MOTORCYCLES

RX3 SERVICE MANUAL

Contents

Foreword 3
Motorcycle Description 4
Maintenance Cautions and Warnings 5
Parts and Components Cleaning 5
Parts Inspection 6
Maintenance Adjustments 6
Recommended Tools 7
Motorcycle Specifications 7
Motorcycle Maintenance Schedule 8
Torque Values 8
Unpacking and Setup 9
Top Case Installation 9
Rearview Mirror Installation 9
Windshield Installation 9
Fuel 10
Inspection 10
Frame and Body 11
Brakes 12
Inspecting and Replacing the Brake Pads 12
Replacing the Brake Fluid 13
Bleeding the Brakes 14
Inspecting and Replacing the Brake Disks 15
Brake Troubleshooting 15
Power Transmission 16
Chain Drive System 16
Chain Lubrication 16
Chain Adjustment 16
Lubing the Chain 18
Sprocket and Chain Inspection 19
Chain Drive Troubleshooting 20
Clutch Maintenance 20
Clutch Cable Replacement and Adjustment 21
Clutch Replacement 23
Clutch Troubleshooting 24
Suspension 26
Forks 26
Changing the Fork Oil 26
Repairing a Leaking Fork Seal 28
Rear Shock Absorber 31
Suspension Troubleshooting 32
Steering System 32
Steering System Troubleshooting 32
Swingarm 33

Swingarm Troubleshooting 33
Wheels and Tires 34
Front Wheel Removal 34
Rear Wheel Removal 35
Wheel and Tire Inspection 36
Wheel and Tire Troubleshooting 37
Fixing Flat Tires 37
Engine 40
Engine Break-In Procedure 40
Oil Changes 40
Valve Adjustment 45
Engine Troubleshooting 50
Fuel System 58
Fuel System Maintenance 59
Electronic Fuel Injection System 61
Fuel Injection System Operating Principles 61
Electronic Fuel Injection System Troubleshooting 63
Intake and Exhaust System 64
Air Filter Maintenance 64
Exhaust System 66
Intake and Exhaust System Troubleshooting 67
Cooling System 67
Checking and Adjusting Cooling Fluid Levels 68
Flushing and Replacing the Cooling Fluid 69
Cooling System Troubleshooting 71
Control Cables 72
Cable Troubleshooting 73
Instruments 74
Instrument Troubleshooting 75
Electrical System 76
Battery and Battery Installation 77
Accessories Connections 78
Electrical System Components and Locations 78
Electrical System Troubleshooting 82
Accessories Installation 92
Motorcycle Guard Bar Installation 92
Rear Rack Installation 94
Rear Motorcycle Guard Installation 94
Top Case Installation 96
Pannier Installation 97
Electrical Schematic 98
Appendix A - Service Checklists 99

Foreword

The RX3 Service Manual provides information on maintaining and servicing the motorcycle. It includes the motorcycle's technical specifications, performance parameters, and maintenance and adjustment data.

The technical specifications, performance parameters and maintenance and adjustment data labeled in the manual are based on the latest status.

CSC Motorcycles stocks all RX3 motorcycle parts. CSC recommends that you use only parts and materials provided by CSC when servicing or maintaining your motorcycle.

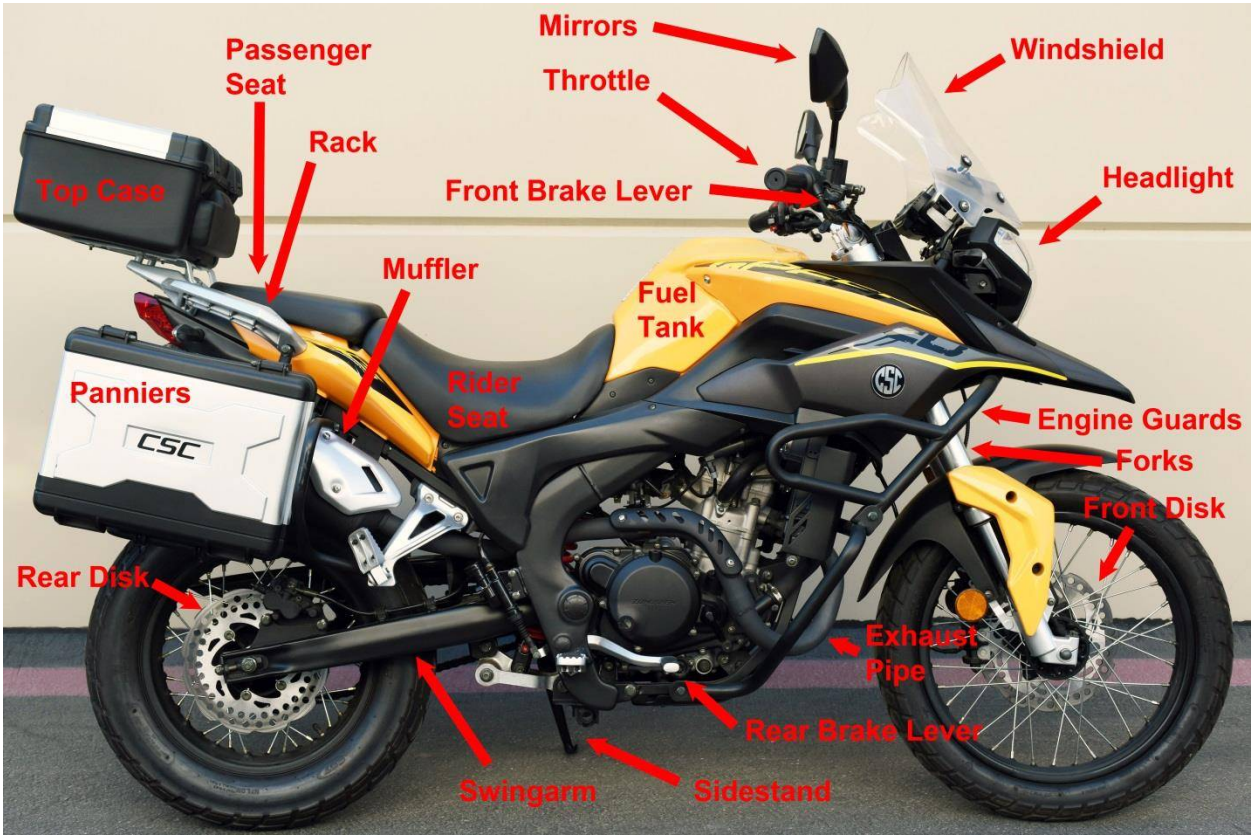
This manual is provided free to all who purchase a new CSC RX motorcycle.

If you have any questions, please contact CSC Motorcycles at (800) 884-4173 or info@CSCMotorcycles.com.

Motorcycle Description

The CSC RX3 motorcycle is a 250cc adventure touring motorcycle. The motorcycle has a single-cylinder, 4-stroke, water-cooled engine and a 6-speed transmission. Major component locations are identified in the photographs below.

Right Side



Left Side

Maintenance Cautions and Warnings

When you repair the motorcycle, please use original components and parts, accessories, lubricating oil and other materials that are made or recognized by CSC Motorcycles. If you use any parts or components which are not recognized or recommended by our company, it may adversely affect the performance, reliability, or stability of your motorcycle.

When working on your motorcycle, you should follow this guidance:

- Whenever the motorcycle is to be reassembled after disassembly, washers, seals, and cotter pins need to be replaced.
- When you fasten a bolt or a nut, you should do it in a diagonal pattern.
- Do not use flammable cleaning fluid to clean components and parts.
- Before assembly operations, add lubricating oil or lubricating grease to lubricated surfaces.
- After assembly, make sure all parts are properly assembled and tightened.
- Stop the engine when repairing the motorcycle.
- If the maintenance operation needs to be done while the engine is working, make sure the area is well-ventilated.
- Gas is flammable and combustible, so do not smoke or provide ignition sources in the work area.
- The battery can liberate hydrogen, which is flammable. Do not smoke, ignite or make sparks near the battery, especially when it is charging.
- The electrolyte of the battery contains sulfuric acid. If your eyes, skin or clothes are splashed with electrolyte, rinse them thoroughly with water and seek immediate medical attention.

The meanings of the symbols in this manual are as follows:

⚠ Warning

- ◆ Potential danger. Improper operation may lead to injury or death.

⚠ Caution

- ◆ Potential danger. Improper operation may lead to motorcycle damage.

Parts and Components Cleaning

After parts are disassembled, they may need to be cleaned. Cleaning methods vary according to the characteristics of the parts.

- To remove oil or grease contamination, CSC recommends using Simple Green or other similar degreasing agents.
- Never use gasoline as a cleaning agent.
- To remove carbon deposits, use mechanical or chemical methods. The mechanical method uses a wooden or plastic scraper or blade to clear the carbon deposit first, and then rinse the parts with an appropriate cleaning agent. The chemical method is to soak the parts in the cleaning

agent first, then clean them with a brush, and then rinse them with hot water.

Parts Inspection

Parts should be inspected after they are cleaned. The purpose of inspection is to check if the parts need to be repaired or replaced. There are three inspection methods: Direct inspection, measurement inspection, and detection inspection.

- Direct inspection doesn't require any instruments or other tools. It checks and judges condition.
- Measurement inspection inspects for size changes and shape changes of the parts with gages and instruments to confirm their dimensions. This method has high accuracy, but before the inspection you must check the precision of the gages and instruments.
- Detection inspection involves inspecting for hidden defects. During maintenance, the oil-immersed hammering method is commonly used, which is simple and convenient. Soak the part in the oil for a few minutes, take it out and rub its surface dry, sprinkle talcum powder evenly over the surface, and knock on its non-working surface gently with a hammer. If the part has any cracks, the oil inside the crack will wick out and dye the talcum powder yellow. A yellow line will appear at the crack.

Maintenance Adjustments

The CSC RX3 motorcycle requires adjustments in the following areas:

- The clutch must be adjusted according to the maintenance instructions included in this manual. The main adjustment features the clutch handle free travel (¼ to ½ inch), and the clutch cable adjusting mechanism. This Service Manual presents the procedure for clutch adjustment.

- Adjustment of the electric horn affects volume and tone. The volume of the electric horn is 95 to 105 dB. If the volume or tone is too high or too low, you can adjust the horn with the adjusting screw at its back, as explained in this Service Manual.

- The throttle cable adjustment is performed at the throttle. The throttle should have 2 to 5 degrees of free rotation. This adjustment is presented in this Service Manual.

- The drive chain is adjusted by positioning and aligning the rear wheel. The drive chain should have ¾ to 1 ¼ inch of free play. The drive chain adjustment procedure is explained in this Service Manual.

- The valves should be adjusted to a gap of 0.04mm to 0.08mm. This Service Manual presents the procedure for adjusting the RX3 motorcycle's valve.

- Tire pressure should be maintained at 33 psi for the front tire, and 35 psi for the rear tire.

Recommended Tools

The CSC RX3 motorcycle includes a basic tool kit that is stored under the rear seat. CSC views these tools as suitable for emergency repairs only. CSC sells custom tool kits with professional grade tools; please contact us at (800) 884-4173 to order the RX3 custom tool kit.

Motorcycle Specifications

Adjustment Specifications

Item	Adjustment Limits
Clutch lever free play (at tip)	¼ to ½ inch
Throttle free travel	2-5 degrees
Drive chain	¾ to 1 ¼ inch
Valve gap (at TDC)	0.04 to 0.08 mm
Tire pressure (front/rear)	33 psi front, 35 psi rear

Major Technical Specifications

Model: single cylinder, 4-stroke, water cooling, SOHC, inclined, 4-valve
Major performance parameters:
a. 24.8 hp @ 9,000 rpm
b. 16.6 ft-lb @ 7,000 rpm
c. Idle speed: 1,5000 rpm
Bore × stroke: 77 mm × 53.6 mm
Displacement: 249.6 cc
Compression ratio: 11.1:1
Ignition mode: Capacitive energy storage
Spark advance angle: 8° BTDC@2,200 rpm, 37°@7,000 rpm
Lubricating method: Pressure plug splash
Intake & exhaust valve lash: 0.04 mm to 0.08 mm (cold state)
Clutch type: Manual, wet multi-plate
Transmission: Constant mesh two-stage drive with 6 speeds
Spark plug model: RG6YC
Fuel: Minimum 87 octane
Oil: 5W 40 or 10W 40; use only motorcycle oils
Oil capacity: 1.7 qt; 55.4 ounces
Motorcycle weight: 386 lbs
Coolant Specification: Ethylene glycol mix suitable for aluminum block engines
Coolant capacity: 2 liters
Thermostat opening temperature: 60±2ℍ; wide open temperature: 72±2ℍ
Front Brake: Twin-piston caliper, 262mm single disc
Rear Brake: Twin-piston caliper, 258mm single disc
Front Tire and Pressure: 100/90-18, 33 psi
Rear Tire and Pressure: 130/70-17, 35 psi

Motorcycle Maintenance Schedule

Maintenance Schedule

Maintenance times / Maintenance item	Odometer (miles)		
	500 miles	Every 2,500 miles	Every 5,000 miles
Fuel system		I	I
Fuel filter	A	R/ I	R/ I
Control system	I	I	I
Air cleaner element	A/R	R	R
Spark plug gap	I	I	I
Valve lash	I	-	I
Transmission chain	I/L	I/L	I/L
Battery	I	I	I
Brake pad wear	I	I	I
Braking system	I	I	I
Stop lamp switch	I	I	I
Headlamp dimmer intensity	I	I	I
Main stand and side support	I	I	I
Front and rear shock absorbers	I	I	I
Nut/bolt/ fastener	I	I	I
Front (rear) wheel bearings	I	I	I

The motorcycle should be maintained according to the schedule above. The symbols are defined below:

- R-rinsing
- A-inspection
- L-lubrication
- I-inspection, cleaning, adjustment, lubrication or replacement

If you operate the motorcycle in dusty areas, the maintenance cycle should be shortened.

Torque Values

Torque Values

Item	Bolt	Torque (ft-lb)
Handlebar fixed bolt	M10×1.25	33-40
Front wheel axle nut	M14×1.5	52-59
Rear wheel axle nut	M14×1.5	52-59
Engine suspension bolt	M10×1.25	33-40
Rear shock absorber fixing nut	M10	33-40
Rear rocker shaft nut	M12×1.25	37-44
Fork shaft nut	M12×1.25	41-48
Fork shaft nut	M10×1.25	33-40

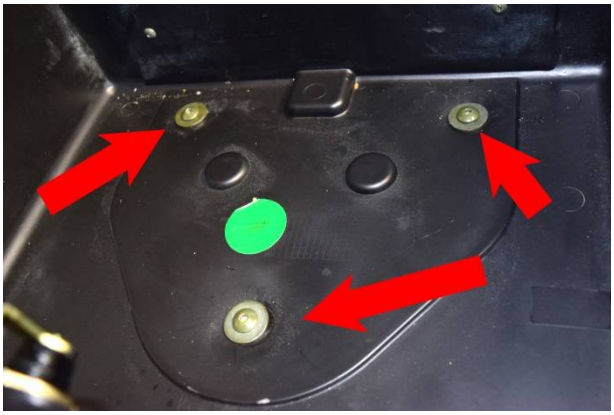
Unpacking and Setup

When your CSC motorcycle is delivered, the motorcycle is completely assembled except for the windshield, the mirrors, and the rear top case.

When the motorcycle is delivered, check the condition of the delivered crate. If there are any anomalies, stop and call CSC at (800) 884-4173. Check the VIN numbers of the exterior of the crate. Compare these numbers to the documentation delivered to you. If the numbers don't match, stop and call CSC at (800) 884-4173.

Top Case Installation

Secure the top case to the top case mounting plate with three 4mm Allen head bolts. Tighten bolts and install top case pad over bolt heads in bottom of top case.



Rearview Mirror Installation

Install left and right rearview mirrors on handlebars.

Windshield Installation

The windshield is secured with six Allen head bolts as shown in the photo below. A cap head nut is used on the inside of the windshield for each Allen head bolt.

Fuel

Fill with the fuel tank with 87 octane (or higher) gasoline.

Inspection

Perform the following inspections when servicing the motorcycle.

- Check to confirm all fasteners are properly tightened and all components are installed correctly and in an operational state.
- Swing the handlebars from side to side to make sure motion is uninhibited.
- Check chain tension and rear wheel alignment in accordance with the Chain Drive section of this Service Manual.
- Insert ignition key and turn on.
- Check horn function, turn signals, headlight high and low beam, brake lights for front and rear brake activation, and instrument panel readout.
- Check oil level and tire pressure.
- Confirm motorcycle is in neutral.
- Place clutch in and start motorcycle. Allow engine to warm.
- Check brake and suspension function.
- Test ride motorcycle to confirm operability.

Detailed inspection checklists are included in Appendix A of this Shop Manual.

Frame and Body

The frame and body subsystem includes the motorcycle's steel frame, the seat, the body panels, the sidestand, the footpegs, and the fenders.

The rear seat is removable by inserting and twisting the ignition key in the left body panel beneath the seat. The tool kit is stored beneath the rear seat.

The front seat is held in place by two 8mm bolts. The rear seat can be removed to provide access to the battery.

The left body panel can be removed to provide access to the air filter.

Frame and body maintenance and troubleshooting guidelines are summarized below.

Frame and Body Maintenance and Troubleshooting

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Frame	Frame is hit or falls over	Frame is curved or deformed	Drift	Correct or replace the frame
	Frame is hit or falls over	Frame is cracked or fractured	Motorcycle cannot drive	Weld or replace the frame
	Frame is impacted and shocked by road	Frame welding detachment	Shake or drift	Weld the frame
Side support	Deformation or fracture	Side support is normal and cannot return	Noise and compromised parking	Correct or replace the side support
Left side cover	Impact	Left side cover damaged	Compromised appearance	Replace or repair the left side cover
Right side cover	Impact	Right side cover damaged	Compromised appearance	Replace or repair the right side cover
Front fender	Impact	Deformation or breakage	Motorcycle drives with a noise	Replace the front fender
Rear fender	Impact	Deformation or breakage	Motorcycle drives with a noise	Replace the rear fender
Front and rear seat cushion	Impact	Seat cushion damaged	Riding comfortableness decreases	Replace the front and rear seat cushion
Front footpeg	Impact	Deformation or breakage	Compromised driving safety	Replace the footpeg
Rear footpeg	Impact	Deformation or breakage	Comfort	Replace the footpeg
Rearview mirror	Impact	Deformation or breakage	Compromised driving safety	Replace the rearview mirror
Rear rack	Impact	Deformation or welding detachment	Compromised placement of items	Weld or replace the rear rack

Brakes

The main function of the brakes is to slow or stop the motorcycle. The brakes consist of the front and rear brakes and their controls. Both front and rear brakes are hydraulically-actuated single disk brakes. The front brake is operated by the right hand and the rear brake is operated by the right foot.

This section of the RX3 Service Manual covers the following topics:

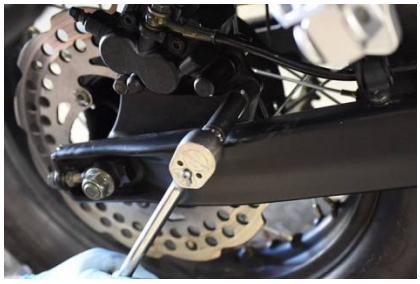
- Inspecting and replacing the brake pads.
- Replacing the brake fluid.
- Bleeding the brakes.
- Inspecting and replacing the brake disks.

Inspecting and Replacing the Brake Pads

The front and rear disk brakes utilize dual piston calipers. You should replace the brake pads when either one has less than 1.5mm of pad thickness left, or if the brake pads are worn such that the groove in the pad is no longer visible. CSC stocks the brake pads (call us at (800) 884-4173).

To remove the rear brake pads, loosen the rear brake caliper Allen bolts as shown in the photos below. Remove the bolts securing the caliper to the swingarm. One the rear caliper bolts are removed, slide the caliper rearward, lift it off of the disk rotor, and then remove the Allen bolts holding the brake pads in place.






Once the caliper Allen bolts are removed, the pads will slide out. Note that the pads are not identical; they must be installed in the correct orientation. The pad with the large arm (shown in the photo above) is opposite the pistons; the pad without the large arm is situated against the pistons.

Inspect the brake pads to determine if they are worn beyond their service limit (less than 1.5mm thick). If the pads are worn such that the grooves are gone (visible as vertical slots in the photo above), the pads should be replaced.

Reinstall the Allen bolts in the caliper, position the caliper in its appropriate location, and install the caliper bolts to mount the caliper to the swingarm. Tighten all fasteners.

Pump the rear brake pedal several times. Operate the motorcycle to assure satisfactory rear brake performance.

The process for replacing the front brake pads is similar to that described above for the rear brake pads. Loosen the front brake caliper Allen bolts, and then remove the front brake caliper mounting bolts. Remove the caliper and then remove the Allen bolts from the caliper. Inspect the front brake pads and replace if necessary. Reinstall the Allen bolts, the front caliper, and the caliper bolts. Tighten all fasteners. Pump the front brake lever several times. Operate the motorcycle to assure satisfactory front brake performance.

Replacing the Brake Fluid

You should replace the brake fluid in the front and rear master cylinders every 2 years.

Use only DOT 4 brake fluid.

We recommend Maxima brake fluid.

If you need brake fluid, call CSC at (800) 884-4173 and we will ship a container to you.

The procedure shown here is for the rear master cylinder; the procedure for the front master cylinder is performed in a similar manner.

Open the master cylinder by unscrewing the two screws securing the master cylinder cover. Remove the master cylinder cover and place it in an area where it will not become contaminated.

Using a turkey baster or other suction device, remove as much of the brake fluid in the master cylinder as possible. Exercise caution to prevent any brake fluid spillage. If any spillage occurs, wipe up the spilled brake fluid immediately (it will damage painted or plastic surfaces).

Remove the caliper bleed cap and attach a small diameter tube to the caliper bleed fitting. Route the tube to a receptacle.



Add fresh brake fluid to the master cylinder.

Open the caliper bleed fitting by unscrewing it slightly (turn it counterclockwise to do so) and depress the brake lever to pump brake fluid out through the caliper bleed fitting. Prior to allowing the brake lever to return, close the caliper bleed fitting by turning it clockwise.


Repeat the process until fresh brake fluid exits the caliper. Close the caliper bleed fitting and replace the caliper bleed fitting cap. Add brake fluid to the master cylinder such that the upper level is within 1/8-inch of the top (do not overfill the master cylinder). Replace the master cylinder cover and the screws securing it to the master cylinder. Tighten the screws.

Pump the brake pedal several times. Operate the motorcycle to assure satisfactory brake performance.

Bleeding the Brakes

If air gets into the brake lines, braking performance will be diminished. You should bleed the brakes once every year, any time the brakes feel spongy or soft, or if the brake fluid drops below the level of the master cylinder view port. Again, use only DOT 4 brake fluid.

The procedure is similar to the procedure for replacing the brake fluid. Open the master cylinder by unscrewing the two screws securing the master cylinder cover. Remove the master cylinder cover and place it in an area where it will not become contaminated. Remove the caliper bleed cap and attach a small diameter tube to the caliper bleed fitting. Route the tube to a receptacle. Open the caliper bleed fitting by unscrewing it slightly (turn it counterclockwise to do so) and depress the brake lever to pump brake fluid out through the caliper bleed fitting. Prior to allowing the brake lever to return, close the caliper bleed fitting by turning it clockwise. Add brake fluid to the master cylinder as necessary. Repeat the process until the brake fluid exiting the caliper is free of air bubbles. Close the caliper bleed fitting and replace the fitting cap. Add brake fluid to the master cylinder such that the upper level is within 1/8-inch of the top (do not overfill the master cylinder). Replace the master cylinder cover and the screws securing it to the master cylinder.

After completing the above, pump the rear brake pedal (if you are bleeding the rear brake) or operate the front brake lever (if you are bleeding the front brake) several times. Operate the motorcycle to assure satisfactory brake performance.

Inspecting and Replacing the Brake Disks

You should replace any brake disk that is worn below service wear limits or if the disk is warped. You can measure disk thickness and straightness without removing the wheel from the motorcycle. You will need to remove the wheel if you replace the brake disk.

Measure the disk thickness. If the disk is less than 2 mm thick, replace the disk.

Use a dial indicator with the wheel off the ground to measure disk runout. Spin the wheel and measure runout. If the runout exceeds 0.3mm, replace the disk. You only need to do this if the disk appears to be visibly warped (which is not likely) or if the brakes pulsate when applied.

You will have to remove the wheel in order to replace the disk. The procedure for wheel removal is explained elsewhere in this Service Manual.

Each disk is secured with six Allen bolts. Use blue Loctite when reinstalling the bolts that secure the brake disk.

Brake Troubleshooting

Brake troubleshooting procedures are summarized below.

Front and Rear Brake Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Brake pad	Reduced braking force	Worn brake pad(s)	Longer stopping distance	Replace brake pad

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Air in brake lines	Reduced braking force	Air intrusion into brake line	Longer stopping distance	Bleed brakes
Pulsating brakes	Pulsating brake lever	Warped rotor disk	Pulsations; longer stopping distance	Measure disk runout, replace disk rotor
Incorrect rear brake lever free play	Brakes applied too soon or excessive pedal travel	Incorrect rear brake lever adjustment	Inadequate or excessive brake pedal travel	Adjust rear brake pedal free play

Power Transmission

The RX3 uses a manually operated wet clutch and a chain drive system.

