

3-78. FAN DRIVE AND FAN BLADE MAINTENANCE

This task covers:

- | | |
|--|------------------------|
| <p>a. Removal</p> <p>b. Inspection</p> | <p>c. Installation</p> |
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INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)

Special Tools

Hex head driver, 8 mm
(Appendix B, Item 156)

Materials/Parts

Four lockwashers (Appendix G, Item 133)
Sealing compound (Appendix C, Item 43)

Manual References

TM 9-2320-280-10
TM 9-2320-280-24P

Equipment Condition

- Hood raised and secured (TM 9-2320-280-10).
- Radiator and shroud removed (optional) (para. 3-61).

a. Removal

1. Disconnect fan drive hose (9) from fan drive (10).

NOTE

- Mark position of fan blade for installation.
 - It may be necessary to apply compressed air to clutch adapter. This disengages fan drive clutch to allow access to socket head screws.
 - The fan drive hose may be modified to add a quick-disconnect at commander's discretion. Refer to appendix D, Fig. D-94 for installation.
2. Using hex head driver, remove four socket-head screws (1) and fan drive assembly (3) from water pump pulley (2).
 3. Remove four nuts (5), lockwashers (6) and fan blade (7) from fan drive (8). Discard lockwashers (6).

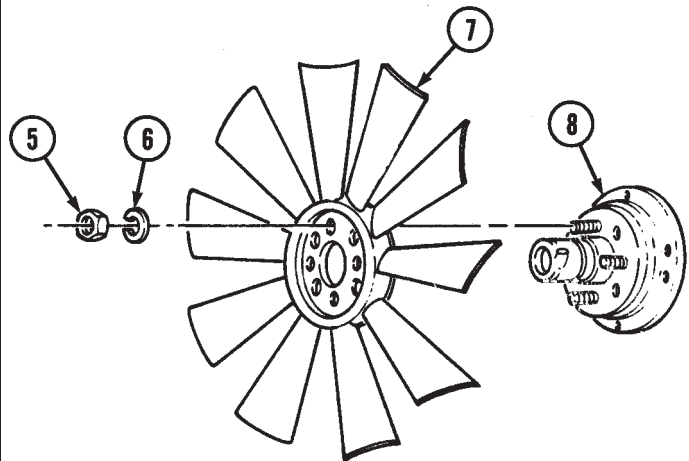
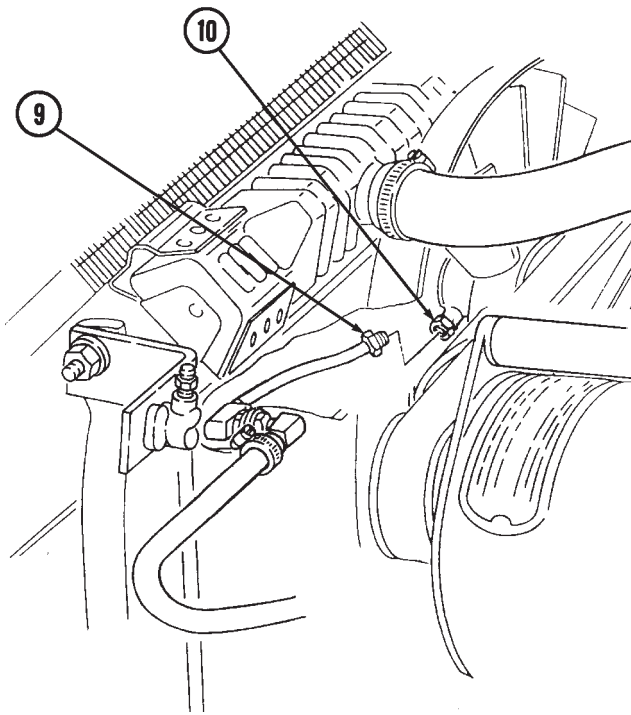
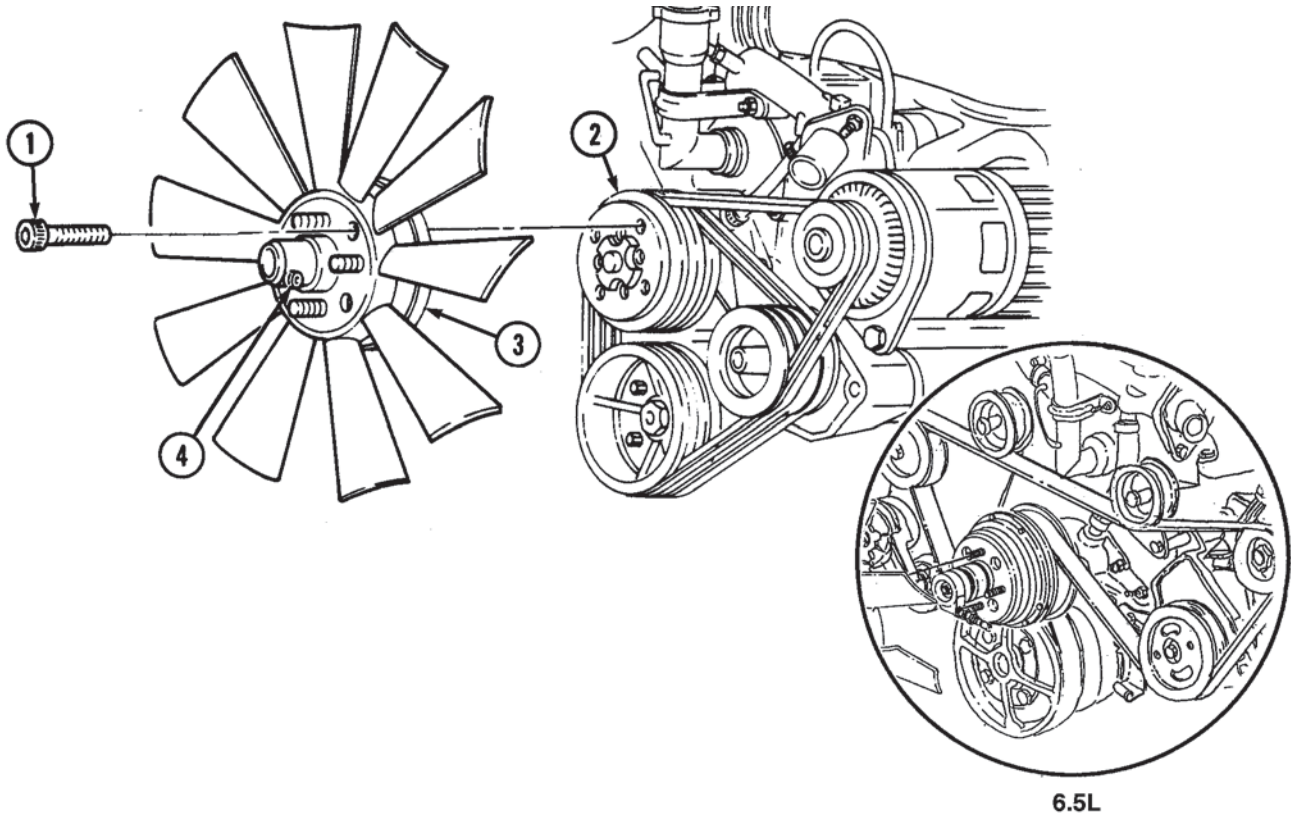
b. Inspection

