MOTOPED

Assembly Manual

PRO

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Welcome

Using this manual

This manual has been designed to assist trained mechanics in servicing the models listed above. If you do not have the proper training or tools to perform a particular task it is best if you seek out a service professional.

This manual was written using the latest information available at the time of publication. Illustrations in this manual are shown to help you with the basics of performing the jobs listed. The pictures in this manual may not depict the actual vehicle you're working on, however the procedures will be similar.

Inexperienced technicians without the correct tools and knowledge may not be able to perform these jobs as intended. Caution needs to be taken for the vehicle and its operator as serious injury can occur. Always read a procedure in its entirety before attempting any repairs.

While the instructions, photographs and illustrations in this manual have been reviewed for accuracy it is up to the individual performing the procedures to use good judgement when performing any procedures described. Every precaution has been taken in the manufacture of this manual however the publisher assumes no responsibility for errors and omissions. Furthermore, no liability or responsibility is assumed for damages to property or injury to persons resulting from the use of the information contained in this guide. Use of this information to perform service procedures is done entirely at your own risk.

Errors and Omissions

If you notice any errors in this guide please contact us immediately.

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Component List

Frame and External Components

Frame

Exhaust pipe

Side covers and hardware

Seat

Rear fender and hardware

Handlebar

Extra grips

Fuel tank, mounts, and petcock

Wheels and Tires

Remove the wheels from the wheel box.

Front wheel

Rear wheel

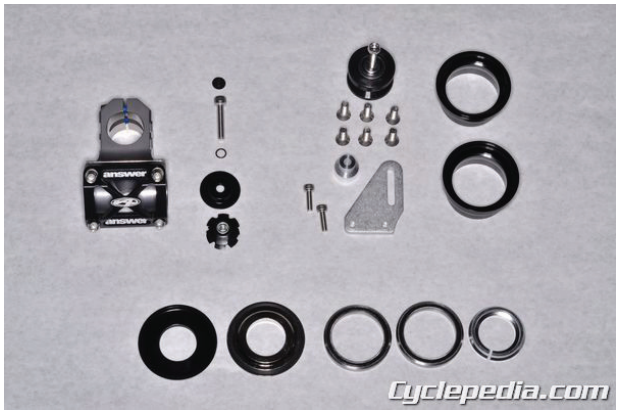
Tires

Inner tubes

Rim strips

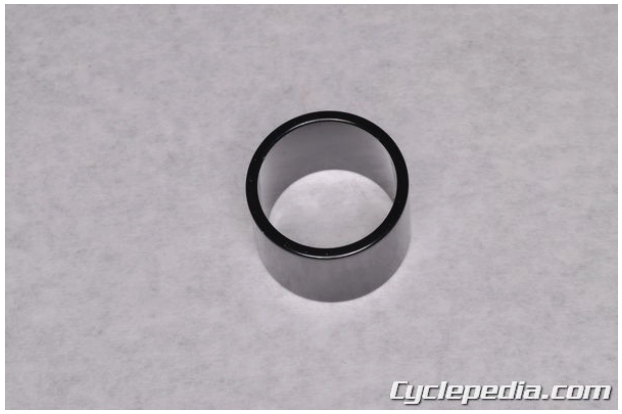
Headset Kit and Chain/Sprocket Kit Box

Open the headset kit and chain/sprocket kit box.



Handlebar stem, star nut components, headset (steering bearings) components, chain roller/tensioner and hardware

Chains and sprockets



Stem spacer

Brake Kit Box

Open the brake kit box.

Brake discs

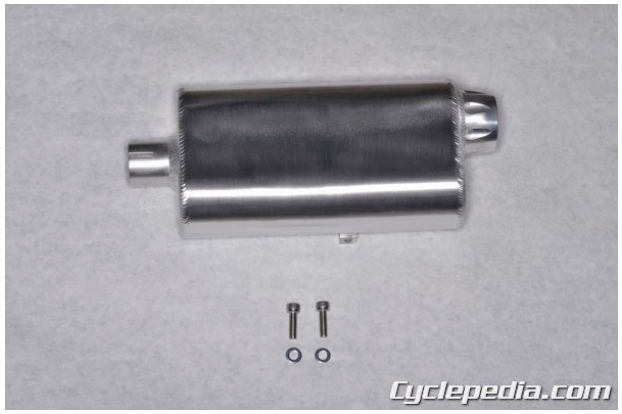
Front and rear hydraulic brake assemblies and mounting hardware

Bottom Bracket Box

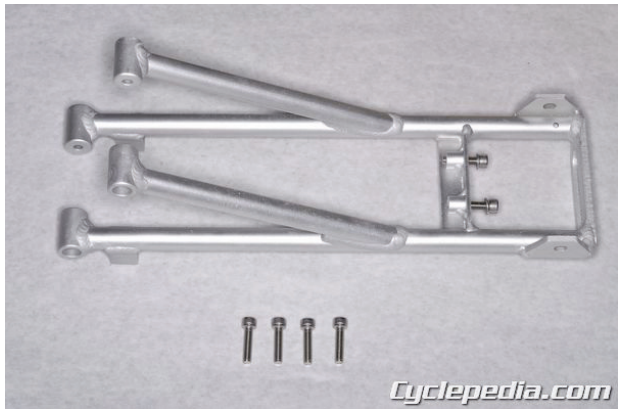
Bottom bracket, side plates, chain roller/tensioner, and hardware

Muffler Box

Open the muffler box.



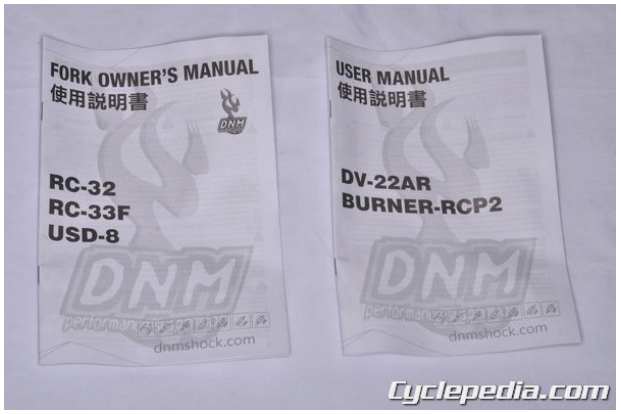
Muffler and hardware



Sub-frame and hardware

Suspension Box

Open the suspension box.



Note the owner's manuals and documentation inside the suspension box.

Front fork and axle

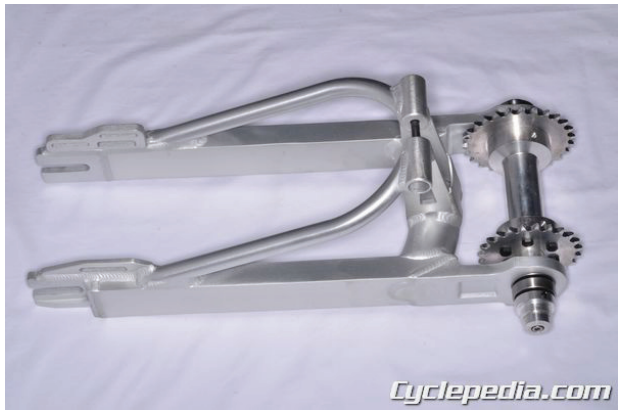
Rear shock absorber

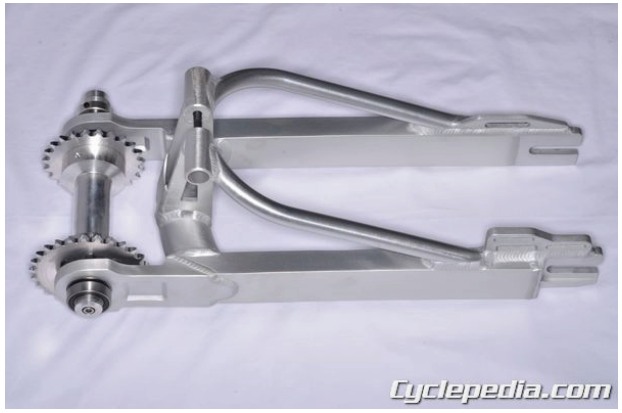
Crankset

Throttle cable, throttle, and grips

Pedals

Swingarm





Swingarm and jackshaft.

Rear axle tensioners

Brakes

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Discs

Fit the brake disc onto the wheel hub.

Make sure the disc direction of rotation is correct.

Install the brake disc mounting bolts (pre-applied thread locking agent).

Tighten the disc bolts to specification with a T25 Torx socket. Tighten the screws evenly in a crisscross pattern.

Torque (N-m)	Torque (ft-lbs.)

6.2	4.6

Brake Hose Routing

Install the front brake master cylinder to the left side of the handlebar, and the rear brake master cylinder to the right side of the handlebar. Route the brake hoses as shown.

Front Brake Caliper

Remove the brake pad separator plate. Do not squeeze the brake lever when the separator plate or disc isn't between the pads.

Use the caliper alignment tool to separate the brake pads if needed.

Fit the front brake caliper and mounting bracket into place. Guide the disc between the brake pads.

Install the bracket mounting bolts with the pre-applied thread locking agent. Tighten the caliper mounting bracket bolts to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
12.43	9.17

Route the brake hose up through its guides on the left fork leg.

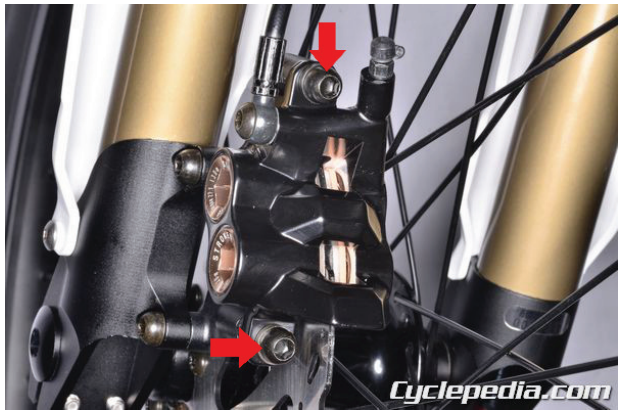
Tighten the hose clamp securely with a 3 mm hex wrench to secure the hose.

Fit the master cylinder into place on the handlebar.

Insert the master cylinder clamp bolts.

Tighten the clamp bolts evenly so the gap is equal on both sides of the clamp. Tighten the master cylinder to specification with a 4 mm hex wrench

Torque (N-m)	Torque (ft-lbs.)
3.37	2.5



Loosen the caliper mounting bolts with a 5 mm hex socket. Squeeze the brake lever and align the caliper with the brake disc. While holding the brake lever, gently wiggle the caliper to position it in its natural centered position over the disc. While squeezing the lever, tighten the mounting bolts.

Release the lever, spin the wheel. Check that it spins freely and that the gaps, between the pad and the disc, are equal. If the gaps are unequal, or if there is drag, readjust the caliper position by loosening the mounting bolts and adjusting the caliper as needed. Note: A piece of paper can be used as a background to help sight down the disc looking for equal clearance between the pads and disc. See the Caliper Aliment tool section for more information.

When the caliper is aligned correctly tighten the mounting bolts to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
12.43	9.17

Rear Brake Caliper

Fit the rear brake caliper bracket into place.

Install the caliper bracket mounting bolts and snug them down with a 5 mm hex wrench.

Install the caliper spacers.

Remove the brake pad separator plate. Do not squeeze the brake lever when the separator plate or disc isn't between the pads.

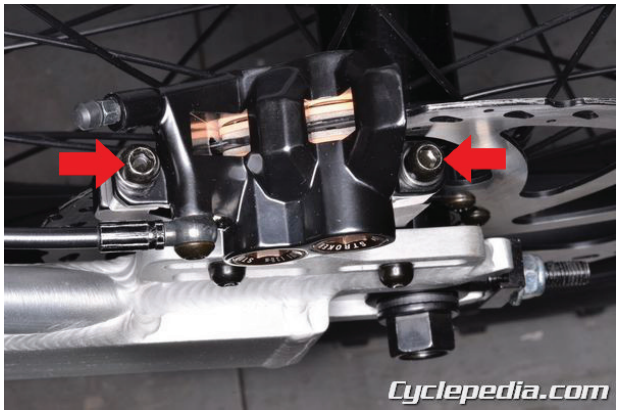
Fit the rear brake caliper into place. Guide the disc between the brake pads.

Install the caliper mounting bolts and washers.

Loosen the caliper bracket mounting bolts and adjust the caliper front-to-rear position so that the brake pad linings make good contact with the disc. Make sure the disc isn't contacting the caliper body.

Tighten the caliper mounting bracket bolts to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
12.43	9.17



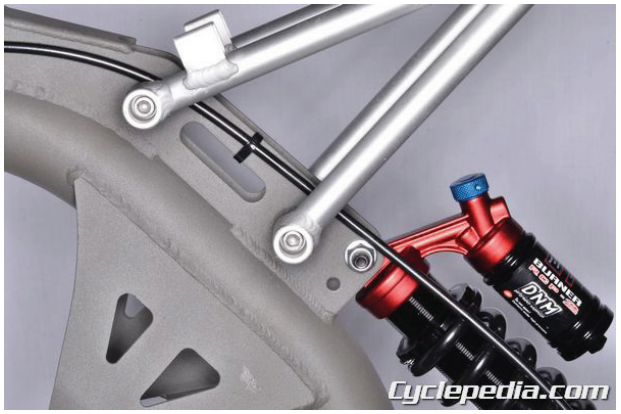
Loosen the caliper mounting bolts with a 5 mm hex socket. Squeeze the brake lever and align the caliper with the brake disc. While holding the brake lever, gently wiggle the caliper to position it in its natural centered position over the disc. While squeezing the lever, tighten the mounting bolts.

