

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

NOTE: The following installation instructions were developed for the M1114 UAH, M1151, M1152 and M1165 Expanded Capacity Vehicle (ECV). Not all of the steps listed within these installation instructions will be required on the M1114 UAH and ECV HMMWV variants. This installation instruction needs to be thoroughly read before installing the 400 Amp Alternator Upgrade Kit in a vehicle.

1. Purpose. This installation instruction is to provide guidance on the installation of the 400 Amp Alternator Upgrade Kit in the M1114 UAH and M1151, M1152 and M1165 ECV HMMWV.

WARNING

Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing battery maintenance. Severe injury will result if acid contacts eyes or skin.

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or disconnected battery ground cable contact battery terminal, a direct short can result, causing instant heating of tools, severe injury to personnel, or damage to equipment.

Ensure all switches are in the OFF position before disconnecting battery cables. When removing battery cable clamps, disconnect both ground cables first. Do not allow tools to come in contact with vehicle when disconnecting cable clamps. A direct short can result, causing instant heating of tools, severe injury to personnel or damage to equipment.

a. Battery Terminal Clamp Removal. Refer to TM 9-2320-387-24-1, Chapter 4, Task Para 4-67, Page 4-108 and **Figure 1** contained in these instructions.

- (1) Remove cap (4) from battery terminal boot (8).
- (2) Loosen screw (6) and nut (7) and remove terminal clamp (3) from terminal post (9).
- (3) Remove screw (2) and nut (5) from cable (1) and terminal clamp (3).
- (4) Remove cable (1) from terminal clamp (3) and battery terminal boot (8).
- (5) Remove terminal clamp (3) from battery terminal boot (8).
- (6) Remove battery cables (1) and secure all cables to the head side of the mounting cap screws.

NOTE: When battery cables are disconnected, all stored fault codes in the Transmission Control module (TCM) will be lost.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Use the above procedure when disconnecting all vehicle battery cables.

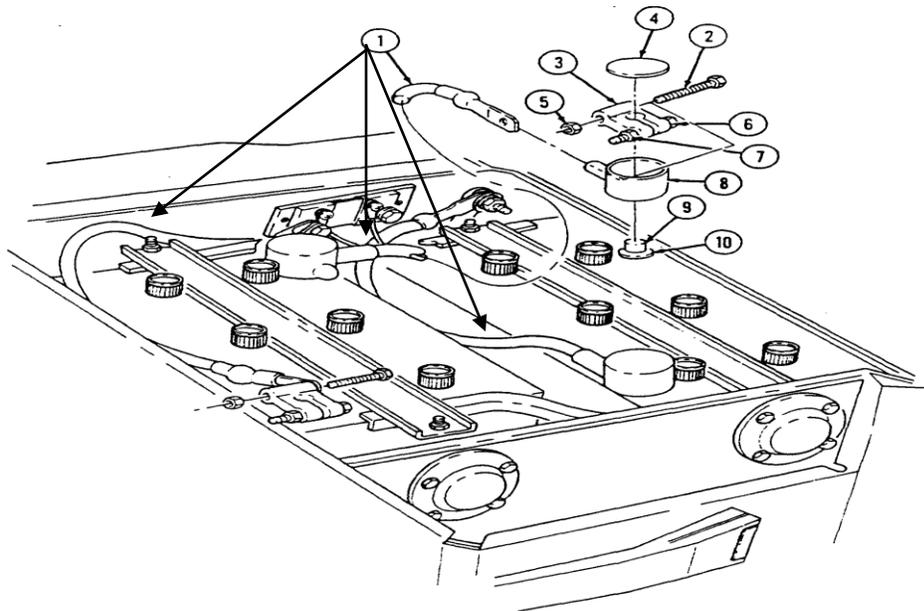


Figure 1

b. Battery Hold Down Removal. Refer to TM 9-2320-387-24-1, Chapter 4, Task Para 4-73, Page 4-126 and **Figure 2** contained in these instructions.

(1) Remove four nuts (2), from battery hold down bracket (3), and four hold down rods (1) from batteries (5) and brackets (4).

(2) Remove batteries from the vehicle.

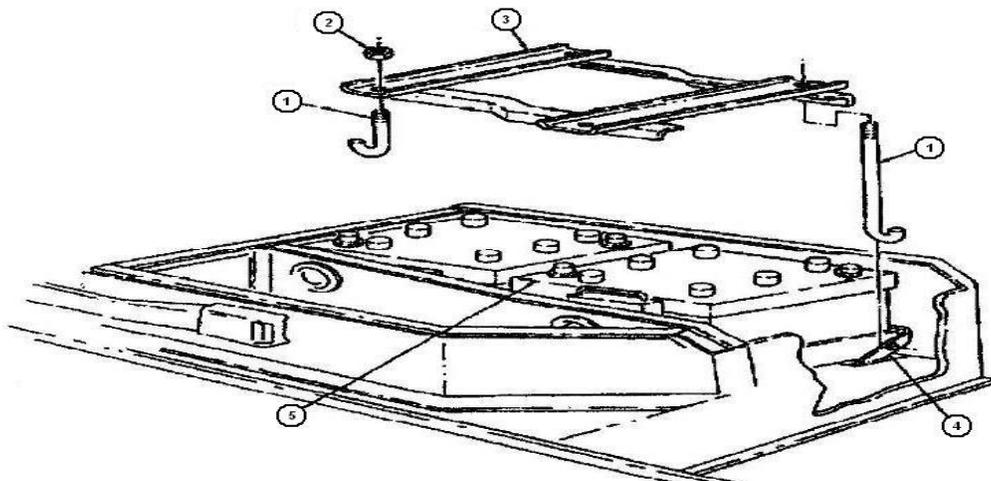


Figure 2

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

WARNING

The air conditioning system on the M1114 UAH ***MUST BE*** discharged prior to removing A/C refrigerant lines, hoses, tubes or other components. Refer to TM 9-2320-387-24-2, Chapter 25, Task Para 25-15, A/C System Servicing on page 25-38. Failure to comply with safety instructions and servicing procedures could result in serious injury to personnel and damage to equipment may result.

NOTE: Whenever any air conditioning vapor system component needs replacement, the system must be discharged, flushed, and new dryer bottles installed.

PARAGRAPH C THRU E ARE FOR THE M1114 UAH HMMWV ONLY

c. A/C Coolant Line Covers Maintenance. Refer to TM 9-2320-387-24-2, Chapter 25, Task Para 25-32, Page 25-84 and **Figure 3** contained in these instructions.

(1) Remove four cap screws (5) and washers (6) from A/C coolant line front cover (7) at left side tunnel (1).

(2) Remove two cap screws (4) and washers (3) from mounting angle (2) at left side tunnel (1).

(3) Remove A/C coolant line front cover (7) with mounting angle (2) from left side tunnel (1).

(4) Remove two screws (8), washers (9), and mounting angle (2) from A/C coolant line front cover (7).

(5) Remove four cap screws (20), washers (21), and A/C coolant line rear B-pillar cover (22) from left side tunnel (1).

(6) Remove three cap screws (18), washers (19), and left rear HVAC lines cover (17) from left side rear tunnel (1).

(7) Remove two screws (14), washers (15), and the left rear HVAC lines cover (11) from left rear wheelhouse (12).

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

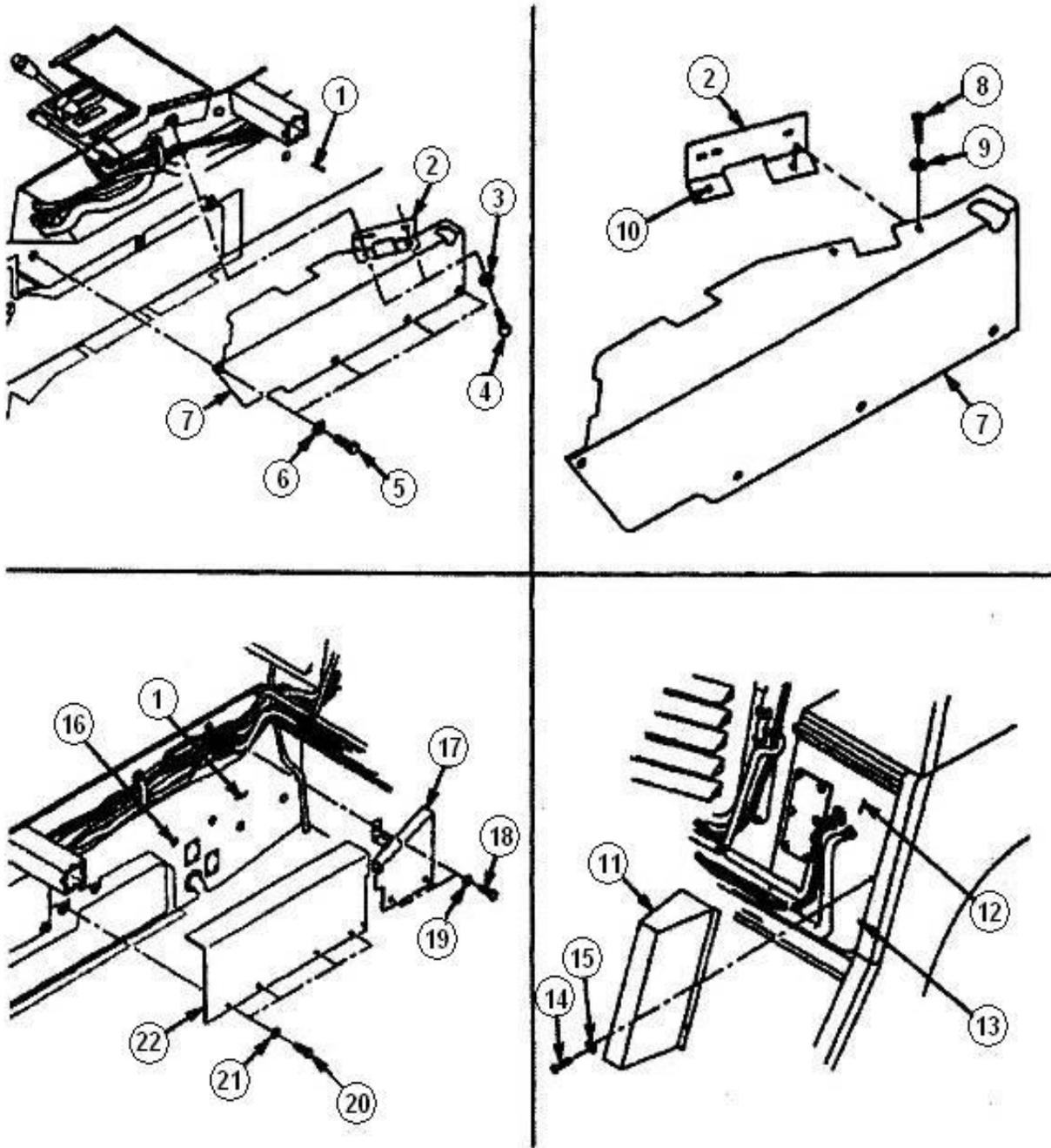


Figure 3

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

CAUTION

Cover all open ends of A/C hoses or tubes, and all open ports of A/C components with Aluminum Tape. Failure to do so may cause A/C system contamination.

d. Removal of A/C Hoses from A/C Compressor Manifold. Refer to TM 9-2320-387-24-2, Chapter 25, Task Para 25-20.1, Page 25-56.2 and **Figure 4** contained in these instructions.

- (1) Disconnect high-pressure hose (5) from manifold tube (3).
- (2) Disconnect high-pressure hose (8) from manifold tube (7).
- (3) Remove and discard two O-rings (4) from manifold tubes (3) and (7).

NOTE: Ensure a wrench is used to hold the A/C compressor manifold nut stationary while loosening the A/C hose fitting.

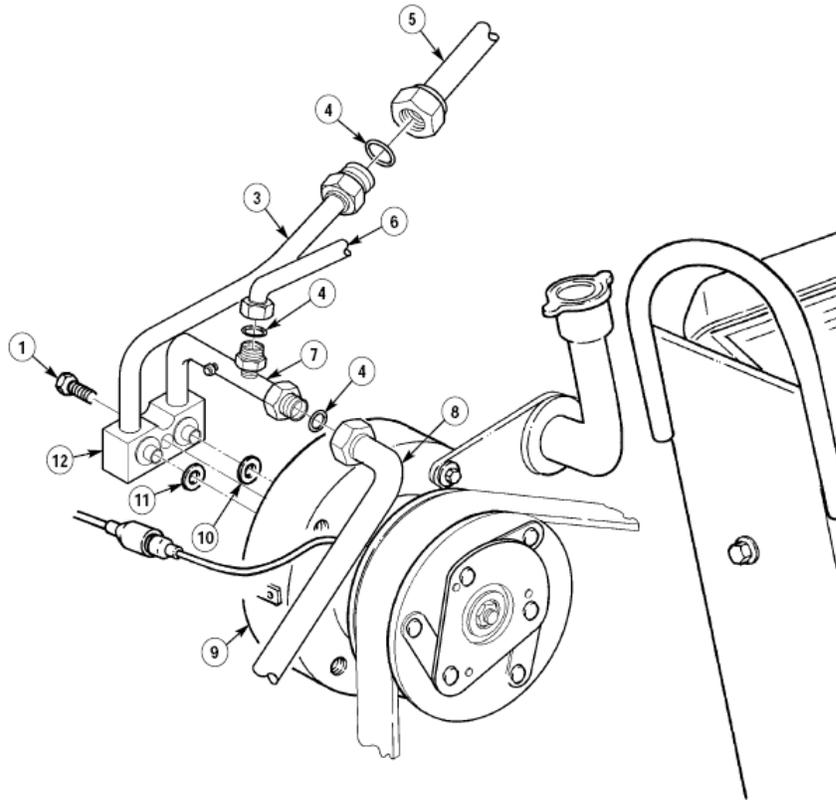


Figure 4

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

e. Removal of A/C Hoses from the Compressor Manifold to Rear Suction and Discharge Tubes. Refer to TM 9-2320-387-24-2, Chapter 25 Task Para 25-30, Page 25-78 and **Figure 5** contained in these instructions.

(1) Loosen two nuts (4) and remove low-pressure hose (6) and two O-rings (3) from compressor manifold (8) and evaporator tube (7). Discard O-rings (3).

(2) Loosen two nuts (1) and remove hose (12) and two O-rings from compressor manifold (8) and rear suction tube (19). Discard O-rings (2).

(3) Loosen two nuts (10) and remove hose assembly (11) and two O-rings (9) from compressor manifold (8) and rear discharge tube (20). Discard O-rings (9).

(4) Remove tie-down straps (16), as required, from hose (12), hose assemblies (11) and (15), and A/C wiring harness (15) in engine compartment.

(5) Remove cap screw (13), washer (18) and clamp (14) from clamping bracket (17).

(6) Remove tied-town straps (16), as required, from hose (12), hose assemblies (11) and (5), and A/C wiring harness (15) at left side tunnel (21).

(7) Remove two cap screws (27) and washers (28) securing clamps (29) to left side tunnel (21).

(8) Remove hose (12) and hose assembly (11) from two clamps (29) at left side tunnel (21).

(9) Remove two screws (24), screw (25), and Central Tire Inflation System (CTIS) cover (23) from vehicle body (26).

(10) Route hose (12) and hose assembly (11) forward through CTIS cover grommets (22) and up into engine compartment. Remove hose (12) and hose assembly (11) from vehicle.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

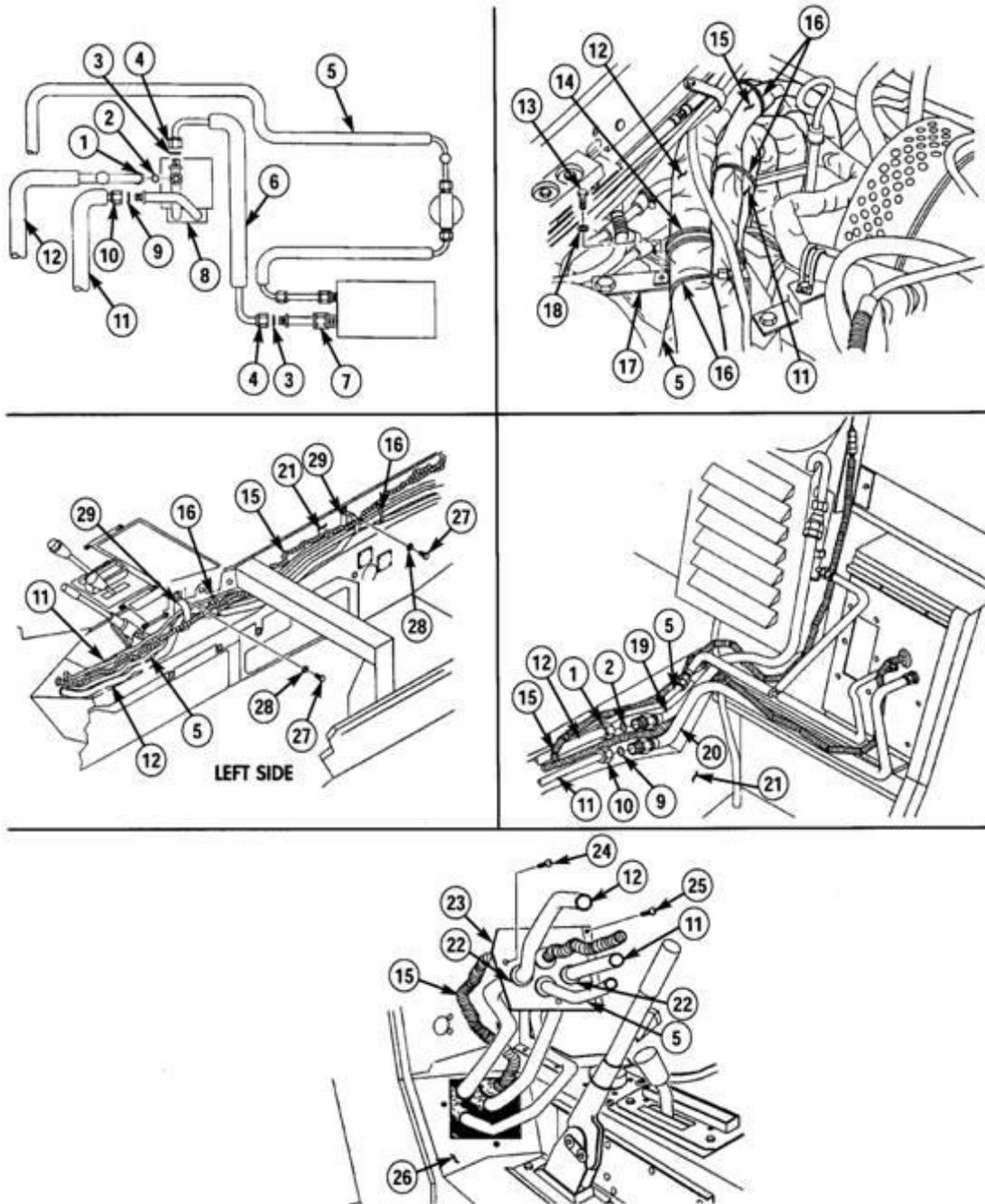


Figure 5

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

f. Removal of Engine Access Cover. Refer to TM 9-2320-387-24-2, Chapter 10, Task Para 10-22, Page 10-25 and **Figure 6** contained in these instructions.

- (1) Unlatch two flexible latches (6) from keepers (5) on hold down brackets (7).
- (2) Unlatch two hold down latches (4) from hold down strikes (3).
- (3) Turn two ring studs (1) and remove access cover (2) from vehicle.

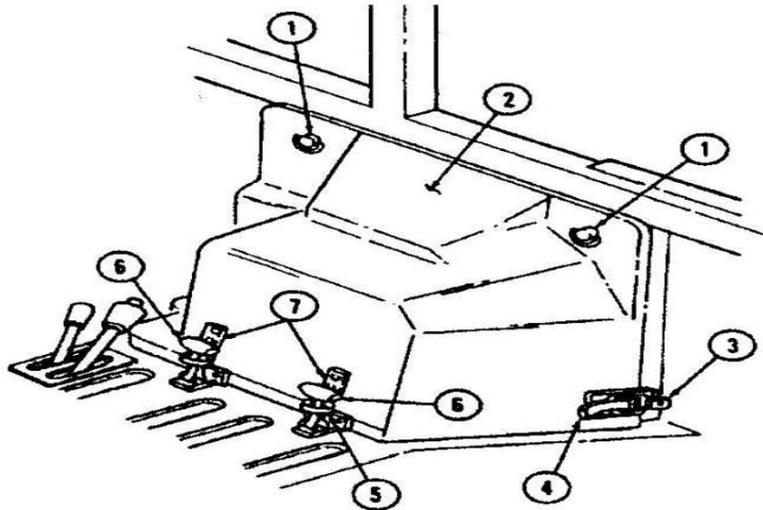


Figure 6

CAUTION

Disconnect or move any wires/cables that are in the way before drilling through the battery box. Failure to do so may result in damage to equipment

NOTE: The below procedure ***ONLY*** applies to the M1151, M1152 and M1165 Expanded Capacity Vehicle (ECV) HMMWV.

g. Relocation of Power Feed Thru Stud Hole.

NOTE: Unless noted all dimensions are in inches.

