# ARMY TM 9-2320-365-34-2
# AIR FORCE T.O. 36A12-1B-1095-12-2

# TECHNICAL MANUAL
# MAINTENANCE INSTRUCTIONS
# DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE
# M1078 SERIES, 2 1/2-TON, 4 X 4,
# LIGHT MEDIUM TACTICAL VEHICLES (LMTV)

## VOLUME NO. 2 OF 2

| MODEL | NSN | EIC |
|---|---|---|
| TRK, CAR., LMTV, M1078 | | |
| W/WN | 2320-01-360-1898 | BHH |
| W/O WN | 2320-01-354-3385 | BHD |
| TRK, VAN, LMTV, M1079 | | |
| W/WN | 2320-01-360-1891 | BHG |
| W/O WN | 2320-01-354-3384 | BHE |
| TRK, CHAS, LMTV, M1080 | | |
| W/O WN | 2320-01-353-9098 | BHC |
| TRK, CAR., LMTV, AIR DROP, M1081 | | |
| W/WN | 2320-01-360-1899 | BHJ |
| W/O WN | 2320-01-355-3064 | BHF |


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FUEL SYSTEM MAINTENANCE
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**HEADQUARTERS, DEPARTMENTS OF THE ARMY AND THE AIR FORCE**

**17 JUNE 1998**

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**HEADQUARTERS**
**DEPARTMENTS OF THE ARMY**
**AND THE AIR FORCE**

**Washington, D.C., 17 June 1998**

## Direct Support and General Support Maintenance Manual

# M1078 SERIES, 2 1/2-TON, 4 x 4, LIGHT MEDIUM TACTICAL VEHICLES (LMTV)

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| **W/O WN** | **2320-01-355-3064** | **BHF** |

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## HOW TO USE THIS MANUAL

### OVERVIEW

This Technical Manual (TM) is provided to help you maintain the LMTV at the Direct Support (DS) and General Support (GS) Maintenance levels. This volume, Volume 2, contains information which will assist you in the performance of remainder of the DS Maintenance procedures and all of the GS Maintenance procedures on the LMTV. Volume 2 contains the following major sections in order of appearance:

## OVERVIEW (CONT)

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual. Read all **WARNINGS** and **CAUTIONS** before performing any troubleshooting or maintenance procedure.

- **TABLE OF CONTENTS.** Lists the chapters, sections, appendixes, and indexes with page numbers in order of appearance.

- **MAINTENANCE PROCEDURES.** DS and GS Maintenance procedures to assist you in supporting the LMTV. Chapters 13 through 19 are Direct Support Maintenance procedures. General Support Maintenance procedures are contained in chapters 20 through 24. Become familiar with the entire maintenance procedure before beginning any maintenance task.

**DIRECT SUPPORT MAINTENANCE**

- **CHAPTER 13, FRAME MAINTENANCE**

- **CHAPTER 14, SUSPENSION MAINTENANCE**

- **CHAPTER 15, BODY AND CAB MAINTENANCE**

- **CHAPTER 16, 11K SELF-RECOVERY WINCH (SRW) MAINTENANCE**

- **CHAPTER 17, HYDRAULIC SYSTEM MAINTENANCE**

- **CHAPTER 18, KIT MAINTENANCE**

- **CHAPTER 19, ARMAMENT/SIGHTING AND FIRE CONTROL MATERIEL MAINTENANCE**

**GENERAL SUPPORT MAINTENANCE**

- **CHAPTER 20, ENGINE MAINTENANCE**

- **CHAPTER 21, TRANSMISSION MAINTENANCE**

- **CHAPTER 22, POWER TRANSFER AND FINAL DRIVE ASSEMBLY MAINTENANCE**

- **CHAPTER 23, FRONT AXLE MAINTENANCE**

- **CHAPTER 24, REAR AXLE MAINTENANCE**

- **APPENDIX A, REFERENCES.** Lists publications used with the LMTV and reference publications which contain information regarding the equipment.

- **APPENDIX B, TOOLS AND SPECIAL TOOLS LIST.** Lists equipment used in the performance of maintenance.

- **APPENDIX C, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.** Lists expendable and durable items used in the performance of maintenance.

- **APPENDIX D, ILLUSTRATED LIST OF MANUFACTURED ITEMS.** Illustrates and describes items that must be fabricated from bulk materials for repair of the LMTV.

- **APPENDIX E, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.

**GENERAL SUPPORT MAINTENANCE (CONT)**

- **APPENDIX F, MANDATORY REPLACEMENT PARTS.**
- **APPENDIX G, ADDITIONAL AUTHORIZATION LIST (AAL).** Lists additional items you are authorized for the support of the LMTV.
- **APPENDIX H, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.
- **SUBJECT INDEX.** Lists important subjects contained in Volume 2 in alphabetical order and gives the paragraph number where they are located.

## FINDING INFORMATION

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

- **FRONT COVER INDEX.** The front cover index contains a list of the most important topics contained in this volume. It features a black box at the right edge of the cover which corresponds with a black box on the page containing the topic. The topics listed on the front cover are highlighted in the table of contents with a box.
- **TABLE OF CONTENTS.** Lists chapters, sections, appendixes, and indexes with page numbers in order of appearance.
- **CHAPTER INDEXES.** List paragraphs contained in the individual chapters with paragraph and page numbers in order of appearance.
- **SUBJECT INDEX.** Lists all maintenance procedures contained in Volume 2 in alphabetical order and gives the paragraph number where they are located.

## TROUBLESHOOTING

Troubleshooting is contained in Chapter 2 of Volume 1. When a malfunction occurs, look at the symptom index for the vehicle troubleshooting table in Chapter 2. Find the malfunction in the index. Turn to the page number listed for the malfunction in the troubleshooting table. Perform the steps required to correct the malfunction. If you can't find the malfunction, or the malfunction is not corrected, notify your supervisor.

**FOLLOW THESE GUIDELINES WHEN USING THIS MANUAL:**

- Become familiar with the entire maintenance procedure before beginning a maintenance task.
- Read all **WARNINGS** and **CAUTIONS** before performing any procedures.

