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 CX50JR 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.

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.

Table of Contents

General Information 4
- Specifications - General 4
- Optional Suspension Components 5
- Specifications - Torque Values 5
- Break-In Procedure 6
- Starting Procedure 7

Maintenance 8
- Tips 8
- Schedule 9
- Replacing Transmission / Clutch Lubricant 10
- Proper Chain adjustment 11
- Rear Brake Maintenance 11
- Brake Bleeding Procedure 13
- Air Filter Cleaning 14
- Fork Oil Replacement 15
- Cobra Frictional Drive (V3 CFD) 16

Parts 18
- Parts – Airbox and Inlet System 18
- Parts – Bars and Controls 19
- Parts - Carburetor 20
- Parts – Coolant System 21
- Parts – Electrical System 22
- Parts – Engine – Bottom End and Transmission 23
- Parts – Engine Clutch and Kicker 24
- Parts – Engine – Top End 26
- Parts – Exhaust System 27
- Parts – Forks & Triple Clamps 28
- Parts – Forks – Leg Assembly – Brake Side 29
- Parts – Forks – Leg Assembly – Non-Brake Side 30
- Parts – Frame – Mounting Hardware I 31
- Parts – Frame – Mounting Hardware II 32
- Parts – Front Brakes 33
- Parts – Front Wheel 34

Parts – Plastic & Seat....35
Parts – Rear Brake....36
Parts – Rear Wheel....37
Parts – Shock....38
Parts – Shock - Inside....39
Parts – Swingarm Assembly....40
Service....41
Engine Service....41
Base Gasket Selection....42
Engine Removal....44
Complete Engine Disassembly Procedure....44
Top End Disassembly Procedure....45
Splitting the Cases....46
Engine Assembly....46
Clutch....48
Ignition....52
Cooling System....54
Radiator fluid removal:....54
Fuel & Air System....57
Carburetor....57
Reeds....59
Exhaust....59
Wheels & Tires....59
Rear wheel pullers....60
Brakes....60
Rear Shock....62
Tuning....63
Gearing....66
Suspension....67
Rear shock....68
Front Forks....69
Carburetion....69
Troubleshooting....73
Index....75

General Information

Specifications - General

Items	CX50 JR
Dimensions	
Wheelbase	35.75” (908mm)
Wheel size	10” (254mm)
Seat height	23.9” (607 mm)
Engine	
Type	2-stroke, single cylinder, reed valve
Cooling system	Liquid-cooled
Coolant	50/50 antifreeze-coolant / distilled water
Displacement	49.8 cc
Bore and stroke	39 mm x 41.7 mm
Ignition system	Electronic, analogic advance
Spark plug	Autolite - XS61 & 4261
Gap	0.023” – 0.025” (0.58 – 0.64 mm)
Ignition timing	0.040” (1.0 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	40:1 to 50:1
Carburetion	14 mm Dell’Orto
Slow (Pilot) Jet / Main Jet	55 / 92
Float Height	16mm ± 0.5mm (0.63” ± 0.020”)
Transmission	
Speed / Clutch	Single / Cobra 3 shoe
Final drive ratio	14/37 T
Chain	420
Transmission / clutch oil type	*Cobra Venom 3 Shoe Clutch Milk*
Quantity	235 – 350 ml (8 – 12oz)
Chassis	
Front tire	2.50 – 10
Pressure	15 psi minimum
Rear tire	2.75 – 10
Pressure	15 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	145 ml
Std settings	Smart leg: 3out,Compression and rebound 1 1/2 out
Rear Shock (std settings)	Compression Low 7, High 7, No Rebound Adj.

Optional Suspension Components

Weight of Rider (lb)	Fork Spring	Shock Spring
Less than 38 (light)	KCCJ3218 (18 lb/in, 3.15 N/mm)	SCMUOH04 (275 lb/in) red
38 – 45 (std)	KCCJ3221 (21 lb/in, 3.70 N/mm)	SCMUOH05 (285 lb/in) yellow
46 to 55 (stiff)	KCCJ3225 (25 lb/in, 4.40 N/mm)	SCMUOH06 (295 lb/in) white

Specifications - Torque Values

Fastener	Torque Value			Size & Remarks
	ft-lb	in-lb	Nm	
Cylinder head nuts	10.3	123	14	M7 X 1.0
Crankcase bolts	8.8	105	12	M6 x 1.0
Spark plug	(SP)	(SP)	(SP)	M14 x 1.25
Stator bolts	2.1	25	2.8	M5 X 0.8**
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	10 x 1.25*
Clutch bolts	12	144	16	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	M10 x 1.5**
Triple clamp (top)	12	144	16	M8 x 1.25
Triple clamp (bottom)	6	72	8	M6 x 1.0
Water pump impeller	3.6	44	5	M5 x 0.8*
Intake manifold bolts	4.6	55	6.2	M6 X 1.0
Ignition rotor nut	33	400	45	M10 x 1.25**
Rear sprocket bolts	18	216	24	M7 X 1.0**
Axle nuts	25	300	34	M12 X 1.25

***** Apply high strength thread locking agent when installing.
**Apply medium strength thread locking agent when installing.
(SP) To apply the proper torque to the spark plug when inserting, first screw the spark plug in until the metal gasket ring causes resistance and then turn another ¼ turn.

Break-In Procedure

Your Cobra CX50 JR is a close-tolerance high performance machine and break-in time is very important for maximum life and performance. The CX50 JR 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 40:1 (150 ml oil to 2 gallons of gas). Other brands of oil should be mixed at 32:1 for break-in.

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.
- Allow bike to cool and inspect bike for loose fasteners.
- Avoid prolonged operation at Wide Open Throttle for the next half hour.
- After 1 hour of operation
  - Check for loose bolts and nuts.
  - 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 or suspension specialist 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) 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 remove the radiator cap of a machine that has a warm engine. 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 fuel. 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 until the engine is at operating temperature.

⚠ 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 other 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 will help to transfer heat from the clutch. Filling with more than 12 oz (295 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 two digits indicate the model and the seventh indicates the model year (MY). Example, CMxxxx7xxx is a 2007 MY CX50 JR.
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 that the air filter is cleaned and oiled.
  - Insure the smooth operation of the throttle cable(throttle soundly ‘clacks’ shut).
  - Check for frayed strands of the throttle cable inside the throttle housing.
  - Check for adequate tire pressure.
  - Check all nuts and bolts for proper torque.
  - Spray all moving parts with WD40 or other light oil.
  - Check drive chain for
    - Proper tension.
    - Adequate lubrication.
  - 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 its safe limits.
  - 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 235 ml (8 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, on the clutch cover, near the brake lever (figure 1).

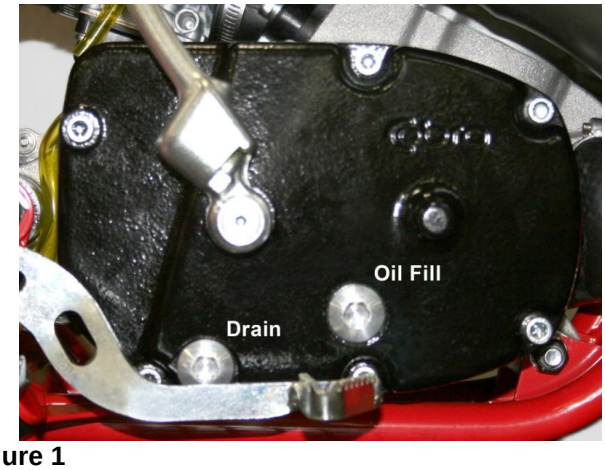


Figure 1

3. Allow the oil to drain completely, then reinstall the oil drain plug.
4. Remove the oil fill plug and add 8.0oz of *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.

NOTE: It can be helpful to lean the bike over on its left side to add oil to the bike.

5. Reinstall the oil fill plug.

NOTE: 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. A properly adjusted chain will have 50mm (13/8”) free movement behind the chain block with no load on the bike. (figure 2)

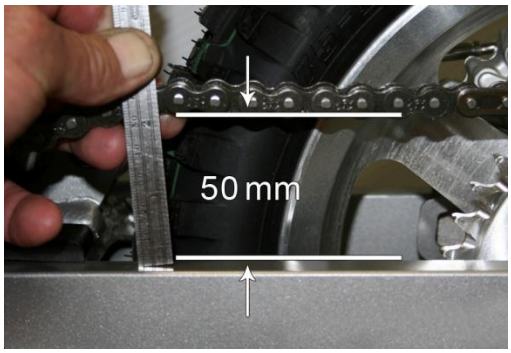
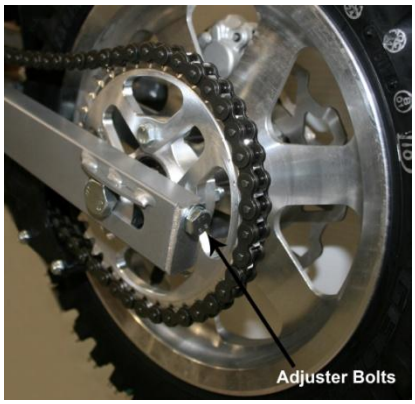


Figure 2



3. Sit on the bike and verify that the chain has a minimum of 12mm (1/2”) free movement when the chain is at its tightest point.
4. 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).
5. Retighten the axel bolt to 25 ft-lb (34 Nm).
6. Retighten the adjustor bolt

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.

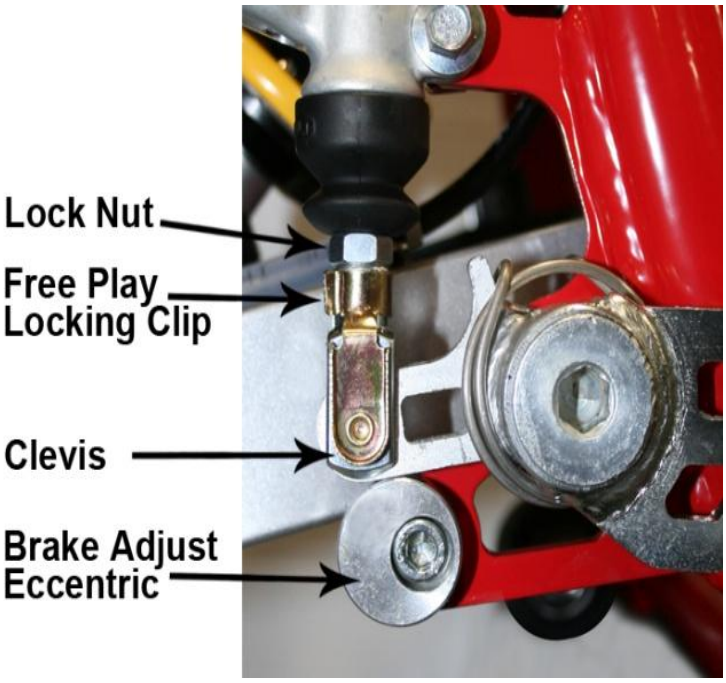
Brake pedal height can be adjusted with the bolt and nut located under the rear of the brake pedal. The free-play is adjusted with the adjustable plunger on the end of the brake pedal.

CAUTION:
Use only DOT 4 brake fluid

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

1. Loosen the lock nut (10mm wrench).
2. Adjust the brake lever stop (10mm wrench) so that the lever is comfortably reachable in both:
   a. Standing riding position, and
   b. Sitting riding position.
3. Tighten the lock nut (10 mm wrench).

Figure 2b



CAUTION:
Adequate pedal free play is required so that the brake pads do not drag on the rotor. 1” MINIMUM.

⚠ 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.

To adjust (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:

- 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.
- 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

Tools recommended for air filter maintenance:

- #2 Phillips head screwdriver
- 4 mm Allen wrench
- Foam filter oil

Procedure

1. Removed the seat with a 4 mm Allen wrench.
2. Remove the filter/air inlet boot from the back of the carburetor with a Phillips screwdriver
3. Pull the filter / boot assembly out the top of the air box.
4. Clean the filter in a nonflammable solvent to remove the filter oil.

⚠ 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.

5. Clean the filter in hot soapy water to remove all dirt particles.
6. Allow it to dry thoroughly.
7. Saturate with filter oil and remove excess.

NOTE: The Cobra is equipped with a special designed Air box. It is very important to keep the air filter clean and properly oiled with high quality water-resistant foam filter oil. It's very important to oil your filter consistently each time because varied amounts of oil will change your carburetor jetting.

8. **Reinstall** the filter / boot assembly making sure the letters "CM" are visible between the carburetor and air box (figure 4).

Figure 4

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 145ml 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).

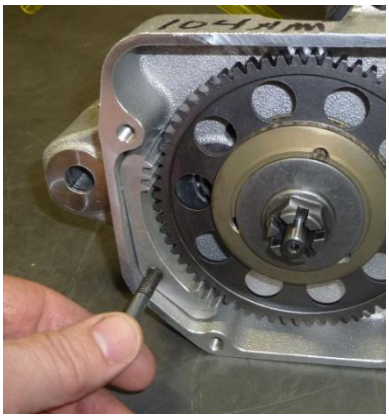
Cobra Frictional Drive (V3 CFD)

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 60 ft-lb (81 Nm) measured at the sprocket.

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



1. Access the slip clutch by draining the oil and removing the cover exposing the CFD.
2. Brace the CFD gear from turning with a suitable device (Cobra tool EAMU0004 or similar).
3. Install the Sprocket Socket CFD torque checking tool (MCMUTL15) on the sprocket and secure with the supplied screw and ensure that the tool is completely up against the sprocket
4. Verify with a torque wrench applied to the Sprocket Socket that the V3 CFD does not slip below 81 Nm (60 ft-lb) in either direction.
5. If there is slippage below 81 Nm (60 ft-lb) remove the cotter pin and tighten the nut on the CFD one more position (it is a hand thread nut so you must turn it counter clockwise)

castle left

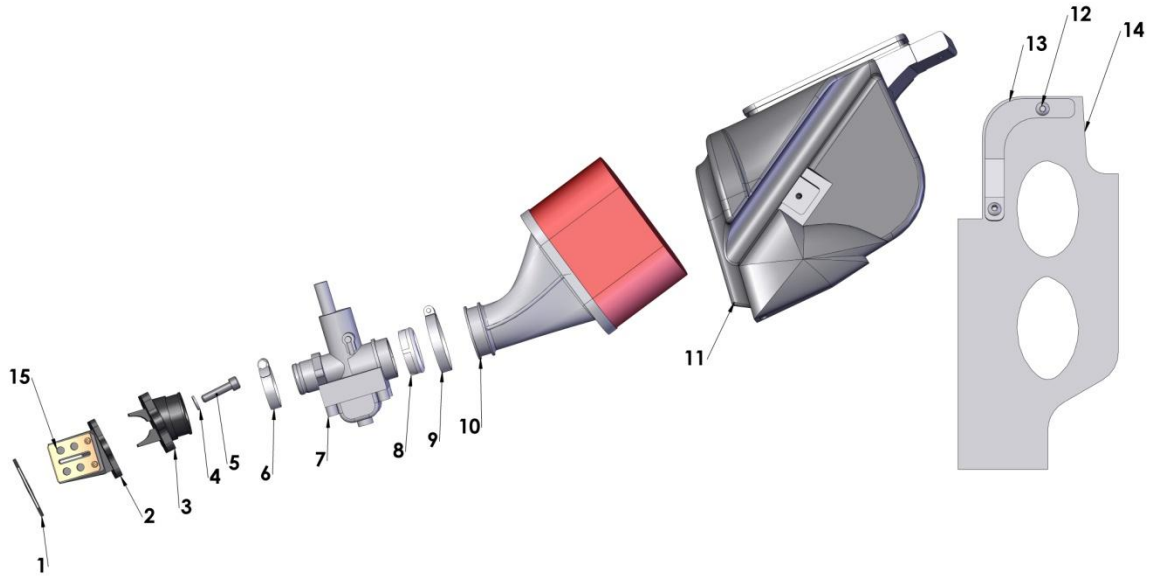
CAUTION:
Do not check earlier versions of the CFD with this method! The torque valves required at the sprocket would be much higher

HINT:
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.