Release the lever, spin the wheel. Check that it spins freely and that the gaps, between the pad and the disc, are equal. If the gaps are unequal, or if there is drag, readjust the caliper position by loosening the mounting bolts and adjusting the caliper as needed. Note: A piece of paper can be used as a background to help sight down the disc looking for equal clearance between the pads and disc.

When the caliper is aligned correctly tighten the mounting bolts to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
12.43	9.17

Install the rear brake master cylinder in the same manner as the front brake master cylinder.



Route the brake hose up to the handlebar as shown, and secure it with the wire bands.

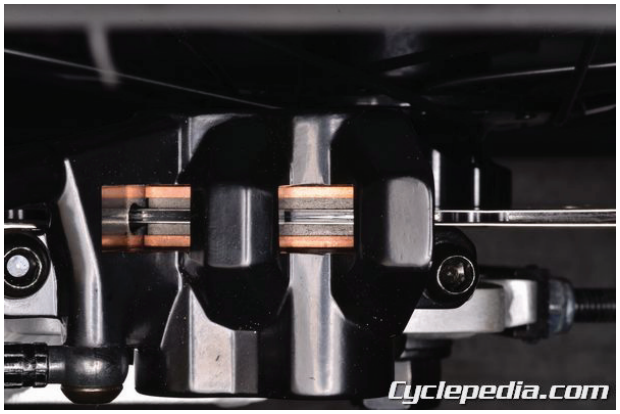
Brake Function

Inspect the brake function before riding the vehicle. If air needs to be bled from the brake fluid see the bleeding instructions in the additional resources.

Caliper Alignment Tool

The caliper alignment tool can be used to aid in caliper alignment and prevent brake pads from dragging on the disc.

Loosen the caliper mounting bolts with a 5 mm hex socket.



Insert the feeler gauges between the disc and pad linings.

Squeeze the brake lever and align the caliper with the brake disc. While holding the brake lever, gently wiggle the caliper to position it in its natural centered position over the disc. While squeezing the lever, tighten the mounting bolts.

When the caliper is aligned correctly tighten the mounting bolts to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
12.43	9.17

Burnishing

Disc brakes require a special burnish period to achieve maximum braking power.

This burnish period last for about 30-40 stops. During this period some noise may occur.

Hayes Brakes Additional Resources

Hayes Brake Owners Manual

Hayes Brake Fluid Bleeding Instructions

Crankset

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Apply a medium strength, non-permanent thread locking agent to the threads of all bolts.

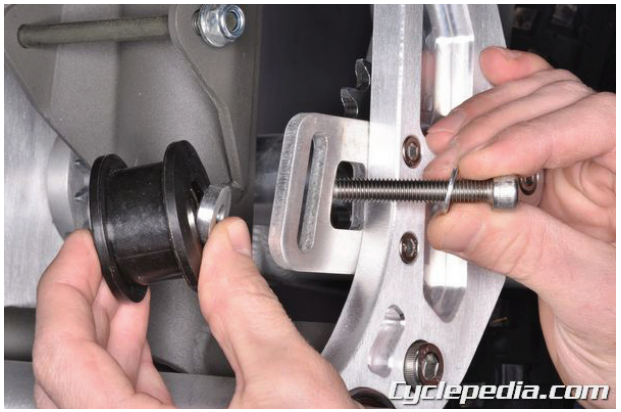
Fit the engine drive chain roller/tensioner bracket into place on the inside of the left side plate.

Install the drive chain roller/tensioner bracket mounting bolts.

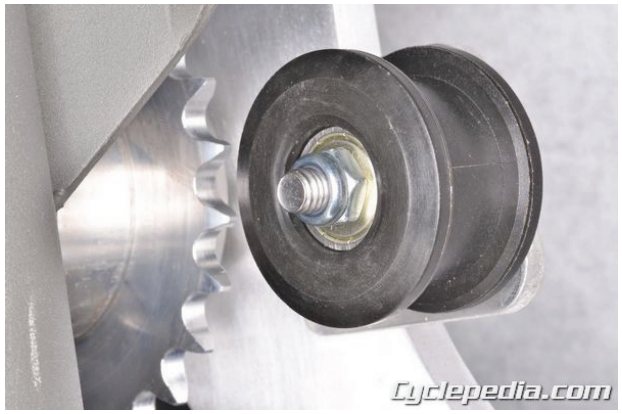
Tighten the drive chain roller/tensioner bracket bolts to specification with a 5 mm hex socket.

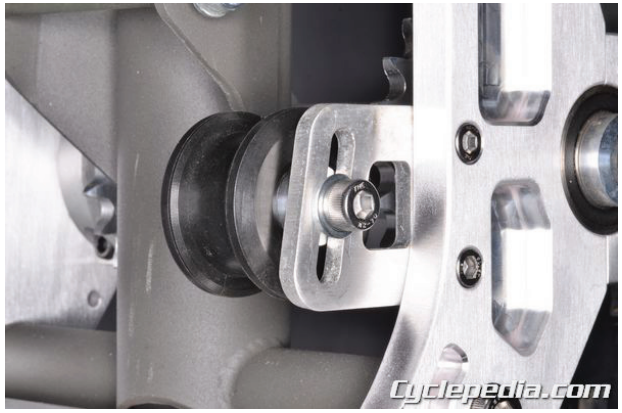
Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Install the collars on each side of the bearings.



Install the drive chain roller/tensioner onto its bracket.





Temporarily tighten the nut and bolt to secure the drive chain roller/tensioner with a 13 mm socket and 6 mm hex wrench.

Fit the crank arm onto the bottom bracket spindle.

The standalone crank arm goes on the left side, and the crank arm with the chain ring goes on the right.

Install the spindle bolt and tighten it to specification with an 8 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
40	29

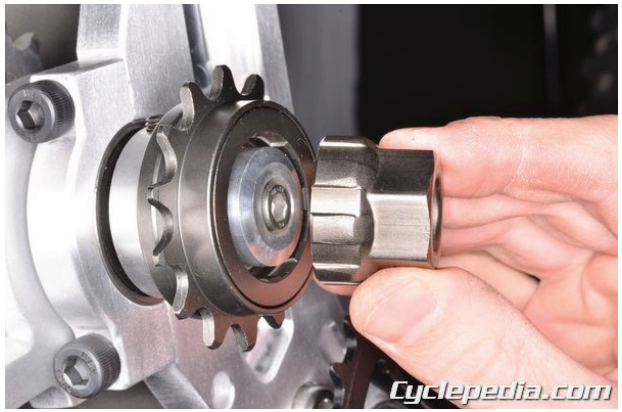
Install the opposite crank arm and chain ring. Position the crank arms 180 degrees apart.

Install the spindle bolt.

Tighten the spindle bolt to specification with an 8 mm hex socket.

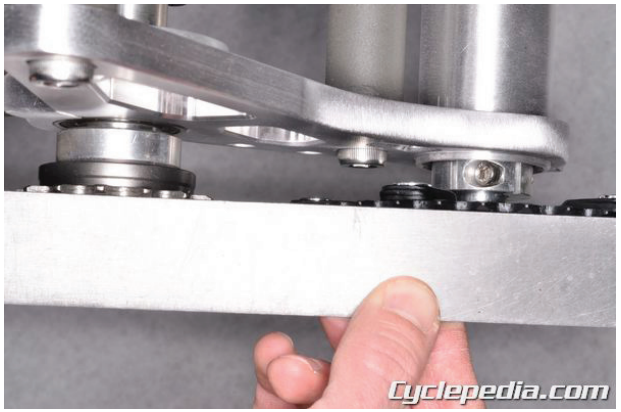
Torque (N-m)	Torque (ft-lbs.)
40	29

Thread the freewheel onto its boss on the jack shaft and tighten it by hand.



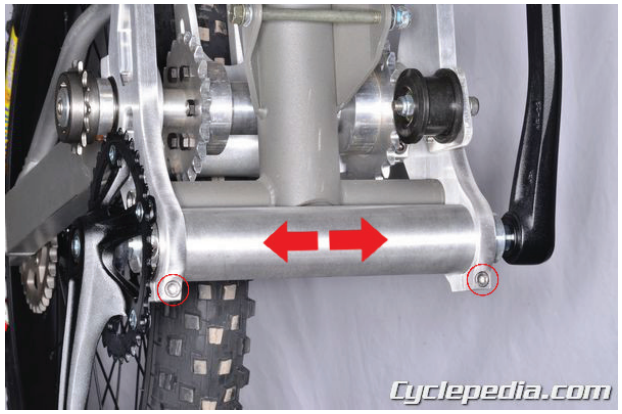
Use the freewheel wrench tool to remove the freewheel from its boss if necessary.

Inspect the chain ring to freewheel sprocket alignment.

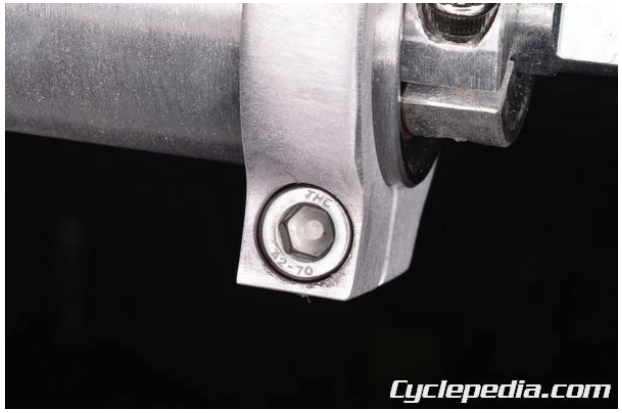


Place a straight edge along the sprockets and make sure the chain will have a straight run. Adjust the alignment if needed.

The chain ring to freewheel sprocket alignment can be adjusted in two ways: bottom bracket movement and freewheel spacing.

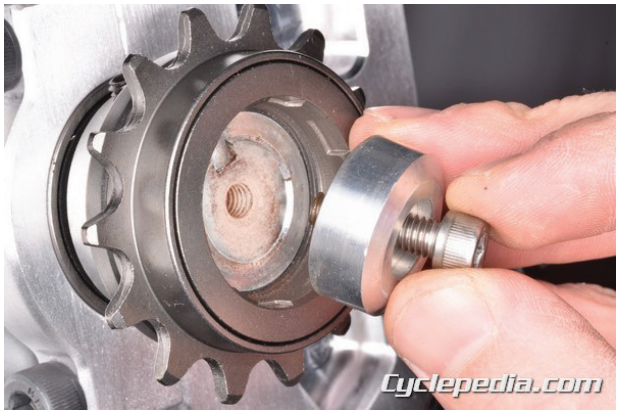


The bottom bracket can move side to side in its clamps. Make sure the crank arms will not contact the engine or kick starter. Also, make sure the chain ring isn't contacted when the kick starter is fully extended.

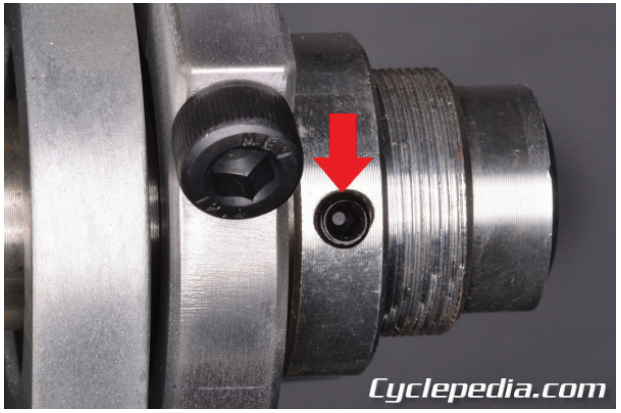


Tighten the bottom bracket clamp bolts securely when finished.

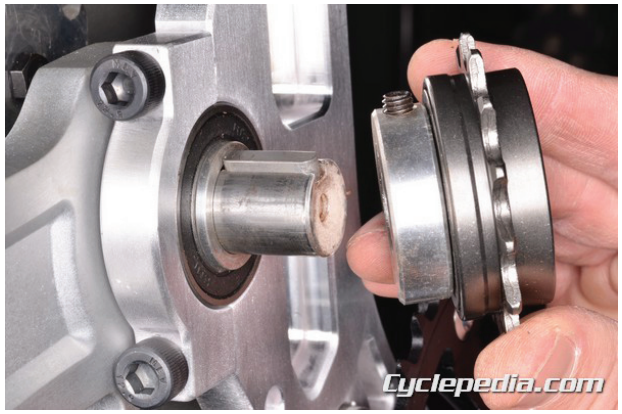
Torque (N-m)	Torque (ft-lbs.)
8.7	6.4



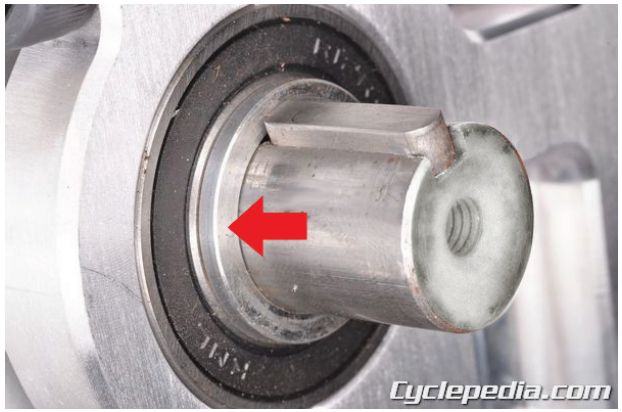
Loosen the jack shaft cap bolt with a 5 mm hex socket. Remove the bolt and cap.