(1) Lay out and drill a 1 5/16 inch diameter hole (1) in vehicle battery box (2) as shown in **Figure 7** below. Utilize called out dimensions (3) and (4) for marking the correct location to drill the 1 5/16 inch diameter hole

(2) Deburr, repair and refinish all surfaces that have been cut, ground, or drilled using appropriate primer per MIL-DTL-53072.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

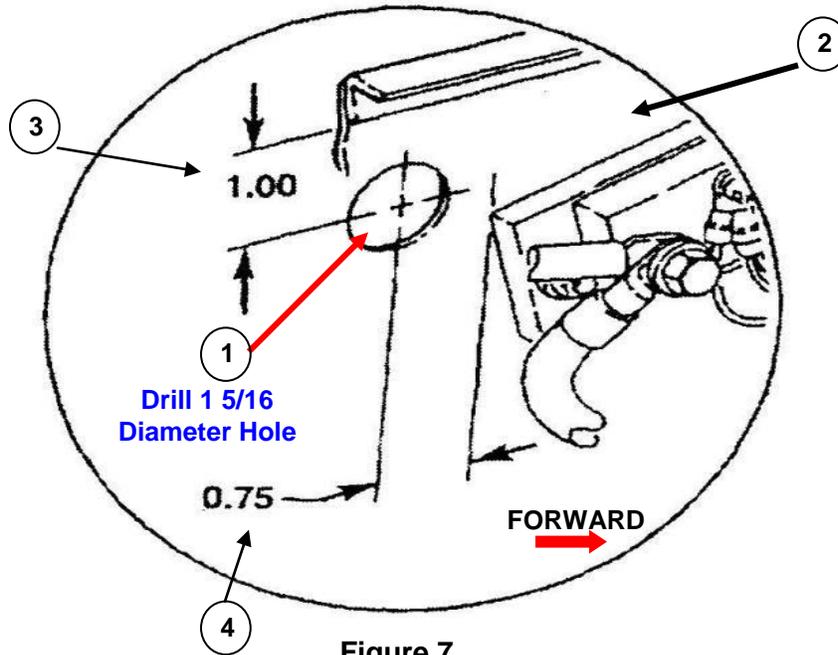


Figure 7

M1151, M1152, and M1165 ECV HMMWV Models Only

h. Removal of Alternator Adjusting Bracket. Refer to TM 9-2320-387-24-1, Chapter 2 and **Figure 8.**

(1) Remove two screws (6), lock washers (7), washers (5), and alternator adjusting bracket (1) from alternator (2) as shown below. Discard lock washers (7) and retain all other parts.

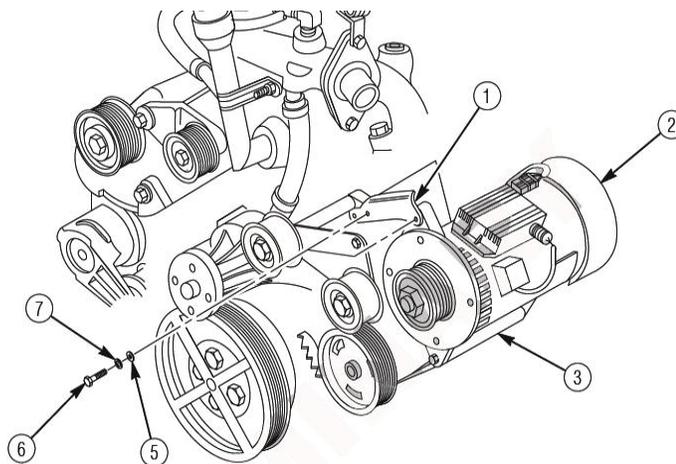


Figure 8

M1151, M1152, and M1165 ECV HMMWV Models Only

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

i. Removal of Serpentine Drive Belt. Refer to TM 9-2320-387-24-1, Chapter 3, Task Para 3-81, Page 3-142 and Task Para 3-81.1, Page 3-142.4 and **Figure 9** contained in these instructions.

NOTE: On M1114 vehicles equipped with A/C, the compressor pulley is used in place of the lower idler pulley.

(1) Position 3/8-inch breaker bar or, as appropriate, a 3/8 inch ratchet wrench on belt tensioner (7) and move tensioner (7) clockwise to loosen drive belt (9).

(2) Remove drive 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).

CAUTION

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

NOTE: Check pulley and pulley grooves for damage and debris prior to installing serpentine drive belt.

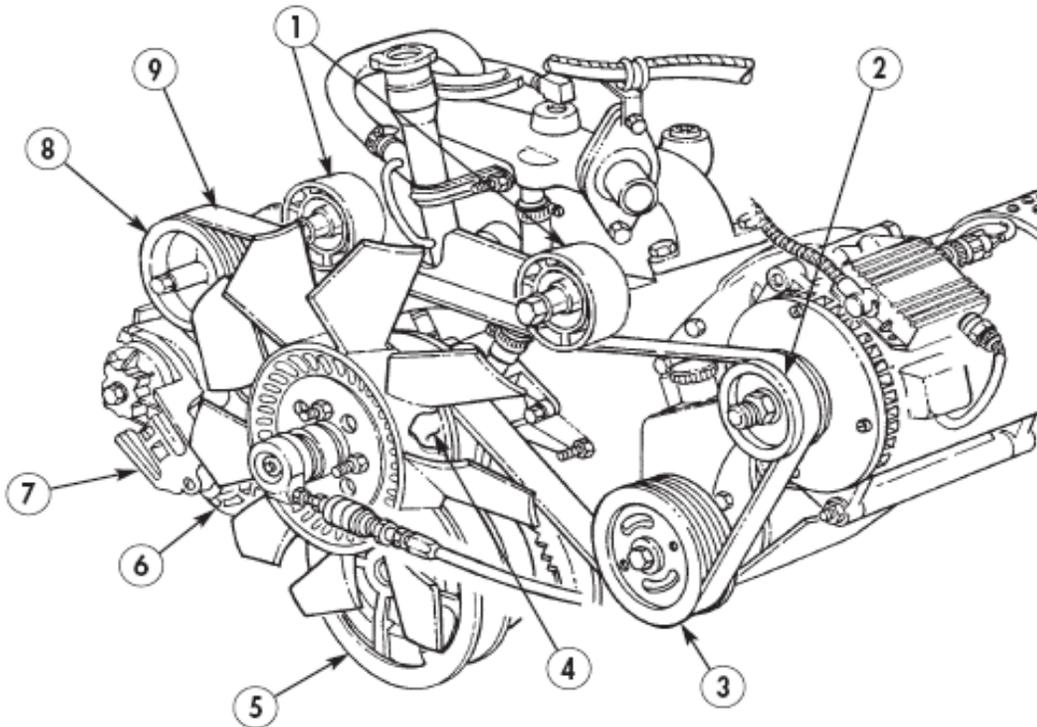


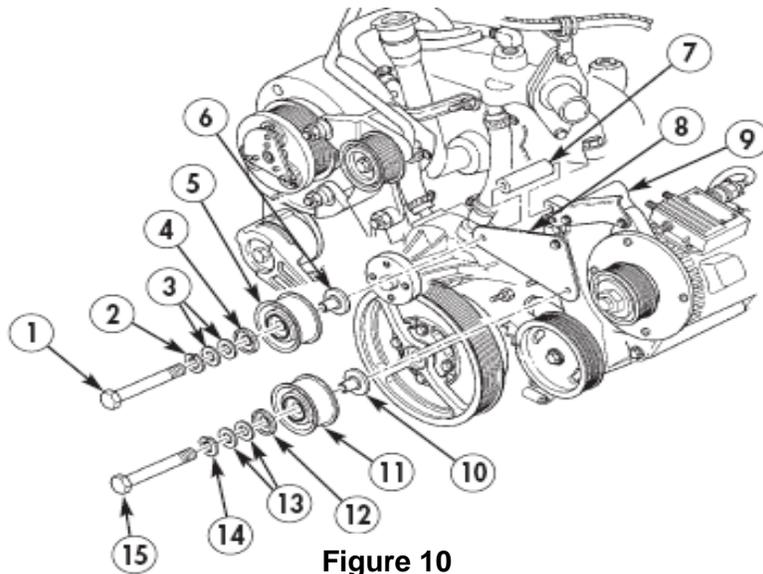
Figure 9

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

j. Removal of Idler Pulley. TM 9-2320-387-24-1, Chapter 3, Task Para 3-82.6, Page 3-145 and **Figure 10** contained in these instructions.

(1) Remove screw (15), pulley support (10), idler pulley (11), cover (12), two washers (13), and lock washer (14) from idler pulley bracket (8) and alternator/pump support (9). Discard lock washer (14).

(2) Remove screw (1), spacer (7), pulley support (6), idler pulley (5), cover (4), two washers (3), and lock washer (2) from idler pulley bracket (8) and alternator/pump support (9). Discard lock washer (2).



k. Removal of Idler Pulley Bracket. TM 9-2320-387-24-1, Chapter 3, Task Para 3-82.7, Page 3-146 and **Figure 11** contained in these instructions.

(1) Remove screw (1), washer (3), lock washer (2), and idler pulley bracket (4) from alternator/pump support (5). Discard lock washer (2).

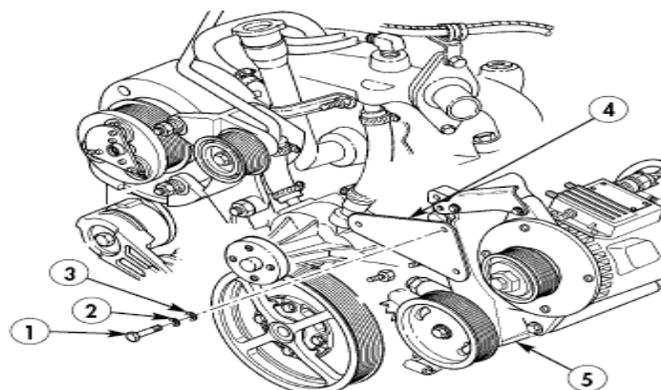


Figure 11

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

I. Removal of 200-AMP Alternator. TM 9-2320-387-24-1, Chapter 4, Task Para 4-5, Page 4-8 and **Figure 12** contained in these instructions.

WARNING

The alternator ***MUST BE*** supported during removal. Failure to support alternator may cause injury to personnel or damage to equipment.

(1) Remove nut (14), lock washer (13), washer (12), and ground strap (11) from ground stud (10). Discard lock washer (13).

(2) Slide back rubber boot (15) and remove nut (1), lock washer (2), washer (3), and alternator positive cable lead 6 (4) from positive stud (7). Discard lock washer (2).

(3) Remove nut (29), lock washer (28), washer (27), two screws (19), washers (17), lock washer (18), and alternator (25) from support bracket (23) and mounting bracket (26). Discard lock washers (28) and (18).

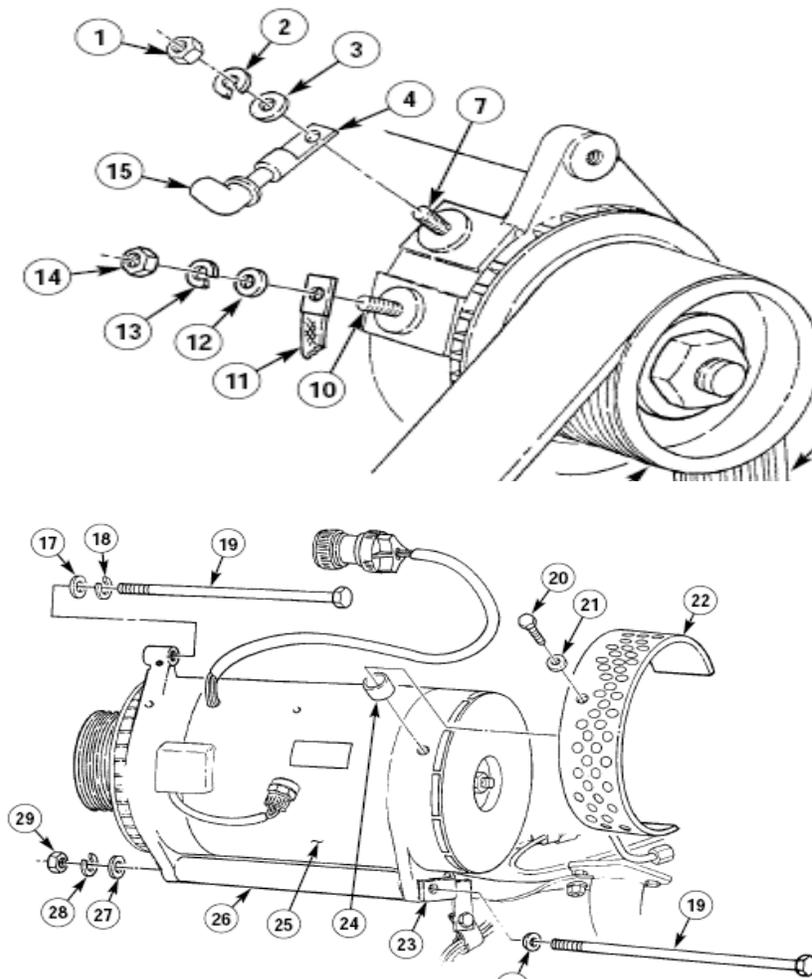


Figure 12

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

m. Removal of Power Steering Pump Pulley. TM 9-2320-387-24-1, Chapter 8, Task Para 8-23.1, Page 8-64.2 and **Figure 13** contained in these instructions.

(1) Remove screw (10), spacer (12), lock washer (11), and pulley (9) from power steering pump (5). Discard lock washer (11).

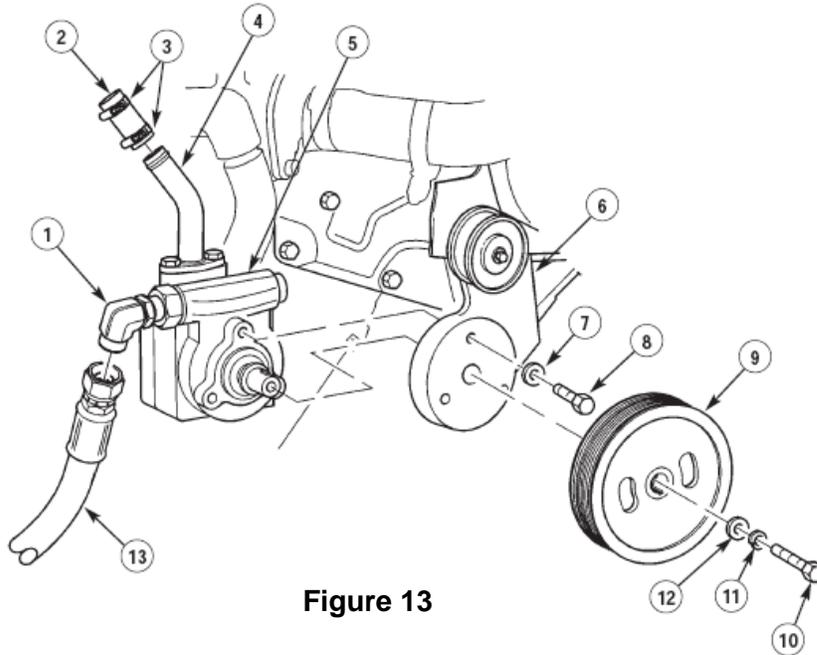


Figure 13

n. Removal of Alternator/Power Steering Mounting Bracket. TM 9-2320-387-24-1, Chapter 4, Task Para 4-3.1, Page 4-4 and **Figure 14** contained in these instructions.

(1) Remove three screws (2) and alternator/power steering mounting bracket (1) from engine (3).

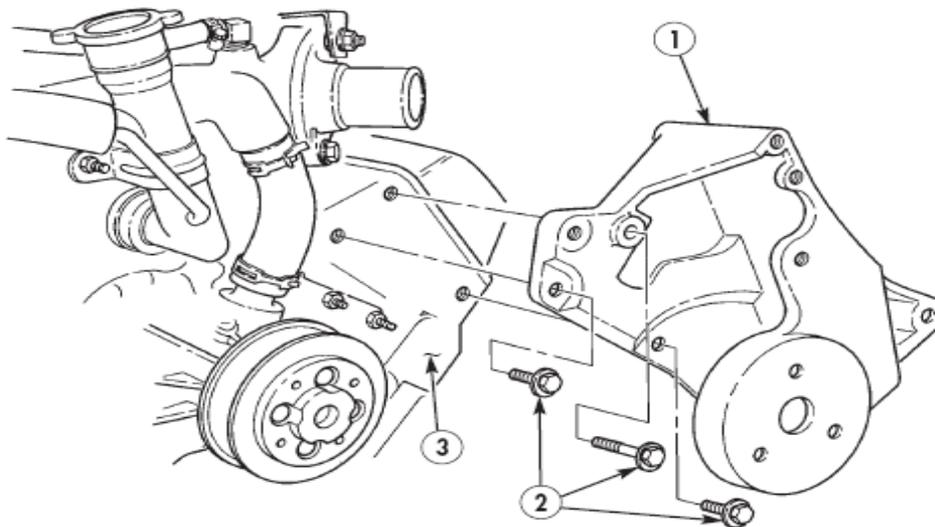


Figure 14

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

o. Removal of Oil Dipstick and Oil Dipstick Tube. TM 9-2320-387-24-1, Chapter 3, Task Para 3-2, Page 3-2 and **Figure 15** contained in these instructions.

- (1) Remove oil dipstick (7) from oil dipstick tube (6).
- (2) Remove nut and lock washer assembly (5) and cap screw (2) from harness clamp (3) and upper dipstick tube bracket (8). Discard nut and lock washer.
- (3) Remove two screw-assembled washers (4) from upper dipstick tube bracket (8) and fuel line bracket (1).
- (4) Remove oil dipstick tube (6) from engine oil pan (10).
- (5) Remove and discard O-ring (9).

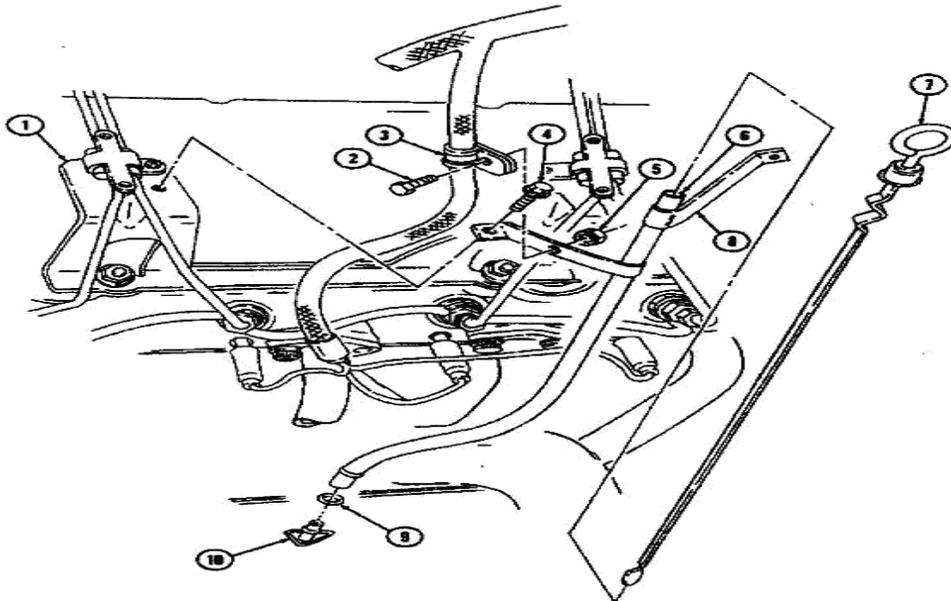


Figure 15

p. Reposition and Secure Hydraulic Winch Lines as follows: TM 9-2320-387-24-2, Chapter 12, Task Para 12-36.4, Page 12-68.8 and **Figures 16A-1 thru 16A-4** and **16B-1 thru 16B-2** contained in these instructions.

PARAGRAPH P AND Q ARE FOR THE M1114 UAH HMMWV ONLY

- (1) Remove two hydraulic winch lines (1 and 3) from hydraulic winch valve (2). Refer to **Figure 16A-1**.
- (2) Route two hydraulic winch lines (1 and 3) down and out of engine compartment, from in front of accelerator cable (14), until reaching winch line tunnel clamp (22). Refer to **Figures 16A-2 and 16A-3**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(3) Re-route two winch lines (1 and 3) back up into engine compartment, behind accelerator cable (14), wiring harness (13), and speedometer cable (12). Refer to **Figures 16A-2 and 16A-3**.

(4) Install two hydraulic winch lines (1 and 3) on hydraulic winch valve (5). **DO NOT** tightens winch lines at this time. Refer to **Figure 16A-2**.

(5) Route hydraulic winch wiring harness (2) behind two hydraulic winch lines (1 and 3). Refer to **Figures 16B-1 and 16B-2**.

(6) Loosen hydraulic winch lines tunnel clamp (22). Refer to **Figure 16A-3**.

(7) Pull two hydraulic winch lines (1 and 3) forward/up as far as possible, and tighten hydraulic winch lines tunnel clamp (22). Refer to **Figure 16A-3**.

(8) Remove locknut (20), washer (9), and upper steering wheel lock mounting screw (21). Discard screw (21) and locknut (20). Refer to **Figure 16A-4**.

(9) Remove throttle lock bracket located inside of vehicle under the steering wheel for easier access to mounting screw.

(10) Install 4397000-006 cap screw (8) in upper steering wheel lock mounting hole. Refer to **Figure 16A-2**.

(11) Install MS21333-126 loop clamp (7) around forward hydraulic winch line (3) and secure on upper steering wheel lock mounting cap screw (8) with existing washer (9) and 4397064-001 locknut (10). **DO NOT** tighten locknut (10) at this time. Refer to **Figure 16A-2**.

(12) Remove locknut (19), washer (16), and lower steering wheel lock mounting screw (18). Discard screw (18) and locknut (19). Refer to **Figure 16A-4**.

(13) Install 4397000-006 cap screw (17) in lower steering wheel lock mounting hole. Refer to **Figure 16A-2**.

(14) Install MS521333-126 loop clamp (11) around forward hydraulic winch line (3) and secure on lower steering wheel lock mounting cap screw (17) with existing washer (16) and 4397064-001 locknut (15). **DO NOT** tighten locknut (15) at this time. Refer to Figure 16A-2.

(15) Pull forward hydraulic winch line (3) up and position toward rear of vehicle, then tighten fitting (6). Refer to **Figure 16A-2**.