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

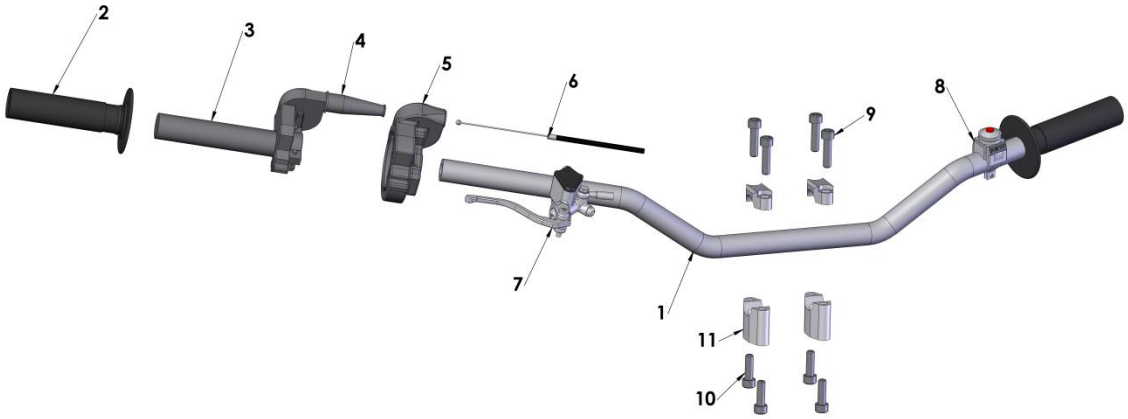
Parts

Parts – Airbox and Inlet System



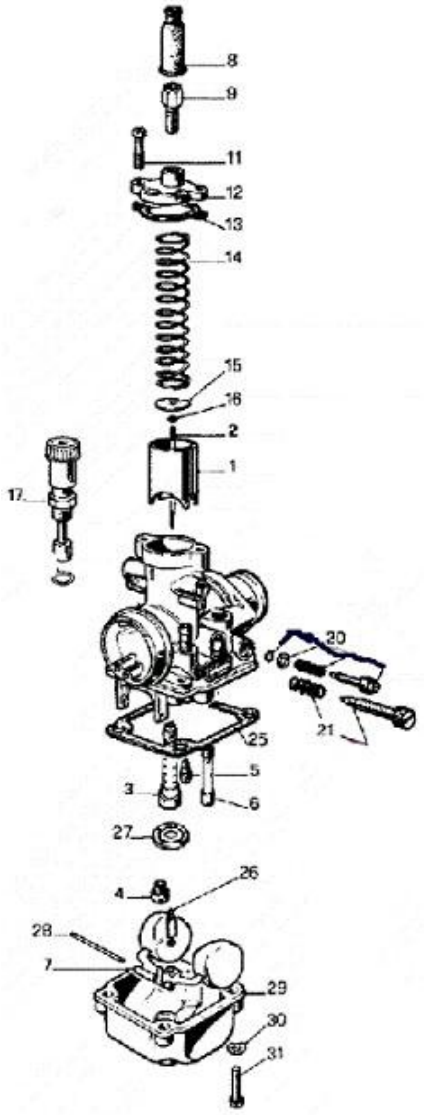
Airbox and Inlet System		
REF #	**PART #**	**DESCRIPTION**
1	ZCCS0001	GASKET – REED TO CYLINDER
2	ECMU0246	REED CAGE ASSEMBLY WITH REEDS VFORCE
3	RCCS0002	INLET MANIFOLD
4	HCWF0601	6mm FLAT WASHER
5	HCBC0603	M6X30mm SOCKET HEAD CAP SCREW
6	MCKGHO04	HOSE CLAMP – CARBURETOR TO MANIFOLD
7	RCCM0001	CARBURETOR 14mm
8	RCCM1301	VELOCITY STACK
9	MCKGHO01	HOSE CLAMP – AIR BOOT TO CARBURETOR
10	RCCJ0004	AIR FILTER WITH BOOT
11	RCMU0405	AIR BOX - JR
12	TCCJ0004	MUD FLAP
13	HCBB0612	M6X12mm BUTTON HEAD BOLT (2 REQ'D)
14	RCMU1407	BRACKET – MUD FLAP
15	ECCS0030	REEDS REPLACEMENT KIT
16	FCMU0026	FUEL LINE 5" (NOT SHOWN)
17	MCMUCL04	HOSE CLAMPS – FUEL LINE (NOT SHOWN)
18	RCMU0022	VENT HOSE (NOT SHOWN)

Parts – Bars and Controls



Bars and Controls		
REF #	**PART #**	**DESCRIPTION**
1	FAMU0013	HANDLEBAR - ALUMINUM
2	TCMU0008	GRIPS (SET OF TWO) – SCOTT WAFFLE
3	FCMU0066	THROTTLE ASSEMBLY
4	FCPW0004	CABLE COVER
5	FCMU0021	THROTTLE COVER
6	FCMU0019	THROTTLE CABLE
7	BAKG0003	BRAKE ASSEMBLY FRONT
8	FCMU0033	KILL SWITCH ASSEMBLY
9	HCBC0803	M8X30mm SOCKET HEAD CAP SCREW (4) REQ'D
10	HCBC0825	M8X25mm SOCKET HEAD CAP SCREW (4) REQ'D
11	TKMU0404	BAR MOUNT KIT, SHORT (1 REQ'D) STANDARD
11A	TKMU0403	BAR MOUNT KIT, TALL (1 REQ'D)
ACCESSORY	BCKG0023	ALLOY BRAKE LEVER W/BALL
ACCESSORY	BCKG0024	BRAKE PERCH ASSY W/LEVER & BALL
ACCESSORY	BAKG0004	SHIELDED BRAKE HOSE ASSEMBLY

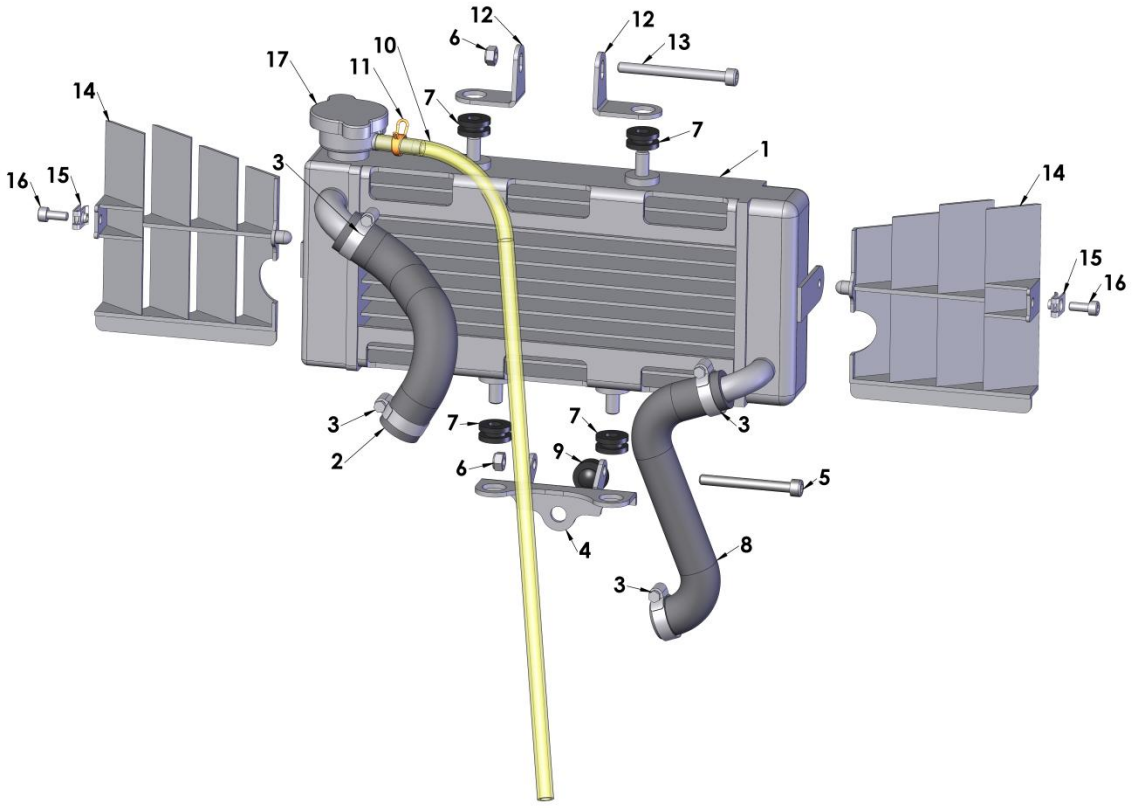
Parts - Carburetor



Carburetor		
REF. #	**PART #**	**DESCRIPTION**
	RCCM0001	COMPLETE CARBURETOR 14MM
1	RCMU0305	SLIDE - #40
2	RCMU0601	NEEDLE - W7
3	RCMU0024	ATOMIZER AU2.62
4	RCMU00xx	MAIN JET, xx denotes size
5	RCMU00xx	PILOT JET, xx denotes size
7	RCMU0301	FLOAT
8	RCMU0102	RUBBER CABLE CAP SEAL
9	RCMU0003	CABLE ADJUSTOR
11	RCMU0006	TOP CARB SCREW
12	RCMU0106	CARB TOP
13	ZCMU0007	TOP CARB GASKET
14	RCMU0004	SLIDE SPRING
15	RCMU0028	NEEDLE RETAINER PLATE
16	RCMU0007	NEEDLE CLIP
17	RCMU0204	CHOKE ASSEMBLY
NOT SHOWN	RCMU0209	O-RING CHOKE ASSEMBLY
20	RCMU0009	FUEL MIXTURE SCREW
21	RCMU0011	IDLE ADJUSTMENT SCREW
25	RCMU0103	FLOAT BOWL GASKET
26	RCMU0107	FLOAT NEEDLE
27	RCMU0012	DIFFUSER
28	RCMU0016	FLOAT RETAINER PIN
29	RCMU0108	FLOAT BOWL
30	HCWF0401	WASHER 4MM FLAT
31	RCMU0201	BOTTOM FLOAT SCREW
NOT SHOWN	RCCM1301	VELOCITY STACK – 05 style
NOT SHOWN	RCCM0314	14MM CARB RESTRICTOR
NOT SHOWN	FCMU0026	FUEL LINE 5”
NOT SHOWN	MCMUCL04	HOSE CLAMPS – FUEL LINE
NOT SHOWN	RCMU0020	ELBOW - CARB VENT
NOT SHOWN	RAMU0001	CANNULUS - Y STYLE CARB VENTS
NOT SHOWN	RCMU0031	SLIDE - #30
NOT SHOWN	RCMU0250	SLIDE - #50
NOT SHOWN	ECKG0160	SLIDE - #60
NOT SHOWN	RCMU0026	NEEDLE - W4
NOT SHOWN	RCMU0602	NEEDLE - W16

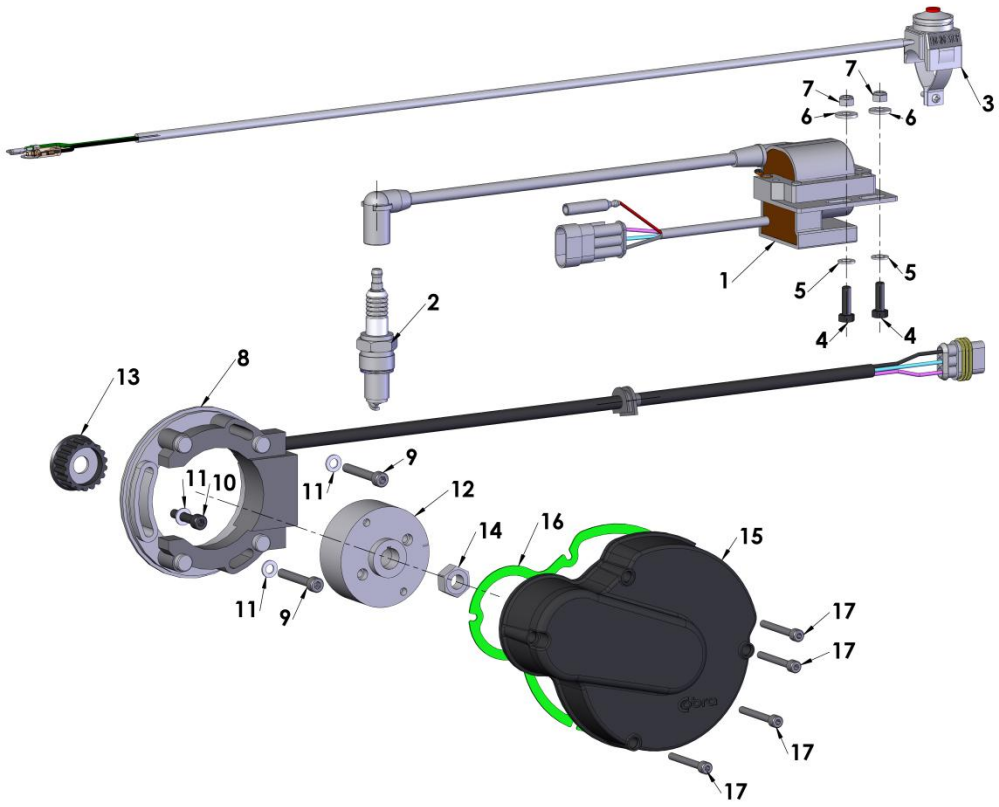
PILOT JET		**MAIN JET**					
48	RCMU0048	85	RCMU0085	92	RCMU0092	99	RCMU0099
50	RCMU0050	86	RCMU0086	93	RCMU0093	100	RCMU1100
52	RCMU0052	87	RCMU0087	94	RCMU0094	101	RCMU1101
55	RCMU0055	88	RCMU0088	95	RCMU0095	102	RCMU1102
60	RCMU0060	89	RCMU0089	96	RCMU0096		
65	RCMU0065	90	RCMU0090	97	RCMU0097		
		91	RCMU0092	98	RCMU0098		

Parts – Coolant System



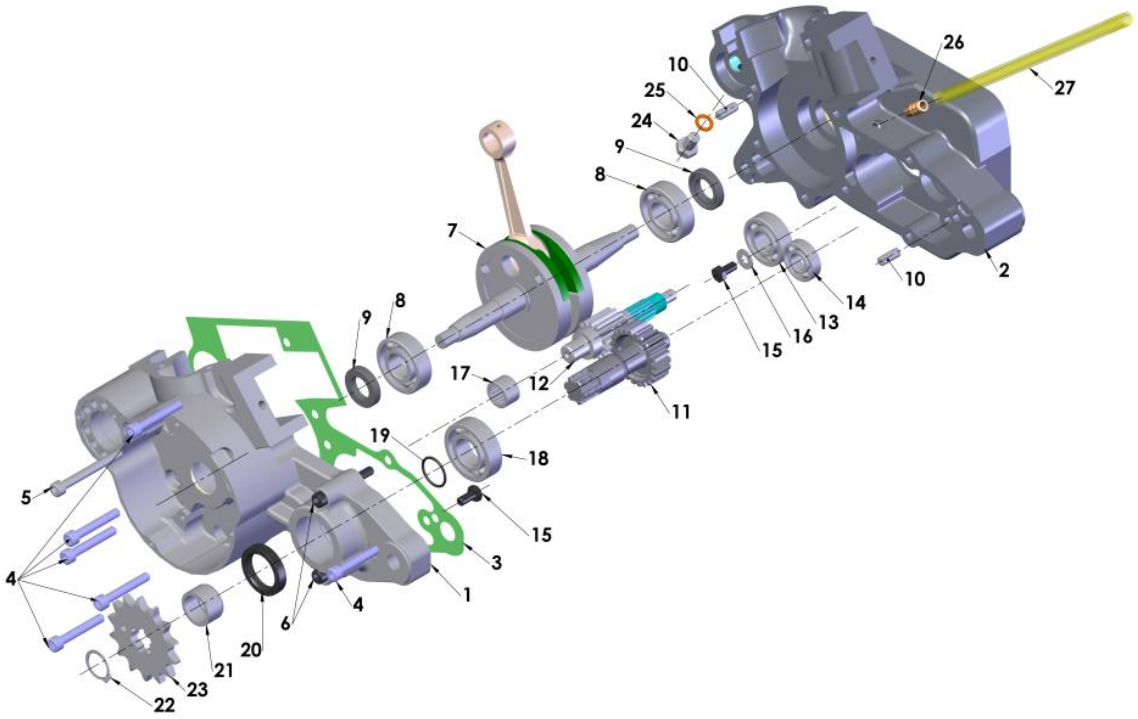
Coolant System		
REF #	**PART #**	**DESCRIPTION**
1	FCCJ0004	RADIATOR WITH CAP
2	MCMUHO02	RADIATOR HOSE LEFT
3	MCMUCL07	HOSE CLAMP
4	EACJ0001	MOUNTING BRACKET – RADIATOR BOTTOM
5	HCBC0608	M6X55mm SOCKET HEAD CAP SCREW
6	HCNL0601	M6 LOCK NUT
7	MCKGGR00	GROMMET – RADIATOR MOUNTING
8	MCCMHO01	RADIATOR HOSE RIGHT
9	TCCJ0001	BUMPER – RAD BRACKET
10	FCMU0049	OVERFLOW HOSE – 20”
11	MCMUCL05	HOSE CLAMP, OVERFLOW HOSE
12	ECHA0109	MOUNTING BRACKET – RADIATOR TOP (2 REQ’D)
13	HCBC0665	M6X65mm SOCKET HEAD CAP SCREW
14	FCCJ0002	LOUVER SET (LEFT AND RIGHT)
15	HCCN0000	5mm CLIP NUT
16	HCBC0501	M5X12mm SOCKET HEAD CAP SCREW
17	FCMU0022	CAP, 1.2 BAR