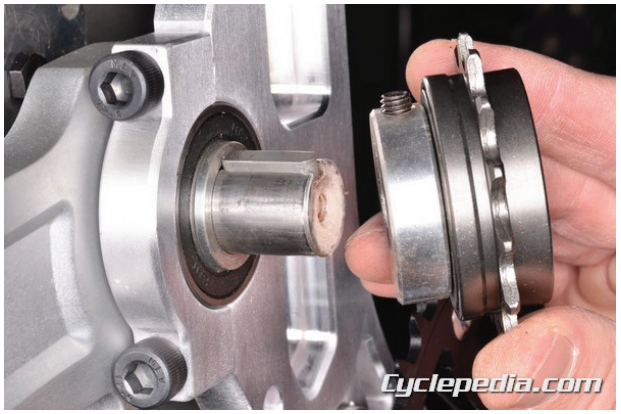
Loosen the freewheel boss set screw with a 3 mm hex wrench.



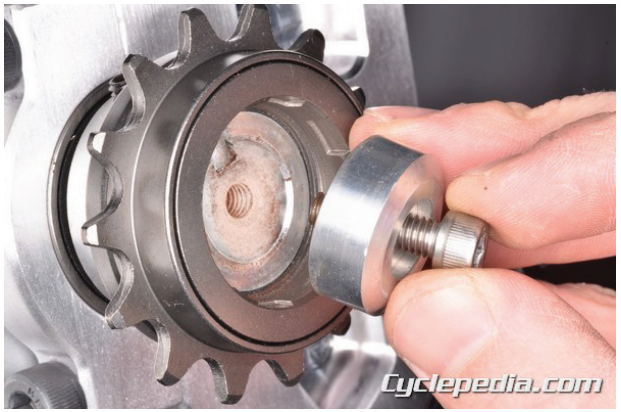
Remove the freewheel and boss from the jack shaft.



Change the spacer with a thicker or thinner piece to adjust the position of the freewheel sprocket.

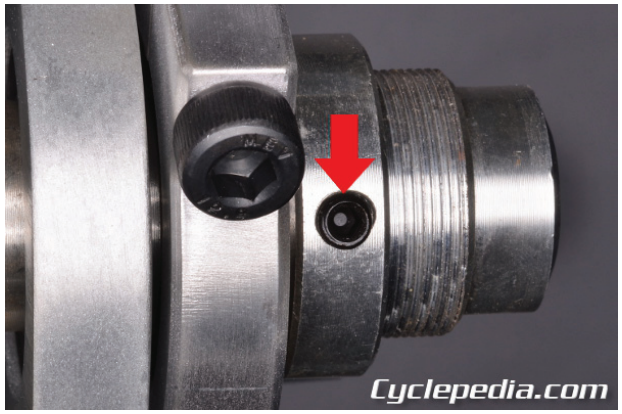


Return the freewheel and boss to the jack shaft.



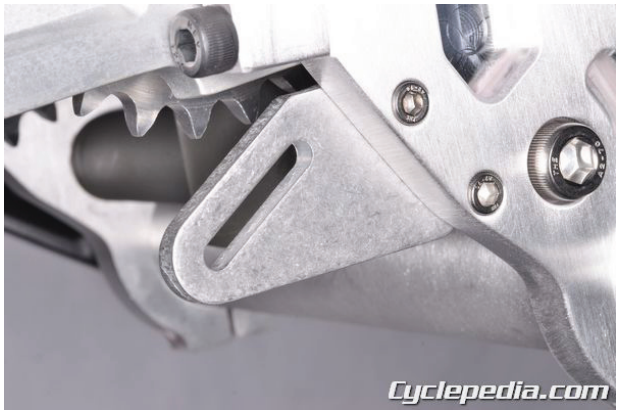
Install the jack shaft cap and cap bolt with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4



Tighten the freewheel boss set screw securely with a 3 mm hex wrench.

Fit the bicycle chain roller/tensioner bracket into place on the inside of the right side plate.



Install the bicycle chain roller/tensioner bracket mounting bolts and tighten them to specification with a 4 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Locate the master link on the bicycle chain.

Use a pair of slip joint pliers to push the open end of the master link clip towards the chain link pin at the closed end of the clip.

Remove the master link clip.

Remove the side plate.

Remove the master link.

Join the bicycle chain ends on the freewheel sprocket.

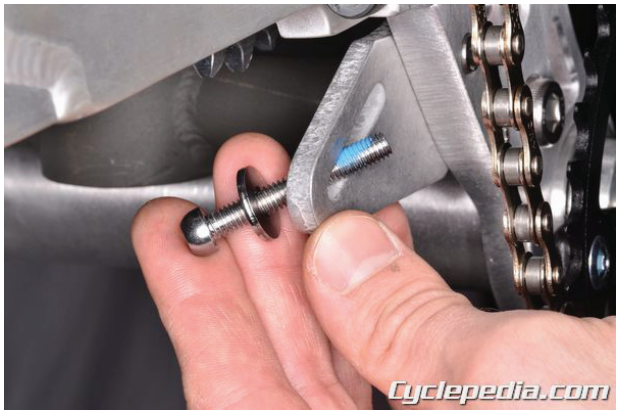
Install the master link from the inside.

Install the side plate from the outside.

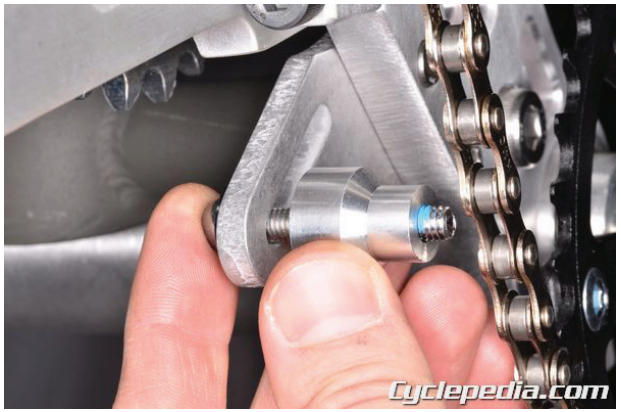
Position the closed end of the clip so that it points in the direction of chain rotation.

Install the master clip and pop it in position by using slip joint pliers to push the closed end of the clip against the pin next to it.

Make sure the clip is fully seated.

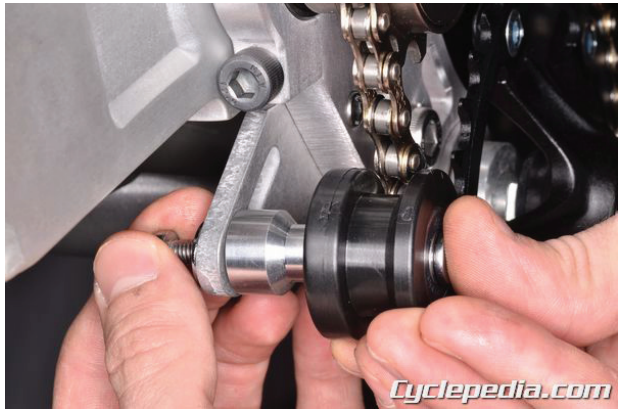


Install the bicycle chain roller/tensioner bolt and washer.

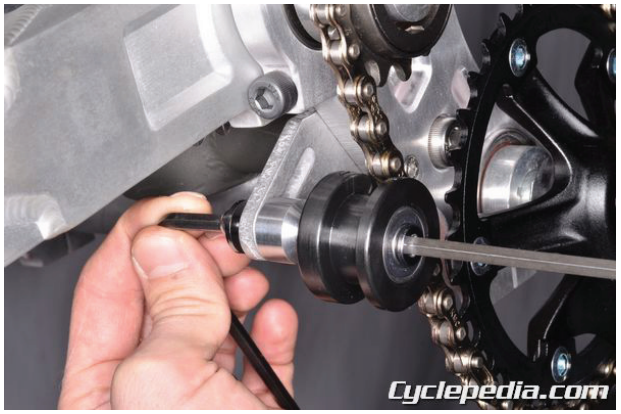


Install the bicycle chain roller/tensioner spacer.

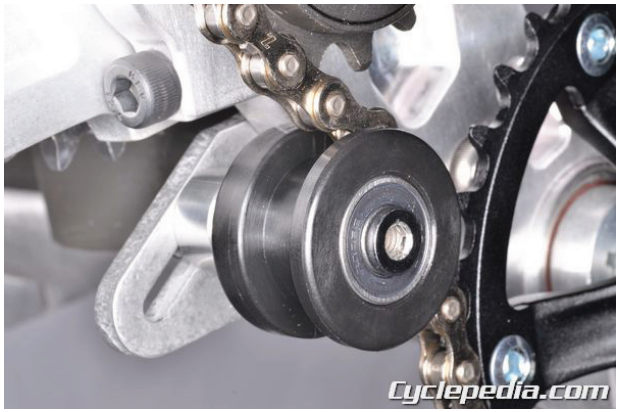
Install the bicycle chain roller/tensioner washer. Adjust the amount or thickness of the washers as necessary for proper fitment of the roller to the chain.



Install the bicycle chain roller/tensioner onto the bolt.



Use a pair of 5 mm hex wrenches to move the roller/tensioner into place and tighten.



Fit the roller/tensioner into place against the chain tighten it securely.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Thread the right pedal into the right crank arm.

The left pedal has reverse threads. Install the left pedal into the left crank arm.

Tighten the pedals securely with a pedal wrench.

Torque (N-m)	Torque (ft-lbs.)
35	26

Locate the master link on the final drive chain.

Use a pair of slip joint pliers to push the open end of the master link clip towards the chain link pin at the closed end of the clip.

Remove the master link clip.

Remove the side plate.

Free the chain ends from the master link.

Route the final drive chain around it's drive sprocket on the jack shaft and fit the ends of the chain together on the rear sprocket.

Install the master link from the inside.

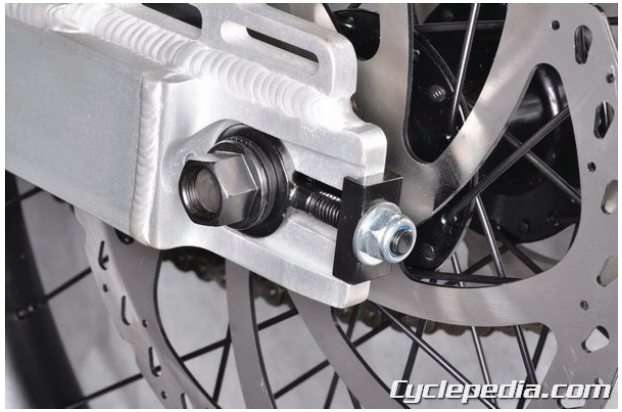
Install the side plate.

Position the closed end of the clip so that it points in the direction of chain rotation.

Install the master clip and pop it in position by using slip joint pliers to push the closed end of the clip against the pin next to it.

Make sure the clip is fully seated.

The final drive chain should have around an inch or 25 mm of free play. Check the free play mid way between the sprockets on the lower run of the chain.



Loosen the rear axle nuts with an 18 mm socket.

Tighten the axle tensioner nuts to reduce the chain free play. Turn the adjuster nuts evenly on both sides of the wheel.

Tighten the axle nuts securely when finished.

Torque (N-m)	Torque (ft-lbs.)
61	45

Fork Installation

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Install the headset, cut the steerer tube to the proper length, and install the star nut. See the Headset Installation topic for more information.

Install the lower bearing onto the crown race.

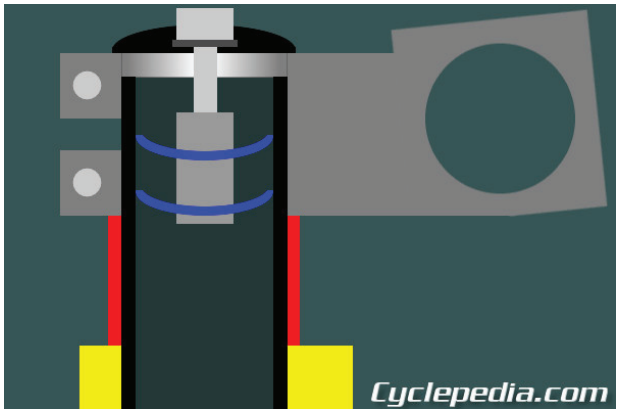
Guide the steerer tube and bearing into the head set. Continue supporting the lower fork crown until the steerer tube has been secured with the upper fork crown.