Chain Drive System

This system consists of the clutch, the countershaft sprocket, the rear sprocket, the rear wheel, the drive chain, the chain guard, the rear axle adjustors, and the cush drive.

Chain Lubrication

The drive chain should be lubricated approximately every 500 miles, or more often if riding in rainy or dusty conditions. Use only a quality wax-based or petroleum based motorcycle chain lubricant. Ride the motorcycle for at least 15 minutes to warm the chain, and apply the lubricant immediately after stopping. Take care not to spray lubricant onto the tire or the rear brake. Do not use the motorcycle for the next 15 minutes to allow the lubricant to seep into the chain.

Chain Adjustment

Adjusting the chain on a motorcycle consists of two jobs: Adjusting chain tension and aligning the rear wheel.

You should check the chain adjustment at your motorcycle's first scheduled maintenance and every maintenance thereafter. The biggest need for adjustment will most likely occur at the first service interval, because chains do most of their stretching in their first several hundred miles of use.
The first step is to check chain slack.

The chain should have between ¾ of an inch and 1 ¼ inch of slack. Measure the chain tension by flexing the lower portion of the chain up and down on the bottom run (between the front and rear sprockets) and measuring the amount of "play" from top to bottom. CSC recommends performing this check with no rider on the bike and the motorcycle on the sidestand.

The measurement approach is shown in the photos below.


To adjust the chain tension, loosen (but do not remove) the rear axle, and loosen the chain adjustors on both aft ends of the swingarm. Note that the rear axle bolt and nut are different sizes. The bolt head is 18mm on the left side of the bike, and the rear axle nut is 17mm on the right side of the bike.


Next, loosen the chain adjustors on both sides of the swingarm.

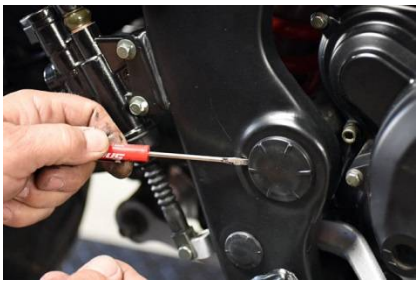
These adjustors each have two 13mm nuts, one on each side of the adjustment plate, as shown in the photo to the right.

Note that in the photo to the right, the rear axle adjustor nuts have already been loosened.

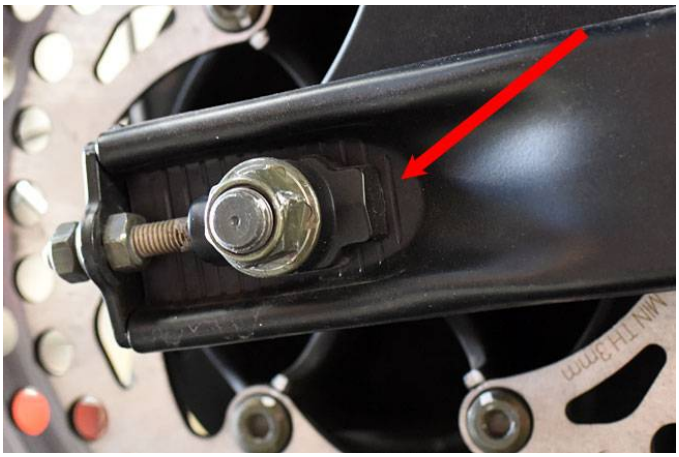
Move the rear axle either forward or rearward using the rear axle adjustor nuts while simultaneously positioning the rear axle such that the desired chain tension is achieved, and rear wheel is aligned. Note there are no washers between the inside nut and where it bottoms against the end of the swingarm, and that there is a flat washer and a lockwasher between the outside nut and the end of the swingarm.

To attain correct alignment rear wheel alignment, there are two approaches (measuring the distance between the swingarm pivot point and the rear axle, or aligning the rear axle adjustors with scribe lines on the swingarm).

To measure the distance between the center of the swingarm pivot point and the center of the rear axle, see the photos below.



To align the rear axle using the swingarm scribe lines, adjust the rear axle adjustors such that the rear axle adjustors on both sides of the motorcycle are in the same position with respect to the swingarm scribe lines.



Once the rear axle is aligned and chain tension is adjusted, tighten the rear axle nut and all four rear axle adjustor nuts.

Lubing the Chain

You should lubricate your chain approximately every 500 miles, or at the end of a long day of riding. You should lube the chain more often if you ride in the rain or in dusty conditions. Lube the chain as soon as you stop riding while the chain is still warm, as this will allow the lubricant to wick into the chain. It's easier to lube the chain if your RX3 has the optional centerstand, but if it doesn't, it's still easy to do.

Hold a rag under the lower chain run and spray the lube directly onto the chain.

Push the bike backward a few feet to expose more of the chain (if your bike does not have the centerstand) and lube the chain.

If you bike has the centerstand, rotate the rear wheel with the bike on the centerstand to expose all parts of the chain as you lube it. Lube the entire chain.

Don't let the lube get on the tire, and don't shoot spray lubricant through the spokes and get the lube on the rear brake. Don't ride the motorcycle for at least 15 minutes after lubing the chain. That will allow the lube to seep into the chain.

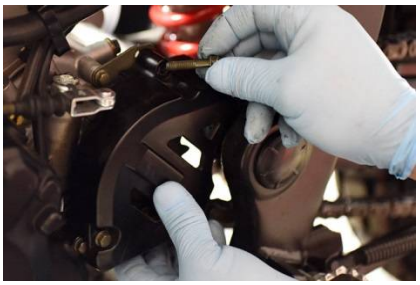
CSC stocks both wax and petroleum based chain lubes (call us at (800) 884-4173 to purchase these items).

Sprocket and Chain Inspection

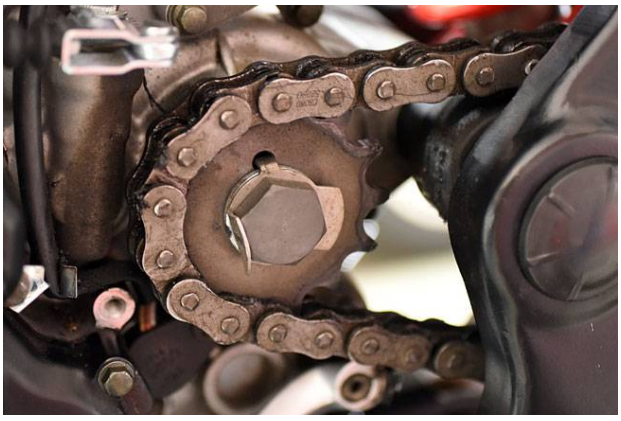
The CSC RX3 has a 520 O-ring type chain, a 14 tooth front sprocket, and a 44 tooth rear sprocket.
If you keep your chain properly adjusted and lubed, the chain and sprockets will last much longer than they would if you don't maintain these items, but they still won't last forever. You can expect the chain and sprockets to wear more quickly if you ride in dusty environments or off road. Chains and sprockets should be replaced as a set. Do not replace one without replacing the other or rapid wear will result.

Remove the countershaft sprocket cover by removing the two bolts that attach it to the engine. You don't have to remove the gear shift lever to remove the countershaft sprocket cover.

There are three Allen bolts that secure the chainguard. Two are visible and easily accessible; the third is hidden on the forward portion of the chainguard (on the part of the chainguard that is behind the chain). Undo the three bolts and remove the chainguard.



After you have removed these items, you can see the sprockets and the chain.




If the sprocket teeth are hooked or otherwise excessively worn, replace both sprockets. If the chain has excessive stretch or if it has kinks that you cannot work out by manually rotating the links with respect to each other, it's time for a new chain.

On a new RX3 motorcycle, the chain does not have a master link. When you need to replace the original equipment chain on your motorcycle, you have to cut it off.

A replacement 520 chain (call us at (800) 884-4173 to order a replacement chain) has a master link that will allow you to install the new chain. When you install the master link, the closed end should always face the direction the chain rotates.

Chain Drive Troubleshooting

Troubleshooting and maintenance activities for the chain drive system are summarized in the table below.

Chain Drive Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Rear sprocket	Excessive wear	Inadequate lubrication, misaligned rear wheel, incorrect chain adjustment	Chain skipping, chain breakage	Replace chain and both sprockets
Counter shaft sprocket	Excessive wear	Inadequate lubrication, misaligned rear wheel, incorrect chain adjustment	Chain skipping, chain breakage	Replace chain and both sprockets
Drive chain	Excessive wear	Inadequate lubrication, misaligned rear wheel, incorrect chain adjustment	Chain skipping, chain breakage	Replace chain and both sprockets
	Excessive tightness	Inadequate lubrication, misaligned rear wheel, incorrect chain adjustment	Chain breakage, loss of power, stiff rear suspension	Adjust chain
	Excessive looseness	Improper adjustment of chain's tension	Chain skipping on sprocket, excessive chain slap	Adjust chain

Clutch Maintenance

This section of the RX3 Service Manual addresses clutch cable lubrication, clutch cable replacement, clutch adjustment, and clutch replacement.

Clutch Cable Replacement and Adjustment

To disconnect the cable at the handlebar clutch lever, pull back the rubber grommet to expose the clutch lever knurled adjustment knob and knurled lock nut. Loosen the knurled lock nut, and then fully screw in the knurled adjustment knob. Align the slots in the knurled adjustment knob and the knurled lock nut, as you see in the photo below.



Locate the other end of the clutch cable where it attaches to the clutch lever on the engine case. It's on the left side of the engine behind the cylinder and above the shift lever. Loosen the lock nuts on the threaded adjustment mechanism and move it forward to gain more slack in the cable.



Once you have enough slack in the clutch cable, you can remove the cable sheath from the knurled adjustment knob at the handlebar end of the cable, and slide the clutch cable out. This will allow pulling the cable forward and sliding the cable head out of the clutch lever (as shown to the right).

Disconnect the clutch cable at the engine end, as shown below.



At this point, the cable should be disconnected at both ends.

Clutch cable installation is the reverse of removal. Reattach the clutch cable at both ends and adjust the clutch so that you have ¼ to ½ inch of free play at the clutch lever tip. Clutch adjustment is covered in the clutch adjustment process section of this Service Manual below.

There are two areas in which adjustments can be made to the clutch. These are the lower end of the clutch cable (where it attaches to the lever on the engine case), and the upper end of the clutch cable (where it attaches to the lever).

The primary function of the lower end of the clutch cable adjusting mechanism is to remove most of the slack from the clutch cable.

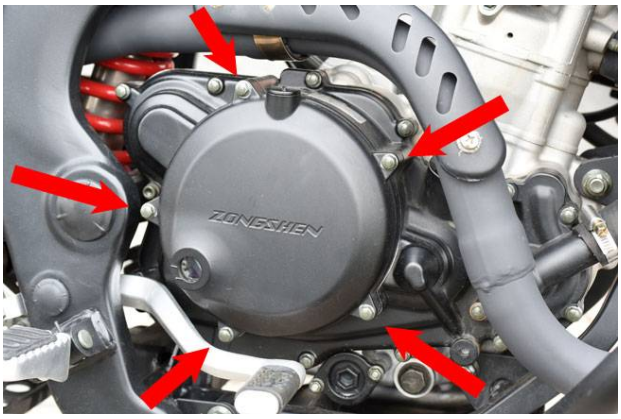
Adjust the lower end of the clutch cable adjusting mechanism so that it is about in the middle of its adjustment range. This will remove nearly all slack from the clutch cable. This is shown in the photo to the right. The final adjustment will be made at the handlebar clutch lever.

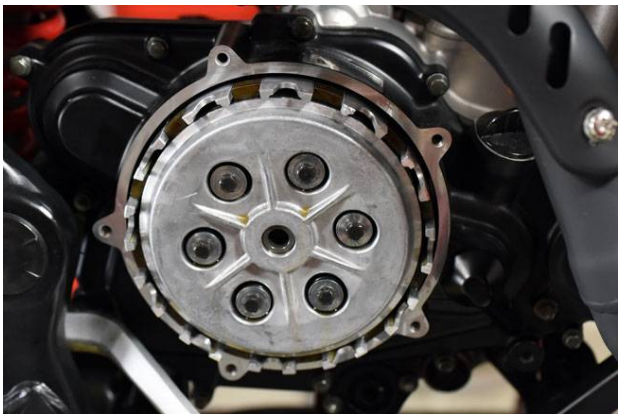
Once you've done adjusted the lower end of the clutch cable, adjust the knurled adjustment know at the handlebar clutch lever such that there is about 10mm to 20mm of free play at the end of the clutch lever. When you've done that, lock the knurled adjustment knob in place with the knurled lock nut. Pull the rubber grommet back over the adjustment mechanism.

Clutch Replacement

If you change your oil regularly and you use the right kind of oil, and if you don't abuse your bike, your clutch will last a long time. If you abuse your clutch it will wear prematurely. If the clutch is grabby or if it slips, and you can't fix it by changing the oil or by adjusting the clutch, you need a new clutch.

Drain the engine oil and remove the clutch cover by unbolting the five bolts securing it to the engine. This will provide access to the clutch internal components.





Set the clutch cover aside, inside face up, so that you can use it as container for the parts to be removed next. Remove the six clutch pressure plate bolts. Each bolt has a machined keeper and a spring.

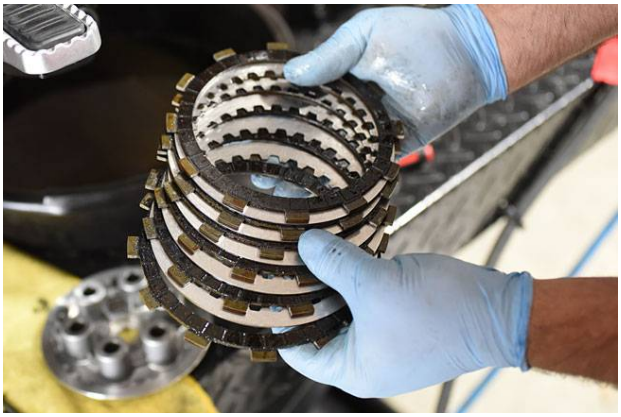
Remove the clutch pressure plate. You may need to use a small pick to get behind it to coax it out.

There's a pusher behind the pressure plate that consists of a shaft, a roller bearing, and washer. You can see it in the photo above, and here are additional photos that show these components.



Inspect the roller bearing and washer. If either part is damaged, replace it.

Remove the clutch plates. There are six friction plates and five steel plates. It's best to use a small pick (as shown below) to do this.

If the clutch slips due to the use of an unapproved oil (for example, an automotive oil with friction inhibitors), wash the plates to remove any remnants of the unapproved oil that induced the slippage.

Soak the new clutch fiber plates in motorcycle engine oil for 24 hours prior to installation.

Replace the clutch plates (contact CSC at (800) 884-4173 for replacement parts), and then reinstall the pressure plate, the clutch springs, the keepers, the bolts, and the clutch cover. Fill the engine to the correct level with approved motorcycle oil. Adjust the clutch as outlined above.

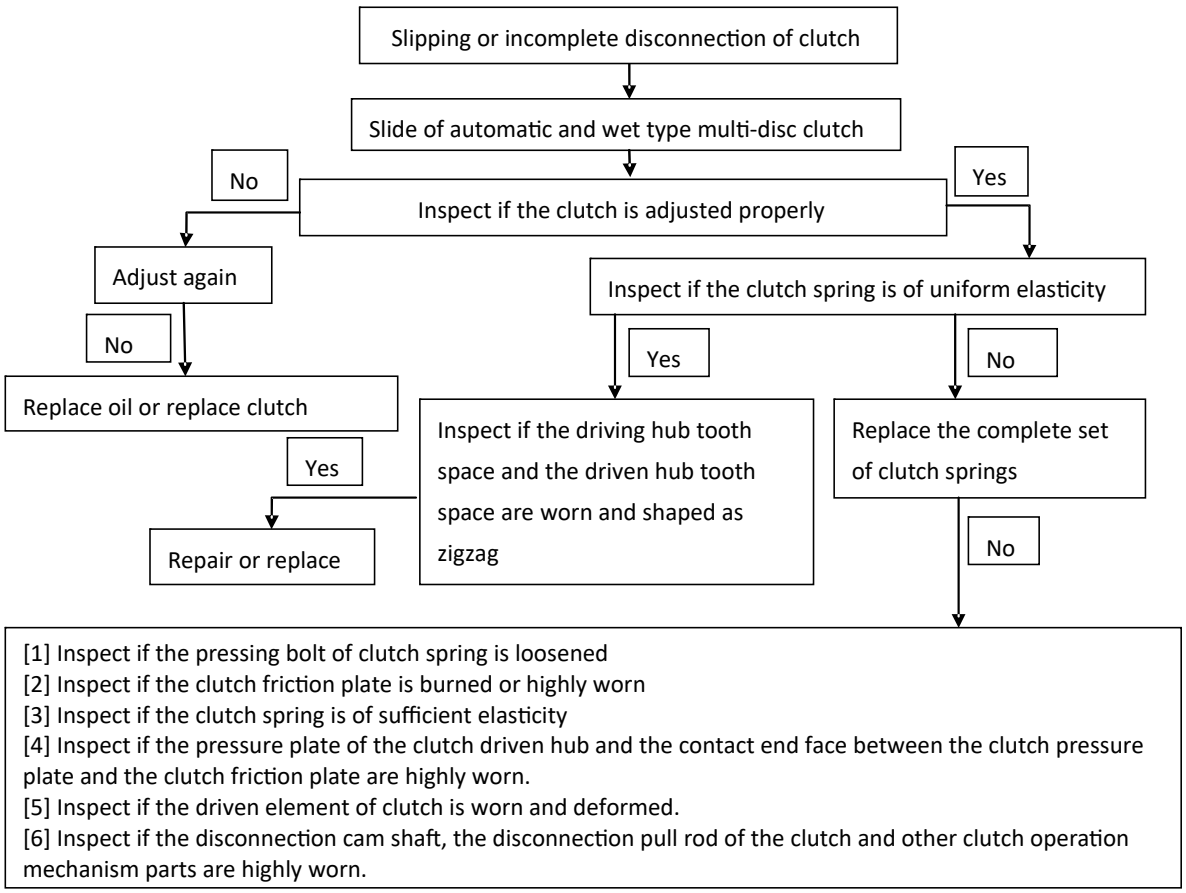
Clutch Troubleshooting

Clutch troubleshooting and maintenance actions are summarized in the table below.

Clutch Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Clutch cable	Breaks	Wear, improper adjustment, inadequate lubrication	Clutch will not disengage	Replace clutch cable
Clutch cable	Sticks or grabs	Wear, improper adjustment, inadequate lubrication	Difficult clutch operation	Lubricate or replace clutch cable
Clutch	Slips	Incorrect engine oil, worn clutch plates, improper clutch adjustment	Loss of power transmission, engine over revving	Adjust clutch, check engine oil, replace clutch plates
Clutch lever	Too little or too much play at clutch lever	Incorrect clutch adjustment, worn clutch plates	Clutch engages early, or clutch slips	Adjust clutch
Difficult shifting	Transmission does not shift smoothly	Incorrect clutch adjustment	Difficult shifting	Adjust clutch

Additionally, a clutch troubleshooting diagram is provided below.



Suspension

The suspension subsystem includes the forks, the rear shock absorber, and the swingarm.

Forks

The front forks of this motorcycle are an inverted hydraulic spring design. When the front wheel receives irregularities in the road and moves up, damping oil inside the forks flows upward through tiny holes. This provides damping.

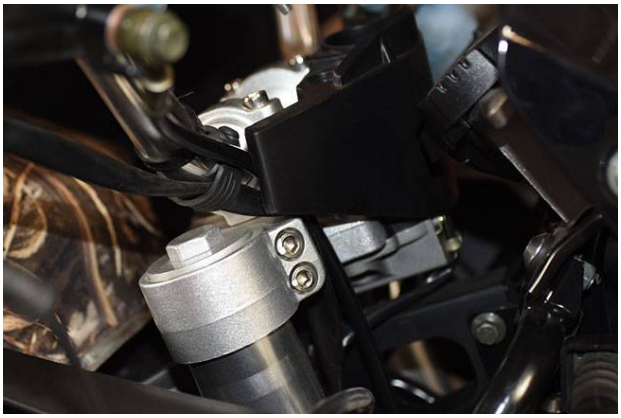
Check the performance of the forks and inspect for leaks. Prompt inspection and maintenance should be given to the forks when any abnormalities are found.

If you wish to use a higher viscosity fork oil to stiffen the forks, please call CSC to discuss which oil will best meet your needs.

Changing the Fork Oil

The first step in working on the forks is to remove the front wheel. Please see the front wheel removal portion of this Service Manual for instructions front wheel removal.

After the front wheel has been removed, remove the ignition switch shroud to gain access to the upper fork yoke pinch bolts.



The next step is to remove the speedometer cable from the right fork leg (if you are removing the right fork leg). There's a composite clamp that secures it. Unscrew the clamp screw and detach the speedometer cable from the fork leg.

Remove the front fender by removing the four bolts that secure it to the forks. The front fender can be maneuvered through the forks so that it can be removed after the bolts securing it have been removed.



Loosen the two upper yoke pinch bolts if you have not done so already. You don't need to remove them; they just need to be loose. Loosen the lower yoke pinch bolts, and be prepared for the fork leg to drop as soon you loosen the last pinch bolt. Hold the fork leg with one hand while loosening the last pinch bolt. You can get to the lower yoke pinch bolts from beneath the body panels, and you don't need to remove the body panels to gain access to the lower yoke pinch bolts.



Unscrew the fork cap from the fork using an impact wrench. Keep the fork in a vertical orientation. The fork contains oil, and if tilted, oil will spill out.



Tilt the fork over a container and pour the oil out of the fork. Each fork leg contains 330 cc (or 11.2 US fluid ounces). You will need to pump all of the oil out of the dampening rod by moving the dampening rod in and out of the fork. You will know all of the oil is out when you feel no dampening when pumping the dampeners. When installing new oil, pump the dampeners to eliminate any air in the dampeners.

The stock fork oil is a fairly light oil, which provides a comfortable ride. If you desire a firmer ride, you can use heavier fork oil.

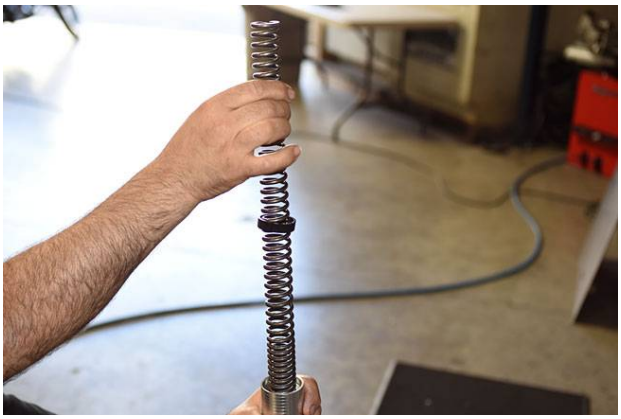
Reassemble the forks in the same manner as they were disassembled, leaving the fork caps loose so that you can add new fork oil. Add 11.2 ounces to each fork using a funnel. Replace the fork caps. Tighten all fasteners.

Repairing a Leaking Fork Seal

If the fork seal leaks because it was damaged by grit or some other attributable cause, you need to replace only the leaking seal. If the seal started leaking due to age-induced degradation, you should to replace the seals on both sides of the forks.

Put a wrench on the bolt head inside the fork spring, and unscrew the fork cap from the fork rod that runs through the center of the fork spring. The fork cap and its washer will separate from the fork rod.

Pull the fork spring completely out of the fork. Note that the fork spring is a compound spring. The more tightly wound coils always go toward the lower end of the fork, as shown in the photo below. At this point, put a shop rag or a paper towel in the opening at the top of the fork (where the fork cap was). There will still be residual oil in the fork and this will prevent spillage.



The next step is to remove the dust seal using a light touch. Use a fine bladed screwdriver (or something similar) and gently tap the dust seal away from the fork upper tube. Work gently around the periphery of the dust seal. Take care not to gouge the fork or damage the dust seal.

Once the dust seal has been removed, you need to reach inside the fork upper with a pick to release the clip that secures the fork seal in place. Gently place the pick inside the raised area of the clip, and push inward and toward the opening. The clip will release. Remove the clip from the fork.

Pull the fork lower out of the fork upper.

Use the fork lower as a jack hammer. Pull it sharply away from the fork upper while holding the fork upper.

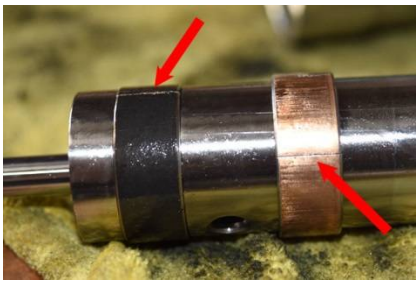
Repeat this motion several times to get the fork lower out of the fork upper.

After you have separated the fork lower from the fork upper, it will look like this.

Note that there are two circular flat clips around the diameter of the fork lower. These are bushings.

Each bushing has a slit in it to allow expanding the bushing so that it can be removed from the fork lower. The red arrow points to the slit in the upper bushing. It's barely visible and it is a fine slit.

The upper bushing (the black one) rests in an annular groove machined into the fork lower. Expand this bushing diametrically to get it off the fork lower. Use a fine-bladed screwdriver to start the expansion process, and then insert a larger screwdriver. Remove the bushing from the fork lower machined annular groove and take if off the fork lower. Take care not to scratch the fork lower or over-expand the bushing.



After removing the upper clamp, slide the lower clamp off. At this point, the fork lower will look like the photos below.