Parts – Electrical System



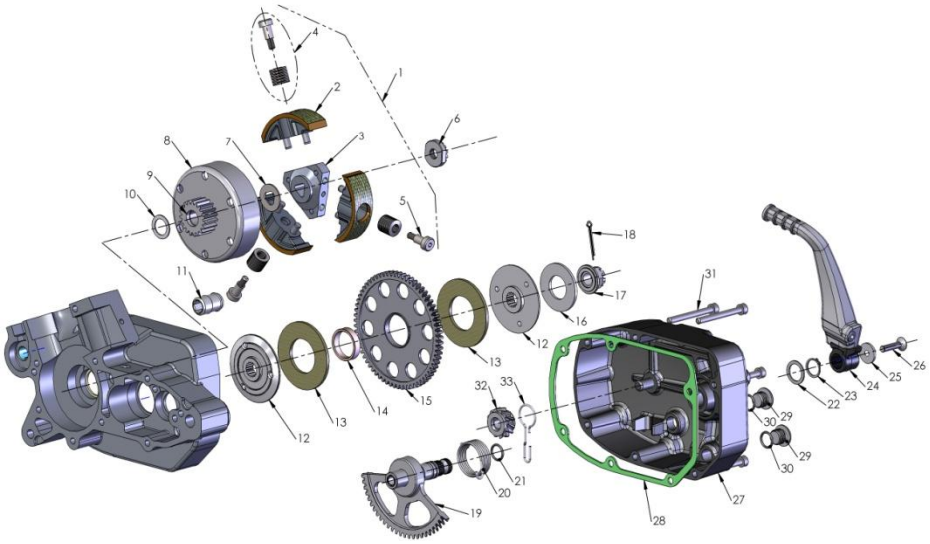
Electrical System		
REF #	**PART #**	**DESCRIPTION**
1	ICCJ0001	COIL W/SPARK PLUG CAP
2	ECMU0010C	SPARK PLUG, AUTOLITE COPPERLITE
2A	ECMU0010I	SPARK PLUG, AUTOLITE IRIDIUM
3	FCMU0033	KILL SWITCH ASSEMBLY
4	HCBH0502	M5X16mm HEX HEAD SCREW (2 REQ'D)
5	HCWF0501	5mm WASHER (2 REQ'D)
6	HCWP0002	5mm WASHER SPECIAL (2 REQ'D)
7	HCNL0501	M5 LOCKNUT (2 REQ'D)
8	ICMU0018	STATOR WITH GROMMET
9	HCBC0535	M5X35mm SOCKET HEAD CAP SCREW (2 REQ'D)
10	HCBC0525	M5X25mm SOCKET HEAD CAP SCREW
11	HCWF0504	WASHER FOR STATOR (3 REQ'D)
12	ICMU0036	ROTOR – LOW INERTIA
13	ECKG0042	PULLEY, WATERPUMP CRANK
14	HCNS1001	M10 NUT
15	ECCS0001	IGNITION COVER
16	ZCCS0002	GASKET – IGNITION COVER
17	HCBC0402	M4X35mm SHCS (4 REQ'D)
18	ICMU0012	WOODRUFF KEY (NOT SHOWN)
NOT SHOWN	FCMU0030	COVER – KILL SWITCH SCREW
ACCESSORY	ICMU0017	SPARK PLUG CAP – 0 Ω

Parts – Engine – Bottom End and Transmission



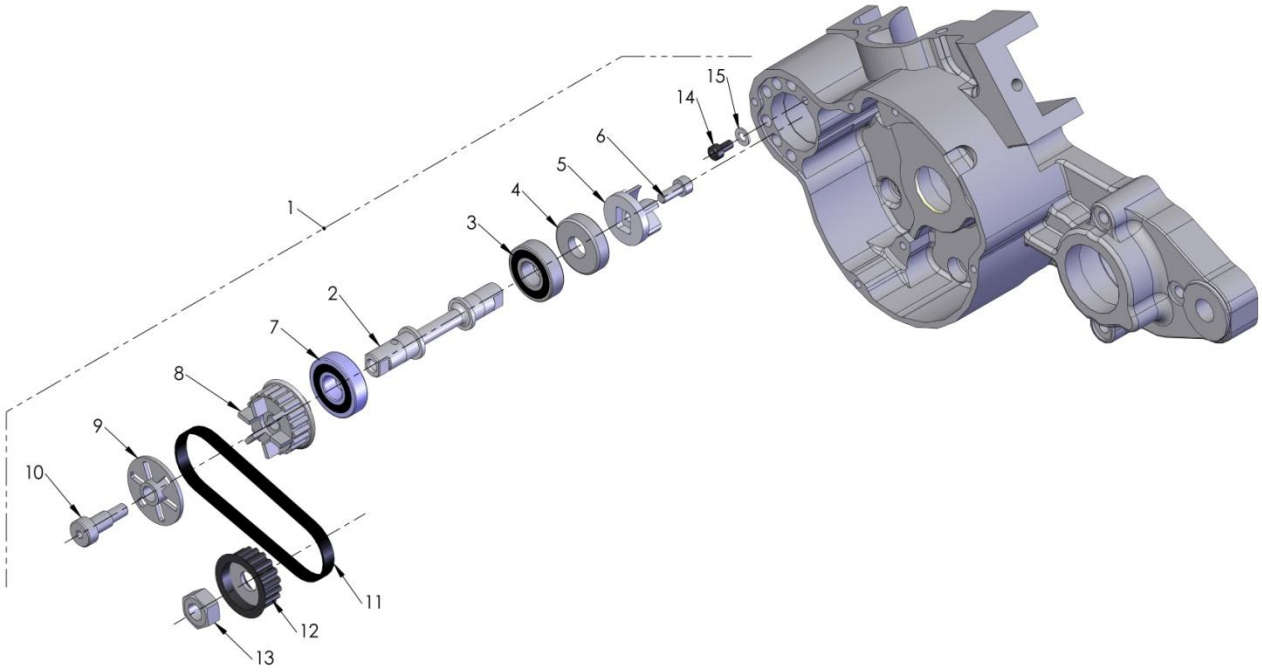
Engine Bottom End and Transmission		
REF #	**PART #**	**DESCRIPTION**
1 & 2	EKCS0003	ENGINE CASE SET WITH BEARINGS & SEALS
3	ZCCS0005	GASKET, CRANKCASE CENTER
4	HCBC0605	M6X40mm SOCKET HEAD CAP SCREW (6 REQ'D)
5	HCBC0608	M6X55mm SOCKET HEAD CAP SCREW (1 REQ'D)
6	HCBC0606	M6X45mm SOCKET HEAD CAP SCREW (2 REQ'D)
7	ECMU0057	CRANKSHAFT - 3 SIDE SPLINE
8	ECMU0016	BEARING, CRANKSHAFT
9	ECMU0118	SEAL, CRANKSHAFT
10	HCDP1401	DOWEL, ENGINE CASE ALIGNEMENT (2 REQ'D)
11	DECMU0999	OUTPUT SHAFT, TRANSMISSION WITH GEAR
12	ECMU0100	SECONDARY SHAFT, TRANSMISSION WITH GEAR
13	ECMU0001	BEARING, TRANMISSION SECONDARY SHAFT
14	ECKG0031	BEARING OUTPUT SHAFT, RIGHT SIDE
15	HCBH0612	M6X12mm HEX HEAD SCREW - BEARING RETAINER (2 REQ'D)
16	HCWF0316	WASHER - FLAT
17	ECMU0020L	BEARING, TRANSMISSION PRECISION
18	ECKGBR01	BEARING, TRANSMISSION OUTPUT SHAFT
19	ZCDCOR01	O-RING, SPROCKET SPACER
20	ECMU0072	SEAL, OUTPUT SHAFT
21	ECMU0073	SPACER, SPROCKET
22	ECKGSR03	SNAP RING, SPROCKET
23	PCKG0013	SPROCKET, 13 T (STANDARD)
23	PCKG0012	SPROCKET, 12T
23	PCKG0014	SPROCKET, 14 T
23	PCKG0015	SPROCKET, 15 T
24	HCBH0805	M8X12mm SCREW – COOLANT DRAIN
25	HCWC0000	COPPER GASKET
26	ECMU0233	FITTING, CRANKCASE VENT - LARGE
27	ECMU0577	VENT HOSE, CRANKCASE

Parts – Engine Clutch and Kicker



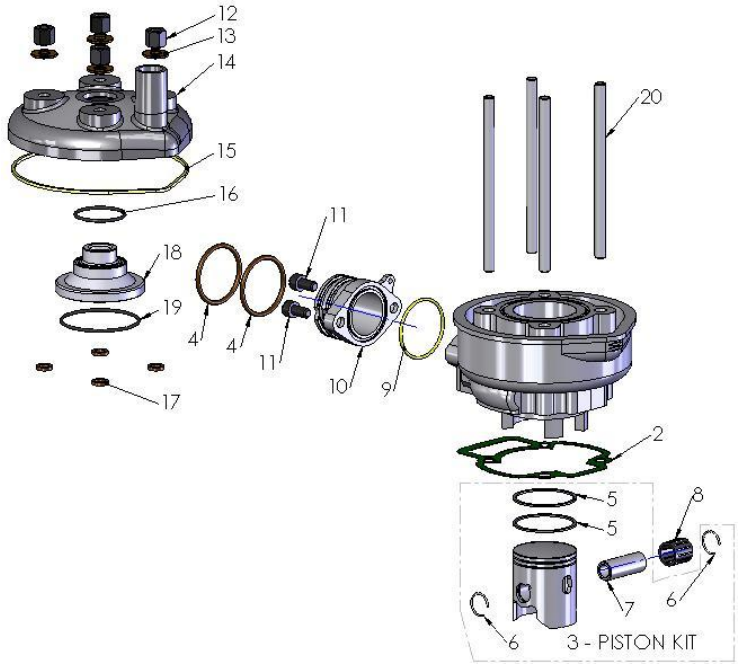
Engine – Clutch and Kick Starter		
REF #	PART #	DESCRIPTION
1	CAMU0006	CLUTCH COMPLETE
2	CAMU0013	CLUTCH SHOES (SET OF 3) WITH BOLT & WASHERS
3	CCMU0005	CLUTCH ARBOR
4	CAMU0010	SPRINGS, WASHERS & BOLTS (SET OF 3)
5	HCBS0004	CLUTCH BOLT (3 REQ'D)
6	ECMU0018	CLUTCH NUT, SPECIAL
7	CCMU0007	CLUTCH BACKING SPACER
8	ECMU0120	CLUTCH BASKET WITH NEEDLE BEARING
9	ECMU0119	BEARING – CLUTCH BASKET - NEEDLE
10	ECMU0040	CLUTCH TO HUB SPACER (0.030", 0.76mm)
11	ECMU0132	COOLANT FITTING
12	ECMU0306	SLIP HUB V3 CFD (2) REQ'D
13	ECMU0249	FRICTION MATERIAL V3 CFDTHICK (2 REQ'D)
14	ECMU0305	BUSHING V3 CFD 7mm
15	ECMU0301	GEAR V3 CFD
16	ECMU0308	BELLEVILLE SPRING V3 CFD
17	ECMU0307	NUT V3 CFD
18	HCCP0002	COTTER PIN 3/32 X 1 ½"
19	EAMU0001	KICKSTART GEAR & SHAFT
20	ECMU0116	SPRING, KICKSTART
21	ZCMUB014	O-RING KICK SHAFT (2 REQ'D)
22	HCWS1622	SHIM, KICK SHAFT
23	ECDC0036	SNAP RING, KICK SHAFT
24	EAMU0011	KICK LEVER
25	ECMU0250	WASHER – KICK LEVER MOUNTING
26	HCFH0625	M6X25mm FLANGE HEAD BOLT
27	ECMU0115	CLUTCH COVER
28	ZCMU0030	CLUTCH COVER GASKET
29	ECMU0168	OIL FILL PLUG, ALUMINUM
30	ZCMUB014	O'RING, OIL FILL PLUG
31	HCBC0608	M6X55mm SOCKET HEAD CAP SCREW (6 REQ'D)
32	ECMU0207	KICKSTART GEAR SMALL
33	ECMUSP01	KICK START DOG SPRING (PAPER CLIP / 'J' SPRING)
ACCESSORY	HKCP0001	10 PACK OF COTTER PINS (HCCP0002)
ACCESSORY	EKMU0002	KICKSTART PIVOT KIT SPRING-BALL-SCREW
KIT	HKAM0022	CLUTCH SHIM HARDWARE KIT
KIT	EKMU0033	CFD RFRESH KITW/NUT, SPRING, AND FRICTIONS

Parts – Engine – Water Pump



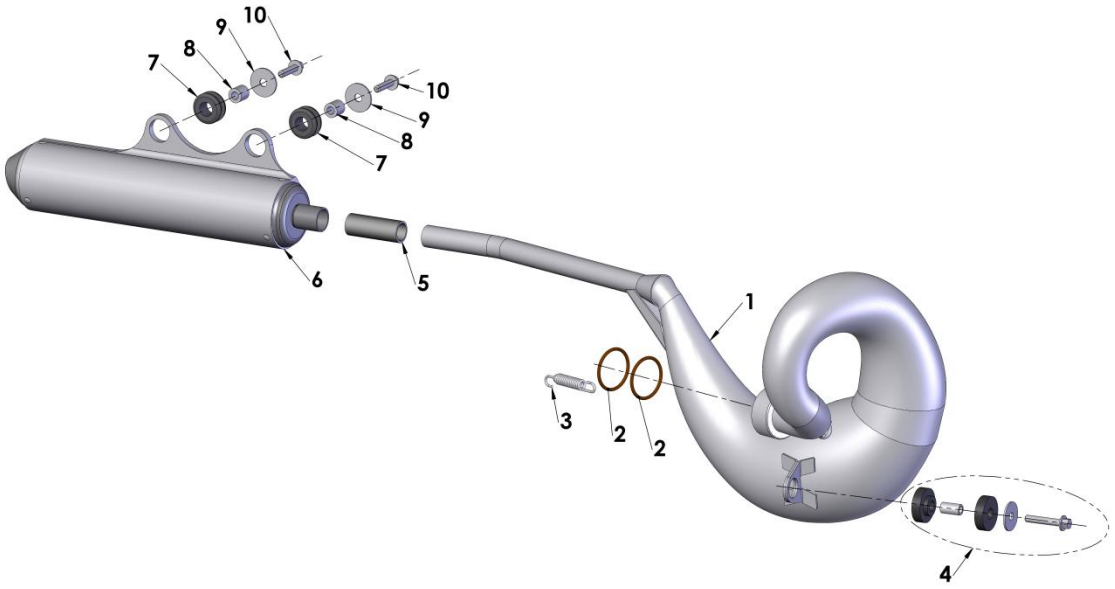
Engine – Water Pump		
REF #	**PART #**	**DESCRIPTION**
1	EKMU0011	WATER PUMP KIT WITH IMPELLER
2	ECKG0142	SHAFT, WATER PUMP
3	ECKG0072	BEARING, WATER PUMP
4	ECKG0074	SEAL, WATER PUMP SHAFT
5	ECKG0073	IMPELLER, WATER PUMP (ALUMINUM)
6	HCBC1512	M5X12mm SOCKET HEAD CAP SCREW (STAINLESS)
7	ECMU0167	BEARING –WATER PUMP BIG
8	ECKG0175	WATER PUMP PULLEY, FAN TYPE – DRIVEN
9	ECMU0180	BELT RETAINER
10	HCBS0003	SHOULDER BOLT 6mm
11	ECKG0170	WATER PUMP BELT
12	ECKG0042	WATER PUMP PULLEY, CRANK
13	HCNS1001	M10 NUT
14	HCBC0408	M4X8mm SOCKET HEAD CAP SCREW (BLACK OXIDE)
15	HCWF0401	4mm WASHER

