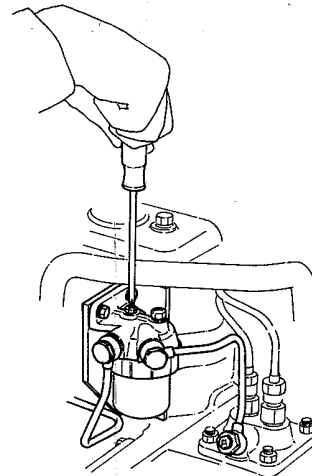


## 2. Engine Operating Instructions

### 2-1 Preparations before starting

#### 2-1.1 Fueling up

- (1) Check the fuel level in the fuel tank and add fuel if necessary.
- (2) Remove water and dirt collected in the bottom of the tank using the fuel tank drain cock.
- (3) Add clean fuel to the tank.  
Since dirt and water sink to the bottom of the fuel drum, do not turn the drum upside down and do not pump the fuel from the bottom of the drum.



#### 2-1.2 Adding lubricating oil

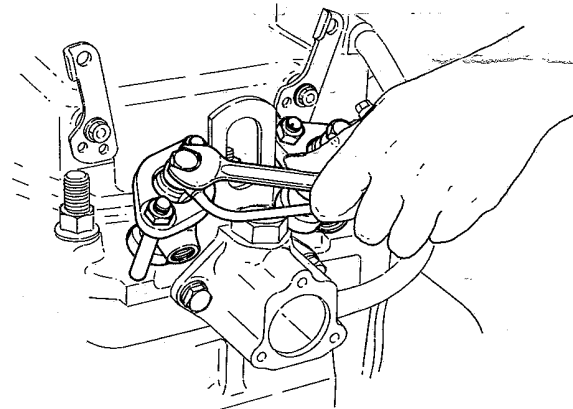
- (1) Check the oil level with the dipstick, and add oil, if necessary, to bring the level up to the full mark of the dipstick.  
The level must be neither too low nor too high.
- (2) The crankcase and clutch case require different oil. Check both and add oil separately, being careful not to mix the oils.
- (3) Since the crankcase oil flows into the crankcase through the camshaft and valve chambers, wait 2 ~ 3 minutes before checking its level.

#### 2-1.3 Lubricating each part

- (1) Lubricate each pin of the remote control lever.

#### 2-1.4 Checking fuel priming and injection

- (1) Operate the priming lever of the fuel pump.
- (2) Set the regulator handle to the full speed position and check for injection sound by turning the engine over several times.
- (3) If there is no fuel injection sound, bleed the air from the fuel system.



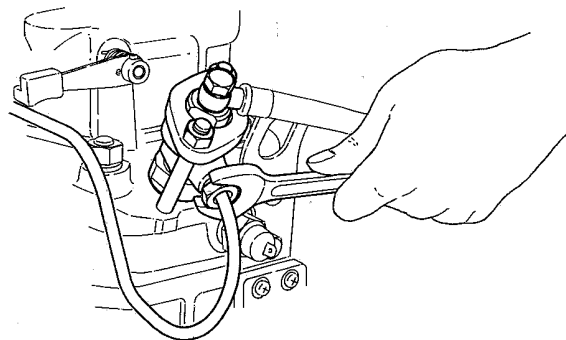
#### 2-1.5 Bleeding the fuel system

Since the presence of air in the fuel system anywhere between the fuel tank and the injection valve will cause faulty fuel injection, always bleed the air from the system when the fuel system is disassembled and reassembled.

##### Bleeding the fuel system

- (1) Open the fuel tank cock.
- (2) Bleed the air from the fuel filter.  
Loosen the air bleeding plug at the top of the fuel filter body and operate the manual handle of the fuel pump until no more bubbles appear in the fuel flowing from the filter.  
Then install and tighten the air bleeding plug.

- (3) Bleed the air from the fuel return pipe.  
Loosen the connector bolt of the fuel return pipe installed on the fuel injection valve, and bleed the air by operating the manual handle of the fuel pump. Bleed the air in the No.1 cylinder (timing gear case side) and No.2 cylinder (clutch side), in that order.



Loosen the nipple on the fuel injection valve side, set the regulator handle to the operating position and the decompression lever to the decompression position, and crank the engine. When no more bubbles appear in the fuel flowing from the end of the injection pipe, retighten the nipple.

(5) Check injection.

After bleeding the air, set the regulator handle to the operating position, set the decompression lever to the decompression position, and crank the engine. When fuel is being injected from the injection valve, an injection sound will be heard and you can feel resistance if you place your hand on the fuel injection pipe. This check must not be performed more than two or three times since overchecking will flood the combustion chamber with fuel, and faulty combustion will occur at starting.

**2-1.6 Checking for abnormal sounds by cranking**

- (1) Set the regulator handle to the STOP position, release the compression of the engine by setting the decompression lever, and crank the engine about 10 times to check for abnormal sounds.
- (2) Crank the engine with the starting handle (Always turn the engine in the proper direction of rotation.)

**2-1.7 Checking the cooling system**

- (1) Open the Kingston cock.
- (2) Check for bending and cross-sectional deformation of the cooling water inlet pipe.
- (3) Set all water drain cocks to the CLOSED position.

**2-1.8 Checking the remote control system**

- (1) Check that the remote control handle operates correctly.
- (2) Check that the engine stop remote control operates smoothly.

**2-1.9 Checking the electrical system**

- (1) Check the battery electrolyte level and add distilled water if low.
- (2) Check that the wiring is connected correctly. (Especially for polarity.)
- (3) Turn the battery switch on, set the main switch to the ON position, and check if the oil pressure lamp and charge lamp are illuminated and if the alarm buzzer sounds when the engine is stopped. (The charge lamp should be on while the engine is stopped and should be off while the engine is running.)

**2-1.10 Checking appearance and exterior**

- (1) Check for loose or missing bolts and nuts.
- (2) Check for loose or disconnected piping and hoses.
- (3) Check that there are no tools or other articles near rotating parts or on the engine.

**2-2 Starting and warm-up**

**2-2.1 Starting**

(1) Starting procedure

- 1) Set the clutch handle to the "NEUTRAL" position.
- 2) Set the governor lever to the "MEDIUM SPEED".
- 3) Keep the decompression lever in the "OPERATION" position.
- 4) Set the main switch to the ON position. The alarm buzzer will sound.
- 5) Push the starting button to start the engine. Release the start button after the engine has started.
- 6) When the engine has started, the alarm lamps and buzzer will go off. If the lamps or buzzer stay on, immediately stop the engine and check for trouble.

