FOREWORD

Jinan Qingqi Motorcycle Co., Ltd. is one of the largest manufacture of motorcycle in China with the best equipment of production and technology, integrated service network and professional service team.

This service manual has been produced primarily for experienced mechanics to inspect, adjust, repair and service QINGQI QM50QT-6/6A scooter.

This manual contains up-to-date information at the time of its issue.

And Jinan Qingqi Motorcycle Co., Ltd. reserves the right to change the specifications without prior written notice. The later-made modifications and changes will be explained to local respective distributor.

QM50QT-6（Drum Brake） Model

LH View

1、Head Light　2、Helmet Hook　3、Seat Assy　4、Seat Lock　5、Rear Carrier
6、Front Reflect　7、Side Stand　8、Center Stand　9、Starter Kick Lever　10、Air Cleaner

RH View

1、Tail Light　2、Foot Rest　3、Rear Winker　4、Muffler　5、Rear Wheel　6、Front Wheel

QM50QT-6A（Disk Brake） Model

LH view

1、Head Light 2、Helmet Hook 3、Seat Assy 4、Seat Lock 5、Rear Carrier
6、Front Fork 7、Side Stand 8、Center Stand 9、Starter Kick Lever 10、Air Cleaner

RH View

1、Tail Light 2、Rear Winker 3、Foot Rest 4、Muffler 5、Rear Wheel 6、Front Wheel

CONTENTS

Ⅰ General

Ⅰ- 1 Location of Serial No.

The chassis serial No (or VIN) and the engine serial No is required especially for registering this vehicle and ordering spare part.

The chassis serial No (or VIN) is stamped on front pipe of frame.

Refer to Fig1.1.1

The engine serial No is stamped on the left side of crankcase.

Refer to Fig1.1.2

The identification plate is riveted near to main stand, which shows the specification, manufacture and production date.

Refer to Fig1.1.3

Fig 1.1.1

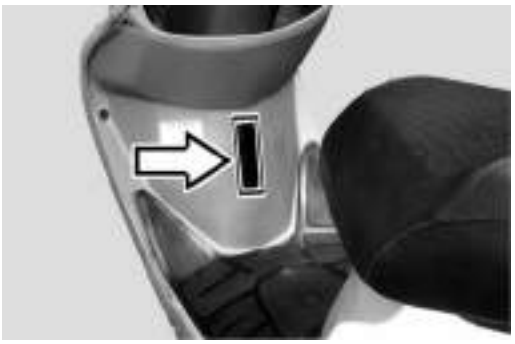


Fig 1.1.2

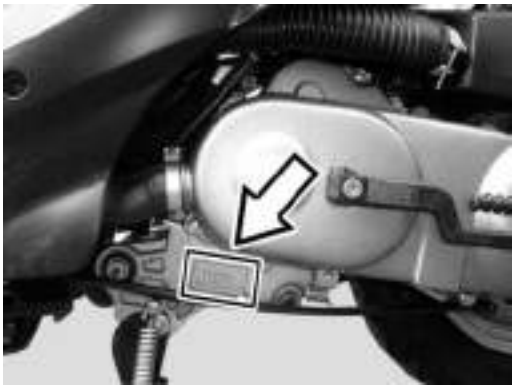


Fig 1.1.3

Ⅰ- 2 Recommended Fuel and Oil

1. Fuel

Gasoline used in this vehicle should be graded 90octane or higher and unleaded. Normal grade gasoline which might result knocking noise in engine should be replaced.

Note

Using lead-free gasoline will be helpful to ensure the spark plug life.

2. Engine Oil and Transmission Oil

Using good quality lubrication oil will ensure the motorcycle service life.

Use SAE10W-40 API-grade engine oil or select according to the table in Fig1.2.1

Note

For new motorcycle, replace the lubrication oil after first 500 km or one month driving, and later on replace for every 6000km.

750ml lubrication oil is required for oil replacement, and 850ml is required for repairing the engine.

3. Hydraulic brake Liquid（only for disk brake model）

Grade: DOT4

Note:

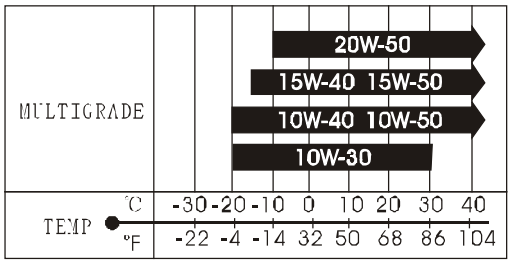
Only DOT4 glycol-based hydraulic brake fluid is equipped in this vehicle.

Don't mix it with silicon-based or oil-based fluid. Otherwise hydraulic brake system will be damaged.

Don't use residual fluid in opened container during last maintenance, because it would absorb moisture in atmosphere.

Don't splash the brake liquid to the surface of paint or rubber part. Otherwise their surface will be corroded.

Fig 1.2.1



4. Hydraulic oil in front fork

Oil #15

I - 3 Break-in

During manufacture only the best 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.

During break-in, engine rpm should be limited as below:

Initial 150km: Less Than 2000rpm
Up to 500km: Less Than 2500rpm
Up to 1000km: Less Than 3000rpm
After 1000km: Less than 4800rpm

During firstly 1000km, full throttle should not be applied, and keep engine rpm less than 4800tpm.

During break-in, engine should avoid to work at constant rpm.

I - 4 Information Label

1	VIN	Fig1.4.1
2	Engine serial No.	Fig1.4.2
3	Rating label	Fig1.4.3
4	Anti-tampering label (EC)	Fig1.4.4

Fig1. 1. 1

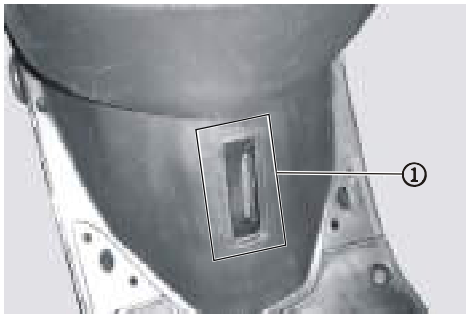


Fig1. 4. 2

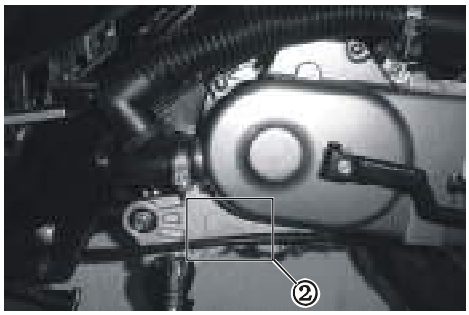


Fig1. 1. 3

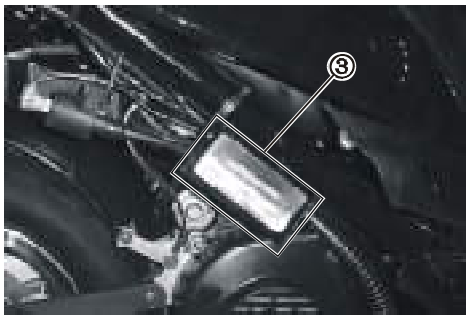
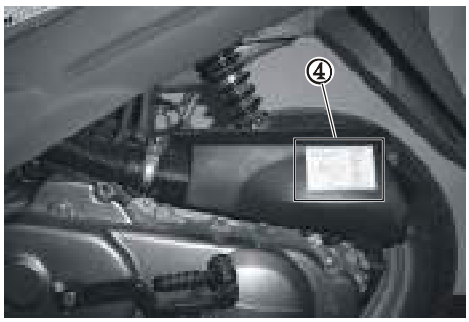


Fig1. 4. 4



I - 5 Specification

Specification

	Item	Parameter
Dimension parameters	Model	QM50QT-6/6A
	L*W*H (mm)	1660 × 700 × 1070
	Wheels Base (mm)	1200
	Ground Clearance (mm)	100
	Turning Radius (mm)	3800
	Cast angle (°)	26
	Steering Angle (°) (L/R)	45
Quality Parameter	Curb Mass (kg)	79
	Max. laden Mass (kg)	100
	Mass Distribution (N) (F/R)	503/1006
	Fuel Tank Capacity (L)	6.3
Engine	Model	139QMB
	Type	4 Stroke Single cylinder Forced air-cooling
	Bore × Stroke (mm)	39.0 × 41.4
	Displacement (ml)	49.58
	Compression ratio	10.5：1
	Max. Power kW/(r/min)	2.00/7000
	Rated Power kW/(r/min)	1.80/7000
	Max. Toque Nm/(r/min)	3.10/6000
	Min. Fuel Consumption g/kw·h	450
	Idling Speed r/min	1500 ⊥ 100
	Ignition	C.D.I.
	Starting	Kick/ self start
	Lubrication	Pressure /Splash
	Lubrication Oil	15W/40
	Fuel	Unleaded petrol 90# above
	Carburetor Type	Diaphragm
	Air Cleaner	Polyurethane-foam element
	Valve Timing	OHV
Transmission System	Clutch Type	Dry, Automatic Centrifugal
	Transmission	CVT Belt
	Primary Drive Ratio	3.25
	Final Drive Ratio	3.40

	Item	Parameter
Wheels and Brakes	Rim (F/R)	Integral type/ Integral type
	Type (F/R)	3.00-10 4PR / 3.00-10 4PR
	Type Pressure (F/R) kPa	125/175
	Brake Type (F/R)	Drum/Drum, Disk/drum
	Brake Operation (F/R)	Manual/Manual
	Suspension (F)	Spring / Oil damping
	(R)	Spring / Oil damping
Electrical System	Spark Plug Model	A7RTC / LDA7TC
	Head Light	12V 25W/25W
	Winker	12V 10W
	Front Position Light	12V 5W
	Stop Light/License Light	12V 21W/5W
	Instrument Light	12V 2W
	Fuse	10A
	Battery	12V 4Ah
	Horn	Electro Magnetic Actuated Diaphragm 12V 1.5A 100dB(A)
	Speedometer	Magnetic Induction
	Interference Suppression	Resistor type
Performance of Motorcycle	Brake Distance (20km/h) m	≤4.00
	Brake Force N (F)	≥301
	(R)	≥503
	Sound Level dB (A)	≤73
	Exhaust Emission Type I (g/km)	CO≤6.00
		HC + NO_X ≤ 3.00
	Type II	CO≤3.8% HC≤3500 × 10^{-6}
	Max Speed km/h	≤48.0
	Cold-starting ability (s)	≤10
	Climbing ability (°)	≥6
	Fuel consumption (l/100km)	≤2.0
	Acceleration (s)	≤12
	Side stand TTL (%)	≥9
	Side stand TTR (%)	≥5
	Center stand TTL & TTL (%)	≥8
	Downstream (%) side stand	≥6
	center stand	≥8
	Reliability (km)	≥6000
	Durability (km)	≥12000
	Head light luminescent intensity (cd)	≥4000

Ⅱ Periodic Maintenance

Ⅱ- 1 Periodic Maintenance Schedule

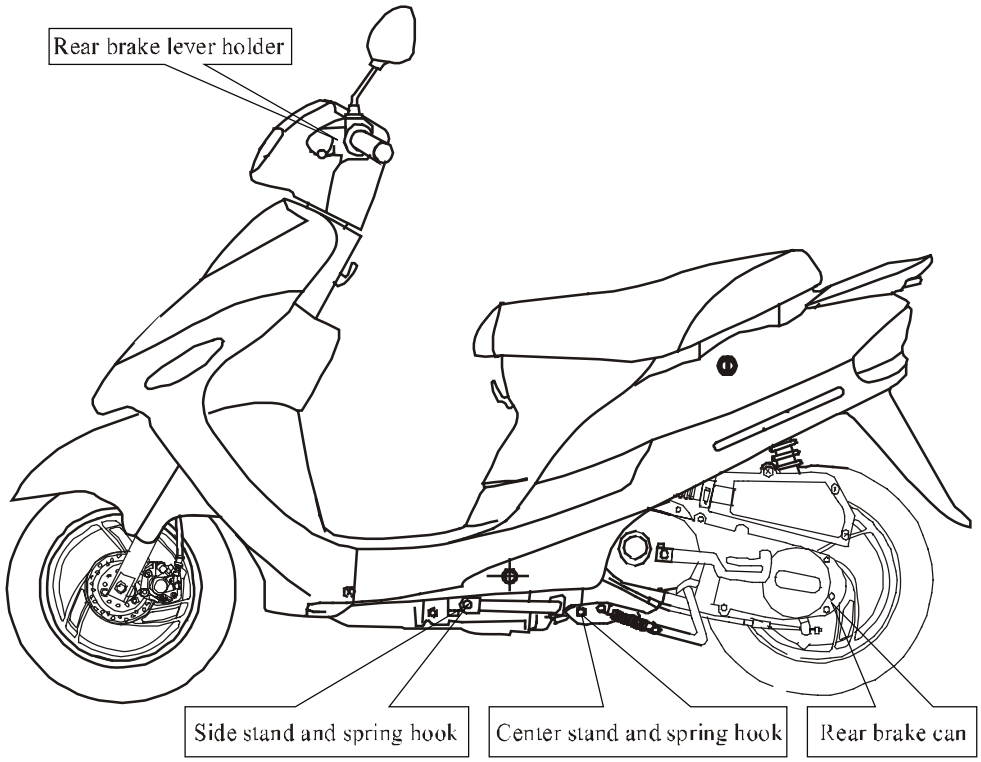
For the best performance of vehicle and engine, the following chart lists out the recommended maintenance frequency which is shown in mile, km and month.

Item \ Frequency	km	1000	4000	8000
	mile	600	2500	5000
	month	3	20	40
Valve Clearance		—	I	I
Spark Plug		—	I	R
Exhaust Pipe bolts		I	T	T
Air Cleaner		—	C	C
Idling Speed (Carburetor)		I	I	I
Throttle Free Play（Carburetor）		I	I	I
Crankcase Cover LH Filter		C	R	R
Fuel Lining		—	I	I
		Replace After Every four years		
Fuel Filter		—	—	C
Engine Oil		R	R	R
Oil Filter		R	—	R
Brake System		I	I	I
Brake Hose		—	I	I
		Replace After Every four years		
Brake Liquid		—	I	I
		Replace After Every four years		
Gear Box Oil		—	R	R
Drive Belt		—	I	I
Steering		I	—	I
Front Fork		—	—	I
Rear Shock Absorber		—	—	I
Tire		—	I	I
Mounting Bolts and Nuts		T	T	T

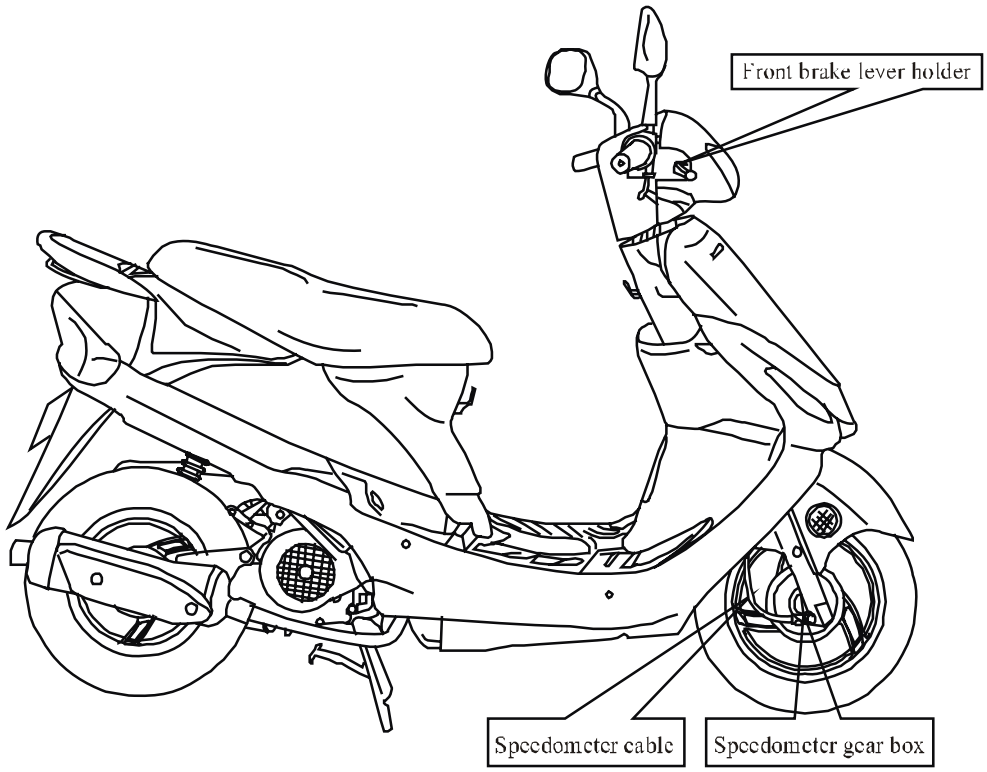
Note: I: Inspect and Adjust, Clean, Lubricate, or Replace if necessary
C: Clean
R: Replace
T: Tight

Lubrication Chart

Properly lubrication is important for motorcycle smoothly working and durable service.



Apply grease to the mentioned parts.



Apply grease to front brake lever holder and speedometer gear box.

Apply oil to speedometer cable.

Note:

Remove the rust, grease, oil and dirt before lubricating the parts.

Apply anti-rusting agent to the outer parts which is easy to rust after ridding in rain.

Ⅱ-2 Maintenance Procedure

Tappet clearance

Inspect and adjust for every 4000km or 20 month

Disassembly

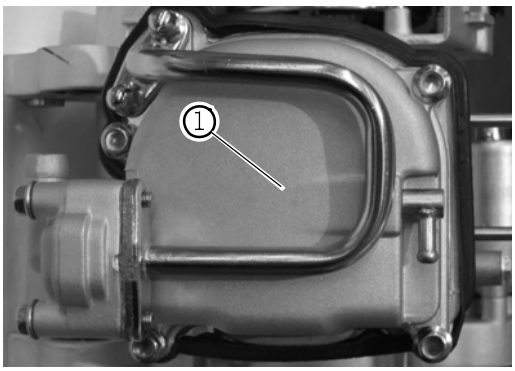
Remove the inspection cap from the bottom of luggage box

Remove the lower shroud of cylinder head

Remove spark plug

Remove cylinder head cover①。Refer to Fig2.2.1

Fig 2.2.1



Inspection

It will be necessary to inspect and adjust the tappet clearance, when

i periodical maintenance

ii replace or repair cam shaft

iii cam shaft was disturbed when replacing other parts

Tappet clearance (cold engine)

Intake valve： 0.08—0.13mm

Exhaust valve：0.08—0.13mm

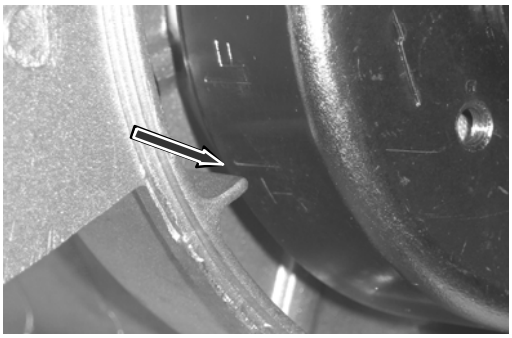
Note:

When inspecting or adjusting tappet clearance, firstly ensure the piston stopped at TOP DEAD PIONT.

Above limit is specified for cold engine.

To get correct reading of clearance, crankshaft should be turned by hand in working direction more than 2 circle and spark plug should be removed.

Fig 2.2.2



Turn crankshaft till the mark on rotor aligns to the mark on crankcase.

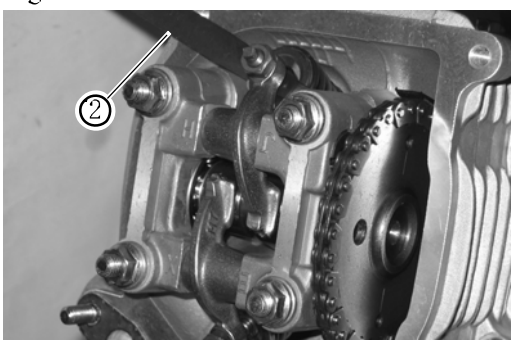
Refer to fig2.2.2

Loosen tappet adjusting nut.

Insert the thickness gauge between the adjusting screw and top end of valve stem.

Refer to fig 2.2.3。

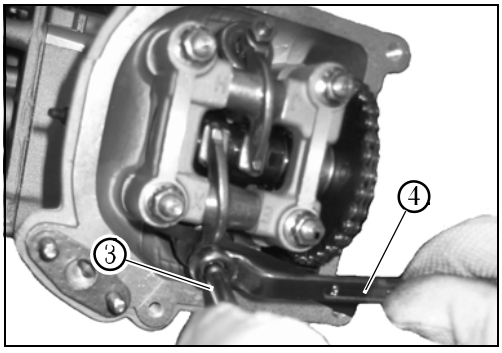
Fig 2.2.3



Adjust valve clearance to specification, and fasten the lock nut.

Refer to Fig2.2.4,

Fig 2.2.4



Tools:

Thickness gauge

Tappet screw driver

Wrench

Spark plug

Inspect after every 4000km (or 20 month), and replace after every 8000km (or 40 month).

Disassembly

Remove the inspection cap from the bottom of luggage box

Remove spark plug adopter

Remove spark plug

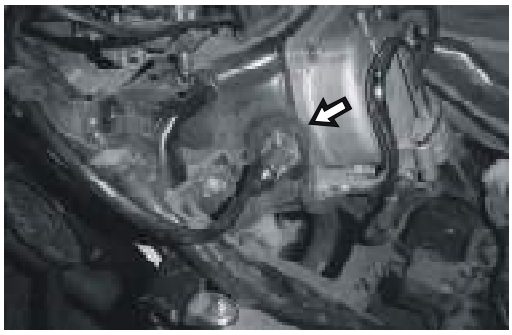
Refer to Fig2.2.5

Tools:

Spark plug wrench

Universal joint

Fig 2.2.5

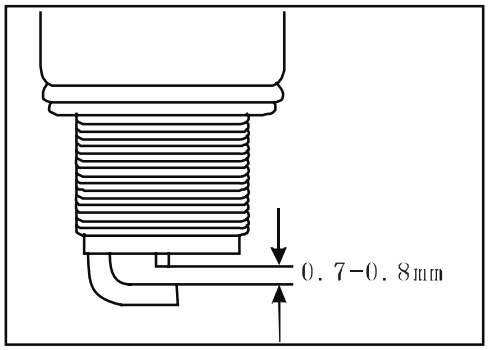


Carbon deposit

Check and remove carbon deposit by wire, then inspect and adjust the plug gap to specification. Refer to Fig2.2.6

Service limit	0.7—0.8mm

Fig 2.2.6



Tools

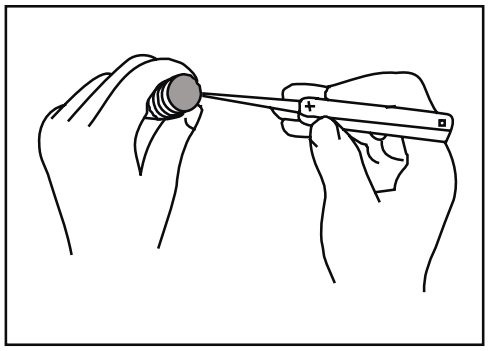
Thickness gauge

Electric pole

Check electric pole for worn and burn. Replace it if it was over worn or damaged, or its insulator and thread was broken.

Note:

Ensure thread specification and length of spark plug when replacing it. The too short spark plug will result the carbon deposit in plug hole and engine defect.



Assembly

Carefully screw spark plug into its hole by hand to avoid damaging the thread on cylinder head, then tighten it to specified torque by wrench.

Specified torque: 11N • m

Muffler mounting Bolts & nuts

Tighten the exhaust nuts and mounting bolts after initial 1000 km (3 month) and every 4000km (20 month).

Tighten the exhaust nuts and mounting bolts to specified torque by torque wrench.

Refer to Fig 2.2.7

Specified torque: 23N·m

Fig 2.2.7

Air Cleaner

Clean the air cleaner for every 4000km (20 month).

Disassembly

Remove cover of air cleaner case③.

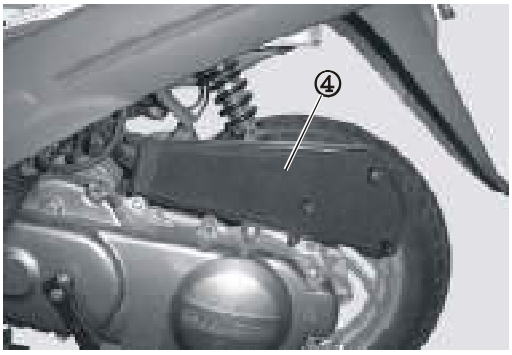
Refer to Fig 2.2.8

Fig 2.2.8

Remove filter element from air cleaner case④.

Refer to Fig 2.2.9

Fig 2.2.9



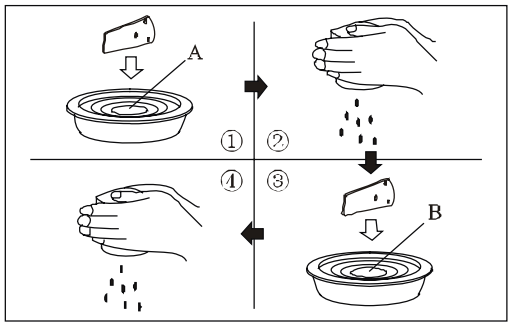
Wash air filter element in clean stoddard solvent and allow to dry thoroughly.

Soak air filter element in clean gear oil (SAE#30 or SAE10W/40) until saturated, then squeeze out excess oil.

Refer to Fig 2.2.10

Reinstall cleaned element in the reverse order of removal.

Fig 2.2.10



Caution:

Check air filter element for crack or damage. Replace if necessary.

Clean it more frequently if riding in dusty areas.

Always keep air cleaner in super-performance. Damaged element or riding without element will result engine early worn.

Fig 2.2.11

Note:

Drain out water from air cleaner case when cleaning air cleaner.

Refer to Fig 2.2.11

Carburetor

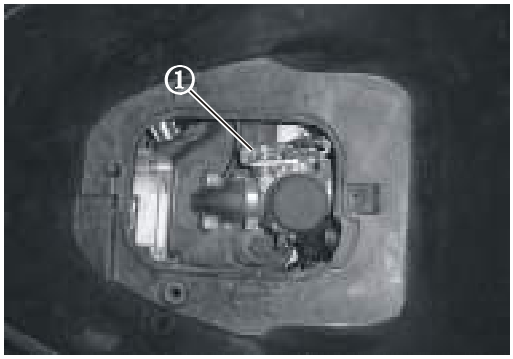
Adjust idle speed after initial 1000 km (3 month) and every 4000km (20 month).

Note:

Perform the adjustment after engine warmed up.

Remove inspection cap from the bottom of luggage box.
Connect electric tachometer.
Start engine and turn the throttle valve adjusting screw① to adjust the speed to the specified range 1600±100rpm
Refer to Fig 2.2.12
Tool: Electric tachometer

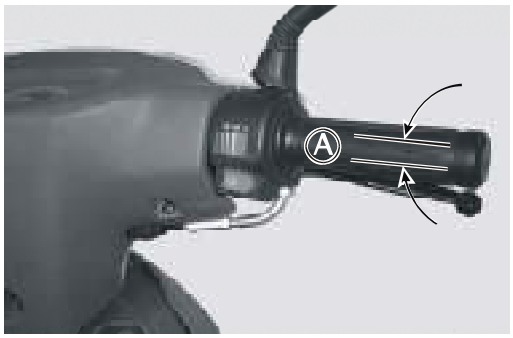
Fig 2.2.12



Throttle cable free play

Refer to Fig 2.2.13
Loosen the lock nut② on throttle cable.
Refer to Fig 2.2.14
Turn the adjuster③ to get the specified free play, then tighten the lock nut②.
Specified value A: 2.0—4.0mm

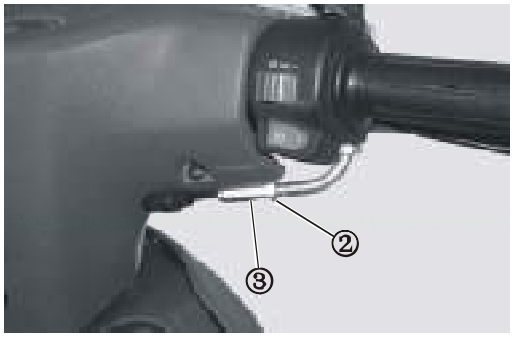
Fig 2.2.13



Caution

After adjustment, ensure that engine speed will not increase when turning handlebar and throttle grip can return smoothly.

Fig 2.2.14



Crankcase cover LH filter

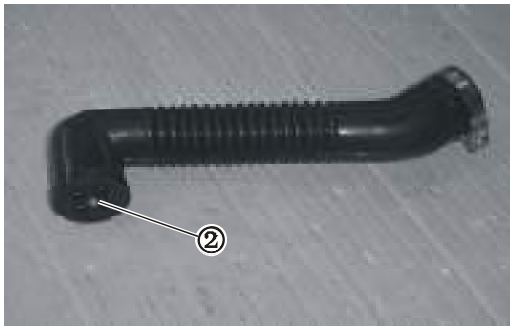
Clean the filter after every 1000km (or 3 month), and replace after every 4000km.

Remove filter cap①.
Refer to Fig 2.2.15

Fig 2.2.15

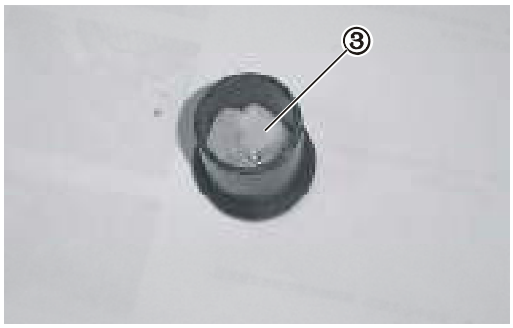
Remove foam bracket mounting screw②.
Refer to Fig 2.2.16

Fig 2.2.16



Carefully clean foam③.
Refer to Fig 2.2.17

Fig 2.2.17

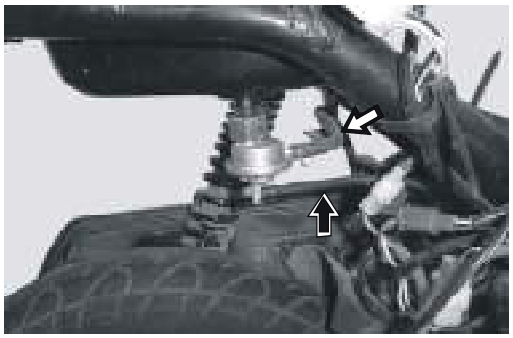


Reinstall the cleaned or new foam in the reverse order of removal.

Fuel hose

Inspect after every 4000km (or 20 month), and replace after every 4 years. Refer to Fig 2.2.18
Check fuel hose for crack or leakage, and replace the fault one.

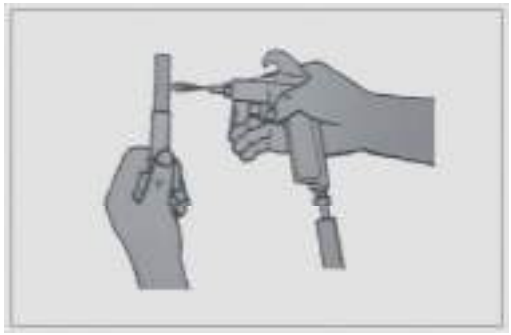
Fig 2.2.18



Fuel filter

Clean the filter after every 8000km (or 40 month).
Clean it by compressed air if clogged.
Refer to Fig 2.2.19

Fig 2.2.19



Engine oil and oil filter

Replace engine oil after initial 1000km (3 month) and every 4000km (20 month).

Replace engine oil filter after initial 1000km (3 month) and every 8000km (40 month).

Note:

Replace engine oil when engine warmed up.

Replace engine oil when oil filter replaced.

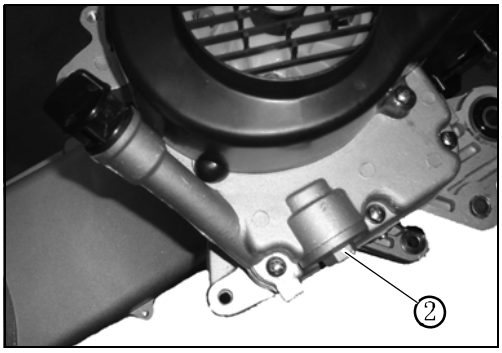
Stand the vehicle vertically.

Place oil pan under engine, and remove oil level gauge①.

Refer to Fig 2.2.20

Fig 2.2.20

Fig 2.2.21



Remove oil filter cap②.

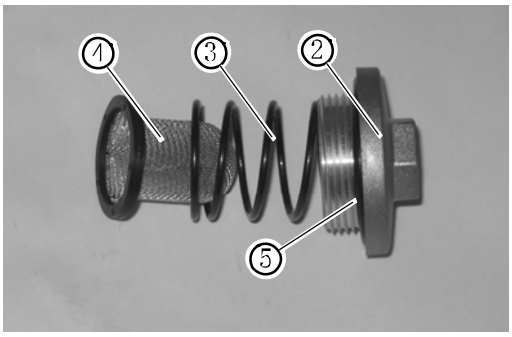
Refer to Fig 2.2.21

Remove filter cap②, spring③, screen④ and O-ring⑤.

Refer to Fig 2.2.22

Clean out the dust from screen and reinstall with new O-ring.

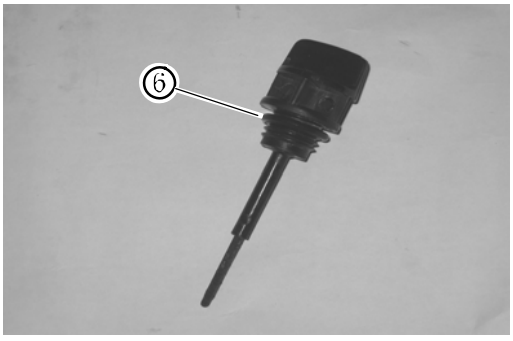
Fig 2.2.22



Tighten the filter cap to specified torque, and fill 800ml engine oil of SAE 10W/40.

Specified torque: 18N·m

Fig 2.2.23



Install O-ring⑥ to oil level gauge, and install it to engine.

Refer to Fig 2.2.23

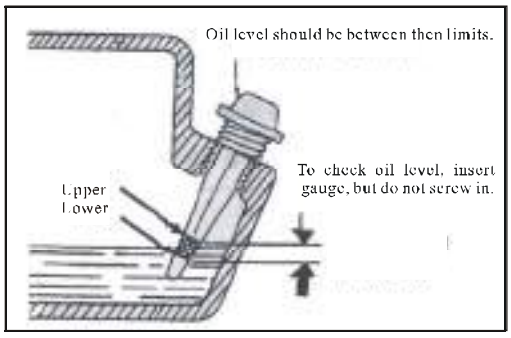
Start engine and keep it running few minutes at idling speed.

Inspect oil level after engine stopped for one minute.

Refill engine oil to "F" mark if its level is below "L" mark

Refer to 2.2.24

Fig 2.2.24



Required engine oil volume:

750ml when replacing engine oil

800ml when replacing oil filter

850ml when repairing engine

Brake system

Inspect brake system after initial 1000km (3 month) and every 4000km (20 month).

Check brake hose and fluid after every 4000km (20 month). Replace the brake hose after every 4 years and replace brake fluid after every 2 years.

Brake fluid level inspection

Stand the vehicle vertically and keep handlebar forward.

Compare the level of brake fluid in reservoir with the mark on screen.

Refer to Fig2.2.25

Refill if the level below lower limit.

Refer to Fig2.2.26

Caution

Only glycol based hydraulic brake fluid is equipped in brake system of this vehicle. Don't use or mix with silicon or fossil oil based fluid when refilling, otherwise the brake system will be damaged.

Don't use long-stocking or unsealed brake fluid.

Caution

Any brake fluid leakage will be dangerous in running. Ensure hose and sealing not damaged or leaked.

Caliper pad wearing

Check the wearing terrain on caliper pad, and replace the pad if friction surface reach the sign "A" of wear.

Refer to Fig 2.2.27

Note:

Replace the brake pad in set, otherwise brake efficiency will be affected.

Caliper pad replacement

Remove brake caliper① ASSY.

Refer to Fig 2.2.28

Remove brake pad② from caliper ASSY.

Refer to 2.2.29

Reinstall in the reverse order of disassembly

Fig 2.2.25

Fig 2.2.26

Fig 2.2.27

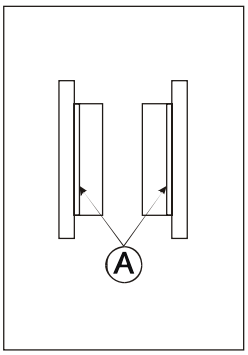


Fig 2.2.28

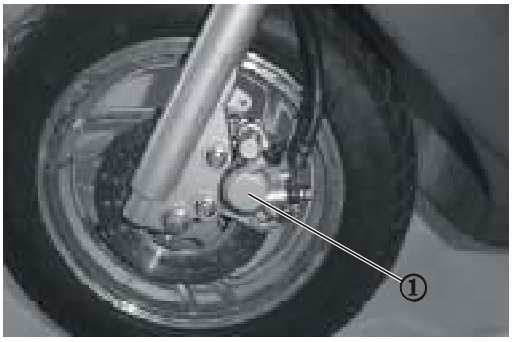


Fig 2.2.29

Brake fluid replacement

Stand the vehicle on horizontal ground with handlebar in verticality.

Remove handlebar front cover.

Remove the cap and diaphragm of fluid reservoir.

Pump out previous brake fluid

Refill with fresh brake fluid.

Refer to Fig 2.2.30

Fig 2.2.30

Fig 2.2.31

Connect the bleed valve and other container by sufficient hose.

Loosen the bleed valve and pump out all previous brake fluid by forcing brake lever. Refer to Fig 2.2.31 & 2.2.32

After closing bleed valve and disconnecting drain hose, refill with fresh brake fluid till its level reach the upper limit on inspection screen.

Specified torque for bleeding valve: 7.5N.m

Fig 2.2.32

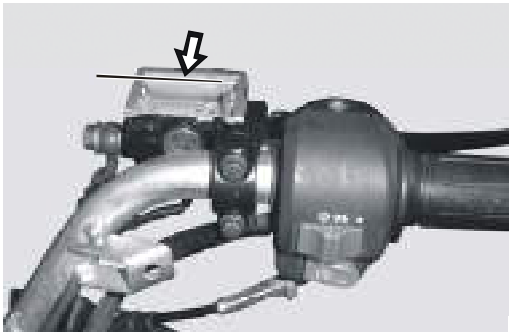
Bleeding out air from brake system

Remaining air in brake system will reduce the master cylinder pressure and affect brake system performance. It is important to bleeding out air from brake system when reinstalling it.

Refill fluid reservoir with brake fluid to "UPPER" mark and cover it by its cap.

Refer to Fig 2.2.33

Fig 2.2.33



Connect the bleed valve and other container by transparent hose. Refer to Fig 2.2.34

Rapidly press and release the brake lever several times, then press the lever firmly. Loosen the bleed valve for 1/4 turn to allow brake fluid drain out. Due to this operation the brake lever will release and touch with handlebar, then close the bleed valve.

Repeat the above operation till no air bubble is found in the brake fluid drain out from bleed valve.

Refer to Fig 2.2.35

Fig 2.2.34

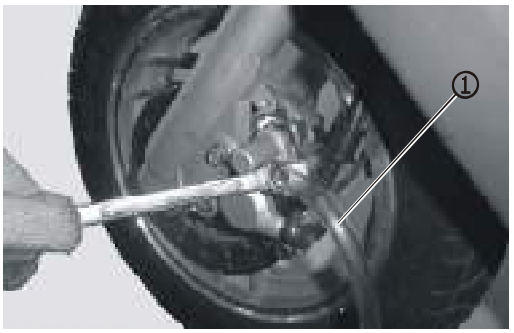


Fig 2.2.35

Fig 2.2.36

Note:

When bleeding out air from brake system, if necessary, refill brake fluid to its reservoir to ensure fluid can be always observed in the reservoir.

Close bleeding valve and tighten to specified torque, then remove the drain hose.

Specified torque: 7.5N.m

Refill brake fluid again to its reservoir to ensure fluid level above "UPPER" mark.

Refer to Fig 2.2.36

Caution:

Take care to deal with brake fluid because it can damage the parts of plastic, paint and rubber due to chemistry.

Fig 2.2.37

Brake panel free play(rear brake)

Adjust the brake panel free play to 15—25mm by turning adjusting nut②.

Refer to Fig 2.2.37

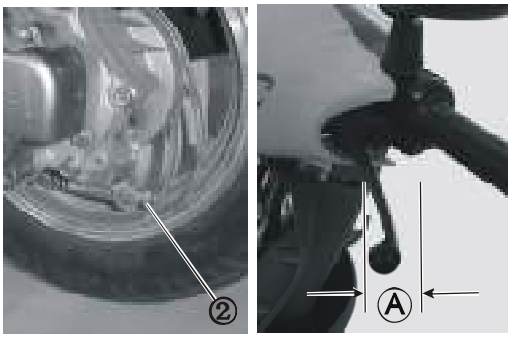


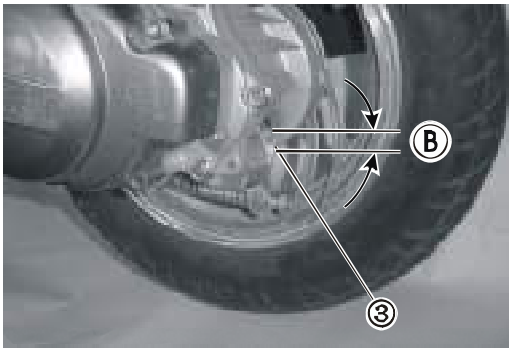
Fig 2.2.38

Brake shoes

Brake indicator③ is installed on brake lever. During brake operation ensure the indicator turning within the limit B.

Refer to Fig 2.2.38.

Replace the brake shoes set if the indicator goes above the limit during brake operation.



Gear oil

Inspect after every 8000km (40 month).

Stand the vehicle vertically.

Remove crankcase cover LH ①. Refer to Fig 2.2.39

Put a pan under the gear box.

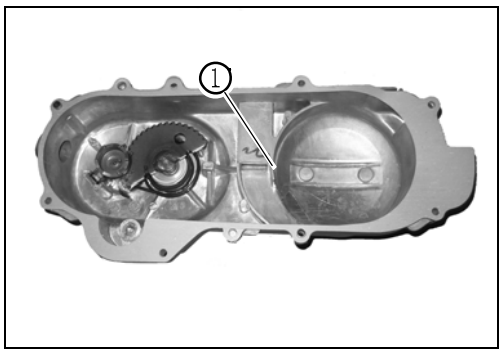
Remove oil level bolt② for checking. Refill oil till overflowing.

Grade：SAE 10W/40 SF or SG。

Tighten oil level bolt to specified torque.

Specified torque：12N.m

Fig 2.2.39



Note:

Replace gear oil if it is dirty or used for long time.

Drain gear oil out through drain plug③ and refill with fresh one.

Refer to Fig 2.2.40

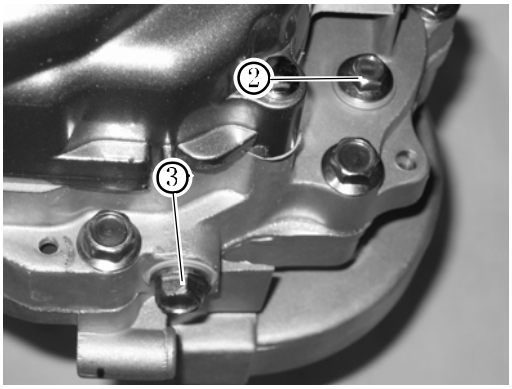
Drain plug tighten torque: 12N.m

Required gear oil volume:

80ml when replacing gear oil

90ml when repairing engine

Fig 2.2.40



Drive belt

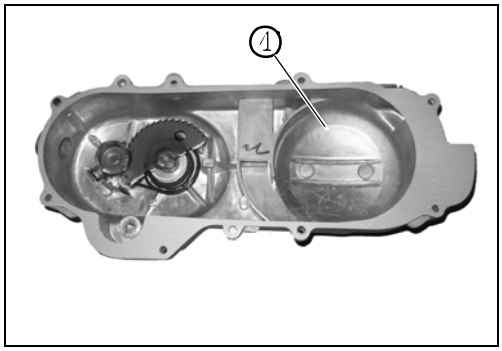
Inspect for every 4000km (20 month).

Stand the vehicle vertically.

Remove crankcase cover LH ①.

Refer to Fig 2.2.41

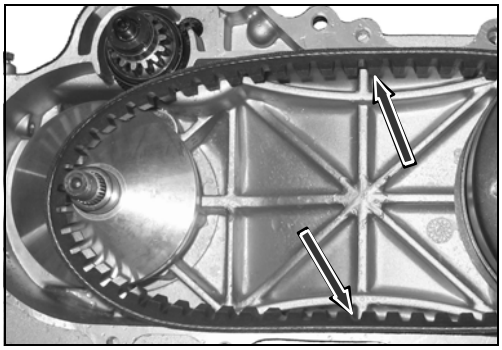
Fig 2.2.41



Check the working surface for crack, and replace if damaged.

Refer to Fig 2.2.42

Fig 2.2.42



Note:

Remove oil and grease from working surface of belt.

Steering

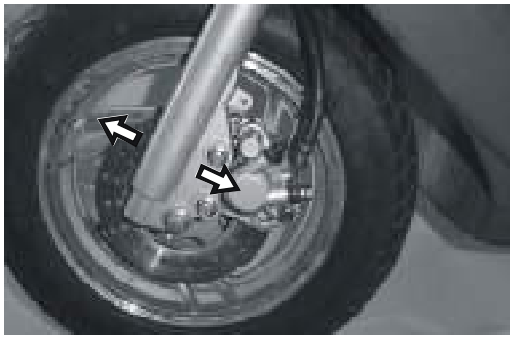
Inspect steering system after initial 1000km (3 month) and every 12000km (24 month).

Steering system must be properly adjusted to ensure handlebar turning smoothly and safety riding. Too tight steering will affect handlebar balance, and too loose steering will affect riding stability.

Stand the vehicle and keep front wheel forward and away from ground, hold the lower end of front fork and pull forward to check the clearance between the parts of front fork. Adjust the steering race if gap is found.

Refer to Fig2.2.43

Fig 2.2.43



Front fork

Inspect front fork for every 8000km (40month).

Check the damper tub for leakage or scratch, replace the damaged parts if necessary.

Refer to Fig 2.2.44

Fig 2.2.44

Rear shock absorber

Inspect rear shock absorber for every 8000km (40month).

Check rear shock absorber for oil leakage, and check engine mounting bracket for cushion wear. Replace the damaged parts if necessary.

Refer to Fig 2.2.45

Fig 2.2.45

Tire

Inspect tires for every 4000km (20month).

Worn tires will affect ridding stability and cause accident.

Check the tire surface by depth gauge, and replace with new tires if its groove depth is less than specified value.

Refer to 2.2.46 & 2.2.47

Specified depth: （front/rear）1.6mm

Fig 2.2.46

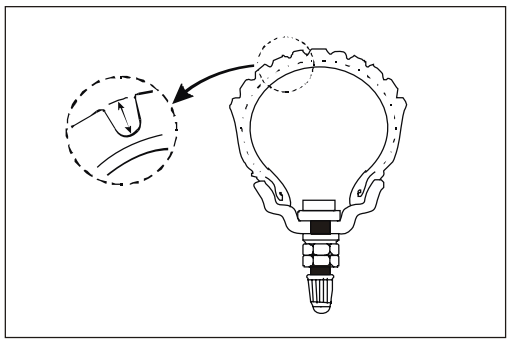
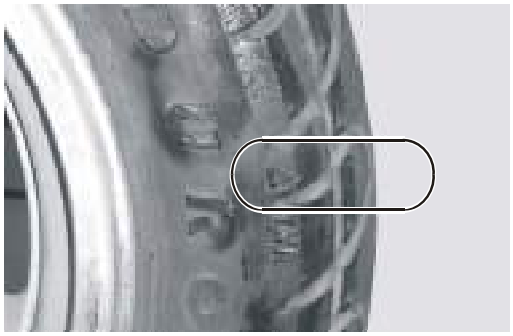


Fig 2.2.47



Tire pressure

Too high or too less tire pressure will affect steering stability.

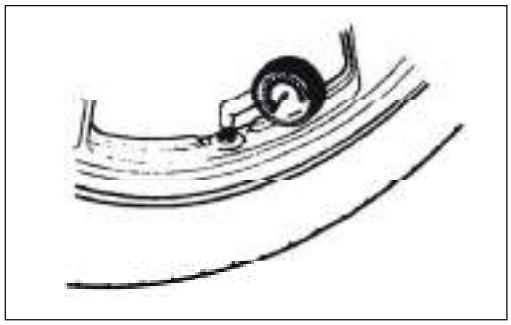
Always inspect and keep proper tire pressure.

Refer to Fig 2. 2. 48

Specified tire pressure of cold tire:

	kpa	Kgf/m^2
Front tire	175	1.75
Rear tire	225	2.25

Fig 2.2.48



Note:

Only 3.50-10 4PR standard tire is equipped in this vehicle. Any tire other than it might affect steering stability.

Qingqi brand Genuine parts is specially recommended.

Bolts and nuts on frame body

Tighten the bolts and nuts to specified torque after initial 1000km (3 month) and every 4000km (20 month).