Install the upper bearing.

Install the centering sleeve onto the steerer tube and into the upper bearings.

Install the upper bearing cap.

Slide on the upper fork crown.



Install the spacer/s and stem onto the steerer tube. The top of the steerer tube should sit about 3 mm below the stem.

Install the cap, bolt, and washer. Thread the cap bolt into the star nut. Tighten the cap bolt to take any slack out of the headset assembly. All vertical play in the steerer tube stack should be eliminated.

Temporarily tighten the stem to steerer tube clamp bolts to support the steering assembly.

Fit the fork legs into the lower fork clamp. The leg with the brake caliper mount should be on the left side.

Install the bump stop.

Continue inserting the fork leg until it enters the upper fork crown. The max line should be aligned at the top of the lower fork crown.

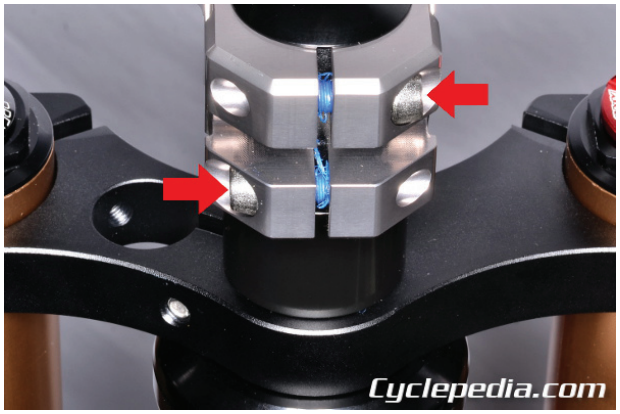
Position the bump stops so they will contact the frame before the fork leg.

Tighten the lower fork crown pinch bolts evenly with a T30 Torx socket.

Torque (N-m)	Torque (ft-lbs.)
7.5	5.5

Tighten the upper fork crown to steerer tube and fork pinch bolts with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
7.5	5.5



Loosen the stem clamp bolts with a 5 mm hex socket and align the stem. Tighten the stem clamp bolts to specification with a 5 mm hex socket. Tighten the stem clamp bolts evenly one turn at a time.

Torque (N-m)	Torque (ft-lbs.)
7.9 - 9	5.9 - 6.6

Move the steering back and forth and check for any vertical play. Loosen the stem and upper fork crown to steerer tube clamps and tighten the cap nut to remove any play if needed. Tighten the clamps securley.

Install the plug over the cap bolt when all steering adjustments are finished.

Frame Assembly

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Support the frame with a suitable stand.

Apply a medium strength, non-permanent thread locking agent to the threads of all bolts.

Sub-Frame

Fit the sub frame into place.

Install the four M6 x 25 mm hex head bolts.

Tighten the sub-frame mounting bolts to specification with a 5 mm hex head socket.

Torque (N-m)	Torque (ft-lbs.)
13.6	10

Side Plates

Fit the side plates into place.

Install the two M10 x 25 mm bolts with each side plate.

Tighten the side plate bolts to specification with an 8 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
42	30.9

Install both side plates as shown.

Bottom Bracket

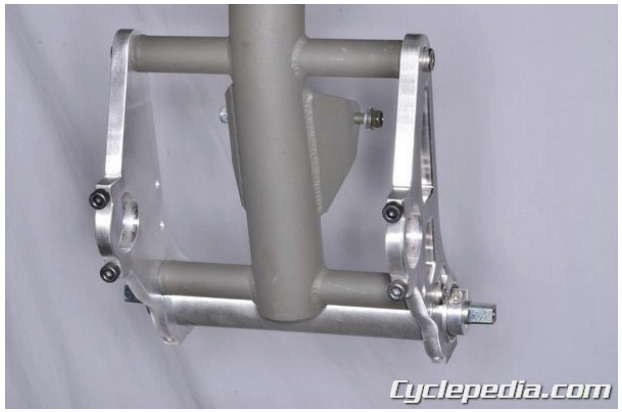
Loosen the bottom bracket clamp bolts with a 5 mm hex socket.

Slide the bottom bracket into place in the side plates.

Snug the bolts down with a 5 mm hex socket.

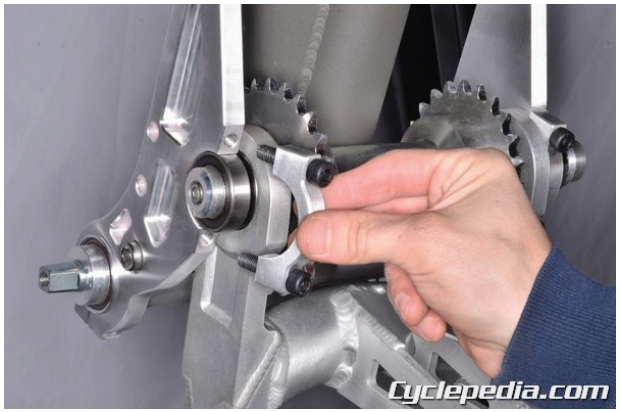
Torque (N-m)	Torque (ft-lbs.)
42	30.9

Swingarm

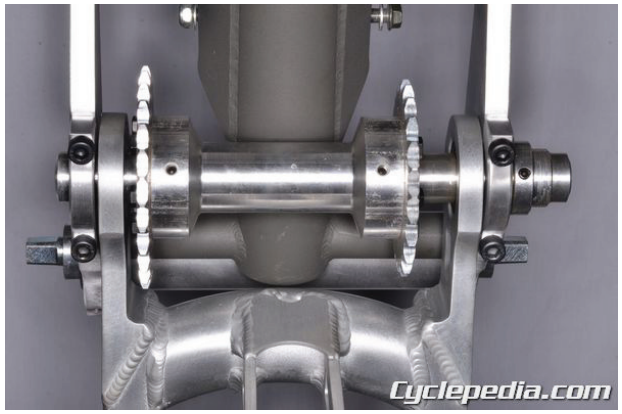


Remove the swingarm pivot bolts with 6 mm hex socket.

Remove the swingarm pivot holders.



Fit the swingarm into place and install the pivot holders.

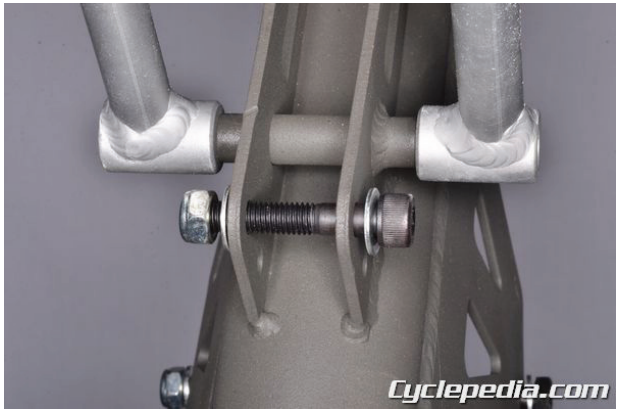


Make sure the swingarm pivot bearings are centered in their mounts on the frame.

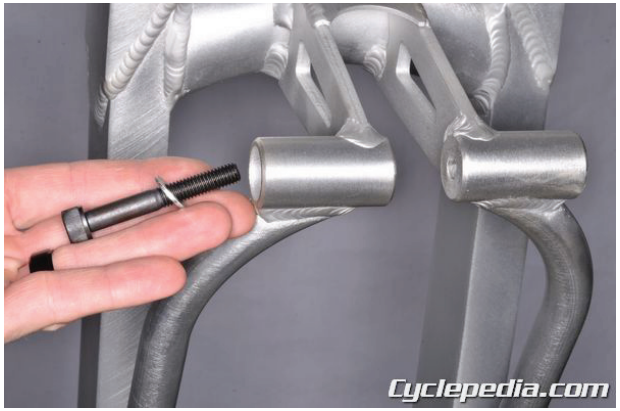
Install the four swingarm pivot holder bolts (M8 x 35 mm) and tighten them to specification with a 6 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
25.4	18

Shock Absorber

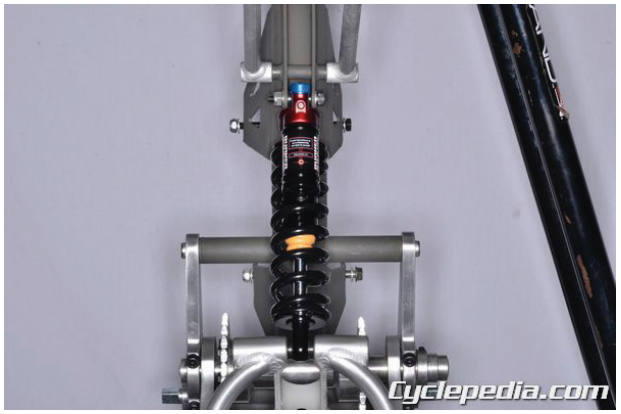


Remove the upper shock absorber mounting nut, bolt and washers from the frame. Note the position of the washers.

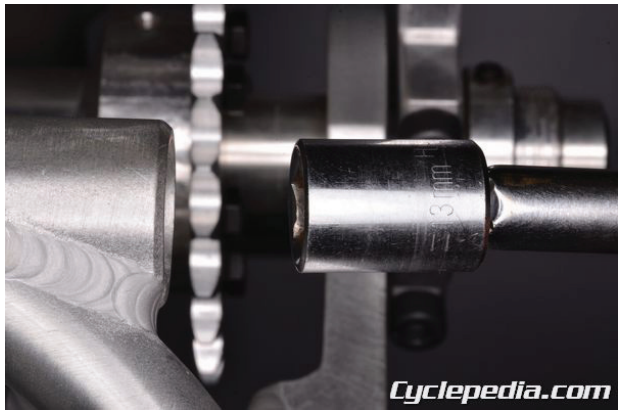


Remove the lower shock absorber mounting bolt, nut, and washers. Note the position of the washers.

Fit the shock absorber into place.



Install the upper and lower shock absorber mounting bolts, nuts and washers.



Hold the bolts with a 6 mm hex socket and tighten the nuts to specification with a 13 mm socket.

Torque (N-m)	Torque (ft-lbs.)
21.2	15.6

Fuel Tank

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Install the engine and carburetor prior to the the fuel tank and seat. See the Engine chapter for more information.

Install the rubber grommets into the fuel tank. There are two grommets, one for the front

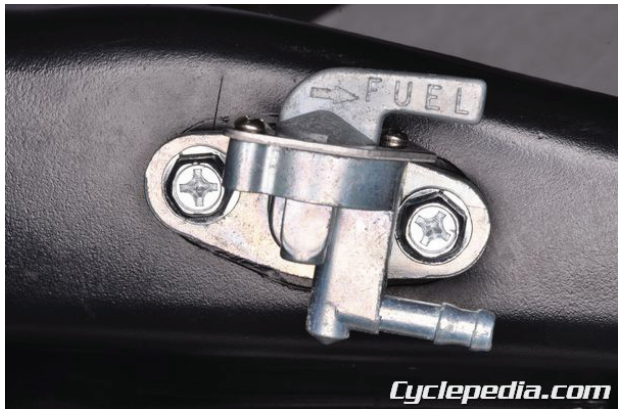
and one for the rear of the fuel tank.

Install the metal collars into the grommets.

Place the O-ring on the petcock.

Install the petcock into the fuel tank so the fuel valve faces out.

Install the petcock mounting bolts.



Tighten the petcock mounting bolts securely with a #3 Phillips screwdriver.

Fit the fuel tank onto the frame.

Install the fuel tank mounting bolts with washers.

Tighten the fuel tank mounting bolts securely with a 6 mm hex wrench.

Handlebar

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Install the fork and stem. See the Fork Installation topic for more information.

Fit the handlebar and face plate into place.

Position the handlebar as desired.

Tighten the face plate bolt in a crisscross pattern in one turn increments. Tighten the face place bolt to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
6.8 - 7.9	5.1 - 5.8

Headset Installation

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Crown Race

Loosen the upper fork crown pinch bolts with a 5 mm hex socket.

Lift off the upper fork crown.

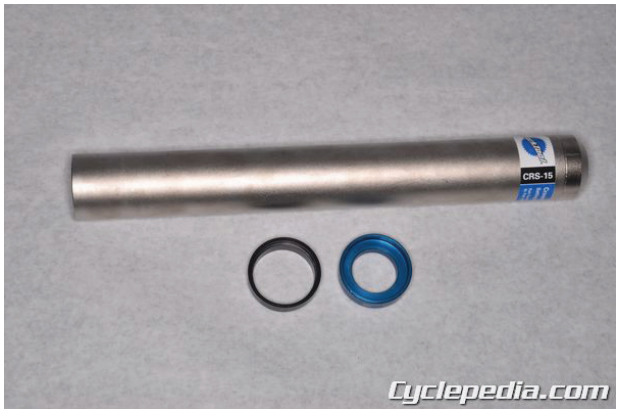
Remove the bump stops.

Loosen the lower fork crown bolts with a T30 Torx socket.

Remove the lower fork crown and steerer tube from the fork tubes.

Set the crown race on the steerer tube.

The fork crown race must be pressed to the lower fork crown.



The CRS-15 Crown Race Setter tool will be needed to drive the race into place.

Use the 1.5 inch installer insert.

