

Disassembly and Assembly

4006 TRS Gas and 4008 TRS Gas Industrial Engines

SG6 (Engine)
SG8 (Engine)



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Disassembly and Assembly Section

i03401440

Gas Pressure Regulator - Remove (Zero Pressure Regulator)

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Comply with the local official gas regulations regarding isolating the gas supply.

1. Turn the gas supply valve to the OFF position.

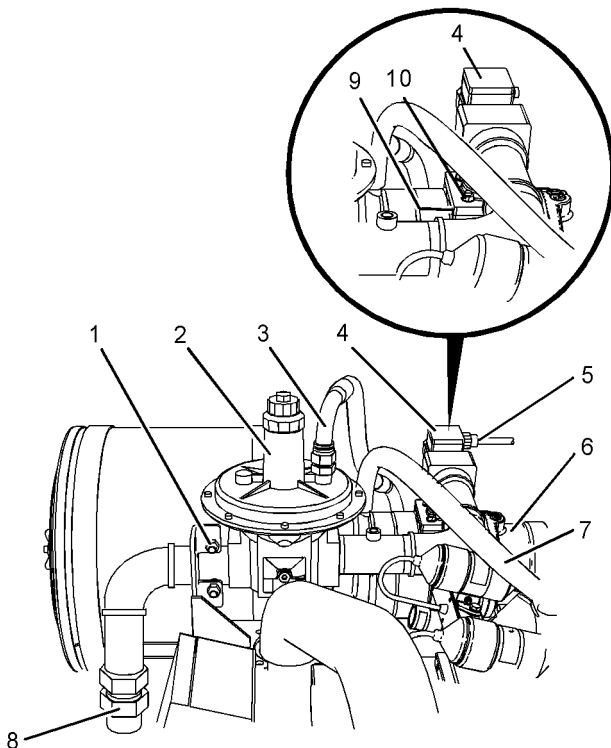


Illustration 1

g01816521

2. Disconnect gas inlet hose from connection (8) from zero pressure regulator (2).

3. Loosen hose clamp. Disconnect plastic hose assembly (7) and position the plastic hose assembly away from the zero pressure regulator.
4. Disconnect harness assembly (5) from fuel control valve (4).
5. Disconnect hose assembly (3) from zero pressure regulator (2).
6. Remove nuts (10) from fuel control valve (4).
7. Remove nuts from clamp (1) and remove the clamp.

Note: Support the weight of the zero pressure regulator.

8. Remove the assembly of zero pressure regulator (2) and fuel control valve (4) from the support bracket and carburetor (6).
9. Remove gasket (9) (not shown).

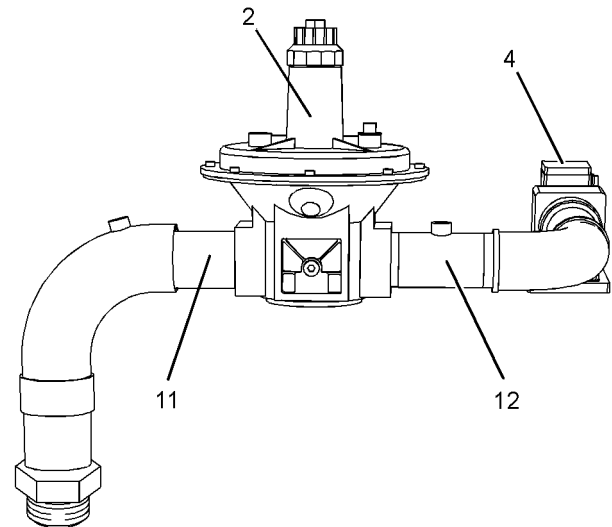


Illustration 2

g01816934

10. If necessary, remove zero pressure regulator (2) from tube assembly (11) and tube assembly (12). Follow Step 10.a through Step 10.c in order to remove zero pressure regulator (2).
 - a. Mount the assembly of zero pressure regulator (2) and fuel control valve (4) in a bench vise.
 - b. Make a temporary mark on tube assembly (11) so that the tube assembly can be reinstalled in the original orientation. Remove tube assembly (11) from zero pressure regulator (2).

- c. Make a temporary mark on tube assembly (12) so that the tube assembly can be reinstalled in the original orientation. Remove zero pressure regulator (2) from tube assembly (12).

i03401441

Gas Pressure Regulator - Install (Zero Pressure Regulator)

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Loctite 577 Pipe Sealant	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that all components of the zero pressure regulator are clean and free from damage. Ensure that all tube assemblies are free from restriction. Clean the gasket surface of the carburetor.

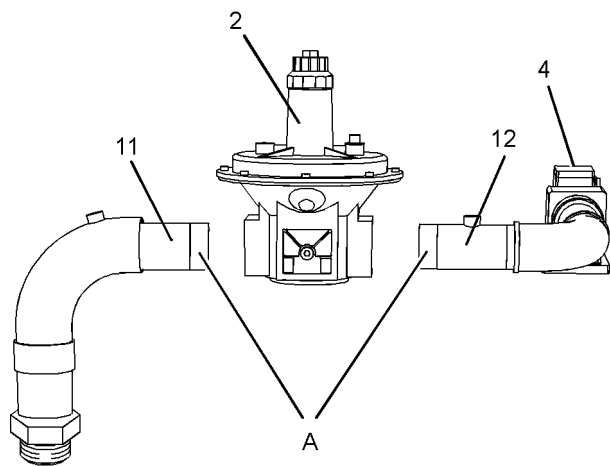


Illustration 3

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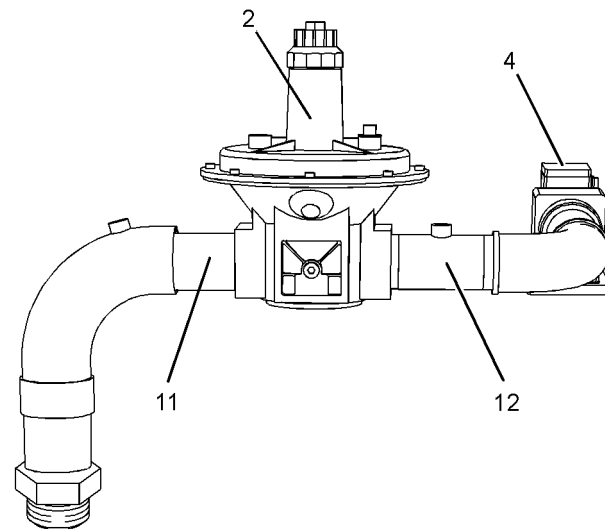


Illustration 4

g01816934

2. If necessary, Install tube assembly (11) and tube assembly (12) to zero pressure regulator (2). Follow Step 2.a through Step 2.f in order to install tube assemblies to zero pressure regulator (2).

- a. Mount tube assembly (12) for fuel control valve (4) in a bench vise.
- b. Apply a bead of Tooling (A) to threads in Position (A) on tube assembly (12).
- c. Install zero pressure regulator (2) onto tube assembly (12).

Note: Ensure that the zero pressure regulator and the tube assembly are installed in the correct orientation.

- d. Mount the zero pressure regulator (2) in a bench vise.
- e. Apply a bead of Tooling (A) to threads at Position (A) on tube assembly (11).
- f. Install tube assembly (11) to zero pressure regulator (2).

Note: Ensure that the tube assembly is installed in the correct orientation.

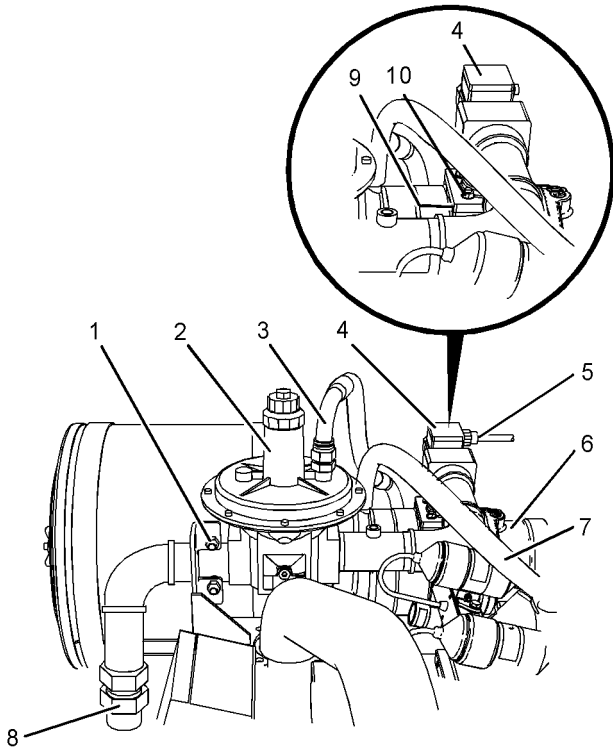


Illustration 5

g01816521

3. Position a new gasket (9) (not shown) onto carburetor (6).
 4. Position the assembly of zero pressure regulator (2) and fuel control valve (4) onto the support bracket and carburetor (6).
- Note:** Support the weight of the zero pressure regulator.
5. Install clamp (1) to the assembly of zero pressure regulator (2) and fuel control valve (4). Install the nuts to clamp (1) finger tight.
 6. Install nuts (10) to fuel control valve (4) and tighten nuts finger tight.
 7. Ensure that the assembly of zero pressure regulator (2) and fuel control valve (4) is installed in the correct orientation.
 8. Tighten nuts (10) to fuel control valve (4). Tighten the nuts to a torque of 25 N·m (18 lb ft).