Inspect clutch adapter (4) and fan blade (7) for damaged threads, cracks, bent blades, or breaks. Replace if defective.

c. Installation

1. Align fan blade (7) onto fan drive (8) with four lockwashers (6) and nuts (5). Tighten nuts (5) to 26 lb-ft (35 N•m).
2. Apply sealing compound to four socket-head screws (1) and install fan drive assembly (3) to water pump (2). Tighten socket-head screws (1) to 45 lb-ft (61 N•m).
3. Connect fan drive hose (9) to fan drive (10).

3-78. FAN DRIVE AND FAN BLADE MAINTENANCE (Cont'd)



- FOLLOW-ON TASKS:**
- Install radiator and shroud (if removed) (para. 3-61).
 - Bleed power steering system (para. 8-29) (if radiator and shroud were not removed).
 - Lower and secure hood (TM 9-2320-280-10).

3-79. FAN DRIVE FRICTION LINING REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)

Manual References

TM 9-2320-280-24P

Equipment Condition

Disconnect battery ground cable (para. 4-73).

a. Removal

WARNING

Prior to loosening screws on fan drive retaining plates, disconnect fan drive hose from fan drive. Failure to do so may result in injury to personnel or damage to equipment.

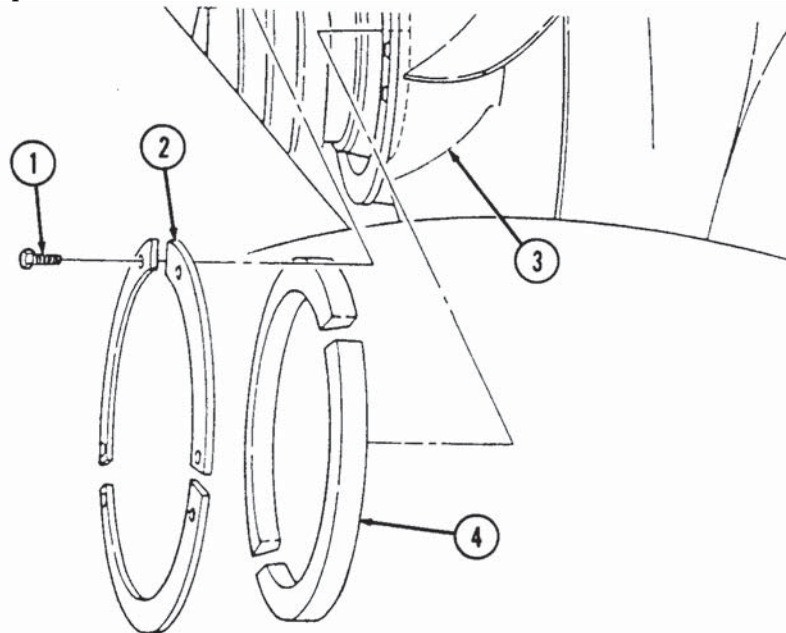
NOTE

- It maybe necessary to apply compressed air to clutch adapter. This disengages fan drive clutch to allow access to friction lining screws.
- The fan drive hose may be modified to add the quick-disconnect. Refer to Appendix D, Fig. D-94 for installation.

1. Remove six screws (1) and three retaining plates (2) from fan drive (3).
2. Remove friction lining (4) from fan drive (3).

b. Installation

1. Install friction lining (4) on fan drive (3).
2. Install three retaining plates (2) on on drive (3) with six screws (1). Tighten screws 1 to 22 lb-in. (2.5 N•m).



FOLLOW ON TASK: Connect battery ground cable (para. 4-73).

3-80. POWER STEERING DRIVEBELT SET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Applicable Models

All vehicles except: M997A2, M1025A2, M1035A2, M1043A2, M1045A2, M1097A2, M1123

Manual References

TM 9-2320-280-24P

Equipment Condition

Alternator drivebelts removed (para. 3-81).

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)

