

FOREWORD

This manual contains an introductory description on HYOSUNG 『Comet650』 and procedures for its inspection/service and overhaul of its main components. Other information considered as generally known is not included.

Read GENERAL INFORMATION section to familiarize yourself with outline of the vehicle and MAINTENANCE and other sections to use as a guide for proper inspection and service.

This manual will help you know the vehicle better so that you can assure your customers of your optimum and quick service.

- ❖ This manual has been prepared on the basis of the latest specification at the time of publication. If modification has been made since then, difference may exist between the content of this manual and the actual vehicle.
- ❖ Illustrations in this manual are used to show the basic principles of operation and work procedures. They may not represent the actual vehicle exactly in detail.

WARNING

This manual is intended for those who have enough knowledge and skills for servicing HYOSUNG vehicles. Without such knowledge and skills, you should not attempt servicing by relying on this manual only.

Instead, please contact your nearby authorized HYOSUNG motorcycle dealer.

GROUP INDEX

GENERAL INFORMATION

1

PERIODIC MAINTENANCE

2

ENGINE

3

FUEL SYSTEM

4

COOLING SYSTEM

5

ELECTRICAL SYSTEM

6

CHASSIS

7

SERVICING INFORMATION

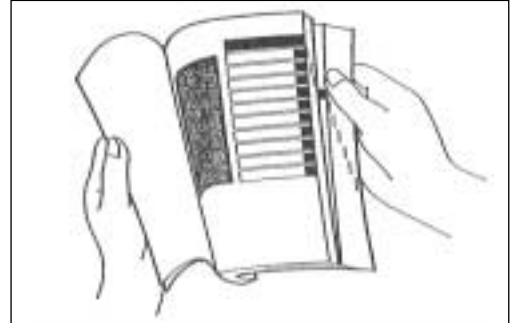
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 **HYOSUNG MOTORS & MACHINERY INC.**

HOW TO USE THIS MANUAL

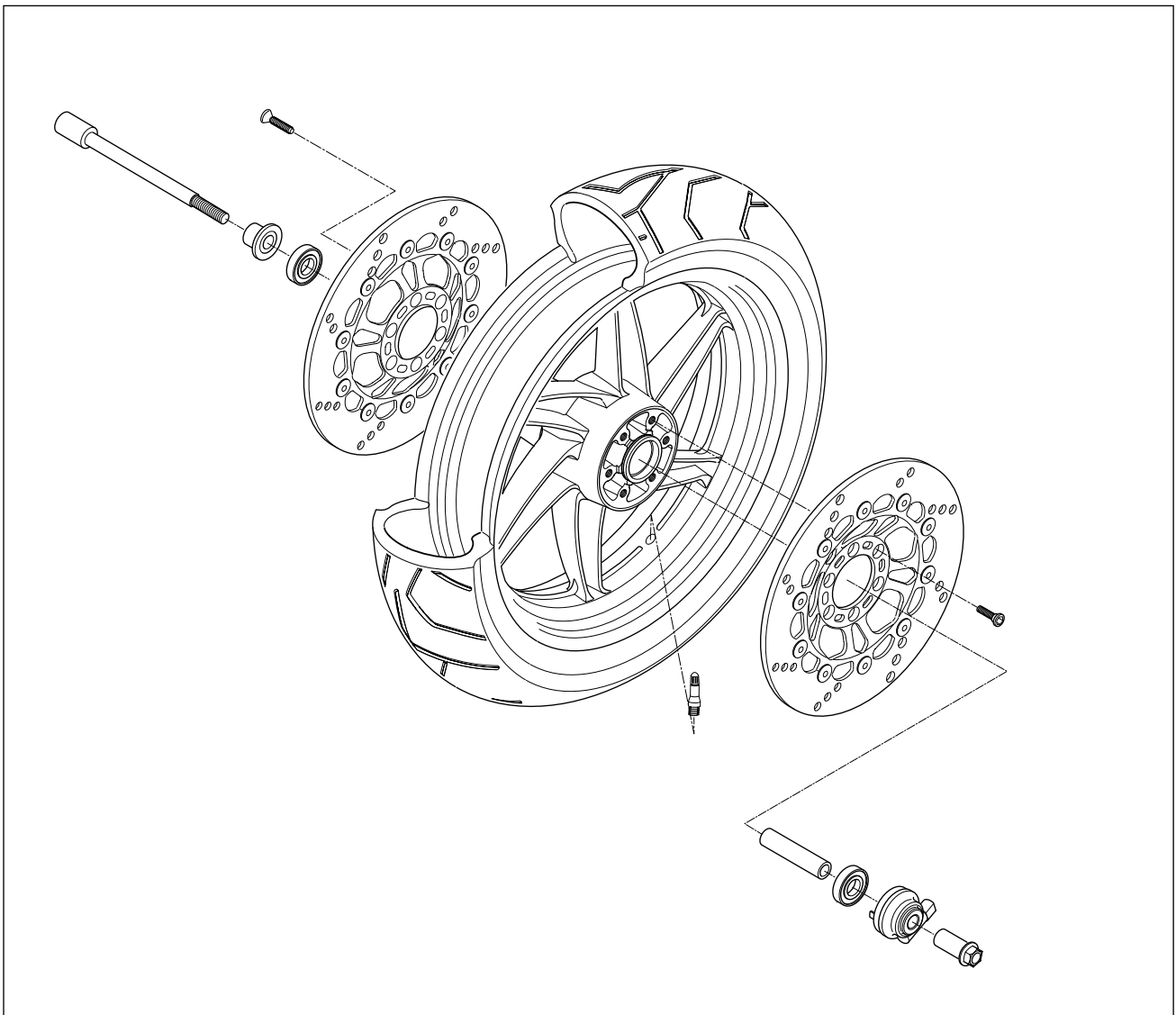
TO LOCATE WHAT YOU ARE LOOKING FOR:

