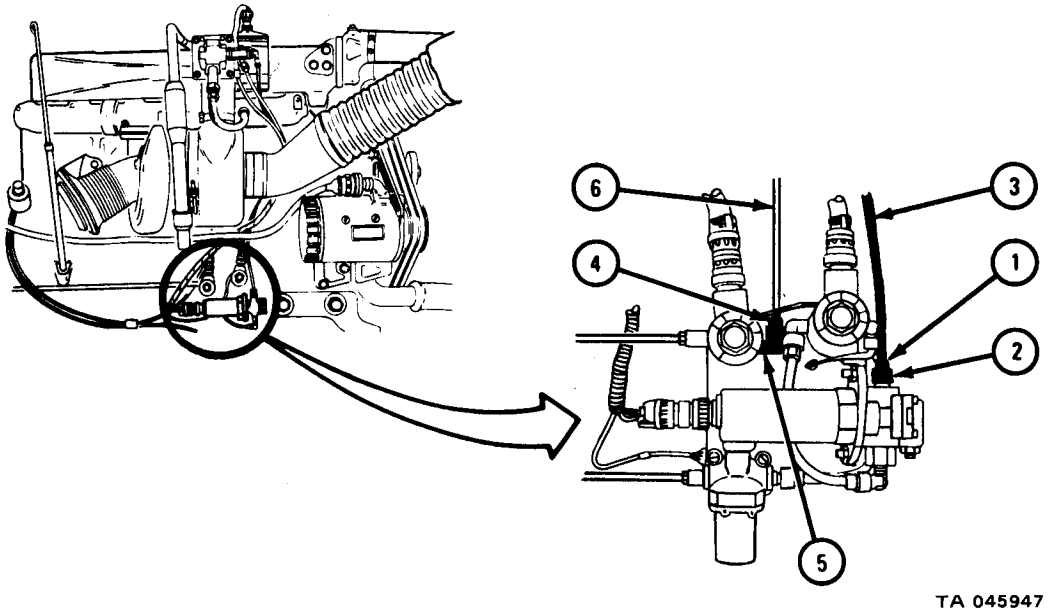
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using open end wrenches, unscrew coupling nut (1) from union (2).
2. Pull fuel supply tube (3) away from union (2).
3. Using open end wrench, unscrew coupling nut (4) from elbow (5).
4. Pull fuel return tube (6) away from elbow (5).

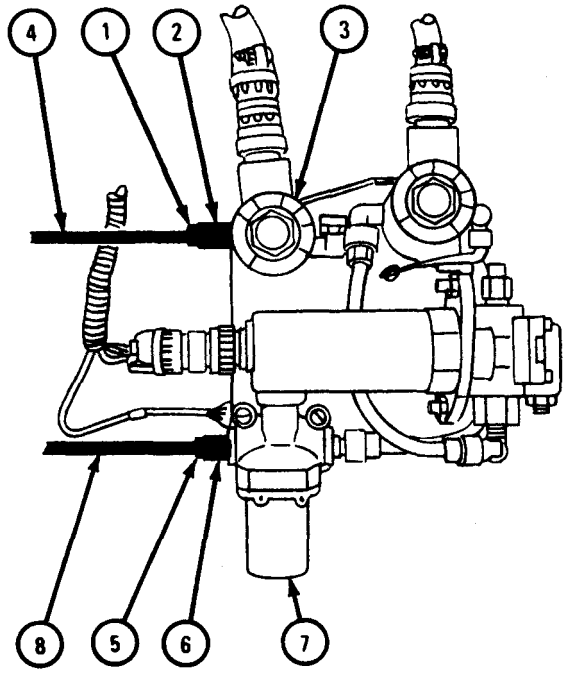
GO TO FRAME 2



FRAME 2

1. Using open end wrenches, unscrew coupling nut (1) from adapter (2) on fuel return solenoid valve (3).
2. Pull fuel return tube (4) away from adapter (2).
3. Using open end wrenches, unscrew coupling nut (5) from adapter (6) on fuel filter (7).
4. Pull fuel supply tube (8) away from adapter (6).

GO TO FRAME 3

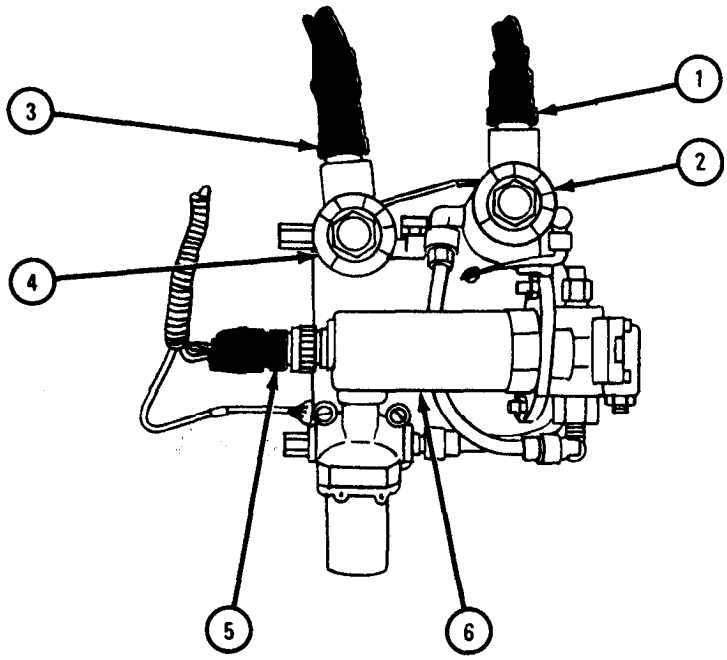


TA 047041

FRAME 3

1. Unscrew connector (1) from fuel supply solenoid valve (2) and pull connector clear of valve.
2. Unscrew connector (3) from fuel return solenoid valve (4) and pull connector clear of valve.
3. Unscrew connector (5) from fuel pump (6) and pull connector clear of pump.

GO TO FRAME 4

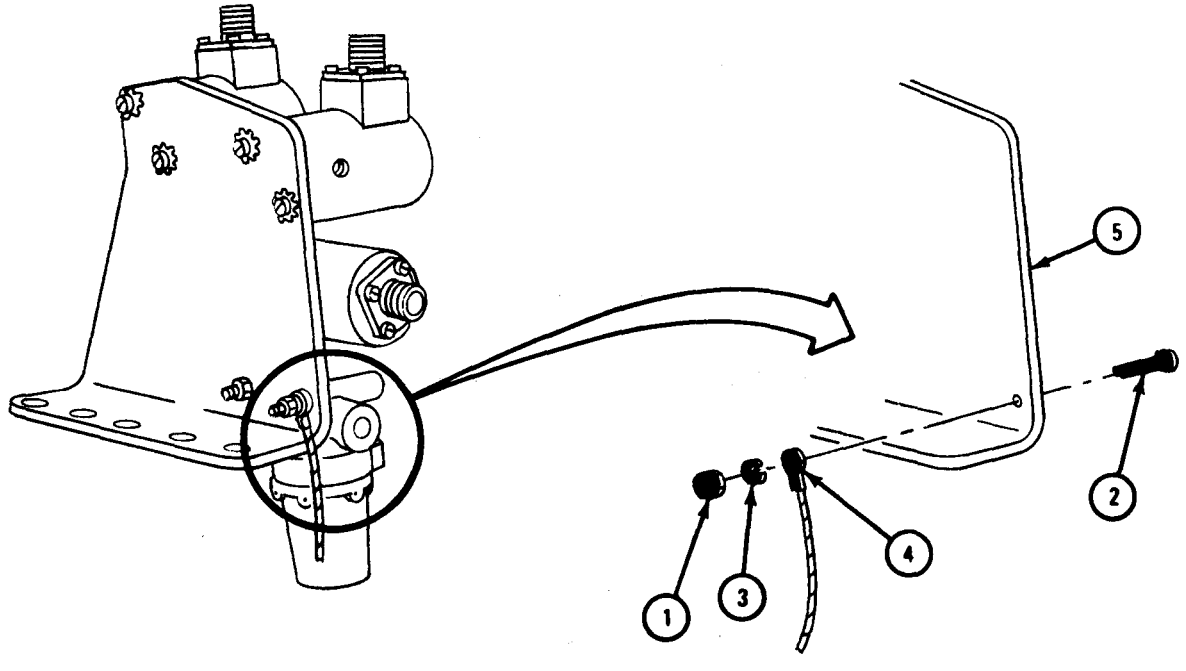


TA 047042

FRAME 4

1. Using open end wrench and flat-tip screwdriver, unscrew and take nut (1) off screw (2).
2. Take lockwasher (3) and ground lug (4) off screw (2),
3. Take screw (2) out of mounting bracket (5).

GO TO FRAME 5

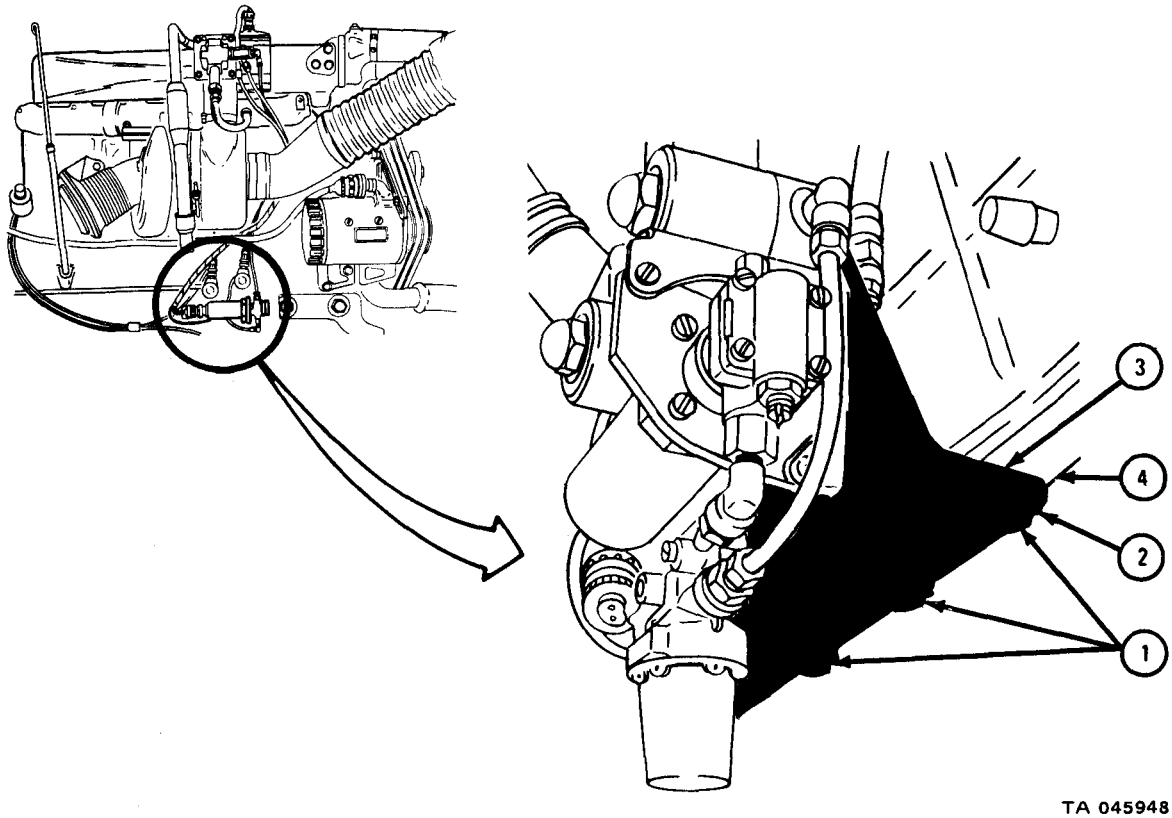


TA 047402

FRAME 5

1. Using socket wrench, unscrew and take off three bolts (1) and three lockwashers (2) holding bracket (3) to crankcase (4). Hold up bracket so that it does not drop when taking out last bolt.
2. Carefully take out bracket (3).

GO TO FRAME 6

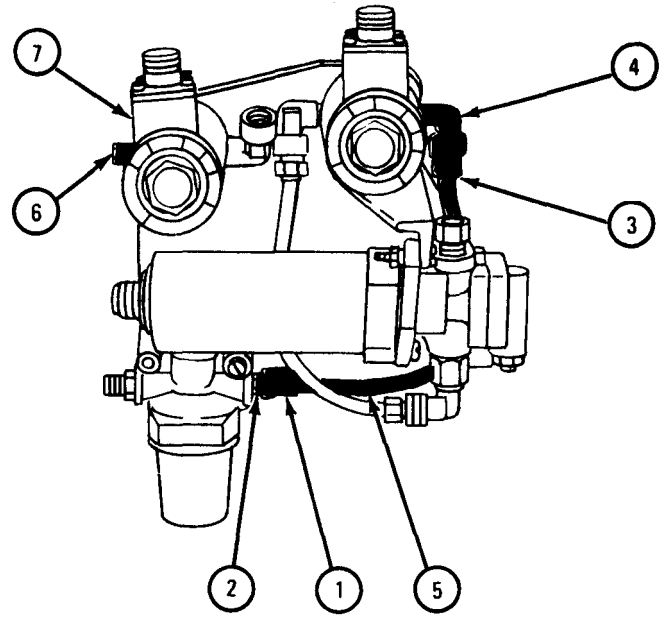


TA 045948

FRAME 6

1. Using open end wrenches, unscrew coupling nut (1) from adapter (2).
2. Using open end wrench, unscrew coupling nut (3) from elbow (4).
3. Pull fuel supply tube (5) out of elbow (4) and adapter (2) and set fuel supply tube aside.
4. Using open end wrench, unscrew adapter (6) from fuel return solenoid valve (7).

GO TO FRAME 7

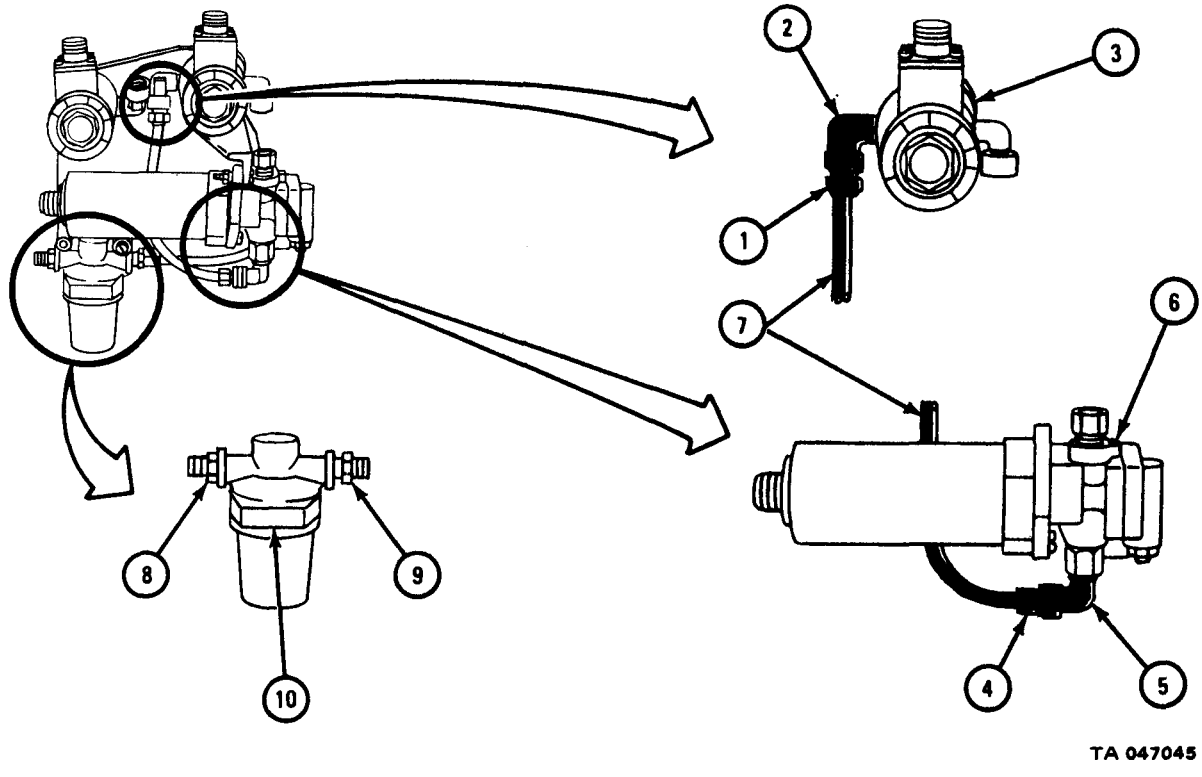


TA 047044

FRAME 7

1. Using open end wrench, unscrew coupling nut (1) from elbow (2) on fuel inlet solenoid valve (3).
2. Using open end wrench, unscrew coupling nut (4) from elbow (5) on fuel pump (6).
3. Pull fuel inlet tube (7) out of elbows (2 and 5) and set it aside.
4. Using open end wrench, unscrew adapters (8 and 9) from filter head (10) and set adapters aside.

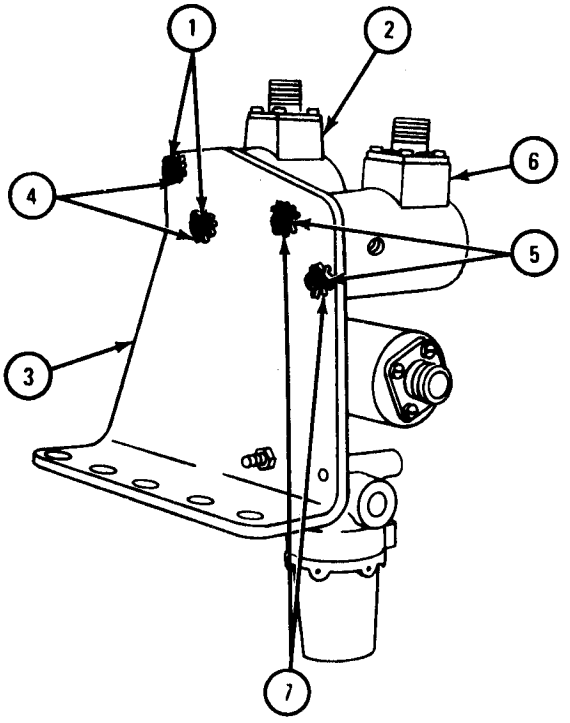
GO TO FRAME 8



FRAME 8

1. Using flat-tip screwdriver, unscrew two screws (1) and take fuel inlet solenoid valve (2) off bracket (3). Keep lockwashers (4) on screws and set them aside.
2. Using flat-tip screwdriver, unscrew two screws (5) and take fuel return solenoid valve (6) off bracket (3). Keep lockwashers (7) on screws and set them aside.

GO TO FRAME 9



TA 047046

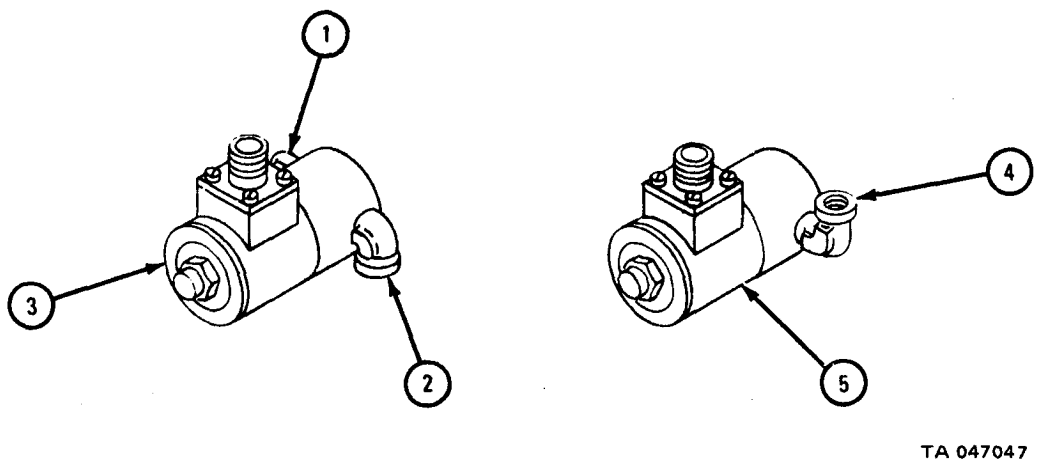
FRAME 9

NOTE

Before unscrewing elbow fittings (1, 2, and 4) from fuel solenoids, note position of each elbow fitting.

1. Using open end wrench, unscrew elbow fittings (1 and 2) from fuel inlet solenoid valve (3).
2. Using open end wrench, unscrew elbow (4) from fuel return solenoid valve (5).

END OF TASK



TA 047047

c. Replacement.

FRAME 1

WARNING

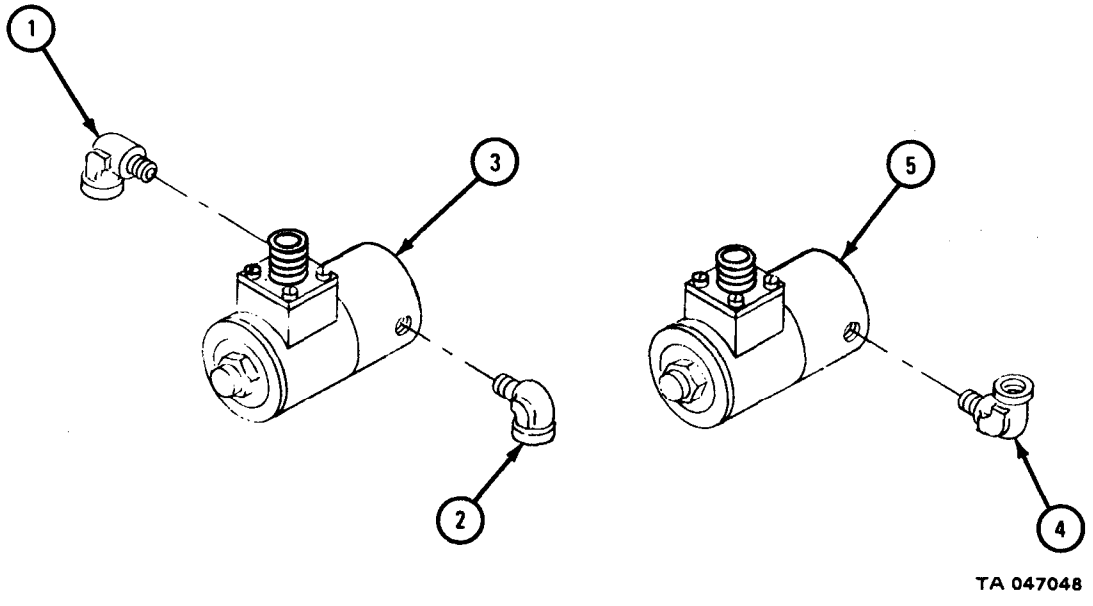
Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

Clean all fuel line fittings with solvent. Before putting fittings together, put a thin coat of liquid gasket cement on threads of fittings.

1. Screw in and hand tighten two elbow fittings (1 and 2) into fuel inlet solenoid valve (3).
2. Using open end wrench, tighten elbow fittings (1 and 2) in fuel inlet solenoid valve. Position each elbow fitting as noted.
3. Screw in and hand tighten elbow fitting (4) into the hole on the side shown of fuel return solenoid valve (5).
4. Using open end wrench, tighten elbow fitting (4) in fuel return solenoid valve (5).- Position elbow fitting as noted.

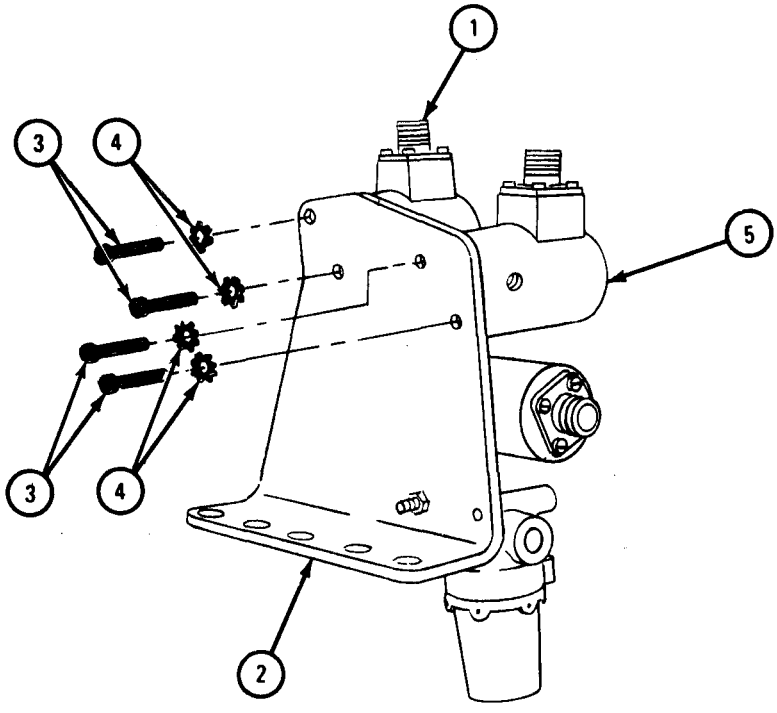
GO TO FRAME 2



FRAME 2

1. Put fuel inlet solenoid valve (1) against bracket (2) and aline mounting holes of solenoid with holes in bracket.
2. Using flat-tip screwdriver, screw in and tighten two screws (3) and two lockwashers (4) to hold solenoid valve (1) to bracket (2).
3. Put fuel return solenoid valve (5) against bracket (2) and aline mounting holes in solenoid with holes in bracket.
4. Using flat-tip screwdriver, screw in and tighten two screws (3) and two lockwashers (4) to hold solenoid valve (5) to bracket (2) .

GO TO FRAME 3

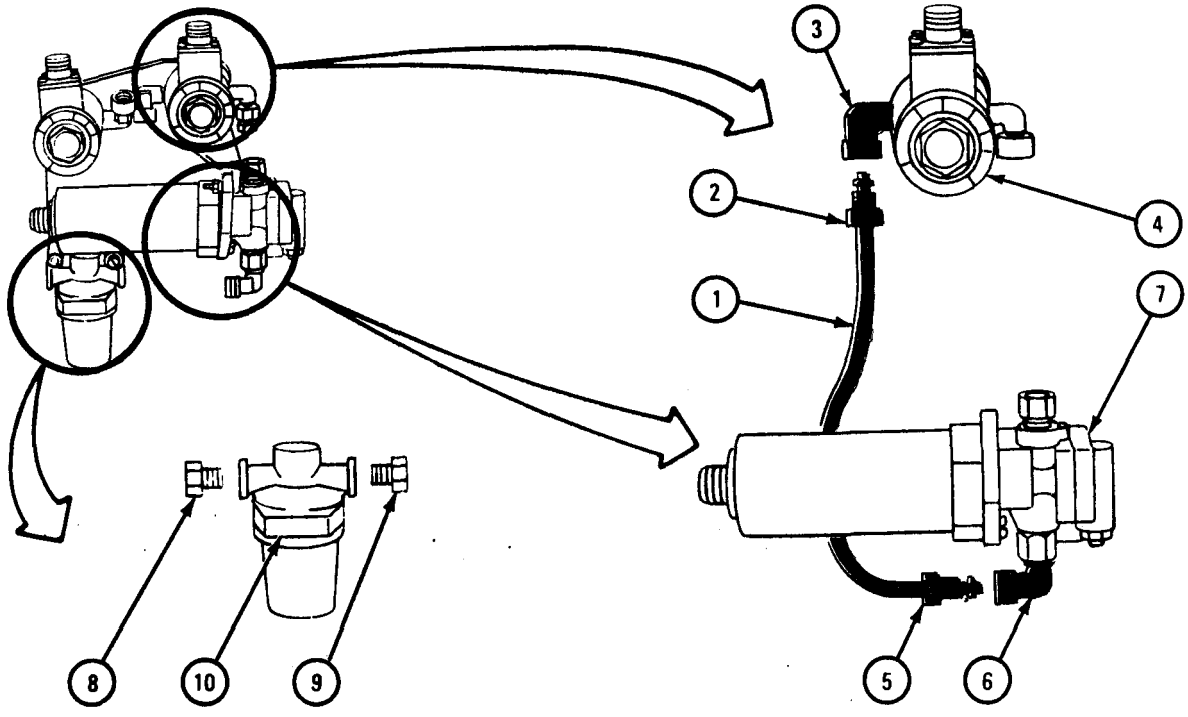


TA 047049

FRAME 3

1. Route fuel tube (1) as shown.
2. Screw coupling nut (2) into elbow (3) on fuel inlet solenoid (4). Using open end wrench, tighten coupling nut.
3. Screw coupling nut (5) into elbow (6) on fuel pump (7). Using open end wrench, tighten coupling nut.
4. Screw adapters (8 and 9) into filter head (10). Using open end wrench, tighten adapters.

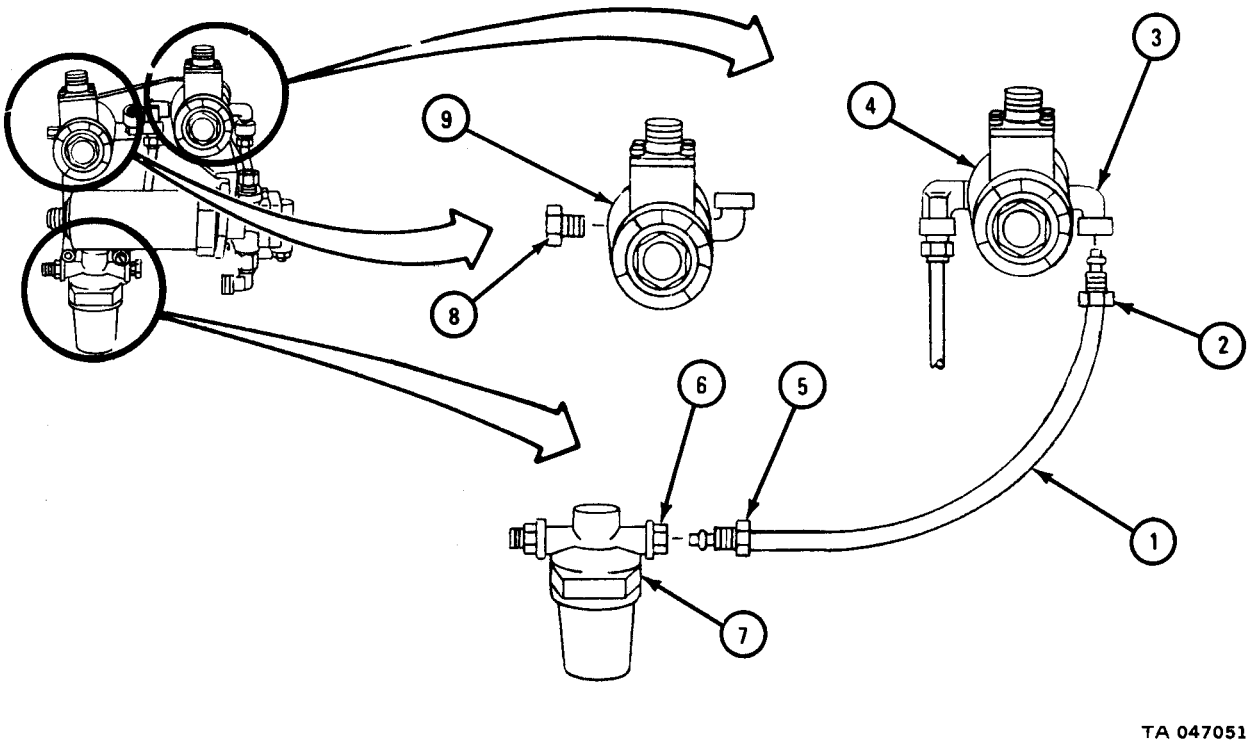
GO TO FRAME 4



FRAME 4

1. Route fuel tube (1) as shown.
2. Screw coupling nut (2) into elbow (3) on fuel inlet solenoid (4). Using open end wrench, tighten coupling nut.
3. Screw coupling nut (5) into adapter (6) on filter head (7). Using open end wrench, tighten coupling nut.
4. Screw adapter (8) into fuel return solenoid (9). Using open end wrench, tighten adapter.

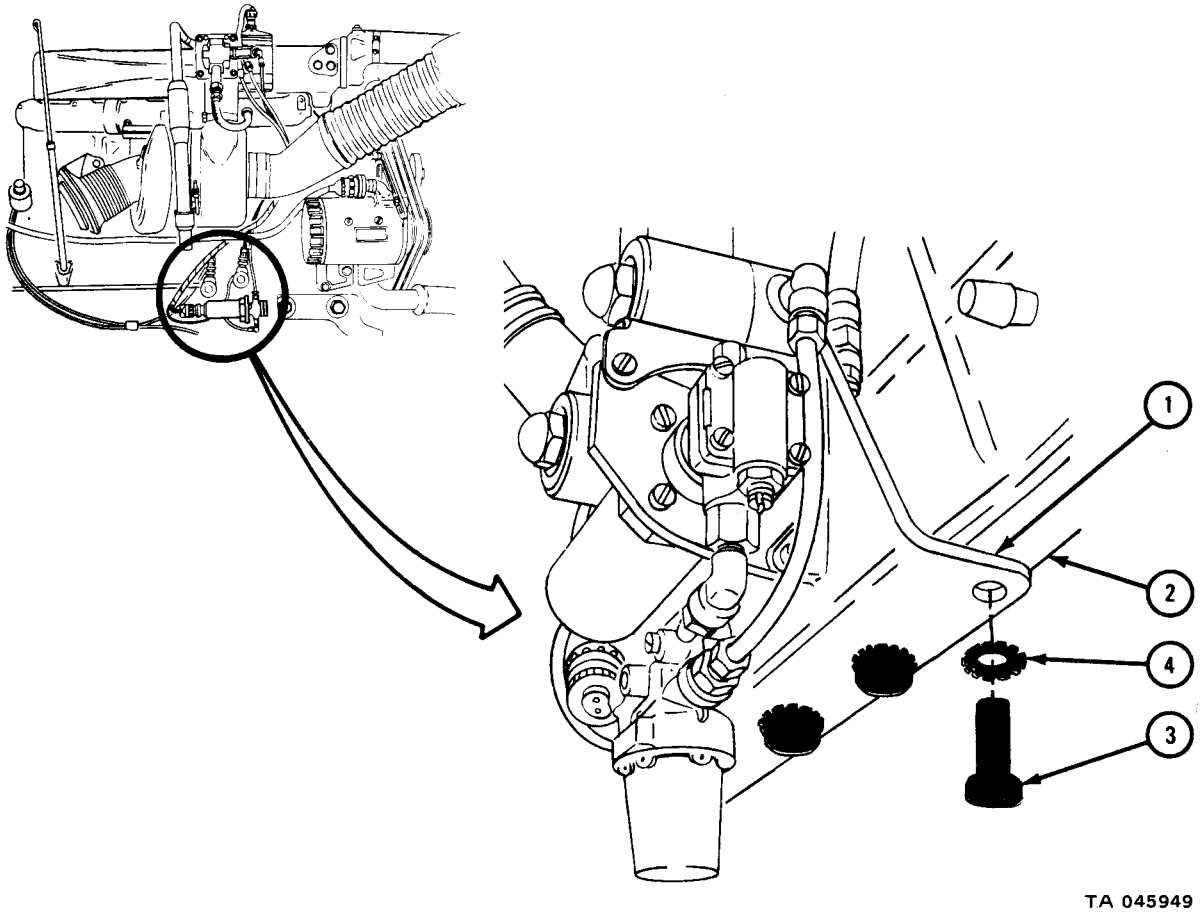
GO TO FRAME 5



FRAME 5

1. Place bracket (1) on lower right side of engine compartment as shown. Aline three holes in bracket with three holes on crankcase flange (2).
2. Using socket wrench, screw in and tighten three bolts (3) with three lockwashers (4).

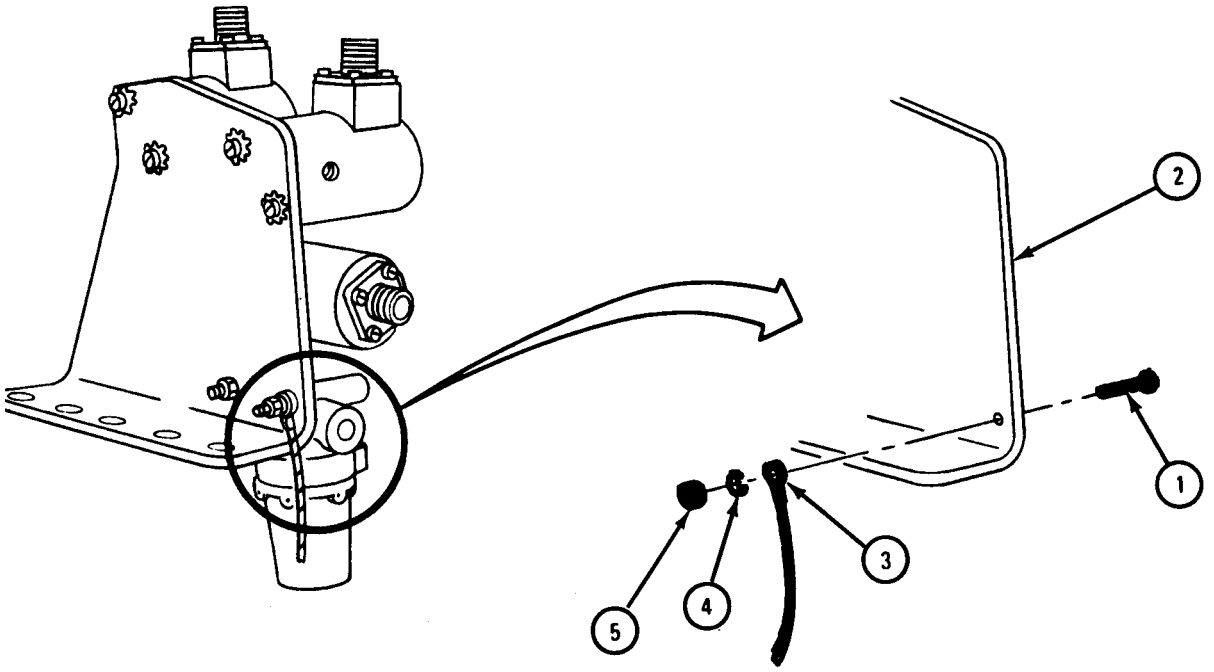
GO TO FRAME 6



FRAME 6

1. Put screw (1) through hole in mounting bracket (2).
2. Put ground lug (3), lockwasher (4), and nut (5) on screw (1).
3. Using open end wrench and flat-tip screwdriver, tighten nut (5).

GO TO FRAME 7

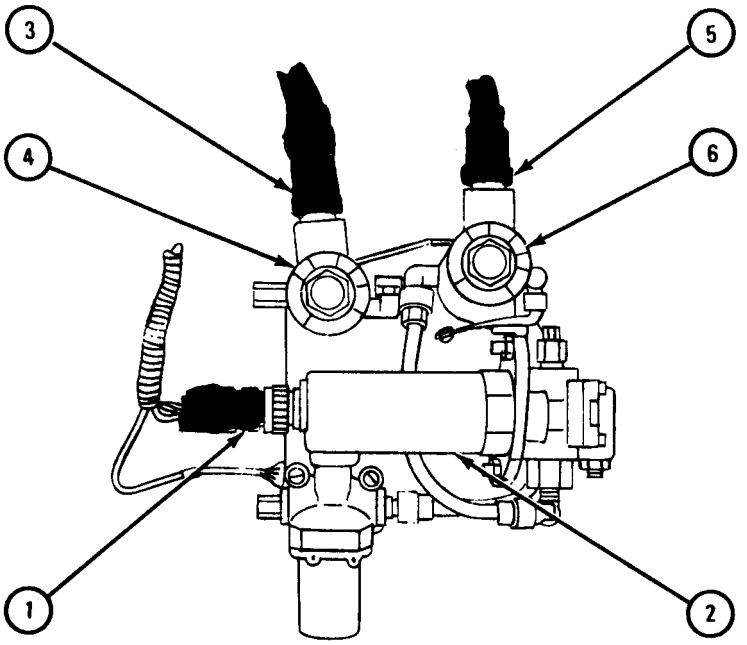


TA 047403

FRAME 7

1. Plug connector (1) into fuel pump (2) and tighten plug.
2. Plug connector (3) into fuel return solenoid valve (4) and tighten plug.
3. Plug connector (5) into fuel inlet solenoid valve (6) and tighten plug.

GO TO FRAME 8

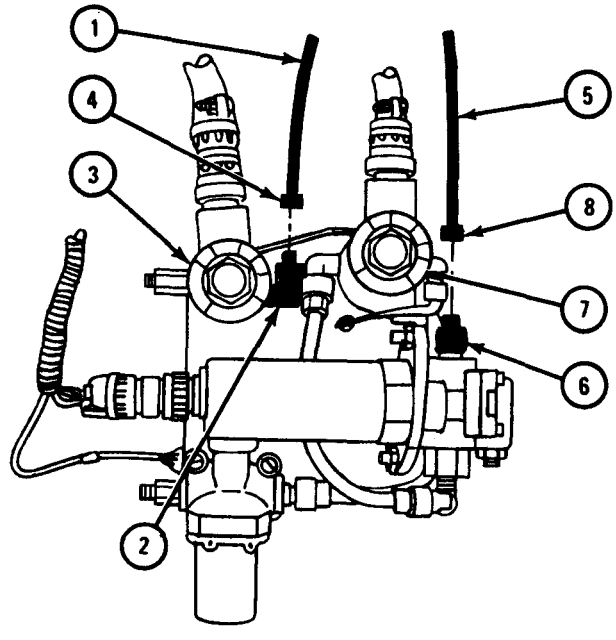


TA 047053

FRAME 8

1. Join fuel return tube (1) to elbow (2) on fuel return solenoid valve (3). Using open end wrench, tighten coupling nut (4).
2. Join fuel supply tube (5) to union (6) on fuel inlet solenoid valve (7). Using open end wrenches, tighten coupling nut (8).

GO TO FRAME 9



TA 047054

FRAME 9

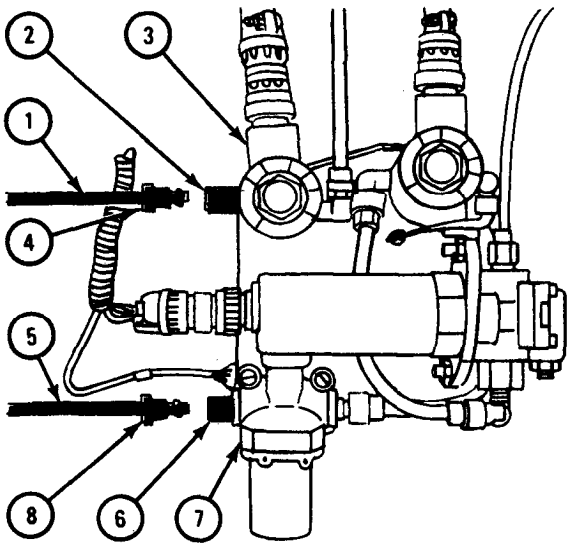
1. Join fuel return tube (1) to adapter (2) on fuel return solenoid valve (3). Using open end wrenches, tighten coupling nut (4).
2. Join fuel supply tube (5) to adapter (6) on fuel filter (7). Using open end wrenches, tighten coupling nut (8).

NOTE

Follow-on Maintenance Action Required:

1. Operate engine manifold heater. Refer to TM 9-2320-211-10.
2. Check all manifold heater fuel lines and fittings for leaks.
3. Turn off engine manifold heater. Refer to TM 9-2320-211-10.
4. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 047055

4-25. MANIFOLD HEATER NOZZLE AND VALVE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: l-inch wrench; Adjustable wrench; 9/16-inch open end wrench; 3/8-inch open end wrench; 7/16-inch open end wrench; l-pint container

SUPPLIES: None

PERSONNEL: One

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

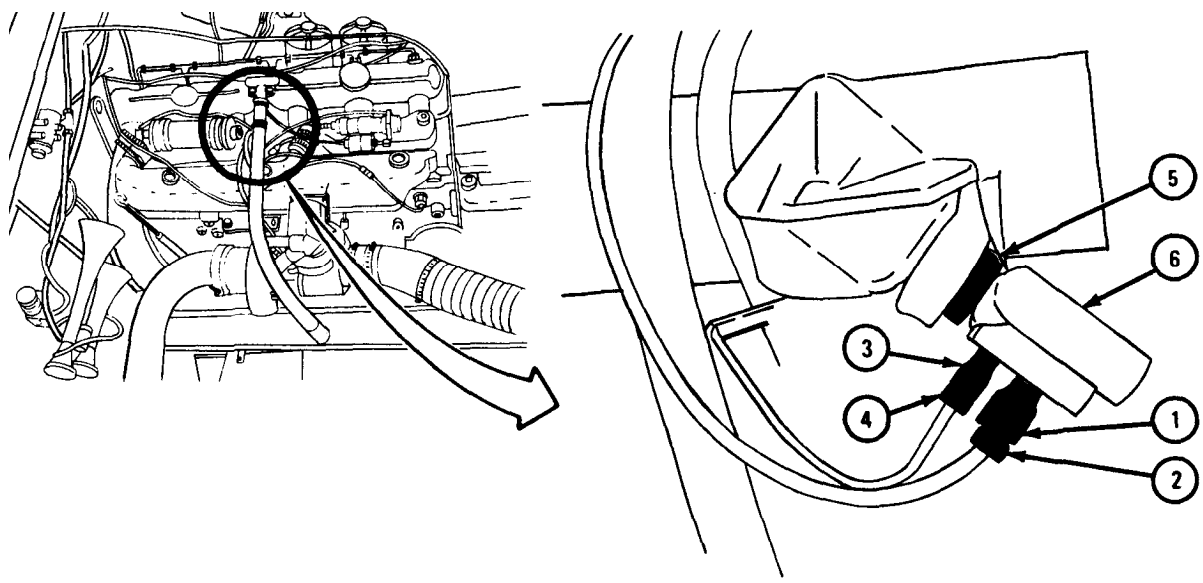
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 9/16-inch open end wrench, hold adapter (l). Using 7/16-inch open end wrench, unscrew and take out inverted nut and tube (2).
2. Using 9/16-inch wrench, unscrew and take out adapter (1).
3. Using adjustable wrench, hold adapter (3). Using 3/8-inch open end wrench, unscrew and take out inverted nut and tube (4).
4. Using adjustable wrench, unscrew and take out adapter (3).
5. Using l-inch wrench, loosen locknut (5).
6. Unscrew and take out nozzle and check valve assembly (6).

END OF TASK



TA 088894

c. Replacement.

FRAME 1

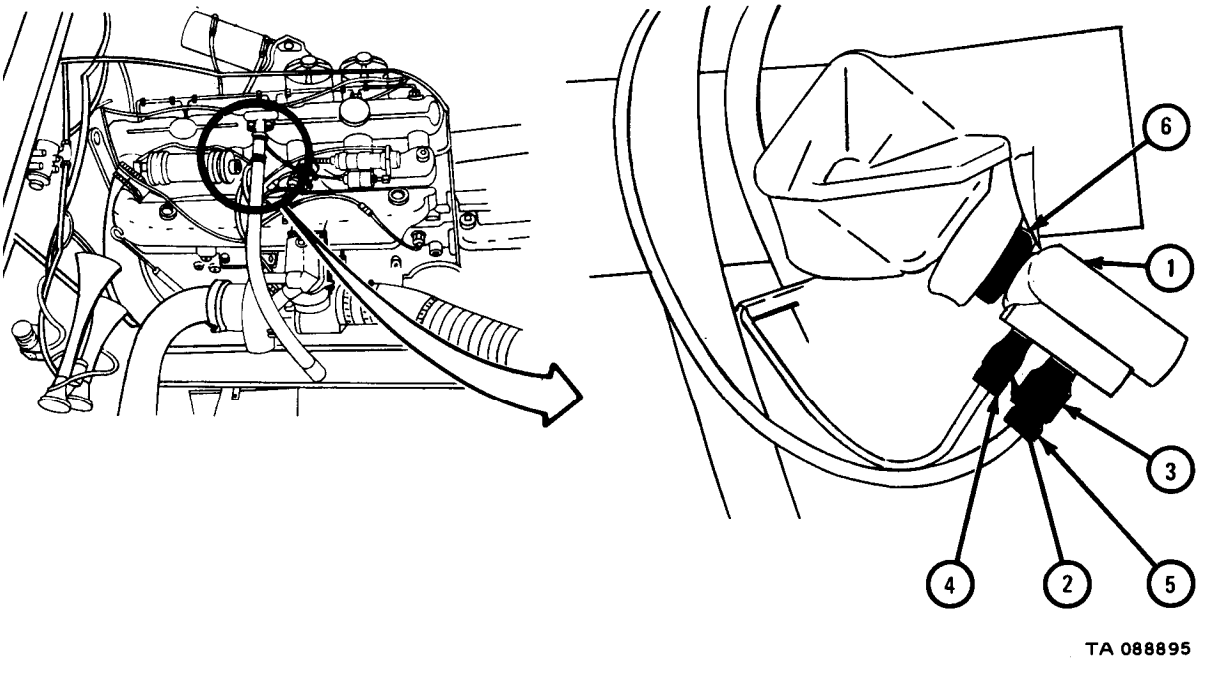
1. Screw in nozzle and check valve assembly (1) until it stops. Then back it out to a position where tube adapters (2 and 3) line up with tubes and inverted nuts (4 and 5).
2. Using l-inch wrench, tighten locknut (6).
3. Using adjustable wrench, screw in and tighten adapter (2).
4. Using 3/8-inch open end wrench, screw in and tighten inverted nut and tube (4).
5. Using 9/16-inch wrench, screw in and tighten adapter (3).
6. Using 7/16-inch open end wrench, screw in and tighten inverted nut and tube (5).

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



4-26. MANIFOLD HEATER (SIDE-MOUNTED) SPARK PLUG AND NOZZLE REMOVAL AND REPLACEMENT.

TOOLS: Wrench
General mechanic's tool kit

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.

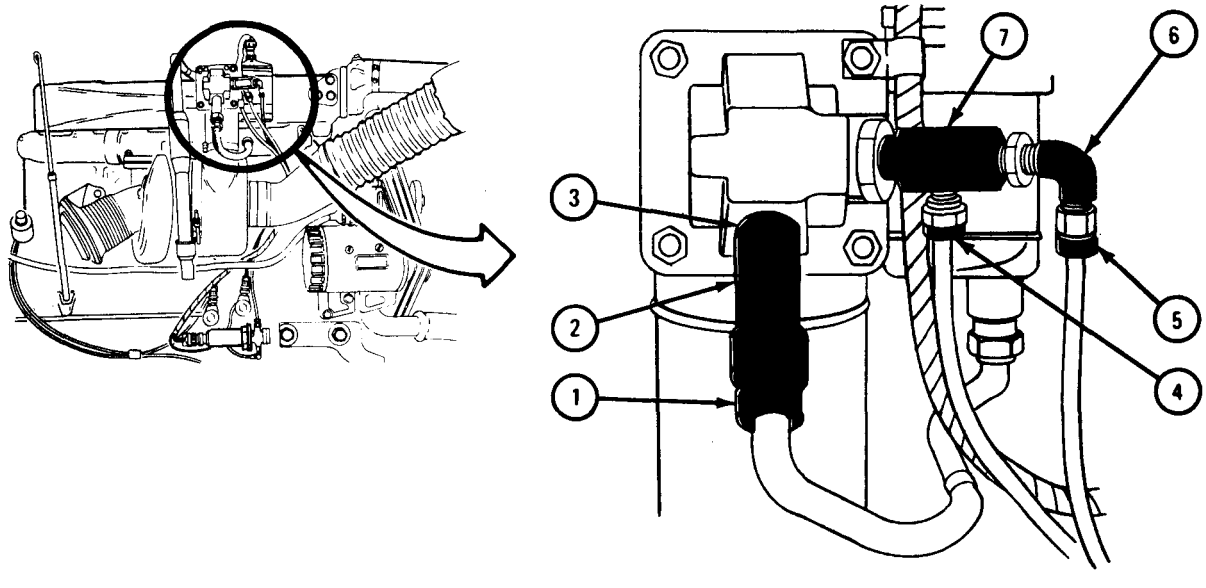
(2) Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Using wrench, unscrew and take off electrical cable connector (1) from spark plug (2).
2. Using wrench, unscrew and takeoff spark plug (2) with gasket (3).
3. Using wrenches, unscrew and take off fuel return tube fitting (4).
4. Using wrenches, unscrew and take off fuel inlet tube fitting (5).
5. Using wrench, unscrew and takeoff elbow (6).
6. Using wrench, unscrew and take off nozzle (7).

END OF TASK



TA 045942

c. Replacement.

FRAME 1

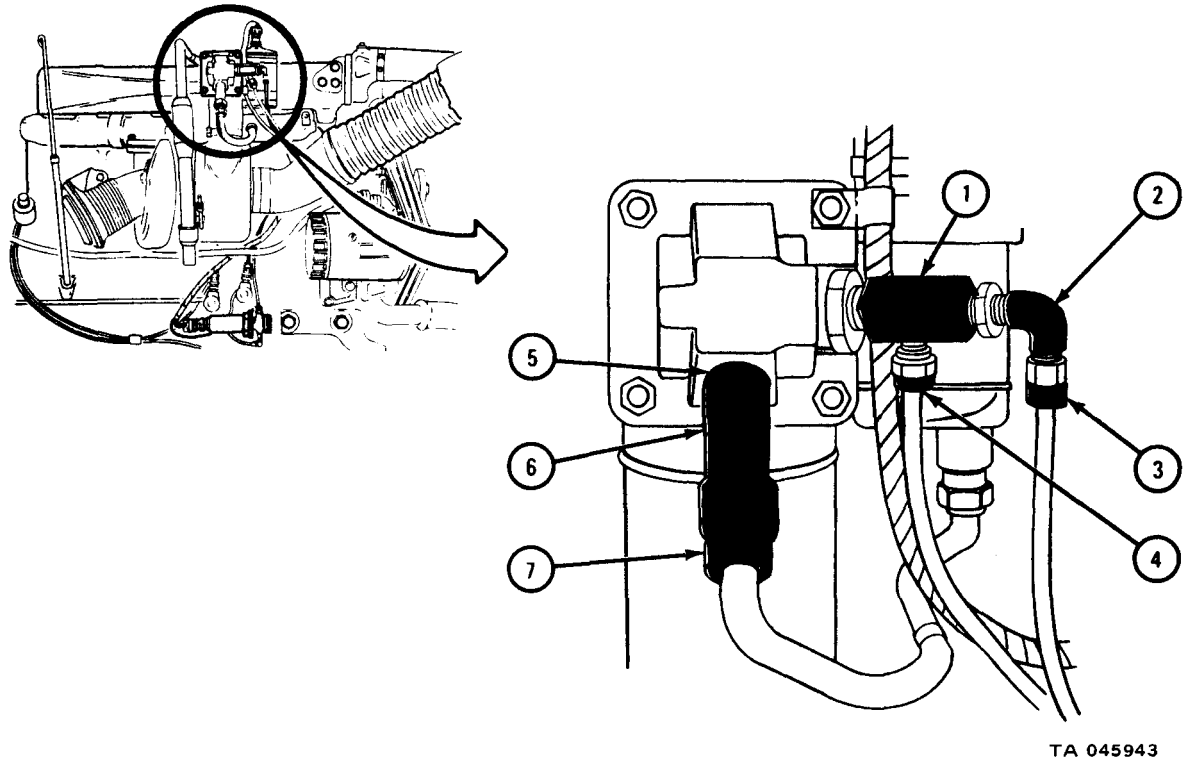
1. Using wrench, screw in and tighten nozzle (1).
2. Using wrench, screw on and tighten elbow (2) to nozzle (l).
3. Using wrench, screw on and tighten inlet tube fitting (3).
4. Using wrenches, screw on and tighten return tube fitting (4).
5. Put gasket (5) on spark plug (6) and using wrench, screw on and tighten spark plug (6).
6. Using wrench, screw on and tighten electrical cable connector (7).

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



4-27. MANIFOLD HEATER SPARK PLUG REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench
7/8-inch wrench

SUPPLIES: None

PERSONNEL: One

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

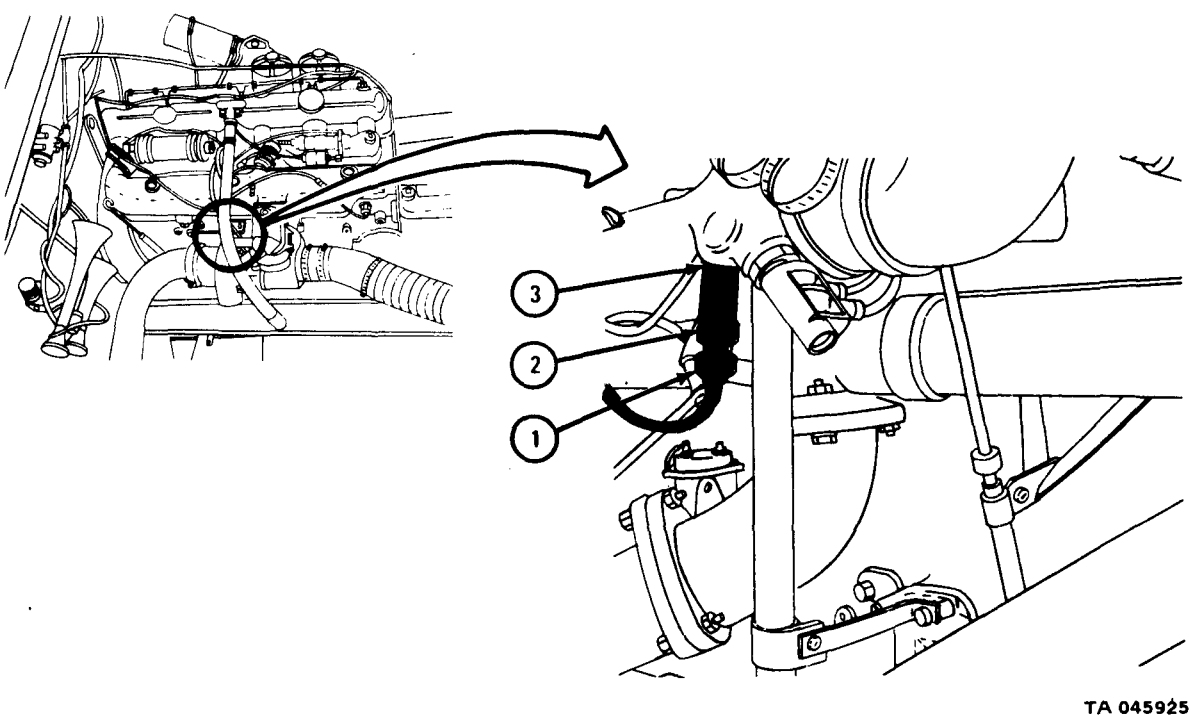
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 3/4-inch wrench, unscrew and take off coupling nut on electrical cable (1) from spark plug (2).
2. Using 7/8-inch wrench, unscrew and take off spark plug (2). Take off gasket (3).

END OF TASK



TA 045925

c. Replacement.

FRAME 1

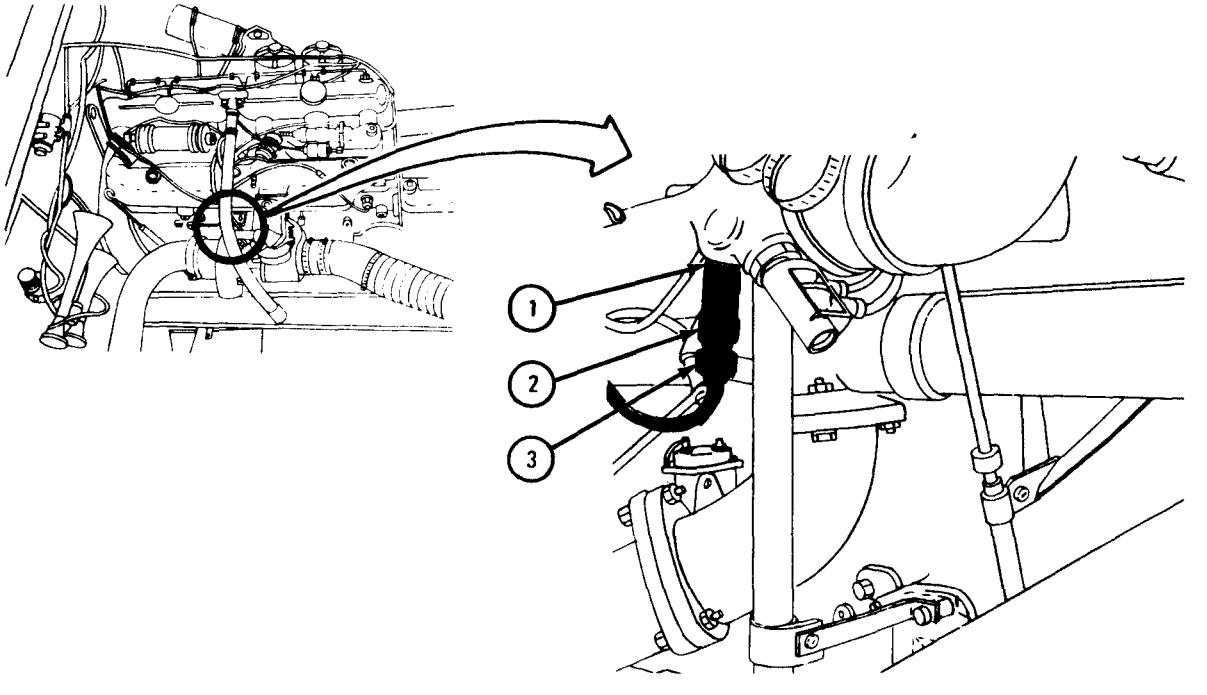
1. Put gasket (1) on spark plug (2). Using 7/8-inch wrench, screw on and tighten spark plug (2).
2. Using 3/4-inch wrench, screw on and tighten coupling nut on electrical cable (3) to spark plug (2).

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



TA 045926

4-28. MANIFOLD HEATER (TOP MOUNTED COVERED) IGNITION COIL AND FUEL PUMP REMOVAL AND REPLACEMENT (TRUCKS WITH ENGINE LDS-465-lA).

TOOLS: 3/8-inch wrench
7/8-inch wrench
7/16-inch wrench
Flat-tip screwdriver

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.

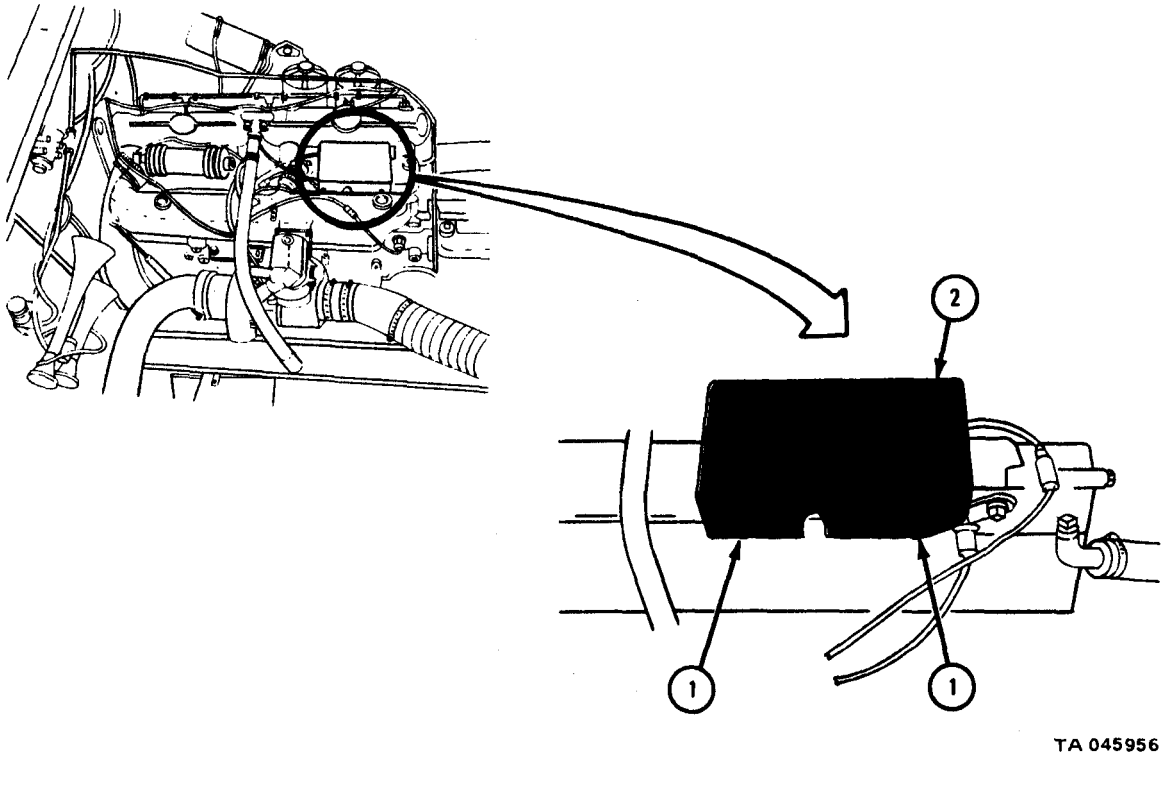
(2) Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Using l/2-inch wrench, unscrew and takeout four capscrews (l).
2. Takeoff cover (2).

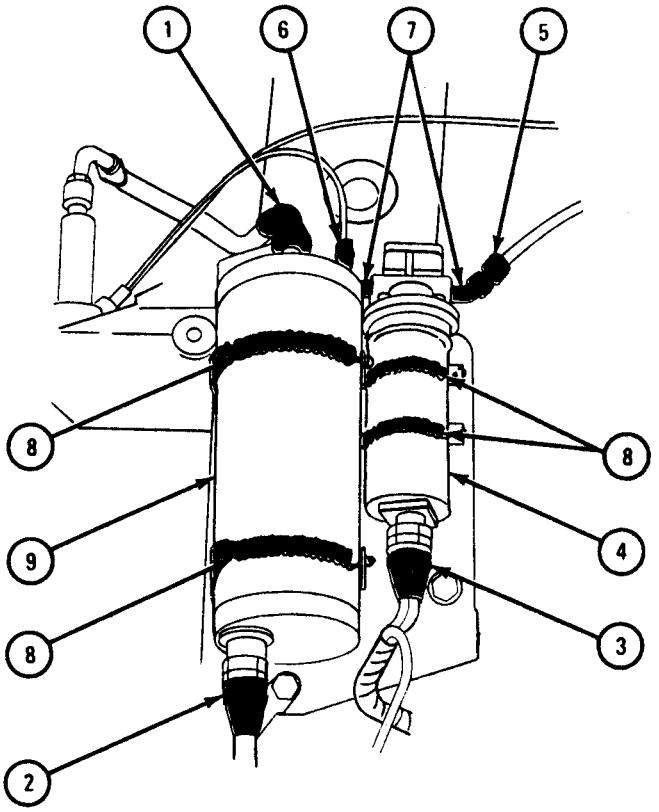
GO TO FRAME 2



FRAME 2

1. Using 7/8-inch wrench, unscrew and take off electrical cable connector (l).
2. Unscrew and takeoff electrical cable connector (2).
3. Unscrew and take off electrical cable connector (3) from fuel pump (4).
4. Using 7/16-inch wrench, unscrew and take off tube fitting (5).
5. Using 3/8-inch wrench, unscrew and take off tube fitting (6).
6. Using 7/16-inch and 3/8-inch wrenches, unscrew and take off two elbows (7).
7. Take off four clamps (8).
8. Take off ignition coil (9) and fuel pump (4).

END OF TASK



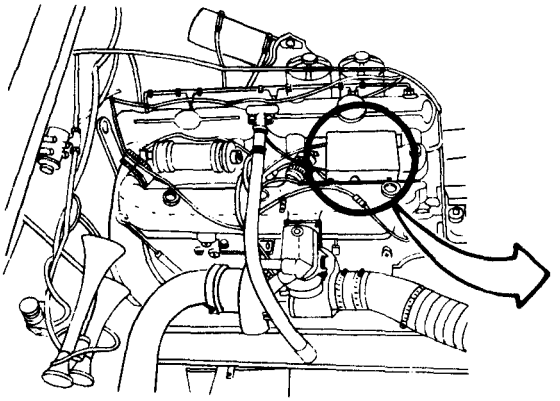
TA 105177

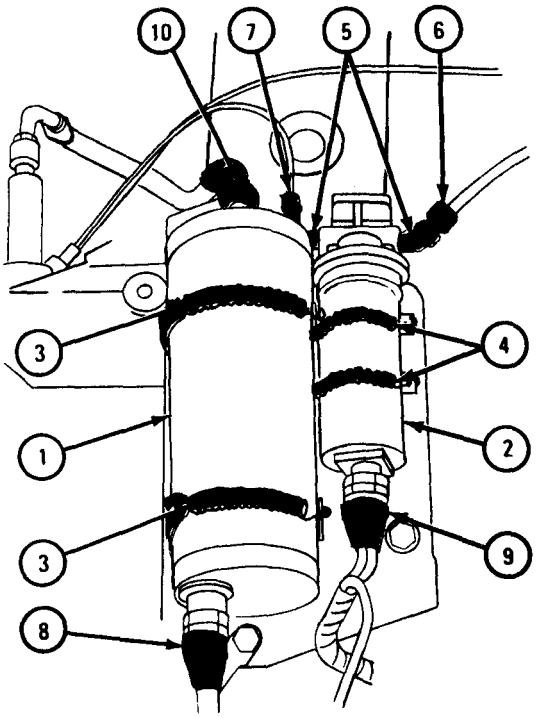
c. Replacement.

FRAME 1

1. Put ignition unit (1) and fuel pump (2) in place. Put on four clamps (3 and 4).
2. Using 3/8-inch and 7/16-inch wrenches, screw on and tighten two elbows (5).
3. Using 7/16-inch wrench, screw on and tighten tube fitting (6).
4. Using 3/8-inch wrench, screw on and tighten tube fitting (7).
5. Screw on and tighten electrical cable connectors (8 and 9).
6. Using 7/8-inch wrench, screw on and tighten electrical cable connector (10).

GO TO FRAME 2





TA 045957

FRAME 2

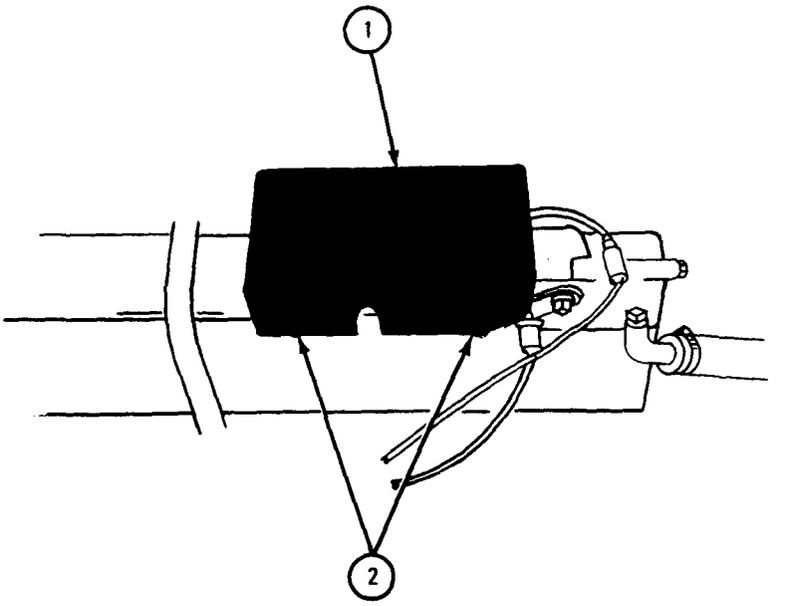
1. Put cover (1) in place, alining screw holes.
2. Using l/2-inch wrench, screw on and tighten four capscrews (2).

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 083334

4-29. MANIFOLD HEATER IGNITION UNIT REMOVAL AND REPLACEMENT.

TOOLS: 7/8-inch wrench
1/2-inch socket wrench
Ratchet
6-inch extension

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

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

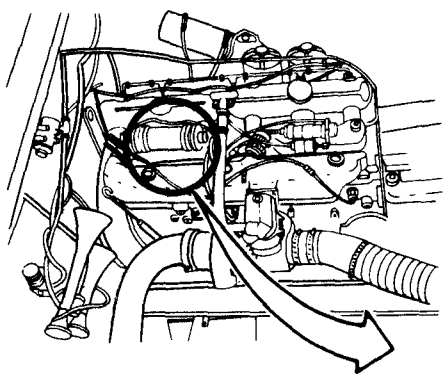
(2) Disconnect battery ground cable. Refer to para 7-44.

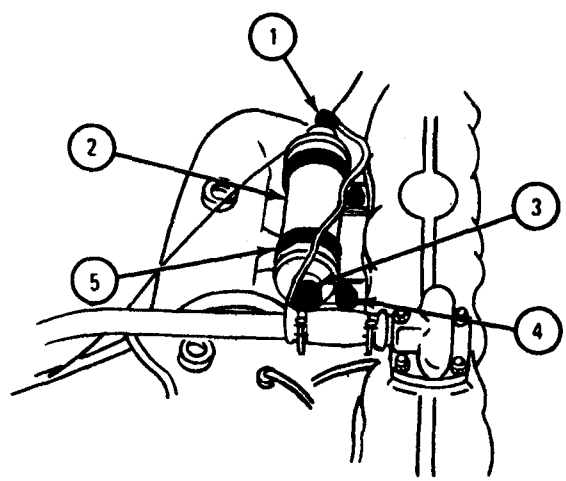
b. Removal.

FRAME 1

1. Unscrew and take off electrical connector (1) from ignition unit (2).
2. Using 7/8-inch wrench, unscrew and take off electrical connector (3) from ignition unit (2).
3. Using 1/2-inch socket wrench with ratchet and 6-inch extension, unscrew and take out two screws with washers (4).
4. Slide off two clamps (5) from ignition unit (2).
5. Take out ignition unit (2).

END OF TASK





TA 045931

c. Replacement.

FRAME 1

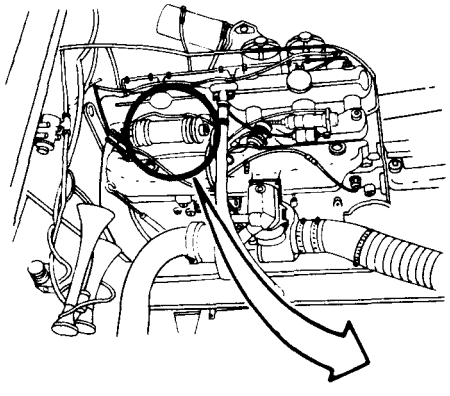
1. Slide two clamps (1) on ignition unit (2).
2. Put ignition unit (2) with two clamps (1) in place. Aline holes in clamps with holes in manifold (3).
3. Using 1/2-inch socket wrench with ratchet and 6-inch extension, screw on and tighten two screws with washers (4).
4. Using 7/8-inch wrench, screw on and tighten electrical connector (5) to ignition unit (2).
5. Screw on and tighten electrical connector (6) to ignition unit (2).

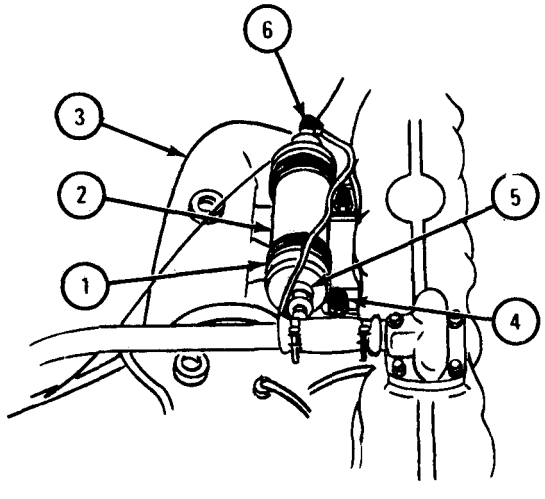
NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK





TA 045932

4-30. MANIFOLD HEATER (SIDE MOUNTED) IGNITION UNIT REMOVAL AND REPLACEMENT.

WARNING

Voltage output of ignition unit can cause dangerous electrical shock. Do not touch any uninsulated or live connections until you make sure manifold heater switch is in OFF position.

TOOLS: 7/8-inch open end wrench
1/2-inch socket wrench
10-inch extension

SUPPLIES: None

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, manifold heater switch in OFF position, handbrake set.

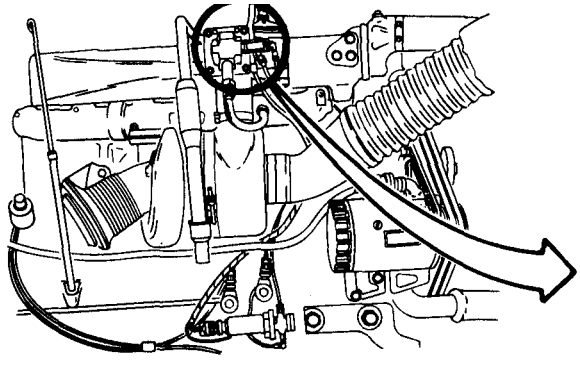
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

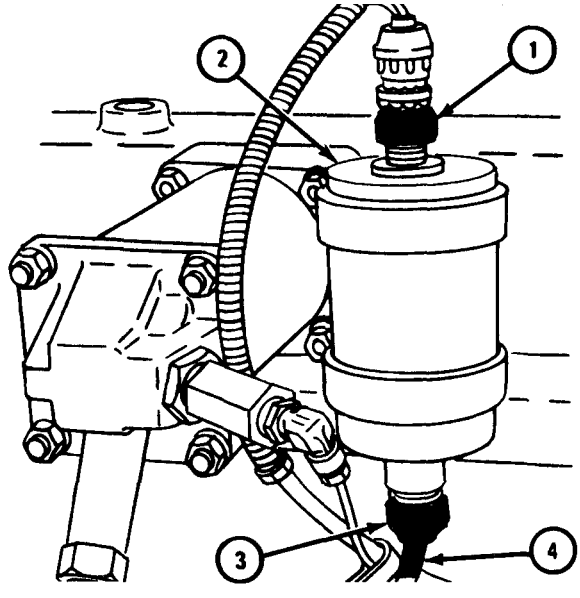
b. Removal.

FRAME 1

1. Unscrew connector (1) and take it off ignition unit (2).
2. Using 7/8-inch open end wrench, unscrew nut (3) and pull ignition lead (4) out of ignition unit (2).

GO TO FRAME 2



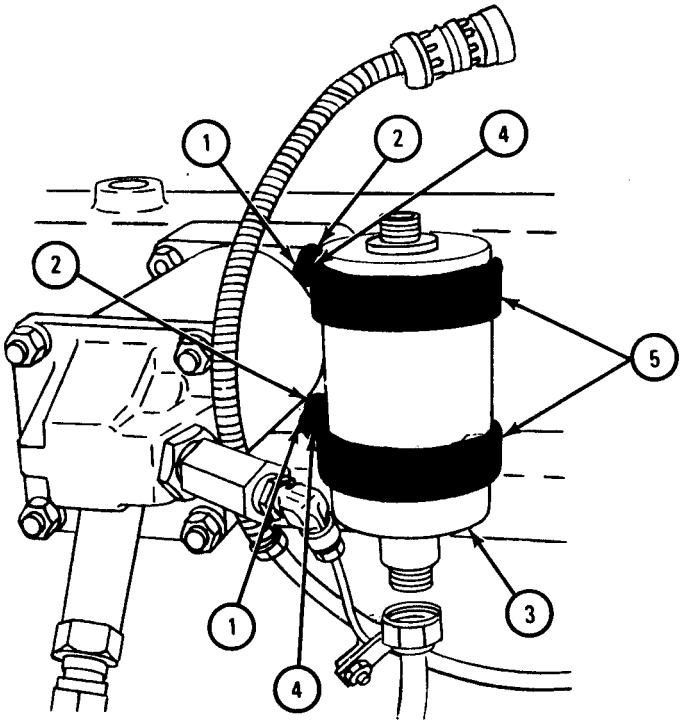


TA 045952

FRAME 2

1. Using l/2-inch socket wrench with 10-inch extension, unscrew and take off two nuts (1). Take off two lockwashers (2).
2. Take ignition unit (3) off manifold studs (4).
3. Slide two clamps (5) off ignition unit (3).

END OF TASK

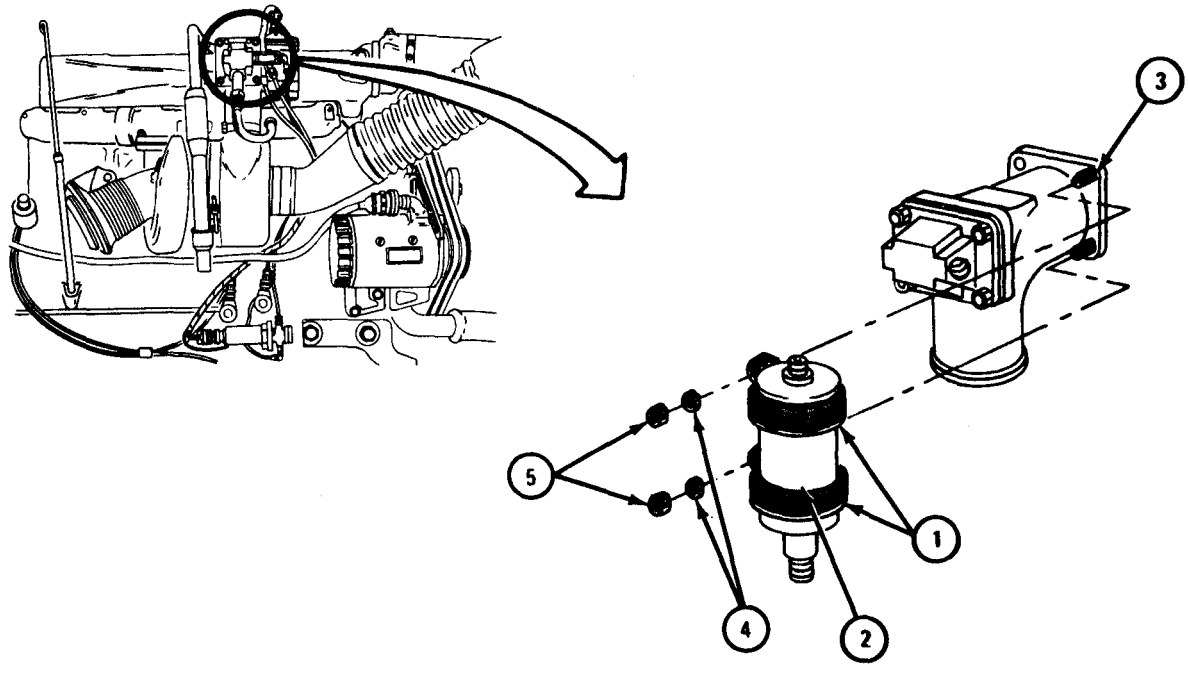


c. Replacement.

FRAME 1

1. Slide two clamps (1) on ignition unit (2). Slide one clamp up to ridge at top of ignition unit.
2. Set spacing between clamps (1) so holes in clamps line up with two threaded studs (3).
3. Put two clamps (1) over threaded studs (3). Put two lockwashers (4) on studs and screw on two nuts (5). Using 1/2-inch socket wrench with 10-inch extension, tighten nuts.

GO TO FRAME 2



TA 045953

FRAME 2

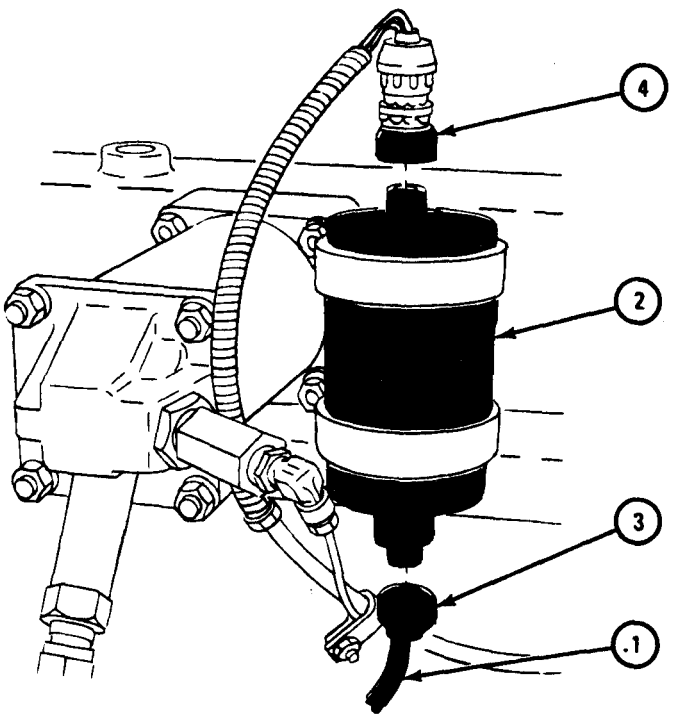
1. Plug ignition lead (1) into connector on bottom of ignition unit (2). Using 7/8-inch open end wrench, tighten nut (3).
2. Plug connector (4) into connector on top of ignition unit (2). Screw on and tighten connector coupling nut.

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



TA 047401

4-31. MANIFOLD HEATER WIRING HARNESS REMOVAL AND REPLACEMENT.

TOOLS: Pliers
l/2-inch wrench

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.

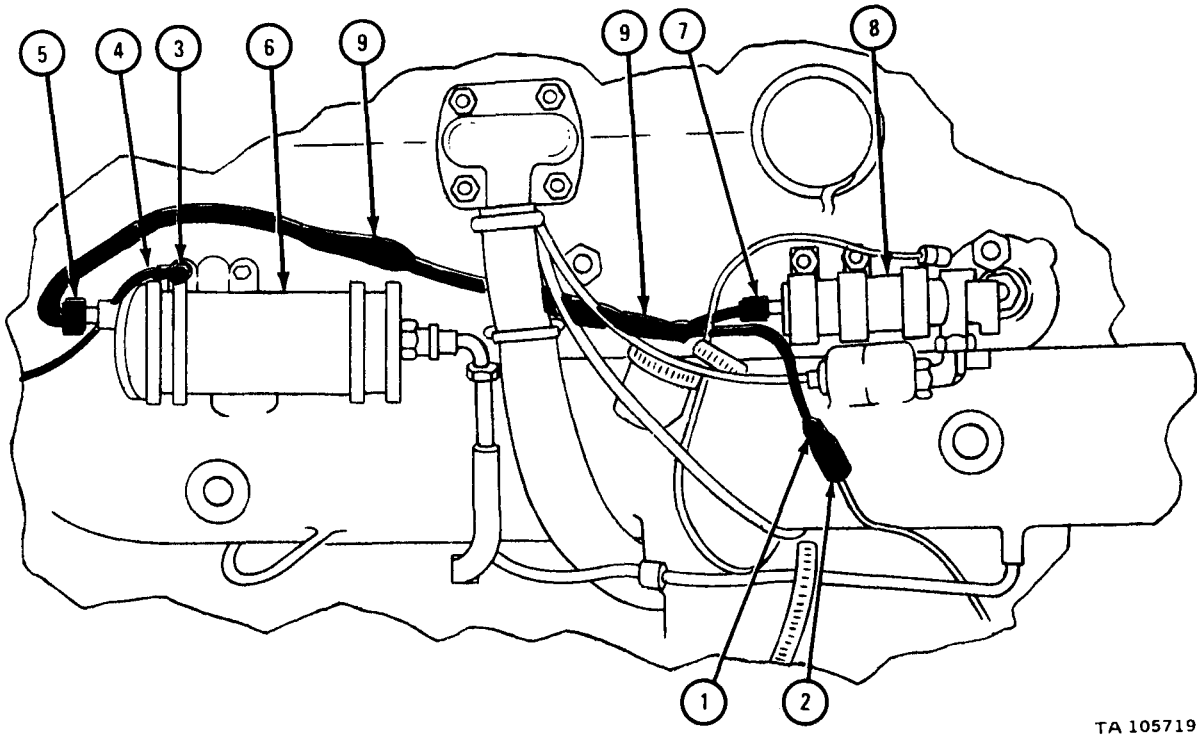
(2) Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Pull plug (1) out of connector (2).
2. Using l/2-inch wrench, unscrew and take out screw (3). Take off ground cable (4).
3. Using pliers, unscrew and take off connector (5) from ignition coil (6).
4. Using pliers, unscrew and take off connector (7) from fuel pump (8). Take off wiring harness (9).

END OF TASK



c. Replacement.

FRAME 1

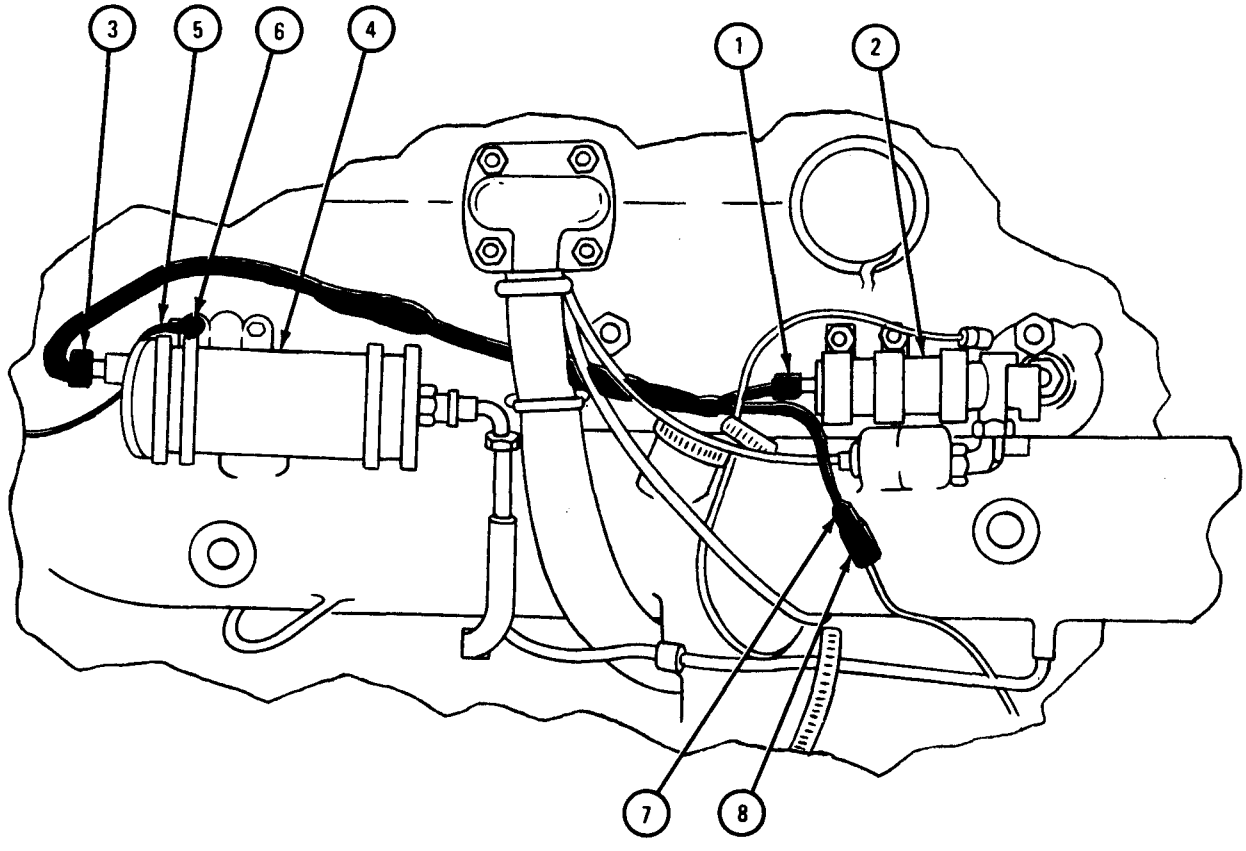
1. Using pliers, screw on and tighten connector (1) to fuel pump (2).
2. Using pliers, screw on and tighten connector (3) to ignition coil (4).
3. Put ground wire (5) in place and using 1/2-inch wrench, screw on and tighten screw (6).
4. Put plug (7) into connector (8).

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 105724

Section VIII. ACCELERATOR AND THROTTLE CONTROL

4-32. ENGINE STOP CABLE REMOVAL, REPLACEMENT AND ADJUSTMENT.

TOOLS: 9/16-inch open end wrench
11/32-inch open end wrench
Cross-tip screwdriver (Phillips type)

SUPPLIES: None

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.

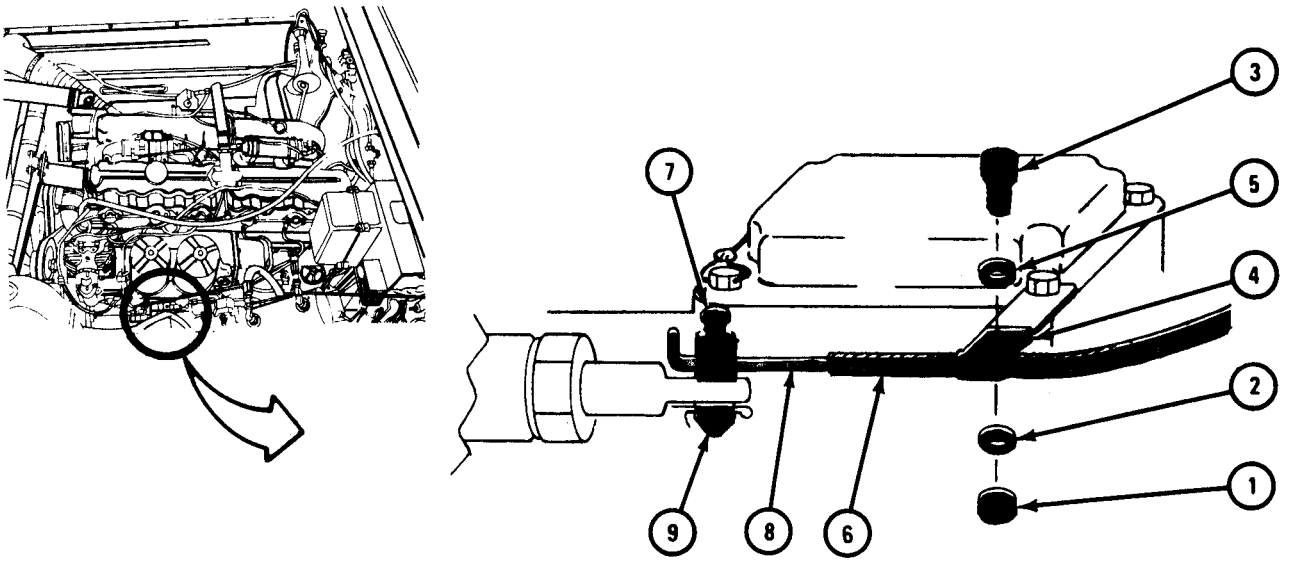
(2) Remove main light switch. Refer to para 7-8.

b. Removal.

FRAME 1

1. Using 11/32-inch wrench and screwdriver, unscrew and take off nut (1) and lockwasher (2). Take screw (3) out of clamp (4), and take off lockwasher (5).
2. Take clamp (4) off control cable (6).
3. Using screwdriver, loosen screw (7). Straighten end of control cable wire (8) and pull it out of swivel (9).

GO TO FRAME 2

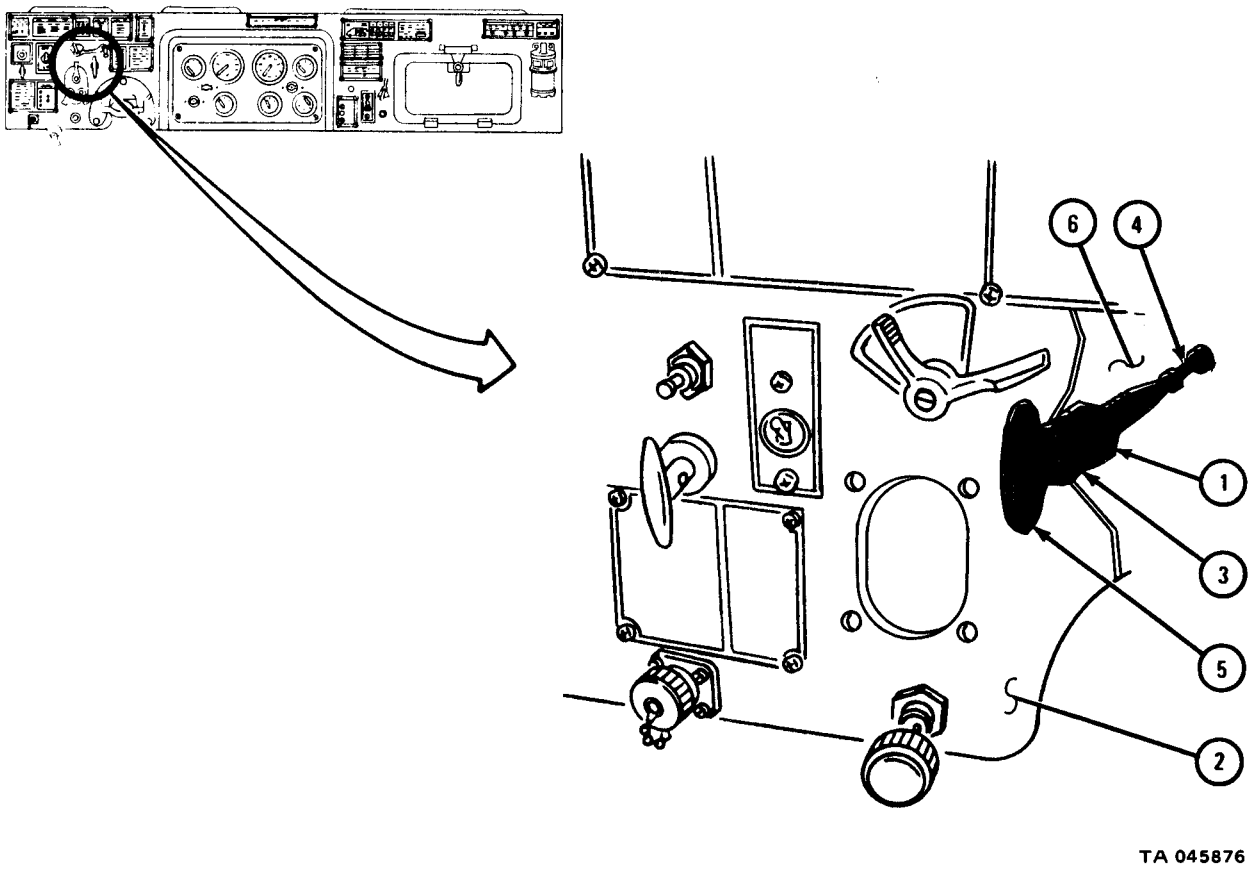


TA 054794

FRAME 2

1. Using 9/16 -inch wrench, unscrew nut (l) behind instrument panel (2). Slide nut and lockwasher (3) back on control cable (4).
2. Pull control assembly (5) out from front of instrument panel (2). Take nut (1) and lockwasher (3) off end of control cable (4) after it comes through hole in firewall (6).

END OF TASK

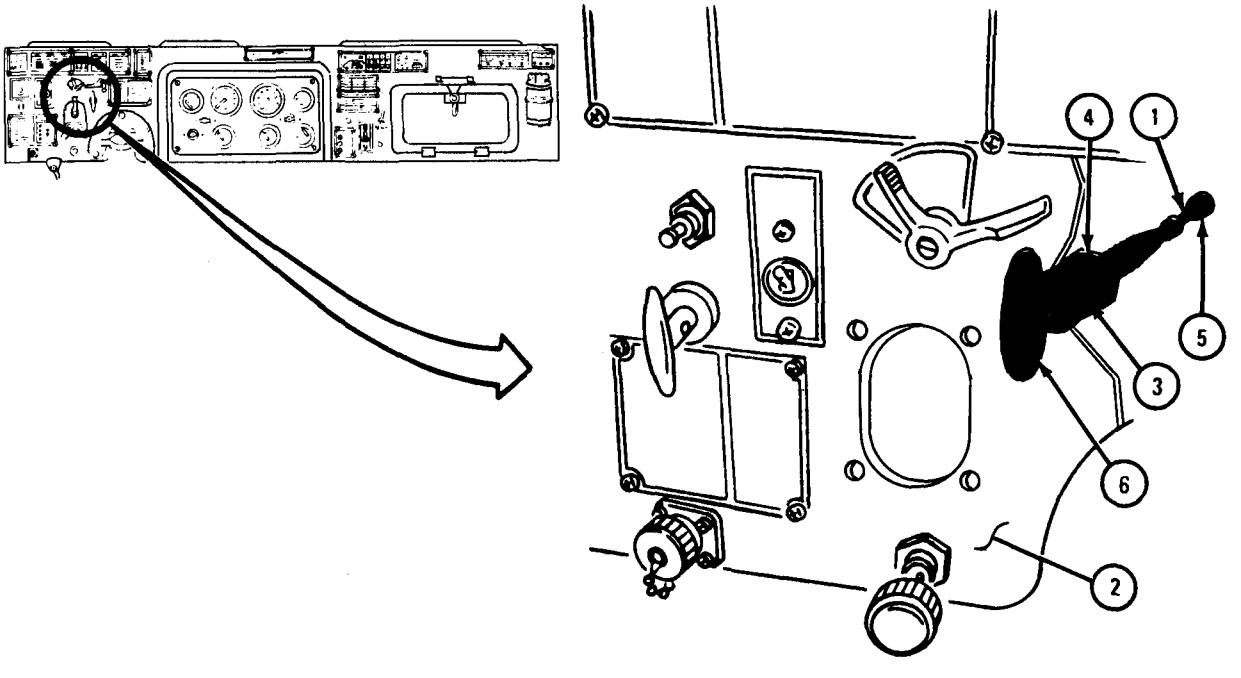


c. Replacement.

FRAME 1

1. Put end of controllable (1) through hole in instrument panel (2).
2. Working behind instrument panel (2), put lockwasher (3) and nut (4) on end of control cable (1) and slide them up to control cable to back of instrument panel (2).
3. Put end of control cable (1) through grommet (5) and push control assembly (6) into place as shown.
4. Using 9/16-inch wrench, screw on and tighten nut (4) with lockwasher (3).

GO TO FRAME 2

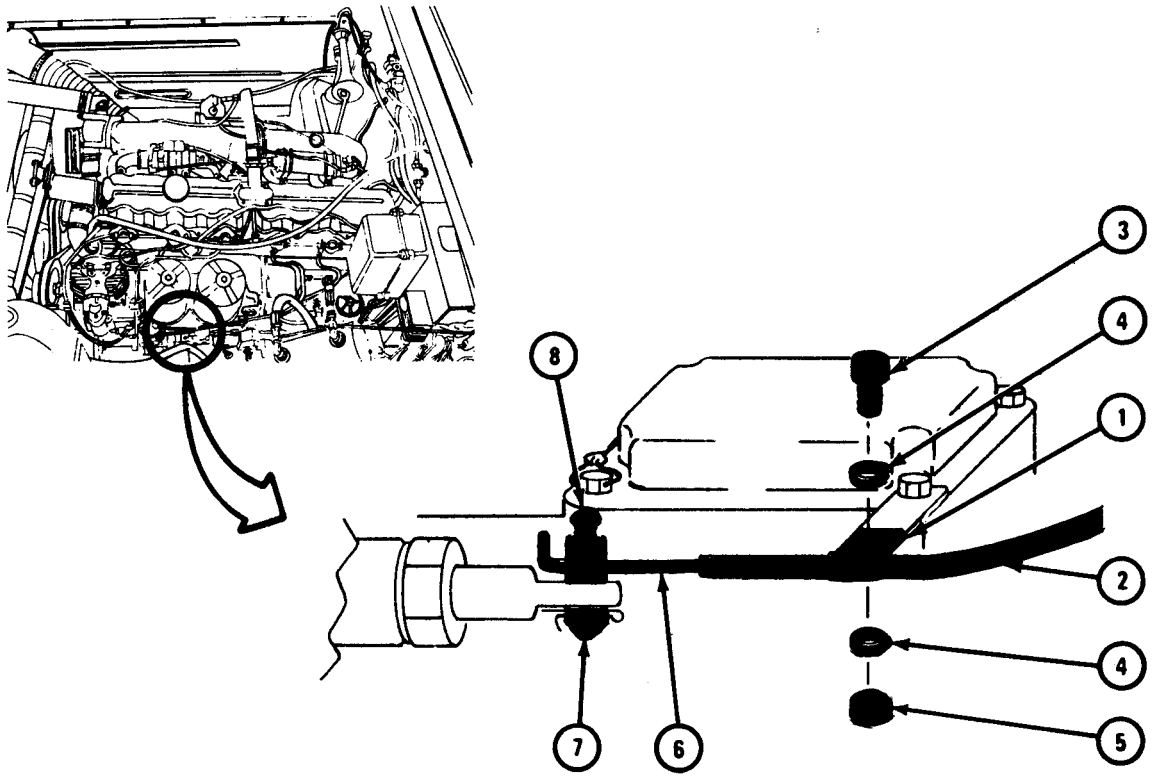


TA 054795

FRAME 2

1. Put clamp (1) on control cable (2) and injector pump flange as shown. Put in screw (3), two lockwashers (4), and nut (5) as shown. Do not tighten nut at this time.
2. Slide control cable (2) in clamp (1) to put control wire (6) through hole in swivel (7). Do not tighten screw (8) at this time.

END OF TASK



TA 045777

d. Adjustment.

FRAME 1

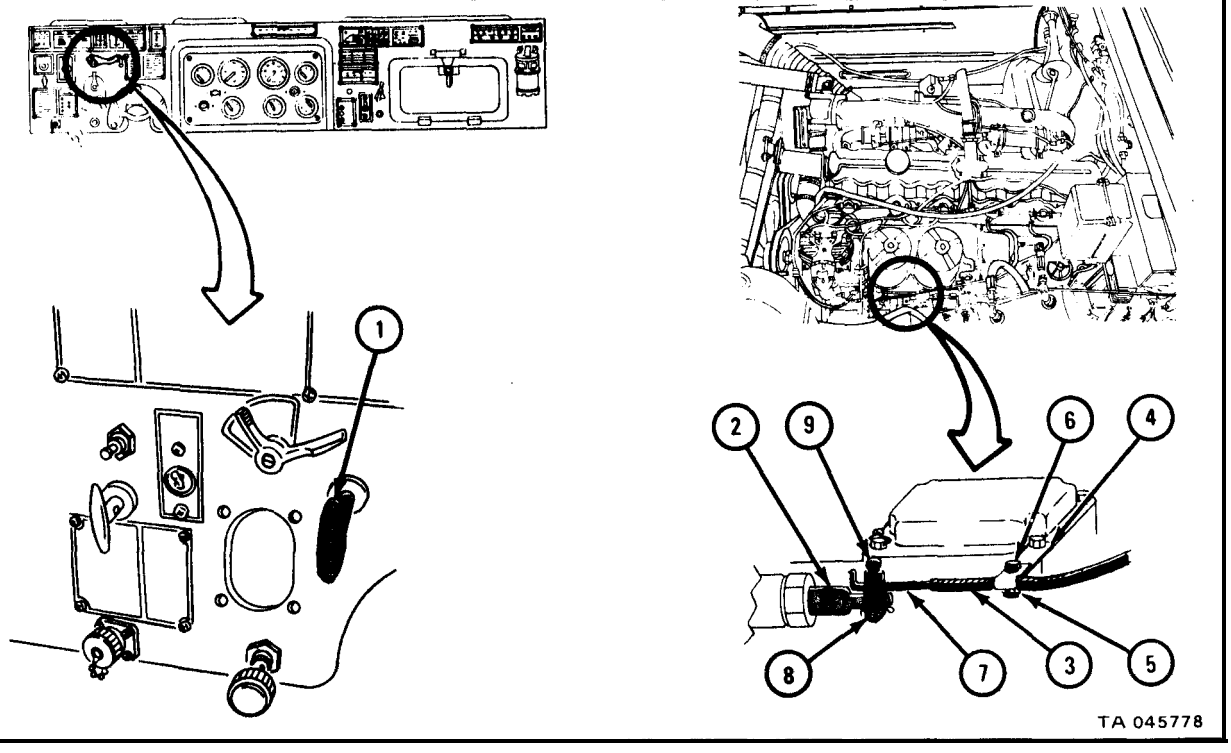
Soldier A	1.	Push ENGINE STOP control (1) all the way in.
Soldier B	2.	Pull fuel shutoff valve actuator (2) all the way out (toward firewall).
	3.	Slide control cable (3) in clamp (4) so that end of control cable clears fuel shutoff valve actuator (2) by no less than 1/2 inch.
	4.	Using 11/32-inch wrench and screwdriver, tighten nut (5) on screw (6). Push fuel shutoff valve actuator (2) all the way in.
	5.	Make sure control wire (7) passes through hole in swivel (8) as shown. Using screwdriver, tighten screw (9). Bend up end of control wire.
Soldier A	6.	Move ENGINE STOP control (1) out and in several times.
Soldier B	7.	Check that fuel shutoff valve actuator (2) and control linkage move smoothly without binding.

NOTE

Follow-on Maintenance Action Required:

1. Close hood and left side panel. Refer to TM 9-2320-211-10.
2. Replace main light switch. Refer to para 7-8.

END OF TASK



4-33. HAND THROTTLE REMOVAL AND REPLACEMENT.

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

SUPPLIES: None

PERSONNEL: One

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

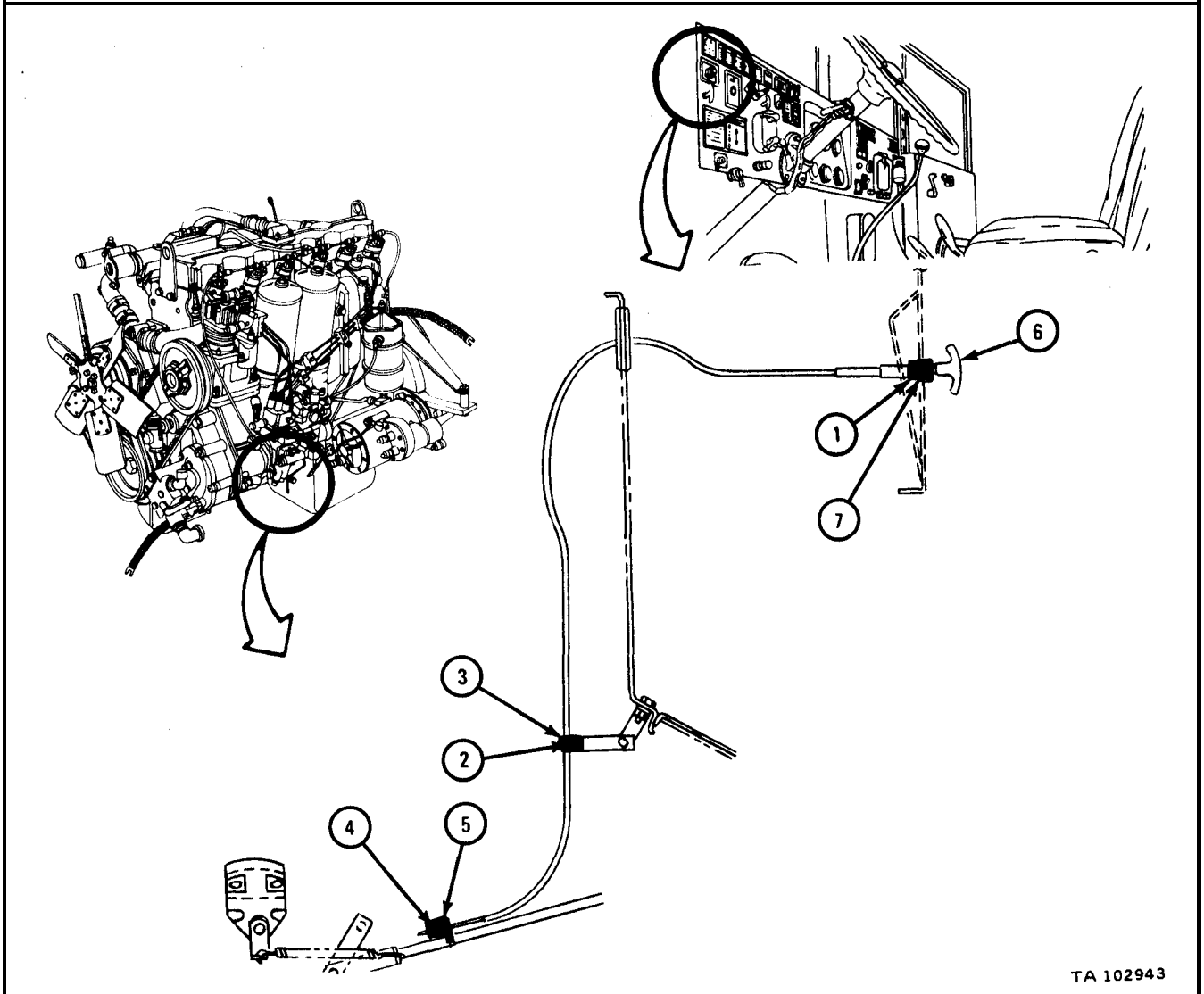
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 9/16-inch wrench behind instrument panel, unscrew and take out nut (l).
2. Using 7/16-inch wrenches, unscrew and take out nut (2) at firewall clamp (3).
3. Using phillips screwdriver, unscrew screw (4). Take out screw with collar (5).
4. Pull out cable assembly (6) in cab. Catch nut (1) and washer (7) when cable goes through panel.

END OF TASK



c. Replacement.

FRAME 1

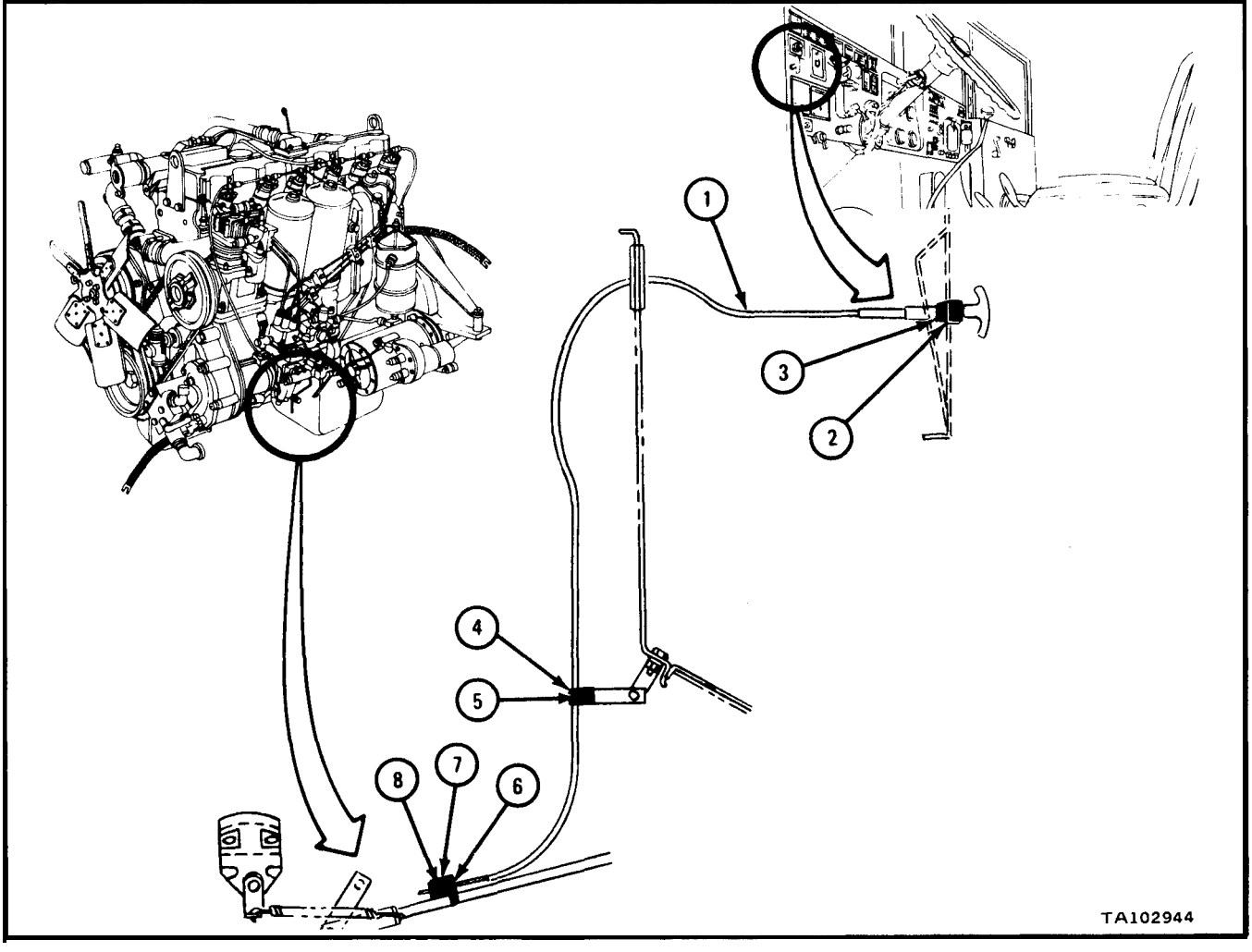
1. Put cable (1) through hole in instrument panel. Put washer (2) and nut (3) on cable. Put cable through firewall.
2. Using 9/16-inch wrench, screw on and tighten nut (3).
3. Working under hood, put cable through clamp (4). Using 7/16-inch wrenches, screw in and tighten screw (5).
4. Put cable through stop (6). Put on collar (7). Using phillips screwdriver, screw in and tighten screw (8).

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



4-34. ACCELERATOR CONTROLS AND LINKAGE REMOVAL, REPAIR, REPLACEMENT, AND ADJUSTMENT.

TOOLS: Flat-tip screwdriver
3/8-inch wrench (2)
3/8-inch socket wrench
Cross-tip screwdriver (Phillips type)
l/2-inch wrench (2)
Pliers
l/2-inch socket wrench
7/16-inch wrench

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

(2) Disconnect battery ground cable. Refer to para 7-44.

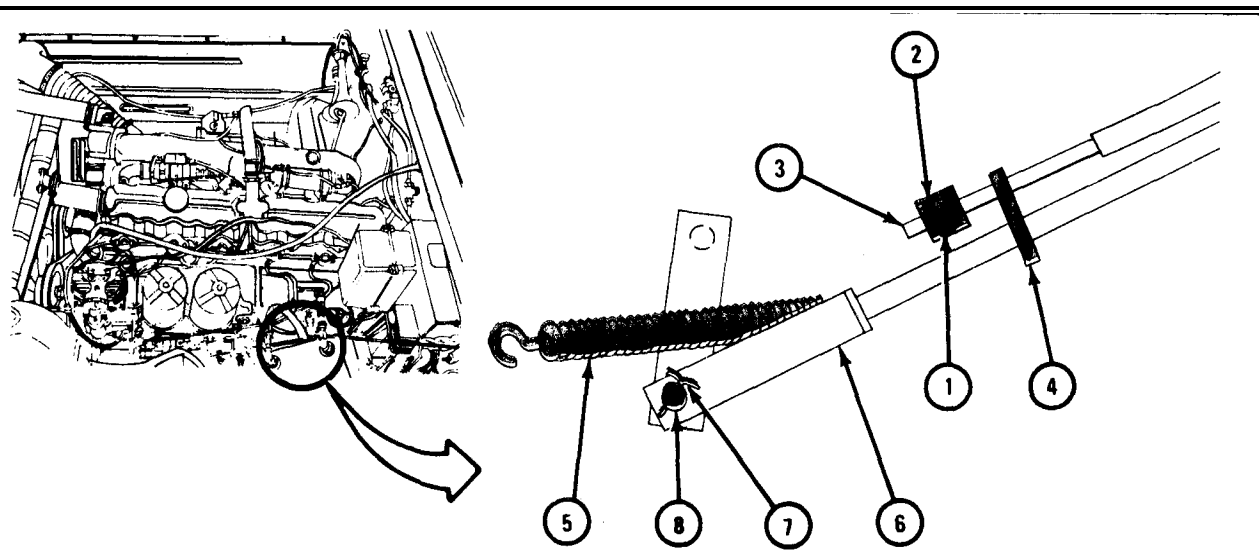
(3) Remove front cab tunnel cover. Refer to Part 2, para 17-5.

b. Removal.

FRAME 1

1. Working under truck and using flat-tip screwdriver, loosen screw (1) and take collar (2) off throttle control wire (3).
2. Take throttle control wire (3) out of clip (4).
3. Take offspring(5) from throttle rod assembly(6).
4. Using pliers, takeout cotter pin (7). Pullout pin (8).

GO TO FRAME 2

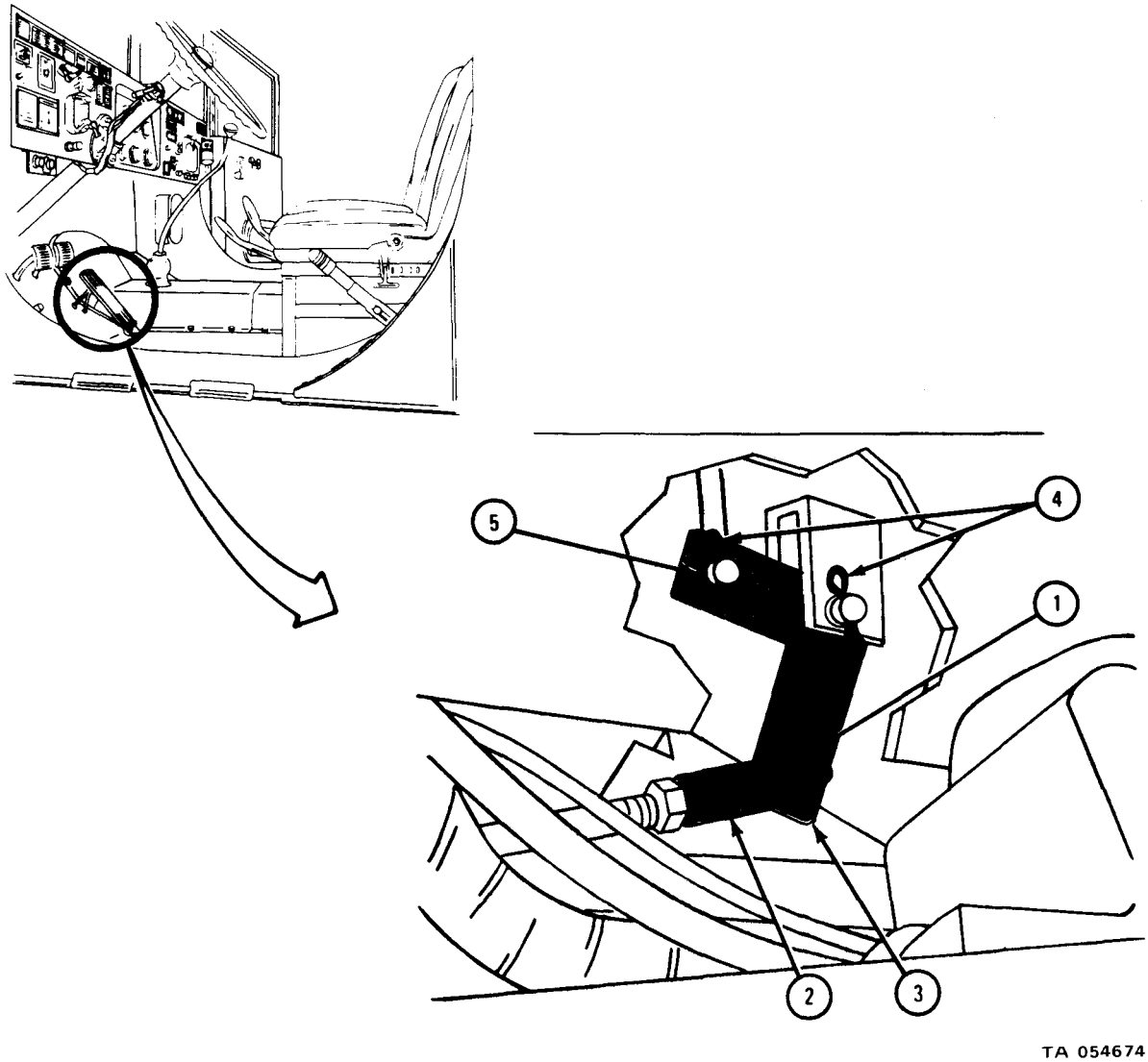


TA 054673

FRAME 2

1. Working in cab through floorboard using 7/16-inch and 1/2-inch wrenches, unscrew and take off nut (1).
2. Take ball joint (2) off throttle linkage bracket (3).
3. Using pliers, take out two cotter pins (4). Take off washer (5).

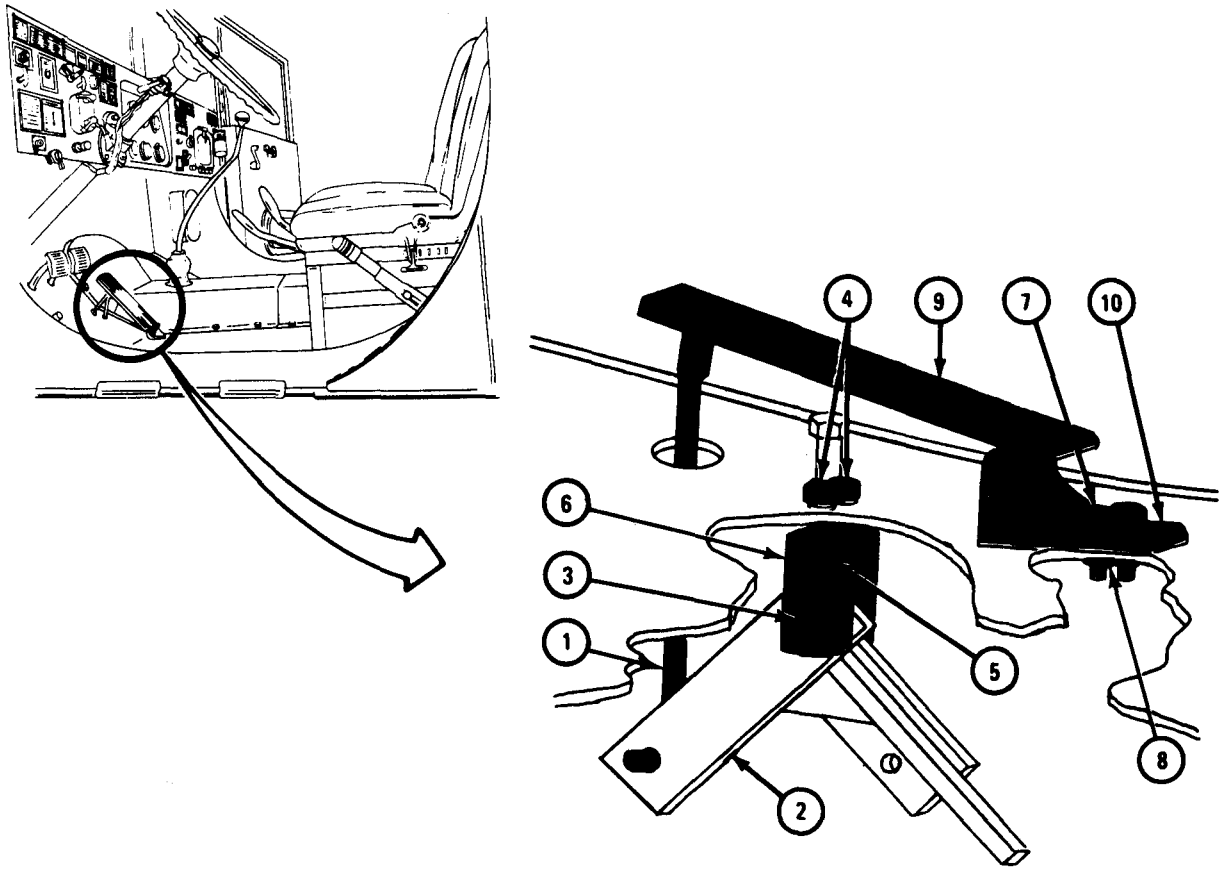
GO TO FRAME 3



FRAME 3

1. Take pedal rod (1) out of throttle linkage bracket (2). Take out pin (3). Take out throttle linkage bracket.
2. Using l/2-inch wrenches, unscrew and take out two screws (4) and nuts (5). Take out bracket (6).
3. Using 3/8-inch wrench or phillips screwdriver, hold two screws (7). Using 3/8-inch socket wrench, unscrew and takeout two nuts (8) and screws (7).
4. Takeout accelerator pedal (9), pedal rod (l), and pedal bracket (10).

END OF TASK



c. 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) Wash all parts in solvent and let parts dry.

(2) Check that all parts have no cracks, stripped threads or other damage.

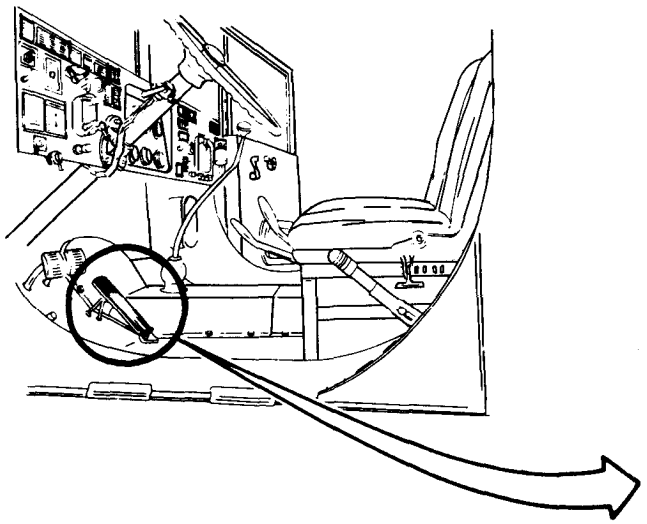
(3) Throw away all damaged parts and get new ones in their place.

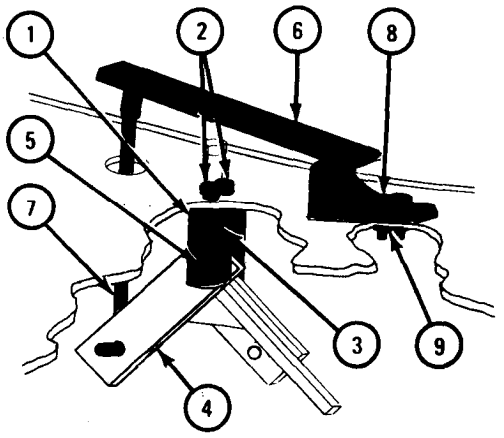
d. Replacement.

FRAME 1

1. Put bracket (1) in place under floorboard and aline holes. Put in two screws (2). Using l/2-inch wrenches, screw on and tighten two nuts (3).
2. Put throttle linkage bracket (4) in place in bracket (1) and aline holes. Put in pin (5).
3. Put pedal and bracket assembly (6) in place as shown, with pedal rod (7) through hole in floorboard. Aline holes for screws (8).
4. Put in two screws (8). Using 1/2-inch wrench or phillips screwdriver, hold screws. Using l/2-inch socket wrench, screw on and tighten two nuts (9).
5. Put pedal rod (7) in hole in throttle linkage bracket (4).

GO TO FRAME 2





TA 054676

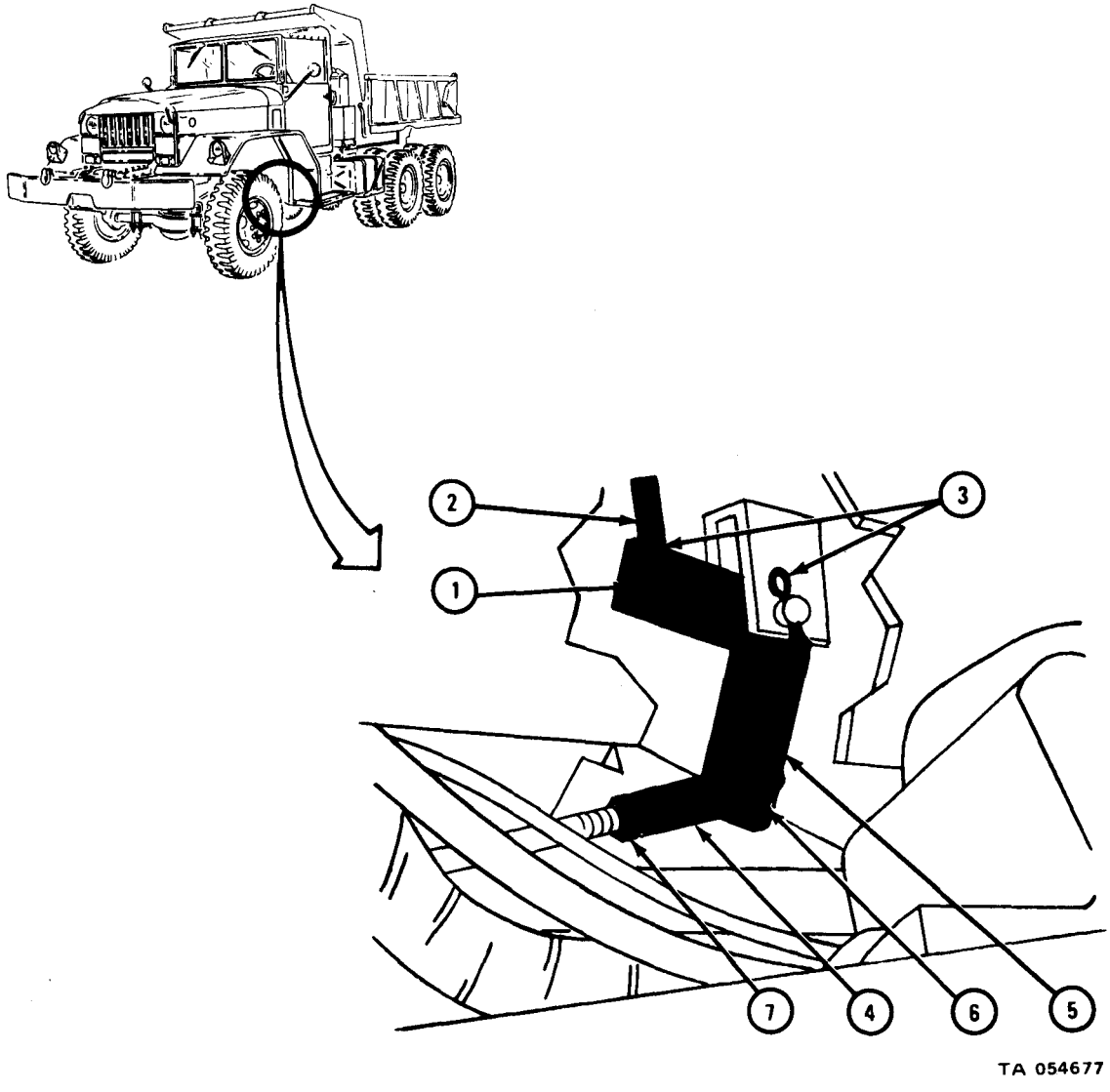
FRAME 2

1. Put washer (1) on pedal rod (2).
2. Using pliers, put in two cotter pins (3) and bend open ends of cotter pins.
3. Put ball joint (4) in place in hole in throttle linkage bracket (5).
4. Using 7/16-inch and l/2-inch wrenches, screw on and tighten nut (6).

NOTE

Do not turn adjusting nut (7) as this will change fuel injector setting.

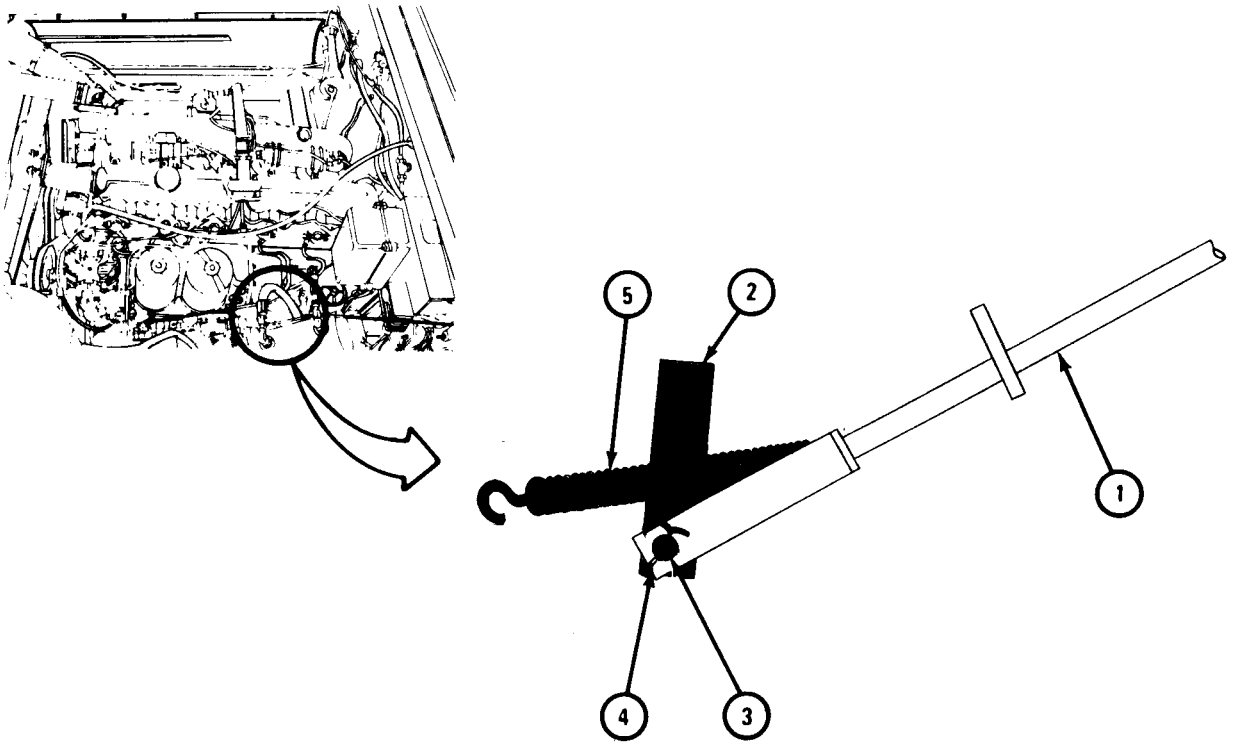
GO TO FRAME 3



FRAME 3

1. Line up hole in throttle rod assembly (1) with hole in injector pump lever (2).
2. Slide pin (3) through holes in throttle rod assembly (1) and injector pump lever (2).
3. Using pliers, push cotter pin (4) through hole in pin (3) and bend open ends of cotter pin.
4. Hook spring (5) onto throttle rod assembly (1).

GO TO FRAME 4

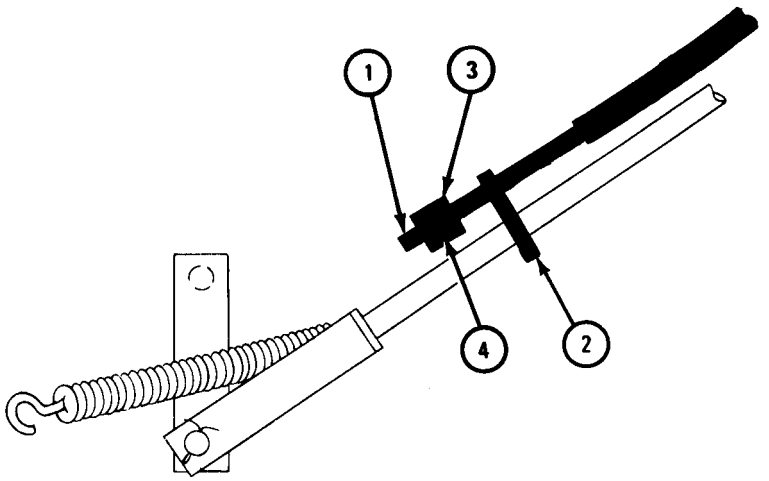


TA 054679

FRAME 4

1. Push throttle control wire (l)through hole in clip (2).
2. Slide collar (3) over end of throttle control wire (l).
3. Using pliers, hold collar (3) in place and using flat-tip screwdriver, screw in and tighten screw (4).
4. Do adjustment. Refer to para 4-32d.

END OF TASK



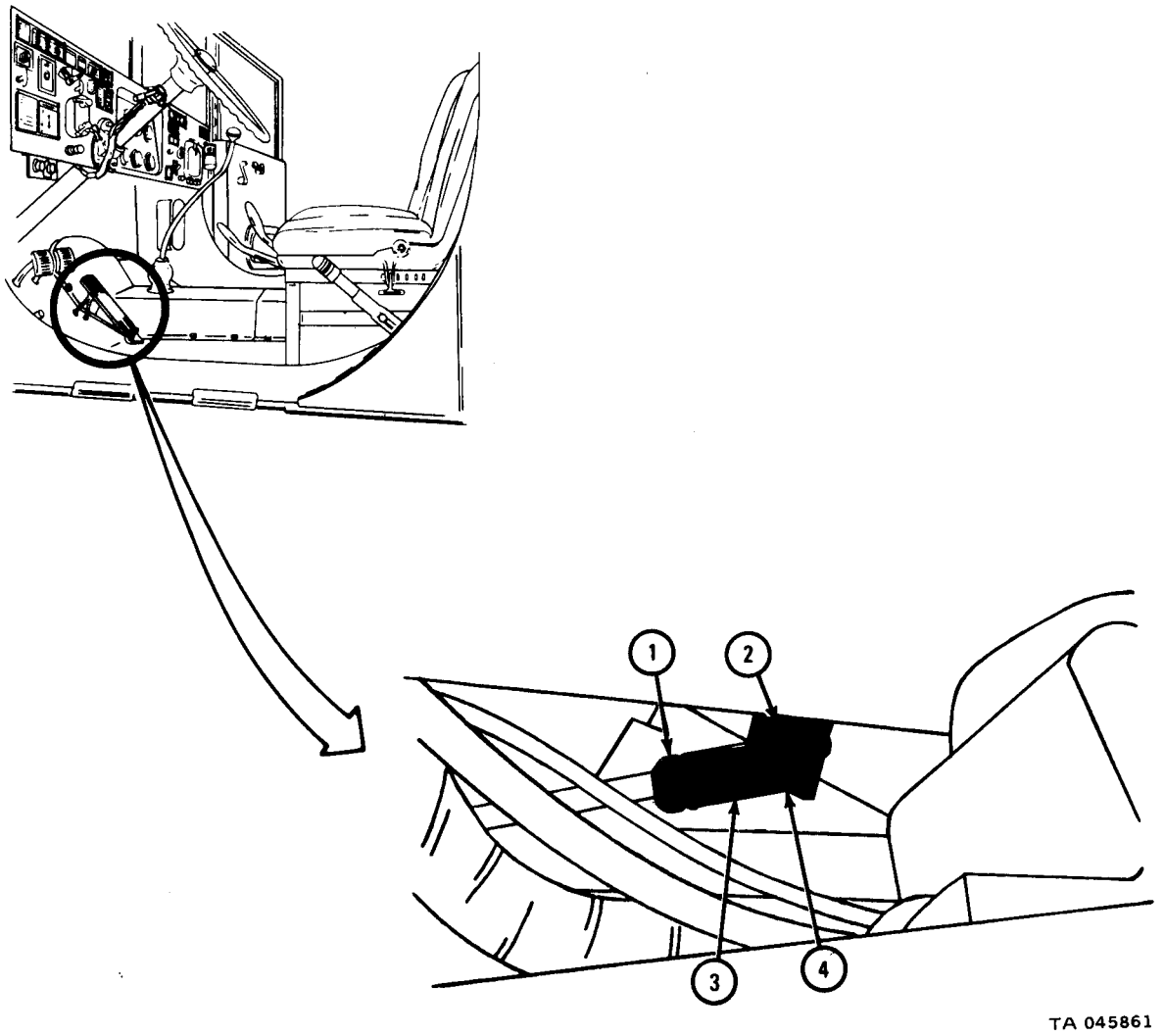
TA 054680

e. Adjustment.

FRAME 1

1. Working in cab through floorboard using 1/2-inch wrench, loosen nut (1).
2. Using 1/2-inch and 7/16-inch wrenches, unscrew and take off nut (2).
3. Take ball joint (3) off throttle linkage bracket (4).

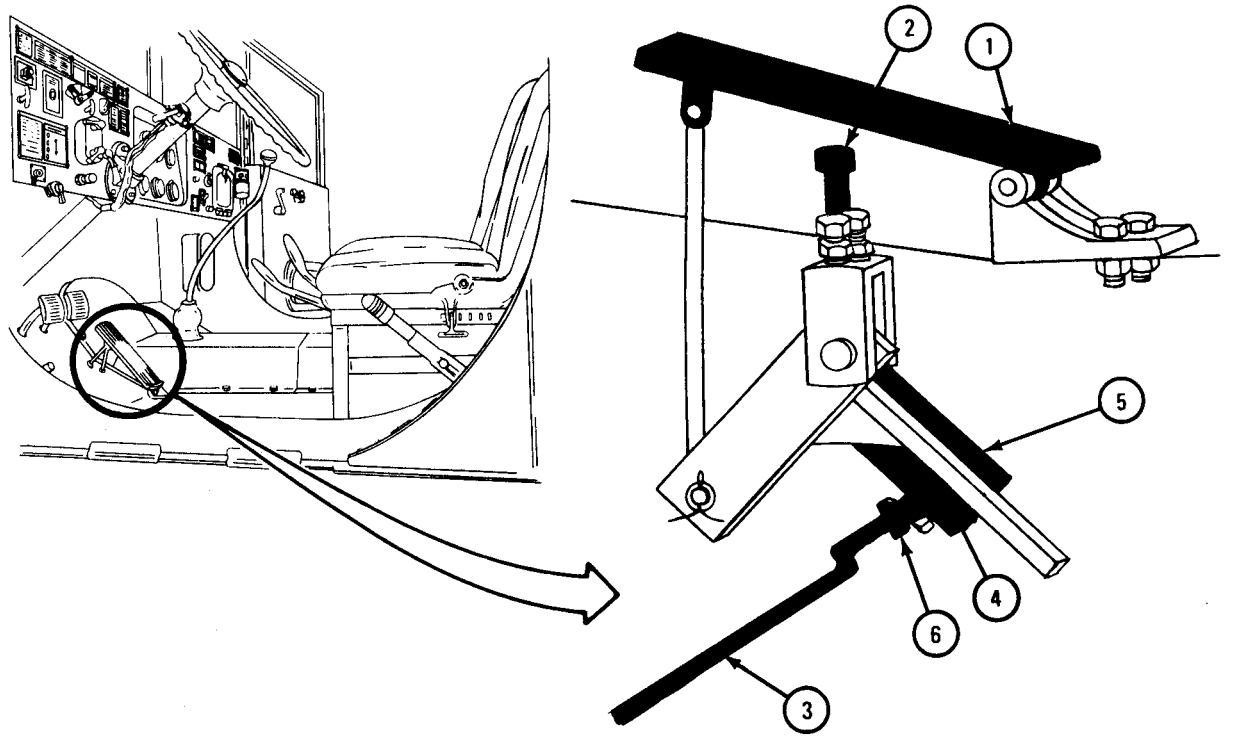
GO TO FRAME 2



FRAME 2

1. Working in cab, press down and hold accelerator pedal (1) against stop screw (2).
2. Pull throttle rod assembly (3) toward back of truck as far as it will go.
3. Turn end of throttle rod assembly (3) until ball joint (4) slides freely into hole in throttle linkage bracket (5). Screw on and finger tighten nut (6). Let up accelerator pedal (1).

GO TO FRAME 3



TA 045860

FRAME 3

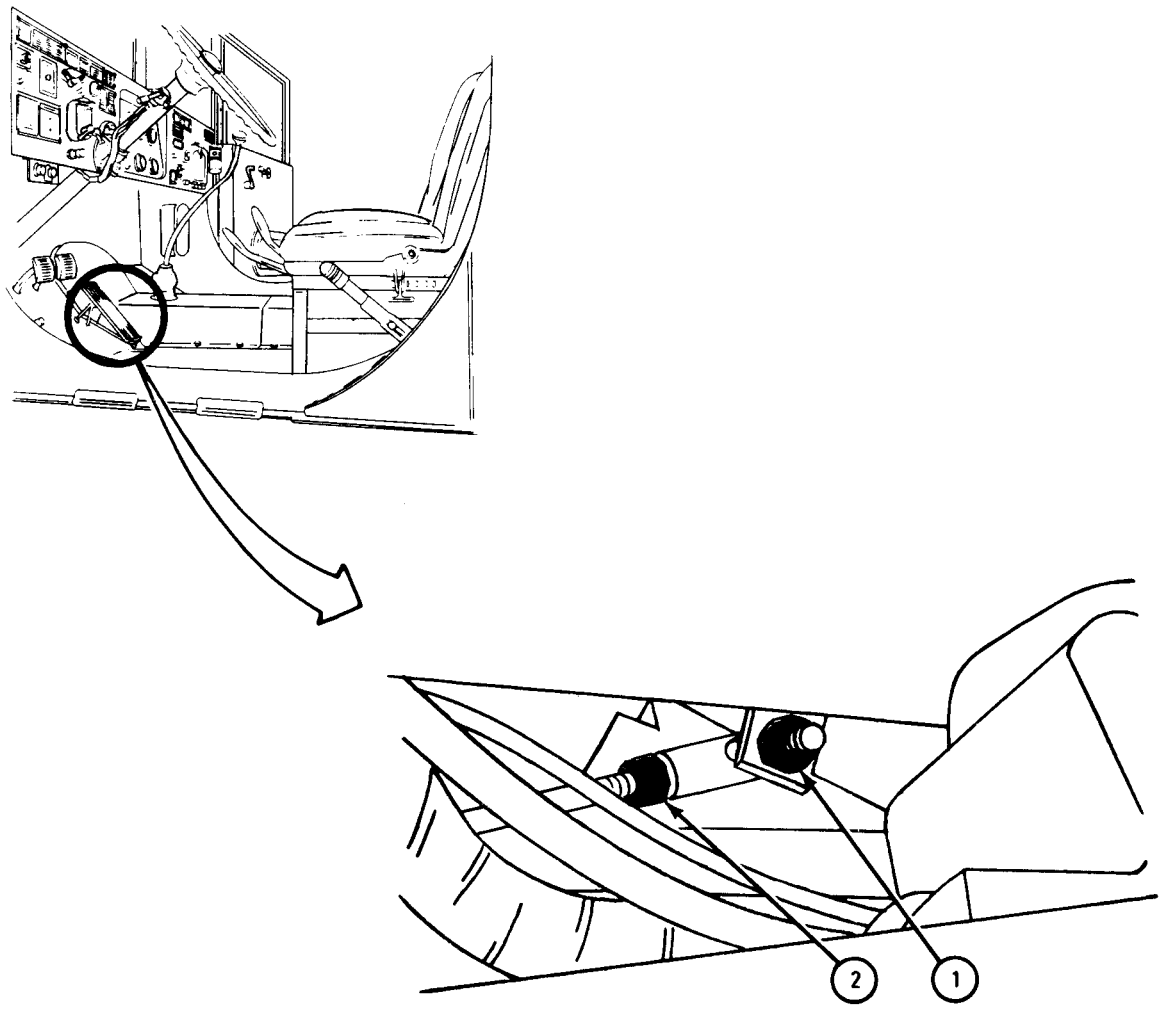
1. Working in cab through floorboard using 1/2-inch and 7/16-inch wrenches, tighten nut (l).
2. Using l/2-inch wrench, tighten nut (2).

NOTE

Follow-on Maintenance Action Required:

1. Close hood. Refer to TM 9-2320-211-10.
2. Reconnect battery ground cable. Refer to para 7-44.
3. Replace front tunnel cover. Refer to Part 2, para 17-5.

END OF TASK



CHAPTER 5

EXHAUST SYSTEM GROUP MAINTENANCE

Section I. SCOPE

5-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for exhaust pipes and mufflers for which there are authorized corrective maintenance tasks at the organizational maintenance level.

5-2. 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. EXHAUST PIPES AND MUFFLERS

5-3. HORIZONTAL EXHAUST PIPE REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: Open end wrench set
Wire brush

SUPPLIES: Front exhaust pipe gasket
Front exhaust pipe rear gasket
Rear exhaust pipe gasket
Center exhaust pipe gasket
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680

PERSONNEL: Two

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

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

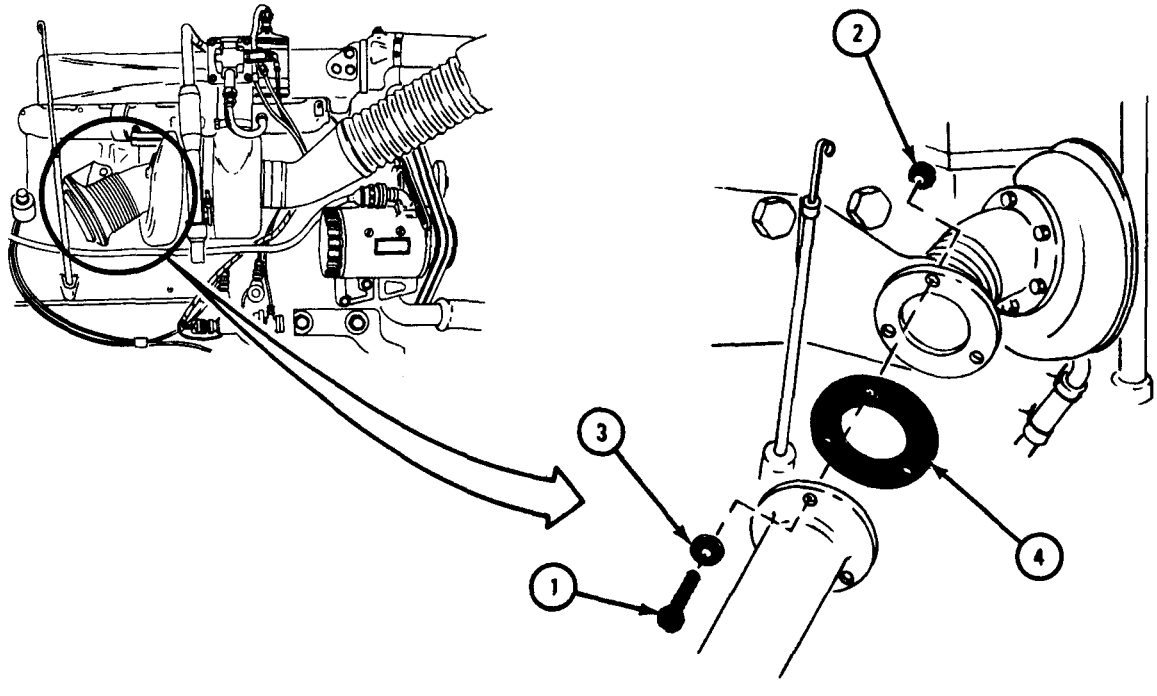
b. Removal.

(1) Front exhaust pipe.

FRAME 1

1. Using wrench, unscrew and take out three screws (1) with nuts (2) and lockwashers (3).
2. Take out gasket (4) and throw it away.

GO TO FRAME 2

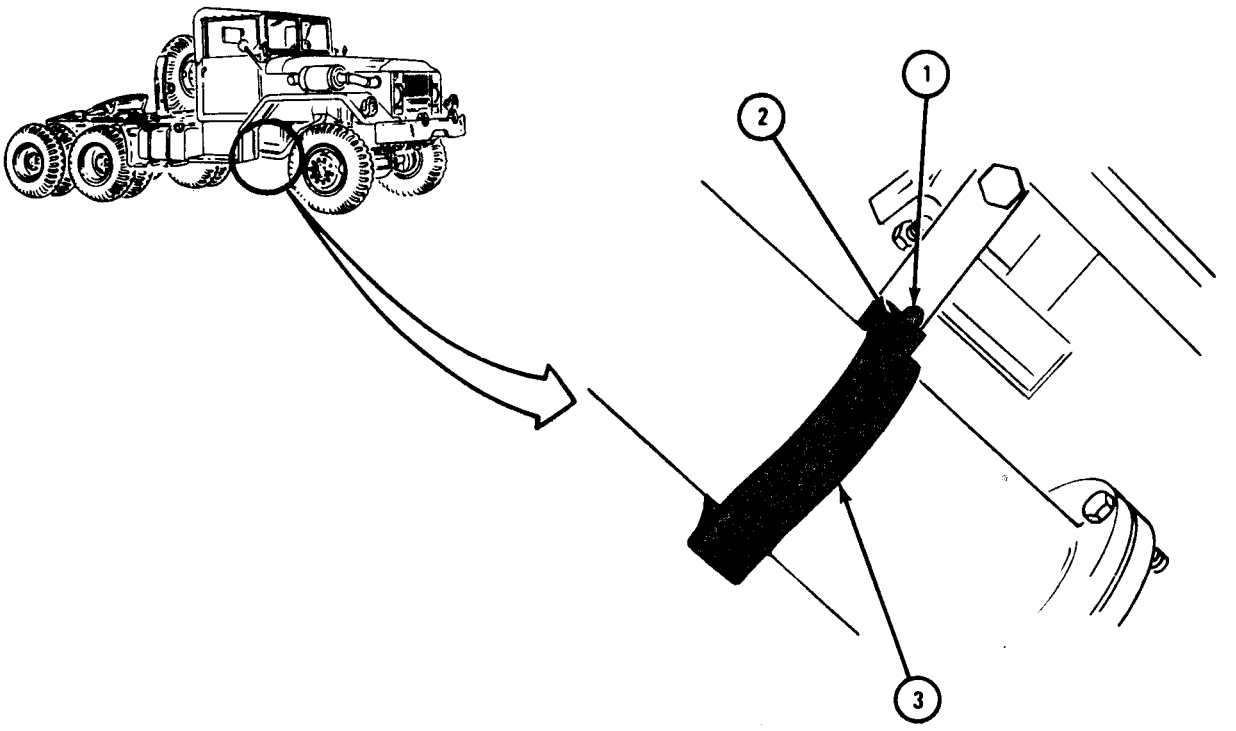


TA 054681

FRAME 2

1. Using wrench, unscrew and take out two bolts (1) with nuts (2).
2. Take off clamp (3).

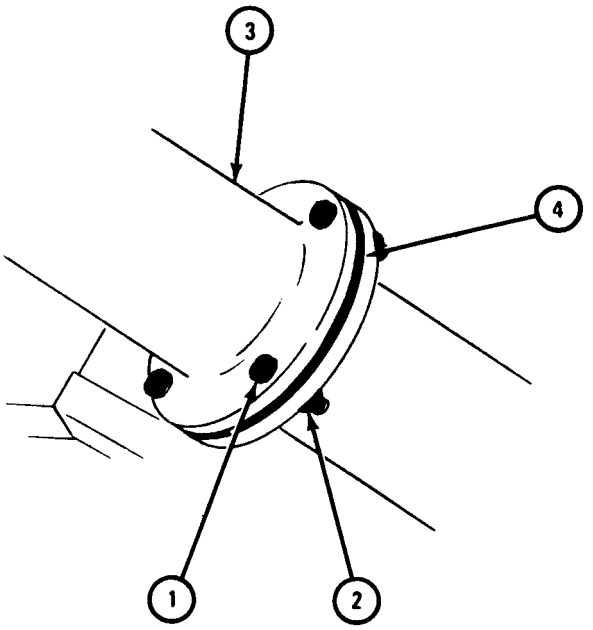
GO TO FRAME 3



FRAME 3

1. Using wrench, unscrew and take out four bolts (1) with nuts (2).
2. Take off front exhaust pipe (3).
3. Take out and throw away gasket (4).

END OF TASK



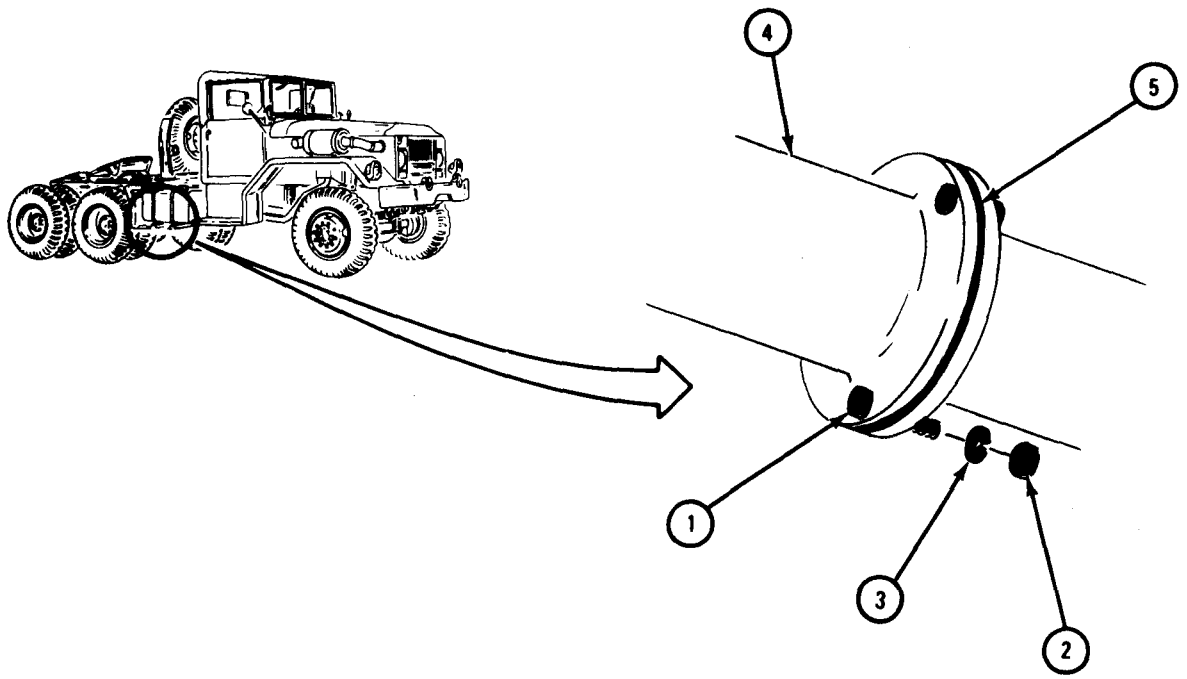
TA 054683

(2) Rear exhaust pipe.

FRAME 1

1. Using wrench, unscrew and take out three bolts (1) with nuts (2) and lockwashers (3).
2. Take off rear exhaust pipe (4).
3. Take out and throw away gasket (5).

END OF TASK

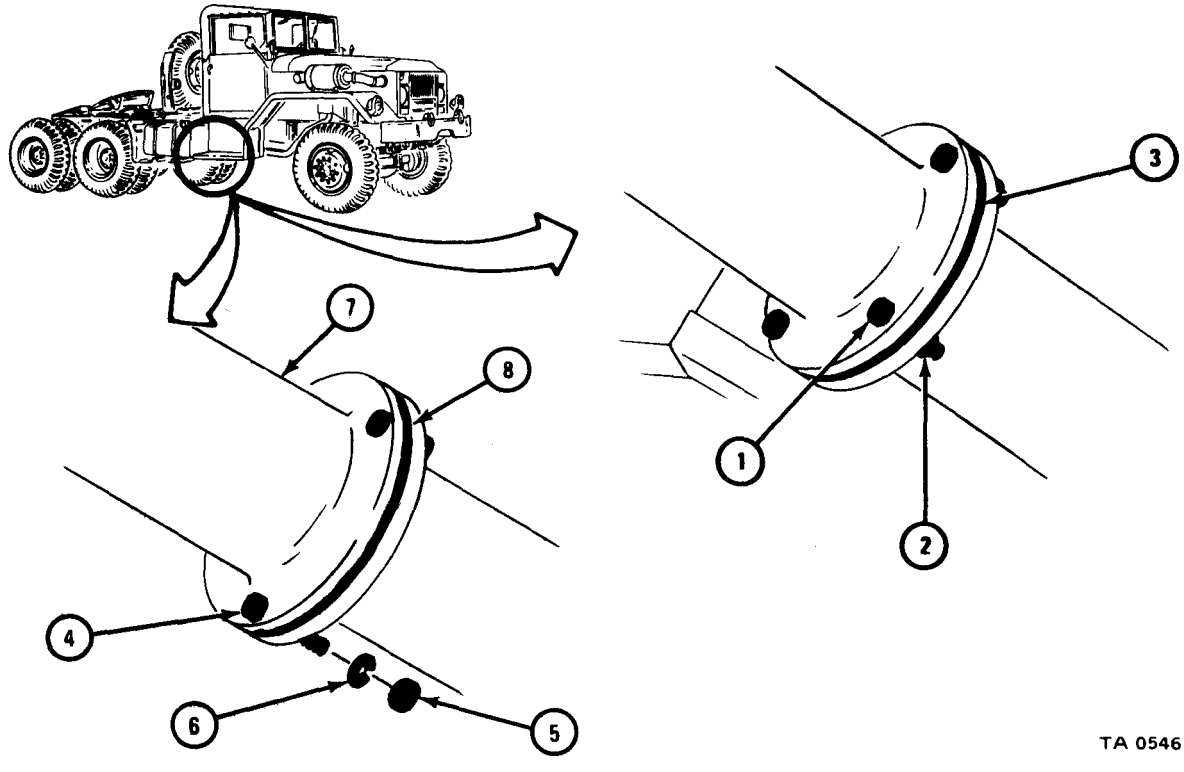


(3) Center exhaust pipe.

FRAME 1

1. Using wrench, unscrew and take out four bolts (1) with nuts (2).
2. Take out and throw away gasket (3).
3. Using wrench, unscrew and take out three bolts (4) with nuts (5) and lock-washers (6).
4. Take off rear exhaust pipe (7).
5. Takeout and throw away gasket (8).

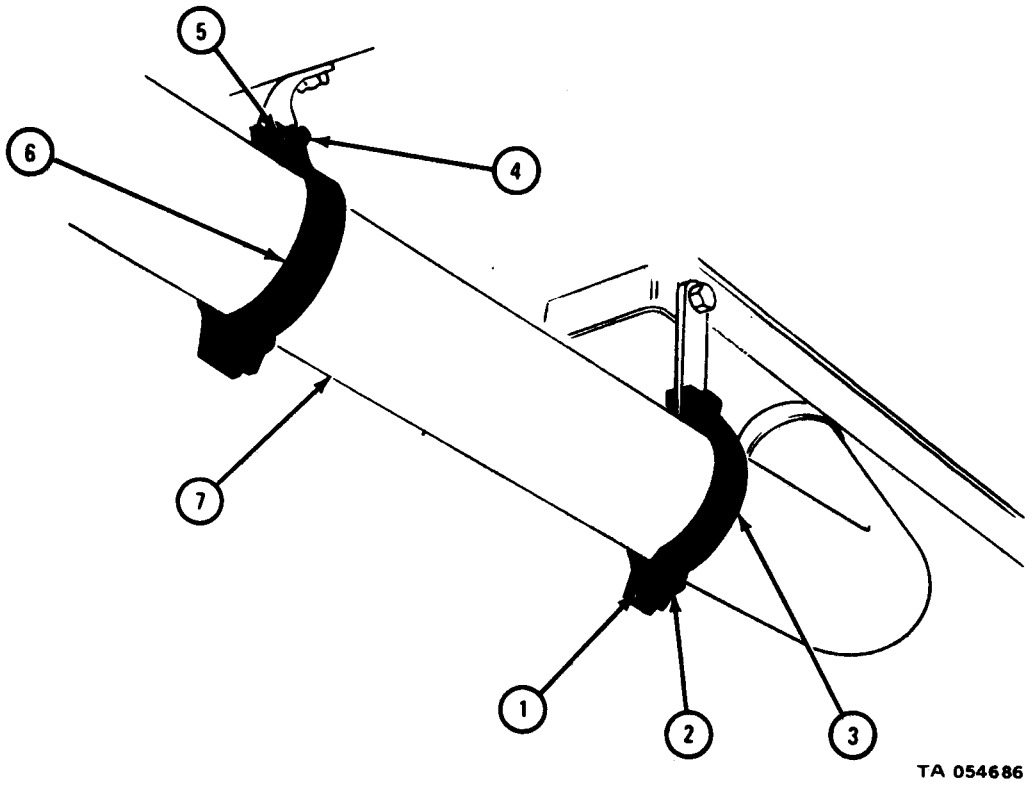
GO TO FRAME 2



FRAME 2

1. Using wrench, unscrew and take out two bolts (1) with nuts (2), Take off front clamp (3).
2. Using wrench, unscrew and take out two bolts (4) with nuts (5). Take off rear clamp (6).
3. Take off center exhaust pipe (7).

END OF TASK



c. Inspection and Repair.

(1) Clean mud and dirt from all parts with water and wire brush.

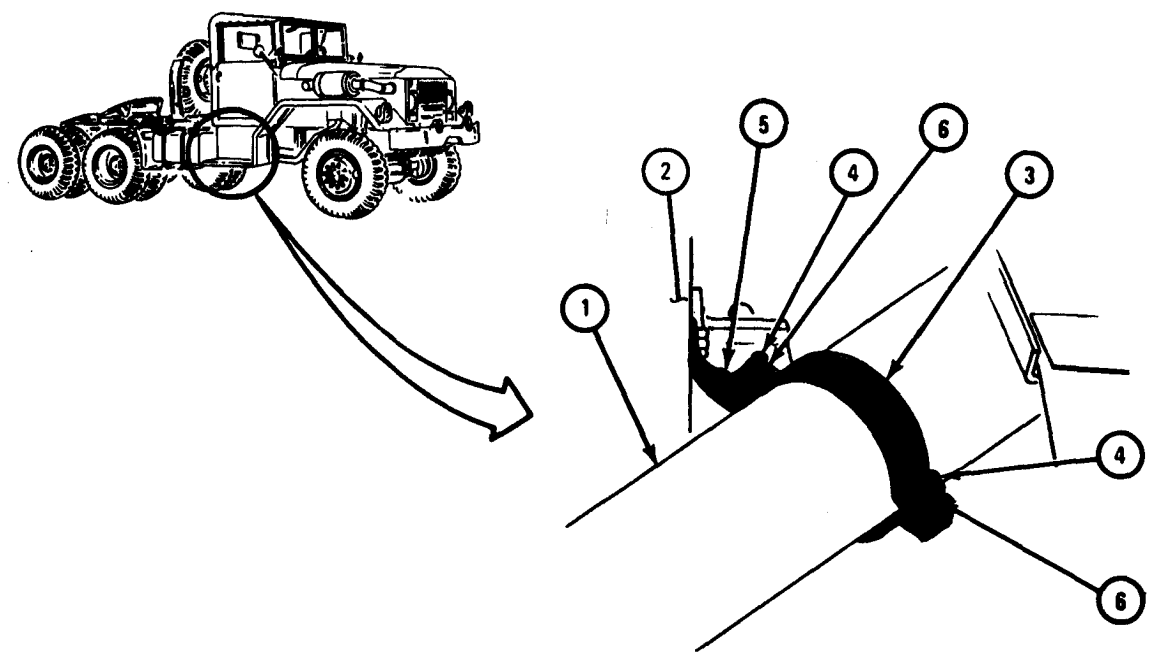
(2) Take off grease with solvent,

(3) Check all parts for wear or damage. Tell direct support maintenance if repairs are needed.

d. Replacement.

(1) Center exhaust pipe.

Soldier A 1. Hold center exhaust pipe (1) in place near truck frame (2).
Soldier B 2. Place rear clamp (3) around center exhaust pipe (1).
3. Push one bolt (4) through holes in clamp (3) and hanger (5).
4. Push one bolt (4) through holes in clamp (3).
5. Loosely screw on two nuts (6).
GO TO FRAME 2



TA 064687

FRAME 2

Soldier B 1. Place front clamp (1) around center exhaust pipe (2).

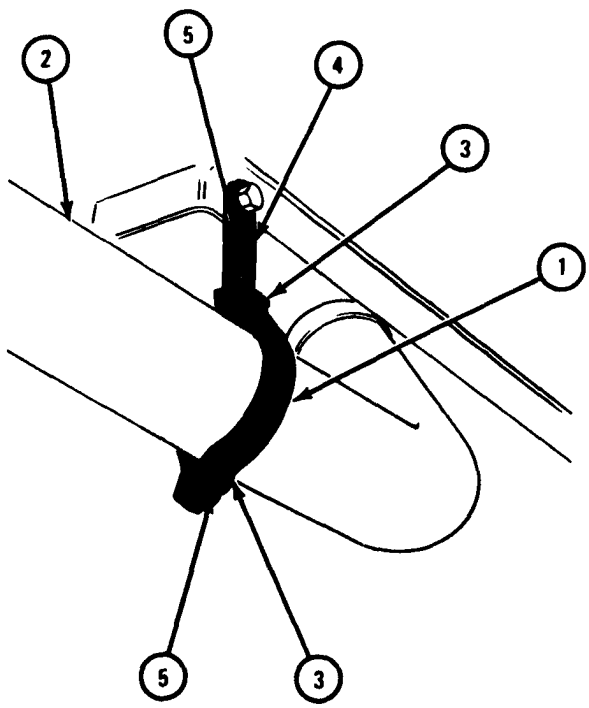
2. Push one bolt (3) through holes in clamp (1) and connecting link (4).

3. Push one bolt (3) through holes in clamp (1).

4. Loosely screw on two nuts (5).

Soldier A 5. Let go of center exhaust pipe (2).

GO TO FRAME 3

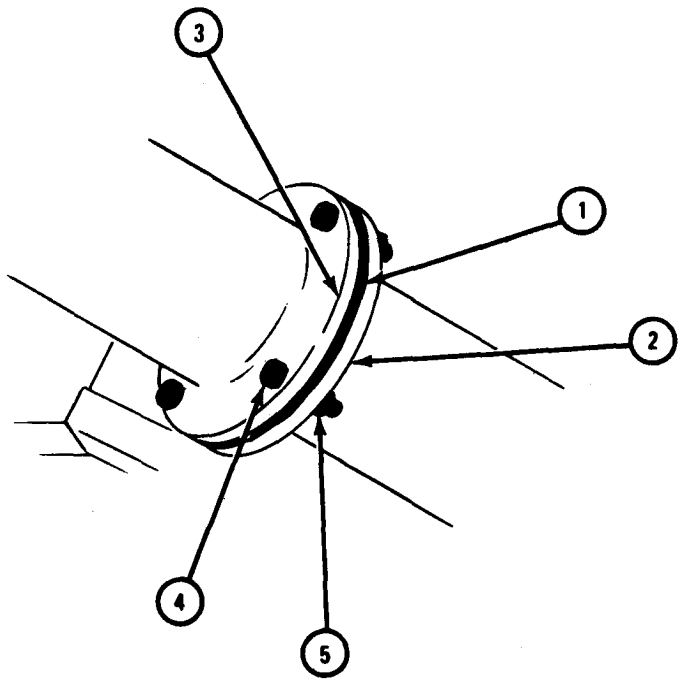


TA 054688

FRAME 3

1. Place gasket (1) between front exhaust pipe flange (2) and center exhaust pipe flange (3), alining holes.
2. Push four bolts (4) through holes in flanges (2 and 3).
3. Using wrench, screw on and tighten four nuts (5).

GO TO FRAME 4

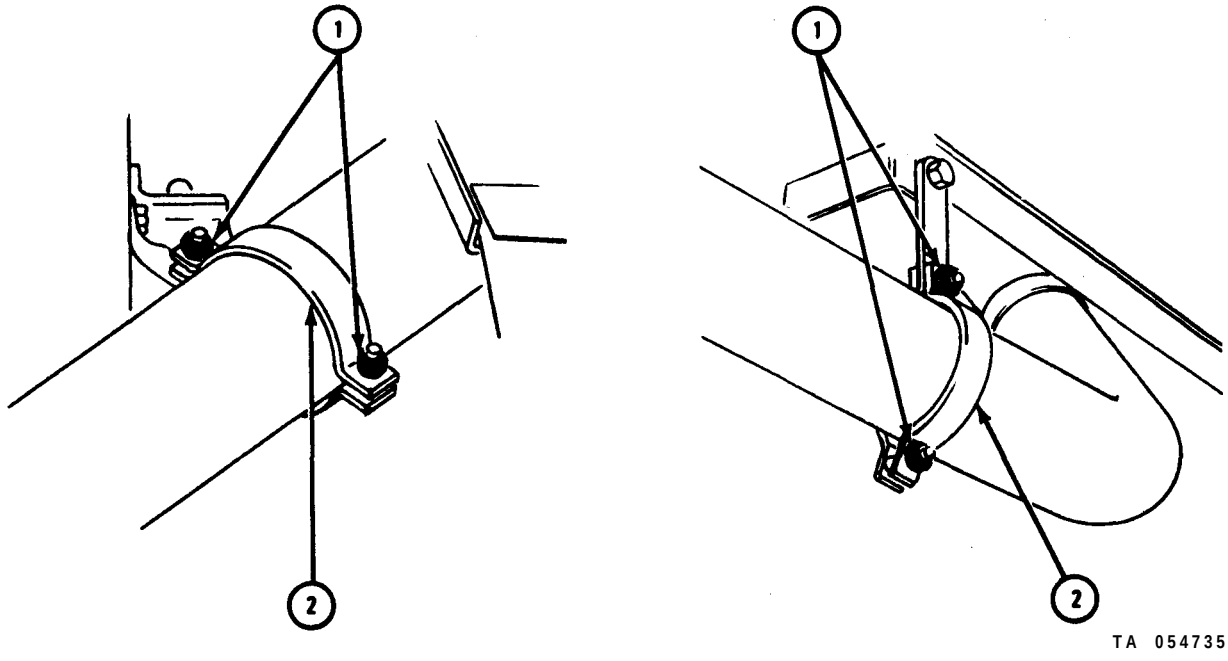


TA 054689

FRAME 4

1. Using wrench, tighten four nuts (1) on two clamps (2).

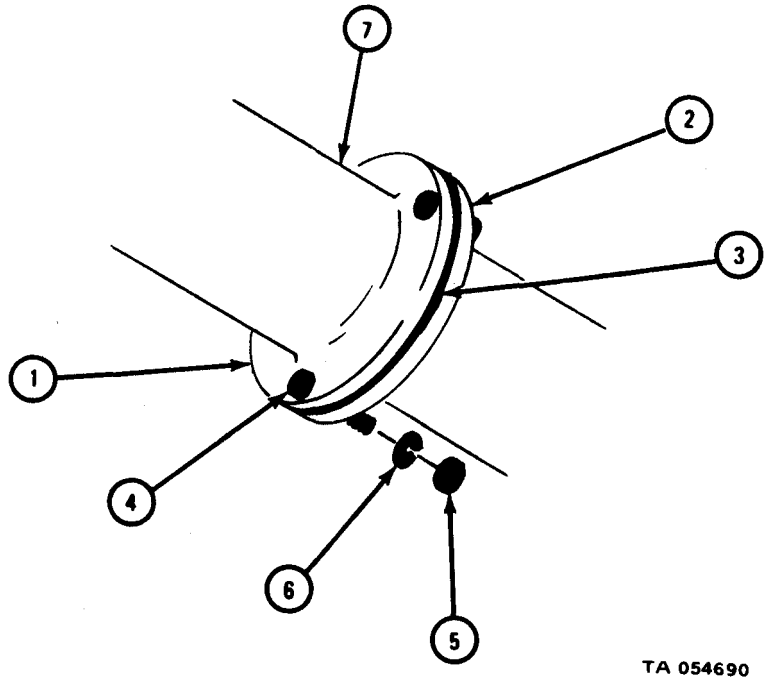
GO TO FRAME 5



FRAME 5

Soldier A	1.	Hold rear exhaust pipe flange (1) against center exhaust pipe flange (2).
Soldier B	2.	Place gasket (3) between flanges (1 and 2), alining holes.
	3.	Push three bolts (4) through holes in flanges (1 and 2).
	4.	Using wrench, screw on and tighten three nuts (5) with lockwashers (6).
Soldier A	5.	Let go of rear exhaust pipe (7).

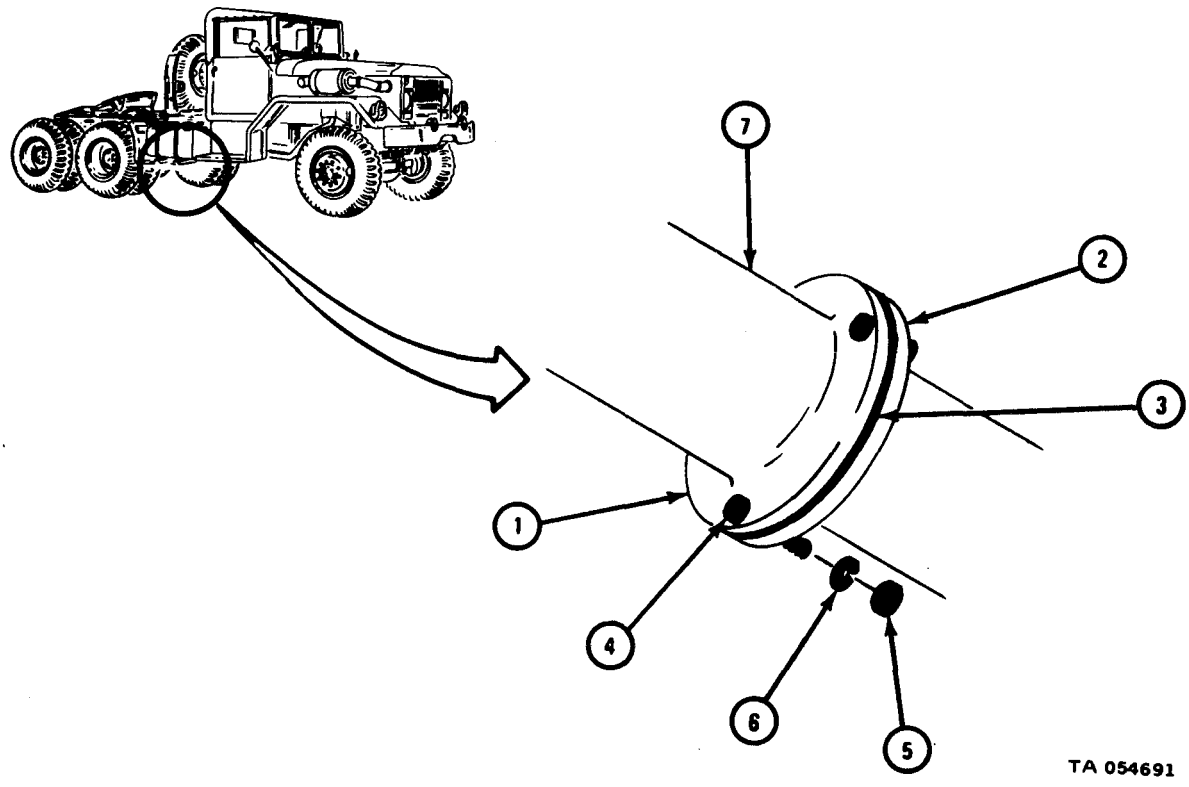
END OF TASK



(2) Rear exhaust pipe.

FRAME 1

Soldier A 1.	Hold rear exhaust pipe flange (1) against center exhaust pipe flange (2).
Soldier B 2.	Place gasket (3) between flanges (1 and 2), alining holes.
3.	Push three bolts (4) through holes in flanges (1 and 2).
4.	Using wrench, screw on and tighten three nuts (5) with lock-washers (6).
Soldier A 5.	Let go of rear exhaust pipe (7).
END OF TASK	



(3) Front exhaust pipe.

FRAME 1

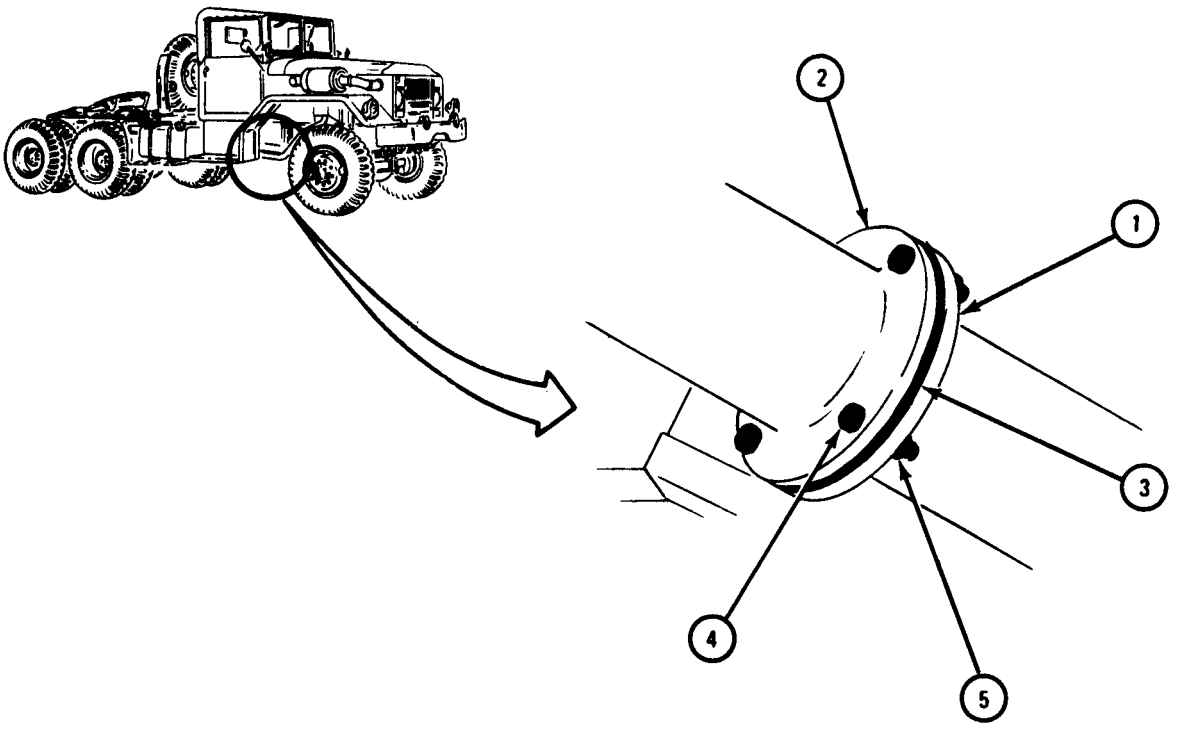
Soldier A 1. Hold front exhaust pipe flange (1) against center exhaust pipe flange (2).

Soldier B 2. Place gasket (3) between front exhaust pipe flange (1) and center exhaust pipe flange (2), alining holes.

3. Push four bolts (4) through holes in flanges (1 and 2).

4. Using wrench, screw on and tighten four nuts (5).

GO TO FRAME 2



TA 054692

FRAME 2

Soldier B 1. Place clamp (1) around front exhaust pipe (2).

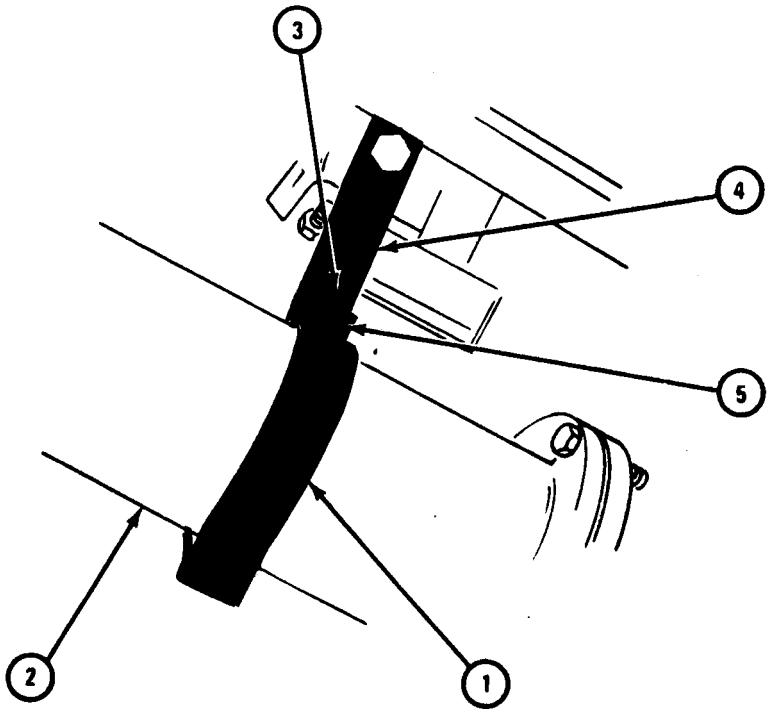
2. Push one bolt (3) through holes in clamp (1) and connecting link (4).

3. Push one bolt (3) through holes in clamp (1).

4. Using wrench, screw on and tighten two nuts (5).

Soldier A 5. Let go of front exhaust pipe (2).

GO TO FRAME 3

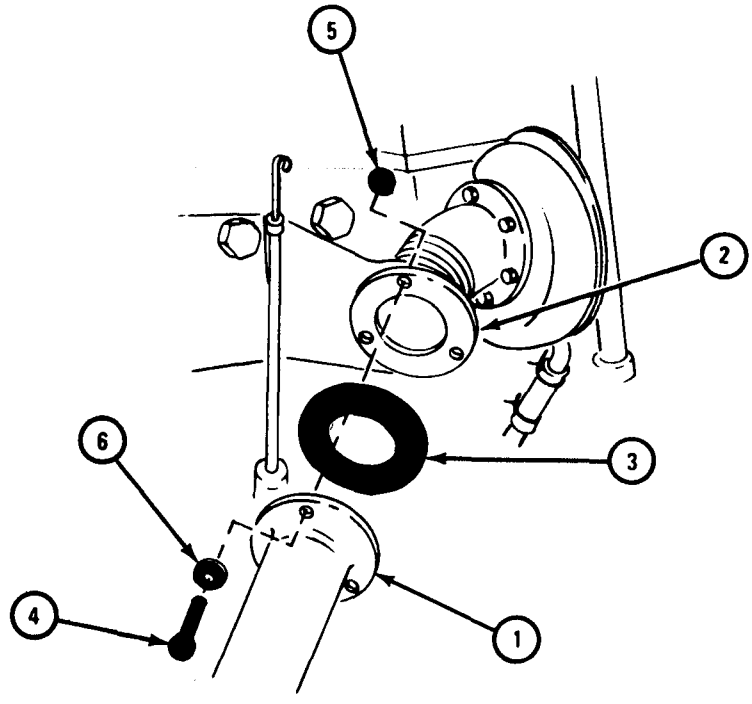


TA 054693

FRAME 3

1. Hold front exhaust pipe flange (1) against exhaust elbow flange (2).
2. Place gasket (3) between front exhaust pipe flange (1) and exhaust elbow flange (2), alining holes.
3. Push three screws (4) through holes in flanges (1 and 2).
4. Using wrench, screw on and tighten three nuts (5) with lockwashers (6).

END OF TASK



TA 054694

5-4. VERTICAL EXHAUST PIPE REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: 1/2-inch wrench
9/16-inch wrench
2-pound hammer
Wire brush

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

PERSONNEL: One

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

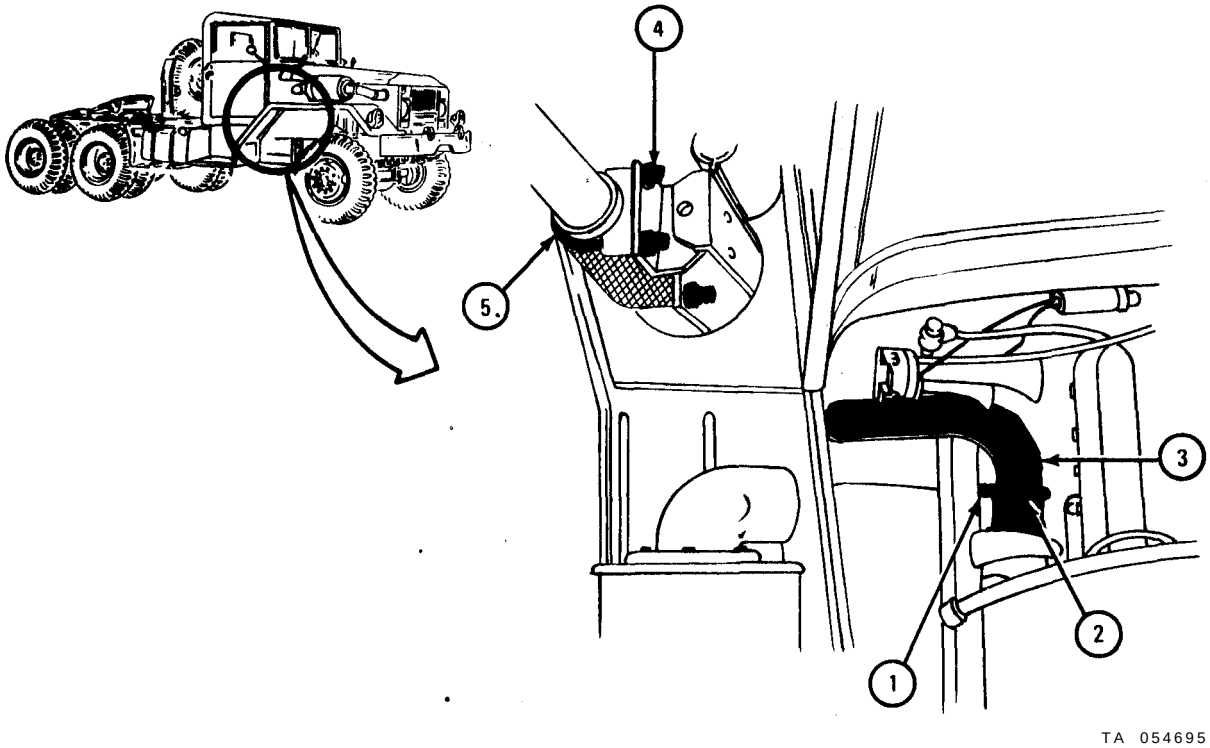
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using l/2-inch wrench, loosen screw (1) and slide coupling (2) forward on turbocharger (3).
2. Using 9/16-inch wrench, unscrew and take off four nuts (4) and two U-bolts (5).

GO TO FRAME 2



FRAME 2

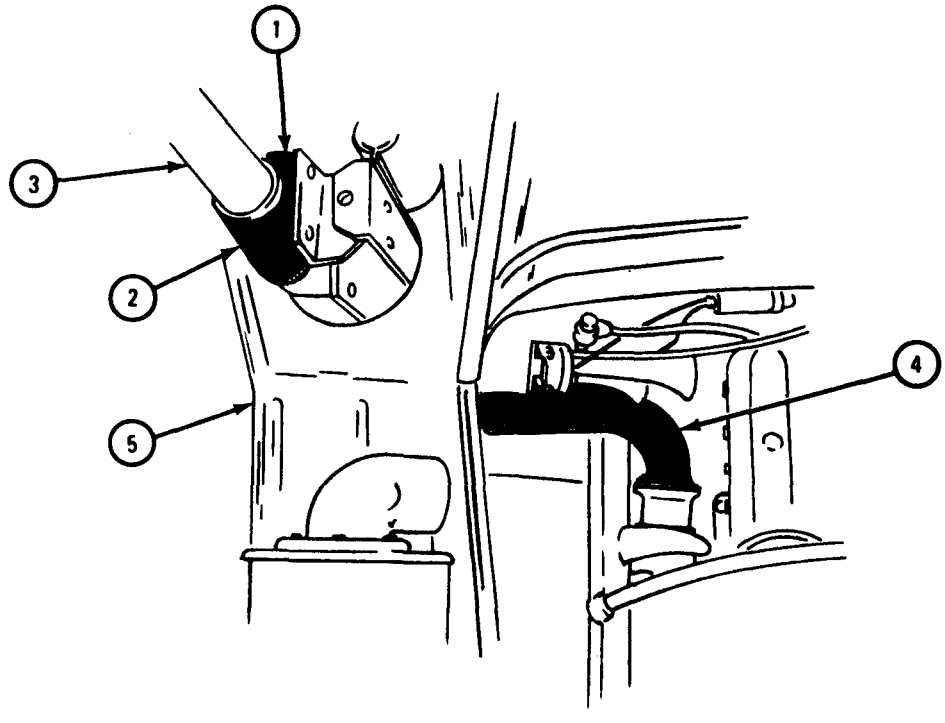
1. Take off two saddles (1) and screen shield (2).
2. Take off pipe extension (3).

NOTE

If pipe extension does not come off easily, tap it lightly with hammer and twist it off.

3. Take out exhaust pipe (4) through hole in fender (5).

END OF TASK



TA 054696

c. 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.

(1) Clean mud and dirt from all parts with water and wire brush.

(2) Take off grease with solvent.

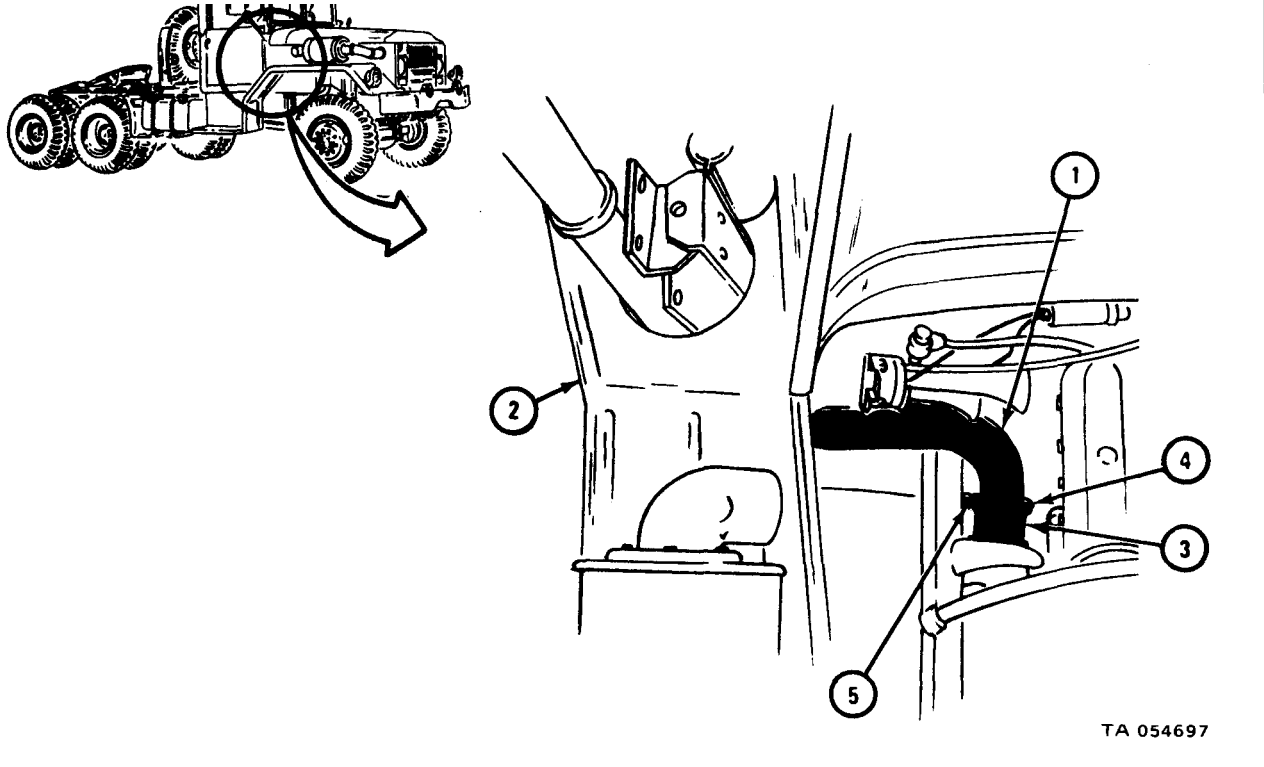
(3) Check all parts for wear or damage. Tell direct support maintenance if repairs are needed.

d. Replacement.

FRAME 1

1. Slide exhaust pipe (1) into place through hole in fender (2).
2. Join exhaust pipe (1) to turbocharger (3) with coupling (4).
3. Using 1/2-inch wrench, tighten screw (5).

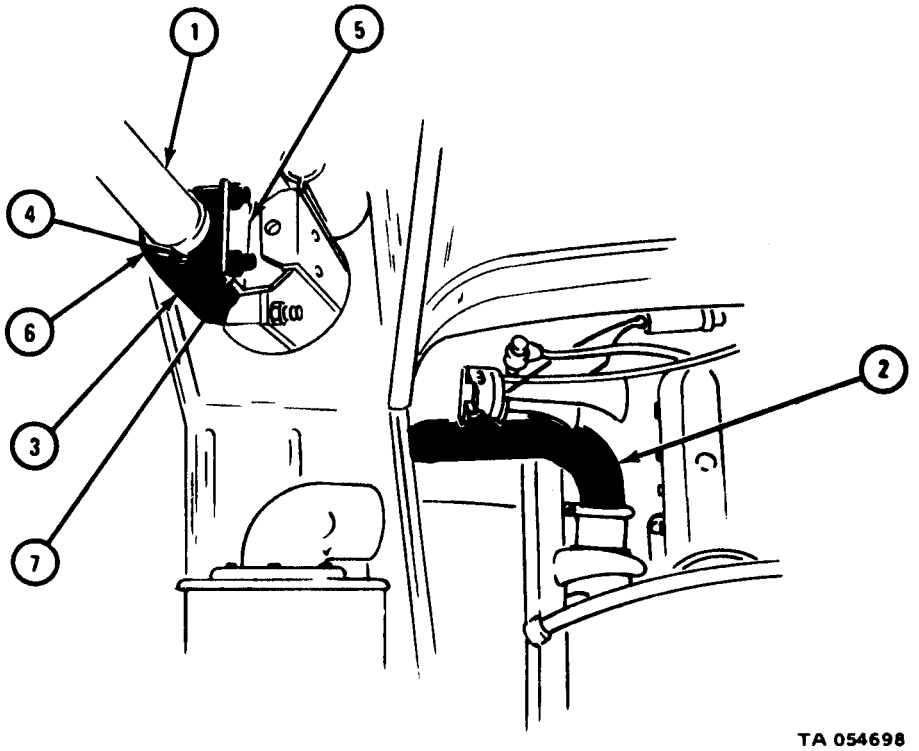
GO TO FRAME 2



FRAME 2

1. Join pipe extension (1) to exhaust pipe (2).
2. Put screen shield (3) and upper saddle (4) in place. Aline holes in upper saddle with holes in bracket (5).
3. Put U-bolt (6) through holes in upper saddle (4).
4. Screw on and hand tighten two nuts (7) on U-bolt (6).

GO TO FRAME 3



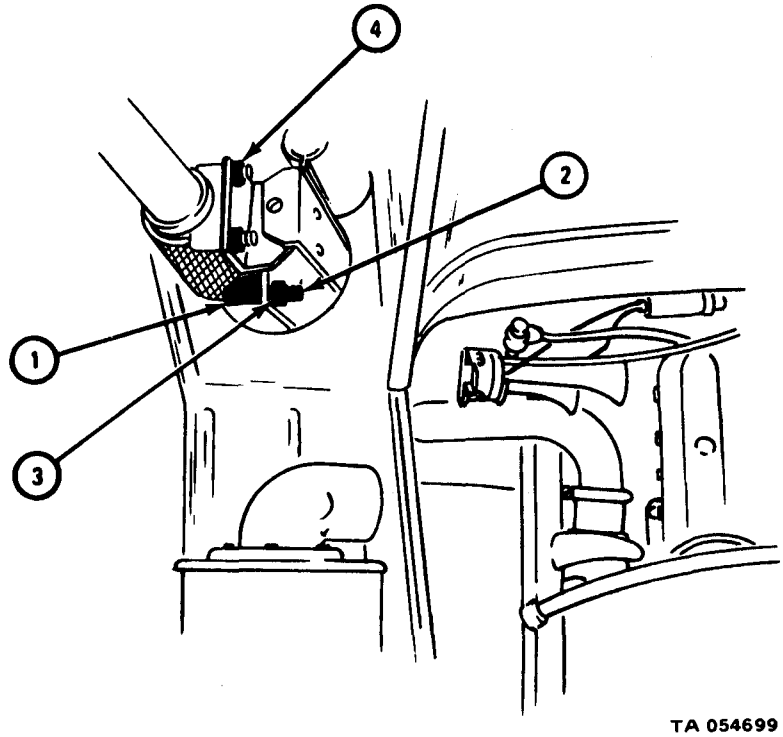
FRAME 3

1. Put lower saddle (1) in place.
2. Put U-bolt (2) through holes in lower saddle (1).
3. Screw on and hand tighten two nuts (3) on U-bolt (2).
4. Using 9/16-inch wrench, tighten four nuts (3 and 4).

NOTE

Follow-on Maintenance Action Required:
Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 054699

CHAPTER 6

COOLING SYSTEM GROUP MAINTENANCE

Section I. SCOPE

6-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the radiator assembly, thermostat, water pump, fan assembly and related parts, and the cooling system, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

6-2. 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. RADIATOR ASSEMBLY

6-3. ENGINE COOLING RADIATOR ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inch wrench
7/16-inch wrench
1/2-inch wrench
3/4-inch wrench (2)
Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: Two

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

a. Preliminary Procedures.

(1) Drain cooling system. Refer to para 6-13.

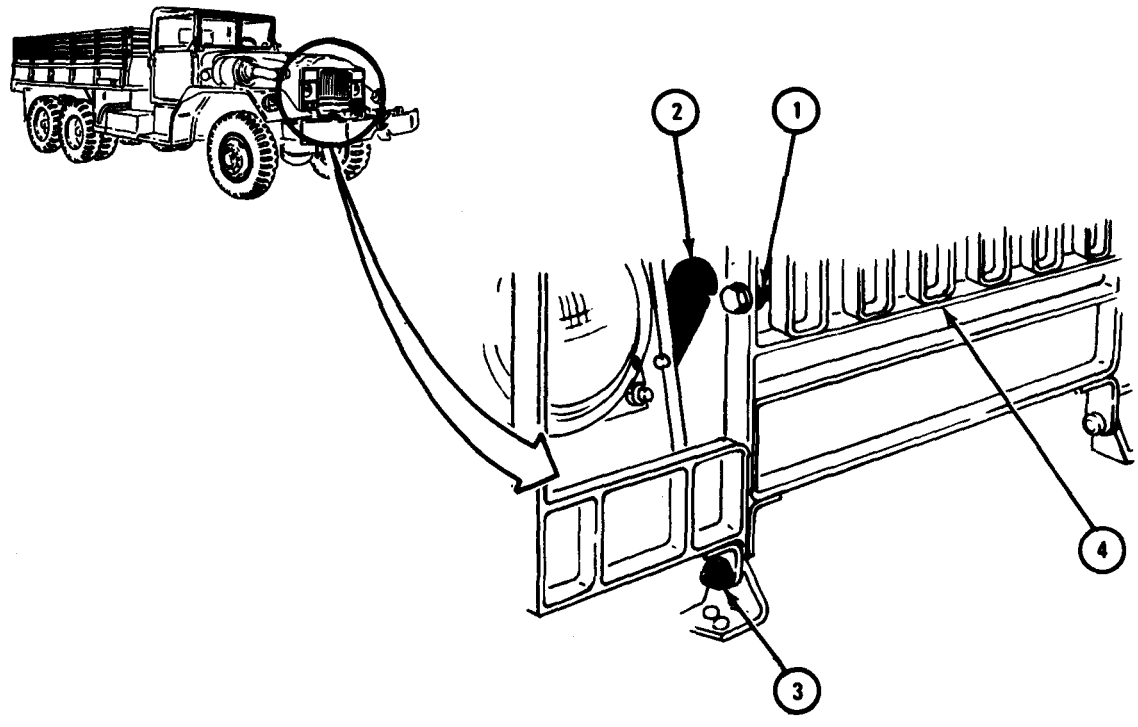
(2) Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 3/4-inch wrenches, loosen two brace nuts (1) and lift up two braces (2)
2. Using 3/4-inch wrenches, loosen two mounting nuts (3).
3. Pull brush guard (4) forward and take it off truck.

GO TO FRAME 2



FRAME 2

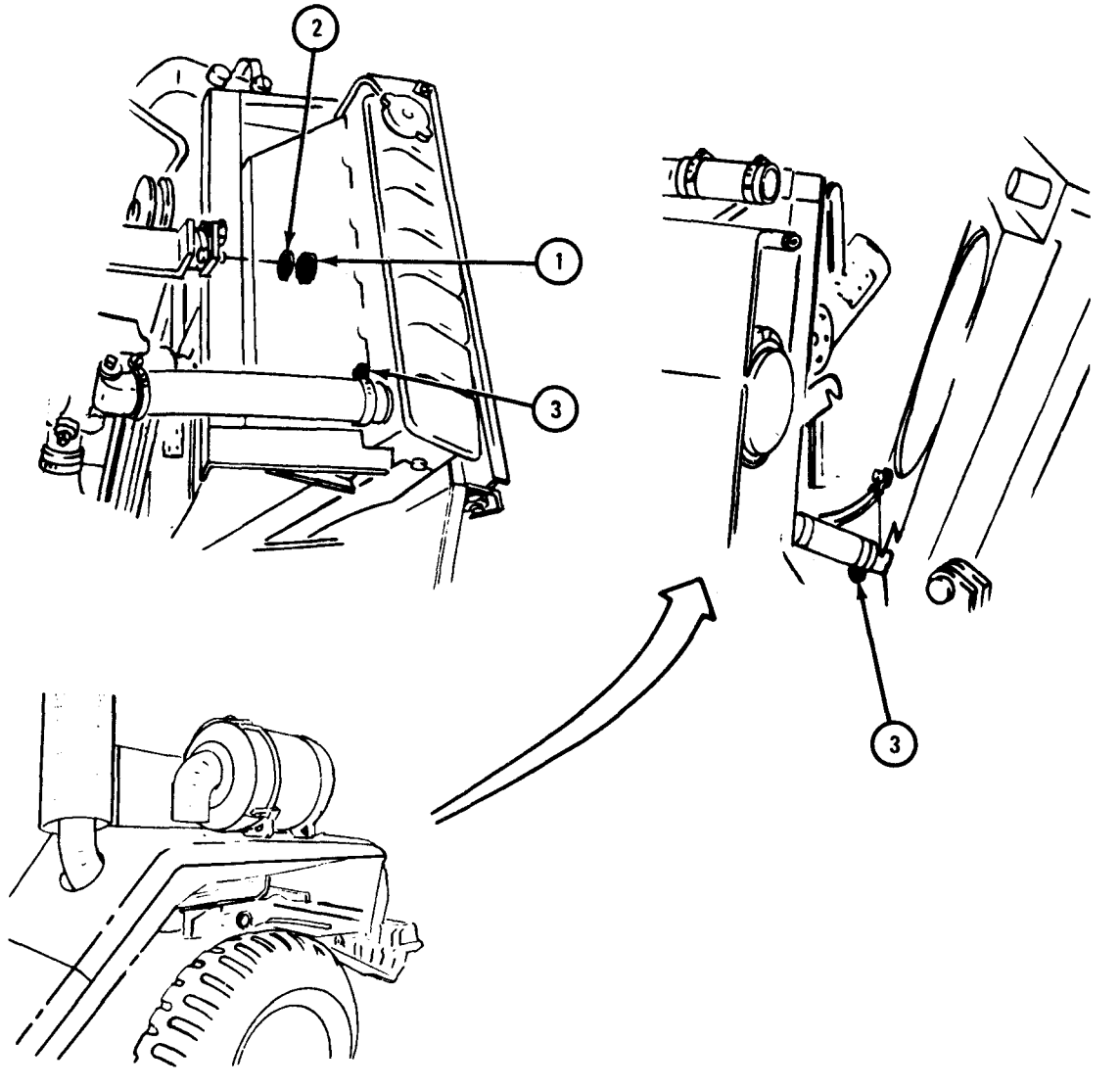
1. Using l/2-inch and 9/16-inch wrenches, unscrew two nuts (1) and take off nuts and two washers (2).

NOTE

Screw (3) in lower hose can be reached through access hole in right front of frame under fender as shown.

2. Using screwdriver, loosen two screws (3).

GO TO FRAME 3

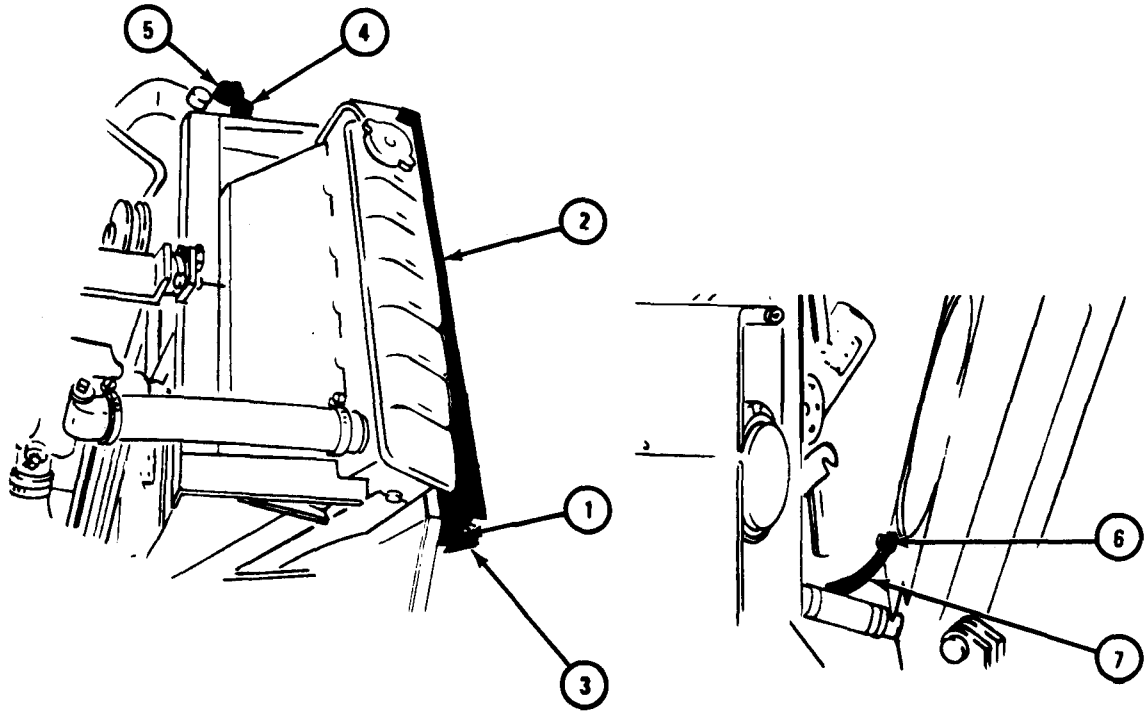


TA 054701

FRAME 3

1. Using 9/16-inch wrench, loosen two nuts (l).
2. Pull upper shield (2) to front and take it off brackets (3).
3. Using 9/16-inch wrench, loosen bolt (4) and take off ground strap (5).
4. Using 7/16-inch wrench, unscrew and take off bolt (6) and take off ground strap (7).

GO TO FRAME 4



TA 054702

FRAME 4

1. Using 3/4-inch wrench, unscrew two mounting nuts (1) and take off nuts, two washers (2), and two rubber mounts (3).

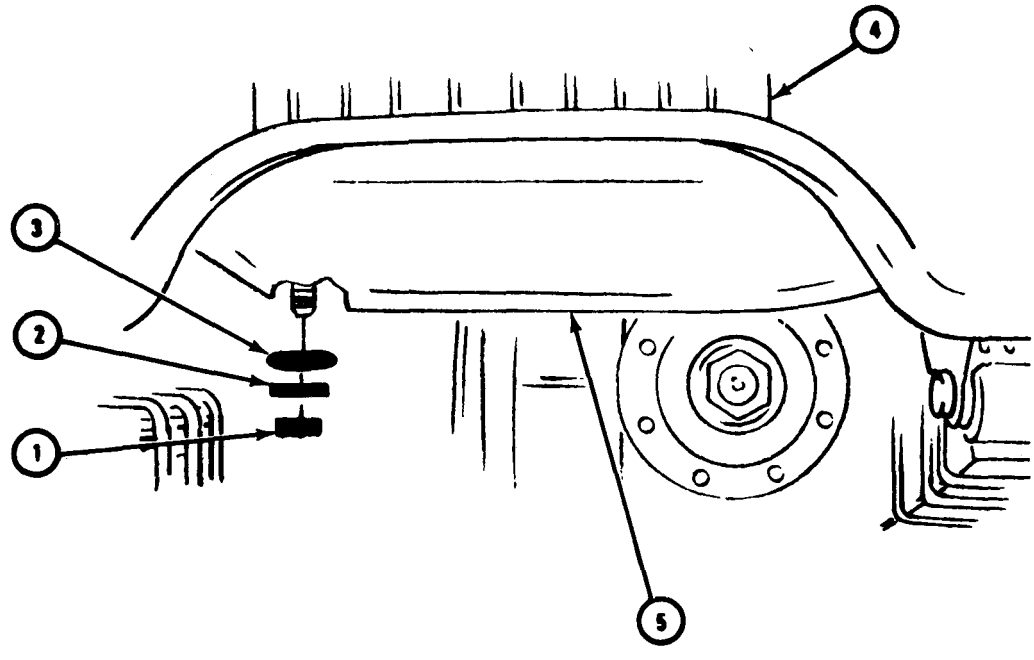
WARNING

Use care when handling radiator. Sharp fins may cause injury to personnel.

Soldiers A and B

2. Lift radiator (4) from mounting support (5).

END OF TASK



TA 054703

c. Replacement.

FRAME 1

1. Put radiator support spacers on left and right radiator mounting studs (1) if they are not already on.

WARNING

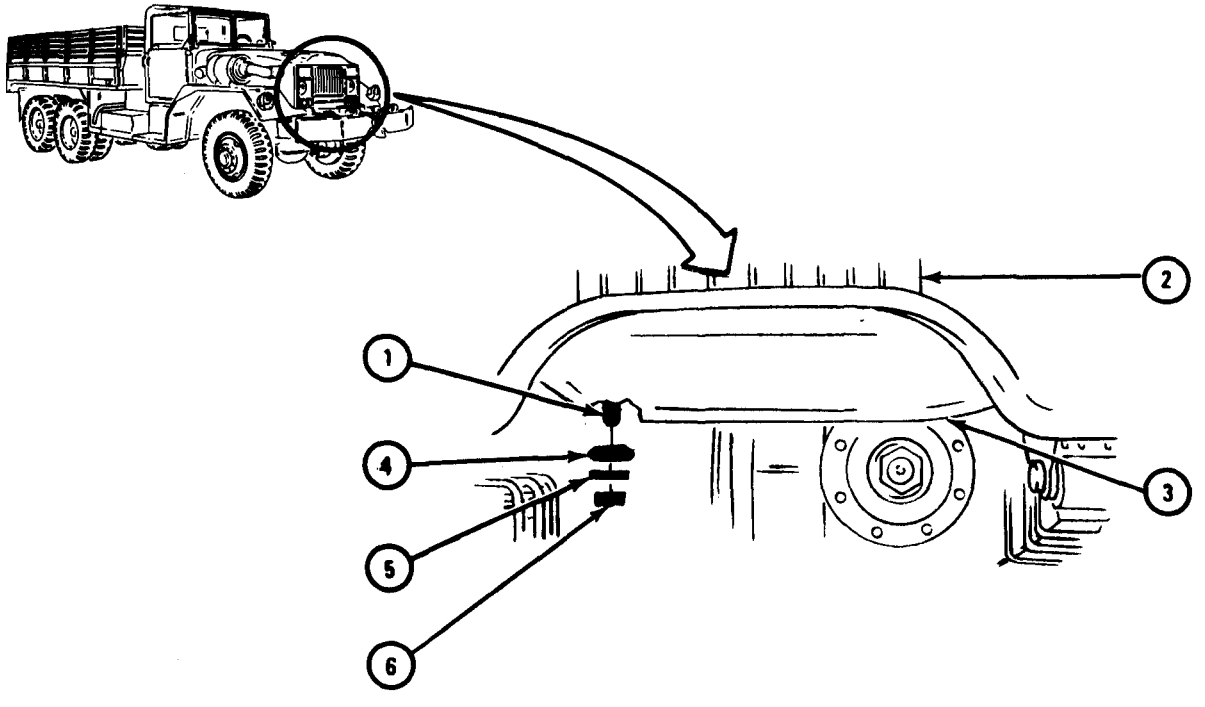
Use care when handling radiator. Sharp fins may cause injury to personnel.

Soldiers A and B 2. Lift up radiator (2) and put radiator mounting studs (1) into holes in engine front mounting support (3).

Soldier A 3. Put two rubber mounts (4) and washers (5) on two radiator mounting studs (1).

4. Using 3/4-inch wrench, screw on two nuts (6) to radiator mounting studs (1) and tighten nuts evenly.

GO TO FRAME 2

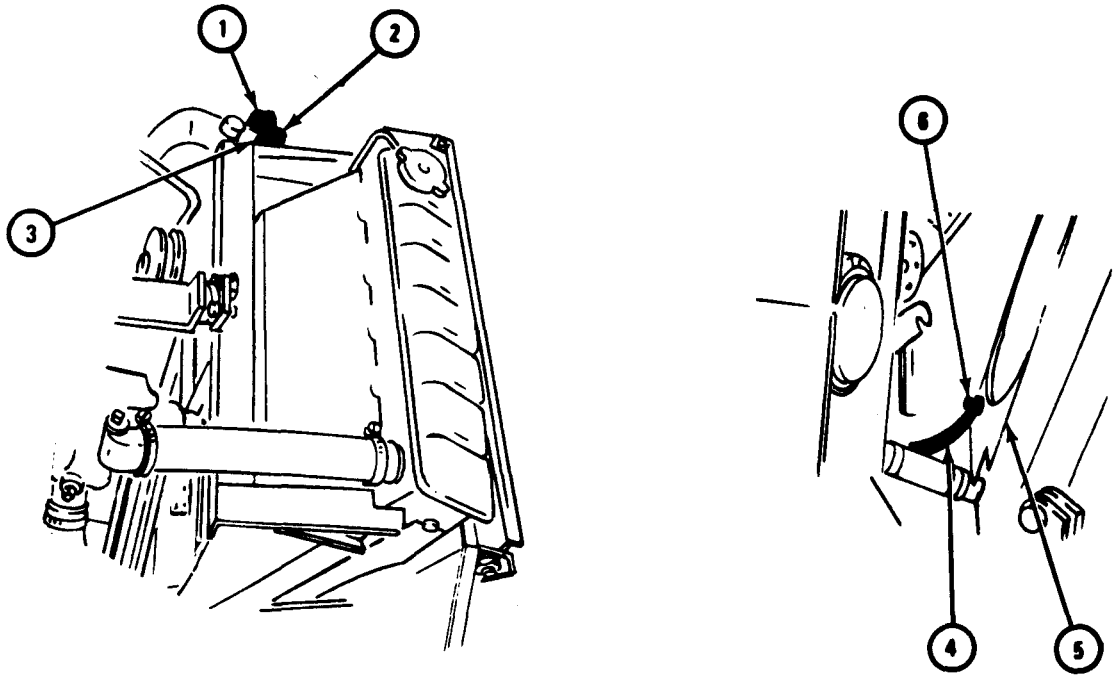


TA 054704

FRAME 2

1. Slide lug on ground strap (1) under retaining bolt (2) and lockwasher (3) and using 7/16-inch wrench, tighten bolt.
2. Aline hole in ground strap (4) with hole in shroud (5).
3. Put bolt (6) through holes in ground strap (4) and shroud (5).
4. Using 1/2-inch wrench, screw in and tighten bolt (6).

GO TO FRAME 3

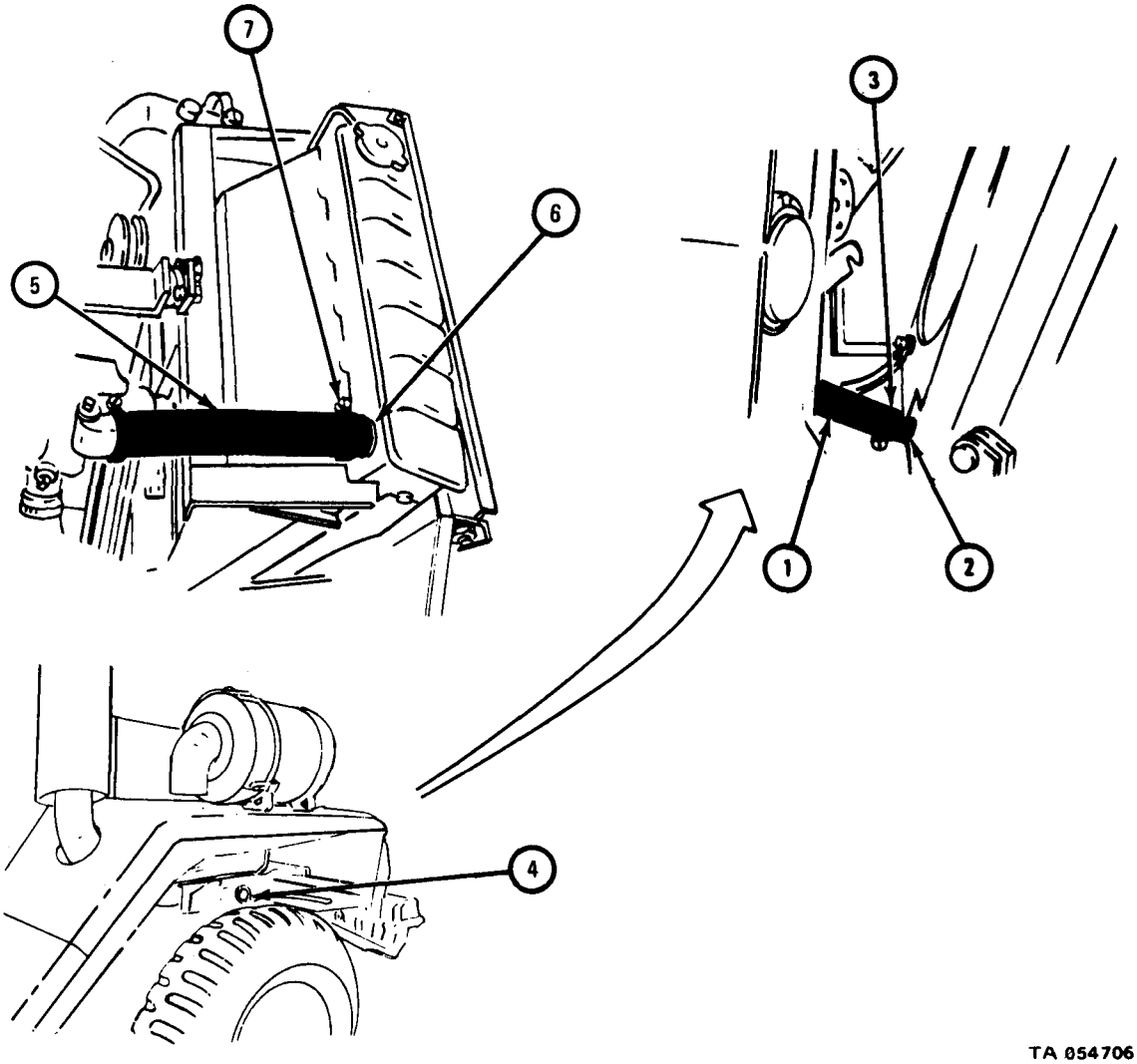


TA 054705

FRAME 3

1. Push outlet hose (1) onto outlet pipe (2).
2. Place screw in clamp (3) so it can be tightened through hole (4) in right front of frame under fender as shown.
3. Using screwdriver, tighten screw in clamp (3).
4. Push inlet hose (5) onto inlet pipe (6).
5. Using screwdriver, tighten screw in clamp (7).

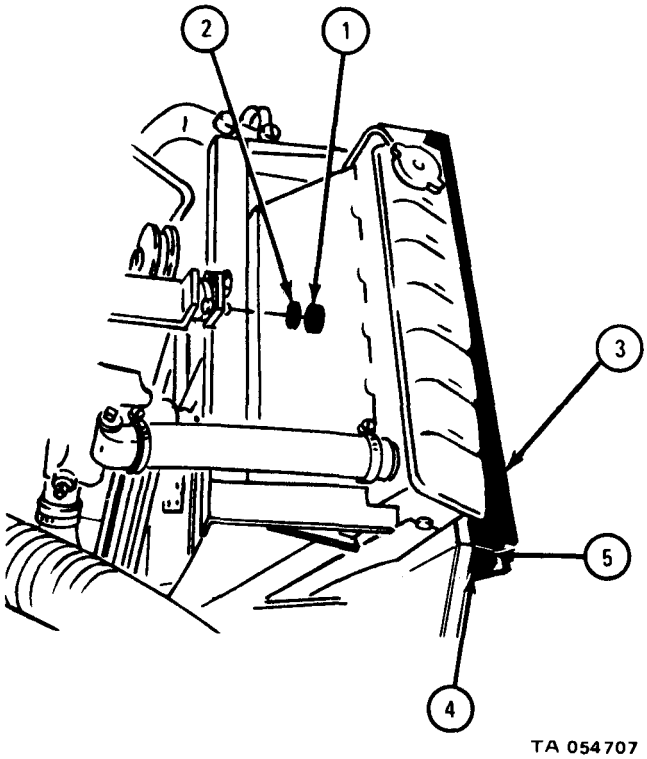
GO TO FRAME 4



FRAME 4

1. Using l/2-inch and 9/16-inch wrenches, screw on two nuts (1) and washers (2).
2. Slide slotted ends of upper shield (3) under two nuts (4) and lockwashers (5).
3. Using l/2-inch and 9/16-inch wrenches, tighten two nuts (4).

GO TO FRAME 5



TA 054707

FRAME 5

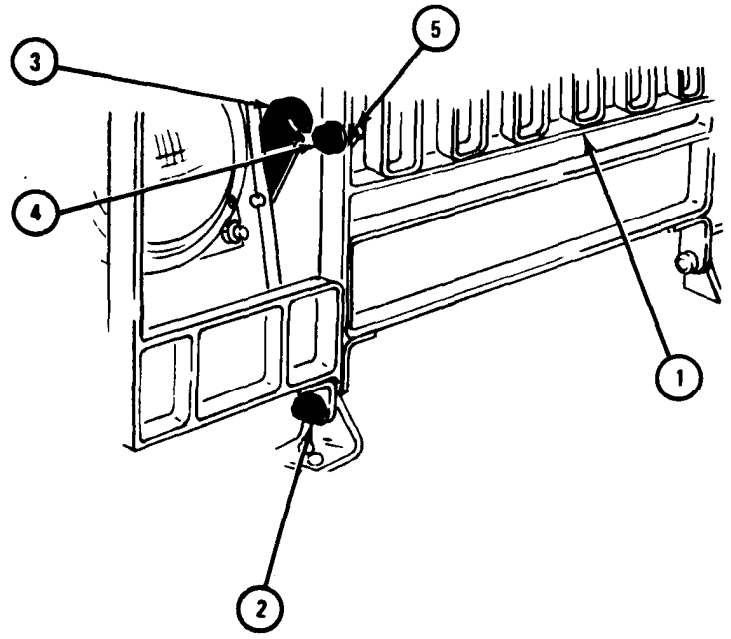
1. Put brush guard (1) in place.
2. Using 3/4-inch wrenches, tighten two mounting nuts (2).
3. Slide two braces (3) between two bolts (4) and brush guard (1).
4. Using 3/4-inch wrenches, tighten two brace nuts (5).

NOTE

Follow-on Maintenance Action Required:

1. Fill cooling system. Refer to para 6-13.
2. CIose hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 054708

6-4. RADIATOR CAP WITH CHAIN REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS : Pliers

SUPPLIES: None

PERSONNEL: One

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

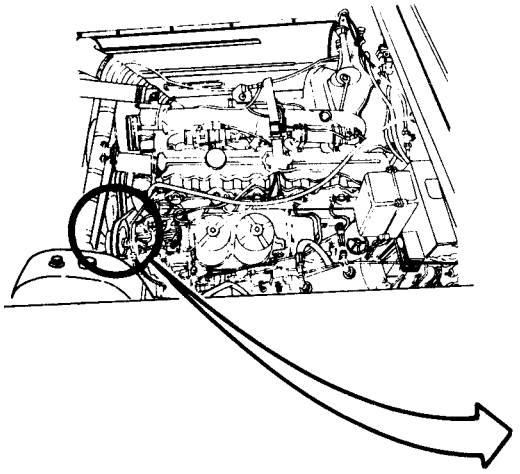
Preliminary Procedure. Open hood and left side panel. Refer to TM 9-2320-211-10.

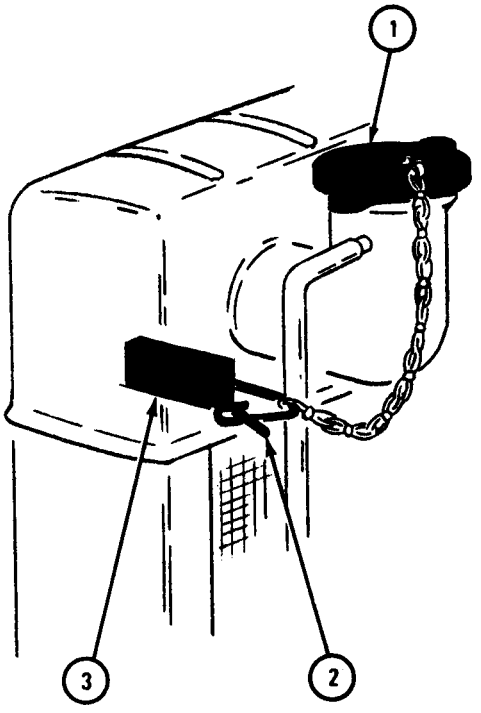
b. Removal.

FRAME 1

1. Unscrew and take off radiator cap (l).
2. Hold cap (1) and using pliers, unhook clip (2). Pull clip out of hole in bracket (3).

END OF TASK





TA 045768

c. Inspection and Repair.

(1) Check that radiator cap, chain, and clip are not cracked, dented, or broken. If parts are damaged, get new ones in their place.

(2) Check gasket in filler neck to see if it is cracked or broken. If gasket is damaged, get a new one in its place.

d. Replacement.

FRAME 1

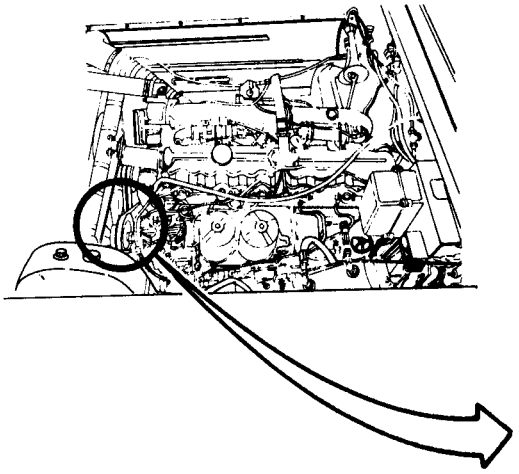
1. Screw on and tighten radiator cap (1) as shown.
2. Put clip (2) through hole in bracket (3).
3. Using pliers, hook clip (2) as shown.

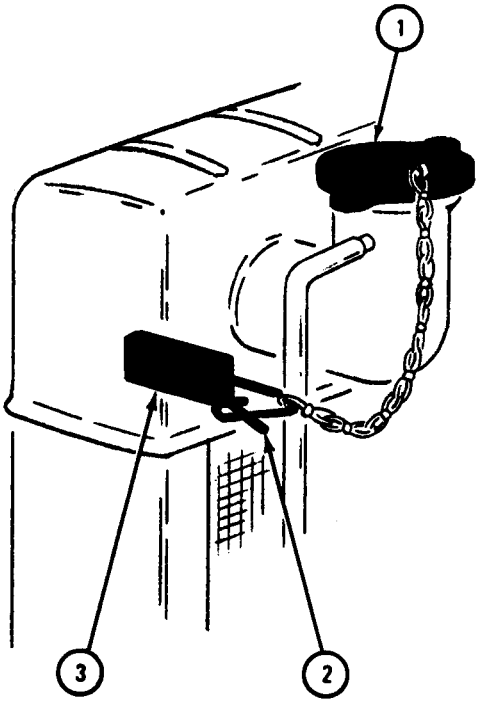
NOTE

Follow-on Maintenance Action Required:

Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK





TA 045768

6-5. RADIATOR INLET PREFORMED UPPER HOSE REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Drain cooling system. Refer to para 6-13.

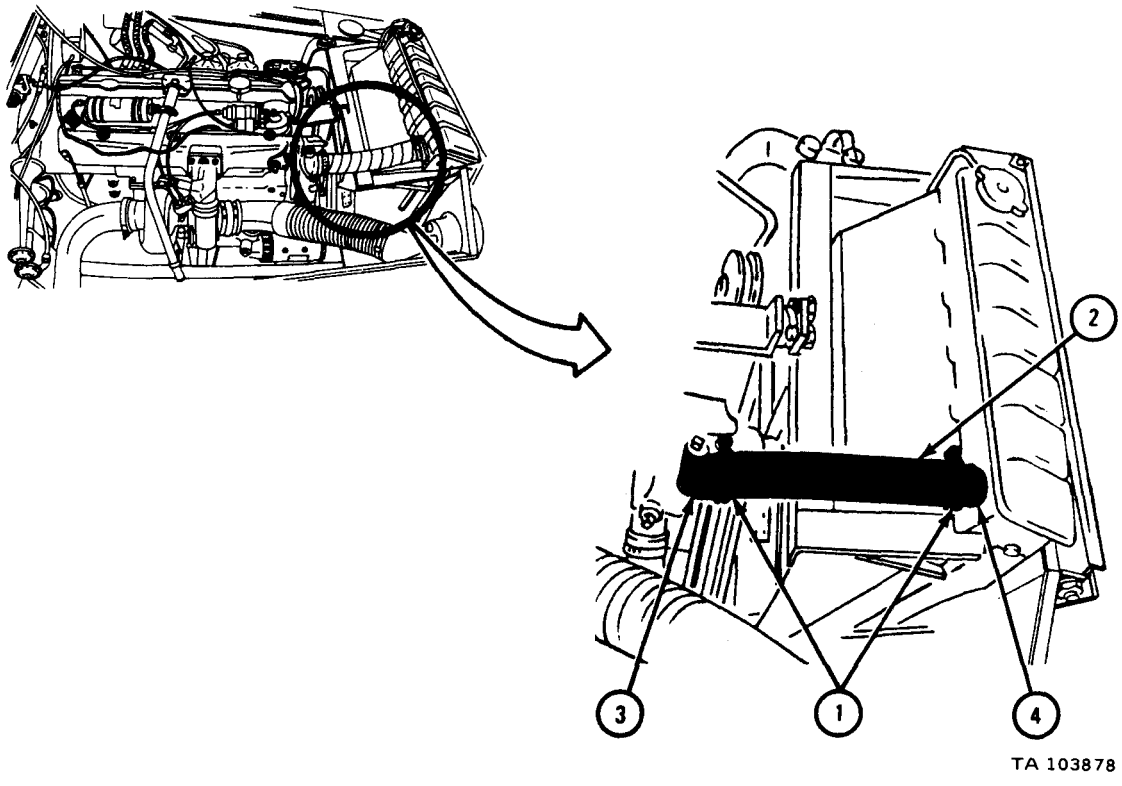
(2) Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using screwdriver, loosen two clamps (1) and slide clamps to center of hose (2),
2. Slide hose (2) forward until it is clear of thermostat housing (3).
3. Lift hose (2) up and back off of radiator inlet (4). Slide clamps (1) off hose (2).

END OF TASK



c. Replacement.

