

## TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
Hard starting	<ol style="list-style-type: none"> <li>1. Fuel shut off valve closed</li> <li>2. Choke linkage not working properly</li> <li>3. Dirt in fuel system</li> <li>4. Engine flooded</li> <li>5. Carburetor out of adjustment</li> <li>6. Water in fuel system</li> <li>7. Dirty air filter</li> </ol>	<ol style="list-style-type: none"> <li>1. Open valve</li> <li>2. Check linkage and repair</li> <li>3. Clean fuel lines, carburetor, and install new fuel filter</li> <li>4. Check linkage, carburetor float setting etc.</li> <li>5. Adjust carburetor</li> <li>6. Clean system and refill with clean fuel</li> <li>7. Install new air filter</li> </ol>
No fuel reaches carburetor	<ol style="list-style-type: none"> <li>1. Empty fuel tank</li> <li>2. Fuel filter plugged</li> <li>3. Gas tank vent plugged</li> </ol>	<ol style="list-style-type: none"> <li>1. Refill tank</li> <li>2. Clean or replace fuel filter</li> <li>3. Clean out vent</li> </ol>
Carburetor leaks	<ol style="list-style-type: none"> <li>1. Loose fuel line fitting</li> <li>2. Carb float setting set too high</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten fuel line</li> <li>2. Adjust float</li> </ol>
Engine starts but runs rough with low power output	<ol style="list-style-type: none"> <li>1. High or low speed mixture adjustments off</li> <li>2. Incorrect float setting</li> <li>3. Dirty air filter</li> <li>4. Carburetor loose on engine block</li> </ol>	<ol style="list-style-type: none"> <li>1. Readjust carburetor</li> <li>2. Adjust float</li> <li>3. Install new air filter</li> <li>4. Tighten carburetor mounting screws</li> </ol>

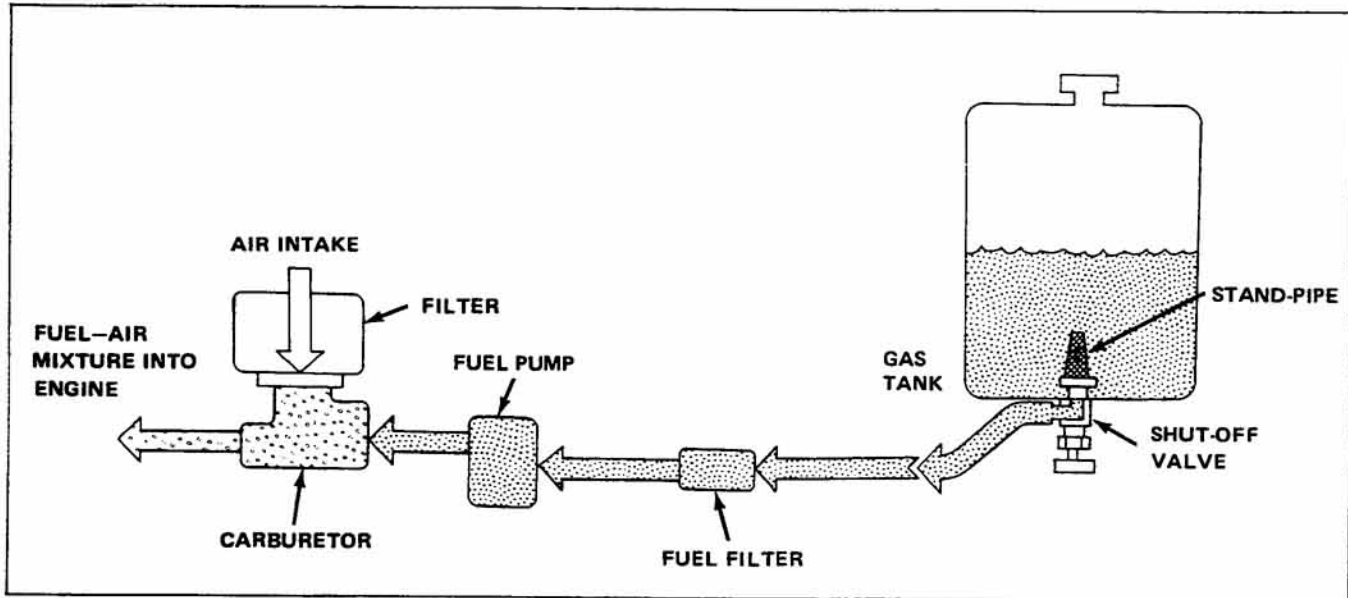


FIGURE 4-1

## FUEL TANK

Fill with clean fresh gasoline of regular grade. (For cold weather operation use winter blend gasoline.) **DO NOT MIX OIL WITH GASOLINE. REFUEL OUTDOORS WITH ENGINE STOPPED AND COOL.**

