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HYOSUNG

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HYOSUNG MOTORS & MACHINERY INC.

WOW 90

SERVICE MANUAL

99000-94310

SERVICE MANUAL

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FOREWORD

This manual contains an introductory description on HYOSUNG『 wow90 』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.
- *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

HYOSUNG MOTORS & MACHINERY INC.
Overseas Technical Department

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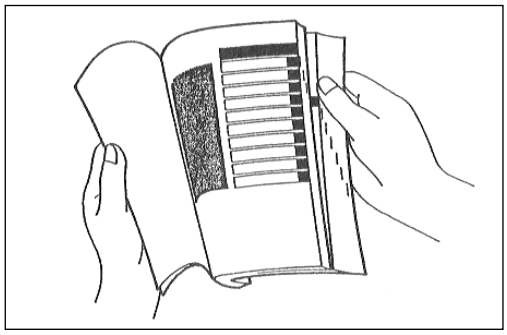
HOW TO USE THIS MANUAL



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.

SYMBOL

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

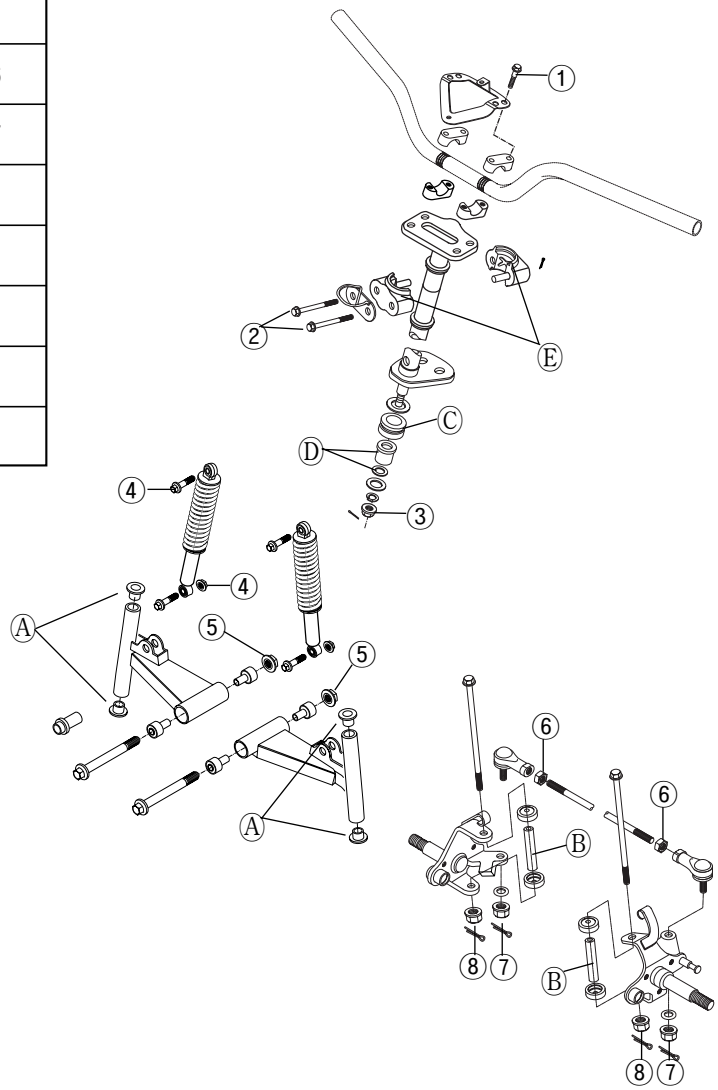
SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.	1324	Apply THREAD LOCK "1324".
OIL	Apply oil. Use engine oil unless otherwise specified.	BF	Apply or use brake fluid.
A	Apply SUPER GREASE "A".	V	Measure in voltage range.
C	Apply SUPER GREASE "C".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

COMPONENT PARTS AND WORK TO BE DONE

Under the name of each system or unit, its exploded view is provided with work instruction and other service information such as the tightening torque, lubricating points and looking agent points.

Example : STEERING AND FRONT SUSPENSION

TIGHTENING TORQUE		
ITEM	N · m	kg · m
①	18 ~ 28	1.8 ~ 2.8
②	18.4 ~ 28.6	1.84 ~ 2.86
③	22.4 ~ 35.7	2.24 ~ 3.57
④	40 ~ 50	4.0 ~ 5.0
⑤	80 ~ 100	8.0 ~ 10.0
⑥	22 ~ 35	2.2 ~ 3.5
⑦	22 ~ 35	2.2 ~ 3.5
⑧	40 ~ 60	4.0 ~ 6.0



Ⓐ : ASSEMBLING APPLY GREASE
Ⓑ : ASSEMBLING APPLY GREASE
Ⓒ : APPLY GREASE TO LIPS
Ⓓ : APPLY GREASE
Ⓔ : ASSEMBLING APPLY GREASE

GENERAL INFORMATION

1

CONTENTS

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 cleaner.

Please note, however, that the **WARNING** and **CAUTION** 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.**

⚠ CAUTION

- ❖ 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, diconnect 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.

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

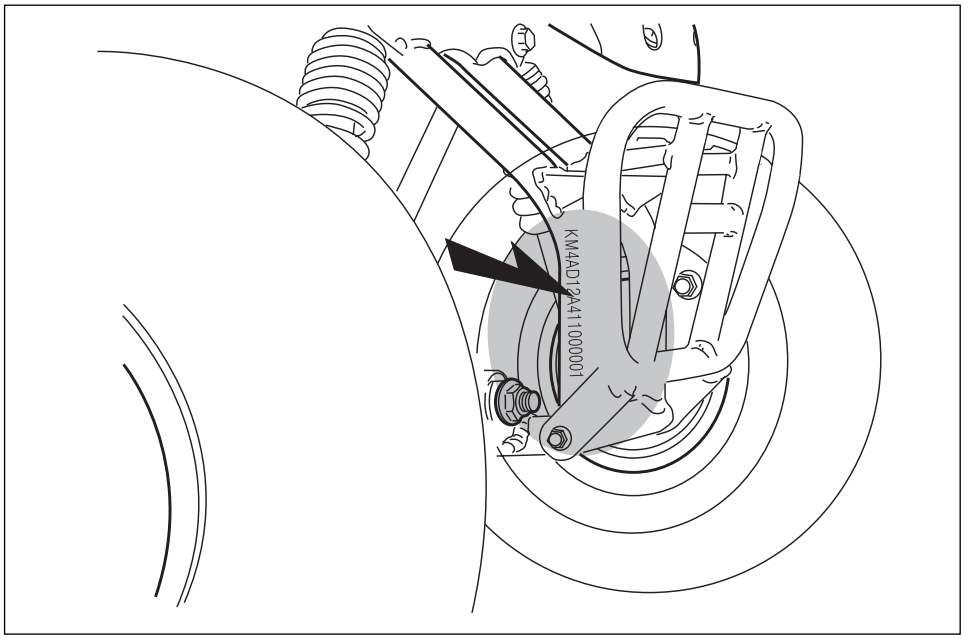
HYOSUNG *wow90*

NOTE :
Difference between photographs and actual vehicles depends on the markets.

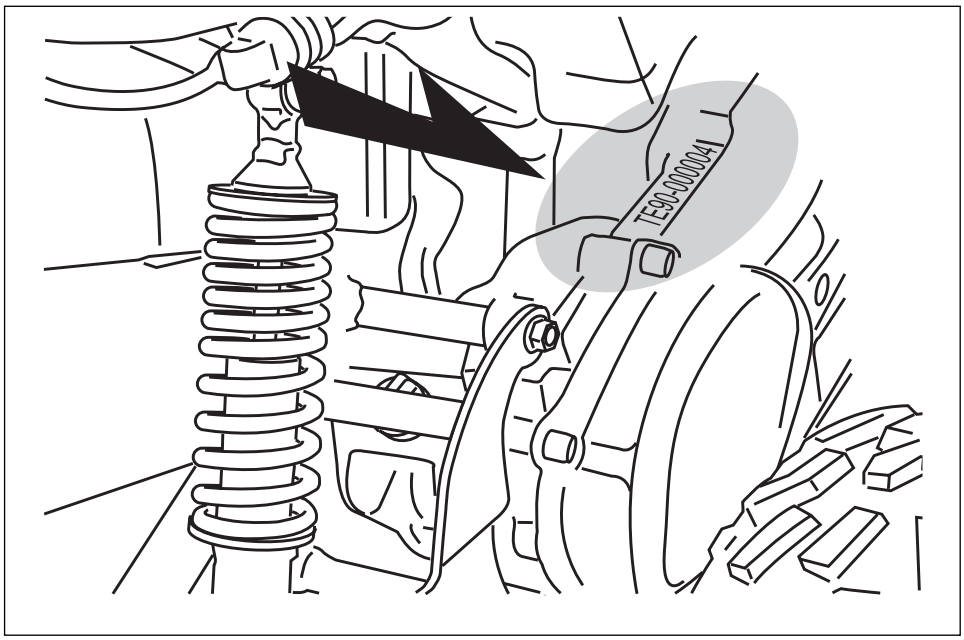
SERIAL NUMBER LOCATION

The frame serial number or V.I.N. (Vehicle Identification Number) is stamped on the front frame member. The engine serial number is stamped on the right side of crankcase assembly.
These numbers are required especially for registering the machine and ordering spare parts.

⊙ FRAME SERIAL NUMBER



⊙ ENGINE SERIAL NUMBER



FUEL AND OIL RECOMMENDATIONS

⊙ FUEL

Gasoline used should be graded 85~95 octane or higher. An unleaded type gasoline is recommended. If engine pinging is experienced, substitute another brand as there are differences between brands.

⊙ ENGINE OIL

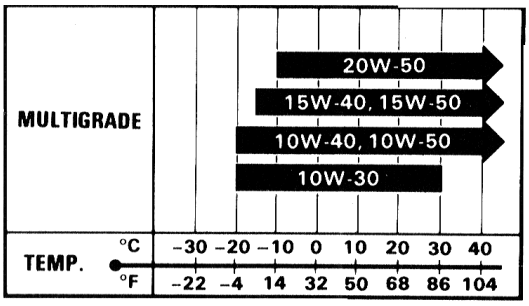
Use **HYOSUNG HYPOL OIL HS.**
If they are not available, use a good quality TWO-STROKE engine oil.

⊙ TRANSMISSION OIL

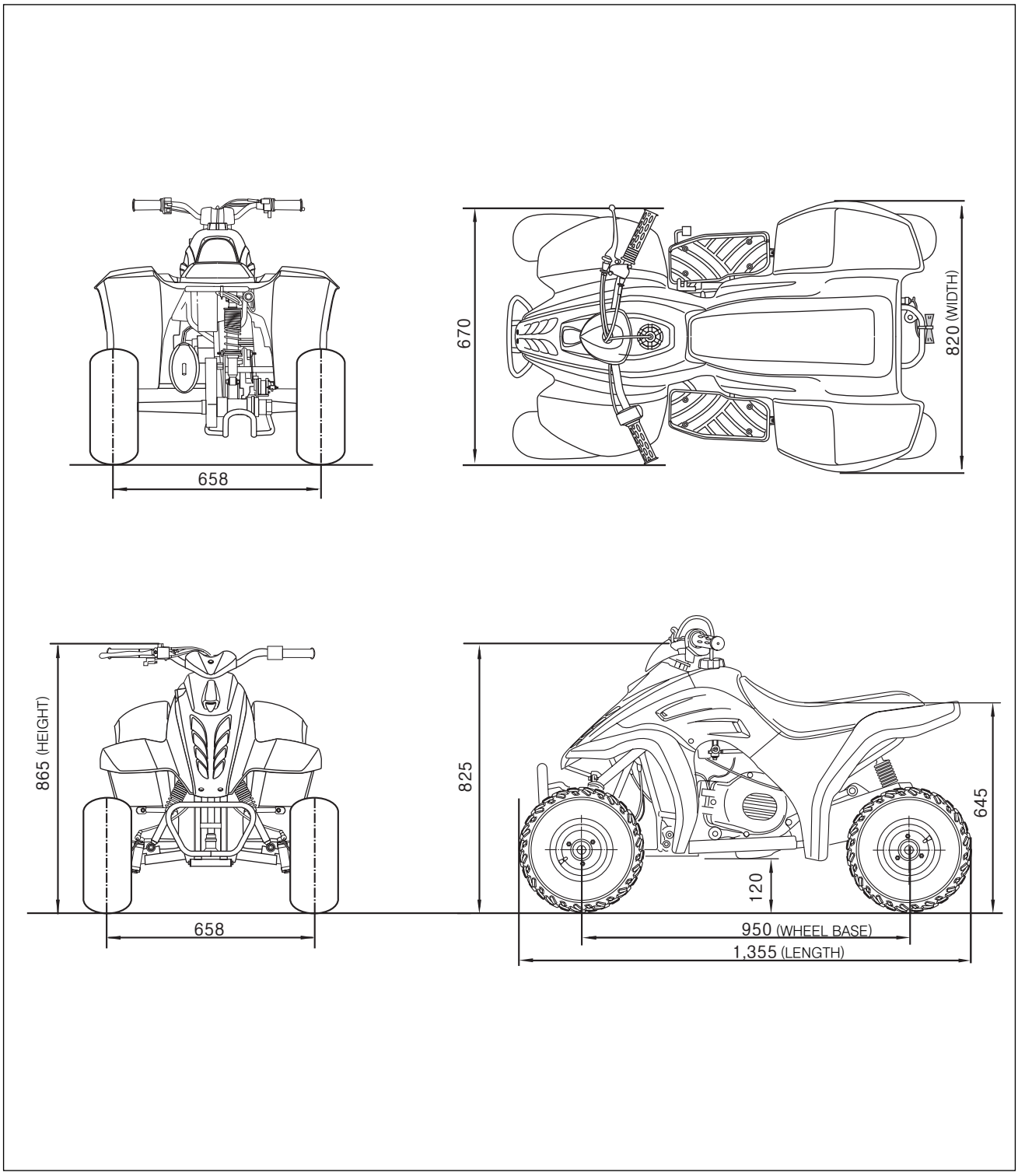
Use a good quality SAE 10W/30 or 10W/40 multigrade motor oil.

Classification system	Grade
API	SF or SG
SAE	10W/30 or 10W/40

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



EXTERIOR ILLUSTRATION



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	1,355 mm (53.4 in)
Overall width	820 mm (32.3 in)
Overall height	865 mm (34.1 in)
Wheelbase	950 mm (37.4 in)
Ground clearance	120 mm (4.7 in)
Front track	658 mm (25.9 in)
Rear track	658 mm (25.9 in)
Mass	95 kg (209.5 lbs)

ENGINE

Type	Two-stroke, forced air cooled
Intake system	Reed valve
Number of cylinder	1
Bore x Stroke	52.5 mm (2.07 in) × 41.4 mm (1.63 in)
Piston displacement	89 ㎤ (5.43 in^3)
Corrected compression ratio	6.6 : 1
Carburetor	PB11M
Air cleaner	Polyurethane foam element

TRANSMISSION

Clutch	Dry shoe, automatic, centrifugal type
Transmission	2.842 ~ 1.042
Drive system	428H 56 links

CHASSIS

Steering angle	37.5° (right & left)
Trail	15 mm (0.591 in)
Turning radius	2,595 mm (102.17 in)
Toe-in	8 mm (0.315 in)
Camber angle	1°
Caster angle	5°
Front brake	Drum
Rear brake	Disk
Front tire size	18 × 7.00 - 7
Rear tire size	18 × 7.00 - 7

ELECTRICAL

Ignition type	"CDI" Type
Ignition timing	8° B.T.D.C at 1,000 rpm and 20° B.T.D.C at 4,000rpm
Spark plug	BPR7HS

CAPACITIES

Fuel tank	4 ℓ
Engine oil tank	1 ℓ
Transmission oil	80 ㎖ (Replace) 90 ㎖ (Overhaul)

NOTE :

These specifications are subject to change without notice.