(16) Push lower loop clamp (11) down and tighten locknut (15) to 10 foot pounds (13.6 N·m). Refer to **Figure 16A-2**.

400 AMP ALTERNATOR UPGRADE KIT
 INSTALLATION INSTRUCTIONS
 MARCH 2010 / REV D

(17) Tighten locknut (10) on upper loop clamp (7) to 10 foot pounds (13.6 N·m). Refer to **Figure 16A-2**.

(18) Position rear hydraulic winch line (1) toward rear of vehicle and tighten hydraulic winch line fitting (4). Refer to **Figure 16A-2**.

(19) Secure hydraulic winch wiring harness (2) to forward hydraulic winch line (3) with one 10342764 cable tie (4). Refer to **Figure 16B-1**.

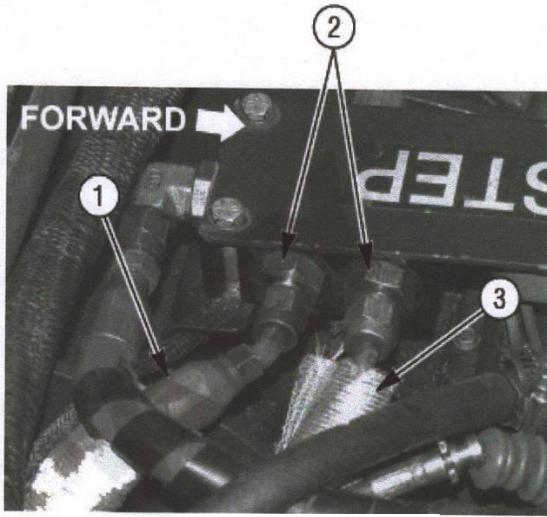


Figure 16A-1

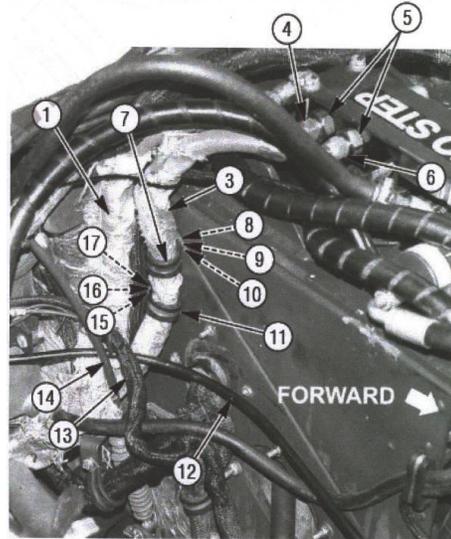
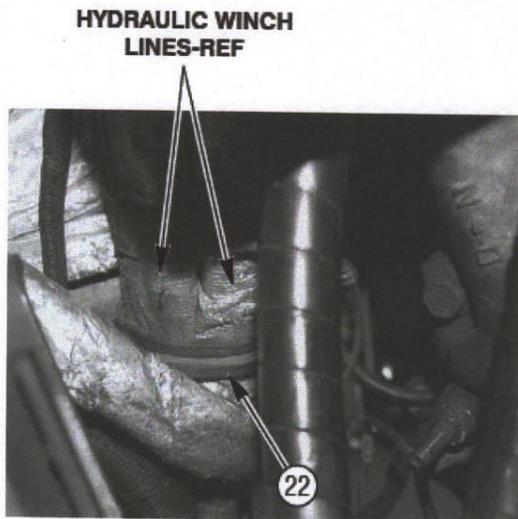


Figure 16A-2



**VIEW FROM UNDER VEHICLE
 LOOKING UP**

Figure 16A-3

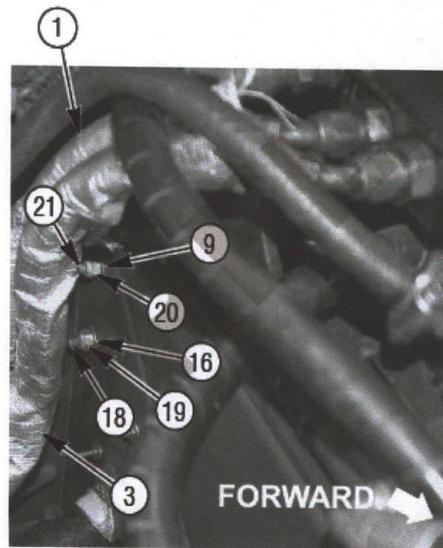
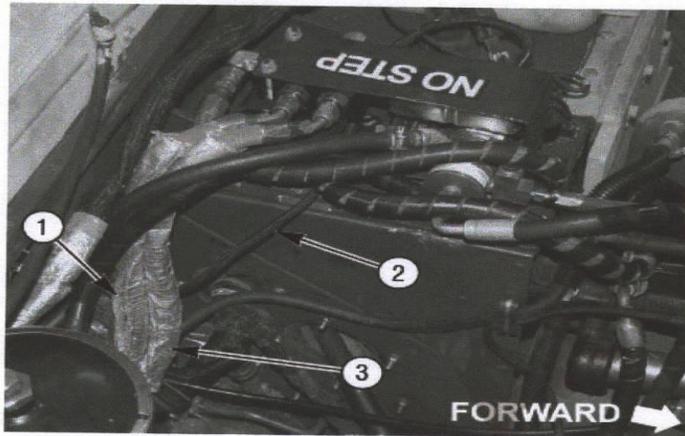


Figure 16A-4

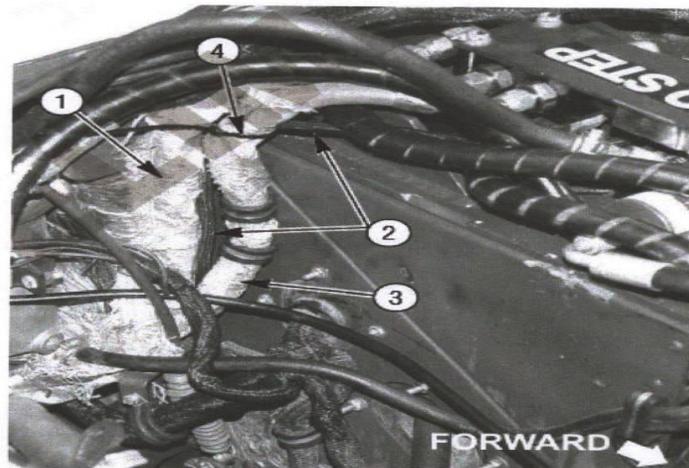
Figure 16A

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D



BEFORE

Figure 16B-1



AFTER

Figure 16B-2

Install clamps, with nuts,
on the inside of the cab

q. Removal of R.P.M Sensor Wire: TM 9-2320-387-24-2, Chapter 27, Task Para 27-3, Page 27-6 and **Figure 17** contained in these instructions.

(1) Remove screw (6) lock washer (5), clamp (7), RPM sensor wires (8), and alternator support (9) from engine block boss (10). Discard lock washer (5) and retain all parts.

(2) Remove nut (4), clamp (1), screw (2), and branch of engine wiring harness (3) from alternator support (9). Discard nut (4) and alternator support (9), and retain all other parts

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

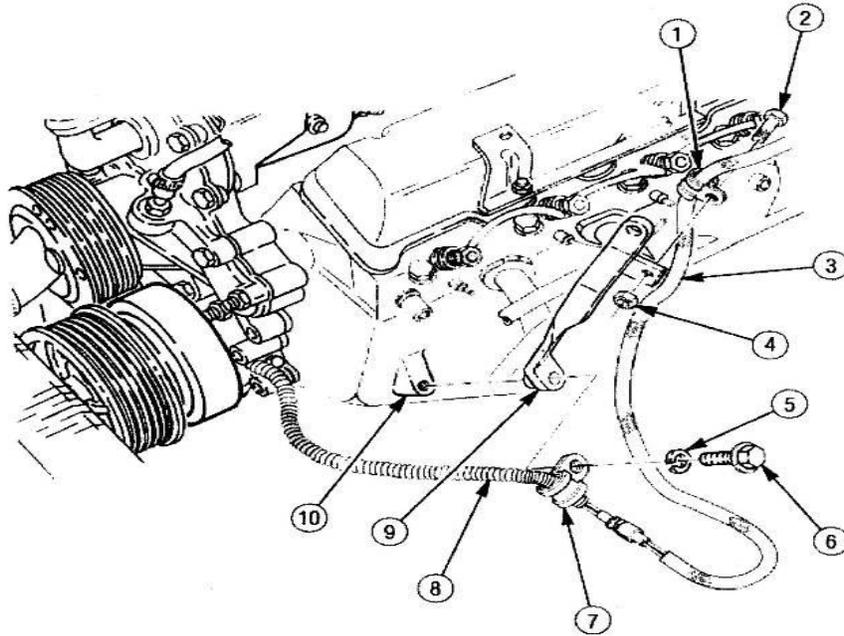


Figure 17

r. Removal of Alternator Ground Strap: Refer to TM 9-2320-387-24-1, Chapter 4, Task Para 4-5, Page 4-10 and **Figure 18** contained in these instructions.

(1) Remove nut (4), lock washer (3), washer (2), cable (1), and ground strap (7) from stud (6) on engine coolant crossover (5). Discard lock washer (3) and ground strap (7), and retain all other parts.

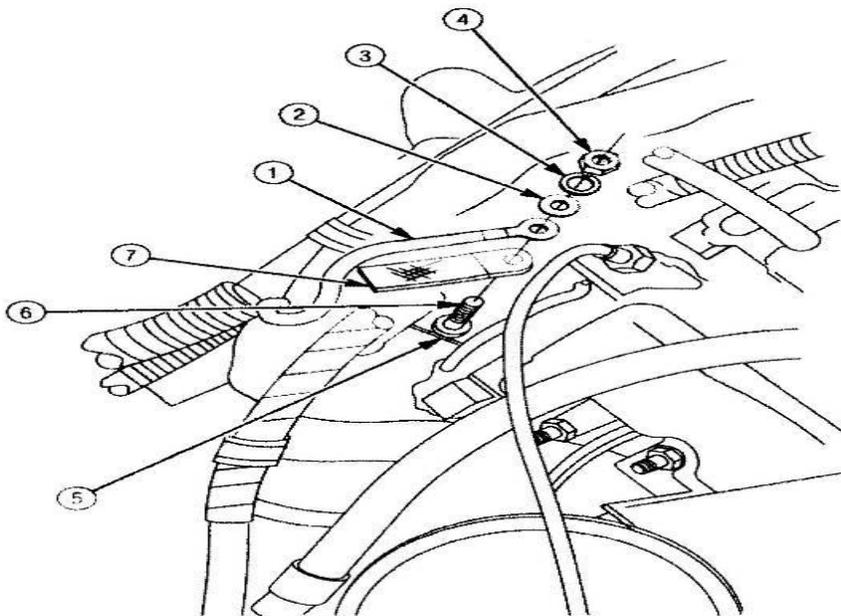


Figure 18

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

s. Removal of Fuel Filter Drain Hose and Cowl Insulation. Refer to TM 9-2320-387-24-1, Chapter 3, Task Para 3-35, Page 3-68 and **Figure 19 and 20** contained in these instructions.

(1) Remove nut (7), screw (4), two clamps (5), fuel filter drain hose (3), and branch of body wiring harness (6) from left inner cowl (2). Discard nut (7) and clamps (5), and retain all other parts.

(2) Remove nut (9), clamp (8), and fuel filter drain hose (3) from rear mounting position (1) for fuel filter drain hose (3). Discard nut (9) and clamp (8).

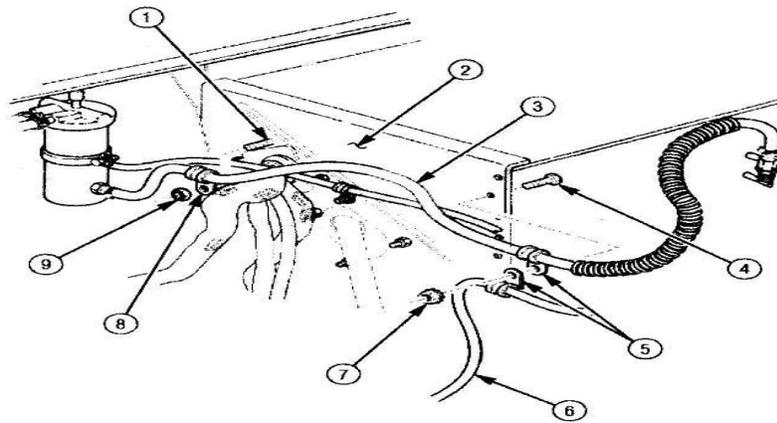


Figure 19

(3) Remove nut (5) and strap (4) supporting insulation (2) from screw (3) on left inner cowl (1). Discard nut (5) and strap (4). Refer to TM 9-2320-387-24-1, Chapter 3 and Figure 20.

(4) Mark and remove section of insulation (2) from left inner cowl (1). Discard removed insulation (2).

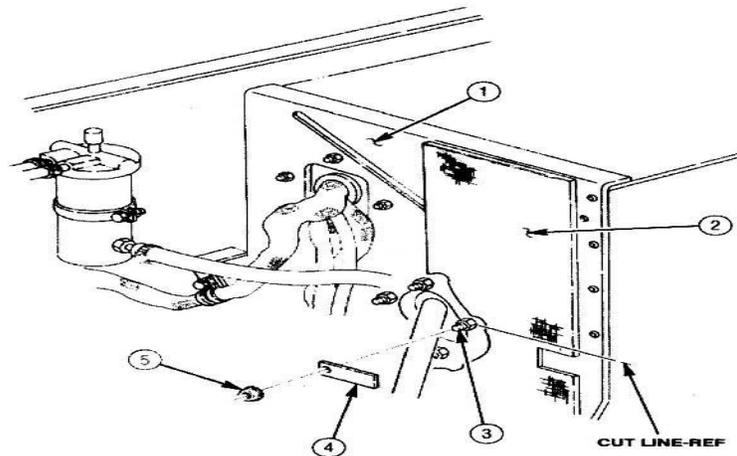


Figure 20

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

t. Re-routing of A/C Wiring Harness. Refer to TM 9-2320-387-24-2, Chapter 25, Task Para 25-35, Page 25-94 and **Figure 21** contained in these instructions.

(1) Re-route A/C wiring harness (1) around inboard side of power steering reservoir (2). Refer to Figure 21.

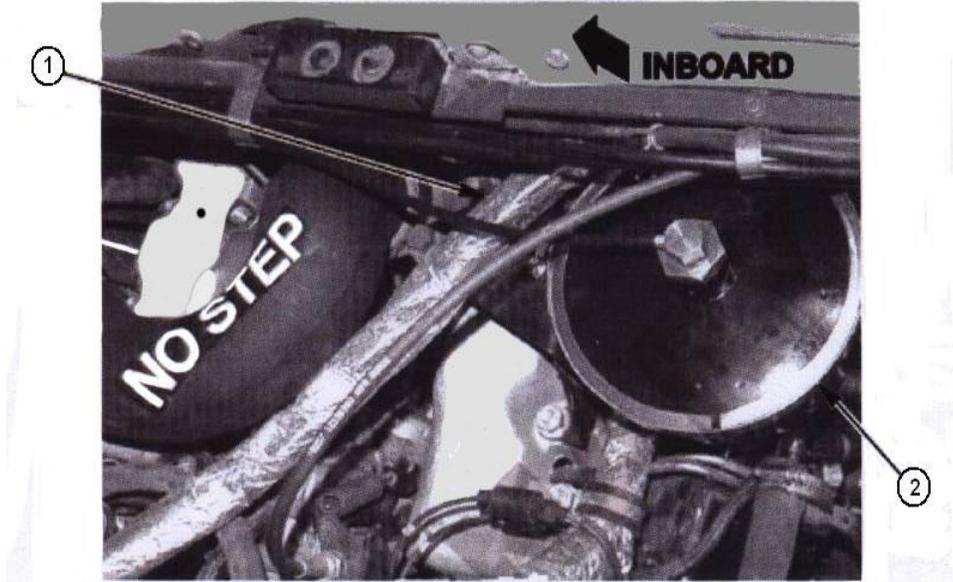


Figure 21

u. Removal of Power Steering Hoses. Refer to TM 9-2320-387-24-2, Chapter 8, Task Para 8-25, Page 8-68 and **Figure 22** contained in these instructions.

NOTE: The Power Steering reservoir needs to be drained before removing hoses.

- (1) Disconnect hose (14) from adapter (11) on hydraulic control valve (10).
- (2) Loosen hose clamp (13) and disconnect return hose (4) from tee (12). Discard hose clamp (13).
- (3) Remove nut (8), washer (15), screw (6), and two clamps (7) from return hoses (4 and 5). Discard nut (8) and retain all other parts.
- (4) Loosen hose clamp (16) and disconnect return hose (4) from front port (17) on power steering reservoir (1). Discard all parts
- (5) Loosen two hose clamps (3) and disconnect return hose (5) from rear port (2) on power steering reservoir (1) and elbow (9) on hydraulic control valve (10). Discard all parts.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

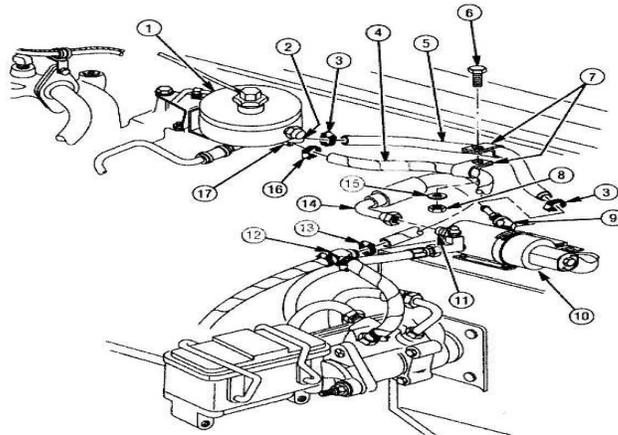


Figure 22

v. Installation of Power Steering Fluid Return Hoses. Refer to TM 9-2320-387-24-1, Chapter 8, Task Para 8-25, Page 8-68 and **Figure 23** contained in these instructions.

(1) Ensure that the existing plastic trim wrap (10) is reused and cut to fit as required on hose (11).

(2) Install two 11608950-1 hose clamps (3) on 12338330-15 hose (11) and connect to front port (13) on power steering reservoir (1) and tee (8) at hydro-booster (7).

(3) Tighten hose clamp (9) at front port (13) and leave hose clamp (9) at tee (8) loose at this time.

(4) Install two 11608950-1 hose clamps (3) on 12338330-16 hose (4) and connect to rear port (2) on power steering reservoir (1) and elbow (5) on hydraulic control valve (6). Tighten hose clamp (3) at rear port (2) – **LEAVE HOSE CLAMP (3) ON ELBOW (5) LOOSE AT THIS TIME.**

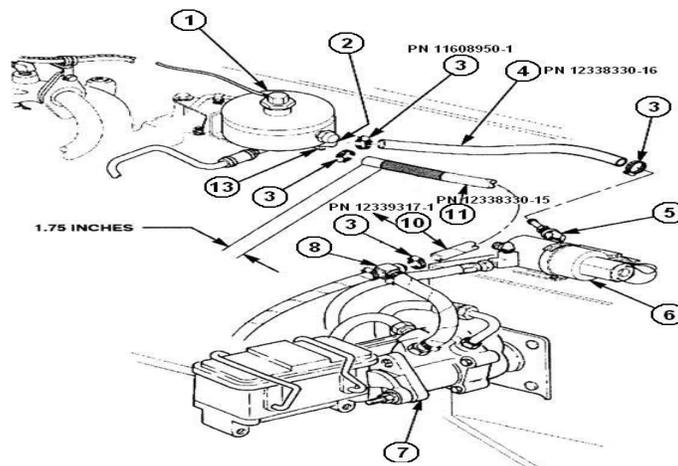


Figure 23

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(5) Remove nut (1), washer (2), clamp (3), and hose (4) from bracket (6) on frame rail (5). Discard nut (1), washer (2), and clamp (3), refer to **Figure 24**.

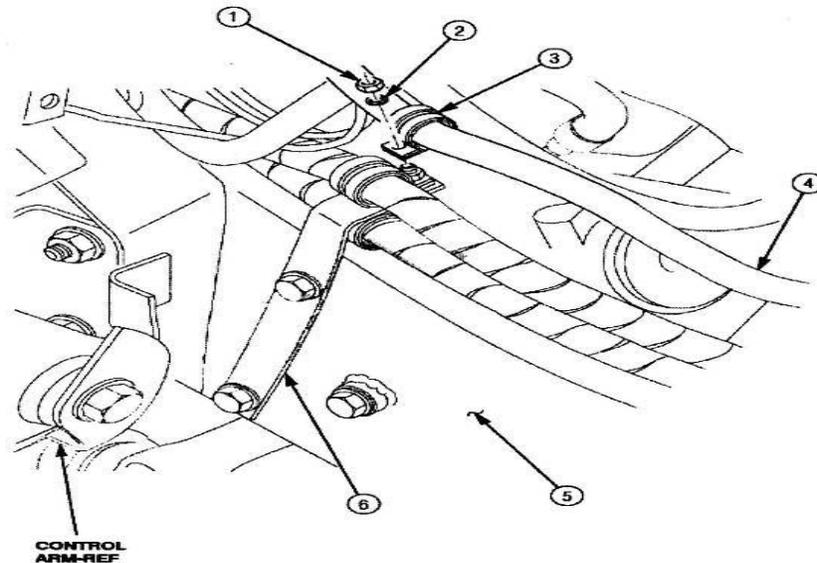


Figure 24

w. Installation of Tube, Engine, Oil P/N 12469130. TM 9-2320-387-24-1, Chapter 3, Task Para 3-2, Page 3-2 and **Figure 25** contained in these instructions. Check the oil level to ensure proper reading before removal. Refer to TM 9-2320-387-24-1 Chapters 2 for information on the correct oil level.