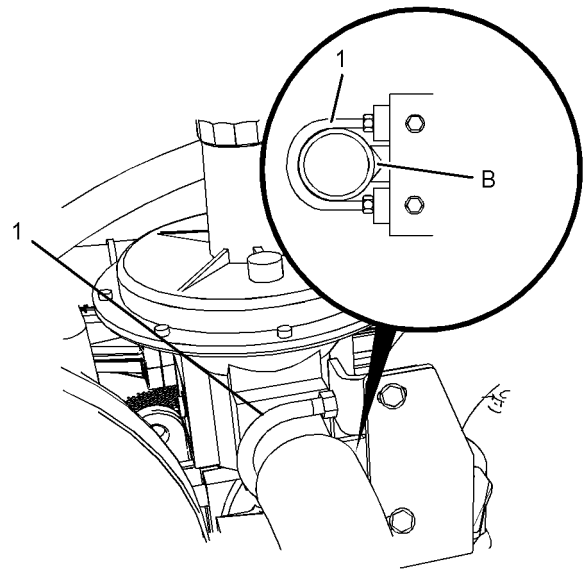


Illustration 6

g01824554

9. Tighten the nuts for clamp (1) to a torque of 47 N·m (35 lb ft). Ensure that the tube assembly is seated in Position (B).
10. Connect gas inlet hose to connection (8) to zero pressure regulator (2).
11. Connect harness assembly (5) to fuel control valve (4).
12. Connect hose assembly (3) to zero pressure regulator (2).
13. Connect plastic hose assembly (7) and tighten hose clamp securely.

NOTICE

Prior to the gas supply valve being reinstated to the ON position. The gas pipe work and the joint should be checked for soundness.

14. Turn the gas supply valve to the ON position.

i03401444

Fuel Control Actuator - Remove and Install (Throttle Governor)

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Comply with the local official gas regulations regarding isolating the gas supply.

1. Turn the gas supply valve to the OFF position.

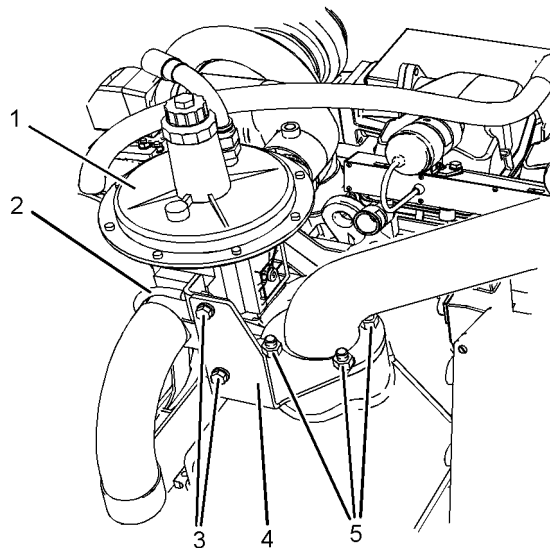


Illustration 7

g01826354

2. Loosen nuts on clamp (2) on zero pressure regulator (1). Remove nuts and bolts (3) from bracket (4).

Note: Support the weight of the zero pressure regulator.

3. Remove nuts (5) and remove bracket (4) from the air charge cooler.

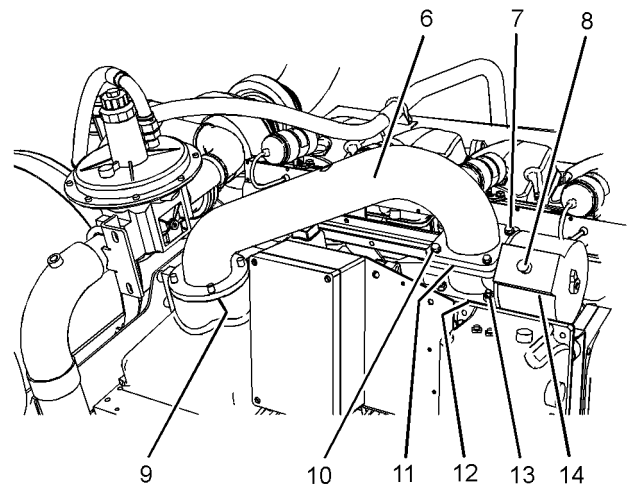


Illustration 8

g01826573

4. Remove the nuts and bolts (10) from tube assembly (6).
5. Remove tube assembly (6) from air charge cooler and throttle governor (14).
6. Remove gasket (9) (not shown) and O-ring seal (11) (not shown).
7. Disconnect harness assembly (8) from throttle governor (14).
8. Remove nuts (13) from throttle governor (14).
9. Remove throttle governor (14) from the inlet manifold. Remove O-ring seal (12) (not shown).

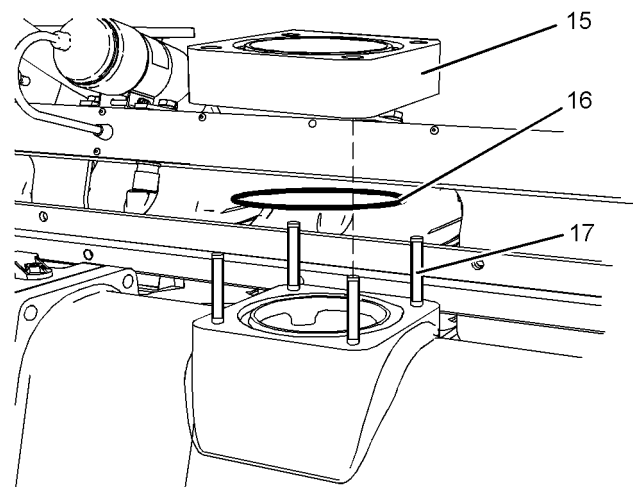


Illustration 9

g01828196

10. Remove spacer (15) and O-ring seal (16) from the inlet manifold.

11. If necessary, remove studs (17) from the inlet manifold.

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that all components of the throttle governor are clean and free from damage. Ensure that the tube assembly is free from restriction. Clean the gasket surface of the air charge cooler, spacer and the inlet manifold.

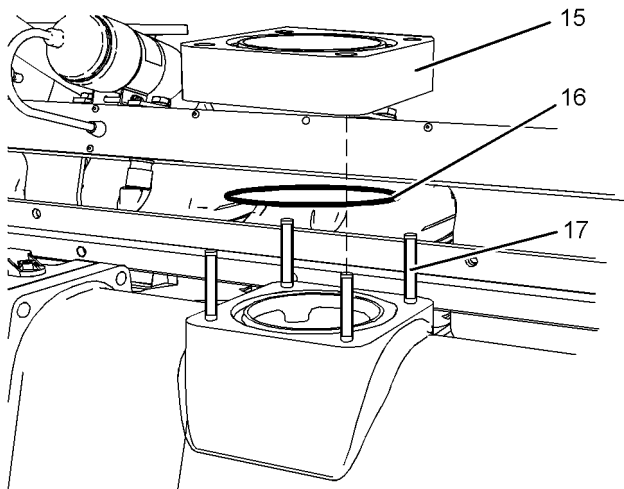


Illustration 10

g01828196

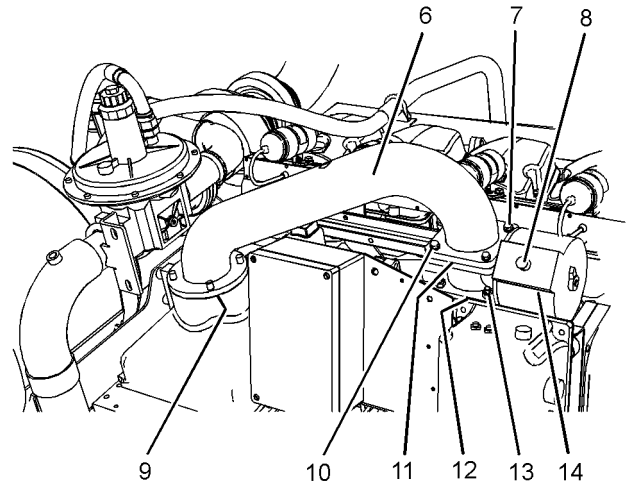


Illustration 11

g01826573

2. If necessary, install studs (17) from the inlet manifold. Tighten studs securely.
3. Install a new O-ring seal (16) to the inlet manifold and install spacer (15).
4. Install a new O-ring seal (12) (not shown) to throttle governor (14).
5. Position throttle governor (14) onto inlet manifold. Install nuts (13) to the throttle governor hand tight.
6. Install a new O-ring seal (11) (not shown) to tube assembly (6).
7. Position a new gasket (9) onto air charge cooler.
8. Install tube assembly (6) onto air charge cooler and throttle governor (14).
9. Install the nuts and bolts (10) to tube assembly (6) hand tight.
10. Connect harness assembly (8) to throttle governor (14).

