CLUTCH

CONTENTS

4-1 GENERAL DESCRIPTION.............................................. 58
DESCRIPTION......................................................... 58
SPECIFICATIONS..................................................... 58
DIAGNOSIS............................................................ 58

4-2 REPAIRING PROCEDURE............................................. 59
a. Disassembly .................................................... 59
b. Inspection ....................................................... 60
c. Reassembly ....................................................... 60

Fig. 4-1 ① Primary driven sprocket ② Clutch outer ③ Friction disc ④ Clutch lever ⑤ Clutch release lever ⑥ Clutch adjusting bolt ⑦ Clutch lifter plate ⑧ Clutch center ⑨ Clutch plate
4-1 GENERAL DESCRIPTION

DESCRIPTION

The function of the clutch is to transmit power from the crankshaft to the transmission mainshaft by the friction between the clutch friction discs and clutch plates.

The clutch is a multiple disc wet type clutch with a friction disc bonded to a core having a good heat dissipating characteristic.

The wet type clutch is lubricated by oil which also serves to dissipate the heat generated by the clutch. Friction discs have long life due to minimum of wear.

The clutch consists of seven cork mold discs, six clutch plates and four clutch springs, contained within the clutch outer. The torque applied at the clutch lever rotates the clutch release lever which moves inward to disengage the clutch. The actuation of clutch can be adjusted by the clutch adjusting bolt. (Fig. 4-1)

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Serviceable limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friction disc thickness</td>
<td>0.1347~0.1409 in.</td>
<td>0.122 in.</td>
</tr>
<tr>
<td></td>
<td>3.42~3.58 mm</td>
<td>3.1 mm</td>
</tr>
<tr>
<td>Clutch spring free length</td>
<td>1.2575 in.</td>
<td>1.201 in.</td>
</tr>
<tr>
<td></td>
<td>31.94 mm</td>
<td>30.5 mm</td>
</tr>
<tr>
<td>Clutch spring load</td>
<td>214.3~226.7 lbs/0.984 in.</td>
<td>198.5 lbs/0.984 in.</td>
</tr>
<tr>
<td></td>
<td>97.2~102.8 kg/25 mm</td>
<td>90 kg/25 mm</td>
</tr>
<tr>
<td>Clutch lever free play at</td>
<td>0.4~1.0 in.</td>
<td></td>
</tr>
<tr>
<td>the lever end</td>
<td>10~25 mm</td>
<td></td>
</tr>
</tbody>
</table>

DIAGNOSIS

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch slippage</td>
<td>1. No play in the clutch lever</td>
<td>Adjust the clutch lever.</td>
</tr>
<tr>
<td></td>
<td>2. Weak or none uniform clutch pressure plate spring</td>
<td>Replace the weak spring.</td>
</tr>
<tr>
<td></td>
<td>3. Worn or glazed friction disc</td>
<td>Replace.</td>
</tr>
<tr>
<td>Poor clutch engagement</td>
<td>1. Excessive clutch lever play</td>
<td>Adjust clutch lever.</td>
</tr>
<tr>
<td></td>
<td>2. Warped friction disc</td>
<td>Replace.</td>
</tr>
<tr>
<td></td>
<td>3. Warped pressure plate</td>
<td>Replace.</td>
</tr>
<tr>
<td></td>
<td>4. Bent main shaft</td>
<td>Replace.</td>
</tr>
</tbody>
</table>
4-2 REPAIRING PROCEDURE

a. Disassembly
1. Remove the clutch cover and disconnect the clutch cable from the clutch lever. Remove the clutch case mounting screw, and remove the case. (Fig. 4-2)

2. Unscrew the four clutch lifter mounting bolts and remove the clutch lifter plate and spring. (Fig. 4-3)

3. Remove the clutch lock nut using the lock nut box wrench (Tool No. 07916-2830000) and then remove the tongued washer and spring washer, followed by the clutch center. (Fig. 4-4)

4. Remove the clutch friction disc B and clutch outer ring from the clutch outer and then remove the friction discs A and clutch plates. (Fig. 4-5)
5. Remove the clutch washer, clutch pressure plate and pull off the clutch outer from the main shaft.
b. Inspection

1. Clutch friction disc.
   Use a vernier caliper and if the thickness is less than 0.122 in. (3.10 mm), replace the disc. It should also be replaced if the clutch plate is warped in excess of 0.012 in. (0.3 mm) (Fig. 4-6)

