Air Filter

Filter Replacement

1. Remove air filter cap, fix screw and remove the air filter cap.

2. Check filter for dirt or damage. Replace as necessary.

Do not attempt to clean the filter element.

Replacing Frequency

1. More frequent replacement is required if vehicle is driven on dusty roads or in the rain.

2. Make sure the air filter cover is securely in place.

Spark Plug

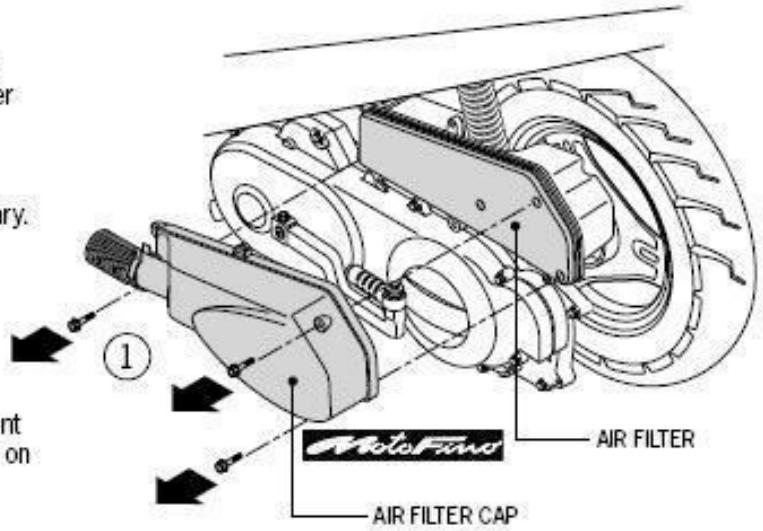
1. Remove spark plug.

2. Check spark plug for burning, dirt or deposit.

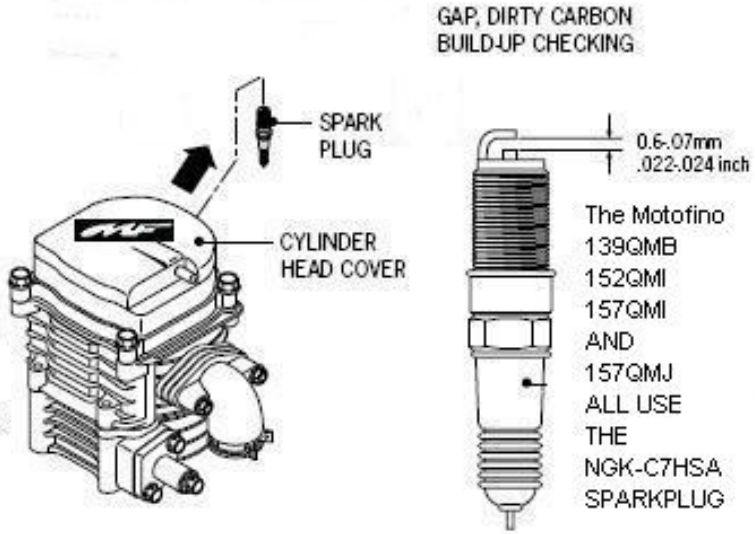
3. Clean it with a spark-plug cleaner or steel brush in case of dirt or carbon deposits.

Specified spark plug:
NGK-C7HSA or CR7HSA
Check spark plug gap
Gap: 0.6-.07mm (.022-.024 in.)

4. Check plug for dirt, carbon build-up or cracking of insulator.



The diagram shows a standard 50cc air box. Larger motors have several different styles- They use paper element air filters. For best performance replace the air filter as part of a regular tune-up.

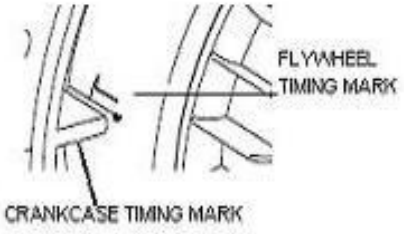


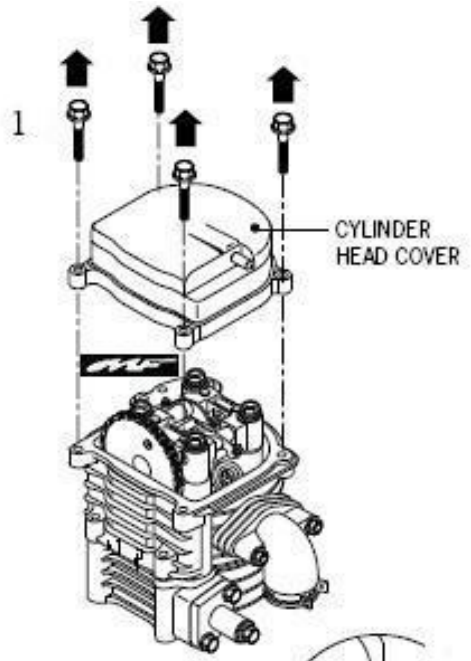
GAP, DIRTY CARBON BUILD-UP CHECKING

The Motofino
139QMB
152QMI
157QMI
AND
157QMJ
ALL USE
THE
NGK-C7HSA
SPARKPLUG

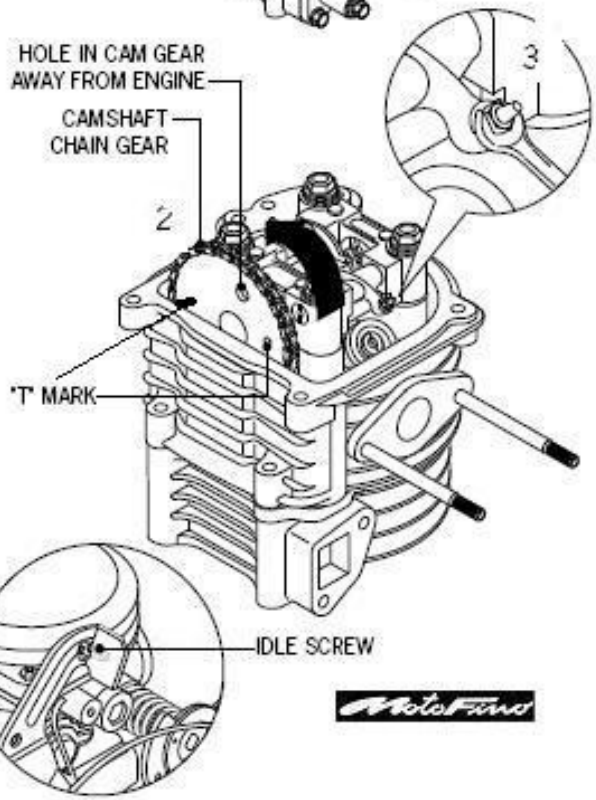
Always adjust valves when engine is cold.

1. REMOVE CYLINDER HEAD COVER.
2. REMOVE FLYWHEEL COVER-ROTATE THE FLYWHEEL UNTIL CAMSHAFT IS IN POSITION SHOWN IN DIAGRAM 2 AND THE "T" MARK ON THE FLYWHEEL IS LINED UP WITH THE MARK ON THE CRANKCASE.





3. TO ADJUST THE VALVES-LOOSEN THE JAM NUT AND SLIDE FEELER GAUGE UNDER THE ADJUSTING SCREW TURN THE ADJUSTING SCREW UNTIL THE FEELER GAUGE FITS SNUG- BUT NOT TIGHT UNDER THE ADJUSTING SCREW. TIGHTEN THE JAM NUT. RECHECK THE VALVE GAP AGAIN AFTER TIGHTENING THE JAM NUT.



VALVES SHOULD BE ADJUSTED TO:
0.004–INTAKE
0.005–EXHAUST

ADJUST IDLE SPEED TO 1700-1800 RPM

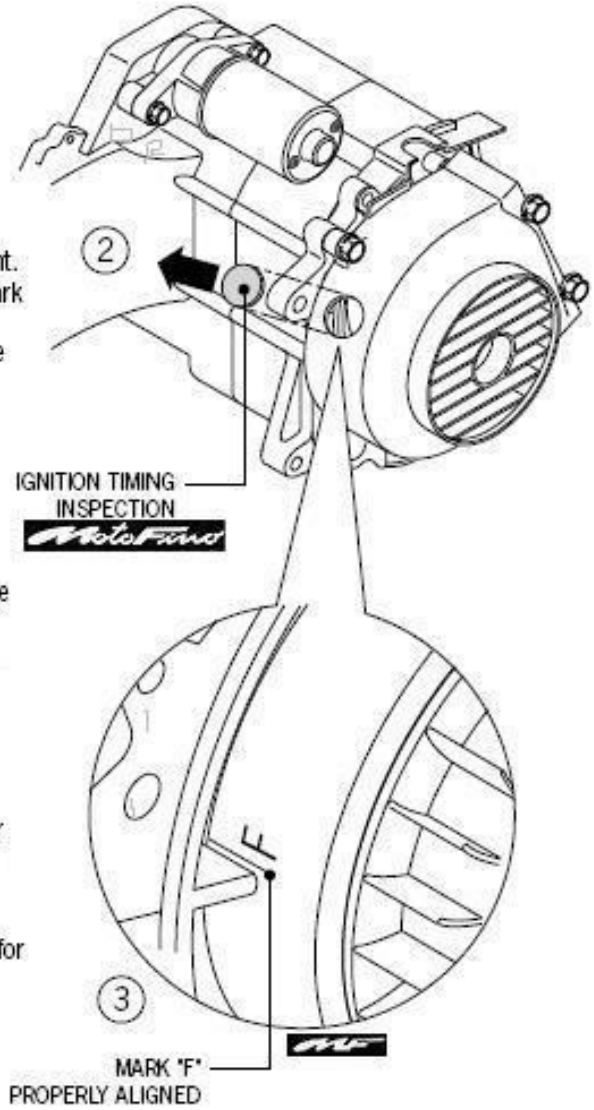
Ignition timing

Equipped with CDI, there is no need for ignition setting.

Check ignition system if ignition time is incorrect.

1. Dismount right body cover.
2. Remove ignition timing inspection.
3. Check ignition timing using the timing light. Crankcase mark must be aligned with mark "F" on flywheel while engine is at idle speed. The timing should advance as the RPM is increased.

The timing mark should align with the crankcase mark at 3000 RPM.



Cylinder Pressure

Measure cylinder pressure with the engine warmed up.

Remove spark plug.

Install cylinder pressure gauge.
With throttle valve fully open, start starter motor to measure cylinder pressure.
Compression pressure: 140-150 psi

If the pressure is excessively low, check for the following:

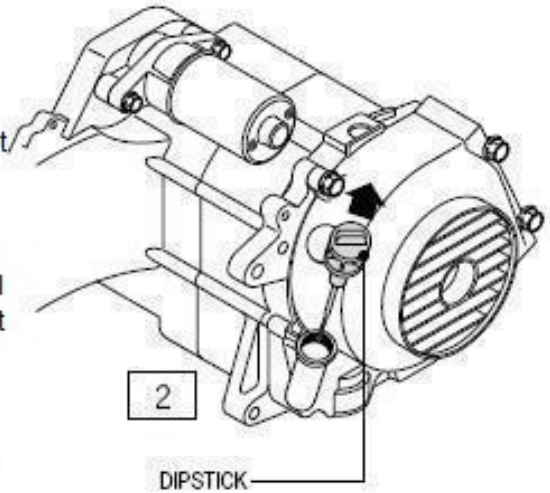
- Valve leakage
- Valve gap too tight
- Cylinder head gasket damaged
- Piston ring worn
- Piston or cylinder worn

Check combustion chamber and piston top for excessive deposit if compression pressure is too high.

Engine Oil/Filter Screen

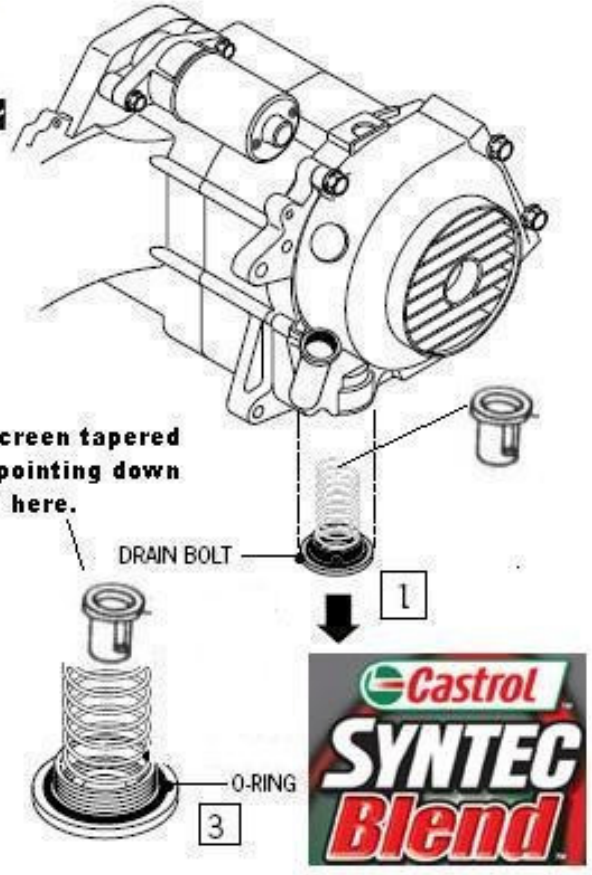
Oil Volume

Check the oil with scooter parked on level ground and on center stand.
Run the engine for 2 to 3 minutes and turn it off, allow it to cool for 2 to 3 minutes then check the oil level.
Remove the dipstick and wipe it clean, insert the dipstick without screwing it in- pull it out and check the level, it should be about halfway up the cross hatched area.
Clean the dipstick again and insert it with the dipstick screwed all of the way in, with the dipstick screwed in the level should be at the top of the cross hatched area or just slightly above.
DO NOT OVERFILL.

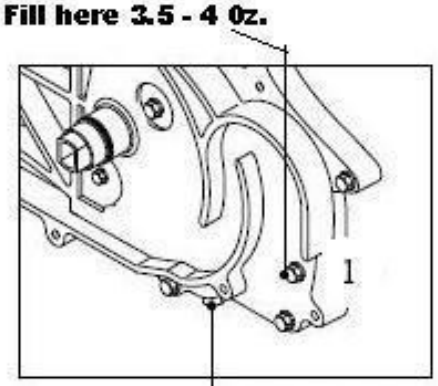


Oil Change

1. Remove drain bolt to completely drain oil.
2. Disassemble the oil filter screen cover and take off the oil filter screen. Use high-pressure air to clean the filter screen. Wash with solvent and dry before reinstalling.
3. Check o-ring for damage. Replace if necessary.
4. Assemble engine oil filter screen and filter screen cover.



5. Add assigned oil to determined volume.
   Aproximatley 28 ounces of
   Castrol Syntec Blend motor oil.
6. Check for oil leaks.
7. Run engine for 1-2 minutes at idle speed.
8. Turn engine off and check oil level. Add oil if needed.



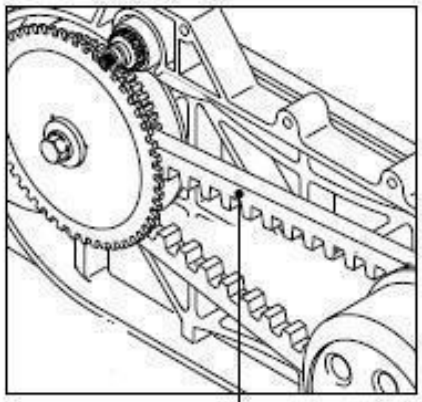
Changing Gear Oil

1. Remove gear oil adjusting bolt and drain oil.
2. Confirm whether or not packing washer is broken.
3. Add recommended gear oil.

   Castrol 10w-40 Syntec Blend- this the same oil that is used in the crankcase.

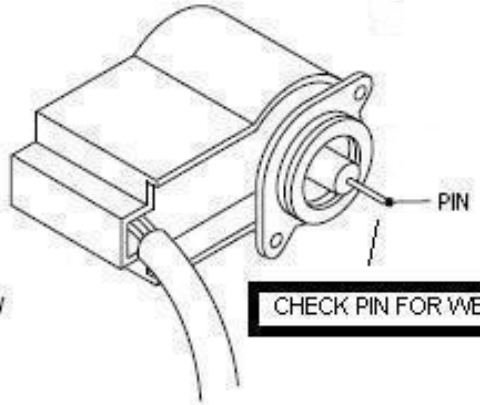
Transmission Belt

1. Detach the left crankcase cover
2. Check whether there is wear and tear of transmission belt.
3. Change with new one when necessary or during timely maintenance.

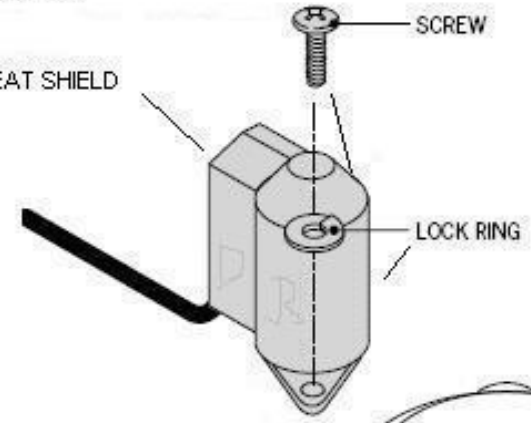


AUTO CHOKE

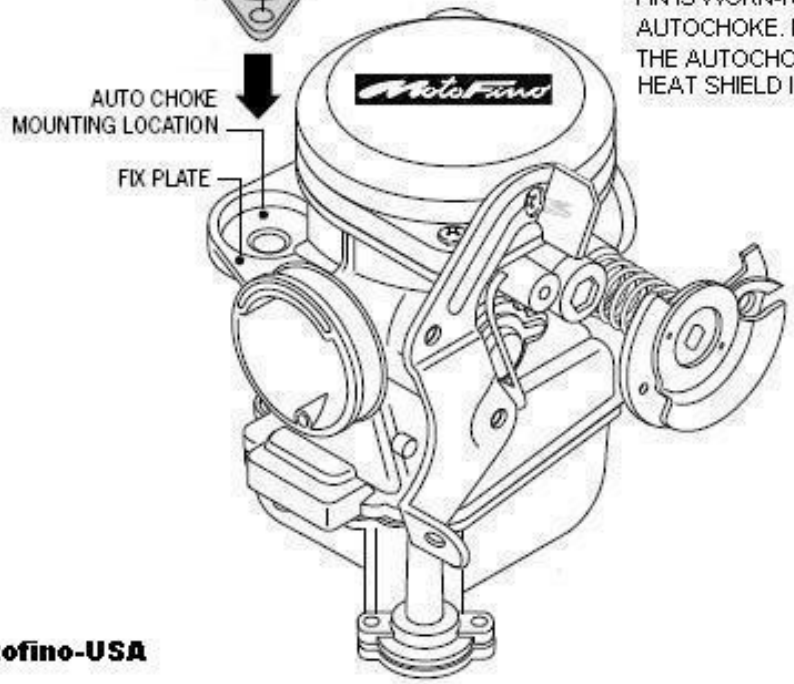
THE AUTOCHOKE IS NOT A TRUE CHOKE IT IS A FUEL ENRICHMENT SYSTEM THAT SUPPLYS EXTRA FUEL TO THE ENGINE WHEN IT IS COLD. AS THE ENGINE WARMS THE PLUNGER EXTENDS SLOWLY UNTIL THE EXCESS FUEL FLOW IS STOPPED.



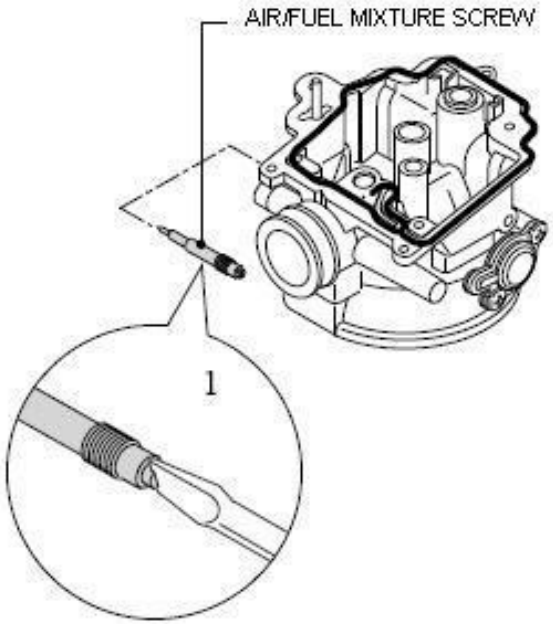
CHECK PIN FOR WEAR.



TO CHECK THE OPERATION OF THE AUTOCHOKE- CONNECT IT TO A 12 VOLT BATTERY-THE PLUNGER SHOULD EXTEND 3/8 INCHES IN 5 MINUTES. IF IT DOES NOT EXTEND PROPERLY OR IF THE PIN IS WORN-REPLACE THE AUTOCHOKE. NEVER OPERATE THE AUTOCHOKE WITHOUT THE HEAT SHIELD IN PLACE.



Carburetor adjustment



1. If this screw has been removed for cleaning of the carburetor, it should be reset carefully. The standard setting is two turns out, plus or minus 1/4 turn.

2. To set this position, run the engine until warm and allow it to idle. Turn the screw in or out a little at a time and measure the idle RPM. The correct setting is achieved when the idle speed is maximized.

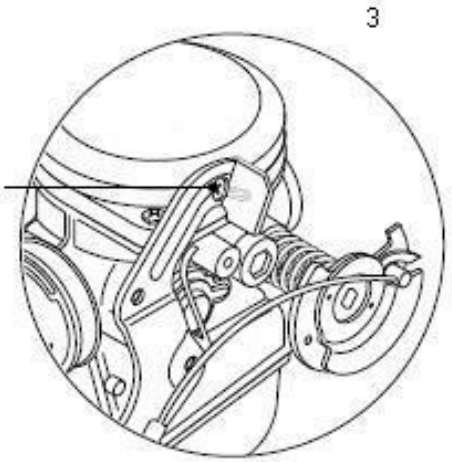
3. Adjust the idle speed of the engine once the engine has been warmed up.

4. Set the warm idle speed to 1700-1900 rpm.

5. Check for engine return to idle speed after running at part throttle.

6. Make sure that the throttle cable allows the throttle control plate to return to the stop screw.

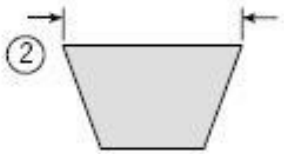
7. If needed, readjust the mixture screw to help stabilize idle performance.



Checking the Driving Belt

1. Detach the left crankcase cover.

2. Check if the driving belt is cracked, frayed, or if there is abnormal wear. Measure the width of the belt. Maximum service allowance: 17mm (.7 in.).

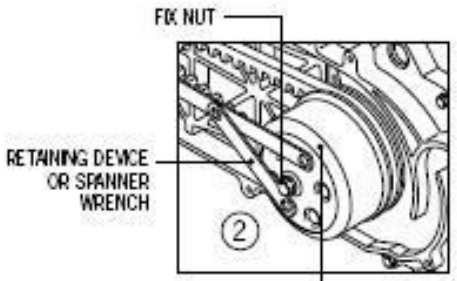


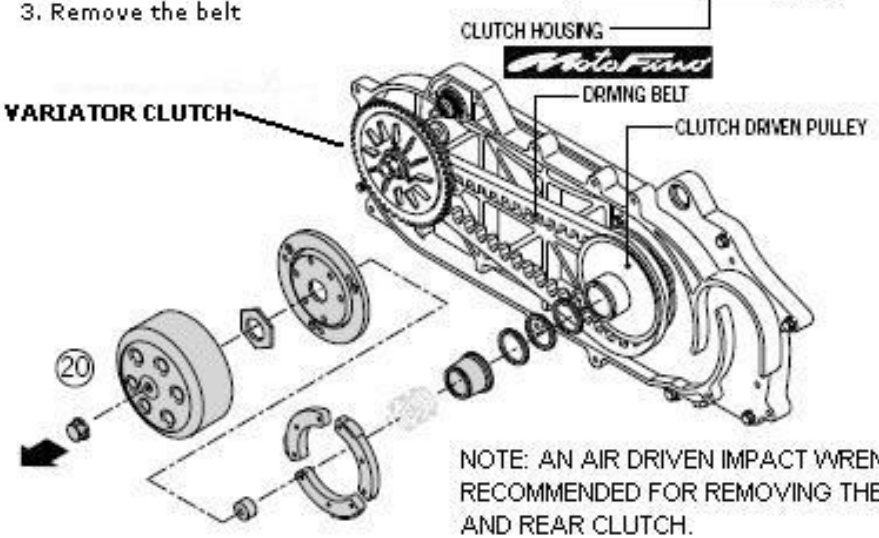
Replacing the Driving Belt

1. Remove the eight fix bolts, then remove he crankcase cover.

2. Remove the front driving pulley (variator clutch)

3. Remove the belt





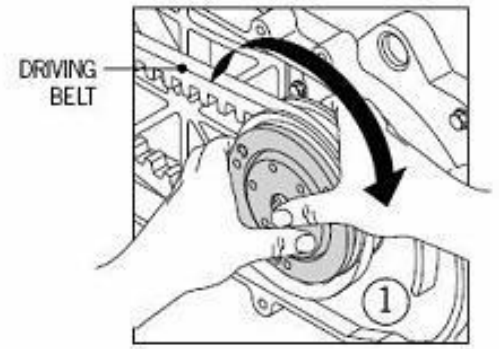
NOTE: AN AIR DRIVEN IMPACT WRENCH IS RECOMMENDED FOR REMOVING THE NUT ON FRONT AND REAR CLUTCH.

Assembling the Driving Belt

1. Turn the driving pulley clockwise to keep the notches of the belt in expanded condition. Then install the new driving belt.

2. Install the driving belt on the driving pulley. Install the driving pulley, the starting ratchet and 10mm (.39 in.) washer. Then install and tighten the nut. Torque: 3,8kg/m 28ft lbs

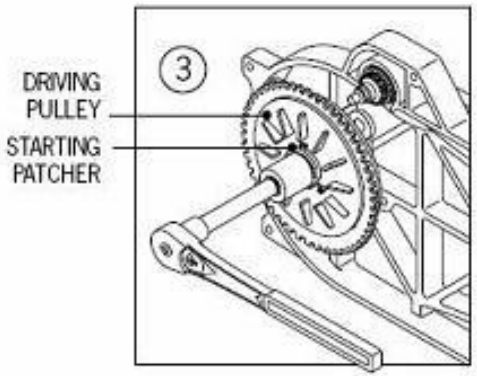
Attention:
During assembly, be sure to align the splints of the driving unit with those on the crank shaft with the ratchet.



The Driving Pulley-Dismounting

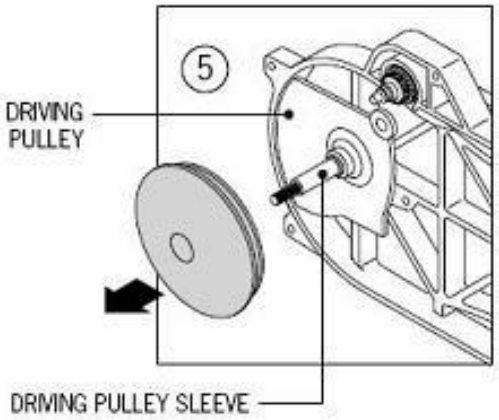
3. Use a retaining device or spanner wrench to hold the driving pulley.

4. Screw out the 10mm (.39 in.) nut, and then remove the ratchet, the 10mm (.39 in.) nut and the driving pulley.



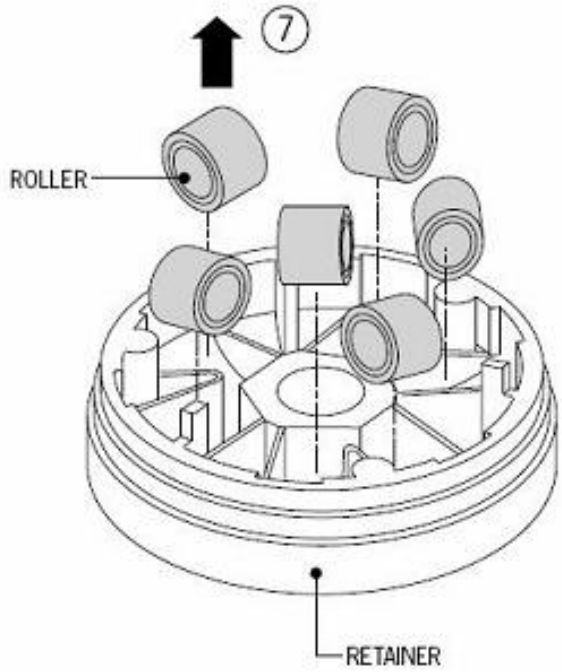
Taking the Driving Pulley Apart

5. Remove the driving pulley and the sleeve from the crankshaft.



6. Remove the retainer.

7. Remove the rollers.



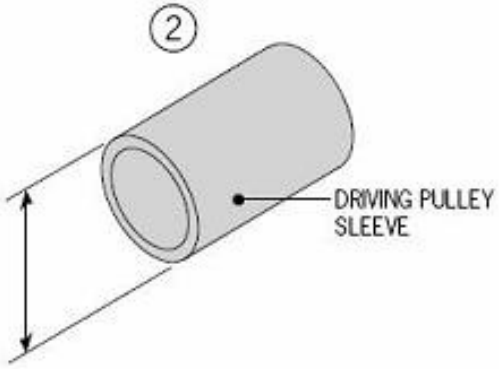
Checking the driving pulley

1. Check the wear of the rollers. Measure the OD of the roller.

Maximum service allowance. Replace when it is below 12.4mm (.47 in.).

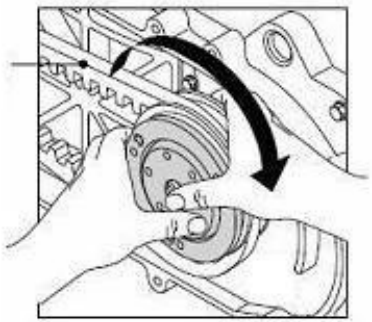
2. Check the wear of the driving pulley sleeve. Measure the OD of the moving section of the sleeve.

Maximum service allowance: Replace when it is below 33.94mm (1.37 in.).

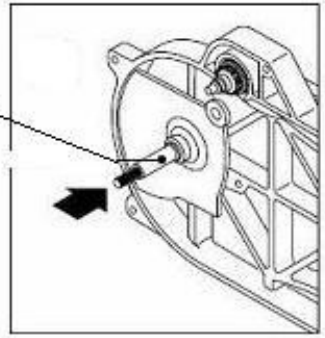


INSTALLING THE BELT

1. TURN THE REAR CLUTCH CLOCKWISE WHILE COMPRESSING THE PULLEY APART-ALLOWING THE BELT TO DROP DOWN.

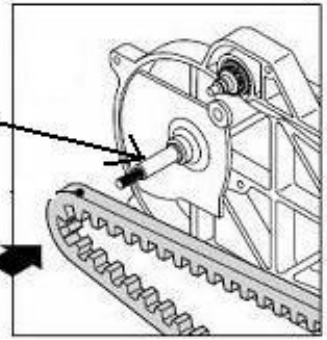


2. INSTALL THE DRIVE PULLEY SLEEVE OVER THE CRANKSHAFT.



3. INSTALL VARIATOR ASSEMBLY OVER PULLEY SLEEVE.

4. SLIDE BELT ON TO SLEEVE.



5. INSTALL STARTER RATCHET GEAR, FAN,-FAN RETAINER, WASHER AND NUT--MAKE SURE THE SPLINES ON THE RATCHET GEAR AND THE FAN RETAINER LINE UP WITH THE SPLINES ON THE CRANKSHAFT-MAKE SURE PULLEY SLEEVE AND BELT ARE FREE OF GREASE.
TORQUE THE NUT TO 28 FT. LBS

Engine is hard to start

•No spark

-check all connections

-check for good grounding connections

-check CDI-ignition coil-sparkplug cap and sparkplug-stator-pickup coil-check connections before testing individual components:

Loose or unhooked grounds are the most common cause of no spark!

•Low compression

- check valve clearance

•No fuel in carburetor

-Blocked fuel line

-Blocked fuel filter

-Blocked vacuum line

-Leaky vacuum line

-Dirty float needle

-Float set too high

Engine quits when hot but restarts after cooling down: possible cause-vapor lock---- check for proper venting and hose routing

possible cause-tight exhaust valve---adjust valve lash

possible cause-faulty CDI----replace

Use only 90 octane or above fuel Try to use gasoline with no alcohol additives.

Alcohol in gasoline can cause an increased chance of vapor lock-especially in hot weather. It also causes an increased chance of moisture buildup in the fuel system.

Alcohol in fuel can also damage fuel system components.

Misfire under acceleration

•Poor spark

•Air mixture screw too lean

•Bad accelerator pump

Poor drivability

•Weak spark/bad ignition system

•Blocked fuel line

•Blocked fuel filter

•Bad fuel

•Water in fuel

•Air leak at carburetor or manifold

•Improper float level

•Bad auto choke

•Obstructed jet in carburetor

•Vacuum slide stuck

•Damaged vacuum diaphragm

•Dirt in carburetor

Too much fuel to engine

-Blocked air filter

-Blocked air passage in carburetor

-Bad autochoke

-Jet loose or not seated correctly

Air/fuel mixture too rich or too lean

•Bad auto choke

•Plugged idle jet

•Float needle stuck or dirty

•Float height too high or too low

•Blocked air passage in carburetor

•Dirty air filter

•Air leak at carburetor or manifold

Troubleshooting
If the brake light or turn light fails to come on with the ignition switch "ON," it may be caused by:

- Bad bulb
- Faulty switch
- Lead broken
- Fuse blown
- Battery discharged
- Faulty wire matching
- Bad flasher

If the fuel indicator fails to come on:

- Lead disconnected
- Wire broken
- Improper float operation
- Faulty fuel sensor
- Bad meter

Starter Motor Does Not Turn

- Fuse broken
- Battery discharged
- Faulty main switch
- Faulty starter clutch
- Faulty brake switch

Abnormal noise from the engine

Improper valve adjustment
Leaking exhaust gasket
Variator rollers or roller plate worn or installed incorrectly-(variators produce some noise even when working correctly).
Crankshaft bearings or transmission bearings worn (very rare on properly maintained engines)
Piston slap-(normally occurs on extremly high mileage engines-due to wear of the cylinder wall)

If light is dim:

- Faulty magneto lighting coil
- Excessive voltage at matching wire or switch
- Faulty rectifier regulator

If the dimmer switch does not operate properly:

- Bad bulb
- Faulty switch

If fuel indicator pointer moves unsteadily:
Loose lead connection

- Faulty fuel sensor
- Faulty meter

Starter Motor Turns Over Slowly

- Battery discharged
- Poor or faulty cable connections
- Starter motor gear seized by a foreign object

Starter Motor Turns – Engine Does Not Rotate

- Faulty starter clutch
- Starter motor reversal
- Battery discharged

Oil in airbox or intake tube
Possible causes:

Too much oil in crankcase
Pinched or blocked crankcase vent hose
Blown head gasket
Bad valve seal
Damaged baffle in valve cover

Riding at high speeds for long distances
Overflow tube on airbox too full

Trouble shooting transmission

The scooter doesn't move after engine is started

- The transmission gear failed
- The driving belt is worn or broken
- The clutch failed

abnormal noise when moving

- The gear is worn, burnt or has damaged teeth
- The bearing is worn and getting loose

Oil leakage from transmission or engine

- Too much oil
- The oil seal is broken