Remove the dust seal and the fork seal from the fork lower.

Take care not to damage either seal. The edges of the fork lower's annual groove are sharp and these edges can damage the seals.

After removing the fork seal and the dust seal, examine both carefully for any cuts, tears, or degradation. Replace the defective part(s).

Examine the fork lower (which is the part that slides through the dust seal and the fork seal). If there are any scratches, gouges, or surface imperfections on the portion of the fork lower that slides through the seals, polish the imperfections out or replace the fork lower.

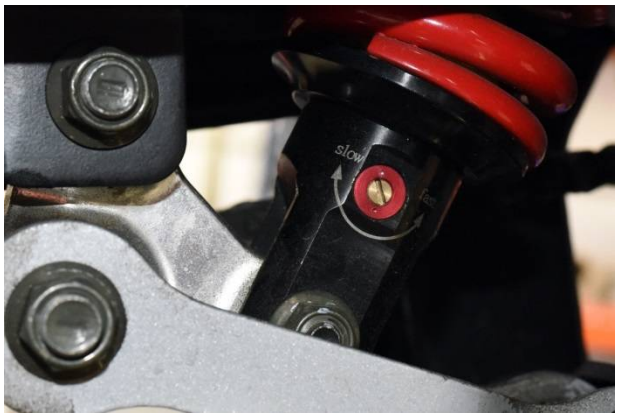
After you've reassembled the forks, tighten all fasteners in accordance with the torque table in the CSC RX3 Service Manual torque specification table.

Rear Shock Absorber

The rear shock absorber is a hydraulic spring composite rear shock absorber, which consists of the upper connector, buffer rubber sheath, bushing, rear shock absorber spring, rear shock absorber lever, piston rod, damper, and lower connector.

The rear shock absorber supports the rear of the motorcycle. When the motorcycle rear wheel receives impacts and shocks from the road and the rear shock absorber compresses or extends, hydraulic oil in the damper is forced to flow through damping holes, which reduce the motion of the rear shock absorber.

The rear shock absorber has a damping adjustment shown in the photo below. Turning the screw clockwise increases damping; turning it counter-clockwise decreases the damping.



Suspension Troubleshooting

Suspension maintenance and troubleshooting actions are summarized in the table below.

Suspension Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Forks	Fork has poor elastic force or is broken	Spring excessively soft	Poor comfort	Replace fork spring
	Fork distorted	Left and right forks are not at same level	Poor fork action, motorcycle pulls to one side	Adjust fork
	Scratches found on surface of fork	Fork has oil leak at the oil seal	Poor fork action	Replace fork or seal
	Oil seal abraded or damaged	Oil leak	Poor fork action, leaking fork	Replace oil seal
	Fork oil low	Fork becomes soft	Poor fork action	Add oil as required
Rear shock absorber	Rear shock absorber spring broken or soft spring force	Rear shock absorber soft	Rear suspension overly soft	Replace rear shock absorber
	Rear shock absorber leak	Defective rear shock absorber	Rear suspension overly soft, leakage	Replace rear shock absorber
	The rubber sheath abraded or cracked	Aging, exposure to contaminants	Rear suspension overly soft or harsh	Replace rear shock absorber

Steering System

The handlebar, fork yoke, and steering components should be inspected and adjusted periodically to check for any abnormal conditions. The front forks should turn evenly from side to side with no interference or looseness. Apply the front brake and rock the motorcycle back and forth. There should be on looseness or clicking in the steering head area.

Steering System Troubleshooting

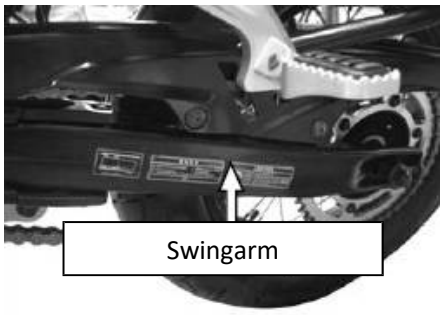
Steering system maintenance and troubleshooting actions are summarized in the table below.

Steering Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Handlebar	Bent	Impact	Drift	Replace handlebar
Steel ball race	Excessive tightness of adjusting nut	Overtightened	Sticky movement	Adjust using a locking wrench until steering column can rotate freely with no end play between steering column and frame
	Excessive abrasion, pitting, dirt, crack and damage	Contamination	Sticky movement, swing and shaking of handlebar while driving	Replace whole set of steel ball and race
Steering race balls	Abrasion, deformation, damage	Contamination	Sticky movement, swing or shaking of handlebar while driving	Replace whole set of steel ball and race
Steering column	Bent	Impact	Sticky movement	Replace steering column

Swingarm

The swingarm connects the rear wheel and the frame. The swingarm consists of the rear fork (i.e., the swingarm), dust seal, dust seal cover, bearing rear fork shaft sleeve, and other small parts. The swingarm includes shaft bearings.



Swingarm Troubleshooting

Swingarm maintenance and troubleshooting actions are summarized in the table below.

Swingarm Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Swingarm	Deformed swingarm	Impact	Pulls to one side	Replace swingarm
	Fractured swingarm	Impact	Pulls to one side	Replace swingarm
	Sticky swingarm action	Dust seals severely abraded or worn	Poor rear suspension action	Replace dust seals and bearings

Wheels and Tires

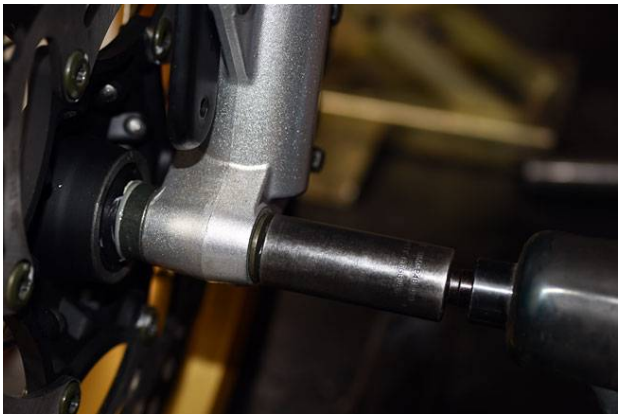
The CSC RX3 uses a 17-inch steel rimmed wire wheel at the rear of the motorcycle, and an 18-inch steel rimmed wire wheel at the front of the motorcycle. Both the front and rear wheels use inner tubes.

The recommended front tire size is 100/90/-18. The front tire should be inflated to 33 psi. The recommended rear tire size is 130/70-17. The rear tire should be inflated to 35 psi. Under-inflation or over-inflation of either tire will adversely affect the motorcycle's handling characteristics.

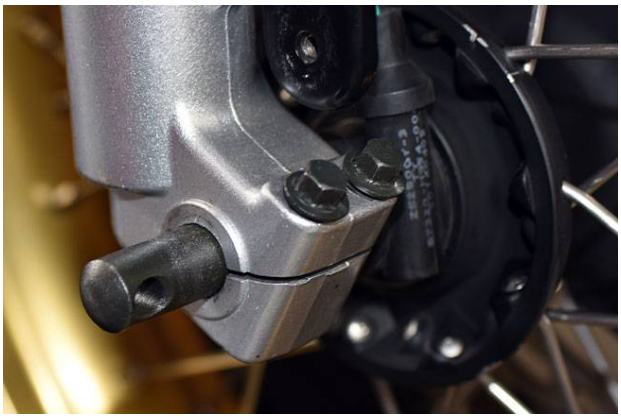
Both the front and rear wheel and tire should be dynamically balanced any time either tire is removed and reinstalled or when a new tire is installed.

Front Wheel Removal

The first step in removing the front wheel is to remove the front axle bolt. It's on the left side of the motorcycle. The axle won't come out yet (it's secured by the pinch bolts on the right side of the motorcycle).



The next step is to lift the front end of the bike off the ground. If you have our accessory centerstand, the front wheel will be off the ground when the bike is on the centerstand. If you do not have a centerstand, you need a bike lift or some means of safely lifting the front wheel off the ground.
Once the front wheel is off the ground, loosen the two pinch bolts on the right side of the motorcycle.



Slide the front axle out on the right side of the motorcycle. Roll the front wheel forward a short distance and remove the speedometer drive from the right side of the front wheel hub.


You can now remove the front wheel. Note that there is only one bushing, and that is installed on the left side of the front wheel hub (it is captured between the left fork and the wheel hub).


Front wheel installation is the reverse of front wheel removal. When reinstalling the speedometer drive unit, make sure that the tab in it fits into the slot on the front wheel.

Rear Wheel Removal

Remove the rear axle nut (the rear axle nut is 17mm; the bolt head on the other side is 18mm). Pull the rear axle out from the left side of the motorcycle.



After removing the axle, push the rear wheel forward and lift the chain off the sprocket. You don't have to remove the chainguard to get the chain off, and you don't have to remove the rear brake caliper to get the wheel off.

Once the chain is off the sprocket, roll the wheel out from under the motorcycle. On the rear wheel, there are two bushings (one on either side of the wheel). The thicker bushing goes on the right side of the motorcycle, and the thinner bushing goes on the left side of the motorcycle.

At this point, you can remove the rear wheel from the motorcycle by rolling it to the rear.

Wheel and Tire Inspection

Check if the tire air pressure is within the specified range (33 psi front, 35 psi rear). Inspect the valve stems for lock nut installation, lock nut security, and valve stem condition. Do not operate the motorcycle without the valve stem cap in place. Inspect the tire condition. Replace any tire with tread that is worn down to the tread wear indicator (or if the tread remaining is less than 2mm), if the tire exhibits cupping, or if the tire has any other defects.

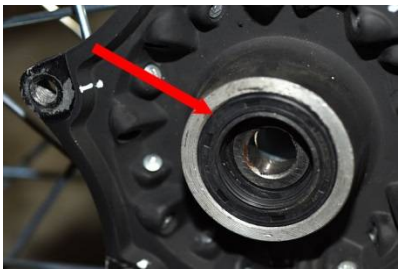
Inspect the spokes on both the front and the rear wheel. If any spokes are loose, tighten them and check for wheel trueness. If any spokes are missing, do not replace single spokes as a long term fix. The entire wheel should be relaced at the next available opportunity.

Check the rims for dents. If the rim is dented, it should be replaced.

When the wheels are removed from the motorcycle, check the grease seals, the wheel bearings, and the rear wheel cush drive rubber cushion. If the grease seals are cut or torn, they should be replaced.

If the wheel bearing inner races are loose, gritty when rotated, or noisy, replace the bearing.

If the cush drive cushion is damaged or degraded, replace the cushion.



Place the wheels on a truing stand and inspect them for runout and ovality. If either exceeds 1.0mm, true the wheel by adjusting spoke tension.

Balance the wheel and tire on a dynamic balancer.

Wheel and Tire Troubleshooting

The table below summarizes wheel and tire troubleshooting and maintenance.

Wheel and Tire Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Wheel and Tire	Vibration	Deformation, out of balance condition, worn tire, wheel trueness or ovality outside of spec limits, worn bearing, motorcycle load	Drift, handlebar shake, vibration	True wheel, check bearings, check inflation pressure, check tire condition, balance tire and wheel, check for proper loading of motorcycle
Tire	Premature wear, cupping	Out of balance, misaligned rear wheel, worn bearing, under or over inflated.	Premature tire wear	True wheel, check bearings, check inflation pressure, balance tire and wheel, check for proper loading of motorcycle

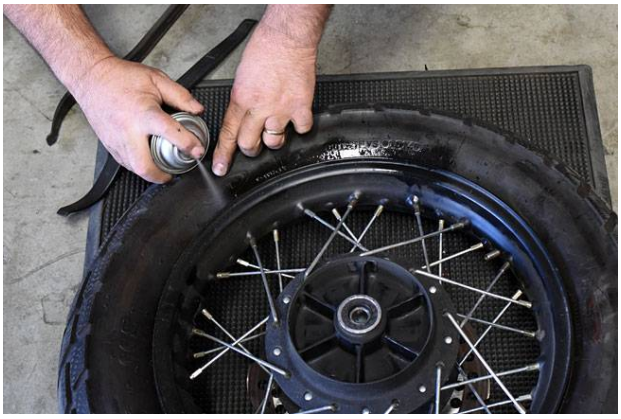
Fixing Flat Tires

If your motorcycle has a flat tire, check for any obvious causes on the outside of the tire (it will make finding the leak in the tube a lot easier if you need to patch the tube).

Prior to lifting the bike to get the wheel with the flat tire off the ground, loosen the axle bolts (just loosen them, do not remove them). If your motorcycle has the CSC accessory centerstand, put the motorcycle on the centerstand. If your motorcycle does not have the accessory, prop up the motorcycle so that the wheel with the flat tire is off the ground.

Remove the wheel with the flat tire in accordance with the instructions for doing so in this Service Manual. Place the wheel on its side, with the brake disk facing down. Remove the valve cap and depress the Schrader valve to allow any remaining air in the tube to escape. With a 10mm wrench, loosen the nut around the valve stem, and then unscrew it completely by hand.

Break the bead around the tire. You only need to do this on one side of the tire. Usually, just stepping on the tire (as shown below) will unseat the tire from the rim. After you've broken the bead, spray the area between the bead and the rim with a rubber lubricant designed for tire mounting.



Using a tire iron (you'll need two), insert the tip between the tire and the bead, and pull the bead over the rim. Using the second tire iron, pick a location about 6 inches away (measured circumferentially on the rim) and do the same thing. Remove the first tire iron and repeat the process. You usually only need to do this once and the tire will pop off the rim on the side you're working. You do not need to remove the tire from the rim; you only have to get it off the wheel on one side.

Push the valve stem back into the rim so that it is no longer passes through the rim. Remembering where the puncture occurred on the tire (if you were able to identify the puncture location), pull the tube out of the tire (you'll be pulling it out between the tire and the rim on the side where you separated the tire from the rim).

Carefully inspect the tube in the area adjacent to the tire puncture location and inspect for the source of the leak. If you find it and if it is small (they almost always are), you can most likely patch it as a temporary fix. If the tear is more extensive, you should replace the tube.

If you can't find the leak, partially inflate the tube and listen for hissing. You may have to put the partially inflated tube near your ear and rotate it until you find the leak. If you are near water, you can immerse the tube and look for bubbles to locate the leak. If you hear it but can't see it, you can rub spit around the general area and look for the leak.

Before you reinstall the tube (either one you've patched or a new one), reach in and gingerly feel around the inside of the tire. Look for anything that might damage the tube when you reinstall it. Exercise caution (if there is something sticking into the tire, don't cut yourself on it). If you find anything, remove it.

Gently insert either the patched or a new tube into the tire. Position it so that the valve stem is aligned with the hole in the rim. Push the valve stem through the hole in the rim and then reinstall the 10mm nut on the valve stem to lock the valve stem in place. Gently tuck the tube completely in to the tire.

Reinstall the tire on the rim using tire irons. Take care not to pinch the tube between the tire and the rim (and don't damage the tube with the tire irons) when reseating the tire. Liberal use of spray lubricant will help.

Reinstall the tire and wheel on the motorcycle before you inflate the tube. This is the reverse of the process I described above.

After accomplishing the above, inflate the tire and to seat it on the rim.

CSC advises keeping a patch kit, a tire repair kit, and a source of compressed air with you, especially if you ride in remote locations (as was the RX3 motorcycle design intent). If you need these items, please call CSC at (800) 884-4173.

Engine

The RX3 engine is a water-cooled, overhead cam, counterbalanced engine.

Engine Break-In Procedure

When an internal combustion engine is new, it should not be subjected to hard acceleration, lugging, overheating, or running for long periods at a constant engine speed. You should avoid these situations during the first 500 miles of service.

We recommend the first oil change when the motorcycle reaches between 200 and 500 miles. We recommend a second oil change at 1,000 miles, and every 2,500 miles thereafter. We recommend using only 10-40W motorcycle oil. Never use any oils intended for automotive use, or any oil that contains friction reducing additives (use of these oils will induce clutch slippage not covered by the CSC warranty).

Use only non-synthetic oils during the first 1000 miles of use. After that, you may wish to change to synthetic motorcycle oil.

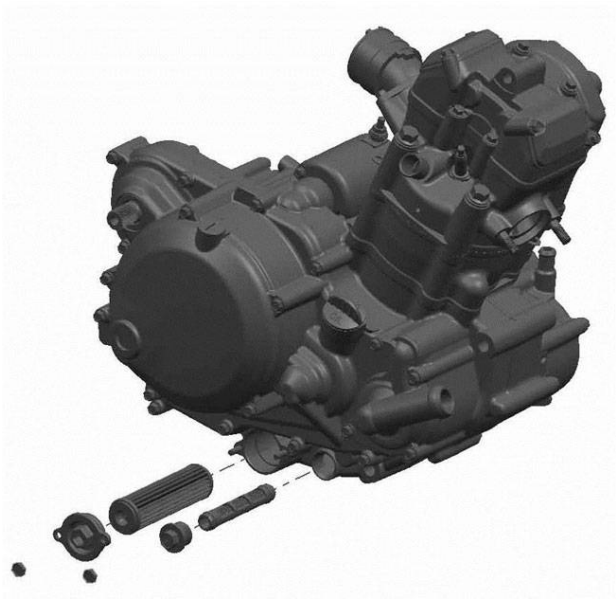
The oil change procedure is outlined in the next section.

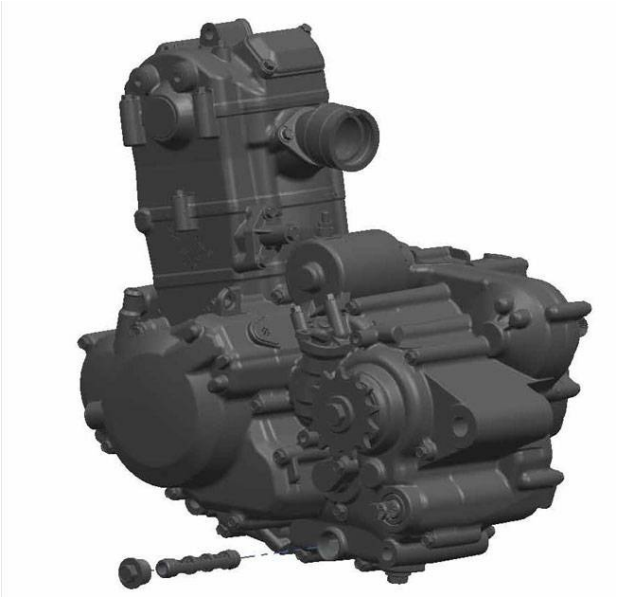
Oil Changes

The following information applies to RX3 oil and oil changes.

- The RX3 takes 1.7 quarts (55.4 ounces) of 5W-40 or 10W-40 motorcycle oil.
- The RX3 has two cleanable and reusable oil strainers (one on the left side of the engine and one on the right side), and one oil filter (you should replace the oil filter with each oil change).
- The RX3 has two oil fill ports (both on the right side of the engine), but you only need to use one or the other to replace the oil.
- The RX3 has an oil viewport on the right side of the engine for assessing engine oil level, and the bike needs to be vertical to use it. The engine does not have a dipstick.
- You'll need a 17mm socket to remove the oil strainer caps and the oil drain plug.
- You'll need an 8mm socket to remove the oil filter cover nuts.
- The RX3 tool kit includes a 17mm socket and an 8mm wrench, but we don't recommend using them for changing the oil.

The oil filter and oil strainer locations can be seen in the drawings below.





This is what the strainer and filter caps look like on the engine. The oil strainer is the large 17mm bolt head, and the oil filter cover is held in place by two 8mm nut on the right, and the left oil strainer is located on the left side of the engine. The left side oil strainer cover is the 17mm bolt head just beneath the shifter.

The RX3 tool kit is located under the rear seat cushion (you need to unlock the rear seat with the key lock on the left side of the motorcycle beneath the seat to get to it).

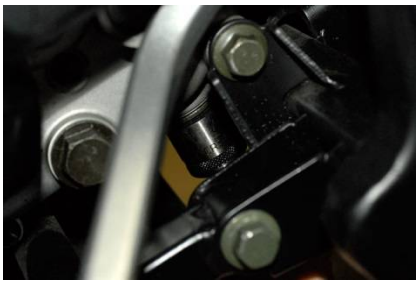
Like most motorcycle tool kits, these should be considered emergency tools only.

Use a 17mm socket with an extension to remove the oil strainer caps. Use an 8mm socket and an extension to remove the oil filter cover. We can provide these tools to you as part of an oil change service pack; we also sell the oil change tool kit separately if you do not have these tools.

Place an oil pan under the motorcycle and remove either or both of the oil fill ports. The rearmost oil fill plug has a slot. It's on the right side of the engine. A penny works well for removing it. There's another fill port on the right side of the engine just behind the exhaust pipe. You can remove that one by hand.

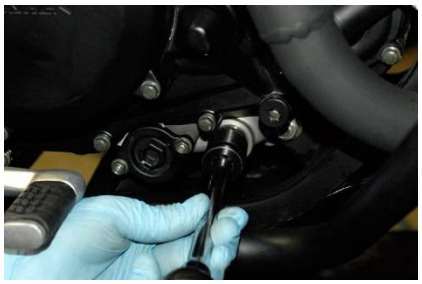



You don't need to remove both filler caps; either will allow in air when you drain the oil. Both access port covers have o-rings; take care not to lose these parts or to allow the o-rings to pick up dirt. After opening either or both of the oil fill ports, remove the oil drain plug. The oil drain plug is on the bottom of the crankcase. Removing the motorcycle's skid plate is not necessary. The oil drain plug also has a 17mm bolt head. The photos below show the socket on the drain plug and the drain plug after it has been removed.

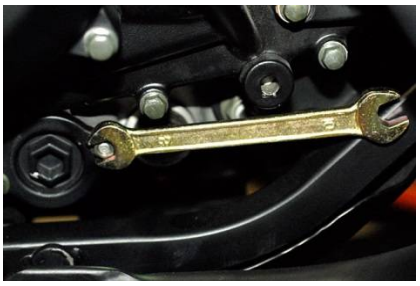
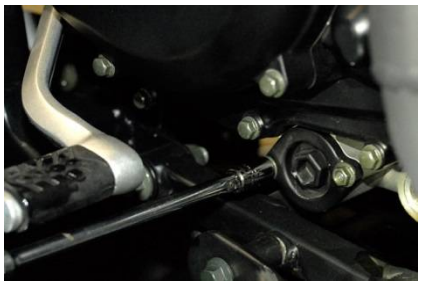


The oil drain plug has a copper gasket. It is not necessary to replace this unless oil leaks from around the drain plug. The drain plug has a magnetic core. Wipe it clean.

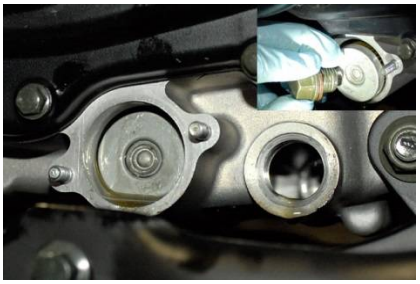
The next step is to remove the oil strainer covers. This requires a 17mm socket and an extension. The photos below show this on the left and right engine sides, and one of the covers after it has been removed. Set the oil strainer covers aside, taking care not to lose the o-rings on the inside or put them where they could become dirty.


Next, remove the oil filter cover. It is secured by two 8mm nuts. You can attempt to remove these with the 8mm wrench provided with the RX3 tool kit; a much better approach, though, is to use an 8mm socket with an extension. Remove the two 8mm nuts and the access port and set them aside, taking care not to lose the nuts. The oil filter cover also has an O-ring. Take care not to get the O-ring dirty or lose it. The spring inside the cover is orientation insensitive; it can be inserted either way.

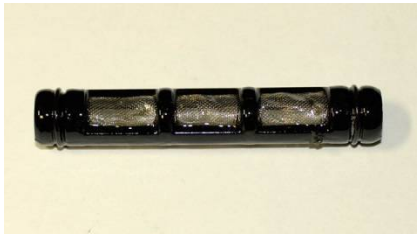




Once you have removed the filter cover, you'll see the metal end of the oil filter, as shown in the photos below. Slide the oil filter out of the engine. The easiest way to do this is to take the magnetic drain plug, put the magnet end against the oil filter, and slide it out. The oil filter end with the rubber gasket goes into the engine first. Install a new oil filter with each oil change.



Next remove and clean the oil strainers. Remember that there are two (one on each side of the engine). You can pull the oil strainers out of the engine using a pair of needle nose pliers. You can clean the oil strainer using WD40 or compressed air.





After removing the oil filter and the oil strainers, additional oil will drain from the engine. Hold the bike in the vertical position so that any remaining oil will drain from the crankcase. After all oil has drained from the engine, reinstall the oil strainers, the oil filter, the oil strainer covers, and the oil filter cover.

The oil strainers are different on each end. Install the thin end of the oil strainer first. The thin end of the oil strainer is shown in the photo on the left (this end should go in first); the thick end of the oil strainer is shown in the photo on the right (it should point out).

After installing the oil strainers, install the oil strainer covers on both sides of the engine.

Next, install a new oil filter. Remember that the end with the black rubber gasket goes into the engine first. After inserting the oil filter in the engine, replace the oil filter cover and spring and secure it with the two 8mm nuts.

Reinstall the oil drain plug.

After the drain plug, the oil filter, the oil filter spring, the oil filter cover, the oil strainers, and the oil strainer covers have been installed, add new oil to the engine.