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# ENGINE MAINTENANCE

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## Section I. INTRODUCTION

### 3-1. INTRODUCTION

This chapter contains maintenance instructions for replacing or repairing Engine and Engine Components at the Direct Support (DS) Maintenance level.

# Section II. MAINTENANCE PROCEDURES

## 3-2. DRESSED ENGINE UNPACKING/PACKING

This task covers:

a. Unpacking

b. Packing.

**INITIAL SETUP**

**Tools and Special Tools**
Tool Kit, Genl Mech (Item 68, Appendix B)
Wrench, Torque, 0-150 lb-in. (Item 79, Appendix B)
Wrench, Torque, 0-175 lb-ft (Item 80, Appendix B)
Sling, Multiple Leg (TM 9-2320-365-20)
Sling, Engine and Transmission, Motor Vehicle (Item 49, Appendix B)
Stand, Engine Transport (Item 59, Appendix B)
Wrench Set, Socket (Item 75, Appendix B)

**Materials/Parts**
Rag, Wiping (Item 59, Appendix C)
Tape, Duct (Item 84, Appendix C)
Desiccant (5) (Item 26, Appendix C)
Lockwasher (41) (Item 104, Appendix F)
Gasket (Item 29, Appendix F)

**Personnel Required**
(2)

**a. Unpacking.**

**WARNING**

**Ensure all pressure is released from engine container. Failure to comply may result in injury to personnel.**

(1) Depress and hold air release button (1) on engine container breather valve (2) until all pressure is released.

**WARNING**

**Engine container cover weighs approximately 130 lbs (59 kgs). Attach a suitable lifting device prior to unpacking. Failure to comply may result in injury to personnel or damage to equipment.**

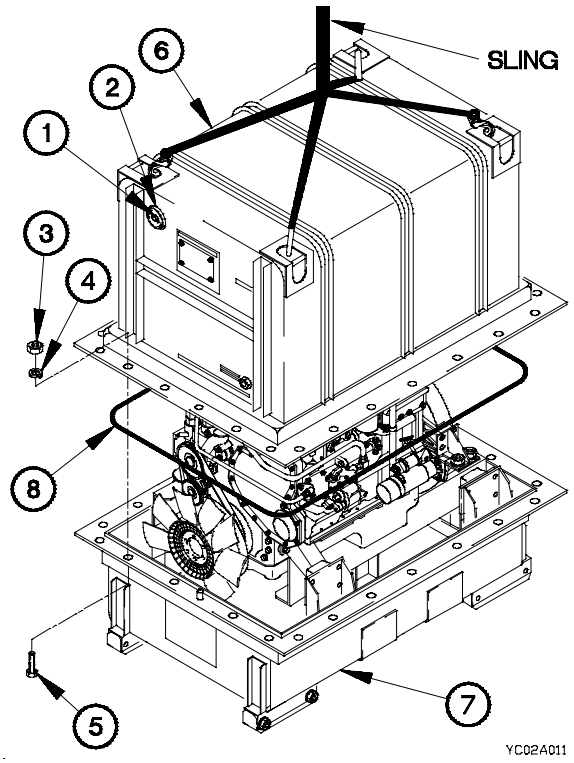
(2) Remove 24 nuts (3), lockwashers (4), and screws (5) from engine container cover (6). Discard lockwashers.

**NOTE**

Step (3) requires the aid of an assistant.

(3) Lift engine container cover (6) from engine container base (7).

(4) Remove gasket (8) from engine container base (7). Discard gasket.



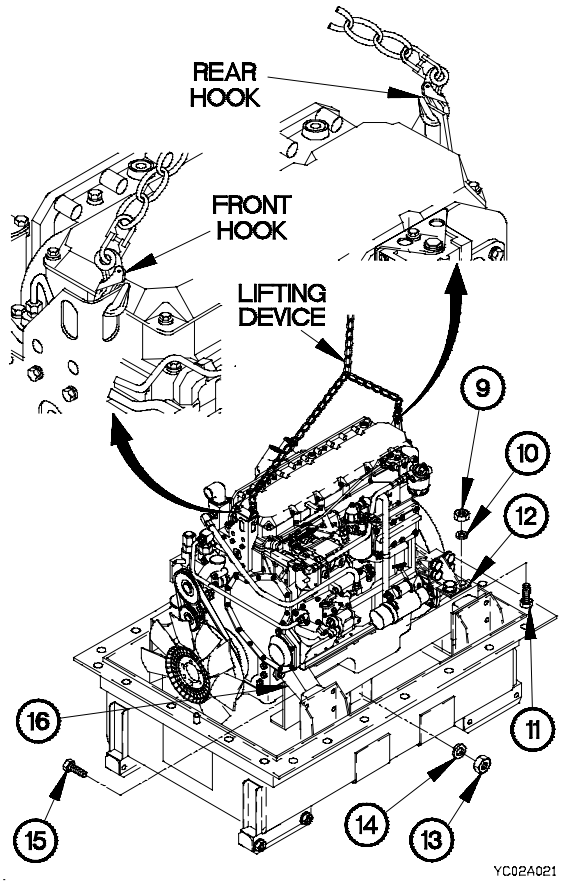
(5) Position rear hook of lifting device inward and front hook in left side lifting hole.

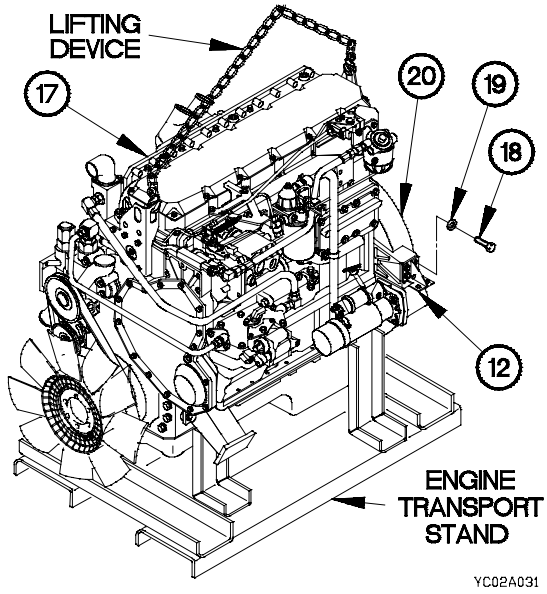
**WARNING**

**Engine assembly weighs approximately 1500 lbs (681 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in serious injury or death to personnel or damage to equipment.**

(6) Remove seven nuts (9), lockwashers (10), and screws (11) from two rear mounting brackets (12). Discard lockwashers.

