

3-12. AIR CLEANER ASSEMBLY AND DUST UNLOADER MAINTENANCE

This task covers:

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

INITIAL SETUP:

Tools

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

Equipment Condition

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

Manual References

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

NOTE

For dust unloader replacement, perform steps 1 and 2 only.

a. Removal

1. Remove four screws (18) and dust unloader cover (17) from support brackets (4).
2. Loosen clamp (15) and remove dust unloader (16) from air cleaner assembly (9).
3. Loosen clamp (5) and disconnect elbow (6) from air cleaner assembly (9).
4. Disconnect air restriction gauge hose (7) from fitting (8).
5. Remove outer strap clamps (10) and (12) securing air cleaner assembly (9) to support brackets (4).
6. Disconnect vent line (3) from elbow (2).
7. Remove air cleaner assembly (9) from support bracket (4).
8. Remove elbow (2) from air cleaner assembly (9).
9. Remove adapter (14) and tube (13) from air cleaner assembly (9).
10. Remove fitting (8) from air cleaner assembly (9).
11. Remove clamp (11) from air cleaner assembly (9).

b. Inspection

1. Inspect gasket (1) for cracks or breaks. Replace gasket (1) if defective.
2. Inspect elbow (2), fitting (8), and adapter (14) for damaged threads or cracks. Replace if defective.

c. Installation

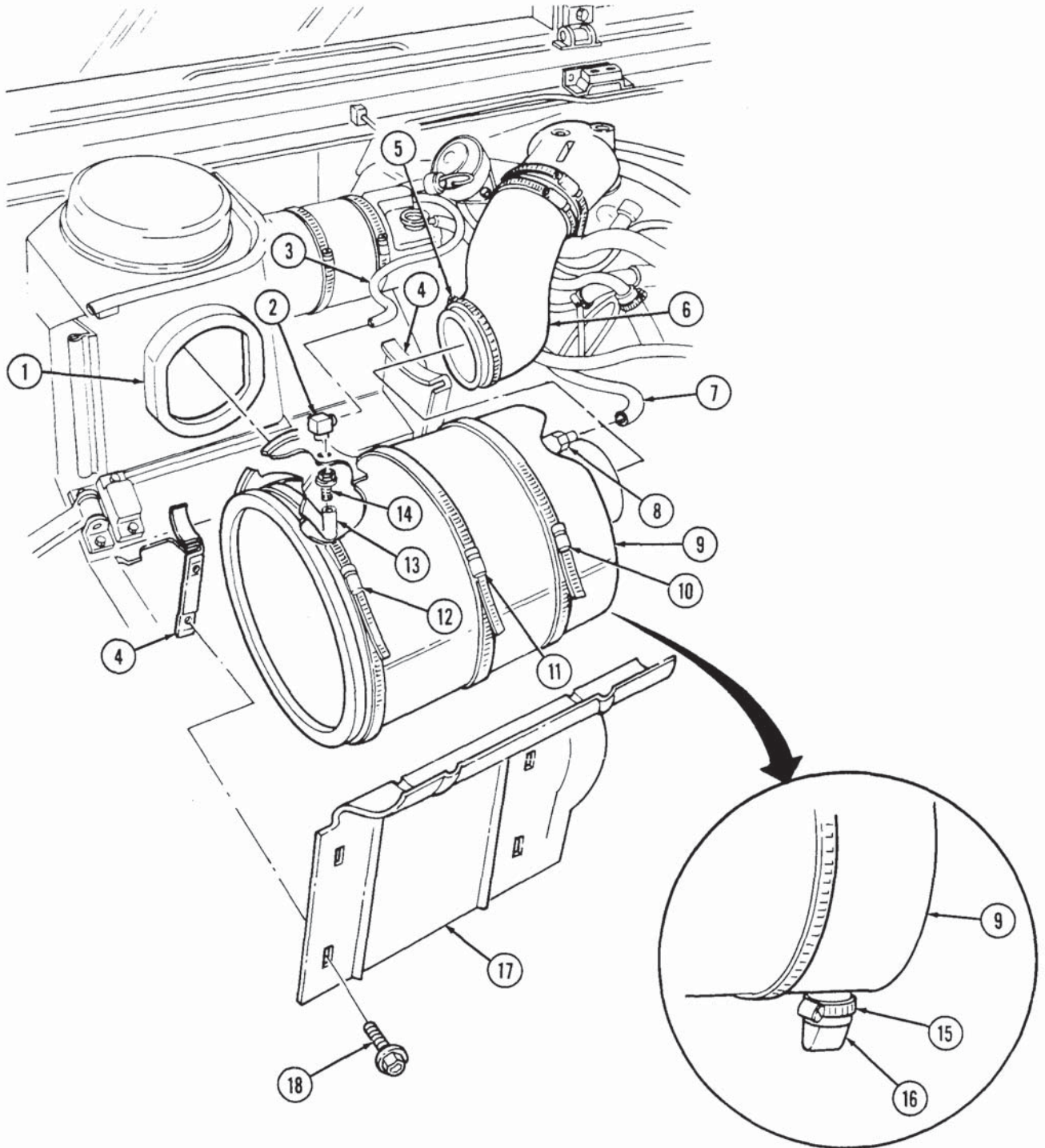
NOTE

For dust unloader replacement, perform steps 10 and 11 only.

1. Install clamp (11) on air cleaner assembly (9).
2. Install fitting (8) on air cleaner assembly (9).
3. Install tube (13) on adapter (14).
4. Install tube (13) and adapter (14) on air cleaner assembly (9).
5. Install elbow (2) to air cleaner assembly (9).
6. Install air cleaner assembly (9) on support brackets (4) with strap clamps (10) and (12). Make sure clamp tabs are facing downward away from cab before tightening. Tighten the following clamps in sequence as follows: (10), (11), and (12).
7. Connect elbow (6) to air cleaner assembly (9) and tighten clamp (5).
8. Connect air restriction gauge hose (7) to fitting (8).
9. Connect vent line (3) to elbow (2).

3-12. AIR CLEANER ASSEMBLY AND DUST UNLOADER MAINTENANCE (Cont'd)

10. Install dust unloader (16) on air cleaner assembly (9) and tighten clamp (15) to 45-50 lb-in. (5-6 N·m).
11. Install dust unloader cover (17) on support brackets (4) with four screws (18).