1. The text of this manual is divided into sections.
2. As the title of these sections are listed on the previous page as GROUP INDEX, select the section where you are looking for.
3. Holding the manual as shown at the right will allow you to find the first page of the section easily.
4. On the first page of each section, its contents are listed. Find the item and page you need.


















COMPONENT PARTS

Example: Front wheel



SYMBOL

Listed in the table below are the symbols indicating instructions and other information necessary for servicing and meaning associated with them respectively.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK "1324".
	Apply oil. Use engine oil unless otherwise specified.		Apply or use brake fluid.
	Apply SUPER GREASE "A".		Measure in voltage range.
	Apply SUPER GREASE "C".		Measure in resistance range.
	Apply SILICONE GREASE.		Measure in current range.
	Apply MOLY PASTE.		Use special tool.
	Apply BOND "1215".		Use engine coolant.
	Use fork oil.		



NOTE

Difference between photographs and actual motorcycles depends on the markets.

GENERAL INFORMATION

1

CONTENTS

INFORMATION LABELS	1-1
GENERAL PRECAUTIONS	1-1
SERIAL NUMBER LOCATION	1-3
FUEL, OIL AND ENGINE COOLANT RECOMMENDATIONS	1-4
BREAK-IN PROCEDURES	1-6
CYLINDER CLASSIFICATION	1-6
EXTERIOR ILLUSTRATION	1-7
SPECIFICATIONS	1-8

1-1 GENERAL INFORMATION

WARNING / CAUTION / NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol and the words WARNING, CAUTION and NOTE have special meanings. Pay special attention to the messages highlighted by these signal words.

WARNING

Indicates a potential hazard that could result in death or injury.

CAUTION

Indicates a potential hazard that could result in vehicle damage.

NOTE

Indicates special information to make maintenance easier or instructions clearer.

Please note, however, that the warning and cautions contained in this manual cannot possibly cover all potential hazards relating to the servicing, or lack of servicing, of the motorcycle. In addition to the WARNING and CAUTION stated, you must use good judgement and basic mechanical safety principles. If you are unsure about how to perform a particular service operation, ask a more experienced mechanic for advice.

