

SCOOTER SERVICE MANUAL

KEEWAY 50cc Models



**© KEEWAY AMERICA, LLC
SPRING 2008**



KEEWAY
MOTOR

If problems cannot be resolved or further assistance is needed,
please feel free to contact us.

KEEWAY AMERICA, LLC
2912 SKYWAY CIRCLE N.
IRVING, TX 75038
214-441-9661 PHONE
214-441-9641 FAX
service@keeway-america.com

Our support staff will assist in any way possible.

PRE-DELIVERY INSPECTION

In order for KEEWAY America to maintain its high standards of quality, it is necessary for each dealer to thoroughly inspect each unit before their customer takes delivery.

INITIAL:

Wash entire vehicle with warm water and wipe dry with a soft cloth. **DO NOT USE SOAP OR TERRY CLOTH.**

Inspect paint sheen and decal quality.

Ensure all fasteners have appropriate torque, to include visible body screws, axle and exhaust nuts, engine and carburetor bolts, etc.

Ensure proper operation of all lock cylinders.

Verify that a new, fully charged battery has been installed.

Inspect vehicle electrical system, including switch and control operations.

Ensure proper operation and adjustment of levers, throttle and rear brake cables.

Ensure proper front and rear brake operation, including fluid level, and adjust as needed.

Verify spark plug gap, and adjust accordingly.

Start engine and bring to operating temperature. Check fluid levels, and add if necessary.

Check and adjust idle speed as needed.

Ensure free travel of both wheels.

Check tire pressure, and adjust accordingly.

Verify proper operation of remote-start system.

TEST DRIVE:

Verify proper front and rear suspension for correct damping and travel.

Ensure proper operation and settings of gauge cluster.

Verify wheel alignment, and adjust accordingly.

Check for fluid leaks, and adjust levels accordingly.

Verify proper operation and adjustment of all vehicle lights.

FINAL:

Wipe down entire vehicle with soft cloth to remove any dust or debris.

Detail grips, seat, and tires.



MAINTENANCE CHART

Note

Increase maintenance frequency when riding in poor conditions.

Periodic maintenance table

| Interval | Mile | 600 | 4000 | 7500 | 11000 | 15000 |
|---|--------------------------------|------|------|-------|-------|-------|
| | Kilometer | 1000 | 6000 | 12000 | 18000 | 24000 |
| | Months. | 2 | 12 | 24 | 36 | 48 |
| Storage battery | | I | I | I | I | I |
| Cylinder head nut and exhaust pipe bolt | | T | T | T | T | T |
| Cylinder head and cylinder | | — | C | C | C | C |
| Spark plug | | — | R | R | R | R |
| Air cleaner | Clean every 3000KM(2000 miles) | | | | | |
| Idle speed rpm | | I | I | I | I | I |
| Throttle cable play | | I | I | I | I | I |
| Oil pump | | I | I | I | I | I |
| Gear oil | | I | — | I | — | I |
| Fuel line | | I | I | I | I | I |
| | Replace every 4 years | | | | | |
| Brake | | I | I | I | I | I |
| Brake hose | | I | I | I | I | I |
| | Replace every 4 years | | | | | |
| Brake fluid | | I | I | I | I | I |
| | Replace every 2 years | | | | | |
| Steering | | I | I | I | I | I |
| Front fork | | I | I | I | I | I |
| Rear shock absorber | | I | I | I | I | I |
| Tire | | I | I | I | I | I |
| Vehicle body bot andnut | | T | T | T | T | T |

Note

- ◆ I=inspect, clean, adjust, lubricate, or replace if necessary;
- A=adjust; C=clean; R=replace; T=tighten

TABLE OF CONTENTS

PREDELIVERY INSPECTION

MAINTENANCE CHART

PREFACE

KEEWAY SERVICE GUIDELINES

ELECTRICAL PRECAUTIONS

SAFETY GUIDELINES

SPECIALTY TOOLS REQUIRED

GENERAL INFORMATION

Terminology
The 2-Stroke Engine Cycle
Vehicle Information
General Specifications

POWERTRAIN SPECIFICATIONS

Fastener Torque

DIMENSIONS

Alignment Pins/Dowels
Pin shafts
O-rings
Seals
Bearings
Gaskets
Gears
Sprockets
Chains

ENGINE PARTS ORIENTATION



ENGINE COMPONENT FIT/TOLERANCE

Cylinder Head/Valve
Cylinder Jug/Piston

SYSTEM FUNDAMENTALS

Kick Start Chain Reaction
Fuel Delivery System
Brake System Fundamentals
Fundamental Front Absorber Theory

TROUBLESHOOTING AND PROCEDURES

COMMON ISSUES

Electric Starter Doesn't Engage or Rotate
Only Clicking Noise When Starter Button Is Pressed
No Reaction whatsoever When Starter Button Is Pressed
Hard Start/Poor Idle/Poor Performance
No Start
Insufficient Power/Lack of Acceleration
Poor/Difficult Handling/Instability
Soft Brakes or Too Much Lever Travel
Hard Brakes or Stiff Lever Feel

BATTERY/CHARGING SYSTEM FUNDAMENTAL TEST

ENGINE COMPRESSION TEST

IGNITION TIMING TEST

TECHNICAL GUIDE FOR 50cc CARBURETORS



POWERTRAIN COMPONENTS

CARBURETOR REMOVAL/INSTALLATION

ENGINE AND COMPONENTS REMOVAL/INSTALLATION

- Cowling Assembly
- Cylinder Head Assembly
- Camshaft/Rocker Arm Assembly
- Piston Assembly
- LH Crankcase Cover
- RH Crankcase Cover, Magneto, and Associated Parts
- RH Crankcase Internals
- LH Crankcase Cover and Associated Parts
- Crankcase Assembly
- Transmission Case Assembly
- Drive Wheel Clutch Assembly
- Kick Start Gear Assembly
- Transition Gear Assembly
- Variator Assembly
- Starter Clutch Assembly

CHASSIS

TORQUE SPECIFICATIONS

COMPONENT GUIDE

- Front Wheel Assembly
- Rear Wheel Assembly
- Exhaust Assembly
- Front Fork Assembly



PREFACE

This service manual serves as KEEWAY America's promise of quality service and technical support for its entire line of vehicles. This manual is intended to provide most of the necessary information for the proper service and maintenance of all 50cc scooters.

KEEWAY 50cc scooters lie on the cutting edge of technology, offering such creature comforts as:

Fully-automatic, belt-driven transmission

Forced air-cooling system

CDI ignition system

Electric start with security system/remote start capabilities

These 50cc scooters are intended to fit the needs of a wide array of potential riders. In order to remain familiar with the proper service procedures, authorized technicians should periodically review this manual.

Please understand that this service manual acts as a general guide for KEEWAY's entire line of 50cc, 2-stroke scooters. Model-specific information such as vehicle specifications, wiring diagrams and technical/service bulletins will follow, keeping this guide as complete and current as possible.

For any questions or concerns not addressed in this service manual or any succeeding documents, please don't hesitate to contact KEEWAY America directly.

KEEWAY SERVICE GUIDELINES

- 1.** Use only genuine KEEWAY parts, and use proper lubricants where specified.
 - 2.** Use only the proper tools for the task at hand.
 - 3.** Please be sure to replace all washers, seals, o-rings, cotter pins, etc.
 - 4.** Please note that all fasteners are metric.
 - 5.** When reassembling fasteners, please snug nuts and bolts in a circular pattern, and torque to spec in a diagonal, star pattern (if applicable).
 - 6.** Upon completion of assembly, double check fastener tension (torque) and ensure free movement of parts.
 - 7.** Parts and fasteners should be free of debris prior to measurement. Upon assembly, use lubricant, or thread lock as needed.
 - 8.** When metal parts are removed, and need to be stored for extended periods, please apply a heavy coat of lubricant to minimize rust and debris accumulation.
-

ELECTRICAL PRECAUTIONS

A loose or dangling cable is a tremendous hazard. Ensure fasteners are in place and secure.

Never leave wire exposed, especially near any metal surface, including nuts and bolts.

Only lay wire in straight, relaxed manner. Never stretch, twist, or sharply bend wire or electrical connectors, or loss of conductivity will occur.

Keep wires away from heat sources and moving parts/rotating assemblies to avoid electrical damage.

Inspect pigtails and connectors before connecting to wire to ensure a clean, firm contact.

When making repairs to wires and connectors, please be sure to wrap the new joint in heat-shrink tubing. This will reinforce the connection and protect it from the elements.

SAFETY GUIDELINES

WARNINGS:

Use only the appropriate, well-maintained tool for the task at hand.

Gasoline is a highly volatile chemical, and should be treated with care. Never handle near open flame or heat source.

Keep floor clean and free of debris. Avoid fluid spills to minimize the risk of accidents and equipment damage.

Exhaust fumes are hazardous to your health. Never operate engine in closed or poorly ventilated areas.

BRAKE DUST CONTAINS ASBESTOS. Use of a dry brush or compressed air will increase the risk of inhaling asbestos fibers, which carries a high risk of damage to the respiratory system.

AVOID EYE AND PROLONGED SKIN CONTACT with brake cleaner. If this occurs, immediately and thoroughly flush affected area with water and seek medical assistance.

Only use DOT-approved brake fluid from a sealed container to ensure no moisture absorption. Avoid fluid splash/overflow onto painted or rubber parts, as rapid deterioration can occur.

BATTERIES CONTAIN ELECTROLYTE SOLUTION. Exercise caution and wear protective clothing and eyewear. If accidental exposure occurs, immediately and thoroughly flush affected area with water and seek medical assistance.

Please maintain sufficient communication with coworkers to maintain productivity and minimize accident potential.

SPECIALTY TOOLS REQUIRED

T01

T-Driver and socket set
(8, 10, 12, 13mm, and screwdriver bits
needed)



T02

Flywheel removal tool



T03

Valve spring compressor



T04

Spanner socket



T05

Cylinder compression tester

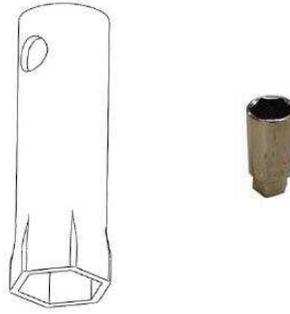


T06

Piston pin removal tool



T07
13/16 Spark plug socket
(2 styles shown)



T08
Impact wrench



T9
Impact sockets
(17 & 18mm needed)



T10
Clutch clamp tool

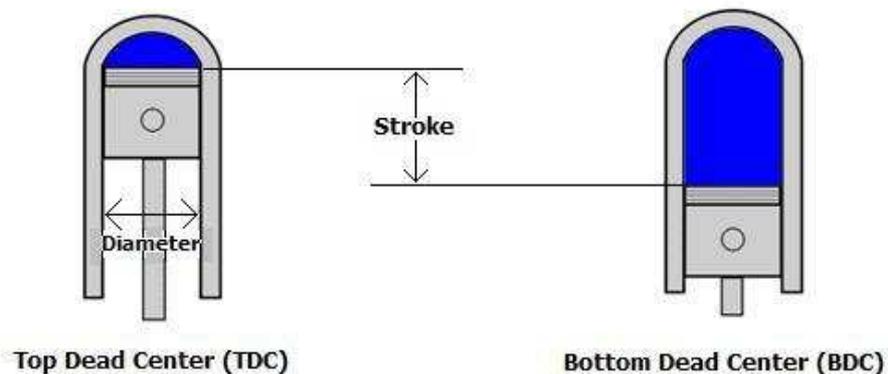


T11
Torque wrench
(and appropriate sockets)
*Recommend **both** lbs-ft and lbs-in*



GENERAL INFORMATION

TERMINOLOGY



The two absolute maximums of linear piston travel in the internal combustion engine are referred to as **TOP DEAD CENTER (TDC)** and **BOTTOM DEAD CENTER (BDC)**.

Note that **TDC** is at the point farthest from the rotation center of the crankshaft, and **BDC** is the closest point.

The distance across the piston's sleeve, or cylinder, is known as **CYLINDER DIAMETER**.

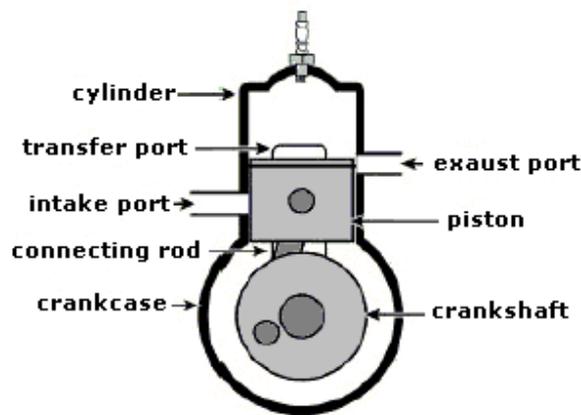
The **STROKE** is the distance the piston travels from **TDC** to **BDC**.

The cylinder's **DISPLACEMENT** is achieved by calculating the cylinder's volume (by multiplying $(\frac{1}{2} \text{ DIAMETER})^2 * \pi * \text{STROKE}$), all in centimeters. (**NOTE:** *total engine displacement is achieved by multiplying this number by the total number of cylinders.*) The end measurement is cubic centimeters, or cc.

THE 2-STROKE ENGINE CYCLE

The 2-stroke engine differs slightly from the 4-stroke, in that it combines its phases, or strokes. Upon initial inspection, the most noticeable difference in overall 2-stroke architecture is the location of the **INTAKE PORT**.

Component Guide

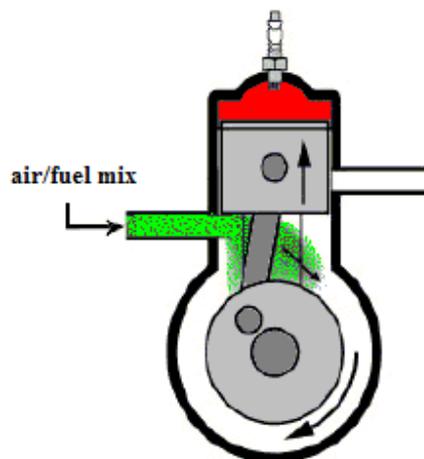


It provides a direct feed into the **CRANKCASE**, and then moves into the **CYLINDER** via the **TRANSFER PORT**. The following better describes the process.

At the beginning of the engine's first revolution, the piston begins an upward motion in the cylinder, which generates pressure in the combustion chamber, and creates a vacuum into the **CRANKCASE**.

NOTE: The piston skirt is blocking the transfer and exhaust ports, but is allowing the air/fuel mix to enter the crankcase via the intake port.