FOLLOW-ON TASK: Lower and secure hood (TM 9-2320-280-10).

3-13. AIR CLEANER FILTER ELEMENT SERVICING

This task covers:

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

INITIAL SETUP:

Tools

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

Materials/Parts

Detergent (Appendix C, Item 17)

Manual References

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

Equipment Condition

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

General Safety Instructions

- Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa).
- If NBC contamination is suspected, consult NBC officer or NBC NCO for appropriate handling instructions.

WARNING

- Improper cleaning methods and use of unauthorized cleaning liquids can injure personnel and cause damage to equipment. Do not use anything other than compressed air, water, and detergent to clean elements.
- If NBC contamination is suspected, consult NBC officer or NBC NCO for appropriate handling instructions.

a. Removal

1. Loosen bolt (8), and remove ring clamp (1), cover (2), and gasket (3) from air cleaner assembly (6).
2. Remove nut and washer assembly (7) and filter element (4) from stud (5) and air cleaner assembly (6).
3. Cover housing opening with screen or rag to prevent contaminants from entering the air intake system and damaging your engine.

b. Inspection

1. Check gasket (3) for dents, tears, rips, and other damage. Make sure the gasket has not taken a set. Make sure there are no hard dirt ridges on the sealing surfaces.
2. Inspect filter element (4) for holes and tears by looking through the element toward a bright light. If pinpoint of light shine through, replace the element. Holes that are large enough to let light through are large enough to let contaminants through. Another way to check for leaks or damage is to look for uneven dirt patterns. Make sure there is no rust or flaking paint on metal parts of the filter. If the filter has already been cleaned three times, or if you find damage, replace it.
3. Check air cleaner assembly (6) for holes, dents, rust, or any other damage that will interfere with proper sealing and allow unfiltered air to enter and destroy engine.

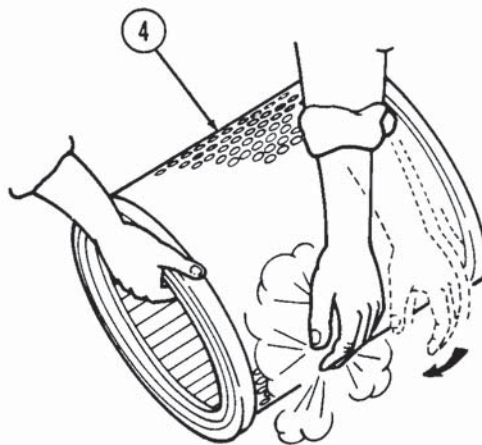
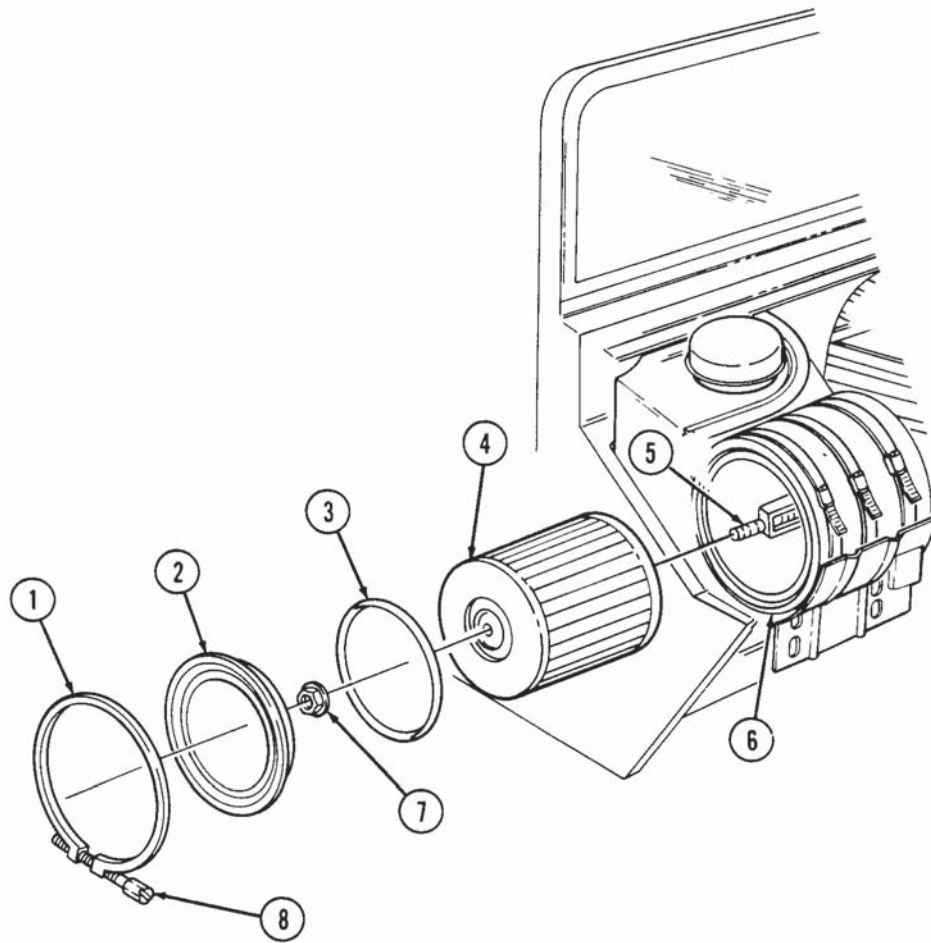
c. Emergency Cleaning

CAUTION

Do not strike ends of filter element on hard surface or damage to filter element may result.

Remove dust or sand from filter element (4) by holding it so neither end faces ground. Gently tap around filter element (4) to free dust and sand.