Specified torque

No.	Item	N • m	kg • m	Reference
1	Front axle nut	53	5.3	Fig2.2.49
2	Handlebar mounting bolt	49	4.9	Fig2.2.50
3	Steering stem lock nut	30	3.0	Fig2.2.50
4	Handlebar locating bolt	25	2.5	Fig2.2.50
5	Front fork mounting bolt	45	4.5	Fig2.2.51
6	Master cylinder mounting bolt	10	1.0	Fig2.2.52
7	Brake hose union bolt	23	2.3	Fig2.2.53
8	Brake caliper mounting bolt	26	2.6	Fig2.2.54
9	Bleeding valve	7.5	0.75	Fig2.2.54
10	Front panel bolt	23	2.3	Fig2.2.54
11	Rear axle nut	120	12.0	Fig2.2.55
12	Rear shock bolt	29	2.9	Fig2.2.56
13	Rear brake lever nut	11	1.1	Fig2.2.57
14	Engine bracket mounting bolt/nut	98	9.8	Fig2.2.58
15	Engine mounting bolt/nut	80	8.5	Fig2.2.58

Fig 2.2.49

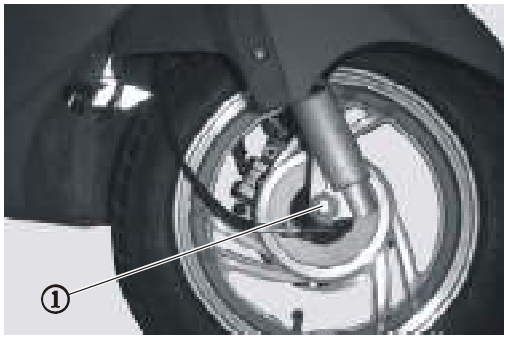


Fig 2.2.50

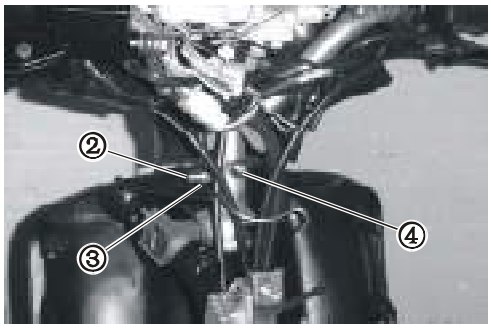


Fig 2.2.51

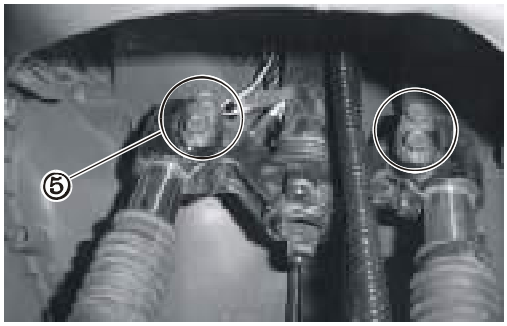


Fig 2.2.52

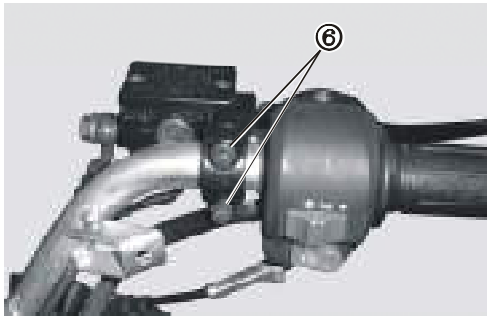


Fig 2.2.53

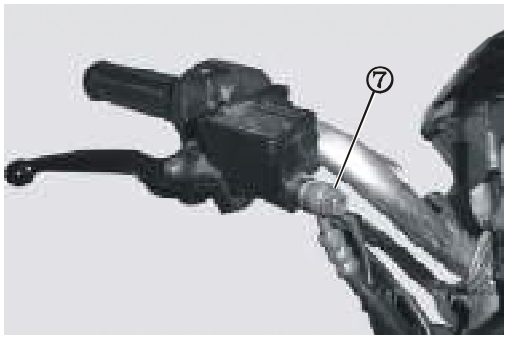


Fig 2.2.54

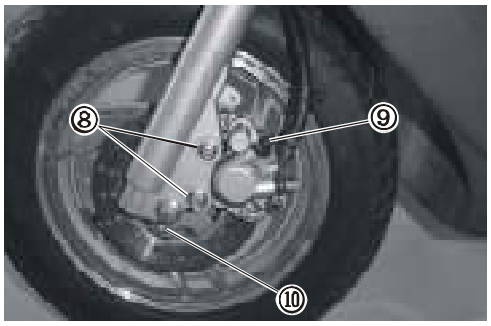


Fig 2.2.55

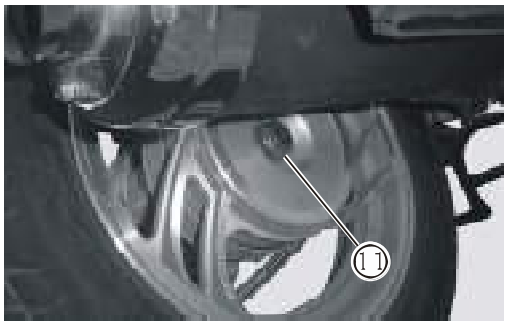


Fig 2.2.56

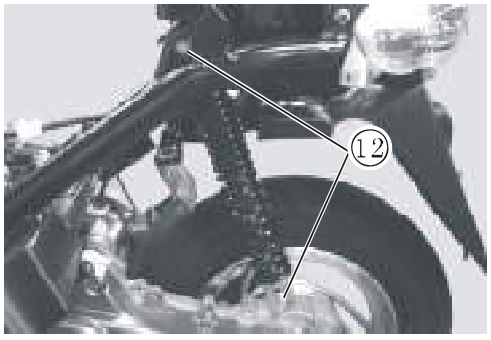
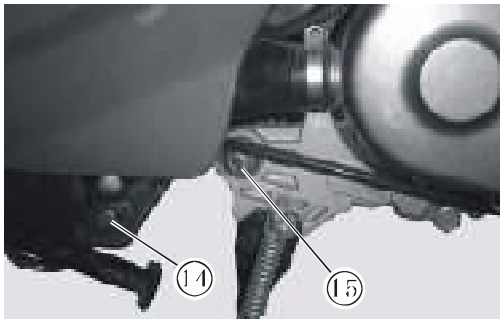


Fig 2.2.57

Fig 2.2.58



Ⅱ- 3 Cylinder compression

Specified compression pressure

standard	limit
1400 kPa (14.0kg/cm^2) (198psi)	980 kPa (9.8kg/cm^2) (139psi)

Low pressure is due to one of the following cause:

1) over worn on cylinder
2) over worn on piston or rings
3) defective or sticking piston rings
4) leaking valve or valve seat
5) damaged or blown cylinder head gasket

Caution

Before checking cylinder compression, ensure that cylinder head nut and bolt has been tighten to specified toque, valve clearance has been adjusted, engine has been warmed up and battery has been fully charged.

Rest the vehicle on center stand.
Remove the inspection cap from the bottom of luggage box
Remove spark plug.
Tighten the gauge in plug hole securely to avoid compression leaks. Refer to Fig2.3.1
Keep throttle valve fully opened.
Start engine several times by starter motor or kick lever, take the highest reading of gauge.
Tools

Compression gauge
Compression gauge adopter

Fig 2.3.1

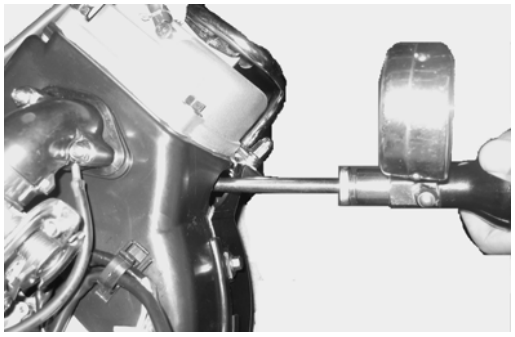
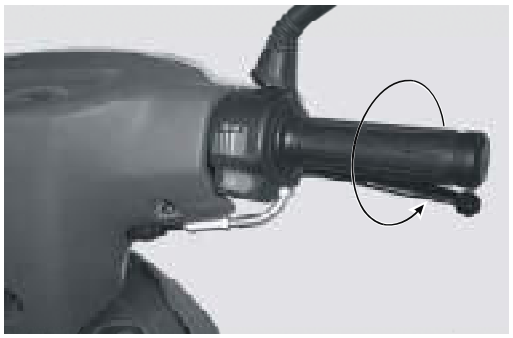


Fig 2.3.2



Ⅱ- 4 Lubricating pressure

Periodic inspection of lubricating pressure will be helpful to judge the performance of moving parts.

Specification:

When engine is running at 3000rpm and temperature of lubrication oil is 60℃ (140 F), the pressure of lubrication oil should be more than 15 kPa(0.15kg/cm^2)(2.1psi), but less than 35 kPa (0.35 kg/cm^2) (4.9psi).

Too low lubricating pressure is due to:

Clogged oil screen
Leakage in oil channel
Damaged O-ring
Damaged oil pump

Too high lubricating pressure is due to:

Too high coefficient of oil viscosity
Clogged oil screen

Inspection procedure

Stand the vehicle by center stand.
Remove inspection cap from engine.
Install oil pressure gauge along with its connector to engine.
Connect tachometer to engine.
Start engine and warm it up at 2000rpm for 10minutes in Summer or 20minutes in Winter.
Increase engine rotating speed to 3000rpm.
Take the reading of oil pressure gauge.

Tools:

Oil pressure gauge
Oil pressure gauge connector
Tachometer

Ⅱ-5 Automatic Clutch Inspection

Auto-clutch and CVT is equipped in this vehicle. Clutch engaging is controlled by centrifuge shoes in accordance with engine rpm.

Starter engaging inspection

Start and warm up the engine.

Remove inspection cap from engine.

Connect electric tachometer to ignition coil cable①.

Refer to Fig 2.5.1.

Seat on scooter, slowly increase engine rotating speed and take the reading of tachometer when scooter just move.

Refer to Fig 2.5.2.

Specified rpm: 2700—3300rpm

Tool: Electric tachometer

Clutch locking inspection

Perform this inspection to ensure clutch engaged firmly without sliding.

Hold the front brake and rear brake firmly.

Refer to Fig 2.5.3

Increase engine rotating speed to full throttle, and take the Max. reading of tachometer.

Refer to Fig 2. 5. 4

Specified Locking rpm: 4100—4900rpm

Note:

Don't run the engine at full throttle more than 3 minutes, otherwise clutch or engine will be damaged.

Fig 2.5.1

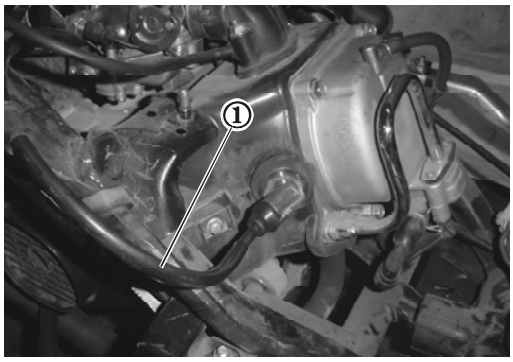


Fig 2.5.2

Fig 2.5.3

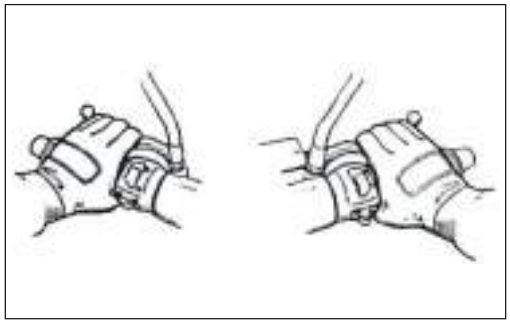
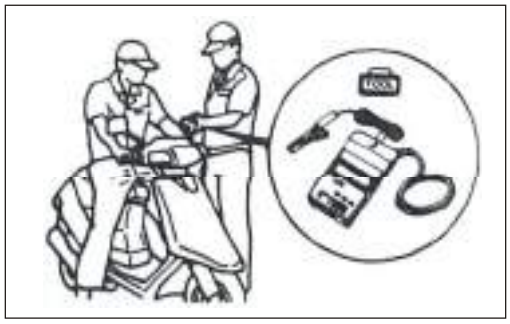


Fig 2.5.4



Ⅲ ENGINE

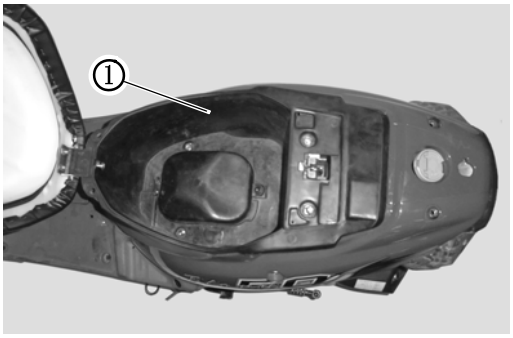
Ⅲ-1 Engine removal & disassembly

Removal

Remove luggage box①。

Refer to Fig 3.1.1

图 3.1.1



Remove frame cover RH &LH②。

Refer to Fig 3.1.2

图 3.1.2

Disconnect carburetor starting cable and magneto wires from main wire harness.

Refer to Fig3.1.3

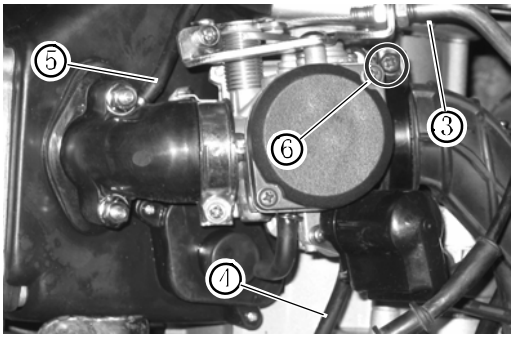
图 3.1.3

Disconnect throttle cable③, fuel hose④ and vacuum pipe⑤.

Loosen clamping screw of air cleaner⑥。

Refer to Fig 3.1.4

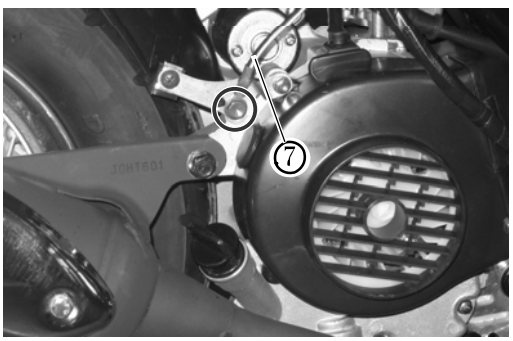
图 3.1.4



Disconnect the earth wire⑦ of starting motor。

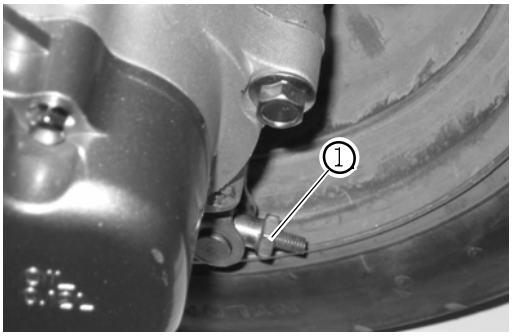
Refer to Fig 3.1.5

图 3.1.5



Remove the adjusting nut① of rear brake cable。
Refer to Fig3.1.6

图 3. 1. 6



Remove air cleaner assy②。
Refer to Fig3.1.7

图 3. 1. 7

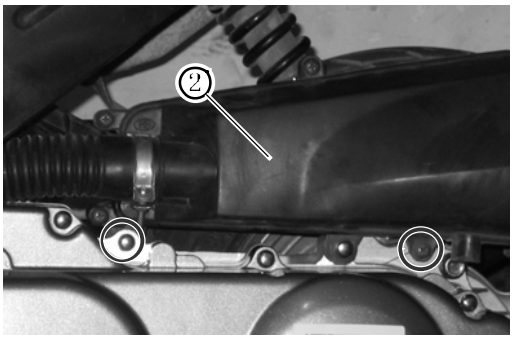


图 3. 1. 8

Remove rear shock absorber assy③。
Refer to Fig3.1.8

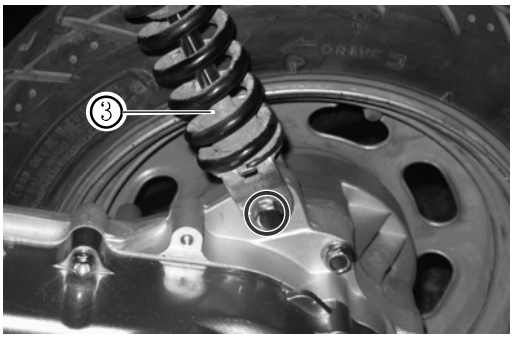


图 3. 1. 9

Remove spark plug adopter④。
Refer to Fig 3.1.9

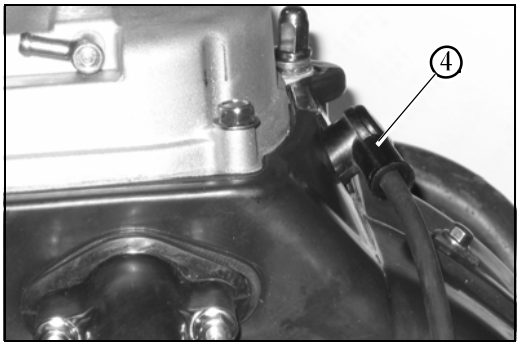
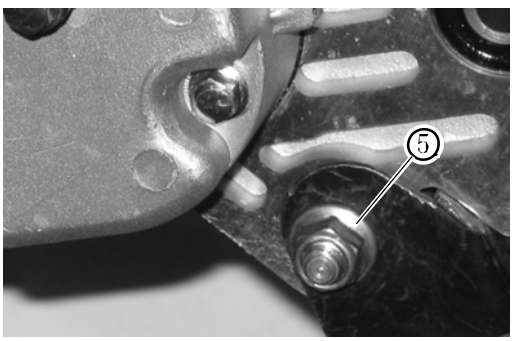


图 3. 1. 10

Remove the engine assy from frame body by removing the bolt ⑤ of engine mounting bracket set。
Refer to Fig 3.1.10



After removing engine from frame body, throughly clean it to prevent the duct from intering during disassembly.

Remove muffler①。

Refer to Fig 3.1.11 and 3.1.12

图 3.1.11

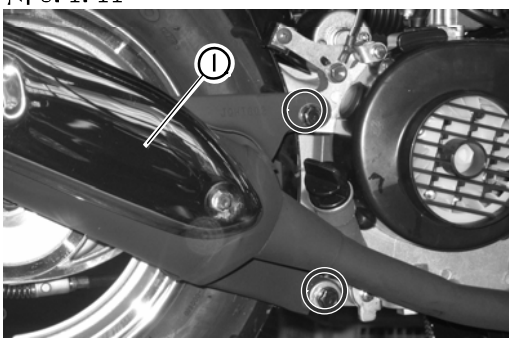
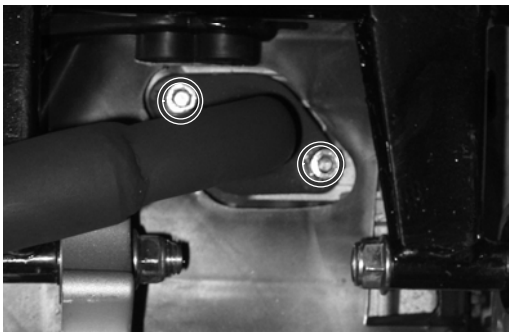


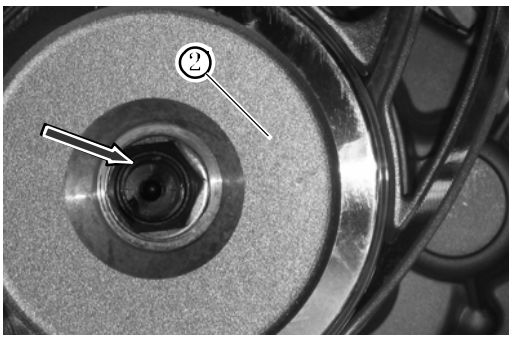
图 3.1.12



Remove rear wheel by loosing its nut②。

Refer to Fig 3.1.13

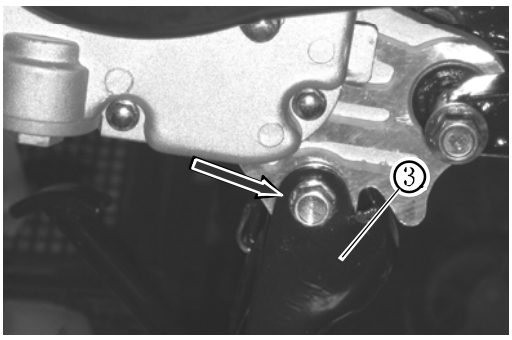
图 3.1.13



Remove center stand③。

Refer to Fig 3.1.14

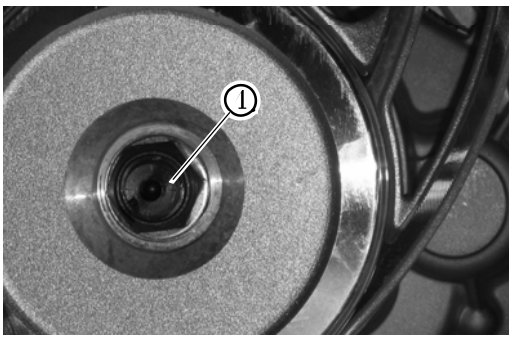
图 3.1.11



Reinstallation

Reinstall the engine in the reverse order of removal.

图 3.1.15



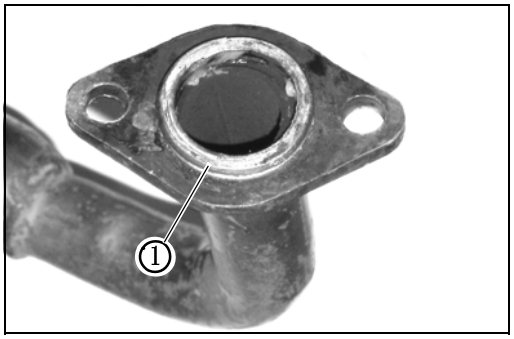
Tighten the nut to specified torque to install the rear wheel.

Refer to Fig3.1.15.

Specified torque: 118N·m

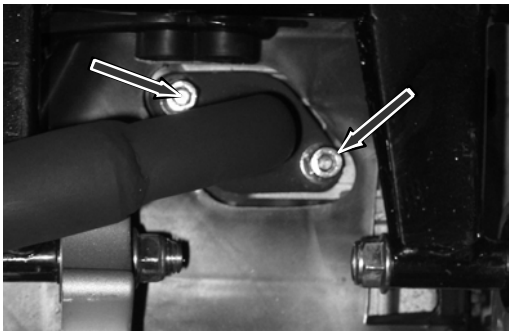
Replace the exhaust gasket① with fresh piece before reinstall muffler.
Refer to Fig3.1.16

图 3.1.16



Tighten the exhaust nuts to specified torque..
Specified torque: 10N·m
Refer to Fig3.1.17

图 3.1.17

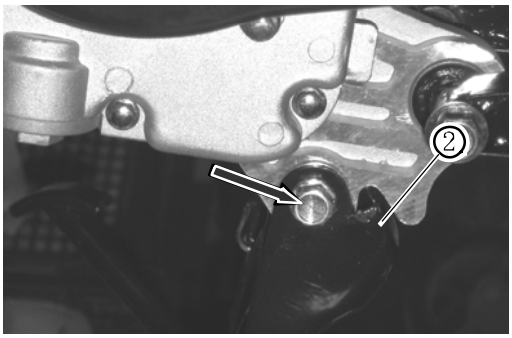


Tighten the muffler mounting nut to specified torque.
Refer to Fig3.1.18.
Specified torque: 24N·m

图 3.1.18

Install center stand and tighten the bolt to specified torque.
Refer to Fig3.1.19.
Specified torque: 54N·m

图 3.1.19



Ⅲ-2 Compression pressure

Caution

Before checking cylinder compression, ensure that cylinder head nut and bolt has been tighten to specified toque, valve clearance has been adjusted, and engine has been warmed up.

Remove spark plug.

Tighten the gauge in plug hole securely to avoid compression leaks.

Keep throttle valve full opened.

Refer to Fig3.2.1

Start engine several times by starter motor or kick lever, take the highest reading of gauge.

Refer to Fig3.2.2

Specified pressure: 1540Kpa at 800rpm

Fig 3.2.1

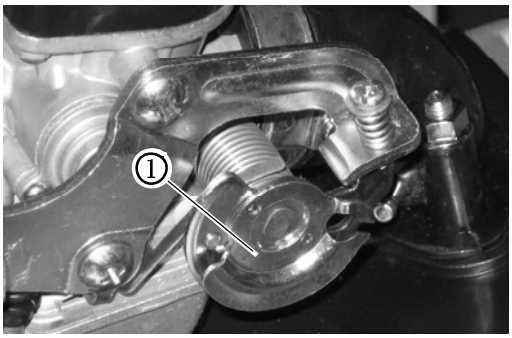
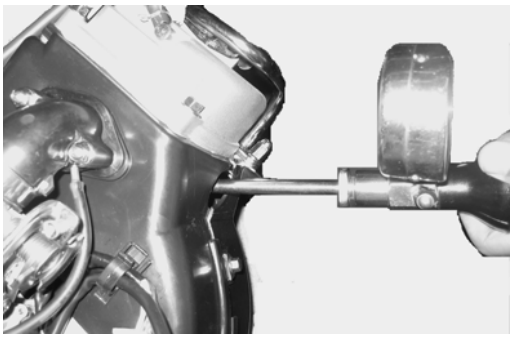


Fig 3.2.2



Low pressure is due to one of the following cause:

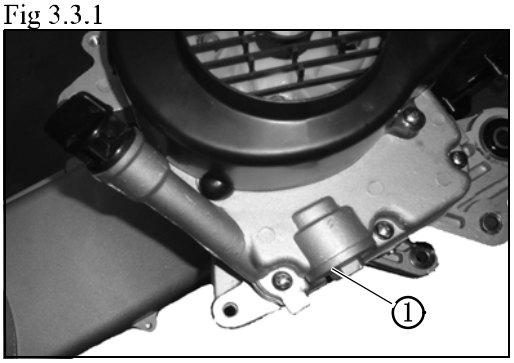
1) over worn on cylinder
2) over worn on piston or rings
3) defective or sticking piston rings
4) leaking valve or valve seat
5) blown cylinder head gasket

Engine must be disassembled for inspection or repaired if compression is less than specified pressure.

Ⅲ-3 Cylinder &cylinder head Disassembly

Remove the drain plug① to drain out engine oil from crankcase.
Refer to Fig3.3.1

Fig 3.3.1



Remove air cleaner, carburetor, intake pipe, fan cover and shroud A and B.
Refer to Fig3.3.2 & 3.3.3

Fig 3.3.2

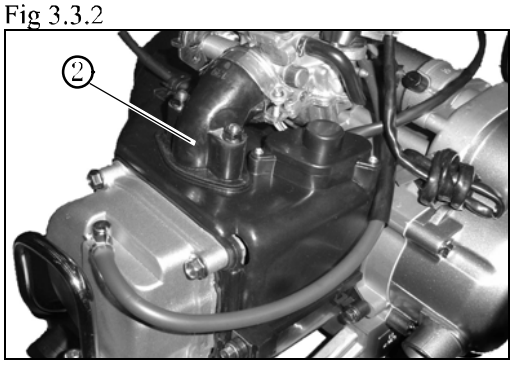
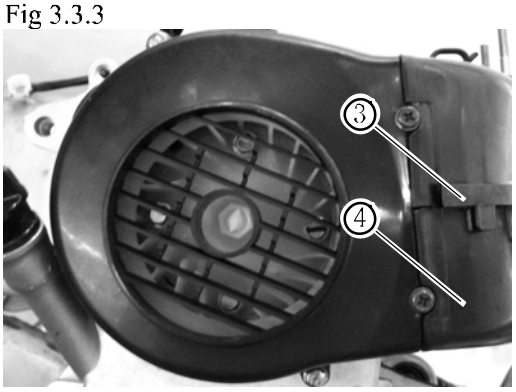
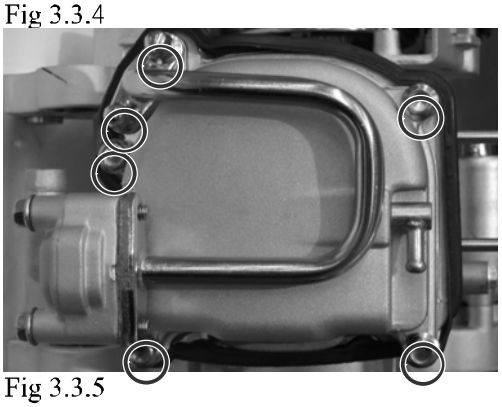


Fig 3.3.3



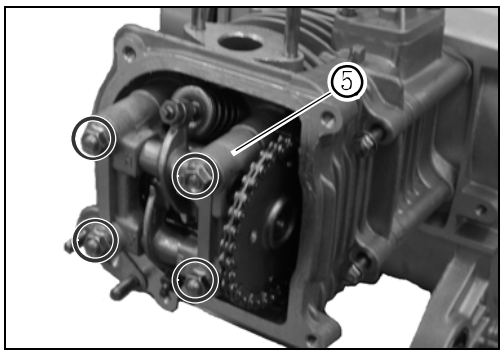
Remove cylinder head cover bolts.
Refer to Fig3.3.4

Fig 3.3.4



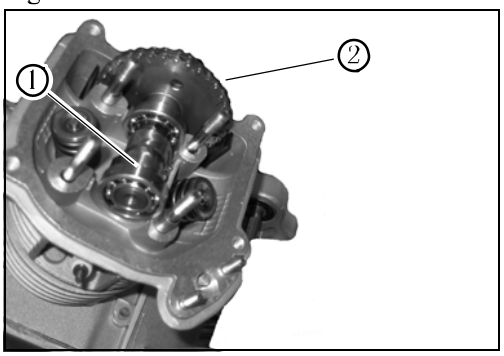
Loosen the nuts over cam shaft holder⑤ diagonally and remove the mounting nuts beside timing chain chamber.
Refer to Fig3.3.5.

Fig 3.3.5



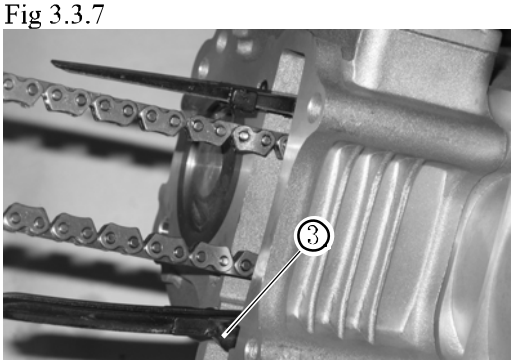
Remove cam shaft holder, then remove timing chain② from cam shaft①.
Refer to Fig3.3.6.
Remove cylinder head.

Fig 3.3.6



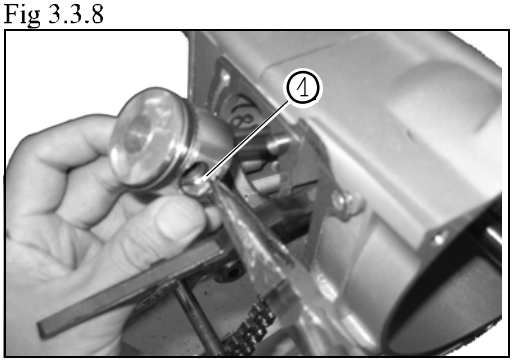
Remove cylinder head gasket, timing chain guide③ and cylinder.
Refer to Fig3.3.7.

Fig 3.3.7



Cover the crankcase opening with clean rags to prevent clip from entering into the crank chamber, and remove piston pin clip④.
Refer to Fig3.3.8。
Remove piston pin and piston.

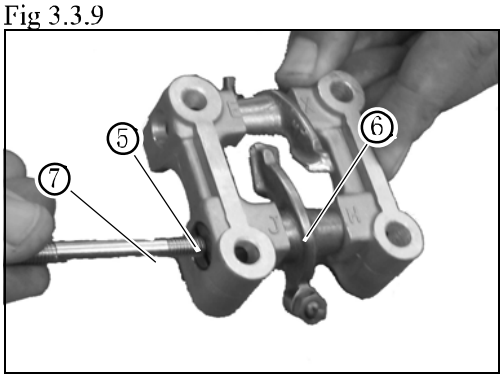
Fig 3.3.8



Disassembly cylinder head

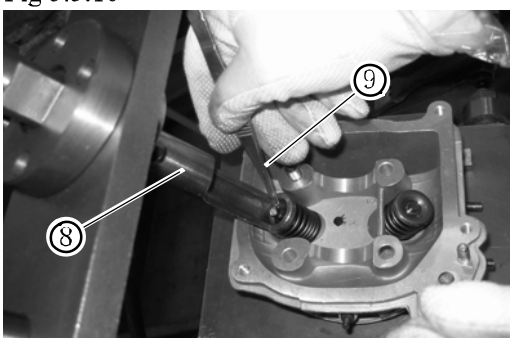
Screw one M5 bolt⑦ into rocker arm shaft⑤, then remove it and rocker arm⑥ from cam shaft holder..
Refer to Fig3.3.9

Fig 3.3.9



Press the spring by valve spring compressor⑧, then remove cotters by forceps.
Refer to Fig3.3.10
Remove spring seats, inner and outer springs.

Fig 3.3.10



Drive out valve and remove valve boot.

Ⅲ-4 Inspection of Cylinder & Cylinder Head

Explanation of specification Ⅰ and specification Ⅱ

- This chapter instructs the inspection and maintenance for cylinder head and accessories, cylinder and piston.
- During inspection, the removed parts should be marked and packed properly to ensure reinstallation.
- Cam shafts and rocker arms are lubricated by the oil coming from the oil channel inside the cylinder head. Take care to clean these oil channel before assemble cylinder head.
- When inspect cylinder head, valves and cylinder, take care not to damage the sealing surface.
- Take care nor to damage the combustion chamber of piston and cylinder head.
- All the removed parts should be cleaned by solvent and dried by compressed air before inspection.
- Remove carbon deposits before inspecting piston and cylinder head.

Specification Ⅰ Unit: mm

Item			Standard	Service limit
Cylinder compression			1540kPa(15.7kgf/cm^2) at 800rpm	---
Cylinder head warpage			---	0.05
Rocker arm	Rocker arm I.D.	IN/EX	10.008—10.023	10.10
	Rocker arm shaft O.D.	IN/EX	9.980—9.995	9.91
	Shaft-to-arm clearance	IN/EX	0.013—0.043	0.08
Cam	Cam lobe height	IN	25.51—25.61	25.50
		EX	25.11--25.21	25.10
Valve Valve guide	Valve clearance	IN	0.06—0.08	---
		EX	0.06—0.08	---
	Valve stem O.D.	IN	4.975—4.990	4.90
		EX	4.955—4.970	4.90
	Valve guide I.D.	IN/EX	5.000--5.012	5.03
	Stem-to-guide clearance	IN	0.010—0.037	0.08
		EX	0.030—0.057	0.10
	Valve guide length out of cylinder head	IN/EX	12.85—13.15	---
	Valve seat width	IN/EX	0.8	1.5
Valve spring free length		inner	30	28
		outer	34.35	32.35

Specification Ⅱ Unit：mm

Item			Standard	Service limit
Cylinder	I.D.		39.010—39.015	39.019
	Out of round		---	0.05
	Taper		---	0.05
	Warpage		---	0.05
Piston, Piston ring, Piston pin	Piston O.D.		38.985—38.990	38.98
	Piston O.D. measurement point		10mm above piston skirt	---
	Piston pin hole I.D.		13.002—13.008	13.04
	Piston pin O.D.		12.994—13.000	12.98
	Piston-to-piston pin clearance		0.002—0.014	0.04
	Ring-to-ring groove clearance	Top ring	0.015—0.045	0.08
		Second ring	0.015—0.050	0.08
	Ring end gap	Top ring	0.05—0.15	0.40
		Second ring	0.05—0.20	0.40
		Oil ring	0.20—0.70	0.90
Cylinder-to-piston clearance			0.010—0.040	0.12

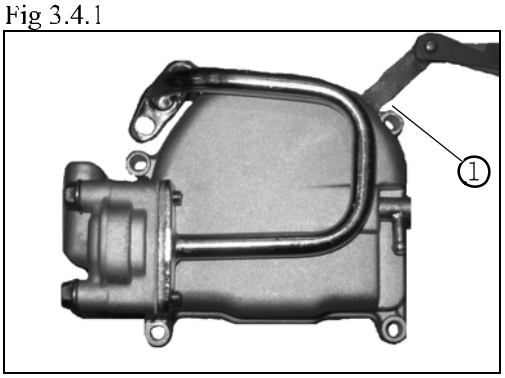
Checking warpage of cylinder head

After removing the seal ring from cylinder head, press it on the flat surface plate and check its warpage at different point with thickness gauge①.

Refer to Fig3.4.1.

Service limit	0.06mm

Fig 3.4.1



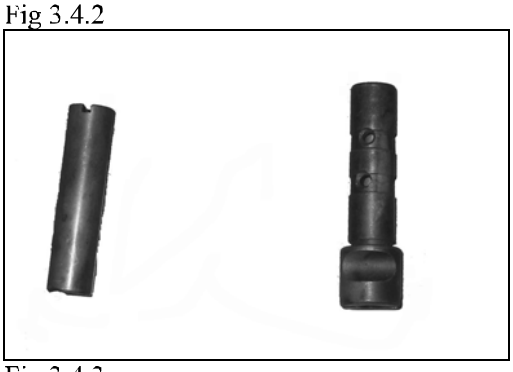
Rocker arm shaft O.D.

Measure Rocker arm shaft O.D. by micrometer.

Refer to Fig3.4.2

Service limit	9.91mm

Fig 3.4.2



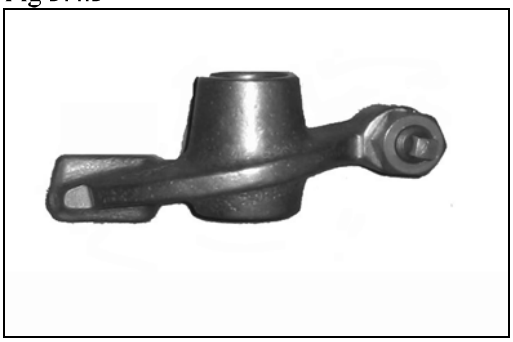
Rocker arm I.D.

Measure rocker arm I.D. by micrometer.

Refer to Fig3.4.3

Service limit	10.10mm

Fig 3.4.3



Shaft-to-arm clearance

Check shaft-to-arm clearance.

Refer to Fig 3.4.4

Service limit	0.08mm

Fig 3.4.4

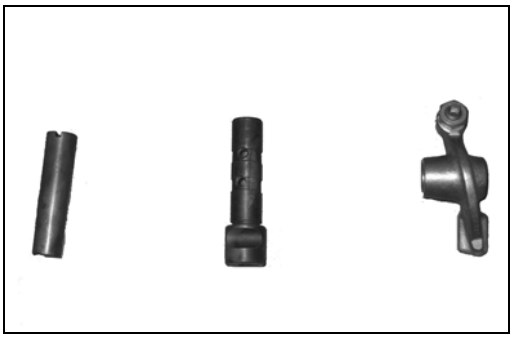


Fig 3.4.5

Cam shaft

If abnormal noise or vibration was found, or engine output was less, the bearing① &②, cam profile and shaft journal must be inspected.

Refer to Fig 3.4.5.

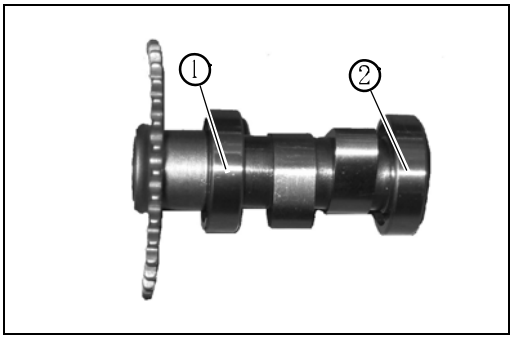


Fig 3.4.6

Wear of cam

Worn cam shaft will cause insufficient valve timing and less horsepower. Wear of cam shaft can be indicated as cam height of intake cam③ and exhaust cam④ and measured by micrometer. Replace if cam height exceeds the limit.

Refer to Fig 3.4.6.

Service limit	25.50mm(in.)/25.10mm(ex.)

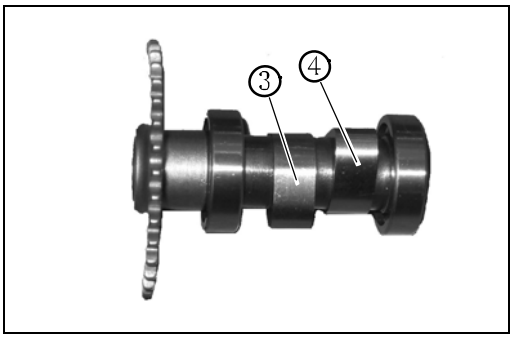


Fig 3.4.7

Cylinder head warpage

Remove carbon deposits in combustion chamber, and check warpage by flat surface plate and thickness gauge⑤ at different position. Replace with new cylinder head if the reading of any position exceeds the limit.

Refer to Fig 3.4.7

Service limit	0.05mm

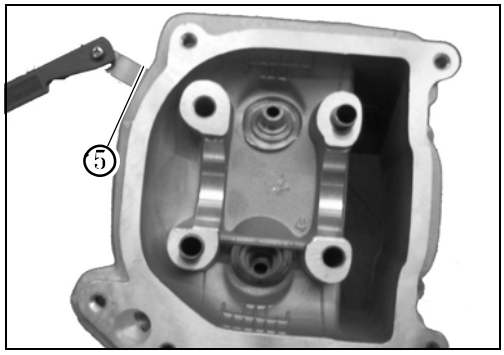


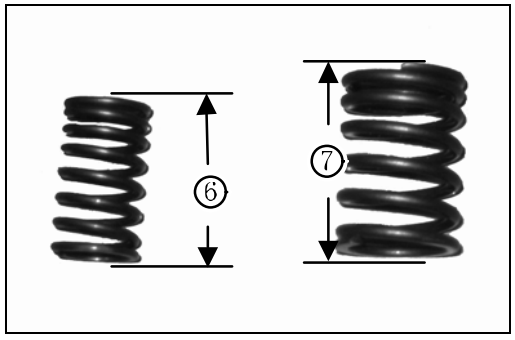
Fig 3.4.8

Valve spring

Check the spring through measuring the free length or spring tension. Replace the spring set if the free length exceeds the limit.

Refer Fig 3.4.8

Service limit	30mm(inner)/34.35mm(outer)



Valve/valve guide

Ensure valve stem sliding in valve guide smoothly.

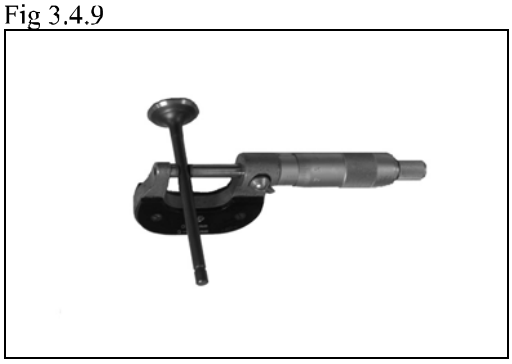
Check for bending, burns, scratches or over wear.

Measure valve stem O.D.

Refer Fig 3.4.9

Service limit(in./ex.)	4.90mm

Fig 3.4.9



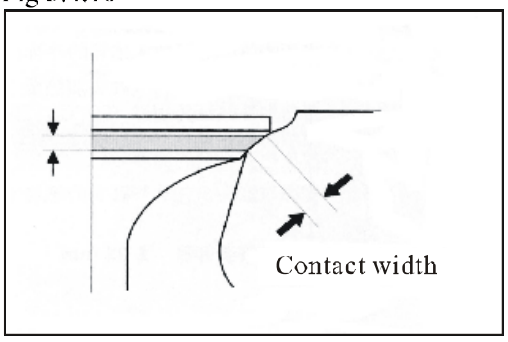
Remove valves and measure contact width of valve seat.

Refer Fig 3.4.10

Standard: 0.8mm

Service limit: 1.5mm

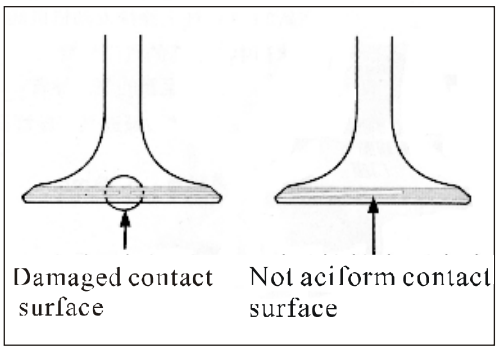
Fig 3.4.10



Replace valve or reface valve seat, if valve seat contact surface is damaged or not uniform.

Refer Fig 3.4.11

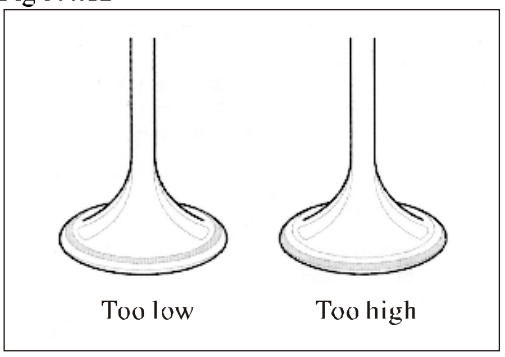
Fig 3.4.11



Reface the valve seat contact surface if the it is too high or low.

Refer Fig 3.4.12

Fig 3.4.12



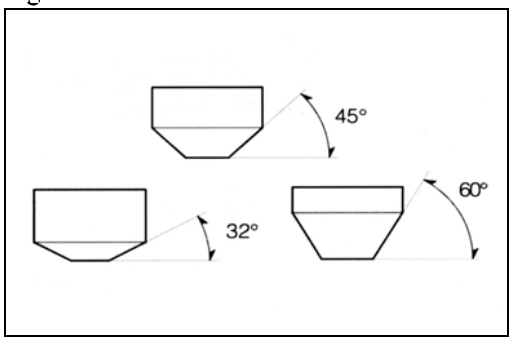
Repair valve seat by reamer

Refer to operation manual of reamer.

Take care not to over cut valve seat.

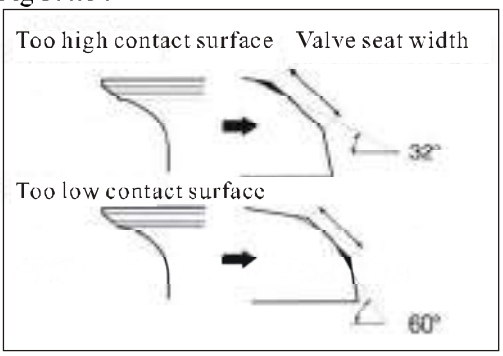
Refer Fig 3.4.13

Fig 3.4.13



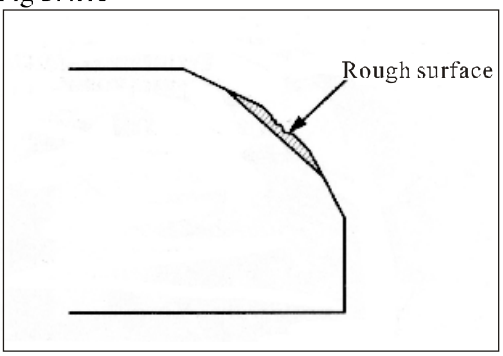
Reduce the height of contact surface by 32° reamer.
Increase the height of contact surface by 60° reamer.
Polish the contact surface to specification by 45° reamer.
Refer Fig 3.4.14

Fig 3.4.14



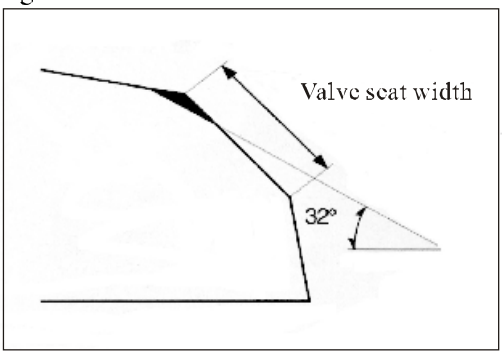
Remove unequal or rough surface from valve seat by 45° reamer.
Refer Fig 3.4.15

Fig 3.4.15



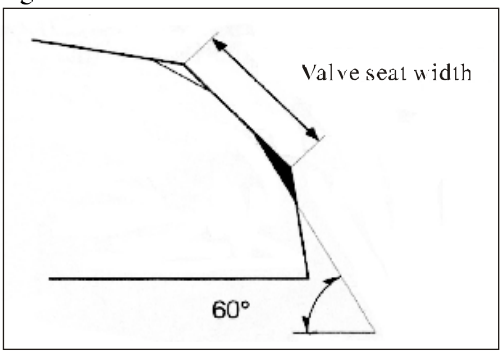
Remove top 1/4 length of valve seat by 32° reamer.
Refer Fig 3.4.16

Fig 3.4.16



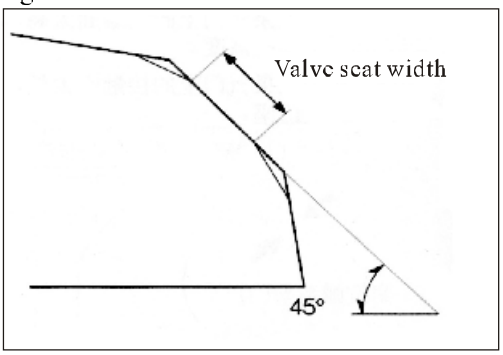
Remove bottom 1/4 length of valve seat by 60° reamer.
Refer Fig 3.4.17

Fig 3.4.17



Polish the contact surface to specified width by 45° reamer.
Refer Fig 3.4.18

Fig 3.4.18



Cylinder warpage

Check warpage of sealing surface by flat surface plate and thickness gauge at different position. Replace with new cylinder if the reading of any position exceeds the limit.

Refer to Fig 3.4.19

Service limit	0.05mm

Cylinder I.D.

Measure the cylinder I.D. at 6 difference position.

Repair the cylinder if any reading exceeds the limit, or replace cylinder and piston in set.

Service limit	39.019mm

Piston O.D.

Measure the piston O.D. by micrometer at the position 10mm above piston skirt. Replace if reading exceeds the limit.

Refer to Fig3.4.20

Service limit	38.98mm

Piston-to-cylinder clearance

If above measurement shows the piston-to-cylinder clearance exceeds the limit, repair or replace cylinder and piston meanwhile.

Service limit	0.12mm

Ring end gap

Insert piston ring into cylinder, measure end gap of each ring by thickness gauge②. Replace defect piece whose gap exceeds the limit.

Refer to Fig 3.4.21

	Service limit
Top ring	0.08 mm
Second ring	0.08 mm
Oil ring	0.04 mm

Piston hole-to-piston pin clearance

Measure piston pin hole I.D. by telescope caliper, and measure piston pin O.D. by micrometer. If piston hole-to-piston pin clearance exceeds the limit, replace piston and piston pin meanwhile.

Refer to Fig 3.4.22

Piston hole I.D.

Service limit	13.04mm

Piston pin O.D. Refer to Fig3.4.23

Service limit	12.98

Fig 3.4.19

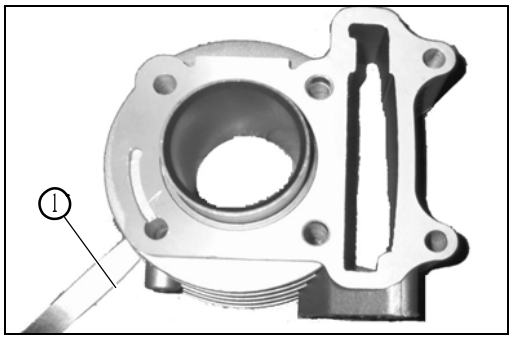


Fig 3.4.20

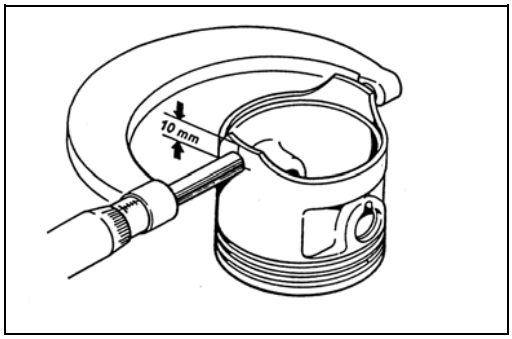


Fig 3.4.21

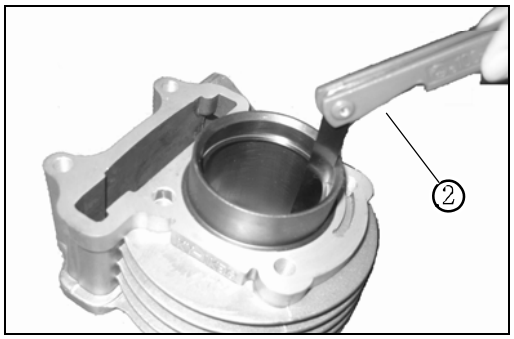


Fig 3.4.22

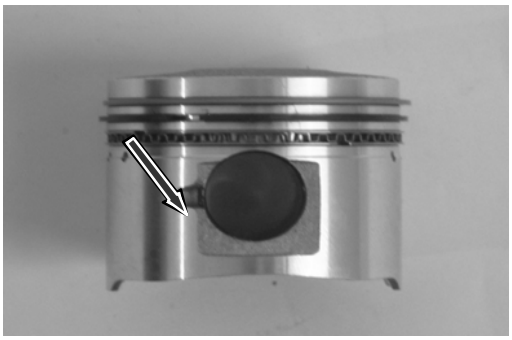
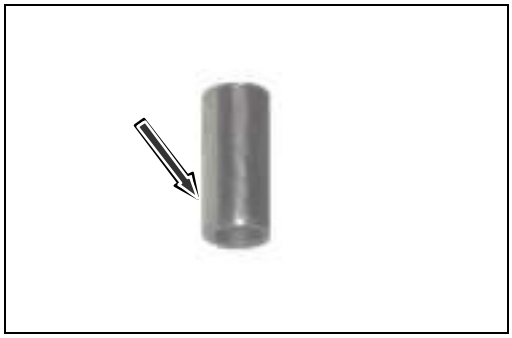


Fig 3.4.23



Ⅲ-5 Reassembly of Cylinder & Cylinder head

Installation of piston

Apply engine oil to piston ring and piston ring groove, then install piston ring to groove with the stamped mark upward.

When installing oil ring, firstly install separating ring, then side track.

