Starters – tutor notes

Tutor

What students will learn

When they have finished the starter module, students should be able to:

- ❑ know the main parts of a manual starter
- ❑ change the starter cord on their engine
- ❑ use an emergency starter cord

Things you need before you start

Information

You will need ideas and information on:

What type of starters are fitted locally to small engines and outboards

What starter parts and cords are available – and where from

How to replace cords and retention springs

Materials

Examples to show students:

engines – outboard motors, mowers and similar

dismantled starter mechanisms to show how they work

spare starter cords

Tools or equipment

If students don't have their own engines, you may need to provide suitable engines to work on

Students will need tools and equipment to check and change cords:

Tools clamps/vice-grips pliers, small pliers, small screwdrivers, wire

Starters – activity

The activities in this module require the students to check and replace the starter cord on their own engine, and to show the tutor how to use an emergency starter cord on their outboard motor.

It would be useful for them to carry out the tasks on other types of engine and equipment as well.

Students should work together in small groups to carry out the maintenance tasks.

The module:

The workbook sections for this module are:

Types of starter

Maintenance

Starter cord checks
Changing cords
Retention recoil springs

Outboard motor – emergency starting

Activity

Copies of the workbook sections are included in your manual here as well as in the Student Workbook.

You need to work through each section with the students, talking about the many types of starters and parts and showing the students what to do – and what they should NOT do.

Remember

The workbooks are **not** designed to be used by the students learning on their own.

General introduction

Use these notes for an introduction at the beginning of the starter module.

To start the module, talk to the students generally about the main things they will learn and what they will do:

- types of starter, and what they have on their engines
- starter cords and springs
- outboard emergency starting.

Explain

Explain that the in module:

you will talk about each of these things – and show them what and how to work on the engines.

Finally, they will get to change cords, tension springs and carry out checks

Then move into *Types of starter.*

In addition:

Talk about - the need for advice and assistance

It is **very** important that students understand the limits of what they learn on this course. Here they learn only about simple, small – scale checks

Bigger jobs **need expert knowledge and skill and equipment** to dismantle, repair and adjust.

Make sure students understand that they need expert assistance for any larger or safety related work.

Types of Starter

In this section, students:

- learn about different starters
- identify the starter type and parts on their engine

Work with students through each part of the workbook notes.

Talk about - starters

Starters just turn over the engine so that ignition/combustion can get going.

Other ways to start:

Push start cars and motor bikes in gear
Starting handles on cars (old ones anyway)
Kick-starts on motor bikes

Electric starters need starter motors, cable and batteries. All large, heavy and expensive – so not suitable on most small engines. But they are fitted to larger outboards, ride-on mowers and cars/trucks. Here the weight and expense is not such a problem – and the engines would be hard work to turn over by hand in normal use.

If your students have small engines with electric starters, you will need to teach them about those starters separately.

This course only looks at cord pull starters (sometimes called recoil or rewind starters).

Talk about - safety

Reinforce the importance of safety.

Recoil starters contain springs under tension and many small parts that can fly out. Eye protection is advised.

Springs and other starter parts can have sharp edges.

Starter cords in good condition and spare starter cords on-board are essential outboard motor safety issues.

Talk about – recoil starters

Simple cord pull starting – wind cord around the flywheel/pulley – and pull.

Side-pull and top-pull starters – depending on engine type and crankshaft direction.

The main parts of a starter assembly and how they work.

- Casing
- Cord – type, size, length, singeing ends to stop fraying
- Recoil spring – size, purpose and tension
- Pulley
- Ratchet, pawls or clutchs to lock pulley to crankshaft – or flywheel. They work in only one direction so engine can spin free.

Many detail differences in design from different engine makers

Show

Different starter types and their main parts

Help students find what starter and parts are fitted to their engine.

Talk about – checks on starter cords

Cords always break when you least want them too!

Always best – and usually easier - to change a cord before it breaks. Especially true with outboard motors.

Make sure students understand how to check a cord – pull t all the way out and look for damage, fraying or going hard.

Talk about – and show how to replace starter cords

The worksheet lists the main steps to follow on two example types. Talk about each step and show how it is done.

Show more examples of different starter parts, how to take them apart to replace a cord and check, or re-tension, the recoil spring.

Help

Students to check and change cords on their own engines.

Outboard motor – emergency starting

Talk about - safety

The importance and safety issues of being able to emergency start an outboard.

Regular checks, and carrying spare cord on every trip.

Talk about – how to emergency start

The worksheet show the main steps, talk about each one and show students how to do it on several types of outboard motor.

Help students – if you need to – to carry out the emergency start prcess on their own out board – if they have one.