FRAME 1

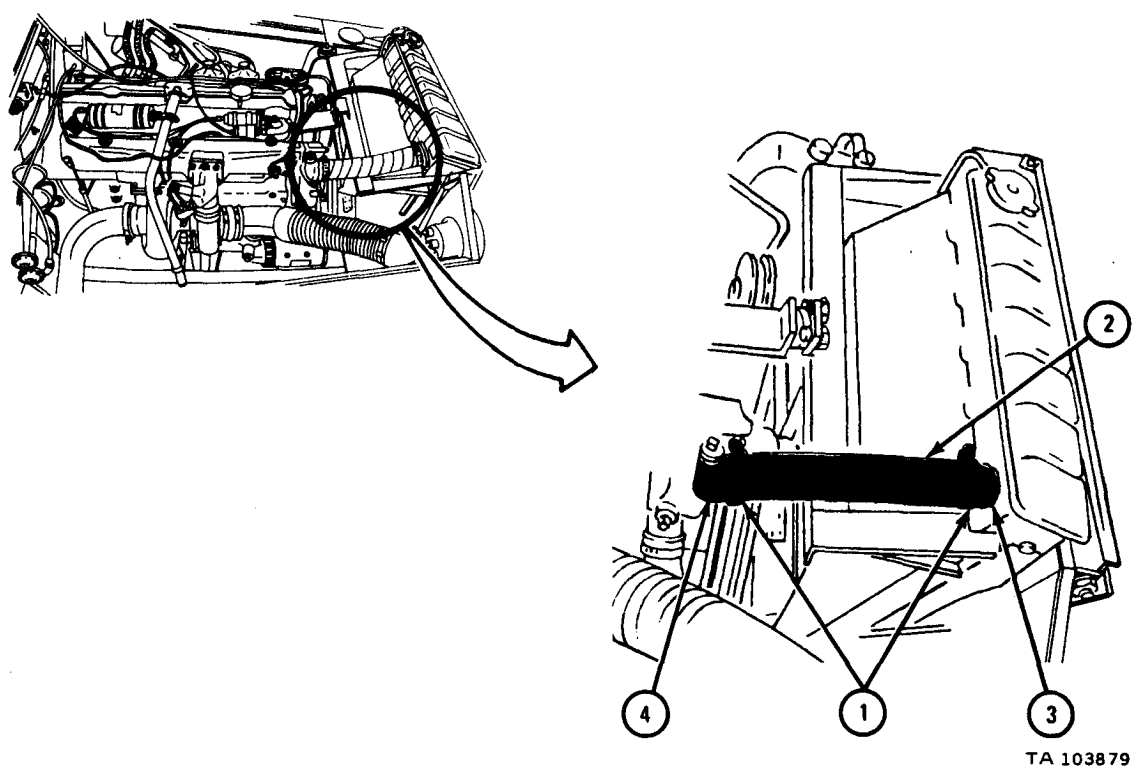
1. Slide two clamps (1) onto hose (2) and move clamps to center of hose.
2. Slide one end of hose (2) over radiator inlet (3) far enough to clear thermostat housing (4).
3. Slide hose (2) back onto thermostat housing (4).
4. Place two clamps (1) as shown. Using screwdriver, tighten clamps.

NOTE

Follow-on Maintenance Action Required:

1. Fill cooling system. Refer to para 6-13.
2. Start engine and check for leaks. Refer to TM 9-2320-211-10.
3. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



6-6. RADIATOR OUTLET PREFORMED LOWER HOSE REMOVAL AND REPLACEMENT.

TOOLS: l/2-inch wrench (2)
Flat-tip screwdriver

SUPPLIES: Lower outlet preformed radiator hose

PERSONNEL: One

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

a. Preliminary Procedures.

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

(2) Drain cooling system. Refer to para 6-13.

(3) Open right access panel. Refer to TM 9-2320-211-10.

(4) Take out generator. Refer to para 7-3.

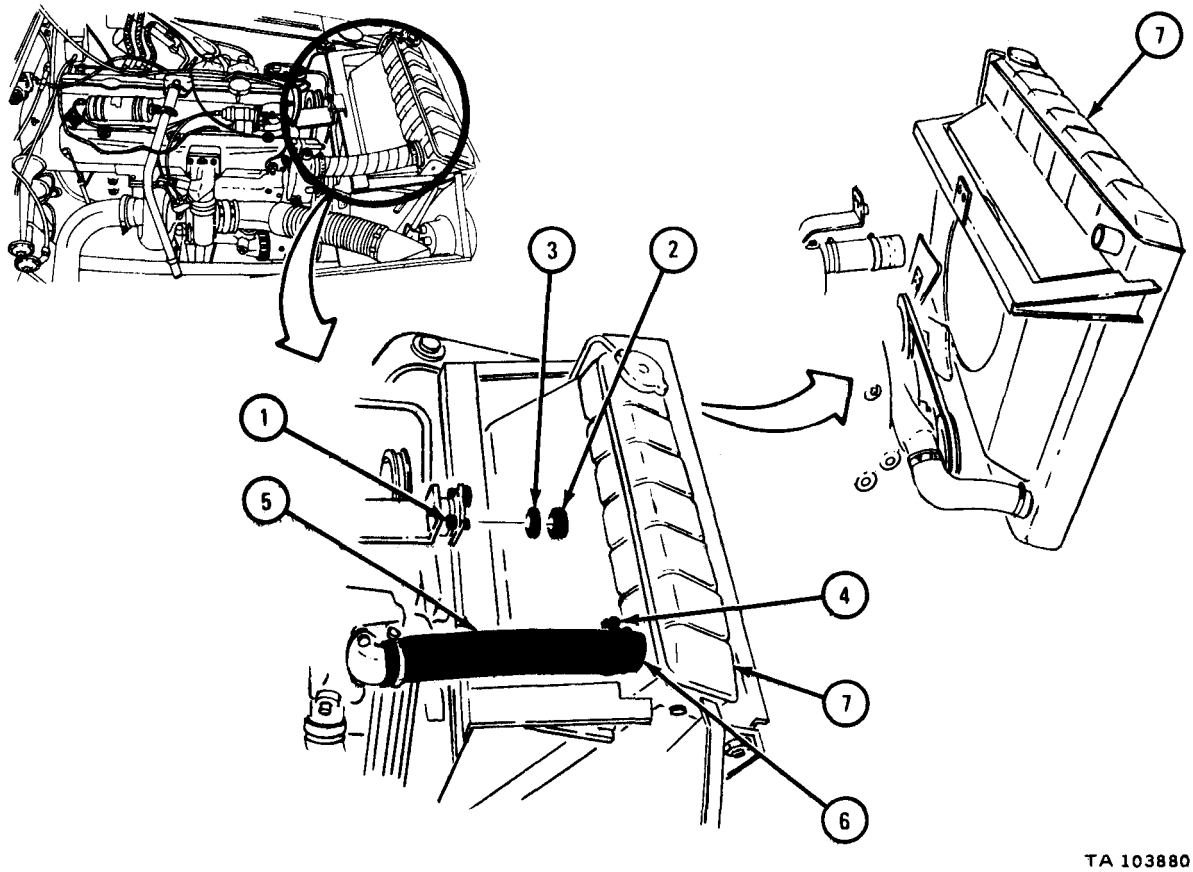
(5) Tilt brush guard forward. Refer to Part 2, para 17-3.

b. Removal.

FRAME 1

1. Using l/2-inch wrench, hold two screws (l).
2. Using l/2-inch wrench, take off two nuts (2) and two washers (3).
3. Using flat-tip screwdriver, loosen clamp (4). Push clamp (4) back toward center of inlet hose (5).
4. Take inlet hose (5) off radiator inlet neck (6).
5. From front of engine, pull top of radiator (7) forward and tilt radiator.

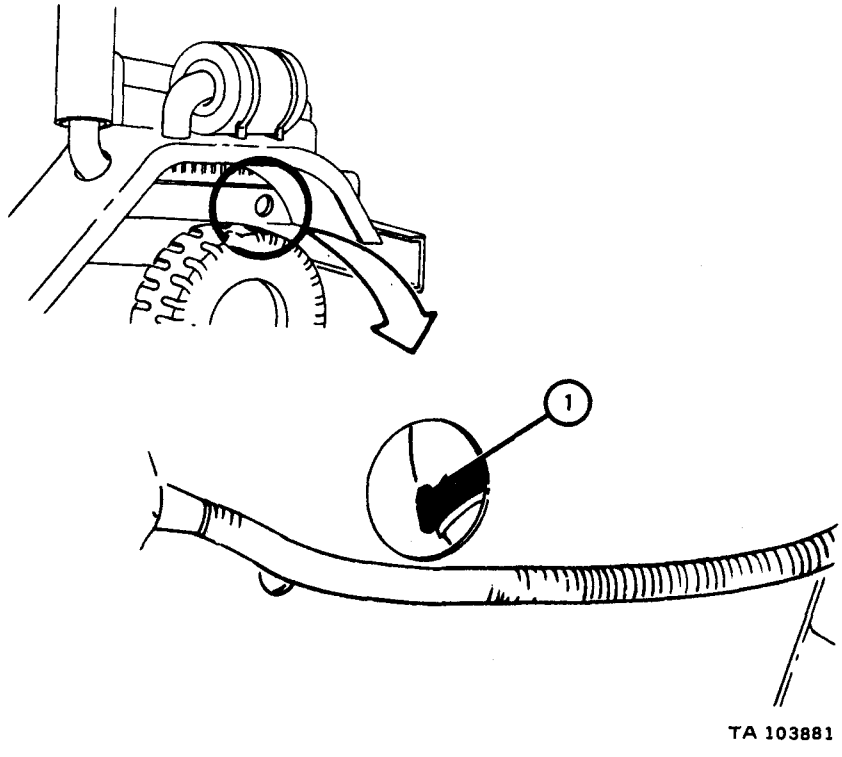
GO TO FRAME 2



FRAME 2

1. Using a flat-tip screwdriver, put screwdriver into access hole in frame under fender and loosen hose clamp (1).

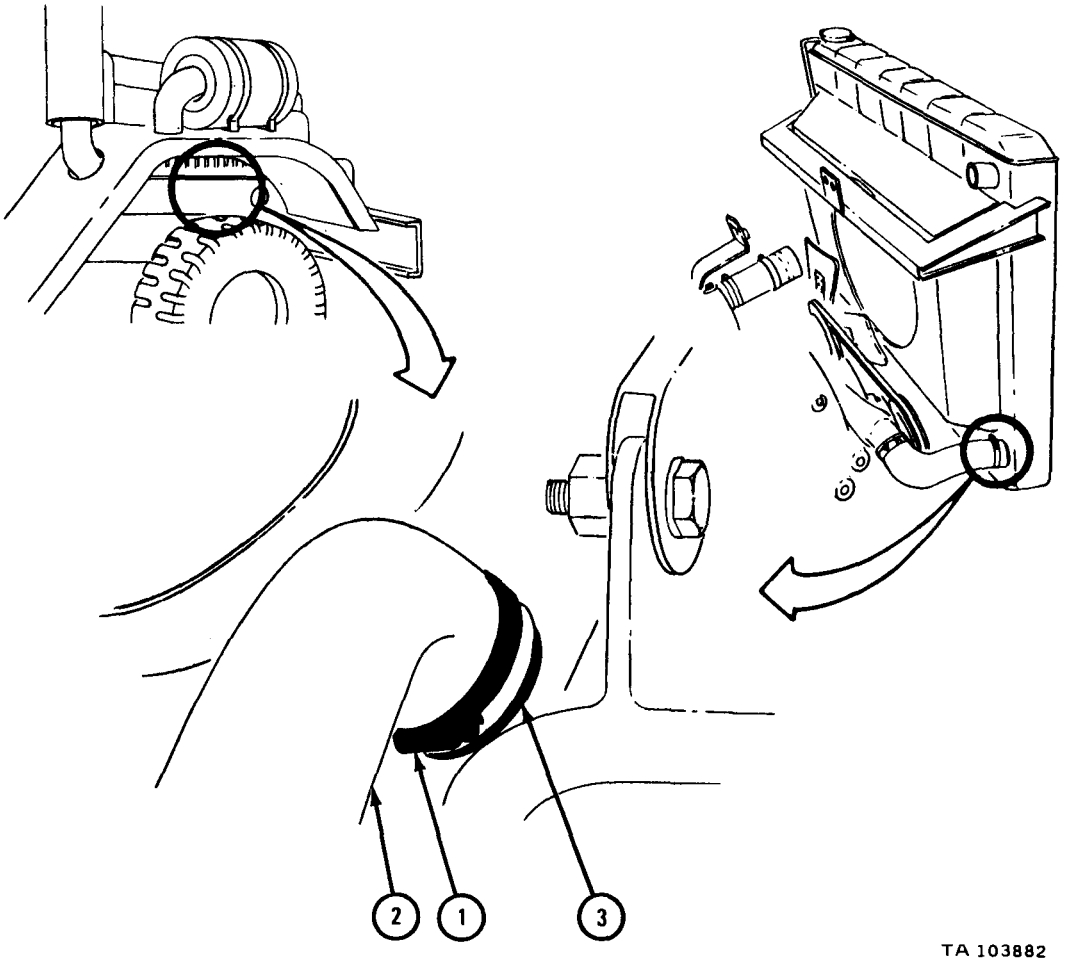
GO TO FRAME 3



FRAME 3

1. Reach through access panel under fender and slide clamp (1) up over hose (2). Slide hose (2) off radiator outlet neck (3).

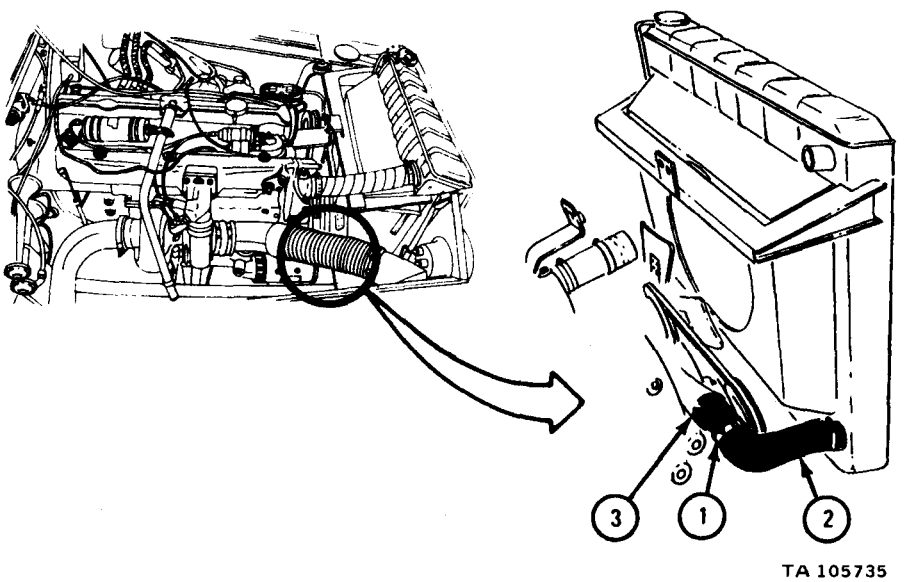
GO TO FRAME 4



FRAME 4

1. Using flat-tip screwdriver, loosen hose clamp (l). Slide clamp back over hose (2). Slide hose (2) off water pump inlet (3).
2. Take two clamps off hose (2). Throw away hose.

END OF TASK



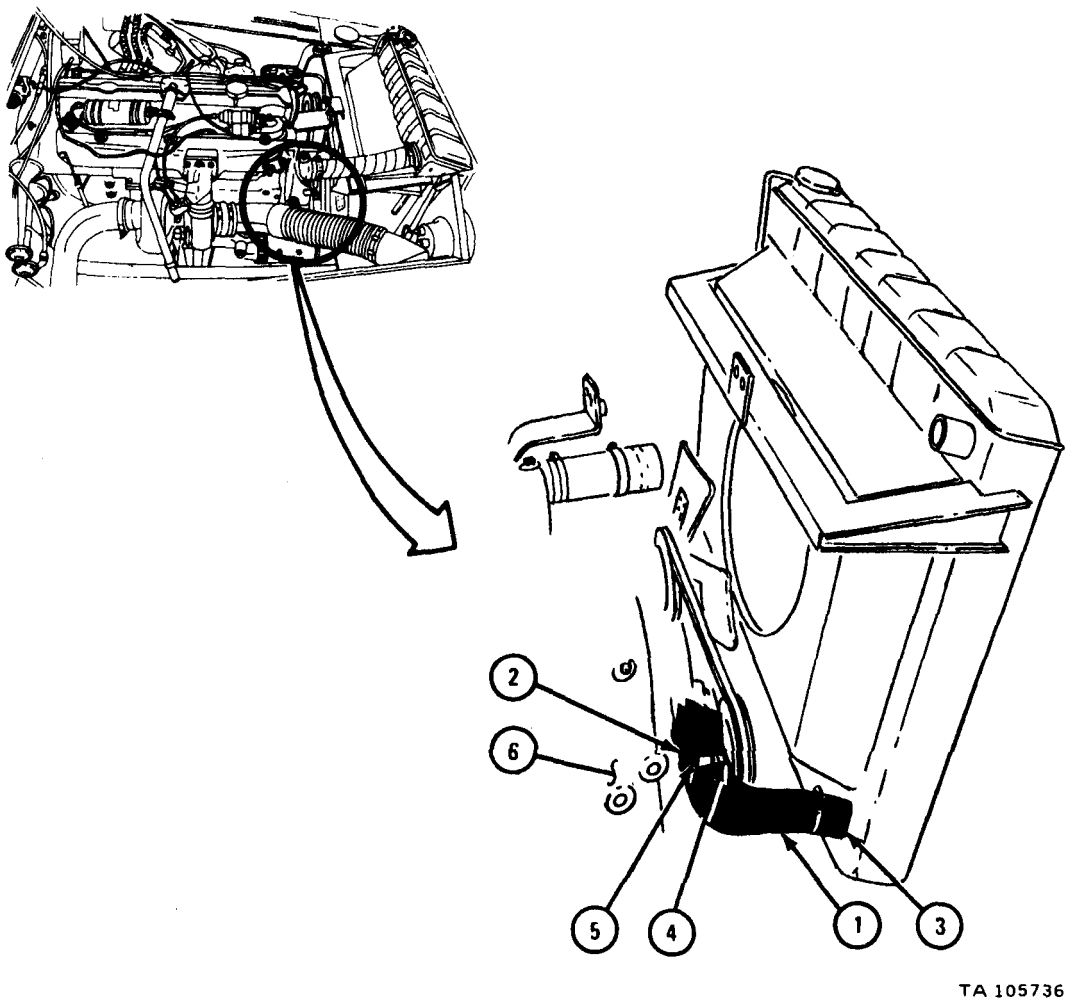
TA 105735

c. Replacement.

FRAME 1

1. Hold long straight end of new radiator outlet hose (1) at water pump inlet (2) with short straight end of hose (1) at radiator outlet (3).
2. Put clamp (4) on water pump inlet (2) end of hose (1) with tightening bolt head (5) on top of hose and facing engine block (6). Slide clamp (4) back over hose (l).
3. Slide hose (1) over water pump inlet (2). Slide clamp (4) near end of hose (1) over water pump inlet (2). Using flat-tip screwdriver, tighten clamp bolt (5).

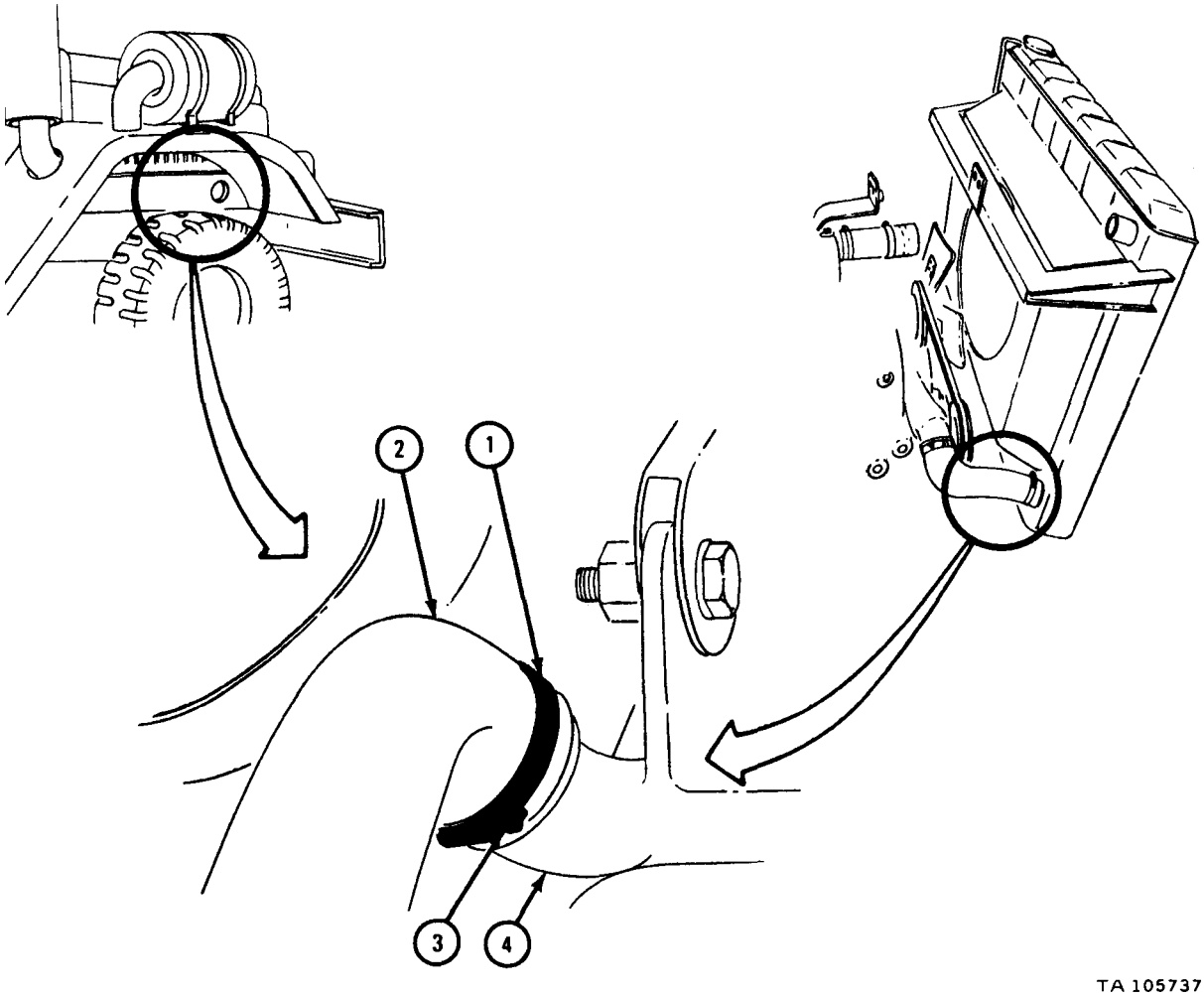
GO TO FRAME 2



FRAME 2

1. Reach through access panel under fender and slide clamp (1) over hose (2) with tightening bolt head (3) on engine block side of hose and facing fender. Slide clamp (1) up over hose (2).
2. Slide hose (2) over radiator outlet (4). Slide clamp (1) near end of hose (2) over radiator outlet (4).

GO TO FRAME 3

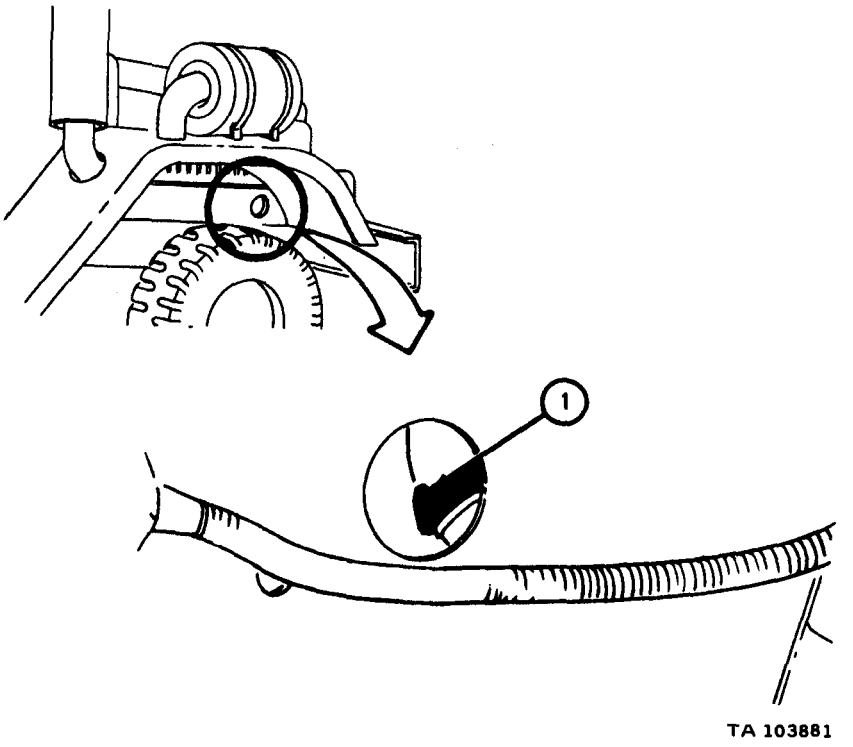


TA 105737

FRAME 3

1. Using a flat-tip screwdriver, put screwdriver into access hole in frame under fender and tighten hose clamp (1).

GO TO FRAME 4



FRAME 4

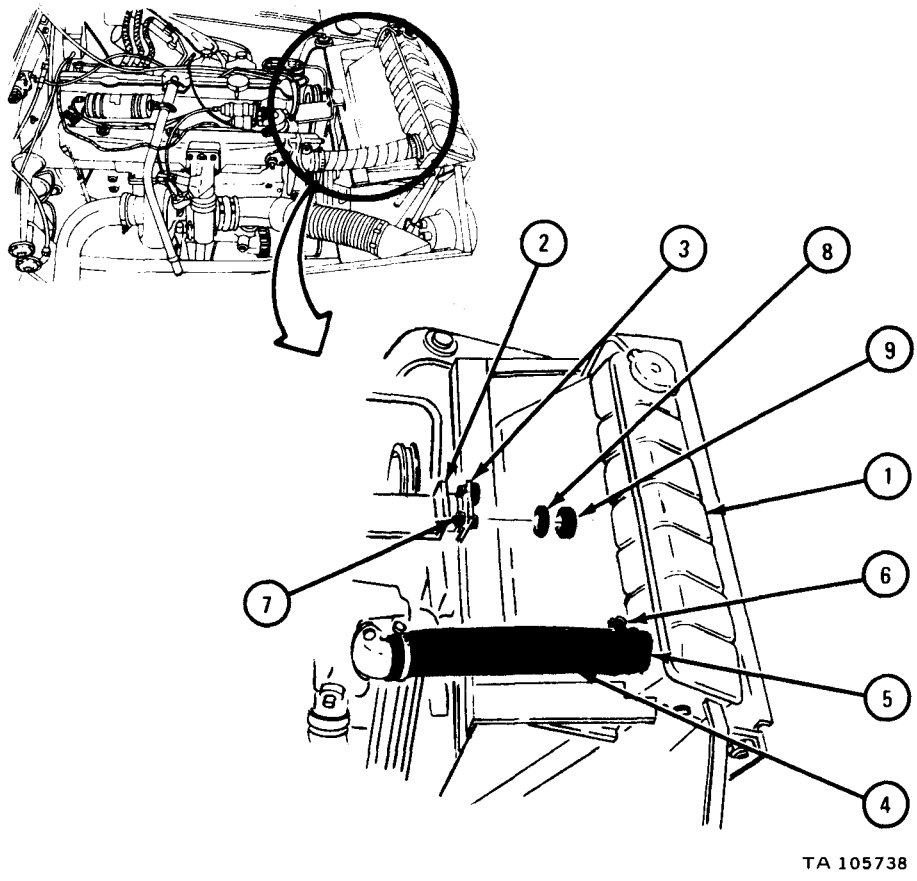
1. From front of truck, push top of radiator (1) toward engine until engine bracket (2) contacts radiator brace (3).
2. Slide hose (4) over radiator inlet (5).
3. Place clamp (6) near end of hose (4) over radiator inlet (5). Using flat-tip screwdriver, tighten clamp (6).
4. Using l/2-inch wrench, hold two screws (7).
5. Puton two washers (8). Using l/2-inch wrench, screw on and tighten two nuts (9).

NOTE

Follow-on Maintenance Action Required:

1. Replace radiator brush guard. Refer to Part 2, para 17-3.
2. Put in generator. Refer to para 7-3.
3. Fill cooling system. Refer to para 6-13.
4. Start engine and check for leaks. Refer to TM 9-2320-211-10.
5. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 105738

6-7. HOSES AND CLAMPS REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

a. Cooling System Hoses and Clamps.

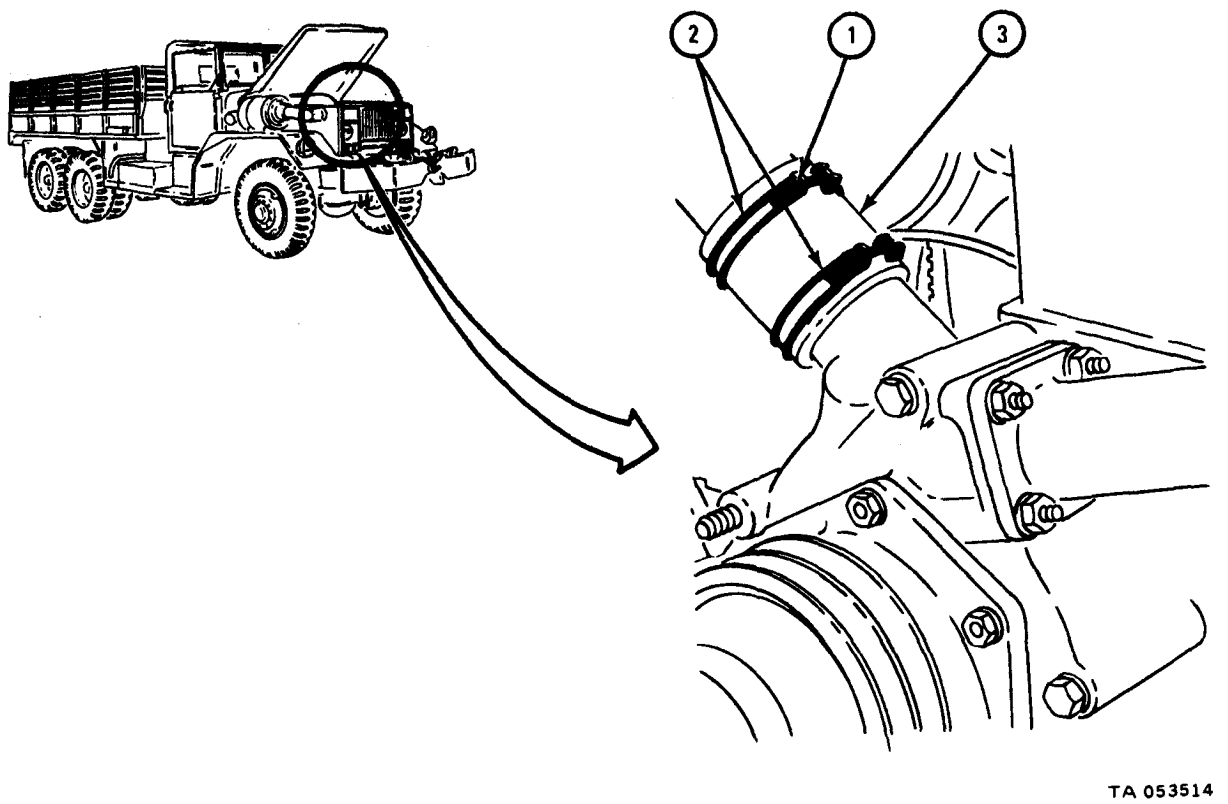
(1) Preliminary Procedure. Drain cooling system. Refer to para 6-13.

(2) Removal.

FRAME 1

1. Using flat-tip screwdriver, loosen screws (1) on clamps (2).
2. Slide clamps (2) down on hose (3).
3. Pull off hose (3).
4. Take clamps (2) off of hose (3).

END OF TASK



(3) Replacement.

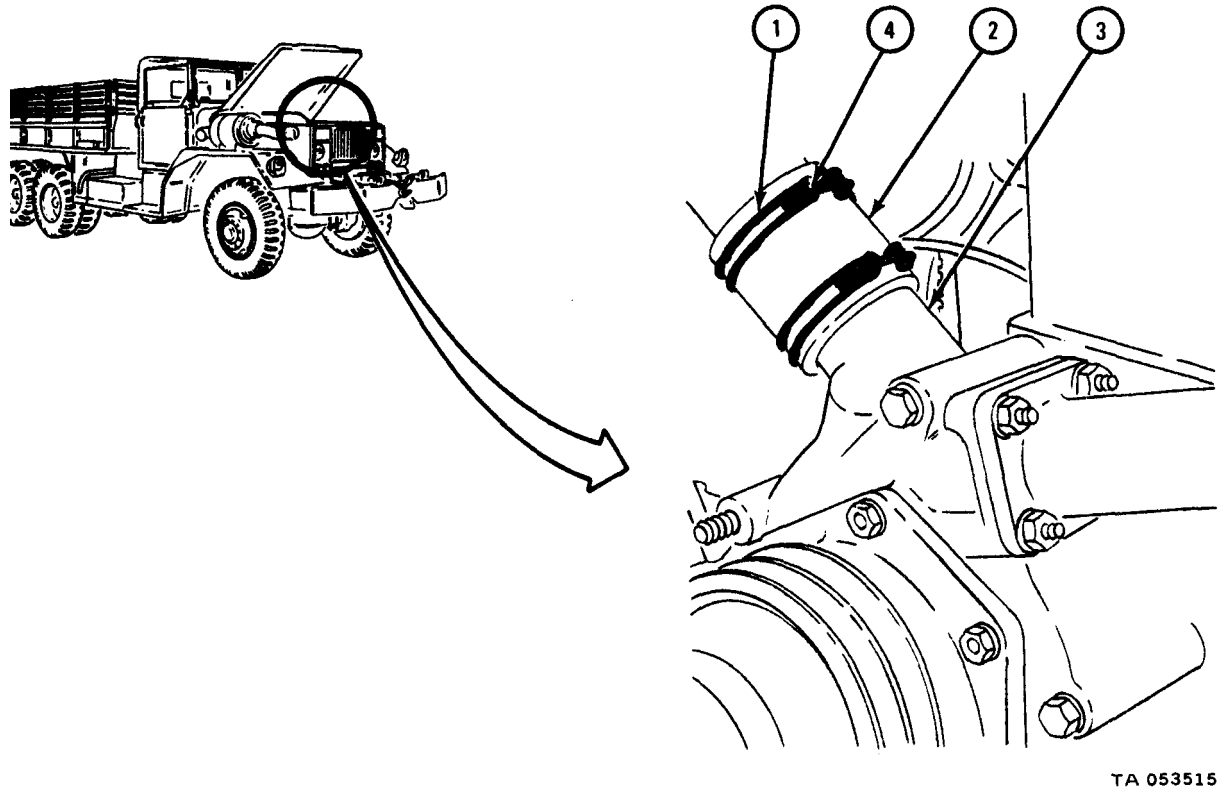
FRAME 1

1. Place clamps (1) loosely on hose (2).
2. Slide hose (2) onto connectors (3).
3. Slide clamps (1) to ends of hose (2).
4. Using flat-tip screwdriver, tighten screws (4).

NOTE

Follow-on Maintenance Action Required:
Fill cooling system. Refer to para 6-13.

END OF TASK



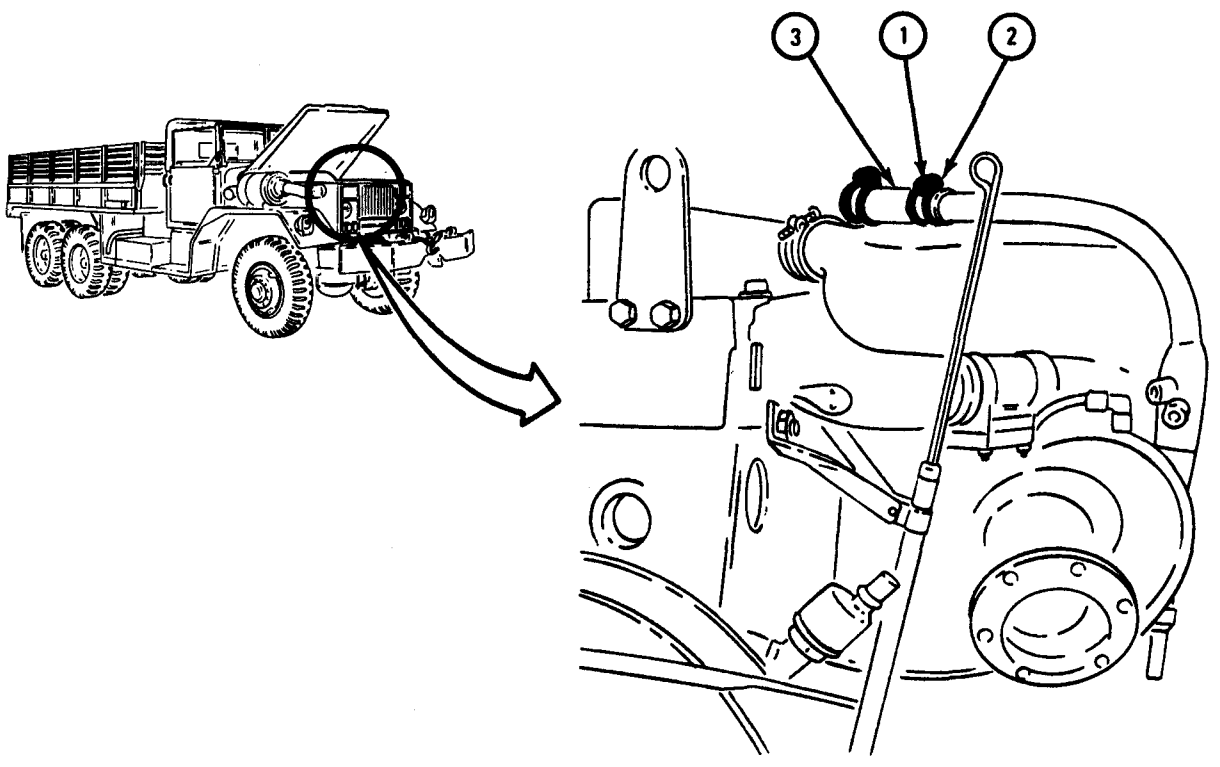
b. Crankcase Breather Tube Hose and Clamps.

(1) Removal.

FRAME 1

1. Using flat-tip screwdriver, loosen screws (1) on clamps (2).
2. Slide clamps (2) down on hose (3).
3. Pull off hose (3).
4. Take clamps (2) off of hose (3).

END OF TASK

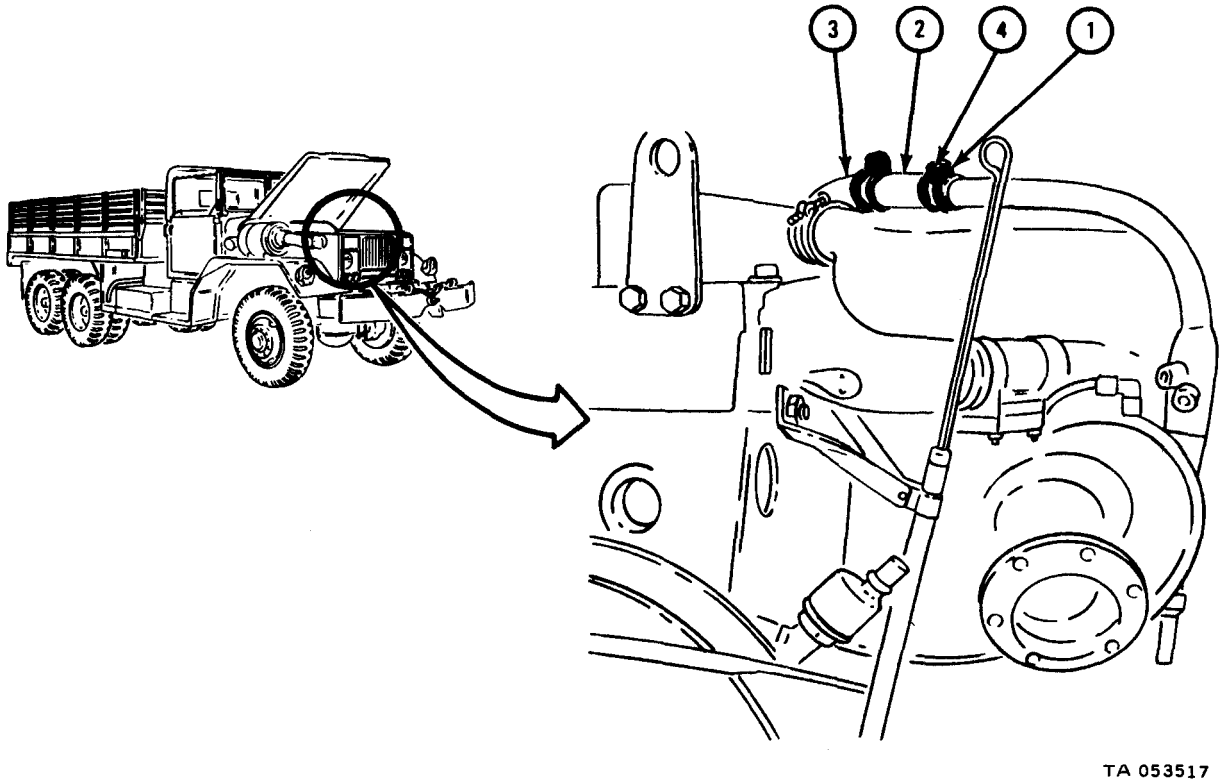


(2) Replacement.

FRAME 1

1. Place clamps (1) loosely on hose (2).
2. Slide hose (2) onto connectors (3).
3. Slide clamps (1) to ends of hose (2).
4. Using flat-tip screwdriver, tighten screws (4).

END OF TASK



TA 053517

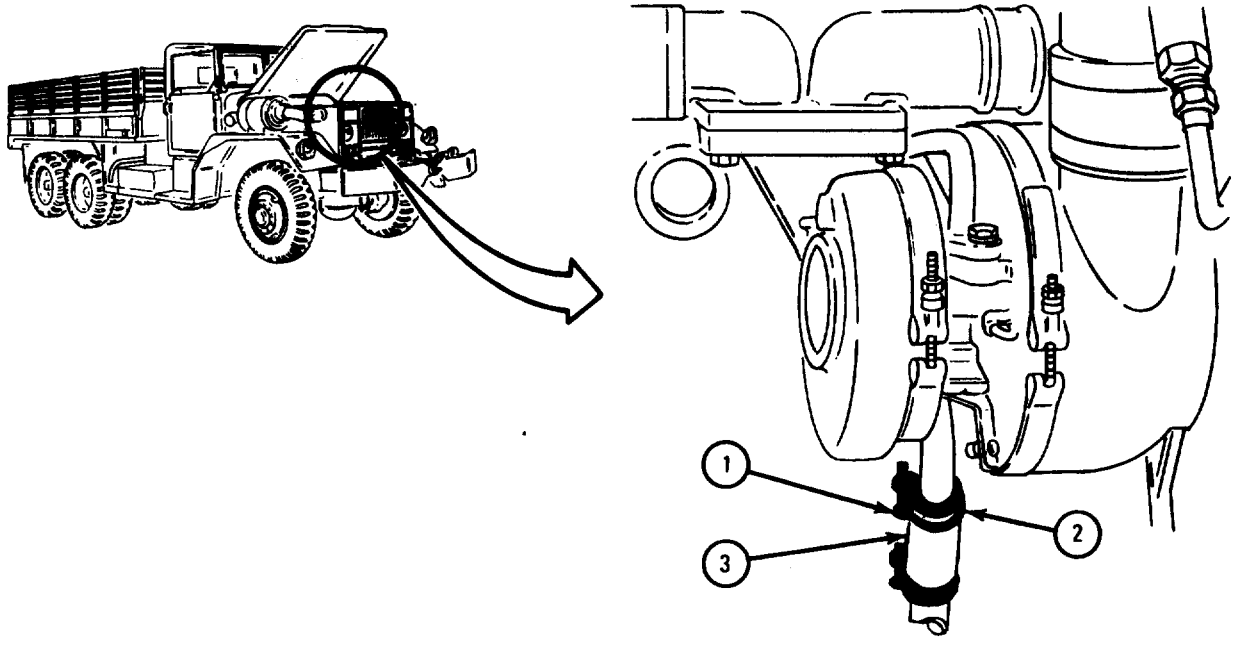
c. Turbocharger Oil Drain Tube Hose and Clamps.

(1) Removal.

FRAME 1

1. Using flat-tip screwdriver, loosen screws (1).
2. Slide clamps (2) down on hose (3).
3. Pull off hose (3).
4. Take clamps (2) off of hose (3).

END OF TASK

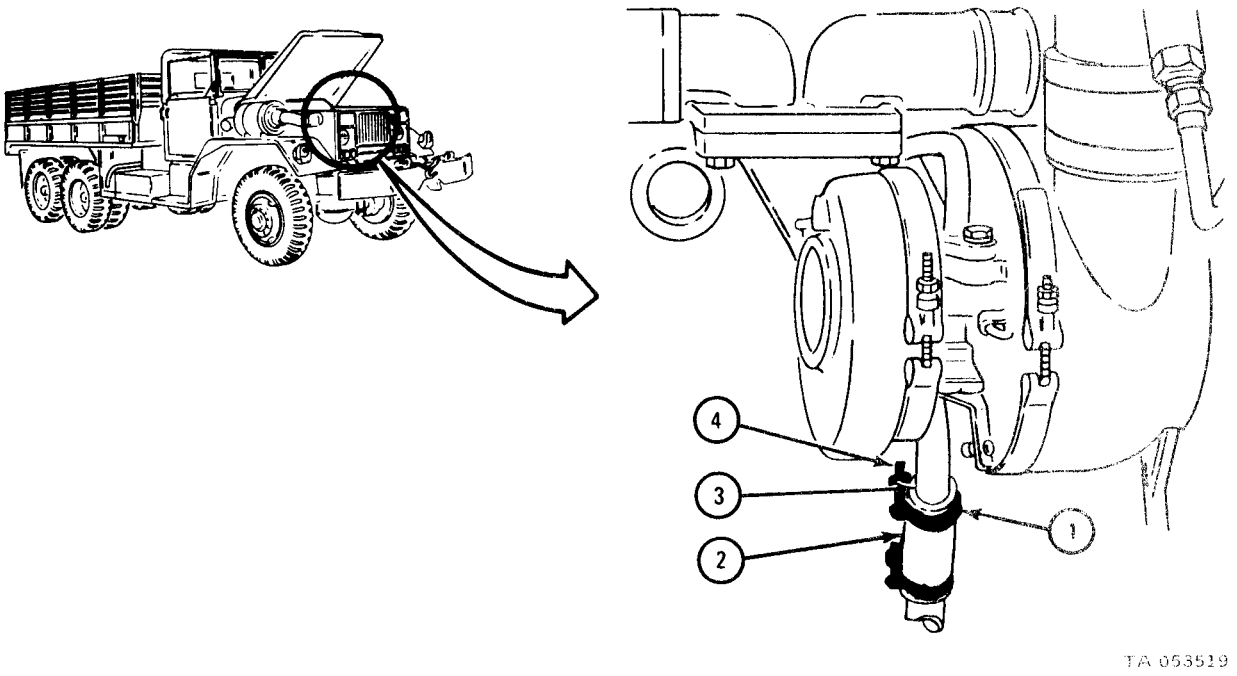


(2) Replacement.

FRAME 1

1. Place clamps (1) loosely on hose (2).
2. Slide hose (2) onto connectors (3).
3. Slide clamps (1) to ends of hose (2).
4. Using flat-tip screwdriver, tighten screws (4).

END OF TASK



Section III. THERMOSTAT

6-8. FLOW CONTROL THERMOSTAT REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
9/16-inch wrench
Pliers

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

PERSONNEL: One

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

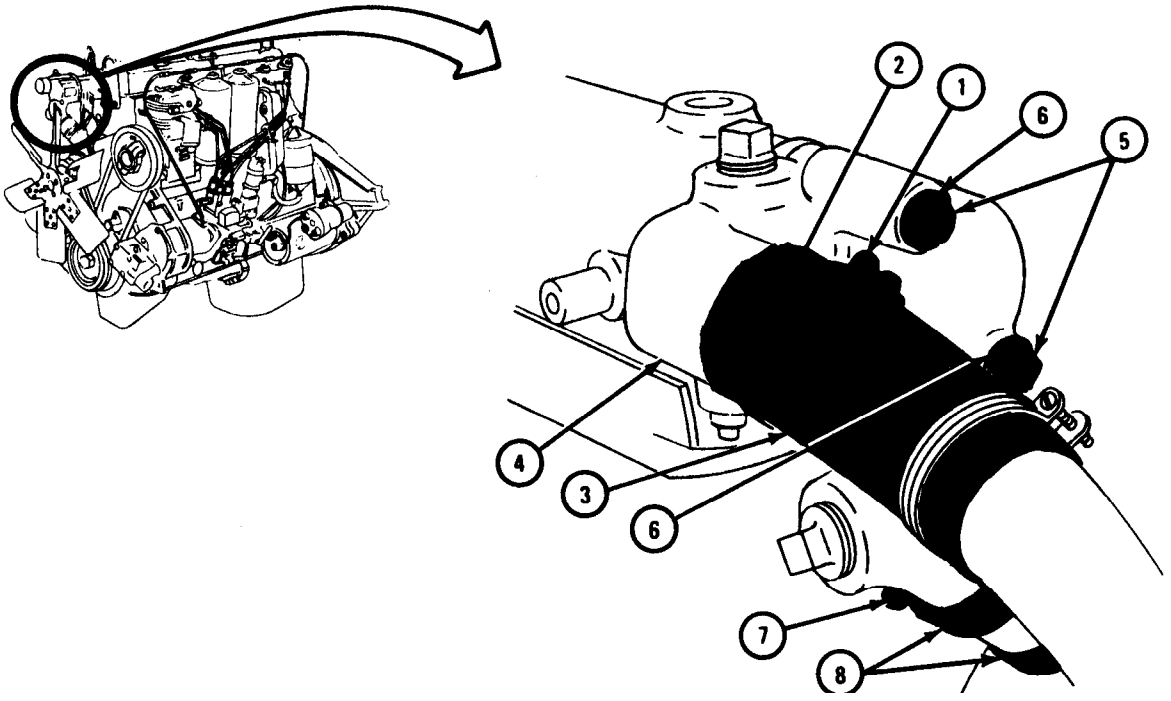
a. Preliminary Procedure. Drain cooling system. Refer to para 6-13.

b. Removal .

FRAME 1

1. Using screwdriver, loosen screw (l) on rear clamp (2) and take hose (3) off housing (4).
2. Using 9/16-inchwrench, unscrew and take out two screws (5) with washers (6)
3. Using screwdriver and pliers, loosen two screws (7) on two clamps (8).

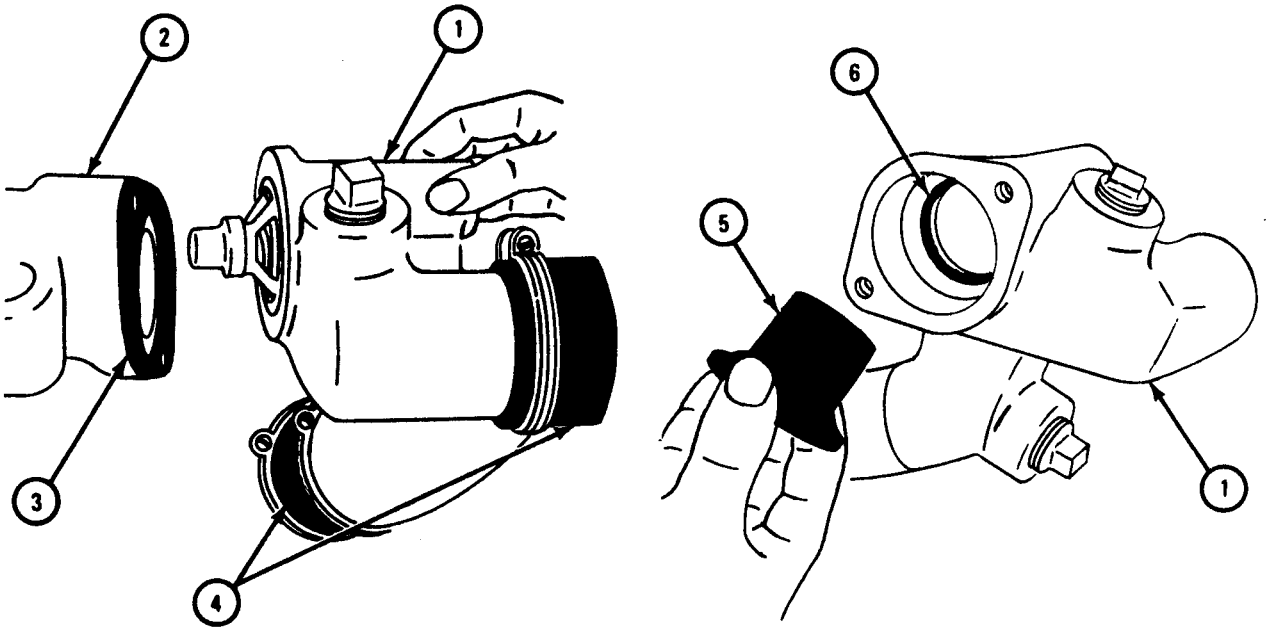
GO TO FRAME 2



FRAME 2

1. Pull thermostat housing assembly (1) away from intake manifold (2).
2. Take out and throw away gasket (3).
3. Pull thermostat housing assembly (1) from hoses (4).
4. Pull thermostat (5) out of thermostat housing assembly (1).
5. Note position of thermostat seal (6). Pull out seal.

END OF TASK



TA 054711

c. Replacement.

FRAME 1

WARNING

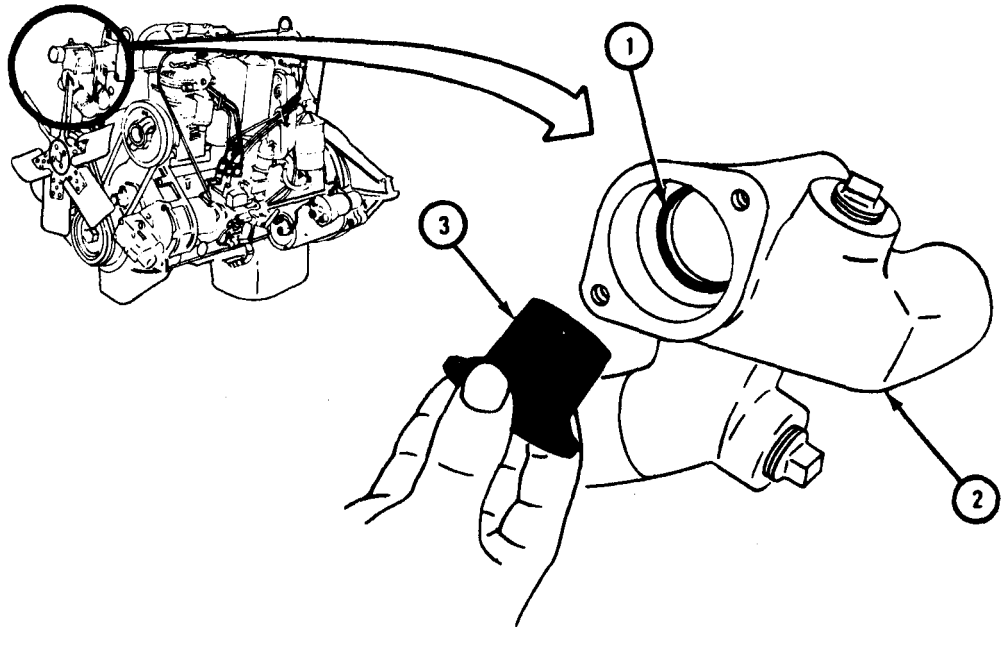
Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

Clean thermostat housing using solvent. Make sure mating surfaces are smooth and clean.

1. Check thermostat seal (1) for cracks, nicks, or any other damage.
2. Throw away damaged thermostat seal (1) and get a new one.
3. Put thermostat seal (1) into thermostat housing (2) as noted with lip of seal toward thermostat (3).
4. Put thermostat (3) into thermostat housing (2) as shown.

GO TO FRAME 2

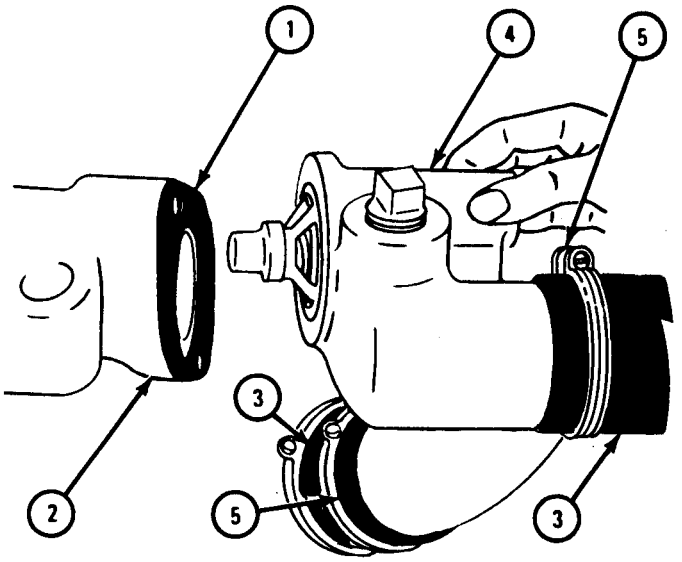


TA 054712

FRAME 2

1. Put gasket (1) on intake manifold flange (2).
2. Join hoses (3) to thermostat housing (4). Do not tighten clamps (5).

GO TO FRAME 3

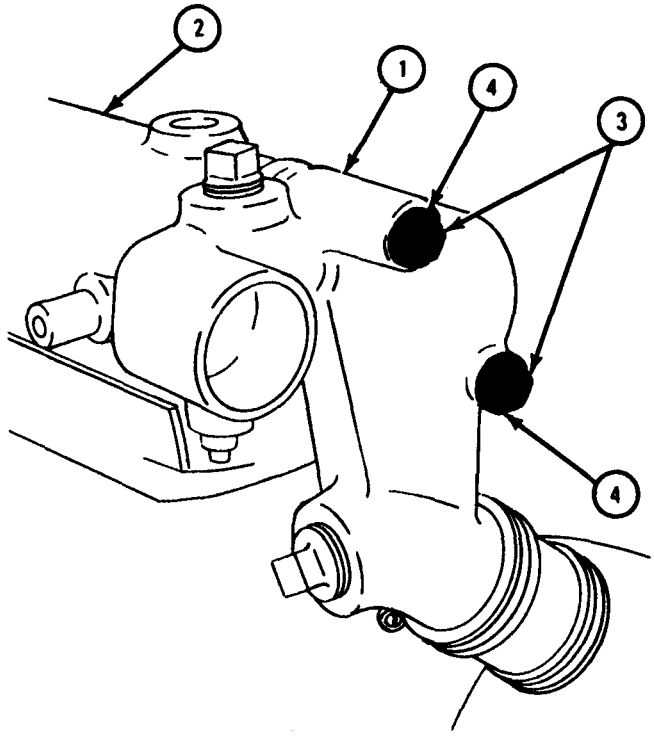


TA 054713

FRAME 3

1. Line up holes in thermostat housing (1) with holes in intake manifold (2).
2. Hold thermostat housing (1) firmly against intake manifold (2).
3. Using 9/16-inch wrench, screw in two screws (3) with washers (4) through thermostat housing (1) into intake manifold (2) and tighten screws (3) evenly.

GO TO FRAME 4



TA 054714

FRAME 4

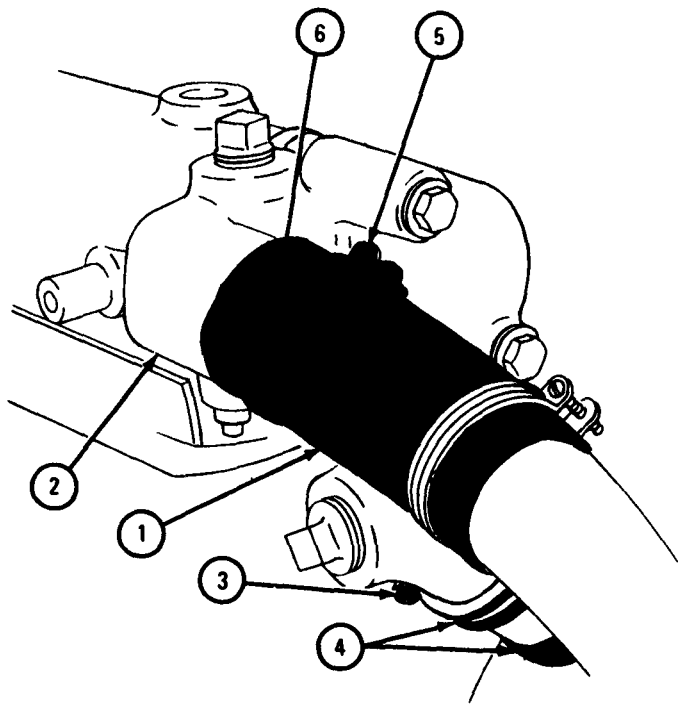
1. Put hose (1) on housing (2).
2. Using screwdriver, tighten two screws (3) on clamps (4).
3. Using screwdriver, tighten screw (5) on rear clamp (6).

NOTE

Follow-on Maintenance Action Required:

1. Fill cooling system. Refer to para 6-13.
2. Start engine. Refer to TM 9-2320-211-10.
3. Check thermostat housing for leaks.
4. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 054715

Section IV. WATER PUMP

6-9. WATER PUMP REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench (2)
Flat-tip screwdriver
9/16-inch wrench
7/16-inch wrench (2)
l/2-inch wrench

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

PERSONNEL: One

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

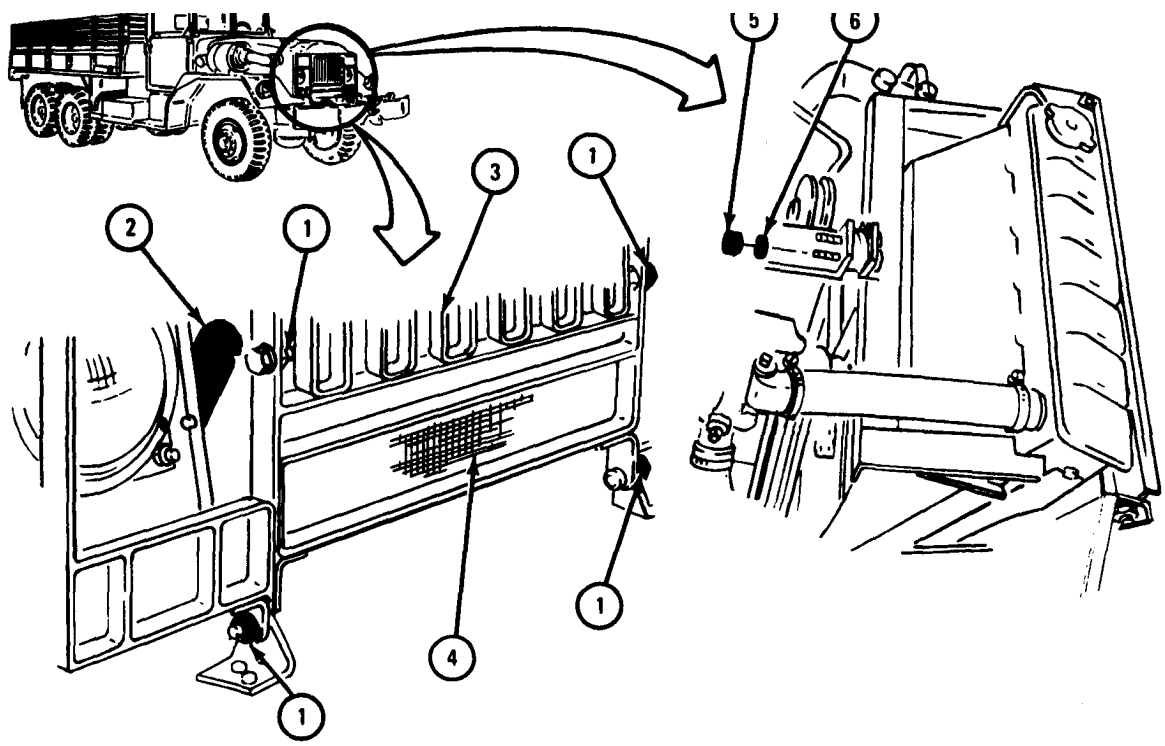
a. Preliminary Procedure. Drain cooling system. Refer to para 6-13.

b. Removal.

FRAME 1

1. Using 3/4-inch wrenches, loosen four nuts (1). Push up two braces (2) and pull top of brush guard (3) away from radiator (4).
2. Using 7/16-inch wrench, unscrew and take off two nuts (5) and washers (6).

GO TO FRAME 2

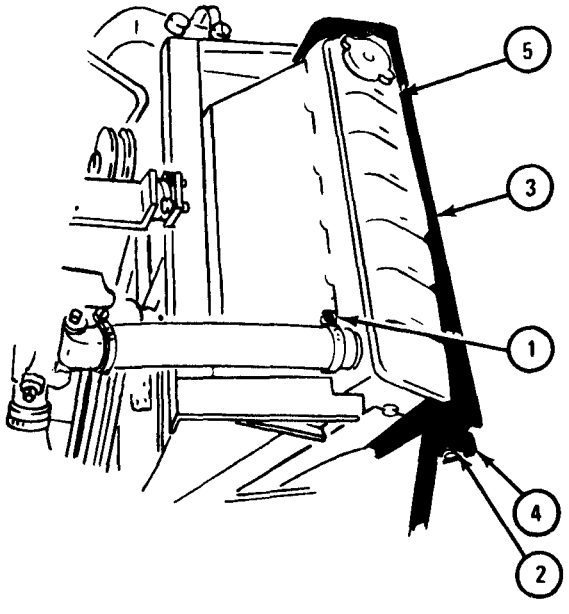


TA 054716

FRAME 2

1. Using screwdriver, loosen screw (1).
2. Using 9/16-inch wrench, loosen two nuts (2).
3. Pull upper shield (3) to the front and take it off brackets (4).
4. Pull top of radiator (5) forward.

GO TO FRAME 3

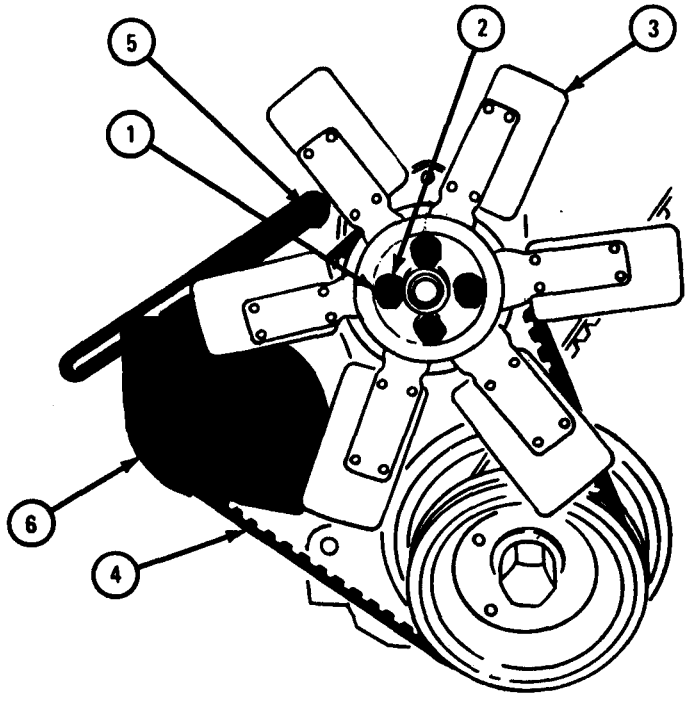


TA 054717

FRAME 3

1. Using l/2-inch wrench, unscrew and take out four screws (1) with lockwashers (2).
2. Take off fan (3).
3. Take off drive belt (4). Refer to para 6-12.
4. Using 9/16-inch wrench, unscrew and take off nut (5). Push generator (6) down as far as it will go.

GO TO FRAME 4

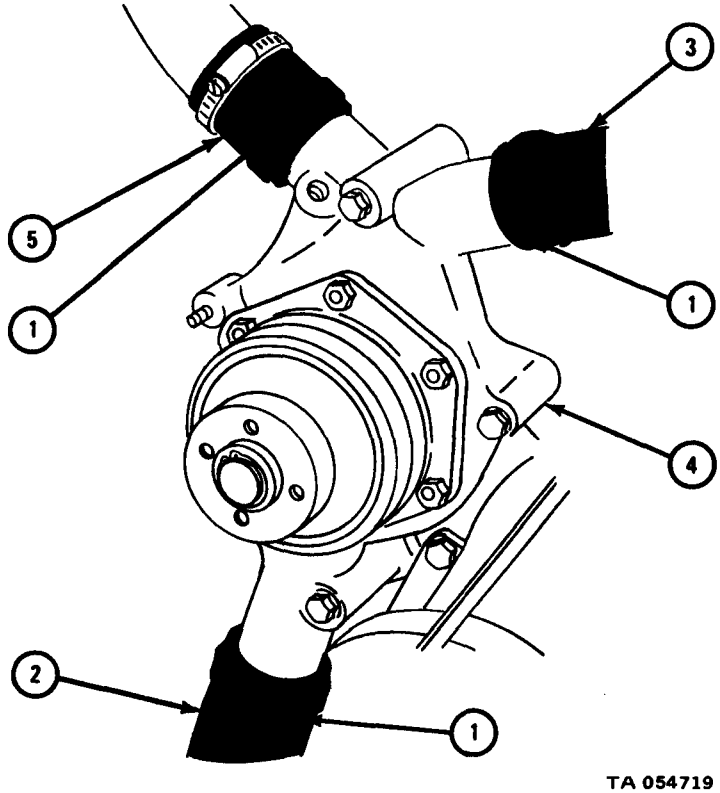


TA 054718

FRAME 4

1. Using screwdriver, loosen three hose clamps (l).
2. Loosen two hoses (2 and 3) and slide them off water pump (4). Loosen hose (5).

GO TO FRAME 5

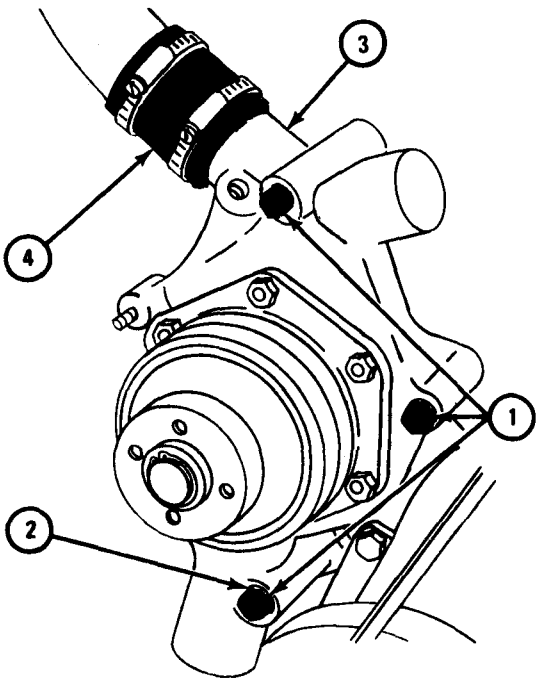


TA 054719

FRAME 5

1. Using 9/16-inch wrench, unscrew and take out three screws (1) with lockwashers (2).
2. Take water pump (3) out of hose (4) and off truck.

END OF TASK



TA 054720

c. Replacement.

FRAME 1

WARNING

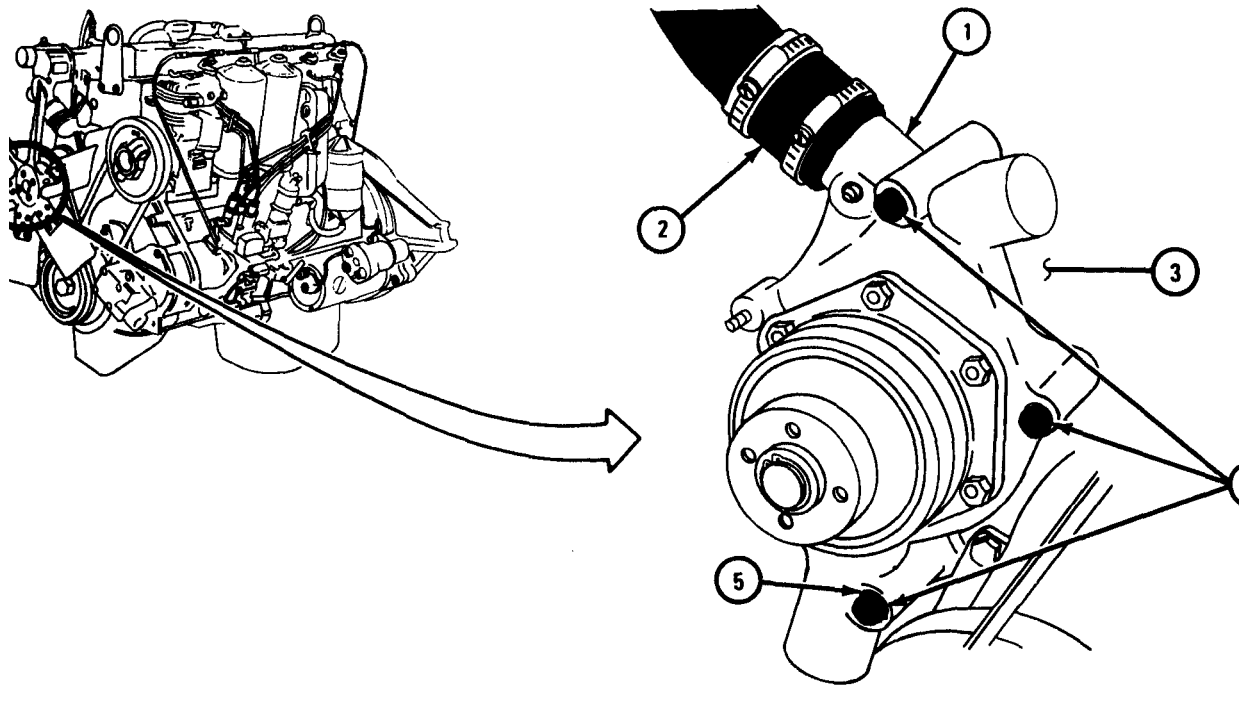
Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

Before putting in water pump (1), clean it well with solvent. Make sure till mating surfaces are smooth and free of dirt.

1. Slide water pump (1) into hose (2) and aline screw holes in water pump with holes in engine block (3).
2. Using 9/16-inch wrench, screw in and tighten three screws (4) with lockwashers (5).

GO TO FRAME 2

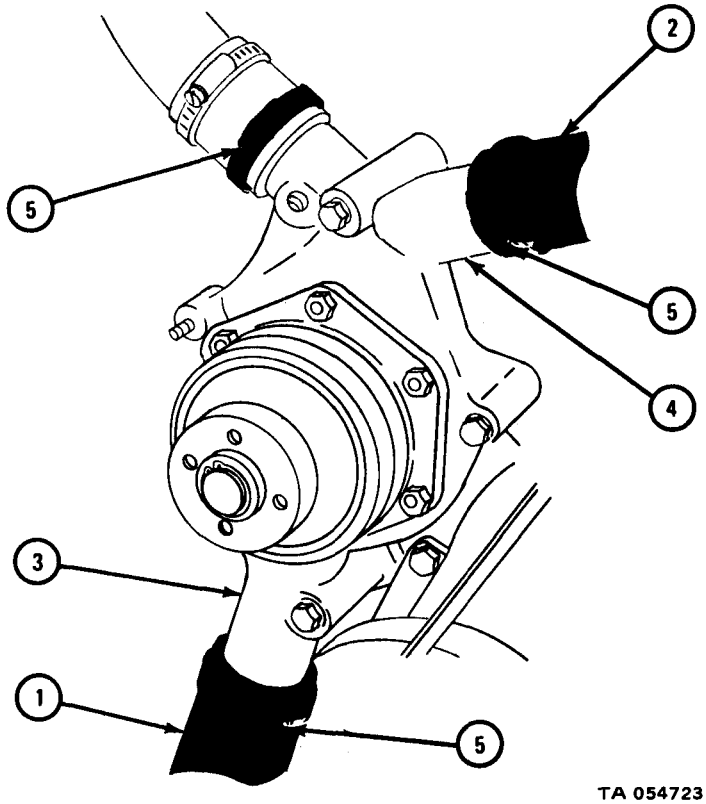


TA 054721

FRAME 2

1. Slide hoses (1 and 2) onto water pump outlets (3 and 4).
2. Using screwdriver, tighten three hose clamps (5).

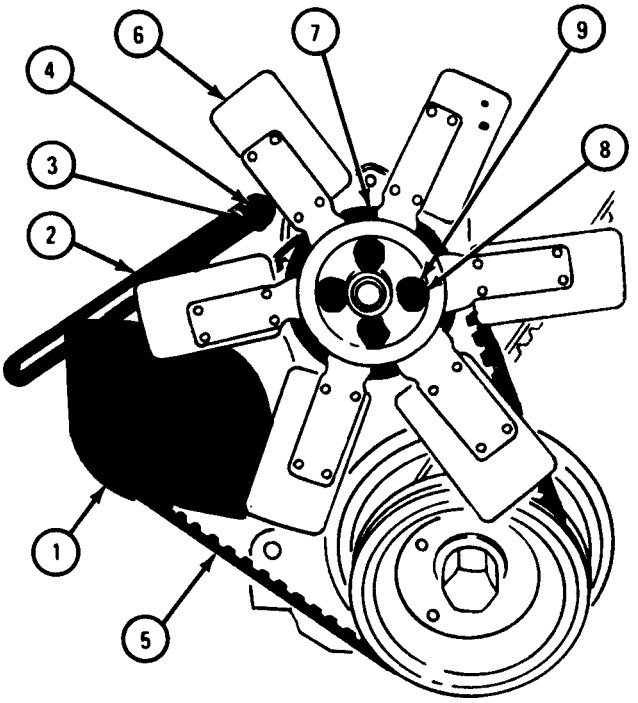
GO TO FRAME 3



FRAME 3

1. Pull up generator (1) and put bracket (2) in place on stud (3).
2. Using 9/16-inch wrench, screw on and tighten nut (4).
3. Replace drive belt (5). Refer to para 6-12.
4. Line up fan (6) with four holes in fan pulley (7).
5. Using l/2-inch wrench, screw in and tighten four screws (8) with lockwashers (9).

GO TO FRAME 4

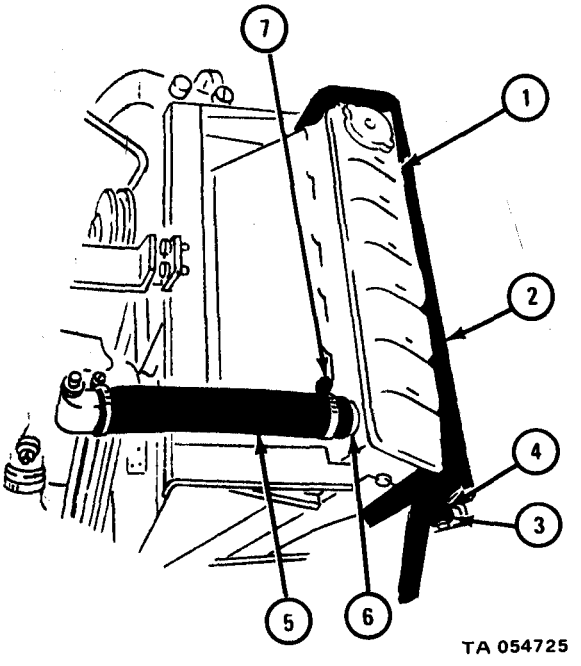


TA 054724

FRAME 4

1. Push top of radiator (1) toward rear of truck.
2. Slide slotted ends of upper shield (2) under two nuts (3) and lockwashers (4).
3. Using 9/16-inch wrench, tighten two nuts (3).
4. Slide hose (5) onto inlet pipe (6).
5. Using screwdriver, tighten screw (7).

GO TO FRAME 5



FRAME 5

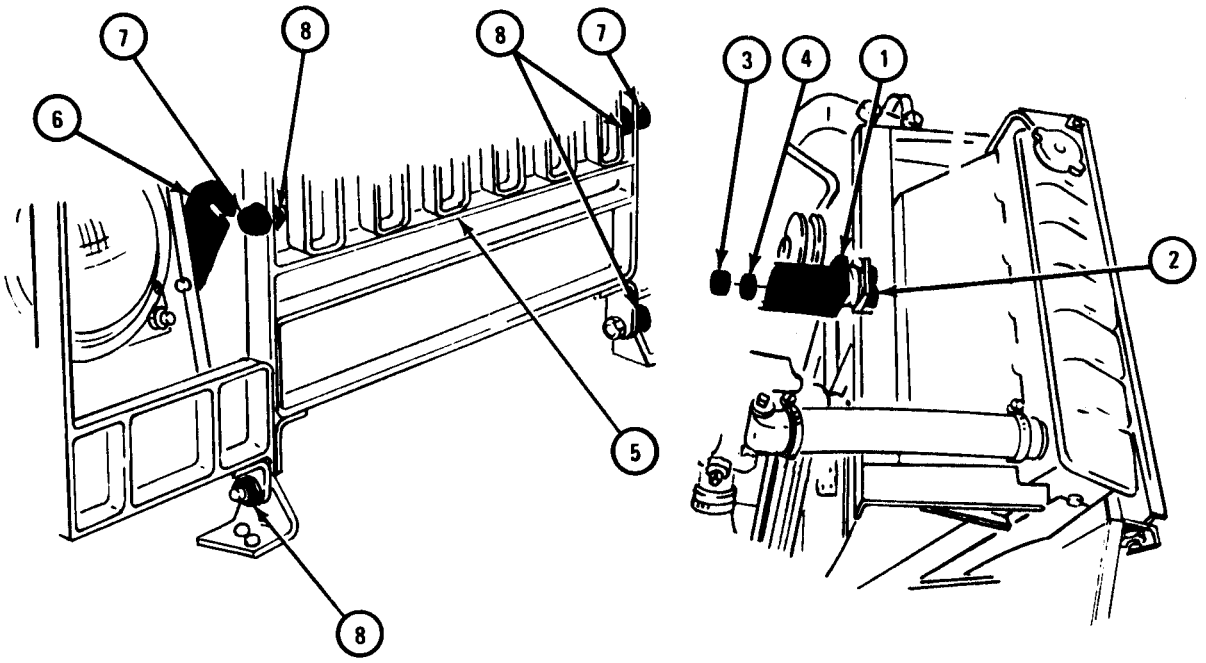
1. Line up holes in bracket (1) with two studs (2).
2. Using 7/16-inch wrench, screw on two nuts (3) with lockwashers (4).
3. Push top of brush guard (5) toward back of truck.
4. Push two braces (6) down over two bolts (7).
5. Using 3/4-inch wrenches, tighten four nuts (8).

NOTE

Follow-on Maintenance Action Required:

Fill cooling system. Refer to para 6-13.

END OF TASK



TA 054726

6-10. OIL COOLER WATER INLET TUBE REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screw driver

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.

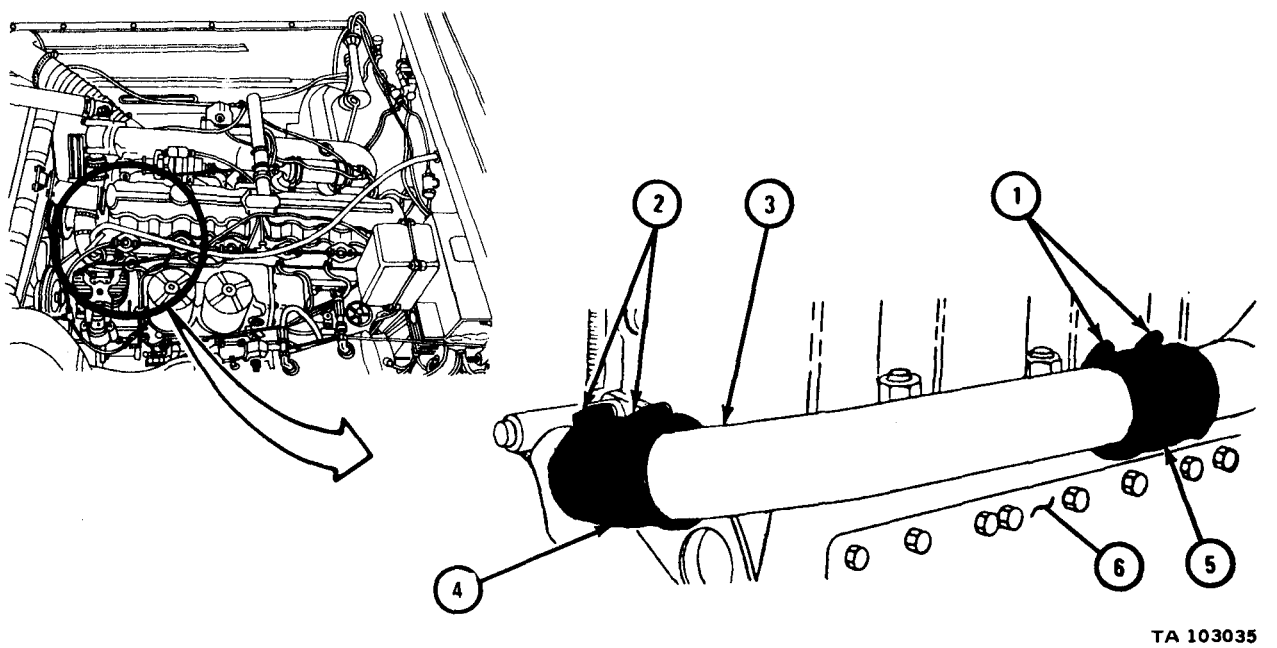
(2) Drain cooling system. Refer to para 6-13.

b. Removal.

FRAME 1

1. Using flat-tip screwdriver, unscrew two clamp screws (1).
2. Using flat-tip screwdriver, unscrew two clamp screws (2).
3. Pull tube (3) with hoses (4 and 5) off engine (6).
4. Take off hoses (4 and 5) from tube (3).

END OF TASK



TA 103035

c. Replacement.

FRAME 1

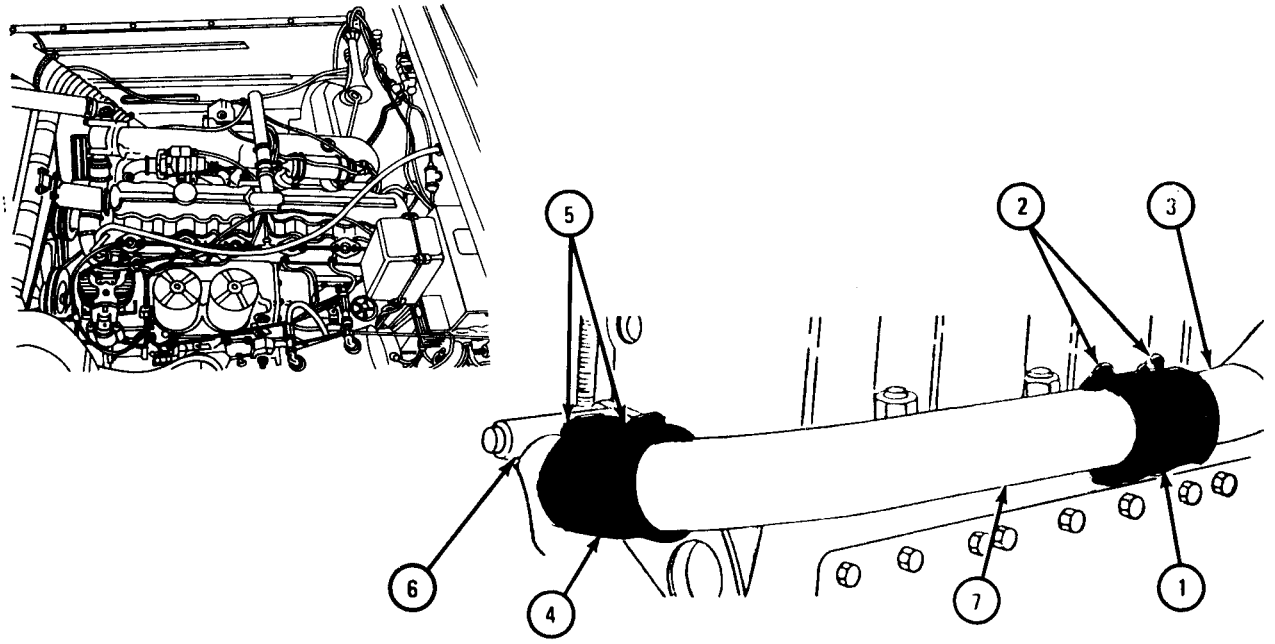
1. Put hose (1) with two clamps (2) on flange (3).
2. Put hose (4) with two clamps (5) on water pump (6).
3. Put tube (7) into hose (1). Put other end of tube into hose (4).
4. Using flat-tip screwdriver, tighten four clamps (2 and 5).

NOTE

Follow-on Maintenance Action Required:

1. Fill cooling system. Refer to para 6-13.
2. Start engine and check that there are no leaks. Stop engine. Refer to TM 9-2320-211-10.
3. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



Section V. FAN ASSEMBLY AND RELATED PARTS

6-11. ENGINE COOLING FAN REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench (2)
Flat-tip screwdriver
9/16-inchwrench (2)
7/16-inch wrench (2)
l/2-inch wrench

SUPPLIES: None

PERSONNEL: One

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

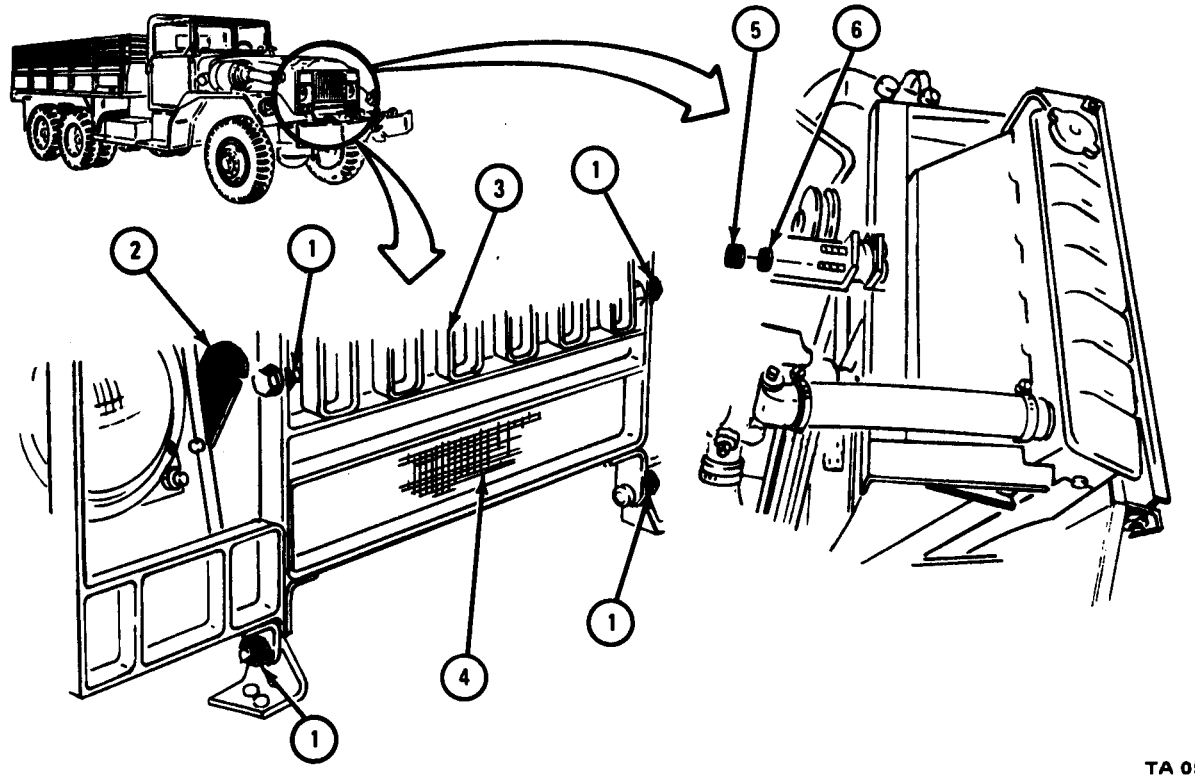
a. Preliminary Procedure. Drain cooling system. Refer to para 6-13.

b. Removal.

FRAME 1

1. Using 3/4-inch wrenches, loosen four nuts (l). Push up two braces (2) and pull top of brush guard (3) away from radiator (4).
2. Using l/2-inch wrench, unscrew and take off two nuts (5) and washers (6).

GOTO FRAME 2

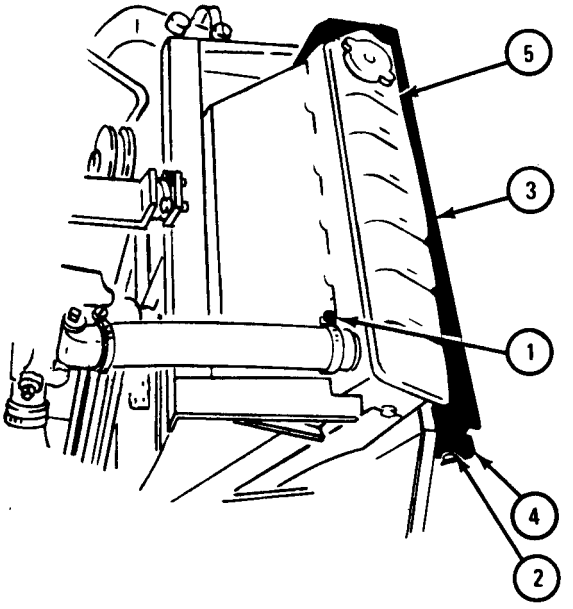


TA 054716

FRAME 2

1. Using screwdriver, loosen screw (1).
2. Using 9/16-inch wrench, loosen two nuts (2).
3. Pull upper shield (3) to front of truck and take it off brackets (4).
4. Pull top of radiator (5) forward.

GO TO FRAME 3

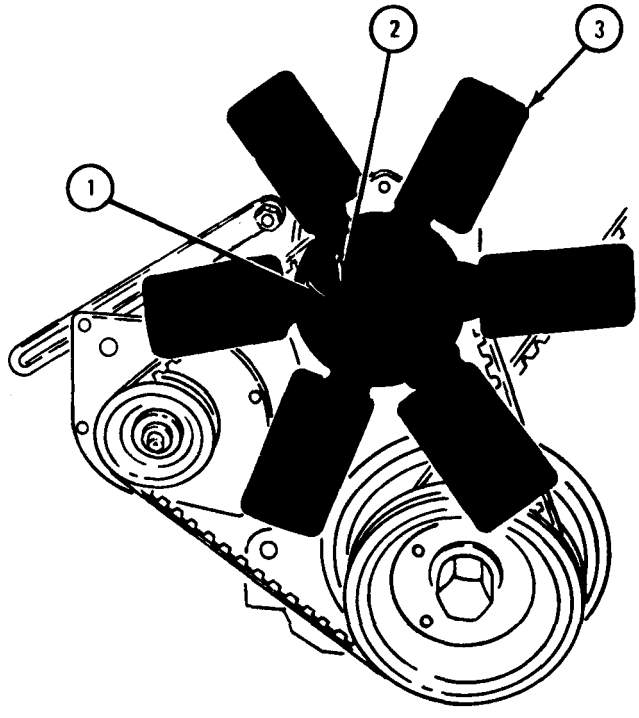


TA 054717

FRAME 3

1. Using l/2-inch wrench, unscrew and take out four capscrews (1) with lockwashers (2).
2. Take off fan (3).

END OF TASK



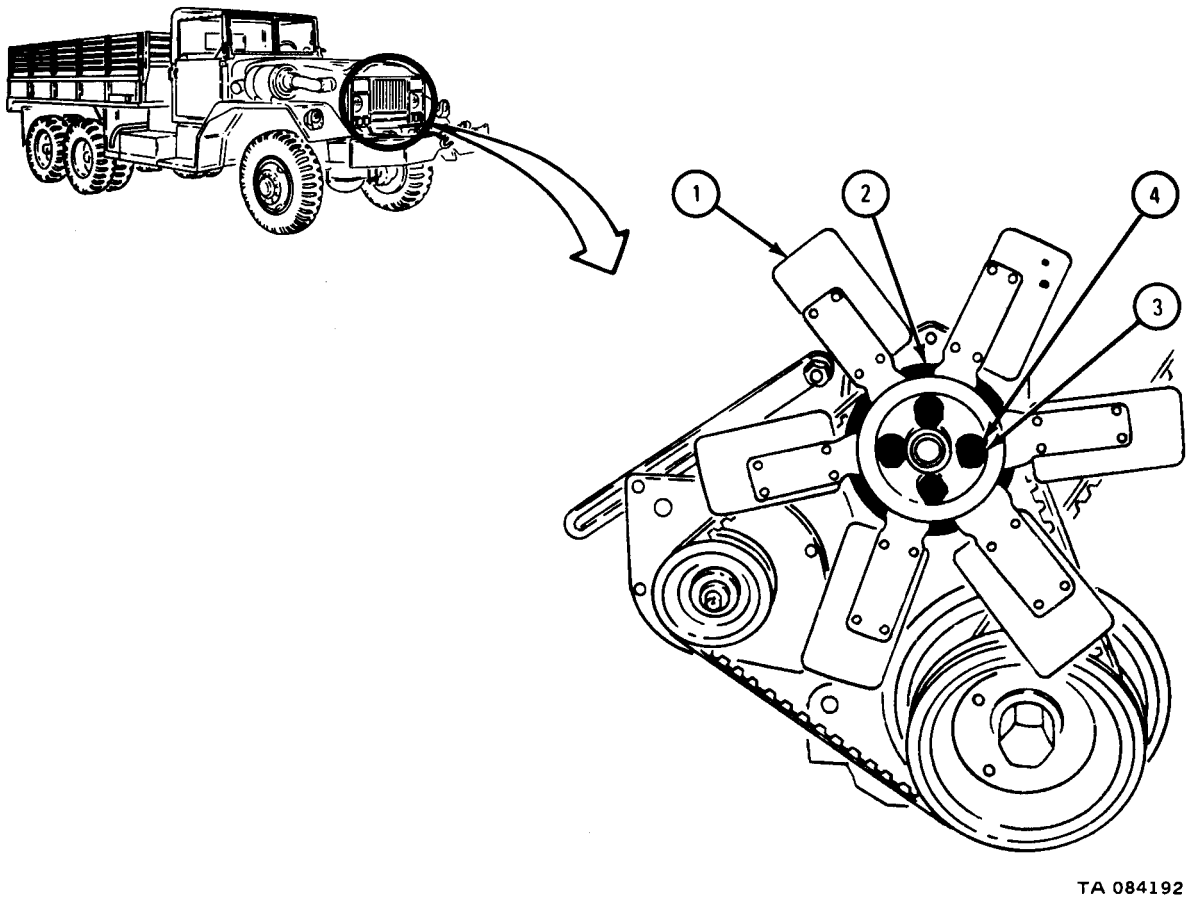
TA 084191

c. Replacement.

FRAME 1

1. Aline four screw holes in fan (1) with four screw holes in fan pulley (2).
2. Using l/2-inch wrench, screw in and tighten four capscrews (3) with lockwashers (4).

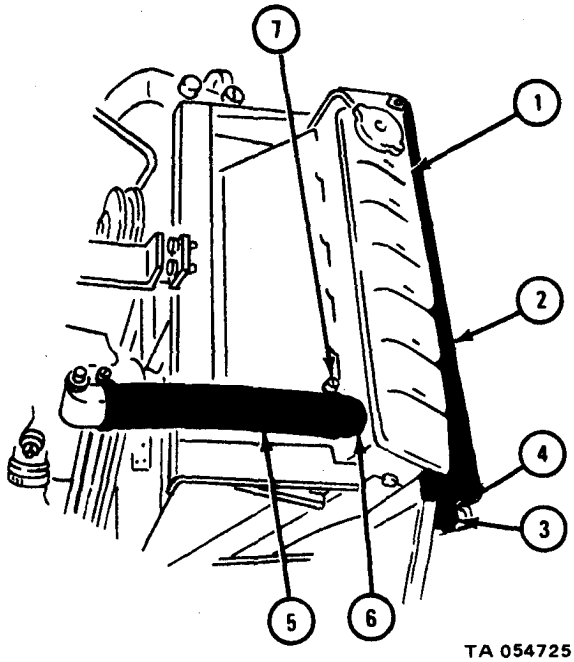
GO TO FRAME 2



FRAME 2

1. Push top of radiator (1) toward rear of truck.
2. Slide slotted ends of upper shield (2) under two nuts (3) and lockwashers (4).
3. Using 9/16-inch wrench, tighten two nuts (3).
4. Slide hose (5) onto inlet pipe (6).
5. Using screwdriver, tighten screw (7).

GO TO FRAME 3



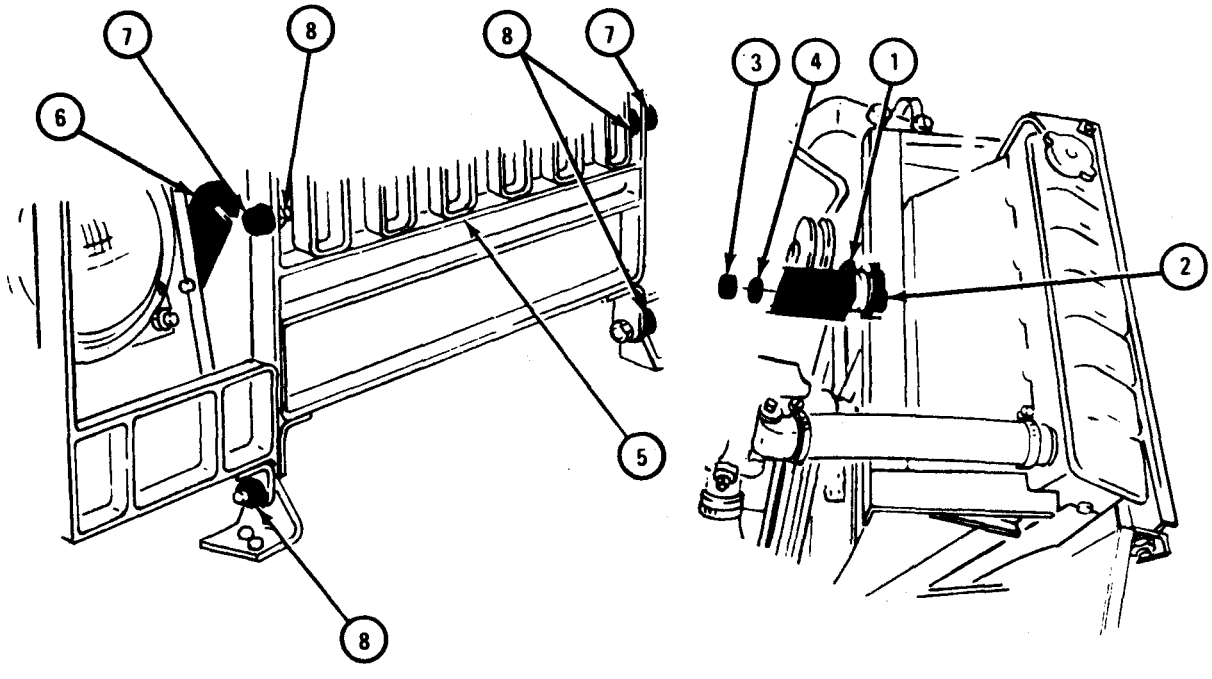
FRAME 3

1. Line up holes in bracket (1) with two studs (2).
2. Using l/2-inch wrenches, screw on two nuts (3) with lockwashers (4).
3. Push top of brush guard (5) toward back of truck.
4. Push two braces (6) down over two bolts (7).
5. Using 3/4-inch wrenches, tighten four nuts (8).

NOTE

Follow-on Maintenance Action Required:
Fill cooling system. Refer to para 6-13.

END OF TASK



TA 054726

6-12. FAN DRIVE BELTS REMOVAL, REPLACEMENT, AND ADJUSTMENT.

TOOLS: 9/16-inch wrench
30-inch prybar
Spring scale
12-inch ruler

SUPPLIES: None

PERSONNEL: One

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

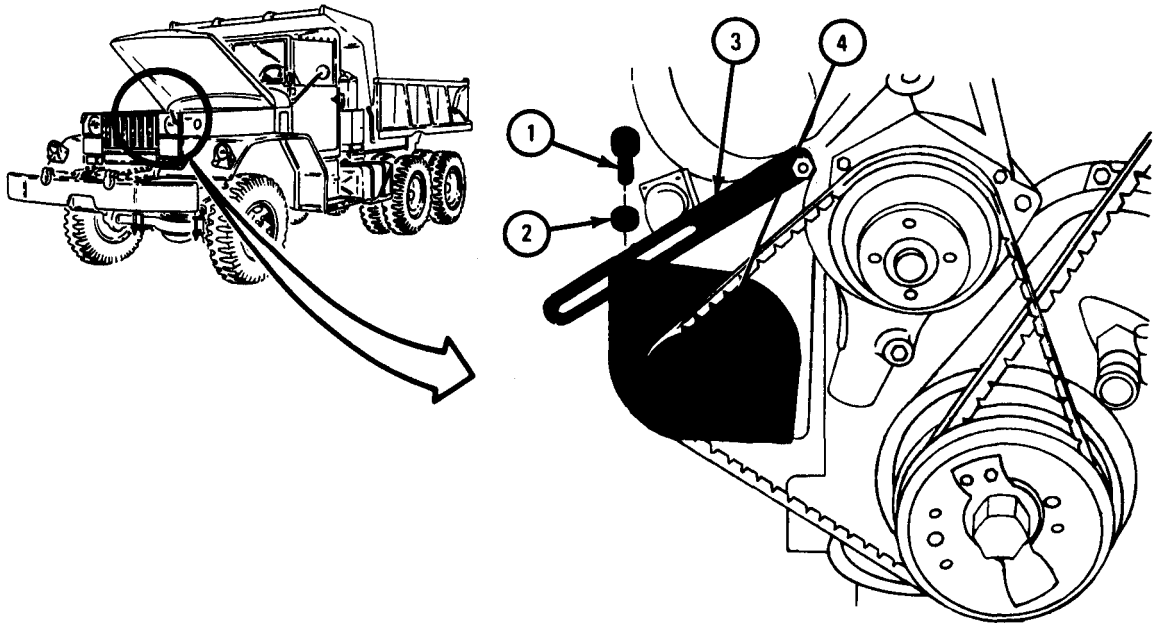
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using 9/16-inch wrench, loosen capscrew (1) and washer (2) that hold adjusting arm (3) to generator (4).

GO TO FRAME 2

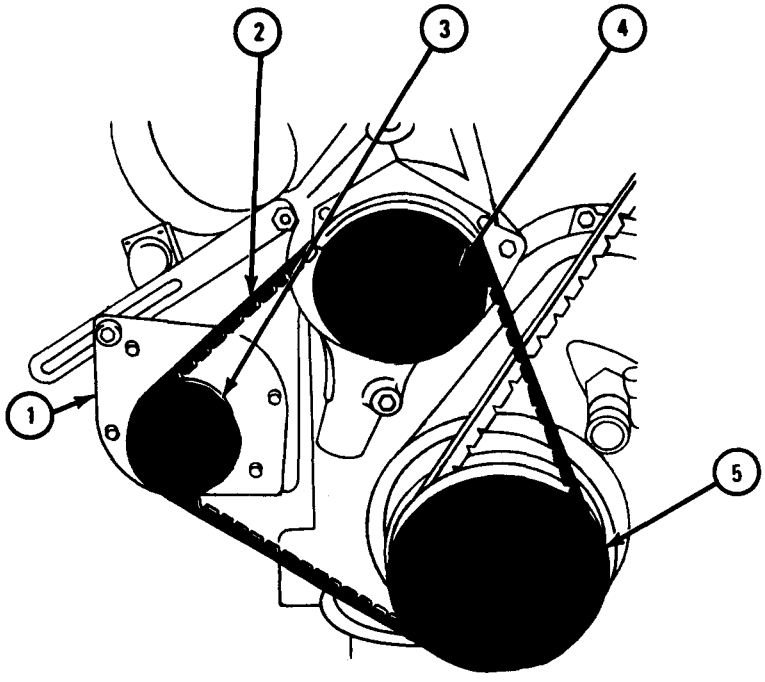


TA 053507

FRAME 2

1. Push generator (1) toward engine.
2. Take off fan drive belts (2) from generator pulley (3), coolant pump pulley (4) and crankshaft pulley (5).

END OF TASK



TA 053508

c. Replacement and Adjustment.

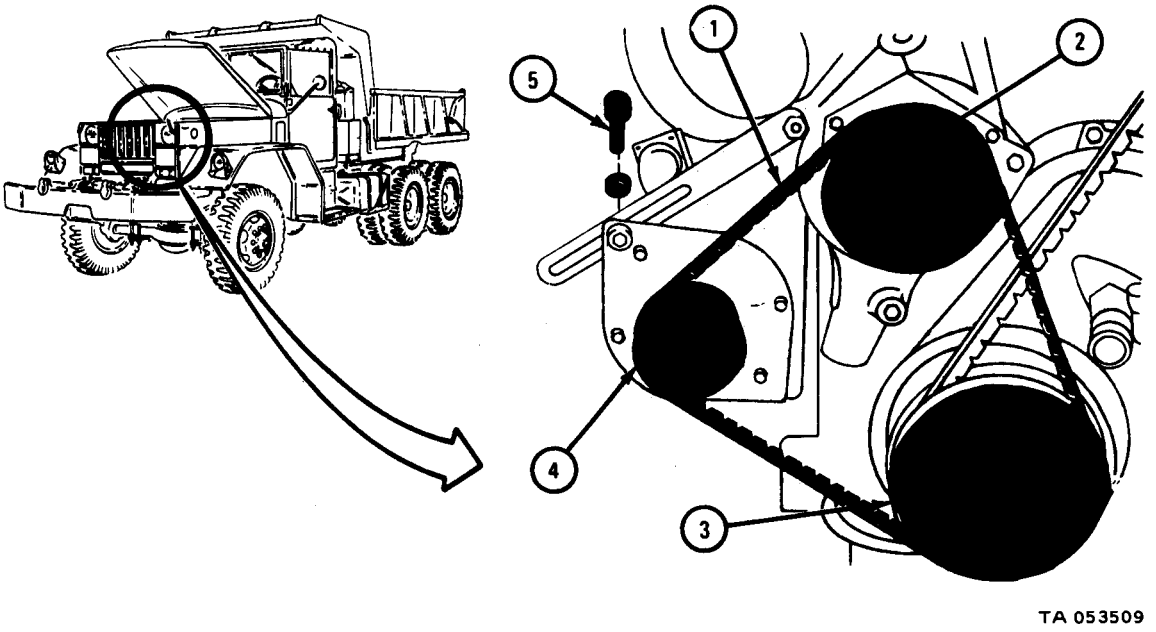
FRAME 1

NOTE

Fan drive belts must always be replaced as a pair.

1. Place fan drive belt (1) over coolant pump pulley (2), crankshaft pulley (3), and generator pulley (4).
2. Hand tighten capscrew (5).

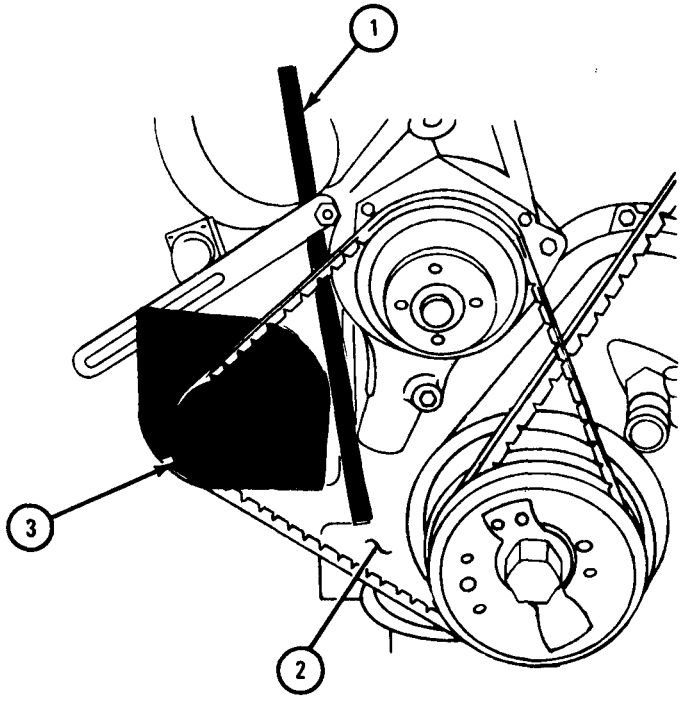
GO TO FRAME 2



FRAME 2

1. Place the end of a 30-inch bar (1) between crankcase (2) and generator (3).

GO TO FRAME 3



TA 047639

FRAME 3

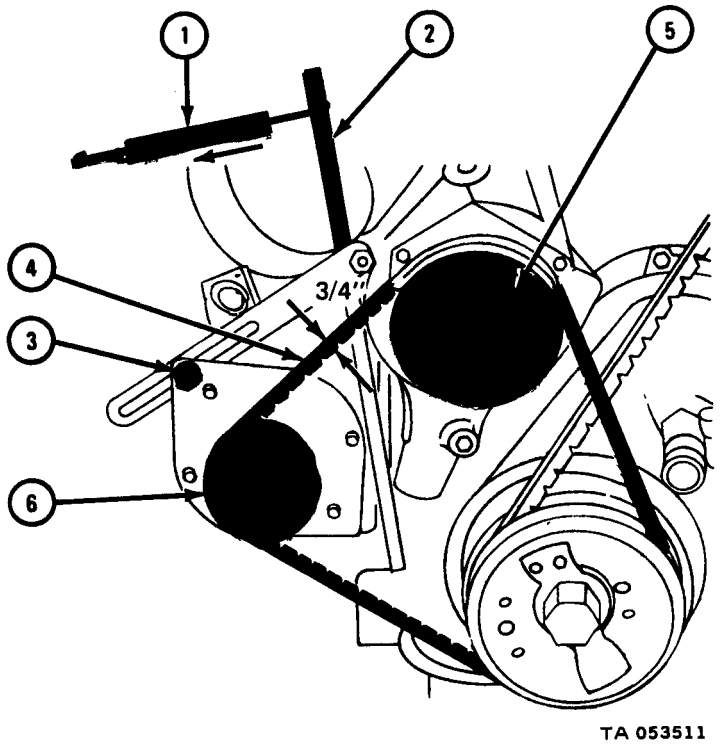
1. Using spring scale (1), pull upper end of bar (2) with force of 50 pounds and using 9/16-inch wrench, tighten capscrew (3). Take out bar.
2. Using finger pressure, push on belts (4) at point midway between the coolant pump pulley (5) and generator pulley (6). Belt should give at this point about 3/4 inch.

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



Section VI. COOLING SYSTEM

6-13. COOLING SYSTEM SERVICE.

TOOLS: 9/16-inch wrench (2)
6-inch pliers
Scraper
Flat-tip screwdriver
Flushing gun
5-gallon container (2)

SUPPLIES: Cleaning kit (2)
Preformed hose
coolant
Compressed air source, 30 psi max
Heavy cloth
Rubber gloves
Thermostat housing gasket
Rubber apron
Safety goggles

PERSONNEL: One

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

a. Preliminary Procedure. Open hood. Refer to TM9-2320-211-10.

b. Draining.

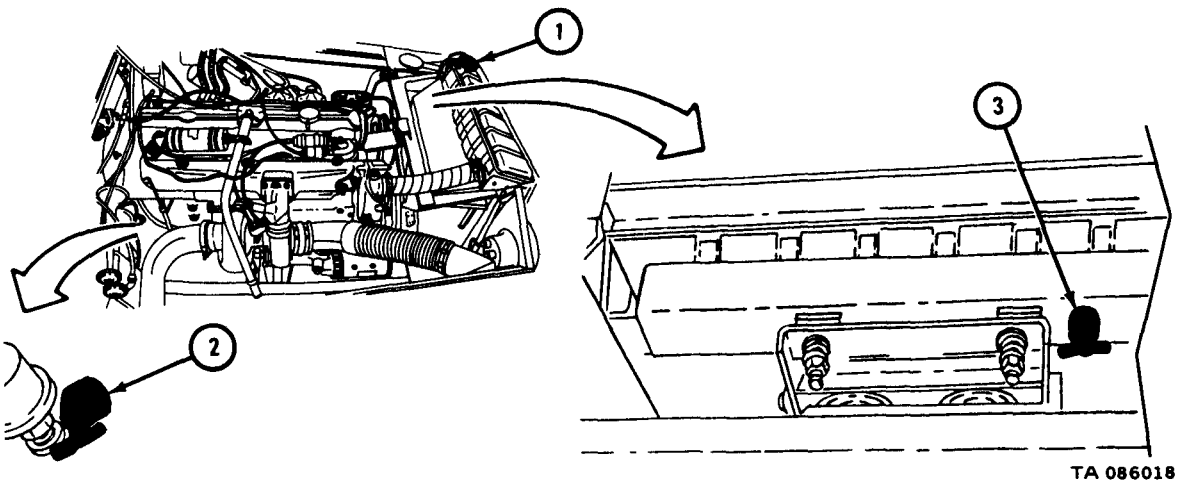
FRAME 1

WARNING

Do not open filler cap (1) if engine is hot. Pressure will blow out scalding fluid and vapor. Personnel can be badly burned.

1. Press down and turn filler cap (1) all the way to the left and lift it off.
2. Put containers under engine block drain cock (2) and radiator drain cock (3). Using pliers, turn two drain cocks to right and let coolant drain into two containers.
3. After all coolant has drained out, turn two drain cocks (2 and 3) to left to close.
4. Empty coolant into approved disposal area.

END OF TASK



c. Cleaning.

FRAME 1

1. Fill engine cooling system with clean water to within two inches of overflow.
2. Start engine. Refer to TM 9-2320-211-10.

NOTE

Put cardboard in front of radiator to raise engine temperature if needed, but do not let coolant boil.

3. Run engine at 650 to 700 rpm until engine temperature reaches 160°F to 180°F. Let it run for at least 10 minutes.

WARNING

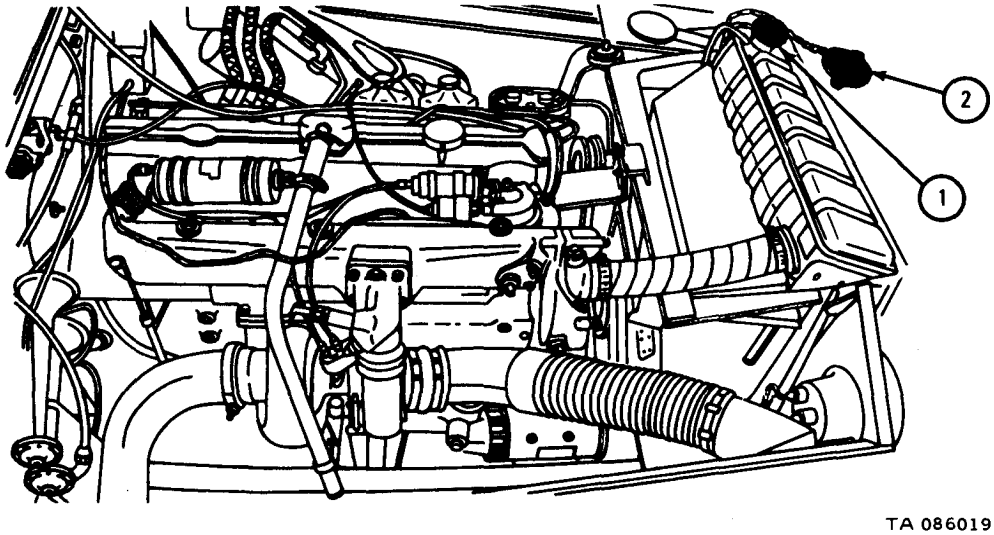
Use rubber gloves, safety goggles, and rubber apron when working with cleaning compound. Do not spill cleaning compound on skin, clothing or truck. Cleaning compound contains strong acid and will cause serious burns to personnel and damage to equipment.

NOTE

Use two bags of oxalic acid and two bottles of aluminum chloride.

4. Slowly pour cleaning compound into radiator (1).
5. Put on radiator filler cap (2) and press down and turn it all the way to the right.

GO TO FRAME 2



TA 086019

FRAME 2

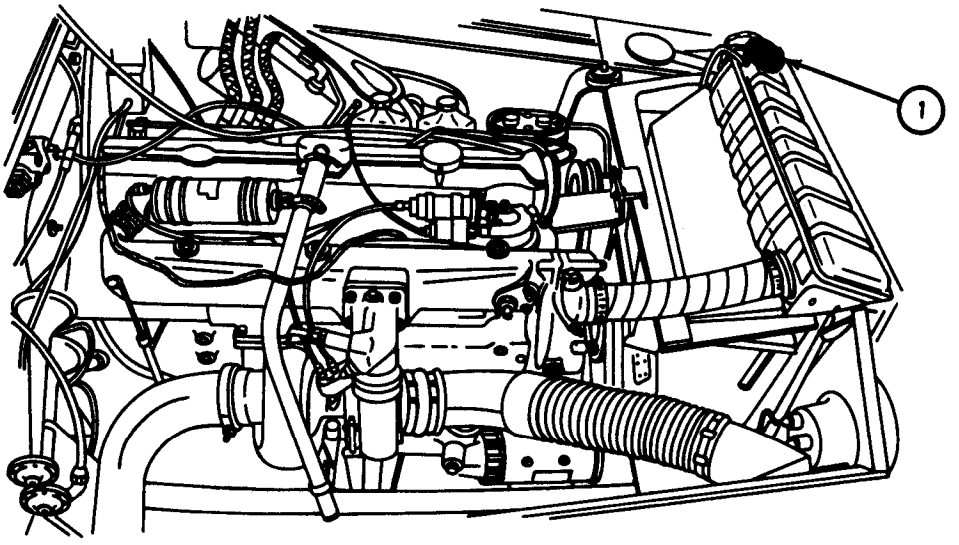
1. Run engine for 25 minutes.
2. Stop engine. Refer to TM 9-2320-211-10.

WARNING

Do not take off filler cap (1) before pressure has been let out. Pressure will blow out scalding fluid and vapor. Personnel can be badly burned.

3. Put heavy cloth over radiator filler cap (1). Press down and turn filler cap slowly to left to first stop. Let all pressure out of cooling system.
4. Press down and turn filler cap (1) all the way to left and lift it off.

GO TO FRAME 3



TA 086020

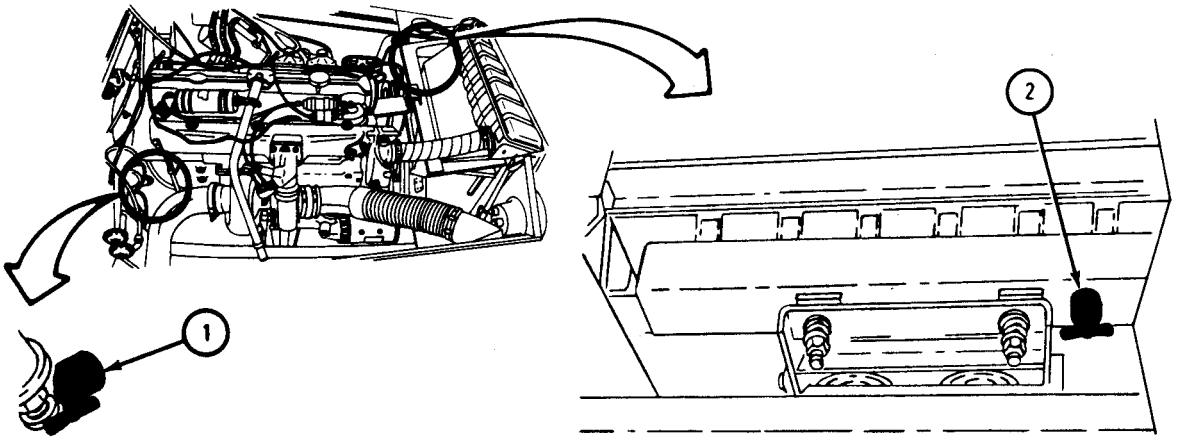
FRAME 3

WARNING

Use rubber gloves when working with cleaning solution. Do not spill cleaning solution on skin, clothing or truck paint. Cleaning solution contains strong acid and will cause serious burns to personnel and damage to equipment.

1. Put containers under engine block drain cock (1) and radiator drain cock (2). Turn two drain cocks to left and let cleaning solution drain into two containers.
2. When all cleaning solution has drained out, turn two drain cocks (1 and 2) to right to close them.
3. Empty cleaning solution in approved disposal area.

END OF TASK



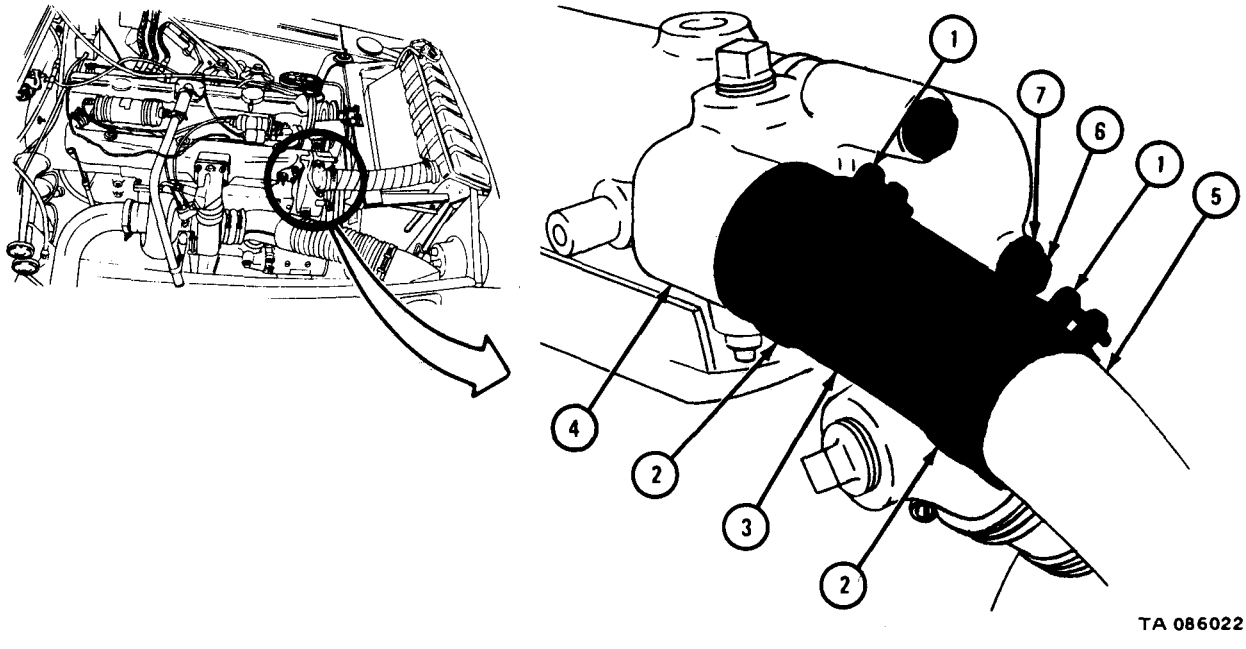
TA 086021

d. Flushing.

FRAME 1

1. Using screwdriver, loosen two screws (1) on two clamps (2). Take hose (3) off housing (4) and radiator port (5).
2. Using 9/16-inch wrench, unscrew and take out two capscrews (6) with washers (7).

GO TO FRAME 2

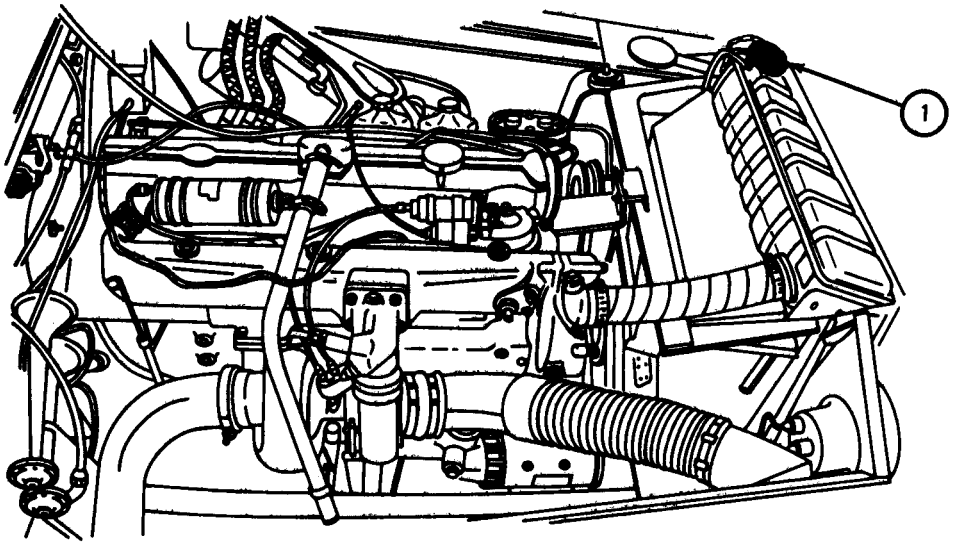


f. Filling.

FRAME 1

1. Fill engine cooling system with coolant to suit local temperature conditions. Refer to table 6-1.
2. Put on filler cap (1) and press down and turn it all the way to right.
3. Start engine and let it run until engine temperature is 160°F to 180°F. Refer to TM 9-2320-211-10.

GO TO FRAME 2



TA 086020

Table 6-1. Guide for Preparation of Antifreeze Solution.

Lowest expected ambient temperature (°F)	Ethylene-glycol (-60°F) inhibited (O-A-548, type 1)		Arctic grade anti-freeze (-90°F) MIL-C-1175
	Pints per gallon of coolant capacity (Notes 1, 2)	Specific gravity (68°F)	
+20	0.750	1.022	Freezing point of -90°F Issued ready for use and must not be mixed with any other liquid
+10	1.000	1.036	
0	1.375	1.047	
-10	1.625	1.055	
-20	1.750	1.062	
-30	2.000	1.067	
-40	2.125	1.073	
-50	2.250		
-60	2.375		
Below -60	Use arctic grade antifreeze (-90°F)		

NOTES:

1. Includes heaters.
2. Proportions are in terms of ethylene-glycol per gallon and not pints of ethylene-glycol added to each gallon of water. For example, at -30°F a gallon of coolant contains two pints of ethylene-glycol and six pints of water (2 pints + 6 pints = 8 pints = 1 gallon).

FRAME 2

1. Stop engine. Refer to TM 9-2320-211-10.

WARNING

Do not take off filler cap (1) before pressure has been let out. Pressure will blow out scalding fluid and vapor. Personnel can be badly burned.

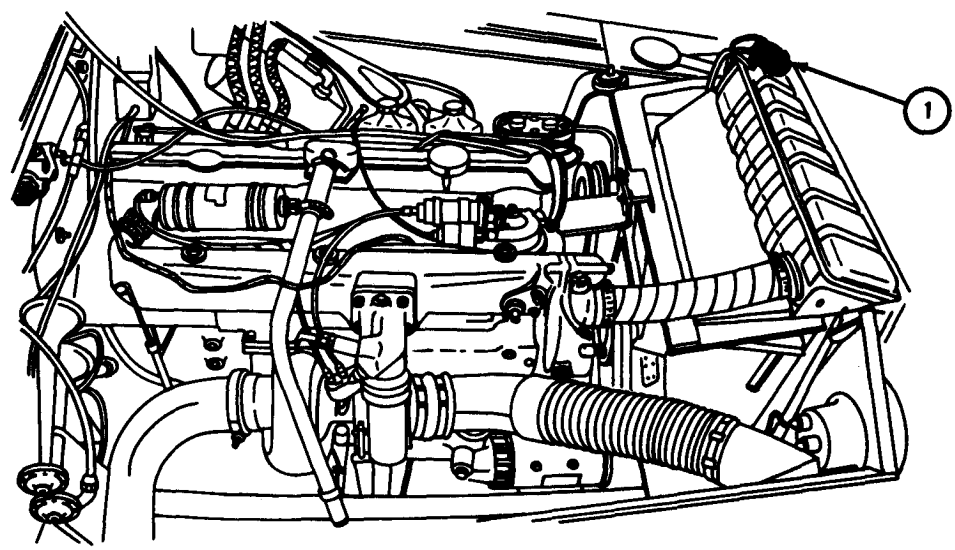
2. Put heavy cloth on filler cap (l). Press down and turn filler cap slowly to the left to the first stop. Let all pressure out of cooling system.
3. Press down and turn filler cap (1) all the way to the left and lift it off.
4. Check coolant level. Add coolant until level is 1 inch from top of filler neck.
5. Put on filler cap (1) and press down and turn it all the way to the right.
6. Check all engine cooling system parts for leaks.

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



TA 086020

CHAPTER 7

ELECTRICAL SYSTEM GROUP MAINTENANCE

Section I. SCOPE

7-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the charging system, starting system, engine safety controls, instrument panel components, lighting system, gage sending units and warning switches, horn assembly, battery system, chassis harnesses and miscellaneous items for which there are authorized corrective maintenance tasks at the organizational maintenance levels.

7-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective mainteniince is authorized at the organizational maintenance levels are covered in this chapter.

Section II. CHARGING SYSTEM

7-3. ENGINE GENERATOR REMOVAL AND REPLACEMENT

TOOLS: Flat-tip screwdriver
Spanner wrench, pn CT685
9/16-inch socket wrench
9/16-inch open end wrench (2)
Pliers
Mechanical puller
3/4-inch socket wrench
Torque wrench, 150 pound-feet capacity
Feeler gage, 0.005 inch
Strap wrench
3/8-inch open end wrench

SUPPLIES: Tape
Shim set
Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Jumper wires (2)

PERSONNEL: One

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

a. Preliminary Procedure.

(1) Disconnect battery ground cable. Refer to para 7-44.

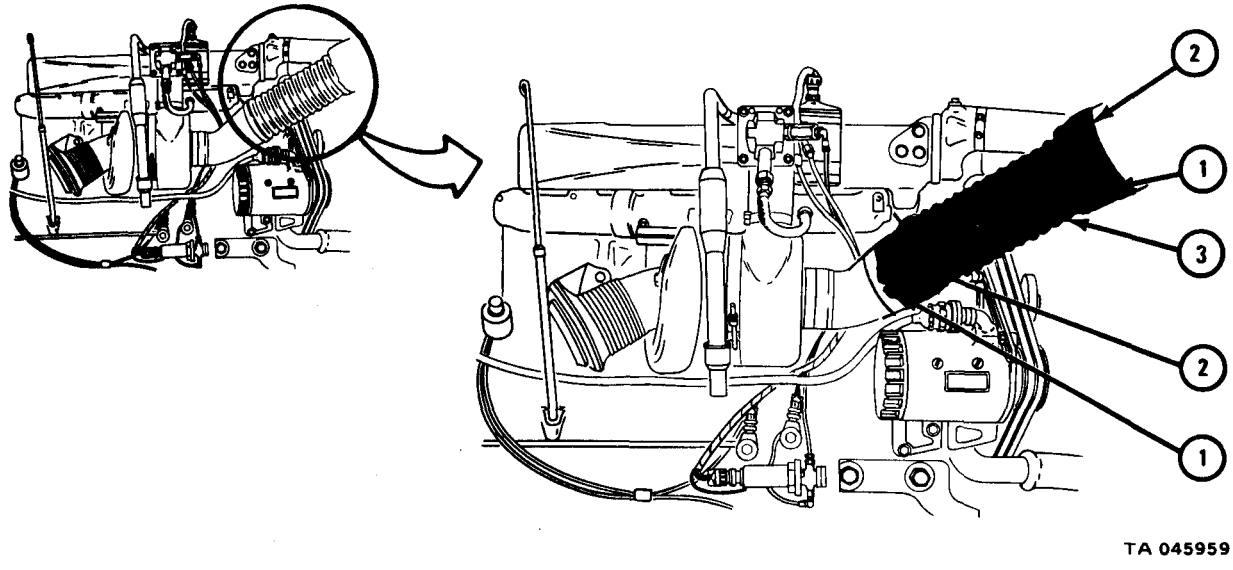
(2) Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Using screwdriver or 3/8-inch wrench, unscrew two screws (1) until two clamps (2) are loose. Take off air inlet hose (3). Take off clamps.

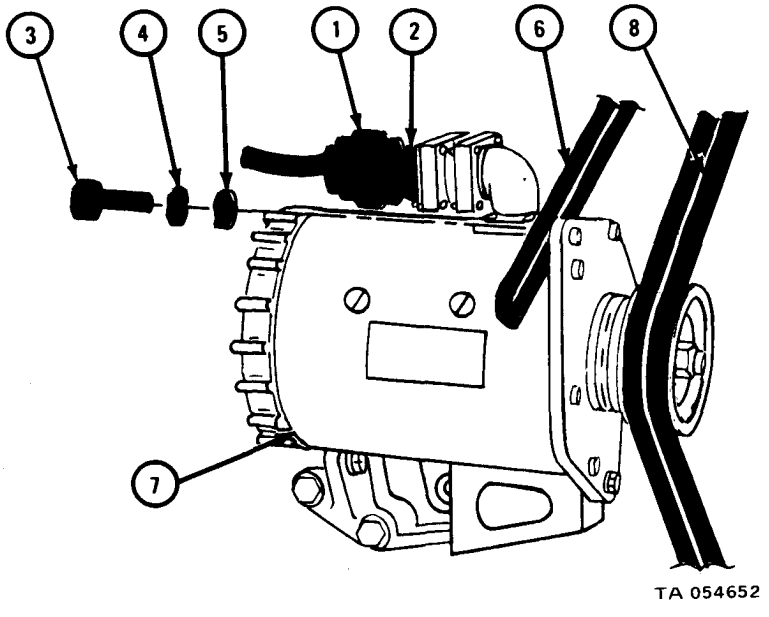
GO TO FRAME 2



FRAME 2

1. Using spanner wrench, unscrew and take off electrical connector (l). Cap connector (1) and mating receptacle (2).
2. Using 9/16-inch wrench, unscrew and take out screw (3), lockwasher (4), and stepped washer (5).
3. Pull bracket (6) up and away from generator (7).
4. Push generator (7) toward engine and take off two belts (8).

GO TO FRAME 3

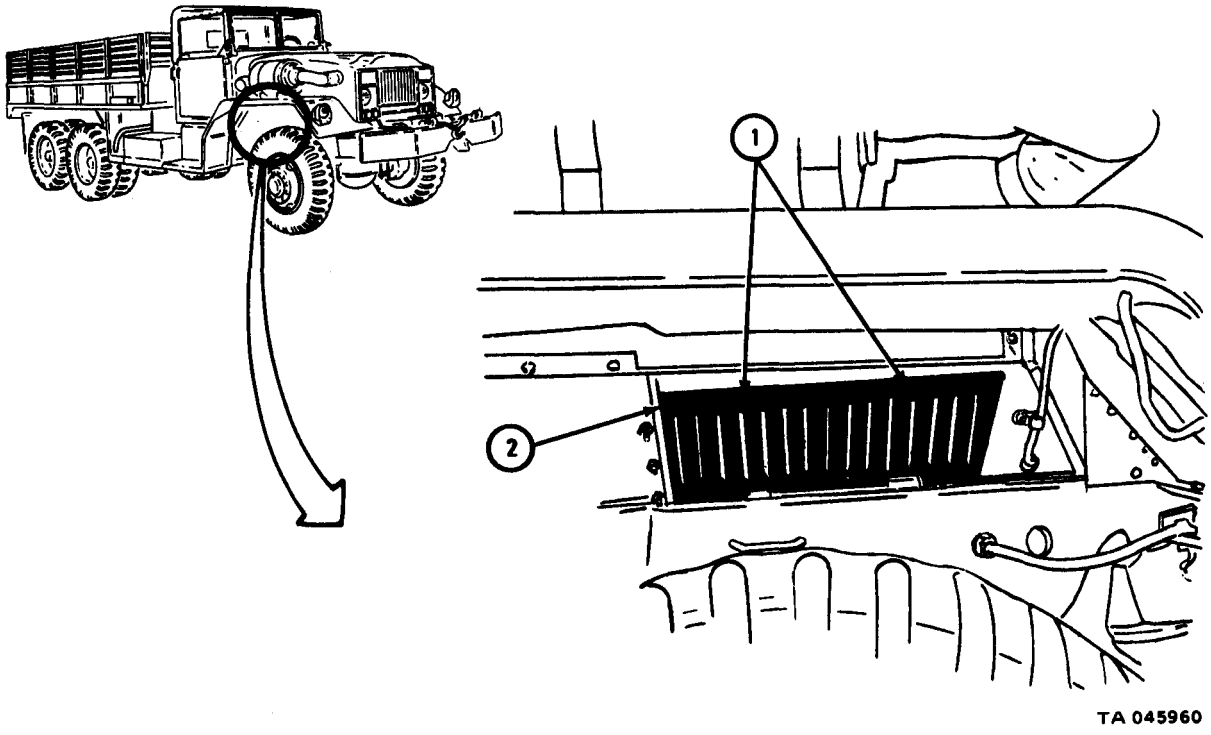


TA 054652

FRAME 3

1. Turn two wing locks (1) to the left until they unlock. Pull down access panel (2).

GO TO FRAME 4



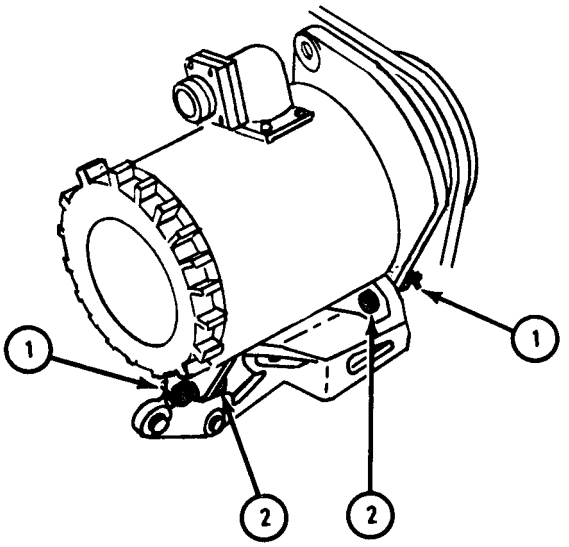
FRAME 4

NOTE

Some generators have cotter pins (1) in screws (2).

1. If generator has cotter pins (l), using pliers, pullout cotter pins and throw them away.
2. Using 9/16-inch wrenches, loosen two mounting screws (2).

GO TO FRAME 5



TA 054653

FRAME 5

1. Using 9/16-inch wrenches, unscrew and take off two nuts (1) with washers (2).

NOTE

Be careful when pulling out rear mounting screws as shims may fall out.

2. Hold generator (3) and pull mounting screws (4) out of bracket (5). Leave two washers (6) on screws.

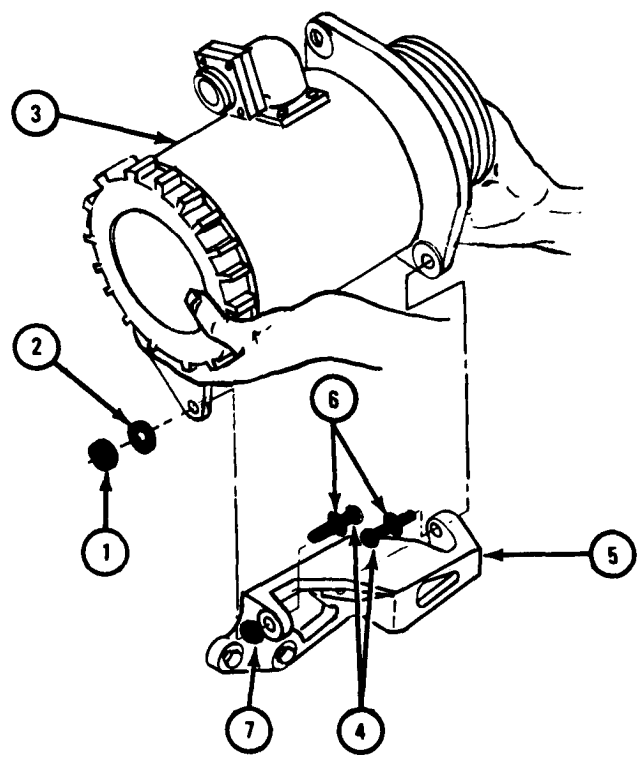
NOTE

Note number of shims (7) so same number can be put back.

3. Take out shims (7) from between generator (3) and bracket (5).

4. Take out generator (3).

GO TO FRAME 6



TA 054654

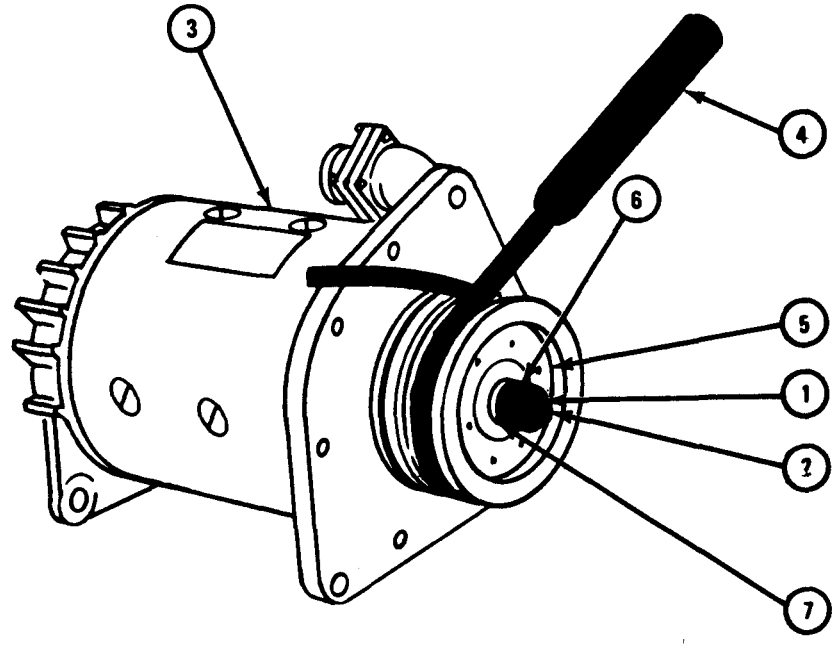
FRAME 6

NOTE

Some generators have a cotter pin (1) in shaft (2).

1. If generator has cotter pin (l), using pliers, pull cotter pin (1) out and throw it away.
2. With generator (3) on bench, put strap wrench (4) around pulley (5) as shown. Pull end of strap to make it tight on pulley and hold it.
3. Using 3/4-inch socket wrench, unscrew and take off locknut (6) with washer (7).

GO TO FRAME 7

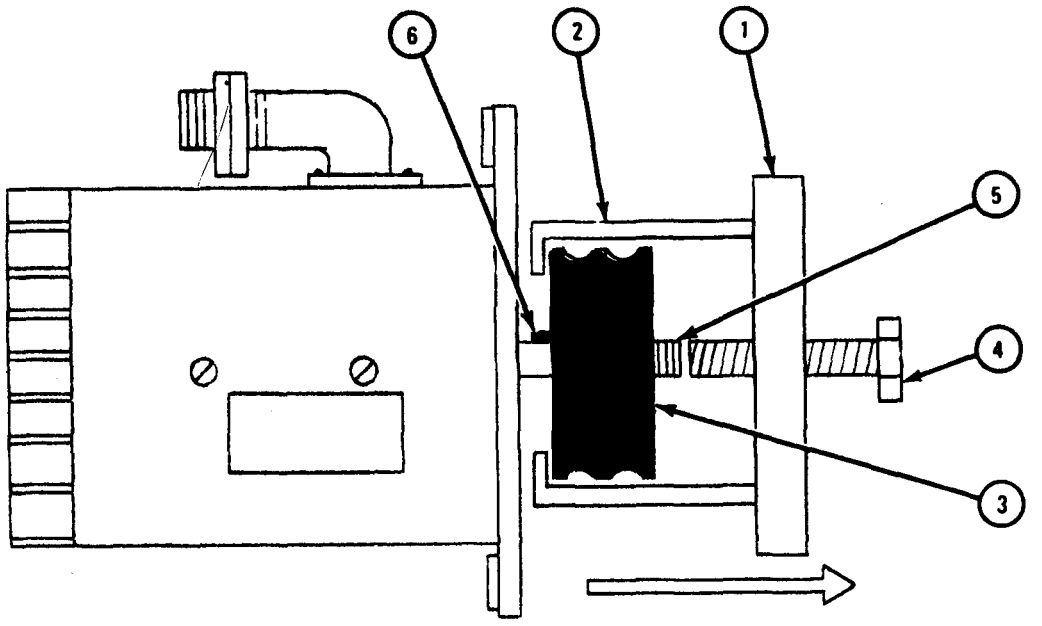


TA 054655

FRAME 7

1. Using mechanical puller (l), set adjustable arms (2) over rear edge of generator pulley (3).
2. Screw in bolt (4) until it presses against generator shaft (5).
3. Using 3/4-inch wrench, slowly tighten bolt (4) until generator pulley (3) is loose on shaft (5). Pulley will move in direction shown.
4. Take puller (1) off generator pulley (3) and slide pulley off shaft (5),
5. Take out key (6) and tape it to shaft (5).

END OF TASK



TA 047104

c. Replacement.

FRAME 1

WARNING

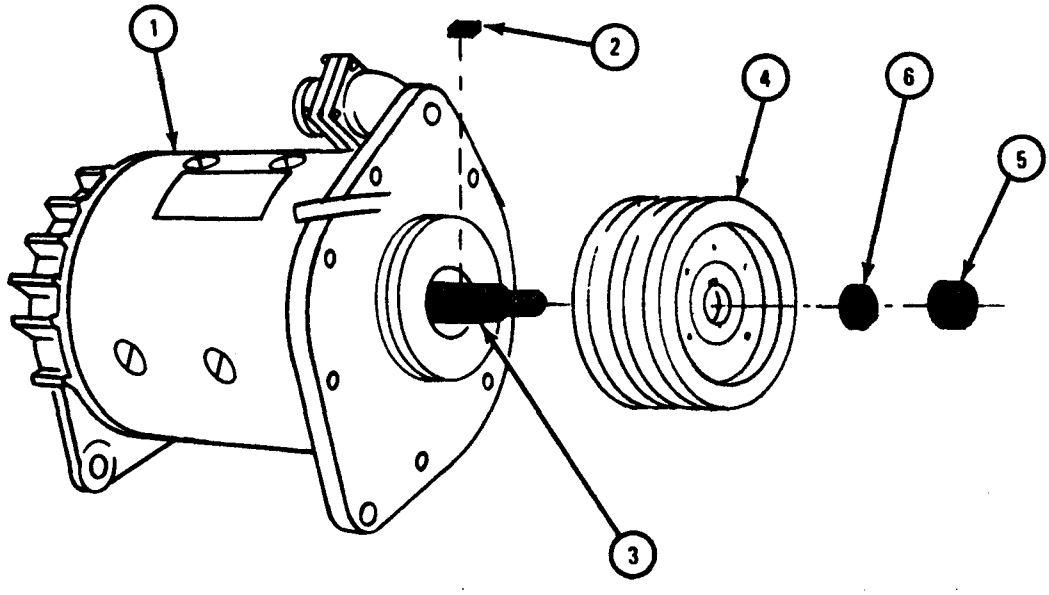
Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

If key is taped to shaft, take off tape. Clean key and shaft with solvent.

1. With generator (1) on bench, put key (2) in slot in generator shaft (3).
2. Line up keyway in generator pulley (4) with key (2) in generator shaft (3).
3. Put generator pulley (4) onto generator shaft (3). Make sure key (2) does not show at back of pulley.
4. Screw on and hand tighten locknut (5) with washer (6) to generator shaft (3).

GO TO FRAME 2



TA 054656

FRAME 2

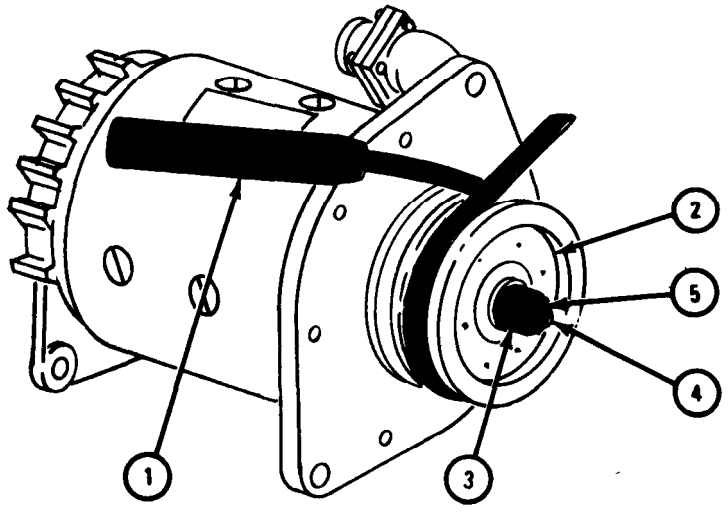
1. Put strap wrench (1) around generator pulley (2). Pull end of strap tight around pulley and hold it.
2. Using torque wrench and 3/4-inch socket, tighten locknut (3) to 40 to 50 pound-feet.

NOTE

Some generators have a hole in generator shaft (4) for cotter pin (5).

3. If generator shaft (4) has a cotter pinhole, using pliers, put cotter pin (5) through hole and bend back ends.

GO TO FRAME 3

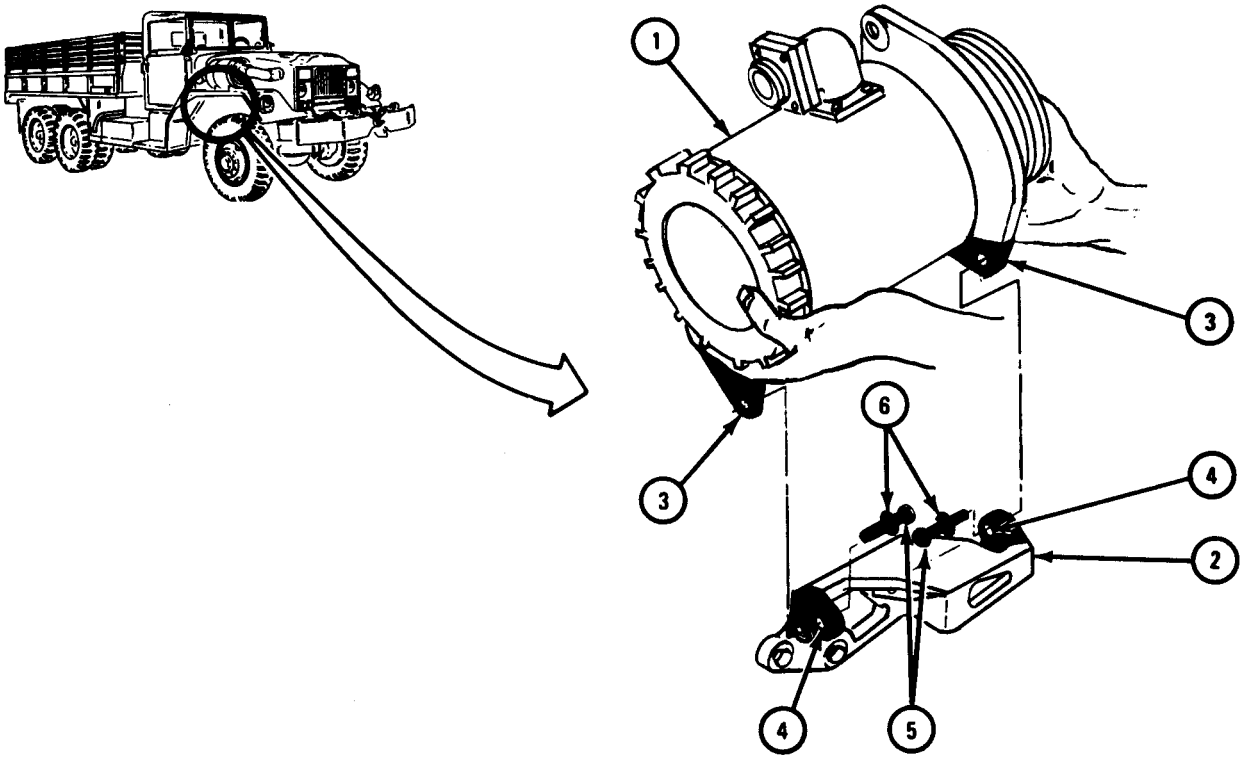


TA 054851

FRAME 3

1. Set generator (1) on bracket (2). Place generator flanges (3) on outside of bracket flanges (4).
2. Line up holes in generator flanges (3) with holes in bracket flanges (4).
3. Push two mounting screws (5) with washers (6) through holes in bracket flanges (4).

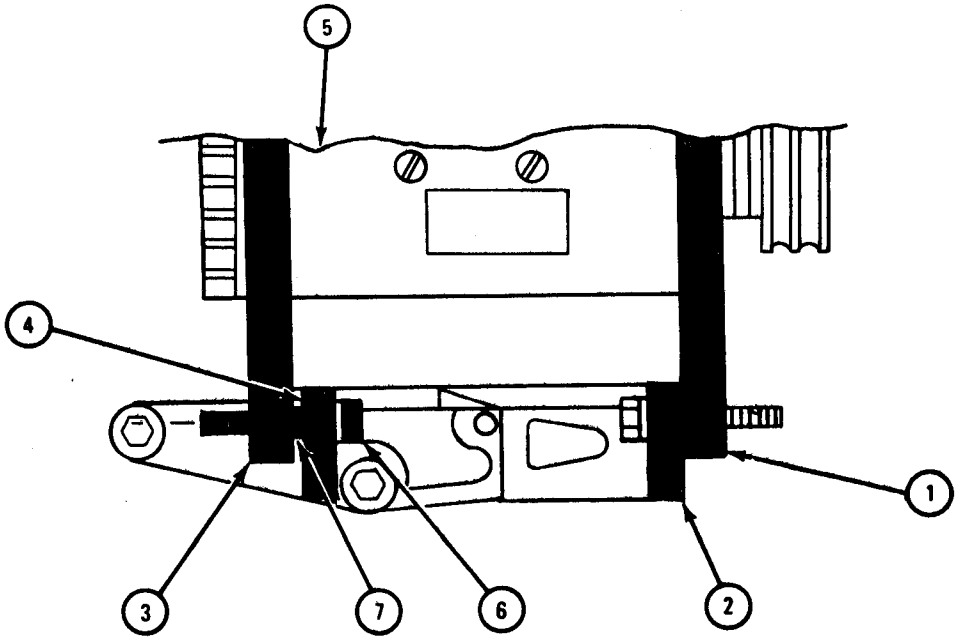
GO TO FRAME 4



FRAME 4

1. Push front generator flange (1) tightly against front bracket flange (2).
2. Slip 0.005-inch feeler gage between rear generator flange (3) and rear bracket flange (4). Gage should slide in very easily.
3. Holding up rear of generator (5), pull screw (6) out of rear generator flange (3).
4. Slip needed number of shims (7) between rear generator flange (3) and rear bracket flange (4). Push screw (6) back through rear generator flange (3).
5. Push rear generator flange (3) tightly against shims (7).
6. Slip 0.005-inch feeler gage between front generator flange (1) and front bracket flange (2).
7. If feeler gage fit is not snug, do steps 3 through 6 again.

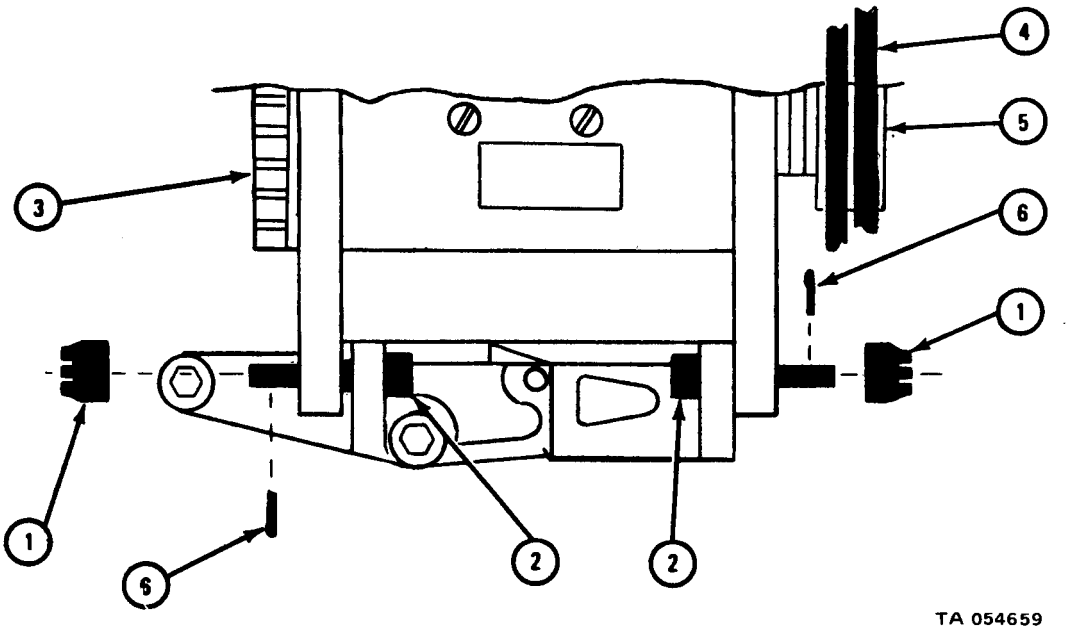
GO TO FRAME 5



FRAME 5

1. Screw on and hand tighten two nuts (1) to screws (2).
2. Push generator (3) towards engine and slip two drive belts (4) around generator pulley (5).
3. Using 9/16-inch wrench, hold two screws (2). Using torque wrench and 9/16-inch socket, tighten nuts (1) to 65 to 70 pound-feet and aline holes for cotter pins (6).
4. Using pliers, push two cotter pins (6) through nuts (1) and screws (2) and bend open ends of cotter pins.

GO TO FRAME 6

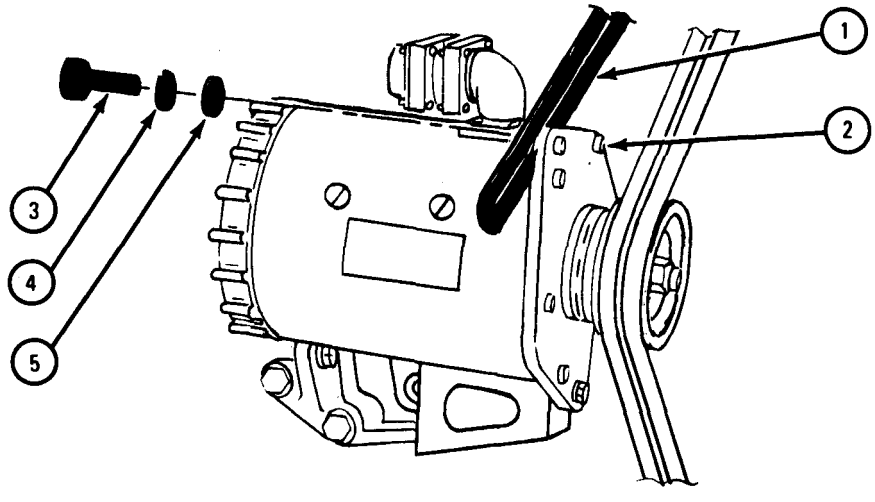


TA 054659

FRAME 6

1. Line up slot in bracket (1) with hole in generator flange (2).
2. Push screw (3) with lockwasher (4) and stepped washer (5) through slot in bracket (1) and into hole in generator flange (2).
3. Using 9/16-inch wrench, tighten screw (3).

GO TO FRAME 7



TA 054660

FRAME 7

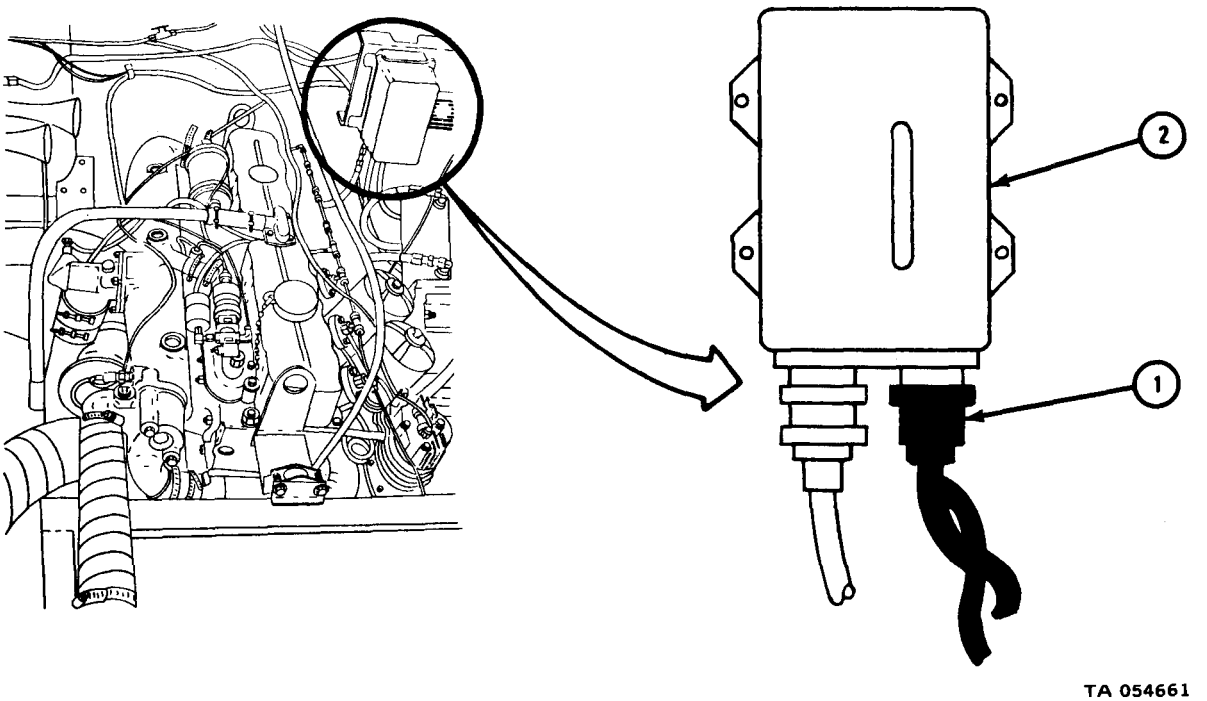
1. Unscrew and take off connector (1) from regulator (2).

CAUTION

Make sure connector pins do not touch engine or chassis. One pin on connector goes directly to positive battery terminal.

2. Reconnect battery ground cable. Refer to para 7-44.

GO TO FRAME 8



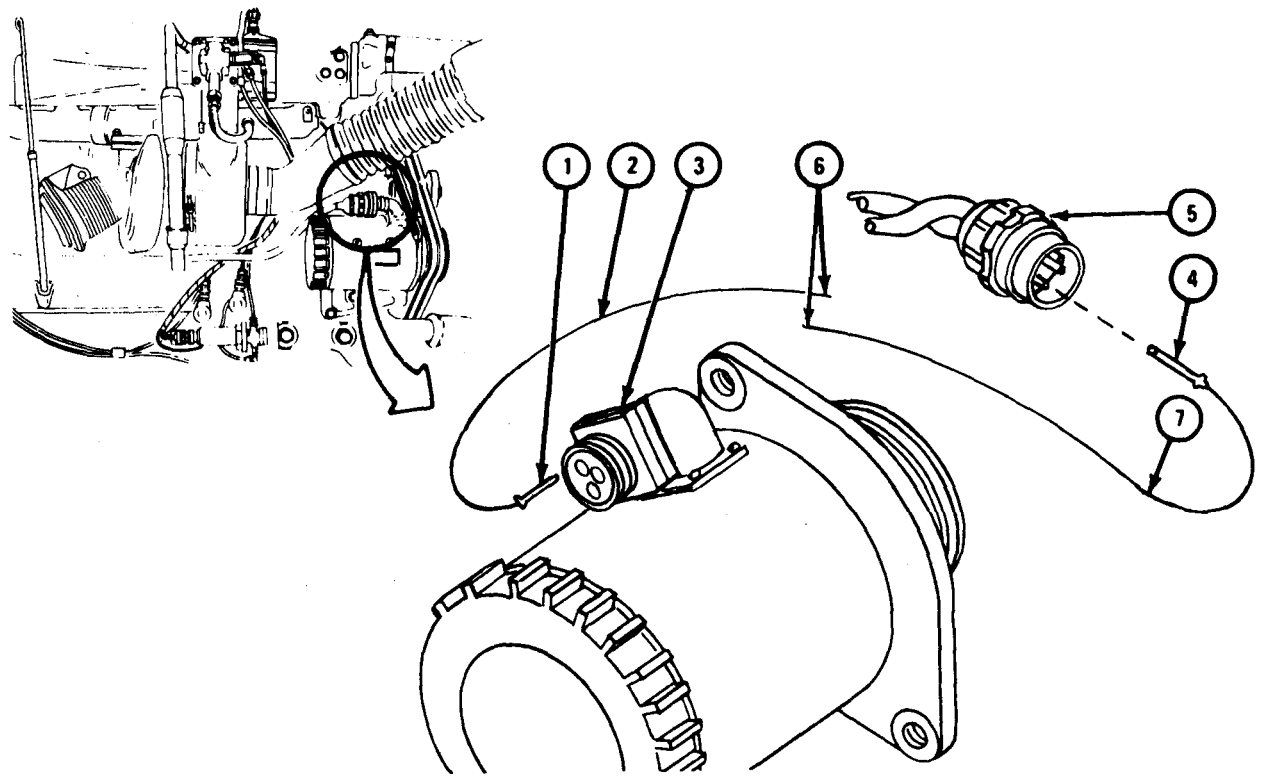
FRAME 8

WARNING

Be very careful when using jumper wire. Shorting wire to ground can burn connector pins or wiring and can cause injury to personnel.

1. Push male connector (1) of jumper wire (2) into pin B of generator receptacle (3).
2. Push female connector (4) into pin A of regulator connector (5).
3. Lightly touch and immediately pull away the ends (6) of jumper wire (2) and jumper wire (7).
4. Disconnect battery ground cable. Refer to para 7-44.
5. Pull male connector (1) out of generator receptacle (3) and pull female connector (4) out of regulator connector (5).

GO TO FRAME 9

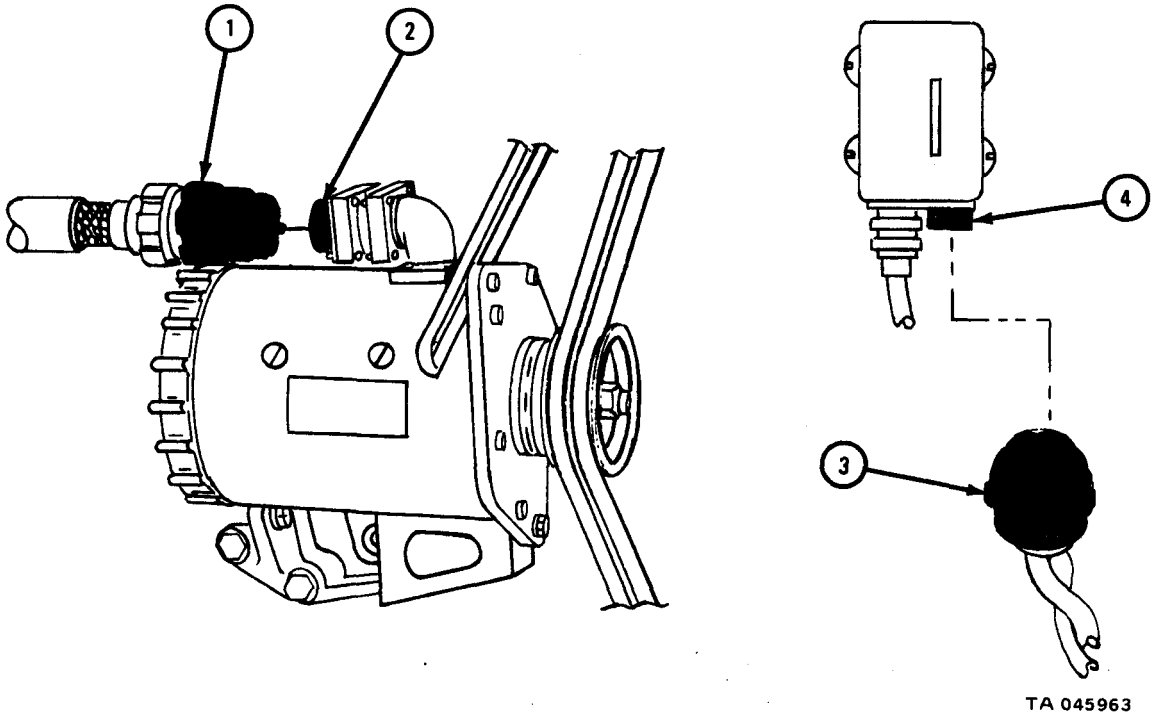


TA 054662

FRAME 9

1. Screw on and tighten connector (1) to generator receptacle (2).
2. Screw on and tighten connector (3) to regulator receptacle (4) on firewall.
3. Adjust drive belts. Refer to para 6-12.

GO TO FRAME 10

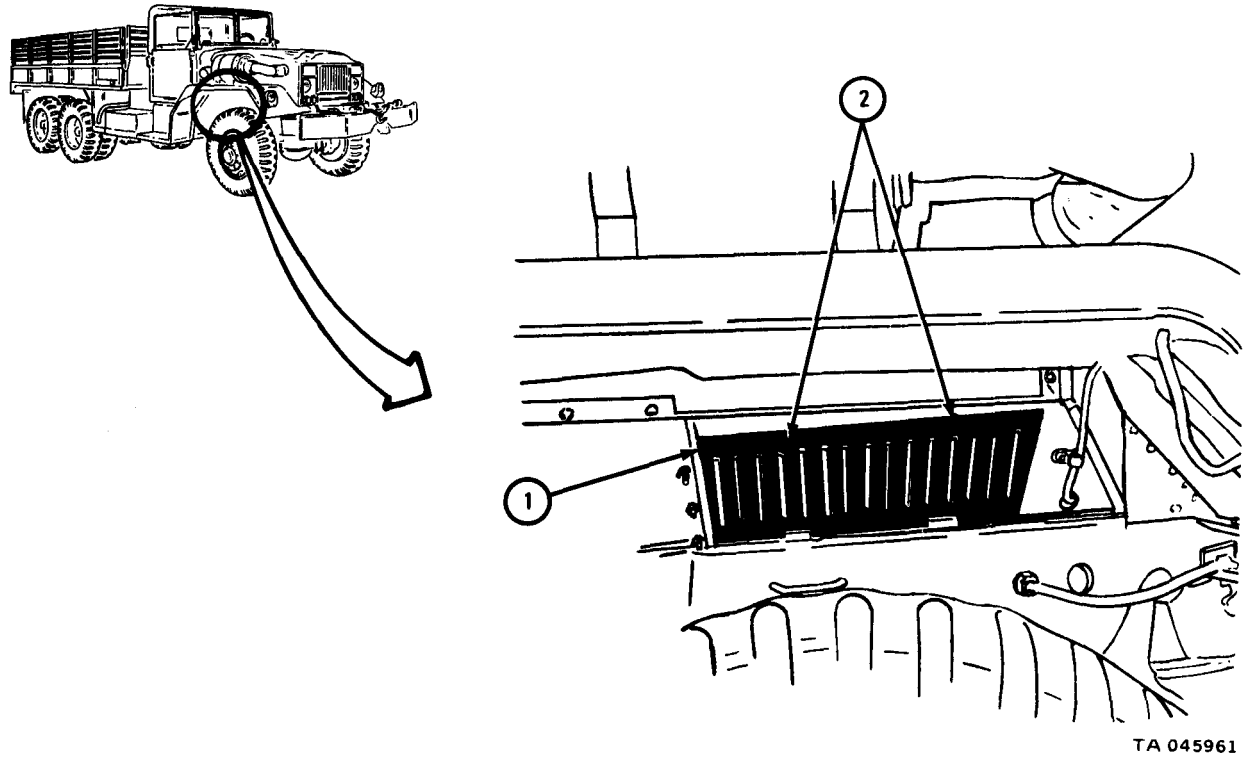


TA 045963

FRAME 10

1. Close access panel (l). Turn two wing locks (2) to the right until they lock.

GO TO FRAME 11



FRAME 11

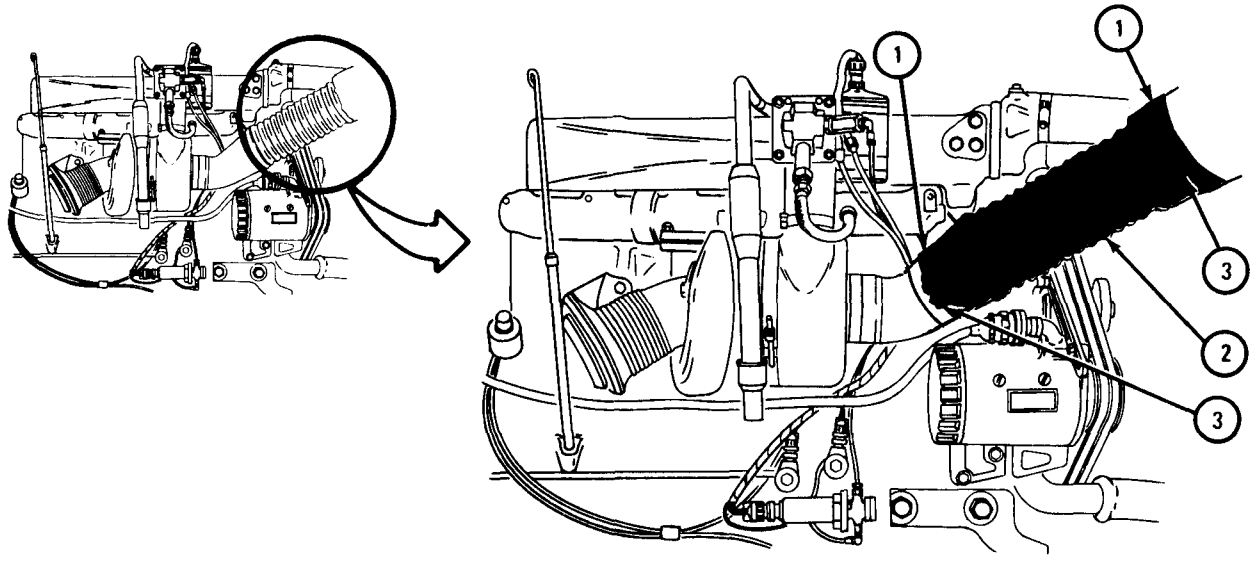
1. Put two clamps (1) on air inlet hose (2). Put air inlet hose in place.
2. Put clamps (1) on so they hold inlet hose (2). Using screwdriver or 3/8-inch wrench, tighten two screws (3).

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Start engine. Refer to TM 9-2320-211-10.
3. Test generator.
4. Stop engine. Refer to TM 9-2320-211-10.
5. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 045962

7-4. ENGINE GENERATOR REGULATOR REMOVAL AND REPLACEMENT.

TOOLS: Spanner wrench, 8-inch extension
l/2-inch open end wrench
Jumper wires (2)
l/2-inch socket wrench
Ratchet

SUPPLIES: Connector caps

PERSONNEL: One

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

a. Preliminary Procedures.

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

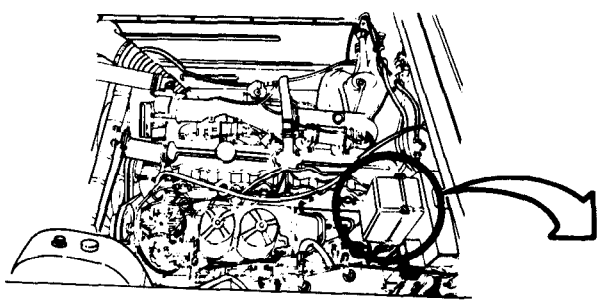
(2) Disconnect battery ground cable. Refer to para 7-44.

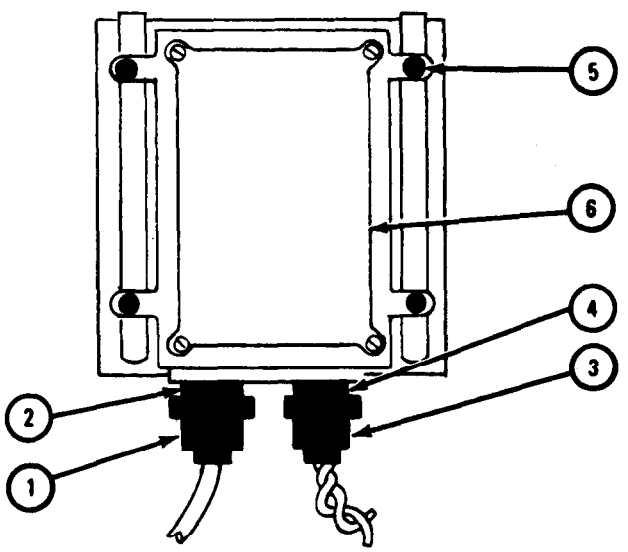
b. Removal.

FRAME 1

1. Using spanner wrench, unscrew and take off generator cable connector (l). Cap connector and receptacle (2).
2. Using spanner wrench, unscrew and take off battery cable connector (3). Cap connector and receptacle (4).
3. Using l/2-inch wrench, unscrew and take out four screws (5).
4. Take out engine generator regulator (6).

END OF TASK





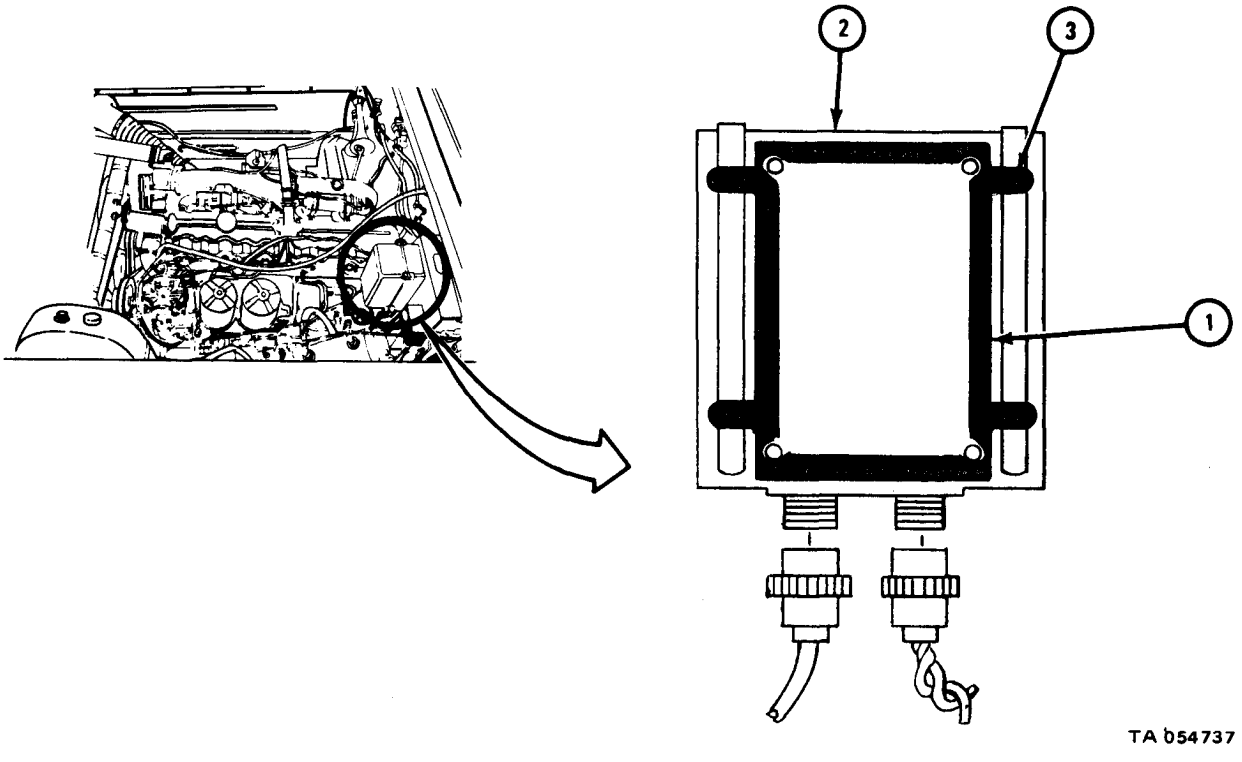
TA 054736

c. Replacement.

FRAME 1

1. Line up four holes in engine generator regulator (1) with holes in mounting bracket (2).
2. Using 1/2-inch wrench, screw in and tighten four screws (3) .
3. Reconnect battery ground cable. Refer to para 7-44.

GO TO FRAME 2



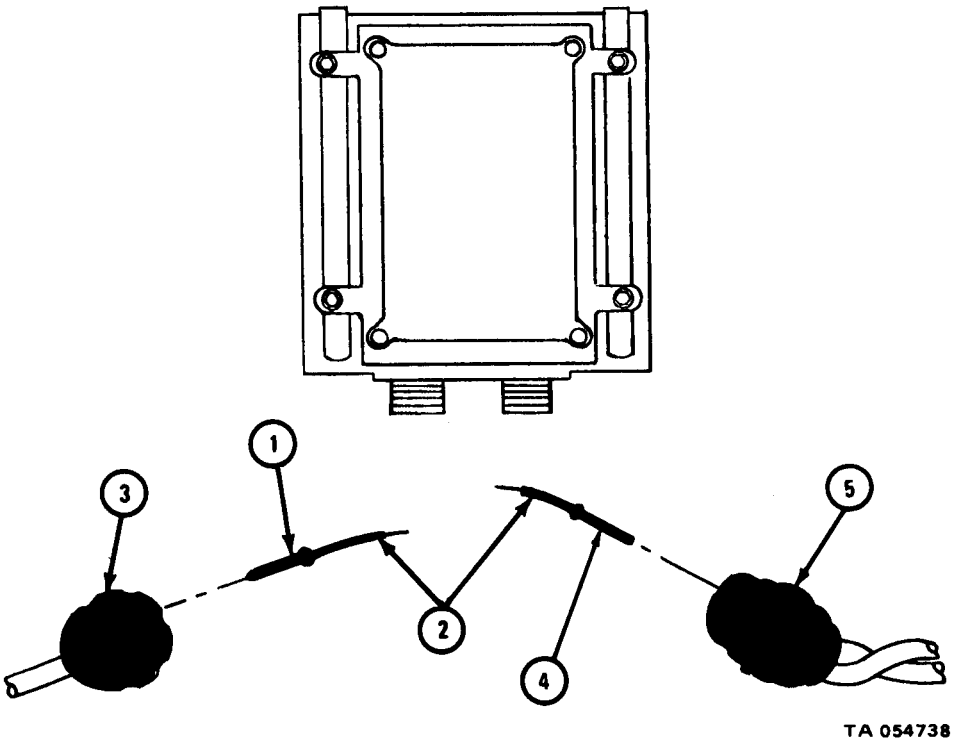
FRAME 2

WARNING

Be very careful when using jumper wire. Shorting wire to ground can burn connector pins or wiring and can cause injury to personnel.

1. Push male pin (1) of jumper wire (2) into pin B of generator cable connector (3).
2. Push female pin (4) of jumper wire (2) into pin A at battery cable connector (5).
3. Lightly touch two ends of jumper wire (2) together. Pull apart immediately. Disconnect battery ground cable. Refer to para 7-44.
4. Pull male pin (1) out of generator cable connector (3), and female pin (4) out of battery cable connector (5).

GO TO FRAME 3



FRAME 3

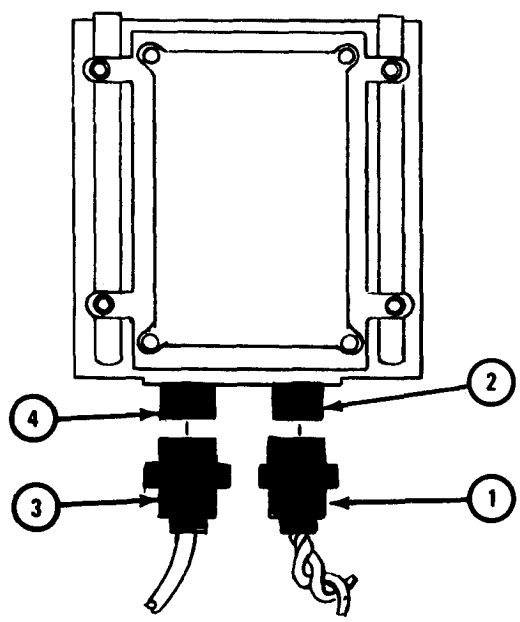
1. Take off caps from connectors and receptacles.
2. Plug battery cable connector (1) into mating receptacle (2) and screw on and tighten it.
3. Plug generator cable connector (3) into mating receptacle (4) and screw on and tighten it.

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Start engine. Refer to TM 9-2320-211-10.
3. Test engine generator regulator.
4. Stop engine. Refer to TM 9-2320-211-10.
5. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 054739

Section III. STARTING SYSTEM

7-5. ELECTRIC ENGINE STARTER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench
15/16-inch wrench
Flat-tip screwdriver

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

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) Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

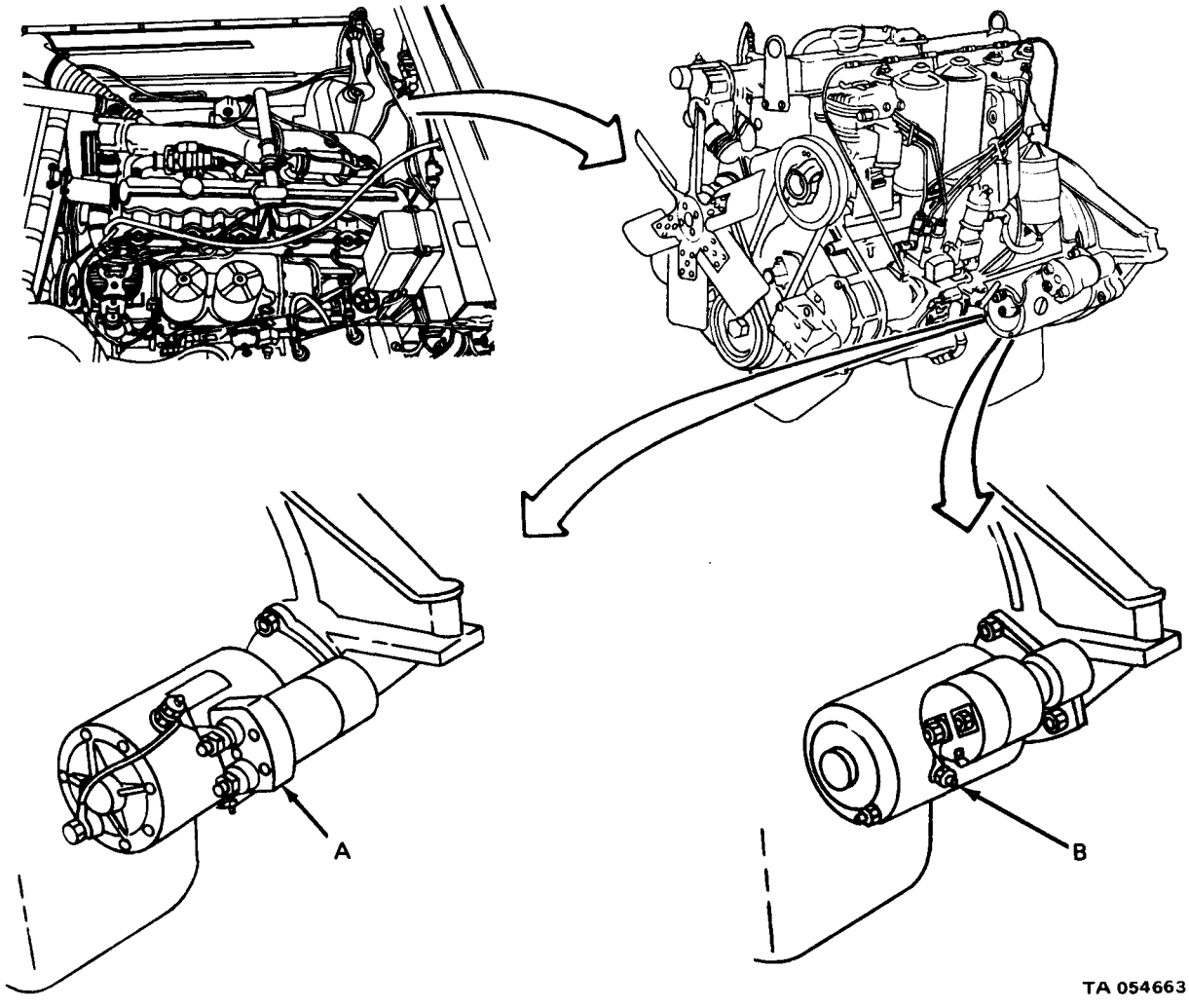
FRAME 1

NOTE

Two types of starters are used on these trucks.

1. Check whether starter in truck is type A or type B.

IF STARTER IS TYPE A, GO TO FRAME 2.
IF STARTER IS TYPE B, GO TO FRAME 3



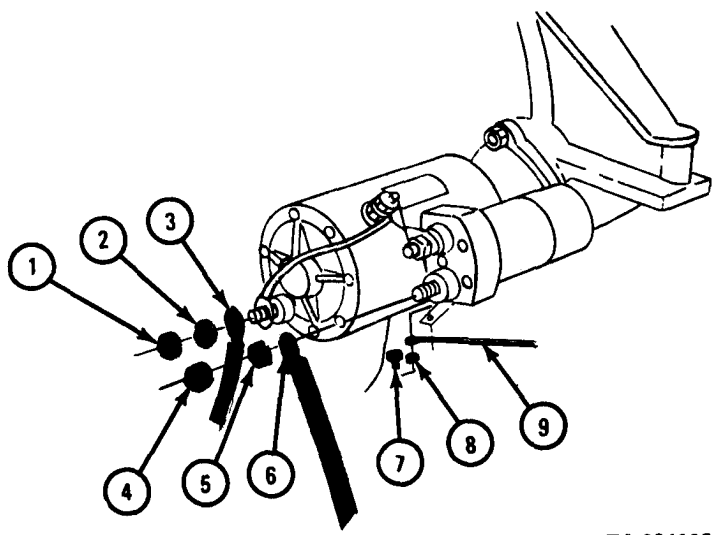
FRAME 2

NOTE

Tag cables before you take them off so they will be put back in the right place.

1. Working under truck using 3/4-inch wrench, unscrew and take off nut (1) and lockwasher (2). Lift off cable (3).
2. Using 3/4-inch wrench, unscrew and take off nut (4) and lockwasher (5). Lift off cable (6).
3. Using screwdriver, unscrew and take out screw (7) and lockwasher (8). Move away cable (9).

GO TO FRAME 3



TA 084185

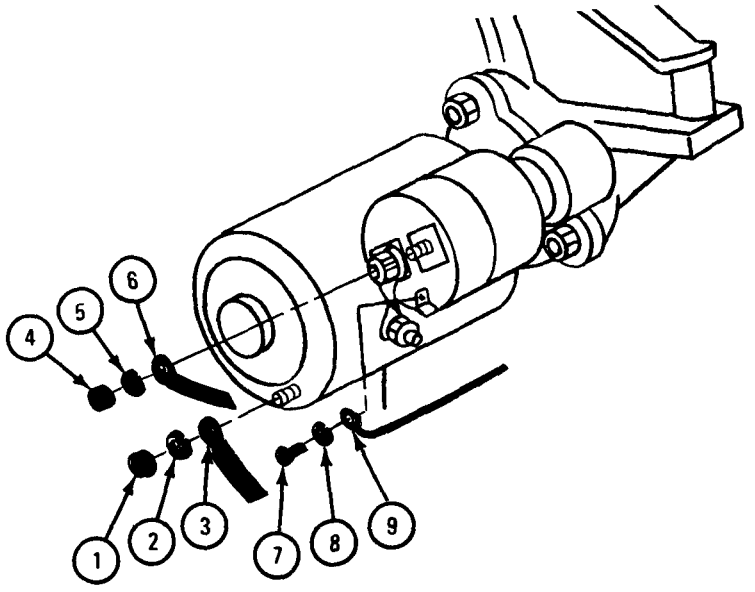
FRAME 3

NOTE

Tag cables before taking them off so they wiIl be put back in the right place.

1. Working under truck using 3/4-inch wrench, unscrew and take off nut (1) with lockwasher (2). Lift off cable (3).
2. Using 3/4-inch wrench, unscrew and take off nut (4) with lockwasher (5). Lift off cable (6).
3. Using screwdriver, unscrew and take off screw (7) with lockwasher (8). Move away cable (9).

GO TO FRAME 4



TA 084186

FRAME 4

CAUTION

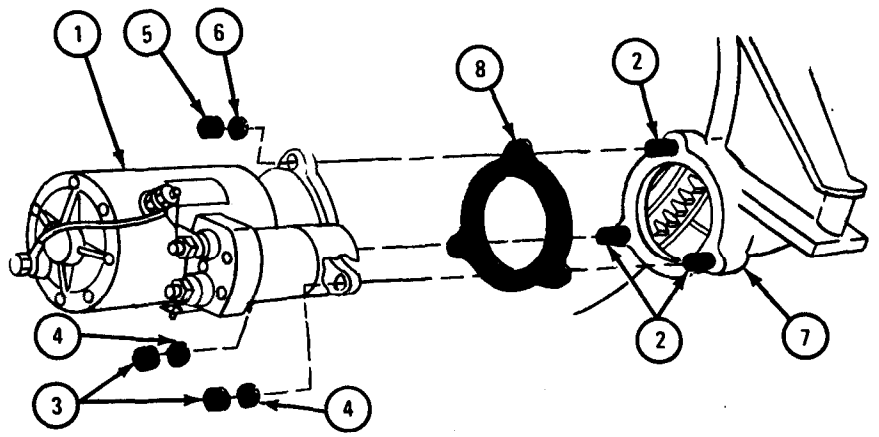
Starter (1) weighs about 50 pounds. Be careful to hold up starter when taking starter off mounting studs (2) to keep it from falling.

Soldier A
1. Working under truck using 15/16-inch wrench, unscrew and take off two lower nuts (3) and lockwashers (4).
2. Hold up starter when soldier B takes off nut (5) and lockwasher (6).

Soldier B
3. Working through side of engine compartment using 15/16-inch wrench, unscrew and take off nut (5) and lockwasher (6).

Soldier A
4. Working under truck, lift starter (1) straight out from flywheel housing (7).
5. Take gasket (8) off three studs (2) and throw it away.

END OF TASK



TA 084187

c. Replacement.

FRAME 1

WARNING

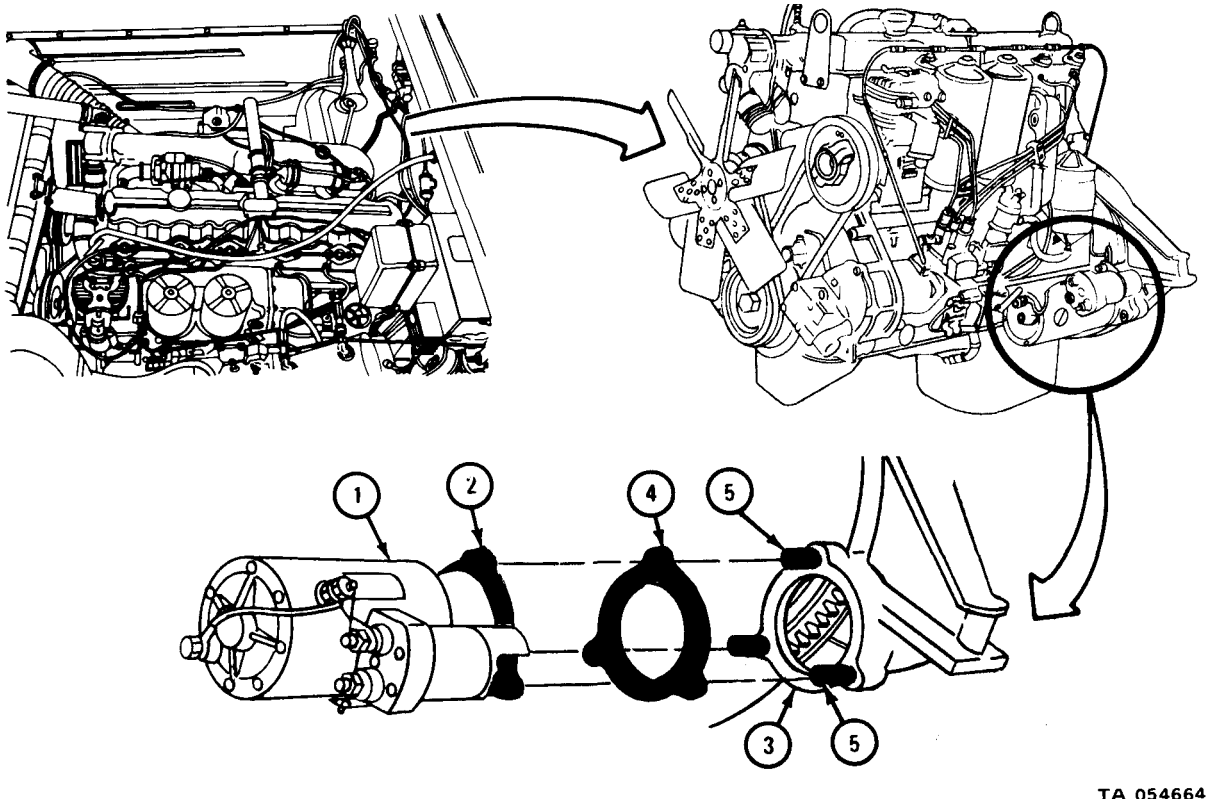
Dry cleaning solvent is flammable. Do not use near an open flame. Keep a fire extinguisher nearby when solvent is used. Use only in well-ventilated places. Failure to do this may result in injury to personnel and damage to equipment.

NOTE

If a new starter (1) is to be put in, position of its mounting flange (2) may have to be shifted to fit truck you are working on. Ask direct support maintenance to check and adjust starter if needed.

1. Before putting in starter, using solvent, clean flywheel housing flange (3) and starter mounting flange (2).
2. Working under truck, place gasket (4) on three studs (5).

GO TO FRAME 2



TA 054664

FRAME 2

WARNING

Starter (1) weighs about 50 pounds. Be careful when lifting it into position. Hold starter up until top nut (2) and lockwasher (3) are tightened.

Soldier A 1. Working under truck, lift starter (1) up into position and push it onto three studs (4).

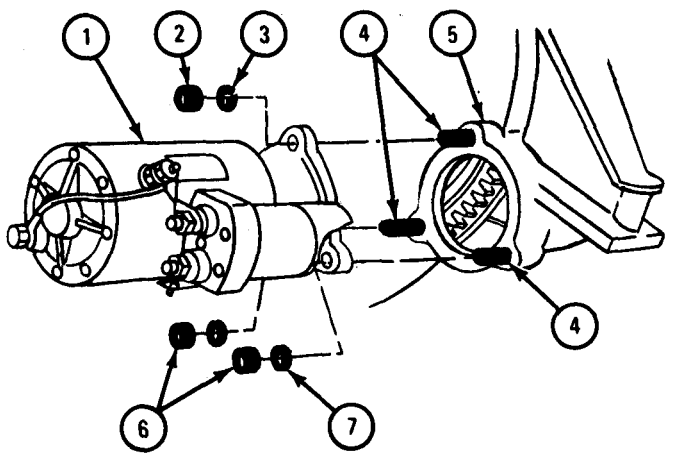
NOTE

If starter (1) does not seat firmly agsinst flywheel housing flange (5), do not force it. Take starter out, turn starter drive gear slightly, and do step 1 again.

Soldier B 2. Working through side of engine compartment using 15/16-inch wrench, screw on and tighten top nut (2) and lockwasher (3).

Soldier A 3. Working under truck, using 15/ 16-inch wrench, screw on and tighten two lower nuts (6) and lockwashers (7).

GO TO FRAME 3



TA 084188

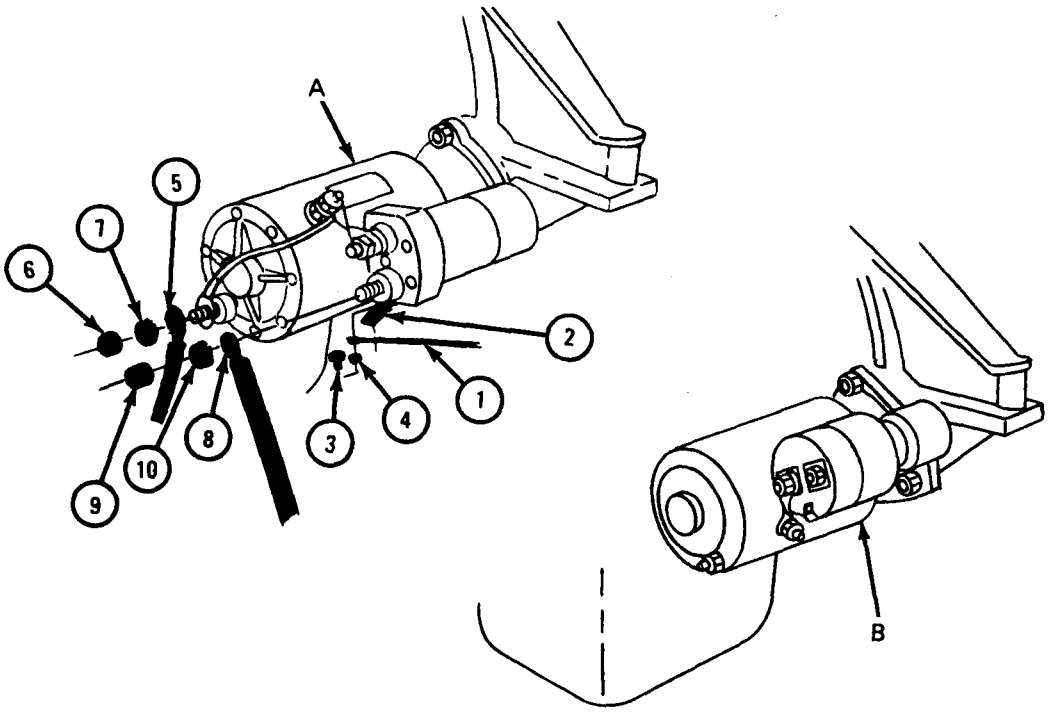
FRAME 3

NOTE

If starter is type A, do steps in this frame. If starter is type B , go to frame 4.

1. Put small cable (1) to tab (2) as tagged. Using screwdriver, screw in and tighten screw (3) and lockwasher (4). Take off tag.
2. Put cable (5) in place as tagged. Using 3/4-inch wrench, screw on and tighten nut (6) and lockwasher (7). Take off tag.
3. Put cable (8) in place as tagged. Using 3/4-inch wrench, screw on and tighten nut (9) and lockwasher (10).

GO TO FRAME 4



TA 084189

FRAME 4

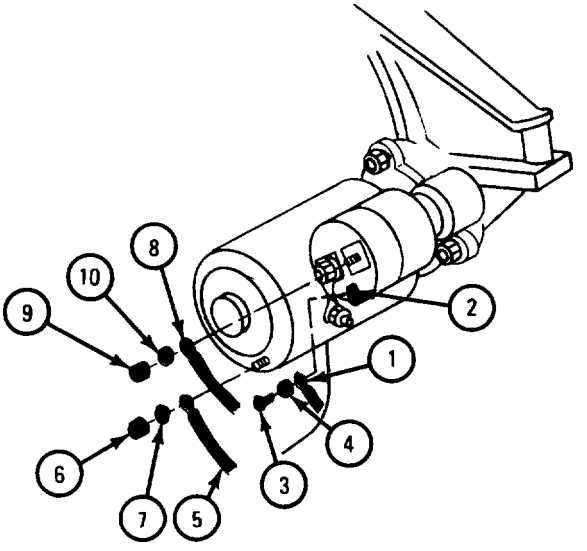
1. Put small cable (1) to tab (2) as tagged. Using screwdriver, screw in and tighten screw (3) and lockwasher (4). Take off tag.
2. Put cable (5) in place as tagged. Using 3/4-inch wrench, screw on and tighten nut (6) and lockwasher (7). Take off tag.
3. Put cable (8) in place as tagged. Using 3/4-inch wrench, screw on and tighten nut (9) and lockwasher (10). Take off tags.

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



TA 084190

d. Functional Test.

FRAME 1

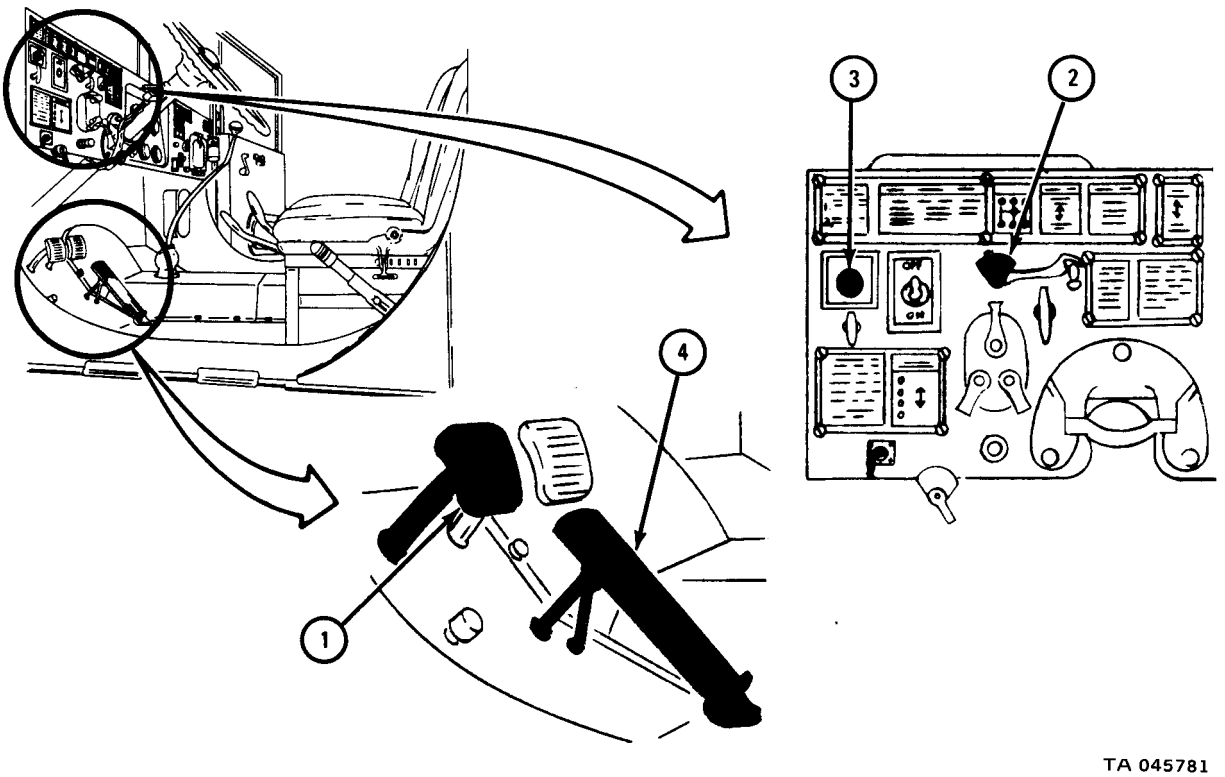
1. Step on clutch pedal (l). Press it all the way down and hold it down. Place transmission shift lever in neutral.
2. Turn BATTERY switch (2) to ON position.

CAUTION

Do not hold START button in for more than ten seconds at one time. If engine does not start in ten seconds, wait two minutes before pressing START button again. Do not press START button while headlights are on. Either of these actions may cause damage to starter or battery.

3. Press START button (3) to crank engine. Step on accelerator pedal (4) lightly until engine starts.
4. Let clutch pedal (1) up slowly as soon as engine starts.
5. After five minutes, stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 045781

7-6. STARTER RELAY ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK WITH LDS 465-1A ENGINE).

TOOLS: 7/16-inch wrench (2)

SUPPLIES: Tags

PERSONNEL: Two

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

a. Preliminary Procedures.

(1) Take off battery ground cable. Refer to para 7-44.

(2) Open hood. Refer to TM 9-2320211-10.

(3) Takeoff left side access panel. Refer to TM 9-2320-211-10.

(4) Tell direct support to peel back thermal blanket in cab on left side of firewall if installed.

b. Removal.

NOTE

Tag leads before taking them off so they can be put back in the right place.

FRAME 1

Soldier A 1. Using 7/16-inch wrench, hold two screws (1) in cab.

Soldier B 2. Using 7/16-inch wrench, unscrew and take off two nuts (2) and washers (3) in engine compartment.

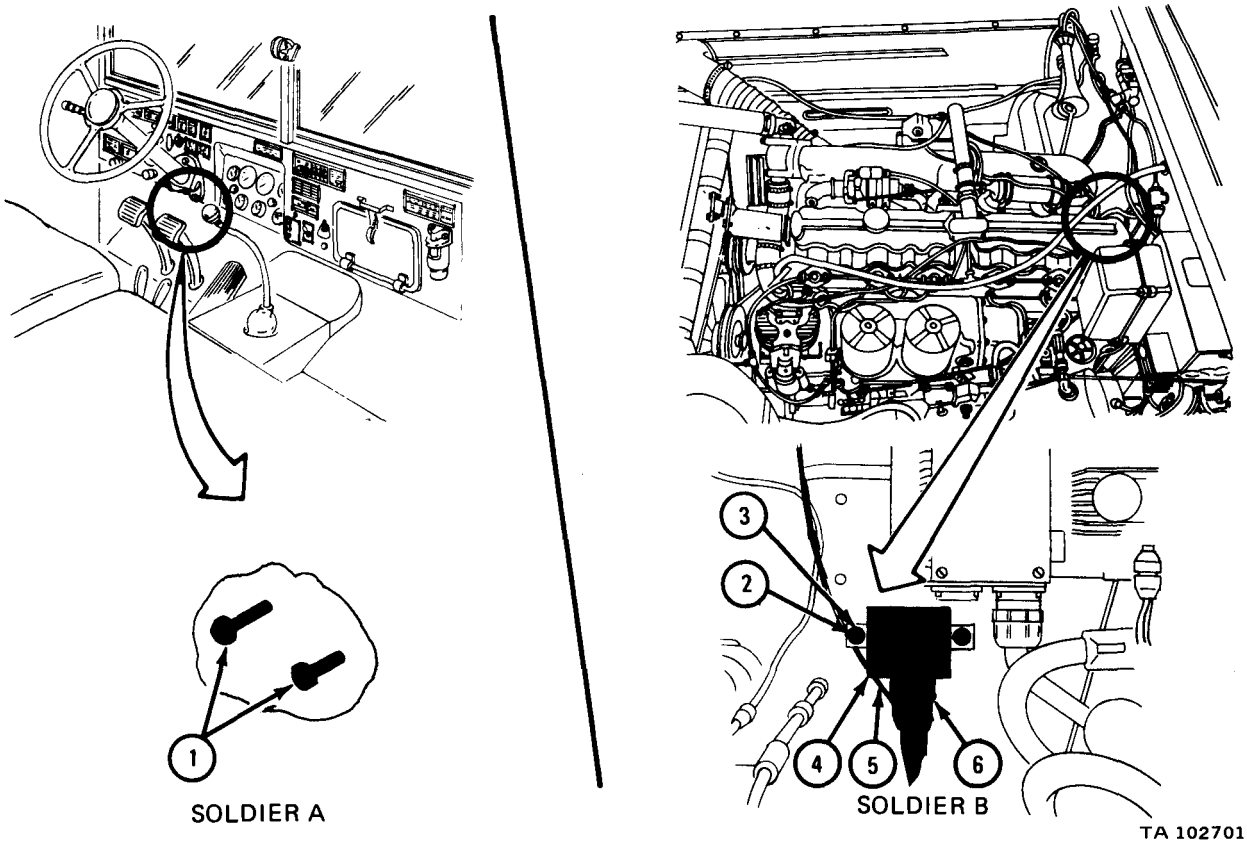
3. Take out two screws (1).

4. Take off relay box (4).

5. Take off ground wire (5) and wiring harness (6).

6. Put tags on wires.

END OF TASK



c. Replacement.

FRAME 1

Soldier A
1. Using 7/16-inch wrench, put in and hold two screws (l).

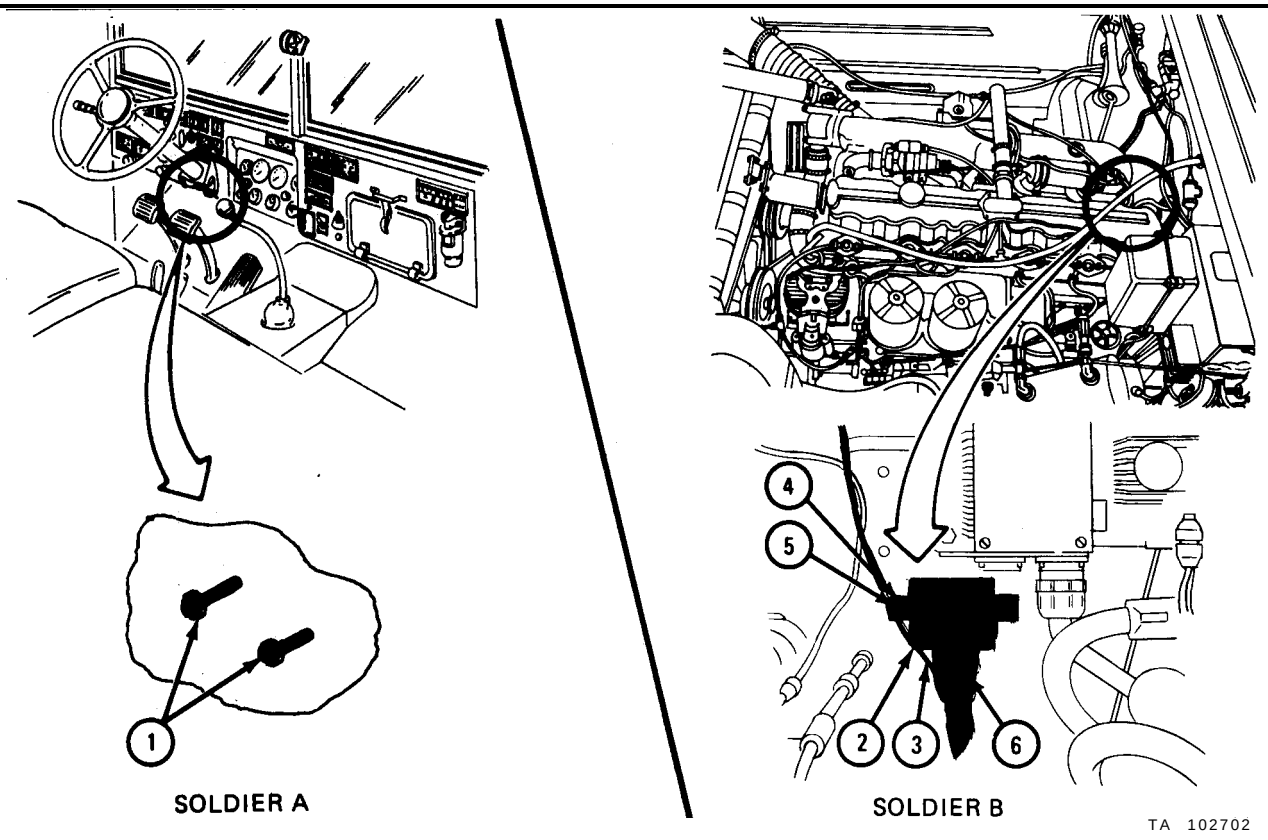
Soldier B
2. Put relay box (2) with ground wire (3) in place.
3. Using 7/16-inch wrench, screw on and tighten two washers (4) and nuts (5).
4. Put on wiring harness (6).
5. Take off tags from wires.

NOTE

Follow-on Maintenance Action Required:

1. Tell direct support to put back thermal blanket if needed.
2. Put on left side access panel. Refer to TM 9-2320-211-10.
3. Close hood. Refer to TM 9-2320-211-10.
4. Put on battery ground cable. Refer to para 7-44.

END OF TASK



Section IV. ENGINE SAFETY CONTROLS

7-7. STOPLIGHT SWITCH ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)
5/8-inch wrench

SUPPLIES: None

PERSONNEL: One

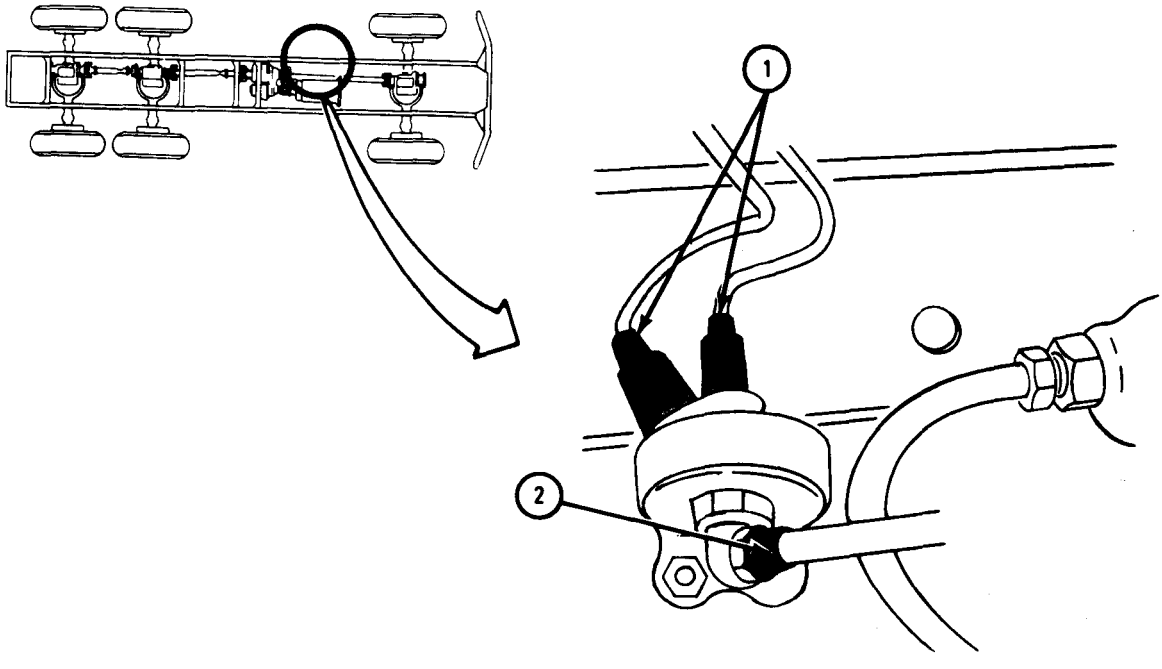
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Working under truck, twist and pull off two connectors (1).
2. Using 5/8-inch wrench, unscrew and take off sleeve nut (2).

GO TO FRAME 2

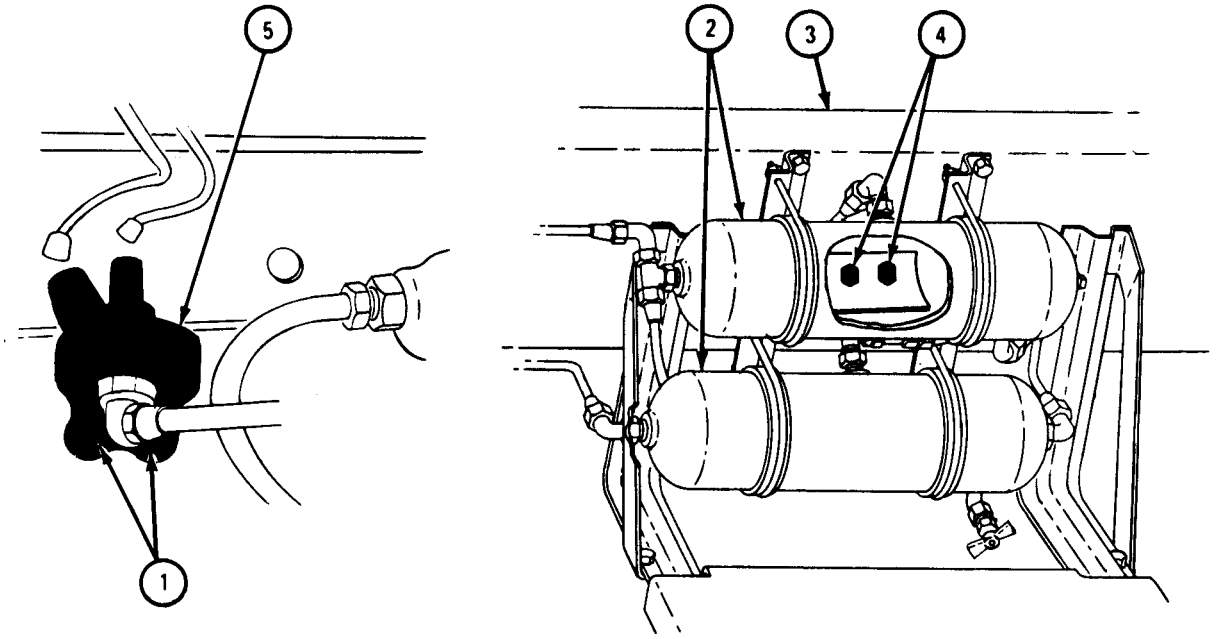


TA 054740

FRAME 2

1. Working under truck and using 7/16-inch wrench, hold two nuts (1).
2. Working under truck, reach up and between air tanks (2) and frame (3) and using 7/16-inch wrench, unscrew and take out two screws (4).
3. Take out pressure switch (5).

END OF TASK



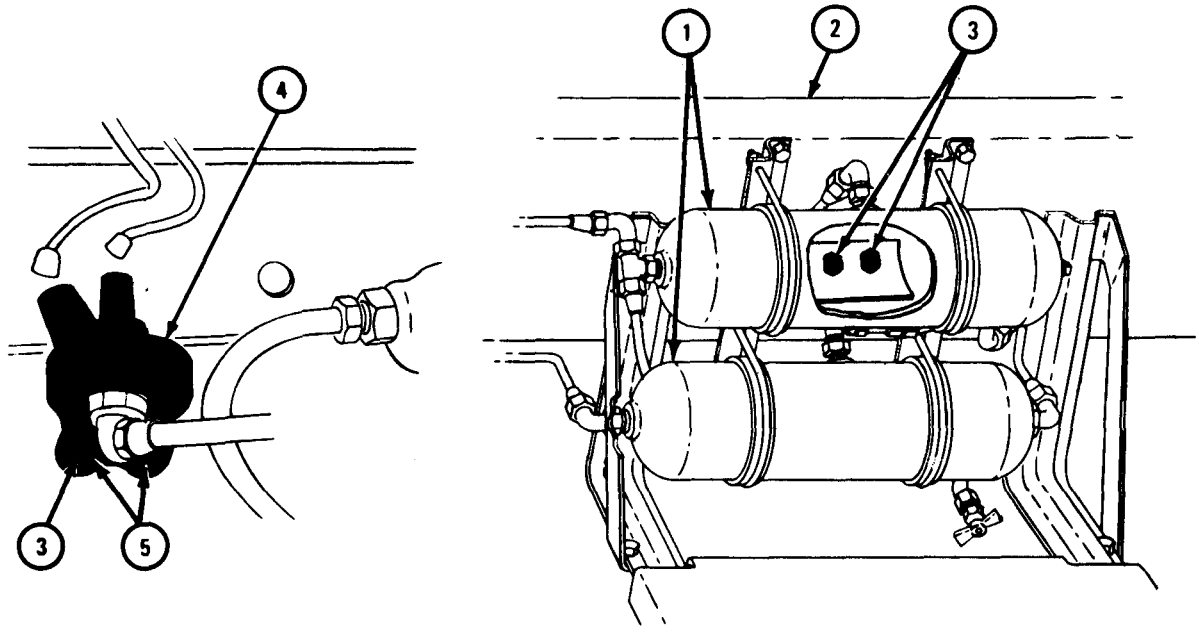
TA 102567

b. Replacement.

FRAME 1

1. Working under truck between air tanks (1) and frame (2), put two screws (3) in holes in frame.
2. Working under truck inside of frame, place pressure switch (4) on two screws (3).
3. Start two nuts (5) on two screws (3).
4. Using 7/16-inch wrench, hold nuts (5).
5. Using 7/16-inch wrench, screw in and tighten two screws (3).

GO TO FRAME 2



TA 054741

FRAME 2

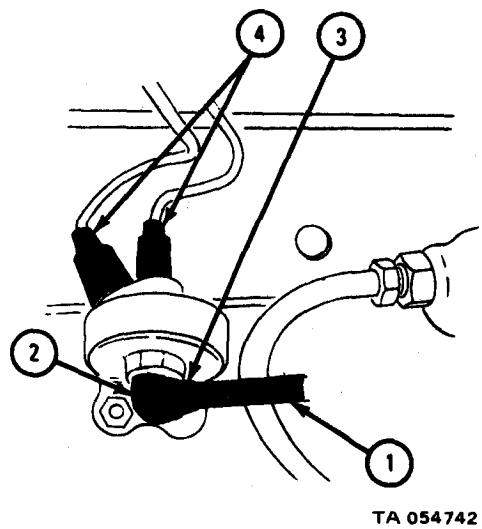
1. Line up brake hydraulic line (1) with elbow (2).
2. Using 5/8-inch wrench, screw on and tighten sleeve nut (3).
3. Push on two connectors (4).

NOTE

Follow-on Maintenance Action Required:

Bleed brake hydraulic system. Refer to para 12-14.

END OF TASK



TA 054742

Section V. INSTRUMENT PANEL COMPONENTS

7-8. LIGHT SWITCH REMOVAL AND REPLACEMENT.

TOOLS : Spanner wrench
Cross-tip screwdriver (Phillips type)
Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

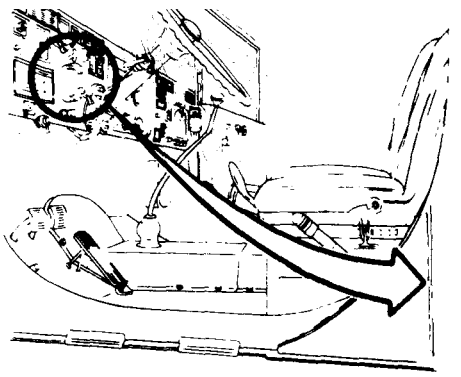
a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

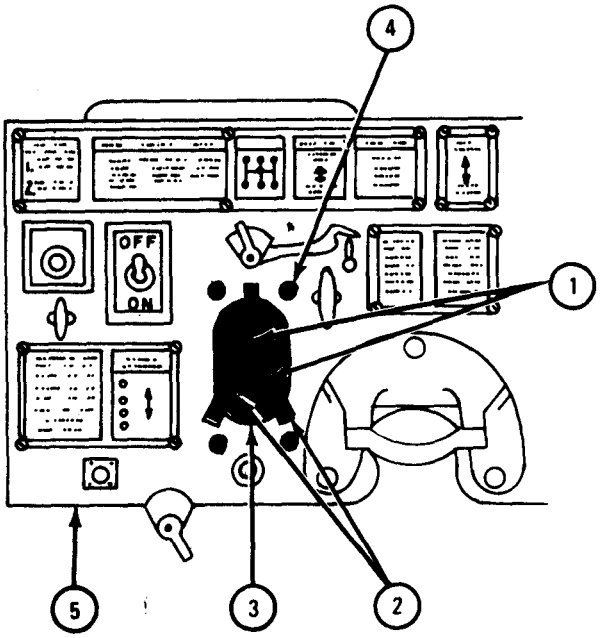
b. Removal.

FRAME 1

1. Using flat-tip screwdriver, unscrew and take out screws (1) from three levers (2) on light switch (3). Take off levers (2).
2. Using phillips screwdriver, unscrew and take out four screws (4).
3. Push light switch (3) into instrument panel (5).
4. Take out light switch (3) from back of instrument panel (5) and let it hang below panel.

GO TO FRAME 2



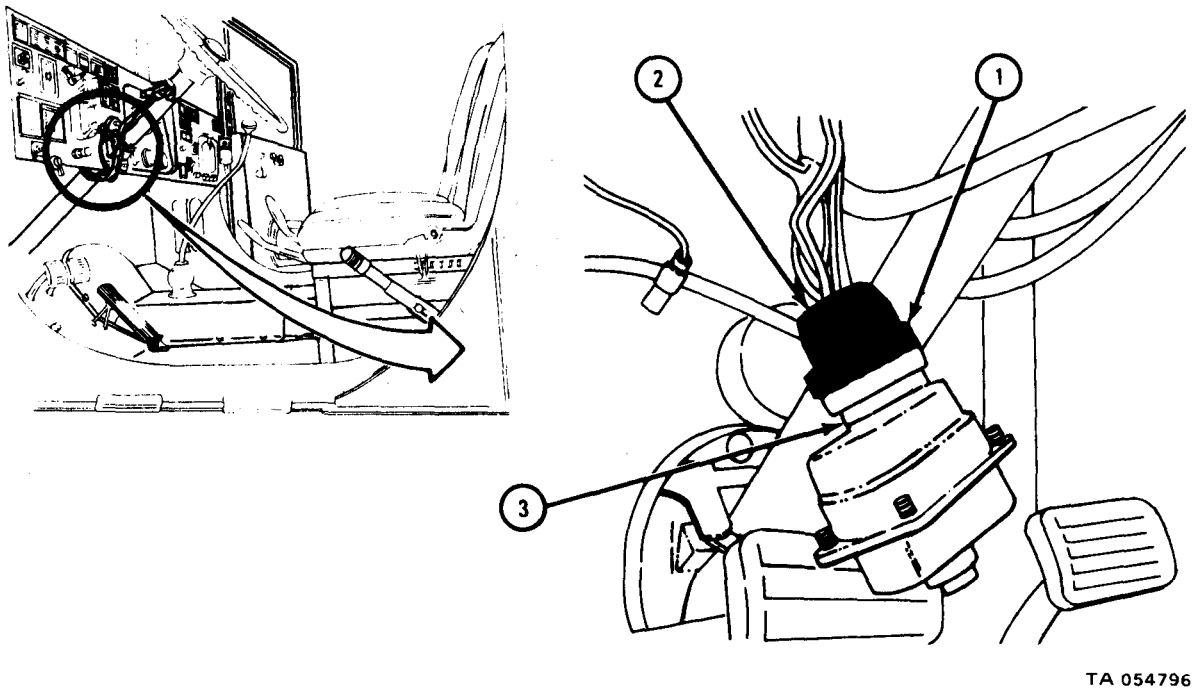


TA 054797

FRAME 2

1. Using spanner wrench, unscrew coupling nut (1).
2. Pull harness plug (2) from receptacle (3).

END OF TASK

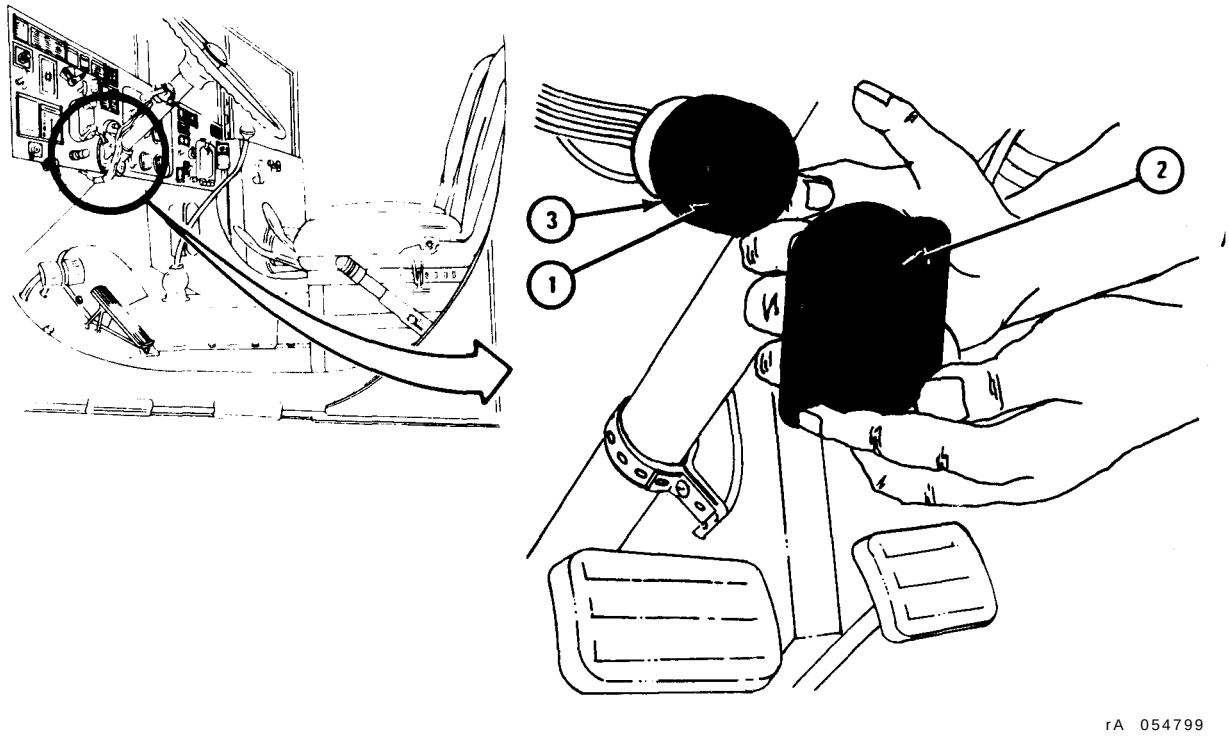


c. Replacement.

FRAME 1

1. Push harness plug (1) into receptacle (2).
2. Using spanner wrench, screw on and tighten coupling nut (3).

GO TO FRAME 2



FRAME 2

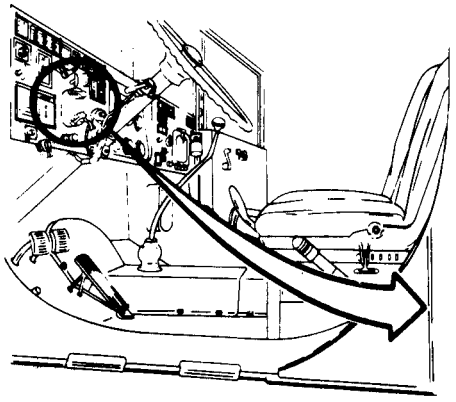
1. Place light switch (1) into opening in instrument panel (2) from back of panel.
2. Line up holes in light switch (1) with holes in instrument panel (2).
3. Using phillips screwdriver, screw in and tighten four screws (3).
4. Place three levers (4) on light switch (1).
5. Using flat-tip screwdriver, screw in and tighten screws (5).

