By KWANG YANG Motor Co., Ltd.
First Edition, Jan 2006

T100LB10DE

PREFACE

This Service Manual describes the technical features and servicing procedures for the KYMCO ***MXU 50 REVERSE/MXU 50/MX'ER 50***.

Section 1 contains the precautions for all operations stated in this manual. Read them carefully before starting any operation.

Section 2 is the removal/installation procedures for the frame covers which are subject to higher removal/installation frequency during maintenance and servicing operations.

Section 3 describes the inspection/ adjustment procedures, safety rules and service information for each part, starting from periodic maintenance.

Sections 4 through 19 give instructions for disassembly, assembly and inspection of engine, chassis frame and electrical equipment.

Most sections start with an assembly or system illustration and troubleshooting for the section. The subsequent pages give detailed procedures for the section.

The information and contents included in this manual may be different from the ATV in case specifications are changed.
KYMCO reserves the right to make changes at any time without notice and without incurring any obligation.

KWANG YANG MOTOR CO., LTD.
OVERSEAS SALES DEPARTMENT
OVERSEAS SERVICE SECTION

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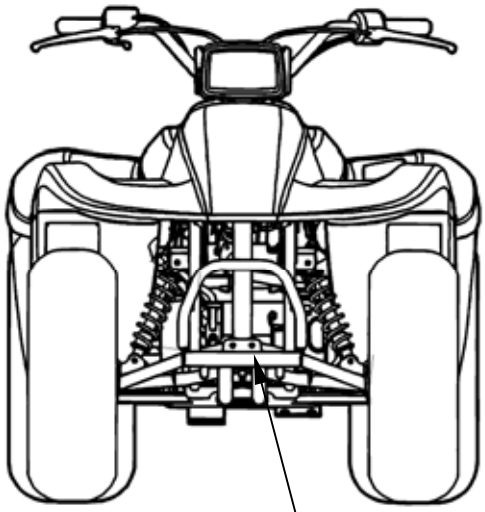
GENERAL INFORMATION

SERIAL NUMBER



Location of Frame Serial Number

Location of Engine Serial Number

SPECIFICATIONS

Model No.			LA10
Name			**MX'ER 50**
Overall length			1685 mm (67.4 in)
Overall width			980 mm (39.2 in)
Overall height			1030 mm (41.2 in)
Wheel base			1120 mm (44.8 in)
Engine type			Air cooled 2-stroke
Displacement			49.4 cm^3 (2.964 cu-in)
Fuel Used			92# nonleaded gasoline
Dry weight	Front wheel		67 kg (147.4 lbs)
	Rear wheel		73 kg (160.6 lbs)
	Total		140 kg (308 lbs)
Curb weight	Front wheel		73 kg (160.6 lbs)
	Rear wheel		77 kg (169.4 lbs)
	Total		150 kg (330 lbs)
Tires	Front wheel		20*7-8
	Rear wheel		22*10-8
Ground clearance			130 mm (5.2 in)
Min. turning radius			2500 mm (100 in)
Engine	Starting system		Starting motor & kick starter
	Type		Air cooled 2-stroke
	Cylinder arrangement		Single cylinder
	Combustion chamber type		Semi-sphere
	Valve arrangement		Reed valve & piston
	Bore x stroke		39 x 41.4 mm (1.56 x 1.656 in)
	Compression ratio		7.2:1
	Compression pressure		12 kgf/cm^2 (1200 kPa, 170.4 psi)
	Port timing Intake	Open	Automatic controlled
		Close	
	Port timing Exhaust	Open	Automatic controlled
		Close	
	Valve clearance	Intake	—
		Exhaust	—
	Idle speed (rpm)		1800
Lubrication type			Separate type
Oil pump type			Plunger type
Oil filter type			Full-flow filtration

Fuel System	Air cleaner type			Sponge
	Fuel capacity			8.1 liters
	Carburetor	Type		PB
		Main jet No.		80
		Venturi dia		ϕ14 mm (ϕ0.56 in)
		Throttle type		Valve piston
Electrical Equipment	Ignition System	Type		CDI
		Ignition timing		22°/2000 rpm
		Spark plug		NGK-BR8HAS
		Spark plug gap		0.6～0.7mm
	Battery	Capacity		12V4AH
Power Drive System	Clutch	Type		CVT
	Operation			Automatic centrifugal Type
	Reduction Gear	Type		Chain drive
		Reduction ratio	1st	—
			2nd	—
	Final gear ratio			23.678
Moving Device	Front Axle	Caster angle		—
		Trail length		—
	Tire pressure		Front	0.35 kgf/cm^2 (35 kPa, 4.97 psi)
			Rear	0.35 kgf/cm^2 (35 kPa, 4.97 psi)
	Turning angle		Left	44°
			Right	44°
Brake system type			Rear	Disk brake
			Front	Drum brake
Damping Device	Suspension type		Front	Swing
			Rear	Swing arm
	Shock type		Front	Swing
			Rear	Swing arm
Frame type				SP pipe

Model No.			LB10
Name			**MXU 50**
Overall length			1775 mm (71 in)
Overall width			950 mm (38 in)
Overall height			1040 mm (41.6 in)
Wheel base			1120 mm (44.8 in)
Engine type			Air cooled 2-stroke
Displacement			49.4 cm^3 (2.964 cu-in)
Fuel Used			92# nonleaded gasoline
Dry weight	Front wheel		87 kg (191.4 lbs)
	Rear wheel		89 kg (195.8 lbs)
	Total		176 kg (387.2 lbs)
Curb weight	Front wheel		92 kg (202.4 lbs)
	Rear wheel		94 kg (206.8 lbs)
	Total		186 kg (409.2 lbs)
Tires	Front wheel		21*7-10
	Rear wheel		22*10-10
Ground clearance			165 mm (6.6 in)
Min. turning radius			2900 mm (116 in)
Engine	Starting system		Starting motor & kick starter
	Type		Air cooled 2-stroke
	Cylinder arrangement		Single cylinder
	Combustion chamber type		Semi-sphere
	Valve arrangement		Reed valve & piston
	Bore x stroke		39 x 41.4 mm (1.56 x 1.656 in)
	Compression ratio		7.2:1
	Compression pressure		12 kgf/cm^2 (1200 kPa, 170.4 psi)
	Port timing Intake	Open	Automatic controlled
		Close	
	Port timing Exhaust	Open	Automatic controlled
		Close	
	Valve clearance	Intake	—
		Exhaust	—
	Idle speed (rpm)		1800
Lubrication type			Separate type
Oil pump type			Plunger type
Oil filter type			Full-flow filtration

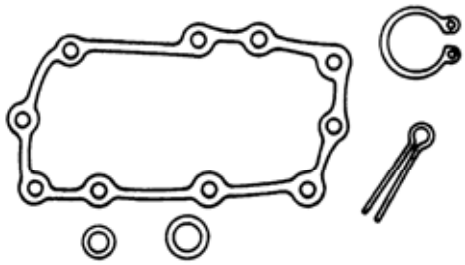
Fuel System	Air cleaner type			Sponge
	Fuel capacity			8.1 liters
	Carburetor	Type		PB
		Main jet No.		80
		Venturi dia		ϕ14 mm (ϕ0.56 in)
		Throttle type		Valve piston
Electrical Equipment	Ignition System	Type		CDI
		Ignition timing		22°/2000 rpm
		Spark plug		NGK-BR8HAS
		Spark plug gap		0.6～0.7mm
	Battery	Capacity		12V8AH
Power Drive System	Clutch	Type		CVT
	Operation			Automatic centrifugal Type
	Reduction Gear	Type		Chain drive
		Reduction ratio	1st	—
			2nd	—
	Final gear ratio			23.678
Moving Device	Front Axle	Caster angle		—
		Trail length		—
	Tire pressure		Front	0.28 kgf/cm^2 (28 kPa, 4 psi)
			Rear	0.28 kgf/cm^2 (28 kPa, 4 psi)
	Turning angle		Left	40°
			Right	40°
Brake system type			Rear	Disk brake
			Front	Drum brake
Damping Device	Suspension type		Front	Swing
			Rear	Swing arm
	Shock type		Front	Swing
			Rear	Swing arm
Frame type				SP pipe

Model No.			LB10
Name			**MXU 50 REVERSE**
Overall length			1786 mm (71 in)
Overall width			958 mm (38 in)
Overall height			1010 mm (40 in)
Wheel base			1105 mm (44 in)
Engine type			Air cooled 2-stroke
Displacement			49.4 cm^3 (2.964 cu-in)
Fuel Used			92# nonleaded gasoline
Dry weight	Front wheel		78 kg (171.6 lbs)
	Rear wheel		80 kg (176 lbs)
	Total		158 kg (347.6 lbs)
Curb weight	Front wheel		83 kg (182.6 lbs)
	Rear wheel		84 kg (184.8 lbs)
	Total		167 kg (36734 lbs)
Tires	Front wheel		21*7-10
	Rear wheel		22*10-10
Ground clearance			162 mm (6.6 in)
Min. turning radius			2900 mm (116 in)
Engine	Starting system		Starting motor & kick starter
	Type		Air cooled 2-stroke
	Cylinder arrangement		Single cylinder
	Combustion chamber type		Semi-sphere
	Valve arrangement		Reed valve & piston
	Bore x stroke		39 x 41.4 mm (1.56 x 1.656 in)
	Compression ratio		7.2:1
	Compression pressure		12 kgf/cm^2 (1200 kPa, 170.4 psi)
	Port timing Intake	Open	Automatic controlled
		Close	
	Port timing Exhaust	Open	Automatic controlled
		Close	
	Valve clearance	Intake	—
		Exhaust	—
	Idle speed (rpm)		1800
Lubrication type			Separate type
Oil pump type			Plunger type
Oil filter type			Full-flow filtration

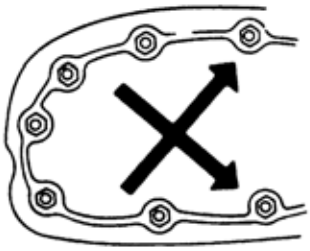
Fuel System	Air cleaner type			Sponge
	Fuel capacity			8.1 liters
	Carburetor	Type		PB
		Main jet No.		80
		Venturi dia		ϕ14 mm (ϕ0.56 in)
		Throttle type		Valve piston
Electrical Equipment	Ignition System	Type		CDI
		Ignition timing		13.5°/1500 rpm
		Spark plug		NGK-BR8HAS
		Spark plug gap		0.6～0.7mm
	Battery	Capacity		12V8AH
Power Drive System	Clutch	Type		CVT
	Operation			Automatic centrifugal Type
	Primary reduction system			Helical gear/spur gear
	Secondary reduction system			Chain drive
	Primary reduction ratio			1.2 – 3.5
	Secondary reduction ratio			20.12
	Reverse ratio			46.11
Moving Device	Front Axle	Caster angle		—
		Trail length		—
	Tire pressure		Front	0.28 kgf/cm^2 (28 kPa, 4 psi)
			Rear	0.28 kgf/cm^2 (28 kPa, 4 psi)
	Turning angle		Left	40°
			Right	40°
Brake system type			Rear	Disk brake
			Front	Drum brake
Damping Device	Suspension type		Front	Swing
			Rear	Swing arm
	Shock type		Front	Swing
			Rear	Swing arm
Frame type				SP pipe

SERVICE PRECAUTIONS

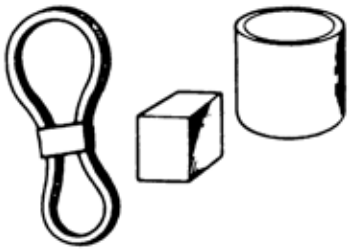
■ Make sure to install new gaskets, O-rings, circlips, cotter pins, etc. when reassembling.



■ When tightening bolts or nuts, begin with larger-diameter to smaller ones at several times, and tighten to the specified torque diagonally.

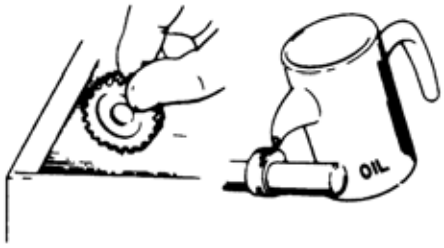


■ Use genuine parts and lubricants.

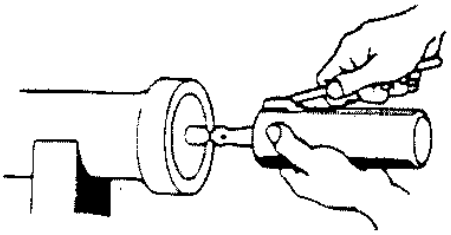


■ When servicing the motorcycle, be sure to use special tools for removal and installation.

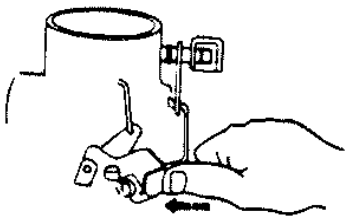
■ After disassembly, clean removed parts. Lubricate sliding surfaces with engine oil before reassembly.



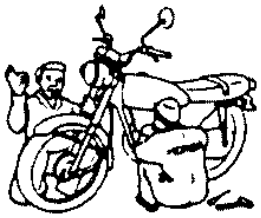
■ Apply or add designated greases and lubricants to the specified lubrication points.



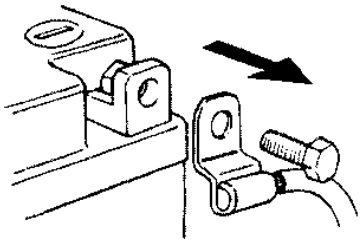
■ After reassembly, check all parts for proper tightening and operation.



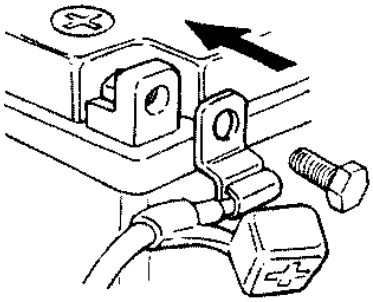
■ When two persons work together, pay attention to the mutual working safety.



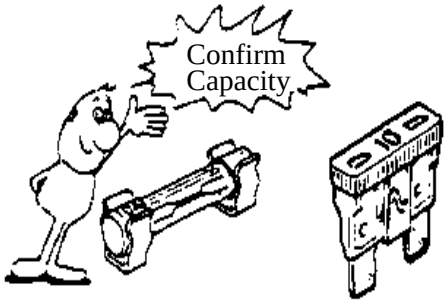
■ Disconnect the battery negative (-) terminal before operation.
■ When using a spanner or other tools, make sure not to damage the motorcycle surface.



■ After operation, check all connecting points, fasteners, and lines for proper connection and installation.
■ When connecting the battery, the positive (+) terminal must be connected first.
■ After connection, apply grease to the battery terminals.
■ Terminal caps shall be installed securely.

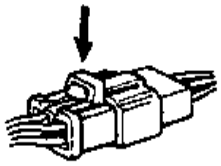


■ If the fuse is burned out, find the cause and repair it. Replace it with a new one according to the specified capacity.

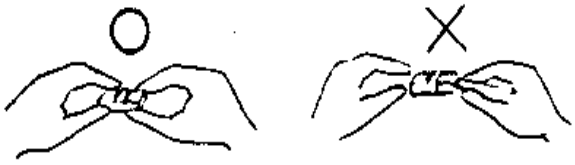


■ After operation, terminal caps shall be installed securely.

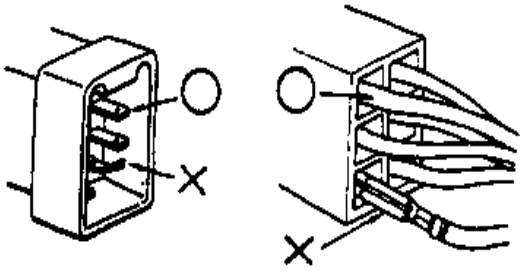
■ When taking out the connector, the lock on the connector shall be released before operation.



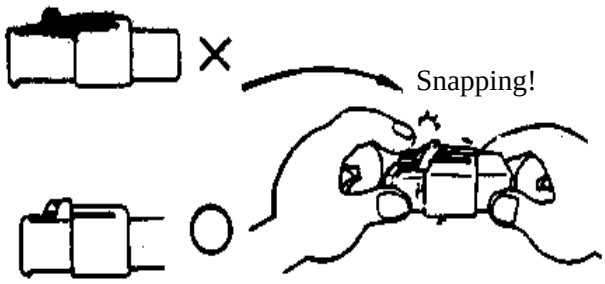
■ Hold the connector body when connecting or disconnecting it.
■ Do not pull the connector wire.



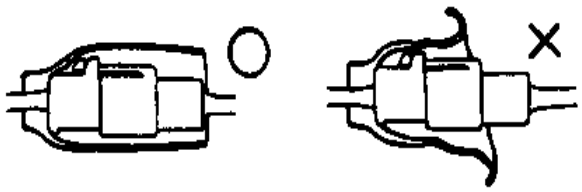
■ Check if any connector terminal is bending, protruding or loose.



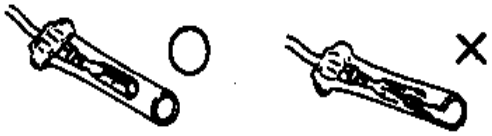
- The connector shall be inserted completely.
- If the double connector has a lock, lock it at the correct position.
- Check if there is any loose wire.



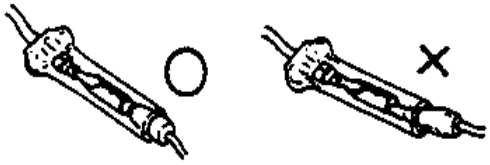
- Before connecting a terminal, check for damaged terminal cover or loose negative terminal.



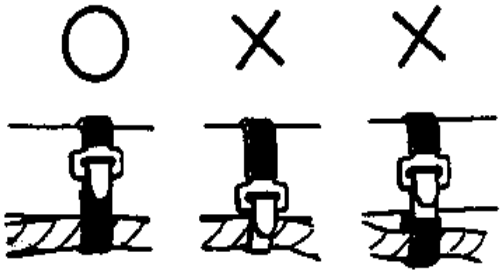
- Check the double connector cover for proper coverage and installation.



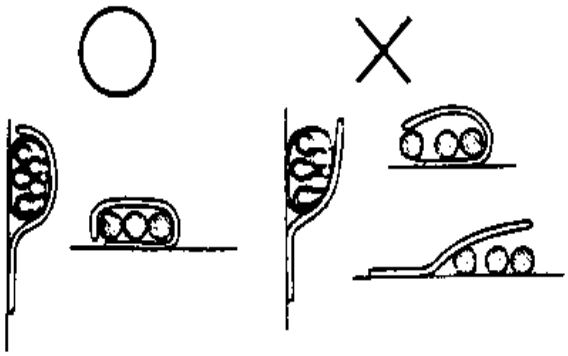
- Insert the terminal completely.
- Check the terminal cover for proper coverage.
- Do not make the terminal cover opening face up.



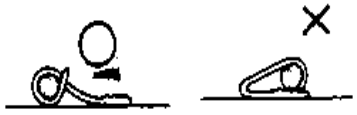
- Secure wire harnesses to the frame with their respective wire bands at the designated locations.
  Tighten the bands so that only the insulated surfaces contact the wire harnesses.



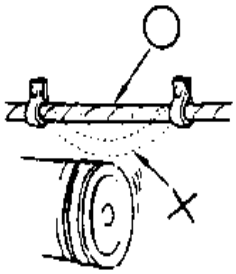
■ After clamping, check each wire to make sure it is secure.



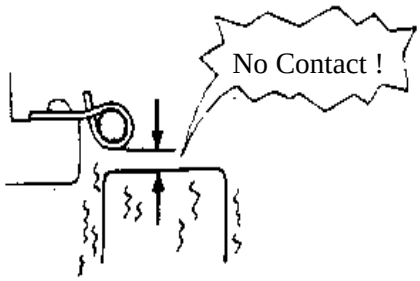
■ Do not squeeze wires against the weld or its clamp.



■ After clamping, check each harness to make sure that it is not interfering with any moving or sliding parts.

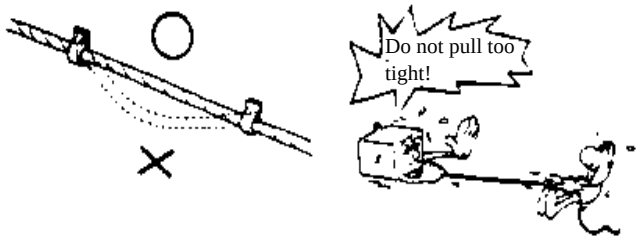


■ When fixing the wire harnesses, do not make it contact the parts which will generate high heat.

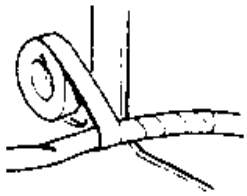


■ Route wire harnesses to avoid sharp edges or corners. Avoid the projected ends of bolts and screws.
■ Route wire harnesses passing through the side of bolts and screws. Avoid the projected ends of bolts and screws.

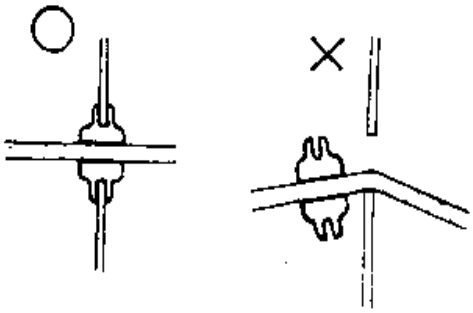
■ Route harnesses so they are neither pulled tight nor have excessive slack.



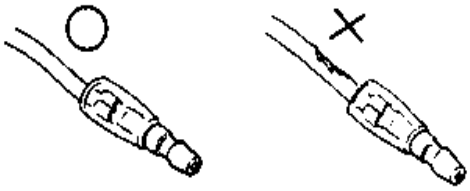
■ Protect wires and harnesses with electrical tape or tube if they contact a sharp edge or corner.



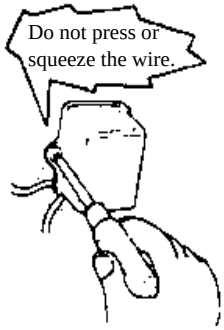
■ When rubber protecting cover is used to protect the wire harnesses, it shall be installed securely.



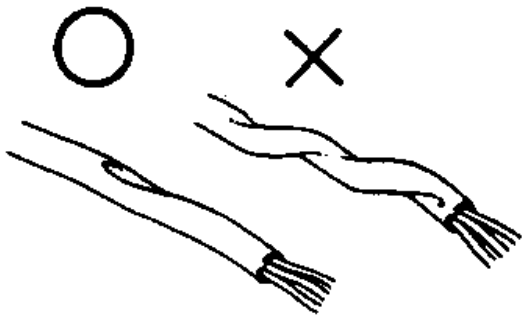
■ Do not break the sheath of wire.
■ If a wire or harness is with a broken sheath, repair by wrapping it with protective tape or replace it.



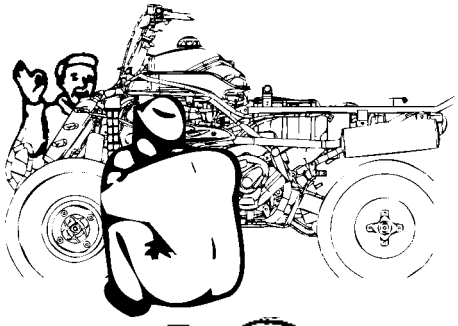
■ When installing other parts, do not press or squeeze the wires.



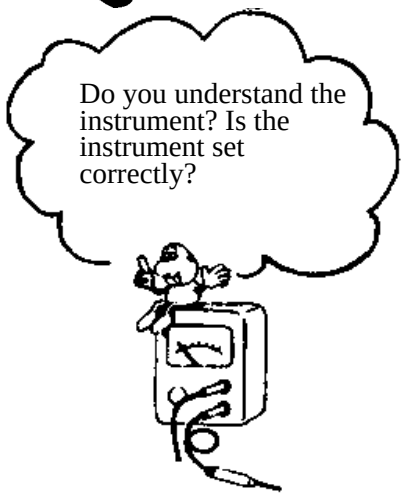
■ After routing, check that the wire harnesses are not twisted or kinked.



■ Wire harnesses routed along with handlebar should not be pulled tight, have excessive slack or interfere with adjacent or surrounding parts in all steering positions.



■ When a testing device is used, make sure to understand the operating methods thoroughly and operate according to the operating instructions.



■ Be careful not to drop any parts.

■ When rust is found on a terminal, remove the rust with sand paper or equivalent before connecting.

■ Symbols:

The following symbols represent the servicing methods and cautions included in this service manual.

Engine Oil

: Apply engine oil to the specified points. (Use designated engine oil for lubrication.)

Grease

: Apply grease for lubrication.

✳ : Caution

: Warning

TORQUE VALUES

STANDARD TORQUE VALUES

Item	Torque kgf-m (N-m, lbf-ft)	Item	Torque kgf-m (N-m, lbf-ft)
5mm bolt and nut	0.5 (5, 3.6)	4mm screw	0.3 (3, 2.2)
6mm bolt and nut	1 (10, 7.2)	5mm screw	0.4 (4, 2.9)
8mm bolt and nut	2.2 (22, 16)	6mm screw, SH bolt	0.9 (9, 6.5)
10mm bolt and nut	3.5 (35, 25)	6mm flange bolt and nut	1.2 (12, 9)
12mm bolt and nut	5.5 (55, 40)	8mm flange bolt and nut	2.7 (27, 20)
14mm bolt and nut	7 (70, 50)	10mm flange bolt and nut	4 (40, 29)

Torque specifications listed below are for important fasteners.

ENGINE

Item	Q'ty	Thread dia.(mm)	Torque kgf-m (N-m, lbf-ft)	Remarks
Cylinder head bolt	4	BF7X115	1.6 (16, 11.5)	
Clutch drive plate nut	1	39	5.5 (55, 40)	
Drive face nut	1	12	3.8 (38, 27)	
Clutch outer nut	1	NH10	3.8 (38, 27)	
A.C.G flywheel nut	1	10	3.8 (38, 27)	
Oil check/filler bolt (MXU 50/MX'ER 50)	1	8	1.2 (12, 9)	
Oil drain plug	1	8	2 (20, 15)	
Oil filler bolt (MXU 50 REVERSE)	1	12	2 (20, 15)	
Exhaust muffler joint lock nut	2	NC6mm	1.2 (12, 9)	
Exhaust muffler lock bolt	2	BF8X35	3.3 (33, 24)	
Spark plug			1.5 (15, 11)	

FRAME

Item	Q'ty	Thread dia.(mm)	Torque kgf-m (N-m, lbf-ft)	Remarks
Steering stem nut	1	14	7 (70, 50)	
Swing arm nut	4	10	4.5 (45, 32)	
Rear wheel nut	4	14	7 (70, 50)	
Front wheel nut	4	14	7 (70, 50)	
Rear shock absorber upper mount bolt	1	10	4 (40, 29)	
Front shock absorber upper mount bolt	2	10	4 (40, 29)	

(Cont'd)

Item	Q'ty	Thread dia.(mm)	Torque kgf-m (N-m, lbf-ft)	Remarks
Front shock absorber lower mount bolt	2	10	4 (40, 29)	
Rear fork axle	1	14	7 (70, 50)	
Rear hub nut	4	12	7 (70, 50)	
Rear wheel shaft nut	2	32	12 (120, 86)	
Rear engine bracket up bolt	1	10	4 (40, 29)	
Rear engine bracket bolt	2	10	4 (40, 29)	
Engine hanger bracket bolt	1	10	4.5 (45, 32)	

SPECIAL TOOLS

Tool Name	Tool No.	Memo
Flywheel puller	A120E00001	
Oil seal and bearing install	A120E00014	
Crankshaft install	A120E00016	
Universal holder	A120E00017	
Crankshaft & crankcase install	A120E00024	
Crankcase puller	A120E00026	
Crankshaft Bearing puller	A120E00030	
Clutch spring compressor	A120E00034	
Bearing puller	A120E00037	
Nut wrench	A120F00010	

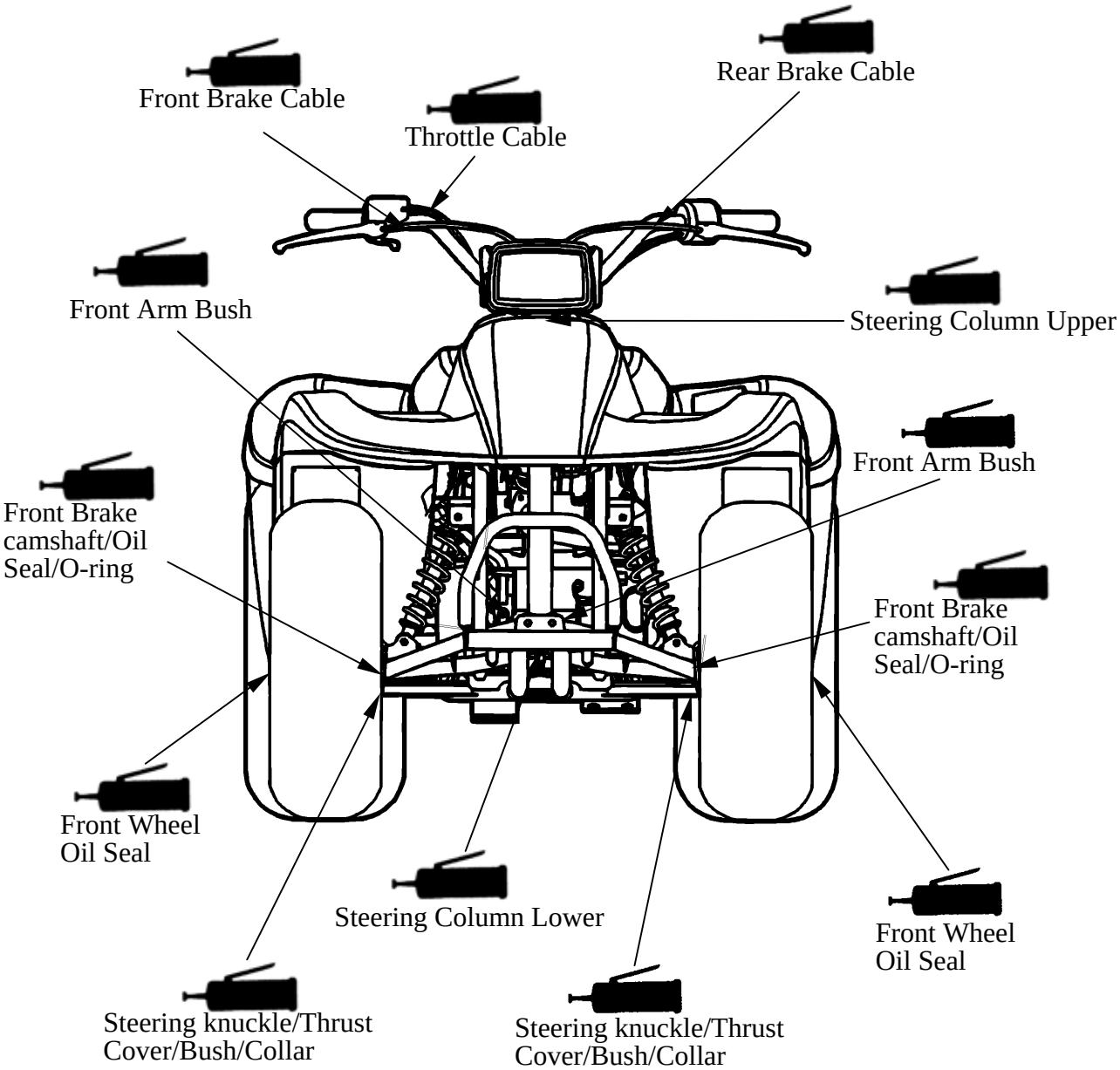
LUBRICATION POINTS

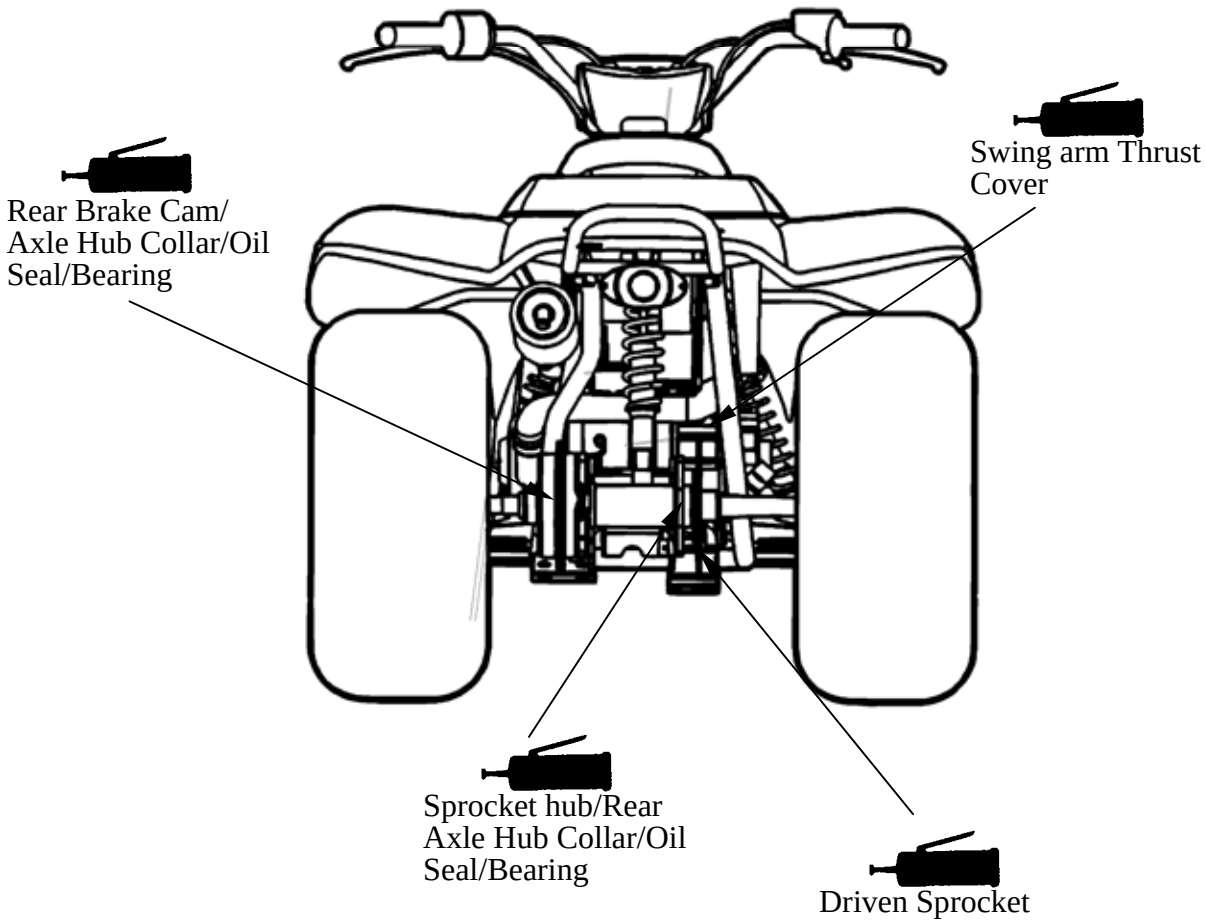
ENGINE

Lubrication Points	Lubricant
Crankcase sliding & movable parts	JASO-FC or API-TC
Cylinder movable parts	JASO-FC or API-TC
Transmission gear (final gear)	Gear oil: SAE90#
Kick starter spindle bushing	Grease
Drive pulley movable parts	Grease
Starter pinion movable parts	Grease

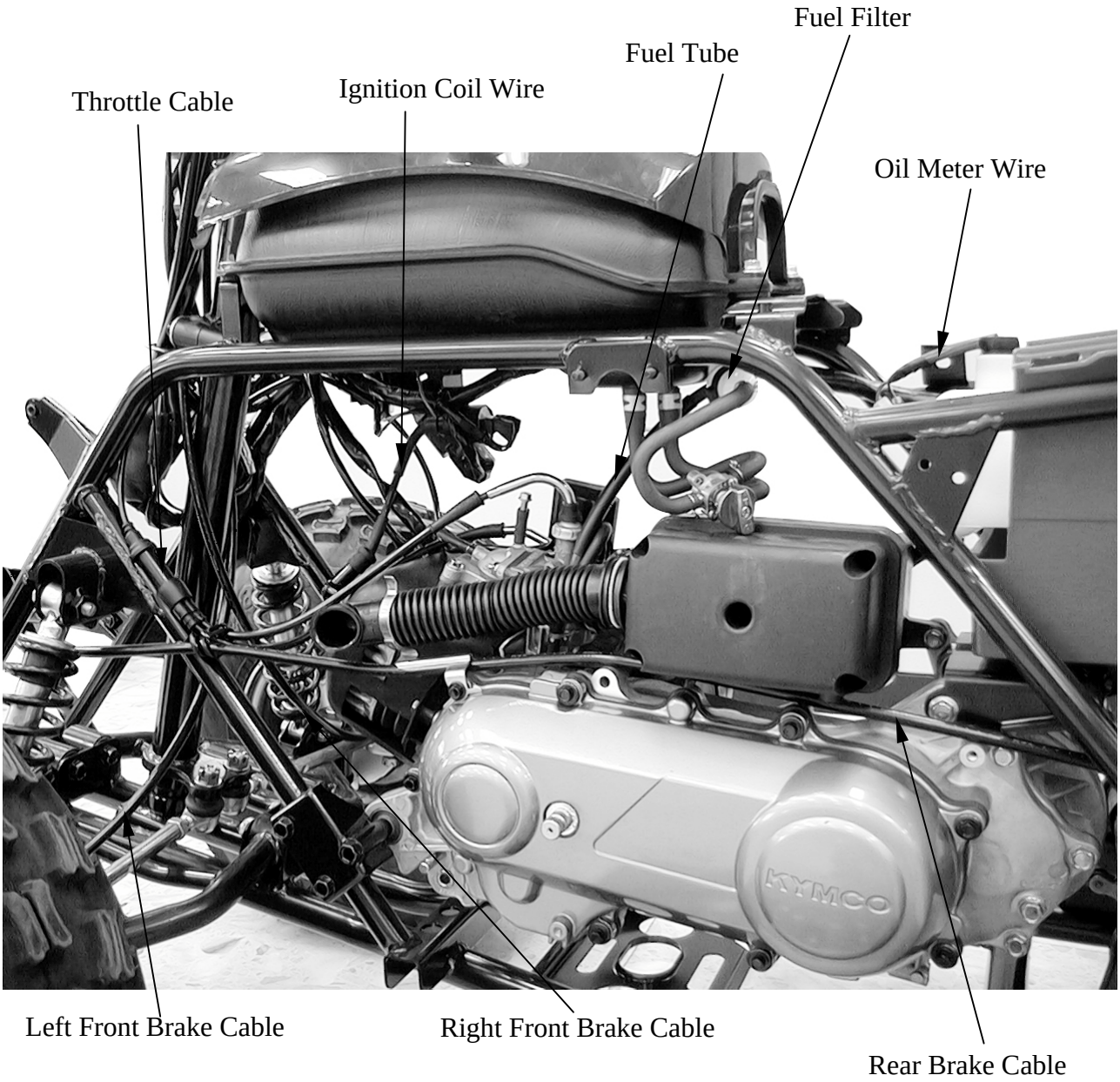
FRAME

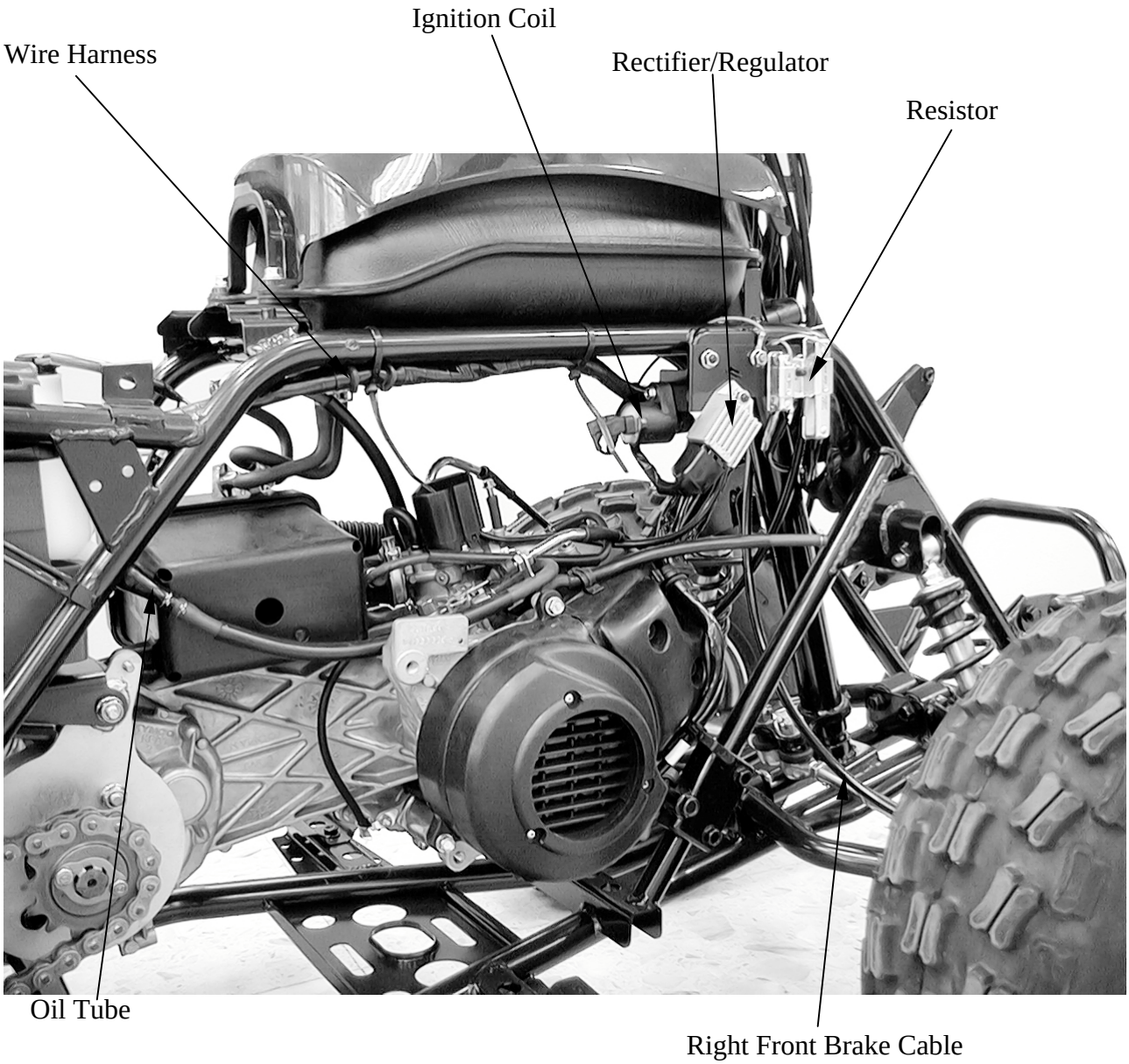
The following is the lubrication points for the frame.
Use general purpose grease for parts not listed.
Apply clean engine oil or grease to cables and movable parts not specified. This will avoid abnormal noise and rise the durability of the motorcycle.