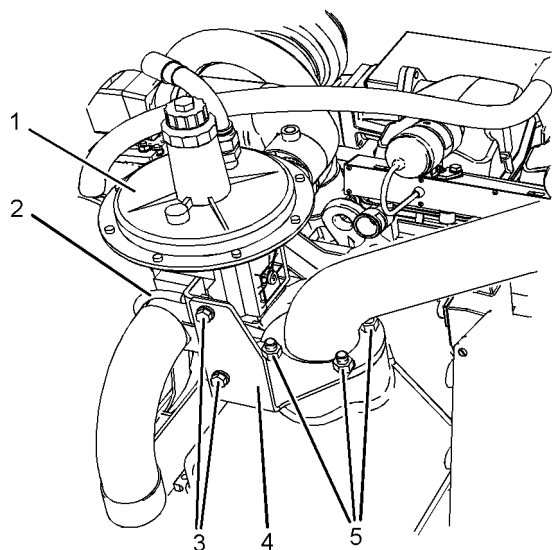


Illustration 12

g01826354

11. Install bracket (4) to the tube assembly. Install nuts (5) hand tight.
12. Install nuts and bolts (3) to bracket (4) for zero pressure regulator (2) hand tight. Tighten nuts on clamp (2) hand tight.

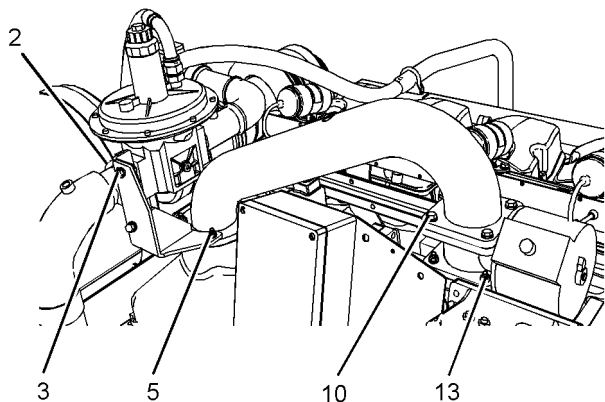


Illustration 13

g01828134

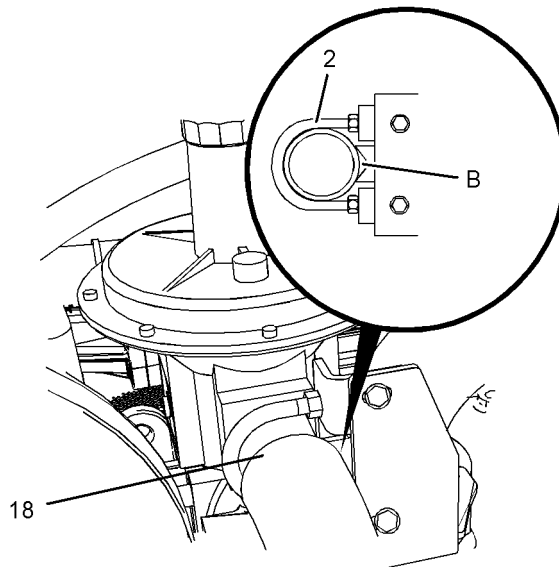


Illustration 14

g01827233

13. Tighten nuts (13) to a torque of 47 N·m (35 lb ft).
14. Tighten the nuts and bolts (10) to a torque of 47 N·m (35 lb ft).
15. Tighten nuts (5) to a torque of 47 N·m (35 lb ft).
16. Tighten the nuts and bolts (3) to a torque of 47 N·m (35 lb ft).
17. Tighten the nuts for clamp (2) to a torque of 47 N·m (35 lb ft). Ensure that tube assembly (18) is seated in Position (B).

NOTICE

Prior to the gas supply valve being reinstated to the ON position. The gas pipe work and the joint should be checked for soundness.

18. Turn the gas supply valve to the ON position.

i03401445

Fuel Control Valve - Remove and Install (Main Fuel Adjuster)

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Comply with the local official gas regulations regarding isolating the gas supply.

1. Turn the gas supply valve to the OFF position.

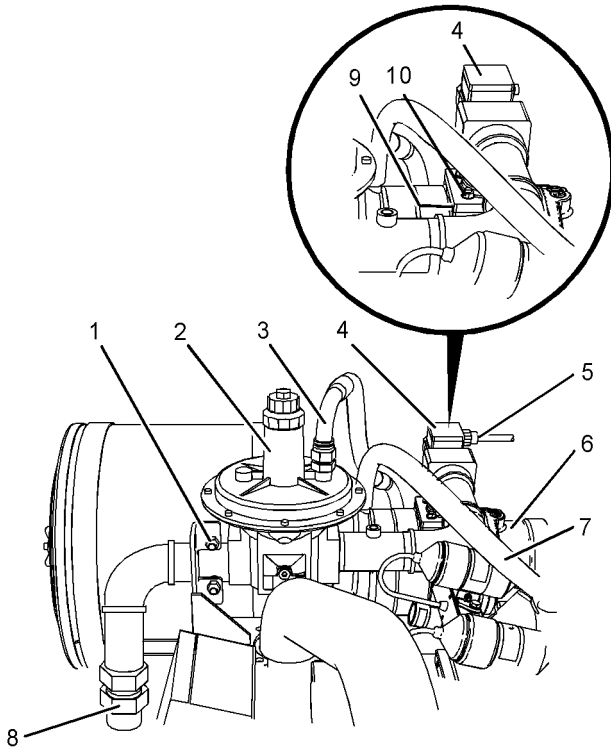


Illustration 15

g01824894

2. Disconnect gas inlet hose from connection (8) on zero pressure regulator (2).
3. Loosen hose clamp on plastic hose assembly. Disconnect plastic hose assembly (7) and position the plastic hose assembly away from the zero pressure regulator.
4. Disconnect harness assembly (5) from fuel control valve (4).
5. Disconnect hose assembly (3) from zero pressure regulator (2).
6. Remove nuts (10) from fuel control valve (4).
7. Remove nuts from clamp (1) and remove the clamp.

Note: Support the weight of the fuel control valve and zero pressure regulator.

8. Remove the assembly of zero pressure regulator (2) and fuel control valve (4) from the support bracket and carburetor (6).

9. Remove gasket (9) (not shown).

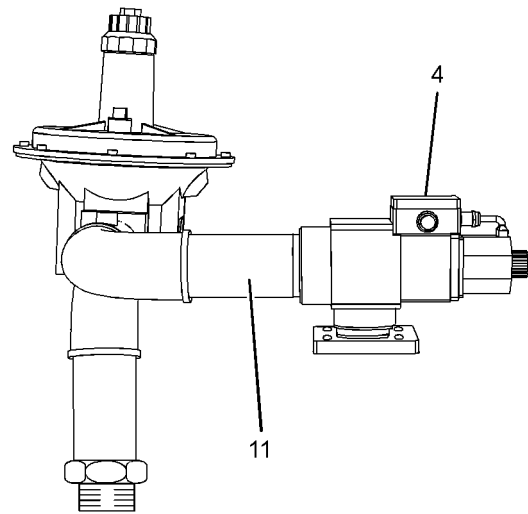


Illustration 16

g01824915

10. Mount the assembly of fuel control valve (4) in a vise.
11. Make a temporary mark on tube assembly (11) so that the tube assembly can be reinstalled in the original orientation. Remove tube assembly (11) from fuel control valve (4).

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Loctite 577 Pipe Sealant	1

1. Ensure that all components of the fuel control valve are clean and free from damage. Ensure that all tube assembly is free from restriction. Clean the gasket surface of the carburetor.