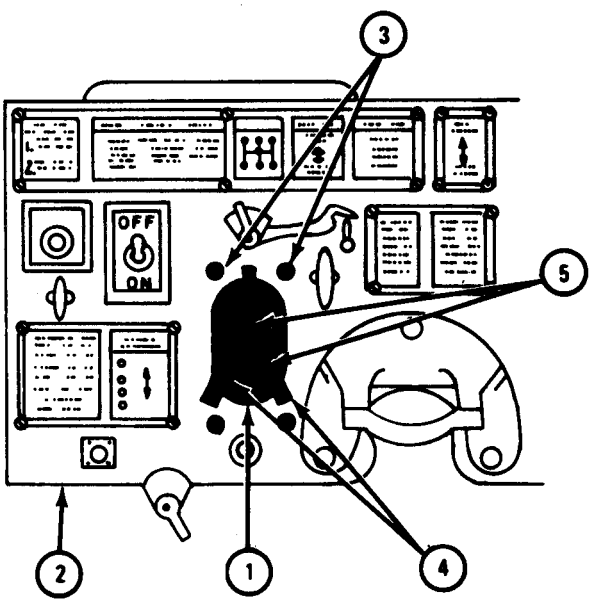
NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK





TA 054798

7-9. ROTARY SWITCH REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
5/8-inch wrench

SUPPLIES: Tags

PERSONNEL: One

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

a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

NOTE

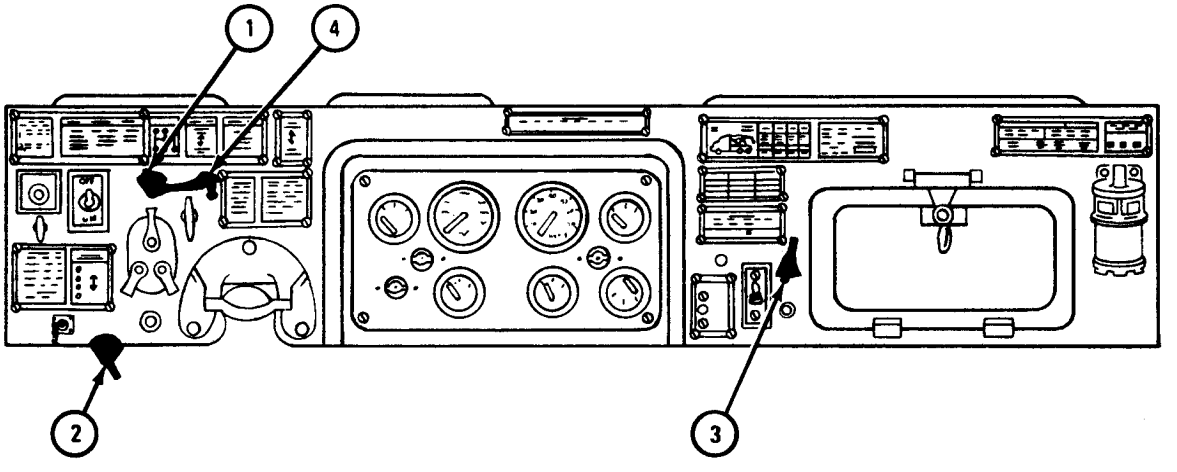
The task shown is for BATTERY switch. This task is the same for all rotary switches on instrument panel. Some switches have more wires than others.

FRAME 1

1. Switches are:

Battery switch (1).
Fuel selector switch (truck M543A2) (2).
Main floodlight control switch (truck M543A2) (3).
Warning signal light switch (truck M543A2) (4) or
fuel selector switch (trucks M51A2 and M52A2) (4).

GO TO FRAME 2

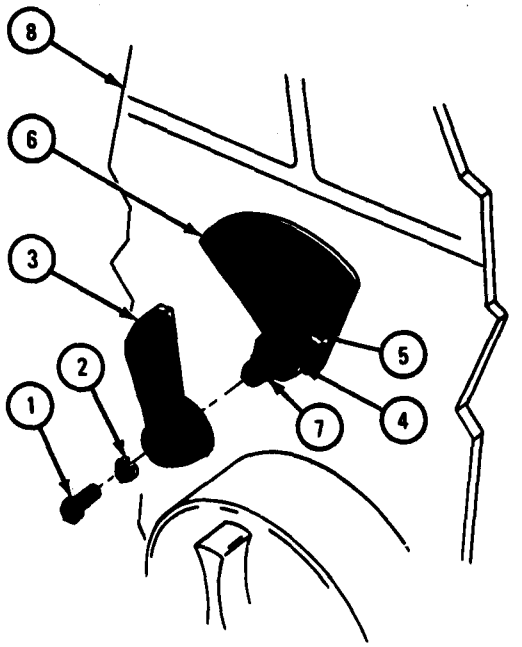


TA 102505

FRAME 2

1. Using screwdriver, unscrew and take out screw (1) and lockwasher (2). Take off lever (3).
2. Using 5/8-inch wrench, unscrew and take off nut (4) and washer (5).
3. Take off data plate (6).
4. Push switch (7) to back of panel (8).

GO TO FRAME 3



TA 102506

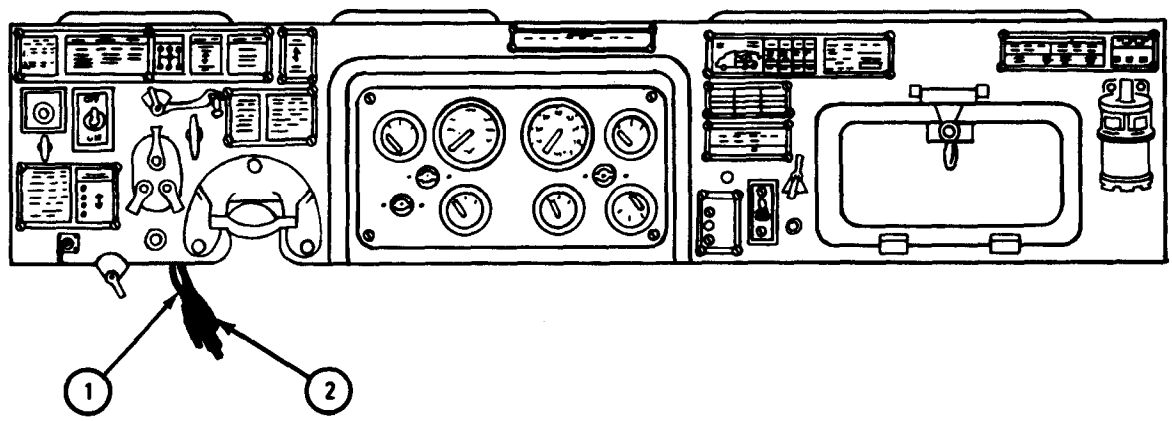
FRAME 3

NOTE

Tag electrical connectors so they will be put back in the same place.

1. Pull four connectors (1) out of switch (2).

END OF TASK



TA 102507

c. Replacement.

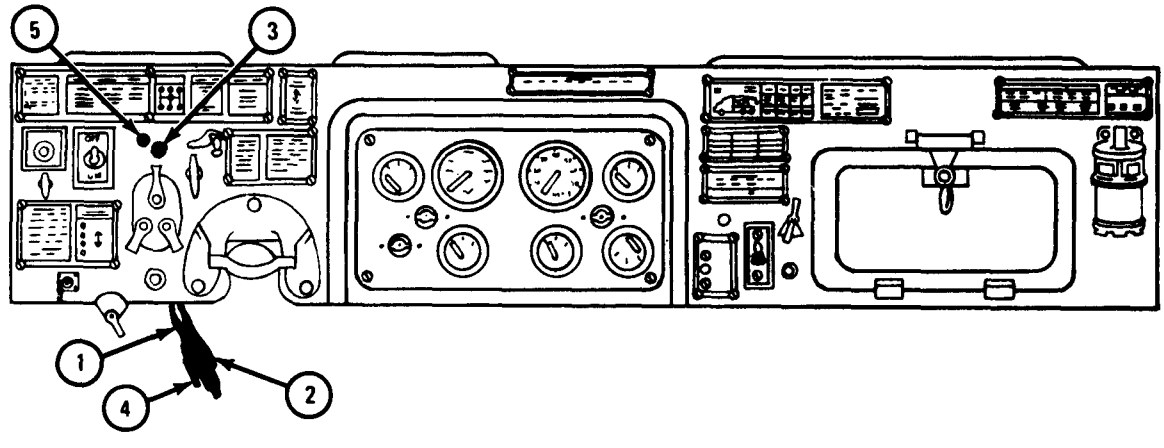
NOTE

This task is shown for BATTERY switch. This task is the same for all rotary switches on instrument panel. Some switches have more wires than others.

FRAME 1

1. Plug four connectors (1) into back of switch (2) as tagged. Take off tags.
2. Put switch (2) into hole (3) in instrument panel from behind panel. Put switch locator pin (4) through hole (5) in panel.

GO TO FRAME 2

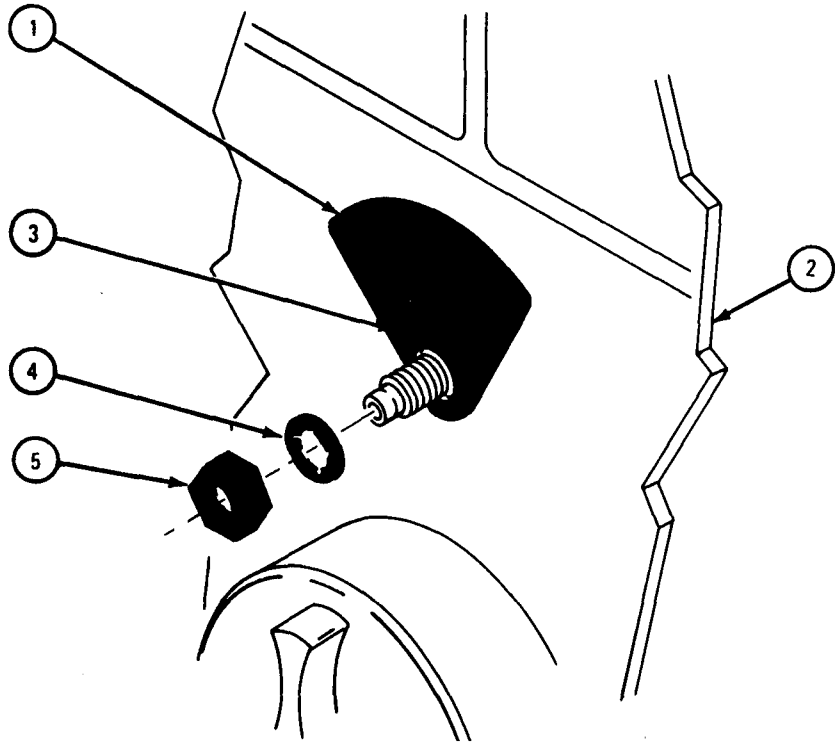


TA 102508

FRAME 2

1. Place data plate (1) over switch in instrument panel (2) with hole over locator pin (3).
2. Using 5/8-inch wrench, screw on and tighten washer (4) and nut (5).

GO TO FRAME 3



TA 102509

FRAME 3

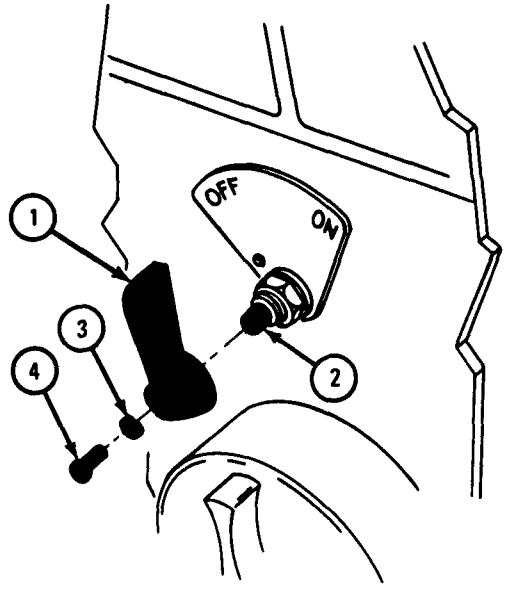
1. Aline lever (1) over flat part on switch stem (2) as shown.
2. Using screwdriver, screw in and tighten Lockwasher (3) and screw (4).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA 102510

7-10. FUEL TRANSFER PUMP SWITCH AND FUEL TANK SWITCH REMOVAL AND REPLACEMENT .

TOOLS: Flat-tip screwdriver
5/8-inch wrench

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedure. Disconnect battery ground cable. Refer to Para 7-44.

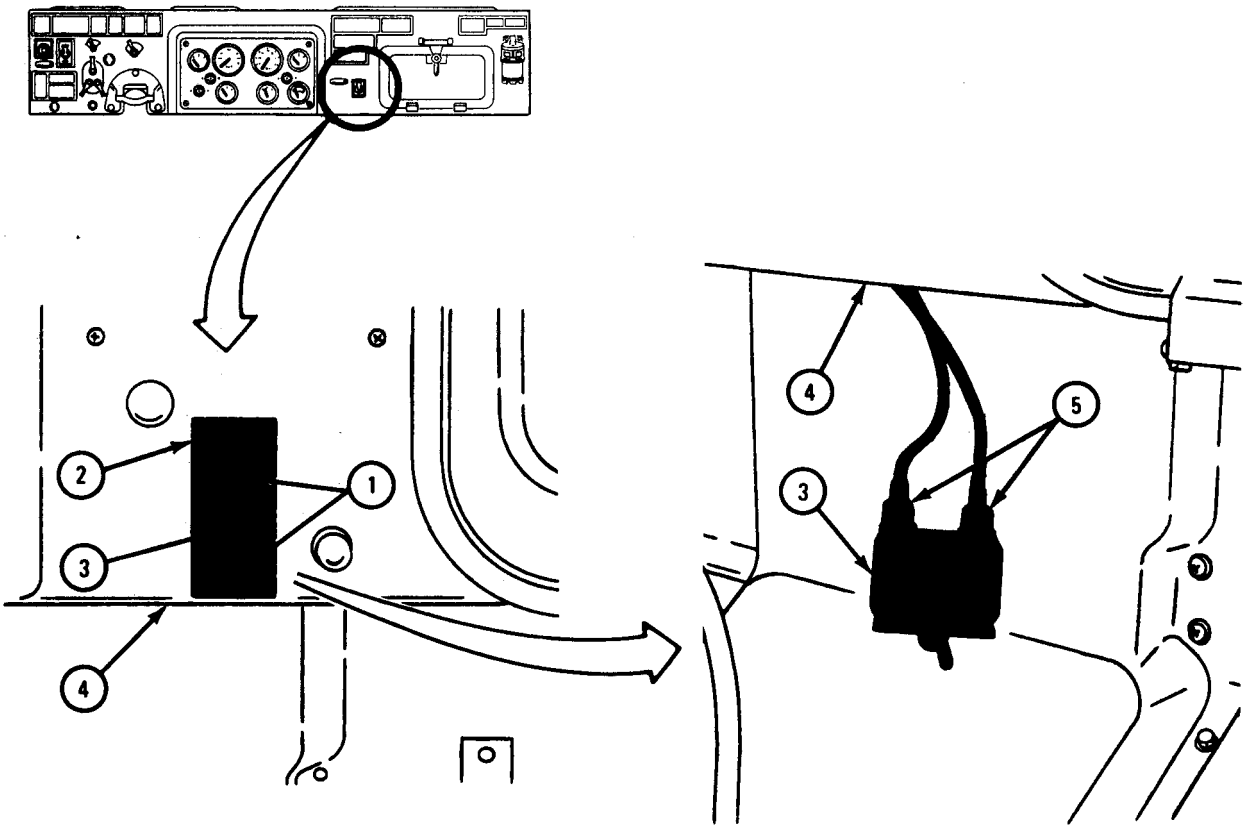
b. Removal.

(1) Fuel transfer pump switch.

FRAME 1

1. Working inside cab using flat-tip screwdriver, unscrew and take out two screws (1). Take out plate (2).
2. Push switch (3) back through instrument panel (4) and let switch (3) hang down.
3. Tag and pull off two wires (5). Take out switch (3).

END OF TASK

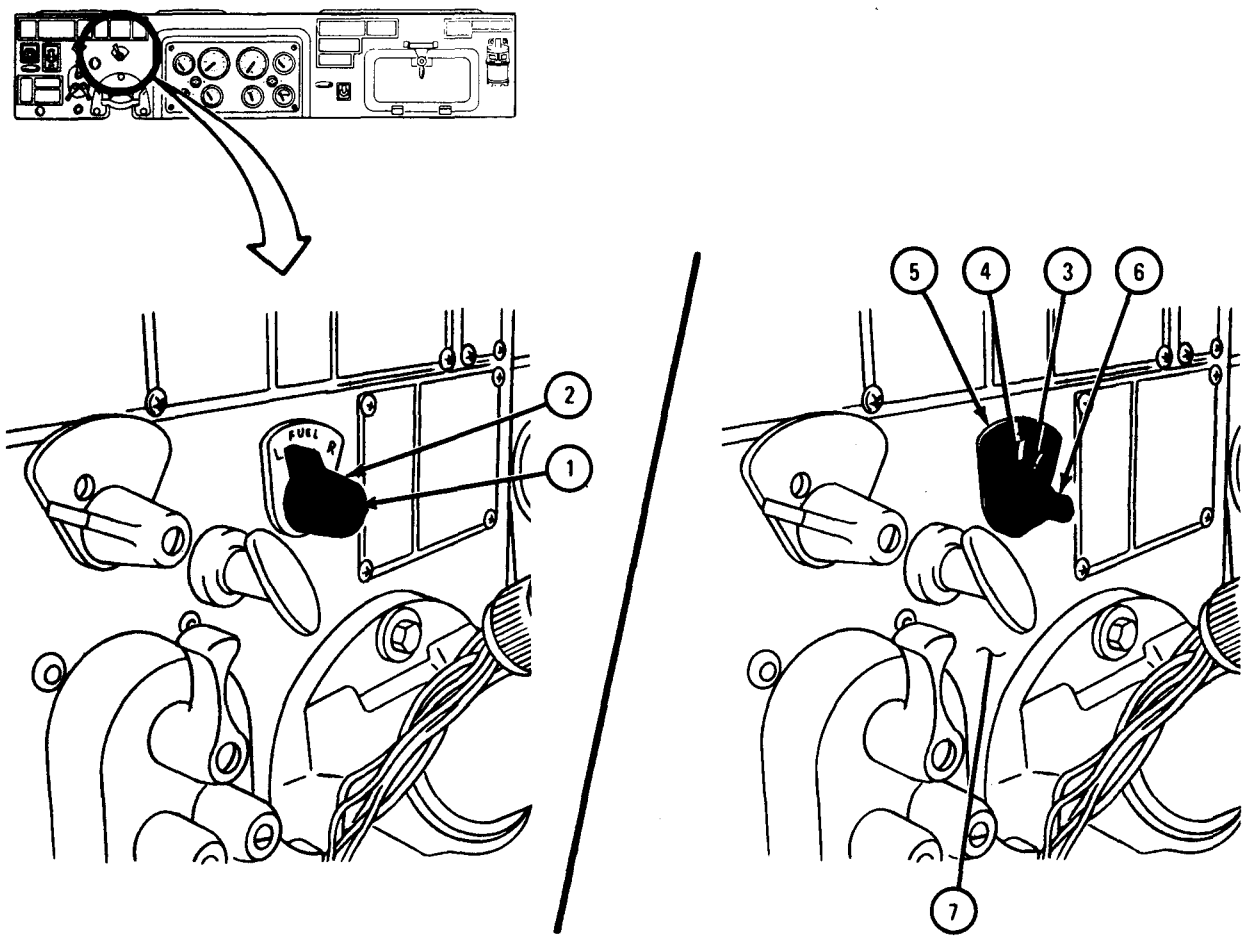


(2) Fuel tank selector switch.

FRAME 1

1. Working inside cab using flat-tip screwdriver, unscrew and take out screw (1). Take off handle (2).
2. Using 5/8-inch wrench, unscrew and take off nut (3). Take off washer (4) and data plate (5).
3. Push switch (6) back through instrument panel (7).

GO TO FRAME 2



TA 102950

FRAME 2

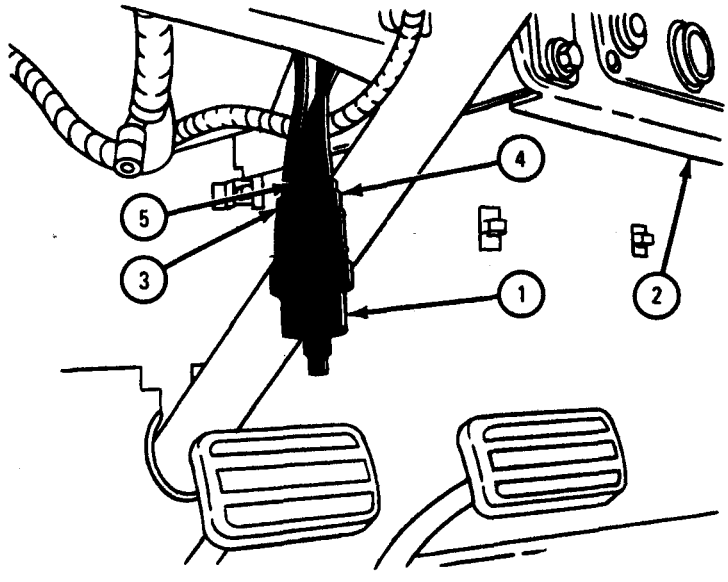
1. Pull switch (1) below instrument panel (2).

NOTE

Tag wires (3, 4 and 5) before taking them off switch (1) so they are put back in same place.

2. Pull off three wires (3, 4 and 5). Take out switch (l).

END OF TASK



TA 102951

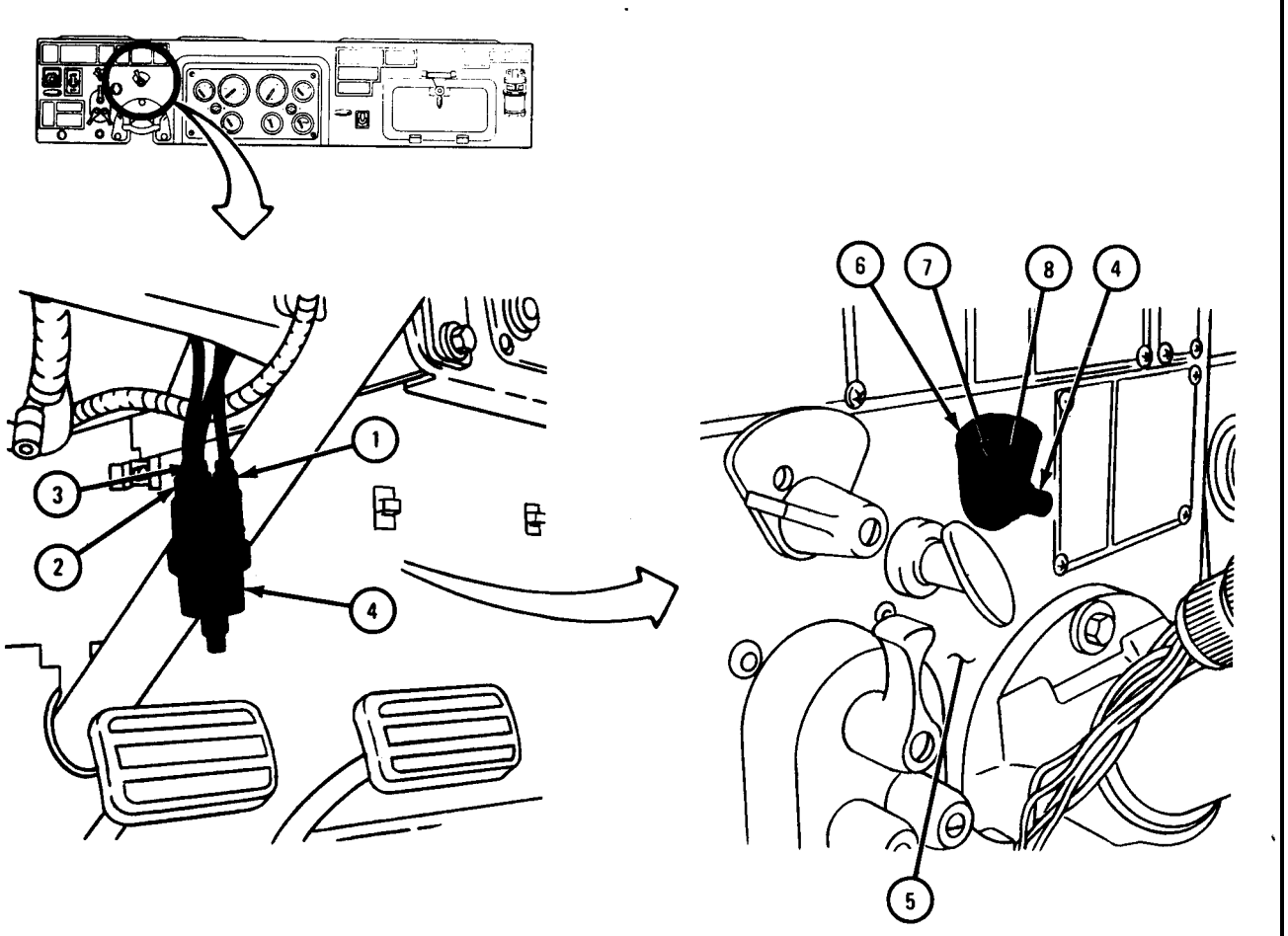
c. Replacement.

(1) Fuel tank selector switch.

FRAME 1

1. Working under instrument panel, put wires (1, 2 and 3) on switch (4) as tagged. Take off tags.
2. Push switch (4) up and in instrument panel (5) through hole and aline dowel in hole.
3. Put on data plate (6). Put on washer (7). Using 5/8-inch wrench, screw on and tighten nut (8).

GO TO FRAME 2



TA 102952

FRAME 2

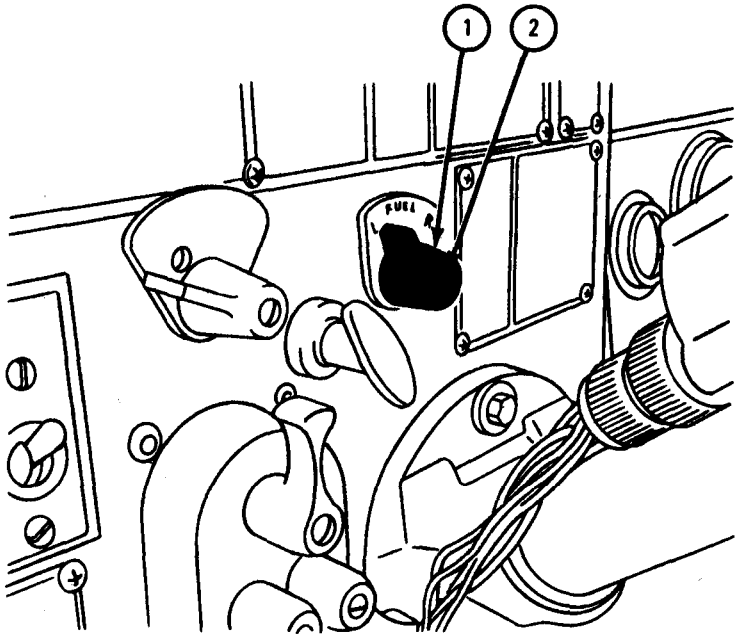
1. Put on handle (1). Using flat-tip screwdriver, screw on and tighten screw (2).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA 102953

(2) Fuel transfer pump switch.

FRAME 1

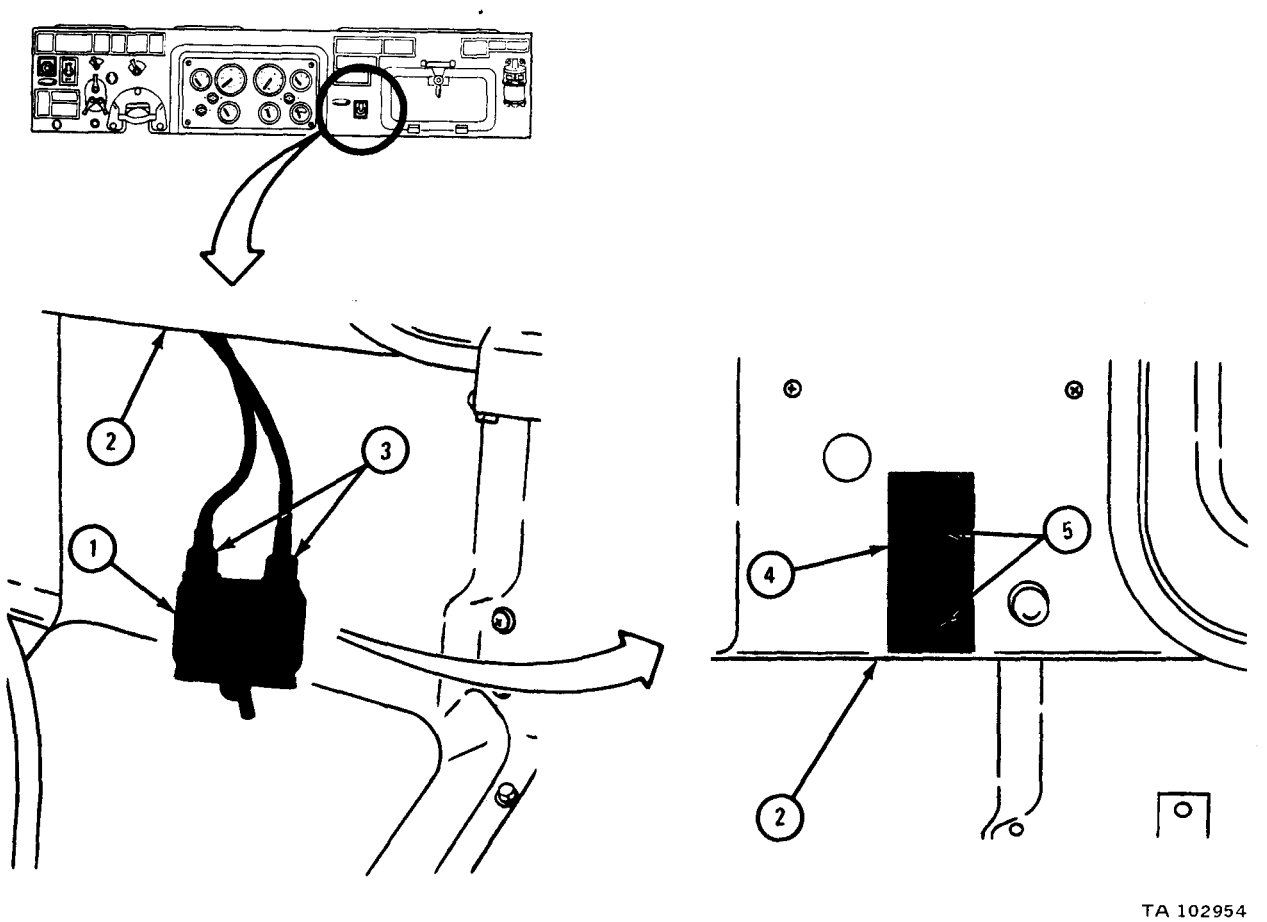
1. Put switch (1) under instrument panel (2). Push on two wires (3) as tagged. Take off tags.
2. Put switch (1) up and through instrument panel (2). Put on plate (4).
3. Using flat-tip screwdriver, screw in two screws (5).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA 102954

7-11. WINDSHIELD WIPER PRESSURE REGULATING VALVE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver, 1/8-inch wide blade
9/16-inch wrench
3/4-inch wrench
5/8-inch wrench
7/16-inch wrench
1/2-inch wrench

SUPPLIES: None

PERSONNEL: One

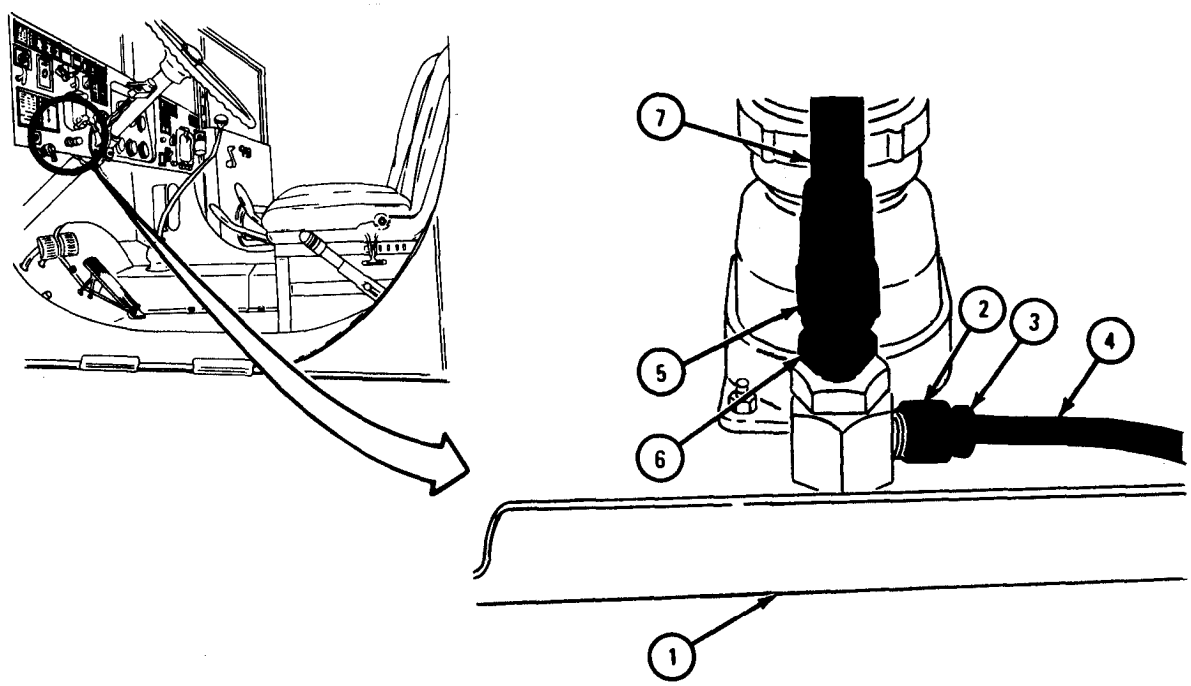
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. From rear of panel (1), using 1/2-inch wrench, hold fitting (2). Using 7/16-inch wrench, unscrew nut (3) and take off tubing (4).
2. Using 9/16-inch wrench, hold fitting (5). Using 5/8-inch wrench, unscrew nut (6) and take off tubing (7).

GO TO FRAME 2

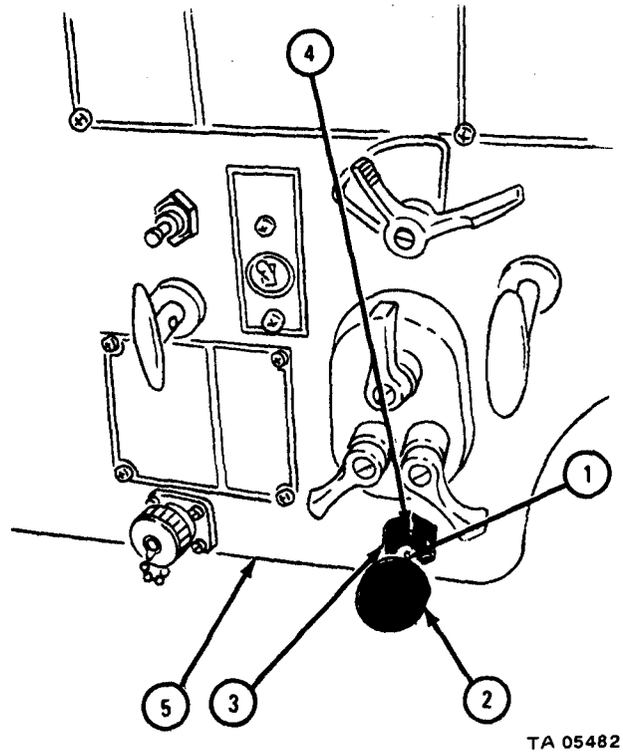


TA 054820

FRAME 2

1. Using screwdriver, loosen two setscrews (1) and pull off control knob (2).
2. Using 3/4-inch wrench, unscrew and take off nut (3).
3. Take out valve (4) from back of panel (5).

END OF TASK

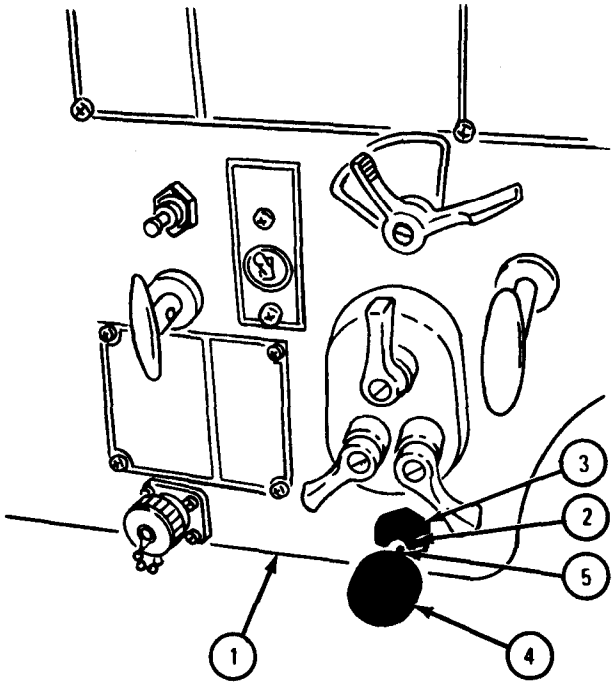


Replacement.

FRAME 1

1. From back of panel (1), push valve (2) through hole in panel.
2. Using 3/4-inch wrench, screw on and tighten nut (3).
3. Push control knob (4) onto valve (2).
4. Using screwdriver, tighten two setscrews (5).

GO TO FRAME 2

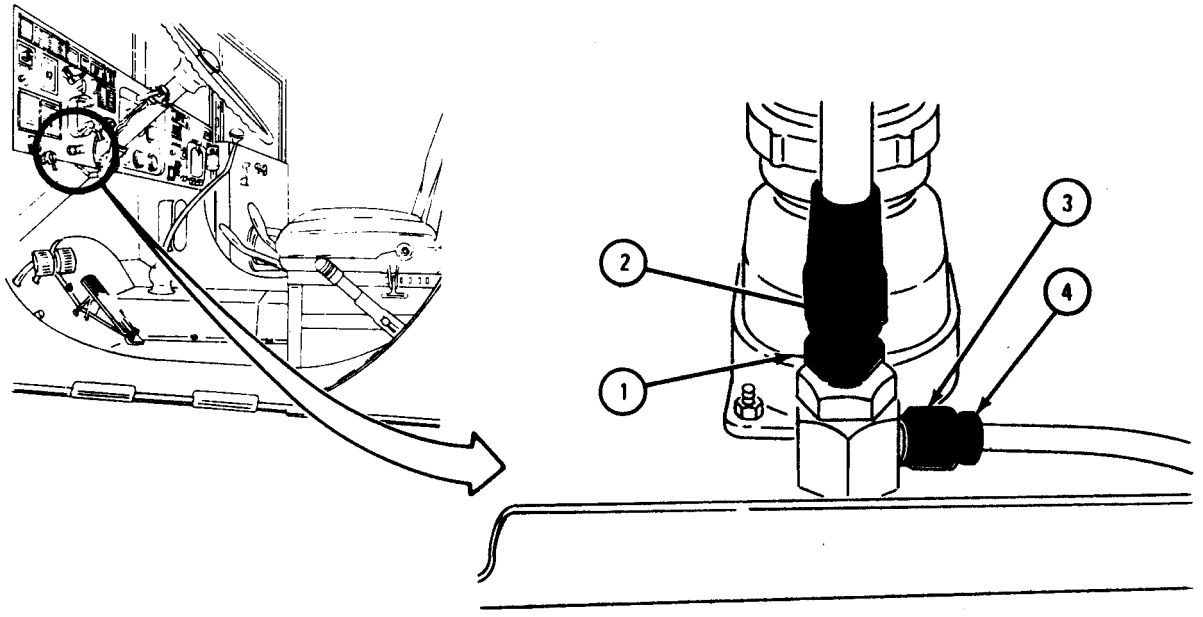


TA 054823

FRAME 2

1. Using 9/16-inch wrench, hold fitting (1). using 5/8-inch wrench, tighten fitting (2).
2. Using 1/2-inch wrench, hold fitting (3). Using 7/16-inch wrench screw on and tighten fitting (4).

END OF TASK



TA 054822

7-12. INSTRUMENT PANEL CIRCUIT BREAKER REMOVAL AND REPLACEMENT.

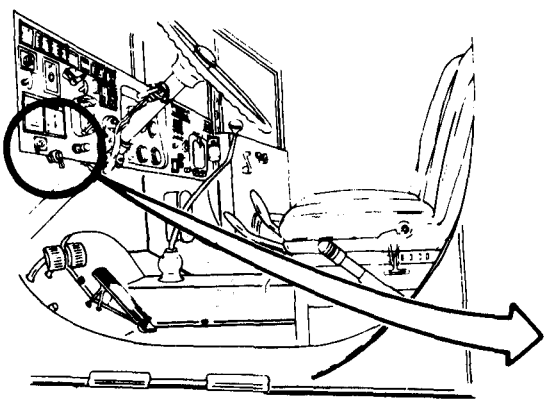
TOOLS: Cross-tip screwdriver (Phillips type)
SUPPLIES: None
PERSONNEL: One
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

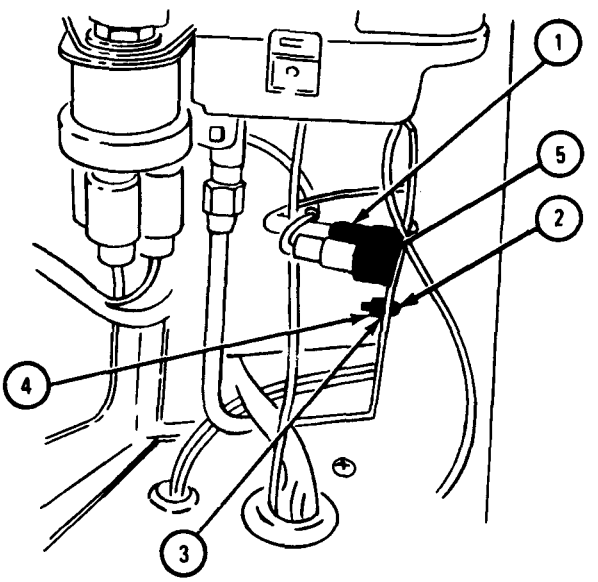
a. Removal.

FRAME 1

1. Pull off two connectors (1).
2. Using screwdriver, unscrew and take out two screws (2) with lockwashers (3) and nuts (4).
3. Take out circuit breaker (5).

END OF TASK





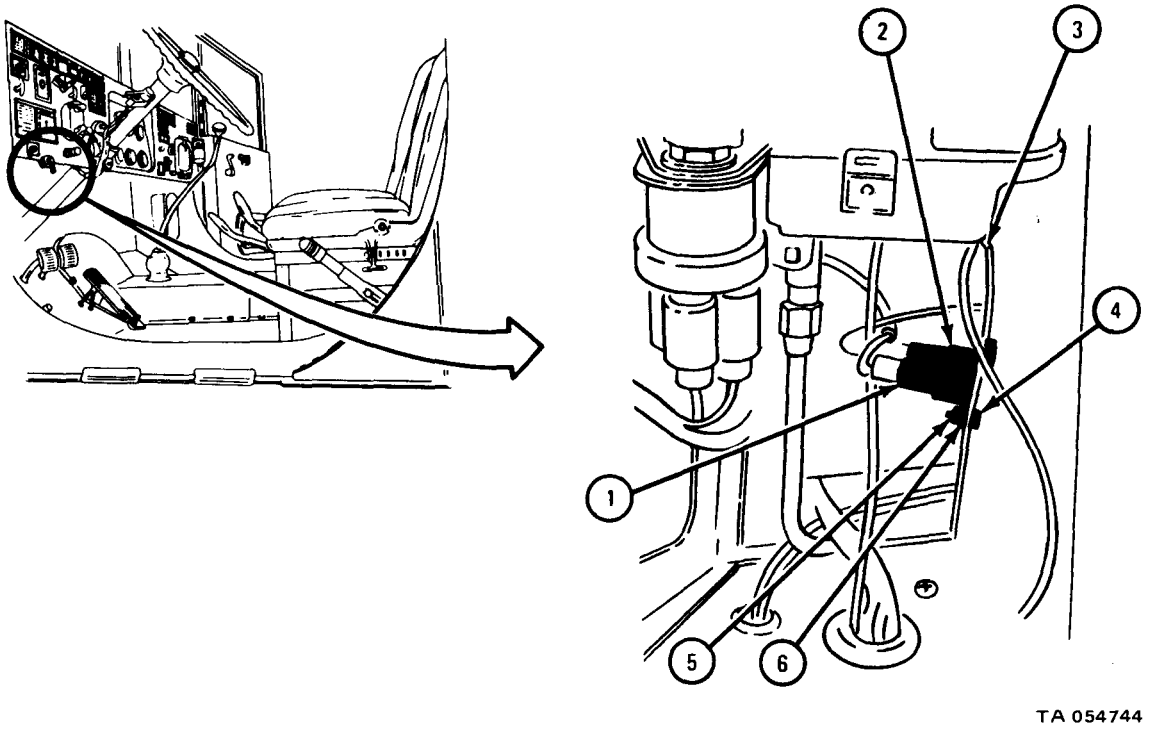
TA 054743

b. Replacement.

FRAME 1

1. Push in two connectors (l).
2. Line up holes in circuit breaker (2) with holes in bracket (3).
3. Push two screws (4) through holes in circuit breaker (2).
4. Using screwdriver, screw on and tighten nuts (5) with lockwashers (6).

END OF TASK



7-13. INSTRUMENT CLUSTER LAMP ASSEMBLIES REMOVAL, REPLACEMENT, AND FUNCTIONAL TEST.

NOTE

This task is the same for each of the three lamp assemblies.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

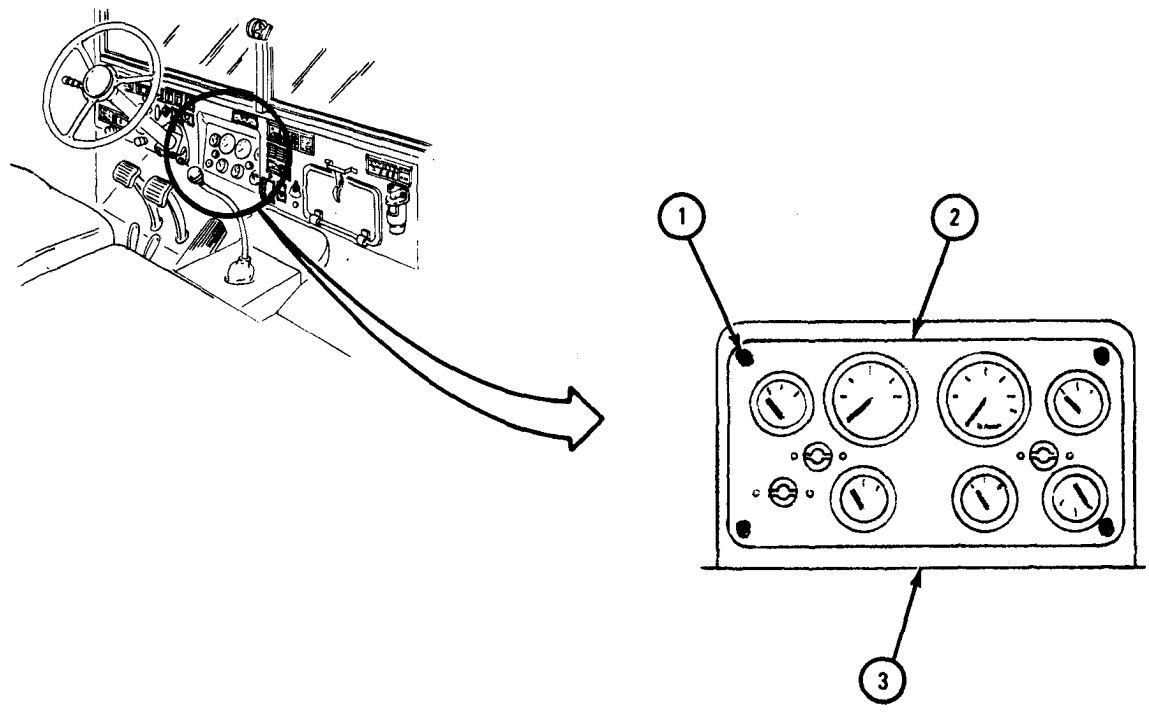
a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Using screwdriver, turn four mounting screws (1) 1/4 turn to the left.
2. Pull instrument cluster (2) away from panel (3).

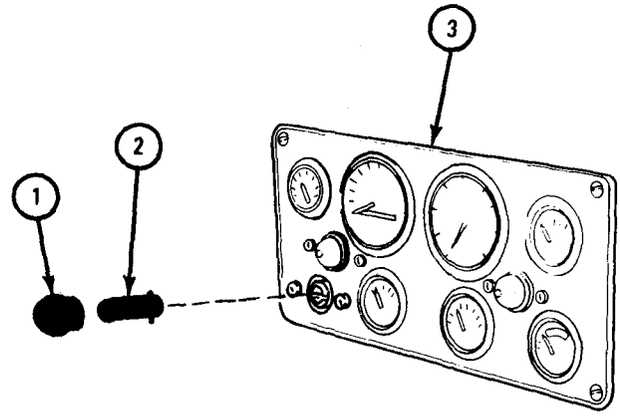
GO TO FRAME 2



FRAME 2

1. Turn lens (1) to left and take it off.
2. Press in and turn lamp (2) to left and take out lamp from front of instrument cluster (3).

GO TO FRAME 3

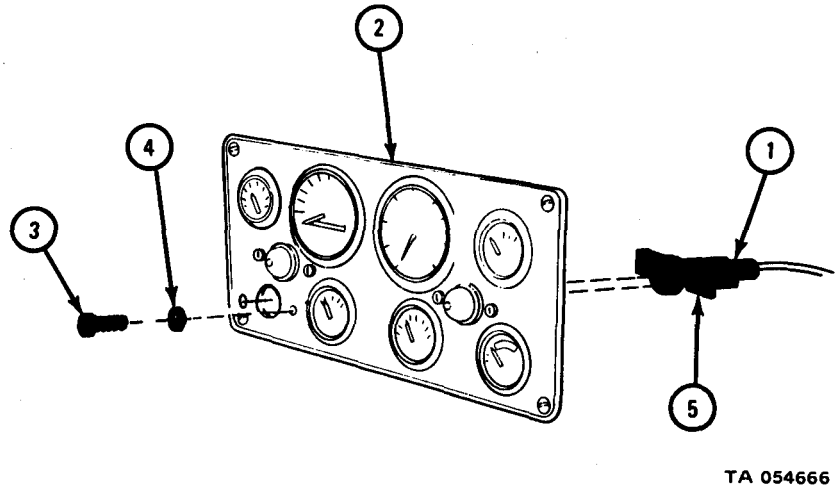


TA 054667

FRAME 3

1. **Twist and pull off connector (1) from back of instrument cluster (2).**
2. **Using screwdriver, unscrew and take out two screws (3) with lockwashers (4) from front of instrument cluster (2).**
3. **Pull out light assembly (5) from back of instrument cluster (2).**

END OF TASK



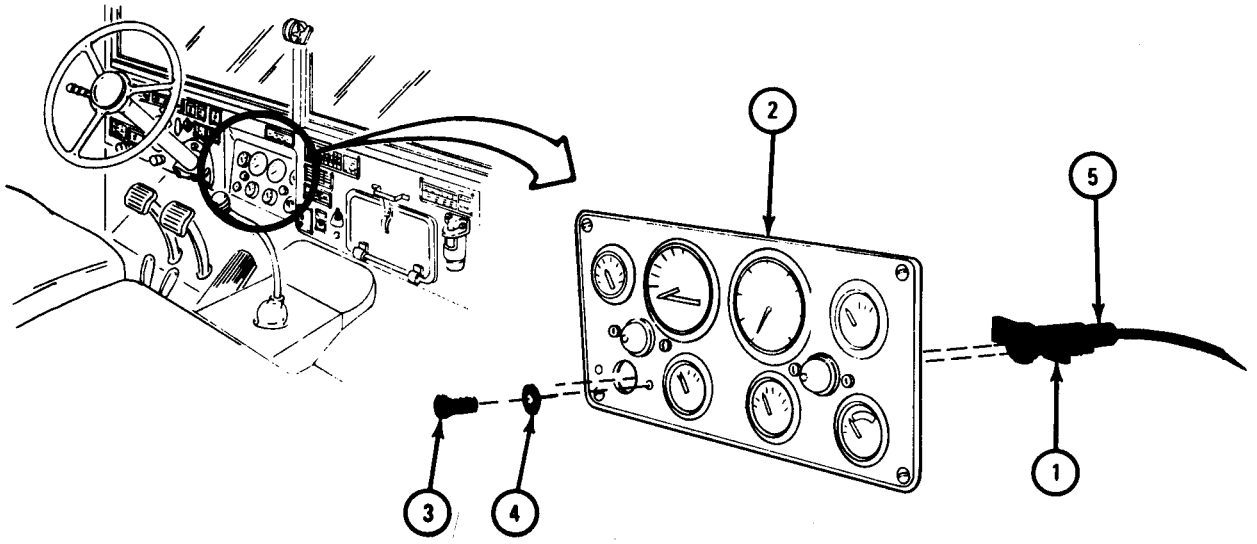
TA 054666

c. Replacement.

FRAME 1

1. Line up mounting holes in light assembly (1) with holes in instrument cluster (2).
2. Using screwdriver, screw in and tighten two screws (3) wi th lockwashers (4) from front of instrument cluster (2).
3. Push on and twist connector (5) on light assembly (1).

GO TO FRAME 2

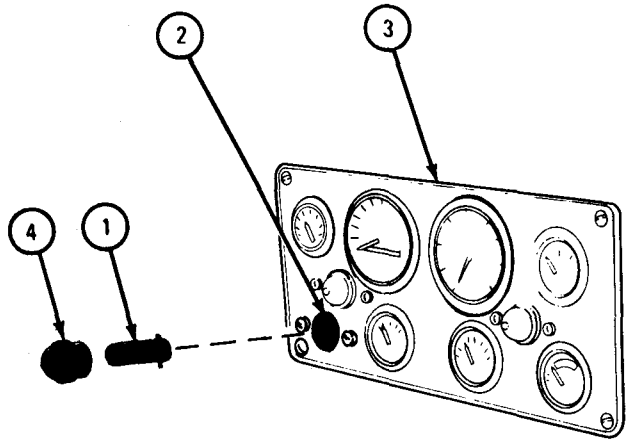


TA 054669

FRAME 2

1. Put lamp (1) in socket (2) from front of instrument cluster (3). Press in and turn lamp to right.
2. Screw lens (4) into front panel of instrument cluster (3). Turn lens to right to tighten.

GO TO FRAME 3



TA 054668

FRAME 3

1. Line up four mounting screws (1) with holes in instrument panel (2).
2. Using screwdriver, turn four mounting screws (1) 1/4 turn to right.

NOTE

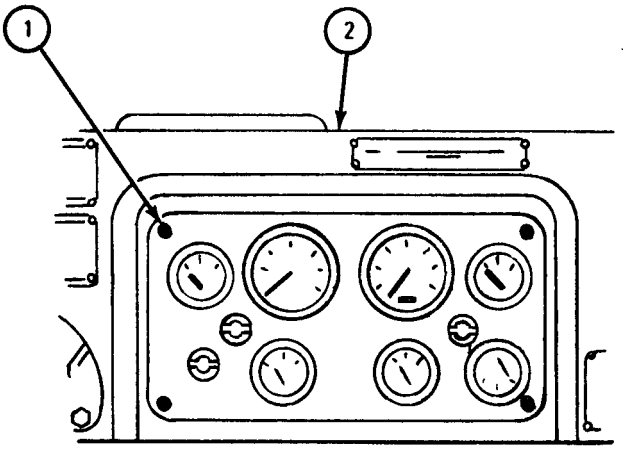
Follow-on Maintenance Required:

Reconnect battery ground cable. Refer to para 7-44.

NOTE

Functional test must follow battery ground reconnection.

END OF TASK



TA 054670

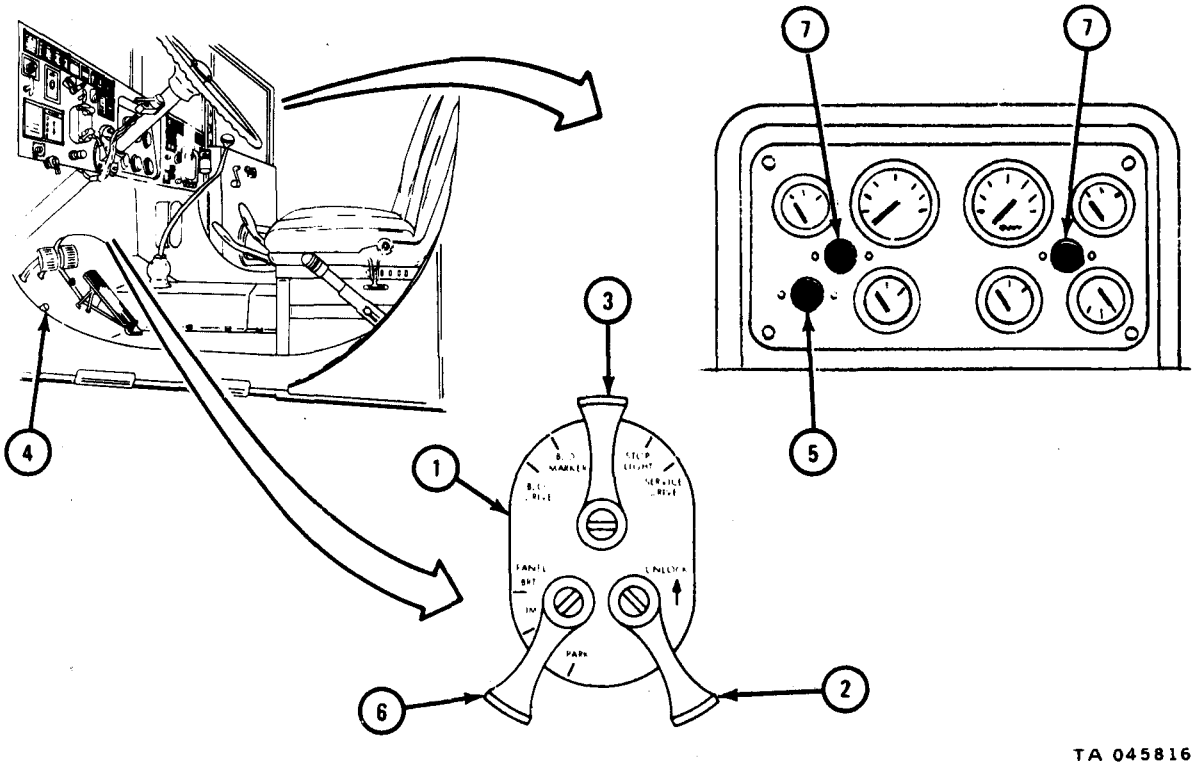
d. Functional Test.

FRAME 1

1. High beam indicator functional test.
   a. On light switch (1), push UNLOCK SWITCH lever (2) up to UNLOCK position and hold it.
   b. Turn LIGHT SWITCH lever (3) to SERVICE DRIVE position.
   c. Let UNLOCK SWITCH lever (2) drop to LOCK position.
   d. Press dimmer switch (4) to turn on high beam headlights. High beam indicator (5) must be lit.
   e. Press dimmer switch (4) again to turn on low beam headlights.
   f. Turn LIGHT SWITCH lever (3) to OFF position.

2. Panel light functional test.
   a. Do steps 1 (a through c) again.
   b. Turn LIGHT SWITCH lever (6) to PANEL BRT. position. Panel lights (7) should be lit.
   c. Turn LIGHT SWITCH lever (6) to OFF position.
   d. Turn LIGHT SWITCH lever (3) to OFF position.

END OF TASK



7-14. INSTRUMENTS AND GAGES REMOVAL, REPLACEMENT, AND FUNCTIONAL TEST.

NOTE

This task is the same for all instruments and gages on instrument cluster.

TOOLS: 3/8-inch wrench

SUPPLIES: None

PERSONNEL: One

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

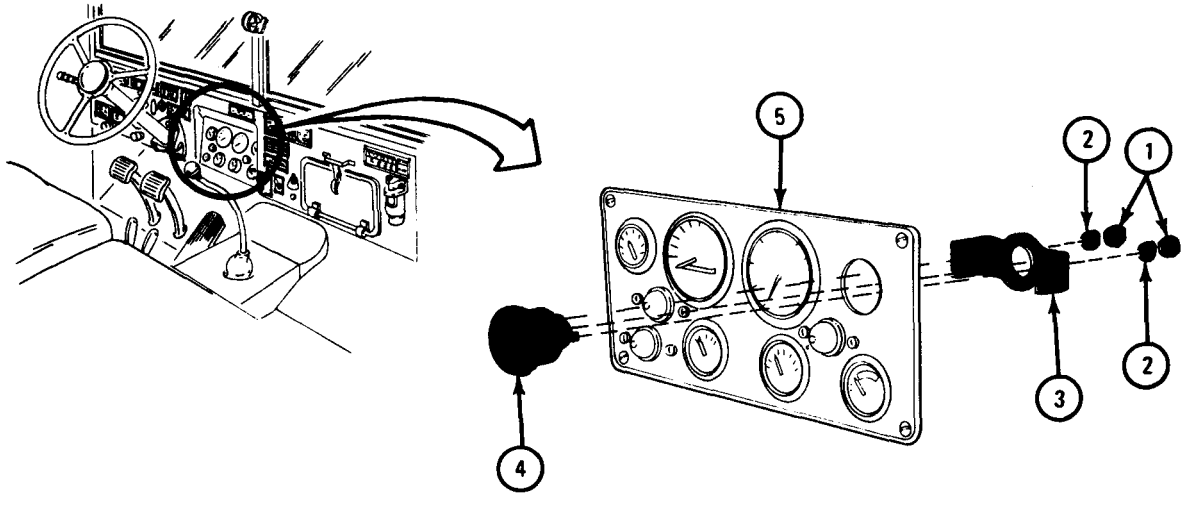
a. Preliminary Procedure. Remove instrument cluster. Refer to para 7-15.

b. Removal.

FRAME 1

1. Using wrench, unscrew and take off two nuts (1) with lockwashers (2).
2. Pull out mounting bracket (3).
3. Pull out gage (4) from front of instrument cluster (5).

END OF TASK



TA 054671

c. Replacement.

FRAME 1

1. Push gage (1) through opening in front of instrument cluster (2).

NOTE

Make sure gage (1) is straight before putting on mounting bracket (3).

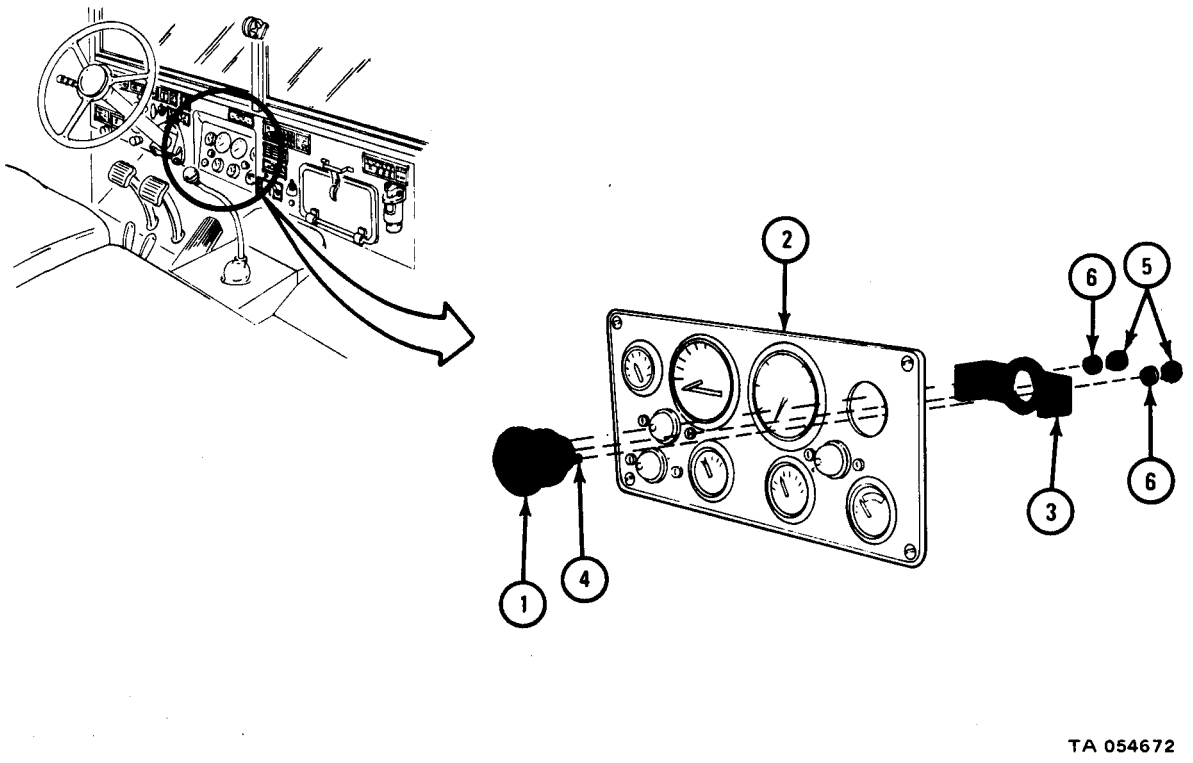
2. Aline holes in mounting bracket (3) with gage studs (4).
3. Using wrench, screw on and tighten two nuts (5) with lockwashers (6).

NOTE

Follow-on Maintenance Action Required:

Replace instrument cluster. Refer to para 7-15.

END OF TASK



TA 054672

d. Functional Test.

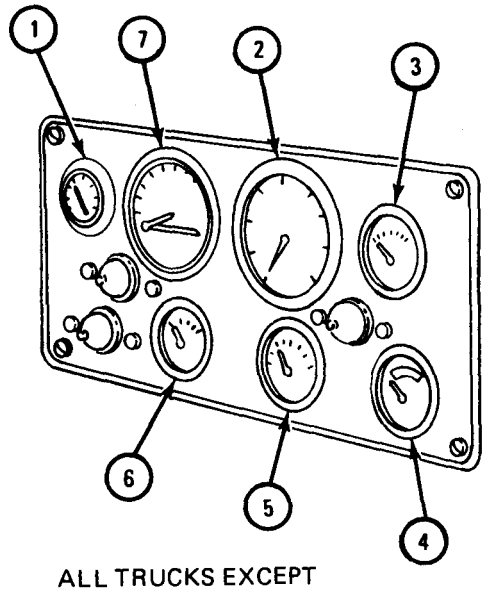
FRAME 1

1. Start up engine and run at idle speed to let it warm up. Refer to TM 9-2320-211-10.
2. Check that engine instrument(s) replaced has steady normal readings as follows:

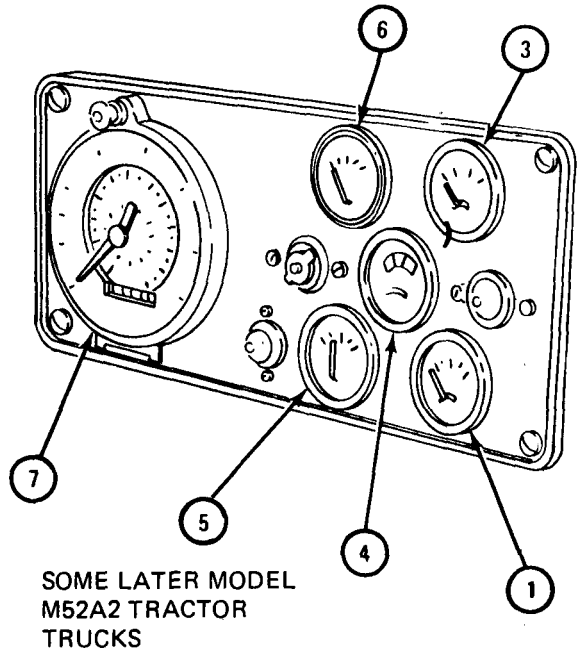
   FUEL gage (1) - above E
   Tachometer (2) - 600 to 700 rpm
   Temperature gage (3) - 160 to 180°F
   Battery-Generator (4) - in green area
   AIR pressure gage (5) - 95 to 105 psi
   OIL pressure gage (6) - 15 to 50 psi

3. Take truck on road test and have another truck moving at a set speed. Check that your speedometer or tachograph (7) reads same as other truck.
4. At end of road test, stop truck and stop engine. Refer to TM 9-2320-211-10,

END OF TASK



ALL TRUCKS EXCEPT SOME LATER MODEL M52A2 TRACTOR TRUCKS



SOME LATER MODEL M52A2 TRACTOR TRUCKS

TA 045786

7-15. INSTRUMENT CLUSTER (WITH SPEEDOMETER AND TACHOMETER) REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
3/4-inch open end wrench
9/16-inch open end wrench
3/8-inch wrench

SUPPLIES: Tags

PERSONNEL: One

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

a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

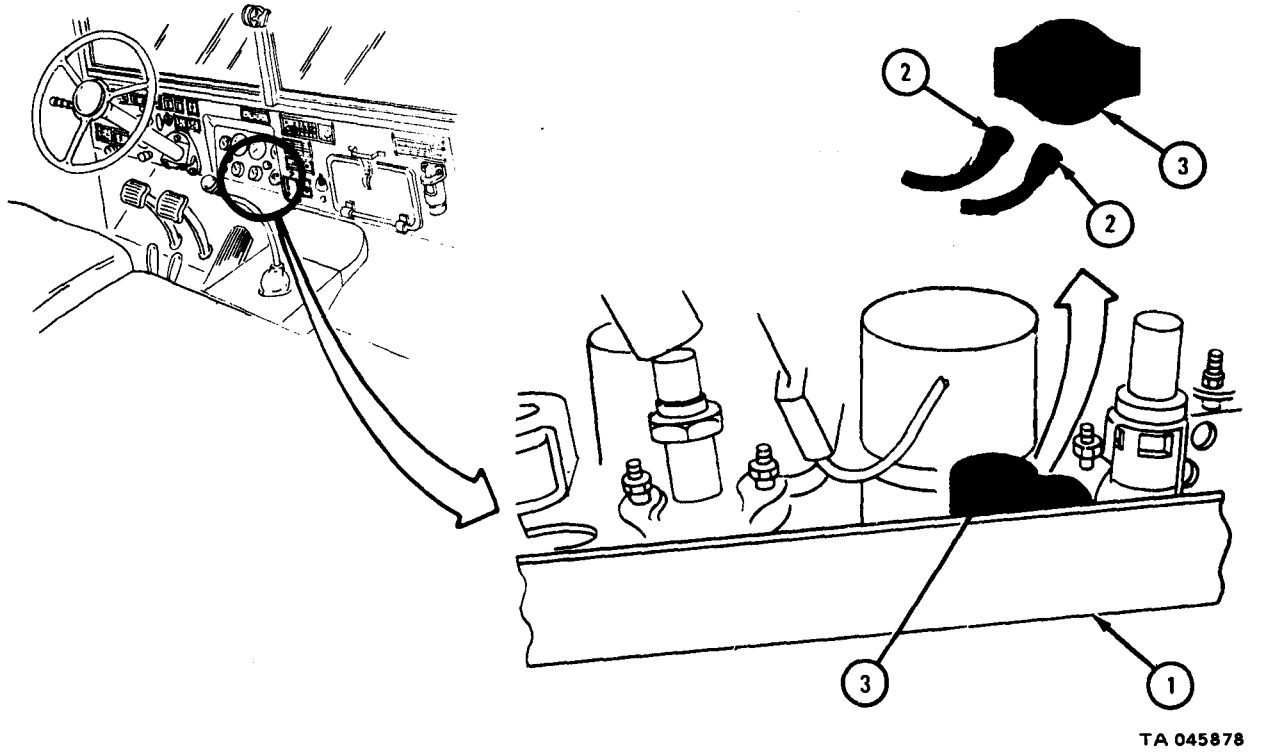
NOTE

Tag all connectors so they can be put back in the right places.

FRAME 1

1. Working from behind instrument panel (1) and using hands, unplug and take out two electrical leads (2) from oil pressure gage (3).

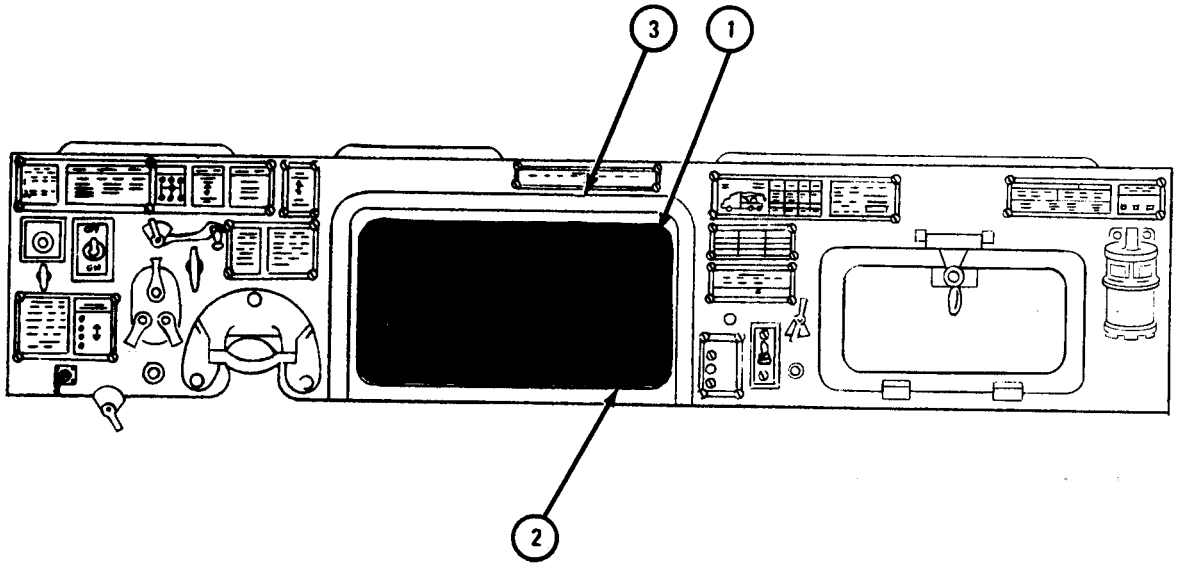
GO TO FRAME 2



FRAME 2

1. Using screwdriver, turn four mounting screws (1) 1/4 turn to left. Drop instrument cluster (2) down from panel (3) about 2 inches.

GO TO FRAME 3



TA 045879

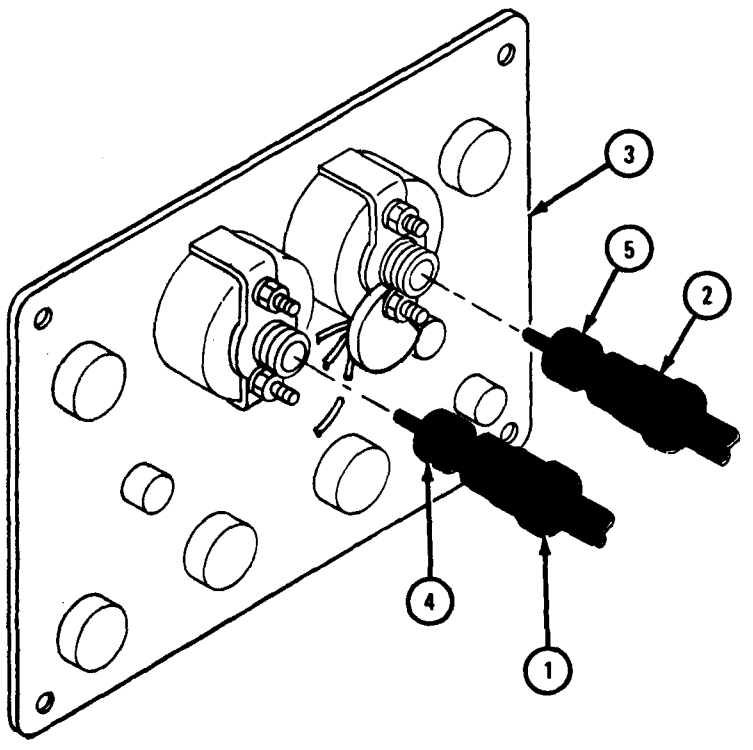
FRAME 3

NOTE

Tag drive shaft assemblies (1 and 2) so they can be put back in the right place.

1. Working from behind instrument cluster (3) and using 3/4-inch wrench, unscrew coupling nut (4) and take off tachometer drive shaft (1).
2. Using 3/4-inch wrench, unscrew coupling nut (5) and take off speedometer drive shaft (2). Pull down instrument cluster (3).

GO TO FRAME 4

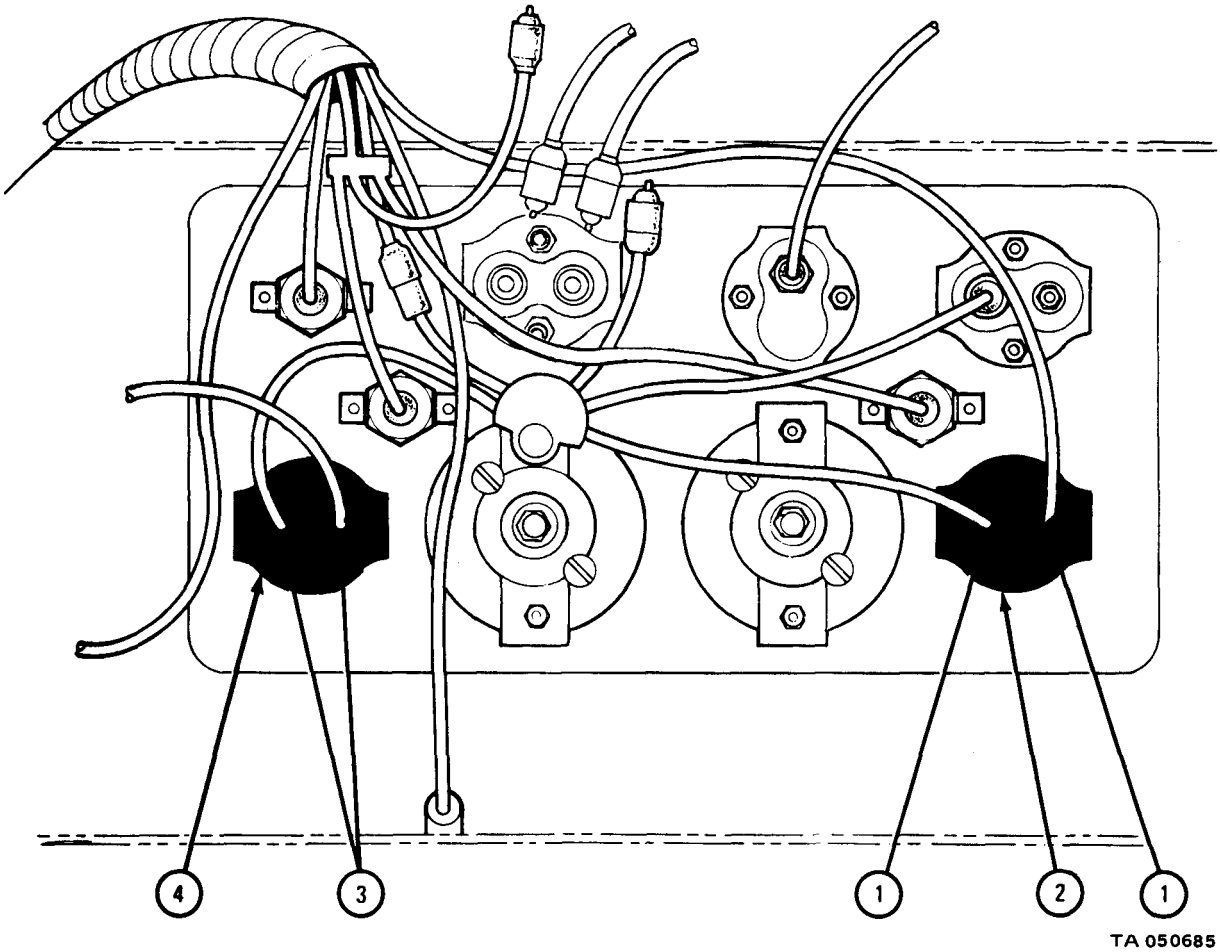


TA 049488

FRAME 4

1. Pull off two connectors (1) from temperature gage (2).
2. Pull off two connectors (3) from fuel gage (4).

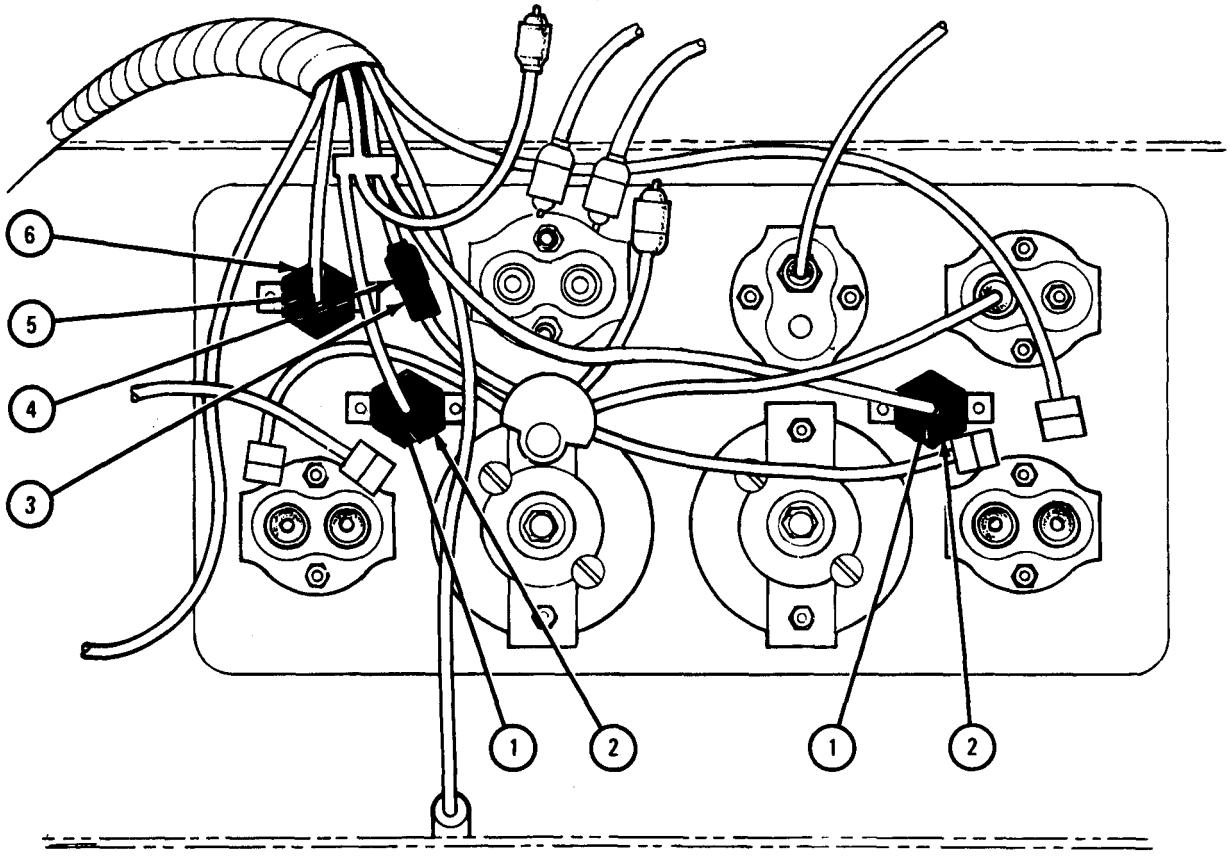
GO TO FRAME 5



FRAME 5

1. Pull off two connectors (1) from two panel lights (2).
2. Pull out instrument cluster connector (3) from circuit breaker connector (4).
3, Pull off connector (5) from high beam indicator (6).

GO TO FRAME 6

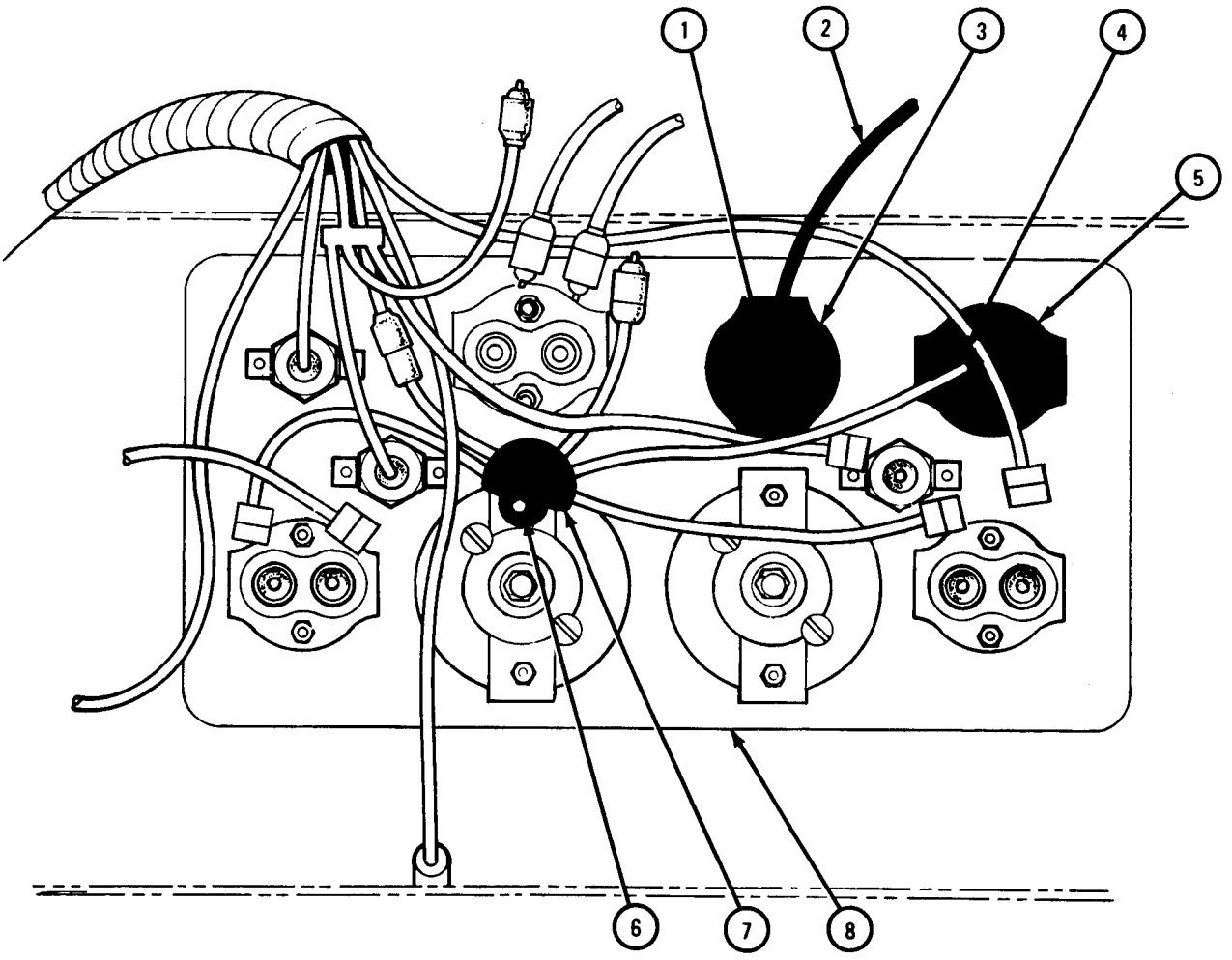


TA 050691

FRAME 6

1. Using 9/16-inch wrench, unscrew nut (1) and take off hose (2) from air pressure indicator (3).
2. Pull off connector (4) from battery-generator indicator (5).
3. Using 3/8-inch wrench, unscrew and take off nut, lockwasher and flat-washer (6). Take off harness assembly (7).
4. Set aside instrument cluster (8).

END OF TASK



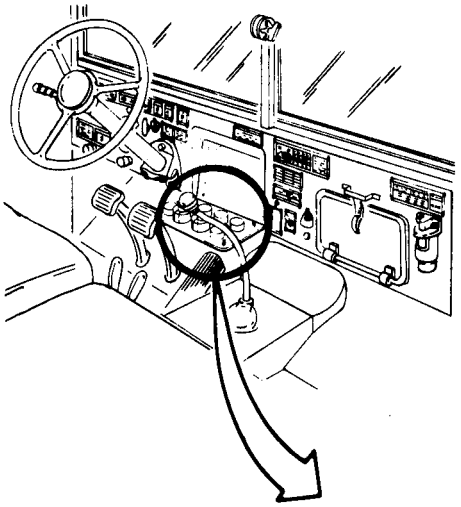
TA 050692

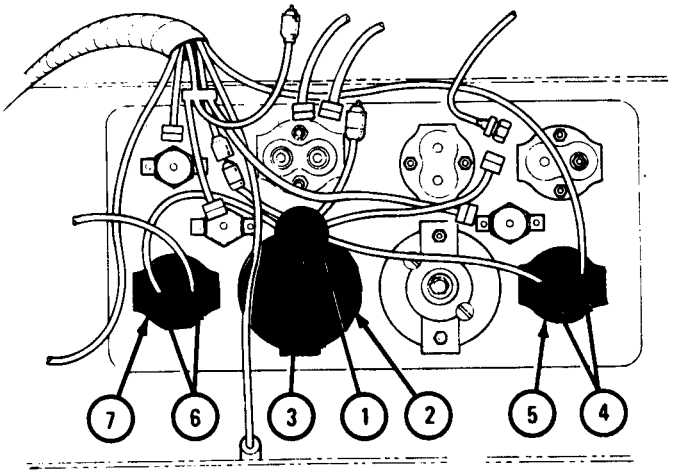
Replacement.

FRAME 1

1. Put harness assembly (1) on stud on speedometer (2). Using 3/8-inch wrench, screw on and tighten nut, flat washer, and lockwasher (3).
2. Push two connectors (4) on temperature gage (5) as tagged. Take off tags.
3. Push two connectors (6) on fuel gage (7) as tagged. Take off tags.

GO TO FRAME 2



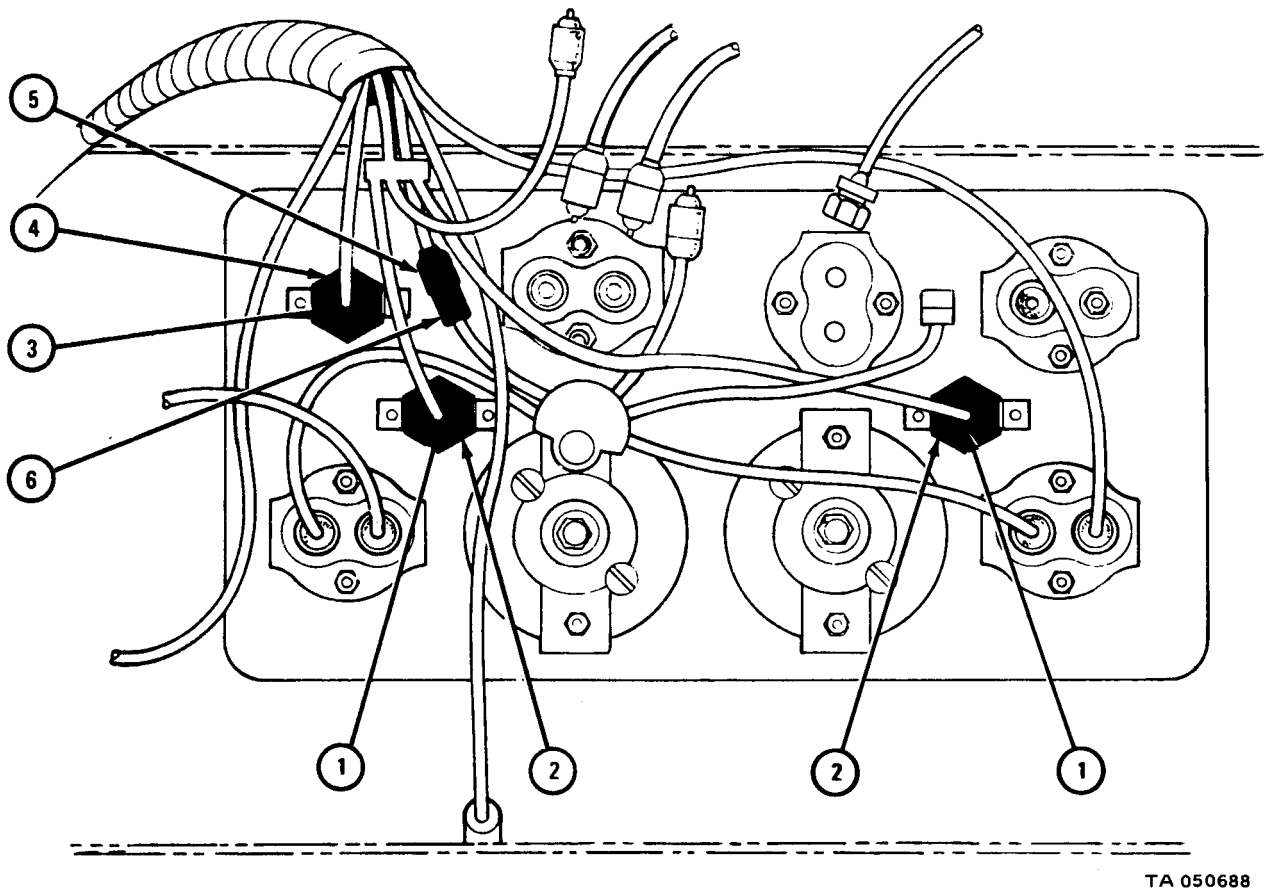


TA 045880

FRAME 2

1. Push two connectors (1) on two panel lights (2) as tagged. Take off tags.
2. Push connector (3) on high beam indicator (4) as tagged. Take off tag.
3. Join circuit breaker connector (5) to instrument cluster connector (6) as tagged. Push connector (6) into connector (5). Take off tag.

GO TO FRAME 3

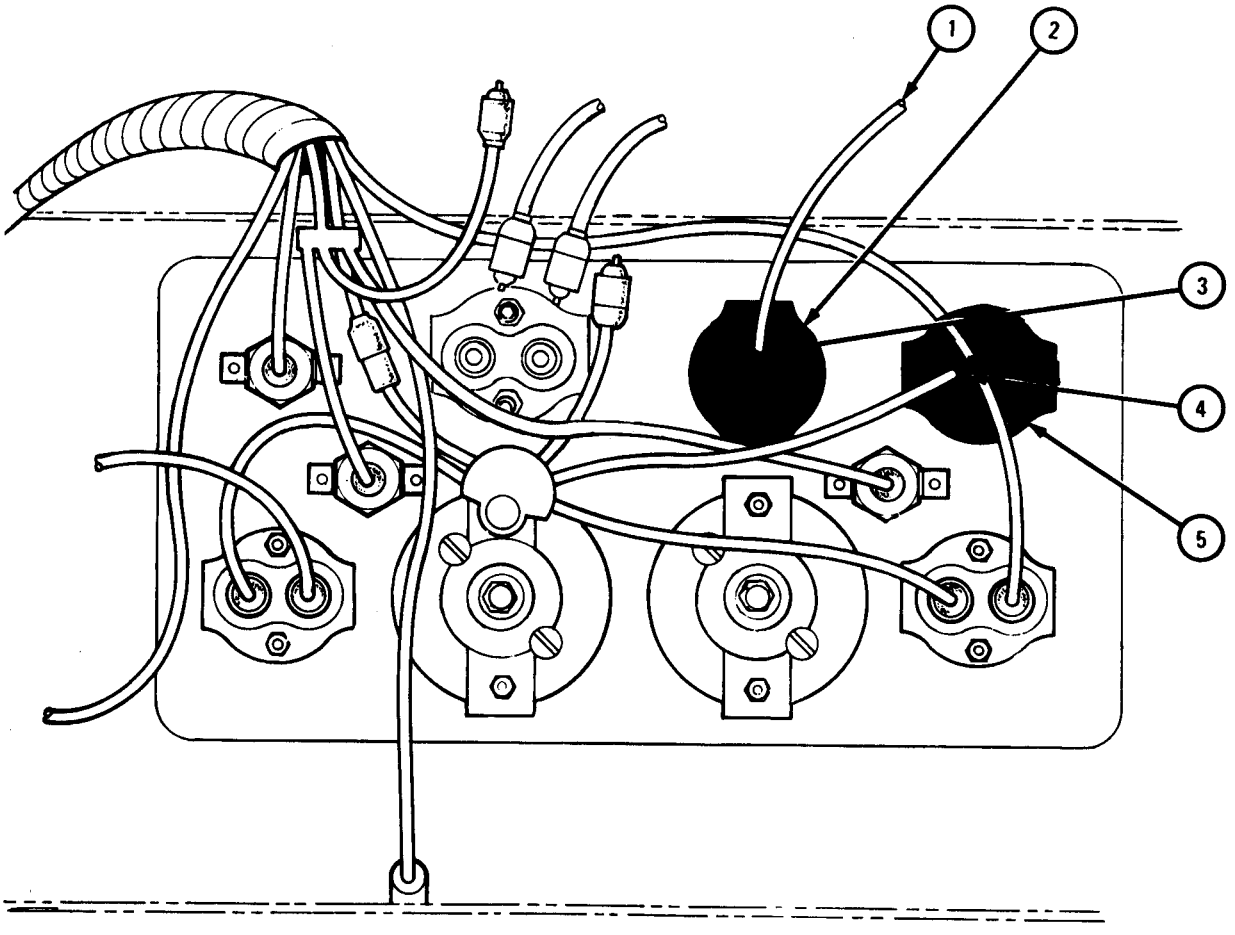


TA 050688

FRAME 3

1. Join hose (1) to air pressure gage (2) as tagged. Using 9/16-inch wrench, screw on and tighten nut (3). Take off tag.
2. Push connector (4) on battery-generator indicator (5) as tagged. Take off tag.

GO TO FRAME 4

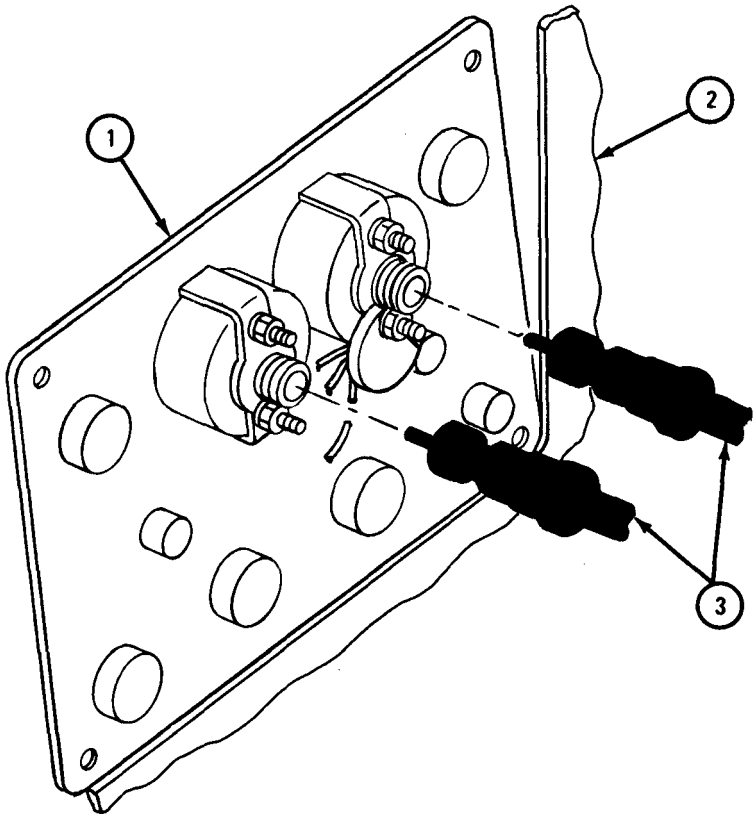


TA 050689

FRAME 4

1. Push instrument cluster (1) up close to instrument panel (2) so two drive shaft assemblies (3) can be put on.
2. Working in between instrument cluster (1) and instrument panel (2) and using 3/4-inch wrench, screw on and tighten two drive shaft assemblies (3) as tagged. Take off tags.

GO TO FRAME 5

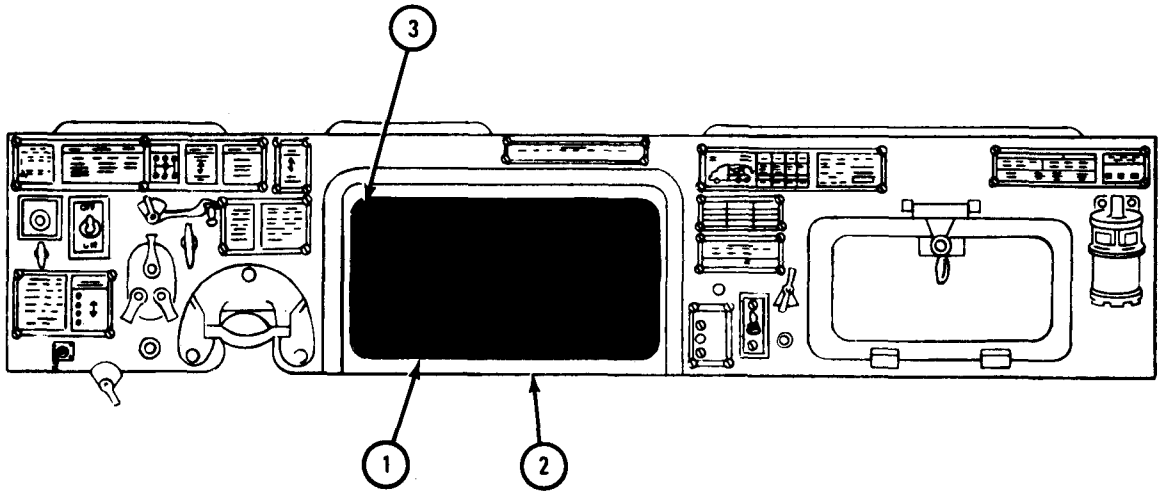


TA 050218

FRAME 5

1. Push instrument cluster (1) all the way up to instrument panel (2).
2. Using screwdriver, turn four mounting screws (3) 1/4 turn to right. Check that instrument cluster (1) is held in panel (2).

GO TO FRAME 6

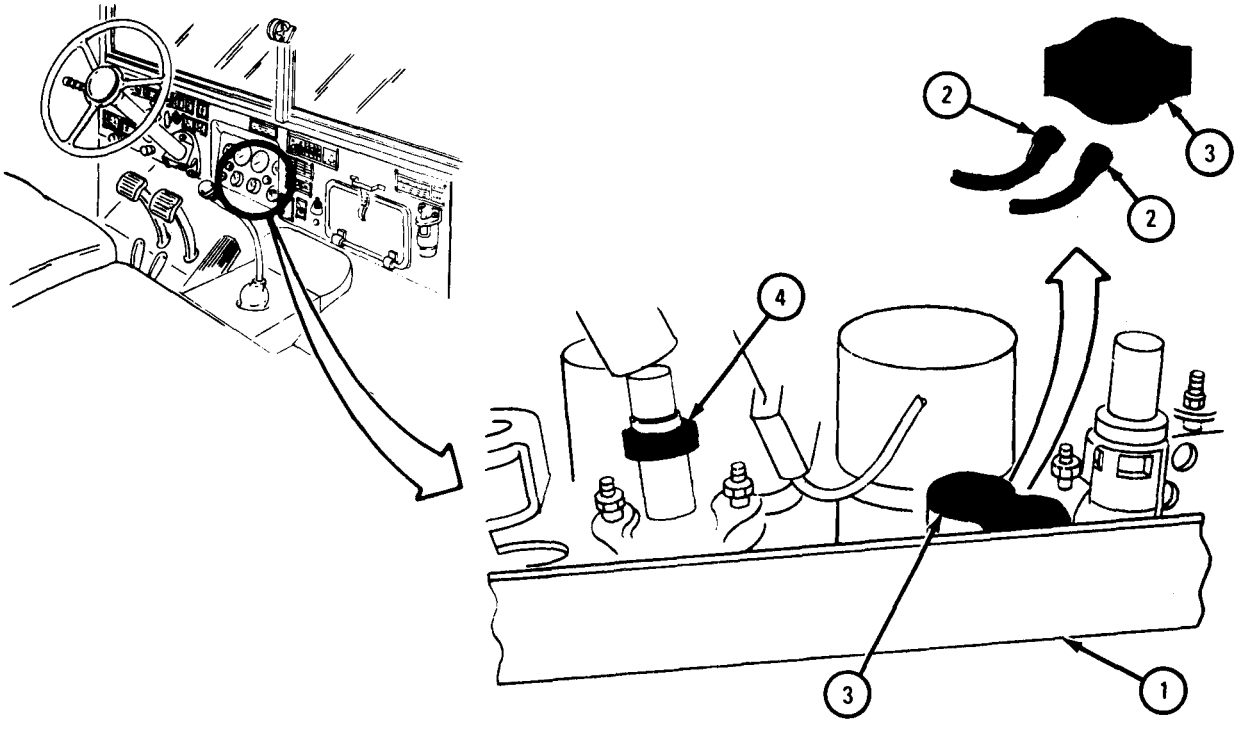


TA 045881

FRAME 6

1. Working from behind instrument panel (1) and using hands, plug in two electrical plugs (2) into oil pressure gage (3).
2. Reconnect battery ground cable. Refer to para 7-44.
3. Start engine. Refer to TM 9-2320-211-10.
4. Check hose nut (4) for air leaks. Tighten nut if needed.
5. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 045882

7-16. INSTRUMENT CLUSTER (WITH TACHOGRAPH) REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
9/16-inch open end wrench
7/16-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. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

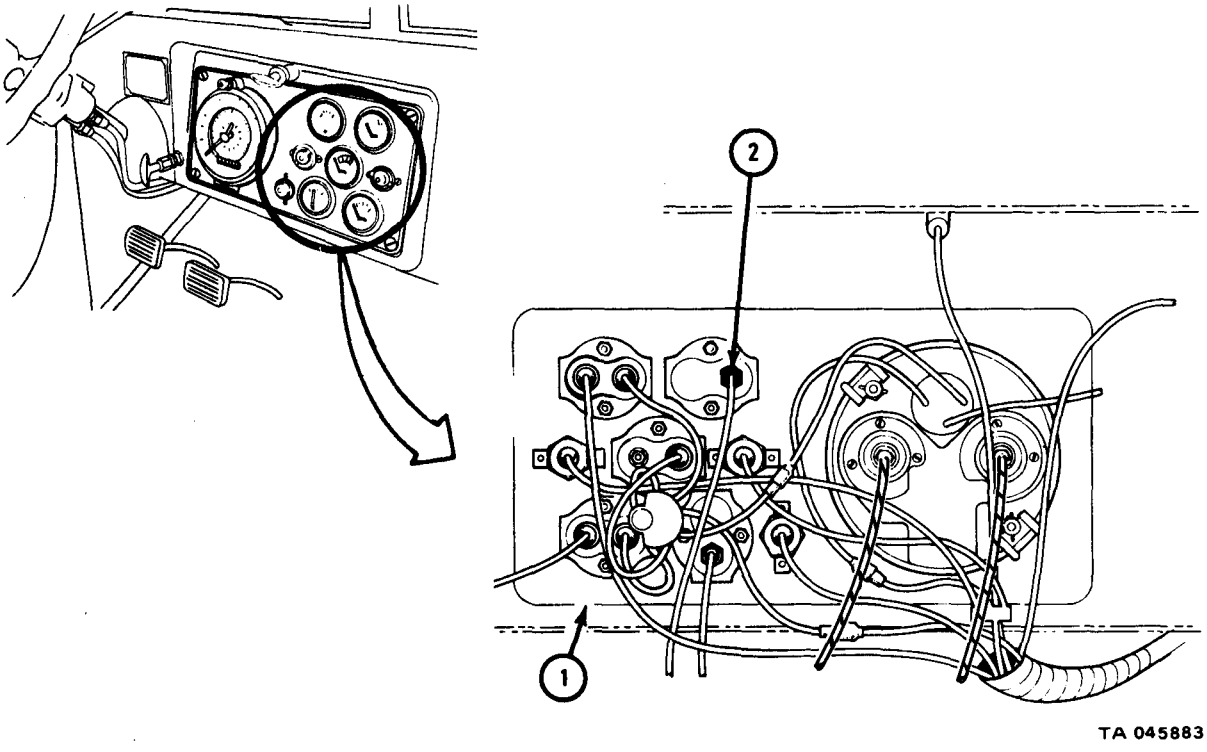
FRAME 1

NOTE

Tag all connectors so they can be put back in the right place.

1. Working from behind instrument cluster (1) and using 9/16-inch wrench, unscrew and take off tube nut (2).

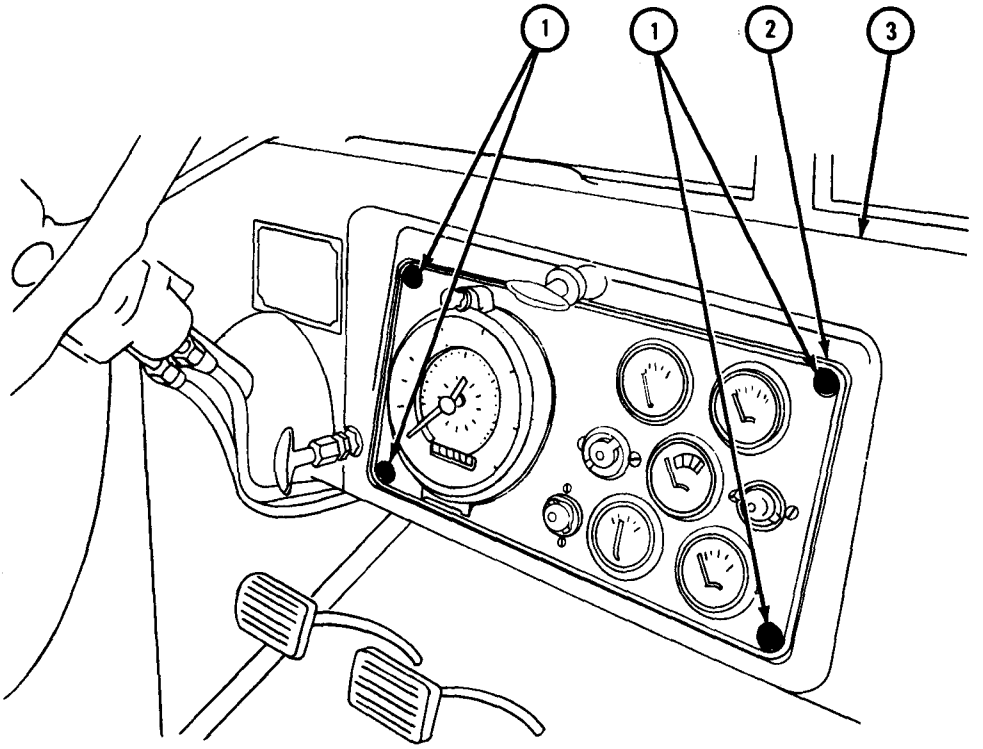
GO TO FRAME 2



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 045884

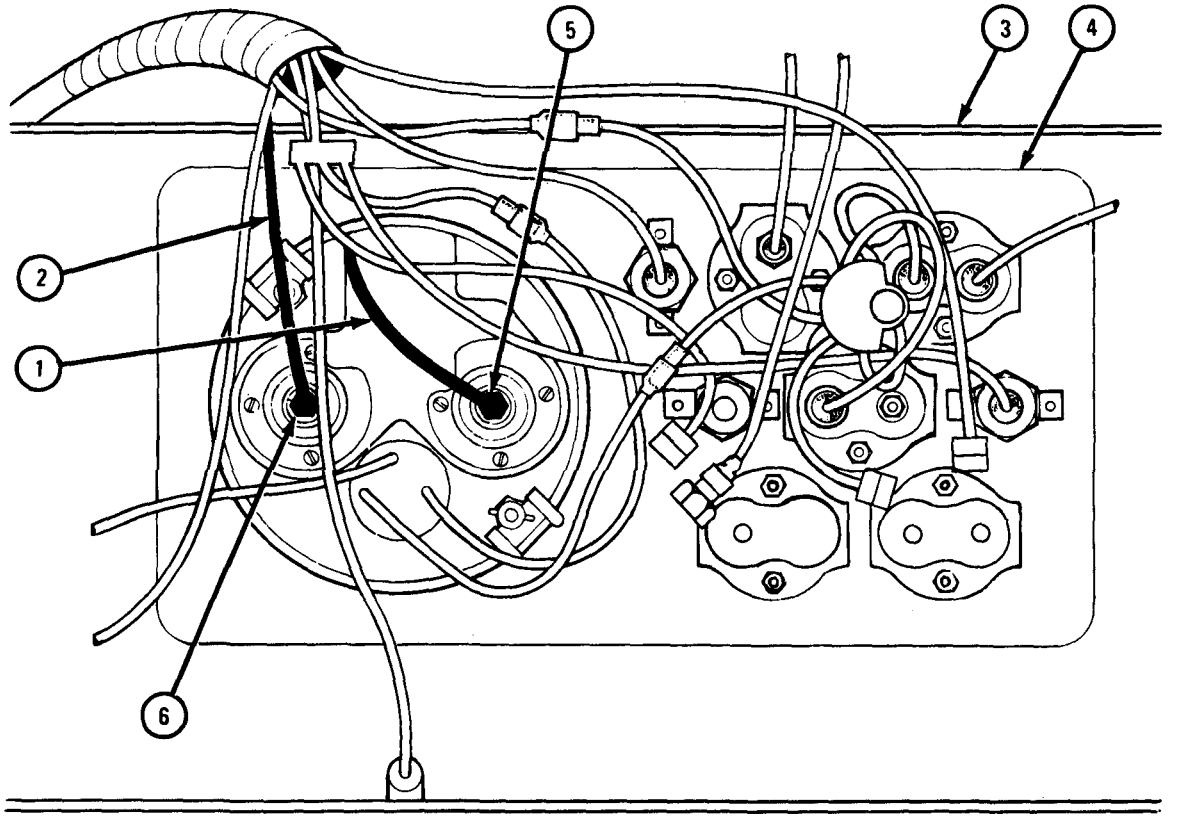
FRAME 3

NOTE

Tag two drive shaft assemblies (1 and 2) so they can be put back in the right place.

1. Working between instrument panel (3) and instrument cluster (4) and using 3/4-inch wrench, unscrew nut (5) and take off tachograph drive shaft (1).
2. Using 3/4-inch wrench, unscrew nut (6) and take off speedometer drive shaft (2). Pull instrument cluster (4) away from instrument panel (3).

GO TO FRAME 4

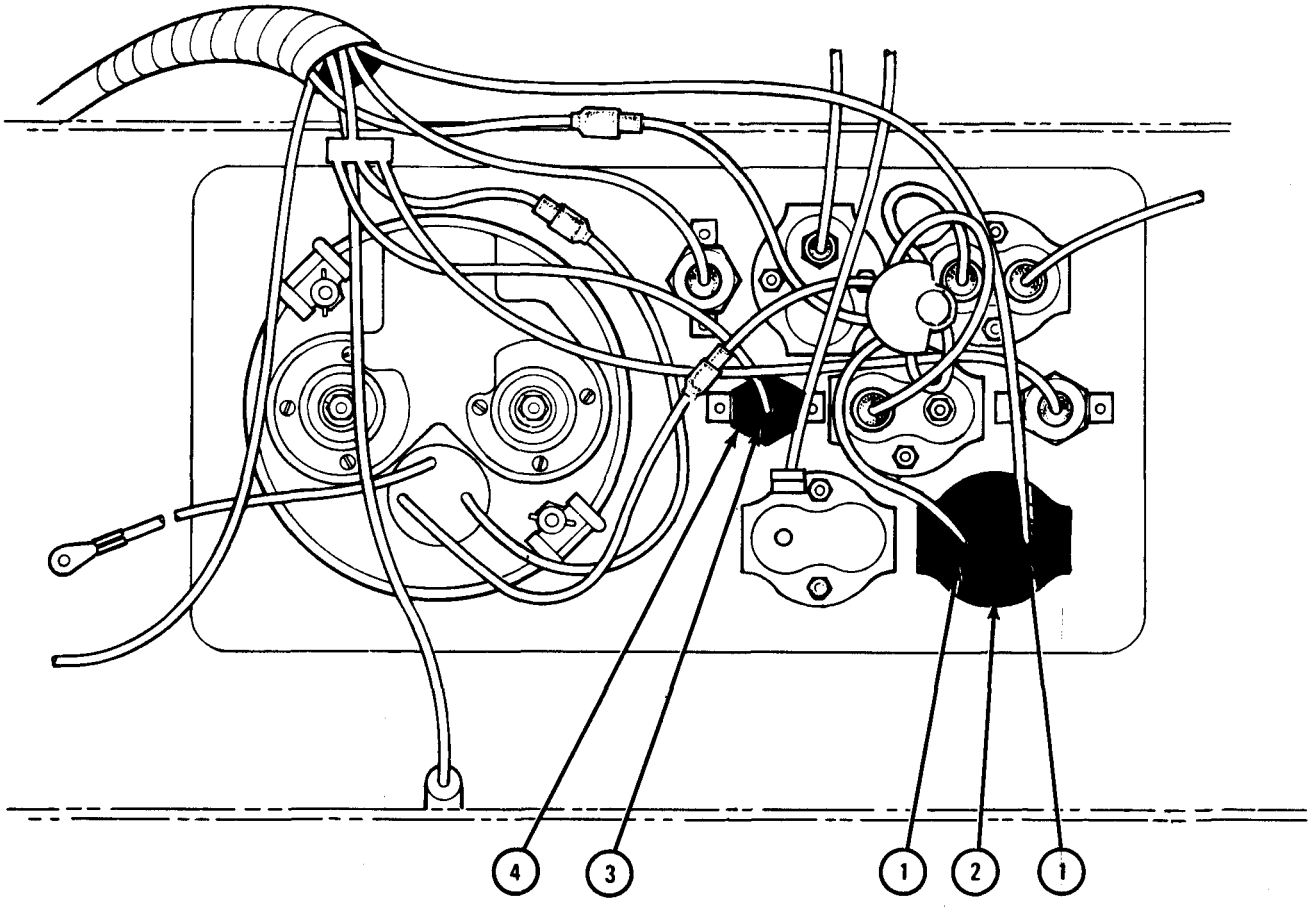


TA 082820

FRAME 4

1. Pull off two connectors (1) from temperature gage (2).
2. Pull off connector (3) from panel light (4).

GO TO FRAME 5

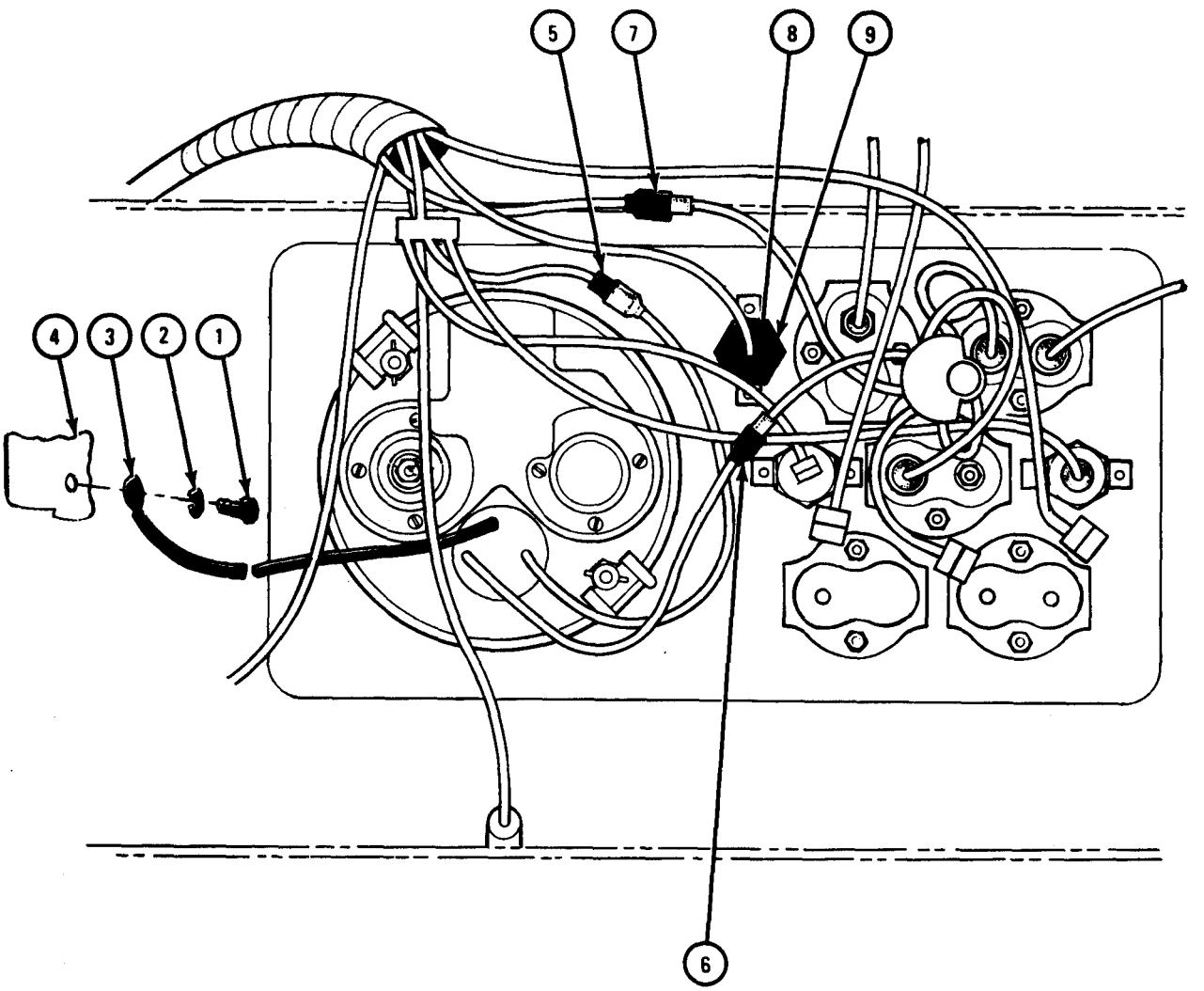


TA 050672

FRAME 5

1. Using 7/16-inch wrench, unscrew and take out screw (1), lockwasher (2), and tachograph ground lead (3) from firewall (4).
2. Unplug tachograph connectors (5 and 6).
3. Unplug instrument cluster connector (7).
4. Pull off connector (8) from high beam indicator (9).

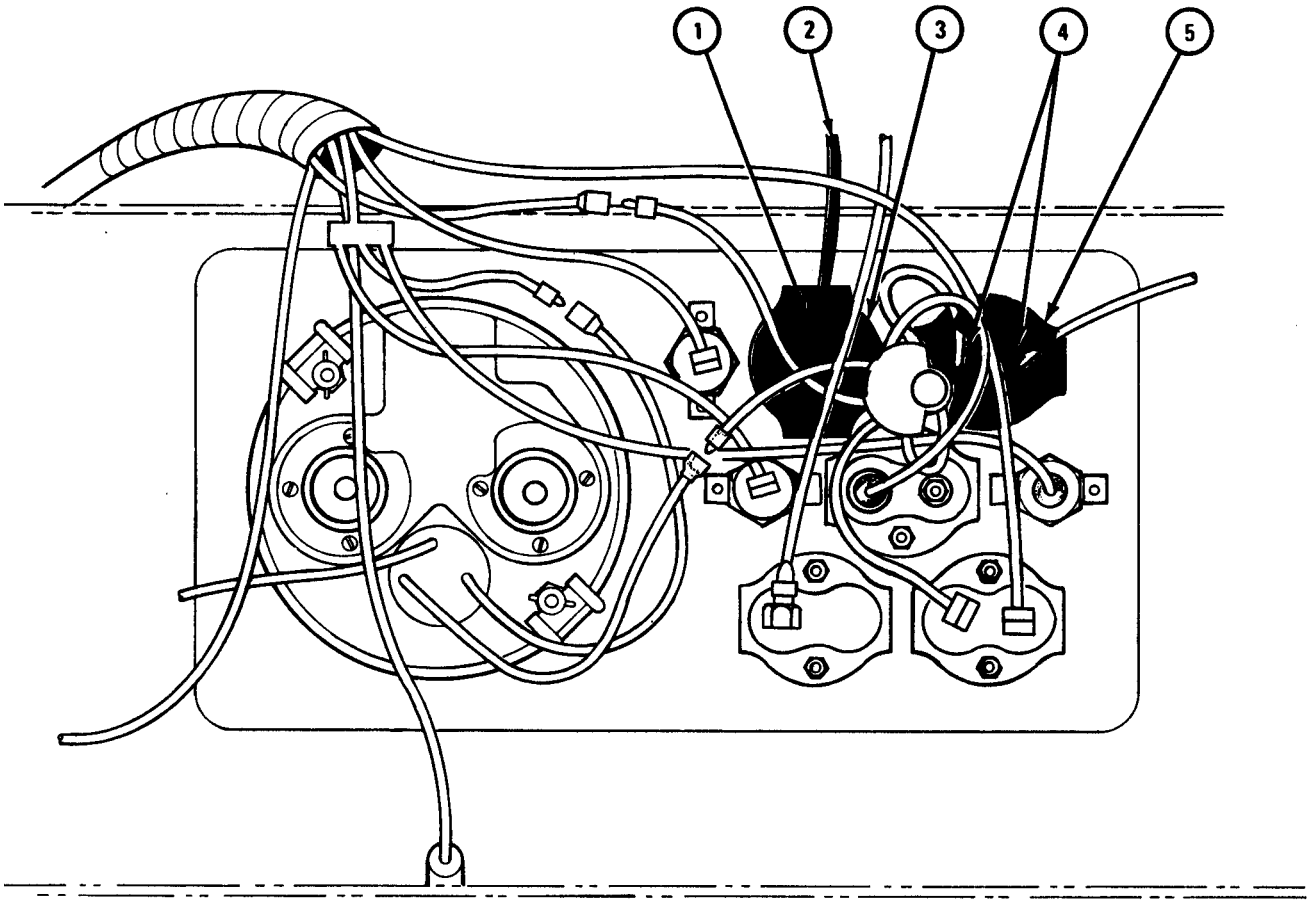
GO TO FRAME 6



FRAME 6

1. Using 9/16-inch wrench, unscrew nut (1) and take off hose (2) from air pressure gage (3).
2. Pull off two connectors (4) from fuel gage (5).

GO TO FRAME 7

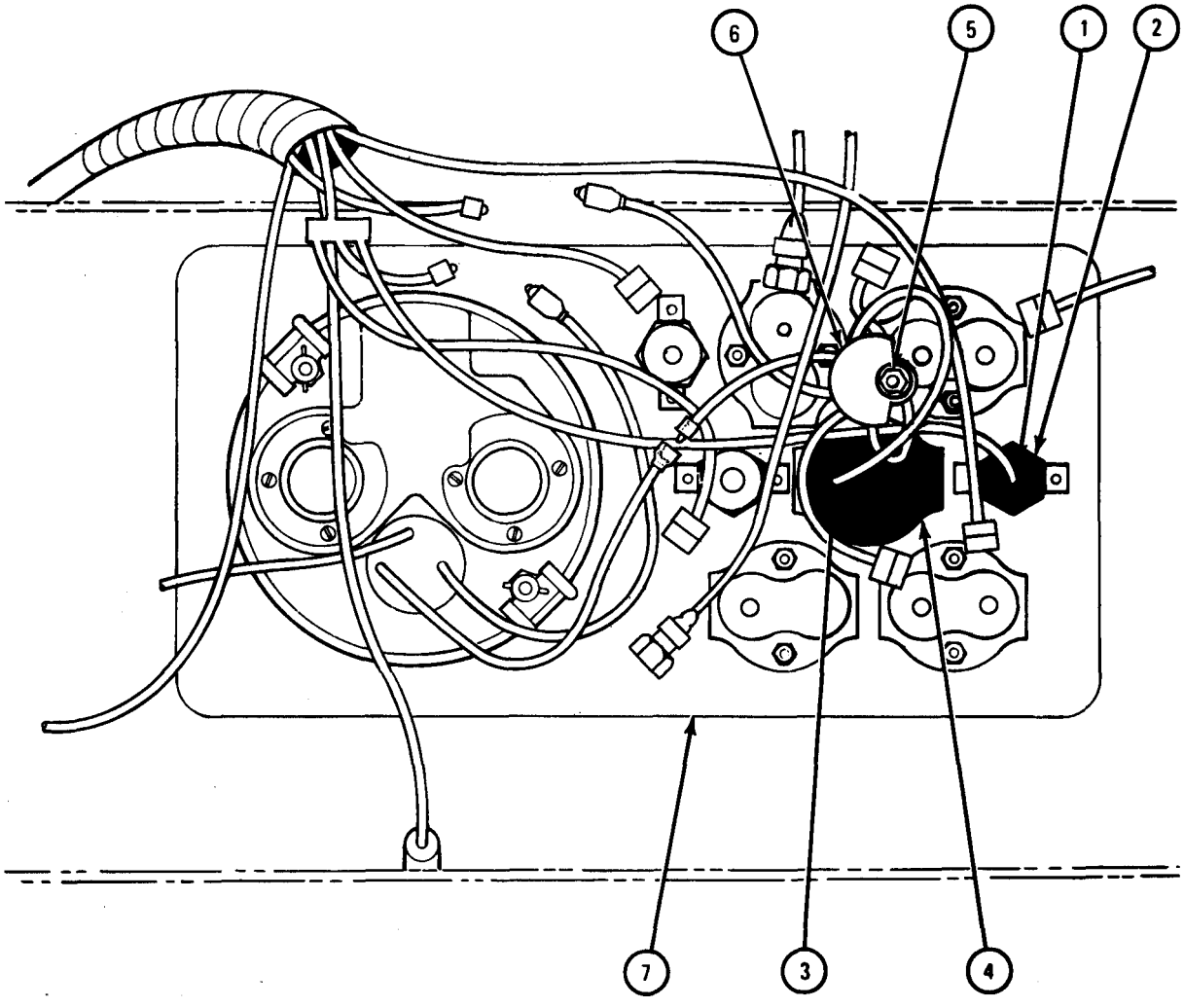


TA 050675

FRAME 7

1. Pull off connector (l) from panel light (2).
2. Pull off connector (3) from battery generator indicator (4).
3. Using 7/16-inch wrench, unscrew and take off nut and washer (5). Take off harness (6).
4. Take instrument cluster (7) out of truck.

END OF TASK

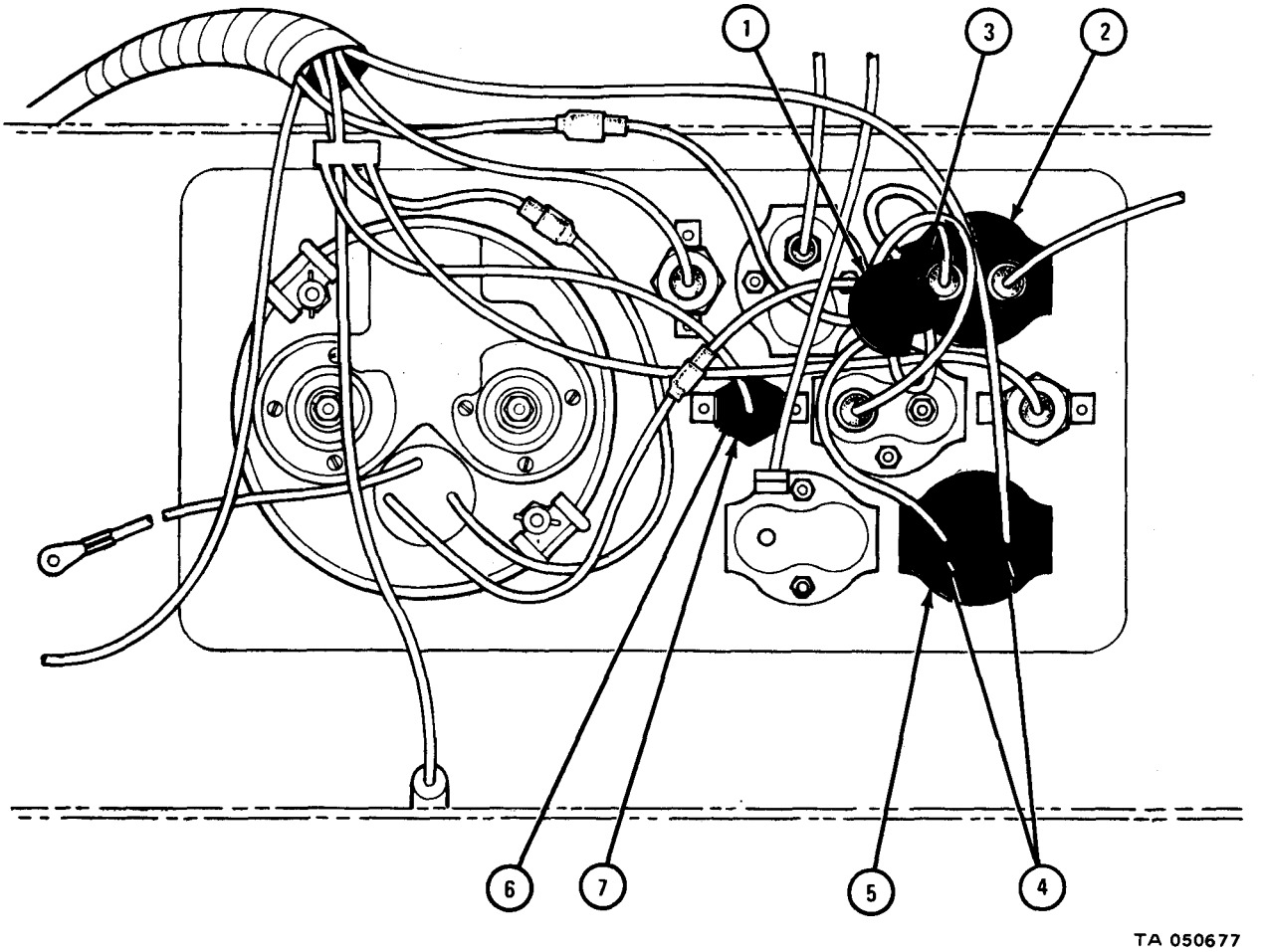


c. Replacement.

FRAME 1

1. Put harness (1) on stud on fuel gage (2). Using 7/16-inch wrench, screw on and tighten washer and nut (3).
2. Push two connectors (4) on temperature gage (5) as tagged. Take off tags.
3. Push connector (6) on panel light (7) as tagged. Take off tag.

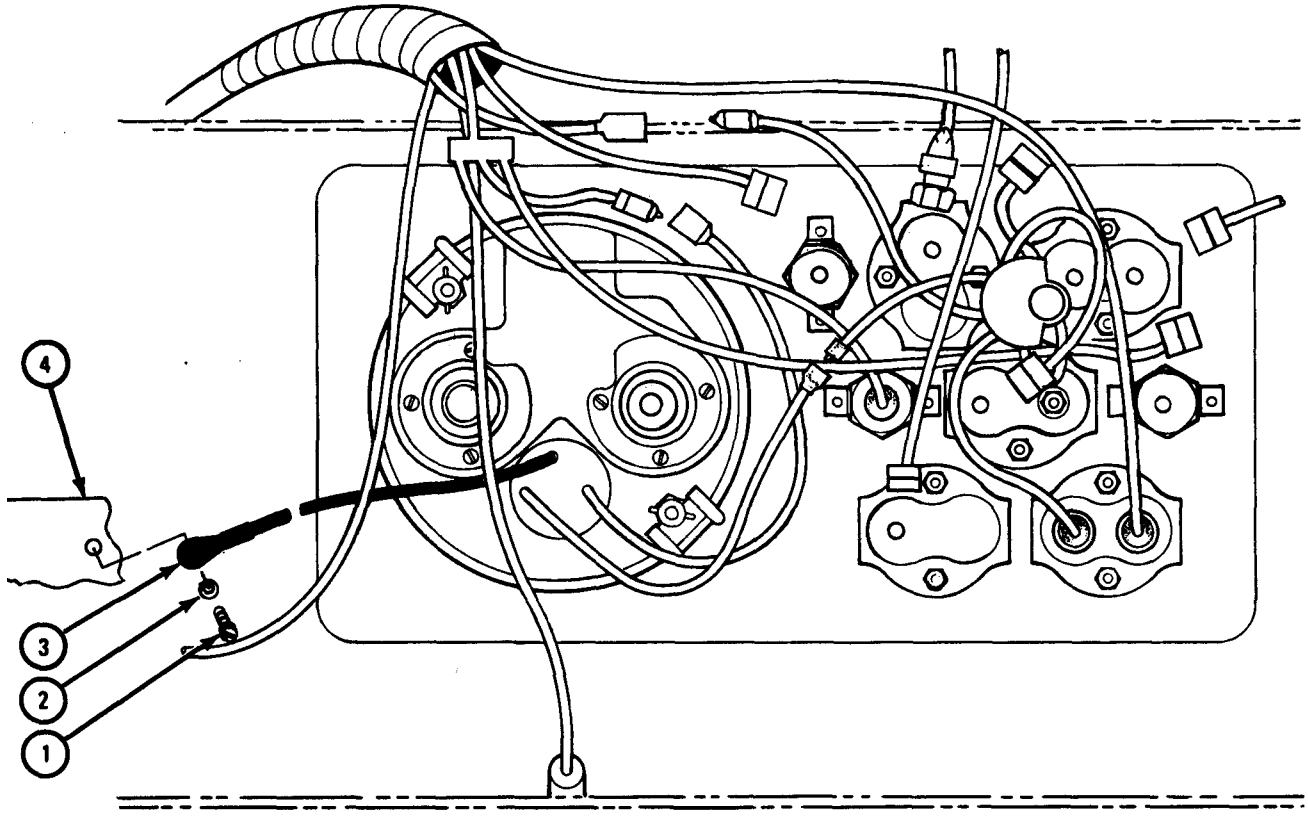
GO TO FRAME 2



FRAME 2

1. Put capscrew (1) and lockwasher (2) on tachograph ground lead (3) as tagged. Using 7/16-inch wrench, screw in and tighten capscrew to firewall (4). Take off tag.

GO TO FRAME 3

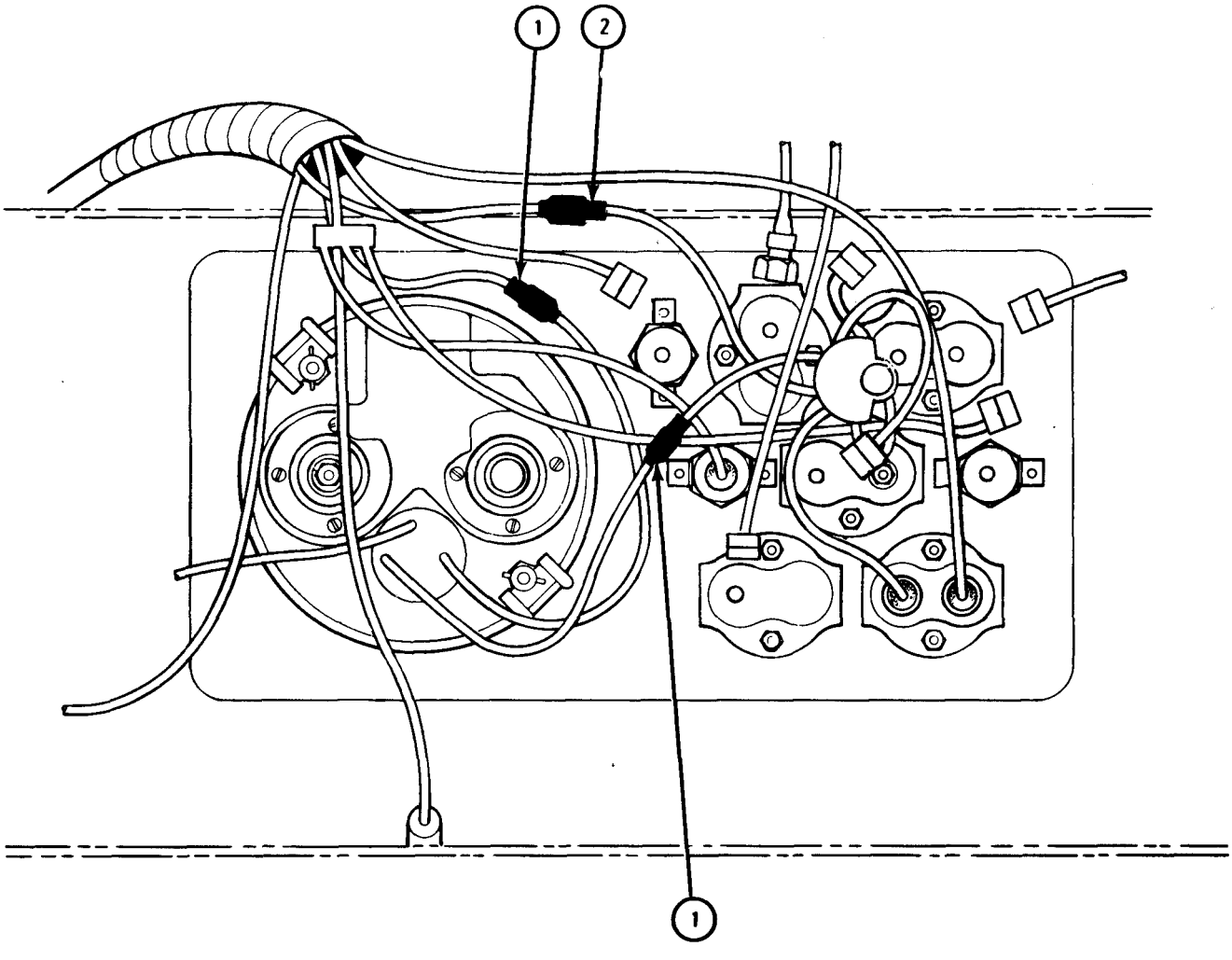


TA 050678

FRAME 3

1. Plug in two tachograph connectors (1) as tagged. Takeoff tag.
2. Plug in instrument cluster connector (2) as tagged. Take off tag.

GO TO FRAME 4

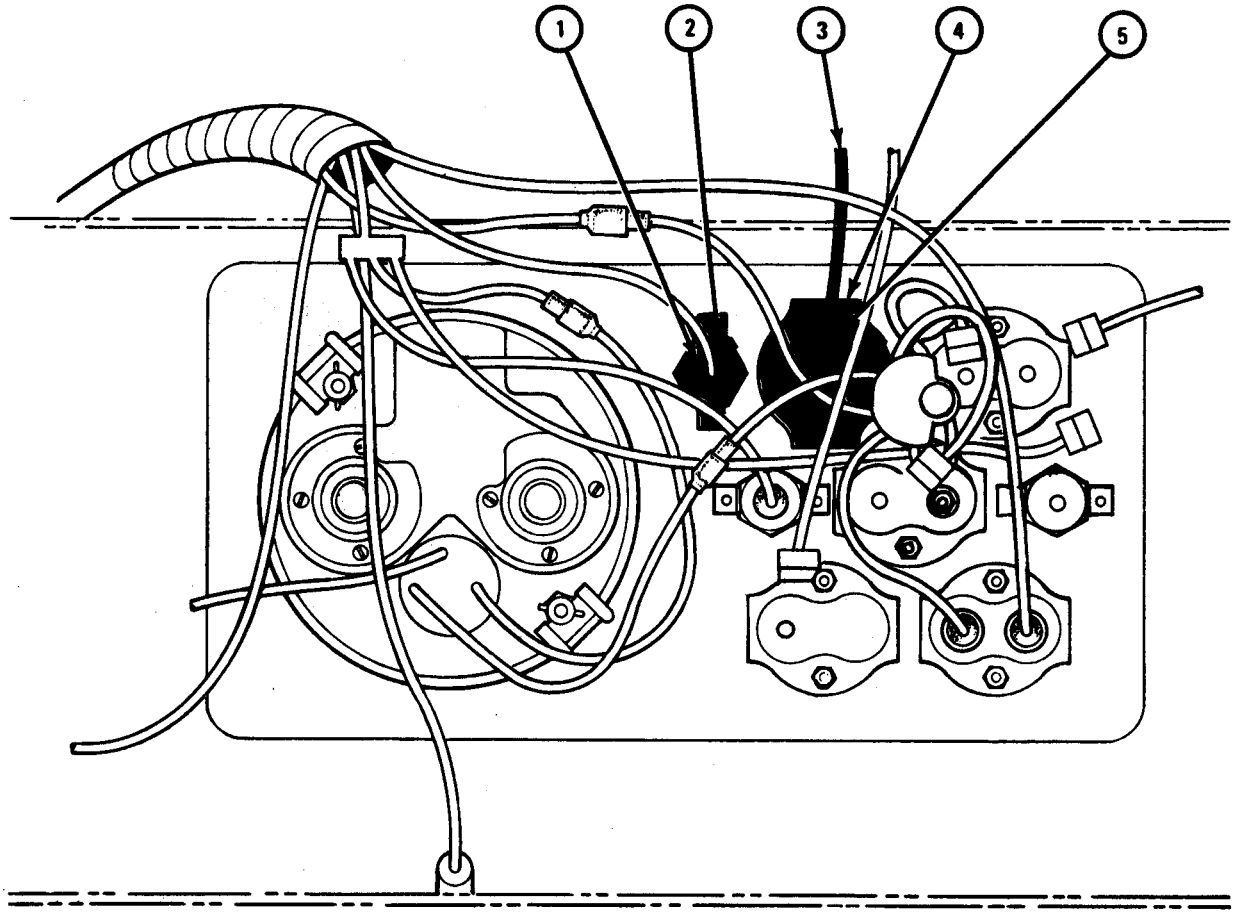


TA 050679

FRAME 4

1. Push connector (l) on high beam indicator (2) as tagged. Take off tag.
2. Join hose (3) to air pressure gage (4). Using 9/16-inch wrench, screw on and tighten nut (5).

GO TO FRAME 5

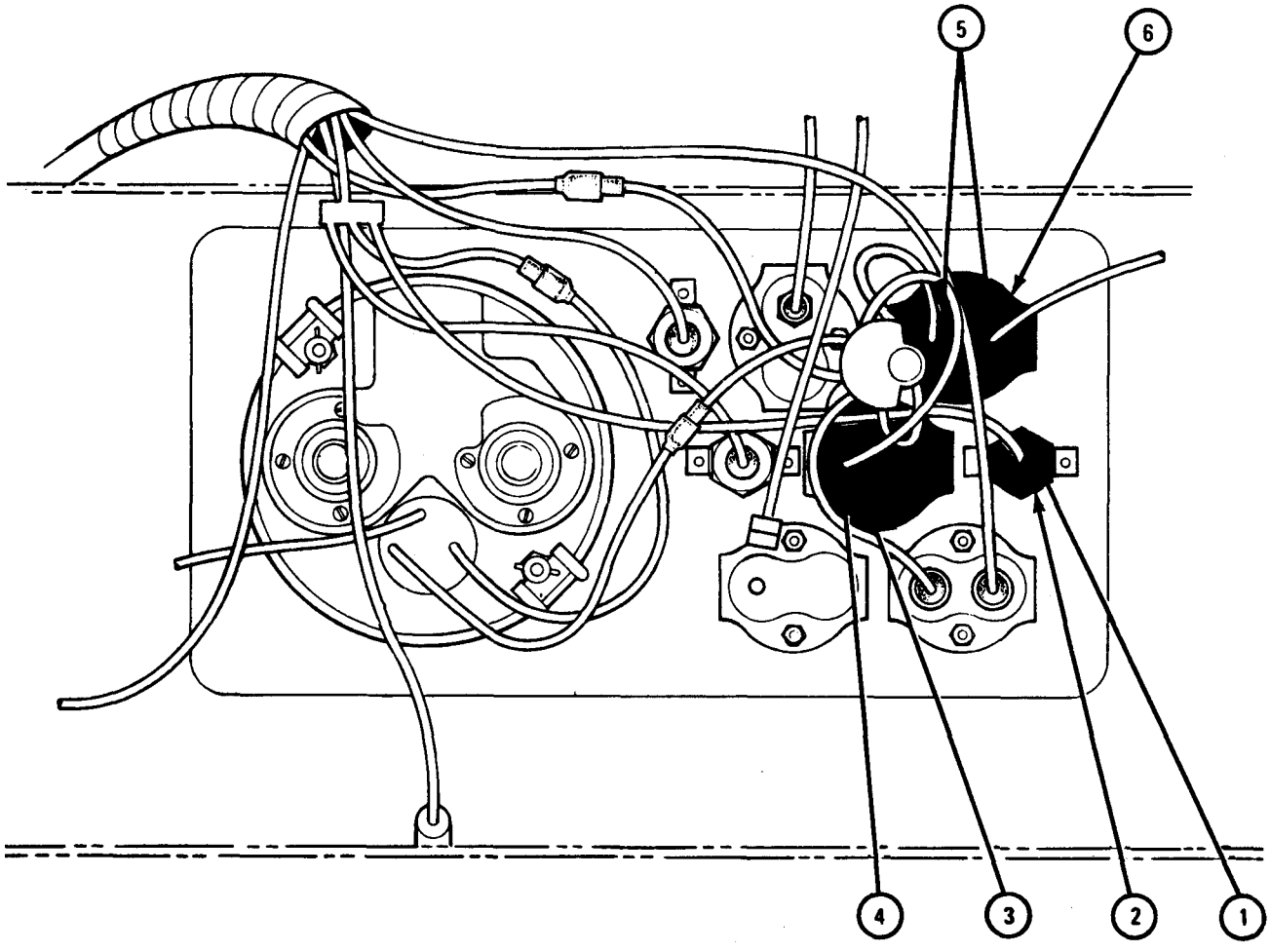


TA 050680

FRAME 5

1. Push connector (1) on panel light (2) as tagged. Take off tag.
2. Push connector (3) on battery-generator indicator (4) as tagged. Take off tags.
3. Push two connectors (5) on fuel gage (6) as tagged. Take off tag.

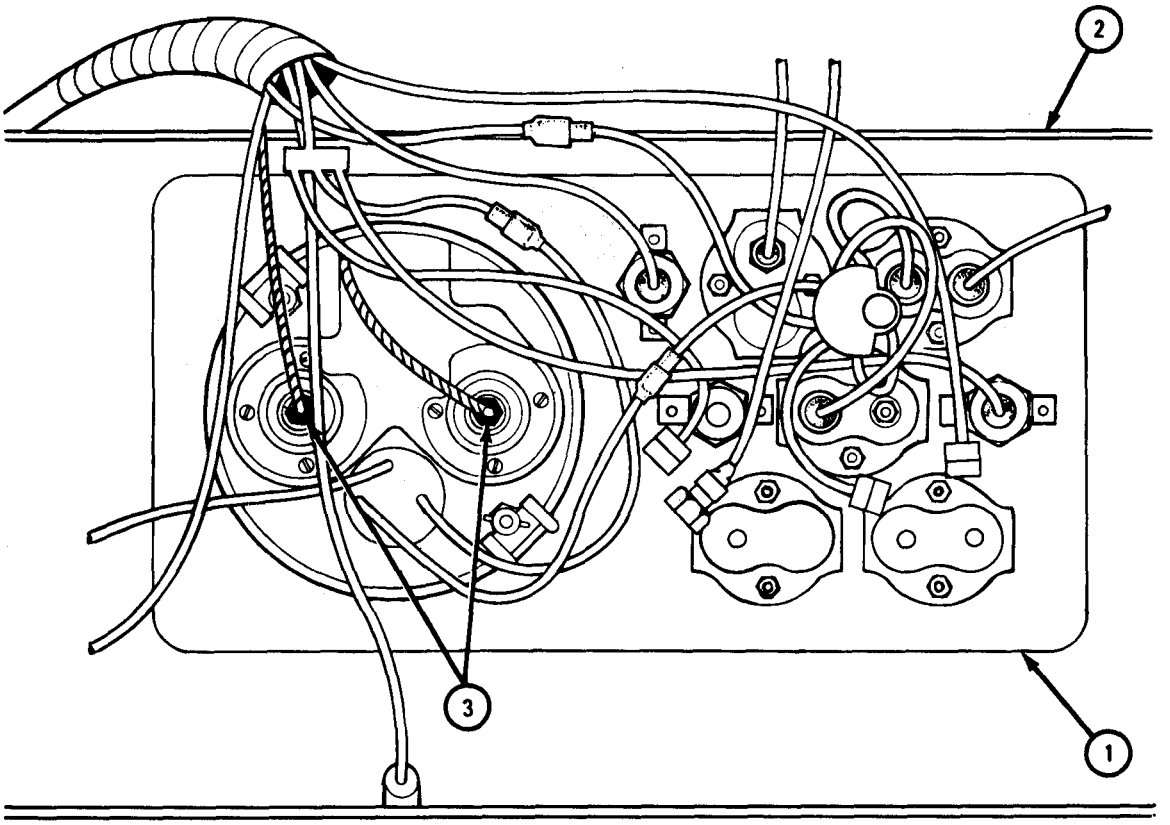
GO TO FRAME 6



FRAME 6

1. Push instrument cluster (1) up to instrument panel (2) so two drive shaft assemblies (3) can be put on.
2. Working between instrument cluster (1) and instrument panel (2) and using 3/4-inch wrench, screw on and tighten two drive shaft assemblies (3) as tagged. Take off tags.

GO TO FRAME 7

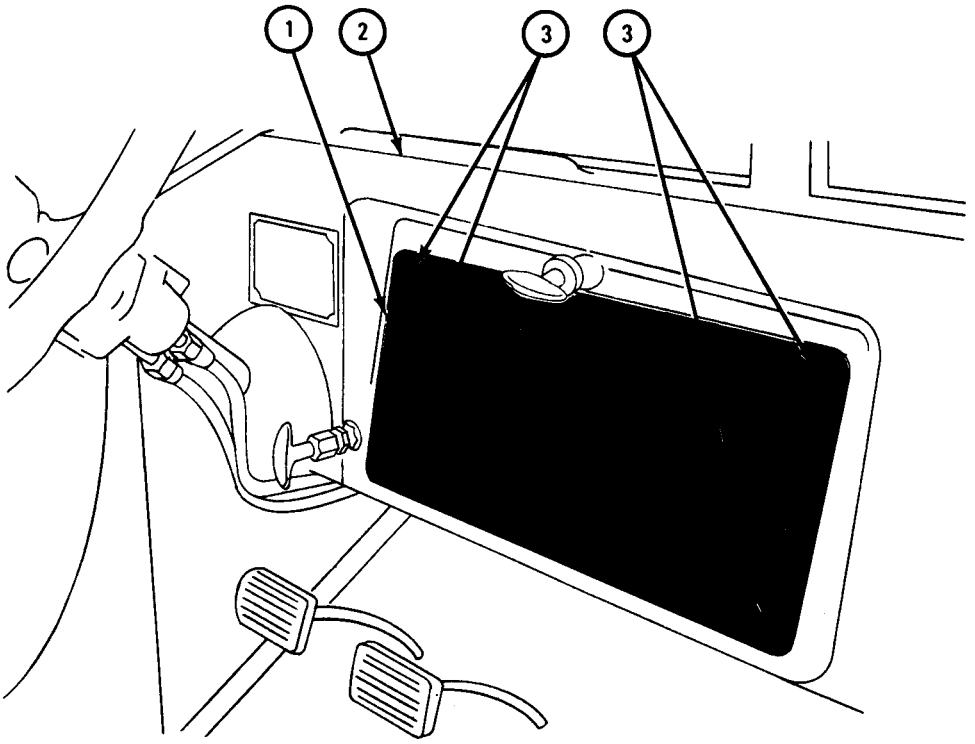


TA 082821

FRAME 7

1. Place instrument cluster (1) on 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 8



TA 045885

FRAME 8

CAUTION

Do not overtighten tube nut (1) or oil may leak out.

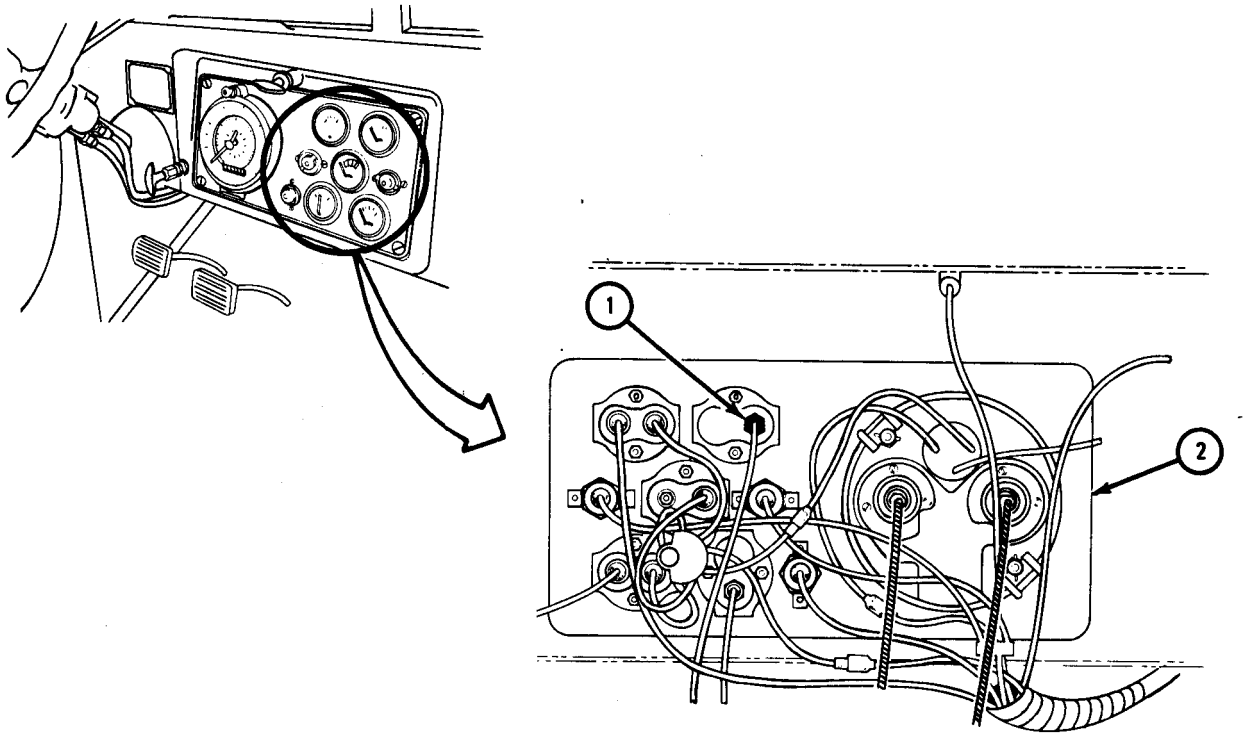
1. Working from behind instrument cluster (2) and using 9/16-inch wrench, screw on and tighten tube nut (1).

NOTE

Follow-on Maintenance Action Required:

1. Reconnect battery ground cable. Refer to para 7-44.
2. Start engine. Refer to TM 9-2320-211-10.
3. Check that tube nut has no oil leaks. Tighten nut if needed.
4. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



7-17. ENGINE STARTER SWITCH REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Move left side of dash out about two inches. Refer to para 7-21.

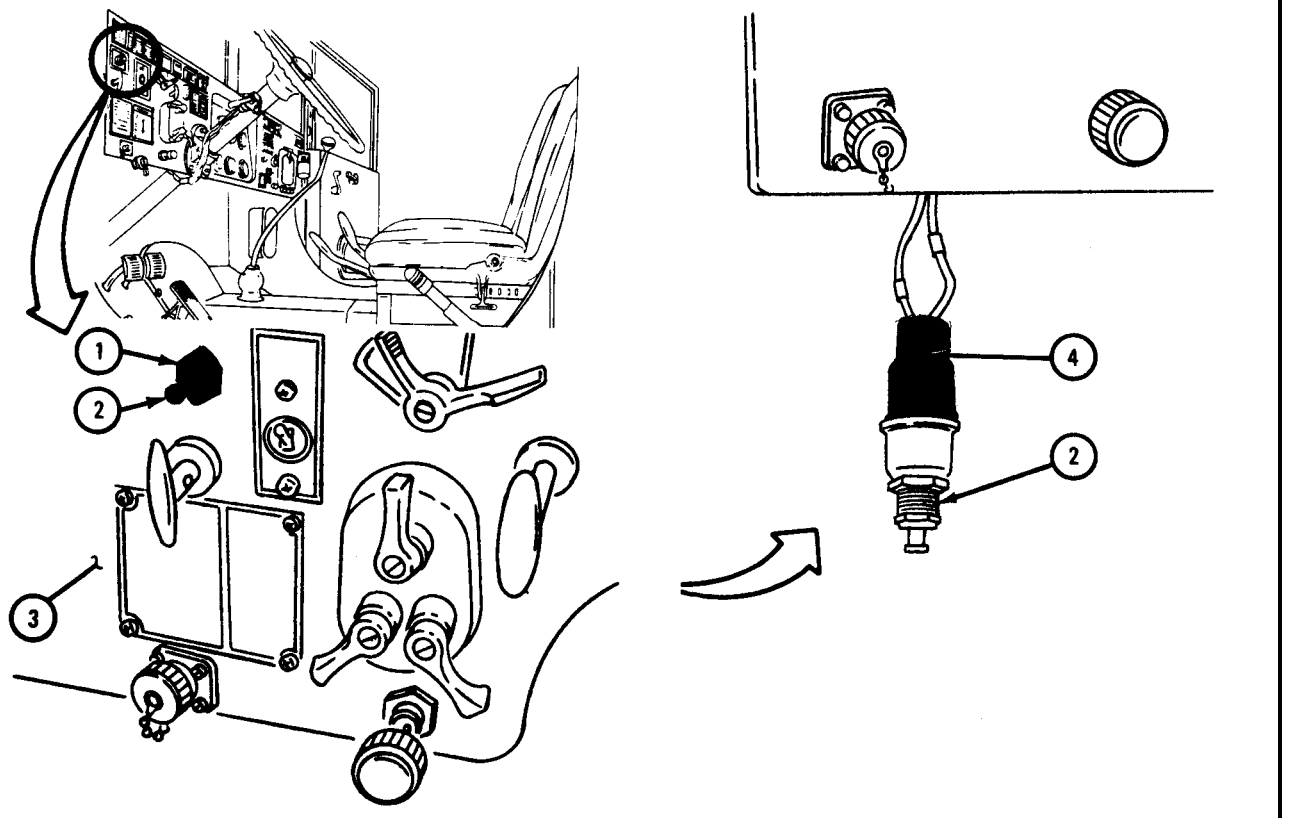
(2) Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Using wrench, unscrew and take off nut (l).
2. Push switch (2) through hole to back of panel (3).
3. Pull switch (2) down below panel (3).
4. Pull out connector (4) from switch (2).

END OF TASK



c. Replacement.

FRAME 1

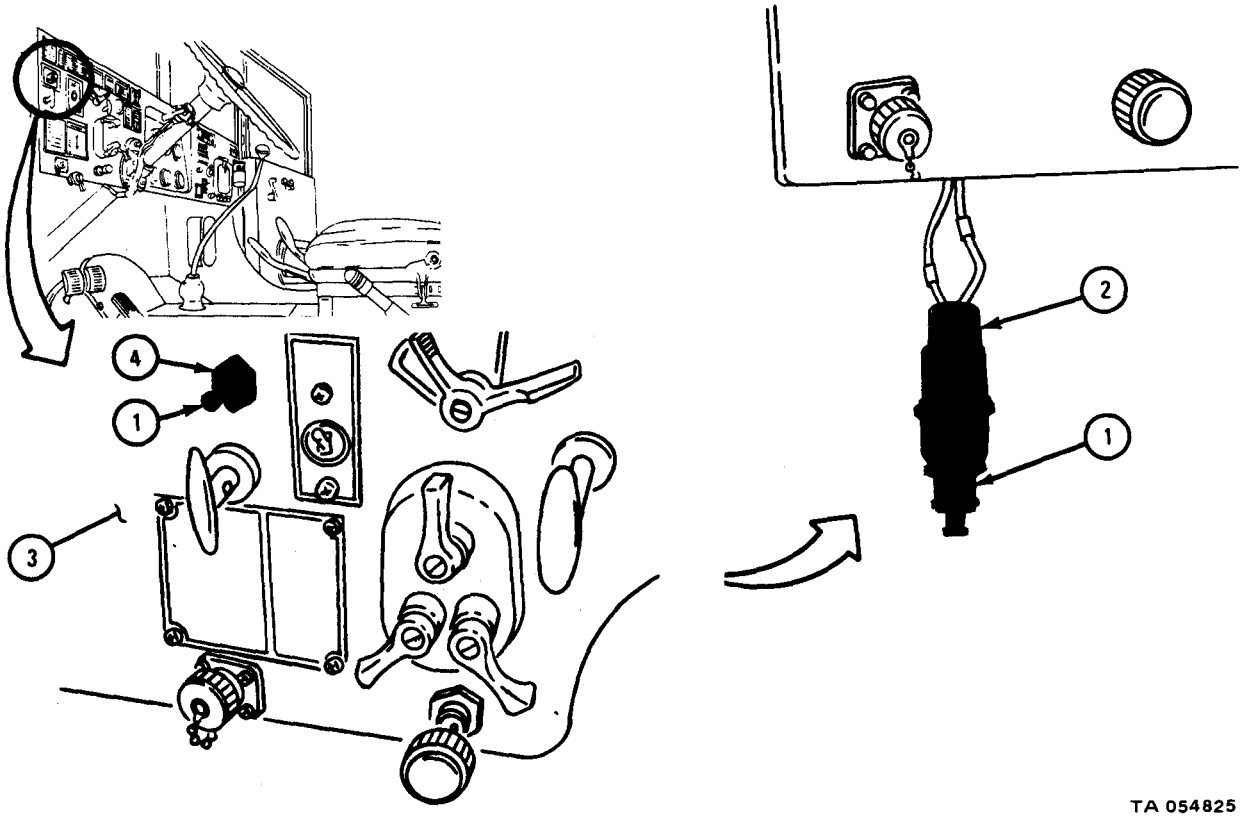
1. Line up marks on switch (1) and connector (2).
2. Push connector (2) onto switch (1).
3. From behind panel (3), push switch (1) through hole in panel.
4. Using wrench, screw on and tighten nut (4).

NOTE

Follow-on Maintenance Action Required:

1. Replace left side of dash. Refer to para 7-21.
2. Connect battery ground cable. Refer to para 7-44.

END OF TASK



7-18. ELECTRIC BRAKE LOCK AND ELECTRIC BRAKE LOCK SWITCH REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Flat-tip screwdriver
General mechanic's tool kit

SUPPLIES: None

PERSONNEL: One

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

Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

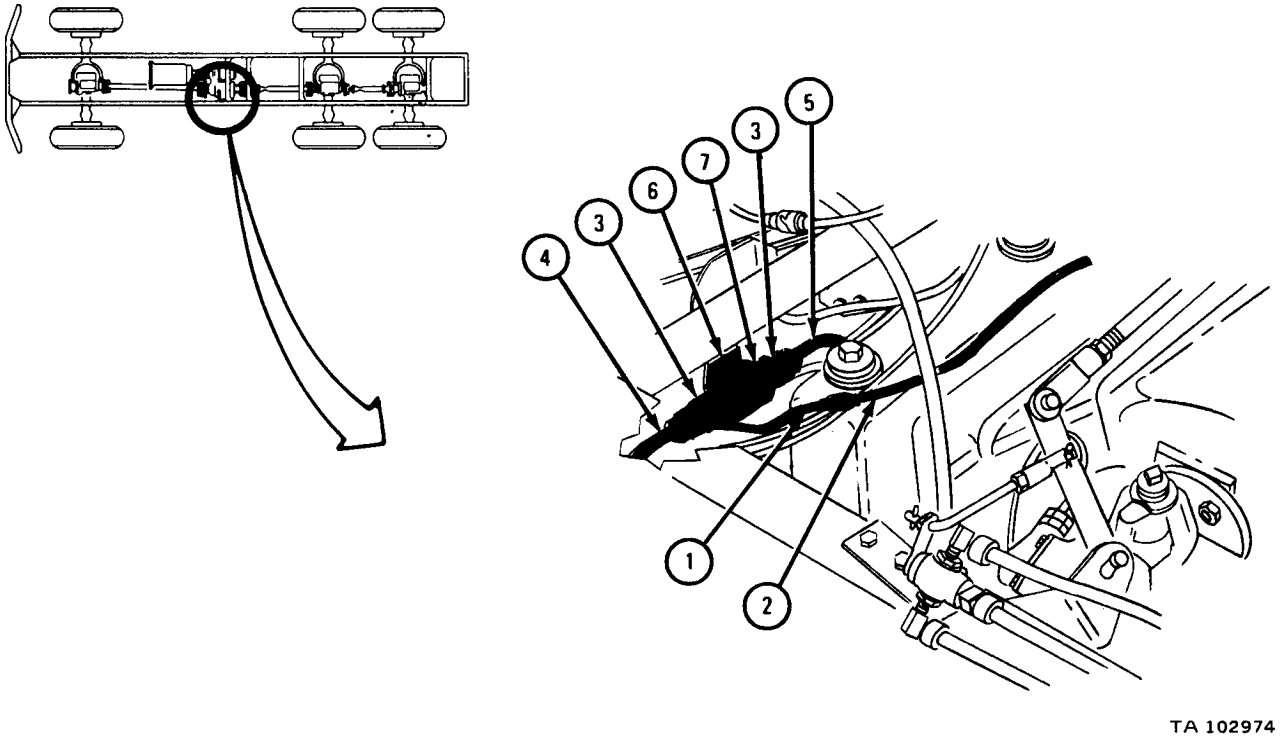
b. Removal.

(1) Electric brake lock.

FRAME 1

1. Unplug cable (1) from cable (2).
2. Using wrench, unscrew two sleeve nuts (3) and take out lines (4 and 5).
3. Using wrenches, unscrew and take off nut and capscrew (6).
4. Take out electric brake lock (7).

END OF TASK

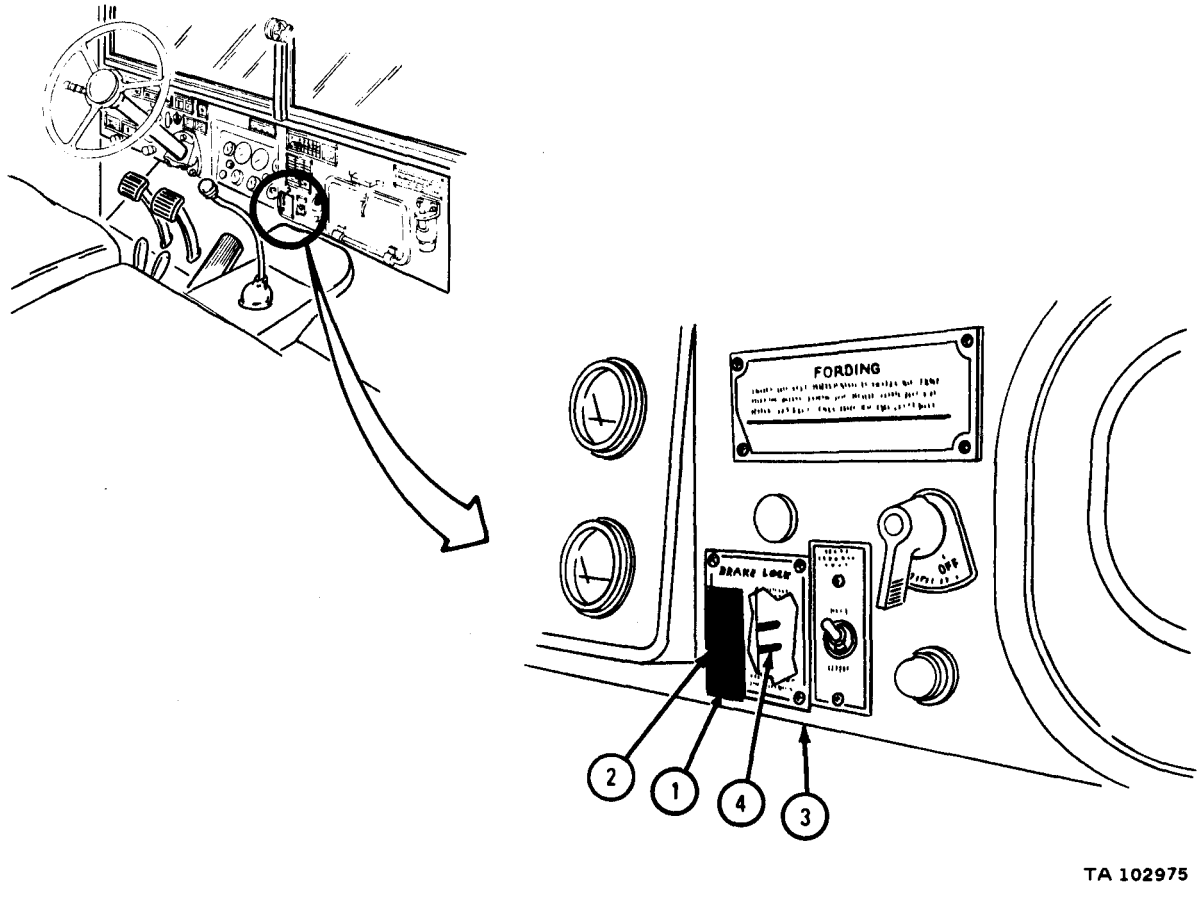


(2) Electric brake lock switch.

FRAME 1

1. Using flat-tip screwdriver, unscrew and take out two screws (l).
2. Push electric brake lock switch (2) into instrument panel (3). Take apart connectors (4) at rear of electric brake lock switch (2) and take out switch.

END OF TASK



TA 102975

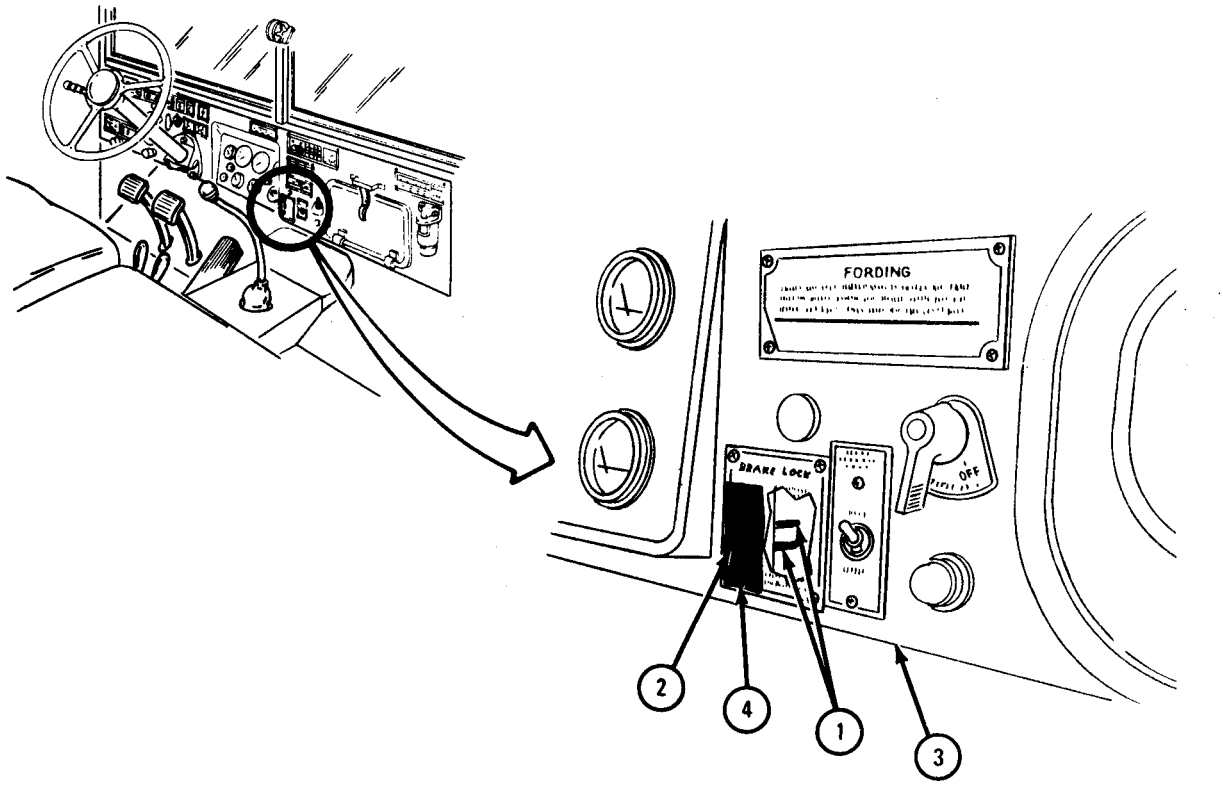
c. Replacement.

(1) Electric brake lock switch.

FRAME 1

1. Plug in two connectors (1) at rear of electric brake lock switch (2).
2. Place switch (2) into position in instrument panel (3) from behind panel.
3. Using flat-tip screwdriver, screw in and tighten two screws (4).

END OF TASK



TA 102994

(2) Electric brake lock.

FRAME 1

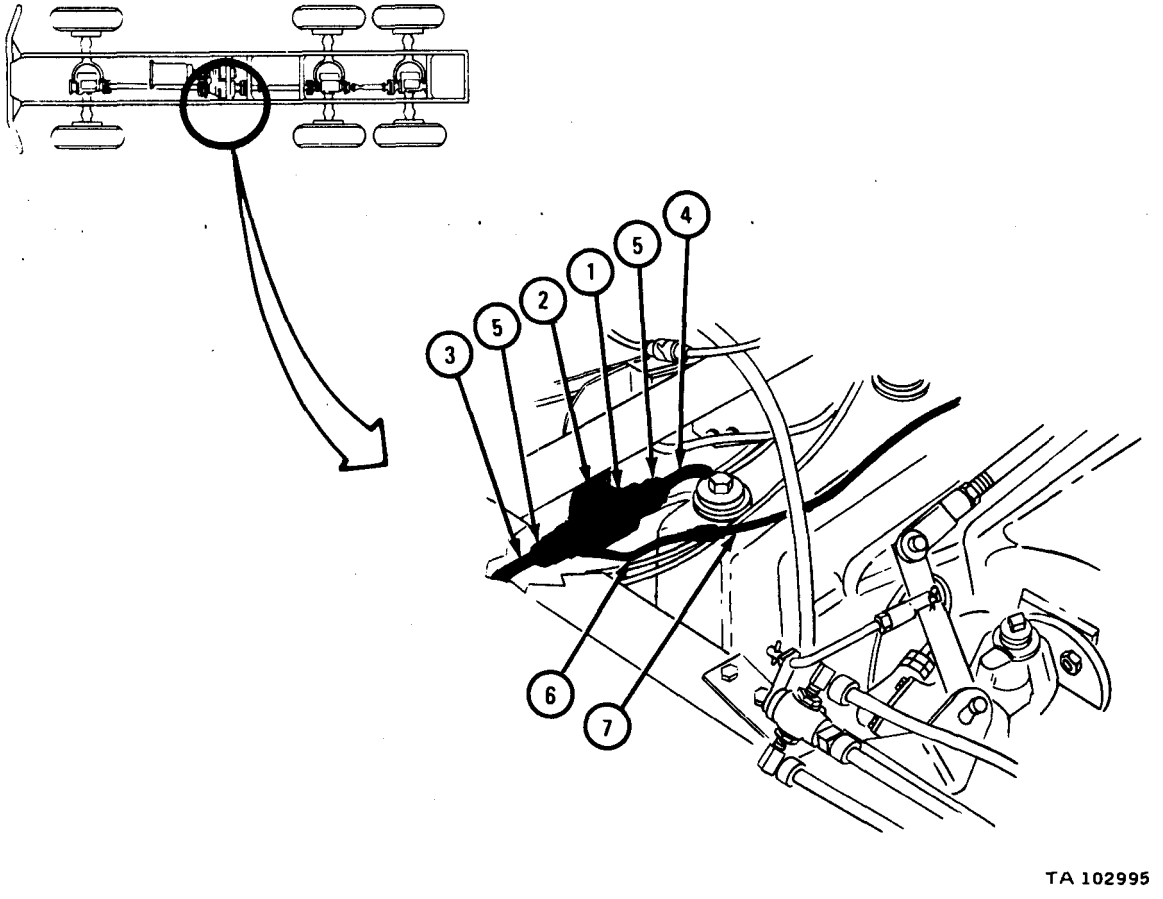
1. Put electric brake lock (1) on truck as shown.
2. Using wrenches, screw in and tighten cap screw and nut (2).
3. Put lines (3 and 4) in electric brake lock (1).
4. Using wrenches, screw on and tighten two sleeve nuts (5).
5. Join cable (6) to cable (7).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA 102995

7-19. MANIFOLD HEATER SWITCH REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

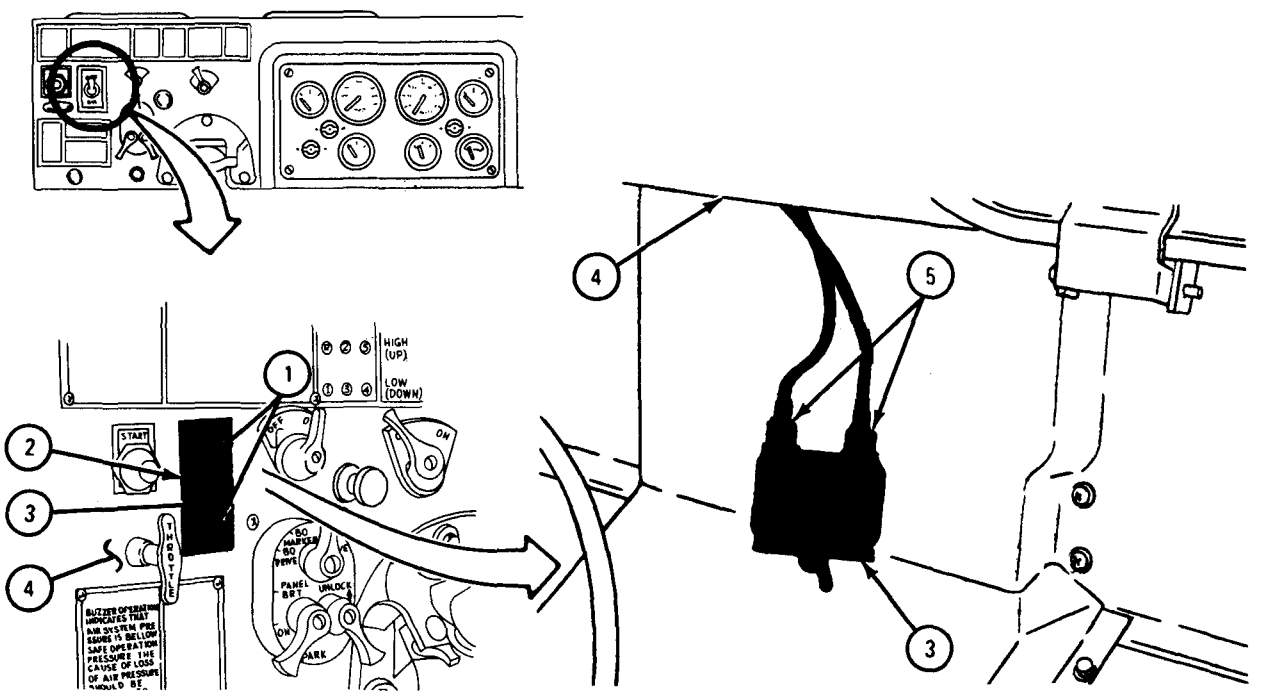
a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Working inside cab and using screwdriver, unscrew and take out two screws (1).
2. Take off name plate (2). Push switch (3) back through instrument panel (4).
3. Let switch (3) drop below instrument panel (4). Tag and pull off two wires (5). Take out switch.

END OF TASK



TA102996

c. Replacement.

FRAME 1

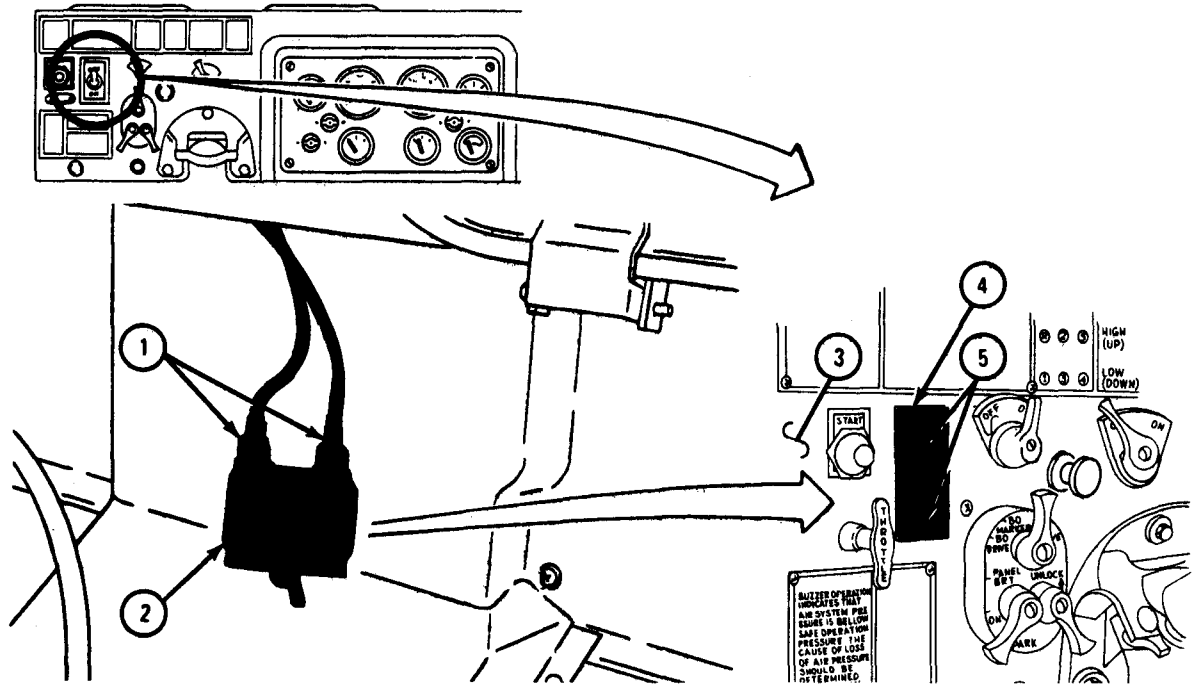
1. Working under instrument panel, put two wires (1) on switch (2) as tagged. Take off tags.
2. Push switch up and through hole in instrument panel (3).
3. Put on plate (4). Using screwdriver, screw in two screws (5).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA102997

7-20. AUXILIARY POWER SOCKET ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 7/8-inch wrench
Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

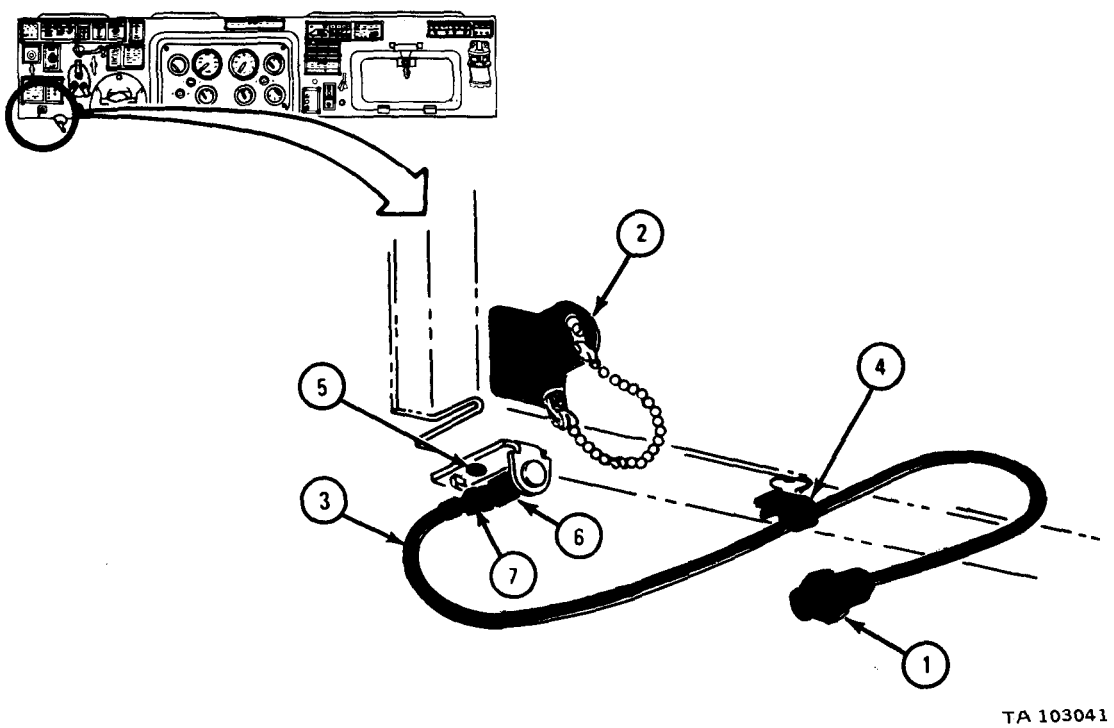
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

1. If connector (1) is connected to receptacle (2), using 7/8-inch wrench, unscrew and take out connector (1).
2. Pull cable (3) out of clip (4).
3. Using screwdriver, loosen screw (5) and take off power socket assembly (6) and cable (3).
4. Using screwdriver, unscrew and take out screw (7).
5. Take cable (3) from power socket assembly (6).

END OF TASK



c. Replacement.

FRAME 1

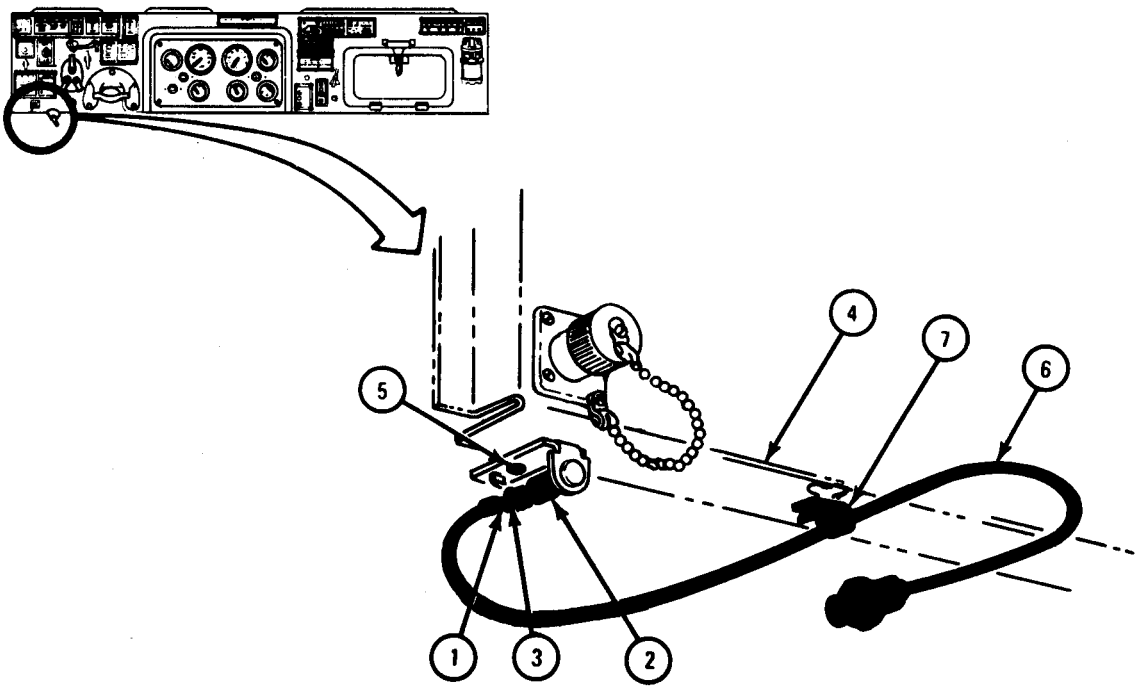
1. Aline hole in cable lug (1) with hole in power socket assembly (2).
2. Using screwdriver, screw in and tighten screw (3).
3. Slide power socket assembly (2) onto bottom lip of instrument panel (4).
4. Using screwdriver, tighten screw (5).
5. Put cable (6) into clip (7).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA 103042

7-21. INSTRUMENT PANEL REMOVAL AND REPLACEMENT.

TOOLS: Pliers
Cross-tip screwdriver (Phillips type or equivalent)
Flat-tip screwdriver
General mechanic's tool kit

SUPPLIES: None

PERSONNEL: Two

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

a. Preliminary Procedures.

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

(2) Remove instrument cluster. Refer to para 7-15.

(3) Remove light switch. Refer to para 7-8.

(4) Remove engine stop cable. Refer to para 4-32.

(5) Remove throttle cable. Refer to para 4-33.

(6) Remove personnel hot water heater control cables on trucks with personnel hot water heater. Refer to Part 2, para 21-8.

(7) Remove blower motor emergency switch. Refer to Part 2, para 21-6.

(8) Remove instrument panel circuit breaker, Refer to para 7-12.

(9) Remove engine starter switch. Refer to para 7-17.

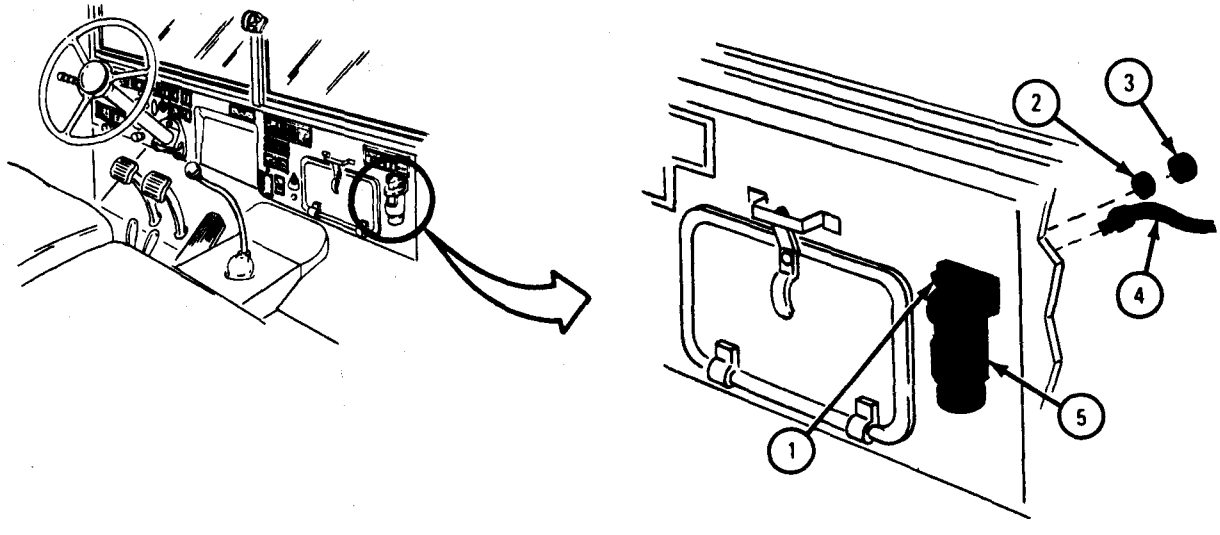
(10) On truck M52A2, remove air brake hand control valve. Refer to para 12-22.

b. Removal.

FRAME 1

1. Using flat-tip screwdriver and 7/16-inch wrench, unscrew and take out two screws (1) with flat washers (2) and self-locking nuts (3).
2. Working behind instrument panel using 9/16-inch wrench, unscrew and take off tube (4) from air filter indicator (5).
3. Take off air filter indicator (5) from instrument panel.

GO TO FRAME 2

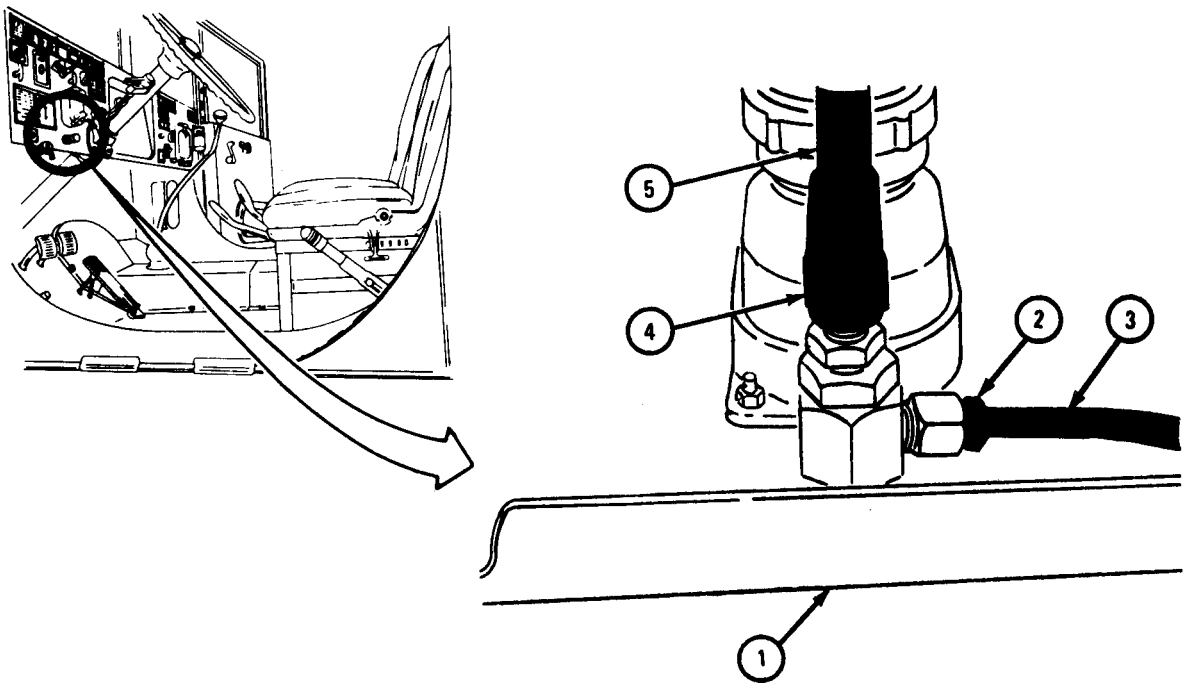


TA 102512

FRAME 2

1. From rear of panel (1) using 1/2-inch wrench, unscrew fitting (2) and take off tubing (3).
2. Using 9/16-inch wrench, unscrew fitting (4) and take off tubing (5).

GO TO FRAME 3

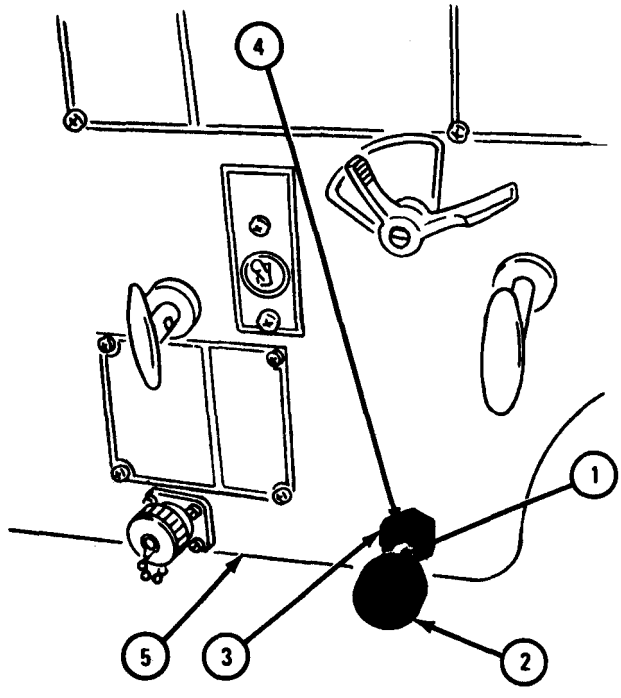


TA 102513

FRAME 3

1. Using screwdriver, loosen two setscrews (1) and pull off control knob (2).
2. Using 3/4-inch wrench, unscrew and take off nut (3).
3. Take out valve (4) from back of panel (5).

GO TO FRAME 4

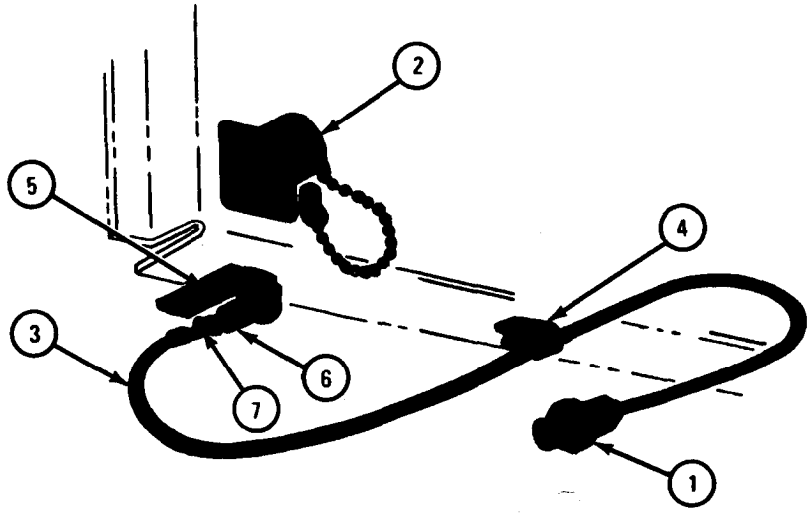


TA 102514

FRAME 4

1. If connector (1) is joined to receptacle (2), using 7/8-inch wrench, unscrew and take out connector.
2. Pull cable (3) out of clip (4).
3. Using screwdriver, loosen screw (5) and take off power socket assembly (6) and cable (3).
4. Using screwdriver, unscrew and take out screw (7).
5. Take cable (3) from power socket assembly (6).

GO TO FRAME 5

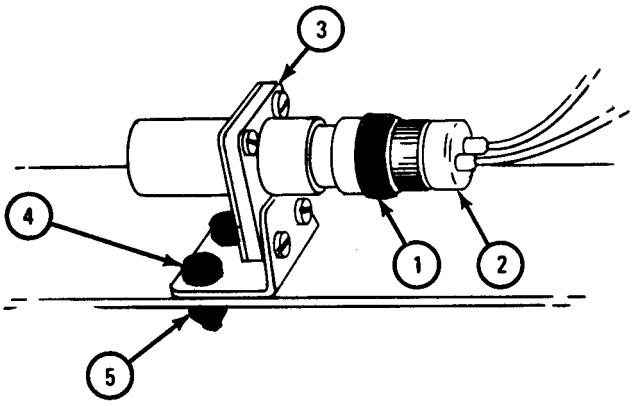


TA 102515

FRAME 5

1. Working from behind instrument panel, unscrew connector nut (1) and pull harness (2) from flasher (3).
2. Using wrenches, hold two screws (4) and unscrew and take off two nuts (5).
3. Take out screws (4) and flasher (3).

GO TO FRAME 6

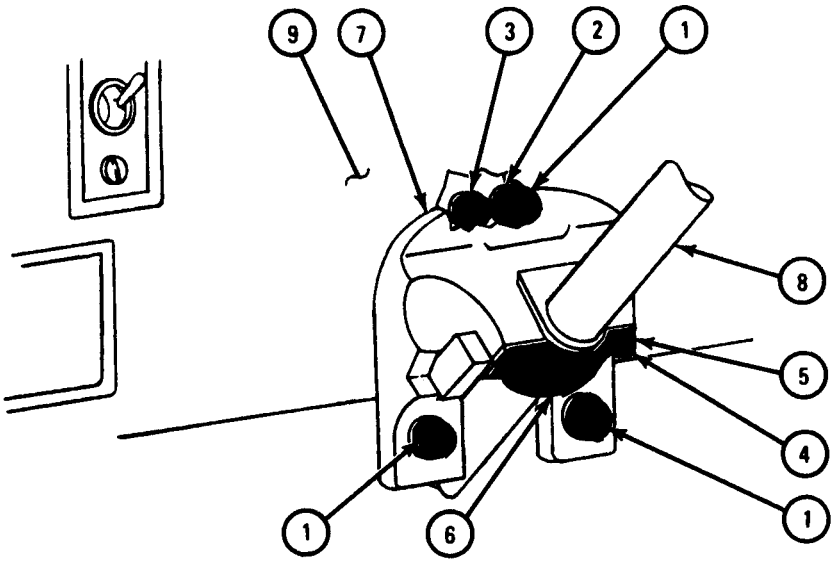


TA 102516

FRAME 6

1. Using l/2-inch wrenches, unscrew and take out three capscrews (l), washers (2), and safety nuts (3).
2. Using 9/16-inch wrench, unscrew and take out cap screw (4) and washer (5).
3. Swing open clamp (6).
4. Take bracket (7) off steering column (8).
5. Pull steering column (8) down away from instrument panel (9).

GO TO FRAME 7

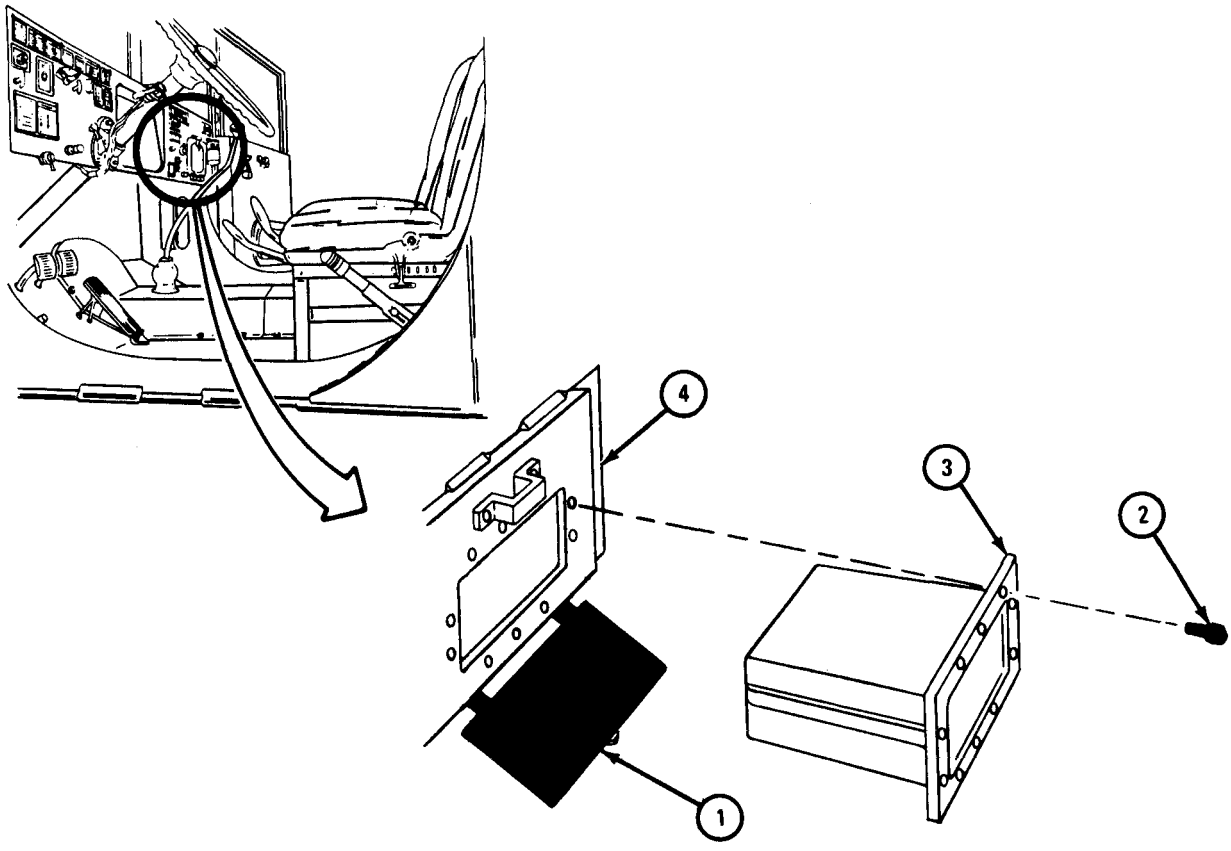


TA 102518

FRAME 7

1. Open map compartment door (l).
2. Using phillips screwdriver, unscrew and take out ten screws (2).
3. Pull map compartment box (3) out of instrument panel (4).

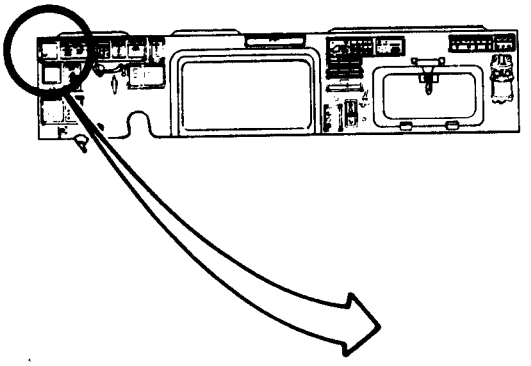
GO TO FRAME 8

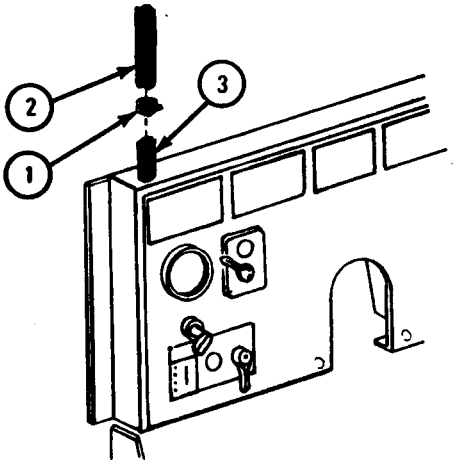


FRAME 8

1. Using pliers, open hose clamp (1) and pull hose (2) from tube (3).

GO TO FRAME 9



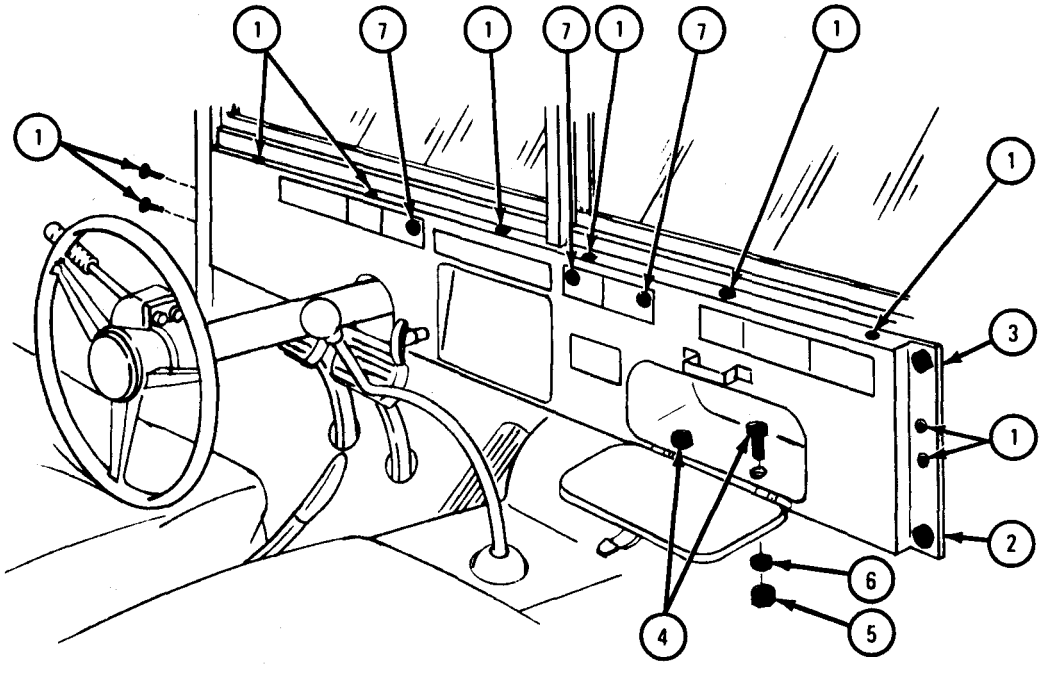


TA 102521

FRAME 9

1. Using screwdriver, unscrew and take out ten screws (1).
2. Using 9/16-inch wrench, unscrew and take out two capscrews (2), one on each side of instrument panel (3).
3. Using 9/16-inch wrenches, hold two capscrews (4) and unscrew and take off two nuts (5) and two washers (6). Take out two capscrews.
4. Using phillips screwdriver, take out three screws (7).
5. Pull top of instrument panel (3) down and take it out.

END OF TASK



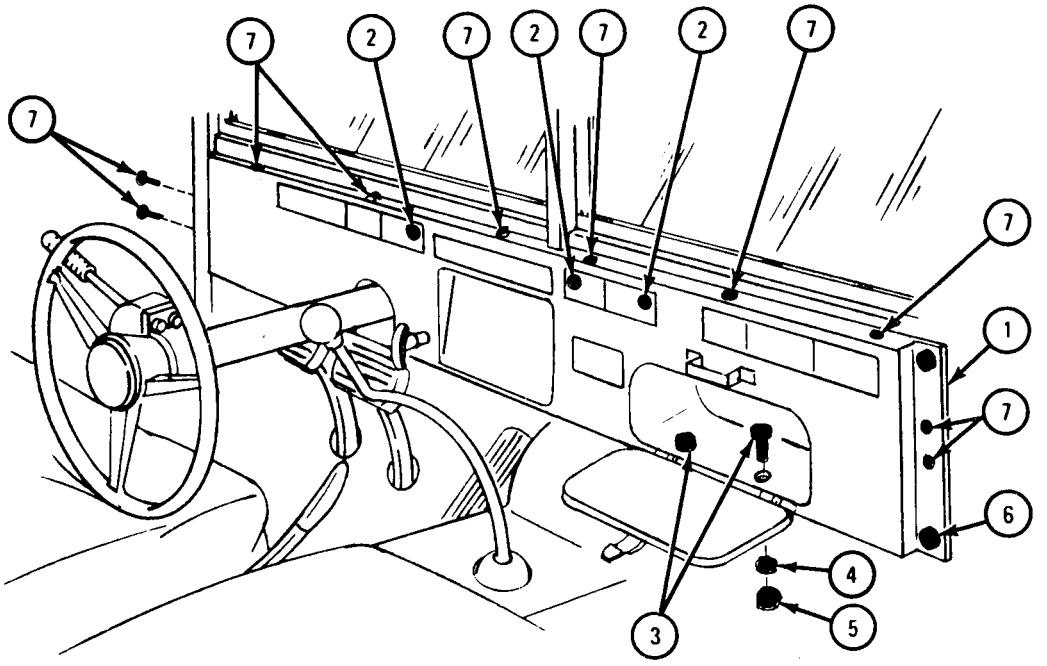
TA 102525

c. Replacement.

FRAME 1

1. Put instrument panel (1) in place as shown.
2. Using phillips screwdriver, screw in three screws (2).
3. Put in two capscrews (3). Put on two washers (4). Using 9/16-inch wrenches, screw on and tighten two nuts (5).
4. Using 9/16-inch wrench, screw in and tighten two capscrews (6).
5. Do step 4 again on other side of instrument panel (1).
6. Using screwdriver, screw in and tighten ten screws (7).

GO TO FRAME 2

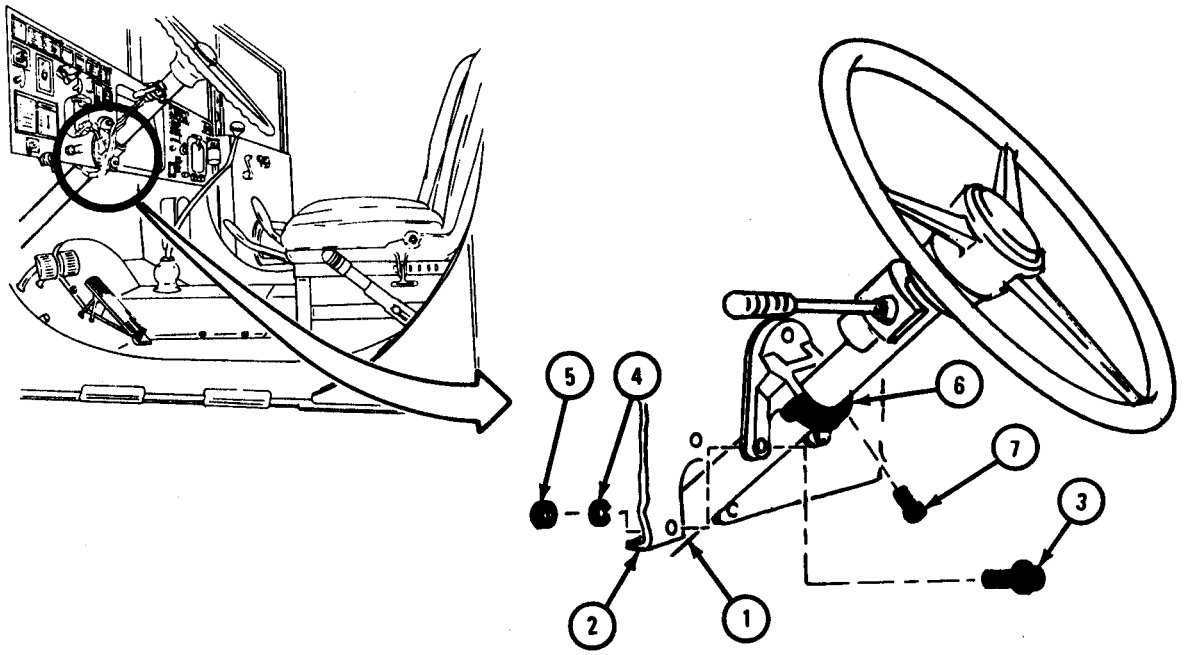


TA 102524

FRAME 2

1. Push steering column (1) up to instrument panel (2).
2. Put in three capscrews with washers (3). Put on three washers (4). Using l/2-inchwrench, screw on and tighten three nuts (5).
3. Close clamp (6) and put in capscrew (7).

GO TO FRAME 3

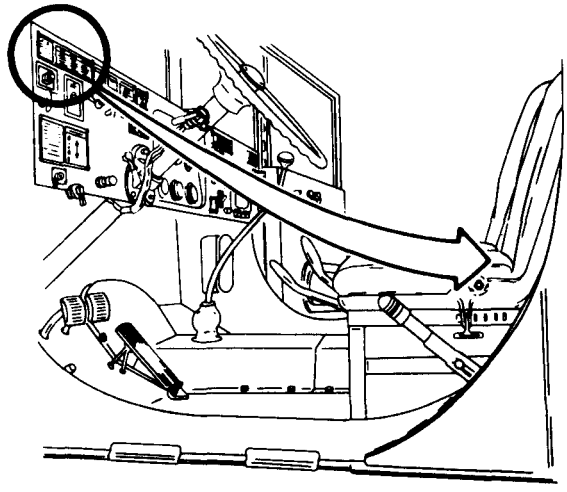


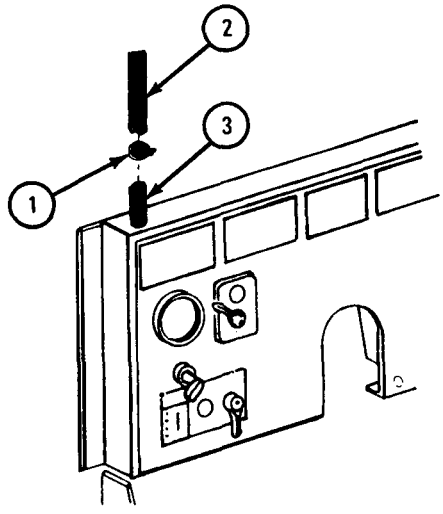
TA 102526

FRAME 3

1. Using pliers, open hose clamp (1) and put hose (2) over tube (3).

GO TO FRAME 4



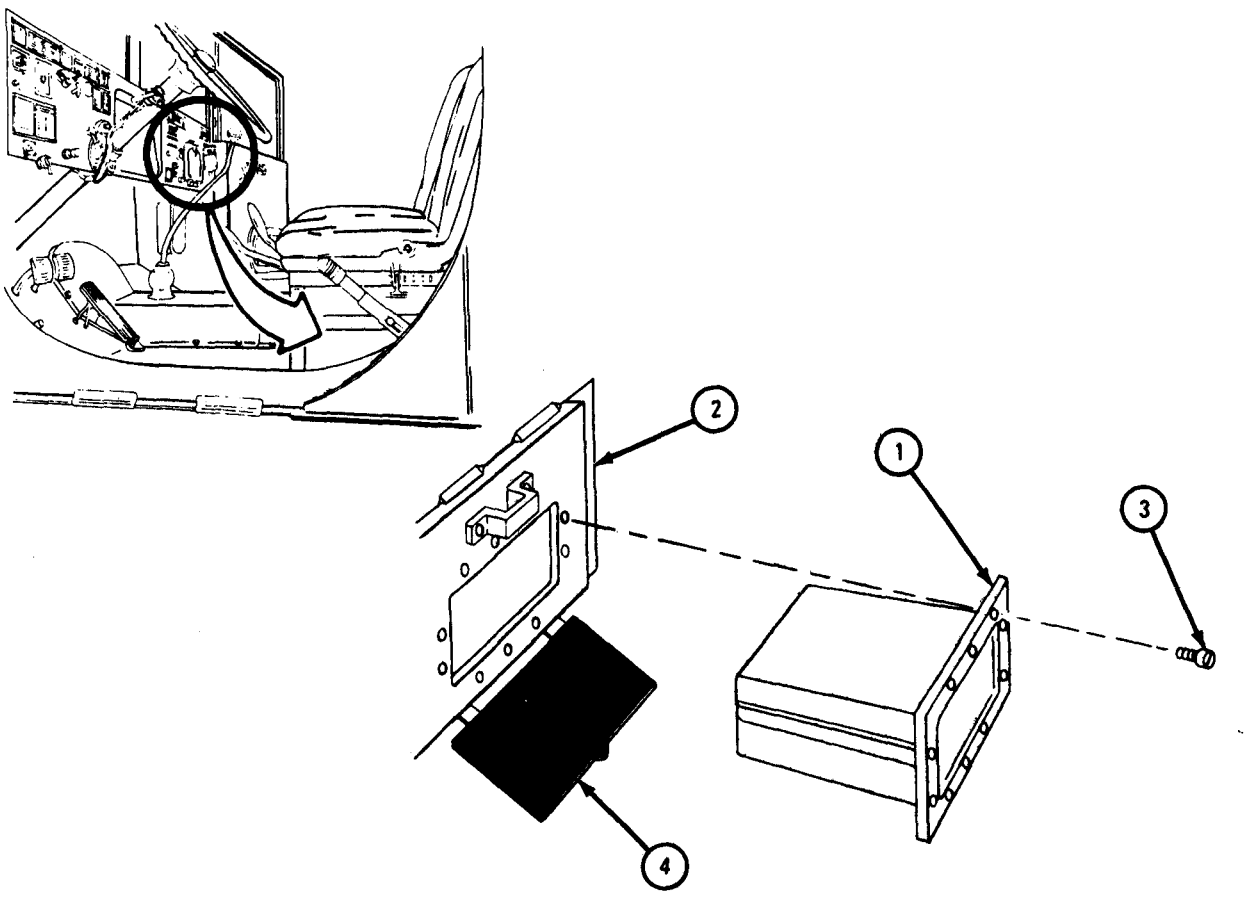


TA 102528

FRAME 4

1. Put map compartment box (1) into instrument panel (2).
2. Using phillips screwdriver, screw in and tighten ten screws (3) and close door (4).

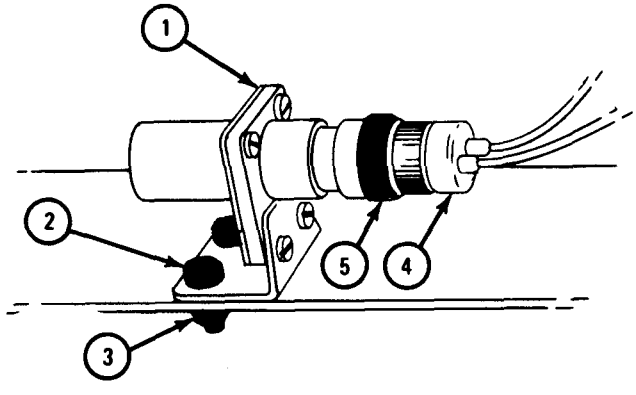
GO TO FRAME 5



FRAME 5

1. Working behind panel, put flasher (1) in place. Put in two screws (2). Using wrench, screw on and tighten two nuts (3).
2. Put harness (4) in place. Screw on connector (5).

GO TO FRAME 6

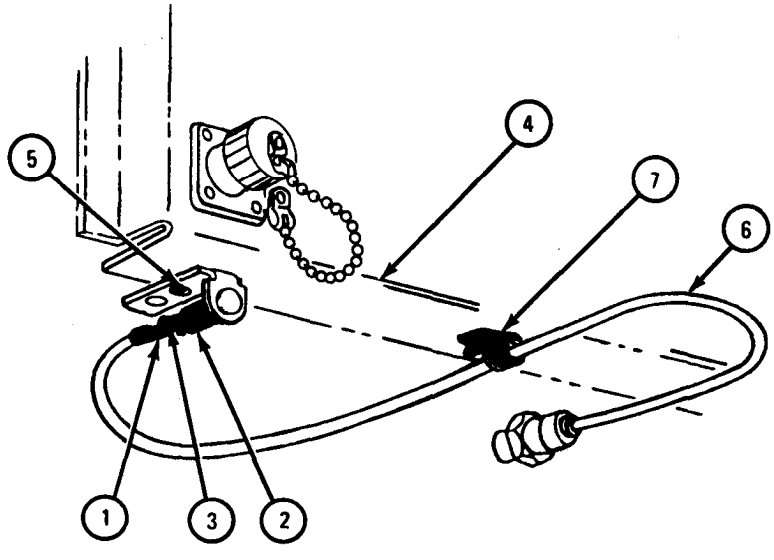


TA 102533

FRAME 6

1. Aline hole in cable lug (l) with hole in power socket assembly (2).
2. Using screwdriver, screw in and tighten screw (3).
3. Slide power socket assembly (2) onto bottom lip of instrument panel (4).
4. Using screwdriver, screw in and tighten screw (5).
5. Put cable (6) into clip (7).

GO TO FRAME 7

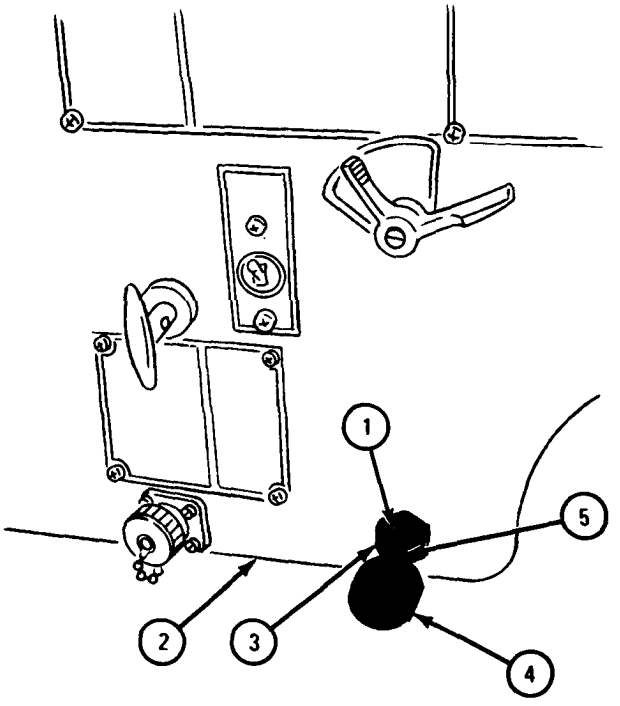


TA 102534

FRAME 7

1. Put valve (1) into panel (2).
2. Using 3/4-inch wrench, screw on and tighten nut (3).
3. Put on knob (4). Using screwdriver, tighten two setscrews (5).

GO TO FRAME 8

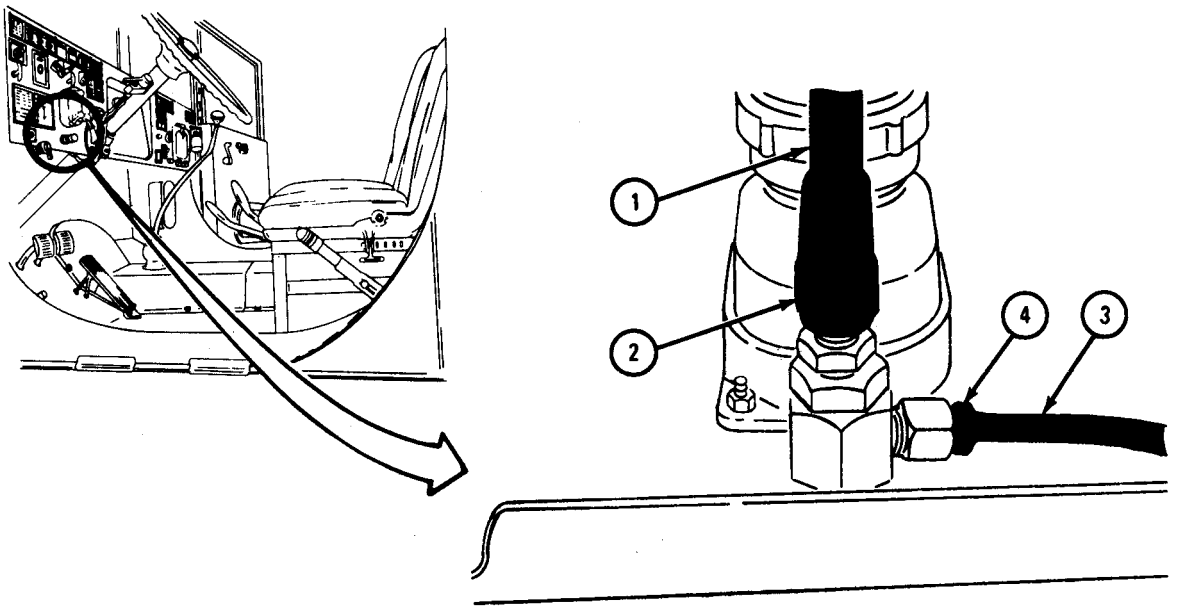


TA 102535

FRAME 8

1. Put tubing (1) in place. Using 9/16-inch wrench, screw on fitting (2).
2. Put tubing (3) in place. Using 1/2-inch wrench, screw on fitting (4).

GO TO FRAME 9

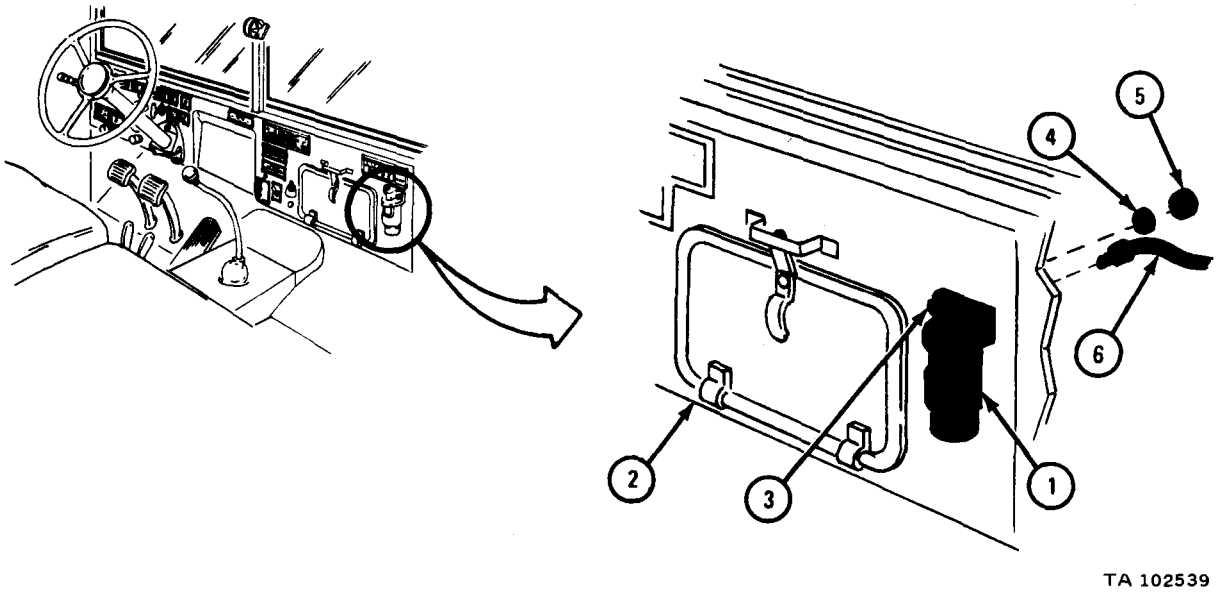


TA 102538

FRAME 9

1. Put air filter indicator (1) on instrument panel (2). Put in two screws (3).
2. Behind panel, put on two washers (4). Using flat-tip screwdriver, hold screws (3). Using 7/16-inch wrench, screw on two nuts (5).
3. Using 7/16-inch wrench, screw on tube (6).

GO TO FRAME 10



TA 102539

FRAME 10

NOTE

Follow-on Maintenance Action Required:

1. Replace air brake hand control valve. Refer to para 12-22.
2. Replace engine starter switch. Refer to para 7-17.
3. Replace instrument panel circuit breaker. Refer to para 7-12.
4. Replace blower motor emergency switch. Refer to Part 2, para 21-6.
5. Replace personnel hot water heater control cables on trucks with personnel hot water heaters. Refer to Part 2, para 21-8.
6. Replace throttle cable. Refer to para 4-33.
7. Replace engine stop cable. Refer to para 4-32.
8. Replace light switch. Refer to para 7-8.
9. Replace instrument cluster. Refer to para 7-15.
10. Close hood. Refer to TM 9-2320-211-10.

END OF TASK

Section VI. LIGHTING SYSTEM

7-22. HEADLAMP ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: Tags

PERSONNEL: One

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

a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

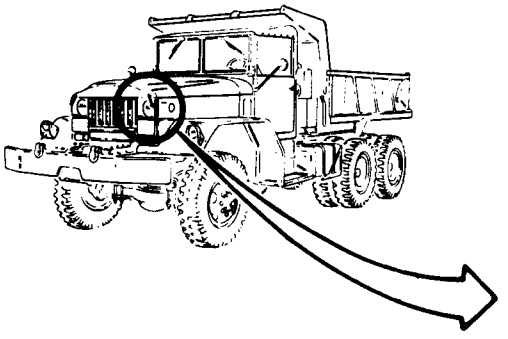
FRAME 1

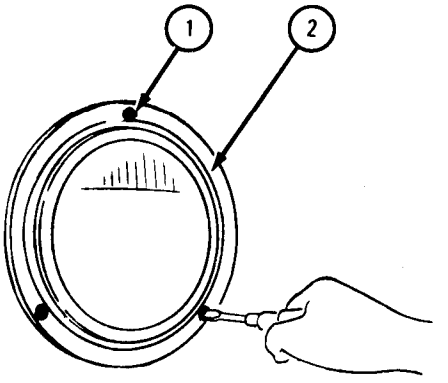
1. Using screwdriver, unscrew and take out three screws (l).
2. Take off headlight rim (2).

NOTE

There are two types of headlamps. Type B is held by a ring and type A is not.

IF HEADLAMP IS TYPE A, GO TO FRAME 2.
IF HEADLAMP IS TYPE B , GO TO FRAME 3





TA 054758

FRAME 2

NOTE

Tag connectors (2) before taking them off so they can be put back in the same place.

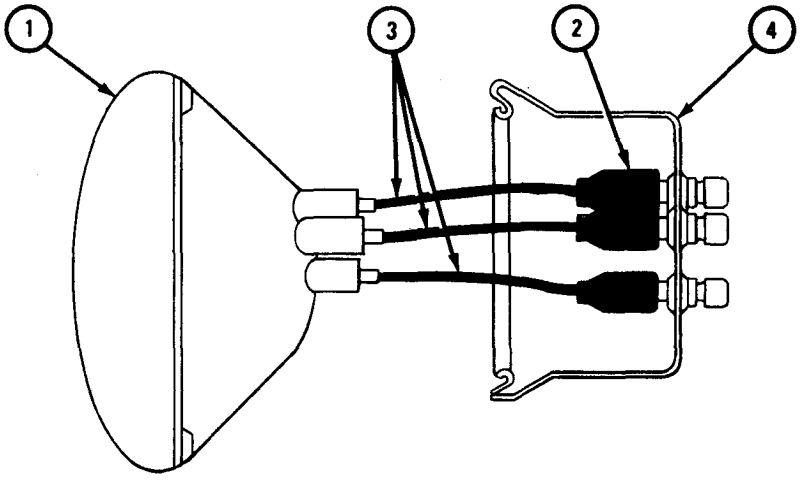
1. Pull headlamp (1) out a few inches.
2. Unplug three connectors (2) and leads (3) at housing (4).

CAUTION

Wires are joined to headlamp (1). Do not pull them off or headlamp will not work.

3. Take out headlamp (1).

END OF TASK



TYPE A

TA 088883

FRAME 3

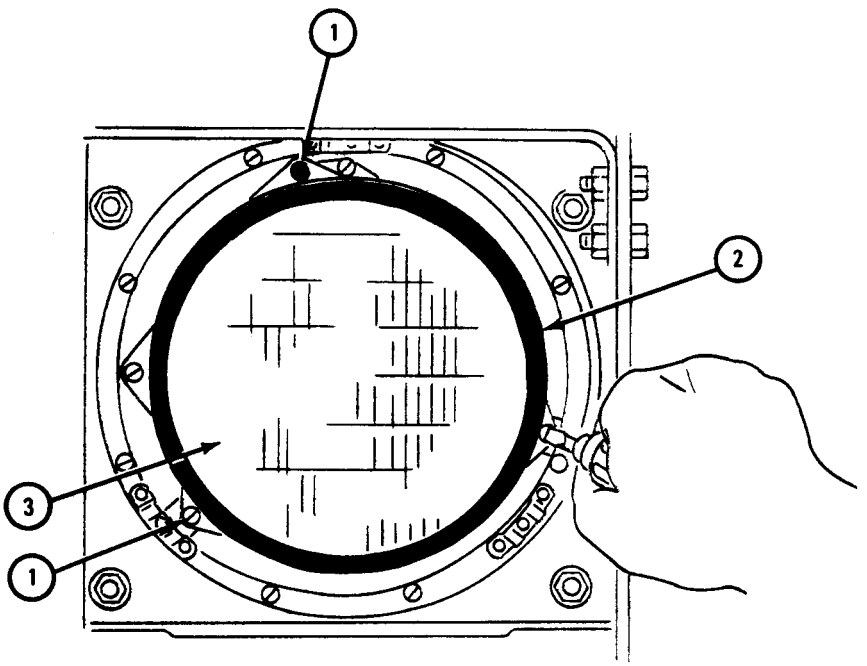
1. Using screwdriver, loosen three screws (l).
2. Turn ring (2) to the left and take it off.
3. Pull headlamp (3) out a few inches.