GENERAL PRECAUTIONS

WARNING

- ❖ Proper service and repair procedures are important for the safety of the service machanic and the safety and reliability of the vehicle.
- ❖ When 2 or more persons work together, pay attention to the safety of each other.
- ❖ When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.
- ❖ When working with toxic or flammable materials, make sure that the area you work in is well-ventilated and that you follow all off the material manufacturer' s instructions.
- ❖ Never use gasoline as a cleaning solvent.
- ❖ To avoid getting burned, do not touch the engine, engine oil or exhaust system during or for a while after engine operation.
- ❖ After servicing fuel, oil, exhaust or brake systems, check all lines and fittings related to the system for leaks.

 **WARNING**

- ❖ If parts replacement is necessary, replace the parts with HYOSUNG Genuine Parts or their equivalent.
- ❖ When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order and orientation.
- ❖ Be sure to use special tools when instructed.
- ❖ Make sure that all parts used in reassembly are clean, and also lubricated when specified.
- ❖ When use of a certain type of lubricant, bond, or sealant is specified, be sure to use the specified type.
- ❖ When removing the battery, disconnect the negative cable first and then positive cable. When reconnecting the battery, connect the positive cable first and then negative cable, and replace the terminal cover on the positive terminal.
- ❖ When performing service to electrical parts, if the service procedures do not require use of battery power, disconnect the negative cable at the battery.
- ❖ Tighten cylinder head and case bolts and nuts, beginning with larger diameter and ending with smaller diameter, from inside to outside diagonally, to the specified tightening torque.
- ❖ Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, cotter pins, circlips, and certain other parts as specified, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surfaces.
- ❖ Never reuse a circlip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.
- ❖ Do not use self-locking nuts a few times over.
- ❖ Use a torque wrench to tighten fasteners to the torque values when specified. Wipe off grease or oil if a thread is smeared with them.
- ❖ After reassembly, check parts for tightness and operation.

 **WARNING**

- ❖ To protect environment, do not unlawfully dispose of used motor oil and other fluids: batteries, and tires.
- ❖ To protect Earth's natural resources, properly dispose of used vehicles and parts.