Parts – Engine – Top End



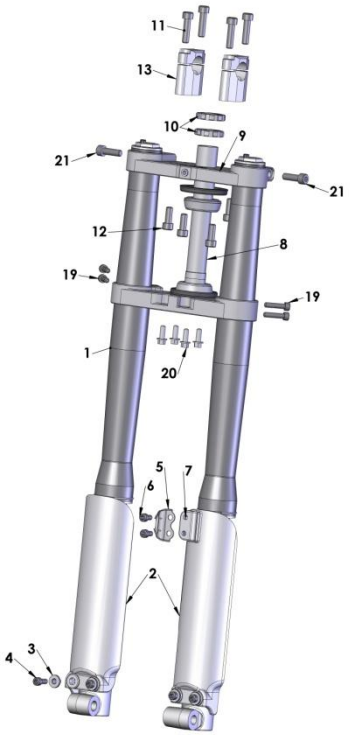
Engine – Top End		
REF #	**PART #**	**DESCRIPTION**
1	ECCJ0001	CYLINDER (INCLUDES PISTON, RINGS, PIN & CLIPS)
2	ZCMU0011	BASE GASKET (0.25mm) THICK
2	ZCMU0703	BASE GASKET (0.30mm) THICK
2	ZCKG0501	BASE GASKET (0.40mm) THICK (STANDARD)
2	ZCMU0705	BASE GASKET (0.50mm) THICK
2	ZCMU0706	BASE GASKET (0.60mm) THICK
2	ZCMU0708	BASE GASKET (0.80mm) THICK
3	ECMU0060A	PISTON KIT – 'A' SIZE
3	ECMU0060B	PISTON KIT – 'B' SIZE
3	ECMU0060C	PISTON KIT – 'C' SIZE
3	ECMU0060D	PISTON KIT – 'D' SIZE
4	ZCMOTE11	O-RINGS – PIPE TO FLANGE (2 REQ'D)
5	ECMU0155	PISTON RINGS (2 PER SET)
6	ECMUSR00	SNAP RING FOR PISTON (2 PER SET)
7	ECKG0012	WRIST PIN
8	ECMU0077	BEARING, WRIST PIN
9	ZCMUOR07	O-RING, EXHAUST FLANGE
10	ECMU0086	EXHAUST FLANGE
11	HCBC0612	M6X12, EXHAUST FLANGE SCREW (2 REQ'D)
12	HCNS0703	7mm NUT - TALL (4 REQ'D)
13	HCWS1401	HARDENED WASHER (4REQ'D)
14	ECMU0530	CYLINDER HEAD OUTER
15	ZCMUOR02	O-RING, CYLINDER HEAD LARGE
16	ZCMUV024	O-RING CYLINDER HEAD SMALL
17	ZCMUOR10	O-RING CYLINDER STUD (4 REQ'D)
18	ECCS0017	CYLINDER HEAD, INSERT
19	ZCMUOR05	O-RING CYLINDER HEAD MEDIUM – YELLOW
20	ECMU0147	STUD, CYLINDER 7mm (4 REQ'D)
ACCESSORY	ZKMUOR11	TOP END/O-RING KIT
ACCESSORY	ZKCSTE11	TOP END/GASKET KIT

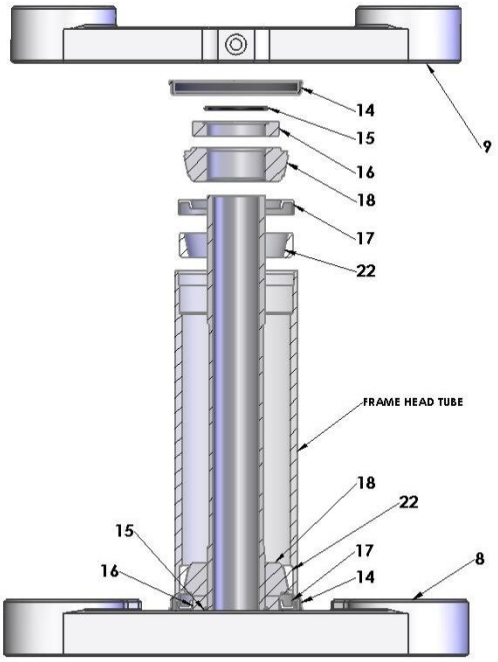
Parts – Exhaust System



Exhaust System		
REF #	**PART #**	**DESCRIPTION**
1	XCCJ2009	CX50JR EXHAUST PIPE
2	ZCMOTE11	HEADER PIPE O-RINGS (2 REQ'D)
3	XCMU0005	EXHAUST SPRING - SHORT
4	MCMUGR02	GROMMET KIT
5	XCMU0028	PIPE / SILENCER SEAL
6	XCMU0032	SILENCER
7	MCMUGR03	MOUNTING GROMMET (2 REQ'D)
8	TCKG0001	SPACER (2 REQ'D)
9	HCWF1478	SILENCER GROMMET WASHER (2 REQ'D)
10	HCBF0625	M6X25mm FLANGE HEAD BOLT (2 REQ'D)
ACCESSORY	XCMU0026	SILENCER PACKING KIT

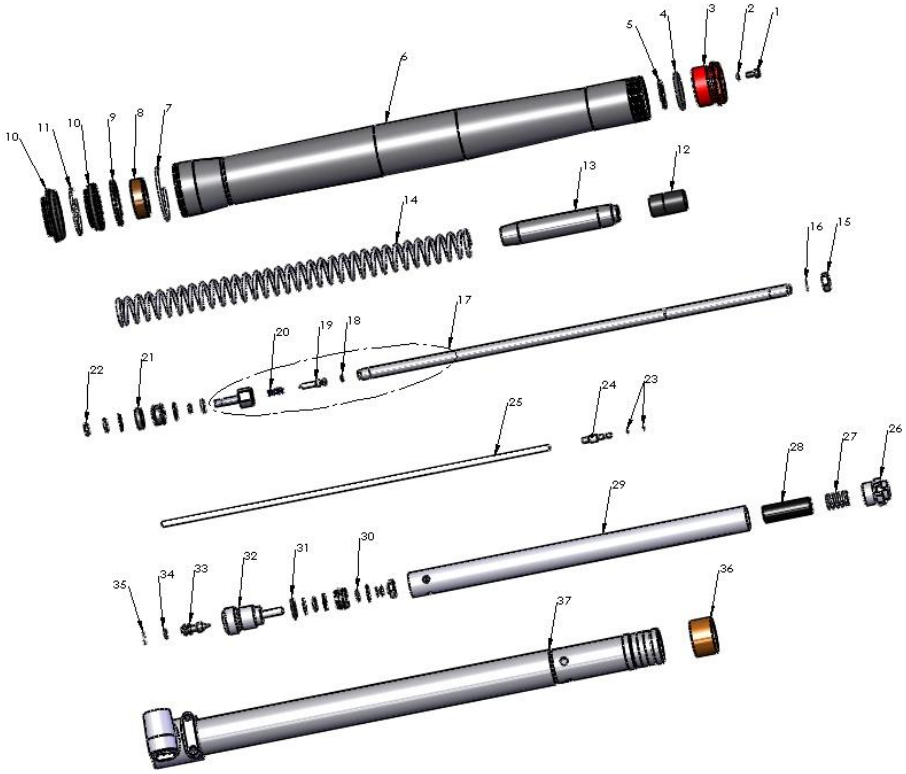
Parts – Forks & Triple Clamps





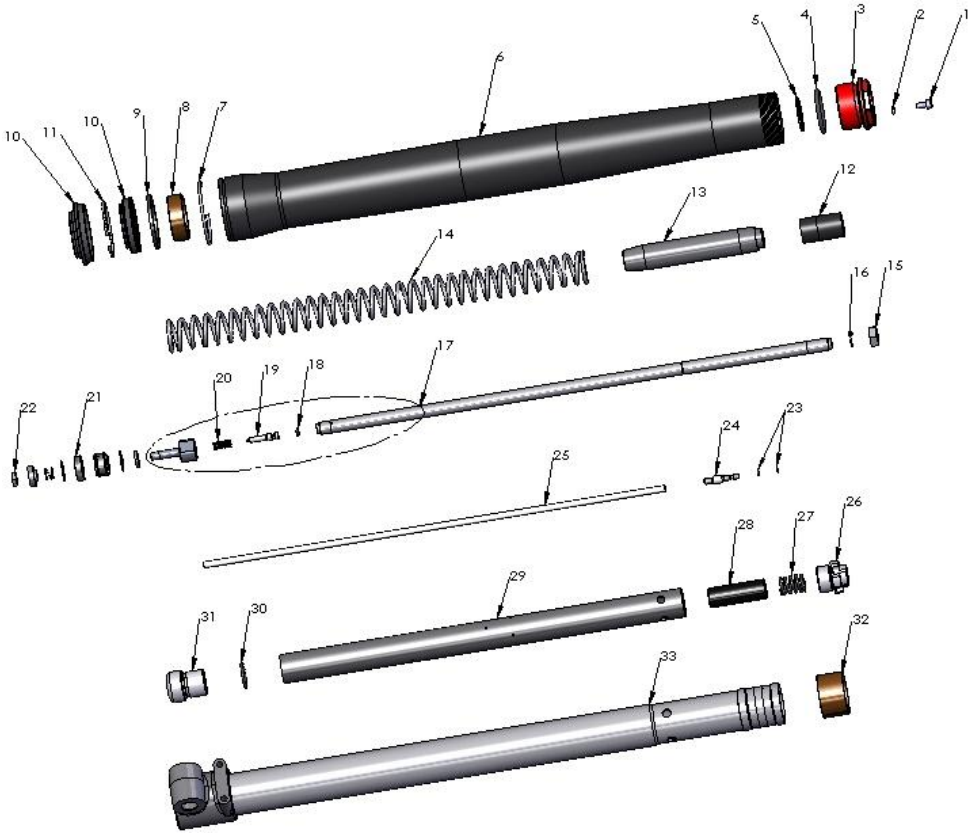
Front Forks and Triple Clamps		
REF #	**PART #**	**DESCRIPTION**
1	KACJ0001	FORK ASSEMBLY FORK LEGS ONLY
2	KCMU0011	FORK GUARD SET
3	TCC60019	WASHER FORK GUARD (4 REQ'D)
4	HCBC0601	M6X16mm, SOCKET HEAD CAP SCREW (4 REQ'D)
5	BCC60015	BRAKELINE CLAMP
6	HCBC0612	M6X12mm, SOCKET HEAD CAP SCREW (2 REQ'D)
7	HCNL0601	M6 LOCKNUT (2 REQ'D)
8	FACJ0004	TRIPLE CLAMP BOTTOM ASSY JR (CLAMP & STEERING STEM)
9	FCCJ2005	TRIPLE CLAMP TOP JR
10	HCNJ0102	JAM NUT STEERING STEM (2 REQ'D)
11	HCBC0806	M8X30mm SOCKET HEAD CAP SCREW (4 REQ'D)
12	HCBC0820	M8X20mm SOCKET HEAD CAP SCREW (4 REQ'D)
13	TKMU0404	HANDLE BAR CLAMP KIT SHORT (STANDARD)
13A	TKMU0403	HANDLE BAR CLAMP KIT TALL
14	FCMU1103	DUST COVER (2 REQ'D)
15	SCMU0036	O-RING (2 REQ'D)
16	FCMU0023	SPACER (2 REQ'D)
17	FCMU0024	SEAL (2 REQ'D)
18	FCMU0004	STEERING HEAD BEARING (2 REQ'D)
19	HCBC0625	M6X25mm SOCKET HEAD CAP SCREW (4 REQ'D)
20	HCBF0616	M6X16mm FLANGED HEAD W/8mm HEX
21	HCBC0825	M8X25mm SHCS (4 REQ'D)
22	FCMU0011	STEERING HEAD RACE (2REQ'D)
ACCESSORY	FKMU0003	KIT – STEERING STEM BEARINGS, RACES AND SEALS

Parts – Forks – Leg Assembly – Brake Side



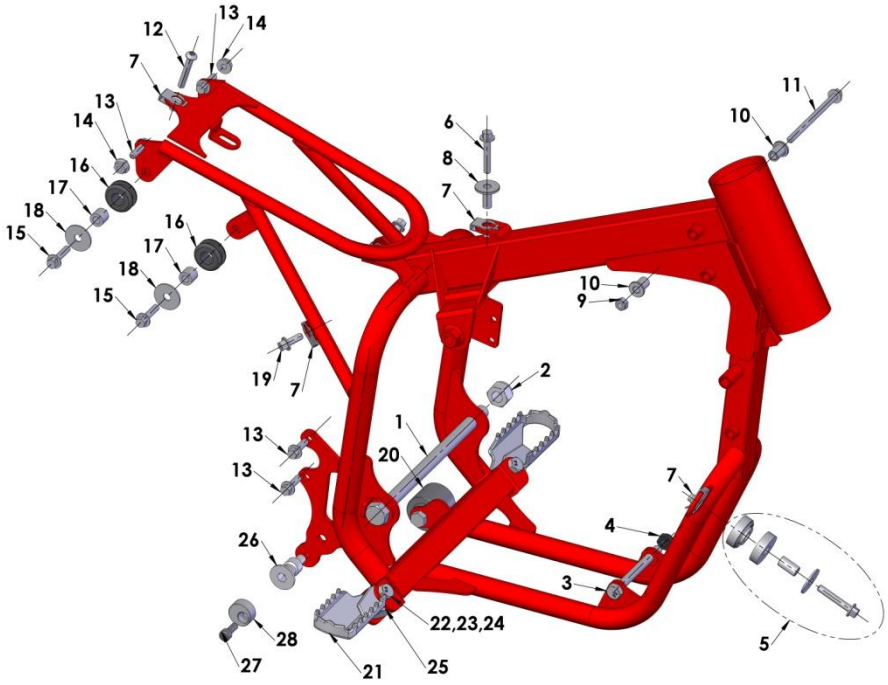
REF #	PART #	DESCRIPTION
1	HCBC0408	4 X 8 SHCS CLEAR ZINC
2	ZCKG0001	GASKET, BLEED SCREW FORK
3	KCCS0004C	FORK CAP - CONVENTIONAL 32MM USD
4	ZCMUOR18	O-RING – 3mm x 27mm ID
5	KCCS0036	FORK - SPRING WEAR PLATE 32MM
6	KCCS0005	FORK - OUTER TUBE 32MM
7	KCCS0035	RING CLIP FORK OUTER WEAR RING 32MM
8	KCCS0006	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	GLIDE RING - FORK PISTON - MID VALVE
22	HCNJ0601	6MM JAM NUT
23	BCKG0033	O-RING – 2MM ID
24	KCCS0033	FORK - ADJUSTER SCREW TOP 32MM
25	KCC60049	FORK - ADJUSTER PIN
26	KCCS0001	FORK - CARTRIDGE CAP
27	KCKG0050	FORK - TOP OUT SPRING
28	KCCJ0002	FORK - TRAVEL LIMITER SPACER
29	KCKG0019	FORK - CARTRIDGE TUBE
30	KCMU0021	O-RING - FORK - BASE VALVE
31	ZCKGB017	O-RING - FORK BOTTOM PLUG
32	KCC60069	FORK BOTTOM PLUG – ADJUSTABLE
33	KCC60048	ADJUSTMENT SCREW – FORK BOTTOM PLUG
34	ZCMUOR03	O-RING – ADJUSTMENT SCREW
35	KCCS0031	RING CLIP – FORK ADJUSTMENT SCREW
36	KCCS0007	FORK GLIDE RING
37	KAMU0001	FORK LOWER – COMPLETE – BRAKE SIDE

