## DISCLAIMER OF WARRANTY

*This motorcycle is sold "as is" with all faults, obvious or not. There are no warranties expressed or implied, including any warranty of merchantability and warranty of fitness for any particular purpose.*

# *"WARNING"*

**THE COBRA CX50SR (KING) IS A COMPETITION MODEL ONLY AND IS NOT MANUFACTURED FOR, NOR SHOULD IT BE USED ON PUBLIC STREETS, ROADS OR HIGHWAYS.**

**THE USE OF THIS BIKE SHOULD BE LIMITED TO PARTICIPATION IN SANCTIONED COMPETITION EVENTS UPON A CLOSED COURSE BY A SUFFICIENTLY SKILLED RIDER AND SHOULD NOT BE USED FOR GENERAL OFF-ROAD RECREATIONAL RIDING.**

**IMPROPER USE OF THIS MOTORCYCLE CAN CAUSE INJURY OR DEATH.**

**THIS BIKE IS INTENDED FOR EXPERIENCED RACERS ONLY AND NOT FOR BEGINNERS.**

**IT IS YOUR RESPONSIBILITY AS THE OWNER OF THIS COBRA MOTORCYCLE OR AS THE PARENT, OR LEGAL GUARDIAN OF THE OPERATOR, TO KEEP THIS COBRA MOTORCYCLE IN PROPER OPERATING CONDITION.**

**THIS BIKE WAS DESIGNED FOR RIDERS THAT WEIGH LESS THAN 80 LBS WITH FULL RIDING GEAR AND SHOULD NOT BE OPERATED BY RIDERS THAT WEIGH MORE THAN THAT.**

**BE SURE THAT THE RIDER ALWAYS WEARS ADEQUATE SAFETY GEAR EVERYTIME HE OR SHE RIDES THEIR COBRA MOTORCYCLE.**

## IMPORTANT SAFETY NOTICE

**⚠ WARNING**

Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.

CAUTION:
A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

**NOTE:** A NOTE provides key information to make procedures easier or clearer.

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# General Information

## Specifications - General

| Items | CX50 SR |
|---|---|
| **Dimensions** | |
| Wheelbase | 39” (991mm) |
| Wheel size | 10” (254mm) rear, 12” (305mm) front |
| Seat height | 26” (660mm) |
| **Engine** | |
| Type | 2-stroke, single cylinder, reed valve |
| Cooling system | Liquid-cooled |
| Coolant | Bel Ray Moto Chill |
| Displacement | 49.8 cc |
| Bore and stroke | 39 mm x 41.7 mm |
| Ignition system | PVL Analogic |
| Spark plug | – XS61 AUTOLITE, RN6YC & 8339 CHAMPION |
| Gap | 0.023” – 0.025” (0.58 – 0.64 mm) |
| Ignition timing | 0.035” (0.9 mm) Before Top Dead Center (BTDC) |
| Fuel type | High octane ***pump*** gasoline |
| Premix Oil type | *Bel-Ray H1-R* |
| Premix oil ratio after break-in | 32:1 – 60:1 |
| Carburetion | 19 mm Dell’Orto |
| Slow (Pilot) Jet / Main Jet | 55 / 93 |
| Needle | W7-2 |
| Needle Clip Position | 2nd slot from top of needle |
| Float Height | 16mm ± 0.5mm (0.63” ± 0.020”) |
| **Transmission** | |
| Speed | Single |
| Final drive ratio | 15/38 T |
| Chain | 100 links 420 |
| Transmission / clutch oil type | *Cobra Venom 3 Shoe Clutch Milk* |
| Quantity | 300ml (10oz) |
| **Chassis** | |
| Front tire | 2.50 (60/100) - 12" |
| Pressure | 16 psi minimum |
| Rear tire | 2.75 (80/100) - 10" |
| Pressure | 16 psi min. (20 psi for hard pack or rocky conditions) |
| Front fork | CARD 32mm USD Fully Adjustable w/ Smart Leg |
| Fork oil type | 2.5wt Bel-Ray Fork Oil |
| Fork oil amount | 155 ml |
| Std settings | Smart leg: 1.5 out, Compression and rebound 2 out |
| Rear shock (std. settings) | Compression: Low 12 out, High 15 out<br>Rebound 16 out, Race sag 75mm, Free sag 25mm |

# Optional Suspension Components

| Weight of Rider (lb) | Fork Spring | Shock Spring |
|---|---|---|
| Less than 50 lb | 0.23 kg/mm<br>KCCS3223 | red, 3.3 kg/mm<br>SCKGFX33 |
| 50 – 60 | 0.23 kg/mm<br>KCCS3223 | gray, 3.5 kg/mm<br>SCKGFX35 |
| 60-75 | 0.25 kg/mm<br>KCCS3225 | yellow, 3.7 kg/mm<br>SCKGFX37 |
| Greater than 80 | 0.27 kg/mm<br>KCCS3227 | gold, 3.9 kg/mm<br>SCKGFX39 |

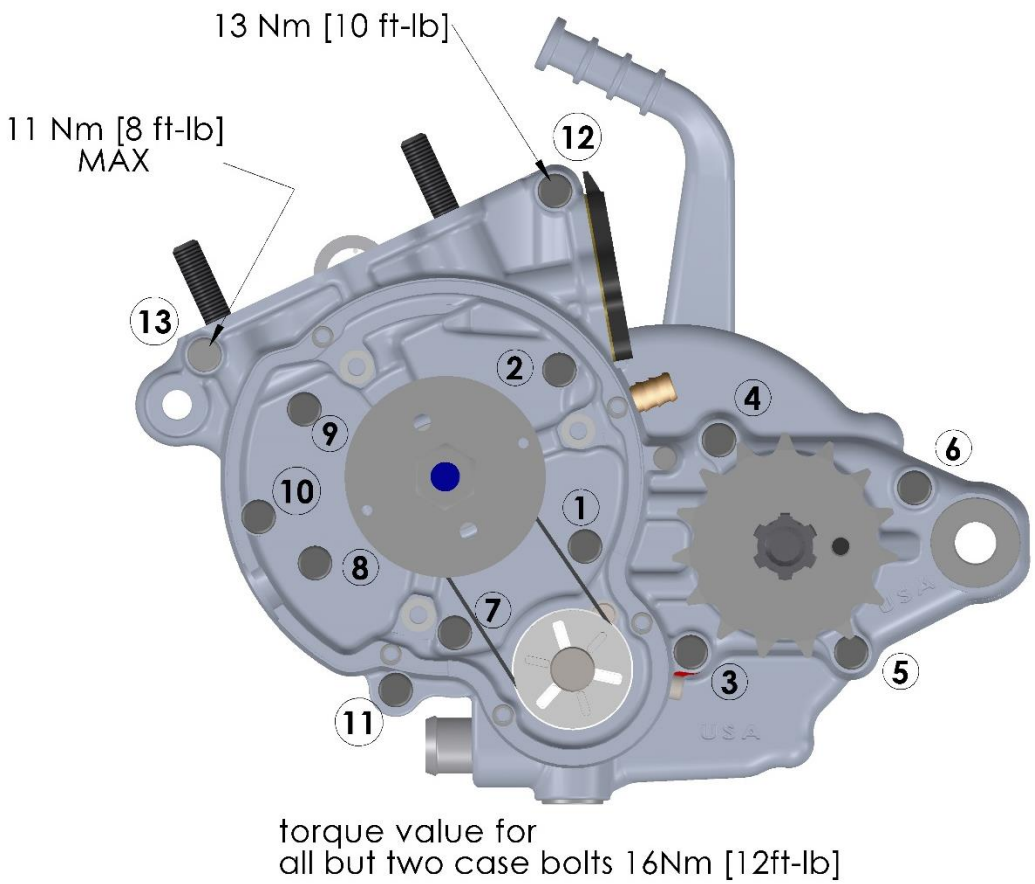
# Specifications - Torque Values

| Fastener | Torque Value | | | Loctite™ | Size & Remarks |
|---|---|---|---|---|---|
| | ft-lb | in-lb | Nm | | |
| Cylinder head nuts | 9 | 110 | 12 | | M6 x 1.0 |
| Cylinder nuts | 22 | 265 | 30 | | M8 x 1.25** |
| Crankcase bolts | See the next page | | | | M6 x 1.0 |
| Spark plug | (SP) | (SP) | (SP) | | M14 x 1.25 |
| Stator bolts | 2.1 | 25 | 2.8 | | M5 X 0.8 |
| Rotor nut | 33 | 400 | 45 | 243 | M10 x 1.25 |
| Stator cover bolts | 1.7 | 20 | 2.3 | | M4 X 0.75 |
| Clutch cover bolts | 5.8 | 70 | 7.9 | | M6 X 1.0 |
| Clutch nut | 40 | 480 | 54 | 263 | M10 x 1.25 |
| Clutch bolts | 12 | 144 | 16 | 263 | M6 x 1.0 |
| Engine mount bolts | 22 | 265 | 30 | | M8 X 1.25 |
| Swingarm pivot | 21 | 250 | 28 | | M14 X 2.0 |
| Shock bolt | 35 | 420 | 47 | 243 | M10 x 1.5 |
| Water pump impeller | 3 | 36 | 4 | 263 | M5 x 0.8 |
| Water pump pulley | 10 | 124 | 14 | 243 | M6 x 1.0 |
| Intake manifold bolts | 4.6 | 55 | 6.2 | | M6 X 1.0 |
| Rear axle nut | 21 | 250 | 28 | | M12 X 1.25 |
| Front axle aluminum bolt | 18 | 221 | 25 | 243 | M10 X 1.25 |
| Fork guard alum bolts | 6 | 88 | 8 | Moly lube | M6X1, ALUM |
| Front axle pinch bolts | 7.5 | 88 | 10 | | M6 x 1.0 |
| Brake caliper bolts | 9 | 106 | 12 | 243 | M6 x 1.0 |
| Brake caliper to carrier | 7 | 84 | 9.5 | 243 | M6 x 1.0 |
| Brake pad secure | 3 | 35 | 4 | | M5 x 0.8 |
| Banjo bolts – brakes | 15 | 177 | 20 | | M8 x 1.25 |
| Rear sprocket bolts | 21 | 250 | 28 | | M7 X 1.0 |
| Brake rotor bolts | 9 | 108 | 12 | 243 | M5 x 0.8 |
| Triple clamp bolt (top) | 8 | 90 | 10 | | M8 x 1.25 |
| Steering stem pinch bolt | 9.5 | 115 | 13 | | M8 x 1.25 |
| Triple clamp bolts (bottom) | 6 | 72 | 8 | | M6 x 1.0 |

**Use a ‘crows foot’ attachment oriented 90° to the torque wrench

**(SP)** To apply the proper torque to the spark plug when inserting, one must first screw the spark plug in until the metal gasket ring causes resistance and then turn another 1/8 to ¼ turn.

Proper torque of engine case bolts




Torque the engine case bolts in the pattern shown above. The upper two bolts have a different toque value compared to the others.

Proper torqueing procedure would have you lubricating the threads with 30W oil, torqueing the bolts all first to an intermediate torque value of 10-12 Nm and then once they are all at that value, proceed back at bolt #1 and toque each bolt further up to the final value.

# Break-In Procedure

Your Cobra CX50 (King) is a close-tolerance high performance machine and break-in time is very important for maximum life and performance. The CX50 can be ridden hard after the first ½ hour break-in time.

Cobra recommends *Bel-Ray H1-R* premix oil with high octane pump gas mixed at 32:1 (4 oz to a gallon of gas).

CAUTION:
Failure to use proper fuel, oil, or fuel/oil mixture may result in premature engine wear or damage to the machine.

Adhering to the following break-in schedule will result in long lasting high performance machine.

- Start bike on stand
- First 5 minute period, operate the bike on the stand with a combination of idle and high RPM operation. (avoid prolonged high RPM but spin the rear wheel good at least once or twice per minute)
- Allow bike to cool
- Ride for 15 minutes maximum (avoid prolonged high RPM operation and avoid abusing the clutch with throttle blipping.
- Cool and inspect bike for loose fasteners.
- Next ½ hour of operation, avoid prolonged operation at Wide Open Throttle.
- After 1 hour of operation
    - Check for loose bolts and nuts on the bike and retighten as necessary (proper toque values are listed under Specifications).
    - Clean the carburetor bowl.
    - Change the transmission / clutch lubricant.
- Check CFD torque and adjust as necessary
- After 8 hours of operation
    - Change the fork oil.
    - Have a Certified Cobra Mechanic change the shock oil.
- Your bike is now ready for the highest level of competition!

**NOTE:** During break-in the bike will likely lose some engine coolant through the radiator overflow hose. Losing up to 4 oz (120 ml, ½ cup) is normal. Proper coolant level will cover the top of the radiator cores. Removing the radiator cap and looking inside is the only way to check the coolant level.

**⚠ WARNING**
Never open the radiator cap of a machine that has a hot or warm engine or one that has recently been ridden. Burning and scalding could occur.

# Starting Procedure

Before starting the machine inspect the following:

- Tire pressure
- Chain tension
- Coolant level
- Proper wear on chain rollers and sliders
- Handlebar tightness
- Throttle assembly movement/cable adjustment
- Air Filter
- Check for loose nuts and bolts
- Turn the fuel on by rotating the fuel petcock knob to the vertically downward position (reserve position is horizontally forward)

**NOTE:** For best results from your Cobra Motorcycle use only the recommended fuels. Testing has shown that most 'race' fuels actually degrade performance.

**⚠ WARNING**

Always wear a helmet and other protective riding gear.

When your pre-ride inspection is complete the bike may be started. For a cold engine follow this procedure.

1. Place the motorcycle on a stand of sufficient strength that positions the motorcycle in a level upright position with the rear wheel off the ground.
2. Pull up the choke knob and turn it to lock it.
3. Kick start the engine.
4. Rev the engine in short spurts, turning the throttle no more than 1/4 open until the engine will run without the choke.
5. Verify a functional engine shut-off switch by shutting off the engine.
6. Restart the engine and proceed with riding when the engine is sufficiently warm (i.e. the side of the cylinder is warm to touch).

CAUTION:

Never rev an engine full throttle when it's cold or slightly warmed up and, for best clutch performance, warm up the bike before taking off.

**⚠ WARNING**

This is a high performance race motorcycle. Too much application of throttle will likely land your little racer on his or her arse. Fenders can be replaced but bruised egos and other body parts take longer.

CAUTION:

Cobra recommends that you tell your child to take it easy the first couple of minutes in practice until the engine comes up to full operating temperature.

CAUTION:

Make sure your riders' foot is not resting on the foot brake while they are riding.

# Maintenance

A properly maintained machine is safer, faster, and more fun to ride. It is important that you adhere to this maintenance schedule so as to promote the longevity of your Cobra Motorcycle.

## Tips

1. Recommended lubricants:
    a. Cobra Clutch Milk is by far the best **auto clutch lubricant.** It is a full synthetic lubricant that has been specifically formulated for Cobra's auto clutch and has;
        - Exceptional film strength over petroleum based oils or synthetic blends.
        - Extreme temperature tolerance.
        - NO frictional modifiers.
        - Dispersant package to keep clutch fibers in suspension so they can be flushed out when the oil is changed.
        - Extremely low viscosity for minimal drag and 'windage'.
    b. *Bel-Ray H1-R* oil is the recommended **premix oil** because:
        - Its Ester base leaves a film on all parts at all times. No metal to metal startups or corrosion potential.
        - Exception film strength over petroleum based oils or synthetic blends.
        - Easily atomizes and burns completely.
        - Does not fall out of suspension from premix in cold weather.
        - Produces virtually no coking deposits, leaving pistons, rings and heads extremely clean with minimal pipe 'spooge'.
2. Filling your transmission with more than 8.0 oz (235 cc) of lubricant may help to transfer heat from the clutch. Filling with more than 12 oz (350 cc) will degrade performance.
3. The cylinder base gasket has been 'fitted' for your engine. The code number stamped into the engine cases will guide you to what thickness base gasket is required during a common top end service. See the service section of this manual to correspond a code number with a base gasket part number.
4. Evaluate the bikes jetting only after it has been warmed up to race temperatures.
5. New chains will stretch on first use. Never install a new chain prior to a race. Always 'break' them in during practice.
6. Your Cobra Motorcycle has a 10 digit VIN (Vehicle Identification Number). The first three digits indicate the model while the sixth and seventh indicates the model year.
    a. Example, CSRxx17xxx is a 2017 CX50 SR.
7. Because of the amount of heat generated by the clutch and engine during extended periods of riding, it is advisable to remove the ignition cover afterward to allow the ignition to cool off. The heat transfers through the

cases and can damage the stator as it cools off because of lack of airflow around the stator.

8. If you ever need to weld anything on the bike, disconnect the spark plug cap, unplug the ignition, disconnect the kill switch, scrape the paint bare near the area to be welded and put the ground clamp as close to the area to be welded as possible.

**⚠ WARNING**

Be sure the fuel tank and carburetor have been removed and safely located away from the welding process.

9. The frame is 4130 Chrome Moly and it is important to weld it with the proper rod and heat settings set as light as possible. Cobra recommends replacing the frame with a new one if the old one becomes damaged. Use ER70S6 filler if welding on the frame.
10. If your kick-starter lever does not return properly, first try loosening the six kick/clutch cover screws ½ turn. Hold the kick lever ½ way down while retightening the six screws starting for the center and working out
11. Inspect CFD slip torque after the 2nd ride and then again after the 6th ride. After this follow the recommended schedule below.
12. Check proper clutch engagement before and after each ride. If the clutch is engaging properly DO NOT feel the need to take the clutch apart to; measure the spring stack, clean the stack, replace the springs, etc... Cobra has worked very hard to make a clutch that is low maintenance and so only take it apart if it NEEDS to be maintained.

# Schedule

- Prior to each ride
  - Check the air filter (clean and re-oil as necessary).
  - Insure the smooth operation of the throttle cable (throttle soundly 'clacks' shut).
  - Check for frayed strands of the throttle cable inside the throttle housing and replace if necessary.
  - Check for adequate tire pressures and adjust if necessary.
  - Check all nuts and bolts for proper torque and re-torque if necessary.
  - Spray all moving parts with WD40 or other light oil.
  - Check drive chain for
    - Proper tension and adjust if necessary.
    - Adequate lubrication and lubricate if necessary.
  - Insure that the ignition stator and rotor are clean and dry.
  - Check the frame for cracks in the metal or cracks in the paint that might indicate that the metal has been stressed beyond it's safe limits. Replace or get properly rewelded as necessary.
  - Check the rims for signs of stress, like cracks around the rim, spokes and hub.
  - Equalize the pressure in the forks with atmosphere.
- Every 2 hours of operation
  - Replace the transmission oil.

- Check the CFD torque.
- Every 10 hours of operation
  - Replace the fork oil.
  - Have the shock oil replaced by a Certified Cobra Mechanic.

# Replacing Transmission / Clutch Lubricant

**Tools needed:**

- 5mm allen wrench
- Minimum of 300 ml (10 oz) *Cobra Venom 3 Shoe Clutch Milk* (Part #MCMUGF32).

**Procedure:**

1. Begin this procedure with a bike that has been ridden more than 5 minutes but less than 10 minutes. It is desired to have the engine warm enough so that the oil is 'runny' but not so hot that there is risk of being burned by the engine or the oil.

**⚠ WARNING**

Hot oil and hot components on the motorcycle may cause burns.

2. Remove the oil drain plug located on the right side of the engine, on the clutch cover, near the brake lever (figure 1).

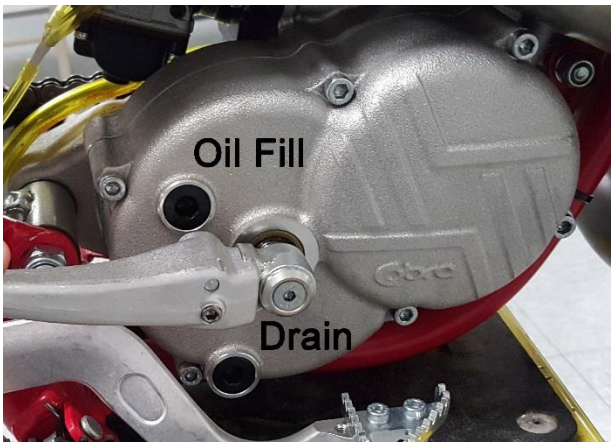



**Figure 1**

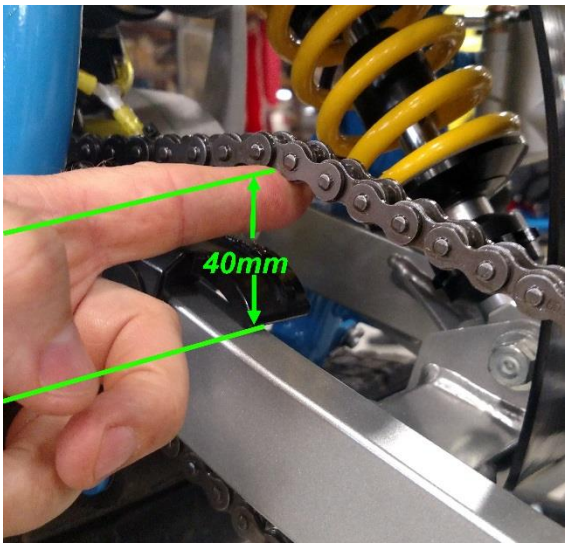
3. After it has drained, reinstall the plug, being sure that the gasket is in place.
4. Reapply oil from oil fill plug 300 cc (10 oz) *Cobra Venom 3 Shoe Clutch Milk* thru the oil fill plug.

**NOTE:** Putting additional oil, up to 350 ml (12 oz), can help clutch life. More than 350 ml (12 oz) will degrade engine performance.

5. Reapply the oil fill plug, hand tight, being sure the gasket is in place.

CAUTION:
Cobra has spent considerable time and money developing the proper lubrication to handle the harsh environment of the automatic clutch and transmission of this motorcycle. Cobra's specially developed *Cobra Venom 3 Shoe Clutch Milk* (Part #MCMUGF32) was formulated to provide superior lubrication and cooling capability over extended periods of time and is the recommended lubricant for your Cobra motorcycle.

# Proper Chain adjustment




**Tools required for chain adjustment**

- 19 mm wrench or socket
- 13 mm wrench or socket

1. Make sure that the rear wheel is aligned properly.
2. For proper adjustment, the chain should have 40 mm (1 1/2") free movement just behind the chain block with no load on the bike (figure 2)

**Figure 2**

CAUTION:
Sit on the bike and verify that the chain has a minimum of 12mm (1/2") free movement when the chain is at it's tightest point.

**Figure 3**

3. If the chain requires adjusting, loosen the axle with a 19 mm wrench and tighten the chain by rotating the adjustor bolts clockwise (CW) or loosen the chain by rotating the adjustor bolts (CCW).
4. Retighten the axel bolt to 25 ft-lb (34 Nm).
5. Retighten the adjustor bolt (figure 3)

# Rear Brake Maintenance

CAUTION:
Too little brake pedal free-play will allow the brake pads to drag causing the pads to wear prematurely and possible engine component failures. Too much free-play will not allow the rider to apply the brakes quickly.

1. Set pedal height/position first, then
2. Set pedal free play.

Brake pedal height can be adjusted with the bolt and eccentric located under the rear of the brake pedal. The free-play is adjusted with the adjustable plunger on the end of the brake pedal.

CAUTION:
Use New container of DOT4 Bel-Ray Racing Brake Fluid

**Setting rear brake pedal position (see figure 2b):**

1. Loosen the Cap Screw in the Eccentric (5mm Allen wrench).
2. Rotate the eccentric so that the lever is comfortably reachable in both:
    a. Standing riding position, and
    b. Sitting riding position.
3. Tighten Cap Screw (5 mm Allen wrench).

CAUTION:
Adequate pedal free play is required so that the brake pads do not drag on the rotor.

**⚠ WARNING**
Make sure that the free play locking clip is installed such that one must push forward, toward the front of the bike, to remove. Otherwise the clip is apt to come undone while riding.

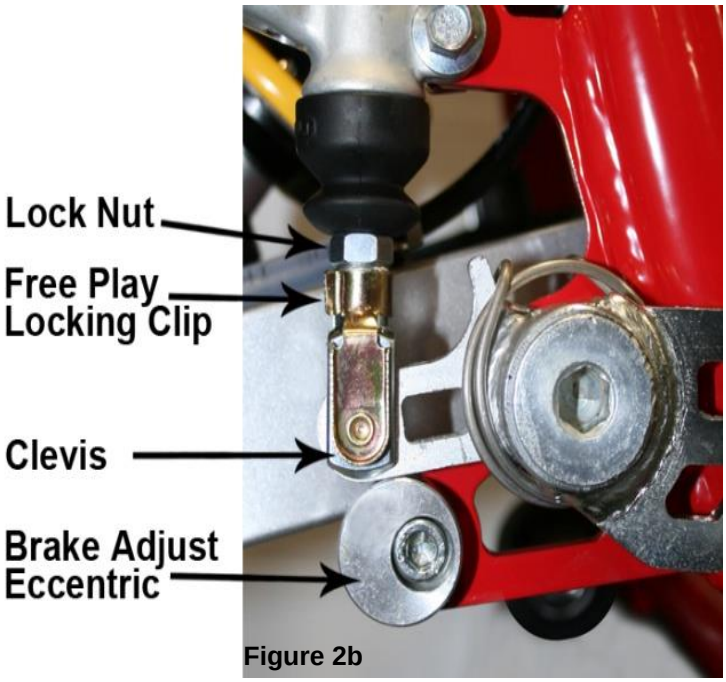


**Figure 2b**

To **adjust freeplay** (see figure 2b):

1. Loosen the lock nut (10mm).
2. Undo the free play locking clip from around the brake adjustor (plunger), with your hand by pushing it forward.
3. Slide the pin of the locking free play locking clip from the brake lever
4. Adjust as needed by rotating the clevis on the end of the adjustor (plunger).

**NOTE:** Turning the clevis Clockwise will lengthen the adjustor (plunger), removing free play from the system, and turning the clevis Counter-Clockwise will shorten the adjustor (plunger) adding free play to the system.