(7) Remove two nuts (13), lockwashers (14), and screws (15) from front motor mounts (16). Discard lockwashers.




**NOTE**

Step (8) requires the aid of an assistant.

(8) Lift engine (17) and place on engine transport stand.

(9) Remove eight screws (18), lockwashers (19), and two rear mounting brackets (12) from flywheel housing (20). Discard lockwashers.

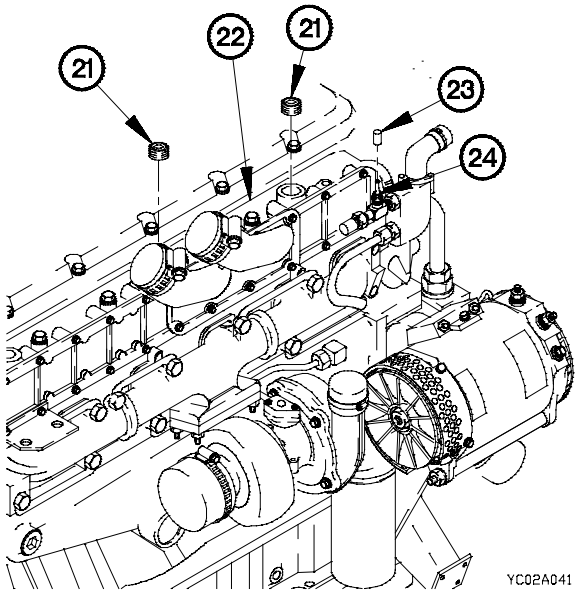
## 3-2. DRESSED ENGINE UNPACKING/PACKING (CONT)

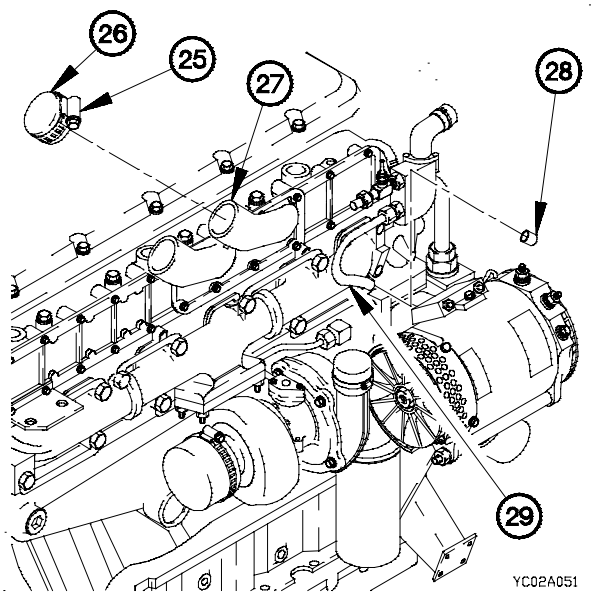
**NOTE**

Plugs, caps, and plastic wrappers will be installed in packing.

(10) Remove two plugs (21) from inlet manifold (22).

(11) Remove dust cap (23) from hose fitting (24).




**CAUTION**

Ensure both air inlet elbow openings are covered with wiping rags after removing dust caps. Failure to comply may result in damage to equipment.

(12) Loosen two clamps (25) on dust caps (26).

(13) Remove two dust caps (26) from air inlet elbows (27).

(14) Remove dust cap (28) from heater supply tube (29).

**CAUTION**

Ensure all turbocharger openings are covered with wiping rags after removing dust caps. Failure to comply may result in damage to equipment.

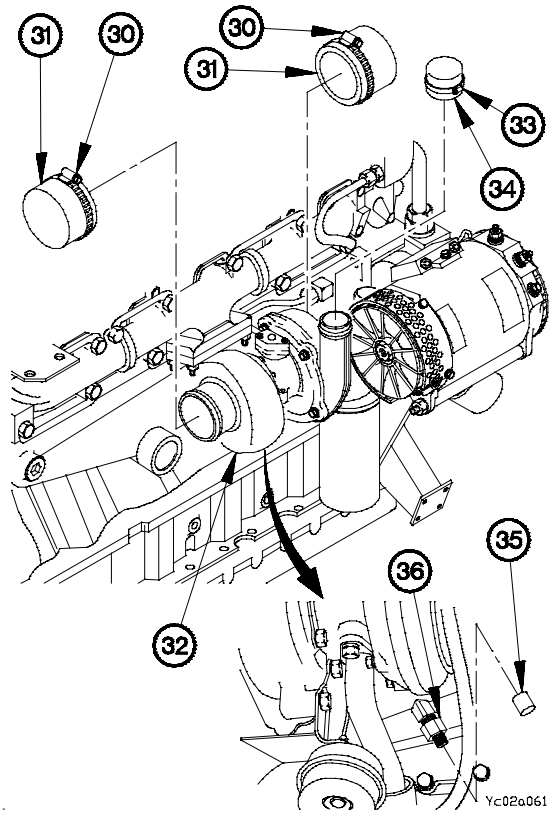
(15) Loosen two clamps (30) on dust caps (31).

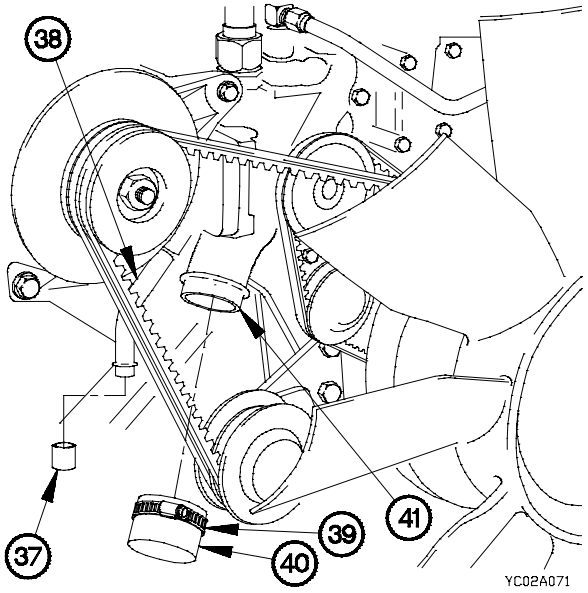
(16) Remove two dust caps (31) from turbocharger (32).