PERIODIC MAINTENANCE

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the vehicle operating at peak performance and economy.

⚠ CAUTION

More frequent servicing should be performed on vehicles that are used under severe conditions.

PERIODIC MAINTENANCE CHART

⊙ ENGINE

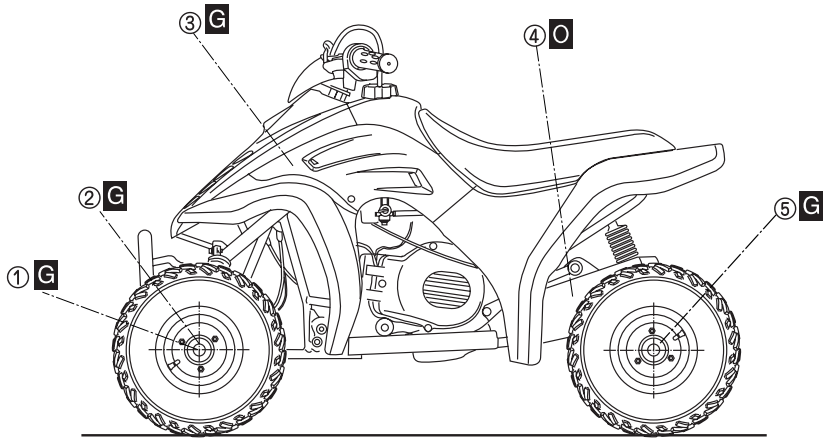
Item \ Interval	Initial 1 month	Every 3 months	Every 6 months	page
Air cleaner element	Clean at least every month			2 - 3
Cylinder head nuts	Tighten	Tighten	—	2 - 4
Cylinder head and cylinder	—	—	Remove carbon	2 - 4
Carburetor	Inspect	—	Inspect	2 - 6
Spark plug	Clean	Clean	Replace	2 - 5
Fuel line	Inspect	Inspect	—	2 - 6
	Replace every 4 years			
Transmission oil	Inspect	—	Inspect	2 - 7
Drive chain	Inspect and lubricate every month			2 - 10
Sprockets	Inspect	Inspect	—	6 - 17

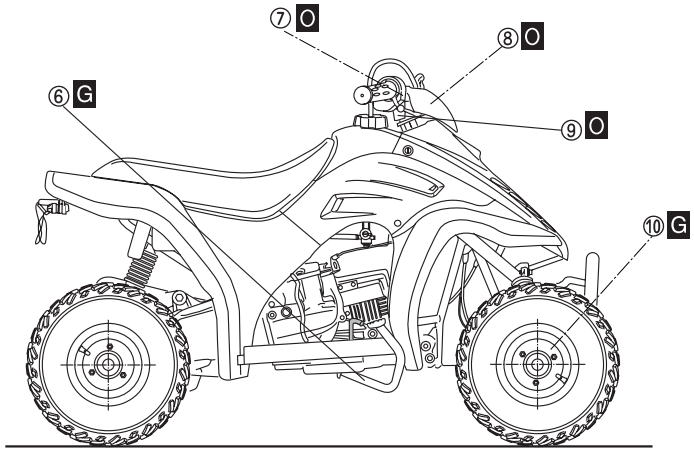
⊙ CHASSIS

Item \ Interval	Initial 1 month	Every 3 months	Every 6 months	page
Brakes	Inspect	Inspect	—	2 - 7
Steering	Inspect	Inspect	—	2 - 12
Tire	Inspect every month · Check pressure each time ride.			2 - 11
Chassis bolts and nuts	Tighten	Tighten	—	2 - 12
General lubrication	—	Lubricate	—	2 - 2

LUBRICATION POINTS

Proper lubrication is important for smooth operation and long life of each working part of the vehicle.
Major lubrication points are indicated below.





① King pin
② Front wheel bearing
③ Steering shaft holder
④ Drive chain
⑤ Rear axle housing
⑥ Rear brake cable
⑦ Front brake cable
⑧ Throttle cable
⑨ Throttle lever
⑩ Front brake cam shaft

O - Motor oil, G - Grease

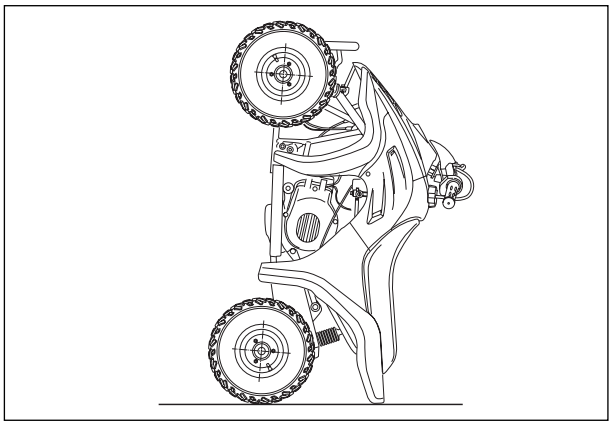
NOTE :

- ***Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.***
- ***Lubricate exposed parts which are subject to rust, with either motor oil or grease whenever the vehicle has been operated under wet or rainy condition.***

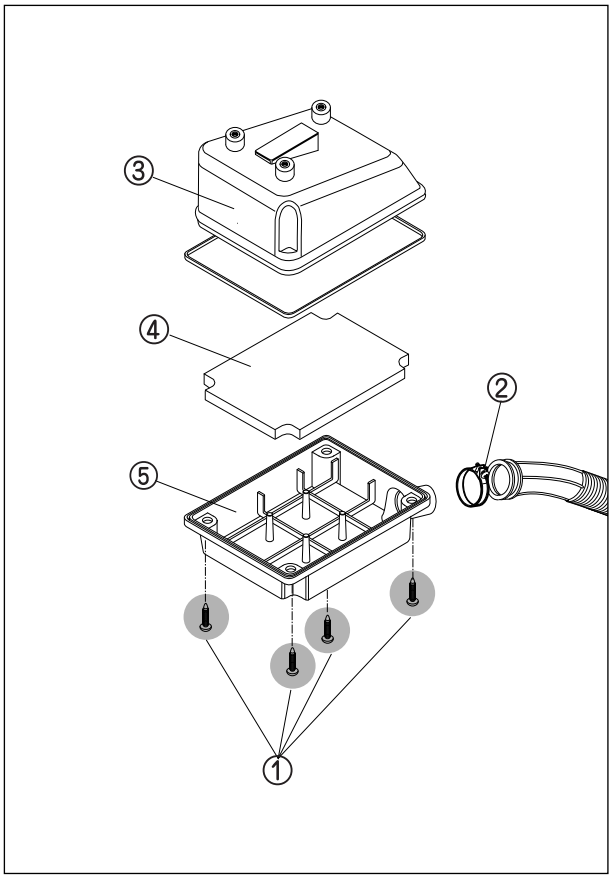
MAINTENANCE PROCEDURES

AIR CLEANER

NOTE :
Clean at least Every month.



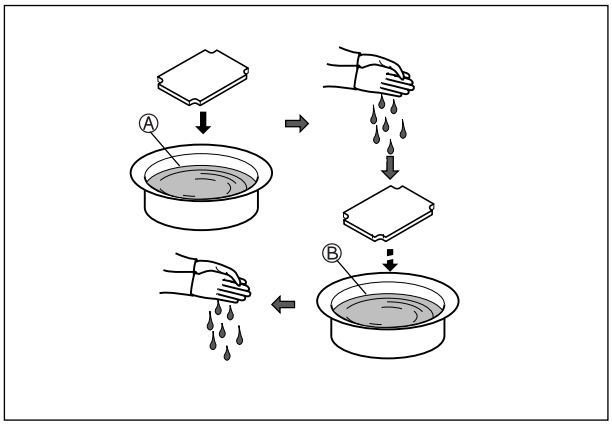
If the air cleaner is clogged with dust, intake resistance will increased with a resultant decrease in output and an increase in fuel consumption.
Check and clean the element in the following manner.



