



# INSTRUCTION BULLETIN

No. 3754

Machine: 8400/8410 G/LPG  
800/810 G/LPG

Published: 2-96/00

System: ENGINE

**NOTE: DO NOT DISCARD the Parts List from the Instruction Bulletin. Place the Parts List in the appropriate place in your machine manual for future reference. Retaining the Parts List will make it easier to reorder individual parts and will save you the cost of ordering an entire kit.**

*NOTE: Numbers in parenthesis ( ) are reference numbers for parts listed in Bill of Materials.*

Installation Instructions for Kit number 83678 (GAS) and 83679 (LPG)

**SYNOPSIS / PROBLEM:** This kit contains the parts needed to install a new Precision Governor on the models listed above. Please follow step-by-step instructions.

**SPECIAL TOOLS / CONSIDERATIONS:** A special ball-end style allen wrench is needed to remove the cap screws that hold the governor assembly to the intake manifold. Part numbers:

**SEARS** (L ball hex 9-46615 and ball driver 9-BH10664)

**SNAP-ON** (L ball hex YAM245 and ball driver SDABM5)

**BONDHUS** (L ball hex 10964 and ball driver 10664) (*Estimated Time to complete: 2 hours*)

## **TO REPLACE LPG CARBURETOR:**

(Refer to FIG. 1 and 3)

1. Close the valve on the LP tank. Start the machine and run the engine until all the LP fuel is used up in the line.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and set parking brake. Then turn off machine and remove key.**

2. Open the engine cover and side door.
3. Remove the air cleaner hose at the carburetor. (Refer to FIG. 3)
4. Remove the hose from the carburetor that leads to the engine breather. (Refer to FIG. 3)
5. Remove the LP hose from the carburetor. (Refer to FIG. 1 and 3)
6. Remove the two M6 hex nuts from the two hex screws holding the carburetor to the governor mount bracket. Remove the carburetor from the machine. Retain the gasket and hardware. (Refer to FIG. 1)

*NOTE: When removing the carburetor, lift the arm and shoulder bolt up and out of the slot on the arm of the governor actuator. (Refer to FIG. 1)*

7. Remove the arm from the old carburetor and install on the new carburetor (3) in the same orientation. (Refer to FIG. 1 and 3)
8. When mounting the arm on the new carburetor--make sure the idle stop is controlling the idle and not the butterfly closing before the idle stop hits. (Refer to FIG. 1 and 3)

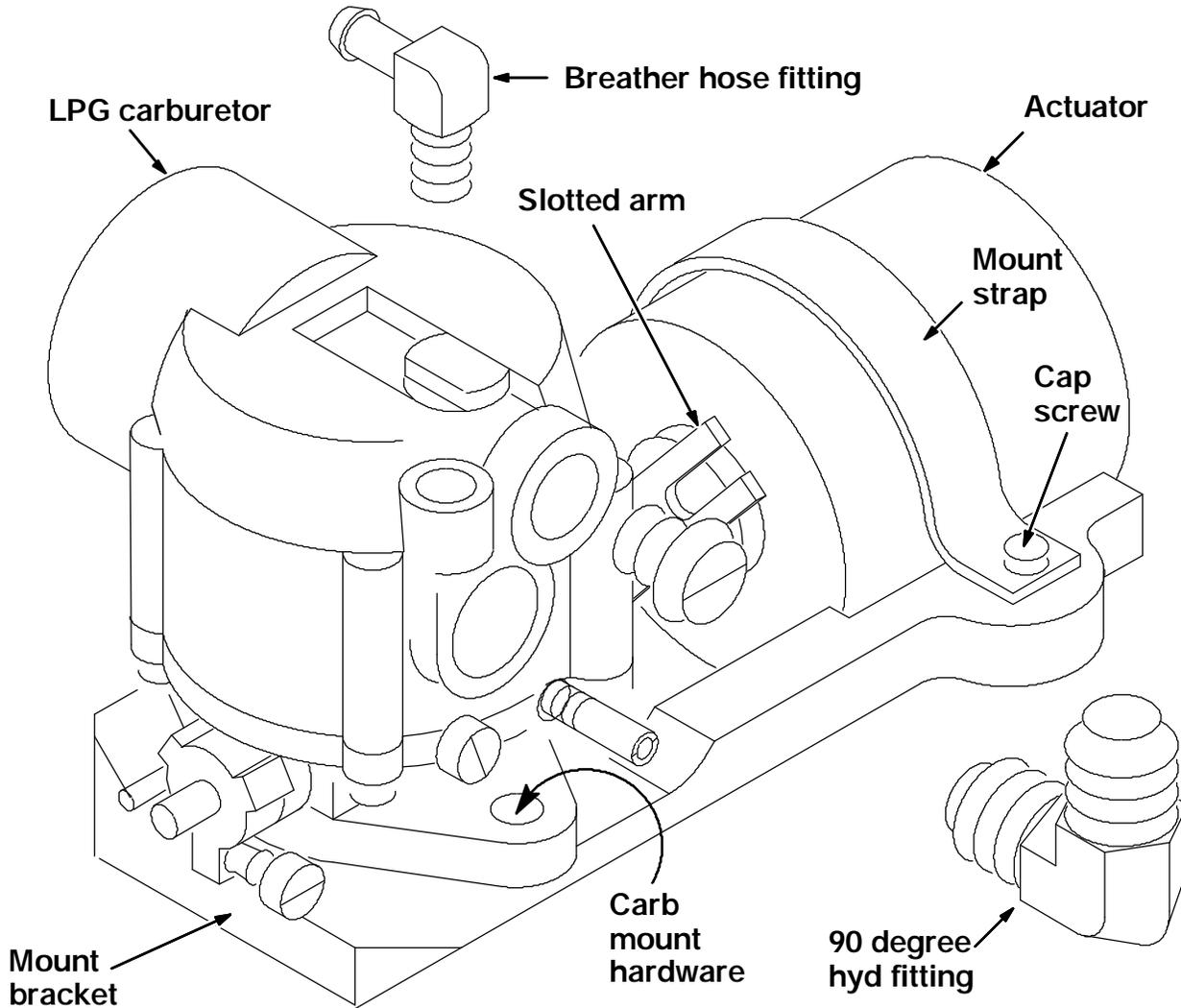
*NOTE: Install the arm flush with the end of the shaft and position the arm to swing approximately equal distance on either side of vertical. Tighten the arm clamp bolt with the nyloc nut. Firmly tighten. (Refer to FIG. 1 and 3)*