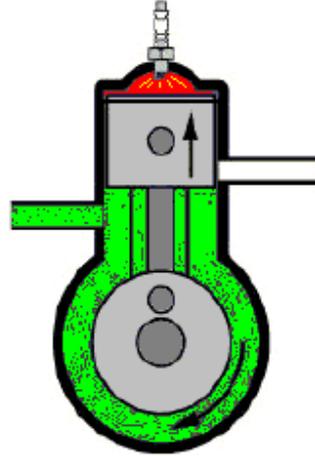
1st Stroke, First Half (intake and compression)



Now the piston is reaching **TDC**, completely compressing the air/fuel mix in the combustion chamber. *NOTE: The exhaust and transfer ports are still blocked by the piston skirt; the intake port is still open, but the crankcase has now filled to capacity.*

The spark plug now fires, igniting the compressed mixture in the combustion chamber.

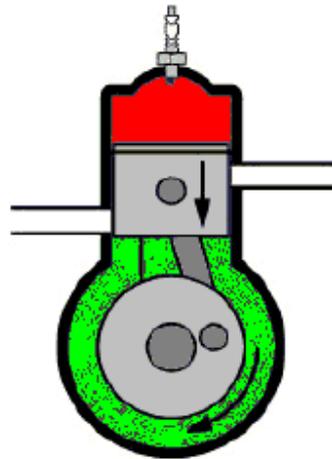
1st Stroke, Second Half (combustion)



Once the mix has been ignited, the following explosion forces the piston back down at a very high rate of speed. This generates the power required to perform the workload.

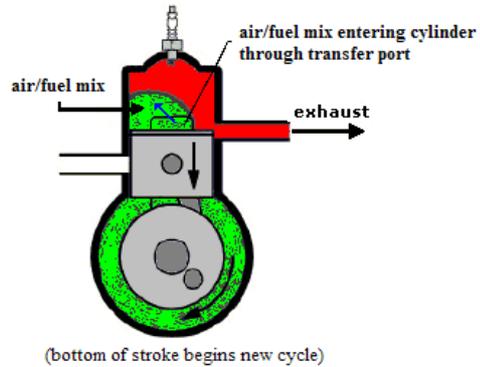
NOTE: All three ports are now closed. As this downward motion occurs, the air/fuel mixture in the crankcase is compressed.

2nd Stroke-First Half (power)



This is the final, and perhaps most complicated step in the 2-stroke process. As the piston travels downward, the **EXHAUST PORT** opens. This allows the combusted gasses to exit the engine. As the piston continues downward, the **TRANSFER PORT** is now exposed. This allows for the compressed mix in the crankcase to expand and enter the cylinder. *NOTE: The intake port remains closed. As the piston reaches BDC, a new cycle begins.*

2nd Stroke-Second Half (exhaust and forced intake)



This cycle of the 2-stroke engine translates into a fundamental rotational force inflicted upon the crankshaft, known as **TORQUE**. This force is translated to the vehicle's drive wheel via a clutch assembly and drive belt. The metric unit of measurement for **TORQUE** is equal to the unit of force multiplied by the length of the arm that inflicts it, which is the Newton-meter (lb-ft standard).

In order to optimize the efficiency of this engine cycle and maximize **TORQUE** output, the timing of ignition of the compressed air-fuel mixture is managed by the vehicle's CDI.

GENERAL SPECIFICATIONS

Chassis

| | |
|----------------------|------------------------|
| Front Shock Absorber | Spring, Oil Damped |
| Rear Shock Absorber | Spring, Oil Damped |
| Turn Angle | 48° (to left/to right) |
| Brakes F/R | Disk/Drum |

Engine

| | |
|--------------------|---|
| Type | 2-Stroke, Forced-Air-Cooling |
| Intake | Piston-Reed Valve |
| Cylinder | Single |
| Bore | 40.0mm |
| Stroke | 39.6mm |
| Displacement | 49.8mL |
| Compression Ratio | 6.9:1 |
| Timing | 15° BTDC @ 1500rpm |
| Carburetor | Mechanical Slide |
| Start System | Electric and Kick-start, Remote-Start Available |
| Lubrication System | Oil-Injection/Pressure Lubrication |

Transmission

| | |
|---------------|--------------------------------|
| Clutch System | Dry, Fully Automatic Eccentric |
| Gearshift | Step-less CVT |
| Gear Range | 0.86~2.64 |

Electrical

| | |
|---------------|-------------|
| Ignition Type | CDI |
| Spark Plug | BR8HSA |
| Generator | A/C Magneto |
| Fuse | 8A |

FLUID CAPACITY

| | |
|-----------------|----------|
| Fuel Tank | 1.38 gal |
| Engine Oil Tank | 1L |
| Gear Oil | 3.4 oz. |

POWERTRAIN SPECIFICATIONS

FASTENER TORQUE

| | |
|---|-----------------------|
| Self-tapping screws for fan cover assembly | 1-3Nm (9-26 lbs-in) |
| Locknuts for fan cover assembly | 10-12Nm (8-9lbs-ft) |
| Self-tapping screws for air cover | 1-3 Nm (9-26 lbs-in) |
| Lock nut for air cover | 10-12Nm (8-9lbs-ft) |
| Self-tapping screw and nut for cylinder head cover vent | 1-3Nm (9-26lbs-in) |
| Locknut for cylinder head cover | 10-12Nm (8-9lbs-ft) |
| Locknut for cylinder head | 15-18Nm (11-13lbs-ft) |
| Spark plug | 15-18Nm (11-13lbs-ft) |
| Intake port bolts | 10-12Nm (8-9lbs-ft) |
| Exhaust port bolts | 10-12Nm (8-9lbs-ft) |
| Carburetor joint locknuts | 10-12Nm (8-9lbs-ft) |
| Cooling fan locknuts | 10-12Nm (8-9lbs-ft) |
| Flywheel locknut | 45-50Nm (33-36lbs-ft) |
| Stator coil locknuts | 6-8Nm (4-6lbs-ft) |
| Magneto locknuts | 10-12Nm (8-9lbs-ft) |
| Locknuts for RH crankcase cover | 10-12Nm (8-9lbs-ft) |
| Locknut for oil pump | 5-9Nm (3-7lbs-ft) |
| Locknut for driven clutch assembly | 55-60Nm (40-44lbs-ft) |
| Locknut for driven clutch hub | 35-38Nm (26-28lbs-ft) |
| RH crankcase locknut | 10-12Nm (8-9lbs-ft) |
| Engine pivot bolt | 55-60Nm (41-44lbs-ft) |
| LH crankcase cover locknut | 10-12Nm (8-9lbs-ft) |
| Self-tapping screws for LH crankcase cover vent | 3-6Nm (2-4lbs-ft) |

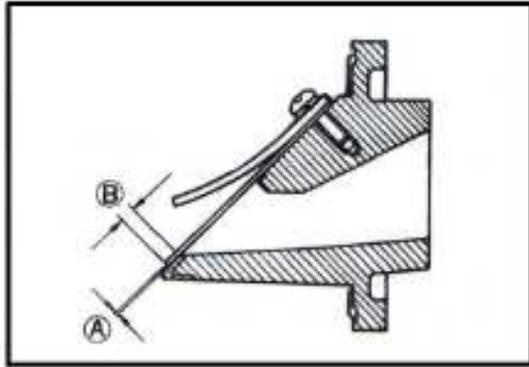
| | |
|----------------------------------|-----------------------|
| Locknut for fixed drive assembly | 40-60Nm (29-43lbs-ft) |
| Kick starter locknut | 10-12Nm (8-9lbs-ft) |
| Transmission case cover locknut | 10-12Nm (8-9lbs-ft) |
| Transmission case drain nut | 22-25Nm (16-18lbs-ft) |
| LH crankcase drain nut | 22-25Nm (16-18lbs-ft) |
| LH crank position shaft nut | 18-22Nm (13-16lbs-ft) |

ENGINE COMPONENT FIT/TOLERANCE

REED VALVE/ CYLINDER HEAD

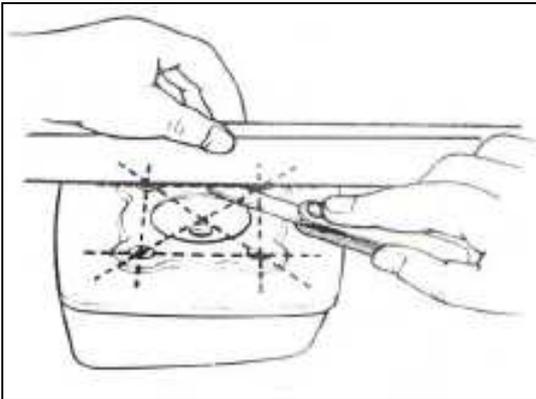
Reed Valve

seat clearance (A): < 0.2mm
overlap (B): 1mm



Cylinder Head Surface Clearance

< 0.05mm



CYLINDER/PISTON

Compression

155±5psi

Cylinder Inner Diameter

40.005-40.020mm

Piston Diameter

39.94-39.955mm

Piston/Cylinder Tolerance

0.06-0.07mm

PISTON PIN

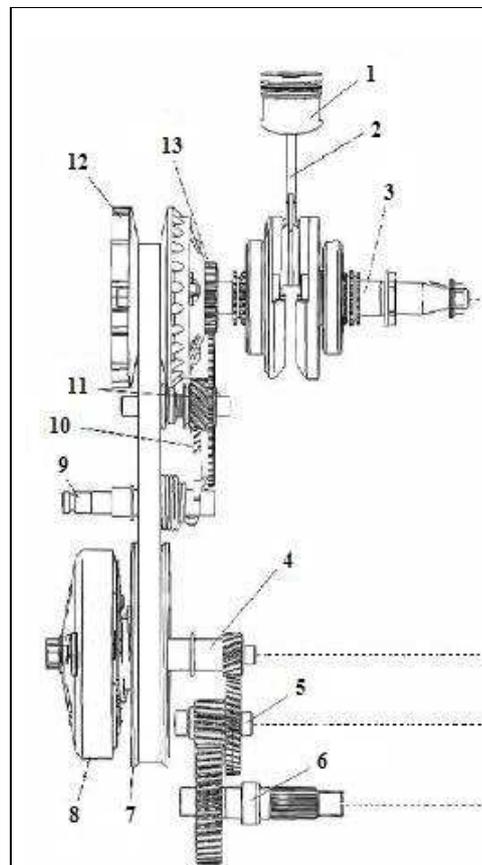
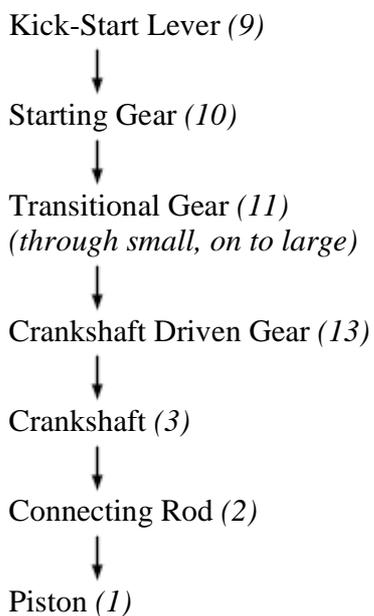
| | |
|---------------------|---------|
| Piston Pin Guide | 12.01mm |
| Piston Pin | 12.00mm |
| Pin/Guide Tolerance | 0.01mm |

PISTON RING

| | |
|--------------------------------------|---|
| Ring/Groove Tolerance | <i>first: 0.04-0.06mm</i> <i>second: 0.02-0.04mm</i> |
| Acceptable Ring End-Gap (uniform) | 0.75-3.6mm |

SYSTEM FUNDAMENTALS

KICK START CHAIN REACTION



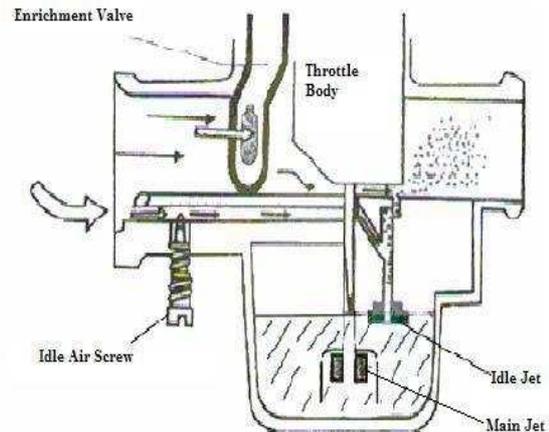
FUEL DELIVERY SYSTEM

The vehicle's fuel flows by gravity feed into the petcock valve, where its flow rate is boosted through vacuum assistance, allowing for a steady and potentially constant feed into the carburetor. From the petcock to the carburetor, the fuel undergoes a double-filtration process. First, the fuel flows through a strainer as it enters the petcock, removing any major debris. As it exits, the fuel travels from the petcock nearly directly into an in-line filter, removing any residual debris and/or sediment before entering the carburetor.

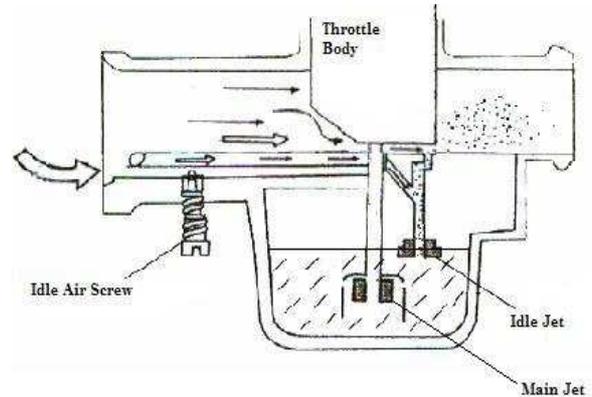
The vehicle's air supply endures a much shorter process. It initially enters through the air filter, located on the left-hand side of the engine. From here, it flows through a duct, finally mixing with the fuel and undergoing **CARBURETION**.

Fuel that enters the carburetor first flows into the float chamber. As the fuel level rises, so does a float. When atmospheric equilibrium is reached, the float makes contact with the needle valve, causing it to close and thereby stop fuel entry until the float level drops again.