# Brake Bleeding Procedure

**Tools Required:**

- New container of DOT4 Bel-Ray Racing Brake Fluid

- Front: T10 Torx bit/driver, Cobra bleed kit (BCKG0031)
- Rear: 3mm hex key (Allen wrench, T10 Torx bit/driver, Cobra bleed kit(BCKG0031)

**Procedure:**

- Remove the brake fluid reservoir cover.
- Fill the syringe half full with brake fluid.
- Remove the brake caliper bleed screw.
- Attach the syringe to the brake caliper bleed access. Keep the syringe oriented as not to allow air from the syringe into the system.
- Using the syringe pull fluid through the system. Use caution not to let the fluid in the reservoir to become low and introduce air into the system.
- Using the syringe push fluid back into the system until the reservoir is full.
- Repeat these actions of pulling and pushing fluid through the system a few times.
- With the reservoir full, engage the brake lever/pedal and hold it there as if engaging the brakes.
- While doing this pull on the plunger of the syringe. Doing this will cause a vacuum in the system. The vacuum will swell the air bubbles which assist in them moving throughout the system.
- Continue pulling a vacuum and release the brake lever/pedal (careful not to allow the reservoir to become empty).
- Once again engage the brakes while continuing to pull a vacuum.
- When the reservoir is almost empty stop and push fluid back into the system.
- Repeat these steps with the vacuum until no more air bubbles can be removed from the system.
- Remove the syringe. Be sure to keep the caliper below the level of the reservoir to allow the fluid to run out of the caliper and not allowing air into the system.
- Reinstall the bleed screw, being sure that the ring is in place.
- Hold the brake pedal down (applying pressure) and momentarily crack the banjo bolt atop the master cylinder. Repeat 3 times being careful not to let the reservoir low on fluid
- Fill the reservoir with fluid (the fluid should be full enough that the fluid spills out when placing the lid on) and replace the cover

# Air Filter Cleaning

- Remove the seat
- Squeeze the two tabs together as shown in figure A1 and pull the wire retainer up and out of the air box
- The filter may now be pulled from the airbox
- Clean the airbox of dirt and clean the filter sealing surface of the old sealing grease.

**Figure A1**

CAUTION:
Pay particular attention to clean any particles from the airbox between the filter location and the carburetor.

**NOTE:** Cobra has available a carburetor cover that allows easy cleaning of the airbox.

1. Remove the air boot
2. Install the cover (RCMU0109) over the carburetor inlet
3. Spray out the airbox.

**⚠ WARNING**
Do not clean the air filter with gasoline or other highly volatile petroleum product. Diesel fuel or kerosene would be preferred but caution should still be taken. Hot soapy water works well.

1. Clean the filter in hot soapy water to remove all dirt particles.
2. Allow it to dry thoroughly.
3. Saturate with filter oil and remove excess.

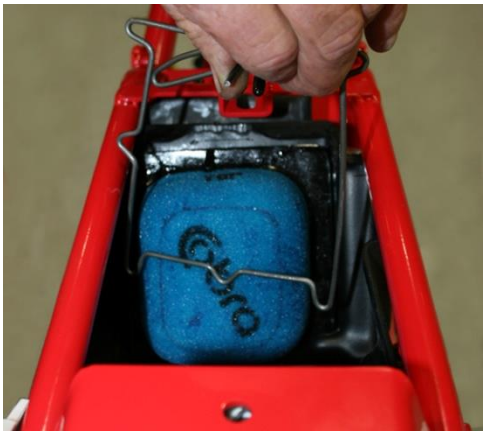


**Figure A2**

**NOTE:** It's very important to oil your filter consistently each time because varied amounts of oil will change your carburetor jetting.

4. Apply grease to the black sealing surface of the filter and reinstall.

5. Squeeze the two finger tabs together on the wire retainer and install into the airbox as in figure A2

6. Push the wire retainer down until it bottoms, making sure the two bottom tabs on the retainer go through the two associated holes in the bottom of the airbox.

7. Push the two top retainer arms out so that they properly insert into each side hole.

CAUTION:
If the side arms do not align with the associated holes it is quite likely that the legs did not make it into the holes. Realign and try again.

8. When properly installed, the filter and retainer should look like figure A4.

**Figure A3**

**Figure A4**

**NOTE:** Make sure you change or clean your filter after each moto. We recommend carrying multiple filters in your toolbox, one for each practice session and moto.

# Fork Maintenance

Cobra strongly recommends that a professional service technician conduct all internal maintenance other than changing springs and oil. This will help to ensure safe and consistent operation.

For routine maintenance, the chart below provides suggested service intervals for common procedures:

| | ***Each Ride*** | ***10 hours*** | ***20 hours*** | ***As Needed*** |
|---|---|---|---|---|
| ***Bleed excess air*** | ***X*** | | | |
| ***Change Oil*** | | ***X*** | | |
| ***Change Seal/Swiper*** | | | ***X*** | |
| ***Change Bushings*** | | | | ***X*** |

# Fork Air Bleeding

**Tools required**

- 3mm hex key (Allen wrench)

During normal operation, both fork legs will build up air pressure. This pressure acts as an additional spring so it must be bled on a regular basis to maintain

consistent suspension operation. Before each ride, loosen the socket head cap screw located at the front of each fork cap far enough so that any excess pressure in the leg is relieved. After excess air is bled off, retighten the screw to 5 in-lb. Be careful not to lose or damage the sealing ring that is located under the head of each bleed screw.

# Fork Oil Replacement

**Tools required**

- 32mm Fork Cap Tool (MCMUTL32)
- 19mm wrench or socket
- 4 & 5 mm hex key (Allen wrench)
- 9/16 wrench
- Mallet
- 2.5 wt. Bel-Ray fork oil

**Disassembly procedure**

1. Remove the front wheel (19 mm wrench).
2. Remove the brake caliper from the fork leg (4 mm hex key).
3. Loosen the fork caps (32mm fork cap tool).
4. Remove the fork legs from the triple clamps (5 mm hex key).
5. One leg at a time
    a. Remove the fork cap from the fork tube.
    b. Pull the fork spring down to gain access to the fork cap jam nut and secure it with a 9/16 wrench.
    c. Holding in one hand the 9/16 wrench use the fork cap wrench to unscrew the fork cap from the damper rod.
    d. Remove the fork spring pad, and fork spring.
    e. Inside the damper rod, the rebound adjustment screw pin is resting and will fall out of the damper rod when the fork is inverted. Try to catch it before it falls into your oil bucket.
    f. Invert the fork and allow the oil to drain completely. Working the damper rod up and down will speed up the draining process.

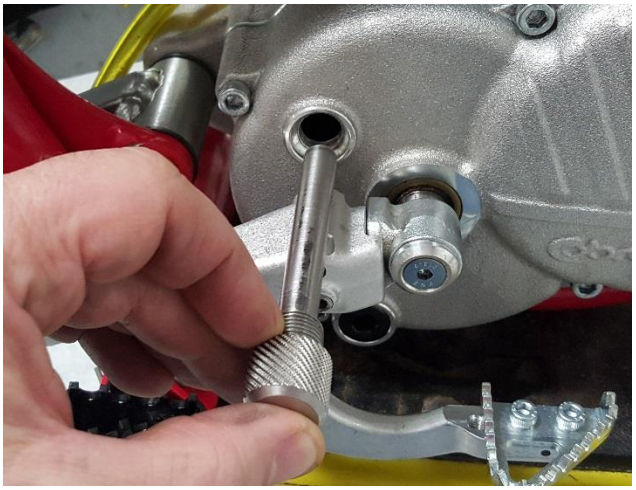
**Assembly procedure**

1. Fill the fork with 155 ml of fork oil.
2. Work the damper rod up and down to allow the fork cartridge to fill with oil.
3. Install the rebound adjustment screw pin into the damper rod.
4. Install the fork spring and spring pad.
5. Extend the damper rod completely and Compress the fork spring enough to begin threading the fork cap back onto the damper rod.
6. Make sure that the fork cap threads onto the damper rod completely before it makes contact with the jamnut.
7. Tighten the jamnut.
8. Tighten the fork cap to the fork leg outer
9. Pump the fork leg several times to verify that it operates smoothly.

10. Install each leg back into the triple clamp. Torque each pinch bolt to 8N-m (6 ft-lb) making sure both legs are set to the same height in the clamps.
11. Reinstall the brake caliper.
12. Reinstall the front wheel (25 ft-lb, 34 Nm).

# Frictional Drive (V3 CFD)

The Cobra Frictional Drive (CFD) is essentially an adjustable slip clutch that dissipates torque spikes transmitted from the rear wheel to the rest of the drive line and engine. Instead of these torque spikes potentially damaging internal components, the CFD allows the transmission to slip with respect to the engine. For this to occur, the CFD must function properly by 'slipping' above a minimum torque value.



The safe minimum slip torque of the CFD should be checked every 2 hours of operation, after break-in.

The slip torque value should be above 80 ft-lb (108 Nm) measured at the sprocket with the following process.

**To properly measure the minimum torque at which the CFD (Cobra Frictional Drive) slips**

1. Remove the oil fill plug and install the check tool/pin MCMUTL40.
2. Make sure that it is threaded in completely until it bottoms out.
3. Install the Sprocket Socket CFD torque checking tool (MCMUTL15) on the output shaft protruding through the sprocket.

CAUTION
It may be necessary to remove the ECKGSR03 sprocket clip, or the sprocket entirely, to ensure good engagement between the tool and the shaft

4. Verify with a torque wrench applied to the Sprocket Socket that the V3 CFD does not slip below 108 Nm (80 ft-lb) in either direction.
5. If there is slippage below 108 Nm (80 ft-lb) remove the cotter pin and tighten the castle nut on the CFD one more position (it is a left hand thread nut so you must turn it counter clockwise)

**NOTE:** This V3 CFD torque checking method is possible do to with the chain on. Just put the bike on a stand so that the rear wheel can turn freely.

**NOTE:** The CFD hubs can be removed with the universal puller (MCMUTL70).

If it slips below the value, the CFD must be readjusted as per described in the service section of this manual.

**NOTE:** If the bike makes a whir, whir, whir, sound coming from the clutch side engine cover it is very probable that the CFD has slipped enough that the brass bushing has worn sufficiently to let the gear operate off center. Time to install a CFD refresh kit (EKMU0033).

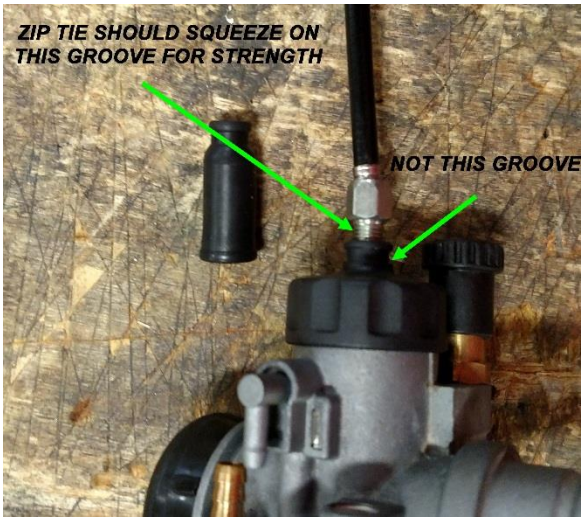
# Throttle cable strain relief

To reduce the likelihood of the throttle cable being pulled from top of the carburetor it is recommended to install two 8” zip ties as shown in the pictures below to strain relief the throttle cable to the carburetor top. One zip tie securing the boot to the cable the other securing it to the threaded cable adjuster.

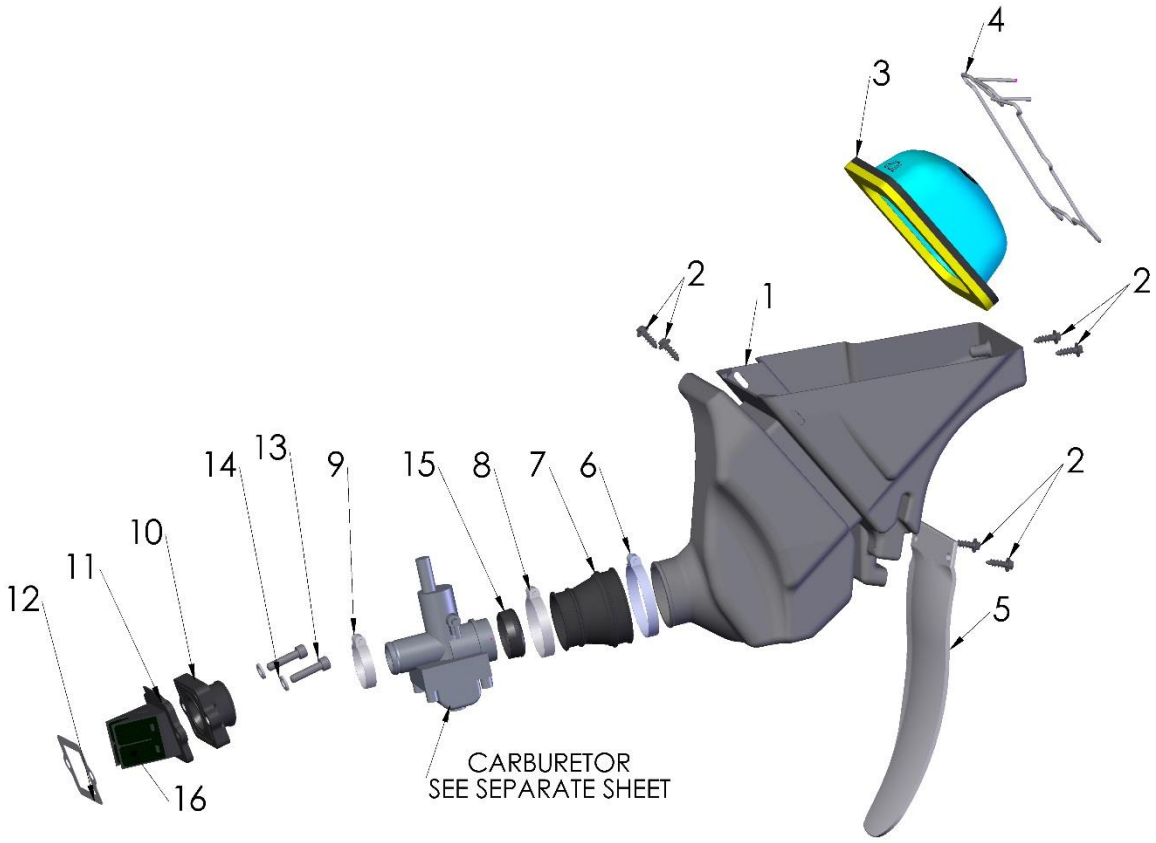
We will be doing this in production going forward.

This applies to all Cobra CX50’s

NOTE: For the strongest grip, the bottom (left in the pictures) zip tie should be squeezing on the groove between the hex adjuster and the top, NOT the groove in the carb top.

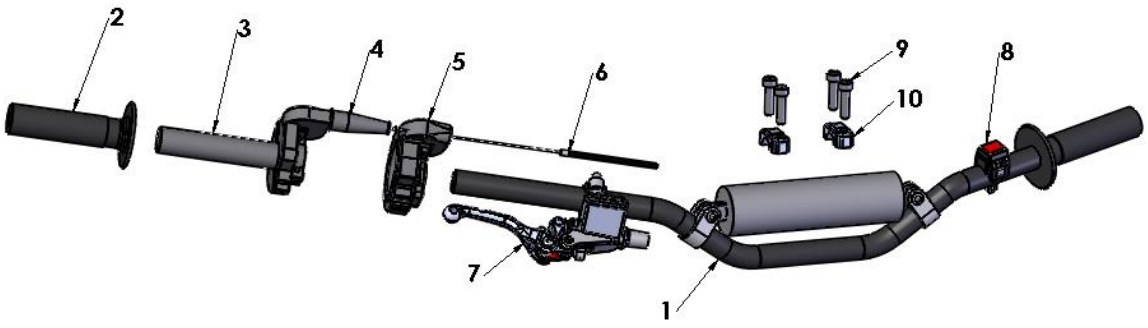


# Parts – Airbox & Inlet System



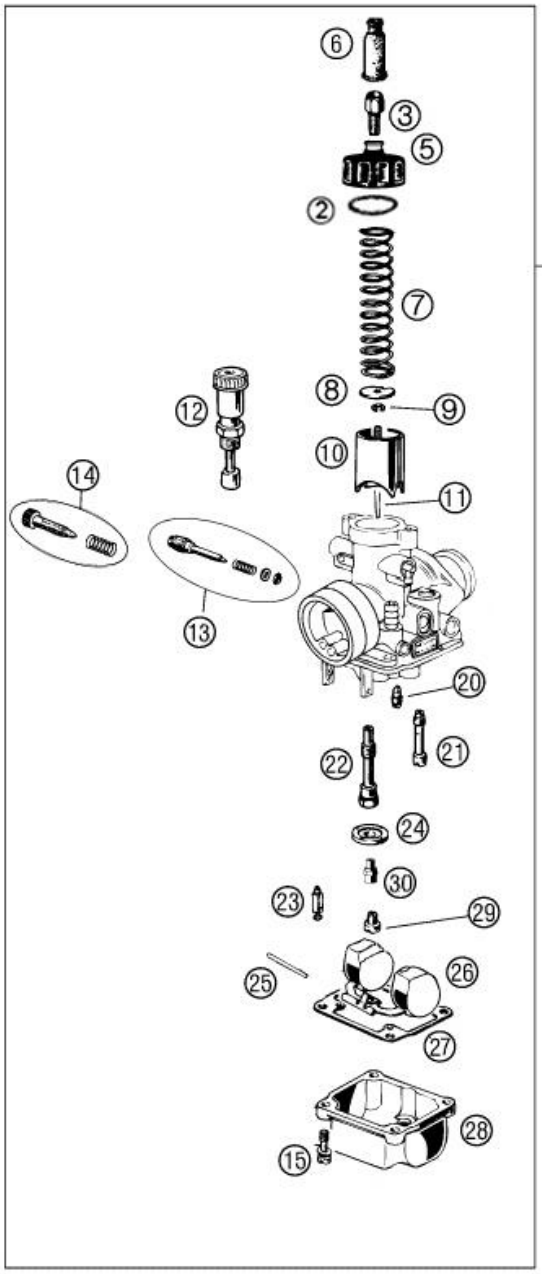

| Air Box | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| | RACS0019 | CARBURETOR – WITH DEEP WELL |
| 1 | TCCS0002 | AIRBOX |
| 2 | HCSP0004 | SCREW – PLASCREW - ALUMINUM |
| 3 | RCCS0016 | AIR FILTER |
| 4 | RCKG0503 | RETAINER – AIR FILTER |
| 5 | TCC60008 | MUDFLAP |
| 6 | MCKGHO03 | HOSE CLAMP – AIRBOX TO BOOT |
| 7 | RCKG0505 | AIR BOOT |
| 8 | MCKGHO01 | HOSE CLAMP – BOOT TO CARB |
| 9 | MCKGHO04 | HOSE CLAMP – CARB TO MANIFOLD |
| 10 | RCMU0036 | INLET MANIFOLD – VENOM |
| 11 | ECMU0246 | REED CAGE ASSEMBLY WITH REEDS VFORCE |
| 12 | ZCCS0001 | GASKET – REEDS TO ENGINE |
| 13 | HCBC0603 | M6X30mm SOCKET HEAD CAP SCREW |
| 14 | HCWF0601 | 6mm FLAT WASHER |
| 15 | RCCM1301 | VELOCITY STACK (SCREWS ONTO CARB) |
| 16 | ECCS0030 | REED REPLACEMENT KIT |

# Parts – Bars and Controls




| Bars and Controls | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | FAMU0014 | HANDLEBAS – PRO TAPER MICROBARS – COBRA KING BEND |
| 2 | TCMU0021 | GRIPS (SET OF TWO) – MICROGRIPS – RED / GRAY FEW |
| 3 | FAMU0016 | THROTTLE ASSEMBLY – PRO TAPER COBRA |
| 3A | FAMU0015 | TUBE ASSEMBLY – THROTTLE – 2 PIECE PRO TAPER MICRO |
| 3B | HCBC0525 | M5 X 25 SHCS – THROTTLE ASSEMBLY |
| 3C | FCMU0041 | STOP RING – MICRO BAR THROTTLE |
| 4 | FCPW0004 | CABLE COVER |
| 5 | FCMU0021 | THROTTLE COVER |
| 6 | FCMU0019 | THROTTLE CABLE |
| 6A | HCNJ0801 | NUT – 8MM JAM |
| 7 | | SEE FRONT BRAKE |
| 8 | FCMU0033 | KILL SWITCH ASSEMBLY |
| 9 | HCBC0806 | M8X30mm SOCKET HEAD CAP SCREW (4 REQ'D) |
| 10 | TCMU0060 | BAR CLAMP |
| | | |
| ACCESSORY | MCMUAM11 | GRIP DONUT – PAIR – PRO TAPER MICRO BAR |
| ACCESSORY | FKMU0004 | HANDLEBAR KIT- PRO TAPER MICRO- WITH COBRA THROTTLE AND GRIPS |

# Parts – Carburetor

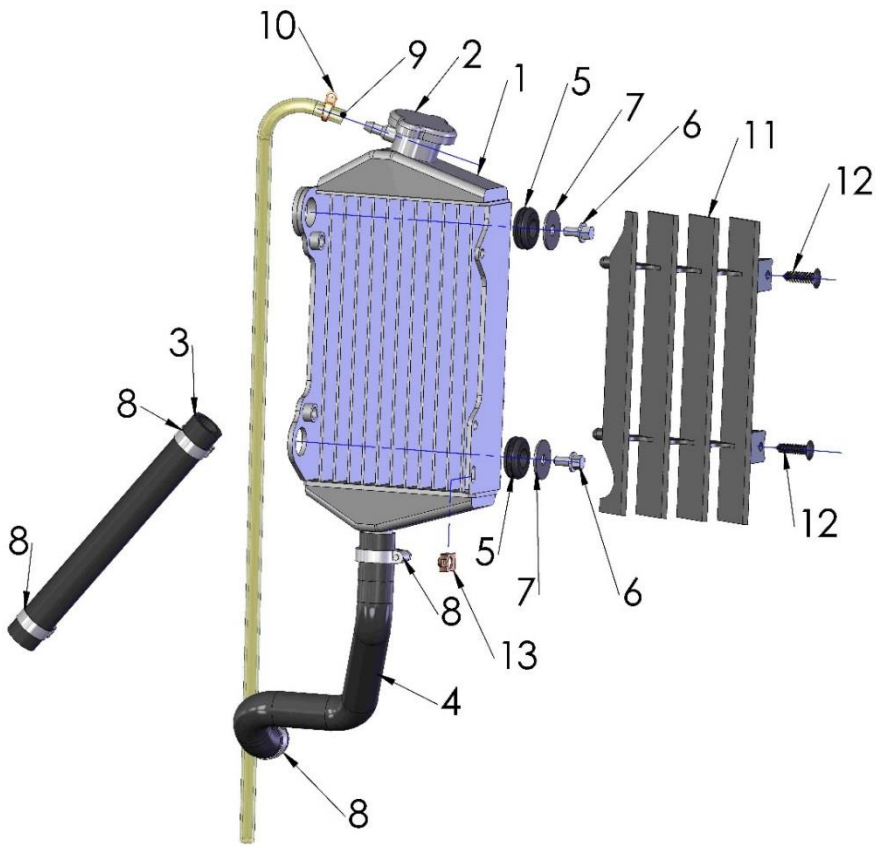



| Carburetor | | |
|---|---|---|
| **REF. #** | **PART #** | **DESCRIPTION** |
| 1 | RACS0019 | CARBURETOR |
| 2 | RCMU0307 | GASKET – CARB TOP |
| 3 | RCMU0003 | CABLE ADJUSTOR |
| 5 | RCMU0046 | TOP CARB THREAD ON |
| 6 | RCMU0102 | RUBBER CABLE CAP SEAL |
| 7 | RCMU0004L | SLIDE SPRING - LIGHT |
| 8 | RCMU0028 | NEEDLE RETAINER PLATE |
| 9 | RCMU0007 | NEEDLE CLIP |
| 10 | RCMU0340 | SLIDE - #40 BIG AIR |
| 11 | RCMU0601 | NEEDLE – W7 |
| 12 | RCMU0204 | CHOKE ASSEMBLY |
| 12A | RCMU0209 | O-RING CHOKE ASSEMBLY |
| 13 | RCMU0009 | FUEL MIXTURE SCREW #16 |
| 14 | RCMU0011 | IDLE ADJUSTMENT SCREW #18 |
| 15 | RCMU0201 | SCREW – FLOAT BOWL |
| 20 | RCMU00xx | PILOT JET, xx denotes size |
| 22 | RCMU0262 | ATOMIZER 2.62 AU STANDARD* |
| 23 | RCMU0107 | FLOAT NEEDLE |
| 24 | RCMU0012 | DIFFUSER #20 |
| 25 | RCMU0016 | FLOAT RETAINER PIN |
| 26 | RCMU0301 | FLOAT #7 |
| 27 | RCMU0103 | FLOAT BOWL GASKET |
| 28 | RCMU0306 | FLOAT BOWL W/ DEEP WELL |
| 29 | RCMU00xx | MAIN JET, xx denotes size |
| 30 | RCMU0044 | MAIN JET EXTENSION |
| | | |
| NOT SHOWN | RCCM1301 | VELOCITY STACK |
| NOT SHOWN | RCCS0006 | FUEL LINE, 5” |
| NOT SHOWN | MCMUCL04 | HOSE CLAMPS – FUEL LINE |
| NOT SHOWN | RCMU0020 | ELBOW - CARB VENT |
| NOT SHOWN | RAMU0001 | CANNULUS - Y STYLE CARB VENTS |
| ACCESSORY | RCMU0330 | SLIDE - #30 BIG AIR |
| ACCESSORY | RCMU0350 | SLIDE - #50 BIG AIR |
| ACCESSORY | RCMU0360 | SLIDE - #60 BIG AIR |
| ACCESSORY | RCMU0026 | NEEDLE - W4 |
| ACCESSORY | RCMU0602 | NEEDLE - W16 |
| | | |
| *Different sizes are available upon request | | |

| PILOT JET | | | MAIN JET* | | | |
|---|---|---|---|---|---|---|
| 48 | RCMU0048 | | 88 | RCMU0088 | 94 | RCMU0094 |
| 50 | RCMU0050 | | 89 | RCMU0089 | 95 | RCMU0095 |
| 52 | RCMU0052 | | 90 | RCMU0090 | 96 | RCMU0096 |
| 55 | RCMU0055 | | 91 | RCMU0091 | 97 | RCMU0097 |
| 60 | RCMU0060 | | 92 | RCMU0092 | 98 | RCMU0098 |
| 65 | RCMU0065 | | 93 | RCMU0093 | | |