(17) Loosen clamp (33) on dust cap (34).

(18) Remove dust cap (34) from turbocharger (32).

(19) Remove dust cap (35) from oil sampling hose fitting (36).

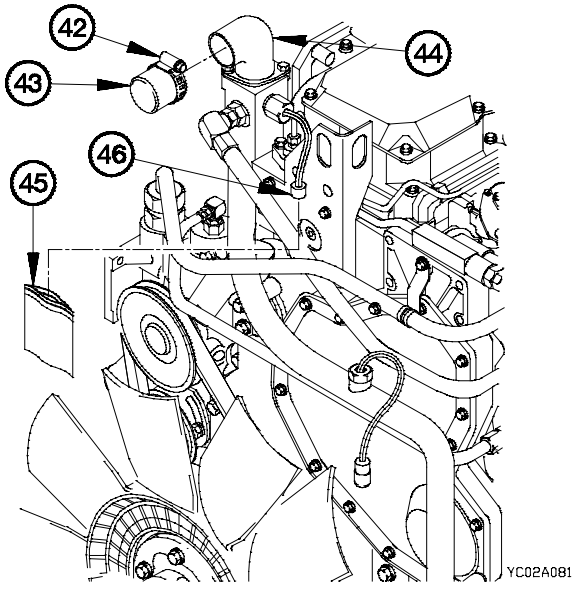



(20) Remove dust cap (37) from heater return tube (38).

(21) Loosen clamp (39) on dust cap (40).

(22) Remove dust cap (40) from water pump (41).




(23) Loosen clamp (42) on dust cap (43).

(24) Remove dust cap (43) from thermostat housing (44).

(25) Remove plastic wrapping (45) from coolant temperature light switch connector (46).

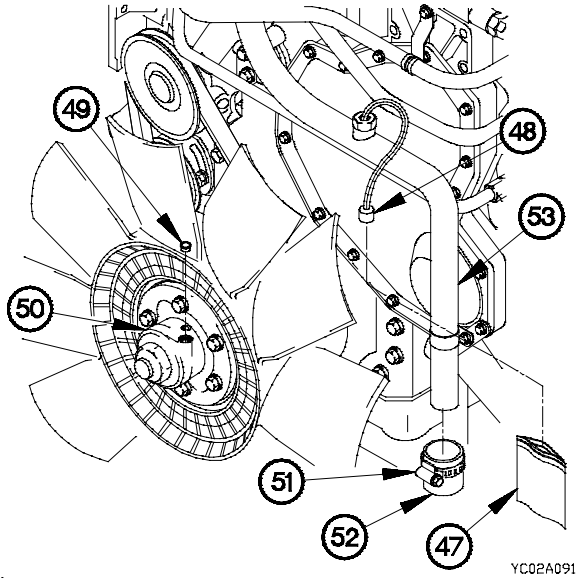
## 3-2. DRESSED ENGINE UNPACKING/PACKING (CONT)

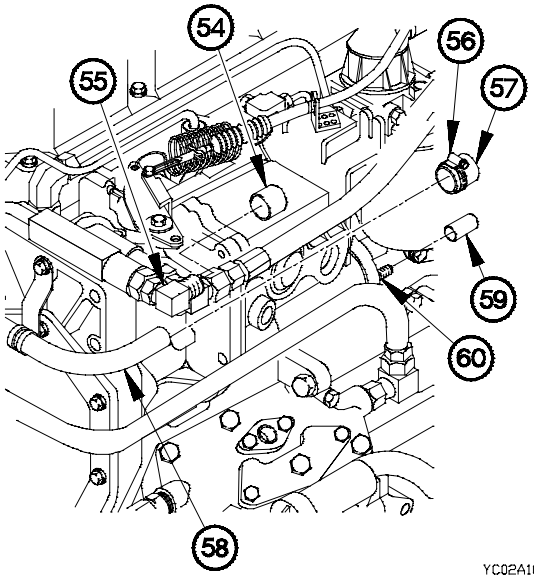
(26) Remove plastic wrapper (47) from ether sensor connector (48).

(27) Remove dust plug (49) from fan impeller clutch (50).

(28) Loosen clamp (51) on dust cap (52).

(29) Remove dust cap (52) from coolant bypass tube (53).




(30) Remove dust cap (54) from 90-degree fitting (55).

(31) Loosen clamp (56) on dust cap (57).

(32) Remove dust cap (57) from coolant overflow tube (58).

(33) Remove two dust caps (59) from fuel shutoff solenoid (60).

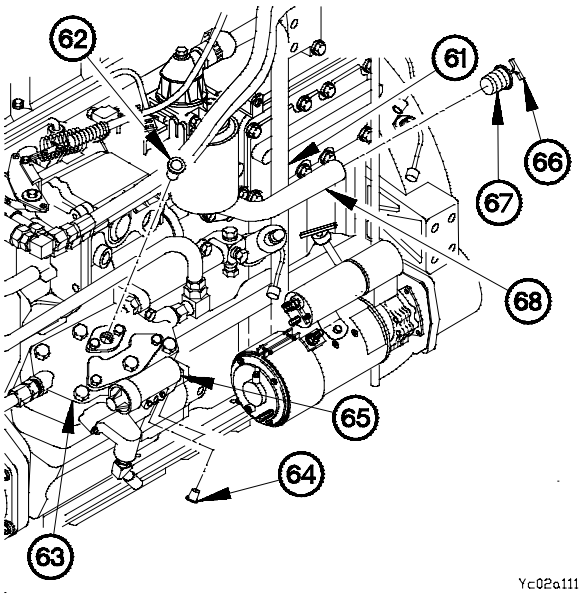
(34) Remove duct tape from crankcase breather hose (61).

(35) Remove dust plug (62) from air compressor (63).

(36) Remove two dust plugs (64) from air compressor governor (65).

(37) Loosen screw (66) in plug (67).

(38) Remove plug (67) from oil fill tube (68).

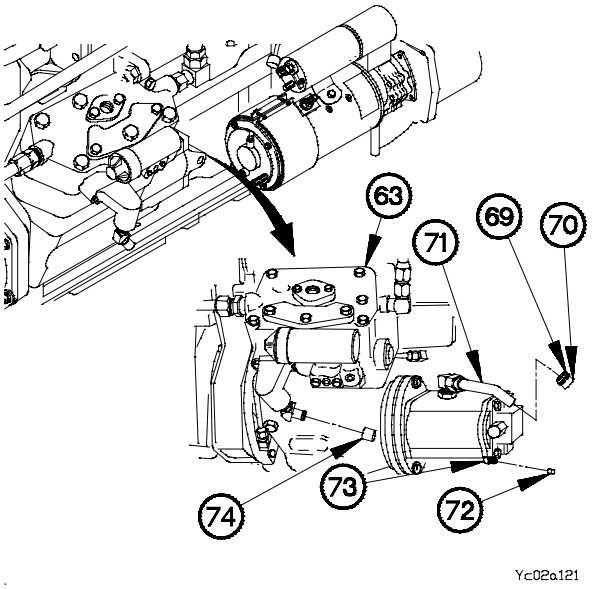


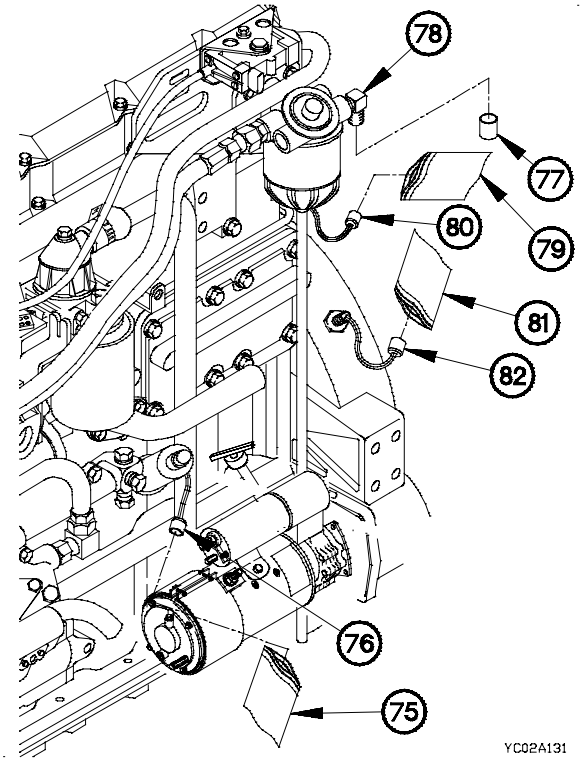
(39) Loosen clamp (69) on dust cap (70).

(40) Remove dust cap (70) from power steering pump supply tube (71).

(41) Remove dust cap (72) from 90-degree fitting (73).

(42) Remove dust cap (74) from air compressor (63).



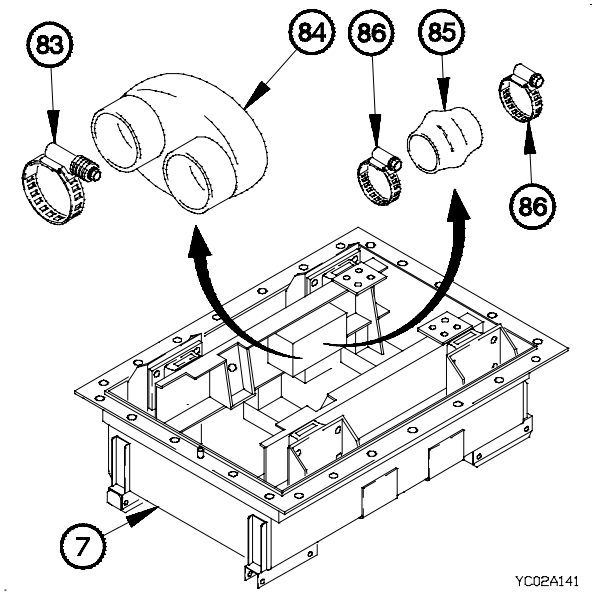

(43) Remove plastic wrapper (75) from oil pressure transducer connector (76).

(44) Remove dust cap (77) from 90-degree fitting (78).

(45) Remove plastic wrapper (79) from fuel/water separator bowl heater connector (80).

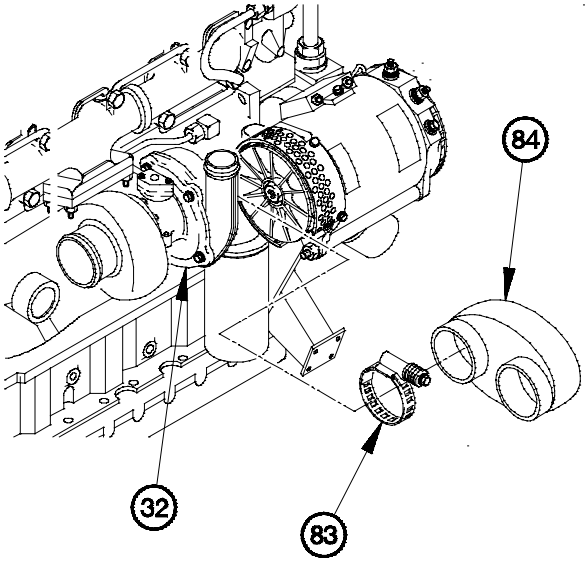
(46) Remove plastic wrapper (81) from engine speed sensor connector (82).