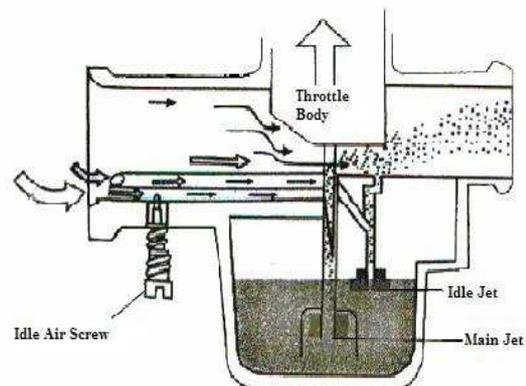
ENRICHMENT. When the engine is started, an electronic **ENRICHMENT** valve opens, allowing a portion of fuel to spray directly into the carburetor throat. This makes the air/fuel mix richer, increasing volatility. This makes it easier for the vehicle to start. Once the engine is running, the enrichment valve gradually closes, and the **IDLE** circuit takes over. This allows the air/fuel mixture to become leaner, which results in optimum combustion efficiency.



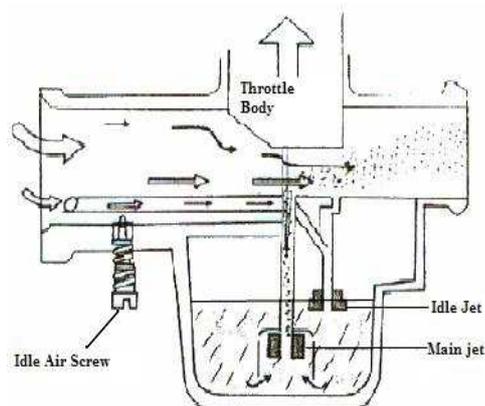
At idle, the fuel is sprayed in a fine mist into the carburetor throat by the idle jet. Since the throttle body is completely closed, air passes through the idle passage and into the throat as well, blending with the fuel mist. This blending process can be adjusted through the **IDLE AIR SCREW**. As the throttle body is slowly opened, a **SLOW** speed condition begins.



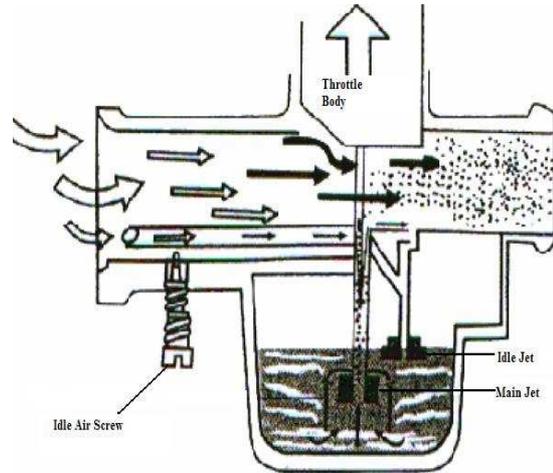
Under light throttle, air begins to flow through the slightly opened throttle body, creating small portion of the vacuum needed to trigger the main jet. Since vacuum is minimal, the idle jet remains active, but the main jet operates at minimum capacity. At the point of half throttle, the throttle body is opened approximately halfway, which greatly increases airflow and vacuum pressure to the main jet. This triggers a **MIDDLE** speed condition.



Under half throttle, airflow through the throttle body increases, which causes the vacuum pressure on the main jet to increase just enough to take pressure from the idle jet, ceasing its fuel spray. At this point, the main jet is the sole source of fuel spray into the carburetor throat, but vacuum is only sufficient for approximately half capacity. At this point, the air/fuel mixture becomes optimal and combustion efficiency is highest.



Under a **HIGH**-speed condition, the throttle body is opened up all the way, allowing maximum airflow. This creates the greatest vacuum pressure possible, resulting in maximum fuel spray from the main jet. The air/fuel mixture becomes richer to facilitate the faster, hotter combustion necessary to support the increased engine speed and demand.



LUBRICATION SYSTEM

The engine's lubrication system has several functions:

Lubrication

Heat Dissipation

Cleansing/Rinsing

Intermediary Seal

Protect Against Wear

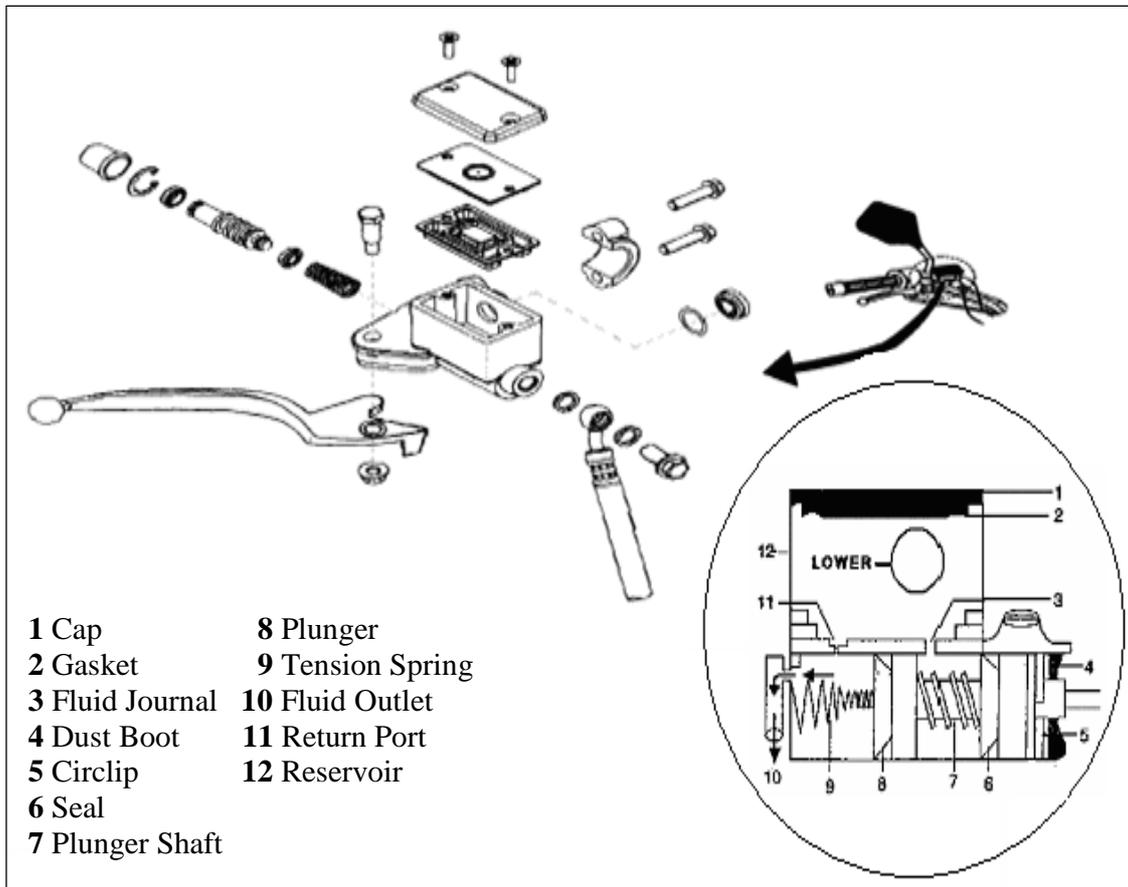
PROCESS

The engine's oil pump (*located in the RH crankcase*) is gear-driven by the crankshaft directly. Oil is drawn from the reservoir to the carburetor via the pump, where it is injected into the air/fuel mix.

Due to the intake process of the two-stroke engine (*see **The 2-Stroke engine Cycle***), the oil most effectively lubricates the crankcase by combining with the air/fuel charge, getting spread throughout by the rotation of the crankshaft. Since two-strokes are typically air-cooled and therefore operate at a much higher temperature, the oil also further lubricates as well as acts as an intermediary seal within the combustion chamber. As it burns, the oil also has a cleaning effect, taking with it any significant carbon buildup. (*Refer to **THE 2-STROKE ENGINE CYCLE** for illustrations/further description*)

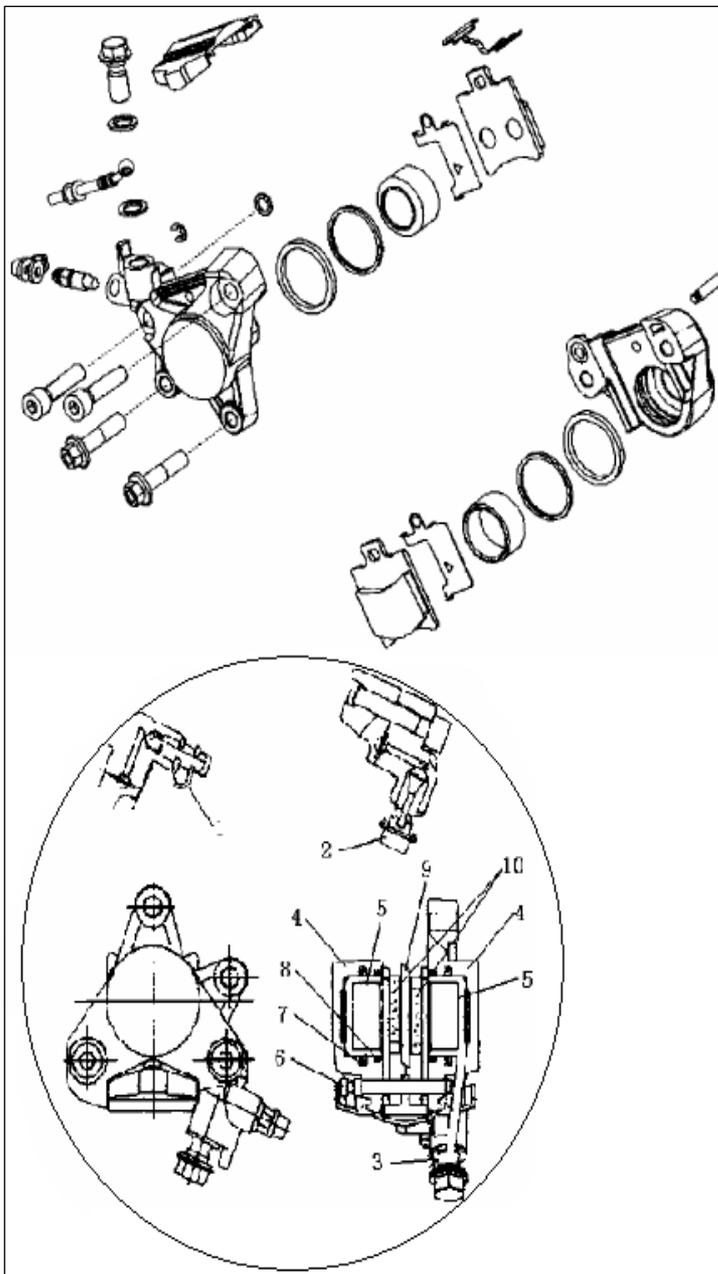
DISK BRAKE SYSTEM FUNDAMENTALS

Hydraulic theory: liquid cannot be compressed, only displaced. Therefore, force can be amplified and carried through fluids by application of force to surface in a sealed system.

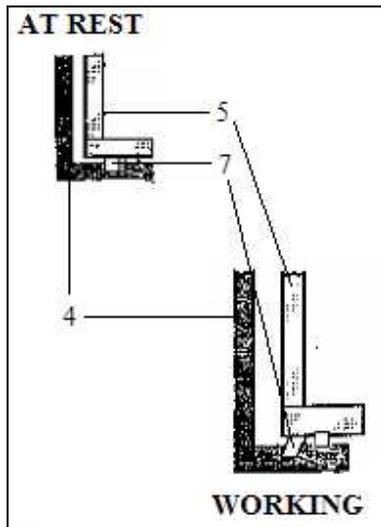


As the front brake lever is pulled, it forces the plunger through the master cylinder reservoir, applying force to the brake fluid. The fluid is then displaced through the brake line and into the caliper. The fluid then forces the caliper's two pistons outward, creating a pressure tension between the brake pads and rotor. When the brake lever is released, a return spring acts to bring the plunger back to its original position, creating a suction effect, bringing the fluid back to the reservoir and consequently sucking the caliper pistons back to their original positions. *NOTE: hydraulic theory only works properly in a properly sealed and bled system. Air cannot be present, or the system will fail.*

Caliper Assembly

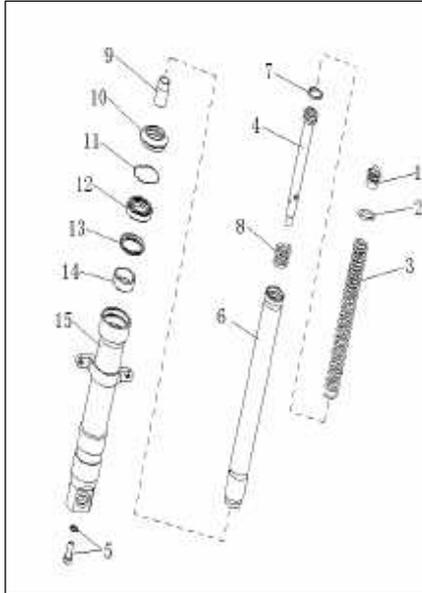


- 1 Bleeder Bolt Dust Cover
- 2 Banjo Bolt
- 3 Fluid Path
- 4 Caliper Body
- 5 Pistons
- 6 Guide Bolt Sleeves
- 7 Piston Seals
- 8 Piston Dust Covers
- 9 Brake Rotor



FUNDAMENTAL FRONT ABSORBER THEORY

This illustration depicts the front fork assembly of this vehicle. The triple clamp connects the fork assembly to the vehicle's frame and handlebars. An inner shaft is supported by a spring within the outer shaft, which is submerged in fluid. The spring acts as an absorber to the impacts experienced due to imperfections in the drive surfaces and the occasional pothole or small obstacle. The fluid acts as a damper, smoothing the spring movement. This results in one compound motion of the shaft assembly, composed of two strokes: **compression** and **rebound**. This process combines to maintain tire contact with the road, as well as to provide a smooth ride.



Compression. When bearing a load from the top of the absorber, the inner shaft moves downward and *into* the outer shaft. In an opposite circumstance, when the front wheel encounters an imperfection on the road or a minor obstacle, the outer shaft moves upward and *over* the inner shaft. In either instance, the compression stroke is experienced, which means that the spring is being compressed, and the fluid is being forced through a one-way valve up past the inner shaft. At the extreme conclusion of the compression stroke, the spring is fully compressed and most, if not all, of the fluid is now above the inner shaft.

Rebound. Once the compression stroke ends, the now compressed absorption spring begins to expand, pushing the inner shaft back up and into the displaced fluid. The fluid now begins to flow back down, through two small one-way valves. These valves function to increase the damping ability of the fluid during the rebound stroke. Once the spring has completely rebounded, forcing the fluid back down the tube, past the valves, the rebound stroke is complete.