(1) Remove protective cap/plugs from both ends of Tube, Engine, Oil (1) prior to installation.

(2) Install Oil Ring P/N 5308T484 (2) onto Tube, Engine, Oil (1).

(3) Install Tube, Engine, Oil (1) into the engine oil pan dipstick tube port (3).

(4) Ensure dipstick bell (4) at the top of Tube, Engine, Oil is installed in front of power steering fluid return hoses.

(5) Secure upper engine Tube, Engine, Oil bracket (5) to fuel line bracket (6) with 12340515 screw (7).

(6) Secure branch of engine wiring harness (8) to fuel line bracket (9) with existing clamp (10) and 12340515 screw (11).

(7) Install Dipstick P/N 12339846 (4) in Tube, Engine Oil (1).

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

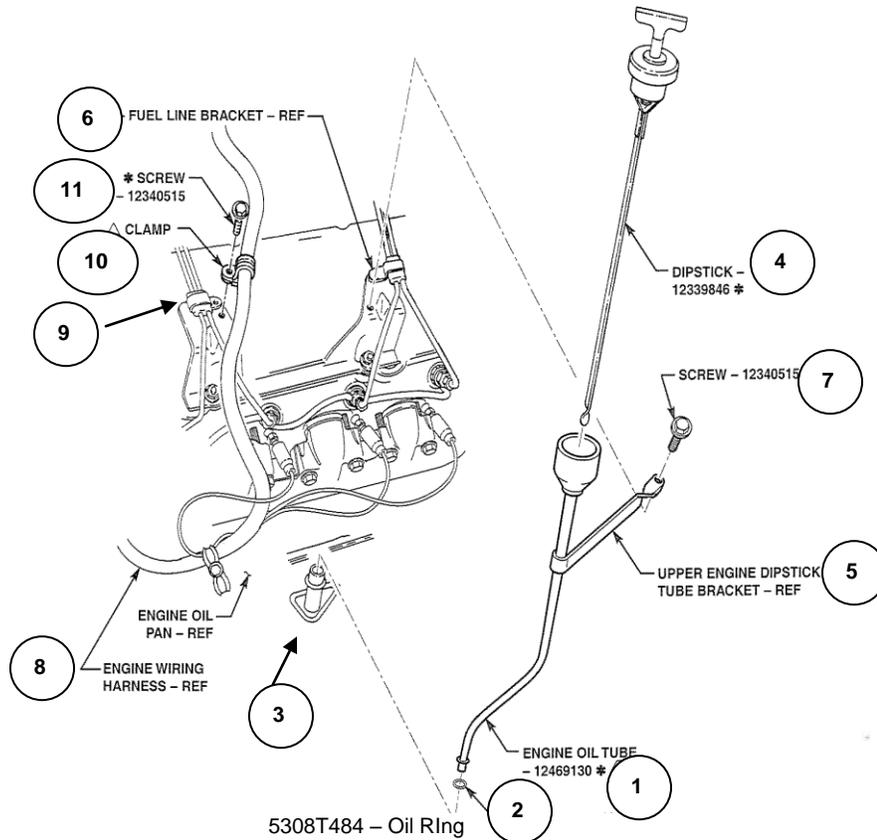


Figure 25

x. Relocate Fuel Filter Drain Hose. TM 9-2320-387-24-1, Chapter 3, Task Para 3-33, Page 3-64 and **Figure 26** contained in these instructions.

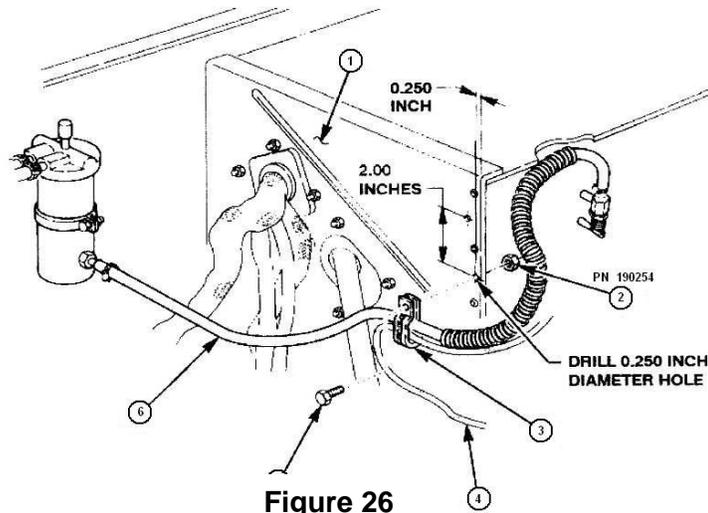
WARNING

Always wear eye protection (safety glasses/goggles/shield) when drilling or grinding. Failure to do so may result in injury to eyes.

(1) Locate, mark, and drill a 0.250 inch diameter hole in left inner cowl (1). Deburr and repair finish all surfaces that have been cut, ground, or drilled using appropriate primer per MIL-DTL-53072.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(2) Install MS21334-31 clamp (3) on fuel filter drain hose (6) and branch of body wiring harness (4) and secure to left inner cowl (1) with existing screw (5) and 190254 nut (2).

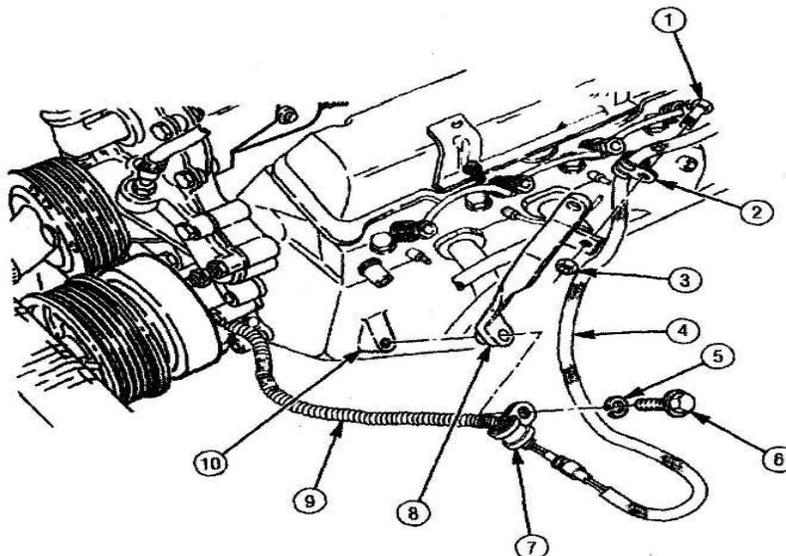


y. Installation of Alternator Support Bracket, Alternator/Power Steering Mounting Bracket and Power Steering Pump. TM 9-2320-387-24-1, Chapter 4, Task Para 4-3.1, Page 4-4 and **Figures 27, 28 and 29** contained in these instructions.

NOTE: Apply AN0221 high strength sealing compound to threads of screws prior to installing them.

(1) Install 12460502 Alternator Support Bracket (8) and RPM Sensor Wires (9) on engine block boss (10) with existing clamp (7), 11500207 lock washer (5), and existing bolt (6) refer to **Figure 27**. **Do not tighten bolt (6) at this time.**

(2) Secure existing clamp (2) and branch of engine wiring harness (4) to alternator support (8) with existing screw (1) and M4591314-4C68Z nut (3).



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Figure 27

(3) Install lower screw (3) in 12469497-1 Alternator/Power Steering Support Bracket (4) and position power steering pump (5) in mounting position. Start lower screw (3) into cylinder head (1) but **do not tighten at this time**, as shown in **Figure 28**.

(4) Install 12469497-1 Alternator/Power Steering Support Bracket (4) to cylinder head (1) with two existing screws (2). Tighten screws (2 and 3) to 48 foot pounds. (64 N·m) as shown in **Figure 28**.

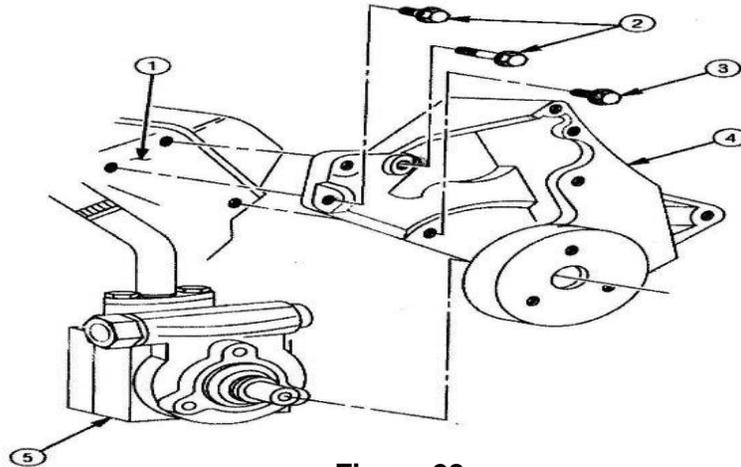
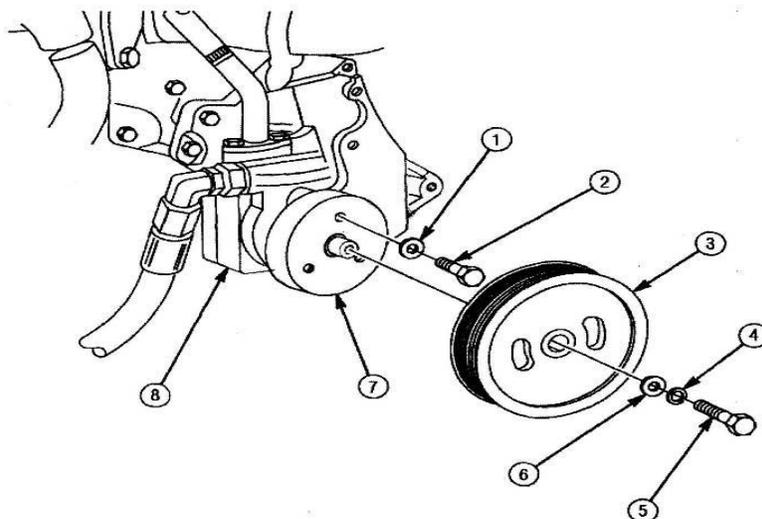


Figure 28

(6) Install Power Steering Pump (8) on the Alternator/Power Steering Support Bracket (7) with three 11500206 lock washers (1) and existing screws (2). Tighten screws (2) to 21-25 foot pounds (28-34 N·m), as shown in **Figure 29**.

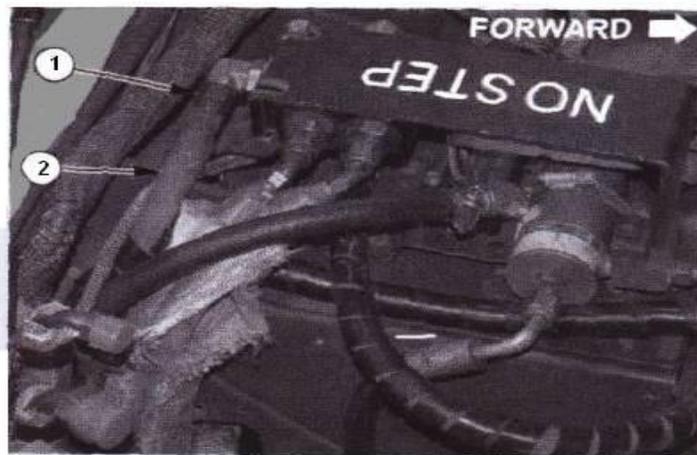
(7) Install existing power steering pulley (3) and woodruff key on shaft of power steering pump (8) with existing spacer (6), 120214 lock washer (4), and screw (5). Tighten screw (5) to 21-25 foot pounds (28-34 N·m), as shown in **Figure 29**.



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

z. Adjust Routing of Power Steering Lines and Wiring Harness: Refer to TM 9-2320-387-24-1, Chapter 8, Task Para 8-25, Page 8-68 and **Figures 30A-B and 31** contained in these instructions.

- (1) Remove fitting (1) and re-route hose (2) toward front of vehicle.
- (2) Re-route hose (2) back toward original connection location as shown in below figure, then install and tighten the fitting (1).
- (3) Re-route hose (1) as shown in below figure. **Place hose (1) aside and do not connect at this time.**
- (4) Loosen screw (2) on clamp (4).
- (5) Pull wiring harness (3) tight downward while holding clamp (4) in place, then tighten screw (2).



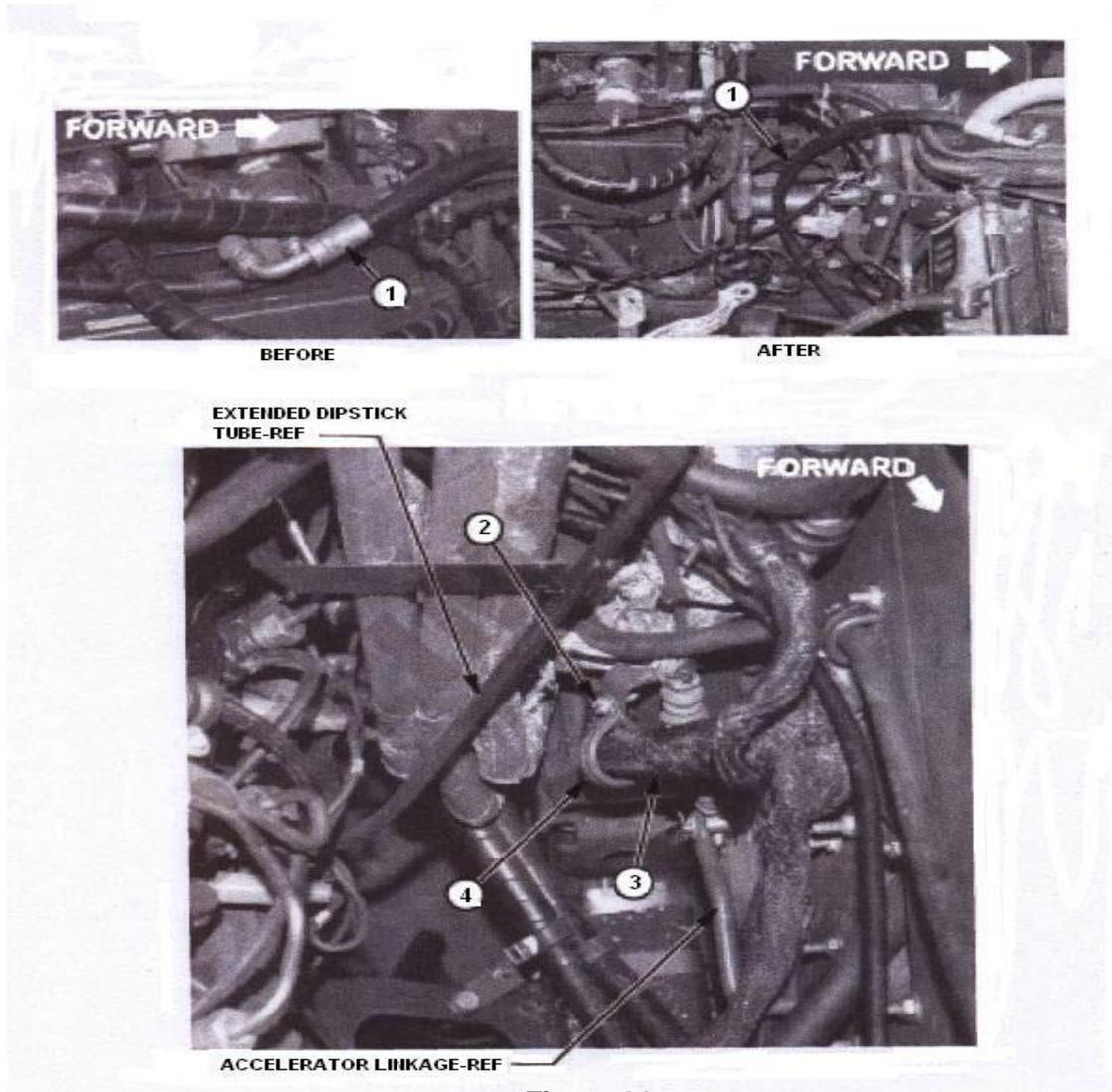
BEFORE

Figure 30A



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

AFTER
Figure 30B



aa. Installation of the 400 Amp Alternator (N1602-1). TM 9-2320-387-24-1, Chapter 4, Task Para 4-8.3, Page 4-18.12 and **Figure 32** contained in these instructions.

CAUTION

Ensure offset flange side of alternator clutch pulley is mounted toward 400 Amp Alternator. Failure to do so may result in damage to equipment.

WARNING

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

The new 400 Amp Alternator is very heavy and ***MUST BE*** supported during installation. Failure to support alternator may cause injury to personnel or damage to equipment.

NOTE: If the new alternator has a pulley installed, skip the below process and go to step 5. If new alternator does not have an alternator clutch pulley installed (6), remove it from existing alternator and install it on the 400 Amp Alternator.

(1) Remove nut (9), washer (1), and packing spacer (2), if installed, from shaft (4) on N1602-1 400 Amp Alternator (5).

(2) Install existing alternator clutch pulley (6) and woodruff key (3) on shaft (4) of 400 Amp Alternator (5) with 12469495-1 adapter (7). Hold rear nut of alternator shaft (4) and tighten adapter (7) to 50 foot pounds (68 N·m).

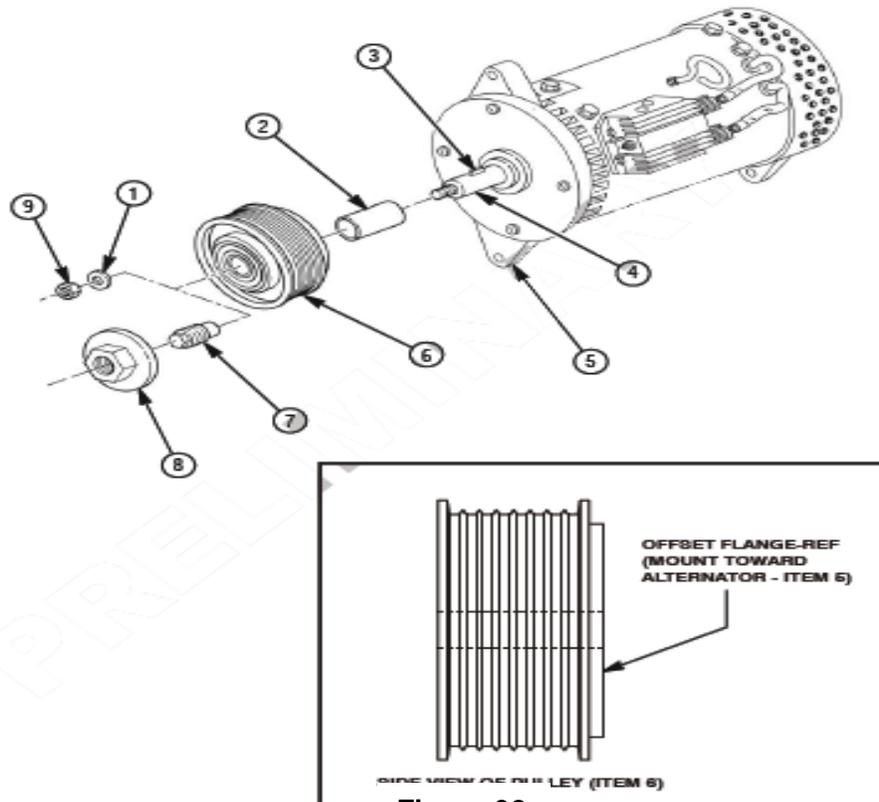


Figure 32

(3) Install existing installation nut (1) on adapter (2) and using torque wrench set at 120 foot pounds (163 N·m) and socket, hold adapter (2) with socket and torque wrench, and turn Installation nut (1) with a wrench clockwise until torque is reached.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(4) Before installing the 400 Amp Alternator pre-adjust number 3 fuel injection line using the Fuel Line Adjustment Tool P/N 2008E0713, as shown in **Figure 33**.

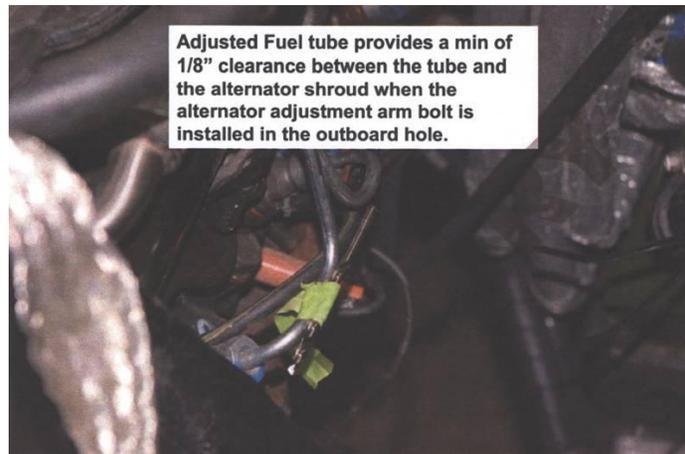


Figure 33

(5) Using a lifting device, position the 400 Amp Alternator (1) on the Alternator/Power Steering Support Bracket 12469497-1 (5). **Do not remove the 400 Amp Alternator from the lifting device.**

(6) Secure the 400 Amp Alternator (1) to the Alternator/Power Steering Support Bracket (5) with long screw B1821BH056F950N (2) at the rear end of the Alternator/Power Steering Support Bracket (4), along with using two MILW1085TYPEA washers (3), MS35338-30 lock washer (6), and 225860 nut (7) as shown in **Figure 34**. **Do not tighten nut (7) at this time.**

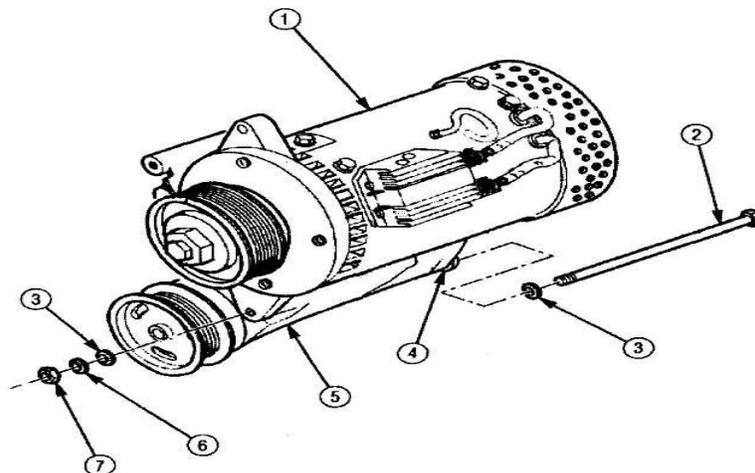


Figure 34

NOTE: If necessary, adjust the motor mount nuts to gain clearance between body and 400 Amp Alternator, refer to TM 9-2320-387-24-2, Chapter 15, Task Para 15-3, Page 15-2.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(7) Tighten bolt (6) to 22 foot pounds (30.0 N-M) as shown in **Figure 35**.