The engine takes 1.7 quarts (55.4 ounces) of oil. Use a funnel to prevent spillage. After adding oil to the engine, start the engine and allow it to reach operating temperature. Stop the engine and wait one minute. The oil level should even with the upper mark on the viewport when the motorcycle is in the vertical position (straight up and down; not on the sidestand). The viewport is located on the right side of the engine.

Reinstall both oil fill caps (the one with the slot and the one with the extension for turning by hand). Start the motorcycle and let it run for a couple of minutes, and check for leaks.

CSC Motorcycles can provide you with everything you need to change your oil, including recommended regular and synthetic oil. We offer a complete oil change service pack. Call us at (800) 884-4173 to order these items.

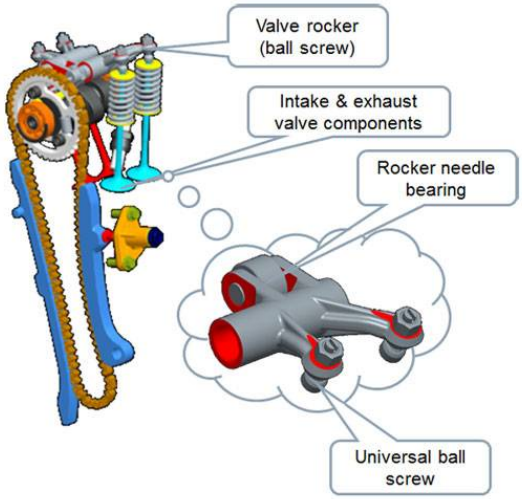
Valve Adjustment

CSC recommends inspecting the valve gap at 500 miles, and adjusting the valves every 5000 miles. If the motorcycle is ridden aggressively or at high rpm for extended periods, you may need to increase the valve adjustment frequency.

The CSC RX3 has a high performance, single overhead cam, 4-valve engine.

There are two exhaust valves and two intake valves. The CSC RX3 has a single camshaft with two lobes, and two rocker arms.

One rocker arm actuates both intake valves; the other rocker arm actuates both exhaust valves. The cam's lobes are what actuate the rocker arms. As the cam lobe lifts the rocker arm, the rocker arm pivots on its shaft. The rocker arm has one arm that follows the cam lobe up and down, and two arms that actuate its two valves. The engine opens the intake valves to admit the fuel/air mixture, and it opens the exhaust valves to expel the exhaust.



When the engine is at the top of its compression stroke, all of the valves are closed. This allows for compression of the fuel air mixture, ignition, and the resulting high combustion pressures will drive the piston down.

If any leakage occurs around any of the valves while this is occurring, the engine will lose power and it could "burn" a valve if the combusting fuel/air mix escapes around the valve while it is still burning.

When engineers design an engine, they want it to do the above, but they have to account for the thermal expansion that occurs as engine temperature increases during normal operation. In order to compensate for this thermal expansion, the engineers design in a gap in the cam lobe/rocker arm/valve train. As the engine warms, this gap approaches zero, and everything works the way it is supposed to.

The valves close against the valve seat every time they go up and down. As the valve pounds against the seat when the engine runs, very small amounts of deformation occur in both the valve and the valve seat. It's microscopic, but it grows over time as the engine runs. As this wear increases, it has the

effect of reducing the valve gap (i.e., the clearance built into the valve train to account for the thermal expansion as the engine warms up).

What happens is that as this wear occurs, the valve actually moves higher into the cylinder head and the valve gap decreases. If this wear goes beyond acceptable limits without adjusting the valves, the valve gap grows smaller and smaller. Ultimately, this wear will result in the valve being held off the seat when combustion occurs. When this condition exists, hot burning gases escape around the valve sealing area. Ultimately, these burning gases will destroy the valve and the seat. That's what happens when a valve "burns."

This above undesirable condition is avoided by adjusting the valves. This keeps gaps in the valve train within an acceptable range over the life of an engine. As the valve and the valve seat wear, valve we keep everything adjusted so that when the engine is at operating temperature it still forms a good seal around the valve seat.

Different engines use different approaches for adjusting the valves. The CSC RX3 uses the best approach for easy maintenance and high performance: It uses a threaded adjustor shaft with a lock nut to set and lock the valve gap. These adjustors are located in the ends of the rocker arms that interface directly with the valve stem. These are shown in the sketch above, and in the photos that follow.

The CSC RX3 valve adjustment process consists of the following steps:

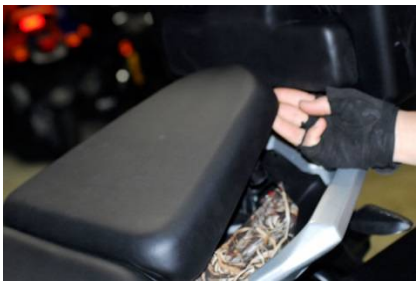
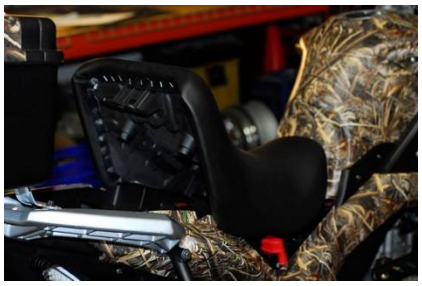
1. We gain access to the valve rocker arms and their adjustment screws.
2. We position the engine to be at a point in its rotation such that the rocker arm is on the cam's base circle. This means the cam is not actuating the rocker arm. We want the engine to have the piston at top dead center on the compression stroke, which means the valves should be closed (which is another way of saying the rocker arm is on the cam's base circle).
3. With the engine in this position, we want to loosen the threaded adjustor lock nuts, we want to set the valve gaps to the **specified gap of 0.04mm to 0.08mm**, and we want to tighten the lock nuts to lock the threaded adjustors at this gap.
4. When we've completed the above, we want to put everything back together.

When you adjust the valves, you have to start with a cold engine. Let your RX3 cool completely.

Remove the rear seat with the key lock, the front seat with its two 8mm bolts, all of the bodywork around the fuel tanks, and the fuel tank. If you do this when the fuel tank is low on fuel, it will make handling the fuel tank easier.

Make sure you don't spill any fuel, and make sure you put the fuel tank in a location where there are no ignition sources.

Take care not to scratch any of the body work.



The next step is to unbolt the RX3's twin radiators. You don't have to disconnect the hoses or remove the radiators; you just want the radiators to be loose so that you'll have access to the valve covers on top of the cylinder head.

Unbolt the radiators but leave them in place…don't disconnect the hoses.

After you've done the above actions, remove the access port on the left side of the engine crankcase.

It comes off with a 10mm Allen wrench, and inside of it, you'll see another Allen receptacle. This is connected directly to the crankshaft, and it's what we'll use to manually rotate the engine.

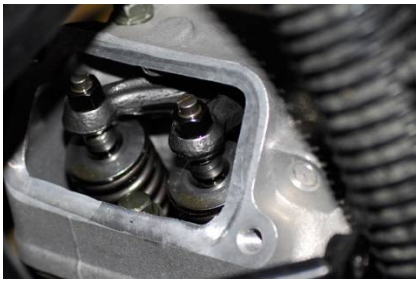
Next, remove the view cap on the left front of the engine crankcase, just forward of the port described above.

This is the view port for viewing the stator cover, and this allows us to position the engine at top dead center.

Next, remove the view caps on the left cylinder head. They can be removed with a 6mm Allen wrench. These view ports will allow determining that the engine is at top dead center.

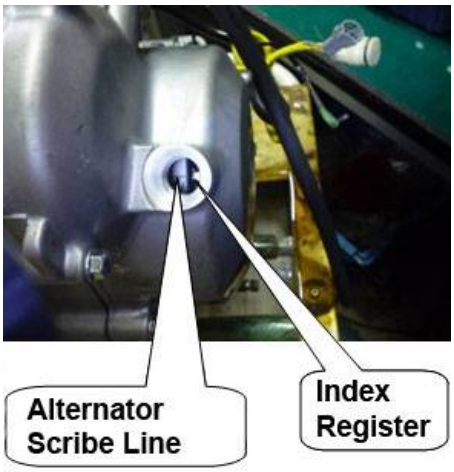
The next step is to pull the wire off of the spark plug and then remove the spark plug.

Finally, remove the intake and exhaust valve covers. Each cover is secured with two 8mm bolts. Note that the covers are not interchangeable, and they are orientation sensitive. The rear valve cover is removed with a ratchet and an extension; the front valve cover is removed without the ratchet extension.



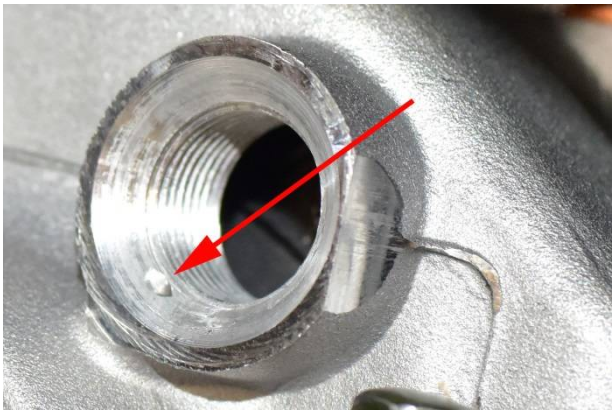
Once the bike is opened up for valve adjustment as described above, the next step is to position the piston at top dead center.

With the motorcycle in neutral, insert a 10mm Allen wrench through the crankcase port and turn the crankshaft until the alternator scribe line is aligned with the index register in the viewing port, as shown in the photo to the right.



Finding the scribe line on the alternator cover may be a bit challenging, as you have to get down low enough to see it. **Wear safety glasses when you do this, as oil may spit out of this hole.** This step is complicated by the fact that even though you've removed the sparkplug, the rotating the crankshaft will feel as though the engine still has compression. This is due to the valve springs acting to rotate the engine as the crankshaft is turned.

Align the scribe line with the index register in the center of the viewing port on the engine crankcase and the "L" and "R" marks are visible in the cylinder head viewing ports. There are scribe lines on the cam chain sprocket next to the "L" and "R" marks, these should be aligned with the machined marks in the viewing ports' threaded regions as shown below. When these marks are aligned (as shown below), the scribe line will be visible in the crankcase viewing port.



Once the engine is positioned as described above, insert a feeler gage between the valve and the threaded adjustor as shown above. This gap should be 0.04mm to 0.08mm. If the 0.08mm leaf slides in too easily, the valve gap is too large. That can result in noisy valves (valve tap). If the 0.04mm shim does not slide into this gap, the valve gap is too tight. When we adjust the valves, we always set them to 0.08mm. As the valves and valve seats wear, the wear will move the valve gap through the 0.04mm to 0.08mm adjustment range.

The valves are adjusted by loosening the lock nut on each threaded adjustor (the lock nut is 8mm). Back the threaded adjustor out a bit with a flat blade screwdriver (see the photo below), insert the 0.08mm shim, and then screw in the adjustor until it's just snug against the shim. There should just be a bit of drag on the shim when it is slid in and out

When the gap is at the 0.08mm value, tighten the lock nut. Then check the gap with the shim again.

Perform this same adjustment (and set each valve at the same gap) for all four of the RX3's valves.

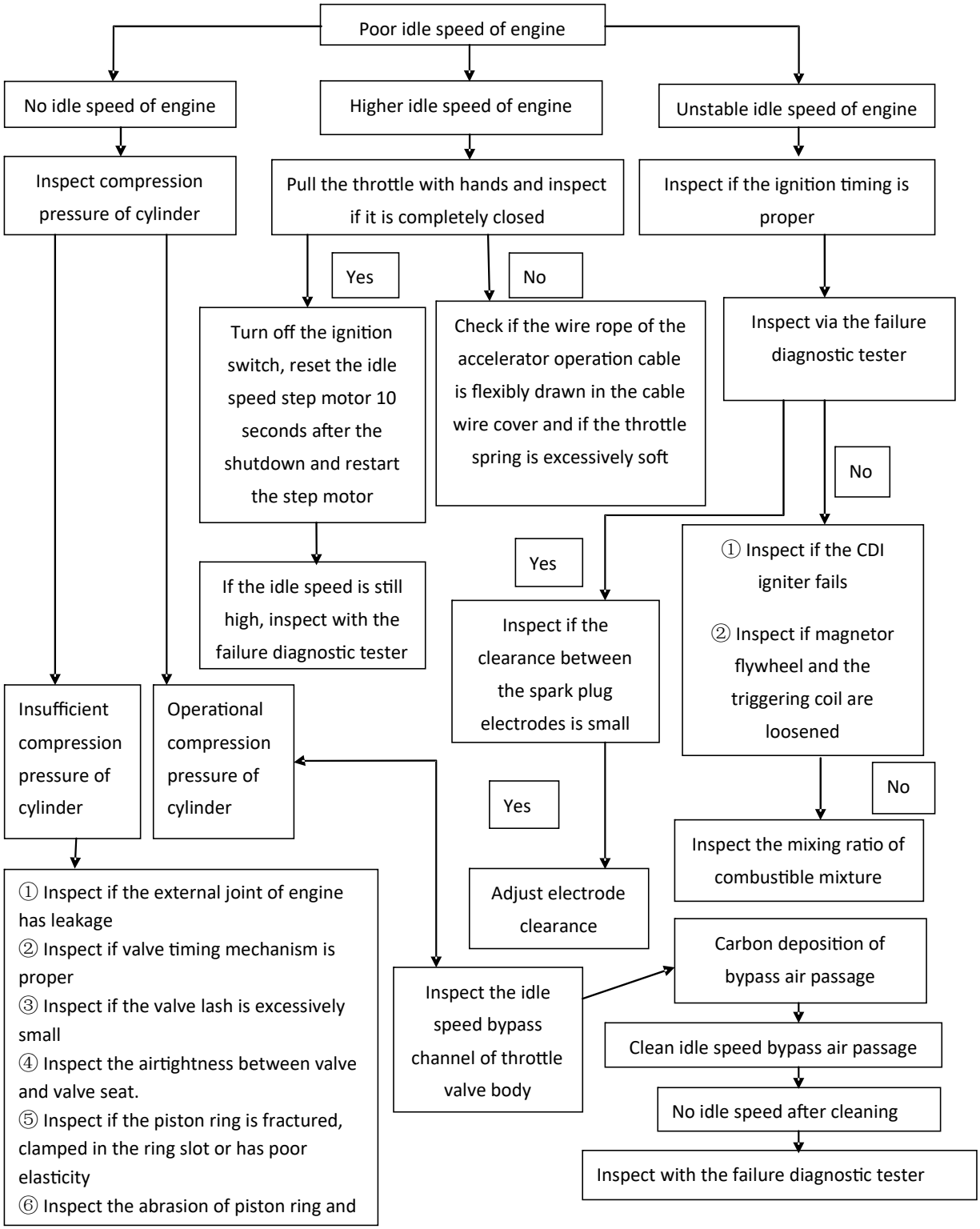
When finished, manually rotate the engine through two couple of revolutions and check the valve gap again. If it is not within specification, repeat the above process until it is.

After completing the above, reassemble all components.

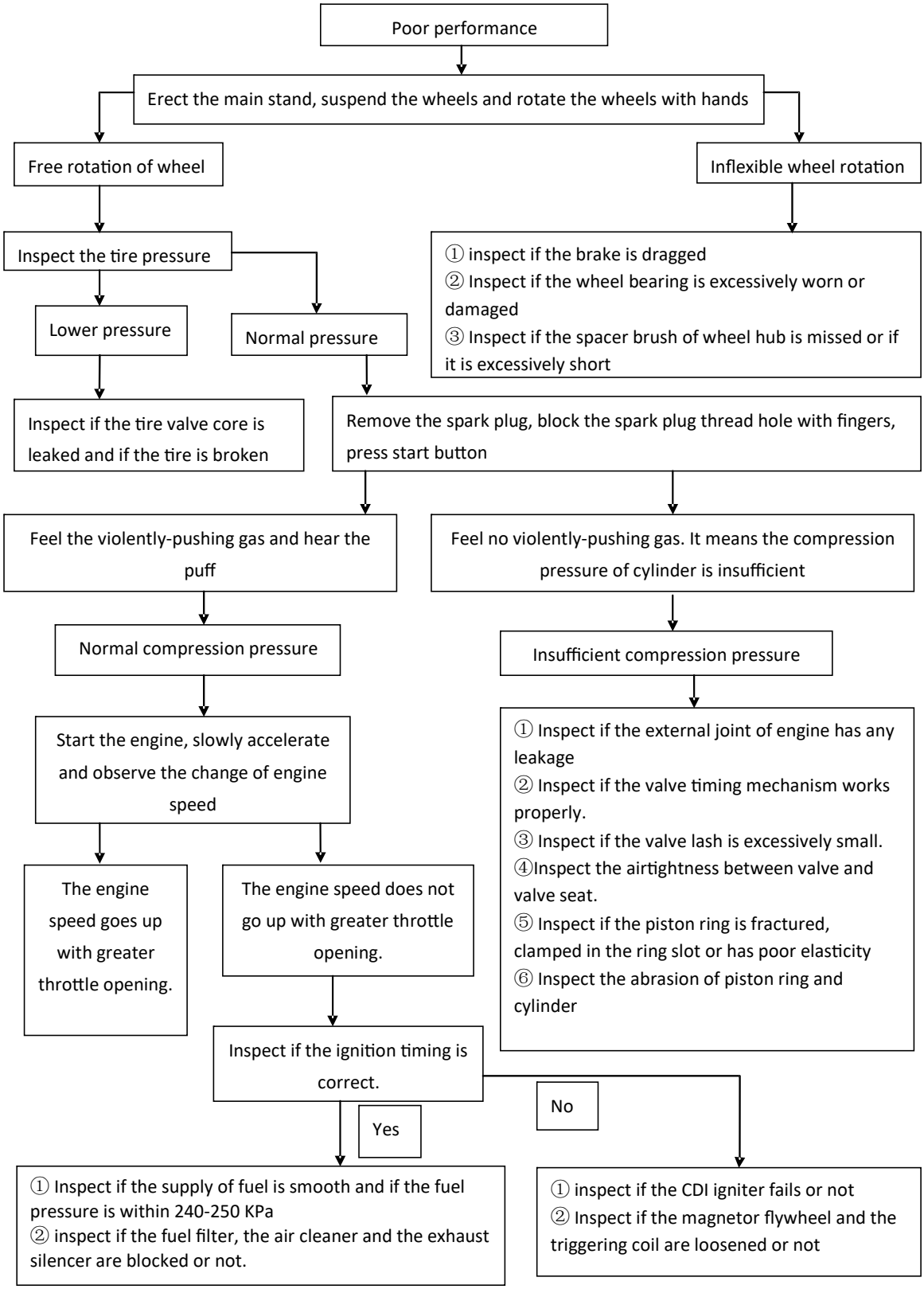
Engine Troubleshooting

The diagrams below outline procedures for troubleshooting engine anomalies.

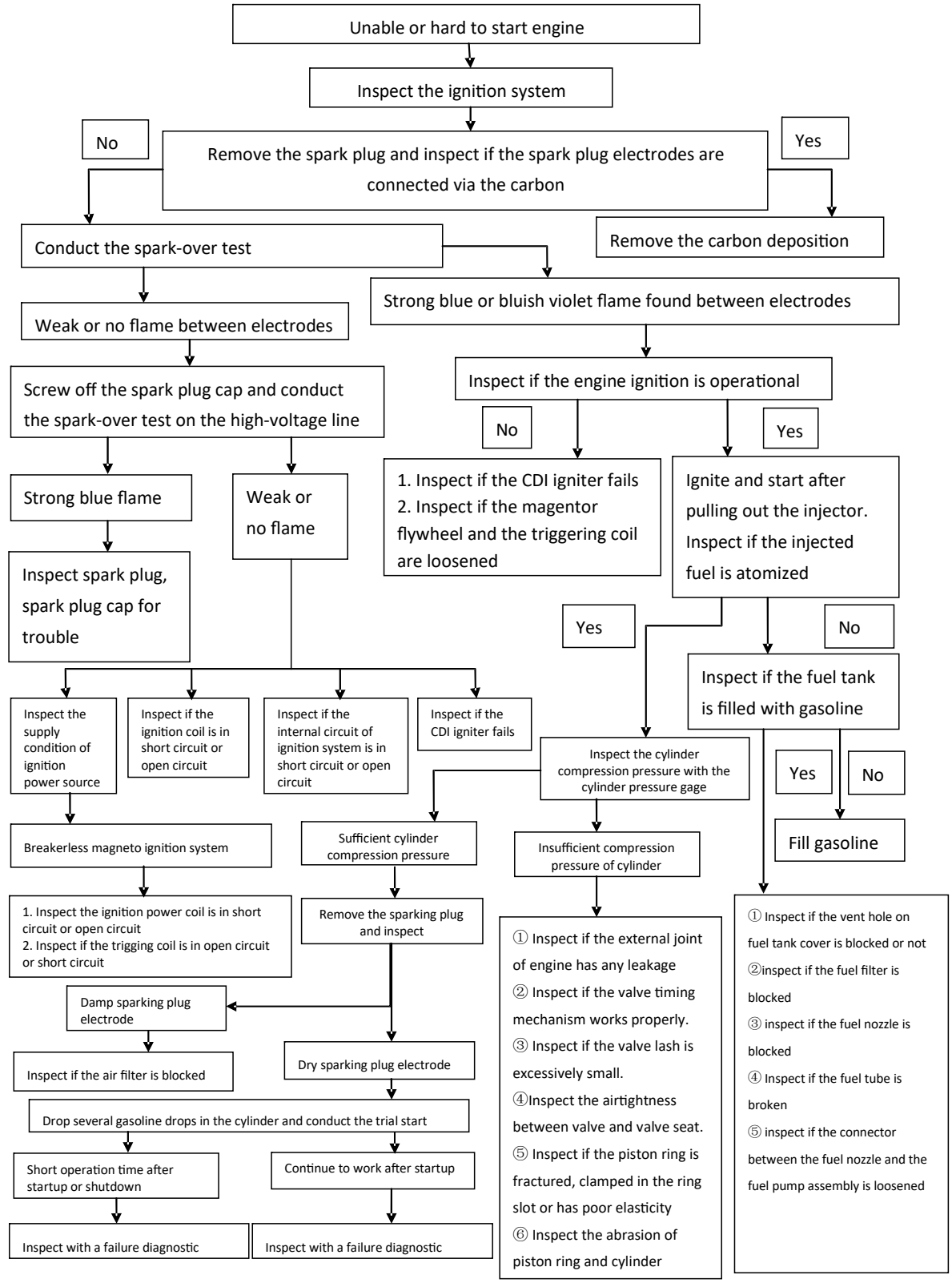
Engine diagnosis procedure: Engine idle speed.



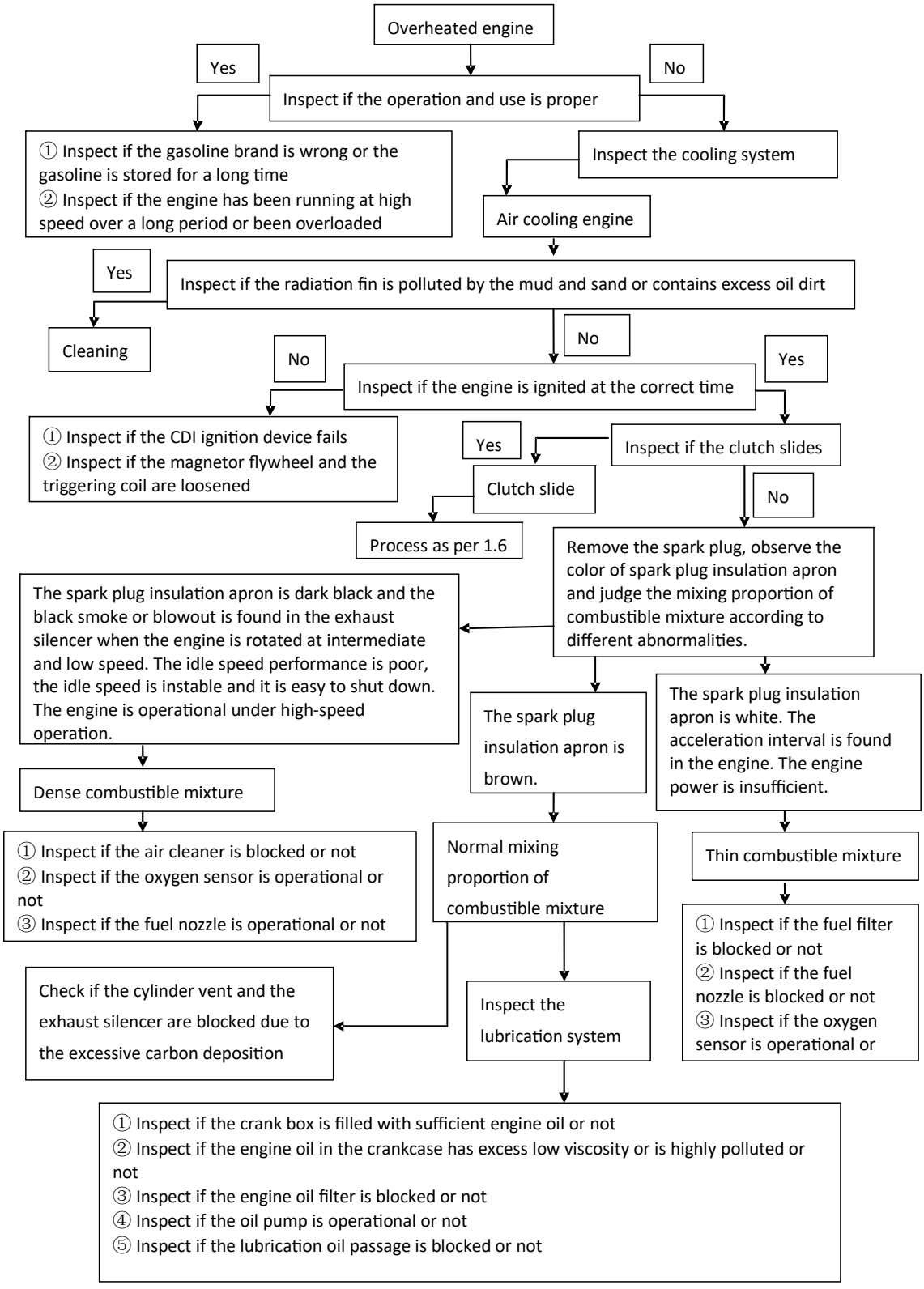
Engine diagnosis procedure: Poor engine performance.