Check to see that vent hole in fuel tank cap is not plugged.

## FUEL VALVE

The fuel valve is located under the fuel tank. This valve must be fully open for proper operation of the tractor.

## FUEL FILTER

1886s, 2086 & 2087 (Fig. 4-2)

The fuel filter is a cartridge type in-line filter. For cleaning, shut off fuel valve and separate filter with a counterclockwise twist. When reassembling filter, twist the two valves counterclockwise each about one-half turn. This preloads the filter to lock it together. Fig. 4-3.

**NOTE: TO RECLOSE, TWIST THE TWO HALVES COUNTERCLOCKWISE EACH ABOUT ONE HALF TURN BEFORE ASSEMBLING. THEN PLACE TWO HALVES TOGETHER AND CLOSE BY TURNING CLOCKWISE UNTIL THEY ARE SECURELY TIGHTENED.**

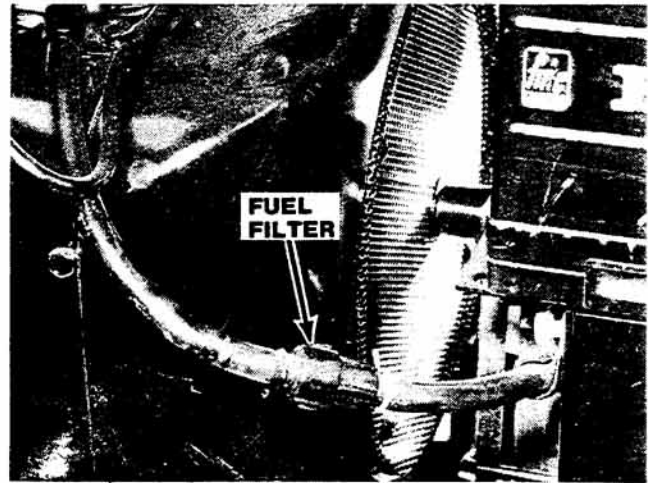


FIGURE 4-2



FIGURE 4-3

## FUEL SYSTEM (Continued)

### FUEL FILTER (CONT'D.)

2087 (Later Models) & 2389, 2389s

This filter is a throw away type. Replace when it shows excessive dirt inside.

Turn off fuel tank valve before moving filter. Open valve after replacing filter.

#### Models 2288 & 2289

### FUEL FILTER

There is a fuel filter (A) Figure 4-4 in the line from the fuel tank. This filter is a throw away type. When replacing the filter turn off the fuel valve. This valve is located on the left hand side of the tractor under the foot pedal. Screw off filter and replace. Service after first 50 hrs. and every 200 hrs. thereafter. Open valve again after filter has been replaced.

#### MODELS 2388s

### FUEL FILTER

There is a fuel filter (C) Figure 4-5 in the line from the fuel tank. This filter is a throw away type. When replacing the filter turn off the fuel valve. This valve is located under the fuel tank. Before the filter can be replaced the pressure inside the filter must be relieved. Follow the instructions below.

1. Start the engine.
2. Turn the main switch to the OFF position.
3. Leave the engine run for approximately 1 minute before moving the throttle control to the stop position.

Remove the filter and replace.

Service after the first 50 hours and every 200 hours thereafter. Open valve after the filter is replaced.