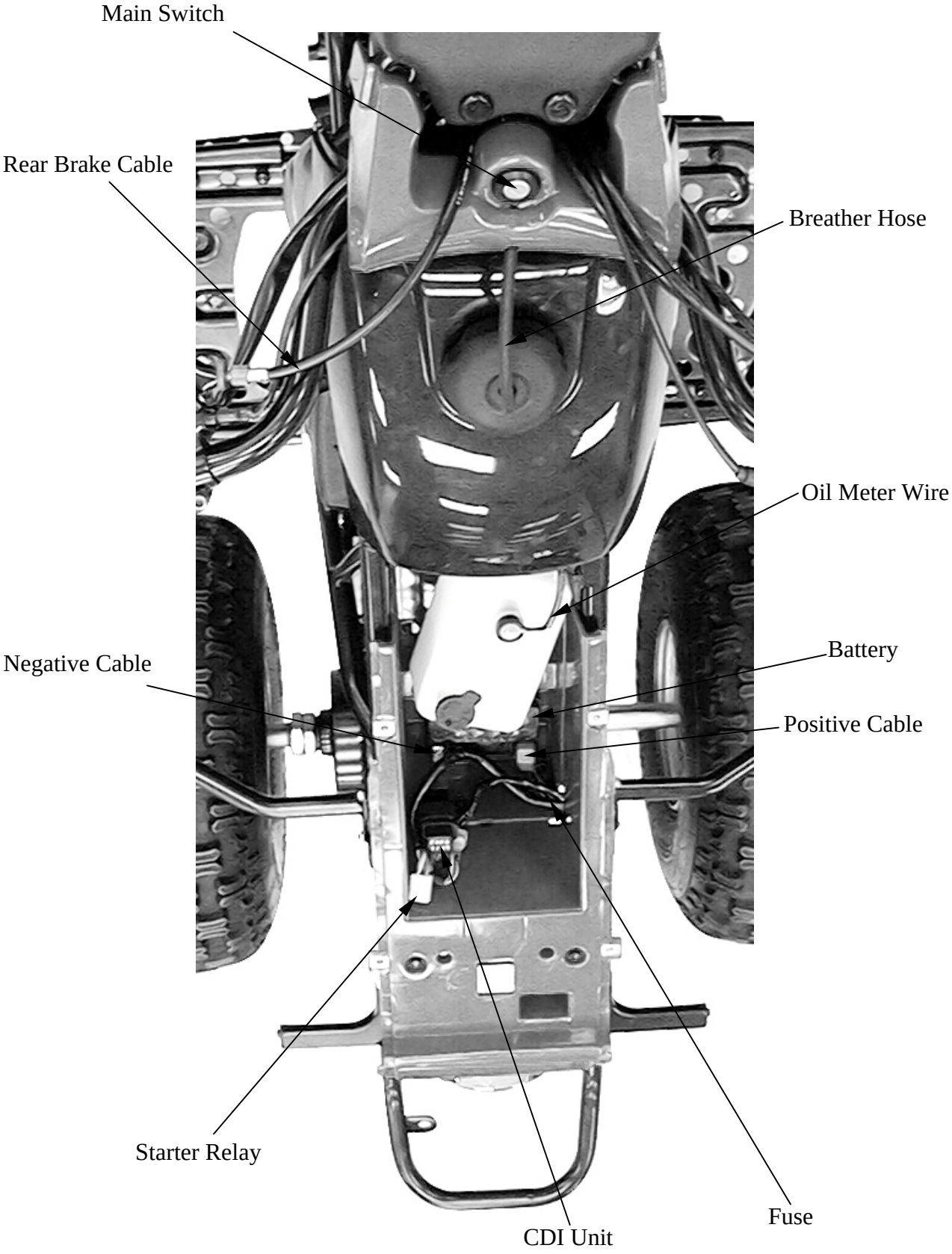




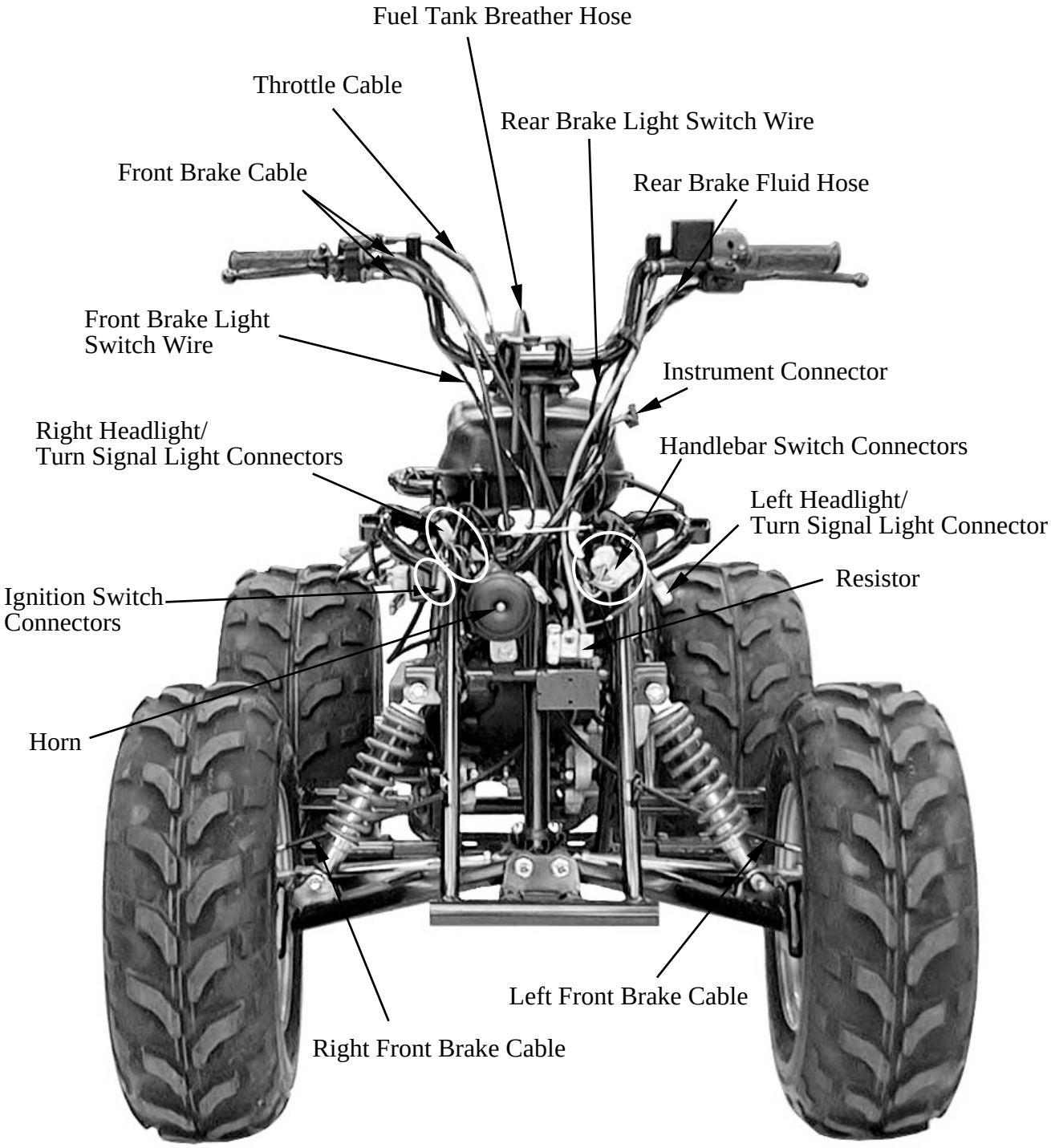
CABLE & HARNESS ROUTING (MX'ER 50)

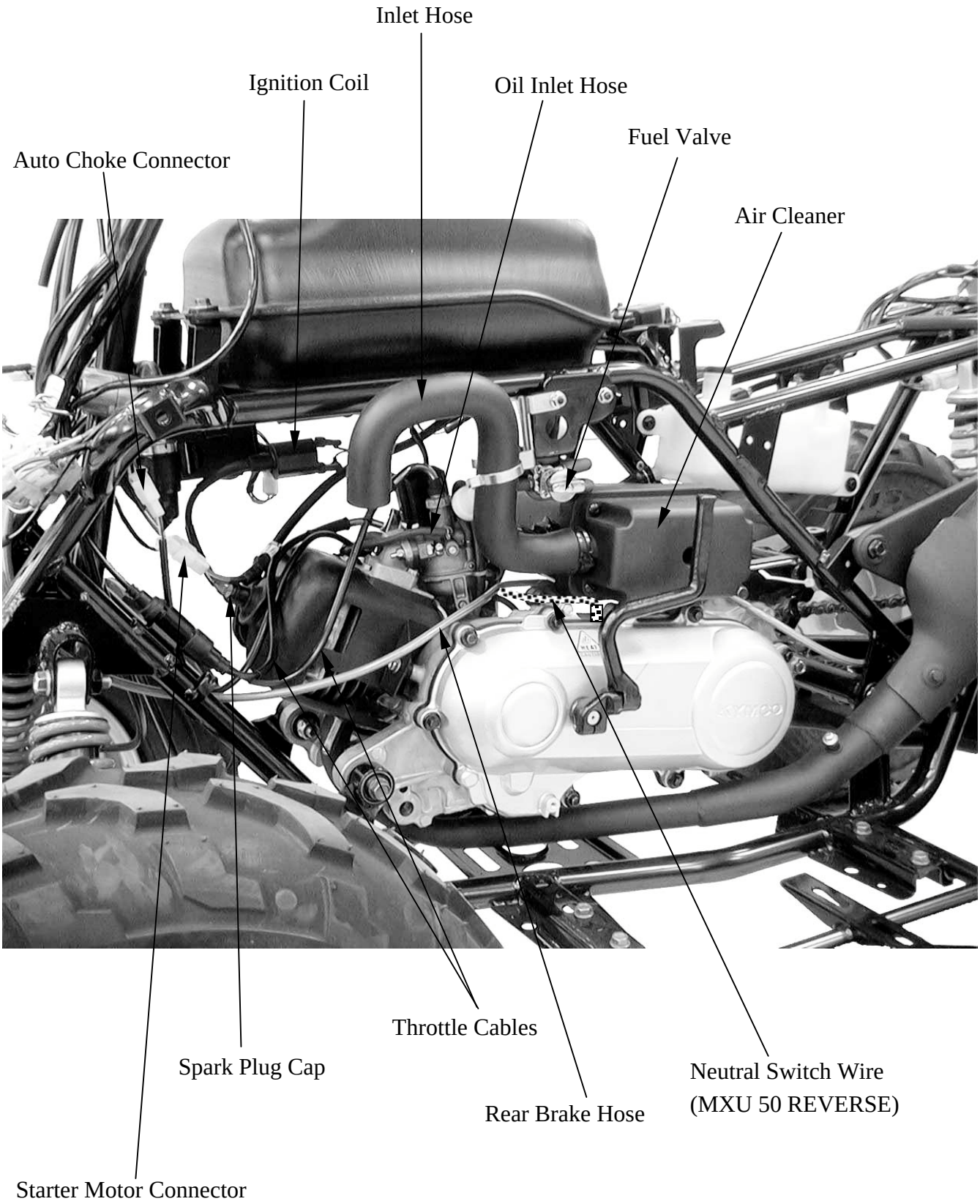


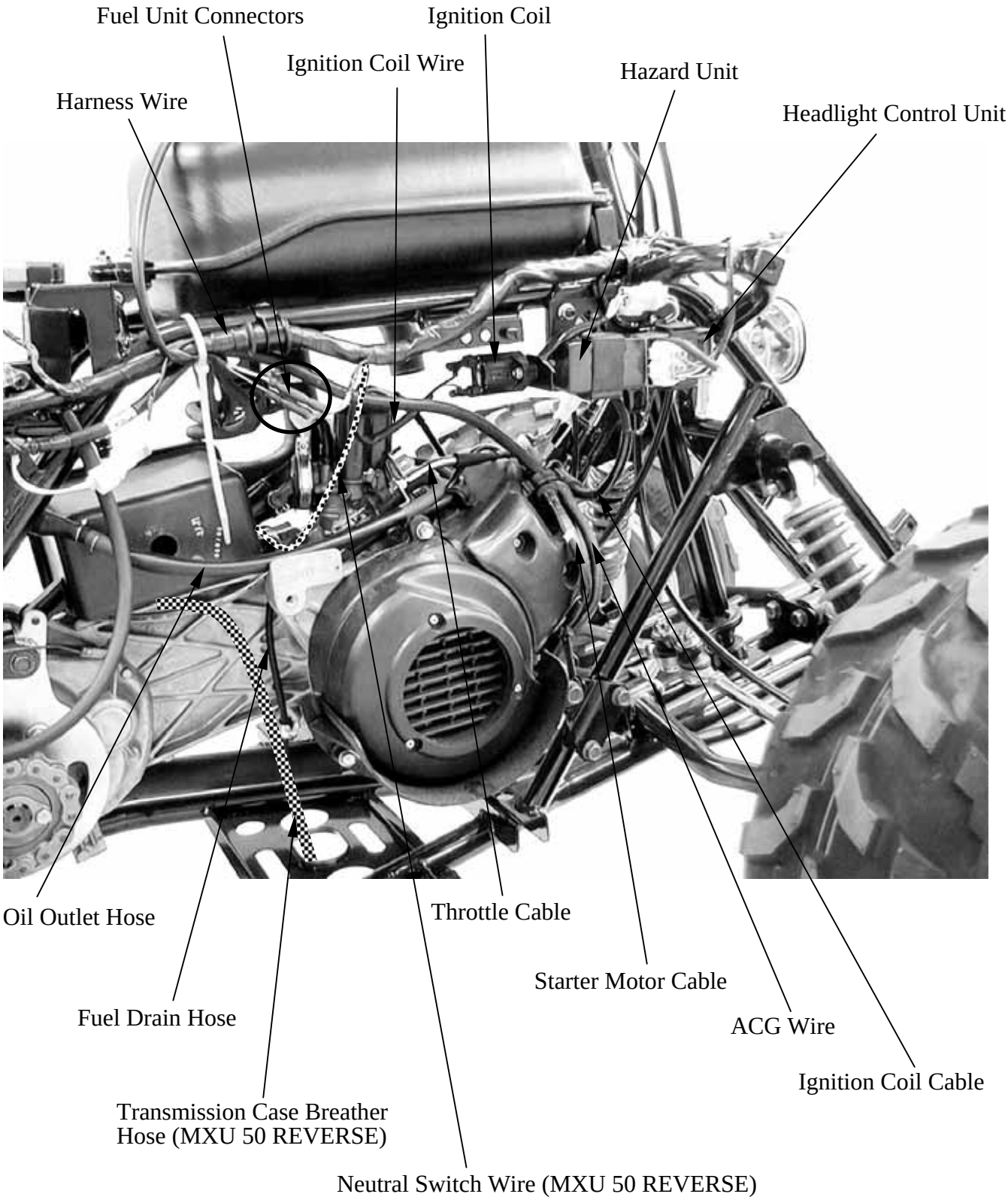


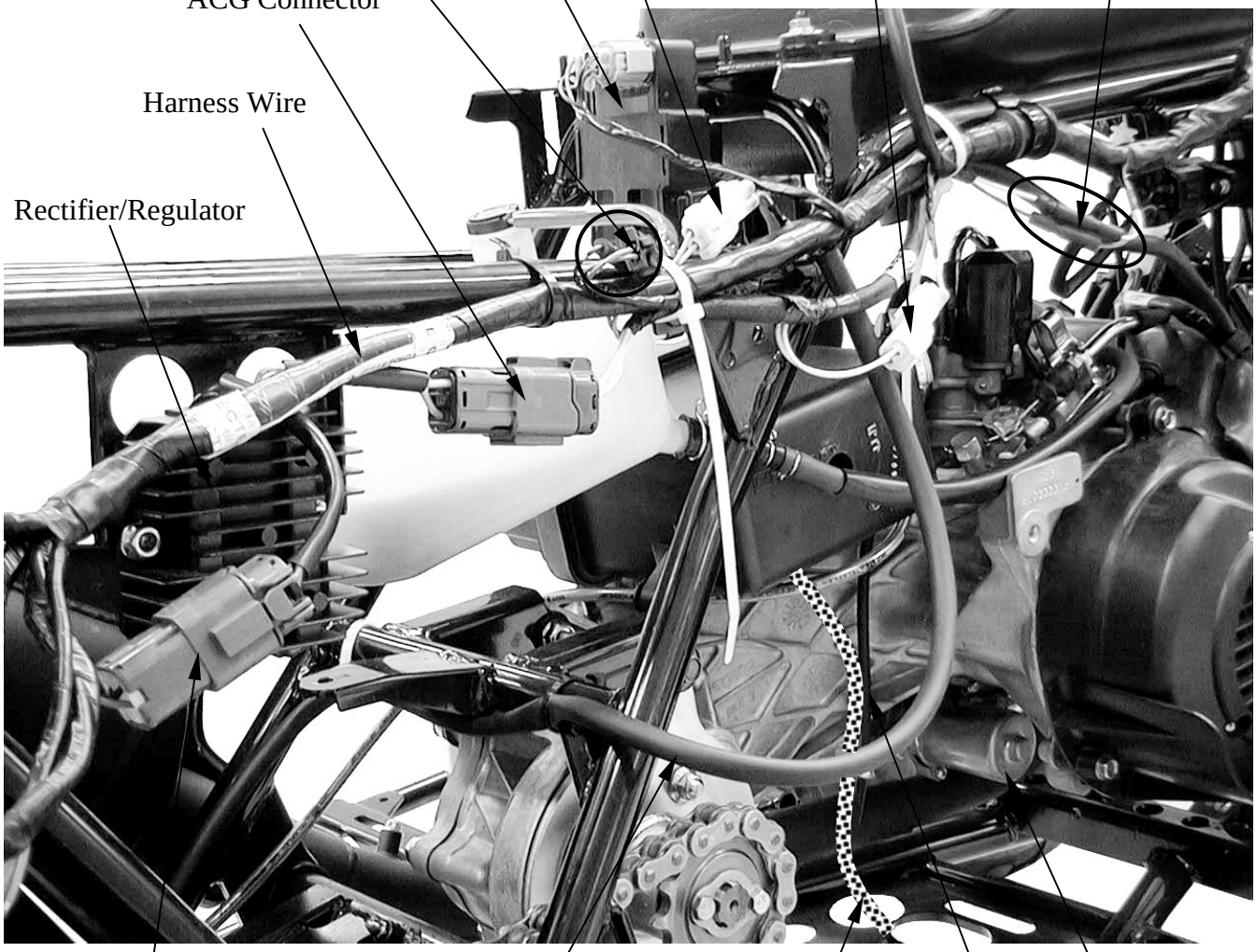


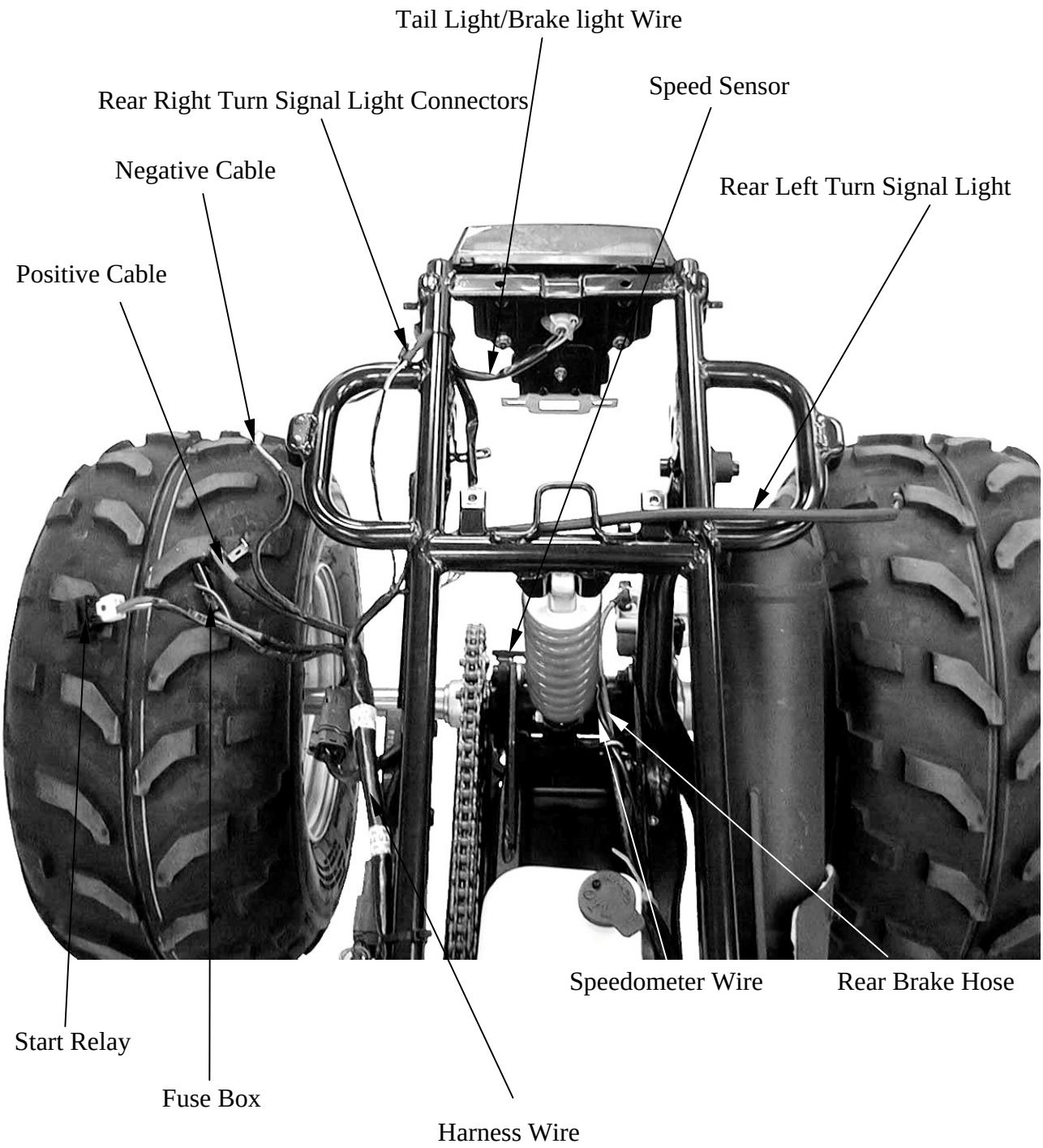
CABLE & HARNESS ROUTING (MXU 50 REVERSE/MXU 50)



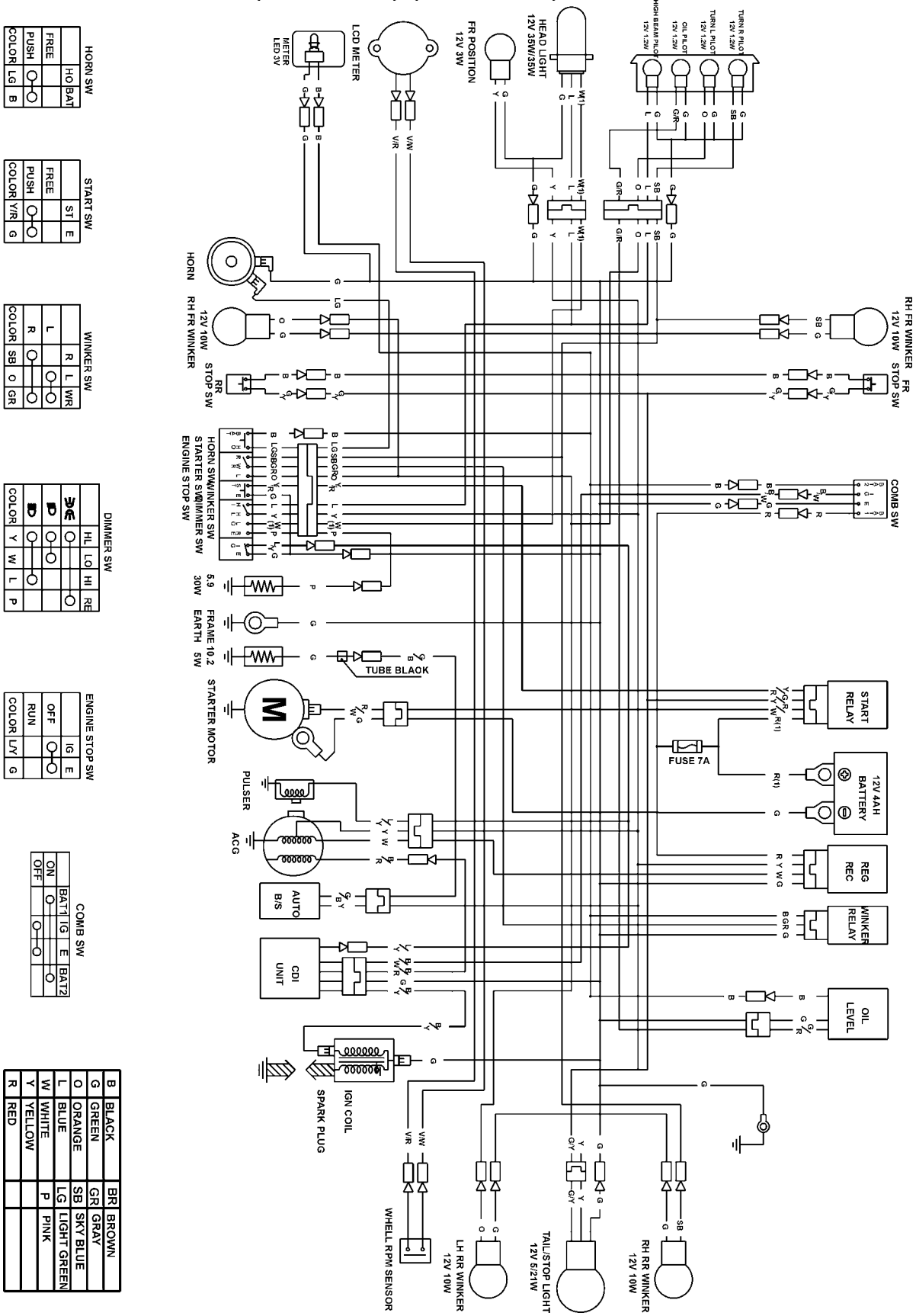




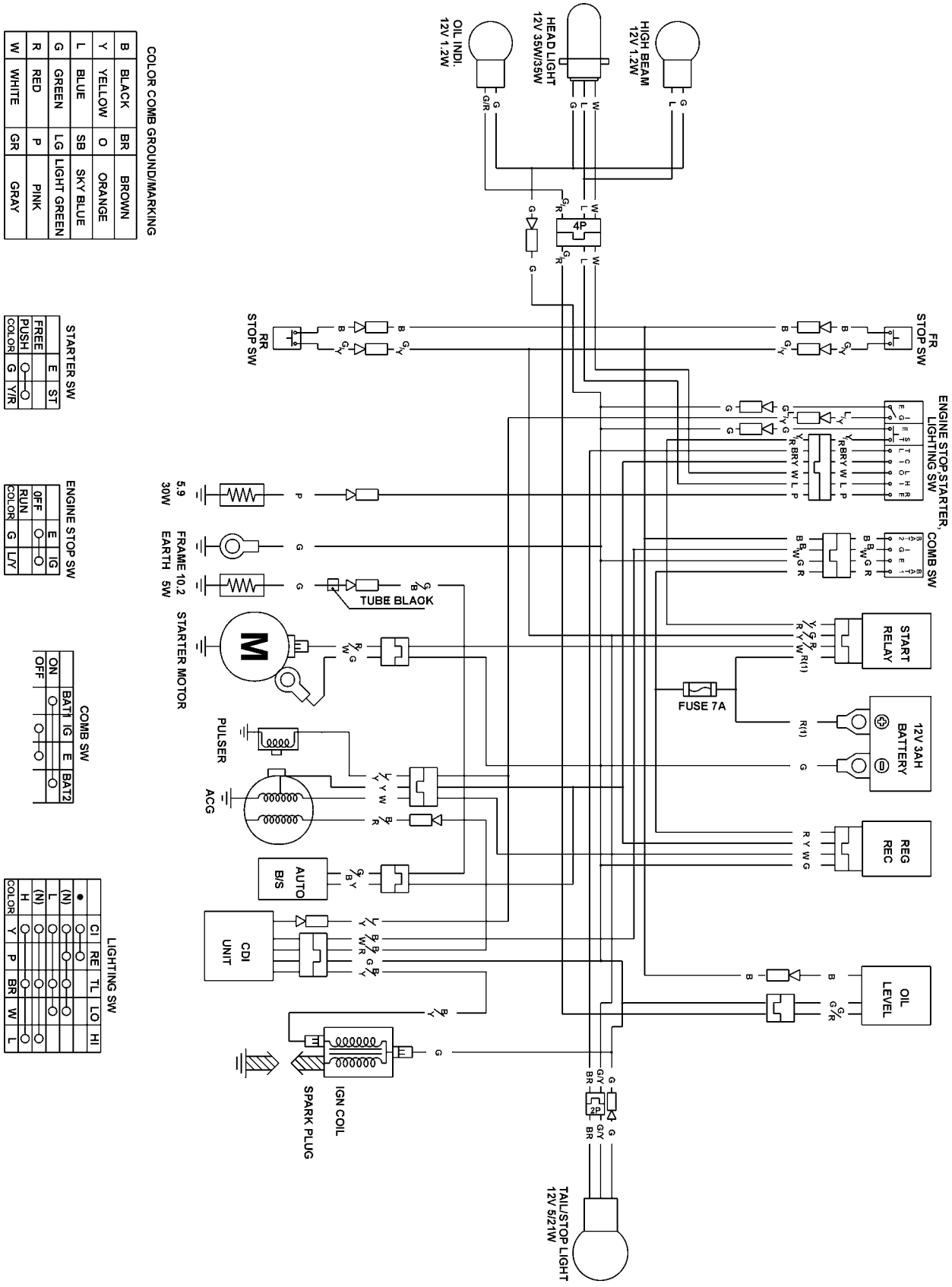




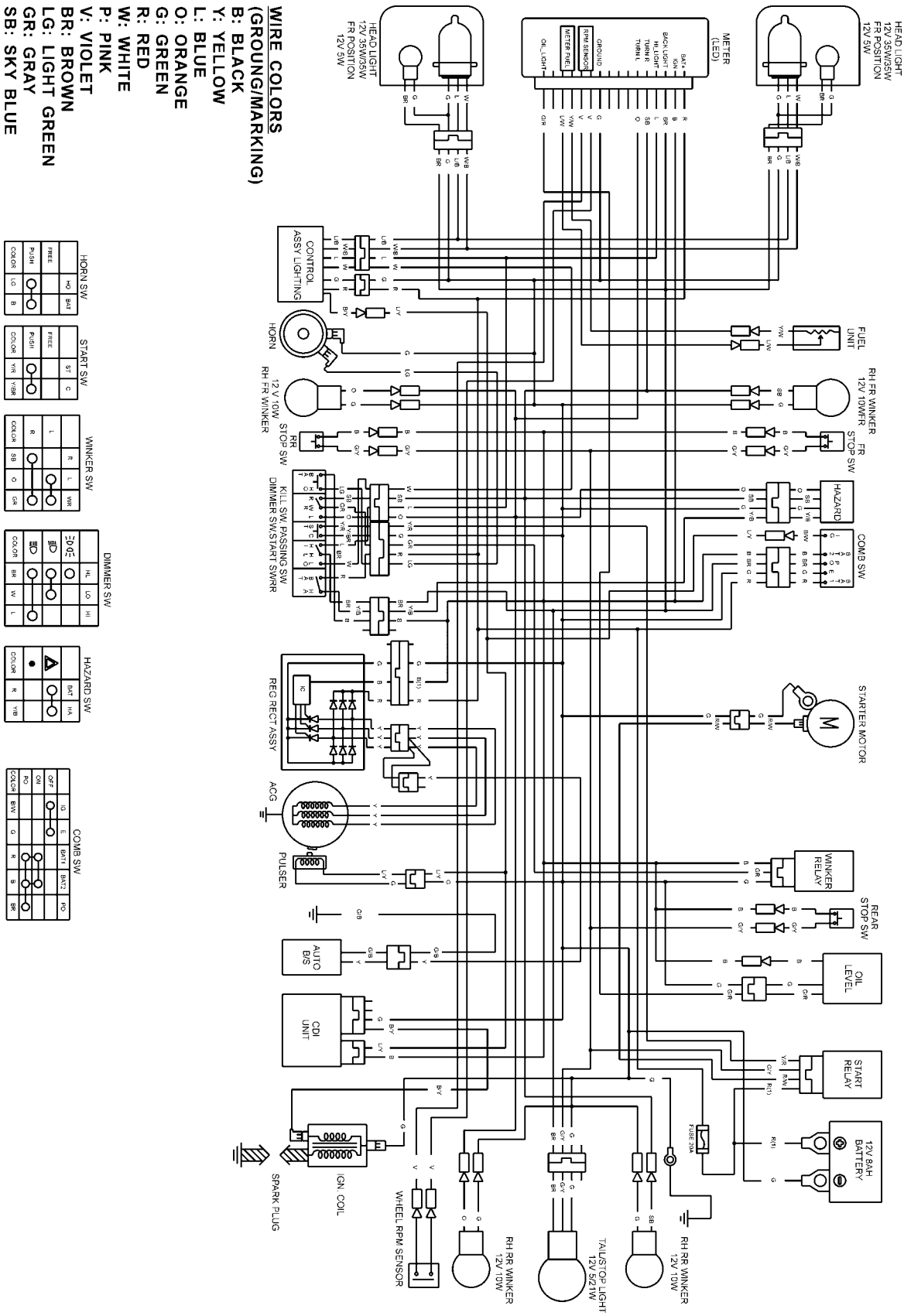
WIRING DIAGRAM (MX'ER 50) (ON ROAD)