- Stand the vehicle in the standing position.
- Remove the four bolts ①.
- Remove the clamp screw ②.
- Remove the air cleaner case ⑤.
- Remove the element ④ from the cap ③.
- Fill a washing pan of a proper size with nonflammable cleaning solvent. Immerse the element in the cleaning solvent and wash it clean.
- Squeeze the cleaning solvent out of the washed element by pressing it between the palms of both hands : do not twist or wring the element or it will develop tears.
- Immerse the element in HYOSUNG genuine oil and squeeze the oil out of the element leaving it slightly wet with oil.
- Fit the cleaner element to frame properly.

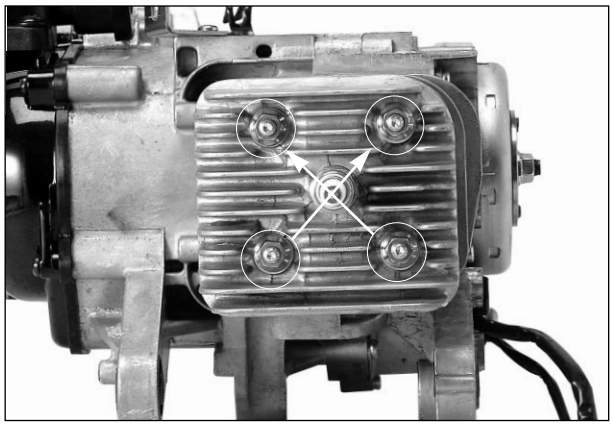
⚠ CAUTION

❖Before and during the cleaning operation, inspect the element for tears. A torn element must be replaced.
❖ Be sure to position the element snugly and correctly, so that no incoming air will bypass it. Remember, rapid wear of piston rings and cylinder bore is often caused by a defective or poorly fitted element.



Ⓐ Non-flammable cleaning solvent
Ⓑ 2-stroke engine oil.

CYLINDER HEAD NUTS

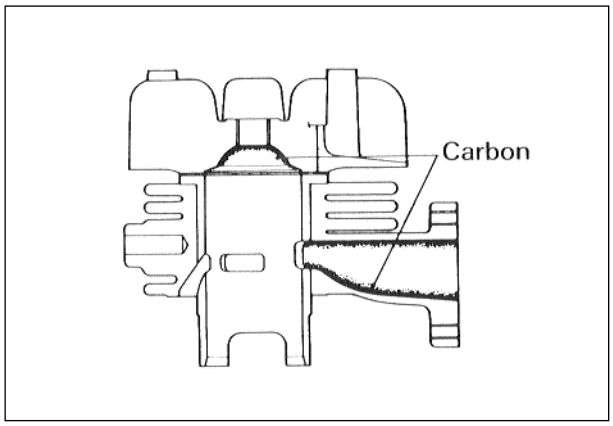


NOTE :
Tighten Initial 1 month and Every 3 months.

Cylinder head nuts, when they are not tightened to the specified torque, may result in leakage of the compressed mixture and reduce output.
First loosen the nuts and tighten the 4 nuts evenly one by one in stages until each one is tightened to the specified torque. Tighten the nuts in the order indicated.

Cylinder head nut : 18~28 N · m (1.8~2.8 kg · m)

CYLINDER HEAD AND CYLINDER



NOTE :
Remove carbon Every 6 months.

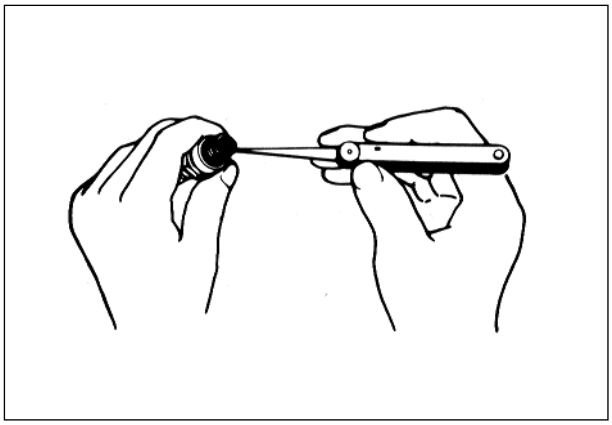
Carbon deposits in the combustion chamber and the cylinder head will raise the compression ratio and may cause pre-ignition or overheating. Carbon deposited at the exhaust port of the cylinder will prevent the flow of exhaust gases, reducing the output. Remove carbon deposits periodically.

SPARK PLUG

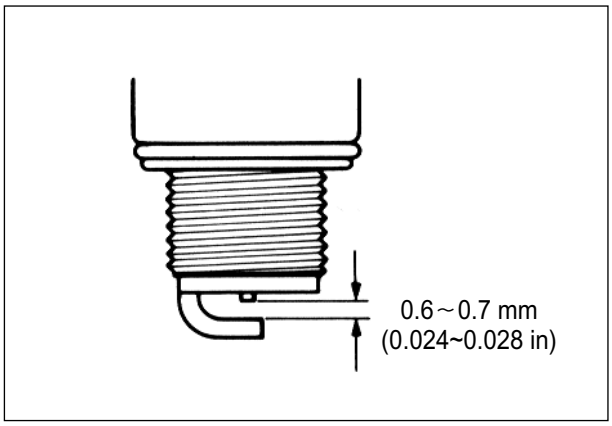
NOTE :
Inspect Initial 1 month and Every 3 months,
Replace Every 6 months.

Neglecting the spark plug maintenance eventually leads to difficult starting and poor performance. If the spark plug is used for a long period, the electrode gradually burns away and carbon builds up along the inside part. In accordance with the Periodic Inspection Chart, the plug should be removed for inspection, cleaning and resetting the gap.

- Carbon deposits on the spark plug will prevent good sparking and cause misfiring. Clean the deposits off periodically.
- If the center electrode is fairly worn down, the plug should be replaced and the plug gap set to the specified gap using a thickness gauge.



Spark plug gap	0.6～0.7 mm (0.024~0.028 in)



TOOL **Thickness gauge : 09900-20804**

- Check spark plug for burnt condition. If abnormal, replace the plug as indicated below.

TYPE	SPARK PLUG SPECIFICATION
Hot type	BPR6HS
Standard type	BPR7HS
Cold type	BPR8HS

Spark plug : 25~30 N · m (2.5~3.0 kg · m)

⚠ CAUTION

- **To check the spark plug, first make sure that the fuel used is unleaded gasoline, and if plug is either sooty with carbon or burnt white, replace it.**
- **Confirm the thread size and reach when replacing the plug.**

CARBURETOR

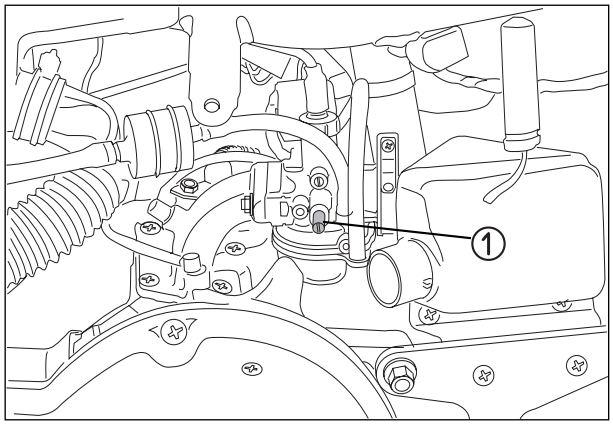
NOTE :
Inspect Initial 1 month and Every 6 months.

⊙ **IDLE SPEED**
- Adjust the throttle cable play.
- Warm the engine up.

NOTE :
A warm engine means an engine has been run for 10 minutes.