NOTE: KEEWAY America discourages disassembly of absorbers for the purposes of diagnosing and repairing KEEWAY vehicles. Always replace the absorbers as assemblies, and in pairs.

TROUBLESHOOTING AND PROCEDURES

IMPORTANT NOTE: before attempting any troubleshooting or repairs, please ensure that scooter is placed on the main stand.

COMMON ISSUES

The following compilation describes the most common symptoms and potential solutions in the form of a flow chart. Further testing is not needed once the problem has been solved.

ELECTRIC STARTER DOESN'T ENGAGE OR ROTATE

Verify proper state of battery charge.

Ensure properly functioning fusible link.

Ensure proper operation of starter relay.

Inspect cable connections to starter solenoid and starter.

ONLY CLICKING NOISE WHEN STARTER BUTTON IS PRESSED

Bypass starter solenoid to ensure proper starter motor operation.

Check solenoid and wire connections.

Ensure proper operation of starter relay.

NO REACTION WHATSOEVER WHEN STARTER BUTTON IS PRESSED

Ensure continuity at input and output sides of starter button.

Bypass starter solenoid to ensure proper starter motor operation.

Ensure proper operation of starter relay.

HARD-START, POOR IDLE, OR POOR PERFORMANCE AT SPEED

If vehicle is slow to start, idles poorly or immediately sputters and dies, or if main circuit performance is lacking, first verify that there is no restriction or blockage of airflow. If condition continues, ensure that carburetor is properly tuned (*see **TECHNICAL GUIDE FOR 50cc CARBURETORS** for procedure and specifications*). Inspect carburetor for external leaks or blockage, and perform **INTAKE LEAK TEST** (*refer to guide for proper procedure*).

Upon completion of properly tuning the carburetor, replace the vehicle spark plug. If condition continues, verify adequate oil flow and ensure proper spark, then verify proper **ENGINE TIMING** (*refer to guide for proper procedure and specifications*) if necessary. If out of range, the **MAGNETO ASSEMBLY** is most likely sending a faulty reference to the CDI, and needs replacement (*refer to guide for removal/installation*). Recommend replacement of **CDI** at the same time.

NO-START CONDITION

Verify proper startup procedure to start engine. If no-start condition continues, verify fuel flow by removing plug in overflow hose on carburetor.

Fuel flow

Verify adequate ignition spark by removing spark plug.

No fuel flow

Verify fuel in tank.

Verify fuel flow at petcock valve.

Verify fuel flow at filter.

Verify clear lines to carburetor.

Possible lack of gas cap ventilation.

Possible stuck carburetor float or needle valve.

Ignition spark is adequate

Ensure sufficient battery charge.

Inadequate ignition spark

Replace spark plug and once again verify spark.

If no spark condition remains, verify current flow to coil lead.

If no current to coil lead, verify current at vehicle kill switch output.

If current at output, verify current at CDI lead to coil.

If current at both locations, coil is faulty and needs replacement.

If lack of current exists at either location, part is faulty and needs replacement; ensure proper battery charge.

Vehicle should now start. If hard-start/poor idle condition is now present, refer to appropriate section (*above*). If no-start condition remains and spark plug is gas-fouled, the carburetor's enrichment valve needs replacing. From this point, if no-start condition remains, perform an **ENGINE COMPRESSION TEST** (*refer to guide for proper procedure and specifications*).

If engine fails to build sufficient compression, the most likely causes are a faulty head gasket or a scoured/abraded cylinder or piston assembly. In the event of either of the latter, the head gasket will need replaced at the same time (*refer to guide for proper procedure and specifications*).

If symptom persists beyond this point, verify proper **ENGINE TIMING** (*refer to guide for proper procedure and specifications*). If out of range, the **CDI** has a bad contact internally and needs replacement (*refer to guide*). Recommend replacement of **MAGNETO ASSEMBLY** as well.

INSUFFICIENT ENGINE POWER/LACK OF ACCELERATION

In the event that this symptom presents itself, the most common issue lies in interference with rear wheel/tire rotation. To inspect, simply spin the rear wheel.

Wheel rotates freely

Ensure proper tire pressure.

If wheel has abnormal resistance/gets hung up

Inspect wheel bearing and lubricate/replace as needed.

Ensure proper drive belt tension.

Ensure proper function of the driven clutch assembly (no binding or hang-ups).

Ensure proper tire pressure.

If proper tire pressure

Ensure airflow is free of blockage/restriction.

Verify proper tuning of carburetor (*refer to TECHNICAL GUIDE FOR 50cc CARBURETORS for proper procedure/specifications*) and replace spark plug.

If tire pressure is low

Inflate to recommended pressure.

Check for leaks or improper valve stem.

Ensure airflow is free of blockage/restriction.

Verify proper tuning of carburetor (*refer to TECHNICAL GUIDE FOR 50cc CARBURETORS for proper procedure/specifications*) and replace spark plug.

If the spark plug appeared light gray in color, this indicates that the engine may be running hot, possibly causing detonation or may have poorly maintained and or poor oil quality. Inspect vehicle oil.

Oil meets requirements

Verify sufficient flow and operating temperature.

Oil does not meet requirements

(Over full, low, or burnt/dirty oil)

Perform engine oil change.

Verify sufficient operating temperature.

Temperature is within range

Perform **ENGINE COMPRESSION TEST** (*refer to guide for proper procedure and specifications*).

Temperature is too high

Inspect for excessive carbon buildup in combustion chamber, then perform **ENGINE COMPRESSION TEST** (*refer to guide for proper procedure and specifications*).

If the symptom has persisted to this point, KEEWAY recommends disassembly of the cylinder head and inspection for proper lubrication, verification of carbon buildup, and a potentially warped/uneven surface. Inspect the piston assembly and cylinder jug for the same signs. A lubrication issue will denote either blockage in the lines or a bad oil pump. Take the appropriate action and reinstall with new gaskets (*see guide for proper procedure and specifications*). If the symptom continues beyond this point, engine timing is most likely out of range.

The **MAGNETO ASSEMBLY** most likely has damaged components, and needs replacement (*refer to guide for removal/installation*). Recommend replacement of **CDI** as well.

POOR/DIFFICULT HANDLING/INSTABILITY

If turning is difficult

Inspect fork bearings and lubricate/replace as needed.

Ensure proper torque is applied to the retaining nut.

Wheel wobble or hop

Inspect wheel bearing for excessive play.

Ensure that rims are straight and true.

Ensure proper torque applied to axle nuts.

Inspect swing arm bushing and ensure no significant wear.

Ensure proper torque applied to swing arm bushing nut.

Ensure that swing arm shaft and axle are straight and true.

If scooter tends to lean

Ensure proper alignment of front and rear wheels, and ensure that axles are straight and true.

Ensure that fork and handlebars are straight and true.

Ensure that swing arm and shaft are straight and true, and track properly.

Inspect front and rear shocks for signs of excessive damage or play.

SOFT BRAKES OR TOO MUCH LEVER TRAVEL

Ensure proper brake fluid level.

Inspect both pads and shoes for proper travel and excessive wear.

Ensure absence of air in brake lines.

Inspect system for leaks.

Inspect caliper piston seal for signs of aging/damage.

Verify that wear on brake pads and rotor is within limits, with no damage or warping.

Inspect master cylinder reservoir for signs of aging/damage.

HARD BRAKES OR STIFF LEVER FEEL

Inspect both pads and shoes for proper travel, contamination, and excessive wear.

Inspect all mechanical components of drum brakes and ensure proper fit/adjustment.

Ensure fluid flow through lines (no blockage, collapsing, etc.).

Verify proper caliper and piston movement.

Ensure brake rotor is not damaged or warped.

Inspect master cylinder plunger and bushing for proper travel as well as signs of excessive wear.

THE BATTERY

In order to troubleshoot the battery, the cornerstone of the vehicle's electrical system, all vehicle systems must be off. Turn voltmeter to **DC VOLTS**. With the alarm disarmed, connect the test leads from the digital multimeter to the battery posts, red to positive and black to negative (*alligator clips ideal*). A properly functioning battery will read a **MINIMUM** of 12.25 volts. Anything below this will require charging (*see procedure below*).

In situations that the vehicle's starter is the suspected issue, and kick-start ability has been verified, a load test may be conducted on the battery. In order to correctly perform this procedure, the multimeter must be connected in the manner described above. Next, with the alarm still disarmed, turn the ignition key to the **ON/RUN** position. **THE VEHICLE KILL SWITCH SHOULD REMAIN IN THE OFF/NO RUN POSITION**. While pressing the vehicle's electric start button, observe the change in battery voltage. Under load, reading should be at or above 10.25. Anything below this indicates that the battery will require charging (*see procedure below*).



NOTE: Verify Polarity Before Testing

BATTERY CHARGE PROCEDURE: With all vehicle systems disengaged, completely remove the battery. **Verifying correct polarity**, connect slow rate/trickle charger. Battery should be charged at a rate of 1.5-2 amps, and will typically take 4-8 hours for a complete recharge, depending on its state.

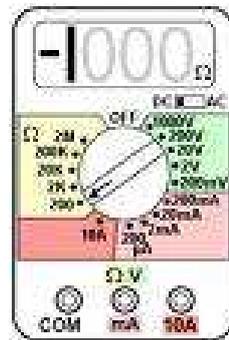
Upon completion of charge, reinstall battery, **verifying correct polarity**. In order to verify properly functioning charging system, start vehicle **using kick-start lever**. Allow vehicle to reach operating temperature, and again connect the digital multimeter in the manner described above. **A PROPERLY FUNCTIONING CHARGING SYSTEM WILL YIELD A CONSTANT READING OF 12.8-13.2 VOLTS AT THE BATTERY AT IDLE**. Reading may fluctuate as throttle is increased, not to exceed 14.5 volts (anything above indicates an overcharge condition and a faulty output from the voltage regulator).

POWER CIRCUITRY AND PARASITIC DRAW TEST GUIDELINES

The parasitic draw test is a procedure used to pinpoint the source of severe voltage draws in electrical systems due to a short in the circuitry.

Specific Tool Required:

Digital Multimeter



PARASITIC DRAW TEST PROCEDURE:

Before beginning, ensure that electrical system is entirely disabled by verifying that ignition cylinder is in **OFF** position and keys removed, and that the vehicle kill switch is in the **NO RUN** position. If the vehicle is equipped with a theft-deterrent/remote-start system, please ensure that it is disarmed.

- Disconnect Negative (-) battery terminal.
- Set multimeter to the **25 MILLIAMPS DC (mA DC)** setting. Complete circuit between negative cable and battery by placing the multimeter **IN SERIES**, with the **POSITIVE** test lead connected to the **NEGATIVE CABLE**, and the **NEGATIVE** test lead connected to the **NEGATIVE BATTERY TERMINAL**.

In a properly operating electrical system, the multimeter will read well under 50 mA. If the draw is greater, there is a parasitic draw.

- Keeping the multimeter connected **IN SERIES**, begin removing components from the loop by disconnecting the pigtails, one at a time. *(In some cases, such as the instrument cluster, it will be necessary to disconnect multiple pigtails in order to accurately remove the component from the loop).*

When the problematic component is removed from the loop, the multimeter reading will immediately fall to within acceptable range.

IMPORTANT NOTE: *In vehicles with theft-deterrent/remote-start systems, unplugging the alarm box will result in an amperage drop. THIS DOES NOT NECESSARILY DENOTE A FAULTY ALARM SYSTEM. The entire vehicle is powered through the alarm box.*

MAGNETO ASSEMBLY



Structure

The magneto is composed of the stator assembly (*star-pattern of copper-wound spools*), the charging coil, and the magnetic Pickup coil.

This assembly is located inside the RH crankcase cover, behind the cooling fan and flywheel.

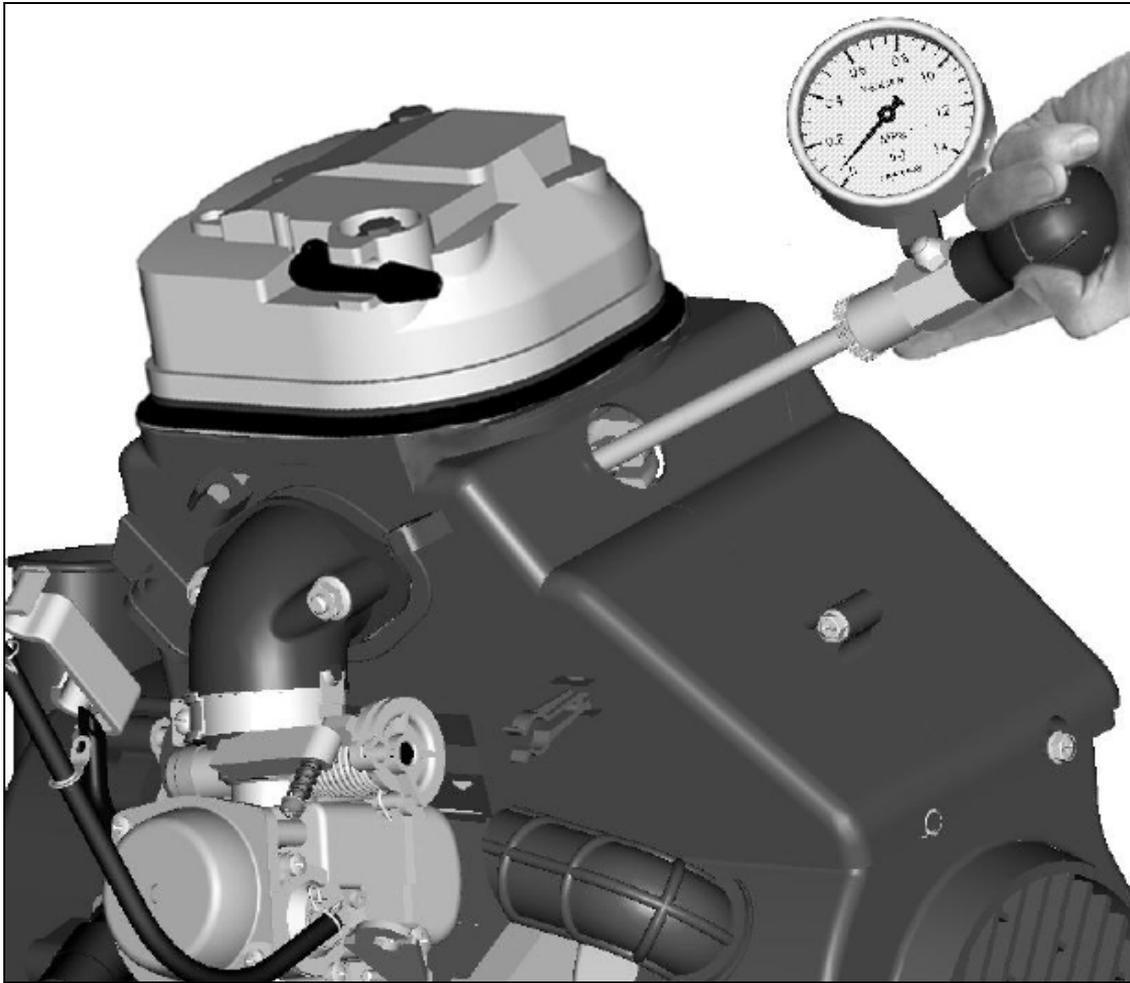
Function

The stator acts as the primary charging source for the vehicle's battery. Current flows from here to the diode trio, and from the diode trio to the regulator to be distributed. The charging coil and pickup function as CDI references for ignition pulse and timing.

| TYPE | Lead Color | Resistance |
|--------|-------------------------|--------------------------|
| Pickup | Blue/White; Green/White | 200±20Ω at 20° C (68° F) |
| Stator | <2 Ω | Blue (2) |

NOTE: Testing for all resistance is verified on ground side of circuit. There is no capacitor in the stator assembly. KEEWAY America encourages replacement of the entire magneto assembly when any component is faulty.

