



# 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.

© Copyright 2010 MTD Products Inc. All Rights Reserved

For Parts Call 606-678-9623 or 606-561-4983

## Table of Contents

<b>Chapter 1: Introduction 1</b>	
Professional Shop Manual intent .....	1
Fasteners .....	1
Assembly .....	2
Description .....	2
Identifying engines .....	3
Model and Serial Numbers .....	4
<b>Chapter 2: Maintenance 5</b>	
Maintenance .....	5
Air filter .....	5
Spark plugs .....	6
Spark arrestor .....	7
Fuel filter .....	8
Storage .....	9
<b>Chapter 3: Troubleshooting 11</b>	
Definitions .....	11
Introduction .....	11
Steps to troubleshooting .....	11
Identify factors that could cause the problem .....	13
Repairing the problem .....	16
Diagnostic tests .....	16
Prime test .....	17
Compression testing .....	18
<b>Chapter 4: Ignition 19</b>	
Troubleshooting the Ignition System .....	19
Testing the module .....	20
Test the engine stop switch .....	21
Module .....	22
Flywheel .....	23

**Chapter 5: Fuel system and carburetor 25**

Fuel system troubleshooting . . . . .	25
Inspecting the fuel . . . . .	25
Check the fuel/oil mixture . . . . .	26
To check the fuel in the carburetor: . . . . .	26
Test fuel for alcohol . . . . .	27
Fuel filter . . . . .	28
Fuel lines . . . . .	29
Fuel tank vent . . . . .	29
Fuel tank . . . . .	30
Carburetor . . . . .	31
Troubleshooting the carburetor . . . . .	31
Disassembly of the carburetor . . . . .	33
Re-assembly of the carburetor . . . . .	37
Carburetor insulator . . . . .	39

**Chapter 6: Starters 41**

Recoil Starter Removal . . . . .	41
The starter rope, pulley and springs . . . . .	43

**Chapter 7: Clutch and Upper Drive Shaft 47**

Drive shaft assembly . . . . .	47
Clutch removal/replacement . . . . .	49

**Chapter 8: Engine assembly 51**

Theory of operation . . . . .	51
Engine disassembly . . . . .	52
Engine Reassembly . . . . .	55

## CHAPTER 1: INTRODUCTION

### Professional Shop Manual intent

This Manual is intended to provide service dealers with an introduction to the mechanical aspects of the 25cc P25 series of 2-cycle engines.

**Disclaimer:** The information contained in this manual is correct at the time of writing. Both the product and the information about the product are subject to change without notice.

About the text format:

**NOTE:** is used to point out information that is relevant to the procedure, but does not fit as a step in the procedure.

- Bullet points: indicate sub-steps or points.



Caution is used to point out potential danger to the technician, operator, bystanders, or surrounding property.



Warning indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.



Danger indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations

**Disclaimer:** This manual is intended for use by trained, professional technicians.

- Common sense in operation and safety is assumed.
- In no event shall MTD be liable for poor text interpretation or poor execution of the procedures described in the text.
- If the person using this manual is uncomfortable with any procedures they encounter, they should seek the help of a qualified technician or MTD Technical Support.

### Fasteners

- Most of the fasteners used on the engine are metric. Some are sized in fractional inches. For this reason, wrench sizes are frequently identified in the text, and measurements are given in U.S. and metric scales.
- If a fastener has a locking feature that has worn, replace the fastener or apply a small amount of releasable thread locking compound such as Loctite® 242 (blue).
- Some fasteners like cotter pins are single-use items that are not to be reused. Other fasteners such as lock washers, retaining rings, and internal cotter pins (hairpin clips) may be reused if they do not show signs of wear or damage. This manual leaves that decision to the judgement of the technician.

## P25 Series of engines

### Assembly

Torque specifications may be noted in the text that covers assembly, they may also be summarized in tables along with special instructions regarding locking or lubrication. Whichever method is more appropriate will be used. In many cases, both will be used so that the manual is handy as a quick-reference guide as well as a step-by-step procedure guide that does not require the user to hunt for information.

The level of assembly instructions provided will be determined by the complexity and of reassembly, and by the potential for unsafe conditions to arise from mistakes made in assembly.

Some instructions may refer to other parts of the manual for subsidiary procedures. This avoids repeating the same procedure two or three times in the manual.

### Description

The P25 series of engines are used on a variety of string trimmers. These engines have:

- 25cc's of displacement.
- Piston ported/loop scavenged design.
- Cantilever crankshaft.



Figure 1.1