9. Install the new carburetor (3) and gasket on the mount bracket (2). Install the M6 hex screws up through the bottom. Install the hex nuts. Do not tighten the hardware at this time. (Refer to FIG. 1 and 3)

*NOTE: When install the carburetor on the mount bracket, position the shoulder bolt in the slot on the actuator arm. (Refer to FIG. 1 and 3)*

10. Align the shaft on the carburetor (3) with the slot in the mount bracket and the shaft on the actuator. Firmly tighten the hardware. (Refer to FIG. 1 and 3)
11. Reconnect the LP hose, vacuum hose, and air cleaner hose to the new carburetor. (Refer to FIG. 1 and 3)
12. Open the valve on the LP tank. Check the LP hose, at the carburetor, for any leaks. (Refer to FIG. 1)
13. Start the machine and check for proper operation.

*NOTE: The idle screw must be set when installing a new carburetor.  
Gas machines--800 RPM (+ or - 50 RPM)  
LPG machines--900 RPM (+ or - 100 RPM)*



**FIG. 1 - LPG Carburetor And Actuator Assembly (83640)**

## TO REPLACE GAS CARBURETOR:

(Refer to FIG. 2 and 4)

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and set parking brake. Then turn off machine and remove key.**

1. Open the engine cover and side door.
2. Remove the air cleaner hose at the carburetor.
3. Remove the air cleaner horn from the carburetor. (Refer to FIG. 4)
4. Remove the hose from the carburetor that leads to the engine breather. (Refer to FIG. 4)
5. Remove the gas line from the fuel filter. (Refer to FIG. 2 and 4)
6. Remove the two M6 hex nuts from the two hex screws holding the carburetor to the governor mount bracket. Remove the carburetor from the machine. Retain the gasket and hardware. (Refer to FIG. 2)

*NOTE: When removing the carburetor, lift the arm and shoulder bolt up and out of the slot on the arm of the governor actuator. (Refer to FIG. 2)*

7. Remove the arm from the old carburetor and install on the new carburetor in the same orientation. (Refer to FIG. 2)
8. When mounting the arm on the new carburetor--make sure the idle stop is controlling the idle and not the butterfly closing before the idle stop hits.