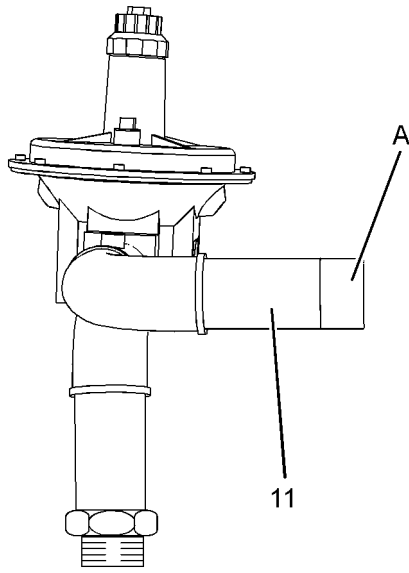


Illustration 17

g01824961

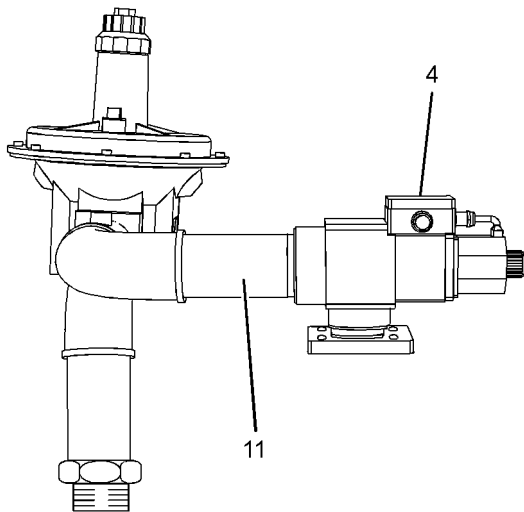


Illustration 18

g01824915

2. Mount tube assembly (11) for the fuel control valve (4) in a vise.
3. Apply a bead of Tooling (A) to threads in Position (A) on tube assembly (11).
4. Install fuel control valve (4) to tube assembly (11).

Note: Ensure that the fuel control valve and tube assembly are installed in the correct orientation.

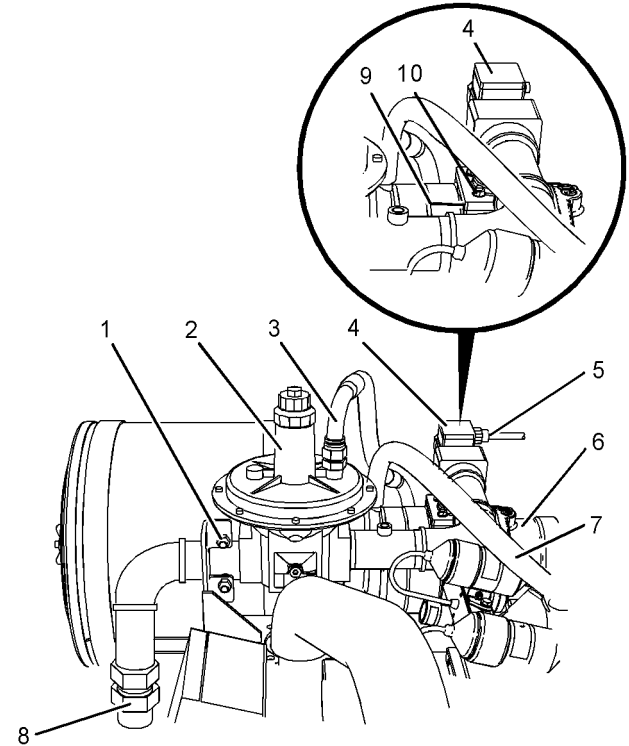


Illustration 19

g01824894

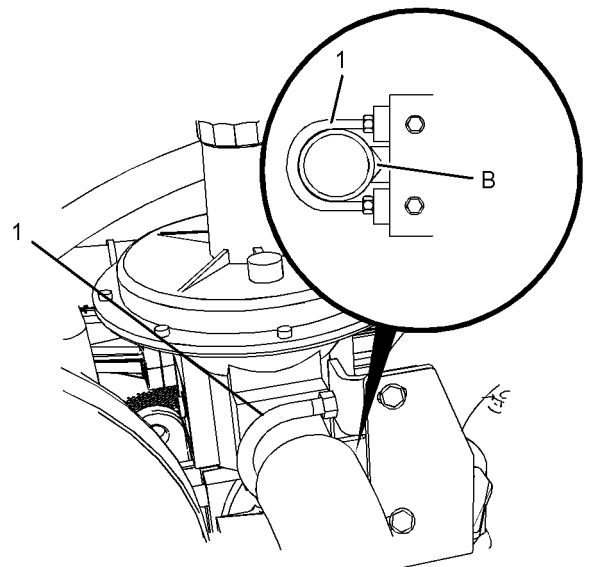


Illustration 20

g01824554

5. Position a new gasket (9) (not shown) onto carburetor (6).
6. Position the assembly of zero pressure regulator (2) and fuel control valve (4) onto the support bracket and carburetor (6).

Note: Support the weight of the zero pressure regulator and the fuel control valve.

7. Install clamp (1) to the assembly of zero pressure regulator (2) and fuel control valve (4). Install the nuts to clamp (1) hand tight.
8. Install nuts (10) to fuel control valve (4) and tighten nuts hand tight.
9. Ensure that the assembly of zero pressure regulator (2) and fuel control valve (4) is installed in the correct orientation.
10. Tighten nuts (10) for fuel control valve (4) to a torque of 25 N·m (18 lb ft).
11. Tighten the nuts for clamp (1) to a torque of 47 N·m (35 lb ft). Ensure that the tube assembly is seated in Position (B).
12. Connect harness assembly (5) to fuel control valve (4).
13. Connect hose assembly (3) to zero pressure regulator (2).
14. Connect plastic hose assembly (7) and tighten hose clamp for plastic hose assembly securely.
15. Connect gas inlet hose to connection (8) for zero pressure regulator (2). Tighten hose for the connection securely.

NOTICE

Prior to the gas supply valve being reinstated to the ON position. The gas pipe work and the joint should be checked for soundness.

16. Turn the gas supply valve to the ON position.

i03401446

Governor - Remove (Governor Control Unit)

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

WARNING

Accidental engine starting can cause injury or death to personnel working on the equipment.

To avoid accidental engine starting, disconnect the battery cable from the negative (-) battery terminal. Completely tape all metal surfaces of the disconnected battery cable end in order to prevent contact with other metal surfaces which could activate the engine electrical system.

Place a Do Not Operate tag at the Start/Stop switch location to inform personnel that the equipment is being worked on.

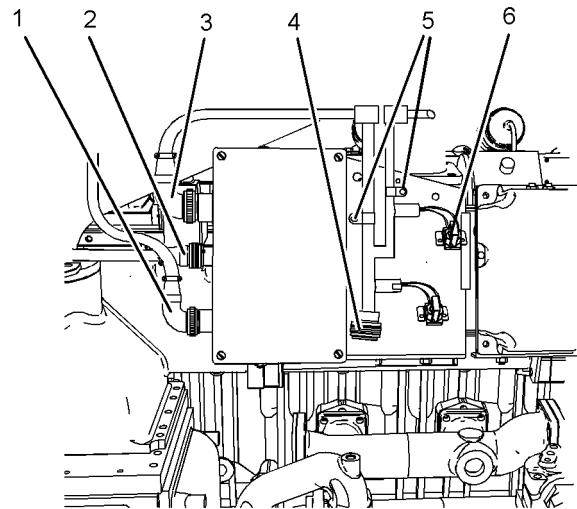


Illustration 21

g01859657

1. Turn the battery disconnect switch to the OFF position.
2. Disconnect harness assembly (1), harness assembly (2) and harness assembly (3) from the governor control unit.
3. Disconnect harness assembly (4) from customer harness assembly. Remove bolts (5) from clips. Remove screws (6) from fuses. Position the wire harness away from the governor control unit.

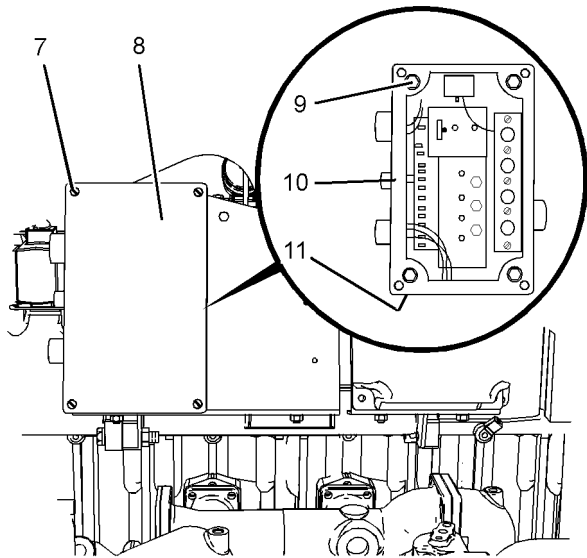


Illustration 22

g01860986

4. Remove screws (7) from cover (8) for the governor control unit.
5. Remove allen head bolts (9) and remove governor control unit (10). Remove washers (11) (not shown).