2. Clutch spring
   Measure the free length of the clutch spring and if it is less than 1.2 in. (30.5 mm), it should be replaced. All four springs should be of the same length. (Fig. 4-7)

3. Clutch plate warpage
   Measure the warpage of the clutch plate on the surface plate using a thickness gauge. If the warpage is over 0.012 in. (0.3 mm), repair or replace. (Fig. 4-8)

c. Reassembly

1. Assemble the clutch outer and the 25 mm spline washer on the main shaft. Hook the washer on the spline and assemble the clutch pressure plate. (Fig. 4-9)

2. Assemble the six friction discs A (outer diameter 151 mm), clutch plates and the clutch center into the clutch outer and then install the clutch outer ring. (Fig. 4-5)
   Note: Clutch outer ring tabs should be installed into the friction disc tab groove of the clutch outer.

3. Assemble the friction disc B (outer diameter 148.5 mm). (Fig. 4-5)
4. Assemble the clutch center, the spring washer (tab toward the front), lock washer and lock nut in that order. And torque with a lock nut box wrench (Tool No. 07916-2830000) to 32.5~36.2 ft-lbs (4.5~5.0 kg-m). Refer to Fig. 4-10 for the installation of the spring washer.

5. Assemble the four clutch springs and mount in place with the four clutch lifter bolts.

6. Refer to page 183 for clutch adjustment.

Fig. 4-10 ① Spring washer  ② Lock washer  ③ Lock nut
5-1 GENERAL DESCRIPTION

DESCRIPTION

The 5-speed, constant mesh transmission is incorporated in the transmission compartment of the lower crankcase.

The relative positions of the transmission at the respective changing position are shown below. (Fig. 5-1)
The gear shift mechanism consists of three gear shift forks, a gear shift drum, a gear shift arm, a shift drum stopper and a gear shift positive stopper.

When the gear change pedal is depressed the gear shift spindle rotates, causing the gear shift arm to rotate the shift drum. When the shift drum rotates, the shift forks move sideways by the cam action of groove cut on the shift drum body. (Fig. 5-2)

![Diagram of Transmission]

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Gear ratio</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st (low)</td>
<td>2.500</td>
</tr>
<tr>
<td>2nd</td>
<td>1.708</td>
</tr>
<tr>
<td>3rd</td>
<td>1.333</td>
</tr>
<tr>
<td>4th</td>
<td>1.097</td>
</tr>
<tr>
<td>5th (top)</td>
<td>0.939</td>
</tr>
<tr>
<td>Primary reduction ratio</td>
<td>1.708</td>
</tr>
<tr>
<td>Secondary reduction ratio</td>
<td>1.167</td>
</tr>
<tr>
<td>Final reduction ratio</td>
<td>2.812</td>
</tr>
</tbody>
</table>
DIAGNOSIS

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult gear shifting</td>
<td>1. Improper clutch disengagement</td>
<td>Adjust the clutch (Refer to page 183).</td>
</tr>
<tr>
<td></td>
<td>2. Damage gear or foreign object lodged in the gear</td>
<td>Replace the defective parts.</td>
</tr>
<tr>
<td></td>
<td>3. Gear shift fork inoperative</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td></td>
<td>4. Improper operation of the gear shift drum stopper and change pedal</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td></td>
<td>5. Mainshaft and countershaft of alignment</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td></td>
<td>6. High oil viscosity</td>
<td></td>
</tr>
<tr>
<td>Excessive high gear noise</td>
<td>1. Excessive gear backlash</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td></td>
<td>2. Worn main and countershaft bearing</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td>Gear slip out</td>
<td>1. Worn fingers on gear shift fork</td>
<td>Replace.</td>
</tr>
<tr>
<td></td>
<td>2. Worn gear dog hole</td>
<td>Replace.</td>
</tr>
<tr>
<td></td>
<td>3. Worn spline</td>
<td>Replace.</td>
</tr>
</tbody>
</table>

5-2 REPAIRING PROCEDURE

a. Disassembly

1. Disassemble the cylinder head, cylinder and cam chain tensioner in accordance with section 3-3 b on page 32~35.
2. Disassemble the crankcase in accordance with section 3-6 b on page 46~47.
3. Raise the transmission mainshaft and remove the primary sprocket and then remove the mainshaft gear assembly from the upper crankcase. (Fig. 5-3)