Refer to Fig 3.5.1 & Fig 3.5.2

Fig 3.5.1

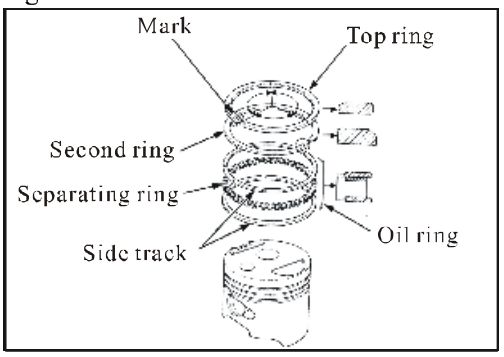


Fig 3.5.2

Adjust piston rings to ensure the rings end gap uniformly distributed at 120°

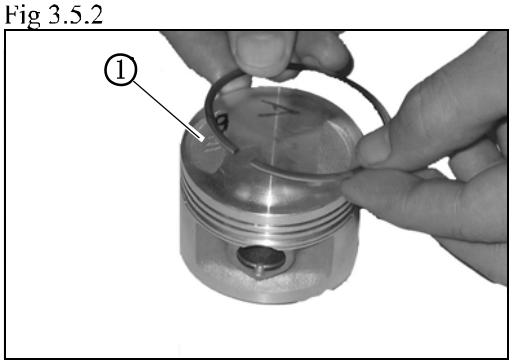


Fig 3.5.3

Apply engine oil to small end of connecting rod.

Install piston with "IN" mark on crown toward up.

Apply engine oil to piston pin and install it to piston through the small end of connecting rod.

Refer to Fig 3.5.3

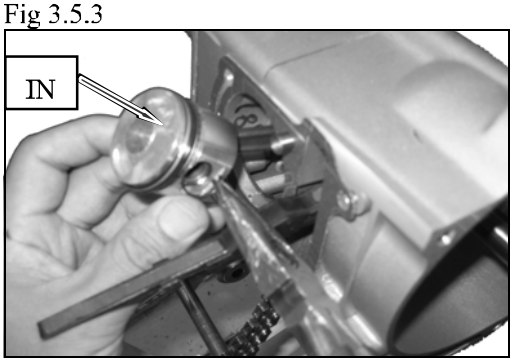


Fig 3.5.4

Installation of cylinder

Install dowel pin and new O-ring.

Refer to Fig 3.5.4

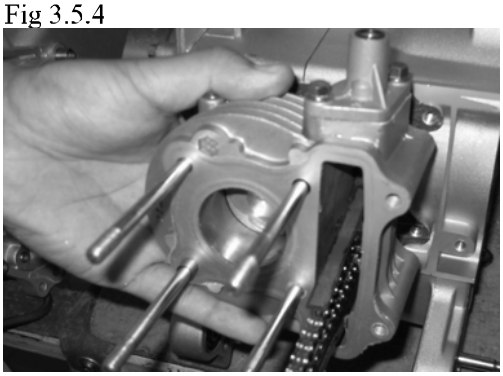


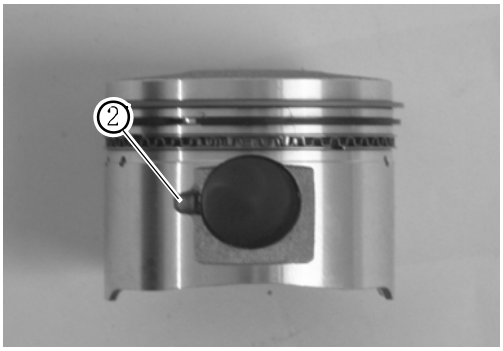
Fig 3.5.5

Install new piston pin circlips properly into its groove and ensure the circlip end gap not aligned with the rabbet② of piston pin hole.

Refer to Fig 3.5.5

Apply engine oil to cylinder wall.

Push cylinder to piston with compressing piston rings into their groove by finger.



Installation of cylinder head

Sub Assembly

Blow compressed air through all oil passages.

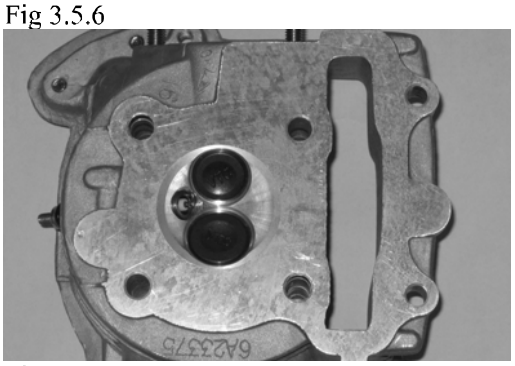
Apply grease to the stem of valves

Apply engine oil to new valve boot.

Insert valve stem into valve guide slowly to avoid damaging valve boot.

Refer to Fig 3.5.6

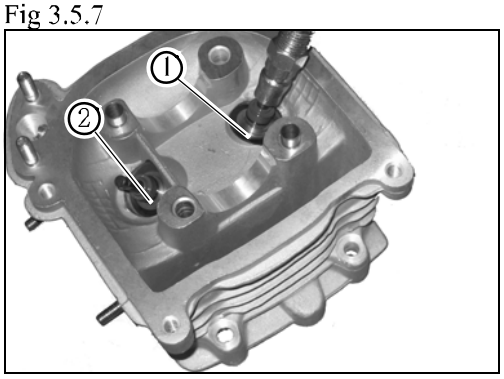
Fig 3.5.6



Install valve spring seats① and new valve boot②.

Refer to Fig 3.5.7

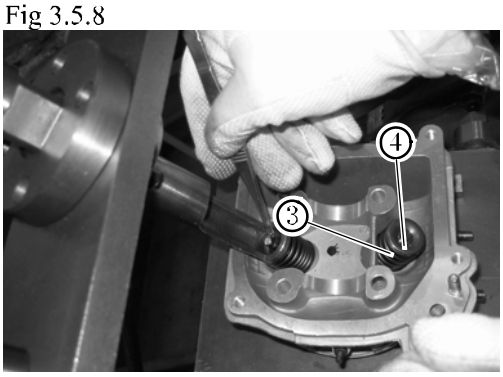
Fig 3.5.7



Compress valve spring and spring seat with closely wound coil near to cylinder head, and install valve seat③ and cotter④.

Tool: Valve spring compressor.

Fig 3.5.8



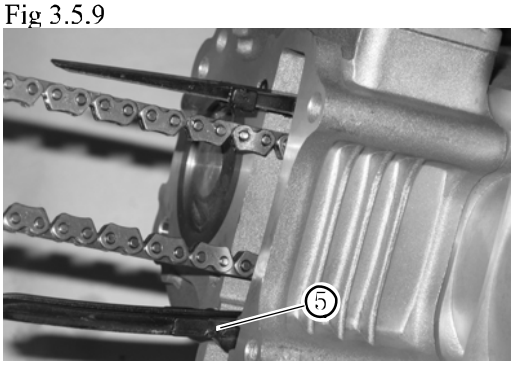
Assembly

Clean the contact surface between cylinder and cylinder head.

Install timing chain guide⑤ with the pin fitted into locating groove.

Refer to Fig 3.5.9

Fig 3.5.9

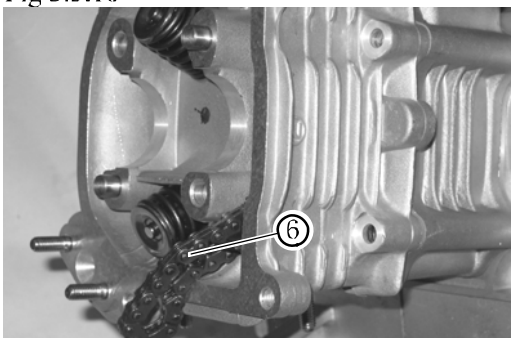


Install dowel pin and new gasket to cylinder.

Take out timing chain through chain chamber of cylinder head and install cylinder head to cylinder.

Refer to Fig 3.5.10

Fig 3.5.10

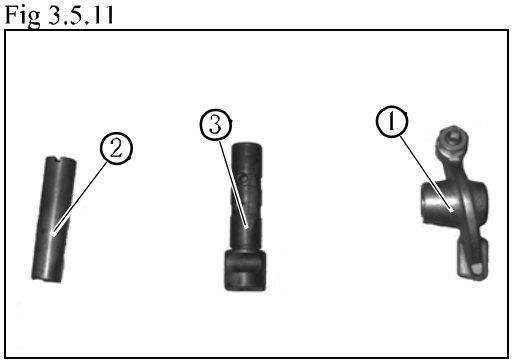


Install cam shaft holder

Apply engine oil to sliding surface of rock arm①, and rock arm shaft②③.

Refer to Fig 3.5.11

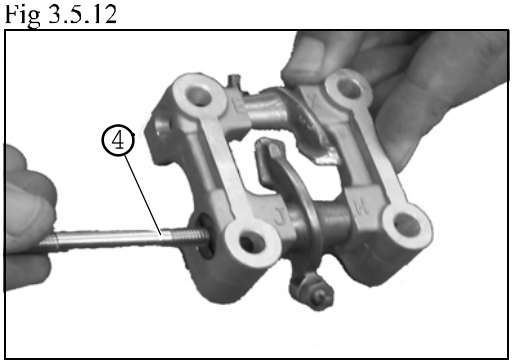
Fig 3.5.11



Insert bolt M5 ④ into rocker shaft, then install rock arm and shaft to cam shaft holder by this bolt.

Refer to Fig 3.5.12.

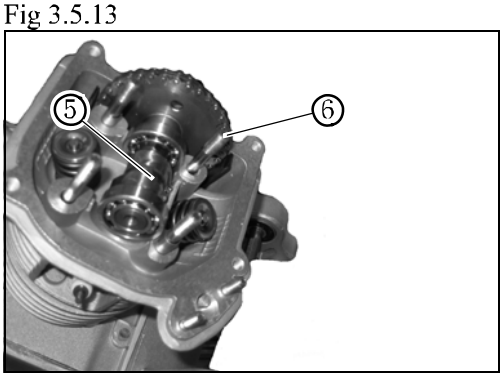
Fig 3.5.12



Insert cam shaft⑤ to timing chain⑥.

Refer to Fig 3.5.13.

Fig 3.5.13

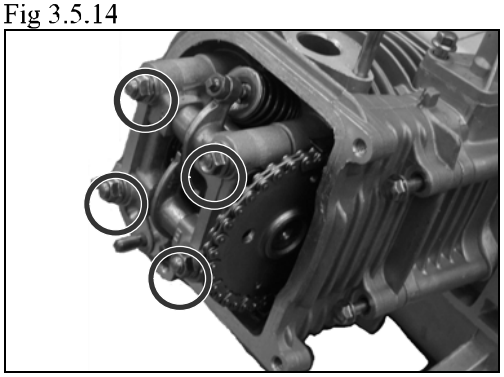


Diagonally tighten cam holder nuts to specified toque.

Refer to Fig 3.5.14

Specified toque: 18N.M

Fig 3.5.14



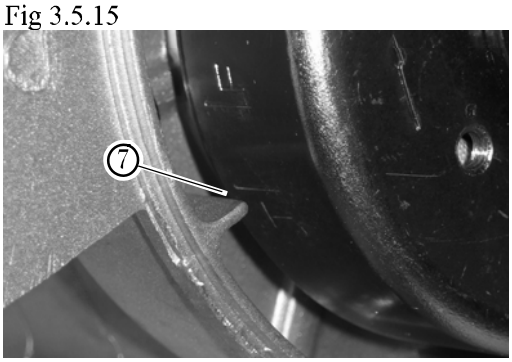
Turn crankshaft counterclockwise till "T" mark on flywheel align with indicator mark on crankcase RH.

Apply engine oil to timing chain and sprocket.

Align the mark on sprocket with flat surface of cylinder head.

Refer to Fig 3.5.15.

Fig 3.5.15



Install timing chain tensioner and gasket with two bolts and tighten to specified toque.
Refer to Fig 3.5.16.
Specified toque: 10N.m

Fig 3.5.16

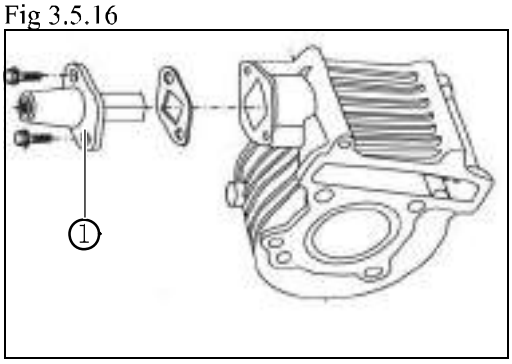


Fig 3.5.17

Apply engine oil to new O-ring② and insert into tensioner.
Insert spring③ into tensioner by screw and tighten the screw to specified toque.
Refer to Fig 3.5.17.
Specified toque: 0.8N.m

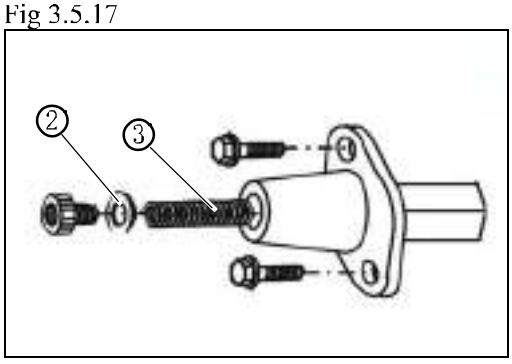


Fig 3.5.18

Tappet clearance

Turn crankshaft counterclockwise till the mark on sprocket align to flat surface④ of cylinder head.
Refer to Fig 3.5.18

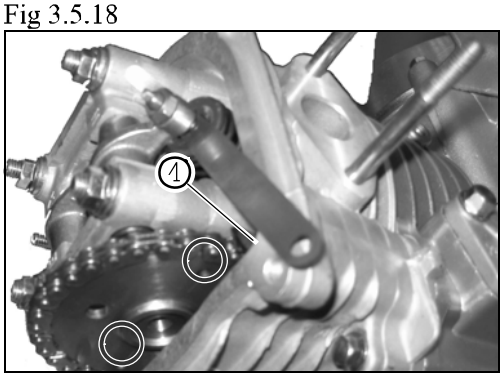


Fig 3.5.19

Ensure cam profile upward and primary circle downward, and keep "T" mark on flywheel align with indicator mark⑤ on crankcase RH.
Refer to Fig 3.5.19.

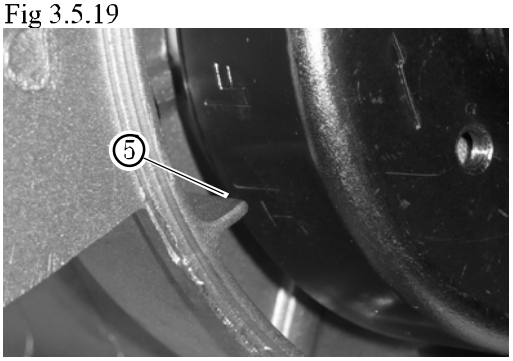
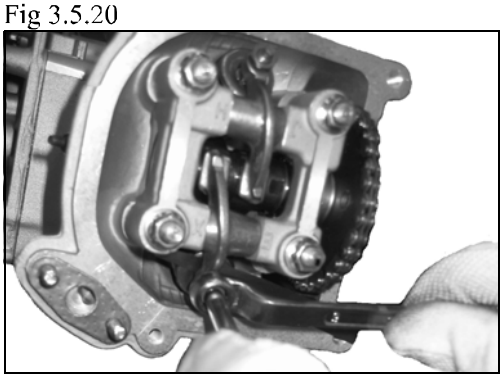


Fig 3.5.20

Adjust Tappet clearance to specification, and tighten the lock nut to specified toque.
Refer to Fig 3.5.20.
Specified toque: 10N.m.

Specification	0.06mm-0.08mm

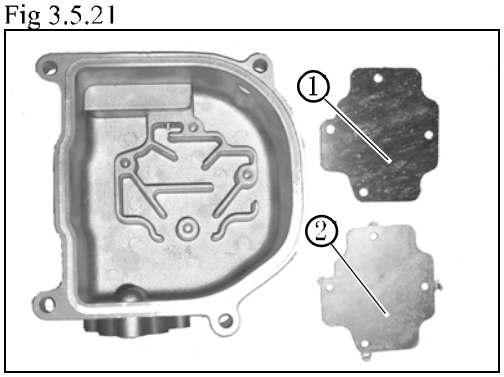


Cylinder head cover sub assembly

Install plat② and new gasket① to cylinder head cover.

Refer to Fig 3.5.21

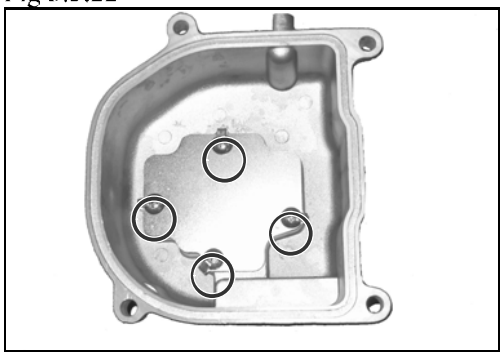
Fig 3.5.21



Bend the edge of plate to lock the bolts with long nozzle pliers.

Refer to Fig 3.5.22

Fig 3.5.22



Install reed valve③ to cylinder head cover and fasten it by its cover④.

Refer to Fig 3.5.23 & 3.5.24.

Fig 3.5.23

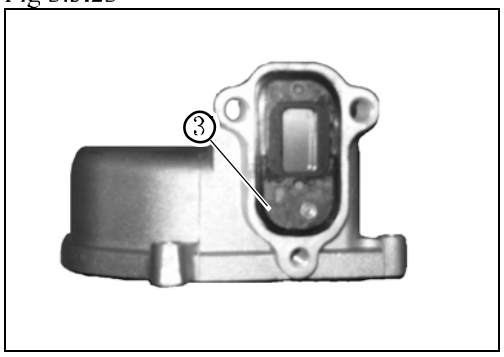


Fig 3.5.24

Install intake pipe of reed valve and its gasket to cylinder head cover, and tighten the mounting bolts to specified toque.

Specified toque: 10N.m

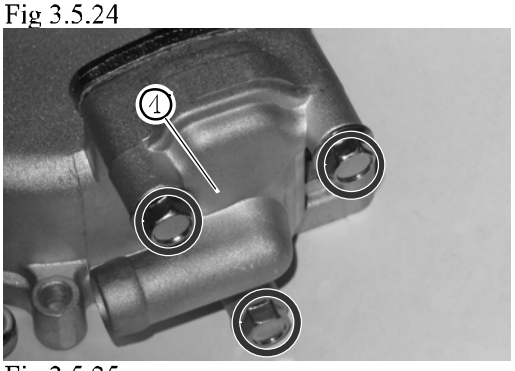
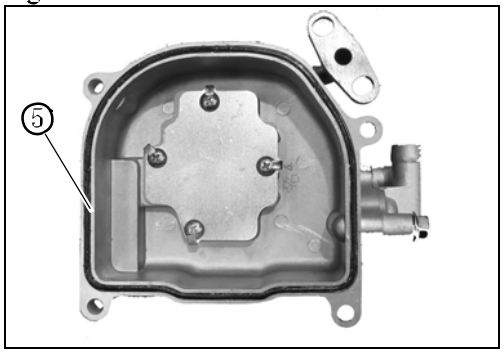


Fig 3.5.25

Installing cylinder head cover

Install new rubber ring⑤ to sealing surface of cylinder head cover.

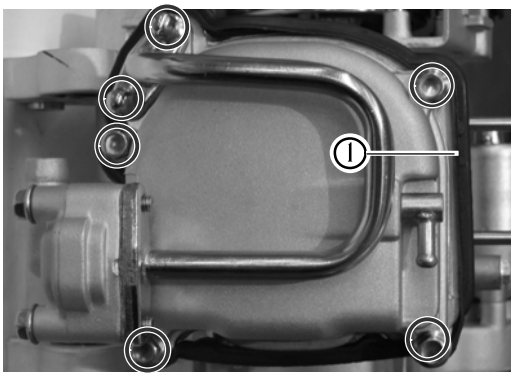
Refer to Fig 3.5.25



Install cylinder head cover to cylinder head, and diagonally tighten the mounting bolts to specified toque.
Specified toque: 10N.m

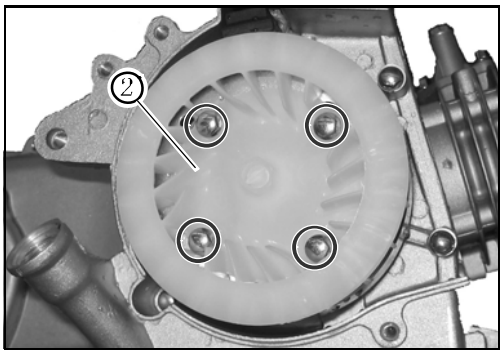
Install shroud seal to cylinder head.
Refer to Fig 3.5.26

Fig 3.5.26



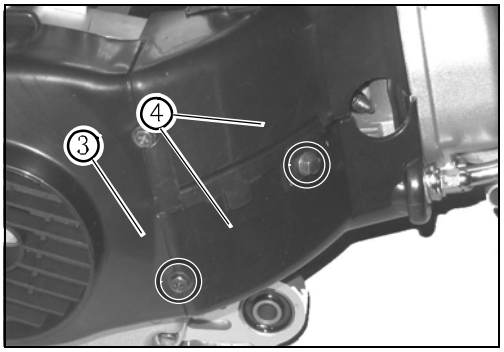
Connect breath hose.
Install cooling fan②, and tighten the mounting screws to specified toque.
Refer to Fig 3.5.27
Specified toque: 10N.m

Fig 3.5.27



Install fan cover③, upper shroud and lower shroud④, and tighten the mounting screws to specified toque.
Refer to Fig 3.5.28.

Fig 3.5.28

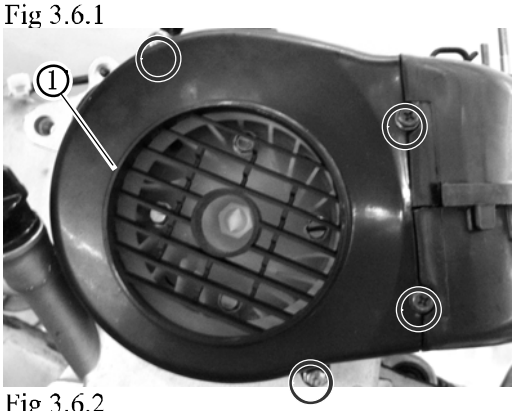


Ⅲ-6 Crankcase Disassembly

Magneto ASSY

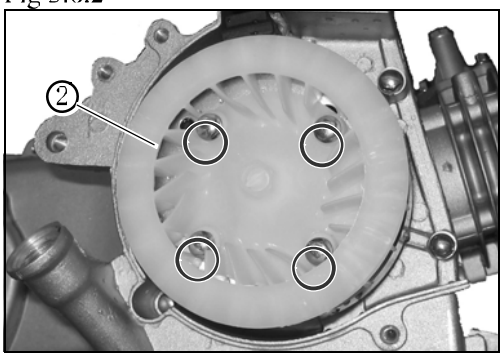
Remove screws and fan cover①.
Refer to Fig 3.6.1

Fig 3.6.1



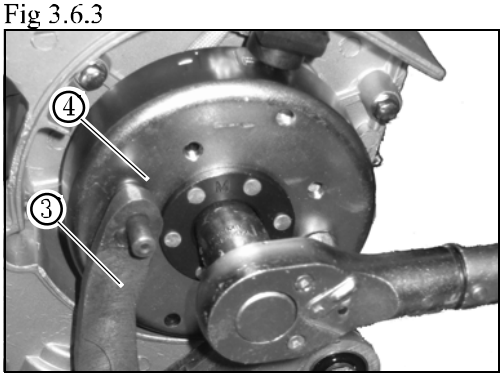
Remove bolts and cooling fan.
Refer to Fig 3.6.2

Fig 3.6.2



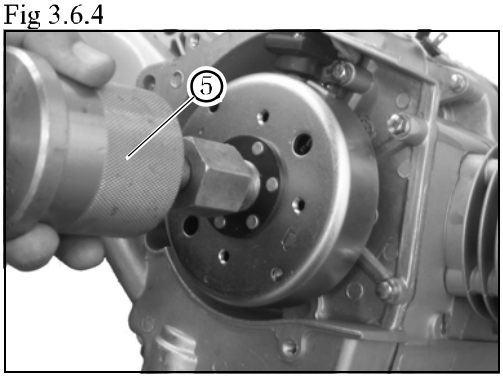
Hold the flywheel① by special tool③ and loosen the nut.
Refer to Fig 3.6.3
Special tool: flywheel holder

Fig 3.6.3



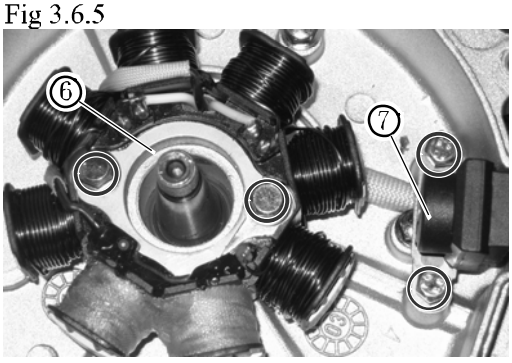
Take out flywheel nut and washer.
Remove flywheel by special tool ⑤.
Refer to Fig 3.6.4
Special tool: flywheel remover

Fig 3.6.4



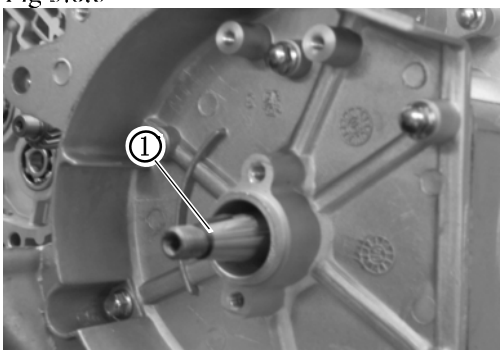
Loosen stator bolts and pulse coil bolts.
Remove stator⑥ and pulse coil⑦.
Refer to Fig 3.6.5

Fig 3.6.5



Remove the woodruff key① from the crankshaft.
Refer to Fig 3.6.6

Fig 3.6.6

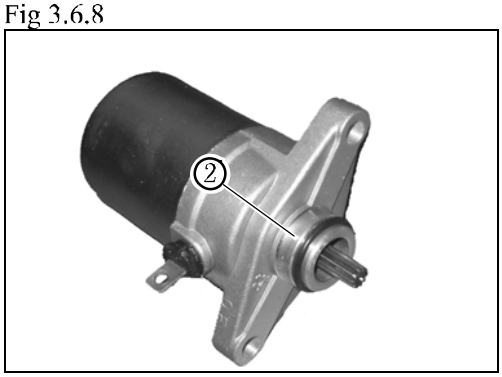


Starter motor
Remove bolts and starter motor.
Refer to Fig 3.6.7

Fig 3.6.7

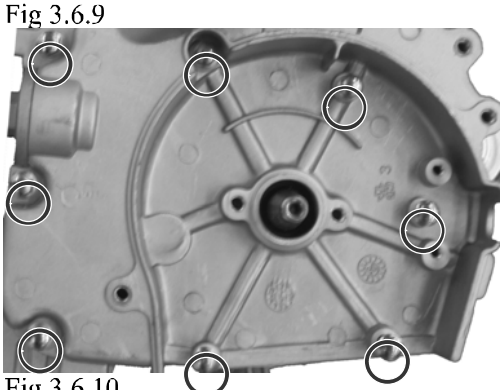
Remove O-ring② from starter motor.
Refer to Fig 3.6.8

Fig 3.6.8



Cover RH /Oil pump
Loosen mounting bolts and remove cover RH.
Refer to Fig 3.6.9

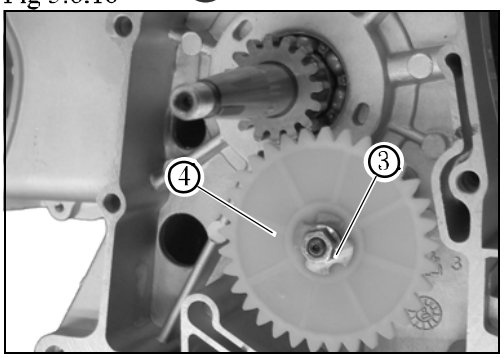
Fig 3.6.9



When removing oil pump, take care to prevent dust from entering the crankcase.

Remove mounting nut③ and oil pump gear④.
Refer to Fig 3.6.10

Fig 3.6.10



Remove mounting bolts and oil pump.
Take out O-ring① from sealing surface of oil passage.
Refer to Fig 3.6.11

Fig 3.6.11

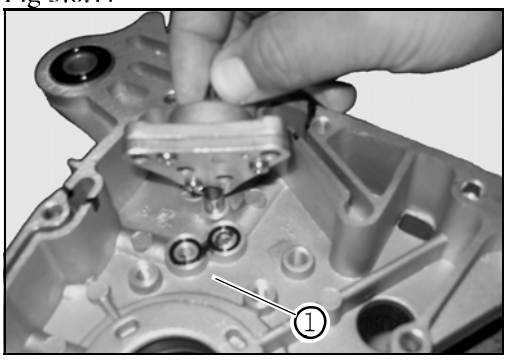
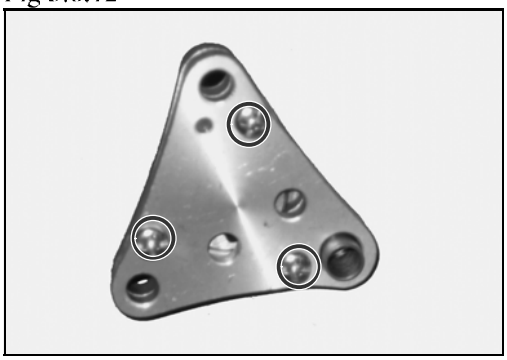


Fig 3.6.12



Disassemble the oil pump in following order:

Screws
Oil pump plate②
Pin ③
Inner rotor④
Outer rotor⑤

Refer to Fig 3.6.12 & 3.6.13

Fig 3.6.13

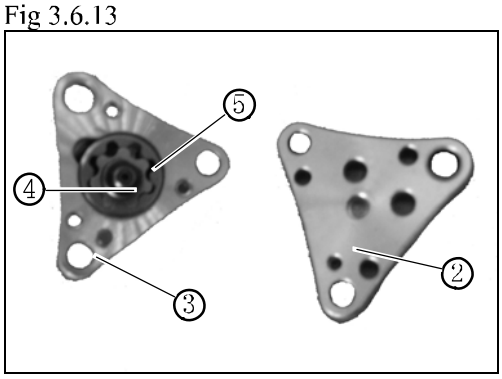


Fig 3.6.14

COVER LH / KICK START

Cover LH

Loosen mounting bolts and remove cover LH.
Refer to Fig 3.6.14

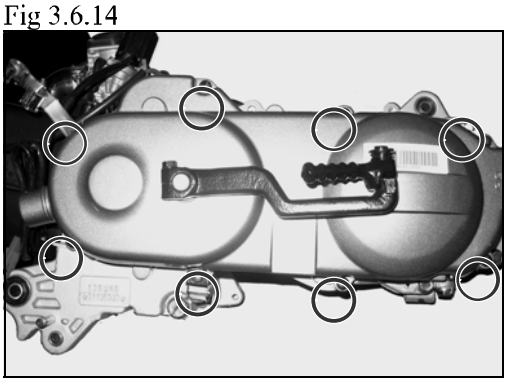
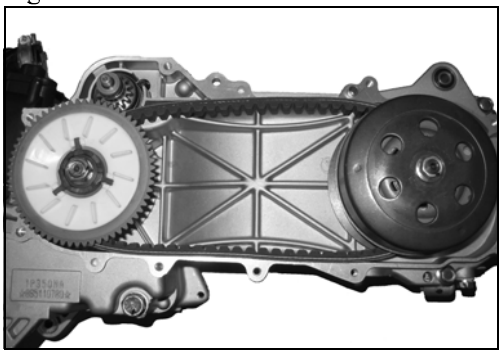


Fig 3.6.15

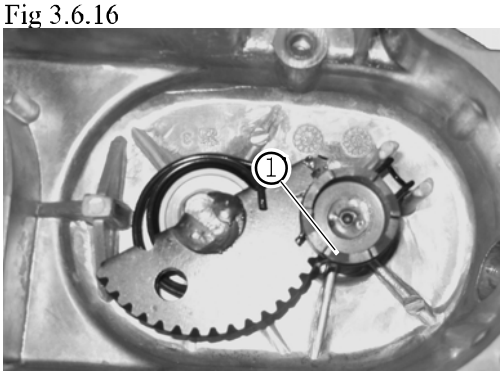
Remove gasket and dowel pin from cover LH.
Refer to Fig 3.6.15



Kick start

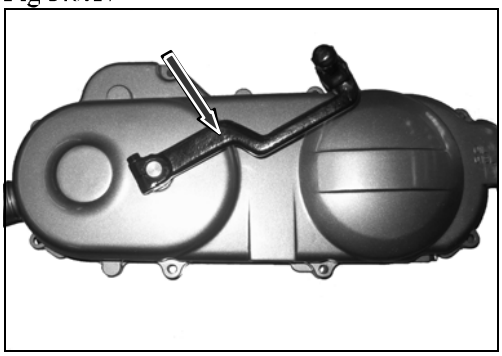
Drive the kick lever on cover LH to remove kick driven gear① and thrust washer.
Refer to Fig 3.6.16

Fig 3.6.16



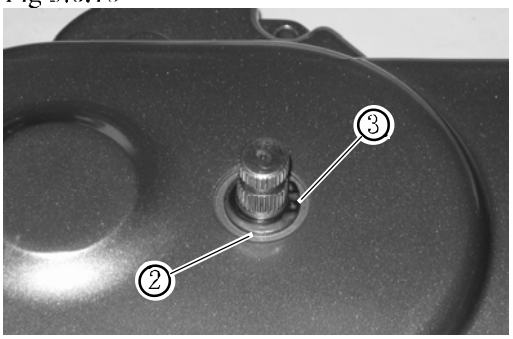
Before removing kick lever, scribe the alignment mark of kick lever and kick shaft as reference for reinstallation.
Remove lock bolt and kick lever.
Refer to Fig 3.6.17

Fig 3.6.17



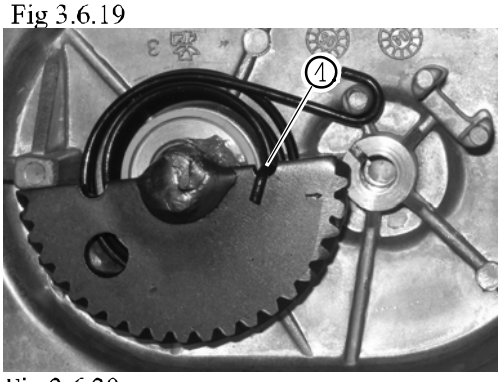
Remove circlip② and washer③ from kick shaft.
Refer to Fig 3.6.18

Fig 3.6.18



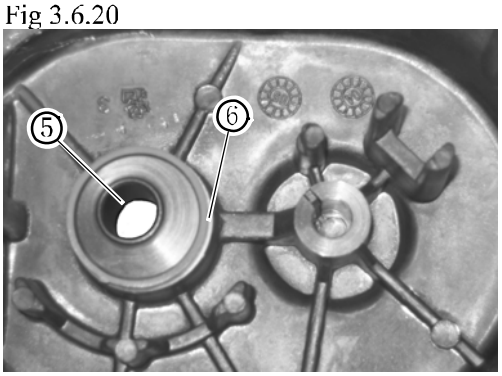
Loosen the kick return spring from rivet on cover LH. Remove kick shaft and kick return spring.
Refer to Fig 3.6.19

Fig 3.6.19



Remove kick shaft bush⑤ and collar⑥.
Refer to Fig 3.6.20

Fig 3.6.20



CLUTCH ASSY

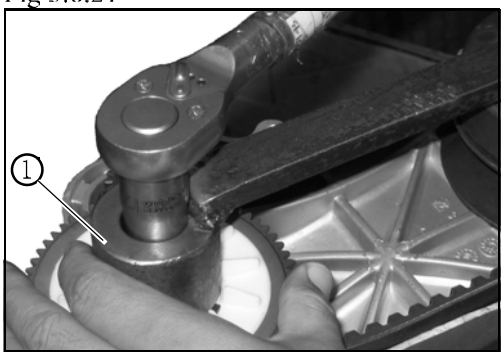
Pulley drive

Hold the kick starter ratchet by special tool①, and remove nut and washer.

Refer to Fig 3.6.21

Special tool: ratchet holder

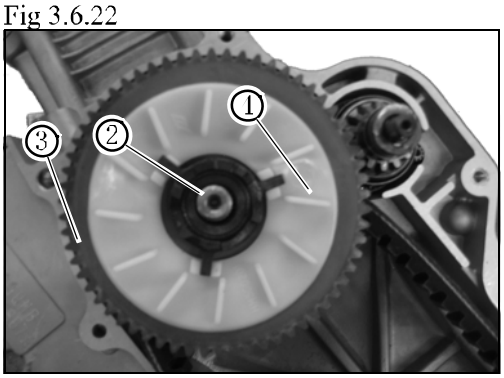
Fig 3.6.21



Remove kick starter ratchet①, fixed drive face③ and cooling fan④.

Refer to Fig 3.6.22

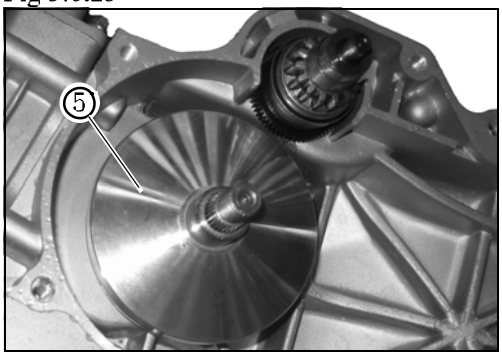
Fig 3.6.22



Remove drive belt and clutch assy when removing movable drive face.

Refer to Fig 3.6.23

Fig 3.6.23



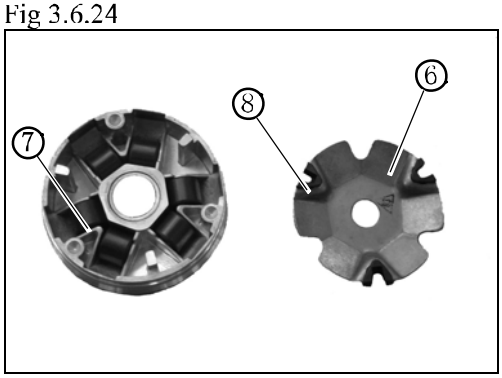
Disassembly

Remove roller guide plate⑥ and rollers⑦ from movable drive face assy.

Take out sliding bush⑧ from roller guide plate.

Refer to Fig 3.6.24

Fig 3.6.24

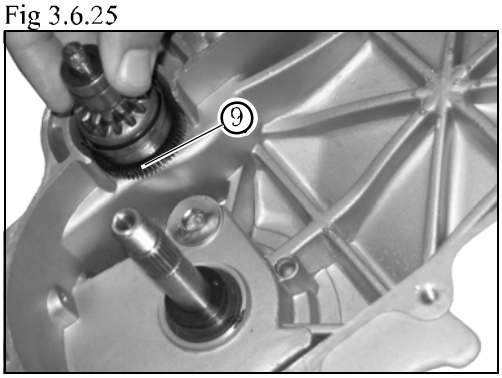


Starter gear assy

Remove starter gear assy⑨ after movable drive face assy removed.

Refer to Fig 3.6.25

Fig 3.6.25



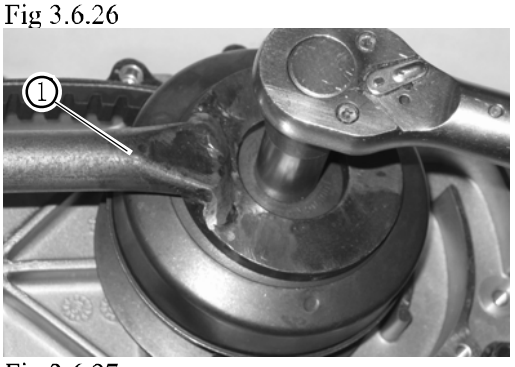
Clutch ASSY / Driven pulley

Hold the clutch hub by special tool① to loosen the nut.

Refer to Fig 3.6.26

Special tool: clutch hub holder

Fig 3.6.26



Remove clutch hub.

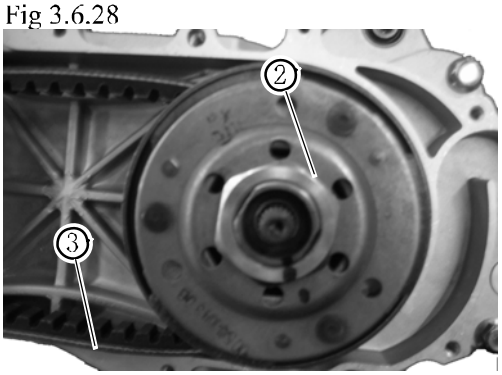
Refer to Fig 3.6.27

Fig 3.6.27

Remove the driven plate assy② and belt③.

Refer to Fig 3.6.28

Fig 3.6.28



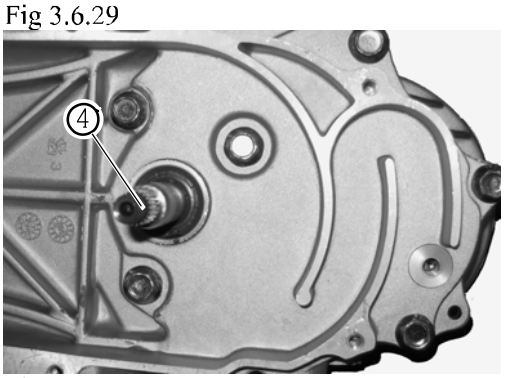
GEAR BOX

Loosen the bolts, and remove gear box.

Remove drive shaft④.

Refer to Fig 3.6.29

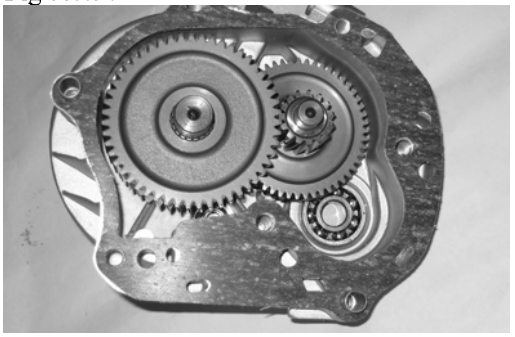
Fig 3.6.29



Remove gasket and dowel pins.

Refer to Fig 3.6.30

Fig 3.6.30



Remove oil seal of drive shaft①.
Refer to Fig 3.6.31

Fig 3.6.31

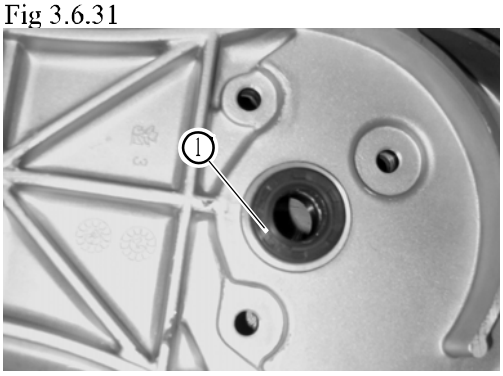


Fig 3.6.32

Remove the parts in following order:
Final gear④
Final shaft③
Counter shaft②
Refer to Fig 3.6.32 & 3.6.33

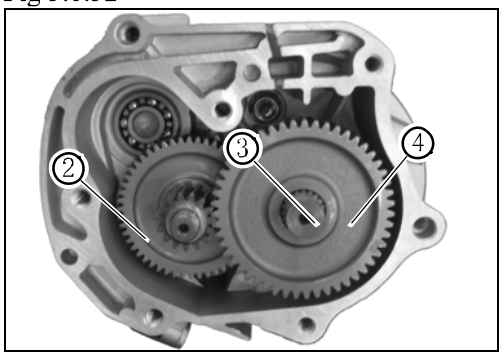


Fig 3.6.33

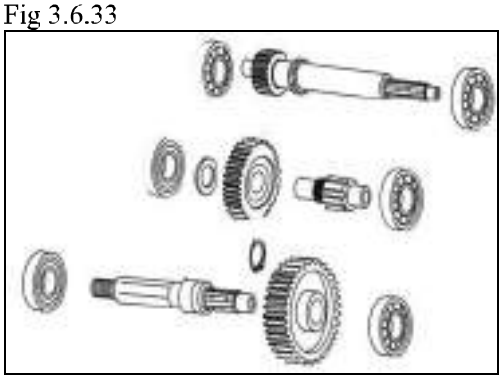


Fig 3.6.34

Remove oil seal of final shaft⑤.
Refer to Fig 3.6.34

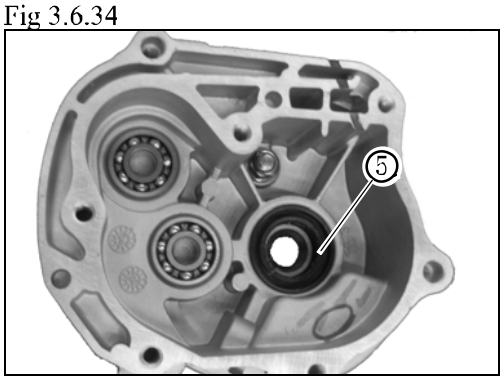
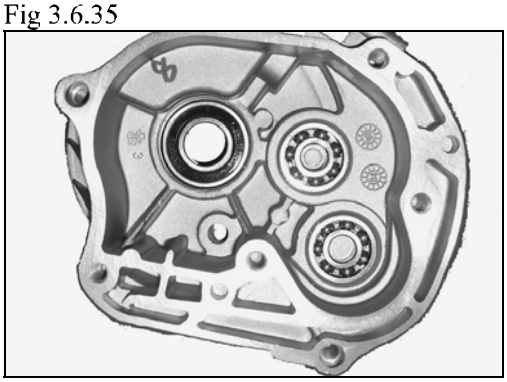


Fig 3.6.35

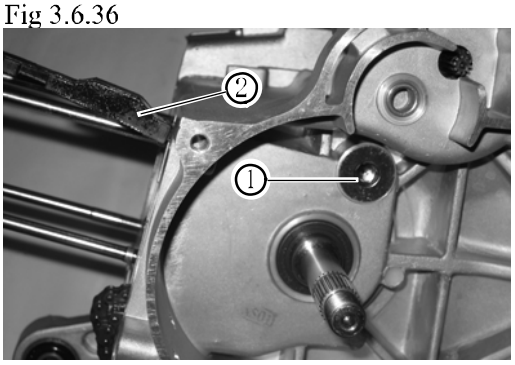
Drive out final shaft bearing, drive shaft bearing and counter shaft bearing by special tools.
Refer to Fig 3.6.35
Special tool:
Bearing puller



CRANK CASE

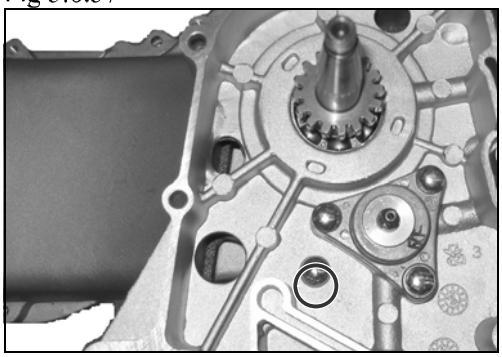
Remove chain tension pivot① and chain guide②.
Refer to Fig 3.6.36

Fig 3.6.36



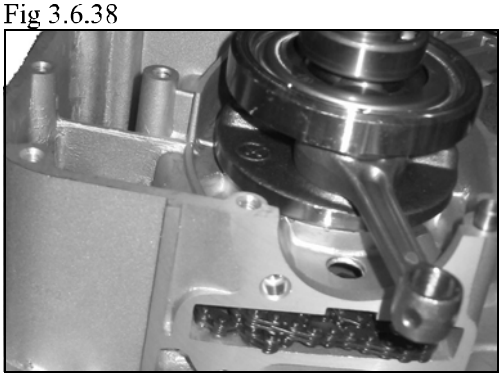
Loosen crankcase bolts. Refer to Fig 3.6.37

Fig 3.6.37



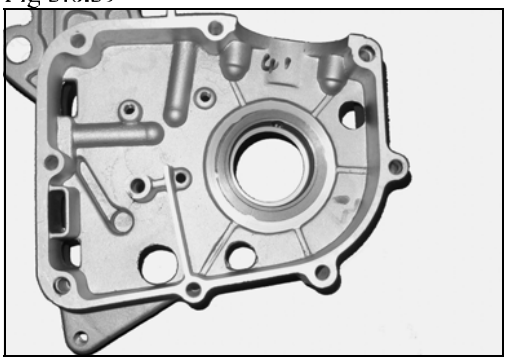
Keep crankcase LH downward, and separate crankcase RH from crankcase LH.
Refer to Fig 3.6.38

Fig 3.6.38



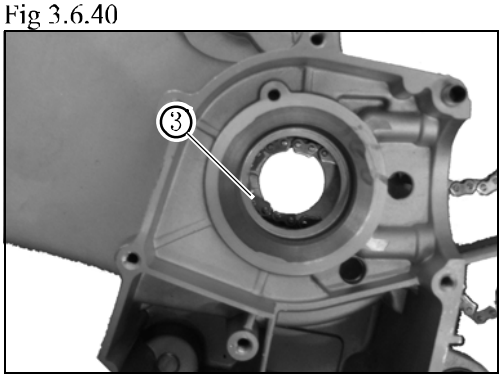
Remove dowel pins, and clean the sealing surface of crankcase.
Refer to Fig 3.6.39

Fig 3.6.39



Slide timing chain③ from timing sprocket of crankshaft, then remove timing chain from crankcase.
Remove riming chain.
Refer to Fig 3.6.40

Fig 3.6.40



Ⅲ-7 Crankcase parts inspection

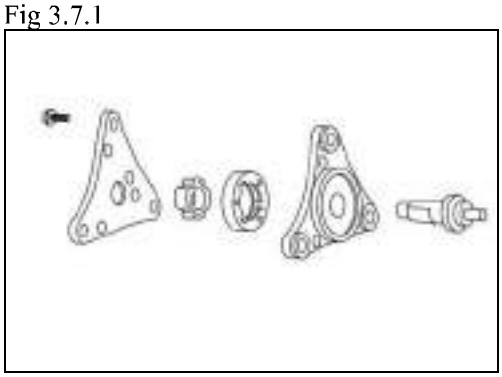
OIL PUMP ASSY

Perform the measurement at different position, and take the Max. reading as the measurement result.

Replace the oil pump assy if its any part exceeds service limit.

Refer to Fig 3.7.1

Fig 3.7.1



Tip clearance

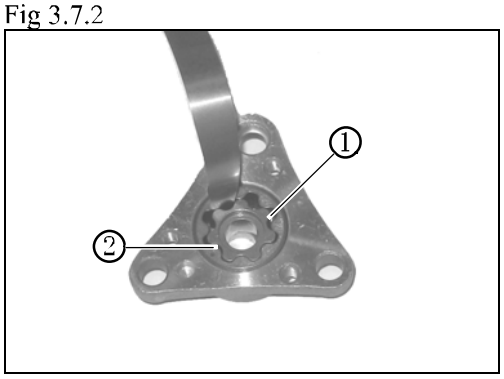
Insert outer rotor① and inner rotor② to oil pump body.

Measure the clearance between outer rotor and inner rotor by thickness gauge.

Refer to Fig 3.7.2

Service limit	0.20mm

Fig 3.7.2



Body clearance

Measure the clearance between outer rotor and body by thickness gauge.