3-13. AIR CLEANER FILTER ELEMENT SERVICING (Cont'd)



3-13. AIR CLEANER FILTER ELEMENT SERVICING (Cont'd)

WARNING

Compressed air used for cleaning purpose will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personnel protective equipment (goggles/shield, gloves, etc.).

d. Cleaning

1. Hold nozzle at least one inch away from element (1) and direct compressed air against clean side of element (1) (in direction opposite to normal air flow). Move air stream up and down length of pleats until you can not see dust being blown out.
2. Prepare a solution of five gallons warm water (80-110° F (26.7-43.3° C)) and approximately one cup of non-sudsing detergent in a container large enough to submerge the element (1). Never use gasoline or solvents of any kind to clean elements.
3. Immerse the element (1) completely in the cleaning solution. Swish for two minutes. Soak the element in the cleaning solution for 15 to 20 minutes, then swish it around again to remove contaminants.
4. Remove the element (1) from the solution and let it drain.
5. Rinse the element with cool water (35-80° F (1.7-26.7° C)) from clean side to dirty side (in direction opposite to normal air flow) with a gentle stream of water (no more than 40 psi (275.8 kpa)). If the clean side was contaminated during the soak cycle, rinse the element from both sides.
6. Air dry the element (1) at normal room temperature until completely dry. Usually overnight is adequate, but temperature and humidity will effect drying time. If you use circulating air, do not exceed 180° F (82.2° C). Do not use compressed air to speed drying time, you will damage your element.
7. Reinspect the element (1) and discard if damaged. If it checks out O.K., mark the date of cleaning on it.

e. Installation

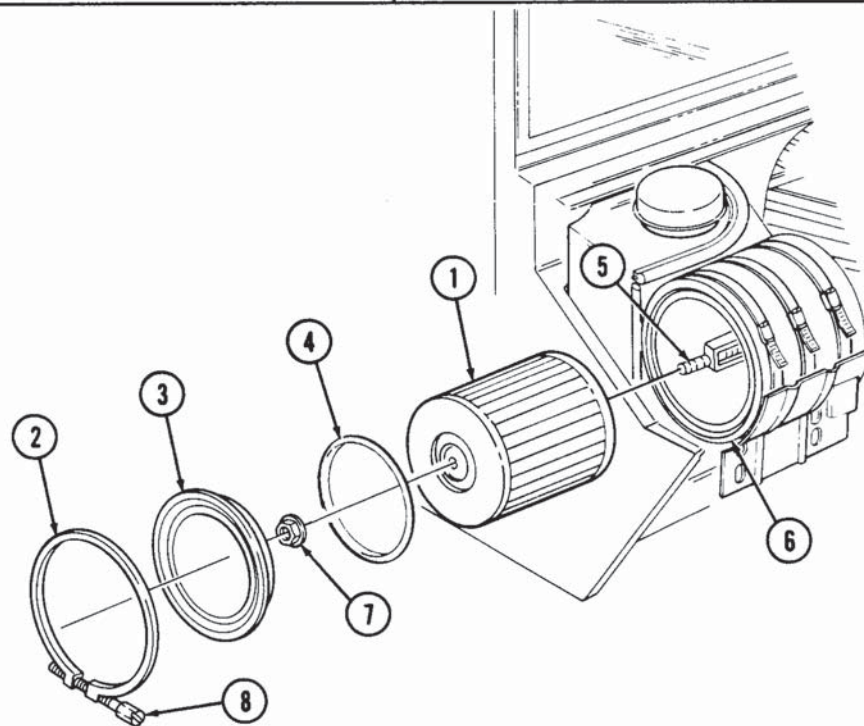
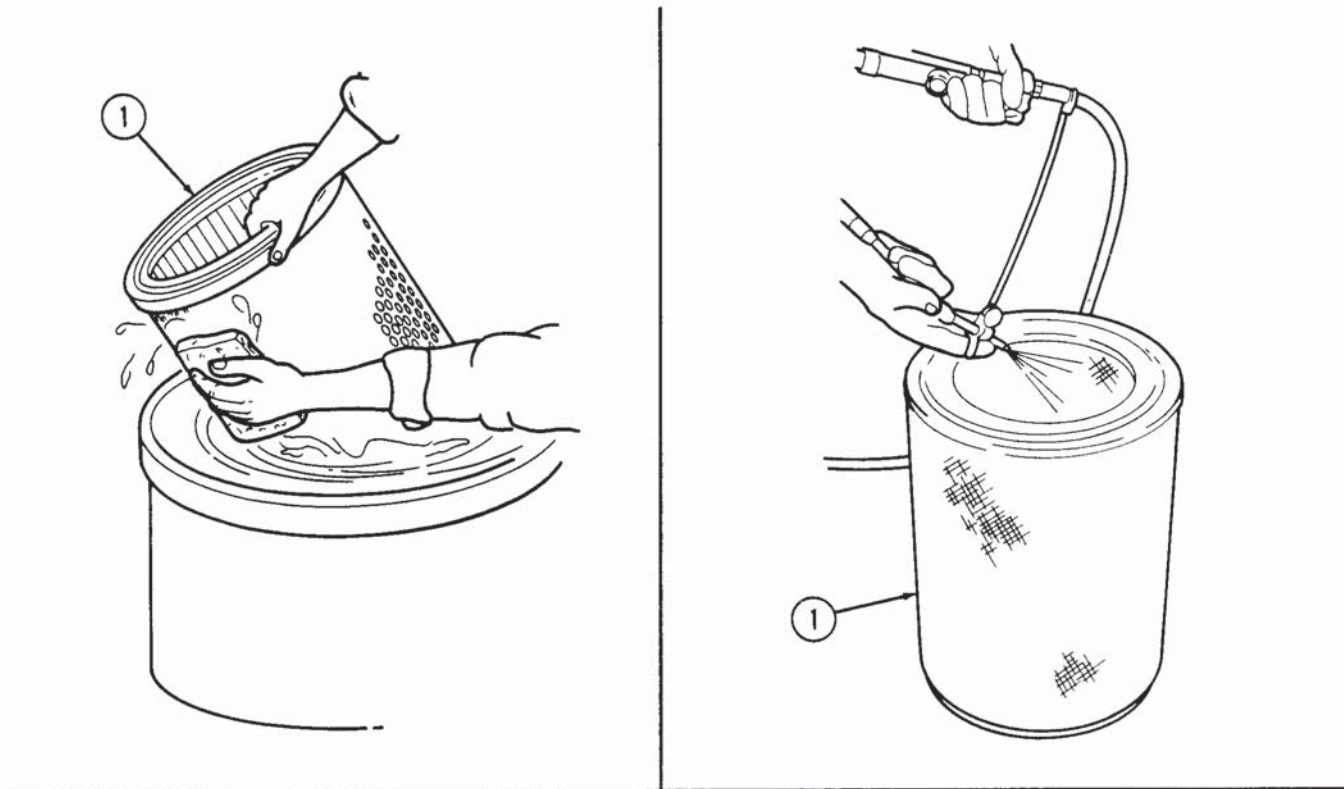
1. Remove screen or rag from housing opening.
2. Install filter element (1) into air cleaner assembly (6) and on stud (5) with nut and washer assembly (7). Tighten nut and washer assembly (7) to 20-40 lb-in (2-4 **N•m**).