4. Remove the final shaft oil guide and the final shaft assembly from the upper crankcase. (Fig. 5-4).
5. Pull off the gear shift fork shaft and remove the shift forks. (Fig. 5-5)
6. Unscrew the neutral stopper bolt, remove the stopper and take out the gear shift drum from the crankcase.
7. Remove the countershaft top gear. (Fig. 5-6)
8. Take out the countershaft gear assembly from the lower crankcase. (Fig. 5-7)
9. Pull out the countershaft right bearing from the lower crankcase using the bearing puller (Tool No. 07048-30025). (Fig. 5-8)
10. Disassemble gears from the respective shafts in accordance with Fig. 5-17 on page 61.

b. Inspection

1. Gear backlash (Fig. 5-9)
   Using a small dial gauge and apply the pointer against the surface of the teeth. Lock the mating gear and read the dial indication as the backlash is being checked. If the backlash is beyond the tolerance shown below, the gears or the shafts should be replaced in pair.

<table>
<thead>
<tr>
<th>Gear</th>
<th>Standard value</th>
<th>Serviceable limit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in. (mm)</td>
<td>in. (mm)</td>
</tr>
<tr>
<td>1st gear</td>
<td>0.0017–0.0052</td>
<td>0.008</td>
</tr>
<tr>
<td>0.044–0.140</td>
<td></td>
<td>(0.2)</td>
</tr>
<tr>
<td>2nd, 3rd, 4th &amp; 5th gear</td>
<td>0.0018–0.0055</td>
<td>0.008</td>
</tr>
<tr>
<td>0.046–0.140</td>
<td></td>
<td>(0.2)</td>
</tr>
</tbody>
</table>

2. Gear locking dog
   Check the dogs on the respective gears and if excessively worn or damaged, the gear should be replaced. Also check to see if the gears are sliding smoothly.
3. Gear to shaft clearance (Fig. 5-10)
Check the gear bore with an inside micrometer or a cylinder gauge and check the shaft with a micrometer. Make sure that the measured values are within the tolerance indicated below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Serviceable limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C2, C3, M3, M5 gear</td>
<td>0.0016 – 0.0032 in. (0.04 – 0.082 mm)</td>
<td>Replace if over 0.0072 in. (0.182 mm)</td>
</tr>
</tbody>
</table>

4. Gear shift fork
Check the fingers on the gear shift fork using a micrometer and if worn beyond 0.240 in. (6.1 mm), or if the shift fork dog is worn to less than 0.260 in. (6.6 mm) diameter, the shift fork should be replaced. (Fig. 5-11).

5. Gear shift fork inside diameter
Check the inside diameter of the gear shift fork with a inside micrometer and if it is greater than 0.5134 in. (13.04 mm) it should be replaced. Gear shift fork shaft is checked
with a micrometer and if it is worn to less than \(0.5079\text{ in. (12.9 mm)}\), it should be replaced. (Fig. 5-12)

6. Gear shift drum

Check the outside diameter of the gear shift drum with a micrometer and if it is worn below the values indicated below, it should be replaced. (Fig. 5-13)

<table>
<thead>
<tr>
<th></th>
<th>Right side</th>
<th>0.5154 in. (12.95 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Left side</td>
<td>1.4142 in. (35.92 mm)</td>
</tr>
</tbody>
</table>

**c. Reassembly**

1. Mount the primary chain tensioner on the lower crankcase.

2. Assemble the gears on to the respective shafts. Use all new circlips and make sure that they are seated properly in the grooves. Refer to Fig. 5-17 (next page) for the proper installation of the gears and circlips.

3. Drive the counter shaft bearing into the lower crankcase using the bearing driver (Tool No. 07949-3000000). (Fig. 5-14)

4. Mount the countershaft gear assembly into the crankcase, however, the C-5 gear must be left off and assembled later from the outside of the crankcase. (Fig. 5-15)

5. Mount the gear shift drum and install the neutral stopper with a bolt. Neutral position on the drum is at the depression on the drum.