Place tool and insert over the fork steerer.

Use hammer and strike top of tool until race fully seats. The sound will change as it seats.

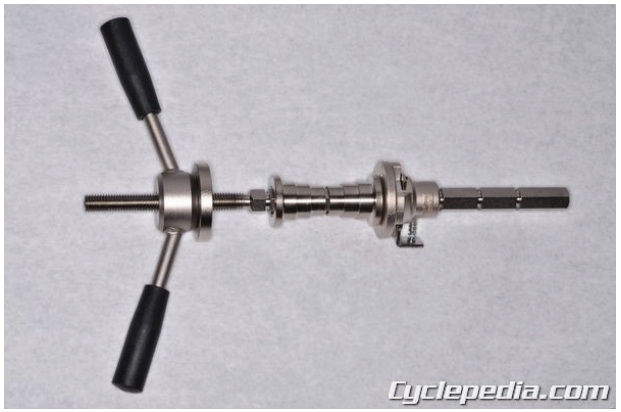
Inspect sides of race for seating.

Headset Bearing Cups

Make sure to install the cups into their correct position. The upper and lower cups are different.

Upper Cup

Lower Cup



Use the HH-2 Bearing Cup Press tool to install the bearing cup.

Adjust threaded press plate of HHP-2 until top is flush with end of hex shaft thread.

Remove sliding press plate and install cups onto guides.

Guides are used to maintain cup alignment while pressing. Before using cup guide, insert guide into cup.

Place upper headset cup on top of head tube. Hold one cup guide onto top threaded press plate and lower assembly through top headset cup.

Install second cup guide onto sliding press plate, and place lower cup onto guide.

Engage sliding press plate onto hex shaft, and push plate upward until headset cup meets head tube. Release lever. Sliding press plate lever must be engaged in one of seven hex shaft notches. Pull downward on lower press plate to test engagement.

Turn handle clockwise slowly and inspect alignment of cups as cups enter head tube.

Continue and press cups fully into head tube. If threaded press plate has bottomed on threads of hex shaft, turn threaded press plate counter clockwise until it is again flush with

top of threads. Re-engage sliding plate to a higher notch, and continue to press cups.
NOTE: Never use a extender bar to extend leverage of handles. If cups will not press using handles, other problems are present and should be addressed.

Inspect the position of the cups in the frame.

There shouldn't be a gap between the cups and frame.

Steerer Tube Fitting

Install the lower bearing onto the crown race.

Guide the steerer tube and bearing into the head set. Continue supporting the lower fork crown until the steerer tube has been secured with the upper fork crown.

Install the upper bearing.

Install the centering sleeve onto the steerer tube and into the upper bearings.

Install the upper bearing cap.

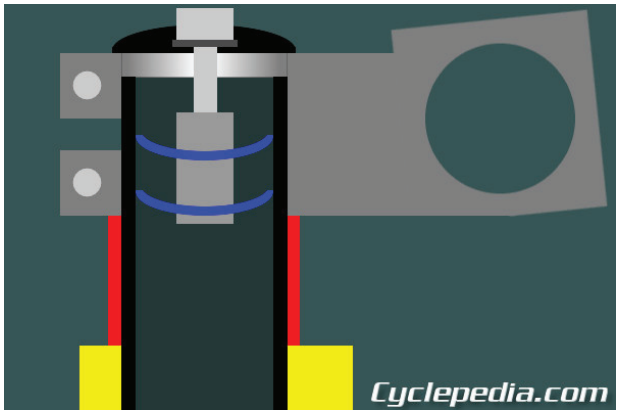
Slide on the upper fork crown.

Pull up on the steerer tube to take any slack out of the bearing stacks and temporarily tighten the upper fork crown steerer tube clamp bolt to secure the steering components in the frame.

Install the spacer/s.

Install the stem and temporarily tighten the bolts with a 5 mm hex socket.

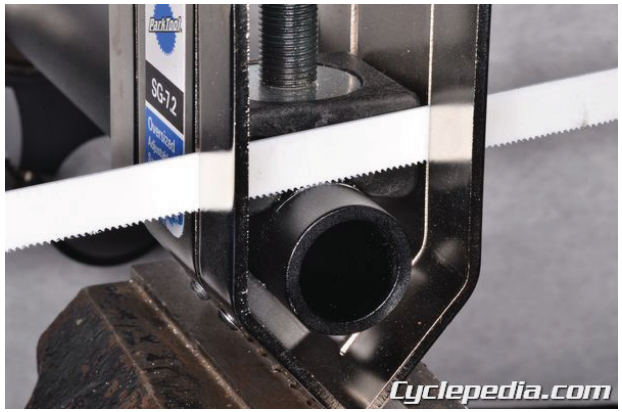
Mark the steerer tube or score it to mark the height at the top of the steering stem.



When the cut steerer tube is installed it should sit just about 3 mm below the top of the stem or below any spacers placed on top of the stem.

Use the SG-7.5 saw guide tool to make a straight cut on the steerer tube.

Place the steerer tube in the saw guide SG-7.2 to cut the steerer tube. This tool holds the fork square to the saw blade. Position the steerer tube in the tool so the cut will be made 3 mm below the mark indicating the top of the stem. Tighten the saw guide clamp securely. Place the saw guide in a vise.



Use a good quality and sharp hack blade to cut the steerer tube. Generally, 24 teeth per inch blades are recommended for cutting steerer tubes.

Cut through tube applying pressure only in a forward direction, and do not apply excessive pressure to the blade.

Use flat file to finish end of the steerer tube. Use round file or de-burring tool to remove sharp inside edge of the tube.

Clean all steerer tube mating surfaces and parts with isopropyl alcohol before installation.

Star Nut Installation

Remove the steerer tube from the saw guide.

Use the TNS-4 threadless nut setter tool to install the star nut.

Thread the star-nut onto the threaded stud inside the TNS-4.

The convex surface will face outward from the tool, and enter the steerer tube.

Place the TNS-4 over the top of the steerer tube. Hold the TNS-4 straight and in line with the steering column.

The inner mandrel will rise up and the outer housing will slid over the tube.

Strike the top of the TNS-4 with a hammer to drive in the star-nut.

Continue driving the nut until the driver meets the outer portion of the tool. Un-thread the handle from the fork.

The star nut should now be secure in the steerer tube.

The steerer tube, fork crowns, and stem can now be installed. See the Fork Installation topic for more information.

Seat

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Fit the rear fender onto the back of the seat.

Install the three rear fender mounting screws.

Tighten the screws securely with a #2 Phillips screwdriver.

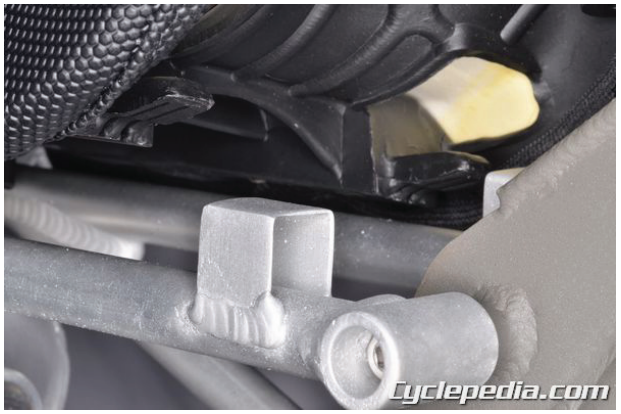
Fit the side covers onto the front of the seat.

Line up the side cover mounts with the holes on the seat.

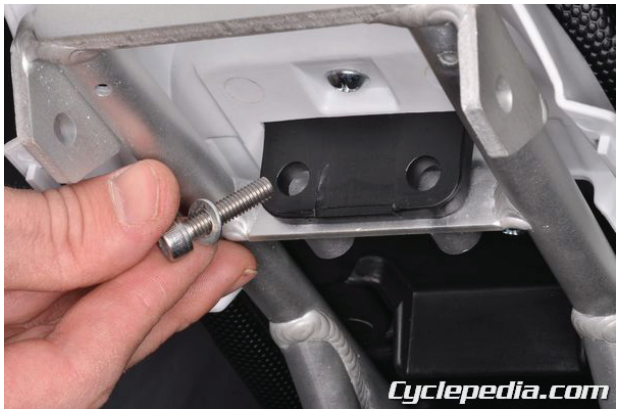
Install the side cover mounting screws.

Tighten the side cover mounting screws securely with a #2 Phillips screwdriver.

Fit the seat assembly into position.



Guide the tabs at the front of the seat under the brackets on the sub frame.



Install the seat mounting bolts and washers. Wait to tighten the bolts until the side cover-to-fuel tank bolts have been installed.

Install the upper side cover bolts and grommets.

Tighten the upper side cover bolts securely with a #2 Phillips.

Install the side cover nuts and bolts. Tighten the fasteners securely with a 10 mm wrench and socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Tighten the seat mounting with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Wheels and Tires

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Wheel Inspection and Truing

Inspect the wheels and spokes. True the wheels as necessary.

With the spokes snug, place the wheel into a wheel truing stand. With a magnetic stand and a dial indicator in position, spin the wheel and measure the amount of runout. If the wheel moves side to side that is known as lateral wobble, if the wheel moves up and down that is known as radial hop.

When truing a wheel always correct the radial hop before correcting the lateral wobble.

To correct radial hop loosen the inside and outside spokes directly opposite of the high spot.

Locate the high spot on the rim and tighten the nipples 1/4 of a turn at a time until the high spot fades.

To correct lateral rim wobble you will need to figure out if its the right or left side first.

If the right side is out you will need to loosen several spokes on the right side where the wobble is and spin the wheel to see if this helped. If so tighten the spokes evenly and recheck. If the wheel still wobbles tighten several spokes near the wobble on the left side at the high point.

Using a spoke wrench, check the tightness of each spoke. When replacing the tire or tube remove the rim strap and inspect each nipple and lubricate them with a penetrating oil to keep them from corroding. Replace the spokes or nipples as needed.

Tire Installation

Install the rim strip onto the rim.

Align the rim strip hole with the valve stem hole.

Make sure to install the tires with correct direction of rotation.

Apply soapy water to the tire bead to aid in installation.

Fit one bead of the tire onto the rim.

Fit the tube inside the tire. Insert the valve stem through its hole.

Make sure the tube isn't twisted or pinched. Apply just enough air to the tube to straighten it out and then let the air back out.

Work tire bead onto rim with hands. If tire bead will not seat using hand, use tire lever as a last resort. Use caution when using tire levers to avoid pinching inner tube. When using the tire lever, try to feel where the tube is before inserting the tire lever, this will help prevent pinching the inner tube. Keep working around the tire carefully until the tire is all the way on. Move the tire lever a small amount at a time.

Inflate the tire so that the bead is evenly seated against the rim edge on both sides. If you're having trouble seating the bead, deflate the tube and press the tire into the rim and

reapply soapy water to the bead.

Set the tire pressure to specification and install the valve cap.

Tire Pressure	Minimum	Maximum
Front and Rear	15 psi	35 psi

Front Wheel

See the Brakes topic for information on installing the brake disc and hydraulic brake system.

Loosen the axle pinch bolts with a 5 mm hex socket.

Remove the front axle bolts cap bolts with an 8 mm hex socket.

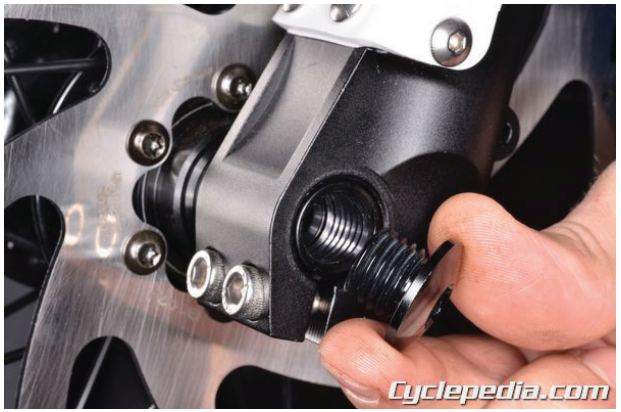
Apply a light coat of water-proof grease to the axle.

Fit the wheel into place between the fork legs. The brake disc should sit on the left side.

Guide brake disc into the brake caliper so the disc fits between the brake pads.

Insert the axle.

Tap the axle into place with a rubber mallet if needed.



Install the axle cap bolts.

Tighten the axle cap bolts to specification with an 8 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
2 - 2.5	1.5 - 1.8

Hold the front brake and compress the forks by pushing on the handlebar a few times to seat the axle. Tighten the axle clamp bolts evenly to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
2 - 2.5	1.5 - 1.8

Rear Wheel

See the Brakes topic for information on installing the brake disc and hydraulic brake system.

Fit the rear wheel sprocket into place.

Insert the bolts.