ENGINE COMPRESSION TEST



Procedure

NOTE: Perform initially on cold engine, then bring engine to operating temperature and repeat. Compare results.

Disable ignition (*via the vehicle kill switch*), remove the spark plug, and connect compression tester.

REQUIRES SPECIAL TOOL T05

Disconnect vacuum line from fuel petcock valve.

Open Throttle completely and crank for 6-8 revolutions.

Record data and repeat procedure 3 times, and take the average of total.
(refer to **CYLINDER/PISTON** section of **ENGINE COMPONENT FIT/TOLERANCE** for compression specifications.)

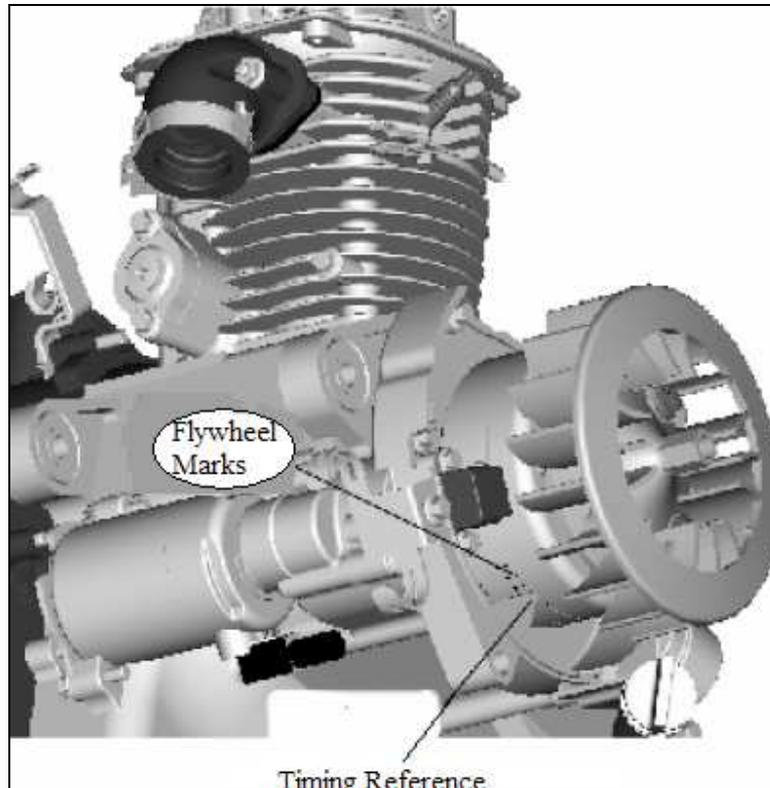
If engine compression is below specifications, repeat test procedure, placing several drops of oil into combustion chamber JUST BEFORE connecting compression gauge.

If the compression rises to within range, there is excessive wear or damage to the cylinder, piston, rings, or cylinder head/gasket.

Ensure proper valve timing and seat

Ensure proper cylinder head gasket seat and seal, and proper torque applied to head bolts.

IGNITION TIMING TEST



Procedure

Remove inspection cap from fan cover.

Connect timing light according to manufacturer-specific directions

Start engine and aim timing light at the timing reference.

At idle:

I and F marks should line up. This denotes ignition timing of 13° BTDC. Idle speed should be approx. 2000 RPM (*refer to tachometer*).

Under Throttle:

II indicates the advanced mark, and should line up with the I reference at 4000 RPM. This denotes ignition timing of 28° BTDC.

If either or both of these indicators are off, replace the CDI and MAGNETO **together**, and check again.

NOTE: As part of the initial preparation procedure, it is necessary to bring the unit to operating temperature, and with a voltmeter connected to the battery, proceed to adjust the idle speed until you get a reading of 12.5-12.8 volts at the battery.

Technical Guide for Keeway 50cc Carburetors

Keeway America uses two primary forms of carburetors. A mechanical slide type is used on the 50cc units, and a constant velocity (CV) style is used on the 150cc four-stroke units.

This guide will demonstrate the proper method of adjusting these carburetors in efforts to achieve maximum performance and reliability. In addition, this guide will provide basic trouble shooting skills when dealing with carburetion issues related to rough running or poor performance.

50cc units:

Mechanical slide units are used. The throttle cable is connected directly to the throttle slide, pulling the slide open. The slide is returned by an internal spring.

Two direct adjustments can be made to these carburetors:

The idle stop screw controls the closed position of the throttle slide. Turning it in (tightening) raises the slide, turning it out (loosening) lowers the slide.

The second adjustment is the idle airscrew. The carb body is ported to allow airflow AFTER the throttle slide. The idle airscrew controls airflow through this port. The mixture is “enriched” when the idle airscrew is turned in (clockwise), and “leaned” when the screw is turned out (counterclockwise).

Further adjustments can be made to “internal” components. Those adjustments will be covered in a later bulletin.

For proper operation, and “clean” running, the carb setup of the 50cc units is critical. These units should be set with the idle stop screw at the minimum opening possible, so that they are running on the idle setscrew almost exclusively for base idle.

The factory setting for the idle airscrew is 1 ½ turns out from seated, plus or minus ½ turn. **Small adjustments should make a LARGE difference in the running of these units at idle.** For example, no more than ½ turn in or out should dramatically affect the idle speed and smoothness. If this does not occur, the idle stop screw is preventing the throttle slide from closing properly, and the unit is running off the main jet circuit. This will result in rich running, and fouling of spark plugs in rapid fashion.

The 50cc carb also has an “automatic enrichment valve” mounted on the right side. This valve feeds both fuel and air to the engine side of carb slide. It is designed to maintain stoichiometric metering, admitting both fuel and air. This valve is an electronic solenoid that moves in or out based on a signal from the stator or the CDI. If the unit has no movement, the unit has failed, and must be replaced.

Common problems and recommended solutions:

50cc and 150cc units:

Slow idle/poor response when warm: Adjust idle airscrew in ¼ turn increments until idle smooths out, and smooth transition to open throttle is achieved.

Fast idle: Loosen idle stop screw until idling at appropriate rate. Adjust idle air mixture screw until smooth, even idle is achieved.

Quick Method for Resetting Unit Idle:

Set idle air mixture screw to factory baseline setting.

Run unit until normal operating temperature is reached.

Adjust idle to appropriate baseline speed using a tach/dwell meter.

Adjust idle air mixture screw until highest idle rpm is reached.

Turn air mixture screw in or out until idle drops 50 to 100 rpm.

Adjust idle stop screw to baseline idle.

Excessive carbon build up on plug/excessive smoke at idle on two stroke units: Quick test procedure:

Remove vacuum line to fuel valve when idling.

- 1) If idle goes up, mixture is too rich.
- 2) If idle drops and unit stalls, mixture is too lean.
- 3) If unit runs rough, but continues to idle, mixture is correct.
- 4) No change in idle noted.

For issue #1: Set idle airscrew to factory baseline setting. Lower idle stop screw until unit is idling at appropriate rate. Adjust air mixture screw to smooth idle. Repeat vacuum test as outlined above.

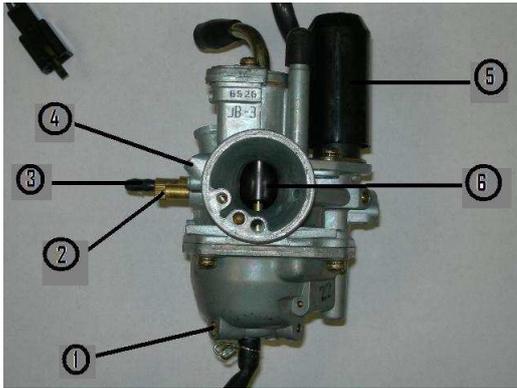
For issue #2: Open the air mixture screw to achieve smooth idle. Idle stop screw should be left alone.

For issue #4: Idle stop screw is adjusted to far open, or there is a vacuum leak after the carb slide. Quick test for a vacuum leak is to spray WD40 around the intake on the mist setting. If the idle changes when this is done, there is an intake leak. If the idle remains steady, adjust as outlined for issue #1.

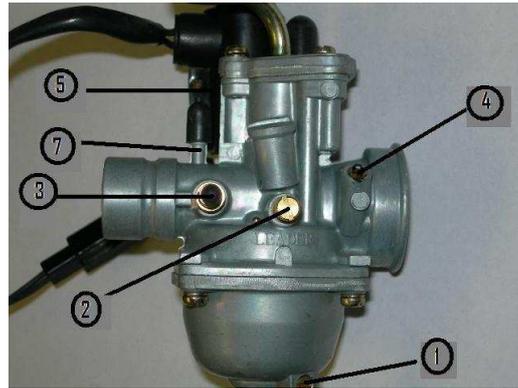
No start/Hard start: Same adjustment process as #1, but may have to start the unit with the throttle partially open until idle stop screw can be set close to the final setting.

IMPORTANT NOTE: When adjusting the idle air mixture screw to baseline settings **DO NOT** tighten screw after it “seats”. If the air mixture screw is over tightened one of two things will occur; the tapered needle will mushroom and not function, or the needle will break off in the carb body, ruining the slow circuit.

50cc Two Stroke Engine Carburetor



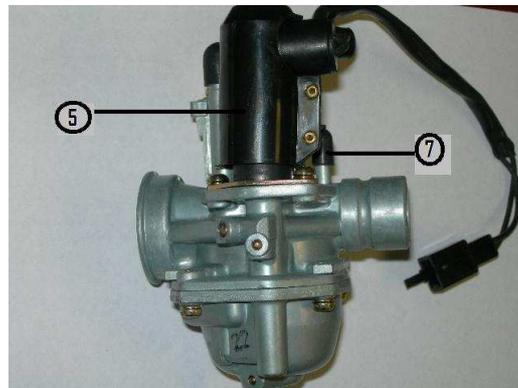
Mechanical Carb Air Cleaner Side



Mechanical Carb Left Hand Side



Mechanical Carb Right Hand Side



Mechanical Carb Engine Side

Image Number Key:

- 1) Float Bowl Drain Bolt
- 2) Idle Stop Screw
- 3) Oiling Port
- 4) Idle Air Mixture Screw
- 5) Enrichment Valve
- 6) Intake Slide
- 7) Vacuum Port

POWERTRAIN COMPONENTS

CARBURETOR REMOVAL/INSTALLATION

Removal

Remove seat/helmet box assembly.

Remove fuel inlet line

Loosen the clamp between carburetor and air box and remove intake duct.

Remove plug from fuel overflow/discharge hose and drain any remaining fuel into a safe container.

Disconnect enrichment valve pigtail.

Disconnect throttle cable.

Remove carburetor-mounting bolts and carefully remove carburetor.

Installation

Upon ensuring that all wiring and cables are safely tucked away, carefully position carburetor over engine intake runner and start the mounting bolts. **DO NOT TIGHTEN AT THIS TIME** for Flash, hurricane and venus models..

Connect throttle cable and enrichment valve pigtail.

Ensure that fuel overflow/discharge hose plug is in place and secure.

Firmly snug carburetor mounting bolts. **DO NOT OVERTORQUE.**

Slide intake duct over carburetor throat and tighten clamp.

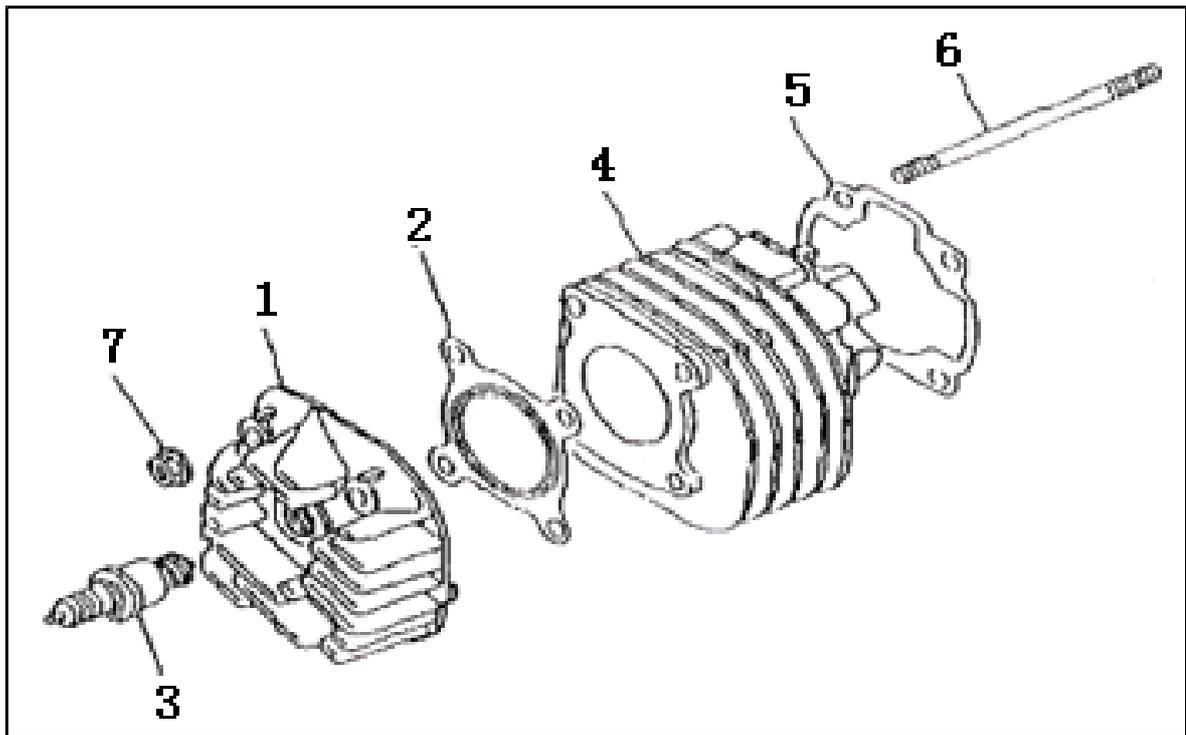
Connect fuel inlet line.

