CLARK M

SERVICE TRAINING

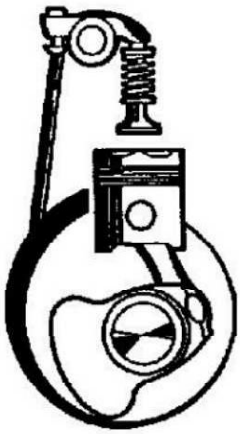
GPM 20-30

GAS./LPG
ENGINE MODELS

MG1
1,5 LITRE DISPLACEMENT

MG3
2,0 LITRE DISPLACEMENT

MG4
2,6 LITRE DISPLACEMENT

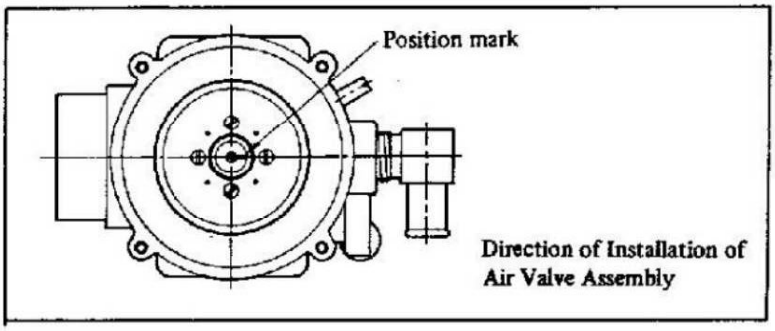


1.3 INSPECTION

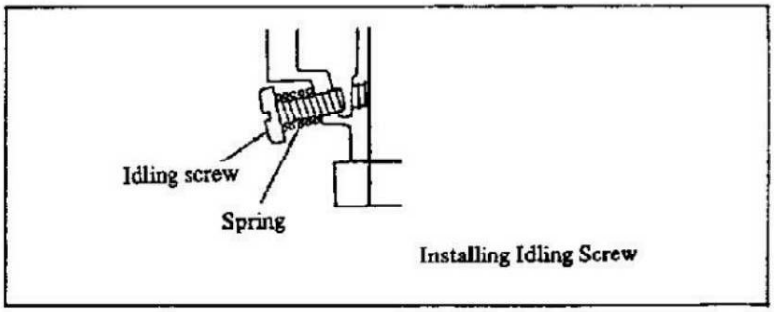
- Check the diaphragm and packing for damage and deterioration.
- Check and clean the carburetor contact surface of the air valve and the air passage in the air valve. Thoroughly clean the gas metering valve contact surface, too.
- Clean the gas passage in the carburetor body. Check the gas intake and gas regulator valve for damage. Never disassemble the gas regulator valve.
- Check the spring for damage.
- Check and clean the throttle body and the air governor system.

1.4 REASSEMBLY OF CARBURETOR

- Clean all parts. Reinstall them to the positions shown in the drawings. When fitting the air valve to the carburetor body, be sure to let the "I" mark at the center of air valve face the gas intake direction. If the air valve is fitted in wrong position, hard engine start and unstable idling may result.



- Fit in the air valve spring to the valve center boss until the spring comes into contact with the seat.
- Install the cover, taking care not to cause the diaphragm to slip. Tighten the screws.
- When the idling screw has been removed, reinstall it with its spring.

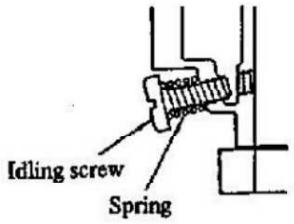


1.5 INSTALLING CARBURETOR

- Install the carburetor securely, with the gasket fitted in place without fail to assure air-tight installation of the carburetor. It is desirable to use liquid packing in addition to the gasket.