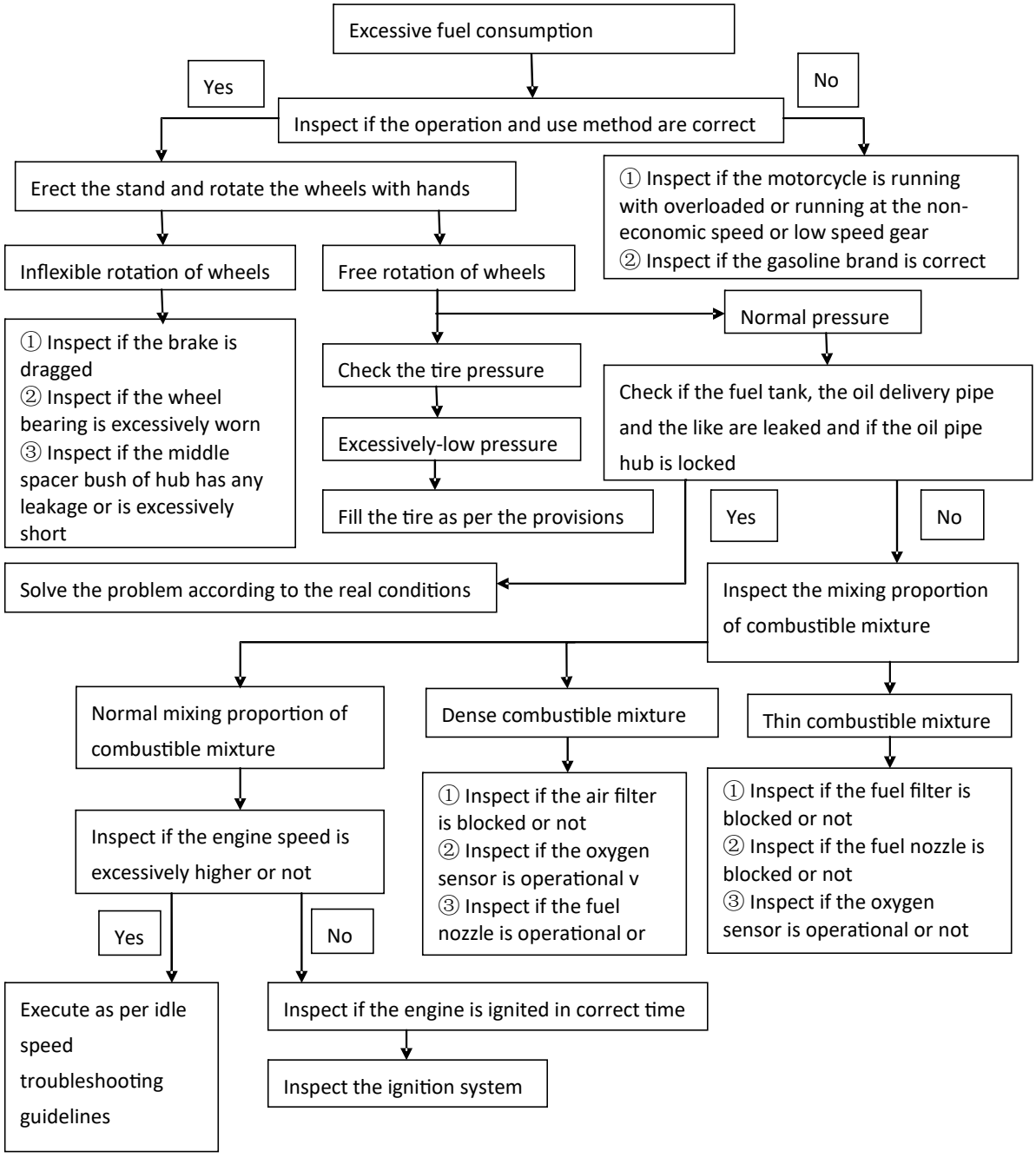
Engine diagnosis procedure: Difficult to start engine.



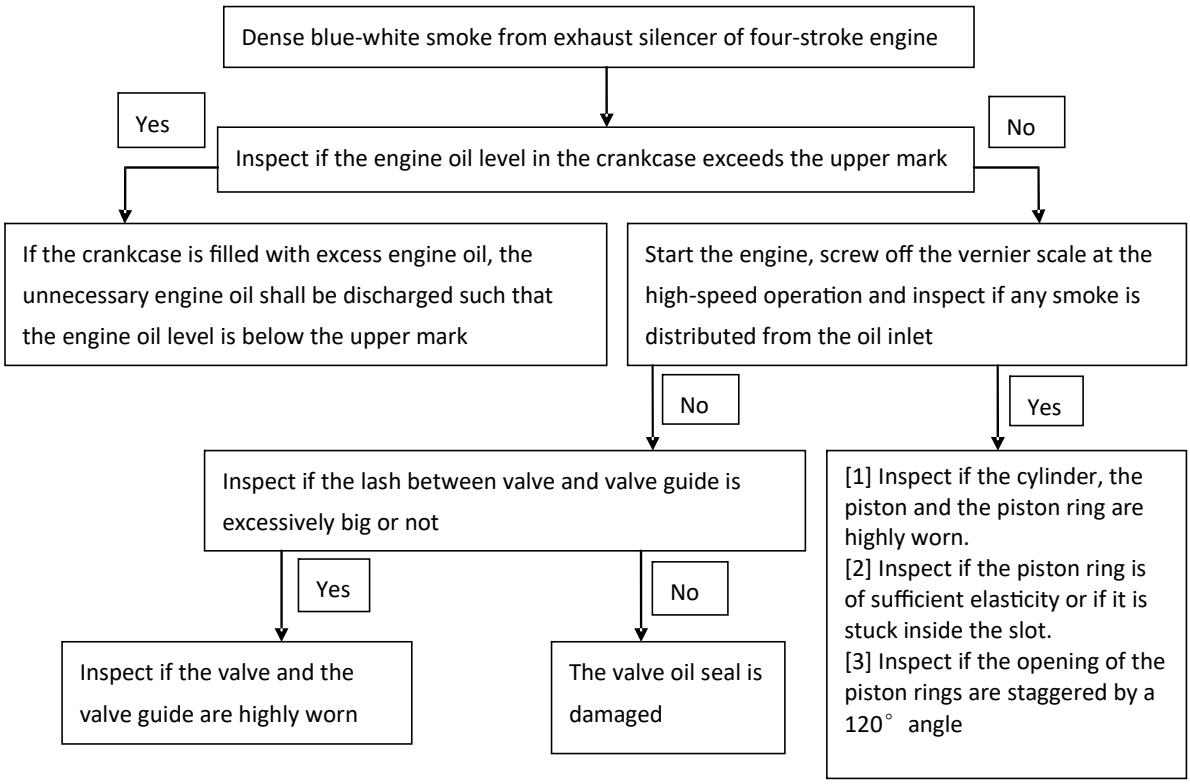
Engine diagnosis procedure: Overheated engine.



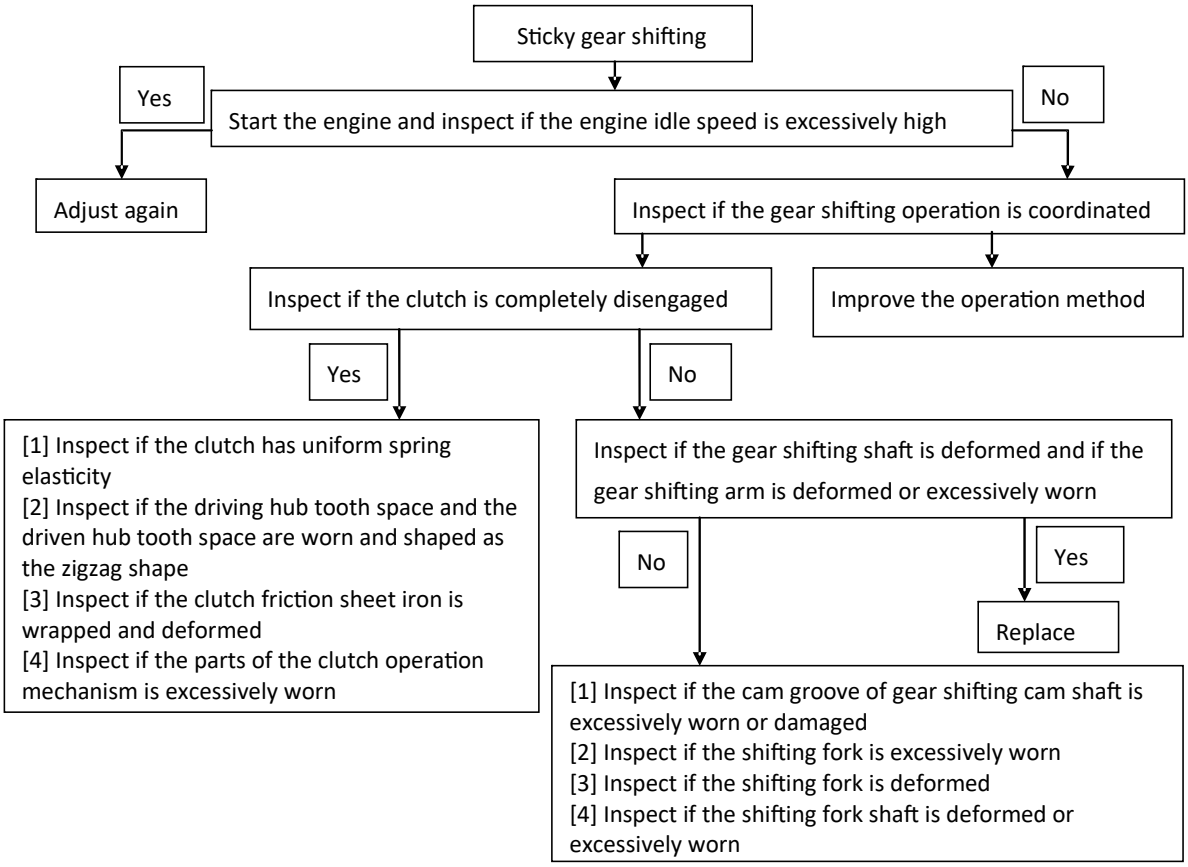
Engine diagnosis procedure: Excessive fuel consumption.



Engine diagnosis procedure: Smoke from exhaust.



Engine diagnosis procedure: Difficult gear shifting.



Fuel System

The fuel supply system consists of the fuel tank, fuel pump, fuel injector, fuel filter and fuel hoses. Controlled by the ECU, the fuel injector sprays appropriate atomized fuel into the engine. The fuel supply pressure is 250kPa. The fuel should be 87 octane gasoline or higher.

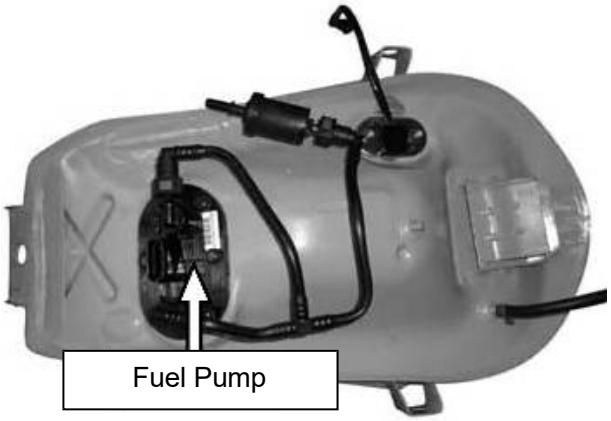
The fuel tank is stamped and welded from 0.8mm—l.0mm thick steel plate.

There is a fuel filler port on the top of the tank, and the tank has a locking cap.

The fuel tank capacity is 16L, or 4.2 gallons without any of the fuel tank's internal components installed (fuel pump and fuel gage sending unit). As assembled (with the fuel pump and the fuel gage sending unit), fuel capacity is 3.9 gallons.

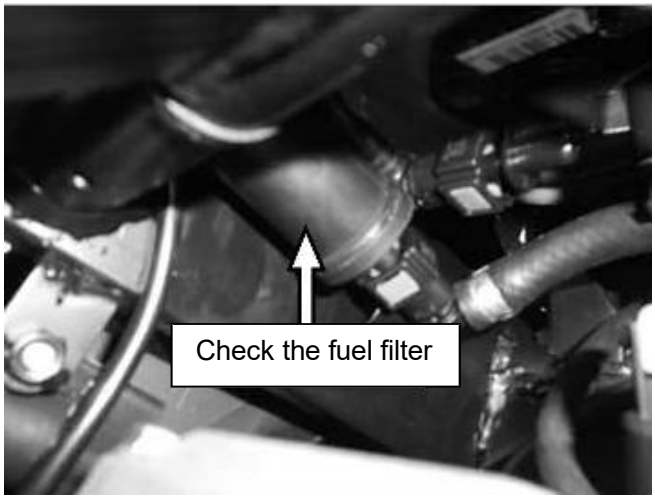
The fuel pump assembly consists of the fuel pump, fuel pump support, and fuel pressure regulator.

The fuel pump is turbo-type single-stage fuel pump driven by a 12V DC motor and controlled by the ECU through the pump relay. On the pump discharge, there is a check valve so that the fuel in the tube will not flow back to the tank when the engine is not working and engine starting will not be affected.



The fuel filter is between the electric fuel pump and the fuel injector to filter fuel and avoid the nozzle blocking.

If the filter is blocked, it must be cleaned or replaced.



Fuel System Maintenance

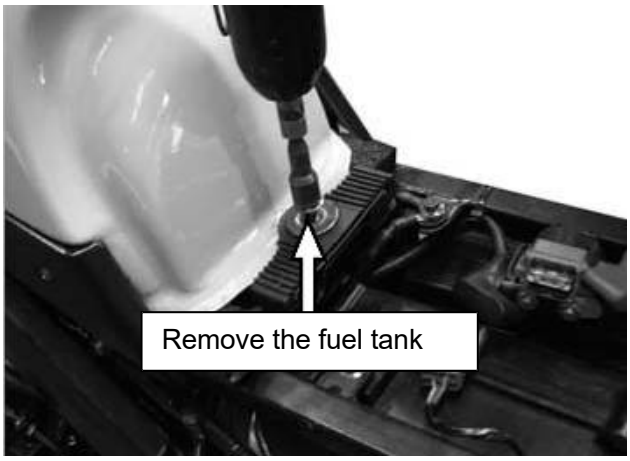
Warning

- Fuel is a combustible material. Smoking and open flames are strictly prohibited around any fuel system repairs.
- Shut off the engine and operate in a well-ventilated area whenever working on the fuel system.
- If there is fuel leakage from the fuel tank cap, the fuel tank cap seal must be replaced.
- Check for any fuel leakage from the tank. If there is leakage, the tank must be repaired or replaced.
- If the tank has any deformation due to the collision of external forces, such as pits, you can use a wood hammer to knock the pits up. If there are any cracks in the tank, you must replace the tank.
- When you replace the fuel lines or fuel filter, you must shut off the ignition switch to stop the fuel pump to avoid spilling fuel.
- Check for any fuel leakage or degradation in the fuel lines or if the fuel filter is blocked.
- If there is any fuel leakage or degradation in the fuel lines, the fuel lines must be replaced.
- When you drain the fuel, keep it away from combustion sources to avoid fire.
- Drain the fuel before removing the pump, and keep it away from the combustion source to avoid the fire.
- After being cleaned, the tank must be placed at a well-ventilated place to dry.

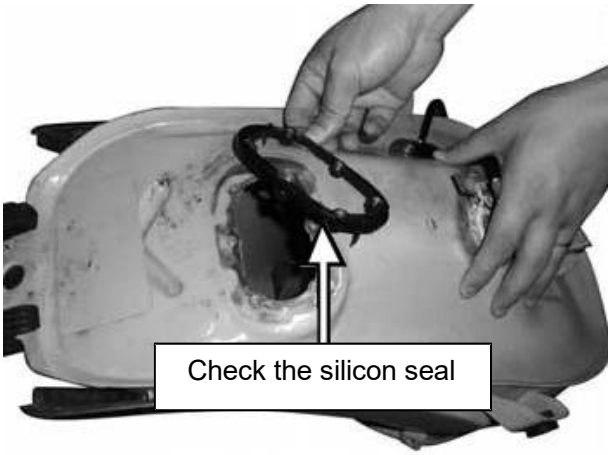
Remove the side covers and the seats. Then remove the fuel tank bolts and remove the fuel tank.

Remove the 6 M5×16 bolts from the fuel pump.

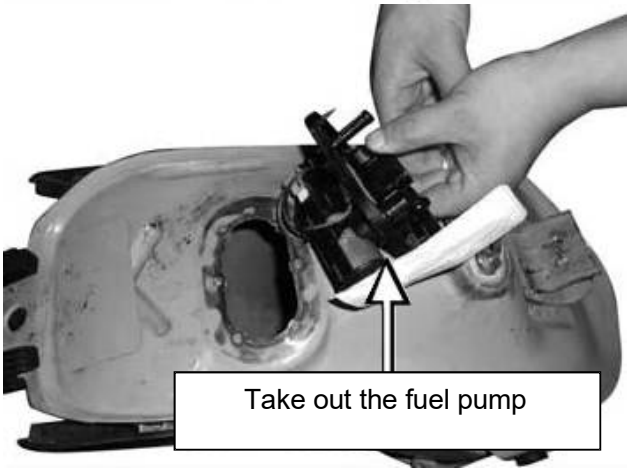
Remove the fuel pump. Use an appropriate cleaning agent to clear any fuel residue and water in the tank.



Check for any degradation, cracks or fuel intrusion in the silicon seal of the fuel pump. If there is, replace the silicon seal.



Check if the motor of the fuel pump works, and rinse or replace the fuel filter screen.



The fuel filter should be replaced every 5,000 miles, or more frequently if the motorcycle is operated in dusty conditions.

Electronic Fuel Injection System

The main function of the electronic fuel injection system is to atomize and inject fuel into the combustion chamber.

Fuel Injection System Operating Principles

The electronic fuel injection system consists of the ECU, injector nozzle, throttle valve assembly, intake air temperature, integration pressure sensor, engine temperature sensor,ignition coil, crankshaft position sensor, oil pump assembly and oxygen sensor.

The engine electronic fuel injection management system precisely controls the mixture ratio of air and fuel conducted into the engine cylinder, the combustion process and the exhaust gas conversion to optimize engine performance. The system controls also controls emissionlevels.

The ECU is a single chip-based microprocessor. The ECU recognizes working conditions of the engine after analyzing it through sensors installed on the engine and other locations. The ECU precisely controls the engine and corresponding systems.

The engine rpm and crank angle sensor is a magneto-electric sensor through which the system can determine the location and speed of the crankshaft.

The crank angle sensor, which is installed on the clutch cover of the transmission, works with the gear of the flywheel.

The MAP sensor is installed on the inlet pipe to measure the pressure. The ECU judges the air amount entered into the engine through this signal.

The MAP sensor consists of a sealed elastic membrane and a ferromagnetic core, both of which are placed precisely inside the coil. When it senses pressure, the MAP will generate a 0～5V output signal in direct proportion to input pressure.

The throttle plate position sensor, a linear variable resistor structure installed on the throttle valve body assembly, shares the same axle with throttle linkage and throttle valve and its slide end is driven by the throttle plate axle.

The resistance signal given to the ECU from the sensor varies from throttle opening to throttle opening. The system will judge the engine's real-time loading and dynamic change according to the output signal value and the rate of change, giving precise control to the engine.

The intake air temperature sensor is installed on the air intake system articulating pipe to detectthe air temperature entered into the engine, and it also adopts negative temperature coefficient thermistors as its sensing elements.

The air temperature change directly affects its density. Therefore, the intake air temperature sensor is one of the most important parameters to calculate the actual air amount entered into the cylinder.

The injector nozzle is structurally an electromagnetic switch. Two poles of coil are connected to the ECU with engine wiring harness, and the coil, controlled by the ECU, will generate magnetic force against spring force after being energized; the magnetic force will disappear and the injector nozzle will shut down after the power being cut off.

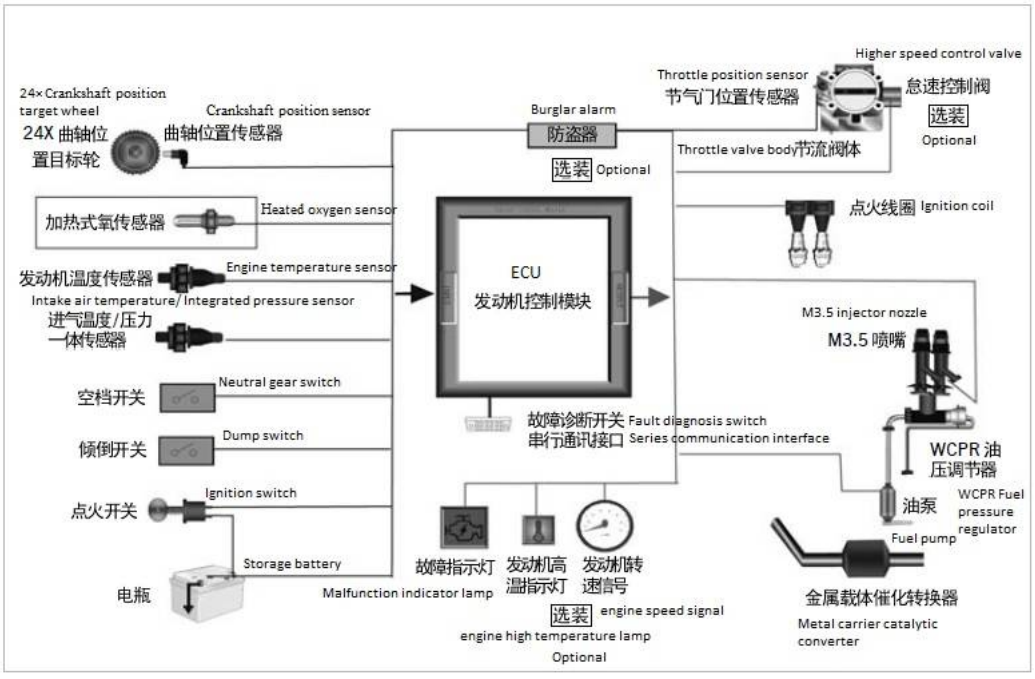
The top end of fuel injector, which uses a rubber seal ring, along with the fuel rail connector forms reliable pressure fuel seal; the lower end uses a rubber seal ring as well, and it forms an air seal along with the engine inlet pipe. The injector nozzle injects fuel to the inlet valve.

The throttle valve body, installed in front of the inlet pipe, consists of the valve body, throttle plate position sensor, idle control valve etc. with a main function of controlling the air input when the engine is in working condition. It is the channel for dialogue between the electronic control system and the driver.

The oxygen sensor is installed on the engine exhaust pipe, and is an important part of the closed loop fuel control system.

The main sensitive material of the oxygen sensor is cobalt oxide. It becomes active after being heated by exhaust gas with a temperature over 300°C. When this occurs, oxygen ions will move through the cobalt oxide to reach the external electrodes. The cobalt oxide parts will sense the oxygen content in the engine exhaust, changing its output voltage value accordingly.

The oxygen sensor uses Teflon-insulated wires and preformed elements made of stainless steel. Reference air is input through these wires. As the air-fuel ratio in the engine combustor becomes thinner, the oxygen content in the exhaust will become higher and the output voltage of the oxygen sensor will become lower; conversely, the output voltage value will become higher, thus giving the ECU feedback about the engine air-fuel ratio.



Electronic Fuel Injection System Troubleshooting

The RX3 electronic fuel injection system is adjusted before it leaves the factory.

A malfunction indicator light is fitted on the motorcycle instrument cluster. When starting the engine, the light will illuminate and then extinguish. If a malfunction occurs, the light will flash.

If any malfunction occurs in the electronic fuel injection system, you can check the system by using the diagnostic tester. Please contact CSC Motorcycles at (800) 884-4173 if you wish to purchase or rent the diagnostic tester. Replace any parts shown to be malfunctioning. Additionally, you should:

- Check if the wire connections are intact.
- Check if the voltage is above 9V.
- Check if the fuel hoses are in good condition. If any of the fuel hoses are blocked, kinked, or otherwise damaged, replace the hose.