Parts – Forks – Leg Assembly – Non-Brake Side



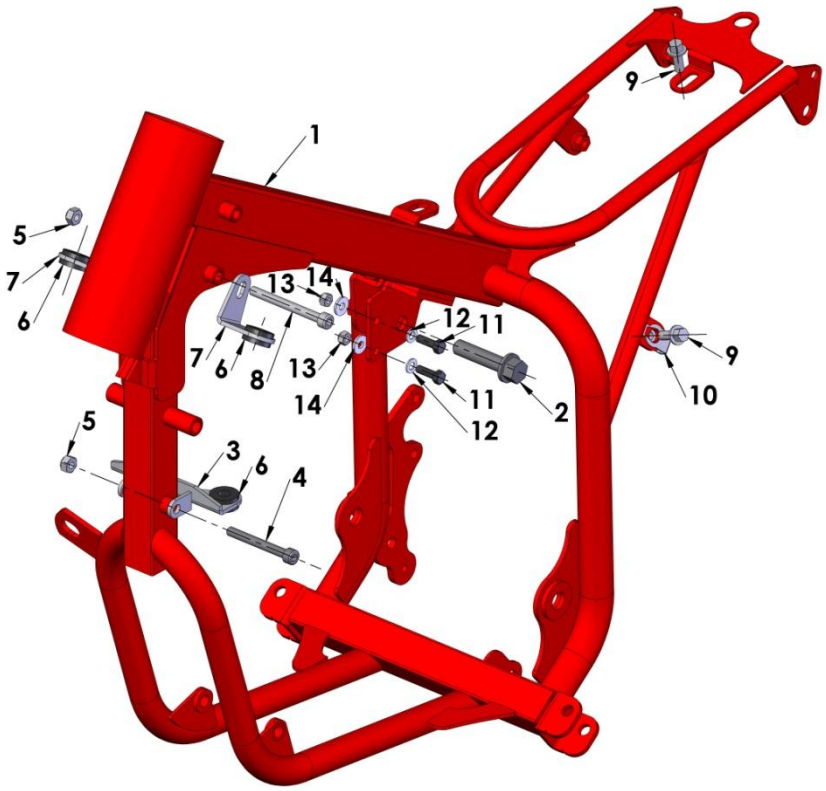
REF #	PART #	DESCRIPTION
1	HCBC0408	4 X 8 SHCS CLEAR ZINC
2	ZCKG0001	GASKET, BLEED SCREW FORK
3	KCCS0004S	FORK CAP - CONVENTIONAL 32MM USD
4	ZCMUOR18	O-RING PV SOLENOID - CX65
5	KCCS0036	FORK - SPRING WEAR PLATE 32MM
6	KCCS0005	FORK - OUTER TUBE 32MM
7	KCCS0035	RING CLIP FORK OUTER WEAR RING 32MM
8	KCCS0006	FORK GLIDE RING BOTTOM 32MM
9	KCCS0032	FORK SEAL SPACER 32MM
10	KCMZ0015	FORK SEAL - MARZ32
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
15	KCCS3223	LIGHT SPRING - FORK 0.23 KG/MM 32mm
15	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	GLIDE RING - FORK PISTON - MID VALVE
22	HCNJ0601	6MM JAM NUT
23	BCKG0033	O-RING – 2MM ID
24	KCCS0033	FORK - ADJUSTER SCREW TOP 32MM
25	KCC60049	FORK - ADJUSTER PIN
26	KCCS0001	FORK - CARTRIDGE CAP
27	KCKG0050	FORK - TOP OUT SPRING
28	KCCJ0002	FORK - TRAVEL LIMITER SPACER
29	KCKG0019	FORK - CARTRIDGE TUBE
30	KCMU0021	O-RING - FORK - BASE VALVE
31	KCC60057	PLUG – FORK BOTTOM – SMART LEG
32	KCCS0007	FORK GLIDE RING
33	KAMU0002	FORK LOWER – COMPLETE – NON BRAKE SIDE

Parts – Frame – Mounting Hardware I



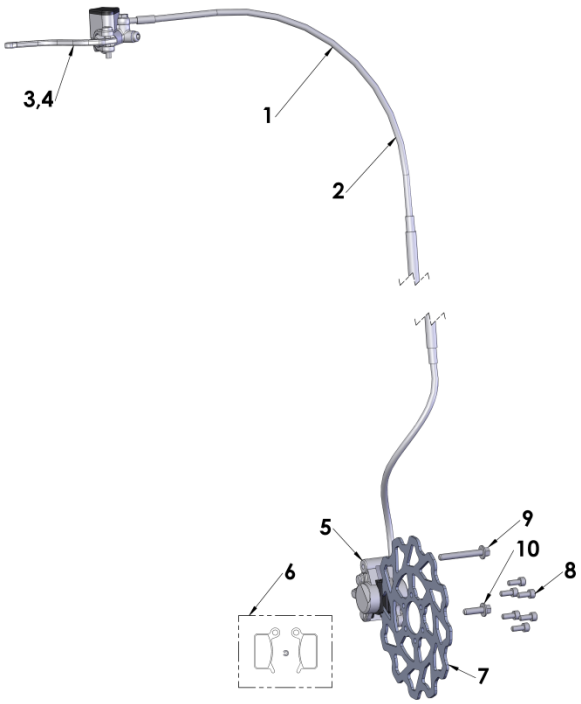
Frame – Engine, Swingarm, Tank, and Pipe Mounts		
REF #	**PART #**	**DESCRIPTION**
1	WCMU0016	SWINGARM BOLT
2	HCNL1201	M12 SWINGARM LOCK NUT
3	HCBH0880	M8X80mm SOCKET HEAD CAP SCREW
4	HCNL0801	M8 LOCKNUT
5	MCMUGR02	GROMMET KIT PIPE & SPACER
6	HCBF0635	M6X35mm FLANGE HEAD BOLT
7	HCHA0003	6mm CLIPNUT
8	TCHA0004	BUSHING – REAR TANK MOUNTING
9	HCNL0601	M6 LOCKNUT
10	TCHA0006	BUSHING – FRONT TANK MOUNT (2 REQ'D)
11	HCBF0685	M6X85mm SOCKET HEAD CAP SCREW
12	HCBB0635	M6X35mm BUTTON HEAD CAP SCREW
13	HCBF0620	M6X20mm FLANGE HEAD BOLT
14	HCNF0602	M6 NYLOC FLANGE NUT
15	HCBF0625	M6X25mm FLANGE HEAD BOLT
16	MCMUGR03	GROMMET – SILENCER (2 REQ'D)
17	TCKG0001	SPACER FOR EXHAUST GROMMETS
18	HCWF1478	WASHER – EXHAUST GROMMET
19	HCBF0616	M6X16mm FLANGE HEAD BOLT
20	FCC60020	CHAIN ROLLER
21	TAMU0005	FOOTPEGS (PAIR) (STANDARD)
22	FCMU0031	CLEVIS PIN - FOOTPEG
23	HCWF0803	8mm FLAT WASHER
24	HCCP0008	COTTER PIN 1/8 X 3/4
25	TCMU0107	FOOTPEG SPRINGS (SINGLE PIECE) (2 REQ'D)
26	BCMU0027	BRAKE PIVOT BOLT
27	HCBC0601	M6X16mm SOCKET HEAD CAP SCREW
28	FCEX0018	BRAKE ADJUST ECCENTRIC

Parts – Frame – Mounting Hardware II



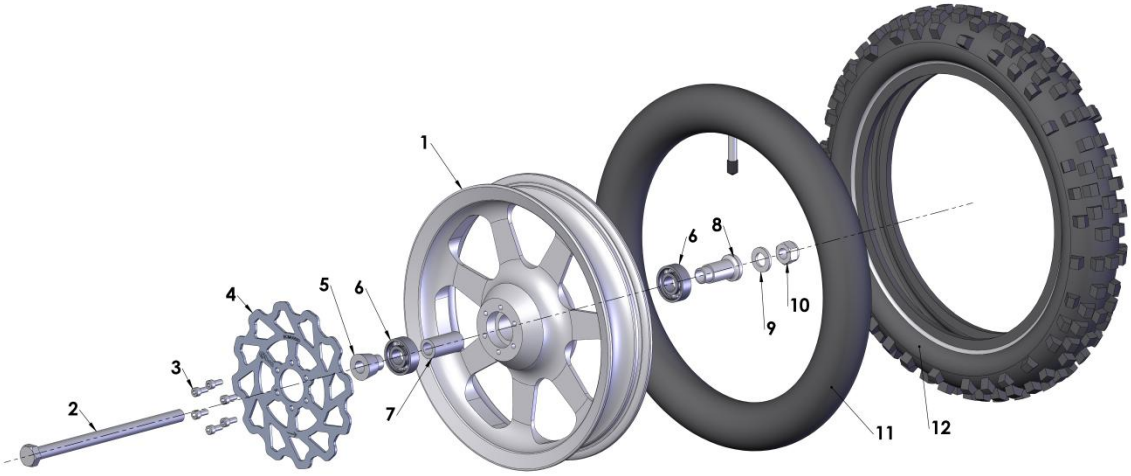
Frame – Seat, Fender, Right Side Panel, Radiator & Shock Mounts		
REF #	**PART #**	**DESCRIPTION**
1	FACJ2012	FRAME CX50 JR
2	HCBF1040	M10X40mm FLANGE HEAD BOLT
3	ECCJ0001	MOUNTING BRACKET – RADIATOR BOTTOM
4	HCBC0608	M6X55mm SOCKET HEAD CAP SCREW
5	HCNL0601	M6 LOCK NUT
6	MCKGGR00	GROMMET – RADIATOR MOUNT (2 REQ'D ON BOTTOM, 2 ON TOP BRACKET)
7	ECHA0109	MOUNTING BRACKET – RADIATOR TOP (2 REQ'D)
8	HCBC0665	M6X65mm SOCKET HEAD CAP SCREW
9	HCBF0616	M6X16mm FLANGE HEAD BOLT
10	HCHA0003	6mm CLIPNUT
11	HCBH0502	M5X16mm HEX HEAD (2 REQ'D)
12	HCWP0002	WASHER POP RIVET (2 REQ'D)
13	HCNL0501	M5 LOCKNUT (2 REQ'D)
14	HCWF0501	5mm FLAT WASHER (2REQ'D)

Parts – Front Brakes



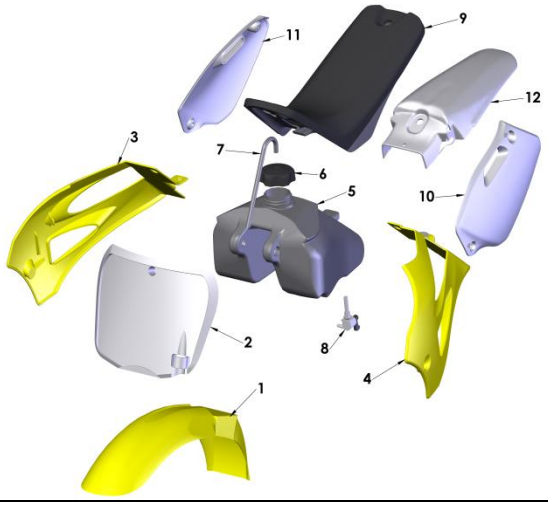
Front Brakes		
REF #	**PART #**	**DESCRIPTION**
1	BAKG0003	FRONT BRAKE ASSEMBLY
2	BCKG0030	HOSE – BRAKE FRONT
3	BCKG0023	ALLOY BRAKE LEVER
4	BCKG0024	BRAKE PERCH & MASTER CYLINDER ASSY W/ LEVER
5	BCKG0029	CALIPER – FRONT
6	BKKG0001	KIT BRAKE PADS, WITH “E” CLIP
7	BCMU0503	BRAKE ROTOR
8	HCBC0501	M5X12mm SOCKET HEAD CAP SCREW (6 REQ’D)
9	HCBF0640	M6X40mm FLANGE HEAD CAP SCREW
10	HCBF0620	M6X20mm FLANGE HEAD CAP SCREW
ACCESSORY	MCMUBF01	BRAKE FLUID **DOT 5.1 OR HIGHER**
ACCESSORY	BCKG0031	BLEED KIT (MULTIPLE SYRINGES, FITTINGS & HOSE)
ACCESSORY	BCKG0028	LEVER ADJUSTMENT KIT
ACCESSORY	BCKG0027	RESERVOIR SEAL KIT
ACCESSORY	BCKG0025	REPLACEMENT BAR CLAMP AND SCREWS (FOR MASTER CYLINDER)
ACCESSORY	BCKG0026	PISTON & REBUILD KIT FOR MASTER CYLINDER
ACCESSORY	BCKG0017	CALIPER ORING & BOLTS (F&R)
ACCESSORY	BCKG0018	CALIPER PISTON KIT (F&R)
ACCESSORY	BCKG0019	RETURN SPRING (4 FINGER SPRING)
ACCESSORY	ZCMUOR09	O’RING - BANJO FITTING
ACCESSORY	BCMU0014	CALIPER ADJUSTMENT SHIMS 6mm ID
ACCESSORY	BCKG0033	O-RING - BLEEDER - 2mm SPECIAL

Parts – Front Wheel



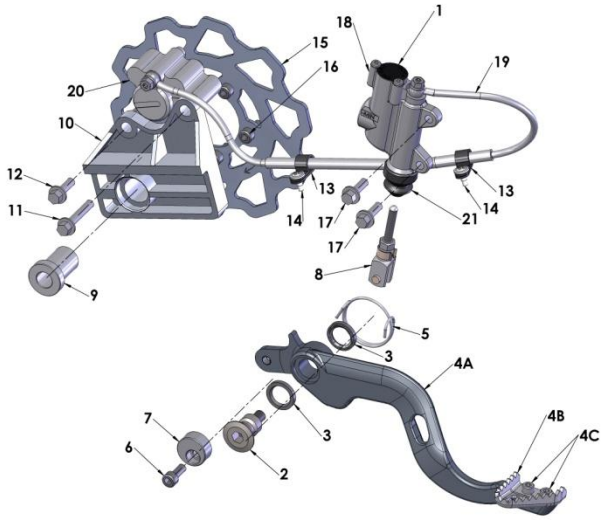
Front Wheel		
REF #	**PART #**	**DESCRIPTION**
1	WACJ0001	WHEEL WITH BEARINGS SPOKE STYLE
2	WCMU0016	FRONT AXLE
3	HCBC0501	M5X12mm SOCKET HEAD CAP SCREW (6 REQ'D)
4	BCMU0503	BRAKE ROTOR – FRONT
5	WCMU0101	WHEEL SPACER LEFT (SHORT)
6	WCMU0120	BEARING – WHEEL (2 REQ'D)
7	WCCJ0004	SPACER – WHEEL FRONT
8	WCCJ0003	WHEEL SPACER RIGHT (LONG)
9	HCWF1202	WASHER – AXLE
10	HCNL1201	LOCK NUT – AXLE
11	WCMUTU10	TUBE 10"
12	WCMU1050D	FRONT TIRE 10" X 2.50" DUNLOP MX51