(before installing seat/helmet box assembly, attempt to start the vehicle. It will take several seconds, as the fuel bowl must fill. As the vehicle starts, closely inspect all joints to ensure proper fit and seal.)

Install seat/helmet box assembly.

ENGINE COMPONENTS REMOVAL AND INSTALLATION

CYLINDER/HEAD ASSEMBLY



Removal (*remove cowling prior*)

Spark plug and cylinder head nuts (3 & 7)

Cylinder head and assoc. gasket (1 & 2)

Cylinder jug and assoc. gasket (4 & 5)

Installation procedure is opposite of removal.

PISTON ASSEMBLY



Ring End Gap:

0.25mm (0.010in) minimum

Service limit:

0.75mm (0.030in)

Ring/Groove Tolerance

First: 0.04-0.06mm

(0.0015- 0.002in)

Second: 0.02-0.04mm

(0.001- 0.0015in)

Removal (*remove cowling, cylinder head assembly and cylinder jug prior*)

First and second rings (1 & 2)

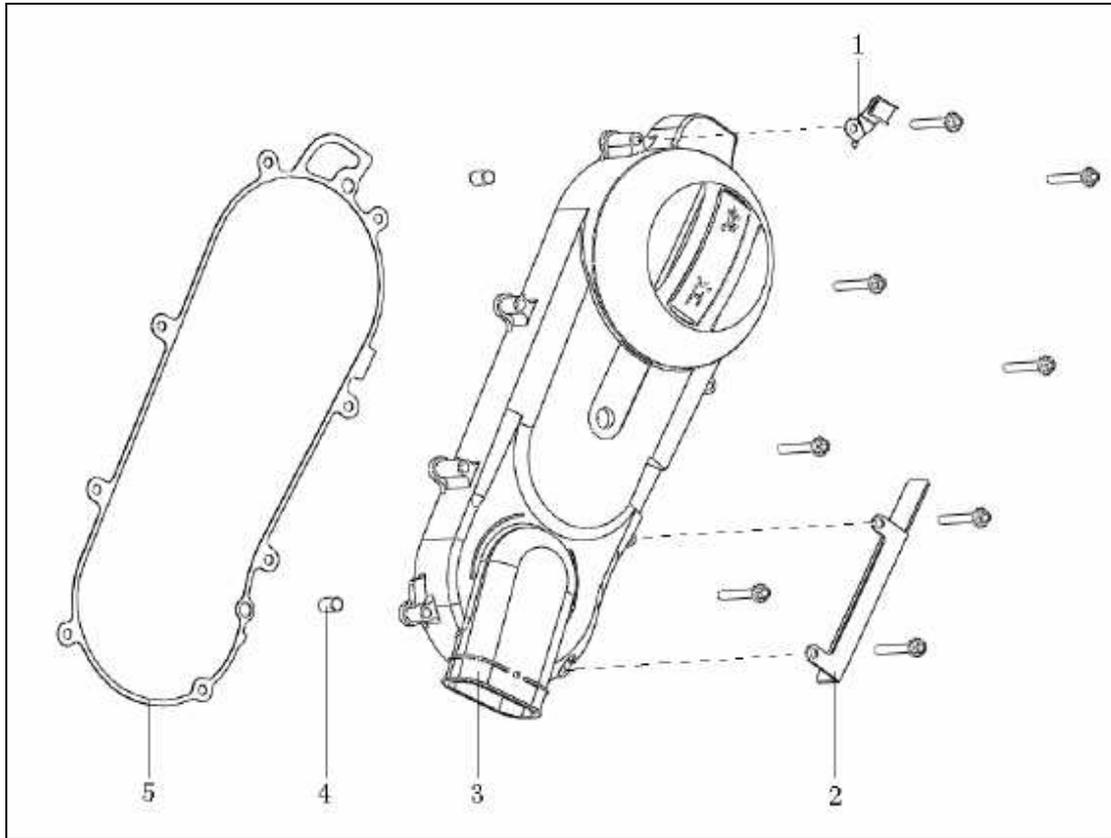
Pin clips (5, qty. 2)

Wrist pin (6)

Bearing (7)

Installation procedure is reverse of removal; ensure ring gaps are set according to alignment pins, guaranteeing offset of 120° and any markings face up.

LH CRANKCASE COVER



Removal

Cable clip and fender bracket (1 & 2)

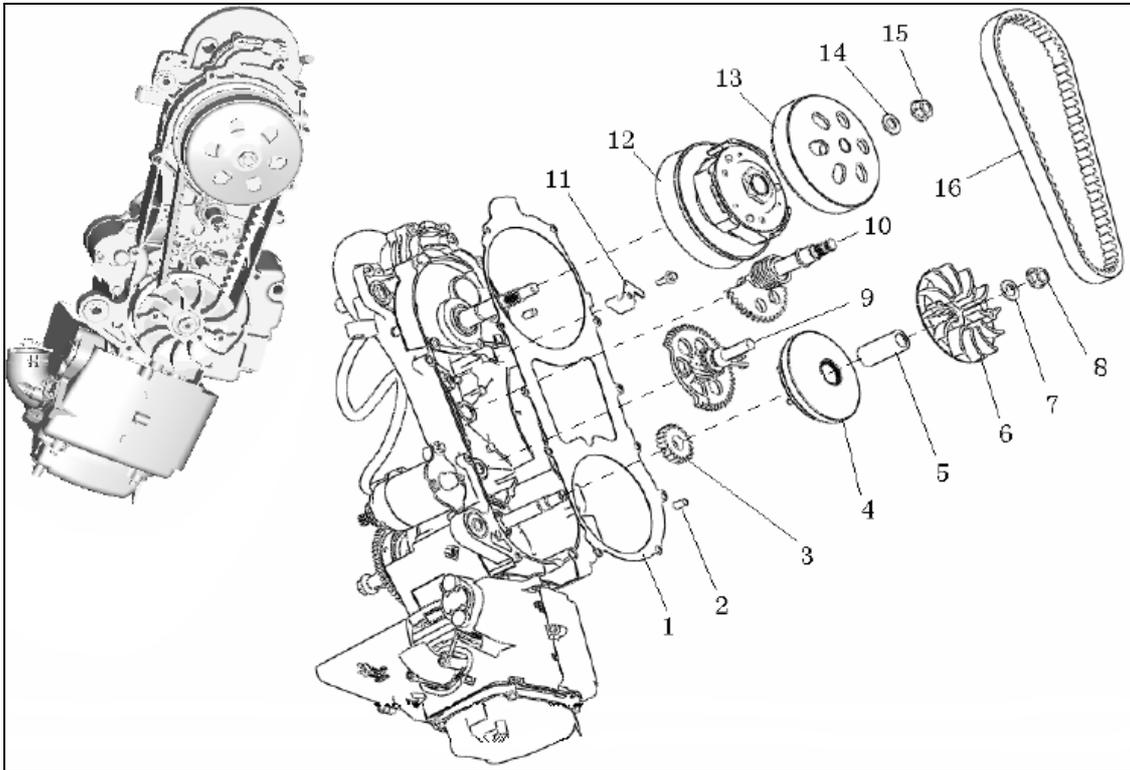
LH Crankcase cover (3)

Dowel and gasket (4 & 5)

Installation procedure is opposite removal.

NOTE: after ensuring proper alignment, installation may be facilitated by gently tapping cover into position with a rubber mallet. Upon starting all bolts, proceed to apply torque in a modified star pattern, bringing them all to 8-9lbs-ft.

LH CRANKCASE COVER AND ASSOCIATED PARTS



Removal

Nut, star washer, and fixed face (6, 7, & 8)

Drive Belt, nut, and washer (16, 15, & 14)

Spacer and variator assembly (4 & 5)

Clutch hub and drive assembly (12 & 13)

Installation procedure is reverse of removal.

Spring retainer and kick-start gear (10 & 11)

Crankshaft starter and transition gears (3 & 9)

Dowel and gasket (1 & 2)

Torque Specifications

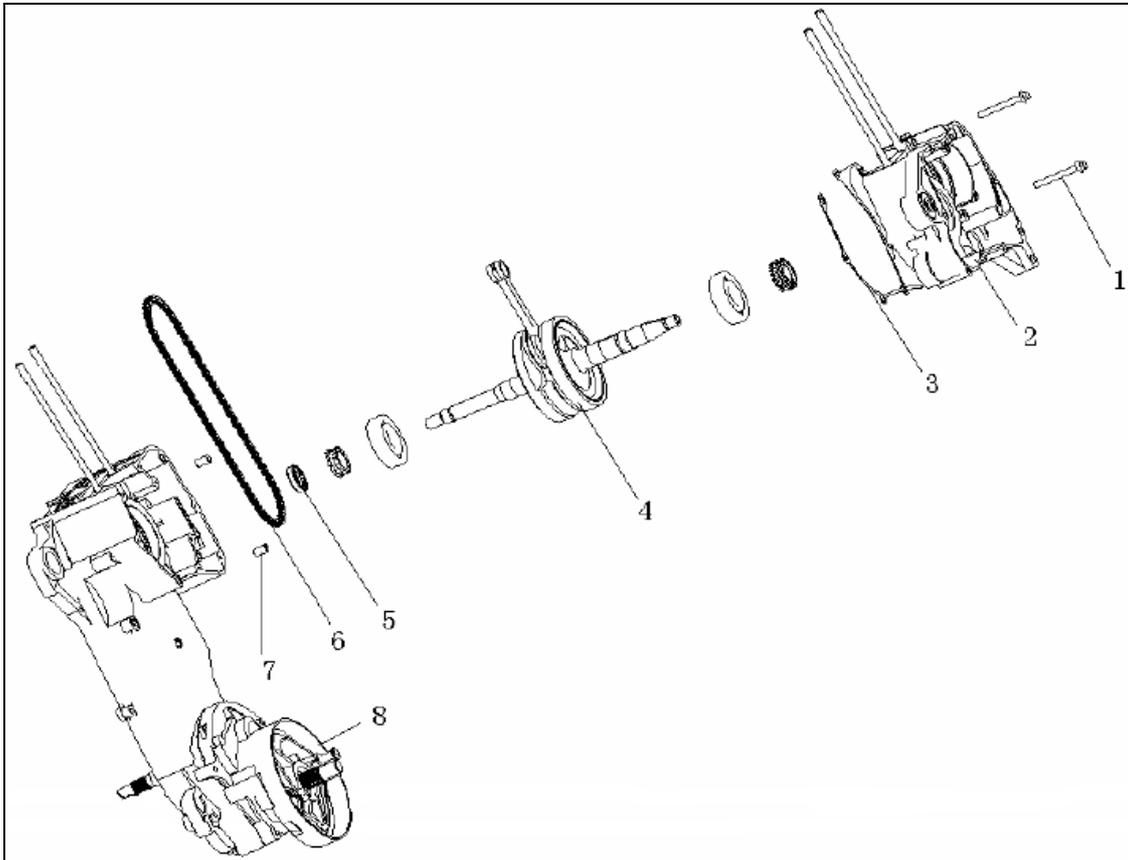
Retaining plate lock bolt 8lbs-ft

Locknuts (8 & 15) 33-40lbs-ft

NOTES: Coat shafts of kick-start and transition gears with assembly lube before installing; keep transition gear reference aligned with crankshaft, and kick-start gear

reference aligned with contact point at transition gear. A brake spring tool is recommended for applying tension to kick start spring; USE CAUTION. Immediately install retaining plate and lock bolt. Install drive belt before installing fixed face.

CRANKCASE ASSEMBLY



Removal (remove cylinder head, cylinder jug, and piston assembly prior)

Bolts (1)

RH Crankcase assembly (2)

Dowels and gasket (3 & 7)

Crankshaft assembly (4)

Camshaft timing chain (6)

LH Crankcase assembly (8)

Oil seal (5)

Installation

LH Crankcase assembly (8)

Camshaft timing chain (6)

Oil seal (5)

Crankshaft assembly (4)

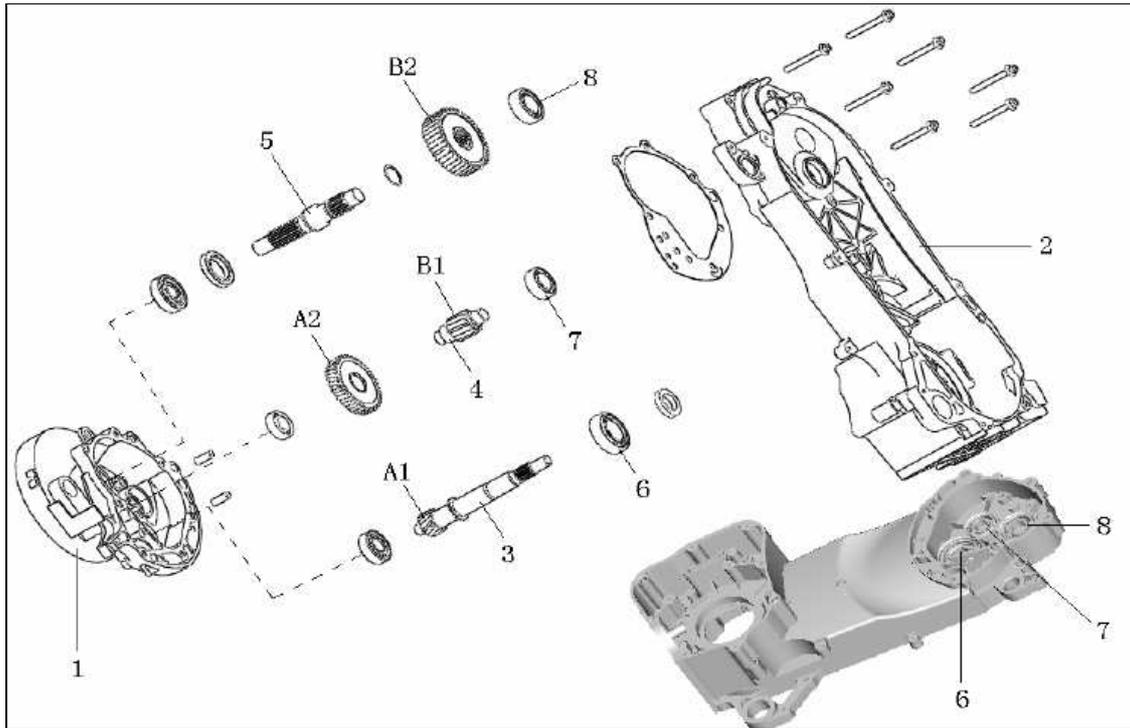
Dowels and gasket (3 & 7)

RH Crankcase assembly (2)

Bolts (1) **Torque: 7-8lbs-ft**

NOTES: When installing crankshaft assembly, coat LH crankcase bearing with oil, then vertically press oil seal into bearing recess; place crankshaft gear into camshaft timing chain; ensure free movement of crankshaft and connecting rod assembly. A rubber mallet may be needed to gently tap the crankcases together. Ensure free movement of crankshaft and connecting rod assembly after assembling the crankcase assembly.