*NOTE: Install the arm flush with the end of the shaft and position the arm to swing approximately equal distance on either side of vertical. Tighten the arm clamp bolt with the nyloc nut. Firmly tighten. (Refer to FIG. 2)*

9. Install the new carburetor (3) and gasket on the mount bracket (2). Install the hex screws up through the bottom. Install the hex nuts. Do not tighten the hardware at this time. (Refer to FIG. 2 and 4)

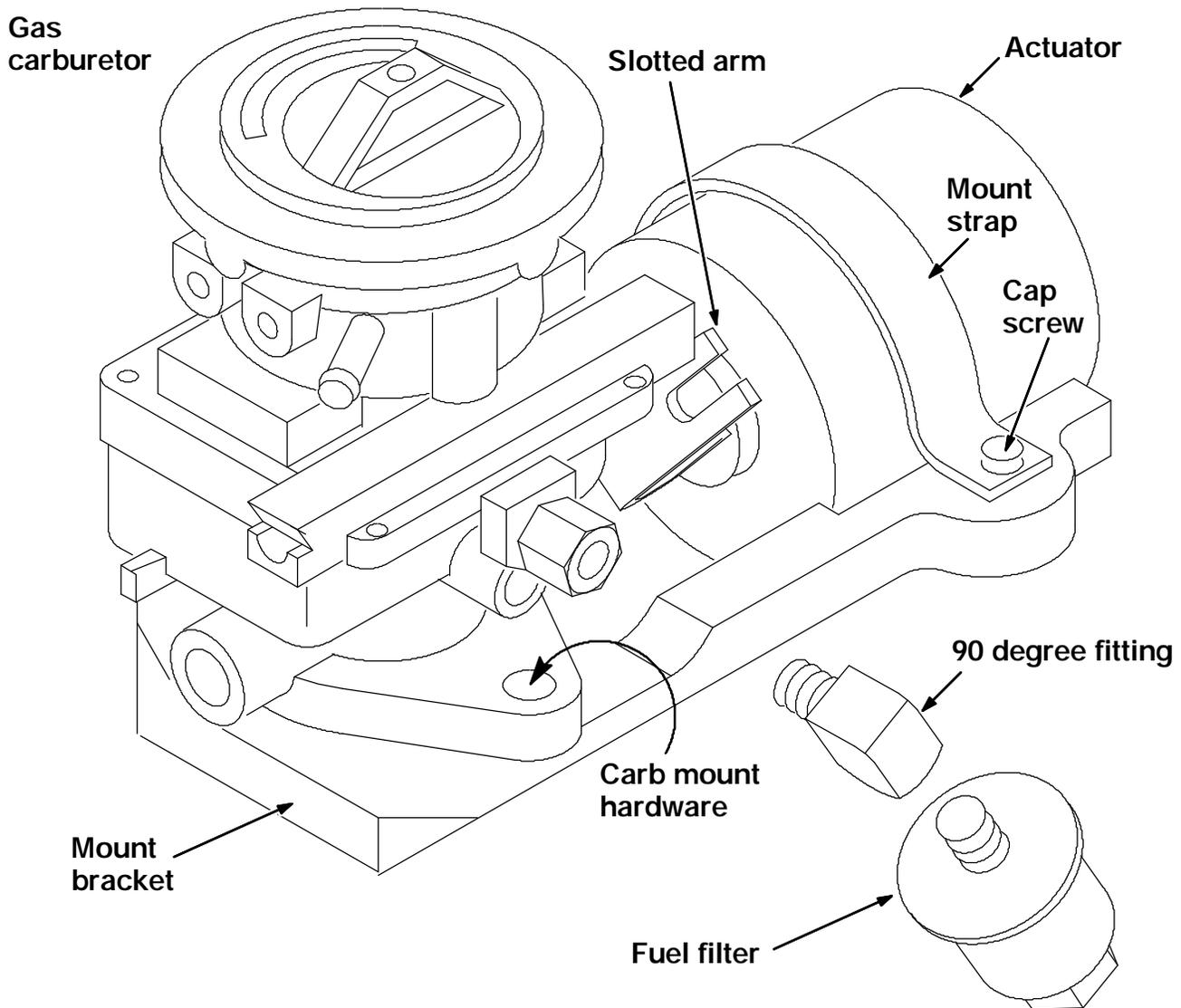
*NOTE: When install the carburetor on the mount bracket, position the shoulder bolt in the slot on the actuator arm. (Refer to FIG. 2 and 4)*

10. Align the shaft on the carburetor (1) with the slot in the mount bracket and the shaft on the actuator. Firmly tighten the hardware. (Refer to FIG. 2 and 4)
11. Install the elbow from the old carburetor and a new fuel filter on the new carburetor (3). (Refer to FIG. 2 and 4)
12. Reconnect the gas line, breather hose, air cleaner horn, and air cleaner hose to the new carburetor (Refer to FIG. 2 and 4)
13. Start the machine and check for any leaks and for proper operation.