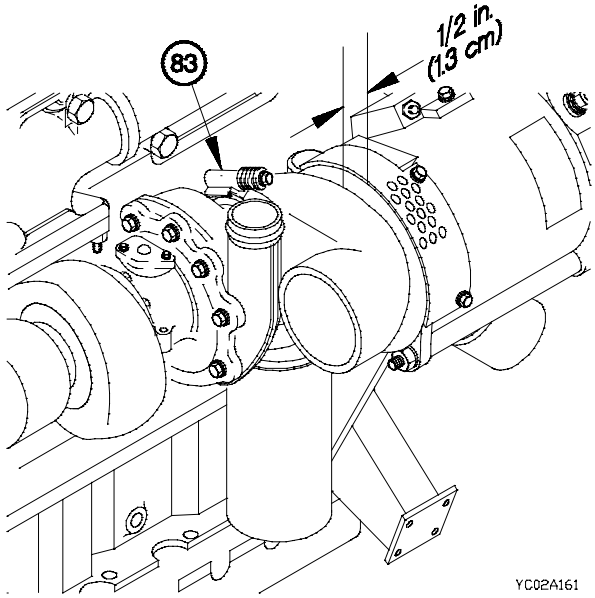
(47) Remove clamp (83), turbocharger inlet coupling (84), hose (85), and two clamps (86) from engine container base (7).



## 3-2. DRESSED ENGINE UNPACKING/PACKING (CONT)

(48) Position turbocharger inlet coupling (84) on turbocharger (32) with clamp (83).




**CAUTION**

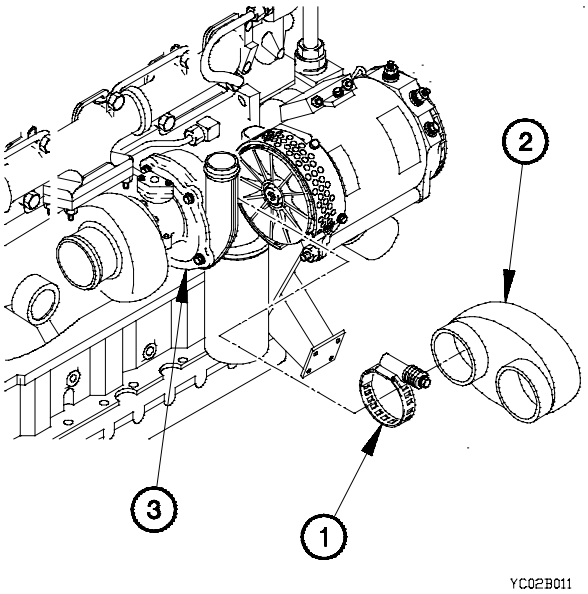
A gap of approximately 1/2 inch (1.3 cm) is required between turbocharger inlet coupling and alternator. Failure to comply may result in damage to equipment.

(49) Tighten clamp (83) to 90-100 lb-in. (10-11 N·m).

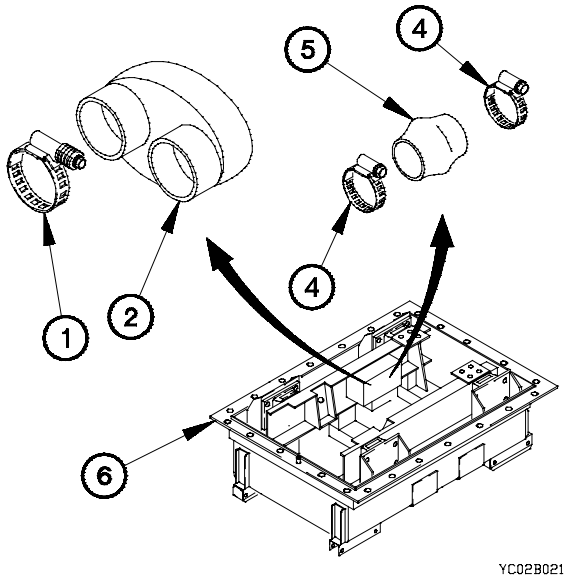
**b. Packing.**

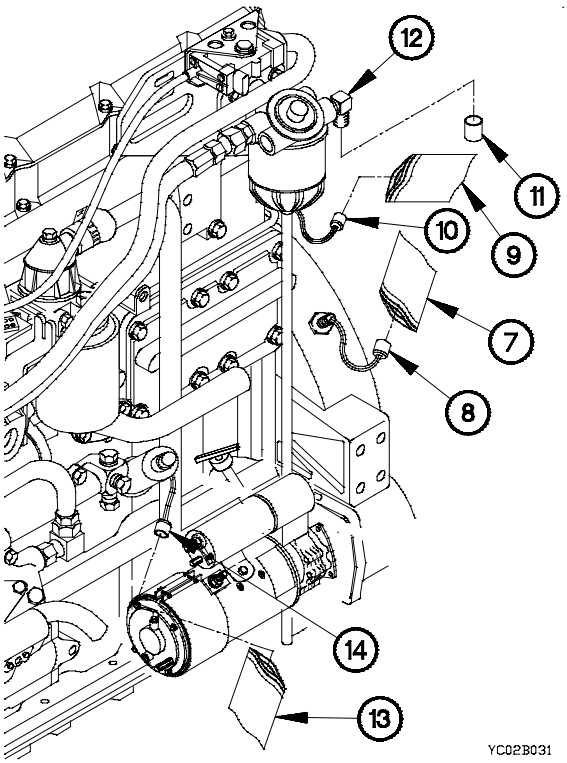
(1) Loosen clamp (1) on turbocharger inlet coupling (2).

(2) Remove turbocharger inlet coupling (2) from turbocharger (3).



(3) Store two clamps (4), hose (5), turbocharger inlet coupling (2), and clamp (1) in engine container base (6).




(4) Install plastic wrapper (7) on engine speed sensor connector (8) with duct tape.

(5) Install plastic wrapper (9) on fuel/water separator bowl heater connector (10) with duct tape.