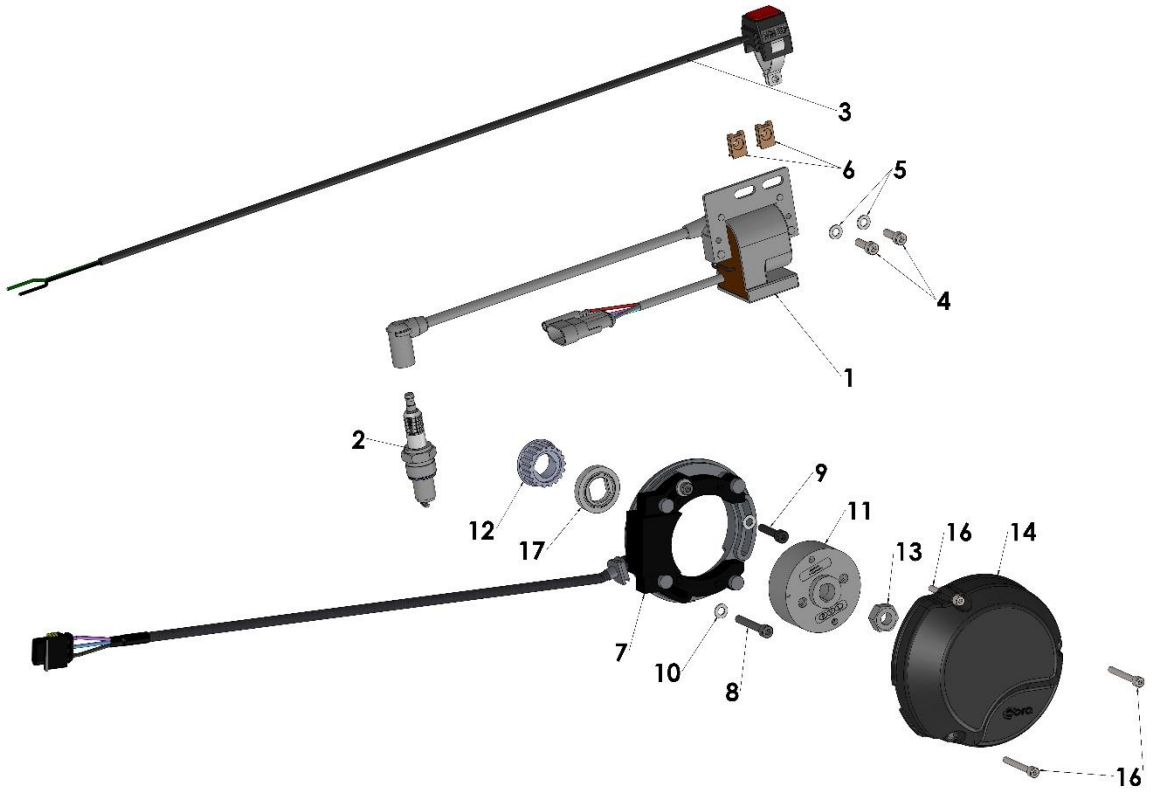
*Larger and Smaller sizes are available upon request

# Parts – Coolant System



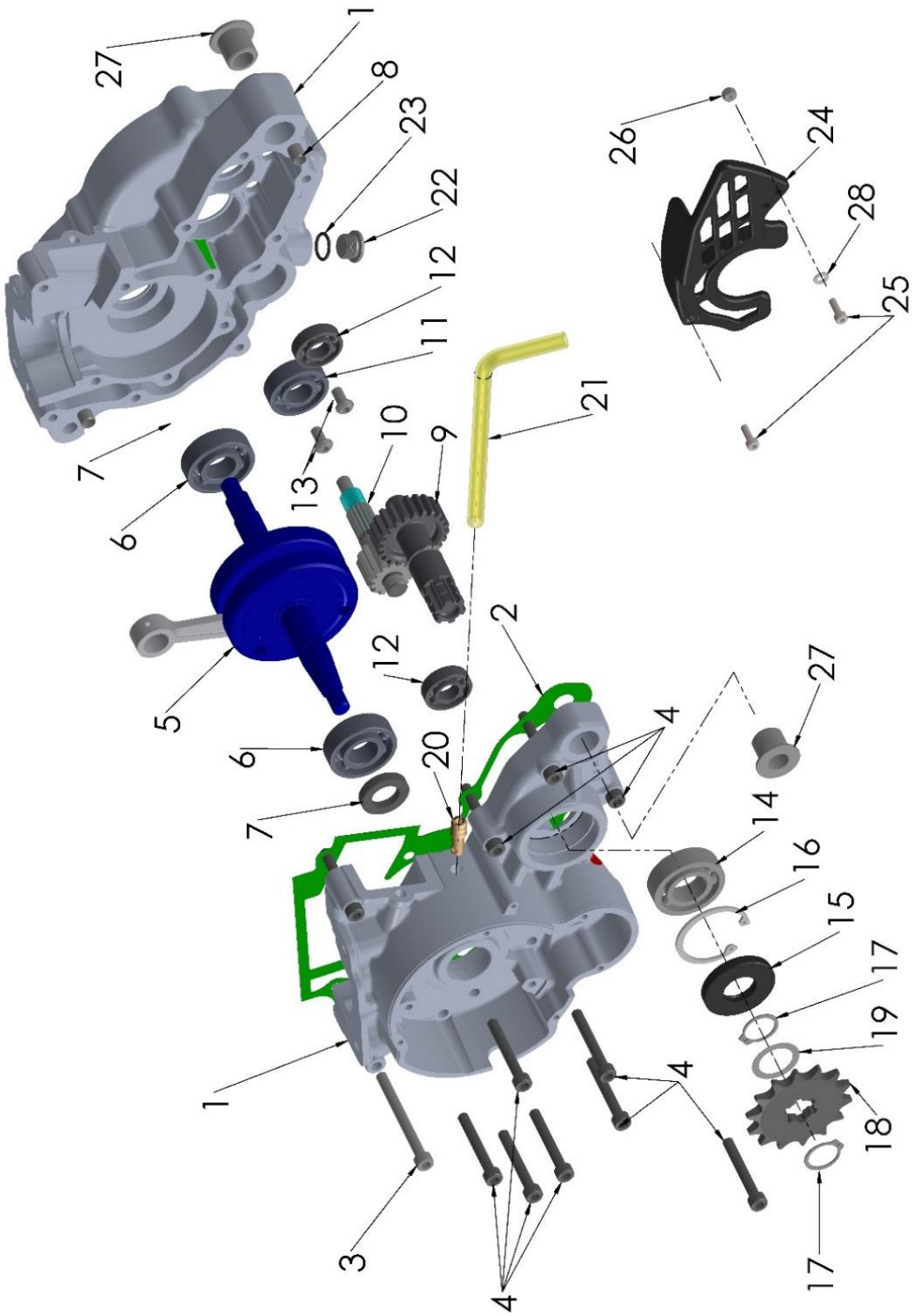

| Coolant System | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | FCCS0058 | RADIATOR WITH CAP - 2016 |
| 2 | FCMU0052 | CAP, 1.3 BAR, WITH RIBS |
| 3 | ECCS0034 | RADIATOR HOSE, TOP, LEFT |
| 4 | ECMU0275 | RADIATOR HOSE, BOTTOM |
| 5A | MCMUGR03 | GROMMET, RADIATOR MOUNTING (TOP) THICK ONE |
| 5B | MCC6GR01 | GROMMET, RADIATOR MOUNTING (BOTTOM) ONE |
| 6 | HCBF0616 | M6X16mm FLANGE HEAD BOLT (2 REQ'D) |
| 7 | HCWF1478 | FLAT WASHER (2 REQ'D) |
| 8 | MCMUCL07 | HOSE CLAMP (4 REQ'D) |
| 9 | FCKG0214 | RADIATOR OVERFLOW HOSE, 22" |
| 10 | MCMUCL05 | HOSE CLAMP FOR OVERFLOW HOSE |
| 11 | FCCS0043 | LOUVER |
| 12 | HCPP0001 | PUSH PIN - REMOVABLE |
| 13 | HCCN0000 | 5mm CLIP NUT |
| TOOL | MCMUTL16 | TOOL – RAD CAP REMOVAL |

# Parts – Electrical System



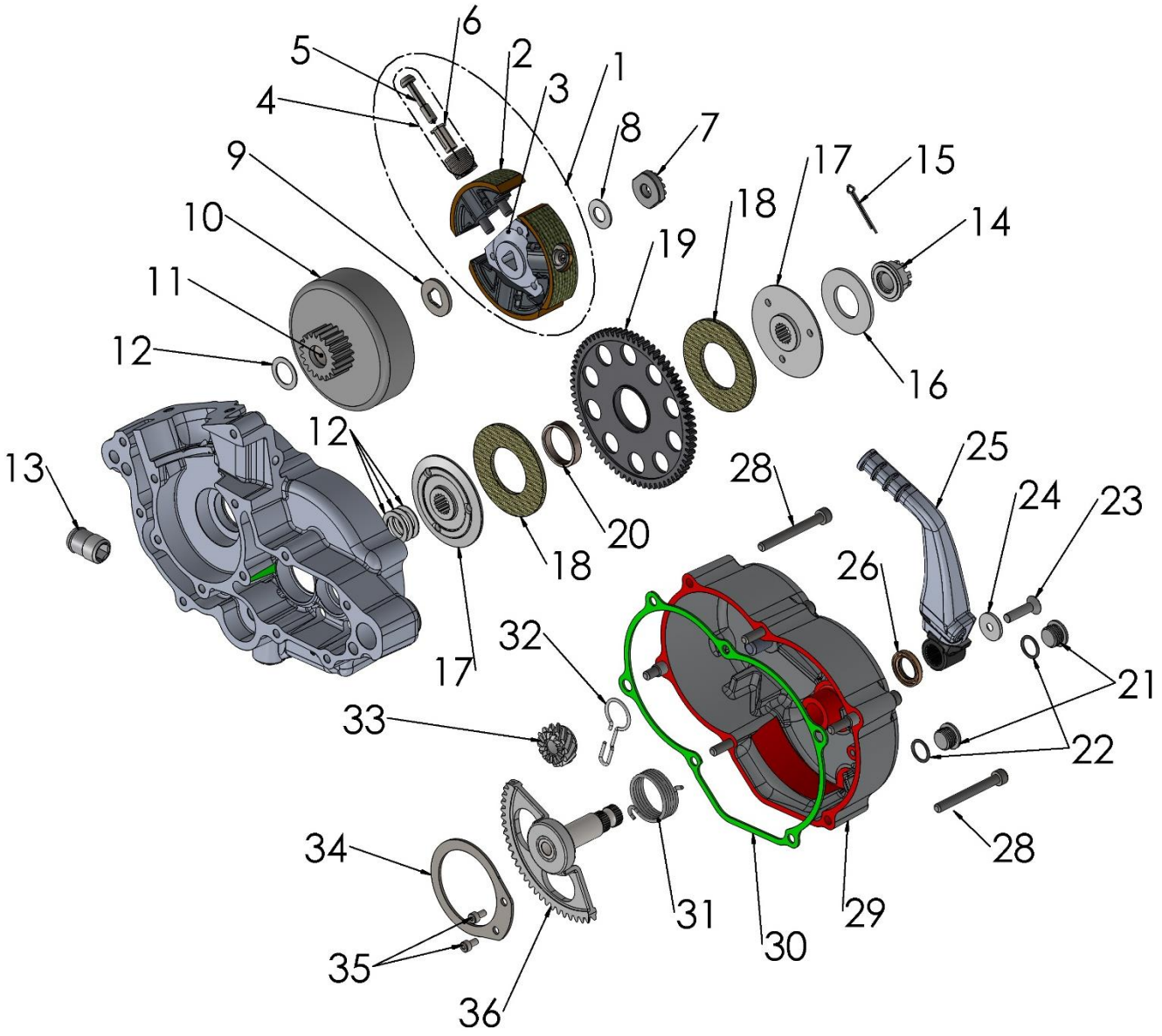

| Electrical System | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | IAMU0005 | COIL/CDI W/SPARK PLUG CAP |
| 2 | ECMU0010I | SPARK PLUG, AUTOLITE IRIDIUM |
| 3 | FCMU0033 | KILL SWITCH ASSEMBLY |
| 4 | HCBC0514 | M5X14mm SOCKET HEAD CAP SCREW (2 REQ'D) |
| 5 | HCWF0501 | 5mm FLAT WASHER (2 REQ'D) |
| 6 | HCCN0000 | 5mm CLIP NUT (2 REQ'D) |
| 7 | ICMU0023 | STATOR WITH GROMMET |
| 8 | HCBC0535 | M5X35mm SOCKET HEAD CAP SCREW (2 REQ'D) |
| 9 | HCBC0525 | M5X25mm SOCKET HEAD CAP SCREW |
| 10 | HCWF0601 | 6MM FLAT WASHER FOR STATOR (3 REQ'D) |
| 11 | ICMU0042 | ROTOR – FEW 2016.5 |
| 12 | EKMU0035 | KIT – PULLEYS, SPACER & BELT RETAINER, VENOM |
| 13 | HCNS1001 | NUT M10 |
| 14 | ECC60166 | IGNITION COVER |
| 15 | | |
| 16 | HCBC0401 | M4X25mm SOCKET HEAD CAP SCREW (3 REQ'D) |
| NOT SHOWN | ICMU0012 | WOODRUFF KEY (NOT SHOWN) |
| NOT SHOWN | FCMU0030 | COVER – KILL SWITCH SCREW |
| ACCESSORY | ICMU0017 | SPARK PLUG CAP – 0 Ω |
| | | |
| TOOL | MCMUTL70 | TOOL – CLUTCH & 50CC FLYWHEEL PULLER |
| TOOL | ECMU0079 | TOOL – DIAL INDICATOR – SPARK TIMING |

# Parts – Engine – Bottom End and Transmission



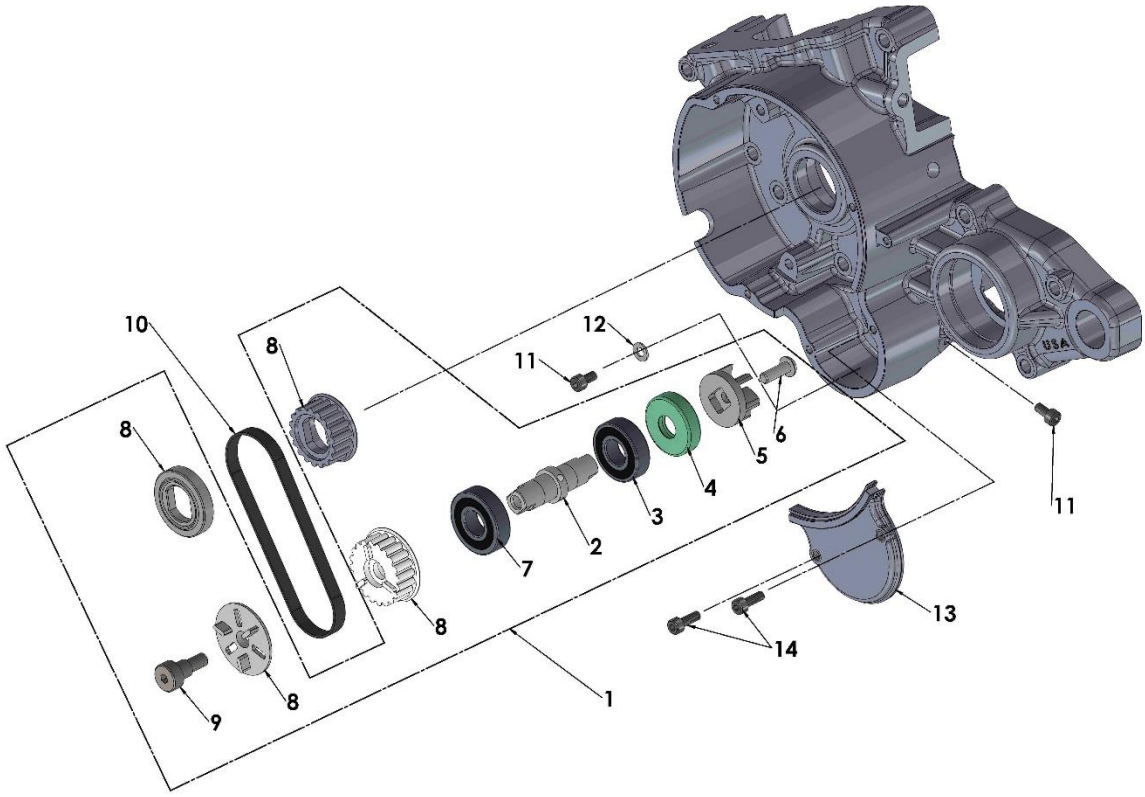
| Engine Bottom End and Transmission | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | EKMU0016 | CRANKCASE SET WITH BEARINGS, SEALS & GASKET |
| 2 | ZCMU0015 | GASKET, CRANKCASE CENTER |
| 3 | HCBC0665 | M6X65mm SOCKET HEAD CAP SCREW (1 REQ'D) |
| 4 | HCBC0604 | M6X35mm SOCKET HEAD CAP SCREW (12 REQ'D) |
| 5 | ECMU0258 | CRANKSHAFT - 3 SIDE SPLINE & INTERNAL W/P |
| 6 | ECMU0016 | BEARING, CRANKSHAFT (2 REQ'D) |
| 7 | ECMU0118 | SEAL, CRANKSHAFT (2 REQ'D) |
| 8 | ECMU0122 | DOWEL (HOLLOW), ENGINE CASE ALIGNEMENT (2 REQ'D) |
| 9 | ECMU0999 | OUTPUT SHAFT, TRANSMISSION WITH GEAR SUPR WIDE |
| 10 | ECMU0268 | SECONDARY SHAFT, TRANSMISSION WITH GEAR |
| 11 | ECMU0001 | BEARING, TRANSMISSION SECONDARY SHAFT |
| 12 | ECKG0031 | BEARING TRANSMISSION SHAFT, (1 EACH CASE HALF) |
| | | |
| 14 | ECKGBR01 | BEARING, TRANSMISSION OUTPUT SHAFT |
| 15 | ECMU0236 | SEAL, OUTPUT SHAFT – 2016.5 |
| 16 | ECMU0237 | SNAP RING – OUTPUT BEARING |
| 17 | ECKGSR03 | SNAP RING, SPROCKET (2 REQ'D) |
| 18 | PCKG0015 | SPROCKET, 15 T (STANDARD, 13, 14 & 16 available) |
| 19A | ECMU0176 | SHIM – SPROCKET .2MM THICK |
| 19B | ECMU0177 | SHIM – SPROCKET .3MM THICK |
| 19C | ECMU0178 | SHIM – SPROCKET .5MM THICK |
| 20 | ECMU0233 | FITTING, CRANKCASE VENT – LARGE |
| 21 | ECMU0557 | VENT HOSE, CRANKCASE |
| 22 | ECMU0272 | OIL FILL PLUG, VENOM |
| 23 | ZCMUB014 | O'RING – OIL FILL PLUG |
| 24 | ECMU0280 | GUARD – COUNTERSHAFT SPROCKET – CX50 |
| 25 | HCBC0412 | M4 X 12MM SOCKET HEAD CAP SCREW (2 REQ'D) |
| 26 | HCNL0401 | M4 LOCKNUT |
| 27 | ECC60028 | BUSHING – ENGINE PIVOT – (1 IN EACH SIDE CASE) |
| 28 | HCWF0401 | 4MM FLAT WASHER |
| | | |
| | ZKMU2016 | COMPLETE GASKET KIT |
| | EACS2017 | COMPLETE ENGINE |

# Parts – Engine Clutch and Kick Lever



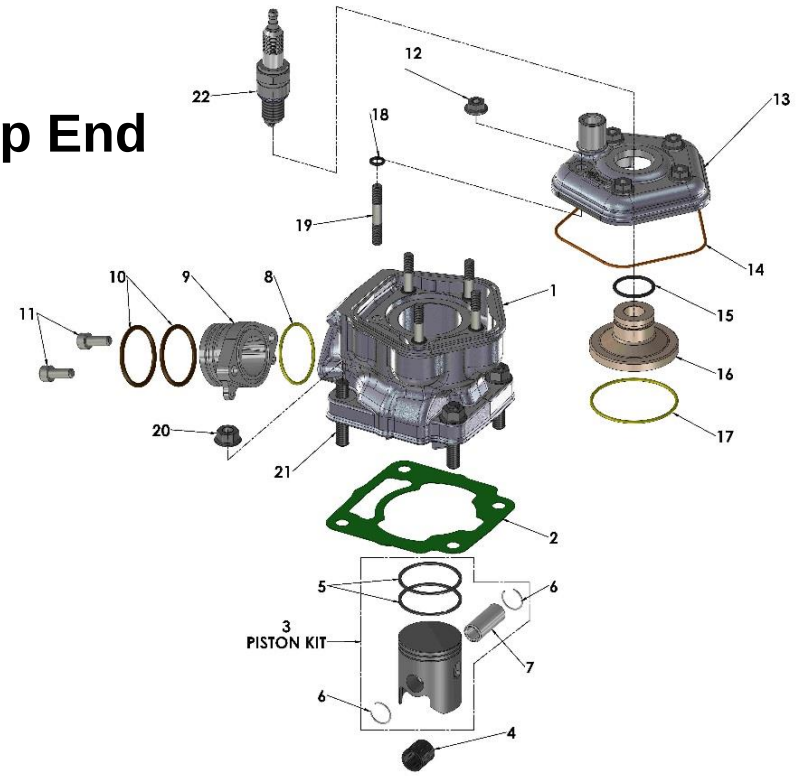
| Engine – Clutch and Kick Starter | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | CAFW0500 | CLUTCH COMPLETE ASSY - 5GX |
| 2 | CAFW0050 | 3 SHOES & WASHER STACKS W BOLTS - 5GX |
| 3 | CCMU0005 | CLUTCH ARBOR – 3 SIDED SPLINE |
| 4 | CAFW0005 | WASHER STACKS - SET OF 3 - CLUTCH - 5GX |
| 5 | HCBT0001 | BOLT - TORX - 5GX CLUTCH - M6 X 29 |
| 6 | CCMU0008 | SLEEVE - CLUTCH STACK 5GX |
| 7 | ECMU0018 | CLUTCH NUT, SPECIAL |
| 8 | ECDC0030 | BELLEVILLE LOCK WASHER |
| 9 | CCMU0007 | CLUTCH BACKING SPACER |
| 10 | ECMU0120 | CLUTCH BASKET WITH NEEDLE BEARING |
| 11 | ECMU0119 | CLUTCH BEARING |
| 12 | ECMU0040 | CLUTCH TO HUB SPACER(S) (0.030”, 0.76mm) |
| 13 | ECMU0132 | FITTING - COOLANT |
| 14 | ECMU0307 | NUT V3 CFD |
| 15 | HCCP0002 | COTTER PIN 3/32 X 1 ½” |
| 16 | ECMU0308 | BELLEVILLE SPRING V3 CFD |
| 17 | ECMU0306 | SLIP HUB V3 CFD (2) REQ’D |
| 18 | ECMU0249 | FRICTION MATERIAL V3 CFDTHICK (2 REQ’D) |
| 19 | ECMU0301 | GEAR V3 CFD |
| 20 | ECMU0305 | BUSHING V3 CFD 7mm |
| 21 | ECMU0272 | OIL FILL PLUG, VENOM |
| 22 | ZCMUB014 | O’RING – OIL FILL PLUG |
| 23 | HCFH0616 | M6X16mm FLAT HEAD BOLT |
| 24 | ECMU0250 | WASHER – KICK LEVER MOUNTING |
| 25 | EAMU0011 | KICK LEVER |
| 26 | ECDC0078 | SEAL - KICKSHAFT |
| 28 | HCBC0608 | M6X55mm SHCS (2 REQ’D) |
| 29 | ECMU0263 | CLUTCH COVER ASSEMBLY WITH SEAL AND PIN -2016 |
| 30 | ZCMU0017 | GASKET - CLUTCH COVER |
| 31 | ECMU0273 | SPRING, KICKSTART |
| 32 | ECMUSP01 | KICK START DOG SPRING (PAPER CLIP / ‘J’ SPRING) |
| 33 | ECMU0207 | KICKSTART GEAR SMALL |
| 34 | ECMU0278 | BRACKET – KICK SHAFT RETAINING |
| 35 | HCBC0508 | M5 X 8mm SHCS (2 REQ’D) |
| 36 | ECMU0269 | KICKSTART GEAR & SHAFT |
| | | |
| KIT | HKCP0001 | 10 PACK OF COTTER PINS (HCCP0002) |
| KIT | EKMU0002 | KICKSTART PIVOT KIT SPRING-BALL-SCREW |
| KIT | HKAM0022 | CLUTCH SHIM HARDEWARE KIT |
| KIT | EKMU0033 | CFD RFRESH KIT W’ FRICTIONS, SPRING, BUSHING AND COTTER PINS |
| | | |
| TOOL | MCMUTL40 | TOOL - CFD – CHECK STOP PIN - VENOM |
| TOOL | MCMUTL18 | TOOL – SPROCKET SOCKET – HIGH TORQUE |
| TOOL | ECMU0078 | TOOL – SOCKET - CLUTCH NUT – CX50 |
| TOOL | MCMUTL03 | TOOL – PISTON STOP |
| TOOL | MCMUTL70 | TOOL – PULLER – CLUTCH AND FLYWHEEL – CX50 |

# Parts – Engine – Water Pump



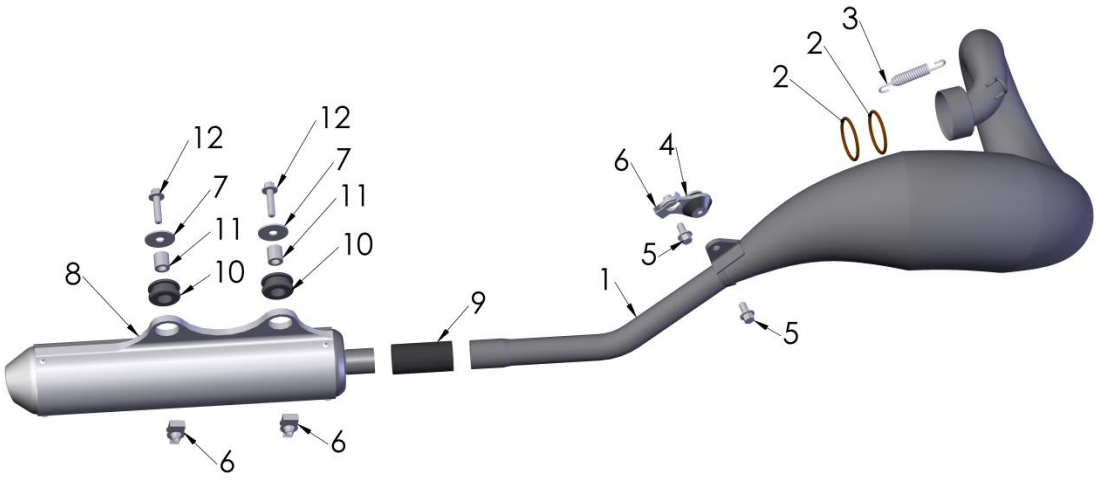

| Engine – Ignition and Water Pump | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | EKMU0021 | WATER PUMP KIT |
| 2 | ECMU0265 | SHAFT, WATER PUMP |
| 3 | ECKG0072 | BEARING, WATER PUMP |
| 4 | ECKG0074 | SEAL, WATER PUMP SHAFT |
| 5 | ECKG0073 | IMPELLER, WATER PUMP (ALUMINUM) |
| 6 | HCBB0512 | M5X12mm BUTTON HEAD |
| 7 | ECMU0167 | BEARING – WATER PUMP BIG |
| 8 | EKMU0035P | KIT – PULLEYS, SPACER & BELT RETAINER, FWE 2016.5 |
| 9 | HCBS0009 | SHOULDER BOLT |
| 10 | ECKG0170 | WATER PUMP BELT |
| 11 | HCBC0408 | M4X8mm SOCKET HEAD CAP SCREW (2 PLACES) |
| 12 | HCWF0401 | 4MM FLAT WASHER |
| 13 | ECMU0274 | COVER – WATER PUMP |
| 14 | HCBC0412 | M4 X 12 SHCS (2 REQ'D) |
| | | |
| TOOL | MCMUTL20 | TOOL – WATER PUMP INSTALL - VENOM |