Fuel System Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Fuel tank	Rusty tank body	Water intrusion	Fuel leakage, clogged fuel filter	Repair or replace the tank
	Fuel supply impeded	Fuel cap vent clogged	Starting failure, engine stalls	Clean air vent
	Deformed tank	Impact	Poor appearance	Repair or replace tank
Fuel pump	Fuel supply impeded	Filter screen blocked	Starting difficulty, insufficient power, unstable idle speed	Clean filter
	Fuel supply impeded	Fuel pump blocked	Starting failure	Clean or replace fuel pump
	Fuel supply failure	Fuel pump doesn't work	Starting failure	Replace fuel pump
	Fuel return failure	Fuel pressure regulator blocked	Cracks of fuel pipe	Clean or replace fuel pump assembly
	Fuel pressure regulator always on	Low fuel supply pressure	Starting difficulty or failure, insufficient power, unstable idle	

Intake and Exhaust System

The air intake system consists of the air cleaner, the inlet pipe, and other related components. The main functions are to conduct air, to filter air, and to reduce intake noise.

Air Filter Maintenance

You should clean the air filter every 2,500 miles, or more often if you ride in dusty environments.

The air filter is located beneath the seat. To gain access, remove the seats. The rear seat is removed with the ignition key in the left side body panel and the front seat is secured with two bolts at the rear.

Remove the left side body panel. Once the body panel has been removed, hold the electrical harnesses away from the cover to gain access to the five screws securing it. Take care not to pull on the harnesses, as this can break the electrical connections. Remove the five screws securing the air filter cover and remove the cover.



After removing the air filter cover, remove the air filter element subassembly by pulling it out.


The air filter element subassembly consists of four pieces (the lower screen, the filter element, the upper frame, and the screw that holds these three items together. Remove the screw to separate the four pieces.



The air filter element is a serviceable item. We recommend cleaning the air filter element with Maxima Air Filter Cleaner, and then applying a light coat of Maxima Air Filter Oil. You can purchase these items from us by calling (800) 884-4173.

After repeated cleanings, or when the air filter element ages, it will ultimately need to be replaced. If you need replacement air filter elements, call CSC for a replacement element.

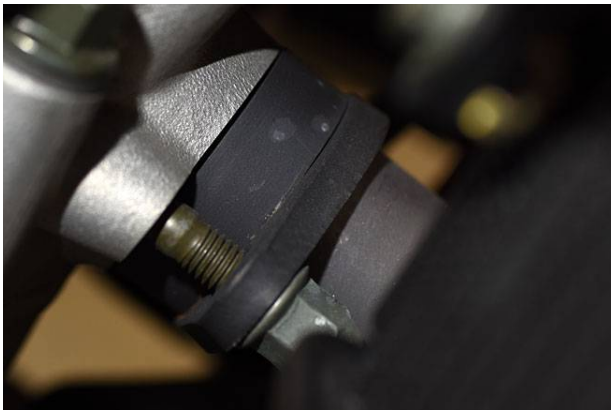
After cleaning and oiling the air filter element (or replacing the air filter element), reinstall the air filter subassembly in the motorcycle and reinstall all components.

Do not ride the motorcycle without the air filter element installed.

Exhaust System

The exhaust system consists of the exhaust pipe, the muffler, heat shields on the muffler and the exhaust pipe, a gasket, and related mounting fasteners. These components are shown in the photos below.






The exhaust system functions are to discharge exhaust gas, to reduce noise, to eliminate flames or sparks from the exhaust, and to assist in the emissions control process. The muffler contains an integral catalytic converter. The exhaust pipe is made of a curved steel tube. It transports exhaust gas from the engine to the muffler.

To remove the exhaust system, remove the fasteners from the muffler, the exhaust pipe, and the muffler support. Check the muffler suspension support for any cracks and repair or replace if necessary. Check the exhaust muffler seal and replace it if necessary. Check the muffler for any cracks or other damage, and repair or replace it if necessary.

Do not operate the motorcycle without the muffler. Install a new seal washer when assembling and disassembling the muffler.

Intake and Exhaust System Troubleshooting

Intake and exhaust system troubleshooting and maintenance actions are shown below.

Intake and Exhaust System Troubleshooting and Maintenance

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Intake system	Hard starting, low power	Excessive dust on the air cleaner element	Poor performance, poor idling, excessive fuel consumption, dark smoke exhaust	Clean or replace the air cleaner element
	Excessive intake noise	Cracks or chaps on the air cleaner shell	Poor performance, excessive intake noise	Replace the air cleaner shell
Exhaust system	Excessive exhaust noise	Cracks or openings in exhaust system	Poor performance, excessive noise	Replace defective components

Cooling System

This section of the Service Manual addresses the cooling system on your RX3 motorcycle.

The RX3 is liquid cooled (the motorcycle uses an ethylene glycol and water mix). The motorcycle has two radiators and two fans.

When the motorcycle is running, you can see your bike's operating temperature on the right side of the instrument cluster.

Anything below the max bar is acceptable. In the photo shown here, we were riding through Joshua Tree National Park on a very cold day, and the temperature indicator never got above two bars. On warm days, when stopped in traffic, or when climbing hills, the temperature indicator will go up to three or four bars. It's normal.

Warnings

- Only work on the cooling system when the engine is cold.
- When opening the radiator cap, always cover the radiator cap with a cloth and open it slowly to prevent being scalded by escaping hot fluid.
- Always immediately wipe up any spilled cooling fluid.
- Only use a quality 50/50 ethylene glycol/distilled water cooling fluid with corrosion inhibitors

intended for use in aluminum engines.

The RX3 cooling system consists of the following components:

- Two radiators located under the fuel tank.
- Two fans (one for each radiator).
- Hoses connecting the radiators and the engine.
- A water pump.
- Cooling fluid. The system coolant capacity is 1.0 liter.
- A temperature sensor (located on the bottom of the left radiator).
- An overflow container located to the left of the right radiator.
- A thermostat located on the top right of the cylinder (it's where the cooling system hose attaches to the engine).

Your RX3 motorcycle has a high performance aluminum engine and it needs a cooling fluid designed to work in this kind of engine. Use only cooling fluid designed for high performance aluminum engines.

CSC stocks approved Coolanol by Maxima, a cooling fluid that is the right one for these engines.

Please call us at (800) 884-4173 if you wish to purchase coolant fluid.

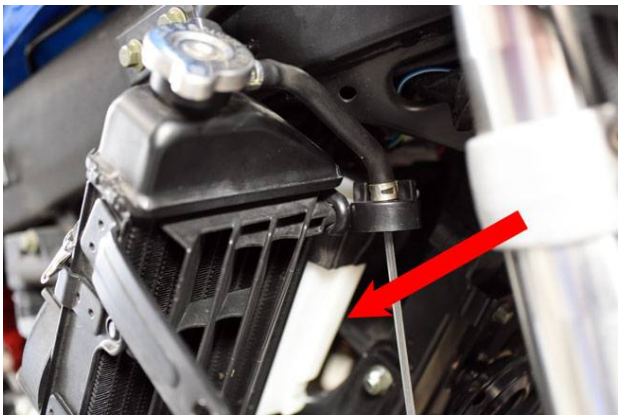
Access to the coolant system is provided via the radiator cap on top of the right side radiator. As mentioned above, when opening the radiator cap, always place a rag over it and open it slowly.

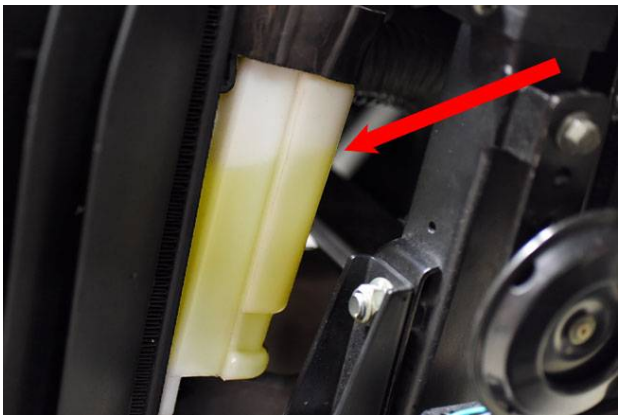
Checking and Adjusting Cooling Fluid Levels

In this section of the Service Manual, we show the RX3 with all of the right side body panels removed.

You can get to the radiator cap and the overflow container without removing the right side body panels. Turn the forks to the left to gain more access to the right side radiator and overflow container. It's easier to get to the overflow container from underneath the bike.

Check the coolant level in the overflow container. The overflow container should show a fluid level between the top and bottom of the container. It is normal for this level to vary as the motorcycle is operated and when the motorcycle is turned off. If you need to add fluid to the overflow container, unscrew the overflow container's twist top. Use a funnel to avoid spilling fluid.





When the engine is cold, the coolant level should not be below the lower mark on the coolant reservoir; when the engine is hot, the coolant level should not be above the upper mark on the coolant reservoir.

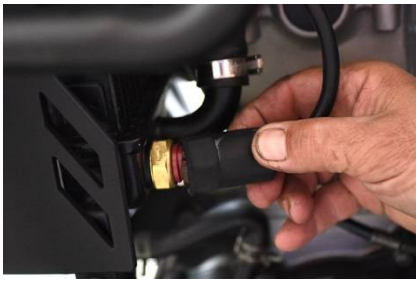
Check the cooling fluid level in the radiator. Use caution opening the radiator cap, and only open it when the engine is cold. The fluid level should be even with the bottom lip in the radiator when the radiator cap is opened, as shown below.

Flushing and Replacing the Cooling Fluid

Flush and replace the cooling fluid every 2 years. Open the cooling system drain plug on the right side of the engine just beneath the water pump (it has a copper gasket beneath the bolt head).


Allow the cooling fluid to completely drain from the right radiator. Move the bike to a completely vertical orientation to allow the radiator to drain completely.

Next, drain the left radiator. Place a drain pan underneath the left radiator. Remove the electrical plug from the temperature sensor, unscrew the temperature sensor, and allow the cooling fluid to drain from the radiator. Immediately wipe any spilled cooling fluid from the motorcycle.



Note that the temperature sensor has a rubber gasket to form a seal between it and the radiator.

Take care not to damage this seal when removing and reinstalling the sensor.

At this point, all cooling fluid should have drained from the motorcycle.

Reinstall the cooling fluid drain plug (just beneath the water pump) and the temperature sensor.

Add one liter of new cooling fluid to the radiator. Use a funnel to prevent spilling cooling fluid on the engine, and again, immediately wipe up any spilled cooling fluid.

As you are adding cooling fluid, you will notice that the radiator will not take the entire liter of cooling fluid. That's because the cooling fluid needs to flow to the other radiator, the hoses, and the engine.

When the right radiator fills to its neck, and with the radiator cap off, start the engine and allow it to run such that cooling fluid is pumped to the engine and the left radiator. Burp the system by gently squeezing the cooling system hoses to move fluid through them.

Shut the engine off and add more cooling fluid to the right radiator.

Repeat this process until the cooling system is full. When you are done, the cooling fluid should be even with the lower lip inside the right radiator opening. Replace the radiator cap on the right radiator.

Start and allow the motorcycle to run for several minutes to make sure the cooling system is operating normally.

Next, remove the cap from the overflow container. Add cooling fluid to the overflow container such that the container is approximately half full. Remember that this is a reservoir and the cooling system will pull from the overflow container and return cooling fluid to it.

Cooling System Troubleshooting

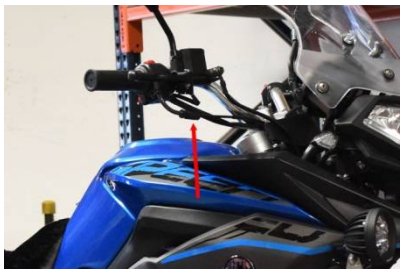
Cooling system troubleshooting and maintenance are summarized in the table below.

Cooling System Troubleshooting and Maintenance

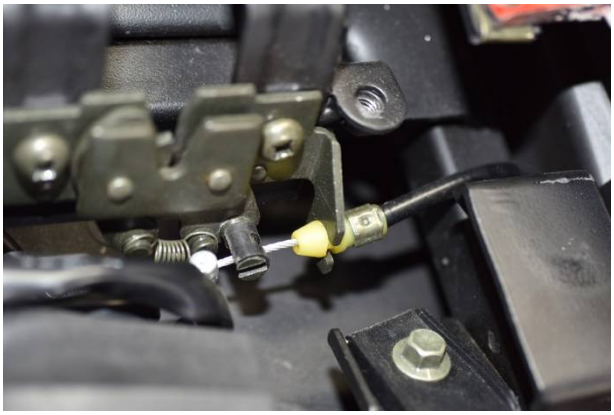
Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Leaking cooling fluid	Fluid leakage	Defective hose or hose connection, defective radiator, defective thermostat, defective water pump, defective temperature sensor	Lowered cooling fluid levels, potential overheating	Identify source of leak and replace or repair defective component.
Overheating	Temperature gage at maximum	Defective thermostat, cooling fluid leaks, radiator plugged, ran inoperable, running engine for long periods without motorcycle movement	Overheating, potential engine damage	Check for leaks and repair, check cooling system operability, shut off engine

Control Cables

The CSC RX3 uses three control cables. These are the clutch cable, the throttle cable, and the rear seat release cable. The clutch and throttle cables are shown below.


Access to the rear seat release cable requires removal of the rear seat with the ignition key in the release lock on the left side of the motorcycle, removal of the plastic tray covering the electrical components beneath the rear seat, and removal of the left side body panel.




There is no adjustment for the rear seat release cable.

The throttle cable should be adjusted such that there is 2 to 5 degrees of free rotation before the throttle is actuated. This accomplished through use of the adjustment mechanism underneath the right handlebar.

Cable Troubleshooting

The table below summarizes cable troubleshooting and maintenance actions.

Cable Maintenance and Troubleshooting

Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Rear seat cable	Rear seat does not release	Rear seat cable disconnects, rear seat cable seizes in sheath, rear seat cable breaks, rear seat cable not connected	Cannot release rear seat	Inspect and lube or replace rear seat cable
Clutch cable	See Clutch section of this Service Manual			
Throttle cable	Throttle has no free play, idle speed too high, throttle does not work	Seized or sticking throttle cable, throttle cable adjustment incorrect, throttle cable snaps	Throttle does not operate, throttle sticks open	Replace or adjust throttle cable

Instruments

The motorcycle instruments show the working condition of the motorcycle. The instrument cluster contains the following instruments:

- Analog tachometer.
- Digital speedometer.
- Gear indicator (will show no gear indication when bike is in neutral).
- Fuel gage.
- Temperature gage.
- Trip meter.
- Odometer.
- Clock.
- Push button to toggle between kilometers and miles.
- Push button to toggle between trip meter and odometer.

The instrument layout is shown in the photograph below.

Other than replacing the indicator light bulbs, the instruments are not designed to be repairable. If any of the instruments fails, the instrument cluster must be replaced.

Although the fuel tank capacity is 4.2 gallons, the fuel level should never go below 1.0 gallon remaining in the fuel tank (this remaining fuel serves to cool the fuel pump). When the fuel tank should be refilled, an orange indicator light on the right side of the instrument cluster will also illuminate. The fuel gage is

calibrated to show that the fuel tank is empty when there is still a little more than a gallon remaining in the fuel tank.

Instrument Troubleshooting

Instrument maintenance actions are summarized in the table below.

Instrument Maintenance and Troubleshooting

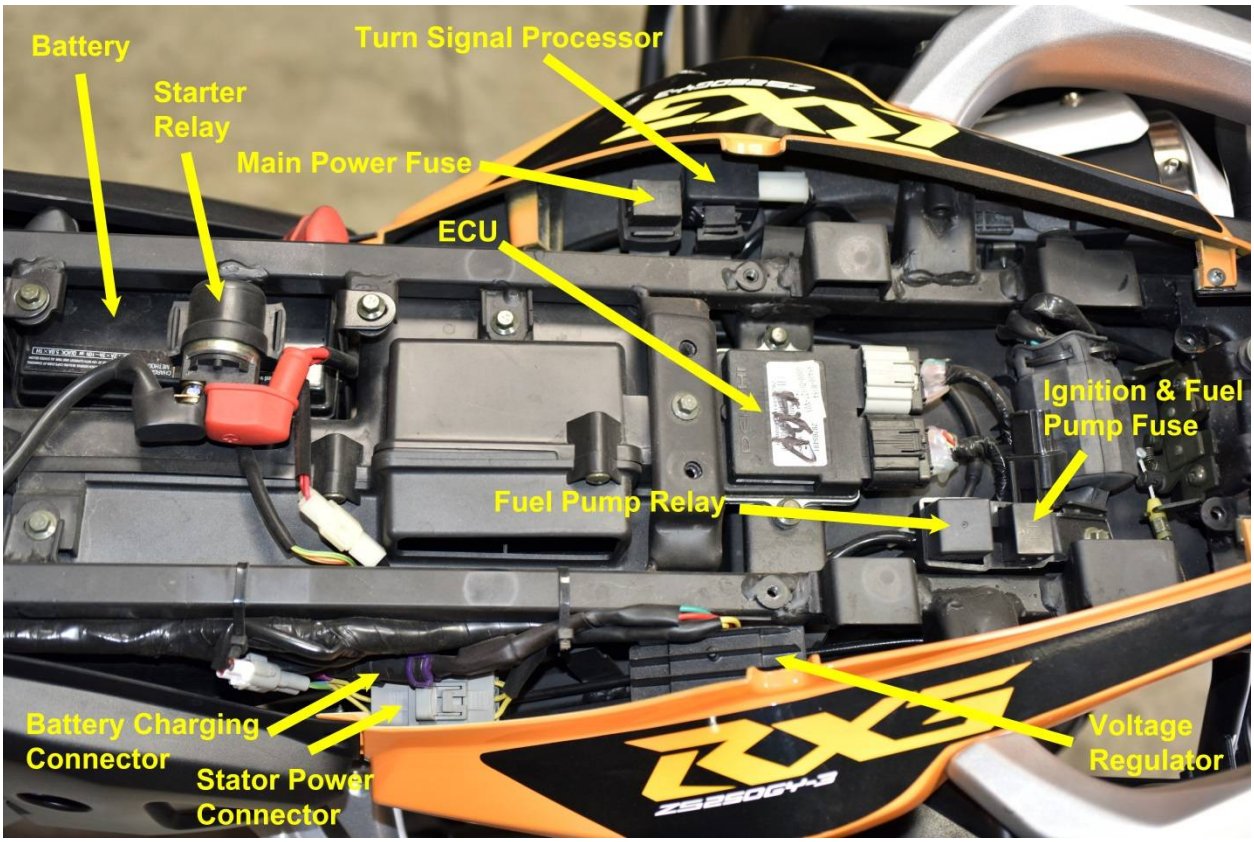
Item	Symptom	Cause	Vehicle Effect	Maintenance Action
Instrument assembly	Instrument lights do not illuminate	Disintegration of indicator lamp filament, no signal to lamp	Indicator lamp not visible	Replace indicator lamp, check signal to lamp
	No digital readout or tachometer output	Damaged speedometer or tachometer, no signal to instruments	No digital readout, no tachometer indication	Replace instruments, check signals to instruments

Electrical System

The function of the electrical system is to supply electric energy for starting and running the motorcycle. The electrical system consists of power supply parts, power utilization parts, and control parts. The power supply system consists of the stator and battery. When the engine drives the stator to reach a certain speed, the stator will output electrical energy. This energy powers the electrical equipment and charges the battery. The battery uses its stored energy for starting, illumination, signaling, and other purposes. The power utilization portion of the electrical system uses electrical energy for lighting, starting, signaling, accessories, and applications. The control portion of the electrical system consists of the electronic control unit (ECU), the rectifier, the starter relay, the fuse, the control switch gear, and the main electrical harness.

Your motorcycle has a 300-watt stator, a 12V lead acid battery, a main harness to conduct electrical energy to various motorcycle components, a regulator, connectors, flashers, an ECU for controlling engine functions, a starter motor, fuses for overload protection, and other components.

Most of the motorcycle's main electrical components are located beneath the rear seat. After removing the seats and the plastic cover beneath the rear seat, the components are accessible. The electrical component locations are identified in the photo below.



Note that the manufacturer moved the regulator location in early 2015 from under the left rear body panel to a new location under the left forward body panel. This is shown in the photos below under the Electrical Components Location section.

Battery and Battery Installation

The battery is located under the seat on the right side of the motorcycle. It is accessible by removing the right body panel underneath the seat. It is not necessary to remove the seat to gain access to the battery. It will be easier to work around the battery, however, if you remove both seats.

The red harness is the positive side of the motorcycle electrical circuit; the black terminal is the negative side of the motorcycle electrical circuit.

When installing a new battery, add acid to the cells. Prior to installing the caps, charge the battery with a battery charging device with a charging rate that does not exceed 2 amps. We recommend using a Battery Tender charging device for this initial charge. We further recommend using the Battery Tender charging device to keep the motorcycle battery charged when the motorcycle is not in use for an extended period of time, as this will extend battery life. If you wish to purchase a Battery Tender, please contact CSC at (800) 884-4173.

After the battery is fully charged, install it in the motorcycle. The battery should be oriented so that the positive terminal faces the rear of the motorcycle, and the negative terminal faces the front of the motorcycle. Connect the red cable to the positive terminal, and the black cable to the negative terminal.

Secure the rubber retention strap around the battery, and reinstall the body panel.

Accessories Connections

The CSC RX3 has two 12V electrical accessory outlets under the seat on the left side of the motorcycle. These are controlled by the right handlebar accessories switch. In the O position, no power is provided to the accessories outlets. In the A1 position, power is provided to one of the accessory outlets; in the A2 position, power is provided to the other accessory outlet.

The RX3 motorcycle requires 160 watts for normal operation. 140 watts are available for accessories beyond those provided with the motorcycle. You should make sure that the total electrical load for all accessories does not exceed 140 watts.

Electrical System Components and Locations

The control system includes the regulator, a flasher relay, a starter relay, an LED relay, two fuse sets (two 20A fuses for the battery power circuit and two 15A fuses for other electrical components), control switches, the main harness, connectors, lights, the horn, and other parts. These components and their locations are primarily located beneath a cover under the rear seat. To gain access to these components, remove both seats. Then remove the black plastic cover beneath the rear seat. It is secured by four bolts.

All electrical components, their location, and a photograph of each are provided in below.

The voltage regulator is located on the left frame beneath the left forward body panel.

The plastic pan under the rear seat covers many of the electrical systems components, as will be seen below.

The ECU controls the fuel injection system and engine electrical management.

It is located directly beneath the cover under the rear seat.

The starter relay is located under the rider's seat to the left of the battery.

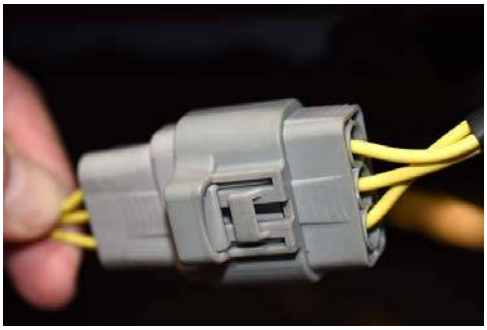
This electrical connector is located under the rider's seat outboard of the left side of the frame. This circuit provides energy from the voltage regulator to the battery.

If this connector is not mated properly, the motorcycle will not charge the battery.

This electrical connector is the main electrical connector from the stator to the voltage regulator.

It is located under the rider's seat outboard of the left side of the frame.

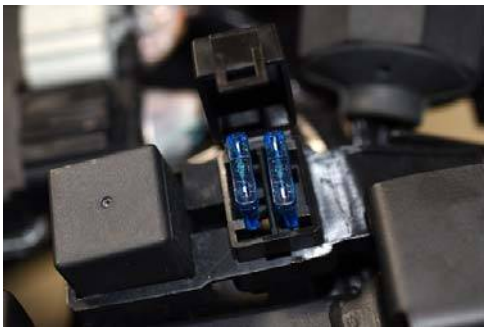
If this connector is not mated properly, the motorcycle will not charge the battery.



This is the relay that controls power to the fuel pump.

It is located under the plastic cover under the passenger seat, inboard of the frame, in front of the 15A fuse box on the left side of the motorcycle.

The motorcycle's two 15A fuses are in a fuse box located under the plastic cover under the passenger seat, inboard of the frame, on the left side of the motorcycle. One fuse is a spare; the other is the fuse for the ignition and the fuel pump.



The motorcycle's two 20A fuses are in a fuse box located under the plastic cover under the passenger seat, inboard of the frame, on the right side of the motorcycle. One fuse is a spare; the other is the fuse for between the battery and the rest of the motorcycle. If this fuse is open, no power is provided to anything on the motorcycle.

This small processor controls the motorcycle's turn signals.

It is located under the plastic cover under the passenger seat, inboard of the frame, on the right side of the motorcycle behind the main fuse.

The horn is attached to the frame behind the headlight.

The left side switches are located on the left handlebar.

These switches operate high/low beam, the turn signals, the emergency flashers, the high beam flash, and the horn.

The right side switches are located on the right handlebar.

These switches operate the accessory outlets, the starter button, and the kill switch.

The ignition switch is located immediately forward of the upper fork yoke.

The headlight is located at the front of the motorcycle.

The taillight and brake light are located at the rear of the motorcycle.

The turn signals are located on the left and right sides of the motorcycle.