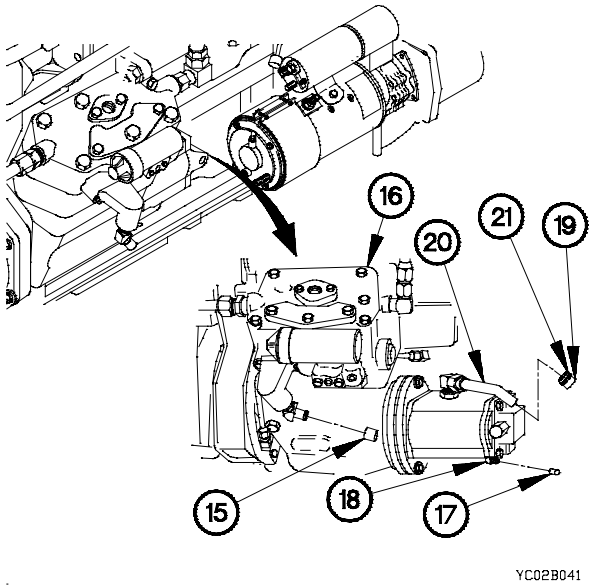
(6) Install dust cap (11) on 90-degree fitting (12).

(7) Install plastic wrapper (13) on oil pressure light switch connector (14) with duct tape.

(8) Install dust cap (15) on air compressor (16).

(9) Install dust cap (17) on 90-degree fitting (18).

(10) Install dust cap (19) on power steering pump supply tube (20) with clamp (21).



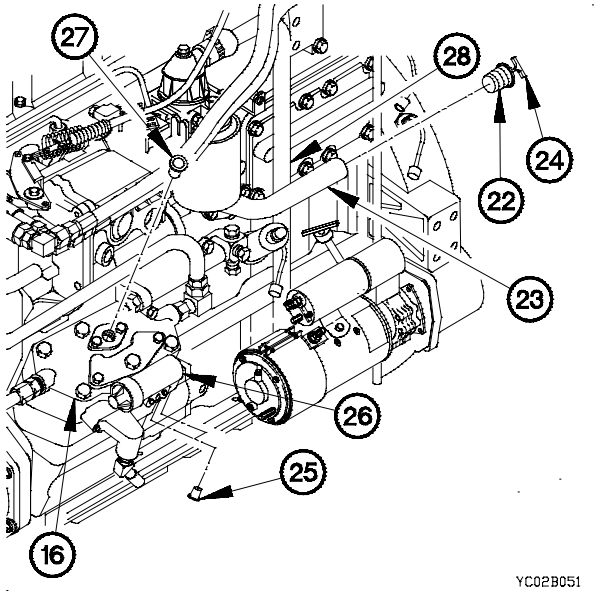
## 3-2. DRESSED ENGINE UNPACKING/PACKING (CONT)

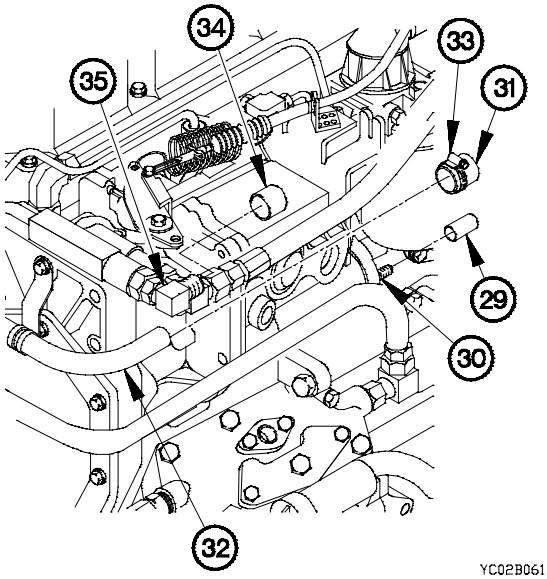
(11) Install plug (22) in oil fill tube (23) with screw (24).

(12) Install two dust plugs (25) in air compressor governor (26).

(13) Install dust plug (27) in air compressor (16).

(14) Cover bottom of crankcase breather tube (28) with duct tape.




(15) Install two dust caps (29) on fuel shutoff solenoid (30).

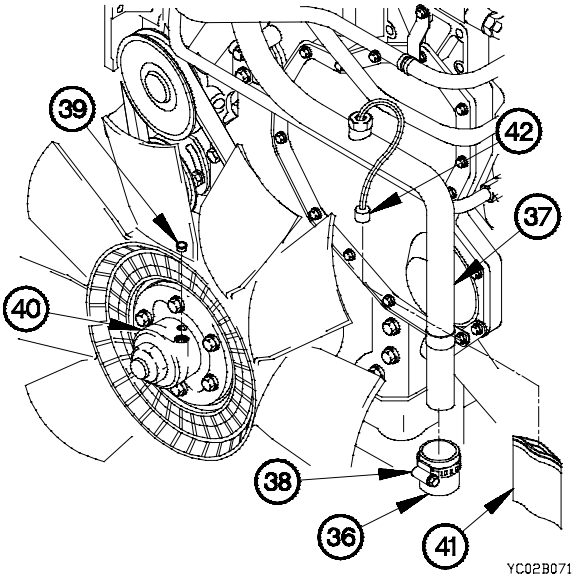
(16) Install dust cap (31) on coolant overflow tube (32) with clamp (33).

(17) Install dust cap (34) on 90-degree fitting (35).

(18) Install dust cap (36) on coolant bypass tube (37) with clamp (38).

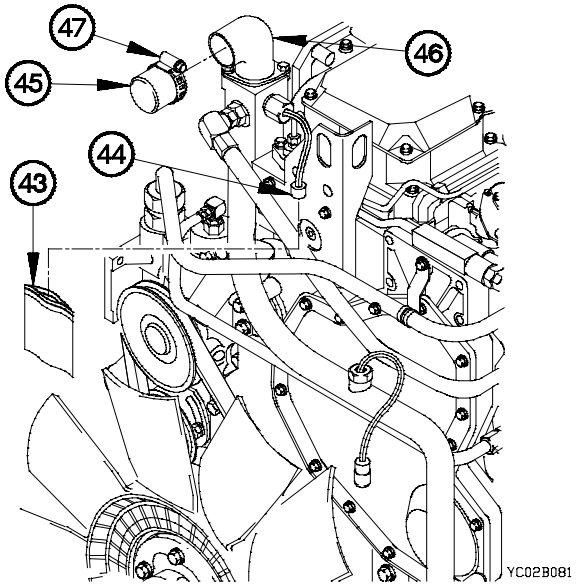
(19) Install dust plug (39) in fan impeller clutch (40).