NOTE

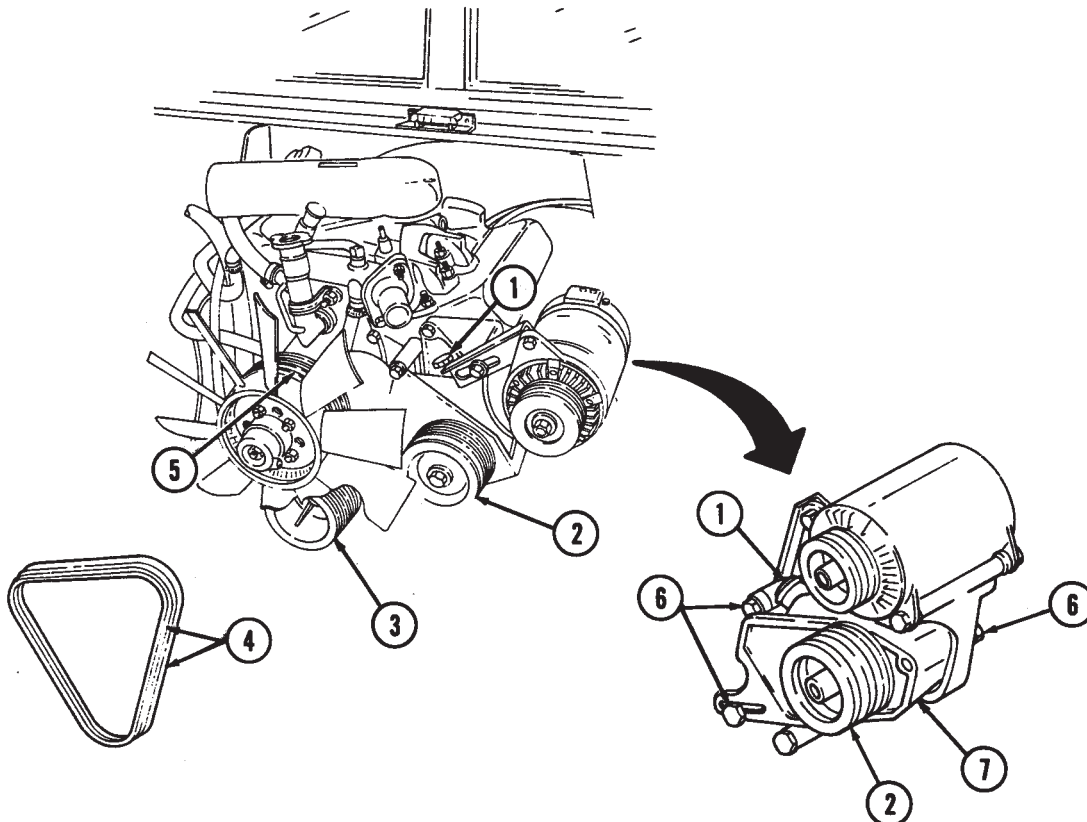
Replace power steering drivebelts in matched sets only.

a. Removal

1. Loosen three capscrews (6) from power steering pump mounting bracket (7) and support brackets.
2. Push power steering pump (1) towards engine and remove drivebelts (4) from power steering pump pulley (2), water pump pulley (5) and crankshaft pulley (3).

b. Installation

Feed belt set (4) into grooves on crankshaft pulley (3), water pump pulley (5), and power steering pump pulley (2).



FOLLOW-ON TASK: Install alternator drivebelts (para. 3-81).

3-81. ALTERNATOR DRIVEBELT SET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Applicable Models

All vehicles except: M997A2, M1025A2, M1035A2, M1043A2, M1045A2, M1097A2, M1123

Manual References

TM 9-2320-280-10
TM 9-2320-280-24P

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)

Equipment Condition

- Hood raised and secured (TM 9-2320-280-10).
- Battery ground cable disconnected (para. 4-73).

NOTE

Replace alternator drivebelts in matched sets only.

a. Removal

1. Loosen two capscrews (8) securing alternator (2) to bottom mounting bracket (9).
2. Loosen adjusting bracket capscrew (1) and push alternator (2) toward engine

NOTE

Some vehicles have a quick-disconnect on fan drive hose.

3. Disconnect fan drive hose assembly (11) from fan drive assembly (10).
4. Remove belt set (5) from power steering pump pulley (4), alternator pulley (3), water pump pulley (7), and crankshaft pulley (6).

b. Installation

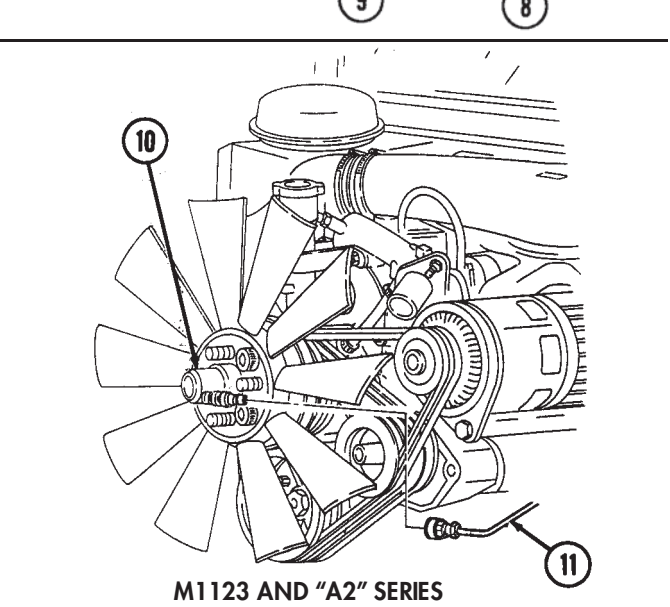
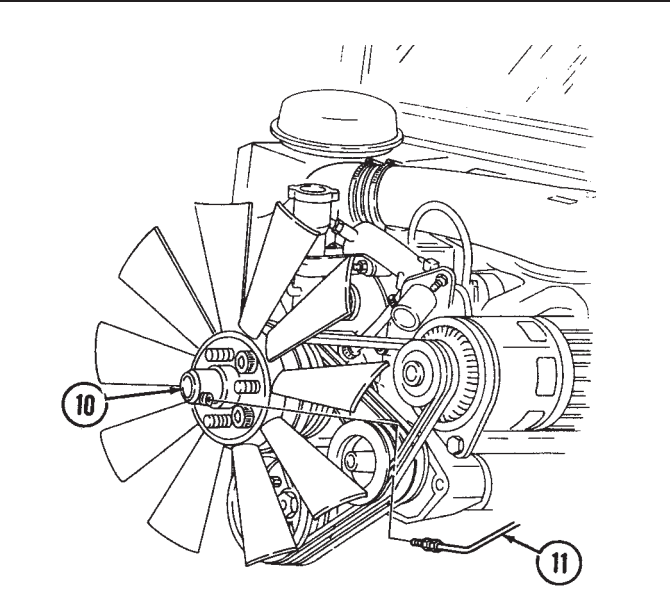
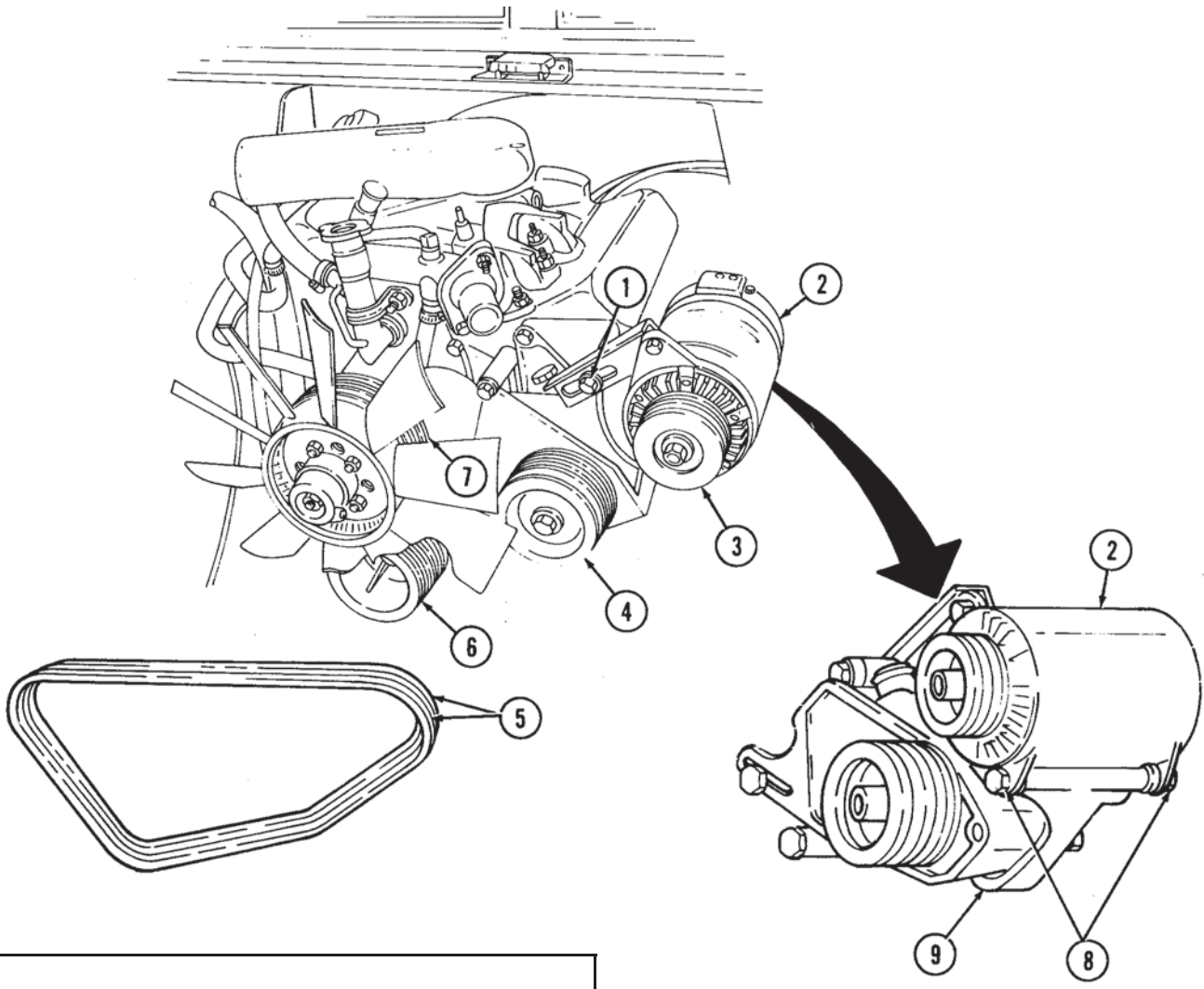
1. Feed belt set (5) into grooves on crankshaft pulley (6), water pump pulley (7), alternator pulley (3), and power steering pump pulley (4).

NOTE

Some vehicles have a quick-disconnect on fan drive hose.

2. Connect fan drive hose assembly (11) to fan drive assembly (10).

3-81. ALTERNATOR DRIVEBELT SET REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Adjust drivebelts (para. 3-82).

3-82. DRIVEBELTS ADJUSTMENT

This task covers:

a. Power Steering Belt Adjustment

b. Alternator Belt Adjustment

INITIAL SETUP:

Applicable Models

All vehicles except: M997A2, M1025A2, M1035A2, M1043A2, M1045A2, M1097A2, M1123

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)

Special Tools

Belt tension gauge (Appendix B, Item 67)

Materials/Parts

Locknut (Appendix G, Item 70)

Personnel Required

One mechanic
One assistant

Manual References

TM 9-2320-280-10
TM 9-2320-280-24P

Equipment Condition

- Hood raised and secured (TM 9-2320-280-10).
- Battery ground cable disconnected (para. 4-73).

NOTE

Prior to making any belt adjustments, check belt tension with belt tension gage. Drivebelt adjustment should only be done if belt tension is below 70 lbs (32 kg). Check alternator belts from above engine; power steering belts from under vehicle. Adjusting power steering belts can affect alternator belt tension. Always check alternator belt tension after adjusting power steering belts. To adjust air-conditioning belt, refer to para. 11-202.

a. Power Steering Belt Adjustment

1. Remove locknut (5), washer (6), capscrew (2), spacer (4), and two clamps (3) from return and control valve hoses (7) and (8) and alternator bracket (1). Discard locknut (5).
2. Loosen three capscrews (15) from power steering pump bracket (16) and support brackets.

CAUTION

Do not pry against power steering pump housing with pry bar when adjusting belt tension. Pump could be damaged.

NOTE

There are two square holes in the power steering pump bracket, one in front, accessible from above; and one in back, accessible from under the vehicle. Either can be used to adjust belt tension.

3. Adjust power steering belt set (9) using 1/2-inch breaker bar in square hole of power steering bracket (16). Apply force until belt set (9) appears tight and tighten capscrews (15).
4. Using belt tension gauge, check each belt individually for proper tension, refer to table 3-2, Belt Tension Requirements.
5. If belt set (9) tension is correct, tighten three capscrews (15) on power steering pump bracket (16) to 40 lb-ft (54 N·m). If not, repeat steps 2 through 5. If tension cannot be properly adjusted, replace belt set (9) (para. 3-80).
6. Install return and control valve hoses (7) and (8) to alternator bracket (1) with spacer (4), two clamps (3), capscrew (2), washer (6), and locknut (5). Tighten locknut (5) to 8 lb-ft (11 N·m).

b. Alternator Belt Adjustment

1. Loosen capscrew (11) and two capscrews (13.1) on alternator (13) and alternator bracket (14).

3-82. DRIVEBELTS ADJUSTMENT (Cont'd)