- Remove the seat and cover.
- Adjust the throttle stop screw ① to obtain the idle speed as follows.

Engine idle speed	1,800 ± 100 rpm

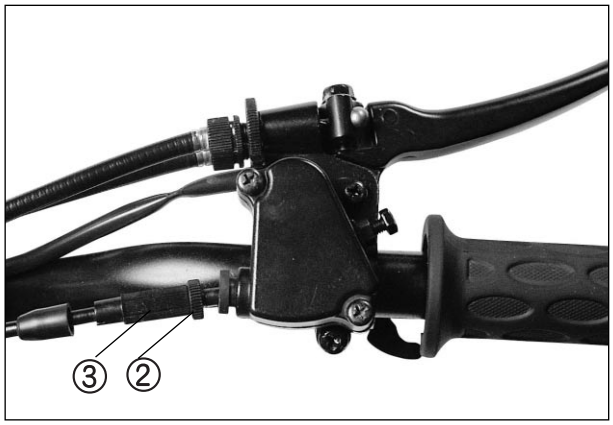


TOOL **Engine tachometer : 09900-26006**

- Finally adjust the throttle cable play.

⊙ **THROTTLE CABLE PLAY**
- Loosen the lock nut ② and adjust the cable slack by turning adjuster ③ in or out to obtain the following cable play.
  After adjusting play, tighten the lock nut.

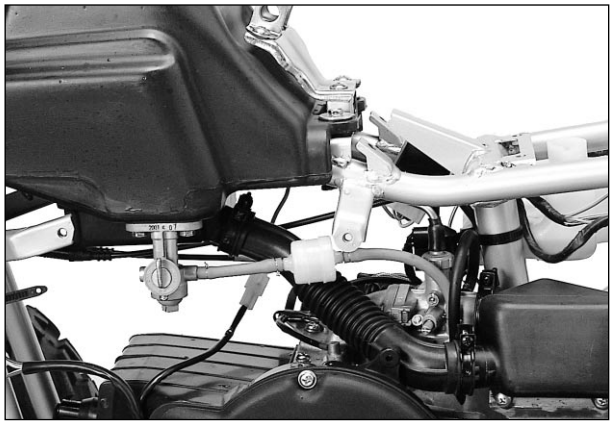
Throttle cable slack	0.5 ~ 1.0 mm (0.020 ~ 0.039 in)



FUEL LINE

NOTE :
Inspect Initial 1 month and Every 3 months,
Replace every 4 years.

Inspect leakage of the fuel line and connection part.
If abnormal, replace it.



TRANSMISSION OIL

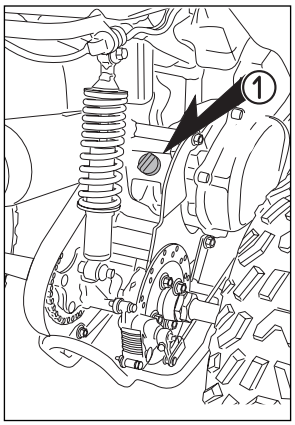
NOTE :
Inspect Initial 1 month and Every 6 months.

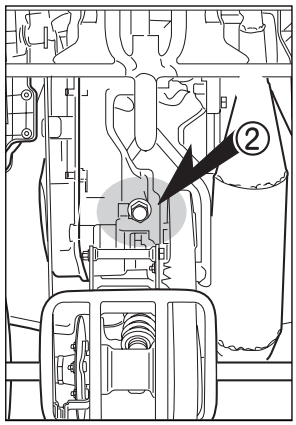
After a long period of use, the transmission oil qualities will deteriorate and quicken the wear of sliding and interlocking surfaces. Replace the transmission oil periodically following the procedure below.

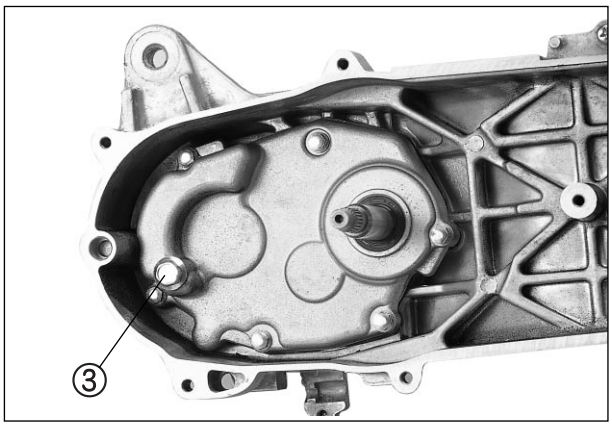
- Start the engine to warm up the oil, this will facilitate draining of oil.
- Unscrew the oil filler cap ① and drain plug ②, and drain the oil completely.
- Tighten the drain plug.
- Supply a good quality SAE 10W/30 or 10W/40 multigrade motor oil.

TRANSMISSION OIL CAPACITY	
Change	80 ㎖
Overhaul	90 ㎖

- Check the oil level with the oil level screw ③ .







BRAKES

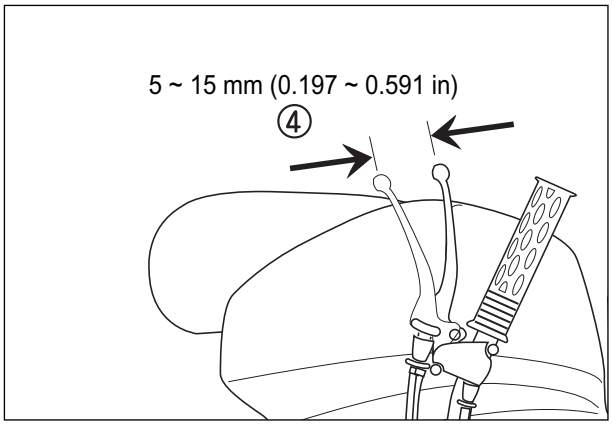
NOTE :
Inspect Initial 1 month and Every 3 months.

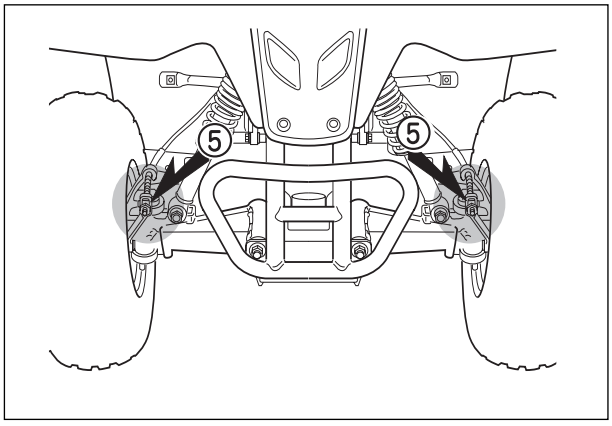
⊙ FRONT BRAKE

■ BRAKE ADJUSTMENT

Adjust the free play ④ to 5 ~ 15mm (0.197 ~ 0.591 in) by screwing in or out the front brake adjust nut ⑤.