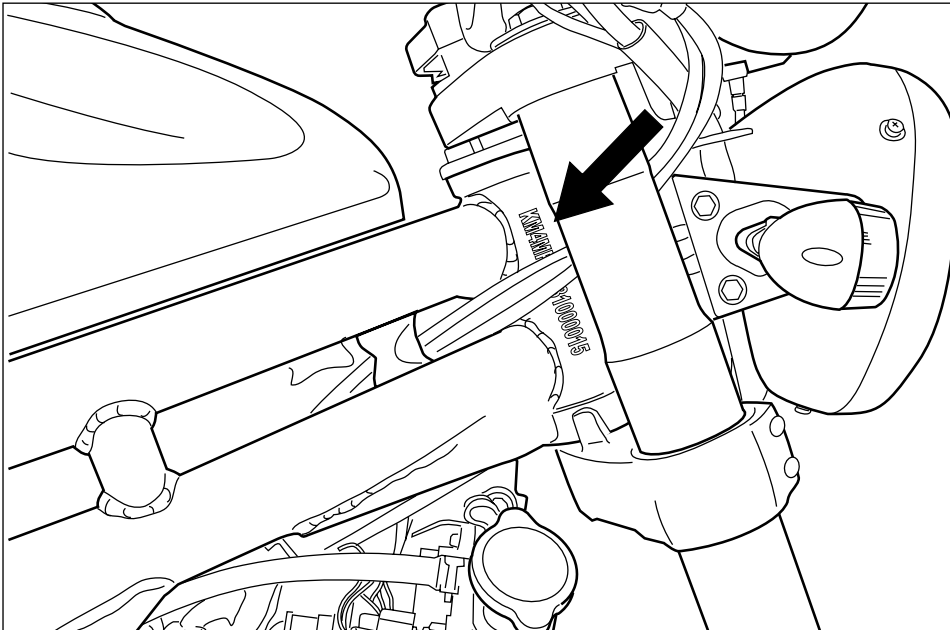
1-3 GENERAL INFORMATION

SERIAL NUMBER LOCATION

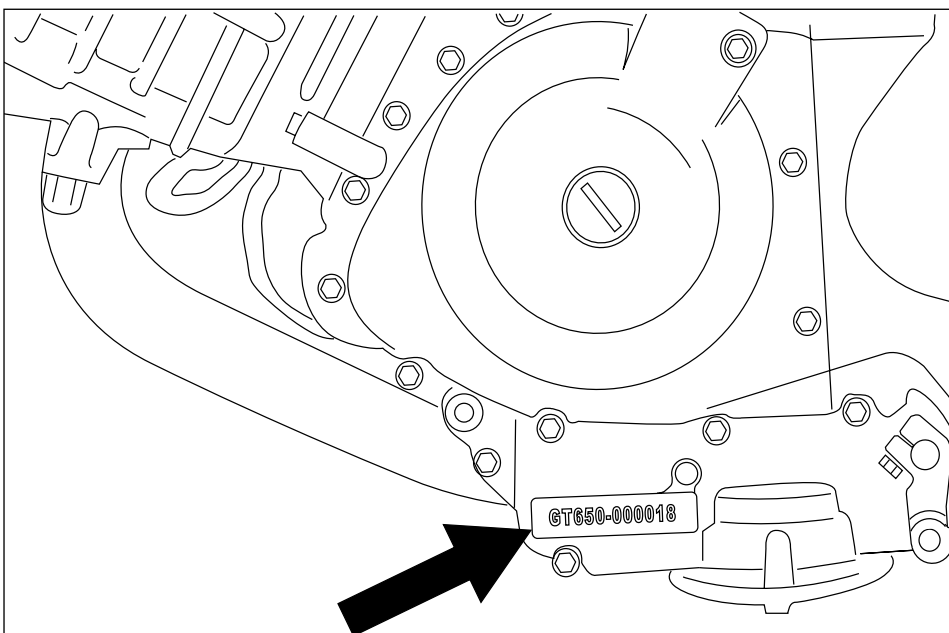
The frame serial number or V.I.N. (Vehicle Identification Number) is stamped on the steering head tube. The engine serial number is located on the left down of crankcase assembly.

These numbers are required especially for registering the machine and ordering spare parts.

⦿ FRAME SERIAL NUMBER



⦿ ENGINE SERIAL NUMBER



FUEL, OIL AND ENGINE COOLANT RECOMMENDATIONS

⦿ FUEL

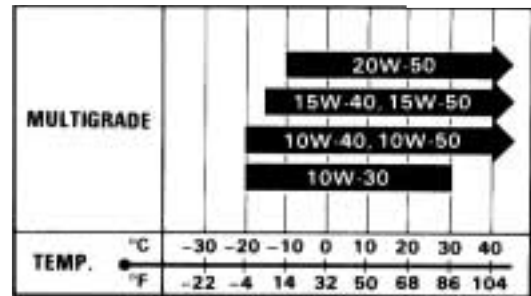
Gasoline used should be graded 91 octane (Research Method) or higher. An unleaded gasoline type is recommended.

⦿ ENGINE OIL

■ ENGINE OIL SPECIFICATION

Classification system	Grade
API	Over SG
SAE	10W/40

* *If an SAE 10W/40 motor oil is not available, select an alternative according to the following chart.*



Use a premium quality 4-stroke motor oil to ensure longer service life of your motorcycle.

⚠ WARNING

- ❖ Don't mix the unrecommended oil. It could damage the engine.
- ❖ When refilling the oil tank, don't allow the dust to get inside.
- ❖ Mop the oil spilt.
- ❖ Don't put the patch on the cap. It could disturb the oil to be provided and damage the engine.

⦿ BRAKE FLUID

Specification and classification (Front brake) : DOT4
(Rear brake) : DOT4

⚠ WARNING

Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.

Do not use any brake fluid taken from old or used or unsealed containers.

Never re-use brake fluid left over from a previous servicing, which has been stored for a long period.