Refer to Fig 3.7.3 & 3.7.4

Service limit	0.35mm

Fig 3.7.3

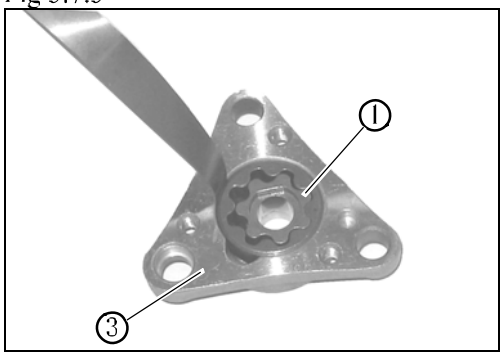
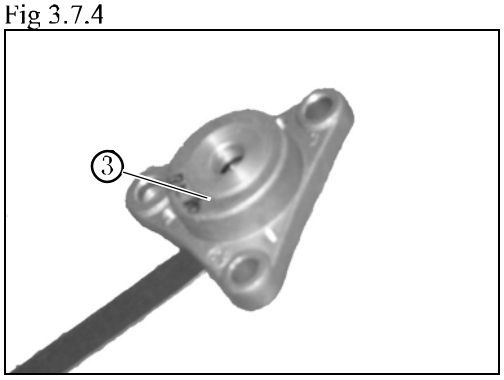


Fig 3.7.4



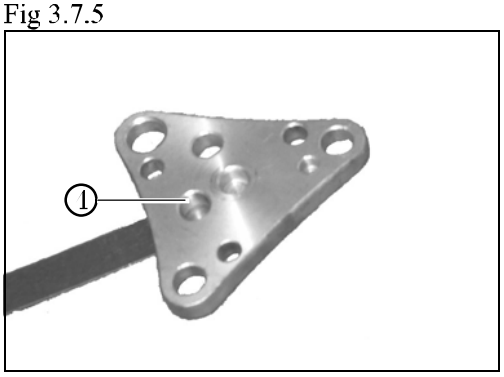
End clearance

Measure the end clearance between body③ and cover④.

Refer to Fig 3.7.5

Service limit	0.12mm

Fig 3.7.5



COVER LH / KICK STARTER

Inspection

Check kick starter shaft① for wear and damage.

Check the teeth of gears for wear and damage.

Check kick return spring② for weak tension and damage.

Check collar③ for wear and damage.

Check bush④ for wear and damage.

Check kick driven gear⑤ and washer⑥ for wear and damage.

Refer to Fig 3.7.6 & 3.7.7

Fig 3.7.6

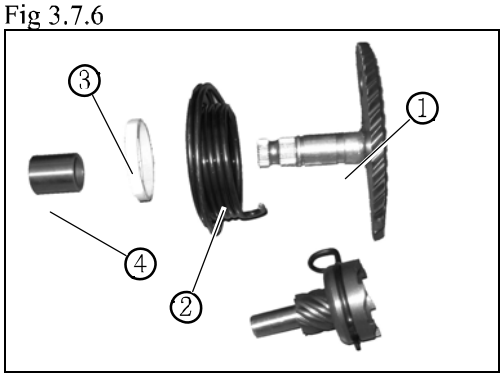
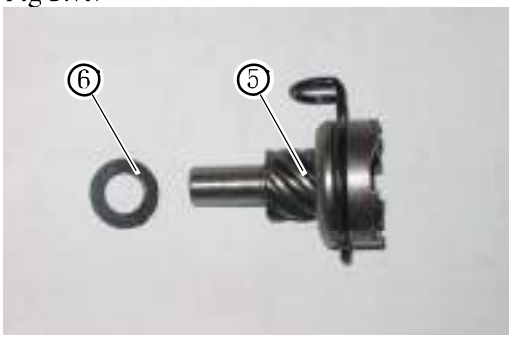


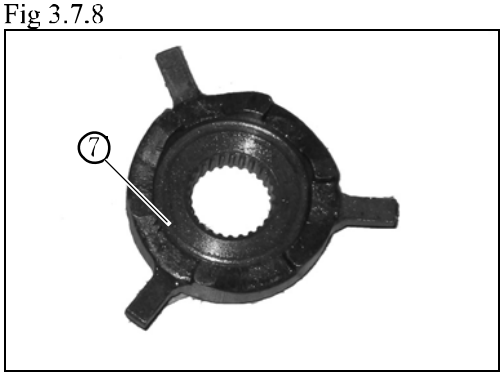
Fig 3.7.7



Check the kick starter ratchet⑦ for wear and damage.

Refer to Fig 3.7.8

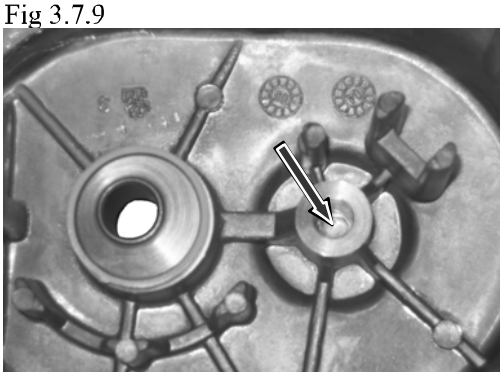
Fig 3.7.8



Check the socket on cover LH for wear and damage.

Refer to Fig 3.7.9

Fig 3.7.9



CLUTCH

Drive belt

Check belt for scratch, separation and over wear, and measure the width of belt.

Refer to Fig 3.7.10

Service limit	17.0mm

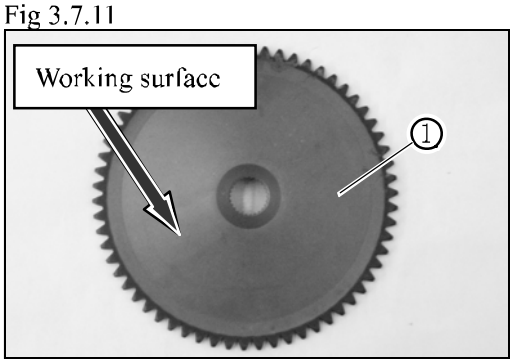
Fig 3.7.10

Ratchet

Check the cooling fan① for wear and damage.

Refer to Fig 3.7.11

Fig 3.7.11



Check the rollers② for wear and damage, and measure O.D. of rollers.

Refer to Fig 3.7.12 & 3.7.13

Service limit	15.4mm

Fig 3.7.12

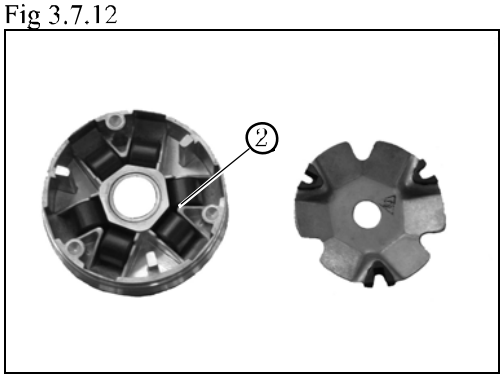
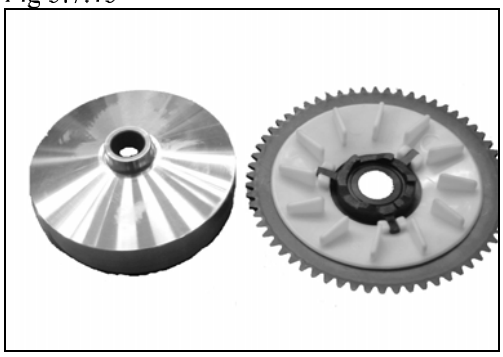


Fig 3.7.13



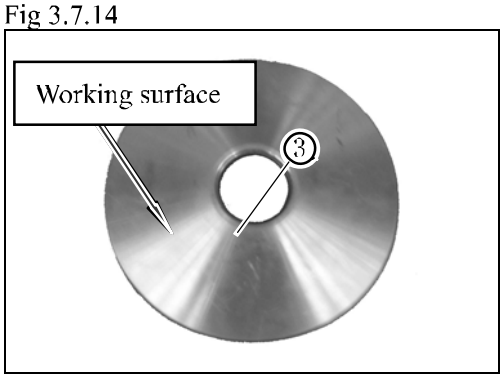
Moveable drive face assy

Check the working surface of moveable drive face assy for wear and damage, and measure its I.D. ③.

Refer to Fig 3.7.14

Service limit	20.17mm

Fig 3.7.14



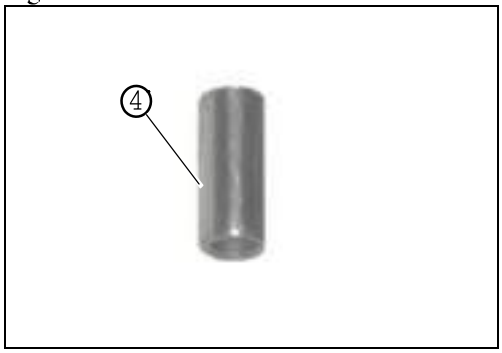
Check the inner bush of moveable drive face assy for wear and damage.

Measure O.D. of inner bush.

Refer to Fig 3.7.15

Service limit	19.97mm

Fig 3.7.15



Starter motor clutch

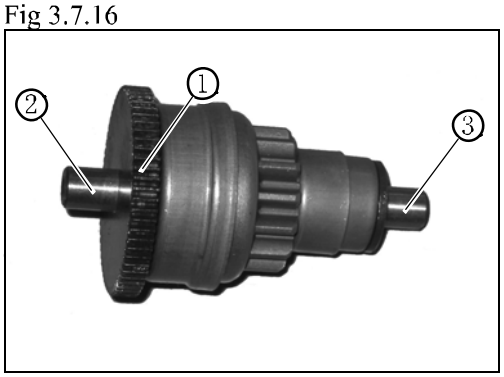
Ensure starter motor clutch operating smoothly.

Check the gear① of clutch for wear or other defect.

Check the shaft②③ for wear.

Refer to Fig 3.7.16

Fig 3.7.16



Clutch/ Driven pulley

Check the working surface of clutch hub for wear and damage.

Refer to Fig 3.7.17

Measure I.D. of clutch hub.

Service limit	107.5mm

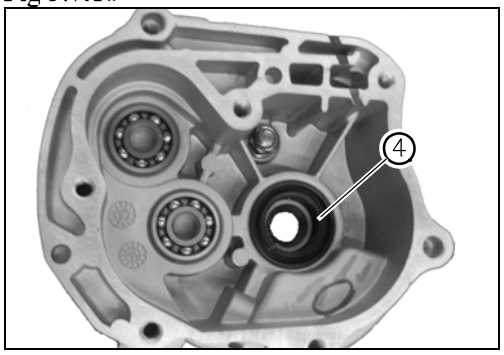
Fig 3.7.17

Gear box

Check the bearing and oil seal in gear box for wear and damage.

Refer to Fig 3.7.18

Fig 3.7.18



Turn the inner ring of bearings of crankshaft by finger to ensure them working smoothly.

Ensure the outer ring of bearings fitted in crankcase without gap.

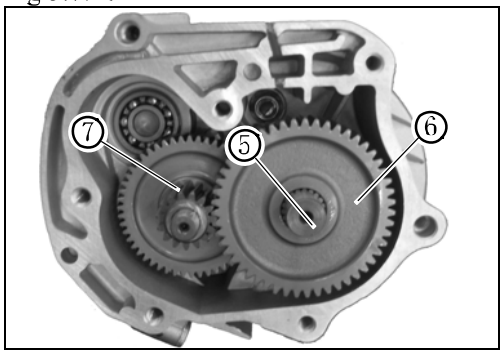
Refer to Fig 3.7.19

Fig 3.7.19

Check the final shaft and gears for wear and damage.

Refer to Fig 3.7.20

Fig 3.7.20



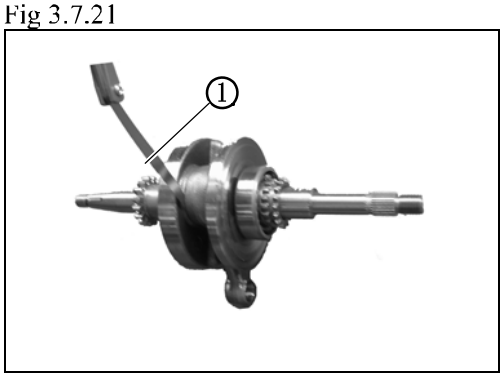
Crankshaft inspection

Measure the axial gap at connecting rod big end by thickness gauge.

Refer to Fig 3.7.21

Service limit	0.55mm

Fig 3.7.21

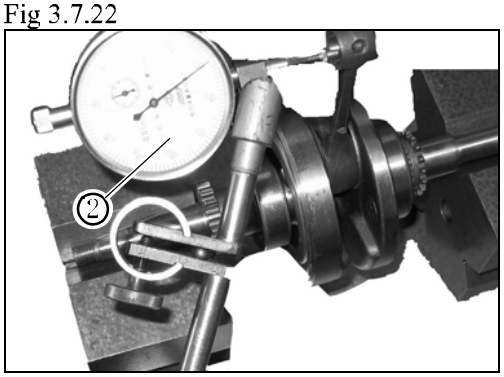


Set the crankshaft on V block, and measure the face run-out at connecting rod small end by diameter-indicator②.

Refer to Fig 3.7.22

Service limit	0.02mm

Fig 3.7.22

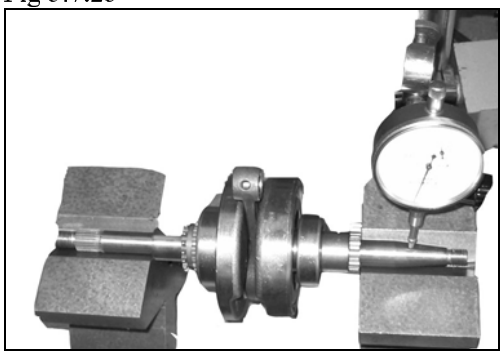


Set the crankshaft on V block, and measure the radial run-out at journal by diameter-indicator②.

Refer to Fig 3.7.23

Service limit	0.10mm

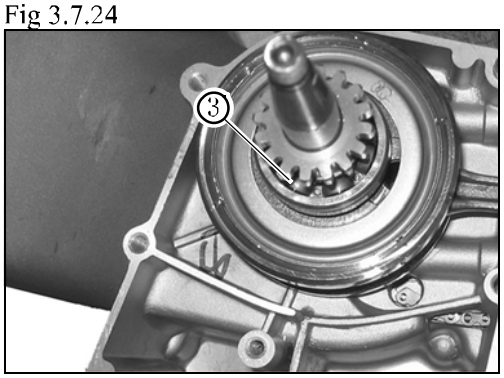
Fig 3.7.23



Check the oil pump driving gear on crankshaft for wear and damage.

Refer to Fig 3.7.24

Fig 3.7.24



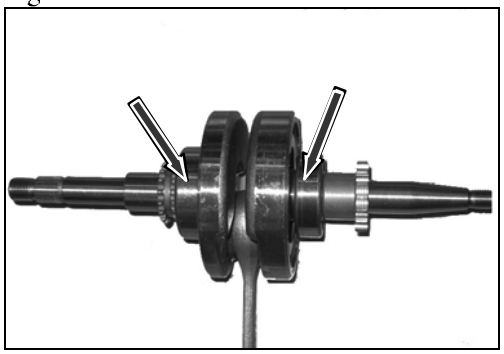
Turn the outer ring of bearings of crankshaft by finger to ensure them working smoothly.

Ensure the inner ring of bearing firmly fitting on crankshaft.

Replace the bearing if turning hardly or loose fitted.

Refer to Fig 3.7.25

Fig 3.7.25



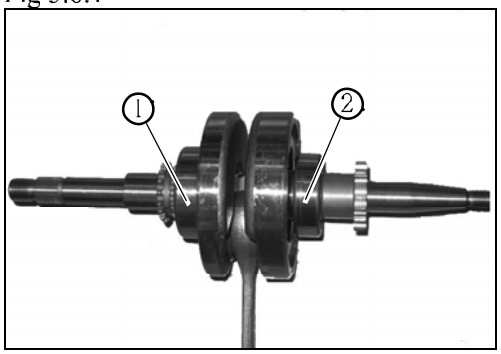
Ⅲ-8 Crankcase Parts Reinstallation

Crankcase

Turn the bearing of crankshaft by finger to ensure it moving smoothly and quietly, otherwise replace it.

Refer to Fig 3.8.1

Fig 3.8.1



Assembly

Always take care to avoid damaging the sealing surface of crankcase.

Clean the crankcase and check it for scratch or damage.

Refer to Fig 3.8.2 & 3.8.3

Fig 3.8.2

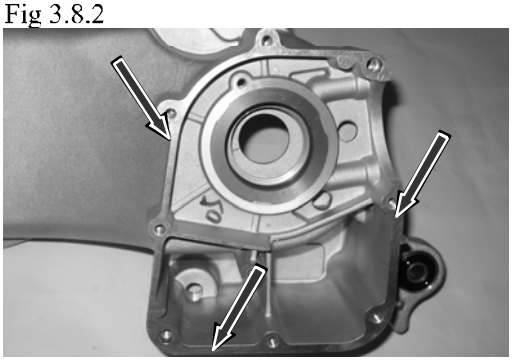
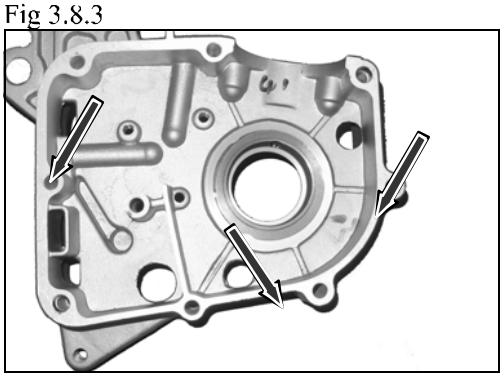


Fig 3.8.3

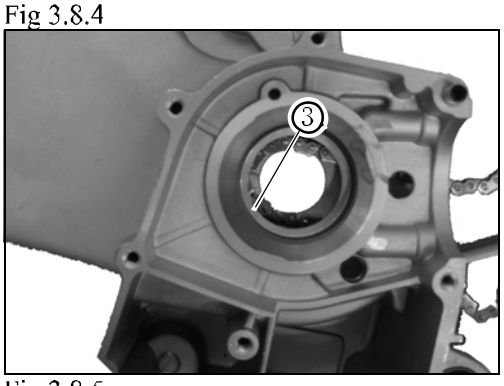


Apply engine oil to timing chain③ and insert it into crankcase.

Refer to Fig 3.8.4

Apply engine oil to crankshaft bearing.

Fig 3.8.4

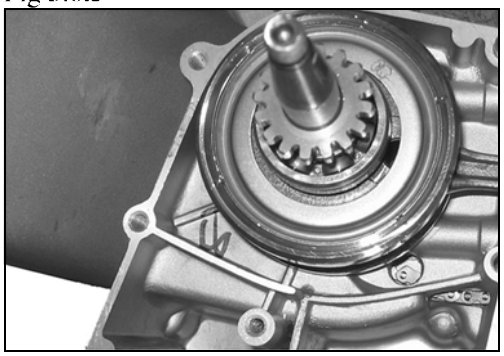


Apply engine oil to big end of connecting rod, and crankcase bearing.

Press crankshaft assy into crankcase LH through timing chain till it fitted firmly.

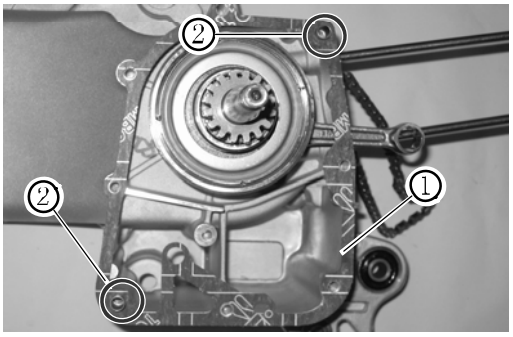
Refer to 3.8.5

Fig 3.8.5



Clean the sealing surface of crankcase RH & LH, and install gasket① and dowel pin②.
Refer to Fig 3.8.6

Fig 3.8.6



Install crankcase RH to crankcase LH, and tighten the bolts to specified torque.
Refer to Fig 3.8.7
Specified torque: 10N·m

Fig 3.8.7

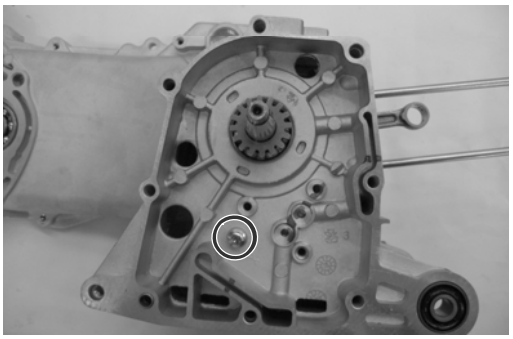


Fig 3.8.8

Insert tentioner movable guide③ to crankcase LH.
Insert the pin④ of tentioner movable guide and O-ring⑤ to crankcase LH and tighten to specified torque.
Refer to Fig 3.8.8
Specified torque: 10N.M

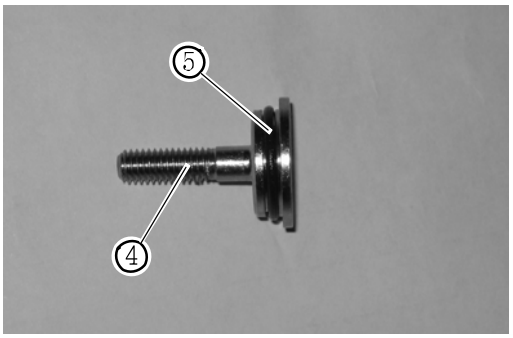


Fig 3.8.9

Apply grease to the lip of fresh oil seal⑥.
Drive the oil seal into crankcase LH till it equal to crankcase.
Refer to Fig 3.8.9 & 3.8.10
Tool: Oil seal driver

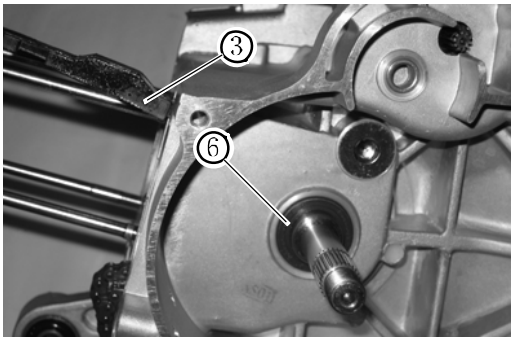
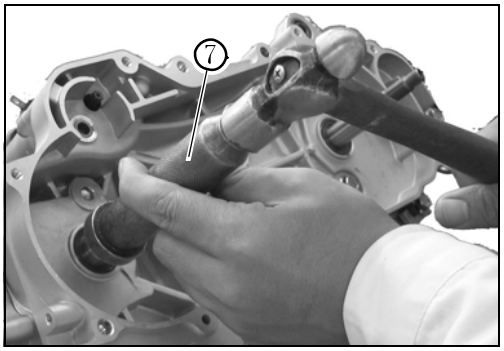


Fig 3.8.10



Oil pump

Apply engine oil to inner rotor① and outer rotor② of oil pump, and insert them into oil pump body③.

Refer to Fig 3.8.11

Fig 3.8.11

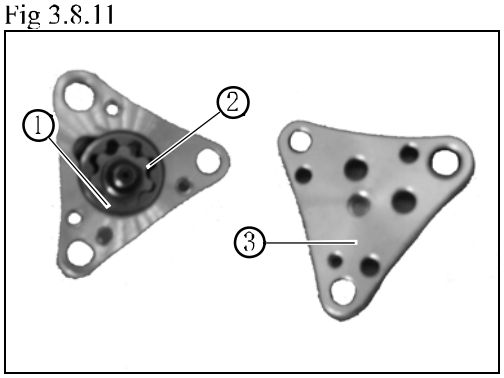


Fig 3.8.12

Install dowel pin and plate to oil pump body, and fasten it by tighten the screws to specified torque.

Refer to Fig 3.8.12

Specified torque: 3N.m

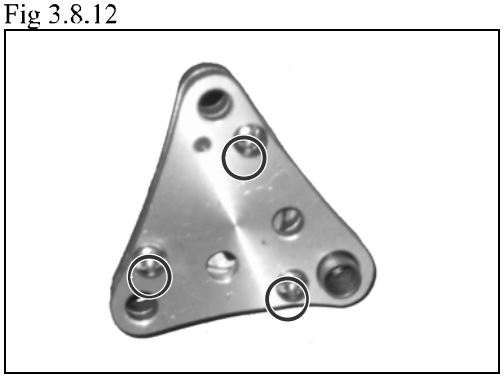


Fig 3.8.13

Take care to prevent the duct entering engine when installing oil pump.

Install dowel pin④ to oil pump body, and insert O-ring⑤ to oil channel in crankcase.

Refer to Fig 3.8.13

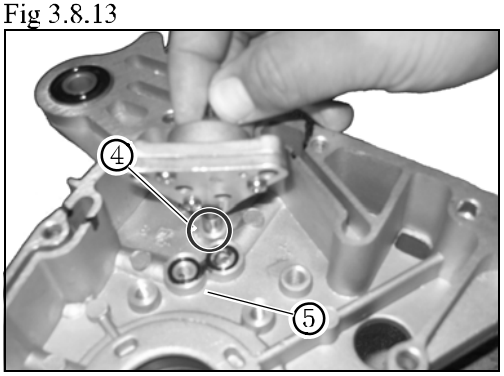


Fig 3.8.14

Install oil pump to crankcase RH and tighten its mounting screws to specified torque.

Refer to Fig 3.8.14

Specified torque: 10N.m

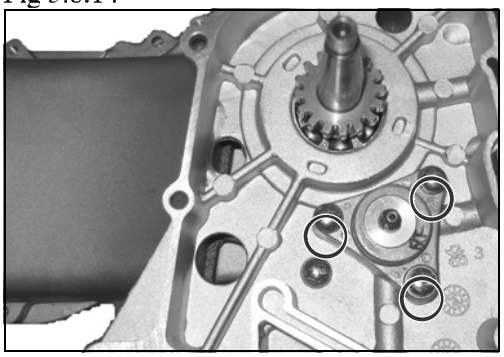


Fig 3.8.15

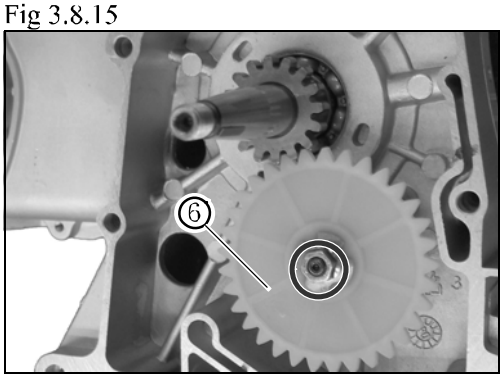
Install dowel pins and gasket to crankcase R11

Apply engine oil to oil pump gear⑥.

Align the slot of gear to oil pump shaft, and install the gear to oil pump by tightening nut to specified torque.

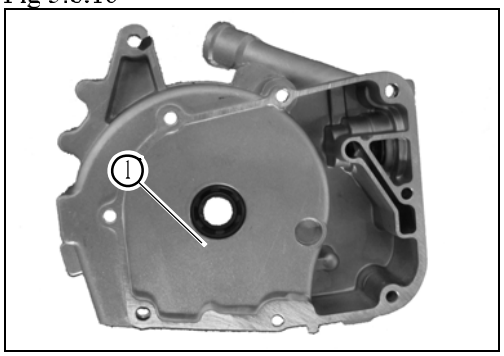
Refer to Fig 3.8.15

Specified torque:



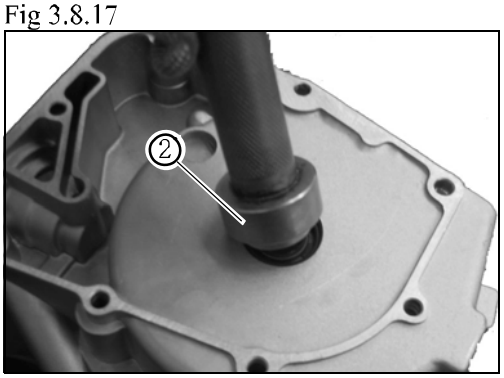
Apply grease to the lip of fresh oil seal.
Refer to Fig 3.8.16

Fig 3.8.16



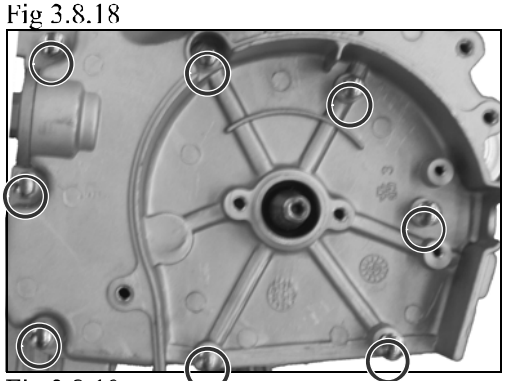
Drive the oil seal into crankcase cover RH till it equal to crankcase cover.
Refer to Fig 3.8.17
Tool: Oil seal driver

Fig 3.8.17



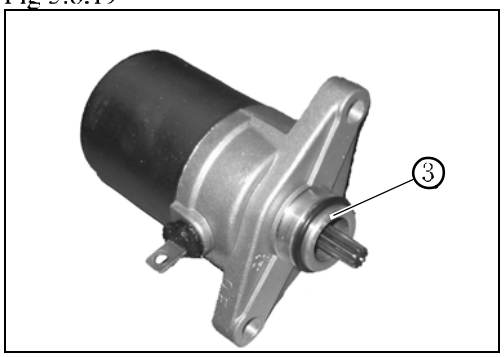
Fasten crankcase cover RH by tightening the bolts to specified torque.
Refer to Fig 3.8.18
Specified torque: 10N·m

Fig 3.8.18



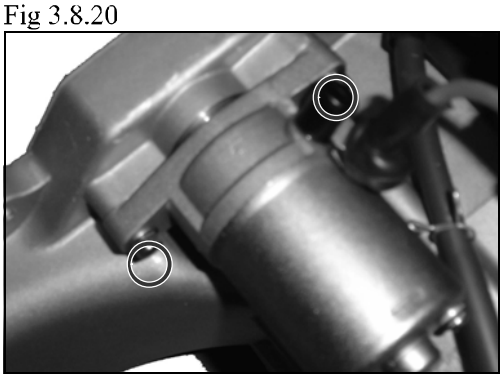
Starter motor
Apply engine oil to new O-ring, and insert it to the end cover of starter motor.
Refer to Fig 3.8.19

Fig 3.8.19



Install starter motor to crankcase LH, and tighten mounting bolts to specified torque.
Refer to Fig 3.8.20
Specified torque: 10N·m

Fig 3.8.20



Gear box

Bearing replacement

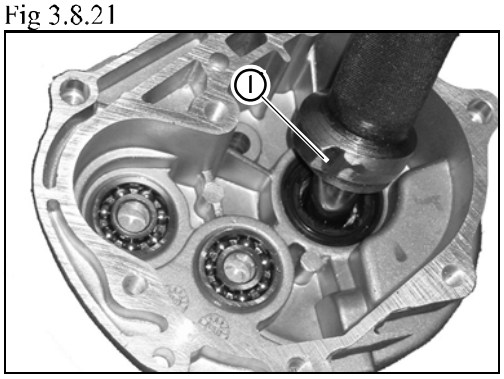
Apply grease to bearing socket, and press bearings into their socket.

Apply grease to the lip of oil seal of final shaft, and install it into gear box by special tool①.

Refer to Fig 3.8.21

Special tool: Bearing driver

Fig 3.8.21



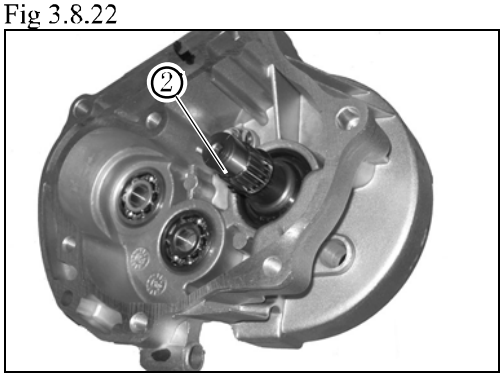
Assemble gear box

Apply engine oil to gears and shafts.

Install final shaft to its bearing.

Refer to Fig 3.8.22

Fig 3.8.22



Install washer③ to counter shaft④, and install them to bearing.

Refer to Fig 3.8.23 & 3.8.24

Fig 3.8.23

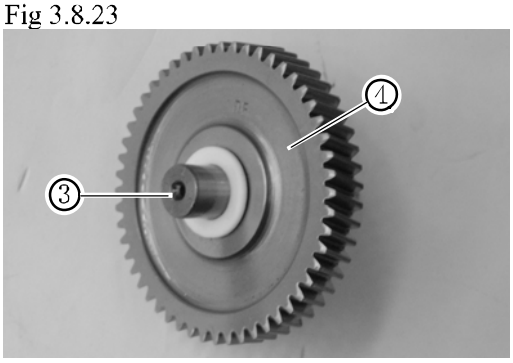
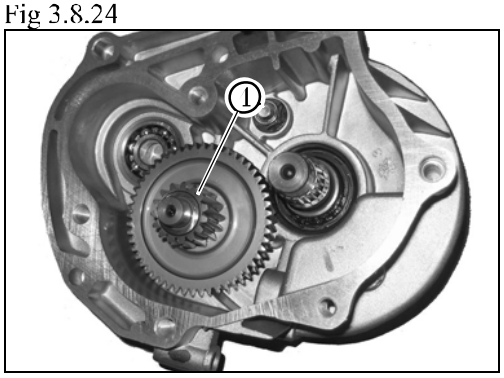


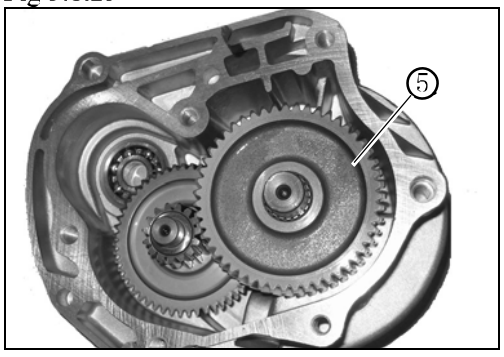
Fig 3.8.24



Install final gear⑤ to final shaft.

Refer to Fig 3.8.25.

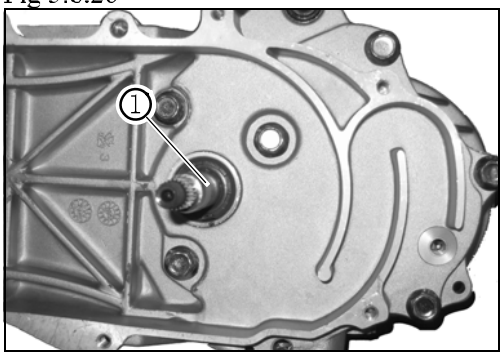
Fig 3.8.25



Install new gasket and dowel pins.
Fasten crankcase cover LH by tightening the bolts to specified torque.
Specified torque: 10N·M

Apply grease to the lip of oil seal①, and install it to gear box cover by special tool.
Refer to Fig 3.8.26

Fig 3.8.26

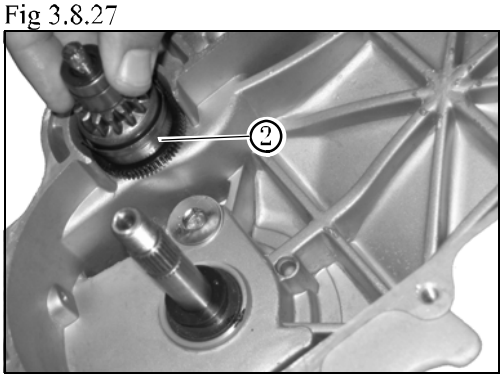


Starting gear Assy / Kick lever

Starting gear Assy

Apply 0.1-0.3g grease to shaft of starting gear assy, and insert it into crankcase LH.
Refer to Fig 3.8.27

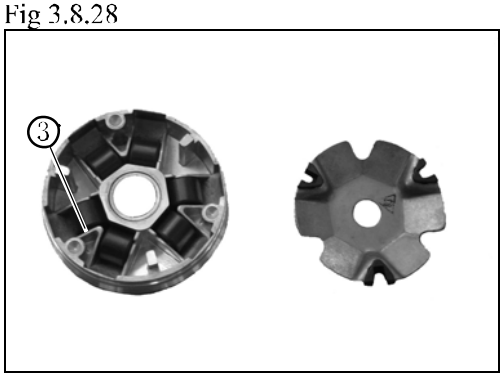
Fig 3.8.27



Pulley drive

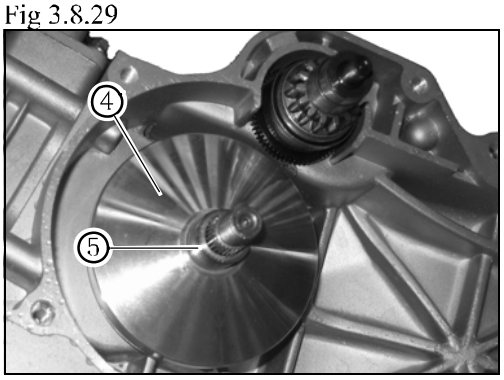
Remove the oil and grease from rollers③, insert them into movable drive face assy④, and install guiding plate⑤ to cover them.
Refer to Fig 3.8.28

Fig 3.8.28



Remove the oil and grease from the surface of movable drive face assy④, and insert the inner bush⑤ into it.
Refer to Fig 3.8.29

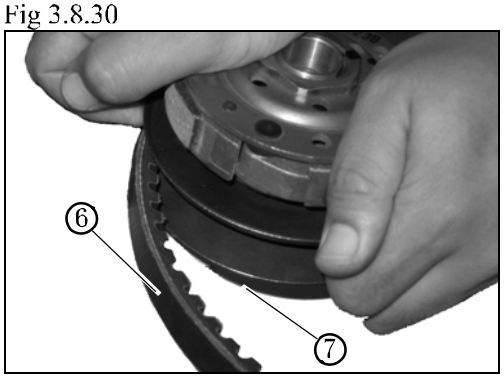
Fig 3.8.29



Driven plate assy

Insert belt⑥ into driven plate assy⑦.
Refer to Fig 3.8.30

Fig 3.8.30



Install driven plate assy on drive shaft.

Remove oil and grease from the inner surface of clutch hub, and install it.

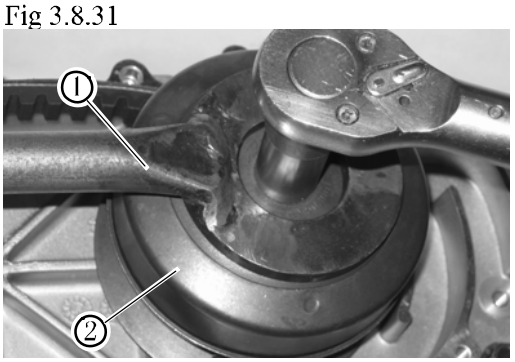
Hold clutch hub② by special tool①, and tighten nut to specified torque.

Refer to Fig 3.8.31

Specified torque: 50N·m

Special tool: Clutch holder

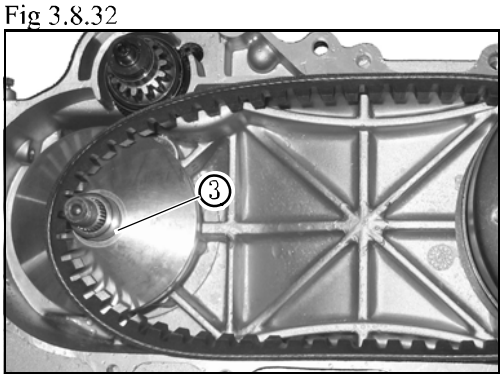
Fig 3.8.31



Put drive belt out of the bush③ of drive face assy.

Refer to Fig 3.8.32

Fig 3.8.32



Install fixed drive face④, fan⑤ and staring ratchet⑥.

Refer to Fig 3.8.33 & 3.8.34

Fig 3.8.33

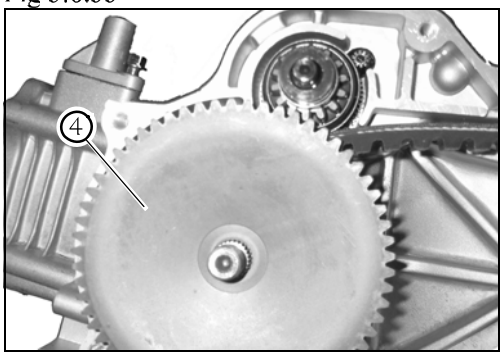
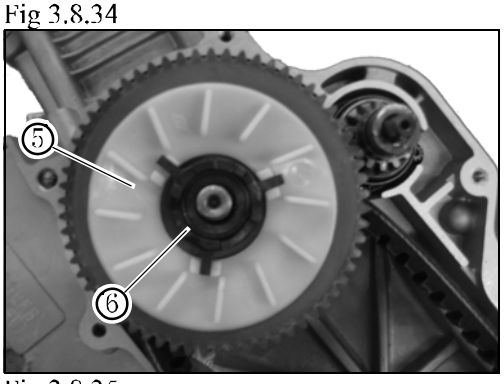


Fig 3.8.34



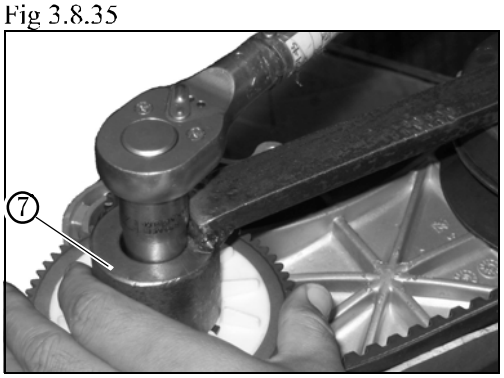
Hold the fixed drive face by special tool⑦, and tighten nut to specified torque.

Refer to Fig 3.8.35

Specified torque: 50N·m

Special tool: Ratchet holder⑦

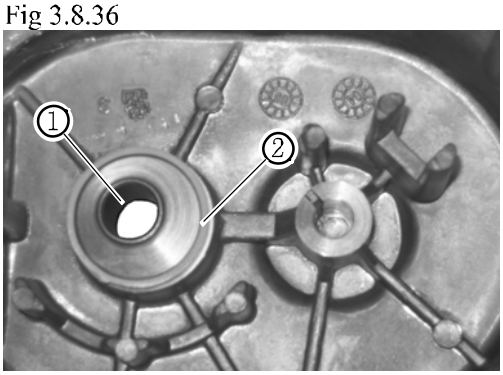
Fig 3.8.35



Kick lever

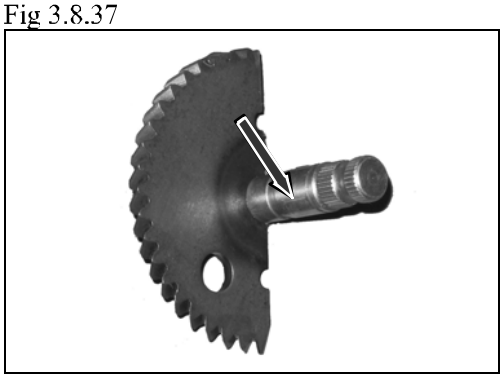
Insert kick shaft bush① and collar② into crankcase cover LH.
Refer to Fig 3.8.36

Fig 3.8.36



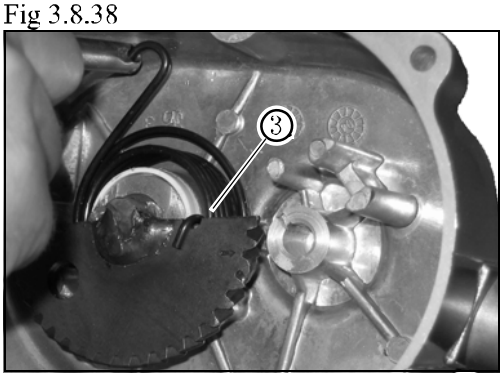
Apply grease on kick shaft, and install it into crankcase cover LH.
Refer to Fig 3.8.37.

Fig 3.8.37



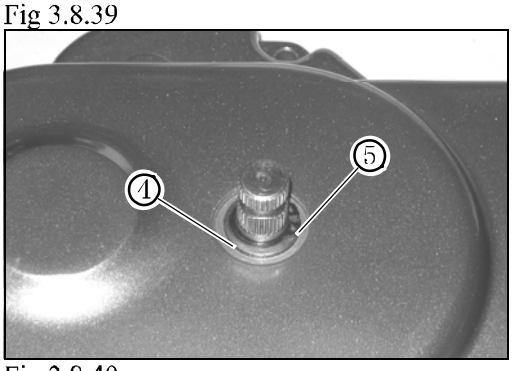
Install kick return spring③, and fix the longer hook to the rivet on crankcase cover LH.
Install kick shaft assy into crankcase cover LH, and fix the shorter hook on kick shaft assy.
Refer to Fig 3.8.38.

Fig 3.8.38



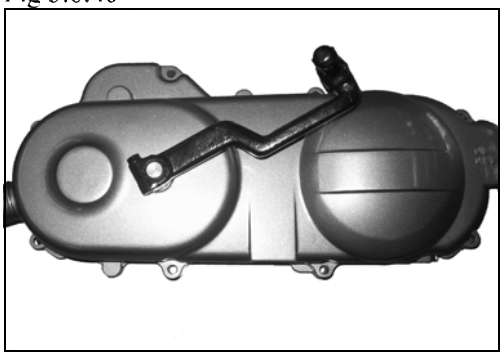
Install washer④ and circlip⑤ on kick shaft.
Refer to Fig 3.8.39.

Fig 3.8.39



Reinstall kick lever to previous location according to disassembly mark, and tighten mounting bolt.
Refer to Fig 3.8.40.

Fig 3.8.40

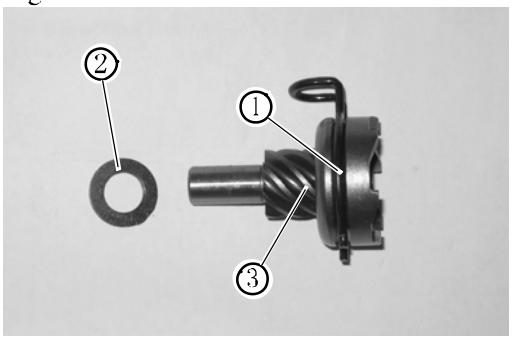


Turn and hold the kick lever some away from dead point, install thrust washer② and kick ratchet③ into crankcase cover LH, and ensure spring hook① align with the relative groove on crankcase cover RH.

Release kick lever to ensure kick gear engaged with kick ratchet.

Refer to Fig 3.8.41.

Fig 3.8.41

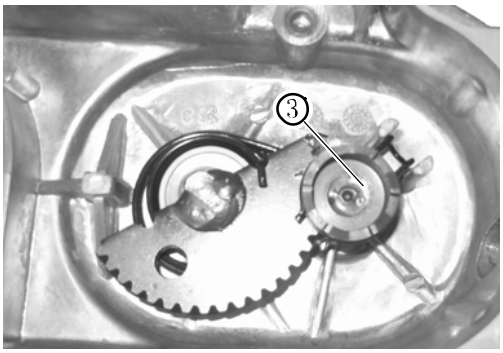


Crankcase cover LH

Install dowel pins and new gasket on crankcase LH.

Refer to Fig 3.8.42.

Fig 3.8.42

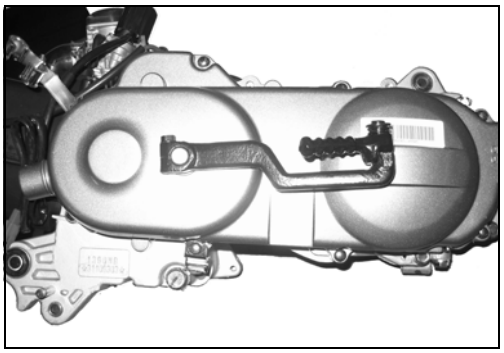


Install crankcase cover LH to crankcase LH, and tighten the bolts diagonally to specified torque.

Refer to Fig 3.8.43

Specified torque: 10N·m

Fig 3.8.43



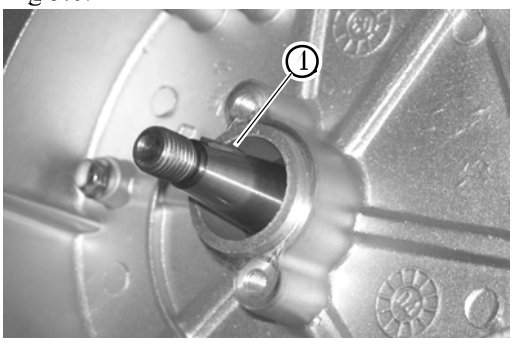
Magneto

Assembly

Clean the taper area of crankshaft, and insert the key④ on it.

Refer to Fig 3.8.44.

Fig 3.8.44



Install pulse coil⑤, and tighten the bolts to specified torque.

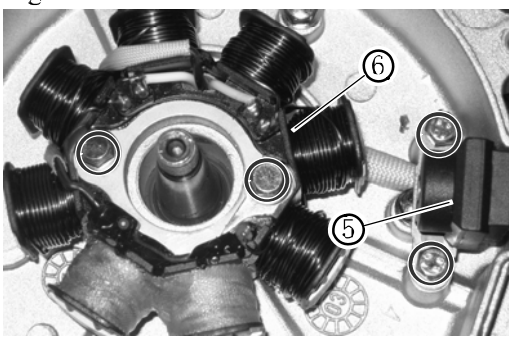
Specified torque: 6N·m

Install stator plate⑥, and tighten the bolts to specified torque.

Specified torque: 8N·m

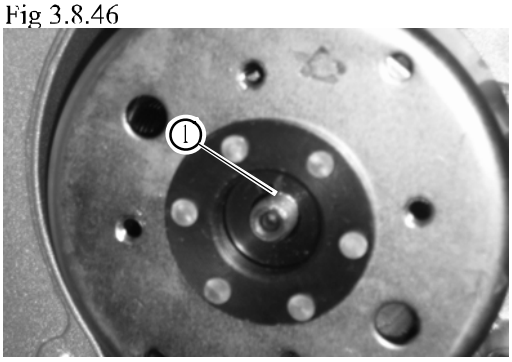
Refer to Fig 3.8.45

Fig 3.8.45



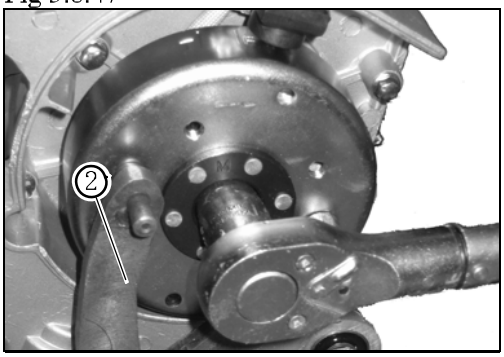
Install fly wheel① to crankshaft with its bush groove aligned to key.
Refer to Fig 3.8.46

Fig 3.8.46



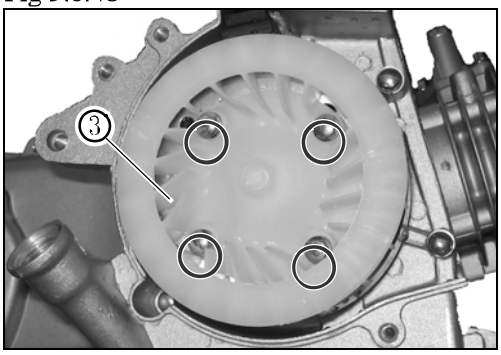
Insert washer, hold fly wheel by special tool②, and tighten nut to specified torque.
Refer to Fig 3.8.47
Specified torque: 50N·m
Special tool: Universal holder

Fig 3.8.47



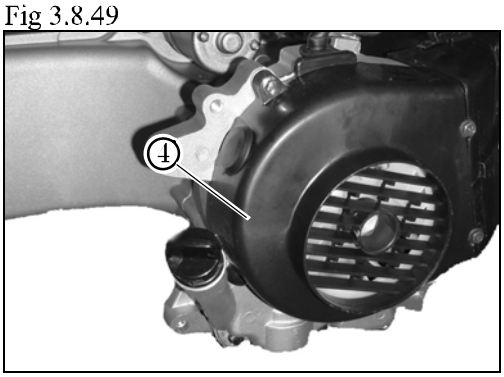
Install cooling fan③, and tighten bolts to specified torque.
Refer to Fig 3.8.48
Specified torque: 8N·m

Fig 3.8.48



Install fan cover④, and tighten bolts to specified torque.
Refer to Fig 3.8.49
Specified torque: 0.8N·m

Fig 3.8.49



Tighten bolts to specified torque.
Refer to Fig 3.8.50
Specified torque: 8N·m

Fig 3.8.50

Ⅳ FUEL AND LUBRICATION SYSTEM

Ⅳ-1 Fuel tank & Fuel level sensor

Fuel tank & Fuel level sensor

Disassembly

Remove rear carrier.

Remove fuel tank.

Remove seat assy and luggage box.

Remove rear center regula, side regula RH & LH.

Remove center cover, body cover RH & LH.