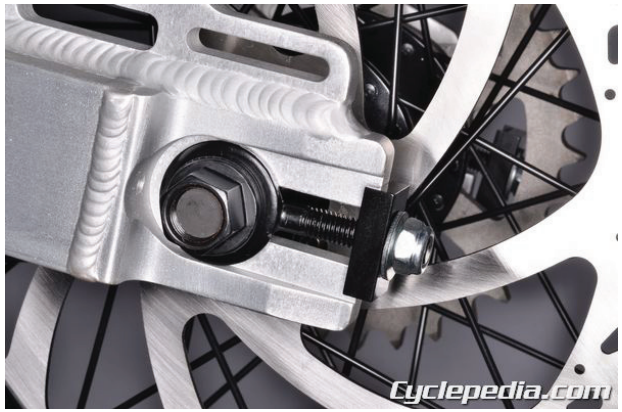
Tighten the rear sprocket bolts to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Loosen the rear axle nuts with an 18 mm socket. Remove the axle nuts and washers from the rear axle.

Install the axle tensioners with the rear axle.

Guide the rear wheel into the swingarm.



Install the axle tensioner, washer, and nut onto the axle on the outside of the swingarm.

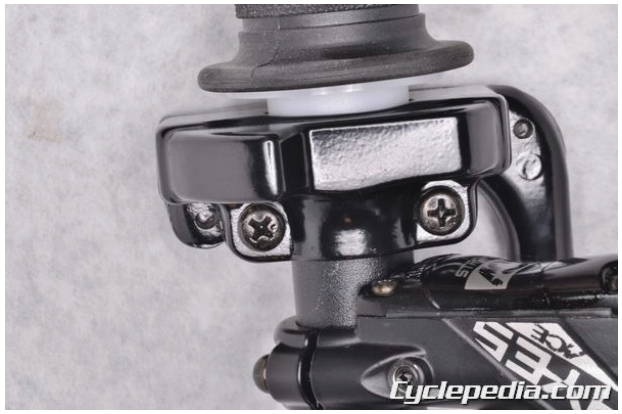
Install the final drive chain and adjust its free play to specification. Tighten the axle nuts to specification. See the Crankset topic for more information.

Carburetor

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Apply a medium strength, non-permanent thread locking agent to the threads of all bolts.

Slide the throttle onto the right side of the handlebar.



Tighten the throttle clamp screws securely with a #2 Phillips screwdriver.

Fit the end of the throttle cable into the throttle tube.

Fit the throttle cable and housing into place as shown.

Install the throttle cable cover.

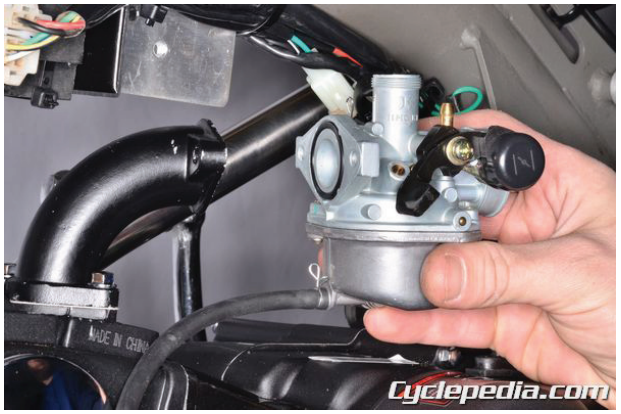
Install the two throttle cable cover screws and tighten them with a #2 Phillips screwdriver. Move the rubber cover into place as shown.

Route the throttle cable down the left side of the frame.

Fit the intake manifold and gasket into place.

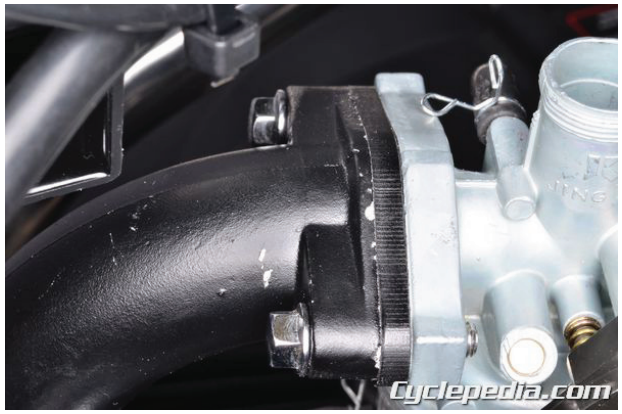
Install the intake manifold mounting bolts and tighten them with an 8 mm socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4



Make sure the O-ring is in place on the carburetor opening.

Install the insulator plate so that its O-ring is facing towards the intake manifold.



Install the carburetor mounting bolts and tighten them with an 8 mm socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Fit the throttle cable into the carburetor cap.

Install the seal into the carburetor cap.

Install the spring.

Pull back the spring and slip the throttle cable into the throttle valve.

Allow the spring to extend into the throttle valve.

Install the throttle valve, needle and carburetor cap. There is a pin in the carburetor body that must line up with the full length slot in the throttle valve. The partial slot with the angled top must fit onto the idle adjuster screw.

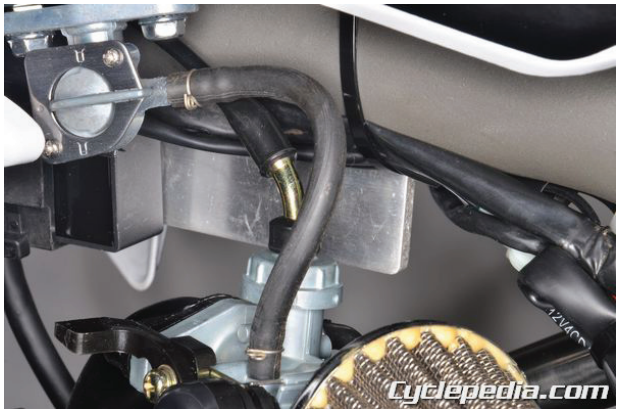
Install the air filter onto the mouth of the carburetor.

Note: If using a foam filter, make sure to oil it according to the filter manufacture's instructions.

For more information on foam air filter prep see -
http://www.cyclepedia.com/manuals/online/free/fuel-system/air-filter/

Tighten the air filter clamp securely. Install the breather hose onto the air filter (stock air filter).

Route the breather hoses down the back side of the crankcases.



Connect the fuel hose to the petcock and carburetor. Secure the fuel hose hose with the clamps as shown.

Connect the float bowl drain hose to the float bowl and secure the hose with a clamp.

Route the float bowl drain hose down the left side of the engine and secure it with the guide as shown.

Loosen the locknut with a 10 mm wrench and turn the adjuster to set the throttle cable free play if necessary. Tighten the locknut securely against the adjuster when finished, and slide the rubber cover over the adjuster.

Check the throttle cable adjustment by gently rotating the throttle grip back and forth until resistance is felt.

(Specification for throttle free play is 2 to 3 mm or 0.08 to 0.12 inches)

Start the engine and let it warm up. Turn the handlebars from side to side, if the engine rpm changes either the free play is too small or the throttle cable is not routed properly. Check and correct the cause.

Engine Components

Open the engine box and remove the components.

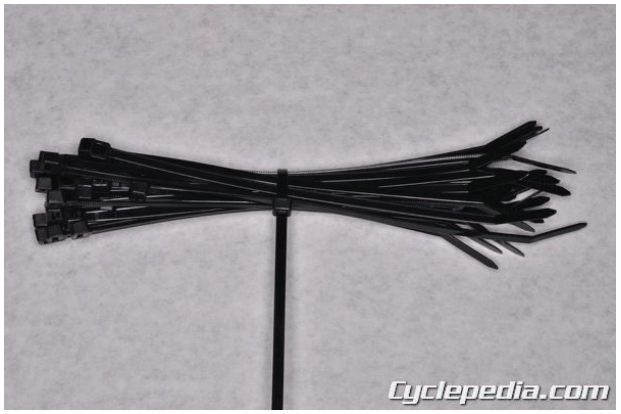
Ignition Box

Ignition Coil

Engine Kill Switch

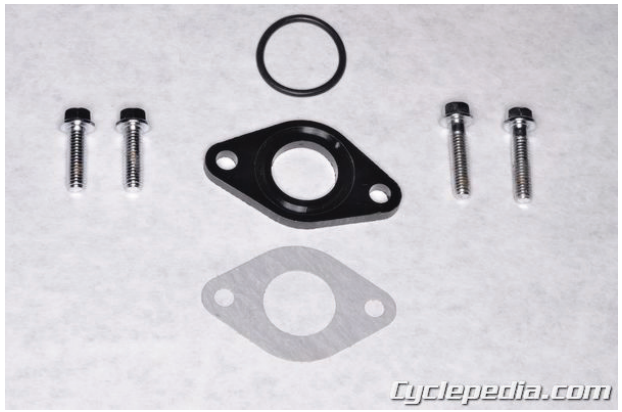
Wiring Harness

Ignition Switch



Wire Bands

Intake Manifold



Intake Insulator Plate

Carburetor

Exhaust Gasket

Shift Pedal

Kick Start Pedal

Air Filter

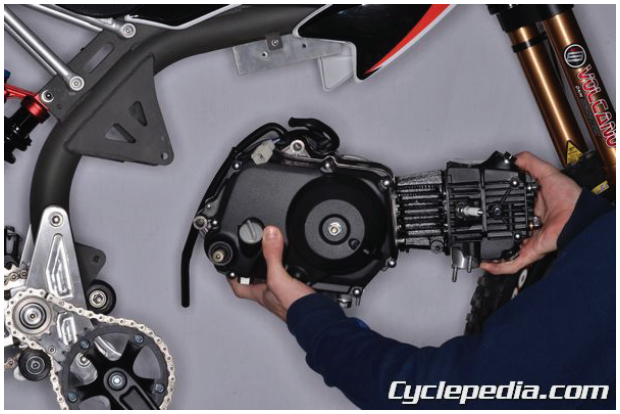
Engine

Engine Installation

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

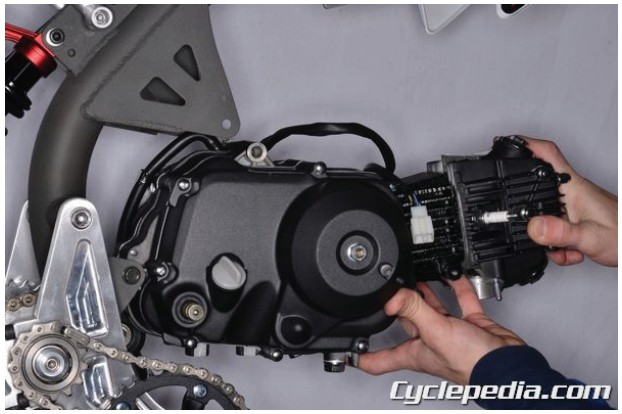
Apply a medium strength, non-permanent thread locking agent to the threads of all bolts.

Remove the engine mounting bolts, nuts, and washers.



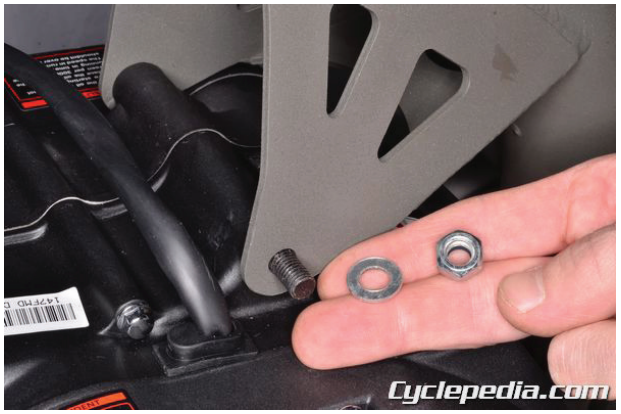
Fit the engine into place and align the lower engine mount.

Insert the lower engine mounting bolt with washer.

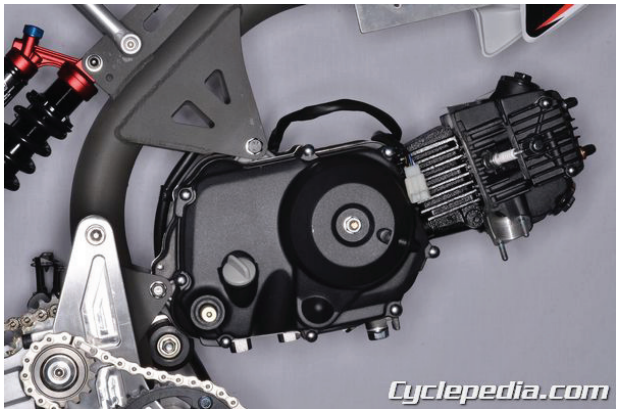


Raise the engine up and line up the upper engine mount.

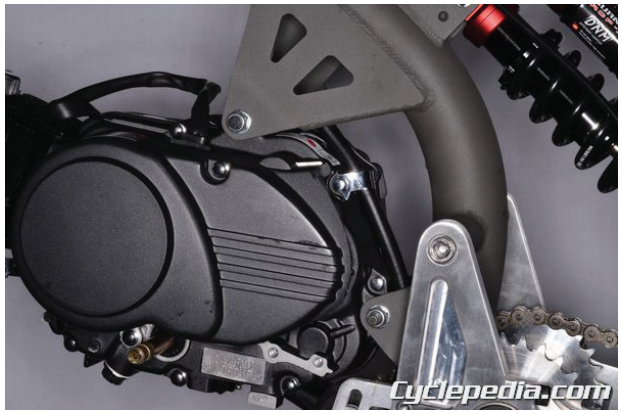
Install the upper engine mounting bolt and washer.