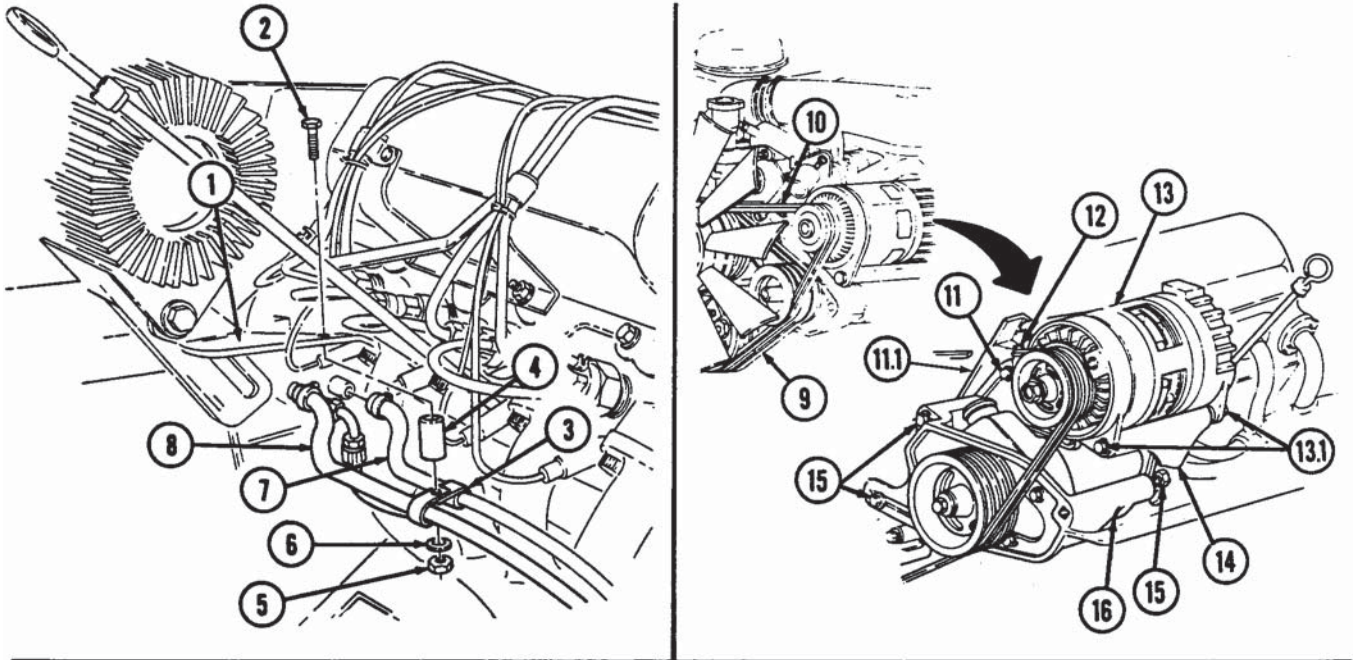
2. Adjust alternator belt set (10) by inserting 1/2-inch drive ratchet and extension in square hole (12) of alternator adjusting bracket (11.1). Turn until belt set (10) appears tight, and tighten capscrew (11) and two capscrews (13.1) securing alternator (13).
3. Using belt tension gauge, check each belt of belt set (10) individually for proper tension. Refer to table 3-2, Belt Tension Requirements.
4. If belt set (10) tension is correct, tighten alternator adjusting bracket (11.1) and capscrew (11) to 40 lb-ft (54 N.m). Tighten two capscrews (13.1) to 60 lb-ft (81 N.m). If tension is not, repeat steps 2 through 4. If tension cannot be properly adjusted, replace belt set (10) (para. 3-81).

Table 3-2. Belt Tension Requirements

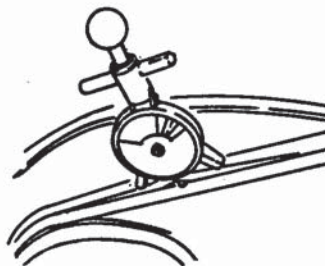
NOTE

A used belt is one that has been run at least 15 min. or 15 mi. (24 km.). Tension variance of not more than 20 lbs (90 N) between belts of the same set is acceptable.

APPLICATION	NEW BELT	USED BELT
All belts	105 ± 5 lbs (467 ± 22 N)	90 ± 5 lbs (400 ± 22 N)



BELT TENSION GAUGE



- FOLLOW-ON TASKS:**
- Connect battery ground cable (para. 4-73).
 - Lower and secure hood (TM 9-2320-280-10).

3-83. SERPENTINE DRIVEBELT MAINTENANCE

This task covers:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Removal b. Inspection | <ul style="list-style-type: none"> c. Installation d. Alignment |
|---|---|

INITIAL SETUP:

Applicable Models

M997A2, M1025A2, M1035A2, M1043A2,
M1045A2, M1097A2, M1123

Personnel Required

One mechanic
One assistant

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)
Breaker bar, 3/8 in. (Appendix B, Item 2)
Breaker bar, 1/2 in. (Appendix B, Item 2)
Pulley alignment tool
(Appendix D, Fig. D-120)

Manual References

TM 9-2320-280-10

Equipment Condition

Hood raised and secured (TM 9-2320-280-10).

a. Removal

1. Position 3/8 or 1/2 in. breaker bar as appropriate on belt tensioner (7) and move tensioner (7) clockwise to loosen belt (9).
2. Remove belt (9) from power steering pump pulley (3), alternator pulley (2), water pump pulley (4), crankshaft pulley (5), air conditioning compressor or idler pulley (8), two upper idler pulleys (1), and tensioner pulley (6). Release belt tensioner (7).