Disconnect the wires.

Refer to Fig 4.1.1。

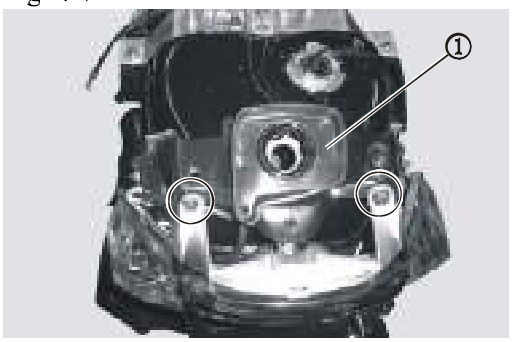
Fig 4.1.1

Remove tail lamp assy.

Remove fuel guide plate①.

Refer to Fig 4.1.2

Fig 4.1.2

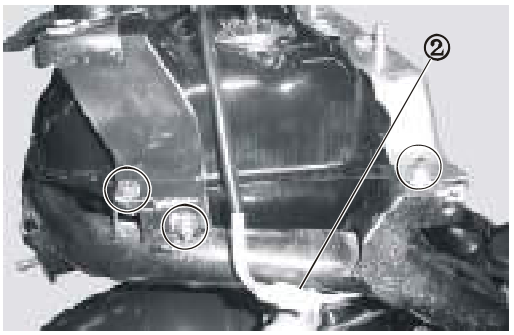


Remove seat bracket and fuel tank bracket.

Disconnect wire② of fuel gauge assy

Refer to Fig 4.1.3

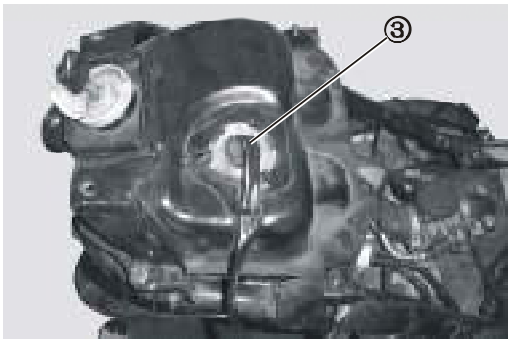
Fig 4.1.3



Turn and release the lock bracket③ of fuel gauge to remove fuel gauge.

Refer to Fig 4.1.4

Fig 4.1.4



Disconnect vacuum hose from fuel cock④.

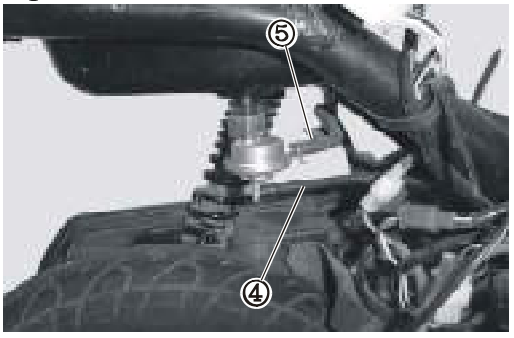
Drain out fuel and disconnect fuel hose⑤.

Refer to Fig 4.1.5

Warn:

Gasoline is extremely flammable and is explosive.

Fig 4.1.5



Remove fuel tank.

Reinstall fuel tank in the reverse order of removal.

Ⅳ-2 Fuel Cock

Disassembly

Remove rear carrier.

Remove fuel tank cap.

Remove seat assy and luggage box.

Remove rear center regula, side regula RH & LH.

Remove center cover, body cover RH & LH.

Drain out fuel and disconnect fuel hose.

Refer to Fig 4.2.1

Remove fuel cock from fuel tank.

Fig 4.2.1

Warn:

Gasoline is extremely flammable and is explosive.

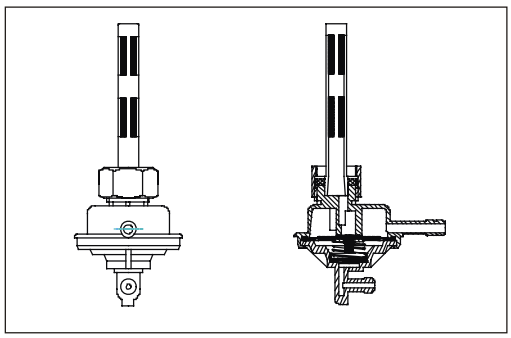
Inspection

Connect vacuum pump and pressure gauge to the vacuum channel of fuel cock. Ensure fuel going from fuel channel of fuel cock under the specified vacuum. Otherwise replace the fuel cock.

Specified vacuum: 22mmHg

Refer to Fig 4.2.2

Fig 4.2.2



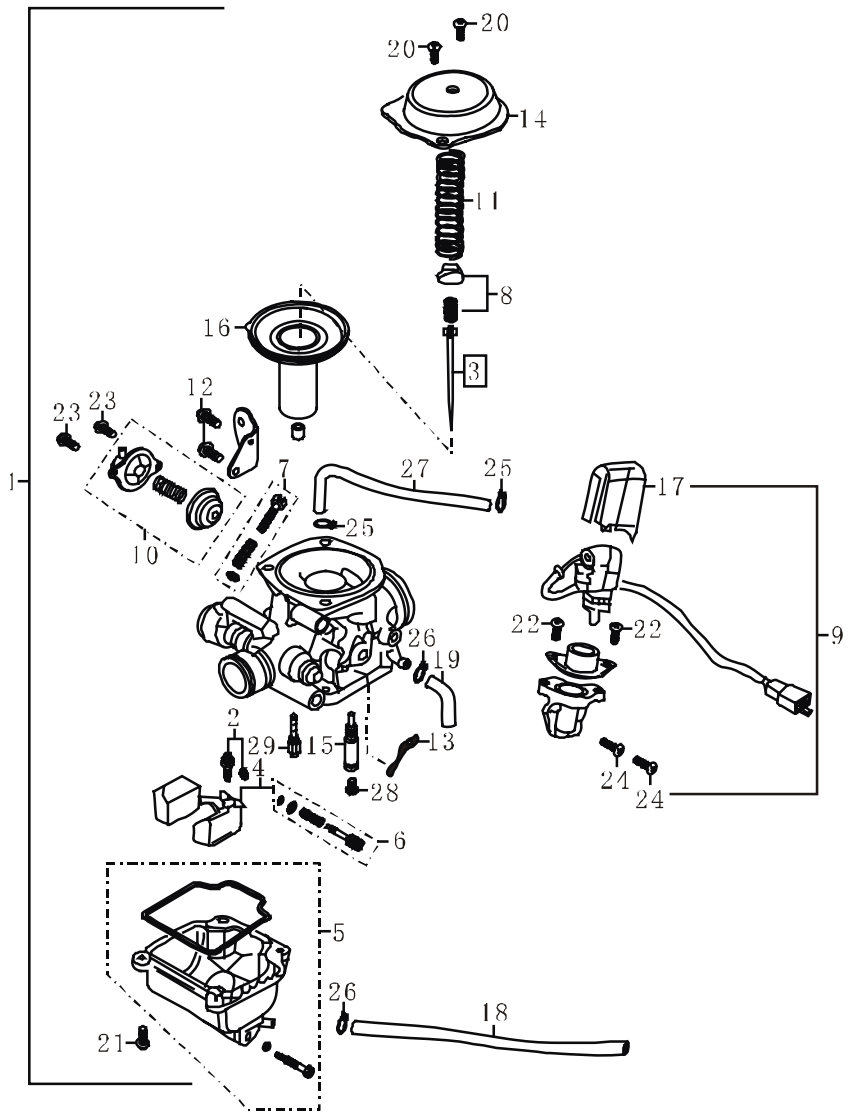
Note:

Operate the vacuum pump manually.

Don't apply high vacuum on fuel cock. It will damage the fuel cock.

Ⅳ-4 Carburetor

Construct



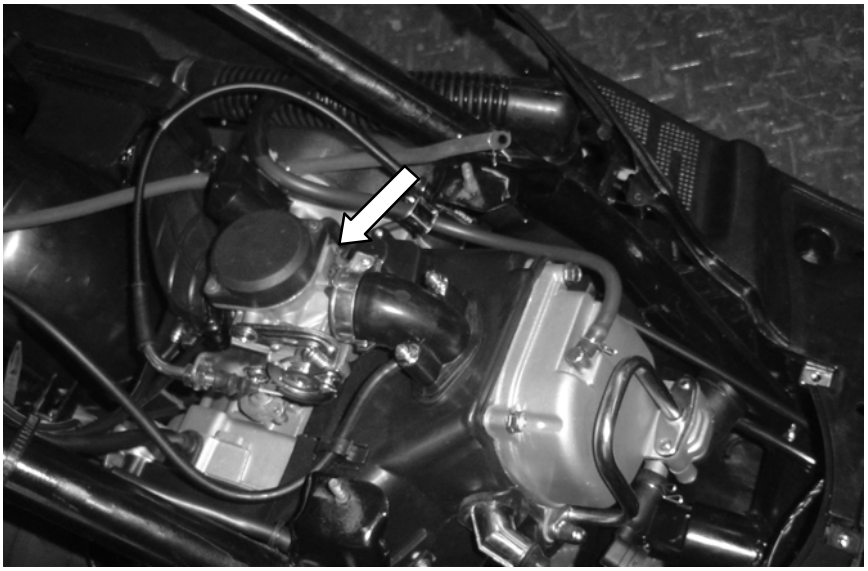
1	Carburetor	9	Starter valve	17	Starter valve cover	25	Clamp
2	Needle jet	10	Chock	18	Overflow pipe	26	Clamp
3	Jet needle	11	Spring	19	Vacuum pipe	27	Fuel pipe Φ3.5×210
4	Float	12	Screw M5×12	20	Screw M4×8	28	Main jet
5	Float chamber	13	Washer	21	Screw M4×14	29	Pilot jet
6	Screw A	14	Top cap	22	Screw M4×8		
7	Screw B	15	Main jet holder	23	Screw M4×10		
8	Needle holder	16	Throttle valve	24	Screw M4×12		

Specification

Item	Specification
Carburetor type	
Model	
I. D. No.	
Idle speed r/min	
Height of float	
Main jet （M. J.）	
Jet needle （J. N.）	
Needle jet （N. J.）	
Throttle valve （Th. V.）	
Slow jet （S. J.）	
Pilot air adjusting screw （P. S.）	
Free play of throttle	

I. D. No. location

I. D. No. is stamped on the body of carburetor.

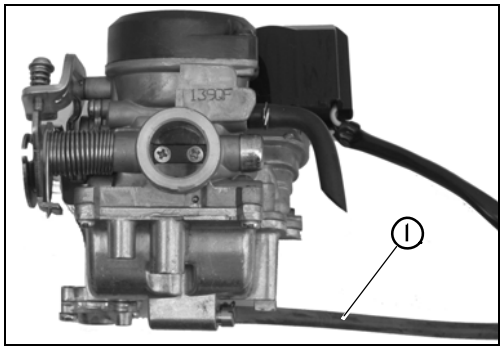


Disassembly

Disconnect the drain pipe①.

Refer to Fig 4.3.1

Fig 4.3.1

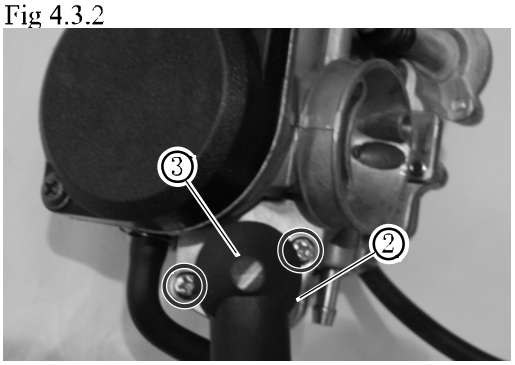


Starter valve

Remove SE starter valve cover, screws, mounting plat② and SE starter valve③.

Refer to Fig 4.3.2

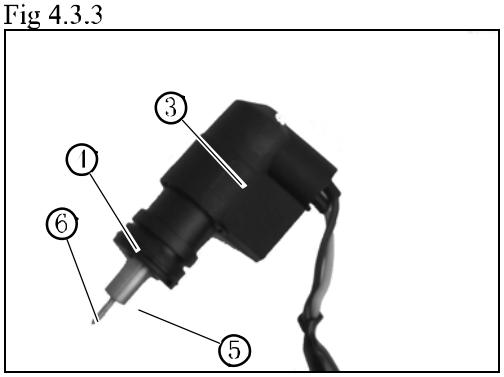
Fig 4.3.2



Remove O-ring④ from SE starter valve, check the valve⑤ and jet⑥ for damage and step wear.

Refer to Fig 4.3.3

Fig 4.3.3

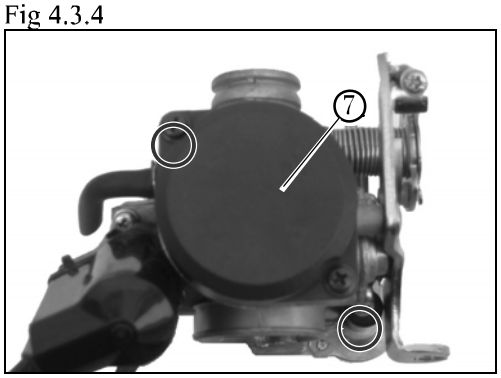


Vacuum chamber

Hold the top cap⑦ of vacuum chamber and remove screws.

Refer to Fig 4.3.4

Fig 4.3.4

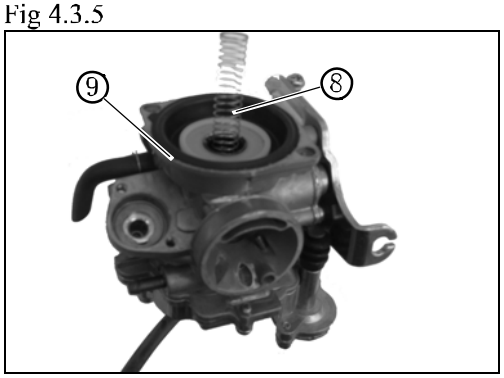


Remove vacuum chamber cap⑦, spring⑧ and diaphragm/vacuum piston⑨.

Check vacuum piston for smooth movement in carburetor body.

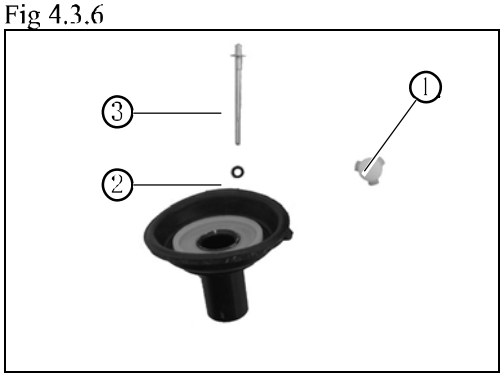
Refer to Fig 4.3.5

Fig 4.3.5



Remove jet needle holder①, O-ring② and jet needle③ from vacuum piston.
Refer to Fig 4.3.6

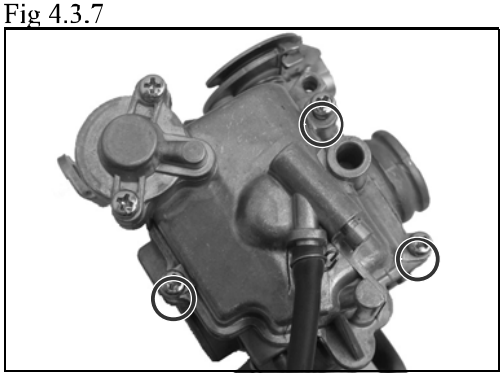
Fig 4.3.6



Check needle for step wear.
Check vacuum piston for wear and damage.
Check diaphragm for pinhole, deform and damage.

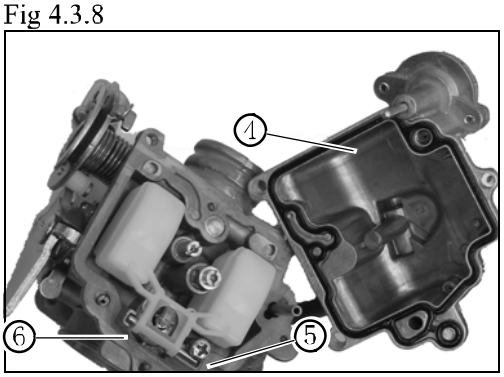
Disassembling float chamber
Remove screws
Refer to Fig 4.3.7

Fig 4.3.7



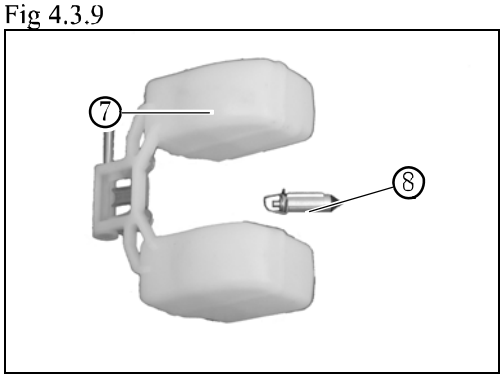
Remove float chamber body, and take out sealing ring④ from float chamber body.
Refer to Fig 4.3.8

Fig 4.3.8



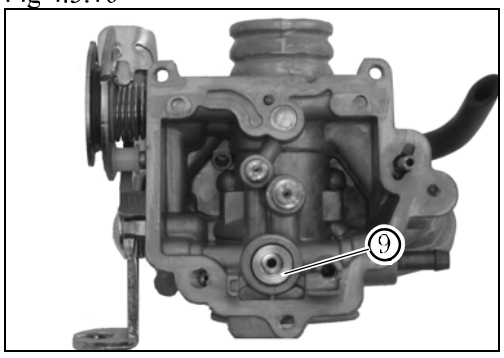
Remove screw⑤, float pin⑥, float⑦ and needle valve⑧.
Check float for damage and leakage.
Refer to Fig 4.3.9

Fig 4.3.9



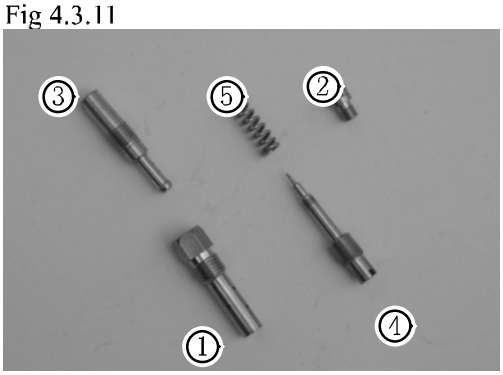
Check needle jet seat⑨ for scratch, clog and damage.
Check needle jet for step wear. Replace it if it is worn.
Refer to Fig 4.3.10

Fig 4.3.10



Remove the parts in following order:
Main jet①/main jet holder②/pilot jet③
Turn in pilot air adjusting screw slightly tight, and mark down total turns.
Remove pilot air adjusting screw ④ and spring⑤.
Check and replace it if worn.
Refer to Fig 4.3.11

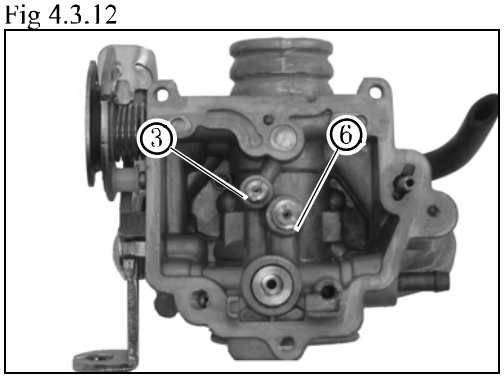
Fig 4.3.11



Cleaning carburetor

Blow compressed air through all jets(main jet①/main jet holder②/ pilot jet③), air passage and fuel passage.
Refer to Fig 4.3.12

Fig 4.3.12

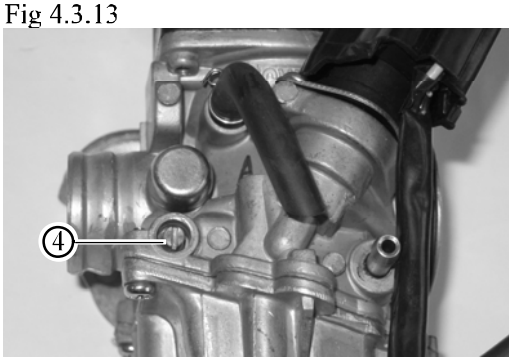


Reinstallation

Float chamber

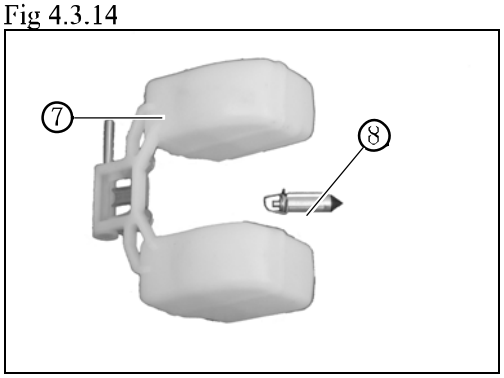
Install the jets in following order:
Main jet / main jet holder⑥ and pilot jet③.
Tighten the jets to specified toque:
Specified toque: Pilot jet: 1.5N.m
Main jet: 2.1N.m
Install pilot air adjusting screw④, and turn it to initial opening position.
Refer to Fig 4.3.13

Fig 4.3.13



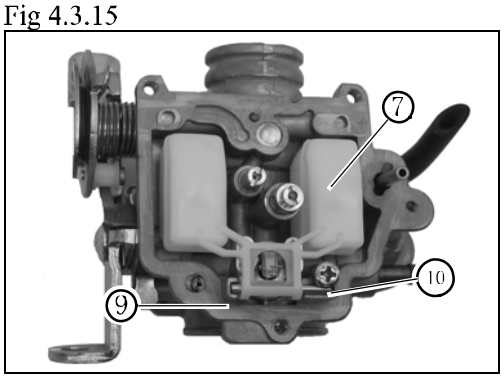
Install float⑦ and needle jet⑧ to carburetor body, and hold them by inserting float pin⑨.
Refer to Fig 4.3.14

Fig 4.3.14



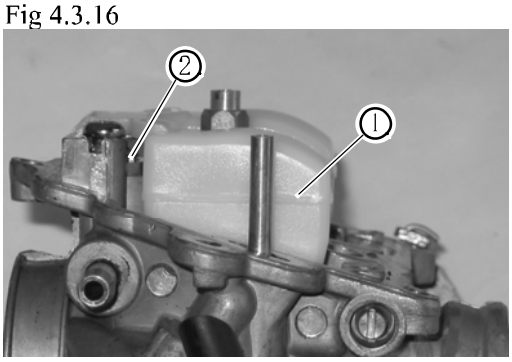
Tighten float pin screw to specified torque.
Refer to Fig 4.3.15
Specified torque: 2.1N.m

Fig 4.3.15



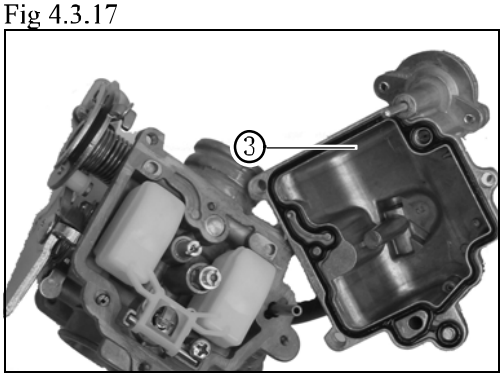
Ensure float swing smoothly.
Refer to Fig 4.3.16

Fig 4.3.16



Install new sealing ring③ to float chamber body.
Refer to Fig 4.3.17

Fig 4.3.17



Install float chamber body to carburetor body, and tighten mounting screws to specified torque.
Refer to Fig 4.3.18
Specified torque: 2.1N.m

Fig 4.3.18

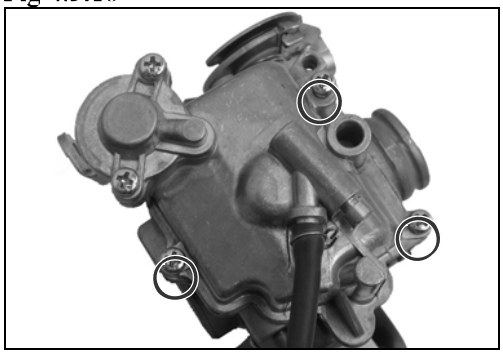


Fig 4.3.19

Vacuum chamber

Install jet needle④ O-ring⑤ and jet needle holder⑥ to diaphragm/vacuum piston.
Refer to Fig 4.3.19
Install diaphragm/vacuum piston⑦ to carburetor body with the tit of diaphragm aligned with the groove on carburetor.
Refer to Fig 4.3.20

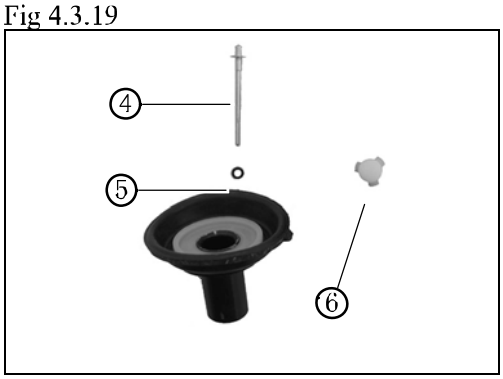
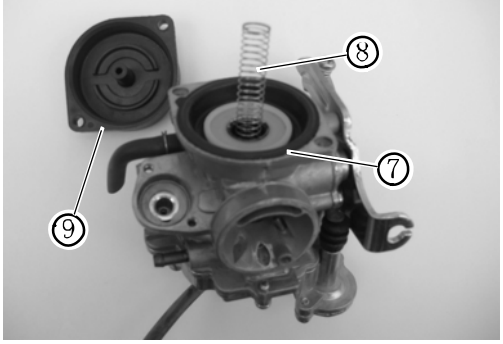


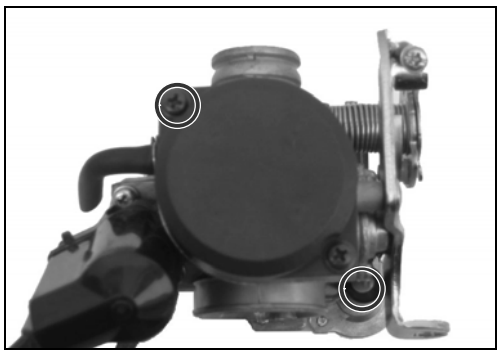
Fig 4.3.20

Install spring⑧ and vacuum chamber cap⑨, and take care not to damage the spring.
Refer to Fig 4.3.20



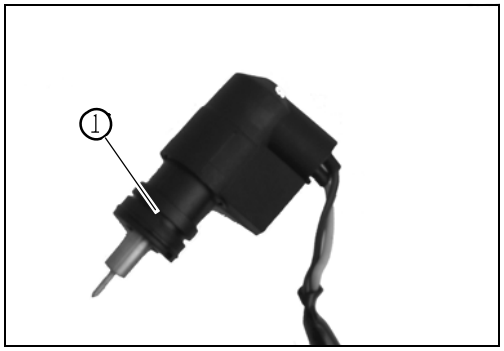
Tighten the mounting screws to specified toque:
Specified toque: 2.1N.m
Refer to Fig 4.3.21

Fig 4.3.21



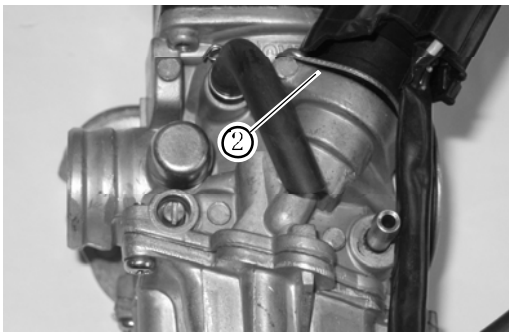
SE Starter valve
Install new O-ring① to SE starter valve.
Insert SE starter valve to carburetor firmly.
Refer to Fig 4.3.22

Fig 4.3.22



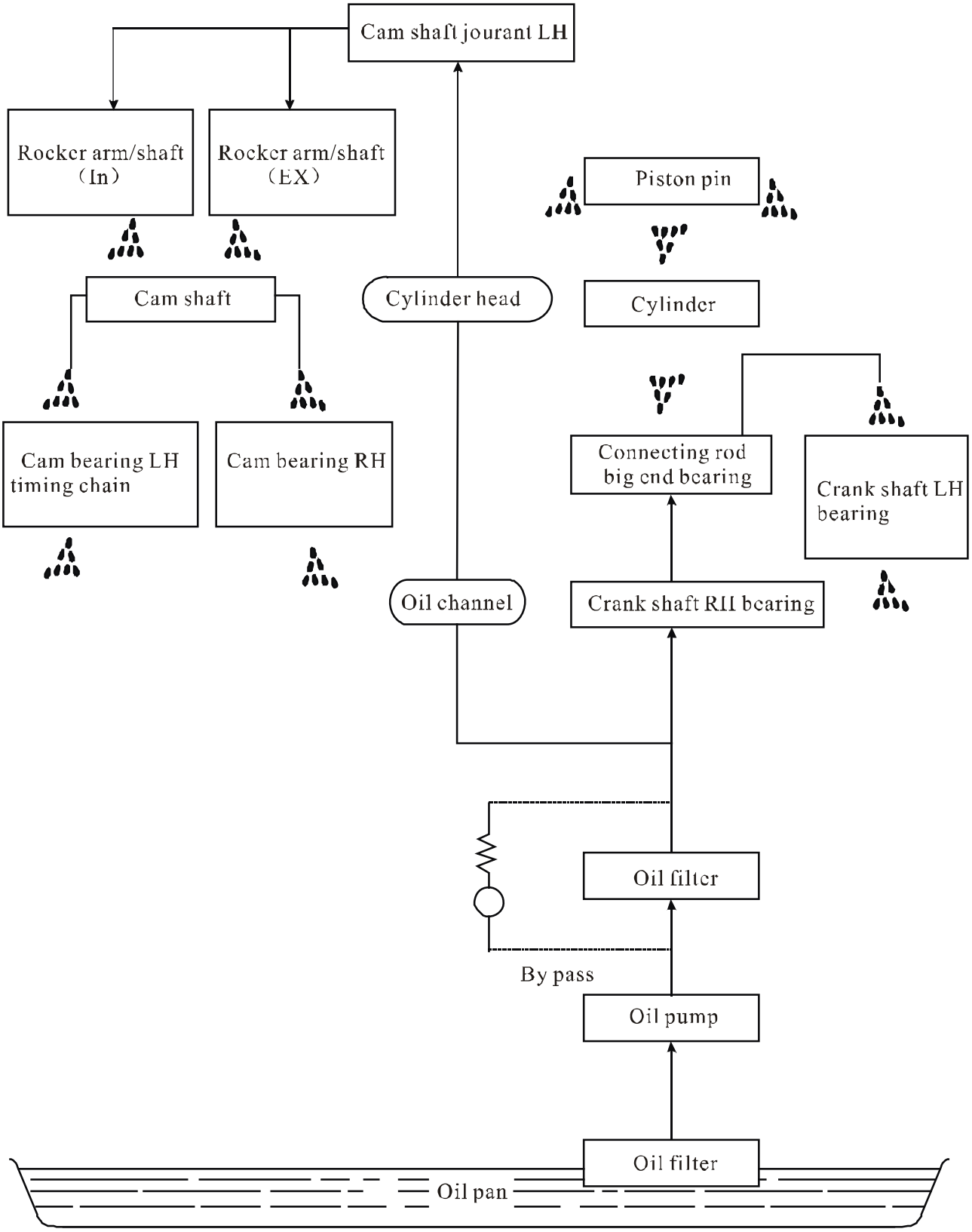
Fix the SE starter valve by mounting plate, and tighten the mounting screws to specified toque, then install its cover.
Refer to Fig 4.3.23
Specified toque: 2.1N.m

Fig 4.3.23



Ⅳ-4 Lubrication system

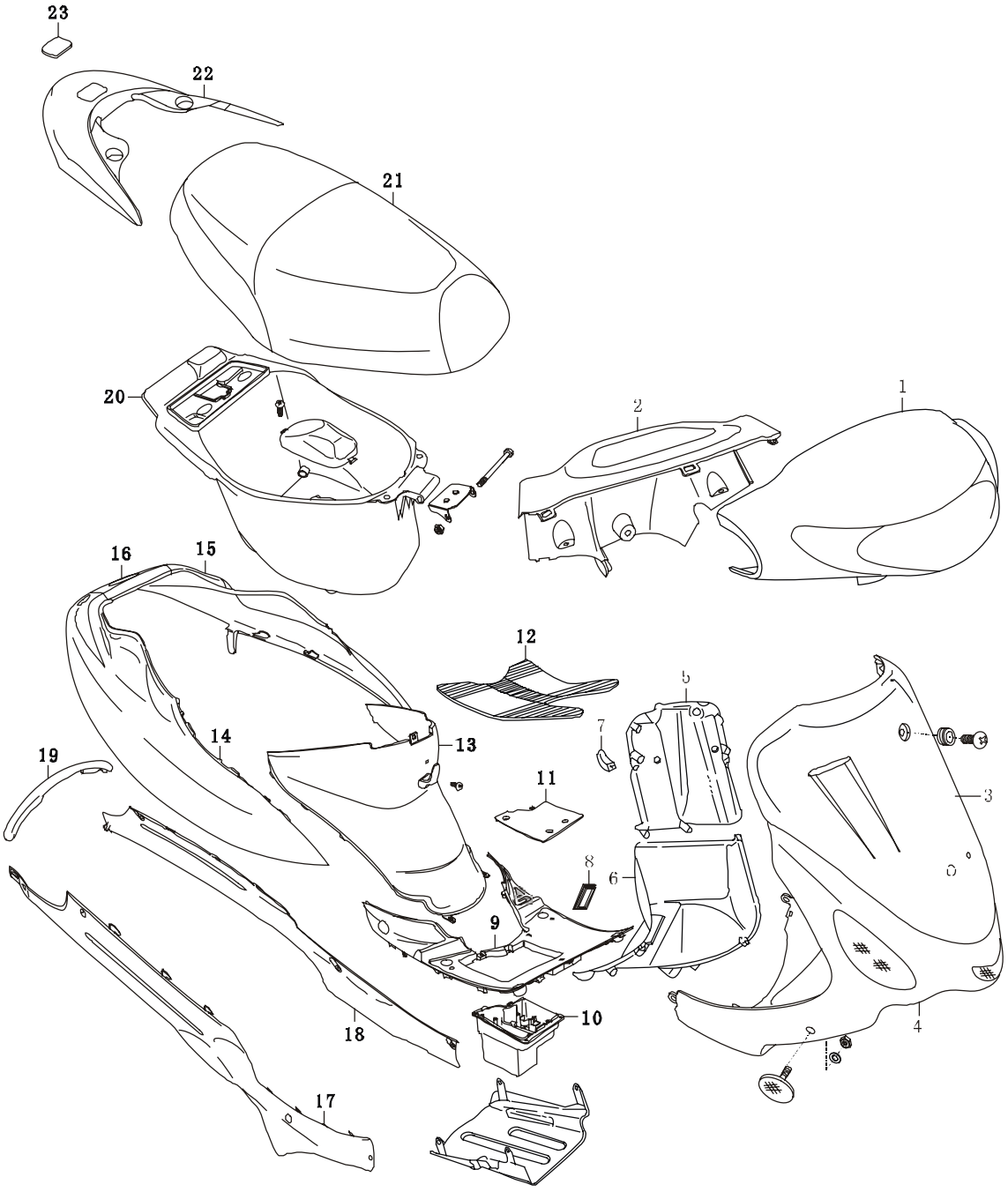
Oil filter



V FRAME BODY

V - 1 Outer Parts

Construct

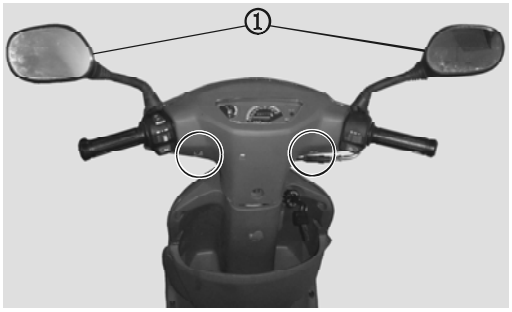


1.Front handlebar cover	2.Rear handle cover	3.Front leg shield	4.Lower shield
5.Upper inner shield	6.Low inner shield	7.Luggage hook	8.Leg shield lid
9.Floor panel	10.Battery case	11.Battery cover	12.Floor mat
13.Center cover	14.Body cover RH	15.Body cover LH	16.Rear center cover
17.Side regula RH	18. Side regula LH	19.Rear regula	20.Luggage box
21.Seat assy	22.Rear carrier cover	23.Fancy cover	

Disassembly

Remove mirror RH & LH①
Refer to Fig 5.1.1

Fig 5.1.1



Remove front handlebar cover②
Refer to Fig 5.1.2

Fig 5.1.2

Disconnect head lamp cable and front winker cable③, and remove speedometer cable④.
Refer to Fig 5.1.3

Fig 5.1.3

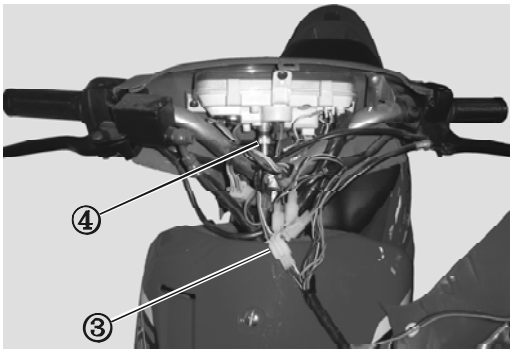
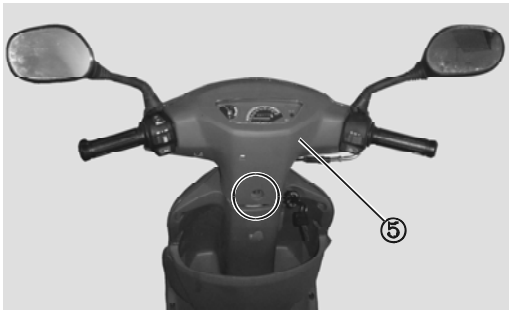
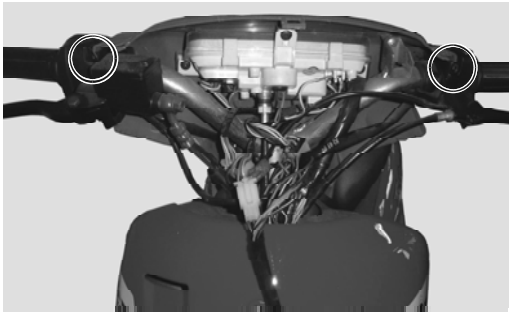


Fig 5.1.4



Remove rear handlebar cover⑤.
Refer to Fig 5.1.3 & 5.1.3

Fig 5.1.5



Remove front leg shield①.
Refer to Fig 5.1.6 & 5.1.7

Fig 5.1.6

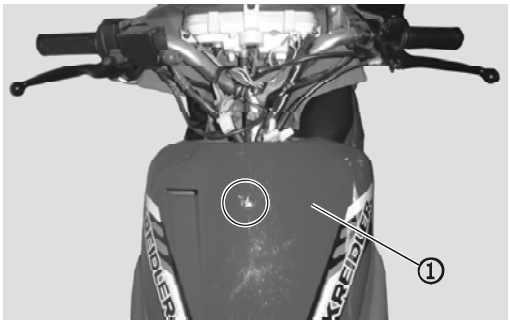
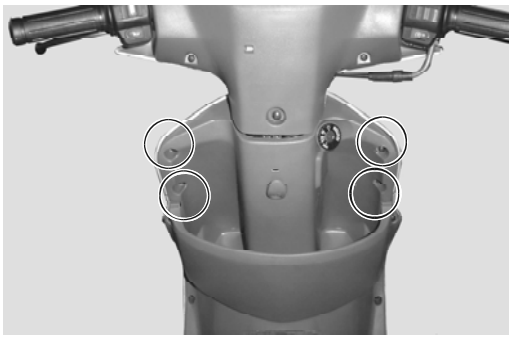
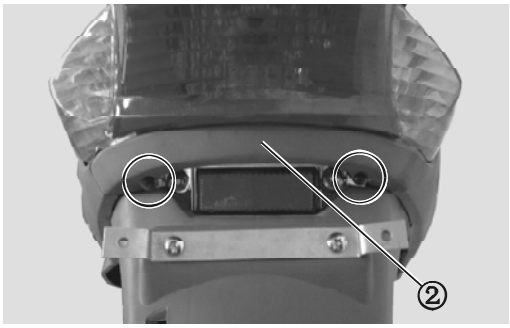


Fig 5.1.7



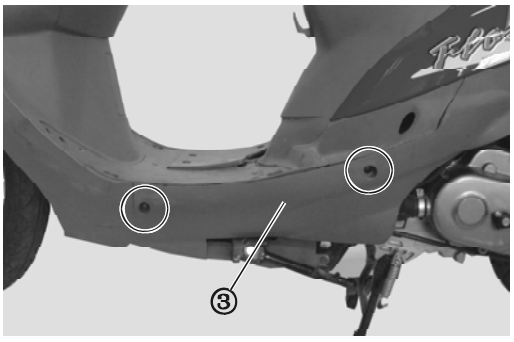
Remove rear regula②.
Refer to Fig 5.1.8

Fig 5.1.8



Remove side regula LH③.
Refer to Fig 5.1.9 & 5. 1. 10

Fig 5.1.9



Remove side regula RH in same method.

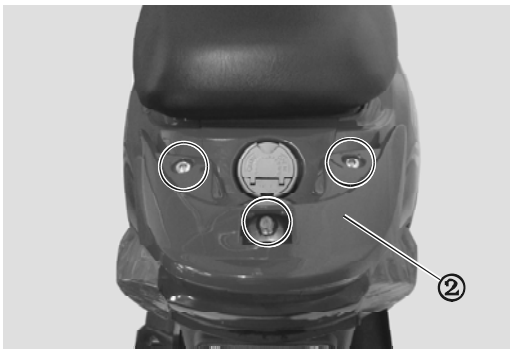
Fig 5.1.10

Fig 5.1.11

Remove rear carrier fancy cover①.
Refer to Fig 5.1.11

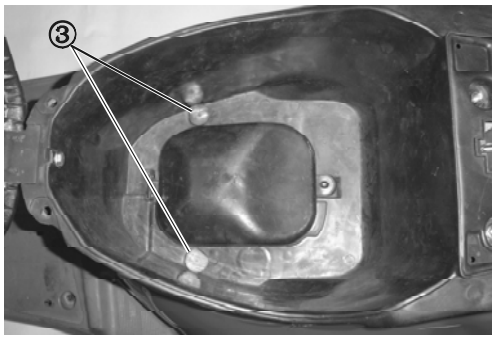
Remove rear carrier②.
Refer to Fig 5.1.12

Fig 5.1.12



Turn ignition key to unlock seat ASSY, and remove the plugs on the bottom of luggage box③.
Refer to Fig 5.1.13

Fig 5.1.13



Remove seat ASSY and luggage box by removing the mounting bolt and nuts.
Refer to Fig 5.1.14

Fig 5.1.14

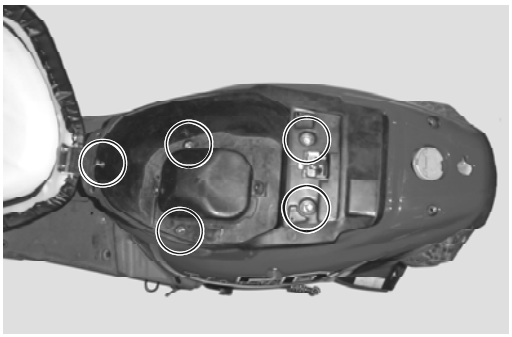


Fig 5.1.15

Remove floor mat④.
Refer to Fig 5.1.15

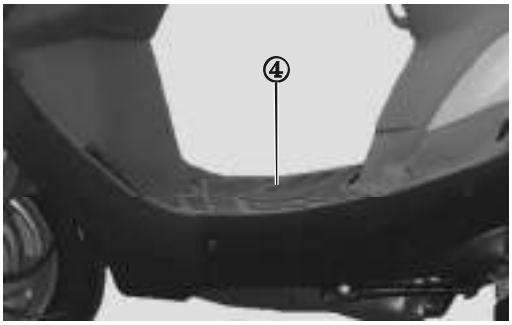


Fig 5.1.16

Remove center cover①.
Refer to Fig 5.1.16

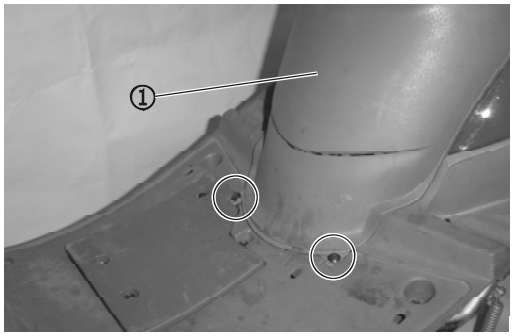


Fig 5.1.17

Open fuel tank cap② by ignition key.
Refer to Fig 5.1.17

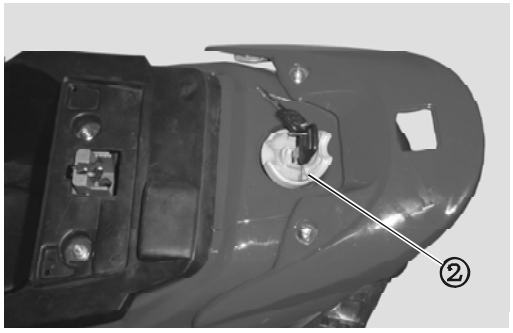


Fig 5.1.18

Remove seat lock cable③ from seat lock holder before removing body cover RH & LH.
Refer to Fig 5.1.18

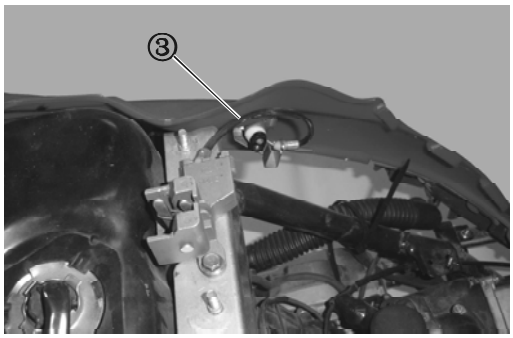
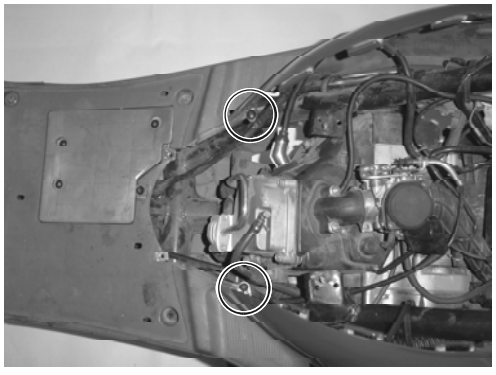


Fig 5.1.19

Remove body cover LH ④
Refer to Fig 5.1.19 & 5.1.20

Fig 5.1.20

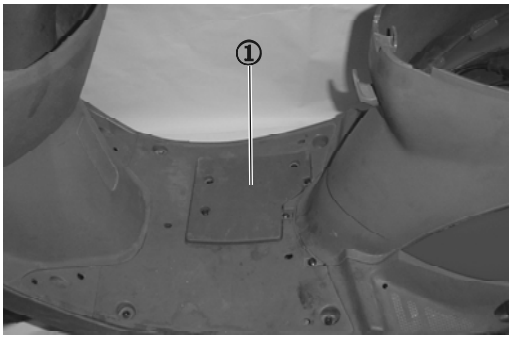
Remove body cover RH.



Remove rear center cover

Remove battery case cover①.
Refer to 5.1.21

Fig 5.1.21

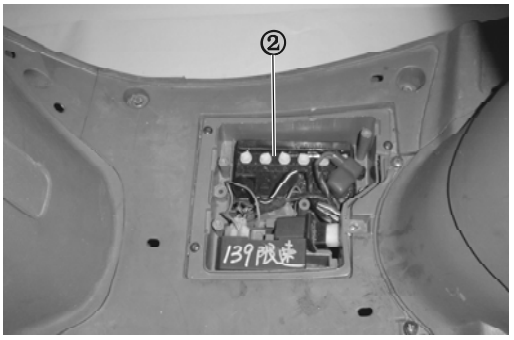


Remove battery②.
Refer to 5.1.22

Note:

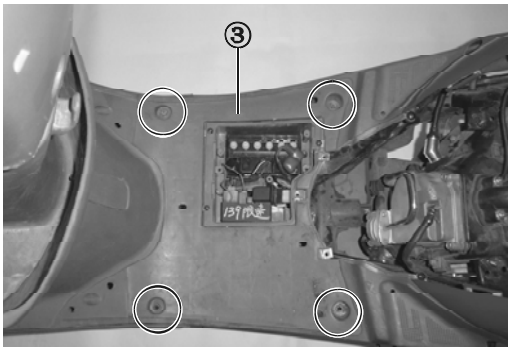
When removing battery, disconnect the negative (-) terminal cable first, then remove positive terminal cable at the battery.

Fig 5.1.22



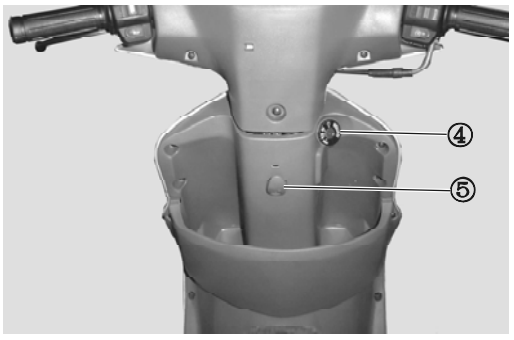
Remove floor panel③
Refer to 5.1.23

Fig 5.1.23



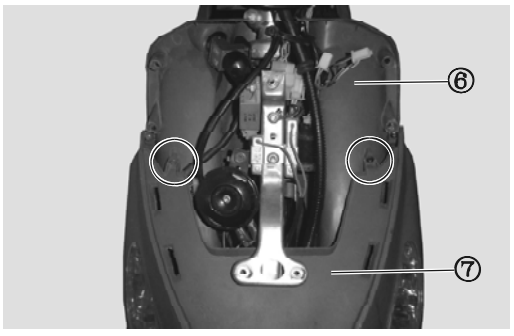
Remove ignition switch cap④ and luggage hook⑤.
Refer to Fig 5.1.24

Fig 5.1.24



Loosen the screws, and remove lower shield⑥ and inner shield⑦.
Refer to Fig 5.1.25

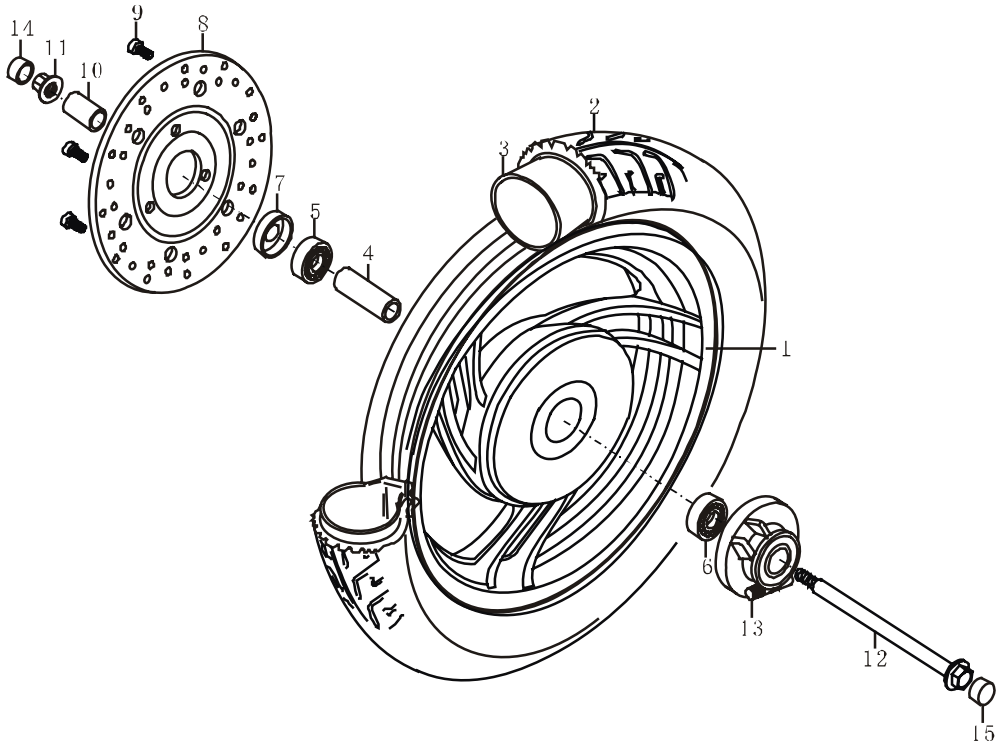
Fig 5.1.25



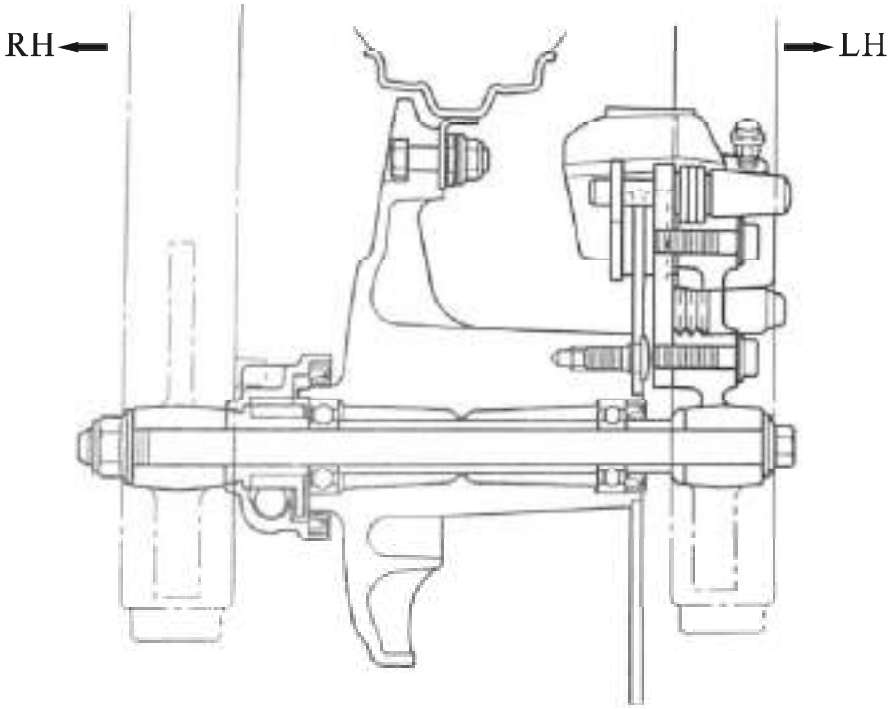
V-2 Front Wheel

For the model of front disk brake

Construction



1.Front rim	2.Front tire	3.Front tube	4.Spacer
5.Bearing 600201	6.Bearing 600301	7.Oil seal	8.Front brake disk
9.Bolt M8×24	10.Bush	11.Nut M12	12.Front axle
13.Speedometer gear box	14.Axle cap RH	15.Axle cap LH	



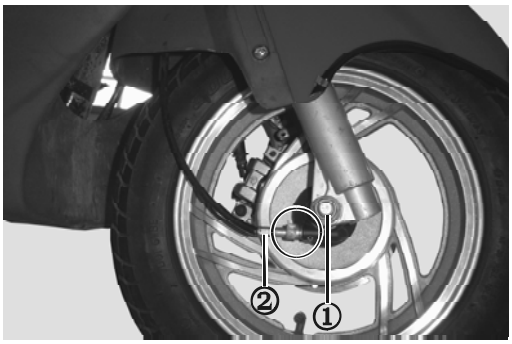
Disassembly

Remove nut① from front axle.

Refer to Fig 5.2.1.

Disconnect speedometer cable②

Fig 5.2.1

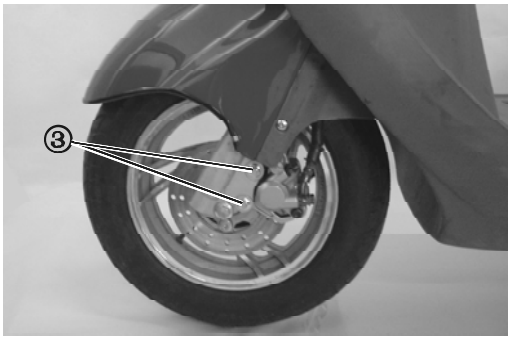


Remove brake caliper mounting bolts③.

Refer to Fig 5.2.2.

Left the vehicle by jack to free front wheel from ground, and remove front axle and front wheel.

Fig 5.2.2



Remove brake disk and bush.

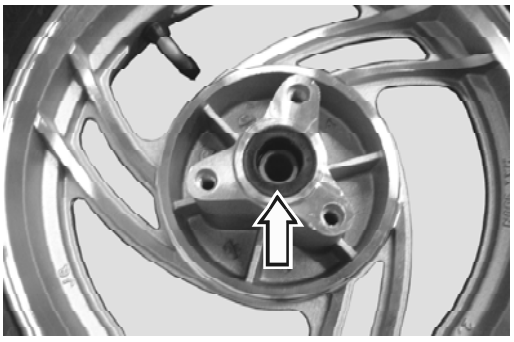
Refer to Fig 5.2.3.

Fig 5.2.3

Remove oil seal

Refer to Fig 5.2.4.

Fig 5.2.4



Inspection and reassembly

Fig 5.2.5

Speedometer gear box

Turn the gear in speedometer gear box to ensure gear and pinion moving smoothly.

Refer to Fig 5.2.5.

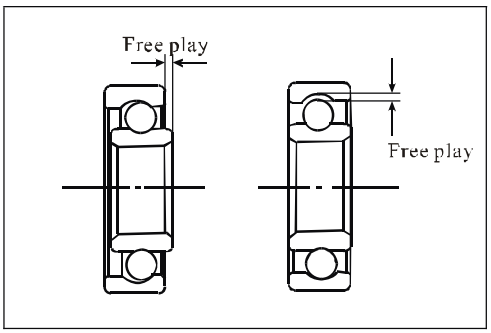
Check and replace oil seal of speedometer gear box if it damage

Rim bearing

Rotate the inner ring of bearing by hand to ensure the bearing working smoothly without abnormal noise. Replace it if necessary.

Refer to Fig 5.2.6.

Fig 5.2.6



Replace the bearing according to following procedure:

Insert the inner adopter① of bearing remover into bearing.

Insert the wedge bar② into inner tube from the opposit end, and ensure it locked in the opening slot of adopter.

Knock the wedge bar by hammer to push the bearing out.

Refer to Fig 5.2.7 & 5.2.8

Fig 5.2.7

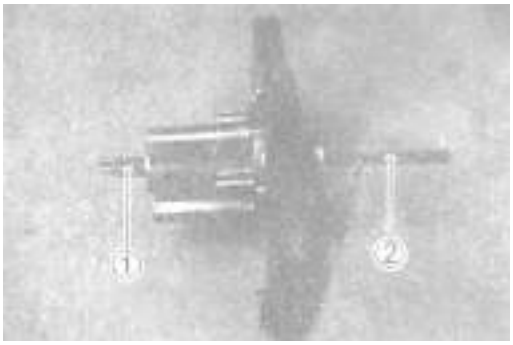
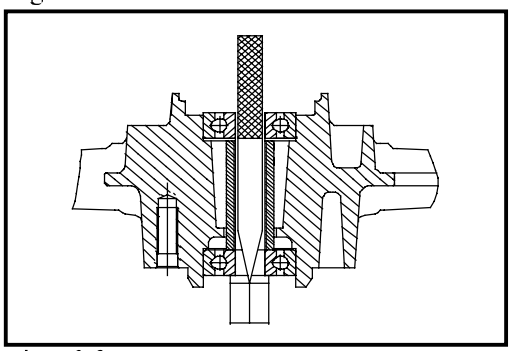


Fig 5.2.8



Note:

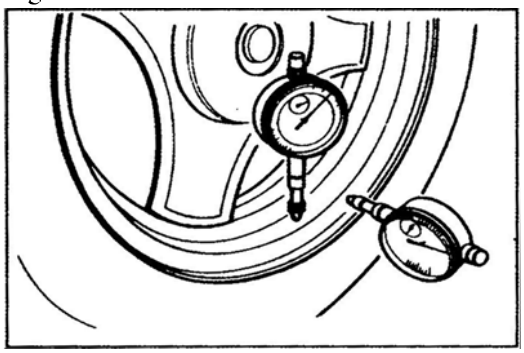
Any disassembled bearing must be replaced with fresh pieces.

Front rim

Inspect the run-out（Radial & Axial）of front rim, and ensure it under service limit. If over run-out was caused by damaged rim bearing, rim could be utilized after replacing the bearing. Otherwise replace with new rim.

Refer to Fig 5.2.9.

Fig 5.2.9



Service limit	2.0mm

Front axle

Inspect front axle run-out by micrometer, and replace it if it exceeds service limit.

Refer to 5.2.10

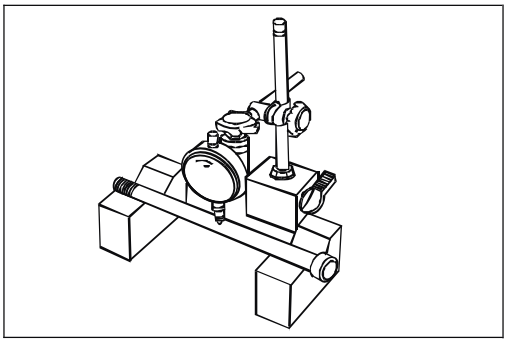
Tools: Micrometer

Magnetic basic

V-block,

Service limit: 0.25mm

Fig 5.2.10



Service limit	0.25mm

Reassembly

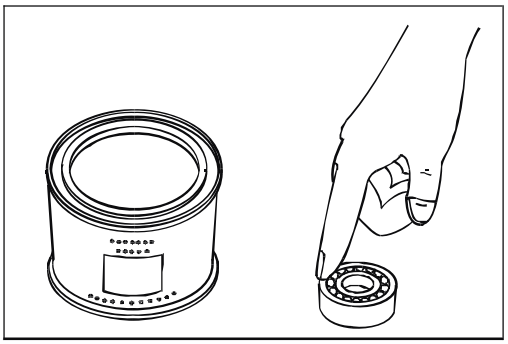
Reassemble the front wheel in the reverse order of removal.

1. Rim bearing

Apply grease to rim bearing.

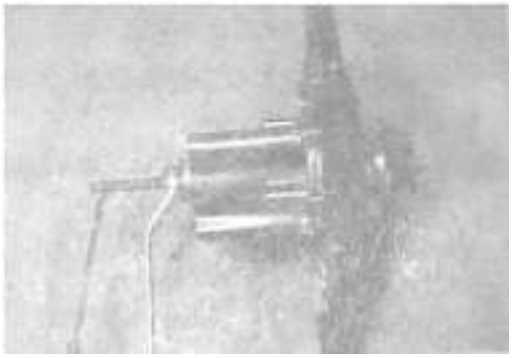
Refer to Fig 5.2.11

Fig 5.2.11



Install the bearings to rim by special tools. Refer to Fig 5.2.12.

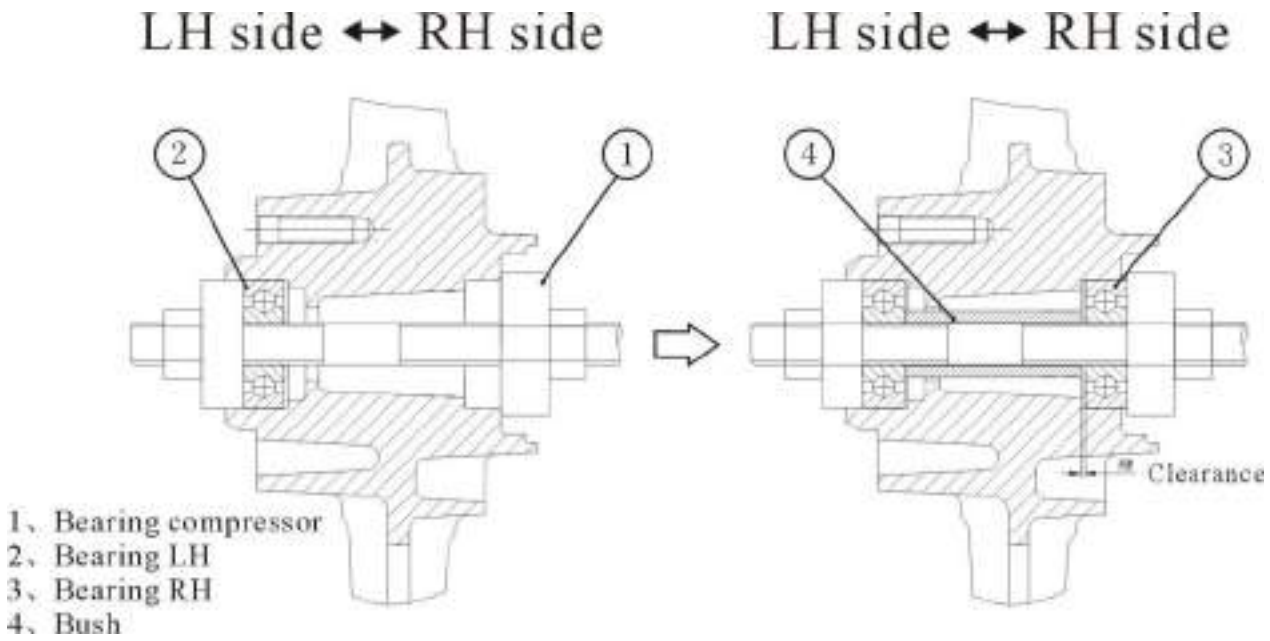
Fig 5.2.12



Caution:

Firstly install Bearing LH, then bearing RH.

Scaling cover of bearing would face outward



Front Wheel

1. Brake disk

Ensure there is no any oil dirt on brake disk.

Apply thread locking sealant 1360 to brake disk mounting bolts, and tighten them to specified torque.

Specified torque: 23N.m

Refer to Fig 5.2.13.

Fig 5.2.13

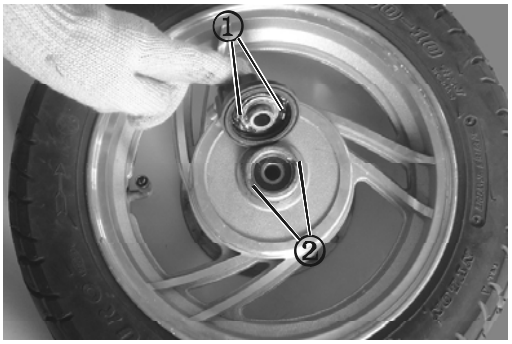
2. Speedometer gear box

Apply grease to gear and oil seal before installation.

Align the gear drive piece with the groove on rim, and install the speedometer gear box to rim.

Refer to Fig 5.2.14

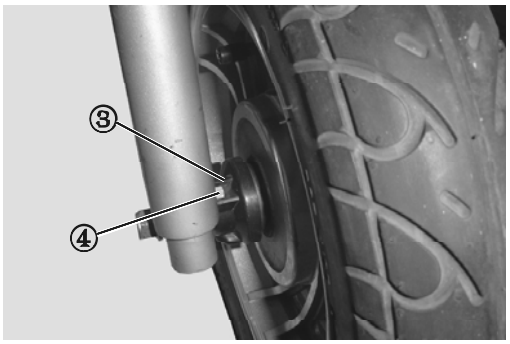
Fig 5.2.14



Align the stopper edge on speedometer gear box to the groove on front fork, and install front wheel to front fork by inserting front axle.

Refer to Fig 5.2.15

Fig 5.2.15



3. Front axle nut

Tighten front axle nut to specified torque.

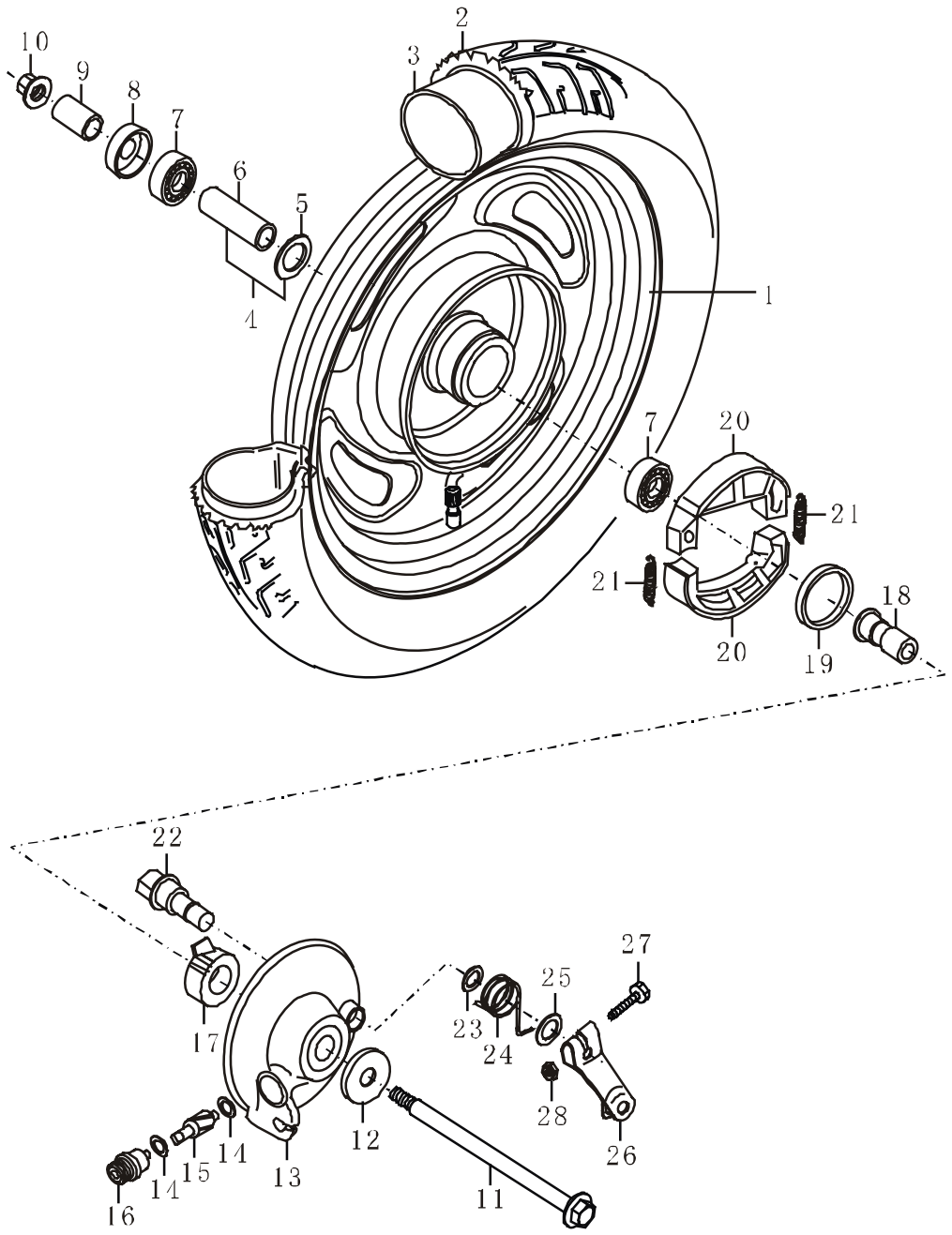
Refer to Fig 5.2.16

Specified torque: 53N.m

Fig 5.2.16

For the model of front drum brake

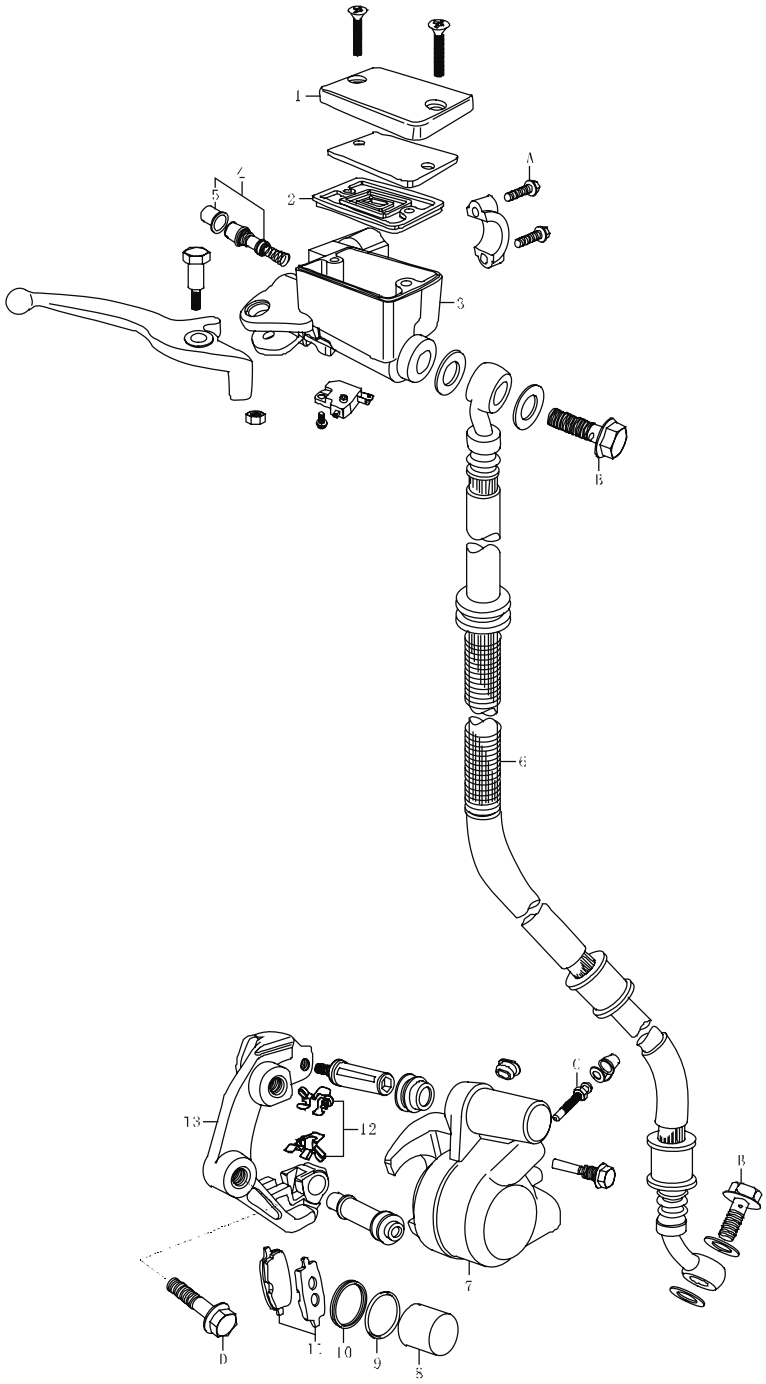
Construction



1.Front rim	2.Tire	3.Tube	4.Spacer	5.Washer
6.Spacer	7.Ball bearing	8.Oil seal	9.Bush	10.Nut M12
11.Front axle	12.Collar	13.Front panel	14.Washer 5	15.Pinion
16.Collar	17.Speedometer gear	18.Bush	19.Oil seal	20.Brake shoes
21.Spring	22.Brake cam	23.O-ring	24.Spring	25.Washer
26.Brake lever	27.Bolt M6×30	28.Nut M6		

V-3 Front Brake System

Construction



1. Cap
2. Diaphragm
3. Master Cylinder
4. Piston Set
5. Dust Cap
6. Front Brake Hose ASSY
7. Front Brake Caliper ASSY
8. Piston
9. Oil Seal
10. O-ring
11. Pad ASSY
12. Spring
13. Caliper Holder

A. Master Cylinder Bolt
B. Brake Hose Bolt
C. Bleed Valve
D. Caliper Bolt

Caution

Only Grade DOT4 glycol based hydraulic brake fluid is equipped in brake system of this vehicle.

Don't use or mix with silicon or fossil oil based fluid when refilling, otherwise the brake system will be damaged.

Keep the container properly sealed and away from reaching of child when stocking brake fluid. Don't use long-stocking or unsealed brake fluid.

Take care to avoid any dirt or dust interring the brake system when refilling brake fluid.

Use fresh brake fluid only to wash the parts of brake system.

Dirty brake disk and pad will affect brake efficiency. Replace or clean it by neutral abstergent.

Warning:

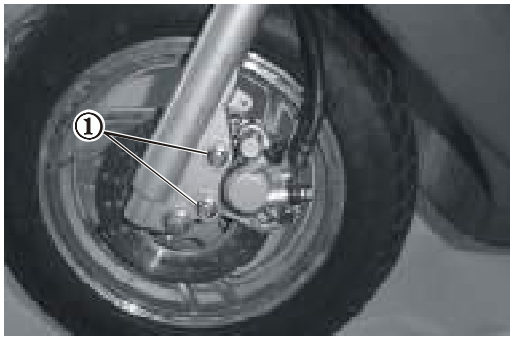
Brake fluid can damage the parts of plastic, paint and rubber due to chemistry.

Brake pad replacement

Remove caliper mounting bolts①.

Refer to Fig 5.3.1

Fig 5.3.1



Push caliper holder to remove brake pad.

Refer to Fig 5.3.2

Fig 5.3.2

Caution

Don't force the brake lever before installing brake pad.

Brake pad would be replaced in set, otherwise brake performance will be affected

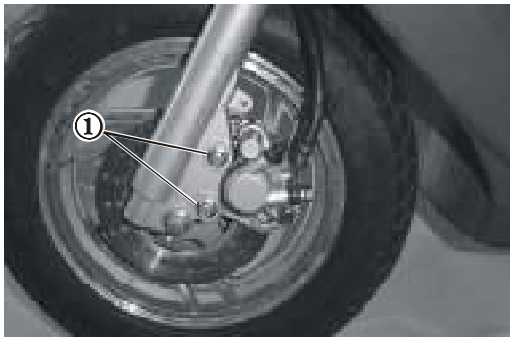
Carefully install new brake pad

Tight caliper mounting bolts① to specified toque.

Refer to Fig 5.3.3

Specified toque: 26N.m

Fig 5.3.3



Note:

After replacing brake pad, apply brake to confirm its performance and fluid level.

Brake fluid replacement

Stand the vehicle on horizontal ground with handlebar in verticality.

Remove handlebar covers.

Remove the cap and diaphragm of fluid reservoir.

Drain out old brake fluid, and refill with fresh brake fluid.

Refer to Fig 5.3.4

Fig 5.3.4

Connect the bleed valve and other container by sufficient hose.

Loosen the bleed valve and pump out all previous brake fluid.

Refer to Fig 5.3.5

Fig 5.3.5

After closing bleed valve and disconnecting drain hose, refill with fresh brake fluid till its level reach the upper limit on inspection screen.

Note:

Bleed out the air from brake system.

Refer to Fig 5.3.6

Fig 5.3.6

Disassemble and reassemble brake caliper

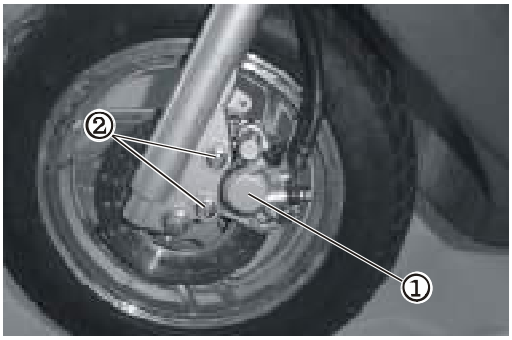
Disassembly

Remove brake hose from brake caliper ASSY by removing the union bolt①, and drain out brake fluid to other container.

Remove caliper ASSY mounting bolts②.

Refer to Fig 5.3.7

Fig 5.3.7



Caution

The remaining brake fluid during last maintenance or long-storing fluid could not be utilized, otherwise the brake system will be damaged.

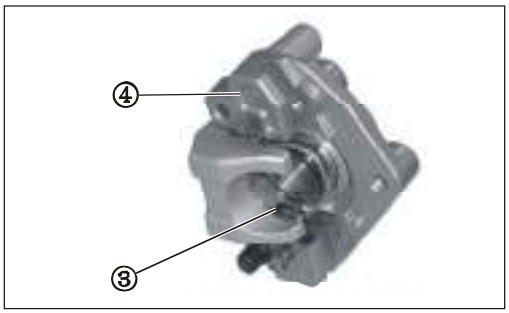
Any brake fluid leakage will be dangerous during running. Ensure hose and sealing not damaged or leaked.

Fig 5.3.8

Remove brake pad. Refer to Fig 5.3.8

Remove brake pad spring③.

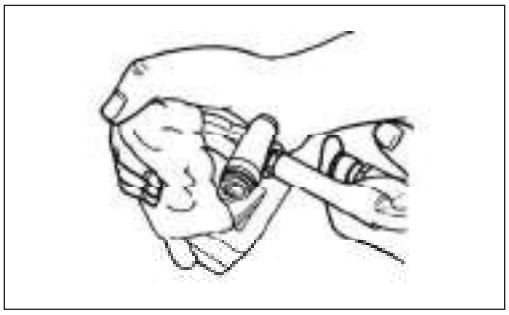
Remove brake pad holder④.



Cover brake caliper by rap to prevent the piston escape suddenly, push out the piston by compressed air.

Refer to Fig 5.3.9

Fig 5.3.9



Caution

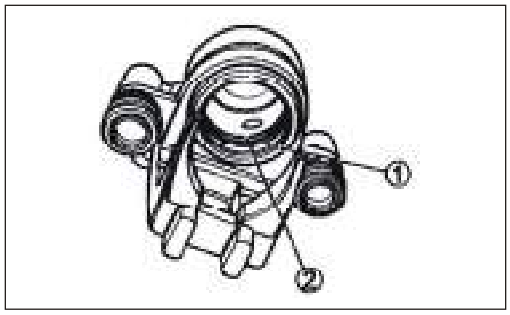
Take care not to damage the piston by compressed air.

Remove dust ring① and piston sealing ring②.
Refer to fig 5.3.10.

Caution

Don't utilize the used dust ring and piston sealing ring.

Fig 5.3.10

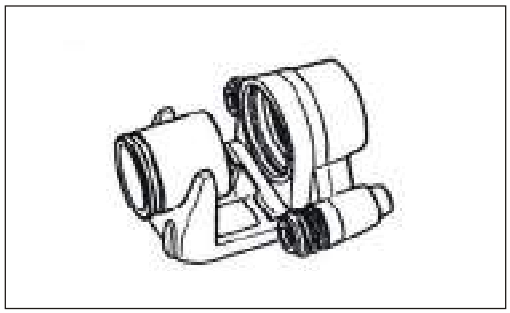


Brake caliper inspection

1. Brake caliper

Check caliper cylinder wall for crack, scratch or other blemish.
Replace with new one if necessary.
Refer to Fig 5.3.11

Fig 5.3.11



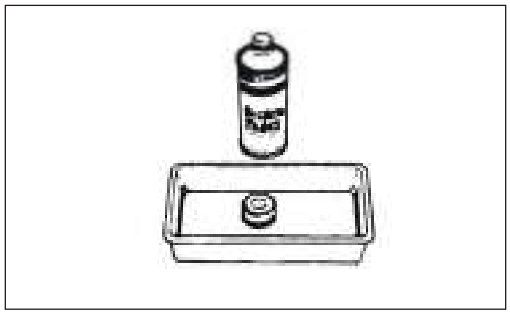
2. Brake caliper piston

Check caliper piston for crack, scratch or other blemish.
Replace with new one if necessary.

3. Reassemble brake caliper

Wash the piston and caliper by specified brake fluid, specially the groove for piston ring and dust seal.
Reassemble the brake caliper in the reverse order of disassembly
Refer to Fig 5.3.12

Fig 5.3.12



Caution

Wash the caliper cylinder and piston before reassembly.

Use the recommended brake fluid to wash caliper cylinder and piston. Don't use petrol, kerosene or other solvent.

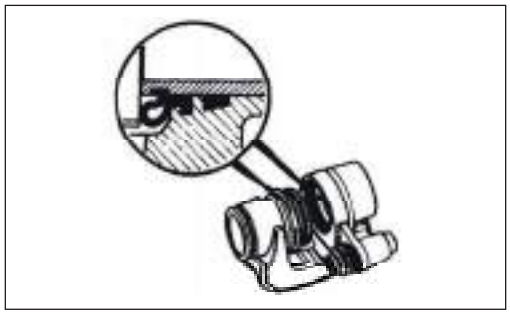
Don't remove brake fluid from caliper after washing.

Replace the used dust ring and piston sealing ring with fresh pieces.

Apply brake fluid to caliper cylinder, piston and sealing ring.

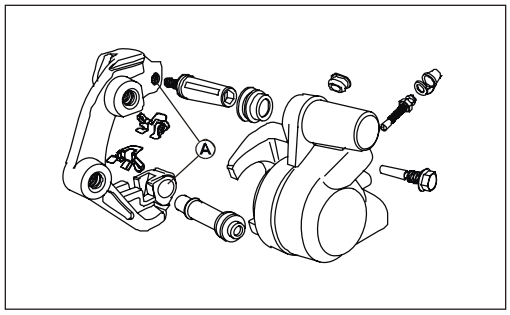
Install piston sealing ring and dust ring
Refer to Fig 5.3.13

Fig 5.3.13



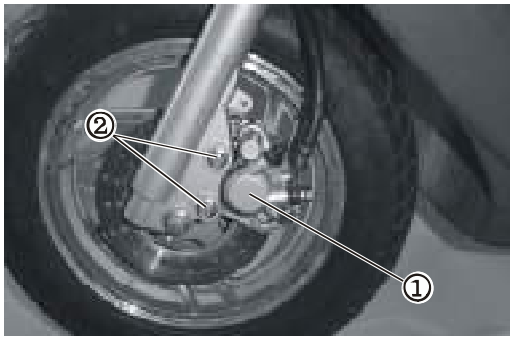
Apply grease to caliper holder A.
Refer to Fig 5.3.14

Fig 5.3.14



Tighten caliper mounting bolts① and hose union bolts② to specified torque.
Refer to Fig 5.3.15
Specified torque:
Caliper mounting bolts—26N.m
Hose union bolts—23N.m

Fig 5.3.15



Note

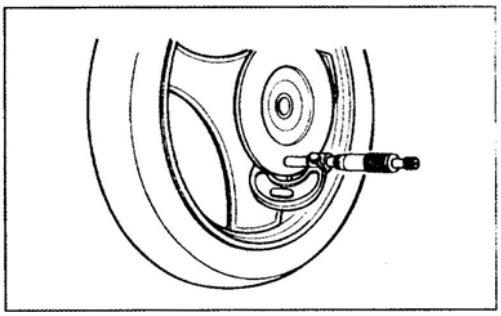
Push the piston into caliper cylinder and bleed out air from bleeding valve

Brake disk inspection

Check the brake disk for scratch, and measure its thickness by micrometer. Refer to Fig 5.3.16
Replace with fresh one if it is scratched or thickness is less than specified service limit.
Tool: micrometer

Service limit	2.5mm

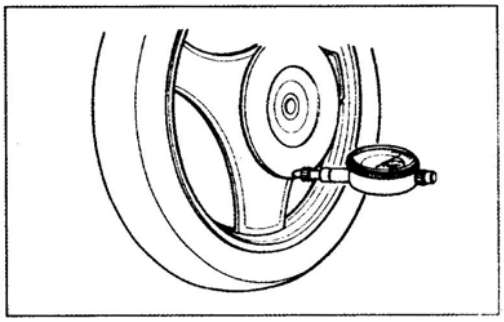
Fig 5.3.16



Measure brake disk run-out by diameter-indicator, and replace with fresh one in it exceeds service limit.
Refer to Fig 5.3.17.
Tools: Diameter-indicator
Magnetic basic

Service limit	0.3mm

Fig 5.3.17



Master cylinder disassembly and installation

Remove handlebar covers.

Put some cotton under the brake hose bolt, and then loosen the bolt and remove brake hose.

Refer to Fig 5.3.18.

Note:

Immediately rub the brake fluid away from the surface of any parts. Brake fluid can damage the parts of plastic, paint and rubber due to chemistry.

Disconnect wire① of front brake switch.

Refer to Fig 5.3.19

Remove master cylinder ASSY.

Remove front brake lever② and front brake switch③.

Refer to Fig 5.3.20

Remove cap④ and diaphragm⑤⑥.

Refer to Fig 5.3.21

Drain out brake fluid.

Remove Dust cap⑦, clip⑧, washer⑨ and piston⑩ along with spring.

Refer to Fig 5.3.22

Fig 5.3.18

Fig 5.3.19

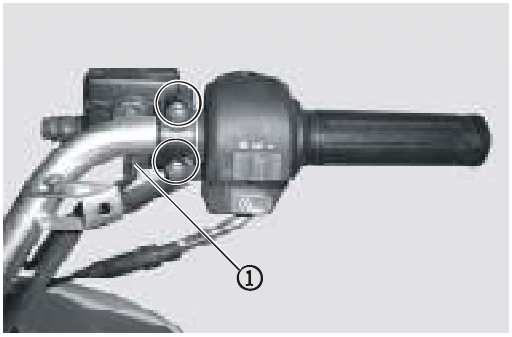


Fig 5.3.20

Fig 5.3.21

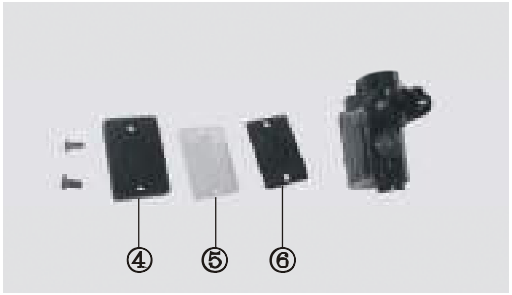
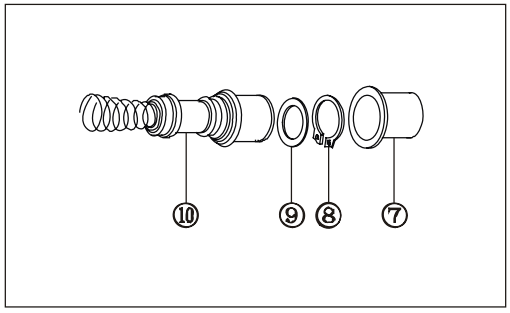


Fig 5.3.22



Master cylinder inspection

1. Cylinder

Check the inner surface of cylinder for scratch or other damage. Replace it if necessary.

Refer to Fig 5.3.23

Fig 5.3.23

Fig 5.3.24

2. Piston and rubber ring

Check piston surface and sealing ring for scratch or wear. Replace it if necessary.

Refer to Fig 5.3.24

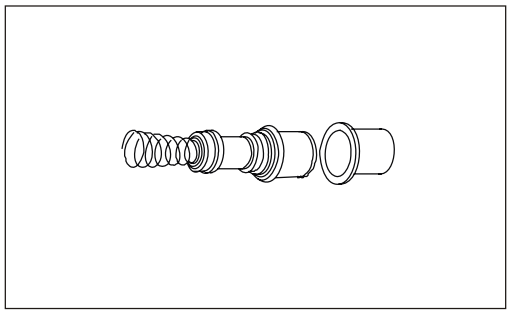


Fig 5.3.25

Master cylinder reassembly and installation

Reassemble master cylinder in the reverse order of removal.

Note:

Use the recommended brake fluid to wash the parts of master cylinder before assembly. Don't use petrol, kerosene or other solvent.

Apply brake fluid on the surface of inner parts of master cylinder.

Fig 5.3.26

Install the clip properly.

Refer to Fig 5.3.26

Note

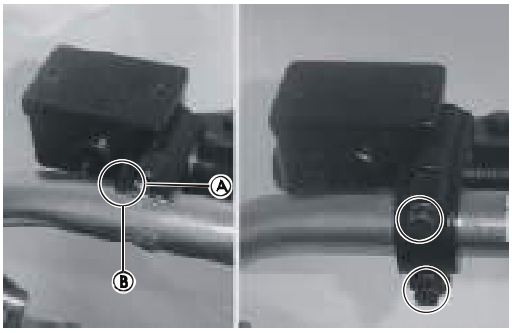
Ensure clip sharp edge facing outward when installing it.

Install the brake switch with its top end aligning with the master cylinder hole.
Refer to Fig 5.3.27

Fig 5.3.27

Install the master cylinder to handlebar with its bracket touching area A aligning with the mark B on handlebar.
Refer to Fig 5.3.28
Firstly tighten the upper bolt, and tighten both bolts to specified torque.
Specified torque: 10N.m

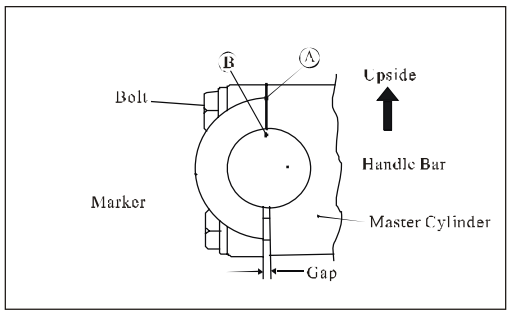
Fig 5.3.28



Note:

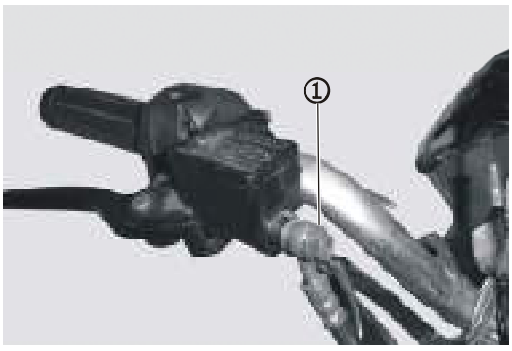
Ensure "UP" mark on master cylinder upward.
Refer to Fig 5.3.29.

Fig 5.3.29



Tighten the brake hose bolt to specified torque.
Refer to Fig 5.3.30.
Specified torque: 23N.m

Fig 5.3.30

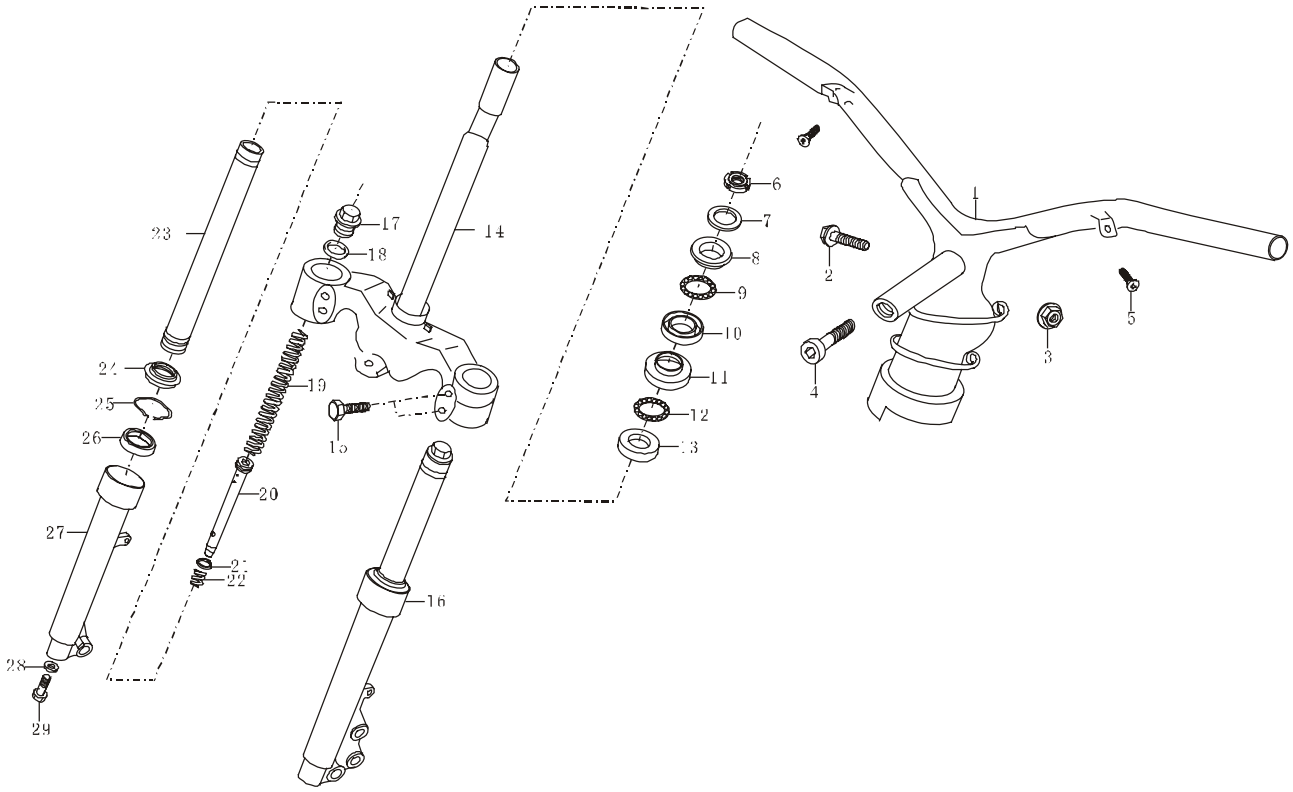


Caution:

Bleed out air from brake system when reassembling master cylinder.

V-4 Front fork

Construction



1.Handlebar assy	2.Bolt	3.Nut	4.Bolt	5.Screw
6.Lock nut	7.Lock washer	8.Upper inner race	9.Steel ball	10.Upper outer race
11.Lower outer race	12.Steel ball	13.Lower inner race	14.Steering stem	15.Bolt
16.Fork LH	17.Bolt	18.O-ring	19.Spring	20.Piston
21.Sealing ring	22.Returnig spring	23.Fork pipe	24.Dust ring	25.Spring ring
26.Oil seal	27.Fork RH	28.Gasket	29.Bolt	

Note

Apply grease to the parts of No.8、9、10、11、12、13、26、28.

Tighten the parts of No.3、4、15、17、29 to specified torque.

Dismantle front fork

Remove handlebar front cover.

Remove front leg shield and lower shield.

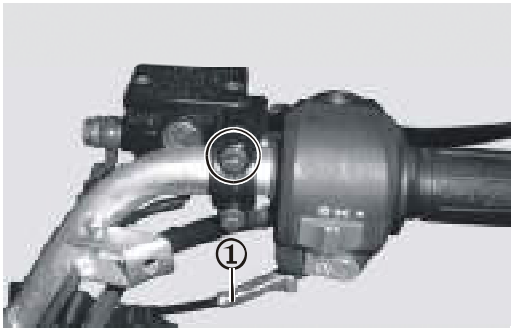
Remove front wheel assy.

Remove front brake caliper assy and master cylinder.

Disconnect throttle cable①.

Refer to Fig 5.4.1

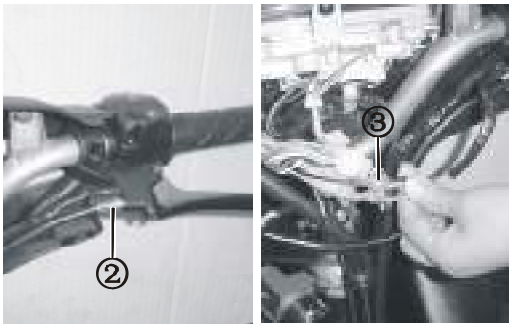
Fig 5.4.1



Disconnect rear brake cable② and rear brake switch③.

Refer to Fig 5.4.2

Fig 5.4.2



Remove the handle bar.

Refer to Fig 5.4.3

Fig 5.4.3

Remove wire clamp.

Refer to Fig 5.4.4

Fig 5.4.4

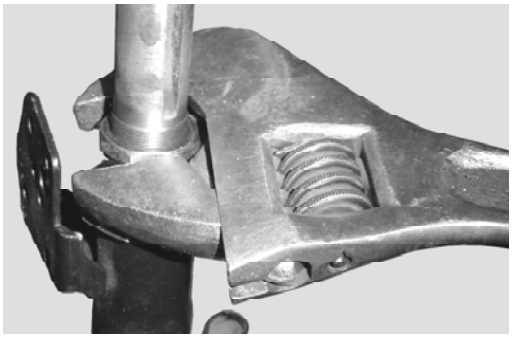
Remove lock nut① on steering stem.

Refer to Fig 5.4.5

Tool:

Steering lock nut spanner

Fig 5.4.5

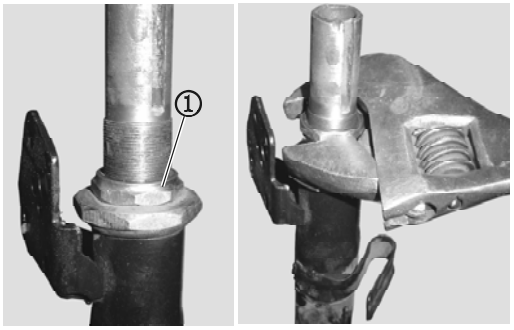


Remove steering nut① from steering stem.
Refer to Fig 5.4.6
Tool:
Steering nut spanner

Note

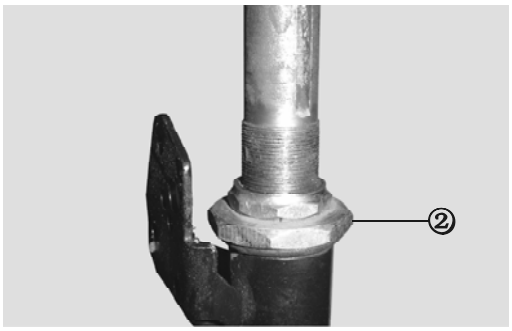
Hold front fork to prevent it from dropping down.

Fig 5.4.6



Remove lock washer② on steering stem.
Refer to Fig 5.4.7

Fig 5.4.7



Remove steel balls(upper-18 pieces &lower -26 pieces).
Refer to Fig 5.4.8

Fig 5.4.8

Remove fork assy RH & LH.
Refer to fig 5.4.9

Fig 5.4.9

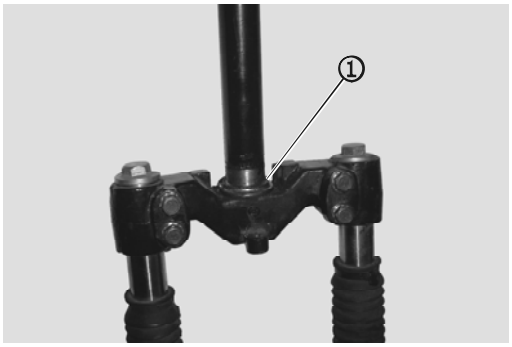
Steering stem Inspection

Inspect the removed parts, and replace with fresh pieces if following defect is found.

Worn race
Worn steel ball
Metabolic handlebar or steering stem

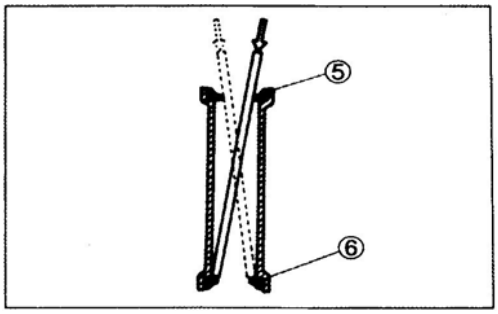
Remove lower inner race① from steering stem by chisel.
Refer to Fig 5.4.10

Fig 5.4.10



Drive out the upper and lower outer race from head pipe of frame body.
Refer to Fig 5.4.11

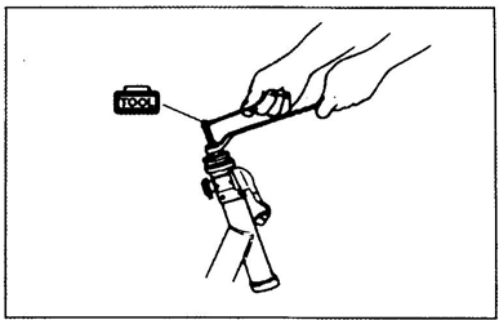
Fig 5.4.11



Steering stem reinstallation

Reinstall steering stem and handlebar in the reverse order of removal

Fig 5.4.12



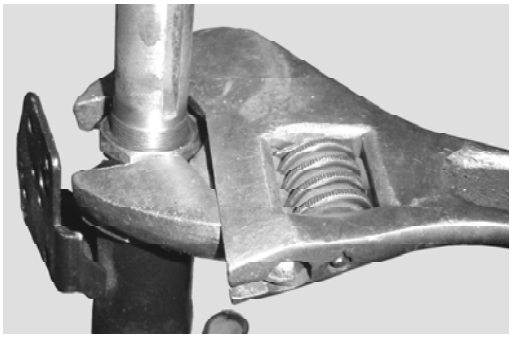
Press the upper and lower outer race into head pipe of frame body.
Refer to Fig 5.4.12
Tool:
Upper and lower outer race driver

Apply grease to the upper and lower outer race, then install steel balls to race.
Refer to Fig 5.4.13
Upper: 18pieces
Lower: 26pieces

Fig 5.4.13

Turn the steering nut all the way in and then back 1/8—1/4 turn.
Refer to Fig 5.4.14

Fig 5.4.14



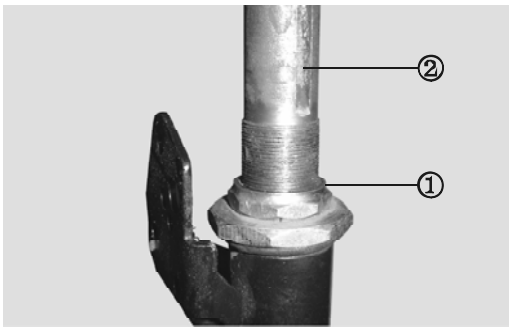
Note:

Ensure turning smoothly to both Right and Left.