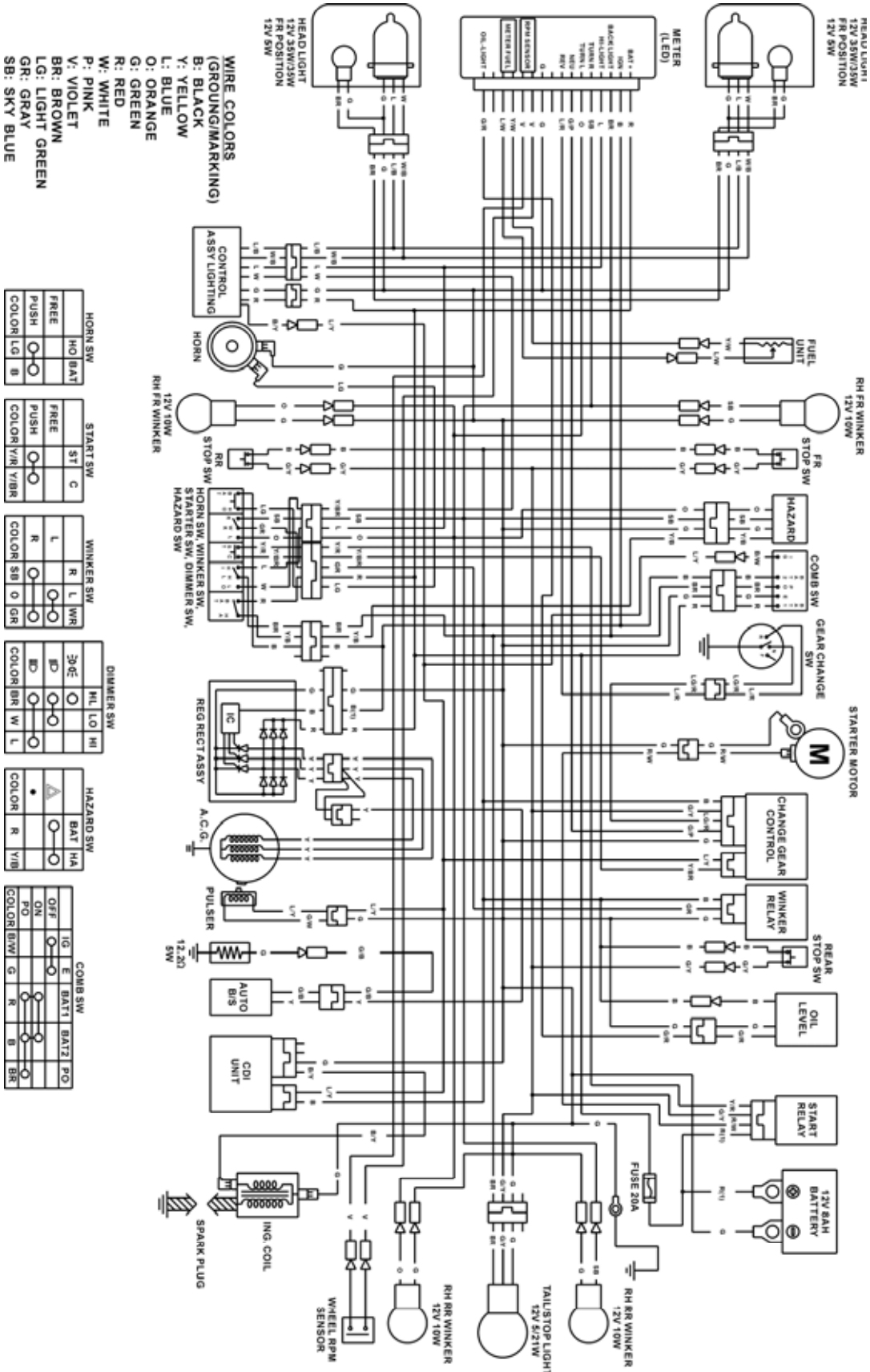
WIRING DIAGRAM (MX'ER 50) (OFF ROAD)



WIRING DIAGRAM (MXU 50) (ON ROAD)

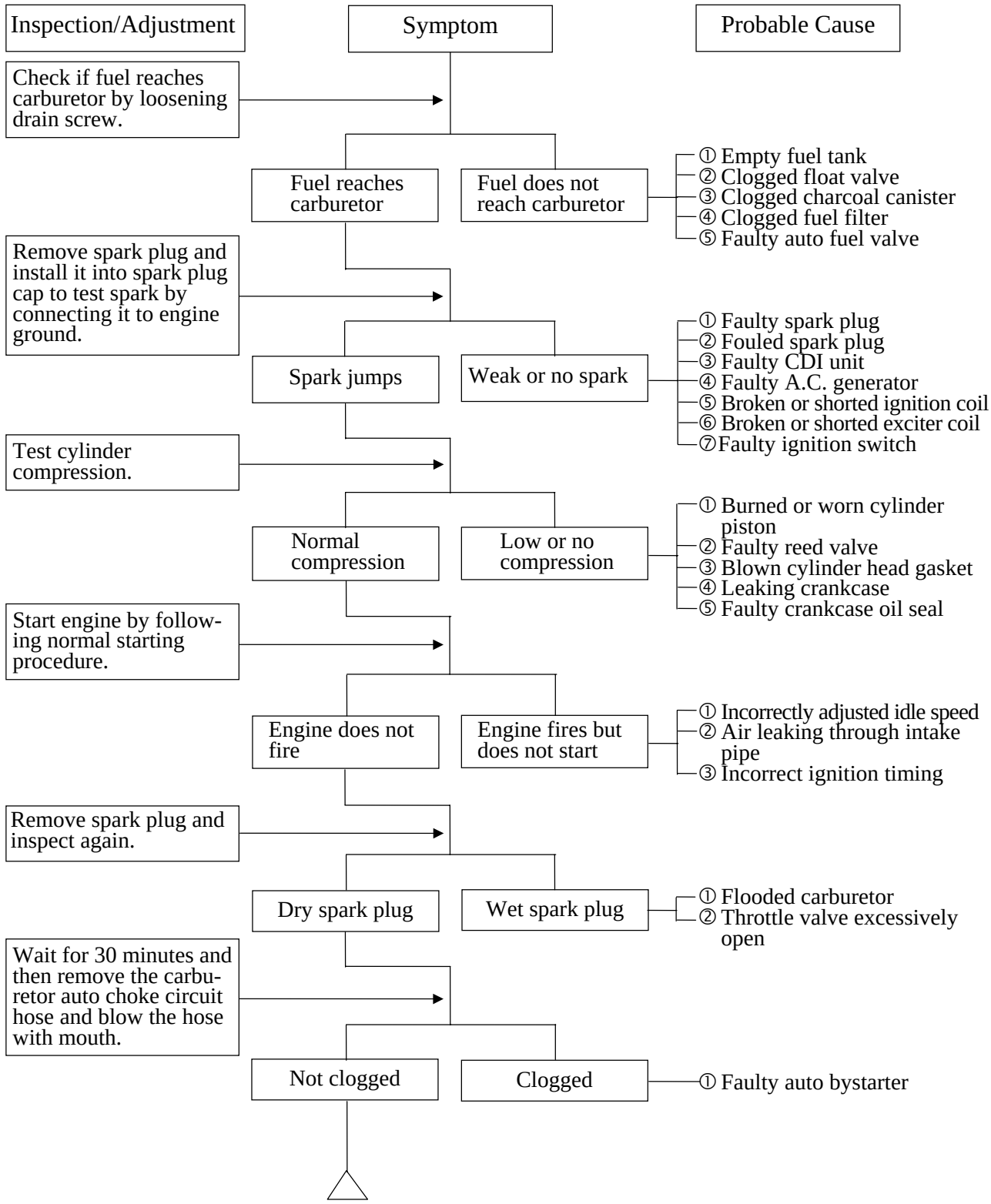


WIRING DIAGRAM (MXU 50 REVERSE) (ON ROAD)

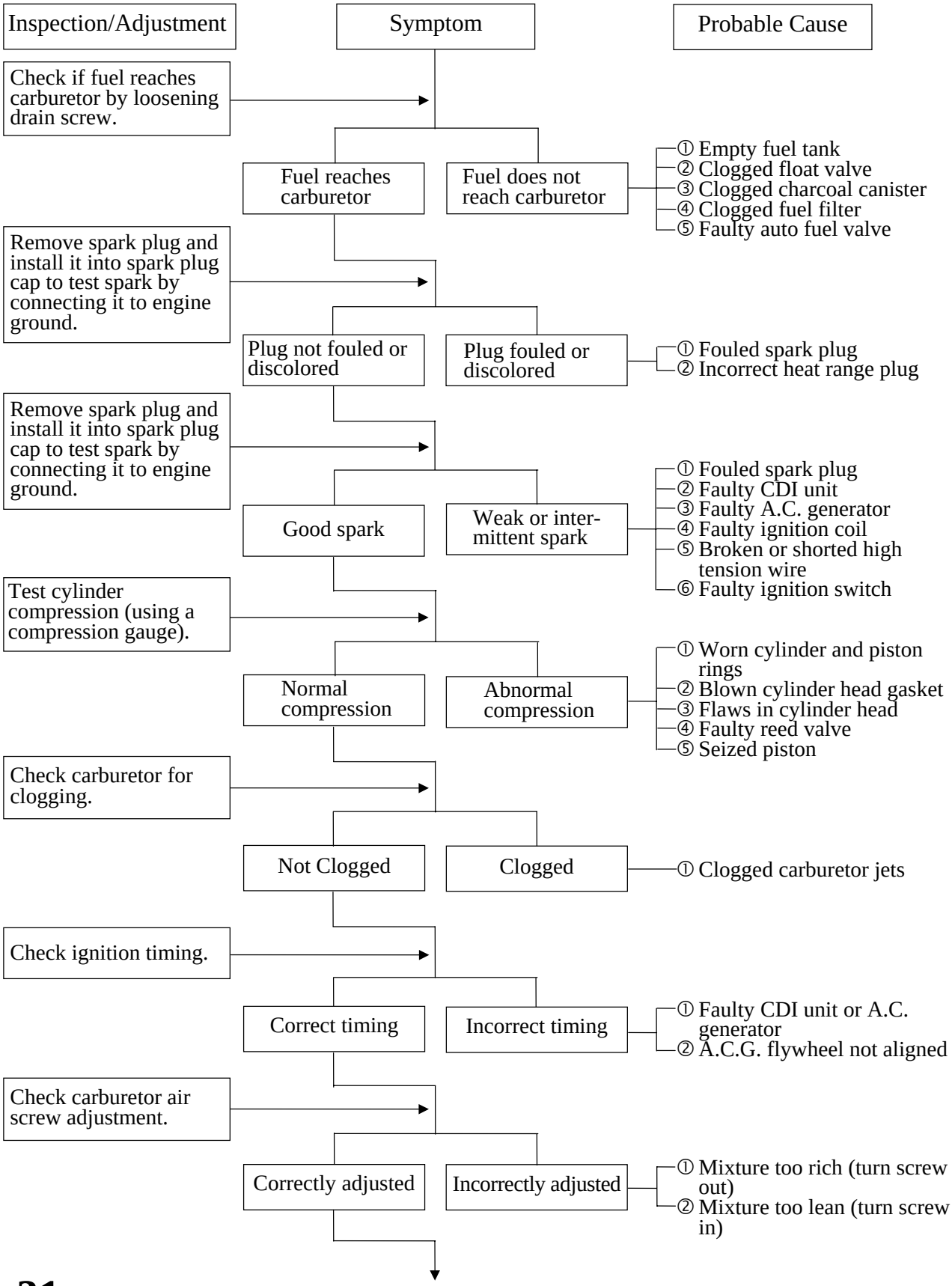


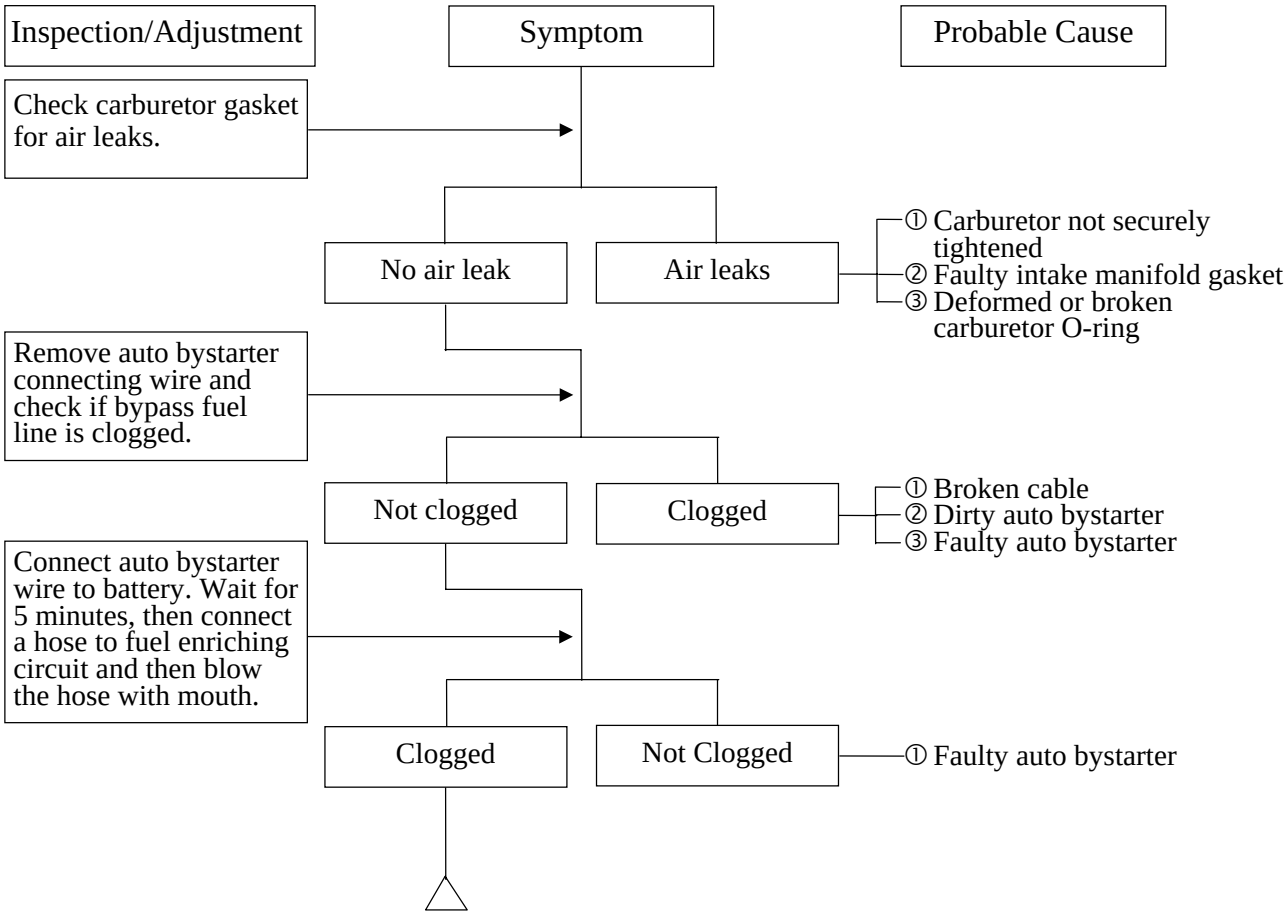
TROUBLESHOOTING

ENGINE WILL NOT START OR IS HARD TO START

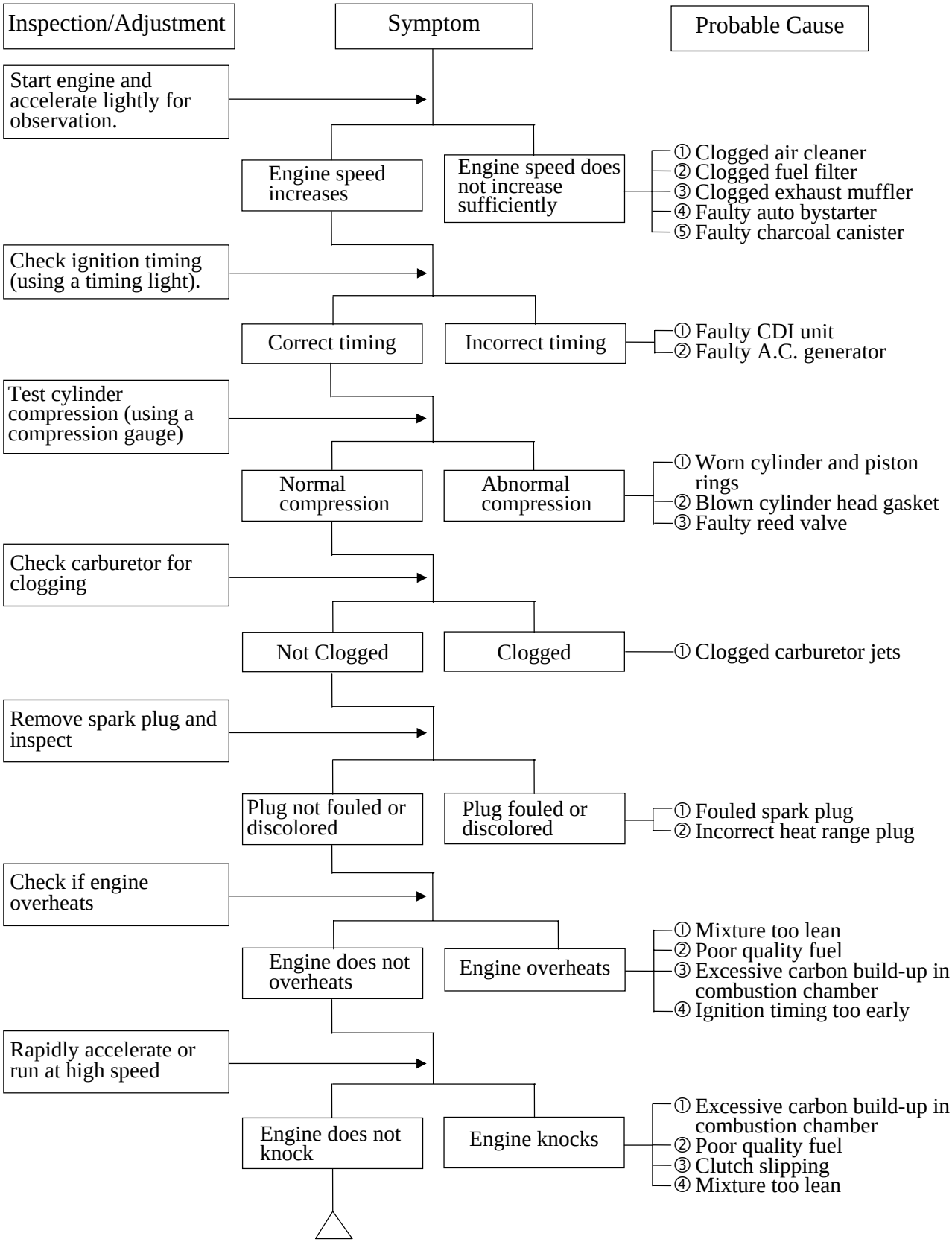


ENGINE STOPS IMMEDIATELY AFTER IT STARTS

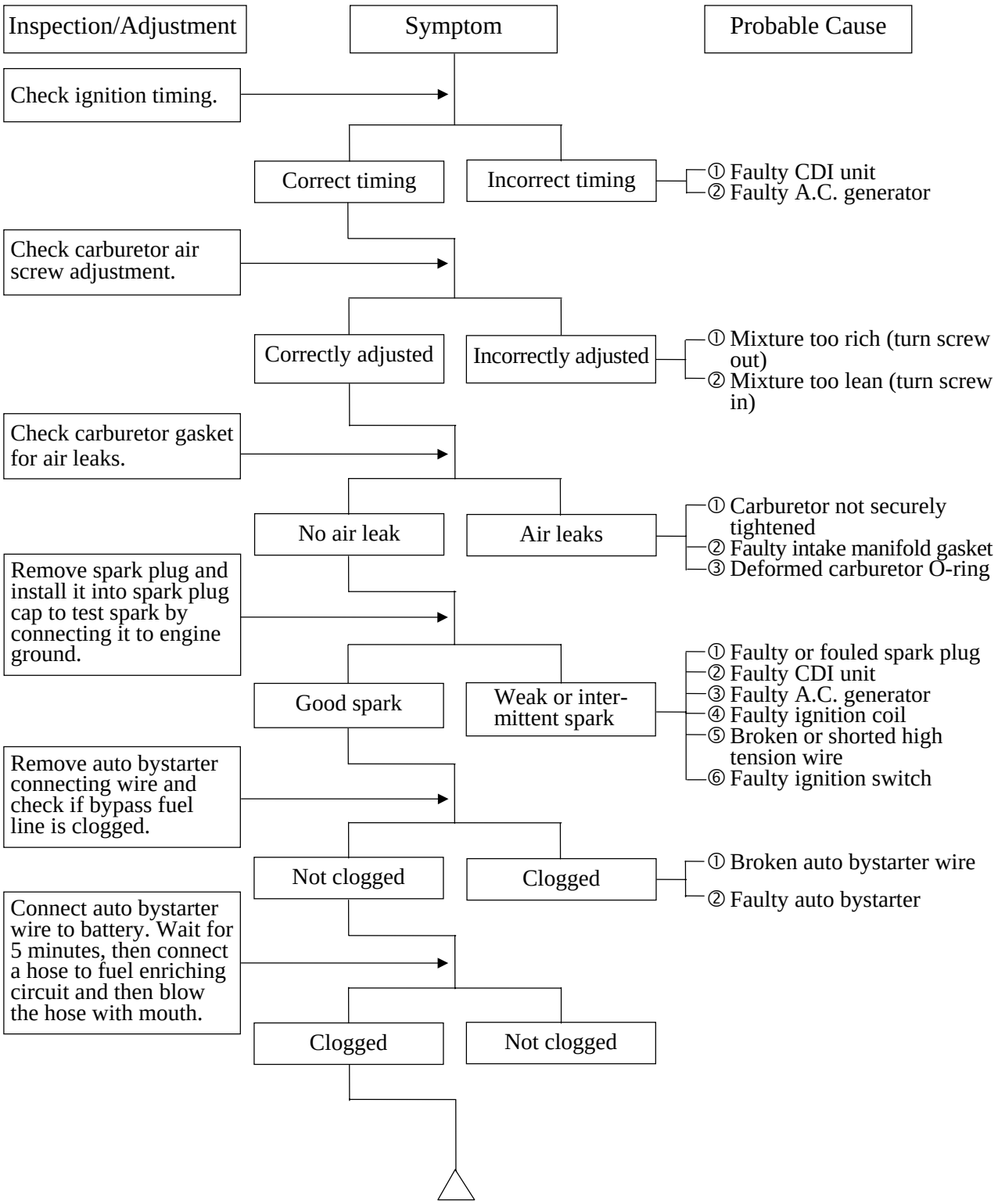




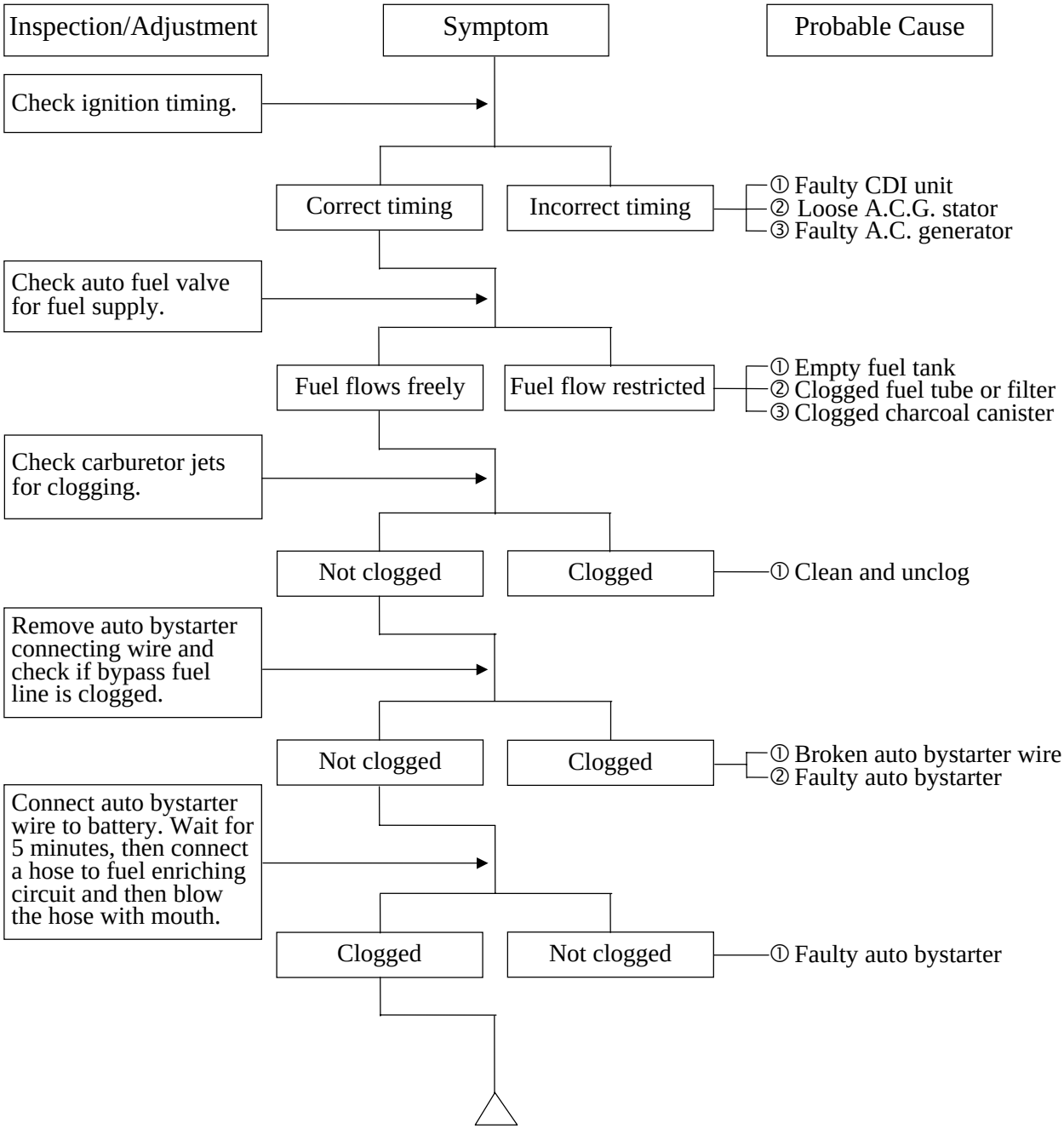
ENGINE LACKS POWER



POOR PERFORMANCE (ESPECIALLY AT IDLE AND LOW SPEEDS)



POOR PERFORMANCE (AT HIGH SPEED)



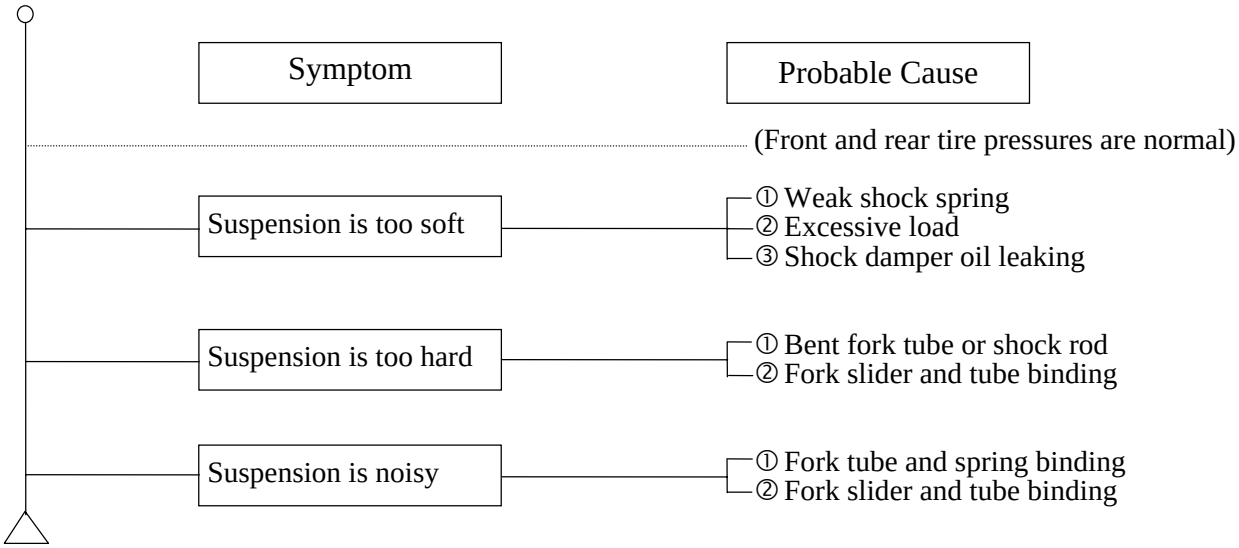
CLUTCH, DRIVE AND DRIVEN PULLEYS

Symptom	Probable Cause
Engine starts but motorcycle does not move	① Worn or slipping drive belt ② Broken ramp plate ③ Broken driven face spring ④ Separated clutch lining ⑤ Damaged driven pulley shaft splines ⑥ Damaged final gear ⑦ Seized final gear
Motorcycle creeps or engine starts but soon stops or seems to rush out (Rear wheel rotates when engine idles)	① Broken shoe spring ② Clutch outer and clutch weight stuck ③Seized pivot
Engine lacks power at start of a grade (poor slope performance)	① Worn or slipping drive belt ② Worn weight rollers ③ Seized drive pulley bearings ④ Weak driven face spring ⑤ Worn or seized driven pulley bearings
Engine lacks power at high speed	① Worn or slipping drive belt ② Worn weight rollers ③ Worn or seized driven pulley bearings
There is abnormal noise or smell while running	① Oil or grease fouled drive belt ② Worn drive belt ③ Weak driven face spring ④ Worn or seized driven pulley bearings

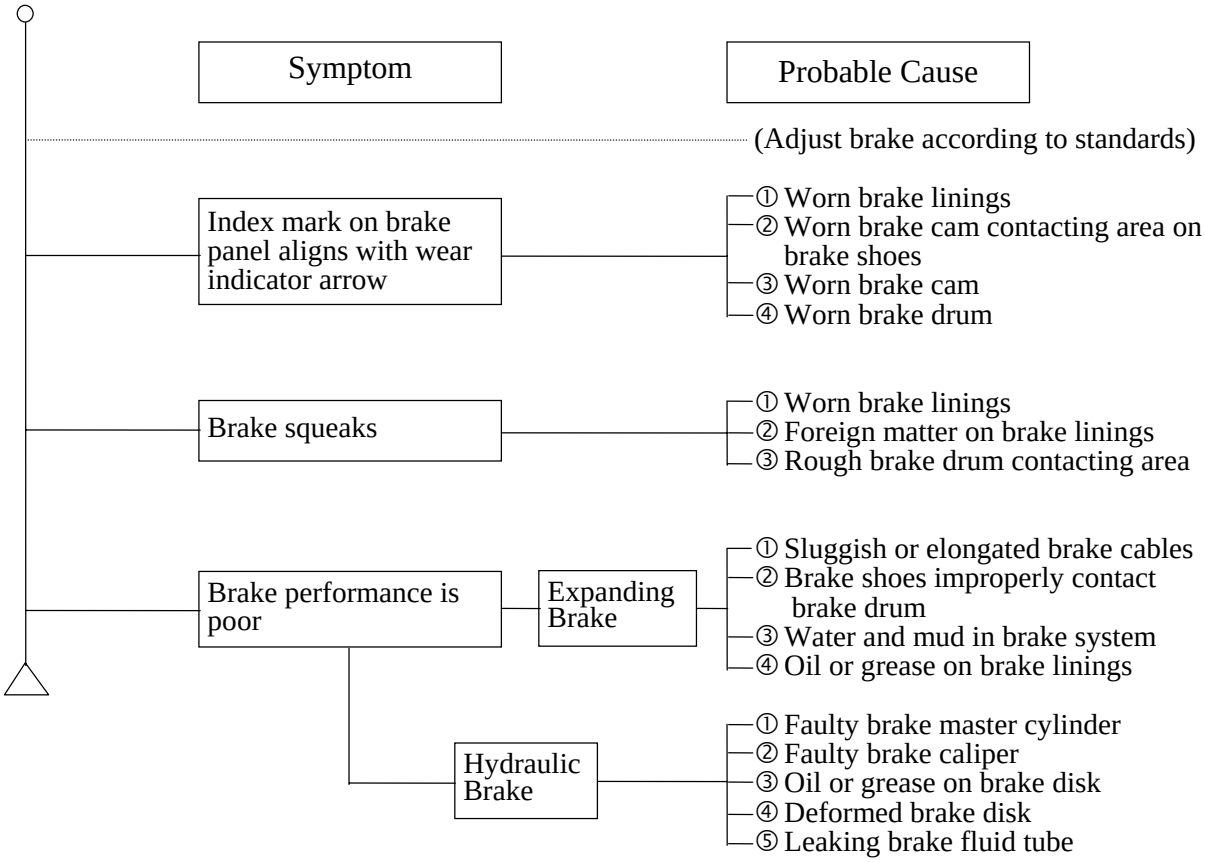
STEERING HANDLEBAR DOES NOT TRACK STRAIGHT

Symptom	Probable Cause
	(Front and rear tire pressures are normal)
Steering is heavy	① Steering stem nut too tight ② Broken steering steel balls
Front or rear wheel is wobbling	① Excessive wheel bearing play ② Bent rim ③ Loose axle nut
Steering handlebar pulls to one side	① Misaligned front and rear wheels ② Bent front fork