CAUTION

When cover clamp is secured to end of filter body assembly, ensure the clamp bolt is between the three and six o'clock position to prevent damaging hood when hood is closed.

3. Install cover (3) and gasket (4) on air cleaner assembly (6) with ring clamp (2) as shown. Tighten bolt (8) to 35-40 lb-in (3-4 **N•m**).

3-13. AIR CLEANER FILTER ELEMENT SERVICING (Cont'd)



- FOLLOW-ON TASKS:
- Lower and secure hood (TM 9-2320-280-10).
 - Start engine (TM 9-2320-280-10) and ensure air restriction gauge on instrument panel does not show red.

3-14. AIR HORN REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Manual References

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

Materials/Parts

Two flat washers (Appendix G, Item 37)
Gasket (Appendix G, Item 41)
Sealing compound (Appendix C, Item 40)

Equipment Condition

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

a. Removal

1. Remove two screws (2), washers (3), and flat washers (4) securing air horn (5) to intake manifold (7). Discard flat washers (4).
2. Loosen clamp (10) and disconnect air intake elbow (9) from air horn (5).

CAUTION

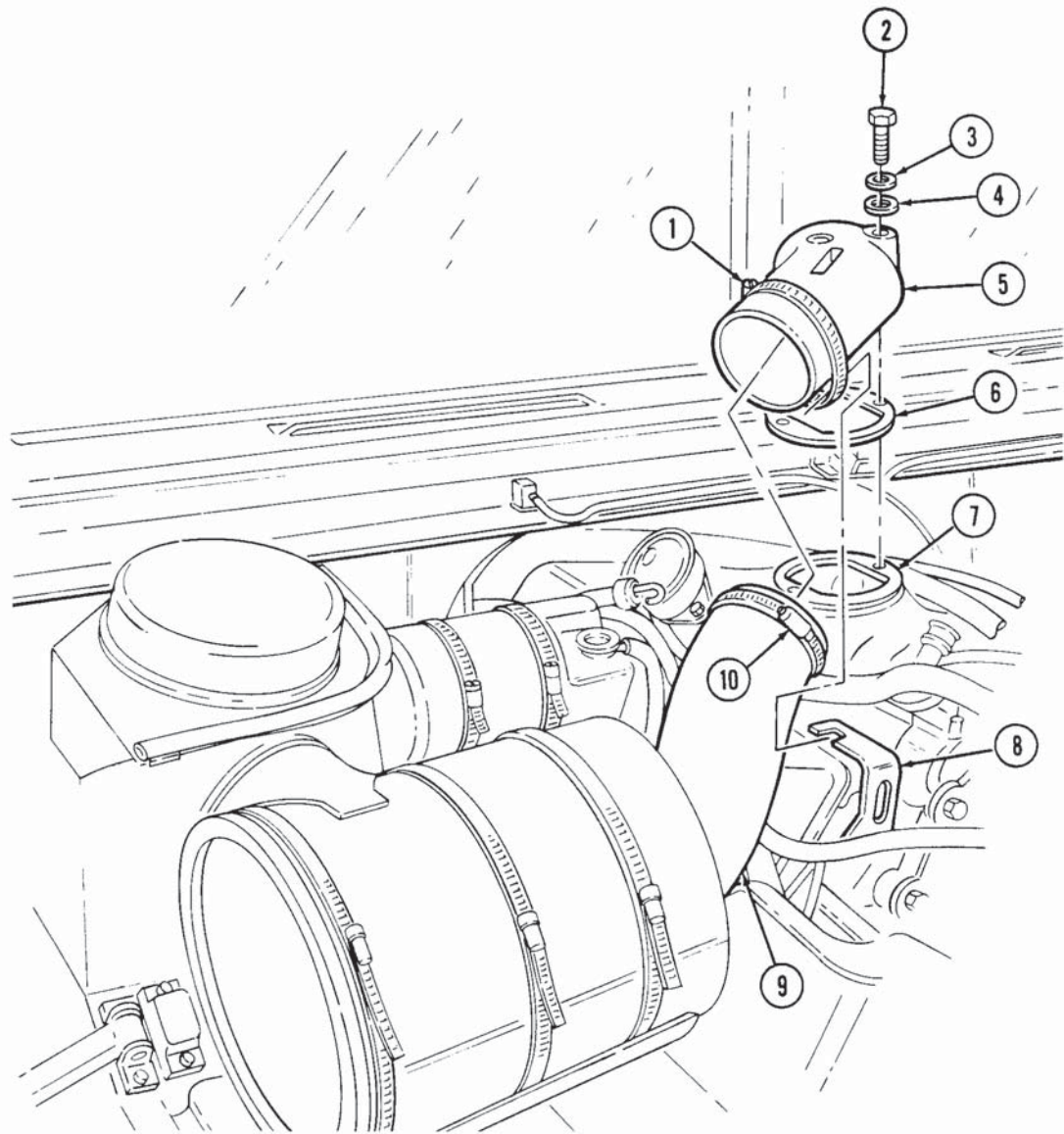
Cover opening of intake manifold to prevent foreign material from entering engine.

3. Loosen clamp (1) securing air horn (5) to engine lift bracket (8) and slide clamp (1) from engine lift bracket (8). Remove air horn (5) from intake manifold (7).
4. Remove gasket (6) from intake manifold (7). Discard gasket (6).
5. Remove clamp (1) from air horn (5).

b. Installation

1. Install clamp (1) on air horn (5).
2. Install gasket (6) on intake manifold (7).
3. Coat threads of screws (2) with sealing compound. Install air horn (5) on intake manifold (7) with two flat washers (4), washers (3), and screws (2). Tighten screws (2) to 40-45 lb-in. (5-6 N•m).
4. Connect elbow (9) to air horn (5) and tighten clamp (10) to 45-50 lb-in. (5-6 N•m).
5. Slide clamp (1) on engine lift bracket (8) and air horn (5) and tighten clamp (1) to 40-45 lb-in. (5-6 N•m).

