

## **Beta - Beta RR 4t 250-400-450-525\_workshop\_manual**

### WORKSHOP MANUAL

RR 4T - 250 - 400 - 450 - 525

### 3 INTRODUCTION

This publication has been designed to assist authorized service personnel of Betamotor Workshops in maintaining and repairing the vehicle referred to in the manual. Familiarity with the specifications contained herein is a key factor in the technical training of operators. In order to make the manual easy to read and understand, the different paragraphs are marked with icons that point out the subject dealt with.

### USEFUL ADVICE

To avoid problems and ensure best results, Betamotor recommends observing the following guidelines:

- Whenever a repair is needed, analyse the customers account of the malfunction and ask any questions that can help to clarify the symptoms.
- Clearly diagnose the causes of the malfunction. This manual provides basic operating principles which the operator will have to supplement with their personal experience.
- Carefully plan the repair so as to avoid wasting time in obtaining spare parts, preparing tools, etc.
- Gain access to the parts to be repaired by performing only the operations that are strictly necessary. For best results, always follow the removal procedures described in this manual.

### Note

Betamotor is committed to constantly improving its products. For this reason, there can be slight differences between the content of this manual and the vehicle to be repaired or serviced. Betamotor products are exported to many countries characterized by different Highway Codes and type-approval procedures. In view of this, Betamotor reserves the right to modify its products and technical documentation at any time and without notice.

### Let us help protect the environment

Everything we do affects the entire planet and its resources. To protect the common interest, Betamotor urges its customers and service operators to use the vehicles and dispose of their components in compliance with applicable regulations on environmental pollution control, waste disposal and recycling.

### 4 GENERAL CONTENTS

- 1 General information
- 2 Specific tools
- 3 Tightening torques - Specifications - Recommended products
- 4 Maintenance
- 5 Bodywork and fittings
- 6 Engine
- 7 Carburettor
- 8 Front suspension/wheel
- 9 Rear suspension/wheel
- 10 Braking system
- 11 Electrical system

# BL Motorcycles Ltd

*Professional Workshop Manual - English Translation*

Workshop manual RR 4T - 250 - 400 - 450 - 525

6 Workshop manual RR 4T - 250 - 400 - 450 - 525

## CONTENTS

HOW TO CONSULT THE MANUAL .....	Chap. 1 - 7
GENERAL CONTENTS .....	Chap. 1 - 7
Arrangement of subjects .....	Chap. 1 - 7
Description of operations .....	Chap. 1 - 7
PURPOSE OF THE MANUAL .....	Chap. 1 - 7
Updates .....	Chap. 1 - 7
TERMS AND SYMBOLS .....	Chap. 1 - 8
CONVENTION .....	Chap. 1 - 9
SAFETY .....	Chap. 1 - 10
Carbon monoxide .....	Chap. 1 - 10
Petrol .....	Chap. 1 - 10
Engine oil .....	Chap. 1 - 10
Coolant .....	Chap. 1 - 10
Brake fluid .....	Chap. 1 - 11
Threadlocking fluid .....	Chap. 1 - 11
Shock absorber nitrogen .....	Chap. 1 - 11
Battery .....	Chap. 1 - 11
Hot parts .....	Chap. 1 - 11
NOTES .....	Chap. 1 - 12

## TABLES OF CONTENTS

TABLE OF CONTENTS OF EACH CHAPTER	Chap. 1 - 12
CONTENTS OF EACH CHAPTER .....	Chap. 1 - 12
OPERATING SPECIFICATIONS .....	Chap. 1 - 13
VEHICLE IDENTIFICATION .....	Chap. 1 - 13

7.1 - General information Release 00 Date 02/2005

## HOW TO CONSULT THE MANUAL

### Arrangement of subjects

The manual is divided into chapters that cover the main sub-assemblies of the vehicle. To make the different chapters easy to find, the pages of each chapter bear a reference mark that is aligned with the related title in the general contents.

### Description of operations

The removing, fitting and checking operations described in the manual are accompanied by pictures (drawings or photographs).

The pictures contain symbols referring to procedures, special tools and other information. Refer to the key to the symbols for a description of their meanings. The procedures are arranged sequentially, step by step.

## EXAMPLE

Whenever a specific tightening torque is needed, begin by applying a standard tightening torque (e.g. 10 N·m), then

# BL Motorcycles Ltd

*Professional Workshop Manual - English Translation*

proceed with the tightening by rotating the part by a predetermined angle (e.g. 30°).