POOR SUSPENSION PERFORMANCE

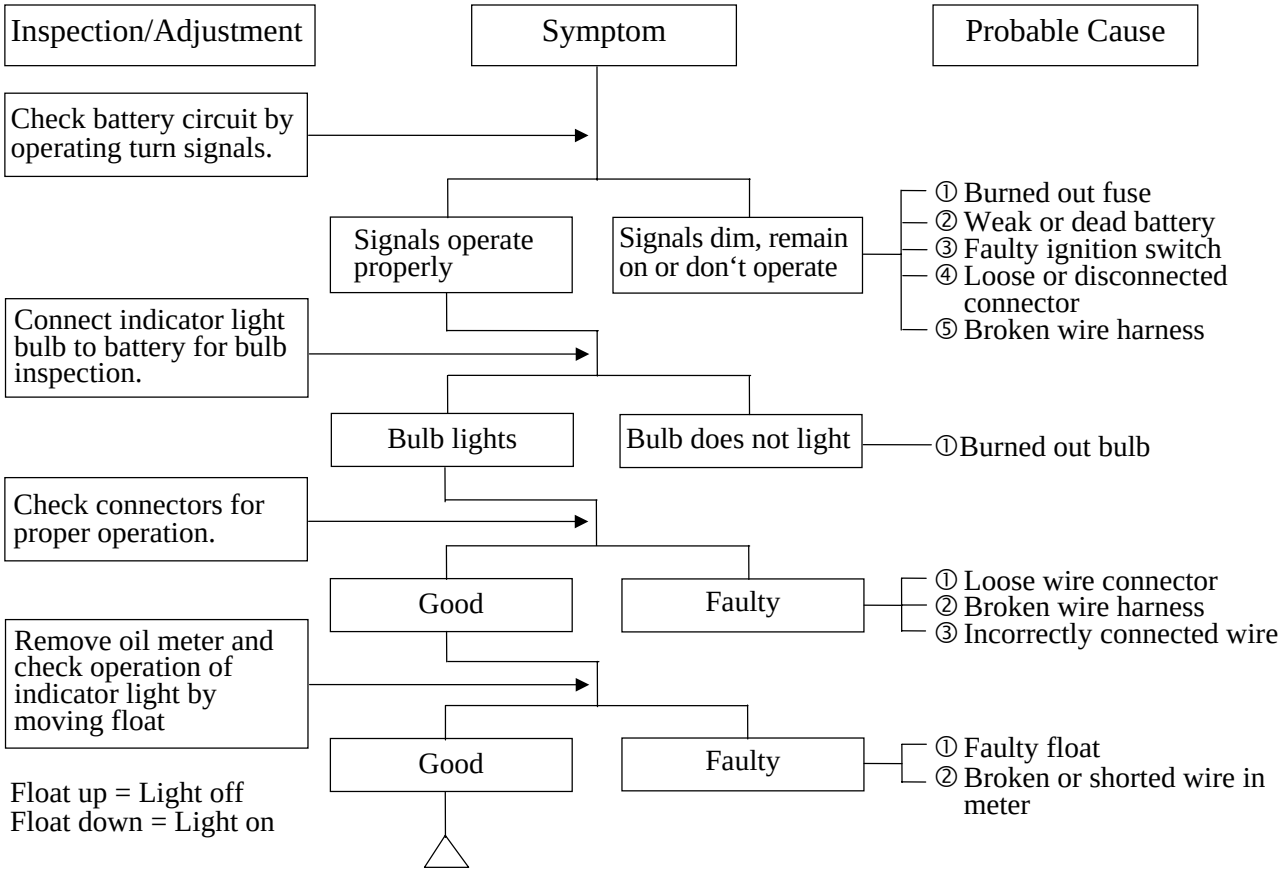


POOR BRAKE PERFORMANCE

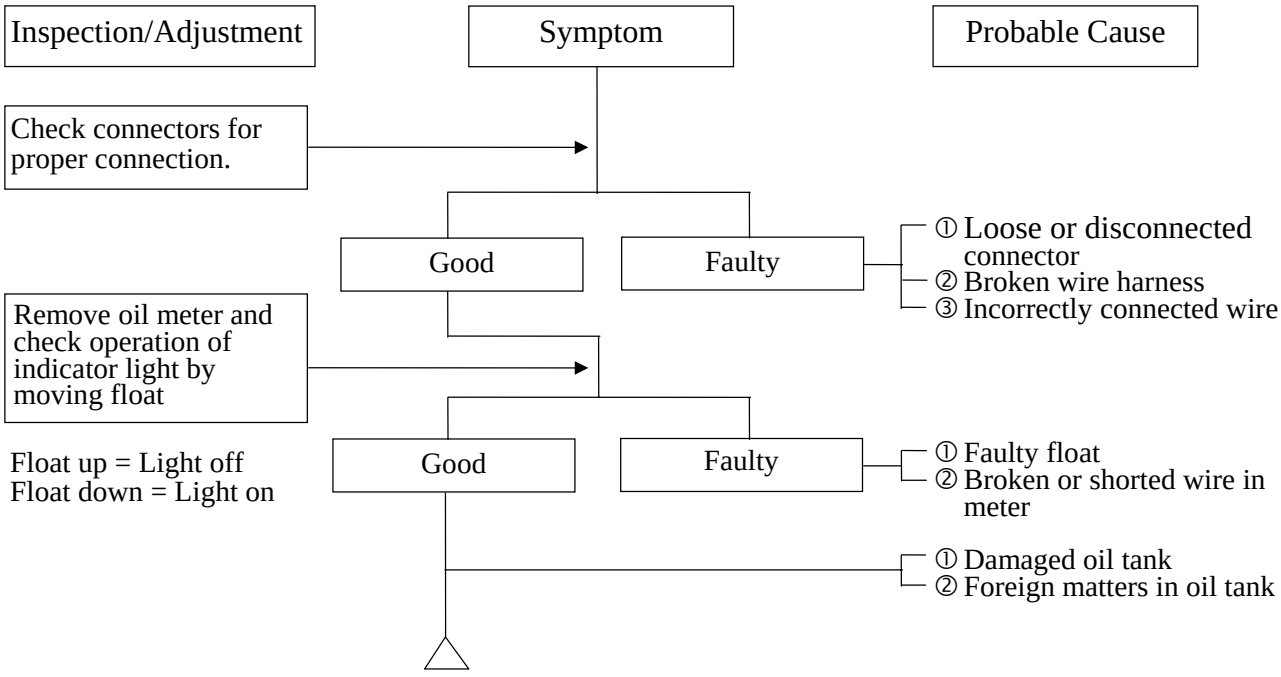


OIL METER

1. Motor oil indicator light does not come on when there is no motor oil (Ignition switch ON)

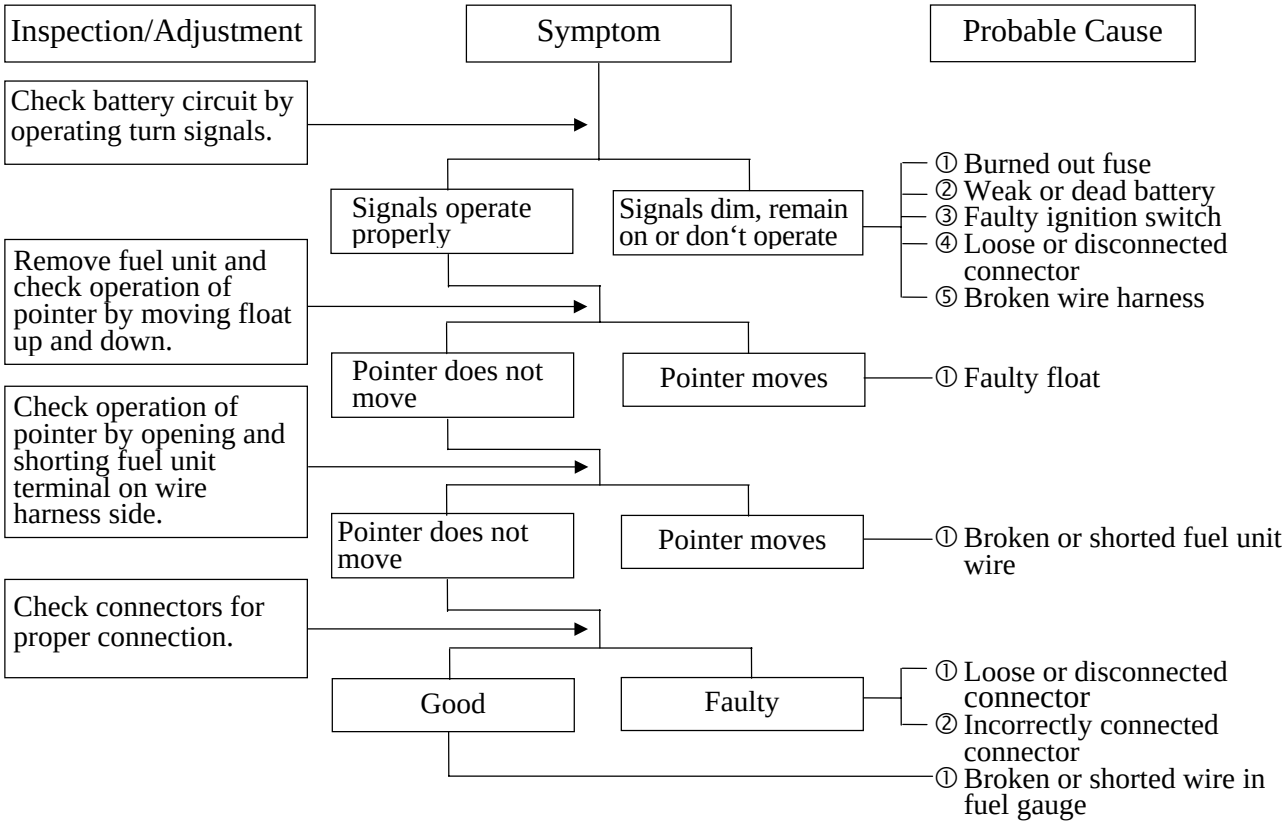


2. Motor oil is sufficient but the indicator light remains on (Ignition switch ON)

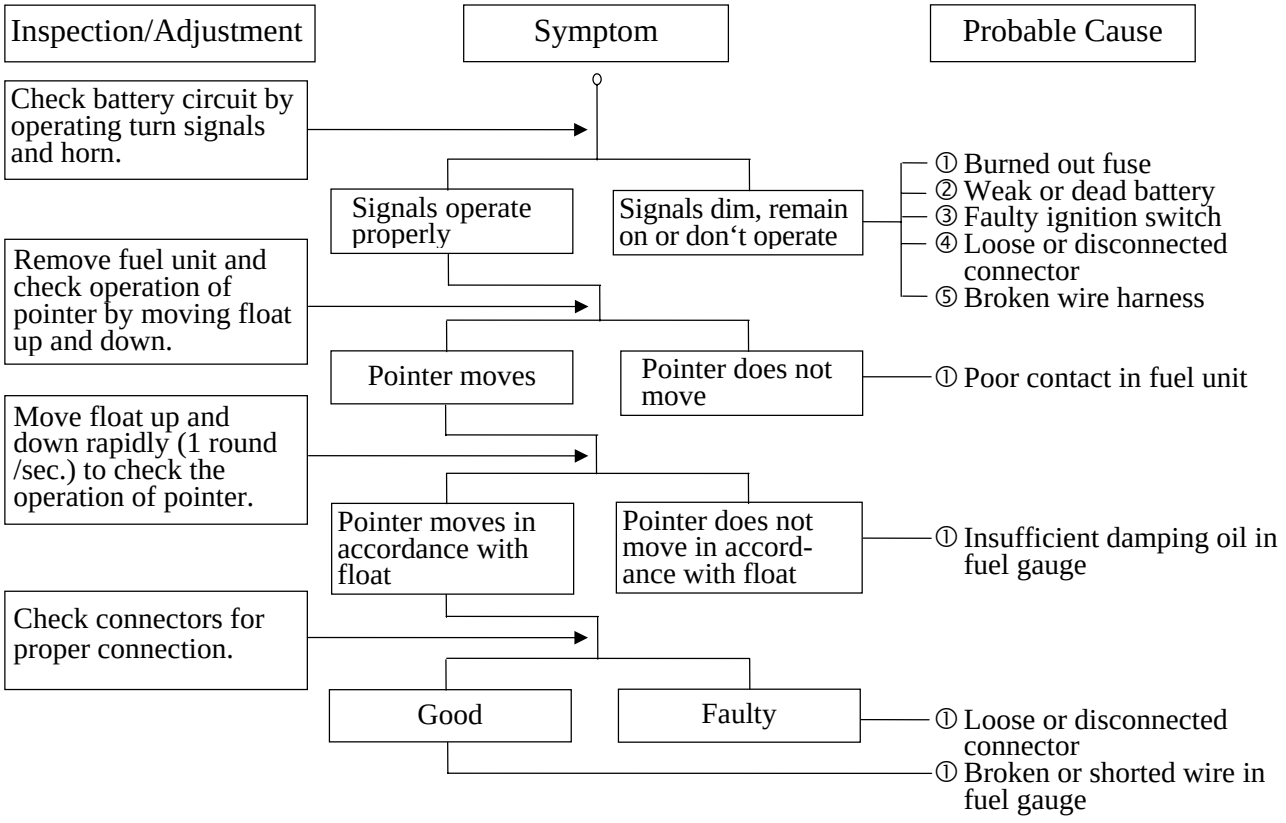


FUEL GAUGE

1. Pointer does not register correctly (Ignition switch ON)

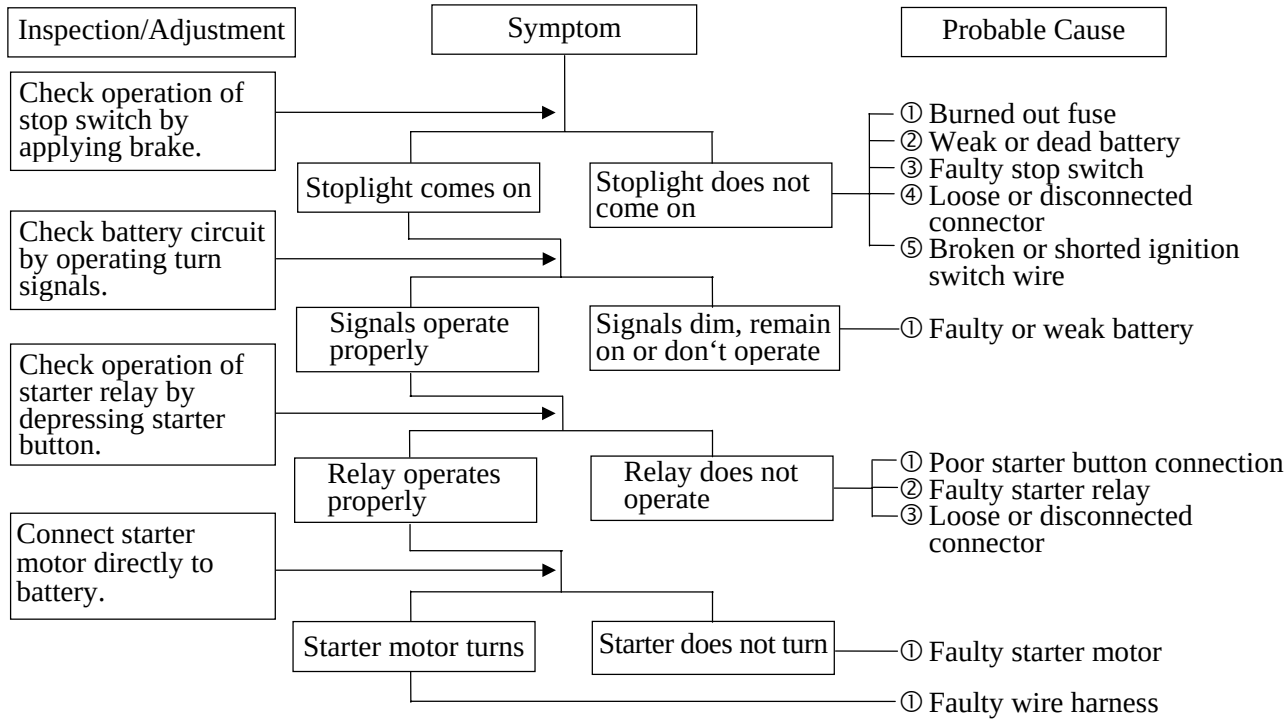


2. Pointer fluctuates or swings (Ignition switch ON)

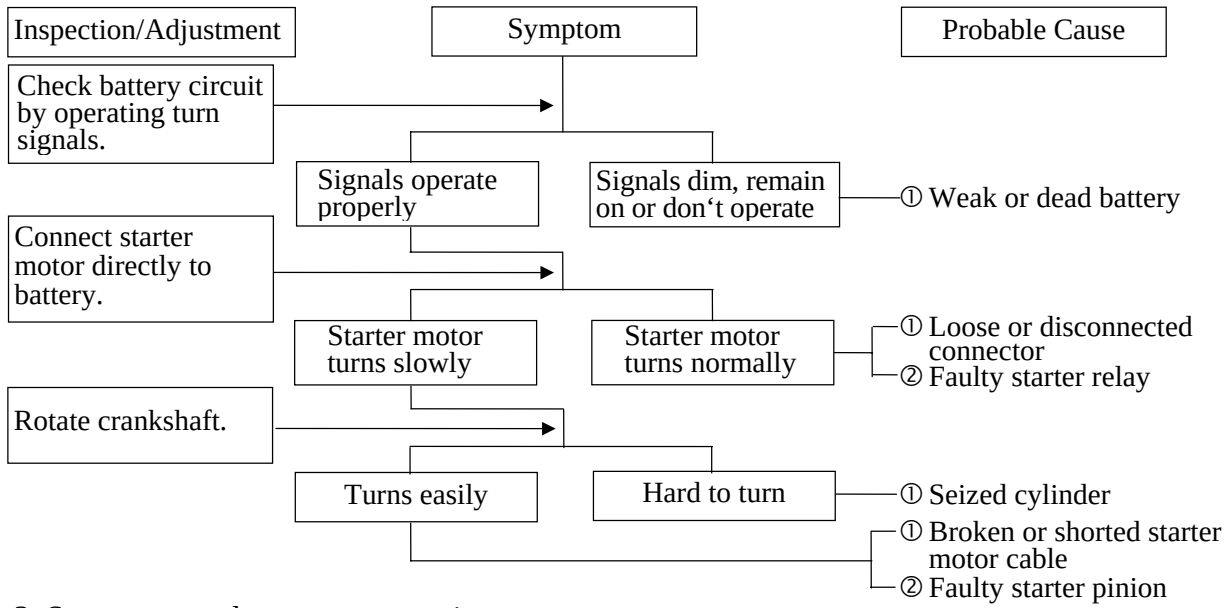


STARTER MOTOR

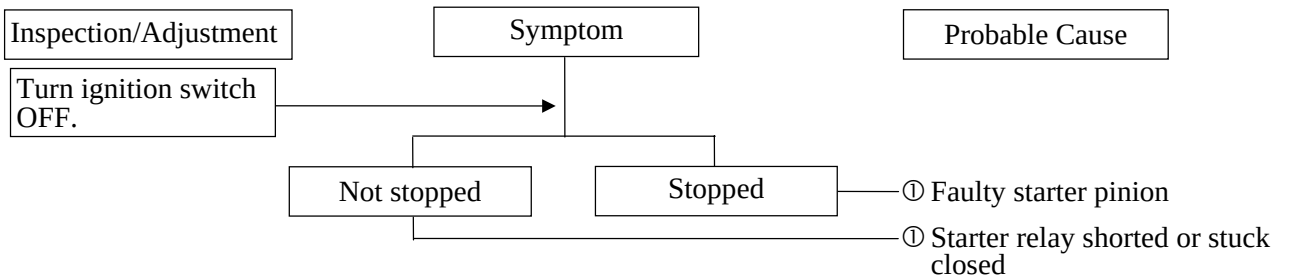
1. Starter motor won‘t turn



2. Starter motor turns slowly or idles



3. Starter motor does not stop turning



2

FRAME COVERS/EXHAUST MUFFLER

2. FRAME COVERS/EXHAUST MUFFLER

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- When removing frame covers, use special care not to pull them by force because the cover joint claws may be damaged.
- Make sure to route cables and harnesses according to the Cable & Harness Routing.

TORQUE VALUES

Exhaust muffler lock bolt	3.3 kgf-m (33 N-m, 24 lbf-ft)
Exhaust muffler joint lock nut	1.2 kgf-m (12 N-m, 9 lbf-ft)

TROUBLESHOOTING

Noisy exhaust muffler

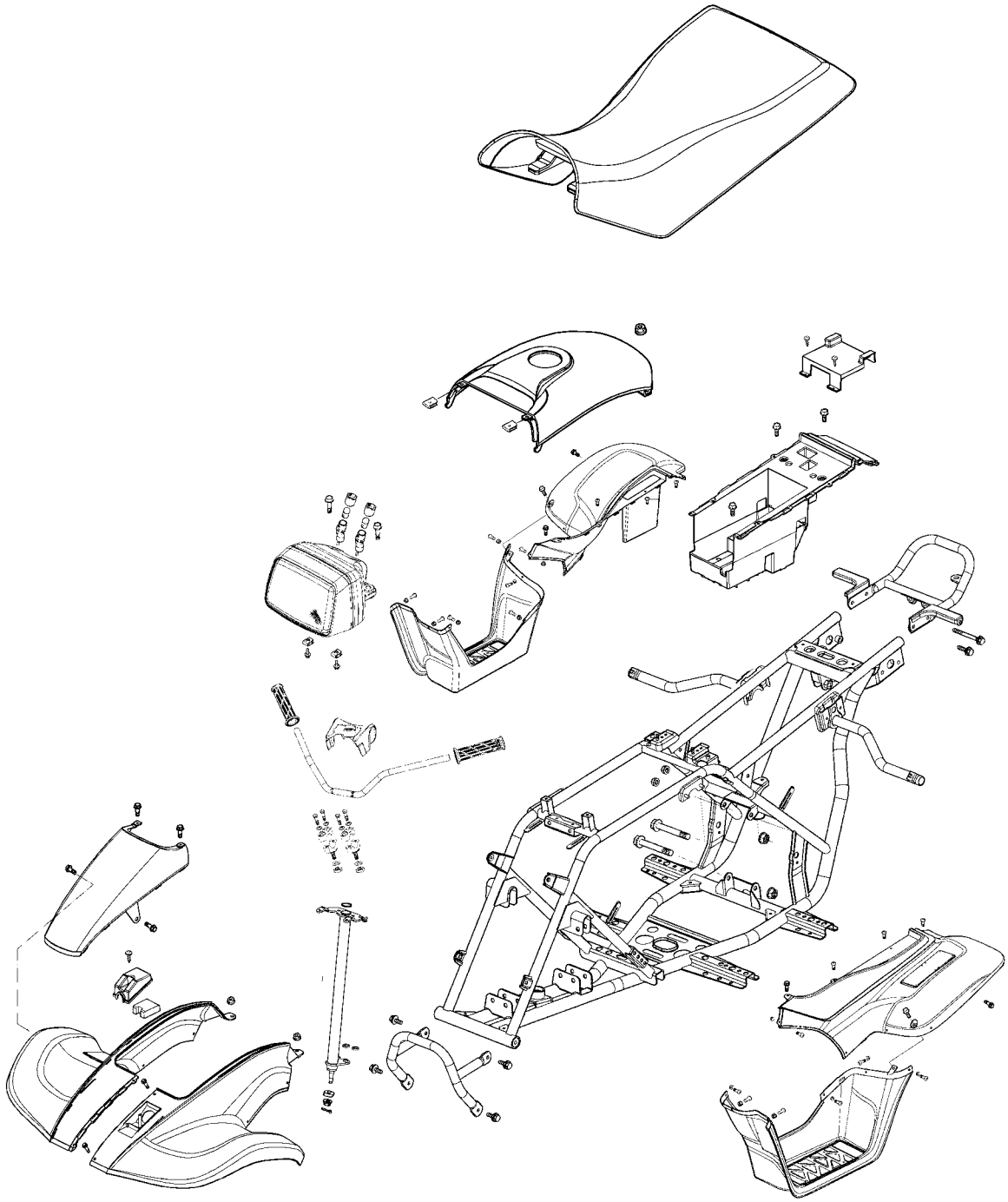
- Damaged exhaust muffler
- Exhaust muffler joint air leaks

Lack of power

- Caved exhaust muffler
- Exhaust muffler air leaks
- Clogged exhaust muffler

2. FRAME COVERS/EXHAUST MUFFLER

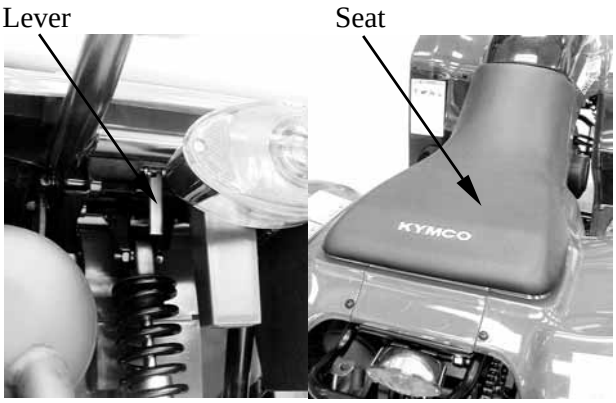
MX'ER 50



FRAME COVERS (MX'ER 50)

SEAT REMOVAL

Pull the lever backward, then pull up the seat at the rear.
Remove the seat.

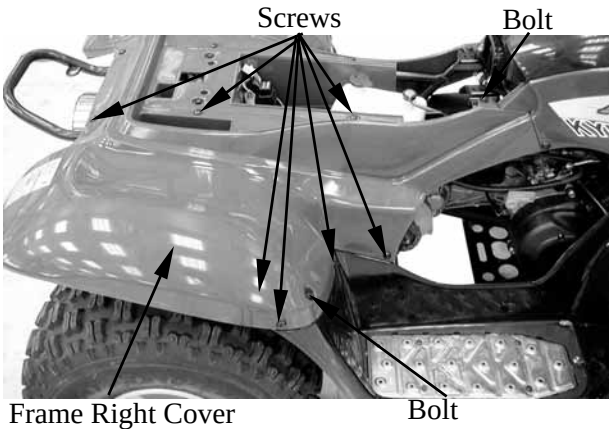


LEFT AND RIGHT REAR FENDER REMOVAL

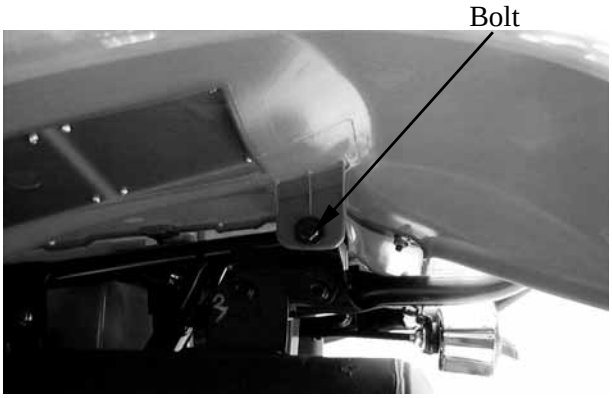
Remove seven screws and two bolts attaching the left rear fender.

Remove seven screws and two bolts attaching the right rear fender.

* During removal, do not pull the joint claws forcedly to avoid damage.



Remove the left rear fender under bolt.
Remove the left rear fender.

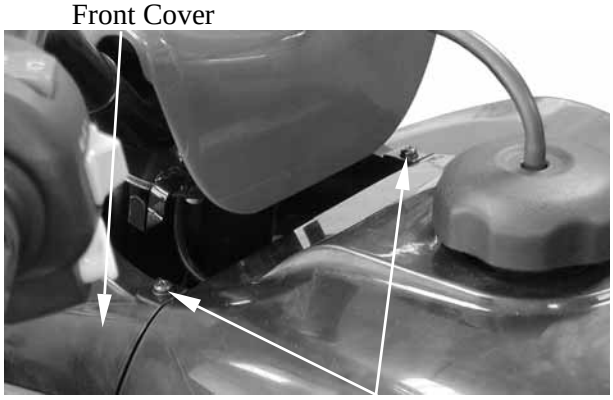


Remove the two bolts under right rear fender.
Remove the right rear fender.

FRONT COVERS REMOVAL

Remove the two screws on the front cover.

Front Cover



Screws

Remove the left and right front fender under bolt.
Remove the front cover.

Bolts

FRONT FENDER REMOVAL

Remove screws attaching the left and right front fender.
Remove the left and right front fender.

Right Front Cover

Screws

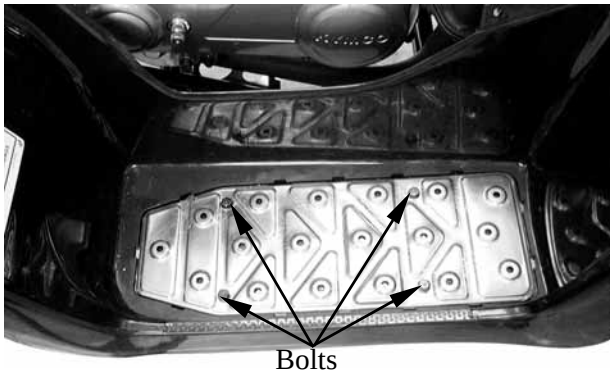
✳ During removal, be careful not to damage the joint claws.

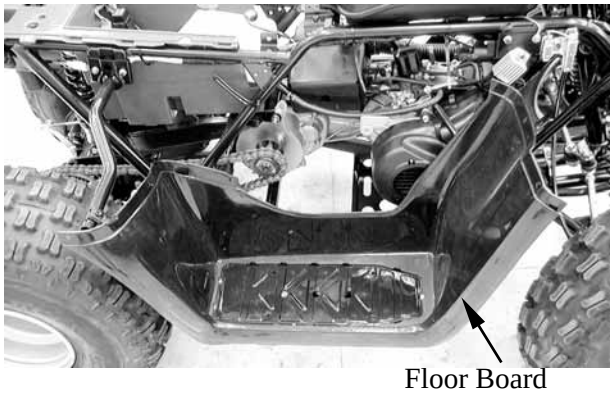
Left Front Cover

Screws

FLOOR BOARD COVER REMOVAL

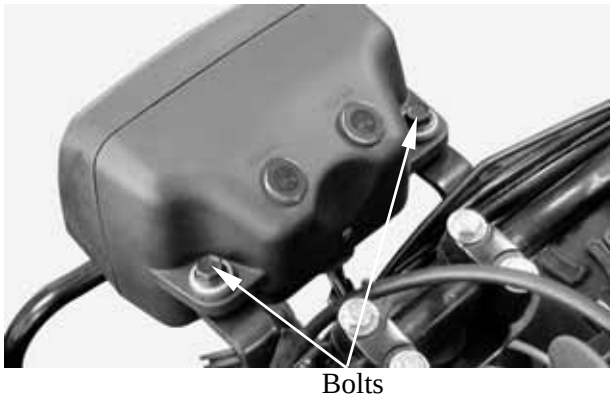
Remove the four bolts on the floorboard cover.
Remove the floorboard cover.



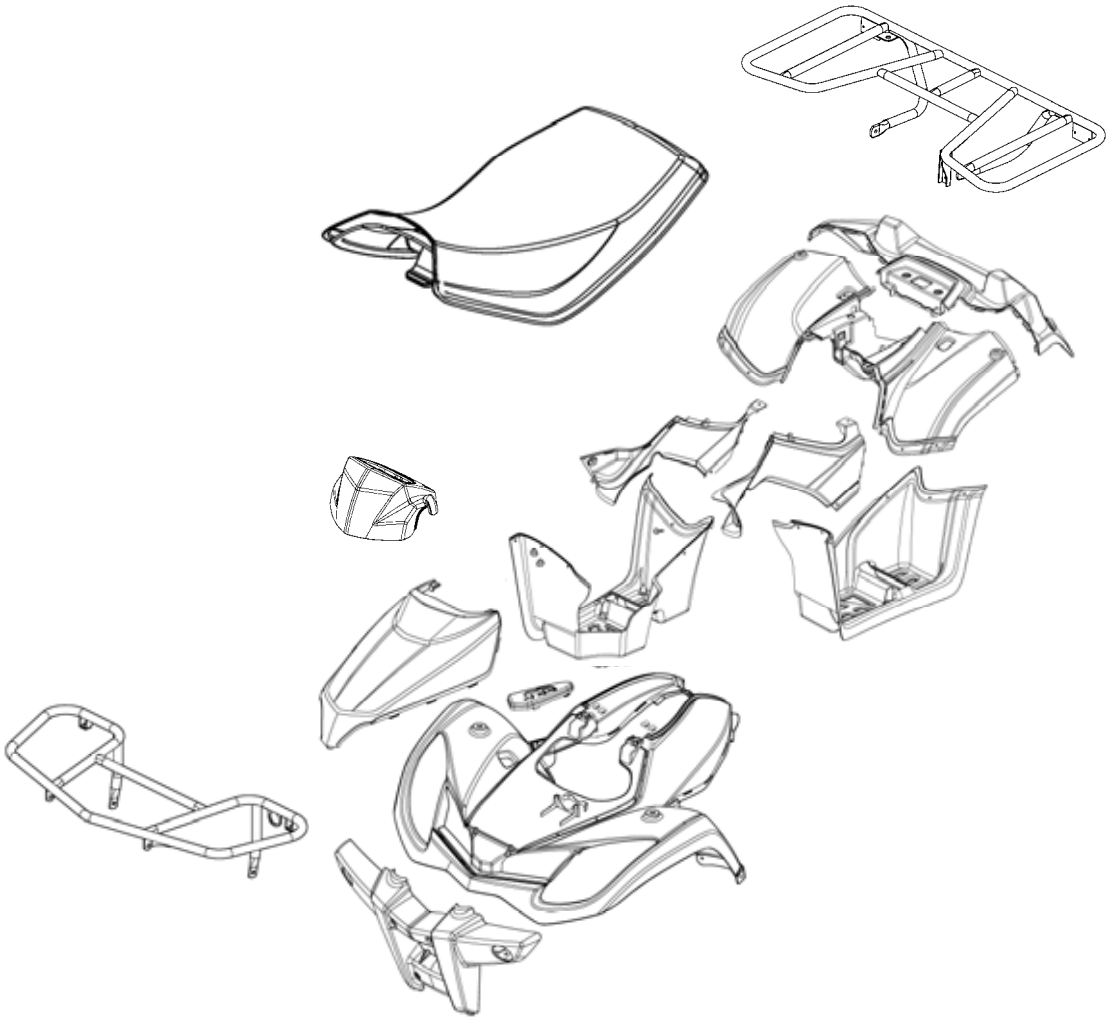


HEADLIGHT REMOVAL (MX'ER 50)

Remove the headlight connector wire.
Remove the two bolts on the headlight.



MXU 50 REVERSE/MXU 50

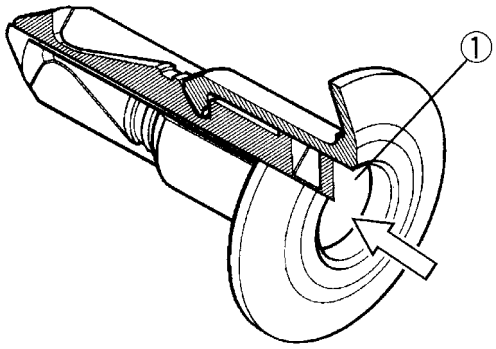


FASTENER REMOVAL AND REINSTALLATION

REMOVAL

Depress the head of fastener center piece ①.

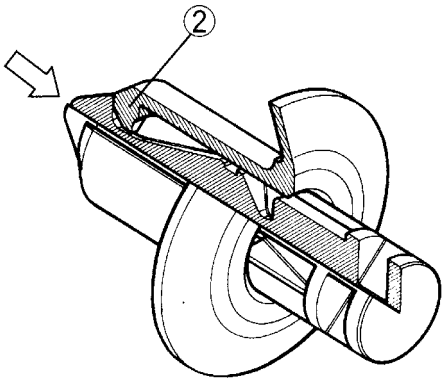
Pull out the fastener.



INSTALLATION

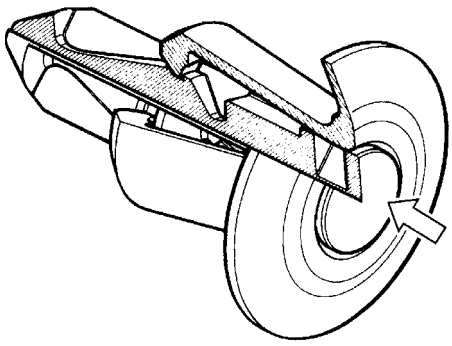
Let the center piece stick out toward the head so that the pawls ② close.

Insert the fastener into the installation hole.



✳ To prevent the pawl ② from damage, insert the fastener all the way into the installation hole

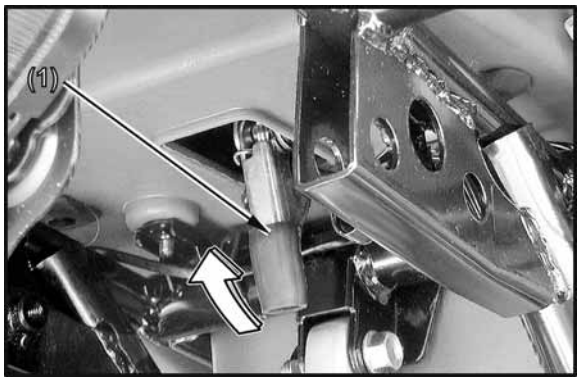
Push in the head of center piece until it becomes flush with the fastener outside face.



FRAME COVERS (MXU 50 REVERSE/MXU 50)

SEAT

REMOVAL
Pull the lever (1) backward, then pull up the seat at the rear.
Remove the seat.



INSTALLATION
To install the seat, align the tabs on the seat with the grommets on the frame and press the seat down until it locks.

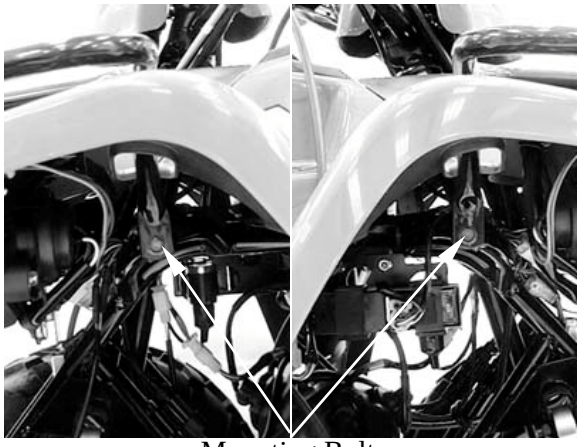
FRONT CARGO RACK

REMOVAL/INSTALLATION
Remove the two mounting bolts.

Mounting Bolts

Remove the two mounting bolts from the front cargo rack right/left side under the front fender, remove the front cargo rack.

Installation is in the reverse order of removal.



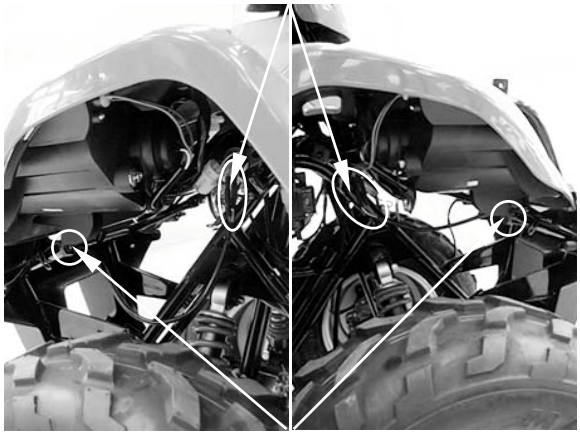
Mounting Bolts

FRONT CARRIER
REMOVAL/INSTALLATION

Remove front cargo rack (see page 2-8).

Disconnect the right and left signal light connectors. (ON ROAD)
Remove the bolts from the right/left headlight case.

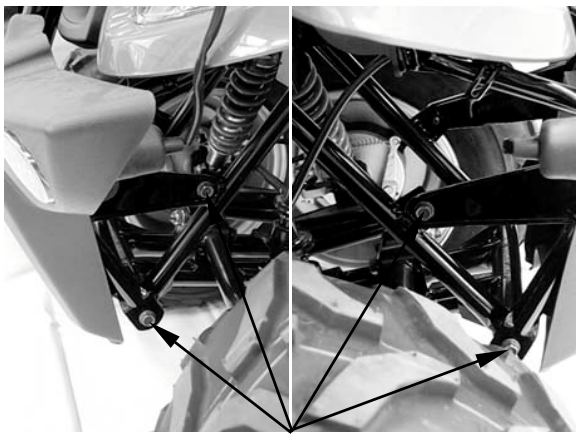
Right/Left Signal Light Connectors



Bolts

Remove the four mounting bolts from the front carrier right/left side, then remove the front carrier.

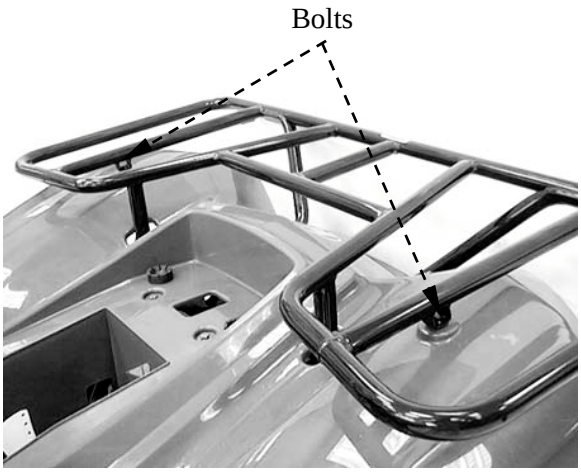
Installation is in the reverse order of removal.



Mounting Bolts

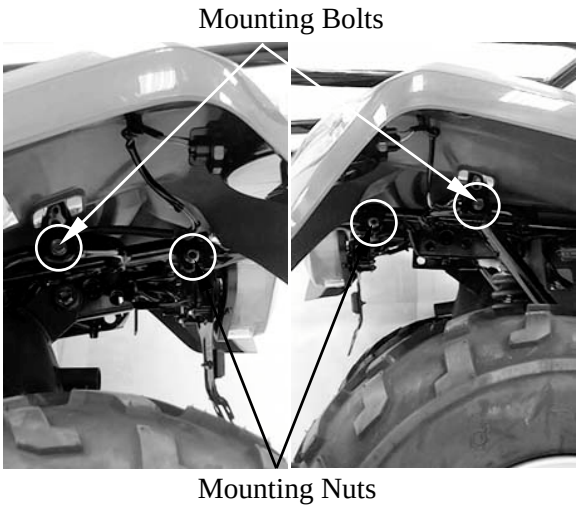
REAR CARGO RACK
REMOVAL/INSTALLATION

Remove the two bolts under the rear fender.



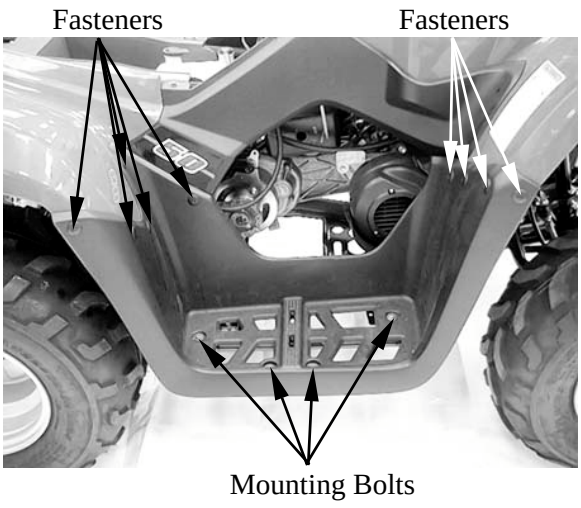
Remove the two mounting bolts and two mounting nuts from the rear cargo rack right/left side under the rear fender.

Installation is in the reverse order of removal.



RIGHT/LEFT FOOTBOARD
REMOVAL/INSTALLATION

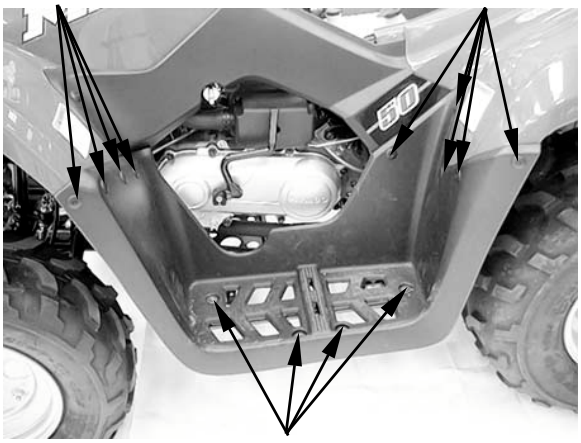
Remove 9 fasteners, 4 mounting bolts and the right footboard.



Remove 9 fasteners, 4 mounting bolts and the left footboard.

* During removal, do not pull the joint claws forcedly to avoid damage.

Installation is in the reverse order of removal.



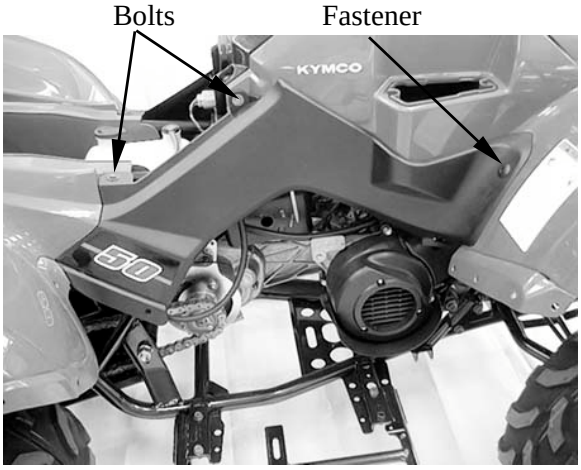
RIGHT/LEFT SIDE COVER

REMOVAL/INSTALLATION

Open the seat (see page 2-8).

Remove the right/left footboard (see page 2-10).

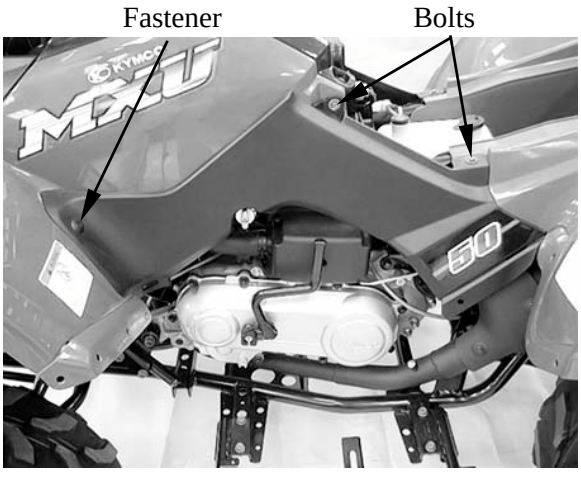
Remove the two bolts, fastener and right side cover.



Remove the two bolts, fastener and left side cover.

* During removal, do not pull the joint claws forcedly to avoid damage.

Installation is in the reverse order of removal.



FRONT CENTER COVER

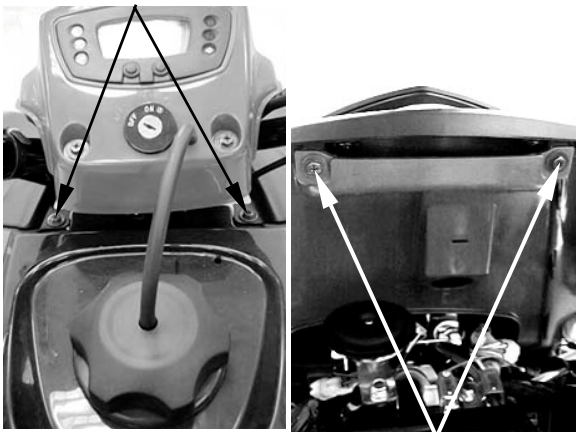
REMOVAL/INSTALLATION

Remove the front cargo rack (see page 2-8).

Remove the two screws on the front cover, two screws under the front cover and front center cover.

* During removal, do not pull the joint claws forcedly to avoid damage.

Installation is in the reverse order of removal.



HANDLEBAR COVER

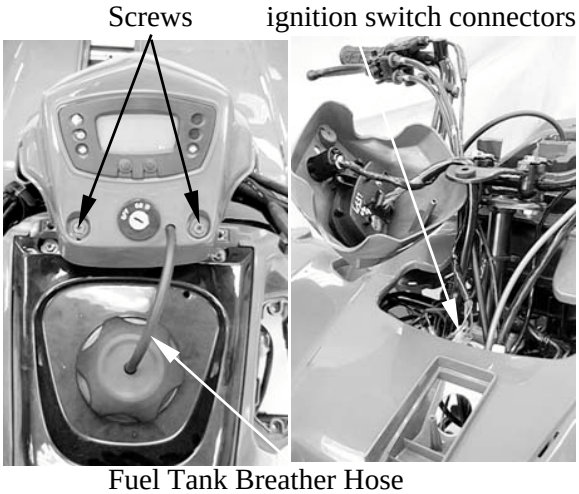
REMOVAL/INSTALLATION

Remove the front center cover (see page 2-12).

Disconnect the fuel tank breather hose from the handlebar cover.

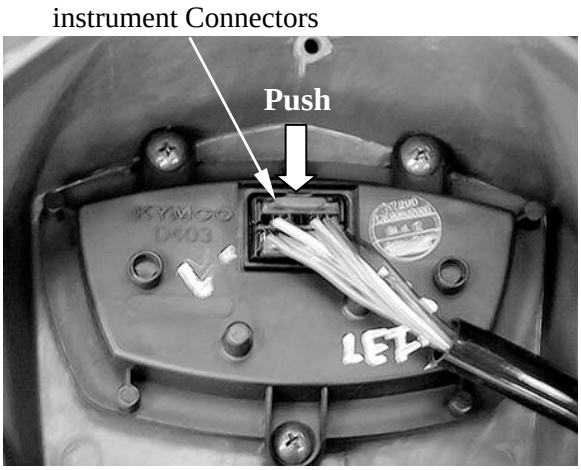
Remove the two screws and raise the handlebar cover.

Disconnect the ignition switch connectors.



Disconnect the instrument connector, then remove the handlebar cover and instrument.

Installation is in the reserve order of removal.



FUEL TANK COVER

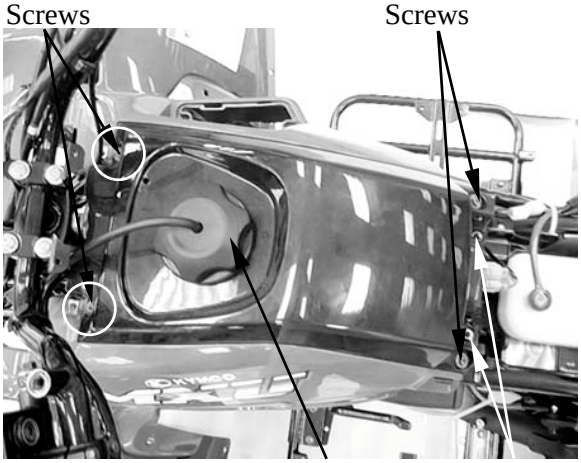
REMOVAL/INSTALLATION

Remove the four screws and two nuts from the fuel tank cover.

Remove the fuel tank cap by turning it counterclockwise and fuel tank seal, then remove the fuel tank cover.

* Put on the fuel tank cap after removing the cover to prevent dust, mud, etc. from entering the fuel tank

Installation is in the reverse order of removal.



MXU 50 REVERSE:

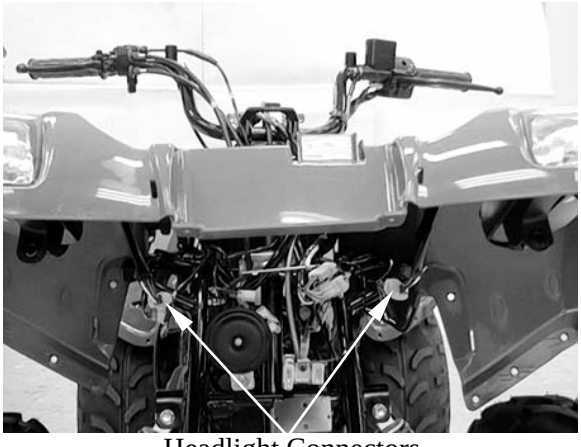
Remove the bolt and then remove the drive select lever grip.

FRONT FENDER

REMOVAL/INSTALLATION

Remove front carrier (see page 2-9), front center cover (see page 2-12), fuel tank cover (see page 2-13) and right/left side cover (see page 2-10).

Disconnect the right and left headlight connectors.

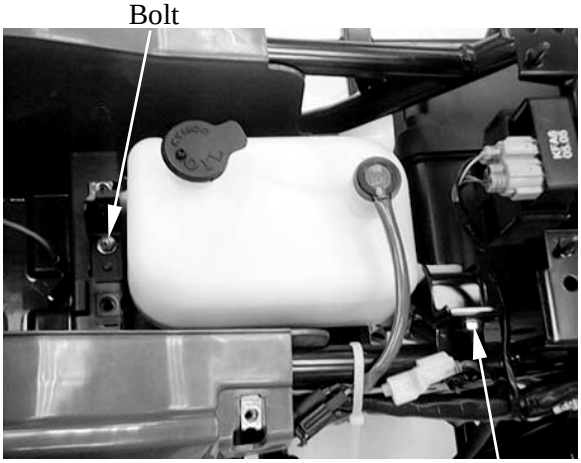


REAR FENDER

REMOVAL/INSTALLATION

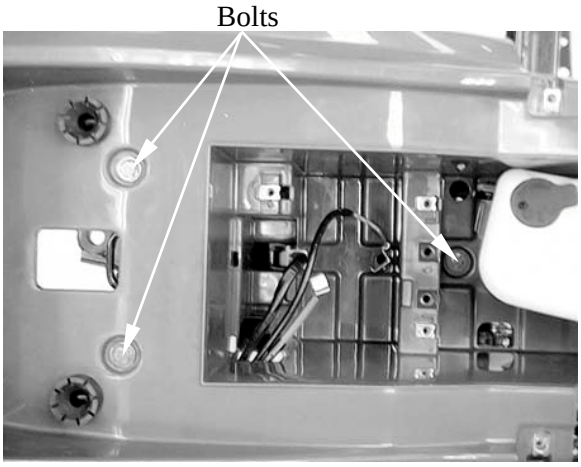
Remove seat(see page 2-8), battery(see page 15-5), rear cargo rack (see page 2-10) and right/left footboard (see page 2-10).

Remove one bolt and one nut, then remove the oil tank.



Remove the three bolts from the rear fender.

Raise the rear fender and pass the fuse/battery cables/start relay through out the rear fender



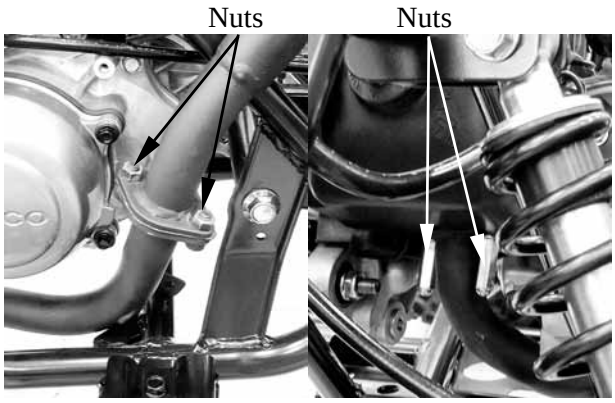
Disconnect the rear right and left signal light connectors.

Installation is in the reserve order of removal.

EXHAUST MUFFLER (MX'ER 50)

REMOVAL

Remove the two nuts attaching the exhaust muffler.
Remove the two nuts attaching the exhaust pipe.

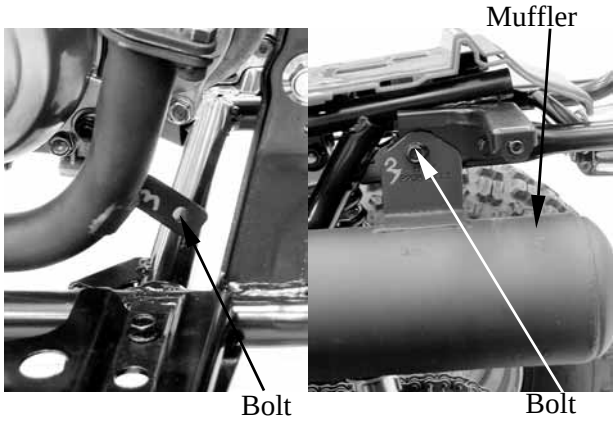


Remove the exhaust muffler lock bolts.
Remove the exhaust muffler and them remove exhaust pipe.
When installing, first install the exhaust pipe onto the engine and then install the exhaust muffler.

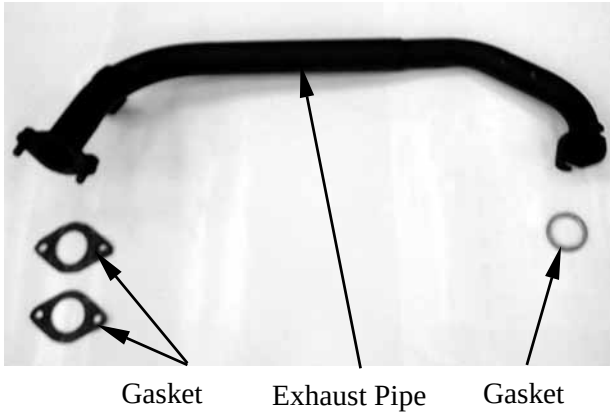
Torque:

Exhaust muffler lock bolt:
3.3 kgf-m (33 N-m, 24 lbf-ft)

Exhaust muffler joint lock nut:
1.2 kgf-m (12 N-m, 9 lbf-ft)



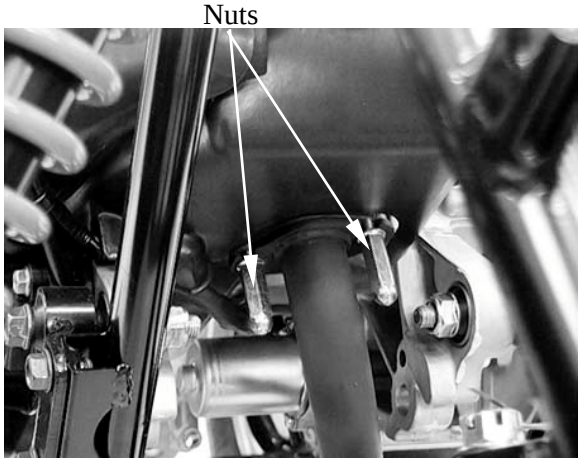
* Be sure to install a new exhaust muffler gasket.



EXHAUST MUFFLER (MXU 50 REVERSE/MXU 50)

REMOVAL

Remove the two nuts attaching the exhaust pipe and cylinder head.



Remove the two bolts attaching the exhaust muffler, then remove the exhaust muffler.

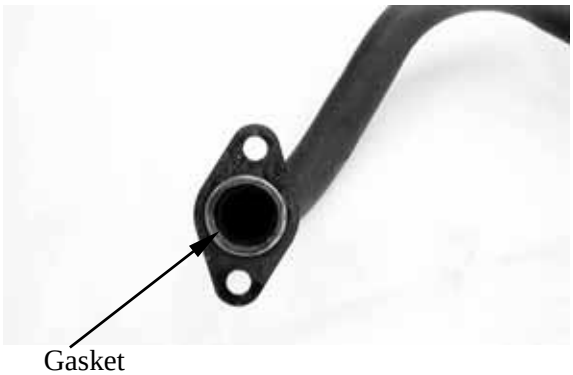
Inspect the gasket.
If the exhaust gas leaks, the gasket should be replaced.

Install by reversing the removal sequence.

Torque:

Exhaust muffler lock bolt:
3.3 kgf-m (33 N-m, 24 lbf-ft)

Exhaust muffler joint lock nut:
1.2 kgf-m (12 N-m, 9 lbf-ft)



* Be sure to install a new exhaust gasket.

3

INSPECTION/ADJUSTMENT

SERVICE INFORMATION

GENERAL

⚠ WARNING

- Before running the engine, make sure that the working area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas which may cause death to people.
- Gasoline is extremely flammable and is explosive under some conditions. The working area must be well-ventilated and do not smoke or allow flames or sparks near the working area or fuel storage area.

SPECIFICATIONS

ENGINE

Throttle grip free play : 1～4 mm (0.04 - 0.16 in)
Spark plug gap : 0.6～0.7 mm (0.024 – 0.028 in)
Spark plug: Standard : NGK: BR8HAS
Idle speed : 1800±100rpm
Gear oil capacity (MXU 50/MX'ER 50):
At disassembly : 0.12 liter (0.11 lmp qt, 0.13 Us qt)
At change : 0.09 liter (0.08 lmp qt, 0.1 Us qt)
Gear oil capacity (MXU 50 REVERSE):
At disassembly : 0.3 liter (0.26 lmp qt, 0.32 Us qt)
At change : 0.25 liter (0.22 lmp qt, 0.26 Us qt)
Cylinder compression: 1200 kPa (12 kgf/cm²,170 psi)
Ignition timing:
MXU 50/MX'ER 50: BTDC 22°/2000rpm
MXU 50 REVERSE: BTDC 13.5°/1500rpm

CHASSIS

Front brake free play: 10～20 mm (0.4 – 0.8 in)
Rear brake free play: 10～20 mm (0.4 – 0.8 in)

TIRE PRESSURE

	MX'ER 50 (1 Rider)	MXU 50 REVERSEMXU 50 (1 Rider)
Front	33 kPa (0.33 kgf/cm², 4.7 psi)	28 kPa (0.28 kgf/cm², 3.9 psi)
Rear	33 kPa (0.33 kgf/cm², 4.7 psi)	28 kPa (0.28 kgf/cm², 3.9 psi)

TIRE SIZE:
MX'ER 50:
Front: 20*7-8
Rear : 22*10-8

MXU 50 REVERSE/MXU 50
Front: 21*7-10
Rear : 22*10-10

TORQUE VALUES

Front wheel nut	70 N-m (7 kgf-m, 50 lbf-ft)
Rear wheel nut	70 N-m (7 kgf-m, 50 lbf-ft)

MAINTENANCE SCHEDULE

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service as well as new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

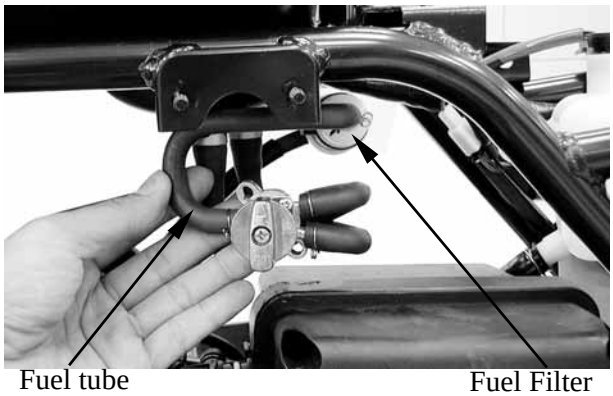
ITEM / ROUTINE (WHICHEVER COMES FIRST)		INITIAL	EVERY	
	mi	100	600	1200
	Km	150	1000	2000
	MONTH	1	6	12
Transmission oil	•Check oil level/oil leakage •Replace every 12 months.	○		○
*V-belt	•Check operation. •Replace if damage or excessive wear.	○		○
Air filter element	•Clean. •Replace if necessary.	Every 20~40 hours (150~300km, 100~200mi) (More often in wet or dusty areas.)		
*Carburetor	•Check idle speed/starter operation. •Adjust if necessary.	○	○	○
*Fuel line	•Check fuel hose for cracks or damage. •Replace if necessary.		○	○
Spark plug	•Check condition. •Adjust gap and clean. •Replace if necessary.	○	○	○
*Wheels	•Check balance/damage/runout. •Replace if necessary.	○	○	○
*Wheel bearings	•Check bearing assembly for looseness/damage •Replace if damage.	○	○	○
*Brake	•Check operation and brake fluid. •Replace brake pad if necessary.	○	○	○
Drive chain	•Check slack/aligment/clean/lube. •Adjust slack if necessary.	○	○	○
Battery	•Check specific gravity. •Check breather hose for proper operation. •Correct if necessary.	○	○	○
*Exhaust system	•Check leakage. •Retighten if necessary. •Replace gasket if necessary.		○	○
*Steering system	•Check operation. •Replace if damaged. •Check toe-in. •Adjust if necessary.	○	○	○
*Knuckle shafts/ Steering shaft	•Lubricate every 6 months.		○	○
*Fittings and Fasteners	•Check all chassis fittings and fasteners. •Correct if necessary.	○	○	○

- In the interest of safety, we recommend these items should be serviced only by an authorized KYMCO motorcycle dealer.

FUEL LINE

Check the fuel tubes and replace any parts, which show signs of deterioration, damage or leakage.

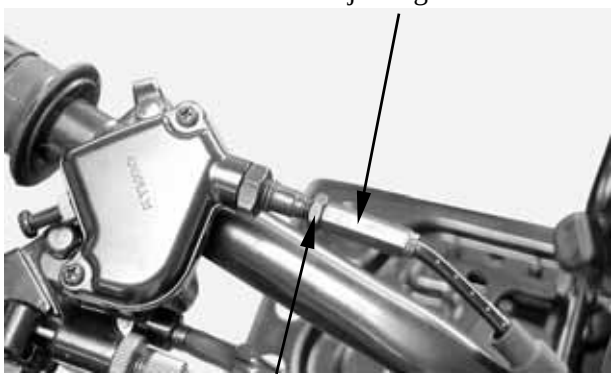
* Do not smoke or allow flames or sparks in your working area.



THROTTLE OPERATION

Check the throttle to swing for smooth movement.
Measure the throttle to swing free play.
Free Play: 1～4 mm (0.04 - 0.16 in)

Minor adjustment is made with the adjusting nut at the throttle to swing above. Slide the rubber cover out and adjust by loosening the lock nut and turning the adjusting nut.

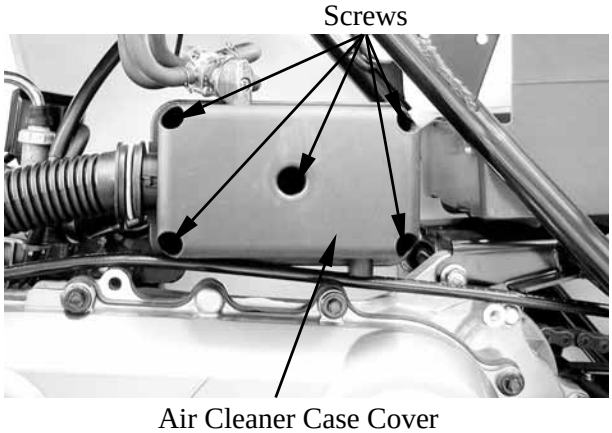


AIR CLEANER

AIR CLEANER REPLACEMENT

Remove five screws on the air cleaner case cover and the cover.

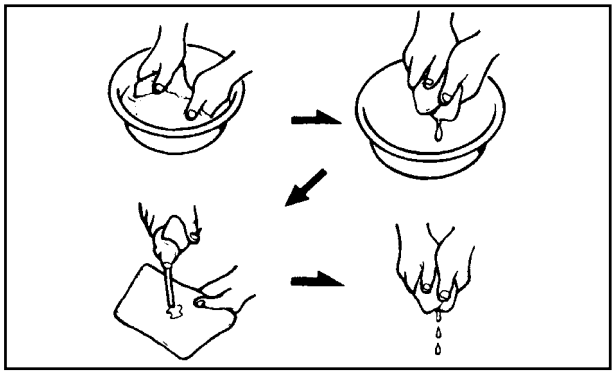
Check the element and replace it if it is excessively dirty or damaged.



CLEAN AIR FILTER ELEMENT

Wash the element gently, but thoroughly in solvent.

* Use parts cleaning solvent only. Never use gasoline or low flash point solvents which may lead to a fire or explosion.



Squeeze the excess solvent out of the element and let dry.

* Do not twist or wring out the foam element. This could damage the foam material.

Apply the engine oil.

Squeeze out the excess oil.

* The element should be wet but not dripping.

CHANGE INTERVAL

More frequent replacement is required when riding in unusually dusty or rainy areas.

Air Cleaner Element

SPARK PLUG

Remove the spark plug

Check the spark plug for wear and fouling deposits.

Clean any fouling deposits with a spark plug

cleaner or a wire brush.

Specified Spark Plug: NGK-BR8HAS

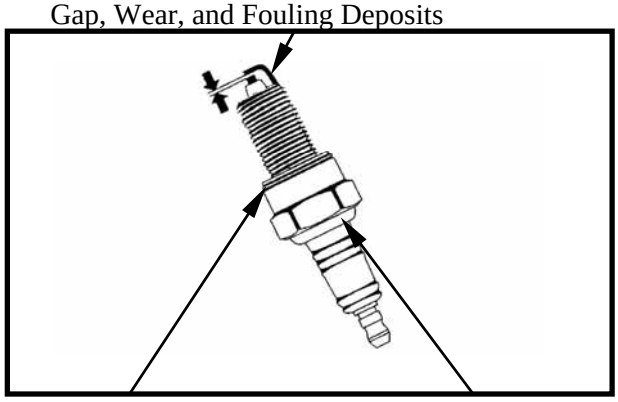
Measure the spark plug gap.

Spark Plug Gap:

0.6～0.7 mm (0.024 – 0.028)

* When installing, first screw in the spark plug by hand and then tighten it with a spark plug wrench.

Gap, Wear, and Fouling Deposits



Washer Deformation Cracks, Damage

LUBRICATION SYSTEM

《Oil Filter Cleaning》

Disconnect the oil tube at the oil pump side and allow oil to drain into a clean container.

Remove the tube clip at the oil tank side and disconnect the oil tube.

Remove the oil filter.

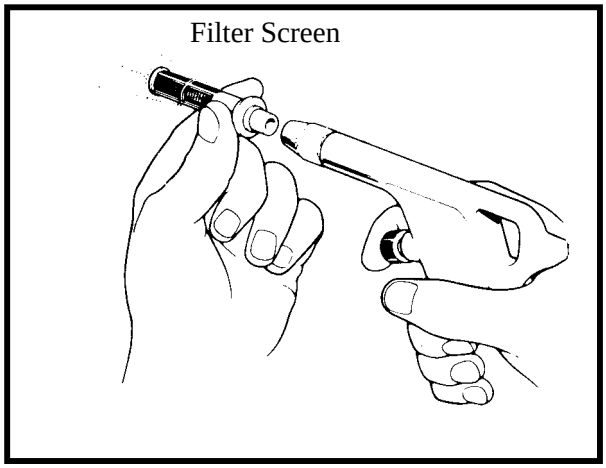
Clip

Oil Filter

Clean the oil filter screen with compressed air.
Install the oil filter in the reverse order of removal and fill the oil tank with specified oil up to the proper level.
Bleed air from the oil pump and oil lines.

* • Connect the oil tubes securely.
  • Install the tube clip at the oil tank side and also install the clip to the lower oil tube that goes to the oil pump.
  • Check for oil leaks.

Filter Screen

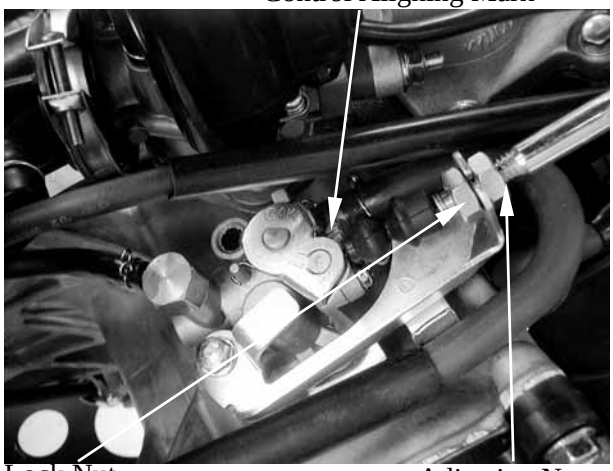


《Oil Pump Condition》

* Adjust oil pump control cable after the throttle grip free play is adjusted.

Open the throttle valve fully and check that the index mark on the pump body aligns with the aligning mark on the oil pump control lever.
Reference tip alignment within 1mm of index mark on open side is acceptable.
Start and idle the engine, then slowly open the throttle to increase engine rpm and check the operation of the oil pump control lever.
If adjustment is necessary, adjust the oil pump control cable by loosening the control cable lock nut and turning the adjusting nut.
After adjustment, tighten the lock nut.

Control Aligning Mark



Lock Nut

Adjusting Nut

* Reference tip alignment within 1mm of index mark on open side is acceptable. However, the aligning mark on the control lever must never be on the closed side of the index mark, otherwise engine damage will occur because of insufficient lubrication.

If the oil pump is not synchronized properly,
the following will occur:
• Excessive white smoke or hard starting due to pump control lever excessively open
• Seized piston due to pump control lever insufficiently open.

CARBURETOR IDLE SPEED

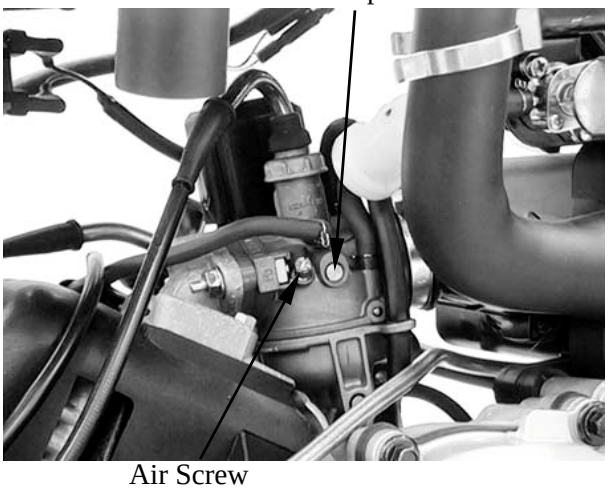
* • The engine must be warm for accurate idle speed inspection and adjustment.

Warm up the engine before this operation. Start the engine and connect a tachometer. Turn the throttle stop screw to obtain the specified idle speed.

Idle Speed: 1800±100 rpm

When the engine misses or run erratic, adjust the air screw.

Throttle Stop Screw



Air Screw

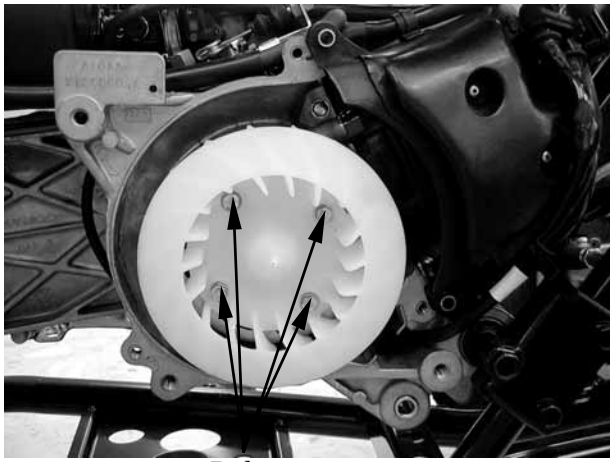
《Ignition Apparatus》

* The CDI ignition timing is not adjustable. If the timing is incorrect, check the CDI unit, ignition coil and A.C. generator and replace any faulty parts.

Remove the A.C. generator fan cover. (⇨8-3)

Remove the four bolts attaching the fan and then remove the fan.

Warm up the engine and check the ignition timing with a timing light.

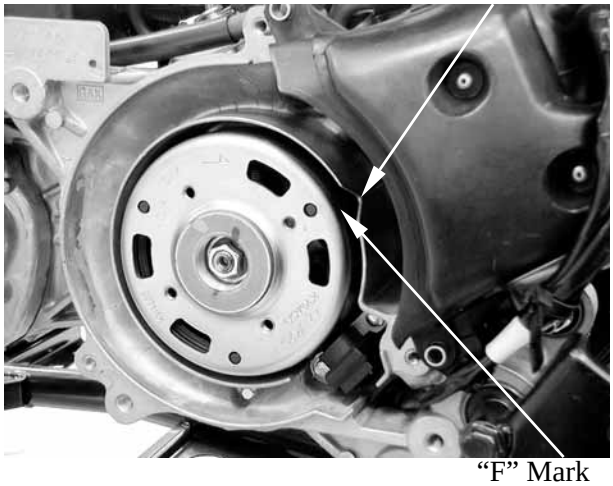


Bolts

When the engine is running at the specified rpm, the ignition timing is correct if the "F" mark on the flywheel aligns with the index mark on the crankcase within ±1.5°.

Ignition Timing:
MX'ER 50: 22°±1.5°BTDC/2000rpm
MXU 50 REVERSE/MXU 50:
13.5°±1.5°BTDC/1500rpm

Index Mark



"F" Mark

CYLINDER COMPRESSION

Warm up the engine before compression test.
Remove the spark plug.
Insert a compression gauge.
Open the throttle valve fully and push the starter button to test the compression.

Compression:

1200kPa (12kgf/cm², 170psi)

If the compression is low, check for the following:

- Leaky valves
- Valve clearance too small
- Leaking cylinder head gasket
- Worn piston rings
- Worn piston/cylinder

If the compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and the piston head.

Compression Gauge

FINAL REDUCTION GEAR OIL

MXU 50/MX'ER 50: Gear Oil Lever

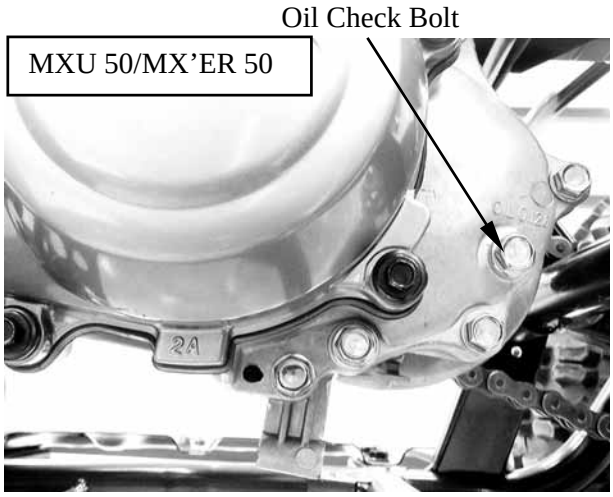
The gear oil level shall be at the oil check bolt hole. If the oil level is low, add the specified oil to the proper level.

Specified Gear Oil: SAE10W90#

Install and tighten the oil check bolt.

Torque: 1.3 kgf-m (13 N-m, 9.4 lbf-ft)

Start the engine and check for oil leaks.



GEAR OIL CHANGE

Remove the oil filler bolt.
Removes the oil drains bolt and drain the oil thoroughly.
Install the oil drain bolt.
Torque: 1.3 kgf-m (13 N-m, 9.4 lbf-ft)

* Make sure that the sealing washer is in good condition.

Fill with the recommended oil.
Specified Gear Oil: SAE10W90#

Oil Capacity:

MXU 50/MX'ER 50
At disassembly:
0.12 liter (0.11 lmp qt,0.13 Us qt)
At change: 0.09 liter (0.08 lmp qt,0.1 Us qt)

MXU 50 REVERSE
At disassembly:
0.3 liter (0.26 lmp qt,0.32 Us qt)
At change:
0.25 liter (0.22 lmp qt,0.26 Us qt)

Reinstall the oil filler bolt and check for oil leaks.
Torque: 1.3 kgf-m (13N-m, 9.4 lbf-ft)

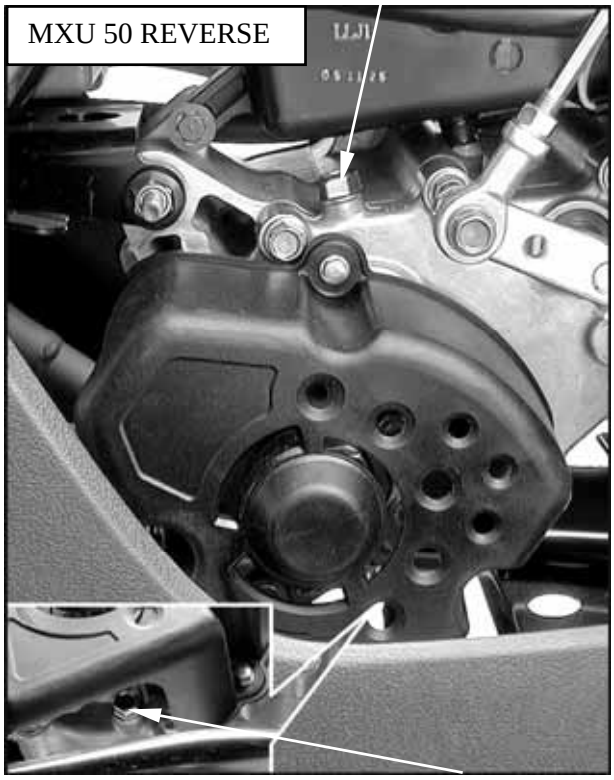
Oil Filler Bolt

MXU 50/MX'ER 50

Oil Drain Bolt/ Sealing Washer

Oil Filler Bolt

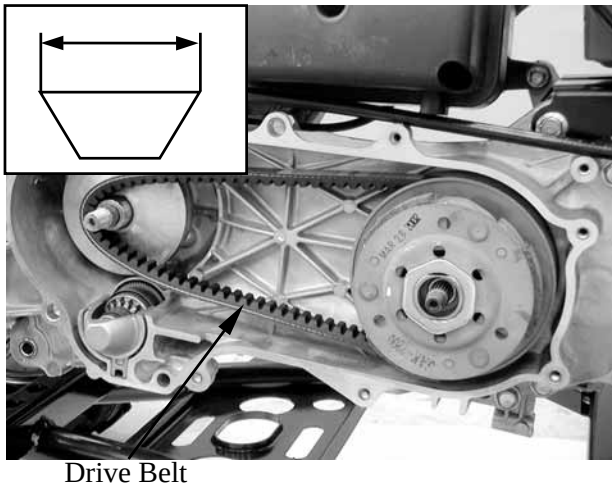
MXU 50 REVERSE



Oil Drain Bolt/ Sealing Washer

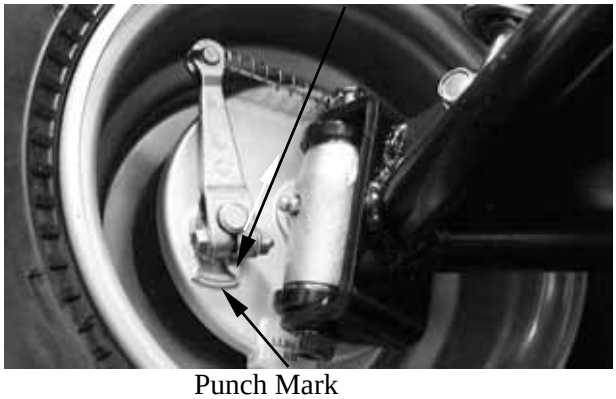
DRIVE BELT

Remove the left crankcase cover.
Inspect the drive belt for cracks, scaling, chipping or excessive wear.
Measure the V-belt width
Service limit: 16.5mm (0.7 in)
Replace the drive belt if out of specification.


Drive Belt

BRAKE SHOE

Replace the brake shoes if the arrow on the wear indicator plate aligns with the punch mark on the brake panel when the brake is fully applied.



BRAKE SYSTEM

FRONT BRAKE

Measure the front brake lever free play.
Free Play: 10～20 mm (0.4 – 0.8 in)
Adjust if out of specification.

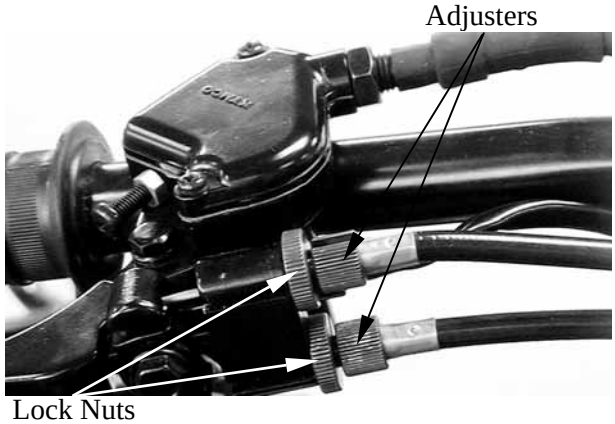
Adjust brake lever free play:

Loosen the lock nuts.

Turn the adjusters in or out until the specified free play is obtained.

Turning adjusters in that the free play is increased.