Front brake lever play	5 ~ 15 mm (0.197 ~ 0.591 in)

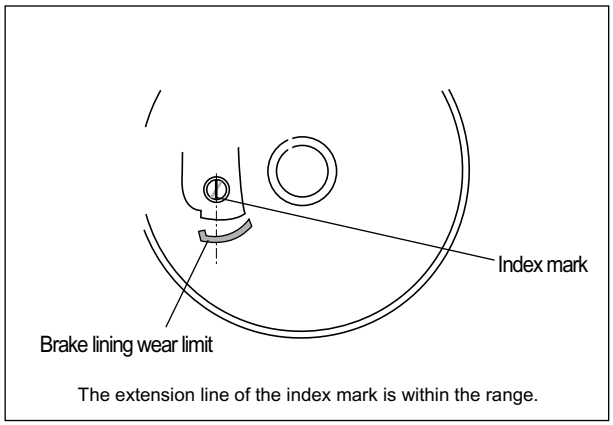




■ BRAKE LINING WEAR LIMIT

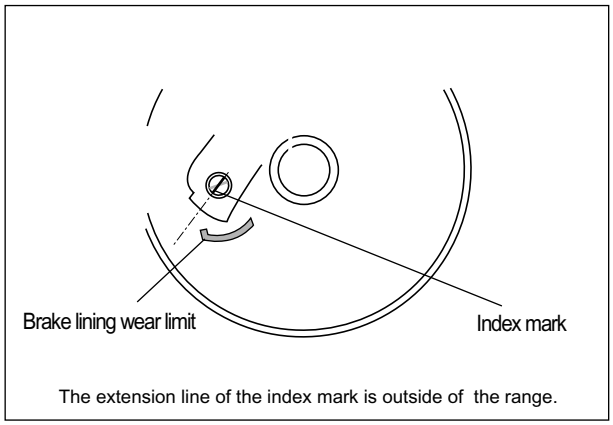
This vehicle is equipped with the brake lining wear limit indicator on the front brake. As shown in the illustration at right, at the condition of normal lining wear, an extended line from the index mark on the brake camshaft should be within the range embossed on the brake panel. To check wear of the brake lining, follow the steps below.

- First check if the brake system is properly adjusted.
- While operating the brake, check to see that the extension line from the index mark is within the range on the brake panel.



The extension line of the index mark is within the range.

- If the index mark is outside the range as shown in the illustration at right, the brake shoe assembly should be replaced to ensure safe operation.



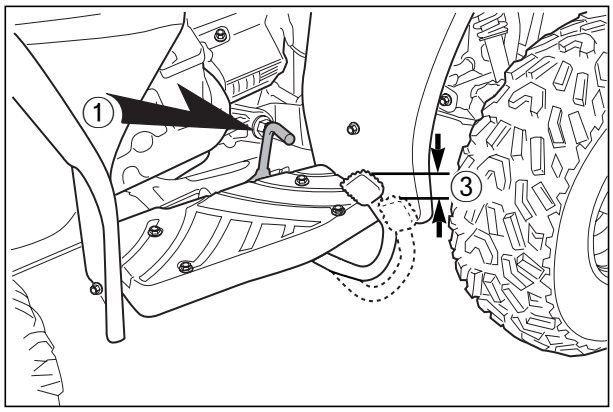
The extension line of the index mark is outside of the range.

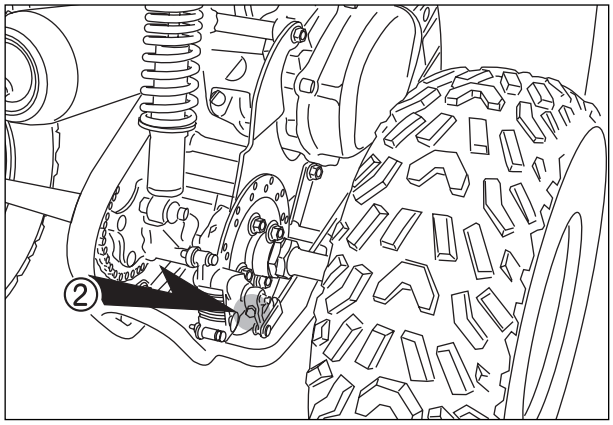
⊙ REAR BRAKE

■ BRAKE ADJUSTMENT

Set the parking brake by pulling the lock lever ①. Rock the vehicle by pushing to see if the brake is sufficiently holding the wheels locked. Adjust the brake, if necessary, by turning the adjuster ② in or out.

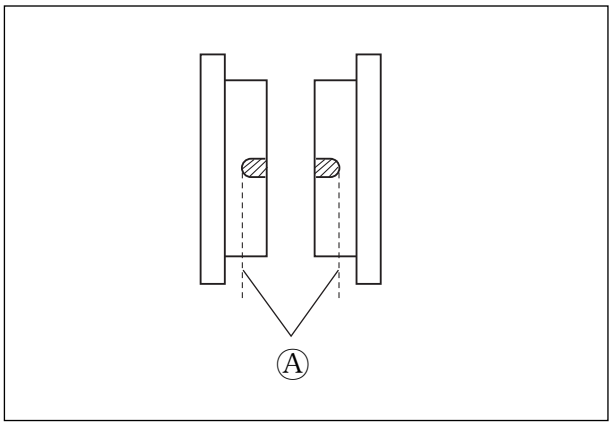
Rear brake pedal play ③	15 ~ 25 mm (0.591 ~ 0.984 in)





■ BRAKE PAD WEAR

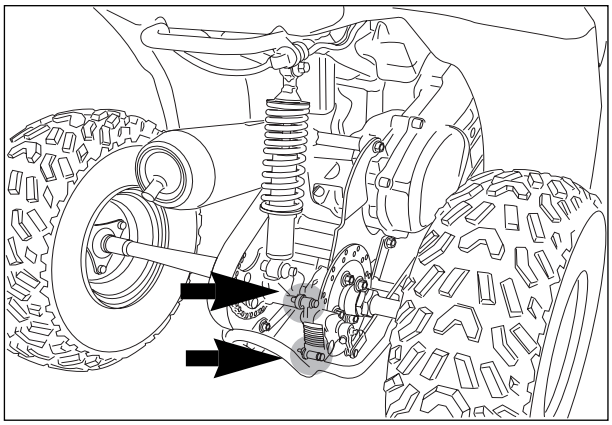
The extend of brake pad wear can be checked by observing the grooved limit Ⓐ on the pad. When the wear exceeds the grooved limit, replace the pads with new ones.



⚠ CAUTION

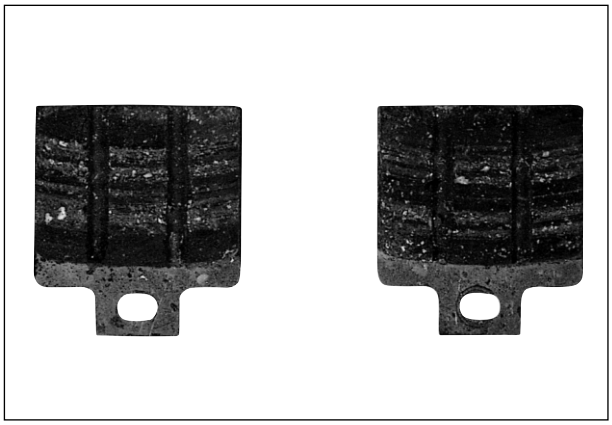
Replace the brake pad as a set, otherwise braking performance will be adversely affected.

■ REAR BRAKE PAD REPLACEMENT



- Remove the brake caliper.
- Remove the brake pads.
- To reassmble, reverse the above sequence.

Rear brake caliper mounting bolt
: 5.0~7.0 N · m (0.5~0.7 kg · m)



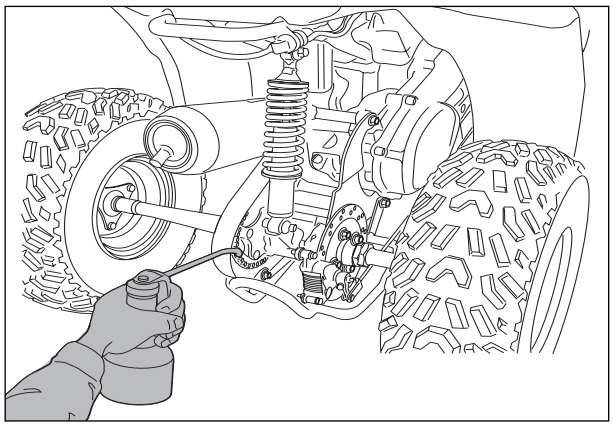
DRIVE CHAIN

NOTE :
Inspect and lubricate Every month.

Visually check the drive chain for the possible defects listed below.