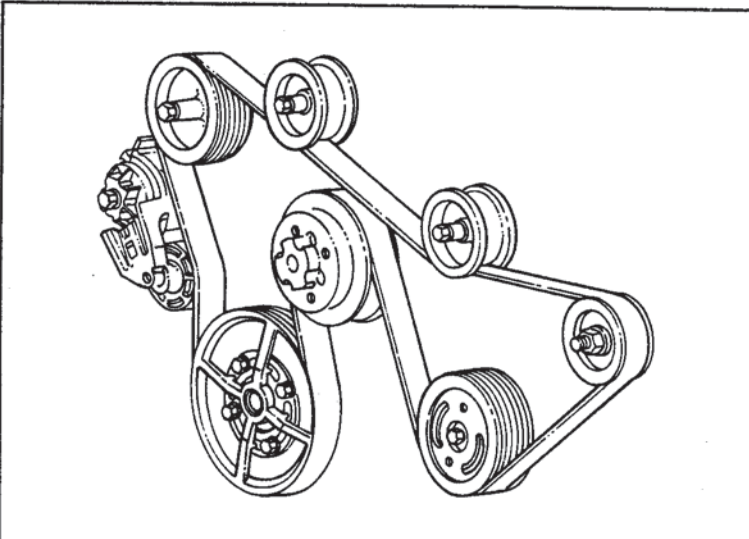
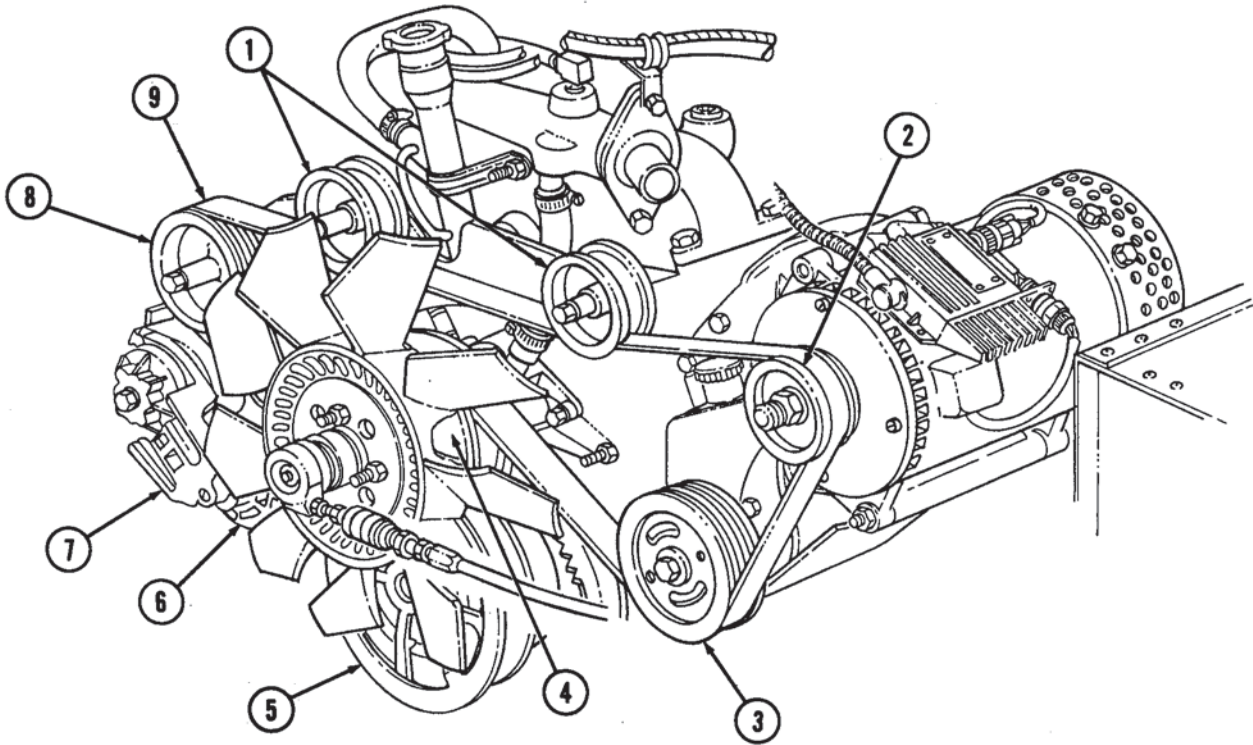
b. Inspection

Clean and check pulleys and pulley groves to ensure a smooth surface.

c. Installation

1. Position 3/8 or 1/2 in. breaker bar as appropriate on belt tensioner (7) and move tensioner (7) clockwise to allow installation of belt (9).
2. Feed belt (9) into grooves on crankshaft pulley (5), air conditioning compressor or idler pulley (8), two upper idler pulleys (1), alternator pulley (2), power steering pump pulley (3), water pump pulley (4), and tensioner pulley (6). Release belt tensioner (7).

3-83. SERPENTINE DRIVEBELT MAINTENANCE (Cont'd)



3-83. SERPENTINE DRIVEBELT MAINTENANCE (Cont'd)

d. Alignment

CAUTION

Serpentine belt failure (abnormal wear or belt dislodgement) can be caused by misalignment of pulleys, improper installation, or foreign objects introduced into belt path. Damage to equipment may result

NOTE

Ensure tab of pulley alignment tool seats flush against back side of crankshaft pulley.

1. Position tab (1) of pulley alignment tool (5) behind crankshaft pulley (6) and straight edge portion (4) of pulley alignment tool (5) across power steering pump pulley (2) and alternator pulley (3). Tab (1) on pulley alignment tool (5) should seat flush against back side of crankshaft pulley (6). Straight edge portion (4) of pulley alignment tool (5) should seat flush against power steering pump pulley (2) and alternator pulley (3). If pulley alignment is not flush, rotate engine and recheck alignment in several locations. Proceed to step 3 if pulleys are out of alignment.
2. Position straight edge portion (4) of pulley alignment tool (5) against idler pulleys (7) and check for bent mounting bracket (8). If mounting bracket (8) is bent, refer to para. 8-24 for replacement.

NOTE

If any adjustments are made while performing steps 3 through 8, start engine and check for proper tracking of belt.