Install the washers and nuts onto the engine mounting bolts.

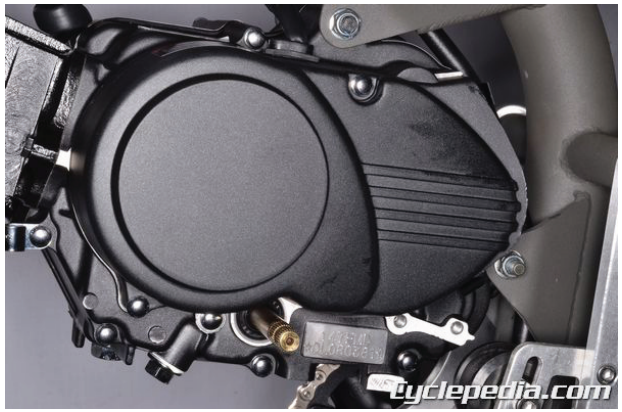


Hold the mounting bolts to keep them from turning.



Tighten the engine mounting nuts to specification.

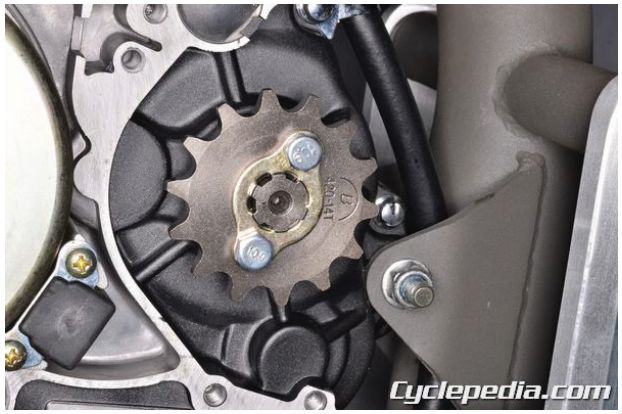
Torque (N-m)	Torque (ft-lbs.)
31	23



Remove the magneto cover bolts with an 8 mm socket.

Remove the magneto cover.

Inspect the engine drive sprocket to jack shaft driven sprocket alignment with a straight edge. The sprockets should be aligned so the engine drive chain has a straight run.



The engine sprocket may need to be moved closer to the engine for correct drive chain alignment.

Remove the engine sprocket bolts with a 10 mm socket.

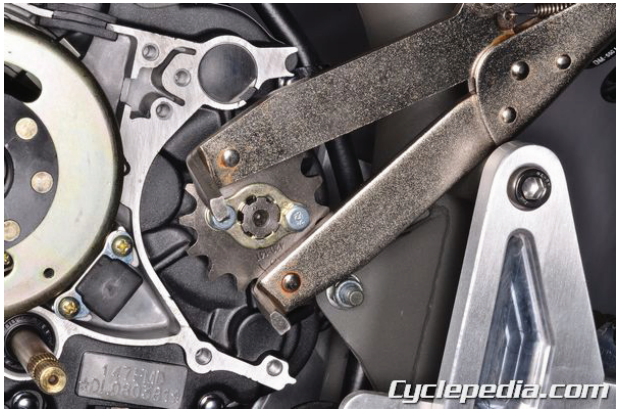
Rotate the fixing plate to line up its teeth with the grooves on the countershaft.

Remove the fixing plate.

Remove the engine sprocket.

Use washers between the sprocket and fixing plate to adjust the position of the sprocket.

Install the washers between the fixing plate and the sprocket and insert the bolts. Make sure the fixing plate is secure in its groove.

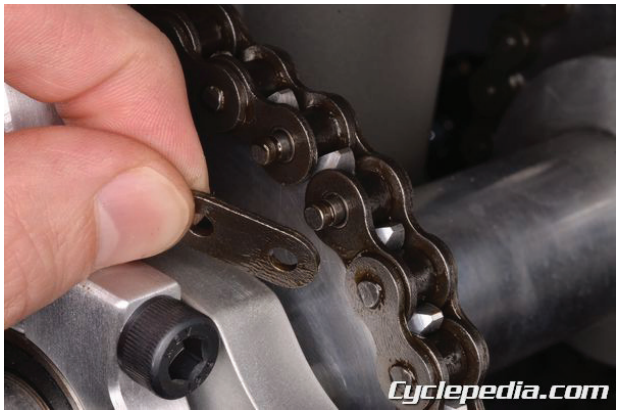


Tighten the engine sprocket bolts to specification with a 10 mm socket. Use a suitable holder tool to keep the sprocket from turning if necessary.

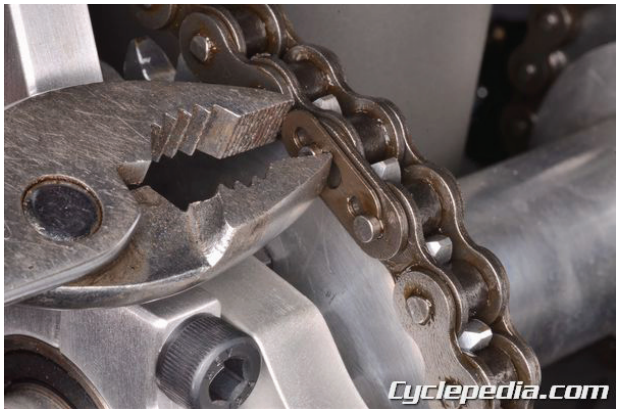
Torque (N-m)	Torque (ft-lbs.)
12	9

Install the engine drive chain around the engine sprocket and have the ends meet on the driven sprocket on the jack shaft.

Install the master link from the inside.

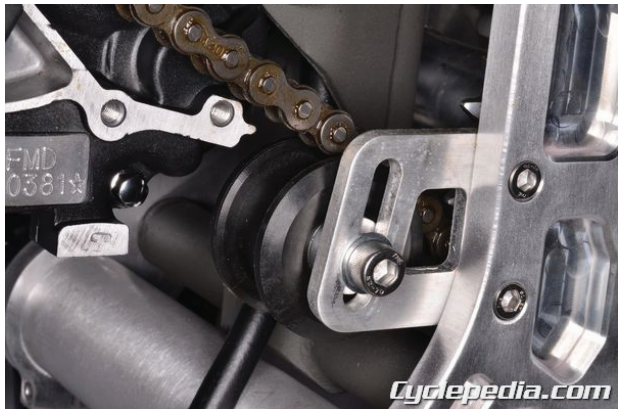


Install the side plate from the outside.



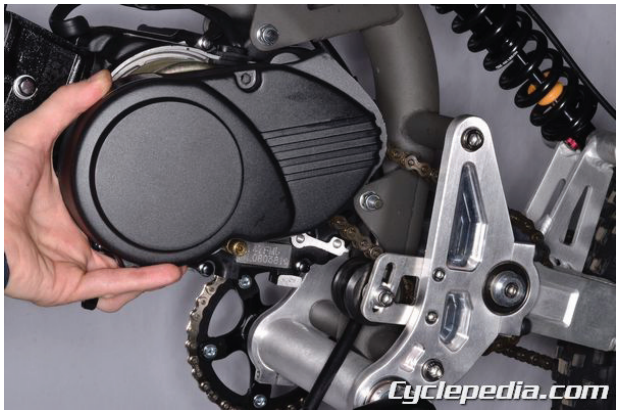
Position the closed end of the clip so that it points in the direction of chain rotation. Install the master clip and pop it in position by using slip joint pliers to push the closed end of the clip against the pin next to it.

Make sure the clip is fully seated.

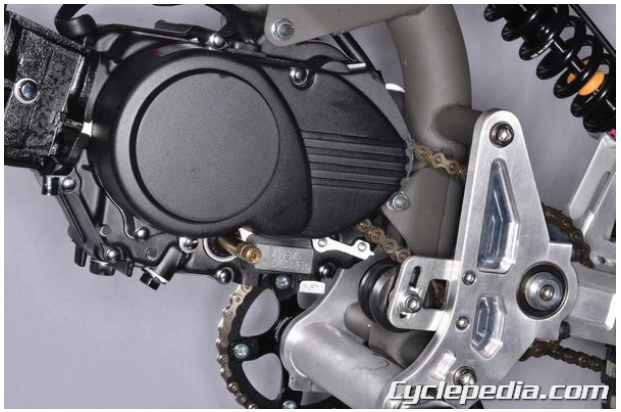


Adjust the roller/tensioner into place against the chain and tighten the nut and bolt with a 13 mm socket and 6 mm hex wrench.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4



Install the magneto cover.



Tighten the magneto cover bolts to specification with an 8 mm socket.

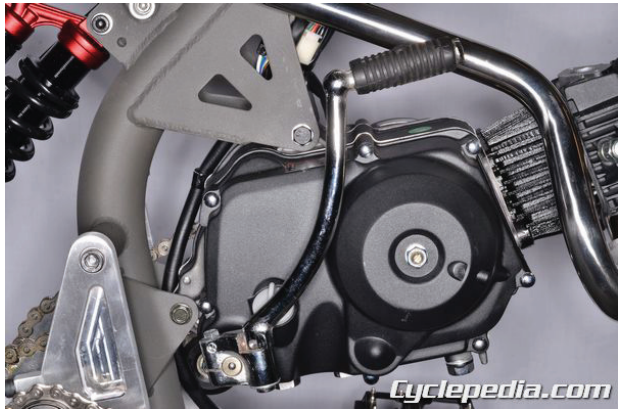
Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Remove the gear shifter bolt with a 10 mm socket.

Slide on the shift pedal.

Tighten the bolt securely with a 10 mm socket.

Remove the kick pedal bolt with a 10 mm wrench.



Fit the kick start pedal onto the kick start shaft.

Tighten the bolt securely with a 10 mm wrench.

Inspect the engine oil level before staring the engine the first time.

Position the vehicle upright on a level surface.

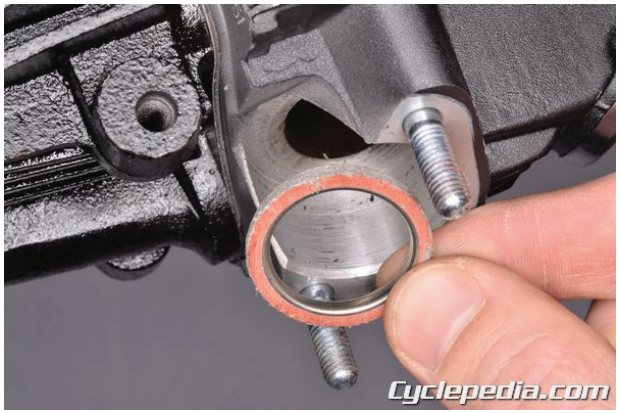
Remove the dipstick and clean the measuring surface. Insert the dip stick without threading it in. Remove the dipstick and inspect the oil level. The oil level should be in the indicated range. Add additional oil if necessary. Use a quality 10W-40 motorcycle specific engine oil.

Make sure the oil dipstick O-ring is in good condition. Thread the dipstick into the side cover and tighten it securely by hand.

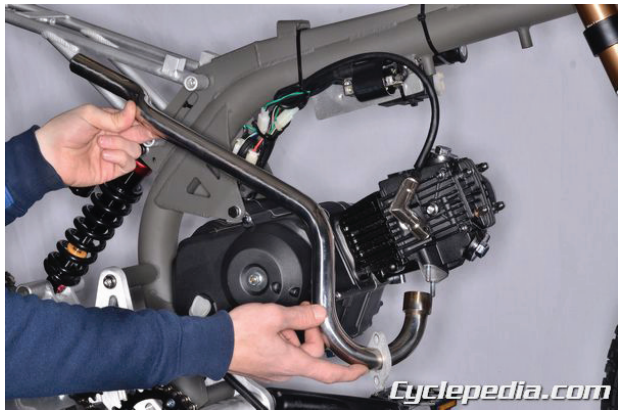
Exhaust System

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

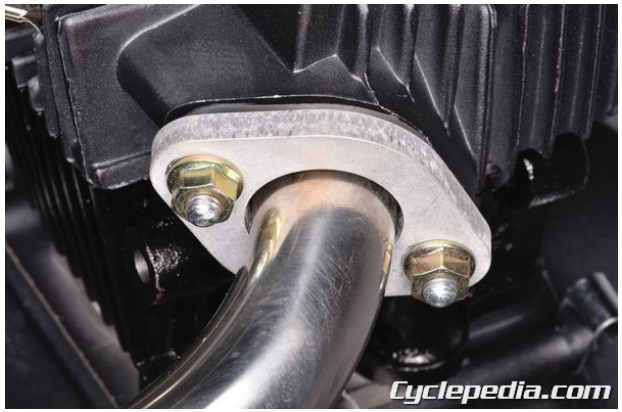
Apply a medium strength, non-permanent thread locking agent to the threads of all bolts.



Install a new exhaust pipe gasket into the exhaust port. A small dab of grease will help hold it in place, just be aware that it will smoke and burn off when the engine is started.



Fit the exhaust pipe into place.



Install the exhaust pipe joint nuts. Wait to tighten the nuts until the muffler is installed.

Fit the muffler into place and connect it to the exhaust pipe.

Install the muffler mounting bolts and tighten them to specification with a 5 mm hex socket.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4

Tighten the exhaust pipe nuts to specification.