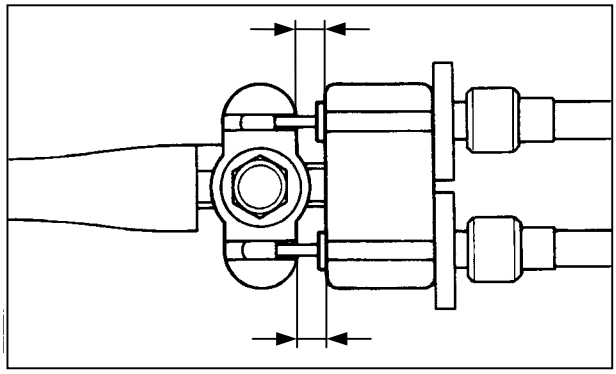
Turning adjusters out that the free play is decreased.



The difference between both clearances should be 2 mm (0.08 in)or less when front brake is applied.

Tighten the lock nuts.

* Make sure that the brake does not drag after adjusting.

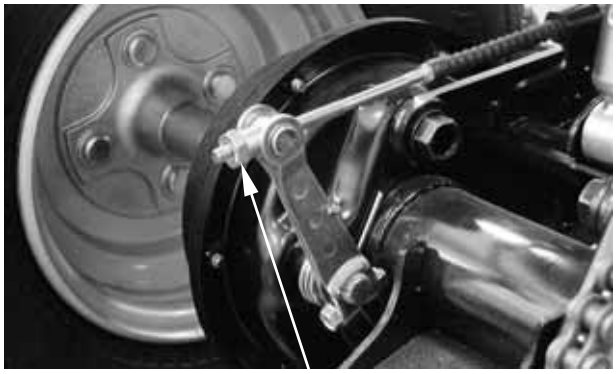


REAR BRAKE (drum brake)

Measure the rear brake lever free play.

Free Play: 10～20 mm (0.4 – 0.8 in)

If the free play do not fall within the limit, adjust by turning the adjusting nut.



HEADLIGHT AIM

MX'ER 50:

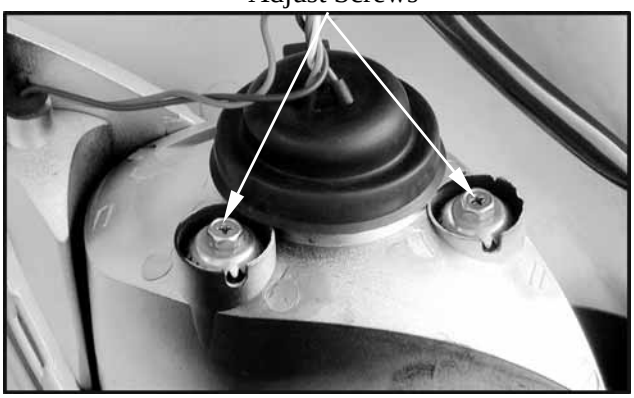
Turn the ignition switch ON and start the engine.
Turn on the headlight switch.
Adjust the headlight aim by turning the headlight aim adjusting screw.

Adjusting Screw

MXU 50 REVERSE/MXU 50:

Turn the ignition switch ON and start the engine.
Turn on the headlight switch.
Adjust the headlight aim by turning the headlight aim adjusting screws.

Adjust Screws



STEERING SYSTEM

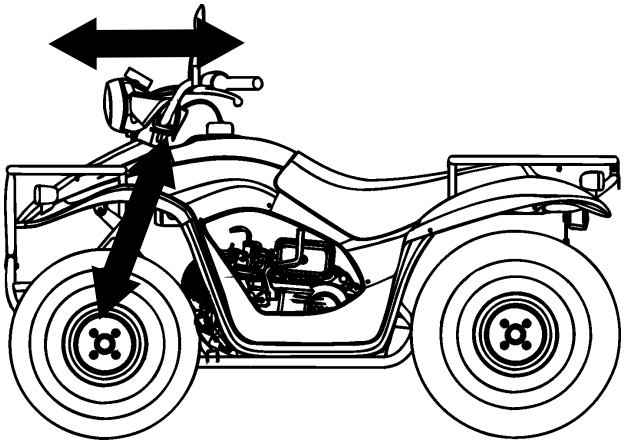
INSPECTION

Place the machine on a level place.

Check the steering column bushings and bearings:

Move the handlebar up and down, and/or back and forth.

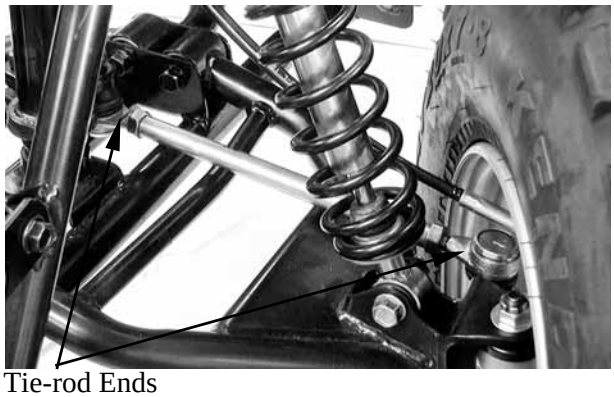
Replace the steering column bushings and or bearings if excessive play



Check the tie-rod ends

Turn the handlebar to the left and/or right until it stops completely, then slightly move the handlebar from left to right.

Replace the tie-rod ends if tie-rod end has any vertical play.



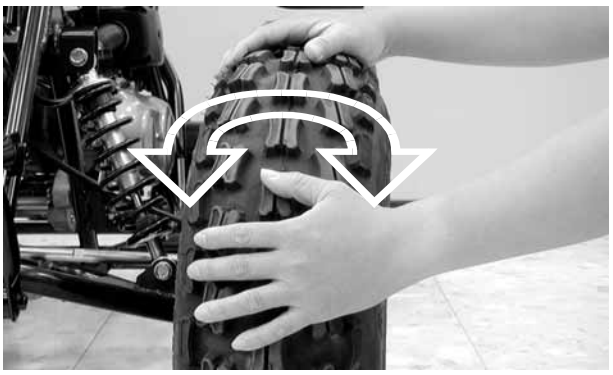
Tie-rod Ends

Raise the front end of the machine so that there is no weight on the front wheels.

Check ball joints and/or wheel bearings.

Move the wheels lately back and forth.

Replace the front arms and/or wheel bearings if excessive free play.



TOE-IN ADJUSTMENT

Place the machine on a level place.

Measure the toe-in

Adjust if out of specification.

Toe-in measurement steps:

Mark both front tire tread centers.

Raise the front end of the machine so that there is no weight on the front tires.

Fix the handlebar straight ahead.

Measure the width A between the marks.

Rotate the front tires 180 degrees until the marks come exactly opposite.

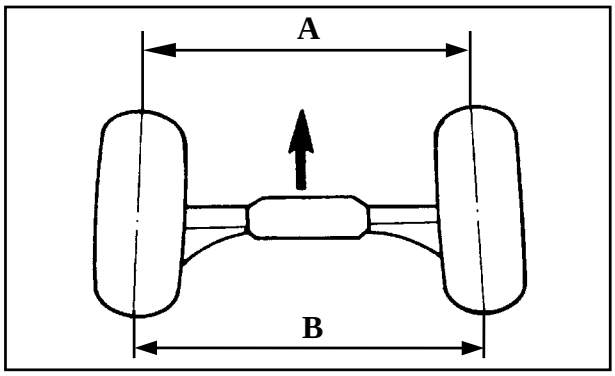
Measure the width B between the marks.

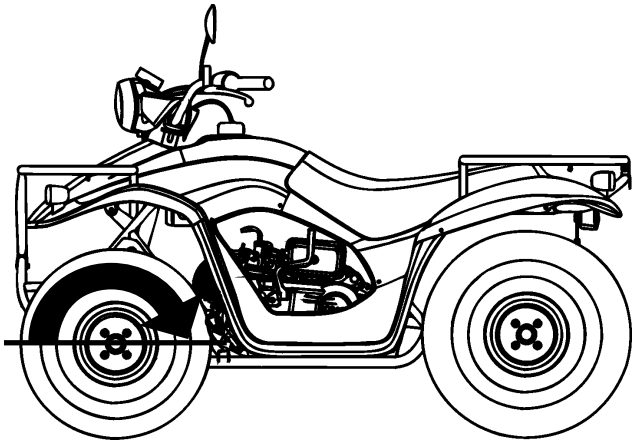
Calculate the toe-in using the formula given below.

Toe-in = B－A

Toe-in: 0～10mm (0 – 0.4 in)

If the toe-in is incorrect, adjust the toe-in





Adjust the toe-in step:

Mark both tie-rods ends.

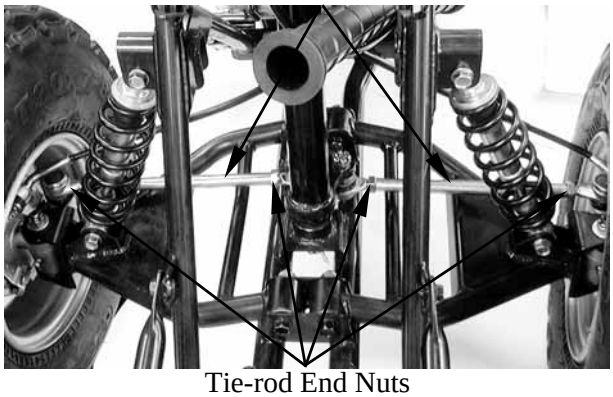
This reference point will be needed during adjustment.

Loosen the lock nuts (tie-rod end) of both tie-rods

The same number of turns should be given to both tie-rods right and left until the specified toe-in is obtained, so that the lengths of the rods will be kept the same.

Torque: 3 kgf-m (30 N-m, 22 lbf-ft)

Tie-rod



Tie-rod End Nuts

＊

- Be sure that both tie-rod are turned the same amount. If not, the machine will drift tight or left even though the handlebar is positioned straight which may lead to mishandling and accident.
- After setting the toe-in to specification, run the machine slowly for some distance with hands placed lightly on the handlebar and check that the handlebar responds correctly. If not, turn either the right or left tie-rod within the toe-in specification.

WHEELS/TIRES

Check the tires for cuts, imbedded nails or other damages.
Check the tire pressure.

* Tire pressure should be checked when tires are cold.

TIRE PRESSURE

	Front/Rear (1 Rider)
MX'ER 50	0.33 kgf/cm² (33 kPa, 4.7 psi)
MXU 50	0.28 kgf/cm² (28 kPa, 4.7 psi)

Front Axle Nut

TIRE SIZE
MXU 50 REVERSE/MXU50:
Front: 21*7-10
Rear: 22*10-10

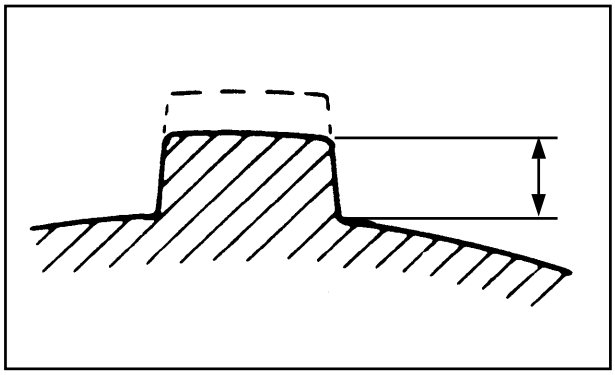
MX'ER 50:
Front: 20*7-8
Rear: 22*10-8

Rear Axle Nut

Check the front axle nut for looseness.
Check the rear axle nut for looseness.
If the axle nuts are loose, tighten them to the specified torque.
Torque:
Front : 7 kgf-m (70 N-m, 50 lbf-ft)
Rear : 7 kgf-m (70 N-m, 50 lbf-ft)

WHEEL INSPECTION

Inspect the tire surfaces.
Replace if wear or damage.
Tire wear limit: 3 mm (0.1 in)



* It is dangerous to ride with a worn out tire. When a tire wear is out of specification, replace the tire immediately.

Inspect the wheel.

Replace if damage or bends

Always balance the wheel when a tire or wheel has been changed or replaced.

* • Never attempt even small repairs to the wheel.
  • Ride conservatively after installing a tire to allow it to seat itself properly on the rim.

DRIVE CHAIN SLACK ADJUSTMENT

Before checking and/or adjusting, rotate the rear wheels several revolutions and check slack at several points to find the tightest point. Check and/or adjust the chain slack with the rear wheels in this "tightest" position.

* Too little of chain slack will overload the engine and other vital parts; keep the slack within the specified limits.

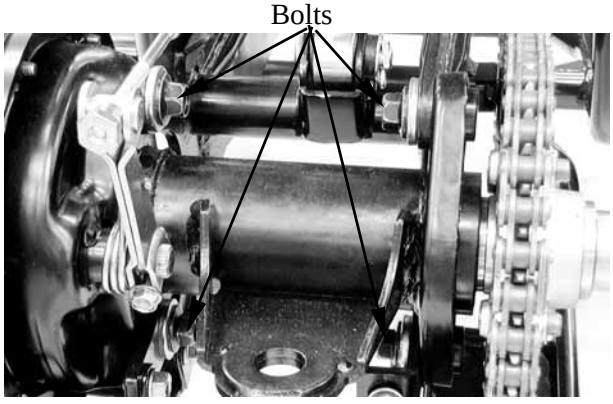
Place the machine on a level place.

* Wheels should be on the ground without the rider on it.

Check drive chain slack.

Adjust if out of specification.

Drive chain slack: 10-20 mm (0.4 – 0.8 in)



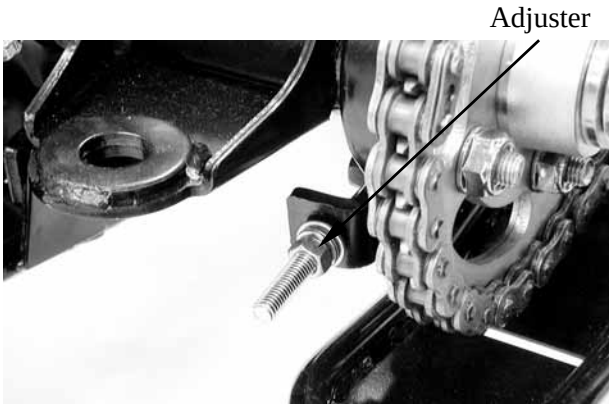
Adjust drive chain slack:

Elevate the rear wheels by placing a suitable stand under the rear of frame.

* Support the machine securely so there is no danger of it falling over.

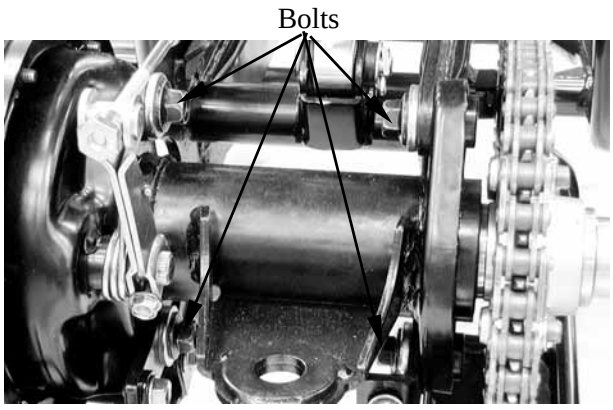
Loosen four bolts attaching rear axle hub.

Turn the adjuster in or out until the specified slack is obtained.

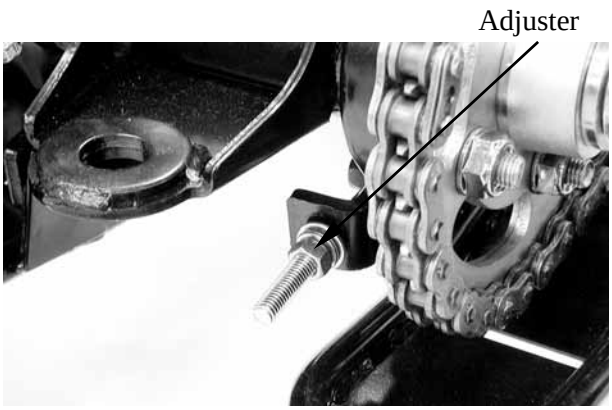


Turn in: Slack is increased.
Turn out: Slack is decreased.

Tighten four bolts attaching rear axle hub to the specification. While pushing up or down on the chain to zero slack.
Torque: 7 kgf-m (70 N-m, 50 lbf-ft)



Tighten the adjuster.
Torque: 2.2 kgf-m (22 N-m, 16 lbf-ft)



CABLE INSPECTION AND LUBRICATION

* Damaged cable sheath may cause corrosion and interfere with the cable movement. An unsafe condition may result so replace such cable as soon as possible.

Inspect the cable sheath.
Replace if damage.
Check the cable operation.
Lubricate or replace if unsmooth operation.

* Hold cable end high and apply several drops of lubricant to cable.

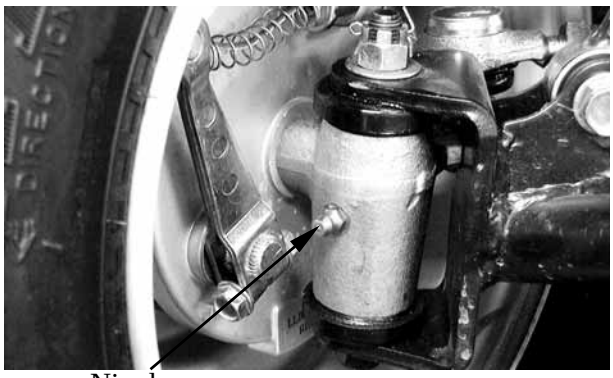
LEVER LUBRICATION

Lubricate the pivoting parts of each lever.

FRONT/REAR SUSPENSION LUBRICATION

Inject grease into the nipples using a grease gun until slight over flow is observed from the thrust covers.

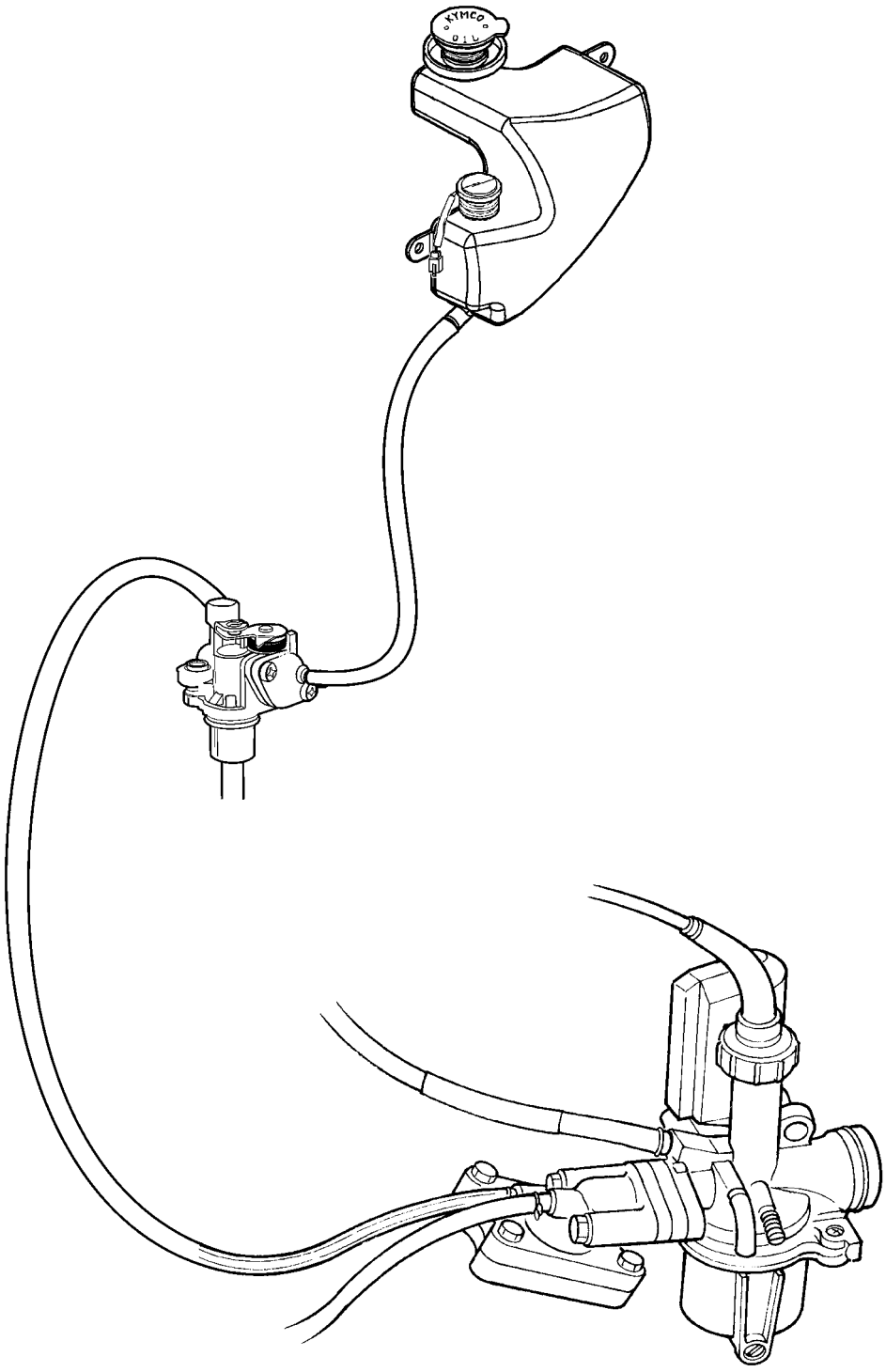
* Wipe off the excess grease.


Nipple

4

LUBRICATION SYSTEM

LUBRICATION SYSTEM



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Use care when removing and installing the oil pump not to allow dust and dirt to enter the engine and oil line.
- Do not attempt to disassemble the oil pump.
- Bleed air from the oil pump if there is air between the oil pump and oil line.
- If the oil is disconnected, refill the oil line with motor oil before connecting it.

SPECIFICATIONS

- Recommended Motor Oil: SAE20W20# 2-stroke Motor Oil
- Oil Capacity : 1 liter (0.88 lmp qt, 1.06 Us qt)
  Light comes on : 0.25 liter (0.22 lmp qt, 0.27 Us qt)

TROUBLESHOOTING

Excessive white smoke or carbon deposits on spark plug

- Oil pump not properly synchronized (excessive oil)
- Poor quality oil

Engine overheating

- Oil pump not properly adjusted (insufficient oiling)
- Poor quality oil

Seized piston

- No oil in tank or clogged oil line
- Oil pump not properly adjusted (insufficient oiling)
- Air in oil line
- Faulty oil pump

Oil not flowing out of tank to engine

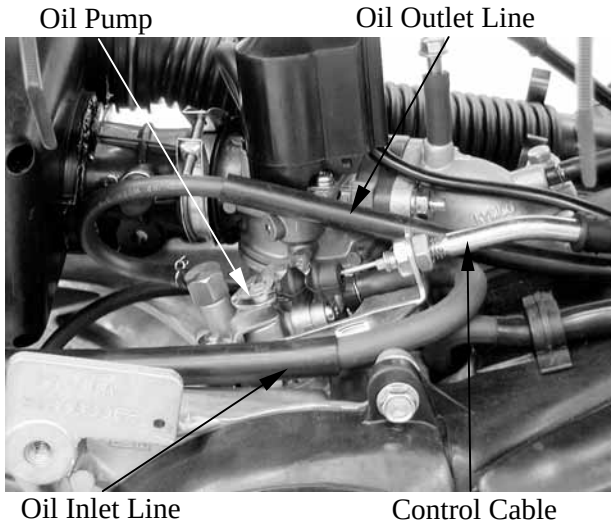
- Clogged oil tank cap breather hole
- Clogged oil filter

OIL PUMP REMOVAL

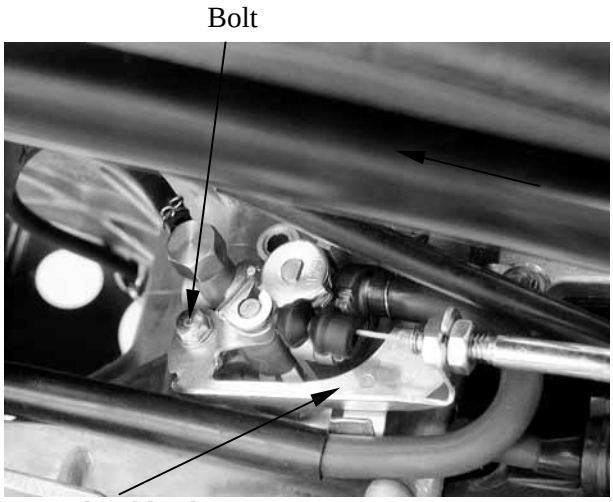
* Do not allow foreign matters to enter the crankcase. Before removing the oil pump, clean the oil pump and crankcase surfaces.

Disconnect the oil pump control cable from the pump body.
Disconnect the oil inlet line from the oil pump.
Then, disconnect the oil outlet line.

* Before disconnecting the oil line, clip the oil line to avoid oil flowing out and then plug the oil line after it is disconnected.



Remove the oil pump control cable plate bolt.
Remove the oil pump from the crankcase.

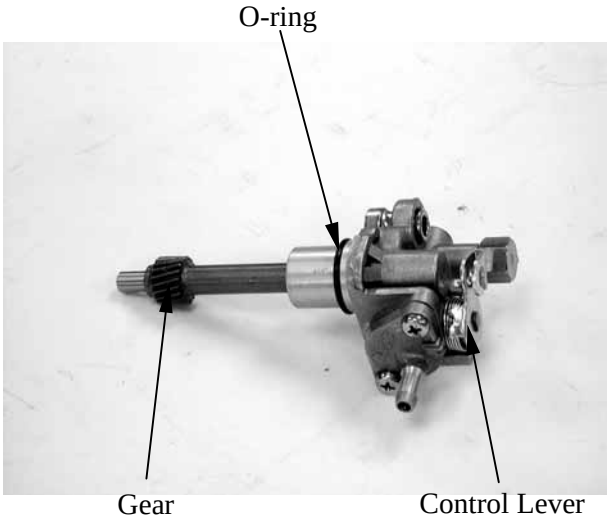


OIL PUMP INSPECTION

Remove the oil pump and inspect the following items:

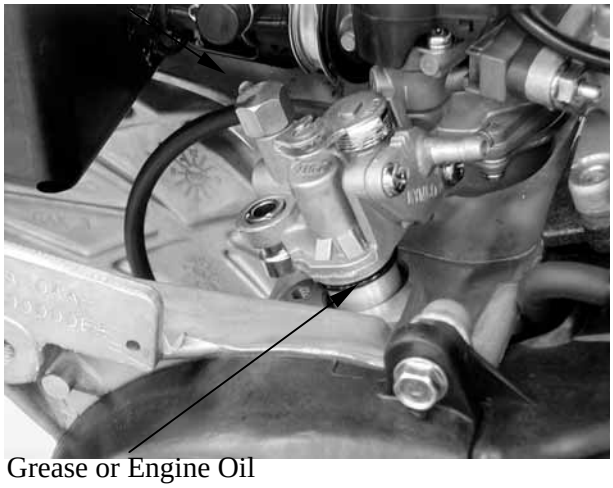
- Weakened O-ring
- Damage to crankcase mating surface
- Damage to pump body
- Control lever operation
- Oil leaks through oil seals
- Worn or damaged pump pinion

* Do not disassemble the oil pump which cannot be used after disassembly.

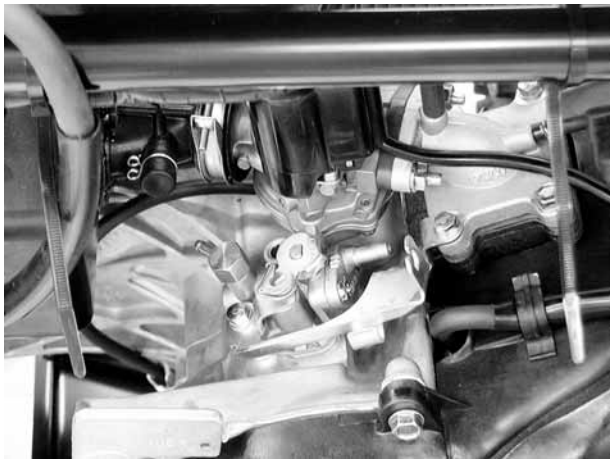


OIL PUMP INSTALLATION

✳
- Lubricate the O-ring with grease or engine oil before installation.
- Make sure that the oil pump is inserted into the crankcase.
- Apply molybdenum disulfide or grease to the pump pinion.

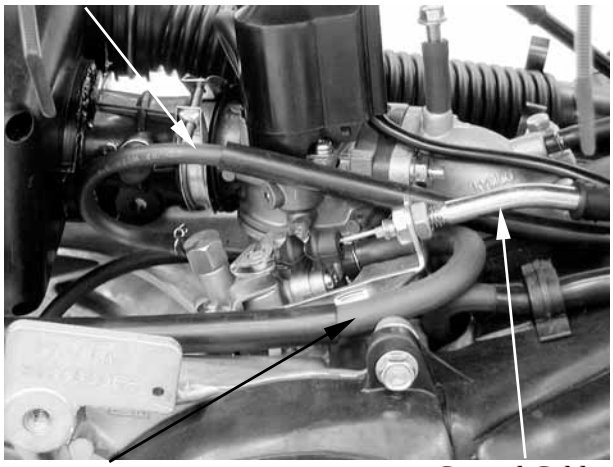

Grease or Engine Oil

Install the oil pump onto the crankcase.



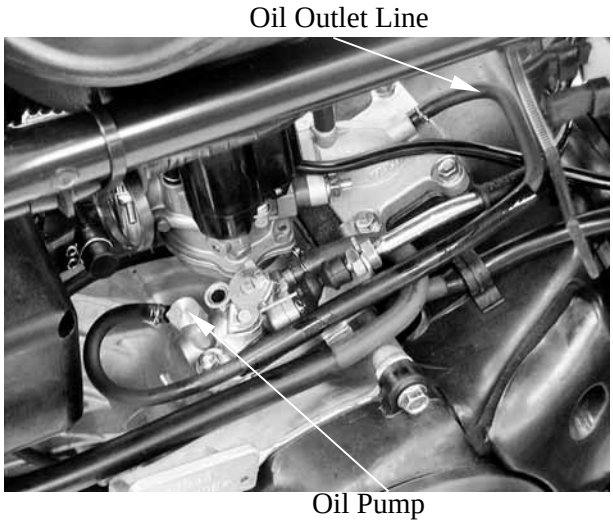
Install the oil pump control cable plate.
Connect the oil inlet line and oil outlet line properly.
Connect the oil pump control cable.
Bleed air from the oil pump.

Oil Outlet Line


Oil Inlet Line
Control Cable

OIL PUMP BLEEDING

✳
- Air in the oil lines will block oil flow and result in severe engine damage.
- Bleed air from the oil lines and oil pump whenever the oil lines or pump have been removed or there is air in the oil lines.



OIL INLET LINE/OIL PUMP BLEEDING

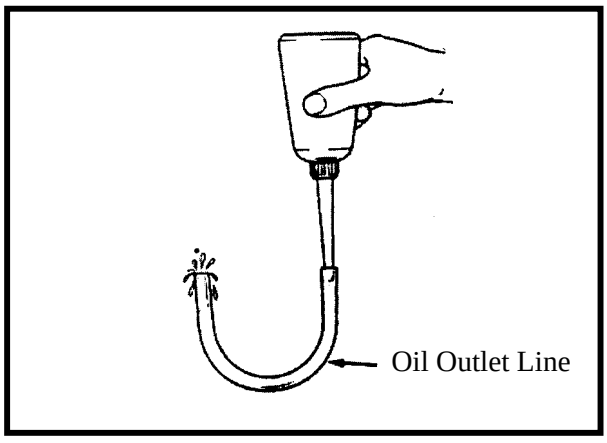
Fill the oil tank with recommended oil.
Place a shop towel around the oil pump.
Disconnect the oil inlet line from the oil pump and clip it.
Fill the oil pump with oil by squirting clean oil through the joint. (About 3cc, 0.003 lmp qt, 0.003 Us qt)
Fill the oil line with oil and connect it to the oil pump.

✳
Bleed air from the oil inlet line first, then bleed air from the oil outlet line.

OIL OUTLET LINE BLEEDING

1. Disconnect the oil outlet line and bend it into U shape. Force air out of the tube by filling it with oil.
2. Start the engine and allow it to idle with the oil control lever in the fully open position. Visually check the oil flow.
3. If there is no oil flowing out within 1 minute, bleed air from the oil inlet line and oil pump.

✳
- Never run the engine in a closed area.
- Do not increase the engine speed at will.

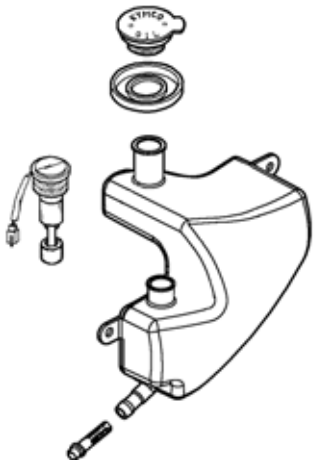


OIL TANK

OIL TANK REMOVAL

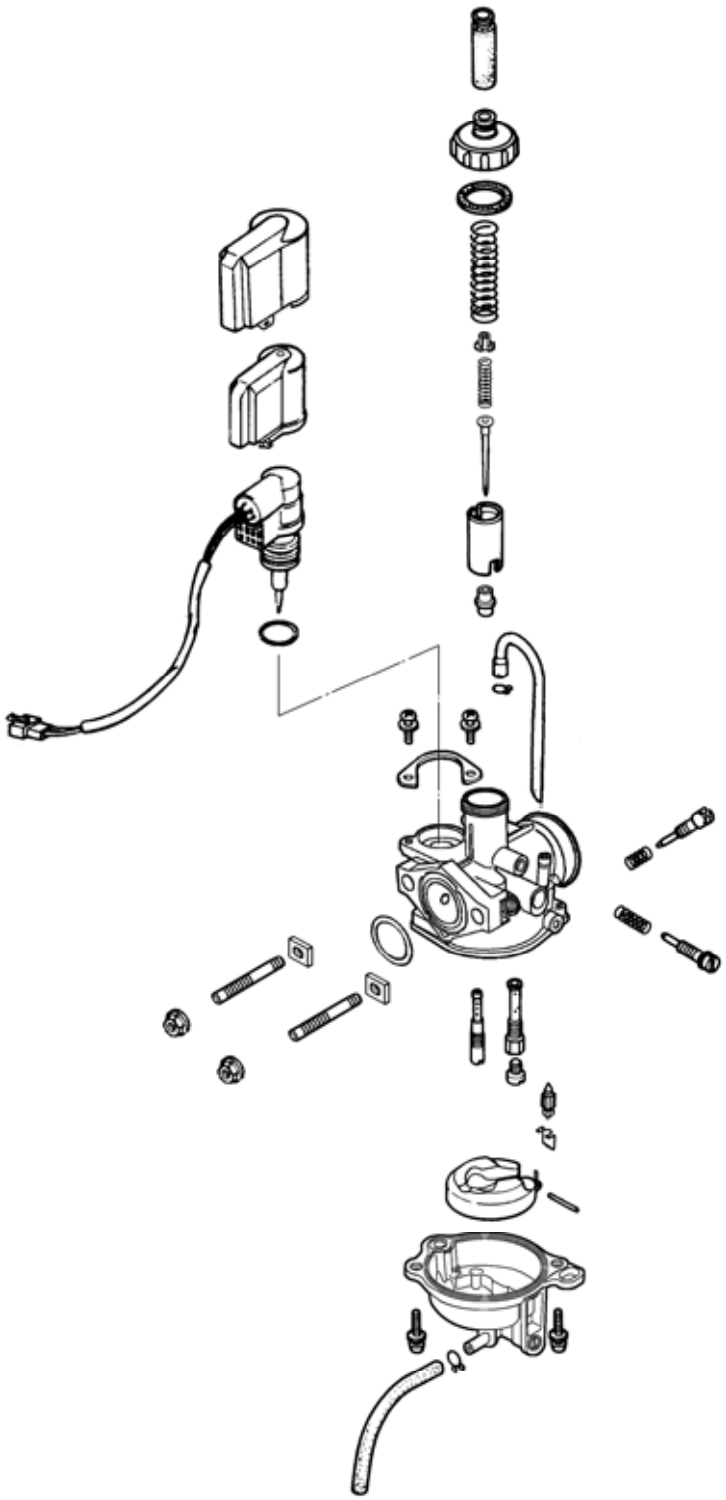
Remove the seat. (⇨2-3 or 2-8)
Remove the oil meter connector.
Remove the one bolt and one nut from the oil tank. (see page 2-14)
Disconnect the oil inlet line.
Drain the oil inside the oil tank into a clean container.
Remove the oil tank.
The installation sequence is the reverse of removal.

✳
- Connect the oil line properly.
- Bleed air from the oil pump after installation.
- The oil tube clip (at the oil tank side) must be locked from inside of the oil tube joint.



5

FUEL SYSTEM



5. FUEL SYSTEM

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- When working with gasoline, keep away from sparks and flames..
- Note the locations of O-rings when disassembling and replace them with new ones during assembly.
- All cables, fuel lines and wires must be routed and secured at correct locations.
- Bleed air from the oil lines whenever they are disconnected.

SPECIFICATIONS	ATV 50
Venturi dia.	14 mm (0.56 in)
Identification number	PB
Float level	8.6 mm (0.34 in)
Main jet	# 80
Slow jet	# 38S
Air screw opening	2 ± 1/2
Idle speed	1800±100 rpm
Throttle grip free play	1～4 mm (0.04 – 0.16 in)

SPECIAL TOOL

Float level gauge

TROUBLESHOOTING

Engine does not start

- No fuel in tank
- Too much fuel getting to cylinder
- Clogged fuel filter
- Clogged air cleaner

Lean mixture

- Clogged fuel jets
- Clogged fuel cap vent
- Clogged fuel filter
- Bent, kinked or restricted fuel line
- Faulty float valve
- Float level too low
- Clogged air cleaner

Engine idles roughly, stalls or runs poorly

- Incorrect idle speed
- Ignition malfunction
- Compression too low
- Incorrectly adjusted air screw
- Incorrect float level
- Clogged air cleaner
- Intake air leaks
- Fuel contaminated
- Faulty reed valve
- Clogged fuel jets

Rich mixture

- Faulty float valve
- Float level too high
- Clogged air jets

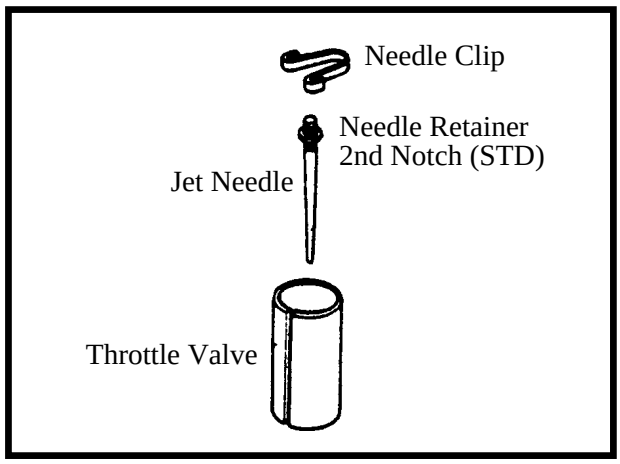
THROTTLE VALVE DIS-ASSEMBLY/CARBURETOR REMOVAL

Loosen the carburetor cap and remove the throttle valve.