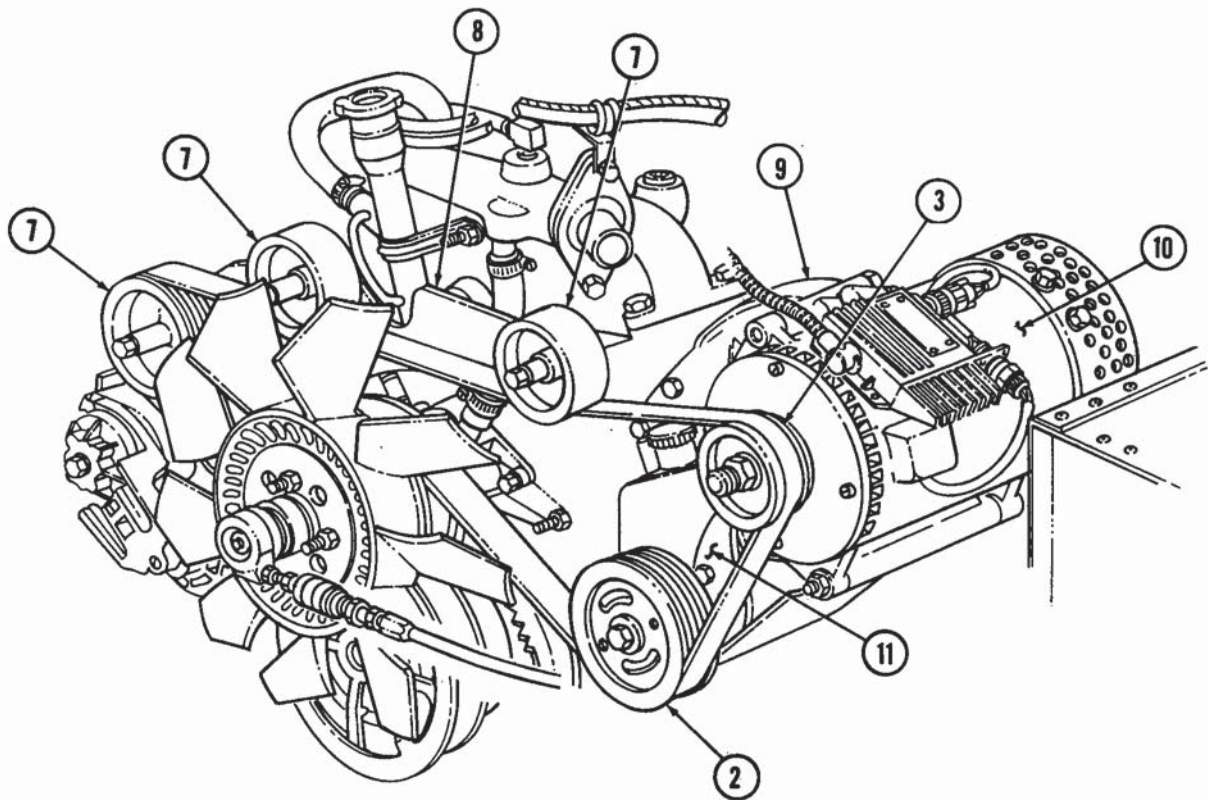
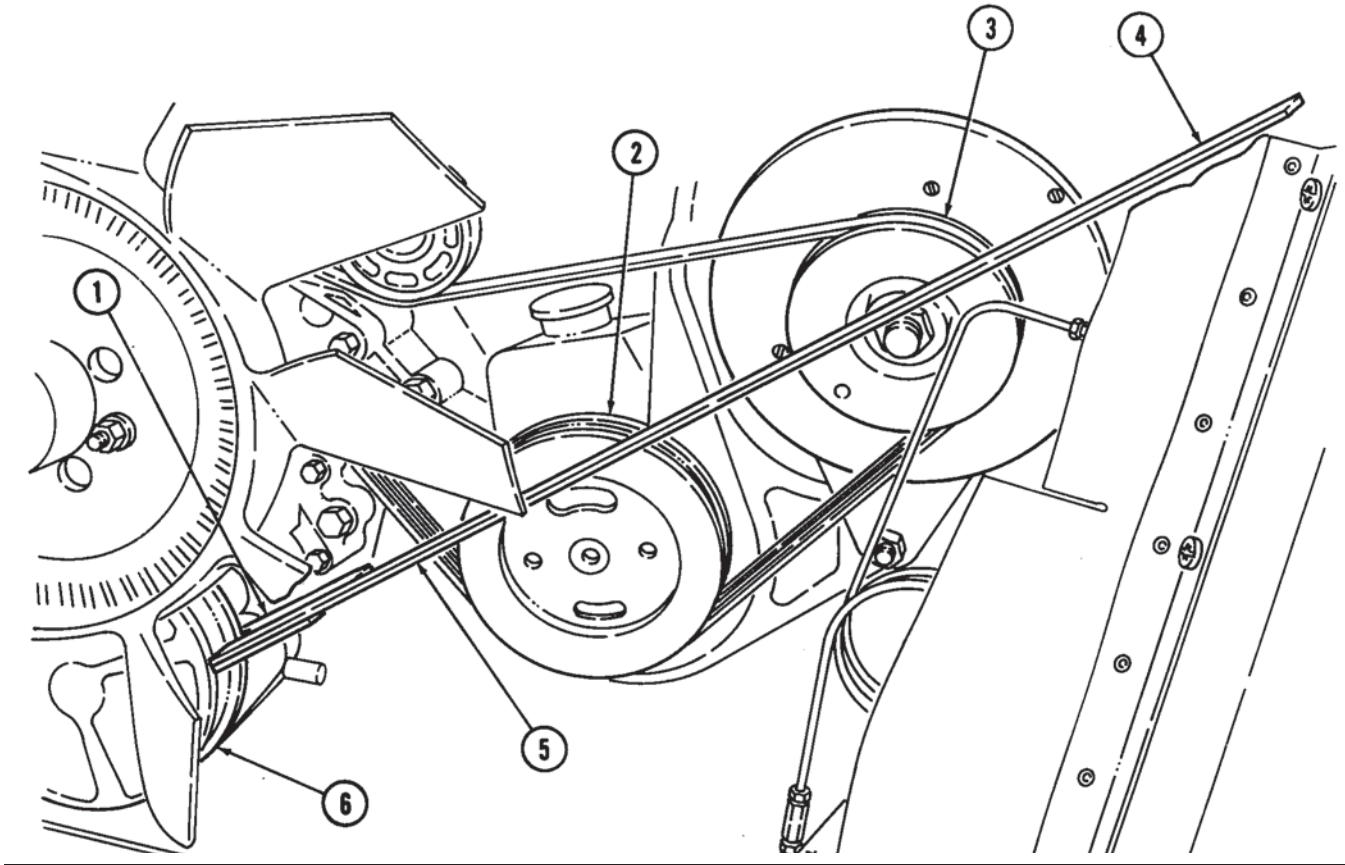
3. Check all pulleys (2), (3), (6), and (7) for mud or foreign objects lodged in grooves.

NOTE

Power steering pump pulley must be flush with end of shaft.