*NOTE: The idle screw must be set when installing a new carburetor.*

*Gas machines--800 RPM (+ or - 50 RPM)*

*LPG machines--900 RPM (+ or - 100 RPM)*



**FIG. 2 - Gas Carburetor And Actuator Assembly (83639)**

**TO REPLACE GOVERNOR ACTUATOR:**

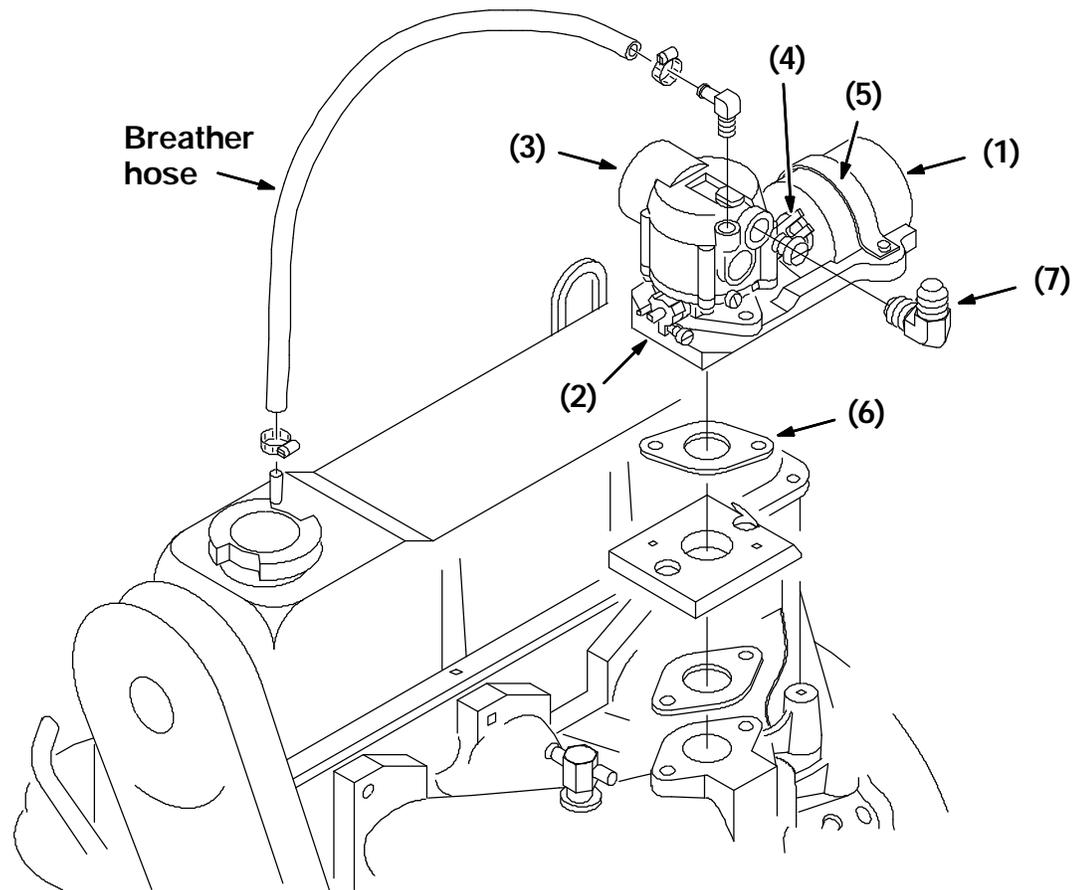
(Refer to FIG. 2)

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface and set parking brake. Then turn off machine and remove key.