Adjustment varies for different model.

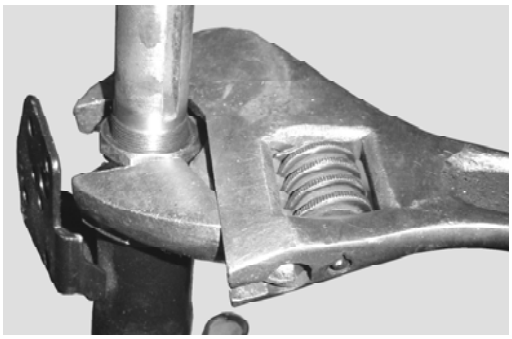
When installing lock washer, insert its lip① into the groove② on steering stem
Refer to Fig 5.4.15

Fig 5.4.15



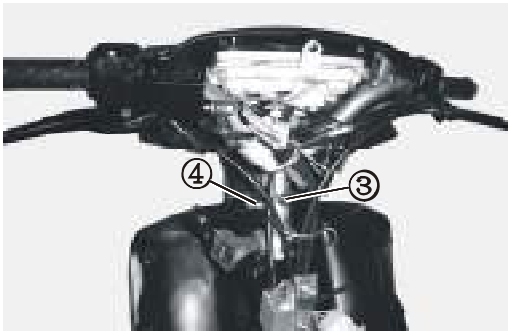
Tighten the lock nut to specified toque.
Refer to Fig 5.4.16
Specified toque: 30N.m
Tool: Lock nut connector
Lock nut spanner

Fig 5.4.16



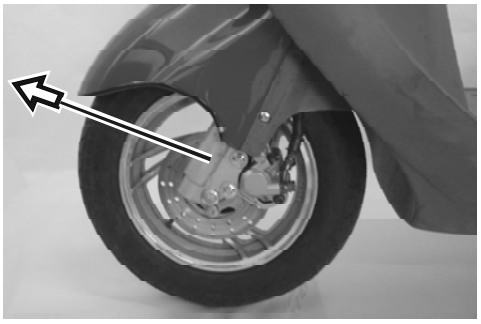
Install handlebar mounting bolt and nut, and tighten to specified toque.
Refer to Fig 5.4.17
Specified toque: Mounting bolt 25N.m
Mounting nut 49N.m

Fig 5.4.17



Install front wheel and front brake assy.
Refer to Fig 5.4.18

Fig 5.4.18



Note:

After installing and adjusting handlebar, push the front wheel frontward and backward to ensure that there is not gap on steering stem race.

Inspect and ensure that the steering stem can turn smoothly under gravity.

Front fork disassembly

Remove steering stem from frame body.

Remove front fender bracket mounting screw.

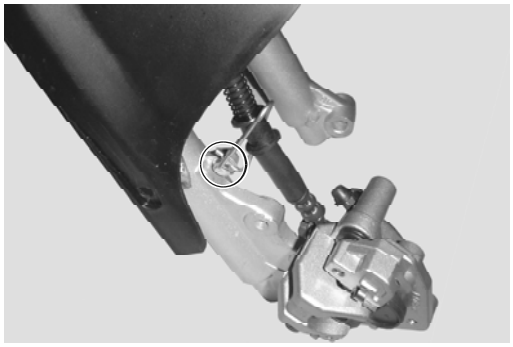
Refer to Fig 5.4.19

Fig 5.4.19

Remove front brake hose and caliper.

Refer to Fig 5.4.20

Fig 5.4.20

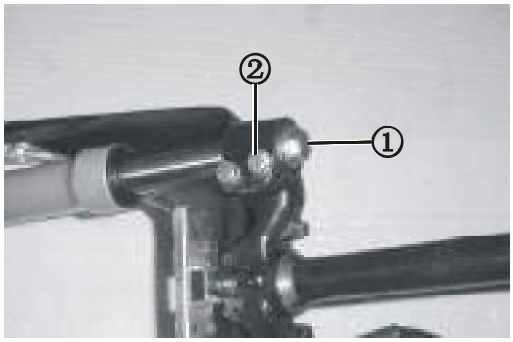


Remove the bolt from top end of fork.

Refer to Fig 5.4.21

Remove the forks from steering stem by loosening the mounting bolts.

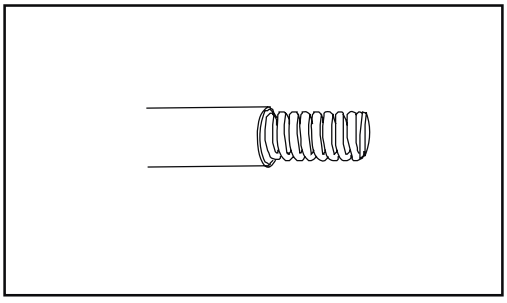
Fig 5.4.21



Remove the spring.

Refer to Fig 5.4.22

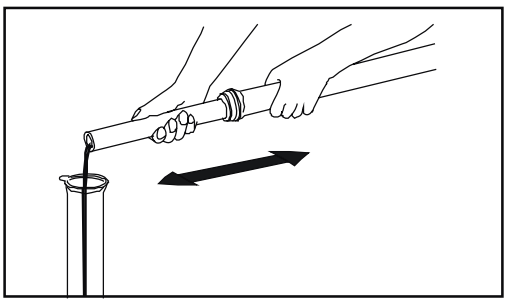
Fig 5.4.22



Compress and release the damper rod to drain out the oil from front fork.

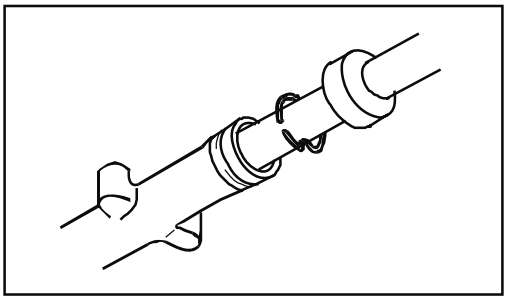
Refer to Fig 5.4.23

Fig 5.4.23



Remove dust seal and clip.
Refer to Fig 5.4.24

Fig 5.4.24



Remove damper rod bolt and pull out inner tube.
Refer to Fig 5.4.25 & 5.4.26
Tool:
T Handle spanner

Fig 5.4.25

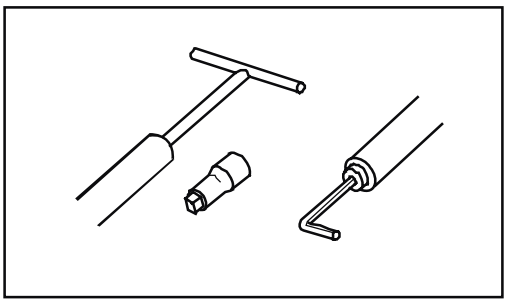
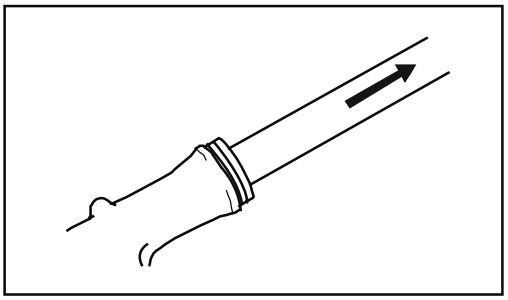
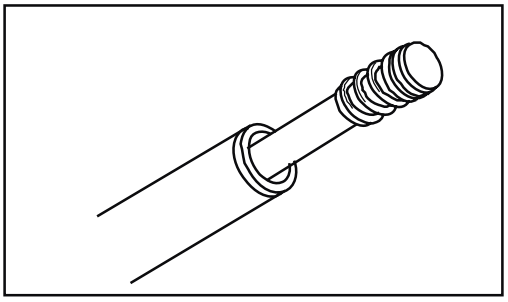


Fig 5.4.26



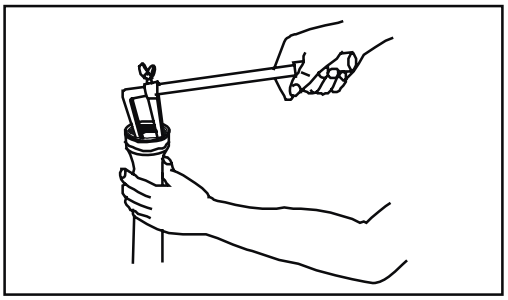
Remove damper rod and oil rings from inner tube.
Refer to Fig 5.4.27

Fig 5.4.27



Remove oil seal by special tool.
Refer to Fig 5.4.28
Tool:
Oil seal remover

Fig 5.4.28



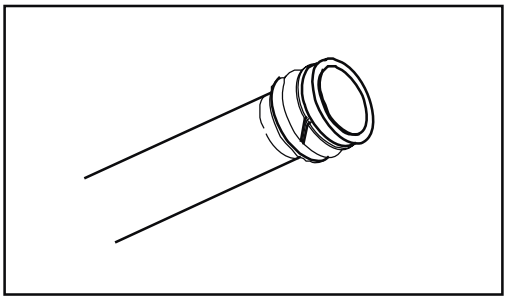
Inspection

Oil ring on damper rod

Check the oil ring for over wear and other defect, and replace if necessary.

Refer to Fig 5.4.29

Fig 5.4.29



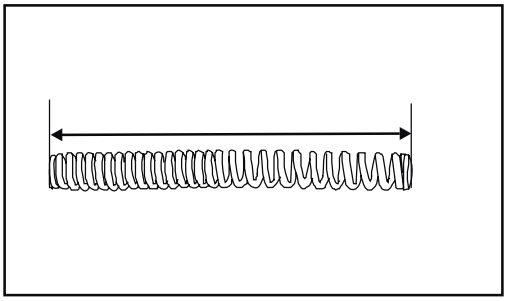
Front fork spring

Measure the free length of front fork spring, replace the spring length is less than service limit.

Refer to Fig 5.4.30

Service limit	254mm

Fig 5.4.30

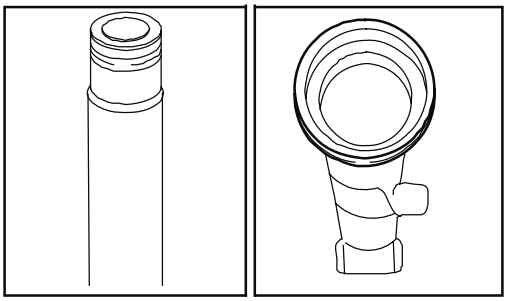


Inner and outer tube

Check the sliding surface of inner and outer tube for over wear and other defect, and replace if necessary.

Refer to Fig 5.4.31

Fig 5.4.31



Reinstallation

Reinstall the front fork in the reverse order of removal.

Note:

Don't use the previous fork oil.

Replace the oil seal and dust seal with fresh pieces.

Damper rod bolt

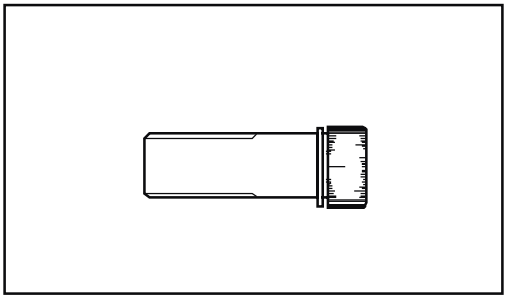
Apply thread locking sealant "1322" to bolt, insert it into damper rod and tighten it to specified toque.

Refer to Fig 5.4.32

Specified toque: 23N.m

Tool: T handle spanner

Fig 5.4.32



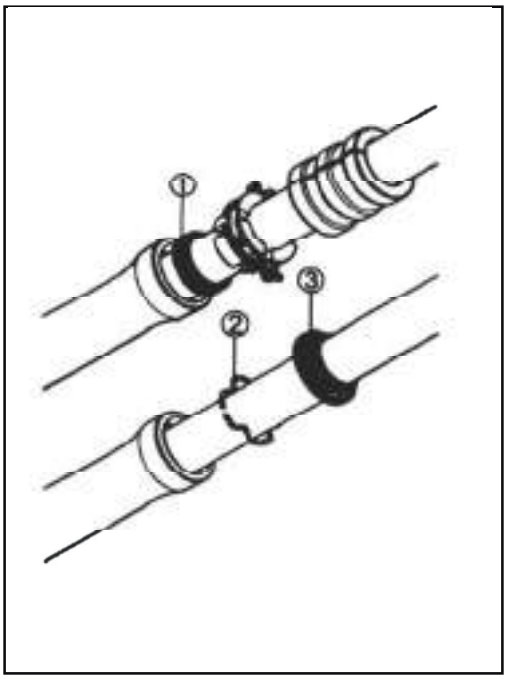
Install oil seal, clip and dust seal by special tool.
Refer to Fig 5.4.33.
Tool: Oil seal driver

Note:

Apply fork oil to oil seal and dust seal before installation.

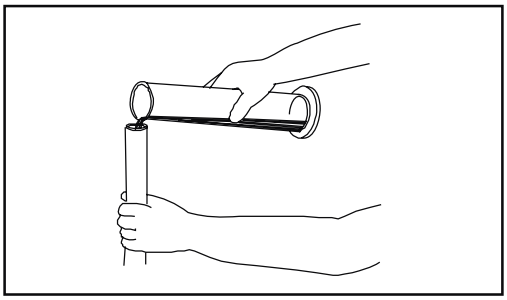
Insert the clip firmly.

Fig 5.4.33



Fill each inner tube with 87ml of fork oil.
Refer to Fig 5.4.34
Fork oil: 15#

Fig 5.4.34



Hold the fork vertically, and check and adjust oil level by special tool.
Refer to Fig 5.4.35.
Specified oil level: 81mm
Tool: Oil level gauge

Note:

Take out fork spring and push the inner tube to the bottom when adjusting oil level.

Fig 5.4.35

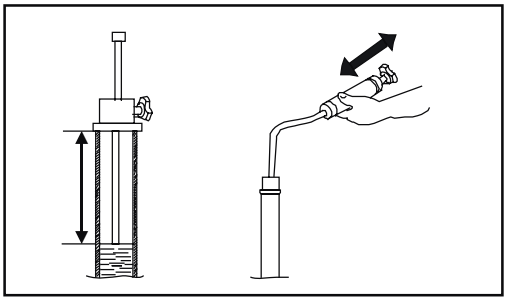
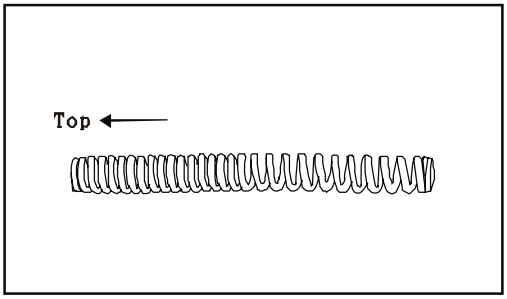


Fig 5.4.36

Install fork spring.
Refer to Fig 5.4.36

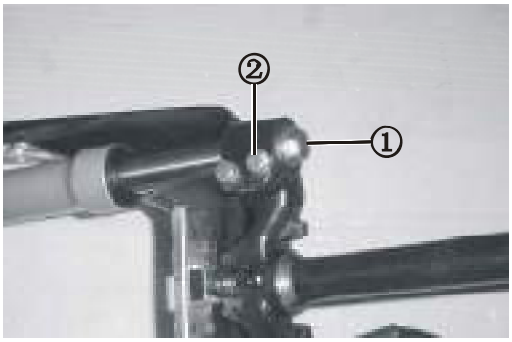
Note:

Install the spring with the tightly wound coil facing up.



Tighten the fork top bolt① and fork mounting bolt② to specified toque.
Refer to Fig 5.4.37
Specified toque:
Fork top bolt: 45N.m
Fork mounting bolt: 23N.m

Fig 5.4.37



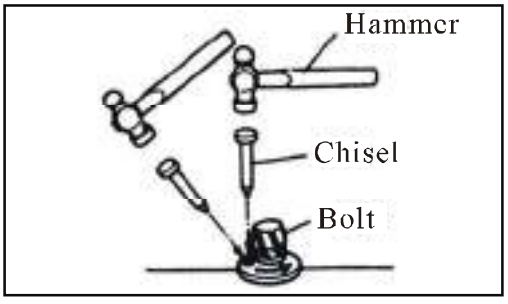
Install steering stem to frame body.
Install handlebar.

Ignition Switch ASSY

Remove inner shield from frame body
Remove the ignition switch ASSY from frame body through removing its mounting bolts by chisel and hammer.
Refer to Fig 5.4.38 & 5.4.39.

Fig 5.4.38

Fig 5.4.39

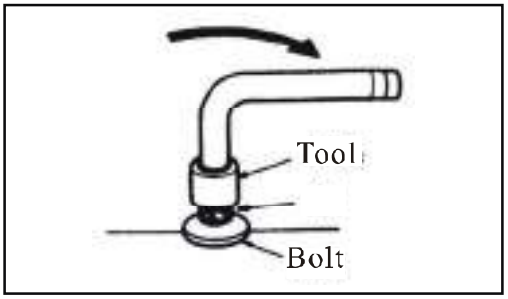


Fasten the ignition switch ASSY to frame body by special bolts and spanner.
Refer to Fig 5.4.40.

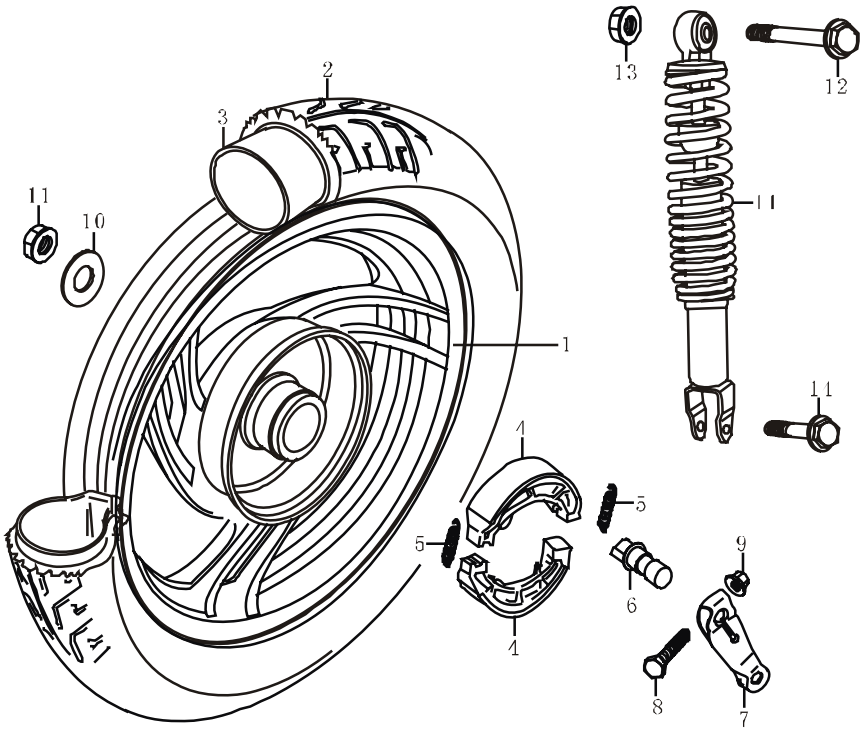
Note:

Turn the special bolts by spanner till the bolt head breaking down.

Fig 5.4.40



V- 5 Rear Wheel /Brake/Suspension



1.Rear rim	2.Rear tire	3.Rear tube	4.Brake shoes
5.Spring	6.Brake cam	7.Brake lever	8.Flange bolt M6×28
9.Nut M6	10.Washer 16	11.Nut M16	12.Flang bolt M10×71
13.Nut	14.Flange nut M8×35	15.Rear shock absorber	

Note:

Apply grease to the brake cam.

Fig 5.5.1

Disassembly

1. Rear wheel and brake

Stand the vehicle by center stand.

Remove muffler.

Remove rear wheel.

Refer to Fig 5.5.1

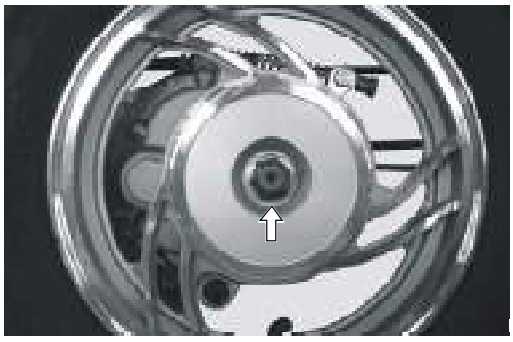
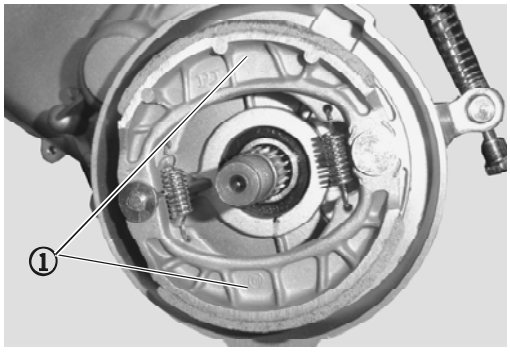


Fig 5.5.2

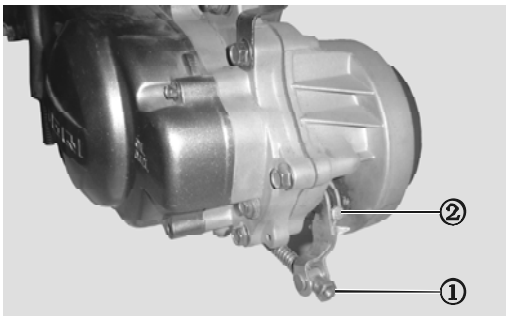
Remove rear brake shoes①.

Refer to Fig 5.5.2.



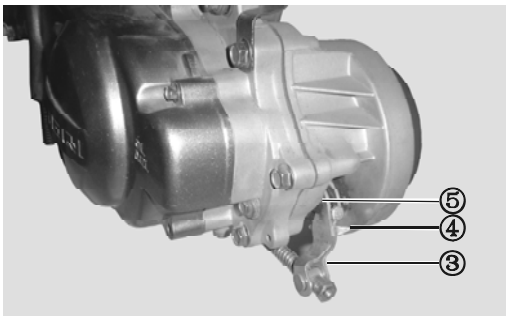
Remove brake adjusting nut①, brake lever bolt and nut②.
Refer to Fig 5.5.3..

Fig 5.5.3



Remove brake lever③, indicator④ and brake cam⑤.
Refer to Fig 5.5.4

Fig 5.5.4



2. Rear shock absorber
Remove frame cover.
Remove air cleaner.
Remove rear shock absorber
Refer to Fig 5.5.5.

Fig 5.5.5

Inspection

Fig 5.5.6

1. Brake hub
Inspect I.D. of brake hub, and replace the rim if I.D. exceeds service limit.
Refer to Fig 5.5.6
Tool: Caliper

Service limit	120.7mm

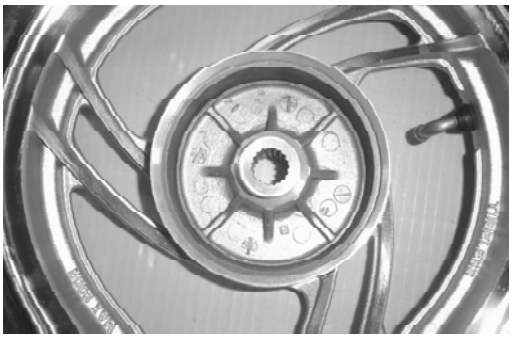


Fig 5.5.7

2. Brake shoe
Inspect the brake shoes for wear and damage, and replace the completed set of brake shoes if necessary.
Refer to Fig 5.5.7

Note:

Brake shoes must be replaced in completed set, otherwise brake efficiency will be affected.

3. Rear shock absorber

Inspect the rear shock absorber for leakage or other damage, and replace if necessary.

Refer to Fig 5.5.8

Fig 5.5.8

Reinstallation

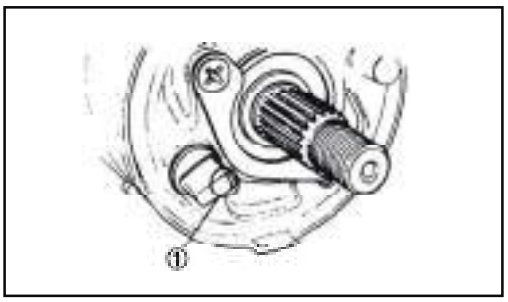
Reinstall rear wheel, brake and suspension in reverse order of removal.

Note:

Allow the stamped mark on brake cam facing the rear axle.

Refer to Fig 5.5.9

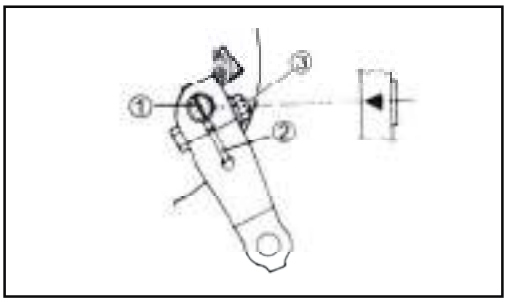
Fig 5.5.9



Install the indicator to the brake cam with its tooth aligning with the slot on the brake cam, and then install brake lever to the brake cam.

Refer to Fig 5.5.10

Fig 5.5.10



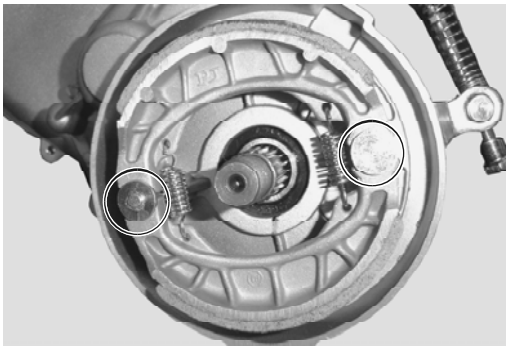
Tighten the brake lever bolt to specified toque.

Specified toque: 11N.m

Apply grease to the brake cam and fixed pin before install brake shoes to them.

Refer to Fig 5.5.11

Fig 5.5.11



Caution:

Don't apply extra grease to the brake cam and fixed pin.

Don't allow grease get on the surface of brake shoes.

Install rear wheel to final shaft, and tighten the nut to specified toque.

Refer to Fig 5.5.12

Specified toque: 120N.m

Fig 5.5.12

V-6 Tire and Rim

Dismantle

Proper sealing between rim and tire is important for tubeless tire. It is recommended to dismantle and reassemble the tire by tire building machine according to its operation manual.

Note

When reinstall tire to rim, ensure the white mark on tire align with inflating valve on rim. Refer to Fig 5.6.1

Balance the rim after repairing and reinstalling tire.

Fig 5.6.1

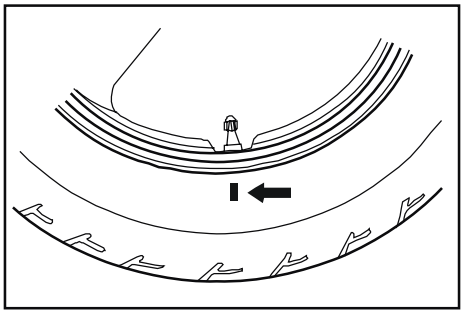


Fig 5.6.2

Inspection

Rim

Clean and check the rim, and replace with fresh piece if following defect was found.

Deform, crack

Scratch at rim edge;

Over wear

Refer to Fig 5.6.2 & 5.6.3

Service limit	2.0mm

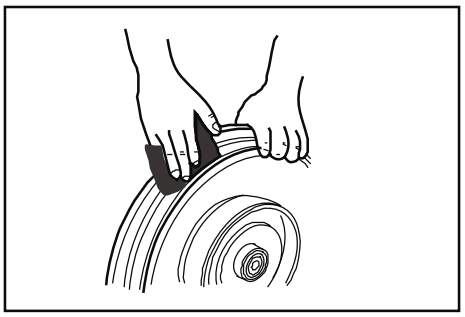


Fig 5.6.3

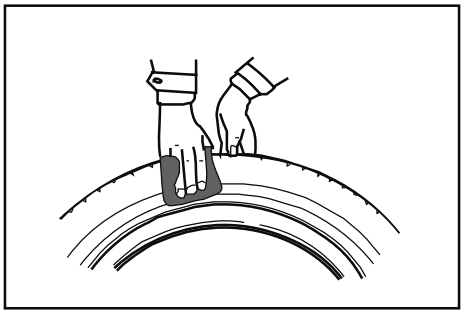


Fig 5.6.4

Tire

Check and replace the tire if following defect was found.

Scratch and crack on side face of tire

Refer to Fig 5.6.4

Damaged tire cord

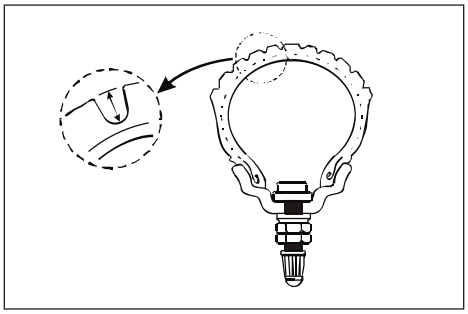
Abnormal wear of tread

Crack on tire edge

Tire protector disarrangement

Tool: Tire tread tester

Service limit of tread depth (Front & rear)	1.6mm

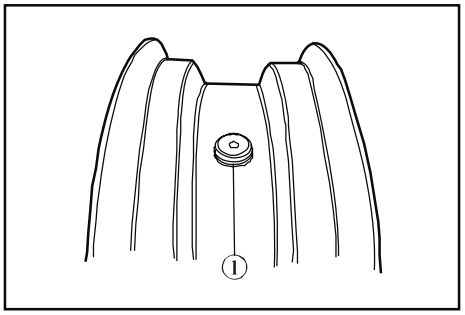


Inflating valve

Check the inflating valve① and sealing ring for crack or other damage. Replace if necessary.

Refer to Fig 5.6.5

Fig 5.6.5



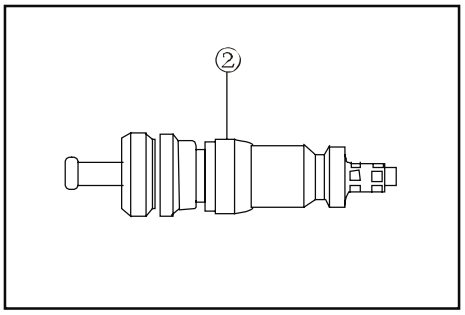
Assembly

Inflating valve

Remove the dust and rust surrounding inflating valve③.

Refer to Fig 5.6.6.

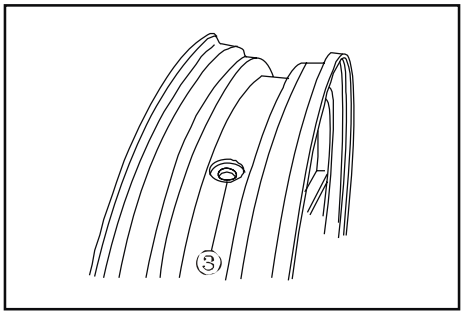
Fig 5.6.6



Install inflating valve① to rim.

Refer to Fig 5.6.7.

Fig 5.6.7



Note:

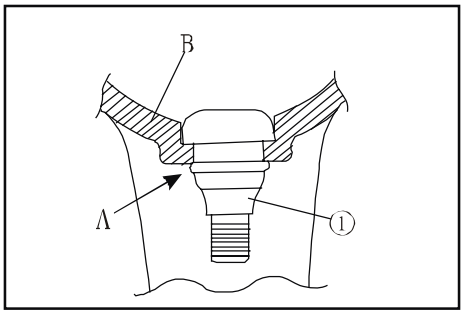
Apply special lubricant or neutral soap emulsion on inflating valve before installing it.

Caution:

Don't damage the lip A of inflating valve.

Refer to Fig 5.6.8.

Fig 5.6.8

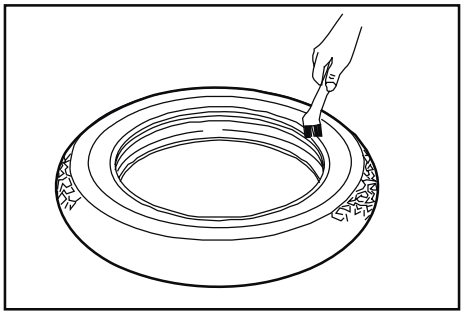


Tire

Apply special lubricant on tire edge.

Refer to Fig 5.6.9.

Fig 5.6.9

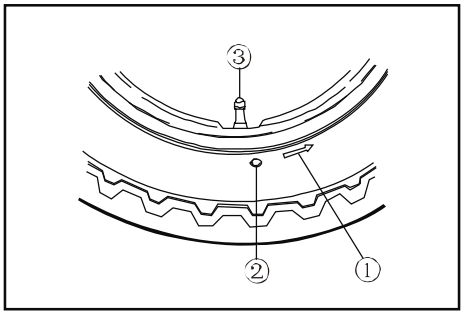


Note:

Don't apply grease, oil or petrol.

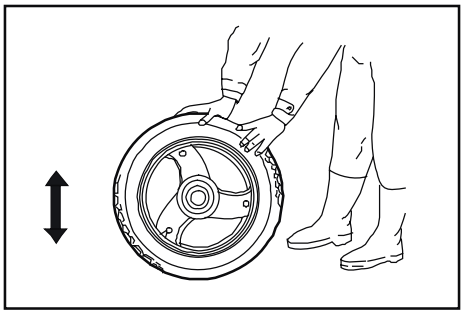
When installing tire to rim, ensure arrow mark① on tire aiming to the rotate direction of wheel and balance mark② aligning with inflating valve③.
Refer to Fig 5.6.10.

Fig 5.6.10



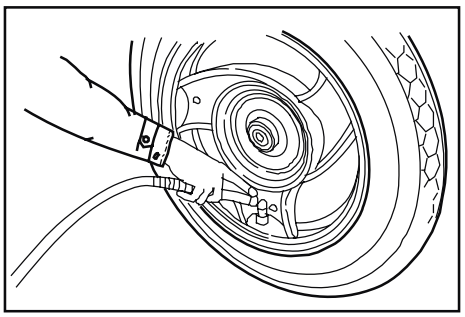
Refer to tire building machine operating manual to install tire to rim.

Fig 5.6.11



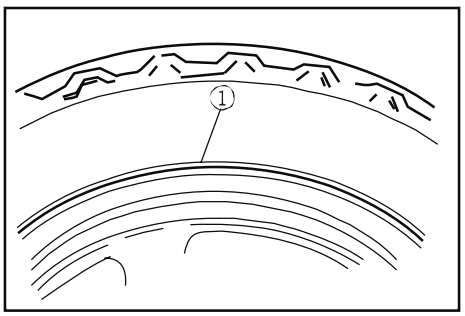
Knock the tire on ground when rolling it for the proper sealing between tire and rim.
Refer to Fig 5.6.12

Fig 5.6.12



Ensure balance mark aligning with inflating valve before inflating.
Inflate the tire to specified pressure.
Balance the wheel if necessary.

Fig 5.6.13



Specified cold tire pressure:

Front: 125kPa

Rear: 175kPa

Caution:

Inflating pressure must not exceed 300kPa. Too high pressure will be dangerous.

Don't stand on the tire when inflating.

Carefully adjust the pre-creation pressure of inflating pump.

Ensure the tire out of rim is balanced after inflating.
Refer to Fig 5.6.13
Otherwise bleed it and reinstall again.

Caution:

Just repaired tire is not sufficient for high speed ridding.

Ⅵ ELECTRIC SYSTEM

Ⅵ-1 General

Connector

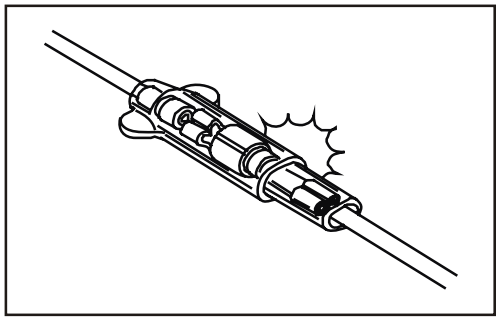
Hold the connectors instead of wire to disconnect it.

Push the connectors firmly to connect it.

Check the connector terminal for corrosion, dirt or crack.

Refer to Fig 6.1.1

Fig 6.1.1



Lock connector

Release the lock firstly before disconnecting the connectors.

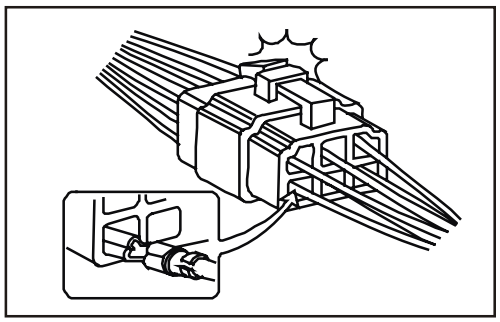
Push the connectors firmly to connect it.

Hold the connectors instead of wire to disconnect it.

Check the connector terminal for corrosion, dirt or bending.

Refer to Fig 6.1.2

Fig 6.1.2



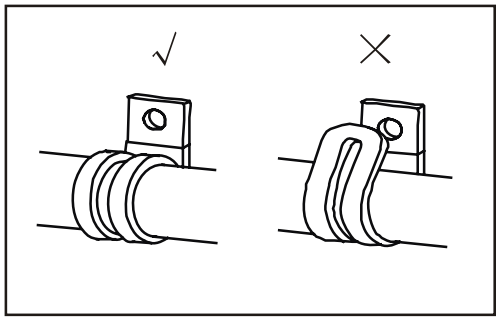
Wire clamp

Clamp the wires at the location shown in wire diagram.

Bend the clamp as Fig 6.1.3.

Don't use wire or other succedaneum instead of clamp.

Fig 6.1.3



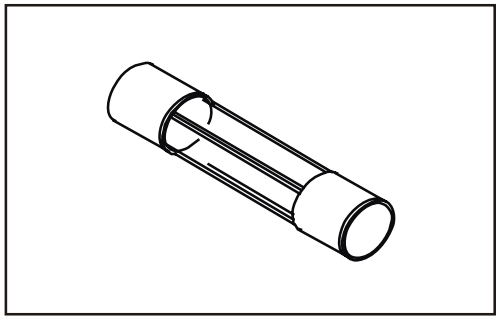
Fuse

Refer to Fig 6.1.4

Check the defect reason before replacing the burned fuse.

Don't install the unspecified fuse or other material instead of fuse.

Fig 6.1.4



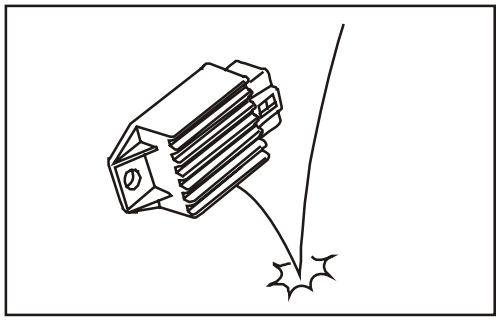
Semiconductor device

Take care not to drop down the parts contain of semiconductor device, such as CDI, rectifier.

Refer to Fig 6.1.5

Carefully follow the specified procedure to inspect these parts. Otherwise these parts will be damaged.

Fig 6.1.5



Battery

Sealed battery is equipped in this vehicle.

Refer to 6.1.6

When charging the battery, keep it away from fire since hydrogen gas might be emitted due to boost-charging.

Don't equip normal battery instead of this battery since the charging system is different.

Fig 6.1.6

Connecting battery

Disconnect the negative (—) cable firstly from the battery when dismantle or repair it. Refer to Fig 6.1.7

Fig 6.1.7

Connect the positive (+) cable firstly with battery when connect it. Refer to Fig 6.1.8

Clean the rust on battery terminal by hot water and metal brush.

After installing cables, apply grease to the terminals and cover the positive (+) terminal by its cap.

Fig 6.1.8

Connecting wire

Connect the wires according to diagram.

Multi-meter

Properly use the probes of multi-meter during measuring, otherwise vehicle and meter will be damaged.

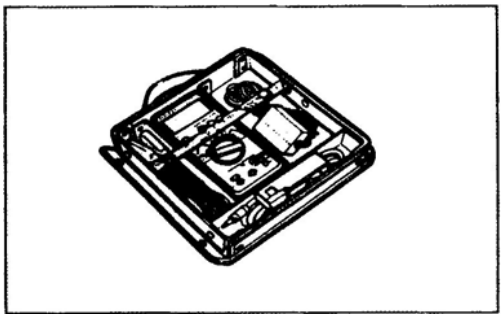
Refer to Fig 6.1.9.

When measuring the current using the multi-meter, first set it to a high range, and then bring the range down to an appropriate level.

When measuring resistance, ensure there is no voltage on this resistor. Otherwise multi-meter will be damaged.

Always switch off multi-meter after measurement.

Fig 6.1.9



Note:

Read the multi-meter manual book before using it.

Ⅵ-2 Location of electric parts

1.Ignition switch	2.Rectifier	3.Horn	4.Flasher relay	5.Resistor
6.Starter Valve	7.Fuse	8.CDI	9.Starter relay	10.Battery
11.Starter motor	12.Magneto	13.Ignition coil	14.Fuel gauge	

Ⅵ-3 Speedometer ASSY

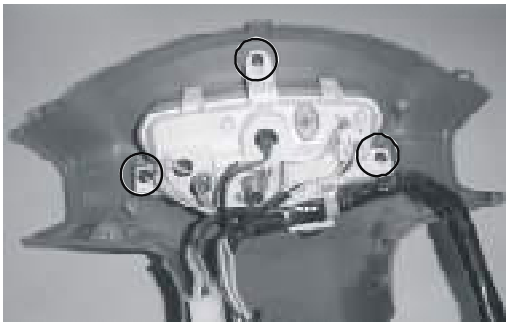
Dismantle

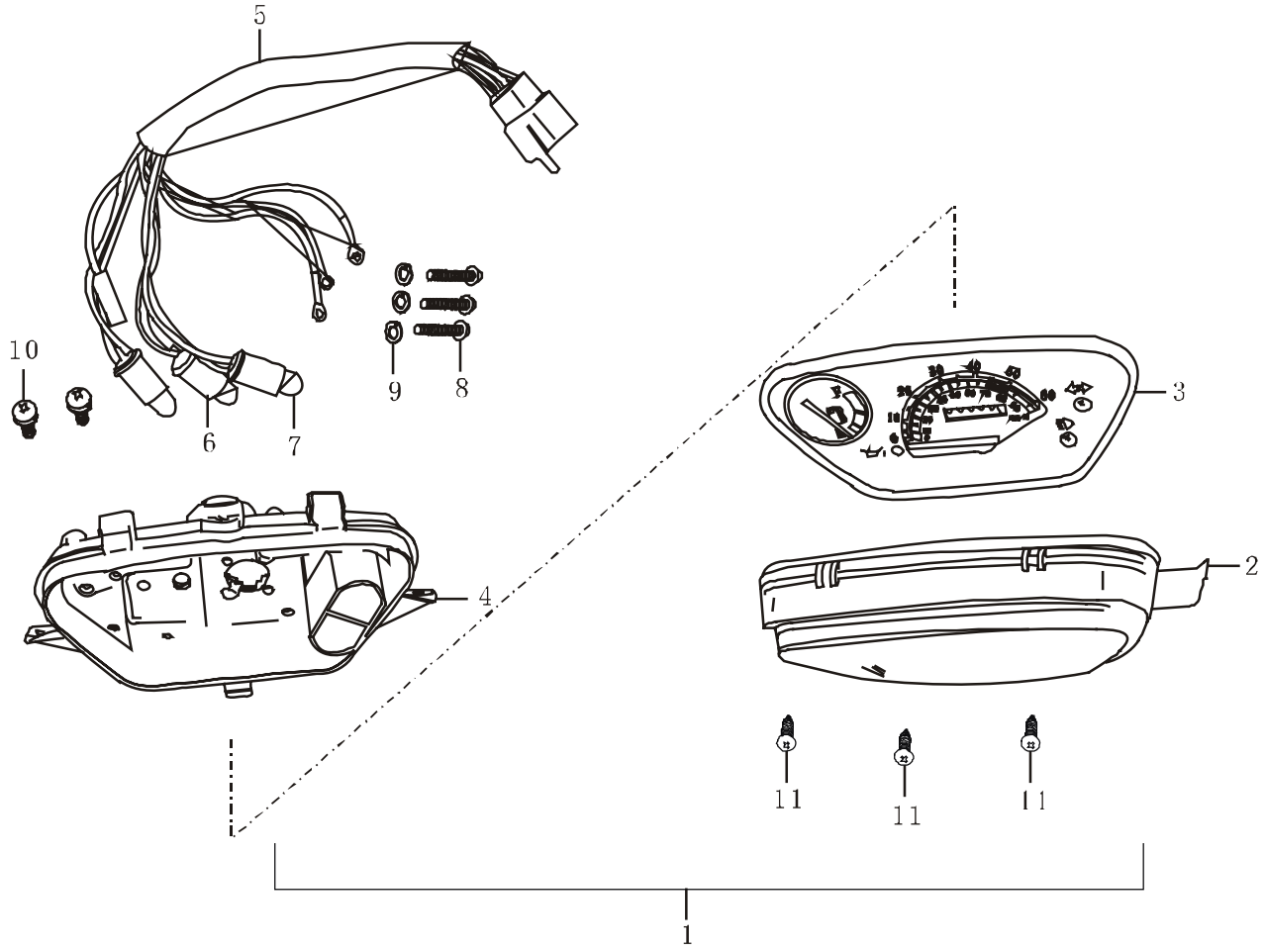
Remove handlebar cover.

Remove and disassemble speedometer.

Refer to Fig 6.3.1

Fig 6.3.1





Inspection

Check conductance of wires by multi-meter.

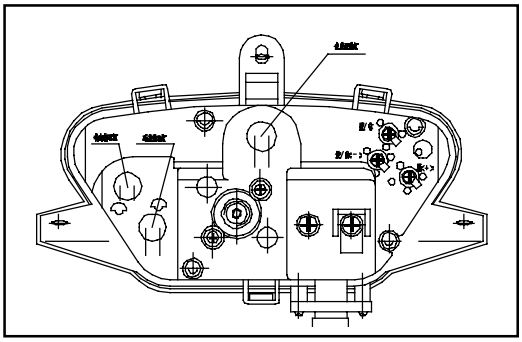
Refer to Fig 6.3.2

SP: Speedometer light: (+)---Brown
(-) ---Black/white

HI: High beam indicator: (+)---Blue
(-)---Black/white

TU: Winker indicator(+): Orange (RH)
Light blue (LH)
(-)---Black/white

Fig 6.3.2



Ⅵ-4 Fuel level gauge & sensor

Fuel level gauge inspection

Release seat ASSY.

Refer to Fig 6.4.1

Fig 6.4.1

Remove luggage box.

Disconnect wire coupler of fuel level sensor.

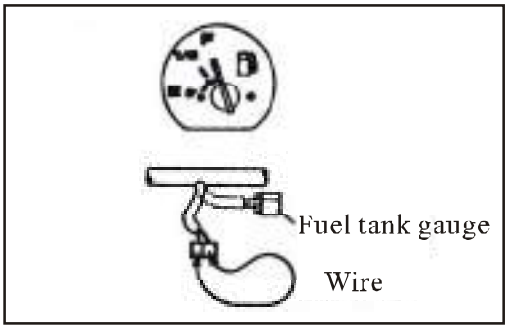
Refer to Fig 6.4.2

Fig 6.4.2

Connect B/W and Y/B wire of main wire harness by another wire. If ignition switch was turned on, fuel level gauge will indicate "".

Refer to Fig 6.4.3

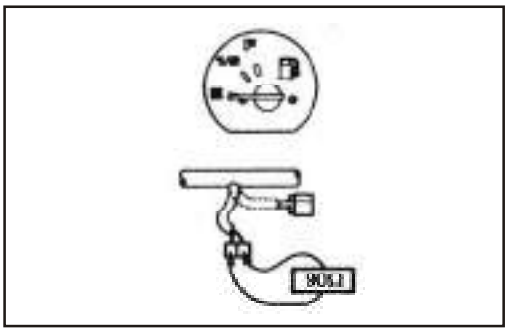
Fig 6.4.3



If resistor of 90-100 Ω was connected between B/W & Y/B wire and ignition switch was turned on, fuel level gauge will indicate "E".

Refer to Fig 6.4.4

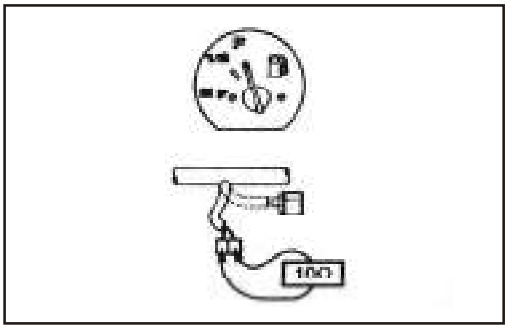
Fig 6.4.4



If resistor of 6-10 Ω was connected between B/W & Y/B wire and ignition switch was turned on, fuel level gauge will indicate "F".

Refer to Fig 6.4.5

Fig 6.4.5



Replace fuel level gauge if defect was found in any inspection.

Fuel level sensor inspection

Remove luggage box.

Disconnect wire coupler of fuel level sensor.

Remove fuel level sensor.

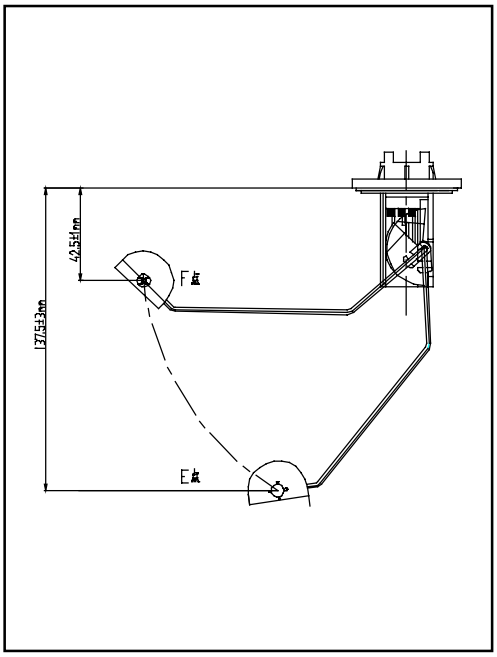
Refer to Fig 6.4.6

Fig 6.4.6

Measure the resistance of fuel level sensor at different position.

Refer to Fig 6.4.7

Fig 6.4.7



Floater Position	Resistance
Position "F"	6-10 Ω
Position "E"	90-100 Ω

Reinstall fuel level sensor

Reinstall the fuel level sensor in the reverse order of removal.

Ⅵ-5 Switch

Flasher Relay

Flasher relay is located behind front leg shield.