4. Check power steering pump pulley (2) for proper installation. Refer to para. 8-24.
5. Check power steering pump (11) and power steering/alternator mounting bracket (9) for proper installation and security of mounting hardware. Refer to para. 8-24.
6. Check alternator pulley (3) for proper installation. Refer to para. 4-3.
7. Check alternator (10) for proper installation and security of mounting hardware. Refer to para. 4-2.
8. Check idler pulleys (7) and mounting bracket (8) for proper installation and security of mounting hardware. Refer to para. 8-24.

3-83. SERPENTINE DRIVEBELT MAINTENANCE (Cont'd)



3-84. TENSIONER, IDLER PULLEYS, AND MOUNTING HARDWARE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Applicable Models

M997A2, M1025A2, M1035A2, M1043A2, M1045A2, M1097A2, M1123

Materials/Parts

Two lockwashers (Appendix G, Item 191)
Three lockwashers (Appendix G, Item 190)

Tools

General mechanic's tool kit:
automotive (Appendix B, Item 1)

Equipment Condition

- Fan drive and fan blade removed (para. 3-78).
- Serpentine drivebelt removed (para. 3-83).

a. Removal

1. Remove capscrew (12) and tensioner (11) from mounting bracket (8).

NOTE

On M997A2 vehicles equipped with A/C, the compressor pulley is in place of the lower idler pulley.

2. Remove three nuts (6), lockwashers (5), washers (4), capscrews (1), washers (2), and idler pulleys (3) from mounting bracket (8). Discard lockwashers (5).
3. Remove two capscrews (10), lockwashers (9), and mounting bracket (8) from water pump (7). Discard lockwashers (9).

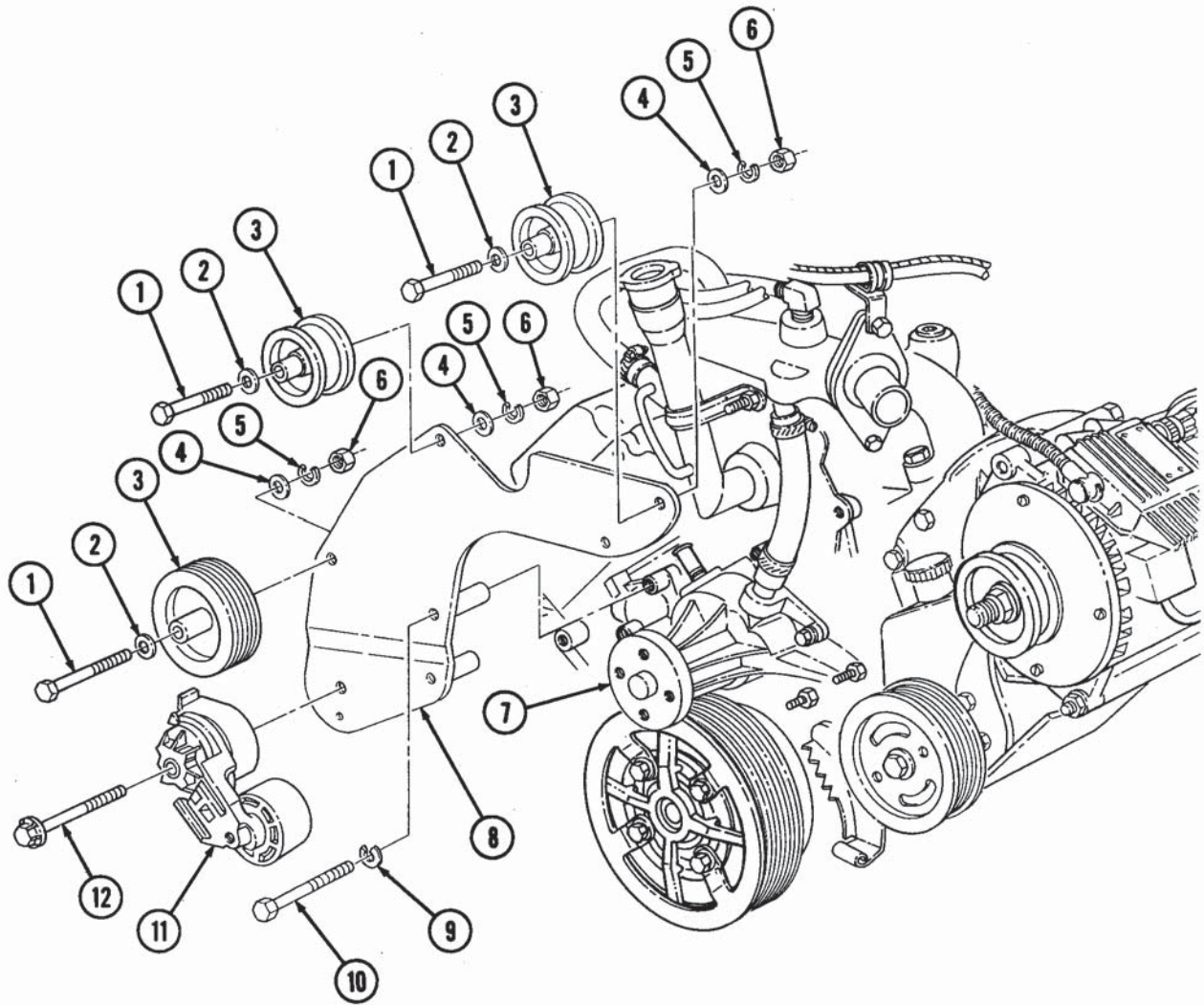
b. Installation

1. Install mounting bracket (8) on water pump (7) with two lockwashers (9) and capscrews (10).

NOTE

- On M997A2 vehicles equipped with A/C, the compressor pulley is in place of the lower idler pulley.
 - Pulley will turn if it is installed correctly. If pulley does not turn, it may be installed backwards.
2. Install three idler pulleys (3) on mounting bracket (8) with three washers (2), capscrews (1), washers (4), lockwashers (5), and nuts (6).
 3. Install tensioner (11) on mounting bracket (8) with capscrew (12).

**3-84. TENSIONER, IDLER PULLEYS, AND MOUNTING HARDWARE REPLACEMENT
(Cont'd)**



- FOLLOW-ON TASKS:
- Install serpentine drivebelt (para. 3-83).
 - Install fan drive and fan blade (para. 3-78).