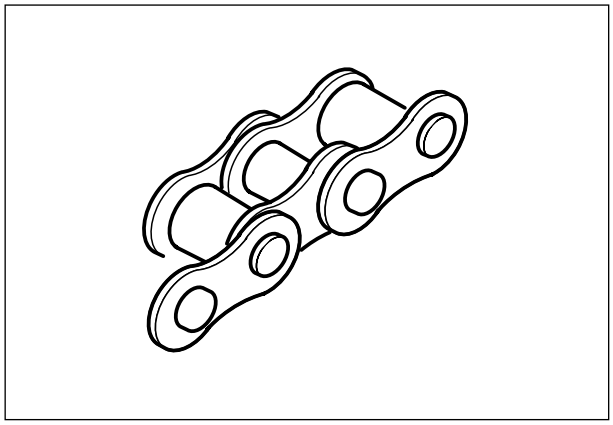
1. Loosen pins
2. Damaged rollers
3. Dry or rusted links
4. Kinked or binding links
5. Excessive wear

If any defects are found, the drive chain must be replaced.



⊙ LUBRICATING THE DRIVE CHAIN

Dirt hastens wear of drive chain and sprockets. Lubricate the drive chain with chain lube or motor oil frequently. Every 1 month or more frequently, wash the chain clean in a pool of solvent and lubricate it with chain lube or motor oil. In a dusty area, this service should be given at shorter intervals.



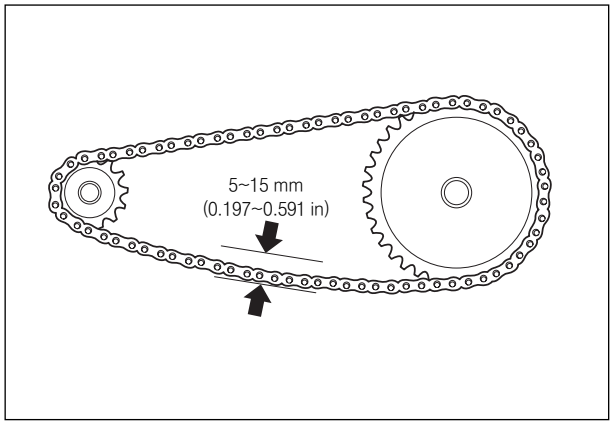
⚠ CAUTION

When refitting the drive chain, be sure to install the chain joint clip as shown : the slit end faces counter to turning direction.

⊙ DRIVE CHAIN REPLACEMENT

The drive chain is checked when its slack (between two sprockets) is within 5~15 mm (0.197~0.591 in) range.

Drive chain slack	5 ~ 15 mm (0.197 ~ 0.591 in)



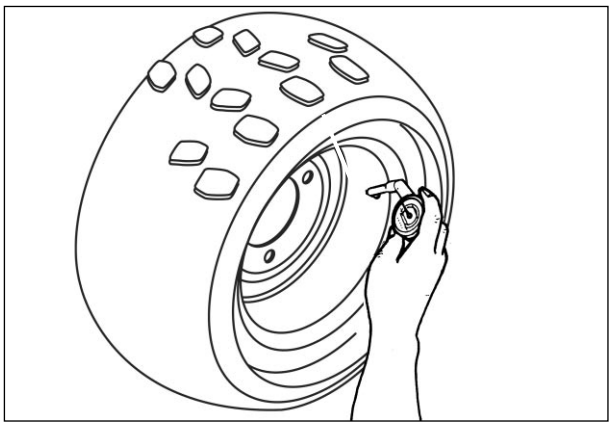
If the drive chain slack exceeds the specification, the chain must be replaced.

TIRE

NOTE :
Inspect Every month. Check pressure each time ride.

⊙TIRE PRESSURE

If the tire pressure is too high, the vehicle will tend to ride stiffly, have poor traction. Conversely, if the tire pressure is too low, stability will be adversely affected. Therefore, maintain the correct tire pressure for good traction and prolonging tire life.



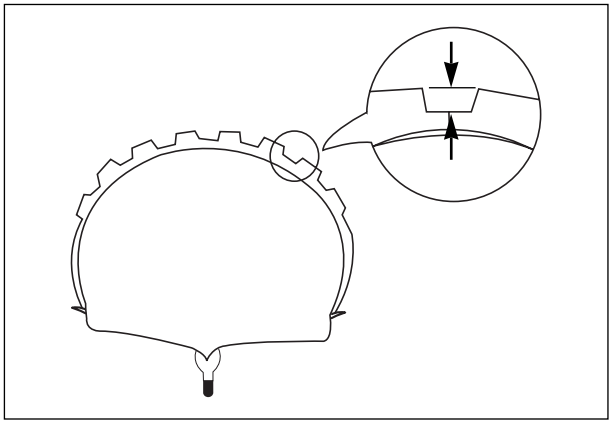
⚠ CAUTION

The standard tire fitted on this 「ATV」 is 18×7.00 - 7 for front and rear. The use of a tire other than the standard may cause handling instability. It is highly recommended to use a HYOSUNG Genuine Tire.

COLD INFLATION TIRE PRESSURE			
	kPa	kgf/㎠	psi
Front	25	0.25	3.6
Rear	25	0.25	3.6

⊙TIRE TREAD CONDITION

Operating the vehicle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace the tire when the remaining depth of tire tread reaches the following specifications.



Front and rear tire tread depth	Service limit
	10 mm (0.394 in)

STEERING

NOTE :
Inspect Initial 1 month and Every 3 months.

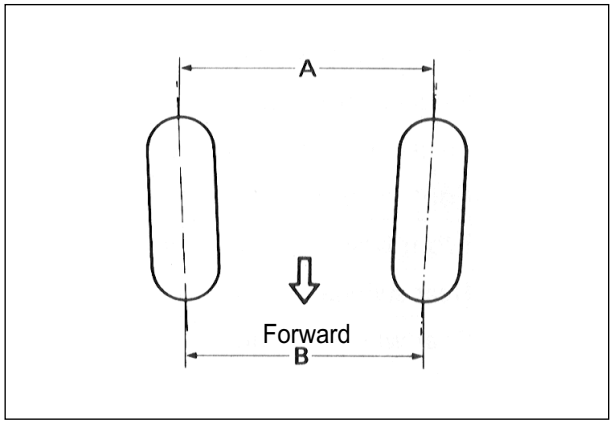
Steering system should be adjusted properly for smooth manipulation of handlebars and safe running.

⊙ **TOE-IN**

- Place the vehicle on the level ground.
- Make sure that the tire pressure is within specification.(Refer to page 2-11)

- The front wheels are set in straight-ahead position.
- Measure the distance (A and B in illustration) of front wheels with a gauge as shown in illustration and calculate the difference between A and B.

Toe - in	8.0 mm (0.315 in)



- If the toe-in is off the specification, bring it into the specified range. (Refer to page 6-11)

CHASSIS BOLTS AND NUTS

NOTE :
Tighten Initial 1 month and Every 3 months.

Check that all chassis bolts and nuts are tightened to their specified torque. (Refer to page 7-9)

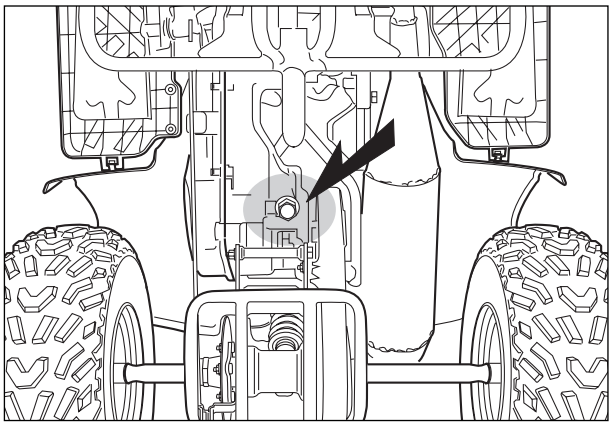
ENGINE

CONTENTS

ENGINE REMOVAL AND REINSTALLATION

ENGINE REMOVAL

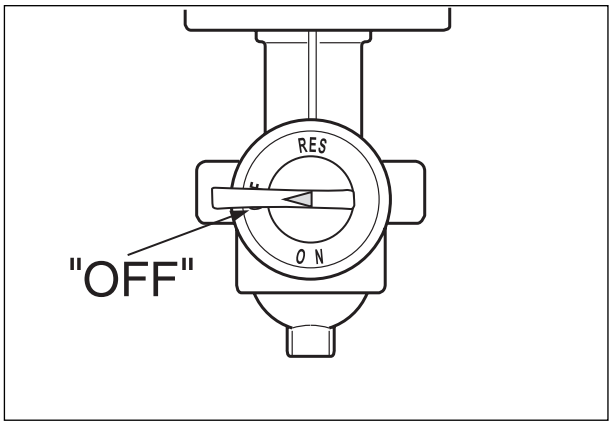
Before taking the engine out of the frame, thoroughly clean the engine with a suitable cleaner and drain transmission oil, etc. The procedure of engine removal is sequentially explained in the following steps, and engine reinstallation is effected by reversing the removal procedure.