3-14. AIR HORN REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Lower and secure hood (TM 9-2320-280-10).

3-15. AIR HORN-TO-AIR CLEANER ELBOW REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Equipment Condition

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

Manual References

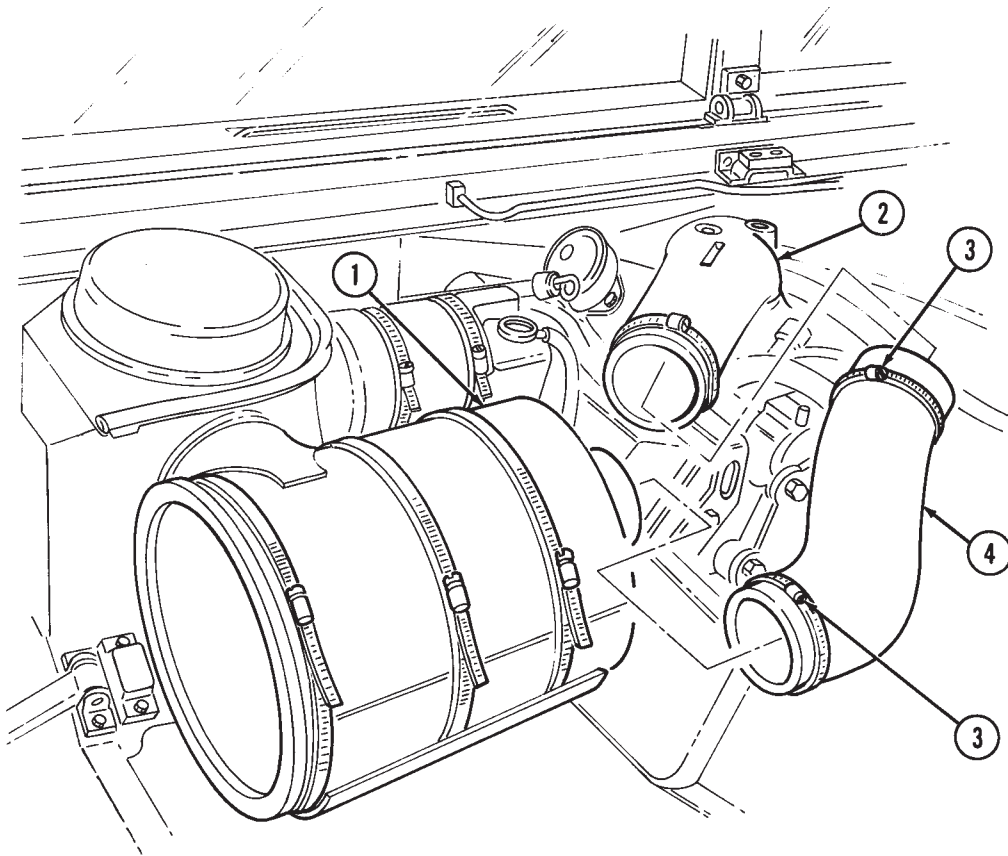
TM 9-2320-280-10
TM 9-2320-280-24P

a. Removal

1. Loosen two clamps (3) and remove elbow (4) from air cleaner assembly (1) and air horn (2).
2. Remove two clamps (3) from elbow (4).

b. Installation

1. Install two clamps (3) on elbow (4).
2. Connect elbow (4) to air cleaner assembly (1) and air horn (2) and tighten two clamps (3). Tighten clamps (3) to 40-45 lb-in. (5-6 N•m).



FOLLOW-ON TASK: Lower and secure hood (TM 9-2320-280-10).

3-16. AIR HORN SUPPORT BRACKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Applicable Models

All models except M997, M997A1, M997A2, M1036, M1037, M1042

Manual References

TM 9-2320-280-24P

Tools

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

Equipment Condition

Air horn removed (para. 3-14).

Materials/Parts

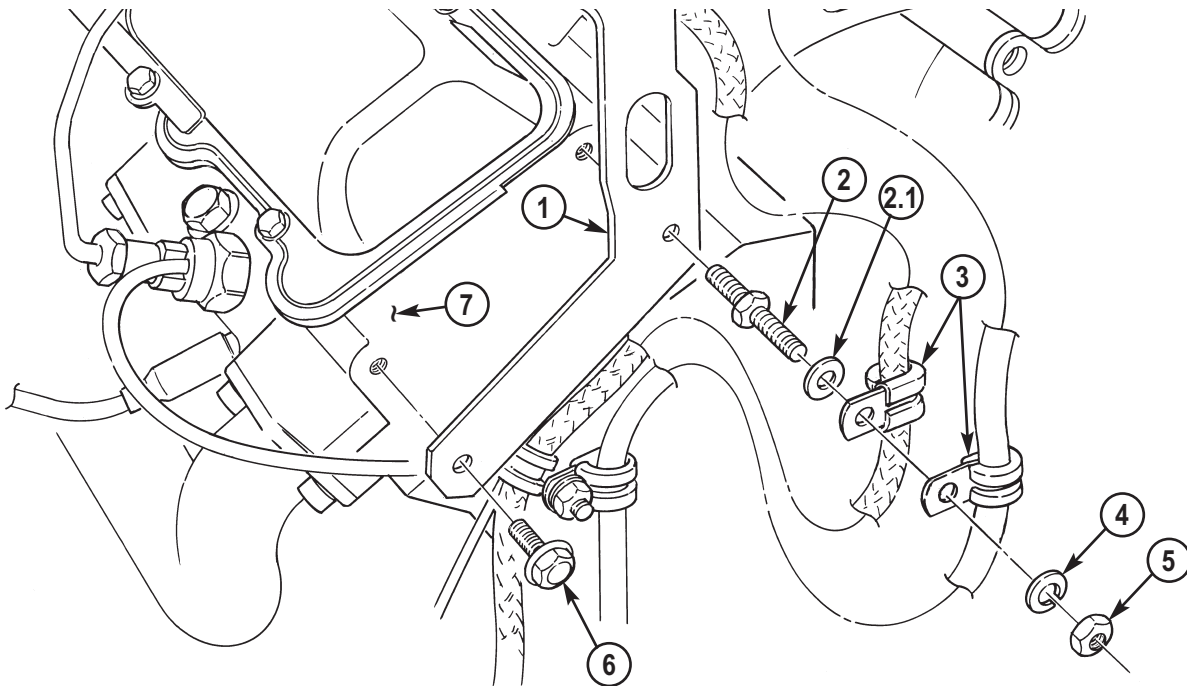
Lockwasher (Appendix G, Item 191)