1. Open the engine cover and side door.
2. Unplug the governor actuator from the electrical harness.
3. Remove and retain the cap screw holding the wire clamp to the actuator mount bracket.
4. Remove and retain the two cap screws holding the mounting strap to the mount bracket.  
(Refer to FIG. 2)
5. Carefully remove the actuator from the mount bracket. (Refer to FIG. 1 and 2)

*NOTE:* When removing the actuator, slip the slotted arm out from the shoulder bolt on the arm of the carburetor. (Refer to FIG. 2)

6. Remove the arm from the old actuator and install on the new actuator (1) in the same orientation. (Refer to FIG. 2)
7. Install the new actuator (1) by sliding the slotted arm under the shoulder bolt on the carburetor arm and fitting the actuator in the matching radius of the mount bracket. (Refer to FIG. 2)
8. Loosely assemble the mount strap (5) using the two cap screws. Use a small amount of loctite on the threads of cap screws. Do not tighten at this time. (Refer to FIG. 2)
9. Rotate the actuator (1) to just close the carburetor butterfly against the idle stop screw--hold this position. (Refer to FIG. 2)
10. Mark the side (away from the arm) of the actuator (1) at the mount bracket top edge with a pencil. Further rotate the actuator in the direction of closing the butterfly until the pencil mark is above the bracket edge by approximately .20 inches. (Refer to FIG. 2)



**FIG. 3 - 2.3 LPG Governor Assembly**

11. Visually check that the slotted arm is centered on the length of the shoulder bolt and that there is no interference between the arms or shafts. Tighten the strap cap screws. (Refer to FIG. 2)
12. Check the arm movement--there must be no binding throughout the full stroke and there must be a spring pre-load holding the carburetor in its throttle closed position. (Refer to FIG. 2)
13. Install the wire clamp to the side of the bracket making approximately a 1 inch loop between the actuator and bracket. Tighten the cap screw.
14. Start the machine and check for proper operation.

## TO REPLACE CARBURETOR/ACTUATOR ASSEMBLY:

(Refer to FIG. 3 and 4)

*NOTE: A special ball-end style allen wrench is needed to remove the cap screws that hold the governor assembly to the intake manifold. Part numbers for this wrench are;*

**SEARS** (L ball hex 9-46615 and ball driver 9-BH10664)

**SNAP-ON** (L ball hex YAM245 and ball driver SDABM5)

**BONDHUS** (L ball hex 10964 and ball driver 10664)

1. **LPG MACHINES:** Close the valve on the LP tank. Start the machine and run the engine until all the LP fuel is used up in the line.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface and set parking brake. Then turn off machine and remove key.**

2. Open the engine cover and side door.
3. Unplug the governor actuator from the electrical harness.
4. Remove the air cleaner hose at the carburetor. (Refer to FIG. 3 and 4)
5. Remove the choke cable from the carburetor. (gas machine) (Refer to FIG. 4)
6. Remove the air cleaner horn from the carburetor. (gas machine) (Refer to FIG. 4)
7. Remove the hose from the carburetor that leads to the engine breather. (Refer to FIG. 4)
8. Remove the gas line from the fuel filter on a gas machine or the LP hose on an LPG machine. (Refer to FIG. 3 and 4)