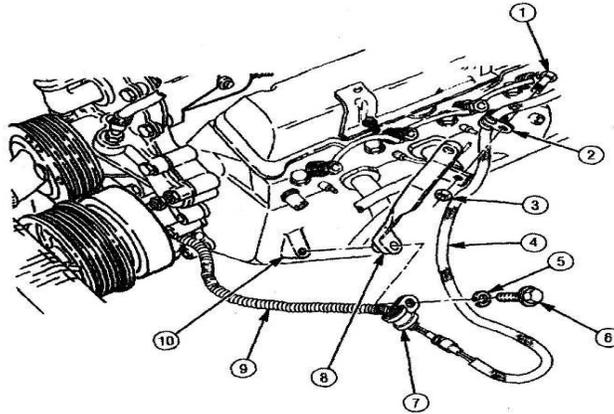
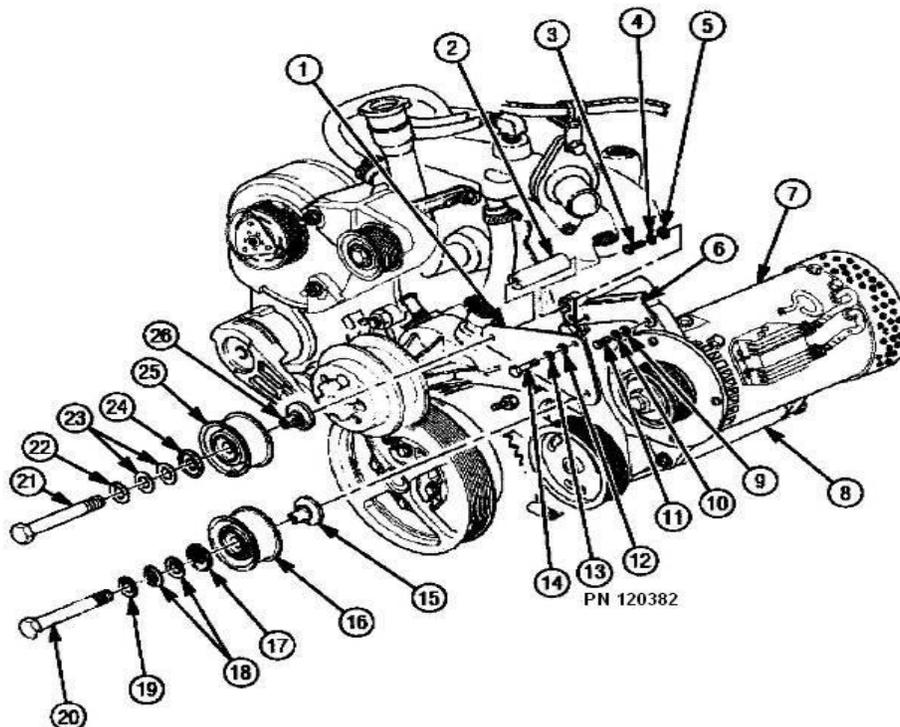


Figure 35

(8) Install the existing Alternator Adjusting Bracket (6) to Alternator/Power Steering Support Bracket (8) with existing screw (3), 120382 lock washer (4), and washer (5). **Do not tighten screw (3) at this time**, as shown in **Figure 36**.

(9) Secure Alternator Adjusting Bracket (6) to 400 Amp Alternator (7) with existing screw (11), 120382 lock washer (10), and washer (9). **Do not tighten screw (11) at this time**. Refer to **Figure 36**.



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Figure 36

CAUTION

After the 400 Amp Alternator is placed in mounting position, a visual inspection from under vehicle is needed to ensure all lines, brackets, hoses, harnesses, etc. are clear of the alternator. If the 400 Amp Alternator shroud is in contact with the number 3 cylinder fuel injector line, the line needs to be modified. Failure to do so may result in damage to equipment.

(10) Tighten nut (7) to the long screw B1821BH056F950N (2) to 155 foot pounds (210 N·m) as shown in **Figure 37**.

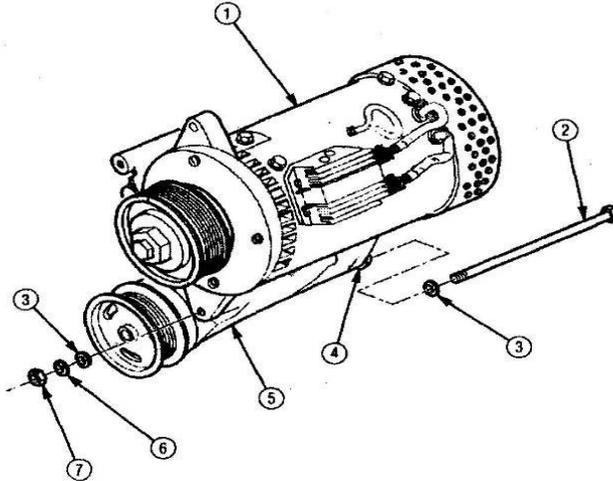
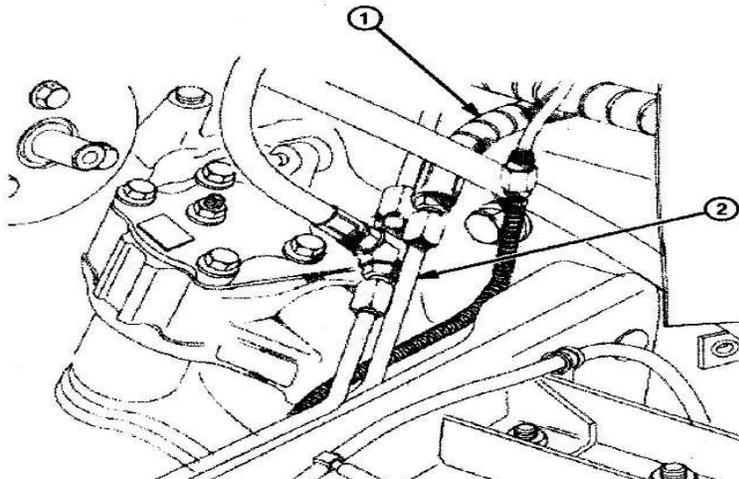


Figure 37

(11) Route hose (1) from tube (2) in **Figure 38**, to hydraulic control valve (6) and connect to fitting (5) on hydraulic control valve (6), as shown in **Figure 39**.



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Figure 38

(12) Position hose (1) to clear regulator (4) and tighten hose connections at tube (2) in **Figure 38** and hydraulic control valve (6) as shown in **Figure 39**.

(13) Ensure that the existing plastic trim wrap (3) is reused and cut to fit if required. Secure each end of the trim wrap with electrical tape, as shown in **Figure 39**.

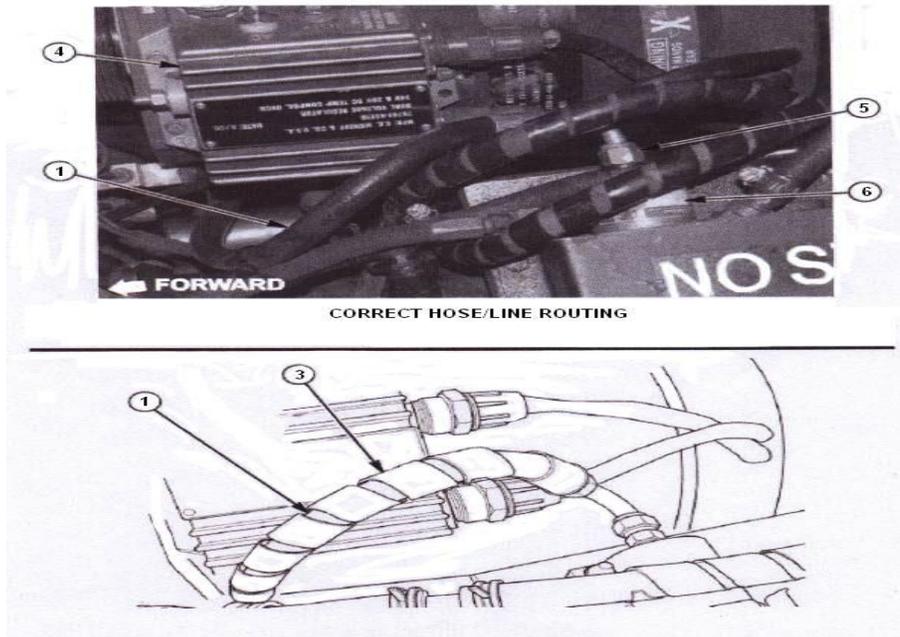
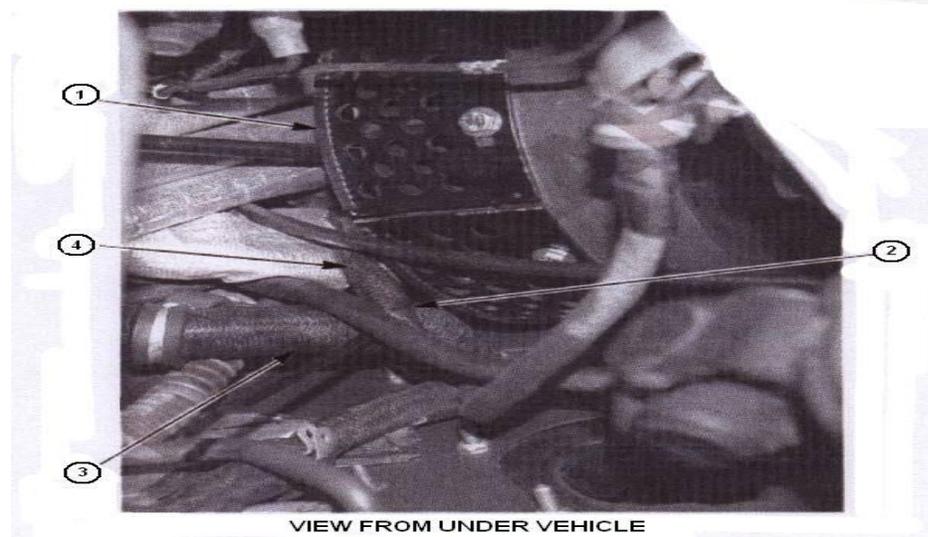


Figure 39

(14) Secure small wiring harness (4) to large wiring harness (3) with 6437403-01M1 cable ties (2) as required to keep small wiring harness away from the rear of the 400 Amp Alternator (1), as shown in **Figure 40**.



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Figure 40

(15) Refer to **Figure 35** on page 30: from under the vehicle, visually inspect to ensure wiring harness (9) is not in contact with the 400 Amp Alternator. If required, bend clamp (7) in order to gain clearance between wiring harness (9) and the 400 Amp Alternator.

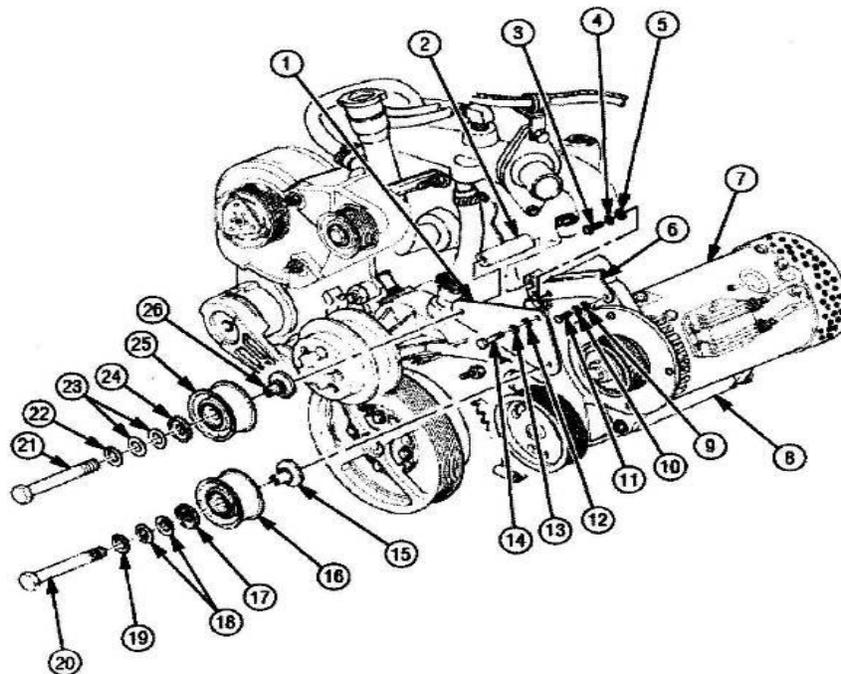
x. Install Idler Pulley Bracket and Idler Pulley as follows: TM 9-2320-387-24-1, Chapter 3, Task Para 3-82.6 and 3-82.7, Pages 3-145 and 3-146 and **Figures 41 and 42** contained in these instructions.

(1) Install existing idler pulley bracket (1) on alternator/pump support (8) with existing screw (14), 120382 lock washer (13), and washer (12), as shown in **Figure 41**. **Do not tighten screw (14) at this time.**

(2) Install existing idler pulley (25) on idler pulley bracket (1) with existing idler pulley support (26), dust shield (24), two washers (23), 120382 lock washer (22), screw (21), and spacer (2) between alternator/pump support (8) and idler pulley bracket (1)), as shown in **Figure 41**. **Do not tighten screw (21) at this time.**

(3) Install existing idler pulley (16) on idler pulley bracket (1) with existing idler pulley support (15), dust shield (17), two washers (18), 120382 lock washer (19), and screw (20). Tighten screw (20) to 33-41 foot pounds (45-56 N·m), as shown in **Figure 41**.

(4) Tighten screws (14 and 21) to 33-41 foot pounds (45-56 N·m), as shown in **Figure 41**.



400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Figure 41

(5) Remove screw (5), lock washer (6), and washer (7) from alternator adjusting bracket (2) and 400 Amp Alternator (3), as shown in **Figure 42**.

Retain all parts.

(6) Route existing serpentine belt (4) on pulleys as shown in **Figure 42**.

(7) Install screw (5), lock washer (6), and washer (7) on alternator adjusting bracket (2) and 400 Amp Alternator (3). Tighten screws (1 and 5) to 33-41 foot pounds (45-56 N-m), as shown in **Figure 42**.

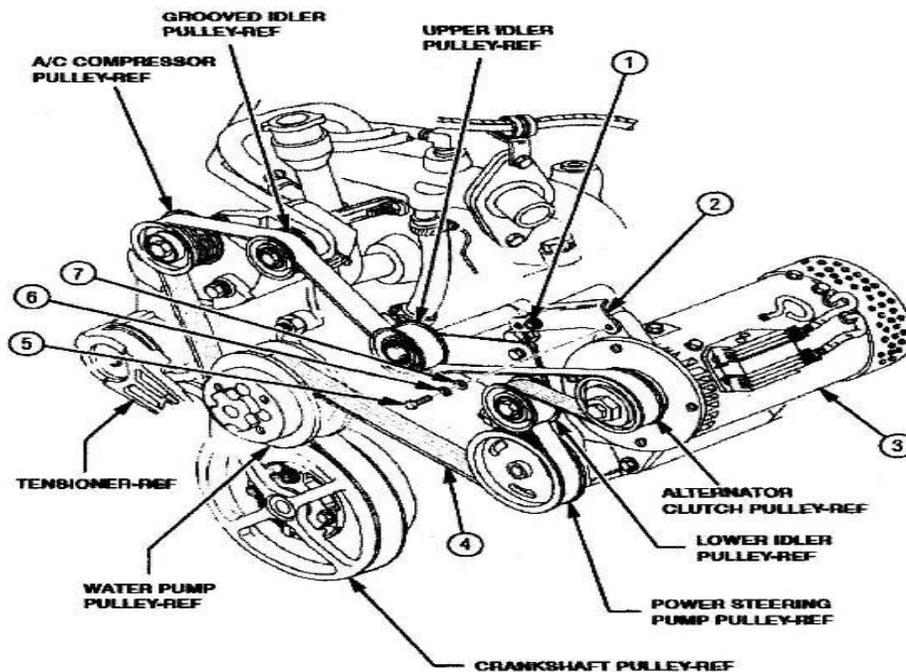


Figure 42

THIS IS ONLY FOR THE M1114 UAH

Refer to TM 9-2320-387-24-1, Chapter 4 and **Figures 43 and 44** contained in these instructions.

y. **Battery Box Access Hole:** Hone the rear access hole in the battery box to 1¼ inches in size, use a 1 ¼ socket as reference for correct sizing (1). Reroute the wiring through the middle access hole in battery box (2) and install the Terminal Installation Plate P/N 2008E0712 (3) using rivets provided P/N 97524A025 (4) as shown in **Figure 43**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

z. Installation of Ground Cable: Install ground cable P/N 122460498-4 to the Terminal P/N12506830 (5) prior to riveting the Terminal Installation Plate to battery box as shown in **Figure 44**.

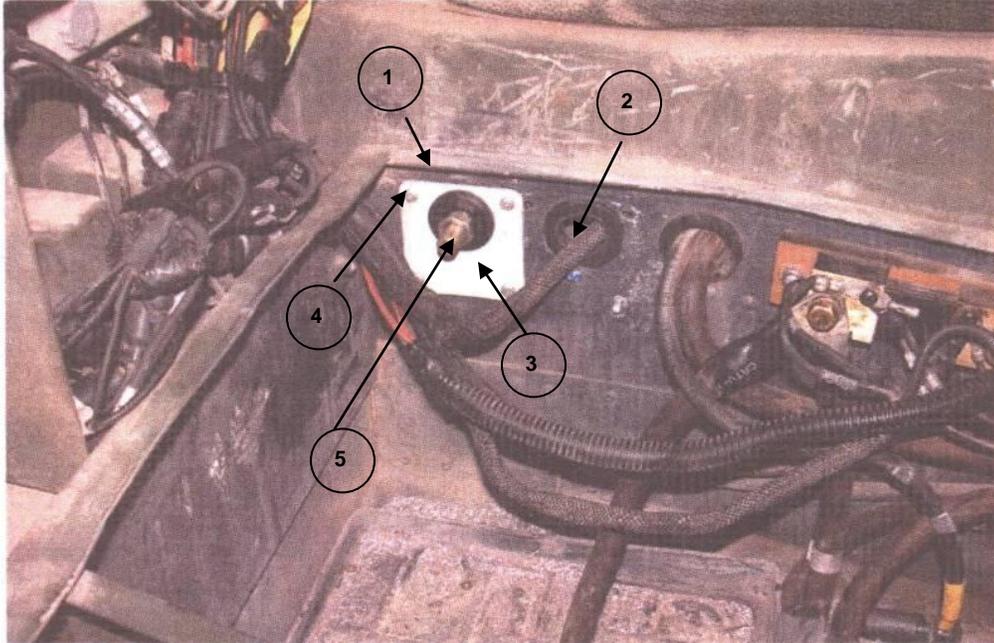
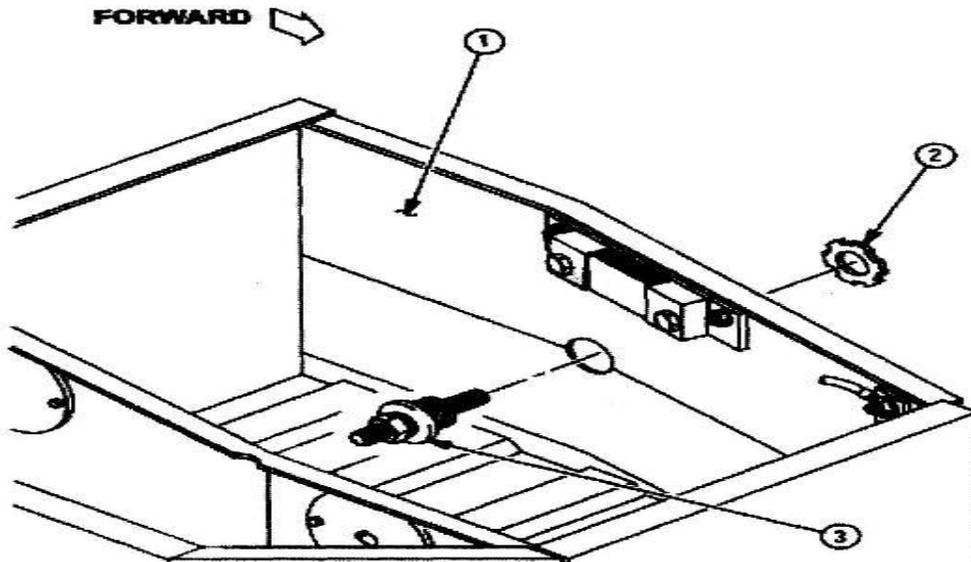


Figure 43

aa. Terminal Installation: Install Terminal (3) P/N12506830, on battery box inboard side panel (1), with locknut (2) as shown in **Figure 44**.



