Professional Shop Manual

25cc 2-Cycle P25 Series Engines

NOTE: These materials are for use by trained technicians who are experienced in the service and repair of outdoor power equipment of the kind described in this publication, and are not intended for use by untrained or inexperienced individuals. These materials are intended to provide supplemental information to assist the trained technician. Untrained or inexperienced individuals should seek the assistance of an experienced and trained professional. Read, understand, and follow all instructions and use common sense when working on power equipment. This includes the contents of the product's Operators Manual, supplied with the equipment. No liability can be accepted for any inaccuracies or omission in this publication, although care has been taken to make it as complete and accurate as possible at the time of publication. However, due to the variety of outdoor power equipment and continuing product changes that occur over time, updates will be made to these instructions from time to time. Therefore, it may be necessary to obtain the latest materials before servicing or repairing a product. The company reserves the right to make changes at any time to this publication without prior notice and without incurring an obligation to make such changes to previously published versions. Instructions, photographs and illustrations used in this publication are for reference use only and may not depict actual model and component parts.

Spark arrestor

Figure 2.5

A spark arrestor is a screen that is in the outlet of the muffler. It's job is to collect any sparks or hot embers that are exiting the muffler. The spark arrestor will develop a carbon build up over time. This build up will restrict the exhaust flow, affecting engine performance.

The spark arrestor is part of the muffler and is not accessible for cleaning. It should be inspected every 25 hours of use. When it develops a carbon build up, replace the muffler.

NOTE: The spark arrestor also serves to keep blockages out of the exhaust system. Typical blockages include insect nests built during the dormant season.

⚠CAUTION Do not return an engine to service without a working spark arrestor. Use of the engine or equipment on unimproved land can start a fire if the spark arrestor has been removed.

Prime test

To perform a prime test:

1. Prime the engine through the carburetor throat using a squirt bottle, filled with clean fresh gasoline/oil mix.

   NOTE: Inspect the air filter while priming the engine. Look for a dirty or plugged filter that could prevent air flow or a missing filter that would indicate dirt ingestion.

2. Make sure the ignition switch is in the run position.
3. Attempt to start the engine.
4. If the engine starts and runs long enough to burn the prime, the problem is effectively isolated to the fuel system. proceed to Chapter 5: The Fuel System and Carburetor.
5. Check ignition system as described in Chapter 4: Ignition.
6. Test compression.

Test fuel for alcohol

Fuels currently on the market contain a wide array of additives. Some of these additives oxygenate the fuel. Oxygenated fuel reduces emissions, and is required in some parts of the United States. Fuel make-up varies seasonally and geographically. Ethanol is the primary additive used to oxygenate fuel.

Ethanol in fuel creates a lot of problems for gasoline engines. The biggest problem is that alcohol attracts and holds water. This corrodes the metal components of the fuel system, especially the carburetor. Alcohol also does not produce as much heat as gasoline when burnt. This results in less power for the engine.

The ideal fuel/air mixture ratio (stoichiometric ratio) for an engine burning alcohol is much richer than the stoichiometric ratio an engine running on gasoline. An engine tuned to run on gasoline will not run well on alcohol. The more alcohol there is in the fuel beyond the 10% that is anticipated, the further the fuel/air mixture will be from the correct ratio.

Figure 5.4

A 10% ethanol (E10) mix is acceptable for MTD engines. Anything higher than that will result in performance issues.

NOTE: E20 and E85 fuels are not to be used in any MTD engines.

There are several alcohol test kit available commercially. See Figure 5.4.

Figure 5.5

Generally these kits involve mixing a measured amount of water and gas together and seeing were the boundary layer is. See Figure 5.5.

The test kit should come with a chart to compare the boundary layer height to alcohol percentage.

Re-assembly of the carburetor

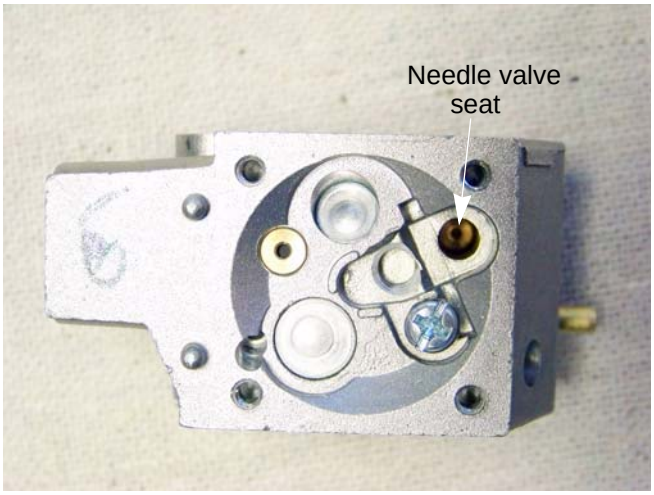

Figure 5.25

NOTE: The carburetor used in this manual is a Walbro. Depending on the application, the engine may have a different carburetor. All carburetors have a manufacturer name cast on them. Contact the carburetor manufacturer for the proper rebuild procedure.