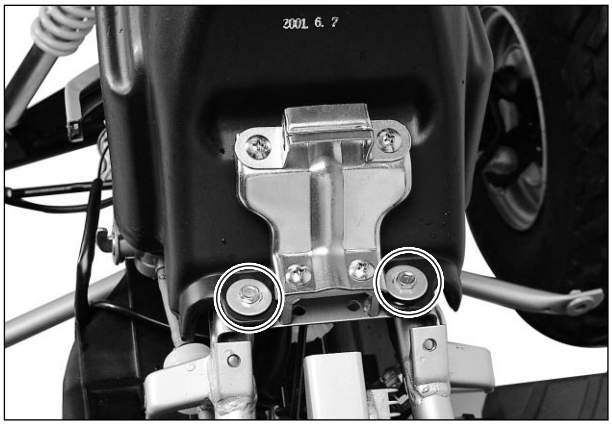
● Place an oil pan under the engine and remove the oil filler cap and the oil drain plug to drain out transmission oil.

● Remove the seat and frame cover.

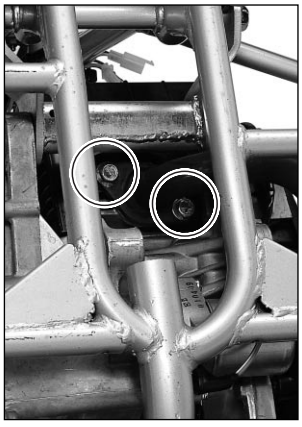
● Turn the fuel cock to "OFF" position.



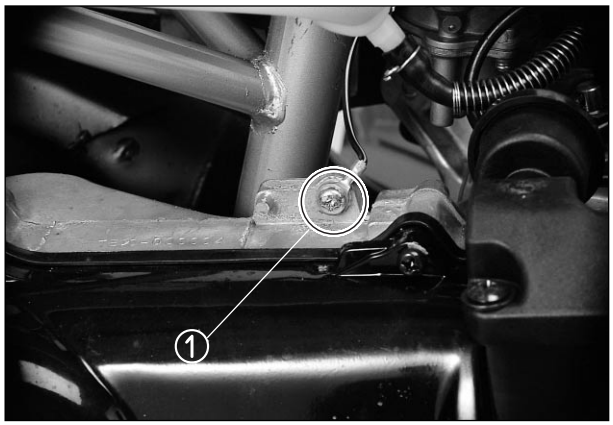
● Remove the fuel hoses from the fuel cock and remove the fuel tank by removing mounting bolts.



● Remove the muffler and exhaust pipe.

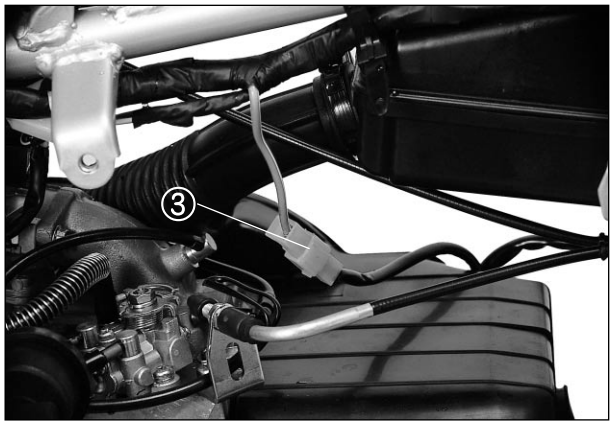


● Remove the engine ground lead wire ①.



● Remove the spark plug cap ②.

● Remove the starter motor lead wire ③.



● Disconnect the magneto coil lead wire ④.

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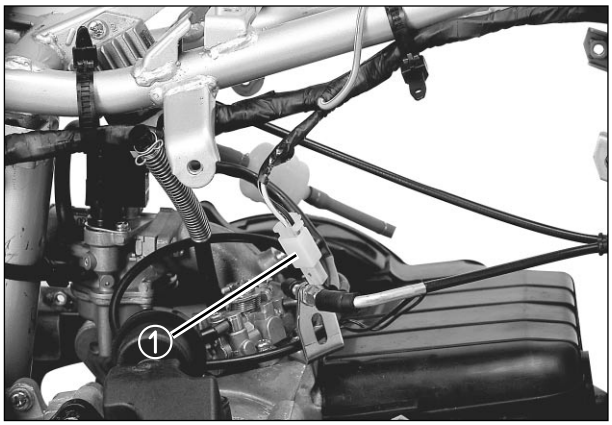
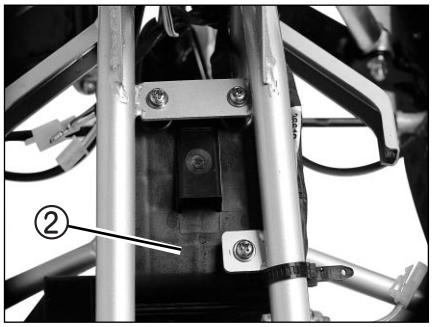
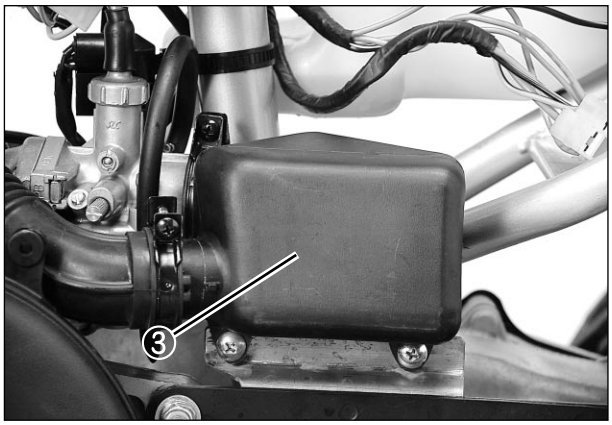
● Disconnect the thermoelement coupler ①.



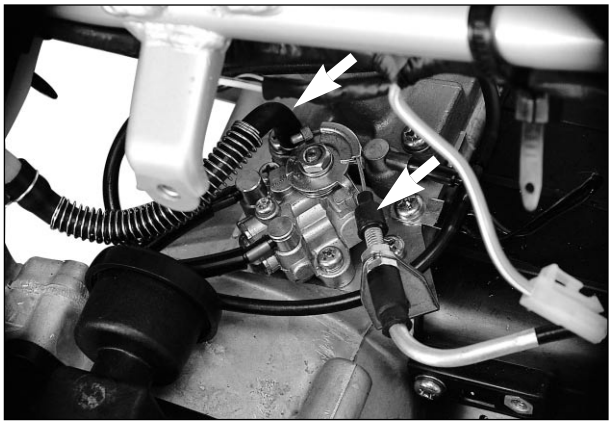
● Remove the air cleaner ② and air cleaner chamber ③.





● Remove the carburetor assembly from the intakepipe.

● Disconnect the oil hose and oil pump cable from the oil pump.



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