Parts – Plastic & Seat



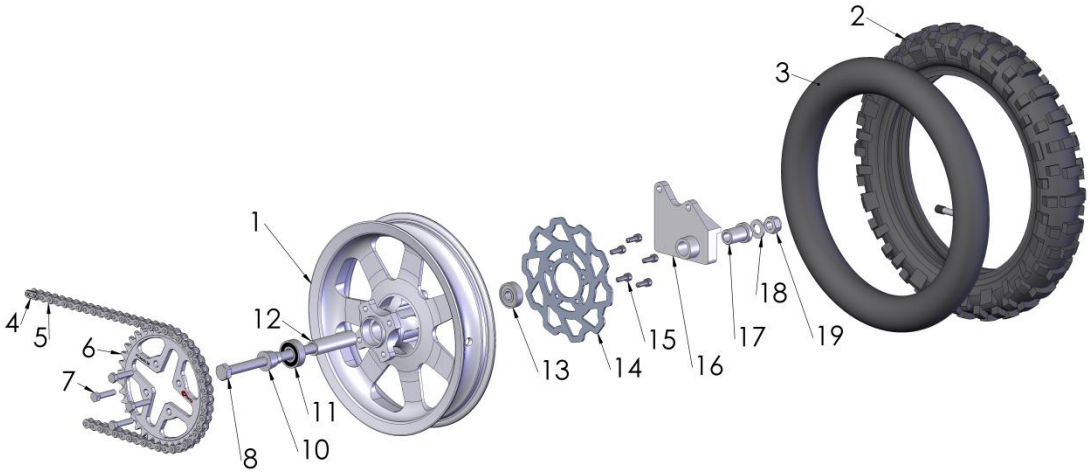
Plastic and Seat		
REF #	**PART #**	**DESCRIPTION**
1	TCHA0107Y	FRONT FENDER
1	TCHA0107x	FRONT FENDER x – DENOTES COLOR BLK, WHT, YEL, FLO
1A	HCBF0616	FENDER BOLT, M6X16mm FLANGE HEAD (4 REQ'D)
2	TCC60002W	NUMBER PLATE – FRONT
2	TCC60002x	FRONT PLATE x – DENOTES COLOR BLK, WHT, YEL
2A	HCBF0616	M6X16mm FLANGE HEAD BOLT – FRONT NUMBER PLATE MOUNT
3 & 4	TCCJ0005Y	RADIATOR SHROUD SET (LEFT & RIGHT) – YELLOW
3 & 4	TCCJ0005x	RADIATOR SHROUD SET x - COLOR BLK, WHT, YEL, FLO
5	TCHA0001	FUEL TANK – NO CAP OR PETCOCK
5A	HCFH0620	M6X20mm PHILIPS HEAD SCREW – SEAT & SHROUD HOLD
5B	TCHA0005	SPACER – SEAT & SHROUD HOLD
5C	TCHA0006	SPACER – FRONT TANK MOUNT (2 REQ'D)
5D	HCBC0685	M6X85mm SHCS – FRONT TANK MOUNT
5E	HCNL0601	M6 LOCK NUT – FRONT TANK MOUNT BOLT
5F	HCBC0645	M6X45mm SOCKET HEAD CAP SCREW
5G	TCHA0004	BUSHING – REAR TANK MOUNTING
6	TCHA0002	CAP – FUEL TANK
7	TCHA0003	HOSE – FUEL CAP
8	TCMU0151	FUEL PETCOCK
9	TCCM0007	SEAT
9A	TCCM0007C	SEAT COVER REPLACEMENT
9B	HCBB0640	M6X40mm SHCS – SEAT HOLDING
9C	MCMU0013	STRAP HANDLE
10 & 11	TCCJ0003W	NUMBER PLATE SET (LEFT AND RIGHT) - WHITE
10 & 11	TCCJ0003x	NUMBER PLATE SET x – DENOTES COLOR BLK, WHT, YEL
10A	HCBF0616	M6X16mm FLANGE HEAD BOLT – FRONT SECURE
10B	HCBF0620	M6X20mm FLANGE HEAD BOLT – FENDER & REAR SECURE
10C	HCNF0602	M6 NYLOC FLANGE NUT
10D	HCBF0616	M6X16mm FLANGE HEAD BOLT – FRONT SECURE
10E	HCBF0620	M6X20mm FLANGE HEAD BOLT – FENDER & REAR SECURE
10F	HCNF0602	M6 NYLOC FLANGE NUT
12	TCHA0112Y	FENDER – REAR
12	TCHA0112x	FENDER – REAR x – DENOTES COLOR BLK, WHT, YEL, FLO
12A	HCBF0616	M6X16mm FLANGE HEAD BOLT – FENDER & AIRBOX
ACCESSORY	TCMU2012	GRAPHIC KIT
ACCESSORY	TKCJ0002B	BODYWORK KIT - JR - BLACK
ACCESSORY	TKCJ0002W	BODYWORK KIT - JR - WHITE
ACCESSORY	TKCJ0002Y	BODYWORK KIT - JR - YELLOW
ACCESSORY	TKCJ0002FLO	BODYWORK KIT - JR – FLO YELLOW

Parts – Rear Brake



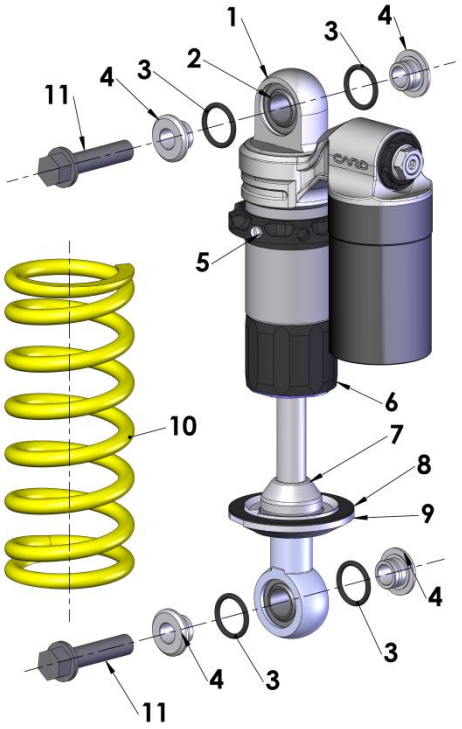
Rear Brake System		
REF #	**PART #**	**DESCRIPTION**
1	BAKG0002	BRAKE SYSTEM – REAR (M/C-LINE-CALIPER)
2	BCMU0027	BRAKE PIVOT BOLT
3	BCMU0501	SEAL – BRAKE PEDAL (2 REQ'D)
4A	BCMU0029	BRAKE PEDAL – ASSEMBLY 50cc – WITH TOE PIECE
4B	BCMU0023T	TOE PIECE
4C	HCBC0501	M5X 12mm SOCKET HEAD CAP SCREW
5	BCMUSP02	BRAKE RETURN SPRING
6	HCBC0601	M6X16mm SOCKET HEAD CAP SCREWS
7	FCEX0018	BRAKE ADJUST ECCENTRIC
8	BACJ0003	PUSH ROD, REAR BRAKE
9	BCKG0006	WHEEL SPACER - FLOATING CARRIER
10	BCKG0103	BRAKE CARRIER WITH PAD
11	HCBF0635	M6X35mm FLANGE HEAD BOLT
12	HCBF0620	M6X20mm FLANGE HEAD BOLT
13A	HCCC0000	BRAKE HOSE CLAMP (2 REQ'D) for hose with clear cover
13B	HCCC0006	BRAKE HOSE CLAMP (2 REQ'D) for hose with black cover
14	HCPP0832	BRAKE HOSE CLAMP FASTENER (2 REQ'D)
15	BCMU0502	BRAKE ROTOR
16	HCBC0601	M6X16mm SOCKET HEAD CAP SCREWS (5 REQ'D)
17	HCBF0620	M6X20mm FLANGE HEAD BOLT (2 REQ'D)
18	BCKG0012	BRAKE – MASTER CYLINDER - REAR
19	BCKG0010	REPLACEMENT BRAKE HOSE
20	BCKG0013	CALIPER – REAR BRAKE
21	BCMU0022	BRAKE – RUBBER CAP
ACCESSORY	BKKG0001	BRAKE PADS WITH "E" CLIP
ACCESSORY	BCKG0031	BLEED KIT (MULTIPLE SYRINGES, FITTINGS & HOSE)
ACCESSORY	BCKG0014	FITTING KIT
ACCESSORY	BCKG0015	MASTER CYLINDER PISTON / SEAL KIT
ACCESSORY	BCKG0016	RESERVOIR SEAL KIT
ACCESSORY	BCKG0017	CALIPER BOLT / O-RING KIT
ACCESSORY	BCKG0018	CALIPER PISTON / SEAL KIT
ACCESSORY	BCKG0019	PAD RETURN SPRING (4 LEG SPRING)
ACCESSORY	ZCMUOR09	O-RING - BANJO FITTING

Parts – Rear Wheel



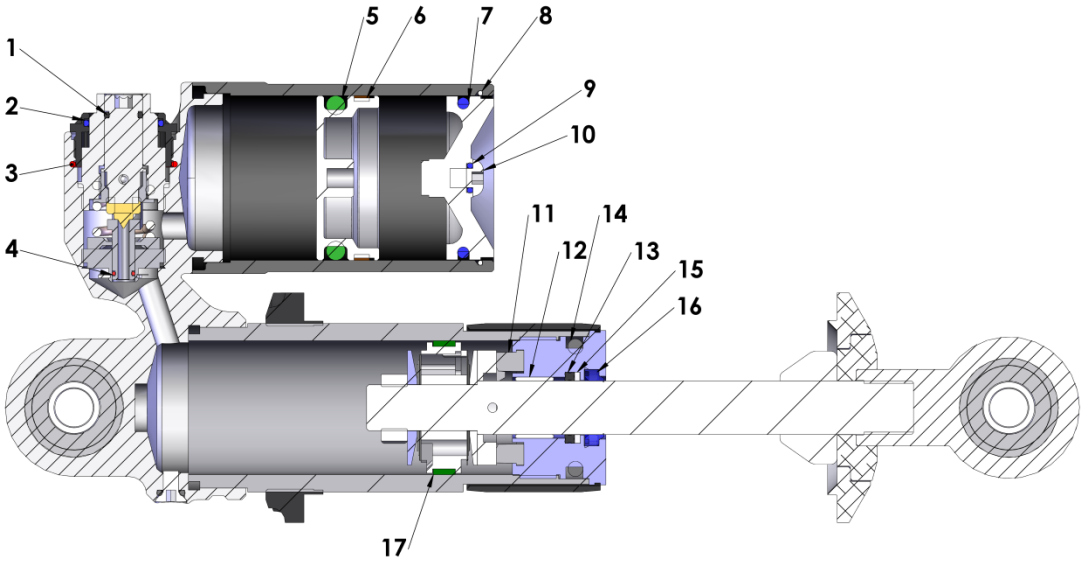
Rear Wheel		
REF #	**PART #**	**DESCRIPTION**
1	WAKG2007R	REAR WHEEL W/BEARINGS
2	WCMU1075D	TIRE – REAR 10X2.75” DUNLOP MX51
3	WCMUTU10	TUBE, 10"
4	PCMU0001	MASTER LINK 420
5	PCMU0100	CHAIN 420 X 100
6	PCMU0138	38T SPROCKET (STANDARD)
6A	PCMU01xx	SPROCKET xx DENOTES TEETH – RANGE OF TEETH (34-45)
7	HCBH0702	M7X30mm HEX 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
11	WCMU0120	WHEEL BEARING SPROCKET SIDE
12	WCMU0034	WHEEL BEARING SPACER
13	WCMU0020	WHEEL BEARING BRAKE SIDE
14	BCMU0502	BRAKE ROTOR
15	HCBC1616	M6X16mm SOCKET HEAD CAP SCREWS (5 REQ’D)
16	BCKG0103	BRAKE CARRIER
17	BCKG0006	WHEEL SPACER - FLOATING CARRIER
18	HCWF1202	AXLE WASHER
19	HCNL1201	AXLE NUT 12MM
ACCESSORY	BCKG0104	BRAKE CARRIER PAD

Parts – Shock



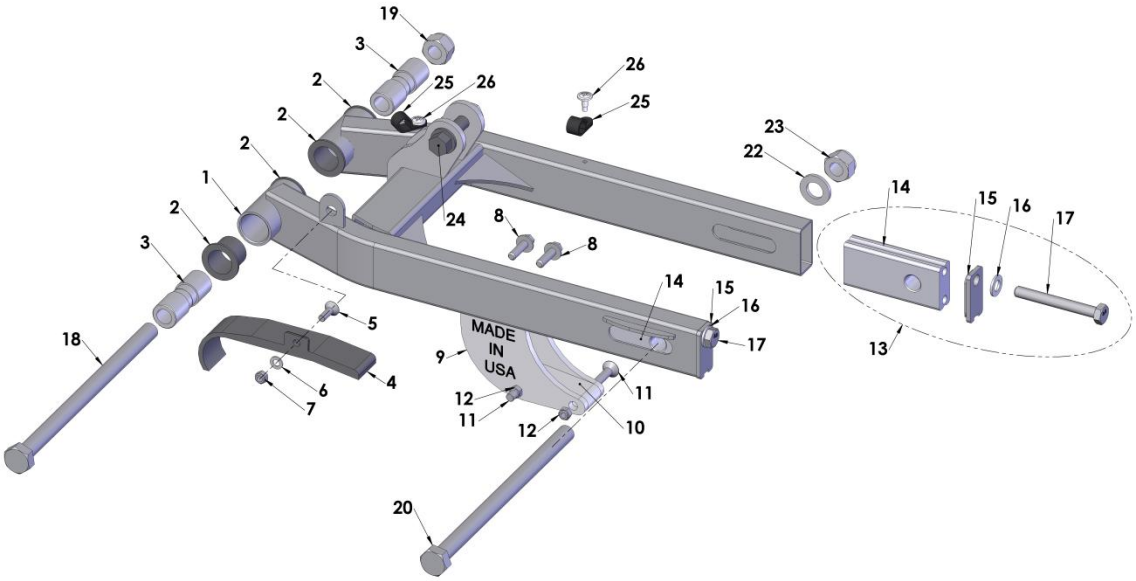
Rear Shock		
REF#	**PART #**	**DESCRIPTION**
1	SACJ2012	SHOCK ABSORBER
2	SCMU0043	SHOCK – BEARING SPERICAL SHOCK MOUNT – (2REQ'D)
3	SCMU0039	O-RING – SHOCK – BUSHING (4 REQ'D)
4	SCMU0042	SHOCK – MOUNT BUSHING (4 REQ'D)
5	SCMU0058	SHOCK – WHITE NYLON TIP SET SCREW M6-1.0
6	SCMU0056	SHOCK – SLEEVE BLACK
7	SCMU0100	BUMPER – TAPPERED - SHOCK
8	SCMU0040	SHOCK – SPRING PAD
9	SCMU0054	SHOCK SPRING PERCH
10	SCMUOH05	SPRING – STANDARD (285 lb/in)
10	SCMUOH04	SPRING – LIGHT (275 lb/in)
10	SCMUOH06	SPRING – HEAVY (295 lb/in)
11	HCBF1040	M10X40 FLANGE HEAD BOLT
ACCESSORY	SKC60002	REBUILD KIT – CARD SHOCK

Parts – Shock - Inside



Rear Shock		
REF#	**PART #**	**DESCRIPTION**
1	SCMU0037	O-RING LOW SPEED COMP ADJUSTER
2	SCMU0038	O-RING HIGH SPEED COMP ADJUSTER
3	SCMU0036	O-RING COMP ADJUSTER CAP
4	SCC60007	O-RING COMPRESSION ADJUSTER
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	M5 X 6mm 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
ACCESSORY	SKC60002	REBUILD KIT – CARD SHOCK

Parts – Swingarm Assembly



Swingarm		
REF #	**PART #**	**DESCRIPTION**
1	GACJ2011	SWINGARM
2	GCMU0001	SWINGARM BUSHING (SINGLE PIECE) (4 REQ'D)
3	GCCJ0001	SPACER - PIVOT TUBE (2REQ'D)
4	GCMU0017	CHAIN GUARD
5	HCFH0512	M5X12mm FLAT HEAD SCREW
6	HCWF0501	5mm FLAT WASHER
7	HCNL0501	M5 LOCK NUT
8	HCBF0620	M6X20mm FLANGE HEAD BOLT (2 REQ'D)
9	PAKG0001	CHAIN GUIDE – ASSEMBLY COMPLETE
10	PCKG0004	CHAIN GUIDE - BOTTOM SLIDER
11	HCBFT640	M6X40mm FLAT HEAD BOLT (2 REQ'D)
12	HCNL0601	M6 LOCKNUT (2 REQ'D)
13	FAMU0005	WHEEL PULL ASSEMBLY (BLOCK, CAP, BOLT, AND WASHER)
14	FCMU0203	WHEEL PULL
15	FCMU0202	WHEEL PULL ENDCAP
16	HCWF0801	8mm FLAT WASHER
17	HCBH0810	M8X65mm HEX HEAD BOLT (FULL THREAD)
18	WCMU0016	SWINGARM PIVOT BOLT 195mm
19	HCNL1201	M12 LOCK NUT
20	WCMU0016	AXLE BOLT 195mm
22	HCWF1202	AXLE WASHER
23	HCNS1201	M12 LOCK NUT
24	HCBF1040	M10X40mm FLANGE HEAD BOLT
25A	HCCC0000	BRAKE HOSE CLAMP (2 REQ'D) for hose with clear cover
25B	HCCC0006	BRAKE HOSE CLAMP (2 REQ'D) for hose with black cover
26	HCPP0832	BRAKE HOSE CLAMP FASTENER (2 REQ'D)

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 do not feel comfortable with the service work log on to:
www.cobramotorcycle.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 wide open throttle kicking compression test. Before performing the procedure please read the caution notes below.