1. Place the carburetor in a clean area on the work bench.
2. Inspect the needle valve seat assembly.
3. If the needle valve seat is damaged, replace the carburetor. See Figure 5.25.
4. Install the throttle valve assembly.

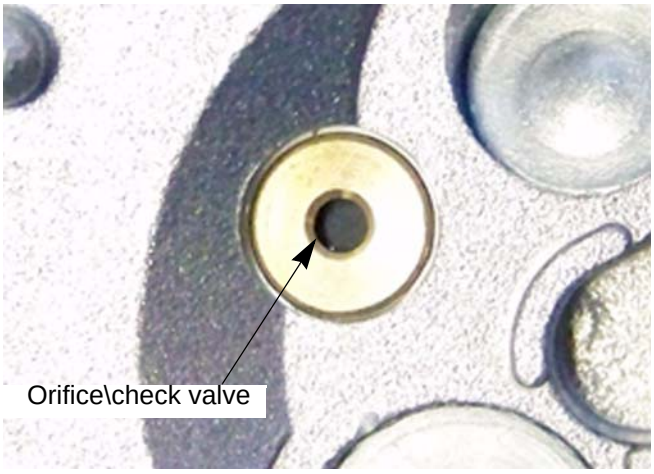

Figure 5.26

5. Clean the metering orifice\check valve with carburetor cleaner.

⚠CAUTION Do not insert anything into the orifice to clean it. That will damage the orifice resulting in the carburetor being unrepairable. See Figure 5.26.

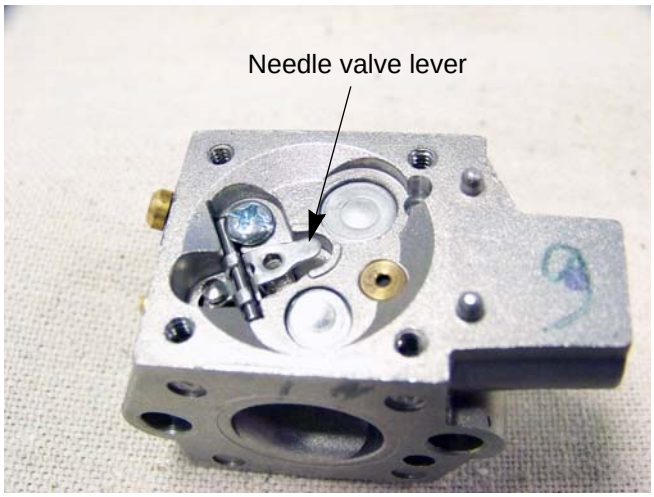

Figure 5.27

6. Install the needle valve, valve lever and spring as one assembly.
7. Tighten the hold down screw using a #2 phillips screwdriver.
8. Set the needle valve lever as per the carburetor manufacturer's recommendations using a W-tool. See Figure 5.27.
9. Install the gasket and diaphragm.
10. Install the cover.

CHAPTER 7: CLUTCH AND UPPER DRIVE SHAFT

Drive shaft assembly

There are two types of drive shaft assemblies available with the P25 series of engines:

- Straight shaft
- Curve shaft

NOTE: The procedure to remove the drive shaft assembly from the engine is the same for both styles.

NOTE: The drive shaft assembly consists of the drive shaft housing and a flexible inner drive shaft. The housing and the drive shaft are serviced separately.

Figure 7.1

To remove the drive shaft assembly:

1. Remove the six screws in the grip with a T-20 torx driver. See Figure 7.1.
2. Let the grip hang off to the side.

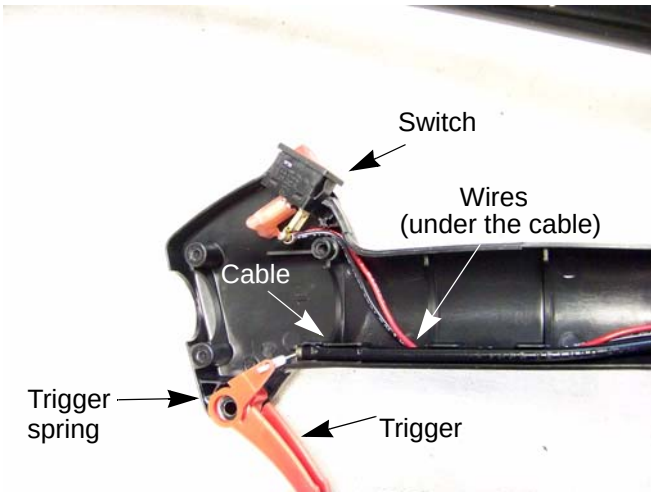

Figure 7.2

NOTE: There are a five parts inside the grip assembly. Be careful that they don't fall out of the grip. See Figure 7.2.