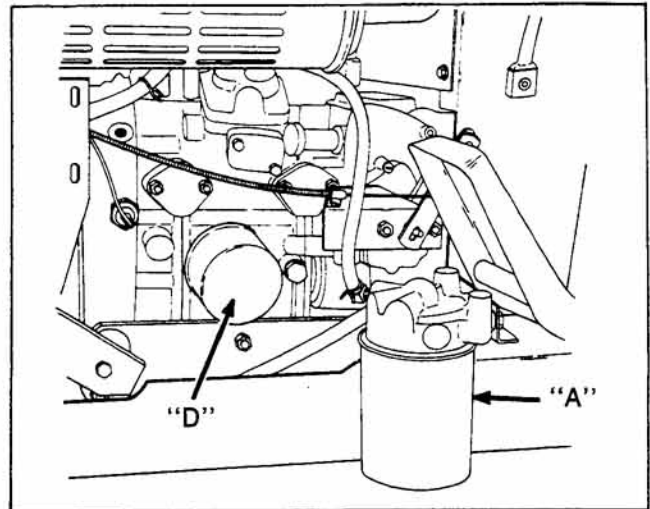


FIGURE 4-4

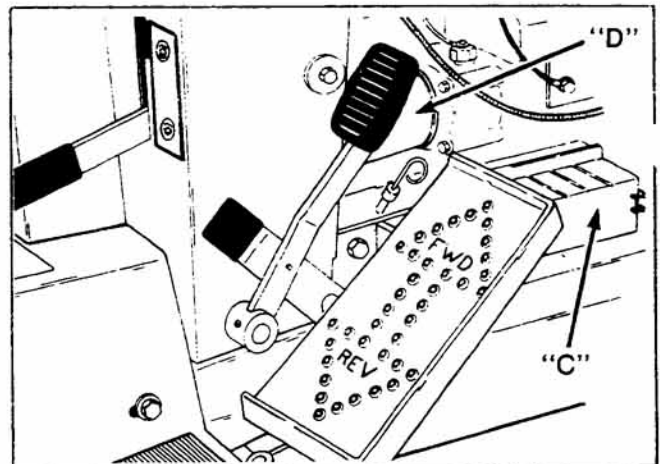


FIGURE 4-5

## AIR CLEANER (Models 1886s, 2086, 2087, 2389, 2389s)

Under normal operating conditions, disassemble and service air cleaner components every 50 hours of operation. Do this more frequently (even daily) if extremely dusty or dirty conditions prevail. The dry type element is cleaned by gently tapping on a flat surface — when doing this, be careful not to damage gasket surfaces on element. **DO NOT** attempt to clean dry type elements in any liquid or with compressed air as this will damage paper filter material. Wipe dirt or dust accumulation from cover including base plate where used.

### IMPORTANT:

**Dry type elements should be replaced after each 100 to 200 hours — replace at 100 hours if engine is operated under dirty conditions — replace every 200 hours under good clean air conditions.**

## CARBURETOR ADJUSTMENT

Carburetor is adjusted at the factory and should not have to be reset. If black exhaust smoke is noted, check the air cleaner first. An “overrich” mixture is usually caused by a poorly serviced, clogged air cleaner element, not an improperly adjusted carburetor.

If readjustment becomes necessary, stop the engine. Turn the MAIN and IDLE fuel adjusting screws all the way in until they bottom *LIGHTLY* — do not force them closed as this will damage the needle valves. For preliminary setting, turn MAIN fuel screw out (counterclockwise) two full turns, and the IDLE 1-1/4 turns. For final adjustments, start engine and allow it to warm up then operate at full throttle and under load, if possible. Turn MAIN fuel screw in until engine slows down (lean side) then out until it slows down again from overrich setting — note positions of screw at both settings, then set it about half-way between the two. The IDLE fuel setting can then be adjusted in the same manner for smoothest idle. Rough idle is often due to the idle speed being set too low — check this also.

## IDLE SPEED ADJUSTMENT

To adjust idle speed, remove heat shield to gain access to adjusting screw. The idle speed should be no less than 1,200 R.P.M. The proper idle speed will help prevent carburetor “load up” and engine “kill.”