⦿ FRONT FORK OIL

Use fork oil : TELLUS #32

1-5 GENERAL INFORMATION

⦿ ENGINE COOLANT

Use an anti-freeze/engine coolant compatible with an aluminum radiator, mixed with distilled water only.

■ WATER FOR MIXING

Use distilled water only. Water other than distilled water can corrode and clog the aluminum radiator.

■ ANTI-FREEZE/ENGINE COOLANT

The engine coolant perform as a corrosion and rust inhibitor as well as anti-freeze. Therefore, the engine coolant should be used at all times even though the atmospheric temperature in your area does not go down to freezing point. Hyosung recommends the use of HYOSUNG COOLANT anti-freeze/engine coolant. If this is not available, use an equivalent which is compatible with an aluminum radiator.

■ LIQUID AMOUNT OF WATER/ENGINE COOLANT

For engine coolant mixture information, refer to cooling system section, page 5-1

CAUTION

Mixing of anti-freeze/engine coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze/engine coolant mixing ratio is below 50%, rust inhabiting performance is greatly reduced. Be sure to mix it above 50% even though the atmospheric temperature does not go down to the freezing point.

BREAK-IN PROCEDURES

During manufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to “BREAK-IN” before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. The general rules are as follows:

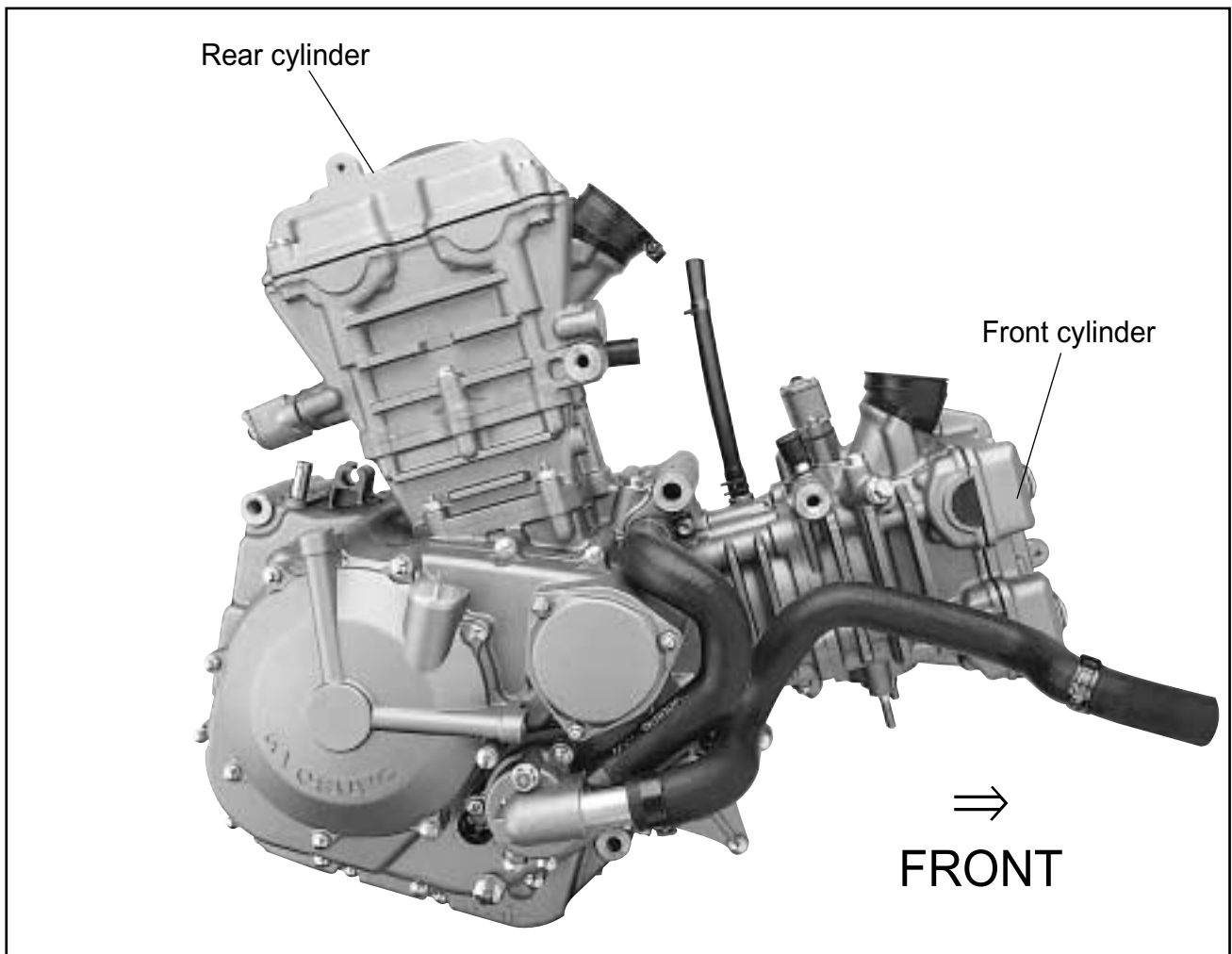
- Keep to these break-in procedures:

Initial 800km	Less than 1/2 throttle
Up to 1,600km	Less than 3/4 throttle

- Upon reaching an odometer reading of 1,600 km you can subject the motorcycle to full throttle operation.
- Do not maintain constant engine speed for an extended period during any portion of the break-in. Try to vary the throttle position.

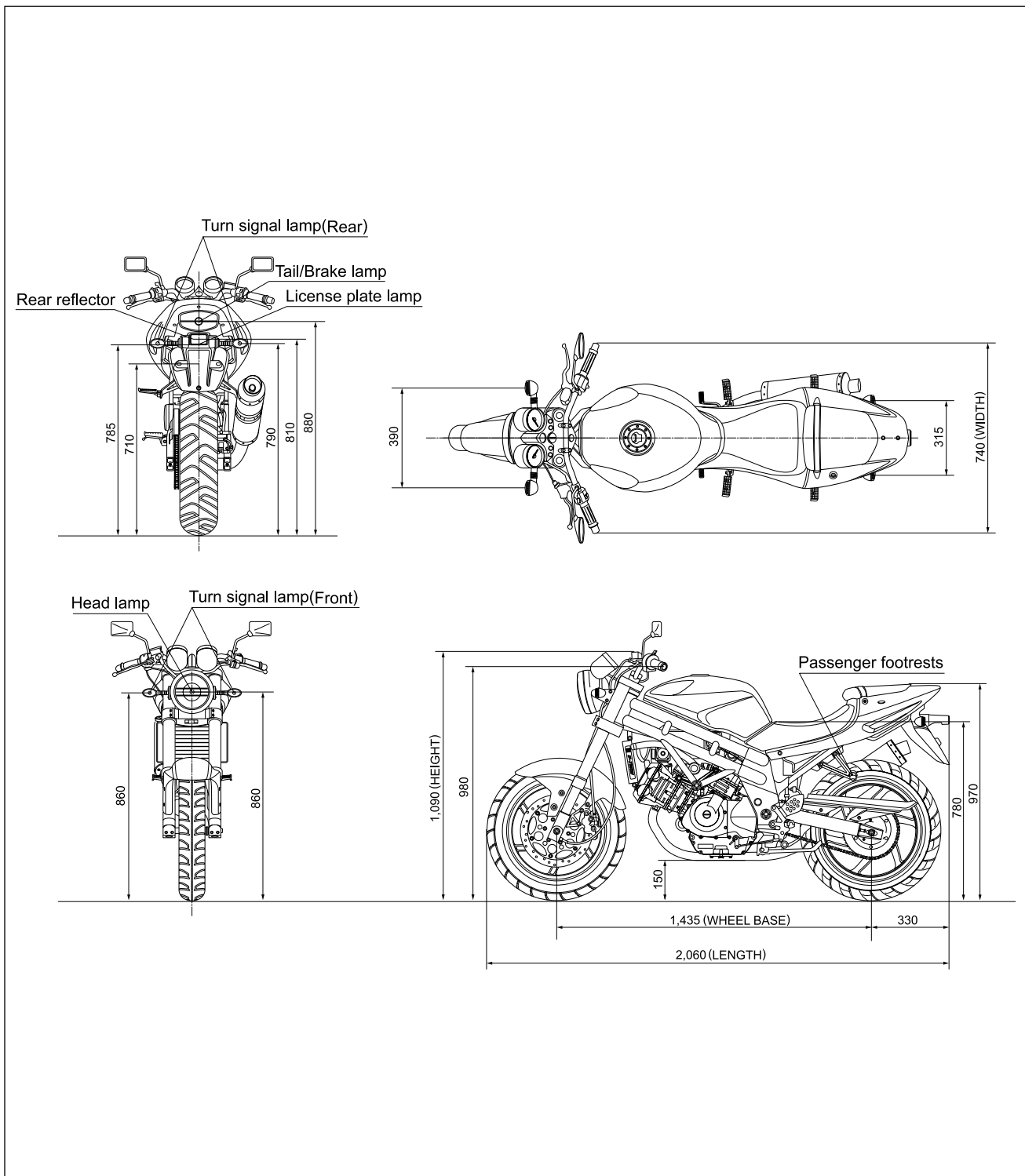
CYLINDER CLASSIFICATION

The engine of 『Comet 650』 is composed of the two cylinder, is classified into the front cylinder and rear cylinder as basis of the motorcycle ahead.



1-7 GENERAL INFORMATION

EXTERIOR ILLUSTRATION



SPECIFICATIONS

DIMENSIONS AND DRY MASS

ITEM	<i>Comet 650</i>
Overall length	2,060 mm (81.1 in)
Overall width	740 mm (29.1 in)
Overall height	1,090 mm (42.9 in)
Wheelbase	1,435 mm (56.5 in)
Ground clearance	150 mm (5.9 in)
Unladen mass	185 kg (408 lbs)

ENGINE

ITEM	<i>Comet 650</i>
Type	Four-stroke, DOHC, Liquid-cooled
Number of cylinder	V-2 cylinder
Bore	81.5 mm (3.21 in)
Stroke	62.0 mm (2.44 in)
Piston displacement	647 cm^3 (39.5 in^3)
Carburetor	BDSR39 TYPE (DOUBLE)
Starter system	Electric starter
Lubrication system	Wet sump

TRANSMISSION

ITEM	<i>Comet 650</i>
Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down, 5-up
Final reduction	2.93
Gear ratio, 1st	2.46
2nd	1.60
3rd	1.32
4th	1.13
5th	0.96
6th	0.85
Drive chain	RK525XSO 108 links

1-9 GENERAL INFORMATION

CHASSIS

ITEM	<i>Comet 650</i>
Front suspension	Telescopic type
Rear suspension	Swingarm type
Steering angle	30 ° (right & left)
Caster	25.5 °
Trail	85 mm (3.35 in)
Front brake	Double disk brake
Rear brake	Disk brake
Front tire size	120/60 - ZR 17 55W
Rear tire size	160/60 - ZR 17 69W
Front fork stroke	120 mm (4.72 in)

ELECTRICAL

ITEM	<i>Comet 650</i>
Ignition type	"Igniter" type
Ignition timing	5 ° B.T.D.C.at 1,500 rpm
Spark plug	CR8E
Battery	12V 12Ah
Fuse	Main : 30 A
	Head lamp : 15 A
Head lamp	HI : 60 W
	LO : 55 W
Turn signal lamp	10 W
Brake / Tail lamp	21 / 5 W
Illumination lamp	1.7 W×3
High beam indicator lamp	1.7 W
Turn signal indicator lamp(right & left)	1.7 W×2
License plate lamp	5 W
Neutral indicator lamp	1.7 W
Fuel indicator lamp	1/2 : 1.7W E : 1.7W

CAPACITIES

ITEM	<i>Comet 650</i>
Fuel tank	17.0 ℓ
Engine oil, oil change	3,000 mℓ
with filter change	3,200 mℓ
overhaul	3,400 mℓ
Front fork oil capacity(One side)	380 cc

NOTE

The specifications are subject to change without notice.