CAUTION

Headlamp (3) has wires joined to it. Do not pull off wires or headlamp will not work.

GO TO FRAME 4

TYPE B



TA 054759

FRAME 4

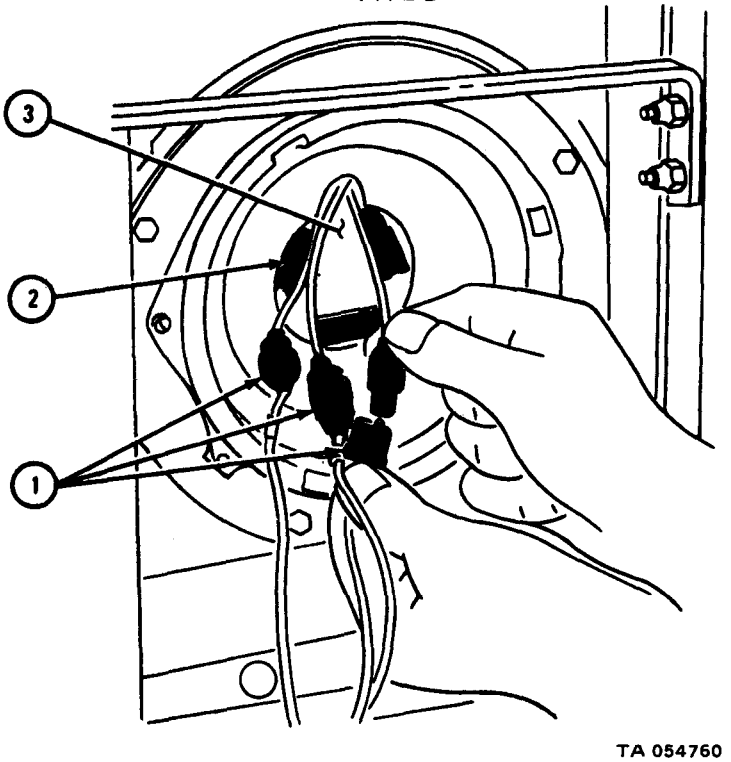
NOTE

Tag connectors (1) before taking them off so they will be put back in the same place.

1. Pull connectors (1) out of brackets (2) in rear of housing (3).
2. Twist and pull apart three connectors (1).

END OF TASK

TYPE B



TA 054760

c. Replacement.

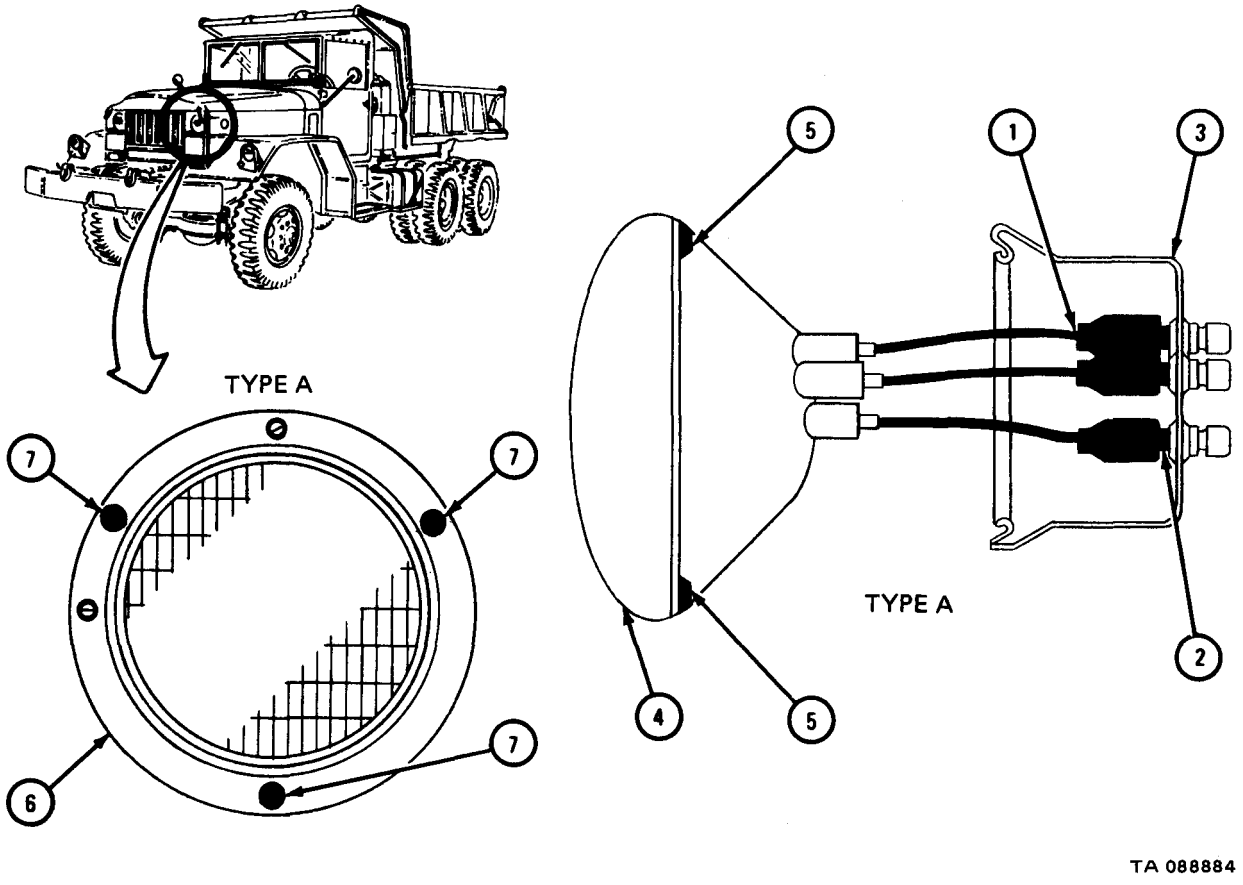
NOTE

If type A headlamp is used, go to frame 1.
If type B headlamp is used, go to frame 2.

FRAME 1

1. Push three leads (1) into connectors (2) in housing (3) as tagged. Take off tags.
2. Put headlamp (4) into housing (3). Put keys (5) into holes in housing.
3. Put ring (6) in place on housing (3), alining holes.
4. Using screwdriver, screw in and tighten three screws (7).

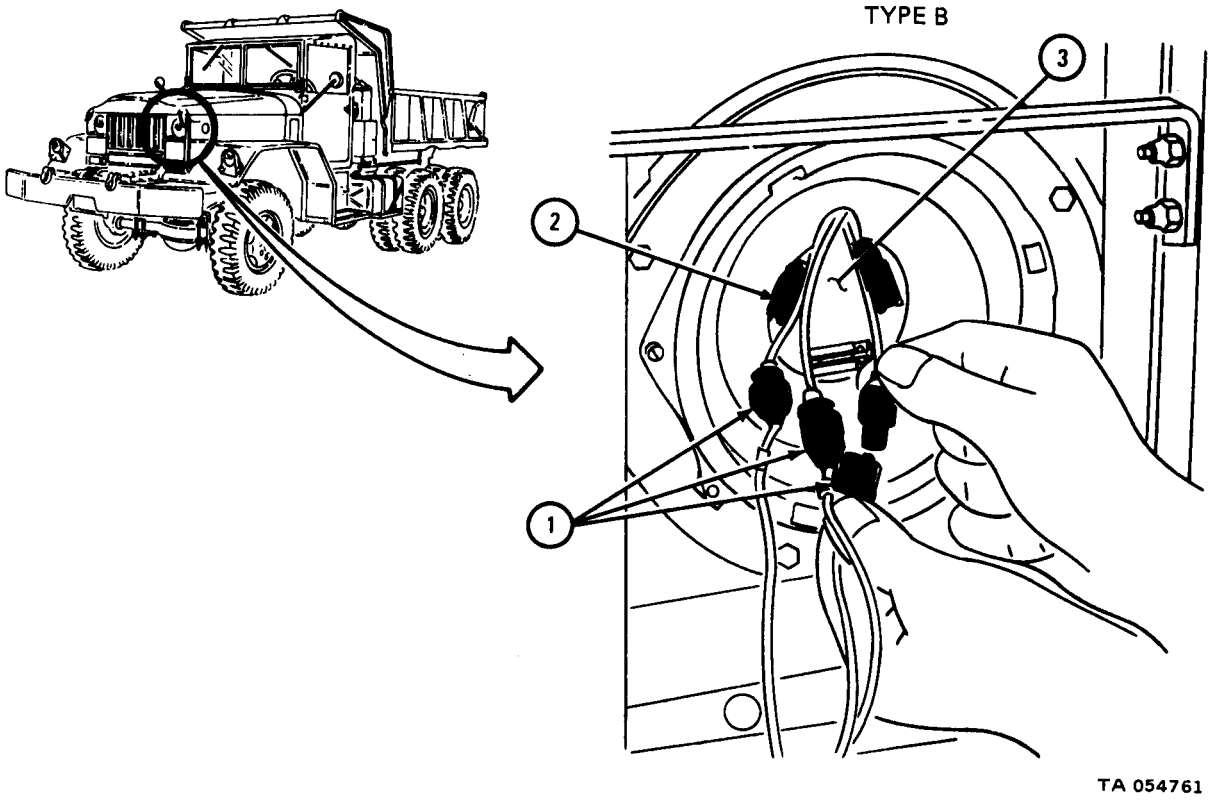
END OF TASK



FRAME 2

1. Push on and twist connectors (1) as tagged. Take off tags.
2. Put three connectors (1) into brackets (2) in housing (3).

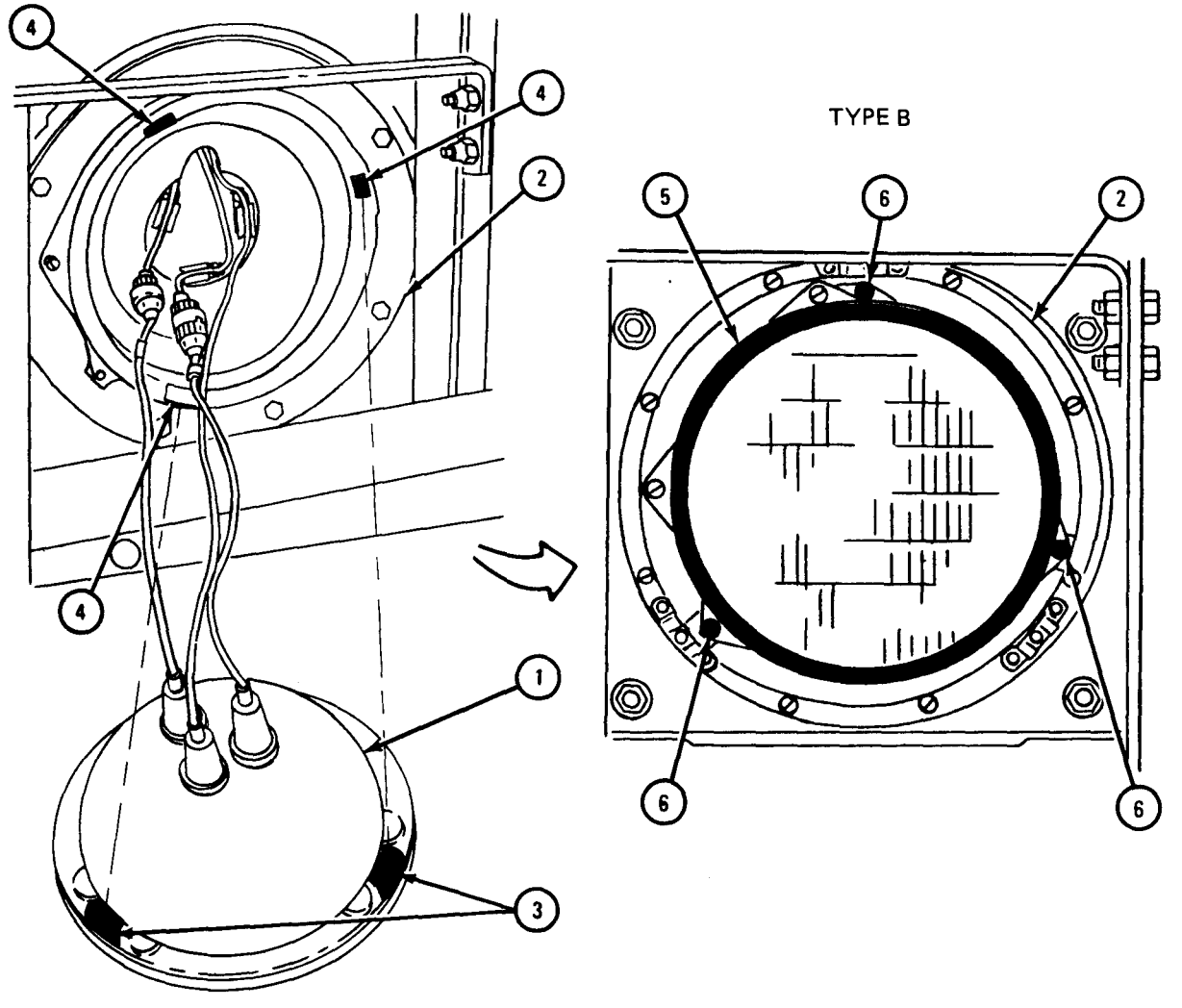
GO TO FRAME 3



FRAME 3

1. Put headlamp (1) in housing (2). Put keys (3) in three notches (4).
2. Put ring (5) in place. Aline holes in ring with three screws (6) in housing (2).
3. Turn ring (5) to the right to catch on three screws (6).
4. Using screwdriver, screw in and tighten three screws (6).

GO TO FRAME 4



TA 054762

FRAME 4

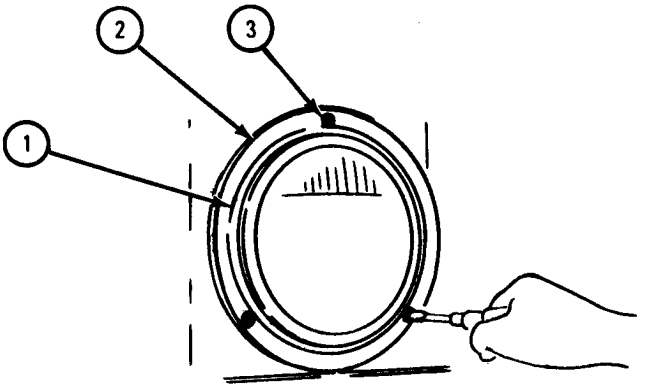
1. Aline holes in headlight rim (1) with holes in housing (2).
2. Using screwdriver, screw in and tighten three screws (3).

NOTE

Follow-on Maintenance Action Required:

Connect battery ground cable. Refer to para 7-44.

END OF TASK



TA 054763

7-23. HEADLIGHT ASSEMBLY REMOVAL, REPAIR, AND REPLACEMENT.

NOTE

There are two types of headlight assemblies. This task is shown for both types.

TOOLS: 7/16-inch wrench
3/8-inch wrench
Cross-tip screwdriver (Phillips type)
Flat-tip screwdriver
9/16-inch wrench

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

(2) Remove brush guard assembly. Refer to Part 2, para 17-3.

b. Removal.

(1) Removal of type B headlight assembly.

FRAME 1

NOTE

Tag connectors (1) before taking them off so that they can be put back in same place.

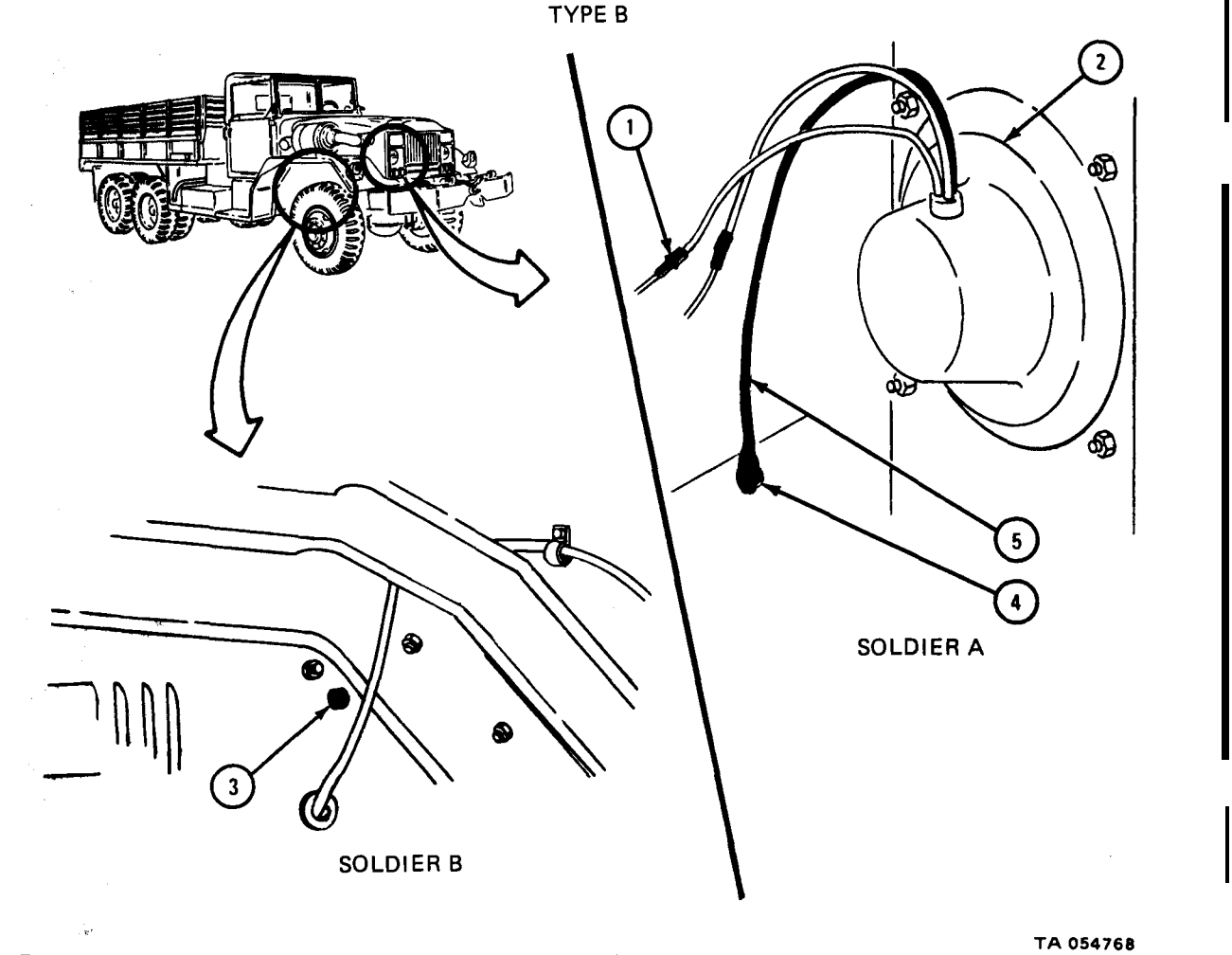
Soldier A 1. Working in engine compartment, pull apart two electrical connectors (1) from headlight assembly (2) .

Soldier B 2. Working under fender using 7/16-inch wrench, hold nut (3).

Soldier A 3. Using 7/16-inch wrench, unscrew and take out screw (4). Take off ground wire (5).

Soldier B 4. Take out nut (3).

GO TO FRAME 2



FRAME 2

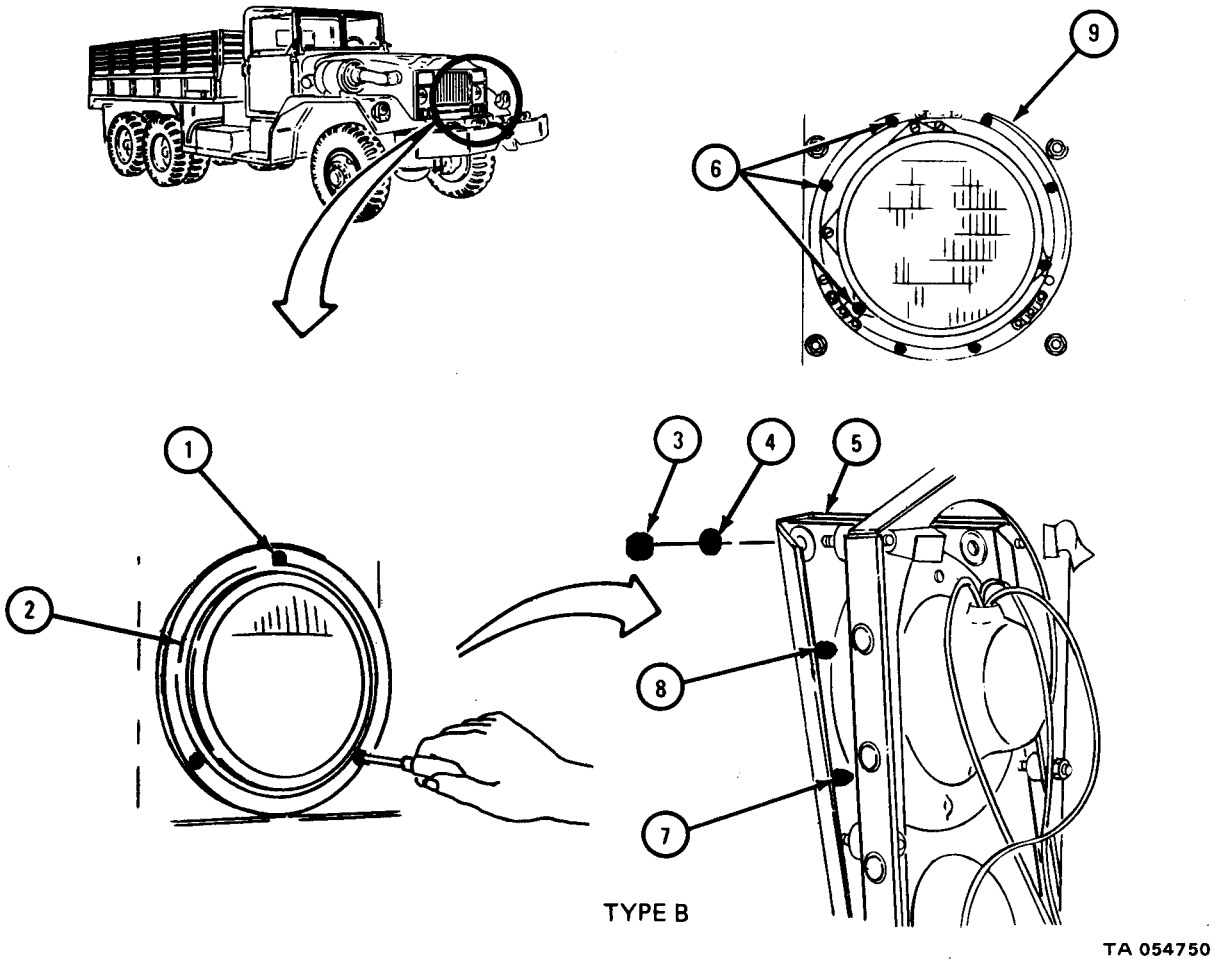
1. Using flat-tip screwdriver, unscrew three screws (1).

NOTE

Screws (1) will not come out of headlight rim (2).

2. Take off headlight rim (2).
3. Using 9/16-inch wrench, unscrew and take off six nuts (3) and six lockwashers (4). Move support (5) forward.
4. Using phillips screwdriver and 3/8-inch wrench, unscrew and take out eight screws (6) and eight nuts (7) and eight lockwashers (8).
5. Take out headlight mount (9).

END OF TASK



TYPE B

TA 054750

(2) Removal of type A headlight assembly.

FRAME 1

NOTE

Tag connectors (2) before taking them off so they can be put back in the same place.

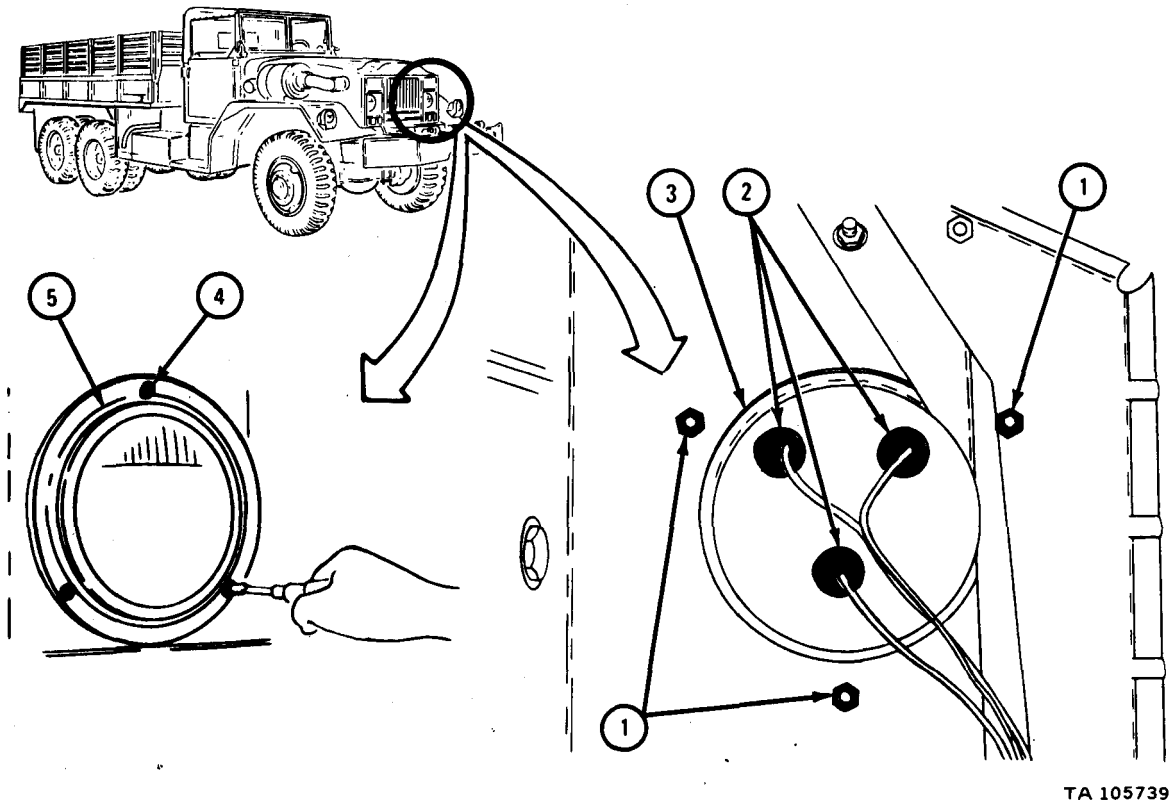
1. Working under hood, using 7/16-inch wrench, unscrew three nuts (1).
2. Unplug three leads (2) at rear of headlight (3).

NOTE

Screws (4) will not come out of headlight rim (5).

3. Working in front of truck, using flat-tip screwdriver, unscrew and take out three screws (4). Take off rim (5).
4. Take out headlight assembly (3).

END OF TASK



TA 105739

c. 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,

NOTE

This task is the same for both headlight assemblies.

(1) Clean all parts using dry cleaning solvent.

(2) Check that all metal parts have no dents, cracks or other damage.

(3) Check that electrical parts have no breaks, cracks or cuts in insulation.

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

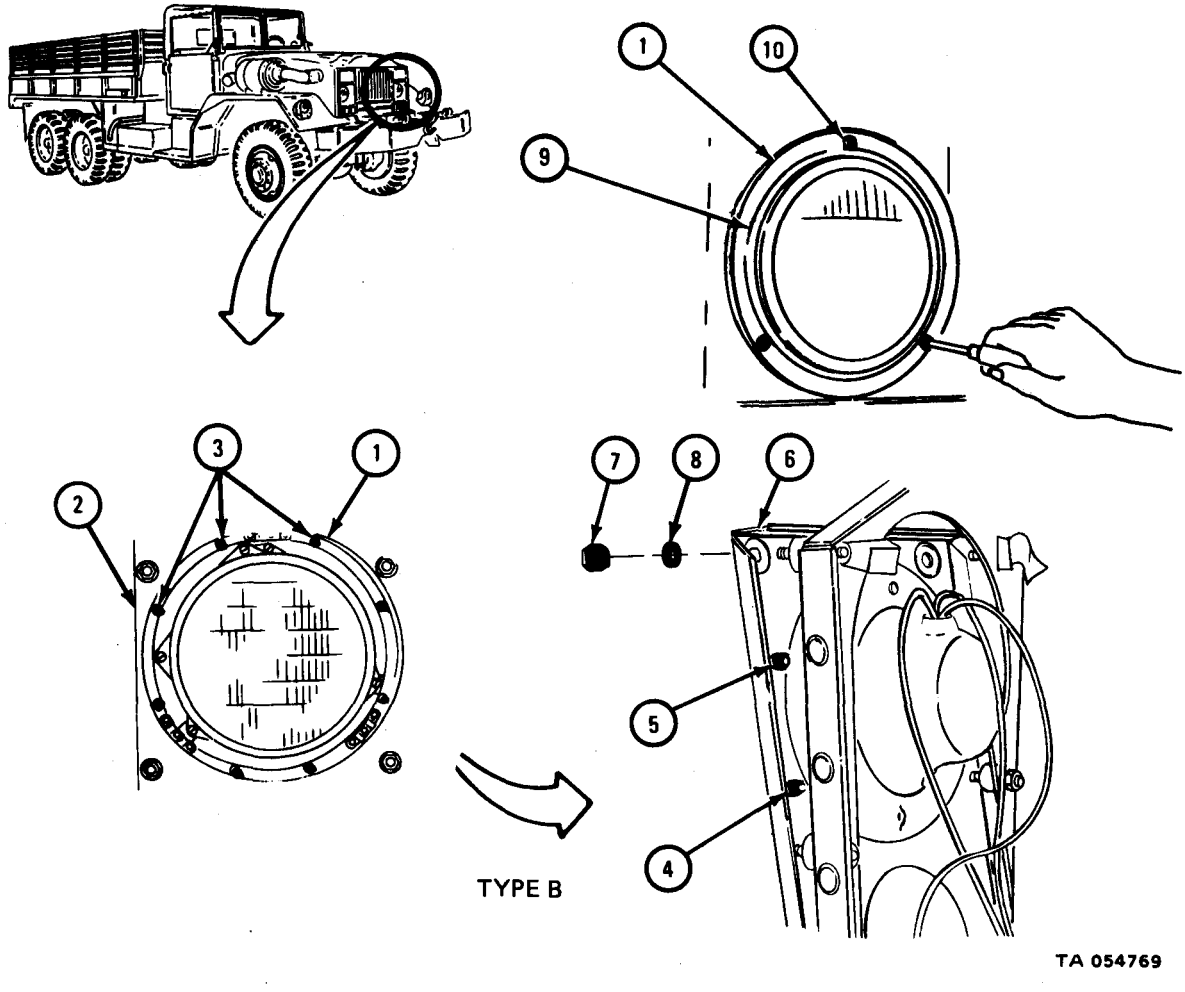
d. Replacement.

(1) Replacement of type B headlight assembly.

FRAME 1

1. Put headlight mount (1) in bracket (2), alining holes.
2. Using phillips screwdriver and 3/8-inch wrench, screw in and tighten eight screws (3), nuts (4), and lockwashers (5).
3. Move support (6) back. Using 9/l6-inch wrench, screw on and tighten six nuts (7) and lockwashers (8).
4. Put rim (9) on mount (1), alining holes.
5. Using flat-tip screwdriver, screw in and tighten three screws (10) .

GO TO FRAME 2



(2) Replacement of type A headlight assembly.

FRAME 1

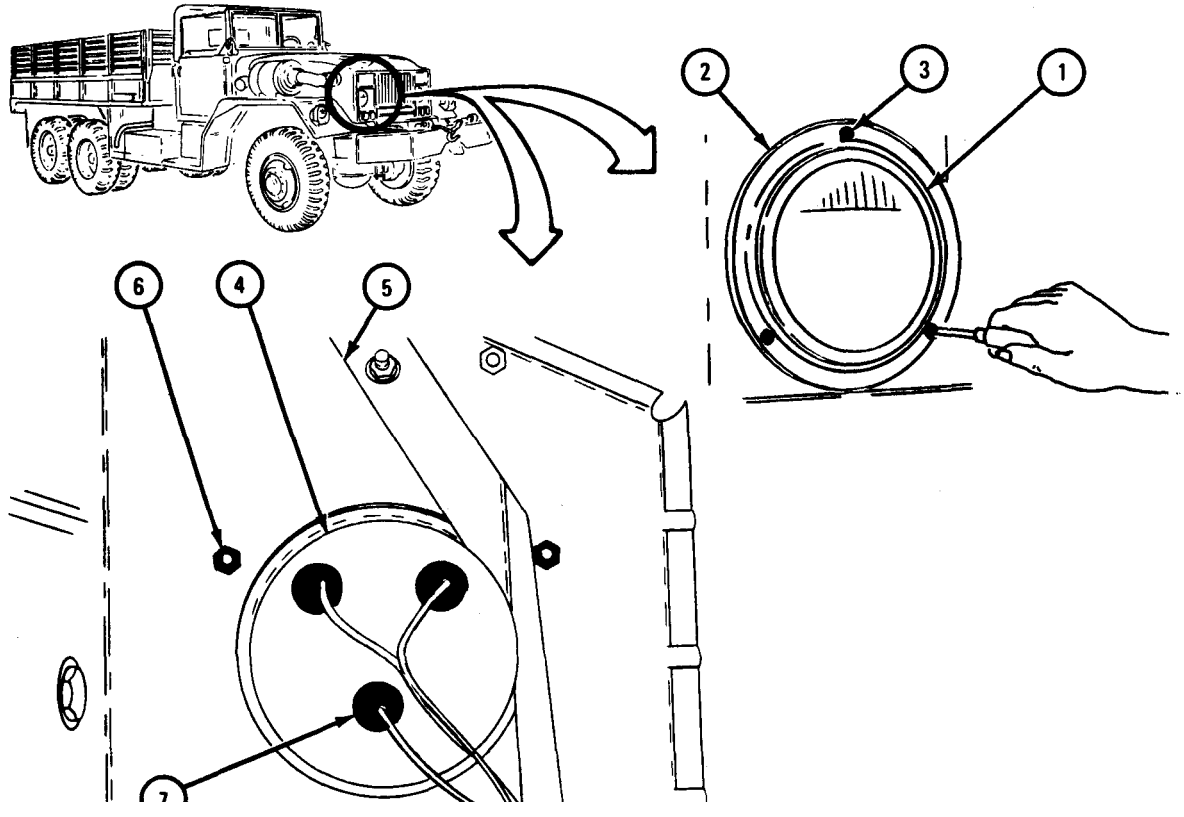
1. Put rim (1) on mount (2), alining holes.
2. Using flat-tip screwdriver, screw on and tighten three screws (3).
3. Put headlight assembly (4) in mounting bracket (5).
4. Working under hood and using 7/16-inch wrench, screw on and tighten three nuts (6).
5. Plug in three connectors (7) as tagged. Take off tags.

NOTE

Follow-on Maintenance Action Required:

1. Close hood. Refer to TM 9-2320-211-10.
2. Replace brush guard assembly. Refer to Part 2, para 17-3.

END OF TASK



7-24. HEADLIGHT ADJUSTMENT.

TOOLS: Flat-tip screwdriver
50-foot tape measure
Carpenter's square

SUPPLIES: Chalk
String

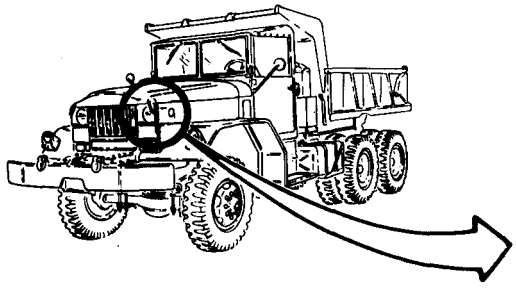
PERSONNEL: Three

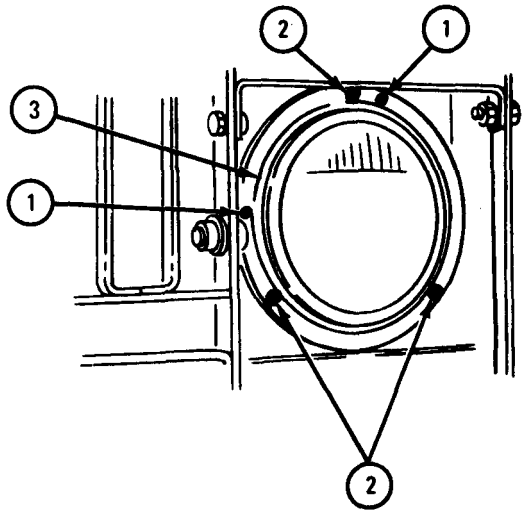
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

FRAME 1

1. Some trucks have two access holes (l). Check for access holes. If truck has access holes, go to frame 2.
2. Using flat-tip screwdriver, unscrew and take out three screws (2).
3. Take off headlight rim (3).
4. Do steps 2 and 3 for other headlight.

GO TO FRAME 2



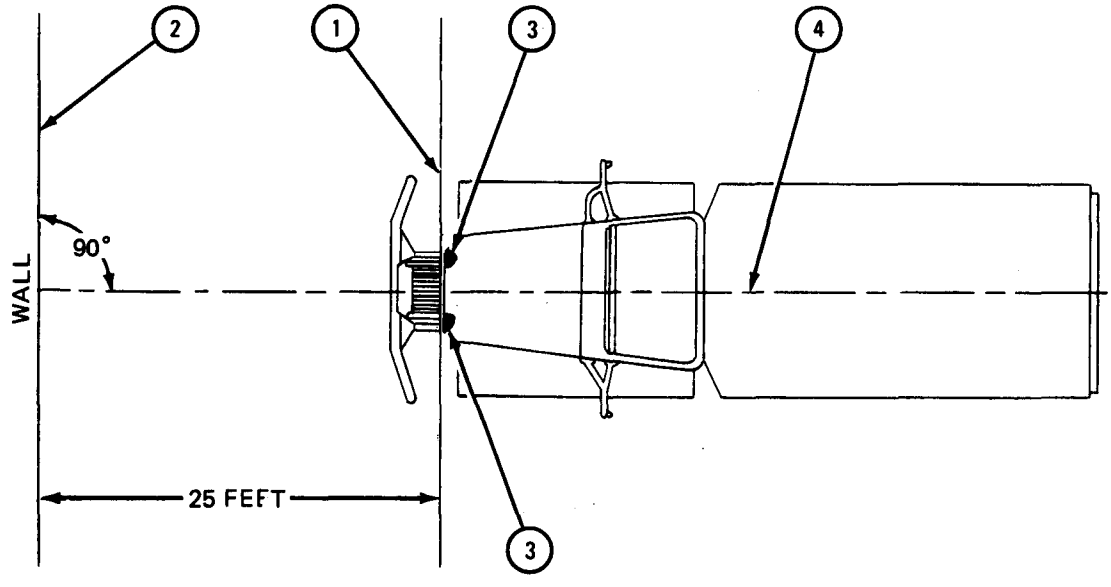


TA 045813

FRAME 2

1. Using tape measure and chalk, draw a line (1) 25 feet from and parallel to vertical wall (2).
2. Start unloaded truck. Refer to TM 9-2320-211-10. Move truck so headlights (3) are parallel with and directly above line (1). The center line of the truck (4) will be at a right angle (90°) to wall (2) as shown.
3. Stop engine and set handbrake. Refer to TM 9-2320-211-10.

GO TO FRAME 3

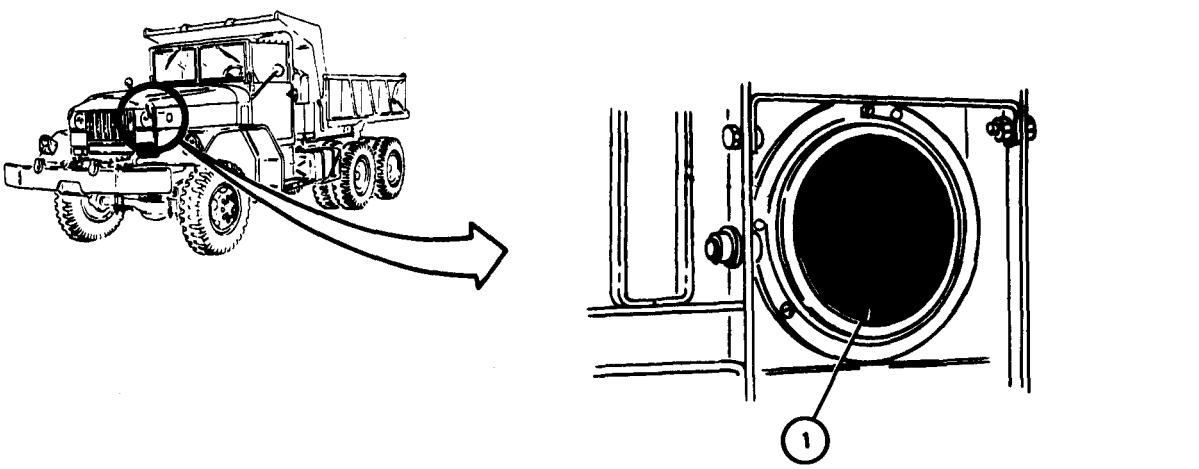


TA 088888

FRAME 3

1. Using tape measure, measure and note height from floor to center of left headlight (1).
2. Do step 1 again for right headlight.

GO TO FRAME 4

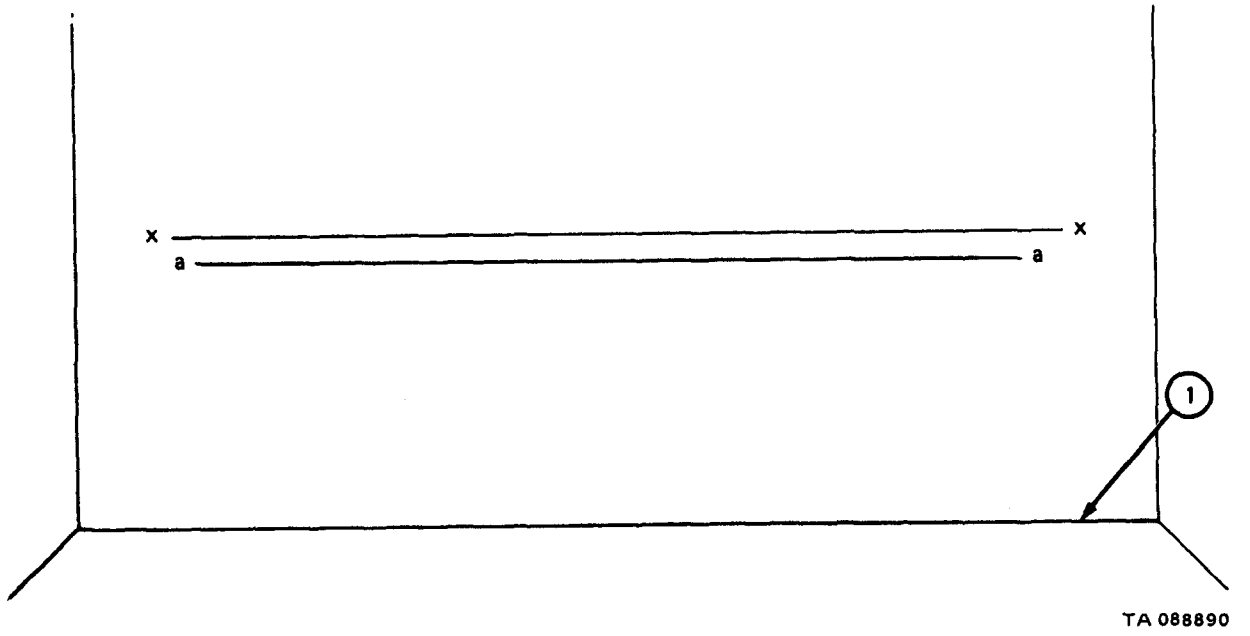


TA 088889

FRAME 4

1. Mark height from floor (1) noted in frame 3 on wall. Using chalk, draw line X-X parallel to floor.
2. Using chalk, draw line a-a 1/12 distance from line X-X to floor (1).

GO TO FRAME 5



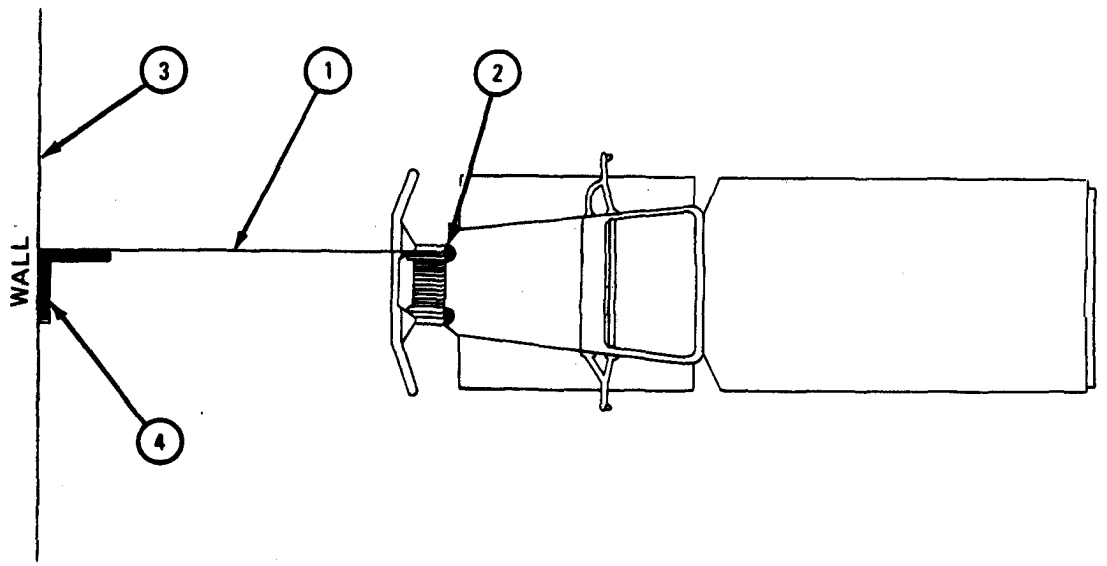
FRAME 5

Soldier A 1. Hold string (1) in center of right headlight (2).

Soldier B 2. Hold other end of string (1) tight on wall (3) on line X-X.

Soldier C 3. Place and hold carpenter's square (4) flush against wall (3) on line X-X.

GO TO FRAME 6

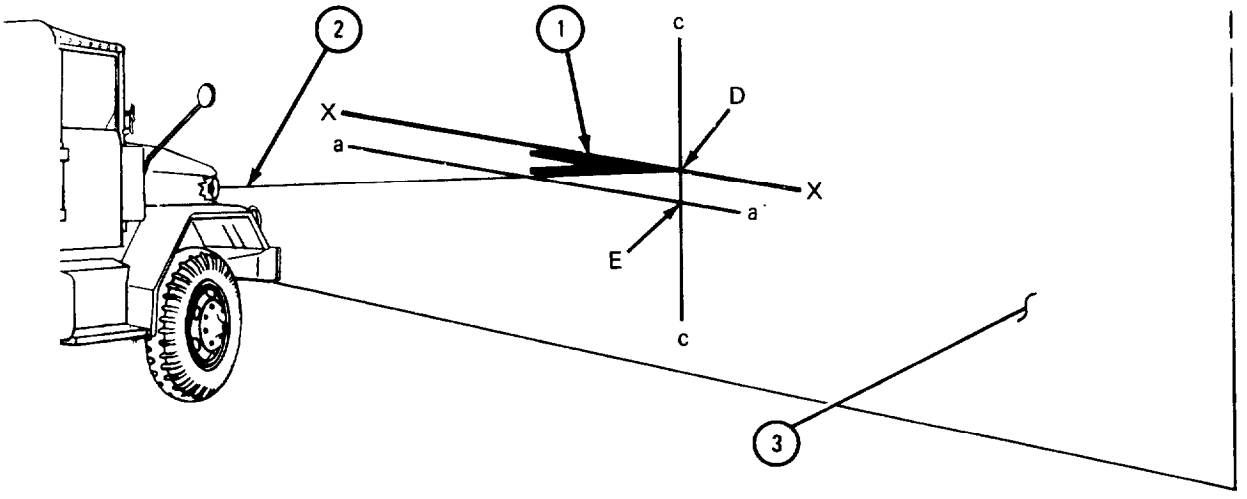


TA 088891

FRAME 6

Soldiers B and C	1.	Slide carpenters square (1) and move string (2) on line X-X until string is flush with edge of carpenter's square. String will be at right angle (90°) to wall (3).
Soldier C	2.	Using chalk, mark point D on line X-X where string (2) is flush with edge of carpenter's square (1).
Soldiers A, B, and C	3.	Do steps 1 and 2 again for line a-a and point E.
	4.	Using chalk, draw line c-c through points D and E.

GO TO FRAME 7



TA 088892

FRAME 7

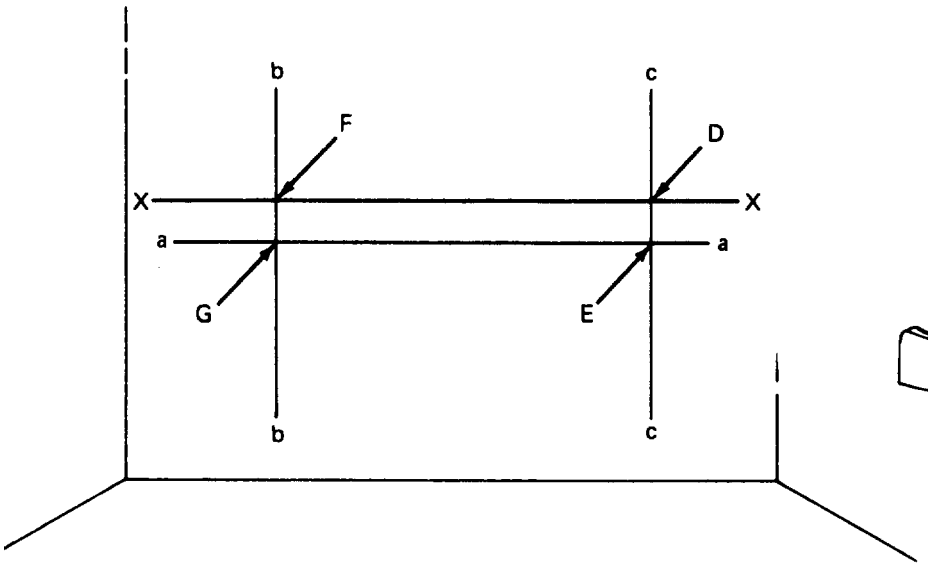
Soldiers A and B 1. Using tape measure, measure distance from center of right headlight (1) to center of left headlight (2). Note distance.

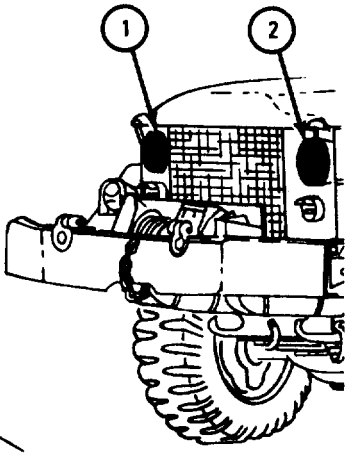
Soldiers A, B, and C 2. Using tape measure and chalk, mark point F as shown online X-X at distance noted in step 1 from point D.

3. Using tape measure and chalk, mark point G as shown on line a-a at distance noted in step 1 from point E.

4. Using chalk, draw line b-b through points F and G.

GO TO FRAME 8



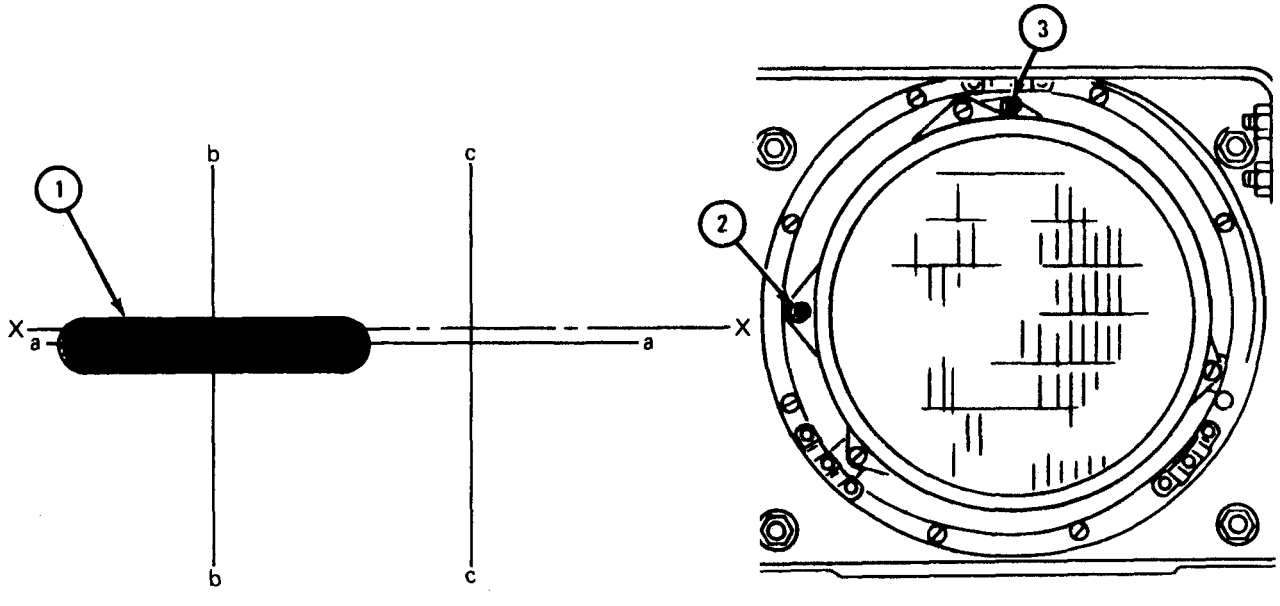


TA 088893

FRAME 8

1. Turn on headlights and high beams. Refer to TM 9-2320-211-10.
2. Cover right headlight.
3. Center of left headlight hot spot (1) should be where lines a-a and b-b meet as shown.
4. Using flat-tip screwdriver, turn screw (2) to move hot spot (1) left or right to put center as shown.
5. Using flat-tip screwdriver, turn screw (3) to move hot spot (1) up or down to put center as shown.
6. Uncover right headlight.
7. Do steps 2 through 6 again for right headlight, covering left headlight and using lines c-c and a-a.
8. Shut off high beams and headlights. Refer to TM 9-2320-211-100

IF TRUCK DOES NOT HAVE ACCESS HOLES, GO TO FRAME 9.
IF TRUCK DOES HAVE ACCESS HOLES, END OF TASK

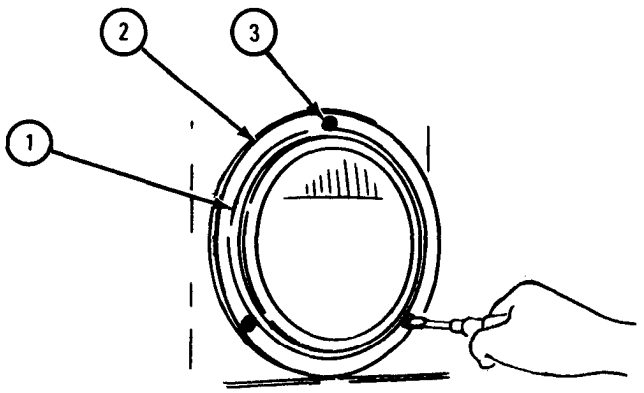


TA 045815

FRAME 9

1. Put rim (1) on mount (2), alining holes.
2. Using flat-tip screwdriver, screw in and tighten three mounting screws (3).
3. Do steps 1 and 2 for other headlight.

END OF TASK



TA 054763

7-25. SHIELDED BLACKOUT HEADLIGHT ASSEMBLY REPAIR.

NOTE

Repair is limited to removal and replacement of damaged headlight assembly or removal and replacement of damaged sealed beam.

TOOLS: Flat-tip screwdriver
7/16-inch wrench
9/16-inch wrench (2)
7/16-inch socket wrench

SUPPLIES: None

PERSONNEL: Two

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, light switch in OFF position.

NOTE

On all trucks with front winch, blackout light is above headlight.

a. Preliminary Procedure.

(1) Disconnect battery ground cable. Refer to para 7-44.

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

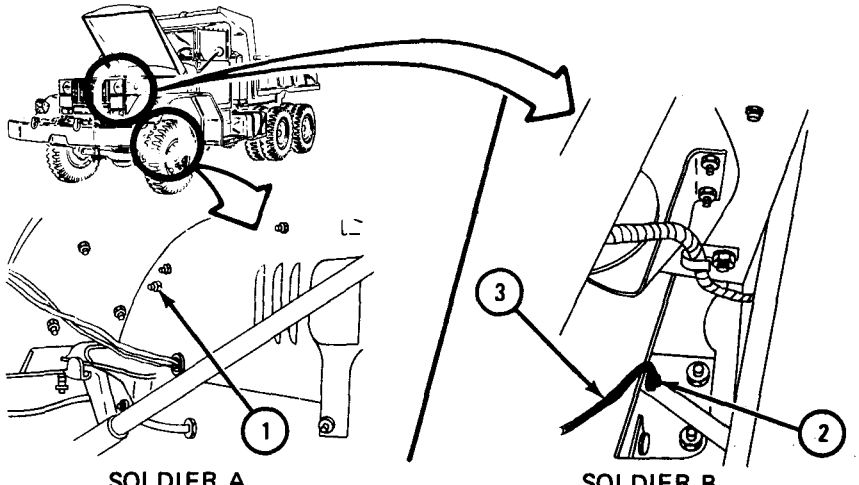
b. Removal of Sealed Beam.

FRAME 1

Soldier A 1. Working under fender using 7/16-inch wrench, hold nut (1).

Soldier B 2. Working in engine compartment using 7/16-inch wrench, unscrew and take out screw (2). Take off ground wire (3).

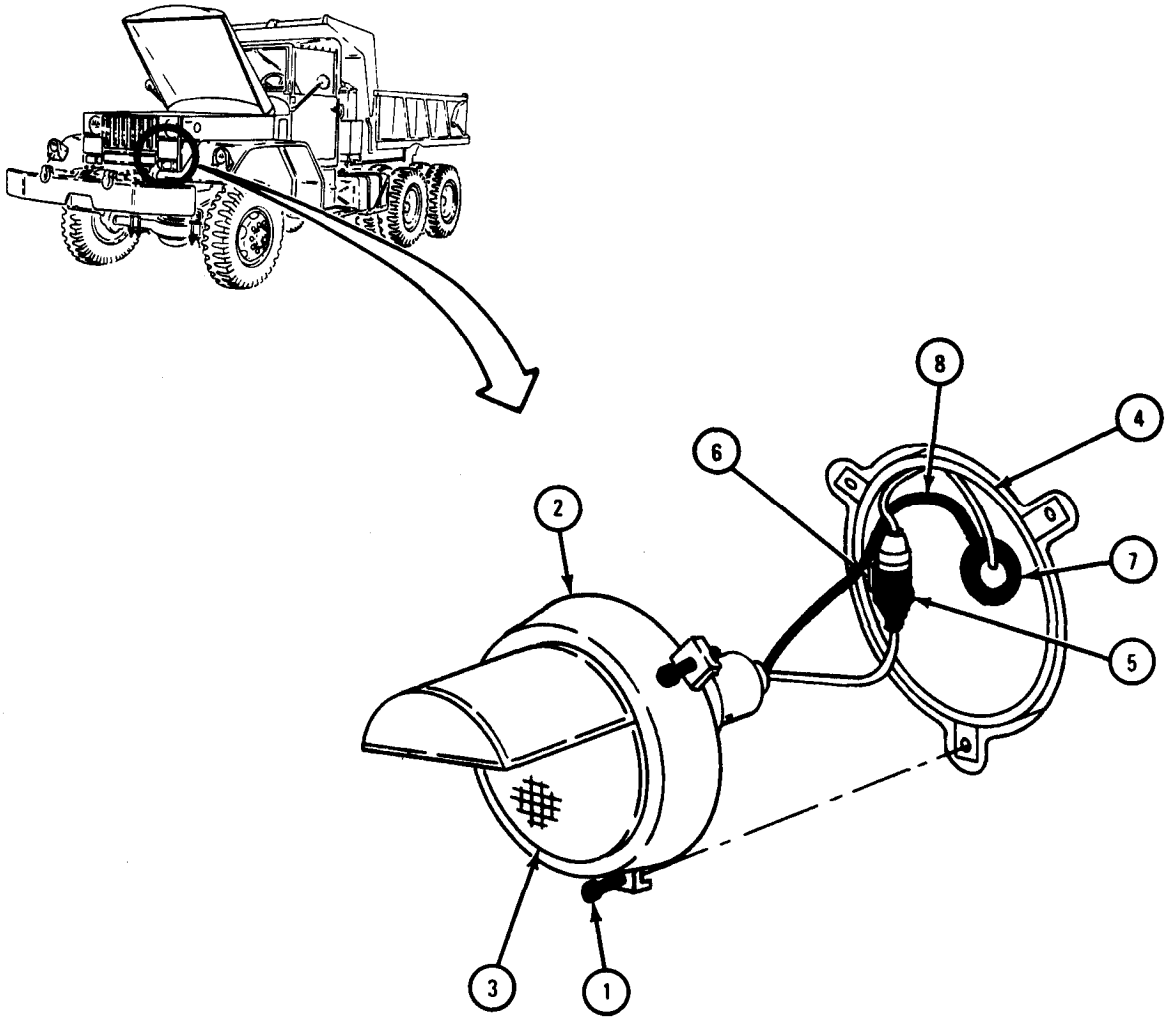
GO TO FRAME 2



FRAME 2

1. Using flat-tip screwdriver, unscrew and take out three screws (1).
2. Hold light door (2) with sealed beam (3) away from light body (4).
3. Using Screwdriver, pry out waterproof connector (5) from connector clip (6).
4. Twist two halves of waterproof conneotor (5) and pull them apart.
5. Pry out grommet (7).
6. Take out sealed beam (3) and light door (2) with ground wire (8) and grommet (7)

GO TO FRAME 3



TA 054753

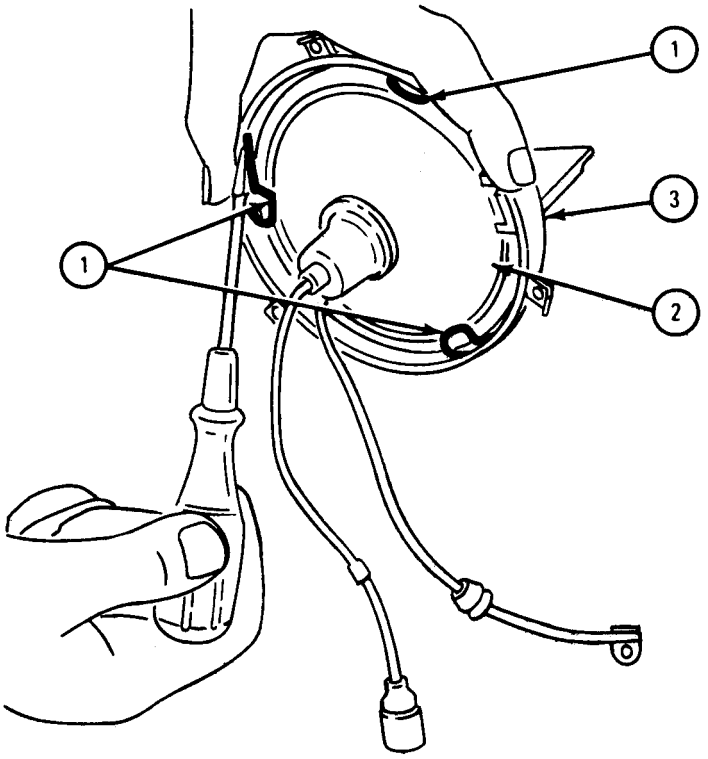
FRAME 3

WARNING

Retaining springs (1) may snap out and cause injury to personnel. Cover spring with free hand while prying if off.

1. Using screwdriver, pry out three lamp unit retaining springs (1) .
2. Take out sealed beam lamp (2) from light door (3).

END OF TASK



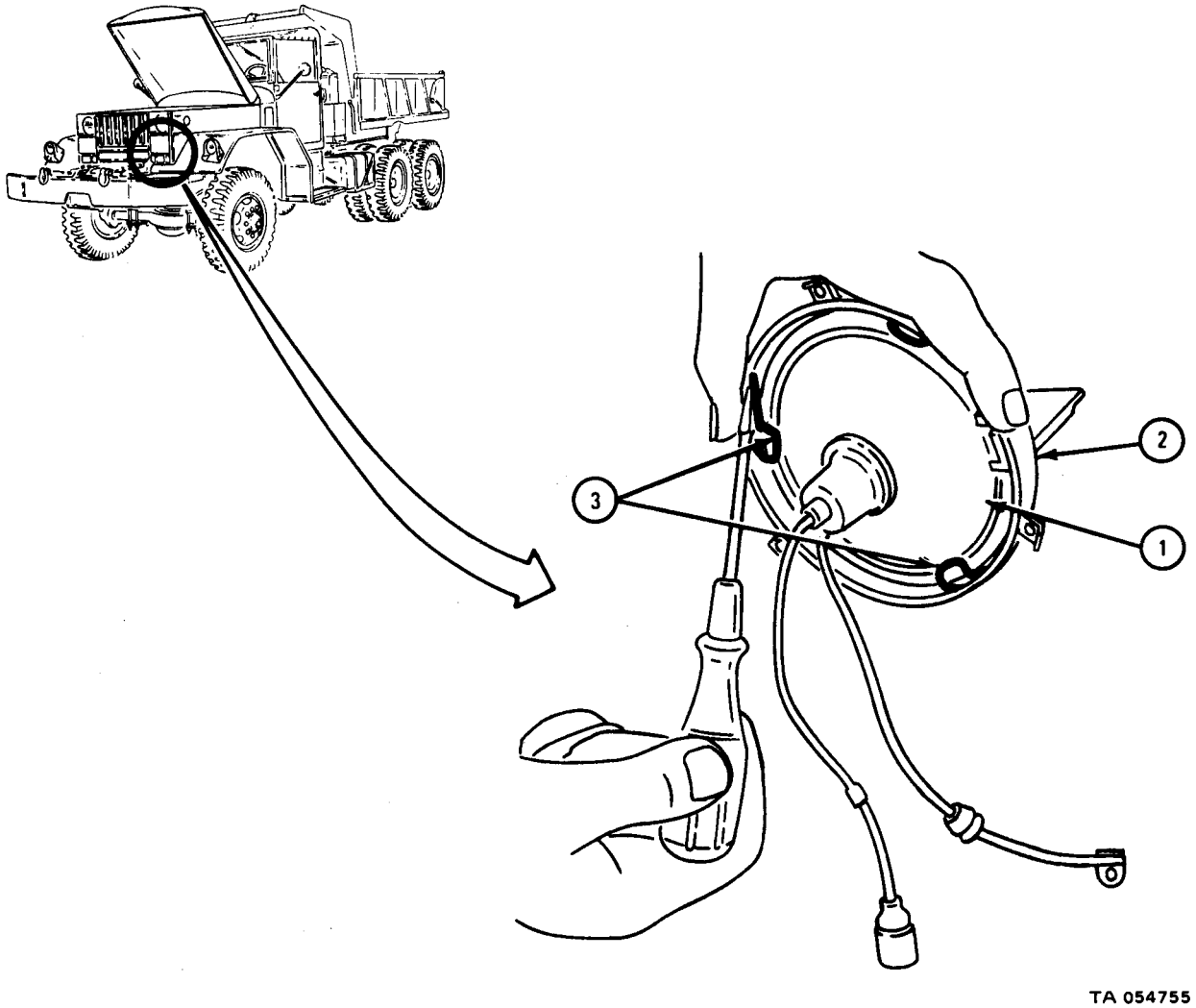
TA 054754

c. Replacement of Sealed Beam.

FRAME 1

1. Place sealed beam lamp (1) into light door (2).
2. Using screwdriver, snap three equally-spaced lamp unit retaining springs (3) into place.

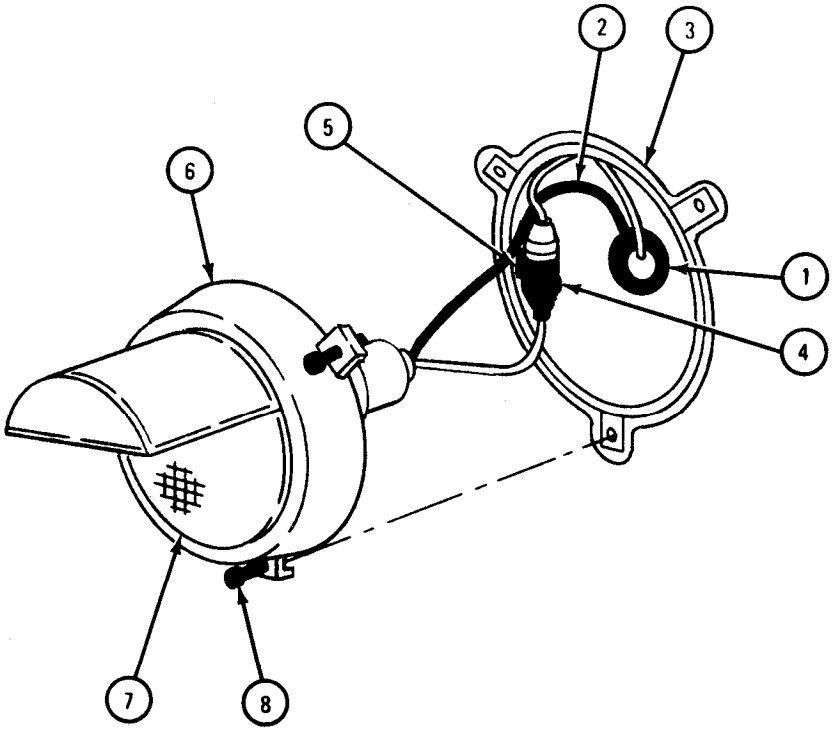
GO TO FRAME 2



FRAME 2

1. Push grommet (1) with ground wire (2) through light body (3).
2. Push halves of waterproof connector (4) together and twist to lock them.
3. Snap waterproof connector (4) into clip (5).
4. Put light door (6) with sealed beam (7) on light body (3).
5. Using flat-tip screwdriver, screw in and tighten three screws (8).

GO T'O FRAME 3



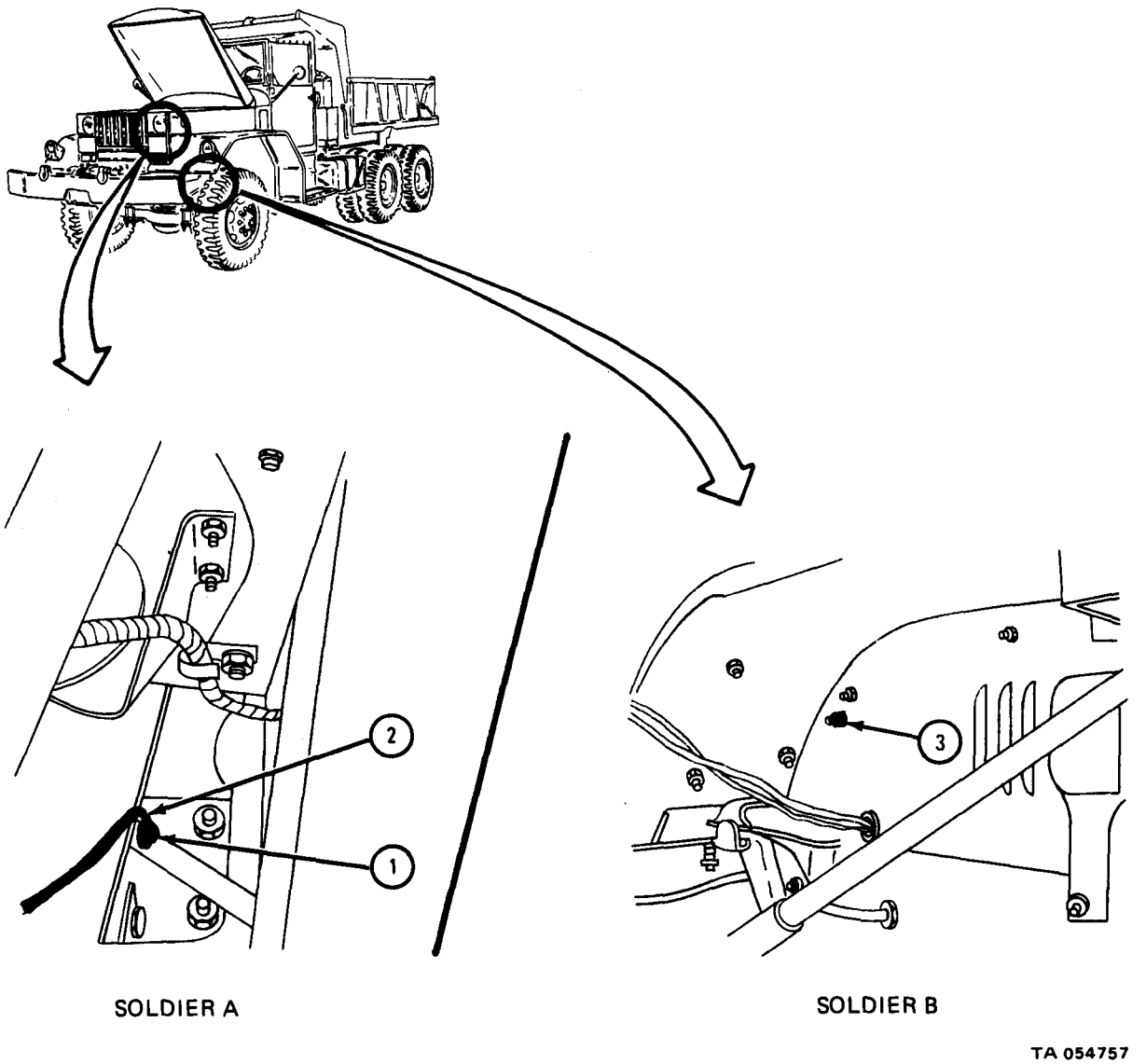
TA 054756

FRAME 3

Soldier A 1. Working in engine compartment using 7/16-inch wrench, put in and hold screw (1) with ground wire (2).

Soldier B 2. Working under fender using 7/16-inch wrench, screw on and tighten nut (3).

END OF TASK



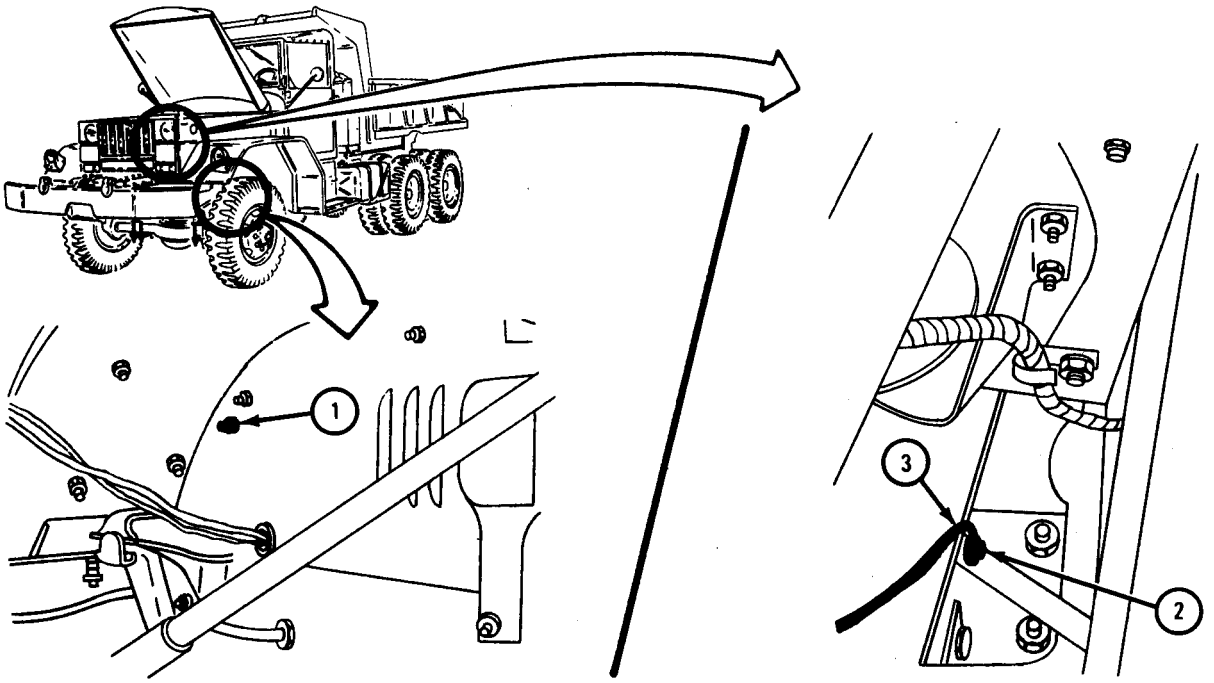
d. Removal of Shielded Blackout Headlight Assembly.

FRAME 1

Soldier A 1. Working under fender using 7/16-inch wrench, hold nut (1).

Soldier B 2. Working in engine compartment using 7/16-inch wrench, unscrew and take out screw (2). Take off ground wire (3).

GO TO FRAME 2



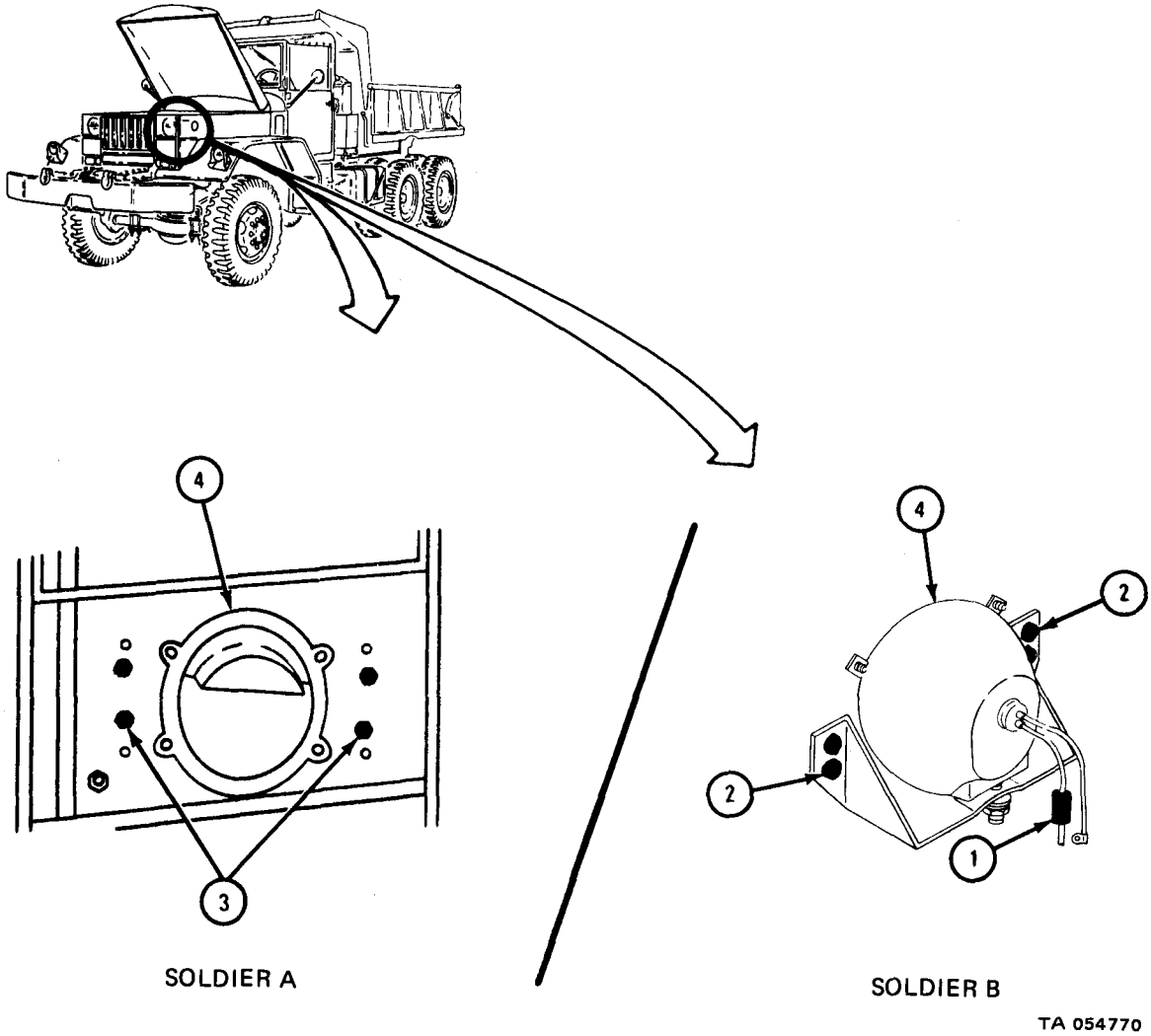
SOLDIER A

SOLDIER B

TA 054752

FRAME 2

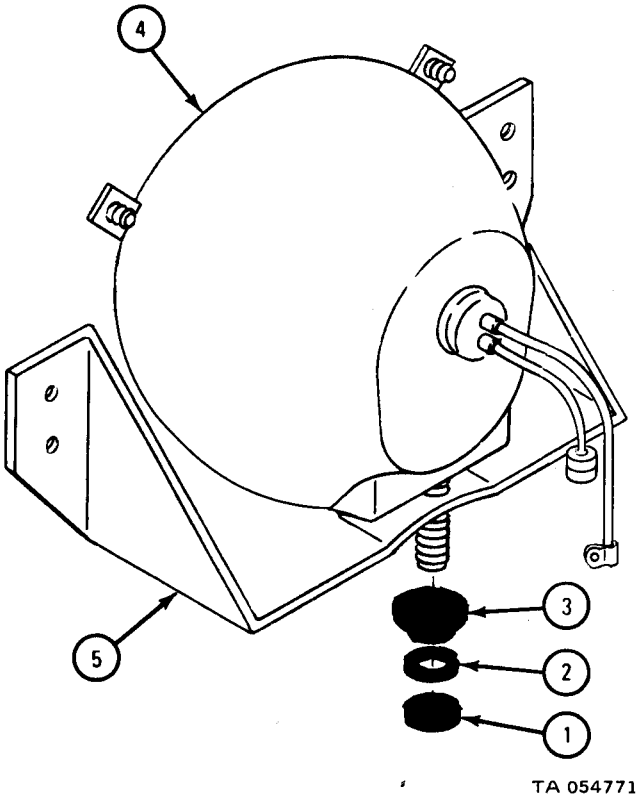
Soldier B 1. Working in engine compartment, twist and pull apart connector (1).
2. Using 7/16-inch wrench, hold four nuts (2).
Soldier A 3. Using 7/16-inch socket wrench, unscrew and take out four screws (3).
Soldier B 4. Take out four nuts (2) and bracket and light assembly (4).
GO TO FRAME 3



FRAME 3

1. Using 9/16-inch wrench, unscrew and take off nut (1). Take off lockwasher (2) and special washer (3).
2. Take light assembly (4) out of bracket (5).

END OF TASK

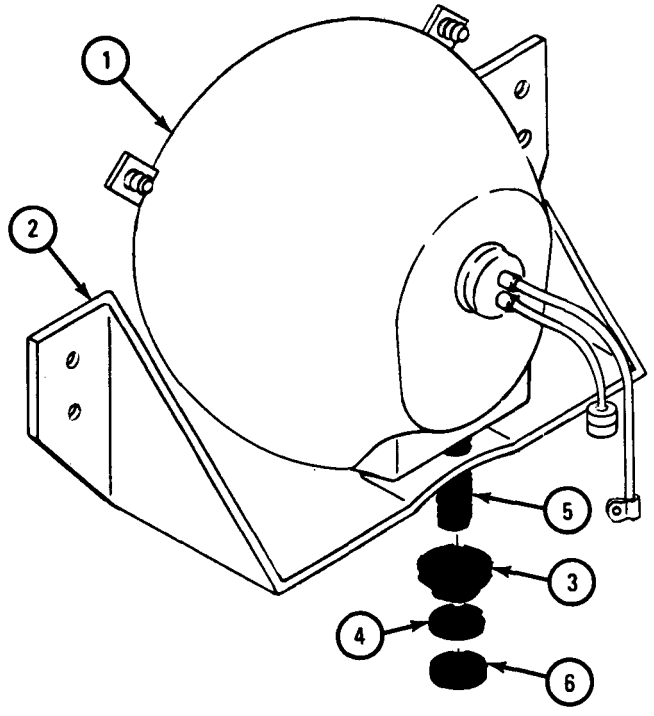


e. Replacement of Headlight Assembly.

FRAME 1

1. Put light assembly (1) in place in bracket (2).
2. Put special washer (3) and lockwasher (4) on stud (5).
3. Using 9/16-inch wrench, screw on and tighten nut (6) on stud (5).

GO TO FRAME 2



TA 084093

FRAME 2

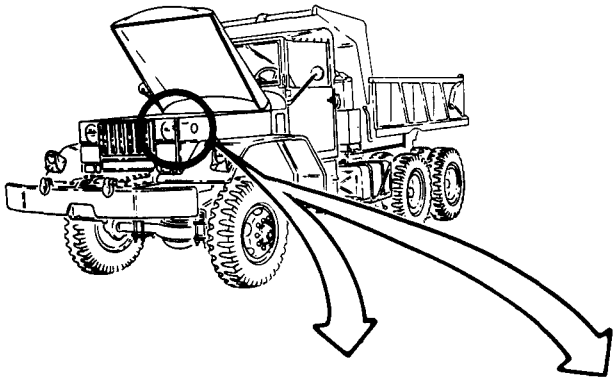
Soldier B 1. Working in engine compartment, put bracket and light assembly (1) in place.

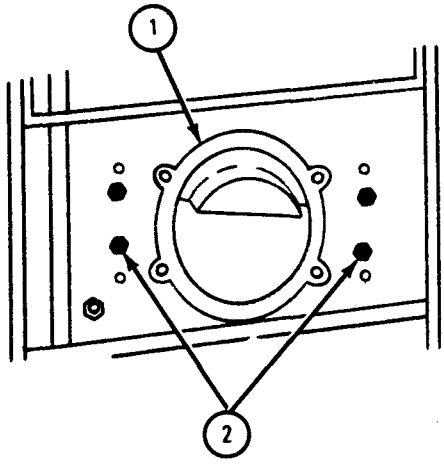
Soldier A 2. Using 7/16-inch wrench, put in and hold four screws (2).

Soldier B 3. Using 7/16-inch socket wrench, screw on and tighten four nuts (3).

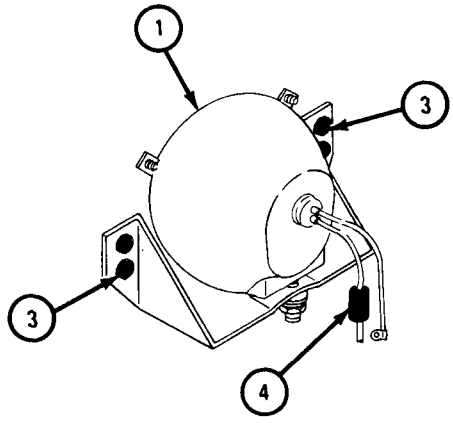
4. Push together and twist halves of connector (4).

GO TO FRAME 3





SOLDIER A



SOLDIER B

TA 084094

FRAME 3

Soldier A 1. Working in engine compartment using 7/16-inch wrench, put in and hold screw (1) with ground wire (2).

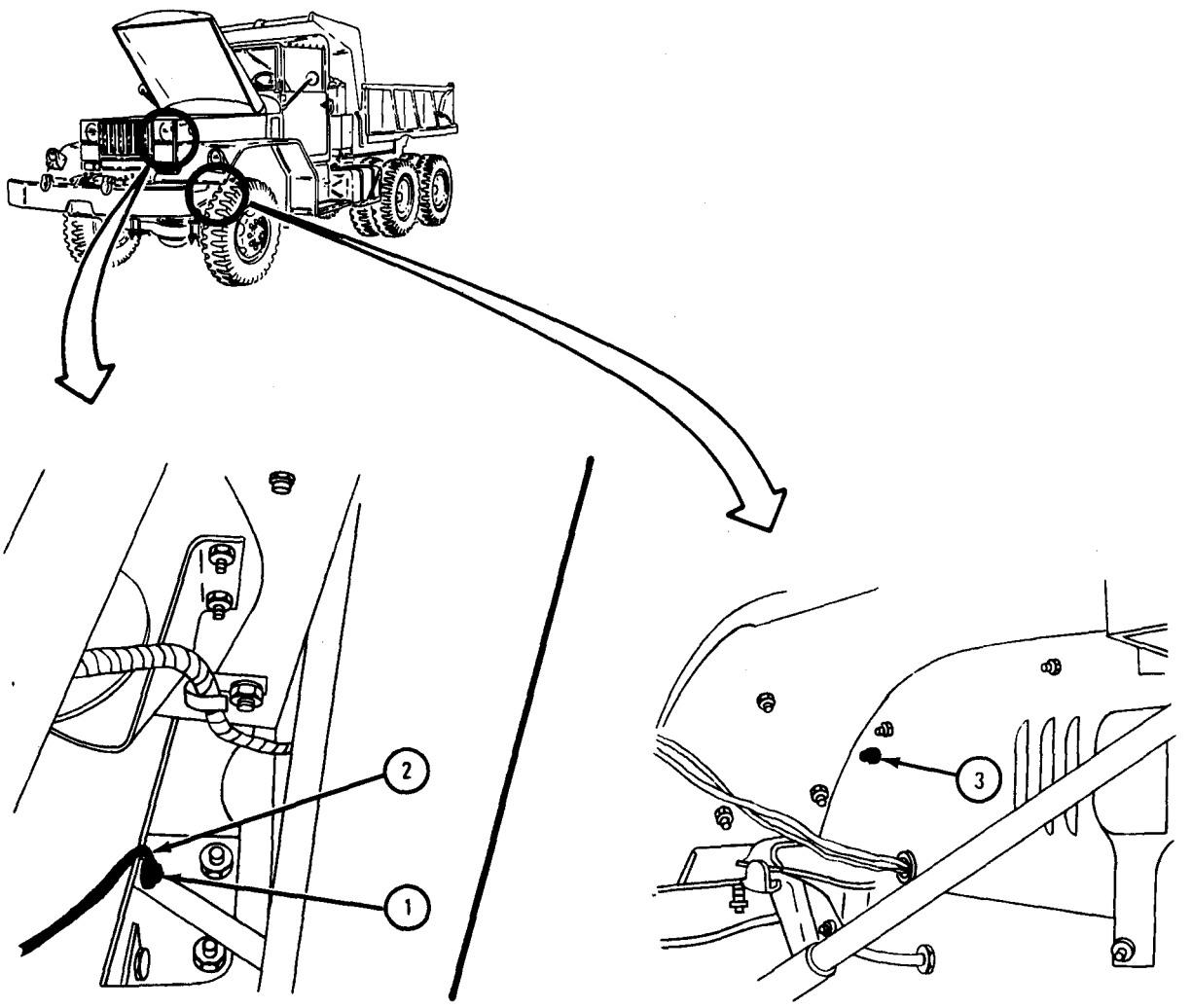
Soldier B 2. Working under fender using 7/16-inch wrench, screw on and tighten nut (3).

NOTE

Follow-on Maintenance Action Required:

1. Close hood. Refer to TM 9-2320-211-10.
2. Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



7-26. SPECIAL LIGHTING MARKER LIGHT REPAIR.

TOOLS: Cross-tip screwdriver (Phillips type)

SUPPLIES: None

PERSONNEL: One

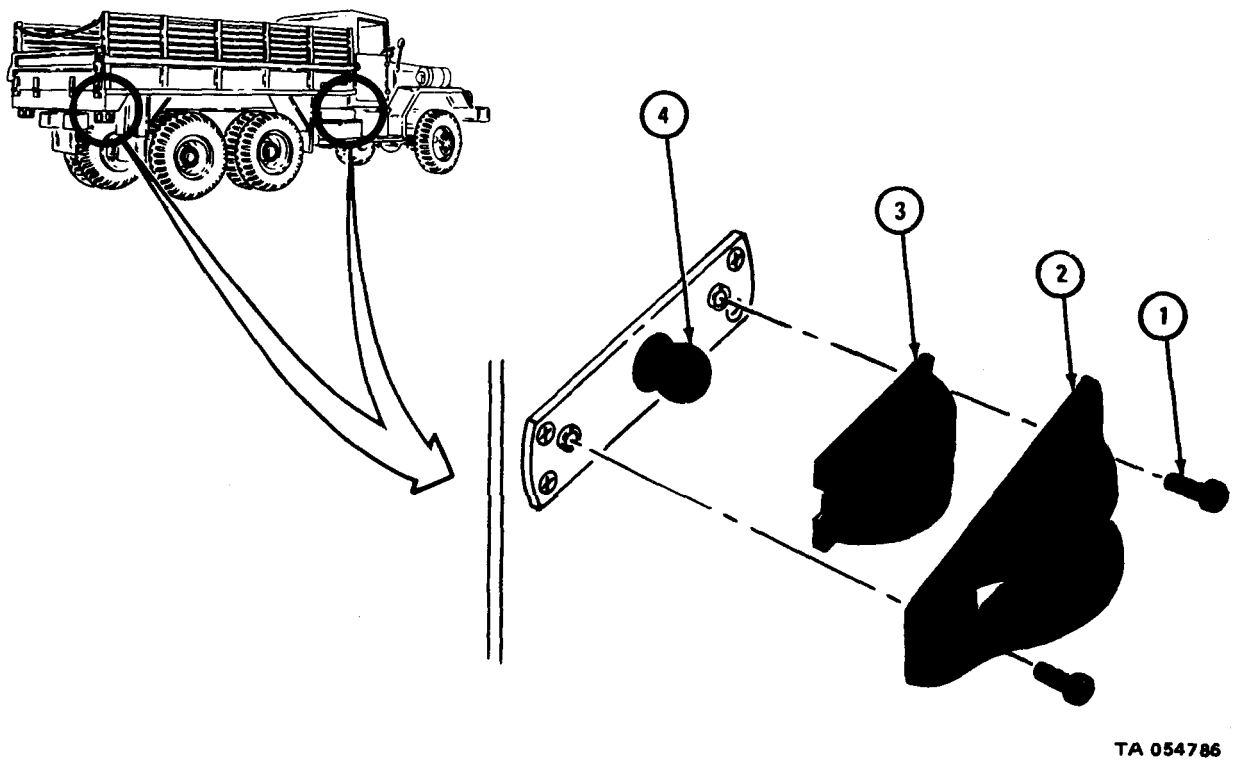
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using screwdriver, unscrew and take out two screws (1).
2. Take off lens housing (2), and lens (3).
3. Push in and turn lamp (4) to left and take out lamp.

END OF TASK

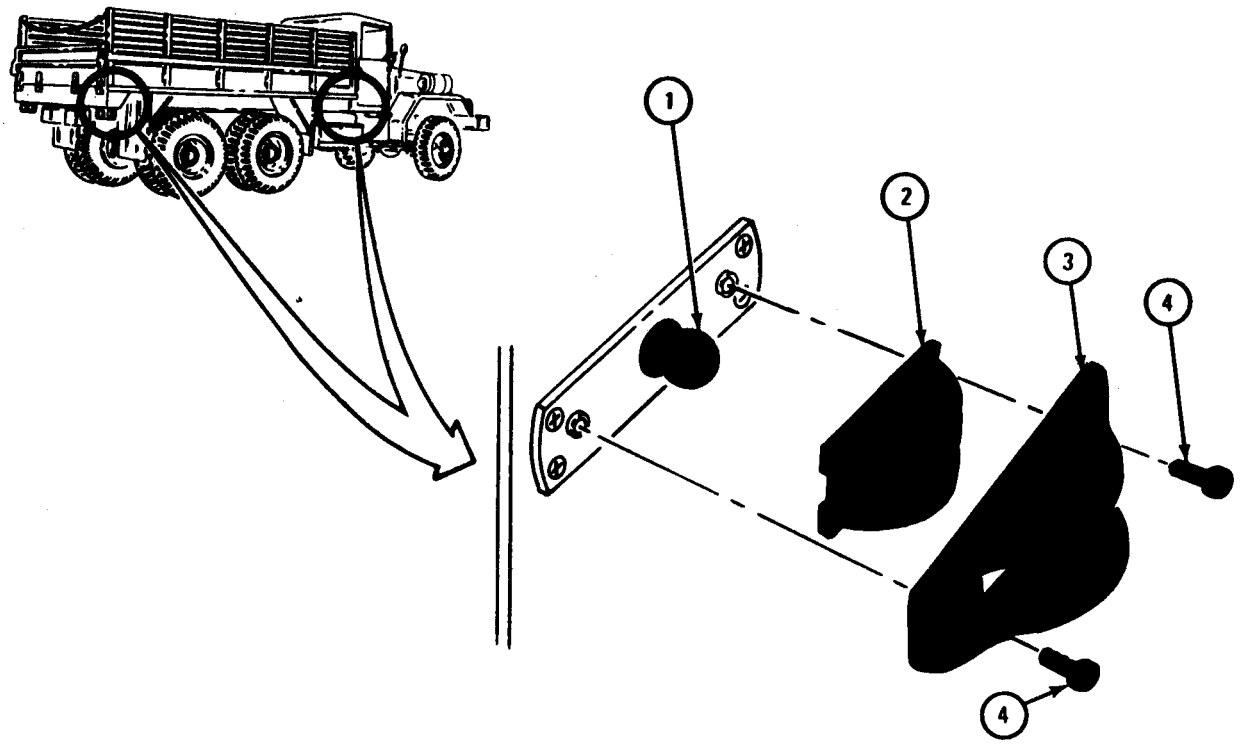


b. Replacement.

FRAME 1

1. Push in and turn lamp (1) to right.
2. Put lens (2), and lens housing (3) in place.
3. Using screwdriver, screw in and tighten two screws (4).

END OF TASK



7-27. FRONT COMPOSITE LIGHT ASSEMBLY AND LAMP REMOVAL AND REPLACEMENT (LATE MODELS).

TOOLS: Flat-tip screwdriver
9/16-inch wrench
l/2-inch wrench (2)

SUPPLIES: Tags

PERSONNEL: One

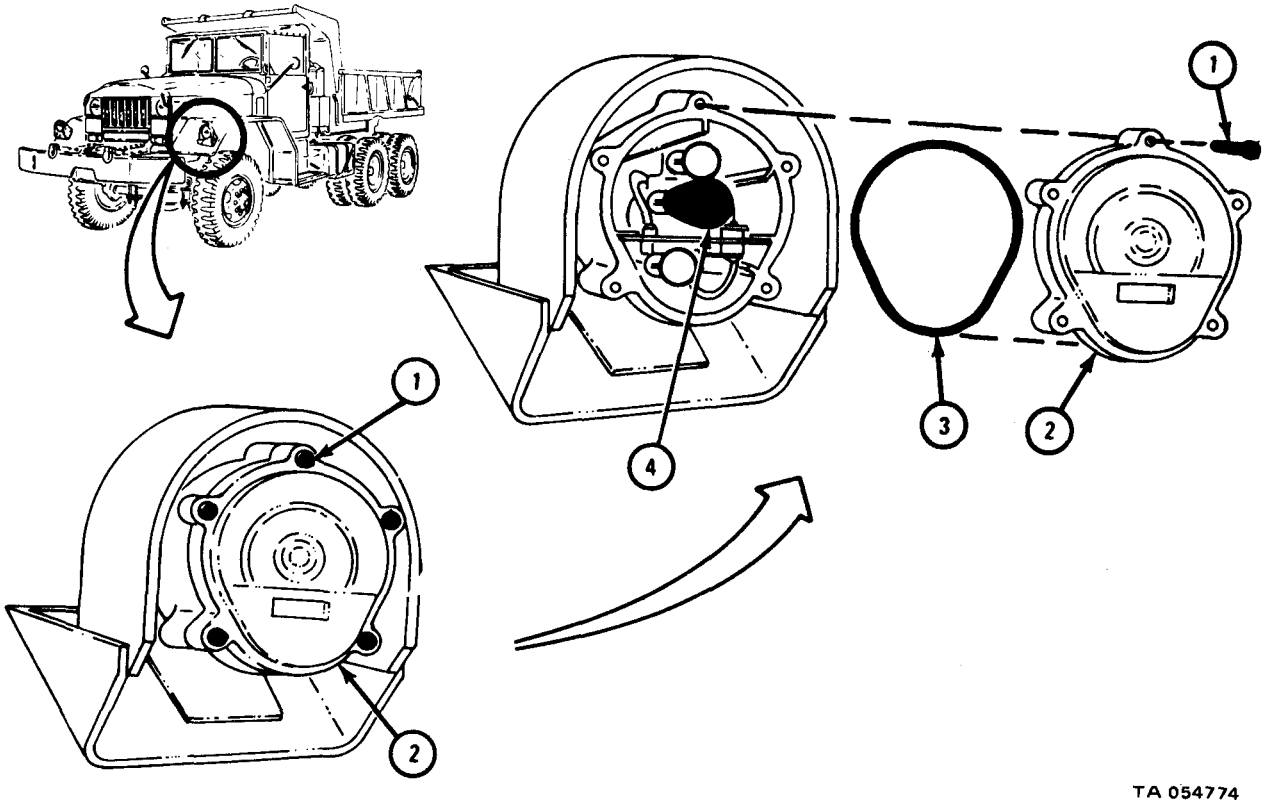
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal of Lamp.

FRAME 1

1. Using screwdriver, unscrew and take out five screws (1).
2. Pull off light door (2) and take gasket (3) out of door (2).
3. Push in and turn lamp (4) to be taken out 1/4 turn to left. Take out lamp.

END OF TASK

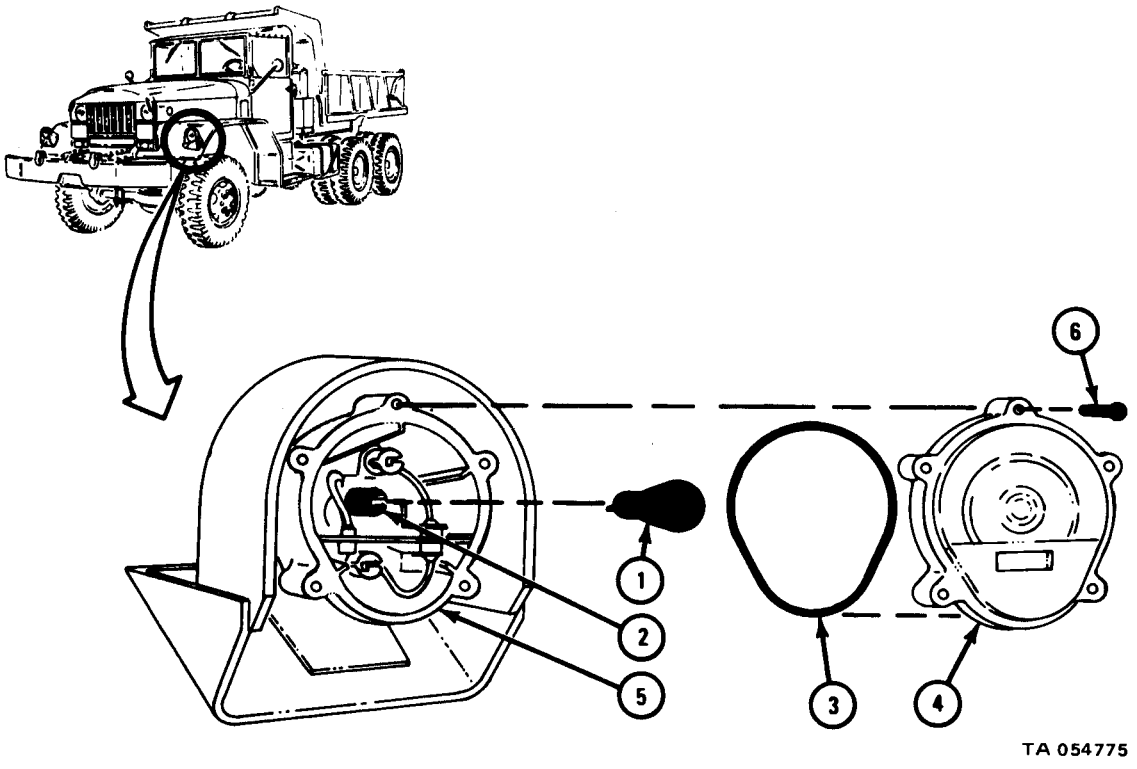


b. Replacement of Lamp.

FRAME 1

1. Push lamp (1) into socket (2) and turn it 1/4 turn to right.
2. Place gasket (3) into groove on light door (4).
3. Aline holes in light door (4) with holes in light body (5).
4. Using screwdriver, screw in and tighten five screws (6).

END OF TASK



c. Removal of Front Composite Light Assembly.

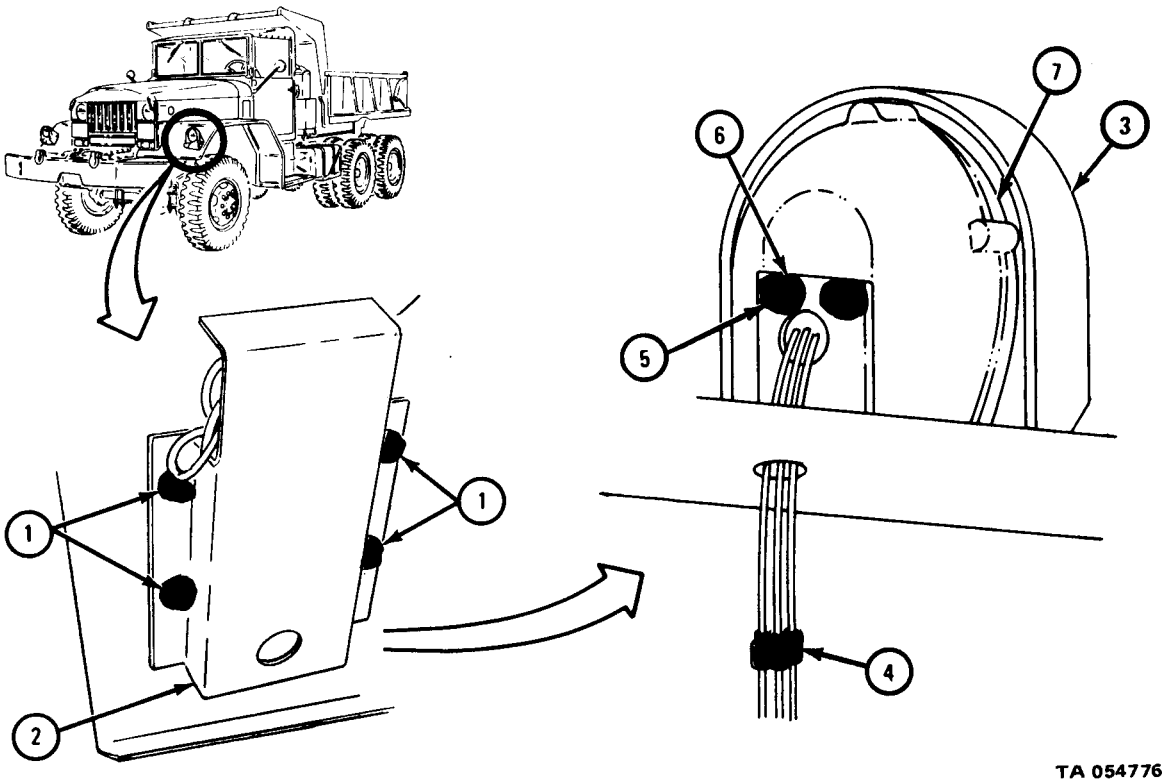
FRAME 1

NOTE

Tag connectors before taking them apart so they are put back in the right place.

1. Working under fender using 1/2-inch wrenches, unscrew and take off four screws and nuts (1). Take out cover plate (2) and brush guard bracket (3).
2. Pull apart three connectors (4) under fender.
3. Using 9/16-inch wrench, unscrew and take out two screws (5) with washers (6).
4. Pull light body (7) forward off bracket (3).

END OF TASK



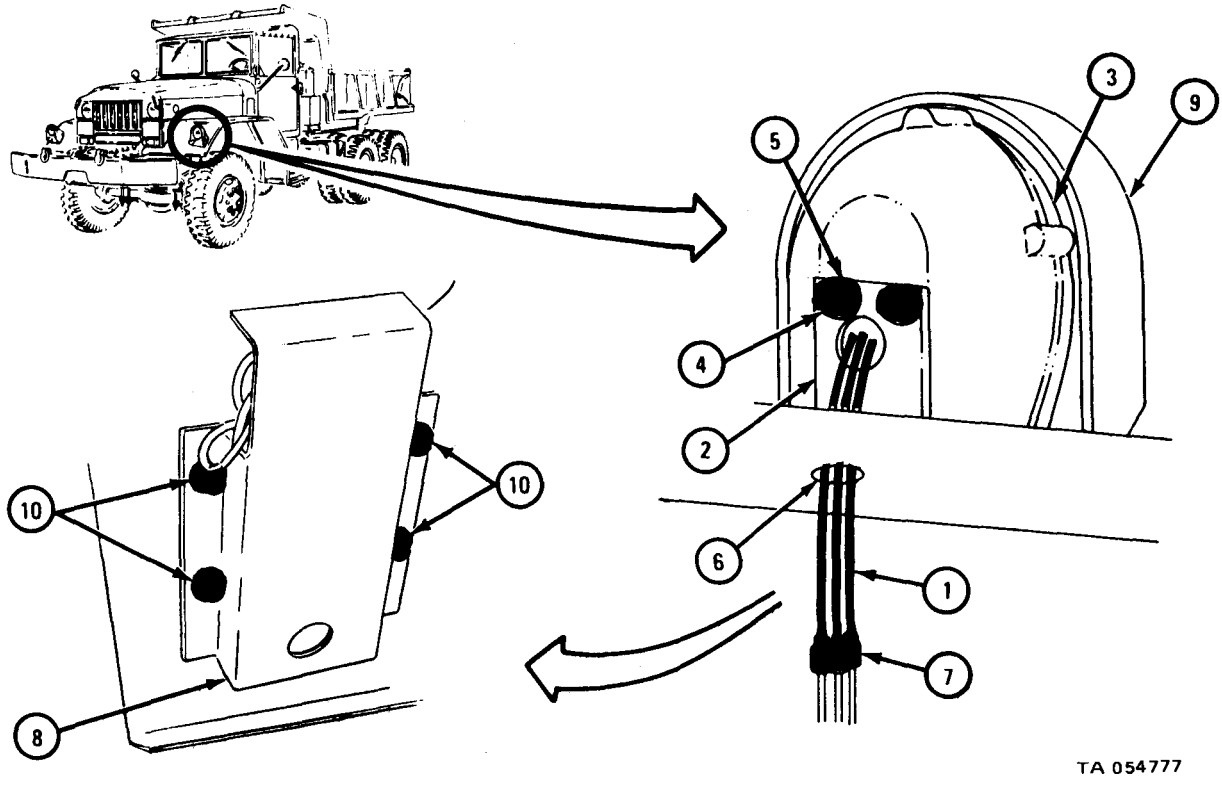
TA 054776

d. Replacement of Front Composite Light Assembly.

FRAME 1

1. Push three electrical leads (1) through center hole in bracket (2).
2. Aline holes in light body (3) with holes in bracket (2).
3. Using 9/16-inch wrench, screw in and tighten two screws (4) with washers (5).
4. Push three electrical leads (1) through hole in fender (6).
5. Working under fender, push together three connectors (7) as tagged. Take off tags.
6. Put cover plate (8) and brush guard bracket (9) in place. Using 1/2-inch wrenches, screw on and tighten four screws and nuts (10).

END OF TASK



7-28. STOPLIGHT AND TAILLIGHT REPAIR.

NOTE

Repair is limited to removal and replacement of lamps.

This task is the same for right and left stoplight and taillight assemblies, except right side has two lamps and left side has three lamps.

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 para 7-44.

b. Removal of Lamp.

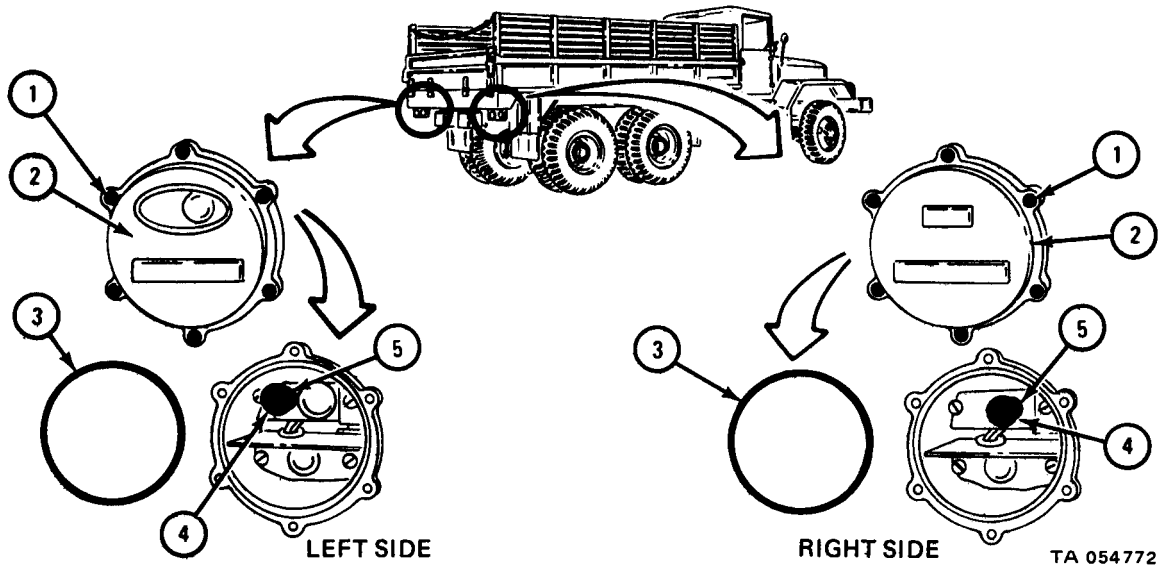
FRAME 1

NOTE

Clips on back of screws (1) must be pressed in order to unscrew them.

1. Using screwdriver, unscrew and take out six screws (1).
2. Pull off light door (2) and take out gasket (3).
3. Push in and turn lamp (4) to left.
4. Pull lamp (4) out of socket (5).

END OF TASK



c. Replacement of Lamp.

FRAME 1

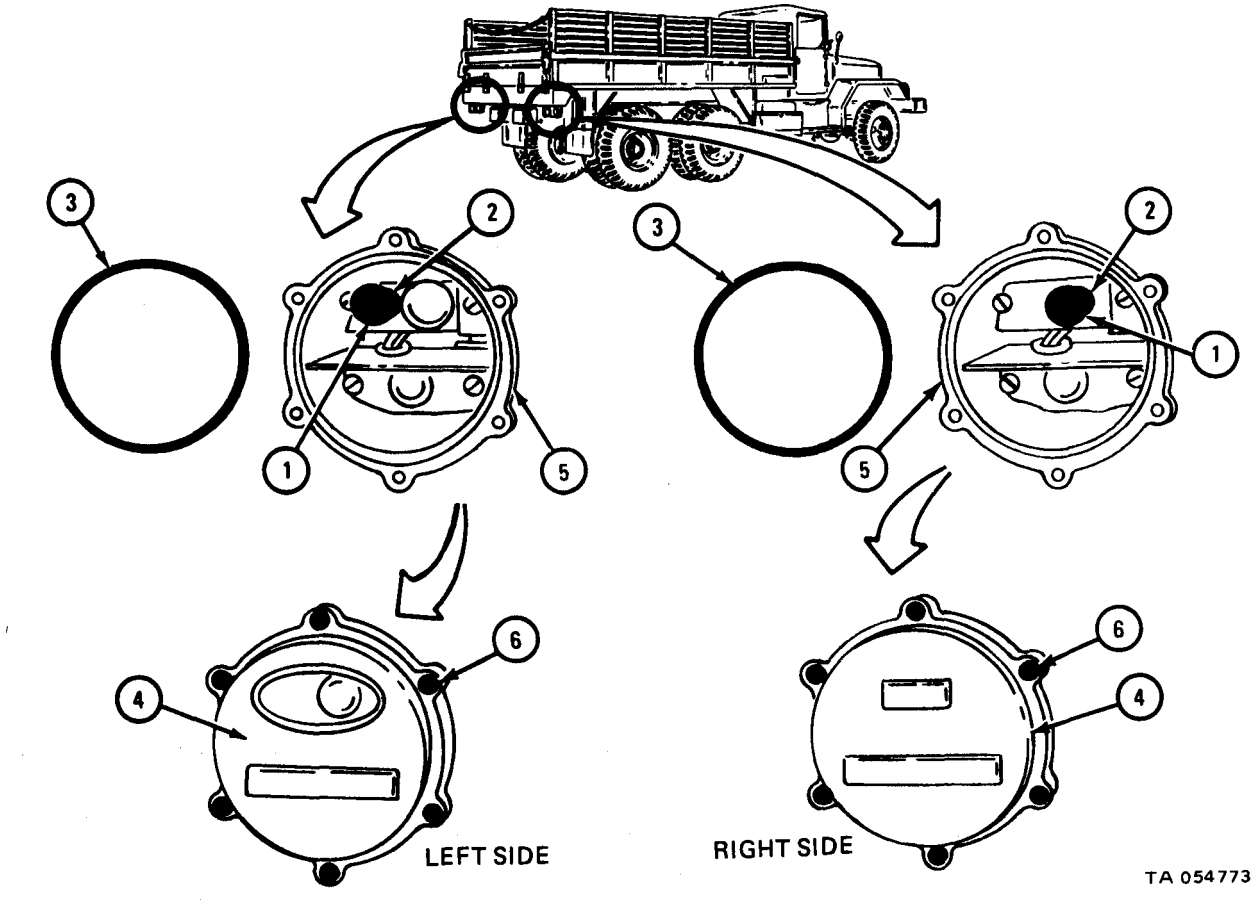
1. Push lamp (1) into socket (2) and turn it to right.
2. Check light for proper operation. Refer to TM 9-2320-211-10.
3. Place gasket (3) in groove in light door (4).
4. Aline holes in light door (4) with holes in light body (5).
5. Using screwdriver, screw in and tighten six screws (6).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



7-29. COMPOSITE TAILLIGHT ASSEMBLY REPAIR.

NOTE

Repair only means to put in new parts in place of damaged composite taillight assembly or lamps.

TOOLS: 9/16-inch wrench
Flat-tip screwdriver

SUPPLIES: Tags

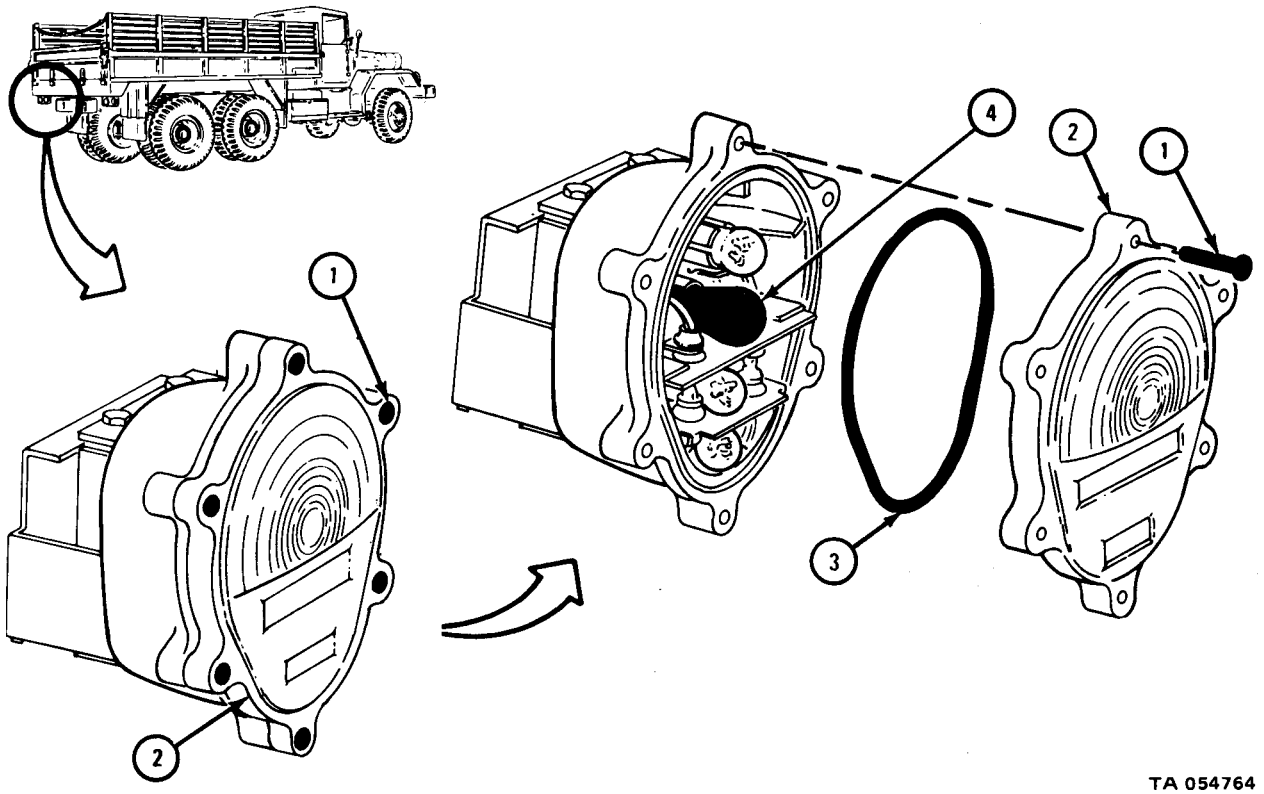
PERSONNEL: One

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

Removal of Lamp.

1. Using screwdriver, unscrew and take out six screws (1).
2. Take off light door (2) and take out gasket (3).
3. Push in and turn lamp (4) to be taken out to left. Take out lamp.

END OF TASK

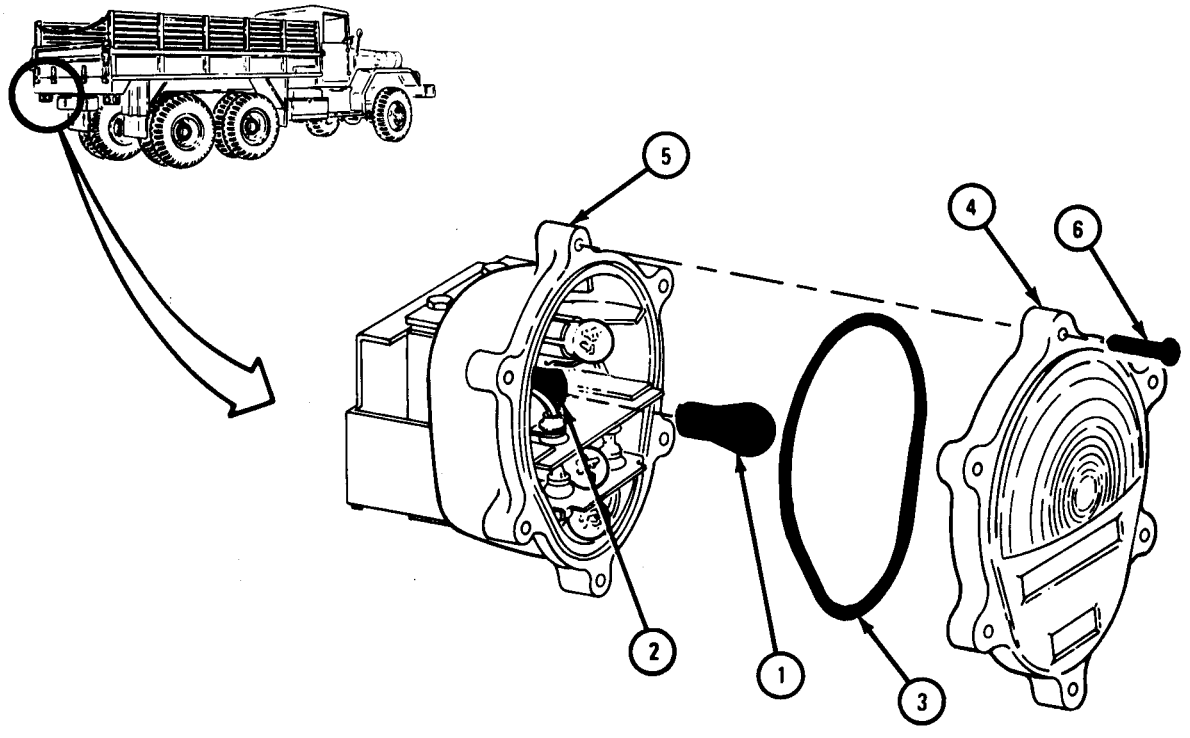


b. Replacement of Lamp.

FRAME 1

1. Push lamp (1) into socket (2) and turn it to right.
2. Place gasket (3) into groove in door (4).
3. Aline holes in light door (4) with holes in light housing (5).
4. Using screwdriver, screw in and tighten six screws (6).

END OF TASK



c. Removal of Composite Taillight Assembly.

FRAME 1

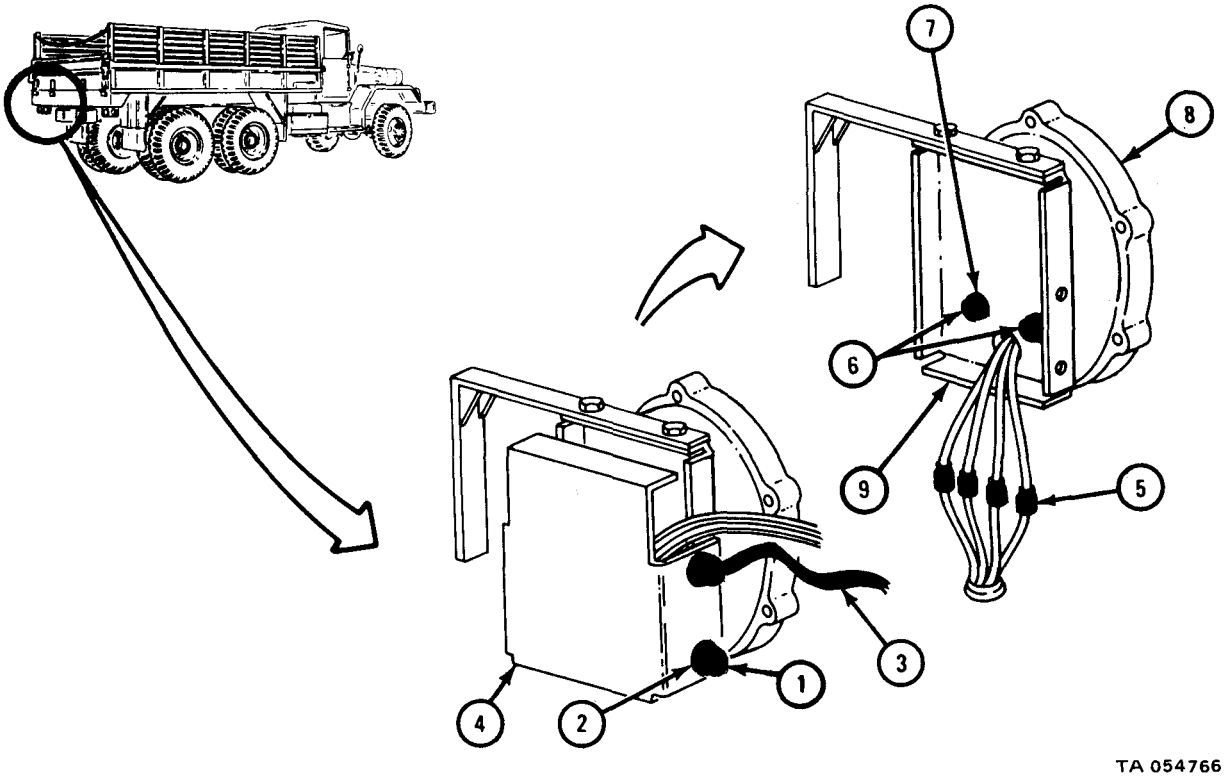
1. Using screwdriver, unscrew and take out four screws (1) with washers (2). Take off ground wire (3).
2. Take off wiring cover (4).

NOTE

Tag connectors (5) before taking them apart so they will be put back in the right place.

3. Pull apart four electrical connectors (5).
4. Using wrench, unscrew and take out two screws (6) with washers (7).
5. Take out light assembly (8) from bracket (9).

END OF TASK

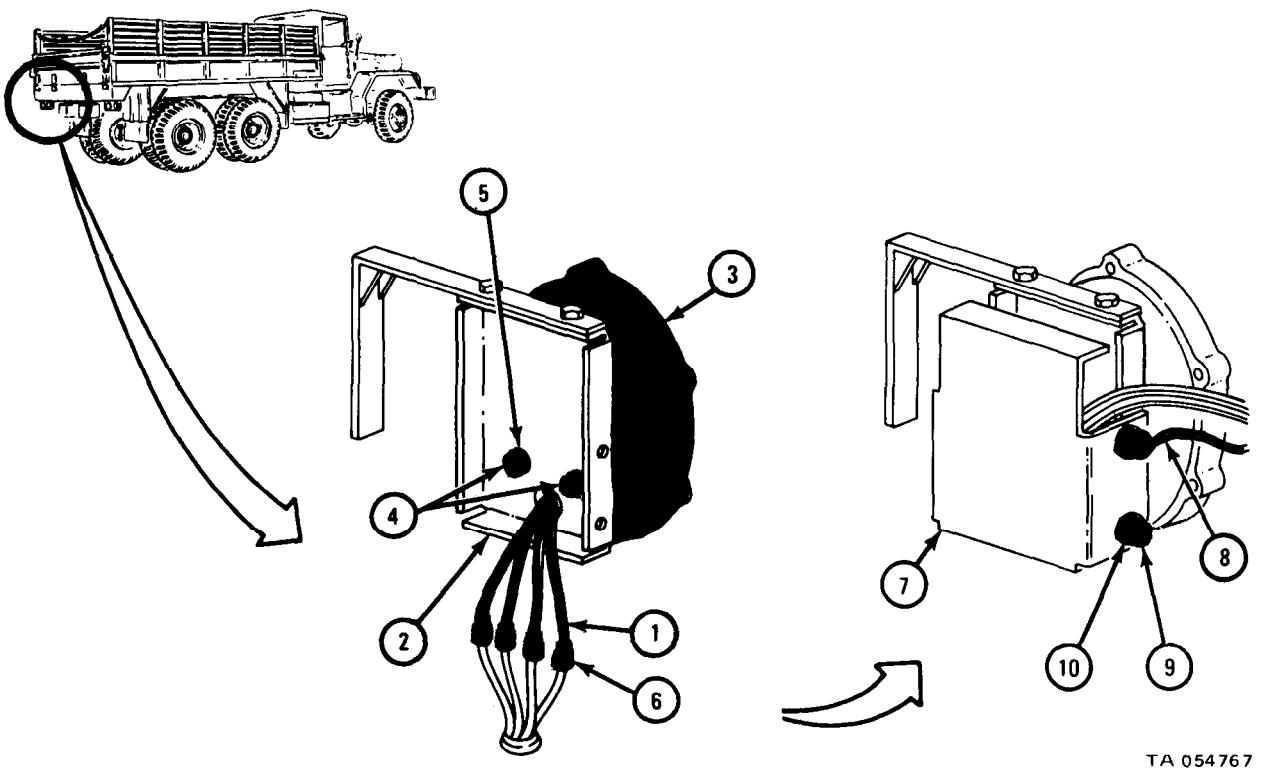


d. Replacement of Composite Taillight Assembly.

FRAME 1

1. Push four electrical leads (1) through hole in bracket (2).
2. Aline holes in light assembly (3) with holes in bracket (2).
3. Using wrench, screw in and tighten two screws (4) with washers (5).
4. Push together four electrical connectors (6) as tagged. Take off tags.
5. Aline holes in wiring cover (7) with holes in bracket (2). Aline ground wire (8) with top screw hole.
6. Using screwdriver, screw in and tighten four screws (9) with washers (10).

END OF TASK



TA 054767

7-30. TURN SIGNAL AND BLACKOUT MARKER LAMP AND LIGHT ASSEMBLY REMOVAL AND REPLACEMENT (EARLY MODELS) .

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

SUPPLIES: Tags

PERSONNEL: One

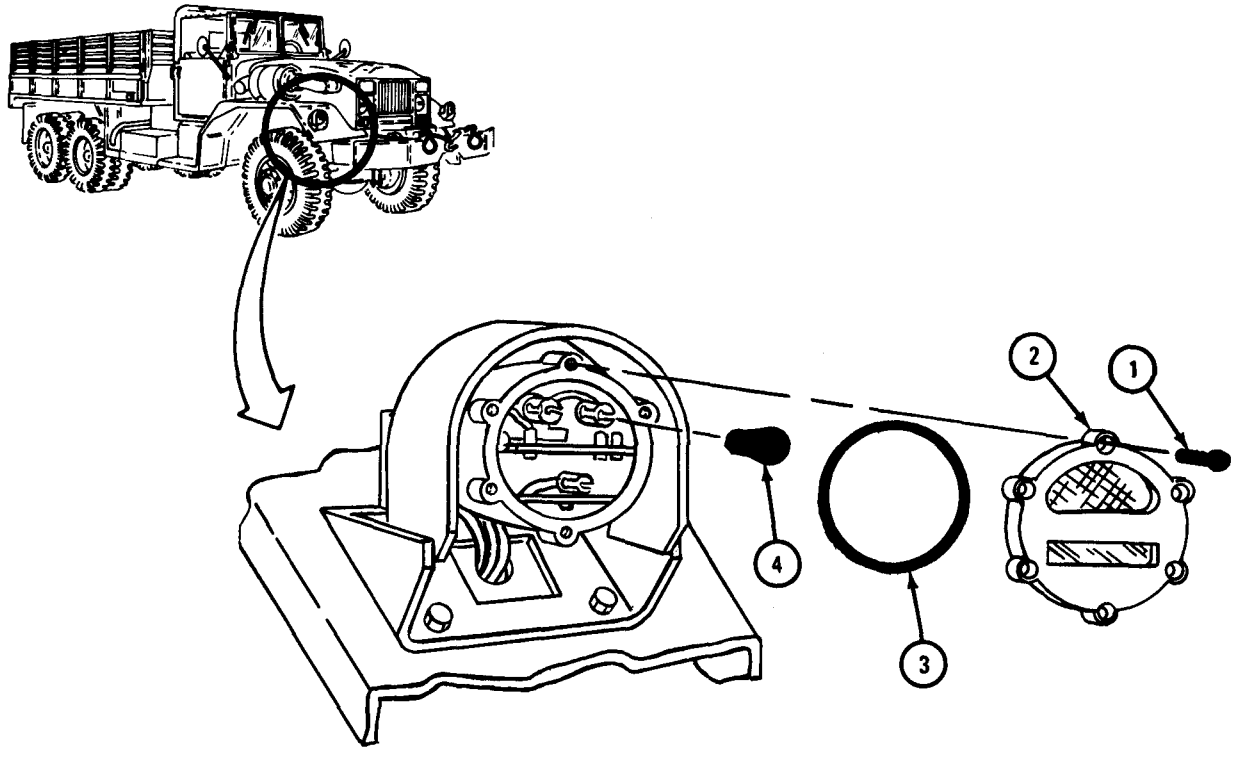
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal of Lamp.

FRAME 1

1. Using screwdriver, unscrew and take out six screws (1) in light door (2). Take off light door and gasket (3).
2. Take out three lamps (4) by pushing them in and turning them 1/4 turn to left.

END OF TASK

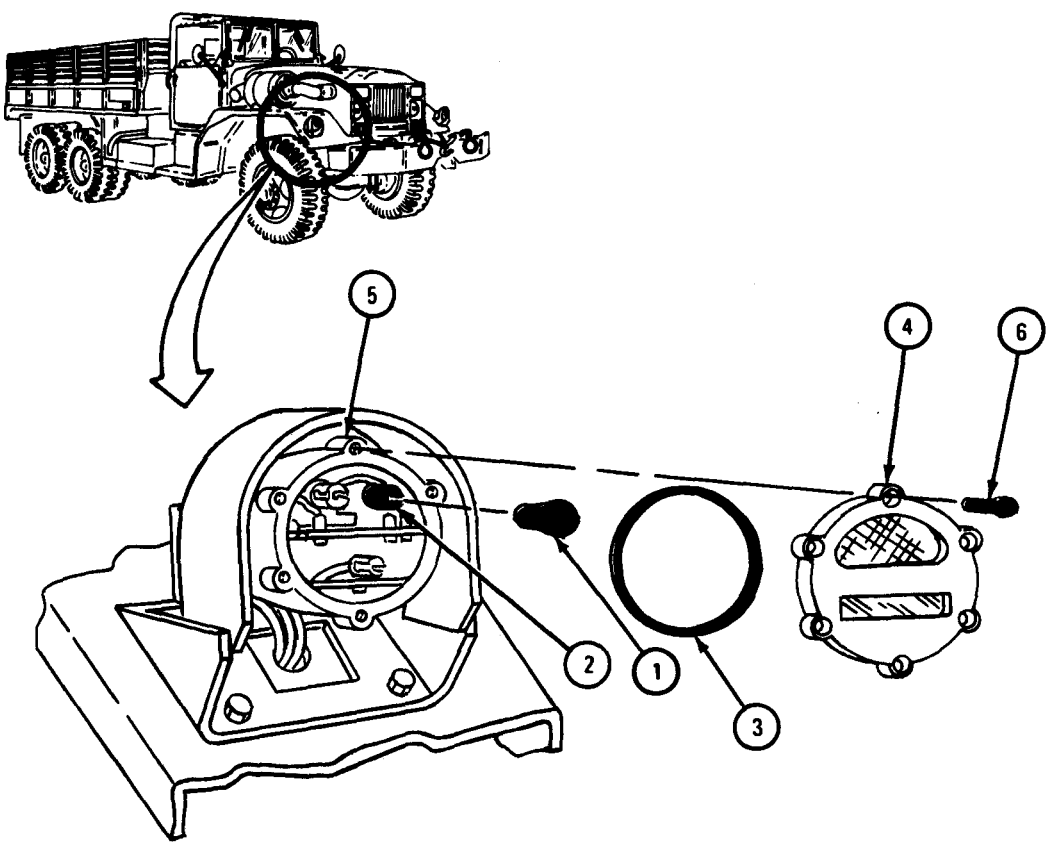


b. Replacement of Lamp.

FRAME 1

1. Push three lamps (1) into sockets (2) and turn them 1/4 turn to right.
2. Place gasket (3) into groove on light door (4).
3. Put light door (4) on light assembly (5).
4. Using screwdriver, screw in and tighten six screws (6).

END OF TASK



TA 088877

c. Removal of Light Assembly.

FRAME 1

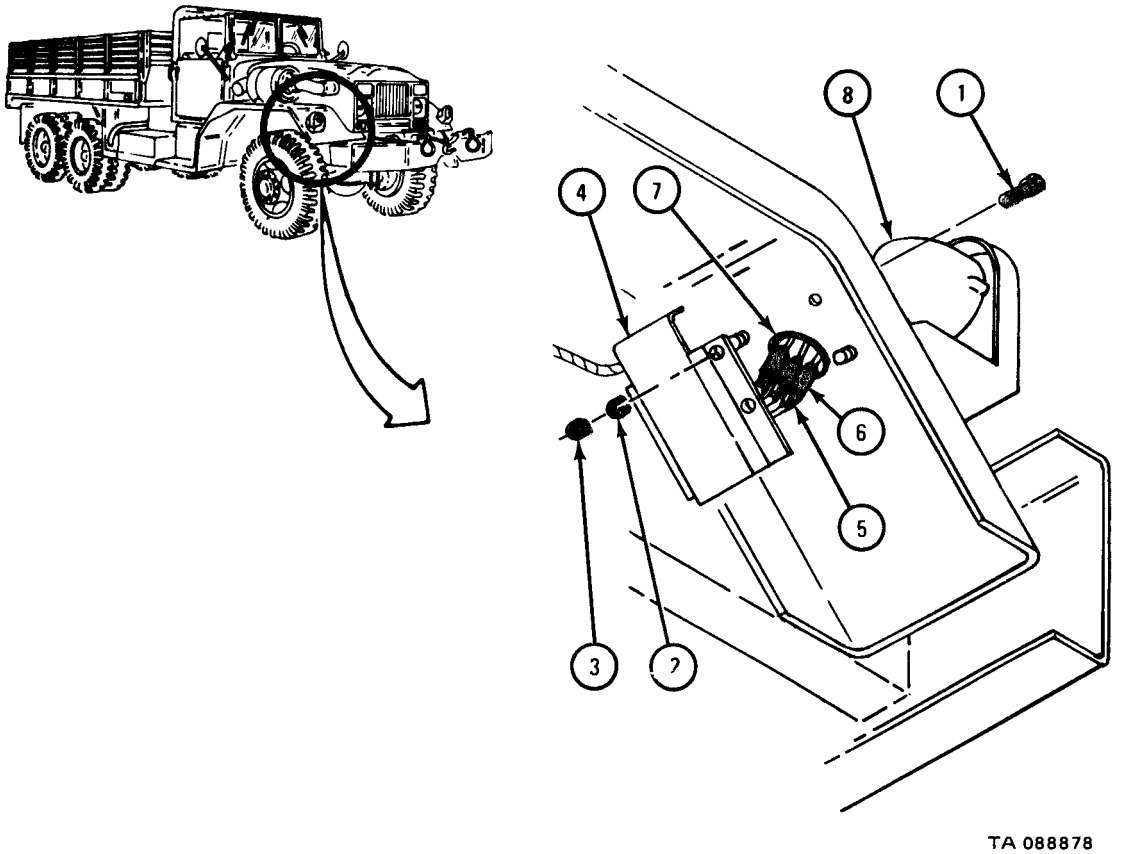
1. Using 1 /2-inch wrenches , unscrew and take off four capscrews (1), four lockwashers (2), and four nuts (3). Take off protector box (4).

NOTE

Tag wires so they will be put back in place

2. Unplug three plugs (5) from connectors (6). Take out grommet (7). Take out light assembly (8).

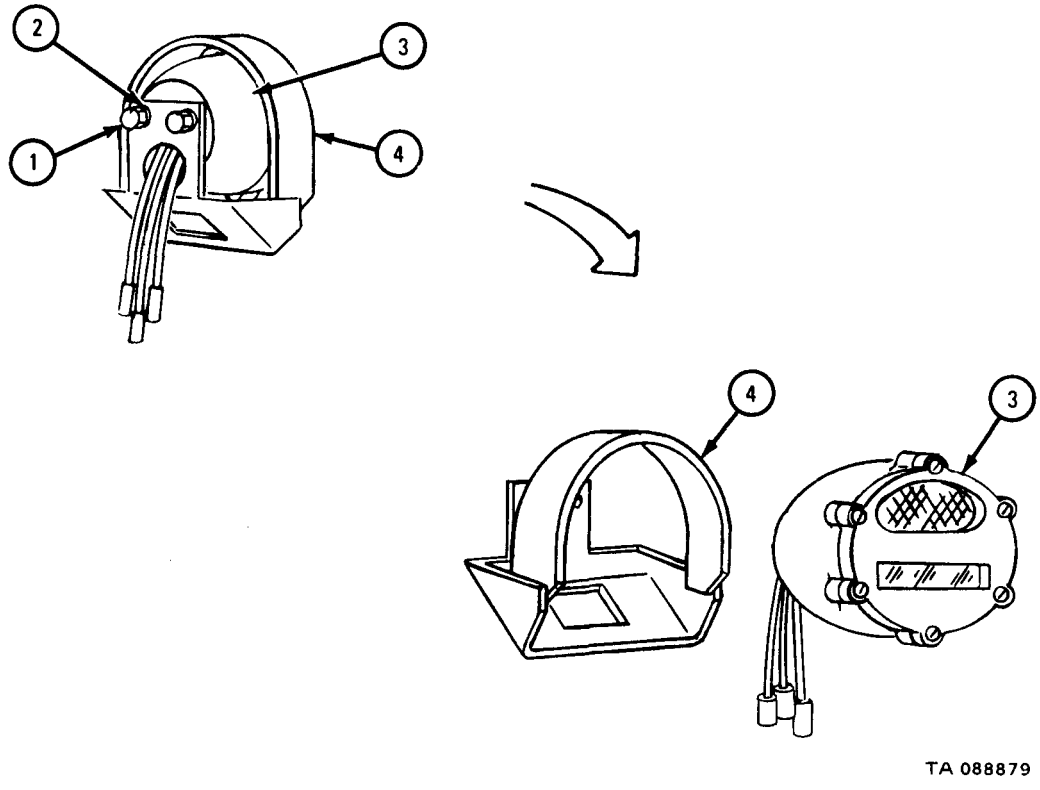
GO TO FRAME 2



FRAME 2

1, Using 9/16-inch wrench, unscrew and take off two capscrews (1) and lockwashers (2). Take light assembly (3) out of bracket (4).

END OF TASK

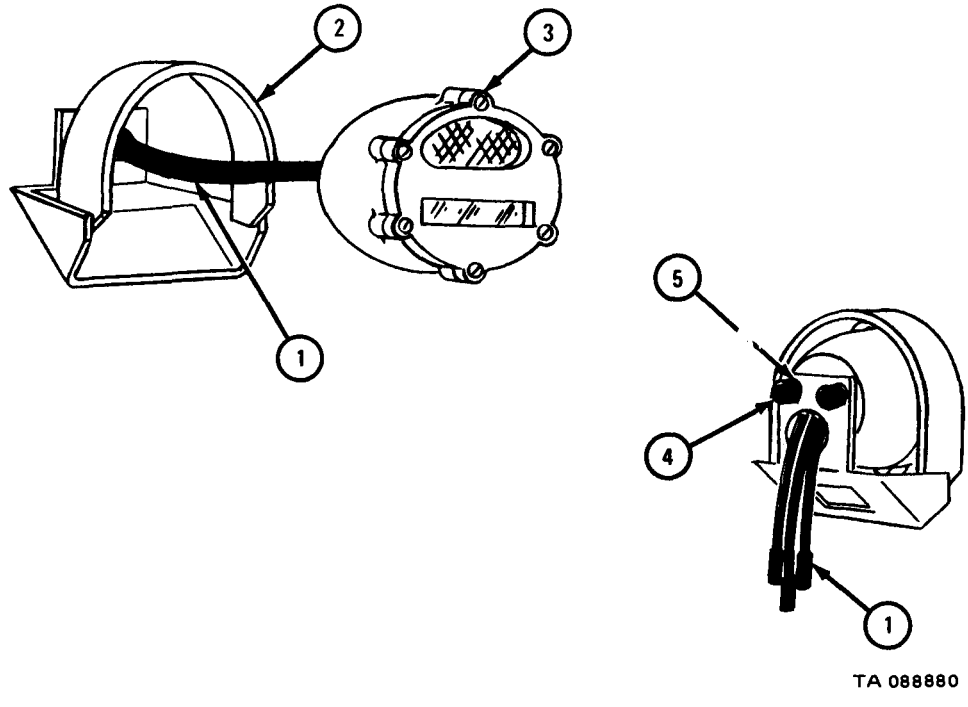


d. Replacement of Light Assembly.

FRAME 1

1. Put three wires (1) through hole in bracket (2).
2. Aline two screw holes in light assembly (3) with two screw holes in bracket (2).
3. Using 9/16-inch wrench, screw in and tighten two capscrews (4) and two lockwashers (5).

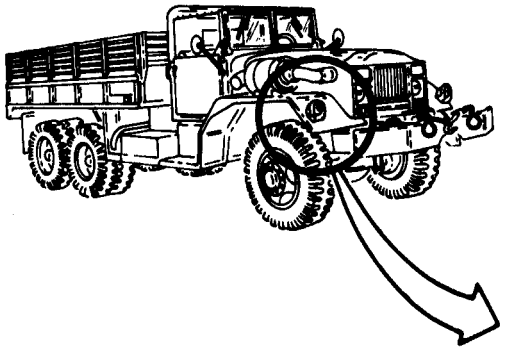
GO TO FRAME 2

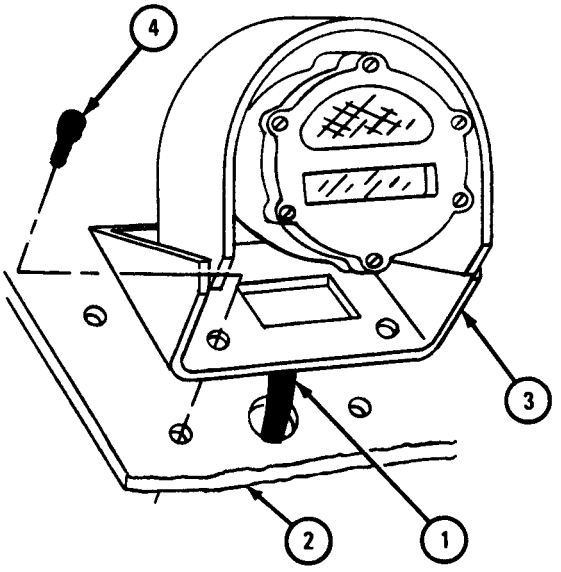


FRAME 2

1. Put wires (1) through hole in fender (2).
2. Aline four screw holes in bracket (3) with four holes in fender (2) and put in four capscrews (4).

GO TO FRAME 3



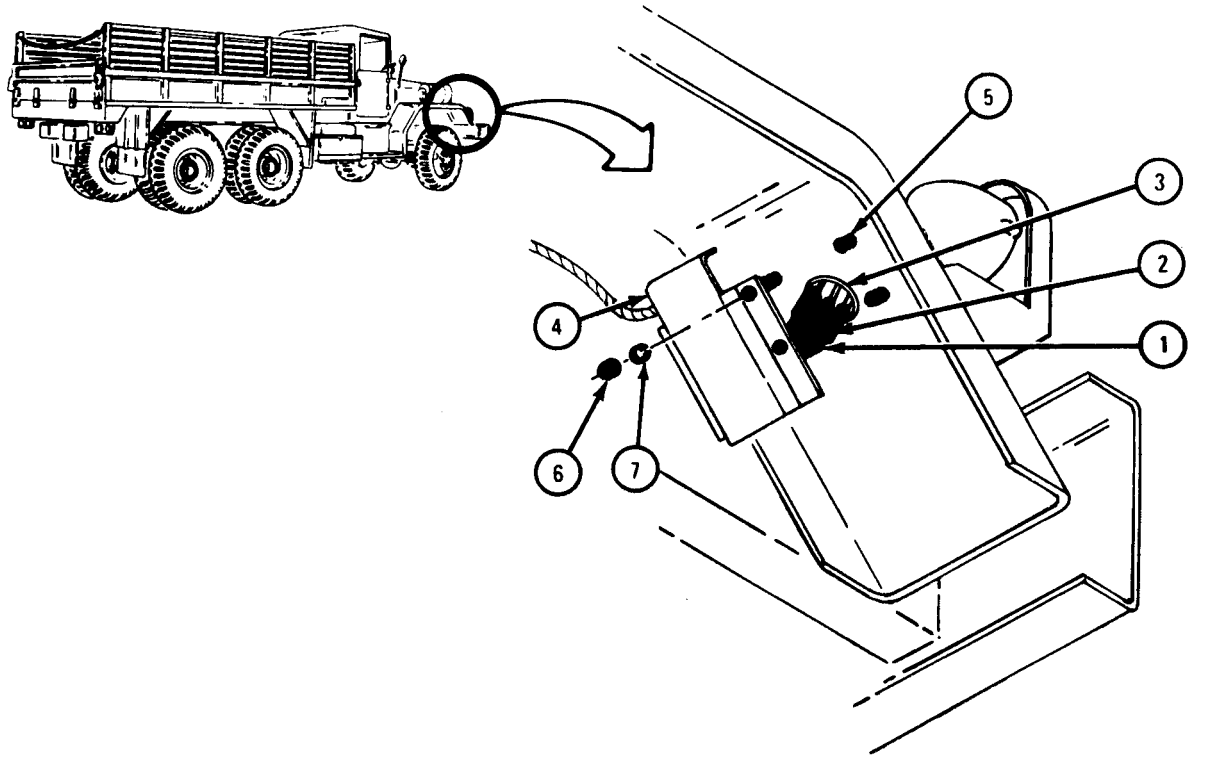


TA 088881

FRAME 3

1. Join three plugs (1) to connectors (2) as tagged. Take off tags. Put in rubber grommet (3).
2. Put protector box (4) on four screws (5).
3. Using 1/2-inch wrenches, screw on and tighten four nuts (6) and lock-washers (7).

END OF TASK



TA 088882

7-31. ELECTRIC FLOODLIGHT REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: Flat-tip screwdriver
15/16-inch wrench

SUPPLIES: None

PERSONNEL: One

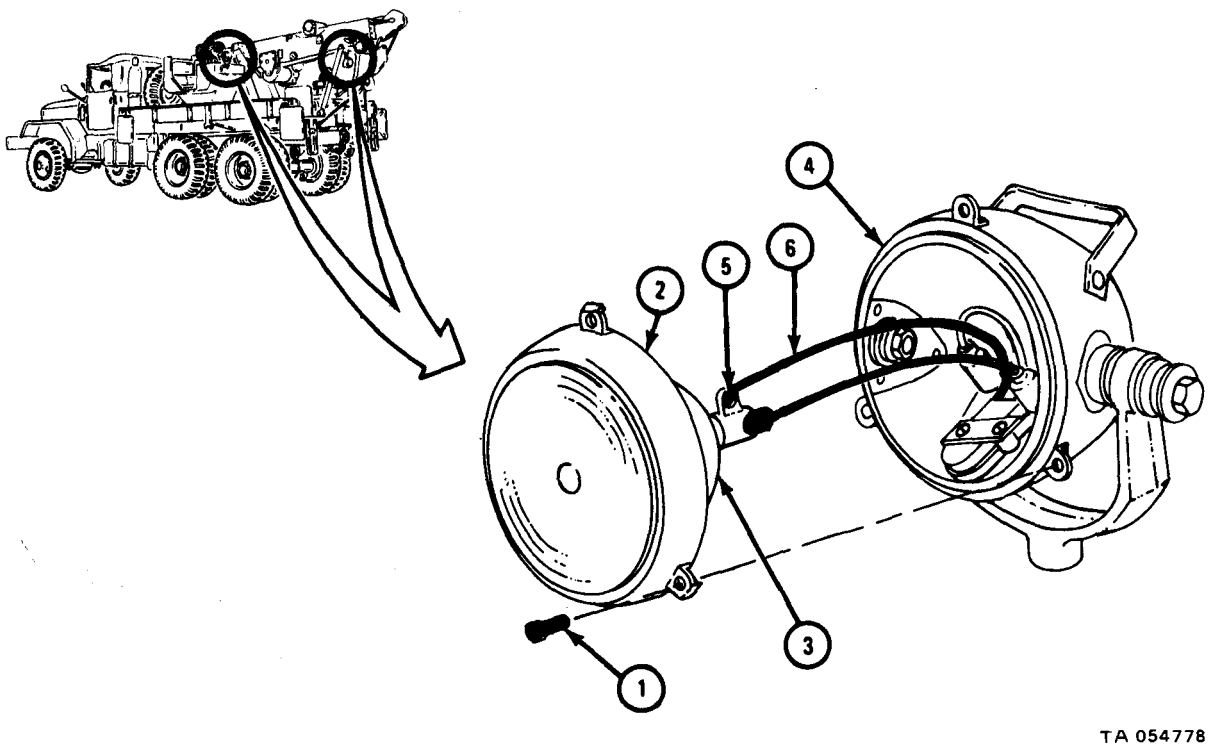
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal of Lamp.

FRAME 1

1. Using screwdriver, unscrew and take out three screws (l).
2. Pull light door (2) with lamp (3) away from light body (4).
3. Using screwdriver, unscrew and take out two screws (5) and take off leads (6).

GO TO FRAME 2



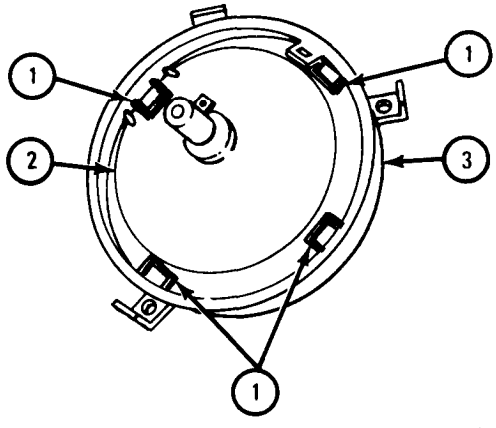
FRAME 2

WARNING

Retaining springs (1) may snap out and cause injury to personnel. Cover spring with free hand while prying it off.

1. Using screwdriver, pry off four retaining springs (1).
2. Pull lamp (2) out of light door (3).

END OF TASK



TA 054779

b. Replacement of Lamp.

FRAME 1

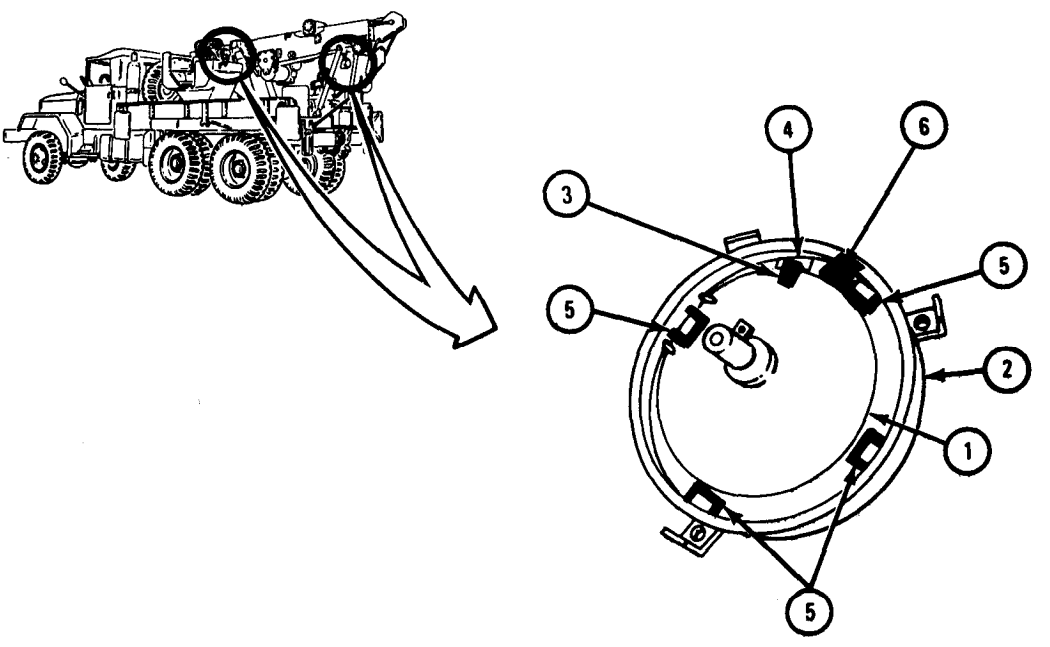
1. Place lamp (1) in light door (2) and aline tab (3) on lamp with slot (4) in light door.

NOTE

Four retaining springs (5) must be spaced evenly around lamp (l).

2. Place square end of retaining spring (5) over lamp (l).
3. Using screwdriver, snap free ends of retaining spring (5) under light door flange (6).
4. Do steps 2 and 3 again for other three retaining springs (5).

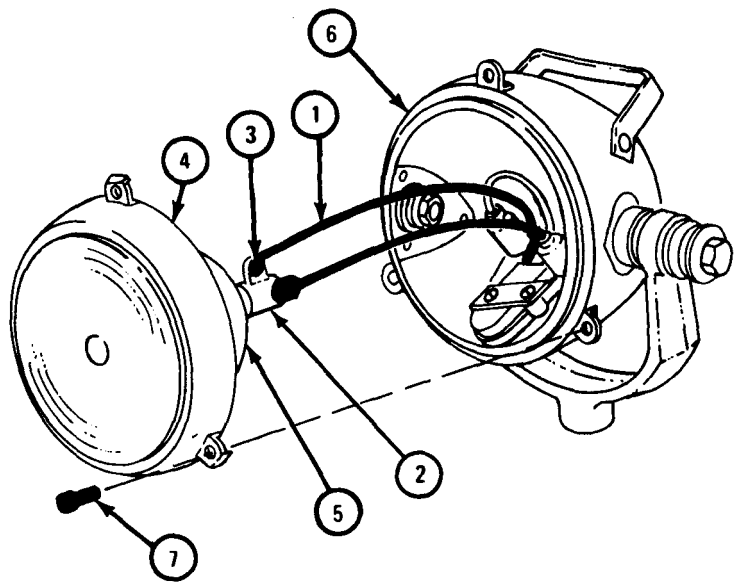
GO TO FRAME 2



FRAME 2

1. Lineup holes in lugs of two electrical leads (1) with holes in terminals (2) as shown.
2. Using screwdriver, screw in and tighten two screws (3).
3. Push light door (4) with lamp (5) into light body (6).
4. Using screwdriver, screw in and tighten three screws (7).

END OF TASK



TA 054781

c. Removal of Electric Floodlight Assembly.

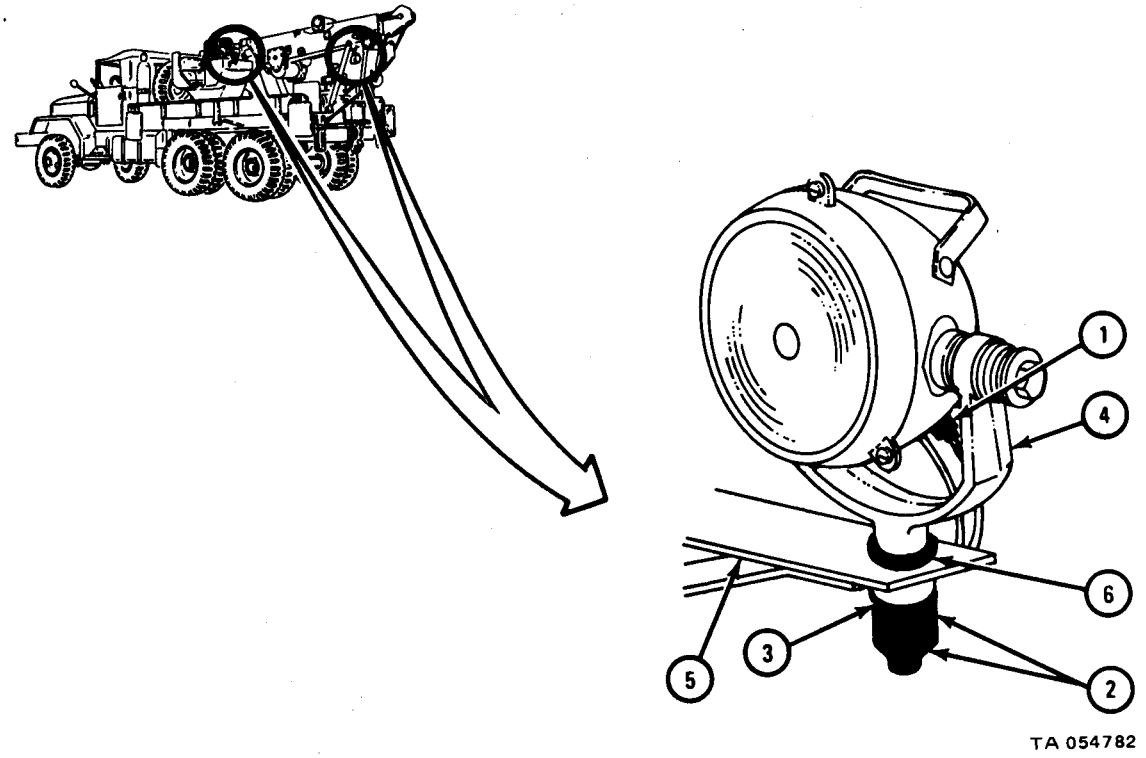
FRAME 1

NOTE

Tag connectors (1) before taking them apart so they will be put back in the right place.

1. Pull apart two connectors (1).
2. Using wrench, unscrew and take off two nuts (2) with fiber washer (3).
3. Lift light bracket (4) out of body bracket (5) and take off fiber washer (6).

END OF TASK

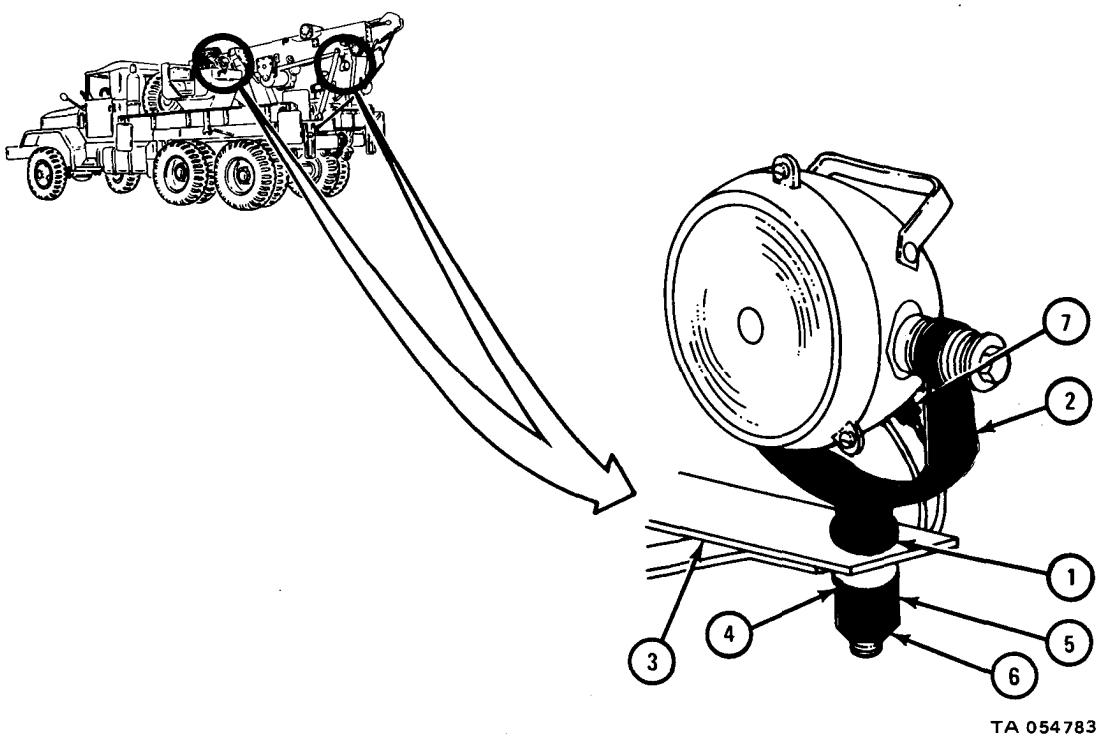


d. Replacement of Electric Floodlight Assembly.

FRAME 1

1. Place fiber washer (1) on light bracket (2).
2. Push light bracket (2) into body bracket (3).
3. Put fiber washer (4) on light bracket (2) and screw on and hand tighten nut (5).
4. Using wrench, screw on and tighten nut (6).
5. Push together two connectors (7) as tagged. Take off tags.

END OF TASK



7-32. FLOODLIGHT HOUSING SWITCH REMOVAL, REPAIR, AND REPLACEMENT (TRUCK M543A2).

TOOLS: Flat-tip screwdriver

SUPPLIES: Electrical contact cleaner
Clean rag

PERSONNEL: One

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

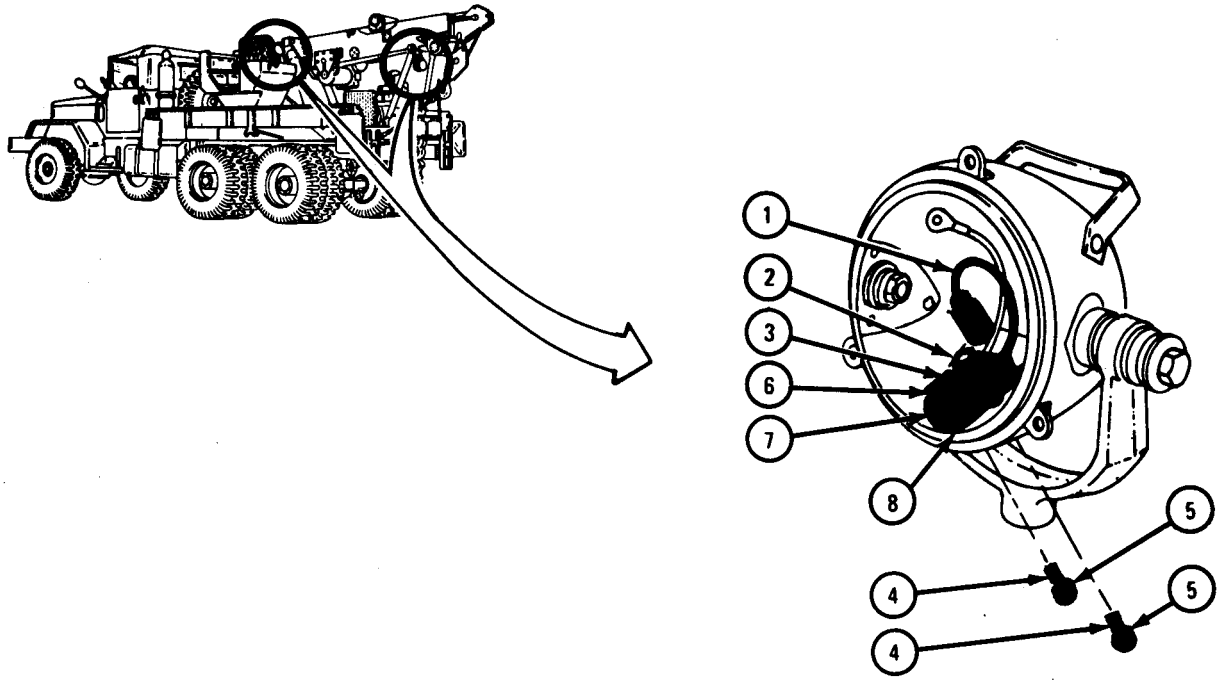
a. Preliminary Procedure. Remove floodlight sealed beam. Refer to para 7-31.

b. Removal.

FRAME 1

1. Unplug electrical lead (1) from connector (2).
2. Using screwdriver, unscrew and take out two screws (3).
3. Using screwdriver, unscrew and take out two screws (4) and washers (5).
4. Take out retainer (6), switch (7), and switch bracket (8).

END OF TASK



TA 102481

c. Cleaning, Inspection, and Repair.

(1) Using contact cleaner, clean retainer, switch, switch bracket, and wires, Dry parts with clean rag.

(2) Check that wires have no breaks or frayed insulation. Check that switch is not damaged.

(3) Check that screws and switch bracket have no damaged threads.

(4) Throw away all damaged parts and get new parts in their place.

d. Replacement.

FRAME 1

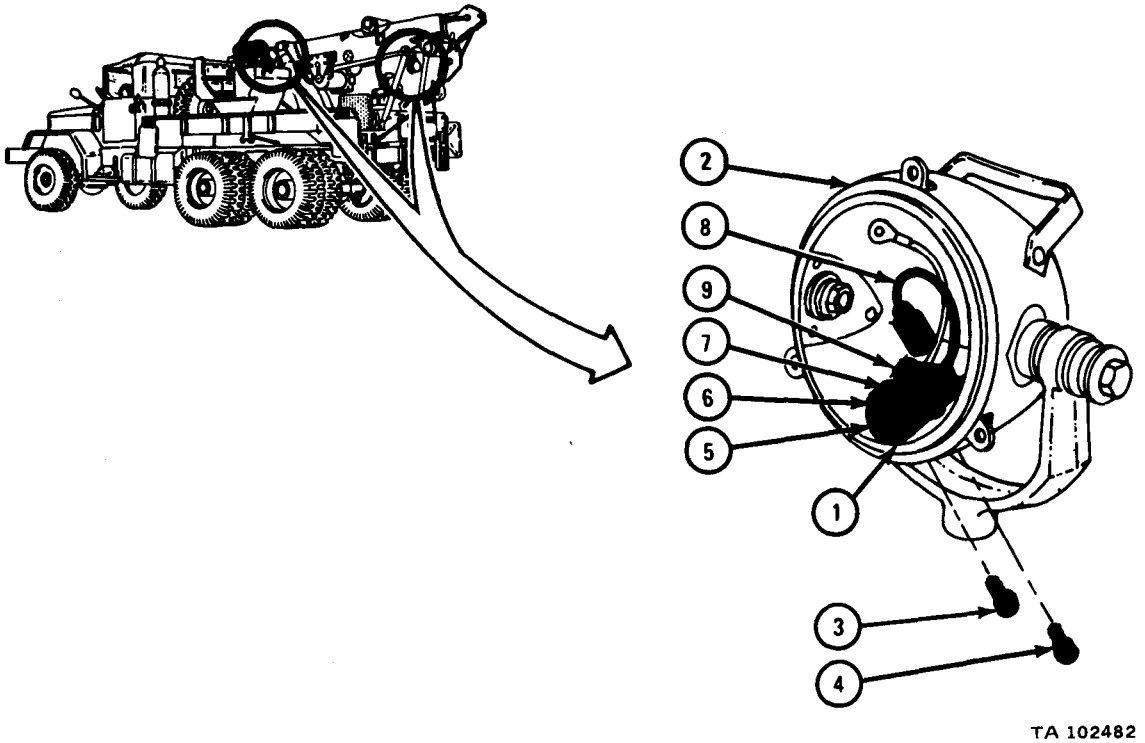
1. Put switch bracket (1) in light housing (2) and aline screw holes.
2. Using screwdriver, screw in and tighten two screws (3) and lockwashers (4).
3. Put switch (5) on switch bracket (1). Put switch retainer (6) over switch and aline screw holes.
4. Using screwdriver, screw in and tighten two screws (7).
5. Plug electrical lead (8) into connector (9).

NOTE

Follow-on Maintenance Action Required:

Replace floodlight sealed beam. Refer to para 7-31.

END OF TASK



Section VII. GAGE SENDING UNITS AND WARNING SWITCHES

7-33. WATER TEMPERATURE GAGE SENDING UNIT REMOVAL AND REPLACEMENT.

TOOLS: 15/16-inch wrench

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

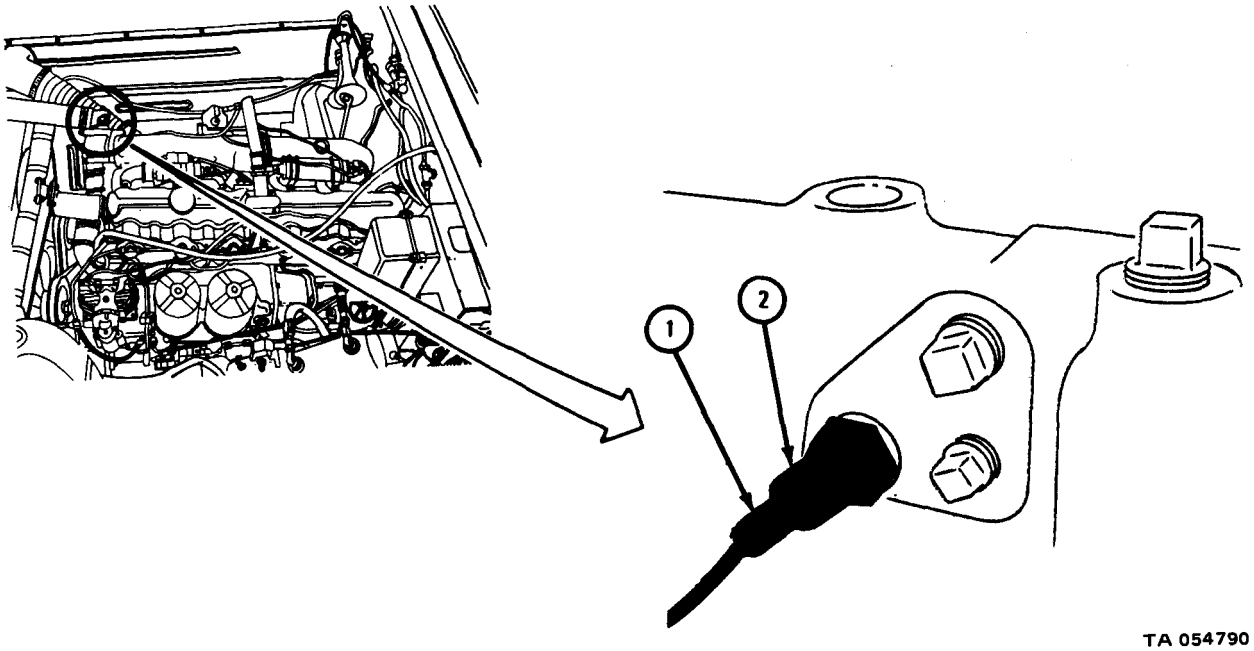
(1) Open hood. Refer to TM 9-2320-211-10.

(2) Drain half of radiator coolant into a clean container. Refer to para 6-13. Removal.

FRAME 1

1. Twist connector (1) to right and pull it off.
2. Using wrench, unscrew and take out water temperature sending unit (2).

END OF TASK



c. Replacement.

FRAME 1

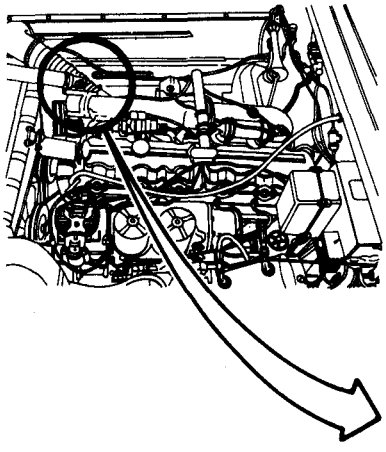
1. Using wrench, screw in and tighten water temperature sending unit (1) into water manifold (2).
2. Push connector (3) into water temperature sending unit (1) and twist it to right.

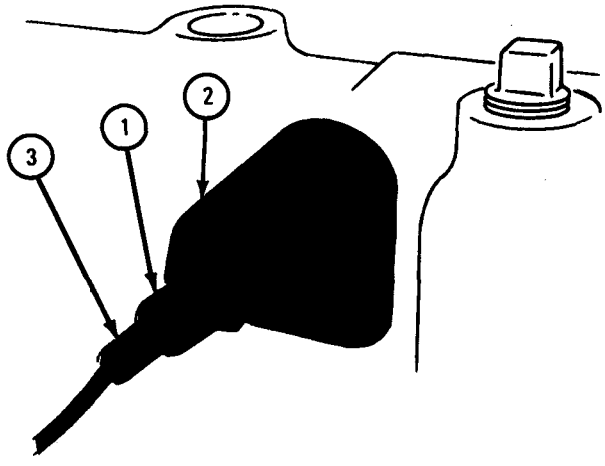
NOTE

Follow-on Maintenance Action Required:

1. Refill radiator. Refer to para 6-13.
2. Close hood. Refer to TM 9-2320-211-10.

END OF TASK





TA 054791

7-34. OIL PRESSURE GAGE SENDING UNIT REMOVAL AND REPLACEMENT.

TOOLS: 7/8-inch wrench

SUPPLIES: None

PERSONNEL: One

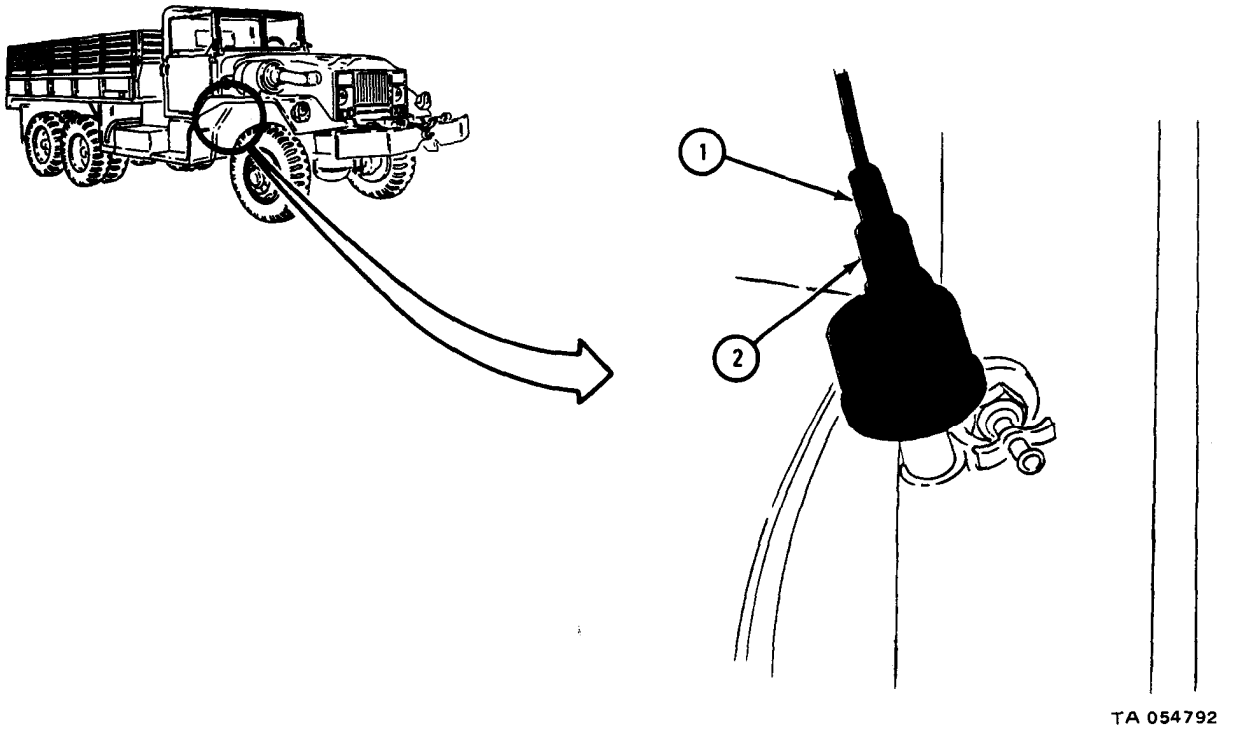
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Pull connector (1) off sending unit (2).
2. Using wrench, unscrew and take out oil pressure gage sending unit (2).

END OF TASK

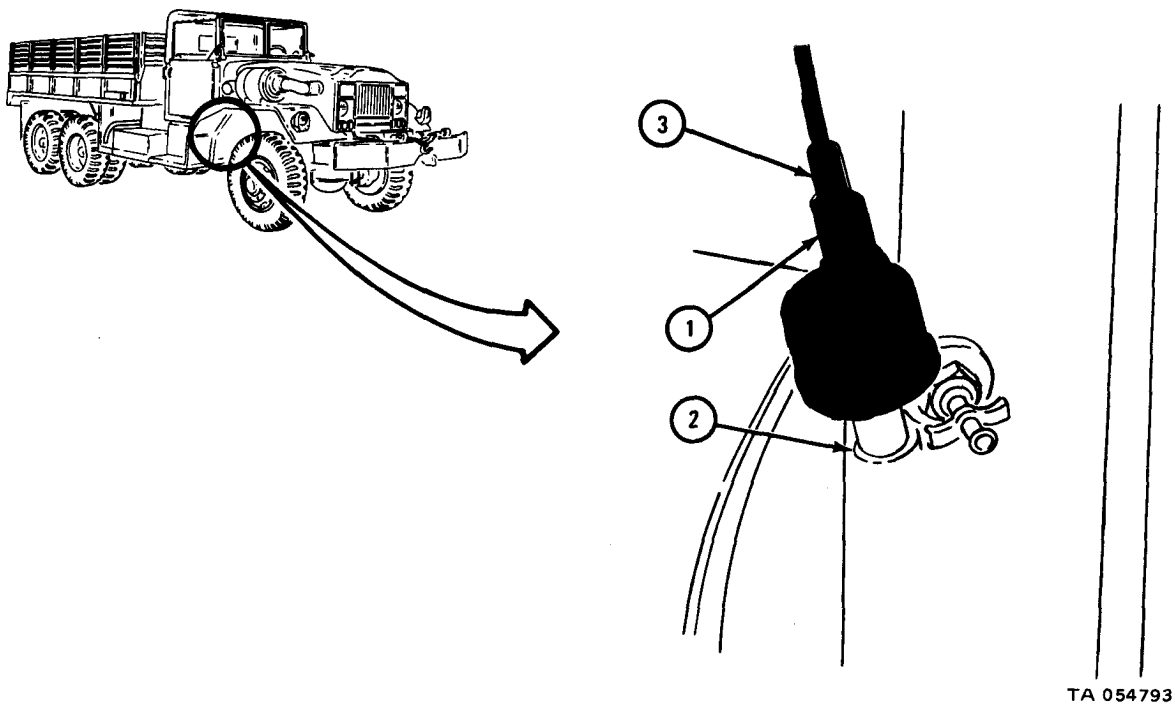


b. Replacement.

FRAME 1

1. Using wrench, screw in and tighten oil pressure gage sending unit (1) into crankcase (2).
2. Push connector (3) into oil pressure gage sending unit (1).

END OF TASK



7-35. FUEL GAGE SENDING UNIT REMOVAL AND REPLACEMENT.

TOOLS: Cross-tip screwdriver (Phillips type), 1 l/2-inch blade

SUPPLIES: Fuel gage sending unit gasket

PERSONNEL: One

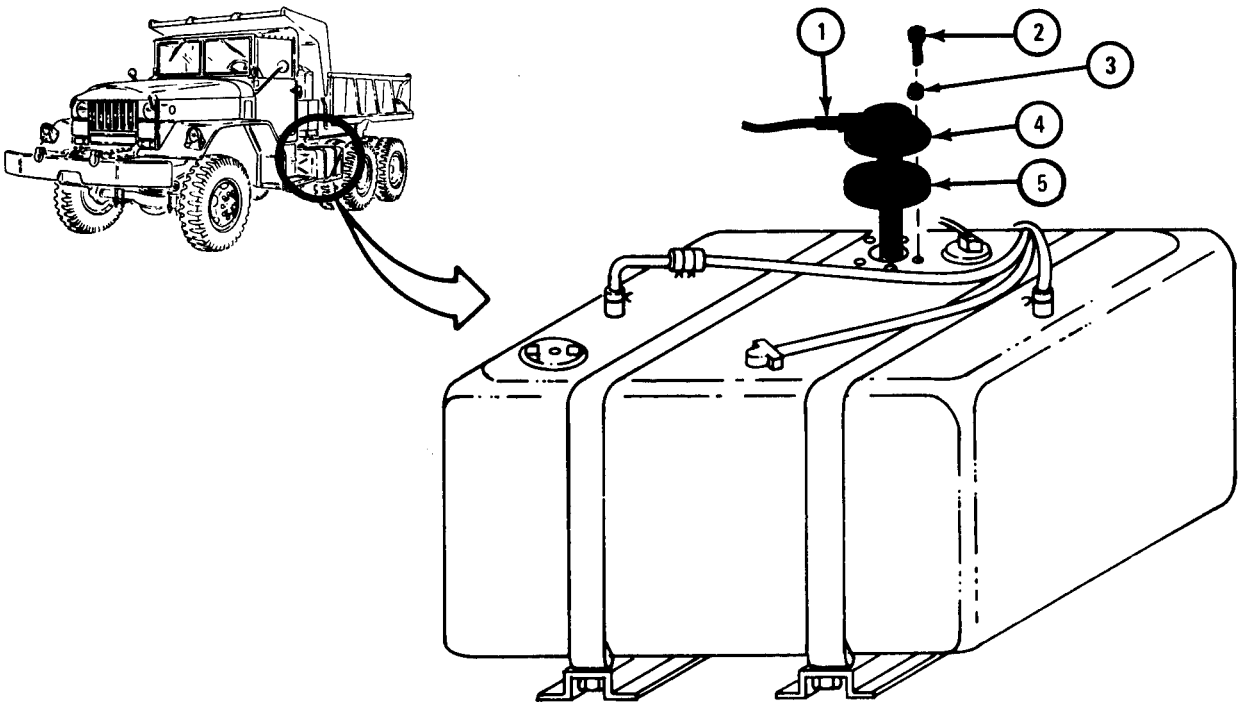
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Pull out connector (1).
2. Using screwdriver, unscrew and take out five screws (2) with washers (3).
3. Pull out fuel gage sending unit (4).
4. Take off and throw away gasket (5).

END OF TASK

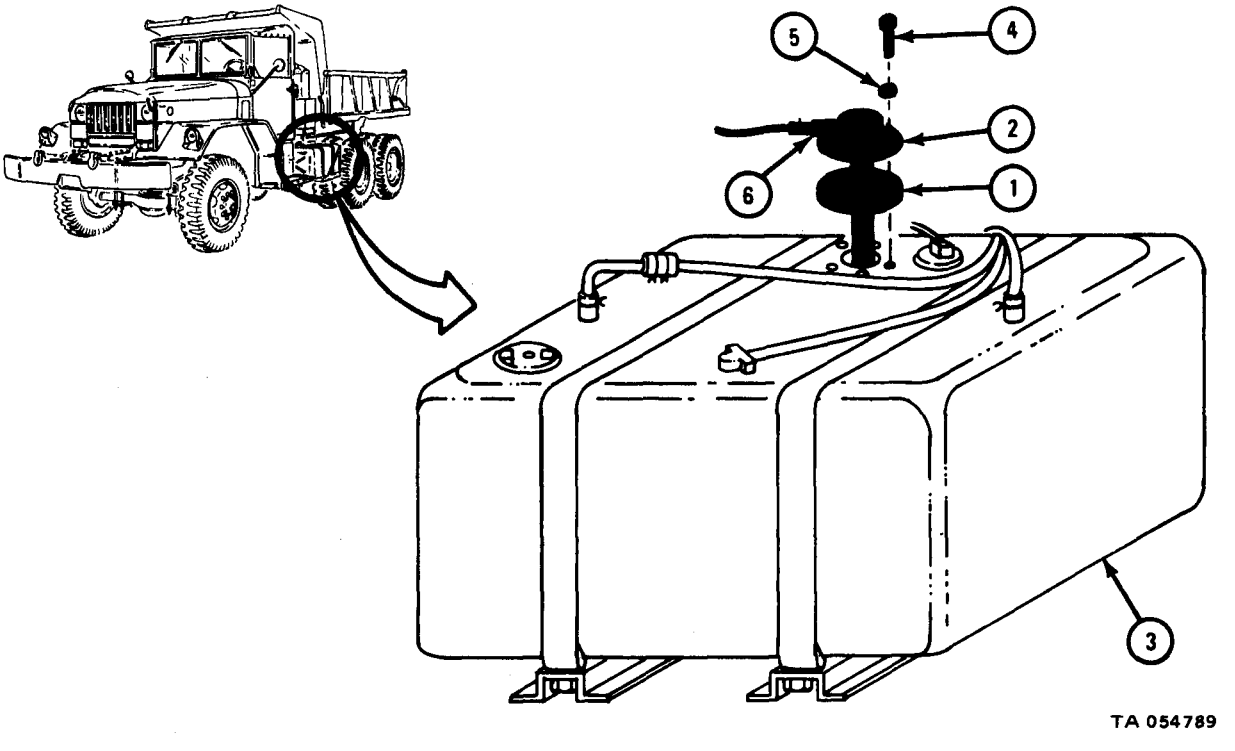


b. Replacement.

FRAME 1

1. Place gasket (1) on fuel gage sending unit (2).
2. Push fuel gage sending unit (2) into opening in fuel tank (3).
3. Line up holes in fuel gage sending unit (2), gasket (l), and fuel tank (3).
4. Using screwdriver, screw in and tighten five screws (4) with washers (5).
5. Push in connector (6).

END OF TASK



7-36. LOW AIR PRESSURE WARNING BUZZER REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: Two

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

Preliminary Procedure. Open hood and left side panel. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

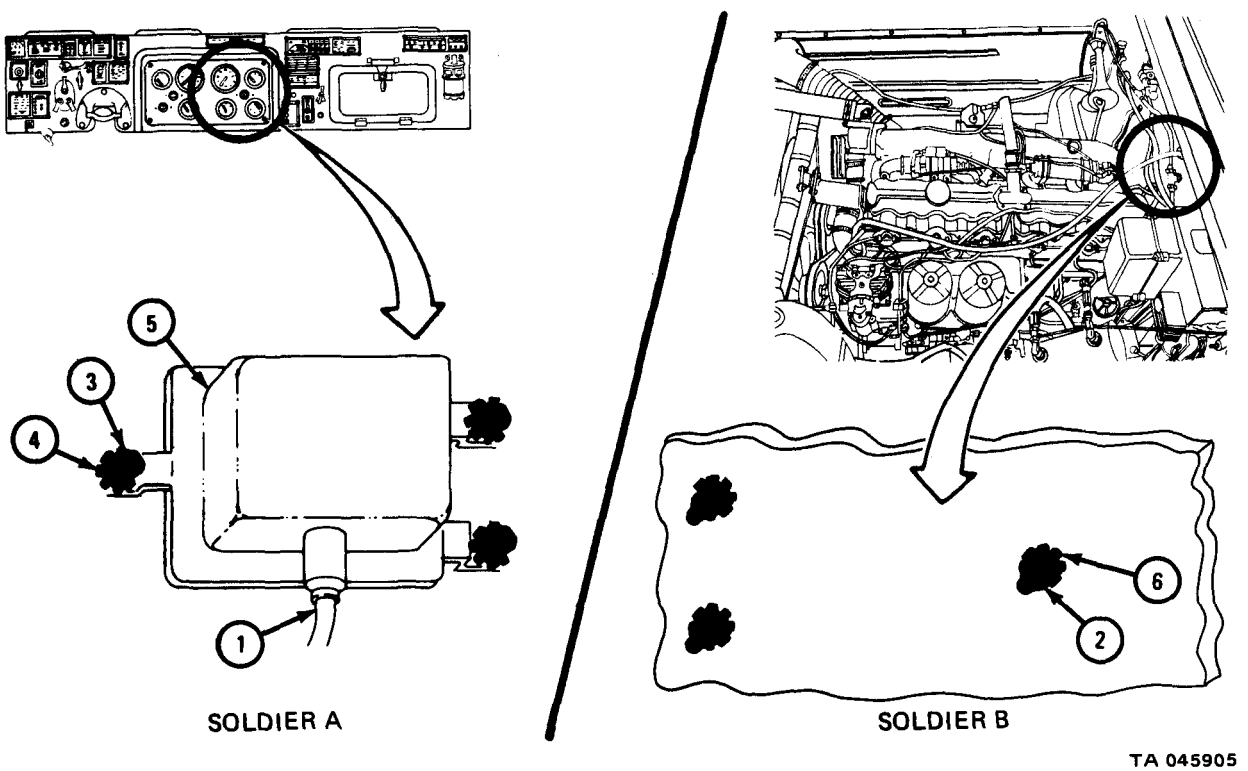
Soldier A 1. Working on cab side of firewall, unplug electrical lead (1).

Soldier B 2. Working on engine compartment side of firewall using 7/16-inch wrench, hold three nuts (2).

Soldier A 3. Using 7/16-inch wrench, unscrew and take off three screws (3) and lockwashers (4) and take out low air pressure warning buzzer (5).

Soldier B 4. Take off three nuts (2) and lockwashers (6).

END OF TASK



c. Replacement.

FRAME 1

Soldier A 1. Working in cab, place low air pressure warning buzzer (1) on firewall, alining three holes. Put lockwasher (2) on each of three screws (3). Put in low air pressure warning buzzer and using 7/16-inch wrench, hold them.

Soldier B 2. Working on engine compartment side of fire wall, place lockwasher (4) and nut (5) on each of three screws (3). Using 7/16-inch wrench, tighten three nuts.

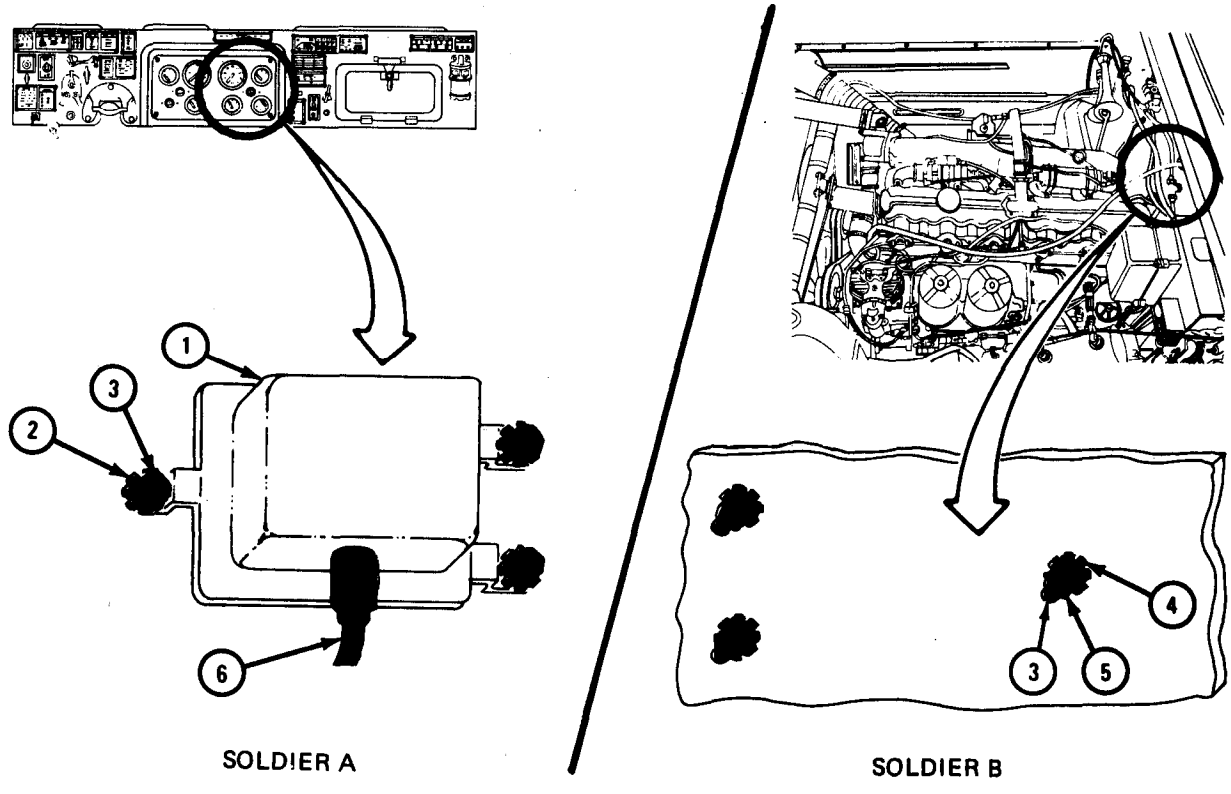
Soldier A 3. Push electrical lead (6) into low air pressure warning buzzer (1).

NOTE

Follow-on Maintenance Action Required:

Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK



7-37. LOW AIR PRESSURE SENDING UNIT REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench
5/8-inch open end wrench

SUPPLIES: None

PERSONNEL: One

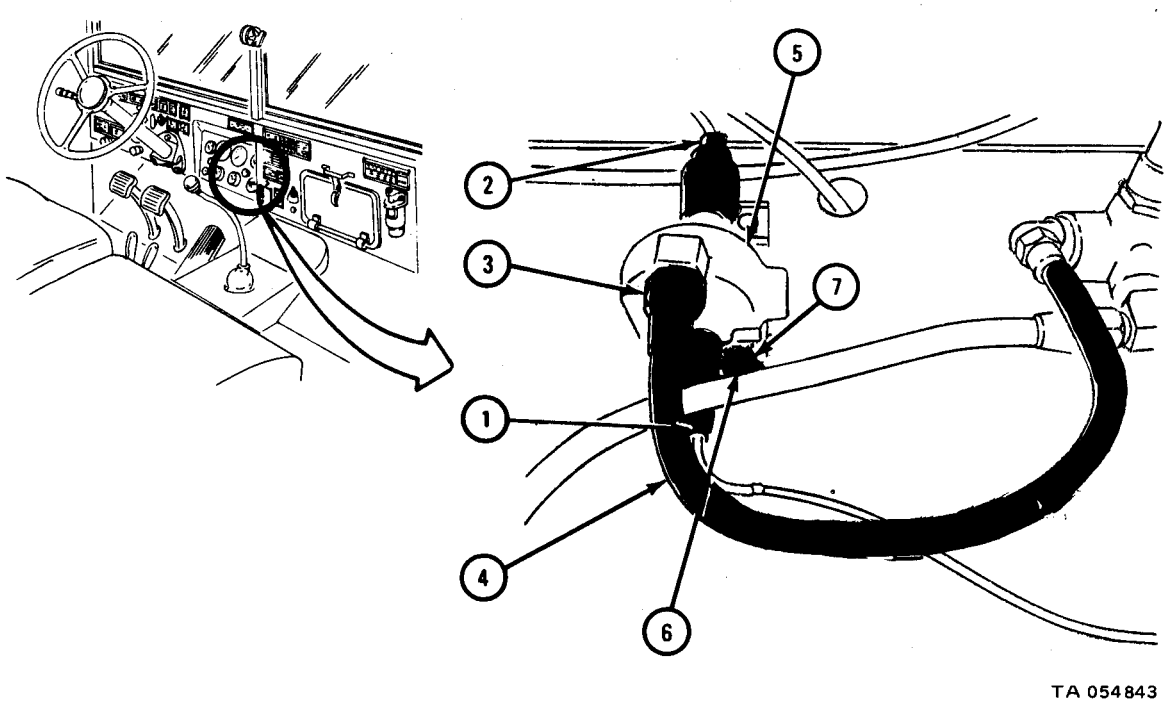
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Pull off buzzer cable connector (1).
2. Pull off ignition switch cable connector (2).
3. Using wrench, unscrew coupling nut (3). Take off supply line (4) from sending unit (5).
4. Using 7/16-inch wrench, unscrew and take out two cap screws (6) with starwashers (7). Take out sending unit (5).

END OF TASK



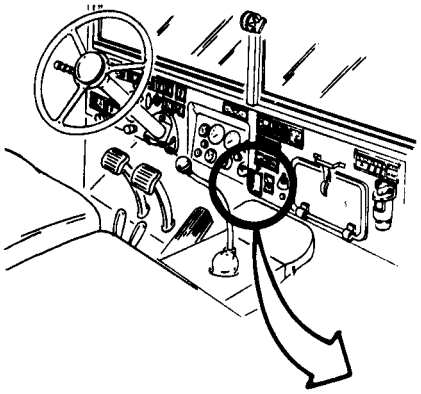
TA 054843

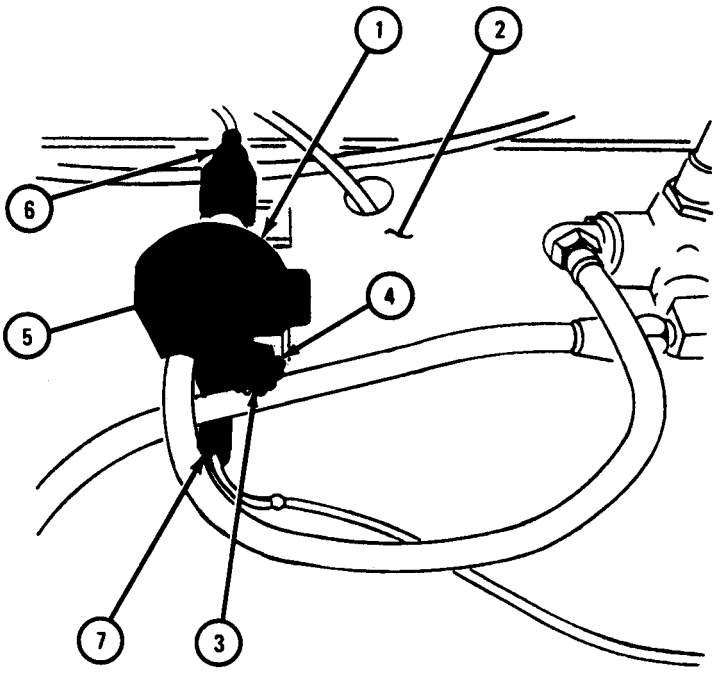
b. Replacement.

FRAME 1

1. Line up holes in sending unit (1) with holes in back side of cab cowl (2).
2. Using 7/16-inch wrench, screw in and tighten two cap screws (3) with starwashers (4).
3. Place air supply line coupling (5) at opening in side of sending unit (l).
4. Using wrench, screw in and tighten coupling nut (5).
5. Push together halves of ignition switch cable connector (6).
6. Push together halves of buzzer cable connector (7).

END OF TASK





TA 054844

Section VIII. HORN ASSEMBLY

7-38. HORN CONTACT BUTTON REMOVAL AND REPLACEMENT.

TOOLS: Flat-tip screwdriver

SUPPLIES: String or wire

PERSONNEL: One

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

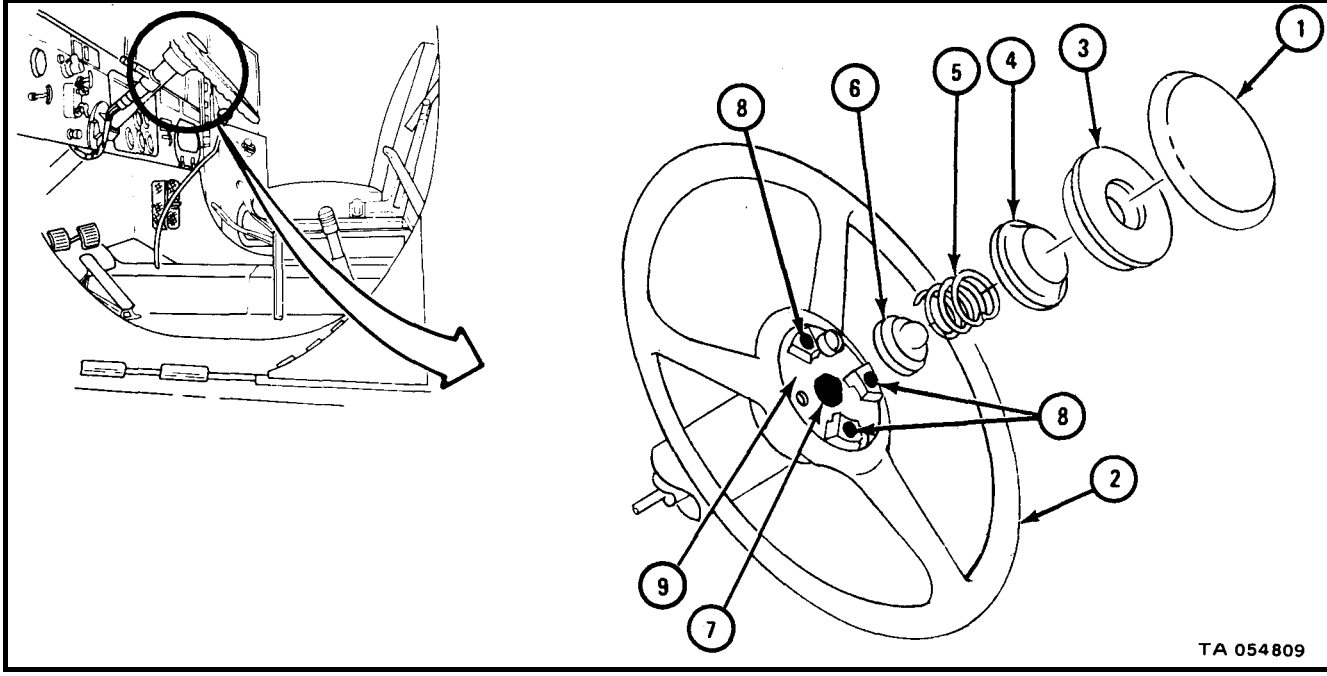
a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Pull off rubber cover (1).
2. Hold steering wheel (2). Press down and turn horn button (3) to left or right.
3. Lift out horn button (3).
4. Lift out cup (4), spring (5), and cap (6).
5. Tie string or wire on horn contact (7) to keep it from sliding inside steering column.
6. Using screwdriver, unscrew and take out three screws (8).
7. Pull out horn button plate (9).

END OF TASK



c. Replacement.

FRAME 1

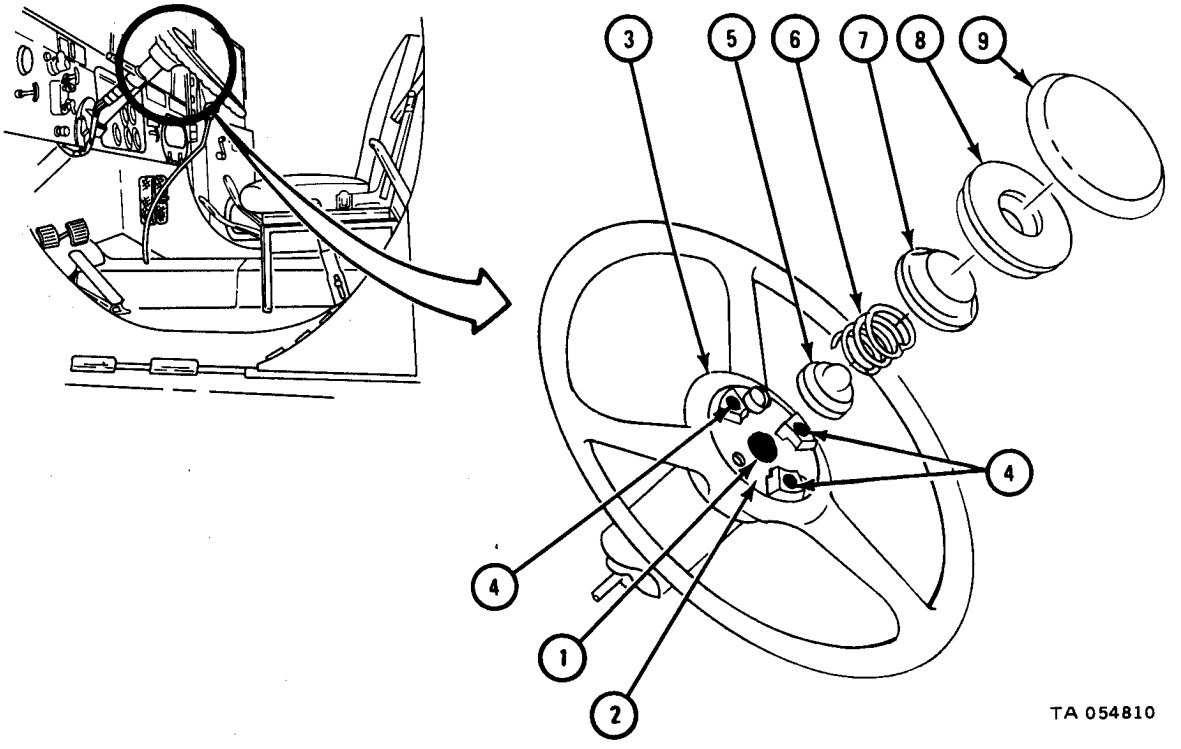
1. Pull horn contact (1) through hole in horn button plate (2). Set contact into center notch in plate. Take off string or wire.
2. Line up holes in horn button plate (2) with holes in steering column (3).
3. Using screwdriver, screw in and tighten three screws (4).
4. Place cap (5), spring (6), and cup (7) on horn button plate (2).
5. Place horn button (8) in center of steering column (3).
6. Press down and turn horn button (8) to right or left until it locks in place.
7. Press rubber cover (9) around horn button (8).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



7-39. HORN SOLENOID (WITH MOUNTING BRACKETS) REMOVAL AND REPLACEMENT.

TOOLS: General mechanic's tool kit

SUPPLIES: None

PERSONNEL: One

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

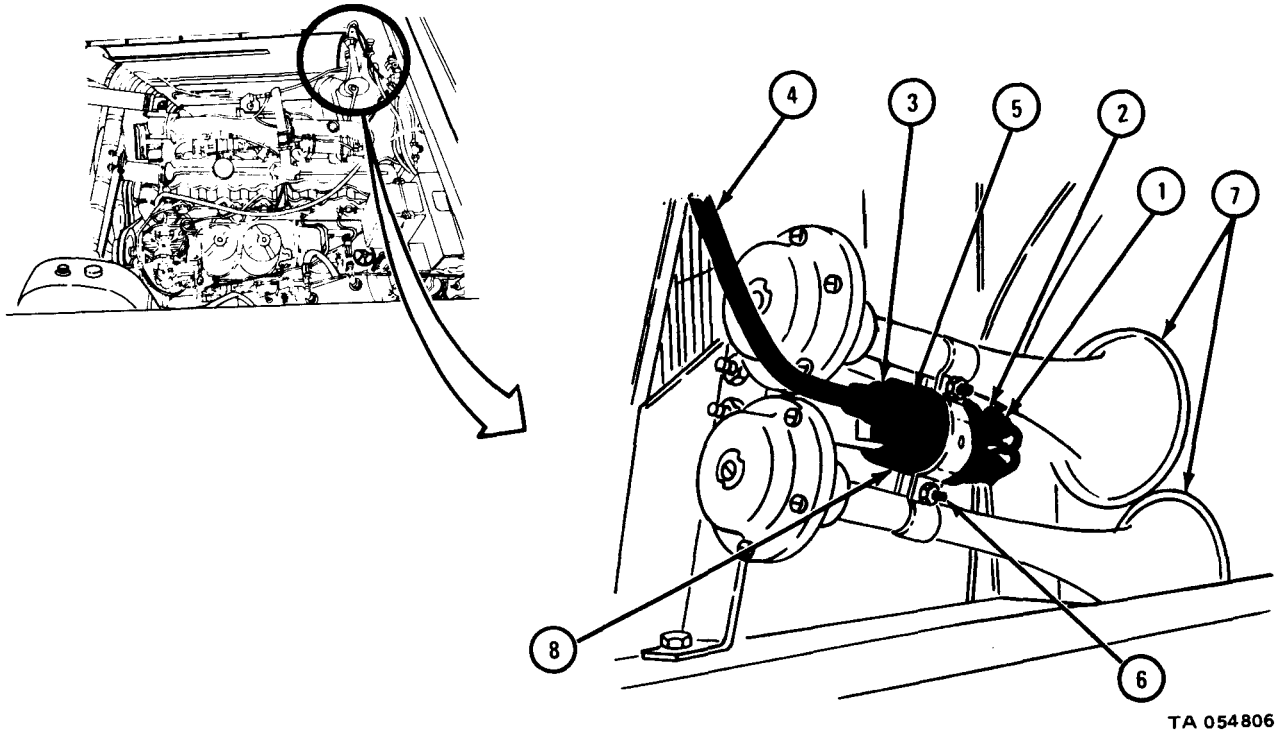
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

b. Removal.

FRAME 1

1. Take two connectors (1) out of clips (2).
2. Twist two connectors (1) to left and pull them apart.
3. Using wrench, unscrew coupling nut (3).
4. Pull off air line (4).
5. Using wrench, unscrew and take out elbow (5).
6. Using wrench, loosen two screws (6).
7. Unscrew and take off two horns (7).
8. Unscrew and take out horn solenoid (8).

END OF TASK

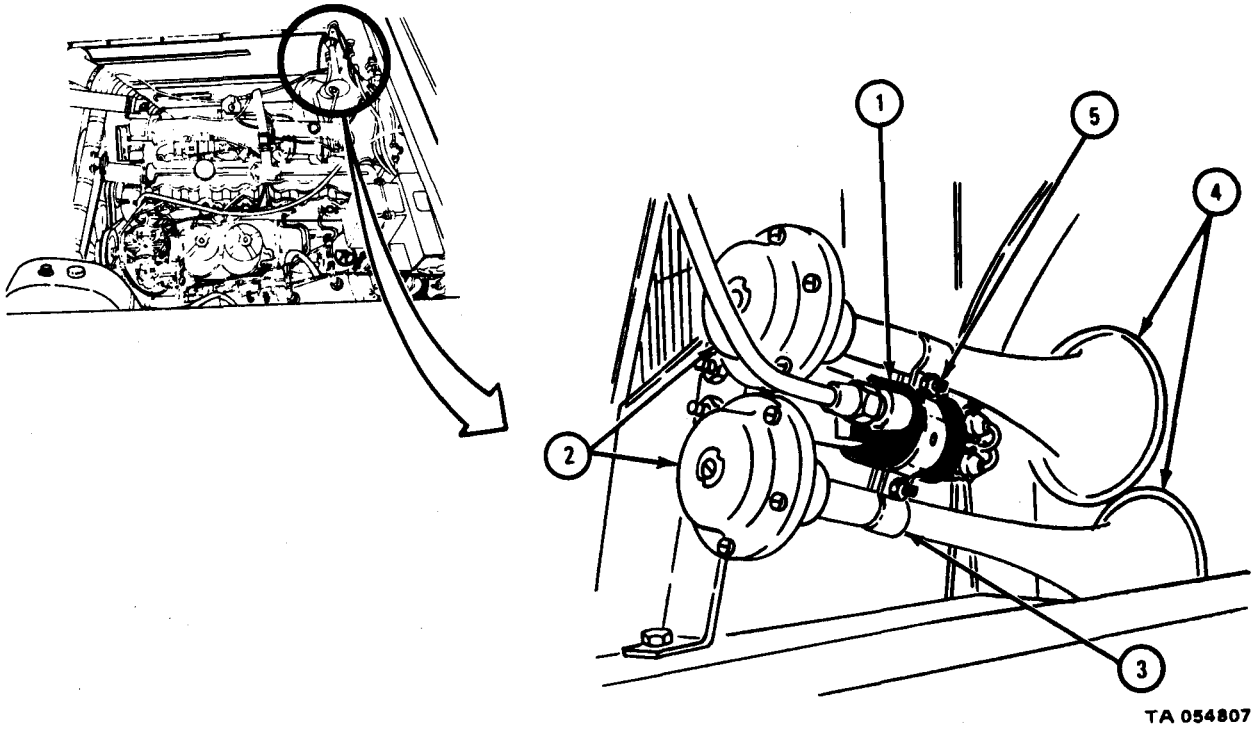


c. Replacement.

FRAME 1

1. Screw in horn solenoid (1) to threaded hole in horn base (2).
2. Line up solenoid mounting brackets (3) with holes in horn base (2).
3. Place both horns (4) through solenoid mounting brackets (3) and screw them into horn base (2).
4. Using wrench, tighten two screws (5).

GO TO FRAME 2



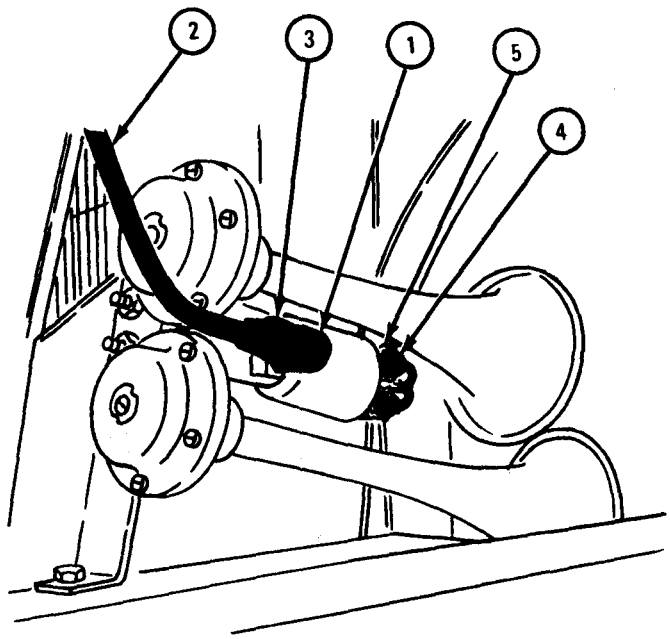
FRAME 2

1. Using wrench, screw in and tighten elbow (1).
2. Put air line (2) to elbow (1).
3. Using wrench, screw on and tighten coupling nut (3).
4. Push two connectors (4) together and twist them to right.
5. Snap connectors (4) into clips (5).

NOTE

Follow-on Maintenance Action Required:
Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 054808

7-40. HORN SOLENOID (WITHOUT MOUNTING BRACKETS) REMOVAL AND REPLACEMENT.

TOOLS: 1/2-inch wrench
11/16-inch wrench
5/8-inch wrench

SUPPLIES: None

PERSONNEL: One

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

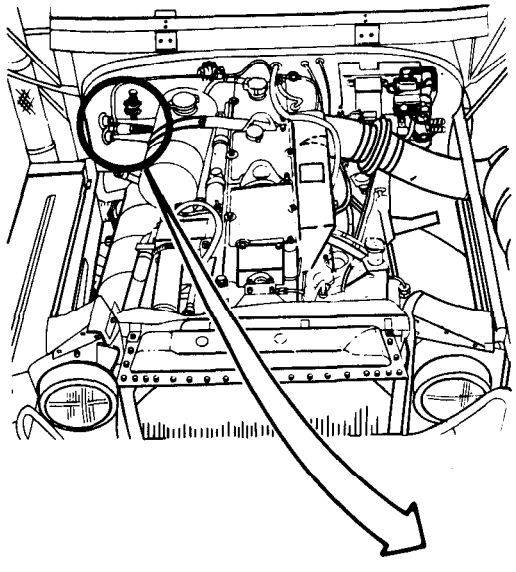
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

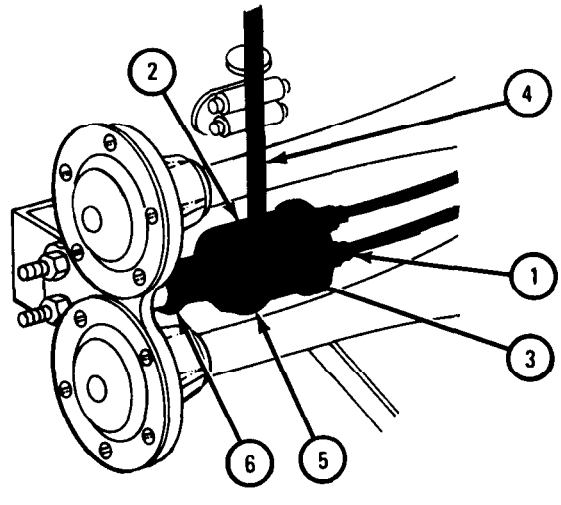
b. Removal.

FRAME 1

1. Pull two connectors (1) out of horn solenoid (2).
2. Using 5/8-inch wrench, unscrew coupling nut (3).
3. Pull off air line (4).
4. Using l/2-inch wrench, unscrew and takeout elbow (5).
5. Using 11/16-inch wrench, loosen fitting (6).
6. Unscrew and take out horn solenoid (2).

END OF TASK





TA 054804

c. Replacement.

FRAME 1

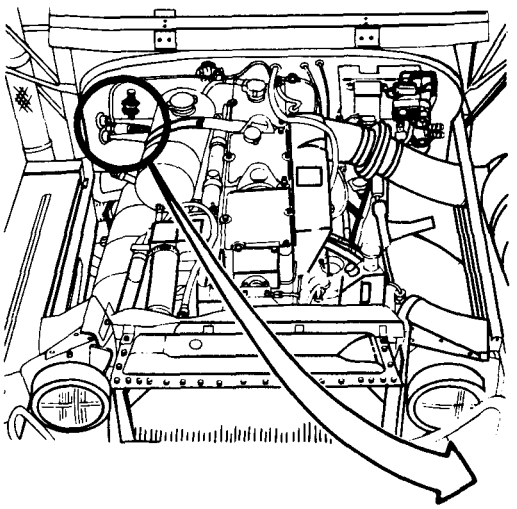
1. Using 11/16-inch wrench, screw horn solenoid (1) into threaded hole in horn base (2).
2. Using l/2-inch wrench, screw in and tighten elbow (3).
3. Put air line (4) to elbow (3).
4. Using 5/8-inch wrench, screw on and tighten coupling nut (5).
5. Push connectors (6) onto solenoid (1).

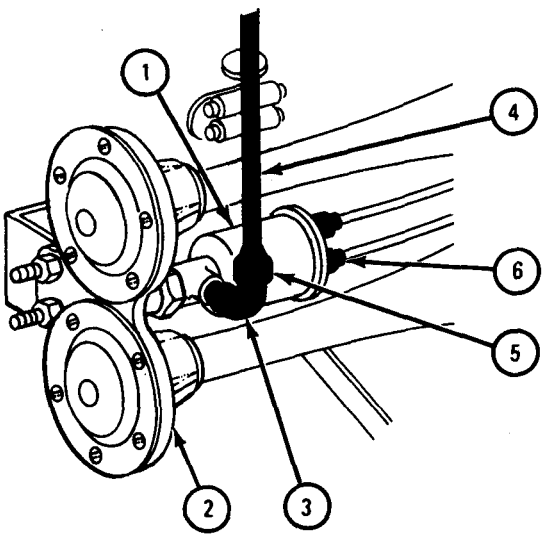
NOTE

Follow-on Maintenance Action Required:

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

END OF TASK





TA 054805

7-41. ELECTRIC AIR HORN REMOVAL AND REPLACEMENT.

TOOLS: 5/8-inch wrench
7/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

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

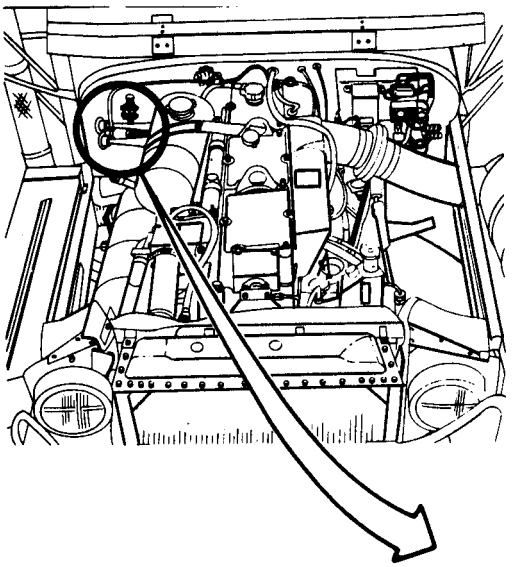
a. Preliminary Procedure. Open hood. Refer to TM 9-2320-211-10.

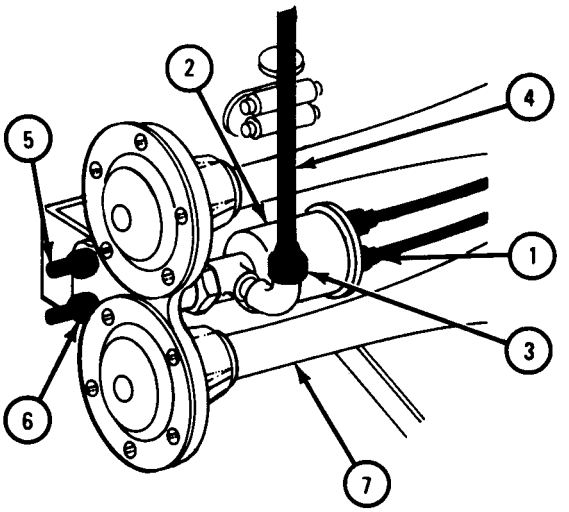
b. Removal.

FRAME 1

1. Pull two connectors (1) out of horn solenoid (2).
2. Using 5/8-inch wrench, unscrew coupling nut (3).
3. Pull off airline (4).
4. Using 7/16-inch wrenches , unscrew and take out two screws (5) with nuts (6).
5. Take out two horns (7).

END OF TASK





TA 054802

c. Replacement

FRAME 1

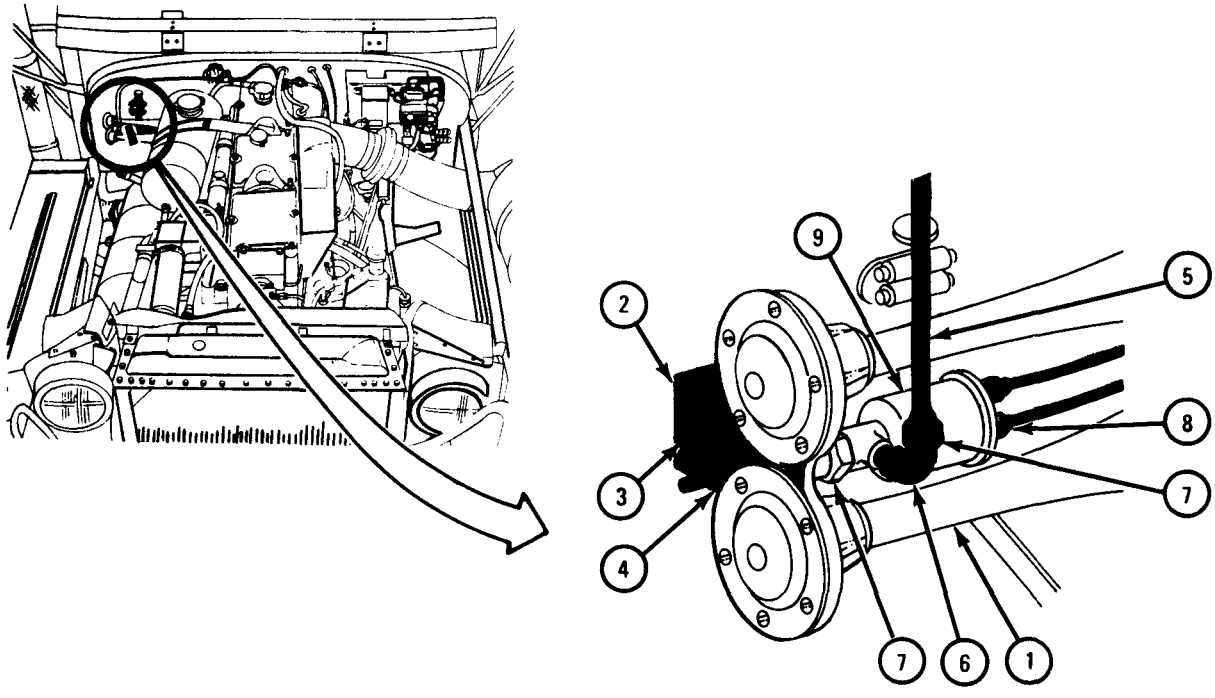
1. Line up holes in two horns (1) with holes in bracket (2).
2. Using 7/16-inch wrenches, screw in and tighten two screws (3) with nuts (4).
3. Put air line (5) to elbow (6).
4. Using 5/8-inch wrench, screw on and tighten coupling nut (7).
5. Push connectors (8) onto solenoid (9).

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



TA 054803

Section IX. BATTERY SYSTEM

7-42. SERVICING THE BATTERIES.

TOOLS: AO DUO-CHEK , coolant and battery tester
Wire brush
Bristle brush
Battery filler, syringe
Rubber gloves
Goggles
Soaking tub

SUPPLIES: Distilled or clean water
Sodium bicarbonate, MIL-0-S-576F
Lint-free cloth
Tissues or clean soft cloth

PERSONNEL: One

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

a. Preliminary Procedure. Remove batteries. Refer to para 7-43.

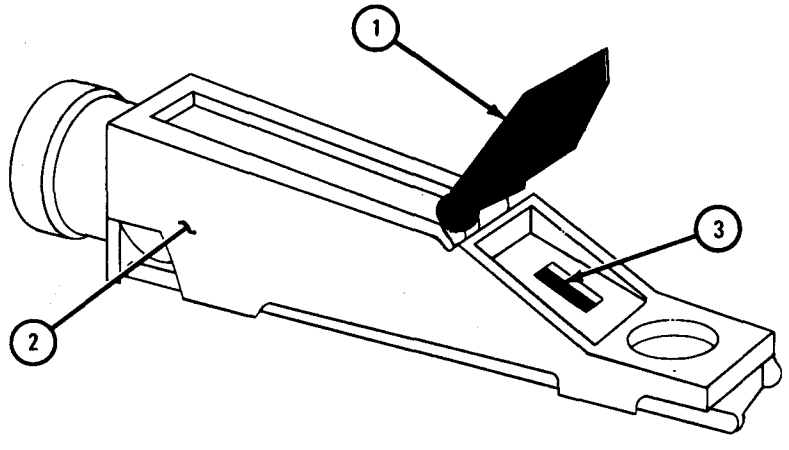
b. Specific Gravity Check.

(1) Preliminary cleaning.

FRAME 1

1. Swing back plastic cover (1) of battery tester (2) all the way.
2. Using tissue, wipe bottom of plastic cover (1) and measuring window (3).
3. Close plastic cover (1).

END OF TASK



TA 114079

(2) Checkout procedure.

WARNING

Do not get electrolyte on personnel or equipment. Personnel may be badly burned and equipment may be damaged.

Wear rubber gloves and goggles while working with electrolyte to stop serious injury from battery acid.

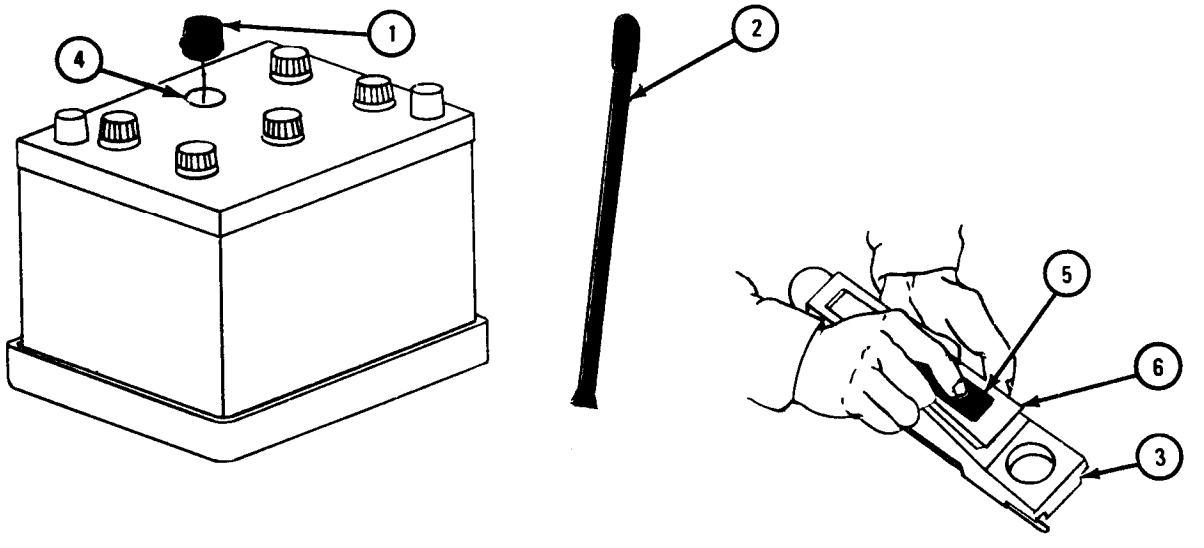
NOTE

Do this test before adding water to battery. Do frames 1 and 2 for each battery cell.

FRAME 1

1. Unscrew and take off battery filler cap (1).
2. Take black dip stick (2) from dipstick retainer (3).
3. Put tip of dipstick (2) into battery cell (4).
4. Take out dipstick (2) from battery cell (4).
5. Using dipstick (2), place a few drops of electrolyte on measuring surface (5) through opening in plastic cover (6).

GO TO FRAME 2

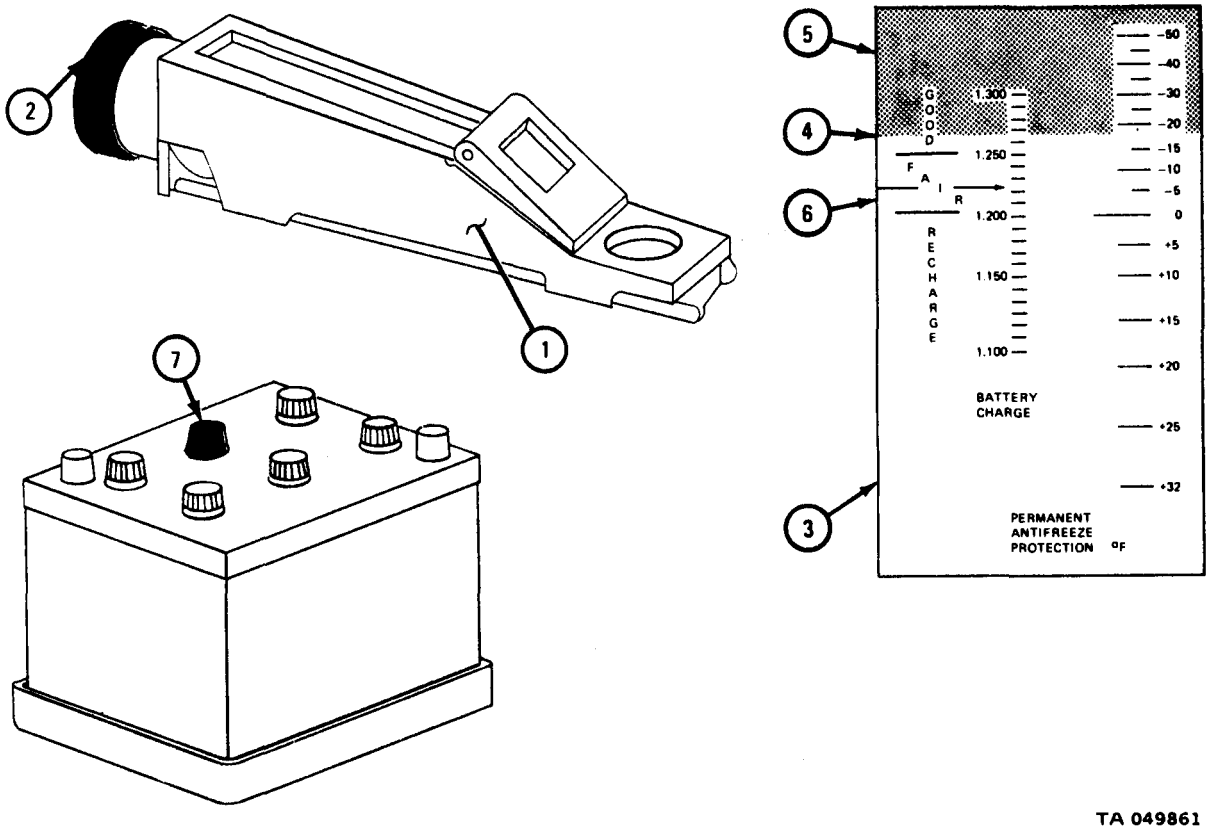


TA 049859

FRAME 2

1. Point coolant and battery tester (1) toward any light source. Look in eyepiece (2).
2. Read battery charge scale (3) on left side. Reading (4) is where dark shadow (5) meets light area (6).
3. Reading (4) should be in GOOD range (1.250-1.300). If specific gravity is below 1.225, replace battery with a fully charged battery if recharging is not possible.
4. Using battery filler syringe, add distilled water if available or clean water as needed to bring electrolyte to needed level, 3/4 inch above plates.
5. Screw on and tighten battery filler cap (7).
6. Clean and dry all parts of the coolant and battery tester (1).