# Parts – Engine – Top End




| Engine – Top End | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | EKMU0015 | CYLINDER KIT (INCLUDES STUDS, PISTON, RINGS, PIN & CLIPS) |
| 2 | ZCMU0102 | BASE GASKET (0.20mm) THICK |
| 2 | ZCMU0103 | BASE GASKET (0.30mm) THICK |
| 2 | ZCMU0104 | BASE GASKET (0.40mm) THICK |
| 2 | ZCMU0105 | BASE GASKET (0.50mm) THICK |
| 2 | ZCMU0106 | BASE GASKET (0.60mm) THICK |
| 2 | ZCMU0107 | BASE GASKET (0.70mm) THICK |
| 2 | ZCMU0108 | BASE GASKET (0.80mm) THICK |
| 3 | ECMU0276A | PISTON KIT – 'A' SIZE (B, C, and D sizes available) |
| 4 | ECMU0077 | BEARING, WRIST PIN |
| 5 | ECMU0155 | PISTON RINGS (2 PER SET) |
| 6 | ECMUSR00 | SNAP RING FOR PISTON (2 REQ'D) |
| 7 | ECKG0012 | WRIST PIN |
| 8 | ZCMUOR07 | O-RING, EXHAUST FLANGE |
| 9 | ECMU0262 | EXHAUST FLANGE |
| 10 | ZCMOTE11 | O-RINGS – PIPE TO FLANGE (2 REQ'D) |
| 11 | HCBC0612 | M6X12, EXHAUST FLANGE SCREW (2 REQ'D) |
| 12 | HCNF0601 | 6MM FLANGE NUT (5 REQ'D) |
| 13 | ECC60149 | CYLINDER HEAD OUTER |
| 14 | ZCC60009 | O-RING, CYLINDER HEAD LARGE |
| 15 | ZCMUOR23 | O-RING CYLINDER HEAD SMALL |
| 16 | ECMU0279 | CYLINDER HEAD, INSERT, 2017 |
| 17 | ZCMUOR05 | O-RING CYLINDER HEAD MEDIUM - YELLOW |
| 18 | ZCMUOR03 | O-RING CYLINDER STUD (5 REQ'D) |
| 19 | ECC60107 | 6MM STUD (5 REQ'D) |
| 20 | HCNF0801 | 8MM FLANGE NUT (4 REQ'D) |
| 21 | ECC60109 | STUD, CYLINDER 8mm (4 REQ'D) |
| 22 | ECMU0010I | SPARK PLUG, IRIDIUM AUTOLITE, XS61 |
| TOOL | MCMUTL03 | TOOL-PISTON STOP |
| ACCESSORY | ZKMUOR13 | TOP END O-RING KIT |
| | EACS2017 | COMPLETE ENGINE |

# Parts – Exhaust System




| Exhaust System | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | XACS2016FWE | EXHAUST PIPE – KING |
| 2 | ZCMOTE11 | HEADER PIPE O-RINGS (2 REQ'D) |
| 3 | XCMU0005 | SPRING – EXHAUST (2 REQ'D) |
| 4 | XCMU0033 | ISOLATION MOUNT |
| 5 | HCBF0616 | M6X16mm FLANGE HEAD BOLT (2 REQ'D) |
| 6 | HCHA0003 | 6mm CLIP NUT – FOR FRONT PIPE MOUNT |
| 7 | HCWF1478 | PIPE GROMMET WASHER (2 REQ'D) |
| 8 | XCMU0032 | SILENCER |
| 9 | XCC60017 | PIPE / SILENCER SEAL |
| 10 | MCMUGR03 | MOUNTING GROMMET (2 REQ'D) |
| 11 | TCKG0001 | SPACER (2 REQ'D) |
| 12 | HCBF0630 | M6X30mm FLANGE HEAD BOLT (2 REQ'D) |
| | | |
| ACCESSORY | XCMU0026 | SILENCER PACKING KIT |

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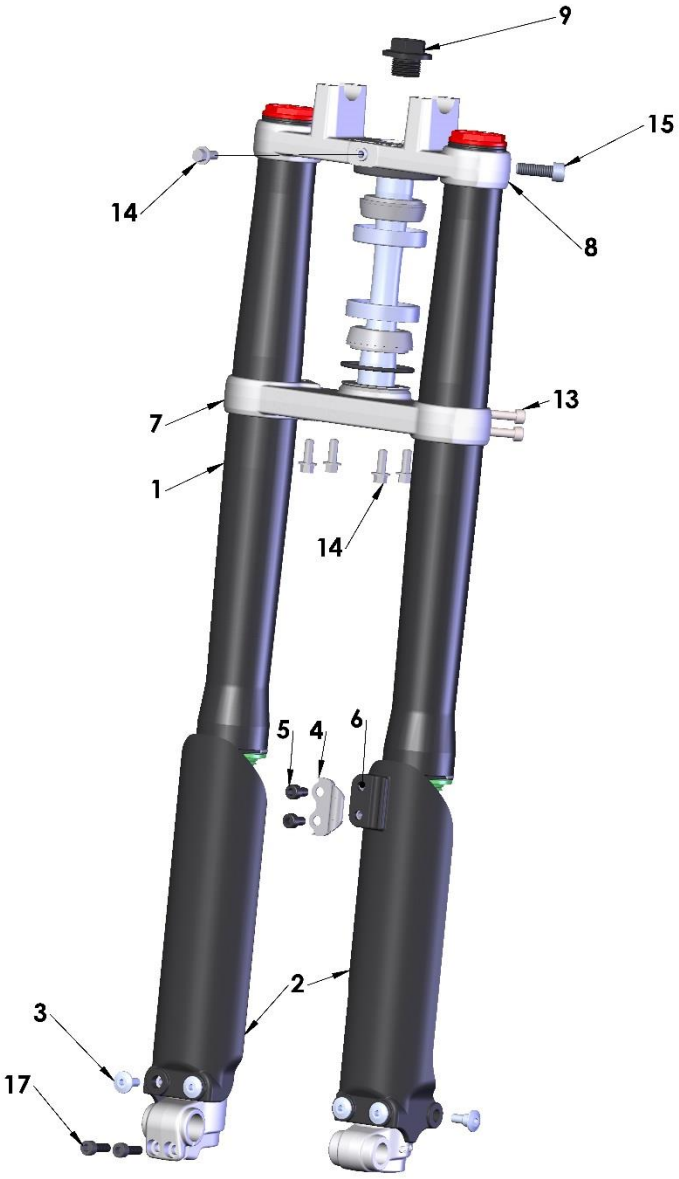
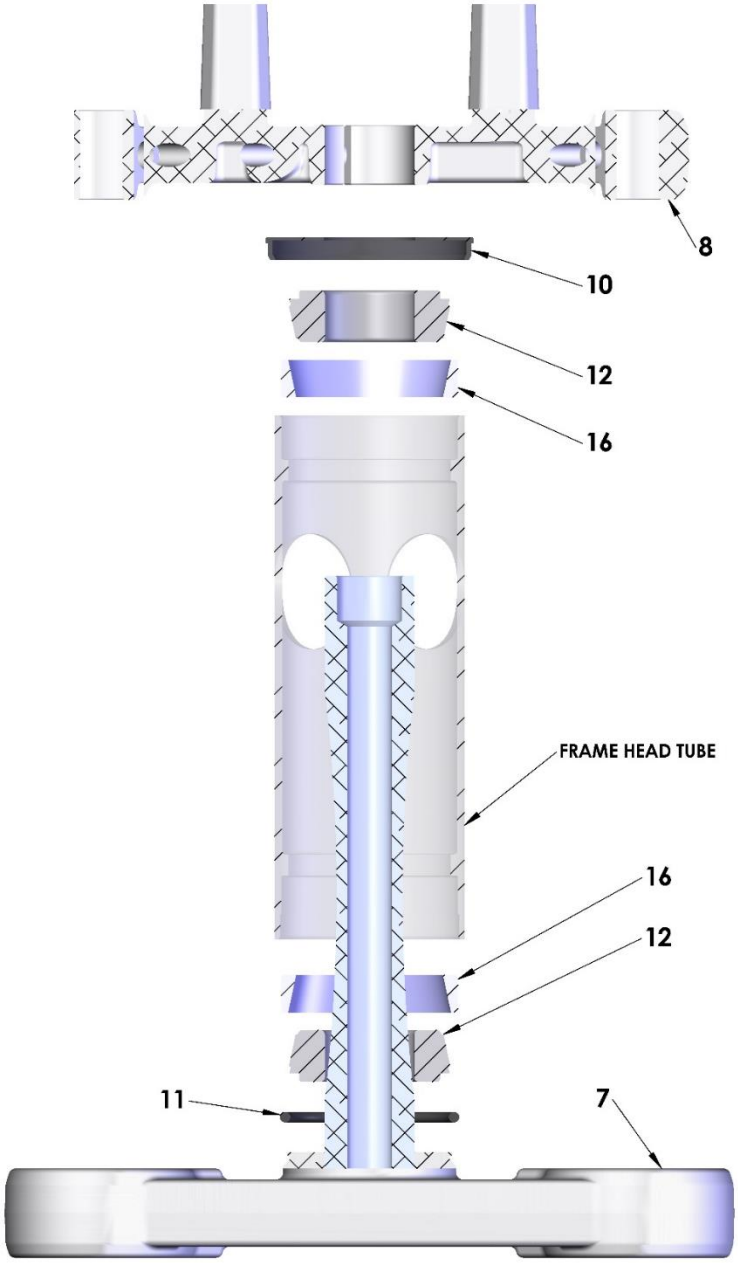
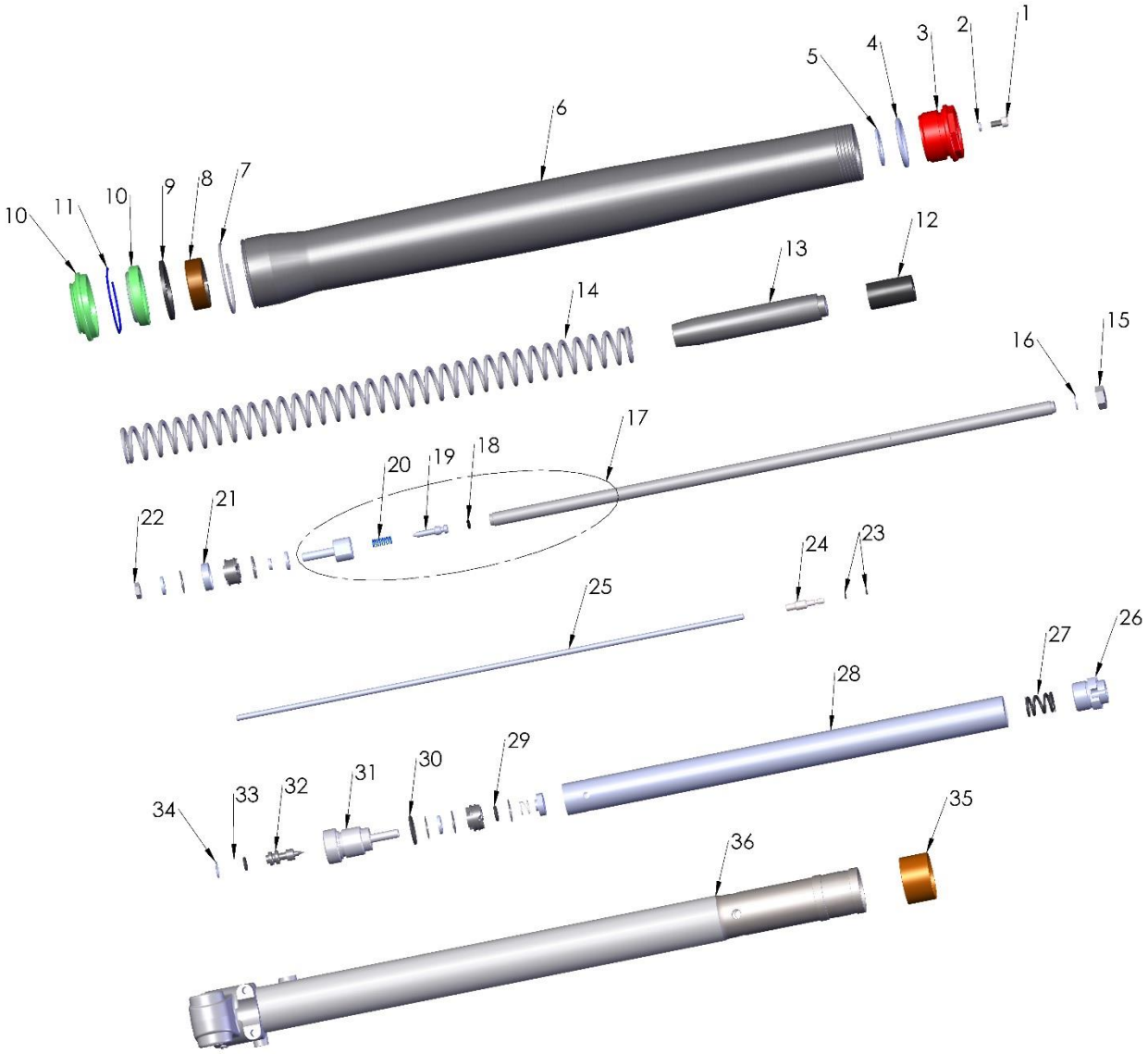
# Parts – Forks & Triple Clamps



| Front Forks and Triple Clamp | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | KACS2018 | FORK COMPLETE, BRAKE & NON-BRAKE SIDE |
| 2 | KCMU0018 | FORK GUARD SET – 3 BOLT |
| 3 | HCSP0610 | BOLT - FORK GUARD (6 REQ'D) |
| 4 | BCC60015 | BRAKELINE CLAMP |
| 5 | HCBC0612 | M6X12mm, SOCKET HEAD CAP SCREW (2 REQ'D) |
| 6 | HCNL0601 | M6 LOCKNUT (2 REQ'D) |
| 7 | FACS0009 | TRIPLE CLAMP BOTTOM ASSY, (CLAMP & STEM) |
| 8 | FCMU0072 | TRIPLE CLAMP TOP |
| 9 | FCMU0074 | BOLT - STEERING STEM - ALUMINUM |
| 10 | FCMU0079 | DUST COVER (1 REQ'D) |
| 11 | FCMU0044 | O-RING (1 REQ'D) |
| 12 | FCMU0004 | STEERING HEAD BEARING (2 REQ'D) |
| 13 | HCBC0625 | M6X25mm SOCKET HEAD CAP SCREW |
| 14 | HCBF0616 | M6X16mm FLANGE HEAD BOLT (NUMBER PLATE & FENDER) |
| 15 | HCBC0825 | M8x 25mm SOCKET HEAD CAP SCREW |
| 16 | FCMU0011 | RACE – STEERING STEM BEARING (2 REQ'D) |
| 17 | HCBC0602 | M6X20MM SOCKET HEAD CAP SCCREW (2 REQ'D) |
| | | |
| ACCESSORY | FKMU0008 | KIT – STEERING STEM BEARINGS, RACES AND SEALS-2019 |
| | | |
| TOOL | MCMUTL44 | TOOL – BEARING AND SEAL INSTALLER ASSY |

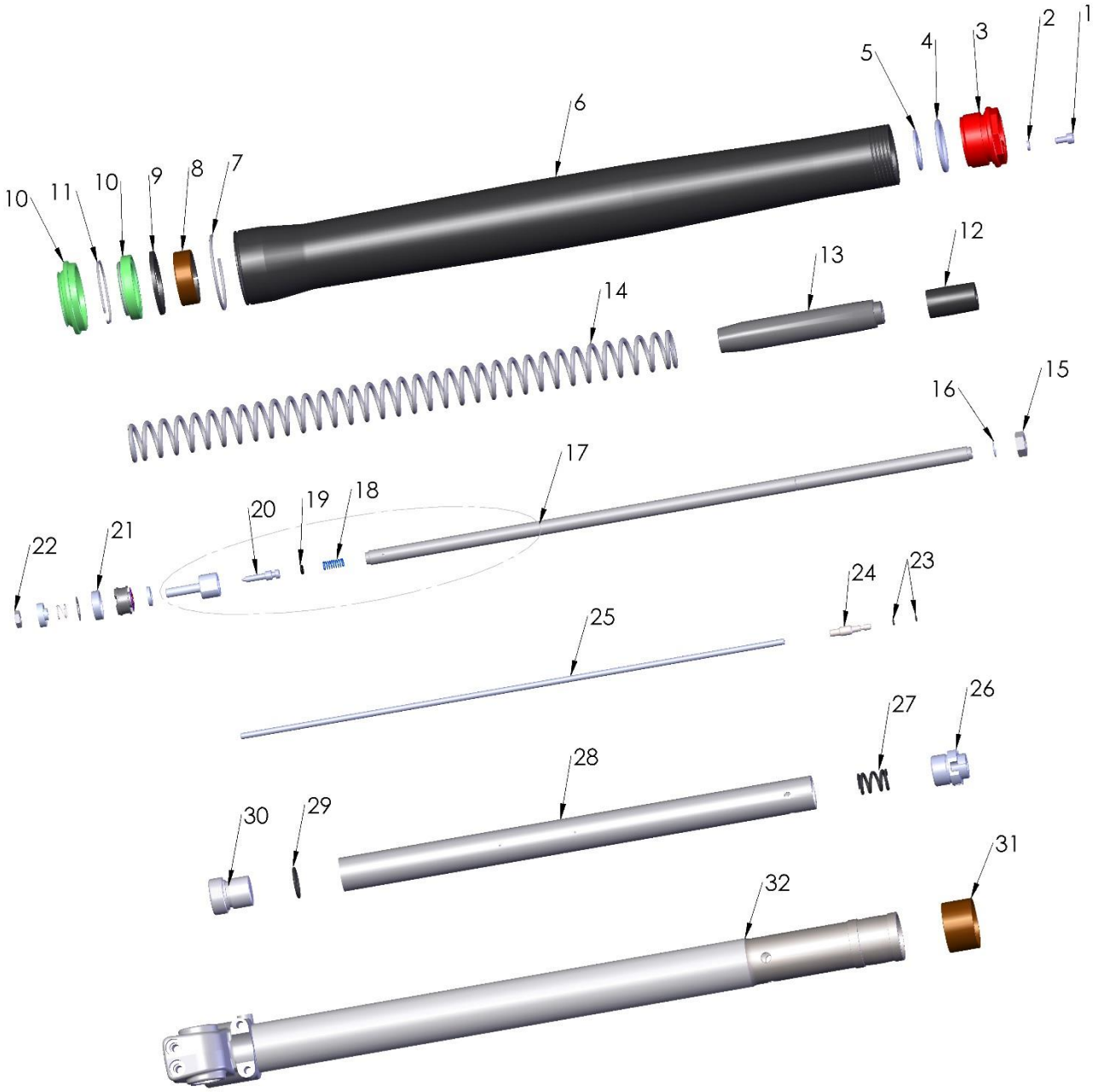
# Parts – Forks – Leg Assembly – Brake Side



# Parts – Forks – Leg Assembly – Brake Side

| REF # | PART # | DESCRIPTION |
|---|---|---|
| 1 | HCBC0408 | 4 X 8 SHCS CLEAR ZINC |
| 2 | ZCKG0001 | GASKET, BLEED SCREW FORK |
| 3 | KCCS0004C | FORK CAP - CONVENTIONAL 32MM USD |
| 4 | ZCMUOR18 | O-RING – 3MM X 27MM ID |
| 5 | KCCS0036 | SPRING WEAR PLATE 32MM |
| 6 | KCCS0005 | OUTER TUBE 32MM |
| 7 | KCCS0035 | RING CLIP FORK OUTER WEAR RING 32MM |
| 8 | KCCS0006 | FORK GLIDE RING BOTTOM 32MM |
| 9 | KCCS0032 | FORK SEAL SPACER 32MM |
| 10 | KKCS0004 | FORK SEAL AND SWIPER KIT 32MM |
| 11 | KCCS0002 | RING CLIP - FORK SEAL RETAINER - 32MM |
| 12 | KCC60067 | FORK JOUNCE BUMPER |
| 13 | KCCS0013 | FORK SPRING GUIDE 32MM |
| 14 | KCCS3225 | STANDARD SPRING - FORK 0.25 KG/MM 32mm |
| 14 | KCCS3223 | LIGHT SPRING - FORK 0.23 KG/MM 32mm |
| 14 | KCCS3227 | HEAVY SPRING - FORK 0.257KG/MM 32mm |
| 15 | HCNJ3824 | NUT JAM 3/8-24 CLASS 8 |
| 16 | KCC60068 | RING CLIP - FORK SPRING GUIDE RETAINER |
| 17 | KAC60003 | DAMPER ROD ASSEMBLY |
| 18 | KCC60058 | O-RING MID-VALVE ADJ NEEDLE |
| 19 | KCC60050 | FORK MID-VALVE ADJUSTER NEEDLE |
| 20 | KCC60051 | SPRING - FORK ADJUSTER NEEDLE |
| 21 | KCCS0018 | SEAL - FORK PISTON - MID VALVE |
| 22 | HCNJ0601 | 6MM JAM NUT |
| 23 | BCKG0033 | O-RING – 2MMID |
| 24 | KCCS0033 | ADJUSTER SCREW TOP 32MM |
| 25 | KCC60049 | ADJUSTER PIN |
| 26 | KCMU0013 | CARTRIDGE CAP |
| 27 | KCKG0050 | TOP OUT SPRING |
| 28 | KCKG0019 | CARTRIDGE TUBE |
| 29 | KCMU0021 | O-RING - FORK - BASE VALVE |
| 30 | ZCKGB017 | O-RING - FORK BOTTOM PLUG |
| 31 | KCC60069 | FORK BOTTOM PLUG – ADJUSTABLE |
| 32 | KCC60048 | ADJUSTMET SCREW – FORK BOTTOM PLUG |
| 33 | ZCMUOR03 | O-RING – ADJUSTMENT SCREW |
| 34 | KCCS0031 | RING CLIP – FORK ADJUSTMENT SCREW |
| 35 | KCCS0007 | FORK GLIDE RING |
| 36 | KAMU0003 | FOR LOWER – COMPLETE – BRAKE SIDE |
| | | |
| TOOL | MCMUTL39 | TOOL – FORK SEAL / SWIPER DRIVER – 32MM |
| TOOL | MCMUTL32 | TOOL – FORK CAP WRENCH – 32MM |
| TOOL | MCMUTL04 | TOOL – CARTRIDGE TUBE WRENCH |

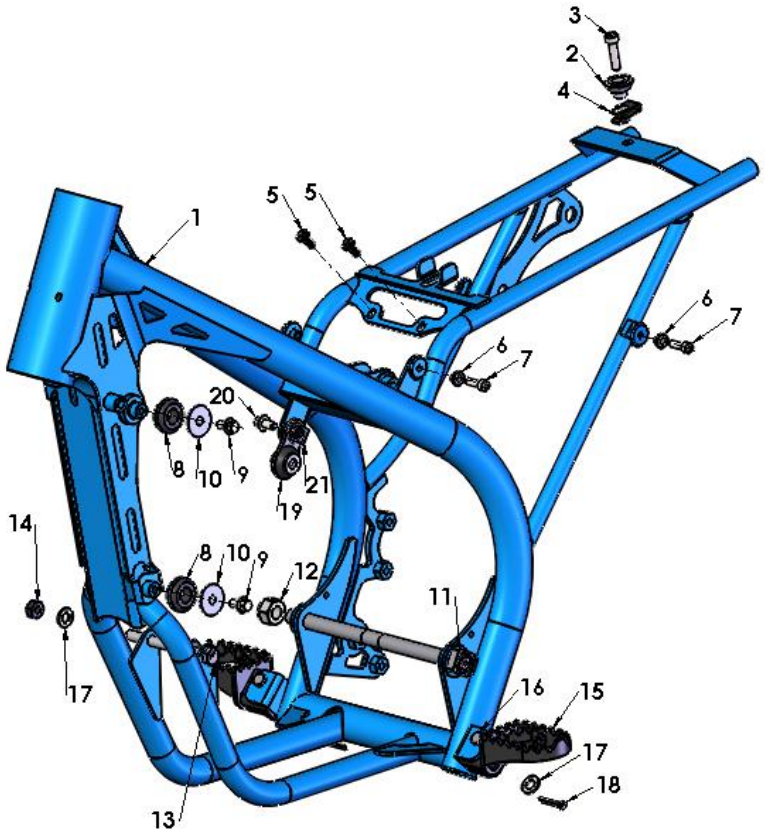
# Parts - Forks – Leg Assembly – Non-brake Side