6. Gear shift forks are stamped with the letters “R”, “C” and “L” on the side. Assemble the forks as shown in Fig. 5-16. The forks stamped with “R” and “L” are for use with the countershaft, therefore, the fingers of those forks are fitted into the grooved in the C-4 and C-5 gears. The “C” stamped fork is used with M-2/3 gear. The dog located on the back side of the fork is fitted into the groove in the gear shift drum.
5.2 REPAIRING PROCEDURE

1. 25 mm thrust washer
2. Ball bearing set ring A
3. 6203 special ball bearing
4. Transmission mainshaft
5. Mainshaft fourth gear (37 T)
6. 25 mm thrust washer
7. 25 mm cir-clip
8. Mainshaft second & third gear (24 T & 27 T)

9. 28 x 20.5 bush
10. Mainshaft top gear (33 T)
11. 20 mm thrust washer
12. 6304 HS radial ball bearing
13. N-6304 radial ball bearing
14. Final drive gear (48 T)
15. Counter shaft low gear (47 T)
16. 28 x 14 bush
17. 25 x 33 thrust washer

Fig. 5-17

18. Countershaft fourth gear (34 T)
19. Countershaft third gear (36 T)
20. Transmission countershaft
t21. Countershaft second gear (41 T)
22. Countershaft top gear (31 T)
23. 6204 ball bearing
7. Install the final shaft assembly into the upper crankcase; do not forget the set ring and install the final shaft oil guide (Fig. 5-18).

8. Mount the primary sprocket on the transmission mainshaft assembly and install the complete unit into the upper crankcase.

9. Install the two dowel pins, oil collar and "O" ring in the upper crankcase, apply liquid packing on the mounting flange, and assemble the lower crankcase.

At this time, all the gears must be in neutral position and the center gear shift fork must be inserted into the M-2/3 gear groove.

10. Install the crankcase in accordance with 3-6 d on page 51-52.

11. Install the camchain tensioner, cylinder and cylinder head by referring to section 3-3 d on page 36-38.
6-1 GENERAL DESCRIPTION

DESCRIPTION

The two fuel tubes connected to the fuel valve supply the fuel from the fuel tank to the four carburetors.

The fuel in the carburetor float chamber is sucked into the engine in the proper air-fuel mixture to conform with the engine speed. This has a great influence on the engine performance.

In an engine with four independent carburetors their precise adjustment is particularly important for smooth operation.

The fuel valve has three positions, ON, STOP and RES; which can be selected by the lever.
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Fuel tank capacity</th>
<th>4.7 U.S gal. (18 lit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank reserve capacity</td>
<td>10.5 U.S pt. (5 lit.)</td>
</tr>
</tbody>
</table>

#### Carburetor setting table

<table>
<thead>
<tr>
<th>Type</th>
<th>Piston valve, 4 pcs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main bore</td>
<td>1.102 in. (28 mm)</td>
</tr>
<tr>
<td>Main jet</td>
<td># 120</td>
</tr>
<tr>
<td>Air jet</td>
<td># 100</td>
</tr>
<tr>
<td>Air bleed</td>
<td></td>
</tr>
<tr>
<td>AB 1</td>
<td>0.035 in. (0.9 mm) × 4</td>
</tr>
<tr>
<td>AB 2</td>
<td>0.035 in. (0.9 mm) × 4</td>
</tr>
<tr>
<td>AB 3</td>
<td>0.024 in. (0.6 mm) × 2</td>
</tr>
<tr>
<td>AB 4</td>
<td>0.024 in. (0.6 mm) × 2</td>
</tr>
<tr>
<td>Needle jet</td>
<td>0.102×0.15 in. (7.6 × 3.8³ mm)</td>
</tr>
<tr>
<td>Jet needle</td>
<td>0.098 in. (2.485 mm)</td>
</tr>
<tr>
<td>Cutaway</td>
<td># 2.5 (recess 0.047 mm (1.2 mm), depth 0.008 in (0.2 mm))</td>
</tr>
<tr>
<td>Air screw opening</td>
<td>1 ± 1/8</td>
</tr>
<tr>
<td>Slow jet</td>
<td># 40</td>
</tr>
<tr>
<td>Valve seat</td>
<td>0.079 in. (2 mm)</td>
</tr>
<tr>
<td>Pilot outlet</td>
<td>0.047 in. (1.2 mm)</td>
</tr>
<tr>
<td>Setting mark</td>
<td>B 750 A</td>
</tr>
</tbody>
</table>
# DIAGNOSIS