NOTE
LOCKNUT (ITEM 2) IS PART OF
TERMINAL (ITEM 3).

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

M1151, M1152, and M1153 ECV HMMWV Models Only

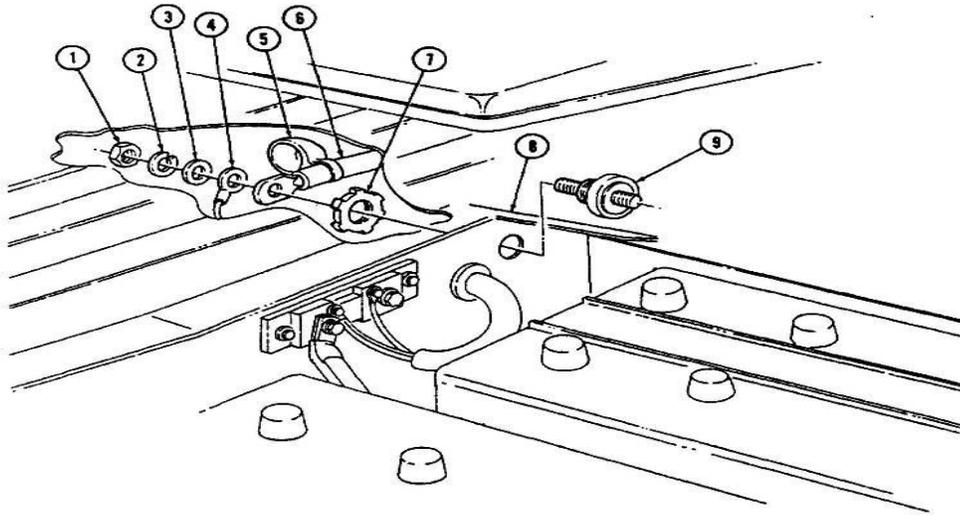


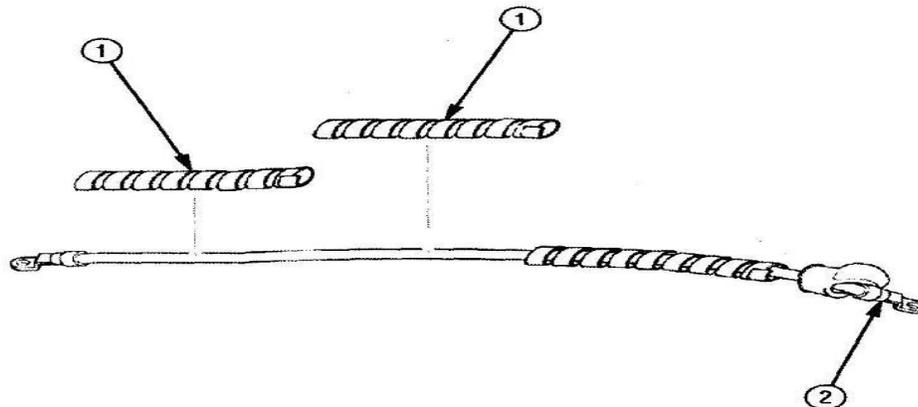
Figure 45

CAUTION

Ensure cable terminal is installed as shown. Failure to do so may result in damage to equipment.

bb. Install Alternator Cables as follows: TM 9-2320-387-24-1, Chapter 4, Task Para 4-8.2, Pages 4-18.4 and **Figures 45 and 46** contained in these instructions.

(1) The two Trim Wraps 12339317-1 (1) on 12339317 cable (2) should already be on the cable (2), if not reuse existing trim wrap and secure the ends with electrical tape as shown in **Figure 46**.

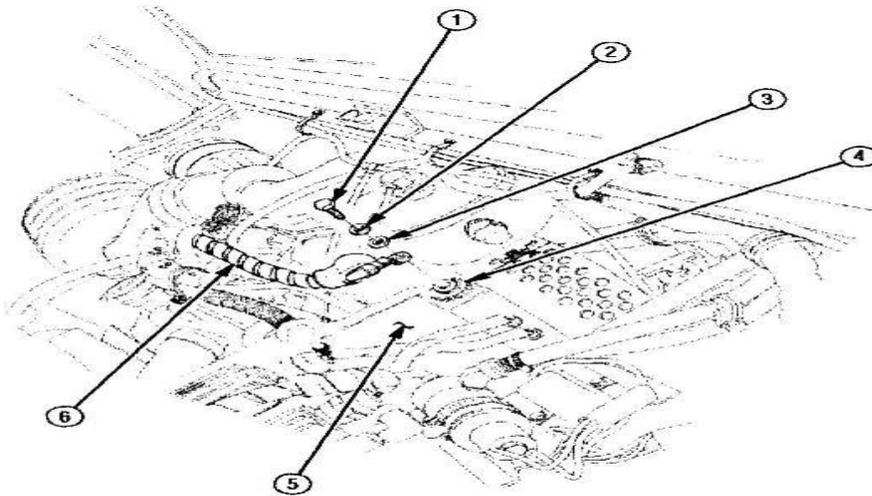


400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

Figure 46

(2) Remove screw (1), lock washer (2), and washer (3) from the 400 Amp Alternator (5) rear positive terminal (4) as shown in **Figure 47**.

(3) Install 12339317 cable (6) on the 400 Amp Alternator (5) rear positive terminal (4) with washer (3), lock washer (2), and screw (1) as shown in **Figure 47**. **Do not tighten screw (1) at this time.**



NOTE
ENSURE TERMINAL OF 12339317 CABLE (ITEM 6)
IS POSITIONED AGAINST REAR POSITIVE TERMINAL
(ITEM 4) AS SHOWN.

Figure 47

(4) Route 12339317 cable (1) over engine to right side, to positive terminal stud (5) on starter (4) as shown in **Figure 48**.

(5) Remove sealing compound from positive terminal stud (5) on starter (4), along with nut and lock washer (3). Discard lock washer (3) as shown in **Figure 48**.

(6) Secure cable (1) on positive terminal stud (5) of starter (4) with 120384 lock washer (3) and existing nut (2) as shown in **Figure 48**.

(7) Remove two nuts (6) from screw (9) on oil pan bracket (10), discard nuts (6) as shown in **Figure 48**.

(8) Install 12339317 cable (1) on oil pan bracket (10) with MS21333-105 clamp (7), existing screw (9), two clamps (7 and 8), and 271172 nut (6) as shown in **Figure 48**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

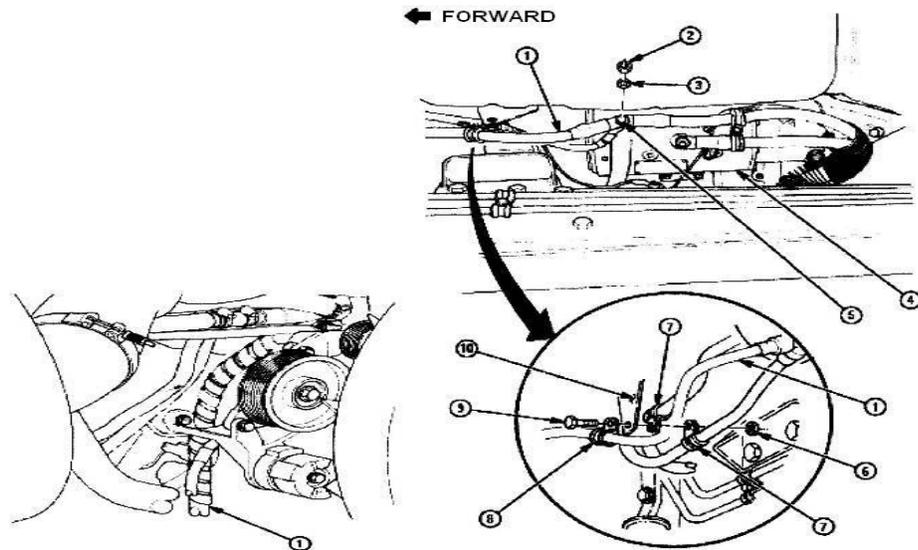


Figure 48

(9) Install MS21333-129 clamp (7) on engine wiring harness (6) and MS21333-126 clamp (3) on 12339317 cable (1) and secure together with B1821BH038C075N screw (2), 2436163 washer (4), and M45913/4-6CG8Z nut (5) as shown in **Figure 49**.

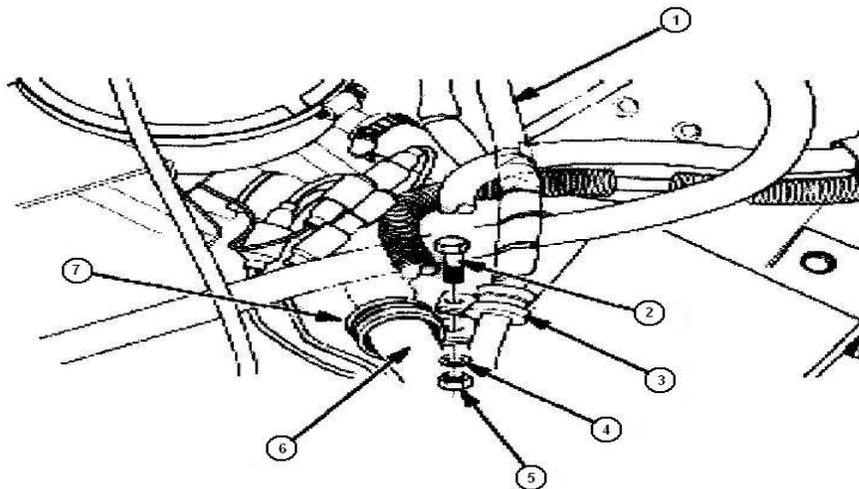


Figure 49

(10) Remove screw (5), lock washer (6), and washer (1) from 400 amp alternator (2) rear negative terminal (3) as shown in **Figure 50**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(11) Install 12460498-4 cable (4) on 400 Amp Alternator (2) rear negative terminal (3) with washer (1), lock washer (6), and screw (5). **Do not tighten screw (5) at this time.**

(12) Route 12460498-4 cable (4) over engine as shown in **Figure 50**.

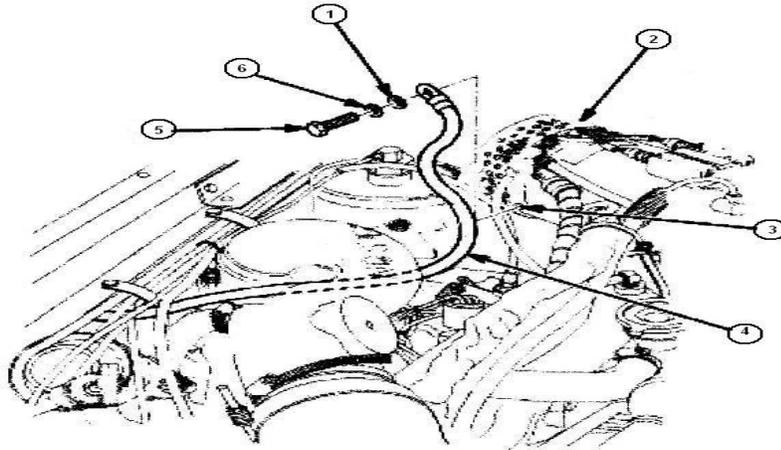


Figure 50

(13) Using **Figure 51**, position Cable 12460498-4 (4) toward back of engine. Attach the cable to the Terminal Power Feed Thru 12340594 (3) in **Figure 44** on page 35 on the battery box inboard side panel.

(14) Remove hardware on the Terminal Power Feed Thru and attach Cable 12460498-4 to the Terminal Power Feed Thru, refer to Figure 45 on page 36 for detailed view. Install hardware and tighten the cable to the Terminal Power Feed Thru.

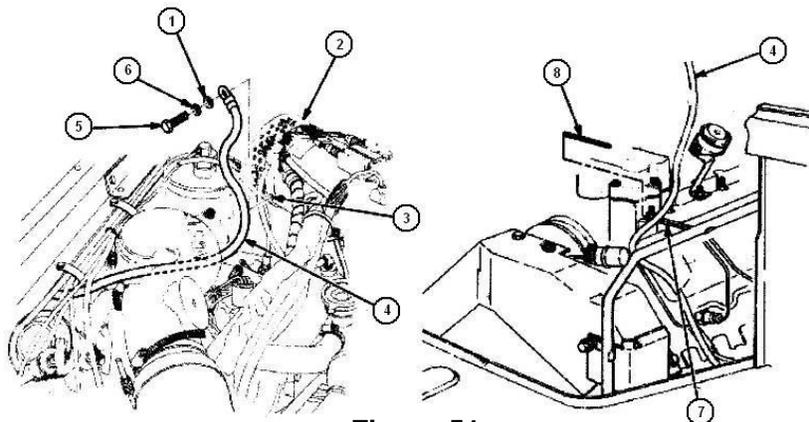


Figure 51

(15) Remove screw (5) from bracket (2) and frame rail (3) as shown in **Figure 52**. Discard screw (5).

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(16) Install MS21333-129 clamp (1) on cable (4) and secure to frame rail (3) and bracket (2), with 271153 screws (5) as shown in **Figure 52**.

NOTE: Because there is no bracket on M1114, tie-wrap cables to existing wires.

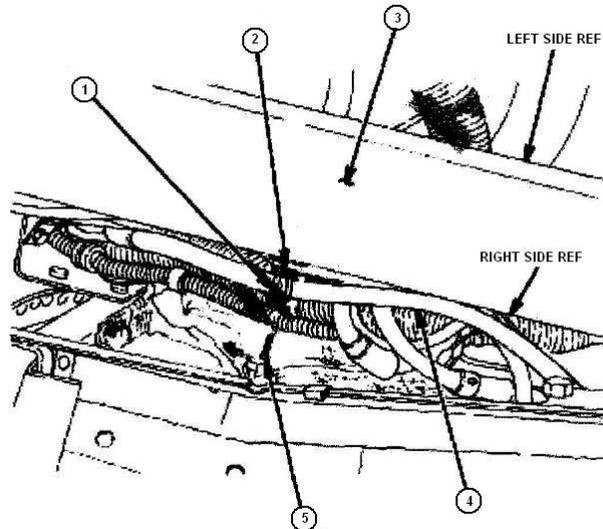


Figure 52

(17) Install MS21333-127 clamp (1) on cable (5) and secure on intake manifold (4) with 11500207 lock washer (3) and 11500929 bolt (2) as shown in **Figure 53**.

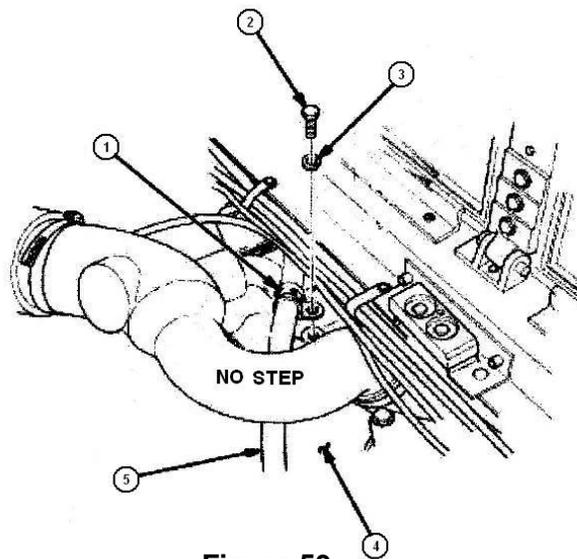


Figure 53

(18) Remove screw (2) and washer (3) from CDR valve (4) and bracket (5) as shown in **Figure 54**. Retain all parts.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(19) Install MS21333-127 clamp (1) on cable (6) and secure on CDR valve (4) and bracket (5) with existing screw (2) and washer (3) as shown in **Figure 54**.

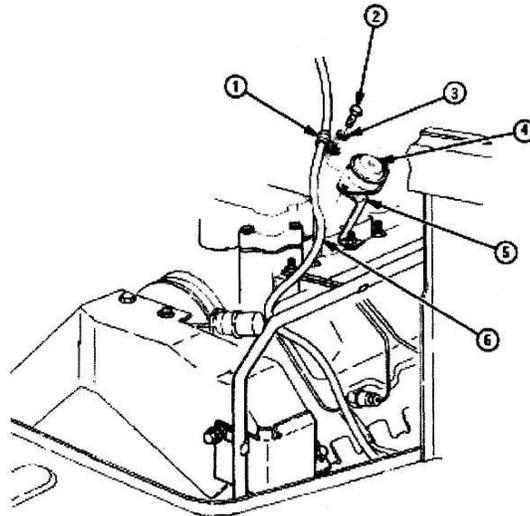


Figure 54

cc. Install Alternator and Regulator Electrical Components as follows: TM 9-2320-387-24-1, Chapter 4, Task Para 4-8.1 and 4-8.3, Pages 4-18.2 and 4-18/12 and **Figure 55** contained in these instructions.

CAUTION

Ensure cable terminals are installed as shown. Failure to do so may result in damage to equipment.

(1) Remove screw (9), lock washer (10), washer (11), and 12339317 cable (8) from rear positive terminal (12) on 400 Amp Alternator (1) as shown in **Figure 55**. Retain all parts.

(2) Remove screw (5), lock washer (4), and washer (3) from front positive terminal (2) on 400 Amp Alternator (1) as shown in **Figure 55**. Retain all parts.

(3) Install 12460498-1 cable (7) and 12339317 cable (8) on rear positive terminal (12) on 400 Amp Alternator (1) with existing screw (9), lock washer (10), and washer (11) as shown in **Figure 55**.

(4) Install 12460498-1 cable (7) and existing cable (6) on front positive terminal (2) on 400 Amp Alternator (1) with existing screw (5), lock washer (4), and washer (3) as shown in **Figure 55**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

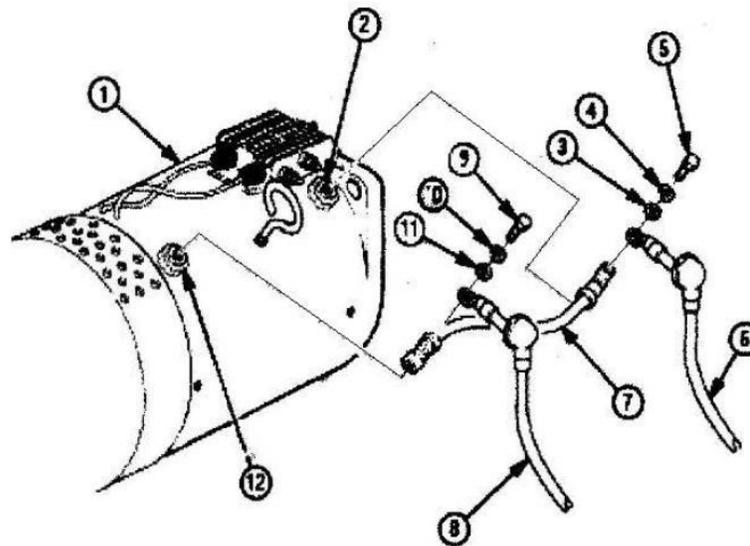


Figure 55

(5) Remove screw (8), lock washer (9), washer (10), and 12460498-4 cable (11) from rear negative terminal (12) on 400 amp alternator (1) as shown in **Figure 56A**. Retain all parts.

(6) Remove screw (5), lock washer (4), and washer (6) from front negative terminal (2) on 400 Amp Alternator (1) as shown in **Figure 56A**. Retain all parts.

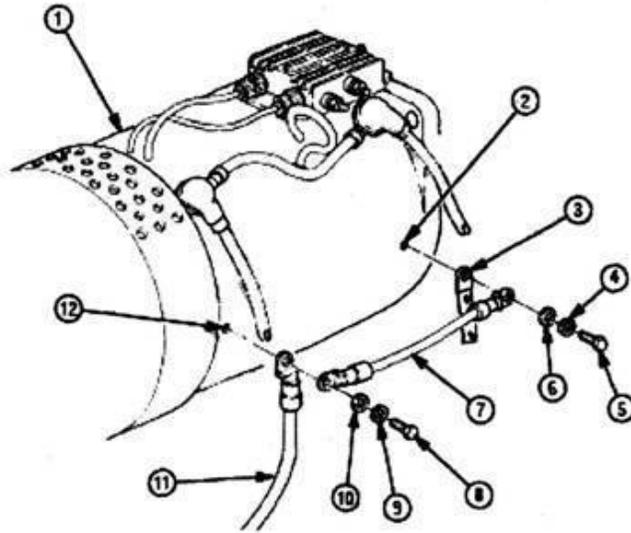
(7). Install 12341151-1 ground strap (3) and 12460498-2 cable (7) on 400 AMP alternator (1) front negative terminal (2) with existing washer (6), lock washer (4), and screw (5) as shown in **Figure 56A**. **Do not tighten screw (5) at this time.**

(8) Secure 12460498-4 cable (11) and 12460498-2 cable (7) on 400 Amp Alternator (1) rear negative terminal (12) with existing washer (10), lock washer (9), and screw (8) as shown in **Figure 56A**.

(9) Route ground strap (5) over the Alternator/Power Steering Support Bracket (8), under tube (10) and wiring harness (9) to stud (6) on engine coolant crossover (7) and secure with existing cable (4), washer (1), 11500207 lock washer (3), and nut (2) as shown in **Figure 56B**.