# Parts - Forks – Leg Assembly – Non-brake Side

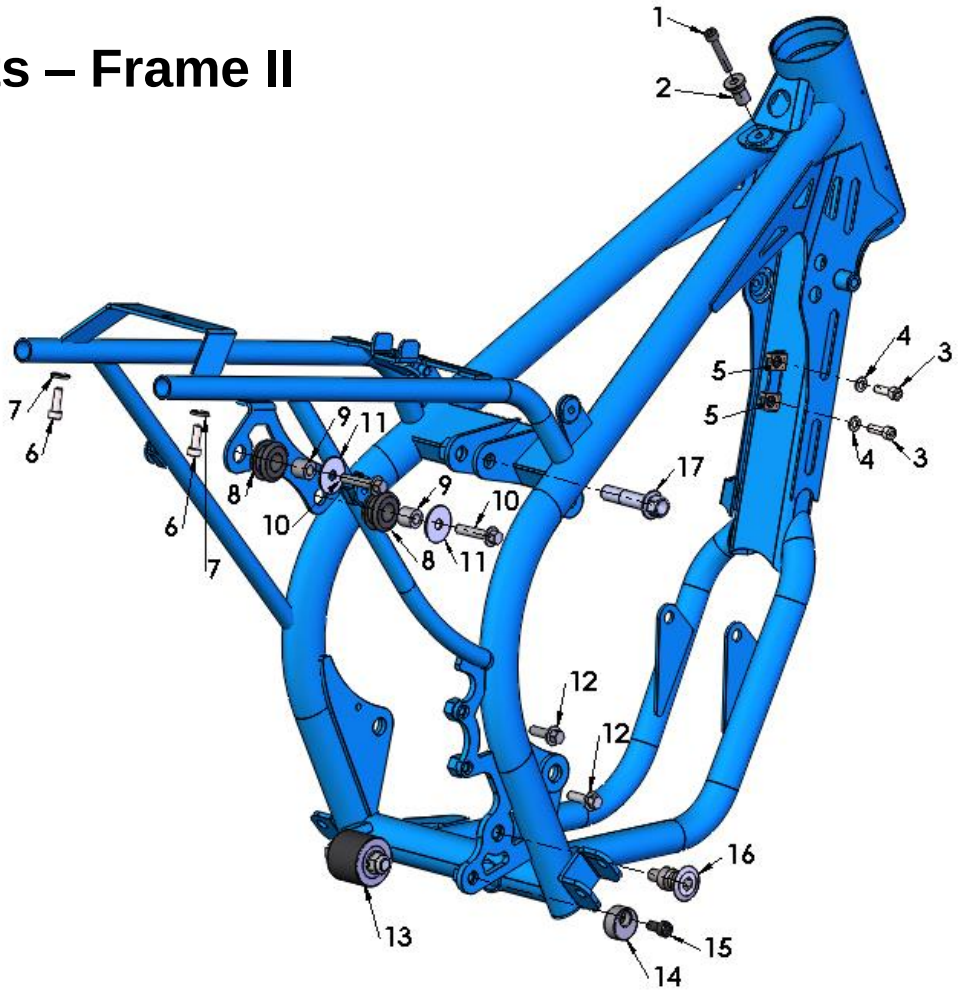
| REF # | PART # | DESCRIPTION |
|---|---|---|
| 1 | HCBC0408 | 4 X 8 SHCS CLEAR ZINC |
| 2 | ZCKG0001 | GASKET, BLEED SCREW FORK |
| 3 | KCCS0004S | FORK CAP - CONVENTIONAL 32MM USD |
| 4 | ZCMUOR18 | O-RING – 3MM X 27MM ID |
| 5 | KCCS0036 | FORK - SPRING WEAR PLATE 32MM |
| 6 | KCCS0005 | FORK - OUTER TUBE 32MM |
| 7 | KCCS0035 | RING CLIP FORK OUTER WEAR RING 32MM |
| 8 | KCCS0006 | GLIDE RING BOTTOM 32MM |
| 9 | KCCS0032 | SEAL SPACER 32MM |
| 10 | KKCS0004 | FORK SEAL AND SWIPER KIT 32MM |
| 11 | KCCS0002 | RING CLIP - FORK SEAL RETAINER - 32MM |
| 12 | KCC60067 | FORK JOUNCE BUMPER |
| 13 | KCCS0013 | SPRING GUIDE 32MM |
| 14 | KCCS3225 | STANDARD SPRING - FORK 0.25 KG/MM 32mm |
| 14 | KCCS3223 | LIGHT SPRING - FORK 0.23 KG/MM 32mm |
| 14 | KCCS3227 | HEAVY SPRING - FORK 0.257KG/MM 32mm |
| 15 | HCNJ3824 | NUT JAM 3/8-24 CLASS 8 |
| 16 | KCC60068 | RING CLIP - FORK SPRING GUIDE RETAINER |
| 17 | KAC60003 | DAMPER ROD ASSEMBLY |
| 18 | KCC60058 | O-RING MID-VALVE ADJ NEEDLE |
| 19 | KCC60050 | FORK MID-VALVE ADJUSTER NEEDLE |
| 20 | KCC60051 | SPRING - FORK ADJUSTER NEEDLE |
| 21 | KCCS0018 | SEAL - FORK PISTON - MID VALVE |
| 22 | HCNJ0601 | 6MM JAM NUT |
| 23 | BCKG0033 | O-RING – 2MMID |
| 24 | KCCS0033 | ADJUSTER SCREW TOP 32MM |
| 25 | KCC60049 | ADJUSTER PIN |
| 26 | KCMU0013 | CARTRIDGE CAP |
| 27 | KCKG0050 | TOP OUT SPRING |
| 28 | KCC60056 | CARTRIDGE TUBE |
| 29 | KCMU0021 | O-RING - FORK - BASE VALVE |
| 30 | KCC60057 | PLUG – FORK BOTTOM – SMART LEG |
| 31 | KCCS0007 | FORK GLIDE RING |
| 32 | KAMU0004 | FOR LOWER – COMPLETE – NON BRAKE SIDE |
| | | |
| TOOL | MCMUTL39 | TOOL – FORK SEAL / SWIPER DRIVER – 32MM |
| TOOL | MCMUTL32 | TOOL – FORK CAP WRENCH – 32MM |
| TOOL | MCMUTL04 | TOOL – CARTRIDGE TUBE WRENCH |

# Parts – Frame I



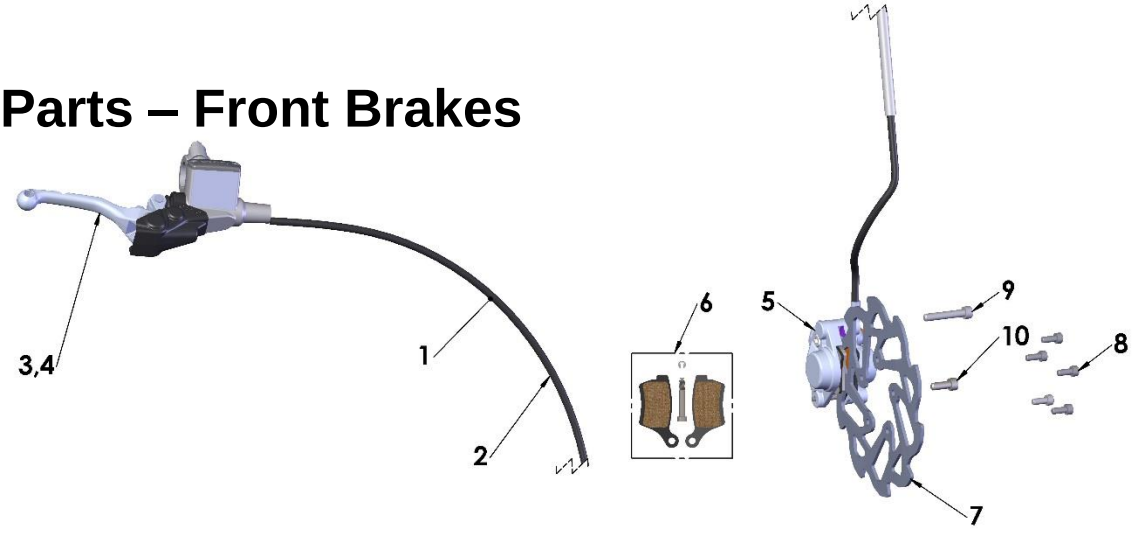

| Frame | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | FACS2019 | FRAME – 2019 KING & FW |
| 2 | TCC60018 | SEAT MOUNT SPACER |
| 3 | HCBC0625 | M6X25mm SOCKET HEAD CAP SCREW |
| 4 | HCHA0003 | 6mm CLIP NUT (MOUNTS TO FENDER TO HOLD SEAT) |
| 5 | HCSP0003 | PLASCREW AIRBOX MOUNTING (2 REQ'D) |
| 6 | TCC60017 | WASHER – 5mm BODY PANEL (2 REQ'D) |
| 7 | HCBC0514 | M5X14mm SHCS |
| 8 | MCC6GR01 | GROMMET, RADIATOR MOUNTING (2REQ'D) |
| 9 | HCBF0616 | M6X16mm FLANGE HEAD BOLT (2 REQ'D) |
| 10 | HCWF1478 | FLAT WASHER (2 REQ'D) |
| 11 | HCBH1203 | M12 SWINGARM PIVOT BOLT |
| 12 | HCNL1201 | M12 SWINGARM LOCK NUT |
| 13 | HCBH0880 | M8X80mm HEX HEAD BOLT |
| 14 | HCNL0801 | M8 LOCK NUT |
| 15 | TAMU0005 | FOOTPEGS (PAIR) (STANDARD) |
| 16 | FCMU0031 | CLEVIS PIN - FOOTPEG |
| 17 | HCWF0801 | 8mm FLAT WASHER |
| 18 | HCCP0008 | COTTER PIN 1/8 X 3/4 |
| 19 | XCMU0033 | ISOLATION MOUNT – EXHAUST |
| 20 | HCBF0616 | M6X16mm FLANGE HEAD BOLT (2 REQ'D) |
| 21 | HCHA0003 | 6mm CLIP NUT |
| | | |
| ACCESSORY | TCMU0139 | ULTRAWIDE FOOTPEG KIT (PAIR) (UPGRADE) |
| ACCESSORY | TCMU0106 | FOOTPEG SPRING (SINGLE PIECE) |

# Parts – Frame II



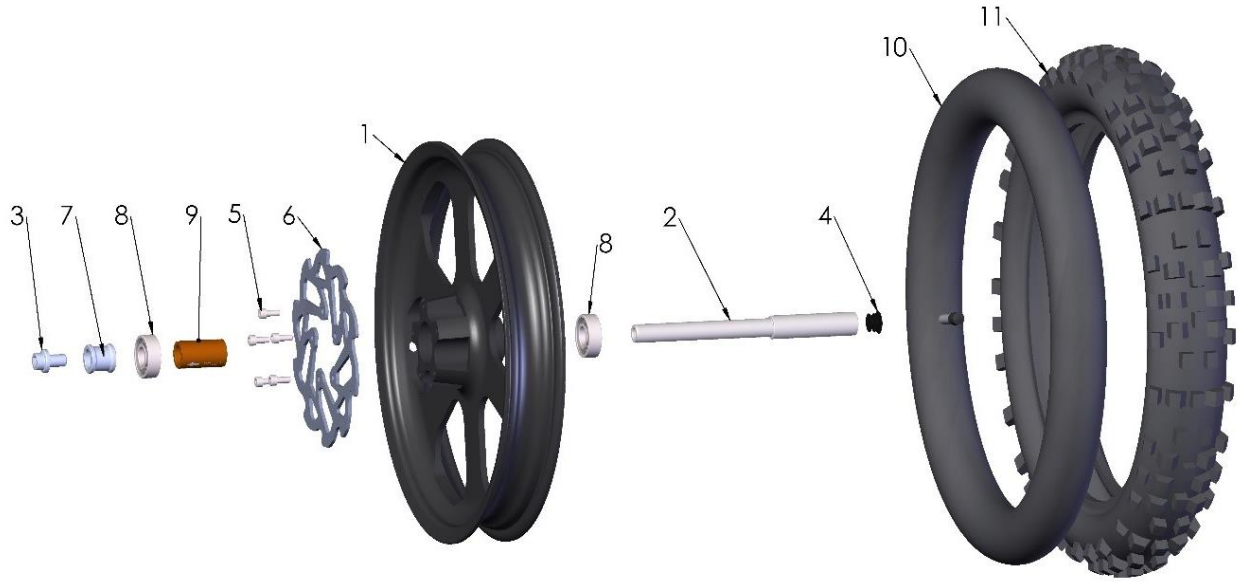

| Frame | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | HCBC0503 | M5X30mm SOCKET HEAD CAP SCREW FT TANK MOUNTING |
| 2 | TCC60027 | SPACER – FT TANK MOUNTING |
| 3 | HCBC0516 | M5X16mm SOCKET HEAD CAP SCREW (2 REQ'D) |
| 4 | HCWF0501 | 5mm FLAT WASHER (2 REQ'D) |
| 5 | HCCN0000 | 5mm CLIP NUT (MAY NOT BE USED) |
| 6 | HCBC0514 | M5X14mm SOCKET HEAD CAP SCREW (2 REQ'D) |
| 7 | HCWP0002 | WASHER - BODY PANEL FLAT (2 REQ'D) |
| 8 | MCMUGR03 | MOUNTING GROMMET (2 REQ'D) |
| 9 | TCKG0001 | SPACER (2 REQ'D) |
| 10 | HCBF0630 | M6X30mm FLANGE HEAD BOLT (2 REQ'D) |
| 11 | HCWF1478 | PIPE GROMMET WASHER (2 REQ'D) |
| 12 | HCBF0620 | M6X20mm FLANGE HEAD BOLT (2 REQ'D) |
| 13 | FCC60020 | CHAIN ROLLER W/BEAR & SEALS |
| 13A | BCDC0153 | WASHER (NOT SHOWN) |
| 14 | FCEX0018 | BRAKE ADJUST ECCENTRIC |
| 15 | HCBC0612 | M6X12mm SOCKET HEAD CAP SCREW |
| 16 | BCMU0027 | BRAKE PIVOT BOLT |
| 17 | HCBF1040 | M10X40mm HEX HEAD BOLT |

# Parts – Front Brakes



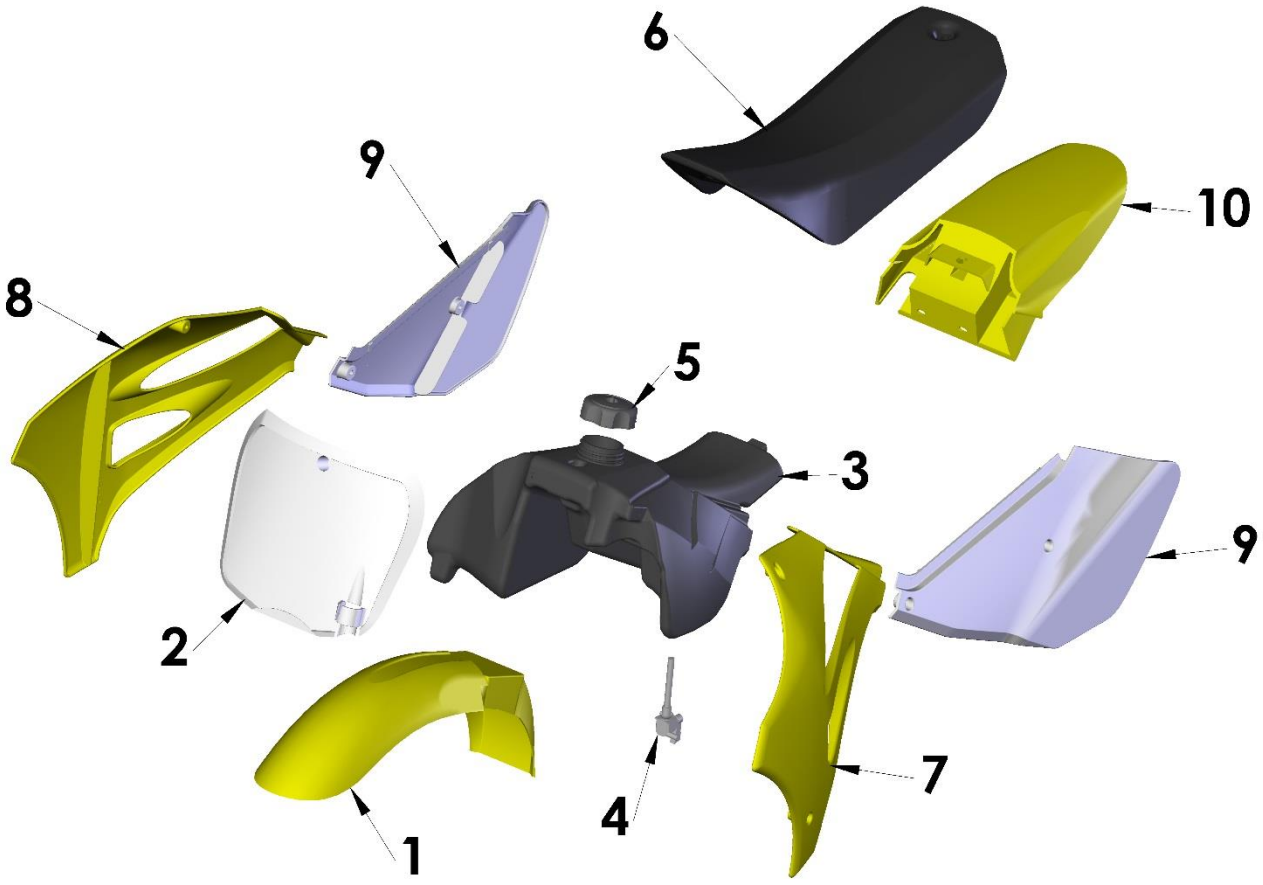

| Front Brakes | | |
|---|---|---|
| REF# | PART # | DESCRIPTION |
| 1 | BAMU0008 | BRAKE ASSY - FRONT CARD - KING FW - 2 PISTON 9.5 |
| 2 | BCCS0002 | HOSE – BRAKE FRONT |
| 3 | BAMU0009 | LEVER ASSEMBLY – THIN FORMLY |
| 4 | BAMU0004 | MASTER CYLINDER ASSEMBLY COMPLETE W LEVER |
| 5 | BAMU0020 | CALIPER – FRONT – CARD 2 PISTON |
| 6 | BKMU0009 | KIT 505 ORGANIC BRAKE PADS, WITH BOLT AND CLIP |
| 7 | BCMU0222 | BRAKE ROTOR |
| 8 | HCBC0514 | M5X14mm SOCKET HEAD CAP SCREW (5 REQ'D) |
| 9 | HCBC0604 | M6X35mm SOCKET HEAD CAP SCREW |
| 10 | HCBC0602 | M6X20mm SOCKET HEAD CAP SCREW |
| 11 | BCMU0116 | COVER – MUD PROTECTION |
| Caliper Accessories | | |
| ACCESSORY | MCMUBF03 | BRAKE FLUID – BEL-RAY RACING DOT 4 –HIGH TEMP - 355 ml |
| ACCESSORY | BKMU0003 | BLEED KIT (MULTIPLE SYRINGES, FITTINGS & HOSE) |
| ACCESSORY | BCMU0038 | SPRING - BRAKE PAD RETURN |
| ACCESSORY | BKMU0006A | PISTON & SEAL KIT – CARD - ALUMINUM |
| ACCESSORY | BKMU0008 | BLEED SCREW KIT – CARD |
| ACCESSORY | BKMU0007 | BANJO BOLT AND WASHER KIT – CARD |
| ACCESSORY | BCMU0014 | CALIPER ADJUSTMENT SHIMS 6mm ID |
| Master Cylinder Accessories | | |
| ACCESSORY | BKC60008 | CAP & BLADDER KIT ZL150 |
| | | *(CAP, BLADDER & (2) M3-0.5 X 6mm LONG PHILLIPS SCREW)* |
| ACCESSORY | BCC60058 | CLAMP – M/C ZL150 |
| ACCESSORY | HCBC0602 | M6-1.0 X 22mm SOCKET HEAD CAP SCREW |
| ACCESSORY | BCMU0060 | PIVOT BOLT |
| ACCESSORY | BCC60017 | BOOT – PISTON END COVER |
| ACCESSORY | BKMU0010 | REBUILD KIT – MASTER CYLINDER CARD 9.5MM |
| ACCESSORY | | *(PISTON, SEALS, BUSHING, SPRING, CLIIP & RETAINING WASHER)* |
| ACCESSORY | HCSS0520 | M5 X 20 SET SCREW – LEVER POSITON ADJUSTMENT |
| ACCESSORY | HCNJ0501 | 5MM LOCKNUT |
| ACCESSORY | CKC60005 | PIVOT BOLT KIT – LEVER TO PIVOT BLOCK – MALE & FEMALE |
| ACCESSORY | HCSS0610 | SET SCREW – PRESET |
| ACCESSORY | BCMU0059 | LEVER ONLY – THIN FORMLY |
| ACCESSORY | CCC60026 | SPRING – LEVER RETURN |
| ACCESSORY | CCC60025 | SPACER – SPRING CENTERING |

# Parts – Front Wheel




| Front Wheel | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | WACSF018BLK | WHEEL WITH BEARINGS SPOKE STYLE – BLACK ANODIZE |
| 2 | WCMU0043 | FRONT AXLE - HOLLOW |
| 3 | HCSP1016M | BOLT – ALUMINUM AXLE PULL |
| 4 | WCMU0024 | PLUG - BLACK PLASTIC |
| 5 | HCBC0514 | M5X14mm SOCKET HEAD CAP SCREW (5 REQ'D) |
| 6 | BCMU0222 | BRAKE ROTOR – FRONT & REAR |
| 7 | WCMU0045 | WHEEL SPACER LEFT |
| 8 | WCMU0120 | BEARING – WHEEL (2 REQ'D) |
| 9 | WCMU0044 | SPACER – WHEEL FRONT |
| 10 | WCKG1201 | TUBE 10" |
| 11 | WCKG1200D32 | TIRE - FRONT - 60/100-12- DUNLOP MX3S |
| | | |
| | | |

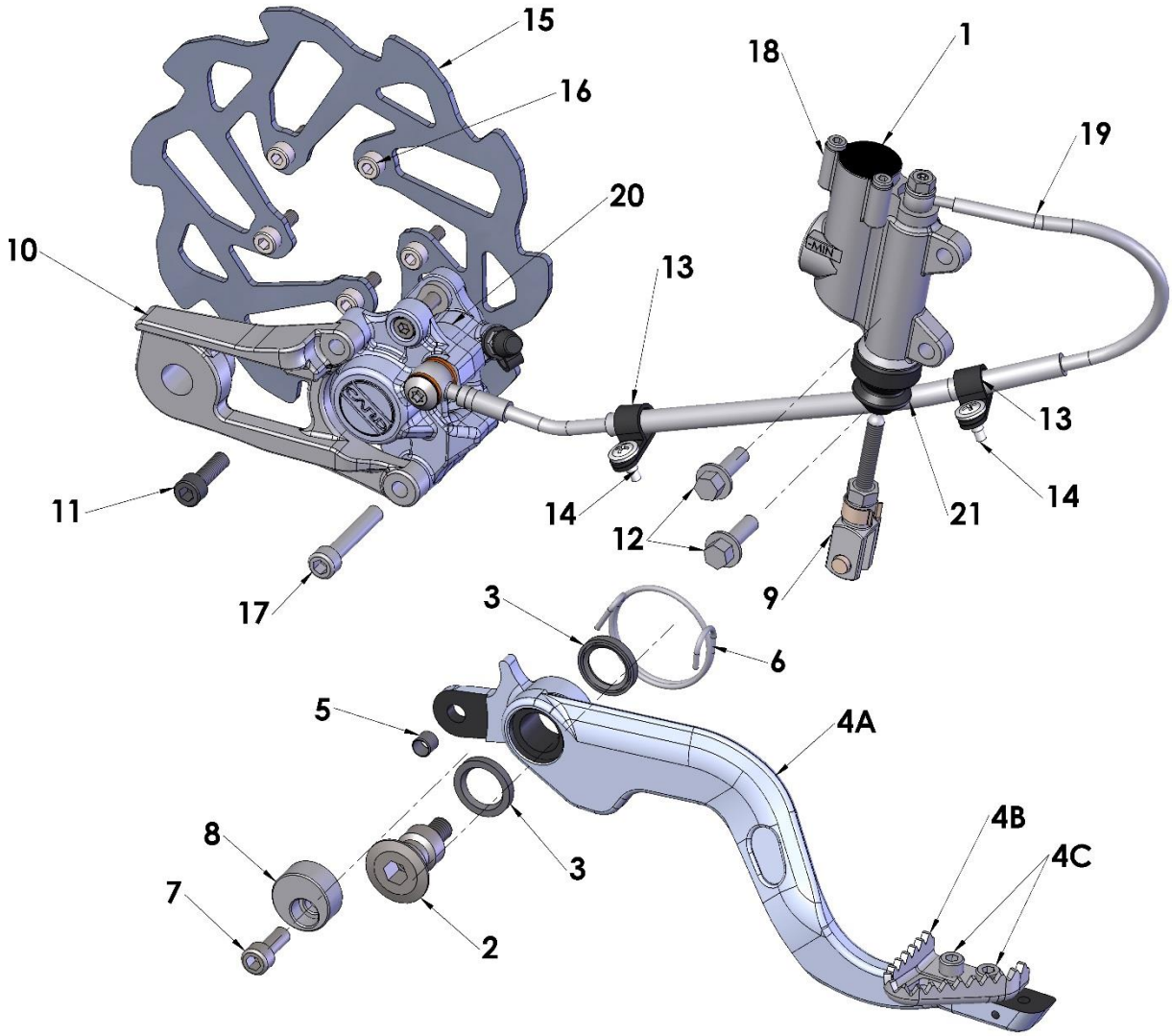
# Parts – Plastic Bodywork & Seat



# Parts – Plastic Bodywork & Seat

| Plastic and Seat | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | TCMU0034x | FRONT FENDER x – DENOTES COLOR BLK, WHT, YEL, FLL |
| 1A | HCBF0616 | FRONT FENDER MTG BOLTS (4 REQD) |
| 2 | TCC60002x | FRONT NUMBER PLATE x – DENOTES COLOR BLK, WHT, YEL |
| 2A | HCBF0616 | M6X16mm FLANGE HEAD BOLT – FRONT NUMBER PLATE MOUNT |
| 3 | TCC60024 | FUEL TANK (NO PETCOCK OR CAP) |
| 3A | HCBC0503 | M5X30mm SOCKET HEAD CAP SCREW – FRONT TANK MOUNTING |
| 3B | TCC60027 | SPACER – FRONT TANK MOUNTING |
| 3C | TCC60029 | SPACER – SEAT MOUNT |
| 3D | HCFH0620 | M6X20mm FLAT HEAD – FRONT SEAT MOUNT |
| 4 | TCMU0151 | PETCOCK |
| 5 | TCHA0002 | CAP – FUEL TANK |
| 5A | TCHA0003 | HOSE – FUEL CAP |
| 6 | TAFW0001 | SEAT – FACTORY WORKS EDITION - CX50 |
| 6A | TCCS0001 | COVER – SEAT – CX50 KING |
| 6B | TCC60018 | SPECIAL WASHER – SEAT HOLDING |
| 6C | HCBC0625 | M6X25 SHCS, REAR MOUNTING BOLT |
| 7 | TCC60222x | SHROUD LEFT, x – DENOTES COLOR BLK, WHT, YEL, FLL |
| 7A | TCC60017 | BODY PANEL WASHER 5MM (1 REQ'D) – MT SHROUD TO RADIATOR |
| 7B | HCBC0514 | M5X14 SHCS (1 REQ'D) – MOUNT SHROUD TO RADIATOR |
| 7C | HCCN0001 | 5MM EXTRUDED "U" NUT - LONG |
| 7D | HCSP0004 | PLASCREW – SHROUD TO TANK |
| 8 | TCC60023x | SHROUD RIGHT, x – DENOTES COLOR BLK, WHT, YEL, FLL |
| 8A | HCSP0004 | PLASCREW – SHROUD TO TANK (2 REQ'D) |
| 9 | TCCS0001x | NUMBER PLATE PAIR x – DENOTES COLOR BLK, WHT |
| 9A | HCBC0514 | M5X14 SOCKET HEAD CAP SCREW (2 REQ'D PER SIDE) |
| 9B | TCC60017 | BODY PANEL WASHER 5MM (2 REQ'D PER SIDE) |
| 9C | HCCN0000 | 5MM EXTRUDED "U" NUT |
| 10 | TCCS0005x | REAR FENDER, x – DENOTES COLOR BLK, WHT, YEL, FLL |
| 10A | HCSP0004 | PLASCREW (2 REQ'D) – FENDER TO AIRBOX - 2016 |
| 10B | HCBC0514 | M5x14 SOCKET HEAD CAP SCREW (2 REQ'D) |
| 10C | HCWP0002 | WASHER - BODY PANEL FLAT (2 REQ'D) |
| 10D | HCHA0003 | CLIP NUT – 6mm |
| | | |
| ACCESSORY | TCMU2019 | GRAPHIC KIT – CX50 2019 |
| ACCESSORY | TKCS2019B | BODYWORK KIT - 2019 KING - BLACK |
| ACCESSORY | TKCS2019W | BODYWORK KIT - 2019 KING - WHITE |
| ACCESSORY | TKCS2019Y | BODYWORK KIT - 2019 KING - YELLOW |