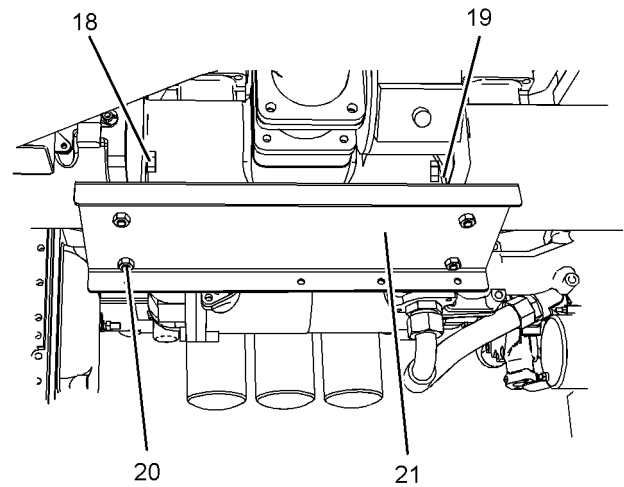


Illustration 24

g01861393

9. If necessary, remove mounting bracket (21) from the inlet manifold. Follow Step 9.a through Step 9.c in order to remove the mounting bracket from the inlet manifold.
 - a. Remove ignition control unit. Refer to Disassembly and Assembly, "Governor Remove (Ignition Control Unit)" for the correct procedure.
 - b. Remove nuts and bolts (20) and remove mounting bracket (21).
 - c. Remove the nuts and bolts (18) from the inlet manifold and remove mounting brackets (19) from the inlet manifold.

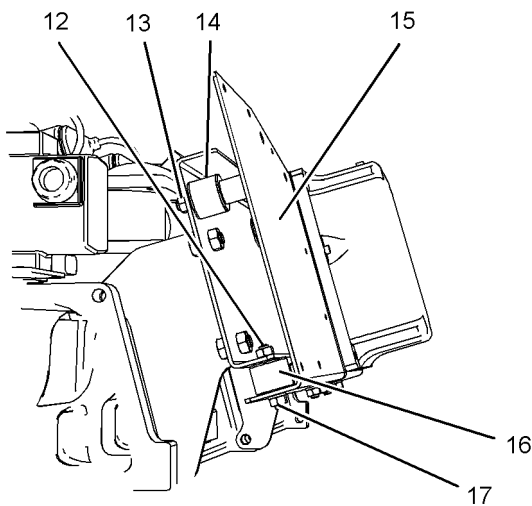


Illustration 23

g01860994

6. Remove nuts (12) and remove bolts (13). Remove mounting bracket (15).
7. Remove rubber mounting (14) from mounting bracket (15).
8. Remove nuts (17) and remove rubber mounting (16) from mounting bracket (15).

i03534440

Governor - Remove (Ignition Control Unit)

Removal Procedure

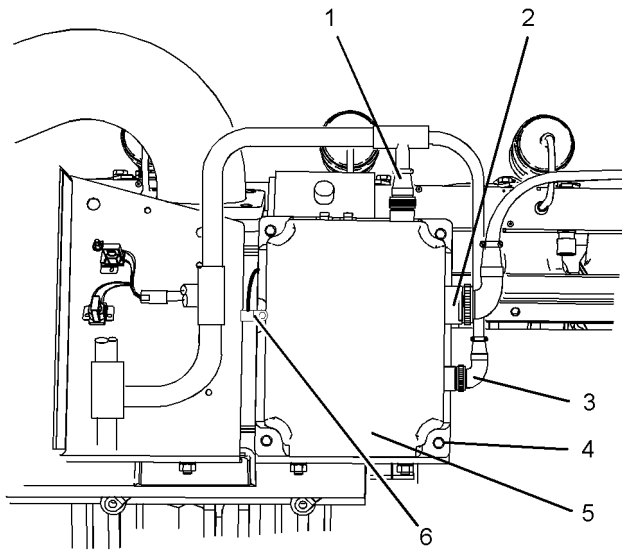


Illustration 25

g01862553

1. Turn the battery disconnect switch to the OFF position.
2. Disconnect harness assembly (1), harness assembly (2) and harness assembly (3).
3. Remove screw (6) and remove grounding wire. Position the harness assembly away from ignition control unit.
4. Remove nuts and bolts (4). Remove ignition control unit (5) from the mounting bracket.

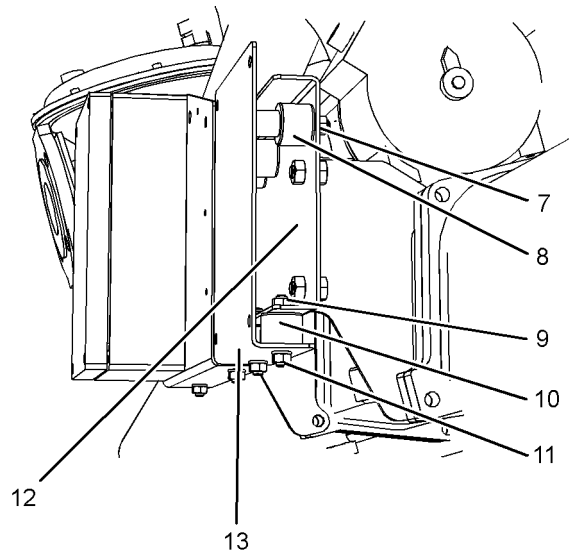


Illustration 26

g01862653

5. Remove nuts (9) and nuts (7). Remove mounting bracket (13) from mounting bracket (12).
6. Remove rubber mountings (8) from mounting bracket (13). Remove nuts (11) and remove rubber mountings (10) from mounting bracket (13).
7. If necessary, remove the electronic control unit and the mounting bracket (12). Refer to Disassembly and Assembly, "Governor Remove (Electronic Control Unit)" for the correct procedure.

i03401447

Governor - Install (Governor Control Unit)

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

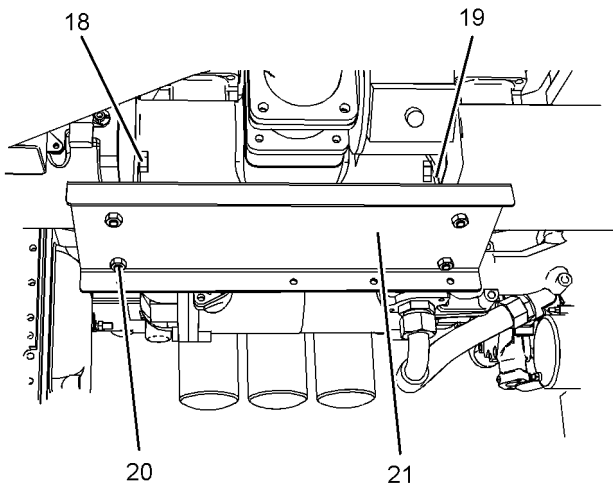


Illustration 27

g01861393

1. If necessary, install mounting bracket (21) to the inlet manifold. Follow Step 1.a through Step 1.b in order to install the mounting bracket to the inlet manifold.

a. Position mounting brackets (19) onto the inlet manifolds. Install bolts (18) and tighten the bolts hand tight. Position mounting brackets (21) onto mounting brackets (19). Install nuts and bolts (20). Tighten the nuts and bolts hand tight. Tighten bolts (18) to a torque of 47 N·m (35 lb ft).

Tighten nuts and bolts (20) to a torque of 47 N·m (35 lb ft).

b. Install ignition control unit. Refer to Disassembly and Assembly, "Governor Install (Ignition Control Unit)" for the correct procedure.

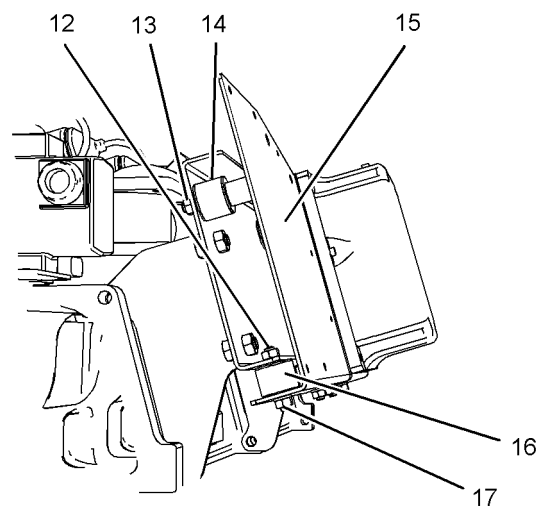


Illustration 28

g01860994

2. Install rubber mountings (14) to mounting bracket (15). Tighten rubber mounting securely.
3. Install rubber mounting (16) and install nuts (17). Tighten nut (17) to a torque of 25 N·m (18 lb ft).
4. Install mounting bracket (15) to mounting bracket (21). Install nuts (13) and nuts (12). Tighten nuts to a torque of 25 N·m (18 lb ft).