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Causes</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| Engine does not start | 1. Choke open to wide  
2. Carburetor air screw opened too far  
3. Air leaking into the cylinder head  
4. Clogged carburetor slow jet  
5. Clogged fuel valve or piping  
6. Clogged vent hole in the fuel filler cap  
7. No fuel in the tank | close choke.  
Adjust air screw.  
Retighten carburetor connecting tube.  
Check, clean and retighten.  
Disassemble and clean.  
Disassemble and clean.  
Fill tank with gasoline. |
| Poor engine idling | 1. Clogged or loose carburetor slow jet  
2. Improper float level  
3. Improper air screw adjustment  
4. Improper carburetor linkage operation  
5. Air leaks | Check, clean and retighten.  
Adjust (Refer to page 68).  
Adjust (Refer to page 71~73).  
Adjust.  
Tighten all air passage connection. |
| Improper running of engine | 1. Jet size too small  
2. Improper float level  
3. Clogged carburetor main jet  
4. Improper carburetor linkage operation  
5. Air leaks | Replace larger size jet.  
Adjust.  
Clean and retighten.  
Adjust.  
Tighten all air passage connection. |
6-2 CARBURETOR

a. Description

The quadruple piston type carburetors are mounted on the cylinder head with a stay plate. Choke lever is a link type which operates all four choke valves simultaneously.

Fig. 6-1 shows the construction details of the carburetor.

As the air enters the carburetor, it passes under the throttle valve where vacuum pressure is produced due to the restriction caused by the throttle valve extending into the main air passageway. The fuel discharge outlet is located in this so-called venturi area so that the vacuum pressure can draw out the fuel. This carburetor incorporates both the main and slow system.

- Main system

The fuel passes through the main jet ⑬ and enters the needle jet holder ⑭ where it mixes with the bleed hole located around the needle jet holder. The fuel air mixture passes by the opening between the needle jet ⑬ and jet needle ⑭ and is discharged from
below the throttle valve.

It is here that the mixture is combined with the main air and after being atomized, is taken in to the engine.

- **Slow system**

  The air which enters from the inlet passes through the outside of the air screw where it is metered and enters the slow jet bleed hole. It mixes with the fuel which enters the slow jet to produce a full spray that is discharged from the pilot outlet at a point under the throttle valve. This mixes with the air from the air inlet to form a combustible mixture before being taken into the engine.

- **Float chamber**

  The carburetor must provide a proper mixture of fuel at different throttle openings and engine speeds; in order to accomplish this, the fuel level in the carburetor must be maintained constant. The float chamber functions to serve this purpose. The fuel from the tank enters the float chamber through the fuel inlet passage, between the float valve seat and float valve and fills the chamber to the level where the float rises to shut off the fuel by seating the float valve against the valve seat through the action of the float arm. As the fuel is consumed, the fuel level in the float chamber, drops the float will follow the level, and the fuel will start to enter the chamber between the opening of the float valve and valve seat to maintain a constant fuel level. 

**b. Disassembly**

1. Turn the fuel tank valve to the "STOP" position, remove the fuel lines from the fuel valve body, raise the seat and pull the rear tank rubber mounting away from the rear tank mount. Remove the fuel tank.
2. Remove the throttle valve from each of the carburetors. (Fig. 6-2)
3. Loosen the air cleaner connecting tube and insulator bands and remove the carburetors as an assembly. (Fig. 6-3)
4. Unscrew the two 6 mm screws and dismount the respective carburetor from the stay plate. (Fig. 6-4)
   Disconnecting the individual choke rod will separate the carburetors.
5. In order to remove the needle jet from the throttle valve, first, disconnect the throttle cable from the throttle valve, and then remove the needle set plate from the throttle valve. (Fig. 6-5)
6. Remove the float chamber retaining clip and the following carburetor components can be removed with a small screwdriver: slow jet, main jet, needle jet holder, float and float valve set. (Fig. 6-6)

**c. Inspection**

1. Carburetor adjustment should be made in accordance with the description on page 78–81.

2. Fuel level check

   Remove the float chamber and set the float arm as shown in the Fig. 6-7 so that it just barely touches the valve and in this position, check the position of the float with the gauge set vertically. At a standard setting the float should just barely come in contact with the gauge. If there is clearance between the gauge and float or if the float is interfering with the gauge, adjustment should be made. The height of float can be adjusted by bending the float arm using a narrow screwdriver.

3. Jet needle, float valve

   The jet needle is constantly moving and if it is found to be excessively worn, it should be replaced. Further, check the wear of the valve and the valve seat and if it is defective, part should be replaced. (Fig. 6-8)

4. The clogging of the respective jet should be cleaned by blowing out the jets with compressed air followed by properly Torquing the jets.
1. Wash all the parts and dry completely with compressed air before reassembly. Assemble the main jet and slow jet on respective location. (Fig. 6–10)
2. When either the float valve or valve seat requires replacement, they should be replaced in set. (Fig. 6-11)
3. Install the respective carburetor on the stay plate with two mounting screws and connect the choke rod to the carburetor; make sure that the action of the choke lever is smooth.
4. Install the carburetor assembly on the cylinder head.
5. Assemble the throttle valves and cables on the carburetors and actuate the throttle grip to assure smooth movement of the cable.
6. Carburetor adjustment
   Before attempting carburetor adjustment, make sure that the following adjustments have been performed properly.
   a. Contact breaker point gap
   b. Ignition timing
   c. Valve tappet clearance
   d. Spark plug gap
   e. Crankcase oil level

(1) Preliminarily adjustment
   a. To make easy of access to the throttle screws on all carburetors, the fuel tank should be removed.
   b. To check the operation of the choke valves remove the air cleaner upper and lower cases. Observe the choke valves from the rear side of the carburetors whether all valves are fully closed or not, when the choke lever is operated.

   If there is a clearance greater than 0.02 in. (0.5 mm) between the choke valve and body, adjust the clearance by lengthening or shortening the choke lever adjusting rod connected to the annex carburetor. (Fig. 6-12)

   c. Adjust the throttle stop screw to align the "T" mark to the index mark stamped on the carburetor body. Perform adjustments on all carburetors. (Fig. 6-13)
   d. Loosen the throttle cable adjuster lock nut and turn the cable adjuster to either directions to obtain the free play of the throttle cable outer within the range of 0.04~0.08 in (1~2 mm). After tightening the lock nut check the movement of the outer cable.

   The four throttle cables should all be adjusted uniformly. (Fig. 6-14)
e. Gently turn the air screws in until they seat, then unscrew them one full turn each. (Fig. 6-15)
f. Install the air cleaner, air cleaner upper and lower case, fuel tank and fuel lines. 
Fill gasoline in the fuel tank.

(2) Final adjustment
For final adjustment use the vacuum gauge. Before attaching the vacuum gauge start the engine and warm up to operating temperature of 140～175°F (60～80°C).

a. Stop the engine and remove the plug of adapter attachment hole on each carburetor bodies. Attach the adapters of vacuum gauge to all carburetors: the long adapters are for inside carburetors and the short ones for outside carburetors. Fit the vacuum gauge hose securely on the adapters. (Fig. 6-16, 17)

b. Start the engine and run it at the idling speed. Check RPM on the tachometer and if the RPM is not in the range of 850～950 RPM adjust all throttle valve stop screws uniformly to obtain the proper speed.

Adjustment should be done within the range of 1/8 turn in both directions while checking the vacuum gauge.

c. The standard vacuum pressure reading should be 20～22 cmHg. in all four gauges. If any of these gauges indicates pressure higher or lower than the standard range adjust it with the throttle stop screw. Turning the stop screw clockwise will reduce the pressure and turning it counterclockwise will bring the pressure higher. (Fig. 6-18)
d. If the swing of the gauge needle is large tighten the gauge restrictor valve to reduce the needle movement within 2 cmHg.

When the indicated pressure is lower than 15 cmHg, check the following possible defects.
- Inlet or exhaust valve sticking open
- Absence of slack in the throttle cable
- Loose spark plug
- Loose clamp on the carburetor connecting tube

e. Turn the air screw slightly at a time within 1/8 turn in both directions from the original setting, pausing for about 5 seconds to locate a point of highest engine speed by the tachometer. Perform this adjustment to all carburetors.

If it takes over a full turn more or 1/2 turn less than the original setting to change the engine speed check the following possible cause.