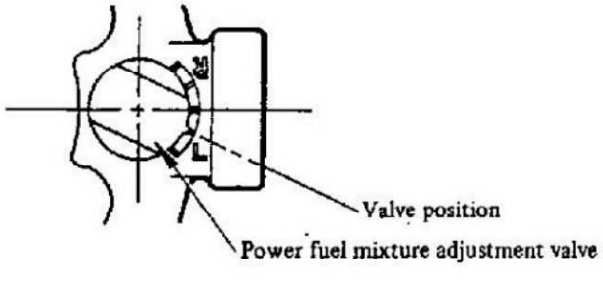
1.6 ADJUSTMENT OF CARBURETOR

- Idling speed can be adjusted with the idling screw. Turning the idling screw clockwise makes air-fuel mixture thicker, and vice versa. To set the idling speed, turn in the idling screw clockwise as far as engine speed increases. When a start of decrease of engine speed is felt, turn back the idling screw and set the screw to a position where the most stable running of the engine is attained. Then, adjust engine speed to 700–740 rpm with the throttle screw and a warmed up engine.



Idling Speed Adjustment

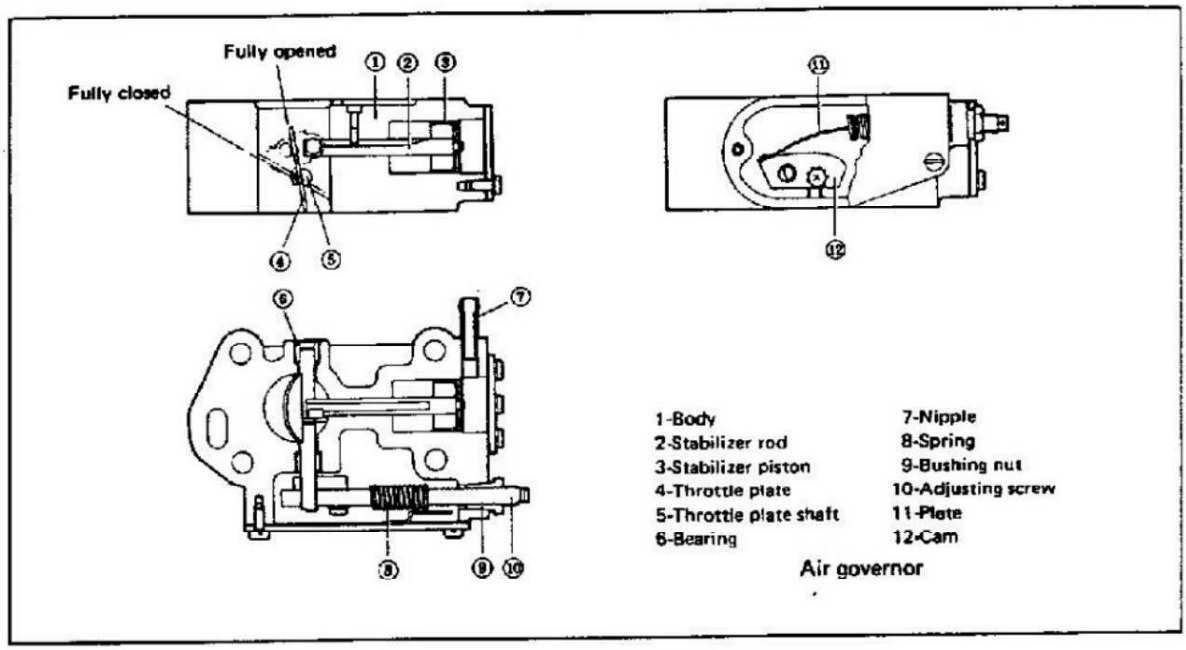
- LP gas regulator valve adjustment
With the engine runnning under full-load condition (stall rpm) turn the valve counterclockwise satisfactorily. Then, turn the valve clockwise until engine speed increases to the maximum. If speed has reached a steady value, continue to turn set-screw till a speed reduction is indicated. This corresponds to the fuel-air mixture best setting. That position will approximately coincide with the position shown in figure below.



LP Gas Regulator Valve Adjustment

- For adjustment of the air governor system, refer to the instruction in adjustment of the air governor system.