## PURPOSE OF THE MANUAL

This manual is chiefly intended for qualified Betamotor dealers and mechanics. A mechanic should not expect to find all the information he requires in a manual. Anybody who uses this manual should have a working knowledge of the principles of mechanics and of motorcycle repairing techniques. Performing repairs or maintenance operations without this knowledge may render the vehicle unusable and even dangerous.

## Updates

Betamotor is committed to continually improving its products. Any significant changes made to the specifications and procedures contained in this manual will be made known to official dealers and will be included in future editions of the manual. All the information, instructions and technical data provided in this manual were up-to-date when the manual was approved for print. Betamotor reserves the right to make changes to the manual at any time, without notice and without incurring any obligations.

30°

10 N·m

## GENERAL CONTENTS

## 8 TERMS AND SYMBOLS

Workshop manual RR 4T - 250 - 400 - 450 - 525

When performing these operations, flammable vapours can be released and metal parts can be ejected at high speed. It is therefore necessary to:

- Avoid working near sparks or open flames.
- Wear protective clothing.
- Wear protective goggles.

## IMPORTANT

Whenever a worn cylinder part needs to be replaced, we recommend checking and if necessary replacing all the parts that are related to it. In particular, the following parts should always be replaced at the same time:

- Piston, piston rings and piston pins.
- Valves, valve springs, valve cotters, caps and thrust washers.
- Valve guides with related valves, springs, caps, valve cotters and thrust washers.
- Crankshaft bearings.
- Any part subject to even wear.

To keep the engine in perfect running order, ensure that all fits are within the prescribed tolerances. A close fit can lead to seizure as soon as the moving parts heat up; on the other hand, a loose fit causes vibrations that accelerate the wear and tear of moving parts.

## NOTE

Whenever the words left, right, upper, lower, front and rear are used, reference is made to the vehicle in its normal direction of travel.

Avoid disposing of the parts in the environment.

## NOTE

# BL Motorcycles Ltd

Professional Workshop Manual - English Translation

9 1 - General information Release 00 Date 02/2005

## CONVENTION

In order to clarify the left/right convention used in this manual, a diagram of the vehicle and engine are provided below with an indication of how the two sides are referred to in the manual.

Rh

Rh

Lh

Lh

10 Workshop manual RR 4T - 250 - 400 - 450 - 525

## SAFETY

### Carbon monoxide

Exhaust gases contain carbon monoxide (CO), a poisonous gas that can cause loss of consciousness and even death.

Before starting the engine, ensure that the area is well ventilated. Never run the engine indoors.

The engine can be run indoors only if the area is equipped with specially designed exhausters.

### Petrol

Petrol is highly flammable and, under certain circumstances, explosive.

Keep all heat sources, sparks and open flames away from the working area.

Always work in a well ventilated area.

Never use petrol as a cleaning solvent. Avoid handling it unless absolutely necessary.

Do not use petrol for cleaning components that need to be blown with compressed air.

Keep out of the reach of children.

### Engine oil

Repeated and prolonged contact of engine oil with the skin can cause skin diseases.

In case of contact, wash the contaminated parts with soap and water as soon as possible.

In case of eye contact, rinse abundantly with water and seek medical attention.

In case of ingestion, immediately seek medical attention without causing vomit as this could result in the oil being breathed into the lungs. If the product is believed to have been breathed into the lungs, immediately transport the affected person to the nearest hospital.

Spent oil contains substances that are dangerous to the environment. Oil can be renewed only by operators that are equipped for the disposal of spent oils in compliance with applicable laws.

Avoid disposing of spent oil in the environment.

Keep out of the reach of children.

### Coolant

Under certain circumstances the ethylene glycol contained in the coolant is flammable and its flame is invisible. Should the ethylene glycol ignite, its flame, though invisible, could cause serious burns.

Avoid bringing the coolant into contact with hot parts as these could ignite it.

The coolant (ethylene glycol) can irritate the skin and is poisonous if ingested.

In case of skin contact, immediately take off any contaminated clothes or footwear and wash abundantly with soap and water. In case of eye contact rinse abundantly with clean water and immediately seek medical attention. If the coolant is

# **BL Motorcycles Ltd**

*Professional Workshop Manual - English Translation*

ingested, avoid causing vomit as this could cause the product to be breathed into the lungs. Administer clean water and immediately transport the affected person to the nearest hospital and show the product to health personnel.

If anybody is exposed to a high concentration of coolant vapours, transport them to an area where they can breath un-polluted air. If necessary seek medical assistance.

Do not remove the radiator cap when the engine is hot. Since the coolant in the radiator is subjected to high pressures, it could