(10) Tighten screw (5) as shown in **Figure 56B**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D



NOTE
ENSURE TERMINALS OF ALL CABLES ARE
POSITIONED AS SHOWN

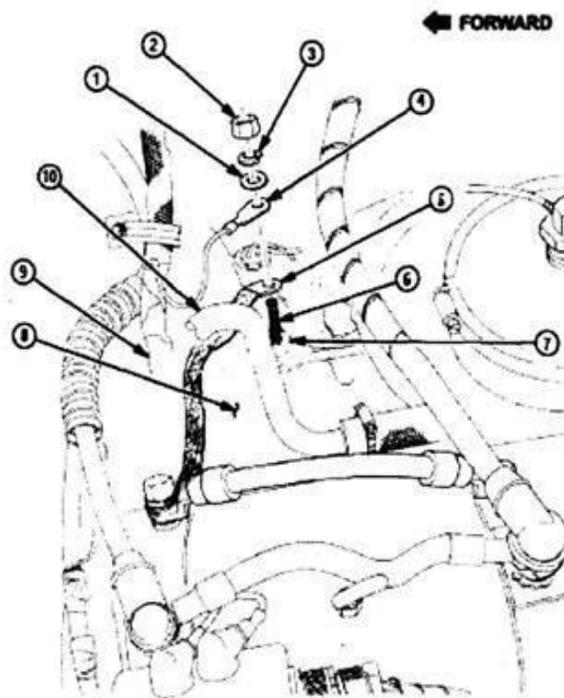


Figure 56B

(11) Remove nut (8) from yellow terminal (4) on regulator (2) as shown in Figure 57. Retain all parts.

NOTE: If vehicle has a tachometer installed, regulator lead 2C is connected to the yellow terminal in place of regulator lead 2A.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(12) Secure lead 2A (6) or lead 2C (7) to yellow terminal (4) on regulator (2) with existing nut (8) and washer (5). Tighten nut (8) to 20 lb-in (2 N·m). As shown in **Figure 57**.

(13) Remove nut (9) from red terminal (3) on regulator (2) as shown in **Figure 57**. Retain all parts.

(14) Secure lead 568 (10) to red terminal (3) on regulator (2) with existing nut (9) and washer (1) as shown in **Figure 57**. Tighten nut (9) to 35 lb-in (4 N·m).

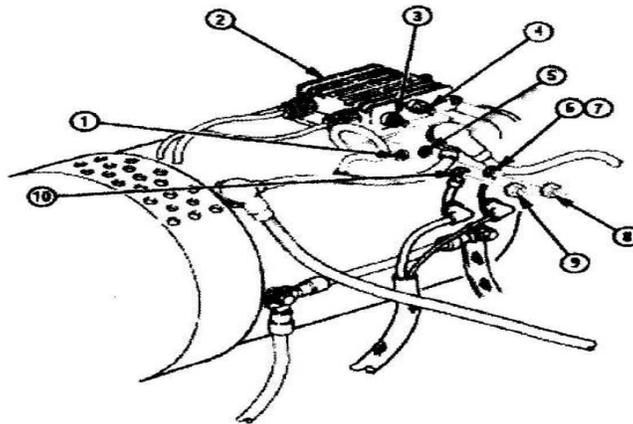


Figure 57

(15) Remove nut (5) from yellow low output terminal (2) on regulator (1) as shown in **Figure 58**. Retain all parts.

(16). Secure cable lead 68A (4) to yellow low output terminal (2) on regulator (1) with nut (5) and washer (3). Tighten nut (5) to 50 lb-in (7 Nm). As shown in **Figure 58**.

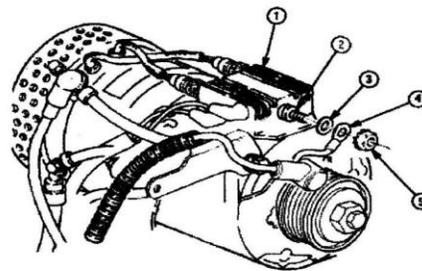


Figure 58

PARAGRAPH DD ARE FOR THE M1114 UAH HMMWV ONLY

NOTE: New O-Rings are installed on the M1114 A/C Lines. O-Rings provided in the A/C Sub-kit are spares, use as required

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

dd Air Conditioner Compressor Hose Assembly Maintenance. Refer to TM 9-2320-387-24-2, Chapter 25, Task Para 25-20.1, Page 25-56.2 and **Figure 59** contained in these instructions.

(1) Lubricate O-ring, with refrigerant oil, that is on Hose Assembly 20-02416 (11) and install.

(2) Connect hose assembly 20-02417 (5) to compressor manifold (8) and tighten nut (10) to 18 ft-lb (24 N-m), as shown in **Figure 59**.

(3) Lubricate O-ring with refrigerant oil that is on Hose Assembly 20-02415 (12) and install, as shown in **Figure 59**.

(4) Install Front Receiver Dryer 07-00260, as shown in **Figure 59**.

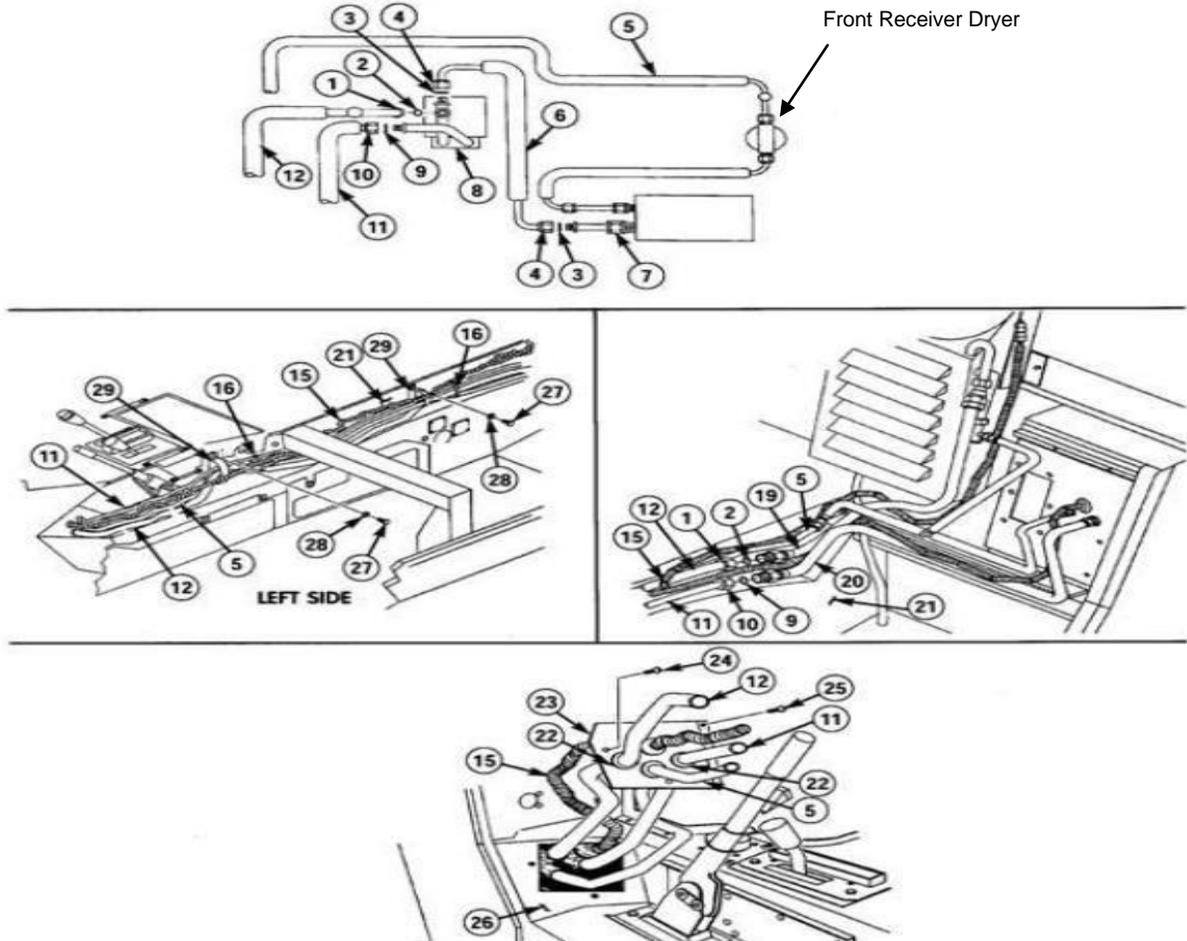


Figure 59

(5) Route A/C hose assembly across engine compartment and over the upper oil dipstick support bracket as shown in **Figure 60**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

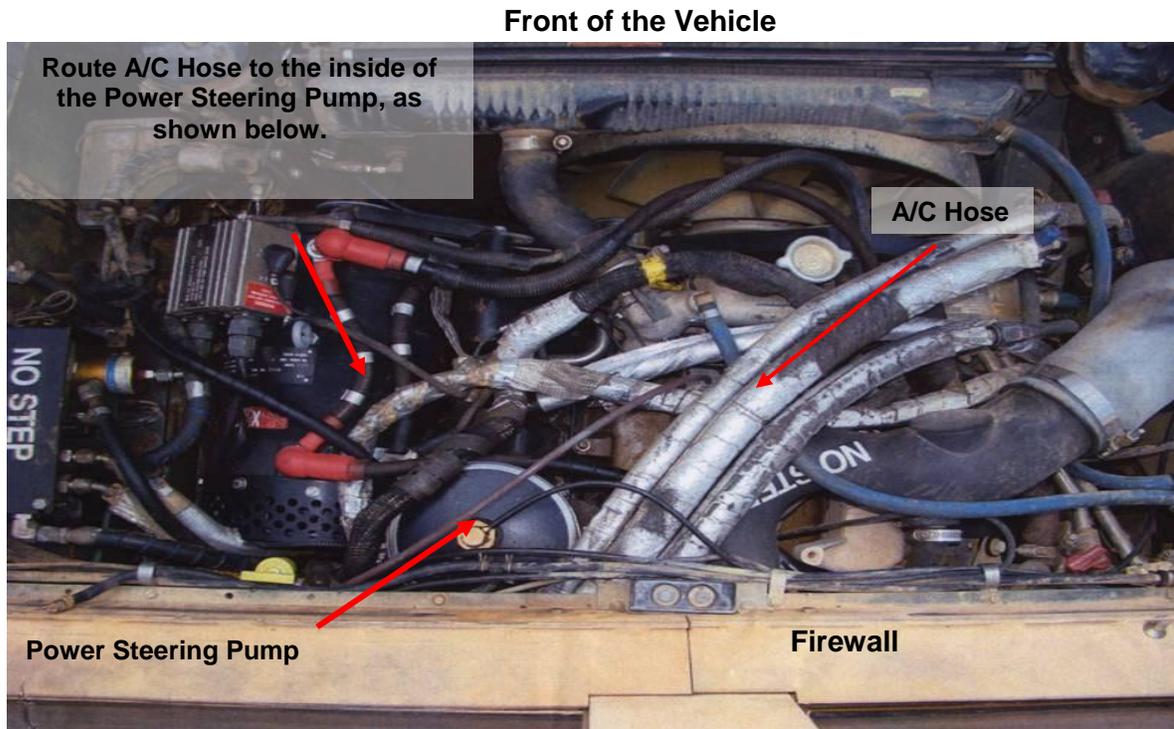


Figure 60

(6) Continue routing hose (12) and hose assembly (11) under vehicle and through the Central Tire Inflation System (CTIS) cover grommets (22) as shown in **Figure 59**.

(7) Pull hose (12), hose assemblies (11) and (5), and the A/C wiring harness (15) rearward and slide CTIS cover (23) forward until foil insulation (28) contacts CTIS cover (23). Foil insulation (29) on A/C wiring harness (15) should extend through CTIS cover (23) approximately 1 inch (2.5 cm) as shown in **Figure 59**.

(8) Install CTIS cover (23) on vehicle body (27) with two screws (25) and screw (26) as shown in **Figure 59**.

(9) Continue routing hose (12) and hose assembly (11) along left side tunnel (22) as shown in **Figure 59**.

(10) Lubricate O-ring, with refrigerant oil, and install Hose Assembly 20-02416 as shown in **Figure 59**.

(11) Connect Hose Assembly 20-02416 to the Rear Discharge Tube (21) and tighten nut (10) to 18 ft-lb (24 N·M) as shown in **Figure 59**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(12) Lubricate O-ring (2) with refrigerant oil, and install on Hose Assembly 20-02415.

(13) Connect hose (12) to rear suction tube (20) and tighten nut (1) to 24 ft-lb (33 N·M) as shown in **Figure 59**.

(14) Install two clamps (29) around hose (12) and hose assemblies (11) and (5), refer to **Figure 61**.

(15) Apply sealing compound to threads of two cap screws (27), refer to **Figure 61**.

(16) Secure two clamps (29) to left side tunnel with washers (28) and cap screws (27) tighten cap screws (27) to 6 ft-lb (8 N·M), refer to **Figure 61**.

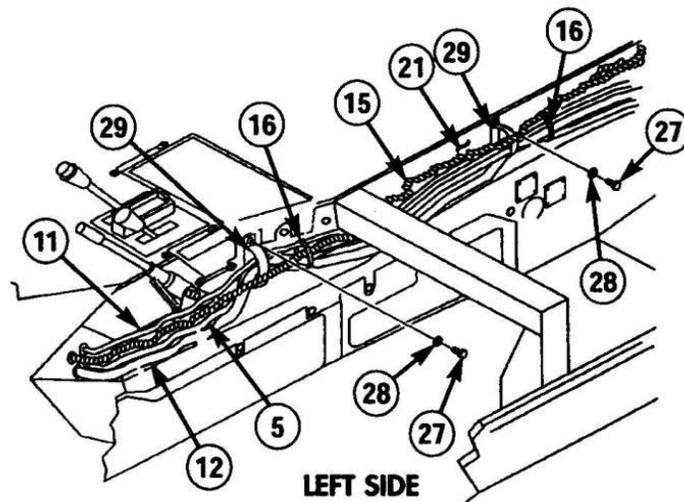


Figure 61

(17) Apply sealing compound to threads of two screws (3), and install left rear HVAC lines cover (1) on left rear wheelhouse (2) with two washers (4) and cap screws (3). Tighten cap screws (3) to 36 in-lb (4 N·M) as shown in **Figure 62**.

(18) Apply sealing compound to threads of three cap screws (7), and install left rear HVAC lines cover (6) on left side tunnel (5) with three washers (8) and cap screws (7). Tighten cap screws (7) to 6 ft-lb (8 N·M) as shown in **Figure 62**.

(19) Apply sealing compound to threads of four cap screws (9), and install A/C coolant line rear B-pillar cover (11) on left side tunnel (95) with four washers (10) and four cap screws (9). Tighten cap screws (9) to 6 ft-lb (8 N·M) as shown in **Figure 62**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(20) Apply sealing compound to threads of two screws (13), and install mounting angle (12) on A/C coolant line front cover (15) with two washers (14) and screws (13). Do not tighten screws (13) as shown in **Figure 62**.

(21) Apply sealing compound to threads of four cap screws (18), and install A/C coolant line front cover (15) on left side tunnel (5) with four washers (19) and cap screws (18). Tighten cap screws (18) to 6 ft-lb (8 N·m) as shown in **Figure 62**.

(22) Apply sealing compound to threads of two cap screws (17), and secure mounting angle (12) to left side tunnel (5) with two washers (16) and two cap screws (17). Tighten cap screws (17) to 6 ft-lb (8 N·m) as shown in **Figure 62**.

(23) Tighten two screws (13) to 36 in-lb (4 N·m) as shown in **Figure 62**.

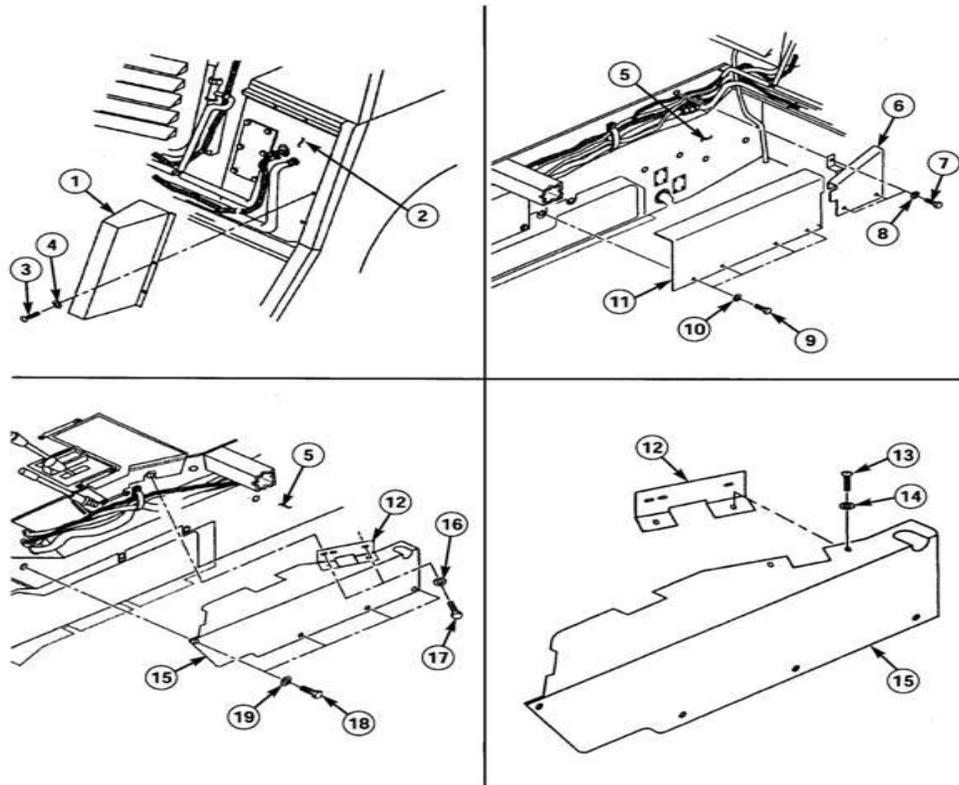


Figure 62

CAUTION

From under vehicle, visually inspect for interference between air conditioning refrigerant tubes and extended oil tube upper support bracket and/or lower bracket mounting stud. Air conditioning refrigerant tubes shall be positioned away from extended oil tube upper support bracket and lower bracket mounting stud. Failure to do so may cause damage to equipment.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(24) Install A/C receiver/dryer, part number 04-00453, on bracket (6) with clamp (2) as shown in **Figure 63**. **Do not tighten clamp (2)**.

(25) Apply refrigerant oil to O-ring, part number 725721, and install O-ring (5) on supply line (3) as shown in **Figure 63**.

(26) Install supply line (3) on A/C receiver/dryer (1) and tighten nut (4) to 12 foot pounds (16 N•m) as shown in **Figure 63**.

(27) Apply refrigerant oil to O-ring, part number 725721, and install O-ring (9) on return line (7) as shown in **Figure 63**.

(28) Install return line (7), on A/C receiver/dryer (1) and tighten nut (8) to 12 foot pounds (16 N•m) as shown in **Figure 63**.

(29) Tighten clamp (2) as shown in **Figure 63**.

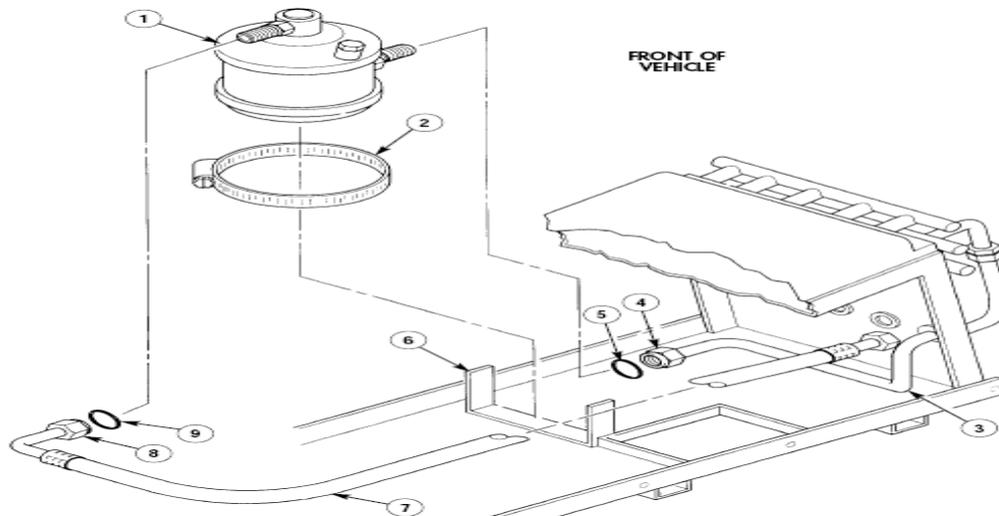


Figure 63

ee. Installation of Power Steering Fluid Lines. Refer to TM 9-2320-387-24-2, Chapter 8, Task Para 8-25, Page 8-68 and **Figure 64** contained in these instructions.

(1) Complete installation of power steering fluid return hoses as follows:

(a) Remove hose (1) and clamp (2) from elbow (3) as shown in **Figure 64**.

(b) Cut off loose end of hose (1) as required, to ensure there are no kinks, and reinstall hose (1) and clamp (2) on elbow (3) as shown in **Figure 64**. Tighten clamp (2).

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(c) Remove hose (6) and clamp (5) from tee (4) as shown in **Figure 64**.

(d) Cut off loose end of hose (6) as required, to ensure there are no kinks, and reinstall hose (6) and clamp (5) on tee (4) as shown in **Figure 64**. Tighten clamp (5).