a. Removal

1. Remove nut (5), lockwasher (4), two clamps (3), washer (2.1), and stud (2) from air horn support bracket (1) and cylinder head (7). Discard lockwasher (4).
2. Remove capscrew (6) and support bracket (1) from cylinder head (7).

b. Installation

1. Install air horn support bracket (1) on cylinder head (7) with stud (2).
2. Secure air horn support bracket (1) to cylinder head (7) with capscrew (6). Tighten capscrew (6) and stud (2) to 40 lb-ft (54 N•m).
3. Install washer (2.1) and two clamps (3) on stud (2) with lockwasher (4) and nut (5).



FOLLOW-ON TASK: Install air horn (para. 3-14).

3-17. AIR RESTRICTION GAUGE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Manual References

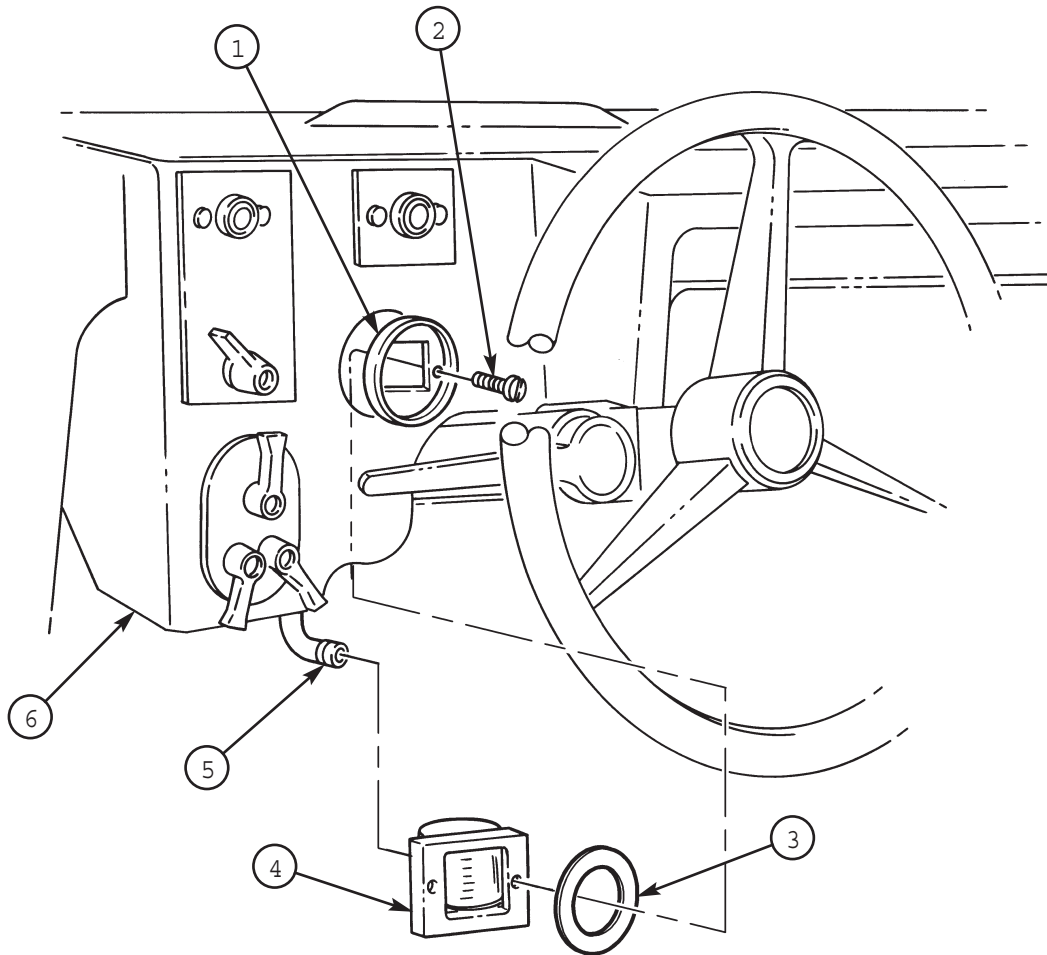
TM 9-2320-280-10
TM 9-2320-280-24P

a. Removal

1. Remove two screws (2) and bezel (1) from air restriction gauge (4), and remove gauge (4) and gasket (3) from behind dash panel (6).
2. Disconnect air restriction gauge hose (5) from gauge (4) and remove gauge (4).

b. Installation

1. Connect hose (5) to gauge (4).
2. Position gauge (4) and gasket (3) behind dash panel (6) and secure to bezel (1) with two screws (2).



FOLLOW-ON TASK: Start engine (TM 9-2320-280-10) and check operation of air restriction gauge.