END OF TASK

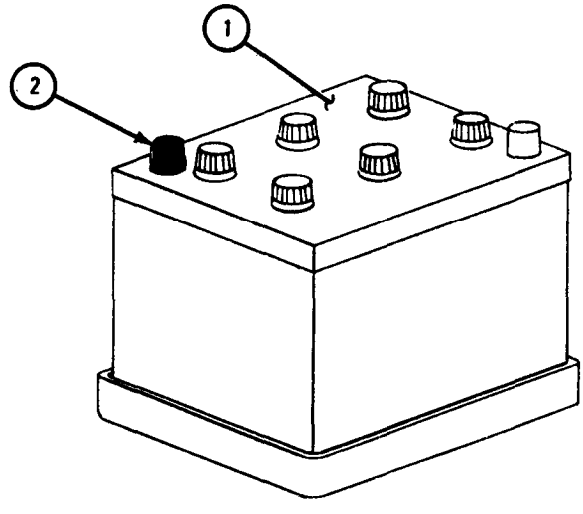


c. Cleaning the Batteries.

FRAME 1

1. Using 1/2 pound of sodium bicarbonate to one gallon of water, mix a sodium bicarbonate solution.
2. Using bristle brush and soda solution, scrub tops of batteries (1) and battery posts (2).
3. After foaming stops, rinse tops of batteries (1) with clean water.
4. Using lint-free cloth, dry off batteries (1).

GO TO FRAME 2



TA 049865

FRAME 2

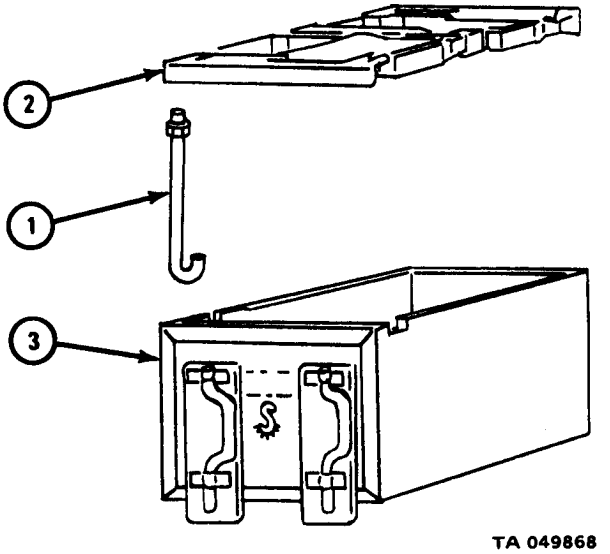
1. Using wire brush, scrub battery hold down bolts (1) and battery retainer (2) to take off rust or corrosion.
2. Soak battery hold down bolts (1) and retainer (2) in tub filled with sodium bicarbonate solution. After foaming stops, rinse in clean water.
3. Using wire brush, scrub battery box (3) to take off rust or corrosion.
4. Wash battery box (3) in soda solution. After foaming stops, rinse in clean water.
5. Using lint-free cloth, dry battery hold down bolts (1), battery retainer (2), and battery box (3).

NOTE

Follow-on Maintenance Action Required:

Replace batteries. Refer to para 7-43.

END OF TASK



TA 049868

7-43. STORAGE BATTERIES, BATTERY RETAINER, HOOK AND BOLT ASSEMBLY, BATTERY BOX, AND BATTERY CABLES REMOVAL AND REPLACEMENT.

TOOLS: 5/8-inch wrench
Pliers
l/2-inch wrench
9/16-inch wrench
3/4-inch wrench
Flat-tip screwdriver
Battery terminal spreader-cleaner
Battery terminal lifter

SUPPLIES: None

PERSONNEL: One

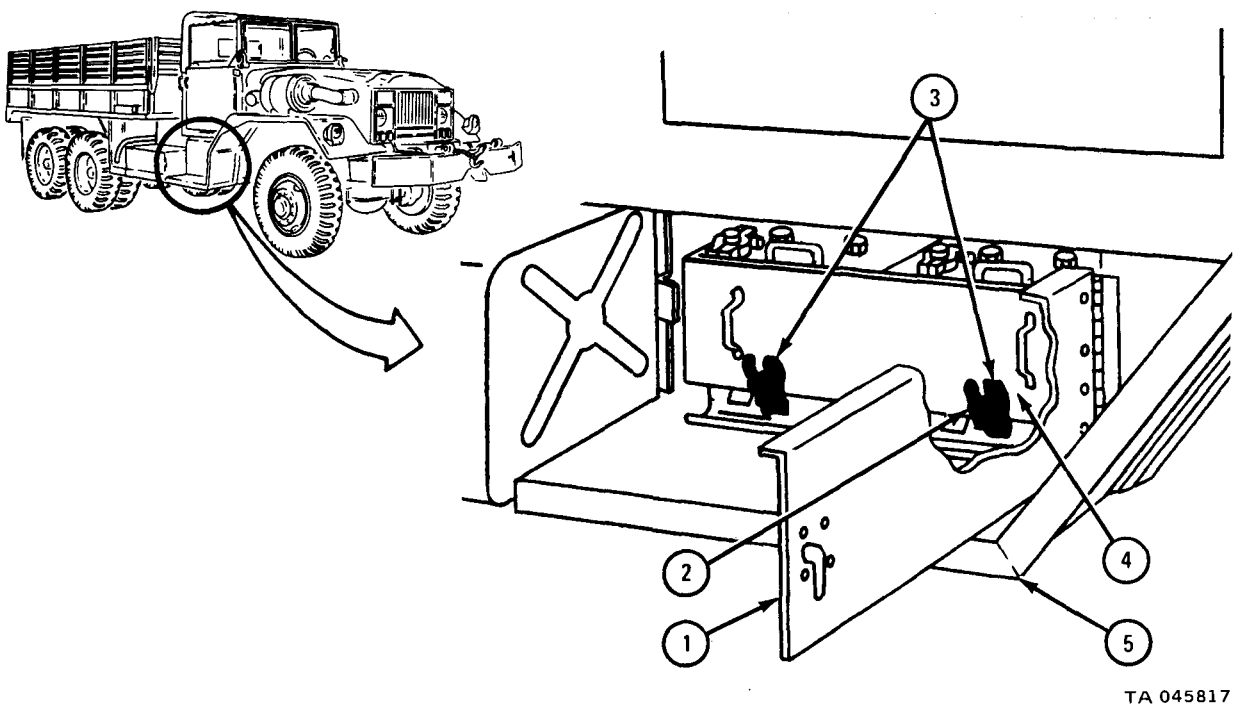
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Open battery compartment door (1).
2. Loosen two thumbscrews (2) and push two clamps (3) down to clear battery box (4).
3. Pull battery box (4) out onto running board (5).

GO TO FRAME 2



FRAME 2

WARNING

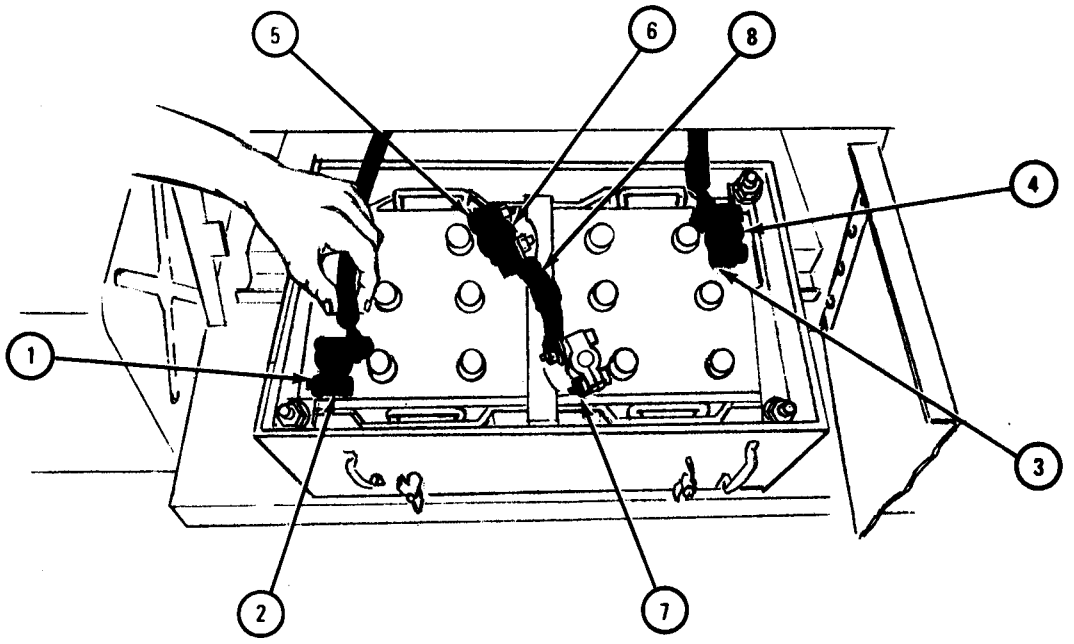
Always take off ground terminal first or electrical damage may occur, causing injury to personnel and damage to equipment.

NOTE

Always use battery terminal lifter to take off battery terminals.

1. Using 1/2-inch wrench, loosen nut (1) and take off battery ground terminal (2).
2. Using 1/2-inch wrench, loosen nut (3) and take off positive terminal (4).
3. Using 1/2-inch wrench, loosen nut (5) and take off positive terminal (6).
4. Using 1/2-inch wrench, loosen nut (7) and lift off jumper cable (8).

GO TO FRAME 3



TA 047163

FRAME 3

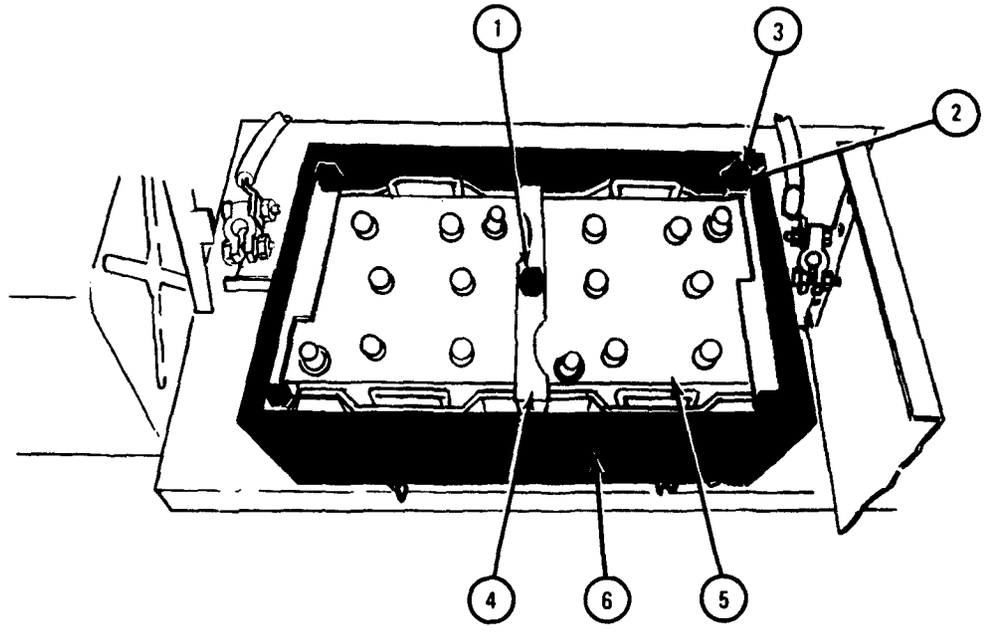
1. Using 5/8-inch wrench, unscrew and take off nut and lockwasher (1).
2. Using 9/16-inch wrench, unscrew and take off four nuts and lockwashers (2) from four clamp bolts (3).

WARNING

Be very careful not to short positive and negative battery posts against retainer (4). This could cause retainer to melt and battery to explode causing injury to personnel and damage to equipment.

3. Lift battery retainer (4) off two batteries (5) and five clamp bolts (3).
4. Lift out two batteries (5). Take off battery box (6).

GO TO FRAME 4

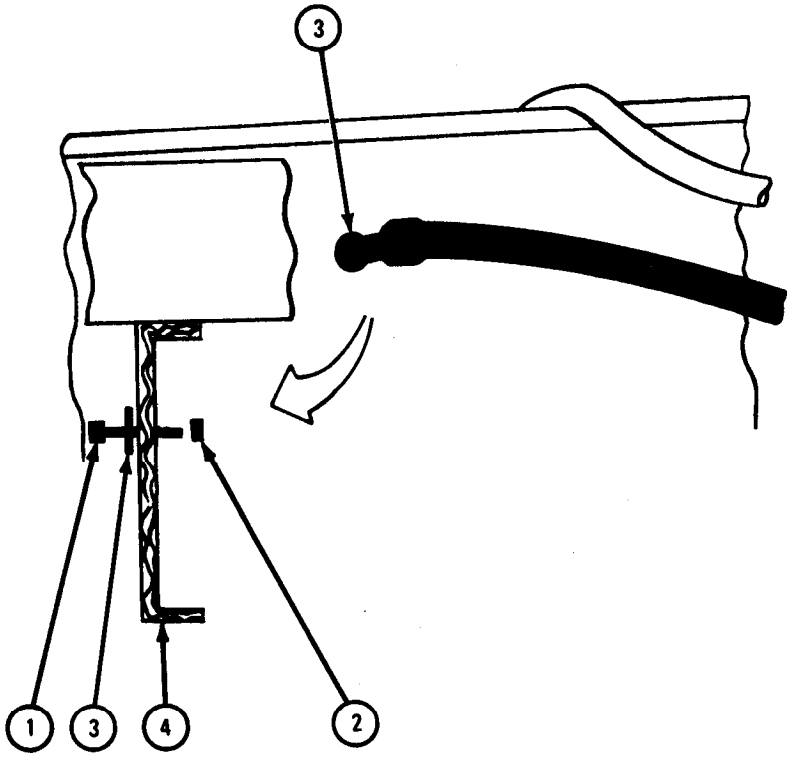


TA 045818

FRAME 4

1. Using two 9/16-inch wrenches, hold capscrew (1) and unscrew and take off nut (2). Take off negative (-) battery cable (3).
2. Take capscrew (1) out of truck frame (4) in back of battery compartment.

GO TO FRAME 5

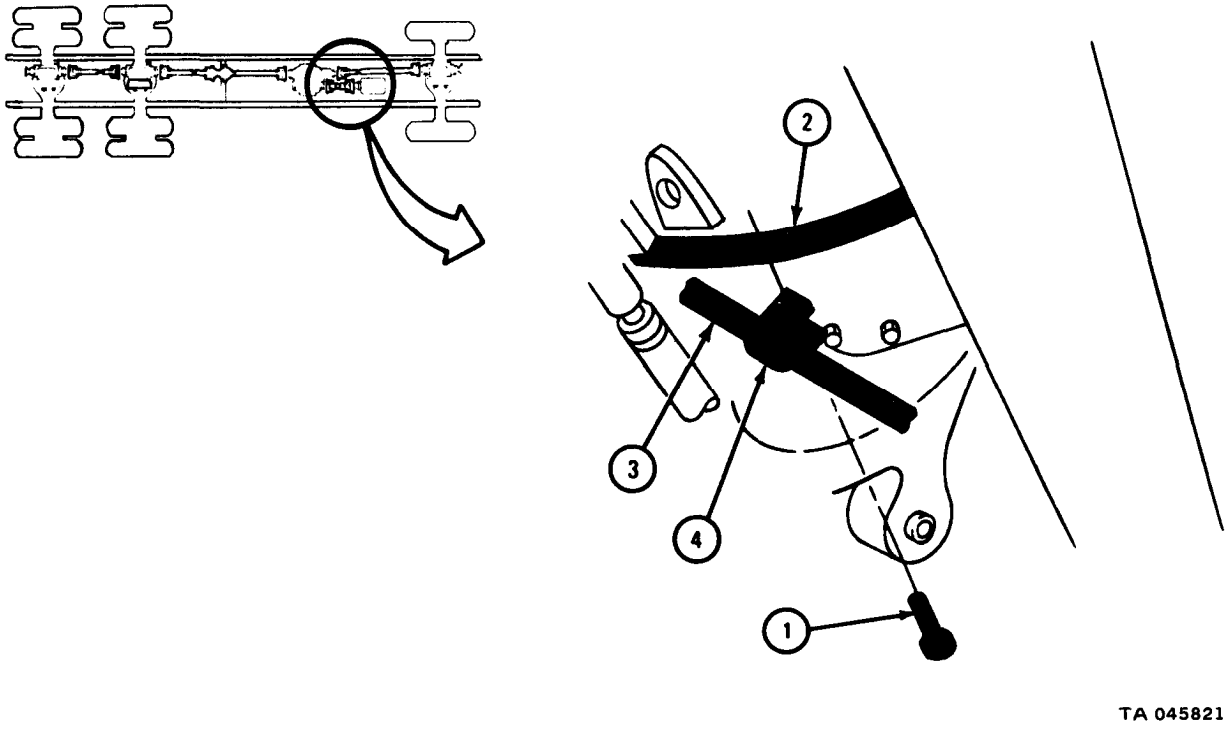


TA 045819

FRAME 5

1. Using 9/16-inch wrench, unscrew and take out two bolts (1) from bell housing (2).
2. Carefully pull out positive cable (3).
3. Using screwdriver, spread out and take off two clips (4) from positive cable (3).

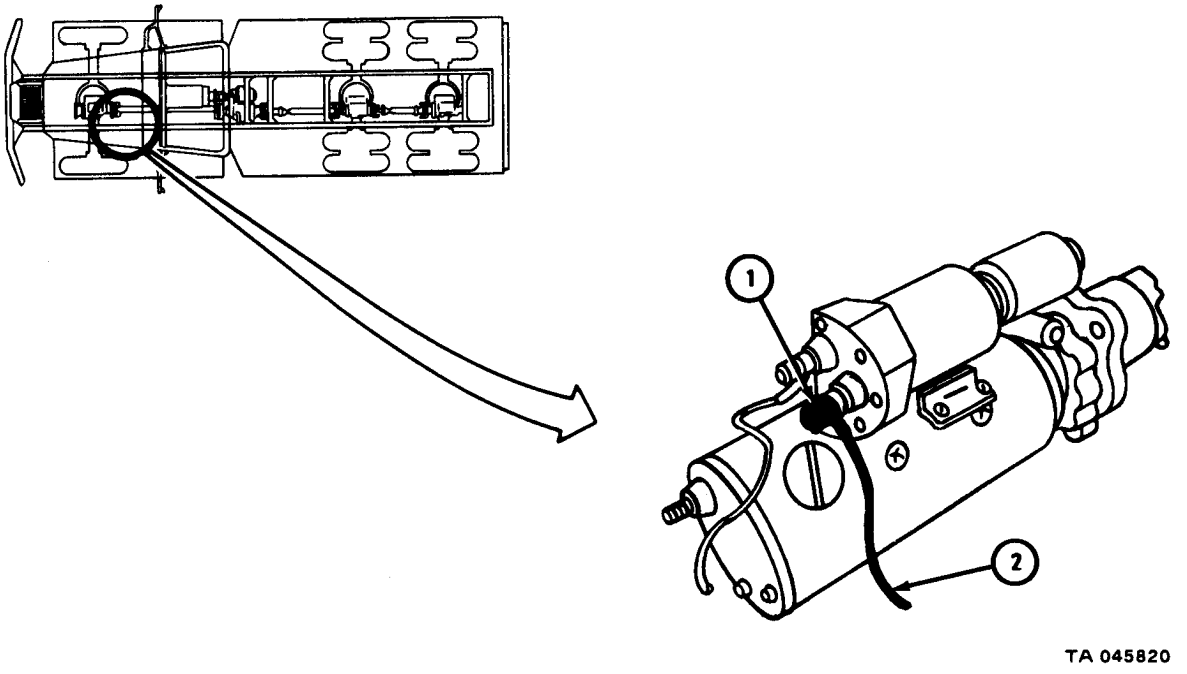
GO TO FRAME 6



FRAME 6

1. Working from under left side of truck and using 3/4-inch wrench, unscrew and take off nut and lockwasher (1).
2. Take off positive (+) battery cable (2).

END OF TASK

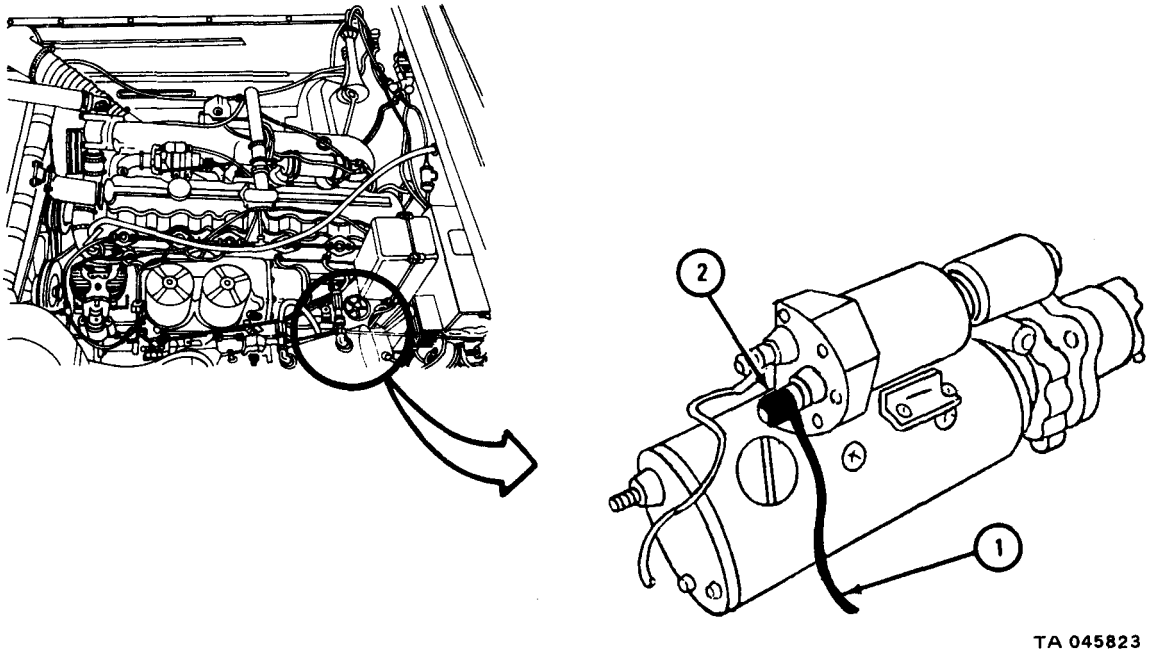


b. Replacement.

FRAME 1

1. Working under truck, put positive (+) cable (1) in place.
2. Using 3/4-inch wrench, screw on and tighten lockwasher and nut (2).

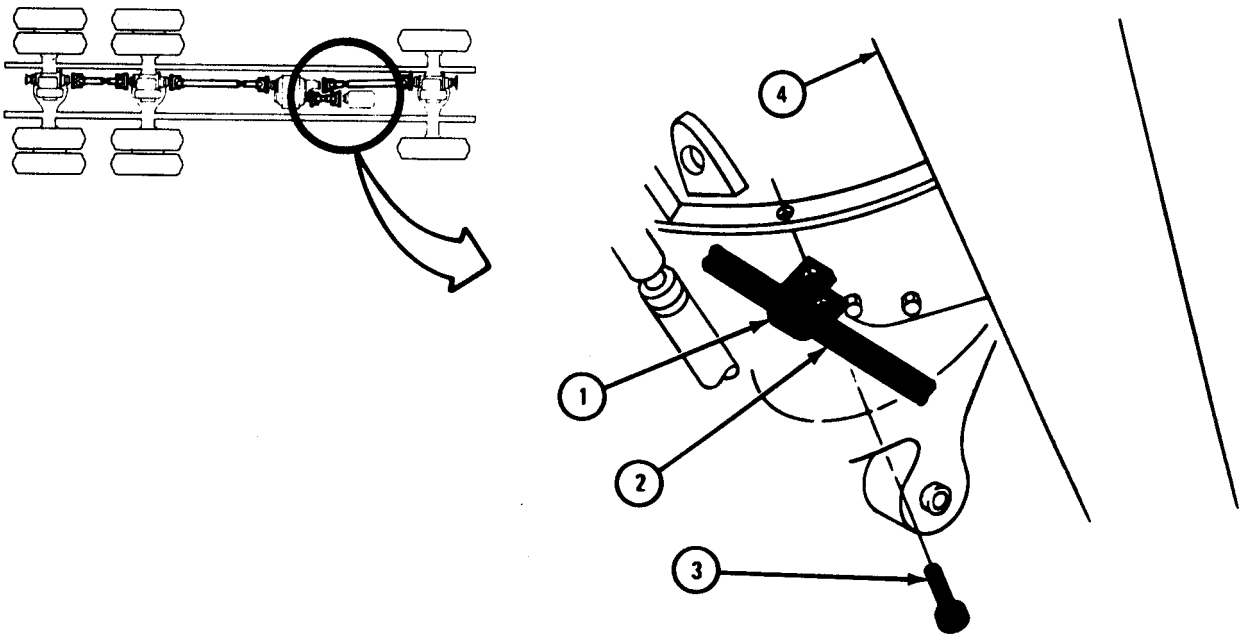
GO TO FRAME 2



FRAME 2

1. Using pliers, squeeze clip (1) over positive (+) cable (2).
2. Hold clip (1) in place and put in bolt (3).
3. Using 9/16-inch wrench, screw in and tighten bolt (3).
4. Bring positive (+) cable (2) over driveshaft (4) to solenoid.

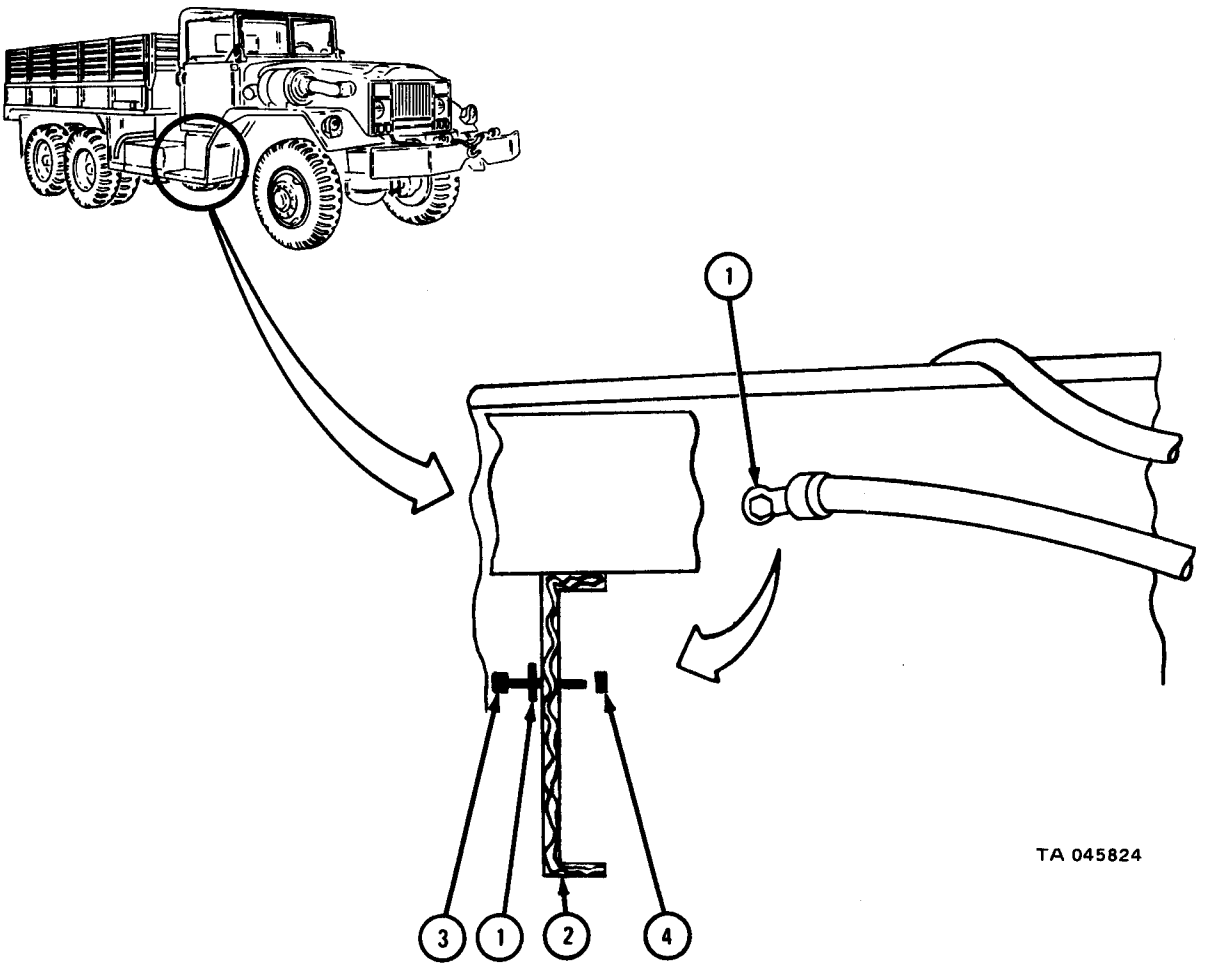
GO TO FRAME 3



FRAME 3

1. Hold negative (-) cable (1) in place on truck frame (2) in back of battery compartment.
2. Put capscrew (3) through cable (1) and truck frame (2).
3. Using 9/16-inch wrenches, hold cap screw (3) and screw on and tighten nut (4).

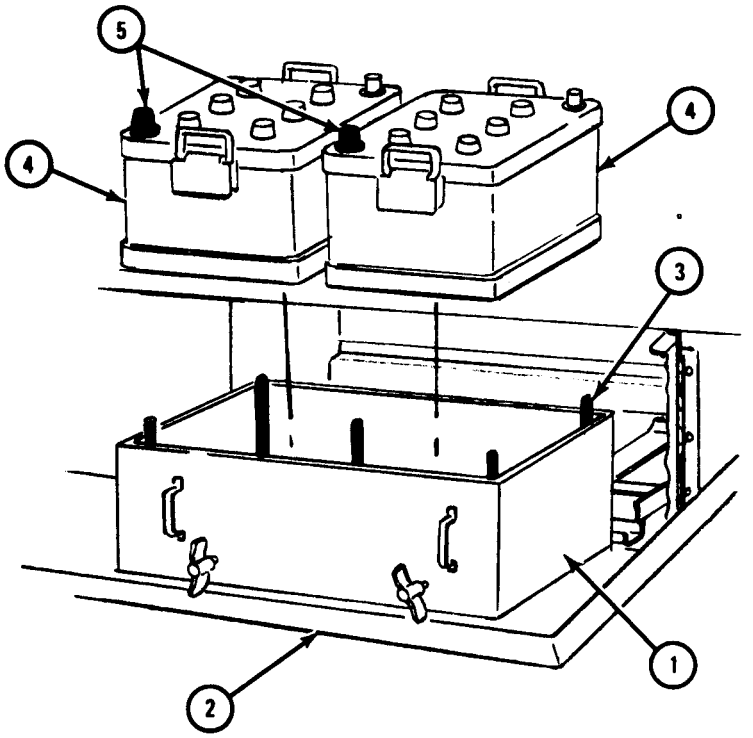
GO TO FRAME 4



FRAME 4

1. Put battery box (1) on running board (2).
2. Place five clamp bolts (3) as shown.
3. Put two batteries (4) into box (1) with negative (-) terminals (5) as shown.

GO TO FRAME 5



TA 045825

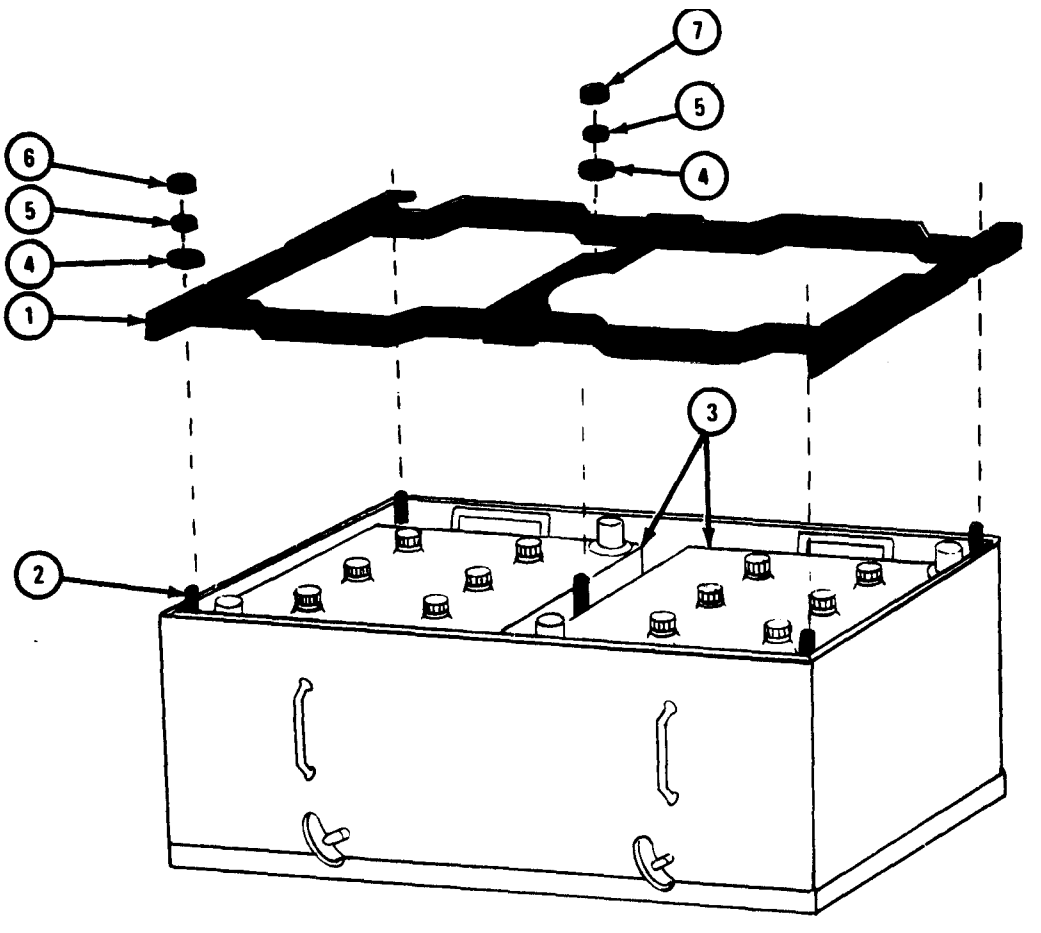
FRAME 5

WARNING

Be very careful not to short positive and negative battery posts against retainer. This could cause retainer to melt and battery to explode, causing injury to personnel and damage to equipment.

1. Line up center hole and four slots in battery retainer (1) with five clamp bolts (2).
2. Place battery retainer (1) over batteries (3) and five clamp bolts (2).
3. Put five flat washers (4) and five lockwashers (5) onto five clamp bolts (2).
4. Using 9/16-inch wrench, screw on and evenly tighten four corner clamp bolt nuts (6).
5. Using 5/8-inch wrench, screw on and tighten center clamp bolt nut (7).

GO TO FRAME 6



TA 045826

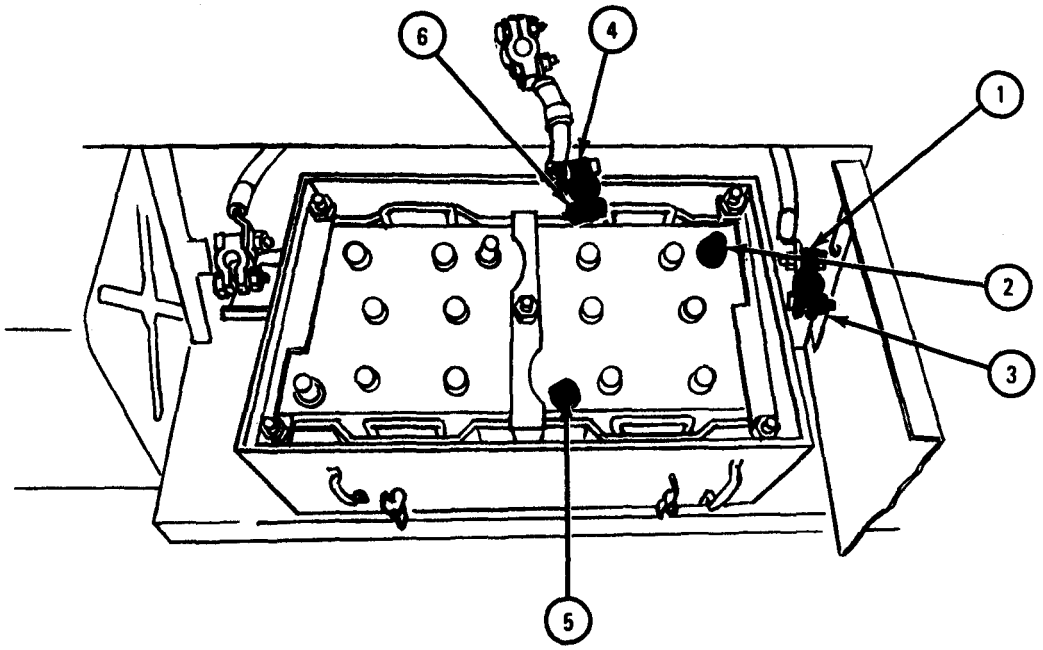
FRAME 6

NOTE

Use battery terminaI spreader to spread all terminals.

1. Put positive terminal (1) on positive post (2) of forward battery. Using 1/2-inch wrench, tighten nut (3).
2. Put jumper cable negative terminal (4) on negative post (5) of forward battery. Using 1/2-inch wrench, tighten nut (6).

GO TO FRAME 7

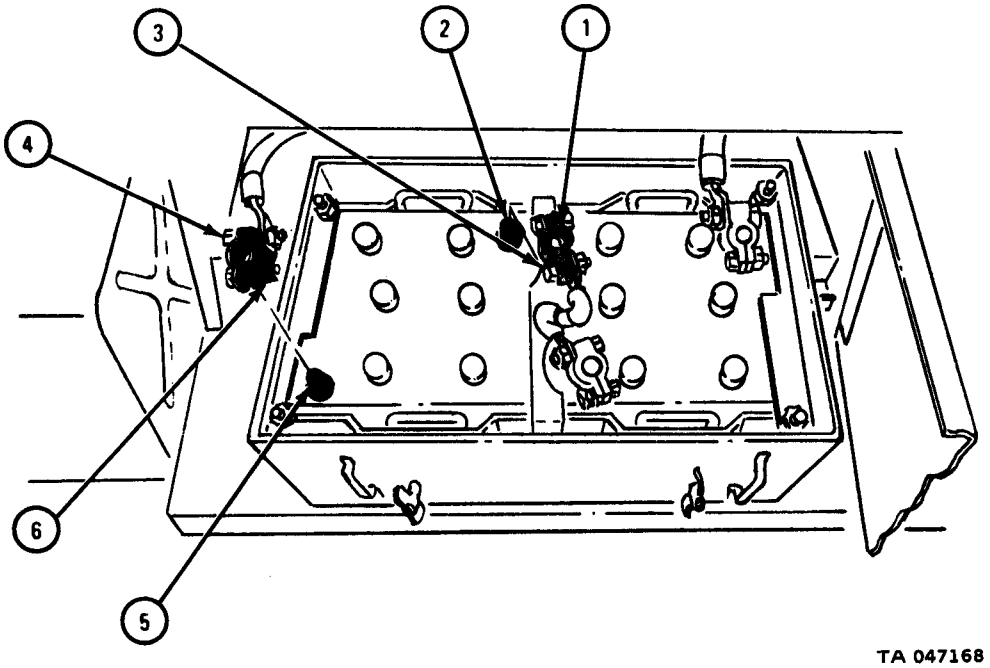


TA 047167

FRAME 7

1. Put jumper cable positive terminal (1) on positive post (2) of rear battery. Using 1/2-inch wrench, tighten nut (3).
2. Put ground cable terminal (4) on negative post (5) of rear battery. Using 1/2-inch wrench, tighten nut (6).

GO TO FRAME 8



TA 047168

FRAME 8

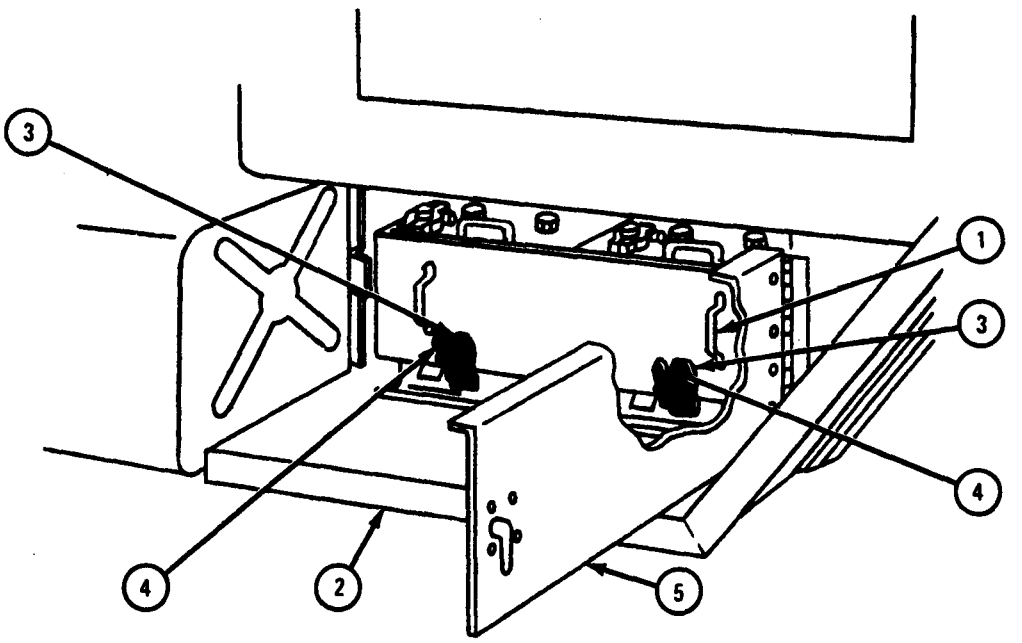
1. Push battery box (1) off running board (2) into battery compartment.
2. Latch two clamps (3) on thumbscrews (4) and tighten thumbscrews.
3. Close battery compartment door (5).

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check that BATT-GEN indicator is in green area.
3. Stop engine. Refer to TM 9-2320-211-10.
4. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



TA 047169

7-44. DISCONNECT AND RECONNECT BATTERY GROUND CABLE.

TOOLS: l/2-inch wrench

SUPPLIES: None

PERSONNEL: One

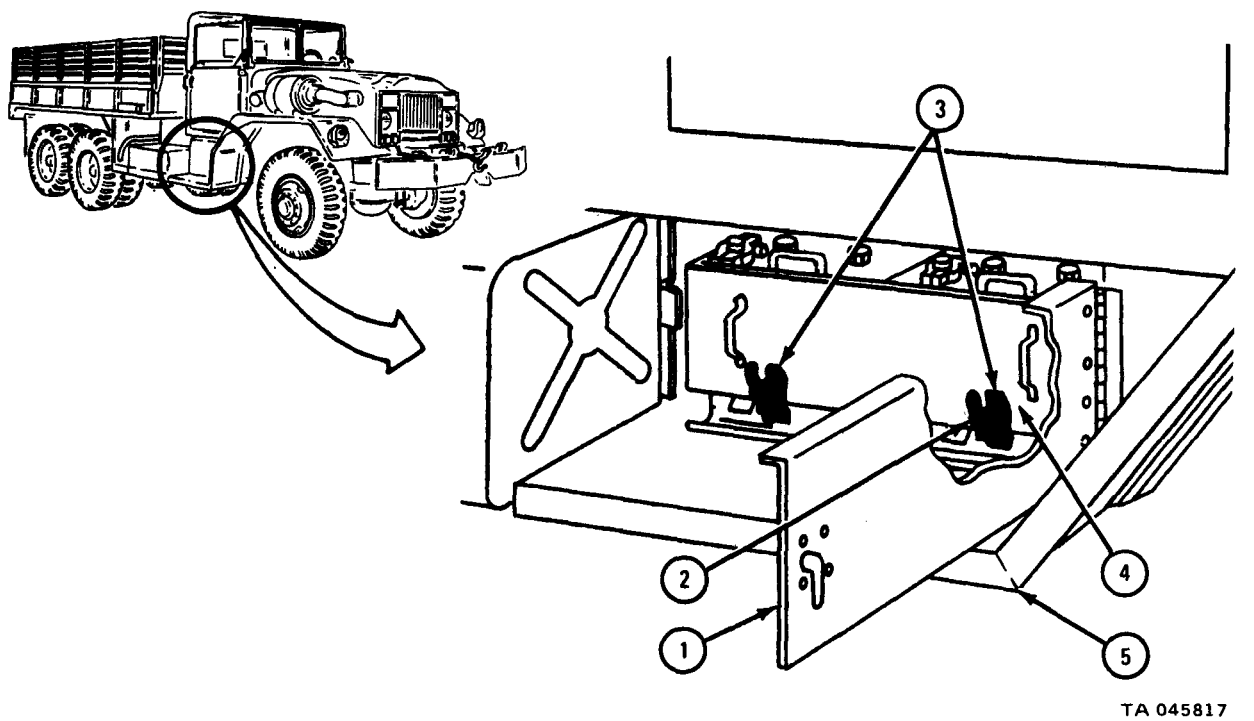
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Disconnection.

FRAME 1

1. Open battery compartment door (1).
2. Loosen two thumbscrews (2) and push two clamps (3) down to Clear battery box (4).
3. Pull battery box (4) out onto running board (5).

GO TO FRAME 2



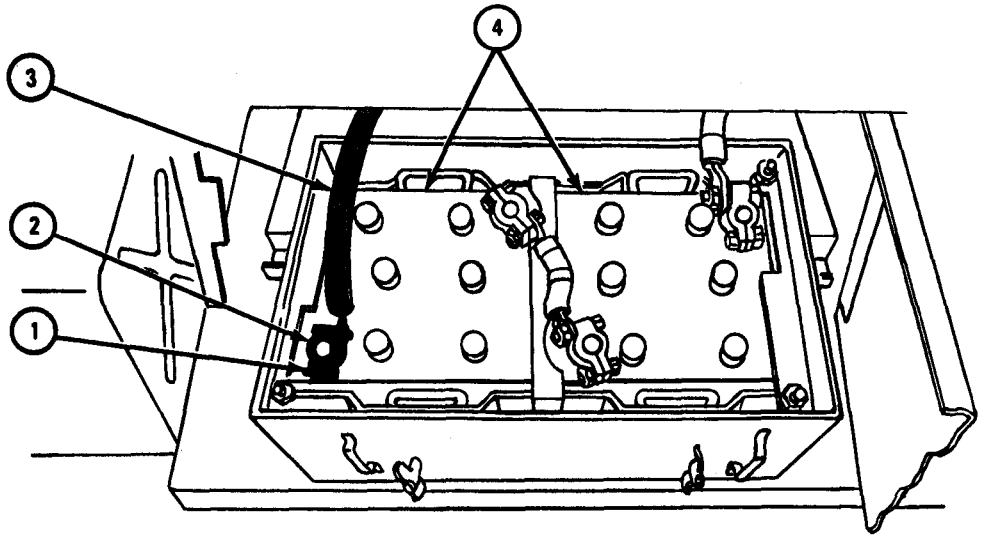
FRAME 2

WARNING

Do not let wrench touch positive battery terminals and truck at same time. This will cause direct short and arcing, wrench will get very hot, and battery may explode. This could cause serious injury to personnel and damage to equipment.

1. Using 1/2-inch wrench, loosen nut (1) and take off battery ground terminal lug (2).
2. Move battery ground cable (3) out of the way so battery ground terminal lug does not touch either of two batteries (4).

END OF TASK



TA 045874

b. Reconnection.

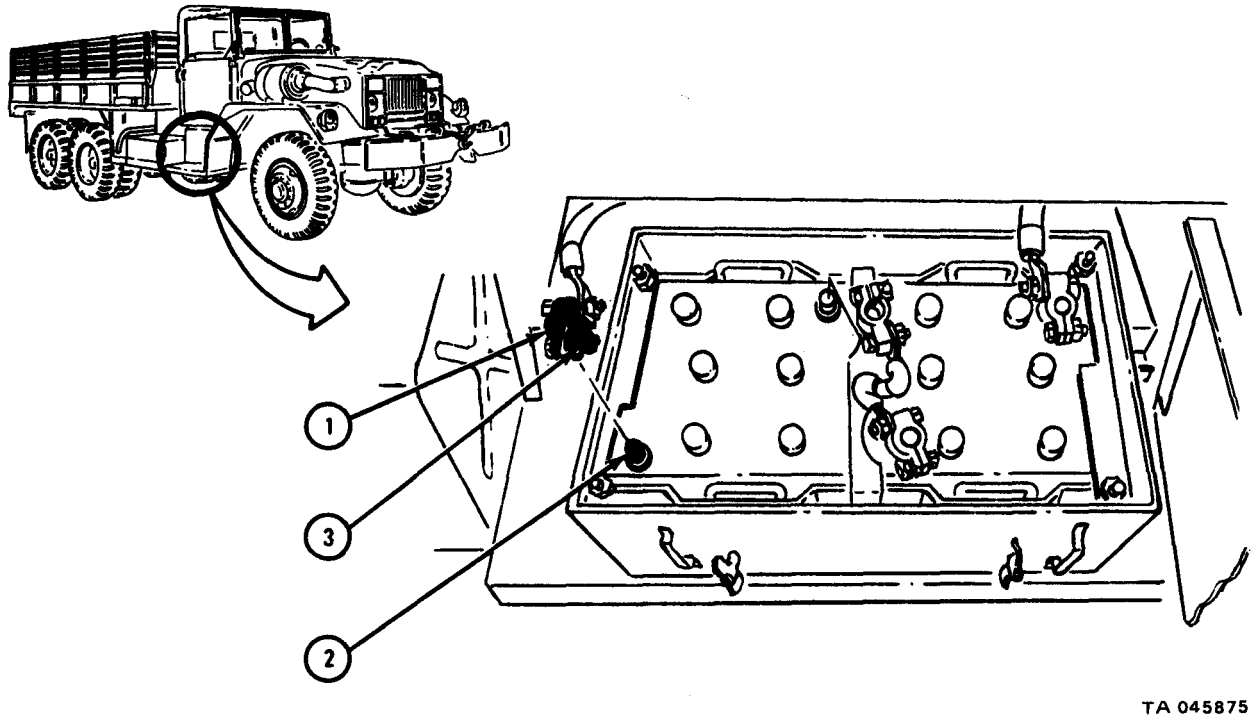
FRAME 1

WARNING

Do not let wrench touch positive battery terminals and truck at same time. This will cause direct short and arcing, wrench will get very hot, and battery may explode. This could cause serious injury to personnel and damage to equipment.

1. Put ground cable terminal lug (1) on negative post (2) of battery as shown. Using 1/2-inch wrench, tighten nut (3).

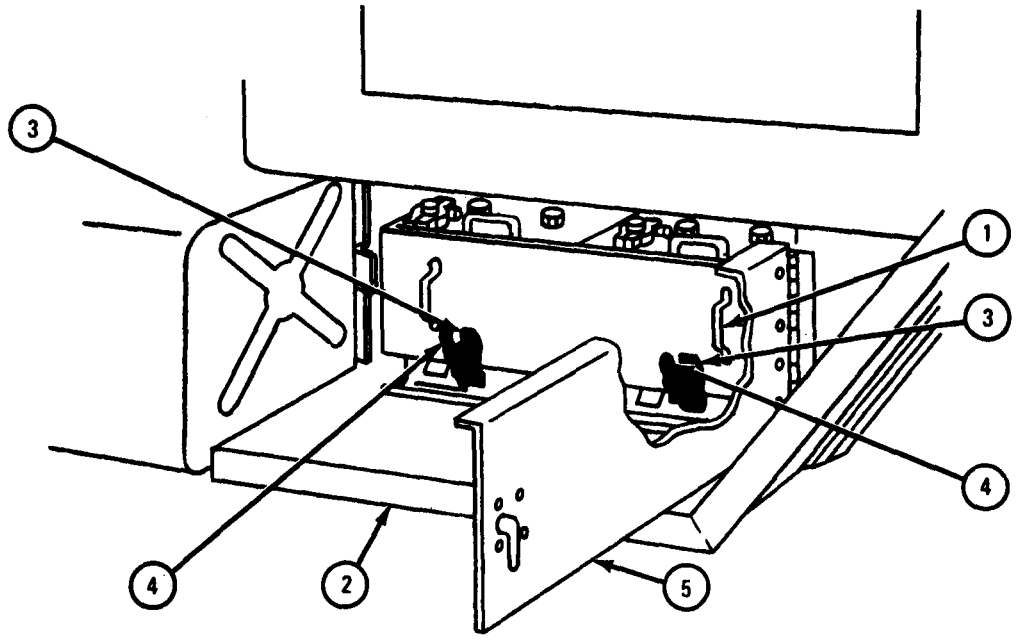
GO TO FRAME 2



FRAME 2

1. Push battery box (1) off running board (2) into battery compartment.
2. Latch two clamps (3) on thumbscrews (4) and tighten thumbscrews.
3. Close battery compartment door (5).

END OF TASK



TA 047169

Section X. CHASSIS HARNESSES

7-45. TRAILER CONNECTOR HARNESS REPAIR.

NOTE

This procedure is the same for both trailer connector plug assemblies.

TOOLS: Contact pin remover
5/16-inch step plate
Mechanical puller
Soldering iron
Needle nose pliers
General mechanic tool kit

SUPPLIES: Rosin core solder

PERSONNEL: One

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

a. Disassembly.

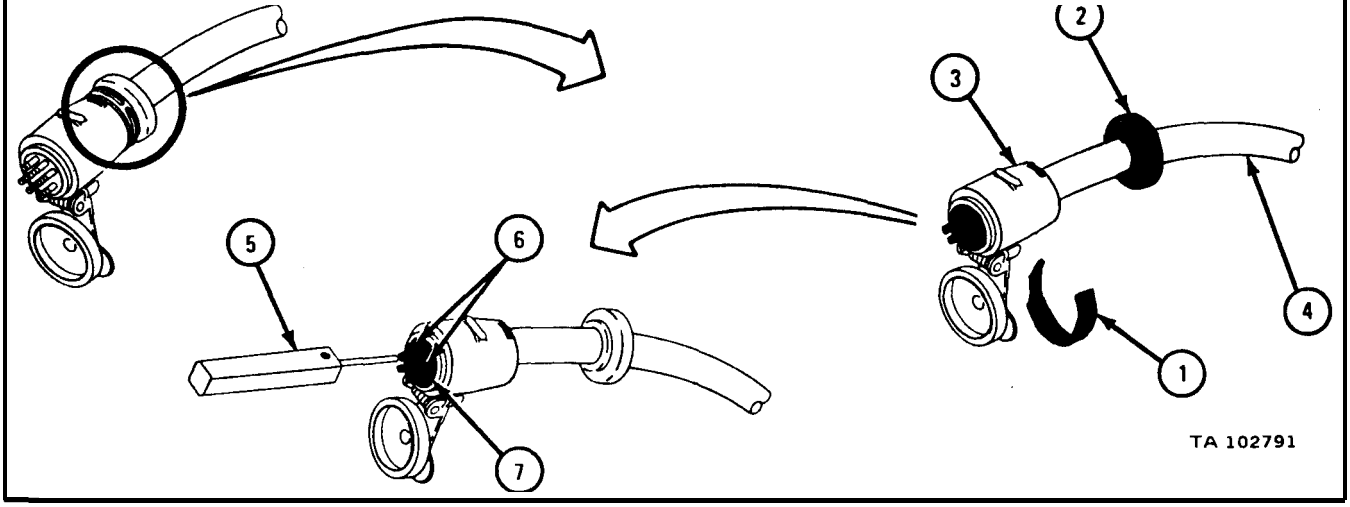
FRAME 1

1. Tell direct support maintenance to remove trailer connector harness.
2. Take off retaining band (1) and pull cuff (2) away from plug body (3).
3. Slide cuff (2) along cable (4) away from plug (3).
4. Using contact pin remover (5), push 12 contact pins (6) out of holes in insert (7).

NOTE

Contact pins (6) and wires are lettered and tagged. Note position of wires on contact pins so they will be put back in the right place.

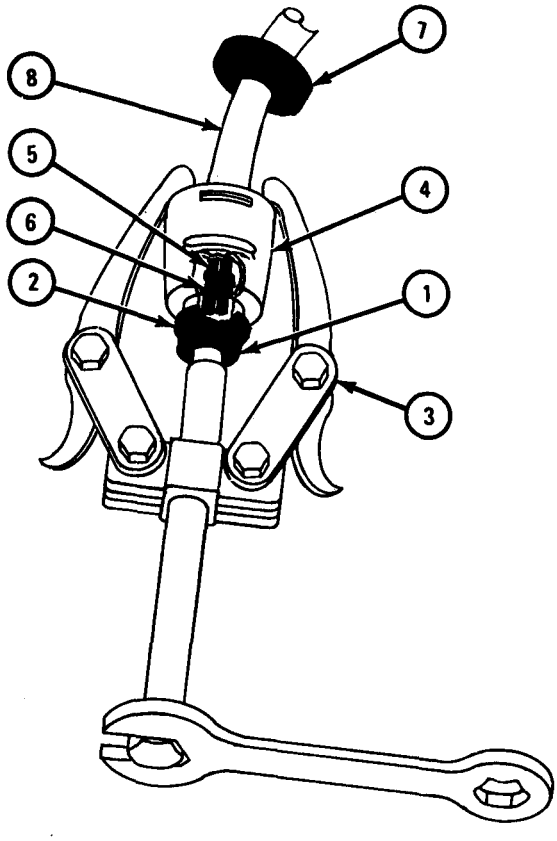
GO TO FRAME 2



FRAME 2

1. Put step plate (1) in front of insert (2) and put on mechanical puller (3) as shown.
2. Using puller (3) and wrench, press insert (2) out of plug body (4).
3. Using soldering iron, unsolder and take wires (5) off contact pins (6).
4. Pull cuff (7) off cable (8).

END OF TASK



TA 102792

b. Inspection. Check intervehicular harness cable for cuts, breaks or folds. Check that cable cover is not worn. If cable is damaged, get a new one.

c. Assembly.

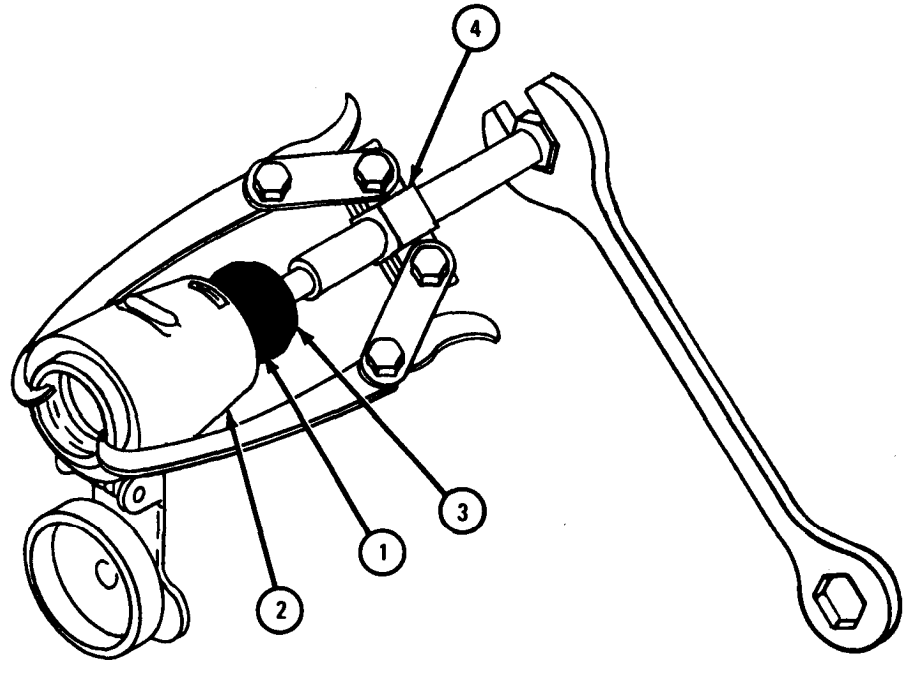
FRAME 1

NOTE

Coat surface of insert and contact pins with soluble oil to make assembly easier.

1. Put insert (1) into rear of plug body (2).
2. Put step plate (3) in front of insert (1) and put on mechanical puller (4) as shown.
3. Using puller (4) and wrench, press insert (1) into plug body (2).

GO TO FRAME 2

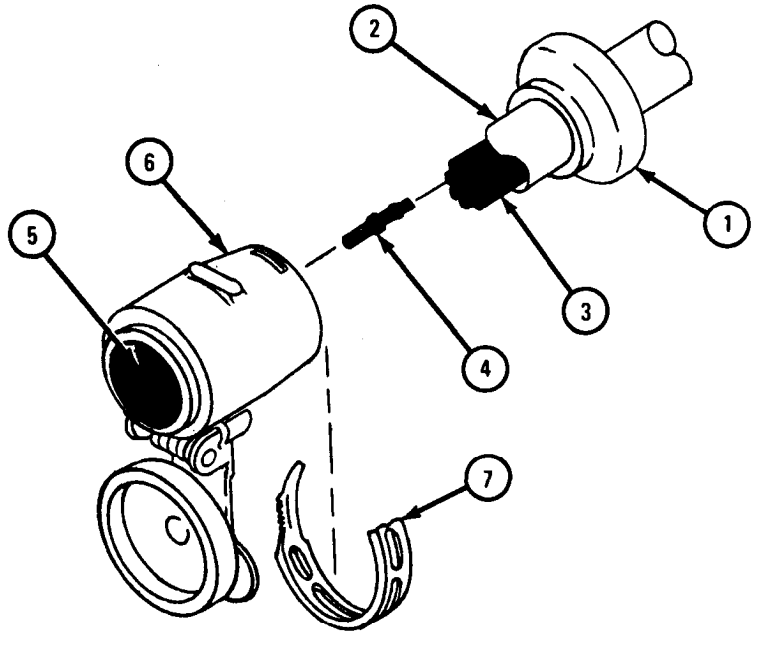


TA 102793

FRAME 2

1. Slide cuff (1) onto cable (2).
2. Using soldering iron, solder wires (3) onto contact pins (4) as noted.
3. Using needle nose pliers, press contact pins (4) into holes in insert (5).
4. Push cuff (1) onto rear of plug body (6).
5. Put retaining band (7) over cuff (1).
6. Tell direct support maintenance to put in trailer connector harness again.

END OF TASK



TA 102794

7-46. INTERVEHICULAR ELECTRICAL RECEPTACLE CONNECTOR REMOVAL, REPAIR, AND REPLACEMENT (TRUCK M52A2).

NOTE

There are two receptacle connectors. This task is the same for both.

TOOLS: 7/16-inch wrench (2)
Mechanical puller
1 5/16-inch step plate
Electrical repair kit

SUPPLIES: None

PERSONNEL: One

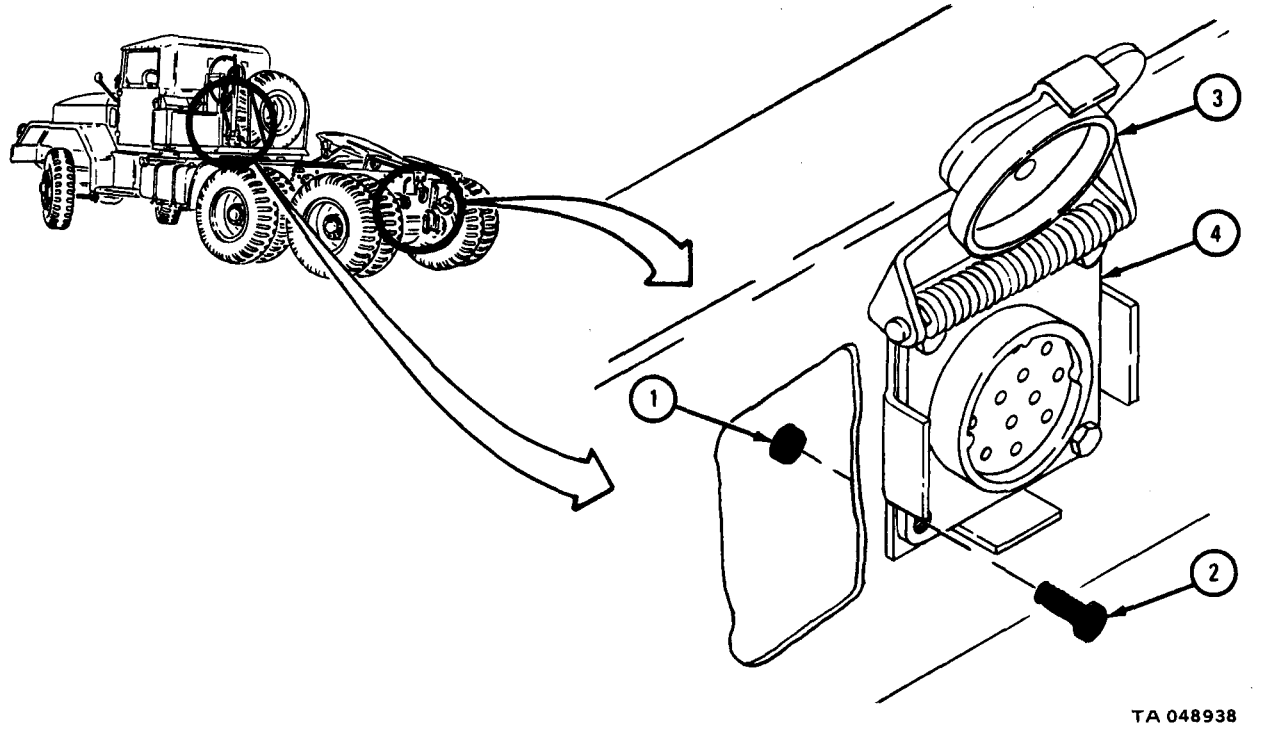
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 7/16-inch wrenches, unscrew and take off four nuts (1). Take out four screws (2) and cover (3).
2. Pull out receptacle (4) and let it hang.

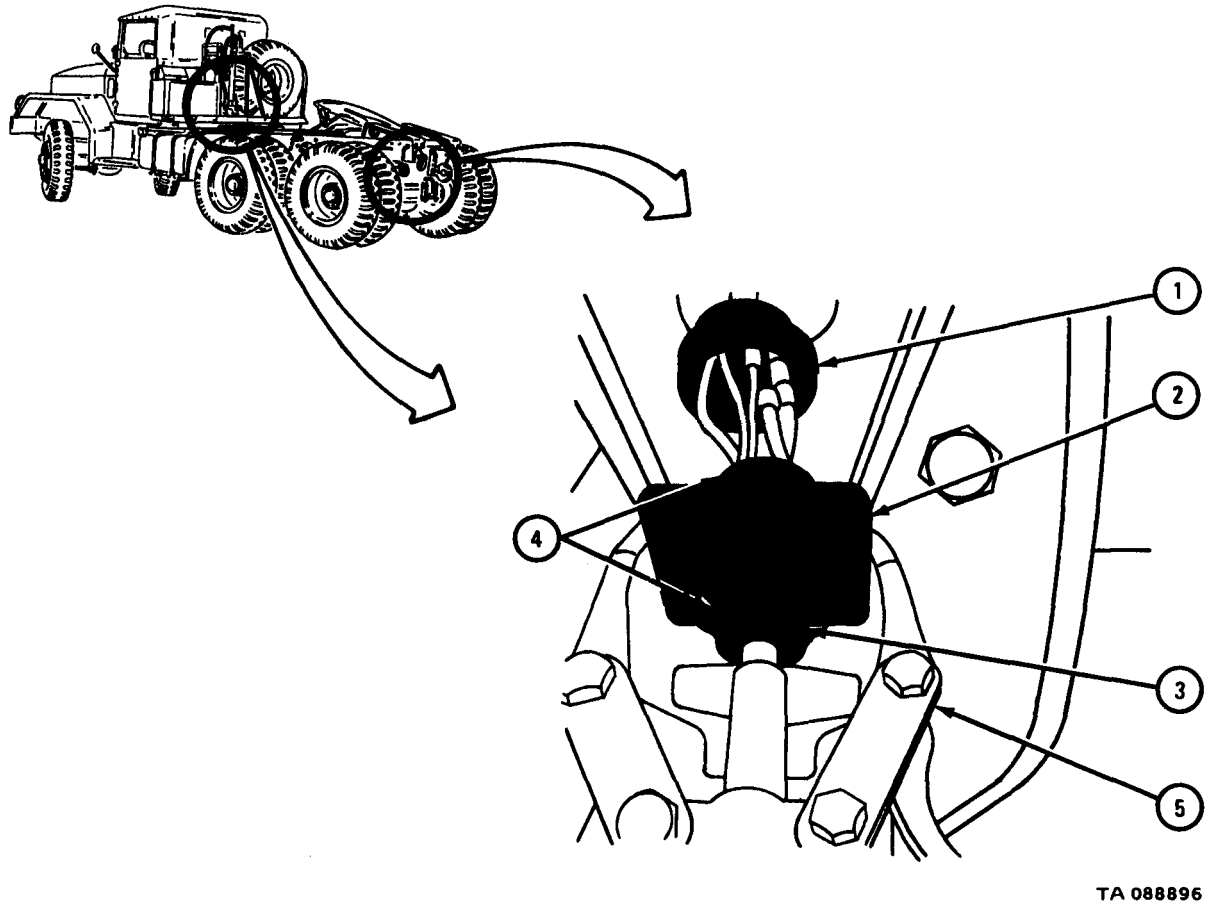
GO TO FRAME 2



FRAME 2

1. Unscrew nut (1) from receptacle (2) and slide it back on wires.
2. Put step plate (3) in front of grommet (4) and put on puller (5) as shown.
3. Using puller (5), pull grommet (4) out of receptacle (2).

END OF TASK



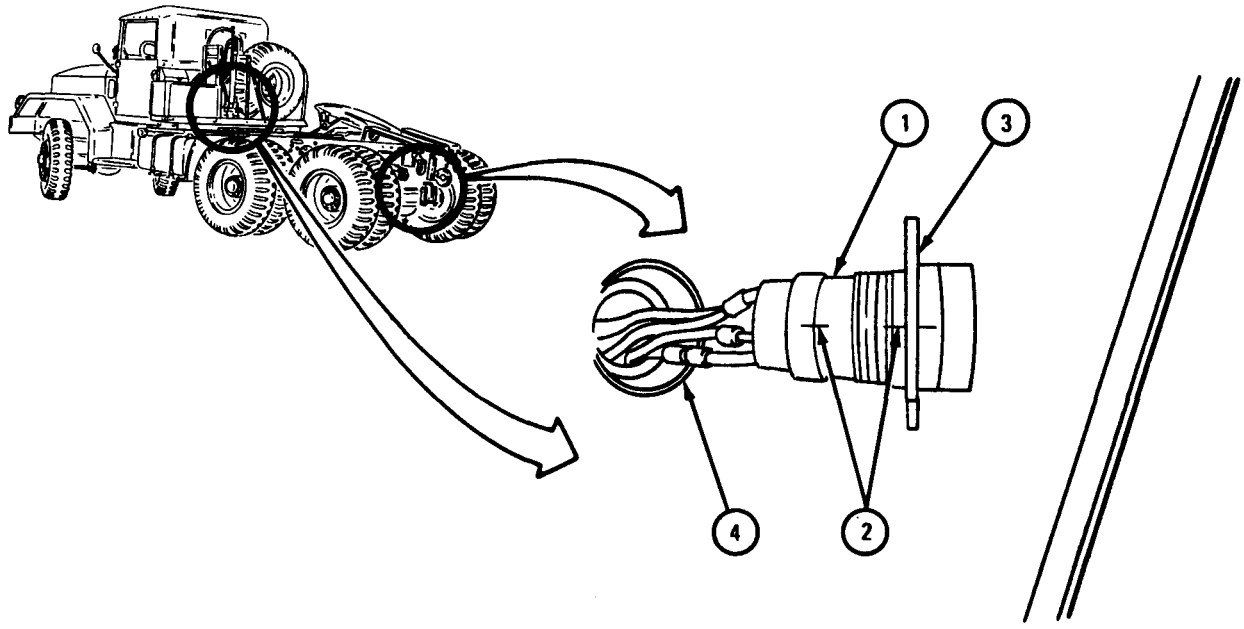
b. Repair. If receptacle is broken or cracked, get a new one.

c. Replacement.

FRAME 1

1. Coat grommet (1) with soluble oil from electrical repair kit.
2. Line up index marks (2) on grommet (1) and receptacle (3).
3. Press grommet (1) into receptacle (3).
4. Hold receptacle (3) and screw on and tighten nut (4).

GO TO FRAME 2

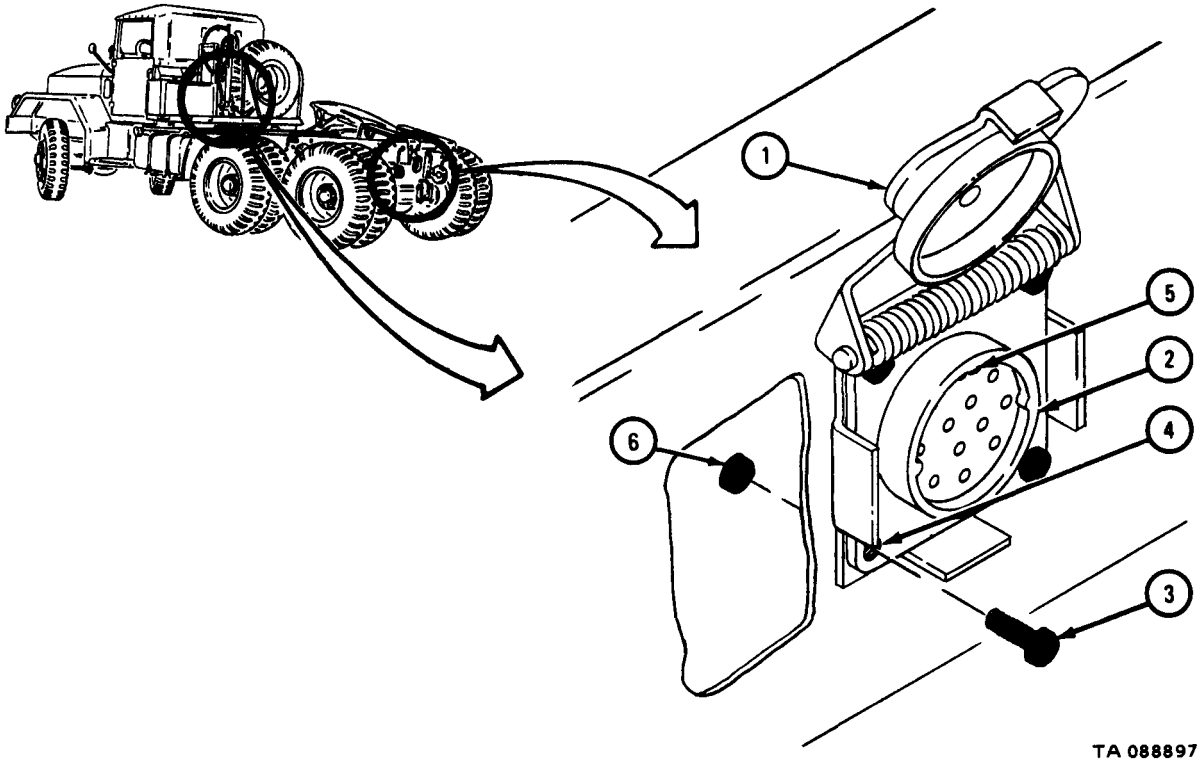


TA 048939

FRAME 2

1. Put cover (1) on receptacle (2). Raise cover (1) and put in four screws (3).
2. Put receptacle assembly in place on truck with screws (3) in mounting holes (4) and locating dowel (5) at top.
3. Screw on four nuts (6).
4. Using 7/16-inch wrenches, hold nuts (6) and tighten screws (3).

END OF TASK



7-47. PARK AND WARNING LIGHT SOCKET AND WIRING REMOVAL, REPAIR, AND REPLACEMENT (TRUCK M543A2).

TOOLS: Flat-tip screwdriver

SUPPLIES: None

PERSONNEL: One

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

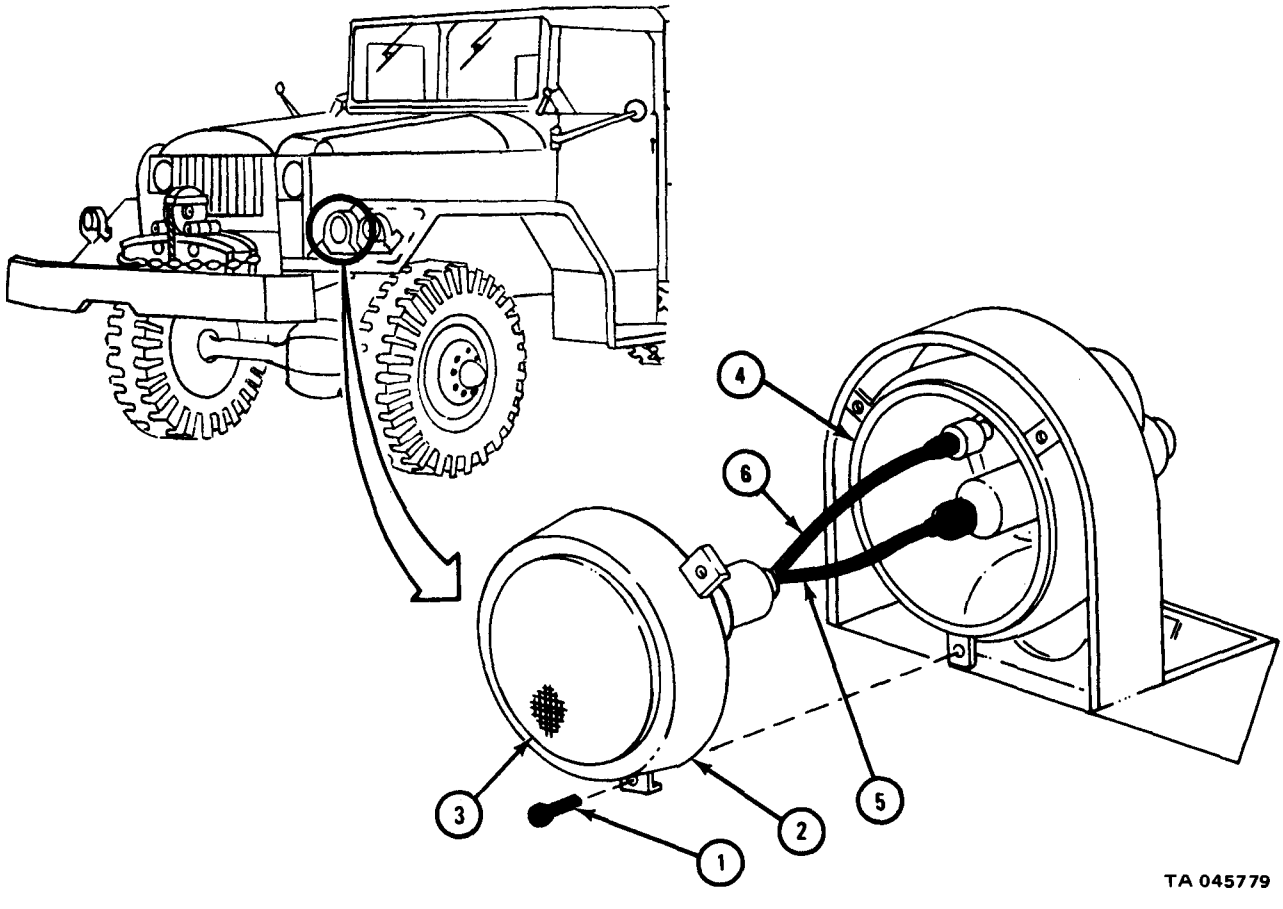
Preliminary Procedures. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

1. Using screwdriver, unscrew and take out three screws (1).
2. Pull light door (2) with sealed beam (3) away from light body (4).
3. Unplug lead (5) and ground lead (6).

GO TO FRAME 2



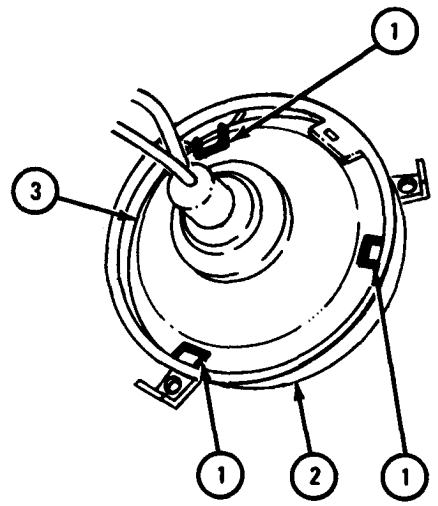
FRAME 2

WARNING

Springs (1) may snap out and cause injury. Cover spring with free hand while prying them loose.

1. Using screwdriver, pry three retaining springs (1) from light door (2).
2. Take out sealed beam (3) from light door (2).

END OF TASK



TA 049246

c. Replacement.

FRAME 1

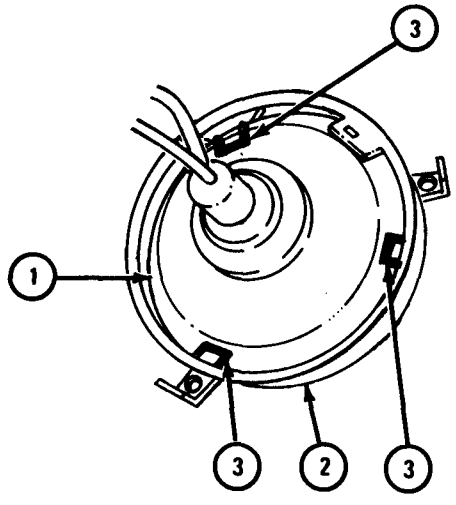
1. Put sealed beam (1) into light door (2).

WARNING

Springs (3) may snap out and cause injury to personnel. Cover spring with free hand when putting them in place.

2. While holding sealed beam (1) in place, put in three evenly spaced retaining springs (3) by placing square bend of spring over sealed beam. Using screwdriver, snap free ends under flange on light door (2).

GO TO FRAME 2



TA 049247

FRAME 2

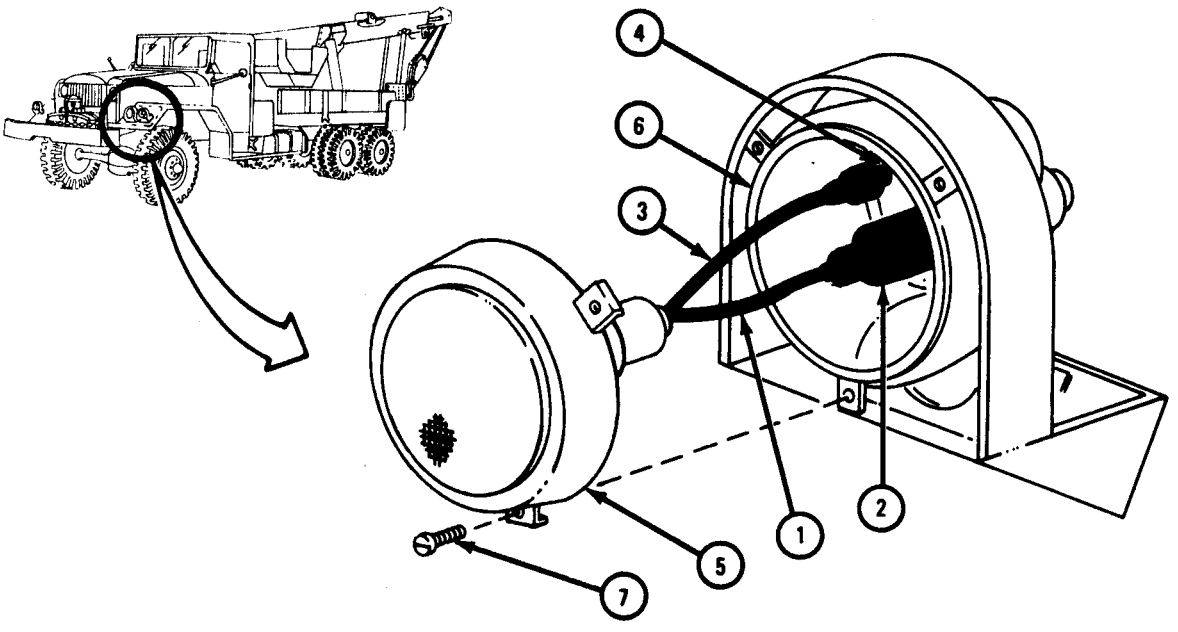
1. Push lead (1) into connector (2).
2. Push ground lead (3) into connector (4).
3. Put light door with sealed beam (5) on light body (6). While holding light door in place, using screwdriver, screw in and tighten three screws (7).

NOTE

Follow-on Maintenance Action Required:

Reconnect battery ground cable. Refer to para 7-44.

END OF TASK



TA 045780

Section XI. MISCELLANEOUS ITEMS

7-48. TURN SIGNAL CONTROL REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: Flat-tip screwdriver
3/8-inch wrench (2)
No. 6-32 NC tap (4)
No. 36 drill bit
No. 28 drill bit
Drill
Finely-pointed awl

SUPPLIES: Round head machine screws
Self-tapping screws

PERSONNEL: One

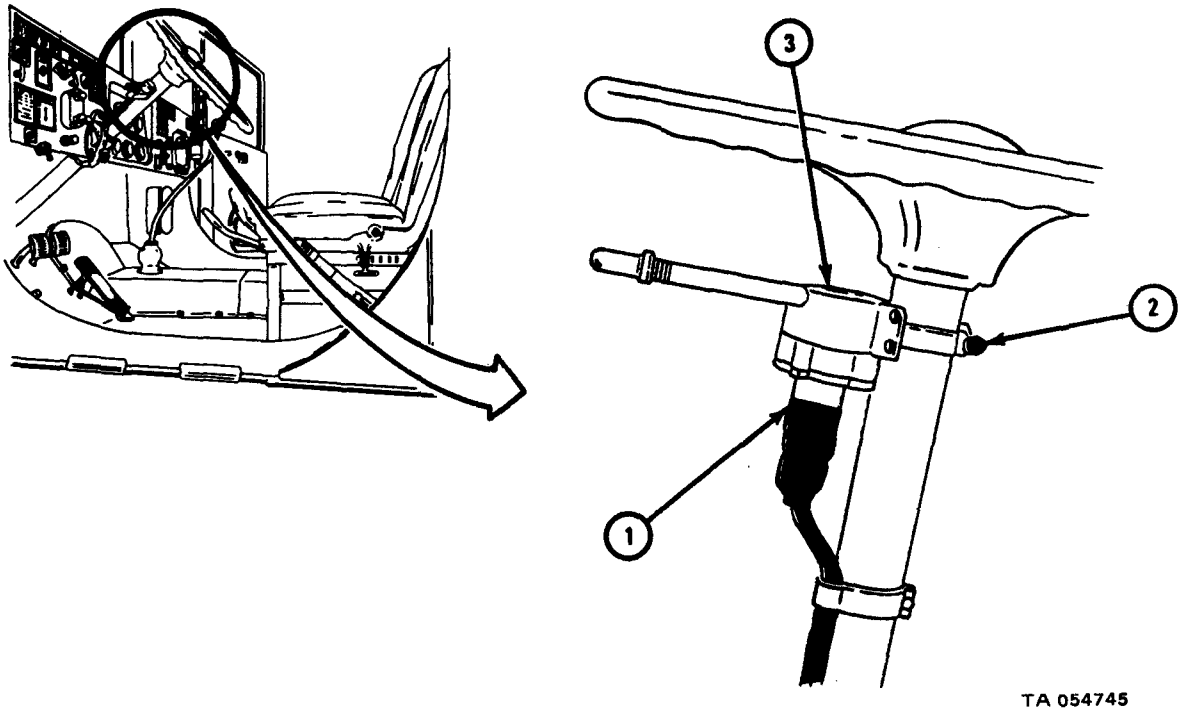
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Unscrew and take off electrical cable connector (1).
2. Using screwdriver, unscrew and take off screw (2).
3. Take off turn signal control (3).

END OF TASK



b. Repair.

NOTE

If directional signal assembly is new or is working, do frame 1. If assembly is not working, go to frame 2.

FRAME 1

1. Using screwdriver, unscrew and throw away two screws (1). Using drill, no. 36 drill bit, and using screw holes (2) as guides, drill holes through upper body (3).

CAUTION

When using no. 28 drill bit, do not drill into upper body. Assembly may become damaged.

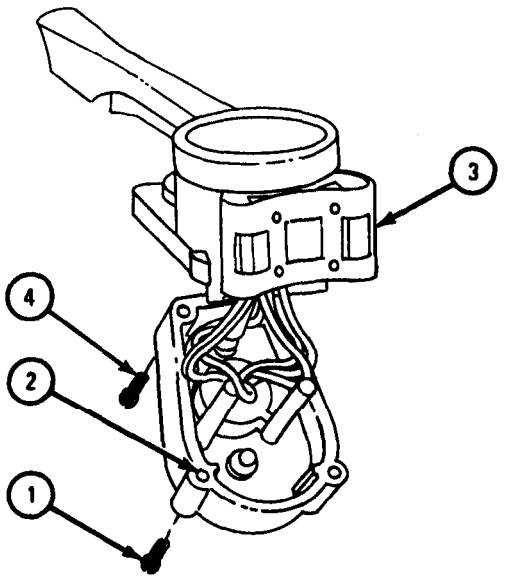
2. Using drill and no. 28 drill bit, drill screw holes (2).

NOTE

If tap is not available, use self-tapping screws.

3. Using tap, tap holes in upper body (3).
4. Using screwdriver, screw in and tighten two screws.
5. Do steps 1 through 4 again for other screws (4).

GO TO FRAME 2



FRAME 2

1. Check that contact points are not pitted or burned. If points are damaged, throw assembly away.

NOTE

If plastic on four screws (1) is loose, use nail scribe or finely-pointed awl to keep it from turning.

2. Using screwdriver, unscrew and take out and throw away four screws (1).
3. Put gasket (2) in place. Put upper body (3) and lower body (4) together.
4. Using drill and no. 36 drill bit and using screw holes (5) as guides, drill holes through upper body (3).

CAUTION

When using no. 28 drill bit, do not drill into upper body (3). Assembly may be damaged.

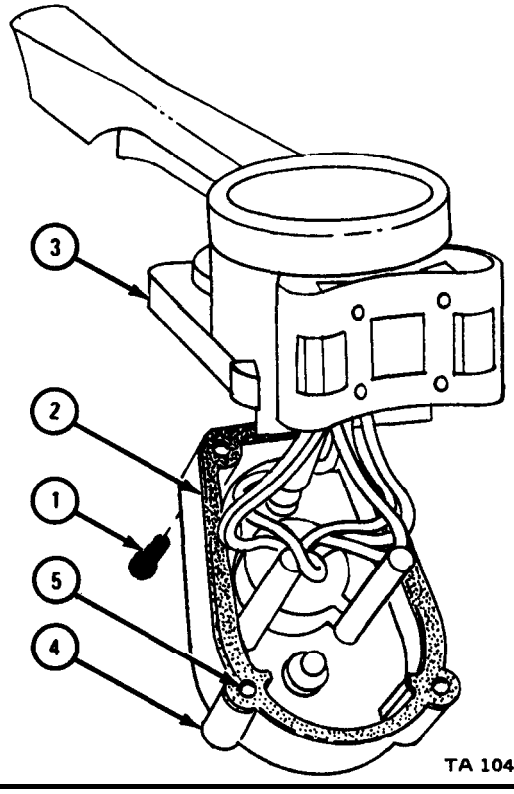
5. Using drill and no. 28 drill bit, drill screw holes (5).

NOTE

If tap is not available, use self-tapping screws.

6. Using tap, tap holes in upper body (3).
7. Using screwdriver, screw in and tighten four new screws.

END OF TASK



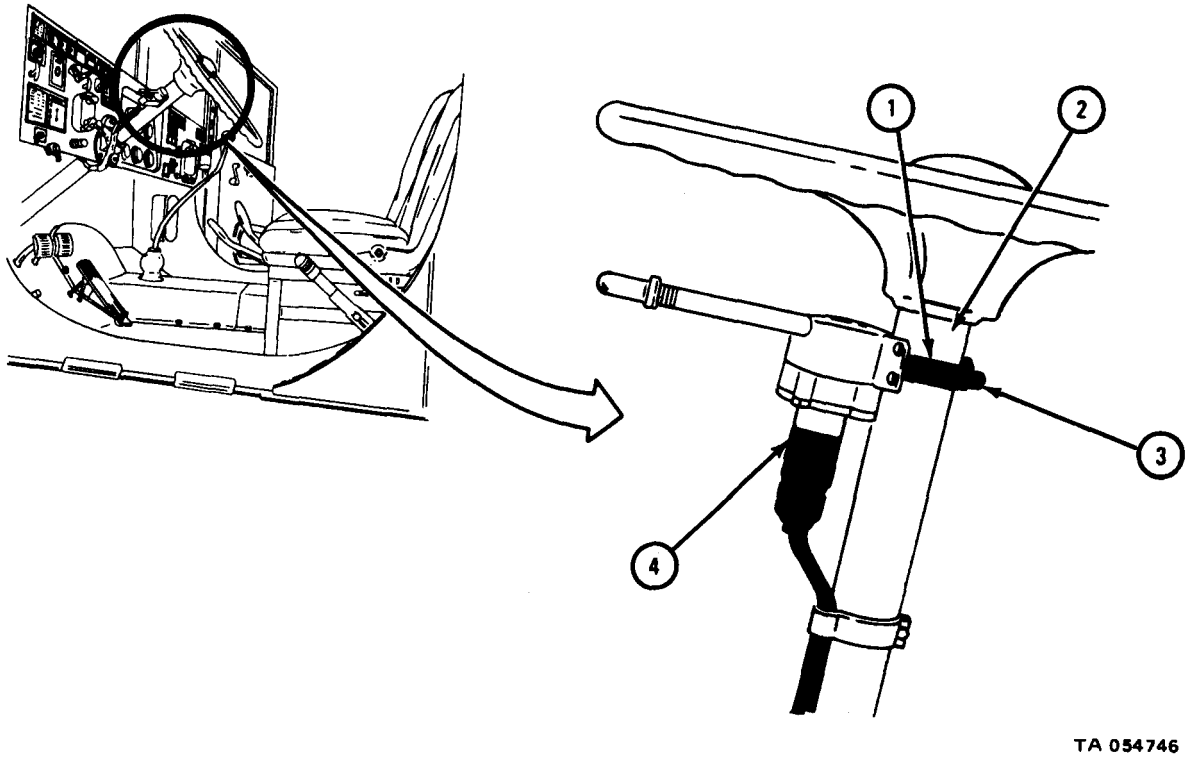
TA 104739

c. Replacement.

FRAME 1

1. Place turn signal control clamp (1) around steering column (2).
2. Using screwdriver, screw in and tighten screw (3).
3. Screw on and tighten electrical cable connector (4).

END OF TASK



7-49. DIRECTIONAL SIGNAL CONTROL INDICATOR LAMP REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: Incandescent lamp

PERSONNEL: One

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

a. Removal.

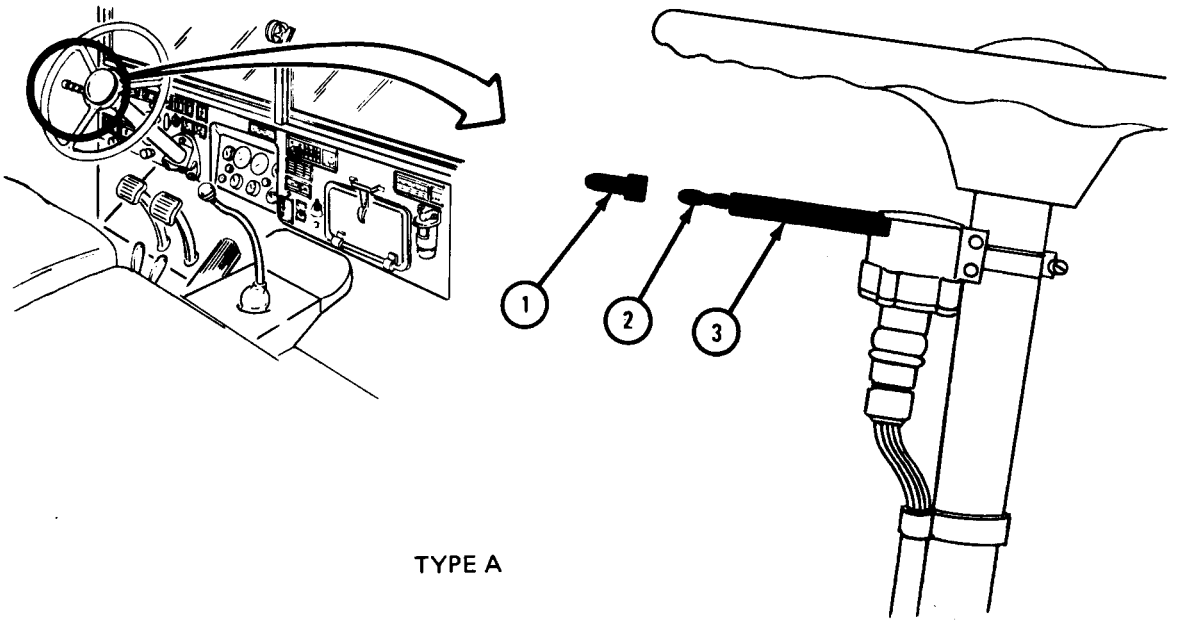
NOTE

There are three different types of directional indicator controls. Type A has lamp in control lever and types B and C have lamp in control body. If working on type A, do frame 1. If working on types B or C, do frame 2.

FRAME 1

1. Unscrew and take off cover (1).
2. Push lamp (2) into lever (3) and turn it to the left.
3. Take out lamp (2).

END OF TASK



TYPE A

TA 105716

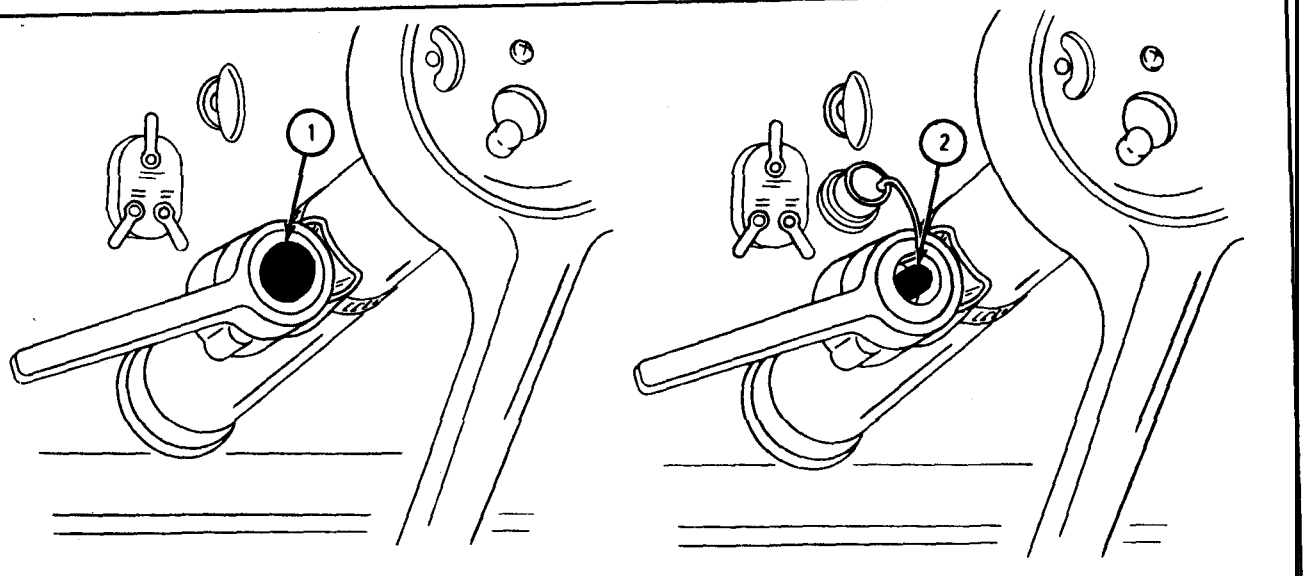
FRAME 2

NOTE

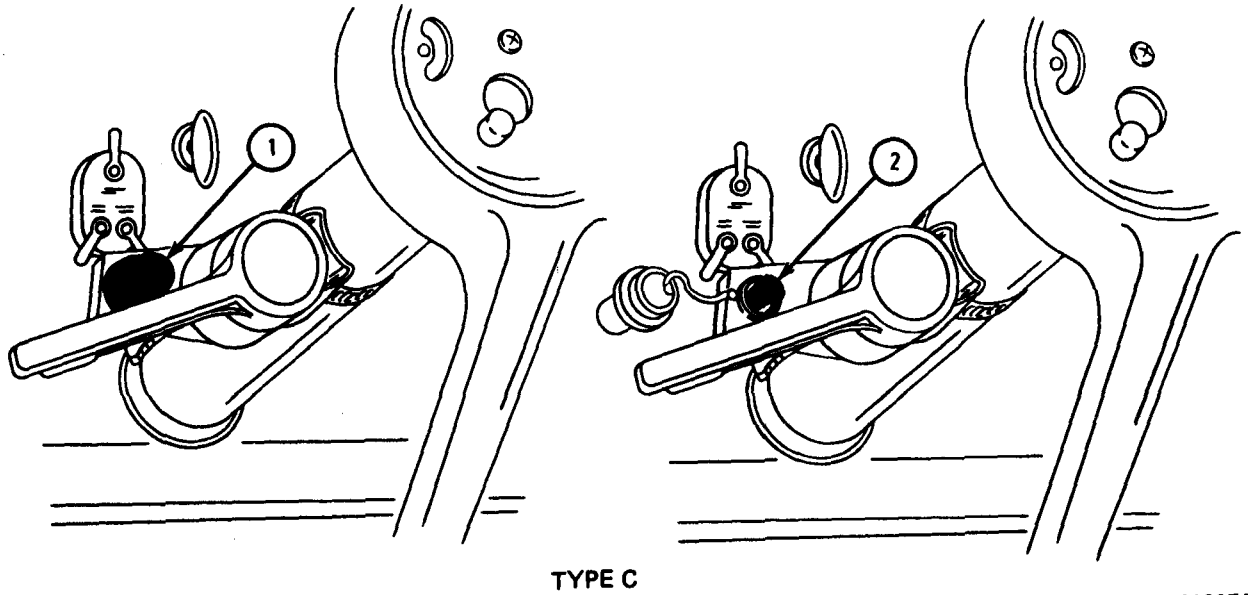
Cover is joined to control assembly with a plastic strap. Do not break strap.

1. Take off cover (1).
2. Push down on lamp (2) and turn 1/4 turn to left.
3. Take out lamp (2).

END OF TASK



TYPE B



TYPE C

TA 118074

b. Replacement.

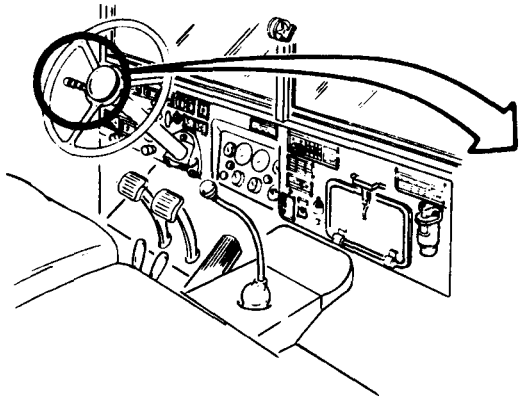
NOTE

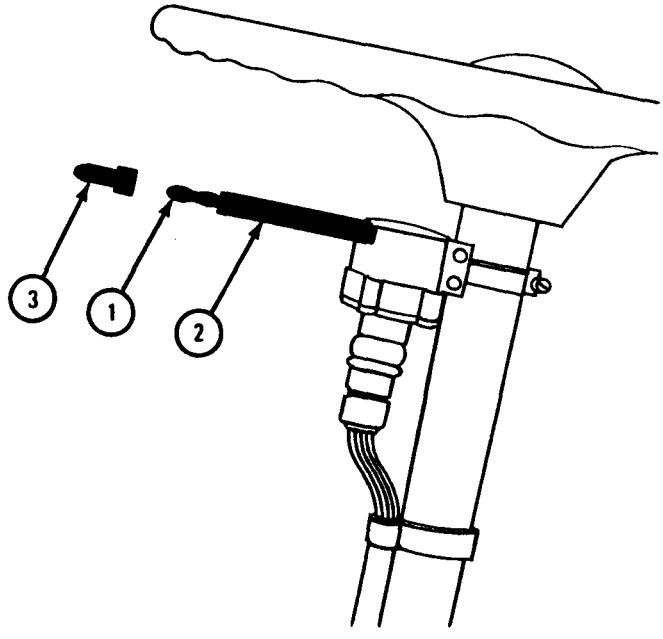
There are three different types of directional indicator controls. Type A has lamp in control lever. Types B and C have lamp in control body. If working on type A, do frame 1. If working on types B or C, do frame 2.

FRAME 1

1. Push lamp (1) into lever (2) and turn it to the right.
2. Screw on and tighten cover (3) to lever (2).

END OF TASK





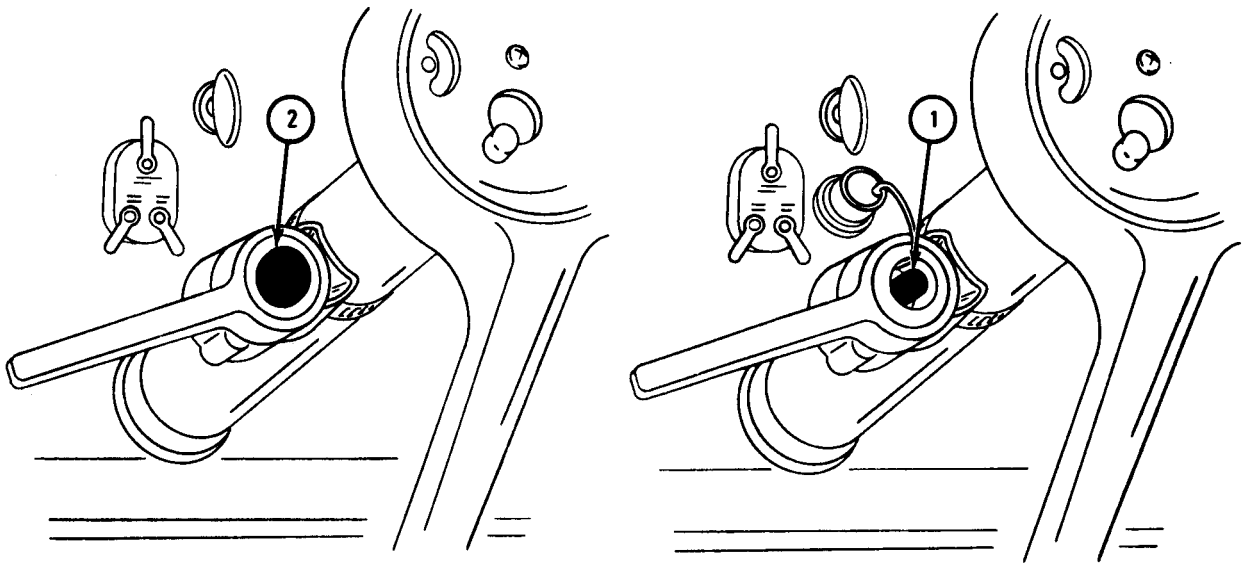
TYPE A

TA 105717

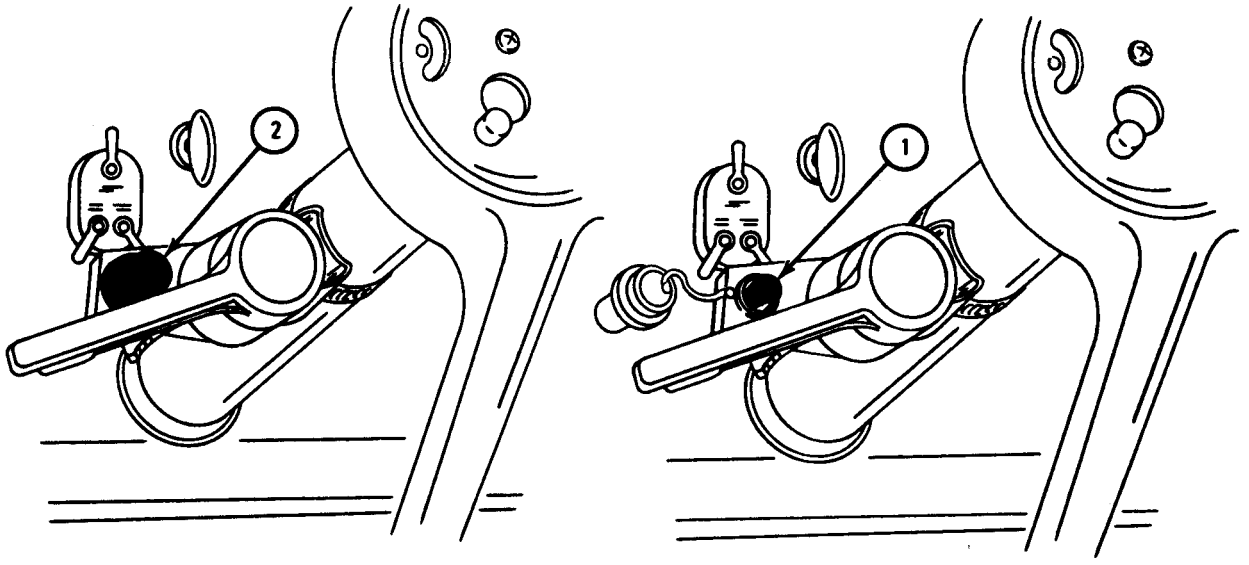
FRAME 2

1. Push lamp (1) into socket and turn to right.
2. Put on cover (2).

END OF TASK



TYPE B



TYPE C

TA 118075

7-50. TURN SIGNAL FLASHER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: Cross-tip screwdriver (Phillips type)

SUPPLIES: None

PERSONNEL: One

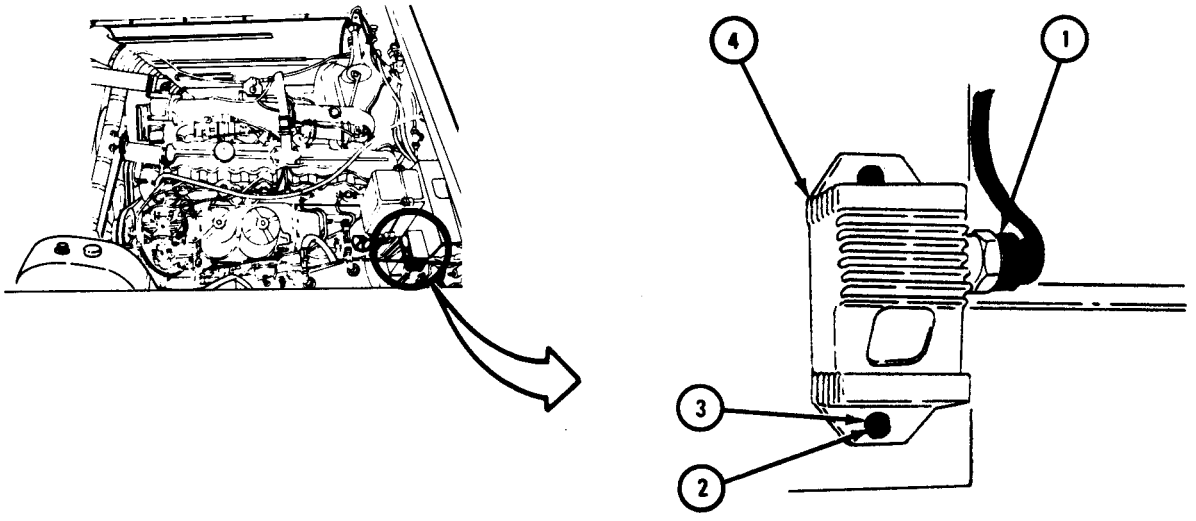
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Unscrew and take off electrical cable connector (1).
2. Using screwdriver, unscrew and take out two screws (2) with lockwashers (3).
3. Take out turn signal flasher assembly (4).

END OF TASK



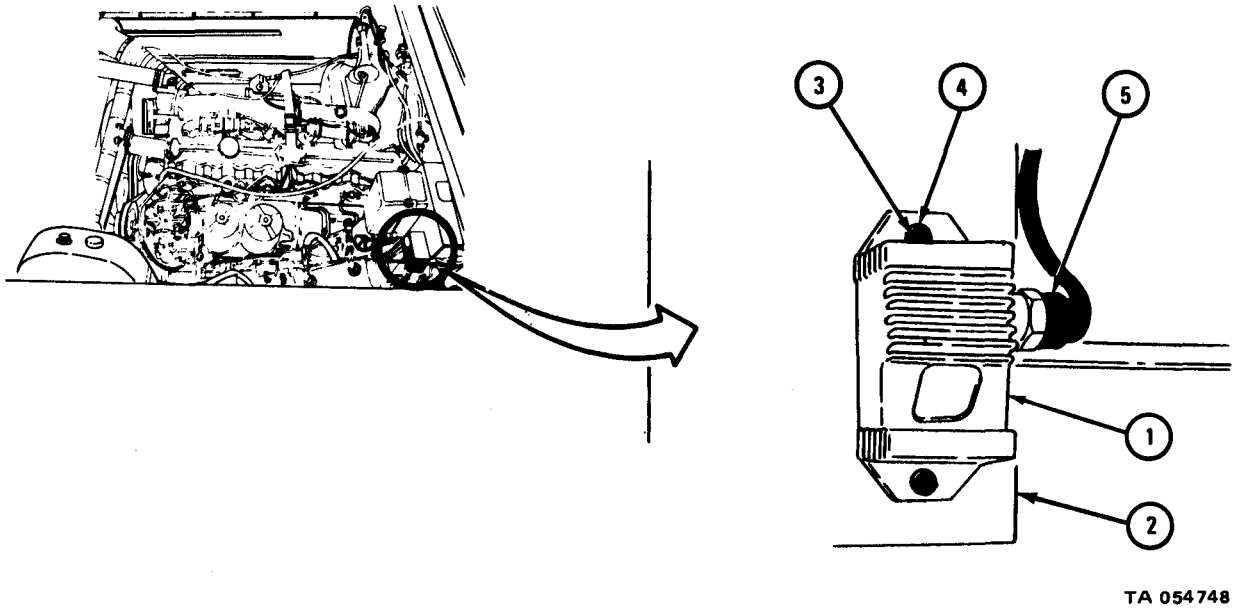
TA 054747

b. Replacement.

FRAME 1

1. Line up holes in turn signal flasher assembly (1) with holes in firewall (2).
2. Using screwdriver, screw in and tighten two screws (3) with lockwashers (4).
3. Screw on and tighten electrical cable connector (5).

END OF TASK



7-51. WARNING LIGHT FLASHER REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench
1 l/4-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

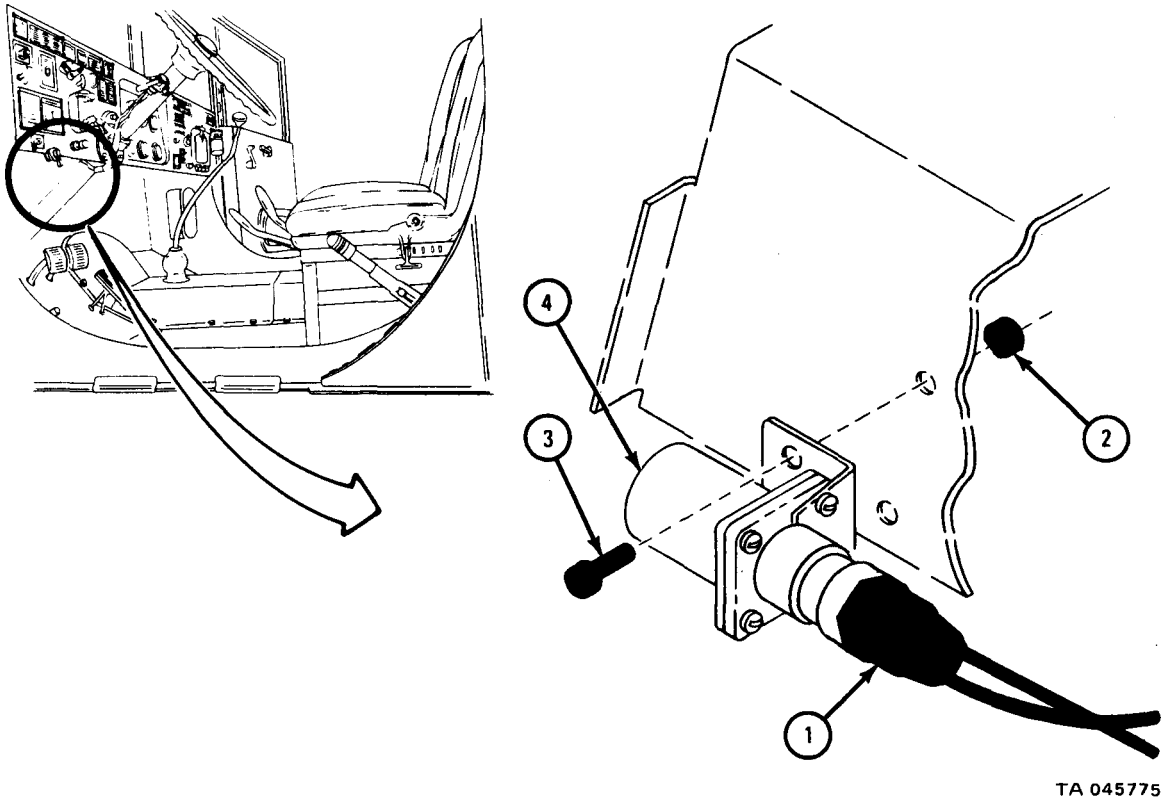
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

FRAME 1

1. Using 1 l/4-inch wrench, unscrew and take off connector (l).
2. Using 7/16-inch wrenches, unscrew and take out two nuts (2) and two screws (3),
3. Take out warning light flasher (4).

END OF TASK

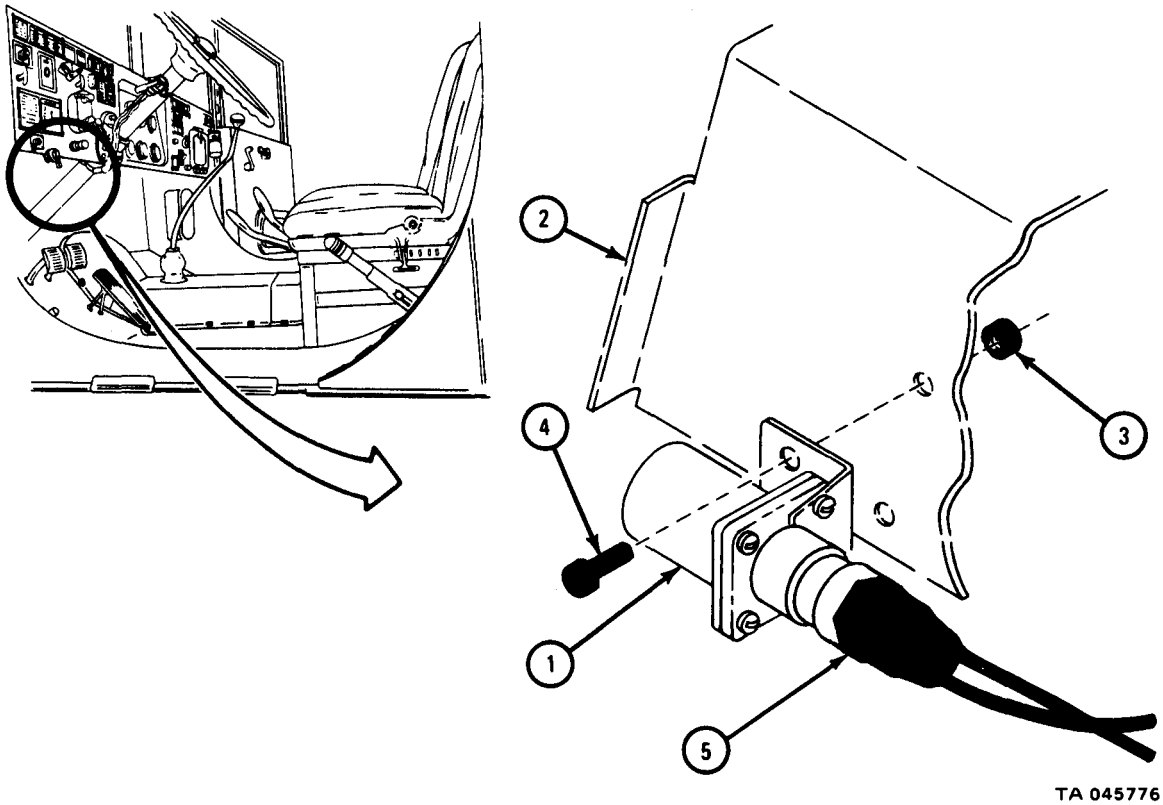


b. Replacement.

FRAME 1

1. Line up holes in warning light flasher (1) with holes in panel brace (2).
2. Using 7/16-inch wrenches, screw on and tighten two nuts (3) and two screws (4).
3. Using 1 1/4-inch wrench, screw on and tighten connector (5).

END OF TASK



7-52. HEADLIGHT DIMMER ELECTRICAL SWITCH REMOVAL AND REPLACEMENT.

TOOLS: Cross-tip screwdriver (Phillips type)

SUPPLIES: Tags

PERSONNEL: Two

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

a. Preliminary Procedure. Disconnect battery ground cable. Refer to para 7-44.

b. Removal.

FRAME 1

Soldier A 1. From underneath left front fender, hold dimmer switch (1).

Soldier B 2. Using screwdriver, unscrew and take out two screws (2) and two lockwashers (3).

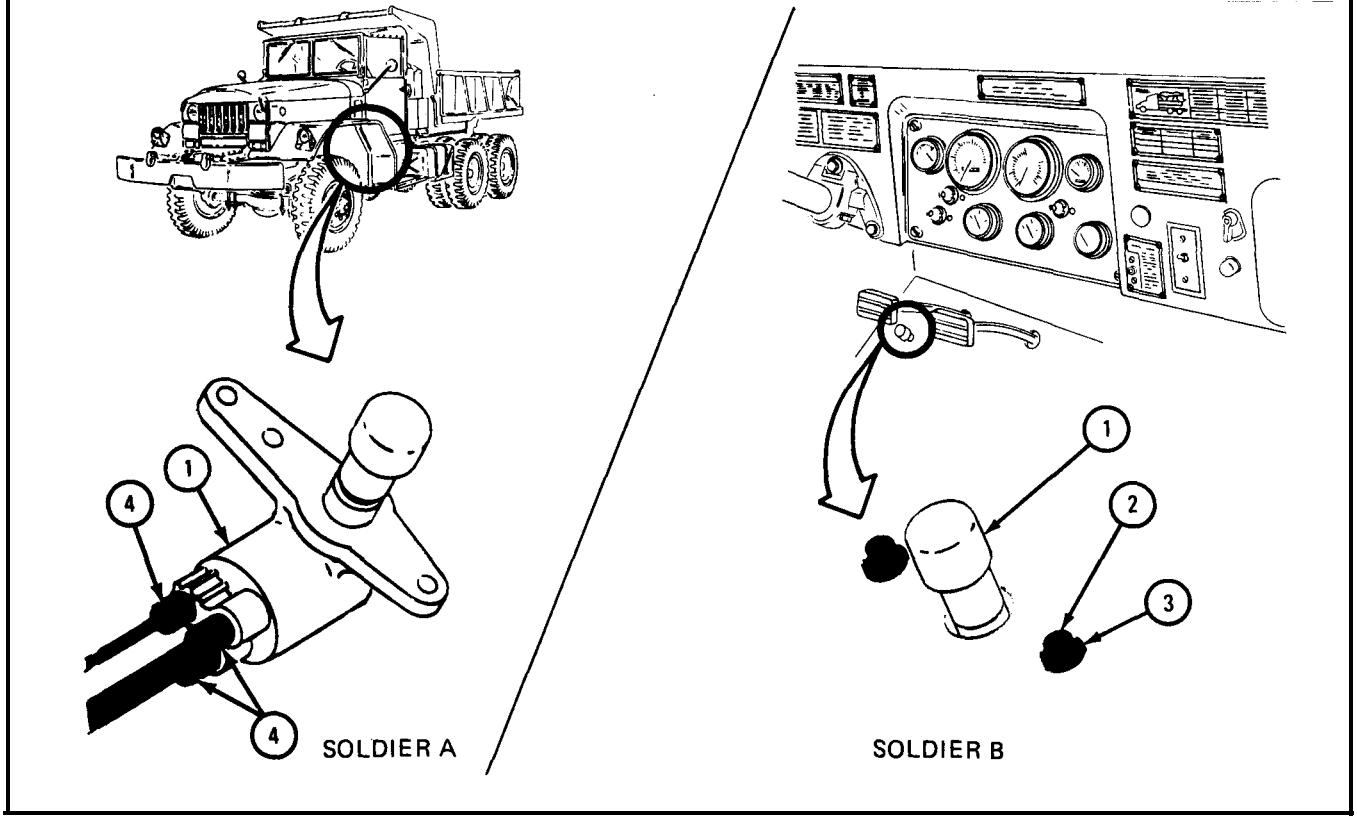
Soldier A 3. Pull switch (1) down.

NOTE

Tag three connectors (4) before taking them off to be sure they are put back in right place.

4. Twist and pull three connectors (4) from switch (1).

END OF TASK



c. Replacement.

FRAME 1

Soldier A 1. From underneath left front fender, put three connectors (1) on dimmer switch (2) as tagged and take off tags.

2. Aline holes in switch (2) with holes in cab floor.

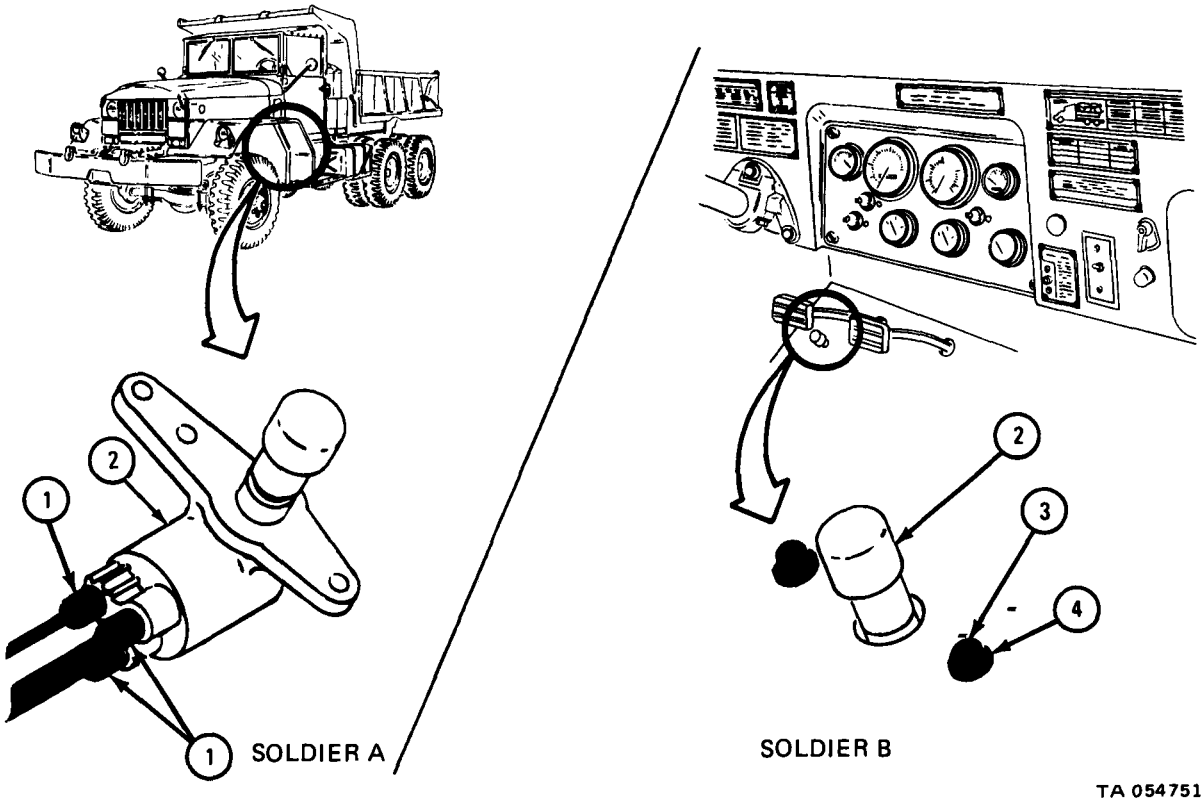
Soldier B 3. Using screwdriver, screw in and tighten two screws (3) with lockwashers (4).

NOTE

Follow-on Maintenance Action Required:

Connect battery ground cable. Refer to para 7-44.

END OF TASK



CHAPTER 8

TRANSMISSION SYSTEM GROUP MAINTENANCE

Section I. SCOPE

8-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the transmission breather for which there are authorized corrective maintenance tasks at the organizational maintenance level.

8-2. 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. TRANSMISSION BREATHER

8-3. TRANSMISSION BREATHER VENT REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch open end wrench

SUPPLIES: None

PERSONNEL: One

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

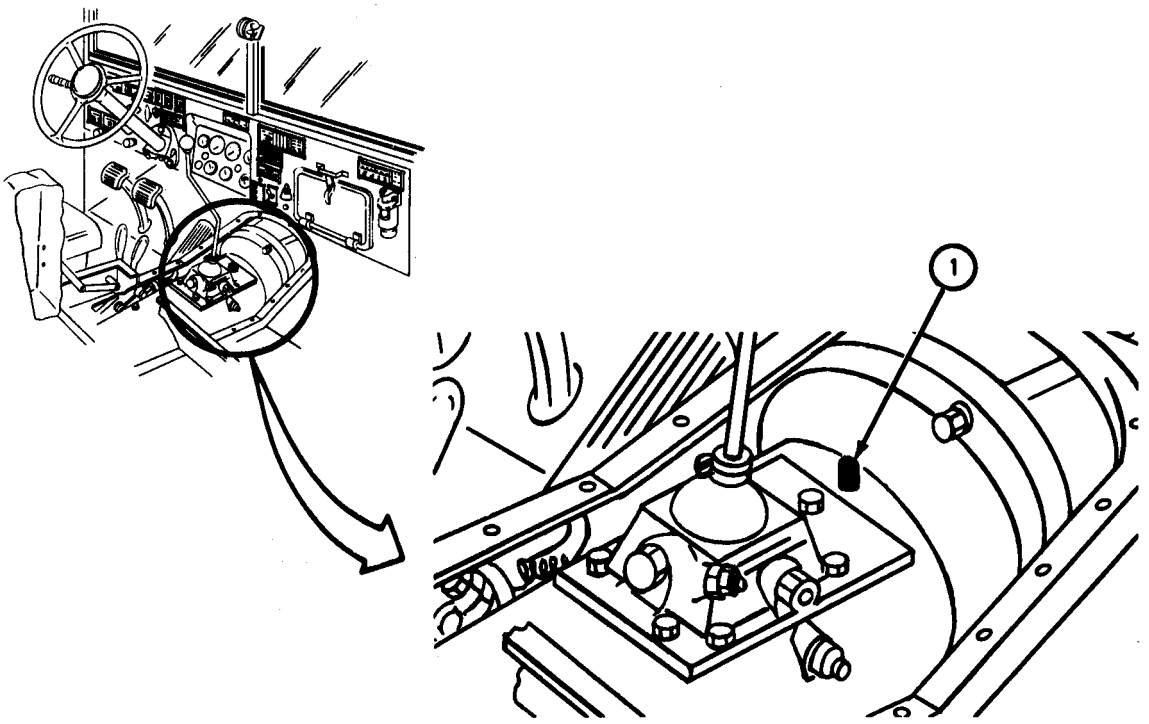
Preliminary Procedure. Remove intermediate cab tunnel. Refer to Part 2, para 17-5.

b. Removal.

FRAME 1

1. Unscrew and take out transmission breather vent (1).

END OF TASK



c. Replacement.

FRAME 1

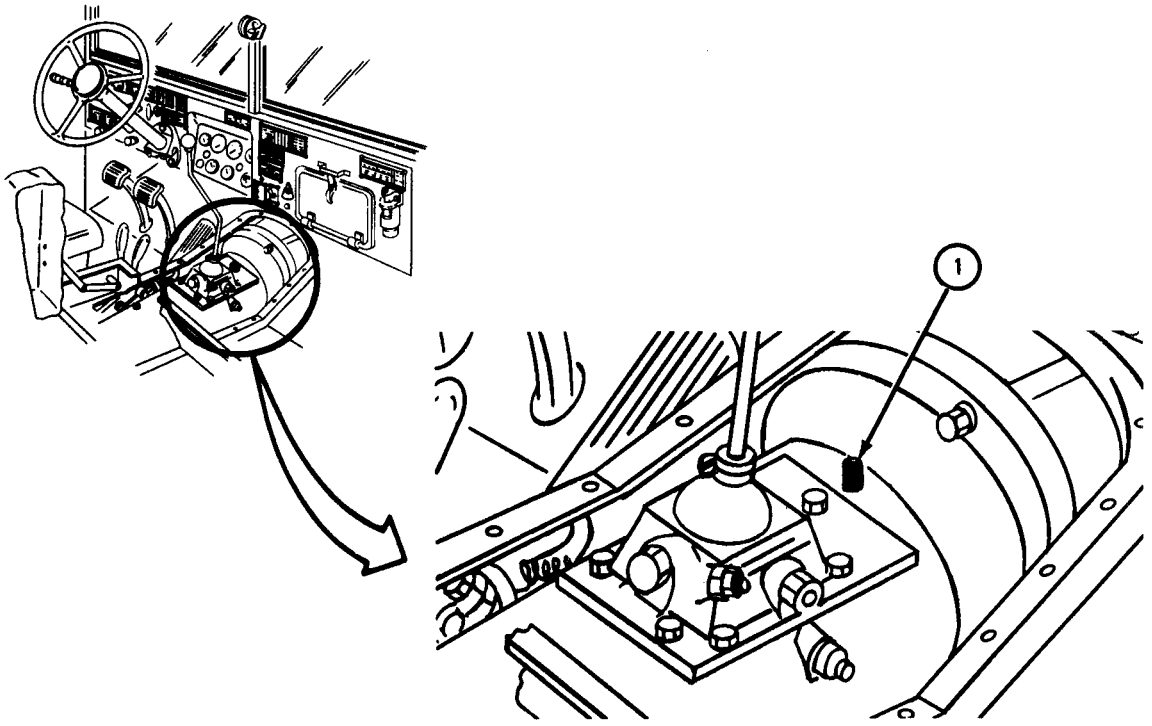
1. Screw in and hand tighten breather vent (1).

NOTE

Follow-on Maintenance Action Required:

Replace intermediate cab tunnel. Refer to Part 2, para 17-5.

END OF TASK



TA 045891

CHAPTER 9

TRANSMISSION TRANSFER SYSTEM GROUP MAINTENANCE

Section I. SCOPE

9-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the transmission transfer air system for which there are authorized corrective maintenance tasks at the organizational maintenance level.

9-2. 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. TRANSMISSION TRANSFER AIR SYSTEM

9-3. TRANSMISSION TRANSFER CASE AIR PRESSURE RELIEF VALVE REMOVAL AND REPLACEMENT.

TOOLS: 7/16-inch wrench
Wire brush

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Lubricating oil, ICE, OE /HDO 10, MIL-L-2104
Rag

PERSONNEL: One

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

a. Removal.

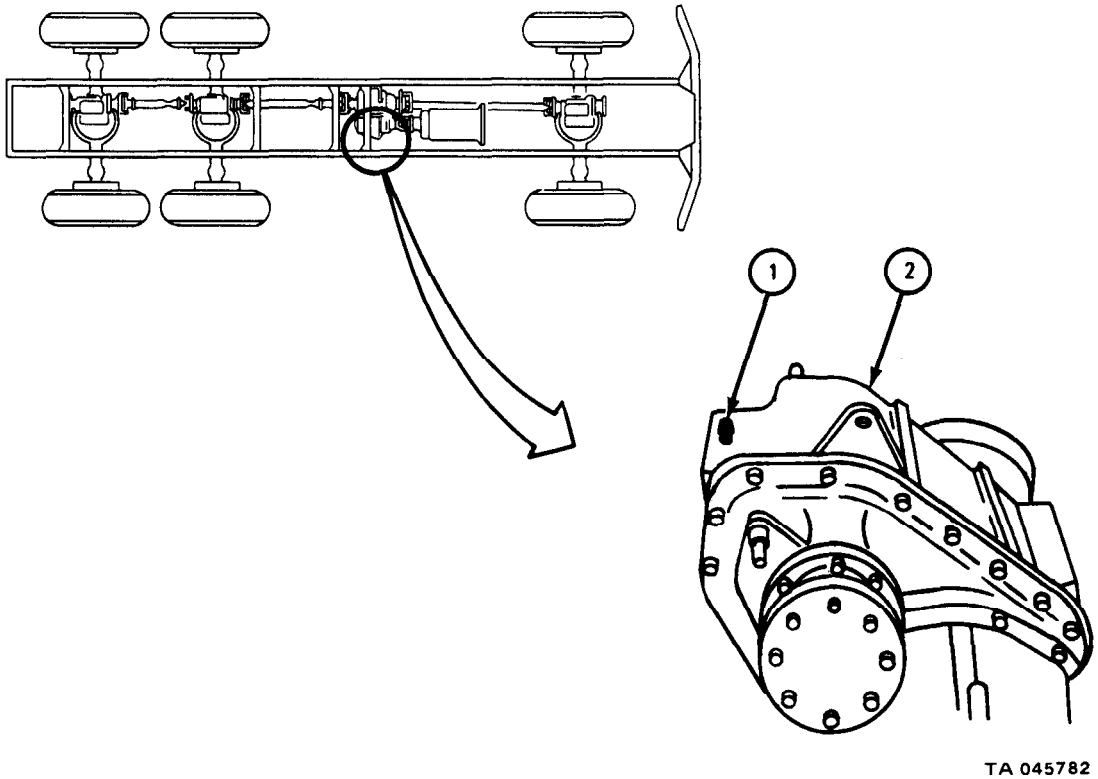
FRAME 1

CAUTION

Make sure area around air pressure relief valve (1) is clean so dirt will not get into transfer case (2).

1. Air pressure relief valve (1) is located on top of transfer case (2) on the right outboard side. Using clean rag, from underneath truck, reach up and wipe away loose dirt from valve.
2. Using 7/16-inch wrench, reach up and unscrew and take off valve (1).

END OF TASK



TA 045782

b. Cleaning.

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.

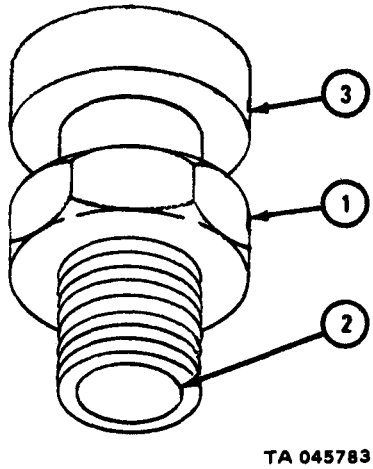
1. Soak relief valve (1) in solvent.
2. Using wire brush, brush all dirt from relief valve (1).
3. Clean passage (2) and make sure valve cap (3) moves freely.

WARNING

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

4. Dry with compressed air and put on a coat of lubricating oil.

END OF TASK



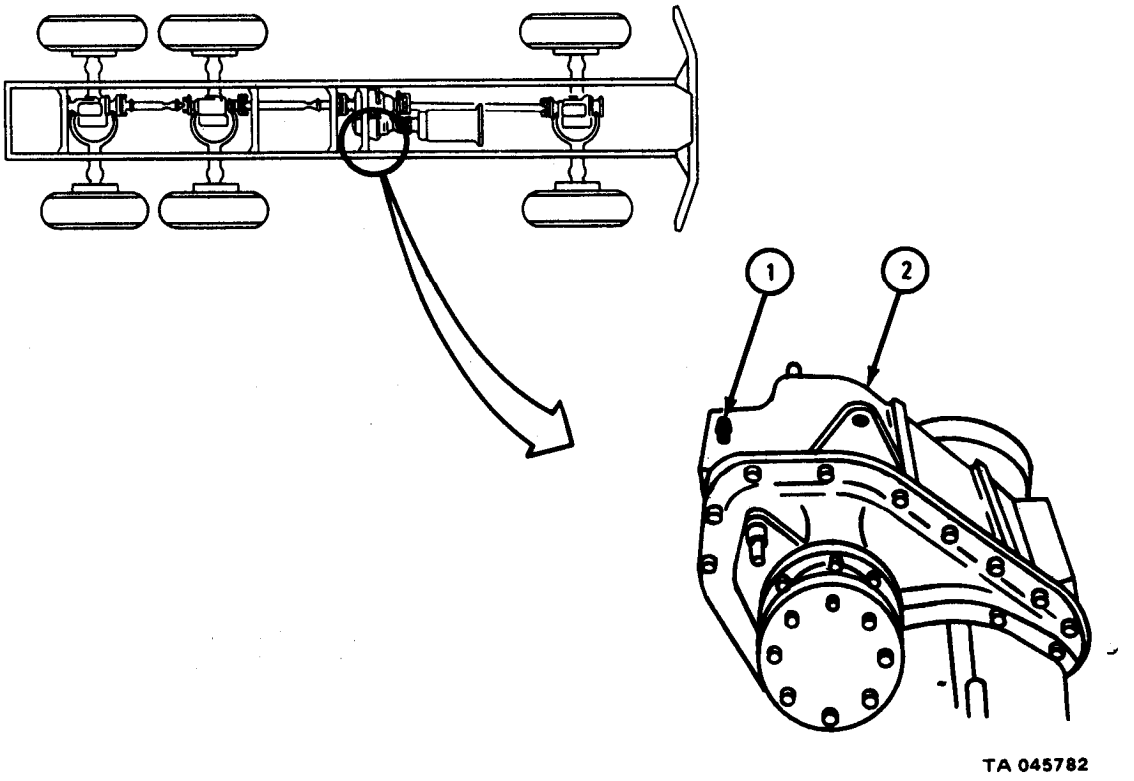
TA 045783

c. Replacement.

FRAME 1

1. Air pressure relief valve (1) screws in on top of transfer case (2) on the right outboard side. From underneath truck, reach up and screw in valve.
2. Using 7/16-inch wrench, tighten valve (1).

END OF TASK



9-4. AIR SHIFT LINES AND CONNECTIONS REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: 11/16-inch wrench
3/4-inch wrench
7/8-inch wrench
5/8-inch wrench

SUPPLIES: Tags
Caps

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Take off intermediate cab tunnel cover. Refer to Part 2, para 17-5.

(2) Take off rear cab tunnel cover. Refer to Part 2, para 17-5.

(3) Vent air system pressure. Refer to para 12-18.

b. Removal.

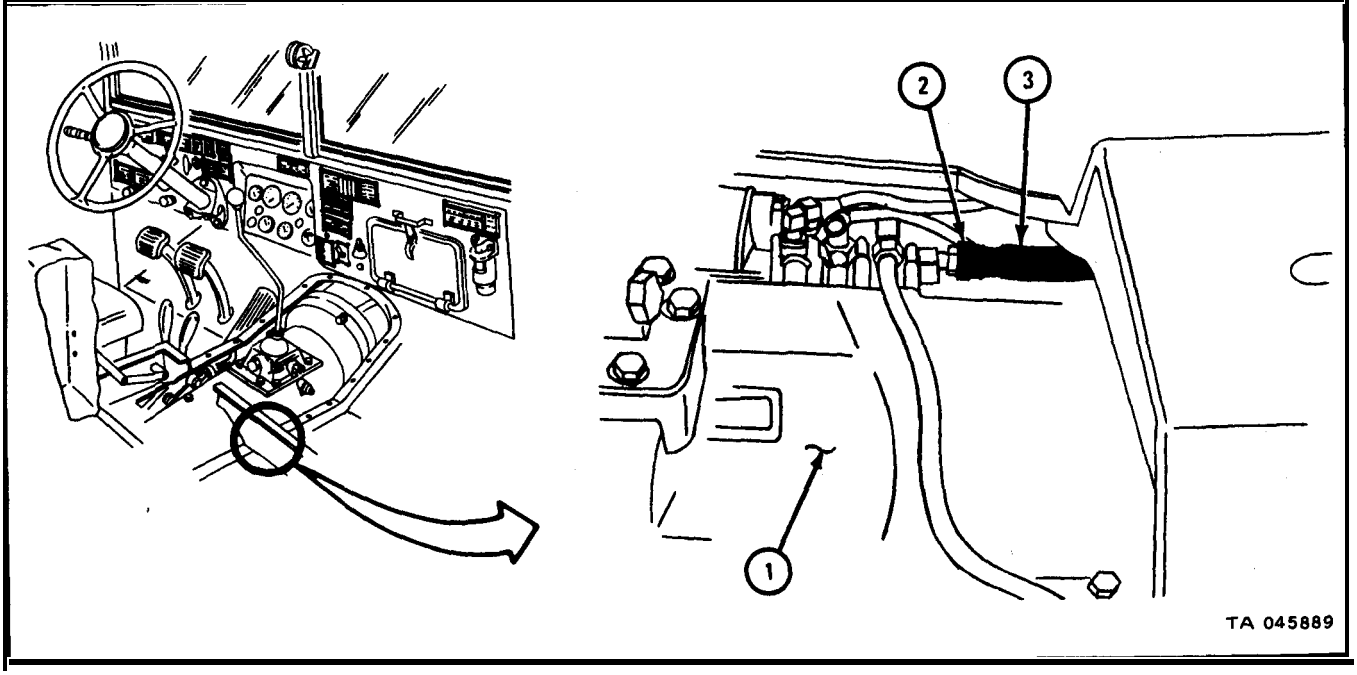
NOTE

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

FRAME 1

1. Working in cab on right side of transmission (1) using 7/8-inch and 3/4-inch wrenches, unscrew and take off sleeve nut (2).
2. Take out air line (3).

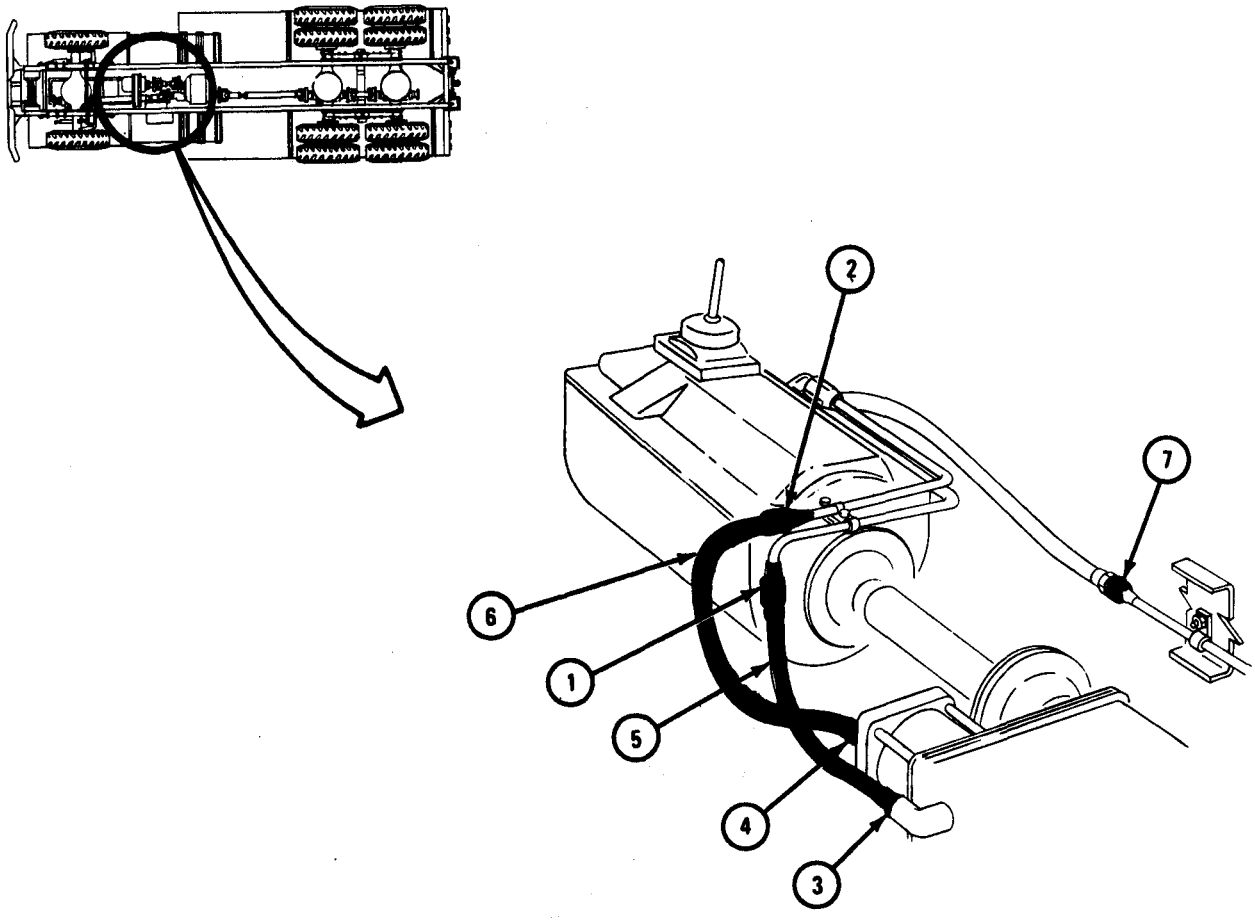
GO TO FRAME 2



FRAME 2

1. Working under left side of truck using 5/8-inch and 11/16-inch wrenches, unscrew and take off two sleeve nuts (1 and 2).
2. Using 7/8-inch wrench, unscrew and take off two sleeve nuts (3 and 4). Take out two air lines (5 and 6).
3. Working under right side of truck using 7/8-inch and 3/4-inch wrenches, unscrew and take off sleeve nut (7).

END OF TASK



TA 045795

c. Inspection and Repair.

(1) Check that rubber part of air lines have no holes, cracks or bulges. Throw away damaged air lines. Get new air lines in their place.

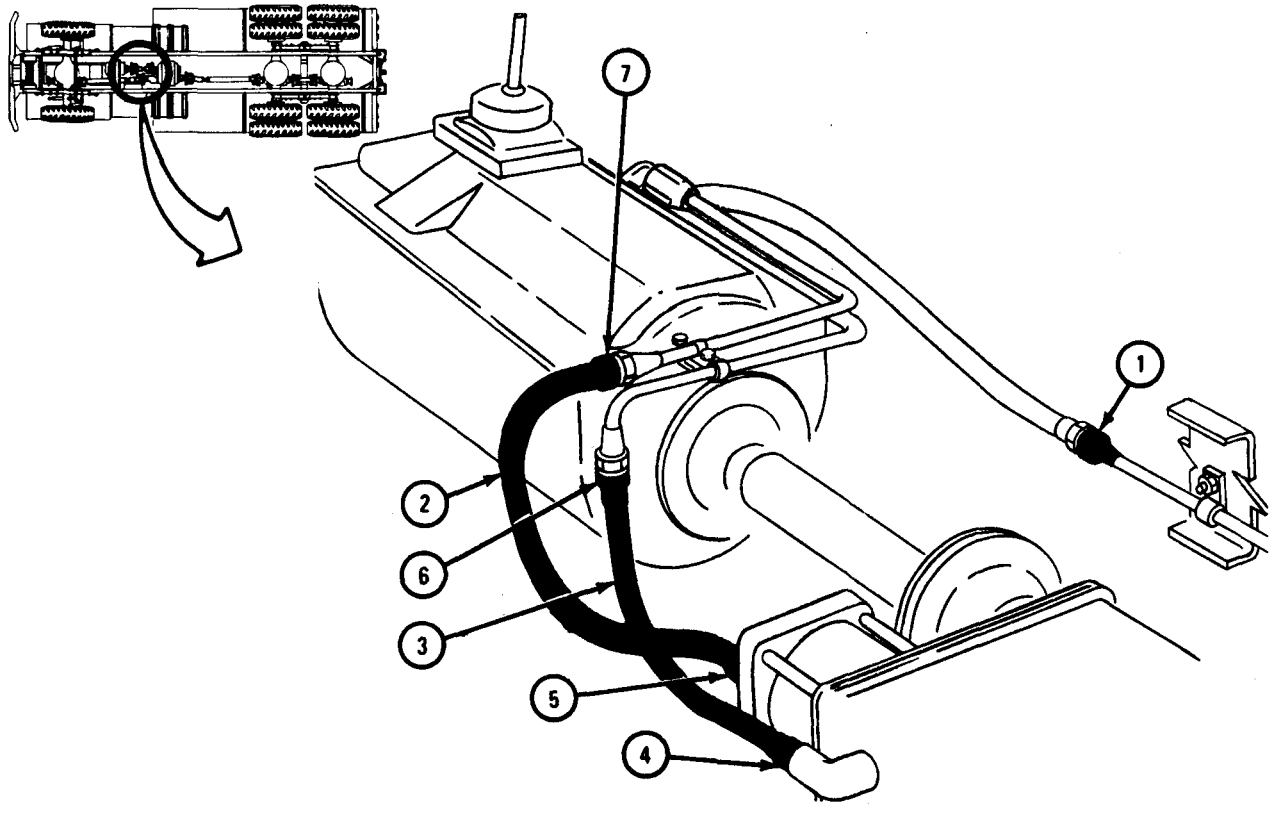
(2) Check that metal parts of air lines have no cracks, breaks, dents, rust or damaged threads. Throw away damaged air lines. Get new air lines in their place.

d. Replacement.

FRAME 1

1. Working under right side of truck using 3/4-inch and 7/8-inch wrenches, screw in and tighten sleeve nut (1) as tagged. Take off tag.
2. Working under left side of truck, put air lines (2 and 3) in place as tagged and using 7/8-inch wrench, screw in and tighten two sleeve nuts (4 and 5). Take off tags.
3. Using 5/8-inch and 11/ 16-inch wrenches, screw in and tighten two sleeve nuts (6 and 7). Take off tags.

GO TO FRAME 2



FRAME 2

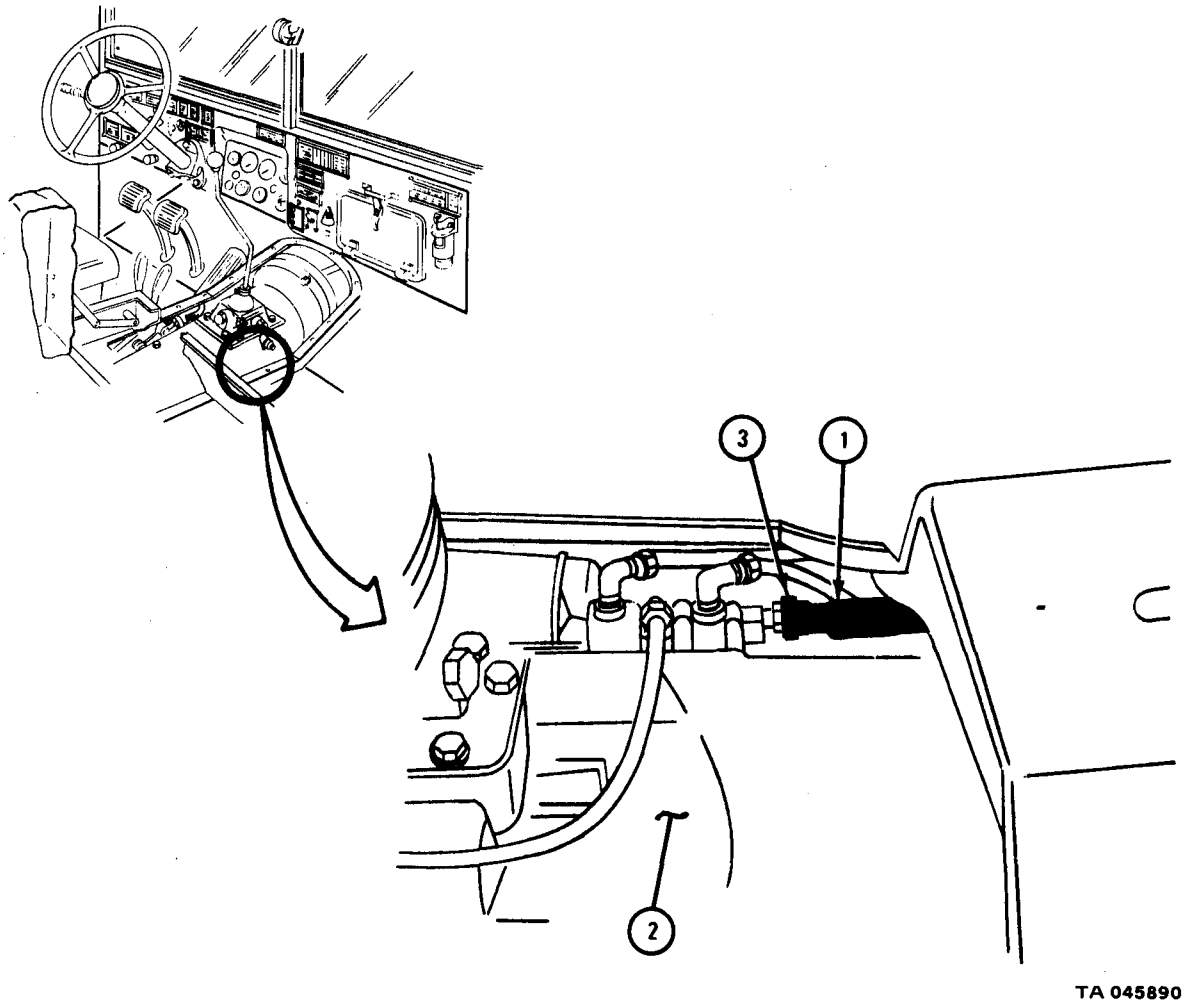
1. Working in cab, push air line (1) through tunnel on right side of transmission (2).
2. Using 7/8-inch and 3/4-inch wrenches, screw in and tighten sleeve nut (3) as tagged. Take off tag.

NOTE

Follow-on Maintenance Action Required:

1. Put on intermediate cab tunnel cover. Refer to Part 2, para 17-5.
2. Put on rear cab tunnel cover. Refer to Part 2, para 17-5.

END OF TASK



CHAPTER 10

PROPELLER SHAFTS GROUP MAINTENANCE

Section I. SCOPE

10-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment maintenance procedures for the propeller shaft assemblies for which there are authorized corrective maintenance tasks at the organizational maintenance level. The truck has to be jacked and supported to do this group of tasks. Therefore, procedures for jacking and supporting the truck are also given in this chapter.

10-2. 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. PROPELLER SHAFT ASSEMBLIES

10-3. JACKING AND SUPPORTING AXLE HOUSING.

WARNING

Never work under truck with only one jack supporting truck. Truck may slip off jack. Weight of truck must be supported by trestles or support stands with capacity for weight of truck.

TOOLS: Floor jack or jack supplied with truck, minimum capacity 8 tons
Trestles, motor vehicle, minimum capacity 5 tons (6)

SUPPLIES: None

PERSONNEL: One

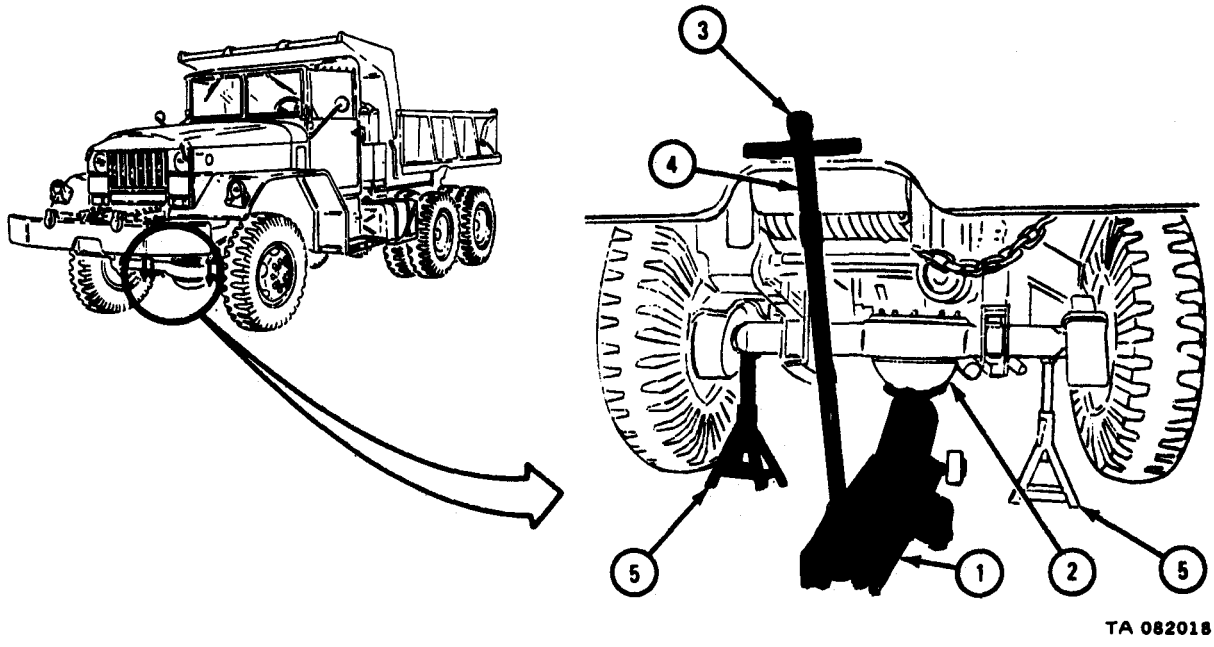
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, wheels chocked.

a. Jacking and Supporting Front Axle Housing.

FRAME 1

1. Put jack (1) under axle housing (2). Turn knob (3) all the way to right and move handle (4) up and down to raise truck. Put two trestles (5) in place under each end of axle housing (2) as shown.
2. Turn knob (3) slowly to left to lower truck onto trestles (5). Take jack (1) out from under truck.

END OF TASK

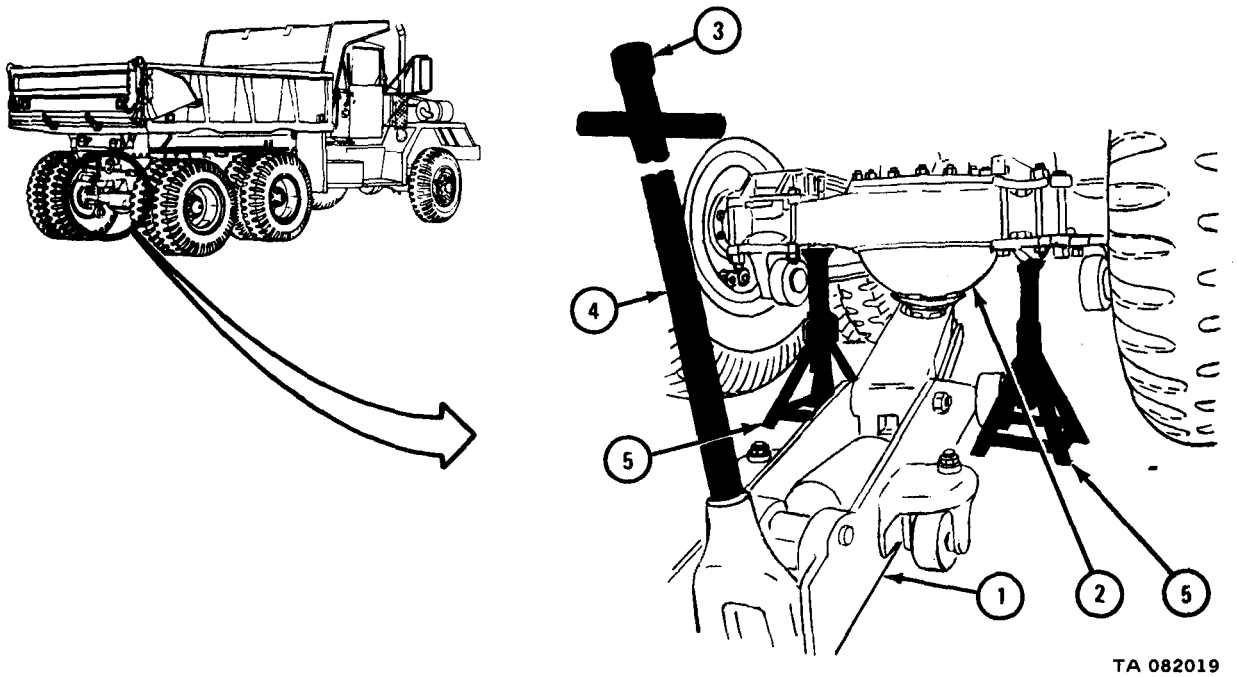


b. Jacking and Supporting Rear Axle Housings.

FRAME 1

1. Put jack (1) in place under axle housing (2). Turn knob (3) all the way to right and move handle (4) up and down to raise truck. Put two trestles (5) under each end of rear axle housing (2).
2. Turn knob (3) slowly to left and lower truck onto two trestles (5). Take jack (1) out from under truck.
3. Do steps 1 and 2 again on other rear axle housing.

END OF TASK



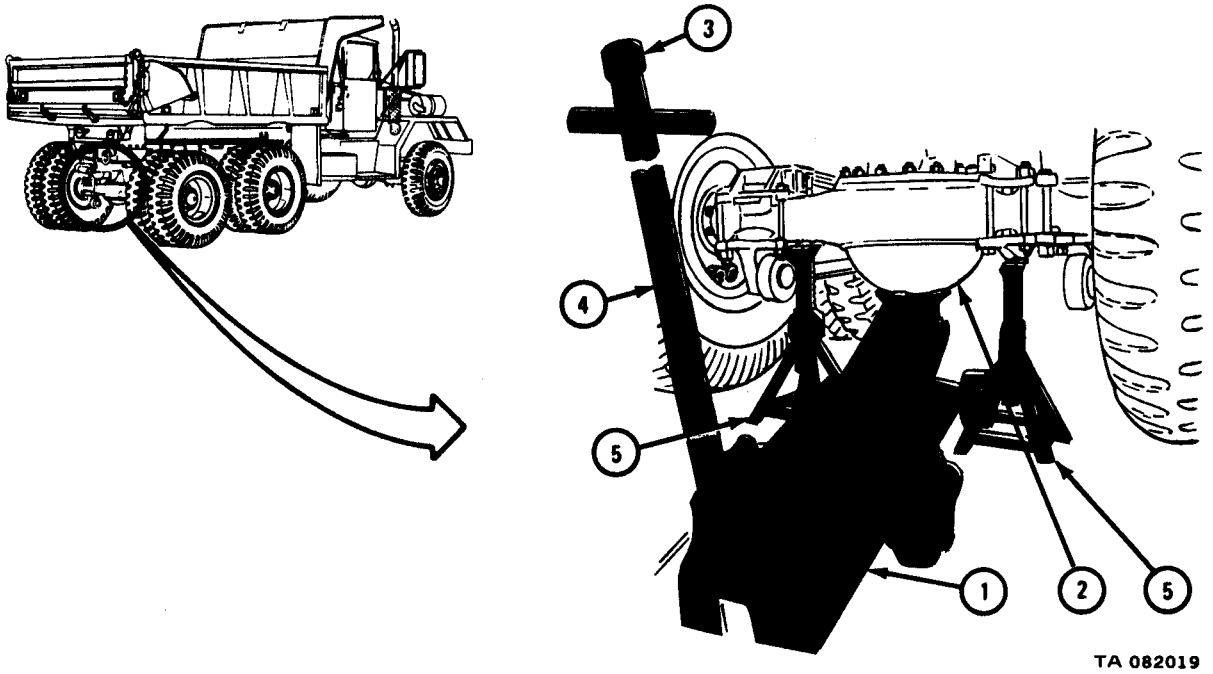
TA 082019

c. Removal of Rear Axle Housing Supports.

FRAME 1

1. Put jack (1) in place under axle housing (2). Turn knob (3) all the way to right and move handle (4) up and down to raise truck until two trestles (5) are free. Take trestles out from under truck.
2. Turn knob (3) slowly to the left and lower axle housing (2) to ground. Take jack (1) out from under truck.
3. Do steps 1 and 2 again on other rear axle housing.

END OF TASK

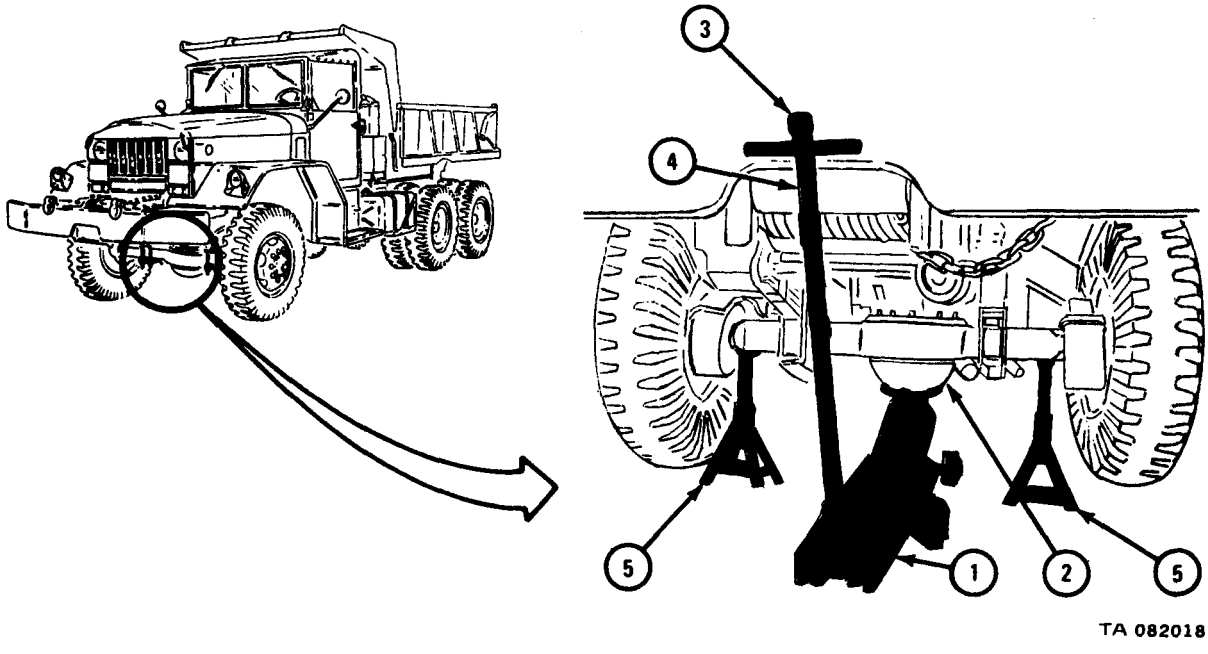


d. Removal of Front Axle Housing Supports.

FRAME 1

1. Put jack (1) in place under axle housing (2). Turn knob (3) all the way to right and move handle (4) up and down to raise truck until trestles (5) are free. Take trestles out from under truck.
2. Turn knob (3) slowly to left and lower truck to ground. Take jack (1) out from under truck.

END OF TASK



TA 082018

10-4. JACKING AND SUPPORTING TRUCK CHASSIS.

TOOLS: Hydraulic floor jack
Wheel chocks (4)
Motor vehicle trestle, 7-ton capacity
8 x 8 x 24-inch wood block (4)
8 X 8 X 42-inch wood block (8)

SUPPLIES: None

PERSONNEL: One

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

a. Raising Front Chassis.

FRAME 1

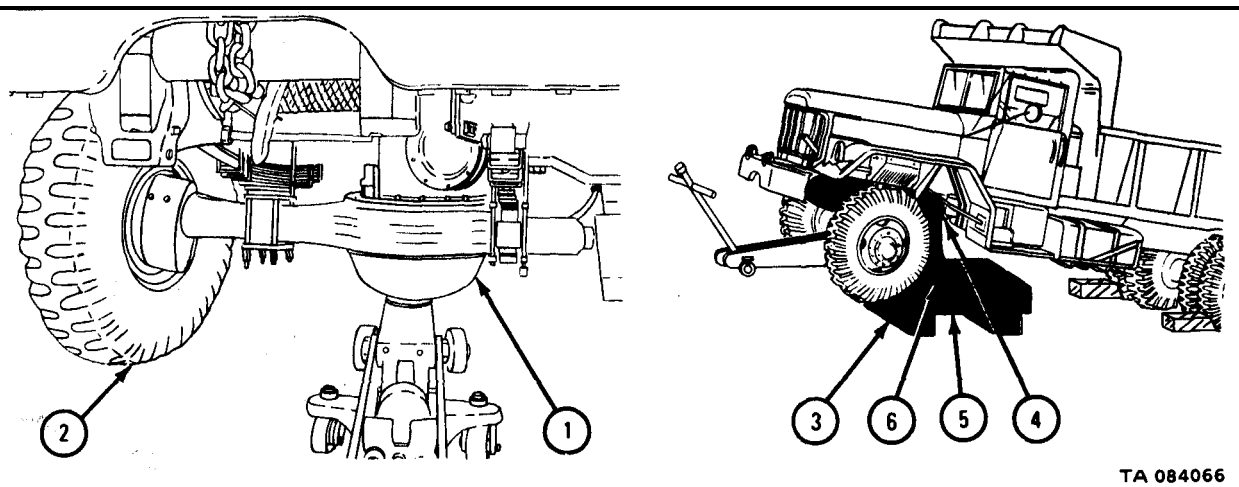
1. Chock rear wheels.
2. Put hydraulic jack under axle housing (1) as shown.

WARNING

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

3. Using hydraulic jack, jack up truck until front wheels (2) are six inches off the ground.
4. Lay two 42-inch wood blocks (3) under chassis (4) and two 24-inch wood blocks (5) next to each other on top of wood blocks (3). Put trestle (6) on top of four wood blocks as shown.
5. Put two 24-inch wood blocks (5) and trestle (6) on other end of the 42-inch wood blocks (3) under other side of chassis (4).
6. Using hydraulic jack, jack down truck onto trestles (6).

END OF TASK

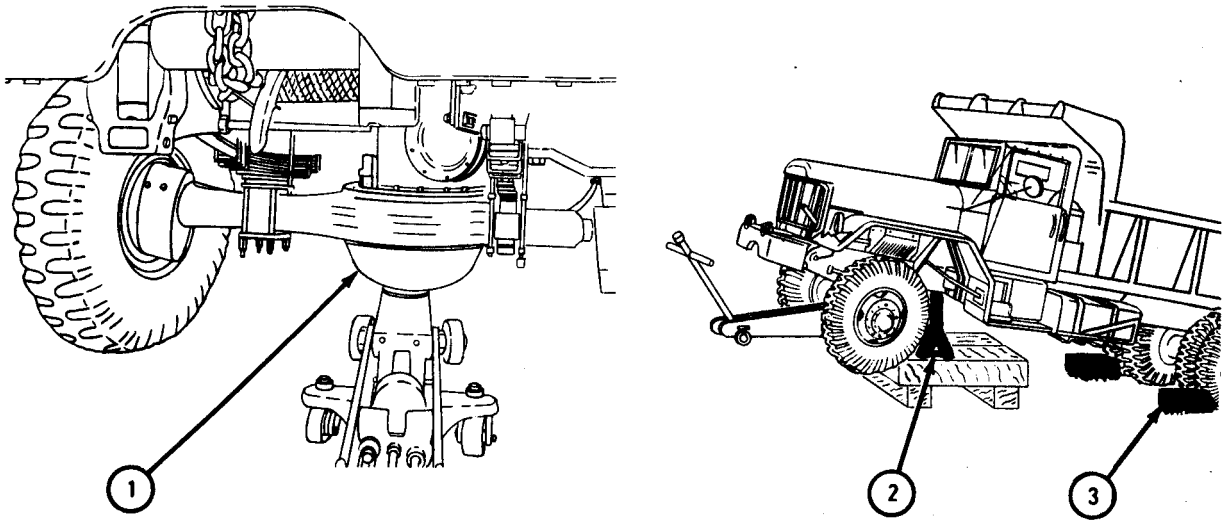


b. Lowering Front Chassis.

FRAME 1

1. Put hydraulic jack under axle housing (1) as shown.
2. Jack up truck until truck is off two trestles (2).
3. Take out two trestles (2) and eight wood blocks.
4. Using hydraulic jack, lower truck onto ground and take away hydraulic jack.
5. Take away wheel chocks (3) from rear wheels.

END OF TASK



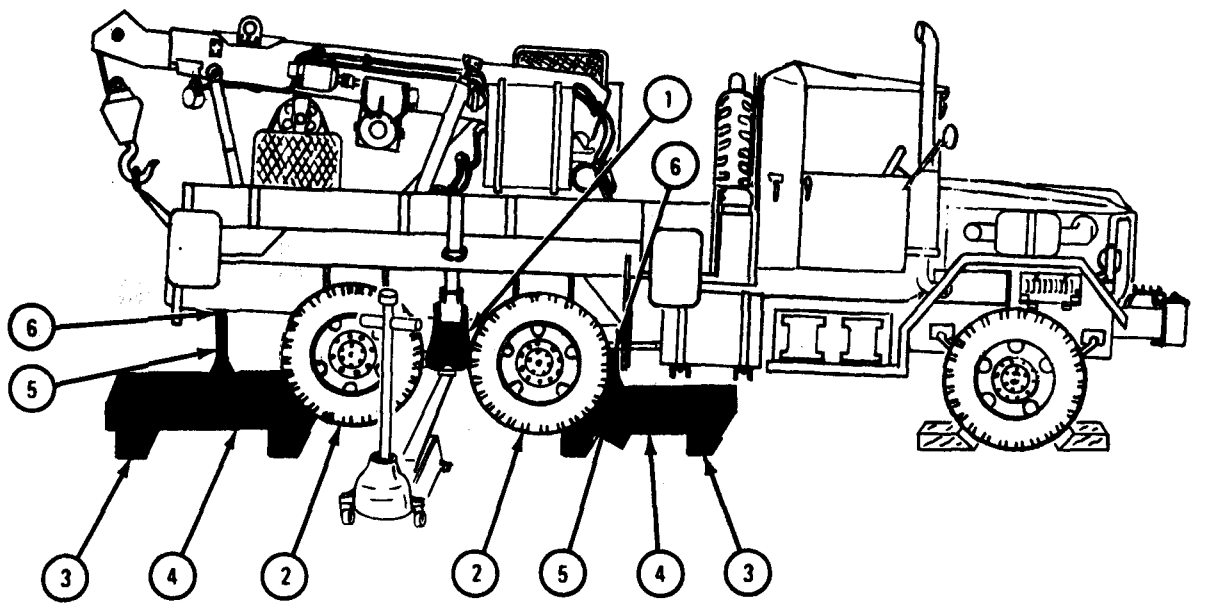
TA 084067

c. Raising Rear of Chassis (One Side).

FRAME 1

1. Chock front wheels as shown.
2. Put hydraulic jack under crosstube bracket (1) as shown. Jack up truck until rear wheels (2) are six inches off the ground.
3. Put four 42-inch wood blocks (3) under chassis of truck as shown.
4. Put two 42-inch wood blocks (4) on top of each set of wood blocks (3) as shown.
5. Put one trestle (5) on top of each set of wood blocks (4) and set trestles under chassis (6).
6. Using hydraulic jack, lower truck onto trestles (5) and take away hydraulic jack.

END OF TASK



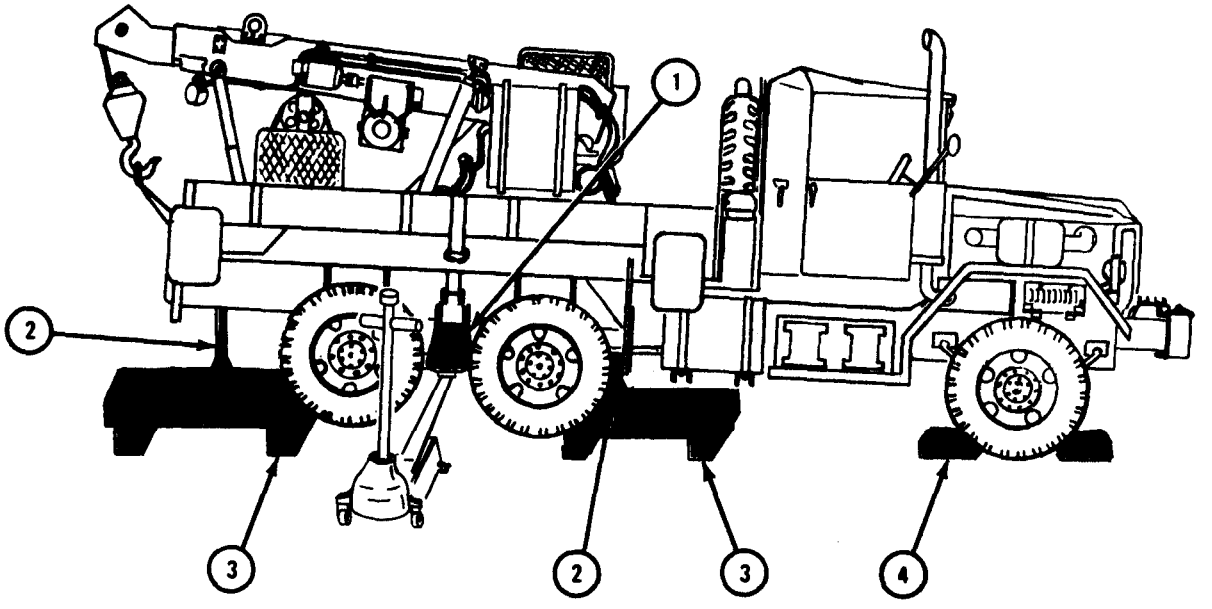
TA 084068

d. Lowering Rear of Chassis (One Side).

FRAME 1

1. Put hydraulic jack under crosstube bracket (1) as shown. Jack up truck until weight of truck is off two trestles (2)
2. Take out two trestles (2).
3. Take away eight wood blocks (3).
4. Using hydraulic jack, lower truck onto ground and take away hydraulic jack.
5. Take away wheel chocks (4) from front wheels.

END OF TASK



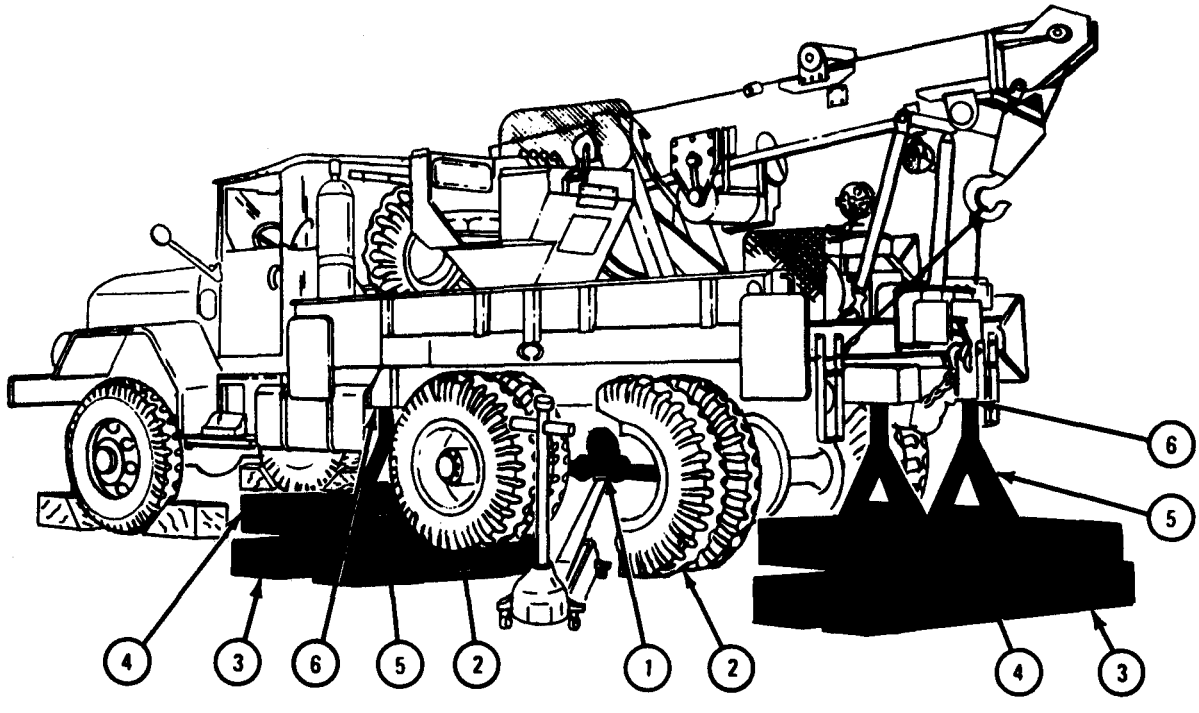
TA 084069

e. Raising Rear of Chassis (Both Sides).

FRAME 1

1. **Chock front wheels as shown.**
2. **Put hydraulic jack under crosstube bracket (1) as shown. Jack up truck until rear wheels (2) are six inches off the ground.**
3. **Put four 42-inch wood blocks (3) under chassis of truck as shown.**
4. **Put two 42-inch wood blocks (4) on top of each set of wood blocks (3) as shown.**
5. **Put one trestle (5) on top of each set of wood blocks (4) and set trestles under chassis (6).**
6. **Using hydraulic jack, lower truck onto trestles (5) and take away hydraulic jack.**
7. **Using hydraulic jack, jack up other side of truck and do steps 4 through 6 again.**

END OF TASK



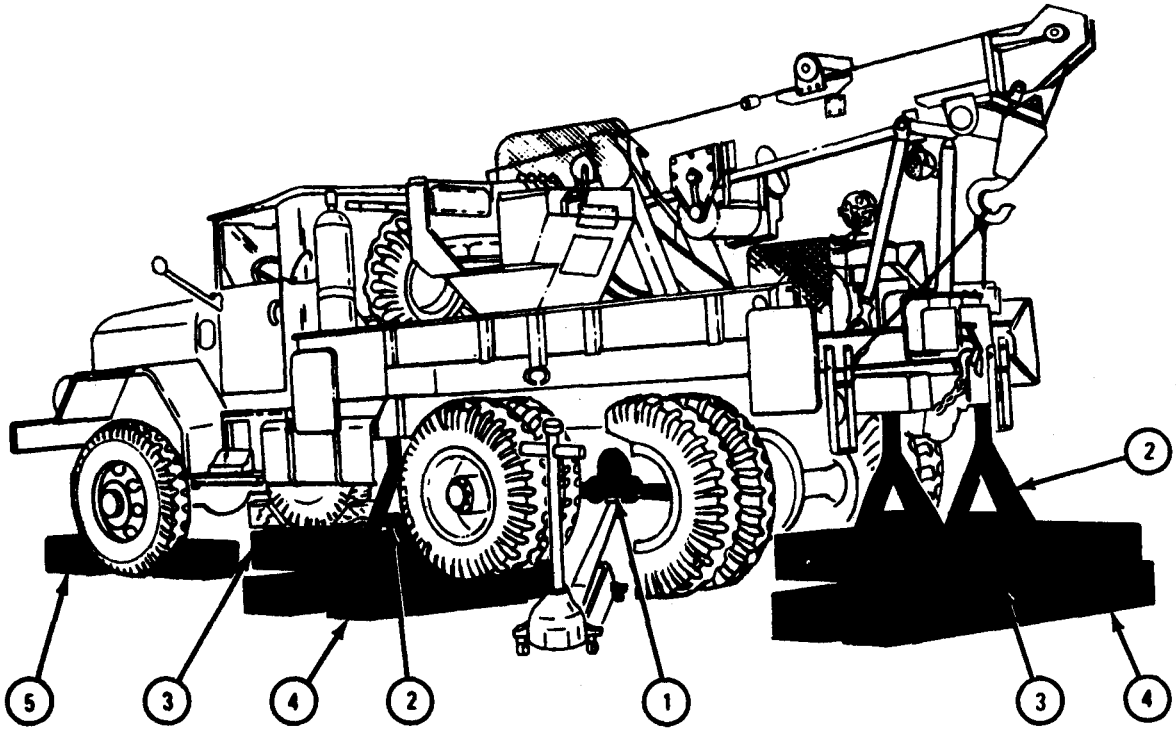
TA 084070

f. Lowering Rear of Chassis (Both Sides).

FRAME 1

1. Put hydraulic jack under crosstube bracket (1) as shown. Jack up truck until weight of truck is off two trestles (2).
2. Take out two trestles (2) and four wood blocks (3).
3. Using hydraulic jack, lower truck onto ground.
4. Using hydraulic jack, do steps 1 and 2 again on other side of truck.
5. Take out four wood blocks (4).
6. Using hydraulic jack, lower truck onto ground and take away hydraulic jack.
7. Take away wheel chocks (5).

END OF TASK



TA 084071

10-5. TRANSMISSION-TO-TRANSMISSION TRANSFER CASE PROPELLER SHAFT REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inchwrench (2)
Torque wrench, 150 pound-feet capacity

SUPPLIES: None

PERSONNEL: One

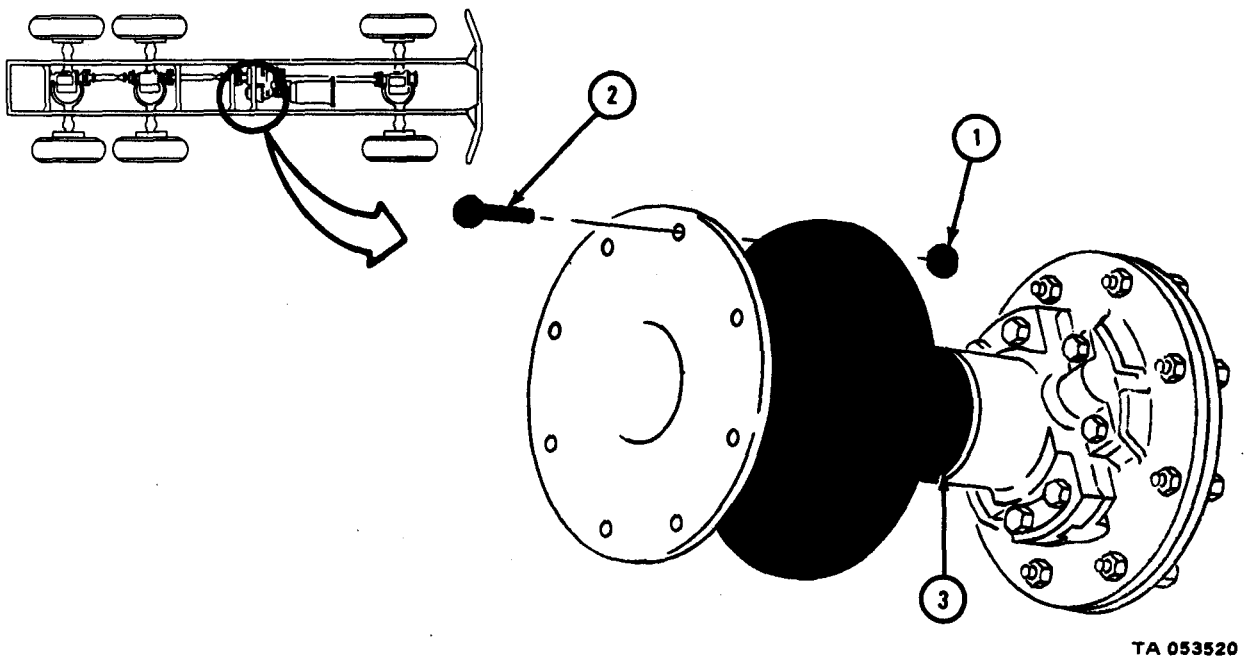
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Working under truck using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Takeout eight screws (2) and drop down loose end of propeller shaft assembly (3).

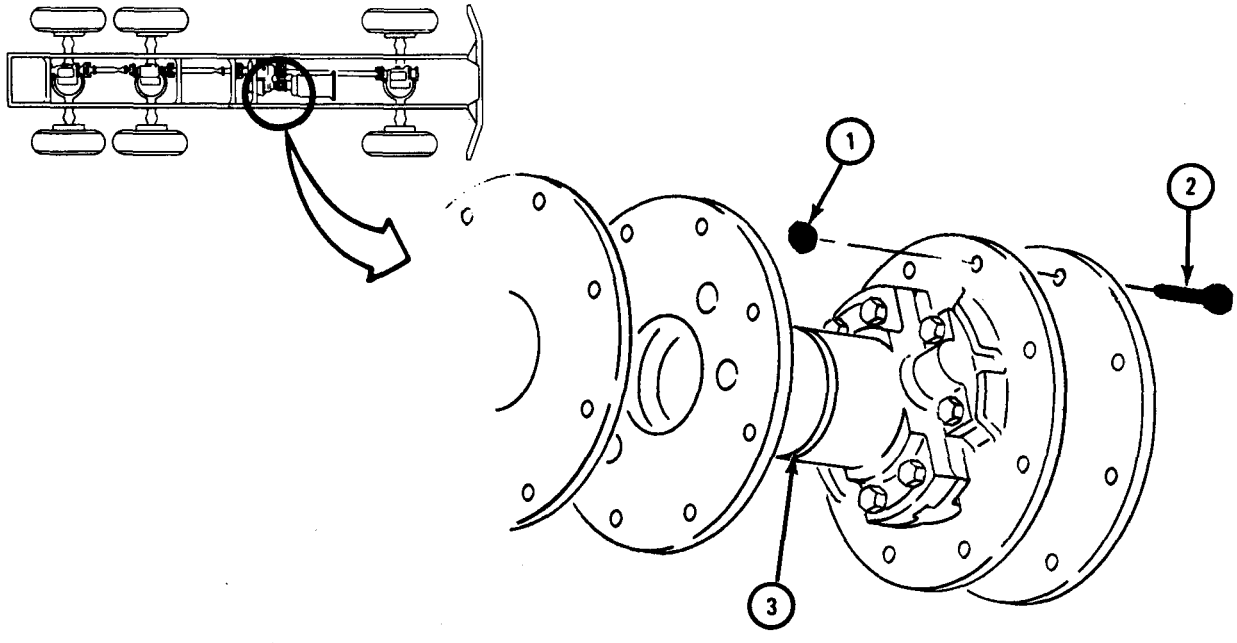
GO TO FRAME 2



FRAME 2

1. Using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down propeller shaft assembly (3).

END OF TASK

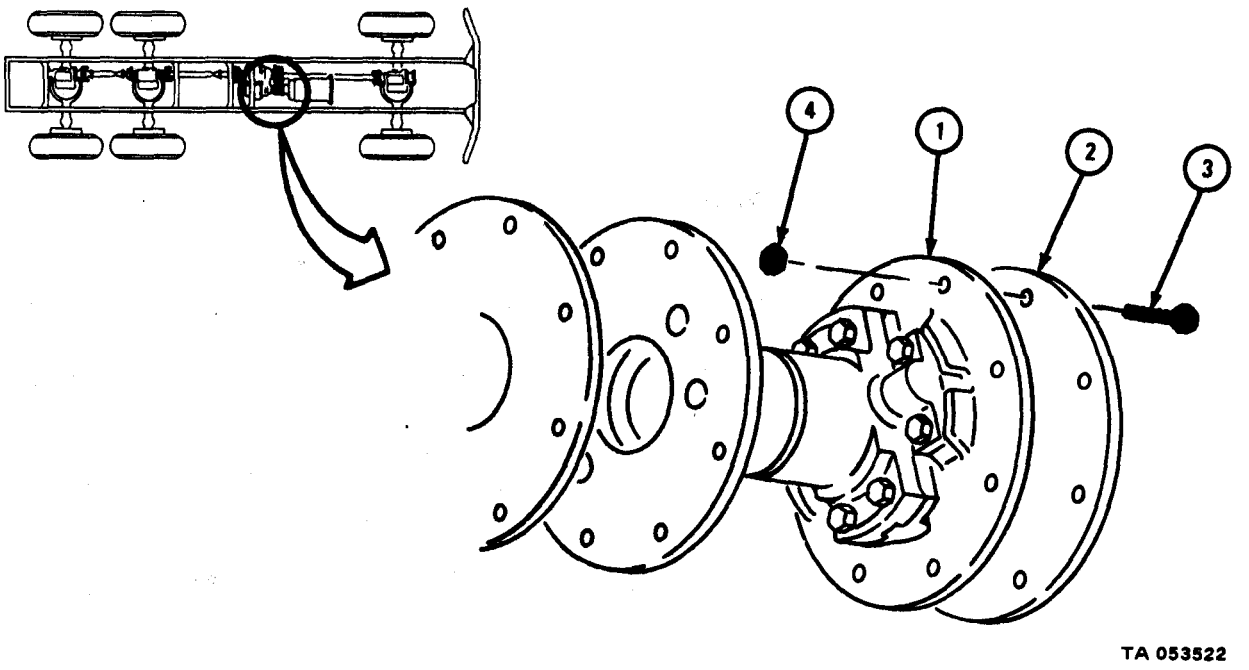


b. Replacement.

FRAME 1

1. Mate slip yoke adapter flange (1) with transmission flange (2).
2. Put eight screws (3) through holes in transmission flange (2) and slip yoke adapter flange (1).
3. Using wrench, screw on eight nuts (4) to screws (3).

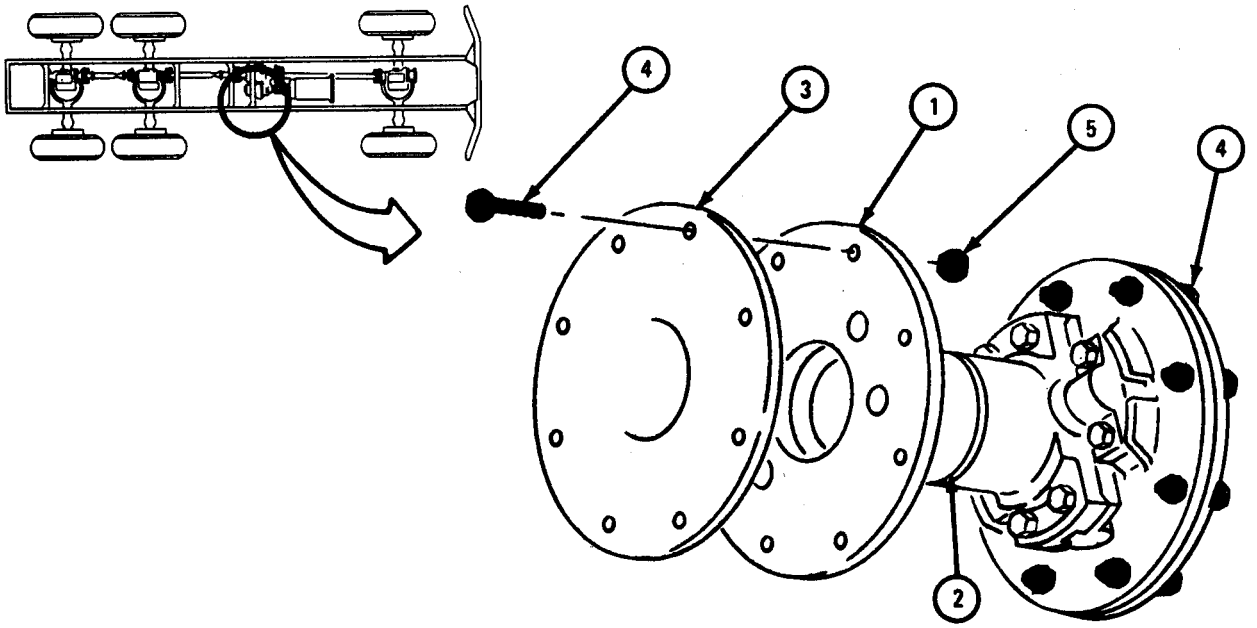
GO TO FRAME 2



FRAME 2

1. Mate yoke adapter flange (1) at other end of propeller shaft (2) with transfer flange (3).
2. Put eight screws (4) through holes in transfer flange (3) and yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (5) to screws (4).
4. Using torque wrench, tighten screws (4) on both ends of propeller shaft (2) to 32 to 40 pound-feet.

END OF TASK



10-6. TRANSMISSION TRANSFER CASE-TO-FRONT AXLE PROPELLER SHAFT REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inch wrench
Torque wrench, 150 pound-feet capacity

SUPPLIES: None

PERSONNEL: One

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

a. Removal.

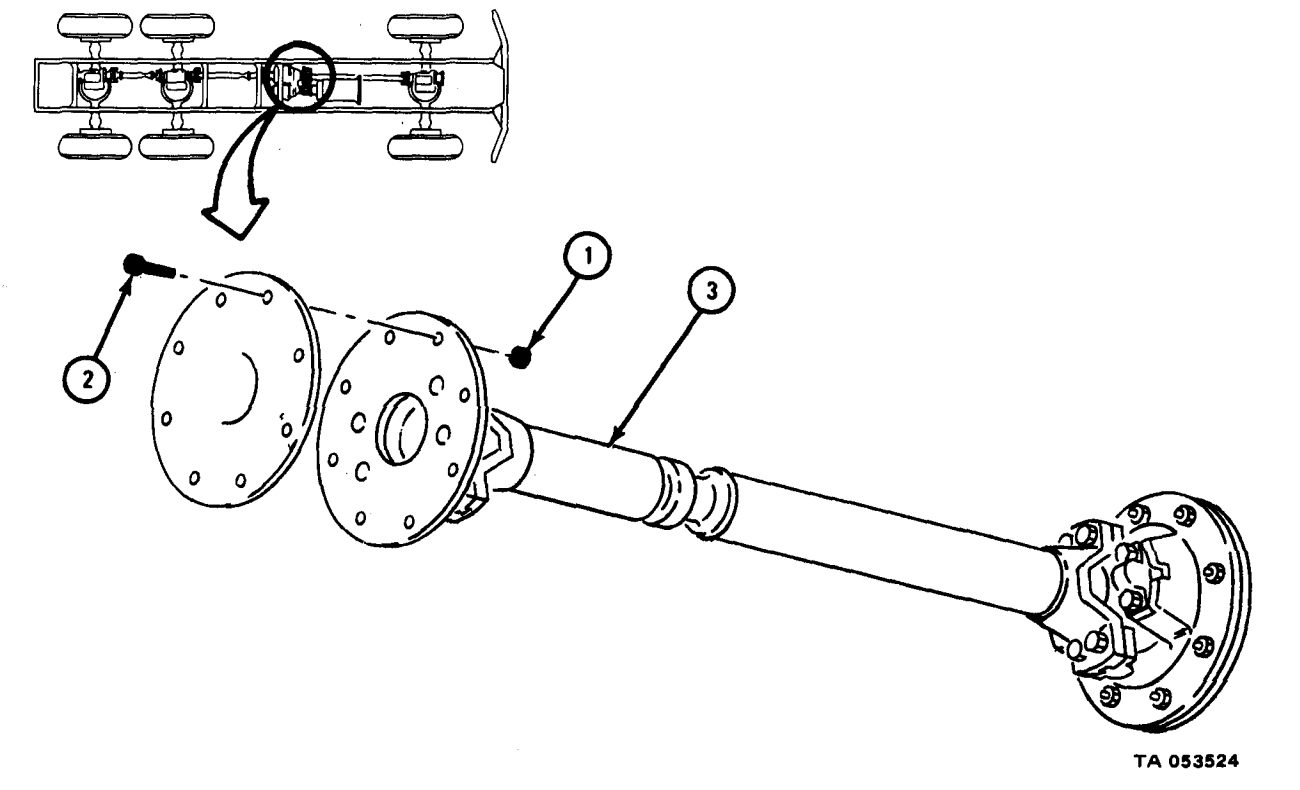
WARNING

Jack up front wheel to unwind sprag unit before taking out transmission transfer case-to-front axle propeller shaft. Refer to para 10-3. This is to keep personnel from being hurt by windup of shaft.

FRAME 1

1. Working under truck, using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down loose end of propeller shaft (3).

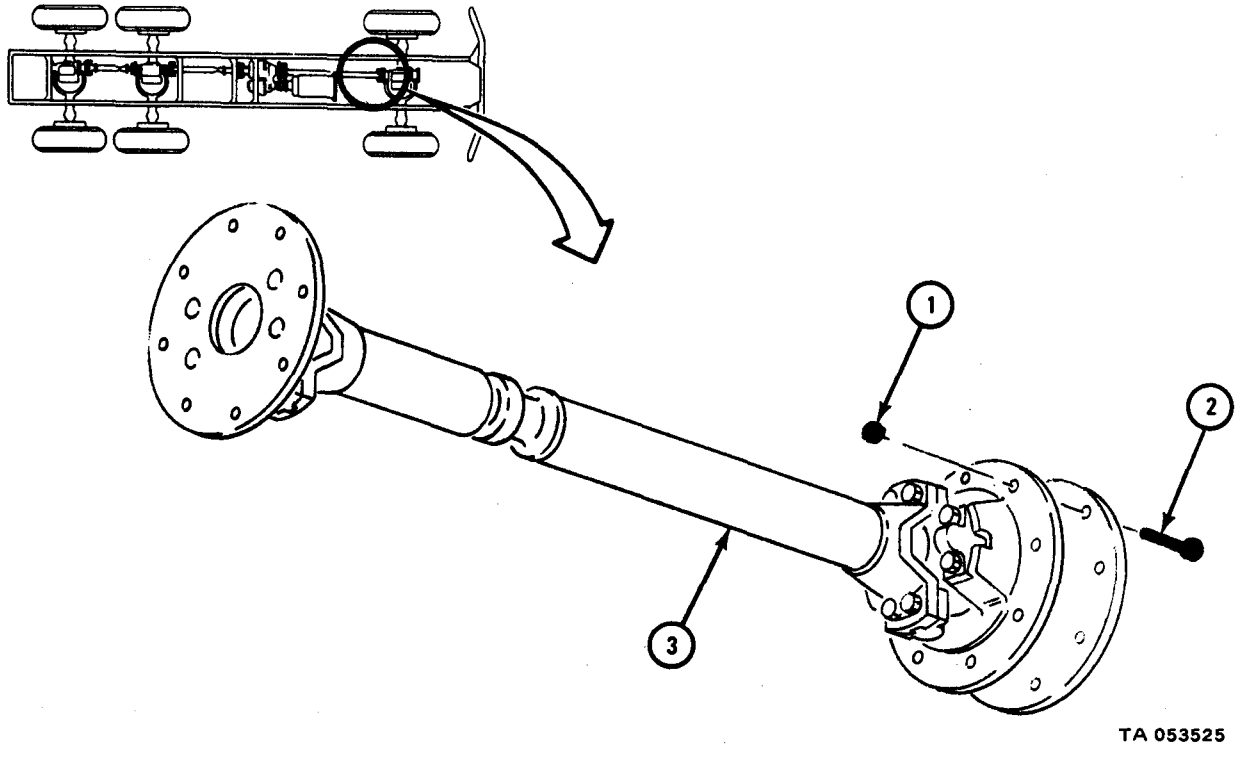
GO TO FRAME 2



FRAME 2

1. Using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down propeller shaft (3).

END OF TASK

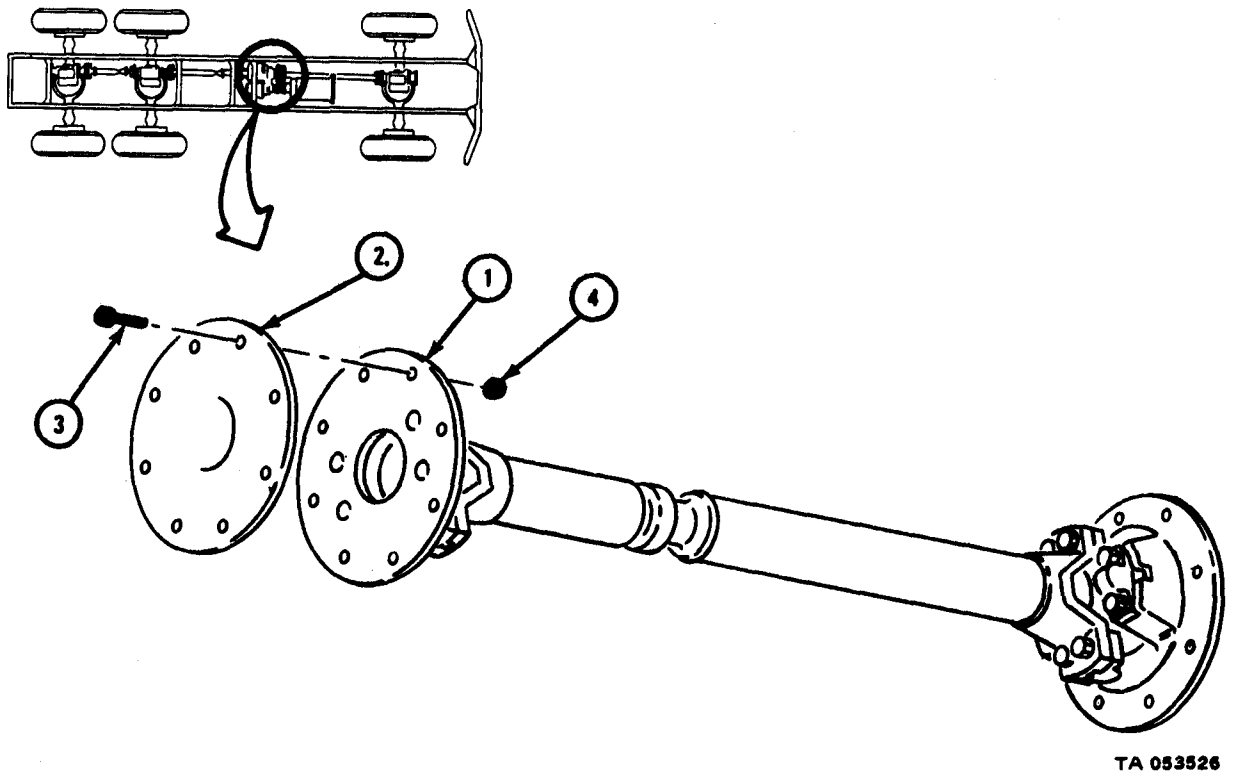


b. Replacement.

FRAME 1

1. Mate slip yoke adapter flange (1) with transfer case flange (2).
2. Put eight screws (3) through holes in transfer case flange (2) and slip yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (4) to screws (3).

GO TO FRAME 2

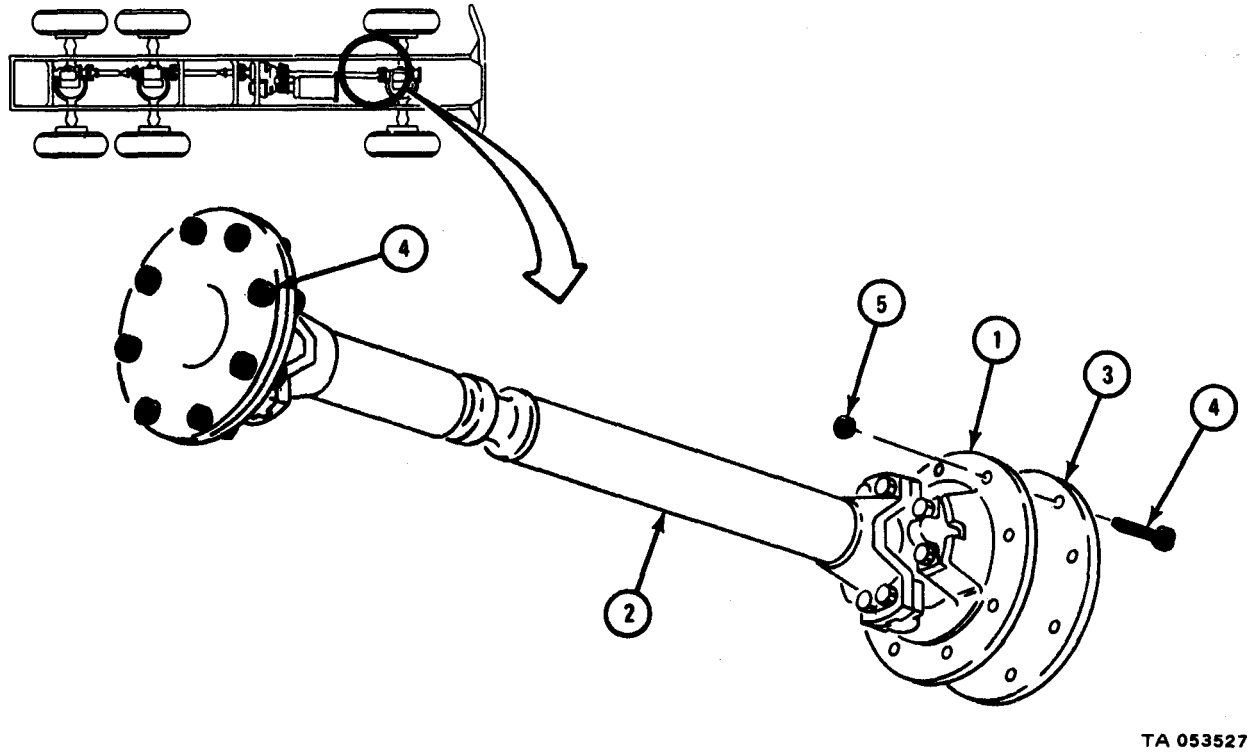


TA 053526

FRAME 2

1. Mate yoke adapter flange (1) at other end of propeller shaft (2) with front axle flange (3).
2. Put eight screws (4) through holes in front axle flange (3) and yoke adapter flange (1).
3. Screw on and hand tighten nuts (5) to screws (4).
4. Using torque wrench, tighten screws (4) on both ends of propeller shaft (2) to 32 to 40 pound-feet.
5. Jack down truck. Refer to para 10-3.

END OF TASK



10-7. TRANSMISSION TRANSFER CASE-TO-FORWARD REAR AXLE PROPELLER SHAFT (WITHOUT CENTER BEARING) REMOVAL AND REPLACEMENT (TRUCKS M51A2, M52A2, M54A2, M54A2C, AND M543A2).

TOOLS: 9/16-inch wrench
Torque wrench, 150 pound-feet capacity

SUPPLIES: None

PERSONNEL: One

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

a. Removal.

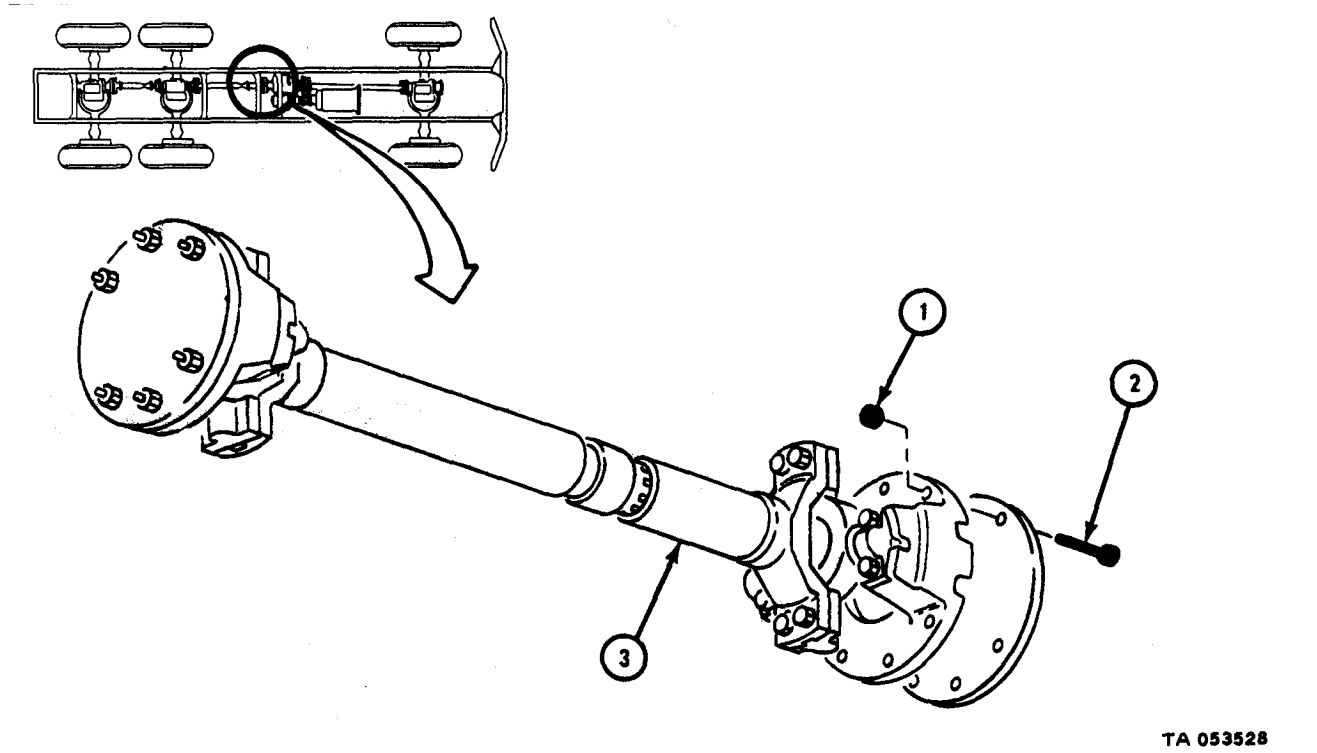
WARNING

Always jack up one wheel of the axle driven by propeller shaft being taken out, Refer to para 10-3. This is to keep personnel from being hurt by windup of shaft.

FRAME 1

1. Working under truck, using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down loose end of propeller shaft (3).

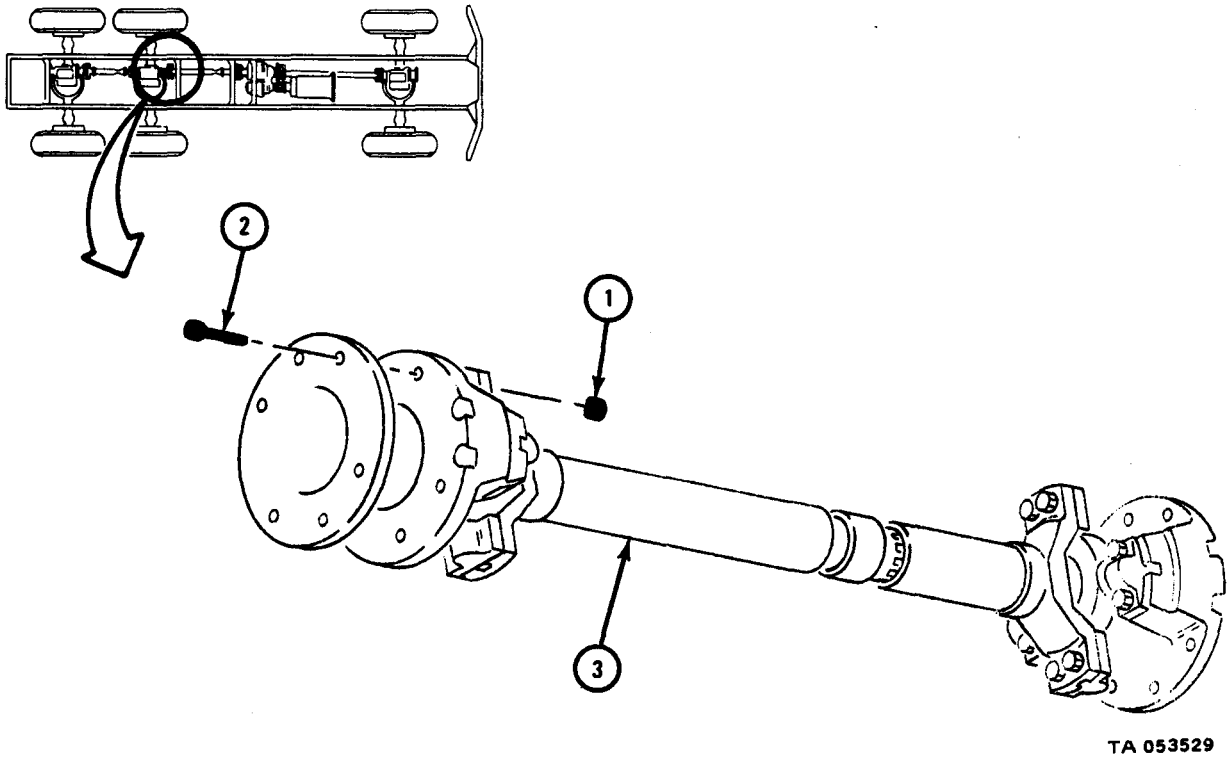
GO TO FRAME 2



FRAME 2

1. Using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down propeller shaft (3).

END OF TASK



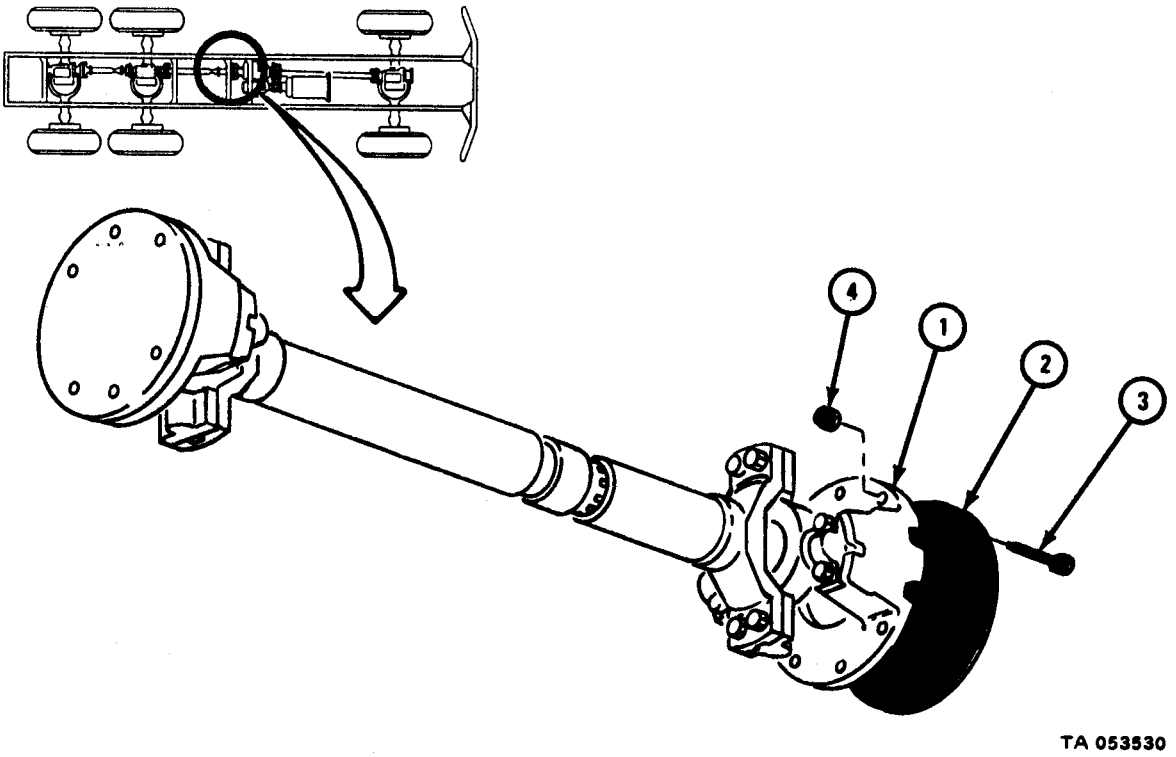
TA 053529

b. Replacement.

FRAME 1

1. Mate slip yoke adapter flange (1) with transfer case flange (2).
2. Put eight screws (3) through holes in transfer case flange (2) and slip yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (4) to screws (3).

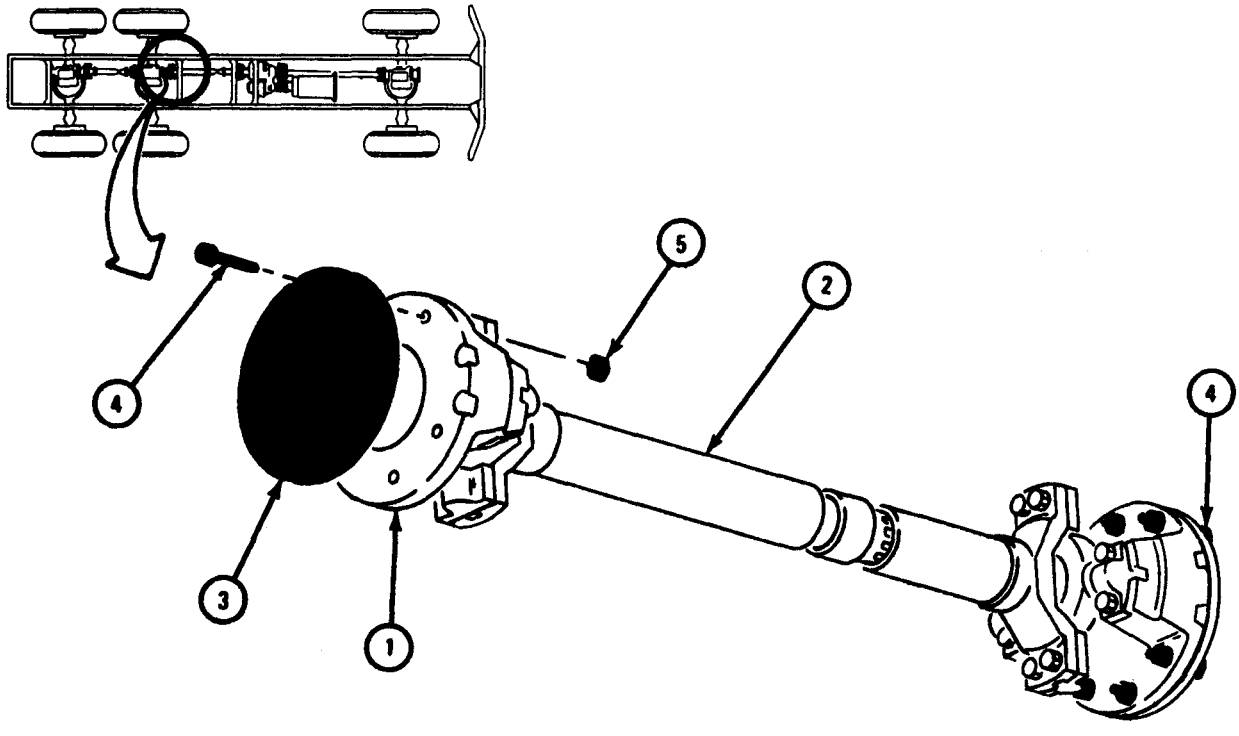
GO TO FRAME 2



FRAME 2

1. Mate yoke adapter flange (1) at other end of propeller shaft (2) with forward-rear axle flange (3).
2. Put eight screws (4) through holes in forward-rear axle flange (3) and yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (5) to screws (4).
4. Using torque wrench, tighten screws (4) on both ends of propeller shaft (2) to 32 to 40 pound-feet.
5. Jack down truck. Refer to para 10-3.

END OF TASK



10-8. TRANSMISSION TRANSFER CASE-TO-FORWARD REAR AXLE PROPELLER SHAFT (WITH CENTER BEARING) REMOVAL AND REPLACEMENT (TRUCK M55A2).

TOOLS: 9/16-inch wrench
Pliers
Torque wrench, 150 pound-feet capacity
2 3/8-inch wrench
3/4-inch wrench

SUPPLIES: None

PERSONNEL: One

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

a. Removal.

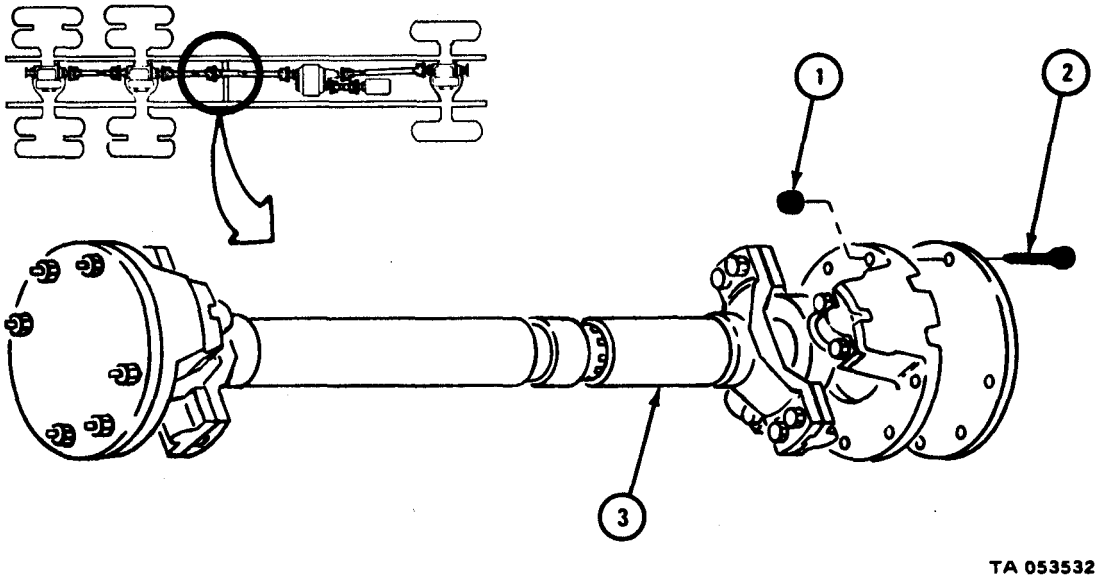
WARNING

Always jack up one wheel of the axle driven by propeller shaft being removed. Refer to para 10-3. This is to keep personnel from being hurt by windup of shaft.

FRAME 1

1. Working under truck, using 9/16-inch wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down loose end of propeller shaft (3).

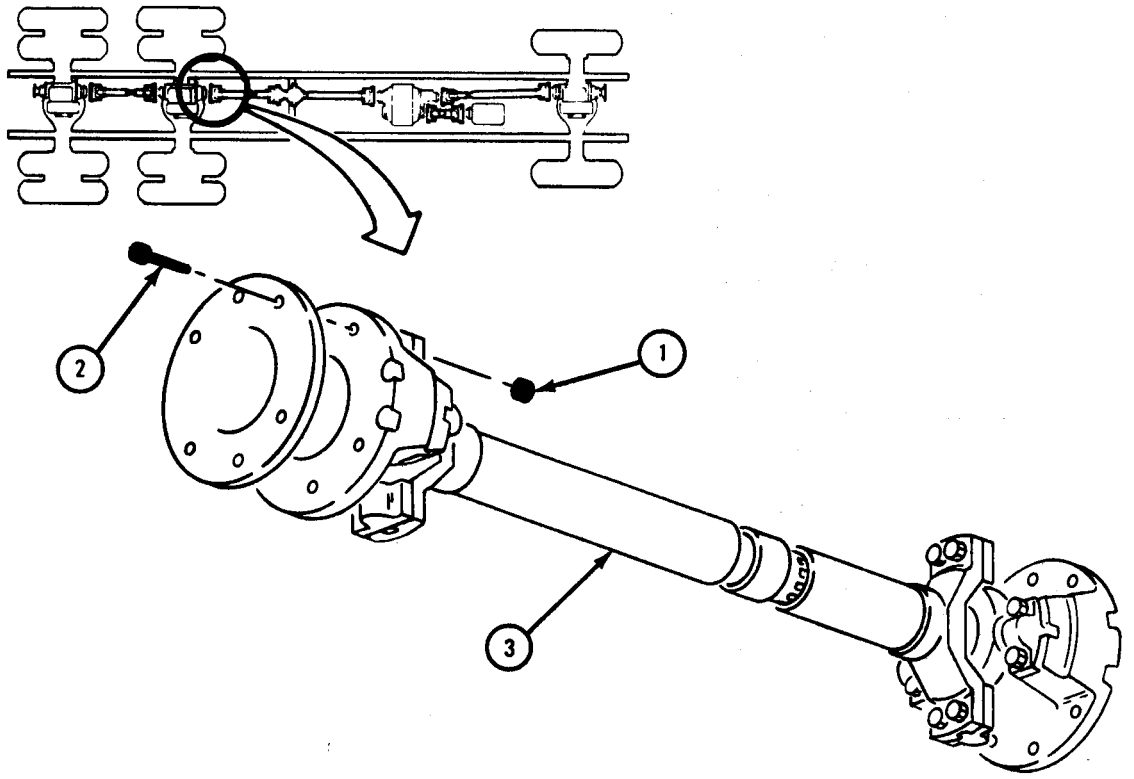
GO TO FRAME 2



FRAME 2

1. Using 9/16 -inch wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down propeller shaft (3).

GO TO FRAME 3

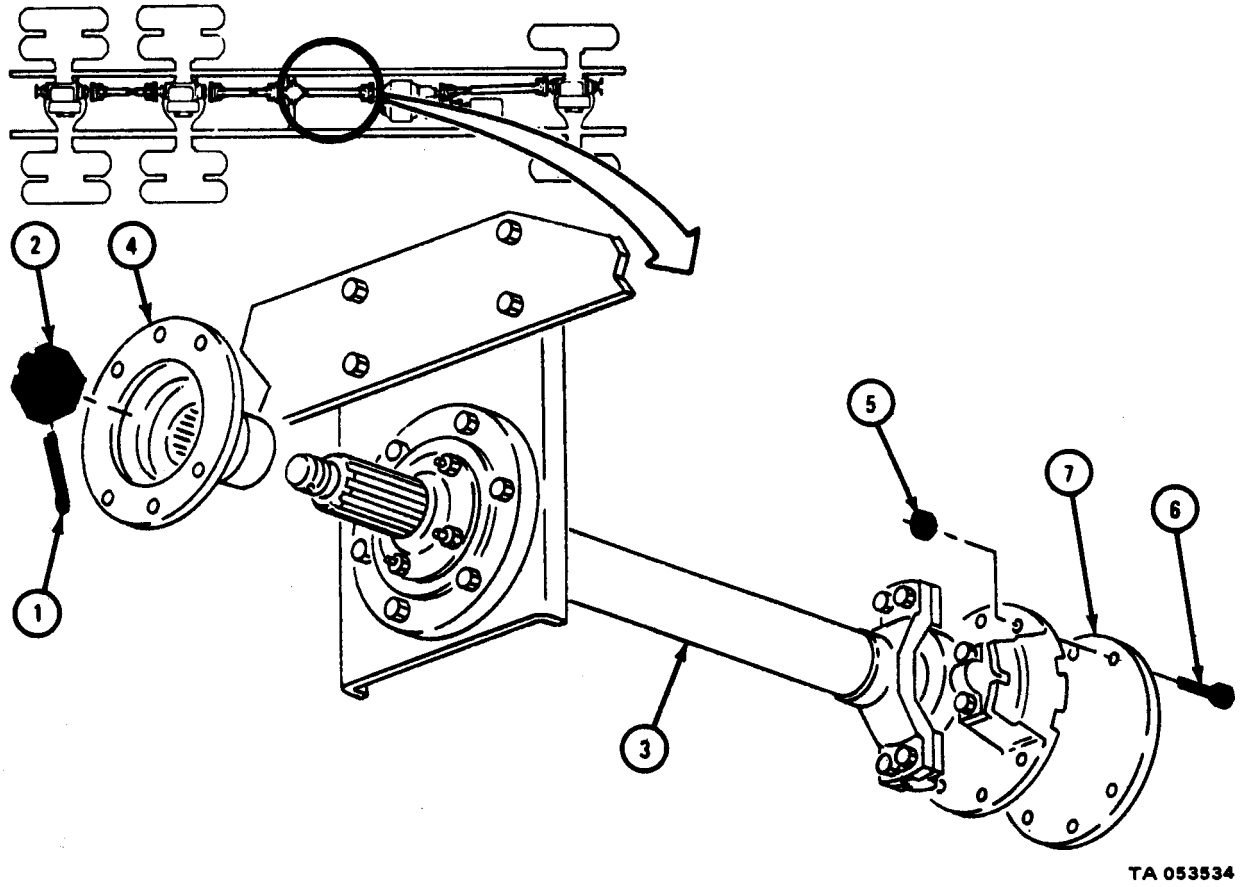


TA 053533

FRAME 3

1. Using pliers, pull out cotter pin (1) from nut (2).
2. Using 2 3/8-inch wrench, unscrew and take off nut (2) from propeller shaft (3) and take off propeller shaft flange (4).
3. Using 9/16-inch wrench, unscrew and take off eight nuts (5) from screws (6). Take eight screws out of transfer case flange (7).

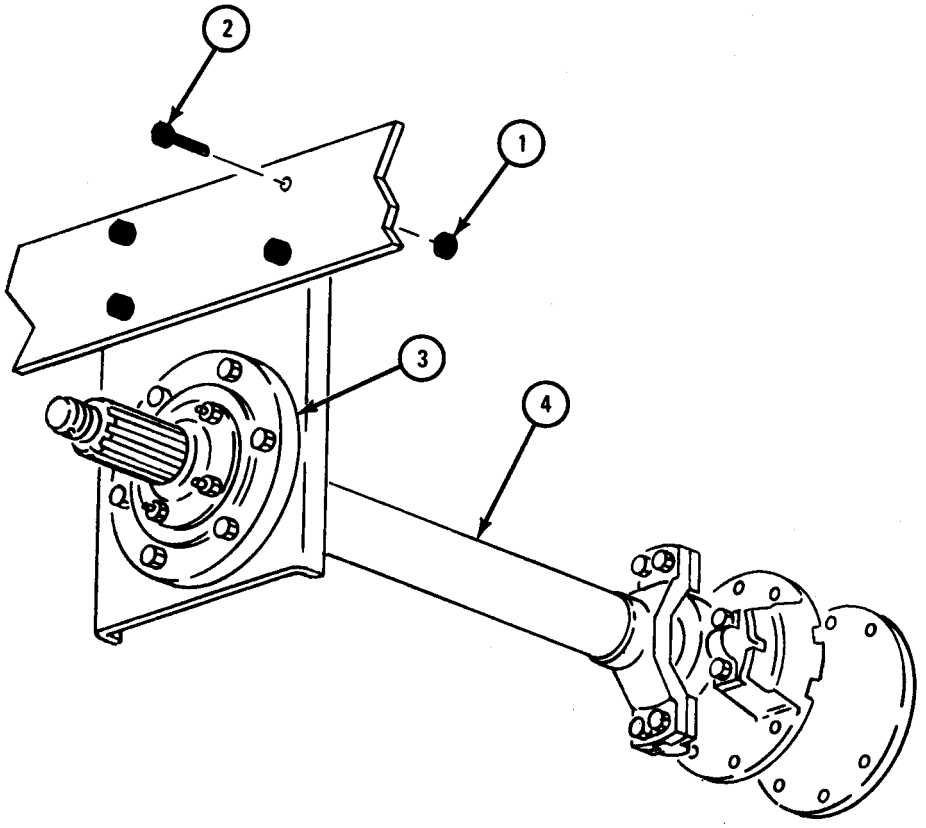
GO TO FRAME 4



FRAME 4

1. Using 3/4-inch wrench, unscrew and take off four nuts (1) from screws (2). Take out four screws.
2. Drop down center bearing assembly (3) and propeller shaft (4).
3. Slide propeller shaft (4) out of center bearing assembly (3).