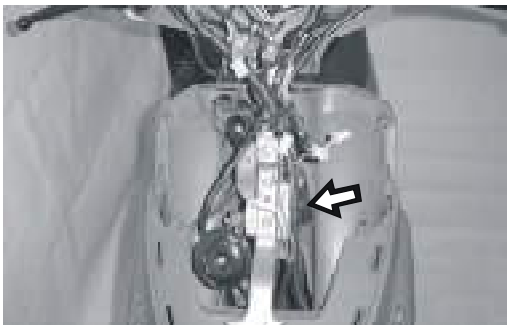
Replace flasher relay when bulbs and electric circuit are in working order, but winkers don't work.

Refer to Fig 6.5.1

Note

Ensure battery is fully charged before this inspection.

Fig 6.5.1



Switch

Ensure the performance of every switch by multi-meter. Replace accordingly if defect was found.

Ignition Switch

Wire / Position	Black	Red	Black/ White	Red/ Black
LOCK（Locked）			○—○	
（Off）			○—○	
（On）	○—○			

Starter Switch

Wire / Position	Black/ White	Yellow/ Red
Press	○—○	

Light Switch

Wire / Position	Pink	Yellow	Brown	White/ Blue
● （Off）	○—○			
（Position）		○—○		
（Ignition）	○—○	○—○		

Horn Switch

Wire / Position	Black	Light green
Press	○—○	

Beam Switch

Wire / Position	White/ Blue	Blue	White	Black
（High beam）			○—○	
（Low beam）			○—○	
Press	○—○			

Front/Rear Brake Switch

Wire / Position	Black	Green/ Yellow
Off		
On	○—○	

Winker Switch

Wire / Position	Orange	Brown	Light blue	
（LH）	○—○			
●				
（RH）		○—○		

Stop Switch on Side Stand

Wire / Position	Yellow/ Black	Black/ Yellow
Released		
Compressed	○—○	

Ⅵ-6 Battery

Specification

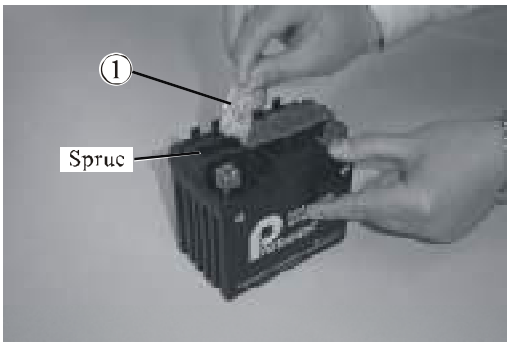
Model	
Capacity	12V/4AH

First Charging

Remove the sealing strip① from top of battery.

Refer to Fig 6.6.1

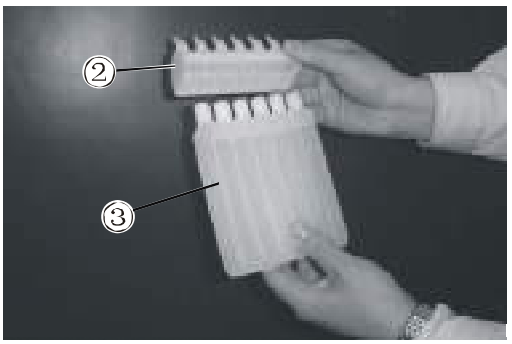
Fig 6.6.1



Firmly press bunker② on battery electrolyte contain③.

Refer to Fig 6.6.2

Fig 6.6.2

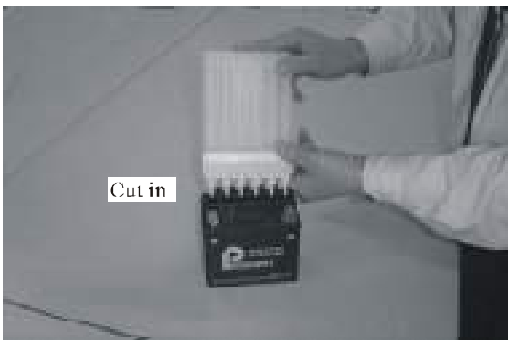


Firmly insert bunker into battery, and drain electrolyte to battery carefully.

Refer to Fig 6.6.3

Keep bubble going up in every case of electrolyte contain for more than 20 minutes,

Fig 6.6.3



Note:

Slightly knock the contain bottom if no bubble going up. Don't remove it from battery.

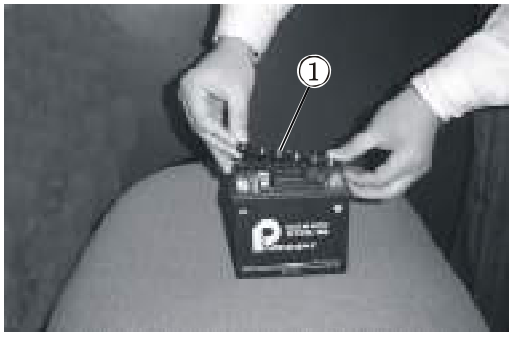
Refer to Fig 6.6.4

Fig 6.6.4

Ensure all electrolyte drain into battery, then remove electrolyte container from battery. After 20 minutes, press the sealing strip ① into filling port of battery and ensure it lower than top of battery.

Refer to Fig 6.6.5

Fig 6.6.5



Note:

Don't equip other model battery to this vehicle.

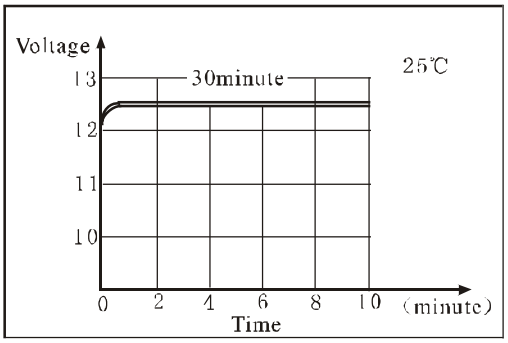
Don't remove the sealing strip from battery once installed.

Don't beat the sealing strip by hammer.

Check and ensure battery voltage more than 12.5-12.6V（DC）. Recharge battery if its voltage is less.

Refer to Fig 6.6.6

Fig 6.6.6



Note:

It is recommended to pre-charge the battery if it is stored more than 2 years.

Maintenance

Check and replace the battery if crack or leakage is found.

Remove rust and acidity powder from terminals by emery paper.

Recharge

Measure the voltage of battery by multi-meter and recharge it by charger if its voltage is less than 12.0V（DC）.

Caution:

Remove battery from vehicle before recharging.

Note:

Don't remove the sealing strip from battery when charging.

Charging period: 5h at 0.5A

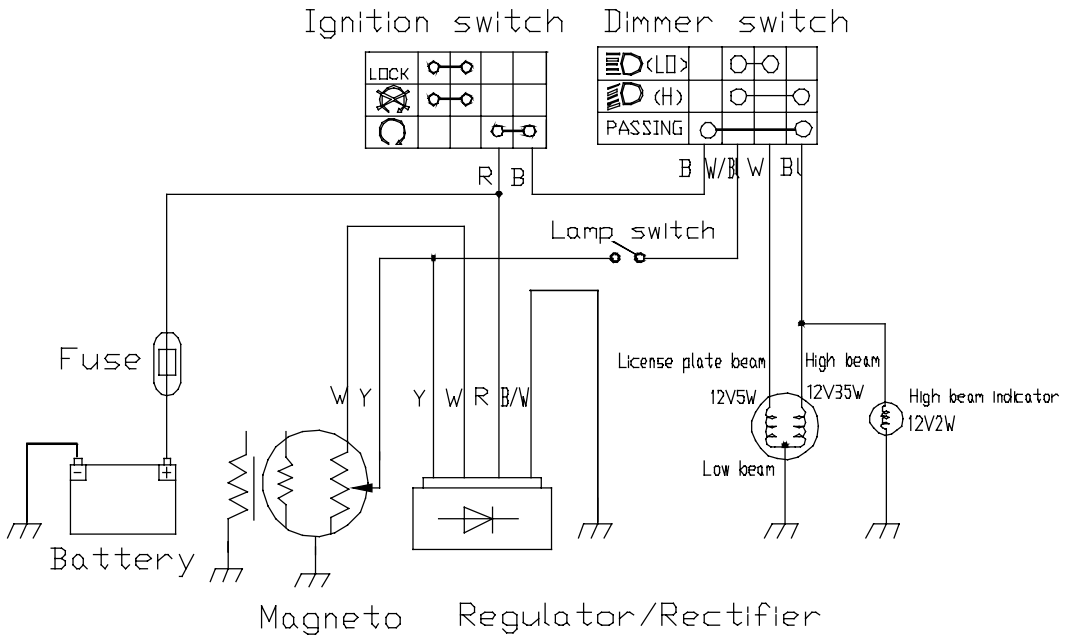
Always keep the charge current less than 1A.

30 minutes later than charging, measure the voltage of battery by multi-meter.

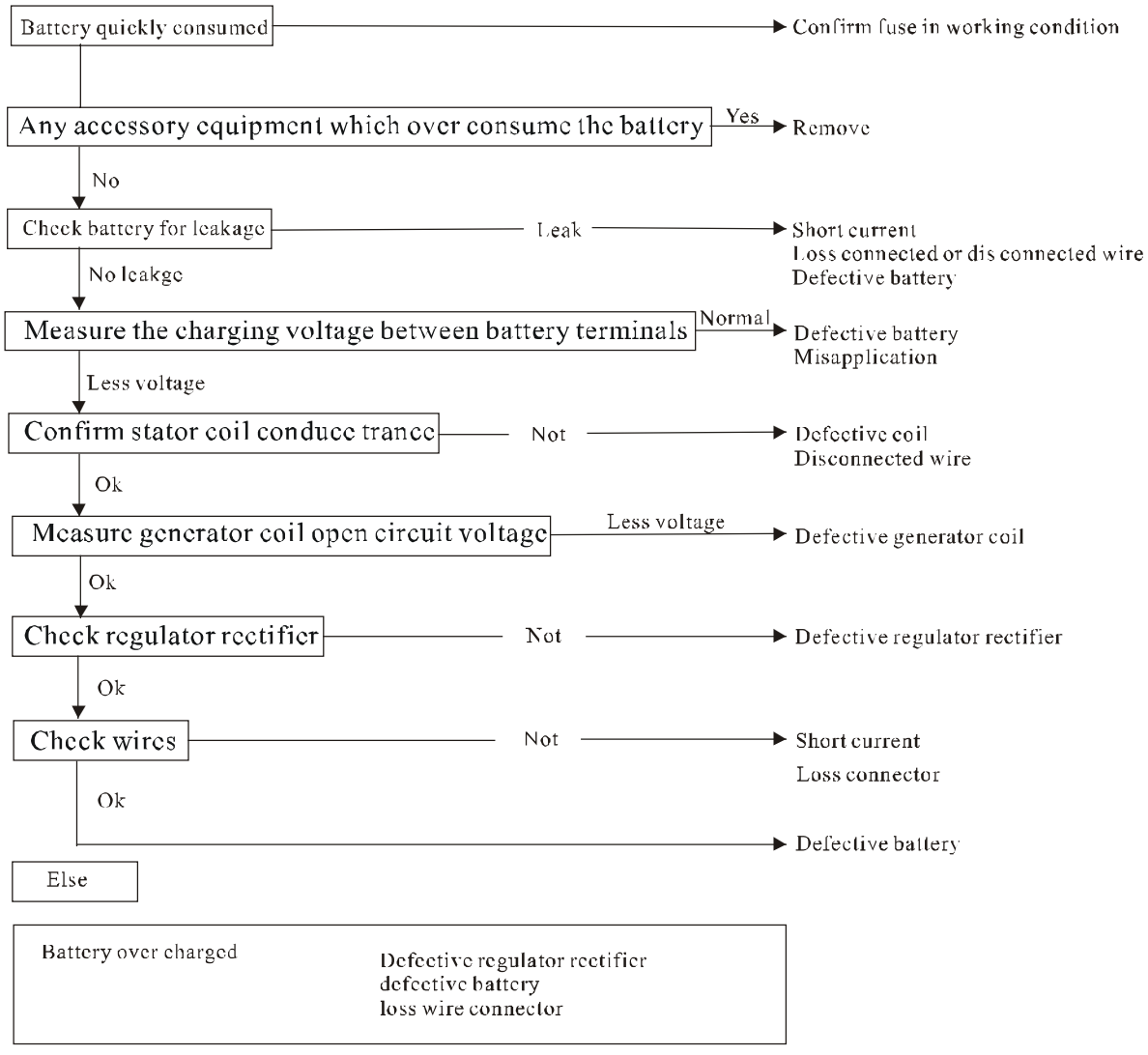
Recharge it as above procedure if the reading is less than 12.5V（DC）. Replace with new battery if the reading is again less than 12.5V（DC）.

Check the battery every month to prevent leakage if vehicle is stored for long time.

Ⅵ-7 Charging System



Trouble Shooting



Inspection

Leakage Test

Turn the ignition switch off.

Remove battery case cover

Disconnect the ground (-) cable from battery.

Connect the ammeter (+) probe to the ground cable and the ammeter (-) probe to the battery (-) terminal, and check for current leakage.

Refer to Fig 6.7.1 & 6.7.2

Tool: multi-meter

Ammeter measurement range ： DC 20mA

Specified current leakage： 1mA max

Note:

When measuring, firstly set the meter to a high range, and then bring the range down to an appropriate level. Current flow larger than the selected range may damage the meter.

When measuring, don't turn the ignition switch on.

Regulated voltage inspection

Start engine, turn Light switch to "☼" ON position and dimmer switch to "≡D" HI position, and keep engine running at 5000 rpm.

Connect the multi-meter between the battery terminals to measure DC voltage. If the reading is less than specified value, check alternator coil and regulator/rectifier. Refer to Fig 6.7.4

Note:

Before performing this inspection, ensure the battery is fully charged.

Tool: multi-meter

Voltage measurement range ： DC 20V

Specified regulated voltage: 14.0-15.0V at 5000rpm

Stator coil resistance

Disconnect stator coil 3P connector.

Measure the resistance between terminals of stator coils. Refer to Fig 6.7.5

If the reading is less than specified value, replace stator coil.

Tool: multi-meter

Measurement range: Ω

Specified resistance: 0.7-0.9 Ω (Yellow wire/Ground)

1.0-1.2 Ω (White wire/Ground)

Fig 6.7.1

Fig 6.7.2

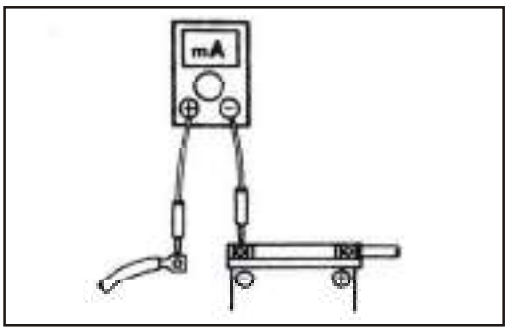


Fig 6.7.3

Fig 6.7.4

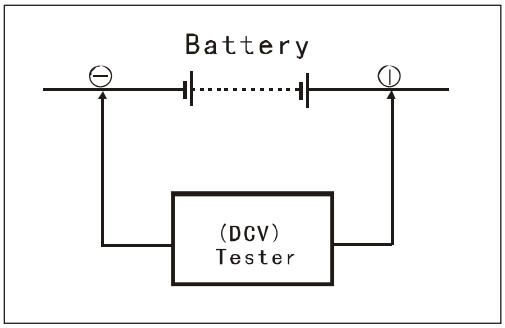
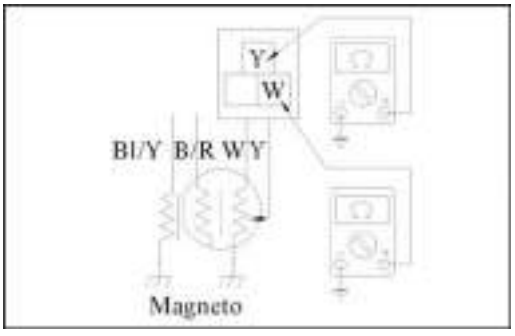


Fig 6.7.5



Generator coil open-circuit voltage

Remove inspection cap at bottom of luggage box.

Disconnect stator coil 3P connector.

Start engine and keep engine running at 5000 rpm.

Measure open-circuit voltage between terminals of stator coils.

Refer to Fig 6.7.6 & Fig 6.7.7

If the reading is less than specified value, replace stator coil.

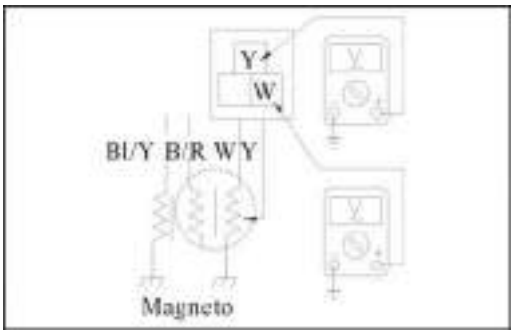
Tool: multi-meter

Measurement range: AC 50V

Specified voltage: 30V at 5000rpm

Fig 6.7.6

Fig 6.7.7



Regulator/rectifier

Remove front leg shield and lower shield

Disconnect regulator/rectifier connector

Measure voltage between terminals according to following table.

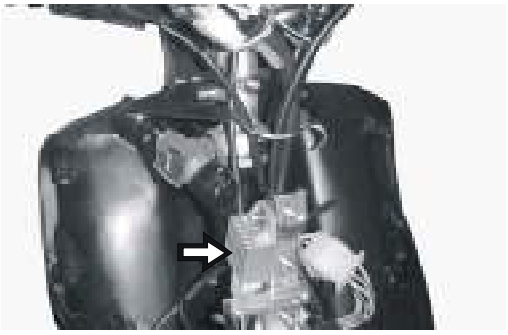
Refer to Fig 6.7.8

If the reading is out of specified value, replace rectifier /regulator.

Tool: multi-meter

Measurement range: Diode

Fig 6.7.8

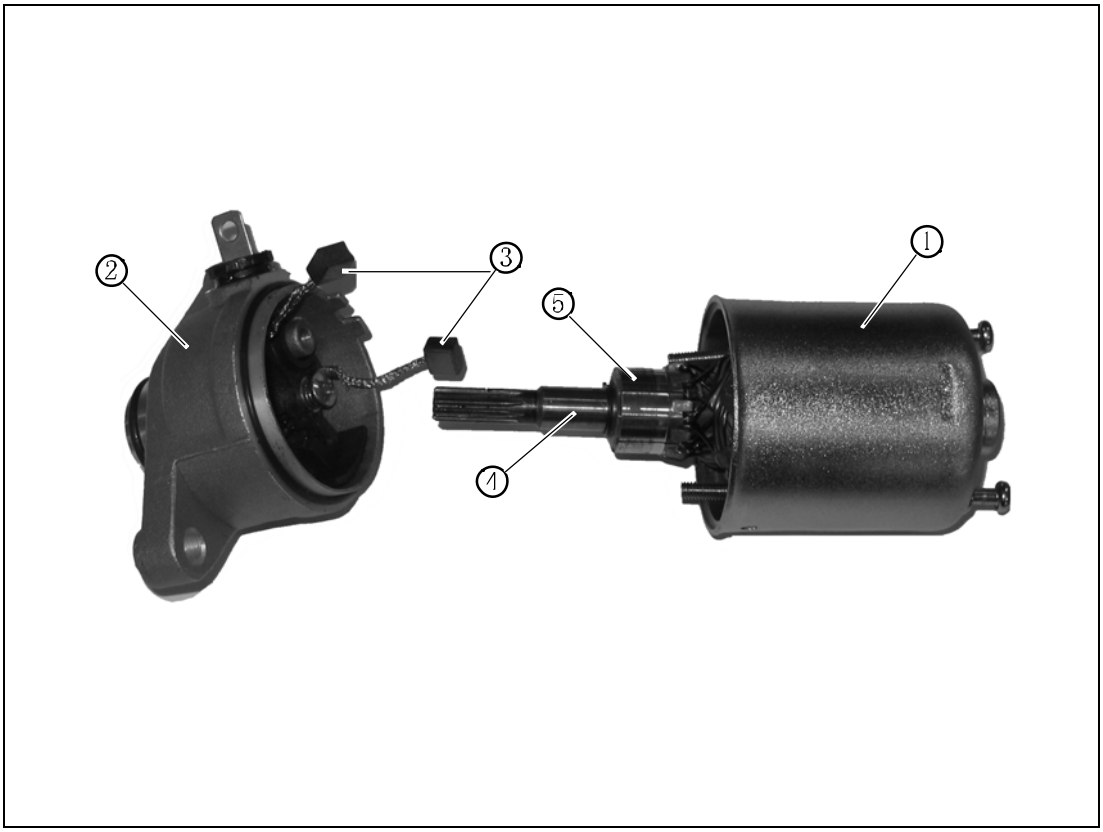


		(+) Probe				
		B/R	B/W	B	B	B
(-) Probe	B/R		0.4-0.7	0.3-0.6	0.3-0.6	0.3-0.6
	B/W	*		8	8	*
	B	*	*			*
	B	*	*	*		*
	B	*	*	*	*	

Ⅵ-8 Starting System

Starter motor component:

Starter motor case①、Holder②、Carbon brush③、Armature④、Commutator bar⑤



Specification

Item	Standard	Service limit
Carbon brush length	6.8mm	4.8mm

Inspection

1. Carbon brush inspection

When carbon brush worn, starter motor can not generate enough torque, and engine is hard to start.

To avoid this defect, it is necessary to measure length of carbon brush and replace if it is too short or thin.

2. Armature coil inspection

Check armature commutator bar for color changing. Changed color on one couple of commutators bar shows this coil is shorted.

Ensure every couple of commutator bar admittance.

Ensure insulation between commutator bar and armature.

Trouble shooting

1. Starter motor can not work.

Fuse is burn.

Battery is not fully charged

Starter motor wire is disconnected or loose.

Check tarter relay performance. When pressing the starting button, contact sound can be heard.

2. When starter motor working, engine turns slowly.

Battery voltage is low.

Battery terminal is not properly connected

Starter motor wire is not properly connected

Defect in starter motor.

3. When starter motor working, engine can not turn.

Starter motor turns in wrong direction.

Starter motor terminal is not properly connected.

Defect in starter gears.

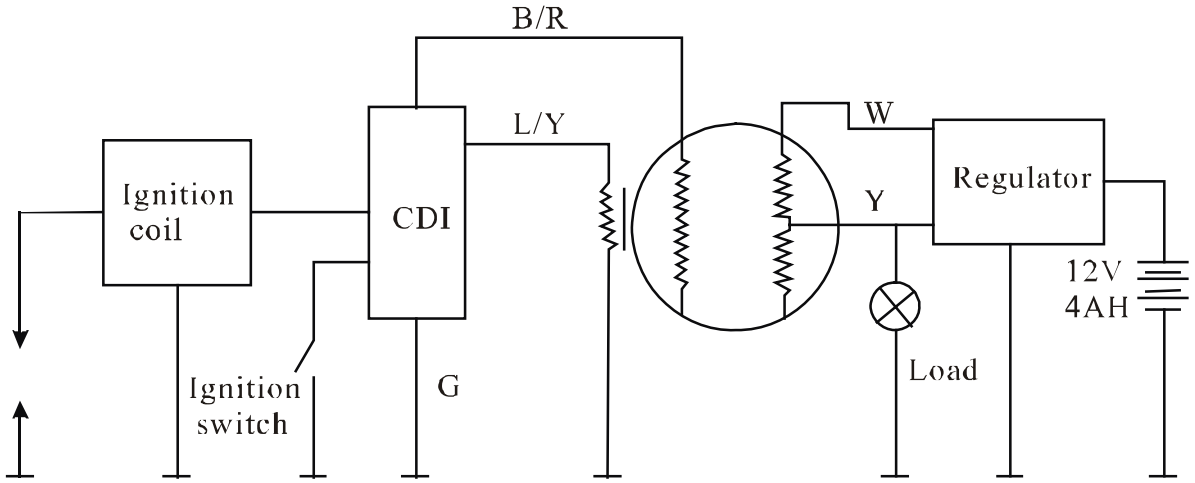
4. When pressing the starting button, the contact sound can be heard, but engine doesn't turn.

Due to defect in engine, crankshaft doesn't turn.

Defect in starter motor.

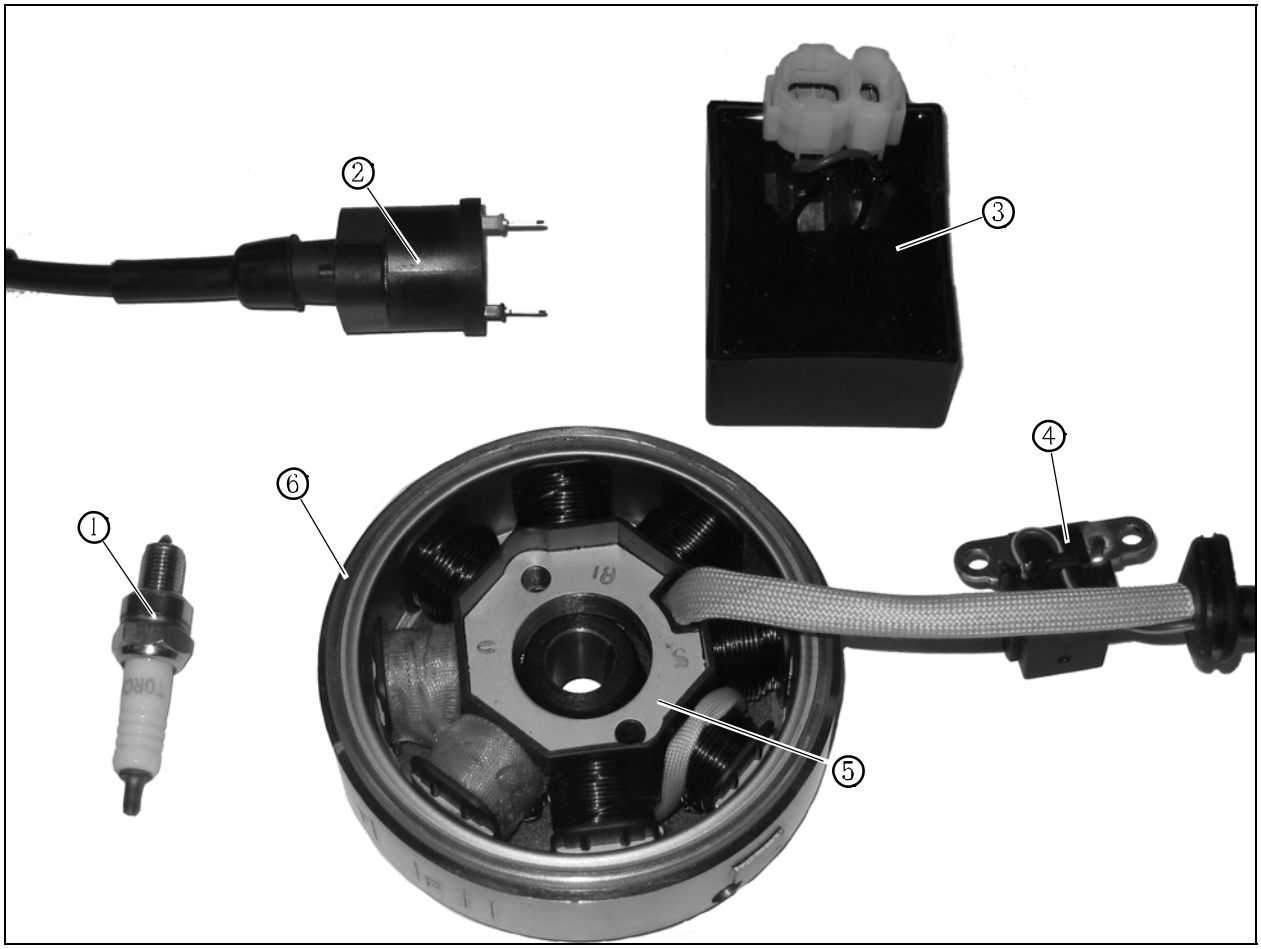
Ⅵ-9 Ignition System

Diagram



Component in ignition system:

Spark plug①, Ignition coil②, CDI③, Pulse coil④, Stator ASSY⑤, Rotor ASSY⑥



Specification:

Item	Standard
Spark plug gap	0.7±0.1mm
Ignition coil primary peak voltage	100V Min
Pulse coil peak voltage	0.7V Min
Ignition timing	13° BCDC at idle speed

Trouble shooting:

Before inspect the ignition system, remove the defect of spark plug as following:

Defective spark plug

Loosed spark plug adaptor or cable

Wet spark plug adaptor (Leakage of ignition coil second voltage)

No spark jumping

Unusual Condition		Probable Cause (Check in numerical order)
Ignition coil primary voltage	Peak voltage is lower than standard value	1.The multi-meter impedance is too low, less than 10MΩ /DCV。 2. Engine cranking speed is too low. 3. The sample timing of the meter and measured pulse were not synchronized. 4. Improperly connecting or open circuit in ignition system. 5. Faulty ignition coil. 6. Faulty CDI.
	No peak voltage while cranking the engine.	1. Incorrect peak voltage adaptor connection. 2. Faulty peak voltage adaptor. 3. Faulty Pulse coil.
	Peak voltage is normal, but does not spark.	1. Faulty spark plug or leaking ignition coil secondary ampere. 2. Faulty ignition coil.
Pulse coil	Peak voltage is lower than standard value	1. Engine cranking speed is too low. 2. Faulty pulse coil.
	No peak voltage while cranking the engine.	1. Faulty peak voltage adaptor. 2. Faulty pulse coil.

Ⅶ MAINTENANCE & SERVICE INFORMATION

Ⅶ-1 Trouble shooting

1、Engine

Check point	Description	Defect	Action
Fuel system (If engine compression and spark jump is proper)	Engine is impossible to start	1.Fuel does not enter into carburetor Fuel tank cap air vent clogged Fuel cock clogged Fuel strainer clogged Fuel hose clogged Vacuum pipe clogged 2.Dirty or aged fuel 3.Improperly adjusted carburetor pilot air adjusting screw Dirty air cleaner Too high fuel level in carburetor Inlet pipe leakage	1.Clean 2.Chang fuel 3.Adjust Clean air cleaner filter element Adjust float Repair or replace
	Engine is hard to start, unconstant idle speed or abnormal noise after starting	1.Carburetor jets clogged 2.Incorrect fuel/air mixture ratio 3.Worn throttle valve 4.Dirty or aged fuel	1.Clean 2.Adjust fuel/air mixture screw 3.Replace 4.Clean fuel tank and change fuel
Ignition system	Weak spark jump or none spark jump	1.Dirty spark plug or carbon deposit on spark plug 2.Improperly adjusted spark plug gap 3.Spark plug bridged or bad insulation 4.Defective primary coil 5.Defective CDI 6.Defective Pulse coil 7.Disconnected or loose wire in ignition system	1.Clean 2.Adjust the gap to 0.6-0.8mm 3.Replace spark plug 4.Replace primary coil 5.Replace CDI 6.Replace pulse coil 7.Connect firmly
	Engine is impossible to start, if spark jump is proper.	1.Wet spark plug Carburetor over flow Too high throttle valve Dirty air cleaner 2.Dirty spark plug	1.Adjust float Adjust throttle valve screw Clean air cleaner filter element 2.Clean

Check point	Description	Defect	Action
Cylinder head/ valves	Low compression, hard to star, unstably working at low rpm	1.Cylinder head Leakage or damaged sealing ring Tortuous cylinder head 2.Valves Improperly adjusted tappet clearance Burn or bent valve Improperly adjusted timing Damaged valve spring or less tension	1. Replace gasket or sealing ring Replace cylinder head 2. Adjusted tappet clearance to 0.14mm Replace valve Adjust Replace valve spring
	High compression	Carbon deposit in combustion chamber and piston top	Remove
	Abnormal noise	1.Improperly adjusted tappet clearance 2.Damaged valve spring or less tension 3.Loose or worn timing chain 4.Damaged or worn timing chain guide 5.Worn timing sprocket 6.Worn rocker arm or shaft 7.Defective piston or cylinder	1.Adjust tappet clearance 2.Replace valve spring 3.Adjust or replace chain tensioner 4.Replace chain guide 5.Replace sprocket 6.Replace rocker arm or shaft 7.Inspect piston or cylinder
Cylinder/ Piston	Less or unstable compression	Worn cylinder or piston	Replace piston or cylinder
	Heavy smoke	1.Worn cylinder, piston or piston ring 2.Improperly installed piston ring 3.Damaged or scratched piston and cylinder 4.Worn valve stem or valve guide	1.Replace piston, cylinder or piston ring 2.Reinstall or adjust 3.Replace piston, cylinder 4.Replace valve or valve guide
	Cylinder and cylinder head overheat	Carbon deposit in combustion chamber and piston top	Remove carbon deposit
Crankshaft/ Crankcase	Abnormal noise	1.Worn piston pin and its hole 2.Worn con-rod small end bearing 3.Worn con-rod big end bearing 4.Bent con-rod 5.Worn crankshaft bearing 6.Less lubrication oil in engine 7.Worn cam shaft and bush	1.Replace piston or piston pin 2.Replace 3.Replace 4.Replace crankshaft ASSY 5.Replace 6.Refill 7.Replace cam shaft or bush
	Temporary less engine power	1.Defective spark plug 2.Engine overheat	1.Replace spark plug 2.Cool down engine
	Perennial less engine power	1.Clogged fuel line 2.Improper fuel/air mixture 3. Carbon deposit in combustion chamber and piston top 4.Worn cylinder or piston(ring)	1.Clean 2.Adjust 3.Remove carbon deposit 4.Replace piston, cylinder or piston ring

2、Transmission

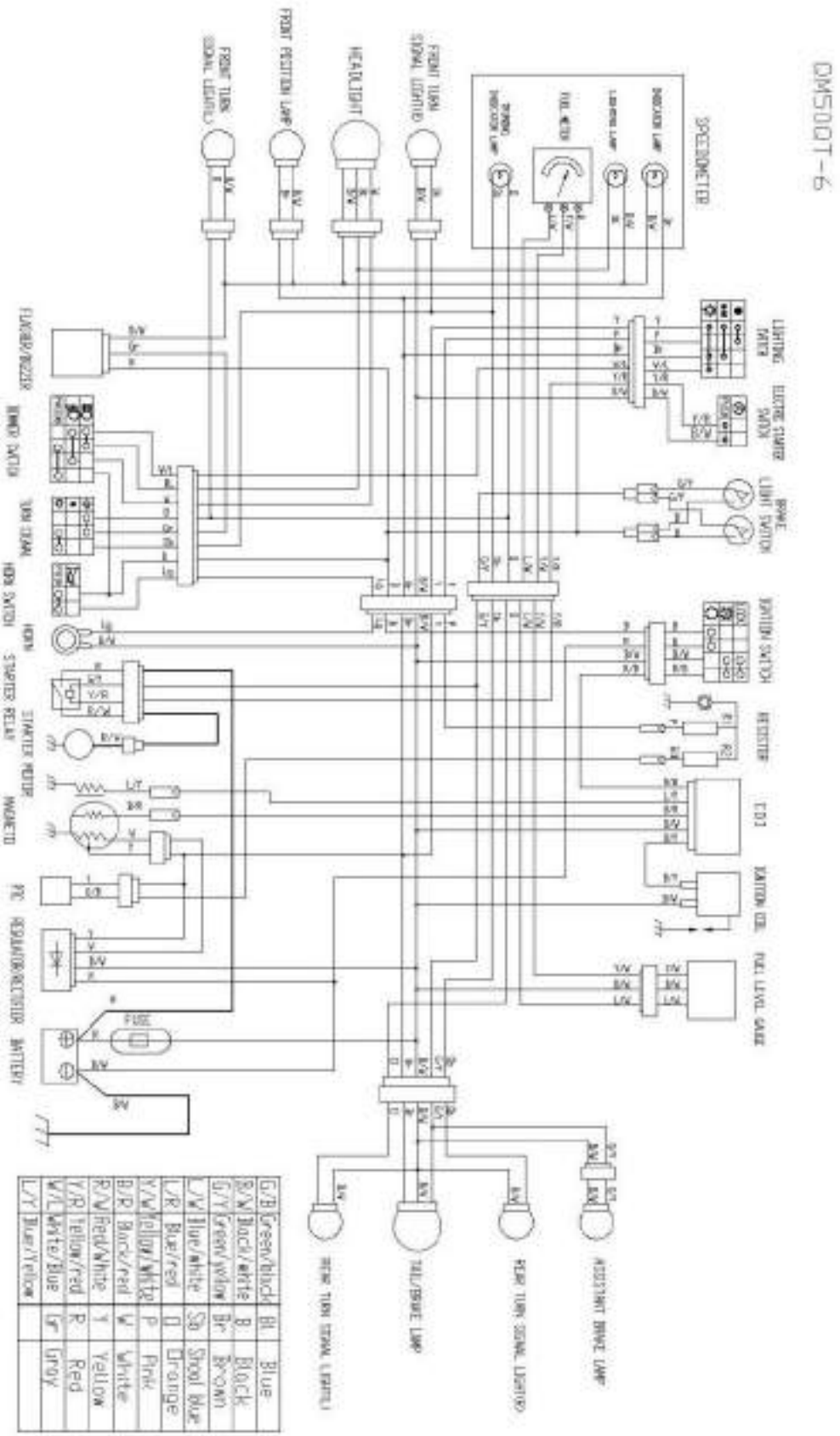
Check point	Description	Defect	Action
Drive pulley/Clutch	Vehicle doesn't move when increasing throttle	1.Worn drive belt 2.Damaged slide ramp 3.Worn or damaged clutch hub 4.Damaged driven face spring	1.Replace 2.Replace 3.Replace 4.Replace
	Engine stopped when increasing throttle	Damaged clutch spring	Replace
	Less power at high engine rpm	1.Worn drive belt 2. Less tension of driven pulley spring 3.Worn roller in drive face 4.Dirty drive belt	1.Replace belt 2.Replace spring 3.Replace roller 4.Clean working surface of belt
Gear box	Vehicle doesn't move when increasing throttle	1.Damaged gears 2.Jamed bearing	1.Replace 2.Replace
	Abnormal noise	1.Worn or damaged gear 2.Worn or damaged bearing	1.Replace 2.Replace
	Oil leakage	1.Too much oil 2.Worn or damaged oil seal 3.Damaged crankcase	1.Drain out extra oil 2.Replace oil seal 3.Replace crankcase
Starter motor/ Starting clutch	Crankshaft doesn't turn	1.Damaged starting clutch 2.Damaged starting Gear 3.Trouble in electric system	1.Repair or replace 2.Replace 3.Check and repair
Starter motor	Starter motor turn slowly	1.Less gravity in battery 2.Poorly connected cable from battery 3.Poorly connected cable from starter motor 4.Defective starter motor	1.Refill with electrolyte 2.Connect properly 3.Connect properly 4.Repair
	Engine doesn't start when starter motor turning	1.Starter motor turning in wrong direction Crankcase wrongly assembled Poorly connected terminal 2.Defective starting clutch 3.Damaged starting driven gear or idle gear	1. Reassemble Connect properly 2.Check and repair 3.Replace

3、Ridding / Steering

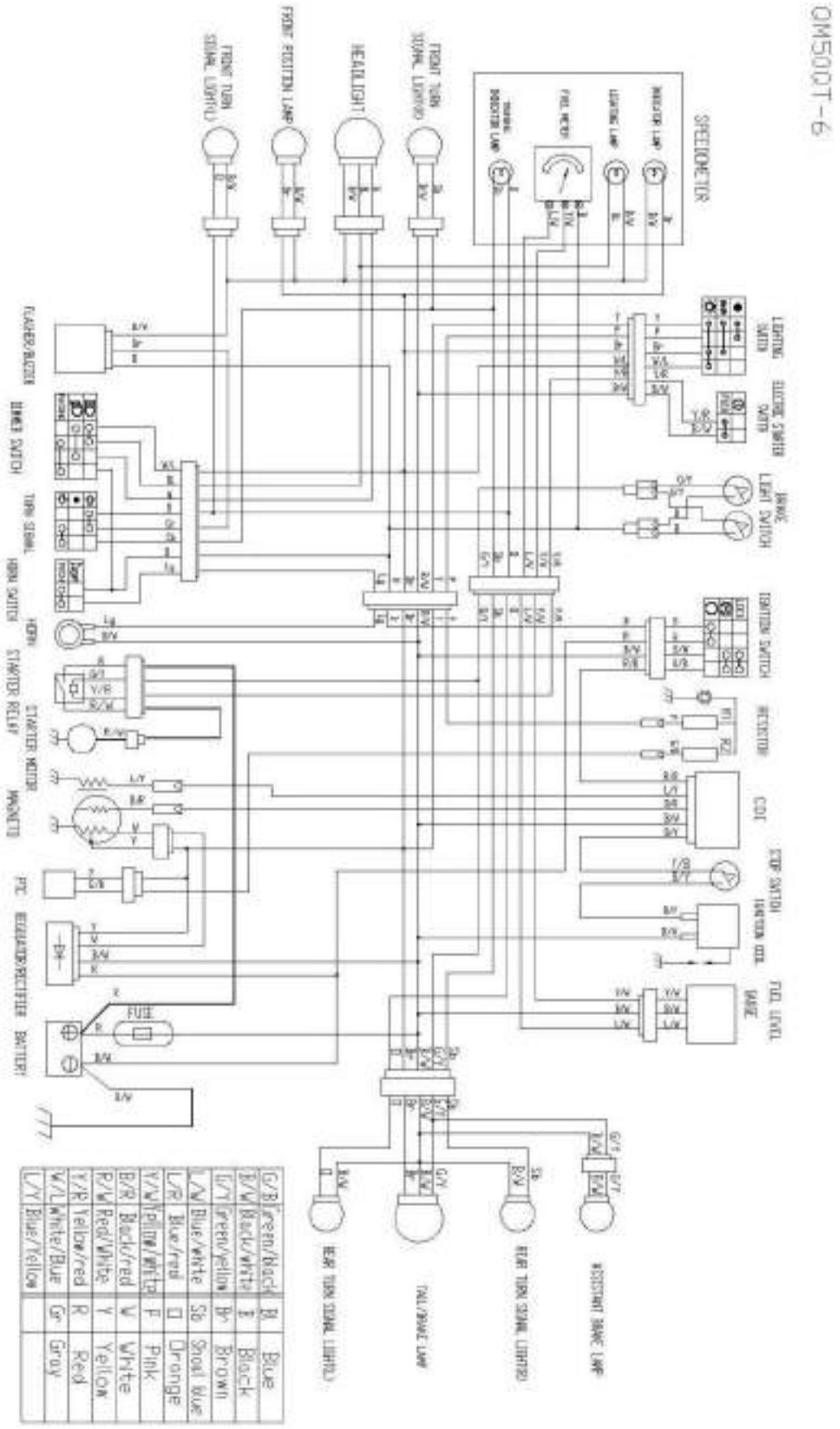
Check point	Description	Defect	Action
Front wheel/ Front suspension/ Steering	Hard steering	1.Damaged steer bearing 2.Improperly adjusted steer bearing 3.Less tire pressure 4.Tube leakage	1.Replace 2.Adjust 3.Charge 4.Repair
	Bad stabilization on steering	1.Bent front fork stem 2.Bent front wheel shaft 3.Incorrect wheel alignment 4.Improperly fitted front wheel 5.Wheel bearing trouble	1.Replace 2.Replace 3.Calibrate 4.Reassemble 5.Replace
	Front wheel bad stabilization	1.Deformed wheel rim 2.Worn wheel bearing 3. Less tire pressure	1.Replace 2.Replace 3.Repair and charge
	Wheel is hard to turn	1.Wheel bearing trouble 2.Trouble in speedometer gear box 3.Improperly adjusted brake	1.Check and repair 2.Check and repair 3.Adjust
Rear wheel/ Rear suspension/ Brake system	Wobbly rear wheel	1.Deformed wheel rim 2.Improperly tightened wheel shaft 3.Less tire pressure	1.Calibrae or replace 2.Tighten 3.Charge
	Less tension of suspension	1.Less spring tension in rear shock absorber 2.Leakage in rear shock absorber	1.Replace spring 2.Replace oil seal
	Abnormal noise	1.Defective rear shock absorber 2.Loose fitting	1.Repair 2.Tighten
	More tension of suspension	Piston rod bent	Replace damper
	Insufficient braking	1.Improperly adjusting 2.Worn / dirty brake shoes 3.Worn / dirty brake drum 4.Worn brake cam 5.Improperly installed brake shoes 6.Seized brake cable 7.Worn contact surface of brake shoe end 8.Brake lever improperly engaging with cam	1.Readjust 2.Replace/clean 3.Replace/clean 4.Replace 5.Reinstall 6.Lubricate 7.Replace 8.Adjust or replace
Exhaust system	More noise	1.Damaged muffler 2.Leaked muffler	1.Replace 2.Repair
	Improper exhaust	1.Damaged muffle 2.Leaked muffler 3.Clogged muffler	1.Replace 2.Repair 3.Clean or replace
Light/ Instrument/ Ignition switch	Light doesn't work when engine started and ignition switch at (○) position	1.Burned bulb 2.Damaged ignition switch 3.Improperly connected wires 4.Wrongly connected wires	1.Replace 2.Replace 3.Reconnect 4.Check and reconnect
	Light is too dark	1.Defective magneto unit 2.Too much resistance in circuit 3.Defective rectifier	1.Check and repair 2.Check and repair 3.Check and repair
No response when turning throttle grip		1.Seized or broken wire in throttle cable 2.Improperly installed throttle 3.Improper free play on throttle cable	1.Replace 2.Reinstall 3.Adjust

Ⅶ-2 Wiring Diagram

ECE Certified mode:



Stop switch of side stand:



Ⅶ-3 Specified Torque

Engine

Item	N-m
Cylinder head bolt	10
Cam shaft holder nut	18
Tappet lock nut	10
Tensioner lifter bolt	10
Crankcase cover LH bolt	10
Clutch hub nut	50
Drive face assy nut	50
Kick lever bolt	16
Magneto rotor nut	50
Magneto stator bolt	10
Pulse coil bolt	10
Oil pump gear nut	10
Oil filter cap	20
Engine oil drain plug	15
Gear box oil level bolt	12
Gear box bolt	16
Oil pump bolt	10
Crankcase bolt	10
Cylinder stud bolt	25
Timing chain tensioner bolt	10
Cooling fan bolt	8
Intake pipe bolt	10
Spark plug	18

Frame body

Item	N-m
Front axle nut	40-52
Steering stem lock nut	30
Handlebar mounting nut	25
Handlebar clamping bolt/nut	48-52
Front fork cover bolt	23
Front fork clamping bolt	23
Front brake master cylinder bolt	10
Front brake hose union bolt	23
Front brake caliper mounting bolt	26
Front brake bleeding valve	7.5
Brake pedal bolt	23
Rear axle nut	60-80
Rear shock absorber bolt (Upper and lower)	28-35
Rear brake cam nut	11
Crankcase bracket mounting nut	98
Engine mounting bolt	32

General Torque Value

Thread Dia.	N-m
M5 bolt and nut	4
M6 bolt and nut	9
M8 bolt and nut	12
M10 bolt and nut	26
M12 bolt and nut	39

Ⅶ-4 Maintenance Specification

Valve / valve guide

Unit：mm

Item	Standard		Service limit
Tappet clearance （cold engine）	IN.	0.08—0.13	---
	EX.	0.08-0.13	---
Valve-to-valve guide clearance	IN.	0.010-0.037	---
	EX.	0.030-0.057	---
Valve guide I.D.	IN./ EX.	5.000-5.012	5.03
Valve stem O.D.	IN./ EX.	4.975-4.990/4.955-4.970	4.90
Valve seat width	IN./ EX.	0.8	1.5
Valve spring free length（IN./ EX.）	Inner	30	28
	Outer	34.35	32.35
Valve spring tension（IN./ EX.）	Inner	43.9-44.7N at 22.45mm	---
	Outer	75.2-91.8N at 25.45mm	---

Cam shaft / Cylinder head

Unit：mm

Item	Standard		Service limit
Profile height	IN.	25.51-25.61	25.45
	EX.	25.11-25.21	25.05
Rocker arm I.D.	IN./ EX.	10.008-10.023	10.10
Rocker arm shaft O.D.	IN./ EX.	9.980-9.995	9.91
Cylinder head flatness	---		0.05

Carburetor

Item	Standard
Type / Model	Diaphragm / PD18J
Idle speed（rpm）	1500±100
Mixing chamber I.D.	ϕ8.5
Main jet No.	85#
Pilot jet No.	31#
Starter jet No.	36#
Main air jet No.	ϕ.15
Pilot air jet No.	ϕ.85
Needle jet	2.1
Jet needle	ϕ .01/4

Cylinder / Piston /Piston ring

Item			Standard	Service limit
Engine compression pressure			1540kPa(15.7kgf/cm^2) at 800rpm with full throttle	
Cylinder	I.D.		39.010—39.015	39.019
	Roundness		---	0.05
	Taper		---	0.05
	Flatness		---	0.05
Piston/ Piston ring/ Piston pin	Piston O.D.		38.985—38.990	38.98
	Measure position		10mm from piston bottom	---
	I.D. of piston pin hole		13.002—13.008	13.04
	Piston pin O.D.		12.994—13.000	12.98
	Piston pin clearance		0.002—0.014	0.04
	Piston ring to groove clearance	Top ring	0.015—0.045	0.08
		2nd ring	0.015—0.050	0.08
	Piston ring end gap	Top ring	0.05—0.15	0.40
		2nd ring	0.05—0.20	0.40
		Oil ring	0.20—0.70	0.90
Piston to cylinder clearance			0.010—0.040	0.12
Connecting rod small end I.D.			13.027—13.016	13.06
Piston pin to connecting rod clearance			0.016—0.033	0.06

Connecting Rod / Crankshaft

Unit：mm

Item	Standard	Service limit
Connecting rod small end I.D.	13.027—13.016	13.06
Piston pin to connecting rod clearance	0.016—0.033	0.06

Oil Pump

Item	Standard	Service limit
Oil pump capacity（80℃）	3.8l/min at 5500r/min	—

Clutch

Item	Standard	Service limit
Clutch hub I.D.	107.00-107.20	107.50
Clutch disc thickness	---	2.0

Transmission / Drive belt

Item	Standard	Service limit
Drive ratio	2.6925-0.7988	---
Final gear ratio	3.4	---
Drive belt width	17.25mm	16.30mm

Electrical System

Item	Standard		Service limit
Spark plug	Model	A7RTC	
	Gap	0.7±0.1	
Battery	Model		
	Capacity	12V 4Ah	
Fuse	10A		

Power

Unit：W

Item		Standard
Head lamp	High beam	25W
	Low beam	25W
Position lamp		5W
Stop lamp / Trail lamp		10W
winker		10W
Speedometer lamp		2W
Turning indicator		2W
High beam indicator		2W

Brake / Wheel

Unit：mm

Item	Standard		Service limit
Rear brake free play	Front	12-25	----
Front brake disc thickness	Front	4.0±0.2	3.5
Brake drum I.D.	Rear	—	120.7
Front brake disc run-out	Front	—	0.3
Master cylinder I.D.	Front	11.000-11.043	----
Master cylinder piston O.D.	Front	10.957-10.984	----
Brake caliper cylinder I.D.	Front	30.230-30.306	----
Brake caliper O.D.	Front	30.150-30.200	----
Brake fluid	DOT4		
Rim run-out	Axial	—	2.0
	Radial	—	2.0
Rim size	Front	J10×2.15	----
	Rear	J10×2.15	----
Axle run-out	Front	—	0.25

Tire

Item	Standard		Service limit
Cold tire pressure	Front	125 kPa	----
	Rear	175 kPa	----
Tire size	Front	3.00-10 4PR	----
	Rear	3.00-10 4PR	----
Minimum tire tread depth	Front	----	1.6mm
	Rear	----	1.6mm

Suspension

Unit：mm

Item	Standard	Service limit
Front fork stroke	85	----
Front fork spring free length	259.9	254
Fork oil level (Inner tube fully compressed without spring)	81	----
Recommended fork oil	Fork oil G-15	----
Fork oil capacity（Single piece）	87ml	----
Rear shock absorber stroke	85	----

Fuel/Lubrication system

Item	Standard		Service limit
Recommended fuel	Unleaded gasoline of octant number above 90		
Fuel tank capacity	6.3L		
Fuel level sensor resistance	Full	4-10Ω	
	End	90-100Ω	
Recommended oil	SHELL grade SG SAE10W/30 or SAE5W/30		
Oil capacity	Replacement	750ml	
	Repair	800ml	
Recommended gear oil	JKC-1		
Gear oil capacity	Replacement	100ml	
	Repair	120ml	

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