2. AIR GOVERNOR OPERATION



Air governor

- Governing operation

The throttle plate shaft is offset from the center of the governor bore. Also, the full-open position of the throttle plate does not coincide with the trully full-open position but rather leans to the closing side. Therefore, the pressure of mixture flow acts on the throttle plate to rotate it in the direction of closing, causing a torque to its shaft. The torque stretches the return spring attached to the cam on the throttle plate shaft until the torque balances the tension of the spring, and the throttle plate is maintained at that open angle. This is governing operation. That is, a balance between the pressure applied to the throttle plate, which depends on vacuum pressure, and the spring tension keeps the throttle plate at a position between the full-open position and the full-close position to control the amount of mixture flowing into the engine.

- Auxiliary operation

The throttle plate opening angle of this governor is set under the full-open condition of the carburetor. Accordingly, when the carburetor throttle valve is operated in the direction of closing, pressure applied to the throttle plate reduces and, therefore, the throttle plate is rotated in the direction of opening. As the result, engine speed increases. To prevent this, the governor is provided with a stabilizer piston, which acts to close the throttle plate when a large vacuum pressure generates on the upper side of the throttle plate so that proper opening of the throttle plate can be maintained in combination with the opening of the carburetor throttle valve. With the help of this auxiliary operation, the governing operation can follow up the variation of load quickly.

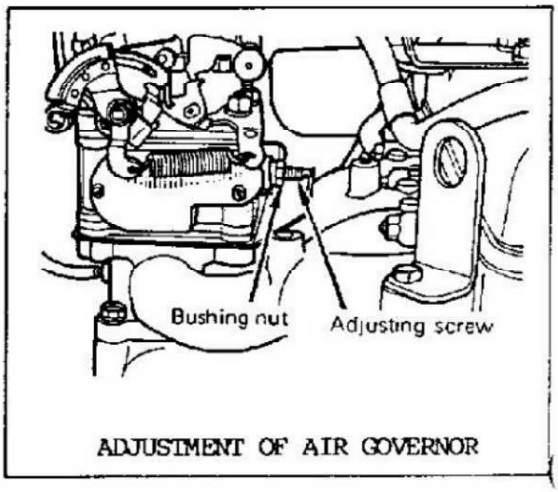
2.1 AIR GOVERNOR ADJUSTMENT

- High-speed adjustment
- Place directional levers in the neutral position
- Depress the accelerator fully. (The carburetor throttle valve is opened fully.) Holding the adjustment screw to prevent it from turning, turn the bush nut right of left to set the unloaded engine speed.

Bush nut	Turning clockwise caused engine speed to increase. (Preload of spring is increased.) Turning counterclockwise causes engine speed to decrease. (Preload of spring is decreased.)

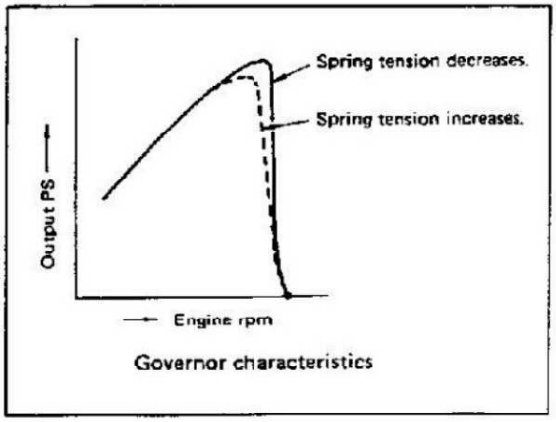
NOTE: When turning the nut, hold the adjusting screw with a screwdriver.

- Hunting adjustment
  - Place all hydraulic control levers in the neutral positions.
  - Depress the accelerator fully.(The carburetor throttle valve is opened fully.) Turn the adjusting screw gradually to right until hunting ceases.



ADJUSTMENT OF AIR GOVERNOR

Adjusting screw	Turning clockwise causes spring rigidity to increase.(Number of active coils of spring decreases.) Turning counterclockwise causes spring rigidity to decrease. (Number of active coils of spring increases.)