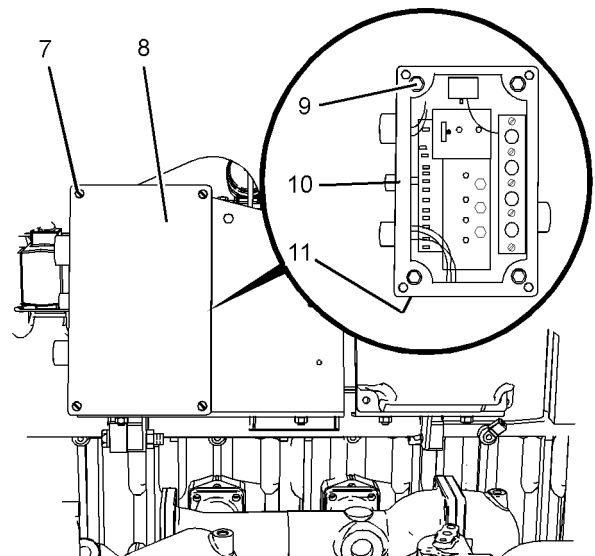


Illustration 29

g01860986

5. Position governor control unit (10) onto the mounting bracket. Position washers (11) (not shown) between the governor control unit and the mounting bracket.
6. Install allen head bolts (9). Tighten the allen head bolts to a torque of 9 N·m (80 lb in).

7. Position cover (8) onto the governor control unit. Install screws (7) and tighten screws securely.

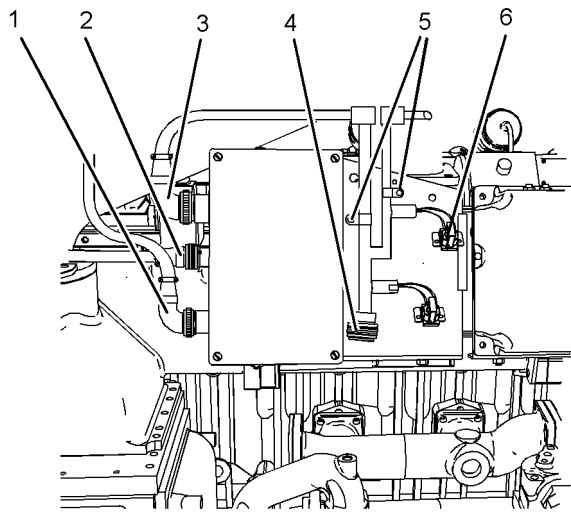


Illustration 30

g01859657

8. Connect harness assembly (1), harness assembly (2) and harness assembly (3).
9. Position clips for harness assemblies. Install bolts (5) and tighten the bolts securely. Position fuses and install screws (6). Tighten screws securely. Connect harness assembly (4) to customer harness assembly.
10. Turn the battery disconnect switch to the OFF position.

i03535840

Governor - Install (Ignition Control Unit)

Installation Procedure

1. If necessary, install the electronic control unit and mounting plate (12). Refer to Disassembly and Assembly, "Governor Remove (Electronic Control Unit)" for the correct procedure.

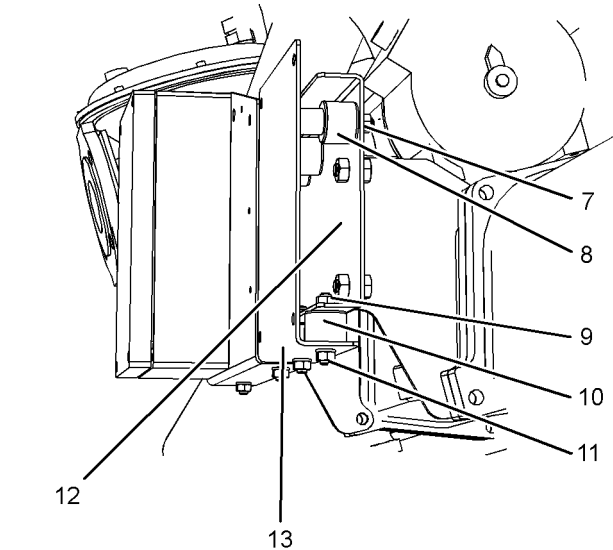


Illustration 31

g01862653

2. Install rubber mounting (8) to mounting bracket (13). Install rubber mounting (10) to mounting bracket (13) and install nuts (11). Tighten nuts to a torque of 25 N·m (18 lb ft).
3. Install mounting bracket (13) onto mounting plate (12). Install nuts (7) and nuts (9). Tighten nuts to a torque of 25 N·m (18 lb ft).

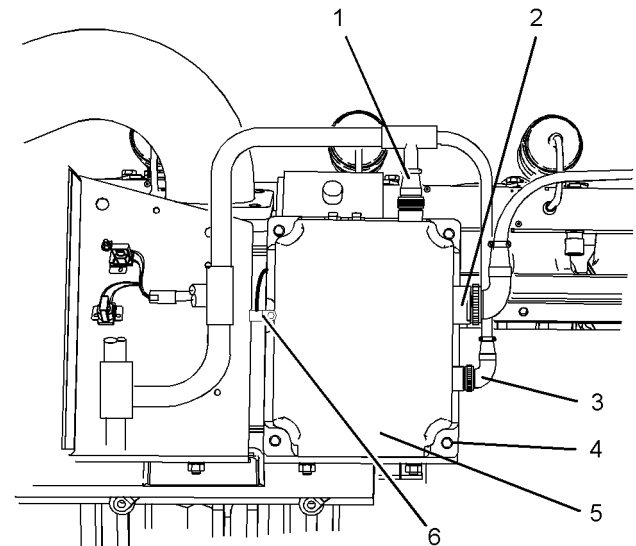


Illustration 32

g01862553

4. Position ignition control unit (5) onto mounting bracket. Install nuts and bolts (4). Tighten nuts and bolts to a torque of 25 N·m (18 lb ft).
5. Position the grounding wire onto the mounting bracket. Install bolt (6) and tighten the bolt securely. Install harness assembly (1), harness assembly (2) and harness assembly (3).

- Turn the battery disconnect switch to the ON position.

i03401449

Spark Plugs - Remove and Install

Removal Procedure

Table 3

Required Tools			
Tool	Part Number	Part Description	Qty
A	484 / 45	Spark plug Socket	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

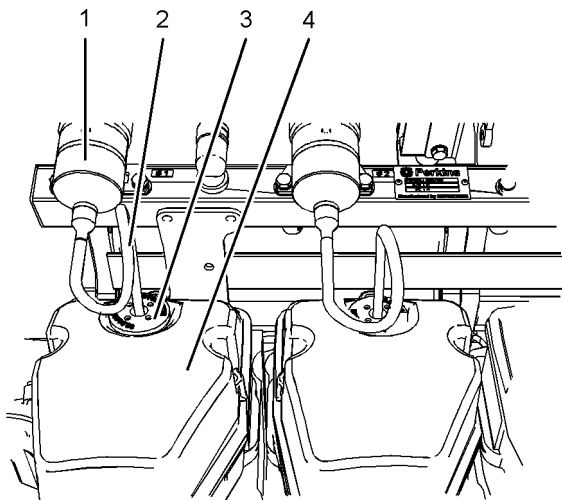


Illustration 33

g01833385

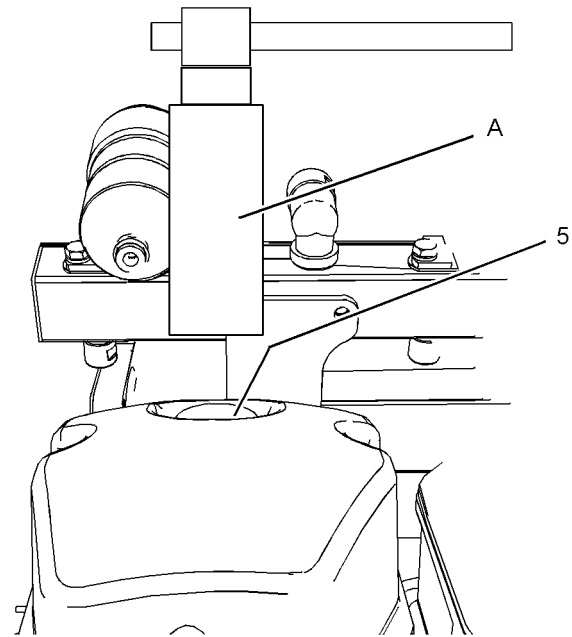


Illustration 34

g01834533

- Remove high tension lead (2) from ignition coil (1).
- Remove seal (3) for high tension lead (2) from valve mechanism cover (4). Remove high tension lead (2) from spark plug (5) (not shown).
- Use Tooling (A) to remove spark plug (5) (not shown) from the cylinder head.