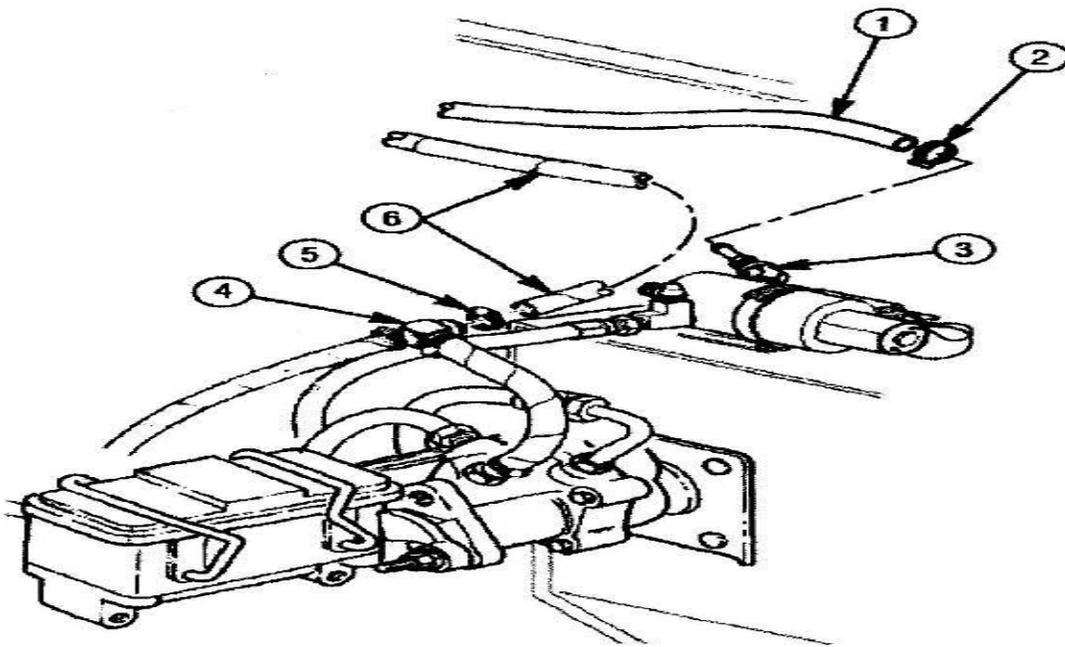


Figure 64

CAUTION

Visually inspect area around 400 Amp Alternator too ensure no lines, hoses, harnesses, brackets, etc. are in contact with the alternator. Secure items as required with cable ties. Failure to do so may result in damage to equipment.

ff Installation of Cable Ties.

(1) Install 6437403-01M1 cable ties (1) in engine compartment as required as shown in **Figure 65**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

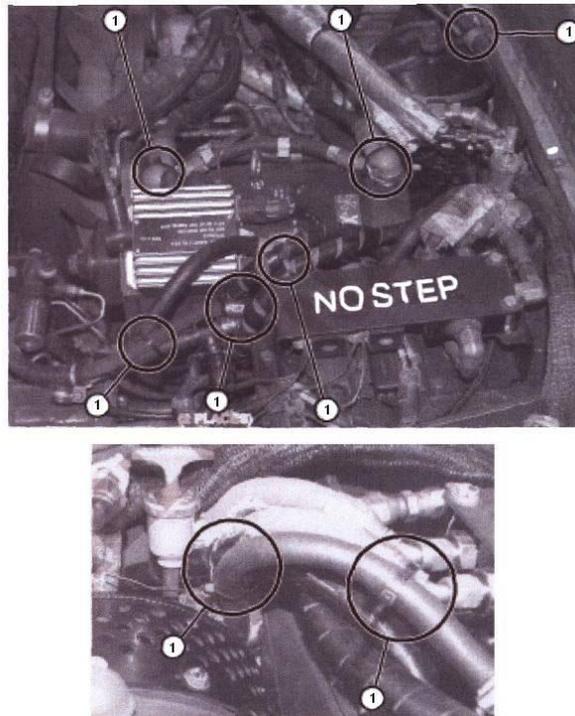


Figure 65

gg. Installation of Batteries and Battery Box Decal. Refer to TM 9-2320-387-24-1, Chapter 4, Task Para 4-73, Page 4-126 and **Figure 66** contained in these instructions.

NOTE: Clean the surface of outer battery box side panel before applying decal.

(1) Install 6437404-01M1 Decal/Battery Box Data Plate (2) on outer battery box side panel (1) as shown in **Figure 66**.

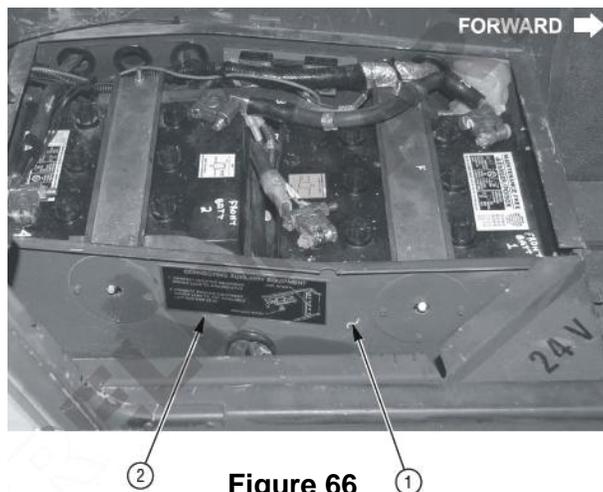


Figure 66

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(2) Follow decal instructions and electrical diagram for power connections, as shown in **Figure 66** and **67**.

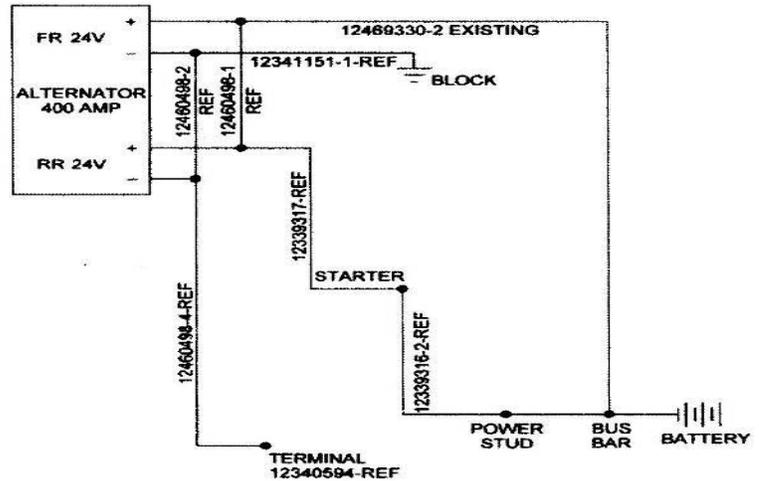


Figure 67

(3) Ensure negative terminal posts are correctly located. Cables must reach their respective terminals without stretching, refer to **Figure 67**.

(4) Install two batteries (1) in battery box (2) as shown in **Figure 68**.

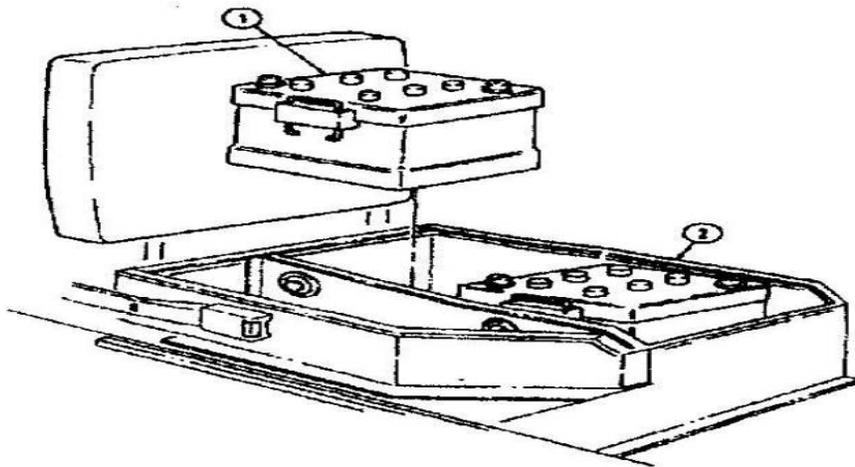


Figure 68

hh. Installation of Engine Access Cover. Refer to TM 9-2320-387-24-2, Chapter 10, Task Para 10-22, Page 10-25 and **Figure 69** contained in these instructions.

(1) Install access cover (2) on vehicle with two ring studs (1), **Figure 69**.

(2) Install two hold down latches (6) on hold down strikes (5), **Figure 69**.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

69. (3) Latch two flexible latches (4) to keepers (3) on hold down brackets, **Figure**

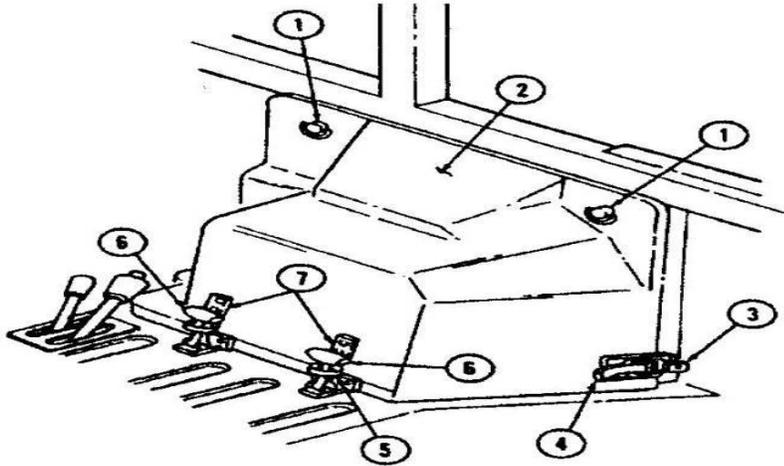


Figure 69

- ii. Refilling Power Steering Reservoir. Refer to TM 9-2320-387-24-2, Chapter 8, Task Para 8-25, Page 8-68 and **Figure 70** contained in these instructions.

NOTE: Power steering fluid must be free of bubbles and foam. If bubbles or foam are noted, it could be an indication of a leak or loose connection.

Fluid with air in it will have a milky appearance. Air must be eliminated from system before normal steering action can be obtained.

- (1) Remove fill cap (1) on power steering reservoir (2) and fill with DEXRON III until fluid is in center of sight glass (3) and replace fill cap (1) as shown in **Figure 70**.

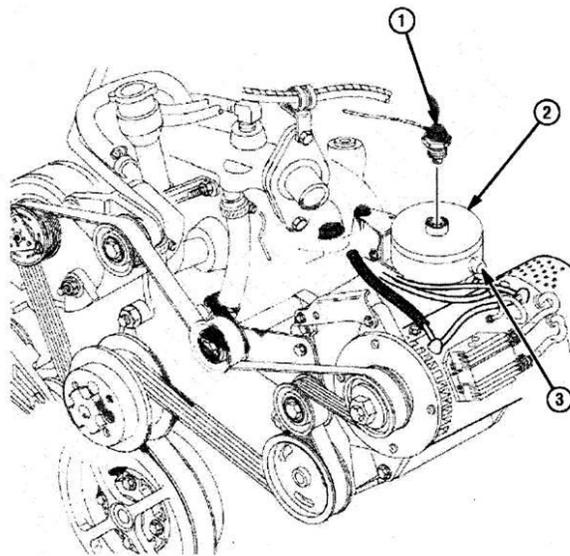


Figure 70

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

- (2) Start engine until fluid level is below sight glass. Shut off engine.
- (3) Add Dexron III if required - fluid level should be at center of sight glass when cold and top of sight glass when hot. **Do not overfill Power Steering Reservoir.**
- (4) Start engine and check power steering system for leaks. Turn steering wheel full left and then full right.
- (5) Repeat steps 2 and 3 until Power Steering system fluid levels out and is free of air.

CAUTION

Ensure all hoses and cables that were installed or that might have been shifted with the installation of the 400 Amp Alternator are clear of all moving parts and sharp edges. Failure to comply may result in equipment damage.

Ensure glow plug controller is disconnected prior to purging air from the power steering system. It will take several attempts of starting and shutting off the engine to remove all air from the power steering system. Failure to comply may result in equipment damage.

jj. Final Inspection / General Information. Refer to TM 9-2320-387-24-1 Chapters 1 and 2 and **Figures 71** through **73** contained in these instructions.

NOTE: The below information serves only as an inspection guideline and TM 9-2320-387-24-1 and TM 9-2320-387-24-2 serve as the reference technical documents that are required to be used for all inspection, installation and repair instructions along with these installation instructions for the 400 Amp Alternator Upgrade Kit.

- (1) Differential Valve and Mount:
 - (a) Inspect to ensure that the Differential Valve (4), which is mounted to the Differential Valve Mounting Bracket (8) as shown in **Figure 71**, does not come into contact with the face plate on the front of the 400 Amp Alternator.
 - (b) If there is contact, slightly bend the Differential Valve Mounting Bracket to create a space and prevent contact.
 - (c) Inspect to ensure that the Alternator Adjusting Bracket (4) as shown in **Figure 72** is properly installed.

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(d) Screw (5) needs to be installed through the second hole in the Alternator Adjusting Bracket and not the first hole. Utilizing the first hole in the Alternator Adjusting Bracket causes the alternator to make contact with the Differential

Valve and possibility crush the Fuel Filter Drain Hose that attaches to the Cowl Panel (6) and runs between the alternator and Cowl Panel.

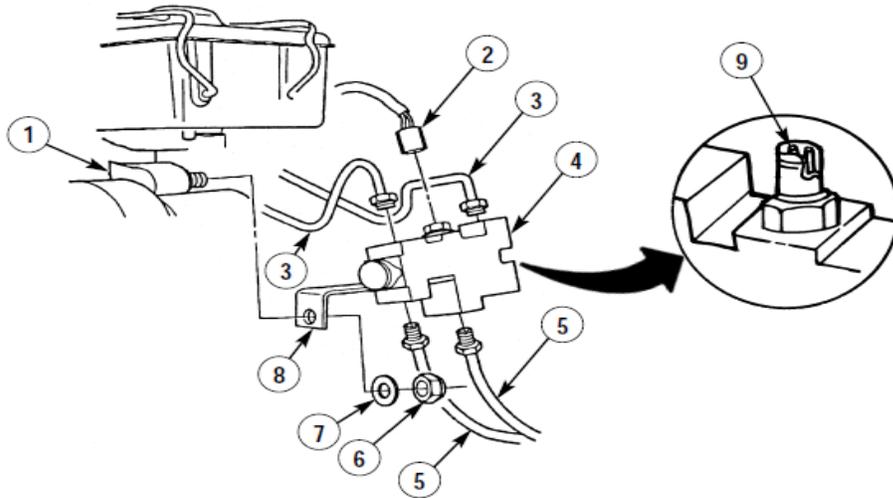


Figure 71

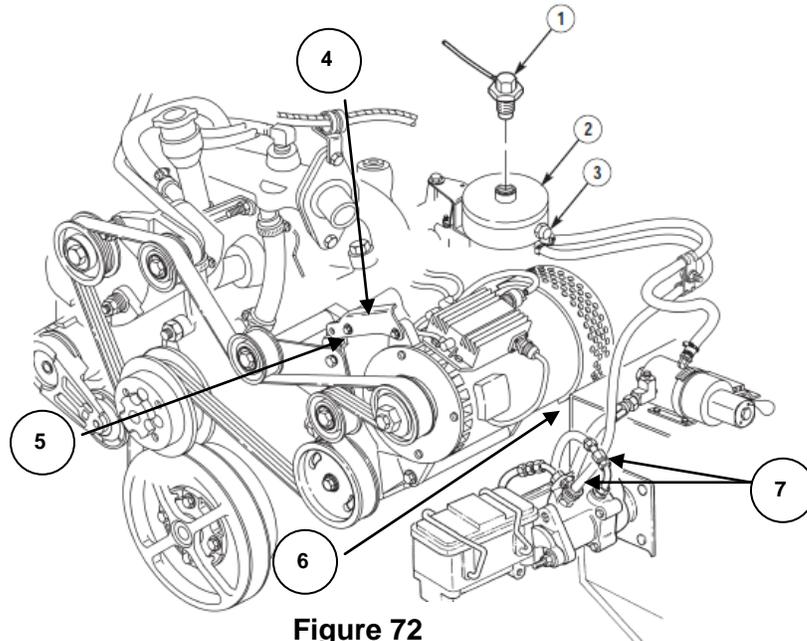


Figure 72

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(2) Power Steering Hoses:

(a) Inspect to ensure that the two Power Steering Pressure Hoses (7) **Figure 72**, do not come into contact with the 400 Amp Alternator.

(b) If there contact, slightly loosen the hose fittings and adjust the hoses to create a space and prevent contact and possible chaffing of the hoses.

(3) Fuel Filter Drain Hose:

(a) Inspect to ensure that the Fuel Filter Drain Hose (10) is properly installed on the cowl panel (3) **Figure 73** and that it does not come into contact with the 400 Amp Alternator.

(b) If the screw in the Alternator Adjusting Bracket (4) as shown in **Figure 72** is not properly installed, it's possible that the Fuel Filter Return Line can be crushed between the alternator and Cowl Panel.

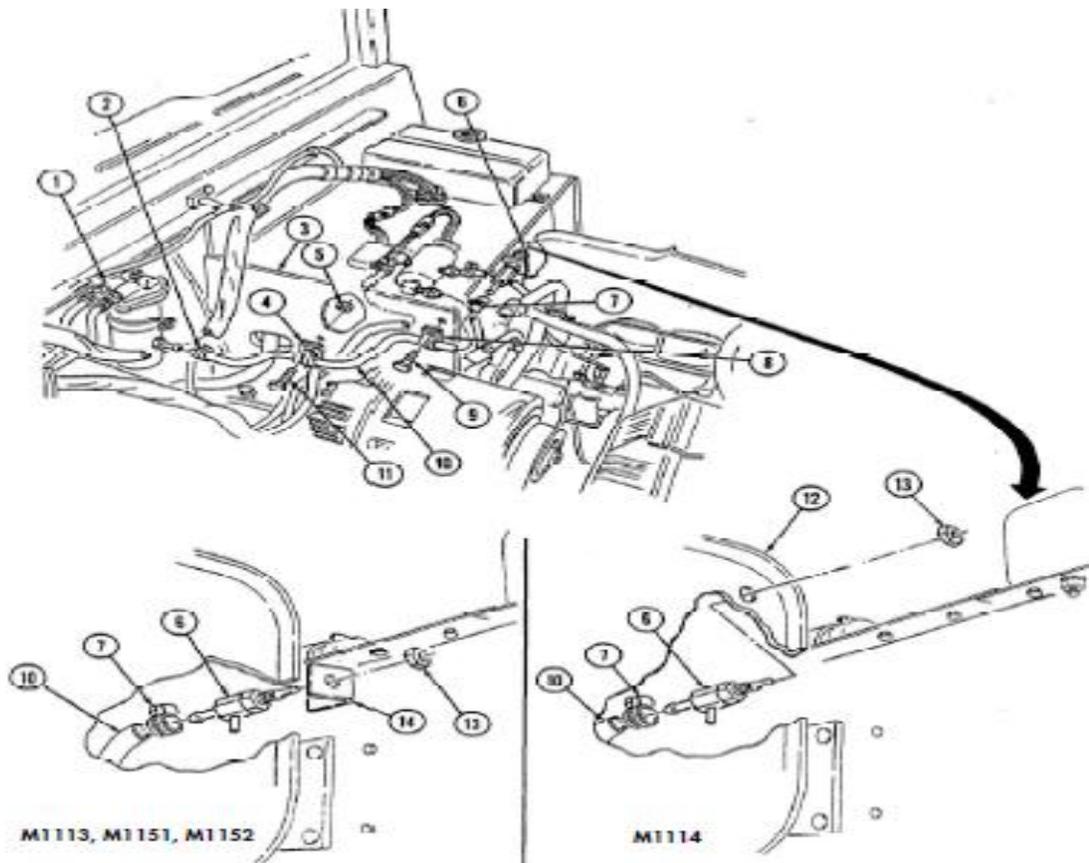


Figure 73

400 AMP ALTERNATOR UPGRADE KIT
INSTALLATION INSTRUCTIONS
MARCH 2010 / REV D

(4) 400 Amp Alternator:

(a) Inspect alternator and voltage regulator for condition, proper installation and security of mounting. Look for missing mounting bolts or alternator damage.

(b) Inspect electrical wiring for broken strands, frayed, cracked, crushed or pinched or worn insulation or loose connections.

(c) Check the alternator pulley for damage and alternator mounting bolts for security of mounting and ensure mounting bolts are tightened to the proper foot pounds.

(d) Check the serpentine belt for good condition and that there are no cracks, frays and or glaze.

(5) Starter:

(a) Inspect cables and studs for loose nuts and damage.

(b) Check cables for fraying, cracked, crushed or pinched or worn insulation. frayed, cracked, crushed or pinched or worn insulation.

(6) Battery, Battery Terminals and Power Feed Thru Stud:

(a) Inspect cables and terminals for corrosion, loose bolts and nuts and damage.

(b) Check all cables for looseness, fraying, cracked, crushed or pinched or worn insulation. Ensure the battery hold down bracket is properly installed and not loose.

(7) Wiring, Cables, Hoses, Lines, Connections, Screws, Nuts, Bolts, Clamps:

(a) Perform one final visual inspection of the vehicle for disconnected, loose or pinched/crushed, frayed, cracked or worn wiring, cables, lines and hoses.

(b) Check to ensure there are no loose studs, screws, bolts, clamps or nuts and that all are tightened to the proper torque specifications. .

(8) Testing and acceptance. Once the 400 Amp Alternator Upgrade Kit is completely and safely installed, start the vehicle and test the alternator, using a multimeter, to ensure the new alternator is properly functioning and the alternator voltage and current output is correct. Refer to TM 9-2320-387-24-1 Chapters 2 and 4 for information on alternator testing and diagnostic trouble shooting procedures. Check the oil level to ensure the dipstick is installed properly and oil level is correct. Refer to TM 9-2320-387-24-1 Chapters 2 and 3 for information on the correct oil level.