Disconnect the throttle cable from the throttle valve.

Remove the throttle valve spring, carburetor cap and rubber seal.

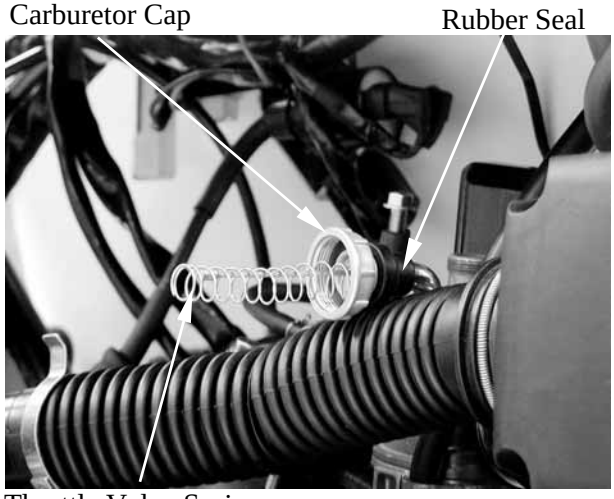
Remove the jet needle by removing the needle clip.
Check the jet needle and throttle valve for wear or damage.



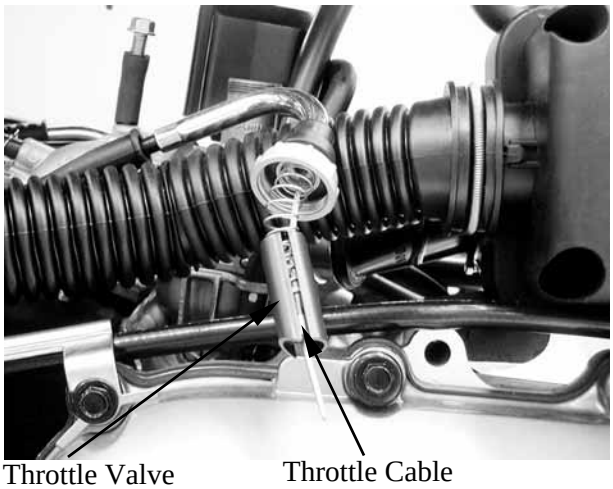
THROTTLE VALVE INSTALLA-TION

Install the jet needle on the throttle valve and secure with the needle clip.

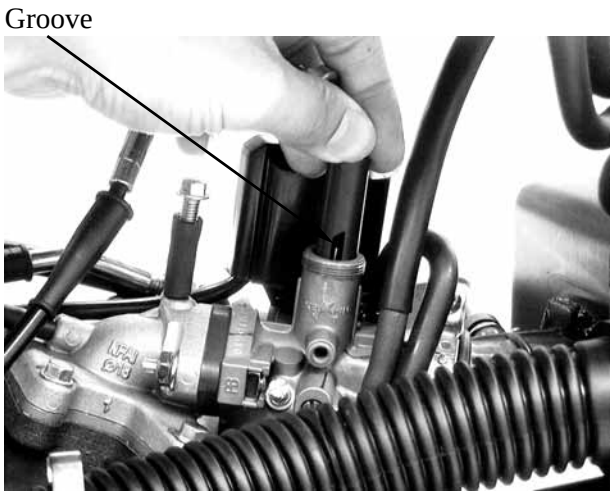
Install the rubber seal on the throttle cable and then install the carburetor cap and throttle valve spring.



Connect the throttle cable to the throttle valve.



Install the throttle valve by aligning the groove in the throttle valve with the throttle stop screw.

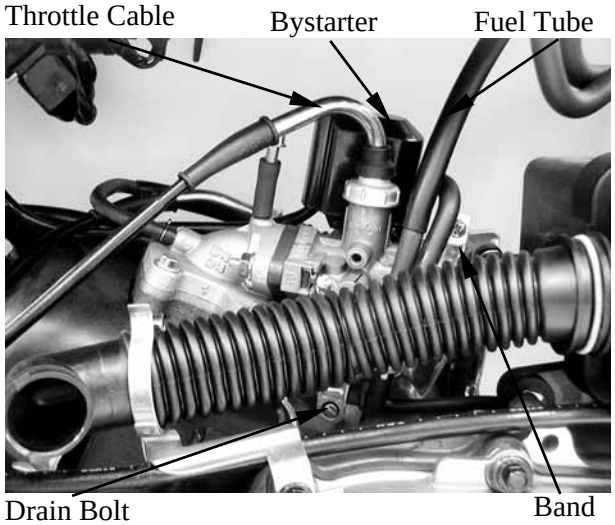


Tighten the carburetor cap.
After installation, perform the following adjustments and inspections.

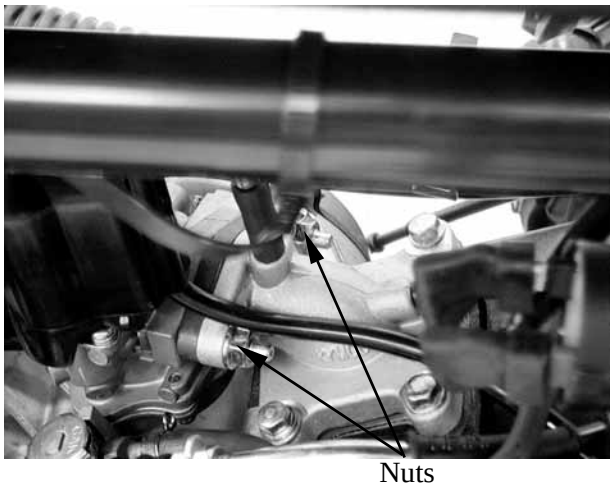
- Throttle cable free play (⇨3-3)
- Idle speed adjustment (⇨3-7)

CARBURETOR REMOVAL

Remove the air cleaner by removing the air cleaner band screw and attaching bolts.
Disconnect the fuel tube.
Loosen the drain bolt to drain fuel from the carburetor.
Disconnect the auto bystarter wire connector.



Remove the two carburetor lock nuts.
Remove the carburetor.

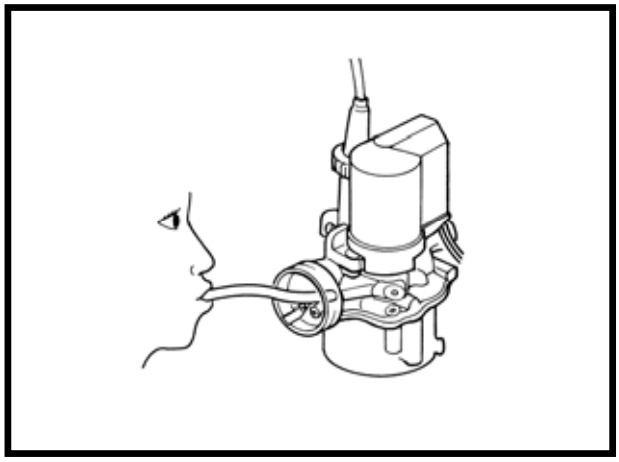


AUTO BYSTARTER

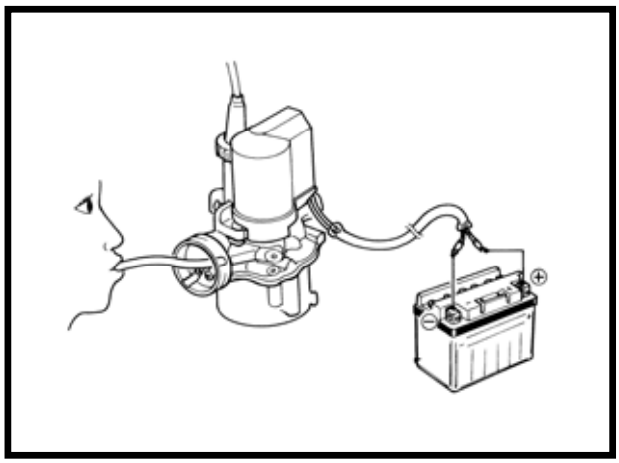
AUTO BYSTARTER INSPECTION

Measure the resistance between the auto bystarter wire terminals.
Resistance: 5Ω (10 minutes minimum after stopping the engine)
If the resistance exceeds 5Ω, replace the auto bystarter with a new one.

After the engine stops for 30 minutes, connect a hose to the fuel enriching circuit and blow the hose with mouth.
If air cannot be blown into the hose (clogged), the auto bystarter is faulty.
Replace it with a new one.

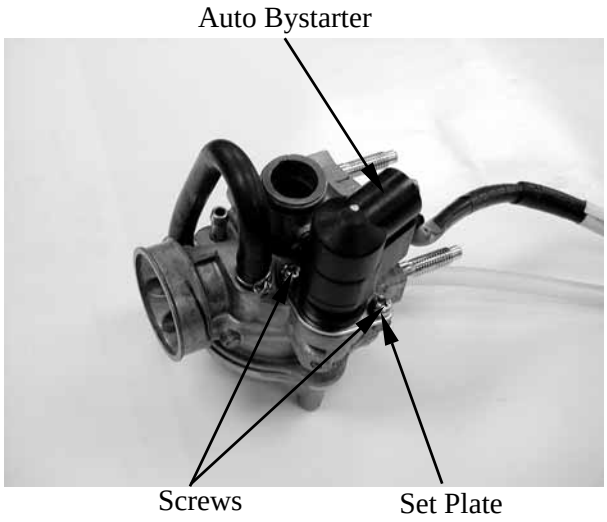


Connect the auto bystarter yellow wire to the battery positive (+) terminal and green/ black wire to the battery negative (-) terminal and wait 5 minutes.
Connect a hose to the fuel enriching circuit and blow the hose with mouth.
If air can be blown into the hose, the auto bystarter is faulty and replace it with a new one.

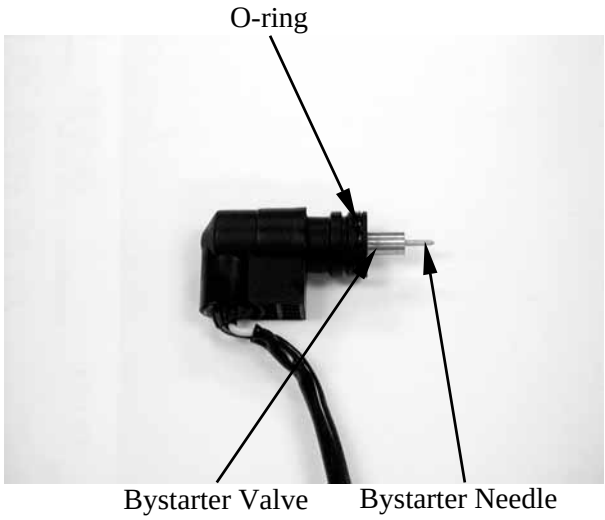


AUTO BYSTARTER REMOVAL

Remove the auto bystarter cover.
Remove the two auto bystarter set plate screws to remove the auto bystarter.

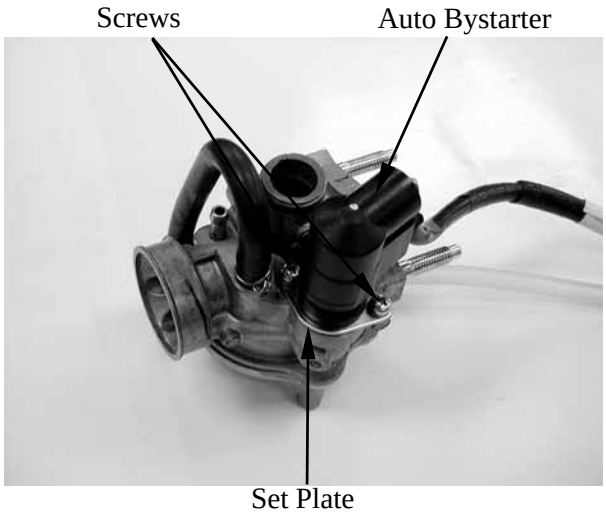


Check the auto bystarter valve and needle for wear or damage.
Check the O-ring for wear or damage.



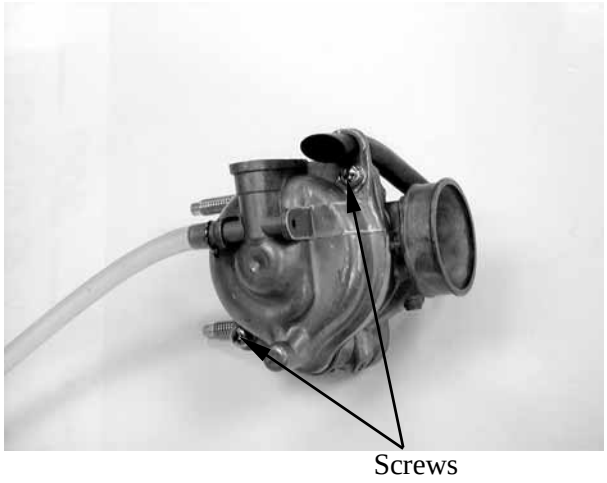
AUTO BYSTARTER INSTALLATION

Install the auto bystarter into the carburetor body until it bottoms..
Install the set plate and then tighten the two screws.

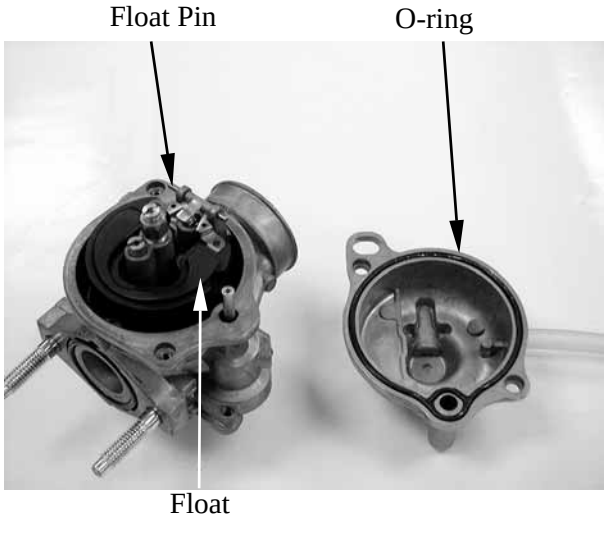


FLOAT/FLOAT VALVE/JETS FLOAT CHAMBER

Remove the two float chamber screws and the float chamber.

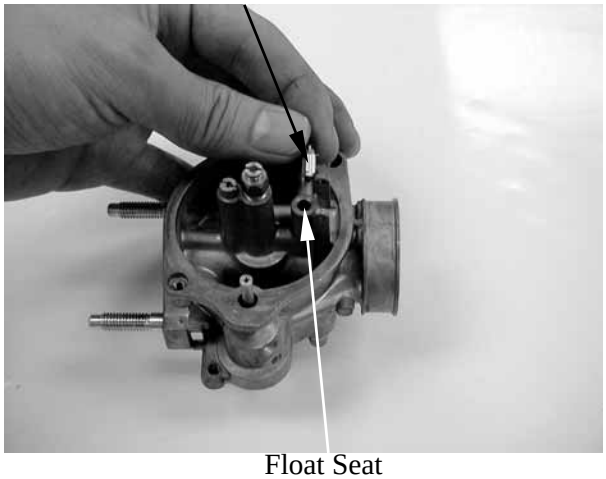


Remove the screw and O-ring.
Remove the float pin, float and float valve.



FLOAT/FLOAT VALVE INSPECTION

Inspect the float for damage or fuel inside the float.
Check the float valve seat for wear or damage.

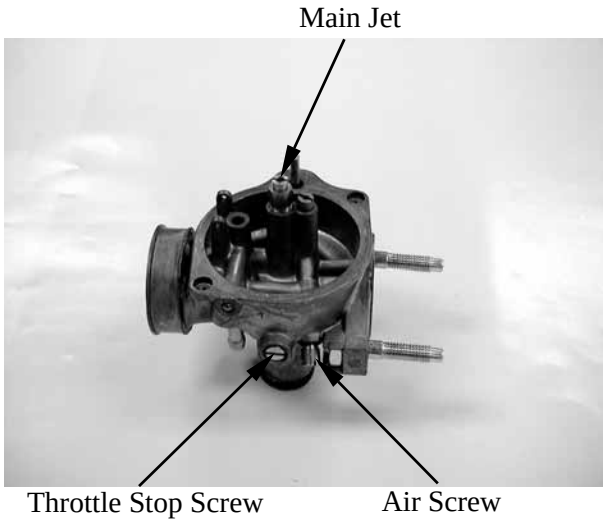


JETS/SCREWS REMOVAL

Before removing the throttle stop screw or air screw, record the number of rotations until it seats lightly. Then, remove them.

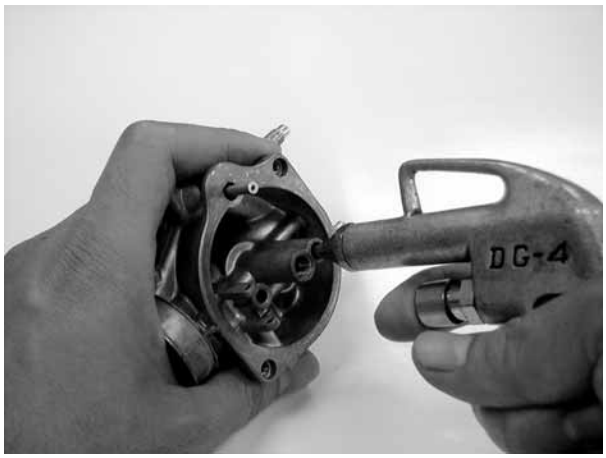
* Do not force the air screw against its seat to prevent damage.

Remove the main jet and needle jet holder.



CARBURETOR PASSAGES CLEANING

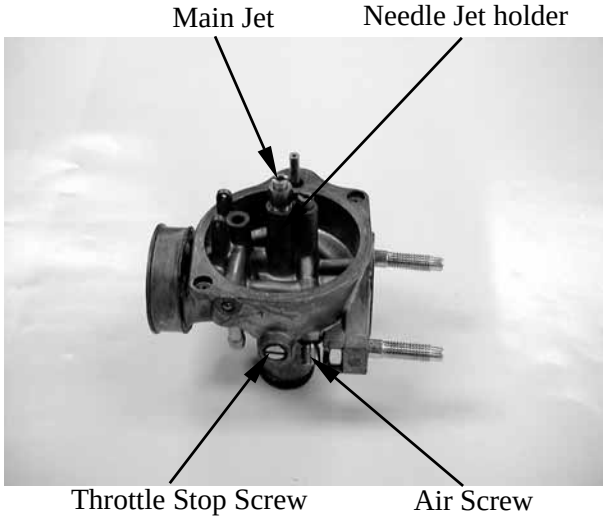
Blow compressed air through all passages of the carburetor body with an air gun.



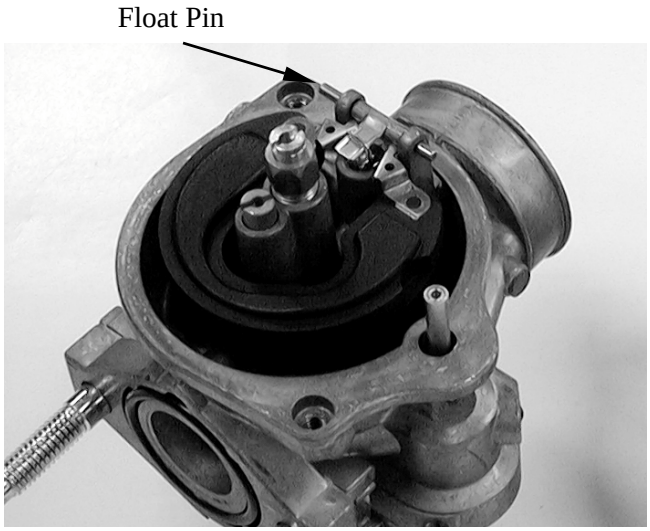
FLOAT CHAMBER ASSEMBLY

Install the main jet and needle jet holder.
Install the air screw and throttle stop screw according to the rotations recorded.

* If the air screw must be replaced, be sure to perform the air screw adjustment again.



Install the float valve, float and float pin.
Tighten the float screw securely.

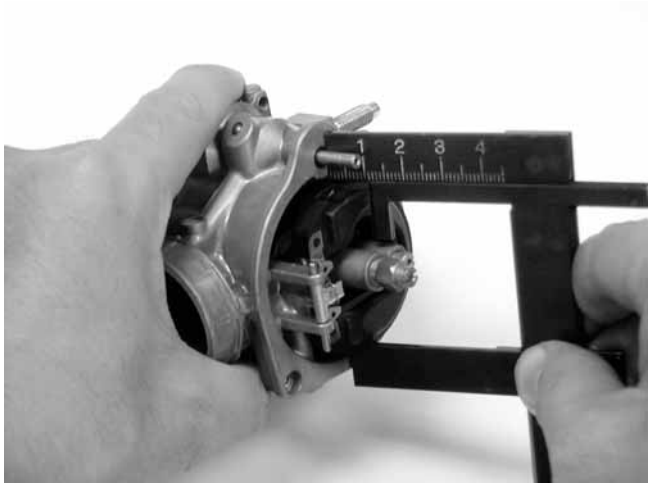


FLOAT LEVEL INSPECTION

Slightly tilt the carburetor and measure the float level with the float valve just connecting the float arm.

Float Level: 8.6 mm (0.34 in)

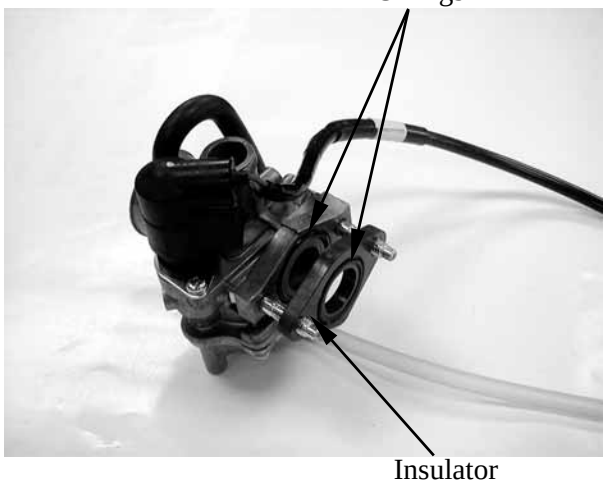
Replace the float if the level is out of the specified level range.
Install the O-ring.
Check the operation of the float and install the float chamber.
Tighten the screws.



CARBURETOR INSTALLATION

* When installation, do not allow foreign particles to enter the carburetor.

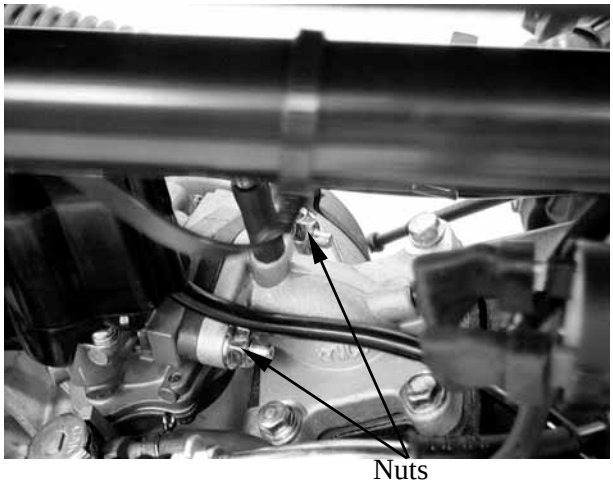
Check the carburetor insulator and O-ring for wear or damage.



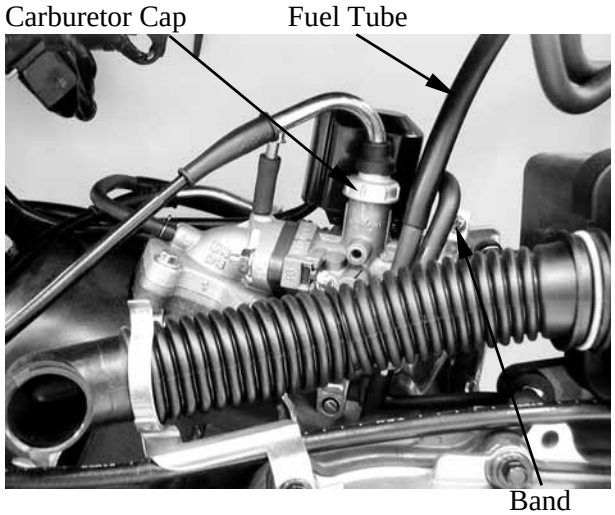
Install the carburetor and insulator onto the intake manifold and tighten the two lock nuts.

Connect the fuel tube and auto bystarter wire connector.

* Route the auto bystarter wire correctly and properly.



Install the carburetor cap. (⇨5-3)
Install the fuel tube
Install the air cleaner onto the carburetor and tighten the band screw.

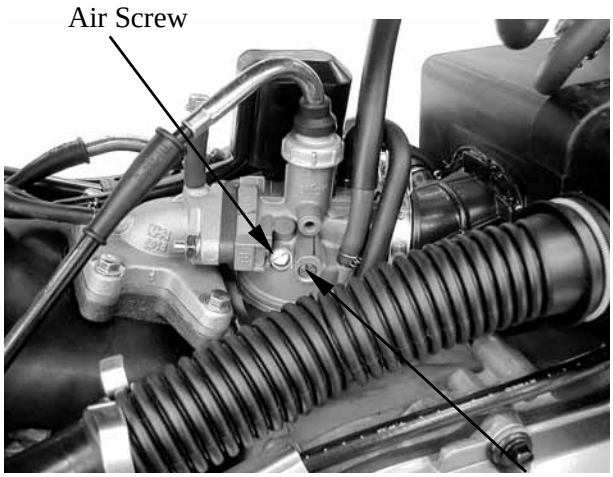


AIR SCREW ADJUSTMENT

Turn the air screw clockwise until it seats lightly and back it to the specification given.

* Do not force the air screw against its seat to prevent damage.

Start the engine and turn the air screw in or out slowly to obtain the highest engine speed.



Turn the throttle stop screw to obtain the specified idle speed.

Idle Speed: 1800±100 rpm

Air Screw Opening: 2 ± 1/2 turns

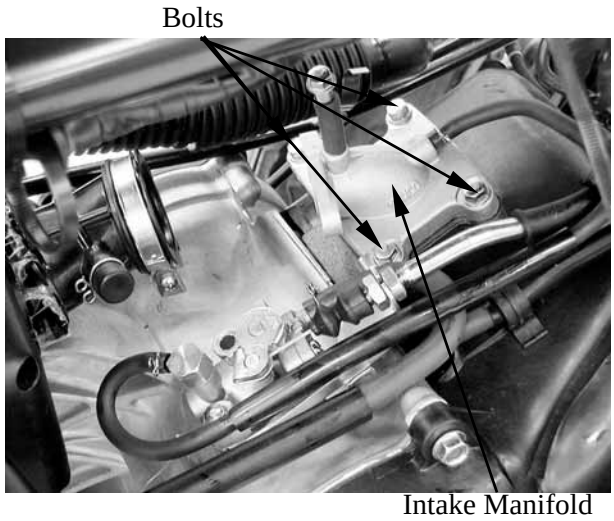
Slightly increase the engine speed and make sure that the engine does not miss or run erratic.

If the adjustment of the air screw within the range of ±1/2 turn makes no difference to the engine performance, check other related items.

REED VALVE

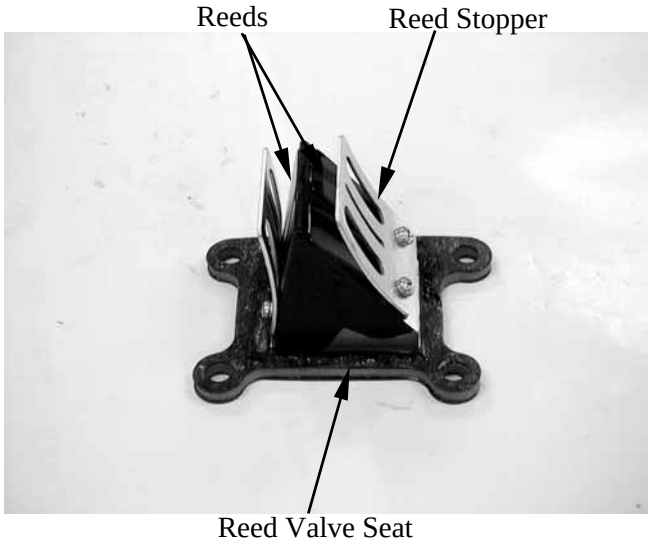
REMOVAL

Remove the four intake manifold bolts and gasket.
Remove the reed valve and gasket.



INSPECTION

Check the reed valve for damaged or weak reeds.
Check the reed valve seat for cracks, damage or clearance between the seat and reed.
Replace the valve if necessary.



* Do not disassemble or bend the reed stopper. To do so can cause loss of engine power and engine damage. If any of the stopper, reed or valve seat is faulty, replace them as unit.

INSTALLATION

Install the reed valve in the reverse order of removal.

* Install a new gasket with the gasket indentation aligned with the reed valve. After installation, check for intake air leaks.

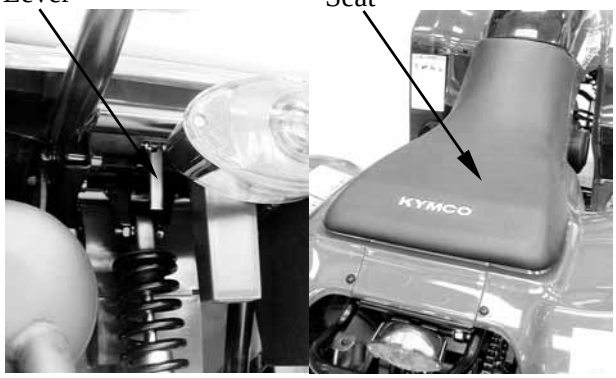
FUEL TANK

FUEL TANK REMOVAL

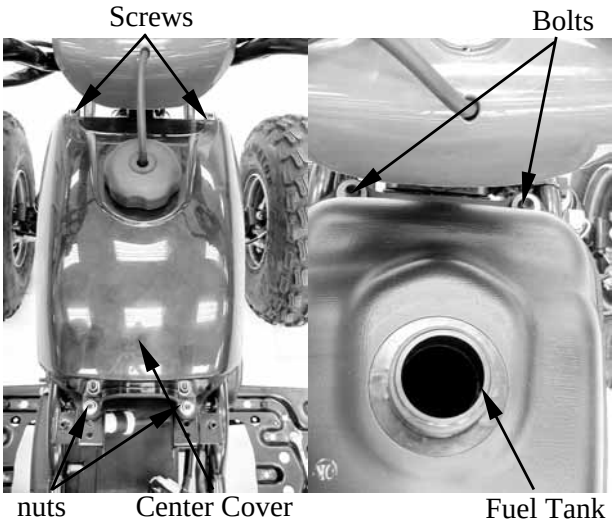
Warning

- Keep sparks and flames away from the work area.
- Wipe off any spilled gasoline.

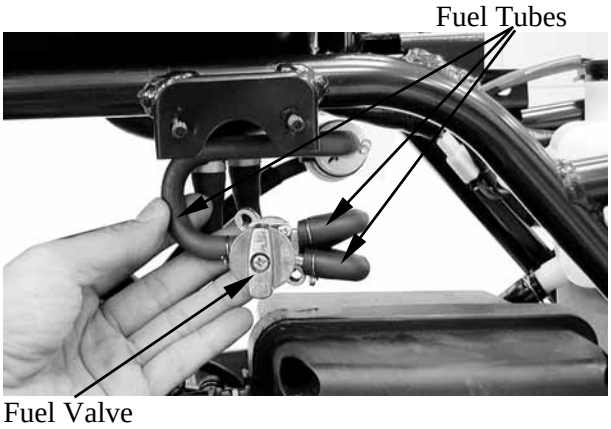
Remove the seat.
Remove the center cover.
Remove the right and left front fender.



Remove two bolts and two nuts on the end of the fuel tank.

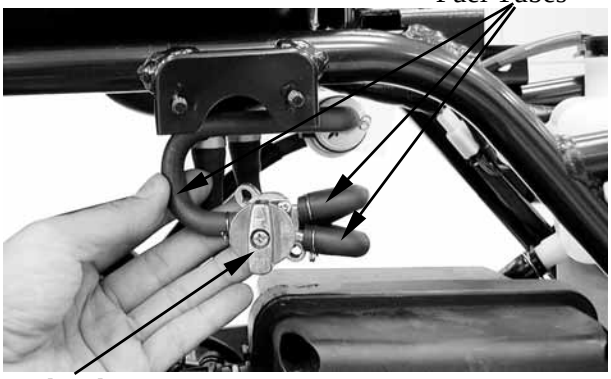


Switch the fuel valve “OFF”.
Disconnect the fuel tubes.
Remove the fuel tank and fuel valve.

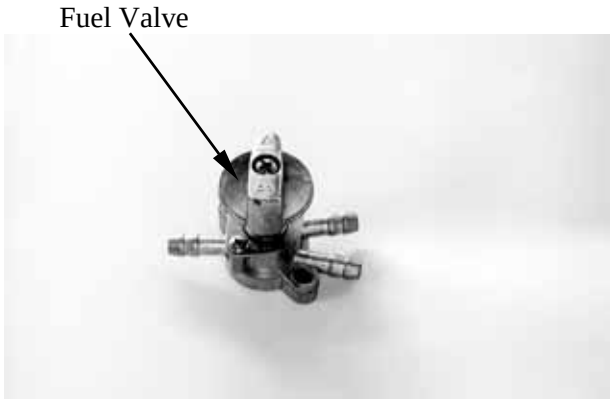


FUEL VALVE REMOVAL

Disconnect the fuel tubes and remove the bolts.



Remove the fuel valve and fuel cup.

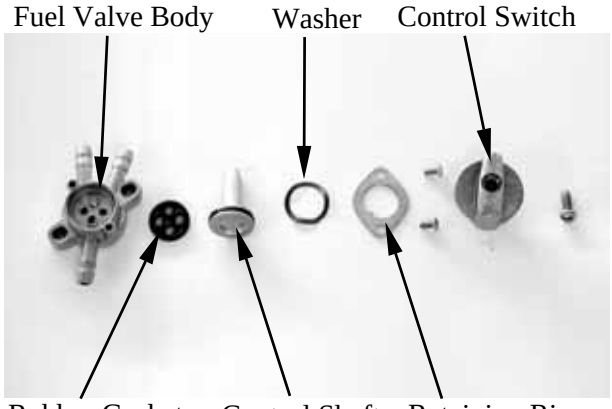


Remove the screw on the fuel valve control switch.
Remove the two screws on the fuel valve body.

INSPECTION

Inspect the fuel valve strainer for dirt and clog. Clean if necessary.

Replace the O-rings with new ones if they are damaged or deteriorated.

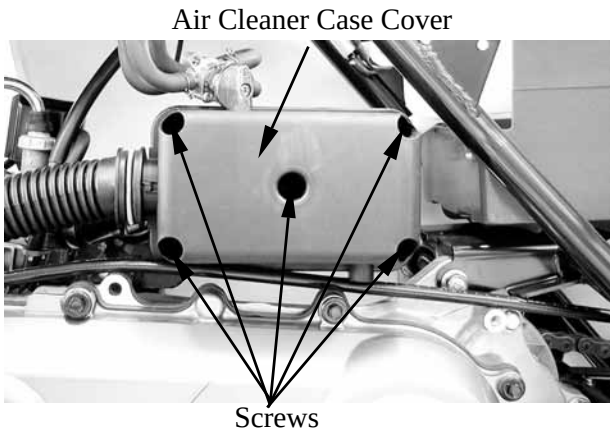


AIR CLEANER

REMOVAL

Remove the five screws on the air cleaner case cover and the cover.
Remove the air cleaner screen and element.

Refer to chapter 3 to clean air filter element.



ENGINE REMOVAL/INSTALLATION

6

SERVICE INFORMATION

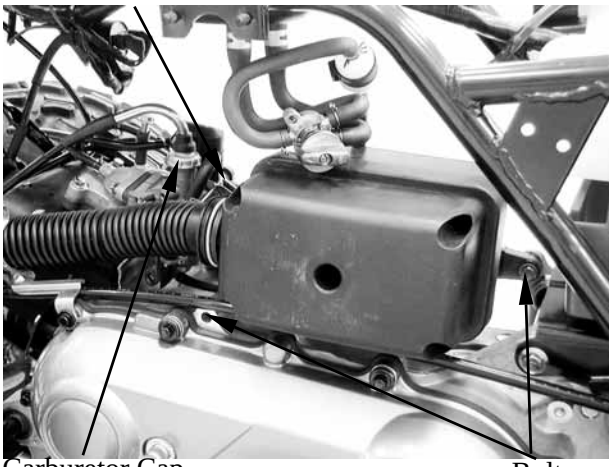
GENERAL INSTRUCTIONS

- A floor jack or other adjustable support is required to support and maneuver the engine. Be careful not to damage the machine body, cables and wires during engine removal.
- Use shop towels to protect the motorcycle body during engine removal.
- Parts requiring engine removal for servicing:
  — Crankcase
  — Crankshaft

ENGINE REMOVAL

Remove the frame covers (see chapter 2).
Remove the exhaust muffler (see chapter 2).
Remove the oil tank (see chapter 4)
Remove the fuel tank (see chapter 5).

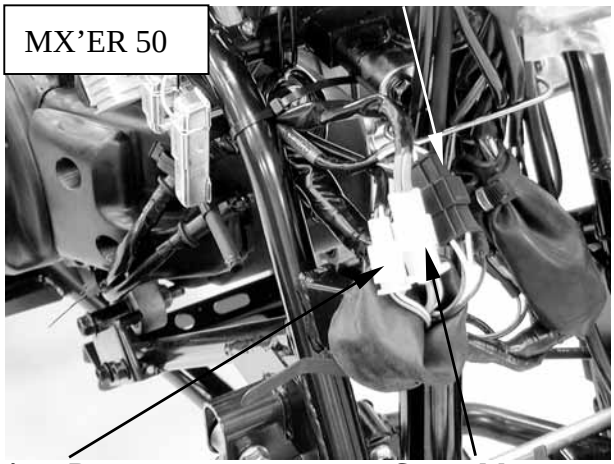
Remove the two bolts attaching the air cleaner case.
Loosen the band between the air cleaner and carburetor to remove the air cleaner case.
Remove the carburetor cap.



Disconnect the auto bystarter, A.C. generator/pulser and starter motor wire connectors.

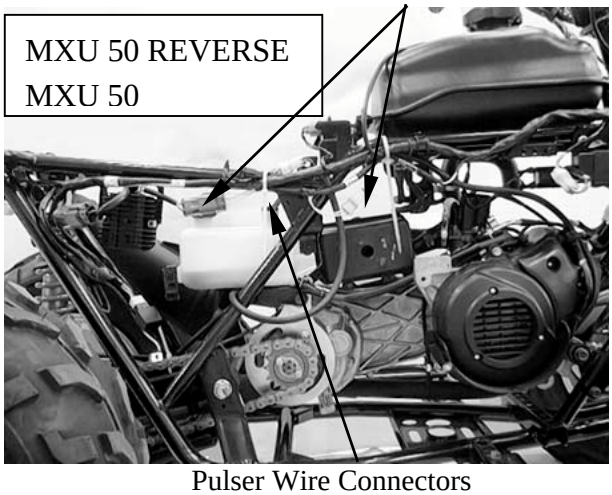
A.C.Generator/Pulser Wire Connector

MX'ER 50



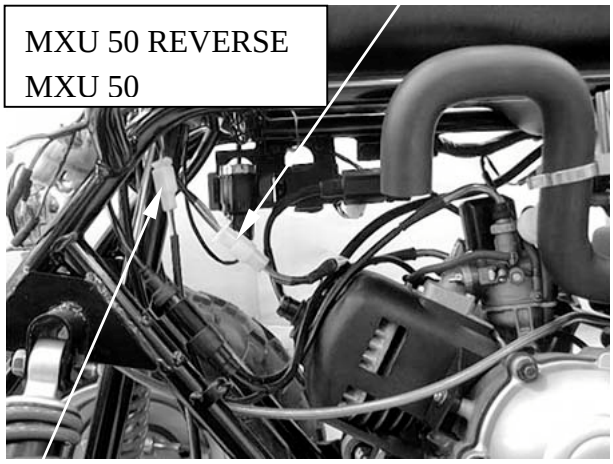
A.C.Generator Wire Connectors

MXU 50 REVERSE
MXU 50



Starter Motor Wire Connector

MXU 50 REVERSE
MXU 50



Auto Bystarter Wire Connector

Spark Plug Cap

Remove the spark plug cap.

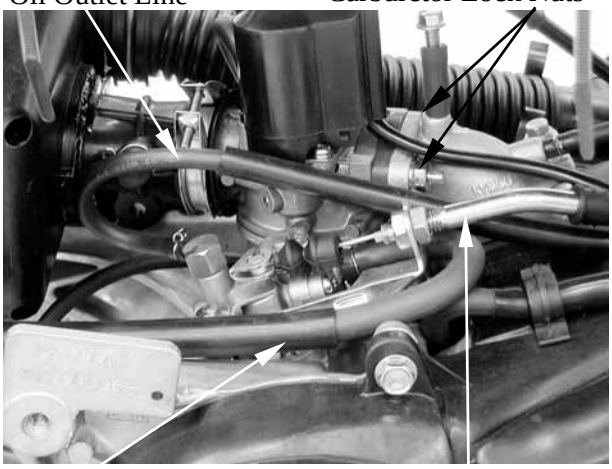
Disconnect the oil pump control cable from the pump body.
Disconnect the oil inlet and outlet line from the oil pump.

✳ After the oil inlet line is disconnected, plug the oil line opening to prevent oil from flowing out.

Remove the two carburetor lock nuts.
Remove the carburetor.

Oil Outlet Line

Carburetor Lock Nuts

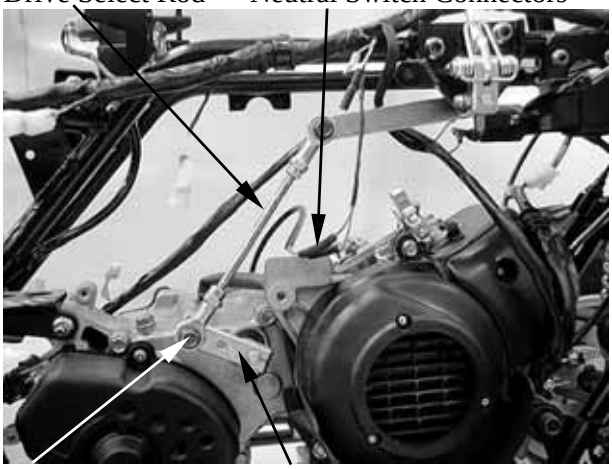


Oil Inlet Line

Control Cable

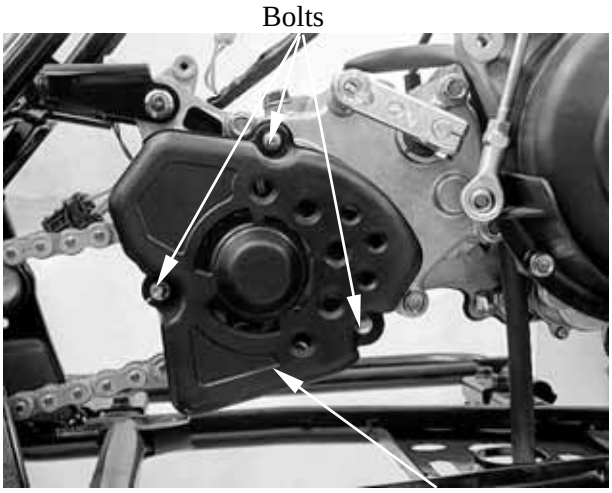
MXU 50 REVERSE:

Disconnect the neutral switch connectors.
Remove the bolt/nut at drive select rod, then remove the drive select rod from drive select arm.

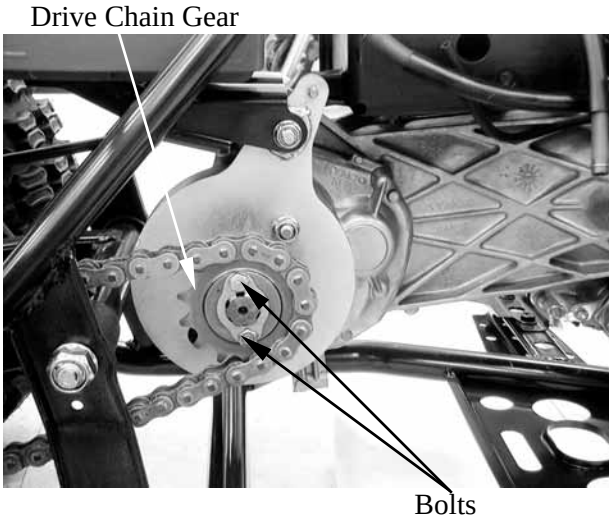


MXU 50 REVERSE:

Remove the three bolts at the drive sprocket cover, then remove the protector cover.



Remove the rear drive chain gear on the bolts.
Remove the drive chain gear.

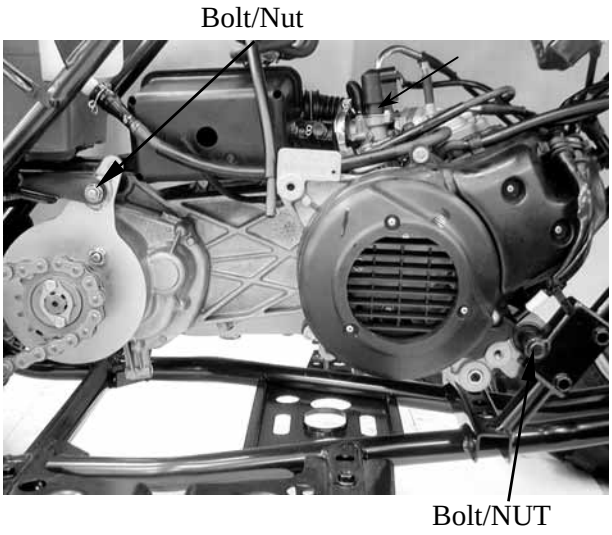


6. ENGINE REMOVAL/INSTALLATION

Remove the engine any connector thing.

Remove the rear right engine bracket bolt/nut **(MXU 50/MX'ER 50)**.

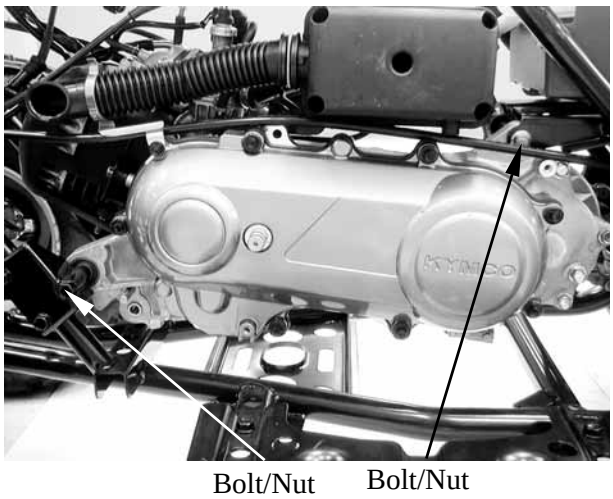
Remove the front right engine bracket bolt/nut.



Remove the front left engine bracket bolt/nut.

Remove the rear left engine bracket bolt/nut.

Remove the engine to the right side of the frame.



ENGINE INSTALLATION

Install the engine and tighten the engine mounting bolts/nuts.

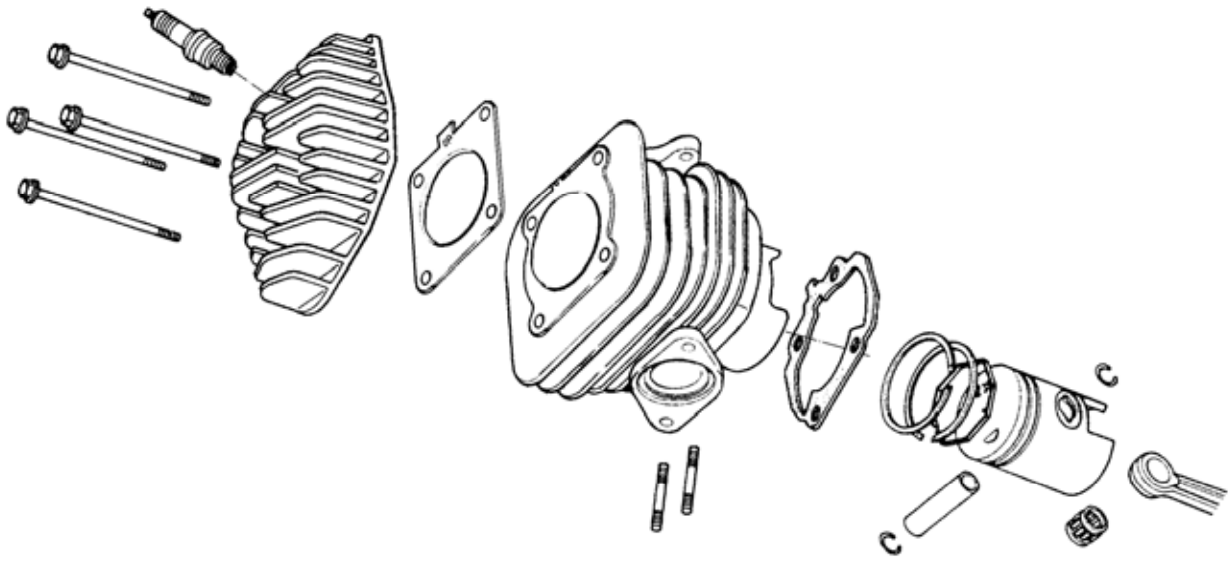
Torque: 4 kgf-m (40 N-m, 29 lbf-ft)

Install the removed parts in the reverse order of removal.

* Route the wires and cables properly.

CYLINDER HEAD/CYLINDER/PISTON

7. CYLINDER HEAD/CYLINDER/PISTON



SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The cylinder head, cylinder and piston can be serviced with the engine installed in the frame.
- Before disassembly, clean the engine to prevent dust from entering the engine.
- Remove all gasket material from the mating surfaces.
- Do not use a driver to pry between the cylinder and cylinder head, cylinder and crankcase.
- Do not damage the cylinder inside and the piston surface.
- After disassembly, clean the removed parts before inspection. When assembling, apply the specified engine oil to movable parts.

SPECIFICATIONS

Unit: mm (in)

Item	Standard	Service Limit
Cylinder head warpage	—	0.1 (0.004)
Piston O.D.(5mm from bottom of piston skirt)	38.97 (1.5588).～38.955 (1.5582)	38.9 (1.556)
Cylinder-to- piston clearance	0.03 (0.0012)～0.07 (0.0028)	0.1 (0.004)
Piston pin hole I.D.	12.002 (0.48008)～12.008 (0.48032)	12.03 (0.4812)
Piston pin O.D.	11.994 (0.47976)～12 (0.48)	11.98 (0.4792)
Piston-to-piston pin clearance	0.002 (0.00008)～0.014 (0.00056)	0.03 (0.0012)
Piston ring end gap (top/second)	0.1 (0.004)～0.25 (0.01)	0.4 (0.016)
Connecting rod small end I.D.	17.005 (0.6802)～17.017 (0.68068)	17.03 (0.6812)
Cylinder bore	39 (1.56)～39.025 (1.561)	39.05 (1.562)

TORQUE VALUES

Cylinder head bolt	1.6 kgf-m (16 N-m, 11.5 lbf-ft)
Exhaust muffler joint lock nut	1.2 kgf-m (12 N-m, 8.6 lbf-ft)
Exhaust muffler lock bolt	3.3 kgf-m (33 N-m, 23.8 lbf-ft)
Spark plug	1.4 kgf-m (14 N-m, 10.1 lbf-ft)

TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed

- Leaking cylinder head gasket
- Loose spark plug
- Worn, stuck or broken piston and piston rings
- Worn or damaged cylinder and piston

Compression too high, overheating or knocking

- Excessive carbon build-up in cylinder head or on piston head

Abnormal noisy piston

- Worn cylinder and piston
- Worn piston pin or piston pin hole
- Worn connecting rod small end bearing

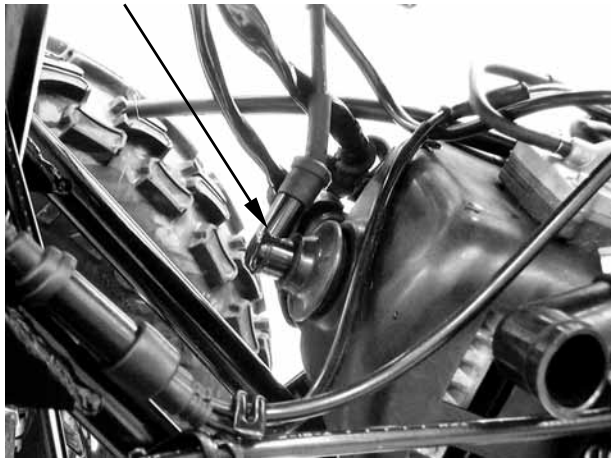
Abnormal noisy piston rings

- Worn, stuck or broken piston rings
- Worn or damaged cylinder

CYLINDER HEAD

REMOVAL

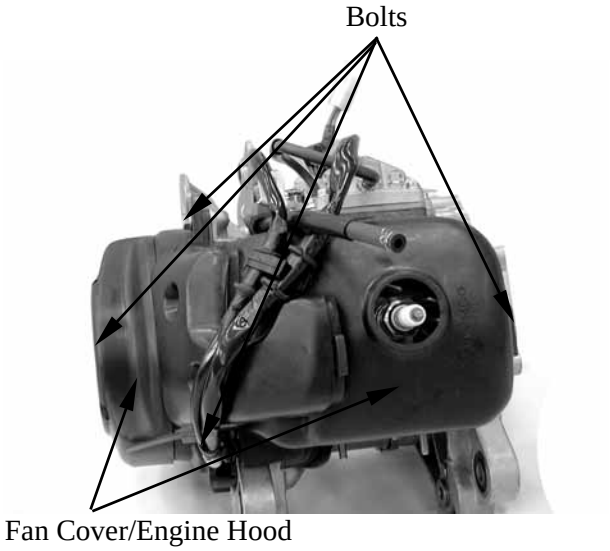
Remove the spark plug cap.
Remove the exhaust muffler. (⇨2-15 or 2-16)



Remove the three bolts attaching the fan cover to remove the fan cover.

Remove the bolt attaching the engine hood to remove the engine hood.

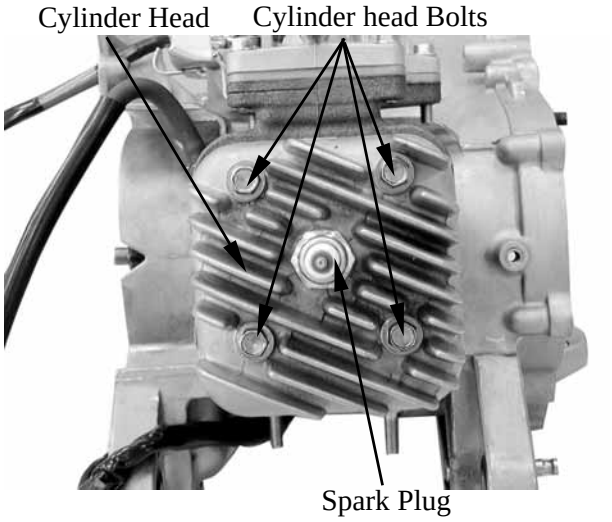
The installation sequence is the reverse of removal.



Remove the spark plug.
Remove the cylinder head bolts and the cylinder head.

* Loosen the bolts diagonally in 2 or 3 times.

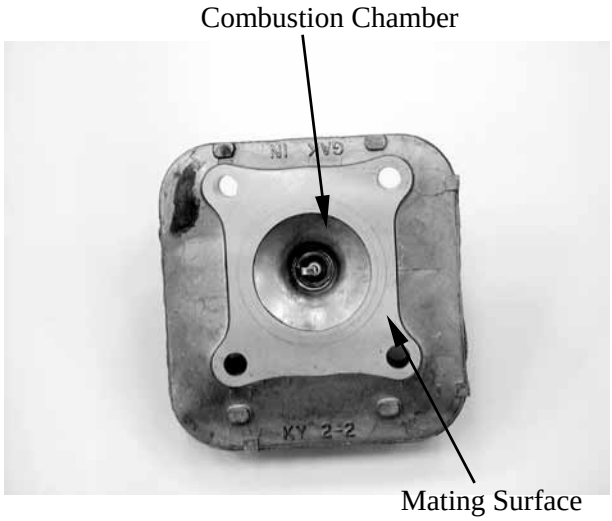
Remove the cylinder head gasket.



COMBUSTION CHAMBER DECABONIZING

Remove the carbon deposits from the combustion chamber

* Avoid damaging the combustion chamber wall and cylinder mating surface.

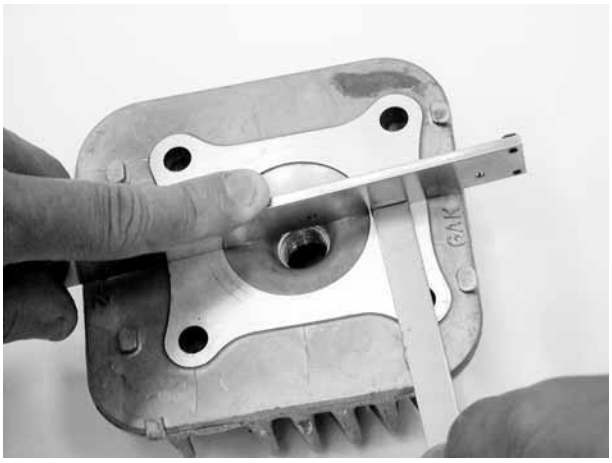


CYLINDER HEAD INSPECTION

Check the cylinder head for warpage with a straight edge and feeler gauge.

Service Limit:

0.1 mm (0.004 in) replace if over

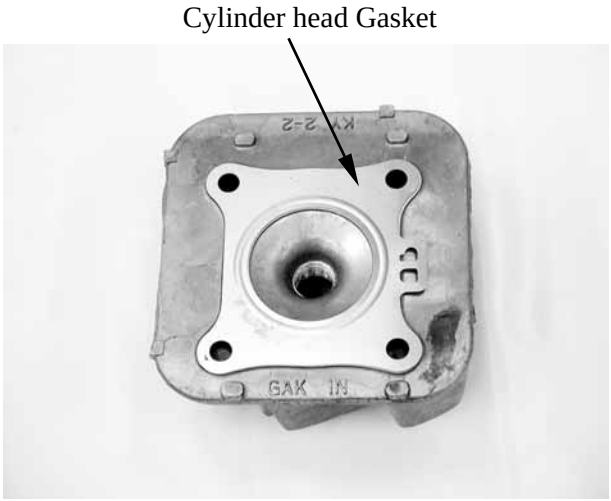


CYLINDER HEAD INSTALLATION

Install the cylinder head on the cylinder properly.

* Be careful not to damage the mating surfaces.

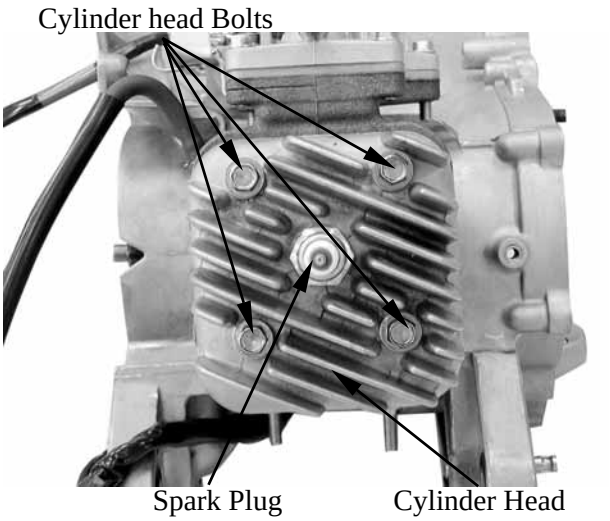
Install a new cylinder head gasket onto the cylinder.



Cylinder Head Bolts Installation

Install and tighten the cylinder head bolts diagonally in 2 or 3 times.
Torque: 1.6 kgf-m (16 N-m, 11.5 lbf-ft)

Install the spark plug.
Torque: 1.4 kgf-m (14 N-m, 10.1 lbf-ft)

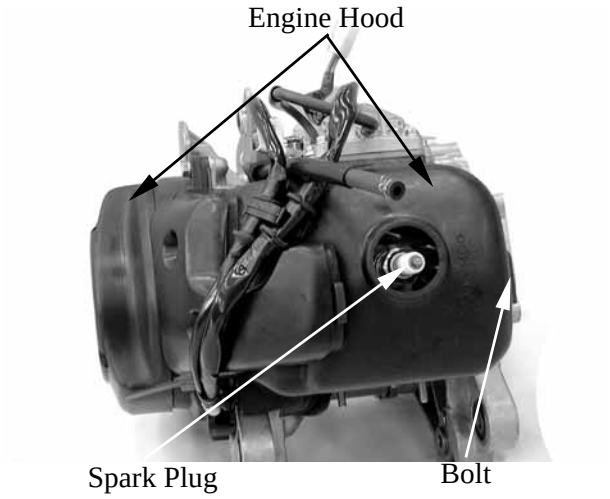


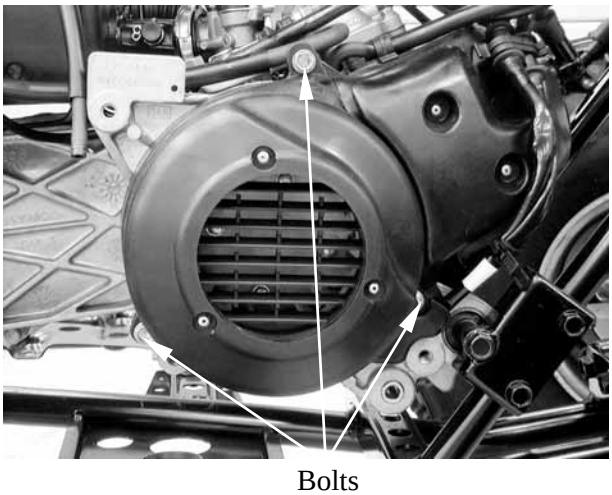
Engine Hood Installation

Install the engine hood. (⇨7-3)
Install the spark plug cap. (⇨7-3)
Install the exhaust muffler. (⇨12-15 or 12-16)

Perform the following inspections after installation:

- Compression test
- Abnormal engine noise
- Cylinder air leaks

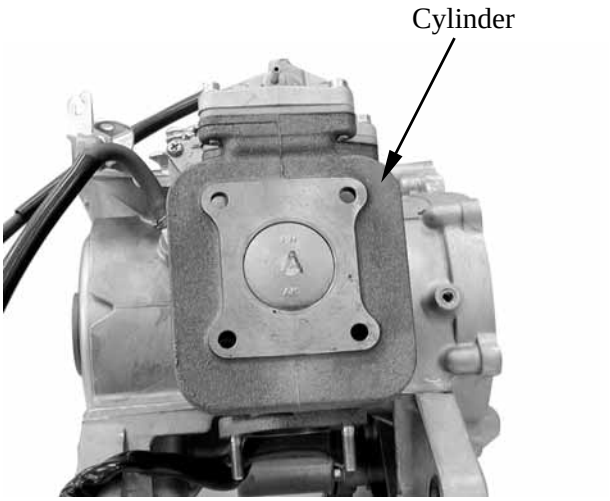




CYLINDER/PISTON

CYLINDER REMOVAL

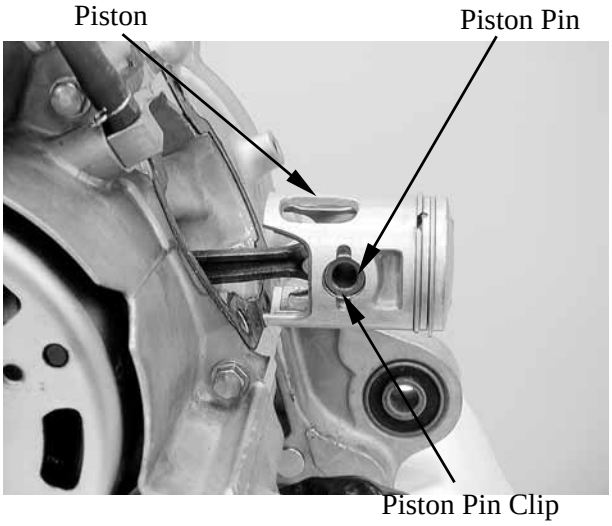
Remove the reed valve (seep page 5-13).
Remove the cylinder head.
Remove the cylinder.
Remove the cylinder gasket.



* Do not pry between the cylinder and crankcase or strike the fins.

PISTON REMOVAL

Remove the piston pin clip to remove the piston pin and piston.



* • Do not damage or scratch the piston.
  • Do not apply side force to the connecting rod when removing the piston pin.
  • Place clean shop towels in the crankcase to keep the piston pin clip from falling into the crankcase.

Spread each piston ring and remove by lifting it up at a point just opposite the gap.
Remove the expander.

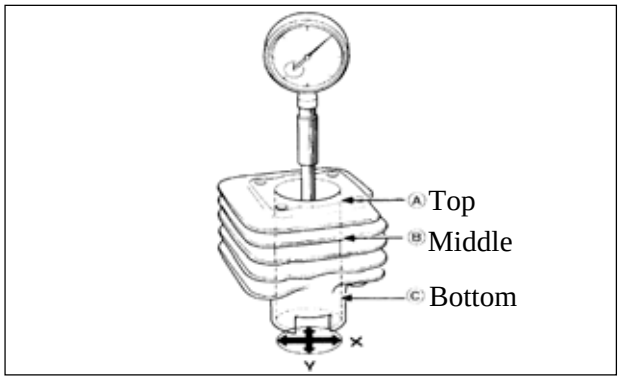
CYLINDER/PISTON INSPECTION

Check the cylinder and piston for wear or damage.
Clean carbon deposits from the exhaust port area.

* Be careful not to damage the cylinder inside wall.

Measure the cylinder bore at three levels of A, B and C in both X and Y directions. Avoid the port area. Take the maximum figure measured to determine the cylinder bore.

Service Limit:
39.05 mm (1.56 in) replace if over

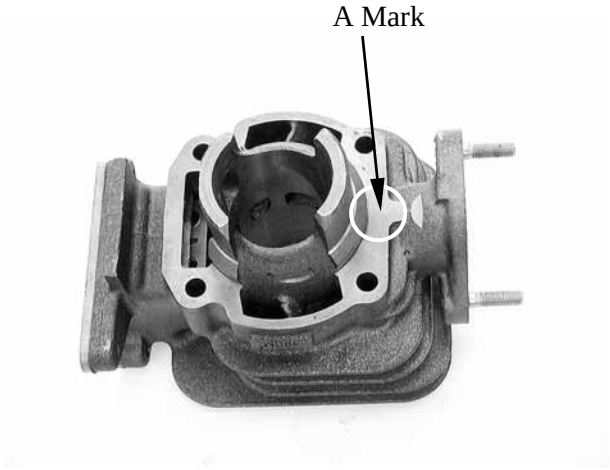


Inspect the top of the cylinder for warpage.

Service Limit:
0.1 mm (0.004 in) replace if over

7. CYLINDER HEAD/CYLINDER/PISTON

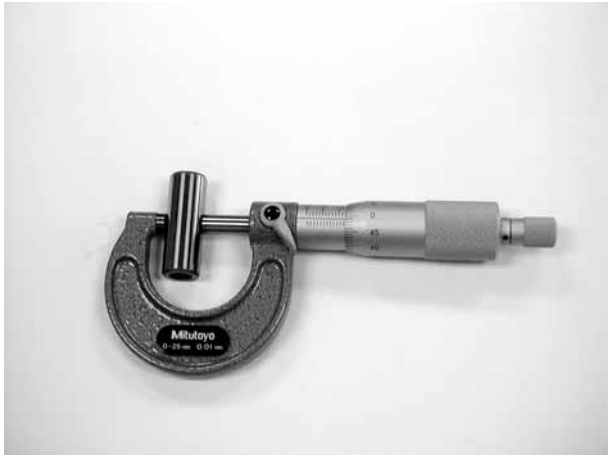
* The cylinder has an “A” mark or no mark on it. When replacing the cylinder with a new one, use a cylinder having the same mark as the old one.



Measure the piston O.D. at a point 5 mm (0.2 in) from the bottom of the piston skirt.
Service Limit:
38.9 mm (1.56 in) replace if below

Measure the piston-to-cylinder clearance.
Service Limit:
0.1 mm (0.004 in) replace if over

Measure the piston pin hole I.D.
Service Limit:
12.03 mm (0.481 in) replace if over



Measure the piston pin O.D.
Service Limit:
11.98 mm (0.479 in) replace if below

Measure the piston-to-piston pin clearance.
Service Limit:
0.03 mm (0.0012 in) replace if over

PISTON RING INSPECTION

Measure each piston ring end gap.
Service Limits: Top/Second:
0.4 mm (0.016 in) replace if over

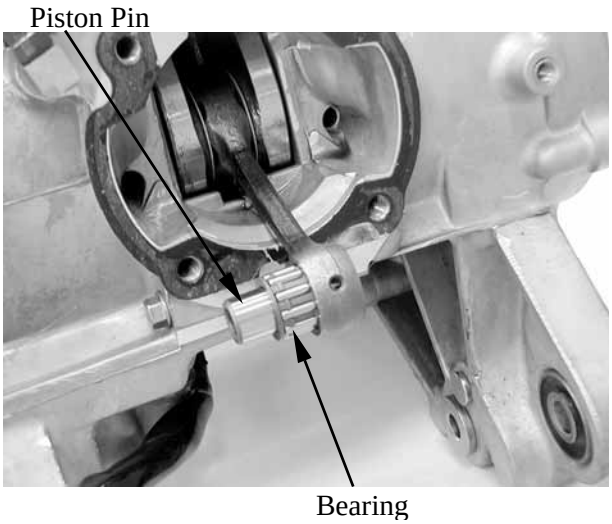
* Set each piston ring squarely into the cylinder using the piston and measure the end gap.

CONNECTING ROD SMALL END INSPECTION

Install the piston pin and bearing in the connecting rod small end and check for excessive play.

Measure the connecting road small end I.D.

Service Limit:
17.03 mm (0.6812 in) replace if over



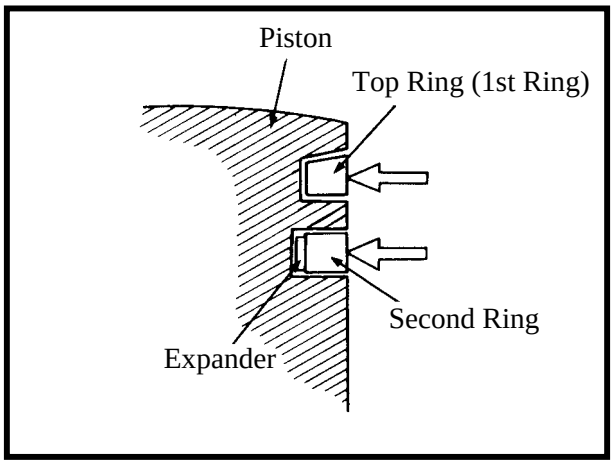
PISTON/CYLINDER INSTALLATION

First install the expander in the second ring groove.

Then install the top and second rings in their respective ring grooves.

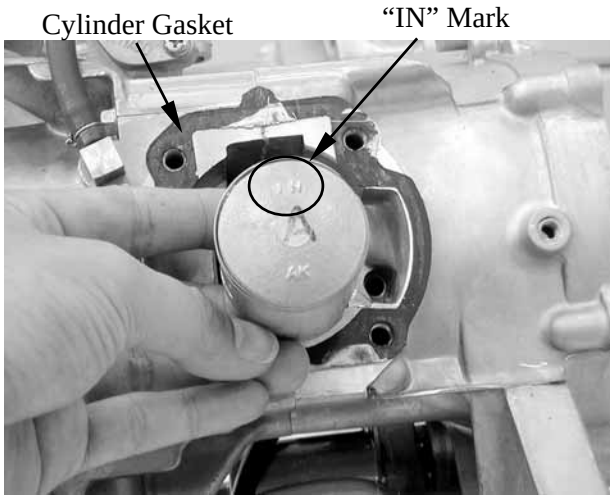
The piston rings should be pressed into the grooves with even force.

After installation, check and make sure that each ring is flush with the piston at several points around the ring.
A ring that will not compress means that the ring groove has carbon deposits in it and should be cleaned.



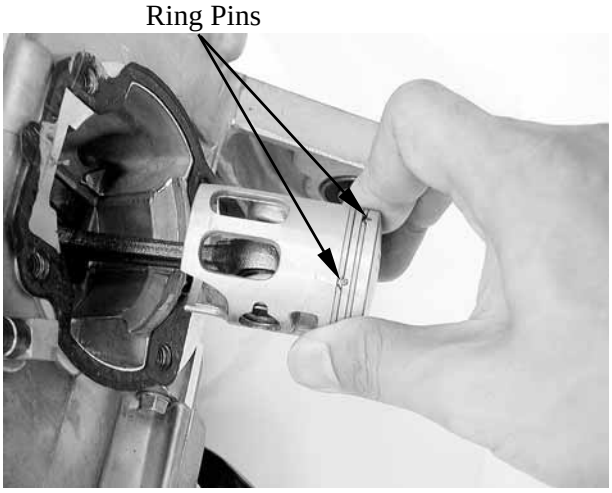
Install a new cylinder gasket on the mating surface between the cylinder and crankcase.

Position the piston “IN” mark on the intake valve side.



Make sure that the ring end gaps are aligned with the piston ring pins in the ring grooves.

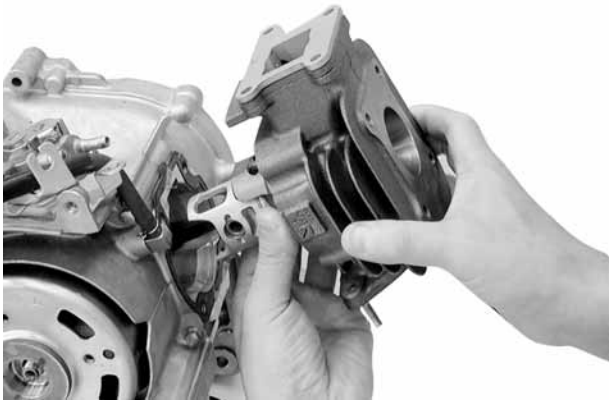
Lubricate the cylinder inside and piston rings with engine oil and install the piston into the cylinder while compressing the piston rings.



* Be careful not to damage the piston.

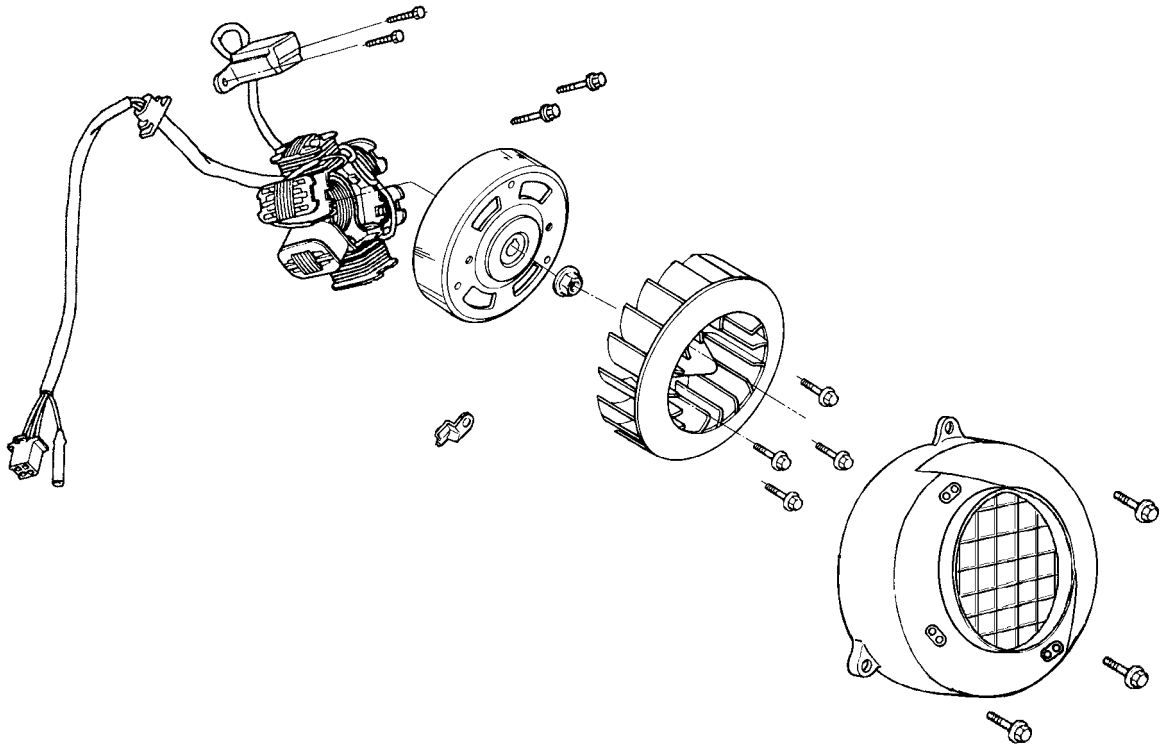
Install the cylinder head.
Torque: 1.6 kgf-m (16 N-m, 11.5 lbf-ft)

The installation sequence is the reverse of removal.



A.C. GENERATOR

8. A.C. GENERATOR



8. A.C. GENERATOR

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- All A.C. generator maintenance and inspection can be made with the engine installed.
- Refer to Section 15, 16 for A.C. generator inspection.

TORQUE VALUE

Flywheel nut : 3.8 kgf-m (38 N-m, 27.4 lbf-ft)

SPECIAL TOOLS

Flywheel puller	A120E00001
Universal holder	A120E00017