END OF TASK



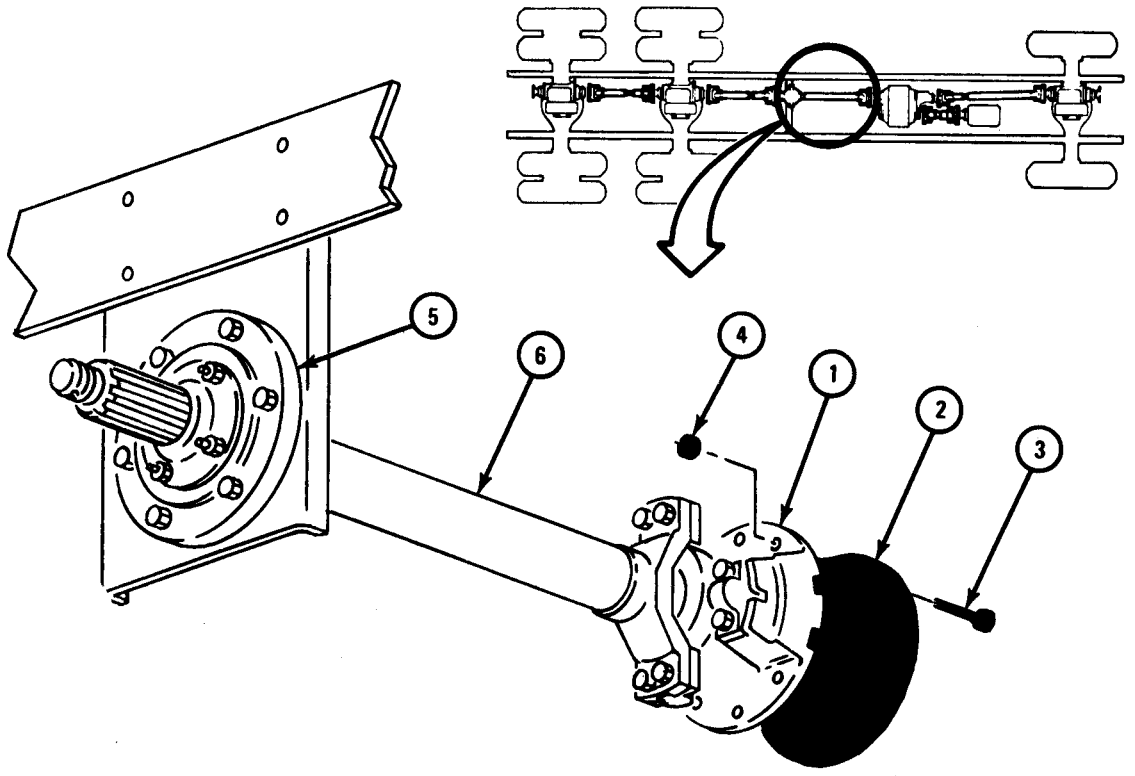
TA 053535

b. Replacement.

FRAME 1

1. Mate yoke adapter flange (1) with transfer case flange (2).
2. Put two screws (3) through holes in transfer case flange (2) and yoke adapter flange (1).
3. Screw on and hand tighten two nuts (4) to screws (3).
4. Slide center bearing assembly (5) onto propeller shaft (6).

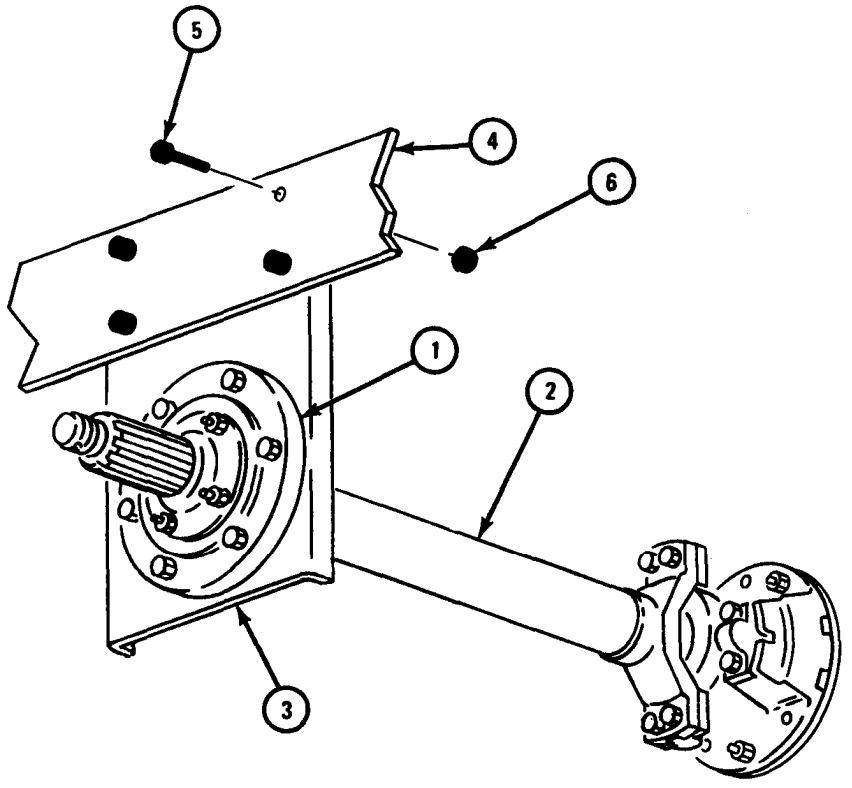
GO TO FRAME 2



FRAME 2

1. Raise center bearing assembly (1) and propeller shaft (2). Aline holes in center bearing bracket (3) with holes in frame crossmember (4).
2. Put four screws (5) in holes.
3. Screw on and hand tighten four nuts (6) to screws (5). Using torque wrench, tighten four screws and nuts to 32 to 40 pound-feet.

GO TO FRAME 3

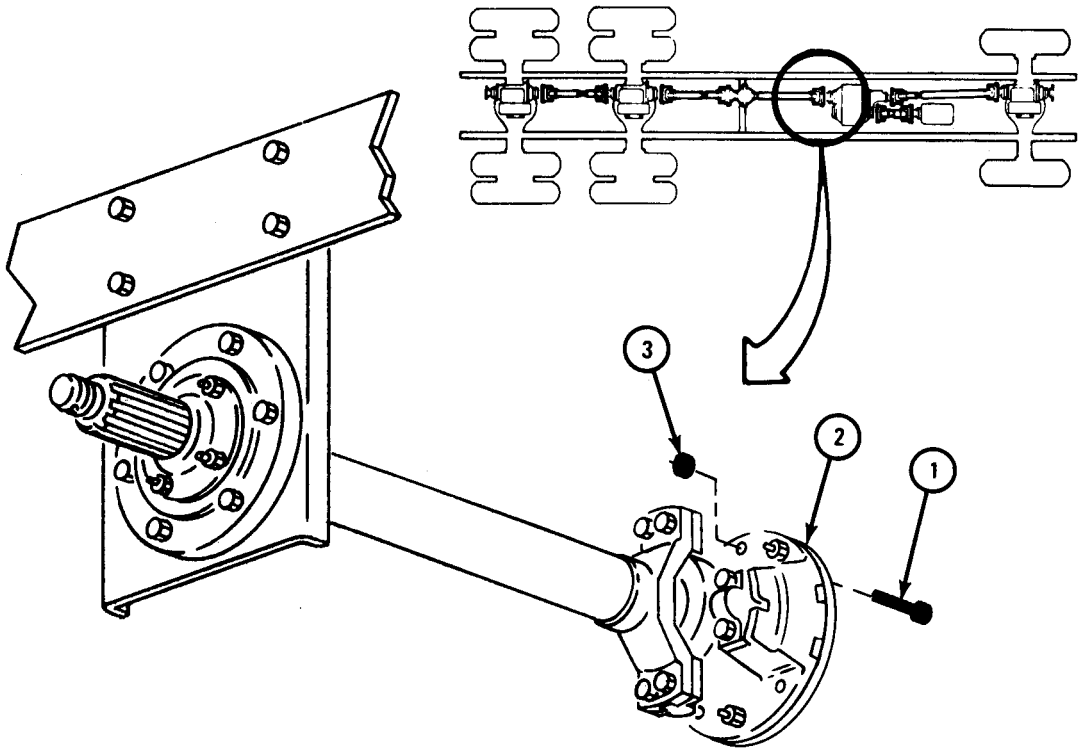


TA 053537

FRAME 3

1. Put six screws (1) through holes in transfer case flange (2).
2. Screw on six nuts (3) to screws (1).
3. Using torque wrench, tighten eight screws (1) and nuts (3) to 32 to 40 pound-feet.

GO TO FRAME 4

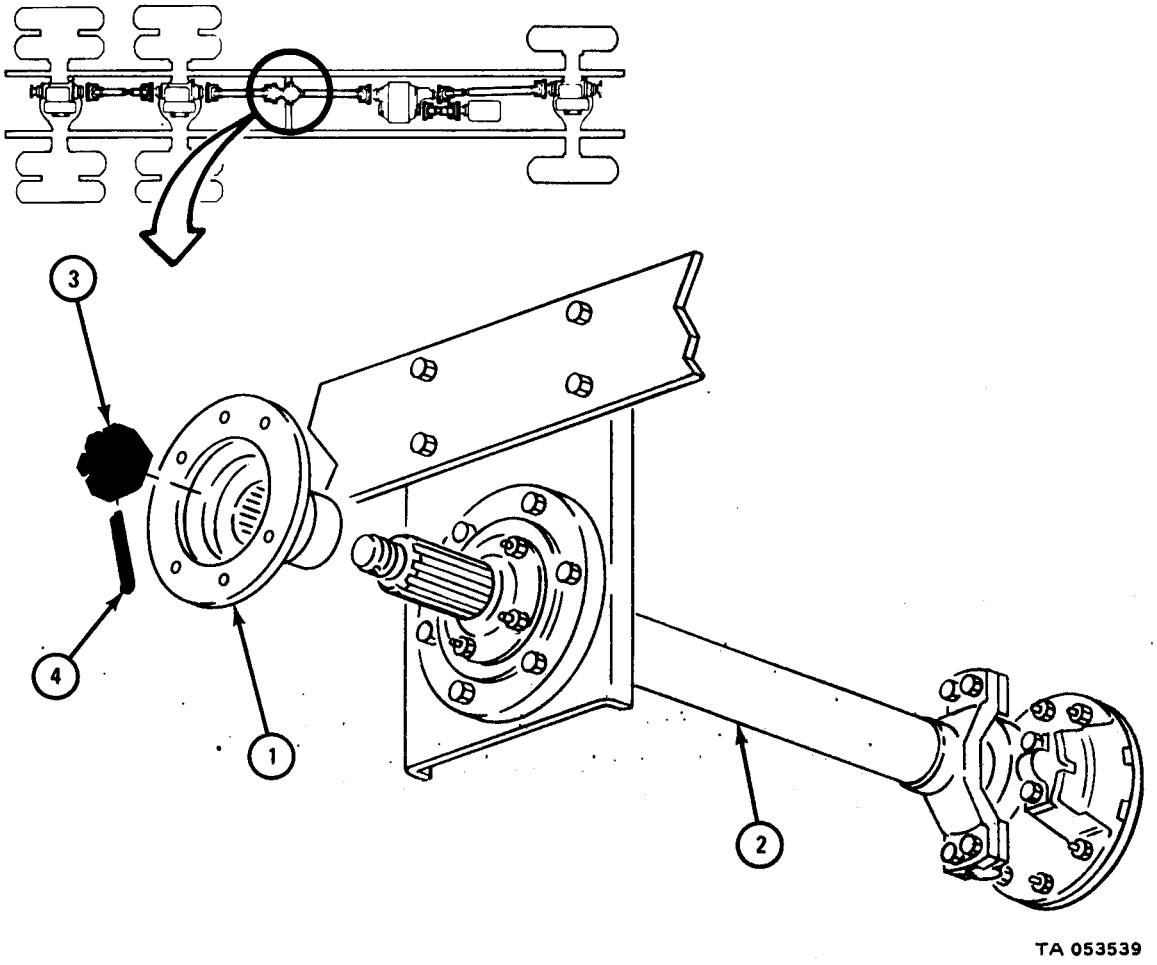


TA 053538

FRAME 4

1. Slide propeller shaft flange (1) onto splined end of propeller shaft (2).
2. Using 2 3/8-inch wrench, screw on and tighten nut (3) onto propeller shaft (2).
3. Aline holes in nut (3) and propeller shaft (2) and push cotter pin (4) through holes.
4. Using pliers, bend open ends of cotter pin (4).

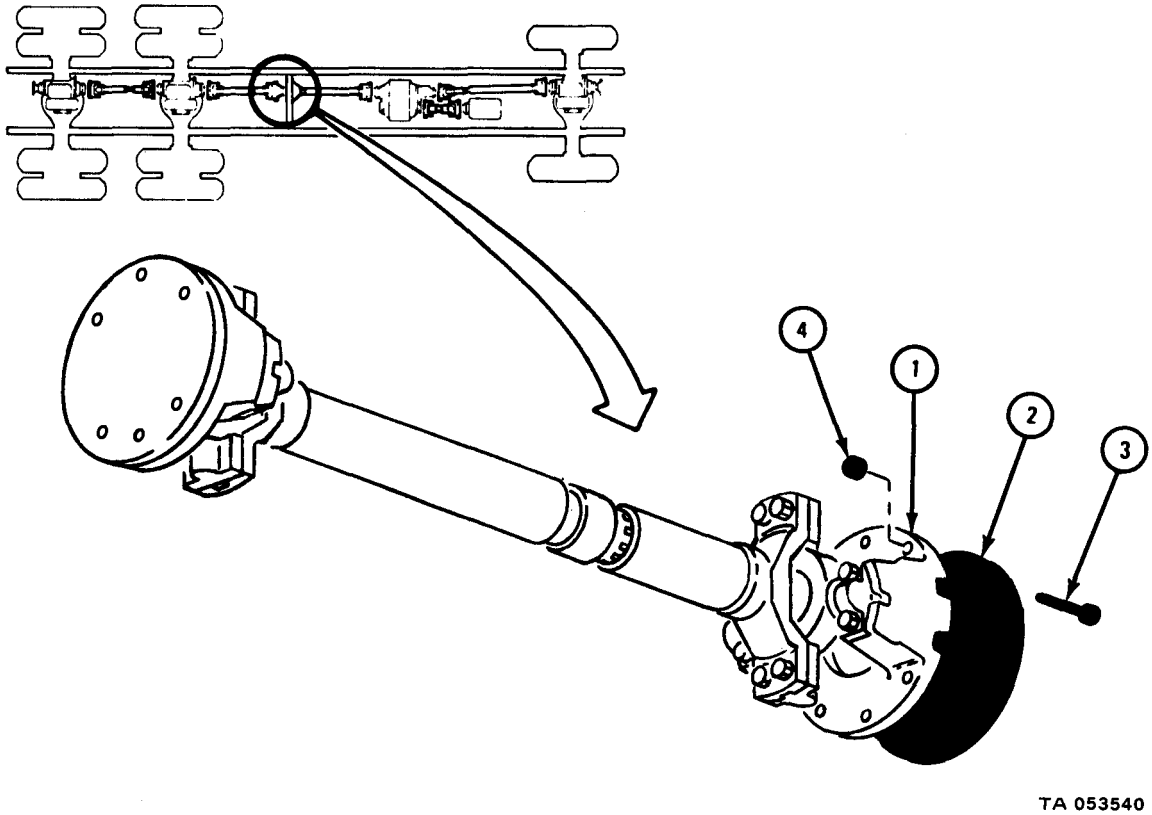
GO TO FRAME 5



FRAME 5

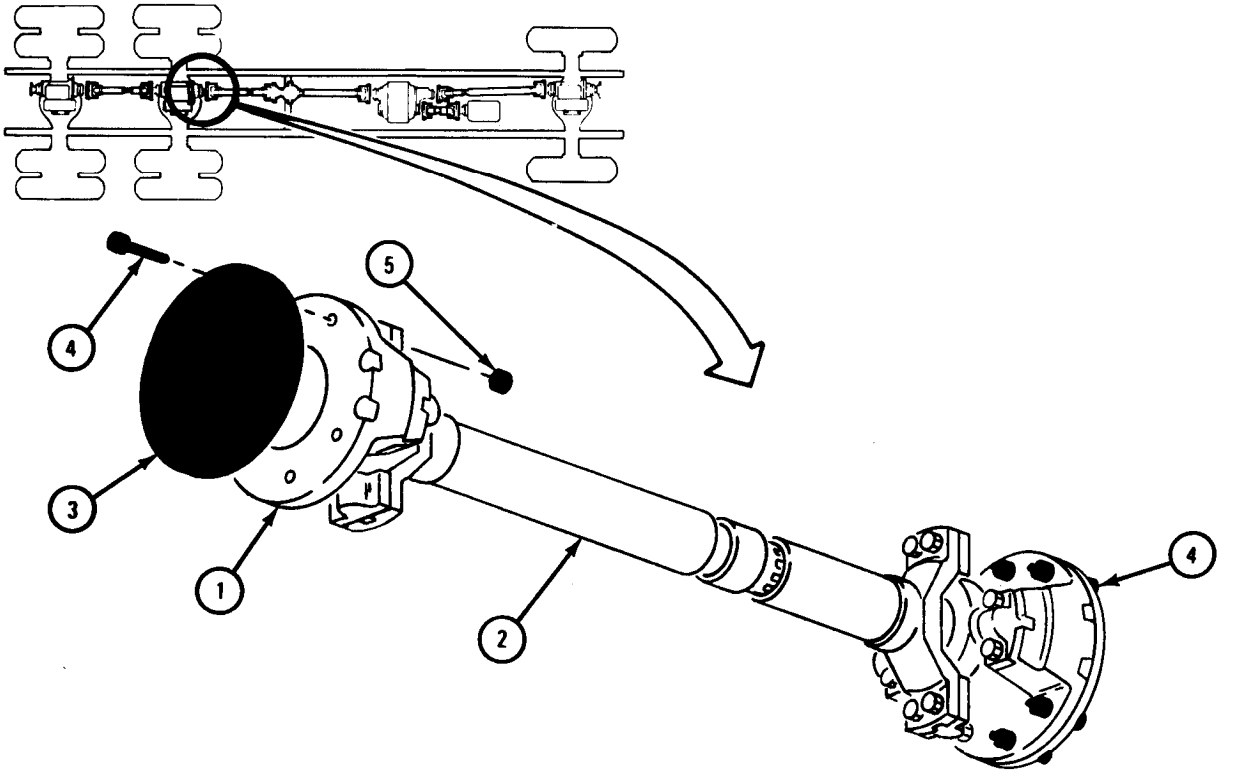
1. Mate slip yoke adapter flange (1) with propeller shaft flange (2).
2. Put eight screws (3) through holes in propeller shaft flange (2).
3. Screw on and hand tighten eight nuts (4) to screws (3).

GO TO FRAME 6



1. Mate yoke adapter flange (1) at other end of propeller shaft (2) with forward-rear axle flange (3).
2. Put eight screws (4) through holes in forward rear axle flange (3) and yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (5) onto screws (4).
4. Using torque wrench, tighten screws (4) on both ends of propeller shaft (2) to 32 to 40 pound-feet.
5. Jack down truck. Refer to para 10-3.

END OF TASK



10-9. DRIVESHAFT CENTER BEARING ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M55A2).

TOOLS: Torque wrench, 150 pound-feet capacity
Pliers
2 3/8-inch wrench
9/16-inch wrench (2)
3/4-inchwrench (2)

SUPPLIES: None

PERSONNEL: Two

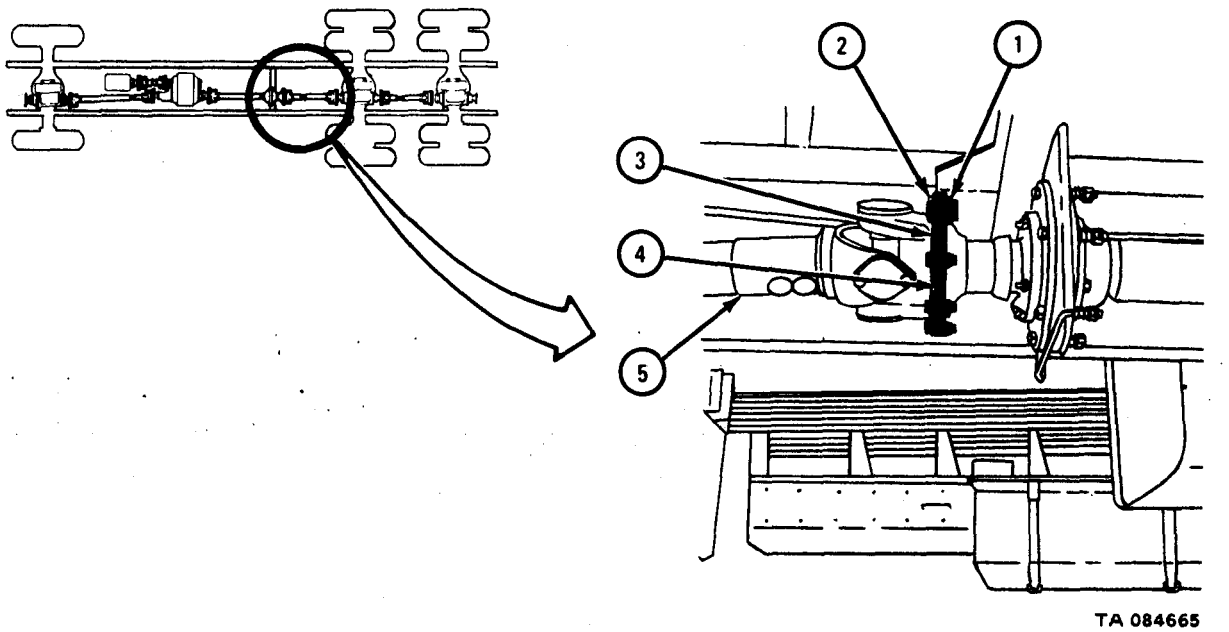
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 9/16-inch wrenches, unscrew and take off eight nuts (1) from screws (2) that hold propeller shaft yoke (3) to propeller shaft flange (4).
2. Take out eight screws (2) and drop down loose end of propeller shaft (5).

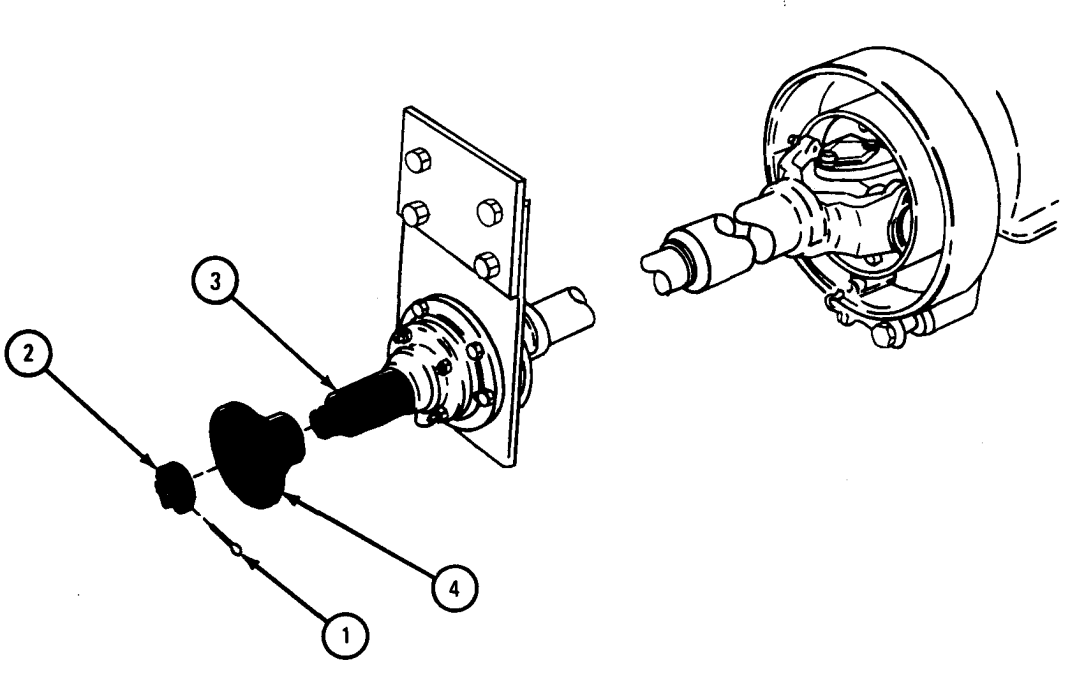
Go TO FRAME 2



FRAME 2

1. Using pliers, take out and throw away cotter pin (1).
2. Using 2 3/8-inch wrench, unscrew and take off nut (2) from propeller shaft (3) and take off propeller shaft flange (4).

GO TO FRAME 3

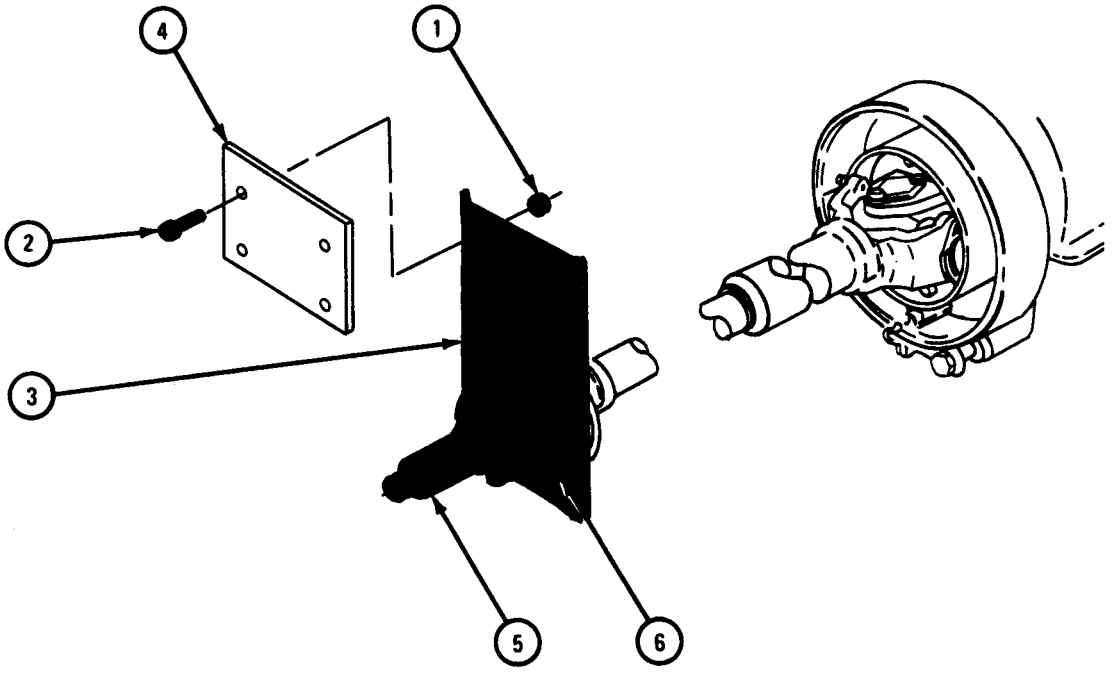


TA 084667

FRAME 3

1. Using 3/4-inch wrenches, unscrew four nuts (1) from screws (2) that hold center bearing bracket (3) to frame (4).
2. Lower propeller shaft (5) with bearing assembly (6).
3. Slide off bearing assembly (6).

END OF TASK



NOTE

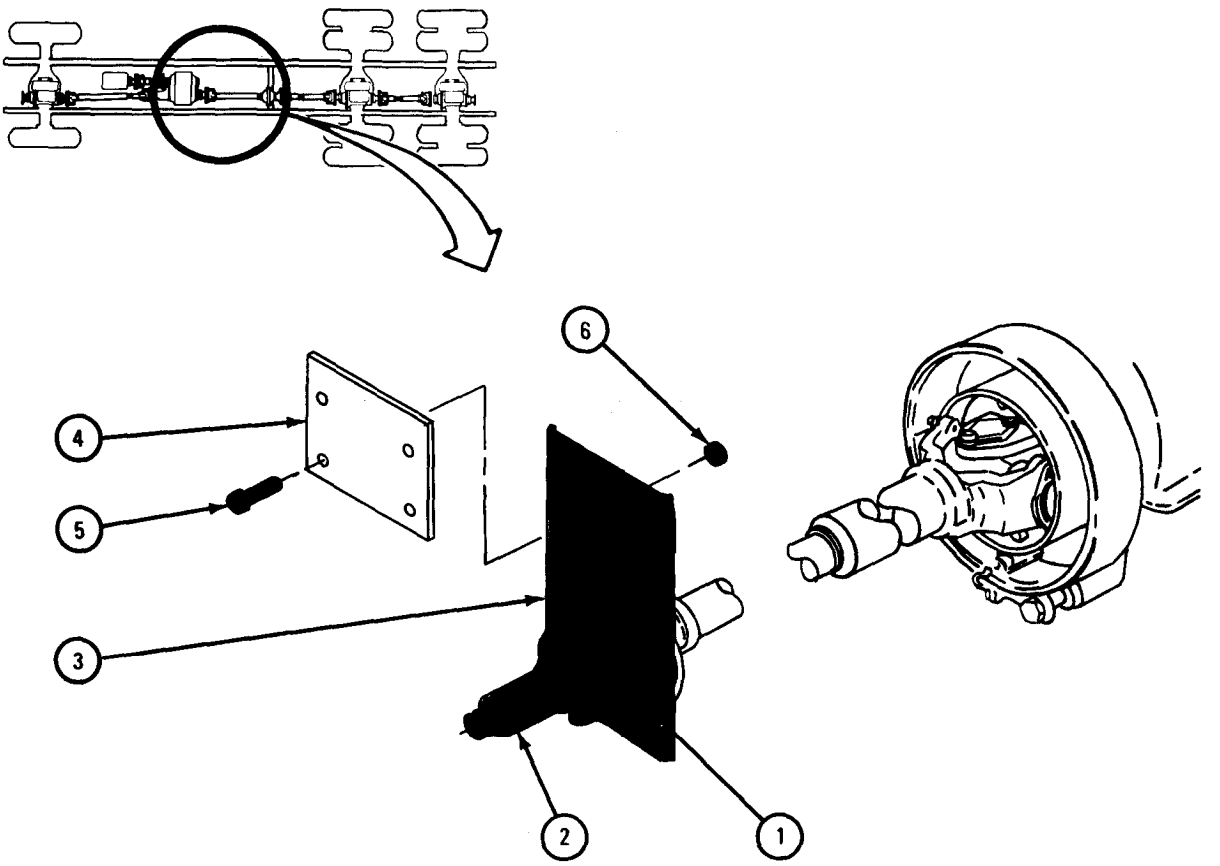
Make sure dust shield is on shaft (2) before sliding on center bearing (1).

b. Replacement.

FRAME 1

1. Slide center bearing (1) on to propeller shaft (2). Aline holes in center bearing bracket (3) with holes in frame crossmember (4).
2. Put in four screws (5) and screw on and hand tighten four nuts (6).
3. Using 3/4-inch wrench and torque wrench, hold four screws (5) and tighten nuts (6) to 32 to 40 pound-feet.

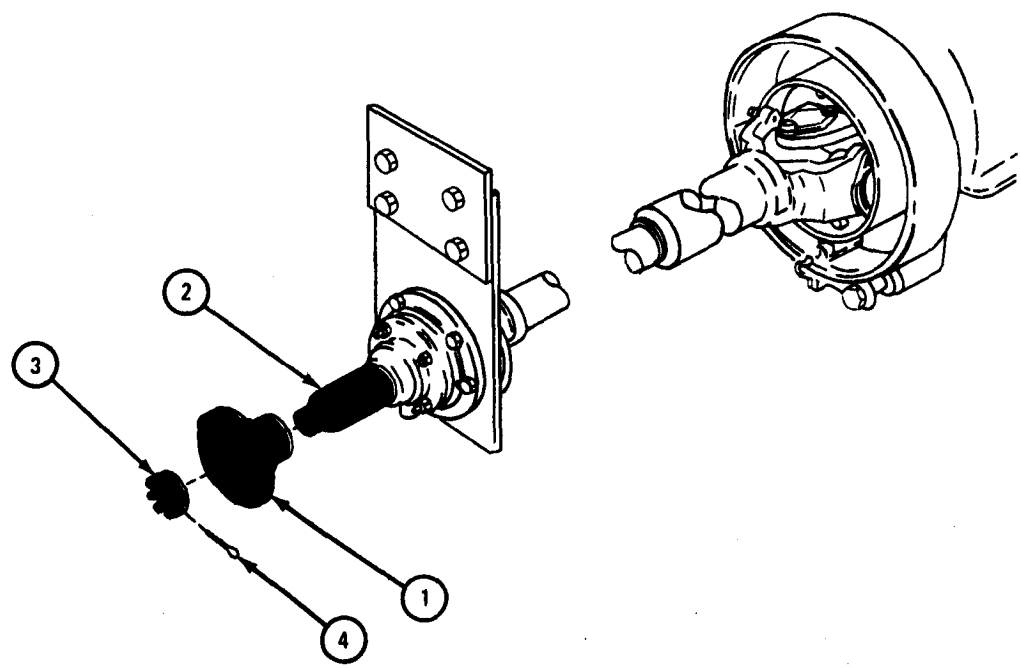
GO TO FRAME 2



FRAME 2

1. Slide flange (l) onto splined end of propeller shaft (2).
2. Using 2 3/8-inch wrench, screw on and tighten nut (3) onto propeller shaft (2).
3. Aline holes in nut (3) and propeller shaft (2) and put in cotter pin (4). Using pliers, bend open ends of cotter pin.

GO TO FRAME 3

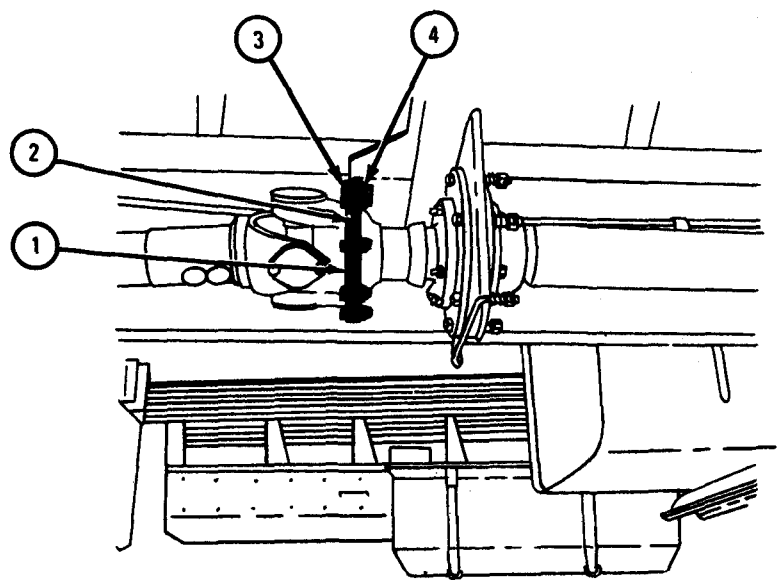


TA 084670

FRAME 3

1. Mate propeller shaft slip yoke (1) with propeller shaft flange (2).
2. Put eight screws (3) through holes in propeller shaft slip yoke (1) and propeller shaft flange (2).
3. Screw on and hand tighten eight nuts (4).
4. Using 9/16-inch wrench and torque wrench, hold eight screws (3) and tighten nuts (4) to 32 to 40 pound-feet.

END OF TASK



TA 084671

10-10. FORWARD REAR AXLE-TO-REAR REAR AXLE PROPELLER SHAFT REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inch wrench
Torque wrench, 150 pound-feet capacity

SUPPLIES: None

PERSONNEL: One

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

a. Removal.

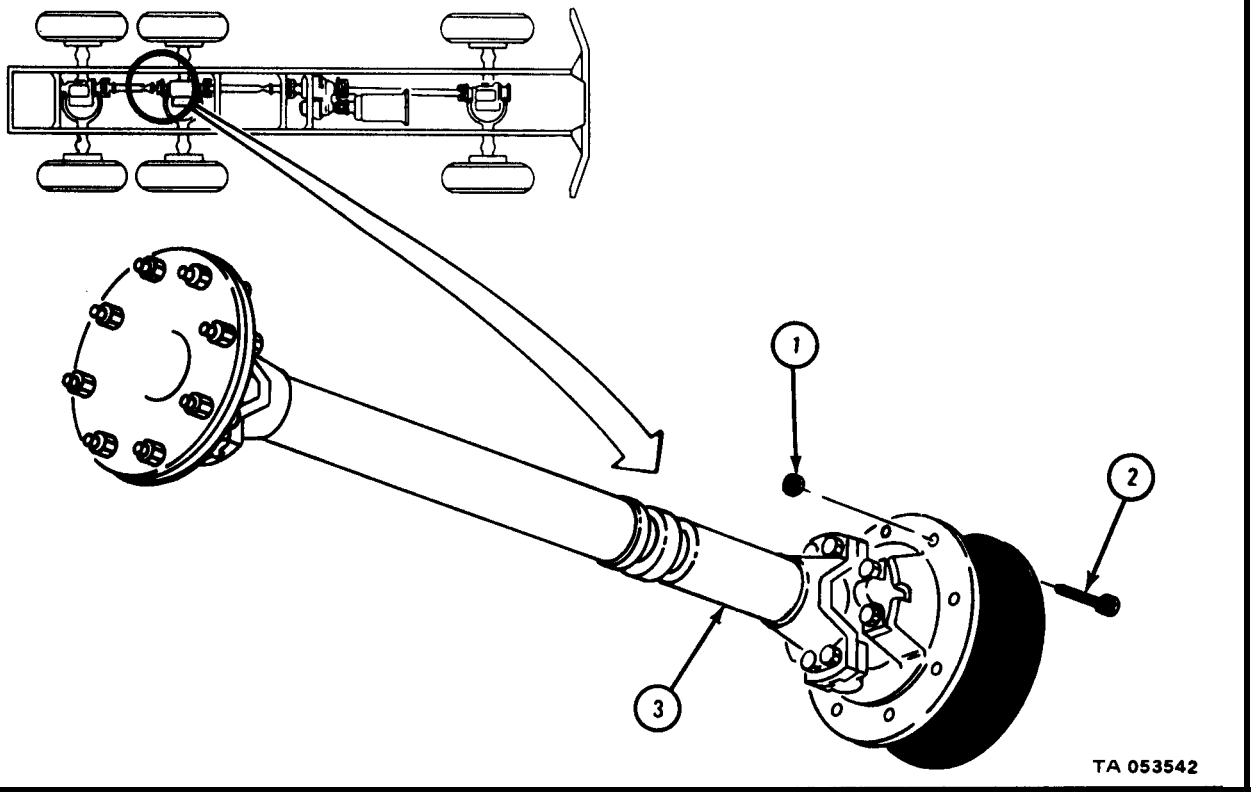
WARNING

Always jack up one wheel of the axle driven by propeller shaft being taken out. Refer to para 10-3. This is to keep personnel from being hurt by windup of shaft.

FRAME 1

1. Working under truck using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down loose end of propeller shaft (3).

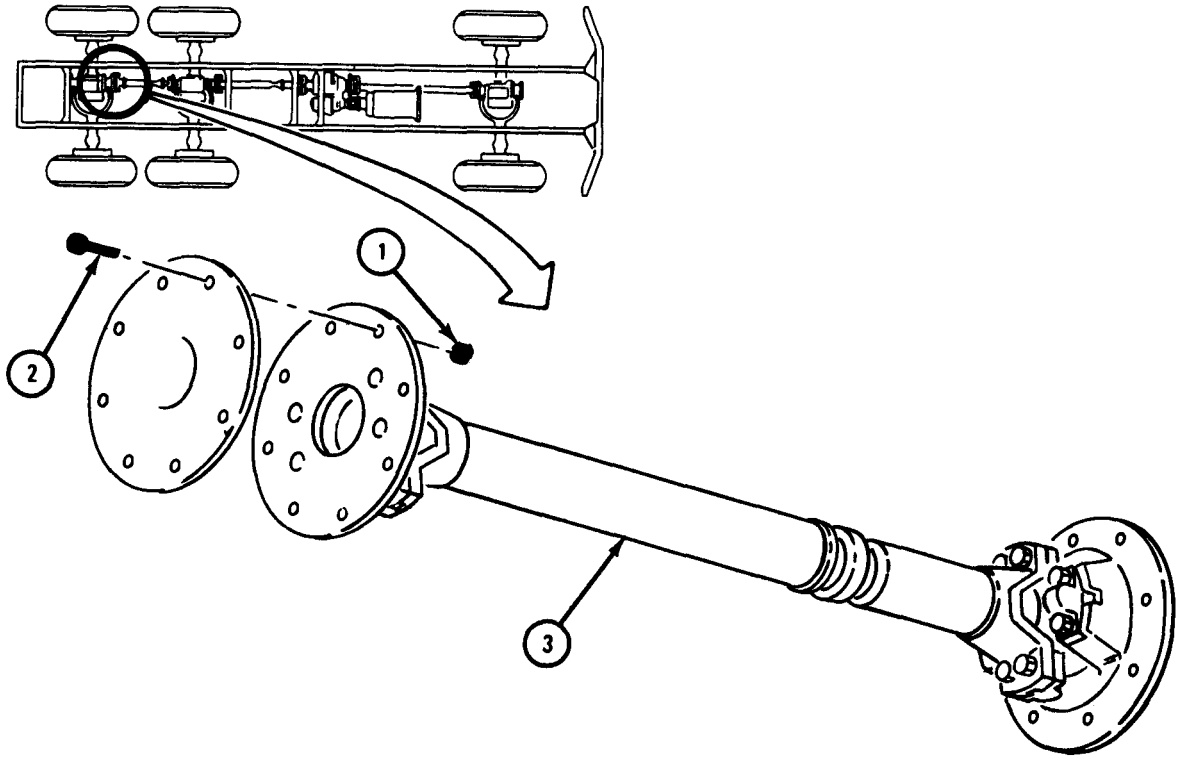
GO TO FRAME 2



FRAME 2

1. Using wrench, unscrew and take off eight nuts (1) from screws (2).
2. Take out eight screws (2) and drop down propeller shaft (3).

END OF TASK



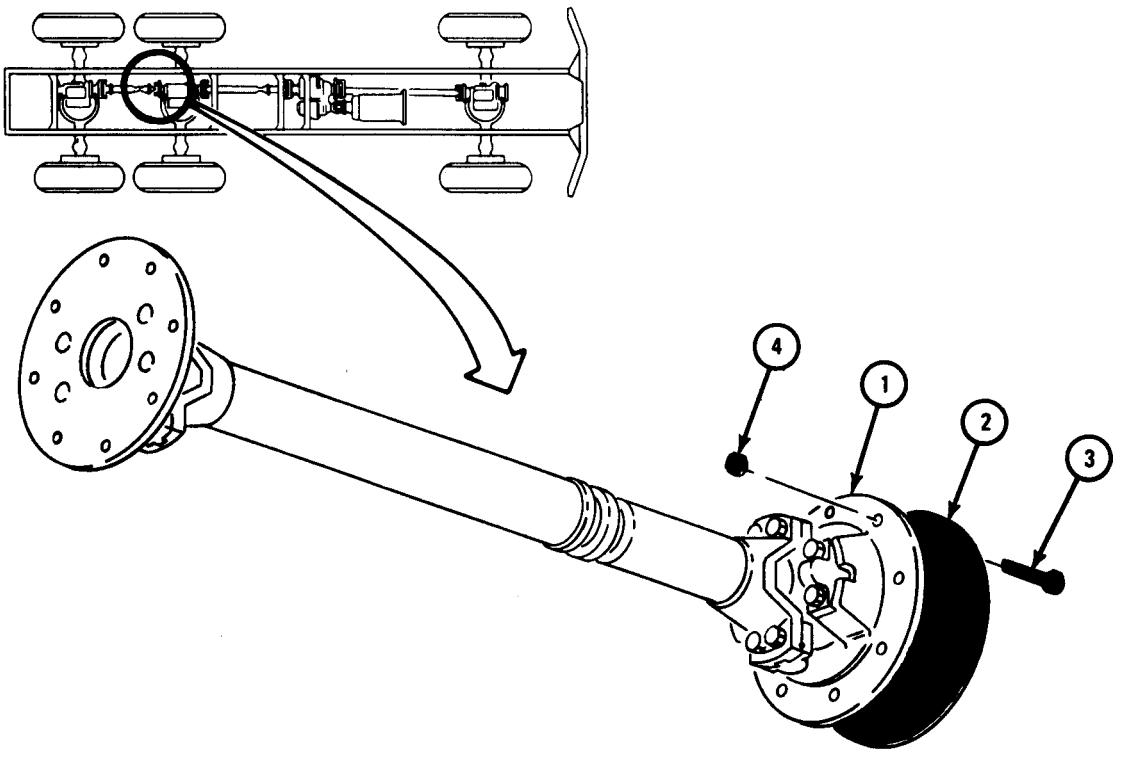
TA 053543

b. Replacement.

FRAME 1

1. Mate slip yoke adapter flange (1) with forward rear axle flange (2).
2. Put eight screws (3) through holes in forward rear axle flange (2) and slip yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (4) to screws (3).

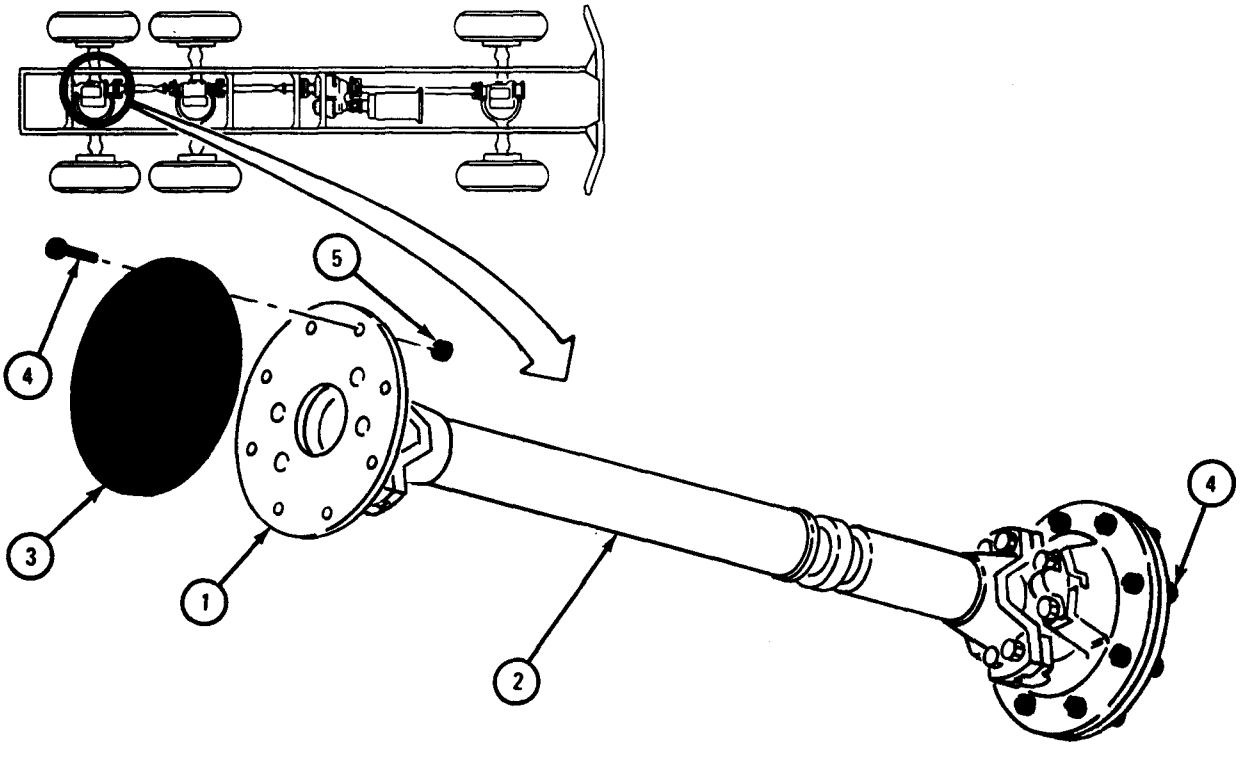
GO TO FRAME 2



FRAME 2

1. Mate yoke adapter flange (1) at other end of propeller shaft (2) with rear rear axle flange (3).
2. Put eight screws (4) through holes in rear rear axle flange (3) and yoke adapter flange (1).
3. Screw on and hand tighten eight nuts (5) to screws (4).
4. Using torque wrench, tighten screws (4) on both ends of propeller shaft (2) to 32 to 40 pound-feet.
5. Jack down truck. Refer to para 10-3.

END OF TASK



TA 053545

10-11. POWER TAKEOFF-TO-FRONT WINCH PROPELLER SHAFT REMOVAL AND REPLACEMENT (TRUCKS WITH FRONT WINCH).

TOOLS: l/4-inch sockethead screw key (Allen wrencher equivalent)
Drive punch
Pliers
Hammer
l/2-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

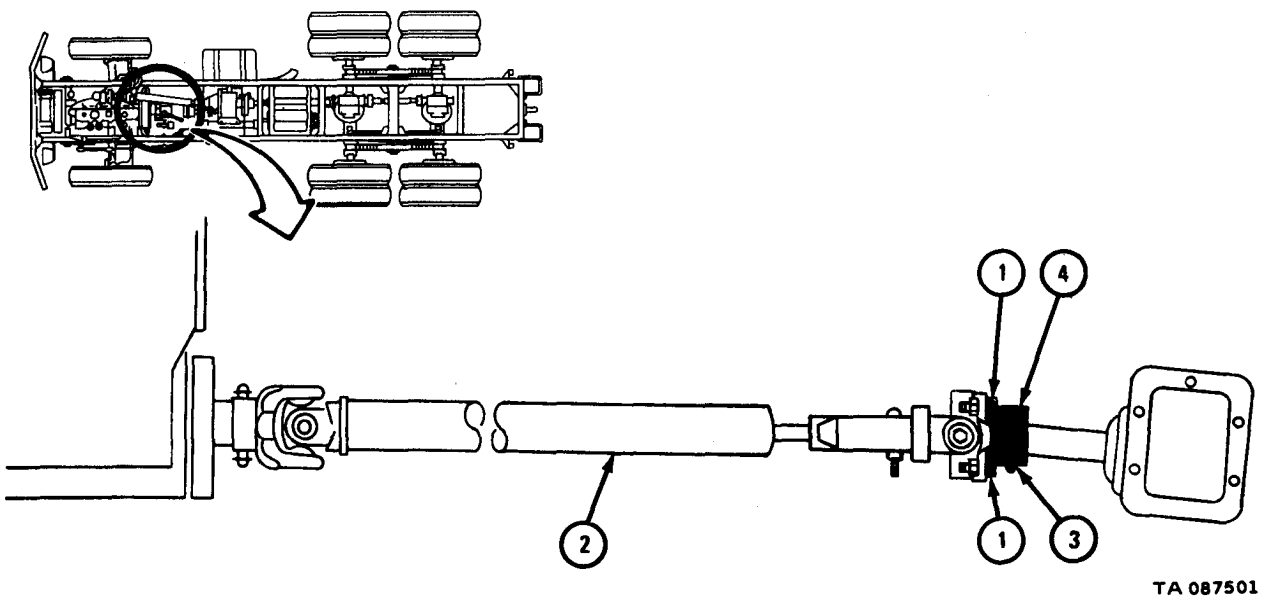
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

FRAME 1

1. Working under truck and using l/2-inch wrench, unscrew and take out four screws (1). Drop down end of propeller shaft (2).
2. Using l/4-inch allen wrench, loosen setscrew (3) and slide off universal joint yoke (4).

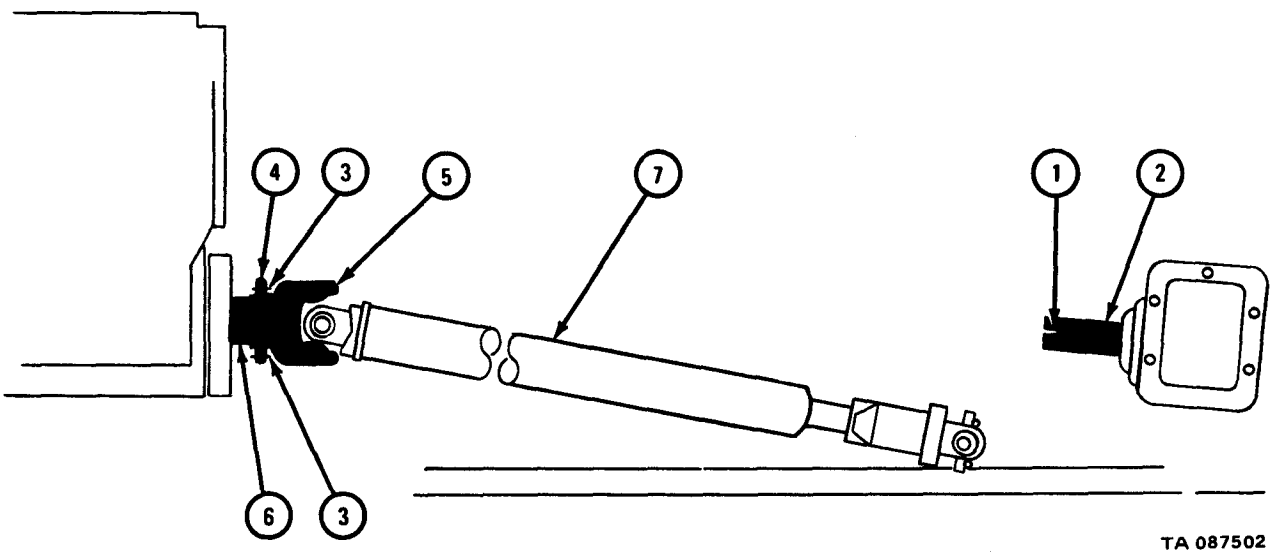
GO TO FRAME 2



FRAME 2

1. Take woodruff key (1) out of power takeoff shaft (2).
2. Using pliers, take out cotter pin (3) from winch input shaft shear pin (4). Throw cotter pin away.
3. Using drive punch and hammer, tap out shear pin (4) and slide off universal joint yoke (5) from winch input shaft (6).
4. Drop down propeller shaft (7) from truck.

END OF TASK

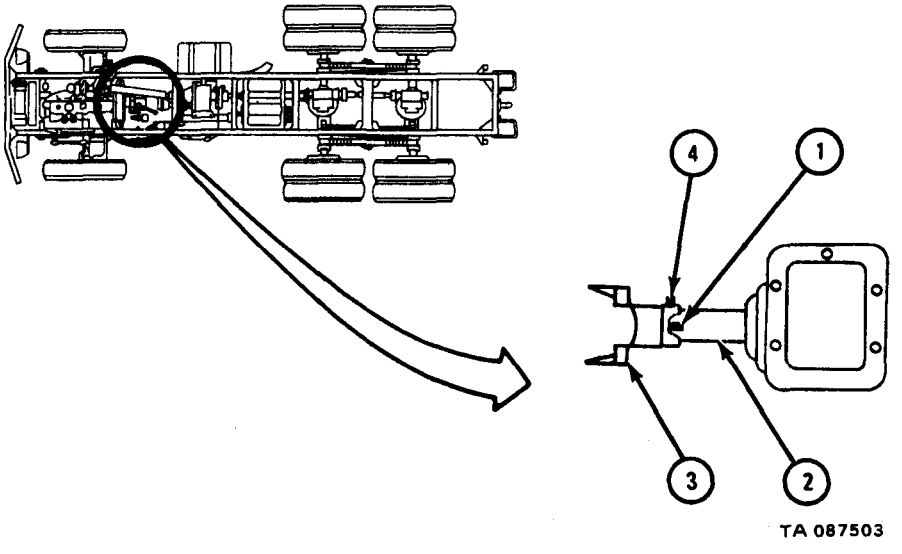


b. Replacement.

FRAME 1

1. Working under truck, put woodruff key (1) into power takeoff shaft (2).
2. Slide rear universal joint yoke (3) onto power takeoff shaft (2).
3. Using l/4-inch allen wrench, tighten setscrew (4).

GO TO FRAME 2



FRAME 2

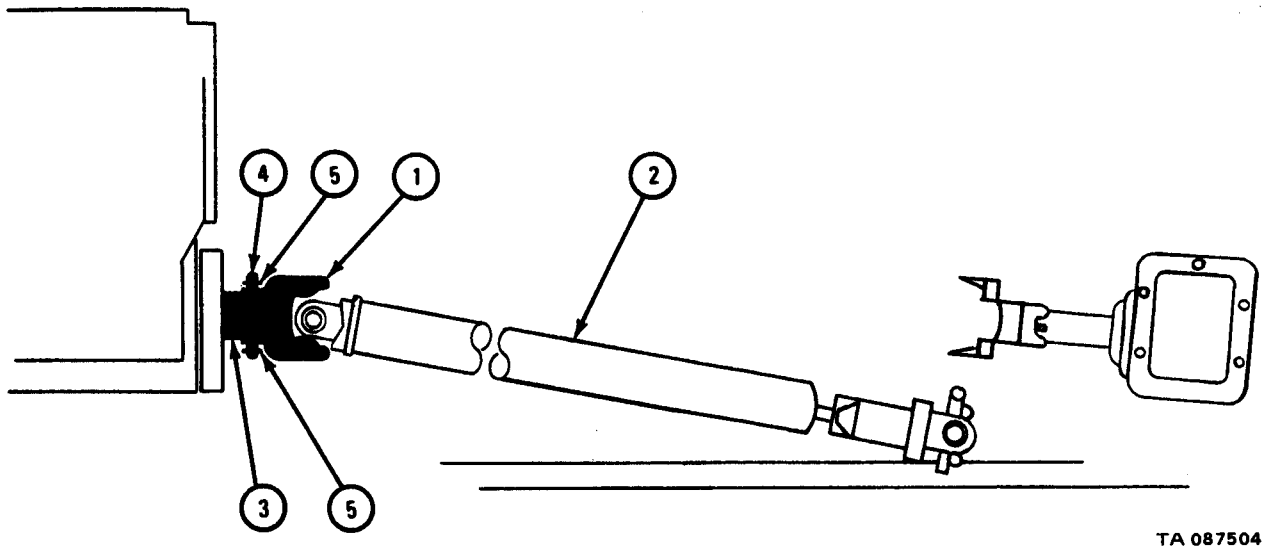
1. Slide front universal joint yoke (1) with propeller shaft (2) onto winch input shaft (3). Line up holes in universal joint yoke and winch input shaft.

CAUTION

Never use rivets, nails, or bolts instead of shear pin (4) or equipment may be damaged.

2. Push shear pin (4) through holes in universal joint yoke (1) and winch input shaft (3).
3. Push cotter pin (5) through hole in shear pin (4). Using pliers, bend open ends of cotter pin.

GO TO FRAME 3

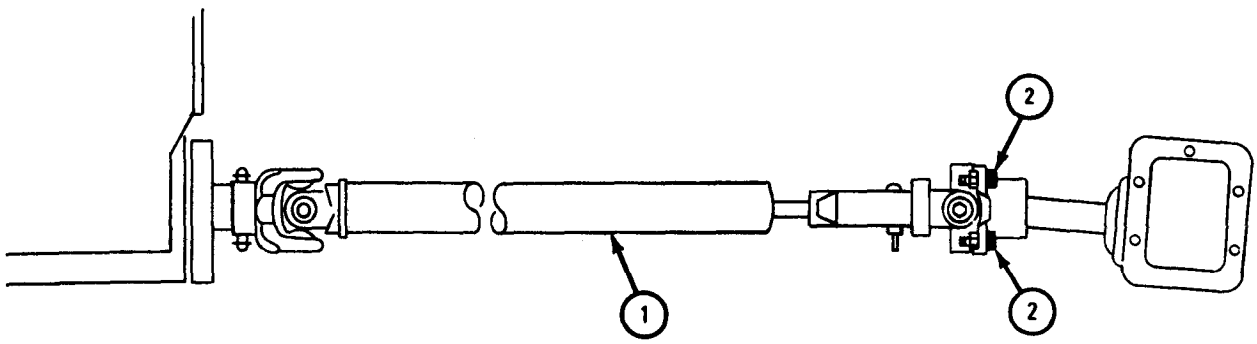


TA 087504

FRAME 3

1. Put propeller shaft (1) into place and aline screw holes.
2. Using 1/2-inch wrenches, screw in and tighten four screws (2).

END OF TASK



TA 087505

10-12. POWER DIVIDER-TO-REAR WINCH PROPELLER SHAFT REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS: General mechanic's tool kit
Rolling head prybar
Leather gloves
5-foot prybar
Torque wrench
150 pound-feet capacity

SUPPLIES: None

PERSONNEL: Two

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

a. Removal.

WARNING

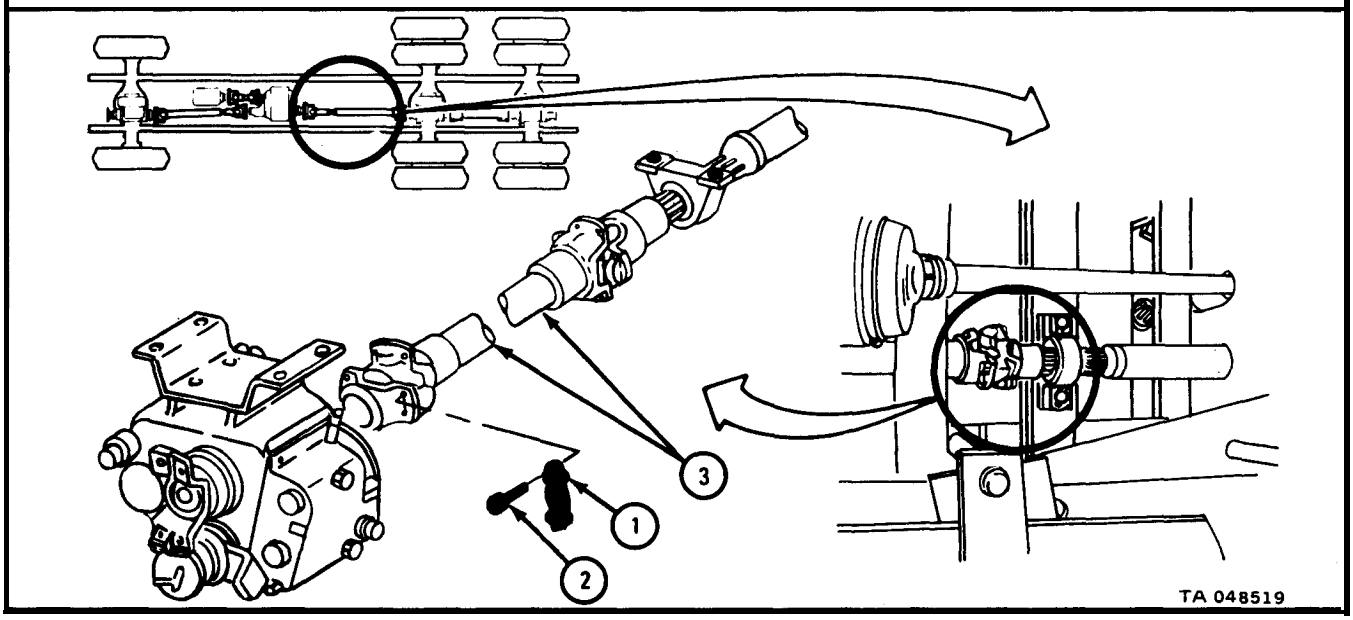
Always jack up one wheel of the axle driven by propeller shaft being taken out. Refer to para 10-3. This is to keep personnel from being hurt by windup of shaft.

(1) Front propeller shaft and universal joints.

FRAME 1

1. Working under truck with flat-tip screwdriver, open ends of two locking clips (1).
2. Using 1/2-inch wrench, unscrew and take out four screws (2). Take out two locking clips (1) and pull down front end of propeller shaft (3).

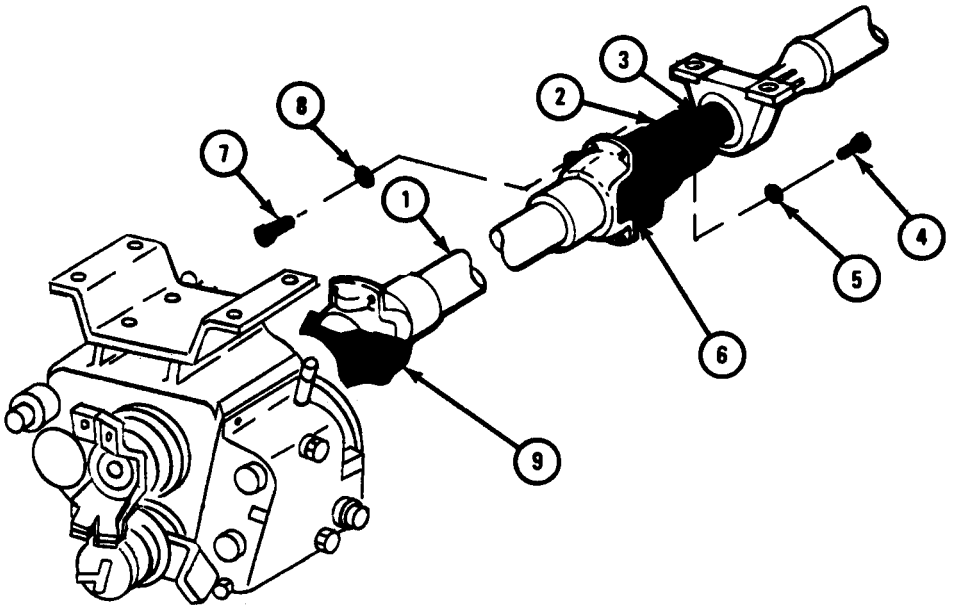
GO TO FRAME 2



FRAME 2

1. Pull front propeller shaft (1) toward front of truck.
2. Pull slip yoke (2) from rear propeller shaft splined end (3). Take out front propeller shaft (1).
3. Using 1/2-inch wrench, unscrew and take out four screws (4) and washers (5). Pull slip yoke (2) from universal joint (6).
4. Using 1/2-inch wrench, unscrew and take out four screws (7) and washers (8). Take off universal joint (6) from front propeller shaft (1).
5. Do step 4 again to take universal joint (9) from other end of front propeller shaft (1).

END OF TASK



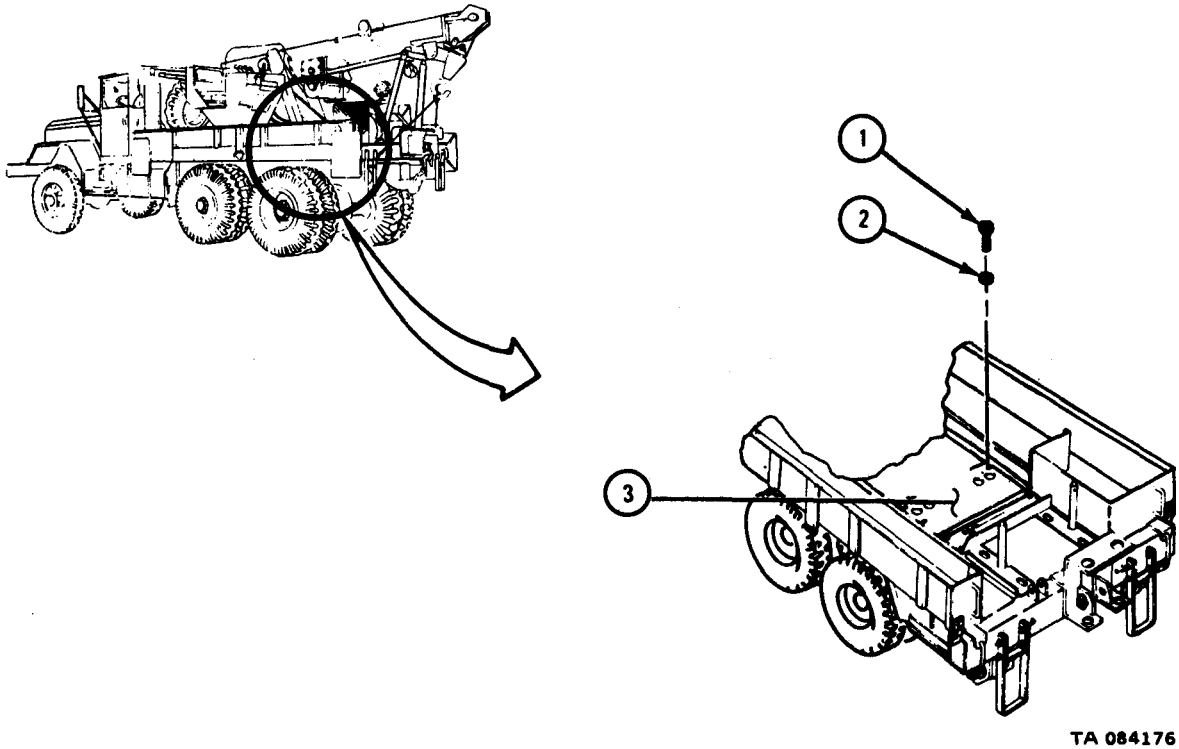
TA 048520

(2) Rear propeller shaft and universal joint.

FRAME 1

1. Using 9/16-inch wrench, **unscrew** and take out six screws (1) and washers (2).
2. Pull up floor plate (3).

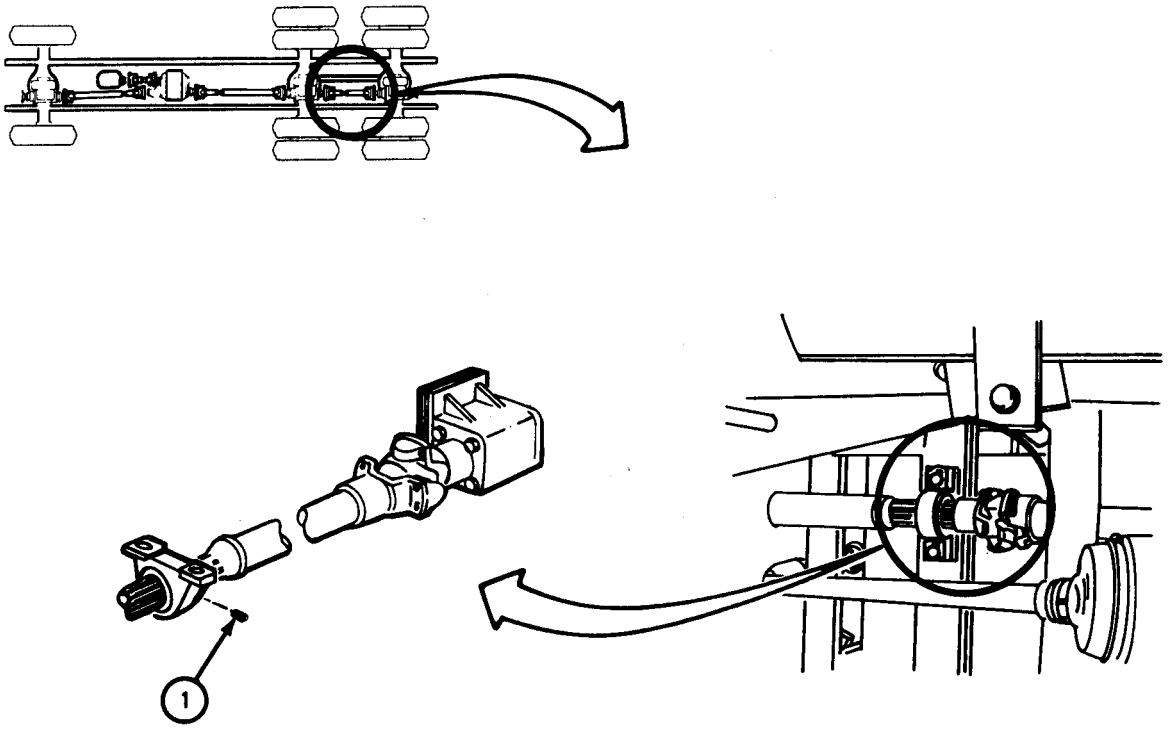
GO TO FRAME 2



FRAME 2

1. Working under truck using allen wrench, loosen two setscrews (1).

GO TO FRAME 3

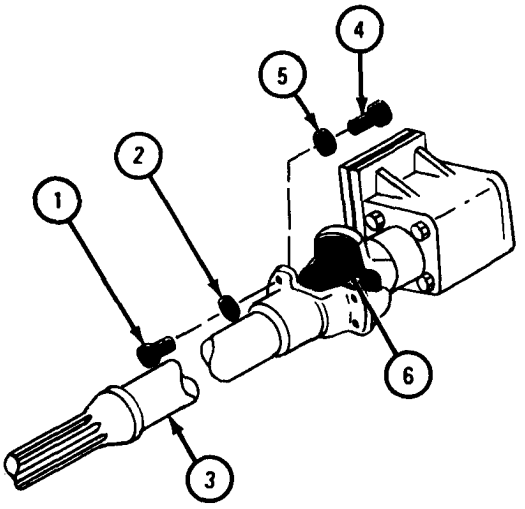


TA 048522

FRAME 3

1. Using 1/2-inch wrench, unscrew and take out four screws (1) and washers (2). Carefully drop down rear propeller shaft (3).
2. Using 1/2-inch wrench, unscrew and take out four screws (4) and washers (5). Take off universal joint (6).

GO TO FRAME 4

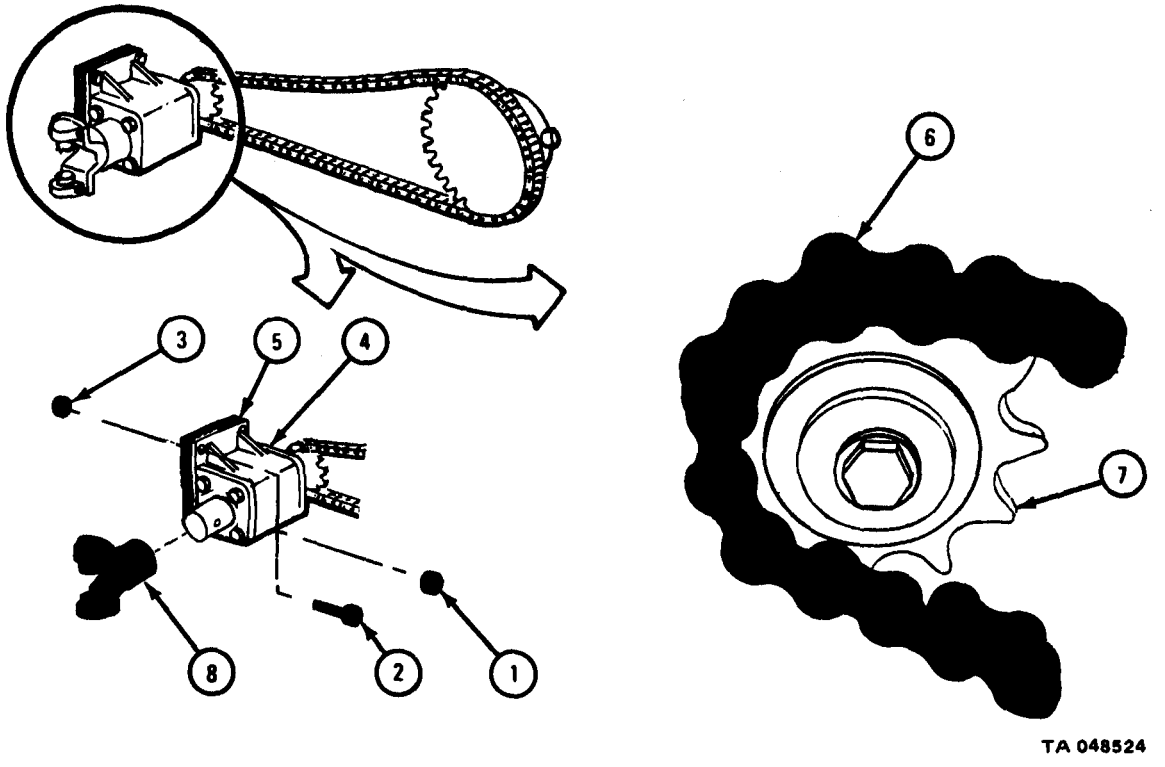


TA 089101

FRAME 4

1. Using 3/4-inch wrench, unscrew and take off two nuts (1).
2. Using 3/4-inch wrenches, unscrew and take off two bolts (2) and nuts (3).
3. Take out drive bearing assembly (4) with shims (5). Do not throw shims away.
4. Take chain (6) off sprockets (7).
5. Slide off yoke (8).

GO TO FRAME 5



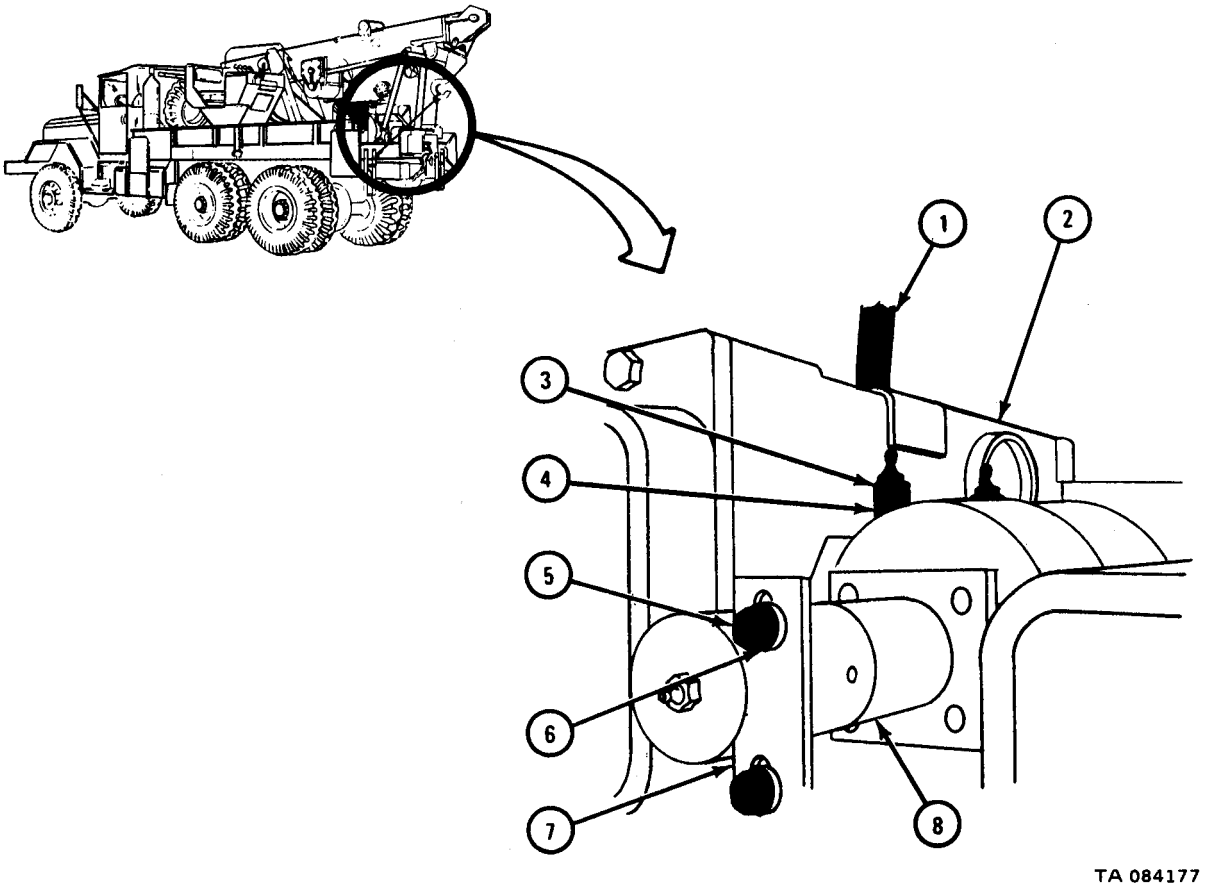
FRAME 5

WARNING

Always wear leather gloves when handling winch cable to protect hands. Never let cable run through hands. Broken or rusty wires can cause injury to personnel.

1. Pull cable (1) completely out of rear winch (2).
2. Using 7/16-inch wrench, unscrew and take out two grease fittings (3).
3. Using 9/16-inch wrench and 1/2-inch wrench, unscrew and take out two elbow adapters (4) and two bolts (5) with washers (6).
4. Take off roller shaft locking plate (7). Using rolling head prybar, pry loose and slide out upper horizontal guide roller shaft (8).

GO TO FRAME 6



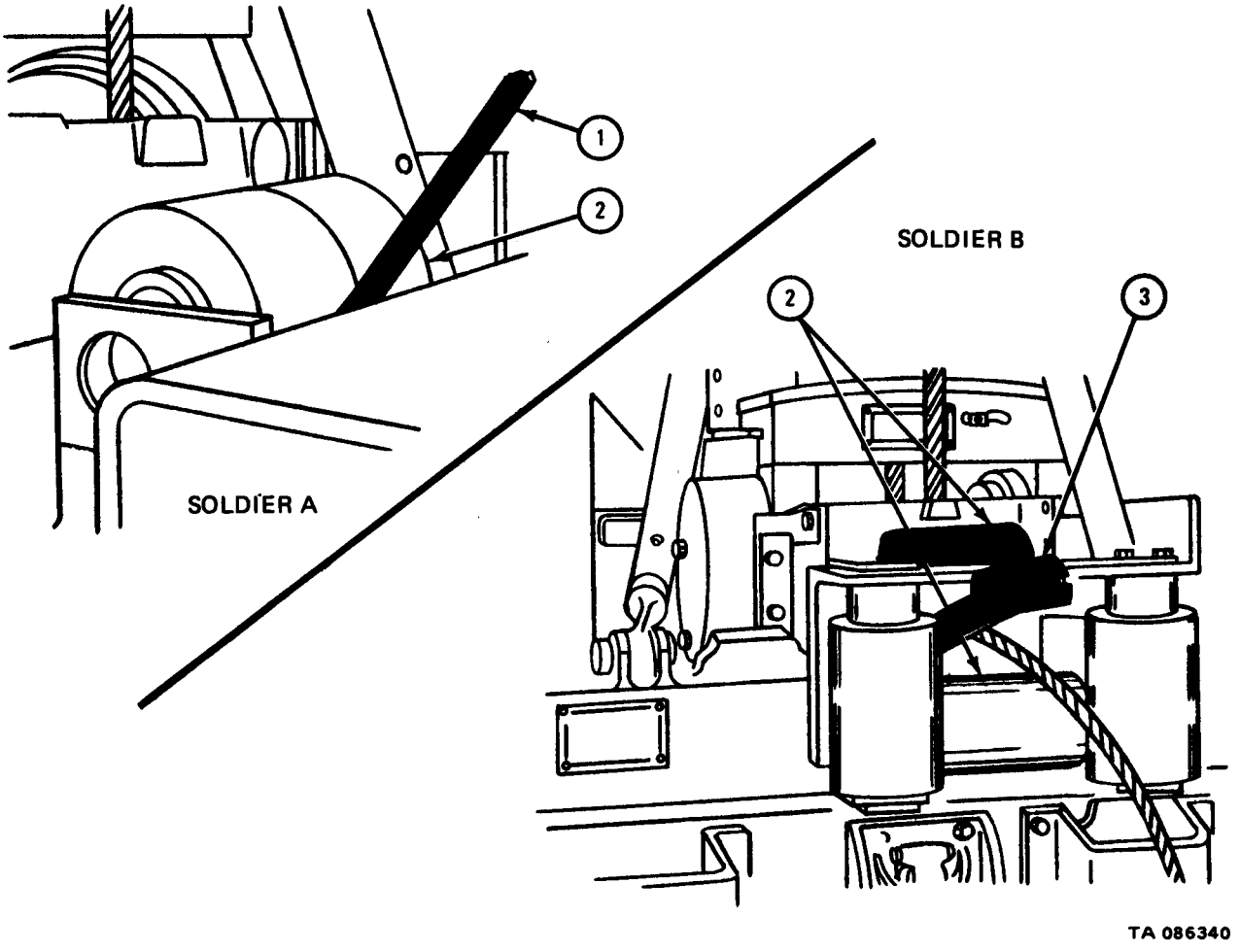
FRAME 6

Soldier A 1. Place five-foot prybar (1) between upper and lower horizontal guide rollers (2).

2. Push down on prybar (1) to raise upper horizontal guide roller (2).

Soldier B 3. From under truck, push propeller shaft (3) toward rear of truck between upper and lower horizontal guide rollers (2).

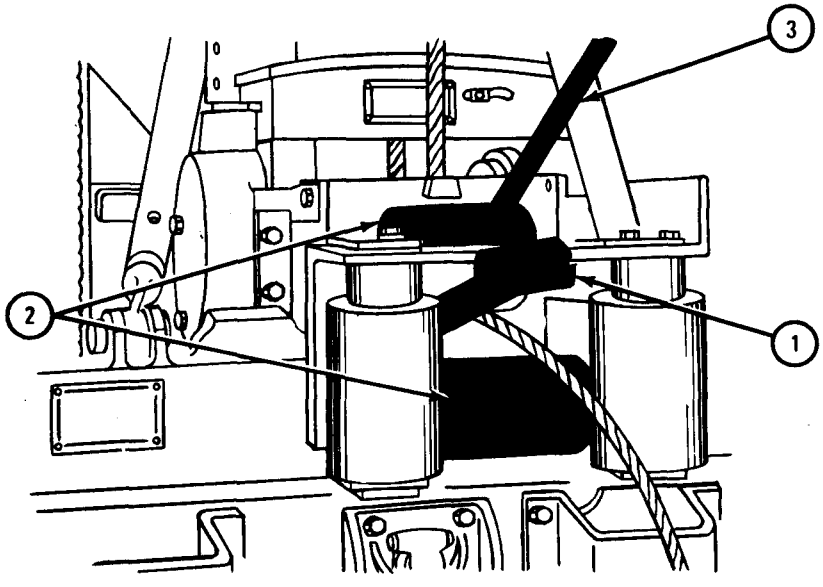
GO TO FRAME 7



FRAME 7

1. Pull propeller shaft (1) completely out from between upper and lower horizontal guide rollers (2).
2. Take out five-foot prybar (3) from between upper and lower horizontal guide rollers (2).

END OF TASK



TA 086341

b. Replacement.

(1) Rear propeller shaft and universal joint.

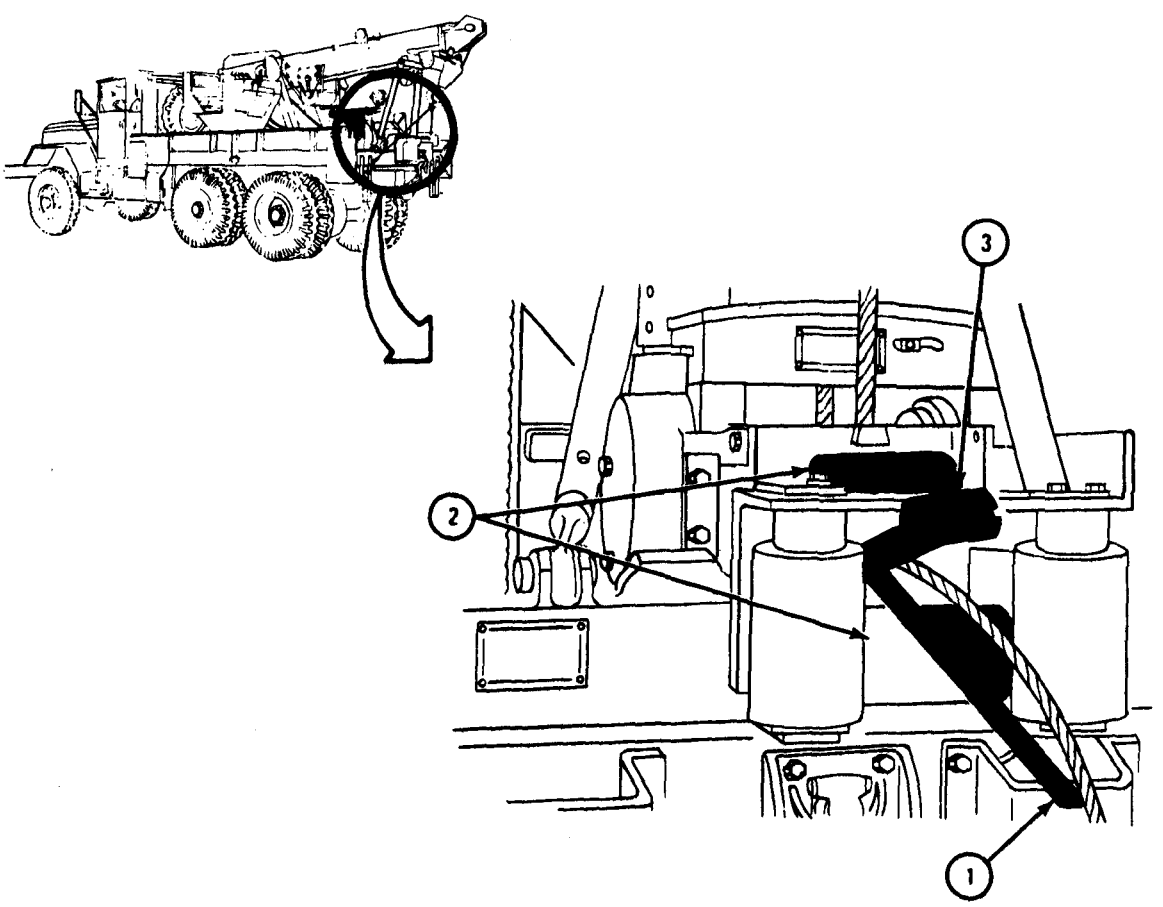
FRAME 1

Soldier A 1. Place five-foot prybar (1) between upper and lower horizontal guide rollers (2).

2. Push down on prybar (1) to raise upper horizontal guide roller (2).

Soldier B 3. Push propeller shaft (3) between upper and Iower horizontal guide rollers (2) toward front of truck.

GO TO FRAME 2



FRAME 2

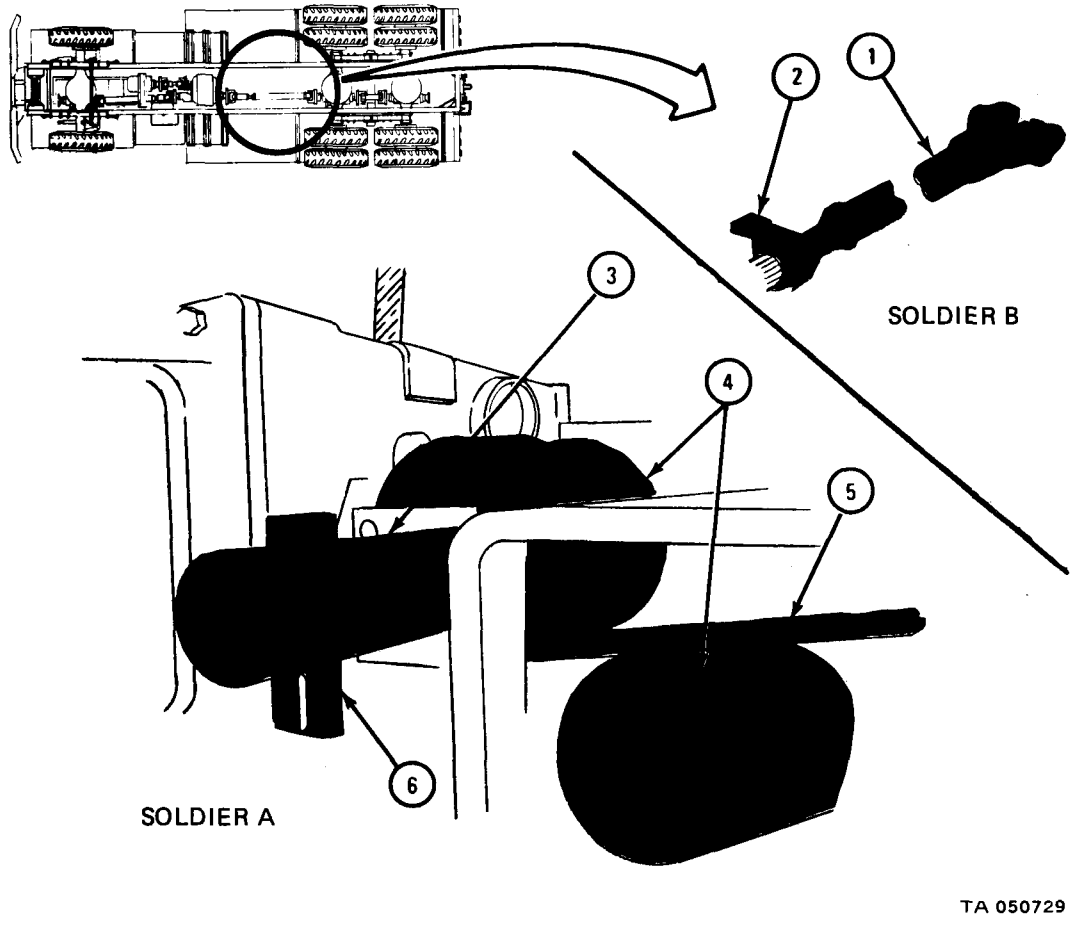
Soldier B 1. From under truck, pull propeller shaft (1) toward front of truck. Guide shaft into position and slide shaft into pillow block (2).

2. Slide roller shaft (3) into upper horizontal guide roller (4).

Soldier A 3. Take out prybar (5) from between upper and lower horizontal guide rollers (4).

4. Place roller shaft locking plate (6) in slot in roller shaft (3).

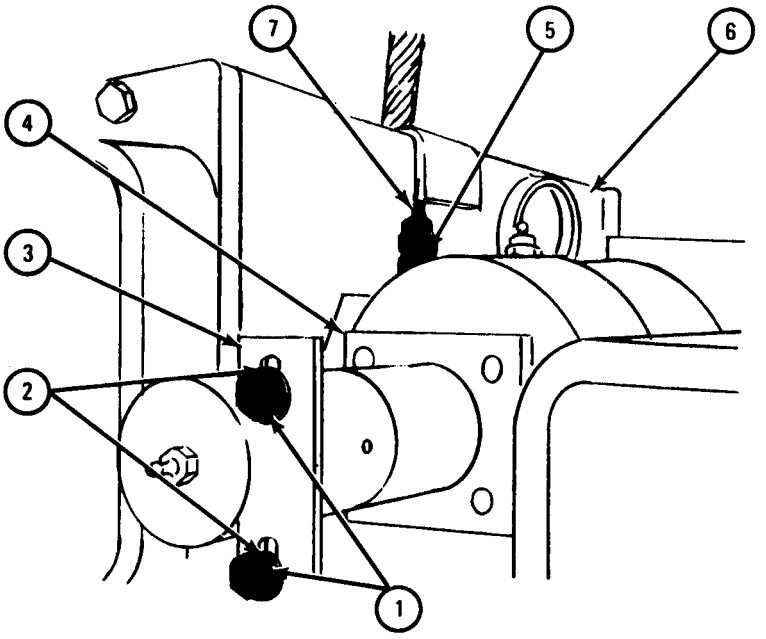
GO TO FRAME 3



FRAME 3

1. Using 9/16-inch wrench, screw two bolts (1) with washers (2) through roller shaft locking plate (3) into roller mounting bracket (4).
2. Using 9/16-inch wrench, screw two elbow adapters (5) into winch frame (6).
3. Using 1/2-inch wrench, screw two grease fittings (7) into elbow adapters (5)

GO TO FRAME 4

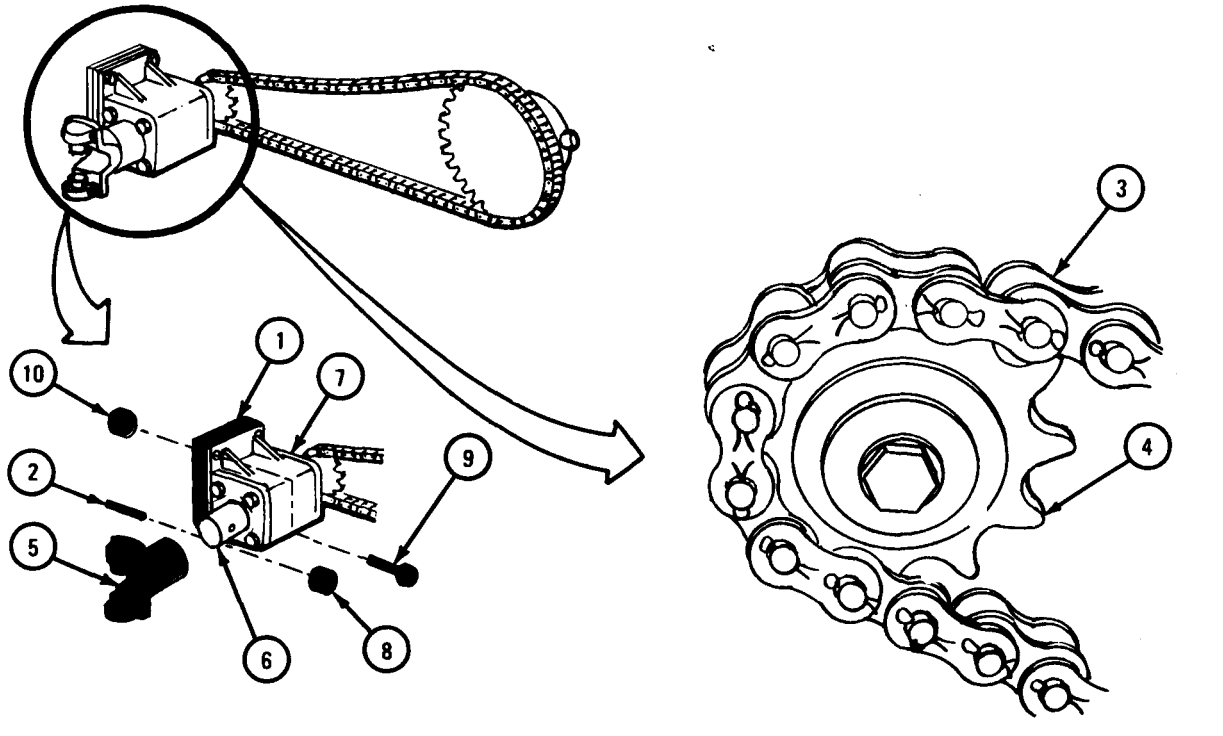


TA 050693

FRAME 4

1. Working under truck, place shims (1) on mounting studs (2).
2. Place chain (3) around sprockets (4).
3. Slide yoke (5) on shaft (6).
4. Place drive bearing assembly (7) on mounting studs (2).
5. Screw on and hand tighten two nuts (8) on mounting studs (2).
6. Screw in two bolts (9) and screw on and hand tighten two nuts (10).
7. Using torque wrench with 3/4-inch socket wrench, tighten nuts (8 and 10) to 44 to 61 pound-feet.

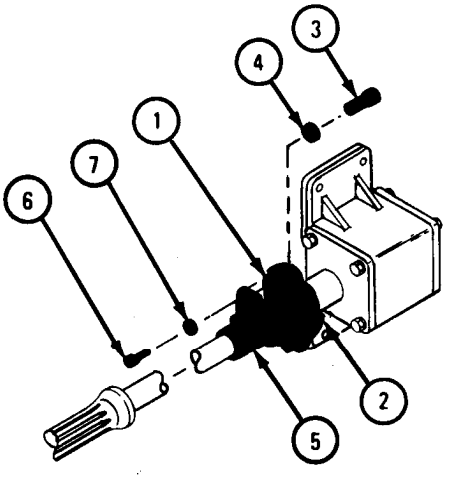
GO TO FRAME 5



FRAME 5

1. Put universal joint (1) into place on yoke (2) and aline screw holes.
2. Using 1/2-inch wrench, screw in and tighten four screws (3) with washers (4).
3. Mate universal joint (2) with rear propeller shaft yoke (5).
4. Using 1/2-inch wrench, screw in and tighten four screws (6) with washers (7) through rear propeller shaft yoke (5) into universal joint (2).

GO TO FRAME 6



TA 089102

FRAME 6

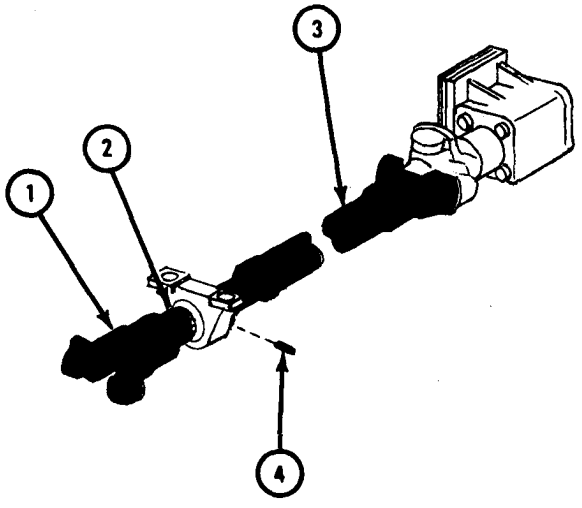
1. Mate rear propeller shaft slip yoke (1) with splined end (2) of rear propeller shaft (3).

NOTE

Rear propeller shaft slip yoke (1) must be in line with yoke on drive bearing assembly.

2. Using allen wrench, tighten setscrew (4).

GO TO FRAME 7



TA 050697

FRAME 7

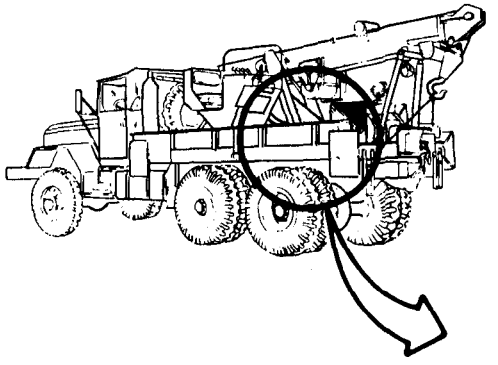
1. Place rear floor plate (1) in position.
2. Line up holes in rear floor plate (1) with holes in truck frame. Screw in six screws (2) with washers (3) through holes in plate into truck frame.
3. Using 9/16-inch wrench, tighten screws (2).

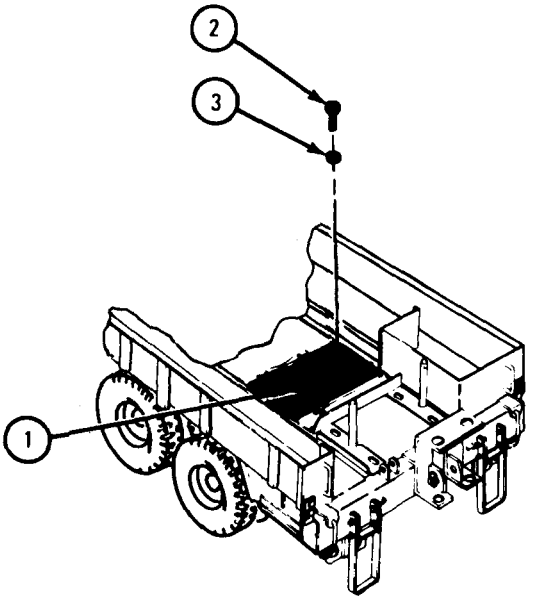
NOTE

Follow-on Maintenance Action Required:

Jack down wheel. Refer to para 10-3.

END OF TASK





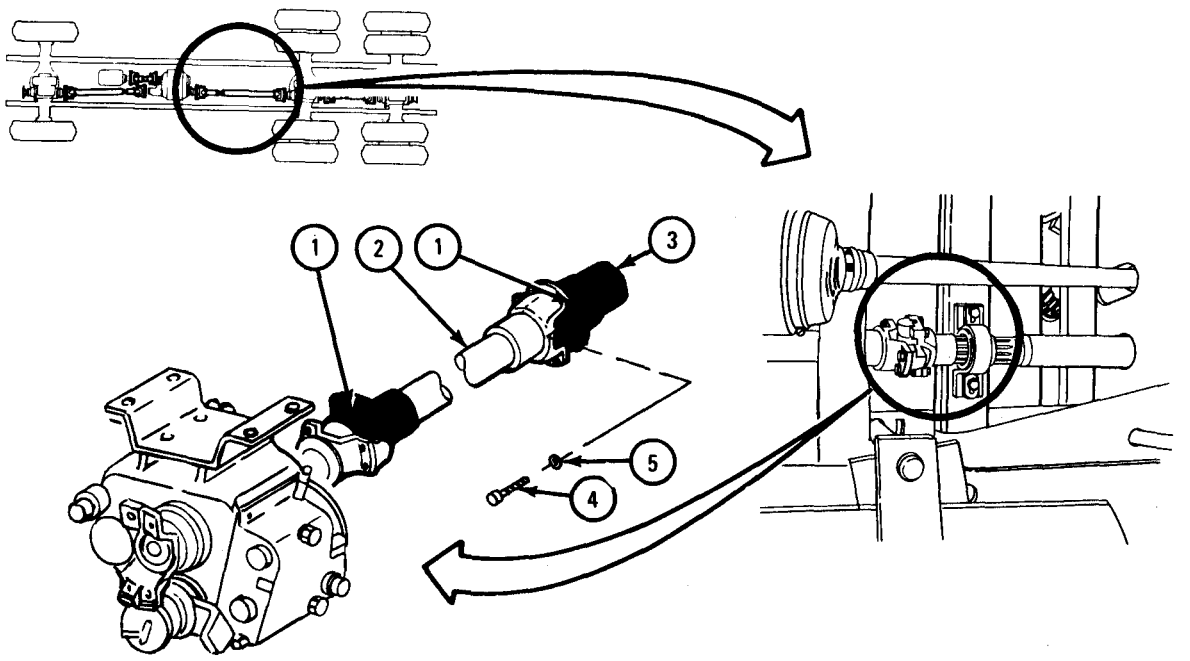
TA 084180

(2) Front propeller shaft and universal joint.

FRAME 1

1. Slide universal joint (1) onto each end of front propeller shaft (2).
2. Mate rear propeller shaft slip yoke (3) with rear universal joint (1).
3. Using l/2-inch wrench, screw in and tighten four screws (4) with washers (5) through holes in rear universal joint (1).

GO TO FRAME 2



TA 050699

FRAME 2

1. Slide rear propeller shaft slip yoke (1) onto splined end (2) of rear propeller shaft (3).

NOTE

Make sure universal joints are in line.

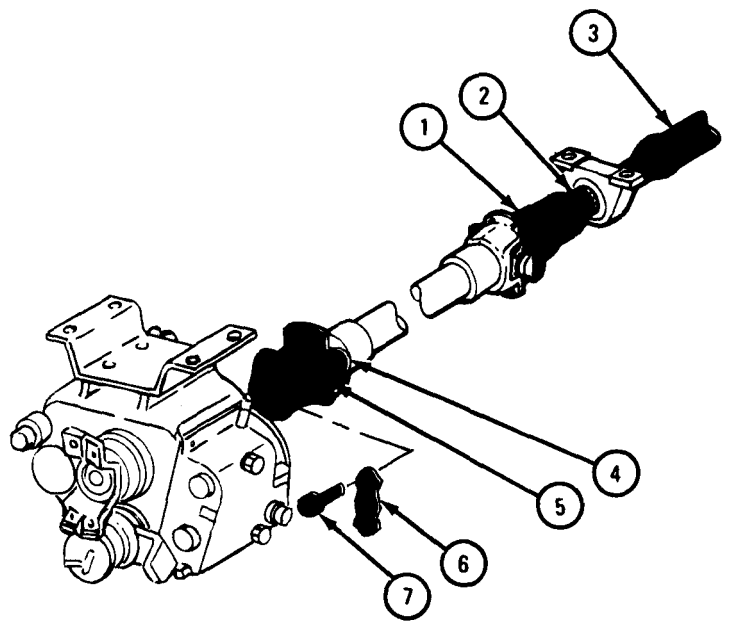
2. Mate front universal joint (4) with power divider output shaft yoke (5).
3. Put on two locking clips (6).
4. Using 1/2-inch wrench, screw in and tighten four screws (7) through holes in front universal joint (4).

NOTE

Follow-on Maintenance Action Required:

1. Jack down wheel. Refer to para 10-3.
2. Wind cable on rear winch. Refer to TM 9-2320-211-10.

END OF TASK



TA 050700

10-13. POWER DIVIDER-TO-BEVEL GEARCASE PROPELLER SHAFT REMOVAL AND REPLACEMENT (TRUCK M543A2).

TOOLS:
- l/2-inch wrench
- 9/16-inch wrench
- Pliers
- No. 3 cross-tip screwdriver (Phillips type)
- Flat-tip screwdriver
- Hammer
- 9/16-inch ratchet
- 10-inch extension
- 15/16-inch wrench (2)
- Chisel
- Hoist

SUPPLIES: None

PERSONNEL: Two

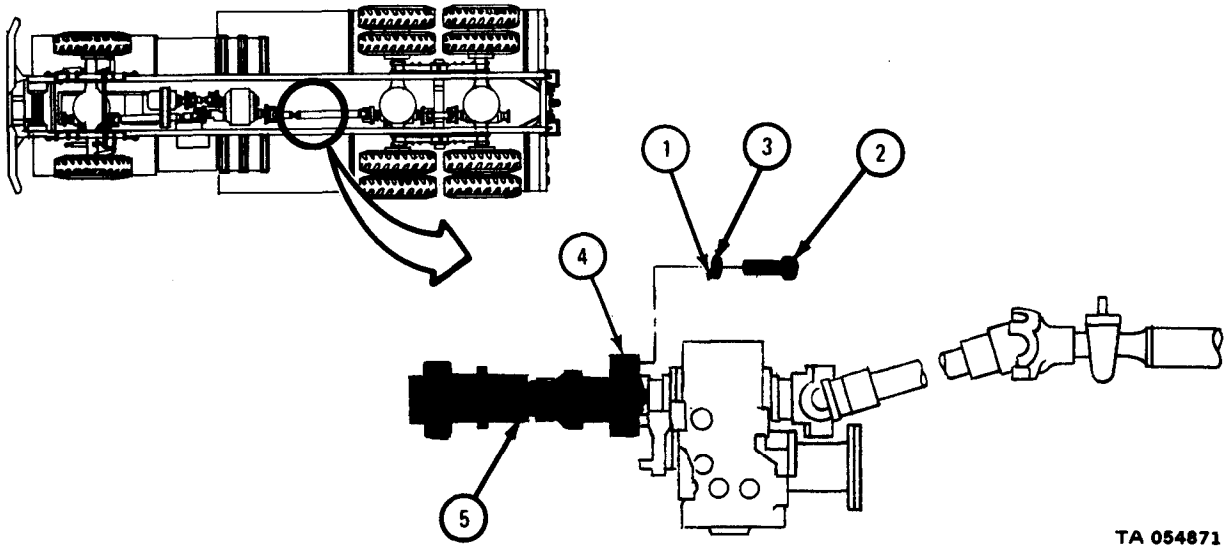
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Working under truck, using hammer and chisel, tap open lock tabs (1).
2. Working under truck, using l/2-inch wrench, unscrew and take out four screws (2) with lockplates (3) from power divider input shaft yoke (4).
3. Pull down rear end of power takeoff propeller shaft (5).

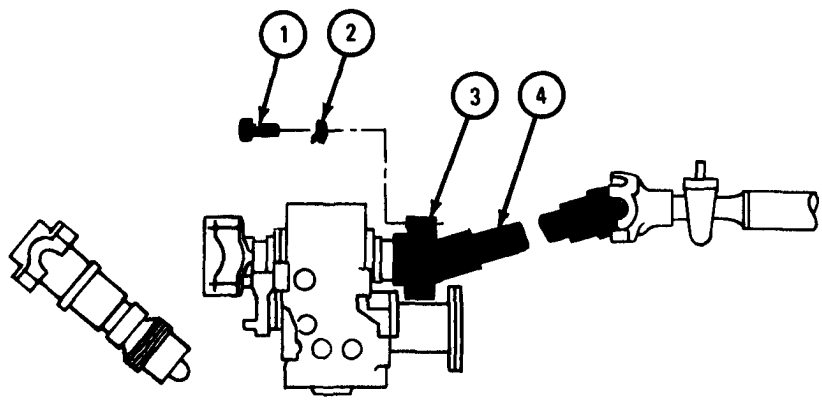
GO TO FRAME 2



FRAME 2

1. Using hammer and chisel, tap open locktabs.
2. Using 1/2-inch wrench, unscrew and take out four screws (1) with washers (2) from power divider output shaft yoke (3).
3. Pull down front end of rear winch propeller shaft (4).

GO TO FRAME 3

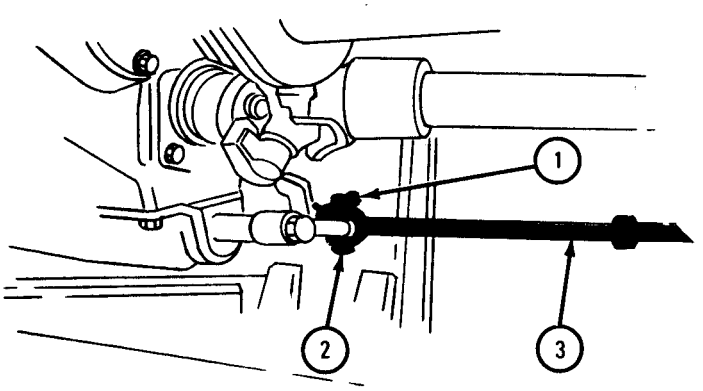


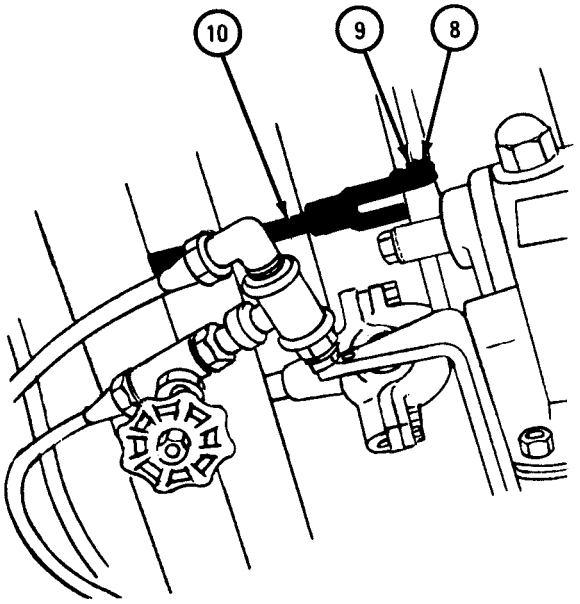
TA 054872

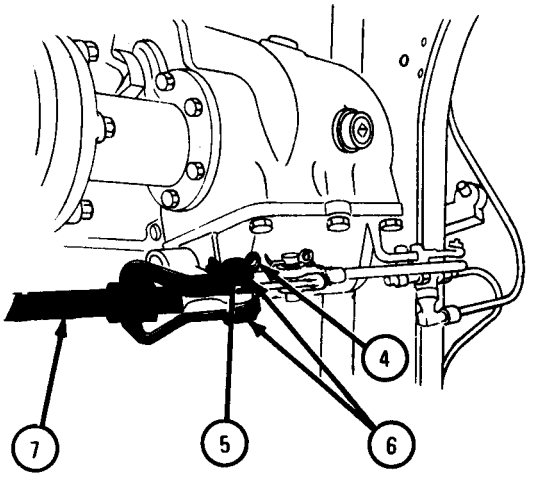
FRAME 3

1. Using pliers, take out cotter pin (1). Pull out yoke pin (2) and drop down winch control rod (3).
2. Using pliers, take out cotter pin (4). Pull out yoke pin (5) with washers (6) and drop down crane control rod (7).
3. Using pliers, take out cotter pin (8). Pull out yoke pin (9) and drop down power divider control rod (10).

GO TO FRAME 4





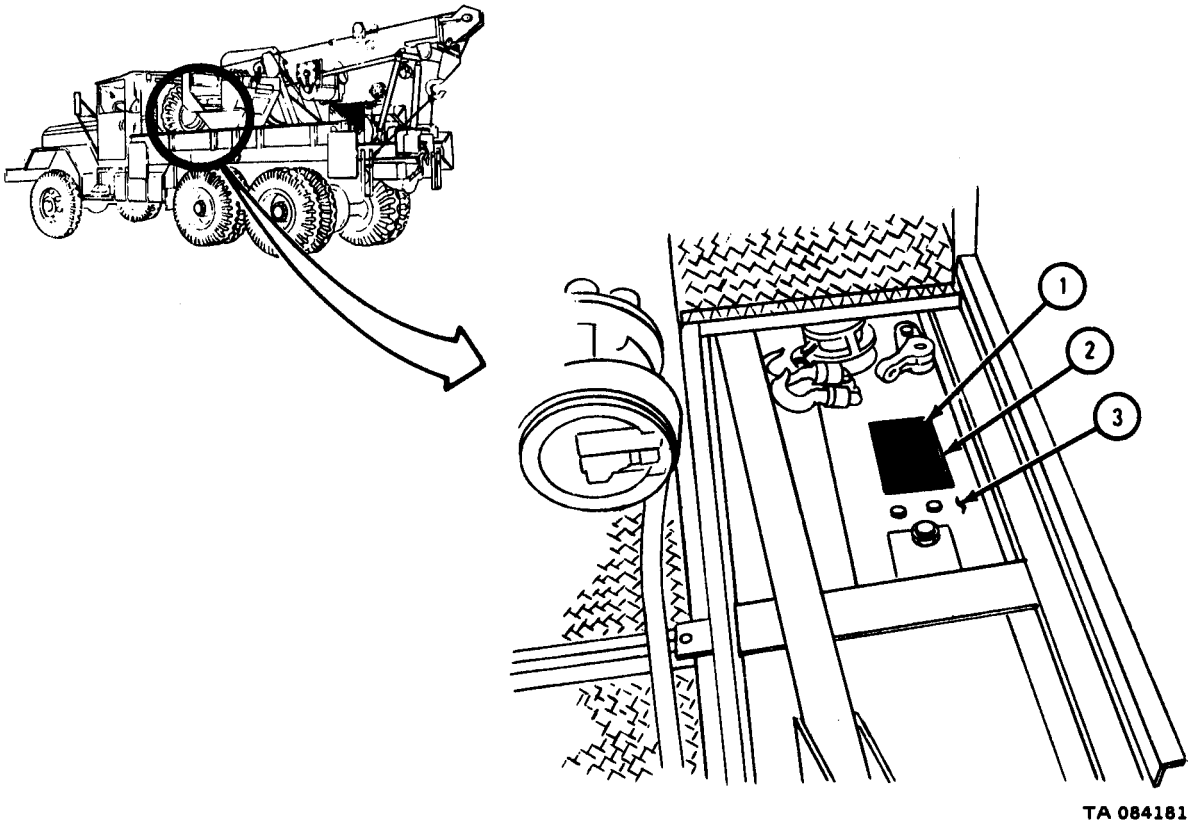


TA 104761

FRAME 4

1. Using phillips screwdriver, take out four screws (1).
2. Lift out patch plate (2) from bottom of tool compartment (3).

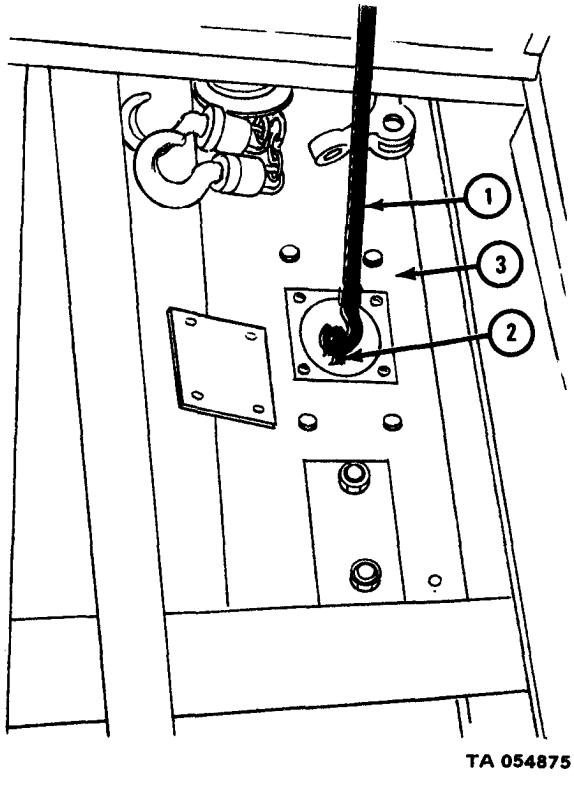
GO TO FRAME 5



FRAME 5

1. Put hoist (1) onto power divider lift ring (2) through opening in bottom of tool compartment (3).
2. Using hoist, take slack out of hoist cable (1).

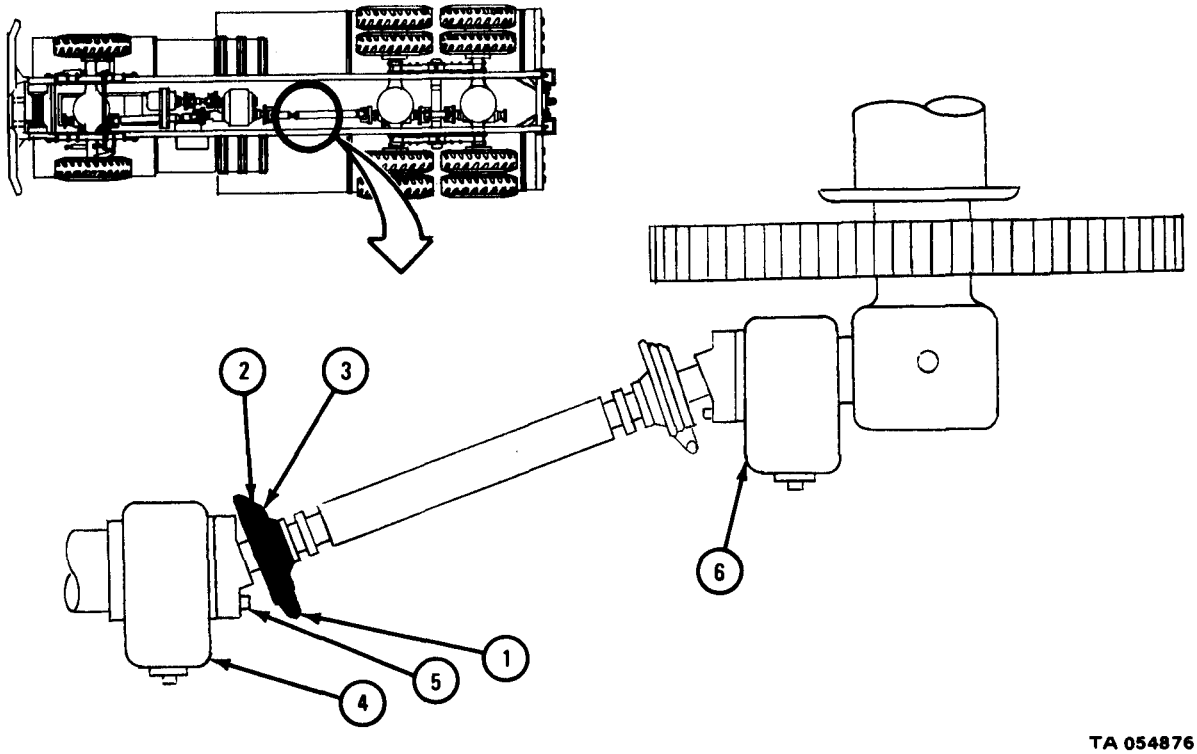
GO TO FRAME 6



FRAME 6

1. Using flat-tip screwdriver, unscrew screw (1) and loosen universal bearing dust seal clamp (2). Slide dust seal (3) off seal housing (4).
2. Using 9/16-inch wrench, unscrew six caps crews (5).
3. Do steps 1 and 2 again for seal housing (6).

GO TO FRAME 7

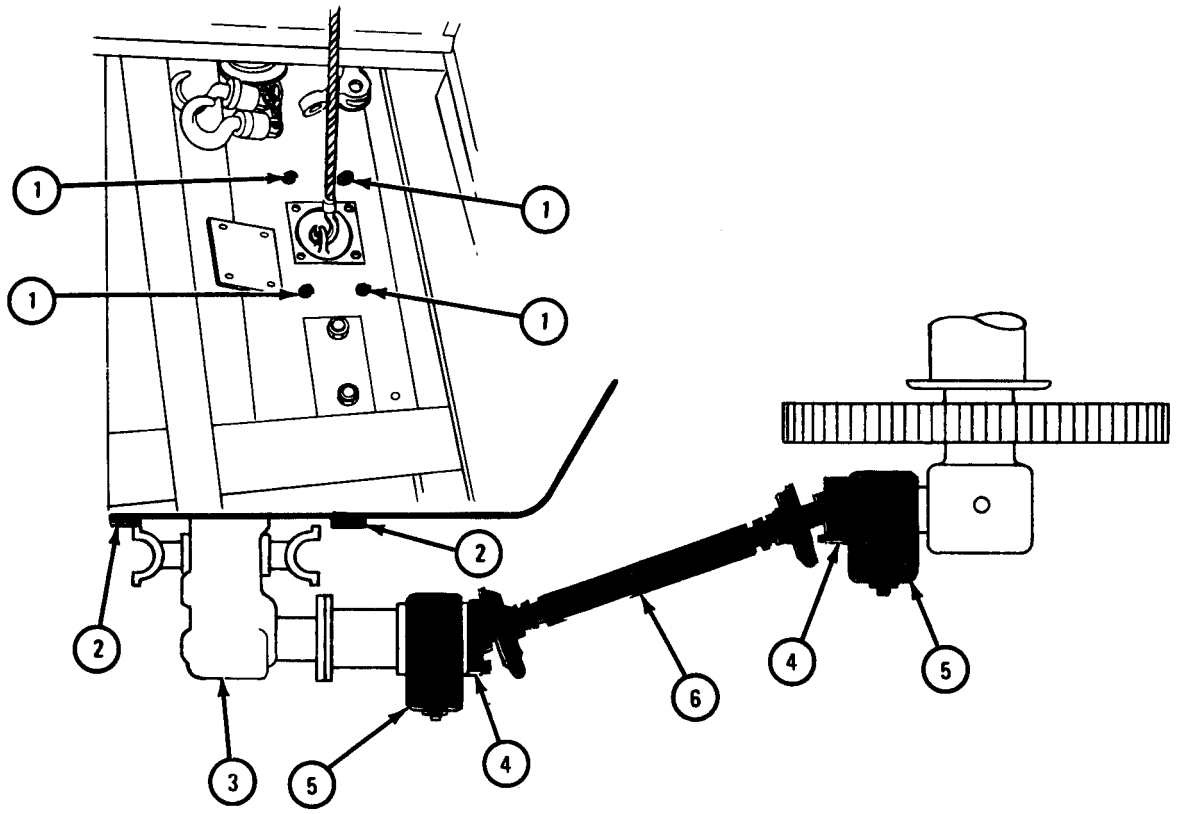


TA 054876

FRAME 7

Soldier A	1.	Using 15/16-inch wrench, unscrew and take out four mounting screws (1).
Soldier B	2.	Using 15/16-inch wrench, hold four mounting nuts (2).
Soldier A	3.	Using hoist, move power divider (3) down until soldier B tells you to stop.
Soldier B	4.	When power divider (3) moves down far enough to take the universal bearing (4) from seal housings (5), tell soldier A to stop hoist.
	5.	Take out universal bearing (4) and propeller shaft (6) from each seal housing (5).

END OF TASK



TA 104764

b. Replacement.

FRAME 1

Soldier A 1. Place propeller shaft (1) and universal bearing (2) into each seal housing (3).

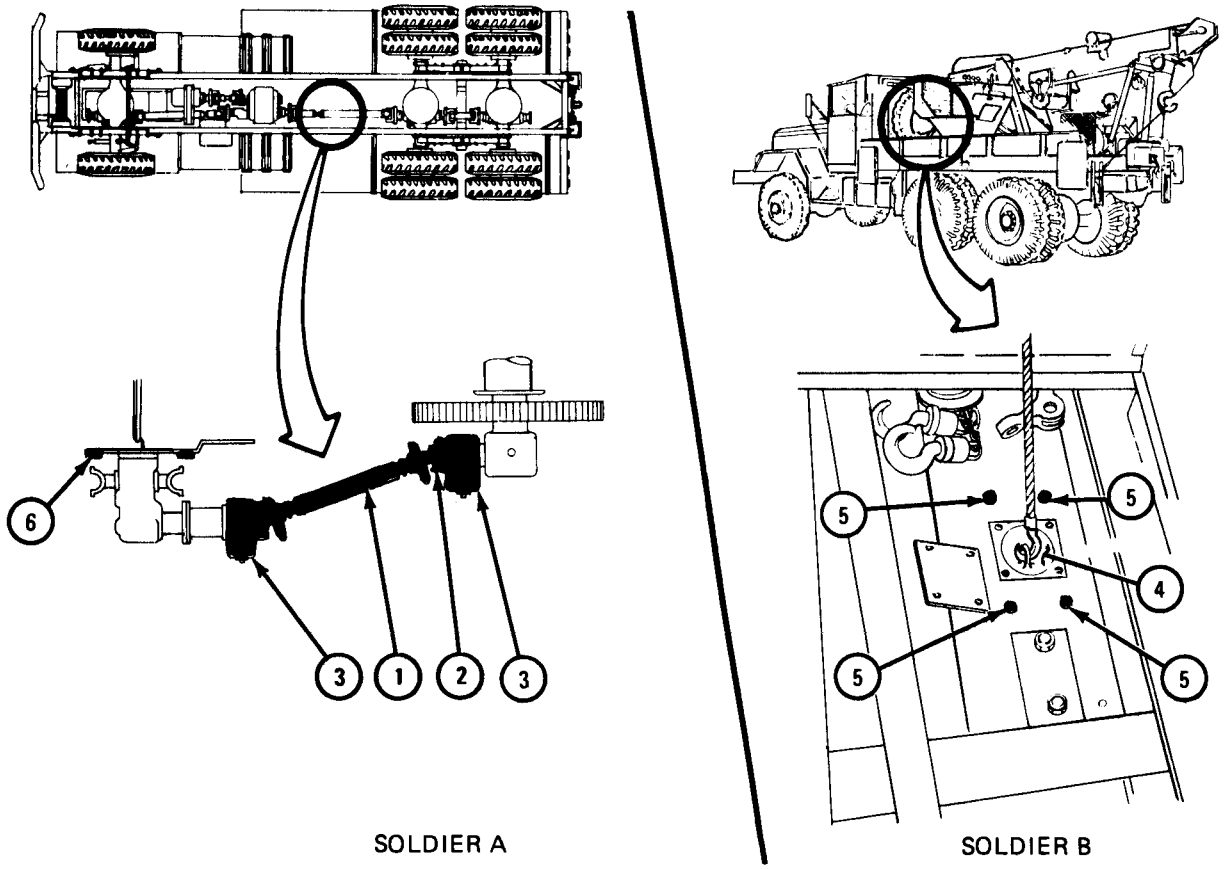
Soldier B 2. Using hoist, lift power divider (4) into place.

3. Using 15/16-inch wrench, screw four mounting screws (5) into power divider (4).

Soldier A 4. Using 15/16-inch wrench, hold four mounting nuts (6).

Soldier B 5. Unhook hoist from power divider (4).

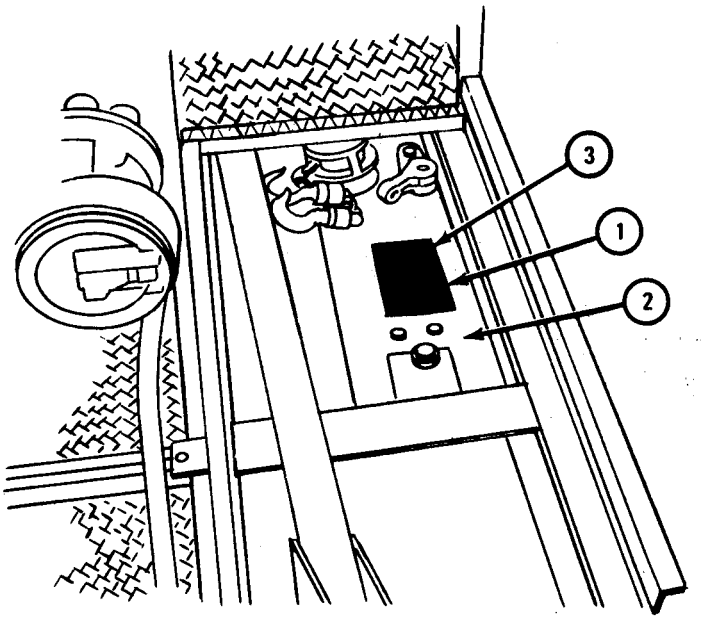
GO TO FRAME 2



FRAME 2

1. Line up holes in patch plate (1) with holes in bottom of front tool compartment (2).
2. Using phillips screwdriver, screw four screws (3) through patch plate (1) into bottom of front tool compartment (2).

GO TO FRAME 3

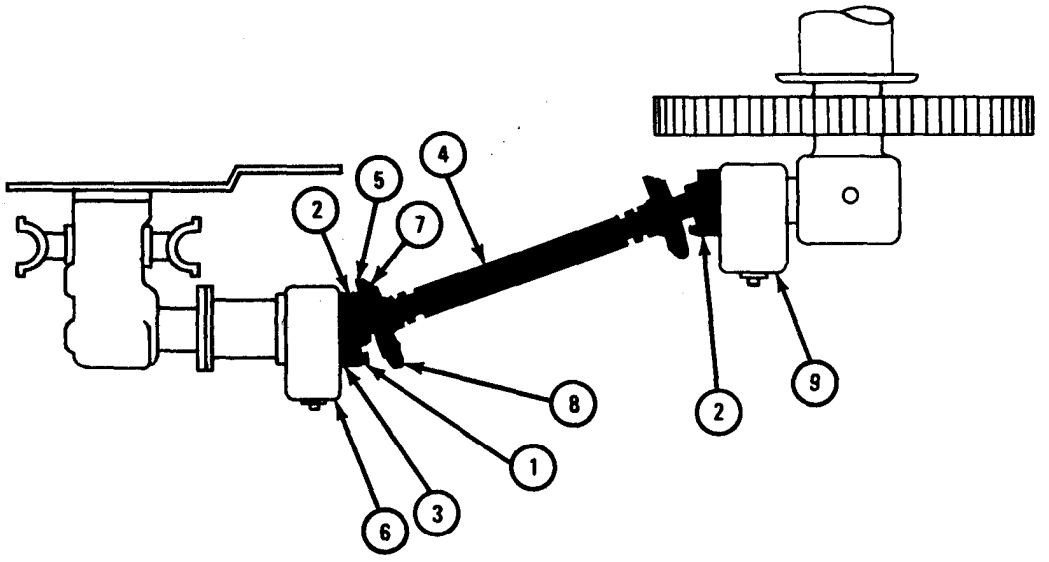


TA 054879

FRAME 3

1. Using 9/16-inch wrench, screw six capscrews (1) through universal bearing (2) into flange (3) at end of propeller shaft (4).
2. Place universal bearing dust seal(5) on seal housing (6).
3. Put dust seal clamp (7) in place. Using flat-tip screwdriver, screw in screw (8) and tighten clamp.
4. Do steps 1, 2, and 3againfor seal housing (9).

GO TO FRAME 4

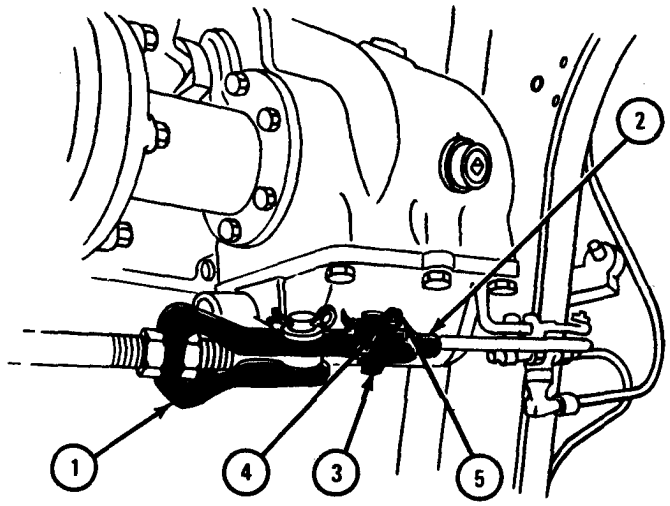


TA 054880

FRAME 4

1. Line up hole in crane control rod yoke (1) with hole in shifter arm (2).
2. Put yoke pin (3) with washer (4) through crane control rod yoke (1) and shifter arm (2). Put washer (4) on yoke pin before putting in cotter pin.
3. Put cotter pin (5) through hole in yoke pin (3). Using pliers, bend open ends of cotter pin.

GO TO FRAME 5

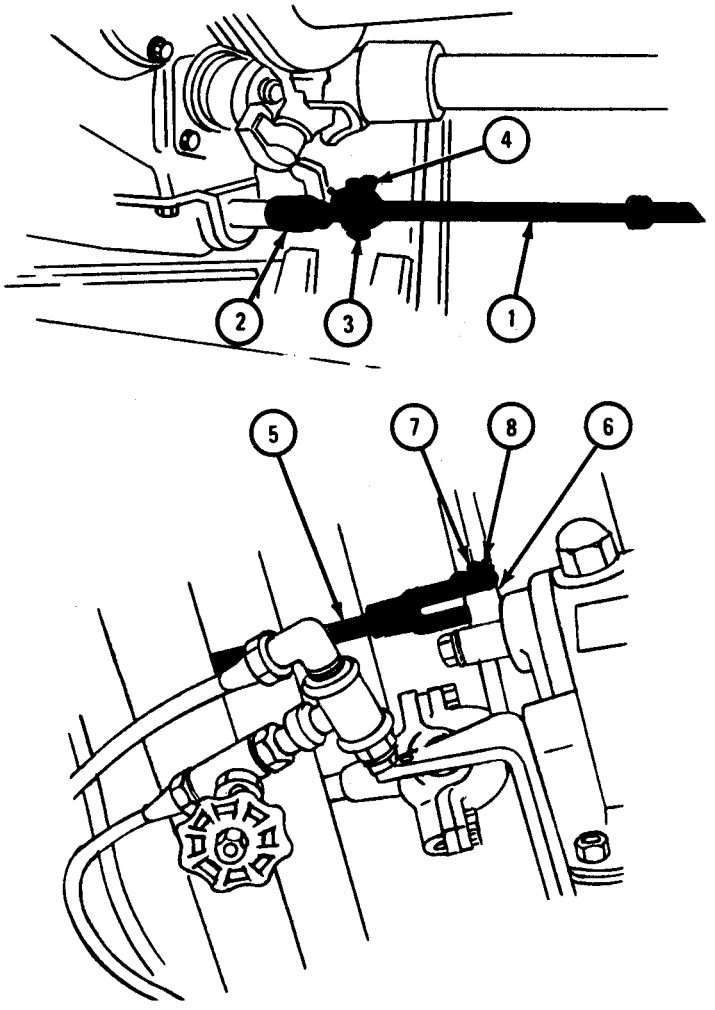


TA 054881

FRAME 5

1. Line up hole in winch control yoke (1) with hole in power divider shifter shaft arm (2).
2. Put yoke pin (3) through winch control rod yoke (1) and power divider shifter shaft arm (2).
3. Put cotter pin (4) through hole in yoke pin (3). Using pliers, bend open ends of cotter pin to keep it in place.
4. Line up hole in power divider rod yoke (5) with hole in Power divider shifter arm (6).
5. Put yoke pin (7) through power divider rod yoke (5). Put cotter pin (8) through hole in yoke pin. Using pliers, bend open ends of cotter pin.

GO TO FRAME 6

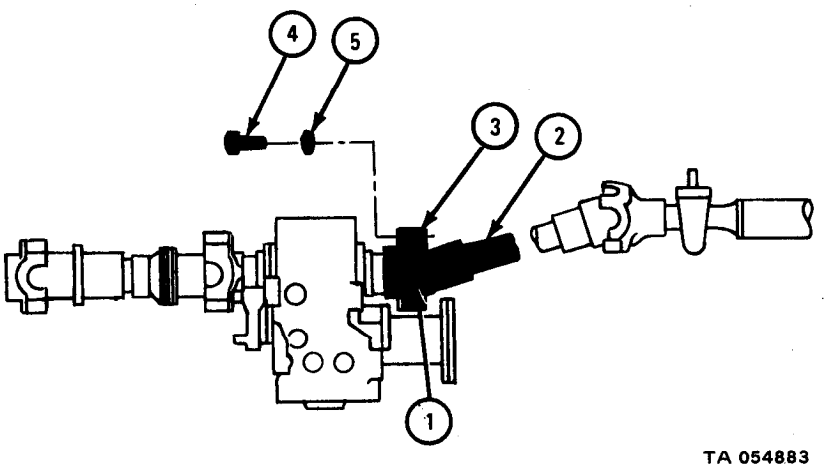


TA 104765

FRAME 6

1. Mate front universal joint (1) of rear winch propeller shaft (2) with power divider output shaft yoke (3).
2. Using 1/2-inch wrench, screw in and tighten four screws (4) with lock tabs (5) into front universal joint (1).
3. Using hammer, bend lock tabs (5) up against heads of screws (4).

GO TO FRAME 7

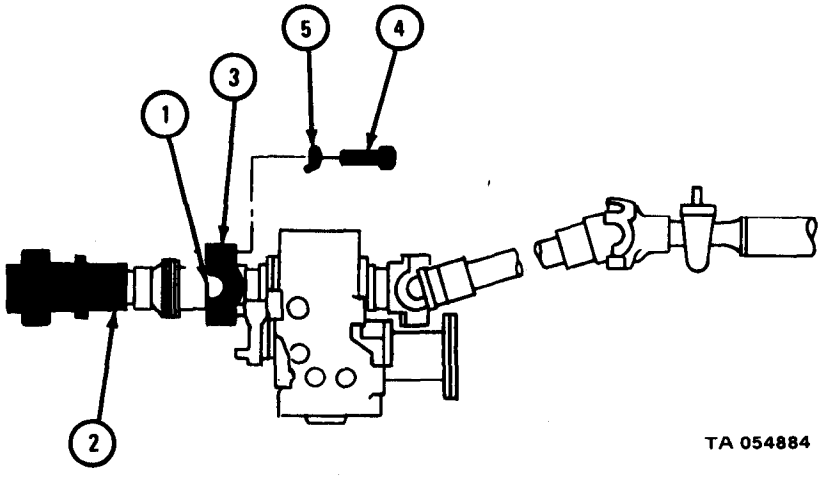


TA 054883

FRAME 7

1. Mate rear universal joint (1) of power takeoff propeller shaft (2) with power divider input shaft yoke (3).
2. Using l/2-inch wrench, screw in and tighten four screws (4) with lock tabs (5) into rear universal joint (1).
3. Using hammer, bend lock tabs (5) against heads of screws (4).

END OF TASK



10-14. UNIVERSAL JOINT ASSEMBLY REPAIR.

TOOLS: 5/8-inch socket wrench; 3-inch punch hammer; Vise; Eye shields; 9/32-inch open end wrench; Small stiff brush

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680; Cork washer (4); Compressed air, 30 psi max

PERSONNEL: One

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

a. Preliminary Procedure. Remove propeller shaft.

(a) For forward rear axle-to-rear axle propeller shaft, refer to para 10-10.

(b) For power divider-to-bevel gearcase propeller shaft, refer to para 10-13.

(c) For power divider-to-rear winch propeller shaft, refer to para 10-12.

(d) For power takeoff-to-front winch propeller shaft, refer to para 10-11.

(e) For power takeoff-to-hydraulic hoist pump propeller shaft (truck M51A2), refer to para 10-15.

(f) For transmission transfer case-to-forward rear axle (with center bearing) (truck M55A2), refer to para 10-8.

(g) For transmission transfer case-to-forward rear axle (without center bearing) (trucks M51A2, M52A2, M54A2, M54A2C, and M543A2), refer to para 10-7.

(h) For transmission transfer case-to-front axle propeller shaft, refer to para 10-6.

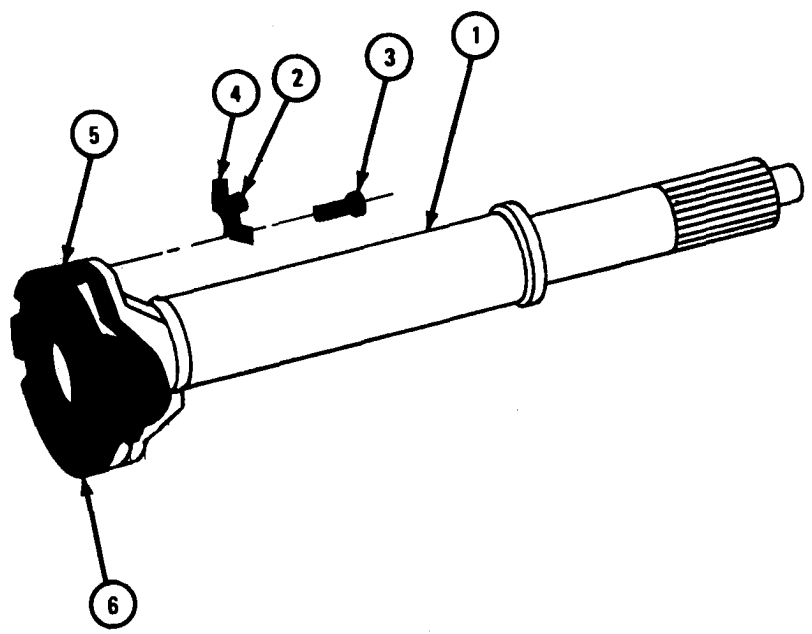
(i) For transmission-to-transmission transfer case propeller shaft, refer to para 10-5.

b. Repair.

FRAME 1

1. Place propeller shaft assembly (1) in vise.
2. Using 3-inch punch hammer, bend two locking plate tabs (2) away from each screw (3).
3. Using 5/8-inch socket wrench, unscrew and take out four screws (3).
4. Take off two locking plates (4).
5. Take off universal joint assembly (5) and flange (6).

GO TO FRAME 2

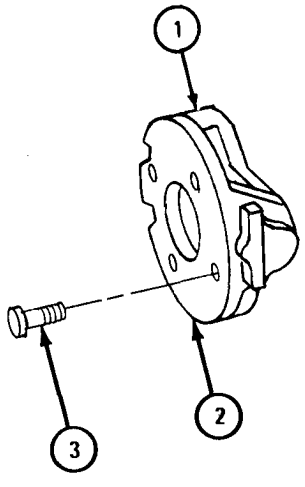


TA 045787

FRAME 2

1. Place universal joint assembly (1) and flangd (2) into vise.
2. Using 5/8-inch socket wrench, unscrew and take out four screws (3).
3. Take off flange (2).

GO TO FRAME 3



TA 045788

FRAME 3

1. Slide off four bearings (1) with cork washers (2) and dust shields (3). Throw away cork washers.
2. Using 9/32-inch wrench, unscrew and take out lubrication fitting (4).

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.

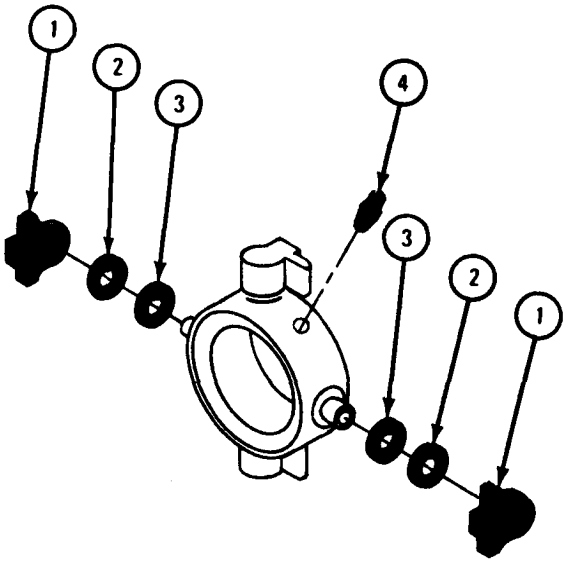
3. Clean all parts in solvent. Let parts soak in solvent for a short time.
4. Using small stiff brush, take off any dirt that is left.

WARNING

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

5. Rinse all parts in clean solvent and dry then with compressed air. Cover parts to keep them clean.

GO TO FRAME 4

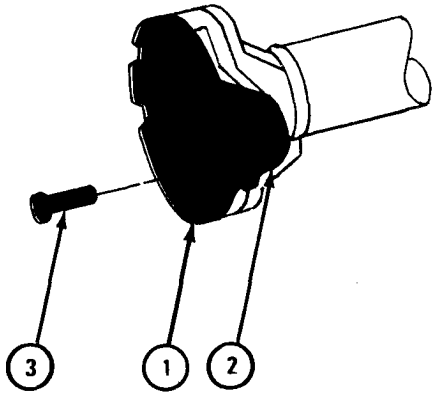


TA 045789

FRAME 4

1. Put flange (1) in vise.
2. Line up holes in flange or yoke (1) and holes in bearings (2).
3. Push four screws (3) through holes in flange (1).
4. Using 5/8-inch socket wrench, screw in and tighten screws (3).

GO TO FRAME 5



TA 045791

FRAME 5

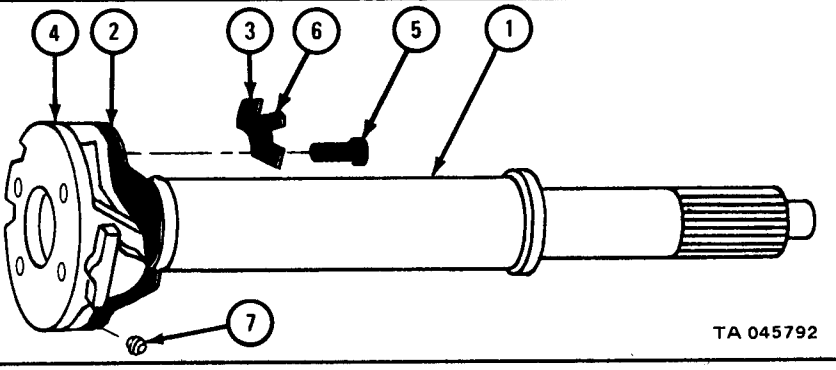
1. Put propeller shaft (1) in vise and line up holes in yoke (2), holes in two locking plates (3), and holes in bearings (4).
2. Push four screws (5) through holes in two locking plates (3).
3. Using 5/8-inch wrench, screw in and tighten screws (5).
4. Using 3-inch punch hammer, bend two locking tabs (6) against each screw (5).
5. Using 9/32-inch wrench, screw in and tighten lubrication fitting (7).

NOTE

Follow-on Maintenance Action Required:

1. Lubricate universal joint assembly. Refer to LO 9-2320-211-12.
2. Replace propeller shaft.
   a. For forward rear axle-to-rear rear axle propeller shaft, refer to para 10-10.
   b. For power divider-to-bevel gearcase propeller shaft, refer to para 10-13.
   c. For power divider-to-rear winch propeller shaft, refer to para 10-12.
   d. For power takeoff-to-front winch propeller shaft, refer to para 10-11.
   e. For power takeoff-to-hydraulic hoist pump propeller shaft (truck M51A2) , refer to para 10-15.
   f. For transmission transfer case-to-forward rear axle (wit h center bearing) (truck M55A2) , refer to para 10-8.
   g. For transmission transfer case-to-forward rear axle (without center bearing) (truck M51A2, M52A2, M54A2, M54A2C, and M543A2), refer to para 10-7.
   h. For transmission transfer case-to-front axle propeller shaft, refer to para 10-6.
   i. For transmission-to-transmission transfer case propeller shaft, refer to para 10-5.

END OF TASK



10-15. POWER TAKEOFF-TO-HYDRAULIC HOIST PUMP PROPELLER SHAFT REMOVAL AND REPLACEMENT (TRUCK M51A2),

TOOLS: 3/8-inch wrench
Hammer
Flat end punch

SUPPLIES: None

PERSONNEL: One

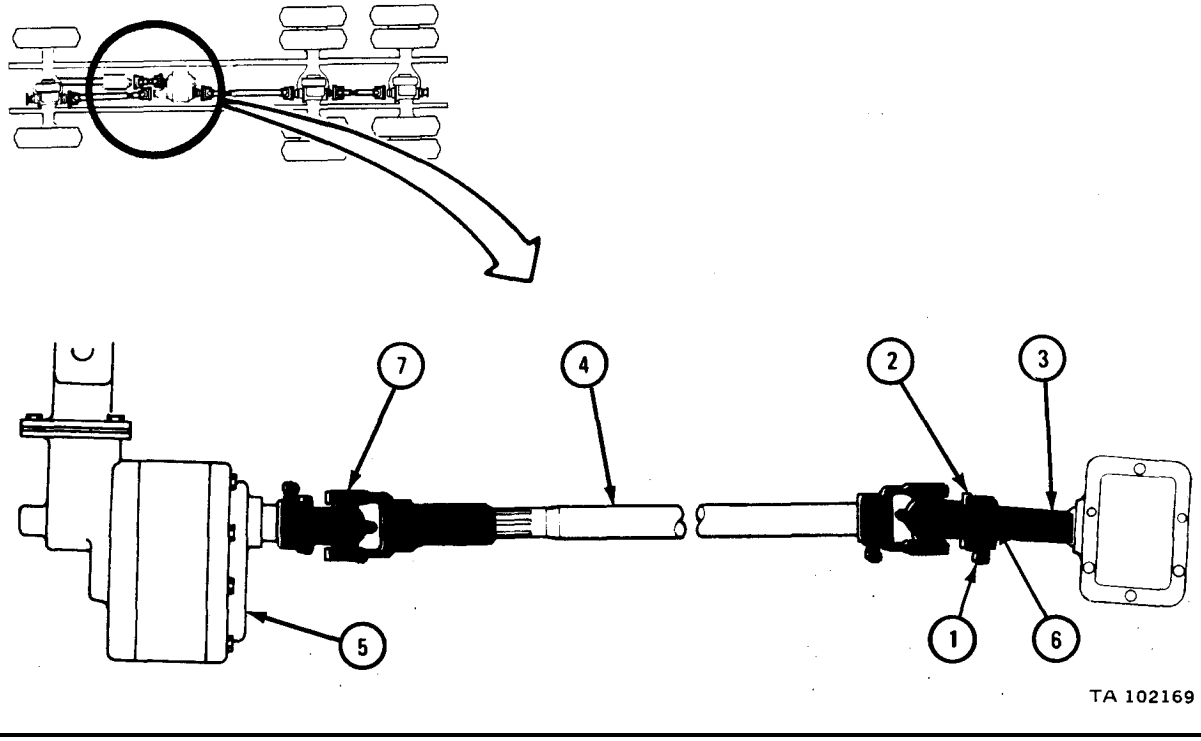
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using wrench, loosen setscrew (1) that holds universal joint yoke (2) to power takeoff shaft (3).
2. Tap propeller shaft (4) lightly with hammer. Slide propeller shaft toward hydraulic pump (5) until it is free from power takeoff shaft (3). Lower propeller shaft to the ground.
3. Using hammer and punch on tapered end of woodruff key (6), take key out of power takeoff shaft (3).
4. Pull propeller shaft (4) from splined universal joint yoke (7) and take shaft out of truck.

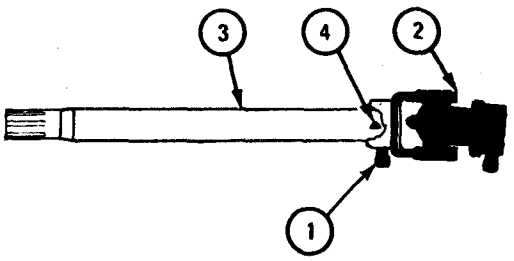
GO TO FRAME 2



FRAME 2

1. Using wrench, loosen setscrew (1) that holds universal joint yoke (2) to propeller shaft (3).
2. Tap universal joint yoke (2) lightly with hammer. Pull universal joint yoke (2) from propeller shaft (3).
3. Using hammer and punch, take woodruff key (4) out of propeller shaft (3).

GO TO FRAME 3

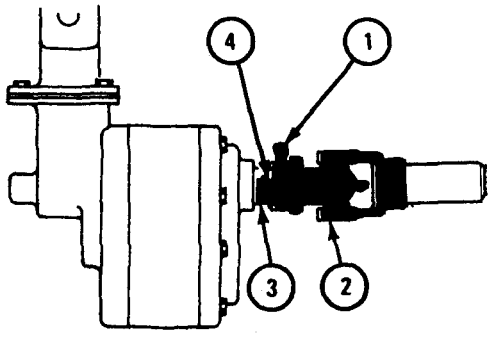


TA 102170

FRAME 3

1. Using wrench, loosen setscrew (1) that holds universal joint yoke (2) to hydraulic pump shaft (3).
2. Use hammer to tap yoke (2) lightly. Pull universal joint yoke (2) from hydraulic pump shaft (3).
3. Using hammer and punch, take woodruff key (4) out of hydraulic pump shaft (3).

END OF TASK



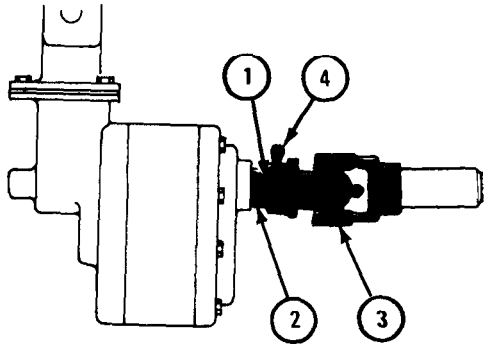
TA 102171

b. Replacement.

FRAME 1

1. Place woodruff key (1) in hydraulic pump shaft (2) with flat side up.
2. Using hammer, tap key into slot in shaft. Aline keyway in universal joint yoke (3) with woodruff key (1) in hydraulic pump shaft (2).
3. Using hammer, tap yoke (3) lightly and slide universal joint yoke (3) onto hydraulic pump shaft (2).
4. Using wrench, tighten setscrew (4).

GO TO FRAME 2

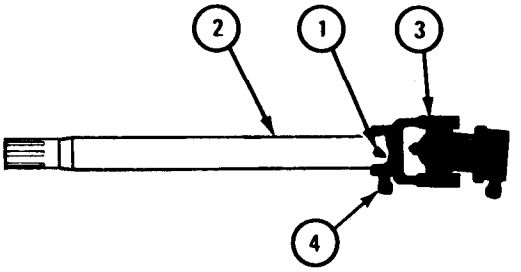


TA 102172

FRAME 2

1. Place woodruff key (1) in propeller shaft (2) with flat side up. Using hammer, tap key into slot in shaft.
2. Aline keyway in universal joint yoke (3) with woodruff key (1) in propeller shaft (2).
3. Using hammer, tap yoke (3) lightly and slide universal joint yoke (3) onto propeller shaft (2).
4. Using wrench, tighten setscrew (4).

GO TO FRAME 3



TA 102173

FRAME 3

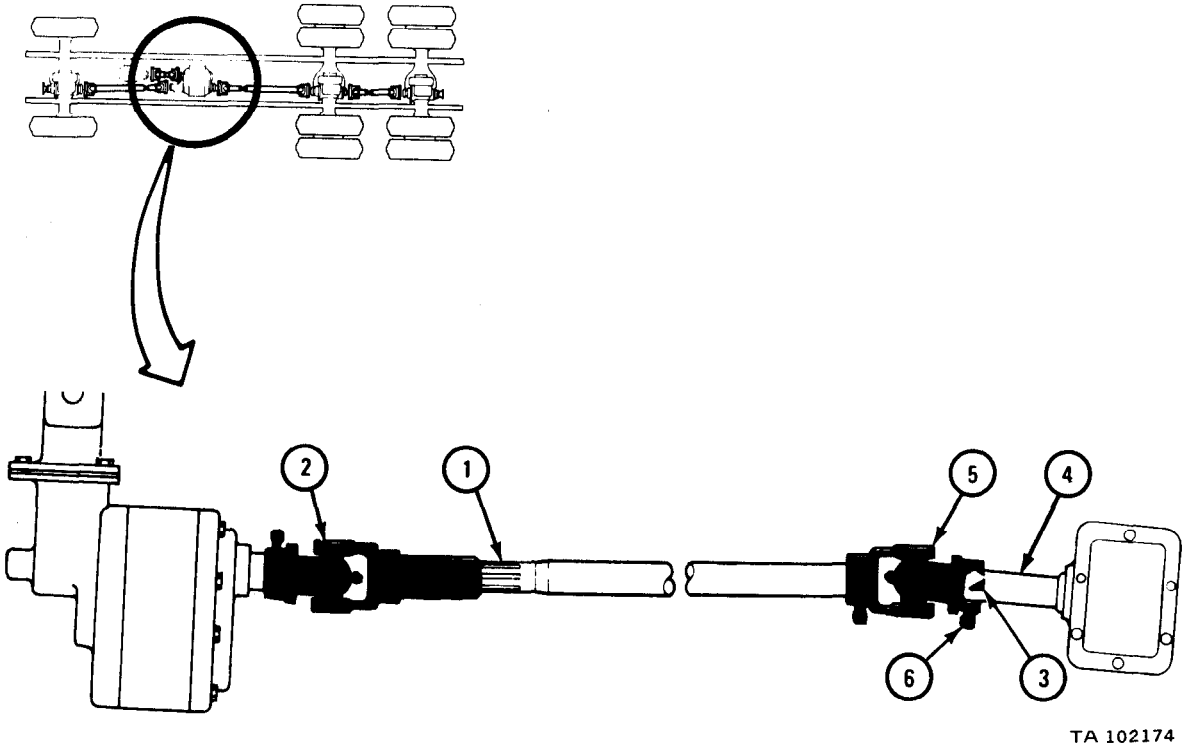
1. Slide splined end of propeller shaft (1) into universal joint yoke (2).

NOTE

Make sure universal joints are lined up as shown with yoke (2) and yoke (5) on same plane.

2. Place woodruff key (3) in power takeoff shaft (4) with flat side up. Using hammer, tap key into slot in shaft.
3. Aline keyway in universal joint yoke (5) with woodruff key (3) in power takeoff shaft (4).
4. Using hammer, tap yoke (5) lightly and slide universal joint yoke (5) onto power takeoff shaft (4).
5. Using wrench, tighten setscrew (6).

END OF TASK



TA 102174

CHAPTER 11

FRONT AND REAR AXLES GROUP MAINTENANCE

Section I. SCOPE

11-1. EQUIPMENT ITEMS COVERED . This chapter gives equipment maintenance procedures for the front and rear axle housings, steering mechanism, and rear axle for which there are authorized corrective maintenance tasks at the organizational maintenante level.

11-2. 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 AND REAR AXLE HOUSINGS

11-3. FRONT AND REAR AXLE AIR PRESSURE RELIEF VALVE REMOVAL AND REPLACEMENT .

TOOLS: 7/16-inch wrench
Wire brush
Eye shields

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Lubricating oil, ICE, OD /HDO 10, MIL-L-2104

PERSONNEL: One

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

a. Removal.

FRAME 1

WARNING

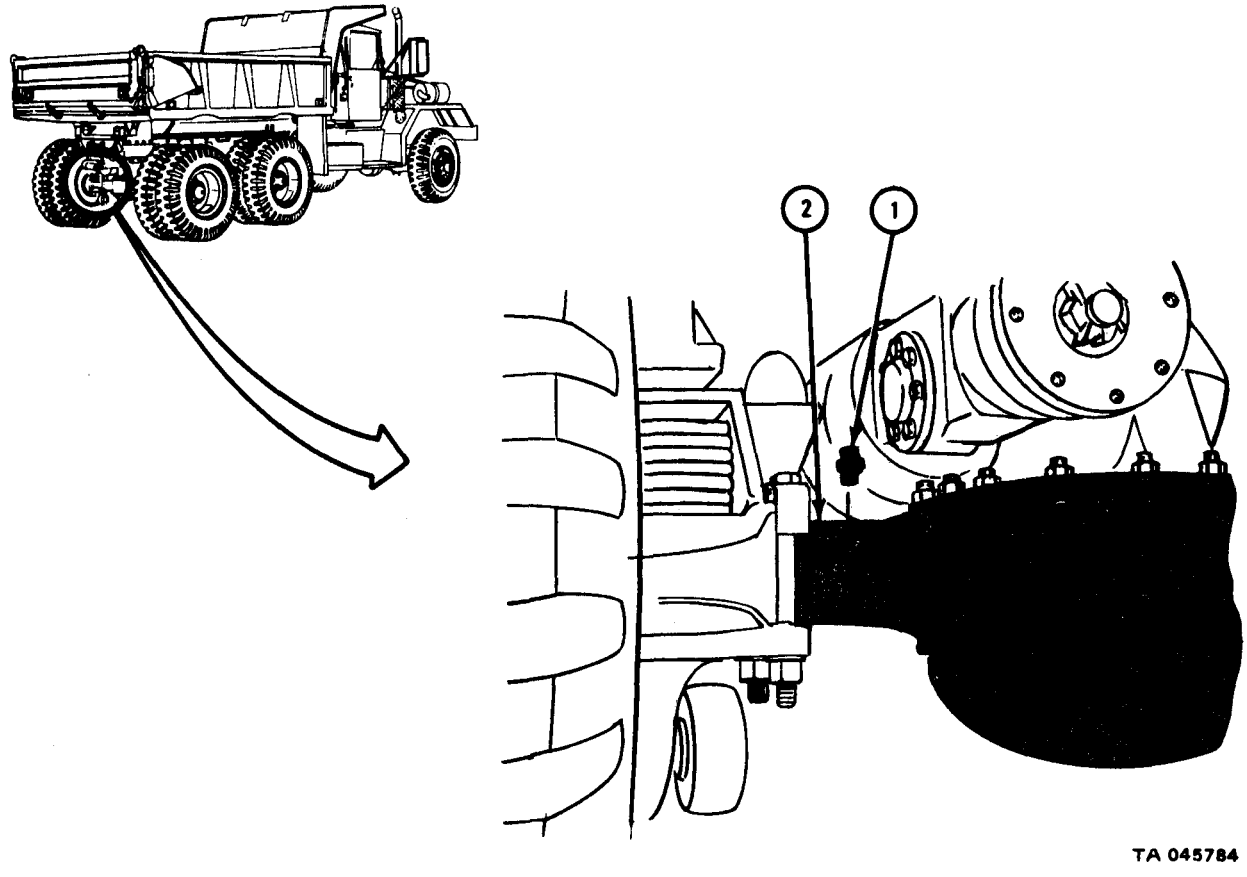
Eye shields must be worn when using compressed air.
Eye injury can occur if eye shields are not used.

CAUTION

Make sure area around air pressure relief valve (1) is clean so dirt will not get into axle housing (2) .

1. Using compressed air, blow off dirt around air pressure relief valve (1).
2. Using wrench, unscrew and take off air pressure relief valve (1) from axle housing (2).

END OF TASK



b. Cleaning.

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.

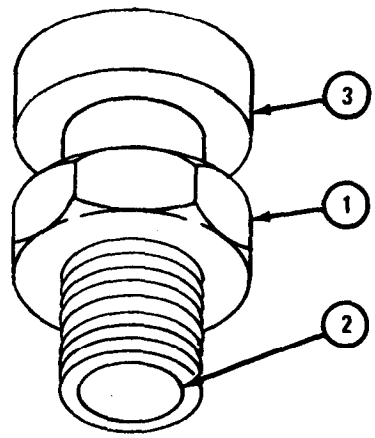
1. Soak relief valve (1) in solvent.
2. Using wire brush, brush all dirt from relief valve (1).
3. Clean passage (2) and make sure valve cap (3) moves freely.

WARNING

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

4. Dry relief valve (1) with compressed air and use small amount of lubricating oil to lubricate.

END OF TASK



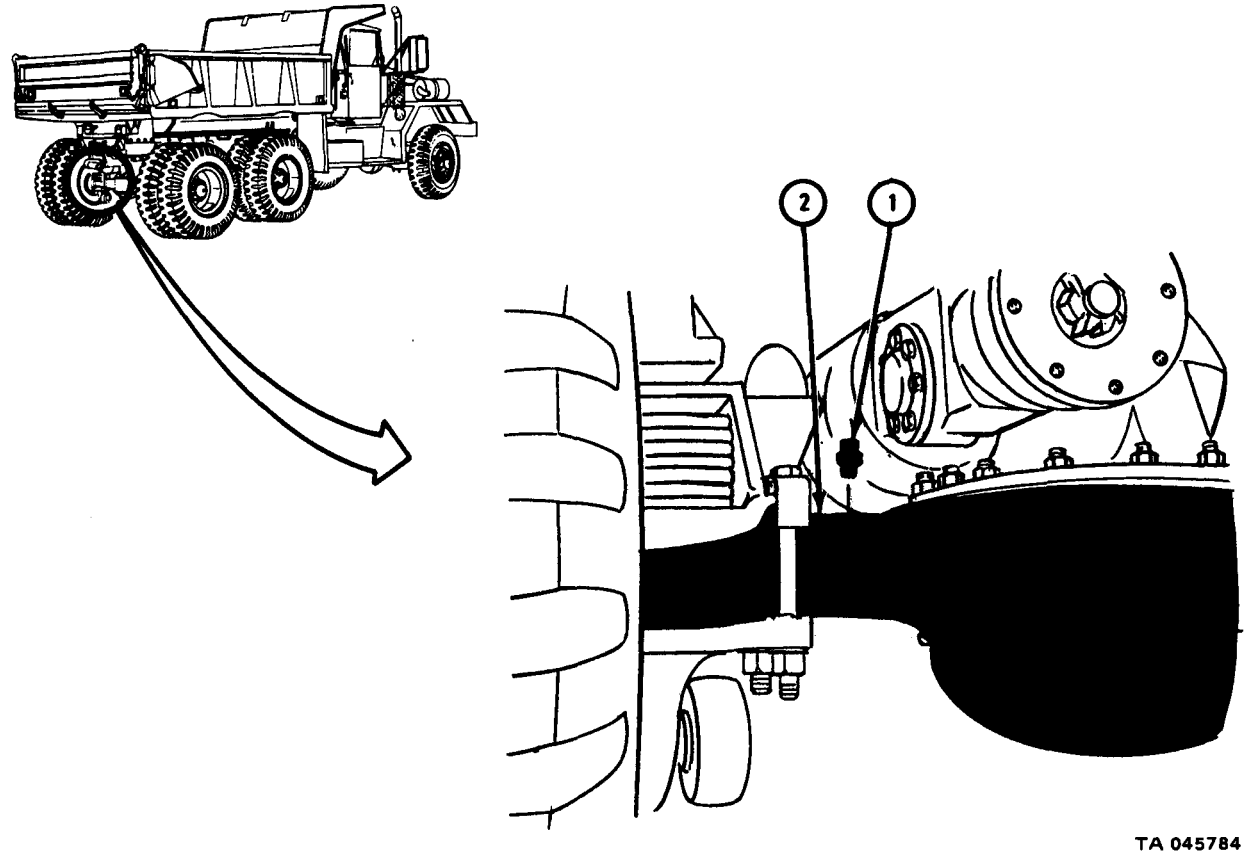
TA 045783

c. Replacement.

FRAME 1

1. Using wrench, screw in and tighten air pressure relief valve (1) into axle housing (2).

END OF TASK



Section III. STEERING MECHANISM

11-4. DUST AND MOISTURE SEAL BOOT REMOVAL AND REPLACEMENT.

TOOLS: 15/16-inch wrench; 11/32-inch wrench; Wire cutters; Flat-tip screwdriver; Pliers; Shears

SUPPLIES: Dust and moisture seal boot
Sealer cement, Adhesive sealant, RTV silicone, type I, MIL-A-46106
Safety wire
Screw

PERSONNEL: One

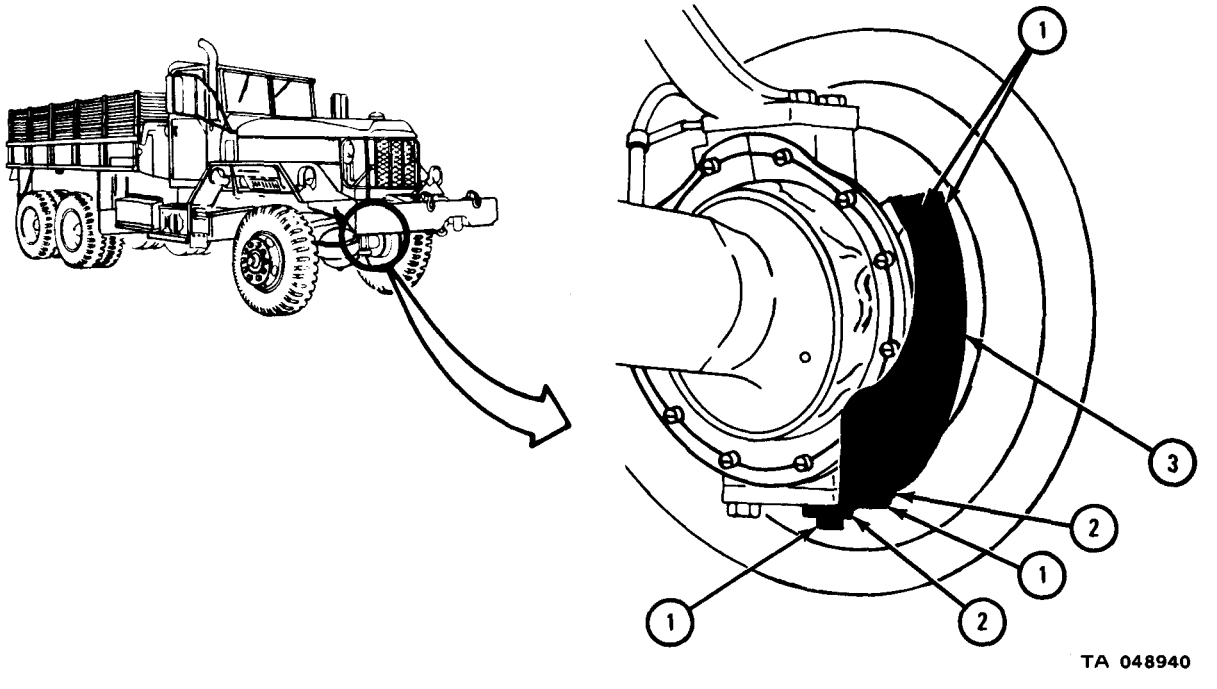
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

FRAME 1

1. Using 15/16-inch wrench, unscrew and take out four screws (1) with lockwashers (2).
2. Take off boot guard (3).

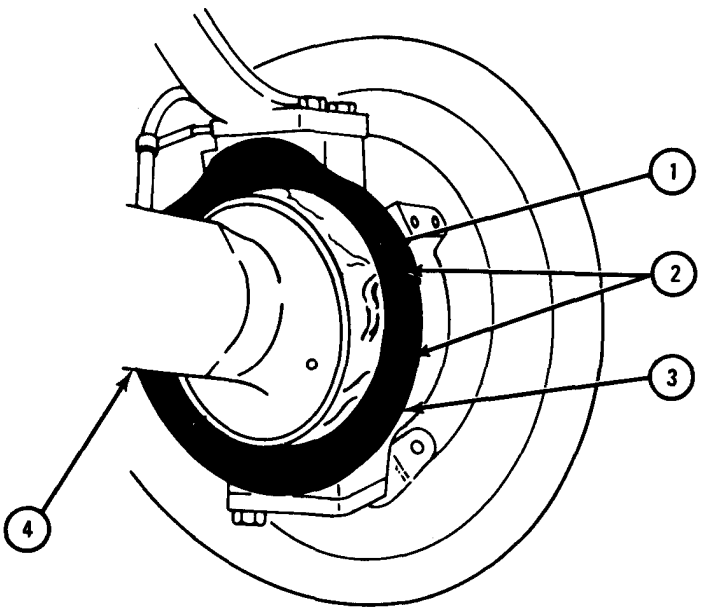
GO TO FRAME 2



FRAME 2

1. Using wire cutters, cut safety wire (1).
2. Using pliers, takeout safety wire (1) from 12 screws (2).
3. Using screwdriver, unscrew and take out 12 screws (2).
4. Slide retaining plate (3) back on axle housing (4).

GO TO FRAME 3

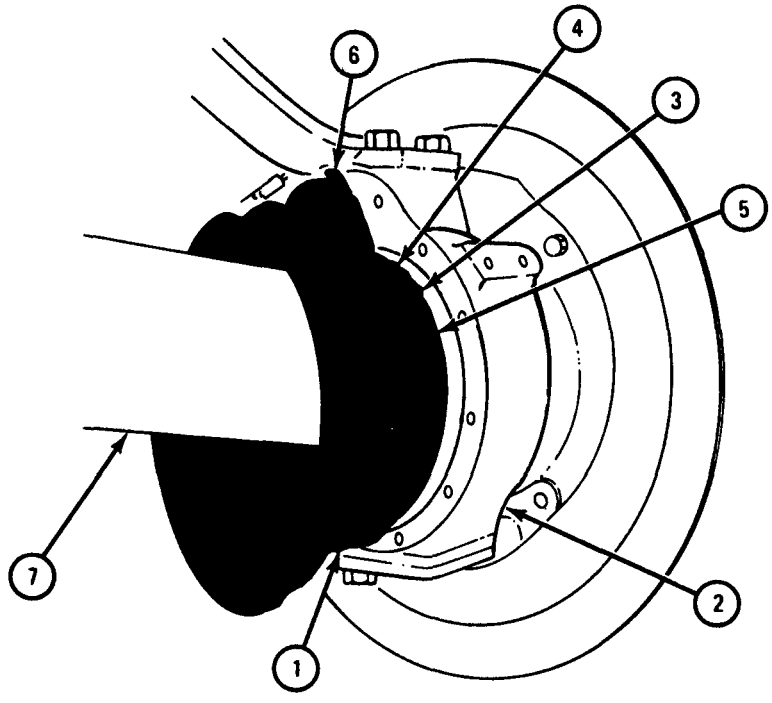


TA 049234

FRAME 3

1. Pull boot (1) back from steering knuckle (2).
2. Using wire cutters, cut off bent end of screw (3).
3. Using 11/32-inch wrench and screwdriver, unscrew and takeoff nut (4).
4. Take out screw (3) and throw it away.
5. Take off clamp (5).
6. Unzip boot zipper (6) and take it off.
7. If boot (1) will not come off, use shears to cut boot (1) and take it off axle housing (7). Throw away cut boot.

END OF TASK



TA 049235

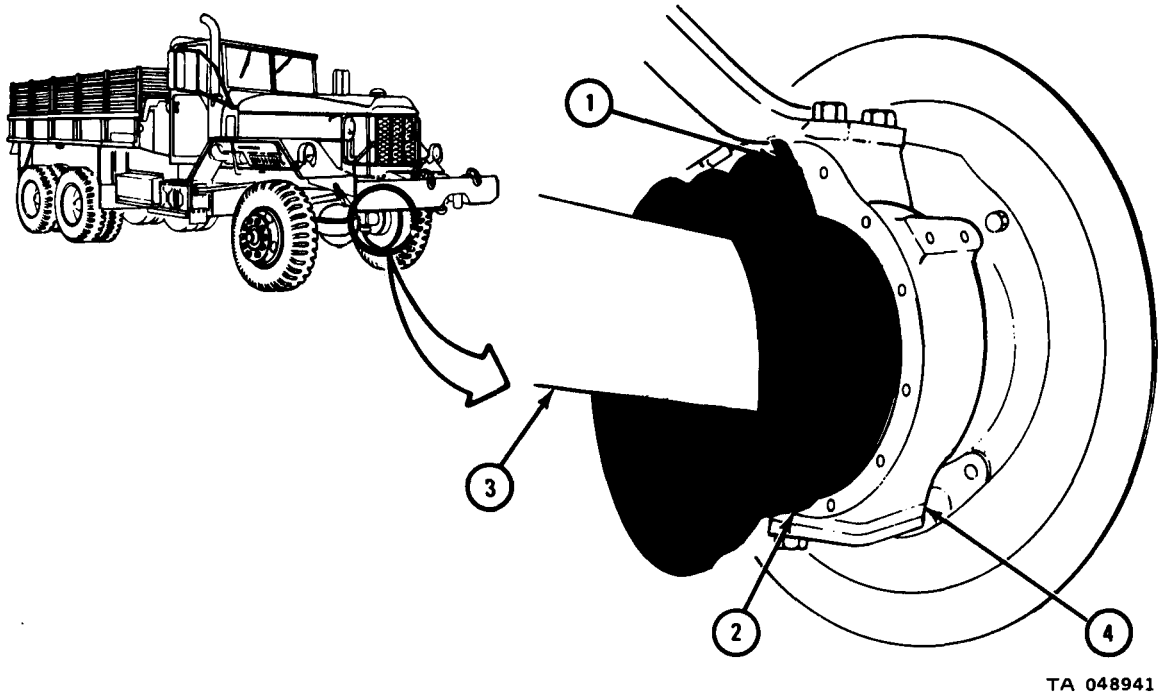
b. Cleaning, Inspection, and Repair. Clean all dirt, mud, and grease from boot. Check that boot has no punctures or tears. If boot is punctured or torn, put on rubber patch. Refer to TM 9-2610-200-20.

c. Replacement.

FRAME 1

1. Unzip zipper (1) on boot (2).
2. Wrap boot (2) around axle housing (3) with cloth side of zipper (1) toward steering knuckle (4). Zipper must be in line with top of knuckle. Close zipper.
3. Put a large amount of sealer cement on zipper teeth and cloth. Let cement set for three to five minutes.

GO TO FRAME 2



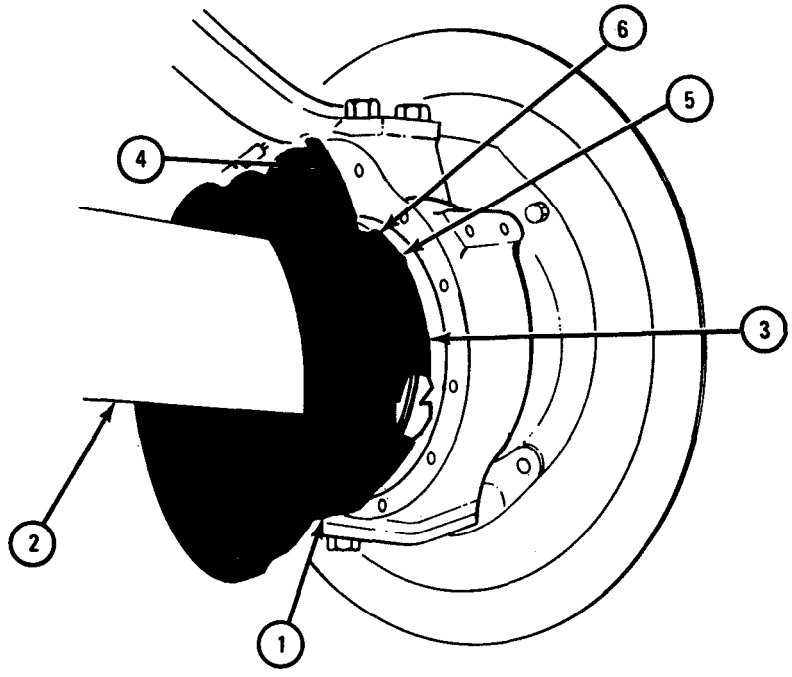
FRAME 2

CAUTION

Be careful not to cut rubber boot. If dirt gets inside boot, it may damage equipment.

1. Using round smooth end of plier handle, force clamp lip of boot (1) into groove on axle housing (2).
2. Place clamp (3) in groove with opening one to two inches from zipper (4).
3. Place screw (5) in clamp (3).
4. Using 11/32-inch wrench and screwdriver, screw on and tighten nut (6).
5. Make sure that boot (1) is well seated in groove all the way around.
6. Using pliers, bend end of screw (5) over nut (6).

GO TO FRAME 3

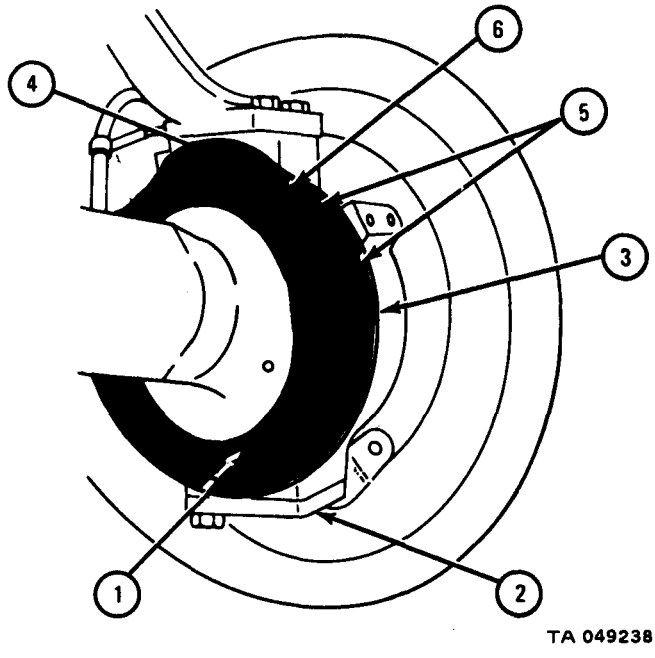


TA 049237

FRAME 3

1. Place outer edge of boot (I) on steering knuckle flange (2).
2. Place retaining plate (3) over boot with split (4) up.
3. Using screwdriver, screw in and tighten 12 screws (5).
4. Thread safety wire (6) through screws (5).
5. Using pliers, twist ends of safety wire (6) and bend them flat.

GO TO FRAME 4

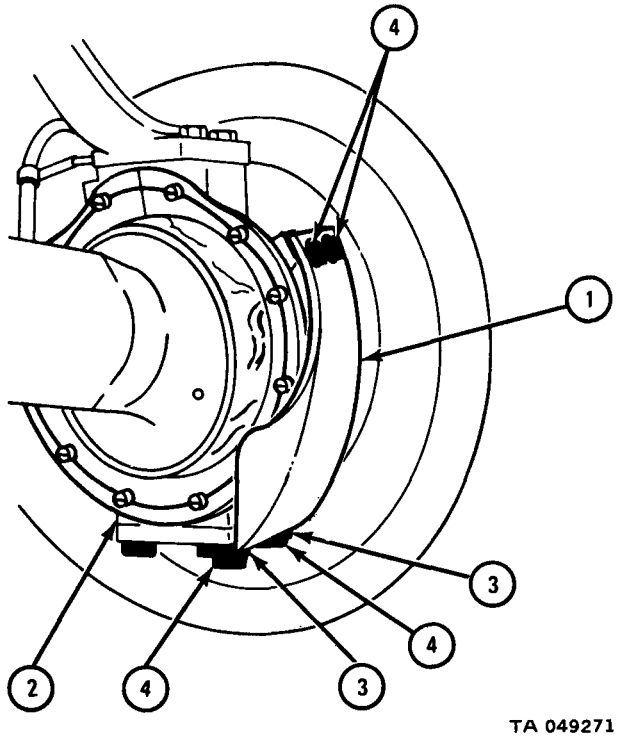


TA 049238

FRAME 4

1. Line up holes in steering knuckle guard (1) with holes in steering knuckle (2).
2. Put four washers (3) on four screws (4).
3. Put screws (4) with washers (3) through holes in steering knuckle guard (l).
4. Using 15/16-inch wrench, screw in and tighten four screws (4) with washers (3).

END OF TASK



TA 049271

Section IV. REAR AXLE

11-5. REAR AXLE SHAFT REMOVAL AND REPLACEMENT.

TOOLS: 3/4-inch wrench

SUPPLIES: None

PERSONNEL: One

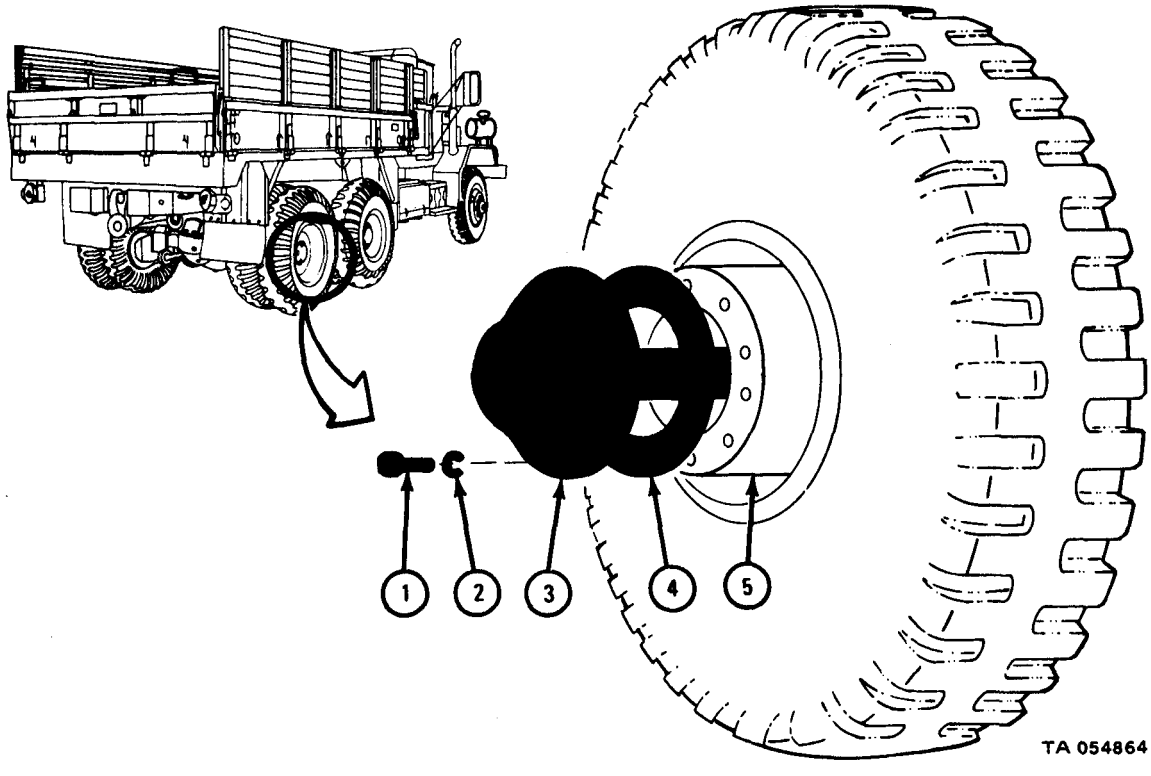
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using wrench, unscrew and take out 10 screws (1). Take off 10 washers(2).
2. Take out shaft (3) and gasket (4) from hub (5).

END OF TASK

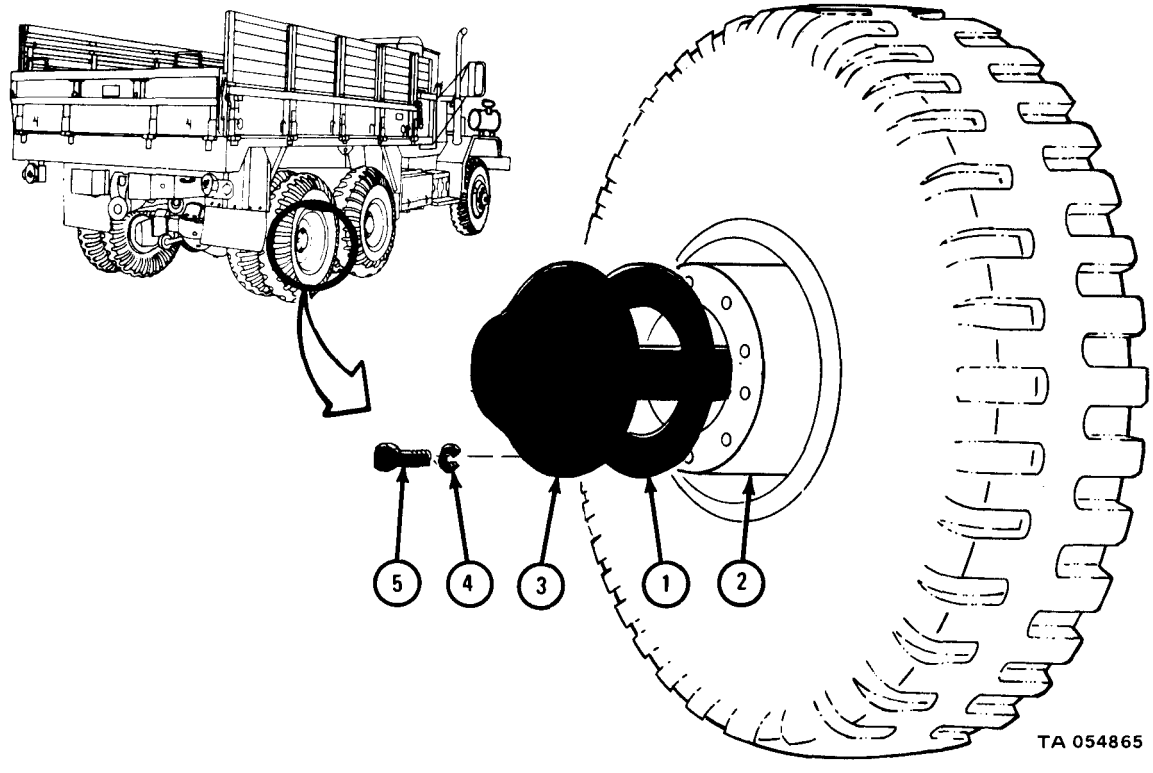


b. Replacement.

FRAME 1

1. **Place gasket (1) on hub (2) and aline holes.**
2. **Place shaft (3) into hub (2), alining holes.**
3. **Put washer (4) on each of 10 screws (5). Using wrench, screw in and tighten screws.**

END OF TASK



CHAPTER 12

BRAKE SYSTEM GROUP MAINTENANCE

Section I. SCOPE

12-1. EQUIPMENT ITEMS COVERED , This chapter gives equipment maintenance procedures for the handbrake assembly and related parts, service brakes, hydraulic brake system, mechanical brake system, air brake system, compressed air system, and trailer brake connections for which there are authorized corrective maintenance tasks at the organizational maintenance level.

12-2. 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. HANDBRAKE ASSEMBLY AND RELATED PARTS

12-3. HANDBRAKE LEVER ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 9/16-inch socket wrench
9/16-inch combination wrench

SUPPLIES: None

PERSONNEL: Two

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

a. Preliminary Procedures.

(1) Remove tool box. Refer to Part 2, para 17-11.

(2) Remove handbrake linkage. Refer to para 12-4.

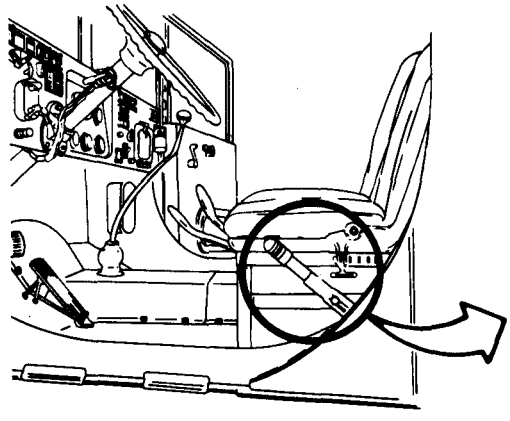
(3) Take out operator's seat cushion. Refer to Part 2, para 17-7.

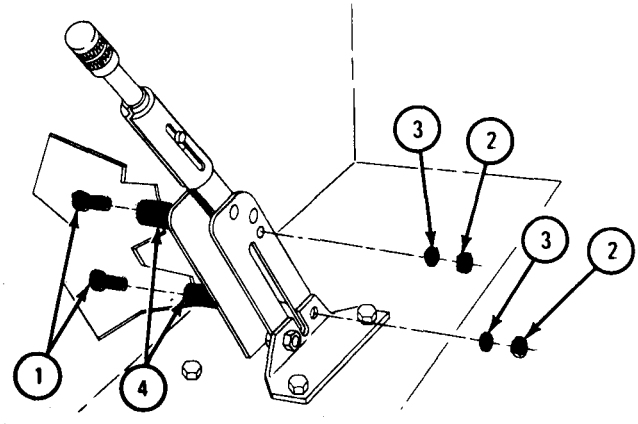
b. Removal.

FRAME 1

1. Working with one hand inside driver's seat and using 9/16-inch wrench, hold two bolts (1) .
2. Using 9/16-inch socket wrench, unscrew and take off two nuts (2) and washers (3).
3. Take out two bolts (1) and spacers (4).

GO TO FRAME 2





TA 089407

FRAME 2

Soldier A 1. Working under cab and using 9/16-inch wrench, hold five nuts (1). Tell soldier B when ready.

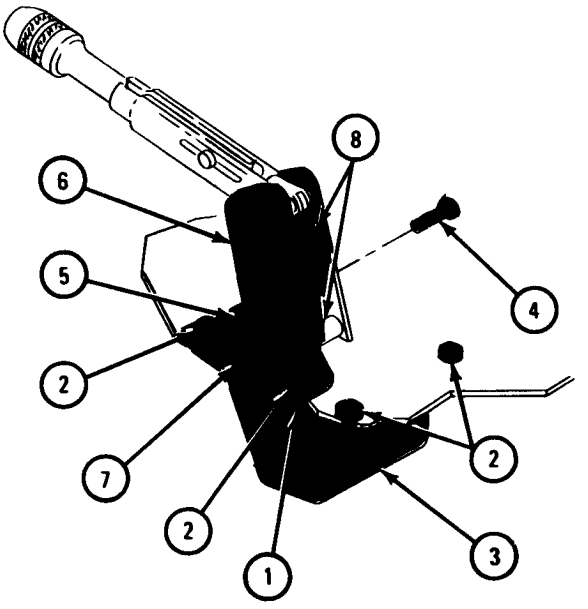
Soldier B 2. Working in cab and using 9/16-inch socket wrench, unscrew and take out five screws (2).

Soldier A 3. Take out five nuts (1) and bracket (3).

Soldier B 4. Using 9/16-inch wrench, hold screw (4). Using 9/16-inch socket wrench, unscrew and take off nut (5). Take out screw, handbrake lever assembly (6), and bracket (7).

5. Spread handbrake lever assembly (6) and take out two inner spacers (8).

END OF TASK



TA 089408

c. Replacement.

FRAME 1

Soldier A 1. Working under cab, put bracket (1) in place, alining holes.

Soldier B 2. Working inside of cab, put bracket (2) in place, alining holes.

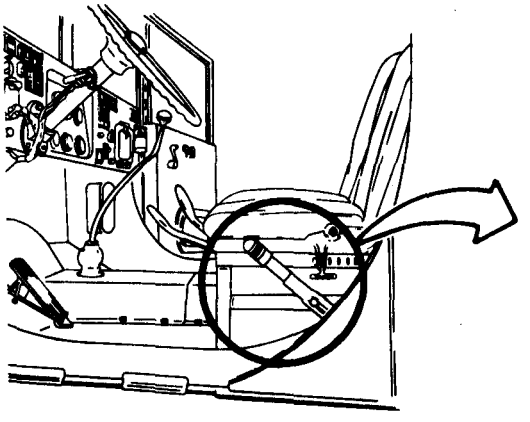
3. Using 9/16-inch wrench, put in and hold five screws (3).

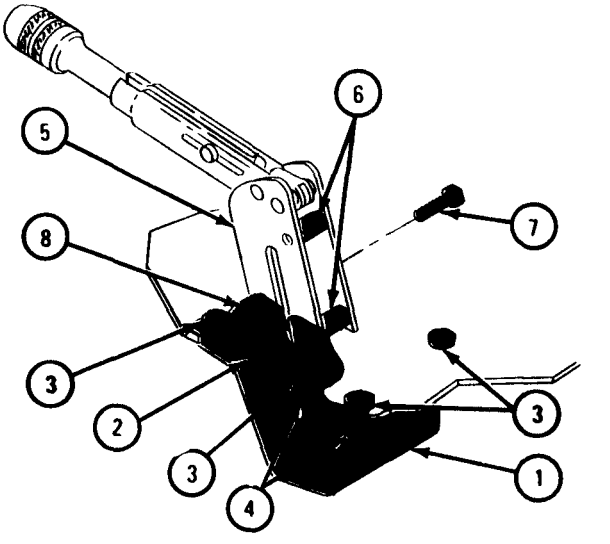
Soldier A 4. Using 9/16-inch wrench, screw on and tighten five nuts (4).

Soldier B 5. Spread open handbrake lever assembly (5) and put two inner spacers (6) in place.

6. Put handbrake lever assembly (5) in place. Using 9/16-inch wrench, put in and hold screw (7) . Using 9/16-inch socket wrench, screw on and tighten nut (8) .

GO TO FRAME 2





TA 089409

FRAME 2

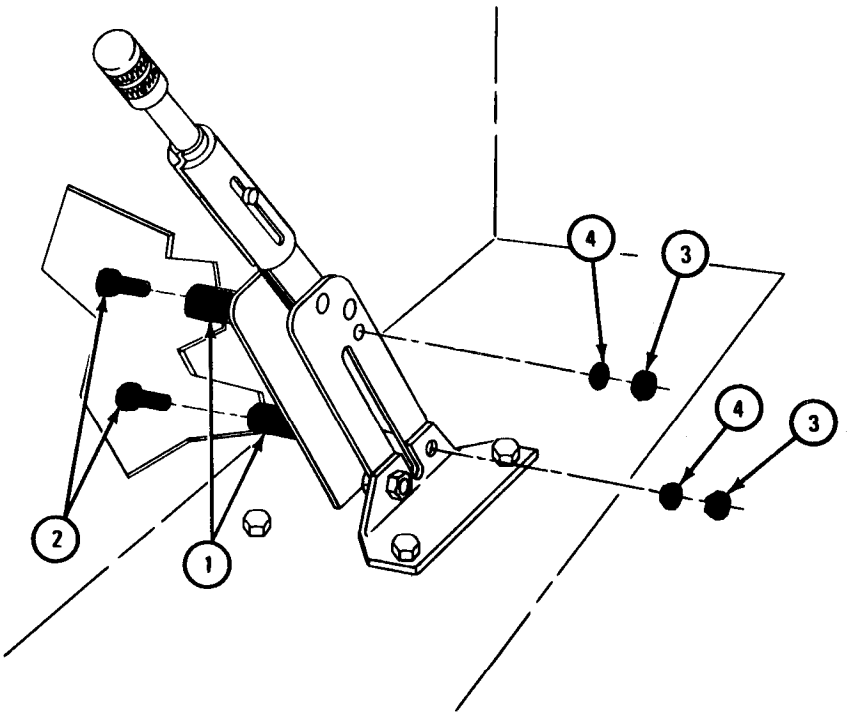
1. Put two spacers (1) in place. Working from inside driver's seat and using 9/16-inch wrench, put in and hold two screws (2).
2. Using 9/16-inch socket wrench, screw on and tighten two nuts (3) with two washers (4).

NOTE

Follow-on Maintenance Action Required:

1. Replace handbrake linkage. Refer to para 12-4.
2. Adjust handbrake linkage. Refer to para 12-6.
3. Replace tool box. Refer to Part 2, para 17-11.
4. Replace operator's seat cushion. Refer to Part 2, para 17-7.

END OF TASK



TA 089410

12-4. HANDBRAKE LINKAGE REMOVAL AND REPLACEMENT.

TOOLS: Pliers
9/16-inch wrench (2)
7/16-inch wrench (2)
7/8-inch wrench
5/16-inch open end wrench

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Loosen handbrake. Refer to TM 9-2320-211-10.

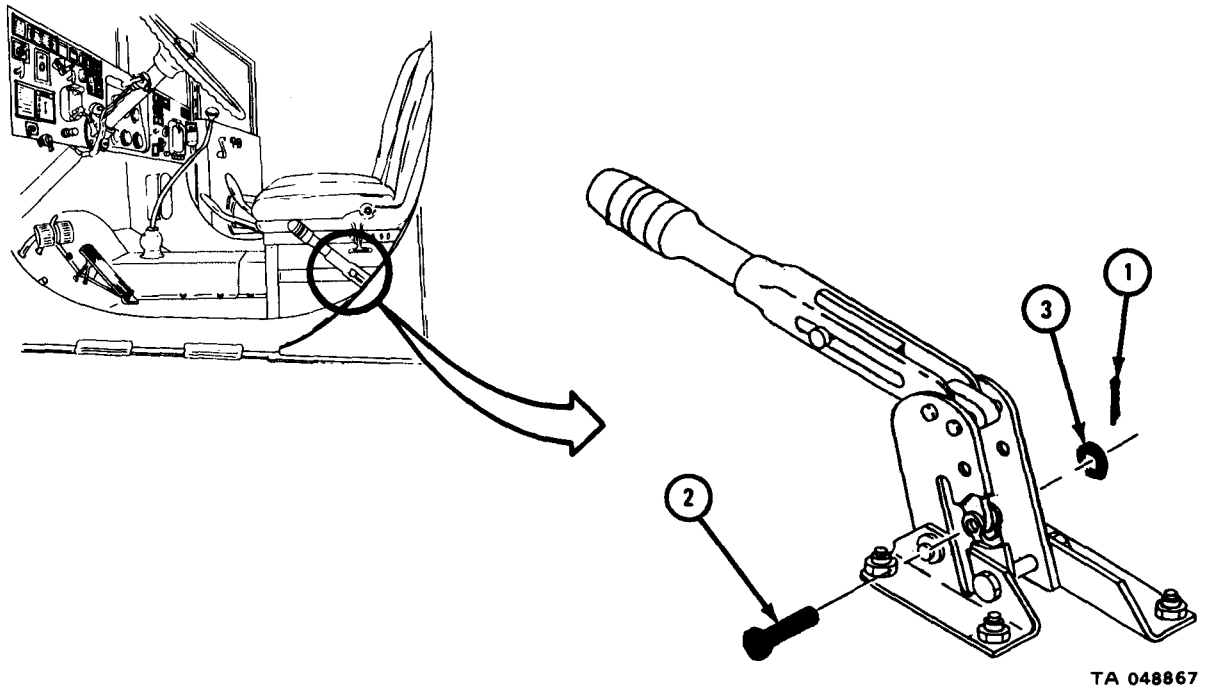
(2) Remove tool box and fuel can holder. Refer to Part 2, para 17-11.

b. Removal.

FRAME 1

1. Using pliers, pull cotter pin (1) from clevis pin (2).
2. Take off washer (3) and pull out clevis pin (2).

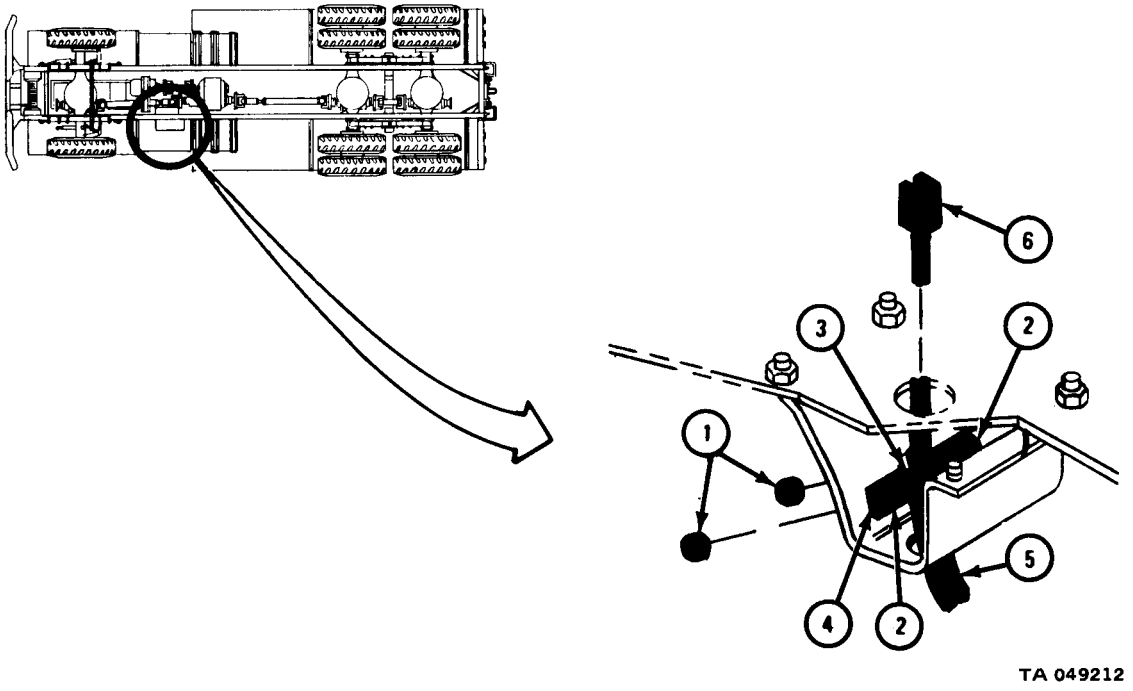
GO TO FRAME 2



FRAME 2

1. Using 9/16-inch wrenches, unscrew and take off two nuts (1).
2. Take out two screws (2) and take off clamp (3) and spacer (4).
3. Pull cable (5) down through cab floor and unscrew and take off clevis (6).

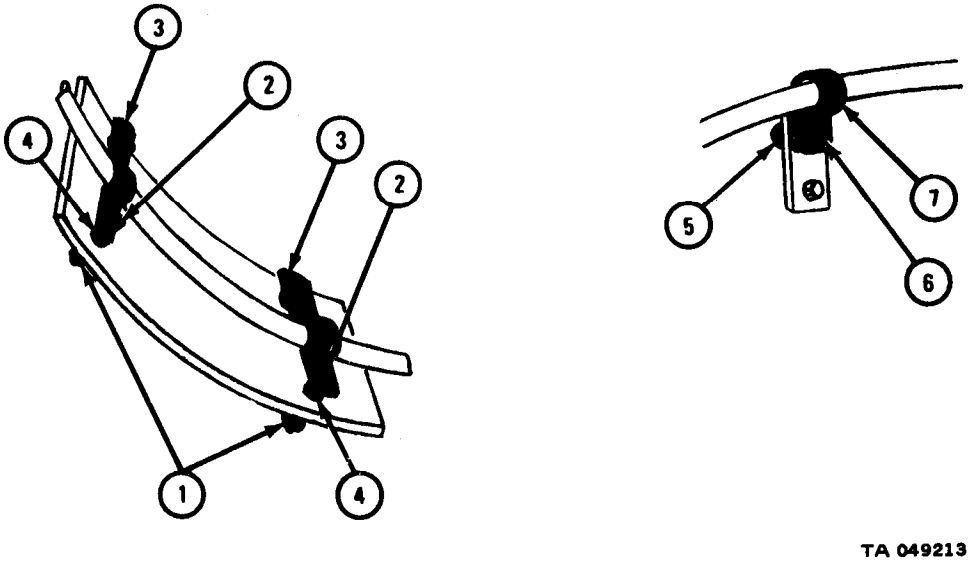
GO TO FRAME 3



FRAME 3

1. Using 7/16-inch wrenches, unscrew and take out four nuts (1).
2. Take out four screws (2) and take off two clamps (3) and eight **washers** (4).
3. Using 7/16-inch wrenches, unscrew and take off nut (5).
4. Take out screw (6) and take off clamp (7).

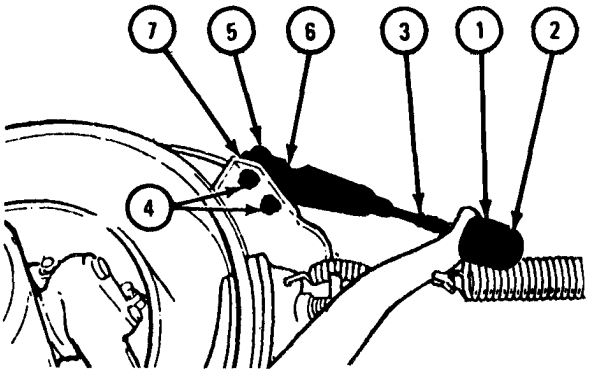
GO TO FRAME 4



FRAME 4

1. Using 7/8-inch wrench, hold adjusting nut (1) and using 9/16-inch wrench, unscrew and take off locknut (2).
2. Using 5/16-inch wrench, hold cable (3) and using 7/8-inch wrench, unscrew and take off nut (1).
3. Using 9/16-inch wrenches, unscrew and take off two nuts (4).
4. Take out two screws (5) and take off clamp (6) and spacer (7).
5. Take away cable (3).

END OF TASK



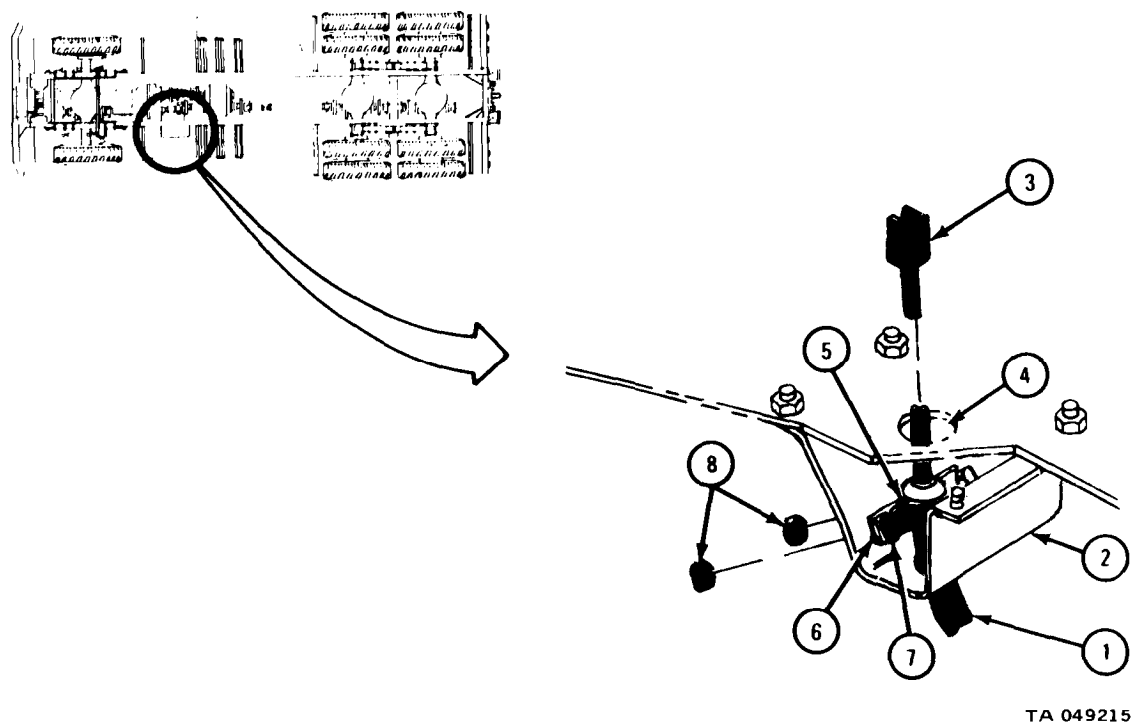
TA 049214

c. Replacement.

FRAME 1

1. Push one end of cable (1) through hole in bottom of bracket (2).
2. Screw clevis (3) on end of cable (1) and push cable up through hole in floor (4).
3. Place clamp (5) on cable (1) in first groove from end of cable cover.
4. Line up holes in spacer (6) and clamp (5) with holes in bracket (2).
5. Push two screws (7) through holes in clamp (5).
6. Using 9/16-inch wrenches, screw on and tighten two nuts (8).

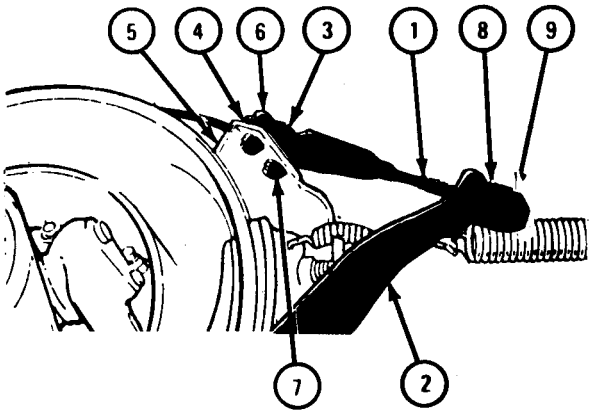
GO TO FRAME 2



FRAME 2

1. Push end of cable (1) through hole in brakeshoe lever (2).
2. Place clamp (3) on cable (1) in second groove from end of cable cover.
3. Line up holes in spacer (4) and clamp (3) with holes in bracket (5).
4. Push two screws (6) through holes in clamp (3).
5. Using 9/16-inch wrenches, screw on and tighten two nuts (7) .
6. Using 5/16-inch wrench, hold cable (1) and using 7/8-inch wrench, screw adjusting nut (8) on end of cable (1) .
7. Using 9/16-inch wrench, screw on and tighten locknut (9).

GO TO FRAME 3

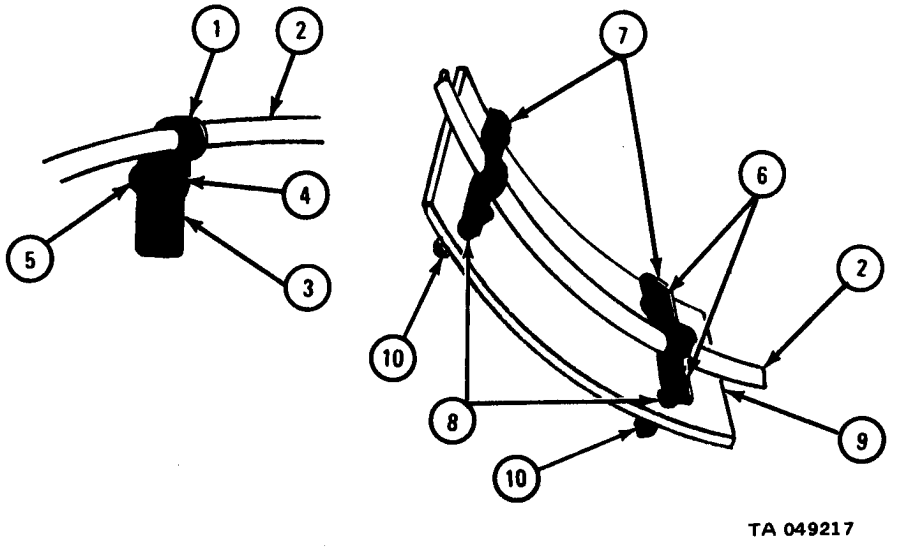


TA 049216

FRAME 3

1. Place clamp (1) over cable (2).
2. Line up holes in clamp (1) with holes in support (3).
3. Push screw (4) through holes in clamp (1).
4. Using 7/16-inch wrenches, screw on and tighten nut (5).
5. Put two screws (6) through holes in each of two clamps (7).
6. Put two washers (8) on each screw (6).
7. Place clamps (7) over cable (2) with screws (6) through holes in wear plate (9).
8. Using 7/16-inch wrenches, screw on and tighten four nuts (10).

GO TO FRAME 4



FRAME 4

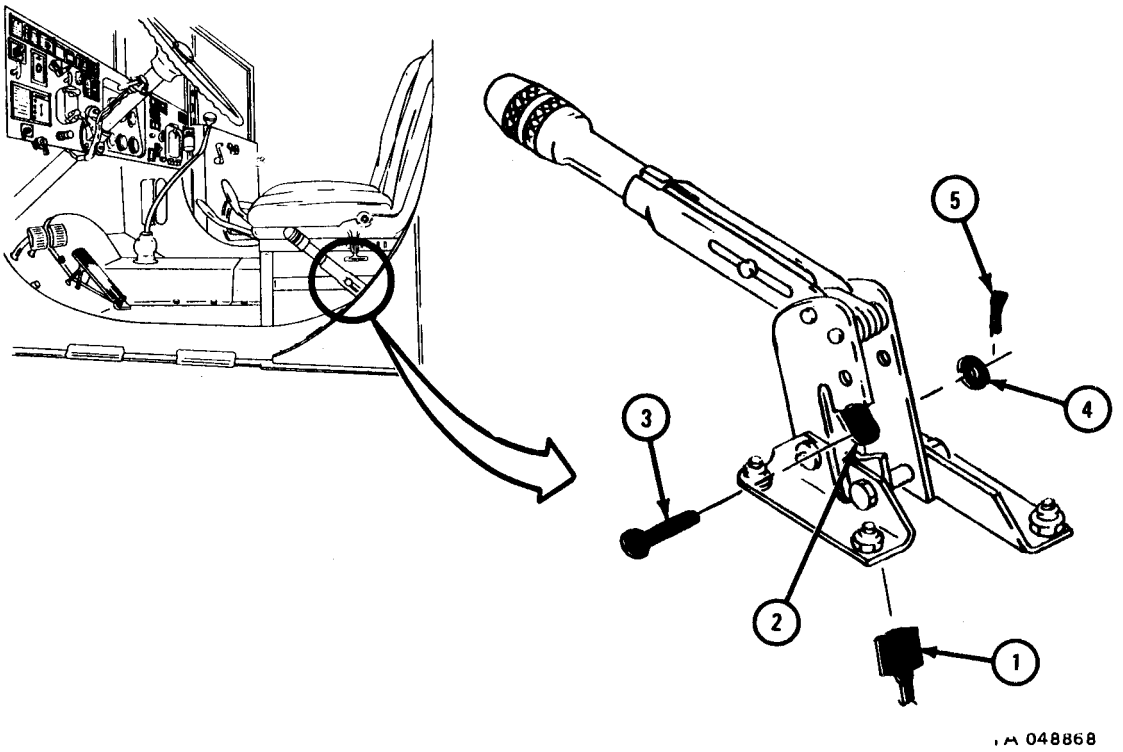
1. Line up holes in clevis (1) with holes in handbrake lever (2).
2. Push clevis pin (3) through holes in clevis (1) and handbrake lever (2).
3. Put washer (4) on clevis pin (3) and put cotter pin (5) through hole in clevis pin.
4. Using pliers, bend open ends of cotter pin (5).

NOTE

Follow-on Maintenance Action Required:

1. Replace tool box and fuel can holder. Refer to Part 2, para 17-11.
2. Tighten handbrake. Refer to TM 9-2320-211-10,
3. Adjust handbrake brakeshoe. Refer to para 12-6.

END OF TASK



12-5. HANDBRAKE SHOE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : 6-inch ruler
9/16-inch wrench
Snapring pliers
7/16-inch wrench
Torque wrench
Screwdriver
1 5/16-inch wrench
1 l/2-inch wrench
7/8-inch wrench
5/16-inch wrench
Pliers

SUPPLIES: Wood blocks
Washer

PERSONNEL: One

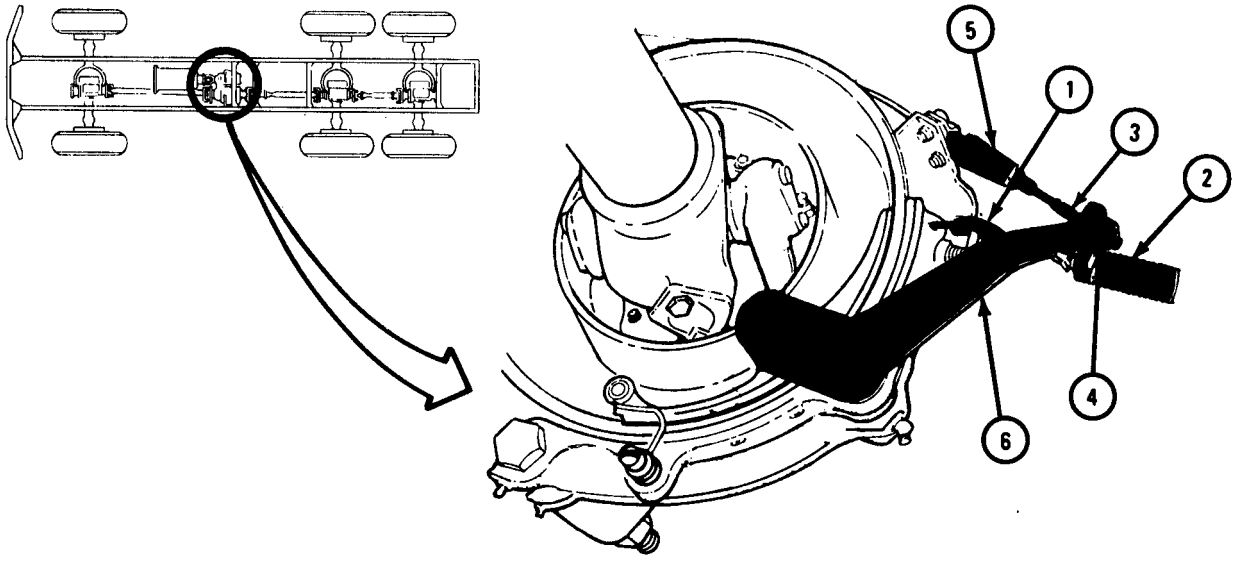
EQUIPMENT CONDITION: Truck parked, engine off, handbrake off, wheels chocked.

a. Removal.

FRAME 1

1. Using pliers, unhook one side of outer shoe return spring (1) and brake lever spring (2).
2. using 5/16-inch wrench, hold cable (3) and using 7/8-inch wrench, unscrew and take off adjusting nut (4).
3. Take cable (5) from lever (6).

GO TO FRAME 2



TA 054811

FRAME 2

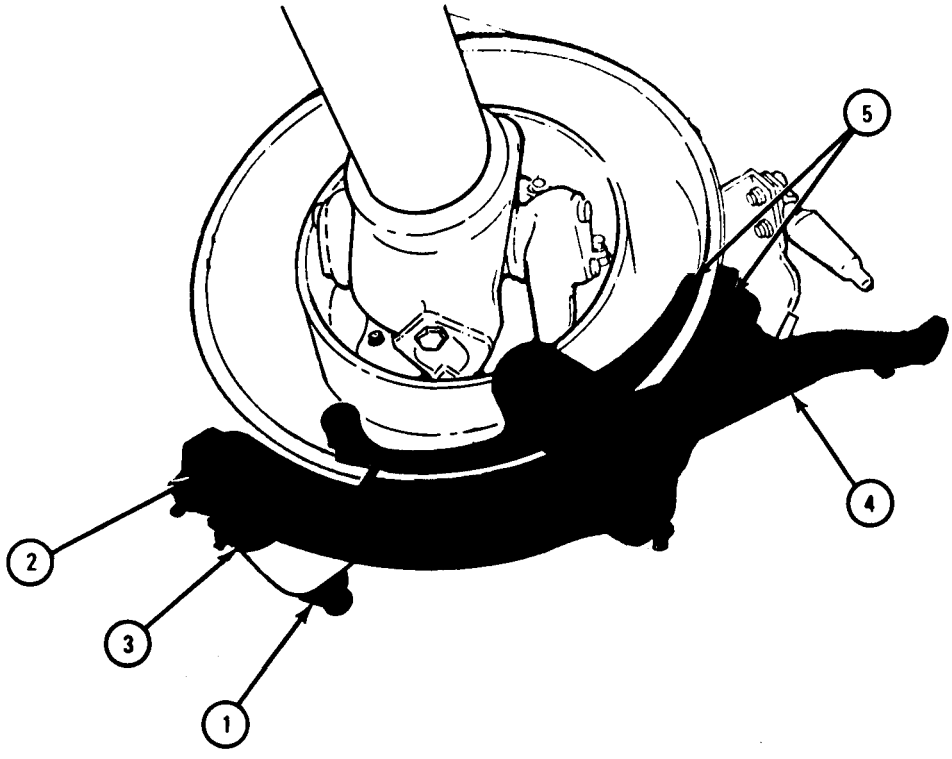
1. Using 1 7/16-inch wrench, unscrew and take off locknut (l).
2. Using 1 5/16-inch wrench, unscrew and take out bolt (2) and, if there are any, washers (3).

NOTE

If there are washers (3), note number of washers to be sure same number are put back.

3. Move lever (4) to the left and pull out brakeshoe (5) and lever assembly.

GO TO FRAME 3

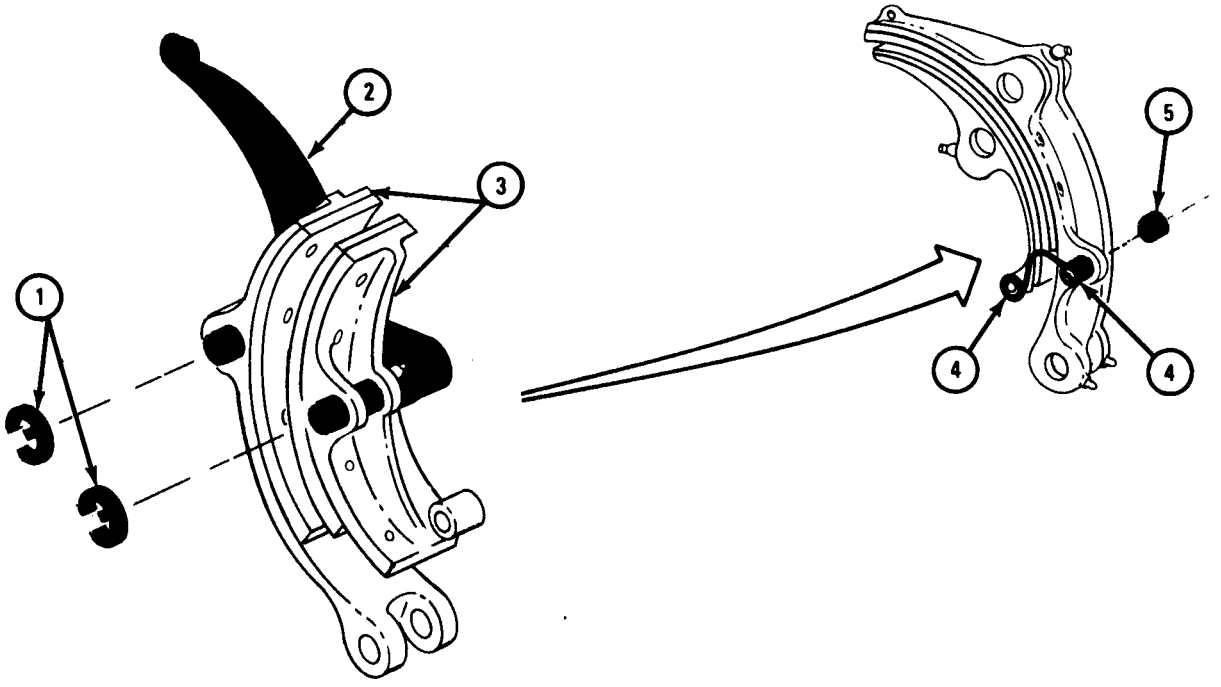


TA 054812

FRAME 3

1. Using two screwdrivers, pull off two spring clips (1).
2. Pull lever (2) from brakeshoes (3).
3. Using pliers, pull off two spring clips (4).
4. Using 9/16-inch wrench and screwdriver, unscrew and take off locknut (5).

GO TO FRAME 4

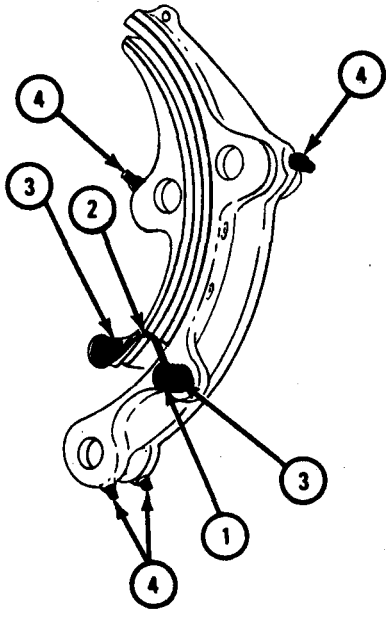


TA 054813

FRAME 4

1. Using screwdriver, unscrew and take out adjusting screw (1), spring (2), and four washers (3).
2. Using 7/16-inch wrench, unscrew and take out four lubrication fittings (4).

END OF TASK



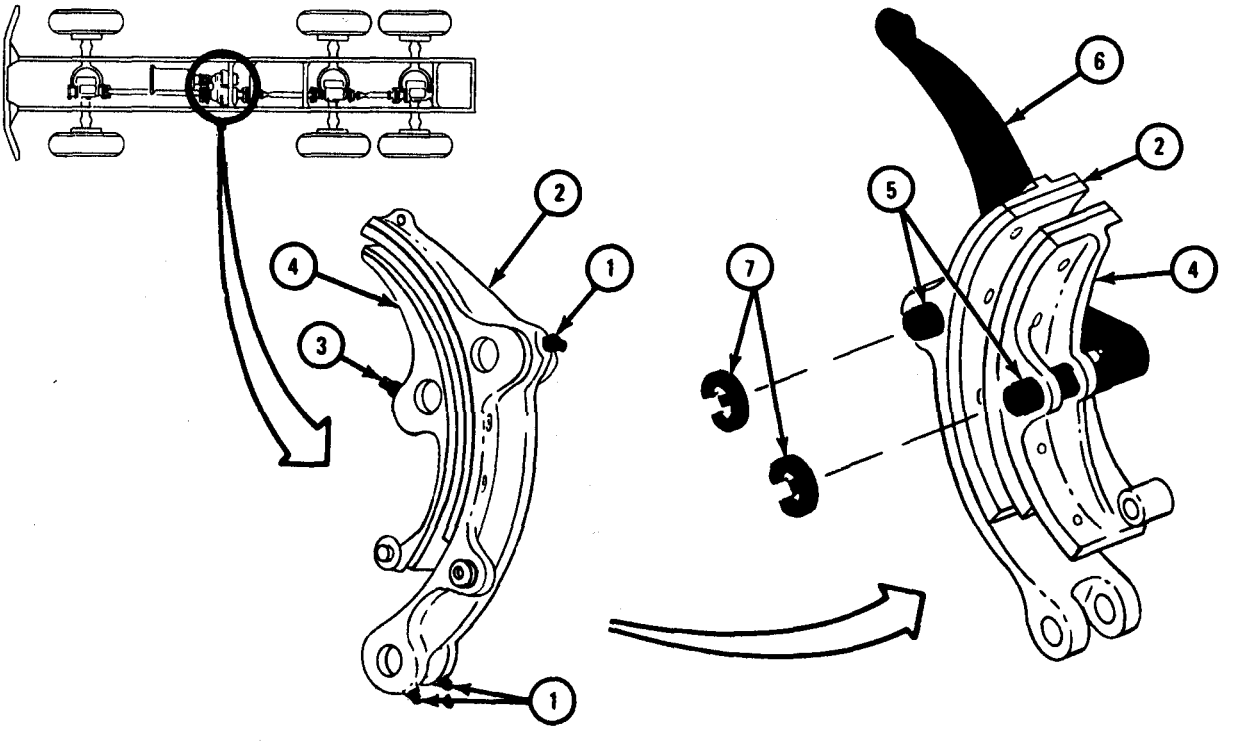
TA 054814

b. Replacement.

FRAME 1

1. Using 7/16-inch wrench, screw three lubrication fittings (1) into outer brakeshoe (2) and one lubrication fitting (3) into inner brakeshoe (4).
2. Place two pins (5) through holes in outer brakeshoe (2), inner brakeshoe (4), and lever (6).
3. Using pliers, snap on two spring clips (7).

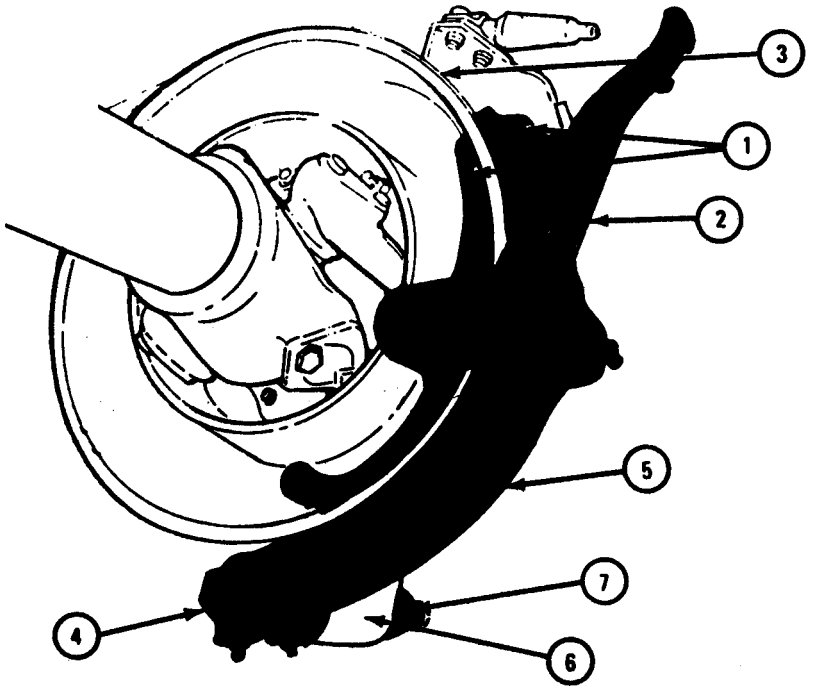
GO TO FRAME 2



FRAME 2

1. Place brakeshoe (1) and lever (2) assembly on brake drum (3) as shown.
2. Screw bolt (4) through outer brakeshoe (5) into transfer cover (6).
3. Screw on and hand tighten nut (7).
4. Push lever (2) to left and, using 1 5/16-inch wrench, tighten bolt (4) until there is a slight bind when lever is moved. Then back off bolt l/2-turn.
5. Using 7/16-inch wrench, tighten nut (7).

GO TO FRAME 3



TA 054816

FRAME 3

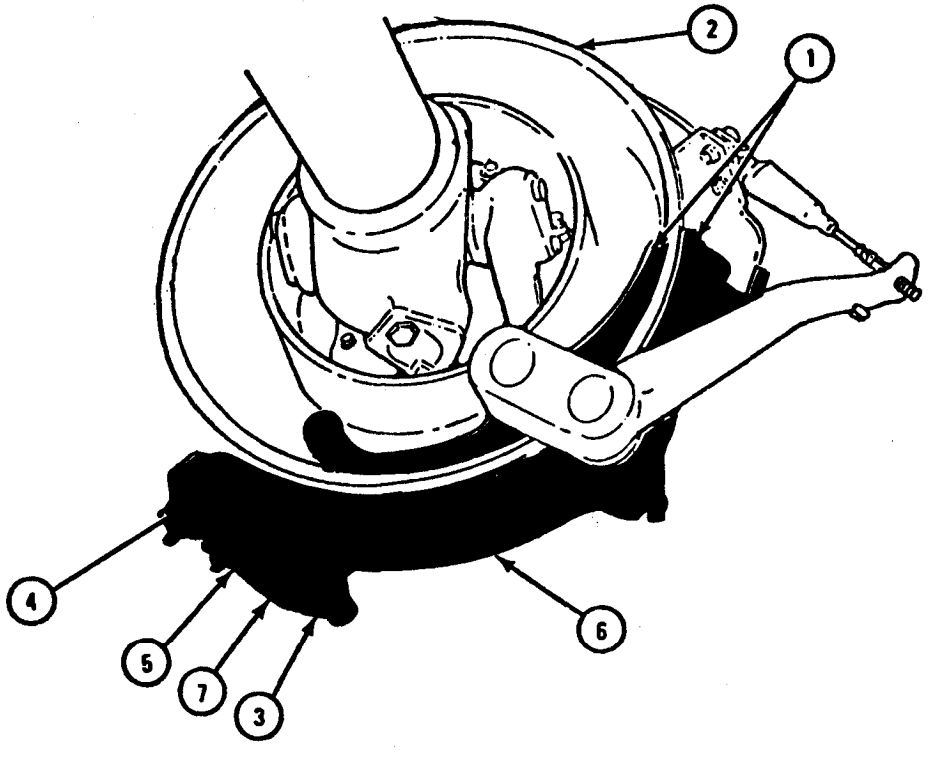
1. Using 6-inch ruler, check alinement of brake lining (1) with brake drum (2).

NOTE

Brake lining must be flush with rim of brake drum within -1/32-inch to +3/32-inch.