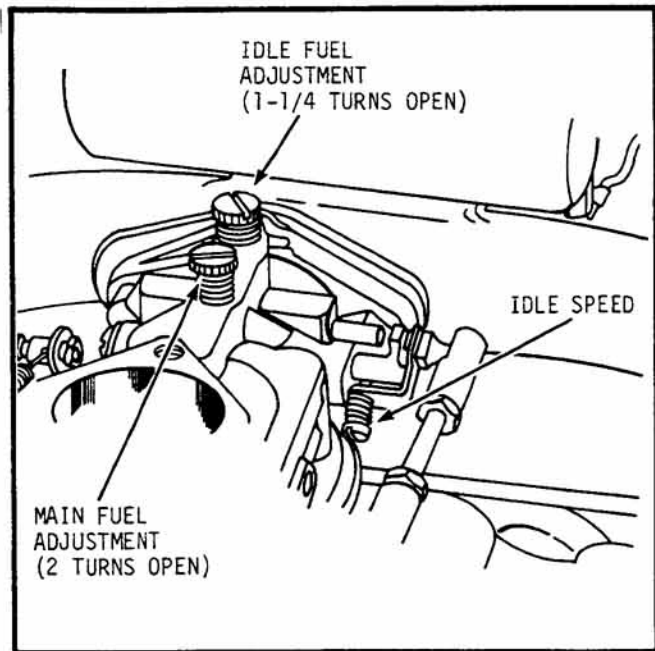


FIGURE 4-6



FIGURE 4-7

## FUEL SYSTEM (Continued)

### AIR CLEANER (Model 2388S)

Disassemble and service air cleaner components every 50 hrs. of operation. Do this more frequently (even daily) if extremely dusty or dirty conditions prevail.

The element is cleaned by gently tapping of a flat surface or blowing with compressed air; 100 psi maximum. Check against bright light for holes before reinstalling. Be careful not to damage gasket surfaces on element. Element can also be cleaned with clear water. Make sure element is dry before using. Wipe dirt or dust accumulation from cover, including base plate where used.

Element should be cleaned after the first 50 hours and replaced after each 4 cleanings.

Make sure rubber flapper valve is free of all dirt.

The importance of maintaining an air cleaner in proper condition cannot be over emphasized! Improper air cleaner maintenance can create engine damage which the engine manufacturer will not warrant.



CAUTION

NEVER RUN THE ENGINE WITH AIR CLEANER REMOVED. DIRT WILL ENTER THE ENGINE AND SCORE THE CYLINDERS.

### AIR PURGING OF THE FUEL SYSTEM

Hard starting may result if air is present in the fuel line. Purge the fuel line as follows:

1. Loosen air vent screw (A) Figure 4-8.
2. Place ignition key to the ON position. The fuel pump will now pump fuel through the system. When fuel runs out of air vent (A) reinstall screw.
3. Start up engine and leave running, at full throttle, for a few seconds.

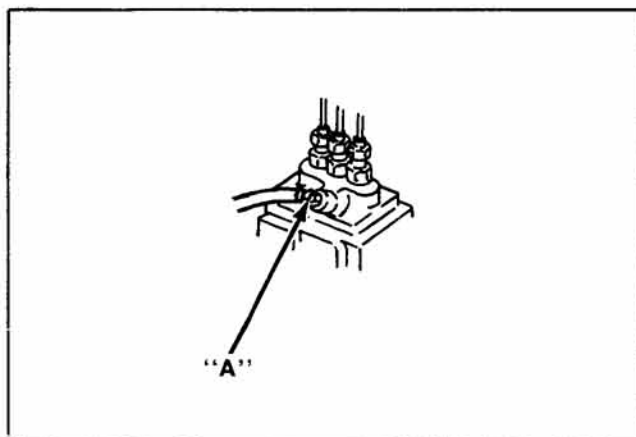


Figure 4-8

### AIR CLEANER (Models 2288 & 2289s)

Disassemble and service air cleaner components every 50 hrs. of operation. Do this more frequently (even daily) if extremely dusty or dirty conditions prevail.

The element is cleaned by gently tapping on a flat surface — when doing this, be careful not to damage gasket surfaces on element. Element can also be cleaned with clear water. Make sure element is dry before using. Wipe dirt or dust accumulation from cover, including base plate where used.

Element should be cleaned after the first 50 hours and replaced after each 10 cleanings.

The importance of maintaining an air cleaner in proper condition cannot be over emphasized! Improper air cleaner maintenance can create engine damage which the engine manufacturer will not warrant.



CAUTION

NEVER RUN THE ENGINE WITH AIR CLEANER REMOVED, DIRT WILL ENTER THE ENGINE AND SCORE THE CYLINDERS.