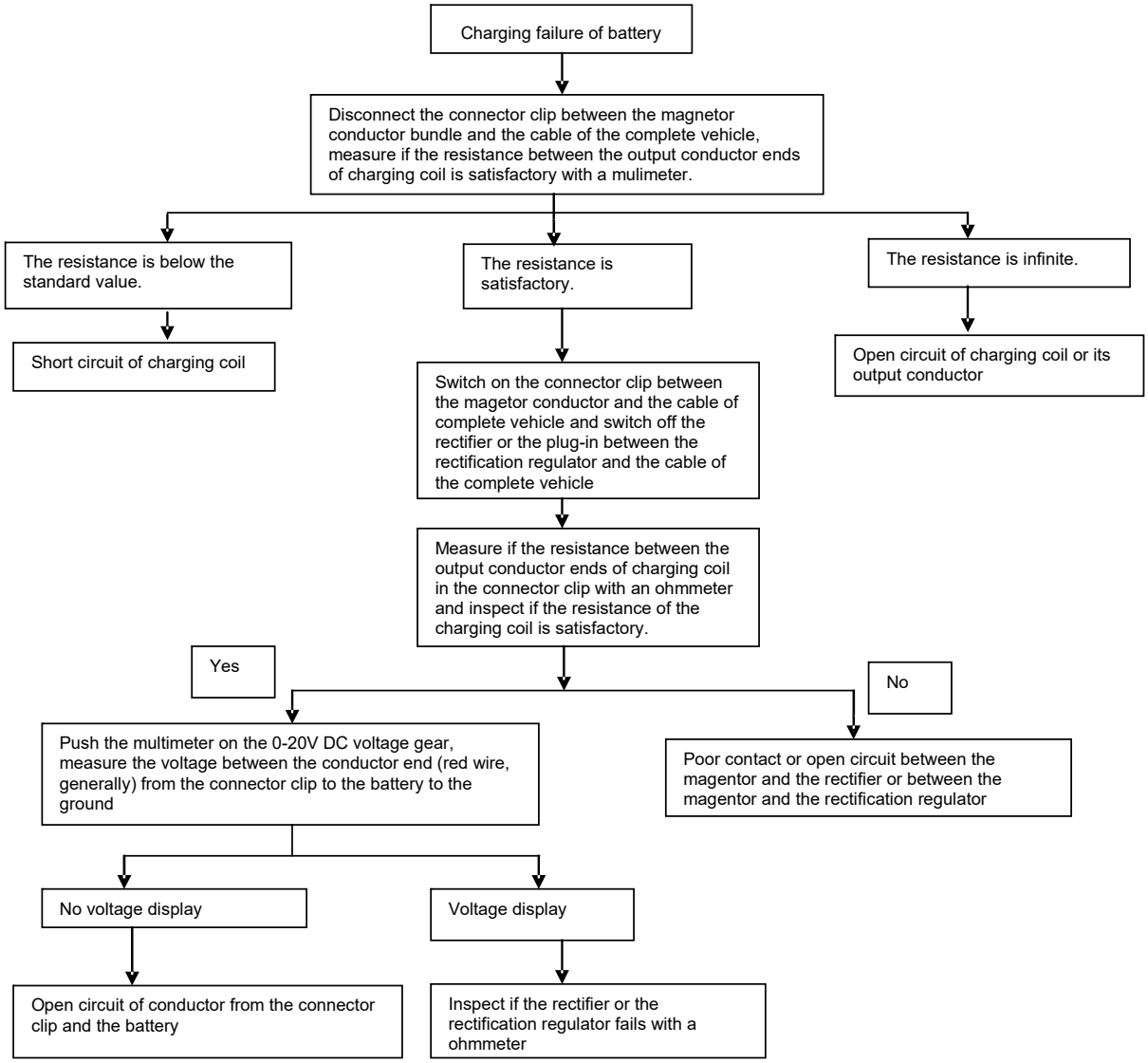
The starter motor is located immediately behind the cylinder on top of the engine case.

The illumination and signal devices consist of headlamp, the turn signals, the tail light, the brake light, a license plate light, the instrument illumination lamps, and a horn. These are used for indicating the vehicle status for the driver and others, and for expressing driver intent via acoustical and visual signals.

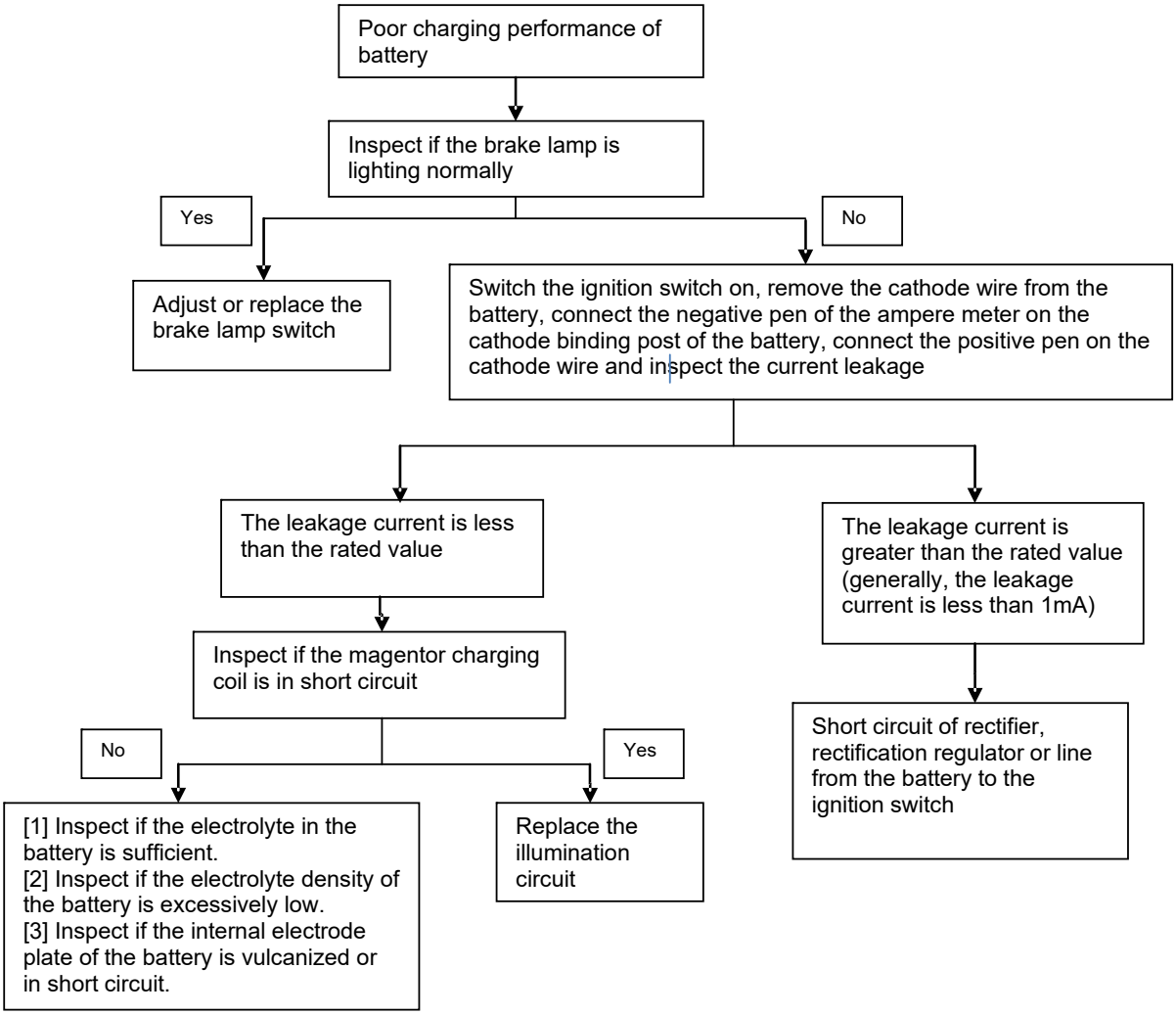
Electrical System Troubleshooting

Troubleshooting flow charts for electrical system problems are provided below in the following pages.

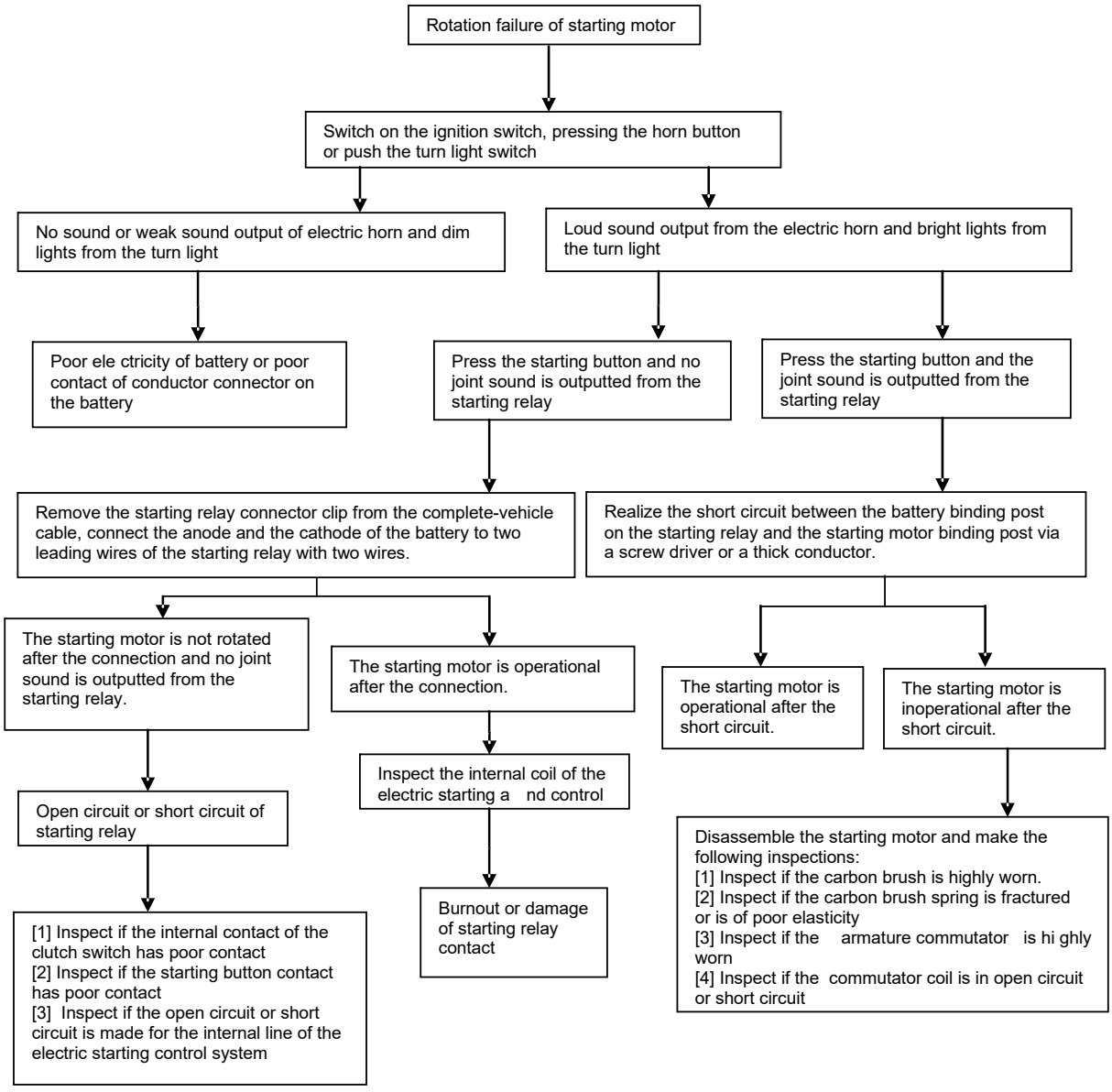
Troubleshooting procedure: Battery charging.



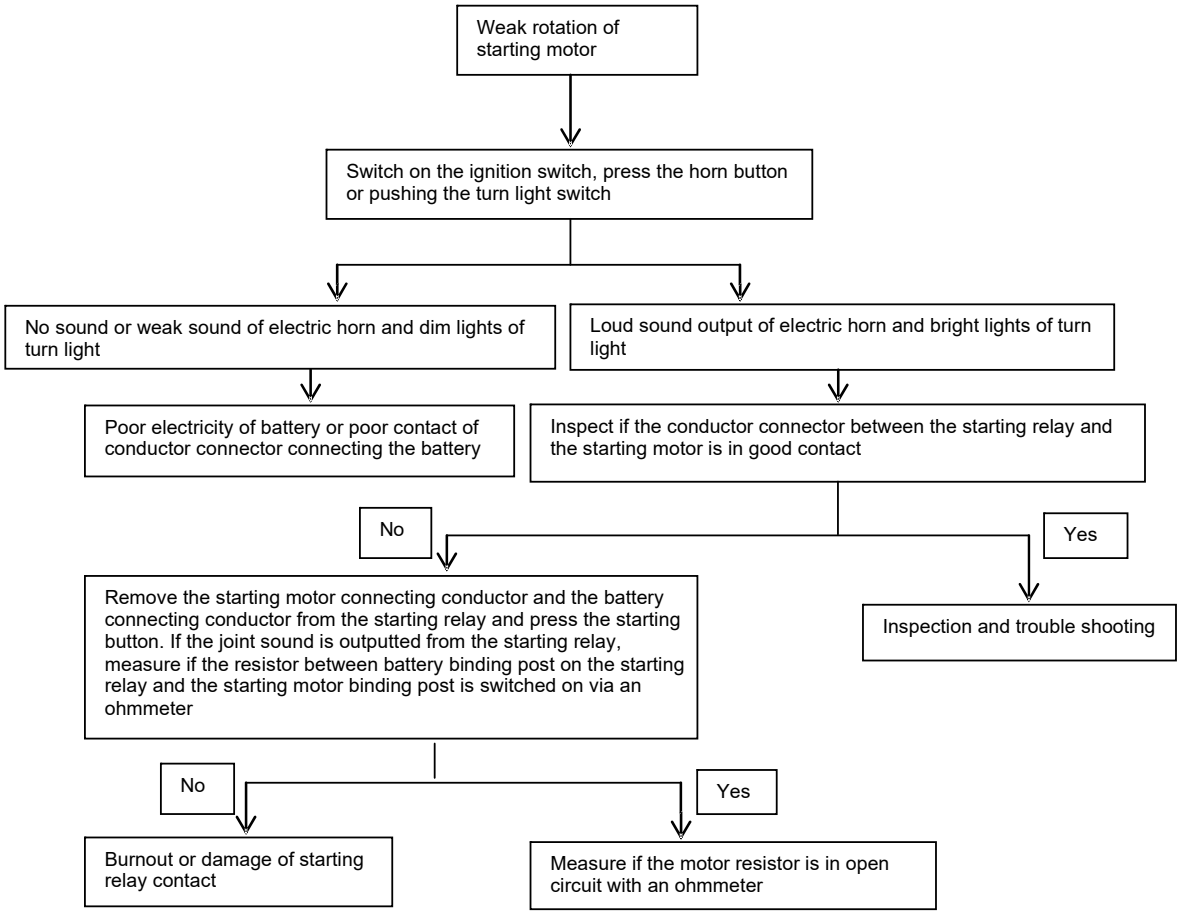
Troubleshooting procedure: Poor battery charging performance.



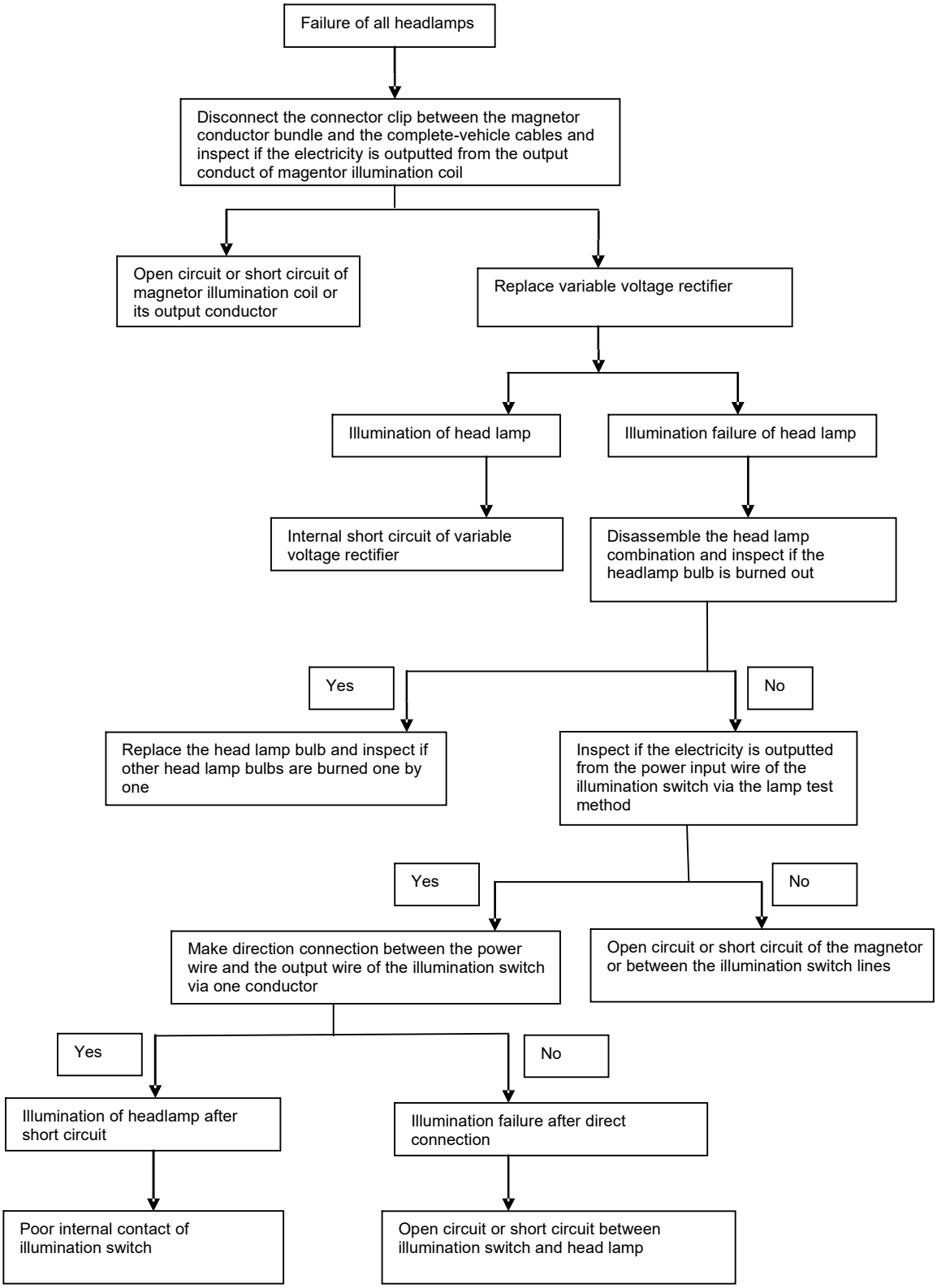
Troubleshooting procedure: Starter failure.



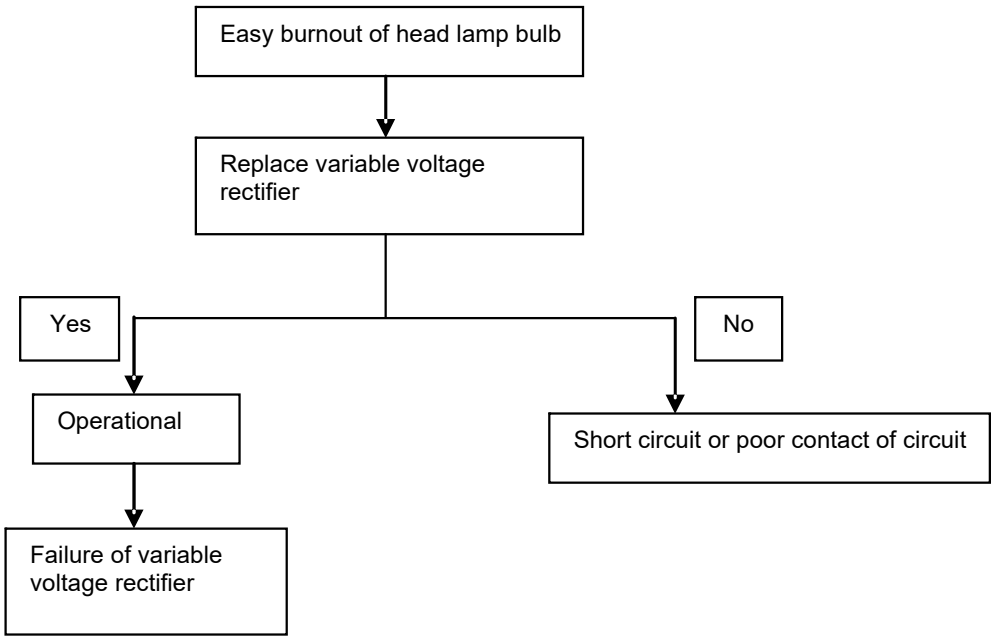
Troubleshooting procedure: Weak rotation of starting motor.



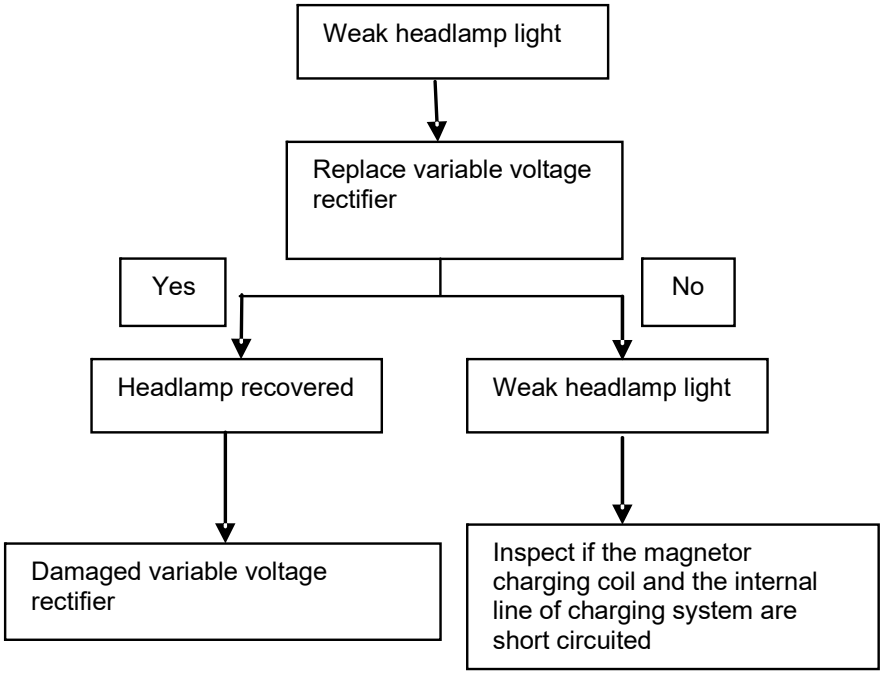
Troubleshooting procedure: Failure of all headlamps.



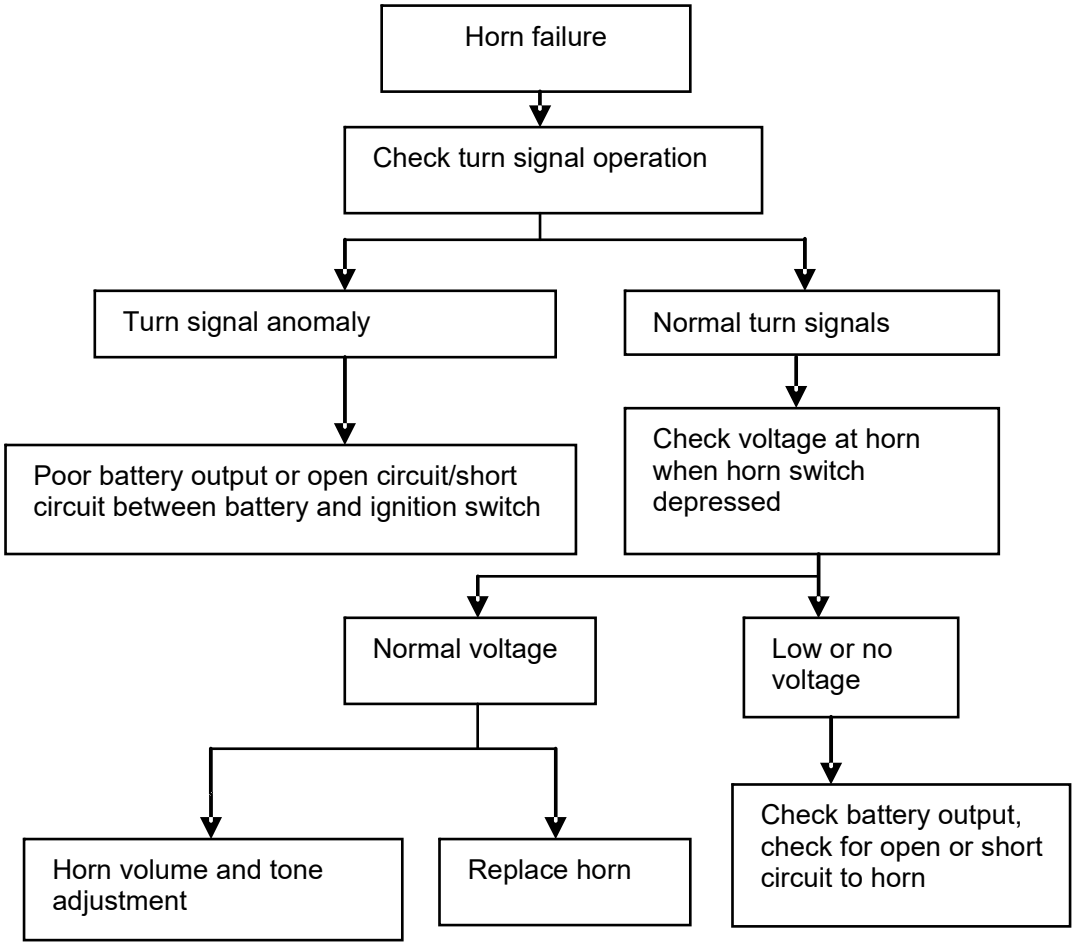
Troubleshooting procedure: Burnout of illumination lamp bulb.