2. If brake lining (1) lines up with brake drum (2), using torque wrench, tighten nut (3) to 153 to 196 pound-feet and go to frame 4.
3. If brake lining (1) does not line up with brake drum (2), using 1 7/16-inch wrench, unscrew and take off nut (3).
4. Using 1 5/16-inch wrench, unscrew and take out bolt (4).
5. Add washsers (5) between outer brake shoe (6) and transfer cover (7) until brake lining (1) lines up with brake drum (2).
6. Go back to frame 2 and do steps 2 through 5 again.
7. Using torque wrench, tighten nut (3) to 153 to 196 pound-feet.

GO TO FRAME 4

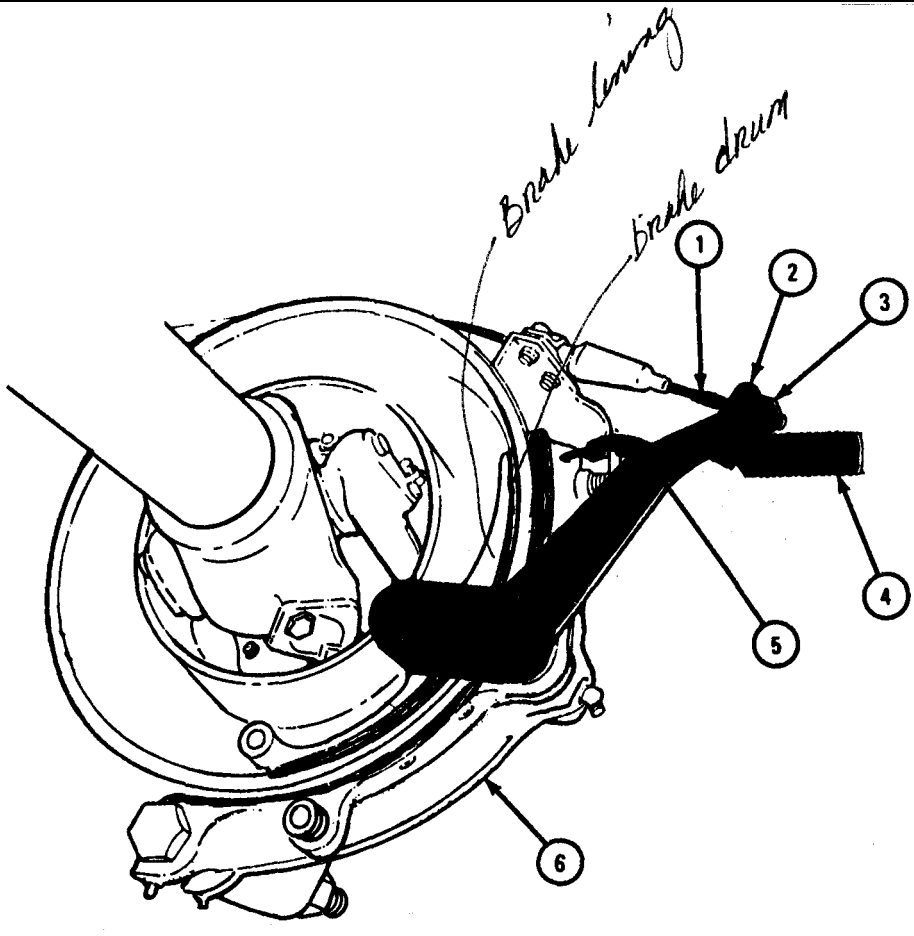


TA 054817

FRAME 4

1. Push end of cable (1) through hole in end of lever (2).
2. Using 5/16-inch wrench and 7/8-inch wrench, screw on and tighten adjusting nut (3).
3. Using pliers, hook brake lever spring (4) onto lever (2) and outer shoe return spring (5) onto outer brakeshoe (6).

GO TO FRAME 5



TA 054818

FRAME 5

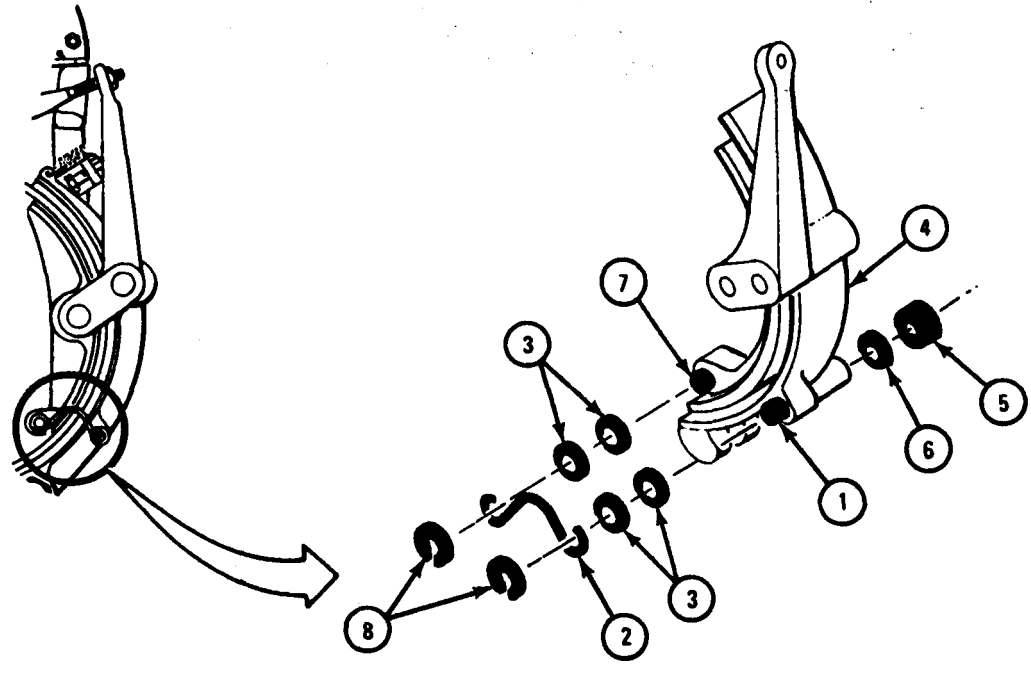
1. Push adjusting screw (1) with spring (2) and two washers (3) into outer brakeshoe (4).
2. Using 9/16-inch wrench and screwdriver, screw on. and tighten nut (5) with washer (6).
3. Place two washers (3) on pin (7).
4. Using spring hook, hook spring (2) onto pin (7).
5. Using snapring pliers, snap on two spring clips (8).

NOTE

Follow-on Maintenance Action Required:

1. Lubricate brakeshoe lever and anchor bolt. Refer to LO 9-2320-211-12.
2. Adjust brakeshoes. Refer to para 12-6.

END OF TASK



TA 054819

12-6. HANDBRAKE SHOE ADJUSTMENT.

TOOLS : 0.015-inch feeler gage
Flat-tip screwdriver
9/16-inch wrench
5/8-inch wrench
Torque wrench, 150 pound-feet capacity
7/8-inch wrench
11/16-inch wrench

SUPPLIES: None

PERSONNEL: One

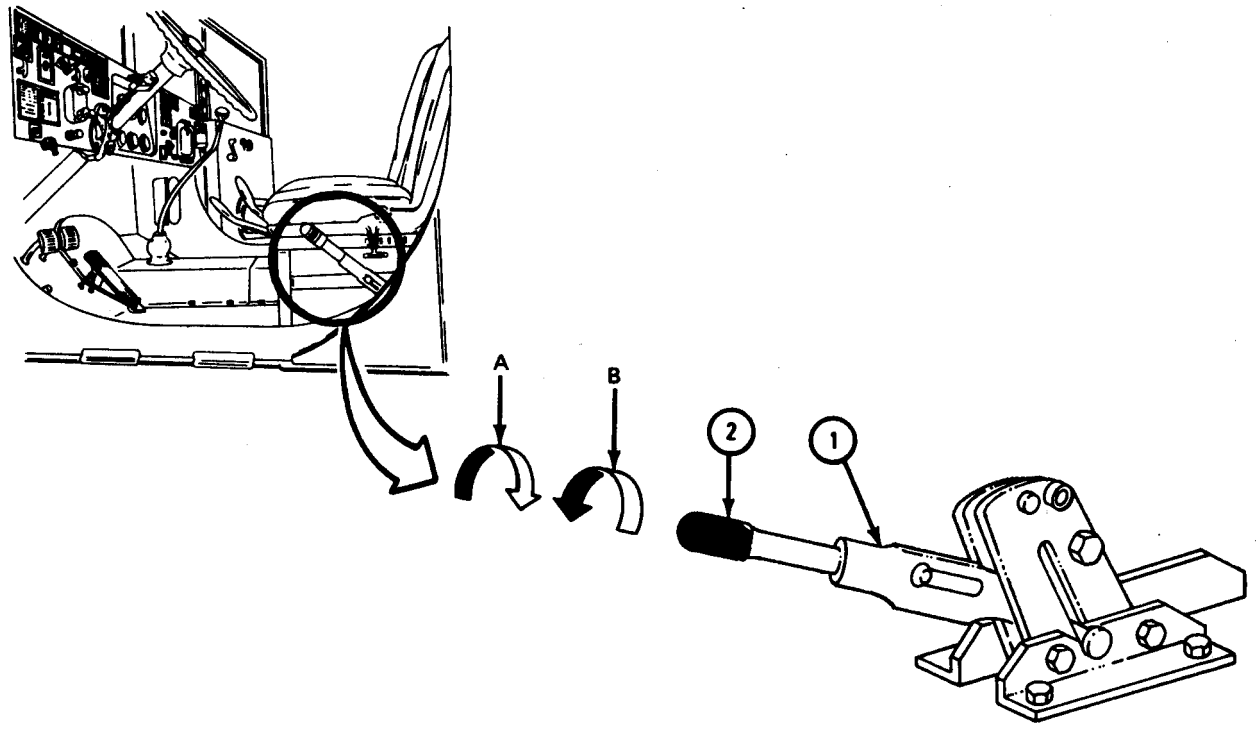
EQUIPMENT CONDITION: Truck parked on level ground, engine off, handbrake off, wheels chocked.

a. Minor Adjustment.

FRAME 1

1. With handbrake lever (1) in full down (brake off) position, turn adjusting cap (2) in direction shown by arrow A to get more braking action.
2. Turn adjusting cap (2) in direction shown by arrow B to get less braking action.
3. If more braking action is still needed, do major adjustment. Refer to para 12-6b.

END OF TASK

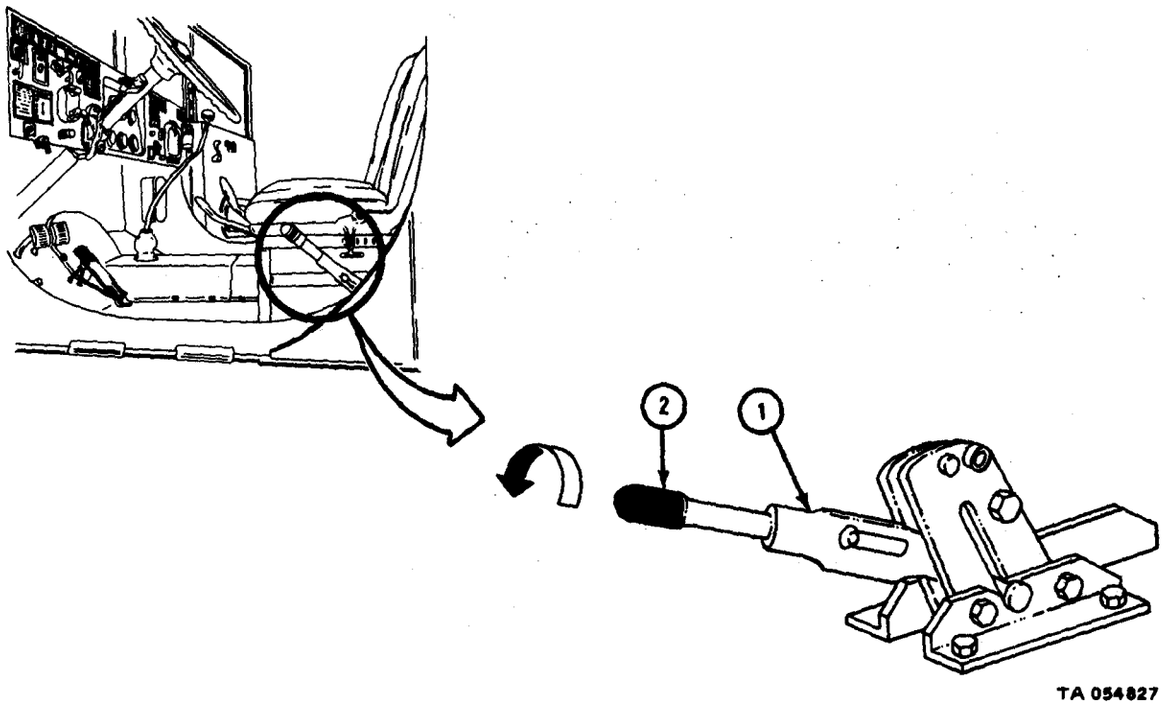


b. Major Adjustment.

FRAME 1

1. With handbrake lever (1) in full down (brake off) position, turn adjusting cap (2) all the way in direction shown by arrow.

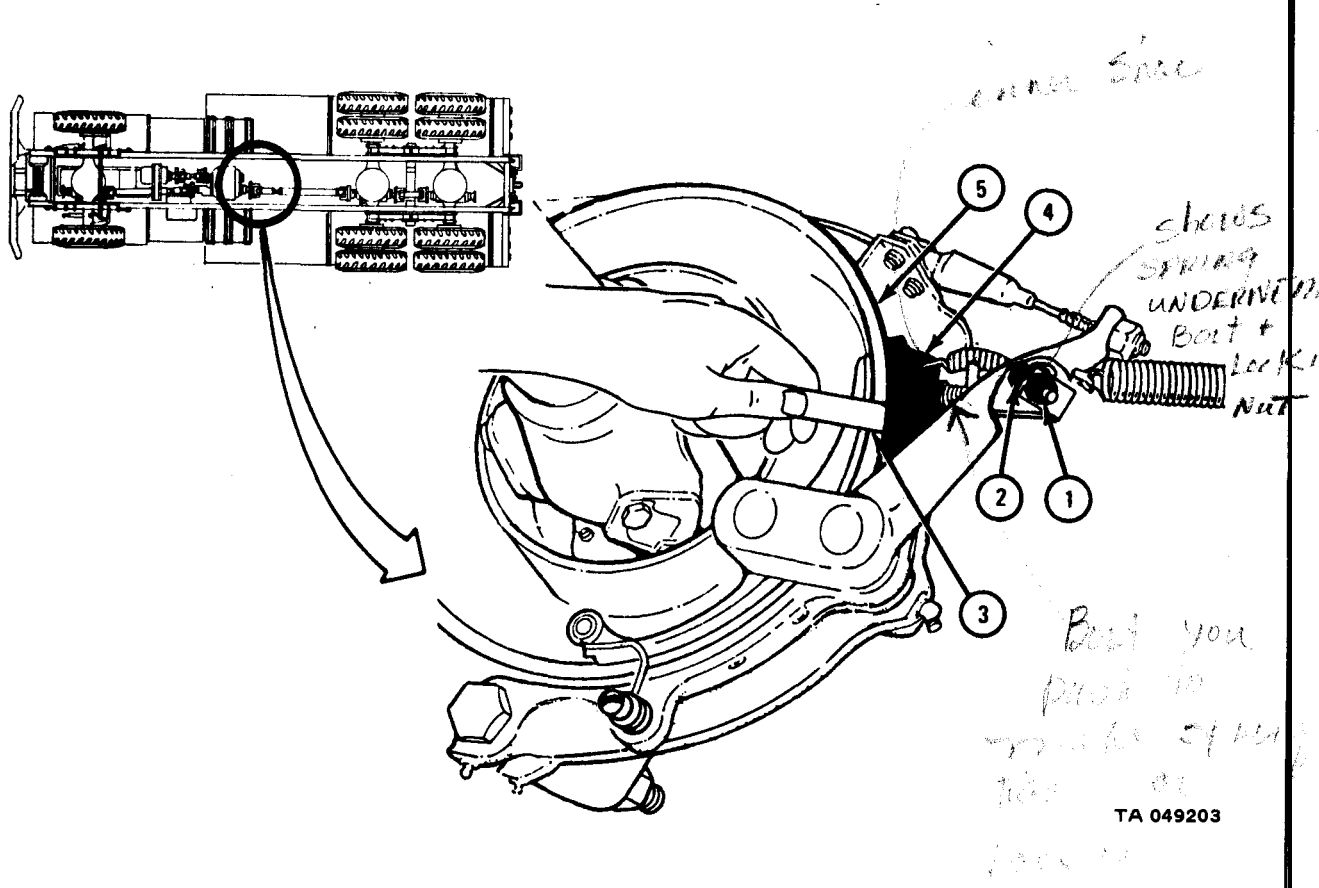
GO TO FRAME 2



FRAME 2

1. Using 11/16-inch wrench, loosen adjusting nut (1).
2. Using 5/8-inch wrench, turn stop screw (2) slightly to the right.
3. Slide feeler gage (3) between upper end of outer brakeshoe (4) and brake drum (5).
4. While sliding feeler gage (3) up and down, turn stop screw (2) to the left until gage barely slips at tightest point.
5. Using 11/16-inch wrench, tighten adjusting nut (1).

GO TO FRAME 3



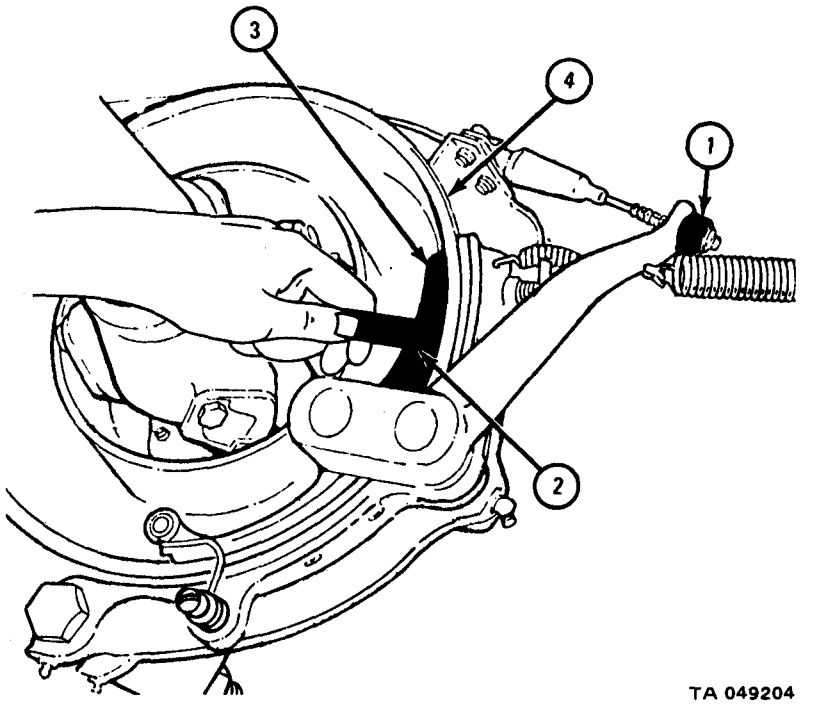
FRAME 3

1. Using 9/16-inch wrench and 7/8-inch wrench, loosen adjusting nut (1).
2. Slide feeler gage (2) between inner brakeshoe (3) and brake drum (4).
3. While sliding feeler gage (2) up and down, turn adjusting nut (1) until gage barely slips at tightest point.

NOTE

For less clearance, turn adjusting nut to the right.
For more clearance, turn adjusting nut to the left.

GO TO FRAME 4

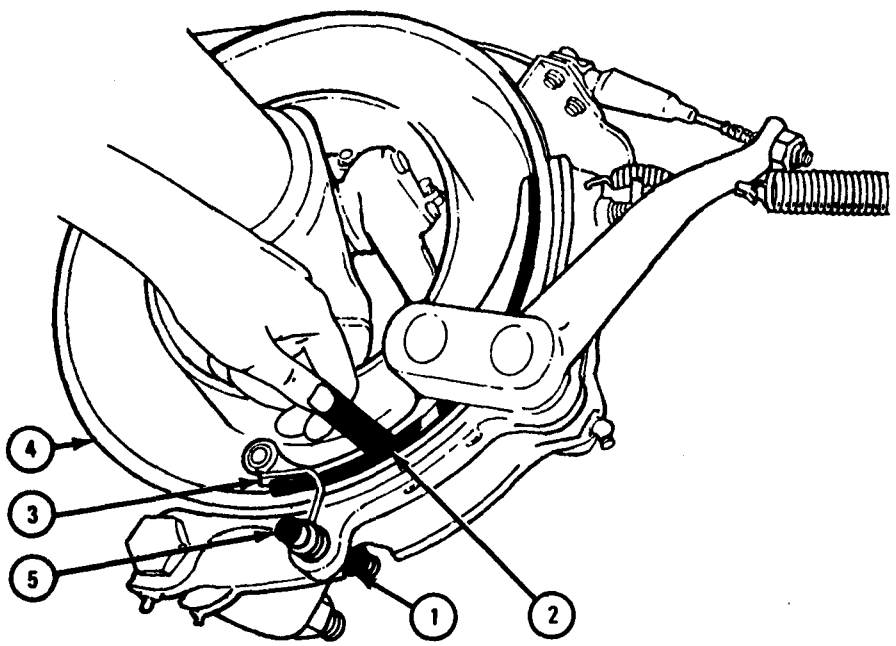


TA 049204

FRAME 4

1. Using screwdriver and 9/16-inch wrench, loosen locknut (1).
2. Slide feeler gage (2) between lower edge of inner brakeshoe (3) and brake drum (4).
3. While sliding feeler gage (2) up and down, turn eccentric screw (5) until gage barely slips at tightest point.
4. Check upper edge clearance. If needed, adjust upper clearance again. Go back to frame 3.
5. When upper and lower edge clearances are the same, using 9/16-inch wrench, tighten locknut (1).
6. Using torque wrench, tighten locknut (1) to 38 to 42 pound-feet.

END OF TASK



TA 049205

Section III. SERVICE BRAKES

12-7. BRAKESHOE ASSEMBLY REMOVAL AND REPLACEMENT.

NOTE

This task is the same for the front and rear brakeshoe assemblies. This task is shown for the left front brakeshoe assembly.

TOOLS : Safety jack
Return spring pliers
Snapring pliers
Retainer ring pliers
9/16-inch open end wrench
11/16-inch wrench
Pliers
11/16-inch open end wrench

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

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Jack up wheel and support truck. Refer to TM 9-2320-211-10.

(2) Take off wheel and tire assembly. Refer to TM 9-2320-211-10.

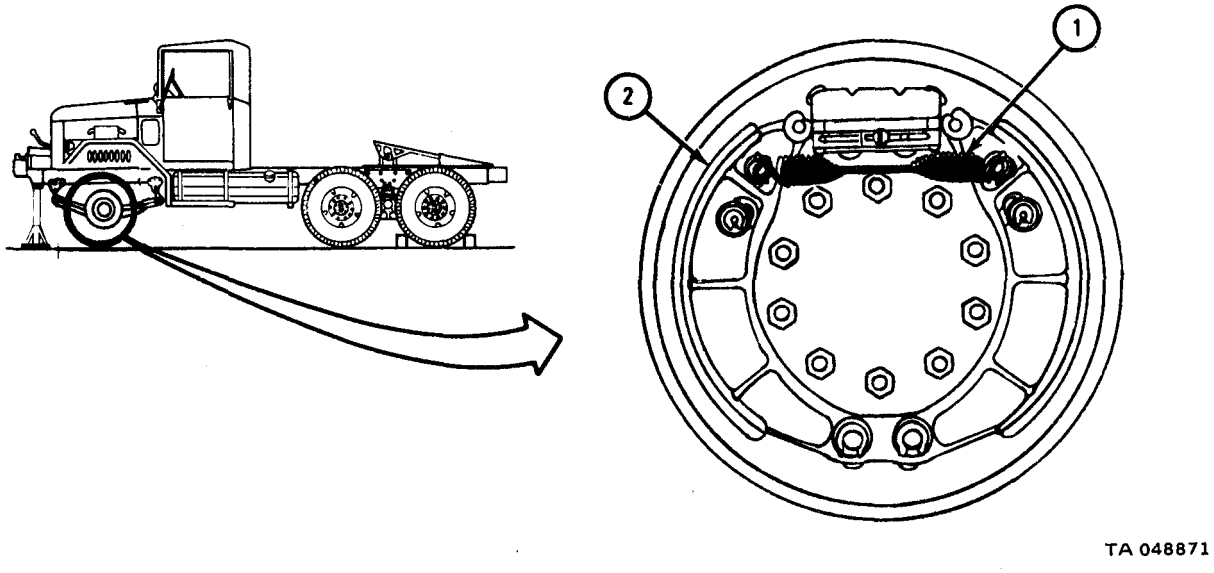
(3) Take off brake hub and drum assembly. Refer to Part 2, para 13-4.

b. Removal.

FRAME 1

1. Using return spring pliers, unhook spring (1) from front brakeshoe (2). Take off spring.

GO TO FRAME 2



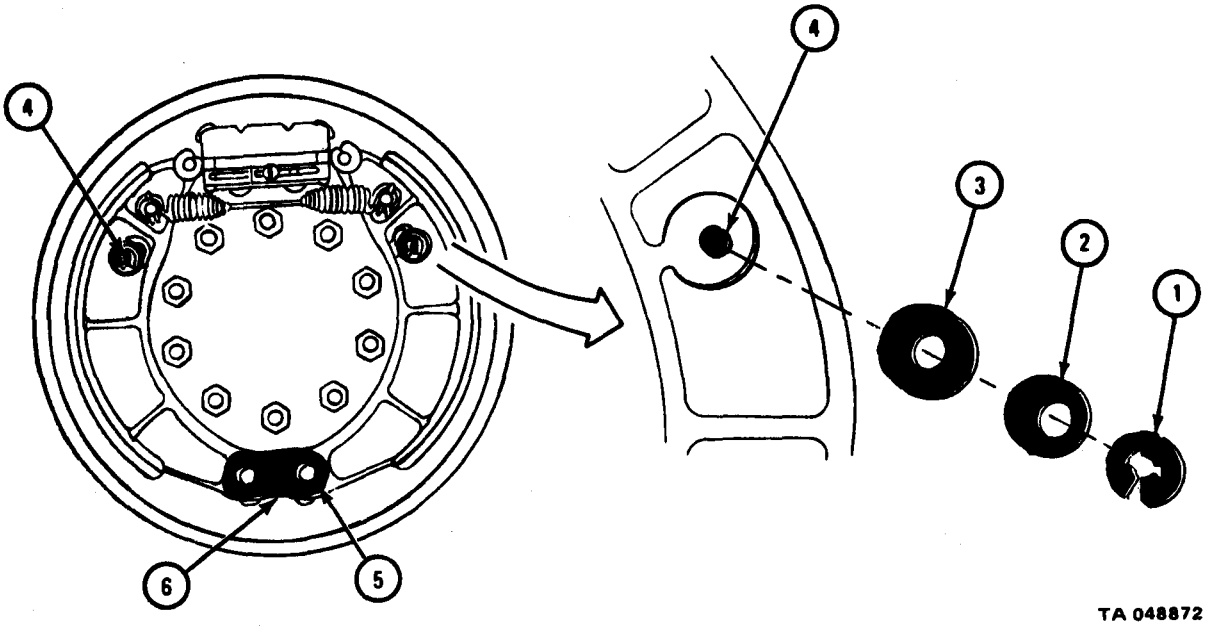
FRAME 2

NOTE

When taking off retaining rings (1), be careful not to lose washers (2 and 3). They may pop off.

1. Using pliers, take off retaining ring (1), spring tension washer (2), and flat washer (3) from each of two guide pins (4),
2. Using snapring pliers, take off two slotted washers (5).
3. Take off anchor pin strap (6).

GO TO FRAME 3



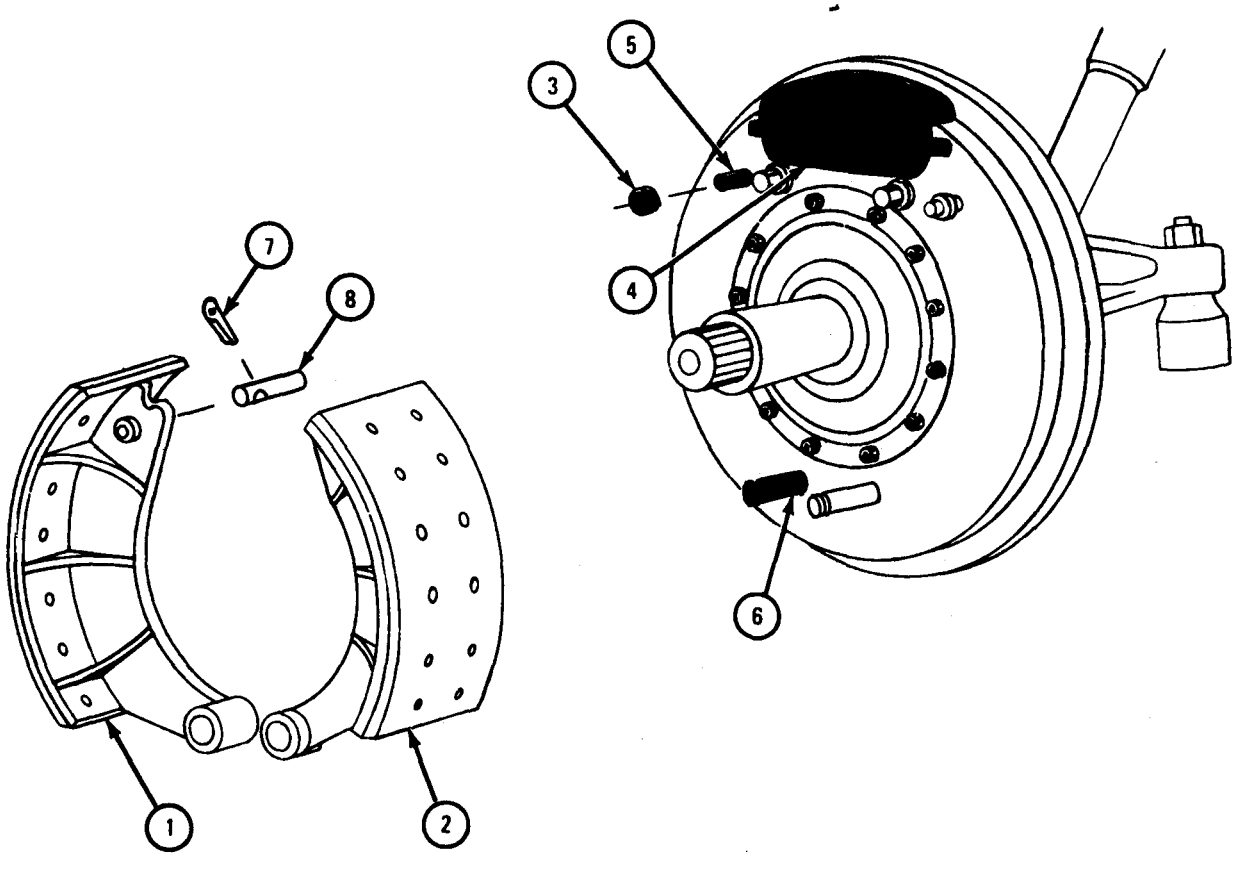
FRAME 3

NOTE

When taking off brakeshoes (1 and 2), be careful not to lose flat washers (3).

1. Holding front brakeshoe (1) at top and bottom, gently pull top of brakeshoe to left until it is free of wheel cylinder (4).
2. Slide brakeshoe (1) off guide pin (5) and anchor pin (6). Take off flat washer (3).
3. Using pliers, take out one cotter pin (7) and one grooved headless pin (8).
4. Do steps 1, 2 and 3 again for rear brakeshoe (2).

END OF TASK



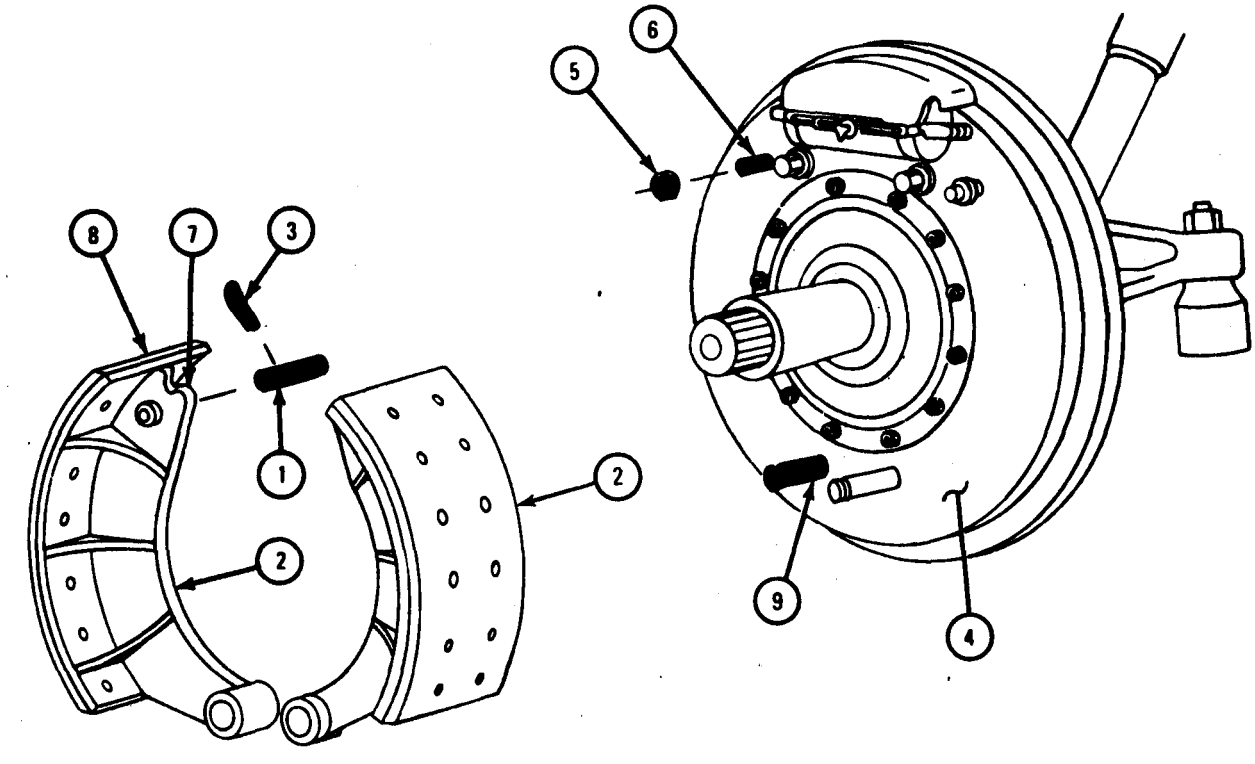
TA 048873

c. Replacement.

FRAME 1

1. Put pins (1) in brakeshoes (2). Put cotter pins (3) in pins (1).
2. Using solvent, clean backing plate (4).
3. Push flat washer (5) on each of two guide pins (6).
4. Hold front brakeshoe (2) so that slot (7) is on top and lining pad (8) is on left side.
5. Aline holes in brakeshoe (2) with left guide pin (6) and left anchor pin (9),

GO TO FRAME 2

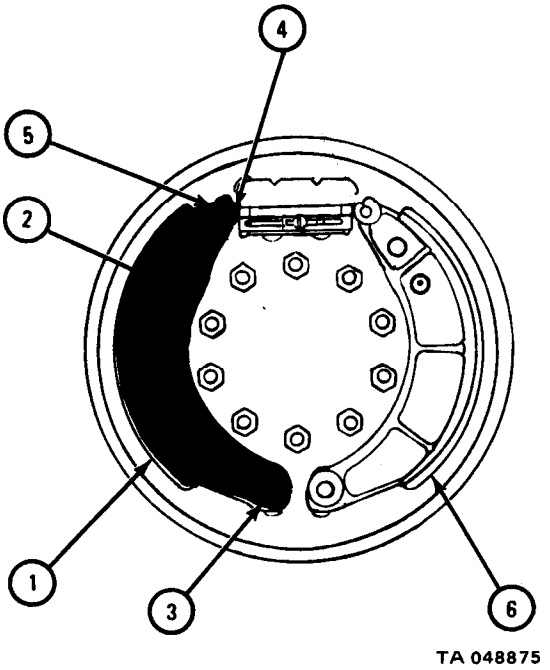


TA 121180

FRAME 2

1. Push front brakeshoe (1) on guide pin (2) and anchor pin (3).
2. Put slot (4) into link (5).
3. Do steps 1 and 2 again for rear brakeshoe (6).

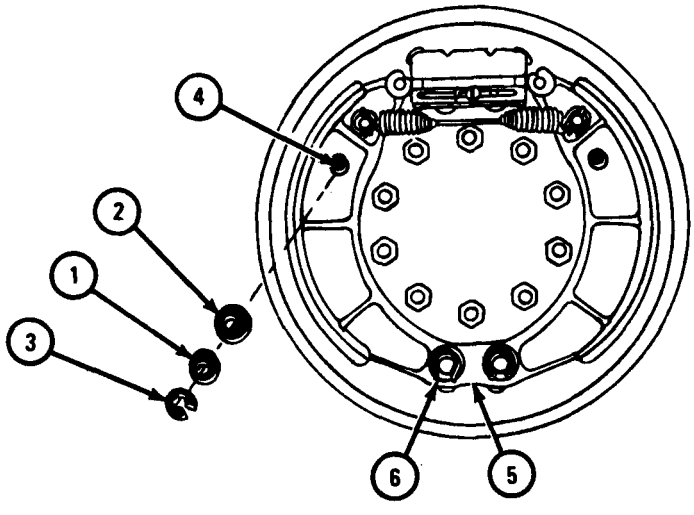
GO TO FRAME 3



FRAME 3

1. Put on spring tension washer (1), flat washer (2), and retaining clip (3). Use pliers to close ends of two guide pins (4).
2. Put on anchor pin strap (5) and use pliers to close two slotted washers (6) over pin.

GO TO FRAME 4

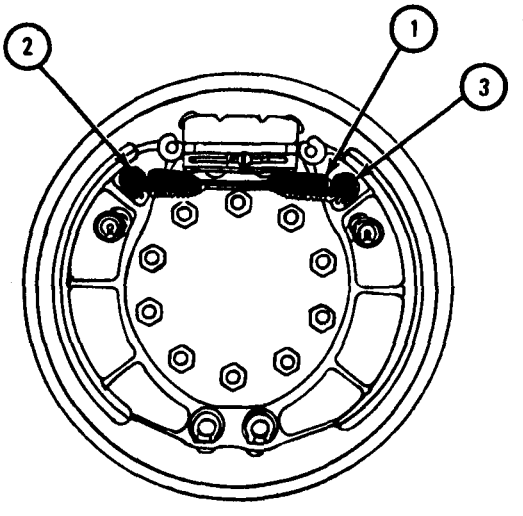


TA 048876

FRAME 4

1. Hook end of return spring (1) around groove in pin (2).
2. Using return spring pliers, put other end of spring (1) on pin (3).

GO TO FRAME 5

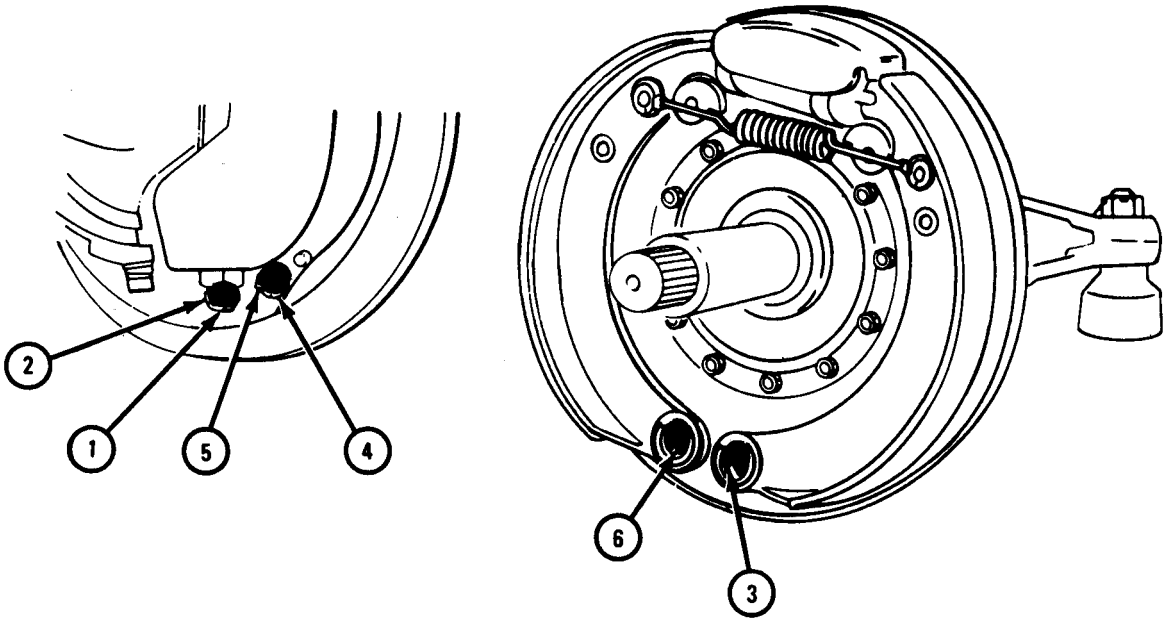


TA 048877

FRAME 5

1. Using 1 1/16-inch wrench, loosen and hold anchor pin locknut (1). Using 9/16-inch open end wrench, turn anchor pin (2) until punch mark (3) is in position shown.
2. Using 9/16-inch open end wrench, hold anchor pin (2). Using 1 1/16-inch wrench, tighten anchor pin locknut (1).
3. Using 1 1/16-inch wrench, loosen and hold anchor pin locknut (4).
4. Using 9/16-inch open end wrench, turn anchor pin (5) until punch mark (6) is in position shown.
5. Using 9/16-inch open end wrench, hold anchor pin (5). Using 1 1/16-inch wrench, tighten anchor pin locknut (4).

GO TO FRAME 6



REAR VIEW

FRONT VIEW

TA 049931

FRAME 6

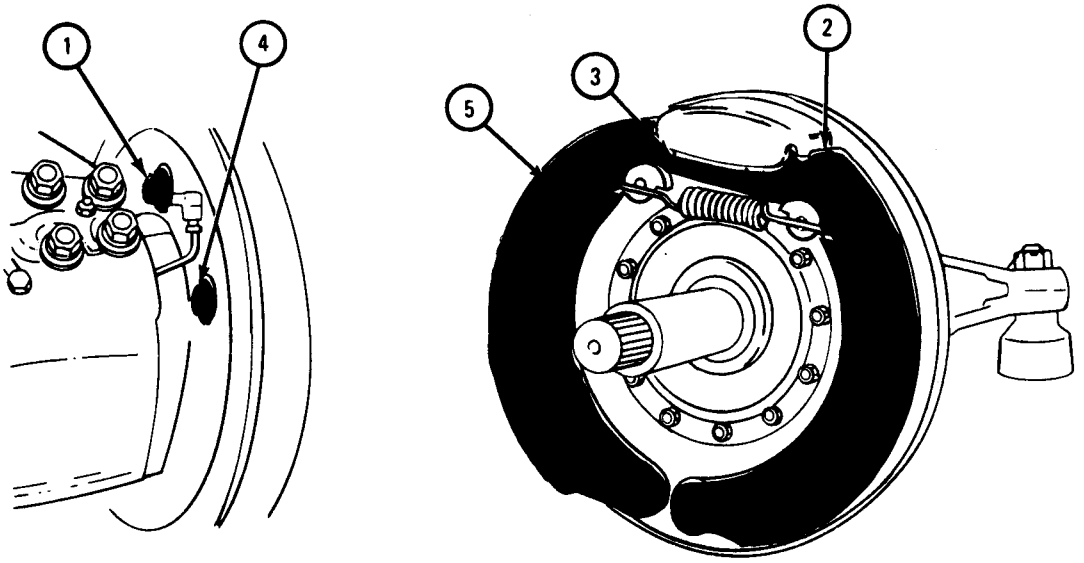
1. Using 11/16-inch wrench, turn adjusting cam (1) to the left until top of rear brakeshoe (2) moves closest to wheel cylinder (3).
2. Using 11/16-inch wrench, turn cam (4) to the right until top of front brakeshoe (5) moves closest to wheel cylinder (3).

NOTE

Follow-on Maintenance Action Required:

1. Replace brake hub and drum assembly. Refer to Part 2, para 13-4.
2. Do service brake major adjustment. Refer to para 12-9.

END OF TASK



REAR VIEW

FRONT VIEW

TA 048879

12-8. SERVICE BRAKES MINOR ADJUSTMENT.

NOTE

This task is for the left front wheel. It can be used for all six wheels of the truck.

TOOLS : 11/16-inch socket wrench
Socket handle
8-inch extension
Motor vehicle trestle
Wheel chocks (4)

SUPPLIES: None

PERSONNEL: One

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

FRAME 1

1. Chock rear wheels.

WARNING

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

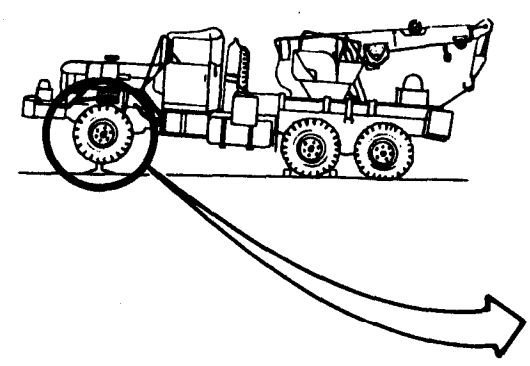
2. Jack up truck and put trestle (1) under clamp plate (2). Jack down truck onto trestle. Refer to TM 9-2320-211- 10.

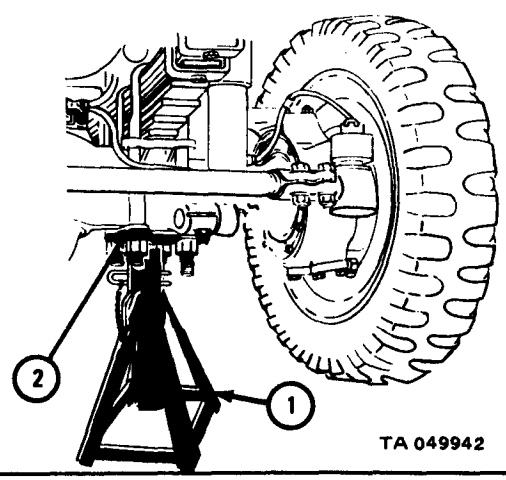
CAUTION

Do not adjust brakes if the wheel bearing adjustment is bad or the brakes are hot.

3. Check wheel bearing adjustment. Refer to Part 2, para 13-3.

GO TO FRAME 2

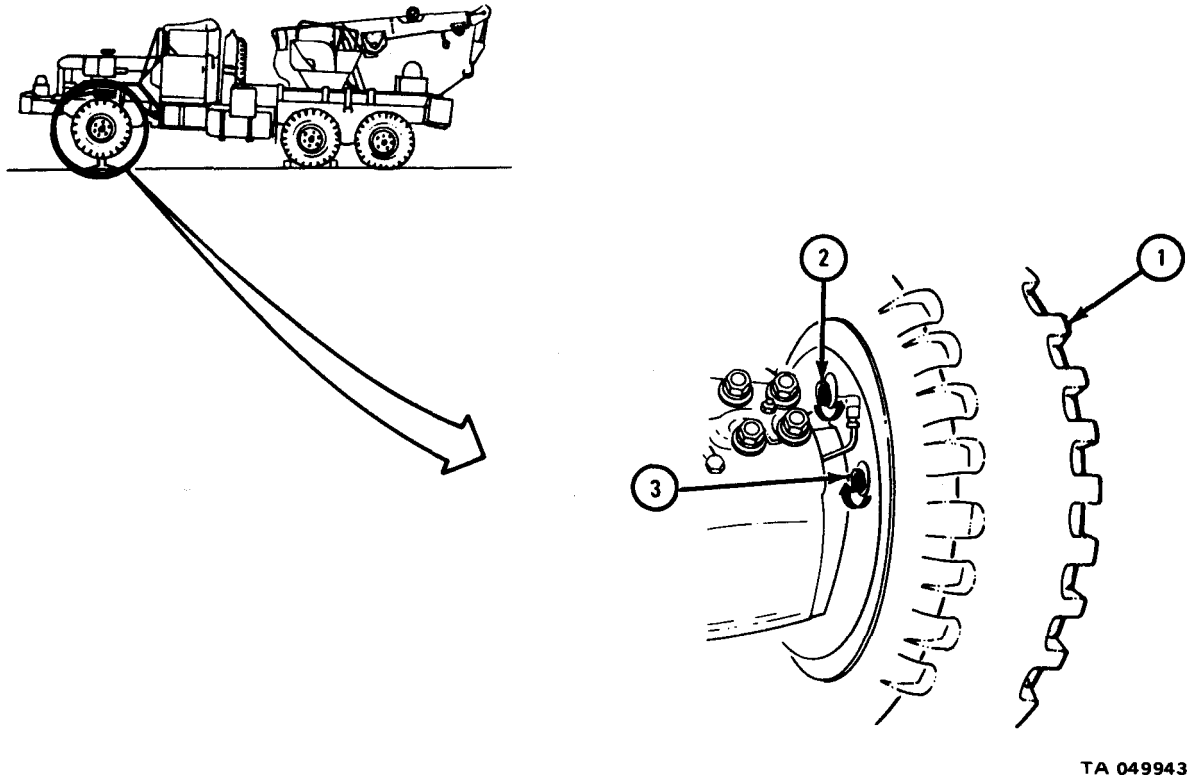




FRAME 2

1. Turn wheel (1) by hand. Using 11/16-inch socket wrench and extension, turn cam (2) the way the arrow shows until wheel drags.
2. Turn wheel (1) by hand. Using 11/16-inch socket wrench and extension, turn cam (2) the other way until wheel stops dragging.
3. Turn wheel (1) by hand. Using 11/16-inch socket wrench and extension, turn cam (3) the way the arrow shows until wheel drags.
4. Turn wheel (1) by hand. Using 11/16-inch socket wrench and extension, turn cam (3) the other way until wheel stops dragging.
5. Jack up truck and take away safety jack. Jack truck down. Refer to TM 9-2320-211-10.
6. Take chocks away from truck.

END OF TASK



12-9. SERVICE BRAKES MAJOR ADJUSTMENT.

NOTE

This task is the same for all six wheels of the truck.

TOOLS : Safety jack; Chocks (4); l/2-inch open end wrench; 0.010-inch feeler gage; Lug wrench; 11/16-inch socket; 11/16-inch wrench; 1 1/16-inch open end wrench; 0.020-inch feeler gage

SUPPLIES: None

PERSONNEL: One

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

FRAME 1

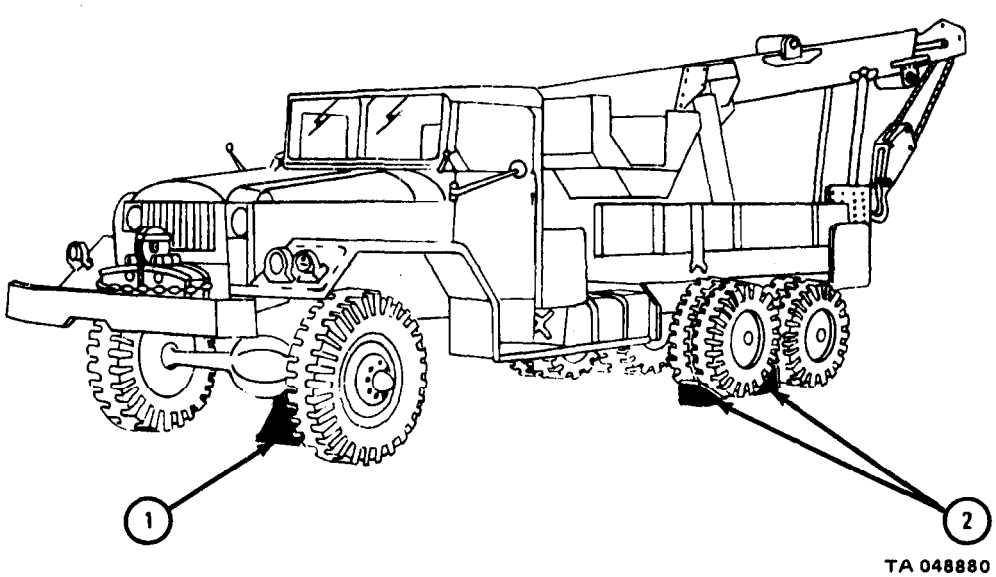
1. Check wheel bearing adjustment. Refer to Part 2, para 13-3.

CAUTION

Do not adjust brakes if the wheel bearing adjustment is bad or the brakes are hot.

2. Place chocks (2) at wheels that are still on ground.
3. Jack up vehicle and place safety jack (1) under axle housing and take off wheel. Refer to TM 9-2320-211-10.

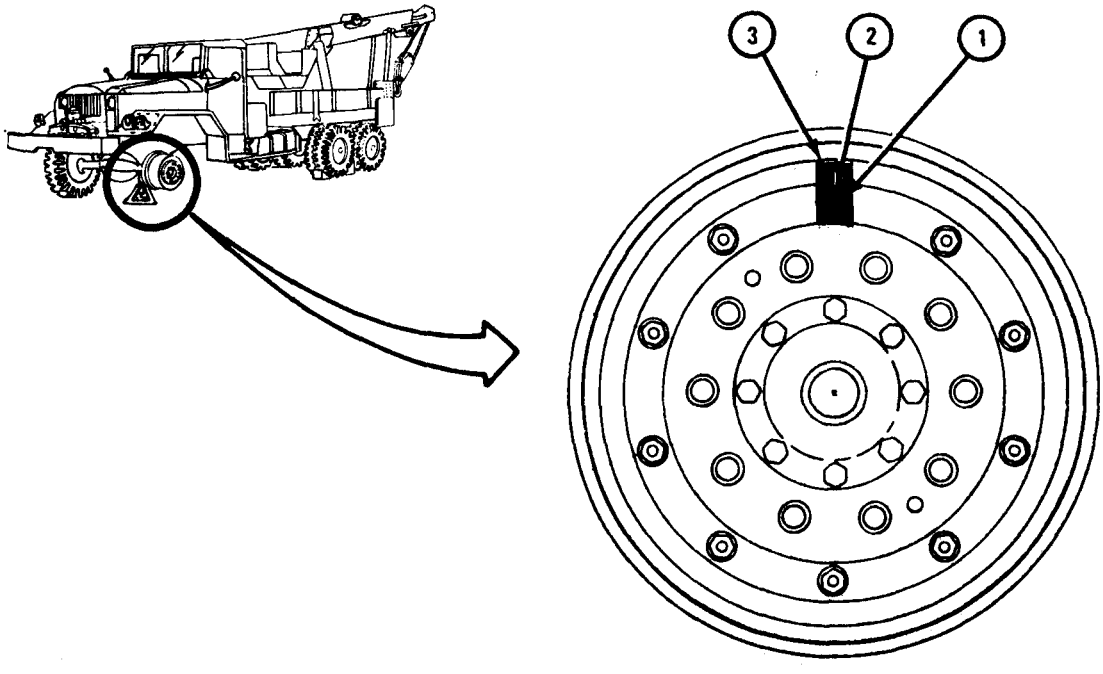
GO TO FRAME 2



FRAME 2

1. Using 11/16-inch socket, unscrew and take off nut (1). Take off lockwasher (2) and inspection cover (3).

GO TO FRAME 3

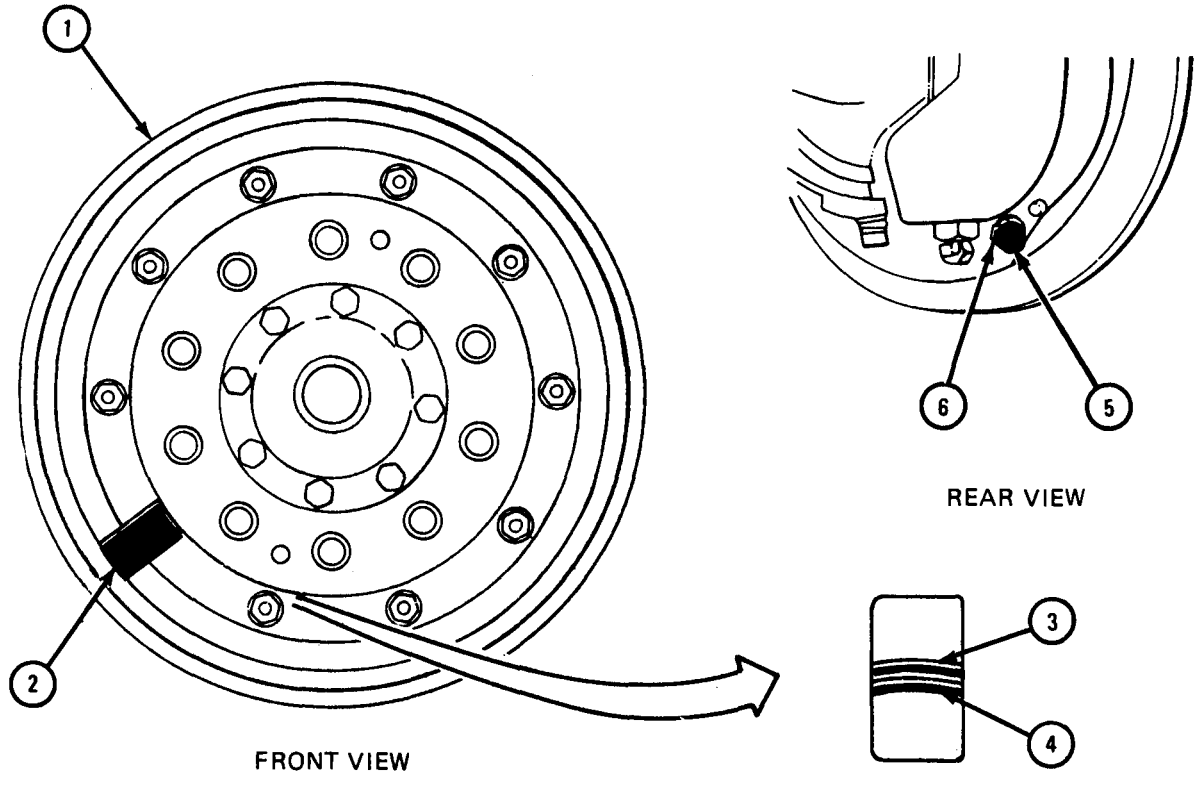


TA 048681

FRAME 3

1. Turn brake drum (1) until inspection hole (2) is at bottom of left brake lining.
2. Put 0.010-inch feeler gage in inspection hole (2) so it is between brake lining (3) and inside of brake drum (4).
3. Using 1 1/16-inch open end wrench, loosen and hold anchor pin locknut (5). Using l/2-inch open end wrench, turn anchor pin (6) to the left until feeler gage just slides in.
4. Using 1/2-inch open end wrench, hold anchor pin (6). Using 1 1/16-inch open end wrench, tighten locknut (5).

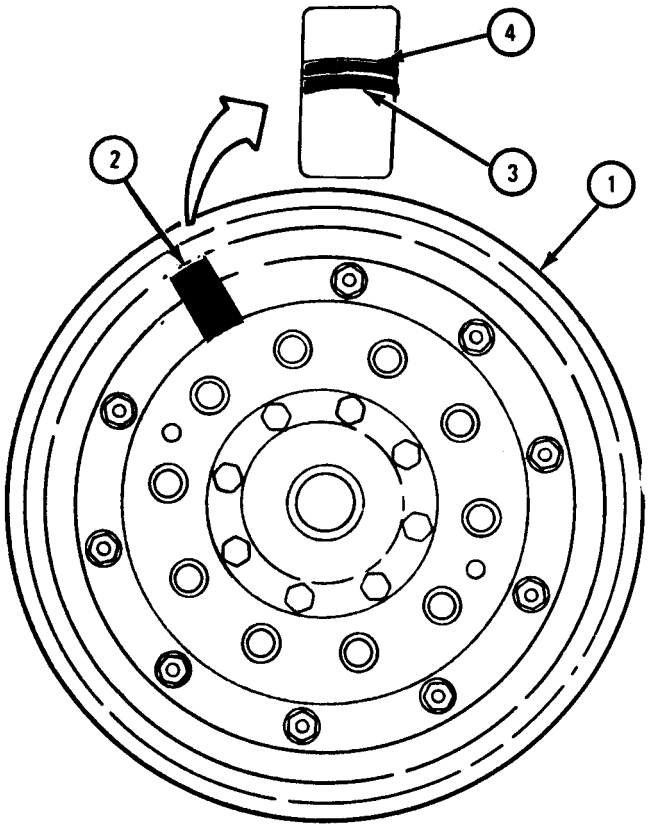
GO TO FRAME 4



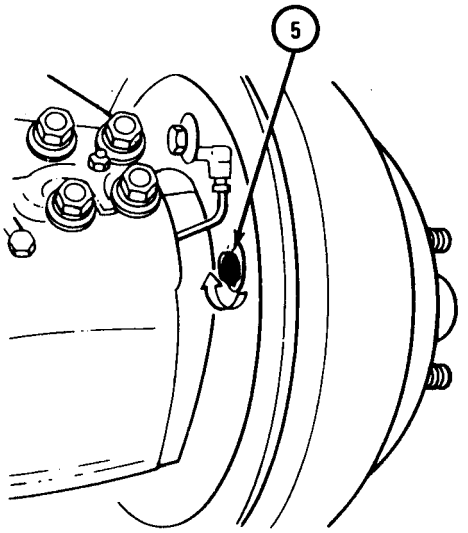
FRAME 4

1. Turn brake drum (1) until inspection hole (2) is at top of left brake lining.
2. Put 0.020-inch feeler gage in inspection hole (2) so it is between brake lining (3) and inside of brake drum (4).
3. Using 11/16-inch wrench, turn cam (5) to the right until the feeler gage just slides in.

GO TO FRAME 5



FRONT VIEW



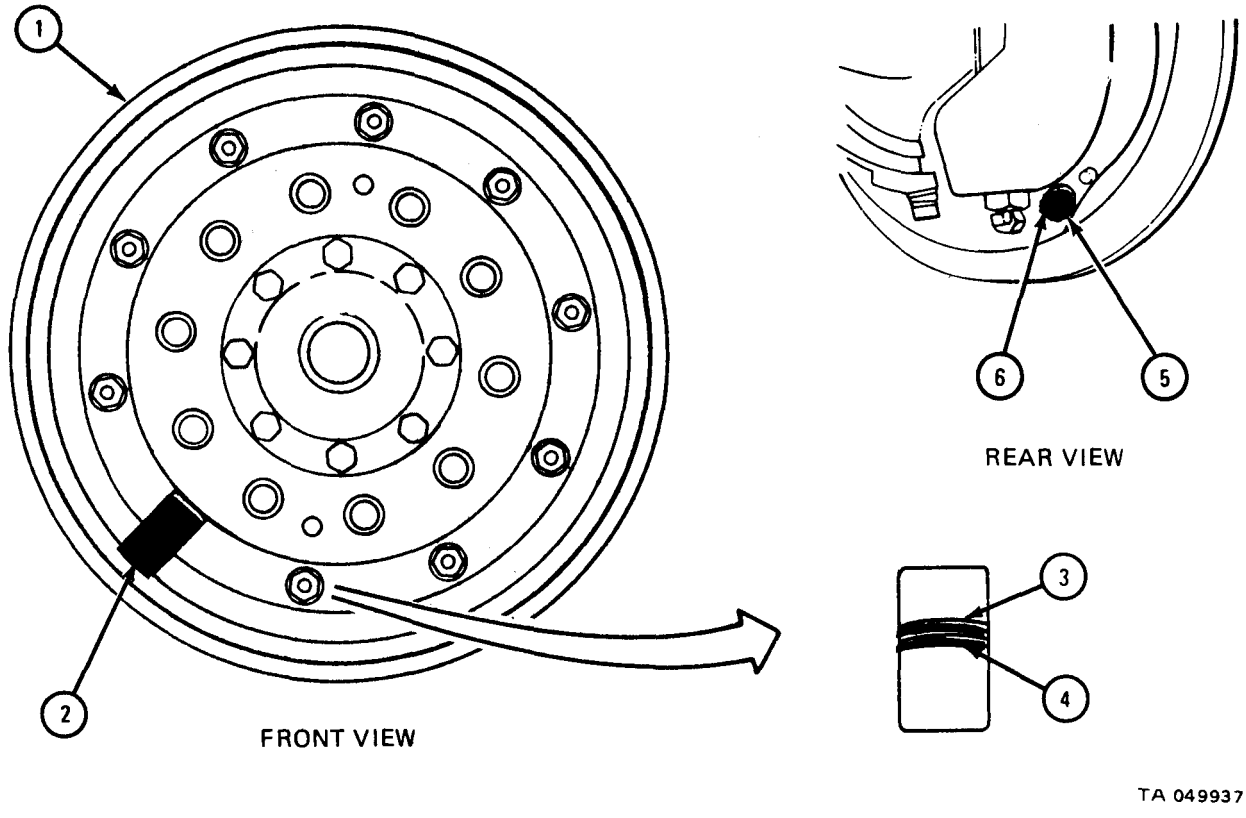
REAR VIEW

TA 049936

FRAME 5

1. Turn brake drum (1) until inspection hole (2) is at bottom of left brake lining.
2. Put 0.010-inch feeler gage in inspection hole (2) so it is between brake lining (3) and inside of brake drum (4).
3. If feeler gage just slides in, take out feeler gage and go to frame 6. If feeler gage does not just slide in, go to step 4.
4. Using 1 1/16-inch wrench, loosen and hold anchor pin locknut (5). Using 1/2-inch open end wrench, turn anchor pin (6) to the left until feeler gage just slides in.
5. Using 1/2-inch open end wrench, hold anchor pin (6). Using 1 1/ 16-inch open end wrench, tighten locknut (5).

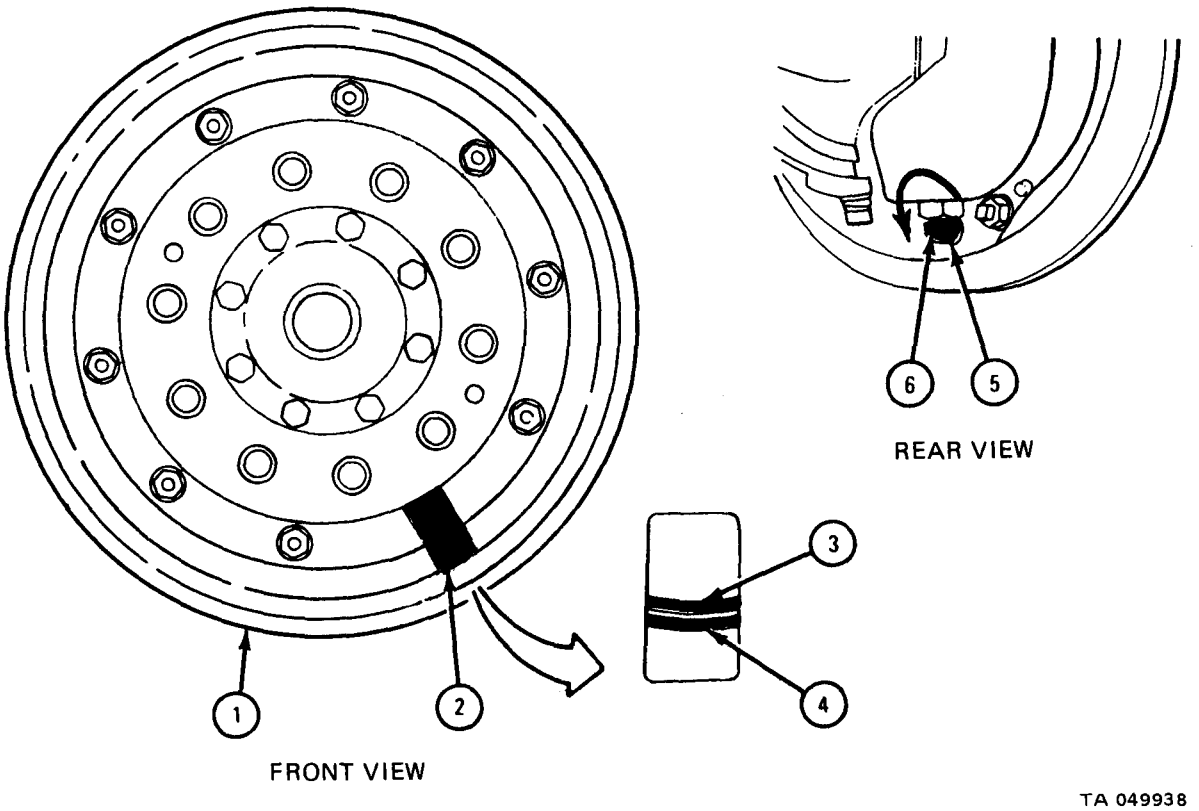
GO TO FRAME 6



FRAME 6

1. Turn brake drum (1) until inspection hole (2) is at bottom of right brake lining.
2. Put 0.010-inch feeler gage in inspection hole (2) so it is between brake lining (3) and inside of brake drum (4).
3. Using 1 1/16-inch open end wrench, loosen and hold anchor pin locknut (5). Using 1/2-inch open end wrench, turn anchor pin (6) to the right until feeler gage just slides in.
4. Using l/2-inch open end wrench, hold anchor pin (6). Using 1 1/16-inch open end wrench, tighten locknut (5).

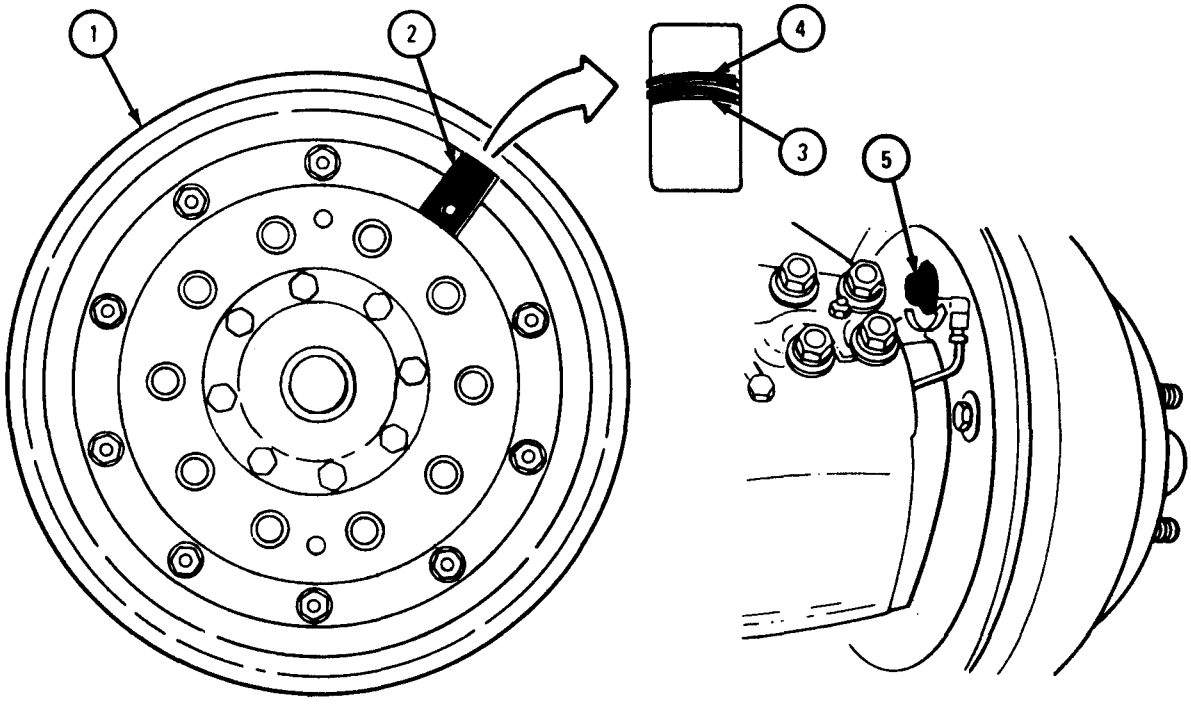
GO TO FRAME 7



FRAME 7

1. Turn brake drum (1) until inspection hole (2) is at top of right brake lining.
2. Put 0.020-inch feeler gage in inspection hole (2) so it is between brake lining (3) and inside of brake drum (4).
3. Using 11/16-inch wrench, turn cam (5) to the left until feeler gage just slides in.

GO TO FRAME 8



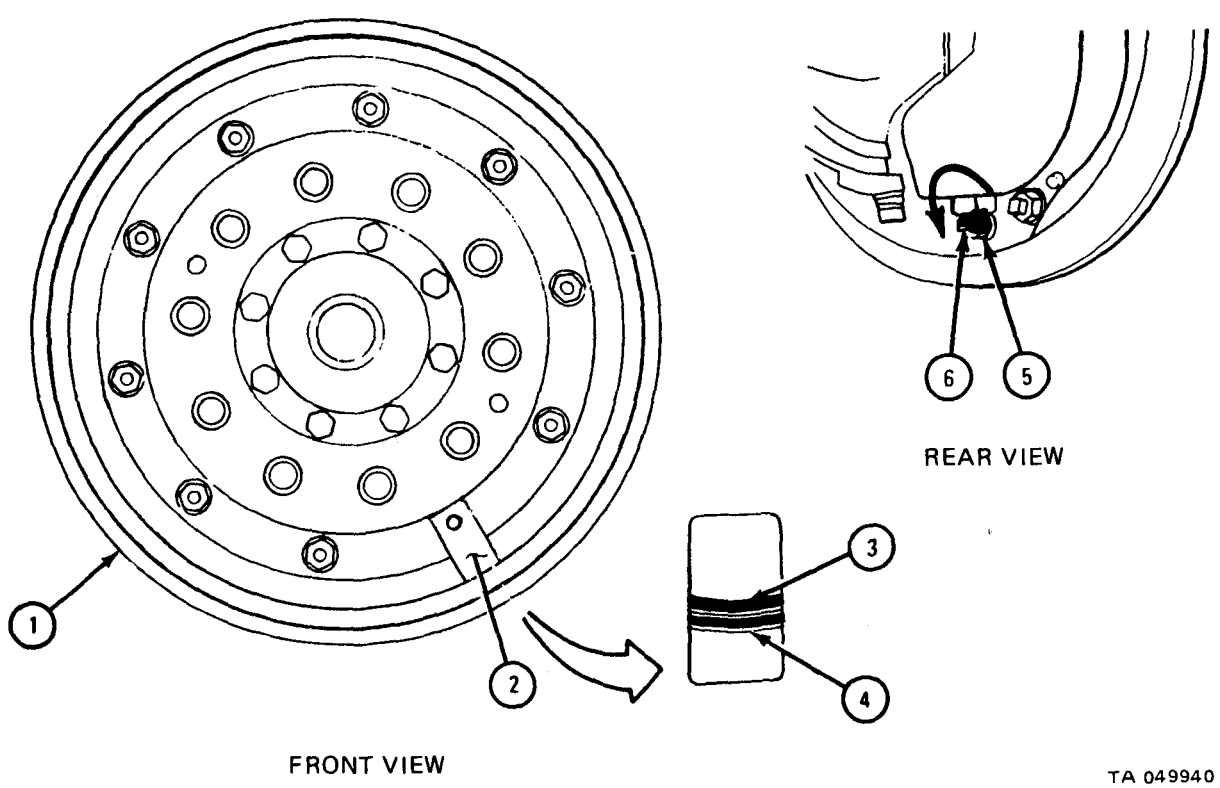
FRONT VIEW REAR VIEW

TA 049939

FRAME 8

1. Turn brake drum (1) until inspection hole (2) is at bottom of right brake lining.
2. Put 0.010-inch feeler gage in inspection hole (2) so it is between brake lining (3) and inside of brake drum (4).
3. If feeler gage just slides in, take out feeler gage, put cover on inspection hole (2), then go to frame 9. If feeler gage does not just slide in, go to step 4,
4. Using 1 1/16-inch open end wrench, loosen and hold anchor pin locknut (5). Using 1/2-inch open end wrench, turn anchor pin (6) to the left until feeler gage just slides in.
5. Using l/2-inch open end wrench, hold anchor pin (6). Using 1 1/16-inch open end wrench, tighten locknut (5).

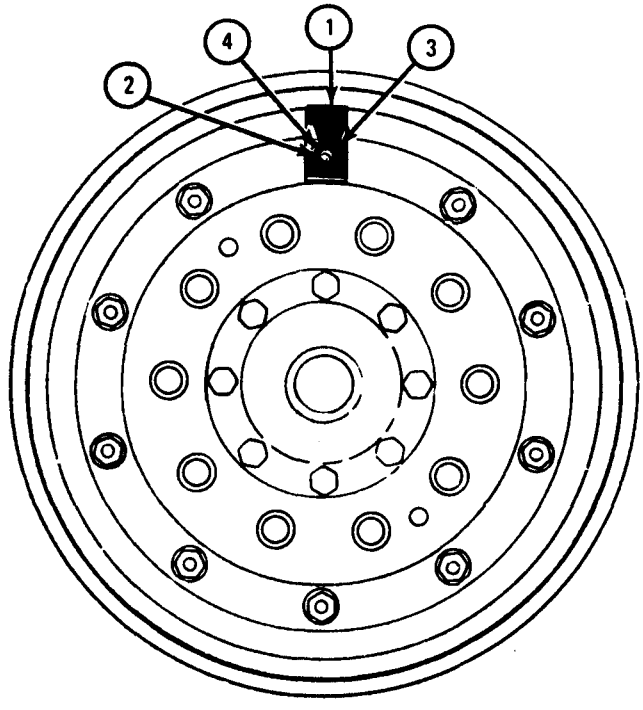
GO TO FRAME 9



FRAME 9

1. Put inspection cover (1) on screw (2).
2. Put lockwasher (3) on screw (2). Using 11/16-inch wrench, screw on nut (4).

GO TO FRAME 10



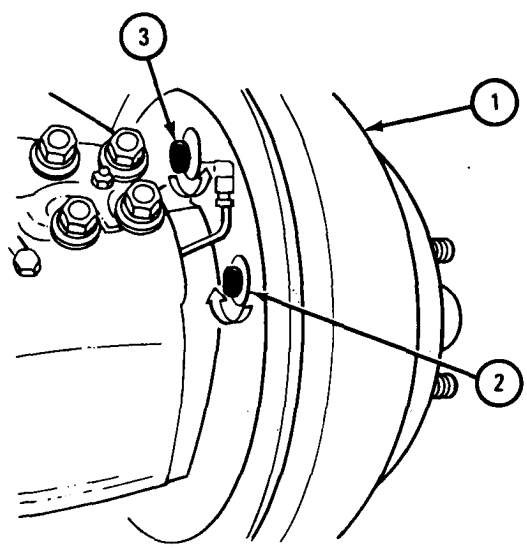
FRONT VIEW

TA 049941

FRAME 10

1. Turn brake drum (1) by hand. Using 11/16-inch wrench, turn cam (2) the way the arrow shows until brake drum drags.
2. Turn brake drum (1) by hand. Using 11/16-inch wrench, turn cam (2) the other way until brake drum stops dragging.
3* Turn brake drum (1) by hand, and using 11/16-inch wrench, turn cam (3) the way the arrow shows until brake drum drags.
4. Turn brake drum (1) by hand, and using 11/16-inch wrench, turn cam (3) the other way until brake drum stops dragging.
5. Put wheel on truck. Refer to TM 9-2320-211-10.
6. Jack up truck. Take out safety jack from truck. Jack truck down. Refer to TM 9-2320-211-10.
7. Take out chocks.

END OF TASK



TA 046151

Section IV. HYDRAULIC BRAKE SYSTEM

12-10. FRONT AND REAR WHEEL CYLINDER REMOVAL AND REPLACEMENT .

TOOLS: 3/4-inch socket, Breaker bar, Socket handle, Brakeshoe spring pliers, 9/16-inch socket, Container

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Jack up truck. Refer to TM 9-2320-211-10.

(2) Remove wheel assembly. Refer to TM 9-2320-211-10.

(3) Remove hub and drum assembly. Refer to Part 2, para 13-5.

b. Removal.

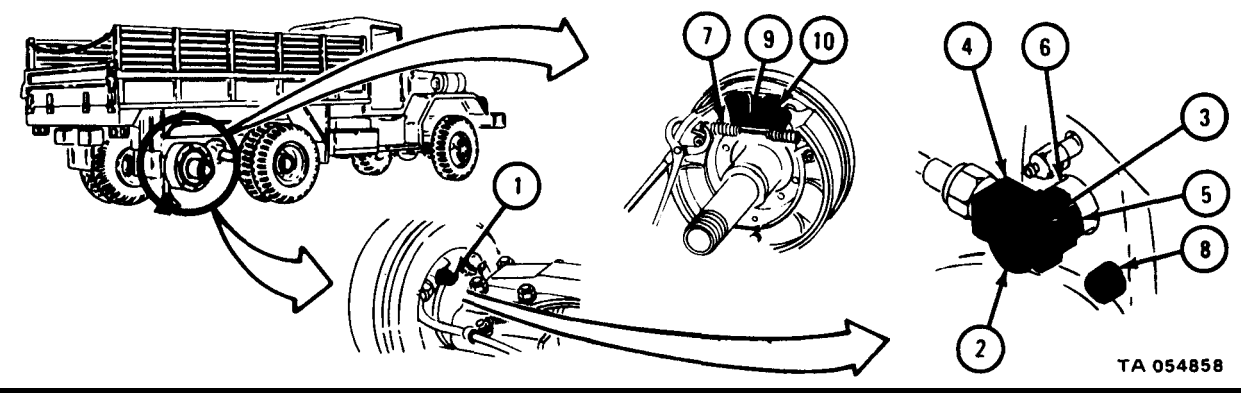
WARNING

Never work under truck with only one jack supporting truck. Truck may slip off jack. Weight of truck must be supported by safety jacks and support stands.

FRAME 1

1. Place container under fitting (1) to catch brake fluid.
2. Using 3/4-inch socket with socket handle, unscrew and take off bolt fluid passage (2) , washer (3) , connector (4) , and copper washer (5) from wheel cylinder (6) .
3. Using brake shoe spring pliers, unhook one end of return spring (7).
4. Using 9/16-inch socket with breaker bar, unscrew and take out two cap screws and lockwashers (8).
5. Take out wheel cylinder (9) and cover (10).

END OF TASK



c. Replacement.

FRAME 1

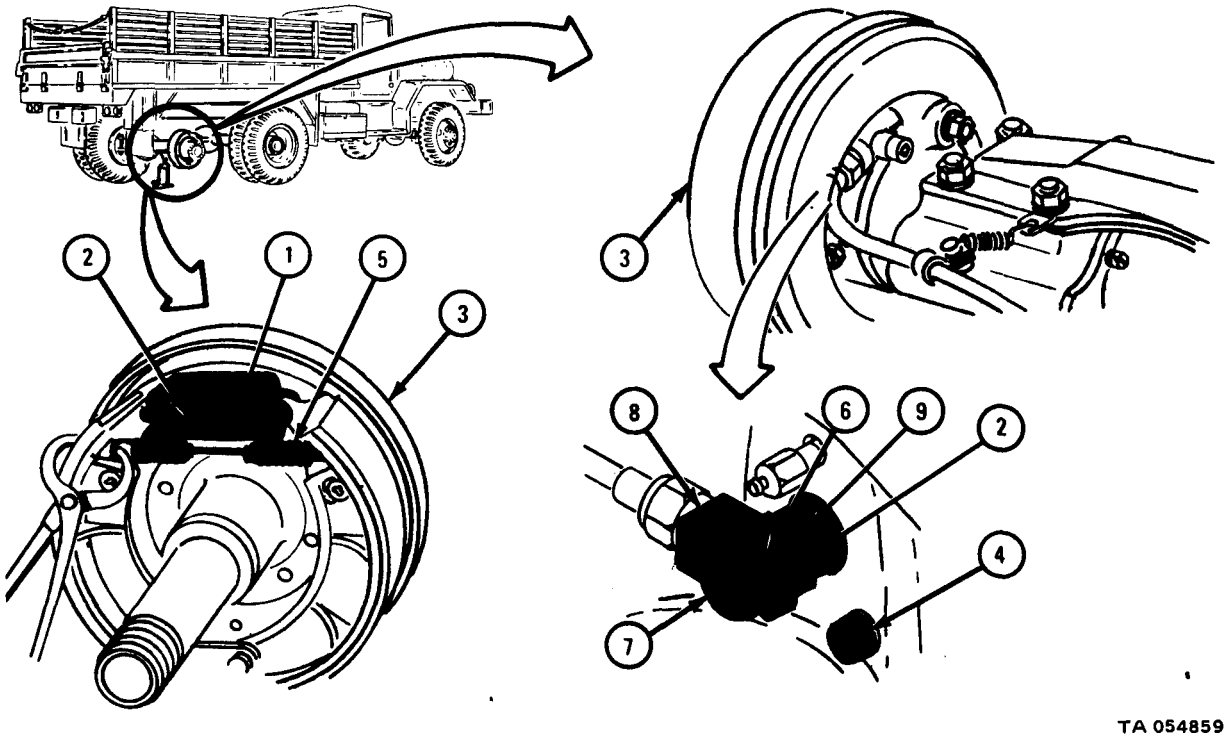
1. Place cover (1) on wheel cylinder (2).
2. Line up holes in cover (1) and wheel cylinder (2) with holes in backing plate (3).
3. Push two capscrews with lockwashers (4) through holes in back plate (3).
4. Using 9/16-inch socket with breaker bar, screw in and tighten two capscrews (4).
5. Using brakeshoe spring pliers, hook on return spring (5).
6. Put washer (6) on bolt (7) and through connector (8). Put washer (9) on bolt (7) and using 3/4-inch socket with socket handle, screw on and tighten bolt (7) into wheel cylinder (2).

NOTE

Follow-on Maintenance Action Required:

1. Replace hub and drum assembly. Refer to Part 2, para 13-5.
2. Replace wheel assembly. Refer to TM 9-2320-211-10.
3. Bleed brake system. Refer to para 12-14.
4. Jack down truck. Refer to TM 9-2320-211-10.

END OF TASK



TA 054859

12-11. HYDRAULIC BRAKE MASTER CYLINDER ASSEMBLY REMOVAL AND REPLACEMENT .

TOOLS: Pliers
9/16-inch wrench (2)
7/8-inch wrench
l-inch wrench
7/16-inch wrench
5/8-inch combination box and open end wrench (2)

SUPPLIES: Two-quart container

PERSONNEL: One

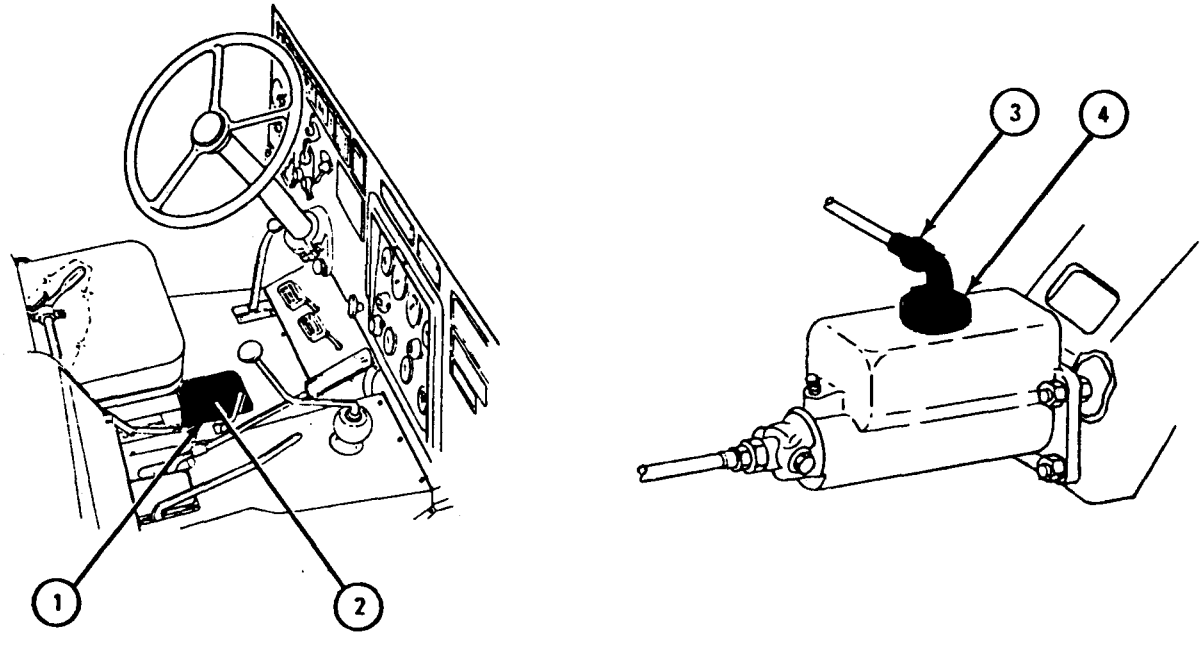
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Removal.

FRAME 1

1. Using 7/16-inch wrench, unscrew and take out screw (1) from master cylinder inspection door (2).
2. Raise inspection door (2). Using 9/16-inch wrench, unscrew and takeoff vent line coupling (3) from filler plug (4).

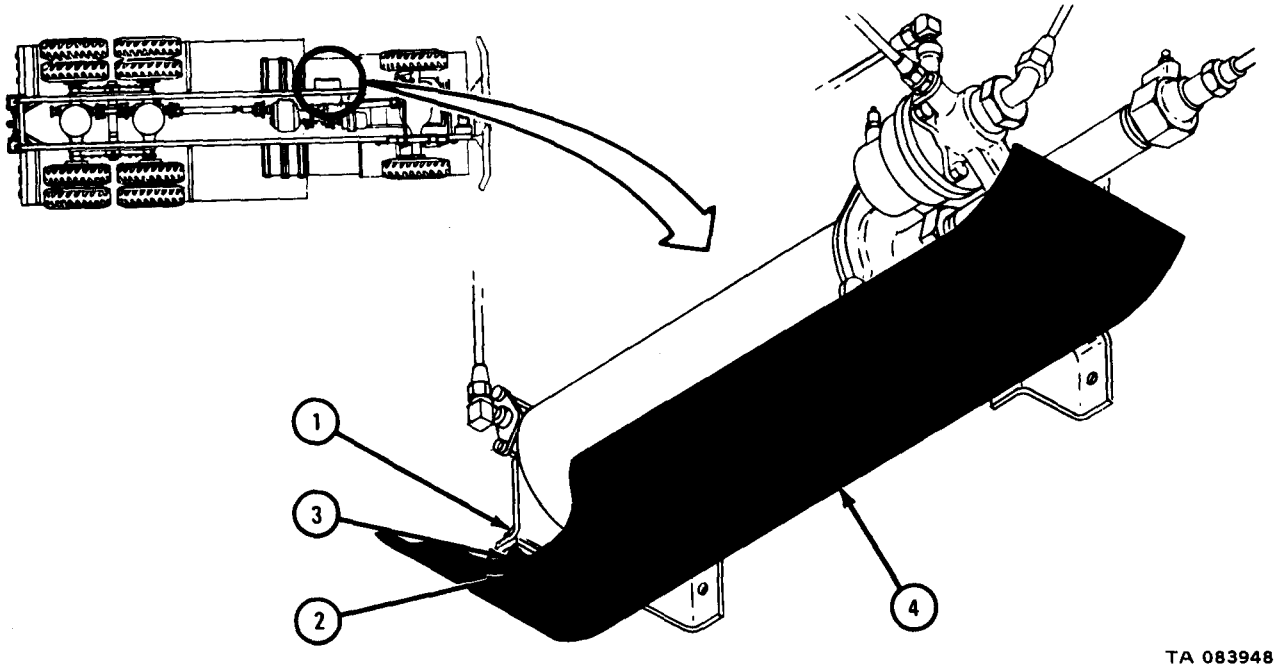
GO TO FRAME 2



FRAME 2

1. Working under truck, using 9/16-inch wrench, hold four bolts (1). Using 9/16-inch wrench, unscrew and takeoff four nuts (2) and four washers (3).
2. Takeoff plate (4). Take out four bolts (1).

GO TO FRAME 3

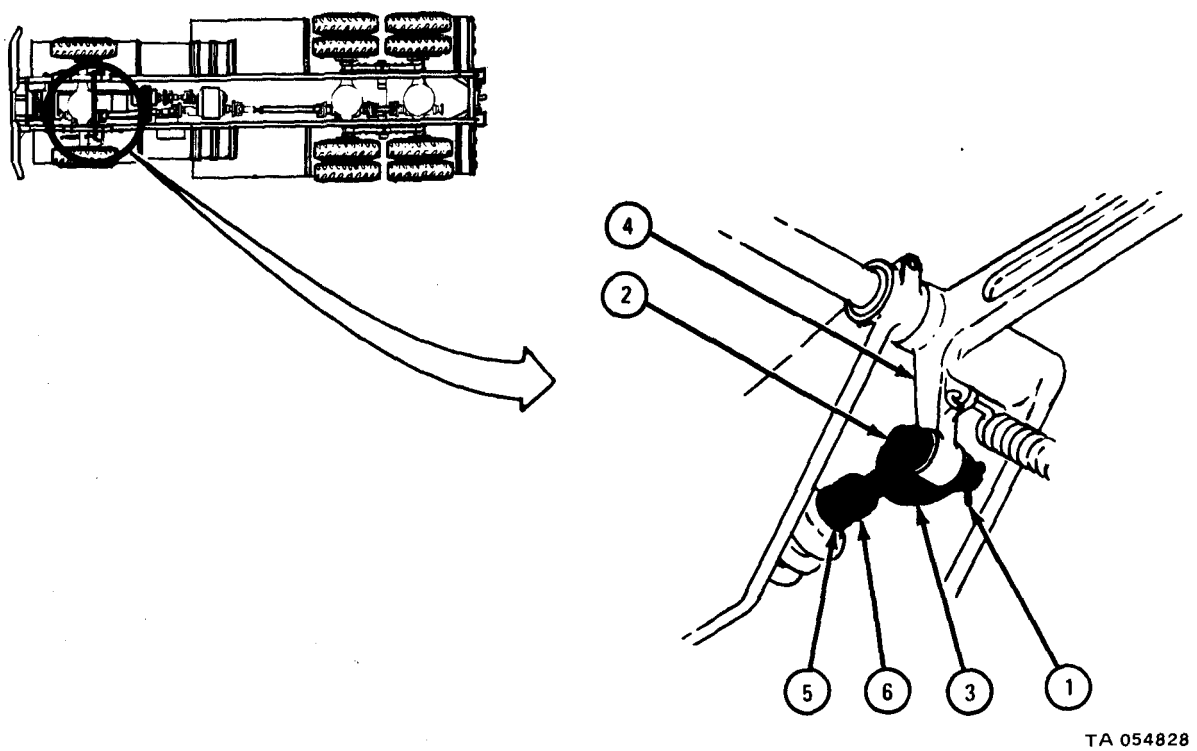


TA 083948

FRAME 3

1. Working under truck and using pliers, pull out cotter pin (1) and throw it away.
2. Pull out clevis pin (2) and slide clevis (3) off lever (4).
3. Using 7/8-inch wrench, hold nut (5) and using l-inch wrench, loosen locknut (6).
4. Unscrew and take off clevis (3).

GO TO FRAME 4



FRAME 4

WARNING

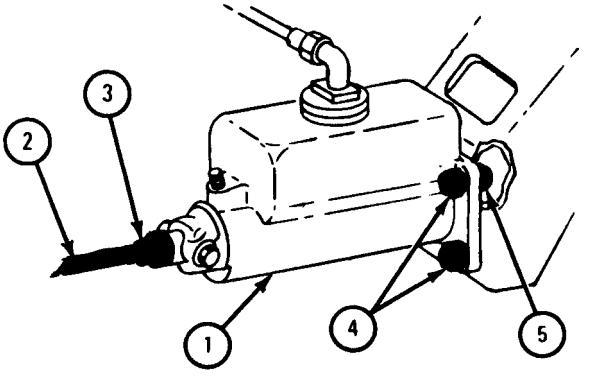
To prevent eye injury keep face from under master cylinder (1) when line (2) is taken off.

NOTE

Cap all open hoses and fittings to keep dirt from getting into brake hydraulic system.

1. Put container under hydraulic line fitting (3). Using 5/8-inch combination box and open end wrenches, unscrew and take off hydraulic line fitting.
2. Using 9/16-inch wrenches, unscrew and take off four nuts (4) .
3. Take out four screws (5) and master cylinder (1) .

END OF TASK



TA 054829

b. Replacement.

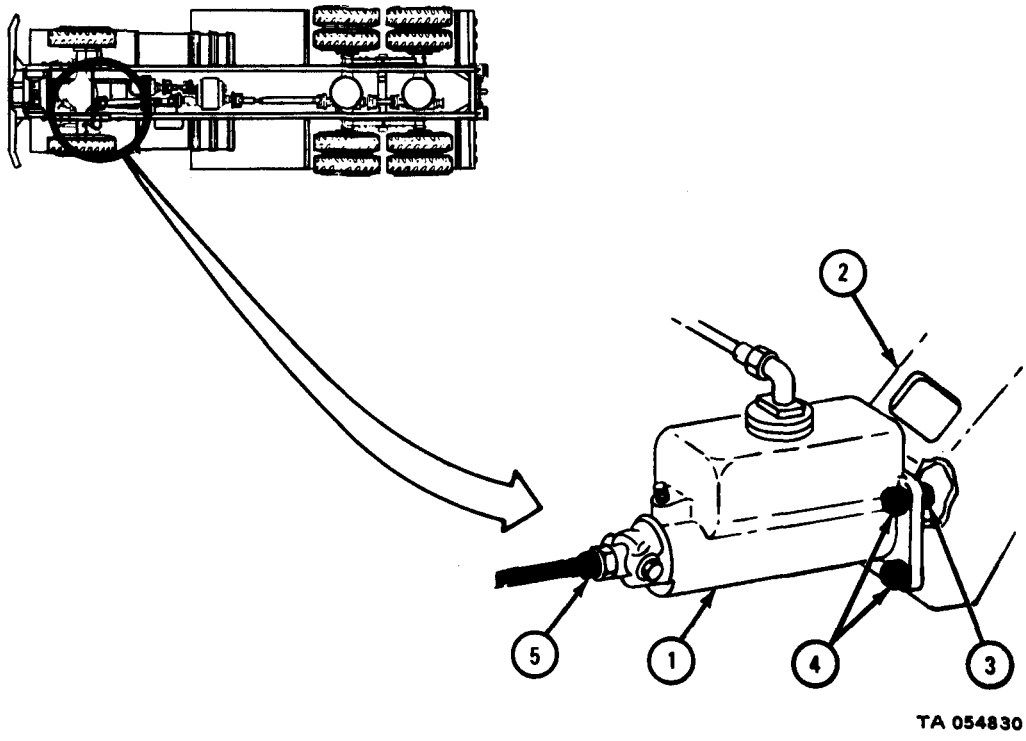
FRAME 1

NOTE

Take caps off hoses and fittings before putting them together.

1. Working under truck, aline holes in master cylinder (1) with holes in bracket (2).
2. Push four screws (3) through holes from inside of bracket (2).
3. Using 9/16-inch wrenches, screw on and tighten four nuts (4).
4. Using 5/8-inch wrenches, screw on and tighten hydraulic line fitting (5).

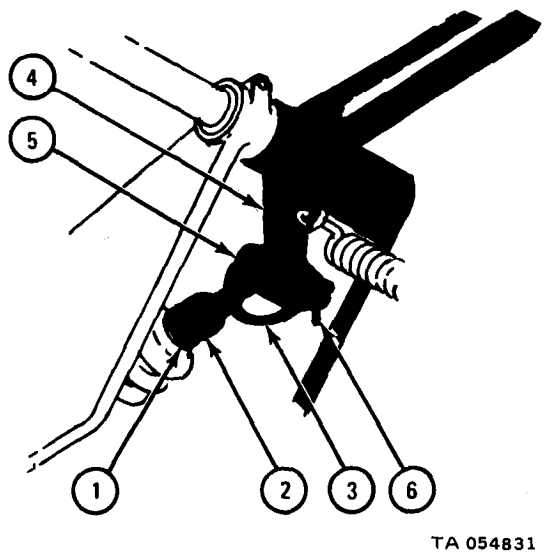
GO TO FRAME 2



FRAME 2

1. Using l-inch wrench, hold nut (1) and using 7/8-inch wrench, tighten locknut (2) to nut (1).
2. Aline holes in clevis (3) with holes in lever (4).
3. Push clevis pin (5) through holes.
4. Push cotter pin (6) through hole in clevis pin (5).
5. Using pliers, bend open ends of cotter pin (6).

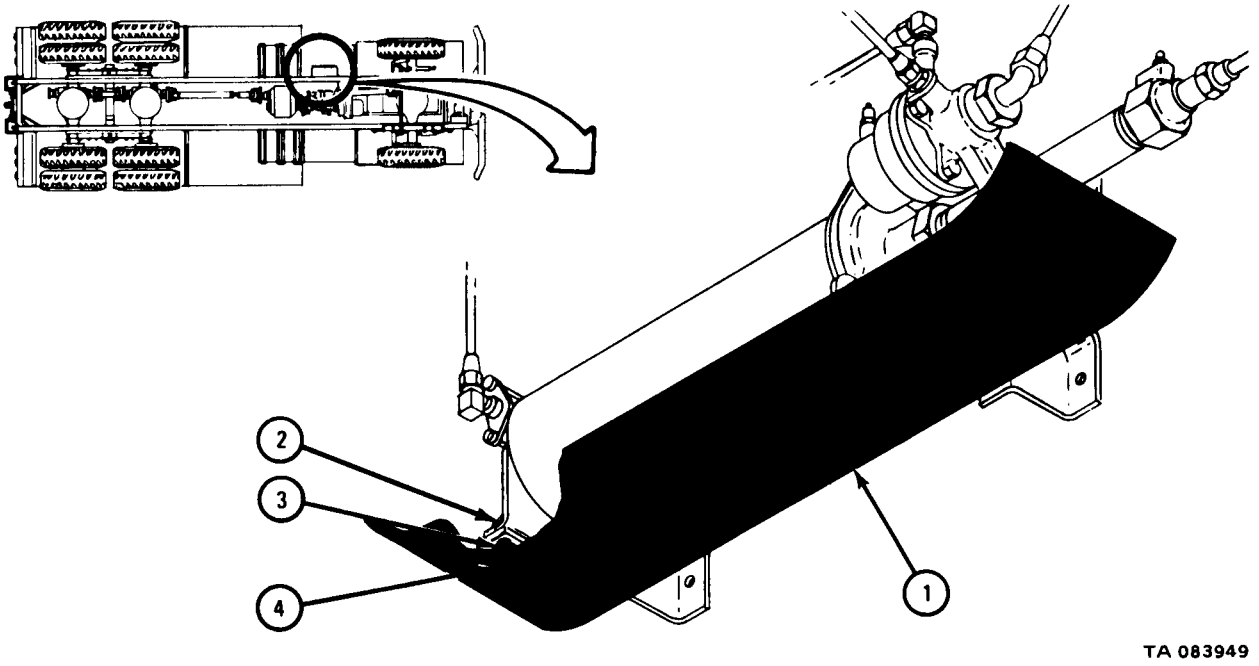
GO TO FRAME 3



FRAME 3

1. Put plate (1) in place, alining holes. Put in four bolts (2) and four washers (3).
2. Using 9/16-inch wrench, hold four bolts (2) and using 9/16-inch wrench, screw on and tighten four nuts (4).

GO TO FRAME 4



FRAME 4

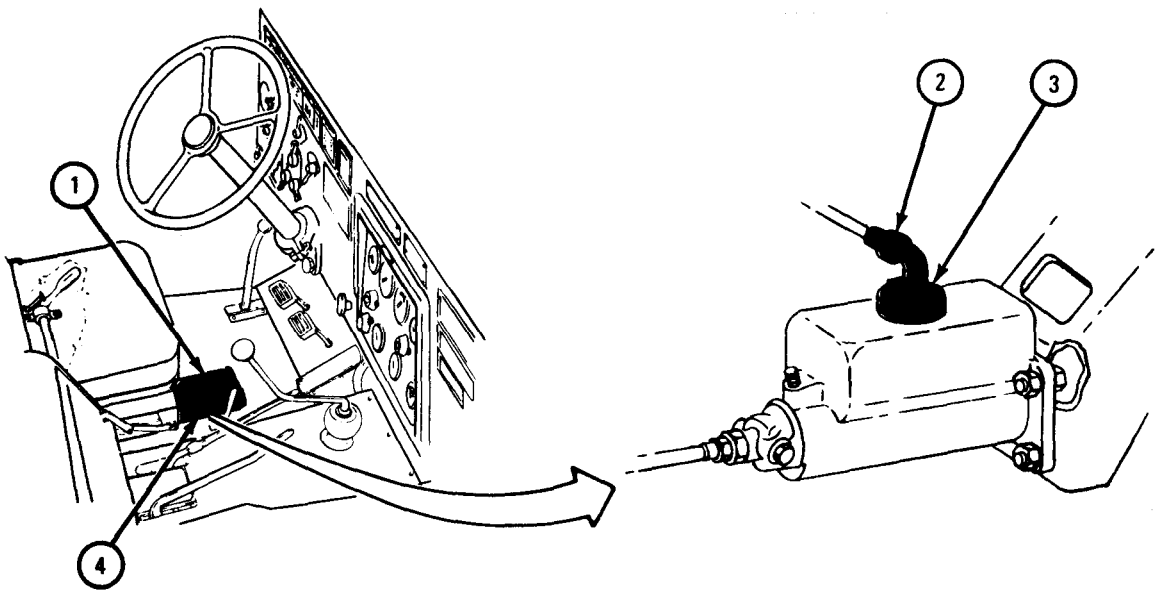
1. Working inside of cab through inspection door (1), using 9/16-inch wrench, screw on and tighten vent line coupling (2) to filler plug (3).
2. Close master cylinder inspection door (1). Using 7/16-inch wrench, screw in and tighten screw (4).

NOTE

Follow-on Maintenance Action Required:

1. Adjust brake pedal free travel. Refer to para 12-9.
2. Bleed hydraulic system. Refer to para 12-14.

END OF TASK



TA 105734

12-12. HYDRAULIC LINES, FITTINGS, AND HOSES REMOVAL AND REPLACEMENT.

NOTE

Procedures given are typical and cover all the different types of installations that you will find on the trucks. Refer to system schematic illustrations used as support diagrams for troubleshooting each system (vol 2, chapter 48).

TOOLS:
- 3/4-inch socket wrench
- 7/8-inch open end wrench
- 11/32-inch open end wrench
- 1/2-inch open end wrench
- 9/16-inch open end wrench (2)
- Container
- 15/ 16-inch combination box and open end wrench
- 5/8-inch combination box and open end wrench
- 7/16-inch combination box and open end wrench
- Cross-tip screwdriver (Phillips type)
- 6-inch pliers
- Cutting pliers

SUPPLIES:
- Caps
- Tags
- Plastic ties

PERSONNEL: One

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

a. Removal.

NOTE

Put container under hydraulic lines and fittings to catch draining hydraulic fluid. Cap all open hoses, lines and fittings to keep dirt from getting into hydraulic systems.

Tag all lines so they will be put back in the same place.

Some hydraulic lines and hoses may have plastic ties in place of clamps. If so, cut and take off all plastic ties.

(1) Hydraulic lines and clamps.

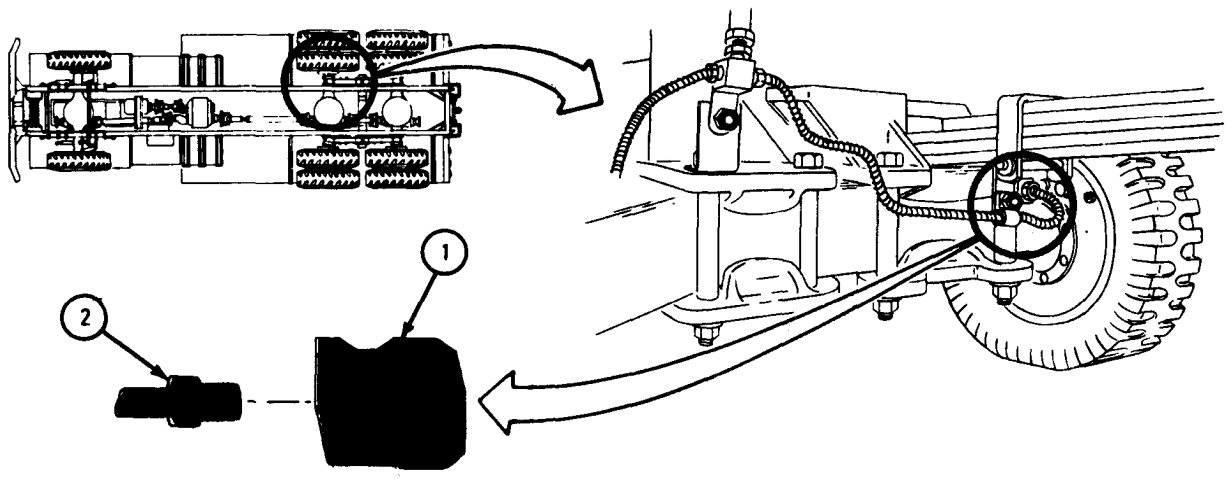
NOTE

Hydraulic line on the forward-rear axle is used for this typical procedure.

FRAME 1

1. Using 1/2-inch wrench, hold multiple connector (1). Using 7/16-inch combination box and open end wrench, unscrew and take out tube nut (2).

GO TO FRAME 2



FRAME 2

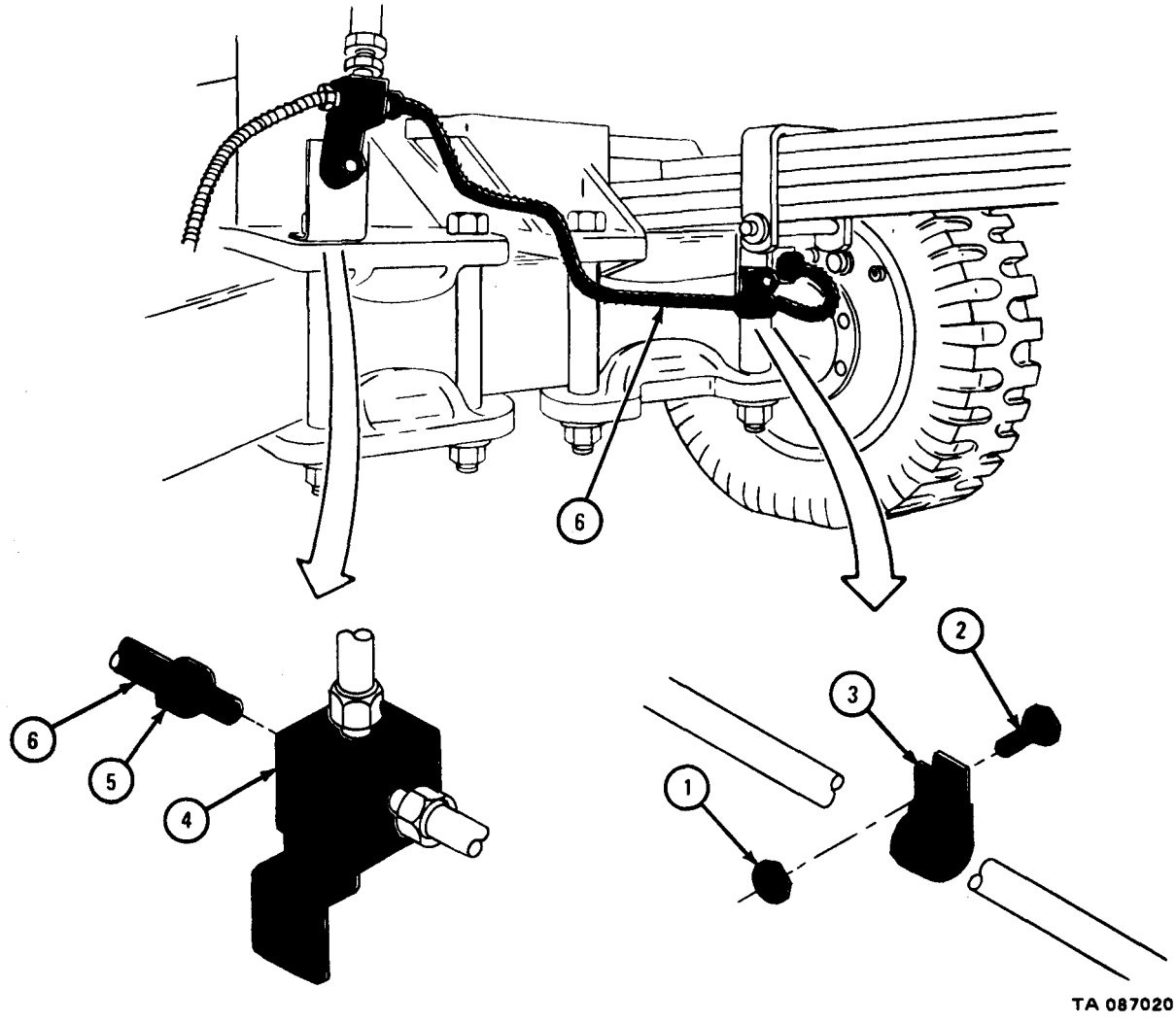
1. Using 9/16-inch wrenches, unscrew and take off nut (1) and screw (2). Spread open and takeoff clamp (3).

NOTE

Some lines have more than one clamp (3). Do step 1 again for any other clamps.

2. Using 7/8-inch wrench, hold multiple connector (4). Using 7/16-inch combination-box and open end wrench, unscrew and take out tube nut (5) . Take off line (6).

END OF TASK



(2) Hydraulic hose.

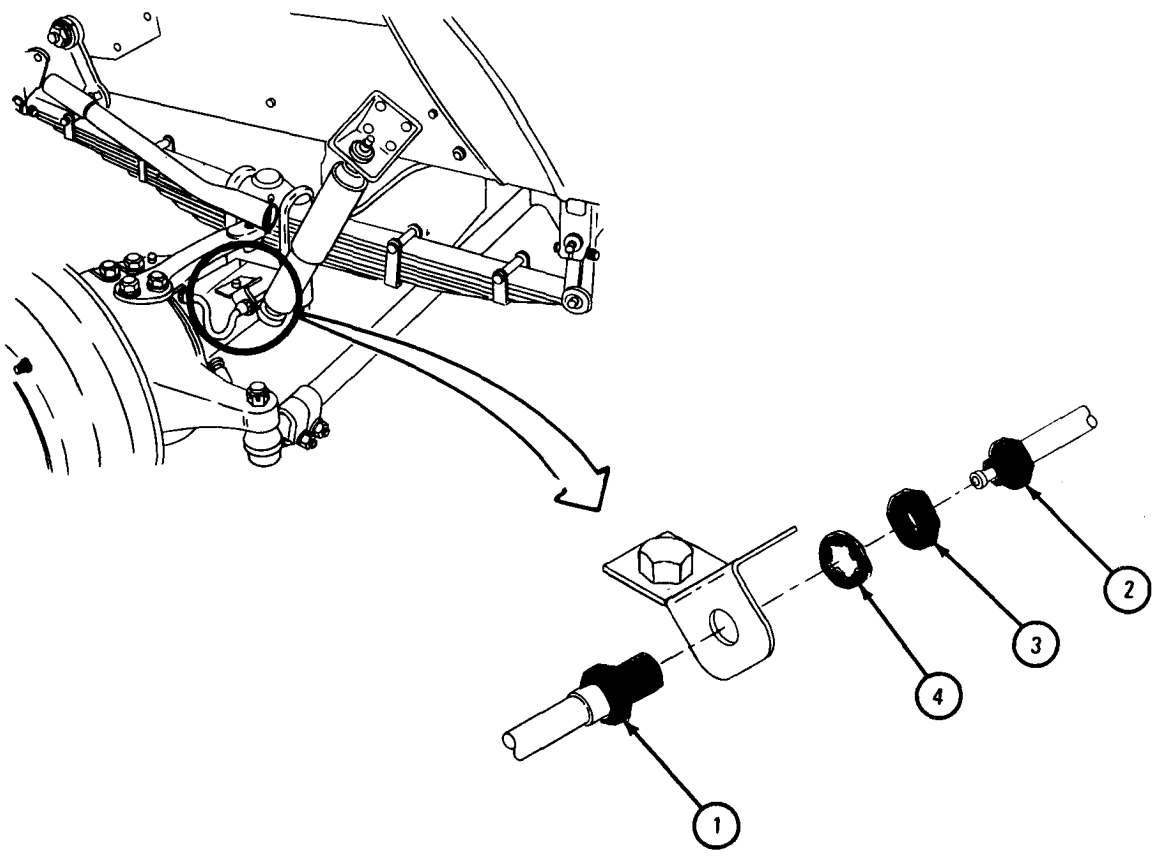
NOTE

Hydraulic hose at the front wheel cylinder is used for this typical procedure.

FRAME 1

1. Using 5/8-inch combination box and open end wrench, hold tube nut (1) . Using 7/16-inch combination box and open end wrench, unscrew and take off tube nut (2).
2. Using 5/8-inch combination box and open end wrench, hold tube nut (1). Using 15/16-inch open end wrench, unscrew and take off nut (3) and washer (4).
3. Take out tube nut (1).

GO TO FRAME 2

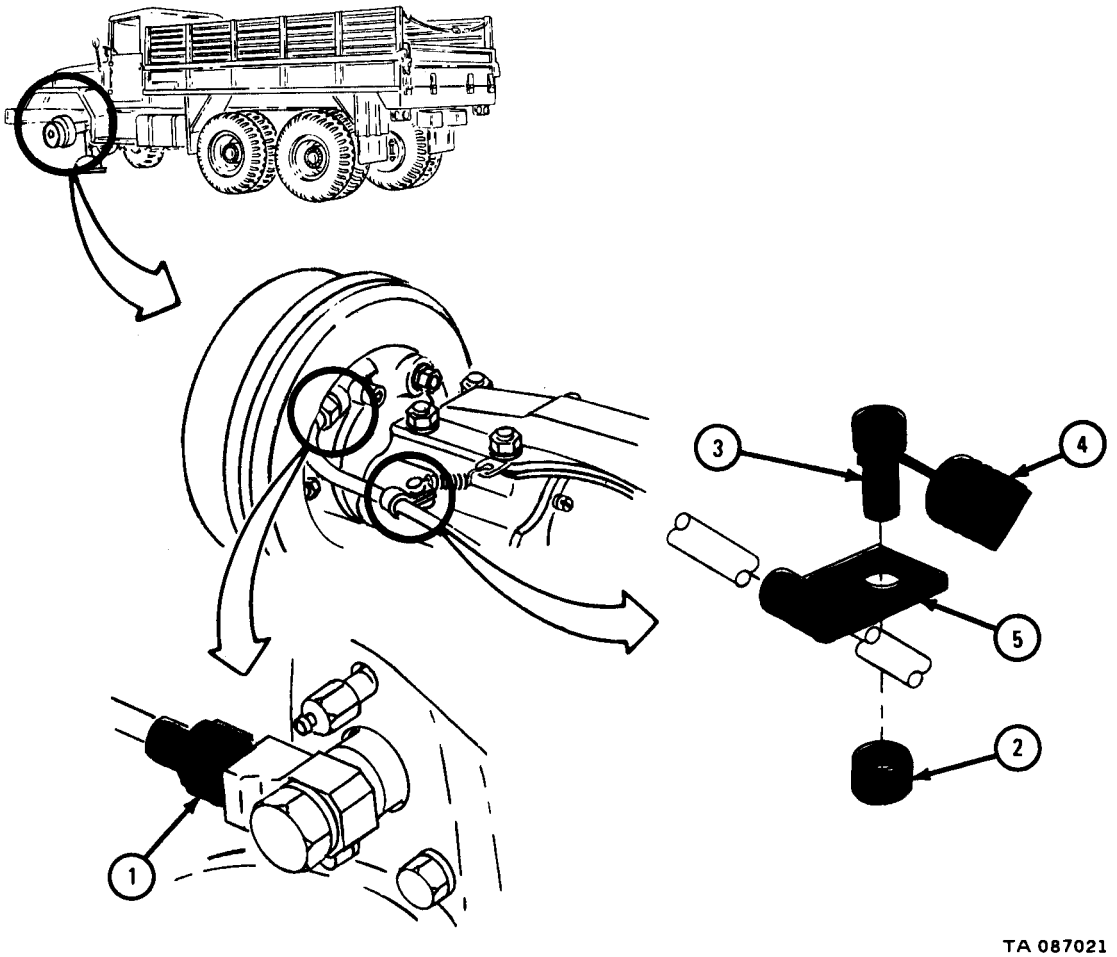


TA 087022

FRAME 2

1. Jack up and support axle housing. Refer to para 10-3.
2. Remove wheel assembly. Refer to TM 9-2320-211-10.
3. Using 5/8-inch open end wrench, unscrew and take off hose nut (1).
4. Using 7/16-inch open end wrench, hold nut (2). Using 7/16-inch wrench, take off capscrew (3) and take off spring (4).
5. Spread open and take off clamp (5).

END OF TASK



TA 087021

(3) Fittings and retaining band.

(a) Multiple connector.

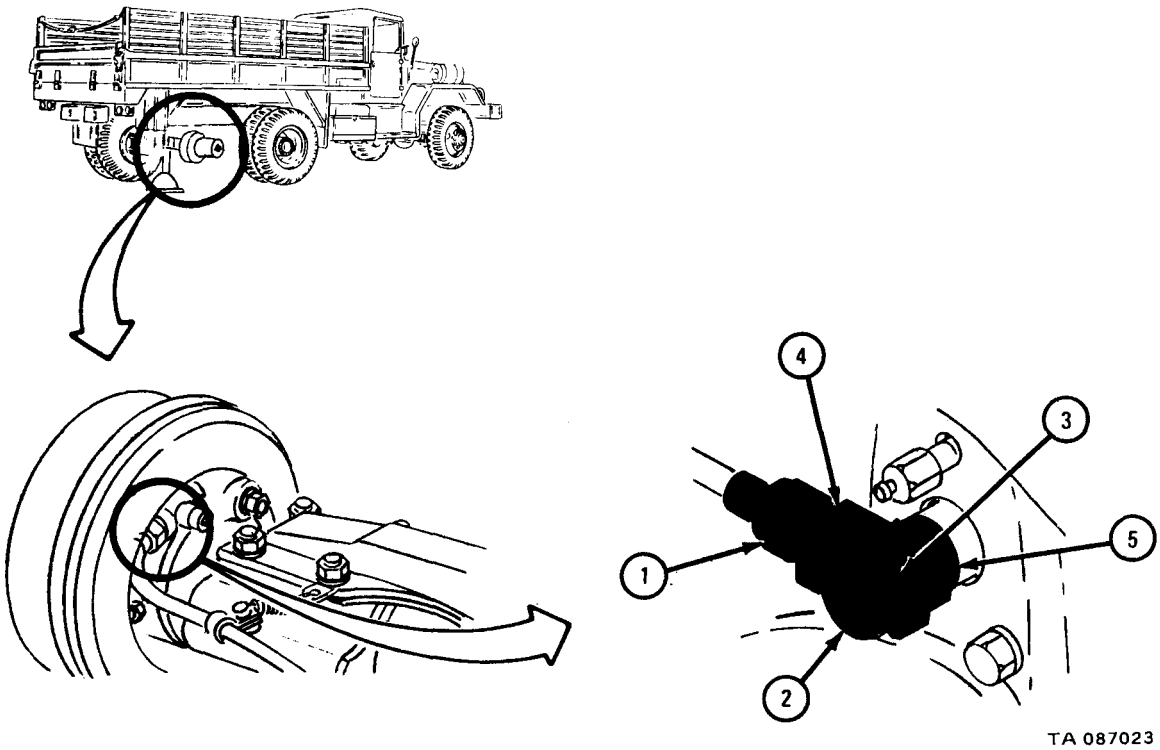
NOTE

The multiple connector on the right rear-rear wheel cylinder is used for this typical procedure.

FRAME 1

1. Using 7/16-inch open end wrench, unscrew and take off hose nut (1).
2. Using 3/4-inch socket wrench, unscrew and take off fluid passage bolt (2), washer (3), multiple connector (4), and copper washer (5).

END OF TASK



(b) Junction tee fitting.

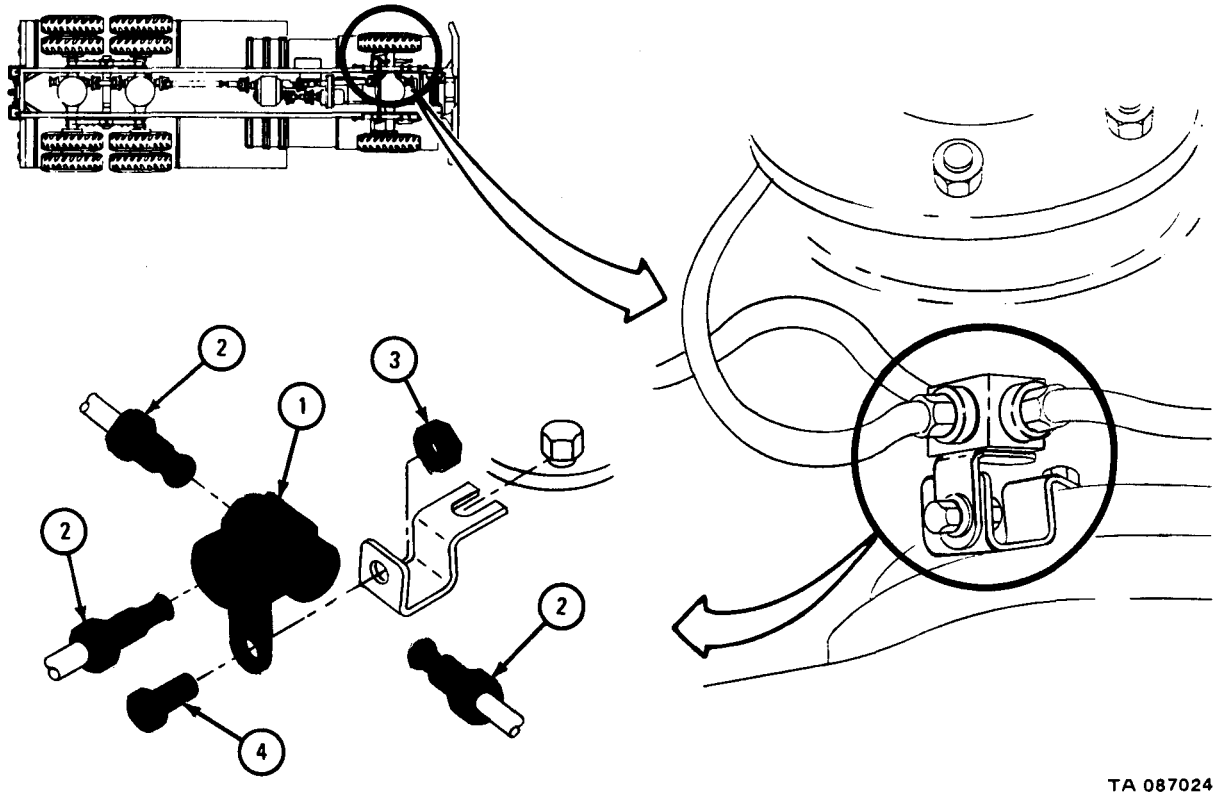
NOTE

The junction tee fitting on the brake hydraulic line on the front axle is used for this typical procedure.

FRAME 1

1. Using 3/4-inch open end wrench, hold tee fitting (1). Using 7/16-inch combination box and open end wrench, unscrew and take off three tube nuts (2).
2. Using 7/16-inch wrenches, unscrew and take off nut (3) and screw (4). Take off tee fitting (1).

END OF TASK



(c) Union.

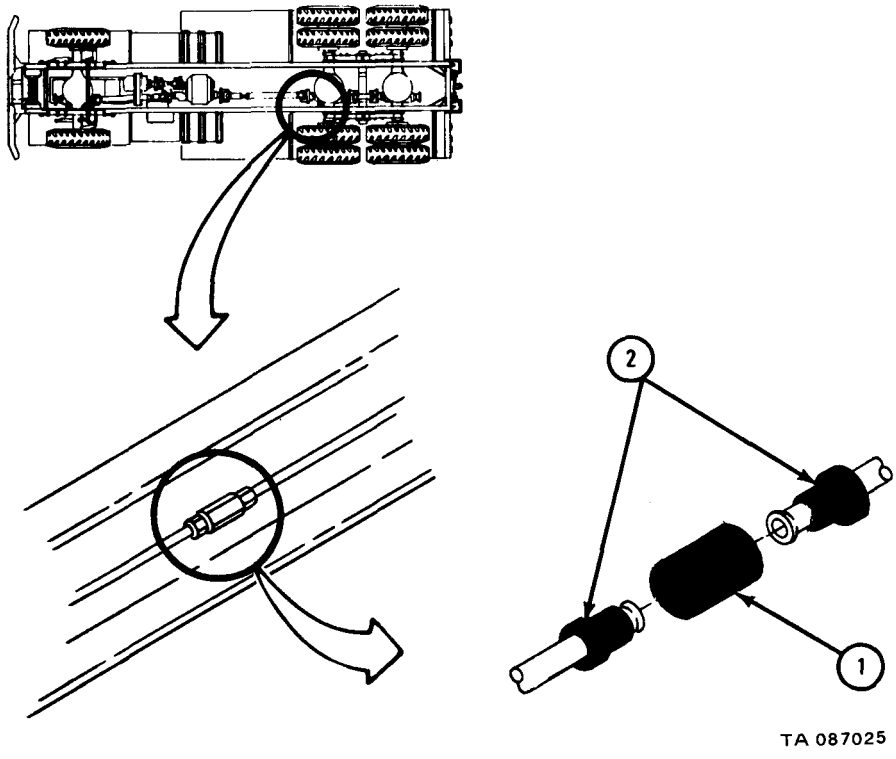
NOTE

The union on the brake hydraulic line on the left rear side of the truck chassis is used for this typical procedure.

FRAME 1

1. Using 5/8-inch open end wrench, hold union (1). Using 5/8-inch combination box and open end box wrench, unscrew and take off two tube nuts (2).

END OF TASK



(d) Retaining band.

NOTE

The retaining band on the brake hydraulic line on the upper torque rod is used for this typical procedure.

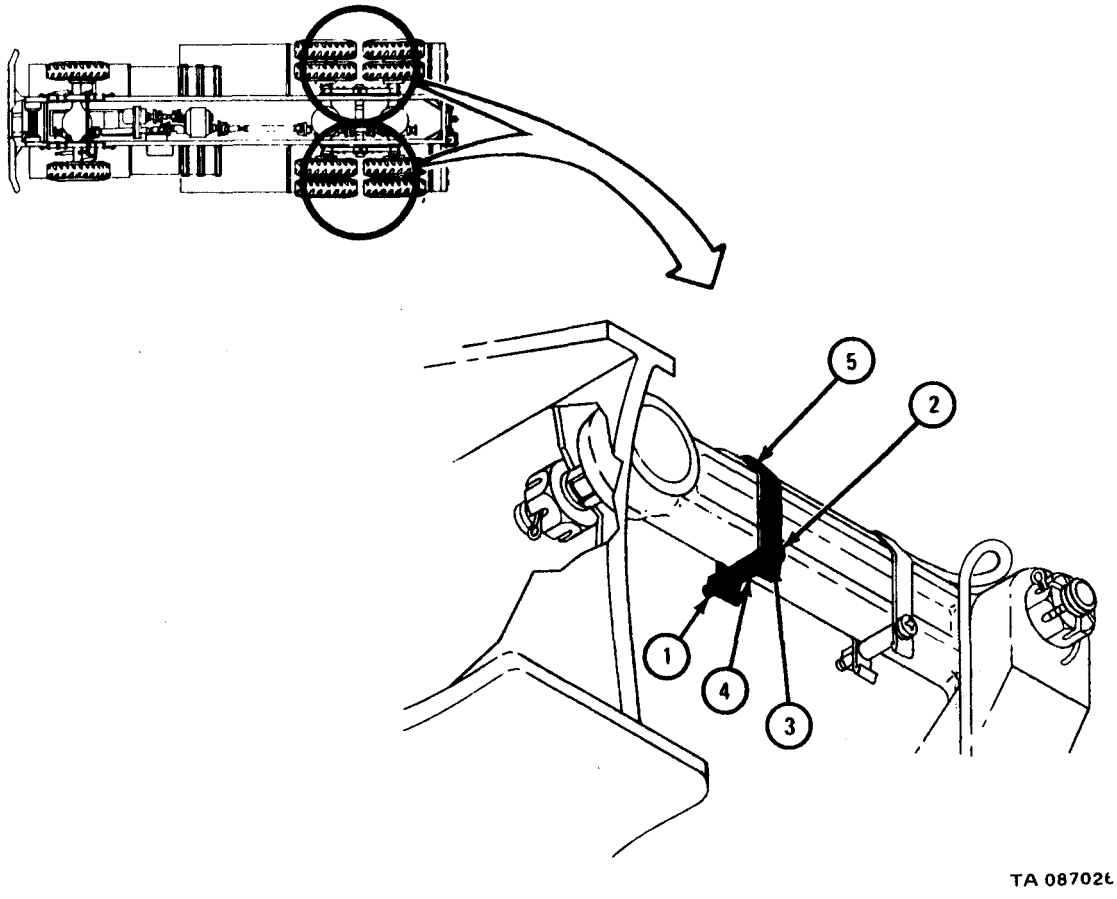
FRAME 1

1. Using screwdriver and 11/32-inch wrench, unscrew and take off nut (l), screw (2), washer (3), and spacer (4). Take off band (5).

NOTE

Some lines have more than one band. Do step 1 again for other bands.

END OF TASK



b. Replacement.

NOTE

Take caps off all lines and fittings.

(1) Hydraulic lines and clamps.

CAUTION

Fittings are made of soft brass. They can be very easily stripped if tightened too much. Tighten fittings just enough to stop fluid from leaking.

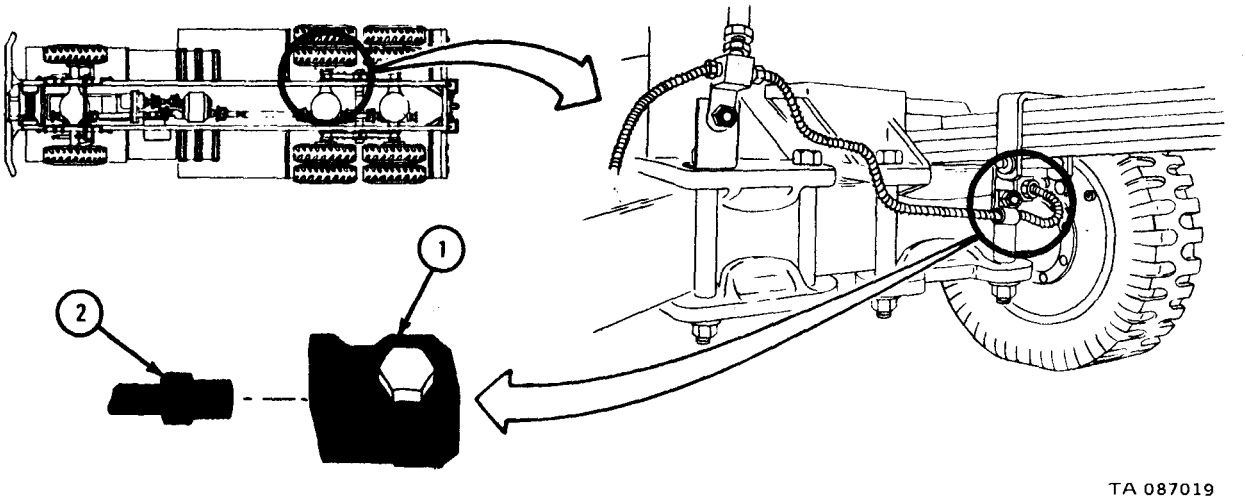
NOTE

Hydraulic line on the forward-rear axle is used for this typical procedure.

FRAME 1

1. Using 1/2-inch wrench, hold multiple connector (1). Using 7/16-inch combination box and open end wrench, put in tube nut (2).

GO TO FRAME 2



FRAME 2

1. Using 7/8-inch wrench, hold multiple connector (1). Using 7/16-inch combination box and open end wrench, screw in and tighten tube nut (2).
2. Put clamp (3) in place on hose (4). Using 9/16-inch wrenches, screw in and tighten screw (5) and nut (6).

NOTE

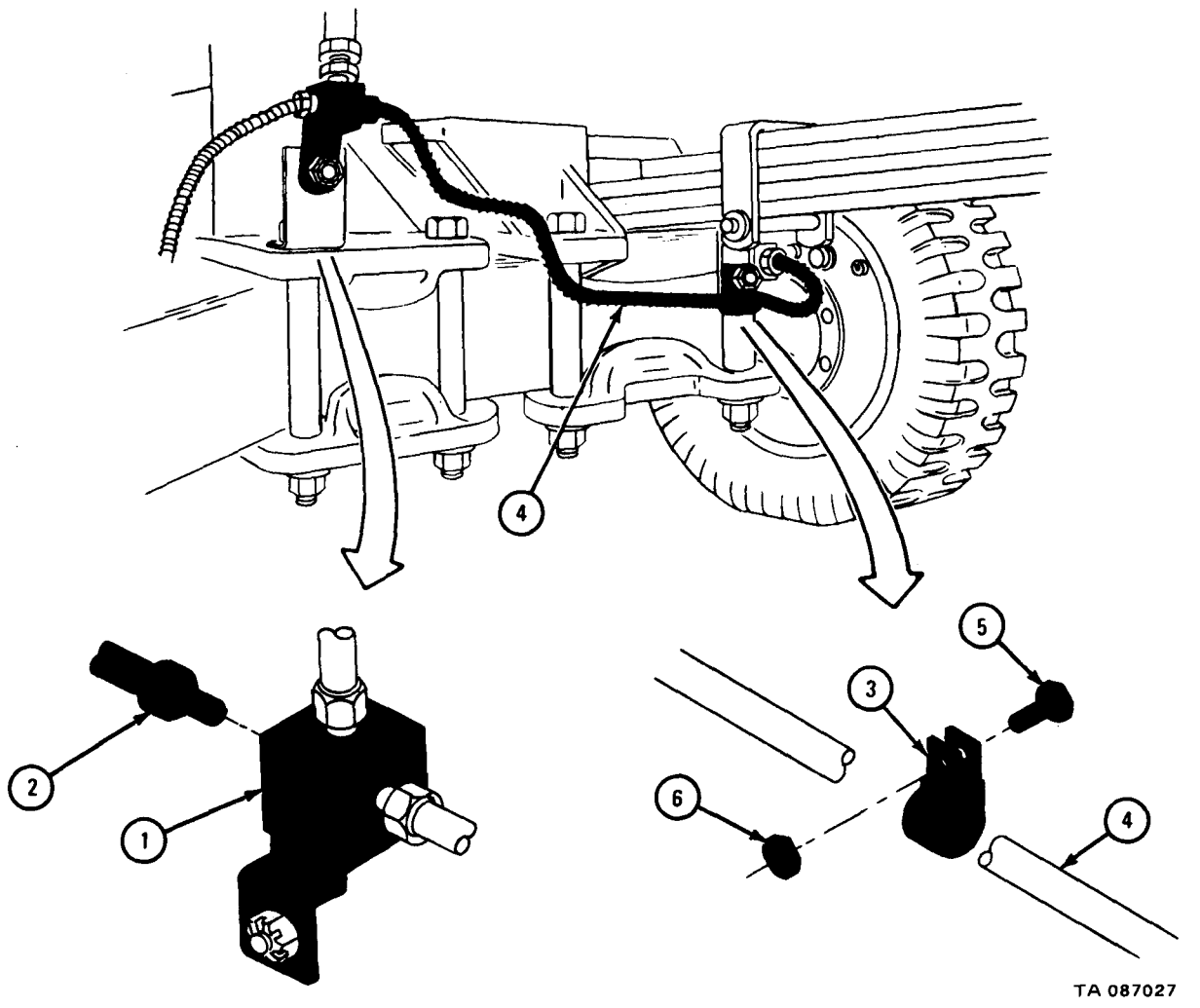
Some lines have more than one clamp. Do step 2 again for any other clamps.

NOTE

Follow-on Maintenance Action Required:

Bleed hydraulic system. Refer to para 12-14.

END OF TASK



(2) Hydraulic hose.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Tighten fittings just enough to stop fluid from leaking.

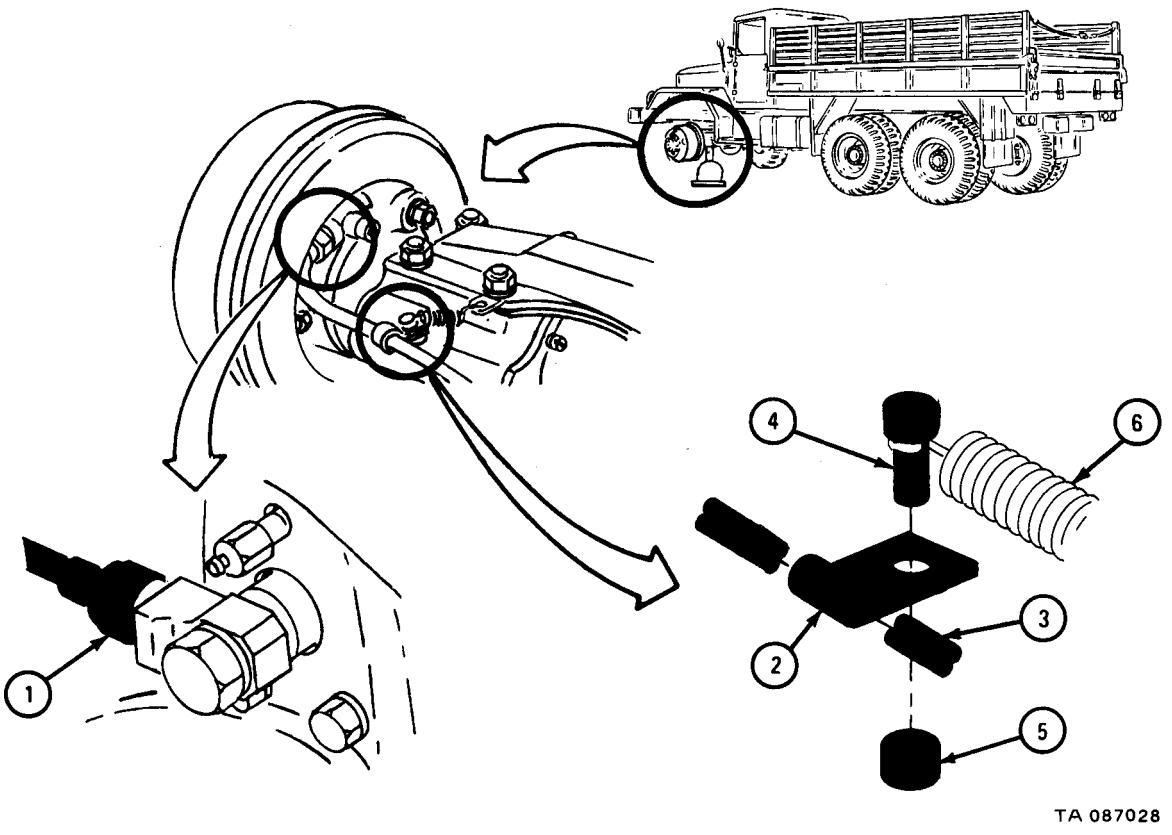
NOTE

Hydraulic hose at the front wheel cylinder is used for this typical procedure.

FRAME 1

1. Using 5/8-inch open end wrench, screw on and tighten hose nut (1) .
2. Put clamp (2) in place on hose (3).
3. Screw on and finger tighten screw (4) and nut (5). Hook spring (6) around screw. Using 7/16-inch wrenches, tighten screw and nut.

GO TO FRAME 2



FRAME 2

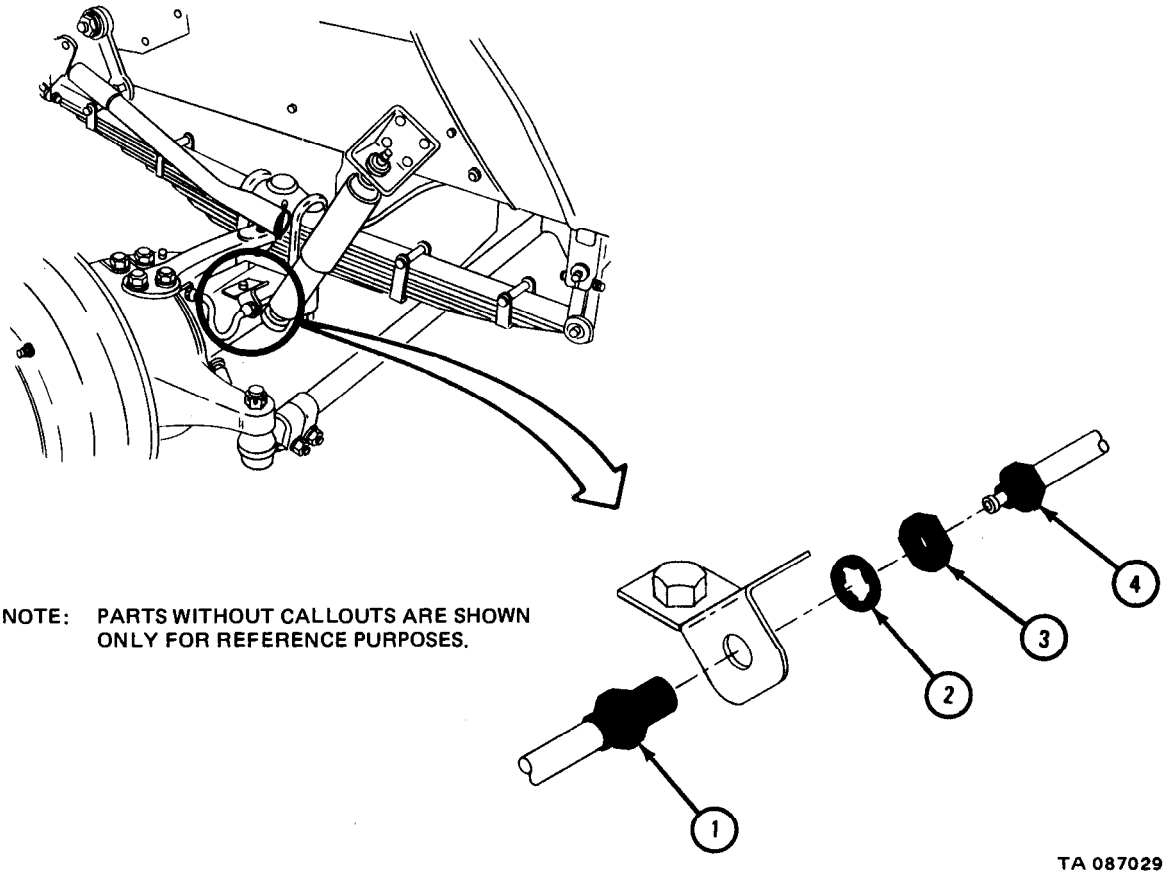
1. Using 5/8-inch combination box and open end wrench, put in and hold tube nut (l). Using 15/16-inch open end wrench, screw on and tighten washer (2) and nut (3).
2. Using 15/16-inch combination box and open end wrench, hold tube nut (3). Using 7/16-inch combination box and open end wrench, screw on and tighten tube nut (4).

NOTE

Follow-on Maintenance Action Required:

Bleed hydraulic system. Refer to para 12-14.

END OF TASK



(3) Fittings and retaining band.

(a) Multiple connector.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Tighten fittings just enough to stop fluid from leaking.

NOTE

The multiple connector on the right rear-rear wheel cylinder is used for this typical procedure.

FRAME 1

1. Put fluid passage bolt (1), washer (2), multiple connector (3), and copper washer (4) in place as shown. Using 3/4-inch socket wrench, screw in and tighten fluid passage bolt.

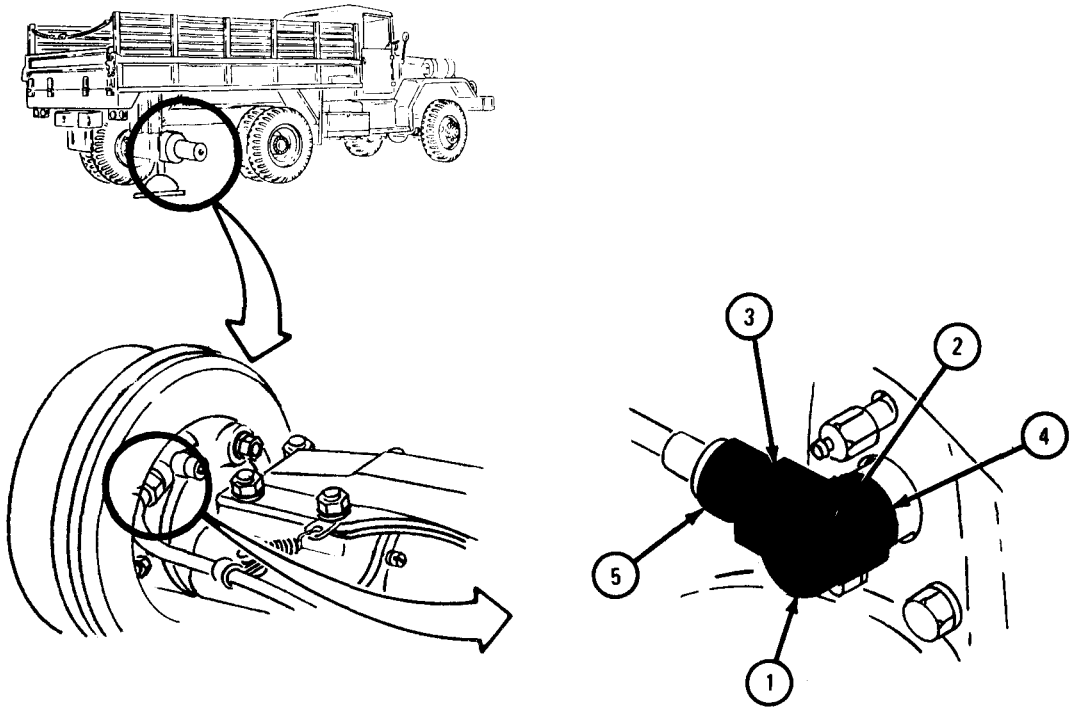
2. Using 7/16-inch open end wrench, screw on and tighten hose nut (5).

NOTE

Follow-on Maintenance Action Required:

Bleed hydraulic system. Refer to para 12-14.

END OF TASK



(b) Junction tee fitting.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Tighten fittings just enough to stop fluid from leaking.

NOTE

The junction tee on the brake hydraulic line on the front axle is used for this typical procedure.

FRAME 1

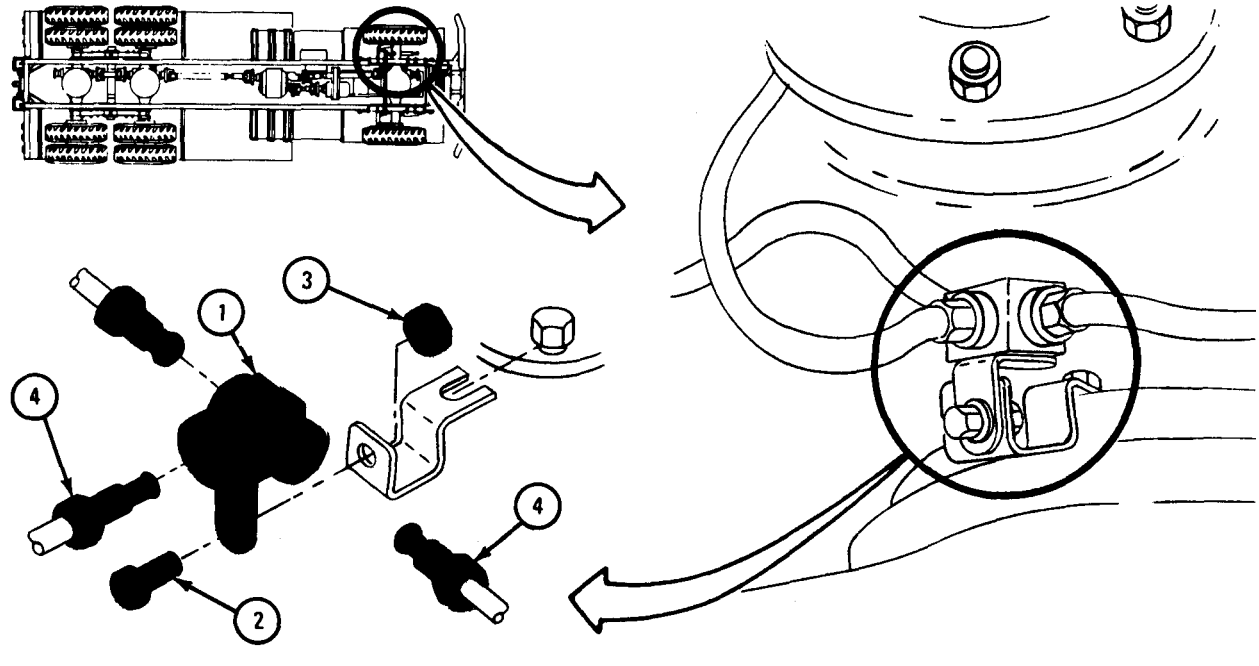
1. Put tee fitting (1) in place. Using 7/16-inch open end wrenches, screw on and tighten screw (2) and nut (3).
2. Using 3/4-inch open end wrench, hold tee fitting (1). Using 7/16-inch combination box and open end wrench, screw on and tighten three tube nuts (4).

NOTE

Follow-on Maintenance Action Required:

Bleed hydraulic system. Refer to para 12-14.

END OF TASK



NOTE: PARTS WITHOUT CALLOUTS ARE SHOWN ONLY FOR REFERENCE PURPOSES.

TA 087031

(c) Union.

CAUTION

Fittings are made of soft brass. They can be stripped very easily if tightened too much. Tighten fittings just enough to stop fluid from leaking.

NOTE

The union on the brake hydraulic line on the left rear side of the truck chassis is used for this typical procedure.

FRAME 1

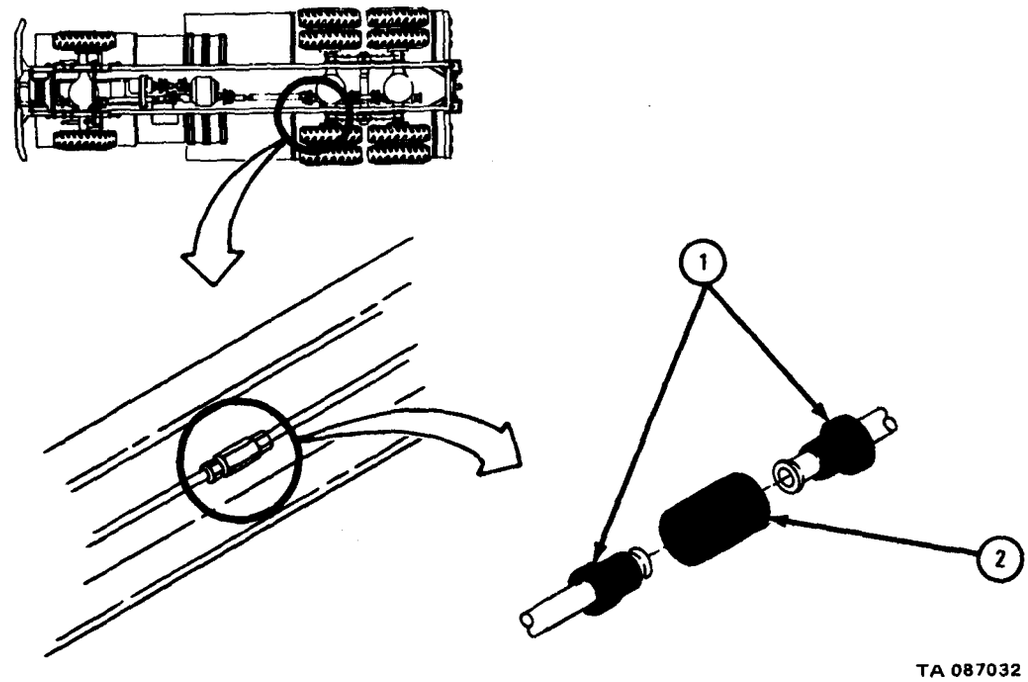
1. Screw on and finger tighten two tube nuts (1). Using 5/8-inch open end wrench, hold union (2). Using 5/8-inch combination box and open end wrench, tighten two tube nuts.

NOTE

Follow-on Maintenance Action Required:

Bleed hydraulic brake system. Refer to para 12-14.

END OF TASK



(d) Retaining band.

NOTE

The retaining band on the hydraulic line or the upper torque rod is used for this typical procedure.

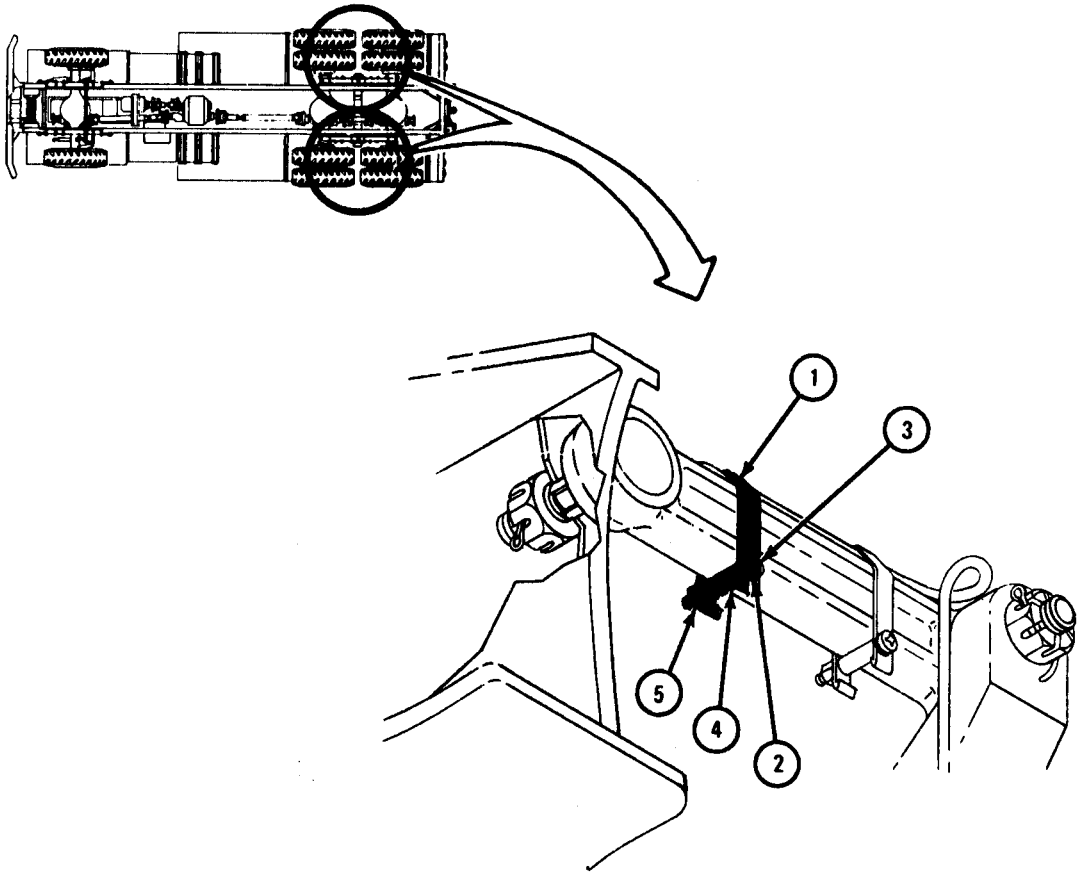
FRAME 1

1. Put band (1) in place. Put washer (2) on screw (3). Put spacer (4) in place.
2. Using screwdriver and 11/32-inch wrench, screw on and tighten screw (3) and nut (5).

NOTE

Some lines have more than one band. Do steps 1 and 2 again for other bands.

END OF TASK



12-13. AIR HYDRAULIC CYLINDER REMOVAL AND REPLACEMENT.

TOOLS:
- 5/8-inch combination box and open end wrench
- 7/8-inch combination box and open end wrench
- 15/16-inch combination box and open end wrench
- 1/2-inch combination wrench
- 5/8-inch combination wrench
- 11/16-inch combination wrench
- 3/4-inch combination wrench
- 13/16-inch open end wrench
- l-gallon cent airier
- 9/16-inch combination wrench (2)

SUPPLIES:
- Tags
- Brass gasket (2)

PERSONNEL: One

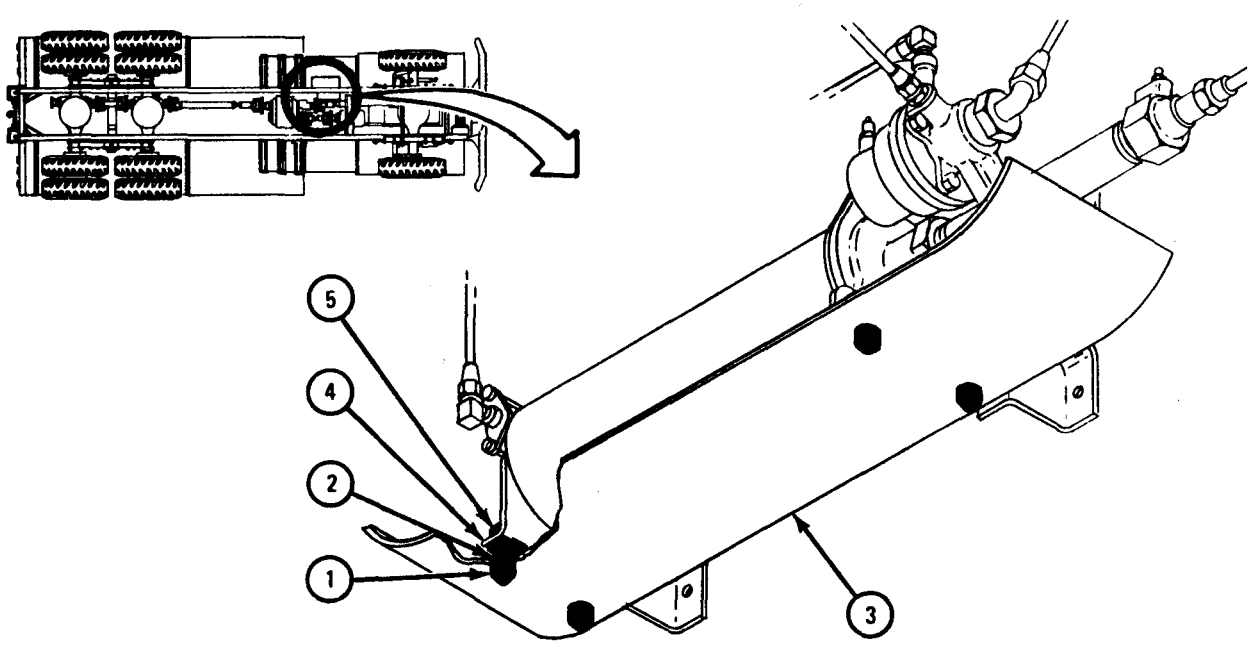
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

a. Preliminary Procedure. Vent air system pressure. Refer to para 11-3.

b. Removal.

1. Using 9/16-inch combination wrenches, unscrew and take off four nuts (1).
2. Take off four washers (2), shield (3), two spacers (4), and four screws (5).

GO TO FRAME 2



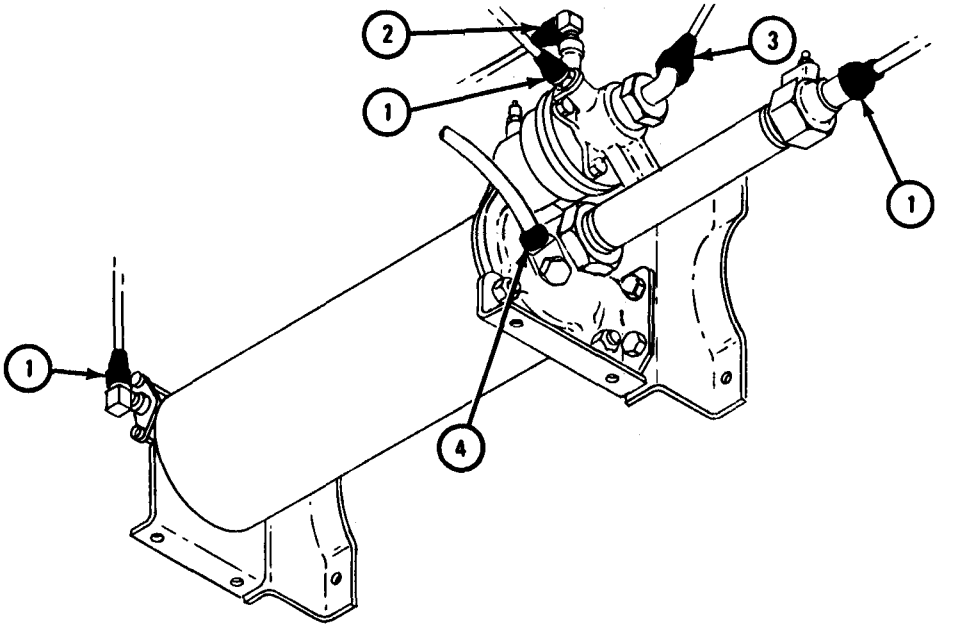
FRAME 2

NOTE

Put container under couplings and let brake fluid drain when taking off couplings.

1. Tag six coupling nuts (1 through 4) so that they will be put back in the right place.
2. Using 5/8-inch combination box and open end wrench, unscrew and take off three coupling nuts (1).
3. Using 15/16-inch combination box and open end wrench; unscrew and take off coupling nut (2).
4. Using 7/8-inch combination box and open end wrench, unscrew and take off coupling nut (3).
5. Using 5/8-inch combination box and open end wrench, unscrew and take off coupling nut (4).

GO TO FRAME 3

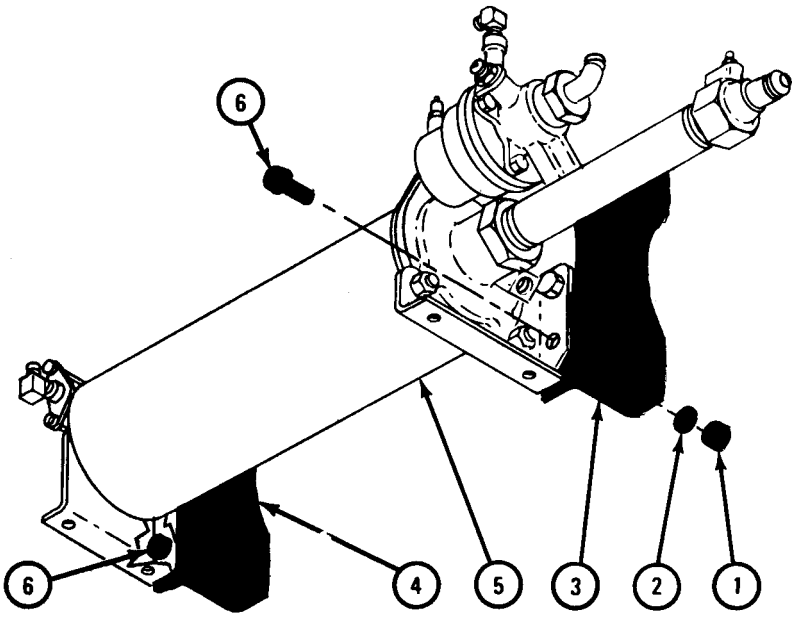


TA 049437

FRAME 3

1. Using 9/16-inch combination wrenches, unscrew and take off two nuts (1) with washers (2) at support (3).
2. Do step 1 again at support (4).
3. Hold air hydraulic cylinder (5) and take out four screws (6) . Take out air hydraulic cylinder.

GO TO FRAME 4

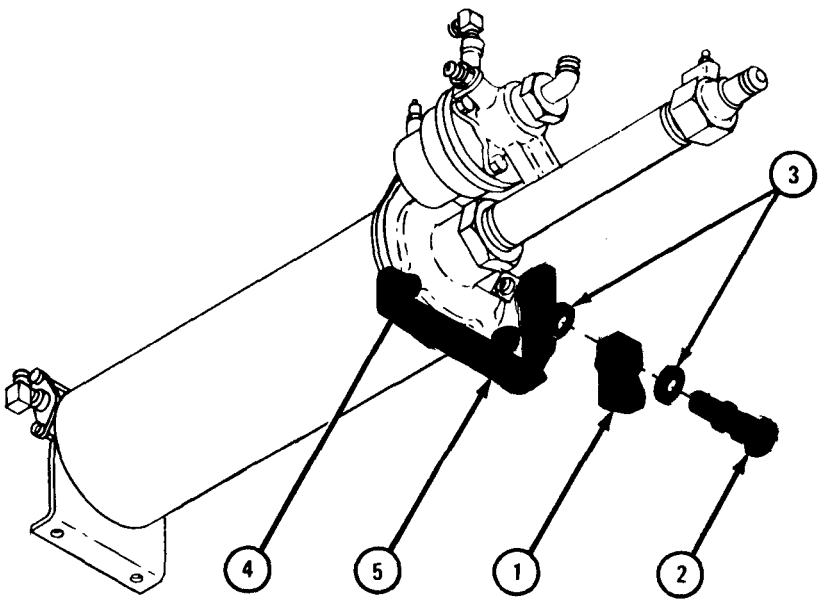


TA 049438

FRAME 4

1. Using 13/16-inch open end wrench, hold tee fitting (1) and using 3/4-inch combination wrench, unscrew and take out passage bolt (2), tee fitting, and two brass gaskets (3). Throw away gaskets.,
2. Using 1/2-inch combination wrench, unscrew and take off three locknuts (4). Take off bracket (5).

GO TO FRAME 5

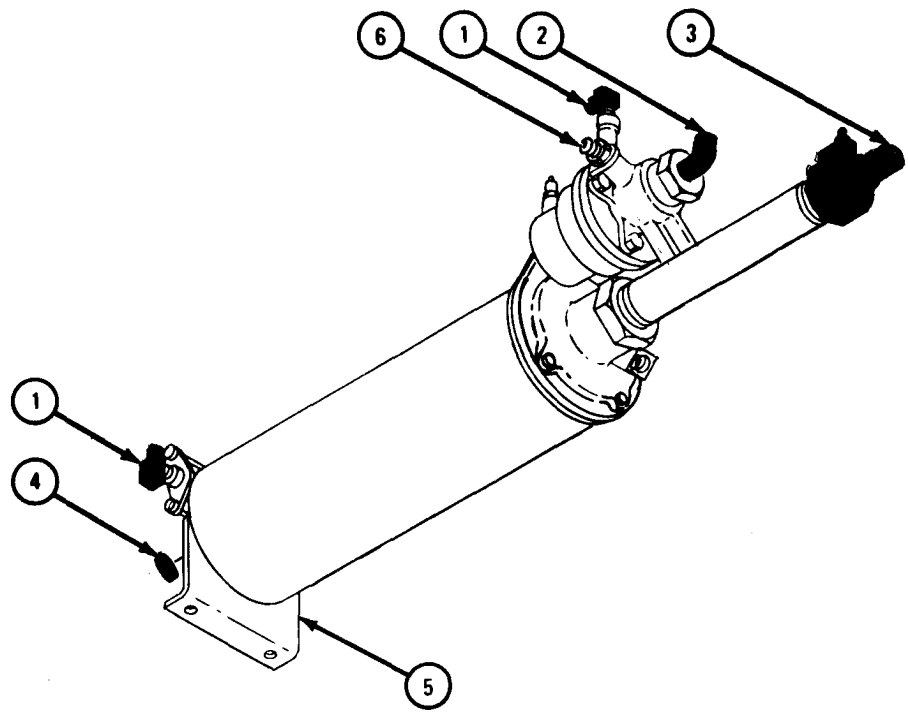


TA 049439

FRAME 5

1. Note positions of two elbows (1) and elbow (2) so that they may be put back in the right places.
2. Using 3/4-inch open end wrench, unscrew and take off two elbows (1).
3. Using 5/8-inch open end wrench, unscrew and take off elbow (2).
4. Using 3/4-inch open end wrench, unscrew and take off fitting (3).
5. Using 1/2-inch combination wrench, unscrew and take off locknut (4) and take off bracket (5).
6. Using 11/16-inch combination wrench, unscrew and take off fitting (6).

END OF TASK



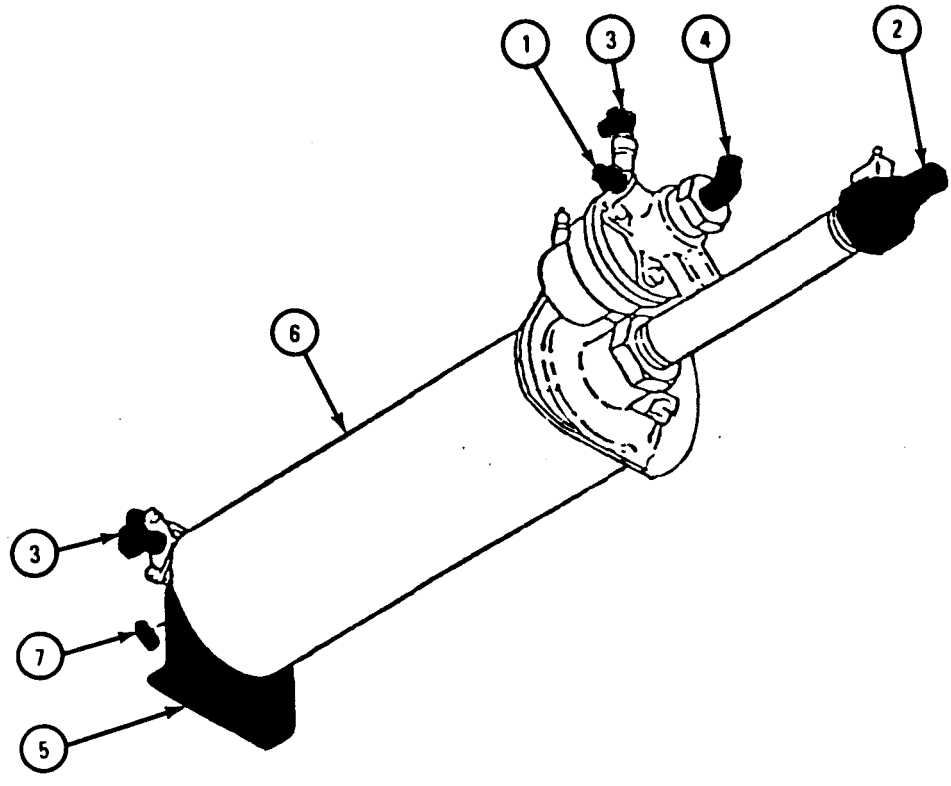
TA 084183

c. Replacement.

FRAME 1

1. Using 11/16-inch combination wrench, screw in and tighten fitting (1).
2. Using 3/4-inch open end wrench, screw on and tighten fitting (2).
3. Using 3/4-inch open end wrench, screw in and tighten two elbows (3). Face elbows as noted in removal.
4. Using 5/8-inch open end wrench, screw in and tighten elbow (4). Face elbow as noted in removal.
5. Put bracket (5) on rear of air hydraulic cylinder (6).
6. Using 1/2-inch combination wrench, screw on and tighten locknut (7).

GO TO FRAME 2

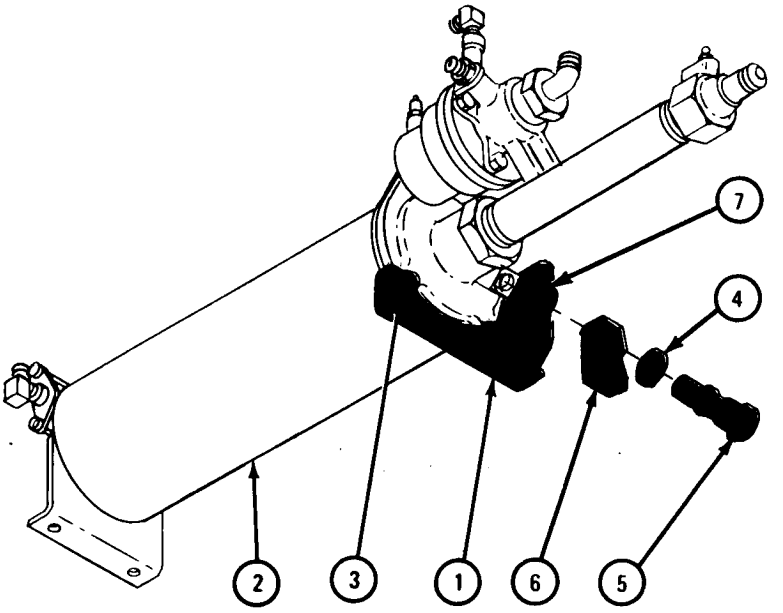


TA 084184

FRAME 2

1. Put bracket (1) on front of air hydraulic cylinder (2) as shown. Using 1/2-inch combination wrench, screw on and tighten three locknuts (3).
2. Put a new brass gasket (4) on passage bolt (5) and put passage bolt in T fitting (6).
3. Put a new brass gasket (7) on end of passage bolt (5) and screw bolt into air hydraulic cylinder (2).
4. Using 3/4-inch combination wrench, tighten passage bolt (5).

GO TO FRAME 3

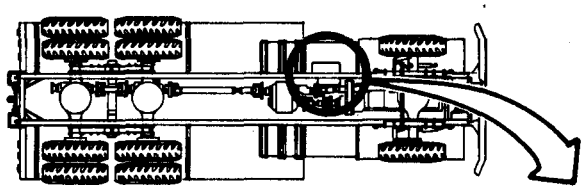


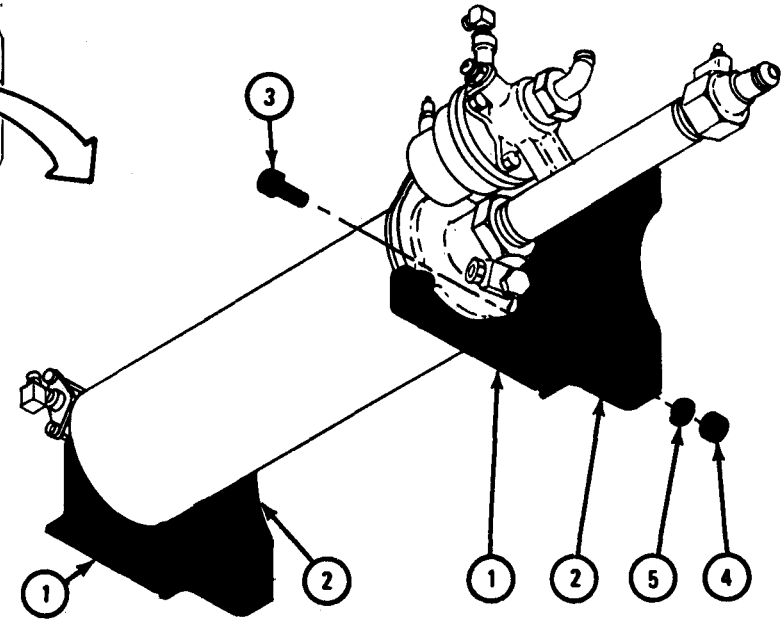
TA 049440

FRAME 3

1. Line up holes in two brackets (1) with holes in two supports (2).
2. Push four screws (3) through holes in brackets (1) and supports (2).
3. Using 9/16-inch wrenches, screw on and tighten four nuts (4) with washers (5).

GO TO FRAME 4



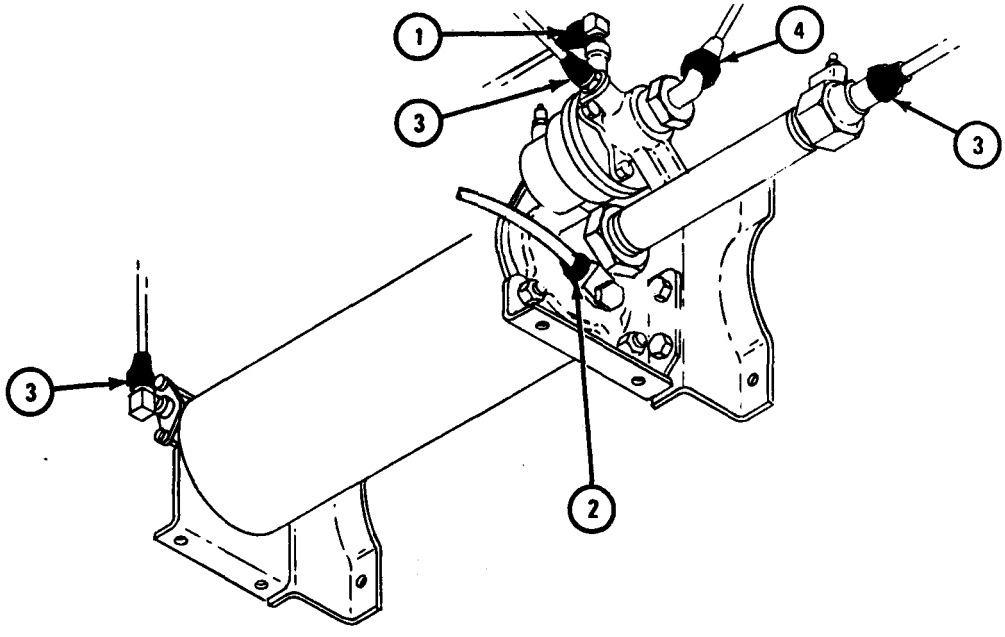


TA 049441

FRAME 4

1. Using 15/16-inch combination box and open end wrench, screw on and tighten coupling nut (1) as tagged.
2. Using 5/8-inch combination box and open end wrench, screw on and tighten coupling nut (2) as tagged.
3. Using 5/8-inch combination box and open end wrench, screw on and tighten three coupling nuts (3) to fittings as tagged. Take off tags.
4. Using 7/8-inch combination box and open end wrench, screw on and tighten coupling nut (4).

GO TO FRAME 5



TA 049442

FRAME 5

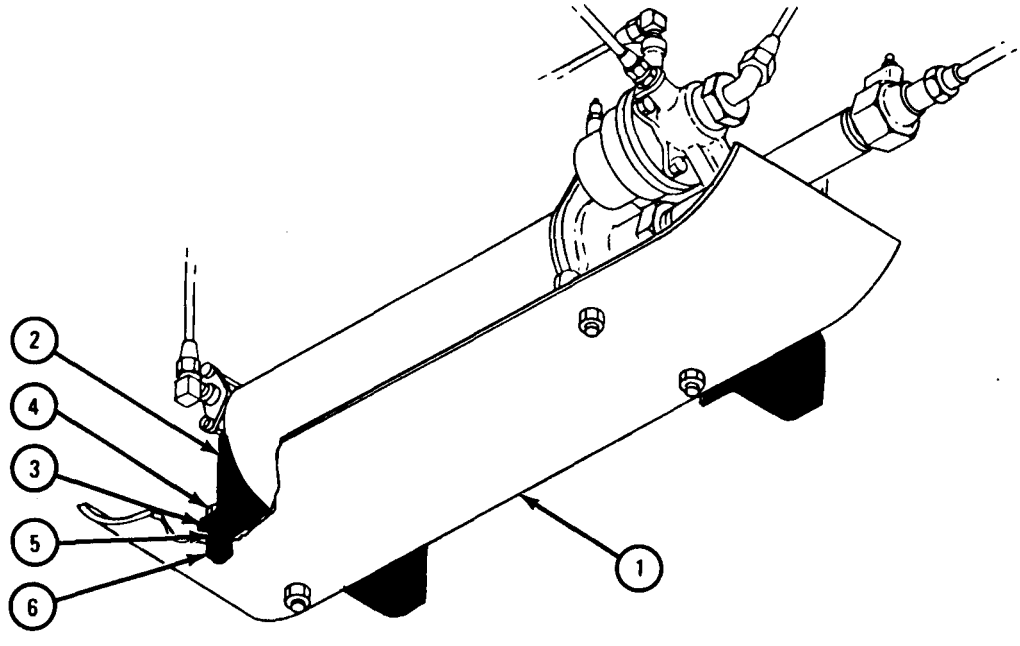
1. Hold shield (1) against two brackets (2). Put two spacers (3) between shield and each bracket, alining holes.
2. Put four screws (4) down through two brackets (2).
3. Put washer (5) on each screw (4) and screw on four nuts (6).
4. Using 9/16-inch wrenches, hold each screw (4) and tighten nuts (6).

NOTE

Follow-on Maintenance Action Required:

1. Pressurize air system and check for leaks. Refer to para 1-5.
2. Bleed hydraulic brake system. Refer to para 12-14.

END OF TASK



12-14. BLEEDING SERVICE BRAKE SYSTEM USING BLEEDER TANK.

TOOLS : 3/4-inch open end wrench
3/8-inch box wrench
7/16-inch box wrench
Bleeding hose
Two-quart transparent
cent airier
Flexible neck oil filler can
Bleeder tank
Pressure tank-to-master
cylinder adapter
Hose-to-adapter quick
disconnect fittings
Cross-tip screwdriver (Phillips type)
9/16-inch box wrench

SUPPLIES : Hydraulic brake fluid, type HB , VV-B-680
Clean cloth

PERSONNEL: One

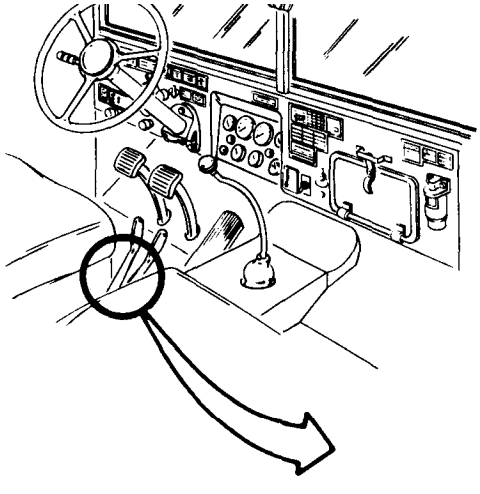
EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

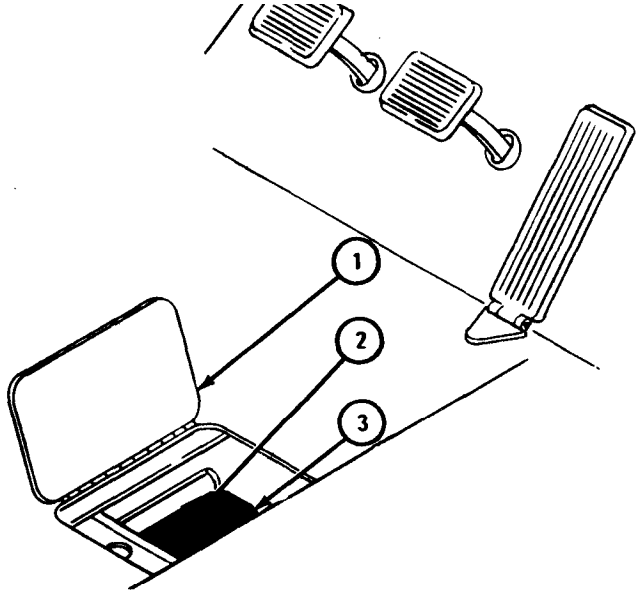
a. Connecting Bleeder Tank.

FRAME 1

1. Using phillips screwdriver and 7/16-inch wrench, open master cylinder access hatch (1) .
2. Using clean cloth, clean area around master cylinder filler cap (2).
3. Using 3/4-inch open end wrench, unscrew and take off master cylinder filler cap (2).
4. Using flexible neck filler can, fill master cylinder (3) to 1/2-inch from top with hydraulic brake fluid.

GO TO FRAME 2

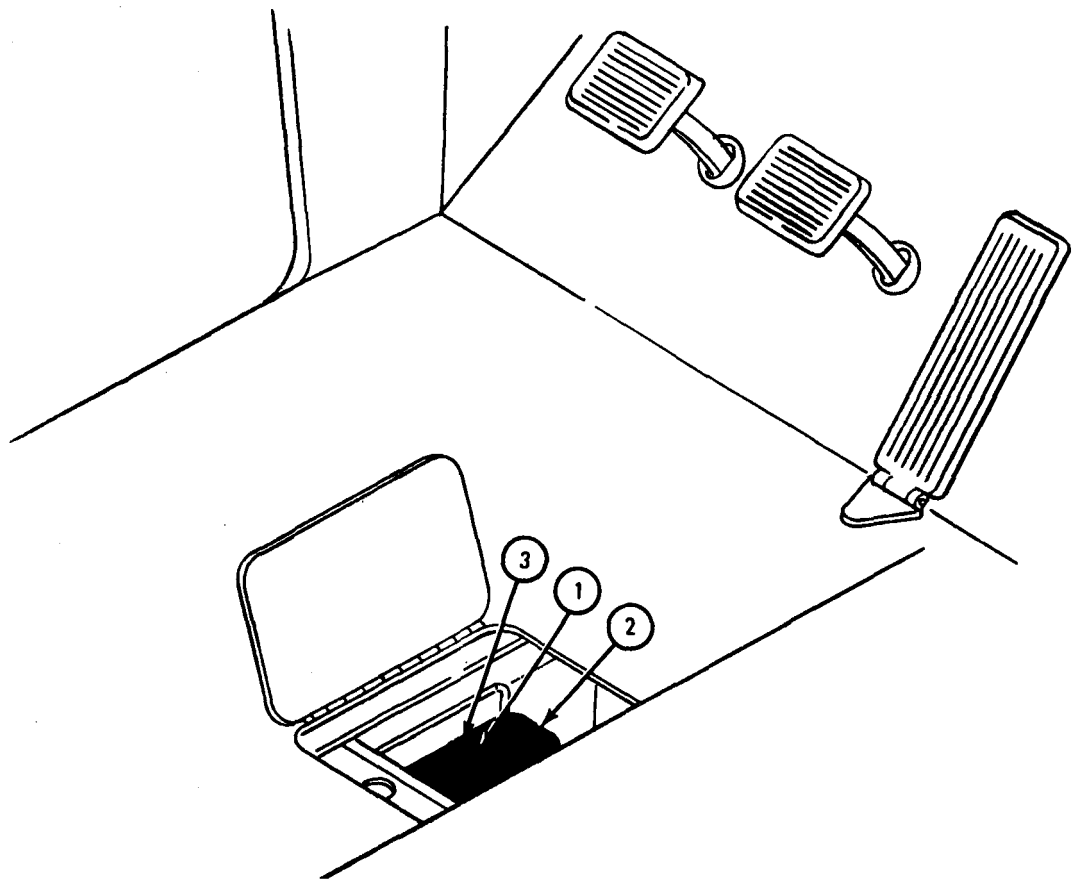




FRAME 2

1. Screw adapter (1) into filler opening of master cylinder (2).
2. Using 9/16-inch wrench, screw male quick-disconnect fitting (3) into adapter (1).

GO TO FRAME 3

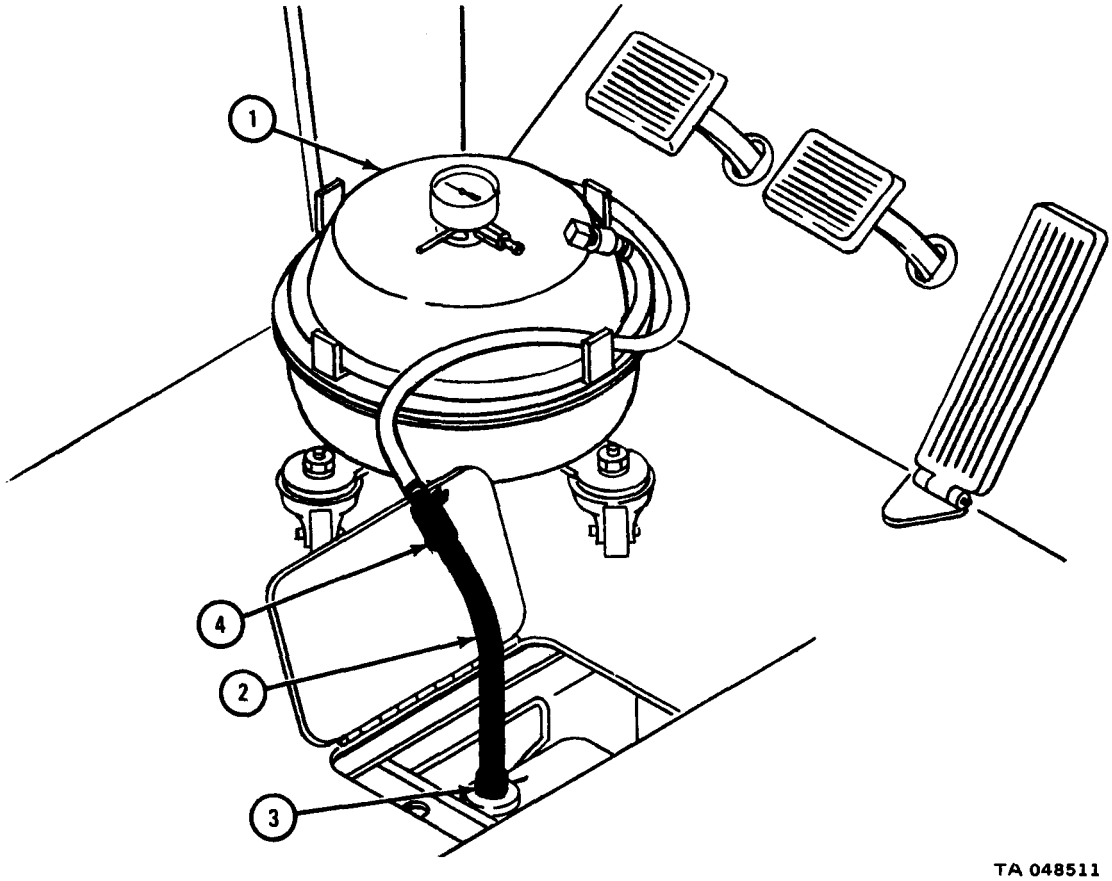


TA 048510

FRAME 3

1. Check that bleeder tank (1) is pressurized to between 20 and 30 pounds.
2. Press female quick-disconnect on hose (2) onto male quick-disconnect in adapter (3).
3. Make sure that valve (4) is open.

END OF TASK

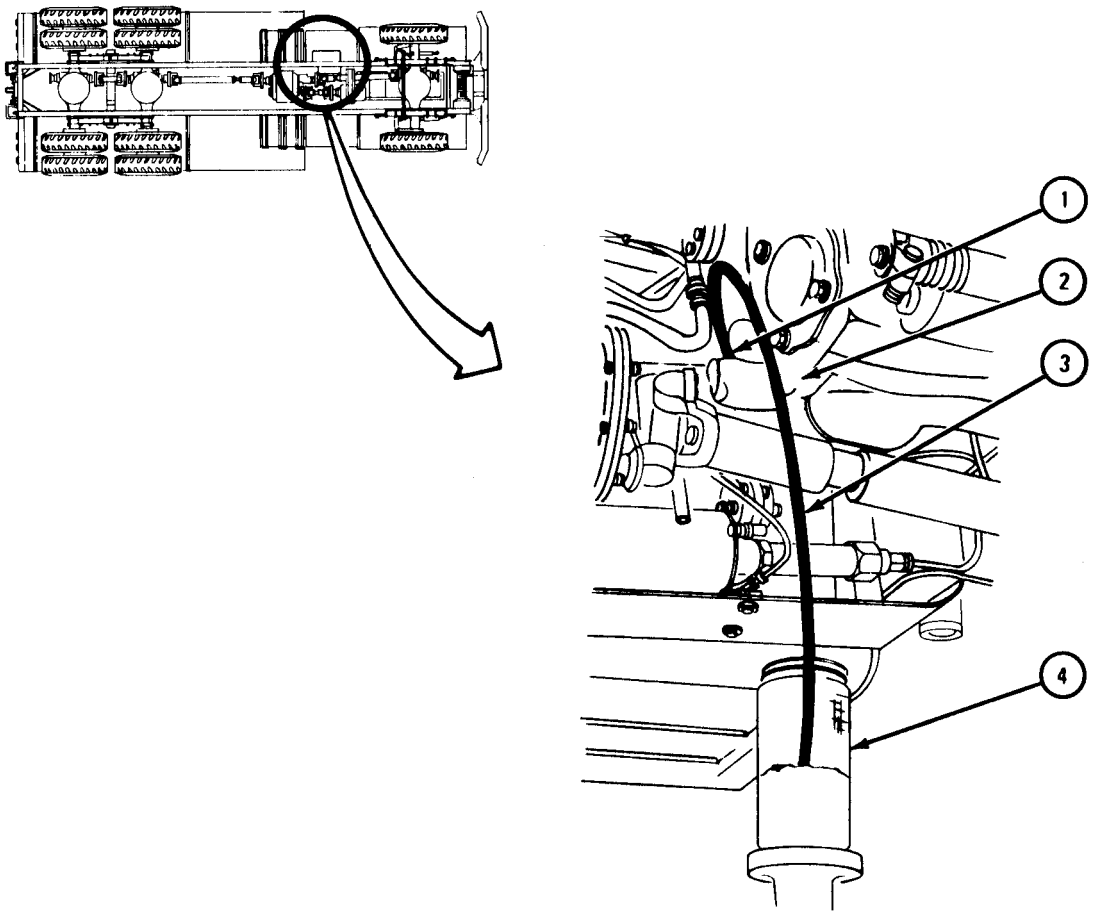


b. Bleeding Master Cylinder.

FRAME 1

1. Connect bleeder tank to master cylinder. Refer to para 12-14a.
2. Using clean cloth, clean bleeding screw (1) on master cylinder (2).
3. Put 3/8-inch wrench on bleeding screw (1).
4. Put one end of bleeding hose (3) on bleeding screw (1) .
5. Put other end of bleeding hose (3) into transparent container (4). Put hydraulic fluid into container until container is 1/2 full. Make sure that end of bleeding hose is below the level of hydraulic fluid in container.

GO TO FRAME 2



FRAME 2

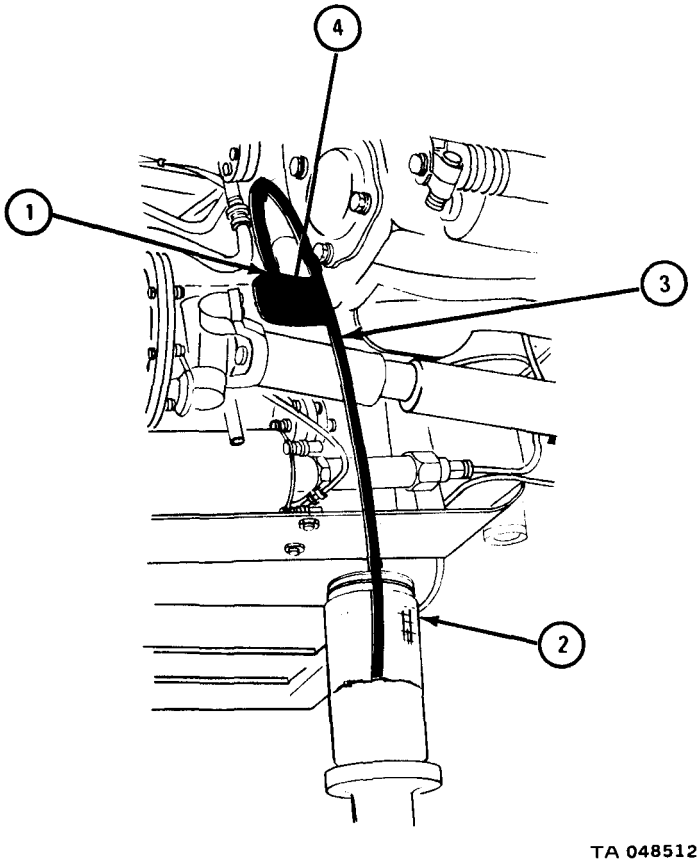
1. Using 3/8-inch wrench, unscrew bleeding screw (1) 3/4 turn. Look for air bubbles in hydraulic fluid in container (2).
2. When there are no air bubbles in hydraulic fluid for five seconds, using 3/8-inch wrench, tighten bleeding screw (1).
3. Take bleeding hose (3) and 3/8-inch wrench off of bleeding screw (1). Take bleeding hose out of container (2) and dump hydraulic fluid in contaminated oil container. Do not dump fluid on ground.
4. Make sure that bleeding screw (1) is screwed on tightly.

NOTE

If air bubbles are seen when bleeding master cylinder, do not disconnect bleeder tank from master cylinder as air hydraulic cylinder and all wheel cylinders must be bled. If no air bubbles were seen, do step 5.

5. Disconnect bleeder tank from master cylinder (4). Refer to para 12-14e.

END OF TASK



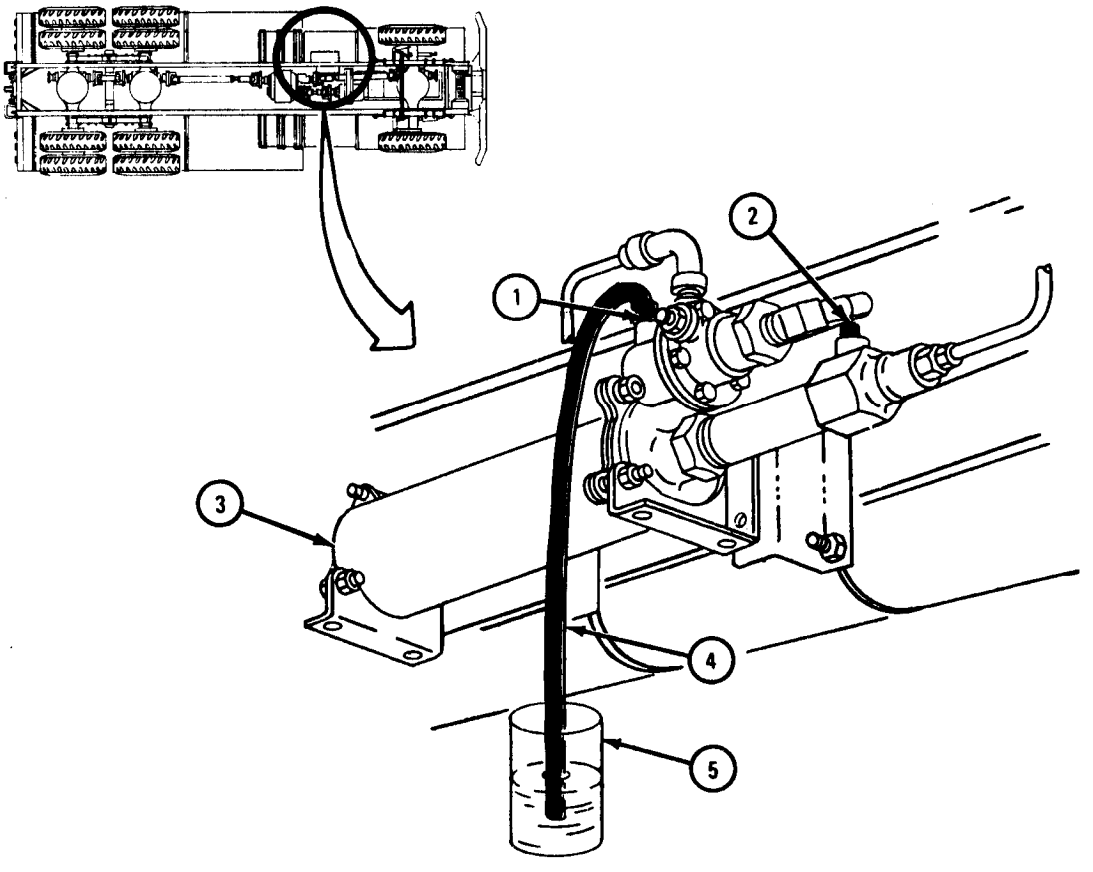
TA 048512

c. Bleeding Air-Hydraulic Cylinder.

FRAME 1

1. Connect bleeder tank to master cylinder. Refer to para 12-14a.
2. Using clean cloth, clean upper bleeding screw (1) and lower bleeding screw (2) on air hydraulic cylinder (3).
3. Put 7/16-inch wrench on upper bleeding screw (1).
4. Put one end of bleeding hose (4) on upper bleeding screw (1).
5. Put other end of bleeding hose (4) into transparent container (5). Put hydraulic fluid into container until container is 1/4 full. Make sure that end of bleeding hose is below level of fluid in container.

GO TO FRAME 2

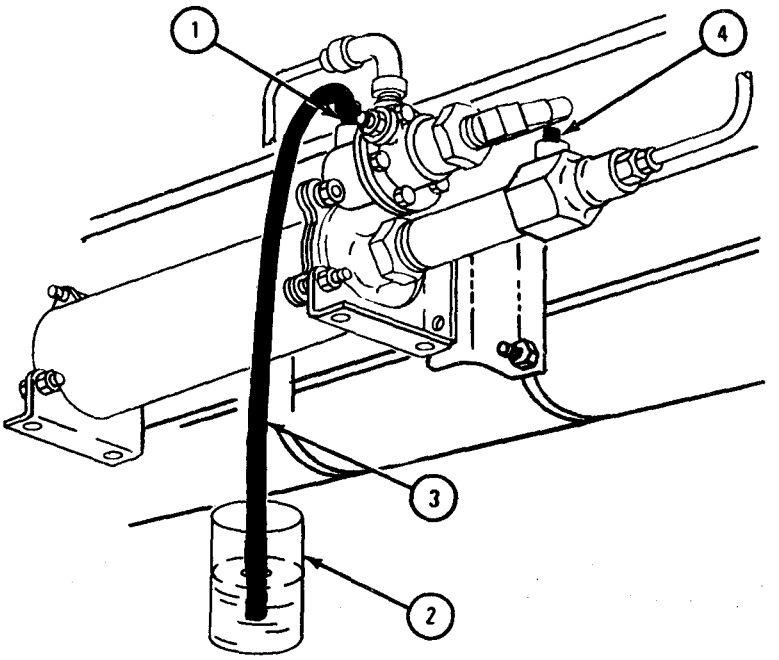


TA 089107

FRAME 2

1. Using 7/16-inch wrench, unscrew upper bleeding screw (1) 3/4 turn. Look for air bubbles in hydraulic fluid in container (2).
2. When there are no air bubbles for five seconds, using 7/16-inch wrench, tighten upper bleeding screw (1). Make sure that upper bleeding screw is screwed on tightly.
3. Take bleeding hose (3) and 7/16-inch wrench off of upper bleeding screw (1) and put them on lower bleeding screw (4).

GO TO FRAME 3



TA 048513

FRAME 3

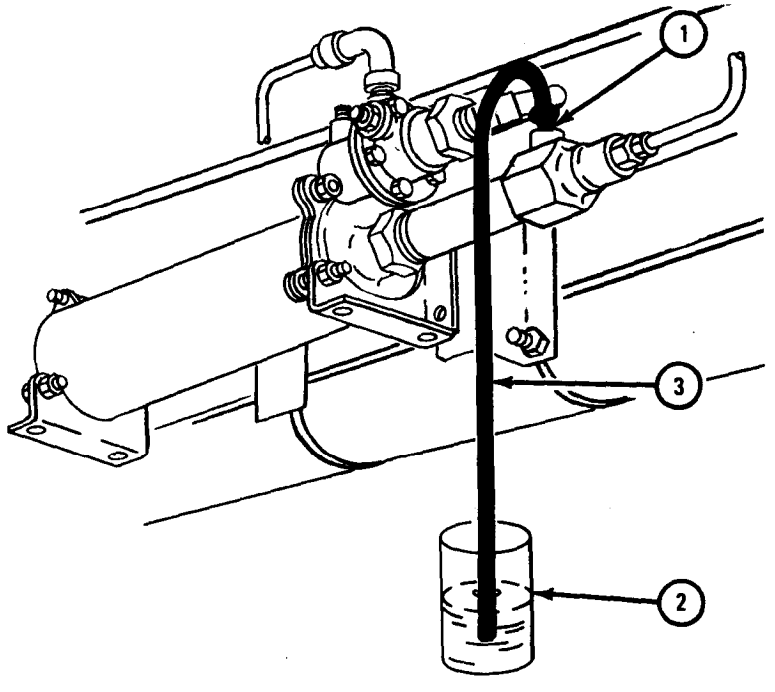
1. Using 7/16-inch wrench, unscrew lower bleeding screw (1) 3/4 turn. Look for air bubbles in hydraulic fluid in container (2).
2. When there are no air bubbles for five seconds, using 7/16-inch wrench, tighten lower bleeding screw (1). Make sure that lower bleeding screw is screwed on tightly.
3. Take bleeding hose (3) and 7/16-inch wrench off lower bleeding screw (1). Take bleeding hose out of container (2) and dump hydraulic fluid in contaminated oil container. Do not throw fluid on ground.

NOTE

If air bubbles were seen when bleeding air hydraulic cylinder, do not disconnect bleeder tank as all wheel cylinders must be bled. If no air bubbles were seen, do step 4.

4. Close shutoff valve in hose from bleeder tank to master cvlinder and disconnect bleeder tank from master cylinder. Refer to para 12- 14e.

END OF TASK



TA 048514

d. Bleeding Wheel Cylinders.

NOTE

Air-hydraulic cylinder must be bled before bleeding wheel cylinders.

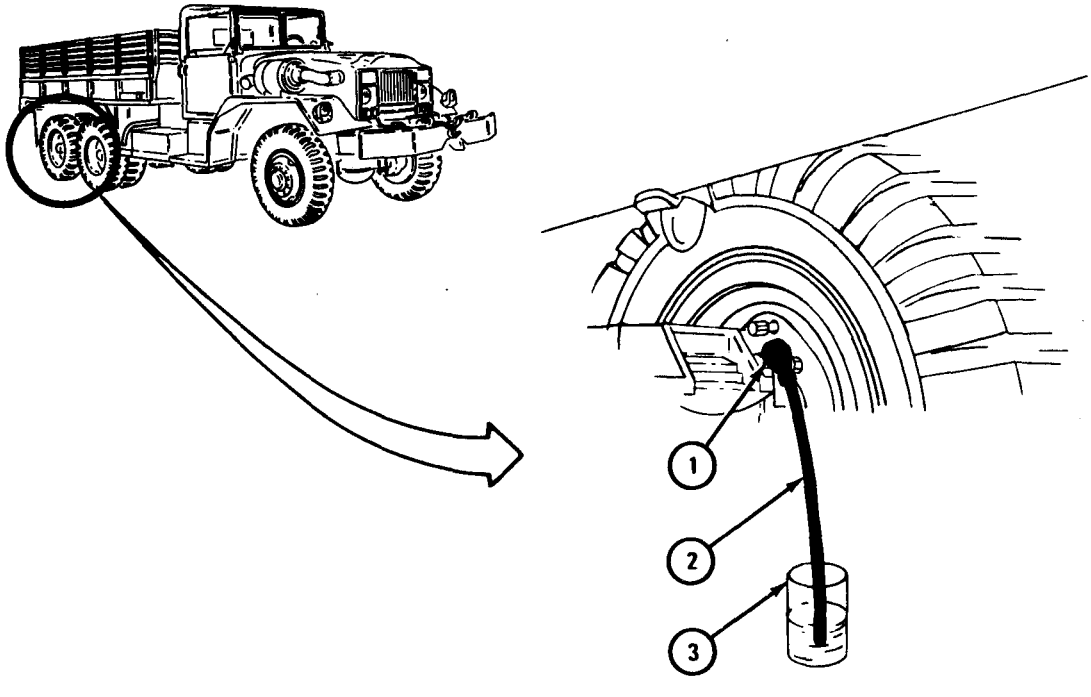
When a brake line has been removed at only one wheel, bleed the wheel cylinder at that wheel only.

When all wheel cylinders must be bled, start with the wheel cylinder farthest away from master cylinder.

FRAME 1

1. Connect bleeding tank to master cylinder. Refer to para 12-14a.
2. Using clean cloth, clean bleeding screw (1).
3. Put 7/16-inch wrench onto bleeding screw (1).
4. Put one end of bleeding hose (2) on bleeding screw (1).
5. Put other end of bleeding hose (2) into transparent container (3). Put hydraulic fluid into container until container is 1/4 full. Make sure that end of bleeding hose is below level of fluid in container.

GO TO FRAME 2

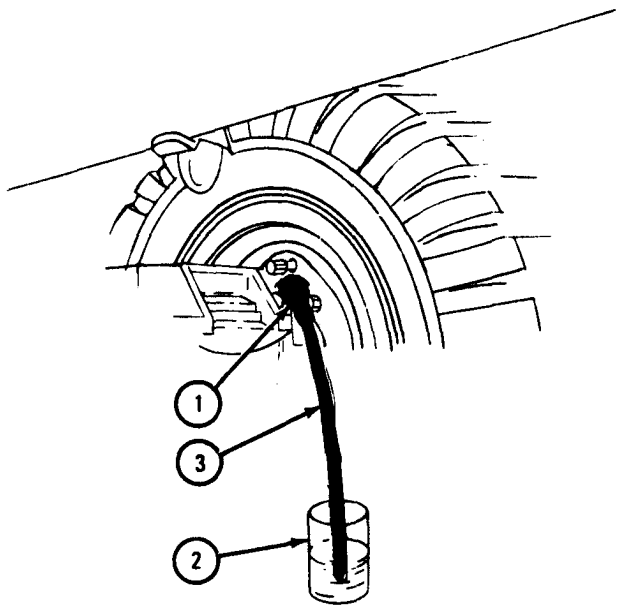


TA 089108

FRAME 2

1. Using 7/16-inch wrench, unscrew bleeding screw (1) 3/4 turn. Look for air bubbles in hydraulic fluid in container (2).
2. When there are no air bubbles for five seconds, using 7/16-inch wrench, tighten bleeding screw (1). Make sure that bleeding screw is screwed on tightly.
3. Take bleeding hose (3) and 7/16-inch wrench off bleeding screw (1). Take bleeding hose out of container (2) and dump hydraulic fluid in contaminated oil container. Do not dump fluid on ground.
4. Disconnect bleeder tank from master cylinder. Refer to para 12- 14e.

END OF TASK



TA 082028

e. Disconnecting Bleeder Tank.

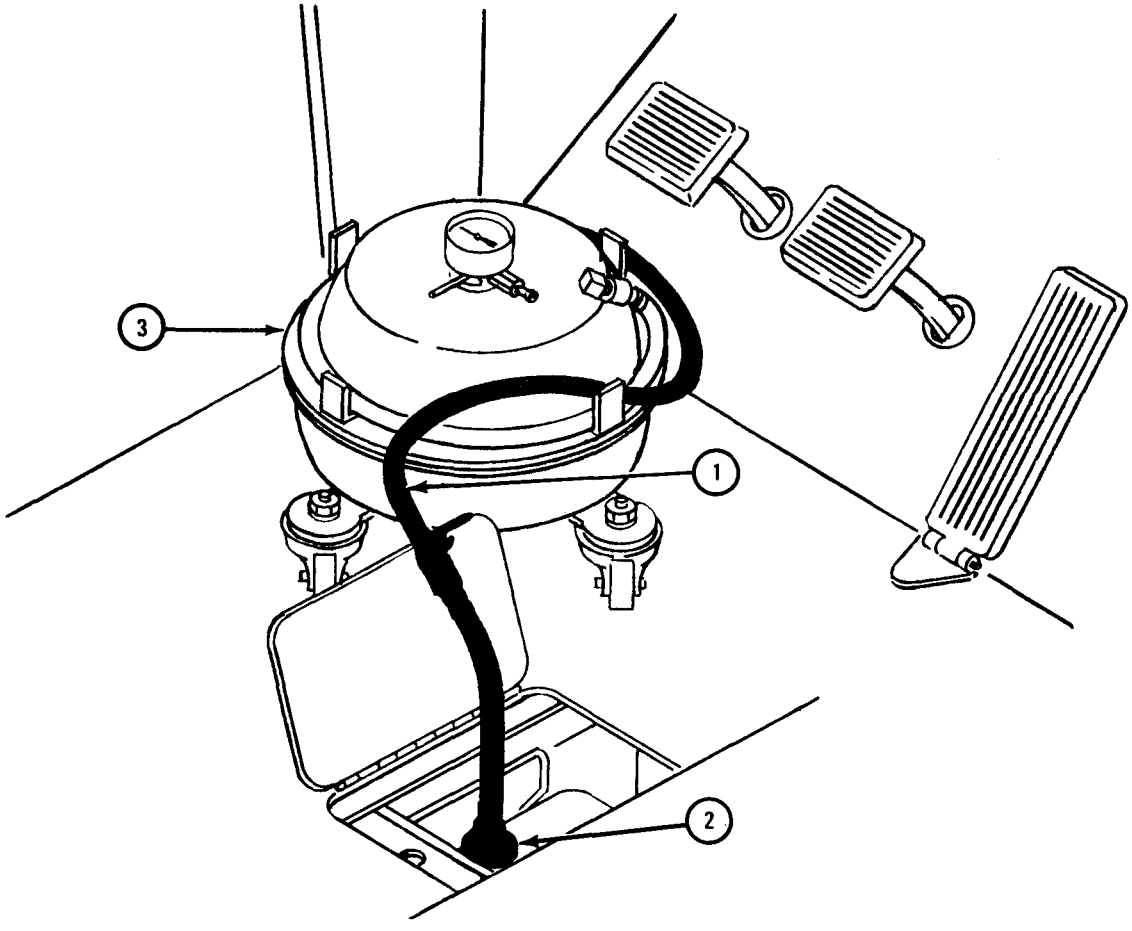
NOTE

After closing shutoff valve in hose (1) loosen adapter (2) on master cylinder to release pressure from hose before removing quick disconnect.

FRAME 1

1. Close shutoff valve in hose to master cylinder and take female quick disconnect on hose (1) out of male quick disconnect in adapter (2) .
2. Take away bleeder tank (3).

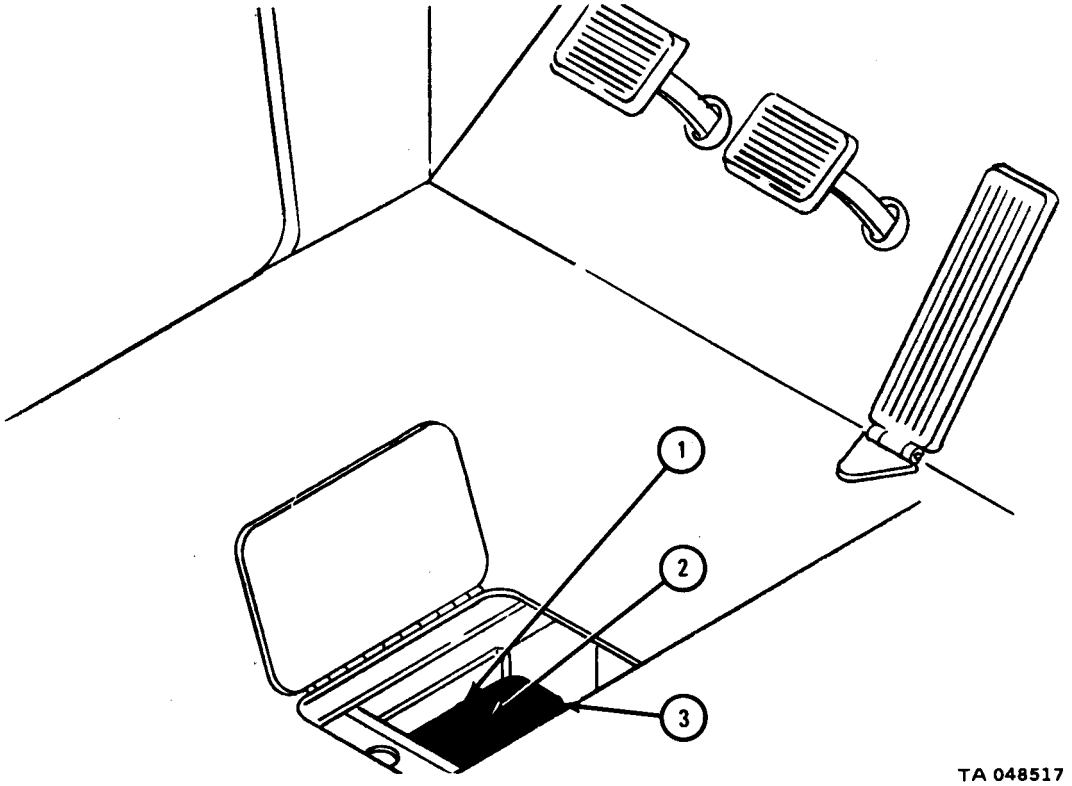
GO TO FRAME 2



FRAME 2

1. Using 9/16-inch wrench, unscrew and take out male quick disconnect fitting (1) from adapter (2).
2. Unscrew and takeout adapter (2) from master cylinder (3).

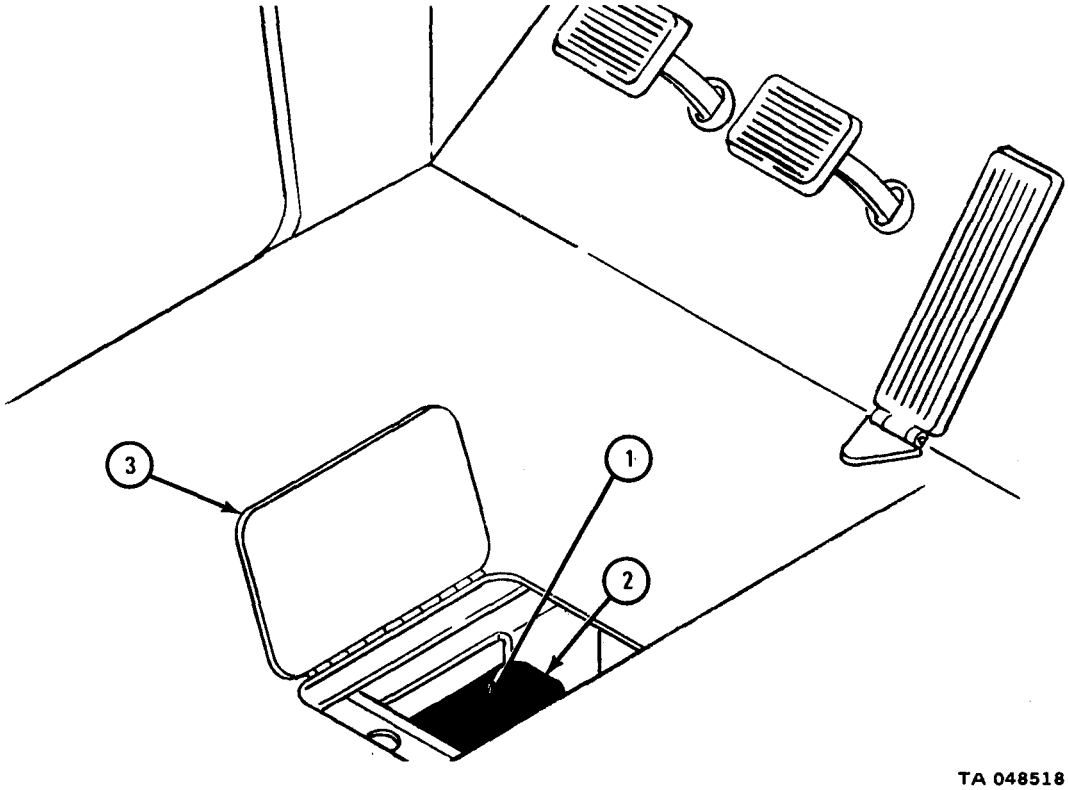
GO TO FRAME 3



FRAME 3

1. Using 3/4-inch open end wrench, screw master cylinder filler cap (1) into master cylinder (2).
2. Using phillips screwdriver, close master cylinder access hatch (3).

END OF TASK



TA 048518

12-15. BLEEDING SERVICE BRAKE SYSTEM WITHOUT USING BLEEDER TANK .

TOOLS : 3/4-inch open end wrench
3/8-inch socket wrench
7/16-inch socket wrench
Bleeding hose
Transparent container
Flexible neck filler can

SUPPLIES: Hydraulic brake fluid, type HB

PERSONNEL: Two

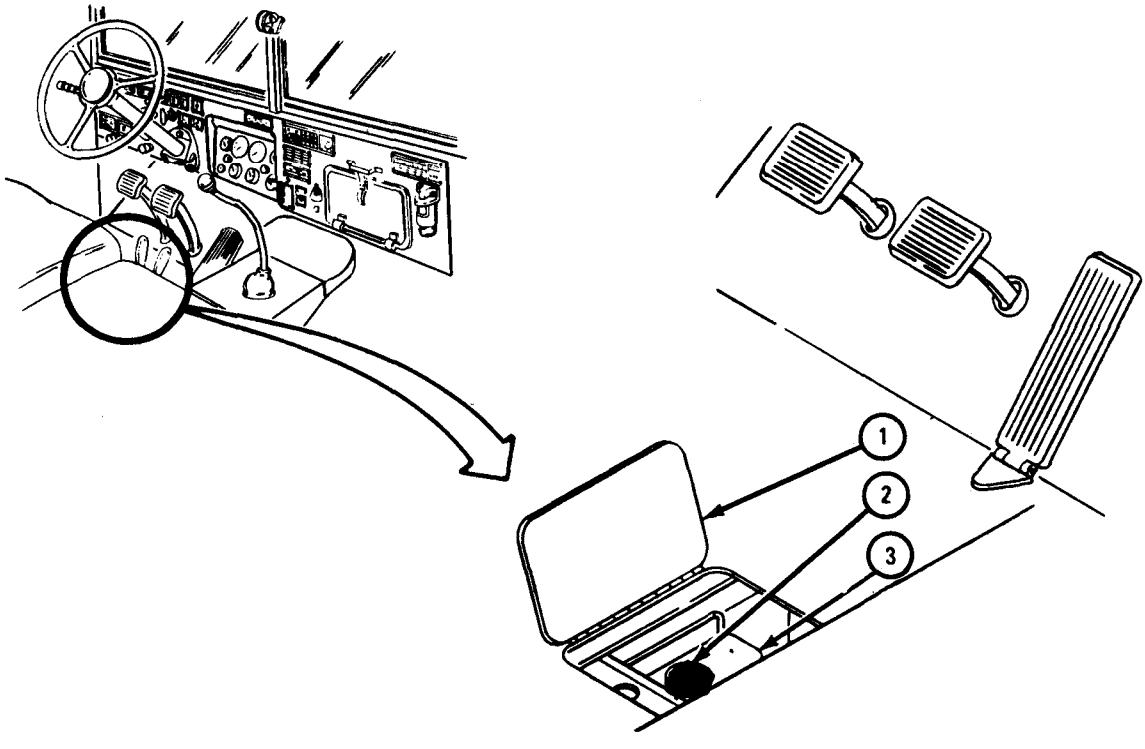
EQUIPMENT CONDITION : Truck parked, engine off, handbrake set.

a. Bleeding Master Cylinder.

FRAME 1

1. Open master cylinder access hatch (1).
2. Using 3/4-inch wrench, unscrew and take off master cylinder filler cap (2).
3. Using flexible neck filler can, fill master cylinder (3) to 1/2-inch from top. Fill with type HB hydraulic brake fluid.
4. Using 3/4-inch wrench, screw on master cylinder filler cap (2).
5. Close master cylinder access hatch (1).

GO TO FRAME 2

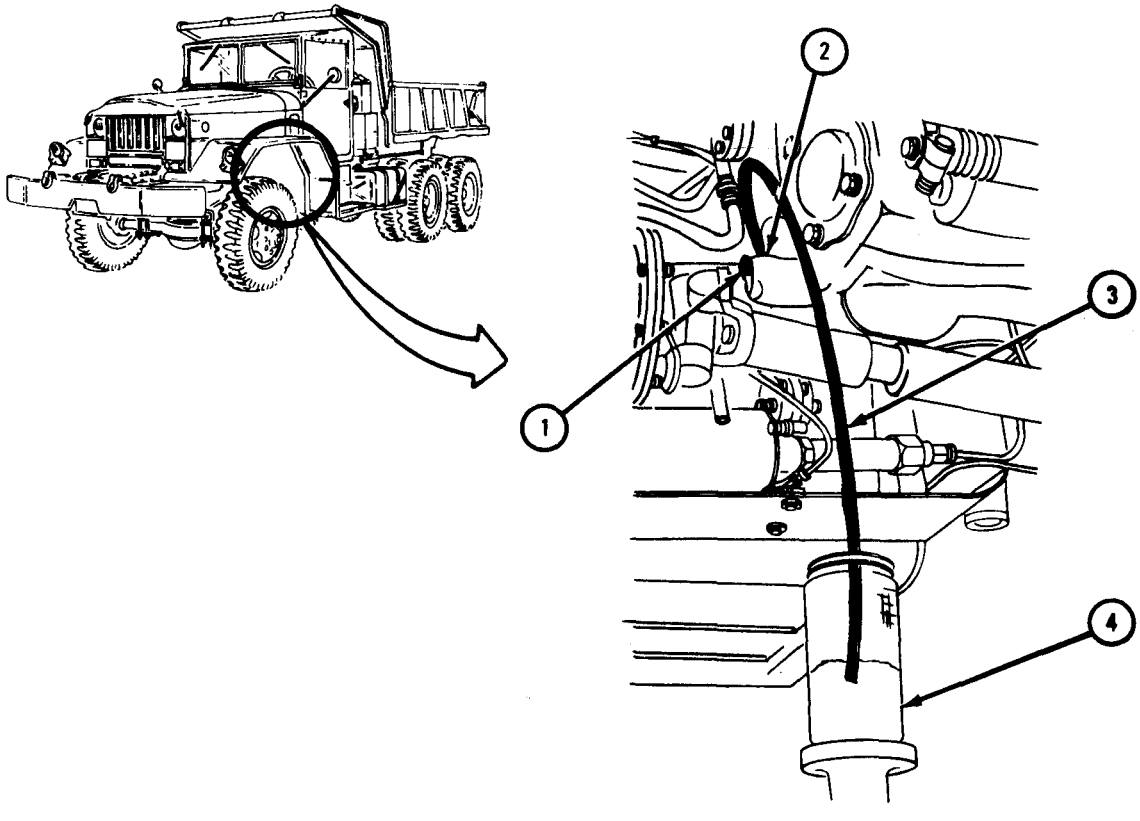


TA 105701

FRAME 2

1. Using a clean cloth, clean bleeding screw (1) on master cylinder (2).
2. Put one end of bleeding hose (3) on bleeding screw (1).
3. Put other end of bleeding hose (3) into transparent container (4). Put hydraulic fluid into container until container is 1/2-full. Make sure that end of bleeding hose is below level of fluid in cent airier.

GO TO FRAME 3

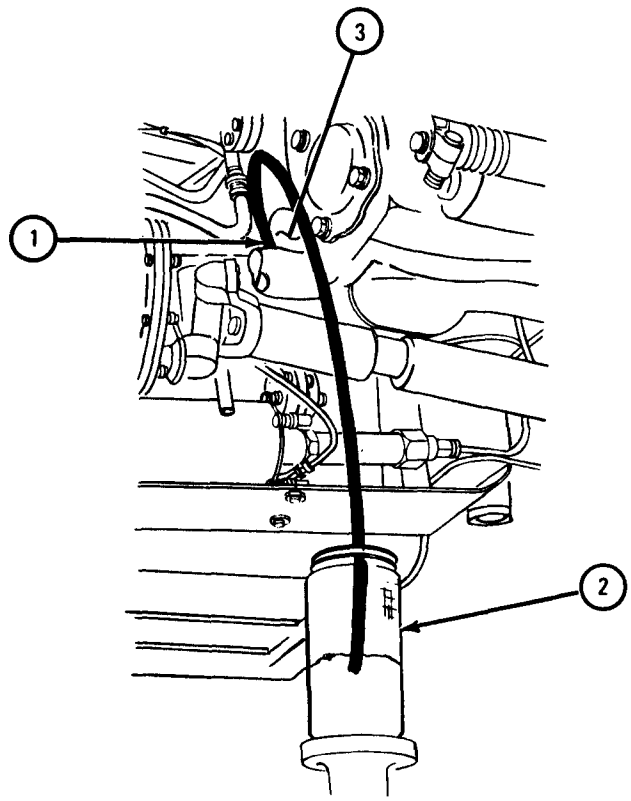


TA 105702

FRAME 3

Soldier A	1.	Using 3/8-inch wrench, unscrew bleeding screw (1) 3/4-turn. Tell soldier B to slowly pump brake pedal three times and hold pedal down after last pump.
Soldier B	2.	Slowly pump brake pedal three times. Hold pedal down after last pump until told to let pedal up. Tell soldier A when pedal is being held down.
Soldier A	3.	Look for air bubbles in hydraulic fluid in container (2). Using 3/8-inch wrench, screw on bleeding screw (1). Tell soldier B to let brake pedal up and to fill master cylinder.
Soldier B	4.	Fill master cylinder (3) . Refer to frame 1. Tell soldier A when master cylinder has been filled.
Soldiers A and B	5.	Do steps 1 through 4 again, as often as required, until there are no air bubbles.

GO TO FRAME 4

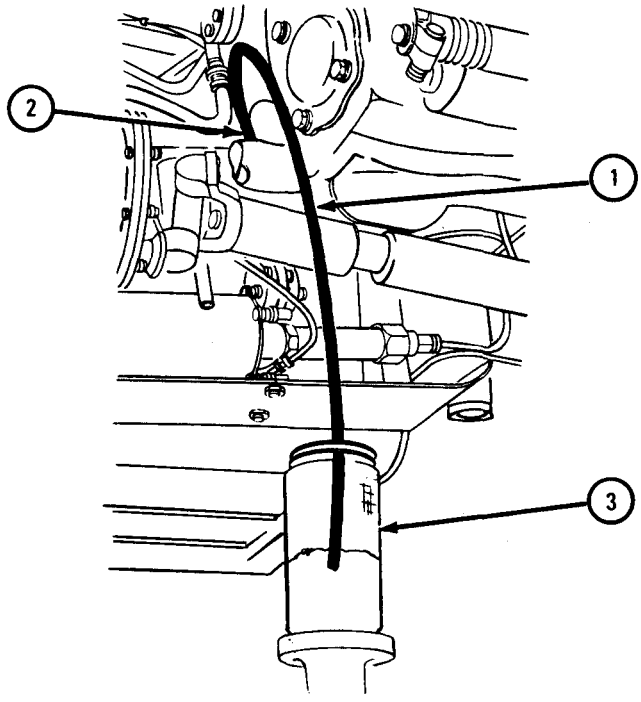


TA 105703

FRAME 4

1. Take bleeding hose (1) off bleeding screw (2). Take bleeding hose out of container (3). Make sure that bleeding screw is screwed on tight.
2. Throw hydraulic fluid in container (3) away.
3. Make sure that master cylinder is filled. Refer to para 12-15a.

END OF TASK



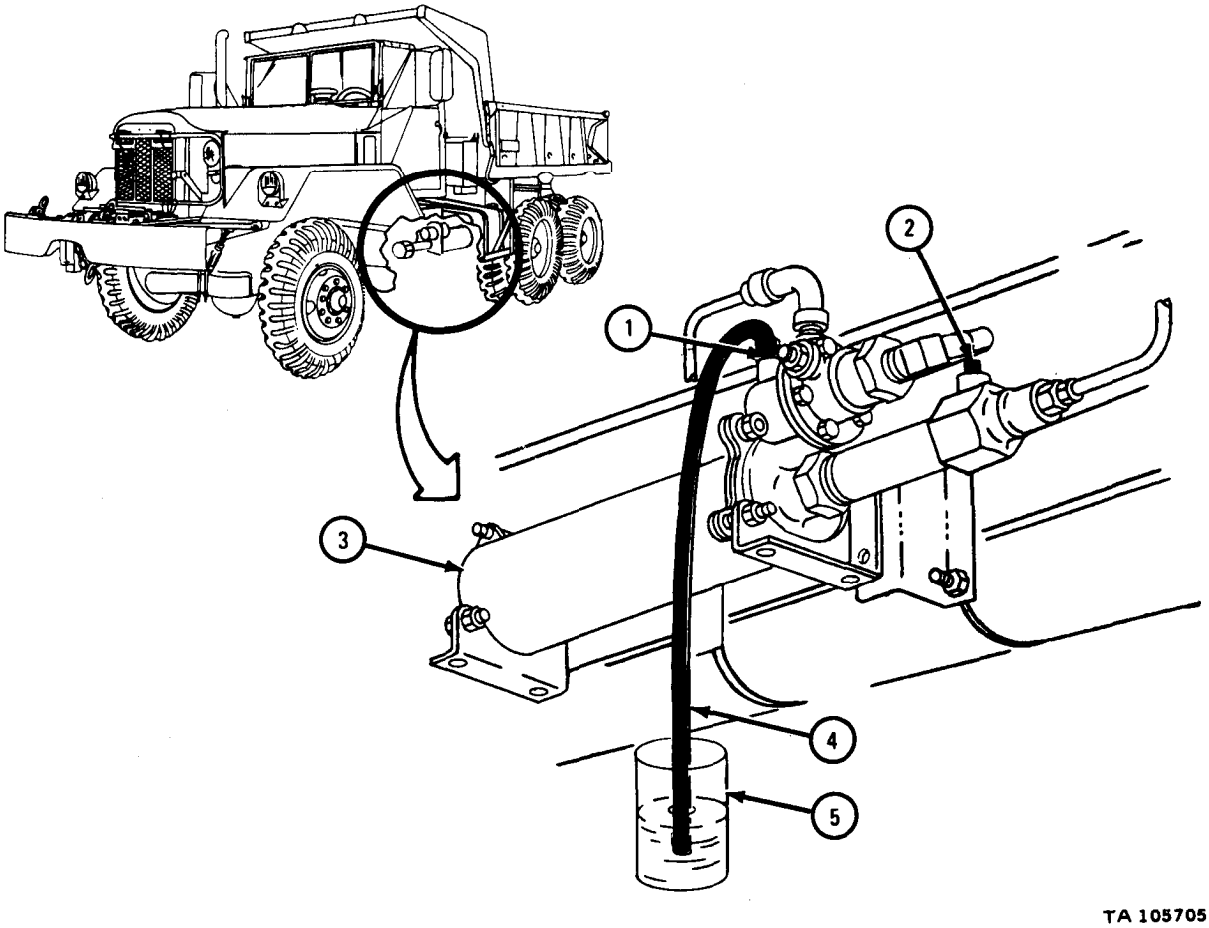
TA 105704

b. Bleeding Air Hydraulic Cylinder.

FRAME 1

1. Fill master cylinder. Refer to para 12-15a.
2. Using a clean cloth, clean upper bleeding screw (1) and lower bleeding screw (2) on air hydraulic cylinder (3).
3. Put one end of bleeding hose (4) on upper bleeding screw (1).
4. Put other end of bleeding hose (4) into transparent container (5). Put hydraulic fluid into container until container is 1/2-full. Make sure that end of bleeding hose is below level of fluid in container.