TRANSMISSION CASE ASSEMBLY



| Gear | <i>A1</i> | <i>A2</i> | <i>B1</i> | <i>B2</i> |
|----------------|-----------|-----------|-----------|-----------|
| Splines | 15 | 42 | 13 | 40 |
| Ratio | 2.8 | | 3.077 | |

Removal

Transmission case assembly (1)

Middle and output shafts (4 & 5)
and input shaft bearing

Middle shaft bearing, output shaft
oil seal and bearing

LH Crankcase assembly (2)

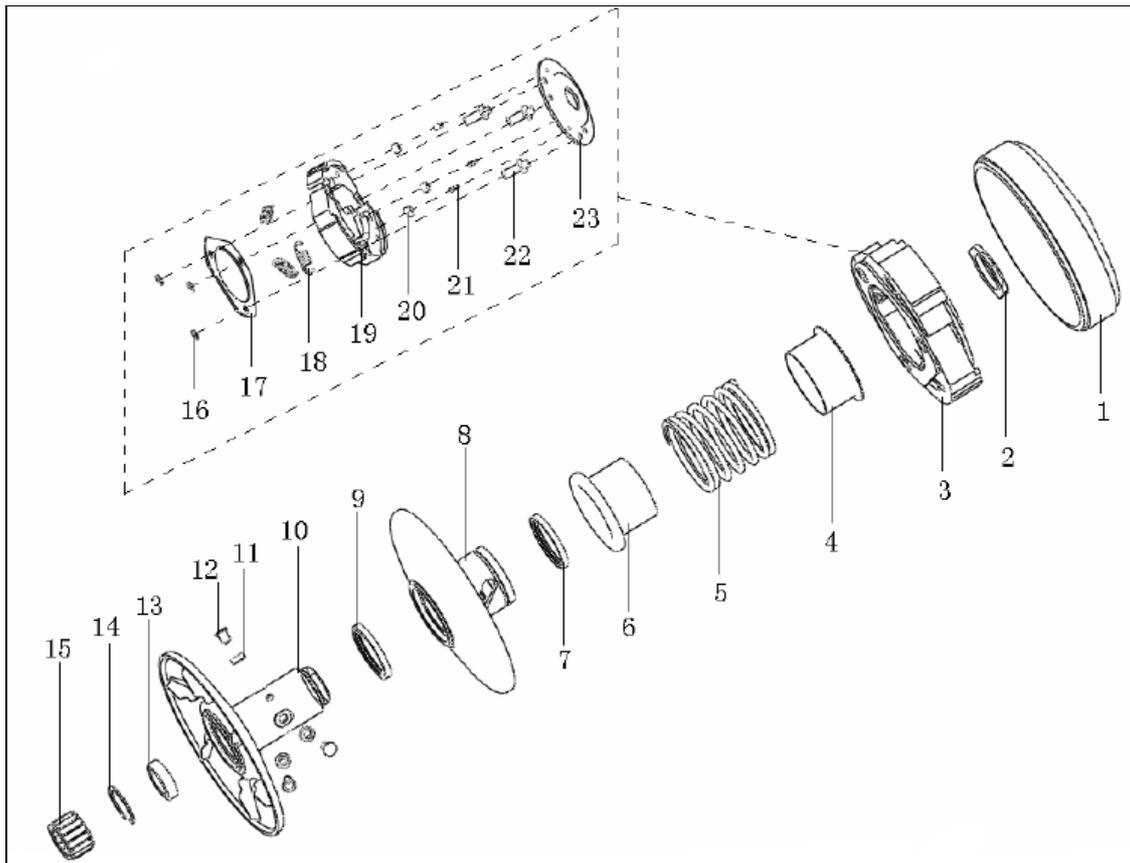
Input shaft (3) and middle and
output shaft bearings

Input shaft oil seal and bearing

Installation procedure is reverse of removal.

NOTES: Position each bearing with number facing outward, and ensure free movement. Lightly coat oil seal with oil when installing, and ensure proper direction and fit. Ensure proper fit and free movement of all gears and pinions. Torque bolts in modified star pattern to 8lbs-ft.

DRIVE WHEEL CLUTCH ASSEMBLY



Removal

Clutch hub, retaining pin and woodruff key (1, 11, & 12)

Nut, washer, and disk (2, 7, & 8)

Clutch shoe assembly (3)

Clips (16)

Backing plate (17)

Springs and shoes (18 & 19)

Dampers (20)

Limiters and pins (21 & 22)

Front cover (23)

Needle bearing (15)

Spring seat, clip, and roller bearing (4, 13, & 14)

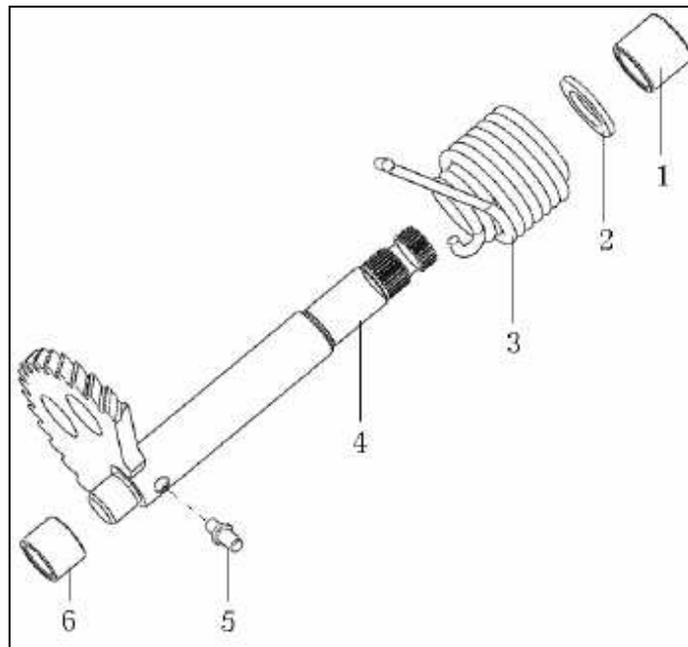
Compression spring and main disk (5 & 10)

Rear seat (6)

Installation procedure is opposite of removal.

NOTES: When assembling clutch shoe assembly, be sure to use new limiters and pins, to ensure proper fit and function. When installing bearings, coat with assembly lube to ensure free rotation, and ensure proper positioning of the clip.

KICK START SHAFT ASSEMBLY



Removal

Kick start shaft assembly

Bushings (1 & 6)

Spring and washer (2 & 3)

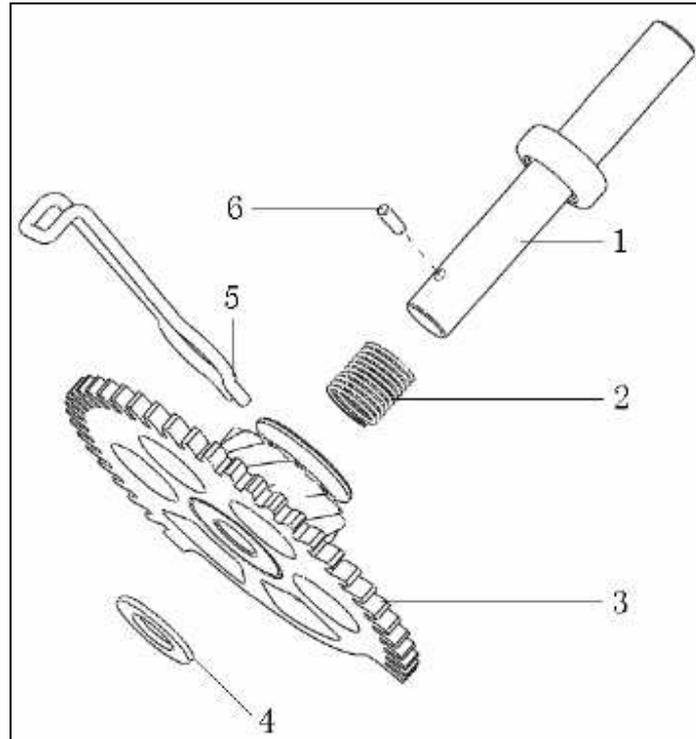
Spring pin (5)

Kick start shaft (4)

Installation procedure is the opposite of removal.

NOTES: Coat bushings and shaft ends with grease to ensure proper installation, and ensure proper spring pin installation.

TRANSITION GEAR ASSEMBLY



Removal

Transition gear assembly

Pin (6)

Washer (4)

Transition gear (3) with bracket (5) intact

Tension spring (2)

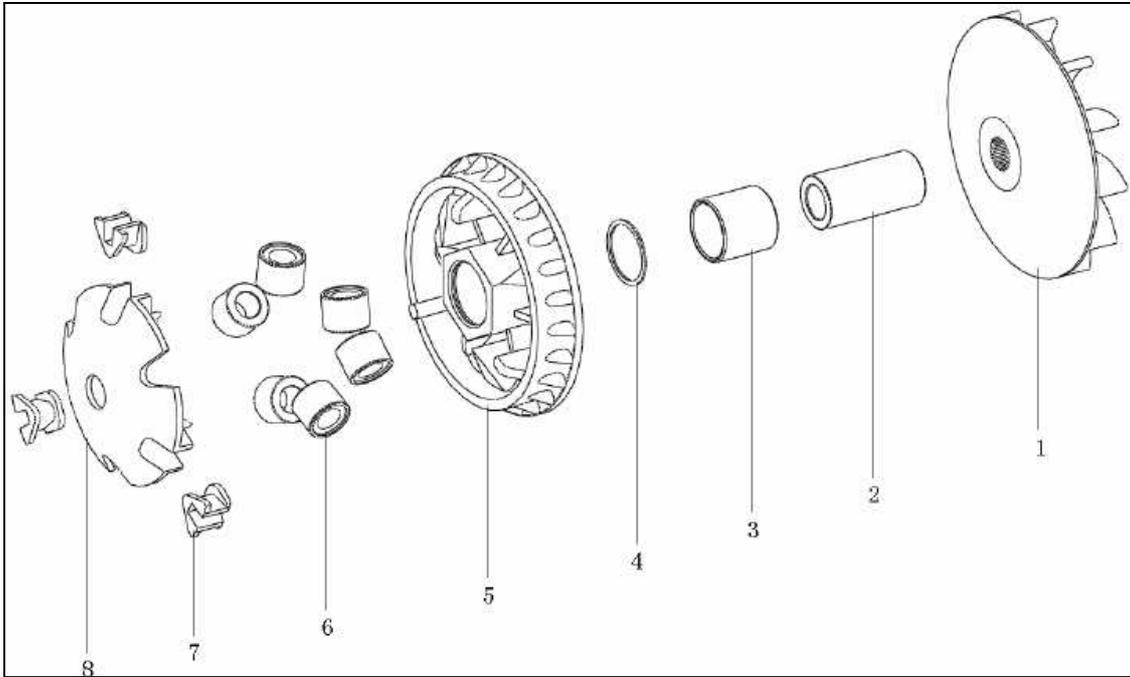
Transition gear shaft (1)

Bracket (5)

Installation procedure is reverse of removal.

NOTES: Install bracket in proper groove before installing transition gear. Ensure proper movement of transition gear.

VARIATOR/CVT ASSEMBLY



Removal

Fixed face (1)

Spacer (2)

Retaining face (8)

Dampers (7)

Rollers (6)

Bushing (3)

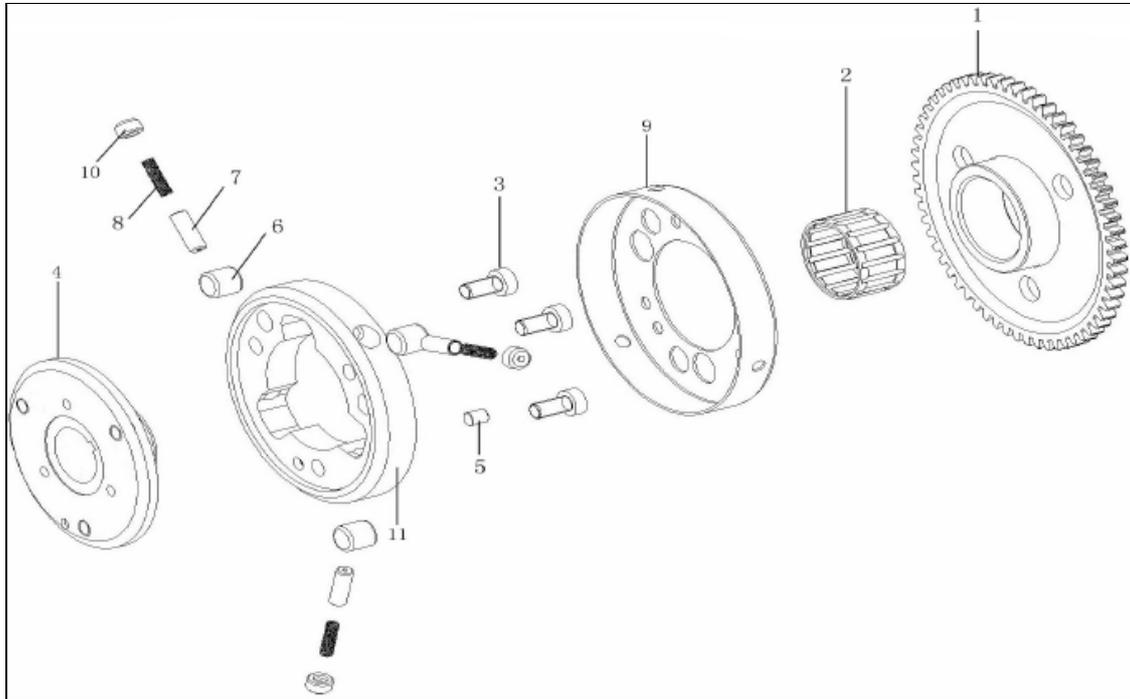
Thrust Washer (4)

Movable face (5)

Installation procedure is reverse of removal.