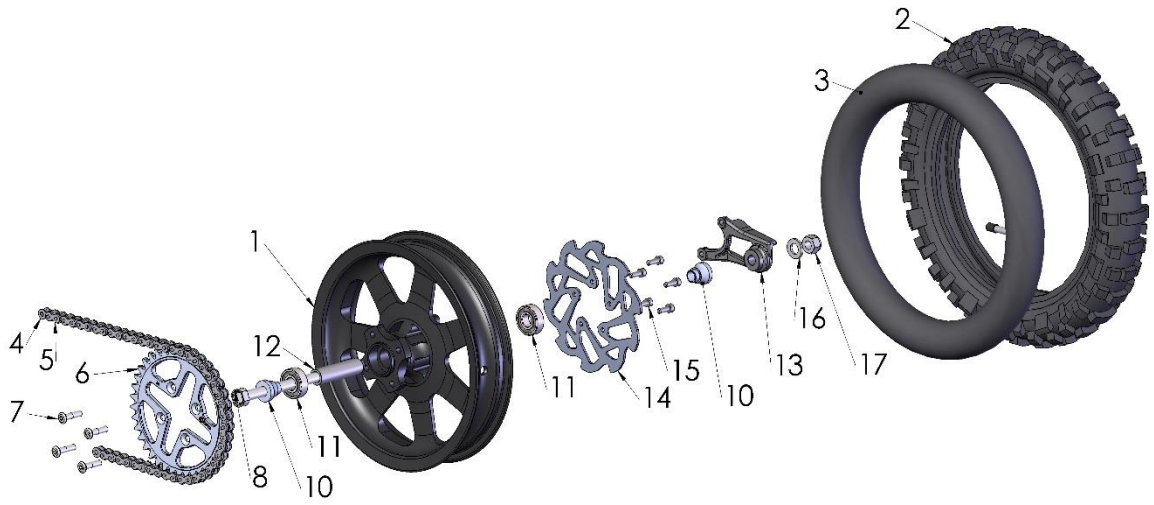
# Parts – Rear Brake



# Parts – Rear Brake

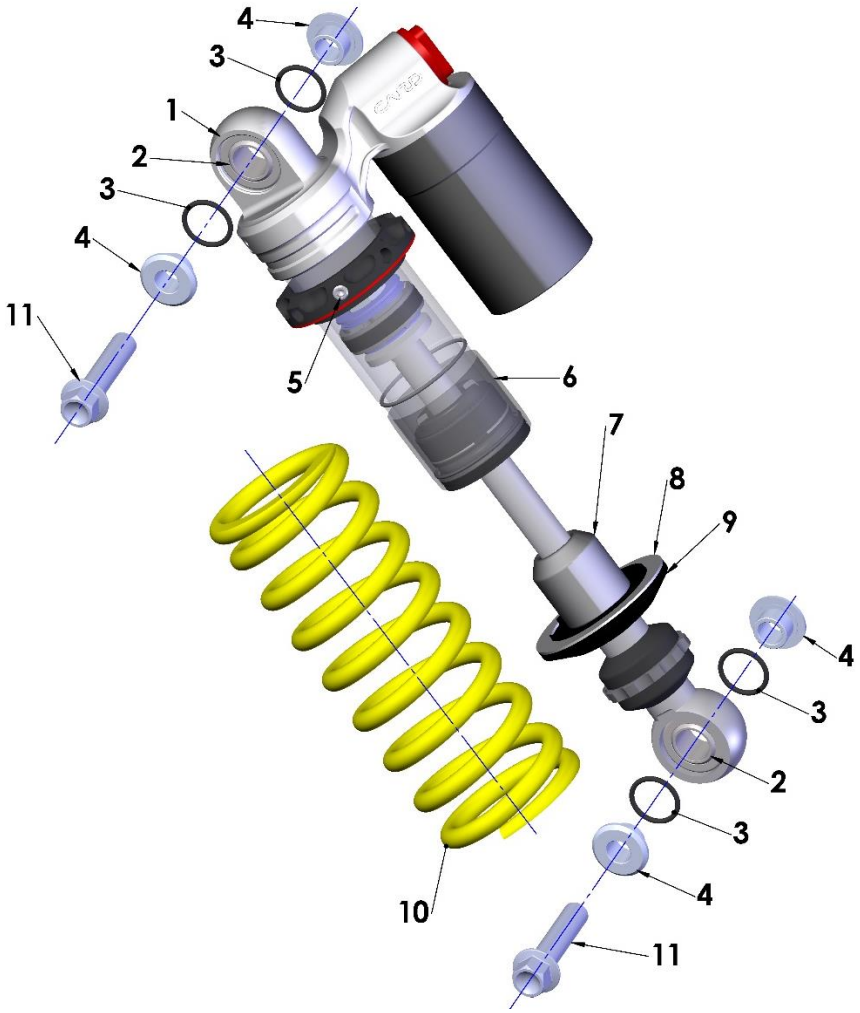
| Rear Brake System | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | BAMU0003 | **BRAKE SYSTEM – REAR (M/C-LINE-CALIPER)** |
| 2 | BCMU0027 | BRAKE PIVOT BOLT |
| 3 | BCMU0501 | SEAL – BRAKE PEDAL (2 REQ'D) |
| 4A | BCMU0029 | BRAKE PEDAL – ASSEMBLY 50cc – WITH TOE PIECE |
| 4B | BCMU0023T | TOE PIECE |
| 4C | HCBC0501 | M5X 12mm SOCKET HEAD CAP SCREW |
| 5 | BCDCBU01 | BUSHING REAR BRAKE PEDAL |
| 6 | BCMUSP02 | BRAKE RETURN SPRING |
| 7 | HCBC0601 | M6X16mm SOCKET HEAD CAP SCREW |
| 8 | FCEX0018 | BRAKE ADJUST ECCENTRIC - BLACK |
| 9 | BAC60004 | PUSH ROD, REAR BRAKE |
| 10 | BCMU0045 | BRAKE CARRIER – CARD 2 PISTON – CX50 |
| 11 | HCBC0602 | M6X20mm SOCKET HEAD CAP SCREW |
| 12 | HCBF0620 | M6X20 FLANGE HEAD BOLT |
| 13 | HCCC0000 | BRAKE HOSE CLAMP (2 REQ'D) |
| 14 | HCPP0832 | BRAKE HOSE CLAMP FASTENER (2 REQ'D) |
| 15 | BCMU0222 | BRAKE ROTOR |
| 16 | HCBC0514 | M5X14mm SOCKET HEAD CAP SCREWS (5 REQ'D) |
| 17 | HCBC0604 | M6X35mm SOCKET HEAD CAP SCREW |
| 18 | BAC60015 | MASTER CYLINDER - REAR |
| 19 | BCMU0047 | REPLACEMENT BRAKE HOSE |
| 20 | BAMU0010A | CALIPER ASSEMBLY – REAR BRAKE – CARD 2 PISTON - ALUM |
| 21 | BCMU0022 | BRAKE – RUBBER CAP |
| | | |
| ACCESSORY | BKMU0009 | PAD SET ORGANIC W BOLT AND CLIP |
| ACCESSORY | BCMU0038 | SPRING - BRAKE PAD RETURN |
| ACCESSORY | BKMU0006A | PISTON & SEAL KIT – CARD - ALUMINUM |
| ACCESSORY | BKMU0008 | BLEED SCREW KIT – CARD |
| ACCESSORY | BCC60034 | RUBBER CAP ONLY - BLEED SCREW CX65 |
| ACCESSORY | BCKG0016 | CAP & SEAL KIT – MASTER CYLINDER |
| ACCESSORY | BCKG0015 | REBUILD KIT – MASTER CYLINDER |
| ACCESSORY | BKMU0007 | BANJO BOLT AND WASHER KIT – CARD |
| ACCESSORY | MCMUBF03 | BRAKE FLUID – BEL-RAY RACING DOT 4 –HIGH TEMP - 355 ml |
| ACCESSORY | BCMU0014 | CALIPER ADJUSTMENT SHIMS 6mm ID |
| TOOL | BKMU0003 | BLEEDING KIT – FORMULA & CARD |

# Parts – Rear Wheel



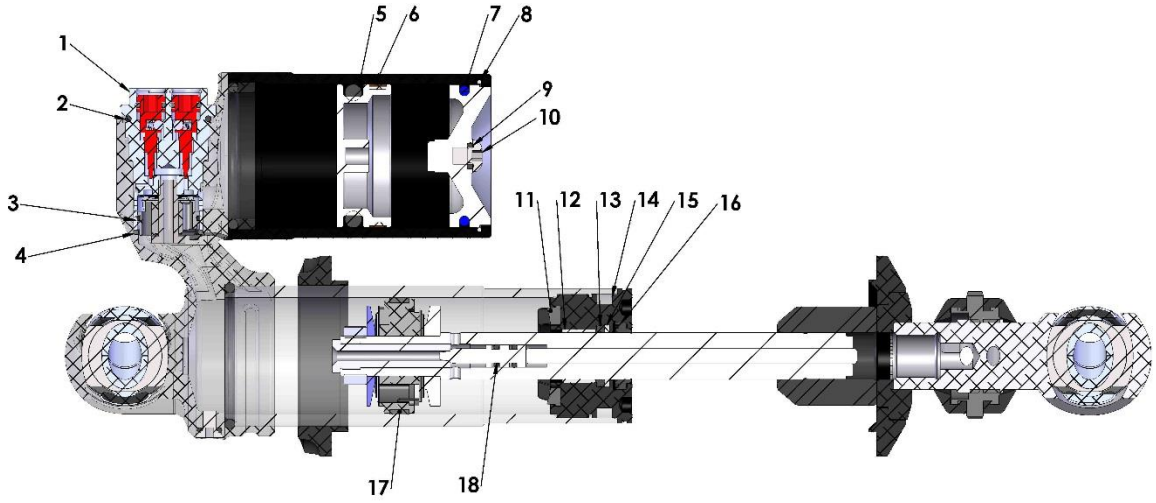

| Rear Wheel | | |
|---|---|---|
| **REF #** | **PART #** | **DESCRIPTION** |
| 1 | WAMUR018BLK | REAR WHEEL W/BEARINGS – BLACK ANODIZE |
| 2 | WCMU1075D32 | TIRE - REAR - 70/100-10 - DUNLOP MX3S |
| 3 | WCMUTU10 | TUBE, 10" |
| 4 | PCMU0001 | MASTER LINK 420 |
| 5 | PCMU0098 | CHAIN 420 X 98 |
| 6 | PCC50138 | 38T SPROCKET (STANDARD) |
| 6A | PCC501xx | SPROCKET xx DENOTES TEETH – RANGE OF TEETH (34-45) |
| 7 | HCSP0701 | M7X30mm SPECIAL HEAD BOLT (4 REQ'D) |
| 7A | HCWF0701 | 7mm FLAT WASHER (4 REQ'D) |
| 7B | HCNL0701 | M7 LOCKNUT (4 REQ'D) |
| 8 | WCMU0016 | REAR AXLE |
| 10 | WCMU0101 | WHEEL SPACER (2 REQ'D) |
| 11 | WCMU0120 | WHEEL BEARING (2 REQ'D) |
| 12 | WCMU0041 | WHEEL BEARING SPACER |
| 13 | BCMU0045 | CARRIER - BRAKE |
| 14 | BCMU0222 | BRAKE ROTOR |
| 15 | HCBC0514 | M5X14mm SOCKET HEAD CAP SCREWS (5 REQ'D) |
| 16 | HCWF1202 | AXLE WASHER |
| 17 | HCNL1201 | AXLE NUT 12MM |
| | | |
| ACCESSORY | HKMU0002 | BOLT KIT – REAR SPROCKET |

# Parts – Shock



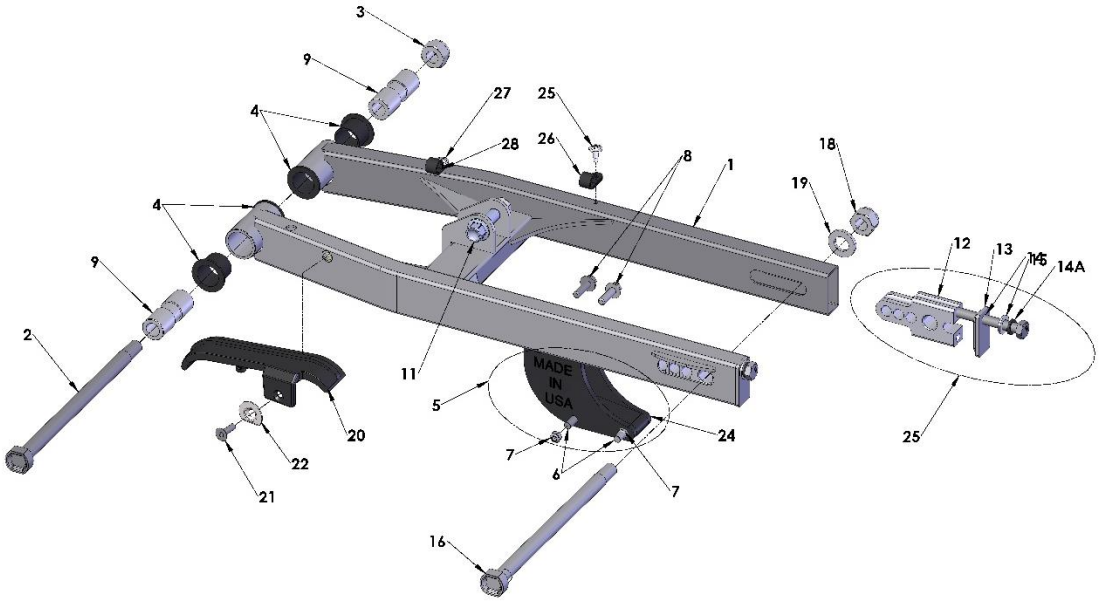

| Shock | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | SACS2016 | SHOCK ABSORBER – KING |
| 2 | SCMU0043 | SHOCK - BEARING SPHERICAL SHOCK MOUNT–CARD (2 REQ'D) |
| 3 | SCMU0039 | O-RING - SHOCK - BUSHING – CARD (4 REQ'D) |
| 4 | SCMU0042 | SHOCK - MOUNT BUSHING – CARD (4 REQ'D) |
| 5 | SCMU0058 | SHOCK - WHITE NYLON TIP SETSCREW M6-1.0 - CARD |
| 6 | SCMU0056 | SHOCK - SLEEVE BLACK - CARD |
| 7 | SCMU0100 | BUMPER - TAPPERED - SHOCK |
| 8 | SCMU0040 | SHOCK - SPRING PAD - CARD |
| 9 | SCMU0054 | SHOCK - SPRING PERCH - CARD |
| 10 | SCKGFX37 | SHOCK SPRING 3.7 KG/MM (STANDARD) |
| 10 | SCKGFX35 | SHOCK SPRING 3.5 KG/MM (LIGHT) |
| 10 | SCKGFX39 | SHOCK SPRING 3.9 KG/MM (HEAVY) |
| 11 | HCBF1040 | M10 X 40 HEX HEAD BOLT (2 REQ'D) |
| | | |
| ACCESSORY | SKMU0003 | REBUILD KIT – CARD SHOCK - 2016 |

# Parts – Shock - Inside




| Shock | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | SAMU0001 | COMPRESSION ADJUSTER ASSEMBLY – COMPLETE |
| 2 | ZCMUB020 | O-RING – COMPRESSION ADJUSTER - OUTSIDE |
| 3 | KCMU0021 | O-RING - COMPRESSION ADJUSTER – PISTON SEAL |
| 4 | ZCMUOR37 | O-RING - COMPRESSION ADJUSTER - INSIDE |
| 5 | SCMU0051 | O-RING - IFP |
| 6 | SCMU0052 | IFP SEAL BAND |
| 7 | SCMU0033 | O-RING SHOCK BASE |
| 8 | SCMU0050 | RESERVOIR CAP RETAINER RING |
| 9 | SCMU0035 | O-RING CHARGE CAP |
| 10 | HCBB0506 | M5X6mm LONG BUTTON HEAD STAINLESS STEEL |
| 11 | SCMU0044 | SEAL HEAD BUMPER |
| 12 | SCMU0048 | SHAFT BUSHING |
| 13 | SCMU0046 | X-RING SEAL |
| 14 | SCMU0034 | O-RING SEAL HEAD |
| 15 | SCMU0047 | SPACER - X-RING |
| 16 | SCMU0045 | DUST SEAL |
| 17 | SCC60014 | PISTON BAND |
| 18 | SCMU0059 | O-RING REBOUND PIN |
| | | |
| | SCCM0001 | SEAL HEAD – WITHOUT COMPONENTS |
| | SKMU0002 | SEAL HEAD - COMPLETE |
| ACCESSORY | SKMU0003 | REBUILD KIT – CARD SHOCK - 2016 |

# Parts – Swingarm Assembly




| Swingarm | | |
|---|---|---|
| REF # | PART # | DESCRIPTION |
| 1 | GACS2017 | SWINGARM |
| 2 | HCBH1203 | M12 SWINGARM PIVOT BOLT |
| 3 | HCNL1201 | M12 SWINGARM LOCK NUT |
| 4 | GCMU0001 | SWINGARM BUSHING (4 REQ'D) |
| 5 | PAKG0001 | CHAIN GUIDE ASSEMBLY COMPLETE |
| 6 | HCBFT640 | M6X40mm FLAT HEAD SCREW (2 REQ'D) |
| 7 | HCNL0601 | M6 LOCKNUT (2 REQ'D) |
| 8 | HCBF0620 | M6X20mm FLANGE HEAD BOLT (2 REQ'D) |
| 9 | GCCS0001 | SWINGARM PIVOT TUBE SPACER (2 REQ'D) |
| 10 | FAMU0005 | WHEEL PULL ASSEMBLY (BLOCK, CAP, BOLT AND WASHER) |
| 11 | HCBF1040 | M10X40mm LOWER SHOCK MOUNT BOLT |
| 12 | FCMU0203 | WHEEL PULL |
| 13 | FCMU0202 | WHEEL PULL ENDCAP |
| 14 | HCBH0810 | M8X65mm WHEEL PULL BOLT |
| 14A | HCWL0801 | 8mm LOCK WASHER |
| 15 | HCWF0801 | 8mm WHEEL PULL WASHER |
| 16 | WCMU0016 | REAR AXLE |
| 18 | HCNL1201 | M12 AXLE NUT |
| 19 | HCWF1202 | AXLE WASHER |
| 20 | GCMU0041 | SWINGARM CHAIN GUARD - CX50 - WITH MOHAWK AND FOOT |
| 21 | HCFH0516 | FLAT HEAD SCREW |
| 22 | GCMU0038 | WASHER – RETAINING – SWINGARM GUARD |
| 24 | PCKG0004 | BOTTOM CHAIN SLIDER |
| 25 | HCCC0000 | CLAMP - BRAKE HOSE |
| 26 | HCPP0832 | FASTENER – ½" SELF TAPPING |
| 27 | HCCC0005 | GUIDE - REAR BRAKE HOSE |
| 28 | HCPP0834 | FASTENER - ¾" SELF TAPPING |
| ACCESSORY | PCMU0002BLK | CHAIN GUIDE OUTER – BILLET - BLACK |

# Service

Trained technicians with precision gauging and proper assembly fixtures carefully assemble all Cobra engines to specific tolerances. If you feel you have the skills, and the appropriate tools, to perform the following service tasks please follow the instructions closely. The part numbers are listed throughout to help you when ordering parts from your local Cobra dealer.

If you don't feel comfortable with the service work, log on to www.cobramoto.com to find a Cobra dealer or Call 517.437.9100.

## Engine Service

One method for determining whether the top end of your engine needs rebuilt is to perform a WOT (Wide Open Throttle) kicking compression test. Before performing the procedure please read the caution notes below.

CAUTION:

- There appears to be a wide range of variability in reading compression gauges across the country.

- The head volume of this Cobra Motorcycle is very small and so requires many kicks ~20 before you establish the most accurate reading possible.

- Because of the geometry of the spark plug used in this Cobra Motorcycle, the adapter used with your compression tester must have a similar volume protruding into the combustion chamber to establish an accurate value.

- Length of hose on the compression tester will affect the reading. The shorter the hose length the more accurate your reading will be.

Because of these difficulties in measuring an *absolute* compression value, a useful *relative* value can be achieved by testing your bike's compression with your own particular gauge after a new top end or when the bike is new so that you know what your particular gauge reads on a 'fresh' engine. When it has dropped to 90% of its original value the engine will be down on power and would benefit from a rebuild. When it's dropped to 80% it really needs rebuilt! Using the table below will help you determine monitor the condition of your top end.

| | Engine is Fresh<br>Measured Value | Engine Down on Power<br>Measured Value * 0.9 | Engine NEEDS Rebuilt<br>Measured Value * 0.8 |
|---|---|---|---|
| Example | 110 psi | 110 psi * 0.9 = 99 psi | 110 psi * 0.8 = 88 psi |
| Your Values | | | |

**Procedure for Compression Testing**

1. Shut off the fuel petcock.
2. Install the compression gauge into the spark plug hole.
3. Hold the throttle to wide open, and kick repeatedly (approximately 20 times) or until the gauge reading does not increase in value with each kick.

# Base Gasket Selection

**Tools required**

- 17mm wrench
- 1mm flexible solder material
- measurement calipers

When rebuilding the 'top end' of your Cobra motorcycle, care must be taken to ensure the proper squish clearance. Squish clearance is defined as the minimum distance between cylinder head and piston at TDC, and there are negative effects of either having too much or too little clearance. Since parts like the crank, connecting rod, cylinder head, piston, and crankcases all have varying tolerances, Cobra offers several different base gasket thickness' to ensure that you can always set the squish clearance of your engine to factory specifications.

For base gasket replacement use the code (see figure 21 for location) along with the table on the following page reorder the correct thickness gasket.

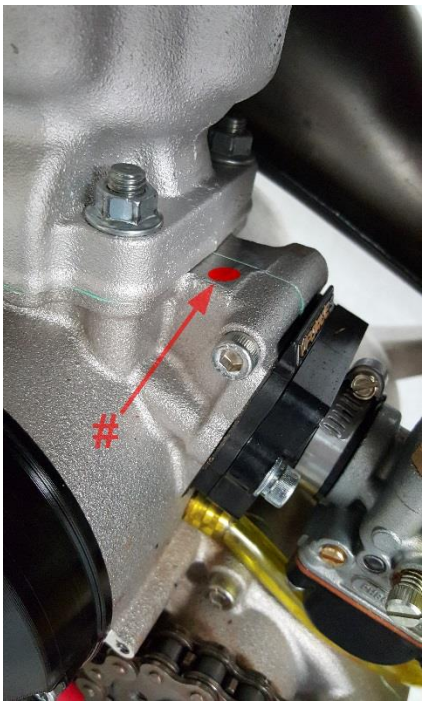



**Figure 21**

| Code | Supplied Base Gasket Thickness | | Cobra # |
|---|---|---|---|
| # | mm | inch | Part # |
| 2 | 0.2 | 0.010 | ZCMU0102 |
| 3 | 0.3 | 0.012 | ZCMU0103 |
| 4 | 0.4 | 0.015 | ZCMU0104 |
| 5 | 0.5 | 0.020 | ZCMU0105 |
| 6 | 0.6 | 0.024 | ZCMU0106 |
| 7 | 0.7 | 0.028 | ZCMU0107 |
| 8 | 0.8 | 0.031 | ZCMU0108 |

**NOTE:** Tolerances will affect the actual gasket thicknesses.

If during the course of the maintenance more parts than the base gasket are changed, the squish clearance should be measured, and possibly a different base gasket will be required.

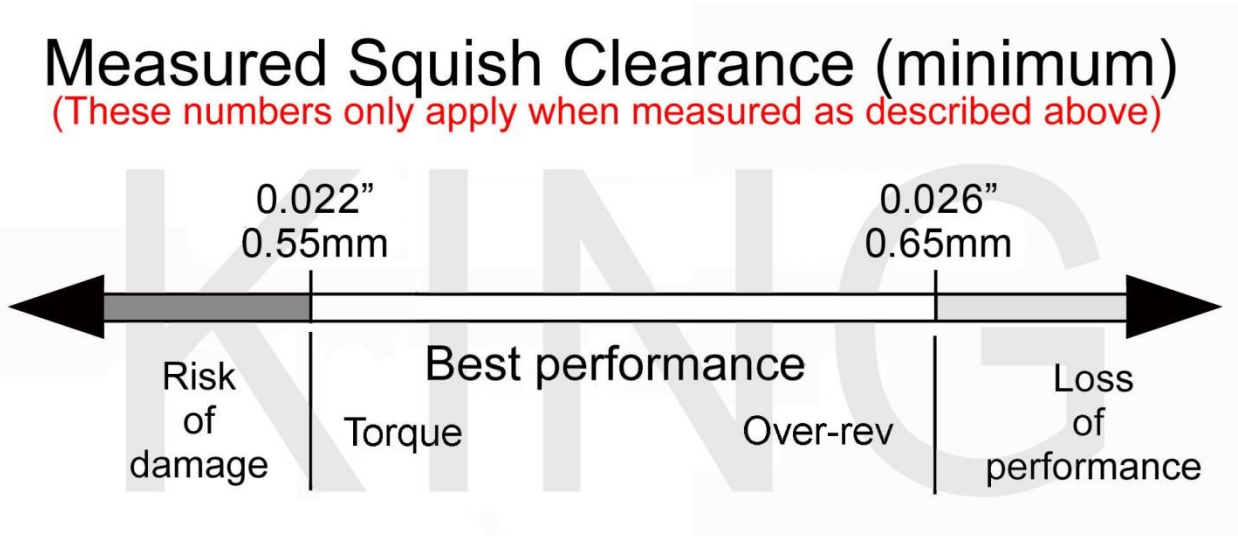
The easiest way to measure squish clearance is with 1mm to 1.5mm thick flexible solder wire (available through most popular electronic stores). The process is as follows:

- Assemble the top end of the engine with either; 1) the crankcase stamp recommended base gasket or, 2) if assembling with a new set of cases assemble with a 0.4mm (0.015”) base gasket, and torque the head nuts to the proper torque specifications leaving off the spark plug and ignition cover (piston rings can be left off to ease of assembly).
- Carefully insert the solder wire though the spark plug hole, into the cylinder far enough such that the tip of the wire touches the left or right side cylinder wall (not the front or back as the piston will rock more and give incorrect measurement).
- Hold the wire at this position and rotate the crankshaft, by the flywheel nut (or kick lever) three revolutions to crush the solder wire.

CAUTION:
If you rotate the flywheel nut in a counterclockwise direction there is a risk of loosening the nut.

- Pull out the wire and measure the solder thickness at the thinnest location near its tip accurately with the thin tips of calipers.
- Adjust base gasket thickness as necessary to get the desired value.

Upon completion, your final assembly squish clearance should agree with the chart below:



# CFD Adjustment

This section tells you what to do if you have tested and determined that the CFD requires adjustment.

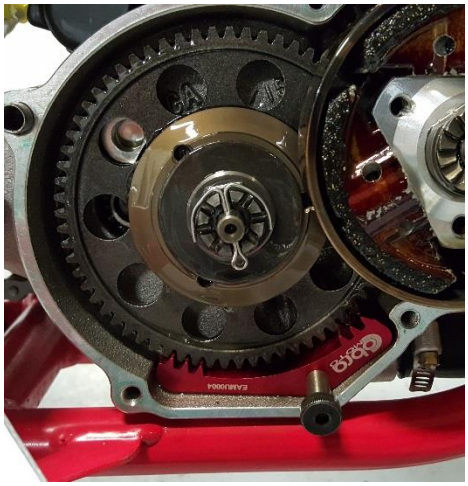
**Tools required**

- 5mm & 10mm hex key
- Pliers to remove the old cotter key
- A new cotter key (Cobra MIL spec recommended – Hardware store ones will become brittle from the hot oil and randomly fail)
- 19mm socket
- Cobra gear stop tool (EAMU0004)

**Procedure**

1. Drain the oil into a suitable container for recycling (10mm hex key)
2. Remove the clutch side cover (5mm hex key)
3. Remove the cotter pin from the castle nut in the CFD assembly.

**NOTE**: The CFD castle nut is “left hand thread”. Turn it counter clockwise (anti-clockwise for you Europeans) to tighten it.



4. Tighten the castle nut to the next cotter pin assembly location.
5. With the internal CFD gear stop tool in position check the slip torque again (it is NOT necessary to have the cotter pin for the test)
6. If the slip torque is below 108 Nm (80 ft-lb) then repeat steps 5 and 6 above.
7. Once the slip torque is at the desired value, install the cotter pin as shown.
8. Remove the CFD gear stop tool
9. Reinstall the clutch cover
10. Fill the clutch case with 300cc Clutch Milk and the bike is ready to race

# Engine Removal

To service the bottom end and transmission, the engine must be removed from the frame.

**Tools required**

- 10, 11, 13, 22 mm wrench
- 8, 10, 14, 17 & 19 mm sockets
- 3, 4 & 5 mm hex key
- 7 mm nut driver, flat or Phillip, screwdriver for hose clamps
- Spring remover
- Flywheel / clutch puller (#MCMUTL70)

- Clutch nut removal tool (#ECMU0078)
- CFD gear stop (#EAMU0004)

**Procedure**

1. Remove the seat.
2. Turn of the fuel at the petcock and disconnect the fuel line.
3. Remove the tank (8 mm socket).
4. Remove the carburetor from the inlet (flat head or Phillips head screwdriver, 7 mm nut driver).
5. Remove the silencer & pipe (spring remover, 8mm socket).
6. Locate a suitable container for the engine coolant and disconnect the coolant lines connected to the engine (8 mm socket).

**NOTE:** If the coolant looks to be free of contaminates it may be reused.

7. Remove the master link from the chain.
8. Remove front engine mount bolt (13 mm socket, 6 mm hex key).
9. Remove the swingarm bolt (19mm socket).

**NOTE:** Only drive the swingarm bolt far enough to clear the engine, leave it holding the one side of the swingarm to the frame

10. Remove the engine from the right side of the frame.

**NOTE:** If you are merely performing a top end service skip ahead to *Top End Disassembly Procedure*.

# Complete Engine Disassembly Procedure

1. Remove the ignition cover (3mm hex key)
2. Remove the bolt from the water pump shaft (4mm) and slide off the belt cover and the water pump belt
3. Using a flywheel holding tool and 14 mm socket remove the nut that secures the flywheel.
4. Using the Cobra flywheel / clutch puller (#MCMUTL70), remove the flywheel from the crankshaft.
5. Remove the stator (4mm hex key).
6. Remove the clutch nut / starter gear that holds on the clutch (#ECMU0078).
7. With the Cobra flywheel / clutch puller (#MCMUTL70), remove the clutch from the crankshaft (details in Clutch Service portion of this manual).
8. Remove the **left hand thread** nut holding the CFD to the transmission input shaft using the CFD gear stop (#EAMU0004) and a 19mm socket.

# Top End Disassembly Procedure

1. Remove the cylinder head nuts (10mm).
2. Remove the cylinder head outer.

**INSPECTION NOTE:**
Inspect the cylinder head for deposits and abrasions.

1. If there are deposits they should be removed
    a. Black oily deposits (indicating a rich mixture or improper oil type/quantity) can be removed with solvent
    b. Crusty deposits (indicating dirt ingestion) can be removed with solvent and may require some scraping.
2. Abrasions
    a. Pitting or erosion indicates detonation and may require cylinder head replacement, also
        i. Retard the ignition timing
        ii. Use a higher octane fuel
    b. Missing chunks or indentations indicate broken hardware or ingested items - replace the cylinder head.

3. Remove the cylinder head insert.
4. Remove the cylinder.

**INSPECTION NOTE:**
Inspect the cylinder bore for abrasions, deposits, and missing coating.

1. If abrasions: scrapes, scratches, pitting, etc… are found, replace the cylinder.
2. If deposits are all are found
    a. Clean with muriatic acid.
    b. Once the deposits are removed, inspect for abrasions and missing surface coating.
        i. If there are abrasions or missing coating, replace.
        ii. If all looks well, the cylinder may be saved.

**⚠ WARNING**
Muriatic acid can be dangerous. Follow the manufacturer's instructions closely.

5. Remove the piston clip with a scribe.
6. Remove the piston pin with a piston pin remover.

**INSPECTION NOTE:**
Inspect the piston for abrasions and deposits on the top and sides and clean or replace as necessary.
**INSPECTION NOTE:**
Piston ring end gap should be between 0.006" (0.16 mm) and 0.015" (0.4 mm)

## Splitting the Cases

1. Remove the fasteners holding the two halves of the crankcase together.
2. Separate the cases with a proper case splitting tools.

CAUTION:
Take caution when handling the crankshaft. It is the main power transfer to the rest of the engine. If it is out of alignment, it will cause premature failure of your bearings which can lead to serious damage to the cylinder as well as the rest of the engine. Do not try to true the crank yourself. Truing the crank should be done professionally.

CAUTION:
- If you split the cases, check the gear tooth faces for chipping & signs of fatigue.
- Check all the bearing for smooth noise free operation.

# Engine assembly

CAUTION:
For any seals that are to be installed, apply a light amount of grease to the seals' ID, assembly lube on all bearings and a small amount of Loctite to the OD.

1. Press the three bearings into the respective holes in each case half.
2. Press in the crank seals such that the concave side faces the crank weights.
3. Press in the counter shaft seal (concave side faces inside of transmission)
4. Press in the water pump assembly
5. Tap both ways axially then verify easy rotation.
6. Inspect the crankshaft for proper true geometry (no more than 0.002 ", 0.05mm, measured at bearing journal area while supported from the ends).
7. Insert the case bolts with the proper lengths at locations shown.
8. Torque to 12Nm (105in-lb). Starting toward the center working outward.
9. Trim away any excess gasket material if necessary.

**NOTE:** Check engine mount holes for excess material that may cause problems in engine installation.

10. Install the piston with new wrist pin bearing and, pin and clips.

CAUTION:
Be sure to install the piston such that the arrow on the top piston surface points to the exhaust (front of bike/engine) and put assembly lube on the connecting rod bearing.

11. Install the piston rings.

CAUTION:
Ring end gap should be no less than 0.006" (0.016mm) and no more than 0.015" (0.4mm).

12. Install the base gasket.

CAUTION:
See base gasket selection at the beginning of service section.

13. Install the cylinder being sure that the piston rings are properly aligned with the indexing pins.

CAUTION:
Never force the cylinder. If resistance is felt, determine the problem and solve it. Once installed slightly rotate the cylinder back and forth insuring that the rings are properly seated.

14. Install cylinder head insert.

**NOTE:** A light application of silicone grease can help hold the O-rings into position during assembly.

15. Install O-RINGs as shown in the Parts-Engine Top End page.
16. Install the cylinder head.
17. Install the flange nuts. Torque to 123 in-lb (14 Nm)
18. Install reed and intake manifold with new gasket. Torque to 55 in-lb. (6.2 Nm).

CAUTION:
The intake manifold bolts will require being checked and torque values reset after a few heat cycles.

19. Leak check the engine to 20 psi to ensure proper seal.
20. Install stator reinstalling the grommet and wires (snug the bolts).
21. Install the rotor per *Rotor Installation* section, under the *S3: Ignition* portion of this manual.
22. If necessary install the water pump outlet pipe (apply gray Permatex gasket maker to the threads before assembly).
23. Install the CFD.
24. Install the clutch per *Clutch Installation* section in this manual.
25. Install the coolant drain plug.
26. Make sure that the exhaust spacer is on the cylinder (53 in-lb, 6 Nm).
27. Install the spark plug with a fresh gasket (to apply the proper torque to the spark plug when inserting, one must first screw the spark plug in until the metal gasket ring causes resistance and then turn another 1/8 to ¼ turn).

# Clutch

The sleeve bolts of the 5GX provide a low uniform stress, minimal heat transfer, and allow channels for flushing the clutch fibers out of the washer stacks allowing a long time between part replacement provided you operate with 10 oz of clean Clutch Milk.

All washer stacks are double sorted at the factory. They are first sorted by measured height. Secondly, each stack with bolt is sorted by measured engagement force. The stacks in each set of three will measure within 0.05mm (0.002”).

There are many variables in an automatic centrifugal clutch. These variables are set to world class standards from the factory but will change over time as the components wear, relax, and just plain get used.

Please see the Tuning Clutch portion of this manual for more helpful info.

**Tools recommended for clutch service:**

- Universal clutch puller- a universal puller that pulls the clutch, main drive gear and rotor. (Part # MCMUTL70).
- 5mm T-handle
- T25 Torx
- Accurate torque wrench in the range of 16 Nm (12 ft-lb, 144 in-lb).
- Clutch nut removal tool (ECMU0078) & piston stop (MCMUTL03).
- *Cobra 3 Shoe Clutch Milk* (Part # MCMUGF32).

**CLUTCH REMOVAL:**

1. Drain the engine transmission oil and remove the clutch cover.
2. Remove the clutch nut (NOT left hand thread) on the end of the crankshaft with the clutch nut removal tool.

CAUTION:
It is possible to cause damage to the piston when using the piston stop. Care must be used when removing and installing the clutch arbor and using the piston stop.

3. Attach the Universal Puller. There are three 6mm clutch puller holes located on the ends of the center hub.
4. Install each of the 3 6mm x 55mmsocket head cap screws (clutch cover bolts can be used) until each is similarly snug and the puller looks square to the end of the crank
5. One at a time, tighten each of the 1/4 turn until the clutch 'pops' off

**NOTE**: It may be helpful to use a screwdriver or similar device in the side hole of the puller to stop rotation

CAUTION:
Do not use a jaw type puller.

**CLUTCH WASHER STACKUPS:**

Once the clutch is removed, and cool to touch, carefully put it into a vice and remove the center shoulder bolt out of each clutch shoe. You WILL have to heat

the center hub again to remove the bolts. Once you get a bolt loosened, carefully remove it with the shoe and observe the way the spring washers are stacked. Clean the washers and bolt if you intend to reuse.

CAUTION:
You **should apply heat** to the arbor near the clutch bolt threads or you will very likely break the Torx bit upon attempted removal.

The spring stacks in your Cobra clutch will contain 11 individual springs and flat washer(s) configured as a 5 ½ stack. See figure 32. This clutch is designed such that it reconfigured by the customer to achieve different clutch engagements 'hits' by changing washer counts and configurations.

CAUTION:
Generally reassemble the springs as you removed them from the engine or as you received them from Cobra. If you are unsure call the Cobra Technical Support Group 517 437 9100 and consult the experts.

| **5GX CLUTCH ASSEMBLY REFERENCE DRAWING** | | |
|---|---|---|
| **REF #** | **PART #** | **DESCRIPTION** |
| 1 | CAFW0050 | Set of three shoes, springs, bolts, flat washers & nuts |
| 2 | CAFW0005 | Set Of three springs, washers, bolts & nuts |
| Not Shown | CAFW0500 | Complete assembled clutch (Arbor, shoes and washer stacks) |

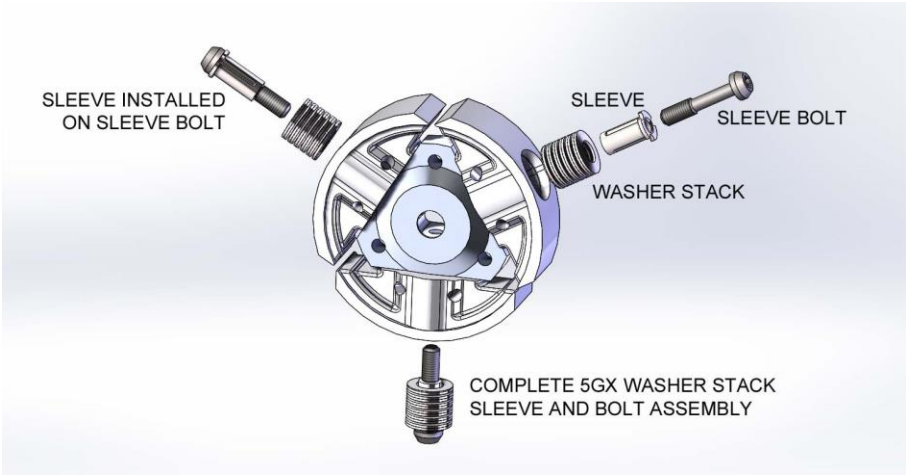



**Figure 32 Some configuration of clutch spring stack**. Each 'spring' stack contains multiple springs (Belleville washers) - arranged into three, four, or five 'flying saucers', or turned away against the flat washer(s). Shown is the 5 ½ stack..

| **Stack** | **Total Springs** | **Flying Saucers or Cymbal Pairs** | **Turned Away or Dish Stacked** | **Std. Flat Washer(s)** | **HIT** |
|---|---|---|---|---|---|
| 5 ½ | 11 | 5 | 1 | VARIED | HARD |
| 4 | 11 | 4 | 3 | VARIED | SOFTER |

**Clutch adjustment washers**

Your Cobra comes stock with flat washer(s) at the bottom of the spring washer stack. Cobra offers several thicknesses of thin adjustment washers that allow clutch engagement tuning. Increasing the flat washer(s) thickness increases the engine speed for clutch engagement thus increasing the abruptness of clutch engagement (harder hit). Conversely, decreasing the flat washer(s) thickness decreases the engine speed for clutch engagement thus decreasing the abruptness of clutch engagement (softer hit).

| Part # | Thickness mm (inch) |
|---|---|
| HKCSM015 | 1.5 (0.060) |
| HKCSM012 | 1.2 (0.047) |
| HKCSM008 | 0.8 (0.031) |
| HKCSM006 | 0.6 (0.025) |
| HKCSM005 | 0.5 (0.020) |
| HKCSM004 | 0.4 (0.015) |
| HKCSM003 | 0.25 (0.010) |
| HKCSM001 | 0.12 (0.005) |
| HKAM0022 | CLUCTH SHIM KIT |

**NOTE:** HKAM022 Clutch shim kit includes - 3 each .005", .010", .015" and .020" shims along with 2 clutch to hub spacers and 2 thin clutch to hub spacers.

Use the table above to order adjustment washers. Replace the stock washer with the proper combination of adjustment washers that delivers the desired clutch hit.

CAUTION:
It is easy to prematurely damage the clutch and other engine components with improper clutch adjustment. If you are unsure of how to adjust the clutch, contact the Cobra Technical Support Group before making adjustments.

**Clutch shoe wear:**

- This can be measured by the overall diameter of the shoes installed on the arbor. This measurement should be greater than 80.5mm
- If the clutch has been slipping and shows signs of glazing, it is best to replace the shoes. We have found that once the shoes are glazed, even if deglazed with emery paper or a file, the performance is reduced.
- The best way to prevent glazing is by not gearing too high, changing the oil as specified and by not blipping the throttle. Every time you blip the throttle, you are working your clutch springs.

**Clutch basket wear:**

- The internal diameter of a new clutch basket should measure ˜84.10mm. Over time the clutch shoes will wear the internal surface down creating a bigger ID and causing a later engagement. The maximum ID we recommend to allow is 84.25mm.

CAUTION:
The clutch produces a tremendous amount of heat and when a rider is blipping the throttle. This makes the clutch and clutch springs wear out quicker. This also makes your engine tend to run hotter which decreases engine power. It is important to train your rider ***NOT*** to be a **throttle 'blipper'**.

# CLUTCH ASSEMBLY:

1. Start with a new set of pre- assembled washer stacks or a cleaned, reassembled set of washer stacks and bolts.

CAUTION:
It is also important that all three shoes are stacked the same. (See figure 32)

2. Clean the threads of the stack bolt and the clutch with brake cleaner removing all old thread locking material.
3. Assemble the stacks and shoes on the arbor using high strength thread lock material to the stack bolt and tighten to 16 Nm (12 ft-lb, 144 in-lb).

CAUTION:
Avoid allowing excess thread lock material to contact the spring washers and the clutch or the clutch is likely to malfunction.

4. Clean the threads of the crank shaft and the clutch nut.
5. Install the clutch arbor on the crank. Making sure that the backing spacer in place on the crank.
6. Apply high strength thread locking agent to the threads and install the clutch nut and torque to 40 ft-lb (54Nm).

**INSPECTION NOTE:**

a. There must be in / out play in installed clutch, 0.3mm to 1.0 mm (0.012” to 0.040”).
b. This should be adjusted with the ECMU0040T and ECMU0040 shims
c. A blue clutch drum is worn out from excessive slippage or improper lubrication.

**7.** Install the clutch cover tightening the bolts from inside out. (8 or 10 mm socket, 5.8 ft-lb, 7.8 Nm).

**NOTE:** To ensure proper engagement of the kick gear with the starter nut, tighten the six screws only to the point of being not extremely loose. Using one hand rotate the kick lever to ½ stroke and hold while tightening the six screws completely with the other hand.

8. Fill with oil (295 ml (10.0 oz) *Cobra 3 Shoe Clutch Milk* (Part # MCMUGF32).

# Ignition

## Stator care

Stator failure could result from running the bike hot. Following is a list of things that will make your engine run hot.

1. The timing should not exceed the maximum specifications listed.
2. Improper carburetor jetting.
3. Improper spark plug heat range. Never run a hotter plug than the specified spark plug.
4. Clutch slippage. See “CLUTCH” section for causes of slippage.

CAUTION:

- Because of the amount of heat generated by the clutch and engine during extended periods of riding, it is advisable to remove the ignition cover afterward to allow the ignition to cool off. The heat transfers through the cases and can damage the stator as it cools off because of lack of airflow around the stator.

- Ignition will overheat if the gap between the rotor and stator is not large enough. There should be even clearance as the rotor rotates relative to the stator.

- Ignition timing is not adjustable. Changing the ignition timing can degrade performance.

- Make sure connections are free of dirt.

CAUTION:
Advancing the ignition timing will cause the engine to run hotter, in-turn causing power loss, shortened clutch life, and possibly lead to premature stator failure, and can also cause detonation which can lead to premature piston and ring failure.

**Tools recommended for timing service:**

- Compact motorcycle dial indicator (ECMU0079)
- Universal clutch puller- a universal puller that pulls the clutch, main drive gear and rotor. (Part # MCMUTL70).

**CONFIRM YOUR IGNITION TIMING:**

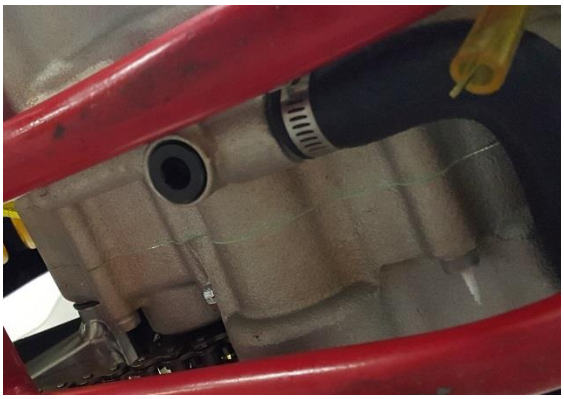
1. Remove the spark plug.
2. Insert the dial indicator into the spark plug hole.
3. Remove the four bolts from the ignition cover.
4. Remove the water pump belt from the rotor and water pump shaft.
5. Turn the crankshaft counterclockwise until it reaches top dead center.
6. Set the dial indicator to zero

7. Turn the crankshaft clockwise until the dial indicator reaches 0.035” (0.9 mm) from top dead center.
8. At this position the line on the rotor should align with the center of the stator coil at 5 o’clock position on stator frame. If not loosen the three 5mm bolts to adjust the stator.

**ROTOR INSTALLATION:**

1. Torque the nut on the rotor to 30 ft-lb (45 Nm) with medium strength (blue) thread locking agent.
2. Recheck the timing following the procedure of *timing your ignition.*
3. Install the water pump belt back on.
4. Bolt the ignition cover back on.
5. Put the spark plug back in, and firmly stick the spark plug cap onto the spark plug.

# Cooling System



**Radiator fluid removal:**
Remove the coolant drain plug (10mm hex key) on the bottom of the engine cases.

**NOTE:** Inspect the old coolant for evidence of oil, combustion byproducts (black ‘oil slick’ stuff) or other things that may indicate a problem.

**Tools recommended for impeller service:**

- Flat head screwdriver
- 2.5mm hex key
- 3mm hex key
- 4mm hex key
- 10mm hex key
- Water Pump Installation tool - MCMUTL08B
- Slide hammer with
    - fitting to thread into threads on end of shaft (M6x1.0)
    - single and double hook ends for removing plastic impeller
- Hammer

***COBRA IMPELLER SERVICE INSTRUCTIONS***

1. Remove radiator cap and drain engine coolant as described above.

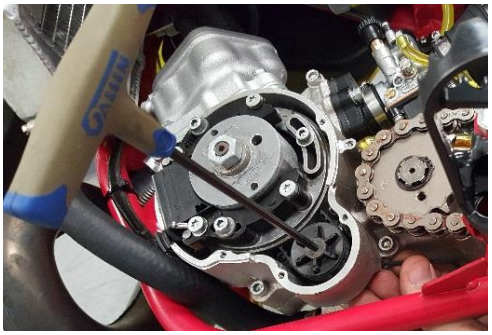
**NOTE:** If the impeller is damaged or broken completely back flush the coolant system to ensure no solid pieces are in the system.

2. Remove ignition cover and water pump cover using a 3mm hex key

3. Using a 3mm hex key, remove the screw in the water pump shaft stop hole.

4. Stick a 2.5mm hex key in the water pump shaft cross hole, and remove belt retainer screw using a 4mm hex key. (Figure 41 - item 1)

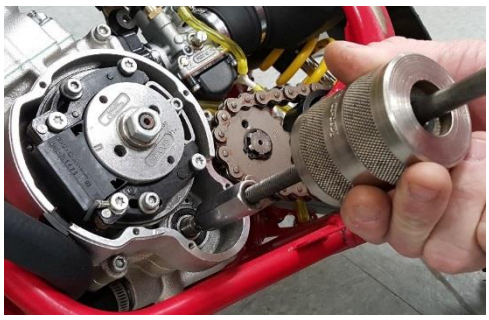
5. Remove belt retainer, water pump belt and water pump fan pulley.



6. Remove bearing retainer screw using a 3mm hex key.

7. Thread a slide hammer onto the end of the water pump shaft and remove the assembly.

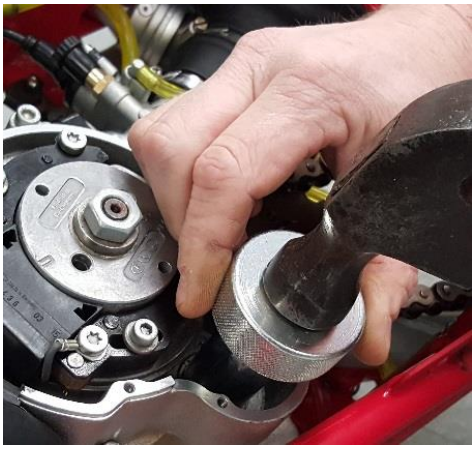
8. Clean any debris or particles from the bore and use some light emery cloth to remove any scratches in the surface that the removal process may have created.



9. Lubricate the bore with grease.

10. Prepare for assembly by installing the water pump assembly into the assembly tool and align the tool with engine case making sure alignment pin is in proper hole.

CAUTION:
Damage may occur if one attempts to install the water pump assembly and it's not aligned correctly in the bore.



11. Holding the tool squarely over the water pump assembly tap it firmly into place.

12. The assembly is installed properly when the retaining screw can be tightened and it does not cause a bind on the spinning shaft (use medium strength thread lock on the retainer screw).

**NOTE:** It may be necessary to tap the outer bearing race in (hammer & blunt punch) or out (with slide hammer) to insure proper free operation of the shaft while the screw is tight.

13. Reinstall the pulley, belt and fan cover using a 2.5mm hex key to stop the rotation of the water pump assembly while tightening with medium strength thread lock to 10 ft-lb (14Nm).

14. Reinstall the covers

**NOTE:** Refill the coolant system with 50/50 antifreeze-coolant / distilled water.

CAUTION:
Do not mix Propylene Glycol based coolant / antifreeze solutions with Ethylene Glycol based coolant / antifreeze solutions.

# Fuel & Air System

## Carburetor:

**Tools recommended for carburetor service:**
- Small flat head screwdriver
- WD-40
- 8mm socket

Your Cobra is equipped with an adjustable carburetor. Some fine-tuning may be needed according to weather condition and altitude. Proper jetting is ***very*** important for engine performance and engine life. Serious damage to the engine can occur if not properly adjusted.

**IDLE ADJUSTMENT:**
On the left side of the carburetor, there are two adjustment screws. The larger screw with the knurled head is the idle adjustment screw. To raise the idle, turn the screw in clockwise (in 1/4 turn increments) and rev the engine after each adjustment. To lower the idle, turn the screw counter-clockwise.

**TOP END JETTING:**
Indications that the engine is running too rich (too much fuel for the air) are:
- Engine not revving out or blubbering at high RPMs.
- Engine will not 'clean out'
- Wet or black spark plug

**NOTE:** Before changing jetting be sure that the air filter is properly cleaned and has the usual amount of air filter oil. An overly dirty air filter can cause the engine to run rich.

If the engine is running rich on the top end it should be leaned out. Leaning it out can be done by:
1. Changing the main jet to a smaller number.
2. Raising the needle clip (this lowers the jet needle) one notch at a time on the slide.

Indications that the engine is running too lean are:
- Engine cutting out on top end.
- Engine overheating and ultimately seizure.

- White spark plug

CAUTION:
It is much safer to operate the engine slightly rich as opposed to slightly lean. This is because an overly rich engine will just run poorly while an overly lean engine will seize, potentially causing an expensive top end rebuild and a DNF.