CAUTION:

- There is a large wide range of variability in reading compression gauges.
- The head volume of this Cobra Motorcycle is very small and requires 20 kicks 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 Measured Value	Engine Down on Power Measured Value * 0.9	Engine NEEDS Rebuilt 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 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. 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 31 for location) along with the table below to reorder the correct thickness gasket.

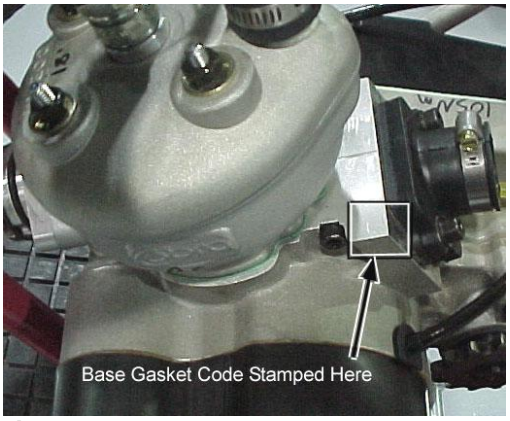


Figure 31

Code	Supplied Base Gasket Thickness		Cobra #
#	mm	inch	Part #
3	0.3	0.012	ZCMU0703
4	0.4	0.015	ZCKG0501
5	0.5	0.020	ZCMU0705
6	0.6	0.024	ZCMU0706
7	0.7	0.028	ZCMU0707
8	0.8	0.031	ZCMU0708

NOTE: Tolerances will affect the actual gasket thicknesses.

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

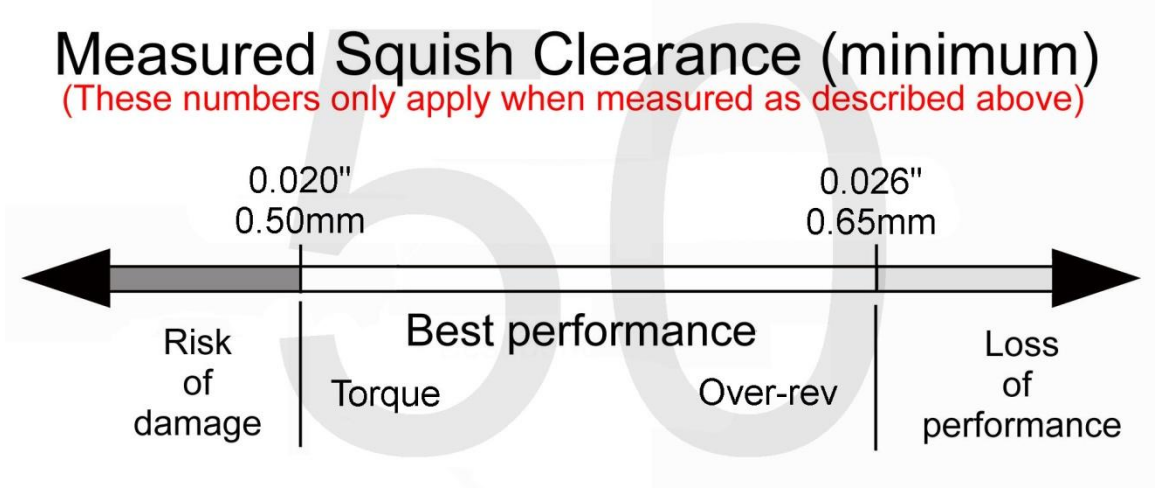
The easiest way to measure squish clearance is with 1mm to 1.5mm thick flexible solder wire (available through most popular electronic stores). The process is as follows:

- 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 to be measured.

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



Engine Removal

To service the bottom end/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 Allen wrench
- 7 mm nut driver, flat or Phillip, screwdriver for hose clamps
- Spring remover
- Flywheel / clutch puller (#MCMUTL68)
- 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.

Complete Engine Disassembly Procedure

1. Remove the ignition cover (4mm Allen)
2. Remove the bolt from the water pump shaft (4mm Allen) and slide off the belt cover and the water pump belt
3. Using a flywheel holding tool and 14mm socket remove the nut that secures the flywheel.
4. Using the Cobra flywheel / clutch puller (#MCMUTL68), remove the flywheel from the crankshaft.
5. Remove the stator (4mm Allen).

6. Remove the left hand thread nut holding the CFD to the transmission input shaft using the CFD gear stop (#EAMU0004) and a 19mm socket.
7. Remove the clutch nut / starter gear that holds on the clutch using the clutch nut removal tool (#ECMU0078).
8. With the Cobra flywheel / clutch puller (#MCMUTL68), remove the clutch from the crankshaft (details in Clutch Service portion of this manual).

Top End Disassembly Procedure

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

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.

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 0.020” (0.5 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 tool.

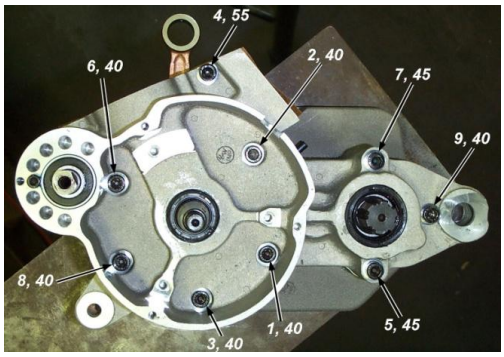
CAUTION:
Take caution when handling the crankshaft. It is the main power transfer to the rest of the engine. If it is out of alignment, it will cause premature failure of your bearings which can lead to serious damage to the cylinder as well as the rest of the engine. Do not try to true the crank yourself.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

CAUTION:
- If you split the cases, check the gear tooth faces for chipping & signs of fatigue.
- Check the small needle bearings for fatigue. If the bearings are damaged, the engine cases should be checked to make sure the needle-bearing casing didn’t oblong the bearing hole in the case.
- Needle bearings should be replaced every 2 months.

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 case bolts with the proper lengths at the locations shown.
8. Torque to 12Nm (105in-lb) in the pattern shown here.



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 0.020" (0.5mm)

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 figure 33.
16. Install the cylinder head.
17. Install the washers (with flat side down) and nuts. Torque to 123 in-lb (14 Nm)

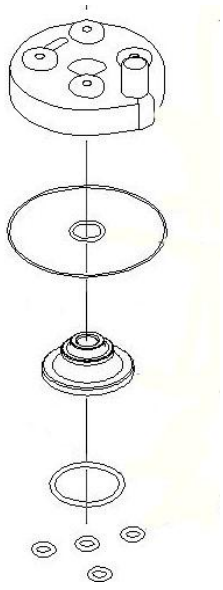


Figure 33

18. Install reed and intake manifold with new gasket. Torque to 55 in-lb. (6.2Nm).

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

19. Leak check the engine at 20 psi to ensure proper seal.
20. Install stator reinstalling the grommet and wires.
21. Install the rotor per *Rotor Installation* section, under the *S3:*

Ignition portion of this manual.

22. Install the water pump outlet pipe (apply Hi-Temp RTV silicon gasket maker to the threads before assembly) before installing the clutch and rotate to a vertical position with the engine resting on bench
23. Install the CFD.
24. Install the clutch per *Clutch Installation* section in this manual.
25. Install the coolant drain plug with copper washer (11 ft-lb, 15 Nm).
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

New in 2011, Cobra improved the clutch washer design. The new washer stacks have taller springs but are overall shorter and have a single thin shim.

These new washer stacks are being double sorted at the factory. They are first sorted by measured height. Secondly, each stack with bolt is sorted by measured engagement force.

Because of this, we have been able to widen the range of stack heights that provide an acceptable clutch 'hit'. The stacks in each stack 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
- 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.
3. Attach the Universal Puller. There are three 6mm clutch puller holes located on the ends of the center hub. (figures 30 & 31)

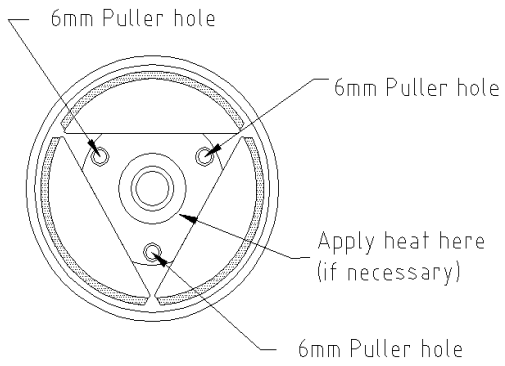


Figure 30

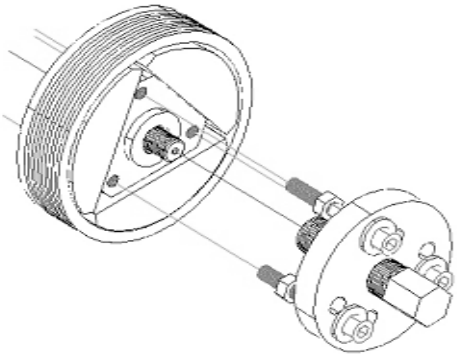


Figure 31 Clutch puller installation

CAUTION:
Do not use a jaw type puller or use the 6mm tapped holes as jackscrews or you are likely damage the clutch or drum.

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.

4. If necessary apply heat to the center clutch hub.

CAUTION:
Do not heat the crankshaft threads or the aluminum shoes.

5. Keep tension on the puller as you are heating it.

⚠ WARNING
The clutch will often pop off under tension from the puller and it will be very hot.

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 may 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.

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.

CLUTCH ASSEMBLY REFERENCE DRAWING		
REF #	**PART #**	**DESCRIPTION**
1	CAMU0013	Set of three shoes, springs, bolts, flat washers & nuts
2	CAMU0010	Set Of three springs, washers, bolts & nuts
Not Shown	CAMU0006	Complete assembled clutch (Arbor, shoes and washer stacks)

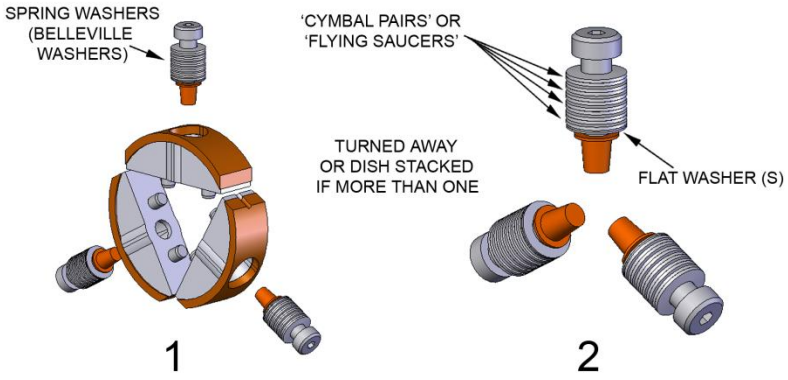


Figure 32 Some configuration of clutch spring stack. Each 'spring' stack contains multiple springs (Belleville washers) - arranged into three, four, or five 'flying saucers', or turned away against the flat washer(s). Shown is the 4 ½ stack..

Stack	Total Springs	Flying Saucers or Cymbal Pairs	Turned Away or Dish Stacked	Std. Flat Washer(s)
5 ½	11	5	1	VARIED

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'**.

CAUTION:
Sludge build-up between the spring washers also keeps the clutch shoe from engaging fully and this will cause the clutch to start to slip. So you will need to clean the sludge out or just replace the spring washers and bolts with new ones. How quickly this sludge builds up depends on how often you **change your oil** and whether your rider is 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 12.5 ft-lb (17 N-m).

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:

- There must be in / out play in installed clutch, 0.4mm to 1.0 mm (0.015" to 0.040").
- This should be adjusted with the ECMU0040T and ECMU0040 shims
- Excess in/out will cause early crank seal failure.
- 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 (235 ml (8.0 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.

- Non-resistor spark plug caps should be used. Resistor caps will result in a weaker spark that will reduce performance.

- Make sure connections are free of dirt.

The proper ignition timing for this model of is at **0.040"** before Top Dead Center (that means 0.040" before the piston reaches the highest point of it's travel in the cylinder).

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).

TIMING YOUR IGNITION:

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 0.040” (1.0mm) 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.

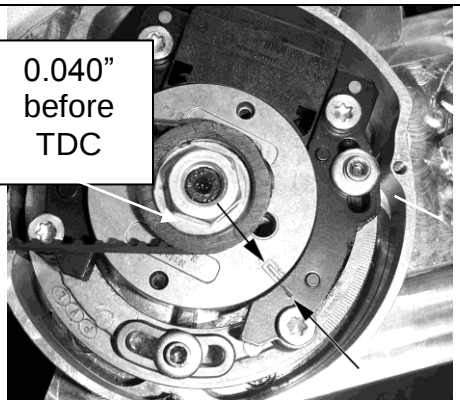


Figure 39, Lining up the line on the rotor with the line on the stator.

Figure 40, Using a dial indicator to measure piston height for setting ignition timing.

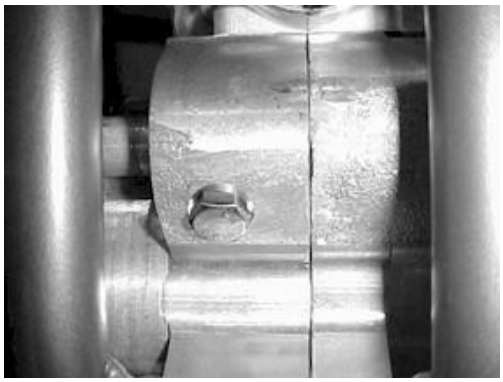
ROTOR INSTALLATION:

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 (13mm bolt) on the front 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:

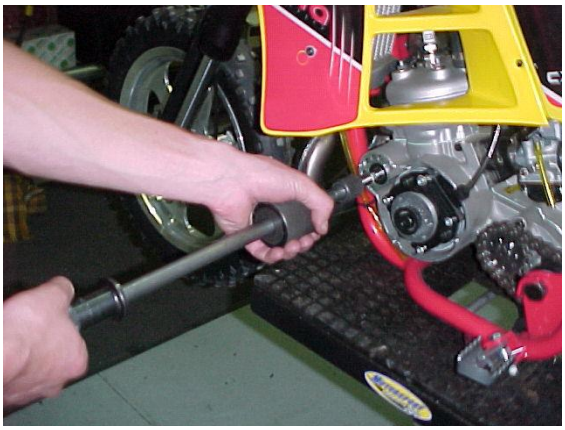
- Flat head screwdriver
- 13mm- hex wrench
- 3mm hex key
- 4mm hex key
- 5mm hex key
- 8mm hex key
- Water Pump Installation tool
  MCMUTL09, 2010 and newer JR & King
  MCMUTL08, 2009 and older JR models
- Slide hammer with
  - fitting to thread into threads on end of shaft (M5x1.0)
  - single and double hook ends for removing plastic impeller
- Dead blow 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.

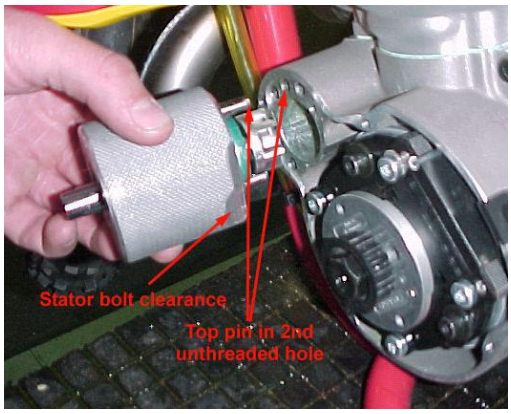
2. Remove ignition cover using a 4mm hex key (four places)
3. Stick a 3mm hex key in the water pump shaft cross hole, and remove belt retainer screw using a 4mm hex key. (Figure 42 - item 1)
4. Remove belt retainer, water pump belt and water pump fan pulley.
5. Remove bearing retainer screw using a 3mm hex key.
6. Thread a slide hammer onto the end of the water pump shaft and remove the assembly.