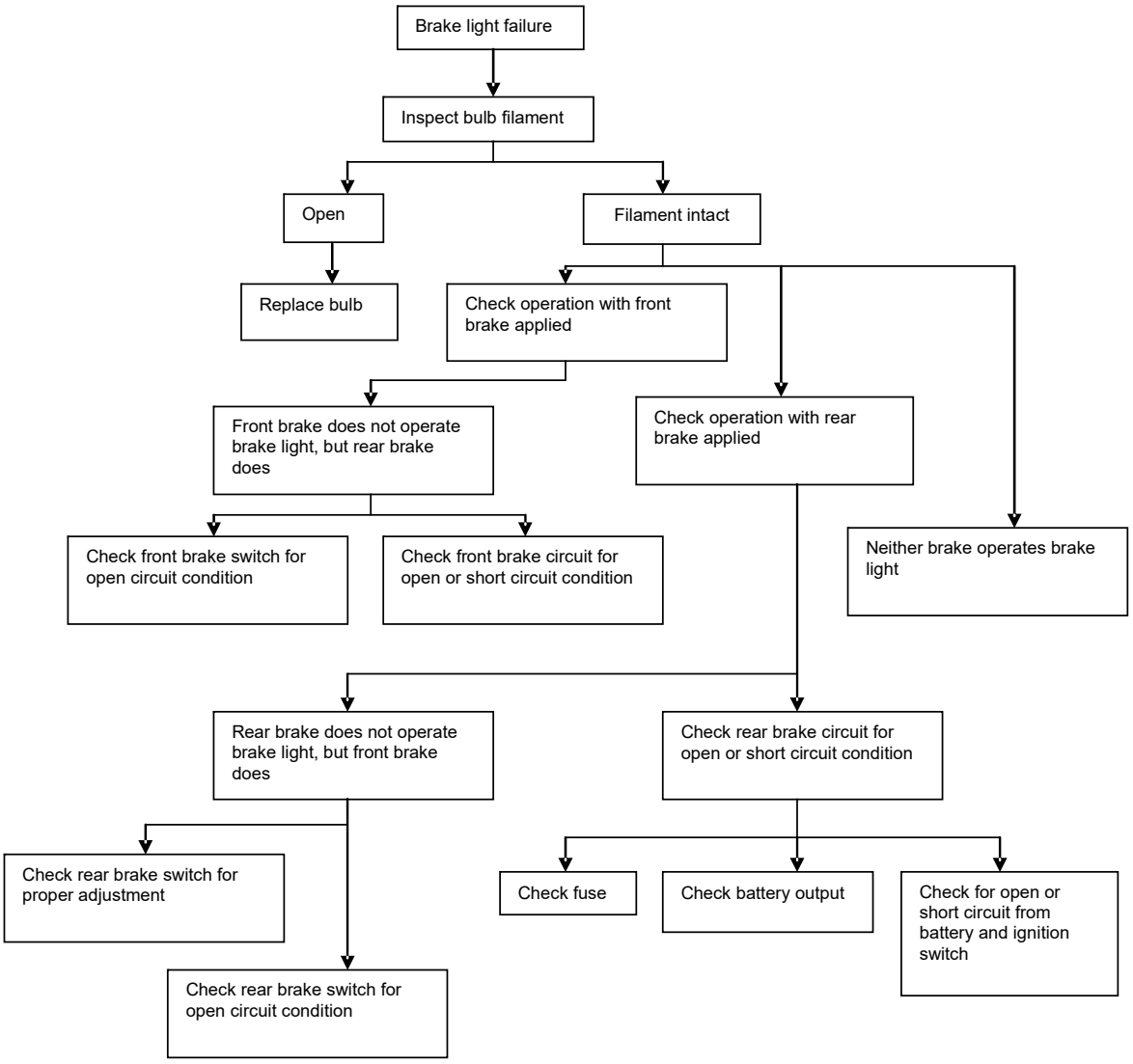
Troubleshooting procedure: Weak headlight.



Troubleshooting procedure: Horn failure.



Trouble-shooting procedure: Brake light failure.

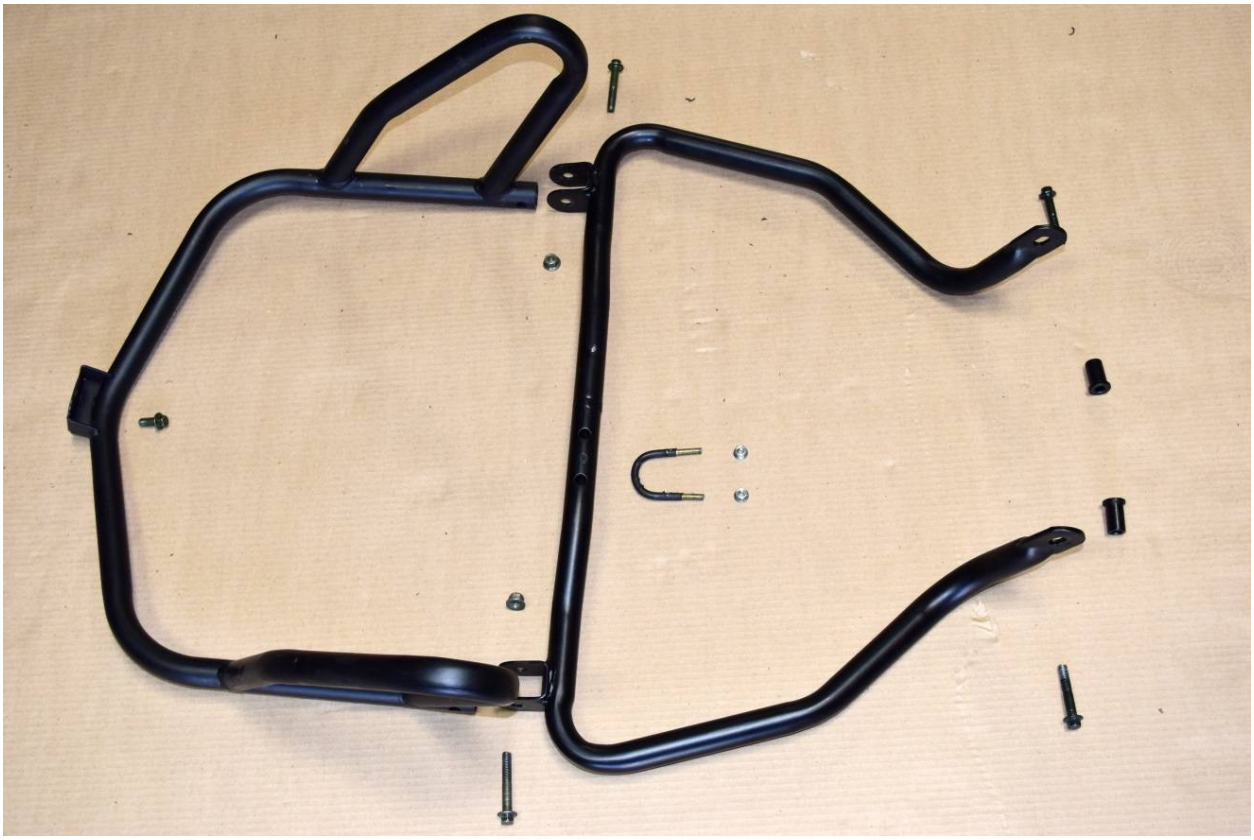


Accessories Installation

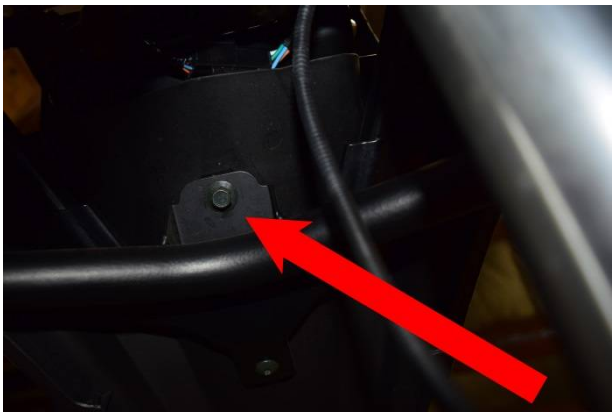
The North American RX3 configuration is delivered fully assembled except for the windshield, the mirrors, and the top case. All other accessories provided with the motorcycle are already installed when the motorcycle is delivered. For reference, installation instructions for the guard bars, the rear rack, the top case, and the panniers are included here.

Motorcycle Guard Bar Installation

Install the forward guards first. The forward motorcycle guard bar layout and required fasteners are shown below.



Start by installing the upper portion beneath the front fender. It attaches with a single M8×16 flange bolt as shown in the photos below.



Install the lower portion of the forward motorcycle guard. Install the guard with two bushings to the lower portion of the guard and two M8×50 flange bolts. Install the U-bolt and attach to the frame using two M8 flanged self-locking nuts. Install two M8×45 flange bolts to connect the upper and lower portion of the forward motorcycle guards.

Tighten all fasteners.

When finished, the forward motorcycle guards should appear as shown in the photo to the right, with red arrows indicating bolt attach points.

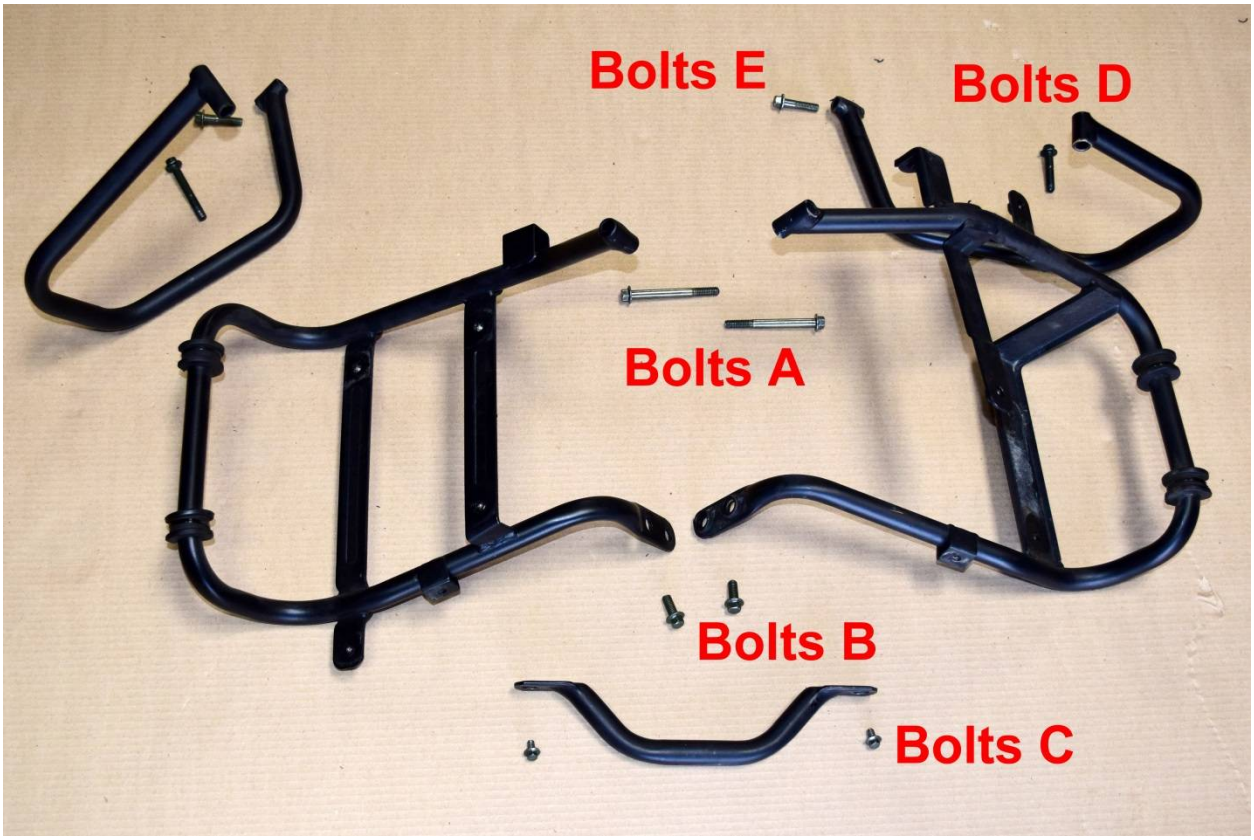
Rear Rack Installation

Carefully install rear rack over rear body panels (exercise caution to not scratch the rear body panels).

Although shown in this photo, do not install the rear rack screws that go through the body panels yet.

Rear Motorcycle Guard Installation

The rear motorcycle guards and their components are shown in the photo below.



The photo to the right shows the rear engine guards assembled off the motorcycle.

This photo is provided only for the purpose of clarifying the relative position of the parts in the assembled condition.

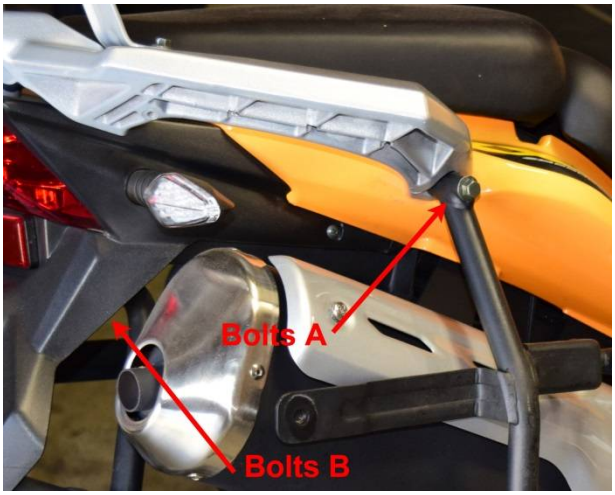
Do not attempt to assemble the guards prior to installation on the motorcycle.

Position the right rear motorcycle guard on the right side of the motorcycle.

Insert Bolt A through the right rear motorcycle guard and the rack and hand tighten to frame. Do the same on the left side of the motorcycle.

Insert Bolts B through the right and left rear motorcycle guards and into frame beneath rear fender.

Note that Bolts B go through both the left and right rear motorcycle guards beneath the rear fender.



Insert Bolts D and E through both the right and left rear motorcycle subguards. The upper portion of the subguard secures to the rear motorcycle guard with Bolt D; the lower portion of the subguard secures to the rear footpeg bracket with Bolt E.

Install the strut to the left and right rear motorcycle guards with Bolts C.

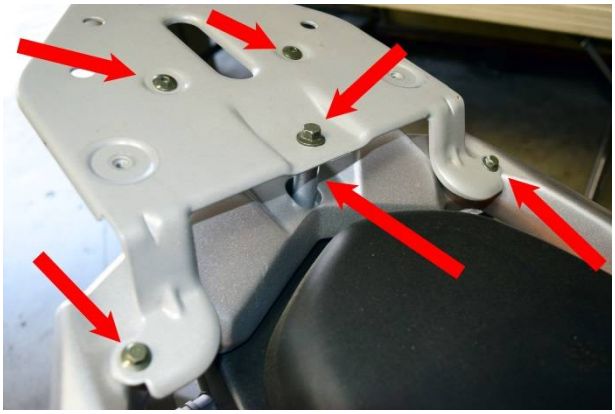
After completing all steps above for the rear rack, top case platform, and rear motorcycle guards, tighten all bolts.

Top Case Installation

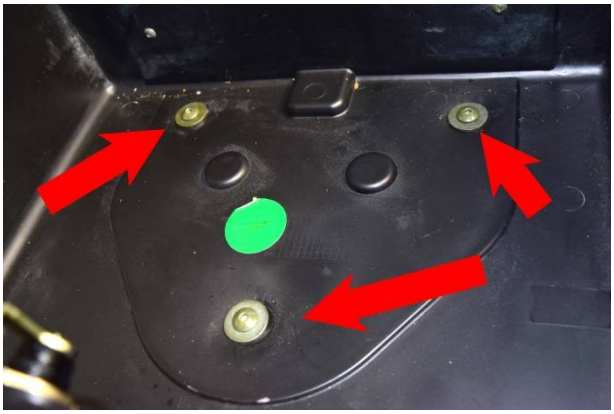
Place the trunk connecting plate bushing beneath the top case support, and install one M8×85 flange bolt.

Install top case support plate with two truss head Allen bolts M6×20 and two truss head bolts M6×35.

Tighten all fasteners.

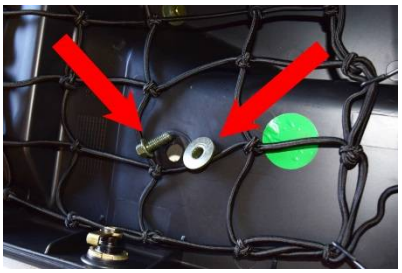


Secure the top case to the top case mounting plate with three 4mm Allen head bolts. Tighten bolts and install top case pad over bolt heads in bottom of top case.

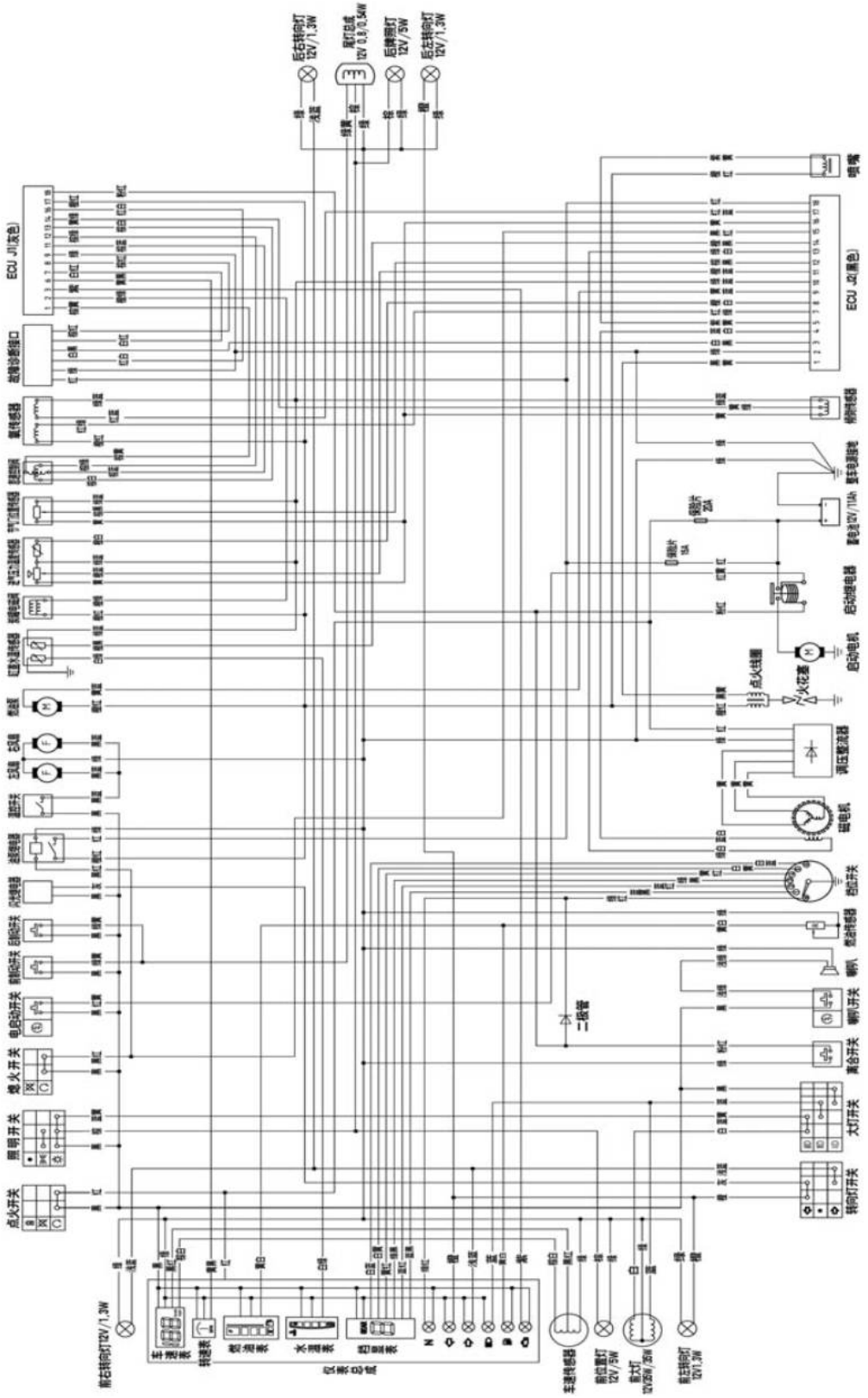


Pannier Installation

Each pannier is secured to the rear motorcycle guard with four M8×20 flange bolts and a flanged washer. The annular step on the washer faces toward the motorcycle and centers the bolt in the rear motorcycle guard bushing. Install all four bolts and tighten. Repeat on left side of motorcycle.



Electrical Schematic



Appendix A - Service Checklists

500-Mile New Motorcycle First Service		
Customer Name:	License:	Odometer;
Repair Order No:	Date:	Technician:

Service Item	**Completion**	**Comments**
Change engine oil and filter		
Check/adjust intake and exhaust valves to 0.08mm		
Check/adjust brake fluid levels		
Check throttle operation for freeplay and smoothness		
Check/adjust clutch operation		
Check/adjust wheel true and spoke tightness		
Check/adjust tire pressure (33 psi front; 35 psi rear)		
Check lighting and signal systems		
Check/adjust drive chain		
Check all chassis hardware		
Check/adjust steering bearing		
Install Lucas fuel injection treatment		
Test ride		

Notes

Odometer reading at completion:

2500-Mile Motorcycle Service		
Customer Name:	License:	Odometer;
Repair Order No:	Date:	Technician:

Service Item	**Completion**	**Comments**
Change engine oil and filter, clean screens		
Check engine mounts; tighter as required		
Inspect air filter, clean or replace as necessary		
Check throttle operation for freeplay and smoothness		
Check/adjust clutch operation		
Check/adjust seat cable operation		
Check high beam		
Check low beam		
Check turn signals		
Check brake light front and rear		
Check tail light		
Check auxiliary lights		
Check/adjust front and rear brake fluid levels		
Check brake pads front and rear		
Check brake rotor wear front and rear		
Check brake hoses and connections		
Check caliper bolts		
Check caliper pins		
Check front and rear tire wear (mm)		
Check/adjust tire pressure (33 psi front; 35 psi rear)		
Check/adjust front and rear wheel true		
Check/adjust front and rear spokes		
Check/adjust coolant level		
Check hose condition		
Check coolant hose clamp tightness		
Check/adjust drive chain		
Check sprocket wear		
Check all chassis hardware		
Check/adjust steering bearing		
Install Lucas fuel injection treatment		
Test ride		
Notes		
Odometer reading at completion:		

5000-Mile Motorcycle Service		
Customer Name:	License:	Odometer;
Repair Order No:	Date:	Technician:

Service Item	Completion	Comments
Change engine oil and filter, clean screens		
Check engine mounts; tighter as required		
Check intake/exhaust valve timing; adjust gap to 0.08mm		
Replace spark plug		
Inspect air filter, clean or replace as necessary		
Check throttle operation for freeplay and smoothness		
Check/adjust clutch operation		
Adjust clutch freeplay		
Lubricate clutch pivot points		
Check/adjust seat cable operation		
Check high beam		
Check low beam		
Check turn signals		
Check brake light front and rear		
Check tail light		
Check auxiliary lights		
Check/adjust front and rear brake fluid levels		
Check brake pads front and rear		
Check brake rotor wear front and rear		
Check brake hoses and connections		
Check brake caliper bolts		
Check caliper pins		
Check front and rear tire wear (mm)		
Check/adjust tire pressure (33 psi front; 35 psi rear)		
Check/adjust front and rear wheel true		
Check/adjust front and rear spokes		
Check front and rear axle torque		
Check/adjust coolant level; replace if more than 2 years		
Check hose condition		
Check coolant hose clamp tightness		
Check battery connections		
Check battery charge rate		
Check battery condition		
Lube drive chain		
Check/adjust drive chain		
Check sprocket wear		
Check all chassis hardware		
Check/adjust steering bearing		
Install Lucas fuel injection treatment		
Test ride		
Notes		
Odometer reading at completion:		

Annual Motorcycle Service		
Customer Name:	License:	Odometer;
Repair Order No:	Date:	Technician:

Service Item	**Completion**	**Comments**
Change engine oil and filter		
Change brake fluid front and rear		
Check throttle cable for smooth operation		
Check/adjust tire pressure (33 psi front; 35 psi rear)		
Check tire condition and tread depth		
Check lighting and signal systems		
Check drive chain tension		
Check battery condition		
Check coolant level		
Check radiator hose condition		
Check hose clamp tightness		
Check frame bolts for tightness		
Install Lucas fuel injection treatment		
Test ride		

Notes

Odometer reading at completion: