

Module Descriptor Four Stroke Engine Maintenance

Award Type: Minor Award Level: 3 Award Code: 3N0886 FÁS Assessment Code: 3N0886-009 Validation date 14th July 2011

Revision 2.0





Module Descriptor

Purpose:

The purpose of this module is to equip the learner with relevant knowledge, skill and competence to carry out the top end strip down and rebuild of a 4 stroke engine under supervision.

Module Duration: The learning effort required from a typical learner to successfully achieve the stated learning outcomes for the module is one hundred hours

Learning Outcomes: By the end of this module, the learner will be able to:

- 1. Identify the tools, equipment and component parts required to complete a top end overhaul
- 2. State the materials used in the manufacture of component parts and their function
- 3. State the reasons and steps taken overhauling the top end of a 4 stroke engine
- 4. Maintain tools and equipment appropriately
- 5. Carry out removal and dismantling of top end of a 4 stroke engine
- 6. Repair or replace damaged or worn component parts
- 7. Clean all component parts for reassembly of top end
- 8. Reassemble the top end of a 4 stroke engine to manufacturer's specification
- 9. Carry out final adjustments on the reassembled components to manufacturer's specification
- 10. Apply appropriate health and safety and personal hygiene practices
- 11. Demonstrate generic skills such as literacy and numeracy and reflect upon own learning and further training





Unit 1 Removal of component parts of the top end of a 4 stroke engine

At the end of this unit, the learner will be able to:

- 1.1 Identify the component parts and tools used in the top end of a 4 stroke engine
- 1.2 State the functions of the component parts of the top end of a 4 stroke engine
- 1.3 State the materials used in the manufacture of the component parts of a 4 stroke engine
- 1.4 Describe the reasons and steps taken overhauling the top end of a 4 stroke engine
- 1.5 Select the appropriate equipment used in the overhaul of the top end of a 4 stroke engine

Key Learning Points

Learning Outcome 1.1:

Identify the component parts and tools used in the top end of a 4 stroke engine

Key Learning Points

- Components by type used in top end of 4 stroke engines
- Tools used
- Safety in use of tools
- Care and storage of tools

Learning Outcome 1.2:

State the functions of the component parts of the top end of a 4 stroke engine

- Components used
- Purpose of each component
- Four stroke cycle
- Function of each component in four stroke cycle
- Safety in handling components





Learning Outcome 1.3:

State the materials used in the manufacture of the component parts of a 4 stroke engine

Key Learning Points

- Materials used by type
- Why certain materials are used
- How the material type contributes to engine efficiency

Learning Outcome 1.4:

Describe the reasons and steps taken overhauling the top end of a 4 stroke engine

Key Learning Points

- When is a 4 stroke engine selected for a top end overhaul
- Why are engines overhauled
- What typical problems lead to top end overhaul
- Steps taken in overhauling a 4 stroke engine

Learning Outcome 1.5:

Select the appropriate equipment used in the overhaul of the top end of a 4 stroke engine

- Equipment used
- Purpose of equipment
- Using equipment safely
- Care and storage of equipment





Unit 2 Dismantle the component parts of the top end of a 4 stroke engine

At the end of this unit, the learner will be able to:

- 2.1 Prepare a 4 stroke engine for top end overhaul
- 2.2 Dismantle the top end of a 4 stroke engine
- 2.3 Identify parts that require replacement
- 2.4 Clean all component parts prior to assembly

Key Learning Points

Learning Outcome 2.1:

Prepare a 4 stroke engine for top end overhaul

Key Learning Points

- Preparation of workspace
- Selection of equipment
- Selection of tools
- Safety precautions

Learning Outcome 2.2:

Dismantle the top end of a 4 stroke engine

Key Learning Points

- Manufacturer's guidelines
- Correct use of tools and equipment
- Dismantling sequence
- Storage of component parts
- Safety precautions

Learning Outcome 2.3:

Identify parts that require replacement

Key Learning Points

- Examination of component parts for wear or damage
- Selection of component parts for repair or disposal
- Safe disposal of worn or damaged parts

Learning Outcome 2.4:

Clean all component parts prior to assembly

- Replace of damaged or worn component parts to manufacturer's specifications
- Safe use of cleaning agents and greases
- Cleaning of all component parts prior to assembly
- Lay out of component parts for reassembly





Unit 3 Reassemble of the top end of a 4 stroke engine

At the end of this unit, the learner will be able to:

- 3.1 Follow manufacturer's guidelines
- 3.2 Layout component parts for reassembly
- 3.3 Complete final adjustments to components
- 3.4 Apply appropriate health, safety and personal hygiene practices

Key Learning Points

Learning Outcome 3.1:

Follow manufacturer's guidelines

Key Learning Points

- Read manufacturer's guidelines for reassembly of top end
- Read manufacturer's guidelines on necessary component adjustments
- Follow manufacturer's guidelines with regard to safety

Learning Outcome 3.2:

Layout component parts for reassembly

Key Learning Points

- Select workspace area for layout of component parts
- Select tools and equipment required
- Select greases and or lubricants
- Layout in a manner that will allow for efficient and safe reassembly
- Carry out the final adjustments on the reassembled component parts to
- manufacturer's specifications

Learning Outcome 3.3:

Complete final adjustments to components

- List what adjustments are necessary from manufacturer's guidelines
- Select appropriate tools for adjustment of components
- Complete adjustments to manufacturer's tolerances
- Clean and store all tools and equipment safely
- Clean work area
- Check engine





Learning Outcome 3.4:

Apply appropriate health, safety and personal hygiene practices

- Familiar with workshop health and safety regulations
- Use of procedures for fire safety
- Use of procedures for accident reporting
- Applying health and safety procedures in carrying out tasks in the workshop
- Safe use and storage of all tools and equipment
- Safe use of all greases and cleaning agents
- Protection of exposed skin
- Application of appropriate hygiene practices





Assessment Specification

Award Title	Four Stroke Engine Maintenance
Award Type	Minor
FÁS Assessment Code:	3N0886-009
Credit Value :	5
Award Code:	3N0886

Module Learning Outcome	Performance Criteria (Knowledge, Skill & Competence)	Assessment Techniques	Weighting	Assessment Instrument	Assessment Evidence
1	Knowledge	Skills Demonstration	8%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
2	Knowledge	Skills Demonstration	8%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
3	Knowledge	Skills Demonstration	8%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
4	Skill, Competence	Skills Demonstration	3%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
5	Knowledge	Skills Demonstration	10%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
6	Knowledge	Skills Demonstration	10%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
7	Skill	Skills Demonstration	10%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
8	Skills	Skills Demonstration	20%	Learner's Instructions S2, S3	Assessment Sheets
9	Skills	Skills Demonstration	10%	Learner's Instructions S2,S3,S4	Assessment Sheets
10	Skill, Competence	Skills Demonstration	8%	Learner's Instructions S1,S2,S3,S4	Assessment Sheets
11	Skill, Competence	Skills Demonstration	5%	Learner's Instructions S1.S2.S3.S4	Assessment sheets





Suggested Learning Methodologies:

Skills Demonstration Practical Work Training Simulated Work Environment

Specific Module Requirements

The following is a recommended list. The list is not definitive as some of the items listed may not be essential in order to run the course. Items other than those listed may also be acquired for the course at the discretion of the Manager

- 4 Stroke Single Cylinder Motorcycle Engine, e.g. Suzuki GN125
- Motorcycle Lift
- 3/8 inch drive socket set 10mm to 19mm
- 1/4 inch drive socket set 6mm to 13mm
- 3/8 inch drive torque wrench
- Set Hex Allen keys 4mm to 12mm
- Feeler Gauges
- Value Spring Compressor
- Set of Pliers; Circlip Pliers, Pointed Pliers and Snips
- Steel Rule
- Magnetic Tray
- Impact Screwdriver
- Gloves
- Rubber Mallet
- Ball Pein Hammer
- Spark Plug Wrench
- Set of Off-Set Ring Spanners 10mm to 19mm
- Set of Combination Spanners 8mm to 19mm
- Workshop Manual (Haynes)
- Set of Phillips Screwdrivers
- Set of Flat Bladed Screwdrivers

Suggested Learning Resources:

All of the highlighted Curriculum Resources mentioned below are available on the Moodle Community Services Curriculum and Assessment page. You can access the CSCA Moodle web page from this link:

http://www.ecollege.ie/site/home.html

If you do not already have a username and password, ask your supervisor to





contact us at CSCA@fas.ie

Haynes Automotive/Motorcycle Repair manuals

Generic Skills: Literacy and Numeracy

The learners will keep and maintain a **Learning Diary** throughout the course in order to record and file any useful and relevant information on any aspect of 4 Stroke Engine Maintenance.

At the end of every week the learners will complete a short **Weekly Reflective Sheet** in order to reflect on their learning and progress during that week.

This Weekly Reflective Sheet will assist the learners to develop their generic skills of literacy, numeracy, communications and quality awareness and will give learners an opportunity to develop their writing skills.

The Learning Diary can be used as a reference for the learner when filling out the Mid Course and End of Course reflections, Activity A and Activity A.

The learners will create a **Personal Dictionary** of new words, key words and terms relating to 4 Stroke Engine Maintenance. This Dictionary will be updated each week and kept in the Learning Diary.

The learners, as a group, will add words and terms to a **Key Word and Terminology Bank** in the classroom, relating to 4 Stroke Engine Maintenance. The learners will find words listed in text books, class notes, DVDs and internet websites etc.

The learners will complete a Word Search.

Generic Skill: Numeracy; Digital

Learners will practice **using a calculator**, identifying and locating all keys needed to carry out basic calculations.

The learners will practice solving various problems, involving litres, metres etc, set by the instructor, **using the mathematical glossary**.

Generic Skill: Literacy

Learners will gather relevant information, using a variety of methods, such as text





books, the internet and class notes, newspaper articles etc, in order to write or type a short description of an area chosen by the instructor:

Generic Skill: Teamwork and Communications

Learners will discuss the importance of teamwork with the instructor using the **Teamwork Guide**.

Learners will take part in a <u>Teamwork exercise</u> by designing, planning and carrying out a project which will incorporate group discussions.

The learners will complete the <u>Team Review Sheet</u> after completing the Teamwork exercise.

Role Play:

Learners will take part in a number of **role plays** in order to improve their listening communication skills. The role plays can be scripted or unscripted

Recommended by:

Community Services Manager

Approved by:

Community Services Director