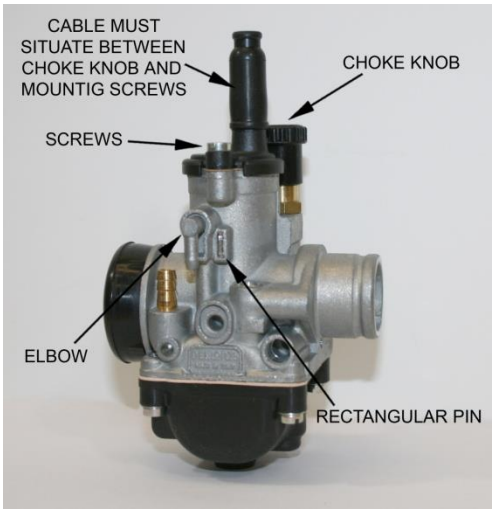
To richen the carburetor:
1. Change the main jet one number at a time (larger).
2. Lower the needle clip (raising the jet needle) one notch at a time until the engine starts to blubber on the top end, then move the clip back up one notch or until you get the blubber out.

**FUEL MIXTURE SCREW**
The smaller brass screw that is towards the front of the engine is a fuel mixture screw. This screw will also richen and lean your engine more on the bottom and mid-range. In warmer conditions, turn the screw in. In colder conditions, turn the screw out. Be sure to keep the carburetor very clean and make sure you don't have water or dirt in the carburetor bowl. Use automotive carburetor cleaner or WD-40 to clean the carburetor inside and out.

**Cleaning the carburetor:**

**⚠ WARNING**
Clean the carburetor in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area; this includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvent to clean the carburetor.

1. Make sure the fuel is shut off.
2. Remove the carburetor.
3. Drain the fuel from the carburetor.
4. Disassemble the carburetor.
5. Immerse all the metal parts in a carburetor cleaning solution.
6. After the parts are cleaned, dry them with compressed air.
7. Blow out the fuel passages with compressed air.
8. Assemble the carburetor
9. Install the carburetor onto the motorcycle.




CAUTION:
The motorcycle will only operate properly if the carburetor top is installed properly with the mounting screws, cable and choke knob oriented as shown.

## Reeds:

- The reeds must lay flat on the reed cage.
- If the reed tips aren't lying flat, replace them immediately.
- The reeds must have a tight seal on the reed cage.
- If the reed is damaged in any way, replace it. This means cracks, chips, and ruptures. Anything abnormal, replace the reeds.

Take the reed cage out and hold it up to the light and look in through the cage. If you see light, it is not necessarily a bad thing, but the pedals may need to be replaced. Bikes have been known to run real well with light visible past the reed tips as long as the jetting proper for the conditions.

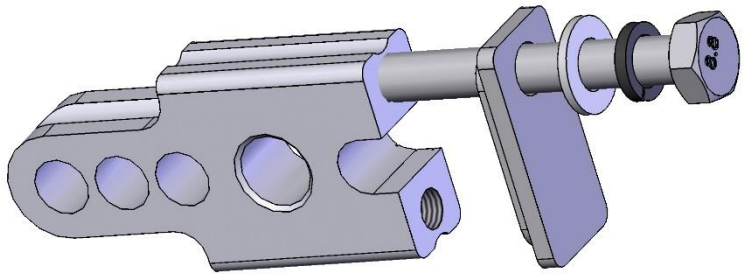
# Exhaust

The pipe is a crucial element to a motorcycle. Any kinks, dents, or damage done to the pipe will result in a major performance loss.

**NOTE:** Be sure to take the pipe off, and any carbon that may be built up. Carbon build up is created from exhaust. Exhaust has oils in it, and the oils cling to the walls of the inside of the pipe. Over a long period of time, the diameter of the pipe will decrease, due to carbon build up. So it is essential to clear the residue.

**NOTE:** If your bike sounds louder than normal, this is a strong indication that your silencer needs repacked.Wheels & Tires

# Rear wheel pullers



1. Remove axle, and back wheel assembly.
2. Pull the rear wheel pullers out of the back of the swing arm.

**Rear wheel alignment:**
By eye, ensure that the rear sprocket is running true (in-line, planar) with the front sprocket. When the sprockets are running true, the wheel is properly straightened, and the chain will run straight.

# Brakes

Check before each ride:

- Make sure the brake does not have any leaks by holding the lever in while checking hose connections.
- Make sure the brake lever pressure is OK by pulling in on the lever and ensuring full braking performance is achieved before the lever touches the handlebar. If this is not the case, pump the lever several times until the lever feels firm.
- Always make sure the rotor and brake pads are free from oil and grease. Clean the rotor with mild dish soap or alcohol. Contaminated pads must be replaced.
- Ensure that the brake caliper is centered over the brake rotor. It a correction is needed, Cobra has thin brake shims to help make minor adjustments in alignment.
- Always leave adequate free-play in the lever or pedal.

CAUTION:
This brake system uses only DOT 4 brake fluid!

# Front Forks

The front forks are fully serviceable but it is recommended that only trained professionals should service them. Contact Cobra for questions and service of your forks.

# Rear Shock

The rear shock is fully serviceable but it is recommended that only trained professionals should service your shock. Contact Cobra for questions and service of your CX50 SR shock.

# Tuning

## Clutch

**There are performance characteristics to observe and things to measure.**

1) Performance characteristics to observe
   a) Clutch coming in **too late**
      i) Engine rev's to a high RPM before moving the motorcycle
      ii) Clutch never fully engages on a reasonable straight stretch
      iii) Basket turns blue in short amount of time
   b) Clutch coming in **too early**
      i) Motorcycle moves too soon when accelerating off idle
      ii) Motorcycle moves but not with much power
      iii) Clutch fully engages before the 'power band' kicks in
2) Things to measure that can have an effect
   a) Spring washer configuration
   b) Spring stack without flat washer
   c) Thickness of flat washer
   d) Individual spring washer thickness
   e) Individual spring washer height
   f) Effective bolt shoulder length
   g) Shoe thickness (difficult to measure accurately - can only be approximated by the size of the step where it sticks out of the basket)
   h) Basket has worn and is too large

***There is a relationship between observed characteristics and the things that can be measured***

If a clutch comes in **too early**, it means that clutch spring stack is **not providing enough force** to keep the shoes from being thrown out to the clutch basket at the proper time with the given shoes, basket, arbor, and bolt. This can be due to:

1. Clutch spring stack is to short
   - Wrong configuration
   - Sacked out (over stressed) washers
   - Too thin a flat shim in the stack
2. Spring rate too low (wrong configuration with proper stack height)
3. Clutch arbor shoulder bolt is too long

If a clutch comes in **too late**, it means that clutch spring stack is **providing too much force** to keep the shoes from being thrown out to the clutch basket at the proper time with the given shoes, basket, arbor, and bolt. This can be due to:

1. Clutch spring stack to tall
   - Wrong configuration
   - Too thick a flat shim in the stack

2. Spring rate too high (wrong configuration with proper stack height)
3. Clutch arbor shoulder bolt is too short
4. Clutch shoe material has worn too thin
5. Clutch basket has worn too much and is too large of a diameter

With the exceptions of component failures, generally two things will occur:

1) The clutch shoes will wear causing the clutch to engage later, and
2) The springs will sack causing the clutch to engage earlier.

Typically the springs will sack at a quicker rate than the shoes will wear, meaning that an un-tampered clutch that worked fine will ultimately hit too early at some time. When this occurs it is easily remedied with a new spring stack **or** a thicker flat shim. Because the shoes have worn, a thinner flat washer may be needed with the fresh new springs to allow proper clutch engagement.

One thing to remember:

***If your clutch is hitting fine, don't mess with it!***

***Some things to remember to aid clutch life***

- Change oil each ride
- Gear to the low side
- Avoid mud if possible
- (Cut mud practice to 1 lap or none)
- Stay on the gas (no throttle blipping)
- Run more air pressure to allow wheels to spin (helps throttle steer)
- Make sure wheels spin freely (no bent rotors, dragging brakes, chain too tight, etc**…**)
- Make sure the engines pulls cleanly and strong by having properly maintained engine with correct ignition timing and carburetion.

With the exceptions of component failures, generally two things will occur:

- The clutch shoes will wear causing the clutch to engage later, and
- The springs will sack causing the clutch to engage earlier.

Typically the springs will sack at a quicker rate than the shoes will wear, meaning that an un-tampered clutch that worked fine will ultimately hit too early at some time. When this occurs, it is easily remedied with a new spring stack **or** a thicker flat shim. Because the shoes have worn, a thinner flat washer may be needed with the fresh new springs to allow proper clutch engagement.

Effective length of the shoulder on the clutch arbor bolt (see Figure C1). Nominal is 16.00mm (0.630").

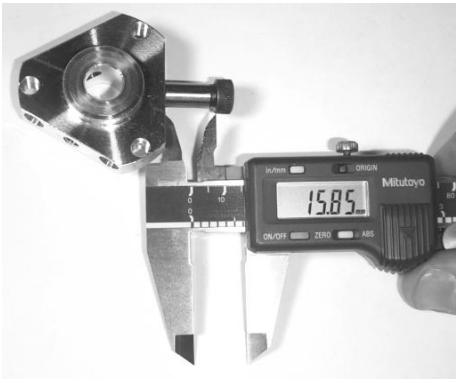



**Figure C1**

As this decreases, the spring stack needs to decrease equally. This can change due to the shoulder bolt 'setting' into the arbor (see C2)

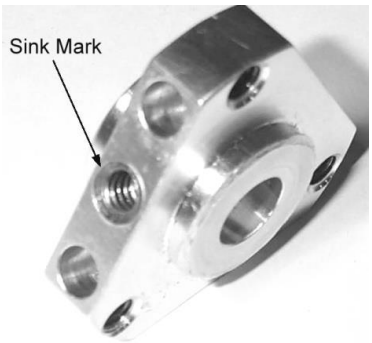


**Figure C2**

If your effective shoulder length is off, or your shoes are worn, adjust the height of your overall combined spring stack accordingly (i.e. if your effective shoulder length is 0.5mm short of the 16.00 measurement, decrease the overall combined spring stack height by 0.5mm, or if your shoes are worn by 0.5 mm, increase the overall combined spring stack height by 0.5mm).

**Frequently asked questions**

Q: When should the springs be replaced?
A: When the clutch 'hit' occurs too early or too late.

Q: Should the clutch springs be replaced if the shoes wiggle on the arbor?
A: Not if the clutch is 'hitting' correctly. Don't mess with it

Q: What is the acceptable tolerance on any of the measurements?
A: For the most part that does not matter. Suffice it to say that any efforts to make the three shoes behave identically will make the best performing clutch. Taking extra time to balance the three stacks (shims, springs, bolts, etc…) to as close to the same length as you are willing to put effort into will result in a better performing motorcycle.

Q: One of my two riders weighs 85 pounds and the other weighs 45 pounds. Should I have their clutches adjusted differently because of their weight?
A: No, there is one best setting and it works for light or heavy riders.

Q: If my clutch basket changes color, should I replace it?
A: If it is blue or purple, replace it. If it is silver or brown, you are fine.

**Cobra is now going to greater lengths to ensure that the clutch on your motorcycle is performing the best possible from the shop and so it may have a different clutch stack or shim washer from what you are used to. Please take measurements for knowledge sake but don't blindly restack washers to different heights without first consulting the factory.**

# Gearing

**For a bike with a centrifugal clutch, it's better to be geared too low than too high.**

What happens with improper gearing?

- Poor performance

| Condition | Gear Taller | Gear Lower |
|---|---|---|
| Mud | | ↓ ↓ |
| Sand | | ↓ |
| Hills | | ↓ |
| Hard Pack | ↑ | |
| Throttle Blipper (novice)* | | ↓* |

*It may be helpful to set up the clutch to hit early for smooth power delivery

- Not enough top end speed
- No snap
- Over heat clutch
- Premature failure of engine seals, bearings, & electronics
- High clutch wear

| Front Sprocket | | | | Rear | Ratio |
|---|---|---|---|---|---|
| | | | 16 | 31 | 1.94 |
| | | | 16 | 32 | 2.00 |
| | | | 16 | 33 | 2.06 |
| | | 15 | | 31 | 2.07 |
| | | | 16 | 34 | 2.13 |
| | | 15 | | 32 | 2.13 |
| | | | 16 | 35 | 2.19 |
| | | 15 | | 33 | 2.20 |
| | 14 | | | 31 | 2.21 |
| | | | 16 | 36 | 2.25 |
| | | 15 | | 34 | 2.27 |
| | 14 | | | 32 | 2.29 |
| | | | 16 | 37 | 2.31 |
| | | 15 | | 35 | 2.33 |
| | 14 | | | 33 | 2.36 |
| | | | 16 | 38 | 2.38 |
| | | 15 | | 36 | 2.40 |
| | 14 | | | 34 | 2.43 |
| | | | 16 | 39 | 2.44 |
| | | 15 | | 37 | 2.47 |
| | 14 | | | 35 | 2.50 |
| | | | 16 | 40 | 2.50 |
| | | 15 | | 38 | 2.53 |
| | 14 | | | 36 | 2.57 |
| | | 15 | | 39 | 2.60 |
| | 14 | | | 37 | 2.64 |
| | | 15 | | 40 | 2.67 |
| 13 | | | | 35 | 2.69 |
| | 14 | | | 38 | 2.71 |
| 13 | | | | 36 | 2.77 |
| | 14 | | | 39 | 2.79 |
| 13 | | | | 37 | 2.85 |
| | 14 | | | 40 | 2.86 |
| 13 | | | | 38 | 2.92 |
| 13 | | | | 39 | 3.00 |
| 13 | | | | 40 | 3.08 |

# Suspension

## Adjustment

1. **Front forks**
    - 1.1. Fork oil
        - 1.1.1. Oil type
            - 1.1.1.1. Heavier weight oil – more damping – slower responding
            - 1.1.1.2. Lighter weight oil – less damping – quicker responding
        - 1.1.2. Oil quantity / level
            - 1.1.2.1. Greater quantity / higher level – greater bottoming resistance, stiffer near the end of the travel.
            - 1.1.2.2. Smaller quantity / lower level – less bottoming resistance, less stiff near the end of the travel.
    - 1.2. Fork spring
        - 1.2.1. Stiffer spring (higher spring rate) – stiffer throughout the travel.
        - 1.2.2. Less stiff spring (lower spring rate) – less stiff throughout the travel.
    - 1.3. Gas pressure – always bleed off any pressure.
    - 1.4. Fork height
        - 1.4.1. Rise in clamps for quicker turning.
        - 1.4.2. Lower in clamps for improved straight line stability.
    - 1.5. Compression damping
        - 1.5.1. Harder (more damping, slower) – adds resistance to the suspension motion when the suspension is compressing.
        - 1.5.2. Softer (less damping, quicker) – reduces resistance to the suspension motion when the suspension is compressing
    - 1.6. Rebound damping
        - 1.6.1. Harder (more damping, slower) – adds resistance to the suspension motion when the suspension is returning to full length.
        - 1.6.2. Softer (less damping, quicker) - reduces resistance to the suspension motion when the suspension is returning to full length
2. **Rear shock**
    - 2.1. Preload adjustment
        - 2.1.1. More preload (greater distance) – less race sag.
        - 2.1.2. Less preload (smaller distance) – more race sag.
    - 2.2. Shock spring
        - 2.2.1. Stiffer spring – stiffer throughout the travel.
        - 2.2.2. Less stiff spring – less stiff throughout the travel.
    - 2.3. Compression damping
        - 2.3.1. Harder (more damping, slower) – adds resistance to the suspension motion when the suspension is compressing.
        - 2.3.2. Softer (less damping, quicker) – reduces resistance to the suspension motion when the suspension is compressing.
    - 2.4. Rebound damping
        - 2.4.1. Harder (more damping, slower) – adds resistance to the suspension motion when the suspension is returning to full length.
        - 2.4.2. Softer (less damping, quicker) - reduces resistance to the suspension motion when the suspension is returning to full length

# Front Fork Operation

The front suspension on the CX50SR works under the principals of hydraulic damping, and it features full adjustability to help tune the fork to meet each rider's needs. The CARD fork contains MXT 'Smart Leg' technology that provides very progressive operation; allowing a small bike to perform well on track surfaces ripped up by larger machines.

The key to Smart Leg technology is to understand that each leg has a different role. The brake side leg features a conventional open cartridge. This cartridge handles both standard compression and rebound damping duties. Rebound damping is adjustable on the fork cap, and compression damping is adjusted at the bottom of the fork. The other leg (the Smart Leg) has no rebound damping, and it contains both a speed sensitive compression damping mechanism as well as a position sensitive one. This design allows for a firm low speed response, controlling rapid chassis pitch, which promotes stability and control. The fork produces significantly less mid and high-speed compression until it travels into the progressive / speed sensitive portion of the smart leg. The speed sensitive compression component is adjustable at the top of the fork.

The combination of the Smart Leg and the conventional leg allows the fork to be very supple throughout all low amplitude operation and yet take punishing hits; producing a progressively increasing damping rate that slows the forks movement as it approaches full bottom. Therefore, the Smart Leg also acts as a hydraulic bottoming control device. Finally, the large degree of adjustability in both legs allows the fork to be tuned to meet each rider's size, ability, and type of riding they do (motocross, off-road, flat track, etc).

# Fork Damping Adjustments

**Tools required**

- Small flat blade screwdriver

REBOUND ADJUSTMENT

The speed at which the fork rebounds can be adjusted at the top of the conventional leg. Turning the adjustment screw clockwise slows the rate at which the fork extends after being compressed, and likewise, turning the screw counter-clockwise returns the leg to its extended position faster. As shown in the figure, 'S' (slower) and 'F' (faster) are etched into the cap as an adjustment guide.

At the base of the conventional leg is another adjustment screw that controls the amount of compression damping. Turning this screw clockwise increases damping and turning it counter-clockwise will decrease it. This is illustrated by the "HARD" and "SOFT" in the figure at the right.

COMPRESSION ADJUSTMENT

The Smart Leg cap is labeled “Speed Sensitive Bottoming Control”, and this adjuster provides a range of control over how progressive the fork feels. Turning the screw clockwise increases the fork’s resistance to bottoming, while turning the screw counter-clockwise decreases it. On the track, this effect will be felt on sections where the fork is forced to move very quickly such as on harsh landings or when traversing sharp edged bumps.

# Rear Shock Adjustments

Always start with standard settings and make damping changes in no more than two click increments and only make one change at a time.

| Symptom | Action |
|---|---|
| Rear end feels stiff on small bumps | Softer Low Speed Compression Damping |
| Rear end ‘sways’ on straights | Harder Low Speed Compression Damping |
| Bike tends to jump ‘rear end high’ | Harder High Speed Compression |
| Bike tends to jump ‘rear end low’ | Softer High Speed Compression |
| Frequent rear end bottoming | Harder Compression Damping |
| Bottoms after end of continuous bumps | Softer rebound damping |
| Rear end ‘kicks’ over square edge bumps | 1) Harder rebound, 2) Softer Low and High Speed Compression |
| Rear end feels stiff under acceleration bumps. | Softer Rebound and/or Stiffer Low Speed Compression Damping |

## Proactive Suspension Adjustments

Once you have the suspension adjusted for decent overall feel, you can make proactive adjustments when faced with different racing conditions.

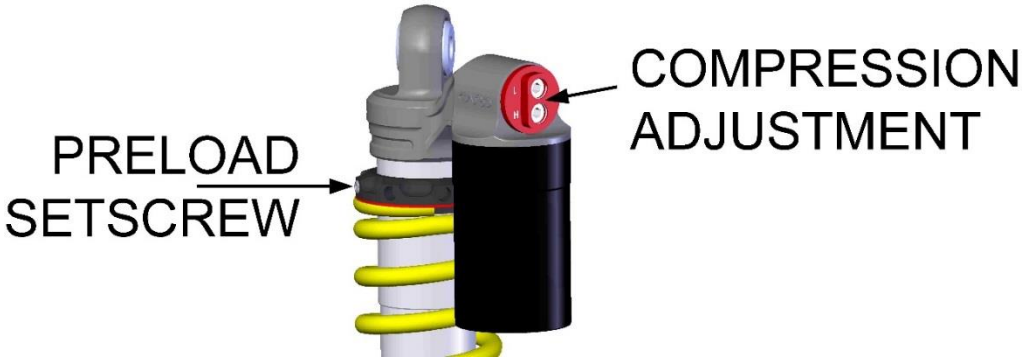
| Situation | Actions |
|---|---|
| Sand track | Lower the rear end (increase race sag). |
| Sand track | Stiffer compression and rebound damping. |
| Long fast track | Lower the forks in the clamps by 3 mm. |
| Tight slow track | Raise the forks in the clamps by 3 mm. |
| Mud track | Lower the bike if the rider has difficulties touching the ground. |

### Shock preload

Loosen the set screw and turn the spring perch in full turn increments to get the desired sag settings.

**NOTE:**
Always leave the spring perch rotated in such position so that the set screw is easily accessible.

### Shock Damping




The Low Speed “L” adjustment is what controls how quickly the rear of the bike settles in the corners or how it settles in sweeping ‘flat track’ style corners whereas the High Speed “H” adjustment controls how the shock reacts to kickers. In “+” adds damping or slows it down, whereas out, “-“ speeds up the shock or removes damping.

# Carburetion

Although your Cobra is sent from the factory with the carburetor jetted for optimal performance, you may find it necessary to adjustment your particular jetting due to current weather conditions, altitude, fuel variations, and/or engine modifications.

CAUTION:
Proper jetting is very important for engine performance and engine life. Symptoms of improper jetting are listed below.

- Symptoms of incorrect oil or oil / fuel ratio
  - Poor acceleration
  - Misfire at low engine speeds
  - Excessive smoke
  - Spark plug fouling
  - Excessive black oil dripping from exhaust system
- Symptoms of too rich a fuel mixture

- Poor acceleration
- Engine will not 'rev' out, blubbers on top
- Misfire at low engine speeds
- Excessive smoke
- Spark plug fouling
- Wet, black, or overly dark spark plug (when removed for inspection)

- Symptoms of too lean a fuel mixture
  - Pinging or rattling
  - Erratic acceleration
  - Same actions as running out of fuel
  - High engine temperature
  - White spark plug (when removed for inspection)

**NOTE:** When inspecting the spark plug to evaluate jetting, a properly jetted machine will produce a spark plug that is dry and light tan in color.

| **Environmental and altitude related mixture adjustments** | | |
|---|---|---|
| **Condition** | **Mixture will be** | **Required adjustment** |
| Cold air | Leaner | Richer |
| Warm air | Richer | Leaner |
| Dry air | Leaner | Richer |
| Very humid air | Richer | Leaner |
| Low altitude | Standard | None |
| High altitude | Richer | Leaner |
| Low barometric pressure | Richer | Leaner |
| High barometric pressure | Leaner | Richer |

**NOTE:** Before making any carburetor jetting changes verify that:
- You are using the proper fuel and oil
- The fuel is fresh and uncontaminated
- The oil and fuel have been mixed in the proper ratio
- The carburetor is clean (no plugged jets)
- The air filter is properly clean and oiled
- The float height is within proper specification (proper measuring technique is described later in this section)

**NOTE:** Perform all jetting changes on a motorcycle that has been warmed up to proper operating temperature.

The carburetor on your Cobra motorcycle is quite adjustable. Figure 49 shows its range of adjustment and in particular what adjustable component affects what range of operation (specifically throttle position).

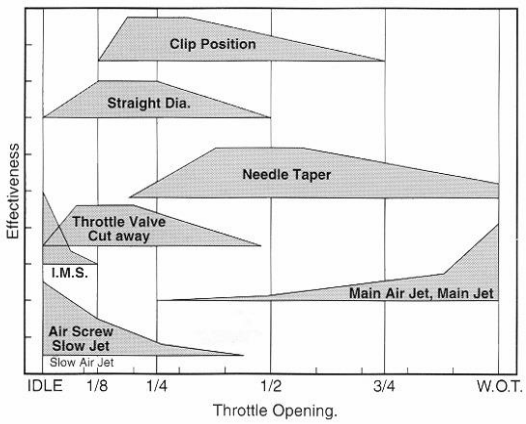



**Figure 49**

**FUEL SCREW ADJUSTMENT:** **Adjust for maximum idle speed**

The fuel adjustment screw is located on the left side of the carburetor. It is the smaller of the two adjustment screws and requires the use of a small flat blade screw driver for adjustment. After adjusting for maximum idle speed, use the idle screw to adjust the desired idle speed.

**NOTE:** If the fuel screw requires more than 3 turns out, replace the pilot jet for one that is one size richer (larger number) then readjust the fuel screw.

**IDLE ADJUSTMENT:** **Adjust for desired idle speed**

The idle speed screw is located on the left side of the carburetor. It is the larger of the two screws on the side of the carburetor and is unique with its knurled head for easy fingertip adjustment. To raise the idle, turn the screw in, clockwise, (in 1/4 turn increments) and rev the engine after each adjustment. To lower the idle, turn the screw counter-clockwise.

**TOP END JETTING:** **Adjust for clean full throttle acceleration**

Jet your top end (main jet) based on the acceleration of your Cobra Motorcycle on the longest straight at the track. Observe any of the lean or rich symptoms (spark plug appearance and bike performance) listed above and change your jetting accordingly.

**PART THROTTLE** **Adjust for desired acceleration**

Using an area of the track that allows the rider to operate and mid throttle and transition (accelerate, or 'roll on') from closed, or mostly closed throttle, to a larger throttle opening. Observe the rich and lean symptoms listed above. Adjust the jet needle position by moving the clip from its current position (move the clip higher on the needle to make the bike run leaner, or move the clip lower on the needle to make the bike run richer) to one higher or lower.

# Troubleshooting

1) **Engine operates erratically**
    a) Carburetor top is installed backwards
    b) The carburetor slide indexing pin is missing
    c) A carburetor vent elbow is plugged or has fallen out
    d) Faulty stator
    e) An air leak
        i) Base gasket
        ii) Intake / reed gaskets
        iii) Crank seals
        iv) Crank case gasket
2) **Engine is down on power**
    a) Clutch engagement is not set properly
    b) Jetting is incorrect
    c) Silencer needs repacked
    d) Exhaust pipe
        i) Has excess carbon buildup
        ii) Has large dent in it
    e) Compression is low
        i) Piston
        ii) Rings
    f) Reeds are damaged
    g) Ignition timing is incorrect
    h) Stator needs replaced
3) **Engine is excessively loud**
    a) Silencer needs repacking
4) **Engine ‘blubbers’ at high RPMs**
    a) Jetting too rich
    b) Stator needs replaced
5) **Engine won’t start**
    a) Fuel
        i) None in tank

ii) Is sour or bad

b) Carburetor is dirty

c) Ignition

i) Spark plug fouled

ii) Spark plug cap off

iii) Engine Shut-off ‘kill’ switch is shorted

iv) Bad electrical ground

v) Stator winding damaged

d) Exhaust is plugged with object of flooded fuel

e) Engine is flooded

f) Cracked, broken, or jammed reed pedal

g) Excessive piston or cylinder wear

h) Clutch bolt or shoe dragging on basket (drum).

**6) Engine won’t idle**

a) Idle knob needs adjusted

b) Carburetor jets are dirty

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