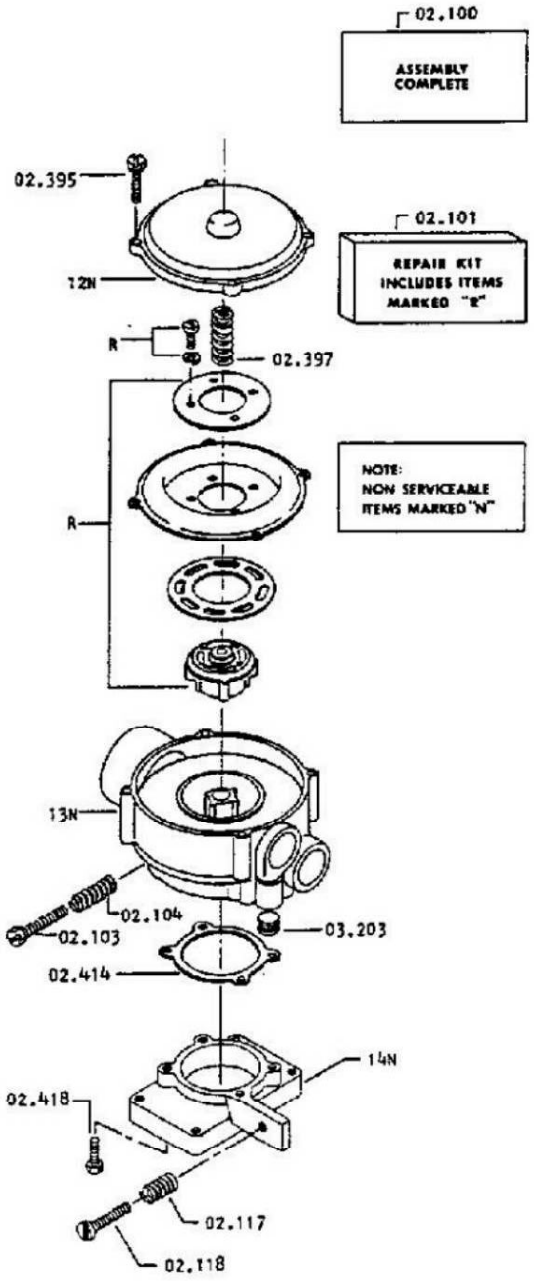


Governor characteristics

Although increasing the spring rigidity is effective to stop hunting, excessive increase of it causes a change of governor characteristic, affecting engine output. Therefore, do not turn the adjusting screw two or more turns in either direction from the standard position.

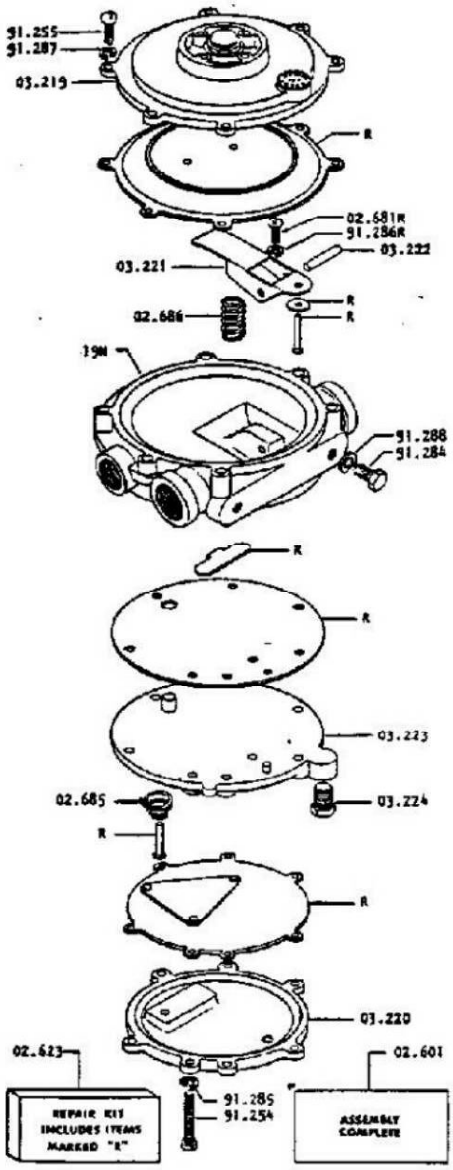
- When the adjusting screw is turned clockwise, the maximum engine speed becomes excessively high. Decrease the maximum engine speed by turning the bush nut counterclockwise.
- For hunting adjustment, turn the bush nut and adjusting screw alternately two or three times to obtain the optimum condition.
- Be careful not to decrease the number of active coils of spring to 11 or less.