NOTES: Before installing retaining face, install dampers. Ensure free movement of the spacer.

STARTER CLUTCH ASSEMBLY



Removal

Clutch gear (1)

Needle bearing (2)

M6 Screws (3)

Clutch hub (4)

Pin (5)

Rollers, spring and bushing (6, 7, & 8)

Clutch cover (9)

Spring retainer (10)

Clutch body (11)

Installation procedure is reverse of removal.

NOTES: There should be no play in clutch assembly. Ensure proper tension on bolts and spring retainer. Clutch gears are directional.

CHASSIS

TORQUE SPECIFICATIONS

Front Wheel/Fork

| | |
|-------------------------------|---------------------|
| Axle Nut (1) | 41-44 <i>lbs-ft</i> |
| Fork Legs to Triple Clamp (4) | 27-32 <i>lbs-ft</i> |
| Brake Assembly Mount (2) | 16-21 <i>lbs-ft</i> |

Handlebar

| | |
|-------------------------------|---------------------|
| Handlebar to Triple Clamp (1) | 27-32 <i>lbs-ft</i> |
|-------------------------------|---------------------|

Frame

| | |
|--------------------------|---------------------|
| Engine Bracket Mount (1) | 28-32 <i>lbs-ft</i> |
| Rear Shock to Frame (1) | 28-32 <i>lbs-ft</i> |

Rear Wheel/Rear Shock

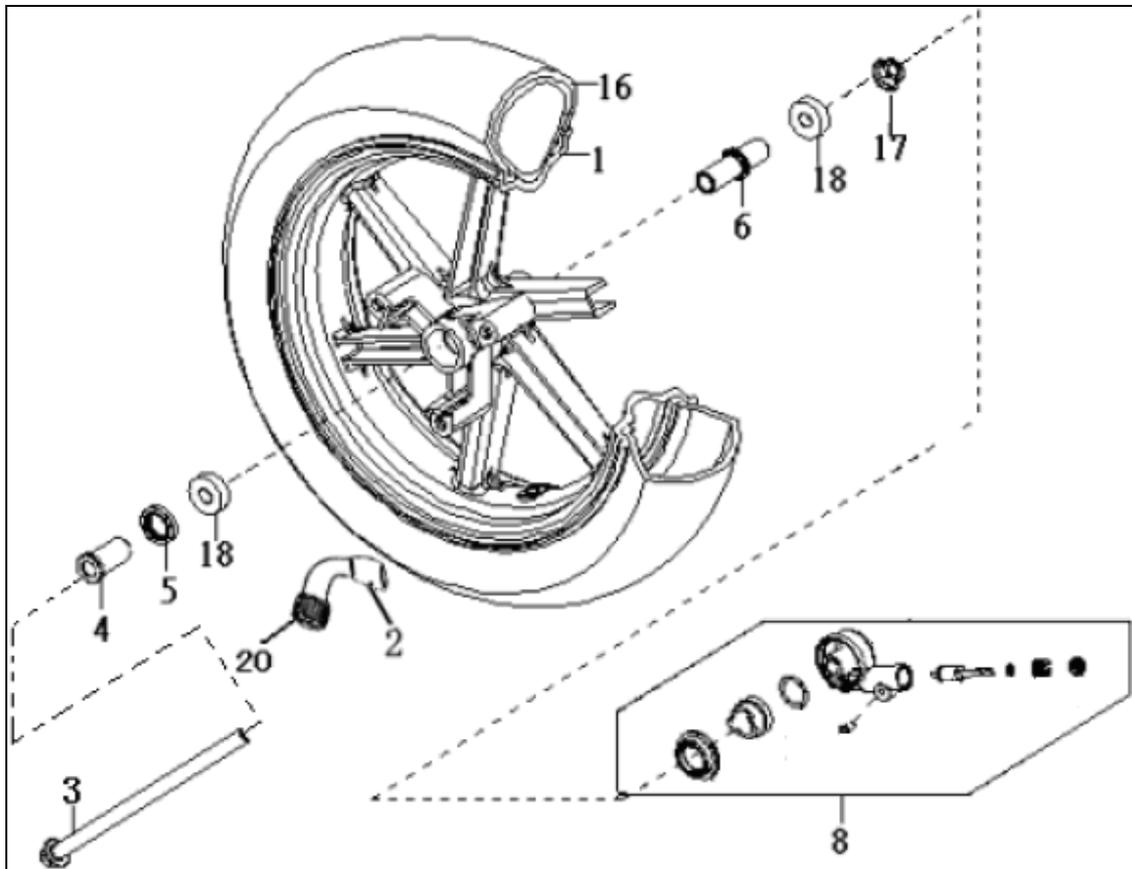
| | |
|-----------------------------|---------------------|
| Axle Nut (1) | 73-95 <i>lbs-ft</i> |
| Rear Shock to Swing Arm (1) | 17-21 <i>lbs-ft</i> |

Engine

| | |
|---------------------------------|---------------------|
| Exhaust to Engine (2) | 13-20 <i>lbs-ft</i> |
| Expansion Chamber to Engine (1) | 8-12 <i>lbs-ft</i> |
| Engine to Engine Bracket (2) | 28-32 <i>lbs-ft</i> |

COMPONENT GUIDE

FRONT WHEEL ASSEMBLY



Removal

Axle locknut (17)

Axle (3)

LH Bushing and speedometer gear assembly (4 & 8)

Front wheel assembly

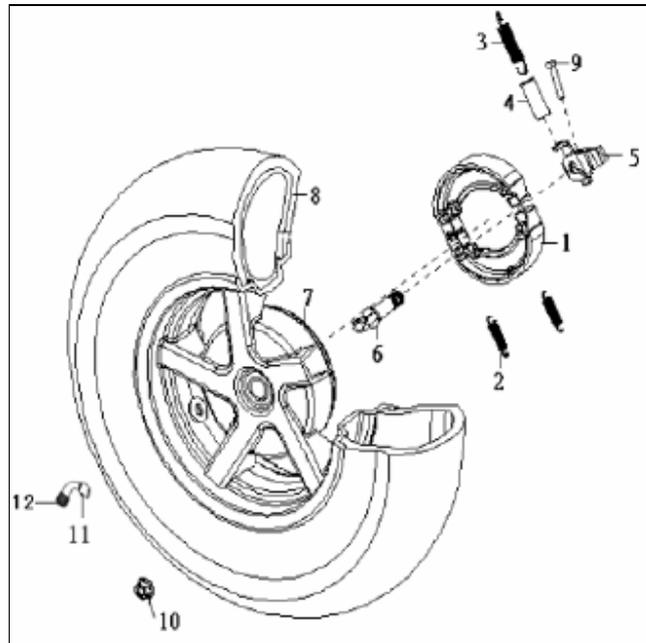
Seal, bearings, and axle shaft bushing (5, 6, & 18)

Tire (16)

Valve stem and cap (2 & 20)

Installation procedure is reverse of removal.

REAR WHEEL ASSEMBLY



Removal

Locknut

Rear wheel assembly

Tire (8)

Valve stem and cap (11 & 12)

Rear wheel (7)

Brake shoes and springs (1 & 2)

Tension spring and bushing (3 & 4)

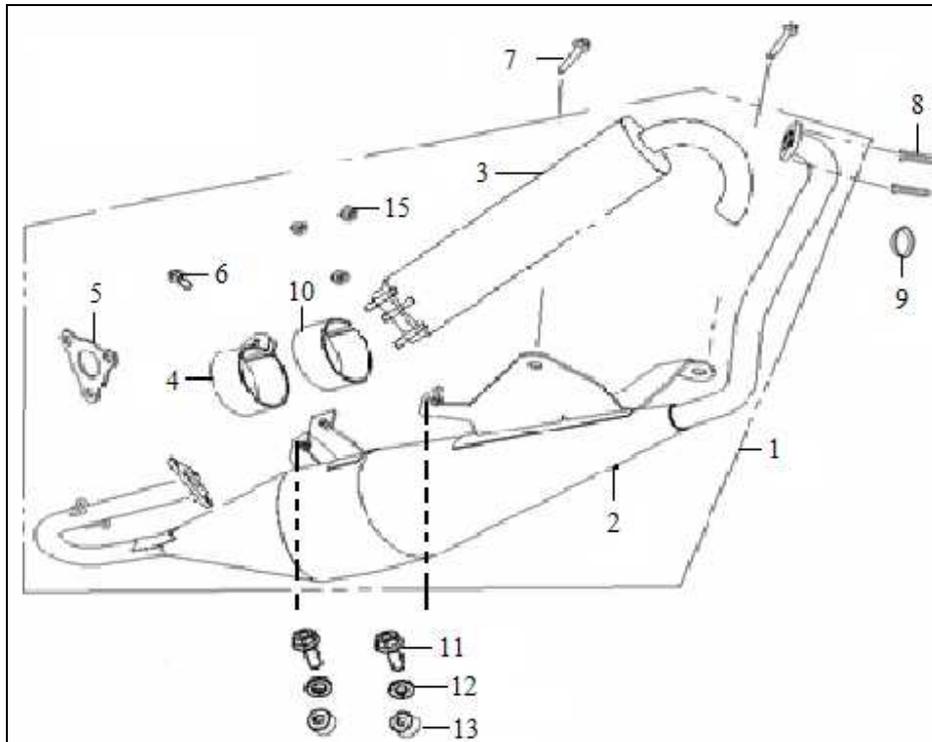
M6x35 Bolt (9)

Brake rocker arm (5)

Brake cam (6)

Installation procedure is reverse of removal.

EXHAUST ASSEMBLY



Removal

Bolts and flange gasket (8 & 9)

Expansion chamber stabilizer bolts, washers, and grommets (11, 12, & 13)

Exhaust assembly (1)

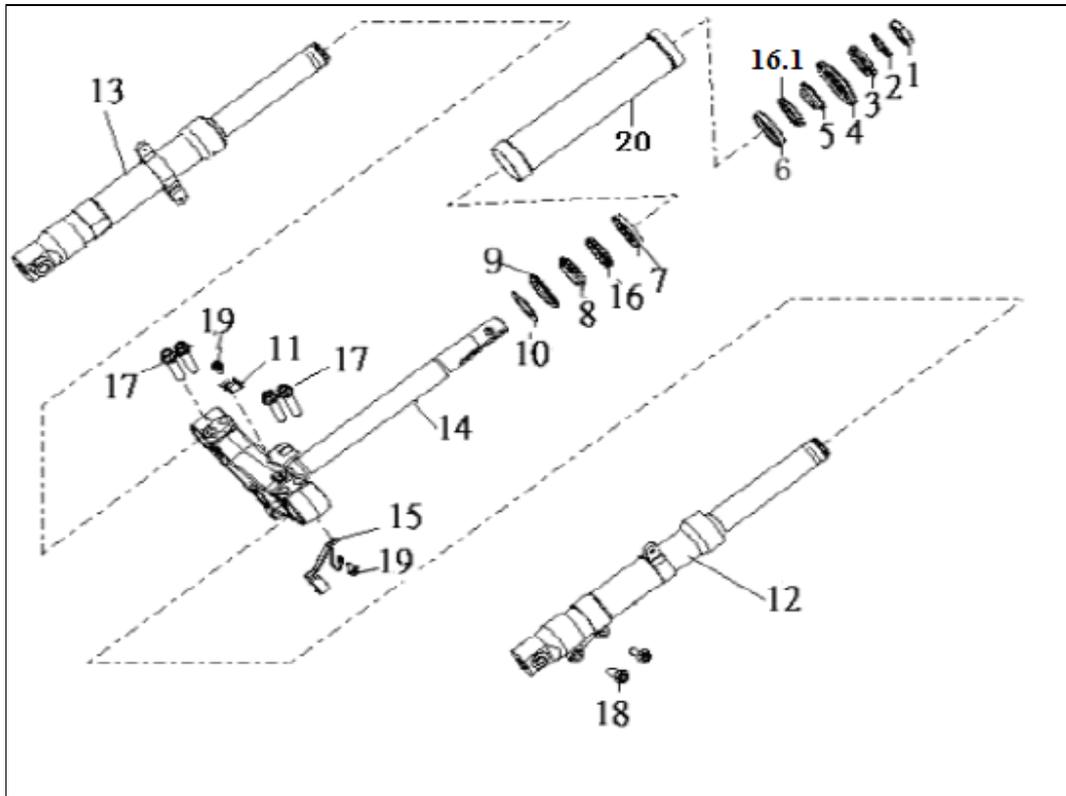
Muffler strap, insulator, and associated bolt (4, 6, & 10)

Muffler mounting nuts and gasket (5 & 15)

Installation procedure is reverse of removal (*assemble exhaust assembly prior*)

NOTE: Apply red thread locker to muffler studs before installing mounting bolts to ensure vibration resistance.

FRONT FORK ASSEMBLY



Removal

M10x1.25x40 Bolts (17)

LH and RH shock absorbers (12 & 13)

Stem locknut and seal (1 & 2)

External nut and dust seal (3 & 4)

Upper steel balls, race, and cap (5, 6, and 16.1).

Slide triple clamp (14) down. **DO NOT REMOVE.**

Bring washer and spacer (9 & 10) down onto triple clamp stem.

CAREFULLY lower race (8) with a hand underneath. Steel balls (16) will drop into your hand.

Upper race (7)

Remove triple clamp and remaining items on stem.

Installation

Triple clamp, washer, and spacer (9, 10, & 14)

Assemble lower bearing assembly (*parts 7, 8, & 16; recommend heavy coat of grease and constant pressure to maintain proper fit.*), and position above spacer (9) on triple clamp stem. Ensure assembly remains together.

Slide triple clamp assembly up into frame (20), ensuring proper fit of bearing assembly. A rubber mallet may be used.

Assemble and install upper bearing assembly (5, 6, & 16.1) in the same manner as the lower bearing assembly. Again, a rubber mallet may be used.

Install dust cover, external thread nut, seal, and retaining nut (1, 2, 3, & 4).

LH and RH shock absorbers (12 & 13)

Install M10x1.25x40 bolts (17).

NOTE: KEEWAY America discourages disassembly of shock absorber assemblies for the purposes of repairing and reinstalling on KEEWAY units. Always replace the entire assembly, and replace them in pairs.