3-18. WEATHERCAP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Manual References

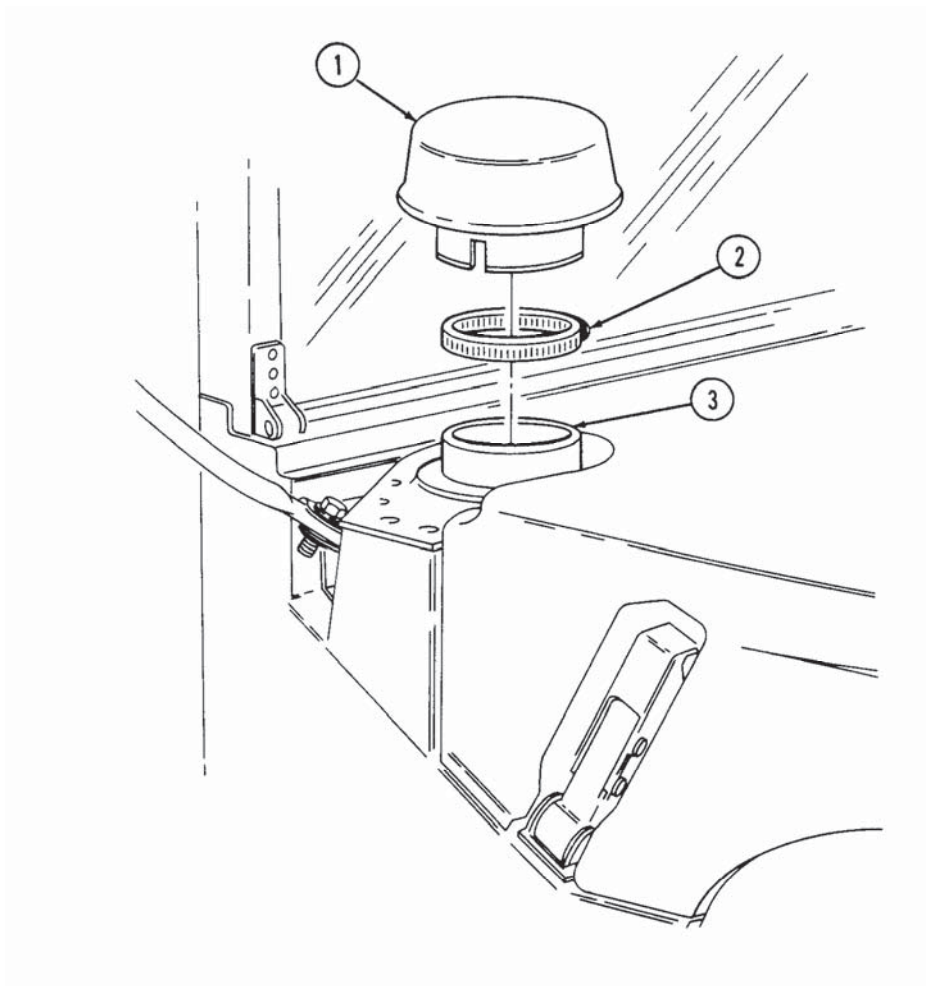
TM 9-2320-280-24P

a. Removal

Loosen clamp (2) and remove weathercap (1) from air intake duct (3).

b. Installation

Install weathercap (1) on air intake duct (3) with clamp (2). Tighten clamp (2) to 45-50 lb-in. (5-6 N•m).



3-19. AIR RESTRICTION GAUGE HOSE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Equipment Condition

- Engine access cover removed (para. 10-15).
- Hood raised and secured (TM 9-2320-280-10).

Manual References

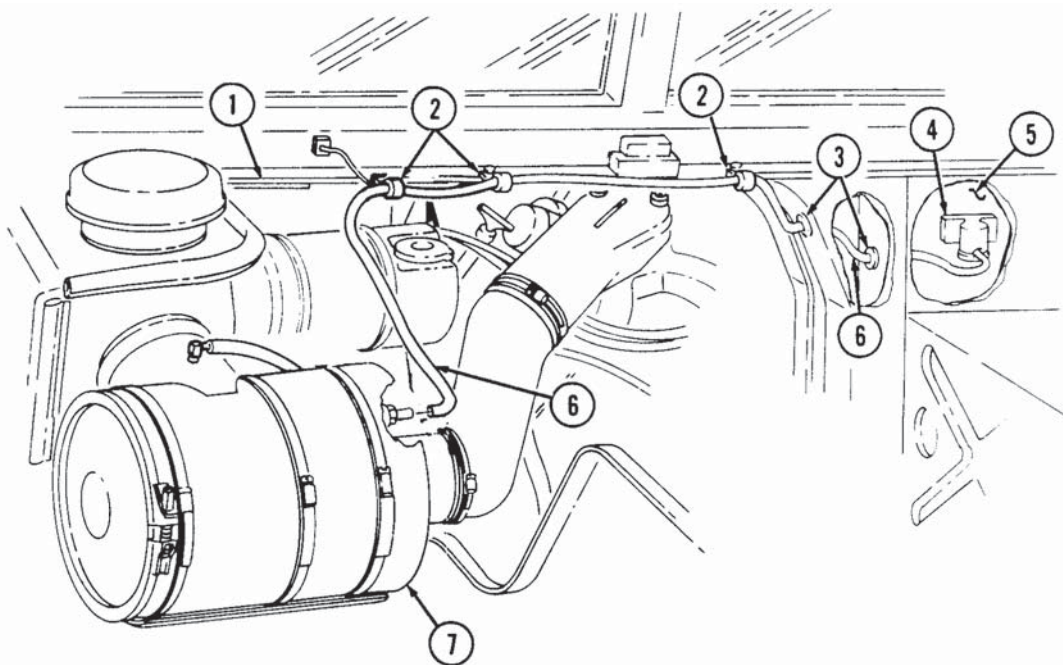
TM 9-2320-280-10
TM 9-2320-280-24P

a. Removal

1. Loosen three clamps (2) from air restriction gauge hose (6) and "A" beam (1).
2. Disconnect hose (6) from air cleaner assembly (7).
3. Disconnect hose (6) from air restriction gauge (4) located behind instrument panel (5).
4. Remove hose (6) by routing out from three clamps (2) through two grommets (3) in "A" beam (1).

b. Installation

1. Route hose (6) through three clamps (2) and two grommets (3) in "A" beam (1) to air cleaner assembly (7) and gauge (4).
2. Connect hose (6) to air cleaner assembly (7).
3. Connect hose (6) to gauge (4).
4. Tighten three clamps (2) on hose (6) and "A" beam (1).



- FOLLOW-ON TASKS:
- Install engine access cover (para. 10-15).
 - Lower and secure hood (TM 9-2320-280-10).