Installation Procedure

Table 4

Required Tools			
Tool	Part Number	Part Description	Qty
A	484 / 45	Spark plug Socket	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

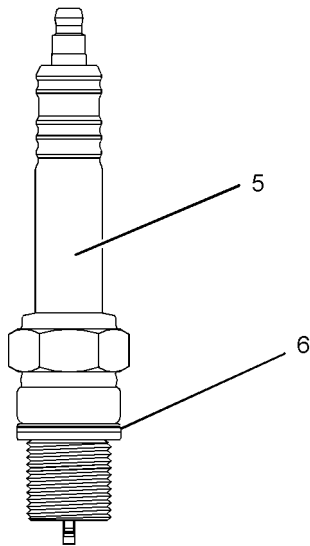


Illustration 35

g01834534

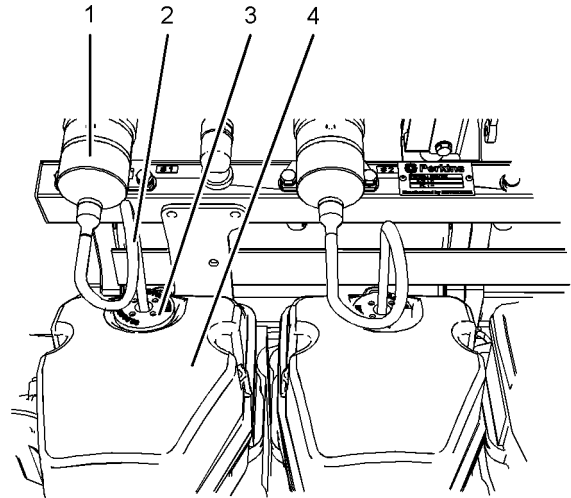


Illustration 37

g01833385

4. Install high tension lead (2) to ignition coil (1).
5. Install seal (3) for high tension lead (2) to valve mechanism cover (4).

i03496842

Spark Plugs - Remove and Install (Multitorch)

Removal Procedure

Table 5

Required Tools			
Tool	Part Number	Part Description	Qty
A	484 / 49	Spark plug Socket	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

The Multitorch spark plugs fitted to the Perkins 4000 TRS series engines are unique to Perkins, they are designed for the specific combustion chamber and must not be replaced with alternatively sourced Multitorch plugs. Damage may occur resulting in engine failure.

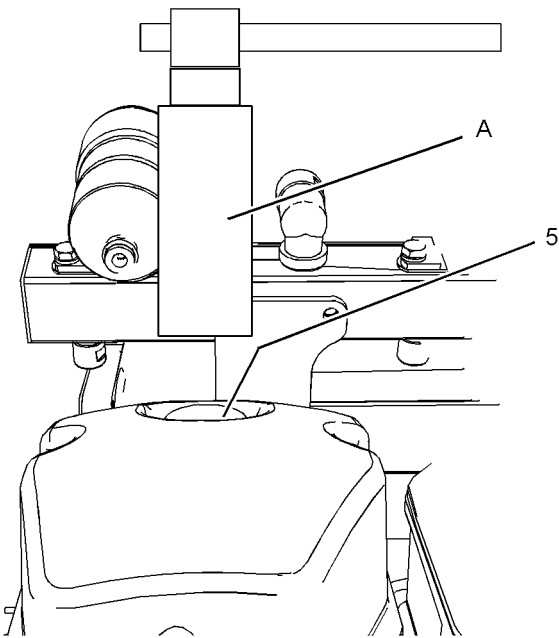


Illustration 36

g01834533

1. Install a new sealing washer (6) to spark plug (5).
2. Use Tooling (A) to install spark plug (5) (not shown) to the cylinder head.
3. Tighten spark plug (5) to a torque of 50 N·m (30 lb ft).

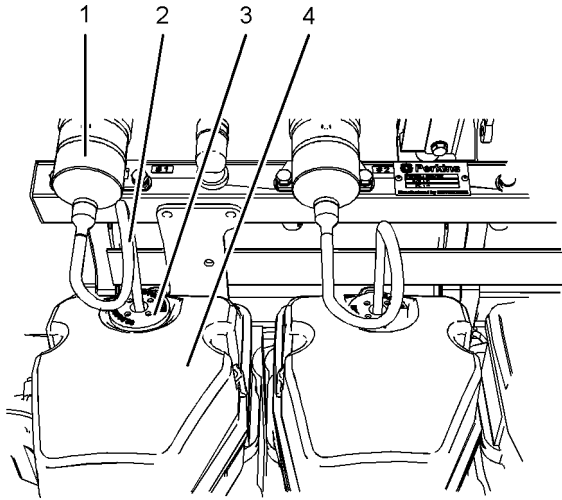


Illustration 38

g01833385

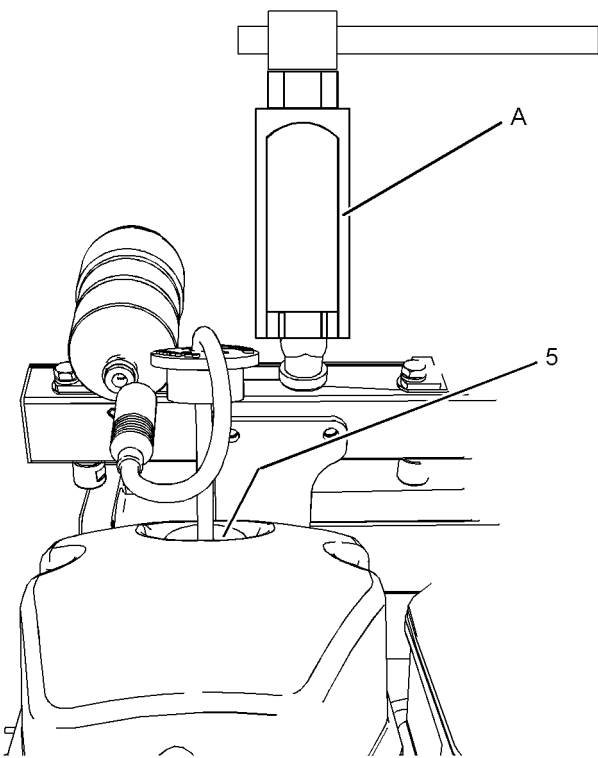


Illustration 39

g01833389

1. Remove high tension lead (2) from ignition coil (1).
2. Remove seal (3) for high tension lead (2) from valve mechanism cover (4).
3. Use Tooling (A) to remove multitorch spark plug (5) (not shown) from the cylinder head.

Installation Procedure

Table 6

Required Tools			
Tool	Part Number	Part Description	Qty
A	484 / 49	Spark plug Socket	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

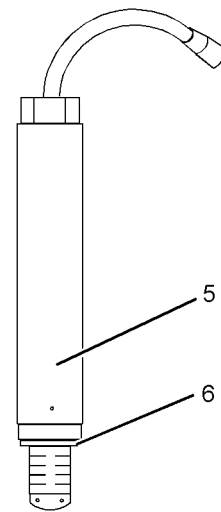


Illustration 40

g01833554

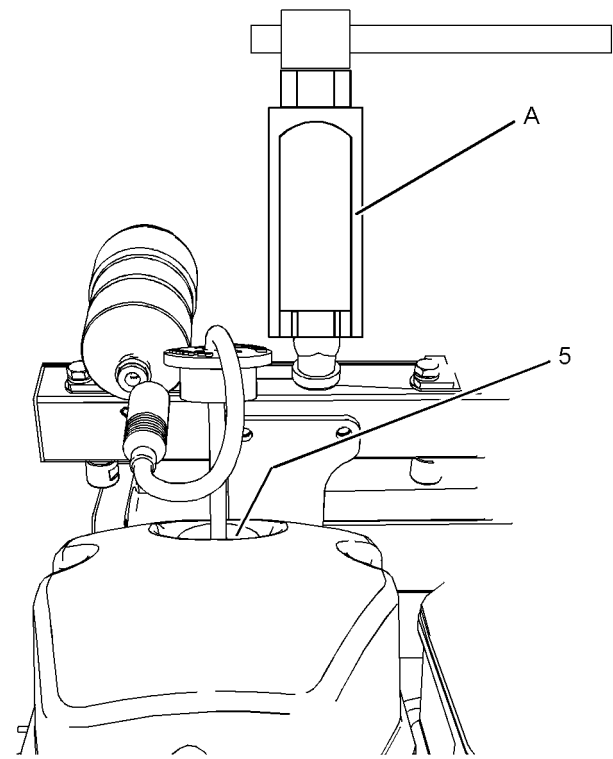


Illustration 41

g01833389

1. Install a new sealing washer (6) to multitorch spark plug (5).
2. Use Tooling (A) to install multitorch spark plug (5) (not shown) to the cylinder head.
3. Tighten multitorch spark plug (5) to a torque of 50 N·m (30 lb ft).