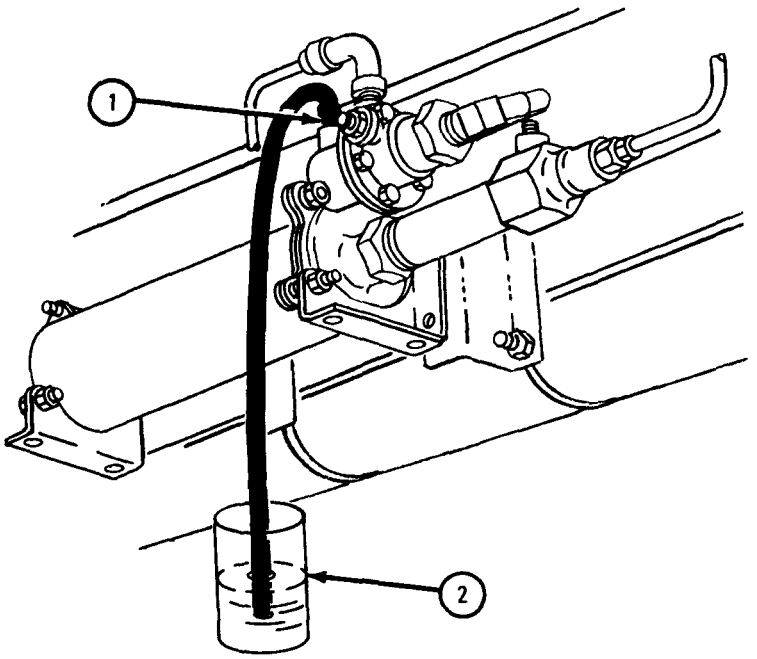
GO TO FRAME 2



FRAME 2

Soldier A 1.	Using 7/16-inch wrench, unscrew upper bleeding screw (1) 3/4-turn. Tell soldier B to slowly pump brake pedal three times and hold pedal down after last pump.
Soldier B 2.	Slowly pump brake pedal three times. Hold pedal down after last pump until told to let pedal up. Tell soldier A when pedal is being held down.
Soldier A 3.	Look for air bubbles in hydraulic fluid in container (2). Using 7/16-inch wrench, screw on upper bleeding screw (1). Tell soldier B to let brake pedal up and to fill master cylinder.
Soldier B 4.	Fill master cylinder. Refer to para 12-15a. Tell soldier A when master cylinder has been filled.
Soldiers A and B 5.	Do steps 1 through 4 again as often as required until there are no air bubbles.

GO TO FRAME 3

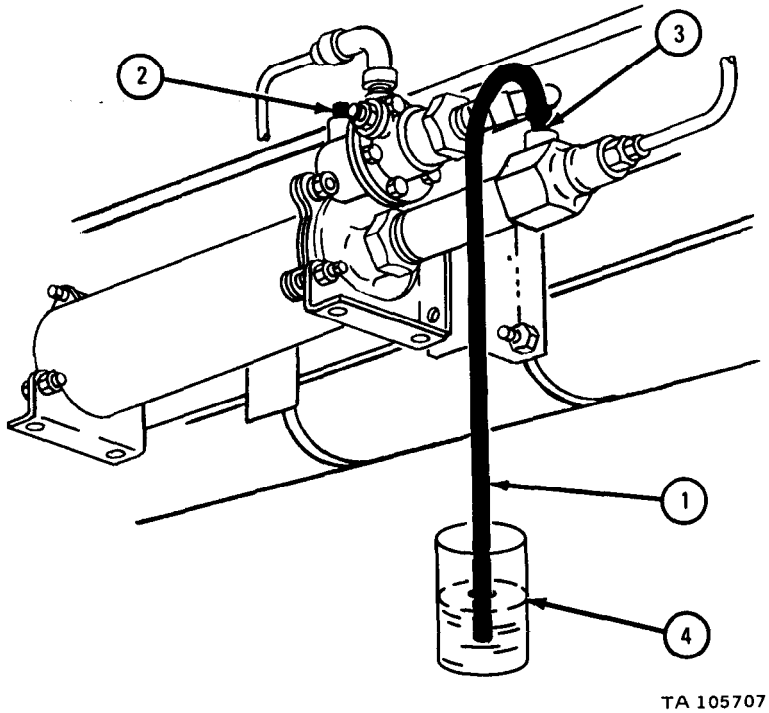


TA 105706

FRAME 3

Soldier A	1.	Take bleeding hose (1) off upper bleeding screw (2) and put it on lower bleeding screw (3). Using 7/16-inch wrench, unscrew lower bleeding screw 3/4-turn. Tell soldier B to slowly pump brake pedal three times and hold pedal down after last pump.
Soldier B	2.	Slowly pump brake pedal three times. Hold pedal down after last pump until told to let pedal up. Tell soldier A when pedal is being held down.
Soldier A	3.	Look for air bubbles in hydraulic fluid in container (4). Using 7/16-inch wrench, screw on lower bleeding screw (3). Tell soldier B to let brake pedal up and to fill master cylinder.
Soldier B	4.	Fill master cylinder. Refer to para 12-15a. Tell soldier A when master cylinder has been filled.
Soldiers A and B	5.	Do steps 1 through 4 again as often as required until there are no air bubbles.

GO TO FRAME 4

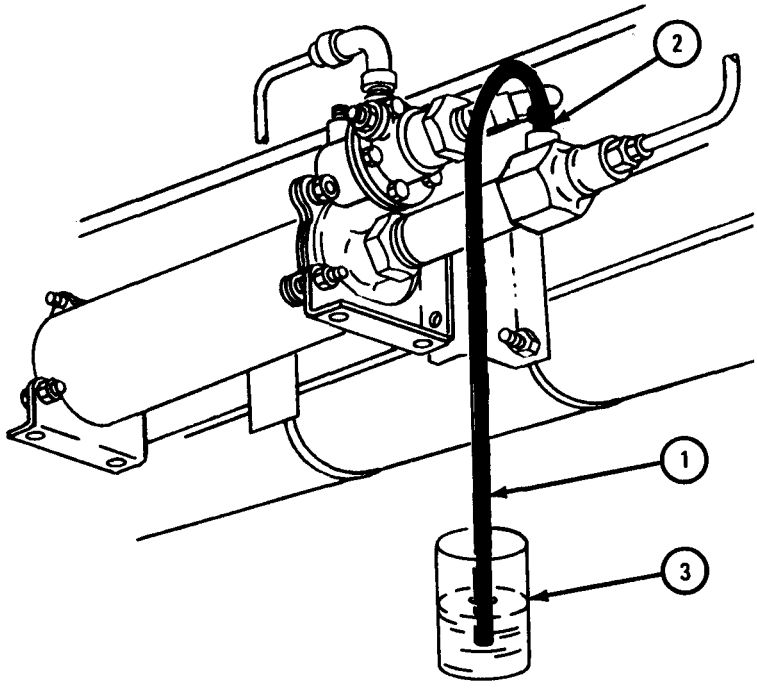


TA 105707

FRAME 4

1. Take bleeding hose (1) off lower bleeding screw (2). Take bleeding hose out of container (3). Make sure that lower bleeding screw (2) is screwed on tight.
2. Throw hydraulic fluid in container (3) away.
3. Make sure that master cylinder is filled. Refer to para 12-15a.

END OF TASK



TA 105708

c. Bleeding Wheel Cylinders.

NOTE

Air hydraulic cylinder must be bled before bleeding wheel cylinders.

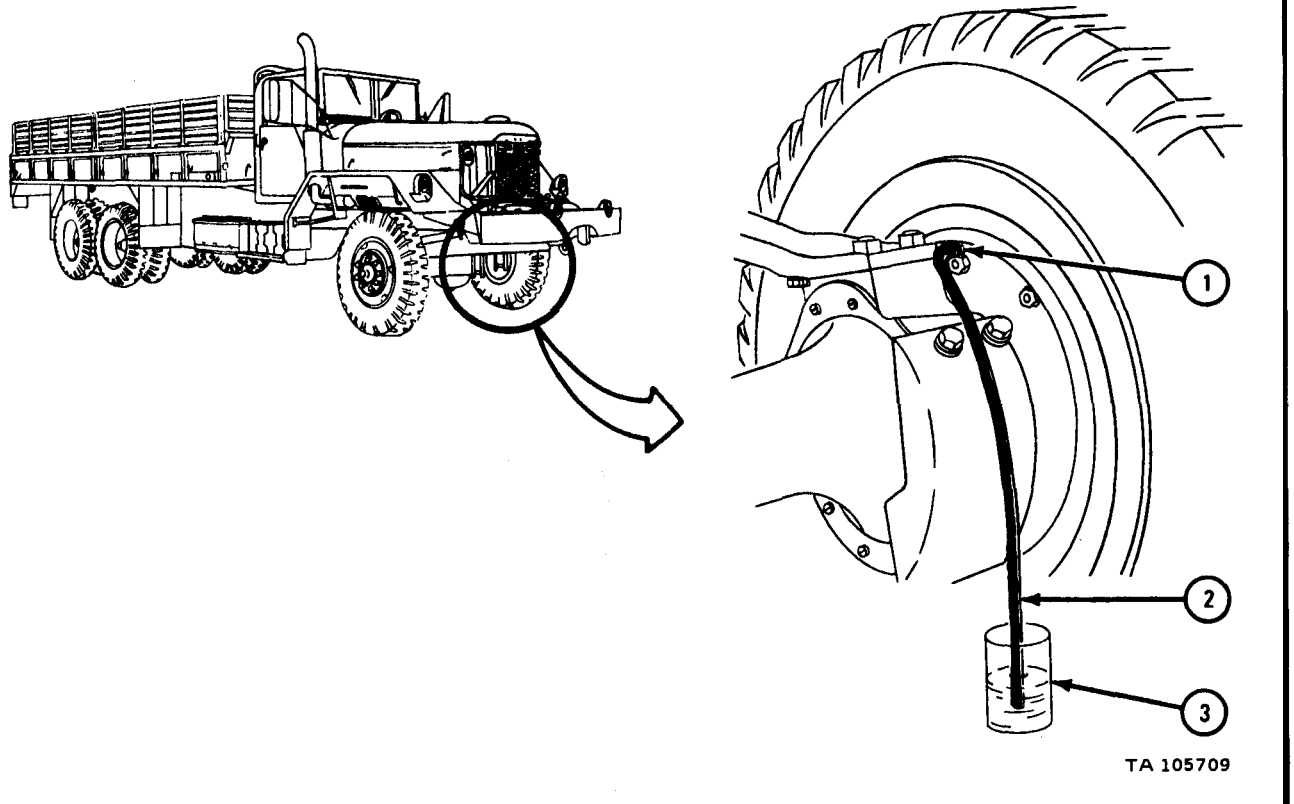
When a brake line has been removed at only one wheel, bleed the wheel cylinder at that wheel only.

When all wheel cylinders must be bled, start with wheel cylinder farthest away from master cylinder.

FRAME 1

1. Fill master cylinder. Refer to para 12-15a.
2. Using a clean cloth, clean bleeding screw (1).
3. Put one end of bleeding hose (2) on bleeding screw (1).
4. Put other end of bleeding hose (2) into transparent container (3). Put hydraulic fluid into container until container is 1/2-full. Make sure that end of bleeding hose is below level of fluid in container.

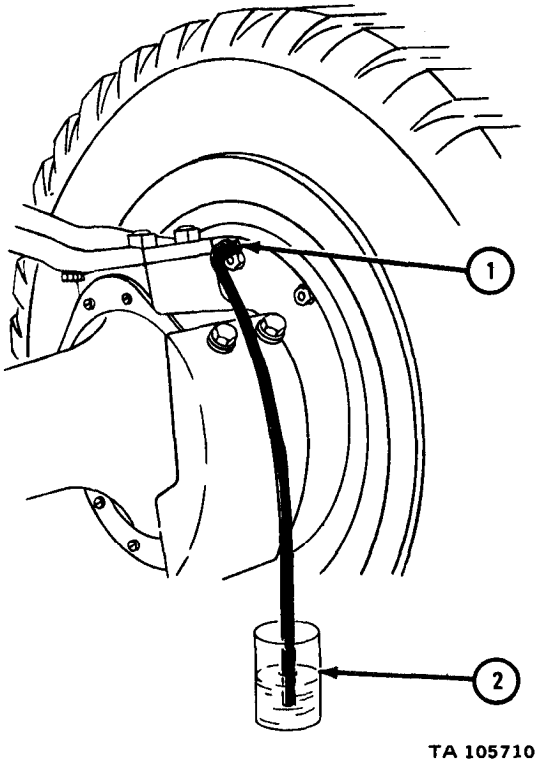
GO TO FRAME 2



FRAME 2

Soldier A	1.	Using 7/16-inch wrench, unscrew bleeding screw (1) 3/4-turn. Tell soldier B to slowly pump brake pedal three times and hold pedal down after last pump.
Soldier B	2.	Slowly pump brake pedal three times. Hold pedal down after last pump until told to let pedal up. Tell soldier A when pedal is being held down.
Soldier A	3.	Look for air bubbles in hydraulic fluid in container (2). Using 7/16-inch wrench, screw on bleeding screw (1). Tell soldier B to let brake pedal up and to fill master cylinder.
Soldier B	4.	Fill master cylinder. Refer to para 12-15a. Tell soldier A when master cylinder has been filled.
Soldiers A and B	5.	Do steps 1 through 4 again as often as required until there are no air bubbles.

GO TO FRAME 3

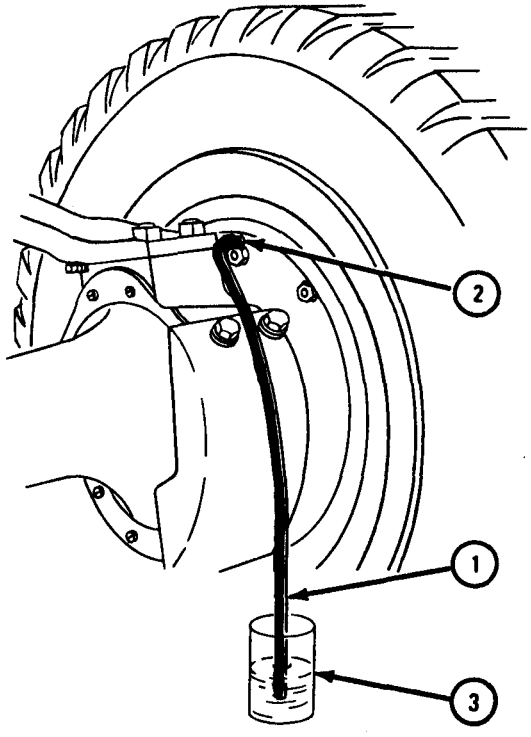


TA 105710

FRAME 3

1. Take bleeding hose (1) off bleeding screw (2). Take bleeding hose out of container (3). Make sure that bleeding screw is screwed in tight.
2. Throw hydraulic fluid in container (3) away.
3. Make sure that master cylinderis filled. Refer to par 12-15a.

END OF TASK



TA 105711

Section V. MECHANICAL BRAKE SYSTEM

12-16. BRAKE PEDAL ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : Pliers
9/16-inch combination wrench (2)
9/16-inch socket wrench
l/4-inch drive ratchet
l/4-inch extension

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Remove front tunnel assembly and toe board. Refer to Part 2, para 17-5.

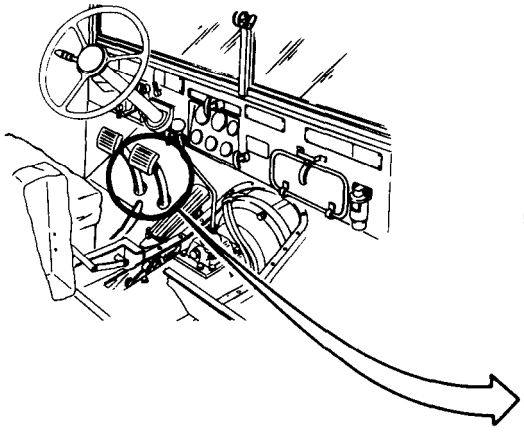
(2) Remove clutch pedal linkage assembly. Refer to para 3-4.

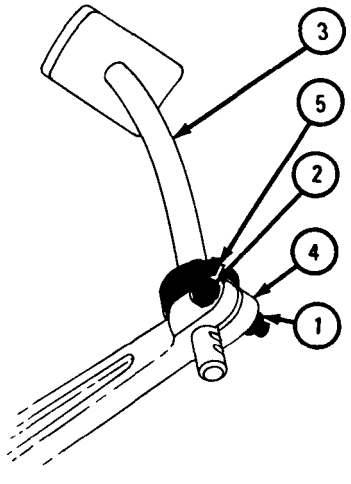
b. Removal.

FRAME 1

3. Pull pedal stem (3) out of brake pedal lever (4) and takeoff rubber bumper (5).
4. Pull out pedal stem (3) from cab side of floorboard.

GO TO FRAME 2



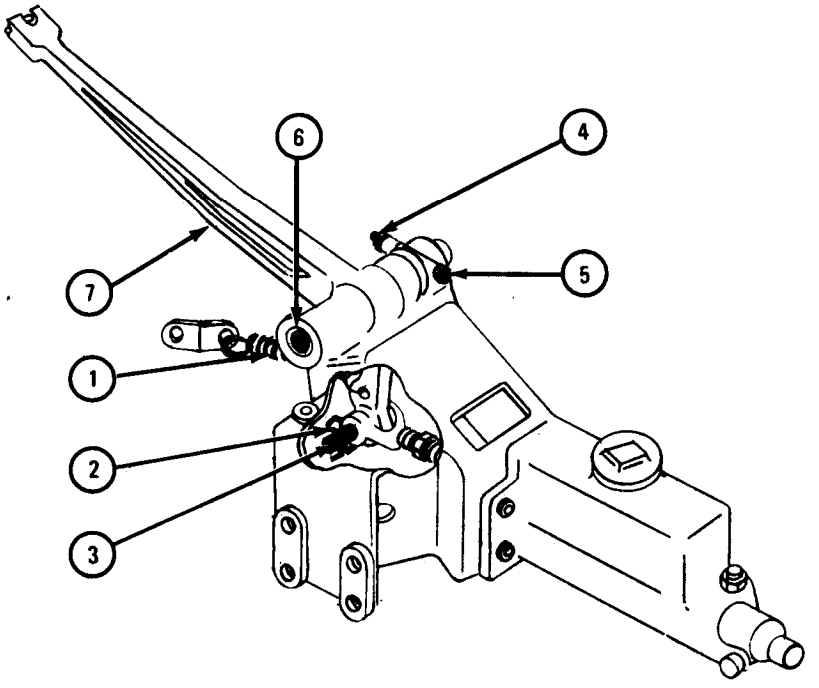


TA 054866

FRAME 2

1. Using pliers, unhook brake pedal return spring (1).
2. Using pliers, take out and throw away cotter pin (2).
3. Pull out clevis pin (3).
4. Using 9/16-inch wrenches, unscrew and take off nut (4). Take out cap-screw (5) and pull out lever shaft tube (6).
5. Take out brake pedal lever (7).

END OF TASK



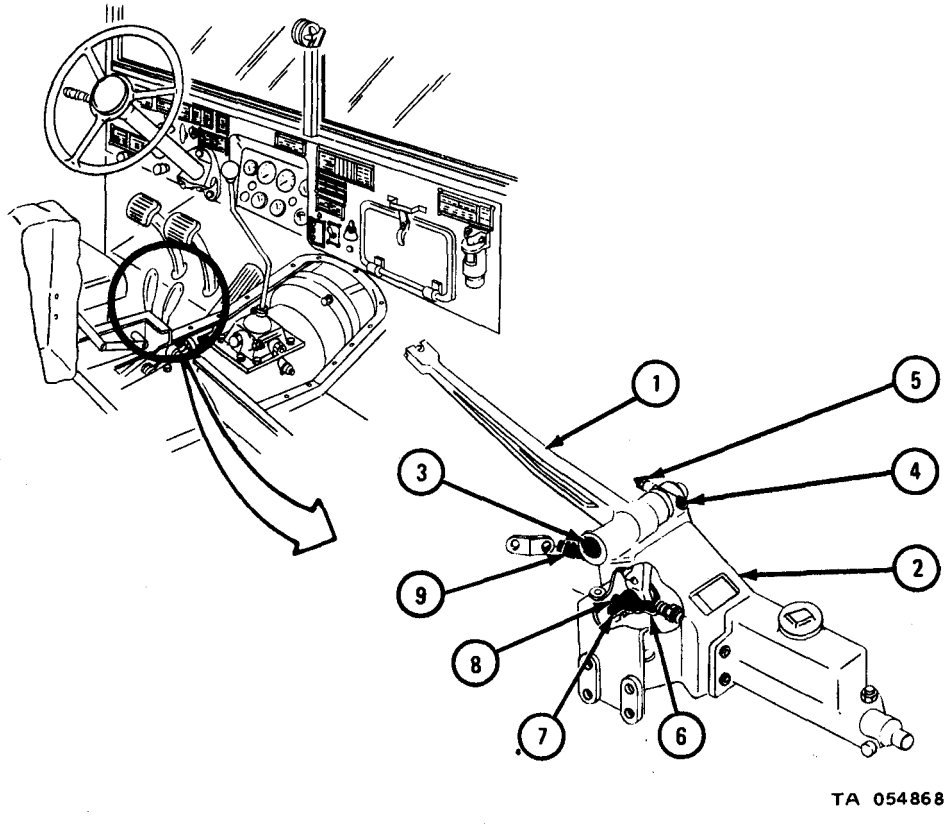
TA 054867

c. Replacement.

FRAME 1

1. Working inside truck, line up hole in brake pedal lever (1) with holes in support bracket (2).
2. Push lever shaft tube (3) through holes in support bracket (2). Make sure groove in shaft tube is alined with. screw hole in support bracket.
3. Push capscrew (4) through screw hole in support bracket (2).
4. Using 9/16-inch wrenches, screw on and tighten nut (5).
5. Line up lower hole in brake pedal lever (1) with holes in rod end clevis (6).
6. Push clevis pin (7) through holes in rod end clevis (6).
7. Push cotter pin (8) through hole in clevis pin (7) and using pliers, bend open ends of cotter pin (8).
8. Using pliers, hook return spring (9) in place.

GO TO FRAME 2



TA 054868

FRAME 2

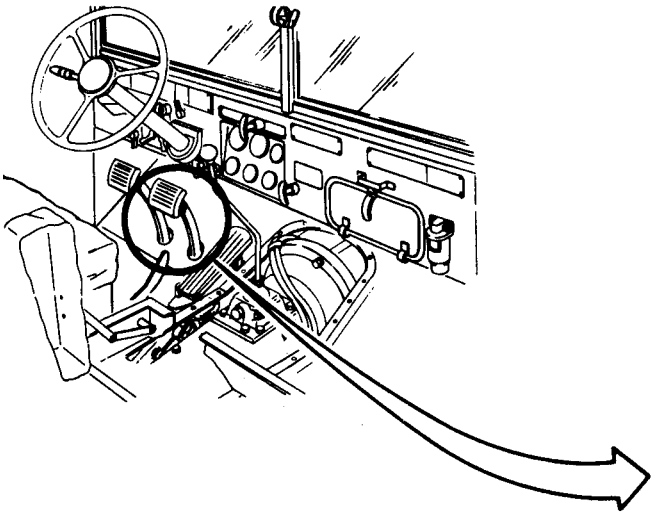
1. Push pedal stem (1) through hole in cab side of floorboard.
2. Slide rubber bumper (2) onto pedal stem (1).
3. Push pedal stem (1) through hole in upper end of brake pedal lever (3).
4. Push capscrew (4) through hole in upper end of brake pedal lever (3).
5. Using 9/16-inch combination and socket wrenches, screw on and tighten nut (5).

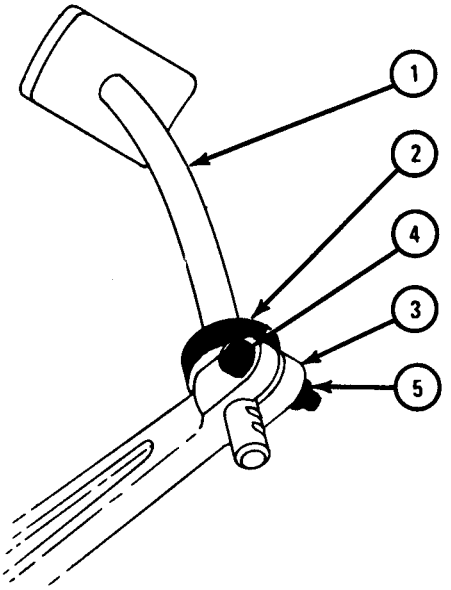
NOTE

Follow-on Maintenance Action Required:

1. Lubricate brake pedal lever and shaft. Refer to LO 9-2320-211-12.
2. Adjust brake pedal. Refer to para 12-9.
3. Replace clutch pedal linkage. Refer to para 3-4.
4. Replace front tunnel assembly and toe board. Refer to Part 2, para 17-5.

END OF TASK





TA 054869

12-17. BRAKE PEDAL PAD REMOVAL AND REPLACEMENT.

TOOLS: None

SUPPLIES: None

PERSONNEL: One

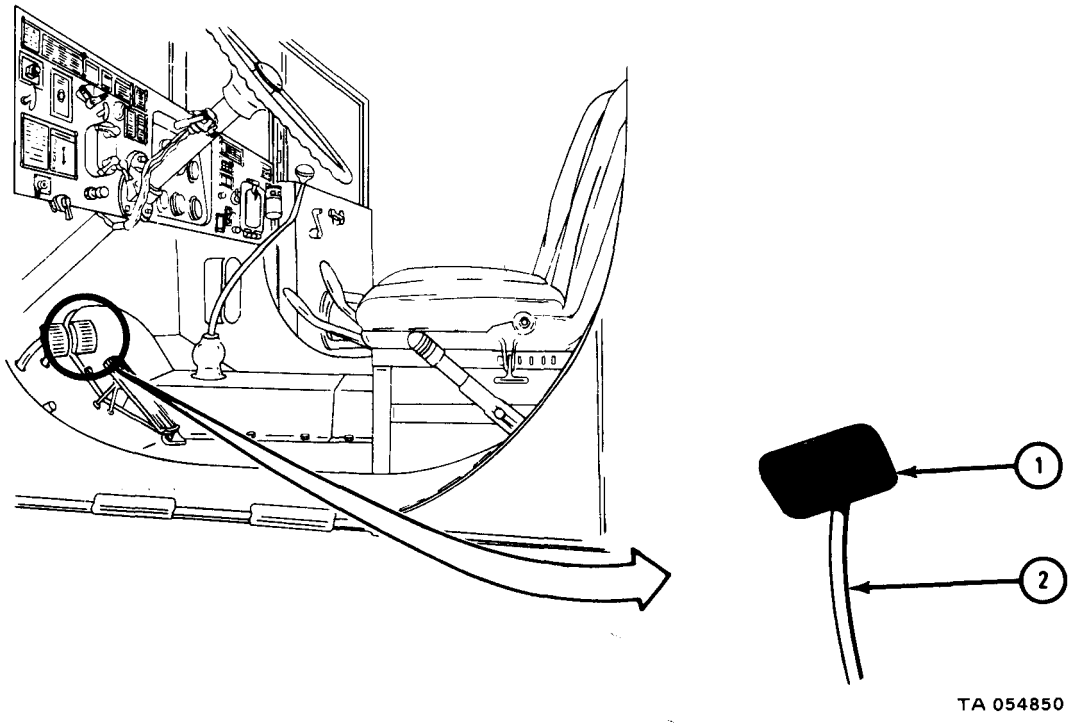
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

FRAME 1

1. Grasp edge of pad (1) at back of brake pedal (2).
2. Pull edge of pad (1) away and lift up over brake pedal (2).
3. Pull pad (1) away from brake pedal (2).

END OF TASK

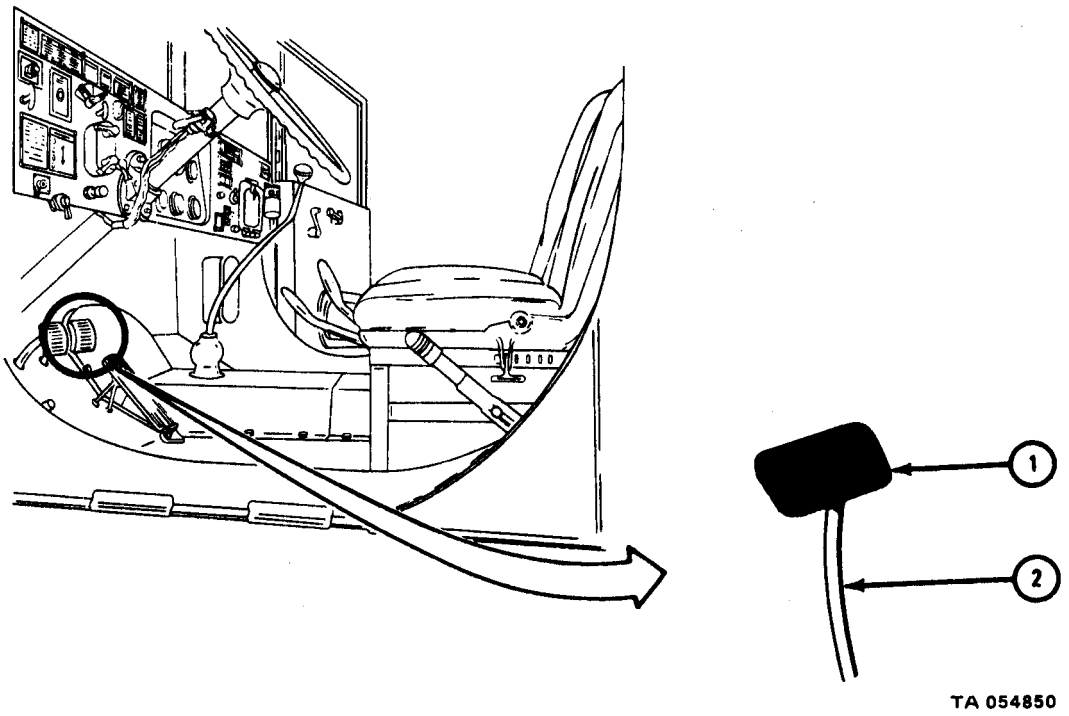


b. Replacement.

FRAME 1

1. Hold pad (1) on a slant and slide pad down so top edge of pad hooks on pedal (2).
2. Pull left edge of pad (1) over left edge of pedal (2).
3. Pull right edge of pad (1) over right edge of pedal (2).
4. Pull bottom edge of pad (1) over bottom edge of pedal (2).

END OF TASK



Section VI. AIR BRAKE SYSTEM

12-18. VENTING AIR SYSTEM PRESSURE.

TOOLS: None

SUPPLIES: None

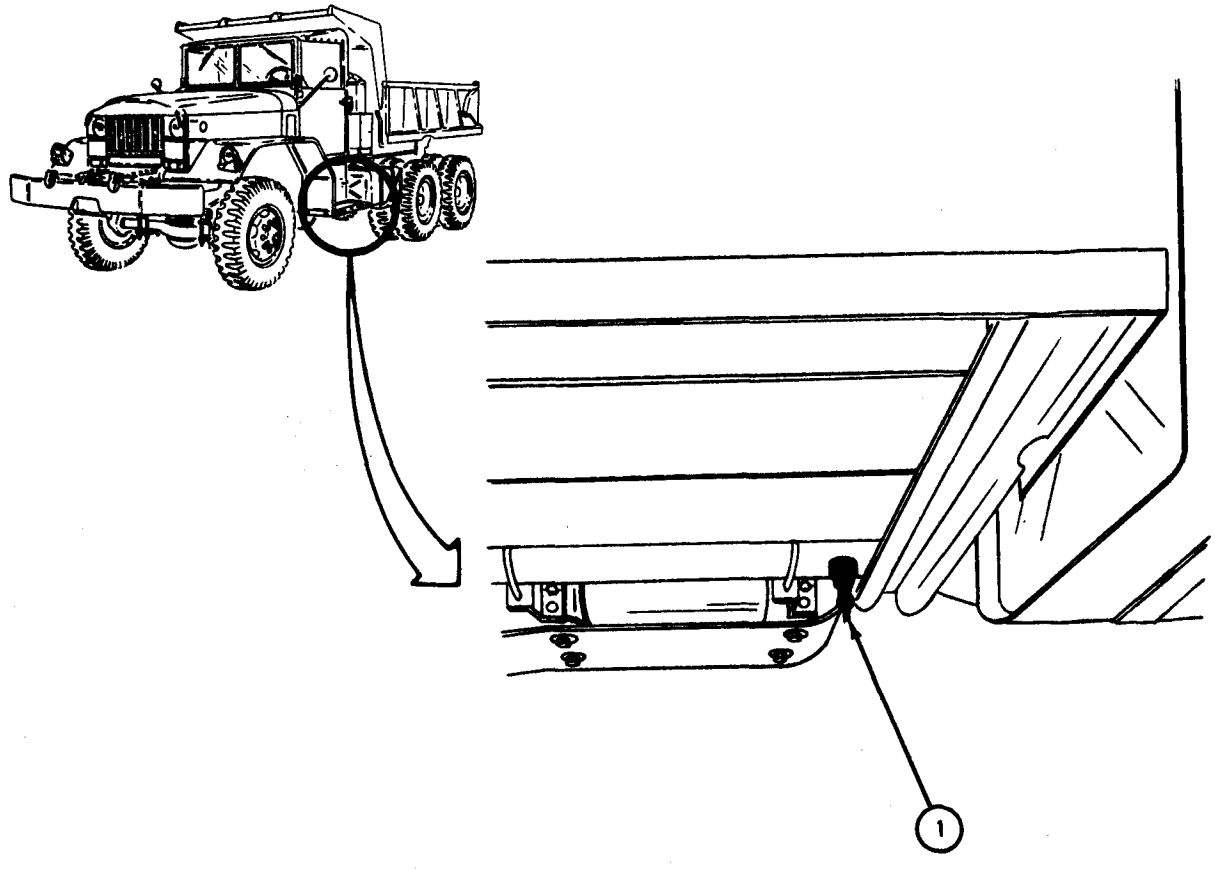
PERSONNEL: One

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

FRAME 1

1. Working under running board, turn air reservoir drain cock (1) to the left and let air pressure out of system.
2. When air flow stops, turn air reservoir drain cock (1) to the right.

END OF TASK



12-19. COMPRESSED AIR LINES AND FITTINGS REMOVAL AND REPLACEMENT .

NOTE

Tasks given are typical and cover all different types of installations that you will find on trucks. Tasks do not show any one truck system. Refer to system schematic illustrations used as support diagrams for troubleshooting each system (vol 2, chapter 48).

TOOLS: 9/16-inch combination box and open end wrench
5/8-inch combination box and open end wrench
3/8-inch combination box and open end wrench
7/16-inch combination box and open end wrench (2)
1 1/2-inch combination box and open end wrench
10-inch pipe wrench

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

(1) Vent air system pressure. Refer to para 12-18.

(2) Remove tool box. Refer to Part 2, para 17-11.

b. Removal.

(1) Air lines and clamps.

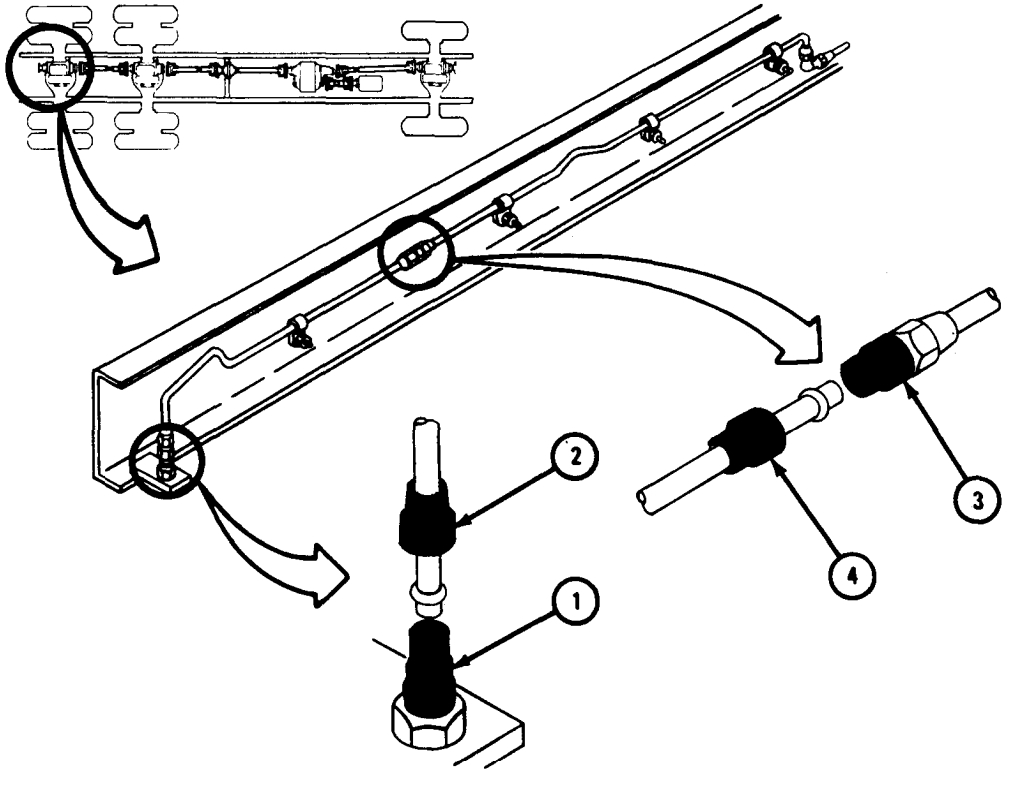
NOTE

The air valve supply line on left side at rear of truck chassis is used for this typical task.

FRAME 1

1. Using 9/16-inch open end wrench, hold adapter fitting (1). Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (2).
2. Using 9/16-inch open end wrench, hold adapter fitting (3). Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (4).

GO TO FRAME 2



TA 083950

FRAME 2

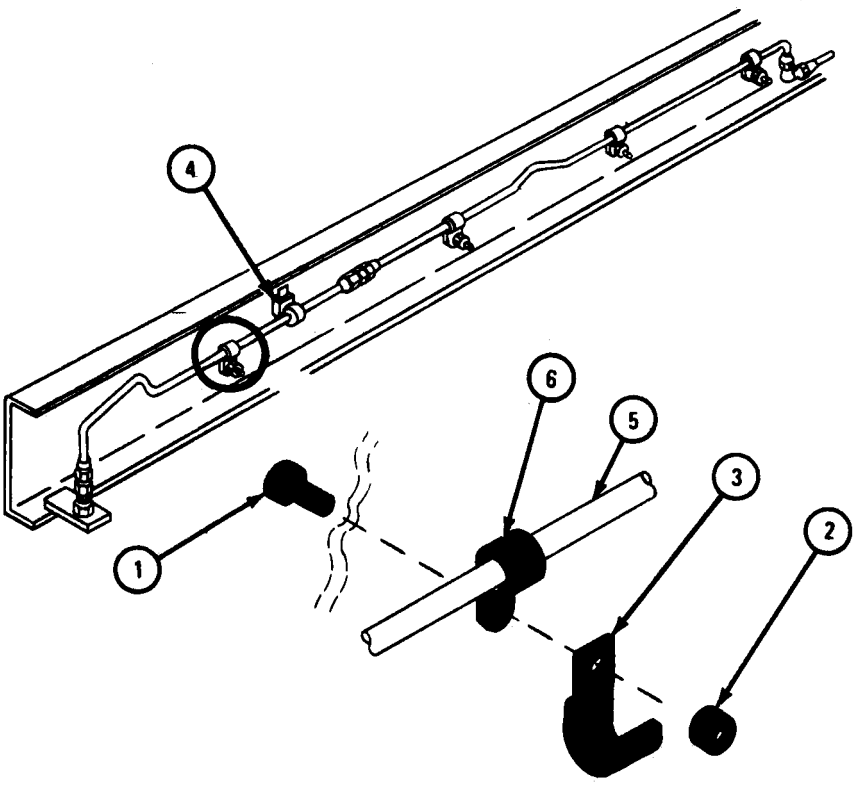
1. Using 7/16-inch open end wrenches, hold capscrew (1) and take off locknut (2).

NOTE

There may be an electrical harness clamp (3) attached to capscrew (1). If so, take if off after taking off locknut (2). There may be a plastic tie (4) on harness. If so, cut tie.

2. Take off air tube (5) and spread open and take off tube clamp (6).

END OF TASK



TA 083951

(2) Air tube fittings.

(a) Air tube connecting nipple.

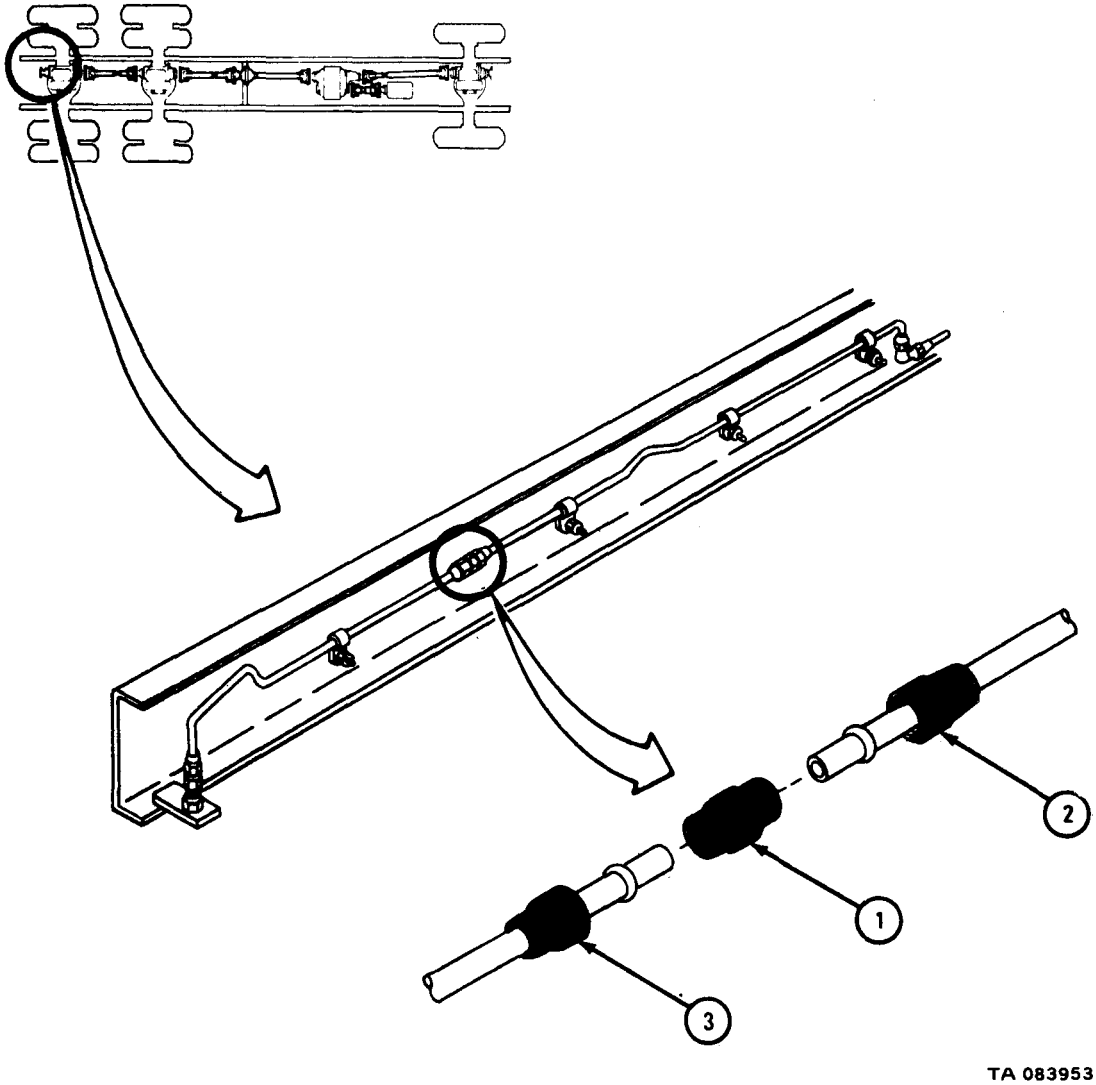
NOTE

The air tube connecting nipple on the air valve supply line at rear of truck chassis is used for this typical task.

FRAME 1

1. Using 9/16-inch open end wrench, hold adapter fitting (1). Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (2) and tube nut (3).

END OF TASK



(b) Air tube junction tee assembly.

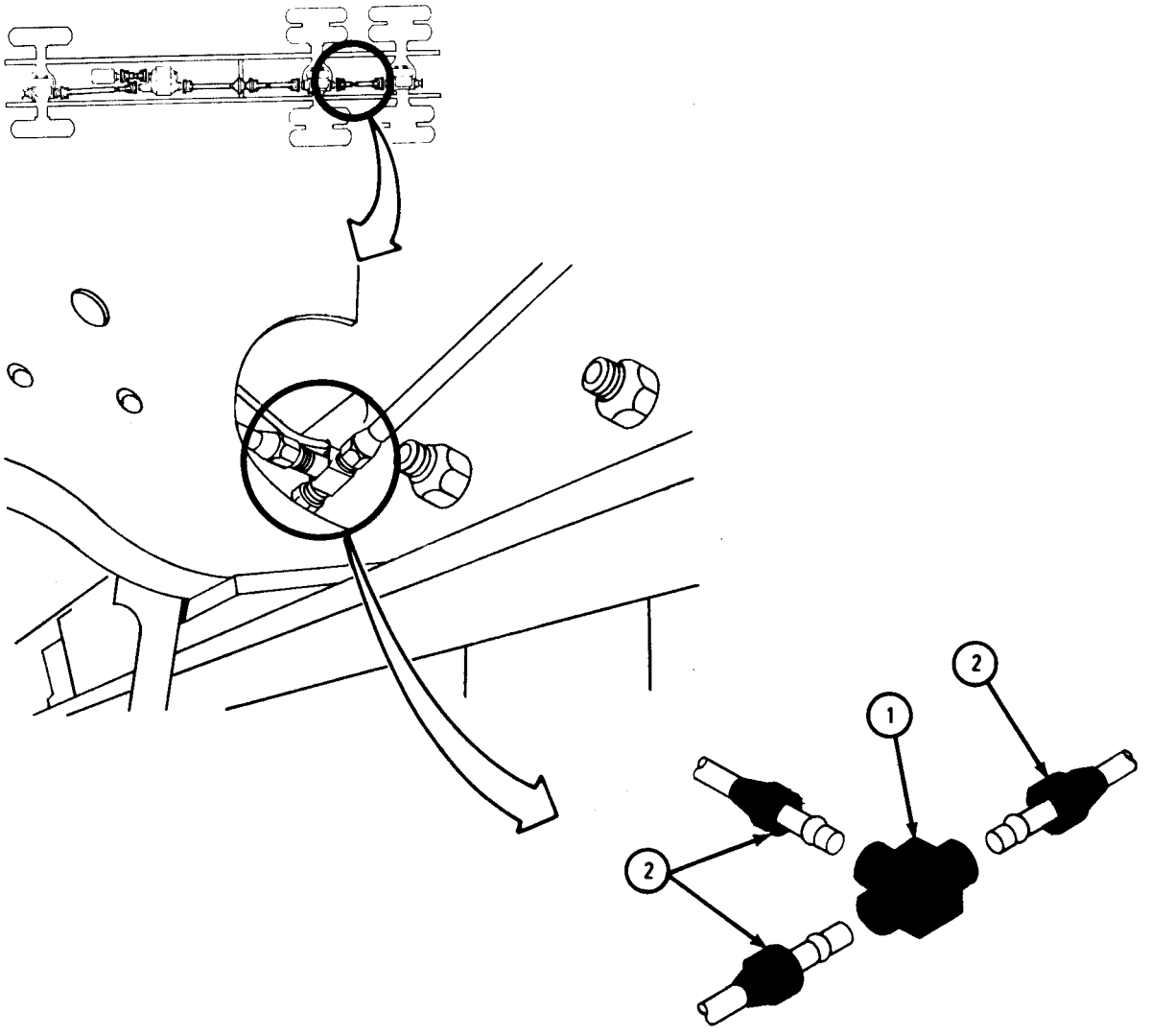
NOTE

The air tube junction tee assembly on the rear air service crossover tube at rear of chassis on truck M52A2 is used for this typical task.

FRAME 1

1. Using 9/16-inch open end wrench, hold tee fitting (1).
2. Using 5/8-inch combination box and open end wrench, unscrew and take off three tube nuts (2).

END OF TASK



(c) Air tube elbow.

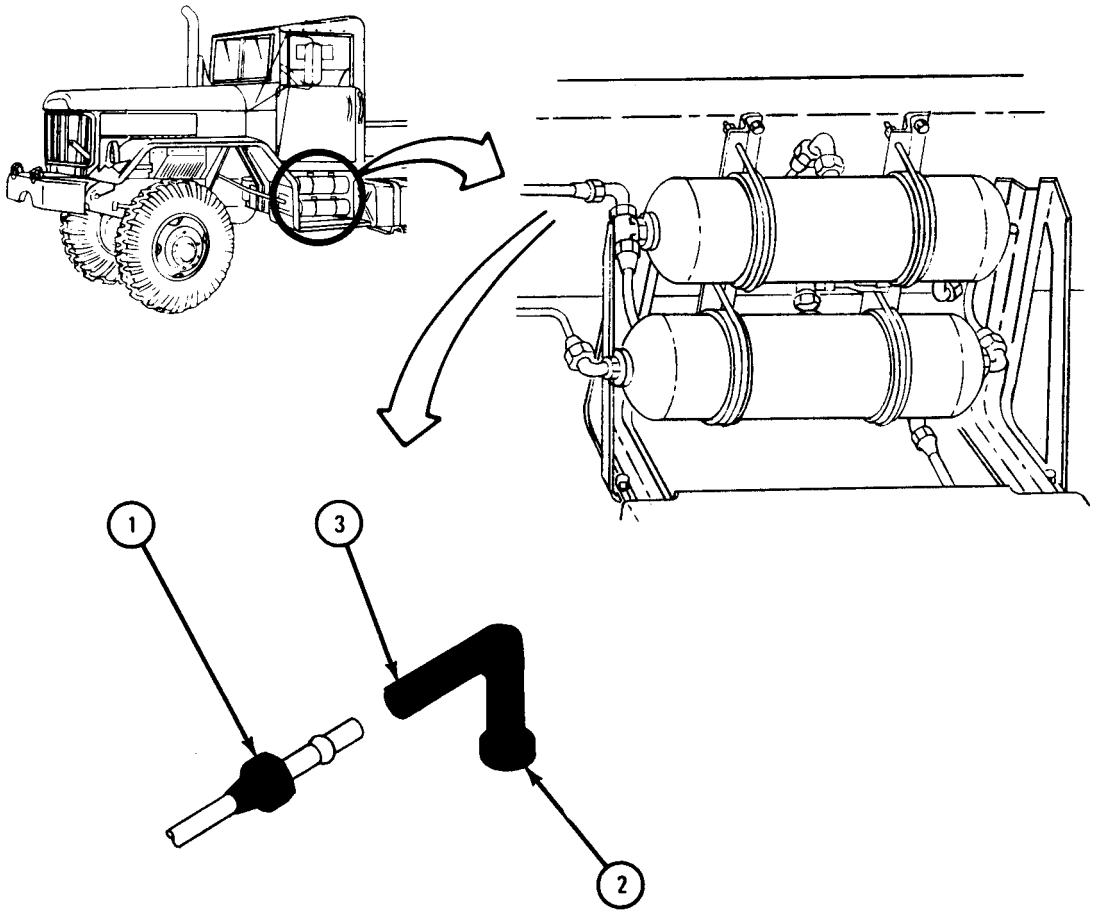
NOTE

The air tube elbow on the air reservoirs used for this typical task.

FRAME 1

1. Using 5/8-inch combination box and open end wrench, unscrew and take off tube nut (1).
2. Using 3/4-inch open end wrench, hold tee fitting (2).
3. Using 10-inch pipe wrench, unscrew and take off elbow (3).

END OF TASK



(d) Bulkhead union.

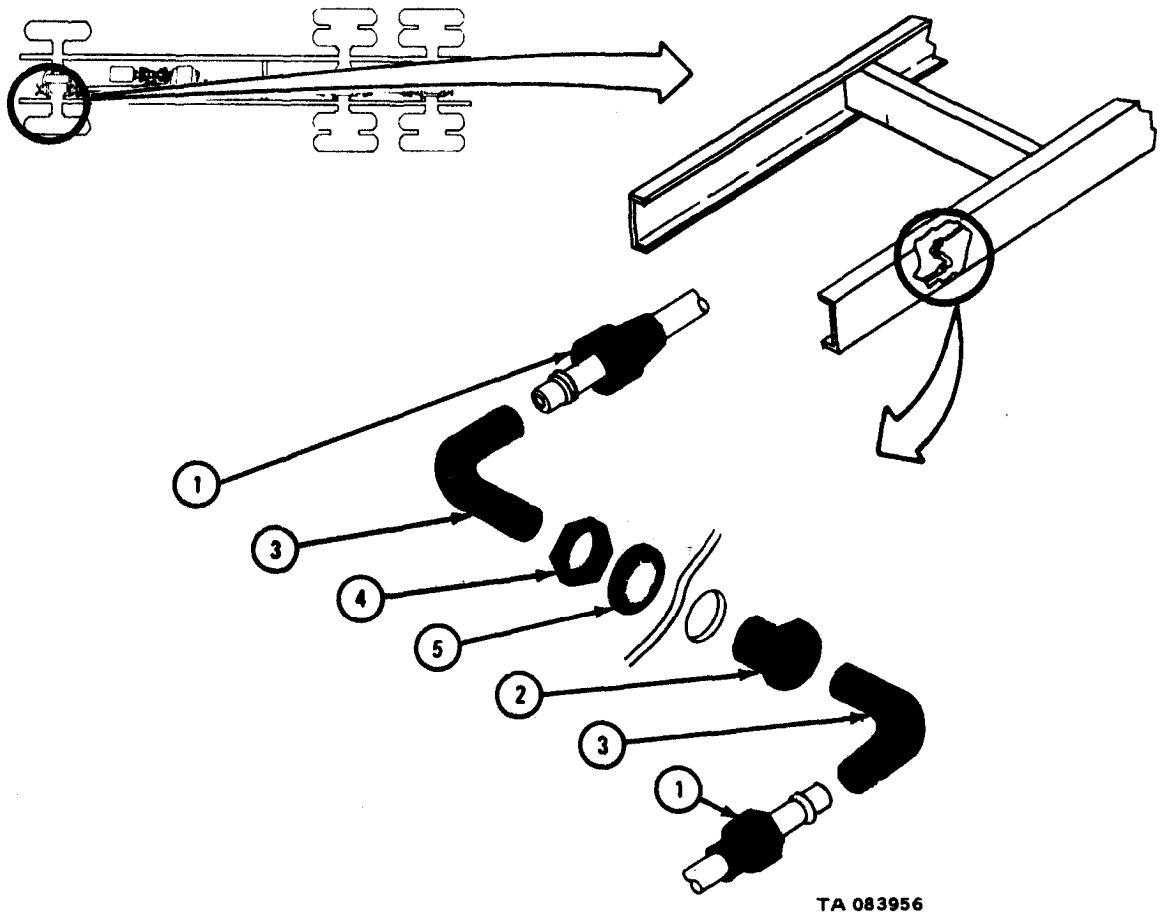
NOTE

The bulkhead union on the air supply line at front of chassis is used for this typical task.

FRAME 1

1. Using 5/8-inch combination box and open end wrench, unscrew and take off two tube nuts (1).
2. Using 1 1/2-inch combination wrench and 10-inch pipe wrench, hold bulkhead union (2) and unscrew and take off two elbow fittings (3).
3. Using 1 l/2-inch combination wrenches, hold bulkhead union (2) and unscrew and take off nut (4) and washer (5).

END OF TASK



(e) Pipe plug.

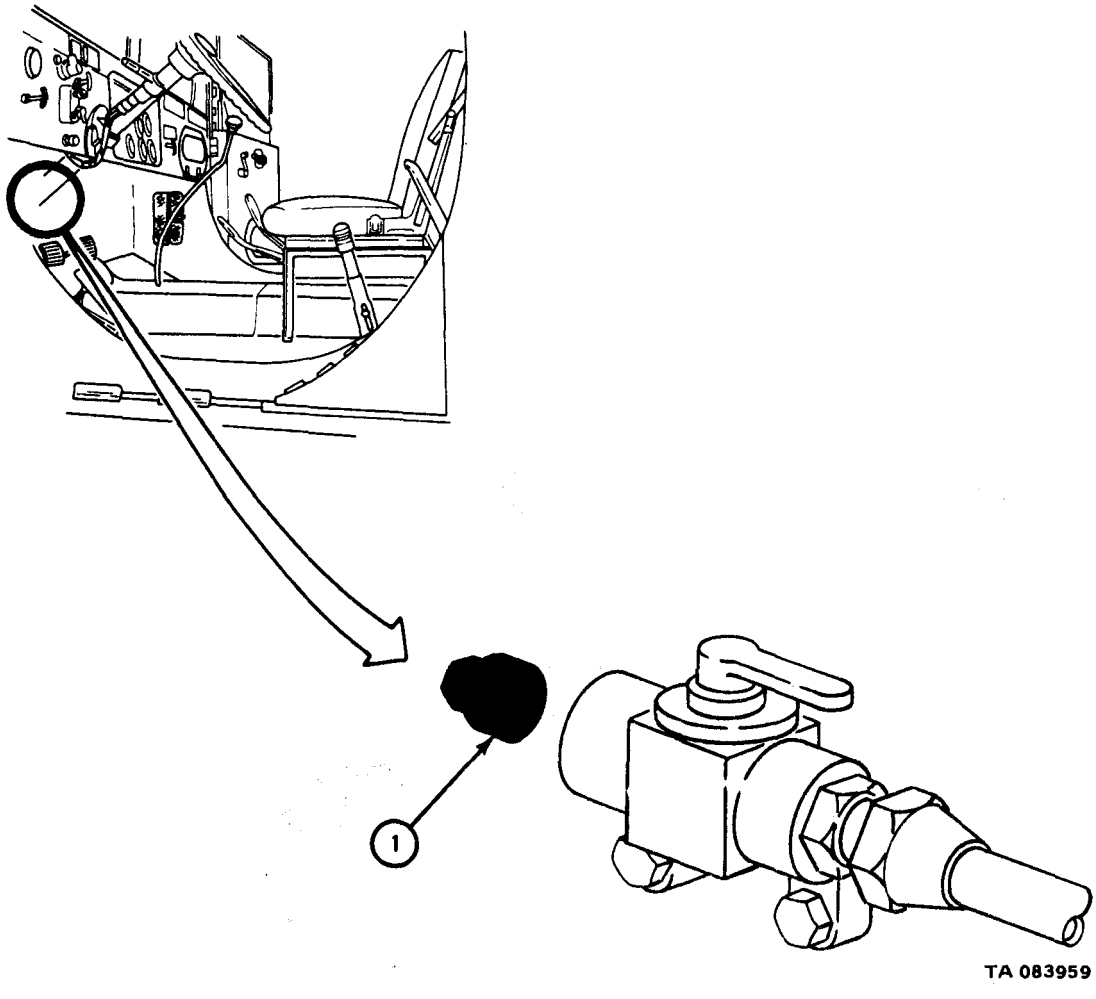
NOTE

The pipe plug on the air supply valve is used for this typical task.

FRAME 1

1. Using 3/8-inch open end wrench, unscrew and takeout pipe plug (1).

END OF TASK



c. Replacement.

(1) Airlines and clamps.

CAUTION

Fittings are made of soft brass and can be stripped easily if tightened too much. Tighten fittings just enough to stop air from leaking.

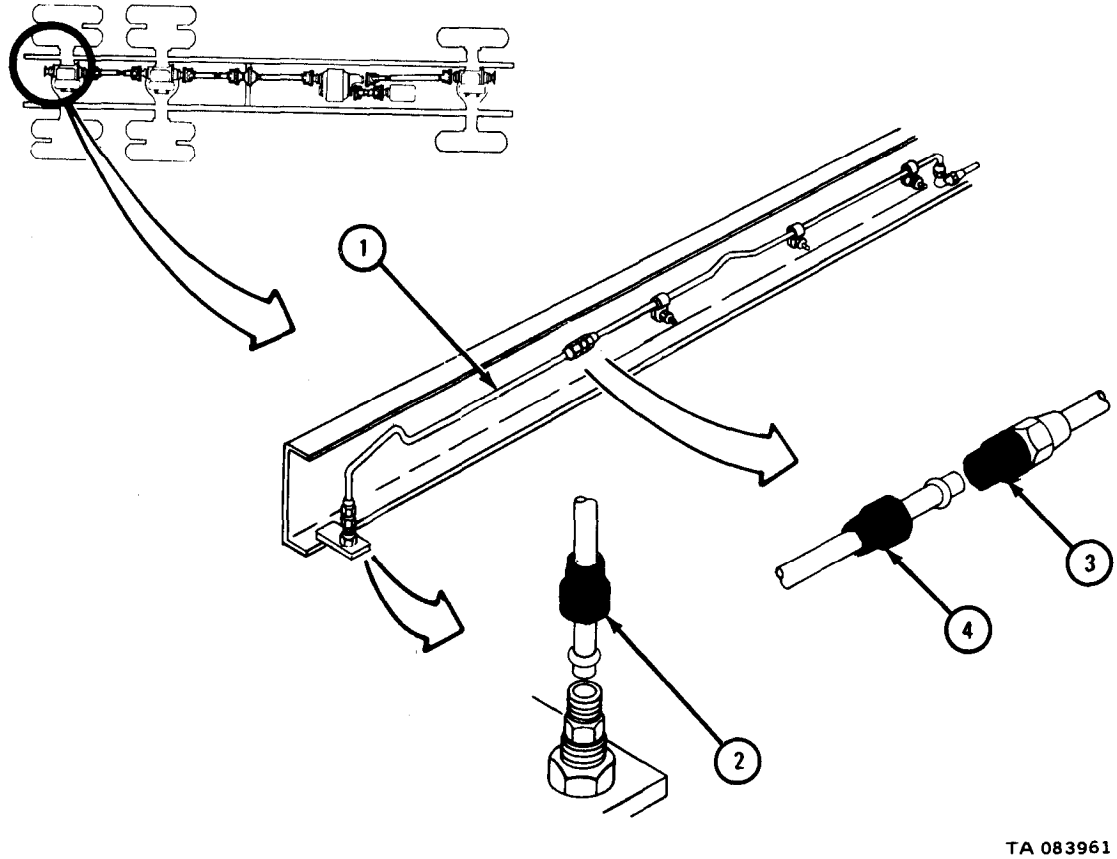
NOTE

The air valve supply line on left side at rear of truck chassis is used for this typical task.

FRAME 1

1. Put air tube (1) in place as shown.
2. Using 5/8-inch combination box and open end box wrench, screw on and tighten tube nut (2).
3. Using 9/16-inch open end wrench, hold adapter fitting (3). Using 5/8-inch combination box and open end box wrench, screw on and tighten tube nut (4).

GO TO FRAME 2



FRAME 2

1. Put tube clamp (1) on air tube (2).

NOTE

There may be an electrical harness clamp (3). If so, put harness clamp on capscrew (4) before screwing on nut (5). If harness had a plastic tie, put on new tie (6).

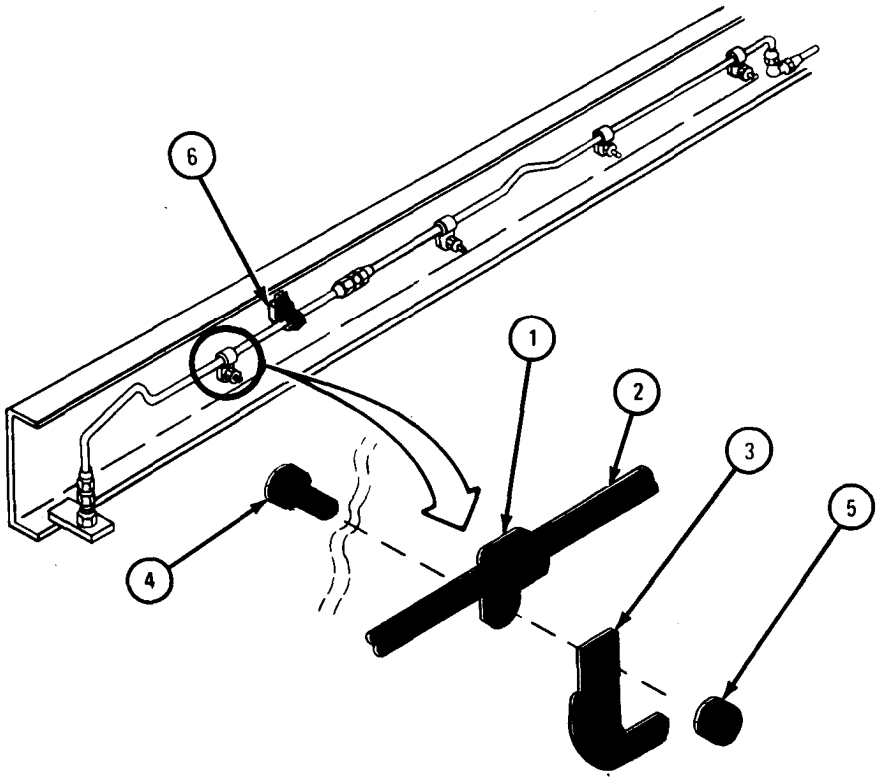
2. Using 7/16-inch wrenches, put capscrew (4) through tube clamp (1) and screw on and tighten nut (5).

NOTE

Follow-on Maintenance Action Required:

1. Start engine and let it run until air pressure gage reads between 65 and 120 psi. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Do air system leak test. Refer to para 1-5.

END OF TASK



(2) Air tube fittings.

(a) Air tube connecting nipple.

CAUTION

Fittings are made of soft brass and can be stripped easily if tightened too much. Tighten fittings just enough to stop air from leaking.

NOTE

The air tube connecting nipple on the air valve supply line at rear of truck chassis is used for this typical task.

FRAME 1

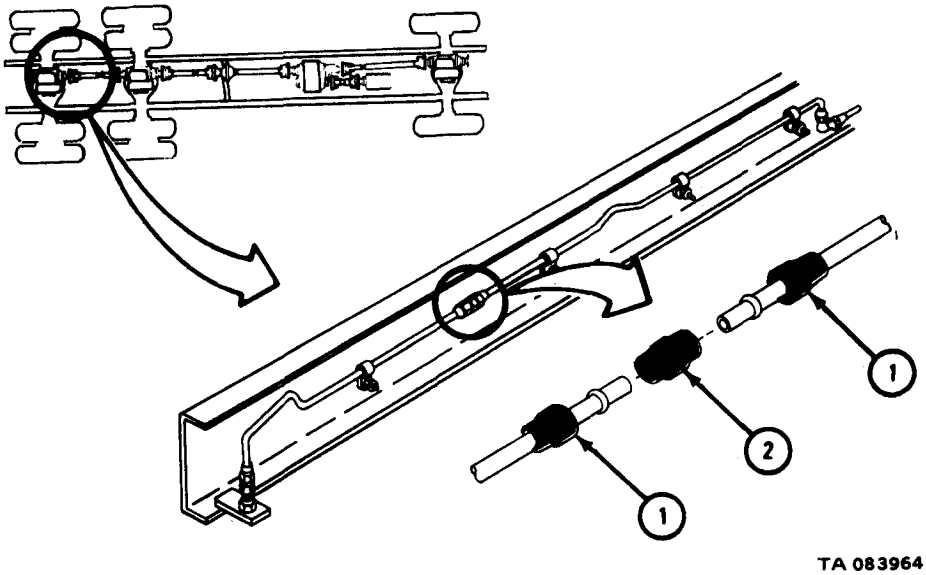
1. Screw two tube nuts (1) onto adapter fitting (2).
2. Using 9/16-inch open end wrench, hold adapter fitting (2).
3. Using 5/8-inch combination box and open end wrench, tighten two tube nuts (l).

NOTE

Follow-on Maintenance Action Required:

1. Start engine and let it run until air pressure gage reads between 65 and 120 psi. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Do air system leak test. Refer to para 1-5.

END OF TASK



(b) Air tube junction tee assembly.

CAUTION

Fittings are made of soft brass and can be stripped easily if tightened too much. Tighten fittings just enough to stop air from leaking.

NOTE

The air tube junction tee assembly on the rear air service crossover tube at rear of truck chassis on truck M52A2 is used for this typical task.

FRAME 1

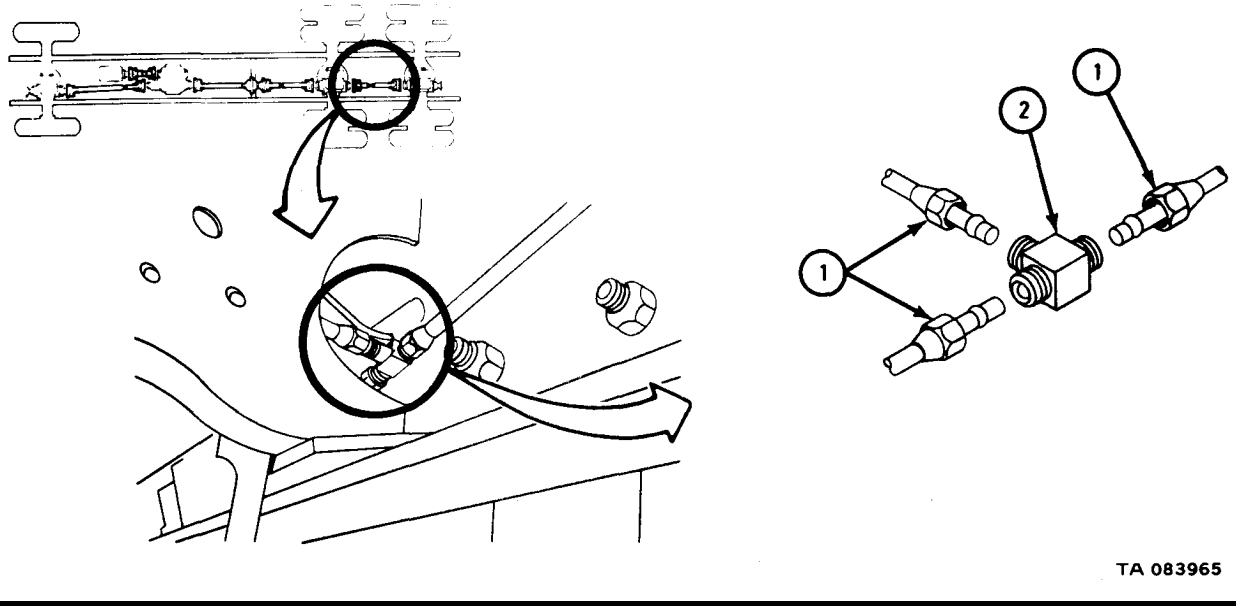
1. Screw three tube nuts (1) onto tee fiting (2).
2. Using 9/16-inch open end wrench, hold tee fitting (2).
3. Using 5/8-inch combination box and open end wrench, tighten three tube nuts (l).

NOTE

Follow-on Maintenance Action Required:

1. Start engine and let it run until air pressure gage reads between 65 and 120 psi. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Do air system leak test. Refer to para 1-5.

END OF TASK



(c) Air tube elbow.

CAUTION

Fittings are made of soft brass and can be stripped easily if tightened too much. Tighten fittings just enough to stop air from leaking.

NOTE

The air tube elbow on the air reservoir is used for this typical task.

FRAME 1

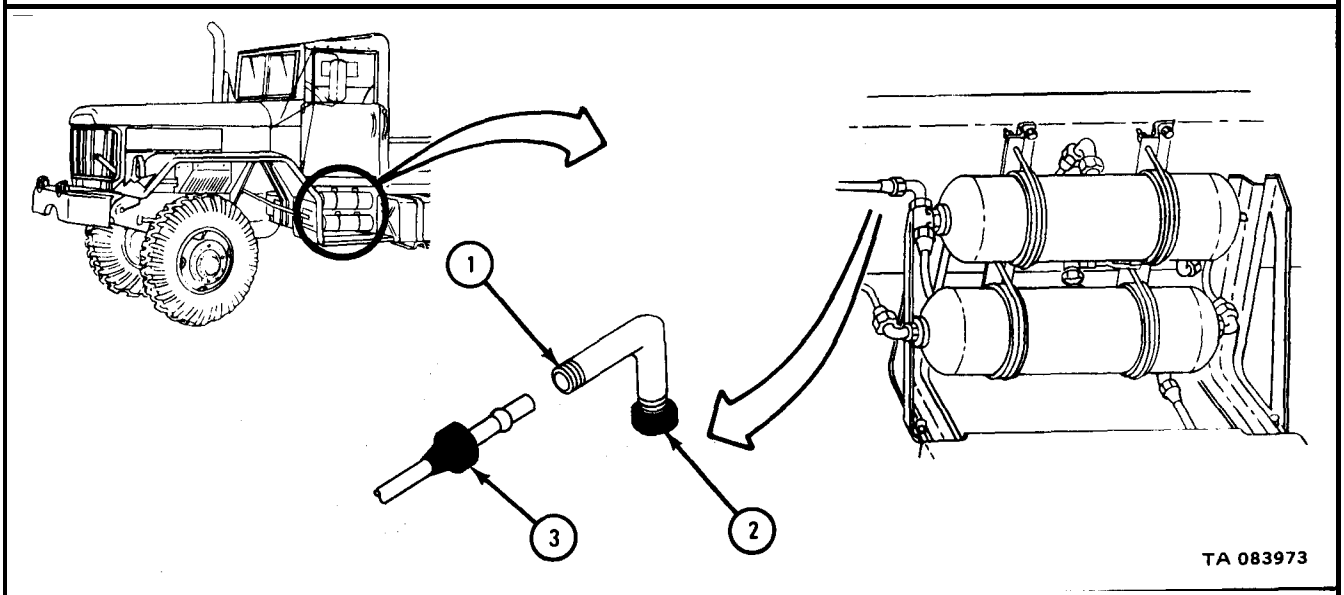
1. Screw elbow (1) into tee fitting (2).
2. Using 3/4-inch open end wrench, hold nut (2).
3. Using 10-inch pipe wrench, tighten elbow (1).
4. Using 5/8-inch combination box and open end wrench, screw on and tighten tube nut (3).

NOTE

Follow-on Maintenance Action Required:

1. Start engine and let it run until air pressure gage reads between 65 and 120 psi. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Do air system leak test. Refer to Para 1-5.
4. Replace tool box. Refer to Part 2, para 17-11.

END OF TASK



(d) Bulkhead union.

CAUTION

Fittings are made of soft brass and can be stripped easily if tightened too much. Tighten fittings just enough to stop air from leaking.

NOTE

The bulkhead union on the air supply line at front of chassis is used for this typical task.

FRAME 1

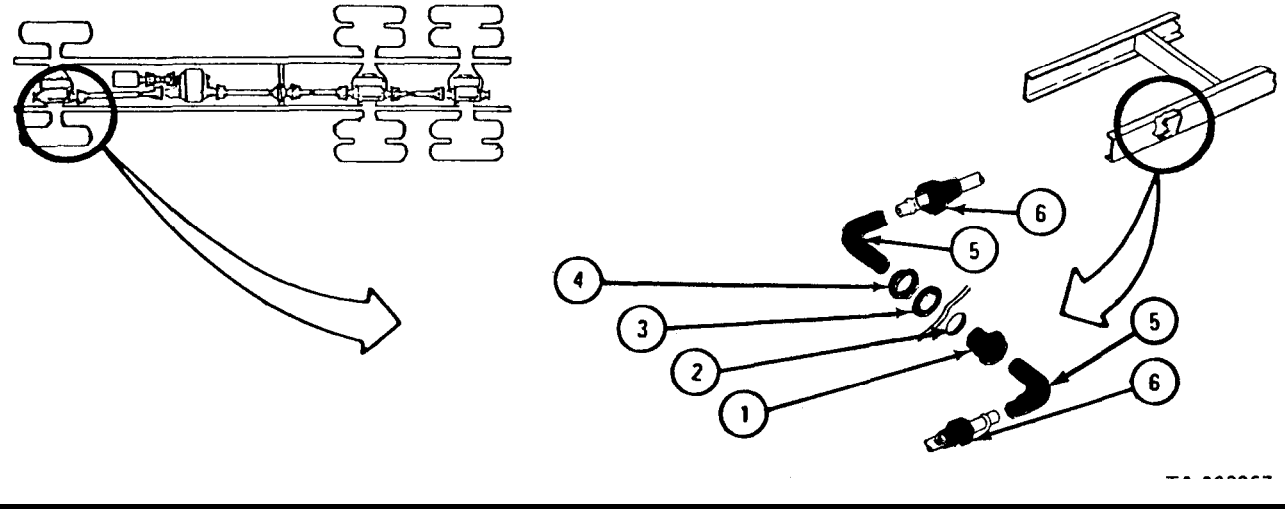
1. Put bulkhead union (1) through hole in chassis (2). Screw on washer (3) and nut (4).
2. Using 1 1/2-inch open end wrench, hold bulkhead union (1). Using 1 1/2-inch open wrench, tighten nut (4).
3. Screw in two elbow fittings (5).
4. Using 1 1/2-inch open end wrench and 10-inch pipe wrench, hold bulkhead union (1) and tighten two elbow fittings (5).
5. Using 5/8-inch combination box and open end wrench, screw on and tighten two tube nuts (6).

NOTE

Follow-on Maintenance Action Required:

1. Start engine and let it run until air pressure gage reads between 65 and 120 psi. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Do air system leak test. Refer to para 1-5.

END OF TASK



(e) Pipe plug.

CAUTION

Fittings are made of soft brass and can be stripped easily if tightened too much. Tighten fittings just enough to stop air from leaking.

NOTE

The pipe plug on the air supply valve is used for this typical task.

FRAME 1

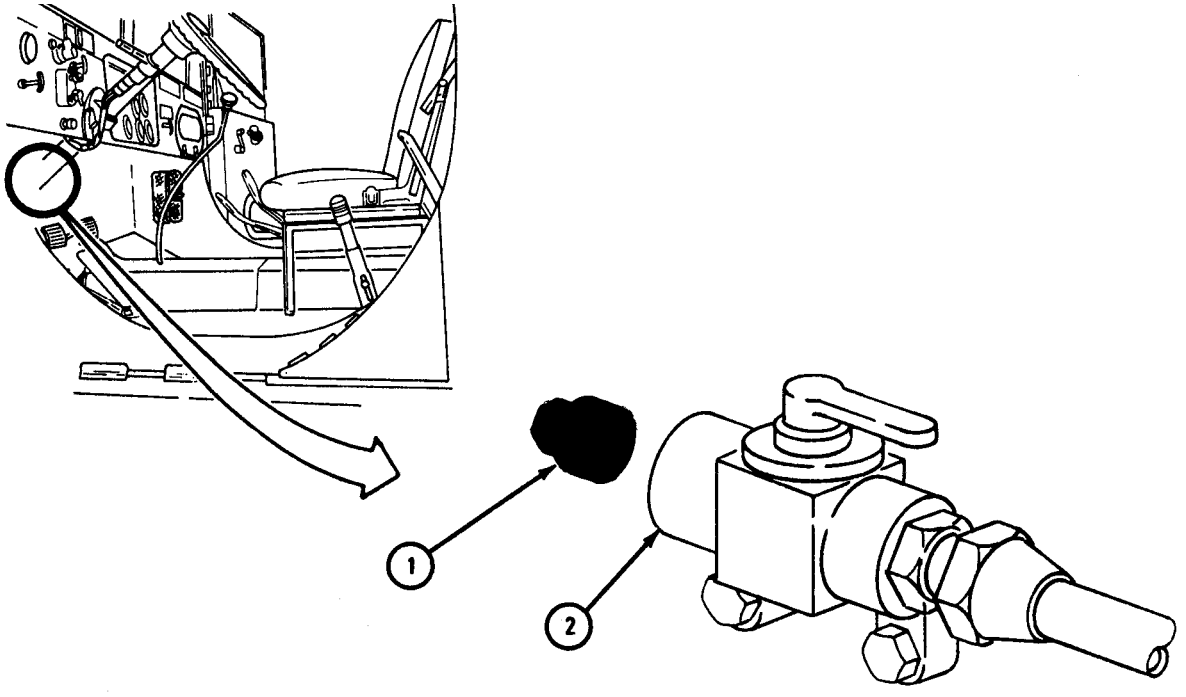
1. Screw pipe plug (1) into valve (2).
2* Using 3/8-inch open end wrench, tighten pipe plug (1).

NOTE

Follow-on Maintenance Action Required:

1. Start engine and let it run until air pressure gage reads between 65 and 120 psi. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Do air system leak test. Refer to para 1-5.

END OF TASK



12-20. AIR SUPPLY VALVE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS : 7/18-inch open end wrench (2)
5/8-inch open end wrench

SUPPLIES: None

PERSONNEL: Two

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

a. Preliminary Procedure. Vent air system. Refer to para 12-18.

b. Removal.

FRAME 1

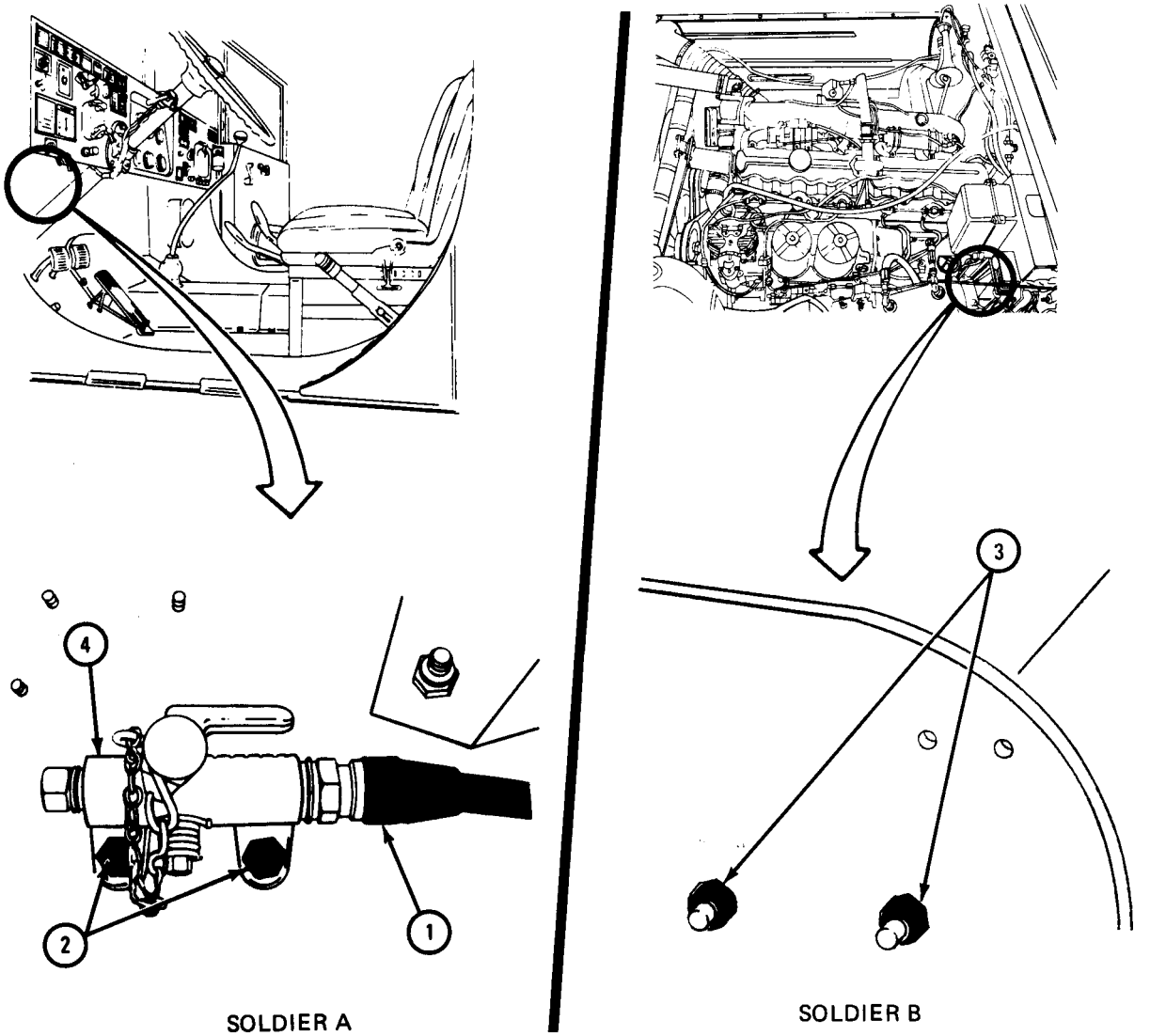
Soldier A 1. Working under instrument panel using 5/8-inch wrench, unscrew and take off coupling nut (1).

2. Using 7/16-inch wrench, hold two bolts (2). Tell soldier B when ready.

Soldier B 3. Working in engine compartment using 7/16-inch wrench, unscrew and take off two nuts (3).

Soldier A 4. Take out two screws (2) and valve (4).

END OF TASK



c. Replacement.

FRAME 1

Soldier A 1. Working under instrument panel, put valve (1) and two bolts (2) in place. Using 7/16-inch wrench, hold two screws. Tell soldier B when ready.

Soldier B 2. Working in engine compartment using 7/16-inch wrench, screw on and tighten two nuts (3).

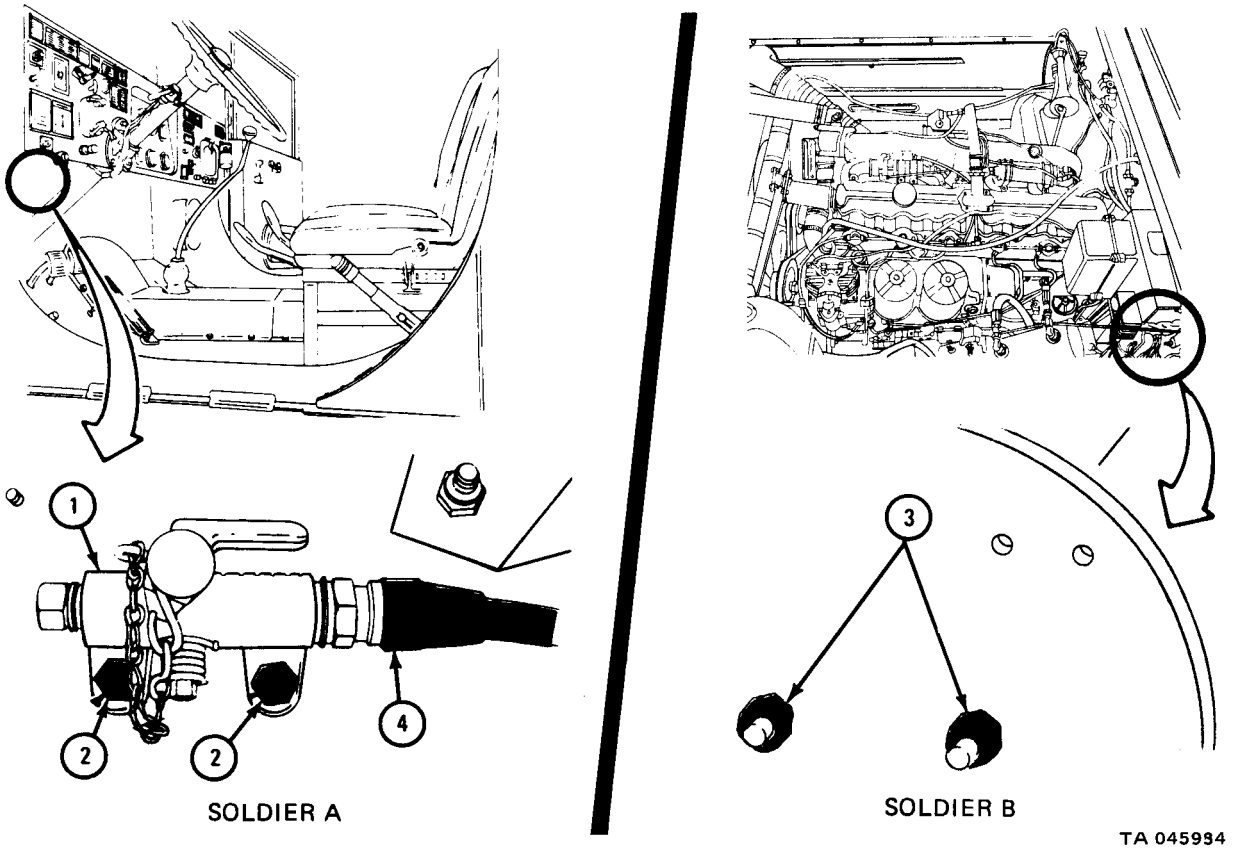
Soldier A 3. Using 5/8-inch wrench, screw on and tighten coupling nut (4). Turn valve (1) to off position.

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Let engine run until air system is up to pressure. Refer to TM 9-2320-211-10.
2. Stop engine. Refer to TM 9-2320-211-10.
3. Check for leaks. Refer to para 1-5.

END OF TASK



12-21. AIR BRAKE SYSTEM VALVES AND FITTINGS (TYPICAL) REMOVAL AND REPLACEMENT.

TOOLS : 5/8-inch open end wrench
1 l/4-inch open end wrench
l-1/2-inch open end wrench
Pipe wrench
7/16-inch wrench (2)

SUPPLIES: None

PERSONNEL: One

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

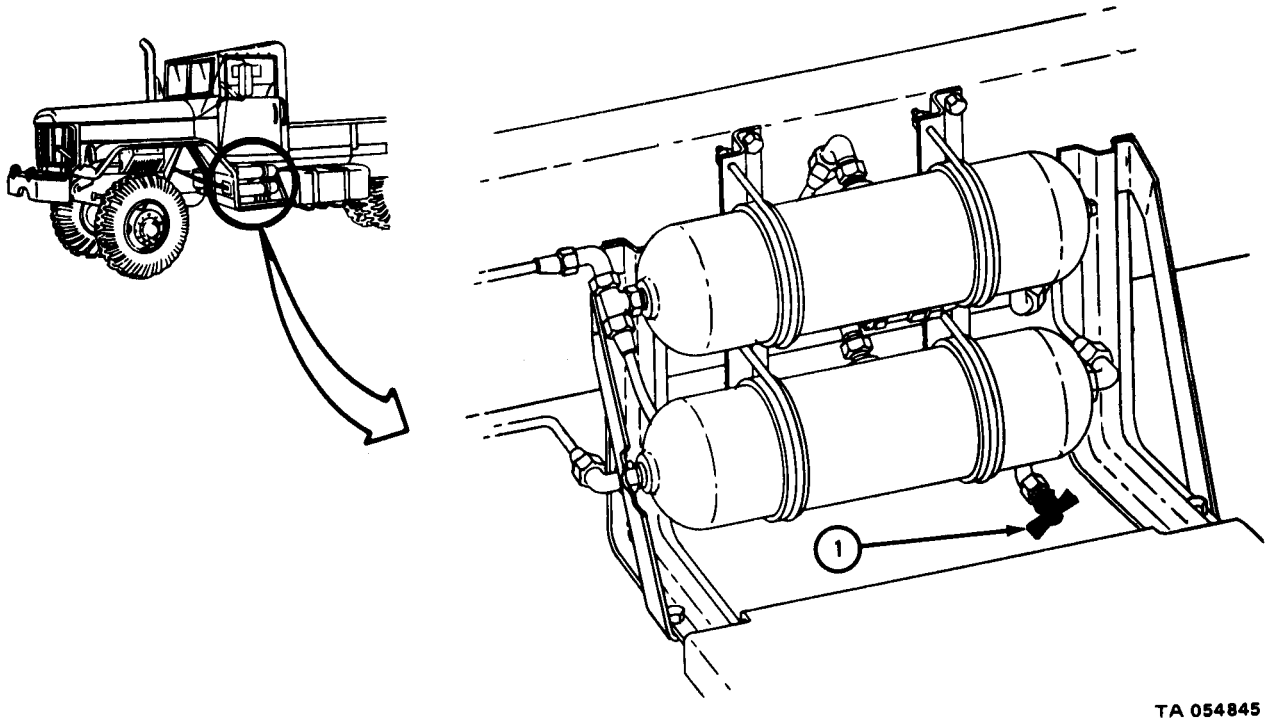
a. Preliminary Procedure. Drain air lines. Refer to para 12-18.

b. Removal.

FRAME 1

1. Open drain cock (1) by turning it to the left.

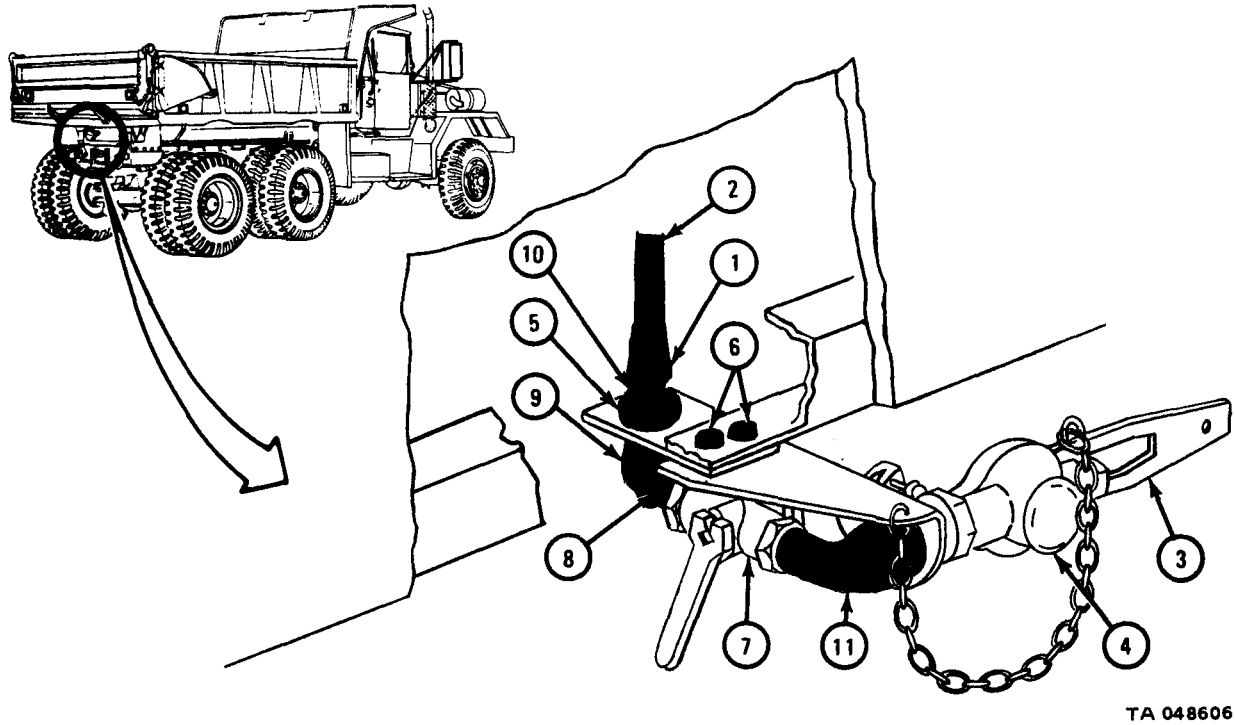
GO TO FRAME 2



FRAME 2

1. Using 5/8-inch wrench, unscrew nut (1) and push it back on tubing (2).
2. Pull off tubing (2) with nut (1).
3. Lift up and twist off dummy coupling (3).
4. Using 1 l/4-inch wrench, unscrew and takeoff coupling half (4).
5. Using l/2-inch wrench, unscrew and take off nut (5).
6. Using 7/16-inch wrenches, unscrew and take out two screws and nuts (6).
7. Take out valve (7) with fittings.
8. Put valve (7) in vise. Using pipe wrench, unscrew and take off nipple (8), elbow (9), and fitting (10).
9. Using pipe wrench, unscrew and take off elbow (11).

END OF TASK

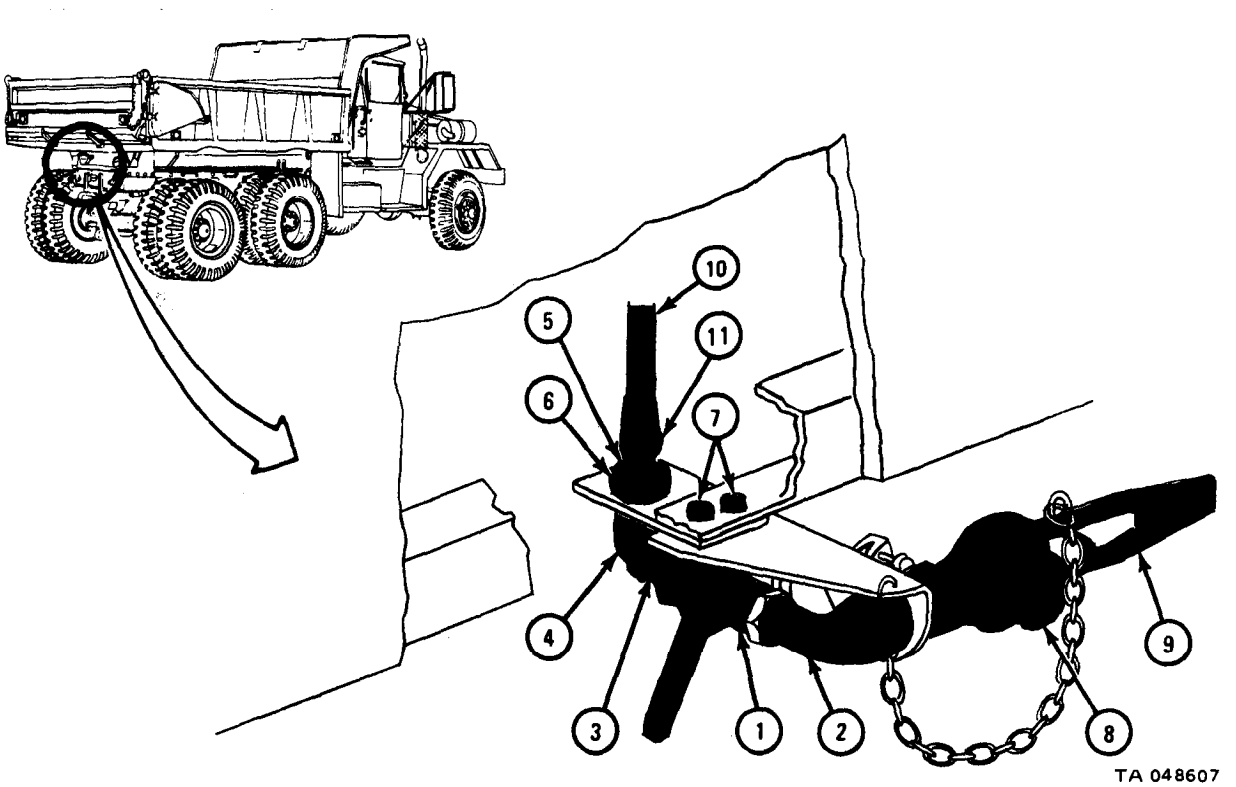


c. Replacement.

FRAME 1

1. Put valve (1) in vise. Using pipe wrench, screw on and tighten elbow (2).
2. Using pipe wrench, screw on and tighten nipple (3) with elbow (4) and fitting (5).
3. Take valve (1) with fittings out of vise.
4. Put valve (1) on truck. Using 1 1/2-inch wrench, screw on nut (6).
5. Using 7/16-inch wrenches, screw in and tighten two screws and nuts (7).
6, Using 1 l/2-inch wrench, tighten nut (6).
7. Using 1 l/8-inch wrench, screw on and tighten coupling half (8).
8. Twist on and push down dummy coupling (9).
9. Push tubing (10) on fitting (5). Using 5/8-inch wrench, screw on and tighten nut (11).

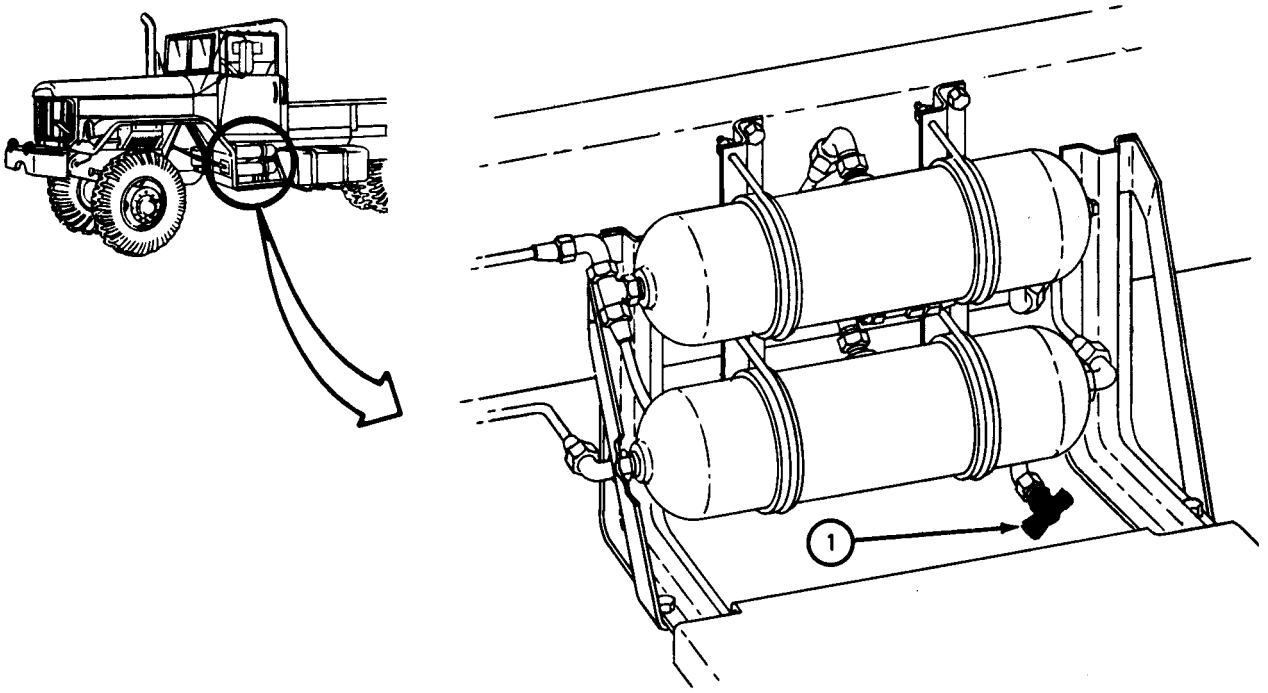
GO TO FRAME 2



FRAME 2

1. Close drain cock (1) by turning it to the right.

END OF TASK



12-22. AIR BRAKE HAND CONTROL VALVE REMOVAL AND REPLACEMENT (TRUCK M52A2).

TOOLS: 3/8-inch socket wrench
5/8-inch wrench

SUPPLIES: Tags

PERSONNEL: One

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

a. Preliminary Procedure. Vent air system pressure. Refer to para 12-18.

b. Removal.

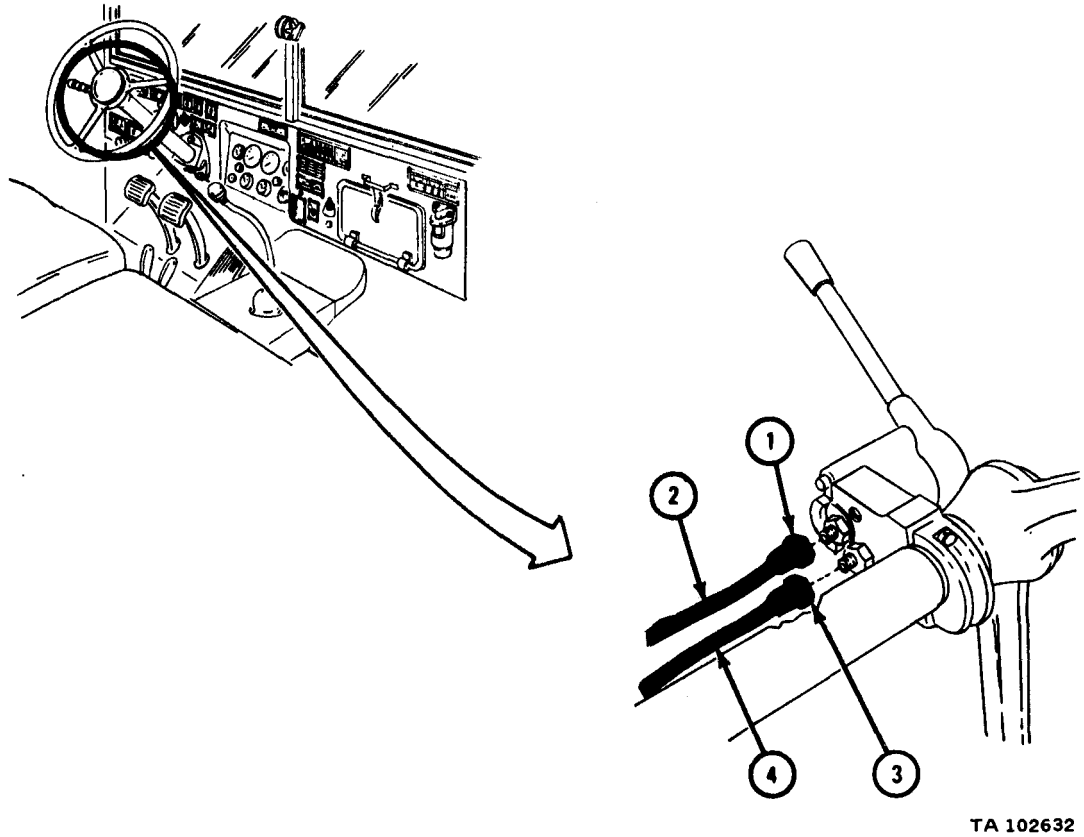
FRAME 1

NOTE

Tag airlines before taking them off so that they will be put back in the same place.

1. Using 5/8-inch wrench, unscrew coupling (1) and take off air supply line (2).
2. Using 5/8-inch wrench, unscrew coupling (3) and take off air return line (4).

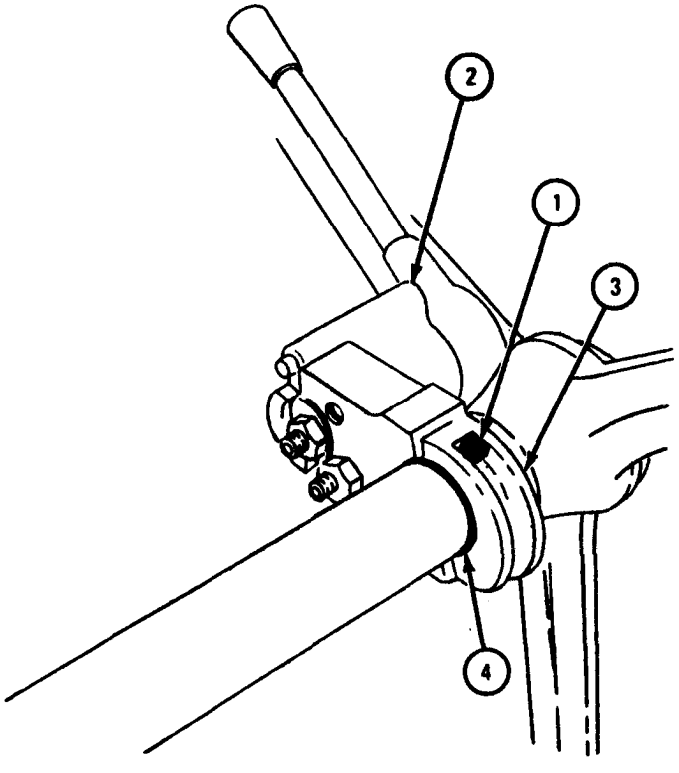
GO TO FRAME 2



FRAME 2

1. Using 3/8-inch socket wrench, unscrew and take out two bolts (1).
2. Take off valve (2) and clamp (3).
3. Take off webbing (4).

END OF TASK



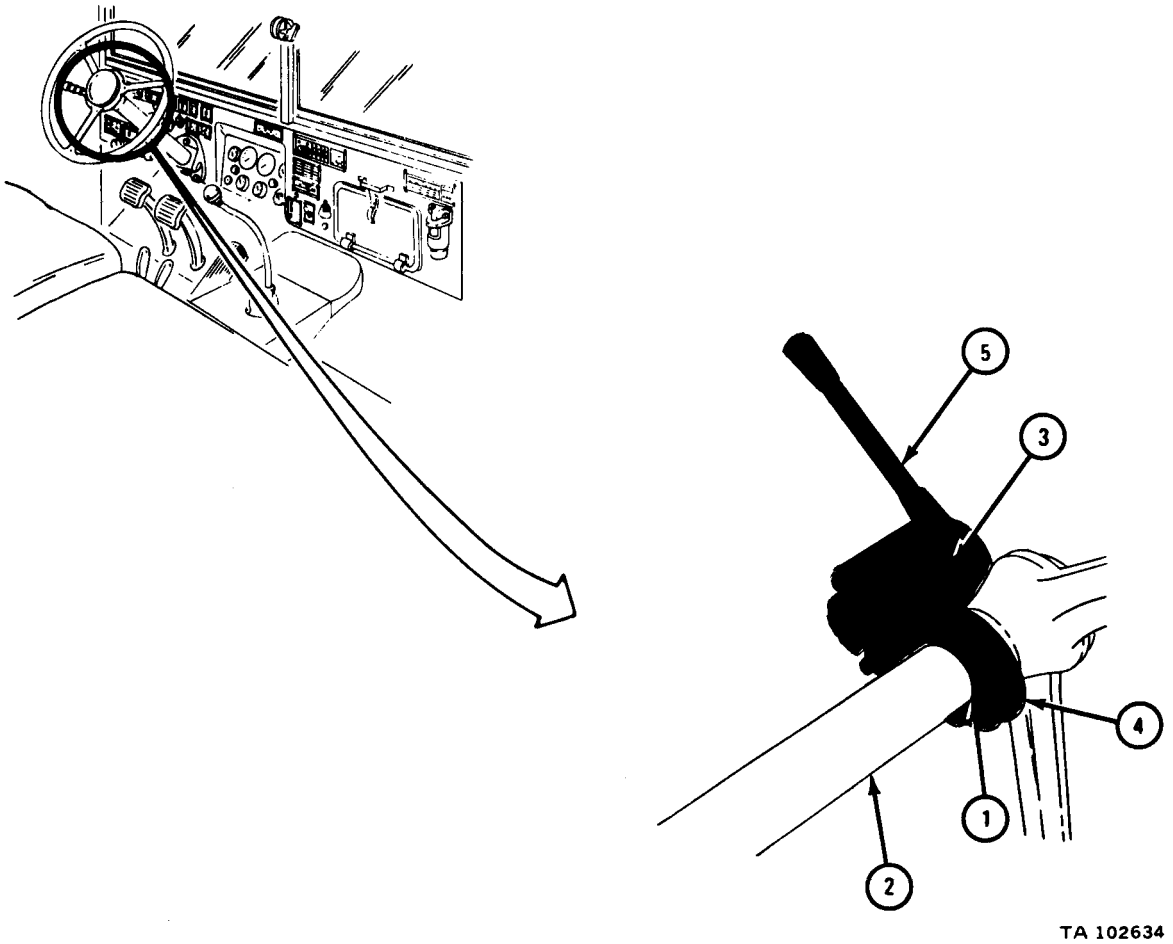
TA 102633

c. Replacement.

FRAME 1

1. Place webbing (1) around steering column (2).
2. Place valve (3) and clamp (4) around webbing (1) with hand control lever (5) on right side of steering column (2).

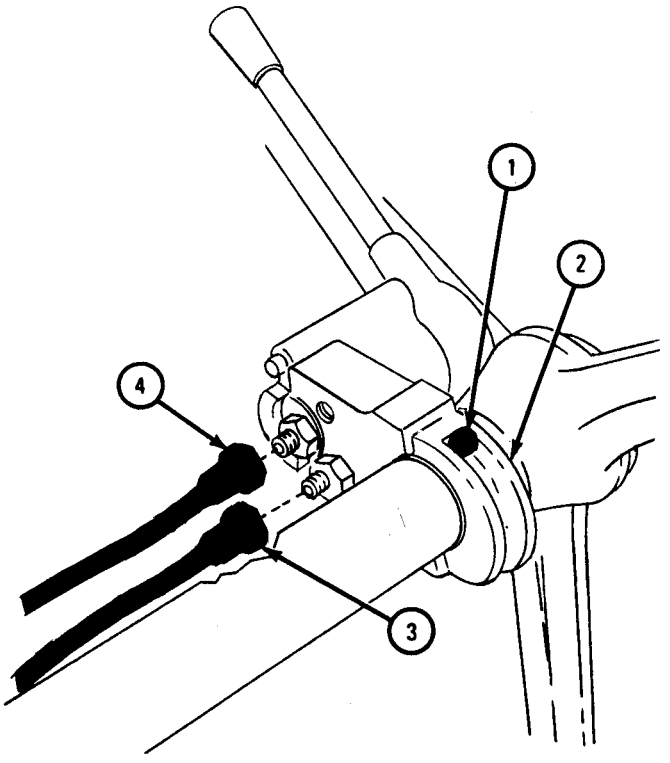
GO TO FRAME 2



FRAME 2

1. Push two bolts (1) through holes in clamp (2).
2. Using 3/8-inch socket wrench, screw in and tighten two bolts (1).
3. Using 5/8-inch wrench, screw on and tighten couplings (3 and 4) as tagged. Take off tags.
4. Start engine. Refer to TM 9-2320-211-10.
5. Check couplings (3 and 4) for leaks. Refer to para 1-5.
6. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 102635

12-23. AIR BRAKE RESERVOIR ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: 5/8-inch wrench
3/4-inch wrench
13/16-inch wrench
9/16-inch box ratchet wrench
1/2-inch wrench
7/8-inch wrench
15/16-inch wrench
1 1/8-inch wrench
1 1/2-inch wrench

SUPPLIES: Antisqueak material

PERSONNEL: One

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

a. Preliminary Procedure. Remove tool box. Refer to Part 2, para 17-11.

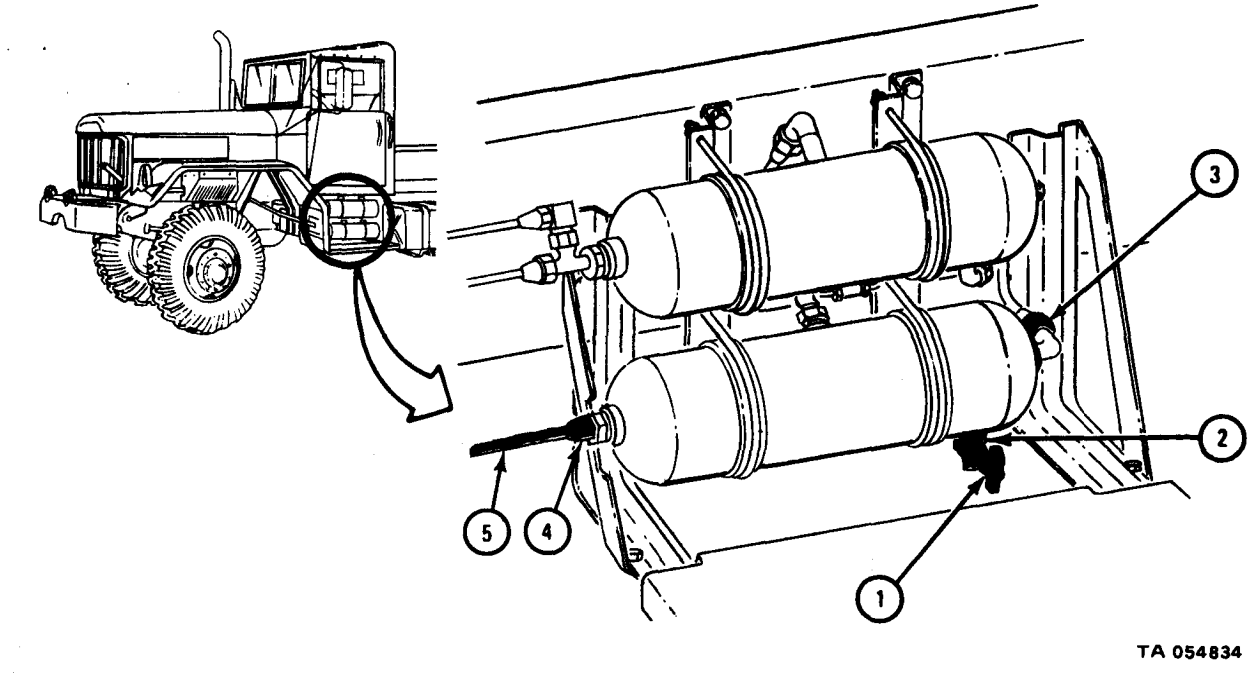
b'. Removal.

(1) Lower Reservoir.

FRAME 1

1. Open drain cock (1) by turning it to left.
2. Using 7/8-inch wrench, unscrew and take off coupling (2) and drain cock (1).
3. Using 15/16-inch wrench, unscrew and take off coupling (3).
4. Using 13/16-inch wrench, unscrew and take off coupling (4). Move away air line (5).

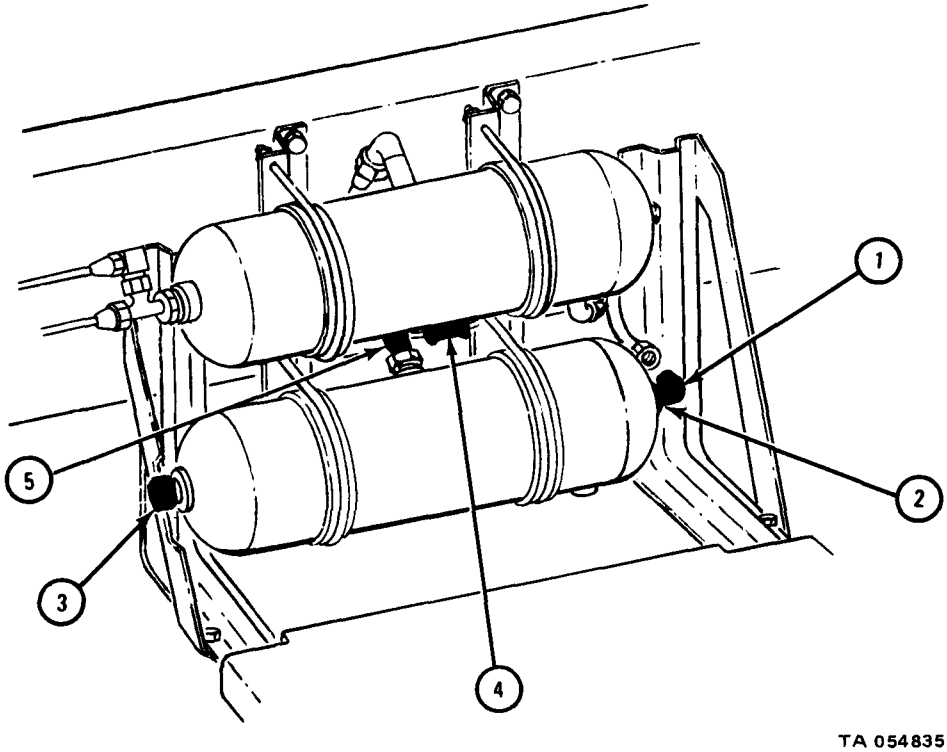
GO TO FRAME 2



FRAME 2

1. Using 7/8-inch wrench, unscrew and take out elbow(1).
2. Using 1 1/2-inch wrench, unscrew and take out adapter (2).
3. Using 1 1/8-inch wrench, unscrew and take out adapter (3).
4. Using 3/4-inch wrench, unscrew and take out safety valve (4).
5. Using 3/4-inch wrench, unscrew and take out elbow (5).

GO TO FRAME 3

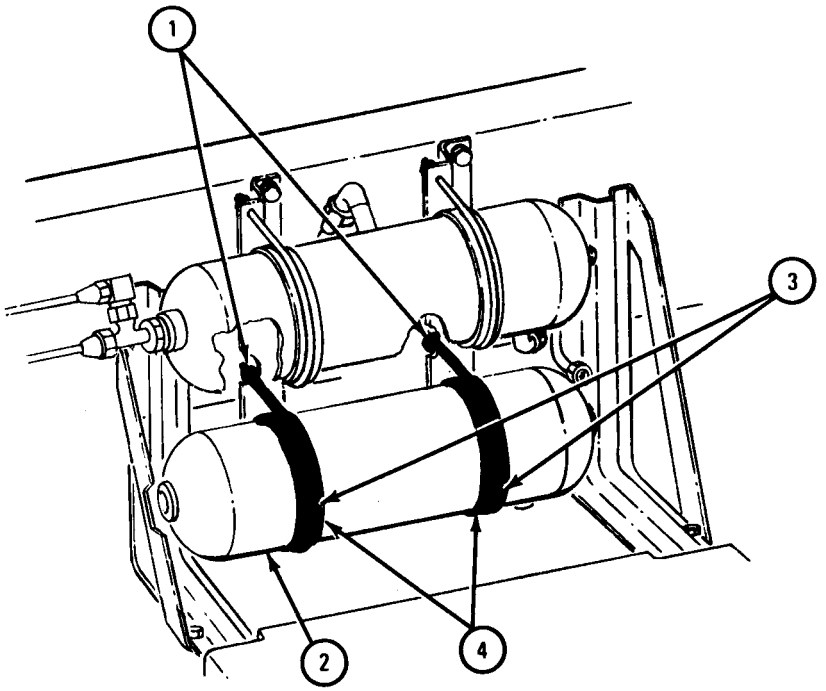


TA 054835

FRAME 3

1. Using 9/16-inch box ratchet wrench, unscrew and take off four locknuts (1).
2. Hold lower reservoir (2) and take out two U-bolts (3) and two strips of antisqueak material (4). Throw away antisqueak material.
3. Take out lower reservoir (2).

END OF TASK



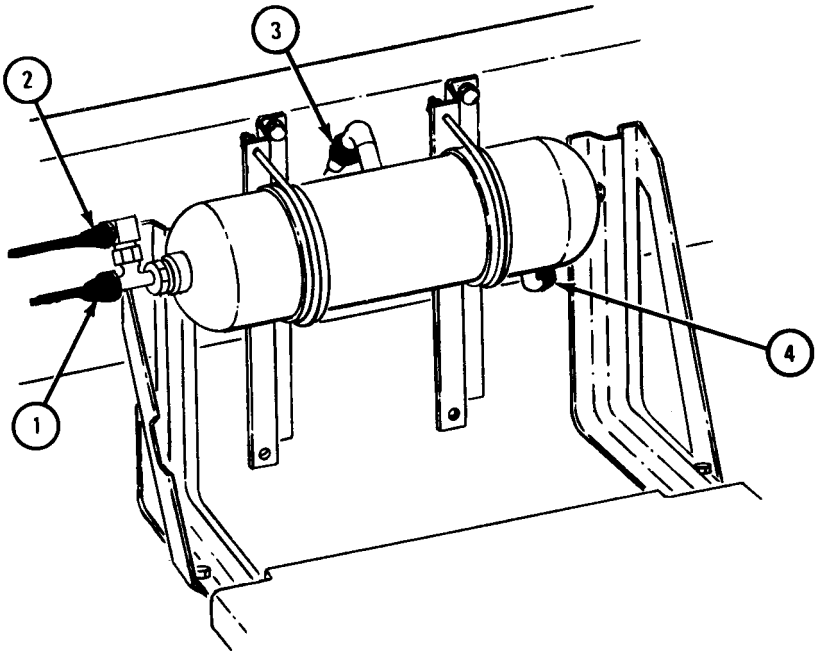
TA 054836

(2) Upper Reservoir.

FRAME 1

1. Using 7/8-inch wrench, unscrew and take off coupling (1).
2. Using 5/8-inch wrench, unscrew and take off coupling (2).
3. Using 5/8-inch wrench, unscrew and take off coupling (3).
4. Using 15/16-inch wrench, unscrew and take off coupling (4).

GO TO FRAME 2

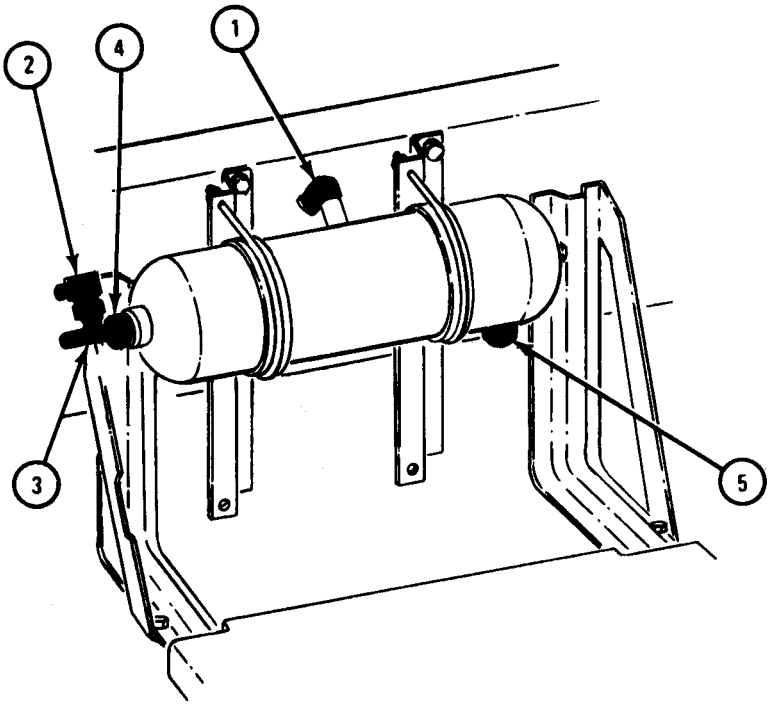


TA 045973

FRAME 2

1. Using l/2-inch wrench, unscrew and take out elbow (1).
2. Using 9/16-inch wrench, unscrew and take out elbow (2) and tee fitting (3).
3. Using 1 l/8-inch wrench, unscrew and take out adapter (4).
4. Using 7/8-inch wrench, unscrew and take out elbow (5).

GO TO FRAME 3

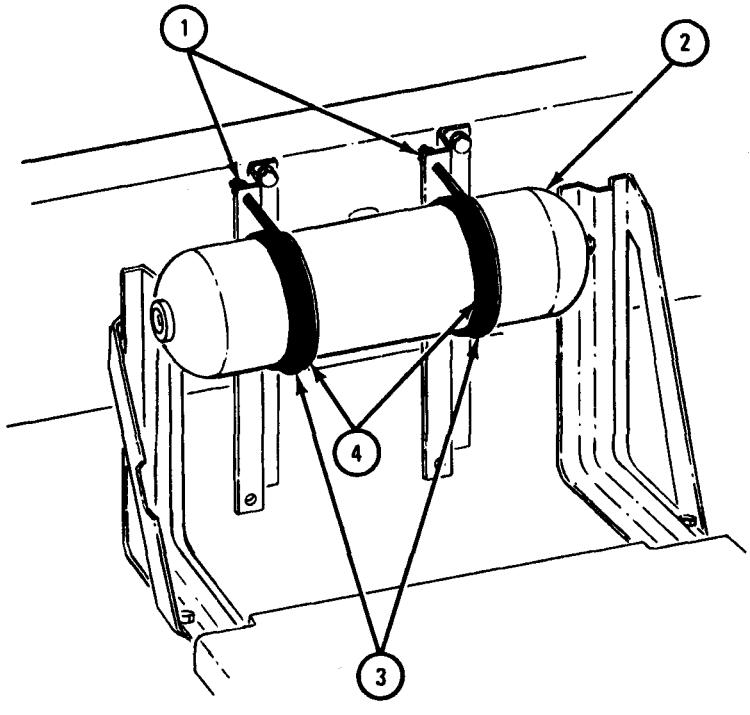


TA 045974

FRAME 3

1. Using 9/16-inch box ratchet wrench, unscrew and takeoff four locknuts (1).
2. Hold upper reservoir (2) and take out two U-bolts (3) and two strips of antisqueak material(4). Throw away antisqueak material.
3. Take out upper reservoir (2).

END OF TASK



TA 045975

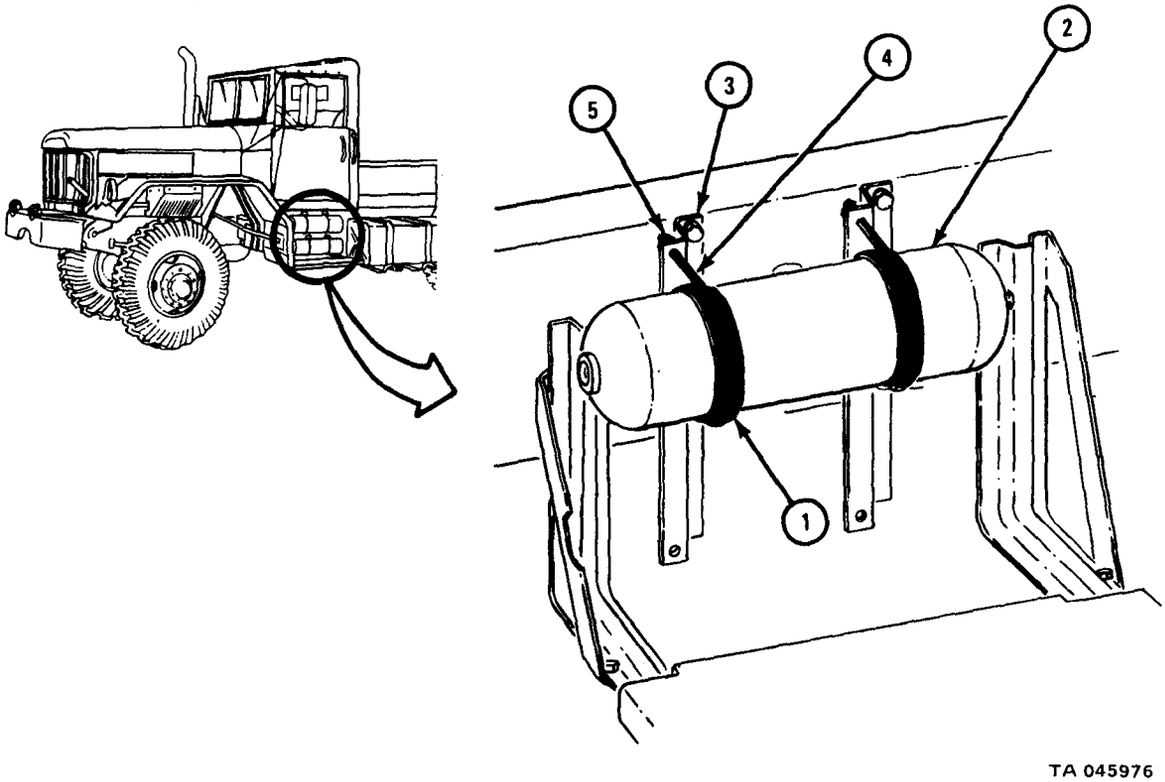
c. Replacement.

(1) Upper Reservoir.

FRAME 1

1. Place antisqueak material (1) around upper reservoir (2) about seven inches from each end. Overlap material where reservoir touches hangers (3).
2. HoId upper reservoir (2) in place. Put U-bolts (4) around reservoir, over antisqueak material (1), and through holes in hangers (3).
3. Using 9/16-inch box ratchet wrench, screw on and tighten f our locknuts (5).

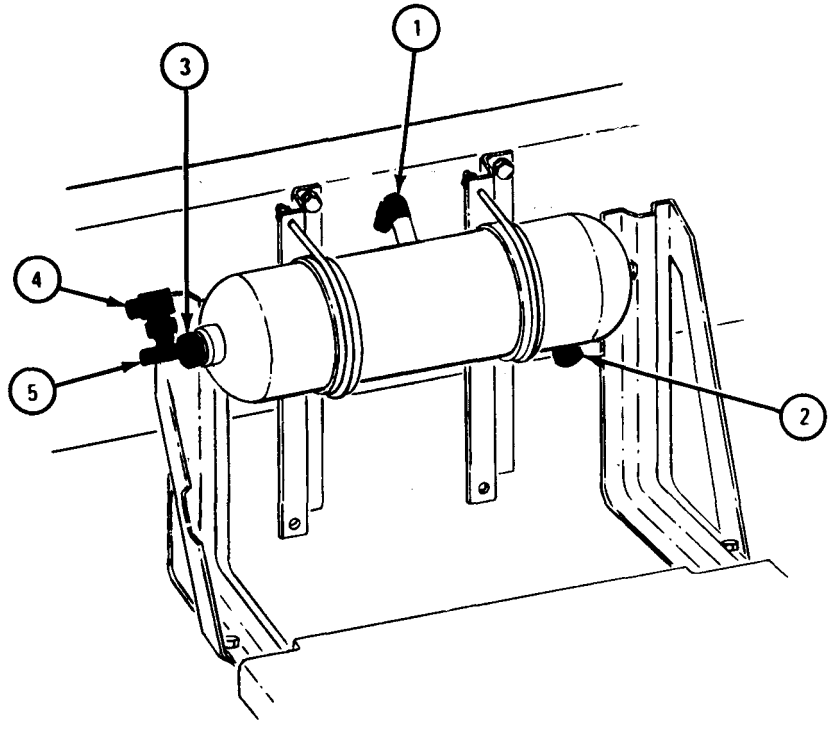
GO TO FRAME 2



FRAME 2

1. Using 5/8-inch wrench, screw in and tighten elbow (l).
2. Using 15/16-inch wrench, screw in and tighten elbow (2).
3. Using 1 1/8-inch wrench, screw in and tighten adapter (3).
4. Using 9/16-inch wrench, screw in and tighten elbow (4) and tee fitting (5).

GO TO FRAME 3

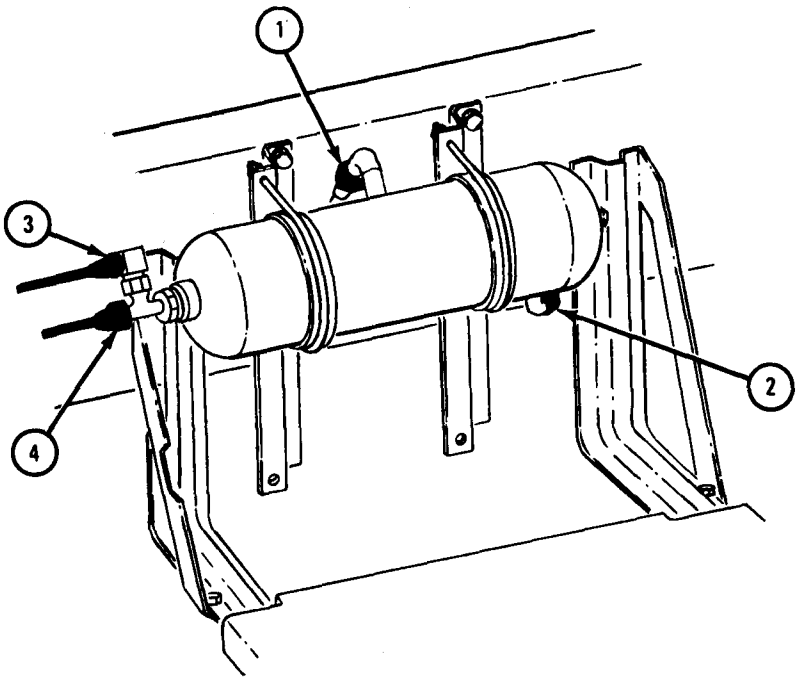


TA 045977

FRAME 3

1. Using 1/2-inch wrench, screw on and tighten coupling (1).
2. Using 7/8-inch wrench, screw on and tighten coupling (2).
3. Using 9/16-inch wrench, screw on and tighten coupling (3).
4. Using 13/16-inch wrench, screw on and tighten coupling (4).

END OF TASK



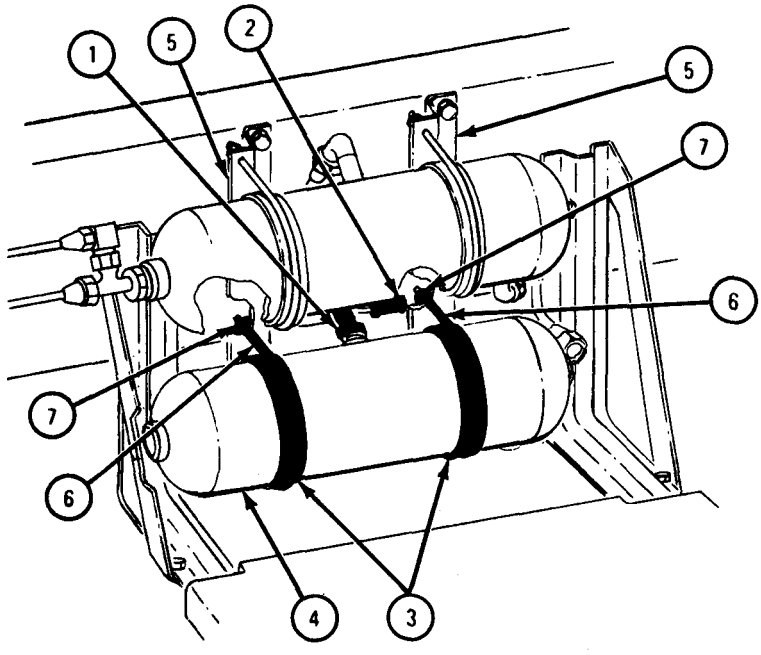
TA 045978

(2) Lower Reservoir.

FRAME 1

1. Using 3/4-inch wrench, screw in and tighten elbow (1).
2. Using 3/4-inch wrench, screw on and tighten safety valve (2).
3. Place antisqueak material (3) around lower tank (4) about seven inches from each end. Overlap material where tank will touch hangers (5).
4. Hold lower tank (4) in place and put two U-bolts (6) around tank, over antisqueak material (3), and through four holes in hangers (5).
5. Using 9/16-inch box ratchet wrench, screw on and tighten four locknuts (7).

GO TO FRAME 2

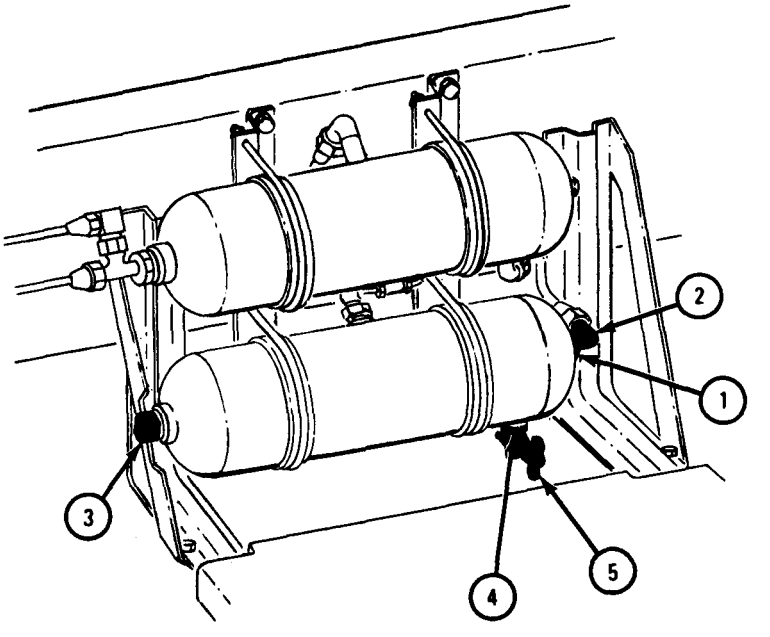


TA 045979

FRAME 2

1. Using 1 1/2-inch wrench, screw in and tighten adapter (1).
2. Using 1/2-inch wrench, screw in and tighten elbow (2).
3. Using 1 1/8-inch wrench, screw in and tighten adapter (3).
4. Using 7/8-inch wrench, screw in and tighten coupling (4) with drain cock (5).

GO TO FRAME 3



TA 045980

FRAME 3

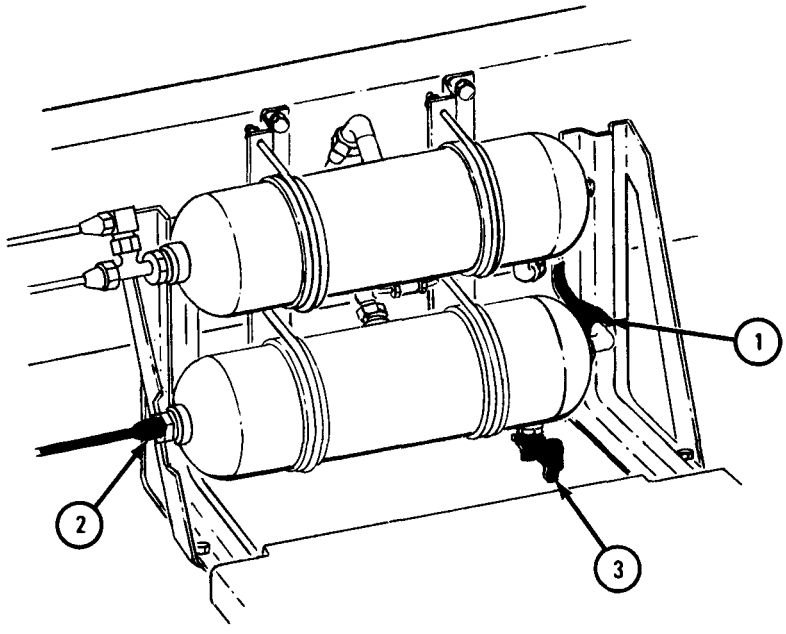
1. Using 15/16-inch wrench, screw on and tighten coupling (1).
2. Using 13/16-inch wrench, screw on and tighten coupling (2).
3. Close drain cock (3) by turning it to right.

NOTE

Follow-on Maintenance Action Required:

Replace tool box. Refer to Part 2, para 17-11.

END OF TASK



TA 054837

12-24. AIR TANK SAFETY VALVE ASSEMBLY REMOVAL AND REPLACEMENT.

TOOLS: General Mechanic tool kit

SUPPLIES: None

PERSONNEL: One

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

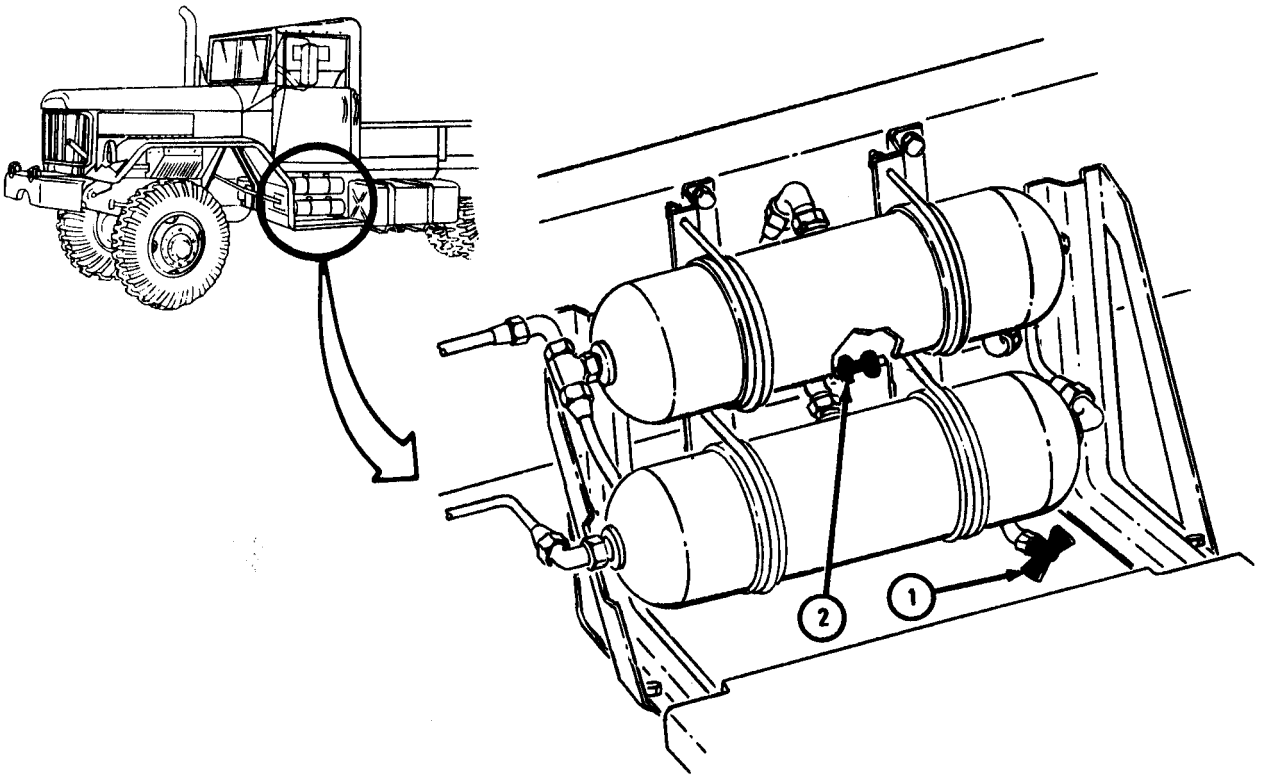
a. Preliminary Procedure. Remove toolbox. Refer to Part 2, para 17-11.

b. Removal.

FRAME 1

1. Open drain cock (1) by turing it all the way to the left.
2. Using 3/4-inch wrench, unscrew and take out safety valve (2).

END OF TASK



c. Replacement.

FRAME 1

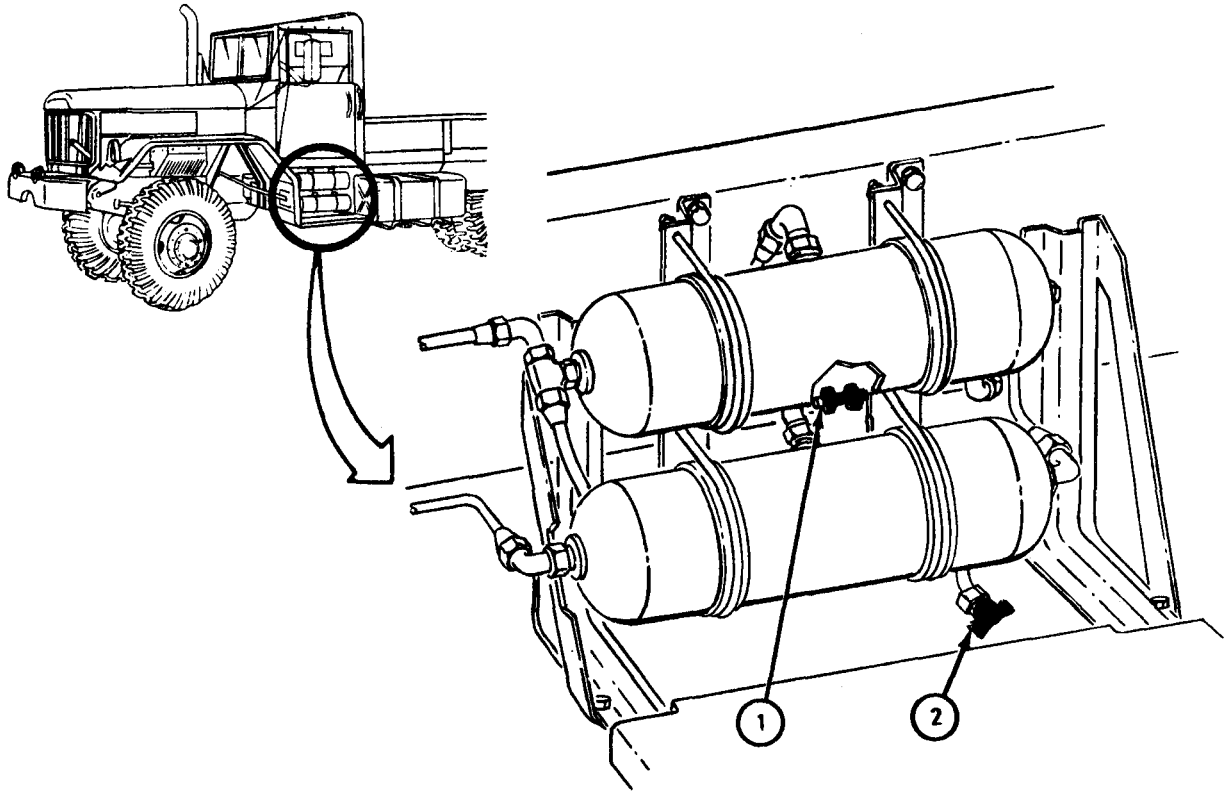
1. Using 3/4-inch wrench, screw in and tighten safety valve (1).
2. Close drain cock (2) by turning it all the way to the right.

NOTE

Follow-on Maintenance Action Required:

1. Replace tool box. Refer to Part 2, para 17-11.
2. Start engine. Refer to TM 9-2320-211-10.
3. Check valve connections for leaks. Refer to para 1-5.
4. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 045827

Section VII. COMPRESSED AIR SYSTEM

12-25. POWER DRIVEN RECIPROCATING COMPRESSOR ASSEMBLY REMOVAL AND REPLACEMENT .

TOOLS: 9/16-inch wrench; Air compressor pulley adjusting wrench, pn 10935288; l/2 inch wrench; 11/16-inch socket; 13/16-inch wrench

SUPPLIES: Compressor mounting gasket

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 cooling system. Refer to para 6-13.
(3) Remove left pump to block hose. Refer to para 12-19.

b. Removal.

FRAME 1

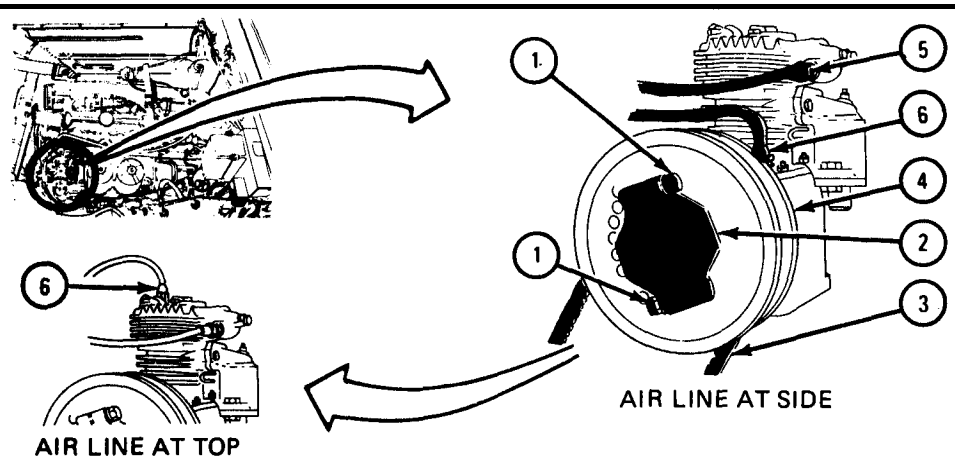
1. Using 9/16-inch wrench, loosen two screws (1).
2. Using air compressor pulley wrench, turn pulley flange (2) to left until drive belt (3) is loose enough to takeoff.
3. Take drive belt (3) off pulley (4).
4. Using 13/16-inch wrench, unscrew and take off air supply line (5).

NOTE

Truck may have governor airline (6) at top of compressor or at side of compressor.

5. Using 9/16-inch wrench, unscrew and take off governor airline (6).

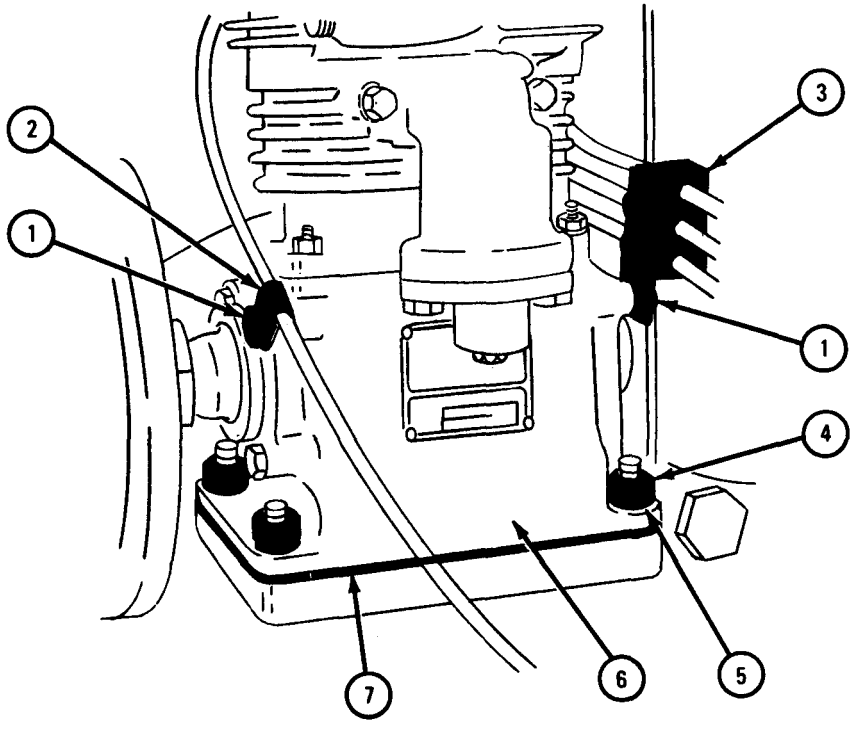
GO TO FRAME 2



FRAME 2

1. Using l/2-inch wrench, unscrew and take out two bolts (1). Take off clip (2) and injector line bracket (3).
2. Using 11/16-inch socket, unscrew and take off four nuts (4) and lockwashers (5).
3. Lift out air compressor assembly (6) and take off and throw away gasket (7).

END OF TASK



TA 054839

c. Replacement.

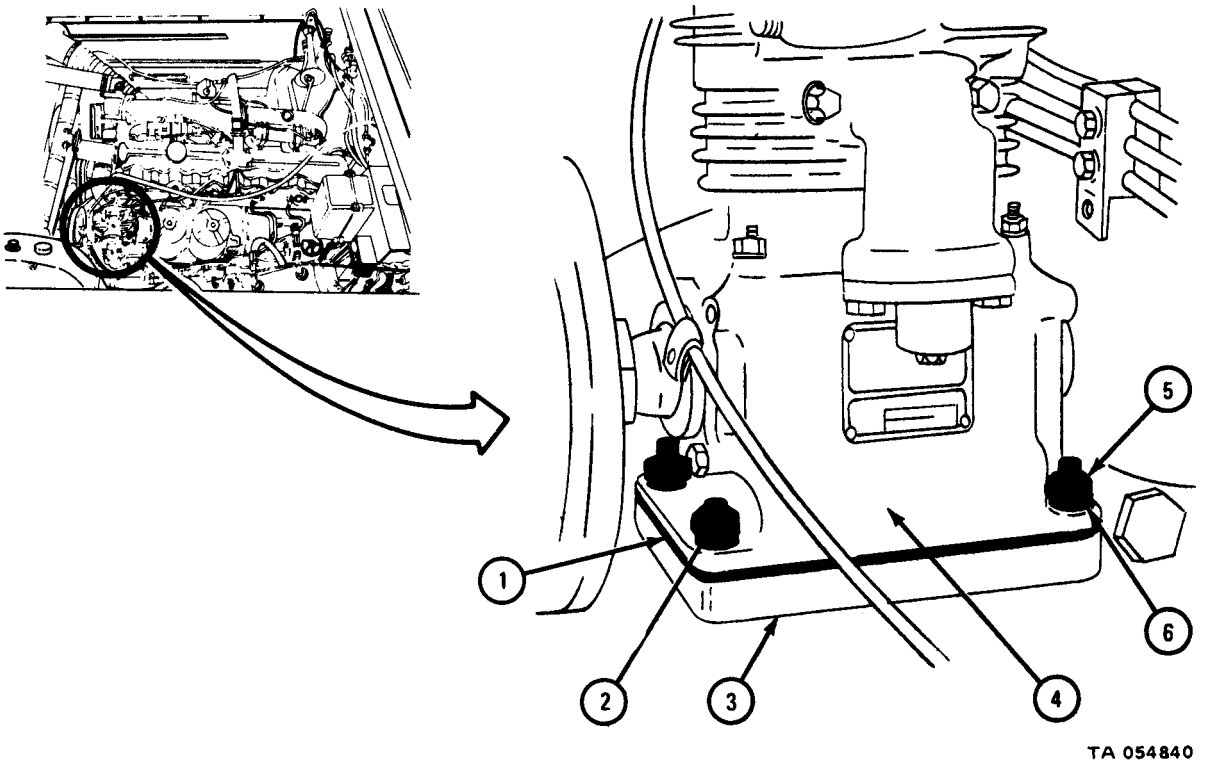
FRAME 1

1 . Place gasket (1) on studs (2) on air compressor support (3).

2. Lift air Compressor assembly (4) onto studs (2).

3. Using 11/16-inch socket wrench, screw on and tighten four nuts (5) with lockwashers (6).

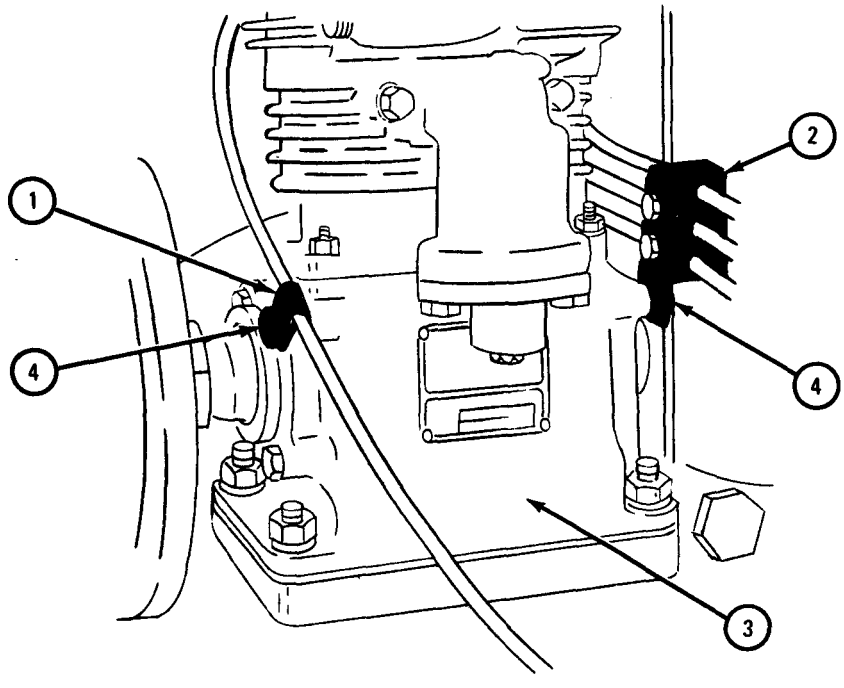
GO TO FRAME 2



FRAME 2

1. Put clip (1) and injector line bracket (2) in place on compressor (3).
2. Using 1/2-inch wrench, screw in and tighten two screws (4).

GO TO FRAME 3



TA 054841

FRAME 3

1. Place drive belt (1) around pulley (2).
2. Using air compressor pulley wrench, turn pulley flange (3) to right until drive belt (1) is tight.
3. Using 9/16-inch wrench, tighten two screws (4).
4. Using 13/16-inch wrench, screw on and tighten air supply line (5).

NOTE

Truck may have governor air line (6) at top of compressor or at side of compressor.

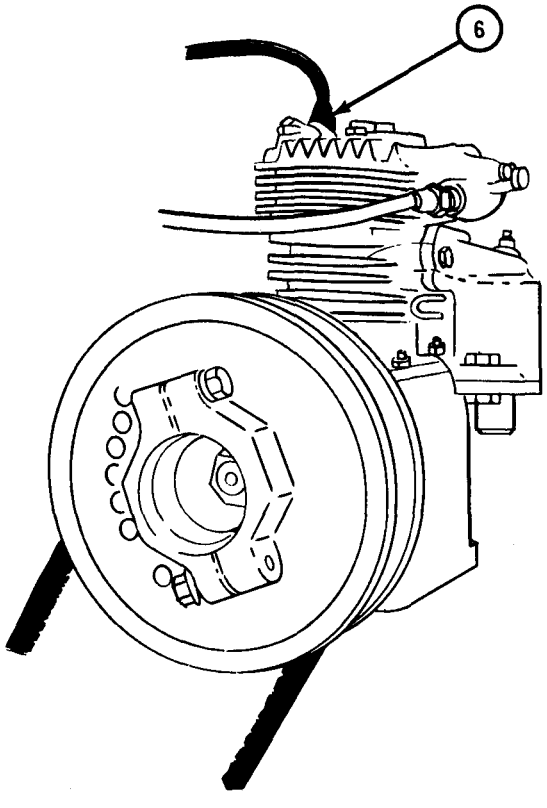
5. Using 9/16-inch wrench, screw on and tighten governor air line (6).

NOTE

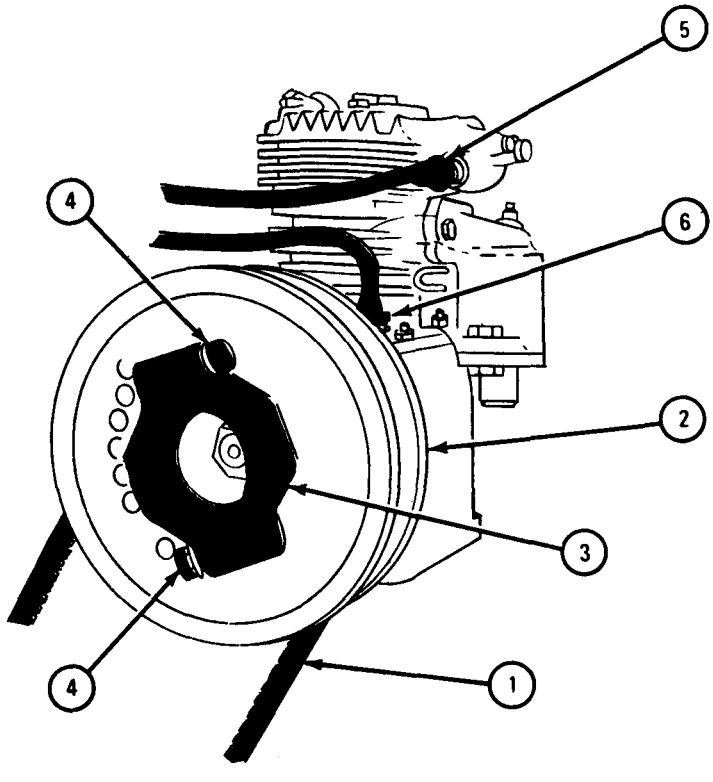
Follow-on Maintenance Action Required:

1. Replace pump to block hose. Refer to para 12-19.
2. Fill cooling system. Refer to para 6-13.
3. Adjust air compressor drive belt. Refer to para 12-28.
4. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



AIR LINE AT TOP



AIR LINE AT SIDE

TA 054842

12-26. AIR COMPRESSOR SERVICE.

TOOLS: 1/2-inch wrench
Eye Shields

SUPPLIES: Air compressor intake manifold gasket
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.

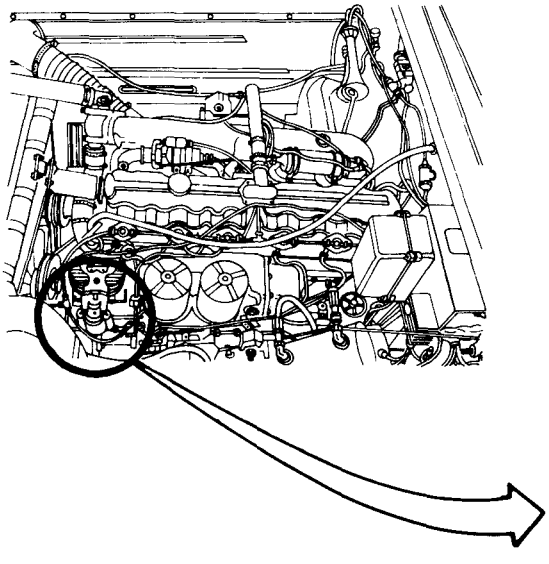
a. Preliminary Procedure. Open hood and left side panel. Refer to TM 9-2320-211-10.

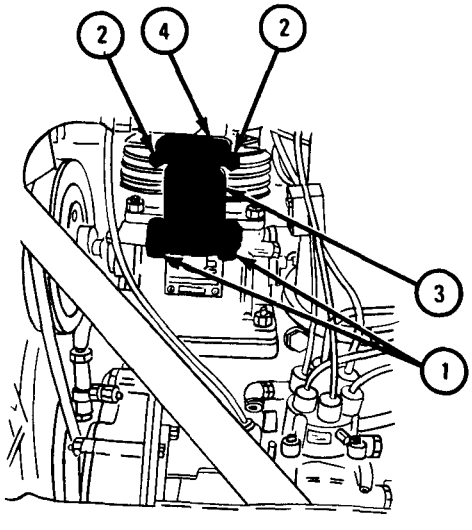
b. Removal.

FRAME 1

1. Using wrench, loosen two capscrews (1).
2. Using wrench, unscrew and take out two capscrews (2) and take off manifold (3) and gasket (4). Throw away gasket.

END OF TASK





TA 102641

c. Disassembly and Service.

FRAME 1

1. Using wrench, unscrew and take out two capscrews (1).
2. Take off cap (2) and take out spring (3), plate (4), strainer (5) and gasket (6). Throw away gasket.

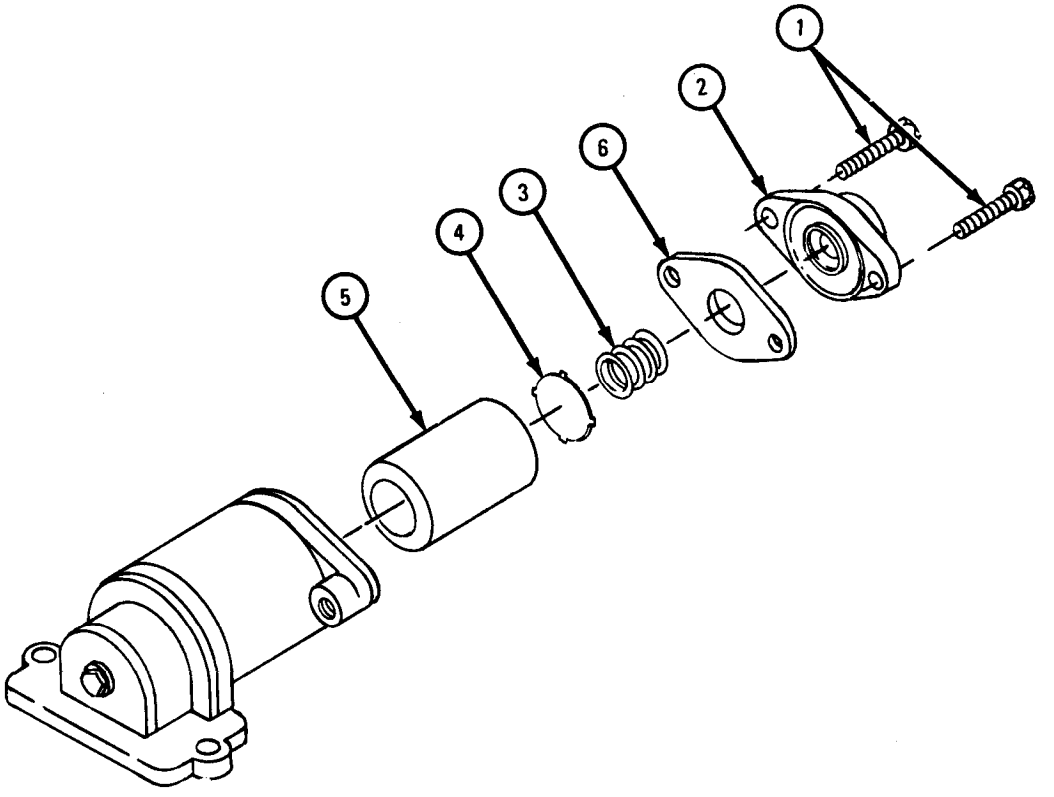
WARNING

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.

3. Using solvent, wash strainer (5). Blow compressed air through strainer to make sure it is clean.

END OF TASK



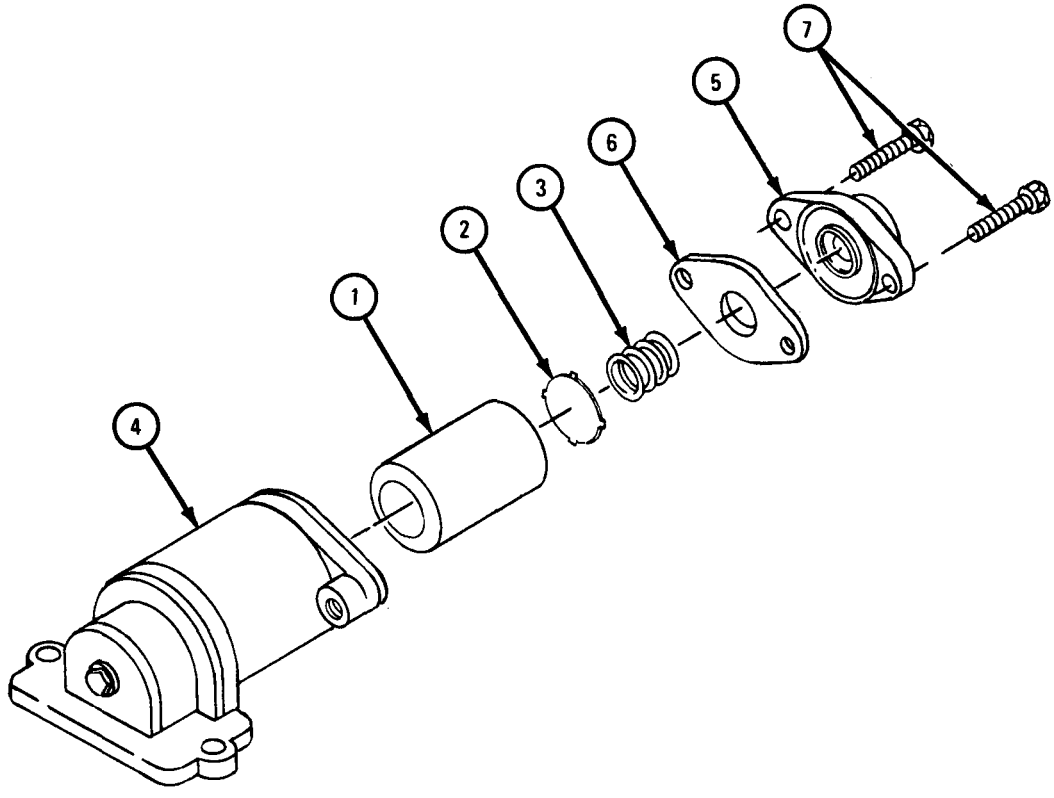
TA 102642

d. Assembly.

FRAME 1

1. Put strainer (1), plate (2), and spring (3) into manifold (4).
2. Put cap (5) and gasket (6) onto manifold (4) and aline screw holes.
3. Using wrench, screw in two capscrews (7). Final tightening of these capscrews will be done on truck.

END OF TASK



TA 102643

e. Replacement.

FRAME 1

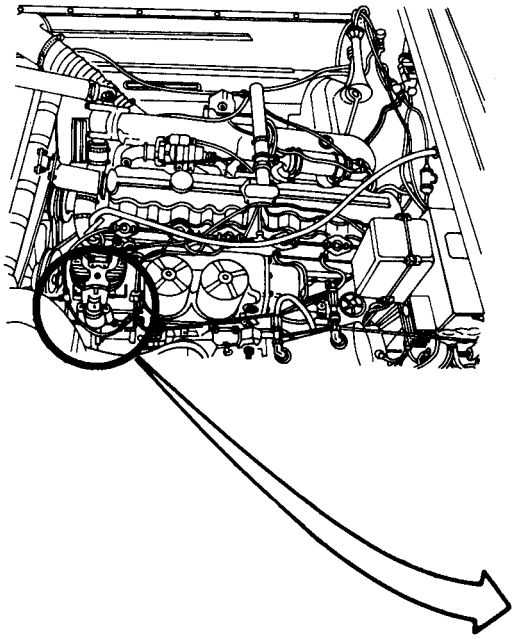
1. Put manifold (1) with gasket (2) in place on compressor (3).
2. Using wrench, screw in and tighten two capscrews (4) and tighten two capscrews (5).

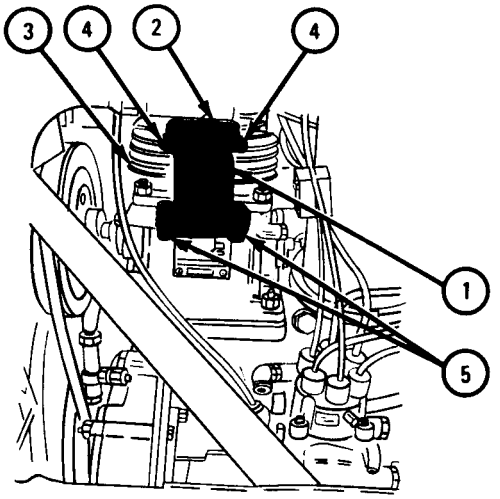
NOTE

Follow-on Maintenance Action Required:

Close hood and left side panel. Refer to TM 9-2320-211-10.

END OF TASK





TA 102644

12-27. AIR COMPRESSOR LEAK TEST.

TOOLS: 2-inch paint brush

SUPPLIES : Castile soap solution

PERSONNEL: One

EQUIPMENT CONDITION: Truck parked, engine off, handbrake set, air system fully charged.

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

b. Test.

FRAME 1

NOTE

When testing the air compressor for leakage, the given limit for air leakage is a three-inch bubble forming in three seconds.

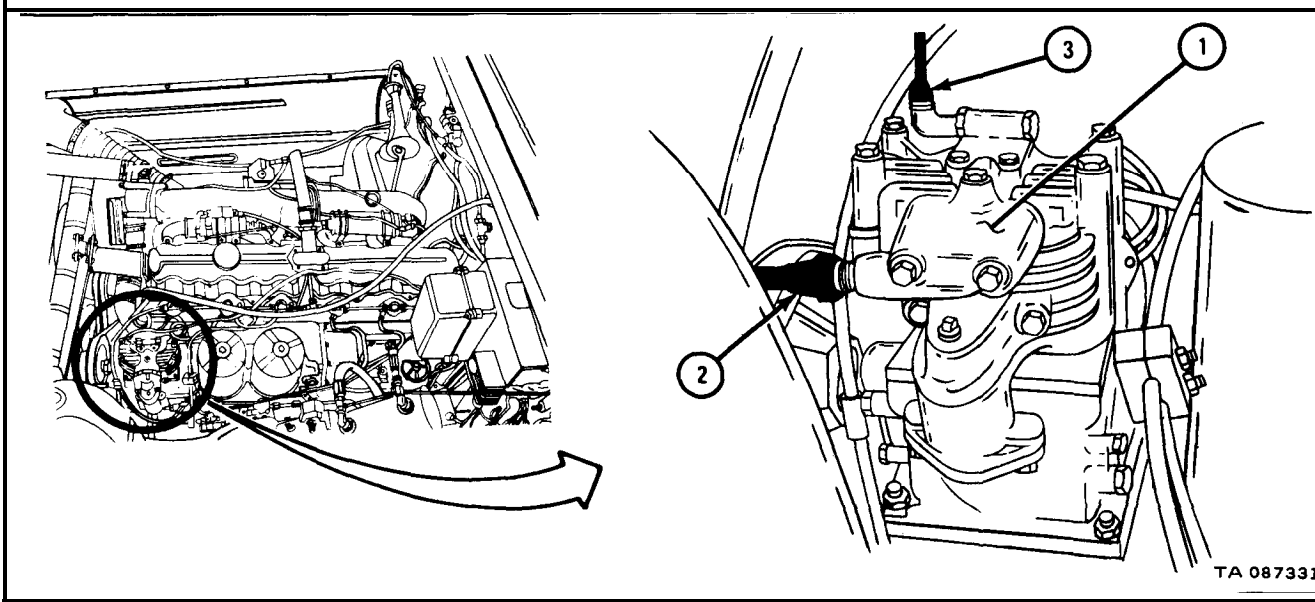
1. Coat outside of air compressor (1) with soap solution.
2. Check mating surfaces and fittings on air compressor assembly (1) for leaks. If bubble forms larger or faster than limit given, tighten fittings (2 and 3) and screws at mating surfaces on air compressor.
3. Do step 1 again. If leakage is still more than limit given, take out air compressor (1) and put in a new one. Refer to para 12-25.

NOTE

Follow-on Maintenance Action Required:

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

END OF TASK



12-28. AIR COMPRESSOR DRIVE BELT REMOVAL, REPLACEMENT, AND ADJUSTMENT.

TOOLS: 9/16-inch wrench
Straight edge ruler
Air compressor pulley adjusting wrench, pn 10935288

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.

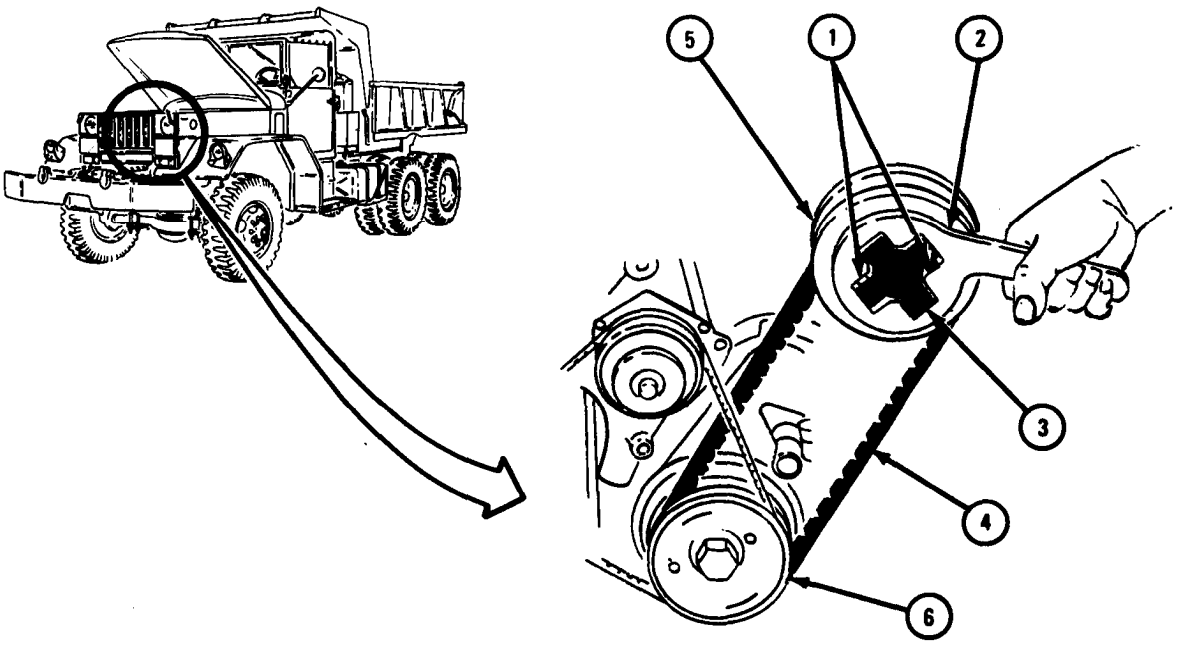
(2) Remove fan drive belts. Refer to para 6-12.

Removal.

FRAME 1

1. Using 9/16-inch wrench, unscrew and take out two capscrews (1).
2. Using air compressor pulley adjusting wrench (2), turn adjusting flange (3) to the left.
3. Take off air compressor drive belt (4) from air compressor pulley (5) and crankshaft pulley (6).

END OF TASK



c. Replacement and Adjustment.

FRAME 1

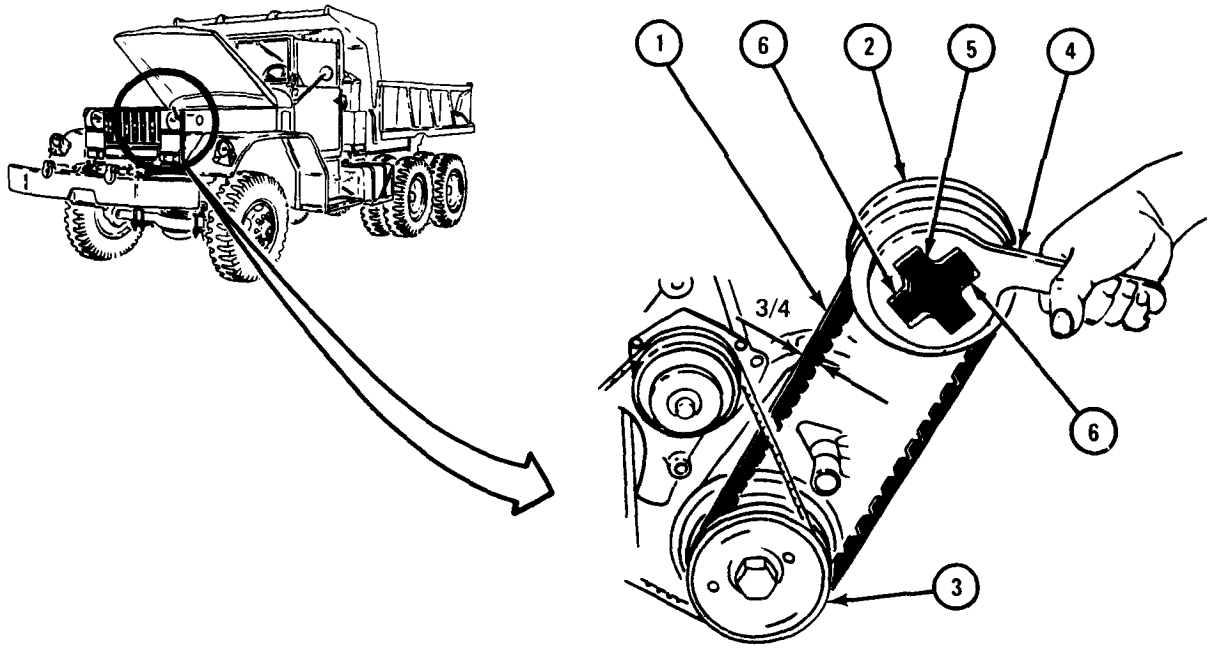
1. Place air compressor drive belt (1) over air compressor pulley (2) and crankshaft pulley (3).
2* Using air compressor pulley adjusting wrench (4), turn adjusting flange (5) to the right. Keep turning until there is no slack in air compressor drive belt (1).
3. Using finger pressure, push on belt (1) at point midway between air compressor pulley (2) and crankshaft pulley (3). Belt should give at this point about 3/4-inch.
4. Turn adjusting flange (5) to the right or the left until belt (1) gives the right amount.
5. Using 9/16-inch wrench, screw in and tighten two capscrews (6).

NOTE

Follow-on Maintenance Action Required:

Replace fan drive belts. Refer to para 6-12. Close hood. Refer to TM 9-2320-211-10.

END OF TASK



12-29. AIR COMPRESSOR GOVERNOR ASSEMBLY REMOVAL AND REPLACEMENT (LATE MODEL TRUCKS).

TOOLS : 3/8-inch wrench
9/16-inch wrench
5/8-inch wrench
l/2-inch socket wrench
5-inch extension
Adjustable wrench
3/16-inch sockethead screw key (Allen wrench or equivalent)

SUPPLIES: None

PERSONNEL: One

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

a. Preliminary Procedures.

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

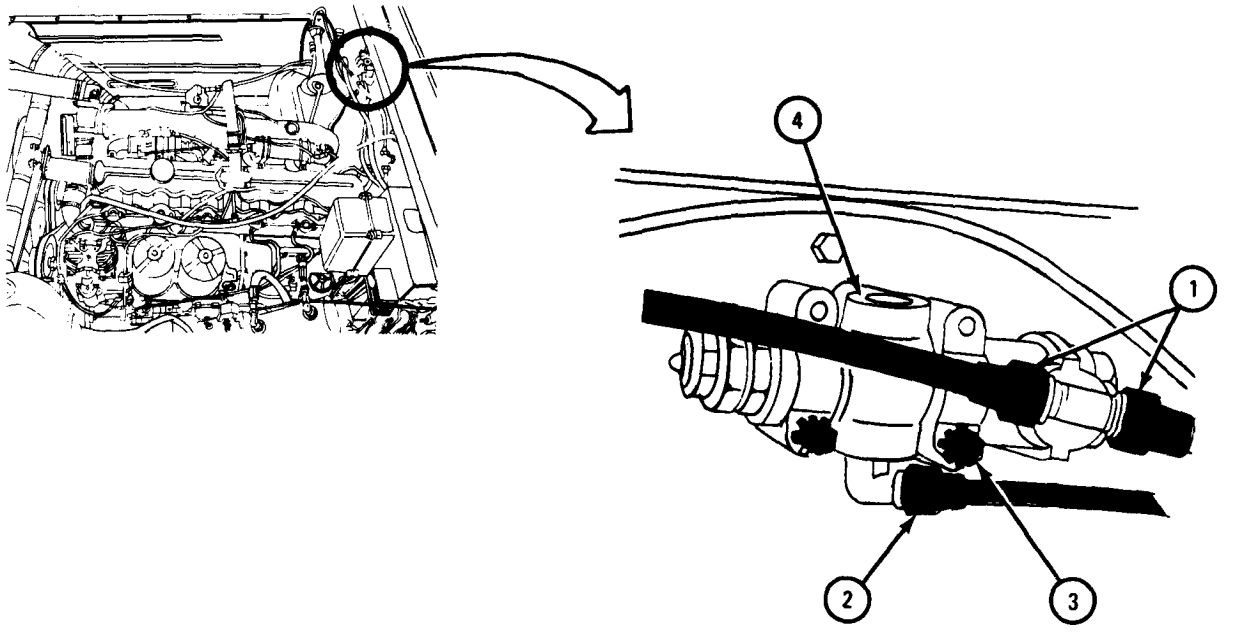
(2) Vent air system. Refer to para 12-18.

b. Removal,

FRAME 1

1. Using 5/8-inch wrench, unscrew two tube nuts (1).
2. Using 9/16-inch wrench, unscrew tube nut (2).
3 Using l/2-inch socket wrench and 5-inch extension, unscrew and take out two capscrews and lockwashers (3).
4. Take off air compressor governor valve (4).

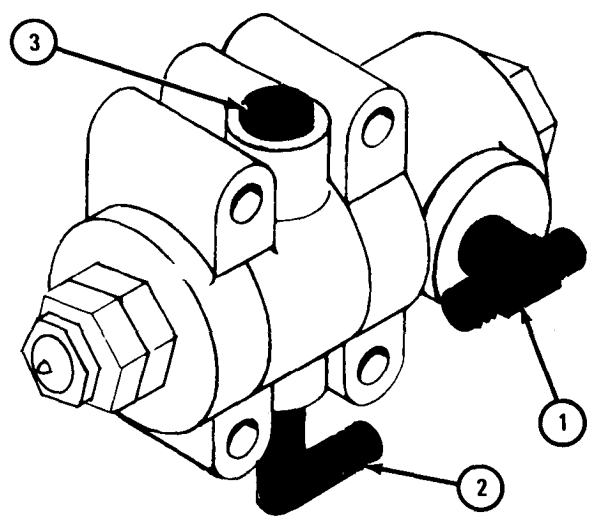
GO TO FRAME 2



FRAME 2

1. Using adjustable wrench, carefully unscrew and take off tee fitting (1).
2. Using 3/8-inch wrench, unscrew and take off elbow fitting (2).
3. Using 3/16-inch allen wrench, unscrew and take out pipe plug (3).

END OF TASK



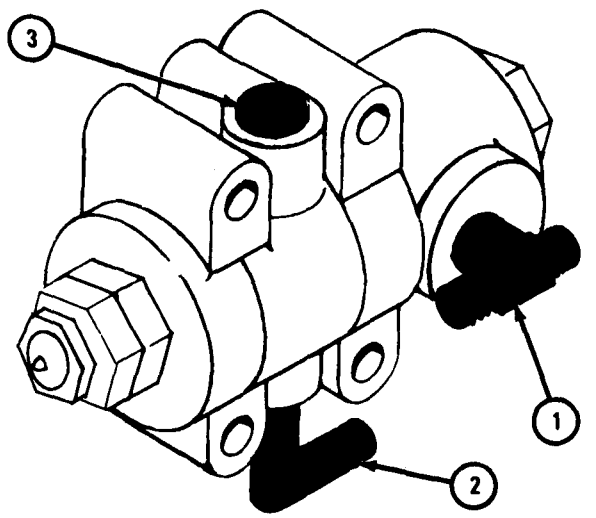
TA 050440

c. Replacement.

FRAME 1

1. Using adjustable wrench, screw in and tighten tee fitting (1).
2. Using 3/8-inch wrench, screw in and tighten elbow fitting (2).
3. Using 3/16-inch allen wrench, screw in and tighten pipe plug (3).

GO TO FRAME 2



TA 050440

FRAME 2

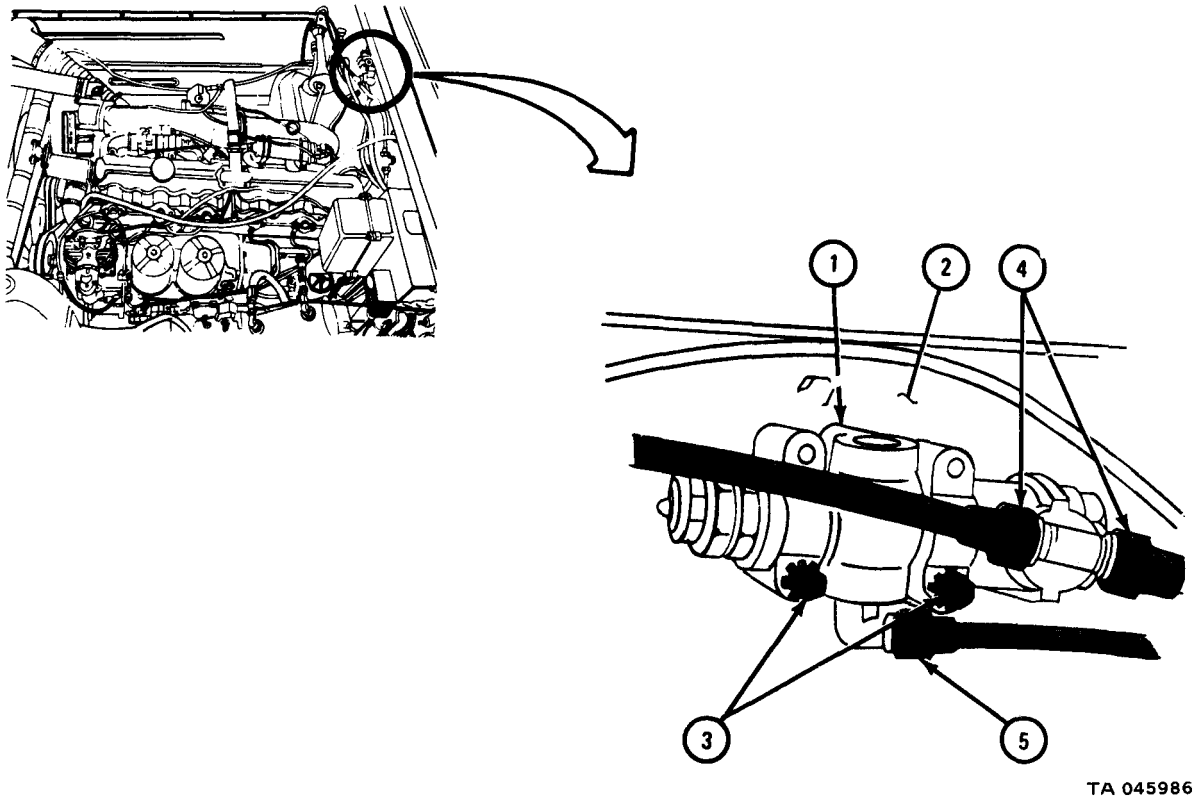
1. Aline screw holes in air compressor governor assembly (1) with firewall (2).
2. Using 1/2-inch socket wrench and 5-inch extension, screw in and tighten two capscrews and lockwashers (3).
3. Using 5/8-inch wrench, screw on and tighten two tube nuts (4).
4. Using 9/16-inch wrench, screw on and tighten tube nut (5).

NOTE

Follow-on Maintenance Action Required:

Close hood and right side panel. Refer to TM 9-2320-211-10.

END OF TASK



12-30. AIR COMPRESSOR GOVERNOR VALVE REMOVAL, CLEANING AND REPLACEMENT (EARLY MODEL TRUCKS).

TOOLS: l-inch wrench
5/8-inch wrench
9/16-inch wrench
7/16-inch socket wrench
5-inch extension
l/2-inch ratchet drive wrench

SUPPLIES: Solvent, dry cleaning, type II (SD-2), Fed. Spec P-D-680
Lubricating oil, ICE, OE/HDO 10, MIL-L-2104

PERSONNEL: One

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

a. Preliminary Procedures.

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

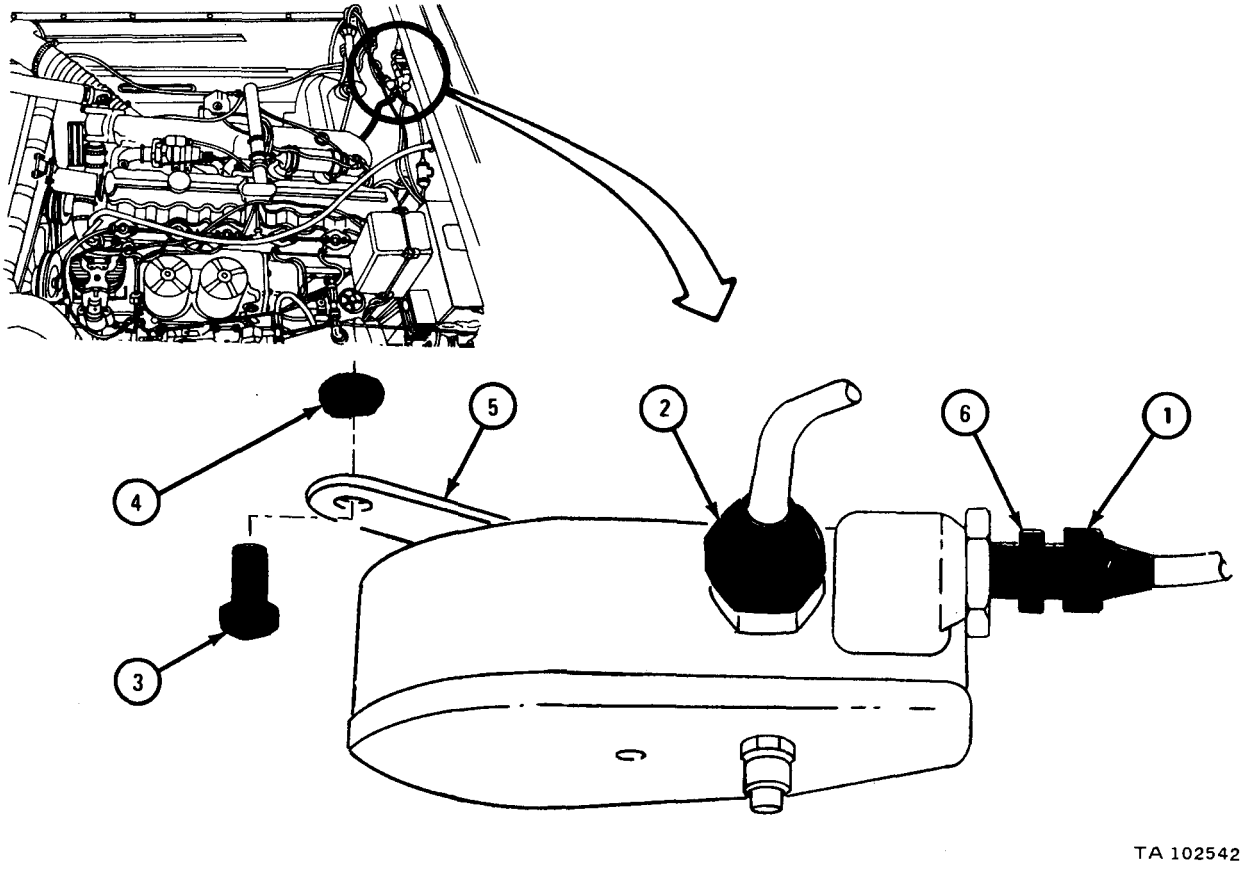
(2) Vent air system. Refer to para 12-18.

b. Removal.

FRAME 1

1. Using 5/8-inch wrench, unscrew and take off tube nut (1).
2. Using 9/16-inch wrench, unscrew and take off tube nut (2).
3. Using ratchet, 7/16-inch socket wrench and 5-inch extension, unscrew two capscrews (3). Take out capscrews (3) and nuts (4).
4. Take out governor assembly (5). Using 9/16-inch wrench, unscrew and take out fitting (6).

END OF TASK



c. Cleaning Filter.

FRAME 1

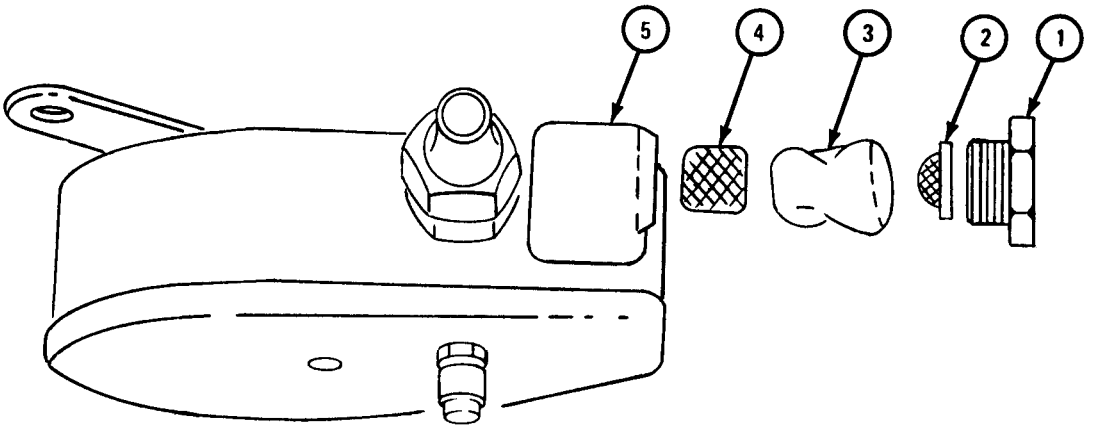
1. Using l-inch wrench, unscrew and take out cap nut (1).
2. Take out cup strainer (2), lambs wool (3), and cylinder strainer (4).

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.

3. Clean lambs wool (3) and strainers (2 and 4) with dry cleaning solvent.
4. Soak lambs wool (3) with lubricating oil and put it inside cylinder strainer (4).
5. Put strainer (4) with lambs wool (3) in body (5).
6. Put cup strainer (2) in body (5). Using l-inch wrench, screw on cap nut (1).

END OF TASK



TA 102543

d. Replacement.

FRAME 1

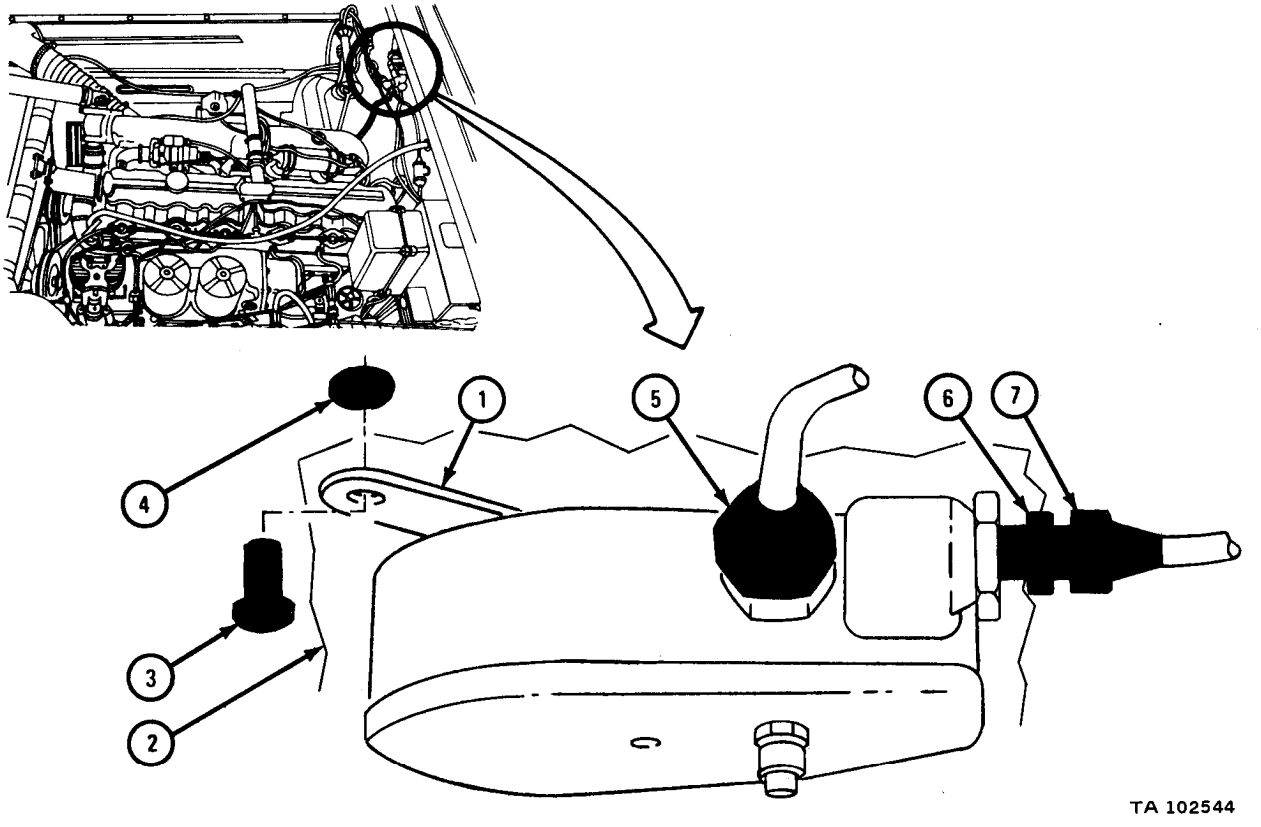
1. Put governor (1) against cowl (2). Put in two capscrews (3). Using ratchet, 5-inch extension, and 7/16-inch socket, screw on and tighten two nuts (4).
2. Using 9/16-inch wrench, screw on and tighten tube nut (5).
3. Using 9/16-inch wrench, screw and tighten fitting (6).
4. Using 5/8-inch wrench, screw on and tighten tube fitting (7).

NOTE

Follow-on Maintenance Action Required:

1. Do air leak test. Refer to para 1-5.
2. Close right side panel and hood. Refer to TM 9-2320-211-10.

END OF TASK



Section VIII. TRAILER BRAKE CONNECTIONS

12-31. HAND CONTROL BRAKE VALVE ASSEMBLY REMOVAL AND REPLACEMENT (TRUCK M52A2).

TOOLS : 3/8-inch socket wrench
5/8-inch wrench

SUPPLIES: None

PERSONNEL: One

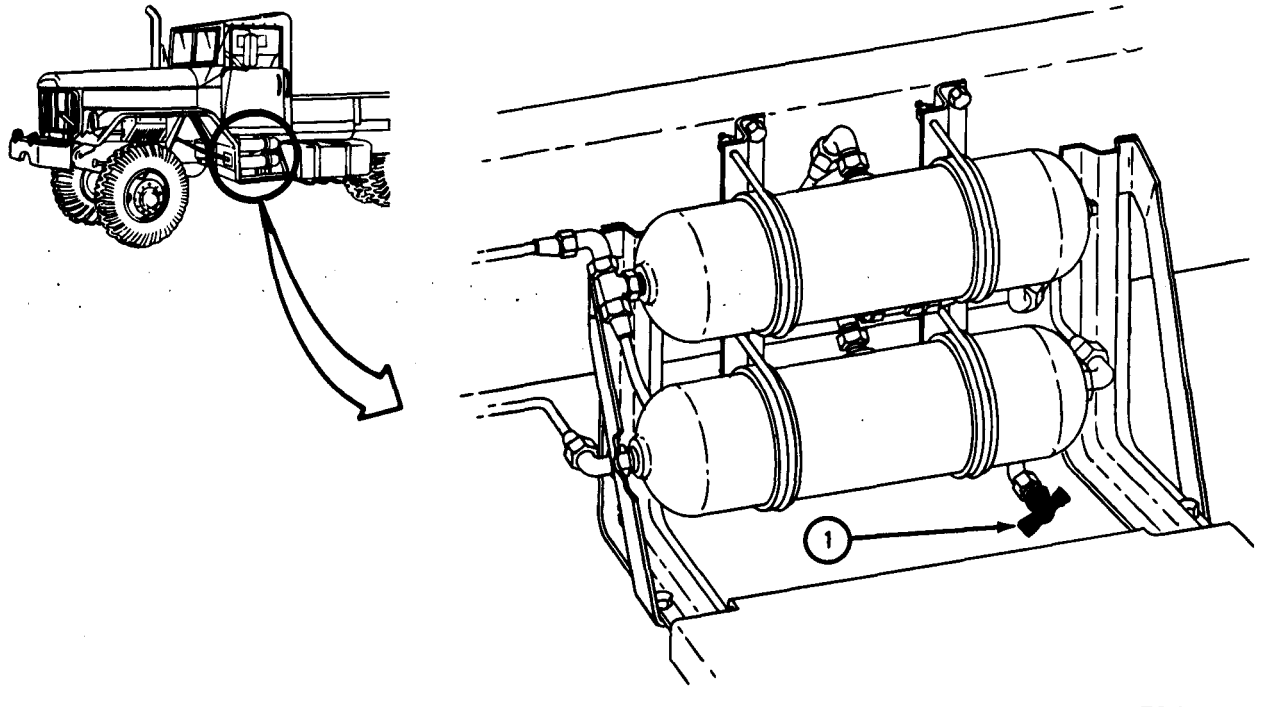
EQUIPMENT CONDITION: Truck parked, engine off, handbrake set.

Removal.

FRAME 1

1. Open drain cock (1) by turning it to the left.

GO TO FRAME 2



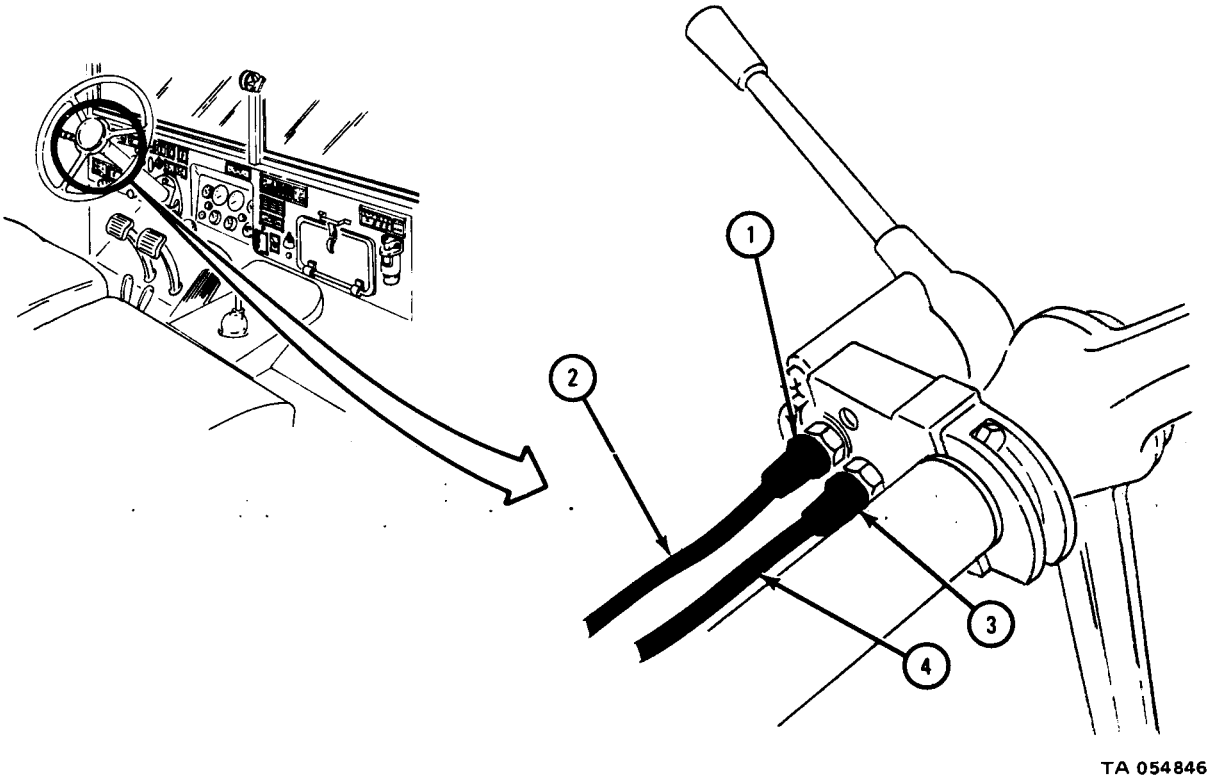
FRAME 2

NOTE

Tag air lines before taking them off so that they will be put back in right place.

1. Using 5/8-inch wrench, unscrew coupling nut (1) and take off air supply line (2).
2. Using 5/8-inch wrench, unscrew coupling nut (3) and take off air return line (4).

GO TO FRAME 3

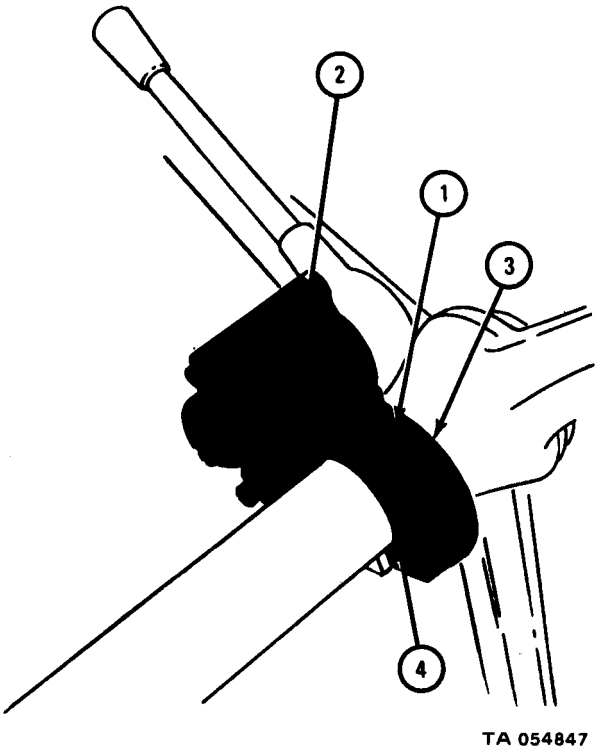


TA 054846

FRAME 3

1. Using 3/8-inch socket wrench, unscrew and takeout two bolts (1).
2. Take off valve (2) and clamp (3).
3. Take off webbing (4).

END OF TASK

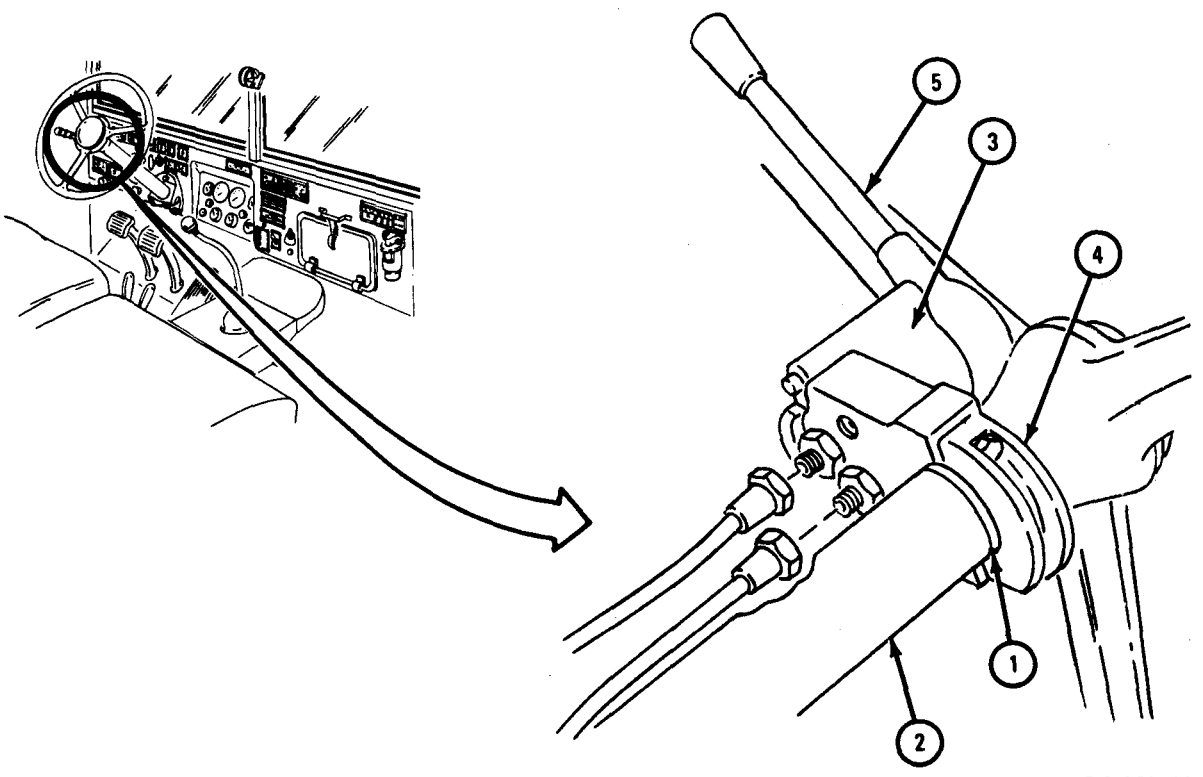


b. Replacement.

FRAME 1

1. Place webbing (1) around steering column (2).
2. Place valve (3) and clamp (4) around webbing (1) with hand control lever (5) on right side of steering column (2).

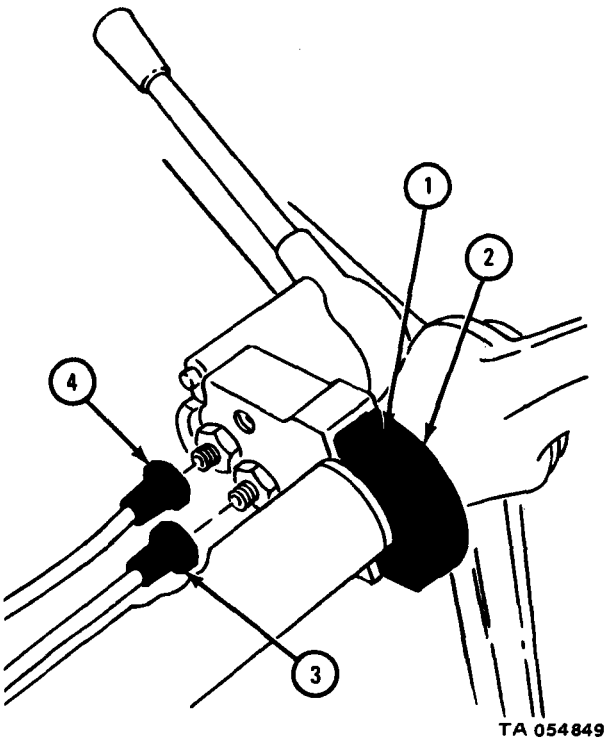
GO TO FRAME 2



FRAME 2

1. Push two bolts (1) through holes in clamp (2).
2* Using 3/8-inch socket wrench, screw in and tighten two bolts (1).
3. Using 5/8-inch wrench, screw on and tighten couplings (3 and 4).

GO TO FRAME 3



FRAME 3

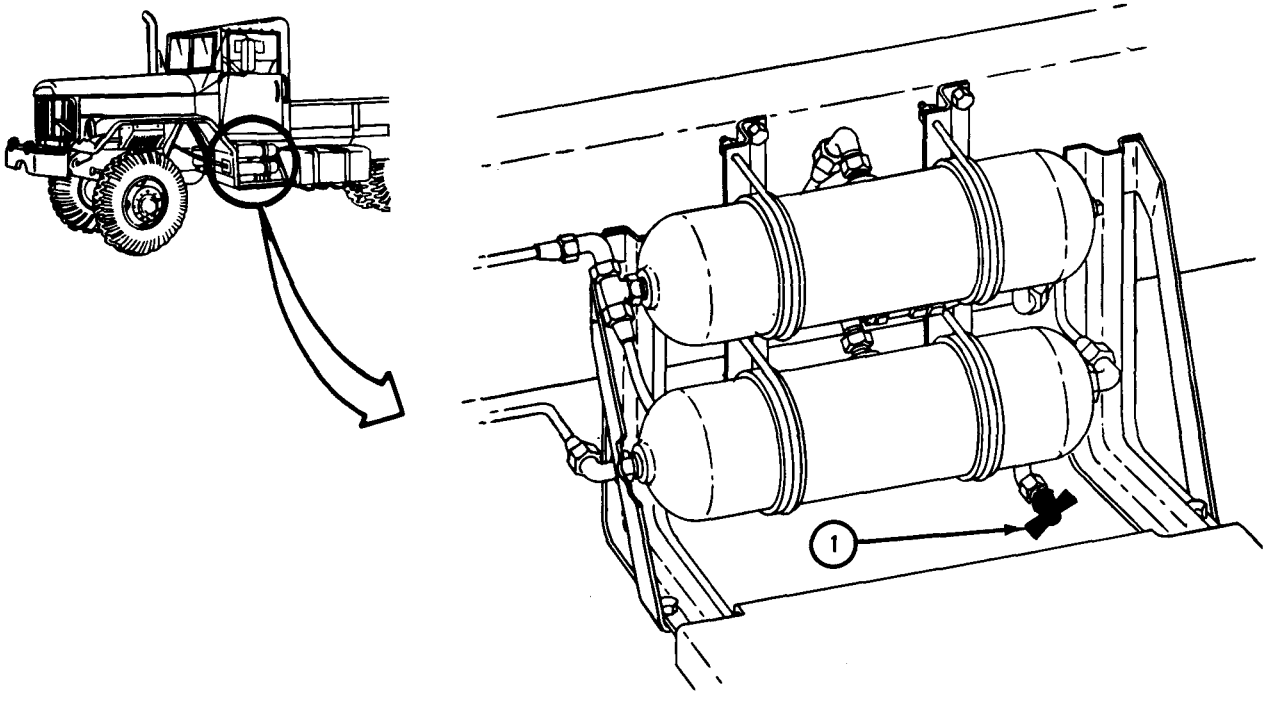
1. Close drain cock (1) by turning it to right.

NOTE

Follow-on Maintenance Action Required:

1. Start engine. Refer to TM 9-2320-211-10.
2. Check air brake system for leaks. Refer to para 1-5.
3. Stop engine. Refer to TM 9-2320-211-10.

END OF TASK



TA 054845

12-32. AIR BRAKE HOSES REMOVAL, REPAIR, AND REPLACEMENT.

TOOLS: 7/16-inch wrench (2)
1 l/16-inch open end wrench
l-inch open end wrench
10-inch adjustable wrench
Hacksaw
6-inch steel ruler

SUPPLIES: None

PERSONNEL: One

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

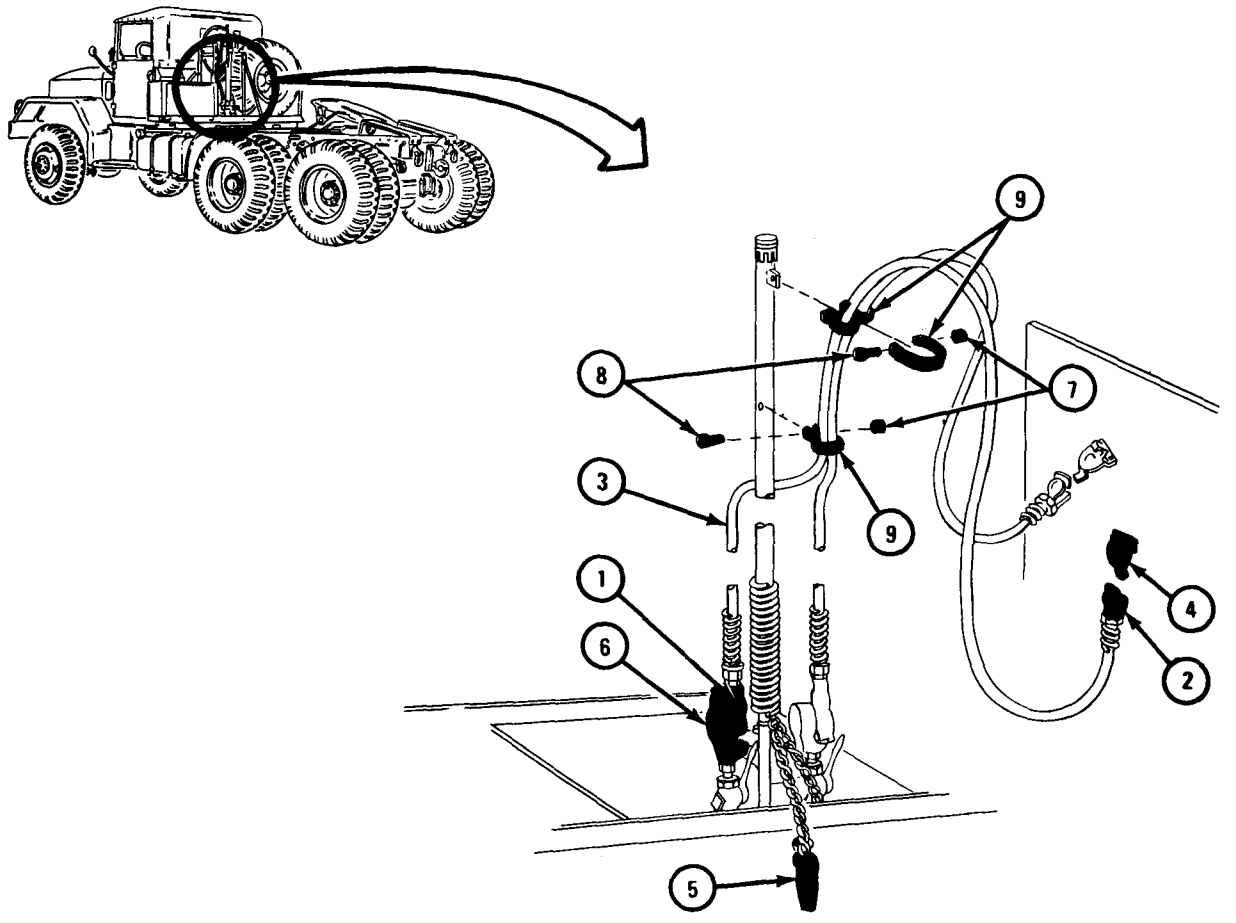
a. Preliminary Procedure. Vent compressed air system. Refer to para 12-18.

b. Removal.

FRAME 1

1. Turn down and unlatch air brake hose coupling (1).
2. Unlatch coupling (2) on other end of air brake hose (3) from its mounting bracket (4).
3. Latch dummy coupling (5) to tractor coupling (6).
4. Using 7/16-inch wrenches, unscrew and take off two nuts (7). Take out two bolts (8).
5. Take off four clamps (9). Take out air brake hose (3).

END OF TASK



c. Repair.

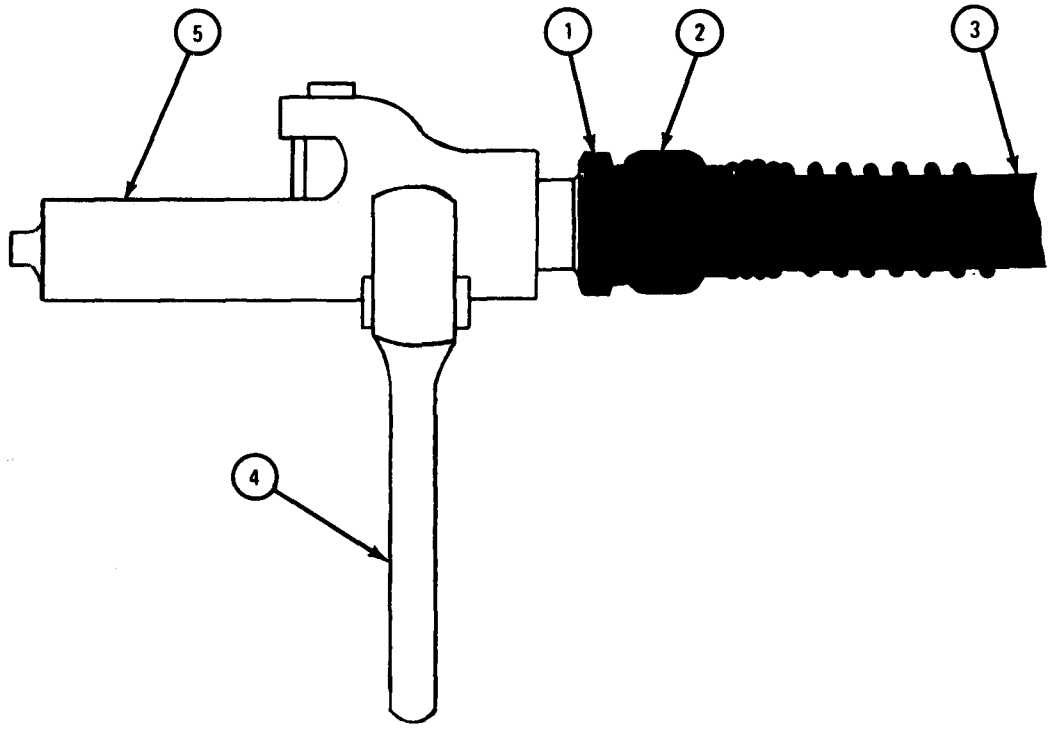
NOTE

Repair of air brake hose is limited to replacement of adapters and pipe to hose. This procedure is for both ends of hose.

FRAME 1

1. Using l-inch wrench, hold coupling (1). Using 1 1/16-inch wrench, unscrew coupling nut (2). Take off coupling nut and hose (3).
2. Using adjustable wrench (4), hold quick disconnect coupling (5). Using l-inch wrench, unscrew and take off coupling (1).

GO TO FRAME 2



TA 045971

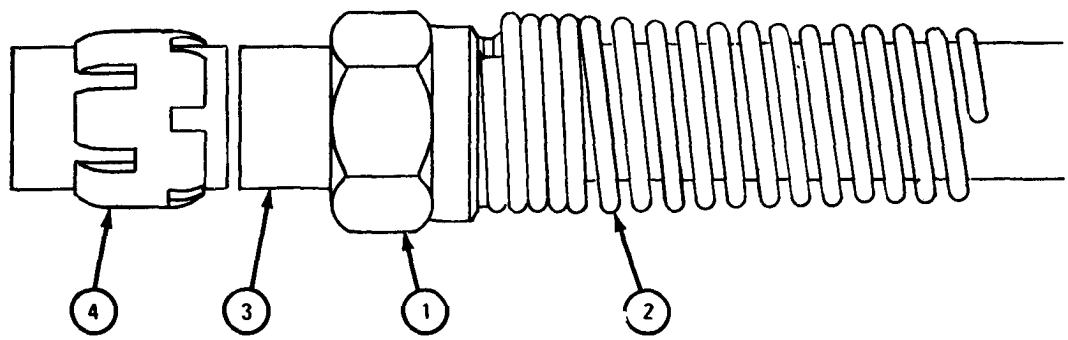
FRAME 2

1. Slide coupling nut (1) with spring (2) back on hose (3) so sleeve (4) is uncovered.

2. Using hacksaw, saw off end of hose (3) just behind sleeve (4). Throw away sleeve with piece of hose.

3. Take coupling nut (1) with spring (2) off of hose (3) and throw away nut and spring.

GO TO FRAME 3

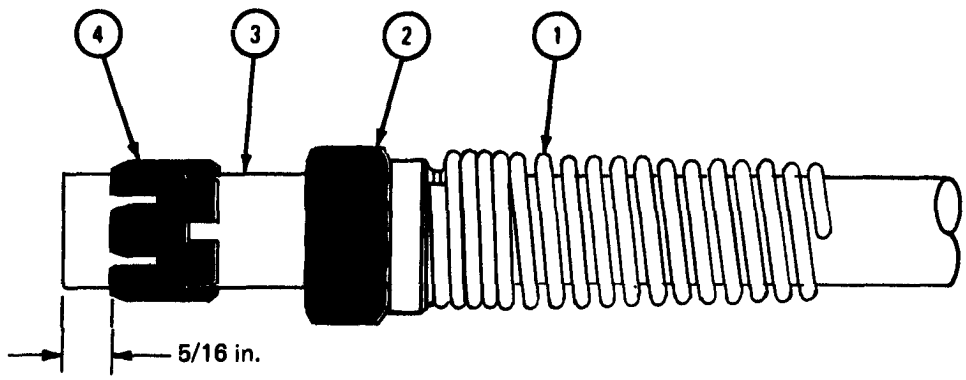


TA 046375

FRAME 3

1. Screw spring (1) on coupling nut (2). Put spring and coupling nut on hose (3) with coupling nut to end of hose being worked on.
2. Check sleeve (4). One end has more chamfer on outside. Hold sleeve (4) so end with more chamfer is to end of hose (3) being worked on.
3. Screw sleeve (4) on hose (3) so sleeve is 5/16-inch up from end of hose. Measure with ruler.

GO TO FRAME 4

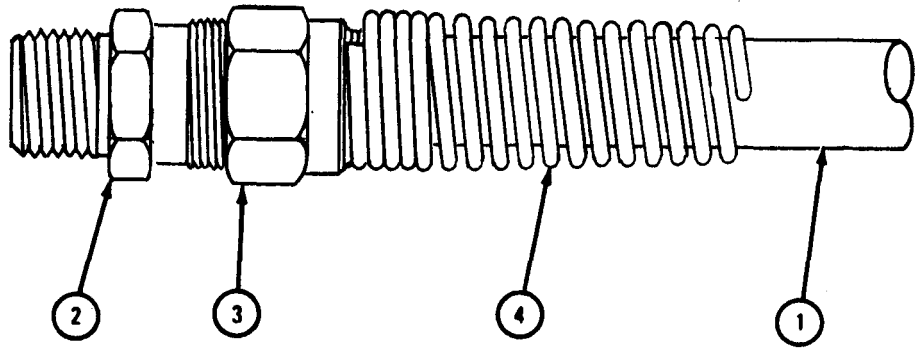


TA 046376

FRAME 4

1. Put hose (1) on adapter (2). Make sure that hose goes all the way into adapter.
2. Push coupling nut (3) with spring (4) down to adapter (2). Make sure hose (1) has not worked back out of adapter.
3. Using l-inch wrench, hold adapter (2). Using 1 l/16-inch wrench, screw on coupling nut (3).

GO TO FRAME 5

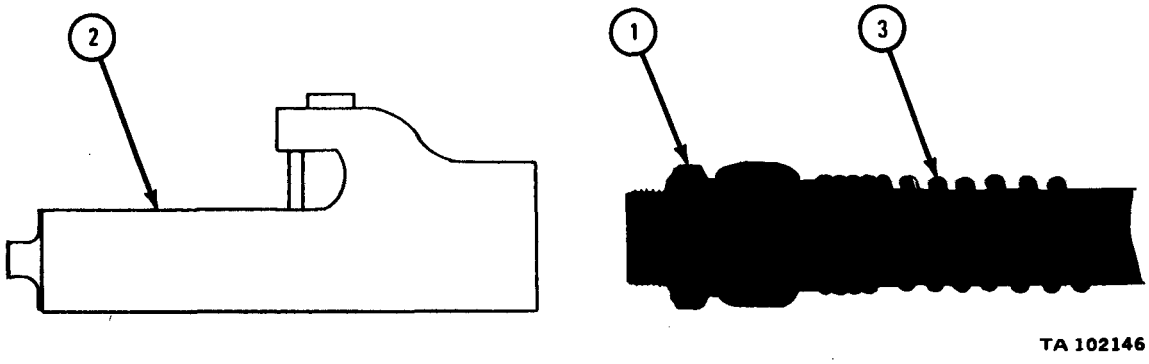


TA 046377

FRAME 5

1. Using 1-inch wrench, hold adapter (1), and using 1 1/16-inch wrench, screw on and tighten coupling (2).
2. Using compressed air, blow through hose (3) to clean out any chips or dirt.

END OF TASK



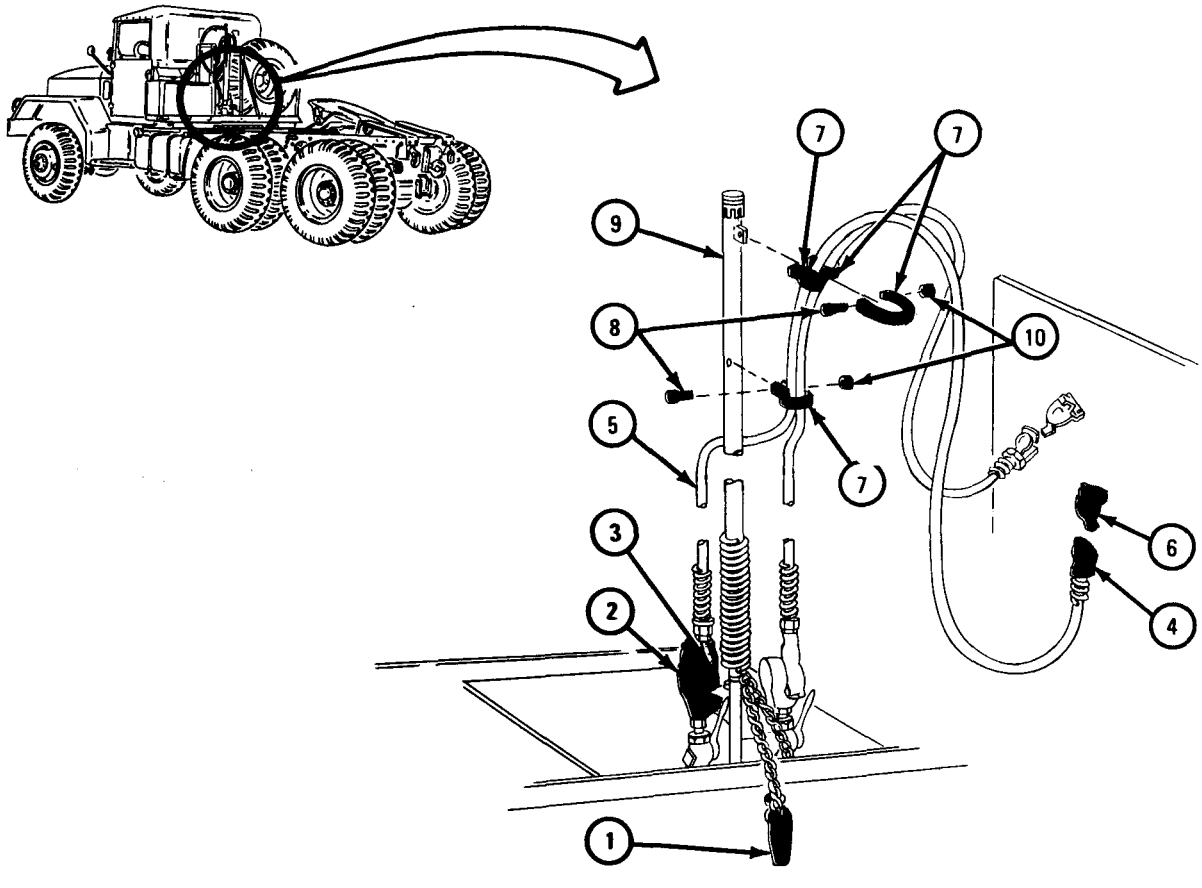
TA 102146

d. Replacement.

FRAME 1

1. Unlatch and take out dummy coupling (1) from tractor coupling (2).
2. Latch air brake hose coupling (3) to tractor coupling (2).
3. Latch coupling (4) on other end of air brake hose (5) to mounting bracket (6).
4. Put four clamps (7) in place as shown.
5. Put two bolts (8) through four clamps (7) and mast (9).
6. Using 7/16-inch wrenches, screw on and tighten two nuts (10).

END OF TASK



By Order of the Secretaries of the Army and the Air Force:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

LEW ALLEN, JR., General, USAF
Chief of Staff

Official:

VAN L. CRAWFORD, JR., Colonel, USAF
Director of Administration

Distribution:

To be distributed in accordance with DA Form 12-38, Organizational Maintenance requirements for 5-Ton Truck Chassis: 5-Ton, 6x6, M39A2.

*U.S. GOVERNMENT PRINTING OFFICE: 1981-750-002/1020

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN. . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
CDR, 1st Bn, 65th ADA
Attn: SP4 Jane Idone
Key West, FL 33040

DATE SENT: Date sent in

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320-211-20-3-1	10 Dec 1980	ORGANIZATIONAL MAINTENANCE MANUAL

BE EXACT. . . PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO
3-8	3-4		
7-153	7-24		
12-141	12-22 b		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Subparagraph a refers to para 1-75. Should refer to para 17-5.

FRAME 8
Change illustration callouts.
Reason: callouts for screw (2) and screw (3) are reversed.

FRAME 2, step 1 reads "Using 3/8-inch socket wrench, unscrew and take out bolt (1)." Should read "Using 3/8-inch socket wrench, unscrew and take out two bolts (1)."

SAMPLE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER
SP4 Jane Idone Autovon 222-2224

SIGN HERE
Jane Idone

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

FILL IN YOUR UNIT'S ADDRESS

FOLD

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $.

SAMPLE

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN. . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320-211-20-3-1	10 Dec 1980	ORGANIZATIONAL MAINTENANCE MANUAL

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 **2028-2**

PREVIOUS EDITIONS ARE OBSOLETE.

P.S. --IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320-211-20-3-1	10 DEC 1980	ORGANIZATIONAL MAINTENANCE MANUAL

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

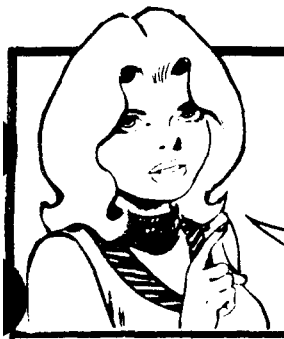
POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320-211-20-3-1	10 DEC 1980	ORGANIZATIONAL MAINTENANCE MANUAL

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

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

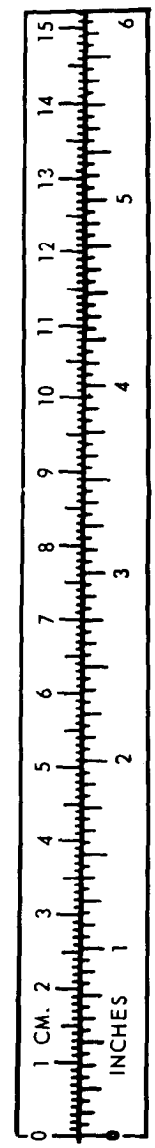
TEMPERATURE

$5/9\ (^0F - 32) = {}^0C$
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



TA089991

PIN: 048319-001

This fine document...

Was brought to you by me:



Liberated Manuals -- free army and government manuals

Why do I do it? I am tired of sleazy CD-ROM sellers, who take publicly available information, slap “watermarks” and other junk on it, and sell it. Those masters of search engine manipulation make sure that their sites that sell free information, come up first in search engines. They did not create it... They did not even scan it... Why should they get your money? Why are not letting you give those free manuals to your friends?

I am setting this document FREE. This document was made by the US Government and is NOT protected by Copyright. Feel free to share, republish, sell and so on.

I am not asking you for donations, fees or handouts. If you can, please provide a link to liberatedmanuals.com, so that free manuals come up first in search engines:

<A HREF=http://www.liberatedmanuals.com/>Free Military and Government Manuals</A>

- Sincerely
  Igor Chudov
  http://igor.chudov.com/
- Chicago Machinery Movers