Torque (N-m)	Torque (ft-lbs.)
12	9

Ignition System

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

Apply a medium strength, non-permanent thread locking agent to the threads of all bolts.

Install wire harness ground to the frame and tighten the bolt securely with a 5 mm hex socket.

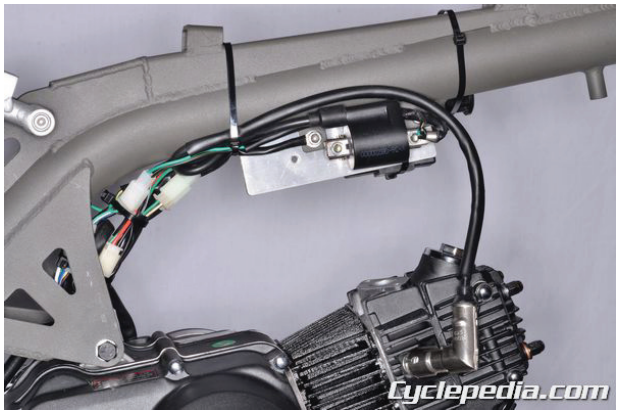
Torque (N-m)	Torque (ft-lbs.)
5.1	3.7

Fit the ignition coil into place.

Fit the stud on the ignition coil bracket through the frame.

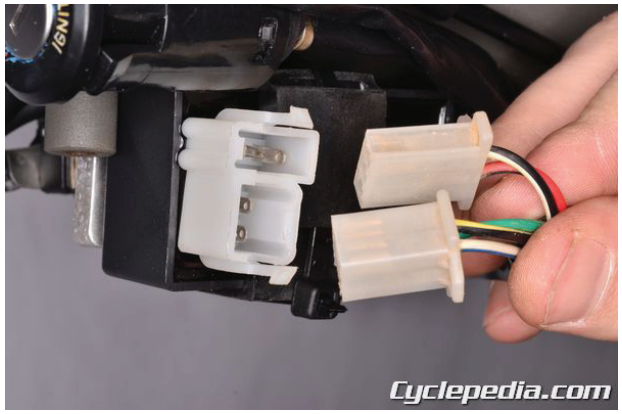
Install the ignition coil nut and tighten it to specification.

Torque (N-m)	Torque (ft-lbs.)
8.7	6.4



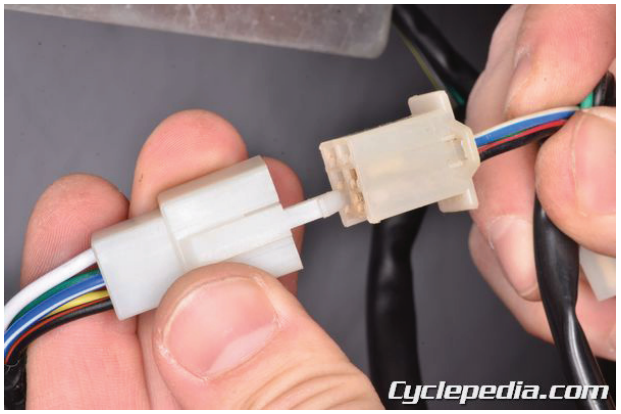
Fit the spark plug cap onto the spark plug.

Fit the ignition box into place.

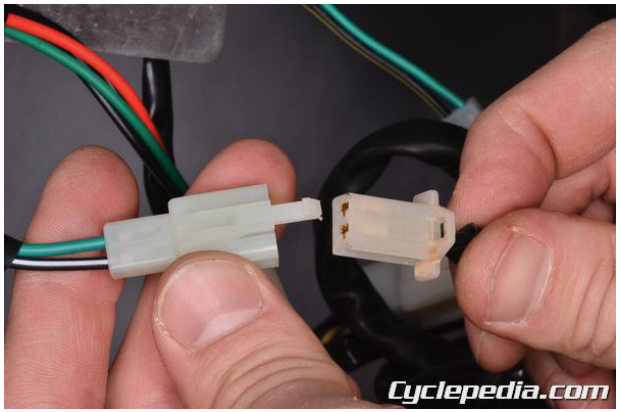


Secure the ignition box with a wire band and plug in the wire harness connectors.

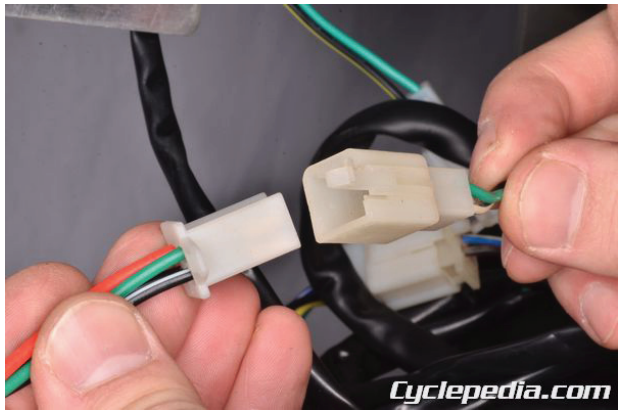
Plug in the ignition coil connector.



Plug in the magneto connector.



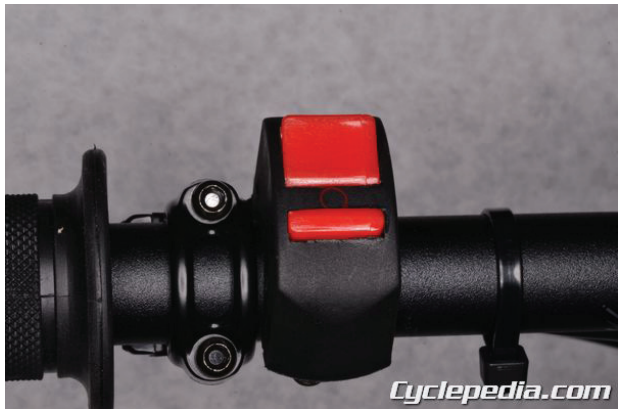
Plug in the kill switch connector.



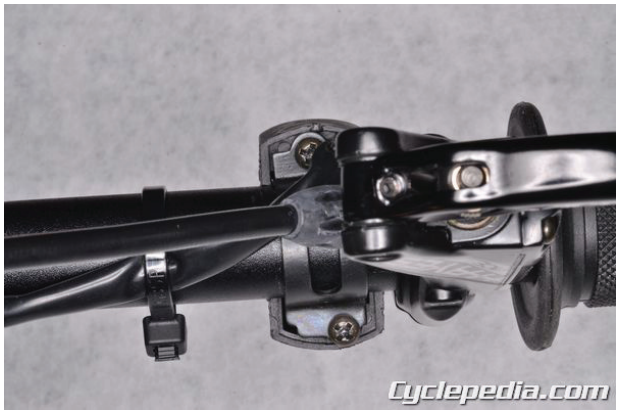
Plug in the key switch connector.

Secure the wires and throttle cable with wire bands.

Route the kill switch wires up the left side of the frame.



Install the kill switch on the left side of the handlebar.



Tighten the kill switch clamp screws securely with a #2 Phillips screwdriver.

Secure the kill switch wires to the handlebar with wire bands.

Special Tools

Standard Metric Tools

- Metric Socket Set
- Metric Allen Sockets or Wrenches
- Torx Socket Set or Wrenches

Bicycle Tools

Park Tool manufactures many excellent bicycle tools. For more information on their tools and how to use them see

http://www.parktool.com/

RT-2 Head Cup Remover - Oversized

The RT-2 Head Cup Remover makes headset cup removal easy. The tool is pulled through the frame until the flared ends snap in behind the cup. A blow on the tool head removes the cup.

- Designed for the 1-1/4 inch and 1-1/2 inch headest standards
- Also easily removes cups on one-piece cranks
- Strong, heat treated alloy steel with a nickel finish

MLP-1.2 Master Link Pliers

Many bicycle chains use a “master link” that allows the chain to be installed and removed by hand. While this type of masterlink doesn't require a traditional chain tool, over time, dirt and corrosion can make it difficult to separate by hand. MLP-1.2 Master Link Pliers make removal and replacement of these masterlinks quick and effortless. Simply insert the specially sized jaws into the masterlink and squeeze the handles.

TNS-4 Threadless nut setter

The TNS-4 makes it quick and easy to install star-fangled nuts used with 1” and 1-1/8” threadless headset systems. Using a durable steel driver and built-in guide, the TNS-4 perfectly aligns the star-fangled nut and sets it to the proper depth every time. The unique design virtually eliminates pinched fingers. Replaceable set screw (#822).

FRW-1 Freewheel Remover Wrench

The FRW-1 is a one-inch socket and securely holds freewheel and lockring tools (FR-1 through FR-8 plus the BBT-5/FR-11) for removal and installation. Features an investment cast head with locking setscrew and a long, round, vinyl dipped handle for superior leverage.

Note: Always use a skewer or axle nut to hold a cassette/freewheel tool in place during removal.

PW-4 Professional Pedal Wrench

SG-7.2 Oversized Saw Guide

Accurately guides a hacksaw to cut aero-shaped seat masts and seat posts up to 2.75” (70mm), as well as fork steerer tubes and other round tubes from 1-1/16” to 1-3/4” (27mm to 45mm). The SG-7.2 features two different cutting slots--standard and carbon cutting blade widths--in a hardened steel body with molded contact points to protect tubes and frames.

CCP-22 Crank Puller for Square Taper Cranks

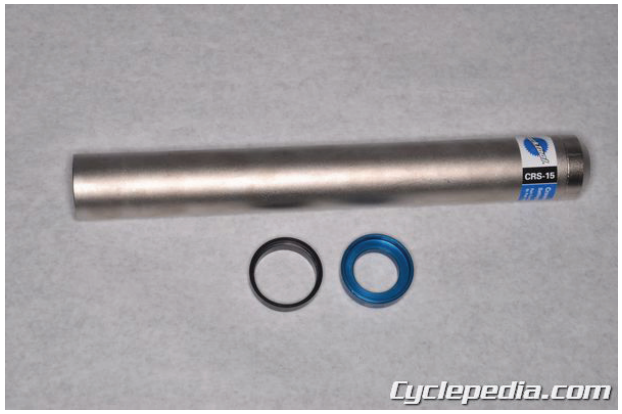
The CCP-22 uses a long comfortable handle and extra fine thread that provides the needed leverage to remove even the tightest cranks.

- Fits all cranks using 22mm x 1 threads and square, tapered bottom bracket spindles
- Also fits "Power Spline" cranks from SRAM using the 8mm thread bolt
- Strong rotating tip system ensures smooth operation and long life.

DT-2 Rotor Truing Fork

Specially designed, and precisely manufactured to gently adjust bent or damaged brake rotors. Each DT-2 features two different slot depths laser cut from high quality steel. Centered handle is vinyl dipped for comfort.

CRS-15 Crown Race Setter for 1.5 in. Column



The CRS-15 uses two different insert rings to install bearing races on the 1.5" and 1-1/4" forks. The bearing surface is spared a direct hit by using an aluminum inserts. Using a

hammer, tap firmly on the end cap of the tube and seat the race into its proper place safely and accurately. The CRS-15 will work on forks with column length of 330 mm or less.

CRP-2 Adjustable Crown Race Puller

The CRP-2 is a precision tool for quickly and easily removing the headset crown race from the crown race seat of the fork. New for 2013, the tool is fully adjustable, allowing precise, independent positioning of the blades around the crown race. Locating each blade

independently provides flexibility to fit around most potential interferences with fork top caps or crown protrusions.

- Universal design works with 1”, 1-1/8”, 1-1/4” and 1.5 forks (suspension or rigid) and crown races with outside diameters up to 64mm
- Accepts steering columns from 14 to 43cm (5.5 to 17 inches) in length
- All-steel construction for long life
- Note: Blades are necessarily thin and will wear with use. Crown races with a tight press fit may also wear on blades. Replacement blades are available: Part #1155-3

HH-2 Bearing Cup Press

Park Tool has the answer to your headset and cartridge cup pressing needs. The HHP-2 accurately aligns and presses 1", 1-1/8", 1-1/4", and 1.5" headset cups. In addition, it presses cartridge bearings and cups into one-piece bottom bracket shells and holds fixed cup wrenches firmly in place when removing or installing adjustable-type bottom brackets.

- Aligns and presses 1", 1-1/8", 1-1/4", and 1.5" headset cups
- Quick-release design for fast tool installation and removal
- Extra long (30cm) handles for superior leverage
- Stepped bushings for precise cup alignment
- Includes the 530-2 adaptors for alinging 1" and 1-1/8" pressed headsets. The adaptors are stepped at 25.7mm, 29.7, and 32.8mm.

Bicycle Tire Lever Set

Plastic tire levers for removing and installing tires.

Freewheel Wrench Tool

Used to remove the freewheel

Torque Specifications

Basic Torque for General Fasteners		
Thread dia. (mm)	Torque	
	N-m	ft-lb
5	3.4 - 4.9	2.5 - 3.5
6	5.9 - 7.8	4.4 - 5.7
8	14 - 19	10.0 - 13.5
10	25 - 34	19.0 - 25
12	44 - 61	33 - 45
14	73 - 98	54 - 72
16	115 - 155	83 - 115
18	165 - 225	125 - 165
20	225 - 325	165 - 240