3-20. AIR INTAKE AND FUEL PUMP VENT LINES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Equipment Condition

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

Manual References

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

NOTE

For fuel pump vent line replacement, perform steps 2, 3, and 4 only.

a. Removal

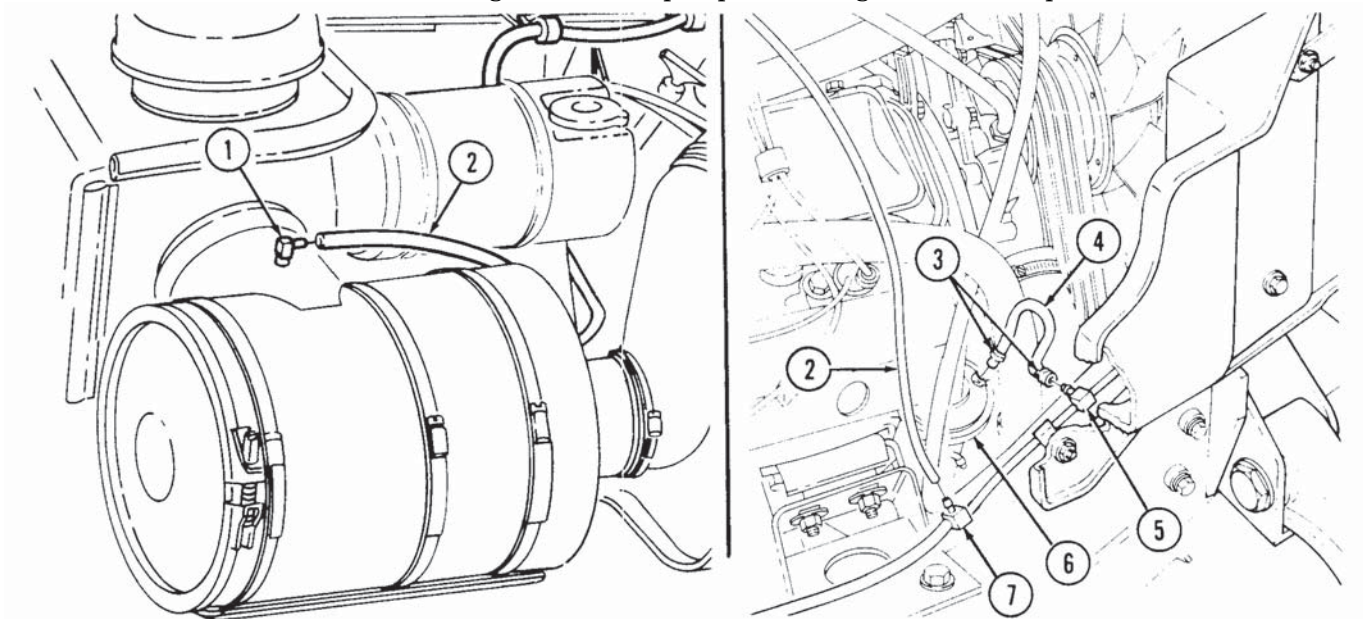
1. Remove vent line (2) from air cleaner fitting (1) and tee fitting (7).
2. Loosen clamp (3) and disconnect vent line (4) from fuel pump (6).
3. Loosen clamp (3) and remove vent line (4) from tee fitting (5).
4. Remove two clamps (3) from vent line (4).

b. Installation

NOTE

For fuel pump vent line replacement, perform steps 2 and 3.

1. Connect vent line (2) to tee fitting (7) and air cleaner fitting (1).
2. Install two clamps (3) to vent line (4).
3. Install vent line (4) on tee fitting (5) and fuel pump (6) and tighten two clamps (3).



FOLLOW-ON TASK: Lower and secure hood (TM 9-2320-280-10).

3-21. DRAINAGE BRACKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

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

Equipment Condition

Air cleaner assembly removed (para. 3-12).

Manual References

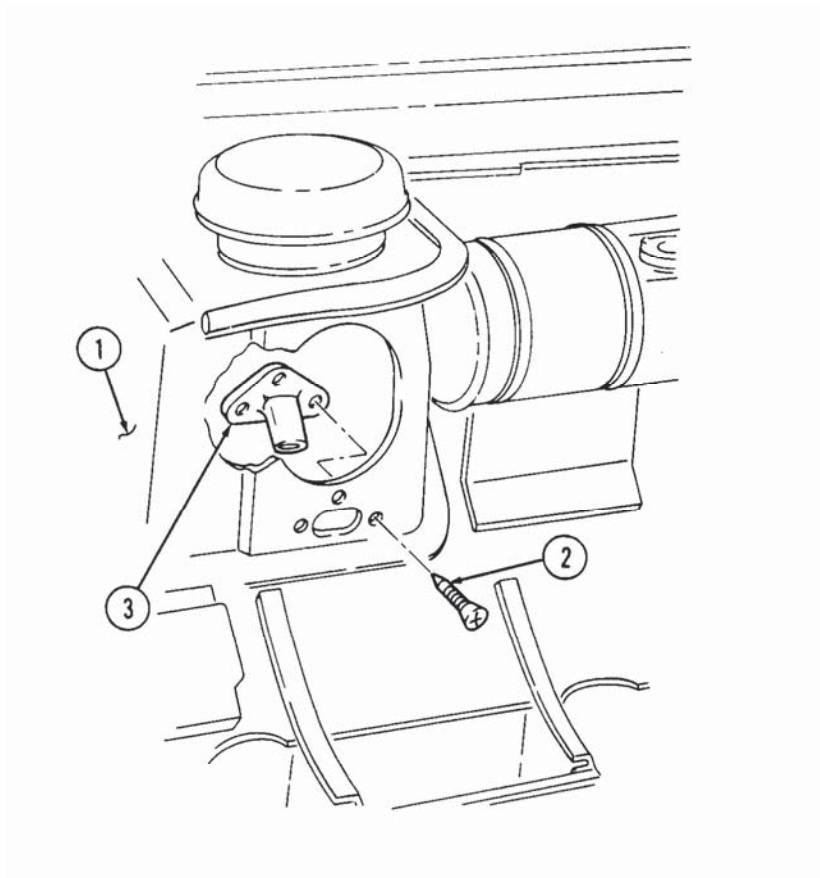
TM 9-2320-280-24P

a. Removal

Remove three screws (2) and drainage bracket (3) from body (1).

b. Installation

Install drainage bracket (3) on body (1) with three screws (2).



FOLLOW-ON TASK: Install air cleaner assembly (para. 3-12).