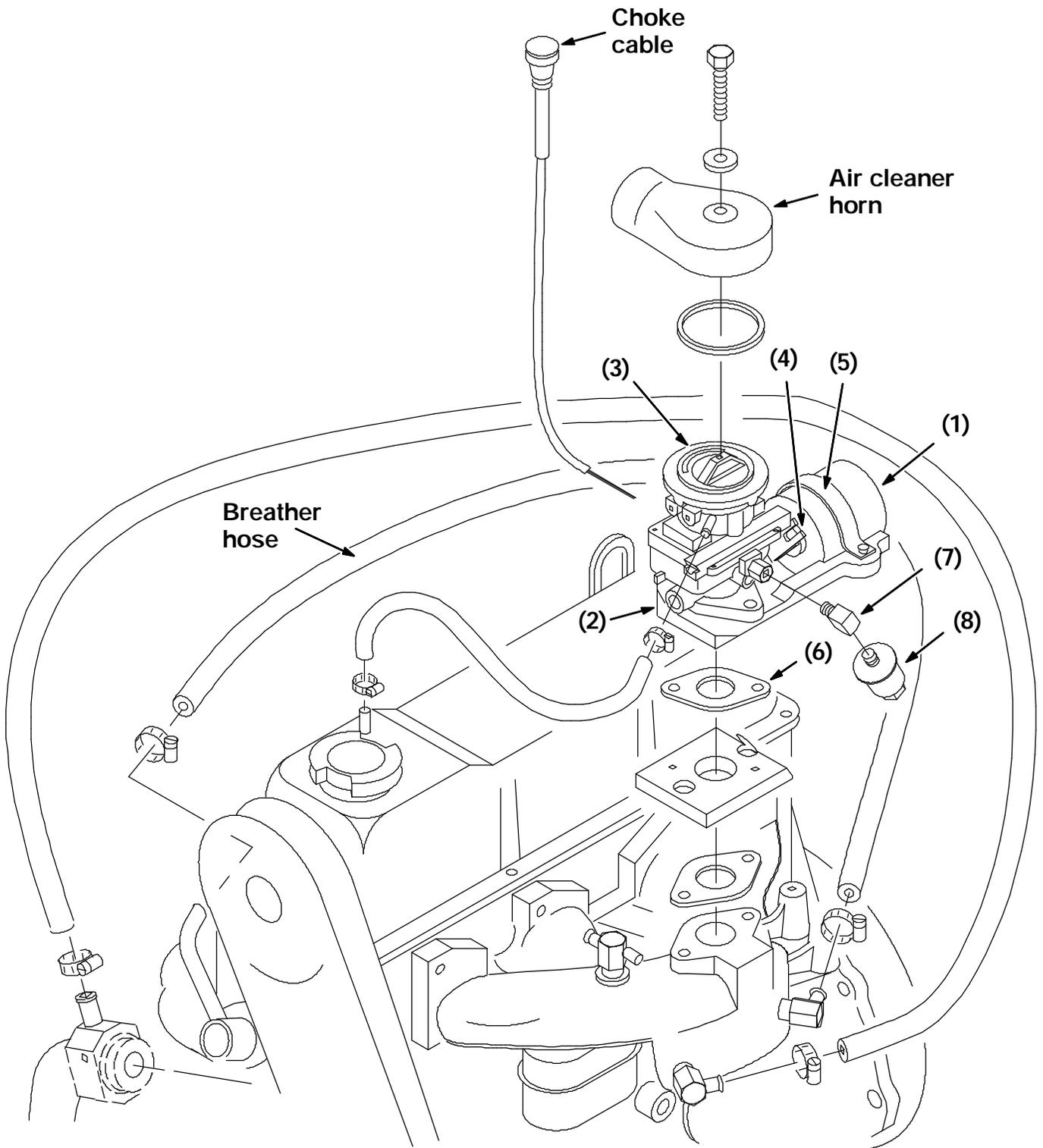
*NOTE: A special ball-end style allen wrench is needed to remove the cap screws that hold the governor assembly to the intake manifold. Part numbers for this wrench are;*

**SEARS** (L ball hex 9-46615 and ball driver 9-BH10664)

**SNAP-ON** (L ball hex YAM245 and ball driver SDABM5)

**BONDHUS** (L ball hex 10964 and ball driver 10664)

9. Remove the two cap screws holding the carburetor/actuator assembly to the engine manifold. Remove the assembly and gasket from the machine. (Refer to FIG. 3 and 4)
10. Position the new assembly and new gasket on the engine manifold. Reinstall the two cap screws and firmly tighten. (Refer to FIG. 3 and 4)
11. Reconnect the gas line (gas machine), LP hose (LPG machine), breather hose, air cleaner horn (gas machine), choke cable (gas machine), and air cleaner hose to the new carburetor/actuator assembly. (Refer to FIG. 3 and 4)
12. Plug the new actuator into the electrical harness.
13. **LPG MACHINES:** Open the valve on the LP tank. Check the LP hose, at the carburetor, for any leaks. (Refer to FIG. 3)
14. Start the machine and check for any leaks and for proper operation.



**FIG. 4 - 2.3 Gas Governor Assembly**

**BILL OF MATERIALS FOR PRECISION GOVERNOR REPLACEMENT KIT 83639 (GAS)**

<b>Ref.</b>	<b>TENNANT Part No.</b>	<b>Description</b>	<b>Qty.</b>
1	83683	Actuator, LH	1
2	83682	Mount bracket	1
3	78897	Carburetor (gas) LSG-423	1
4	83684	Linkage kit	1
5	83685	Actuator mounting strap	1
6	74443	Carburetor to engine gasket	1
7	11984	90 degree pipe fitting	1
8	36050	Fuel filter	1

**BILL OF MATERIALS FOR PRECISION GOVERNOR REPLACEMENT KIT 83640 (LPG)**

<b>Ref.</b>	<b>TENNANT Part No.</b>	<b>Description</b>	<b>Qty.</b>
1	83683	Actuator, LH	1
2	83682	Mount bracket	1
3	73017	LPG carburetor and gasket	1
4	83684	Linkage kit	1
5	83685	Actuator mounting strap	1
6	74443	Carburetor to engine gasket	1
7	69097	90 degree hydraulic fitting	1

TENNANT COMPANY  
P. O. Box 1452  
Minneapolis, MN 55440-1452