<table>
<thead>
<tr>
<th>Air screw adjustment requires over 2 turns</th>
<th>Air screw adjustment requires less than 1/2 turn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clogged air passage</td>
<td>Clogged slow jet</td>
</tr>
<tr>
<td>Worn air screw valve</td>
<td>Clogged slow jet passage</td>
</tr>
<tr>
<td>Float level too high</td>
<td>Float level too low</td>
</tr>
<tr>
<td>Loosened slow jet</td>
<td>Excessively worn air screw valve seat</td>
</tr>
</tbody>
</table>

f. Open the throttle valve slowly about 1/4 turn by the throttle grip for 30 seconds. Observe the vacuum gauge and note the location where the drop of pressure is not even to the other carburetors. Slow down the engine and adjust the throttle cable adjuster on the carburetor concerned. If drop of vacuum pressure is quicker than others turn the adjuster clockwise, namely increase the free play of the throttle cable.

If the drop of pressure is slower than the others, turn the adjuster counter clockwise.

The difference of the vacuum pressure the four carburetors should be less than 2 cmHg. Tighten the lock nuts and fit the rubber caps, when the adjustment has been completed.

(3) Final adjustment without vacuum gauge
a. Set the idling speed to 850—950 RPM with the throttle stop screws. Turn the throttle stop screws clockwise to increase the idling speed. Adjust each carburetor in the same amount.
b. Observe the tachometer and listen to the exhaust noise and/or place a hand at the exhaust outlet to check the exhaust pressure.

Turning out or in very slowly the air screw, obtain the highest engine idle speed or the highest exhaust pressure.

Repeat the same method on all carburetors. The adjustment should not be done exceeding 1/8 turn in both directions.

If there is no change in the engine condition even the adjustment exceeds 1/2 turn in both directions, check possible cause of the defects according to the items in section (2) e.

Adjust the idling speed again by the throttle stop screws to set back to the standard RPM.

c. Slowly twist the throttle grip 1/4 turn to open the throttle valve and allow seconds to run.

Listen to the exhaust noise and if the noise for four cylinders are not identical and random difference as the throttle opened, an adjustments is necessary. Place a hand at the exhaust outlet and check the exhaust pressure of all four cylinders. Locate one or two carburetors of which the exhaust pressures are different from the others.

Adjust them with the throttle cable adjusters. Turning the adjuster clockwise will increase the throttle cable end play and reduce the exhaust pressure. Turn the adjuster counterclockwise to increase the pressure. After completing the adjustment, tighten the adjuster lock nut and properly install the rubber seal cap.

(4) Other inspections.

a. Snap the throttle grip several times and then recheck the vacuum pressure readings or exhaust noise to assure that they are all the same.

b. Turn the steering all the way to the right and left side and snap the throttle grip few times to check that the carburetors are operated smoothly.

c. The air vent tube must be positioned over the air cleaner case.

d. The adjustments of the throttle grip free play and the grip damping force should be referred to the group 19 (page 182)

6-3 FUEL TANK AND VALVE

a. Description

The fuel tank is mounted on the frame body directly above the engine and is installed on the frame body through the fuel tank rubber cushions. (Fig. 6-20)
b. Disassembly
1. Switch the fuel valve to “STOP” and disconnect the fuel tube from the fuel valve. (Fig. 6-21)
2. Raise the seat, open the fuel tank rear cushion and remove the fuel tank to the rear and raise.
3. Remove the fuel strainer cap, O ring and fuel strainer screen.
4. Remove the two fuel valve mounting screws and remove the fuel valve from the tank. (Fig. 6-22)

c. Inspection
1. Inspect the fuel for leaks.
2. Inspect for clogging of the filler cap vent hole.
3. Inspect the front and rear cushion rubbers for deterioration, wear and other damages.
4. Inspect for damage to the valve cock packing and the filter screen, and then clean them with gasoline. (Fig. 6-23)
5. Inspect the fuel tube for defects.

d. Reassembly
1. Install the fuel cock assembly on the tank with two screws.
2. Fit the front and rear rubber cushions to the frame body. The front rubber cushions should be inserted by pushing the fuel tank from the rear. (Fig. 6-24)
3. Install the fuel tank rear bracket on the rear cushion.

Note: When installing the tank, particular attention should be give to the condition of the wires and their routing.
3. Install the fuel lines using fuel tube clips and connect the fuel tubes to the tank valve.
4. Turn the fuel valve cock to the “ON” position and check the fuel for leaks.