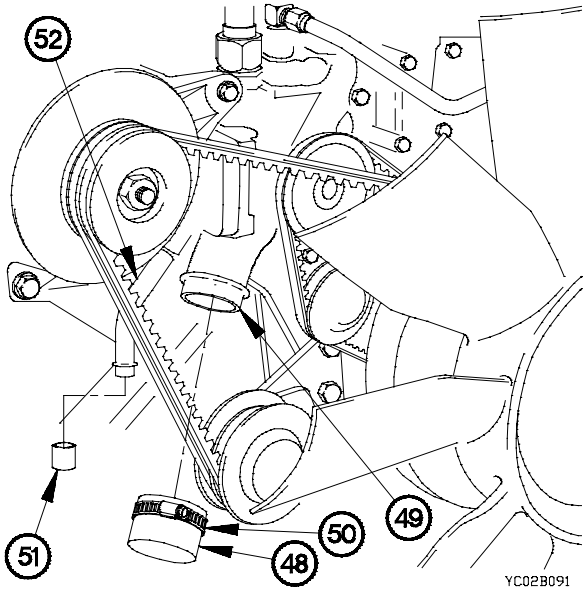
(20) Install plastic wrapper (41) on ether sensor connector (42) with duct tape.



(21) Install plastic wrapper (43) on coolant temperature light switch connector (44).

(22) Install dust cap (45) on thermostat housing (46) with clamp (47) with duct tape.



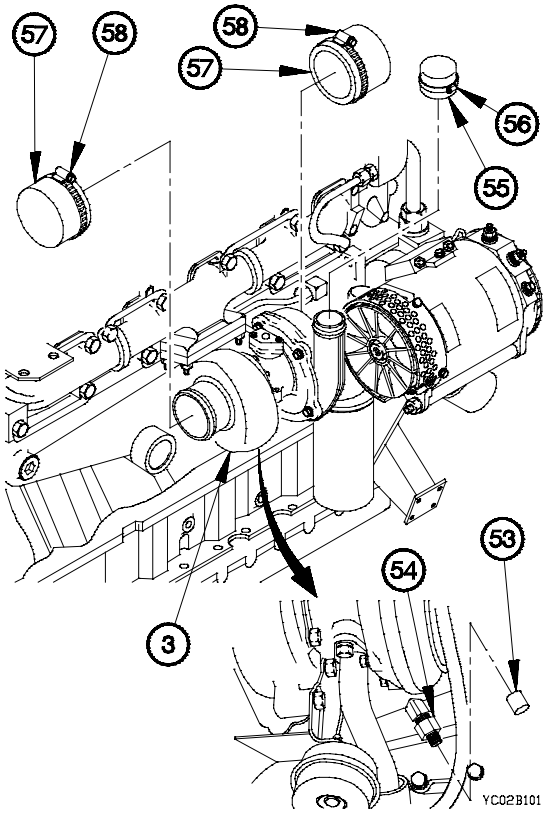

(23) Install dust cap (48) on water pump (49) with clamp (50).

(24) Install dust cap (51) on heater return tube (52).

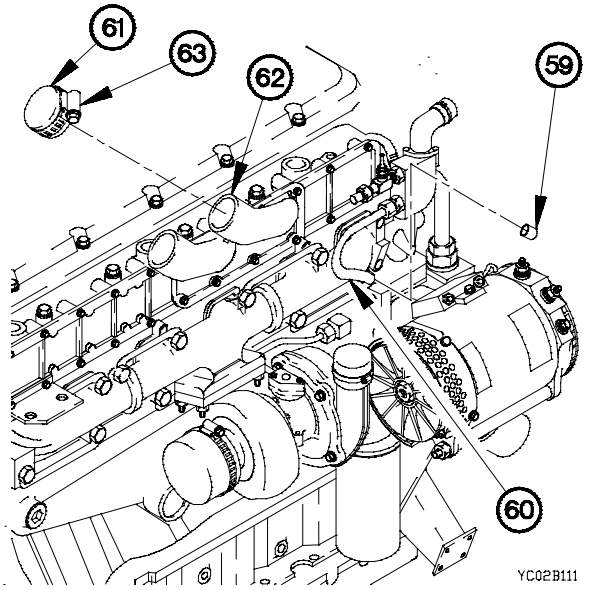
(25) Install dust cap (53) on oil sampling hose fitting (54).

(26) Install dust cap (55) on turbocharger (3) with clamp (56).

(27) Install two dust caps (57) on turbocharger (3) with two clamps (58).

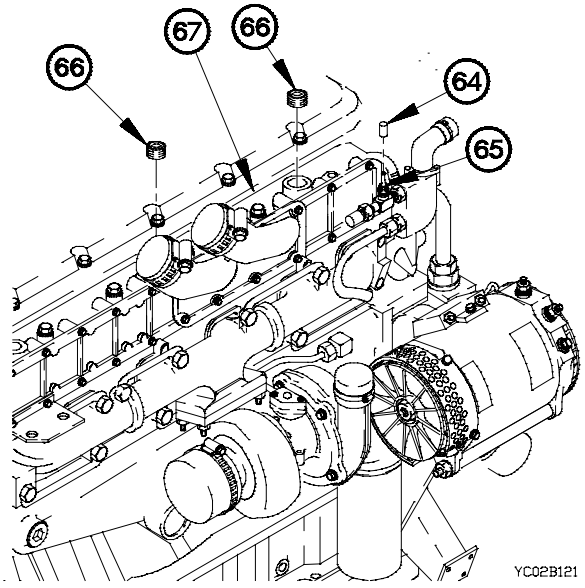


## 3-2. DRESSED ENGINE UNPACKING/PACKING (CONT)




(28) Install dust cap (59) on heater supply tube (60).

(29) Install two dust caps (61) on air inlet elbows (62) with clamps (63).




(30) Install dust cap (64) on hose fitting (65).

(31) Install two plugs (66) in inlet manifold (67).

**NOTE**

Steps (32) through (36) require the aid of an assistant.

(32) Position two rear mounting brackets (68) on flywheel housing (69) with eight lockwashers (70) and screws (71).