NOTE: - When engine speed is increased from idling speed by depressing the accelerator quickly, slight hunting may arise. This should not be considered abnormal condition.
- The air governor has been sealed before shipment of the engine. The seal should not be broken unless it is necessary during engine overhauling.
- Seal the readjusted air governor and instruct the user not to break the seal to tamper with the air governor.

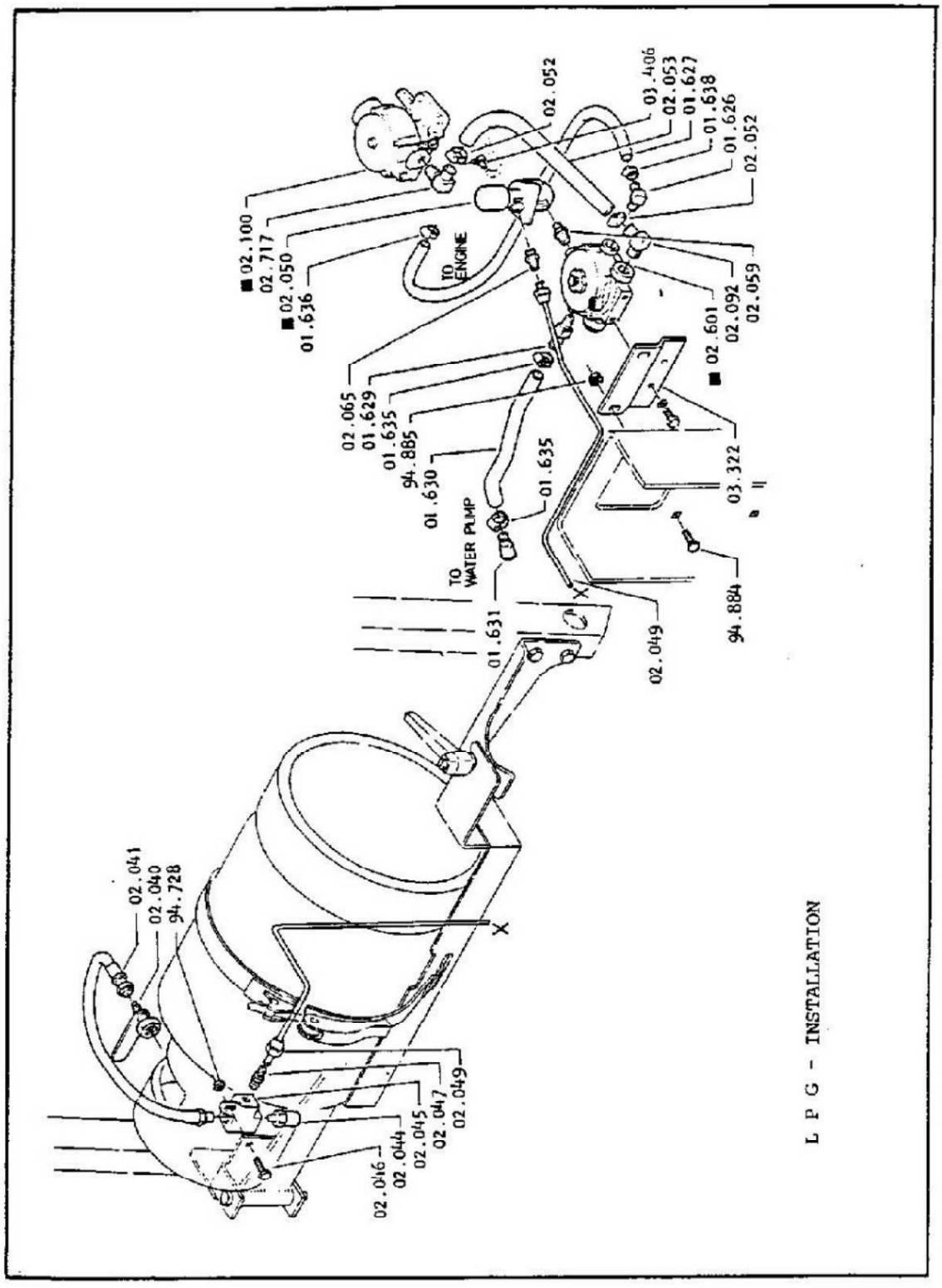


02.100 CARBURETOR ASSEMBLY
02.101 REPAIR KIT,CARBURETOR
02.103 ADJUSTOR,CARBURETOR IDLE
02.104 SPRING,IDLE ADJUSTOR
02.117 SPRING,THROTTLE STOP
02.118 STOP,CARBURETOR THROTTLE
02.395 SCREW,DIAPHRAGM COVER
02.397 SPRING,METERING DIAPHR.
02.414 GASKET,METERING VALVE
02.418 SCREW,CARBURETOR ADAPTER
03.203 PLUG,CARBURETOR

CARBURETOR

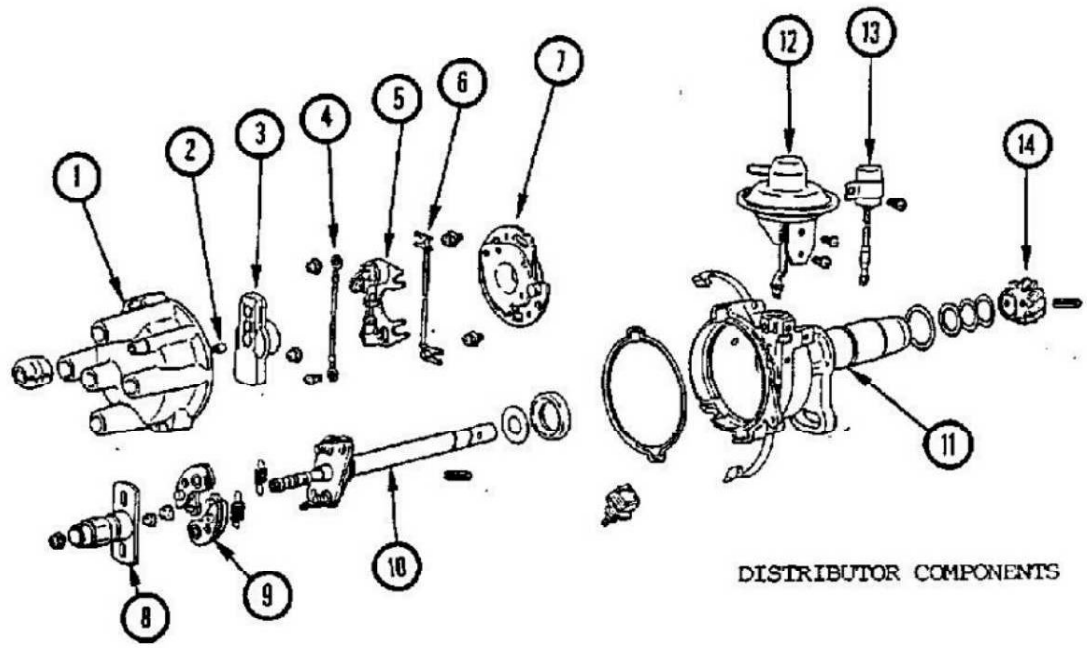


L.P.G. - VAPORIZER



1. IGNITION SYSTEM

1.1 DISTRIBUTOR



DISTRIBUTOR COMPONENTS

1. Cap
2. Carbon
3. Rotor
4. Ground wire
5. Arm support
6. Wire lead
7. Breaker base
8. Cam
9. Governor weight
10. Shaft
11. Housing
12. Vacuum control
13. Condenser
14. Gear

The distributor consists of the contact breaker, whichbreaks low-voltage direct current intermittently, and the rotor and ignition advance mechanism which distribut high-voltage surge of current produced by the ignition coil. The drive camshaft of the distributor is driven by the front end of the cylinder head cam-shaft.
The ignition advance mechanism includes the centrifugal weight type governor and diaphragm type vacuum set, each of which provides the optimum ignition timing depending of engine speed and load condition.
The contact breaker condenser is for the purpose of extinguish the arc of breaker contact points.
Advance characteristics of the distributor is shown below.