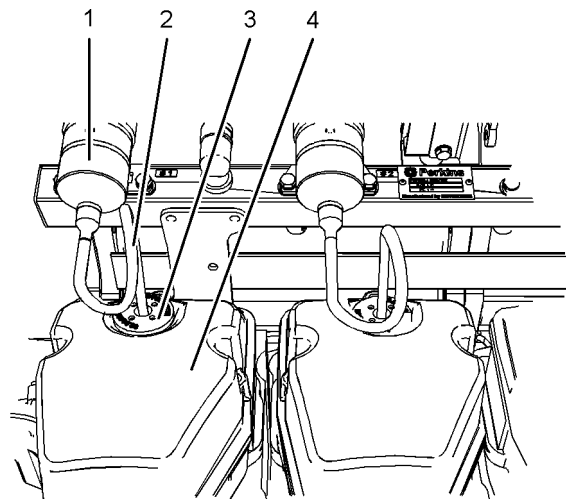


Illustration 42

g01833385

4. Install high tension lead (2) to ignition coil (1).

5. Install seal (3) for high tension lead (2) to valve mechanism cover (4).

i03401450

Carburetor - Remove

Removal Procedure

Start By:

- a. Remove the air cleaner. Refer to Disassembly and Assembly, "Air Cleaner - Remove and Install".

NOTICE

Comply with the local official gas regulations regarding isolating the gas supply.

1. Turn the gas supply valve to the OFF position.

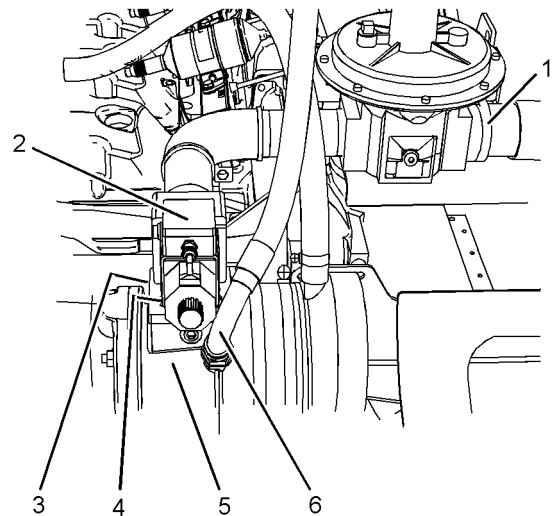


Illustration 43

g01817934

2. Remove nuts (4) (not shown) from fuel control valve (2).
 3. Loosen clamps (1). Position fuel control valve (2) away from carburetor (5). Temporarily tighten the nuts on clamps (1) to a torque of 47 N·m (35 lb ft).
- Note:** Support the weight of the assembly of the fuel control valve and zero pressure regulator.
4. Remove gasket (3) (not shown).
 5. Disconnect hose assembly (6) from carburetor (5).

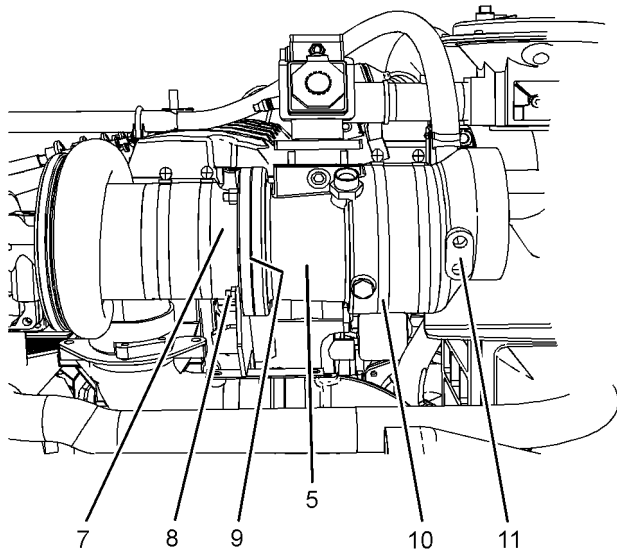


Illustration 44

g01817994

6. Loosen hose clamp (10) and remove air cleaner adapter (11) from carburetor (5).
7. Position air cleaner adapter (11) away from carburetor (5).
8. Remove nuts (8) and remove carburetor (5) from turbocharger adapter (7).
9. Remove carburetor (5).
10. Remove gasket (9) (not shown).

i03401452

Carburetor - Disassemble

Disassembly Procedure

Start By:

- a. Remove the carburetor. Refer to Disassembly and Assembly, "Carburetor - Remove" for the engine that is being serviced.

Note: Cleanliness is an important factor. Before the disassembly procedure, the exterior of the component should be thoroughly cleaned. This will help to prevent dirt from entering the internal mechanism.

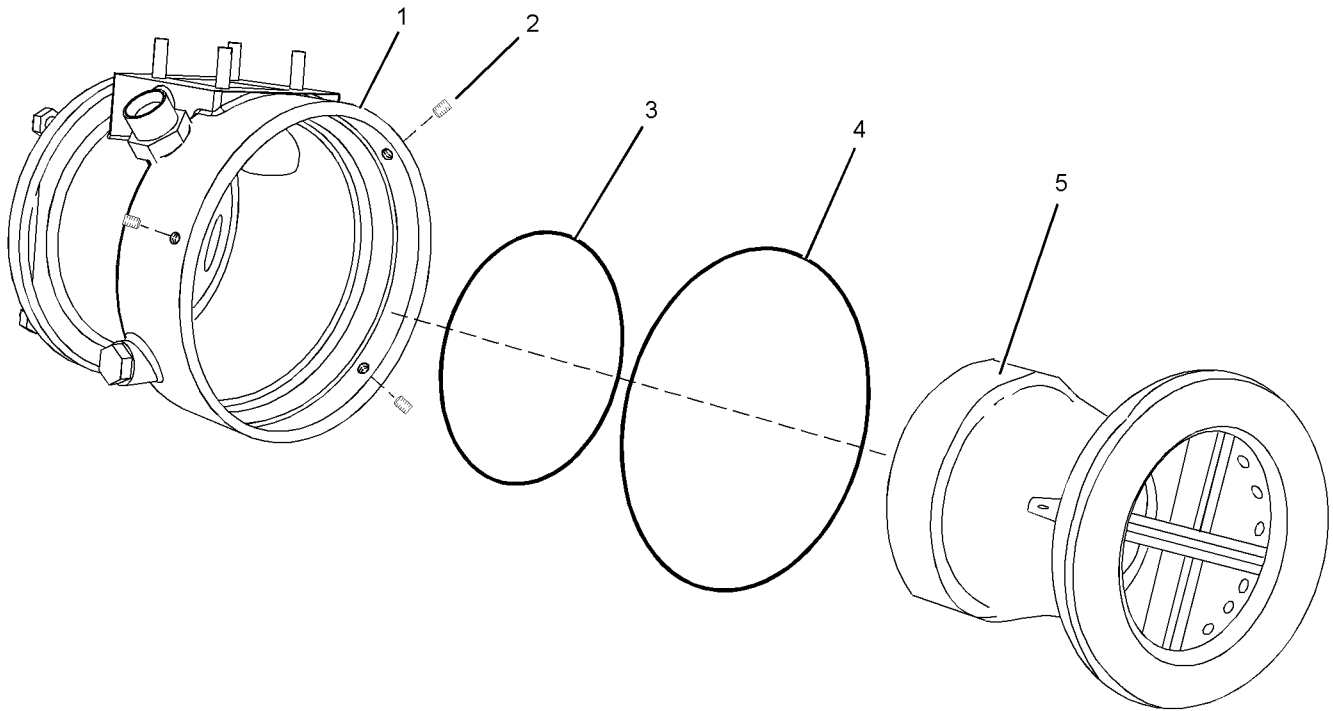


Illustration 45

g01818715

1. Remove grub screws (2) from carburetor (1).
2. Remove venturi (5) from the body of carburetor (1).

Note: Make a temporary mark on the venturi so that the venturi can be reinstalled in the original orientation. Misalignment of the venturi will affect the mixture of the air and the mixture of the gas. Misalignment of the venturi will affect engine performance.

3. Remove O-ring seal (3) and O-ring seal (4) from the body of carburetor (1).

Note: Cleanliness is an important factor. Before assembly, all parts should be thoroughly cleaned in cleaning fluid. Allow the parts to air dry. Wiping cloths or rags should not be used to dry parts. Lint may be deposited on the parts which may cause later trouble. Inspect all parts. If any parts are worn or damaged, use new parts for replacement.

i03401453

Carburetor - Assemble

Assembly Procedure

Table 7

Required Tools			
Tooling	Part Number	Description	Qty
A	21820221	POWERPART Rubber Grease	1

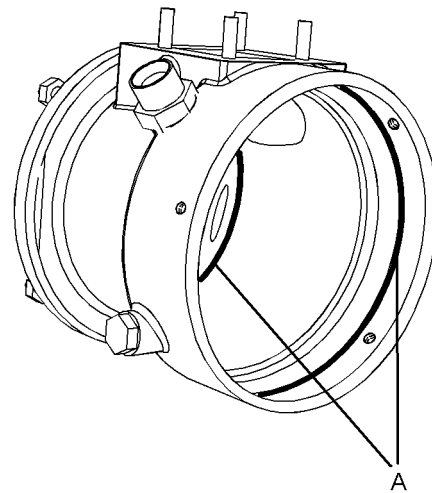


Illustration 46

g01819874



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