NOTE: It is quite common for the older plastic impellers to fall off the end of the shaft during this step of the process if that is the case, then follow the steps at the end of this section to remove the seal and impeller.

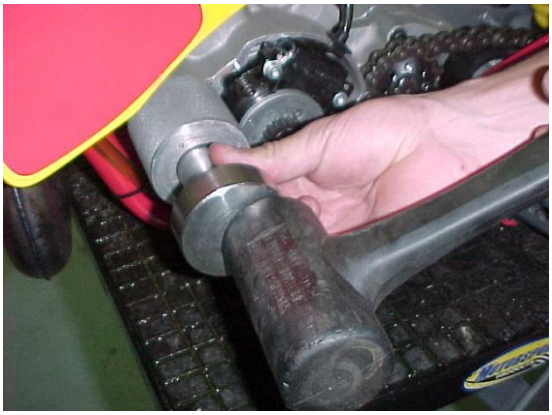
7. Clean any debris or particles from the bore and use some light emery cloth to remove any scratches in the surface that the removal process may have created.
8. Lubricate the bore with grease.

9. 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 and the device is not orientated correctly. If the tool does not sit flat against the cases, the orientation of the tool to the engine is not correct. Make sure that the top alignment pin is in the 2nd unthreaded hole, the bottom alignment pin is also in the 2nd unthreaded hole, and that the relief for the stator bolt head is oriented toward the stator.

10. Hold the installation tool firmly against the engine case and tap on the end of the water pump shaft with a dead blow hammer until the insertion punch is needed



11. Continue driving the assembly with the punch until the head is flush.

NOTE: The insertion punch is 0.010" (0.25mm) longer than the housing so as to seat the water pump assembly just in from the case surface.

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 water pump shaft in (hammer) and out (with slide hammer) to insure proper free operation of the shaft.

13. Reinstall the pulley, belt and fan cover using a 3mm 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 cover

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 and remove the carburetor
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.

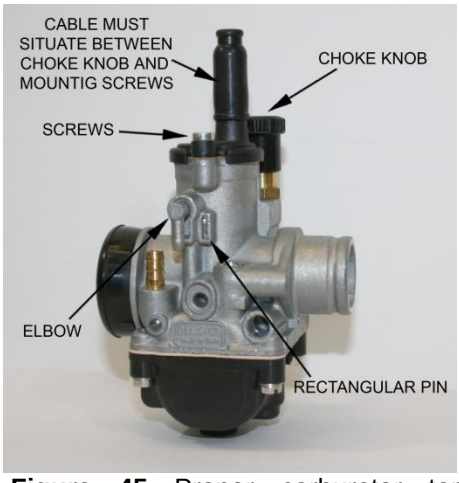


Figure 45 Proper carburetor top installation And location of rectangular slide indexing pin and vent elbows.

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 in figure 45.

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 between the reed pedals and the frame, then replace the reeds. If you do not see light, then the reeds should be ok.

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.

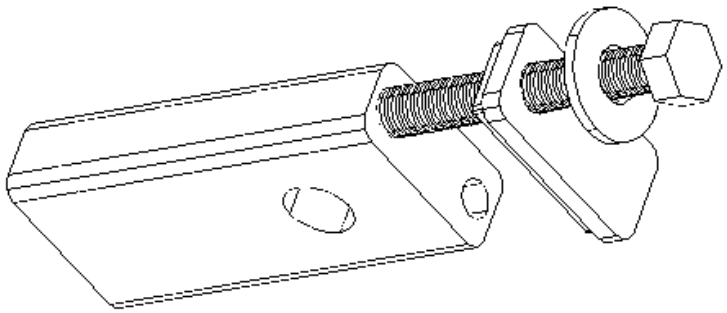
NOTE: Be sure to take the pipe off, and any carbon that may be built up. Carbon build up is created from exhaust. Exhaust has oils in it, and the oils cling to the walls of the inside of the pipe. Over a long period of time, the diameter of the pipe will decrease, due to carbon build up. So it is essential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

CAUTION:
It is important to repack the silencer. Signs of your silencer needing to be repacked are:

- The bike is louder than normal.
- A loss of power.

Rear wheel pullers

Disassembly:



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

Figure 47

Rear wheel alignment:

Either

- Accurately measure the distance from the swingarm pivot to the axle center on each side or
- From the rear of the bike, sight up through both sprockets to ensure that the chain is running in a straight line (no bend in between or jog at either sprocket).

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 or 5.1 brake fluid!

Front Forks

Tools recommended for front fork service:

- Flat head screwdriver
- Hammer
- Pick
- Seal driver MCMUTL02
- 9/16” (loose 14 mm) wrench
- 25mm wrench or socket
- 2.5 wt fork oil

FORK DISASSEMBLY PROCEDURES:

- Using the 25mm wrench, remove the fork cap.
- Drain the fork oil into a suitable container.
- Disconnect the fork cap from the damper rod (9/16” wrench & 25mm wrench).
- Disconnect the damper assembly from the fork leg by removing the large aluminum bolt from the bottom of the fork leg (22mm wrench).
- Pry the dust seal (swiper) from its position with a small screw driver.
- Using a pick, remove the wire retaining ring holding the fork seals into place.
- ‘Pop’ the fork seal out by forcibly pulling on both ends of the fork tube assembly, thus separating the inner from the outer tube.
- Remove the bushings
- Clean all components to be reused.

FORK ASSEMBLY PROCEDURES:

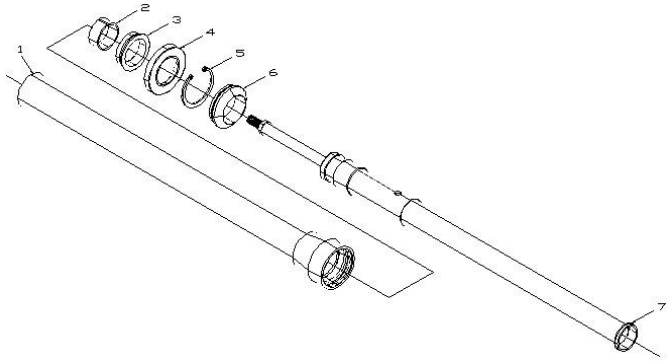


Figure 46

CAUTION:
Make sure all components are clean before assembly.

CAUTION:
Be sure to apply oil to the new fork seal and other components before installing.

1. Slide dust seal (swiper) (#6) onto lower fork leg.
2. Slide retaining ring (#5) onto lower fork leg.
3. CAREFULLY slide seal (#4) onto lower fork leg with spring facing away from snap ring.

CAUTION:
It is helpful to cover the sharp corners of the fork leg with tape or thin plastic before sliding on the new seal. Also take care that the inner lip is not folded over when installing.

4. Slide bushing (#3) onto lower fork leg.
5. Install the glide ring into groove on lower fork leg.
6. Slide the bushing over the glide ring about 1/4" to hold the glide ring in the groove.
7. Insert the lower leg assembly into the upper fork tube about 5-6".
8. Use a seal driver to drive the seal into the upper tube.
9. Install the retaining ring. Make sure it is properly seated in the groove.
10. Snap the dust seal (swiper) into the groove in the upper tube.
11. Reinstall the damper cartridge assembly to the fork leg. Secure the large bolt with 22 mm wrench to 35 ft-lb with green thread locking agent.
12. Fill with 3.6 oz (107 ml) 2.5 wt fork oil should measure 6 mm (0.25”) above the damper cartridge tube with spring removed. (This oil volume works out to leave an oil height of 120mm from top of outer tube with forks collapsed, damper rod down, and spring removed).
13. Install the fork spring
14. Connect the cartridge rod to the cap and tighten to 12 ft-lb (16 Nm).

CAUTION:
The damper rod is hollow and will break if the nut is over tightened (proper torque is 12 ft-lb, 16 Nm).
Because of different rider weights, sizes and riding styles, we offer various suspension options:

See *Optional Components* section of this manual for details on these and other optional components for your Cobra Motorcycle.

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

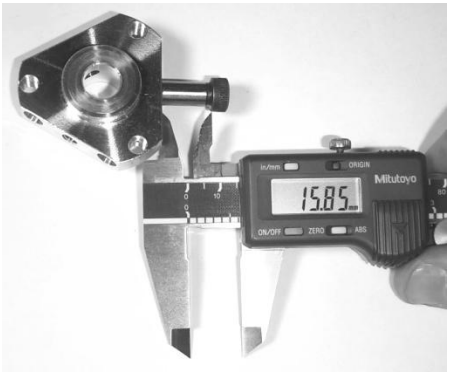


Figure C1

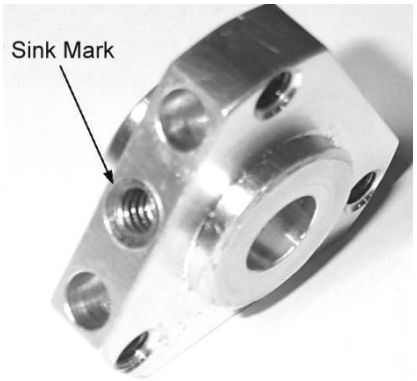


Figure C2

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.

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

What happens with improper gearing?

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

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

Front Sprocket			Rear Sprocket	Gear Ratio
		15	33	2.20
		15	34	2.27
		15	35	2.33
	14		33	2.36
		15	36	2.40
	14		34	2.43
		15	37	2.47
	14		35	2.50
		15	38	2.53
13			33	2.54
	14		36	2.57
		15	39	2.60
13			34	2.62
	14		37	2.64
		15	40	2.67
13			35	2.69
	14		38	2.71
		15	41	2.73
13			36	2.77
	14		39	2.79
		15	42	2.80
13			37	2.85
	14		40	2.86
13			38	2.92
	14		41	2.93
13			39	3.00
	14		42	3.00
13			40	3.08
13			41	3.15
13			42	3.23

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

COMPRESSION ADJUSTMENT

it counter-clockwise will decrease it. This is illustrated by the “HARD” and “SOFT” in the figure at the right.

BOTTOMING 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.

Symptom	Action
Rear end feels stiff on small bumps	Softer compression damping
Rear end ‘sways’ on straights	Harder compression damping
Bike tends to jump ‘rear end high’	Harder rebound damping
Bike tends to jump ‘rear end low’	Softer rebound damping
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 Compression

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

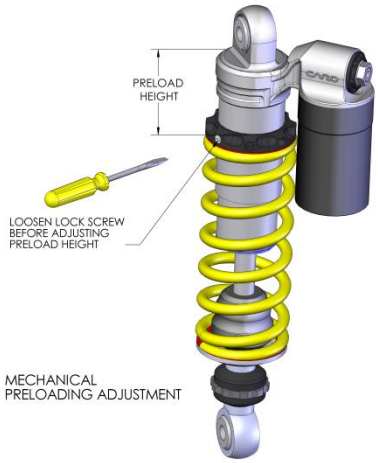
Once you have the suspension adjusted for decent overall feel, you can make proactive adjustments when faced with different racing conditions.

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

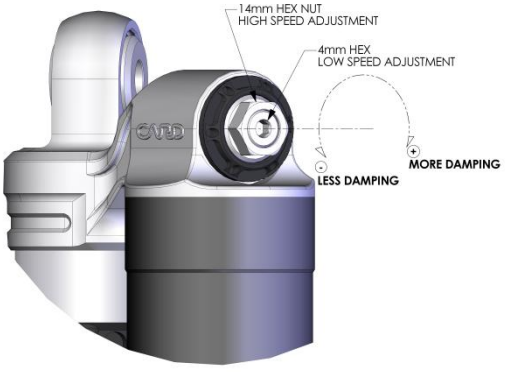
Loosen the set screw and turn the spring perch in full turn increments to get the desired sag settings.

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



Shock Damping

11. Adjustment of rebound damping



12. Adjustment of compression 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 59 shows its range of adjustment and in particular what adjustable component affects what range of operation (specifically throttle position).

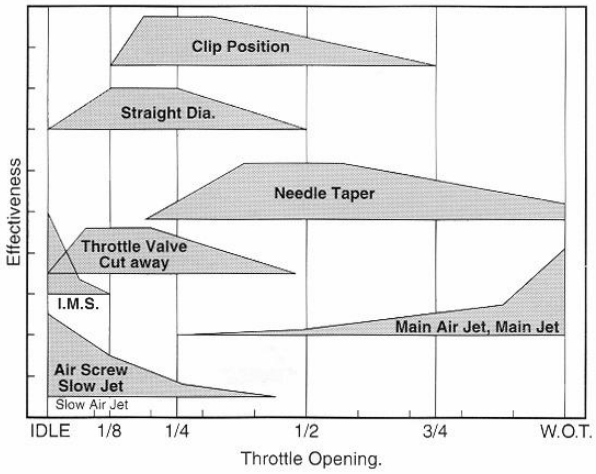


Figure 59

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 screwdriver 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 re-adjust 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 not behaving properly**
    a) Carburetor top is installed backwards (happens a lot)
    b) The carburetor slide indexing pin is missing
    c) Wrong spark plug installed (8339 Champion to be used on ’04 or later & no mods)
    d) Needle clip is on top of plastic not below
    e) Air leak – find where with carb cleaner or similar
    f) Ground wire or ignition leads have fault
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
3) **Engine is excessively loud**
    a) Silencer needs to be repacked
4) **Engine cuts out at high RPMs**
    a) Stator bad
    b) Carburetor diffuser plate upside down (install like a skirt)
    c) Plugged fuel petcock
    d) Silencer core tube broken
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) Wrong spark plug installed (8339 Champion to be used on ’04 or later & no mods)
iii) Spark plug cap off
iv) Engine Shut-off ‘kill’ switch is shorted
v) Bad electrical ground
vi) Stator winding damaged

d) Exhaust is plugged

6) Overheating

a) Bad stator
b) Water pump pulleys or belt broken
c) Water pump impeller broken or bolt out
d) Jetting too lean
e) Too much throttle blipping
f) Too high gearing
g) Kinked radiator hose
h) Rear brake dragging
i) Chain too tight
j) Air leak

7) Engine won’t idle

a) Idle knob needs adjusted
b) Air leak
c) Carburetor jets are dirty

Index

Air Filter Maintenance 14
Airbox
  Parts 18
Bars and Controls 19
Base Gasket Selection 42
Break-In 6
Carburetor
  Parts 20
  Service 57
  Specifications 4
  Tuning 70
CFD Cobra Frictional Drive 16
Chain
  Adjustment 11
Chassis
  Specification 4
Clutch Lubricant
  Replacing 10
Compression test 41
Cooling System 54
Engine
  Specifications 4
Exhaust 59
  Parts 27
Fork
  Adjustments 68
  Operation 68
Fork oil replacement 15, 16
Forks
  Parts 28
Frame Parts 31
Frictional Drive 16
Front Brake
  Parts 33
Front Wheel Parts 34
Fuel System
  Service 57
Hardware and Fasteners
  Frame 31
  Plastic 35
Ignition
  Timing 53
Jetting
  How To 57
  Stock 4
  Troubleshooting 71
Lubrication
  Recommended 4
Maintenance
  Schedule 8
  Tips 8
Oil
  Recommended 4
Optional Components 5
Parts
  Airbox and Filter 18
  Bars and Controls 19
  Bottom End & Transmission 23
  Carburetor 20
  Coolant System 21

Engine 23
Exhaust 27
Forks 28
Frame 31
Front Brake 33
Front Wheel 34
Inlet 18
Plastic & Seat 35
Rear Brake 36
Rear Wheel 37
Shock 38, 39
Swingarm 40
Top End 26
Triple Clamps 28
Plastic & Seat Parts 35
Pullers 60
Rear Brake
Adjustment 11
Parts 36
Rear Wheel
Parts 37
Pullers 60
Reeds 59
Shock
Adjustments 69
Parts 38, 39
Slip Clutch 16
Spark Plug
Recommended 4
Specifications 4
torque values 5
Starting 7
Suspension
Adjustment 67
Swingarm Parts 40
Top End
Parts 26
Service 41
Torque Values 5
Transmission
Specifications 4
Transmission Lubricant
Replacing 10
Troubleshooting 73
Jetting 71
VIN reading 8
WARNING 1
Wheels
Service 59