

# **'05 PW3**

# **Oboro**

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(517) 437 9100



Cobra Motorcycle MFG., Inc.  
240 Uran Road  
Hillsdale, MI 49242

## 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 PW3 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 THAT.

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

## IMPORTANT SAFETY NOTICE

### **WARNING**

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

### **CAUTION:**

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

### **NOTE:**

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

MCPW2005.8

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# General Information

## Specifications - General

Items	PW3
<b>Dimensions</b>	
Wheelbase	35.75" (908mm)
Wheel size	10" (254mm)
Seat height	22" (559 mm)
<b>Engine</b>	
Type	2-stroke, single cylinder, reed valve
Cooling system	Liquid-cooled
Displacement	49.8 cc
Bore and stroke	39 mm x 41.7 mm
Ignition system	Digital Electronic
Spark plug	Champion 8339-1, 8332-1 hotter, 8904-1 colder
Gap	0.023" – 0.025" (0.58 – 0.64 mm)
Fuel type	high octane pump gasoline <b>RACE FUELS ARE NOT RECOMMENDED</b>
Injector oil type	<i>Cobra Venom 2-cycle Race Oil</i>
Fuel / oil mix ratios	Fill oil reservoir as required
Ignition timing	Fixed
Carburetion	12 mm Dell'Orto PHVA - PS
Main jet	82
Slow (Pilot) jet	42
Float height	Non adjustable
Coolant	50/50 antifreeze-coolant / distilled water
<b>Transmission</b>	
Speed	Single
Clutch	3 shoe centrifugal
Final drive ratio	10/44 T
Transmission / clutch oil type	<i>Cobra Venom 3 Shoe Clutch Milk</i>
Quantity	250 ml (8.5oz)

<b>Chassis</b>		
Front tire		2.50 - 10
	Pressure	20 psi minimum
Rear tire		2.50 - 10
	Pressure	20 psi minimum
Front fork		Marzocchi 32mm
	Fork oil type	SAE 20 weight
	Fork oil amount	200 ml (6.8 oz) oil change, 220 ml (7.4 oz) rebuild
	Fork oil height	70 mm (2.75") collapsed from top with spring (no spacer)

## Specifications - Torque Values

Fastener	Torque Value			Size & Remarks
	ft-lb	in-lb	Nm	
Cylinder head nuts	8.8	105	12	M6 X 1.0
Front engine mount bolts	22	264	30	M8 x 1.25
Rear engine mount bolts	22	264	30	M8 x 1.25
Swingarm pivot bolt	21	250	28	M14 x 2
Rear sprocket bolts	18	216	24	M7 x 1
Rear axle bolts	25	300	34	M12 x 1.25
Rear shock mounts	40	480	54	M10 x 1.5
Clutch adjust access plug	10	120	14	M12 x 1.25
Clutch nut	30	360	42	

Units of mm unless otherwise specified

# Optional Components

Call your dealer, or the factory, for details

- Carburetor jets
  - Main jets #'s 74, 76, 78, 80, 84, 86, 88, 90, 92, 94
  - Slow jets #'s 38, 40, 42, 45,
- Exhaust Power Regulator, ECPW0001
- Pre-filter for Airbox
- Sprockets
  - Front sprocket, 11T
  - Rear sprocket, 39 T – 45 T
- Suspension Springs

Weight of Rider (lb)	Fork Spring	Shock Spring
Less than 38 (light)	KCMZ0012A (12 lb/in, 2.10 N/mm)	SCMUOH04 (red) 275 lb/in
38 – 45 (std)	KCMZ0012 (14 lb/in, 2.45 N/mm)	SCMUOH05 (yellow) 285 lb/in
46 to 55 (stiff)	KCMZ0012B (16 lb/in, 2.80 N/mm)	SCMUOH06 (white) 295 lb/in

- Tires
- Tubes or 'Tire Balls'



# Break-In Procedure

Your Cobra PW3 is a close-tolerance high performance machine and break-in time is very important for maximum life and performance. The PW3 can be ridden hard after the first ½ hour break-in time but it is recommended that no adjustments are made to the carburetion or suspension until the full 8 hours of bike break-in has elapsed. Also, after the engine, transmission, and drive train have been broken-in for the full 8 hours, the bike will be faster!

Fill the fuel tank with high octane pump gas without oil. Also, fill the oil injection reservoir with Cobra's specially formulated *Cobra Venom 2-cycle Race Oil*. (Part # MCMUOL02)

## **CAUTION:**

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

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

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

# Starting Procedure

Before starting the machine inspect the following:

- Make sure vehicle is properly maintained (see **Schedule & Tips** in the **Maintenance** section)
- Fill the 2-stroke injector oil reservoir with Cobra's specially formulated *Cobra Venom 2-cycle Race Oil*.
- Insure that the fuel tank contains an adequate volume of fuel to complete the distance required. (high octane pump gas).
- Check the throttle for smooth operation and sound closing.
- Turn the fuel on by rotating the fuel petcock knob to the vertically downward position (reserve position is horizontally forward).

## CAUTION:

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

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. On the carburetor, flip the black choke knob upward from the right side of the bike.
3. Kick start the engine by kicking the lever forward.
4. Rev the engine in short spurts, turning the throttle no more than 1/4 open until the engine will run without the choke.
5. Verify a functional engine shut-off switch by shutting off the engine.
6. Restart the engine and proceed with riding when the engine is sufficiently warm (i.e. the side of the cylinder is warm to touch).

## CAUTION:

Never rev an engine full throttle when it's cold or slightly warmed up. 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. Make sure your engine is properly warmed up before racing.

## 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.

# General Tips

1. Always wear a helmet and other protective riding gear.

2. 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.
3. Make sure your riders' foot is not resting on the foot brake while they are riding.
4. Evaluate the bikes jetting only after it has been warmed up to race temperatures.
5. A properly maintained machine is safer, faster, and more fun to ride.
6. Cobra offers a carburetor inlet cover RCMU0109 to keep water and dirt from getting into the carburetor when the bike is being washed.
7. It is acceptable and common to run 40:1, or leaner, premix in the fuel tank.
8. New chains will stretch on first use. Never install a new chain prior to a race. Always 'break' them in during practice.
9. If your young rider is initially uncomfortable with the abrupt power delivery of the PW3, install the **Exhaust Power Regulator** to make the bike more easy to control while your rider gains confidence with his or her abilities and the feel of the new machine.
10. 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).
  - a. Example, O1xxxx5xxx is a 2005 Model Year Oil Injected PW3.

# Maintenance

## Schedule & Tips

It is important that you adhere to this maintenance schedule so as to promote the longevity of your Cobra Motorcycle.

- Between each ride
  - Fill the 2-stroke injector oil reservoir.
  - Check the air filter (clean and re-oil as necessary).
  - Insure the smooth operation of the throttle cable (throttle soundly 'clacks' shut).
  - Check for frayed strands of the throttle cable inside the throttle housing and replace if necessary.
  - Check for adequate tire pressures and adjust if necessary.
  - Check all nuts and bolts for proper torque and re-torque if necessary.
  - Spray all moving parts with WD40 or other light oil.
  - Check drive chain for
    - Proper tension and adjust if necessary.
    - Adequate lubrication and lubricate if necessary.
  - Insure that the ignition stator and rotor are clean and dry.
  - Check the frame for cracks in the metal or cracks in the paint that might indicate that the metal has been stressed beyond it's safe limits. Replace or get properly rewelded as necessary.
  - Fill the 2-stroke injector oil reservoir with Cobra's specially formulated *Cobra Venom 2-cycle Race Oil*.
- Every 2 hours of operation
  - Replace the transmission oil.
- Every 10 hours of operation
  - Replace the fork oil.
  - Have the shock oil replaced by a Certified Cobra Mechanic.

### **CAUTION:**

1. 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.

2. 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.

## Replacing Transmission / Clutch Lubricant

**Tools needed:**

- 250 ml (8.5oz) *Cobra Venom 3 Shoe Clutch Milk* (Part # MCMUGF01)
- #3 Phillips screwdriver
- large flat blade screwdriver or coin

**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. Lean bike against something or set on stand with oil drain hole.
3. Using Phillips screwdriver, remove the oil drain bolt located on the right side of the engine (figure 1).

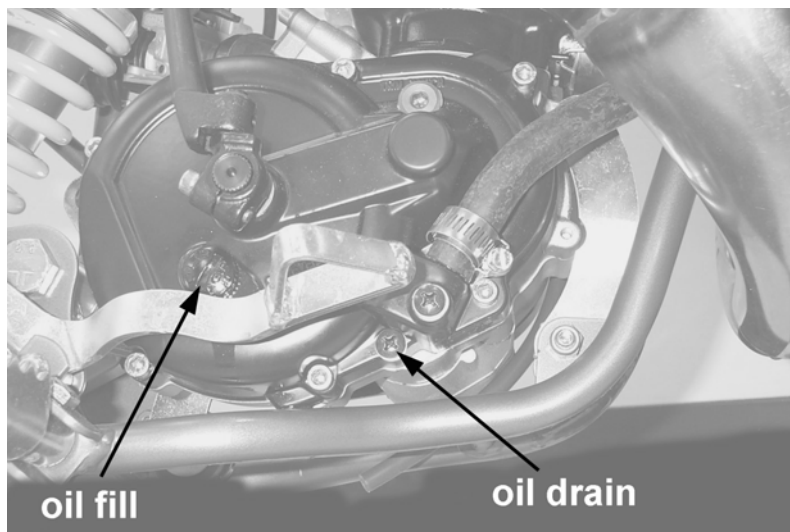


Figure 1

**NOTE:** You may need to adjust the brake pedal (up or down) to gain access to the drain bolt.

4. After it has drained, reinstall the drain screw with gasket.
5. Refill oil from oil fill plug 250 ml (8.5oz) *Cobra Venom 3 Shoe Clutch Milk* (Part # MCMUGF01) thru the fill plug.

**NOTE:** Leaning the bike over onto it's left hand side will facilitate the oil filling procedure.

6. Reapply the oil fill screw, securely, being sure the gasket is in place.

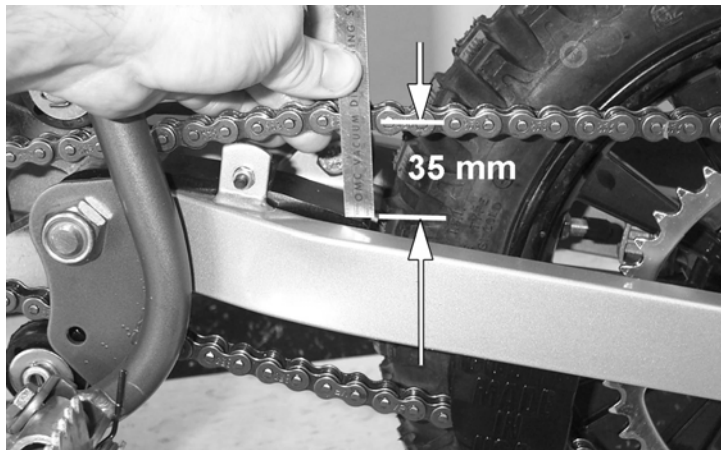
**CAUTION:**

Cobra has spent considerable time and money developing the proper lubrication to handle the harsh environment of the automatic clutch and transmission of this motorcycle. Cobra was forced to put forth this effort because the other available options and not adequate. Cobra's specially developed *Cobra Venom 3 Shoe Clutch Milk* (Part # MCMUGF01) is the recommended lubricant for your PW3 motorcycle.

## Chain adjustment

### Tools required for chain adjustment

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



1. Make sure that the rear wheel is aligned properly.
2. For proper adjustment, the chain should have 35 mm (1 3/8") free movement just behind the chain block with no load on the bike (figure 2)

**Figure 2**

**CAUTION:**

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



**Figure 3**

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

**CAUTION:**

Always check rear brake adjustment and free-play after adjusting the chain.

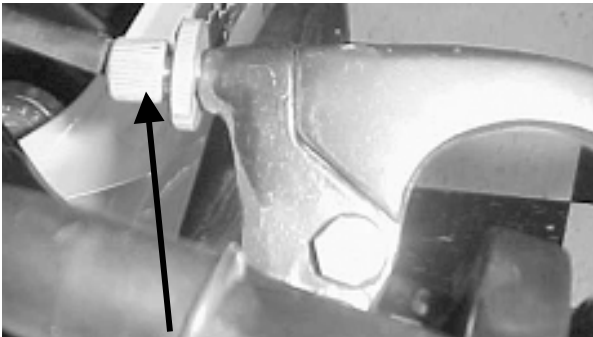
**NOTE:**

Lubricate the chain with a light weight oil like WD40 to reduce frictional drag.

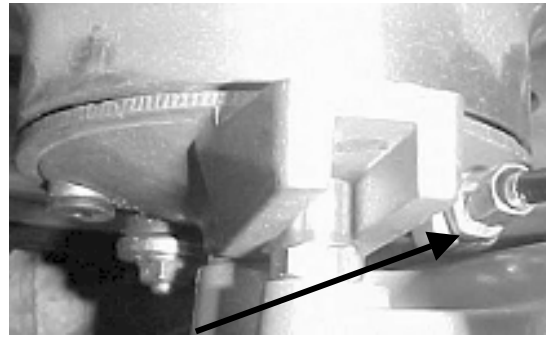
## Front brake adjustment

**Tools recommended for front brake maintenance:**

- 10mm open end wrench



**Figure 4**, from the brake lever



**Figure 5**, from the brake hub

**From the brake lever:**

1. Slide the cover out of the way
2. Loosen the locking nut on the brake lever.
3. Adjust the bolt to desirable position.
4. Tighten the locking nut.
5. Slide the protective cover back over the lever pivot and adjustor

**From the brake hub:**

1. Loosen the 10mm nut on the hub.
2. Adjust the brake cable to desirable position
3. Tighten the 10mm nut.

**CAUTION:**

If you tighten the front brake up too much, the brakes may hang up causing the brake pads to wear incorrectly and prematurely.

## Rear brake adjustment

### Tools recommended for rear brake maintenance:

- 10mm open end wrench

There are 2 adjustments on the brake.

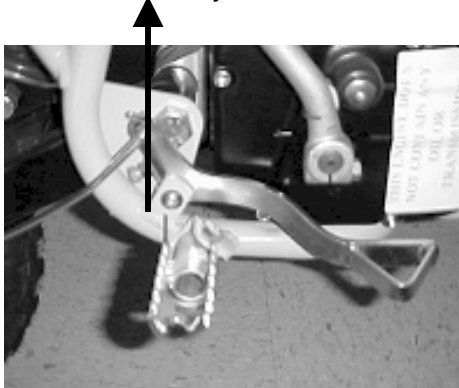


Figure 6, adjust brake lever free height



Figure 7, adjust lever 'free play'

### From the brake lever:

6. Loosen the 10mm nut on the back of the brake pedal.
7. Adjust the bolt to desirable position
8. Tighten the 10mm nut.

### From the brake hub:

1. Adjust the wing nut to the desirable position.

### CAUTION:

If you tighten the wing nut too much, the brakes may remain engaged. If so, the brake pads will burn up, and need replaced.

## Air Filter Cleaning

### Tools recommended for air filter maintenance:

- #2 Phillips head screwdriver
- 4 mm hex key (Allen)
- Foam filter oil

### Procedure

1. Removed the seat with the 4 mm hex key
2. Remove the filter/air inlet boot from the back of the carburetor with a flat screwdriver
3. Pull the filter / boot assembly back, up, and out the top of the airbox.
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 by pushing it down and forward into the airbox making sure the letters "PW" are visible between the carburetor and airbox (figure 8).

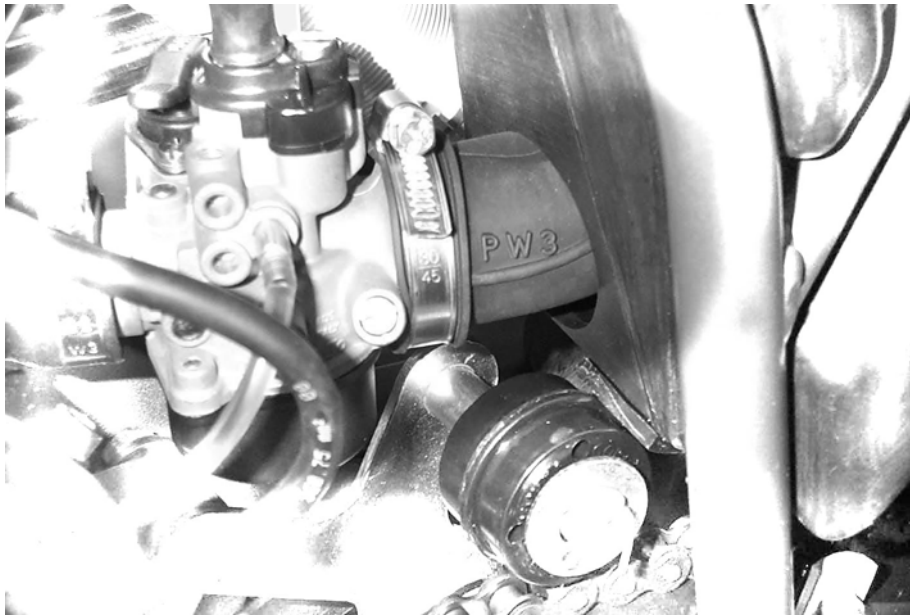


Figure 8

## **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 Oil Replacement

## Tools required

- 5 & 6 mm Allen wrench

- 19 mm wrench or socket (two required)
- Spring clip remover

### **Disassembly**

1. Remove the front wheel.
2. Remove the fork legs from the triple clamps.
3. Perform the following on one leg at a time.
4. Using your hands, remove the black rubber plug from the top of the fork leg exposing the white plastic cap.
5. Secure the fork leg assembly in a vice by gripping the leg across the flats through which the axle bolt goes through.
6. Depress the white plastic cap inwards (down) and remove the wire spring clip from its groove.
7. Remove the white cap, the fork spring preload sleeve, and the fork spring.

**NOTE:** Depressing the fork leg will facilitate removing the white cap.

8. The fork can now be turned upside down and drained.

### **Assembly**

1. Fill the leg with 200 cc (6.8 oz) 20 wt fork oil.
2. Standard fork oil level is 70 mm (2.75") from the top edge with the fork collapsed.

**NOTE:** Remove the preload sleeve but leave the spring in for the measurement.

3. Install the preload sleeve.
4. Install and depress the white cap while installing the spring clip.
5. Fork may be reinstalled.

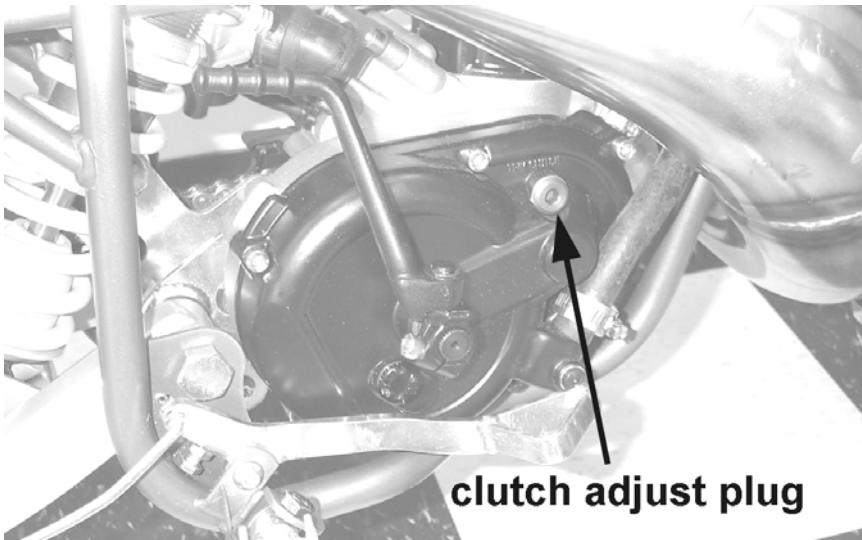
## **Clutch Adjustment**

### **Tools required**

6 mm hex key (Allen wrench)  
large flat blade screw driver

### **Process**

1. Remove the clutch adjustment access plug (6mm hex key).



**Figure 9**

- Using the kick lever, turn the engine over (rotate the crank) until one of the large flat head screws is visible through the access hole (this flat head screw is one of the three adjusters).

**NOTE:** Turning the adjusting screw Counter Clock Wise (CCW) will allow the shoe to engage at a lower RPM, this is the direction you should adjust to compensate for shoe wear. Alternatively, a Clock Wise (CW) adjustment of the screw will allow the clutch to engage at a higher RPM.

- Subsequently use the kick lever to rotate the crank and expose the other two clutch shoe adjusters and adjust them by the same amount.

**CAUTION:**

Be sure to adjust each of the three shoe adjusters by the same amount.

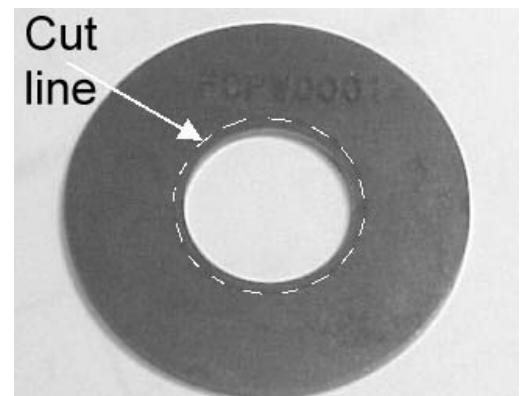
**CAUTION:**

The adjustment screws can fall out if unscrewed too far.

- Reinstall the clutch adjust access plug (10 ft-lb, 14 Nm).

## Exhaust Power Regulator

As an entry level race machine, the Cobra PW3 comes with an optional Exhaust Power Regulator (EPR) (figure 9b) that when installed, between the exhaust pipe and cylinder flange, will cut the peak rear wheel power by  $\frac{1}{2}$ . As your rider's skills progress, the EPR can be opened up to the etched line (18mm diameter drill) to deliver  $\frac{3}{4}$  power or removed it completely for full race power.



**Figure 9b**

# Parts

## Parts – Airbox and Inlet System I

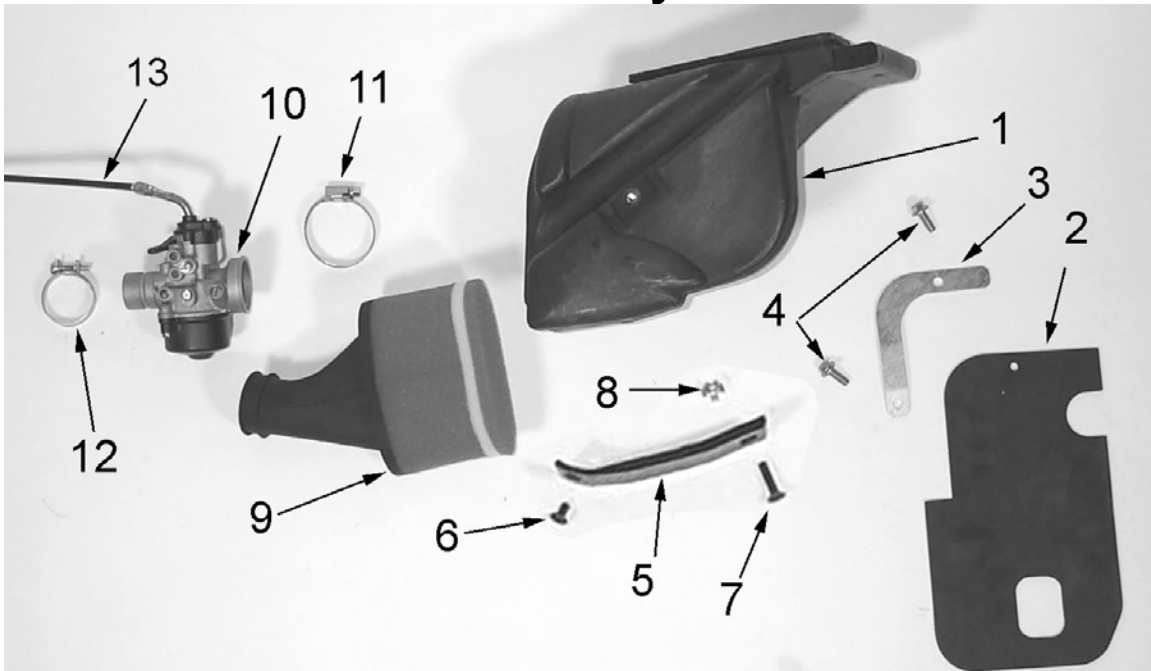


FIGURE 10

Airbox and Inlet System		
REF #	PART #	DESCRIPTION
1	RCMU0404	AIR BOX – PW
2	RCMU0408	MUD FLAP – PW
3	RCMU1407	BRACKET – MUD FLAP
4	HCBB0612	M6X12 BUTTON HEAD BOLT (2 REQ'D)
5	RCMU0409	CHAIN GUARD
6	HCFH0612	M6 X 12 FLAT HEAD SCREW
7	HCFH0620	M6 X 20 FLAT HEAD SCREW
8	HCNL0601	6MM LOCK NUT
9	RCMU0403	AIR FILTER WITH BOOT
10	ECMPIN01	CARBURETOR 12 MM (OIL INJECTED)
Not Shown	FCMU0026	FUEL LINE
Not Shown	MCMUCL04	HOSE CLAMPS – FUEL LINE
11	MCKGHO01	HOSE CLAMP – AIR BOOT TO CARBURETOR
12	ECMOIN02	HOSE CLAMP – CARBURETOR TO MANIFOLD
13	FCPW0002	THROTTLE CABLE

## Parts – Airbox and Inlet System II

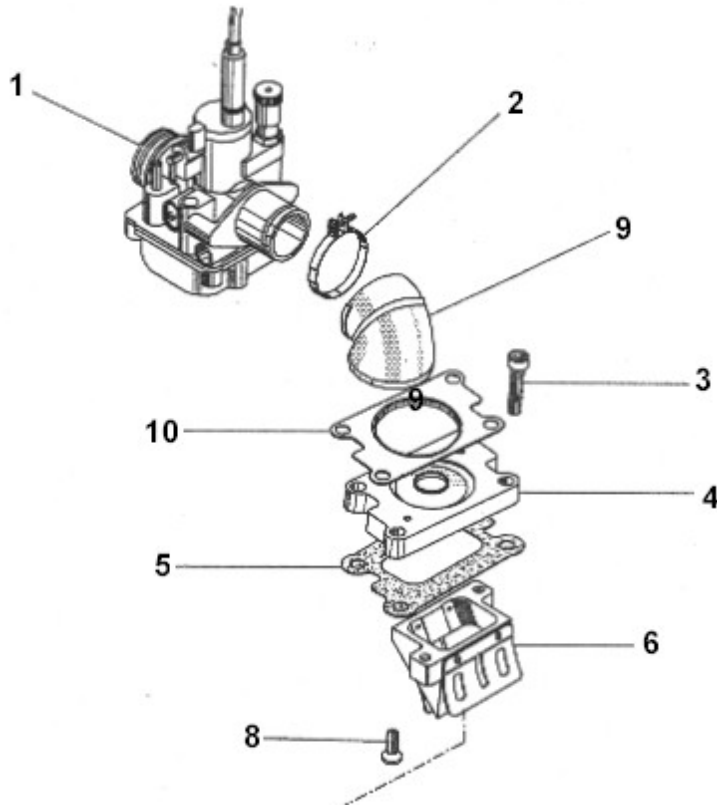


Figure 11

REF NO	PART NO	DESCRIPTION
1	ECMPIN01	12MM CARBURETOR
Not Shown	FCMU0026	FUEL LINE
Not Shown	MCMUCL04	HOSE CLAMPS – FUEL LINE
2	ECMOIN02	CLAMP
3	HCBC0625	6X25 CAP SCREW
4	ECMOIN04	REED SPACER PLATE
5	ZCMOIN05	REED VALVE GASKET
6	ECMOIN06	REED VALVE ASSEMBLY
NOT SHOWN	ECMOIN07	REED PEDALS
8	ECMOIN08	SCREW - REED CAGE TO SPACER PLATE
9	ECMOIN09	RUBBER INTAKE BOOT
10	ECMOIN10	INTAKE RETAINING PLATE

## Parts - Bars and Controls

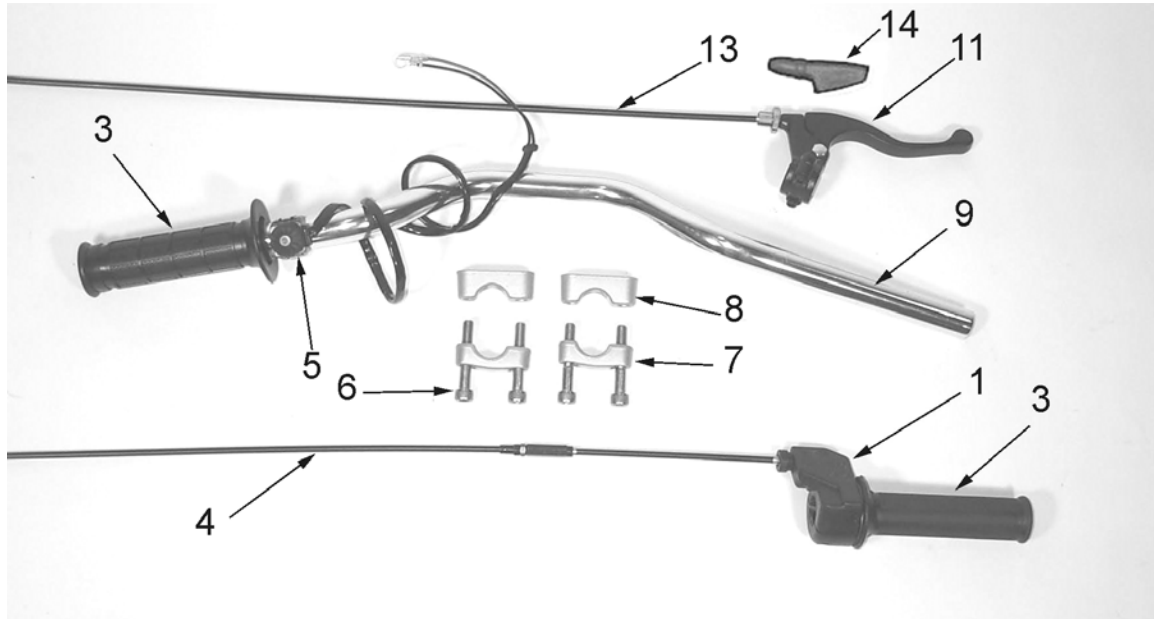


Figure 12

Bars and Controls		
REF #	PART #	DESCRIPTION
1	FCPW0001	THROTTLE ASSEMBLY
3	TCMU0008	GRIPS (SET OF TWO)
4	FCPW0002	THROTTLE CABLE
5	FCMU0033	KILL SWITCH ASSEMBLY
6	KCMZ0001	M8X50 SOCKET HEAD CAP SCREW (4 REQ'D)
7	KCMZ0003	LOWER HANDLE BAR CLAMP (2 REQ'D)
8	KCMZ0002	TOP HANDLE BAR CLAMP (2 REQ'D)
9	TCMU0019	HANDLEBAR - ALUMINUM
11	BCMU0100	BRAKE LEVER / PERCH ASSEMBLY WITH ADJUSTOR
13	BCMU0108	FRONT BRAKE CABLE
14	BCMU0013	BRAKE LEVER COVER
Not shown	FCPW0004	THROTTLE CABLE END GROMMET

# Parts – Carburetor

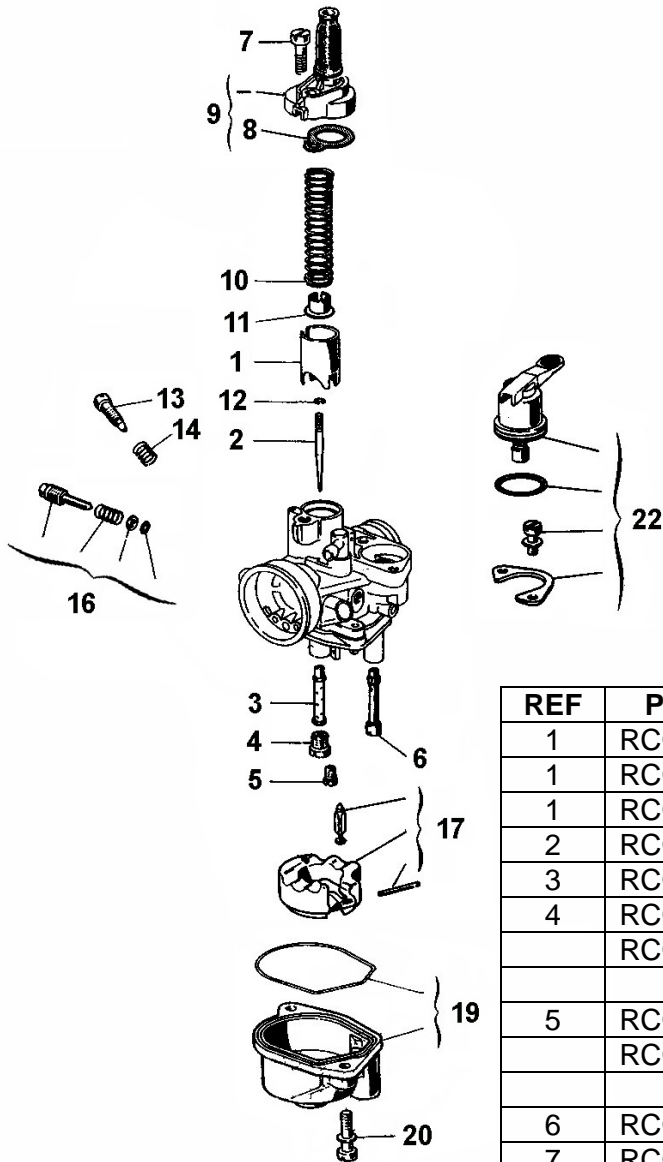


Figure 13

REF	PART #	DESCRIPTION
1	RCOI0001	SLIDE - 40 - STOCK
1	RCOI0030	SLIDE - 30
1	RCOI0050	SLIDE - 50
2	RCOI0002	NEEDLE FOR SLIDE
3	RCOI0003	ATOMIZER
4	RCOI0004	MAIN JET-82 STOCK
	RCOI00##	ADDITIONAL MAIN JETS, 74 - 94 <i>EXAMPLE RCOI0094 FOR 94 MAIN</i>
5	RCOI0005	PILOT JET-42 STOCK
	RCOI00##	ADDITIONAL PILOT JETS, 38 - 45 <i>EXAMPLE RCOI0045 FOR 45 PILOT</i>
6	RCOI0006	CHOKE JET
7	RCOI0007	TOP CARB SCREW
8	RCOI0008	O-RING FOR CARB TOP
9	RCOI0009	CARB TOP W/ O-RING
10	RCOI0010	SLIDE SPRING
11	RCOI0011	NEEDLE RETAINER PLATE
12	RCOI0012	NEEDLE CLIP
13	RCOI0013	IDLE ADJUSTMENT SCREW
14	RCOI0014	IDLE ADJUSTMENT SPRING
16	RCOI0016	FUEL MIXTURE SCREW KIT-4 PIECE
17	RCOI0017	FLOAT KIT - 3 PIECES
19	RCOI0019	FLOAT BOWL WITH O-RING - 2 PC
20	RCOI0020	BOTTOM CARB SCREW
22	RCOI0022	CHOKE ASSEMBLY - 4 PIECES
23	RCOI0023	REBUILD KIT
Not Shown	FCMU0026	FUEL LINE
Not Shown	MCMUCL04	HOSE CLAMPS - FUEL LINE

## Parts – Coolant System

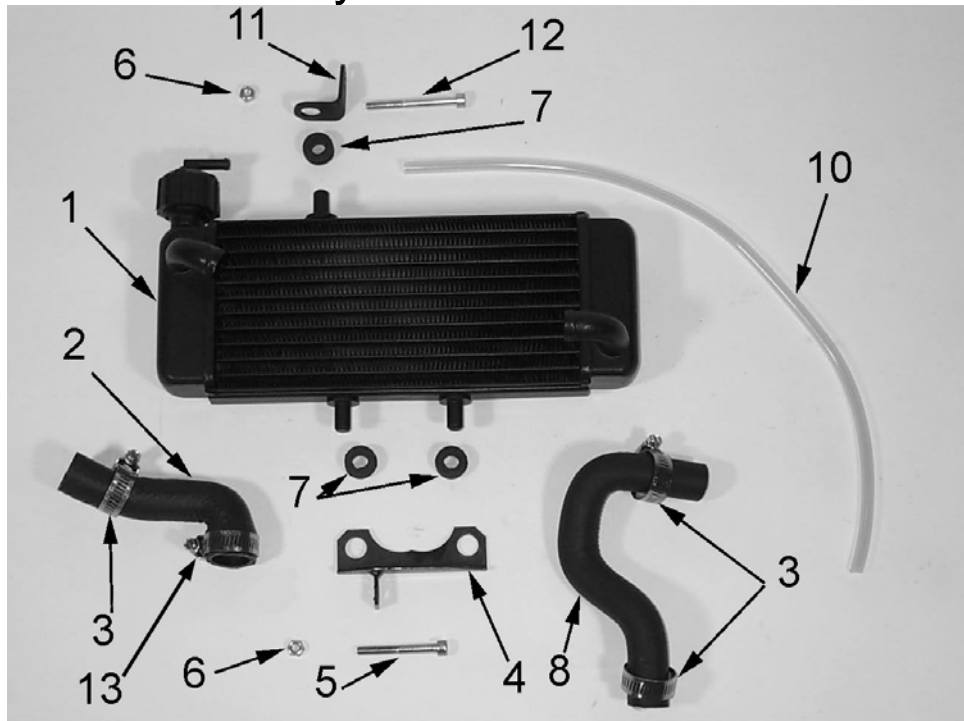


Figure 14

Coolant System		
REF #	PART #	DESCRIPTION
1	ECMU0061	RADIATOR WITH CAP
2	ECPW0002	RADIATOR HOSE LEFT
3	MCMUCL07	HOSE CLAMP STANDARD (three places)
4	ECHA0003	MOUNTING BRACKET – RADIATOR BOTTOM
5	HCBC0607	M6X50 SOCKET HEAD CAP SCREW
6	HCNL0601	6MM LOCK NUT
7	MCKGGR00	GROMMET – RADIATOR MOUNTING
8	ECPW0003	RADIATOR HOSE RIGHT
10	ECHA0002	VENT HOSE
11	ECHA0109	MOUNTING BRACKET – RADIATOR TOP
12	HCBC0660	M6X60 SOCKET HEAD CAP SCREW
13	MCMUCL11	HOSE CLAMP LARGE (one place)



# Parts – Electrical System

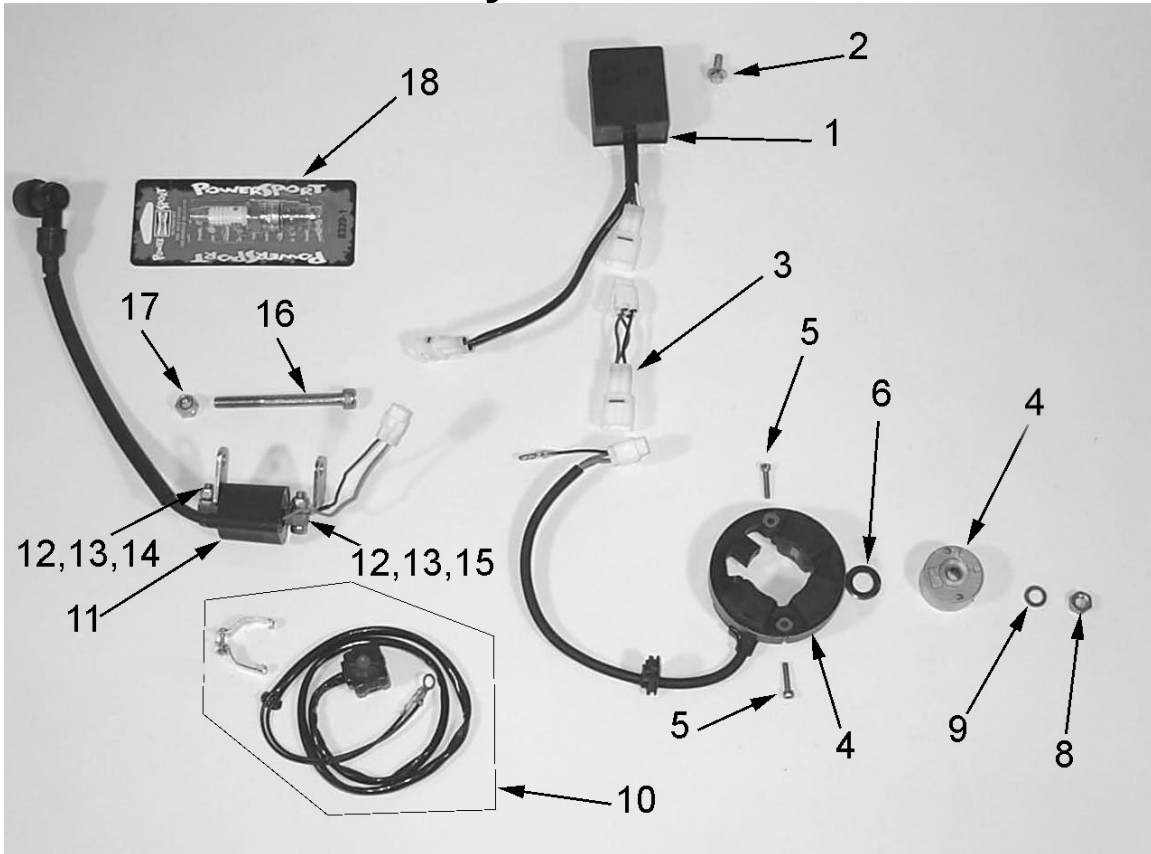


Figure 15

Electrical System		
REF #	PART #	DESCRIPTION
1	ECMOIG06	CDI UNIT
2	HCBF0616	M6X16 FLANGE HEAD BOLT
3		
4	ECMOIG01	STATOR & FLYWHEEL
5	HCBC0401	M4X18 SOCKET HEAD CAP SCREW
6	ECMOIG16	SPACER – FLYWHEEL
8	HCWF0801	8MM FLAT WASHER
9	HCNS0801	8MM NUT
10	FCMU0033	IGNITION CUT-OFF SWITCH ASSEMBLY
NOT SHOWN	MCOIWC01	WIRE CONNECTOR – MALE TO MALE PLUG
11	ECMOIG05	IGNITION COIL WITH SPARK PLUG CAP
12	HCBC0602	M6X20 SOCKET HEAD CAP SCREW
13	HCNL0601	6MM LOCKNUT
14	ECCP0001	COIL BRACKET – EITHER SIDE
15	ECCP0001	COIL BRACKET – EITHER SIDE
16	HCBC0804	M8X80 SOCKET HEAD CAP SCREW
17	HCNL0801	8MM LOCKNUT
18	ECMU0065	SPARK PLUG, CHAMPION (8339-1)
18H	ECMU0067	OPTIONAL HOTTER PLUG (8332-1)
18C	ECMU0066	OPTIONAL COLDER PLUG (8904-1)

# Parts – Engine – Bottom End & Transmission

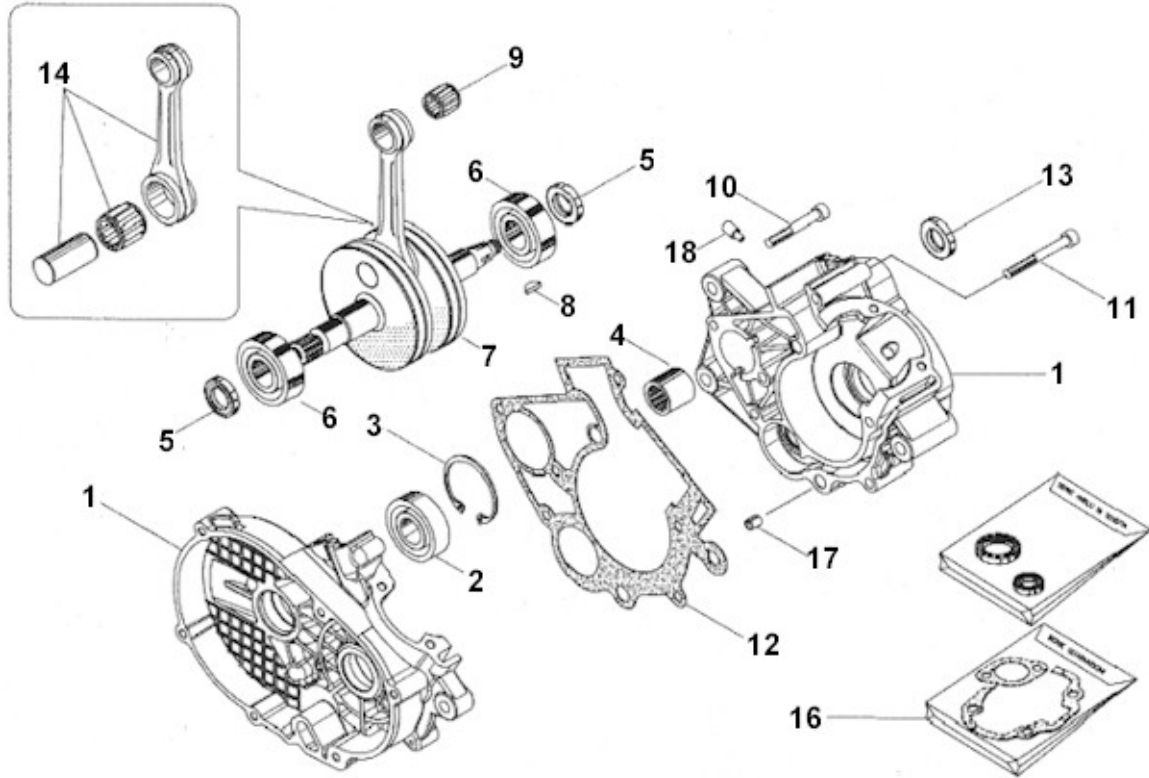
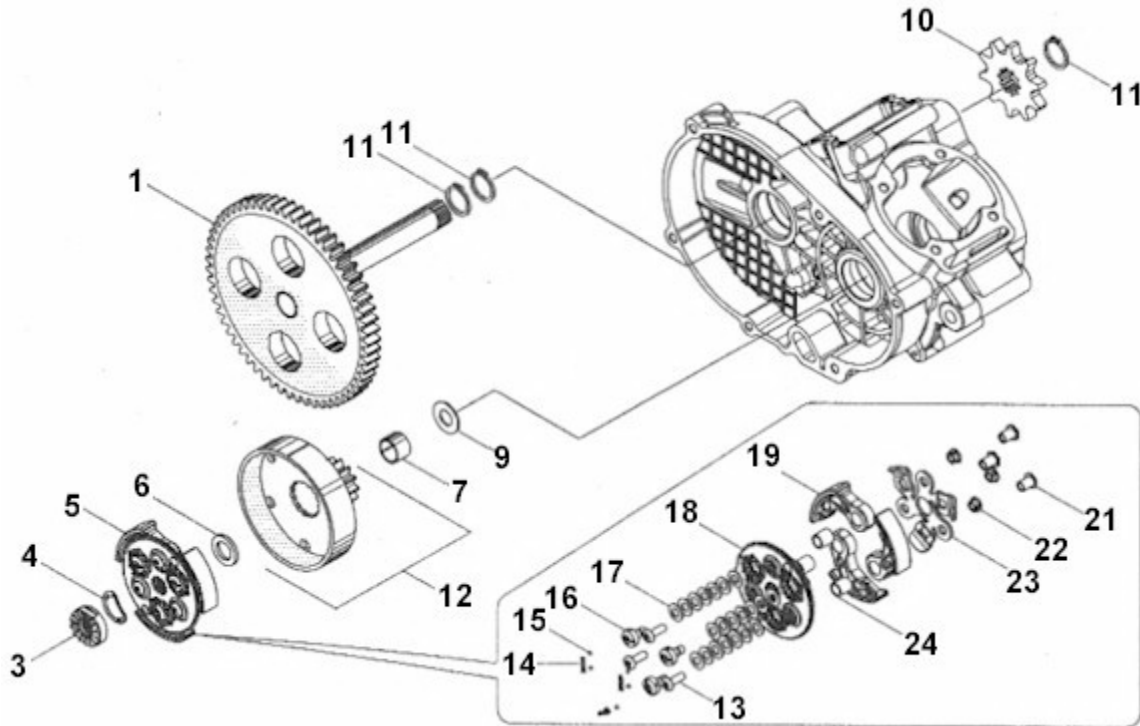


Figure 16

REF NO	PART NO	DESCRIPTION
1	ECMOBE01	CASES - COMPLETE SET
2	ECMOBE02	OUTPUT BEARING
3	ECMOBE03	OUTPUT BEARING - SNAP RING
4	ECMOBE04	PRECISION BEARING
5	ECMOBE05	CRANK SEAL
6	ECMU0016	CRANK BEARING
7	ECMOBE07	CRANKSHAFT COMPLETE
8	ECMOBE08	FLYWHEEL KEY
9	ECMU0077	WRIST PIN BEARING
10	HCBC0660	6X60 CAP SCREW
11	HCBC0607	6X50 CAP SCREW
12	ZCMOBE12	CRANKCASE GASKET
13	ECMOBE13	OUTPUT SEAL
14	ECMOBE14	ROD WITH WRIST PIN AND BEARING
15		S6 V/EC.+COM. SET OF SEAL
16	ZKMOBE16	GASKET KIT
17	ECMOBE17	DOWEL PIN - CASE
18	ECMOBE18	CASE VENT PIPE

## Parts – Engine – Clutch



**Figure 17** Clutch components

REF NO	PART NO	DESCRIPTION
1	ECMOCL01	GEAR - DRIVE
3	ECMOCL03	CLUTCH START NUT - LH THREAD
4	ECMOCL04	WASHER - CLUTCH NUT BACK UP
5	ECMOCL05	CLUTCH COMPLETE
6	ECMOCL06	SPACER - CLUTCH TO HUB
7	ECMOCL07	BUSHING - CLUTCH HUB
9	ECMOCL09	WASHER - CLUTCH BASKET BACK UP
10	PCMOCL10	SPROCKET - 10 TOOTH
11	ECMOCL11	SNAP RING - OUTPUT SHAFT
12	ECMOCL12	CLUTCH BASKET WITH GEAR
13	ECMOCL13	S6 TCBEI M5X14 SCREW FOR MASS.
14	ECMOCL14	ADJUSTING SPRING
15	ECMOCL15	S6 D.2,5 BALL
16	ECMOCL16	S6 SPECIAL-SCREW
17	ECMOCL17	FEDER ATAZZA 6.2X12X0.6 DIN 2093
18	ECMOCL18	CLUTH WASHER
19	ECMOCL19	CLUTCH SHOE
21	ECMOCL21	S6 CLUTCH PAWL
22	ECMOCL22	CLUTCH SCREW COUPLING
23	ECMOCL23	S6 CLUTCH SPRIG
24	ECMOCL24	BUSH

## Parts – Engine – Ignition Side

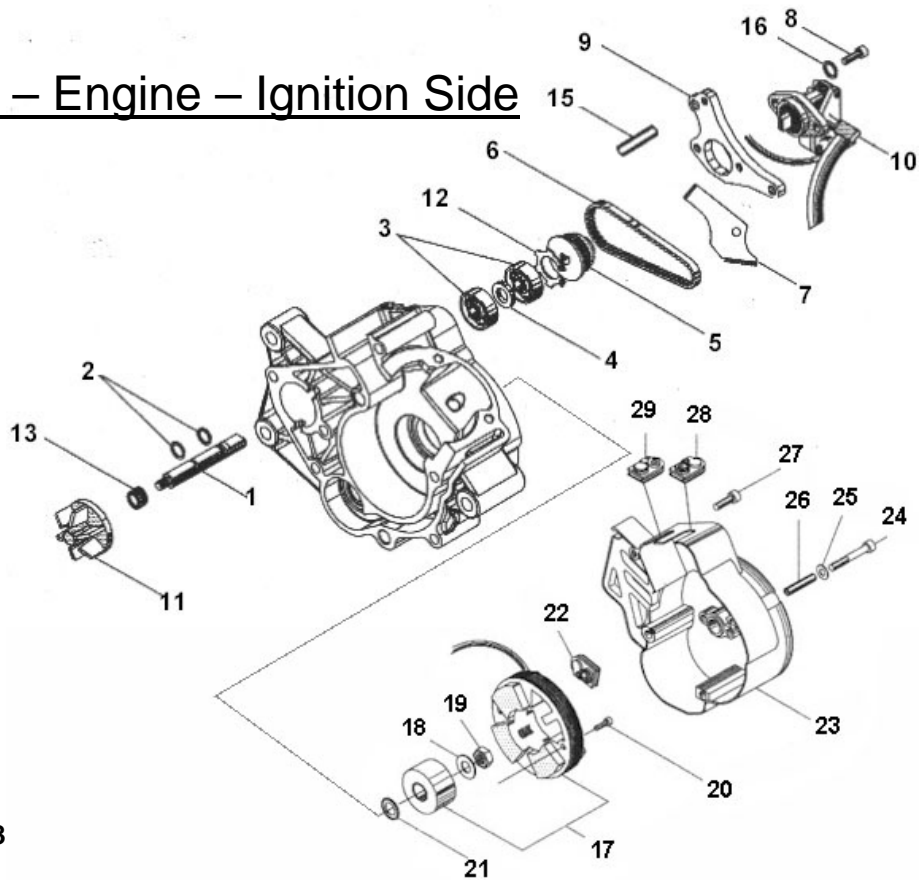


Figure 18

REF NO	PART NO	DESCRIPTION
1	ECMOWP01	WATER PUMP SHAFT
2	ECMOWP02	RETAINER CLIP - WATER PUMP BEARING
3	ECMOWP03	BEARING WATER PUMP
4	ECMOWP04	SPACER - WATER PUMP BEARING
5	ECMOWP05	CRANK PULLEY
6	ECMOWP06	WATER PUMP BELT
7	ECMPWP07	CLAMP FOR OIL TUBE
8	HCBC0501	5X12 CAP SCREW
9	ECMPWP09	OIL INJECTOR MOUNT PLATE
10	ECMPWP10	OIL PUMP WITH TUBE
11	ECMOWP11	WATER PUMP IMPELLER
12	ECMOWP12	SNAP RING - TOOTHED
13	ECMOWP13	WATER PUMP SEAL
14	ECMOWP14	WASHER - BEARING RETAINER
15	ECMPWP15	DOWEL PIN
16	HCWF0501	5MM WASHER
17	ECMOIG01	FLYWHEEL AND STATOR
18	HCWF0801	8MM FLAT WASHER
19	HCNS0801	8MM NUT
20	HCBC0401	M4X18 SOCKET HEAD CAP SCREW
21	ECMOIG16	SPACER – FLYWHEEL
22	ECMOIG20	GROMMET – FLYWHEEL
23	ECMOIG18	COVER – IGNITION
24	HCBC0550	M5X50 SOCKET HEAD CAP SCREW (3 REQ'D)
25	HCWF0501	5MM FLAT WASHER (4 REQ'D)
26	ECMOIG13	7MM DOWEL
27	HCBC0502	M5X20 SOCKET HEAD CAP SCREW (1 REQ'D)
28	ECMOIG15	GROMMET – IGNITION COVER - CLOSED
29	ECMOIG14	GROMMET – IGNITION COVER - OPEN

## Parts – Engine – Kick Starter

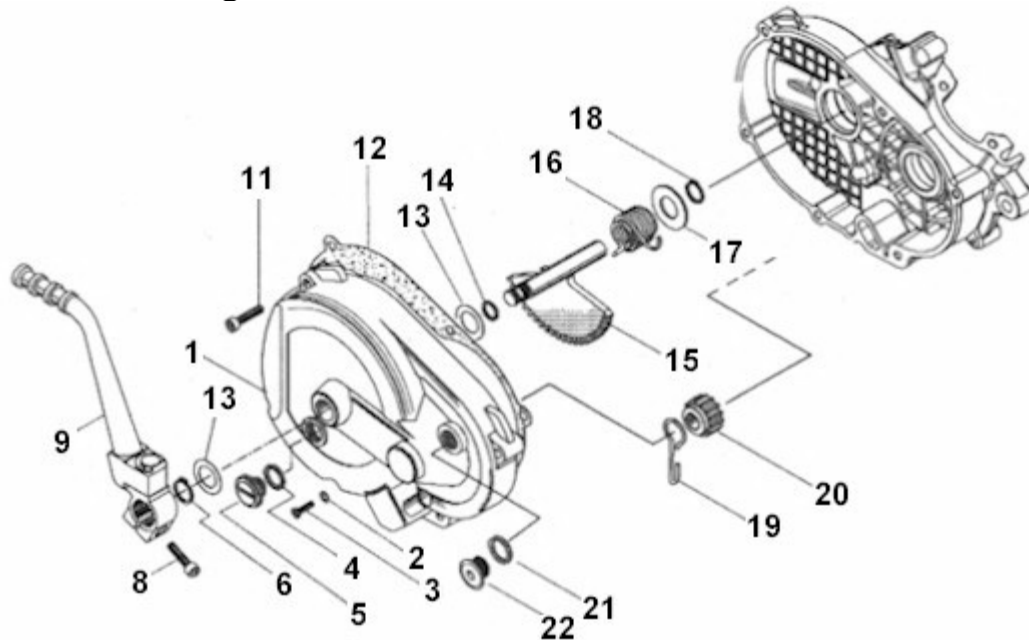


Figure 19

REF NO	PART NO	DESCRIPTION
1	ECMOKS01	CLUTCH COVER
2	ECMOKS02	CRUSH WASHER - WATER DRAIN PLUG
3	ECMOKS03	WATER DRAIN PLUG - 6X8
4	ZCMU0001	OIL FILL PLUG GASKET
5	ECMU0037	OIL FILL PLUG
6	ECMOKS06	RETAINER CLIP - THRUST WASHER
8	HCBC0625	6X25 CAP SCREW
9	ECMPKS09	KICK START LEVER
11	HCBC0603	6X30 CAP SCREW
12	ZCMOKS12	CLUTCH COVER GASKET
13	ECMOKS13	THRUST WASHER
14	ECMOKS14	SEAL - KICK START SHAFT
15	ECMOKS15	KICK START SHAFT WITH GEAR
16	ECMOKS16	KICK START SPRING
17	ECMOKS17	WASHER - RETURN SPRING RETAINER
18	ECMOKS18	RETAINER CLIP - RETURN SPRING
19	ECMOKS19	J-SPRING KICK START
20	ECMOKS20	DOG GEAR
21	ECMOKS21	GASKET - ADJUSTING PLUG
22	ECMOKS22	ADJUSTING PLUG

## Parts – Engine – Top End

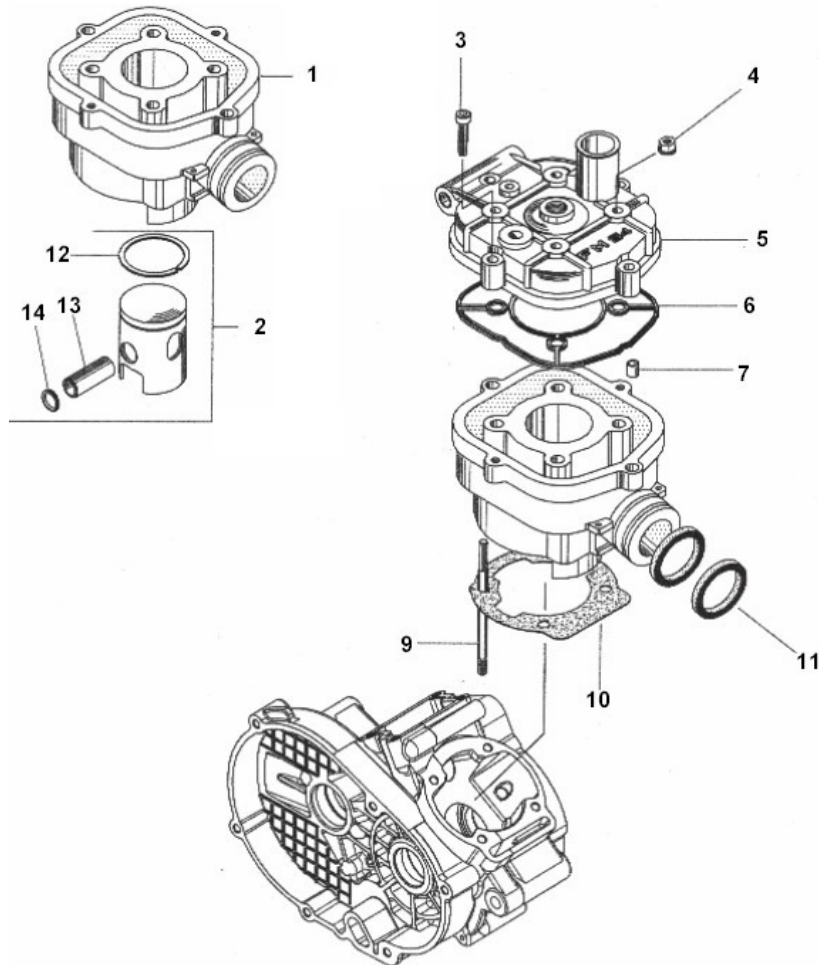


Figure 20

REF NO	PART NO	DESCRIPTION
1	ECMOTE01	CYLINDER - CHROME
2	ECMOTE02	PISTON KIT - SINGLE RING
3	HCBC0603	6X30 CAP SCREW
4	HCNF0601	FLANGED NUT 6MM
5	ECMOTE05	CYLINDER HEAD
6	ZCMOTE06	CYLINDER HEAD O-RING
7	ECMU0026	6MM DOWEL
9	ECMOTE09	CYLINDER HEAD STUD BOLT 6MM
10	ZCMOTE10	BASE GASKET
11	ZCMOTE11	O-RING - EXHAUST FLANGE
12	ECMU0056	PISTON RING - CAST
13	ECMU0076	WRIST PIN
14	ECMUSR04	SNAP RING-FRANCO PISTON

## Parts – Exhaust System

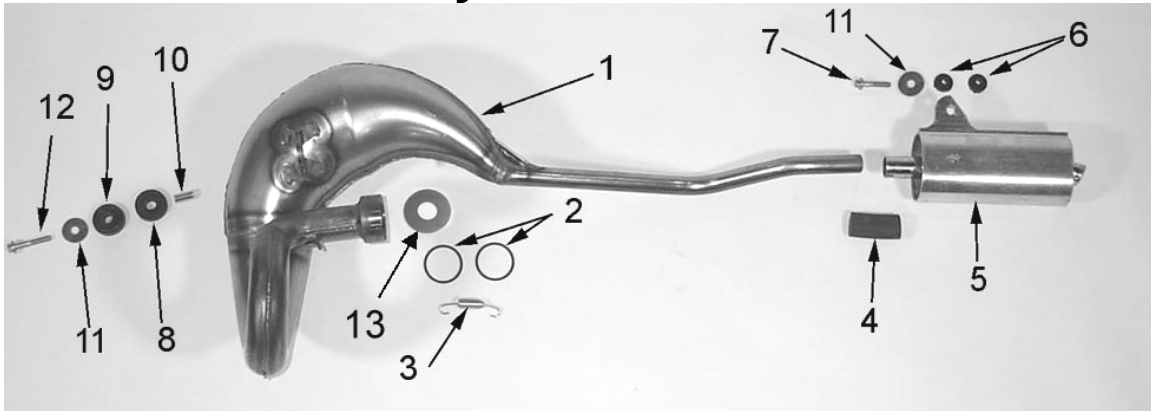


Figure 21

Exhaust System		
REF #	PART #	DESCRIPTION
1	XCPW2004	2004 PW EXHAUST PIPE
2	ZCMOTE11	O-RING – EXHAUST (2 REQ'D)
3	XCMU0005	SPRING – EXHAUST SHORT
4		PIPE / SILENCER SEAL
5	XCKG0003	SILENCER
NOT SHOWN	XCMU0027	SILENCER PACKING KIT
6	MCMUGR04	GROMMET – SILENCER MOUNTING (2 REQ'D)
7	HCBF0630	M6X30 FLANGE HEAD BOLT
8	MCMUGR06	PIPE GROMMET MALE
9	MCMUGR07	PIPE GROMMET FEMALE
10	MCMUSP02	PIPE GROMMET SPACER
11	HCWF1478	PIPE GROMMET WASHER
12	HCBF0635	M6X35 FLANGE HEAD BOLT
13	ECPW0001	Exhaust Power Regulator

## Parts – Forks and Triple Clamps

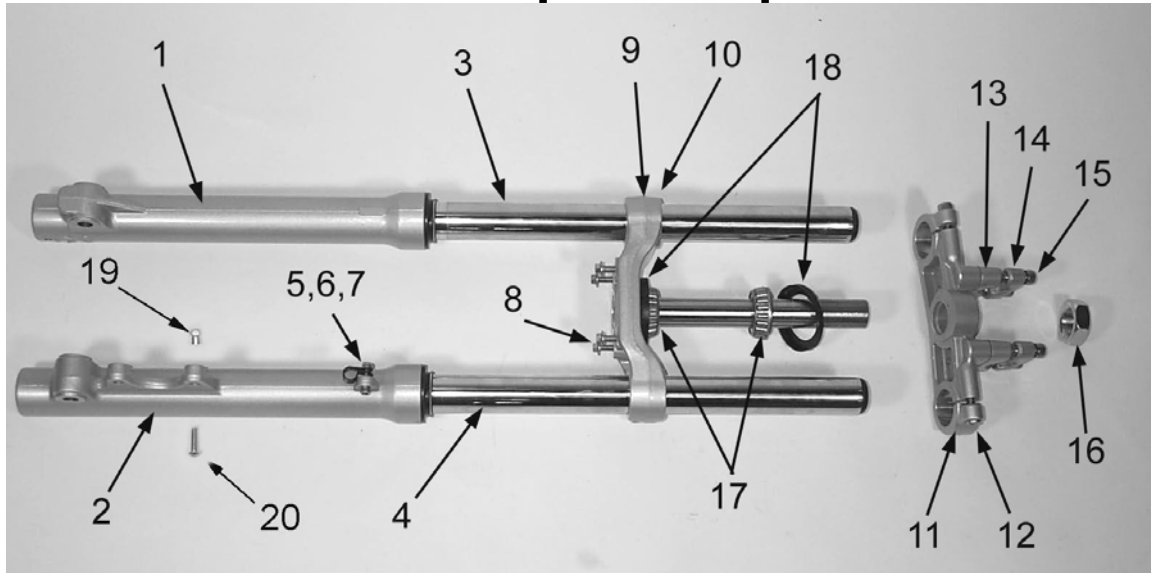


Figure 22

Front Forks and Triple Clamp		
REF #	PART #	DESCRIPTION
1	KCMZ0029	OUTER FORK LEG – RIGHT (NON BRAKE) SIDE
NOT SHOWN	KCMZ0031	OUTER FORK LEG ASSY – RIGHT WITH SEAL & SWIPER
NOT SHOWN	KAPW005R	FORK LEG COMPLETE – RIGHT SIDE
2	KCMZ0020	OUTER FORK LEG – LEFT (BRAKE) SIDE
NOT SHOWN	KCMZ0021	OUTER FORK LEG ASSY – LEFT WITH SEAL & SWIPER
NOT SHOWN	KAPW005L	FORK LEG COMPLETE - LEFT SIDE
3	KCMZ0026	INNER FORK LEG – RIGHT (COMPRESSION) SIDE
4	KCMZ0027	INNER FORK LEG – LEFT (REBOUND) SIDE
5	HCCC0001	CLAMP – BRAKE CABLE
6	HCBC0502	M5X20 SOCKET HEAD CAP SCREW
7	HCNL0501	5MM LOCK NUT
8	HCBF0616	FENDER BOLT, M6X16 FLANGE HEAD (4 REQ'D)
9	KCMZ0025	TRIPLE CLAMP – LOWER WITH STEM
10	HCBC0625	M6X25 SOCKET HEAD CAP SCREW (4 REQ'D)
11	KCMZ0005	TRIPLE CLAMP – UPPER (NO BAR MOUNTS)
12	HCBC0806	M8X30 SOCKET HEAD CAP SCREW (2 REQ'D)
13	KCMZ0003	BAR MOUNT – LOWER (2 REQ'D)
14	KCMZ0002	BAR MOUNT – UPPER (2 REQ'D)
15	KCMZ0001	M8X50 SOCKET HEAD CAP SCREW
16	HCNJ0101	STEERING HEAD NUT 1X14
17	FCMU0004	STEERING HEAD BEARING (2 REQ'D)
18	FCMU1103	DUST COVER (2 REQ'D)
19	BCMU0007	BRAKE STOP
20	HCBH0808	M8X30 BUTTON HEAD SCREW



Parts –  
Forks –  
Leg  
Assembly

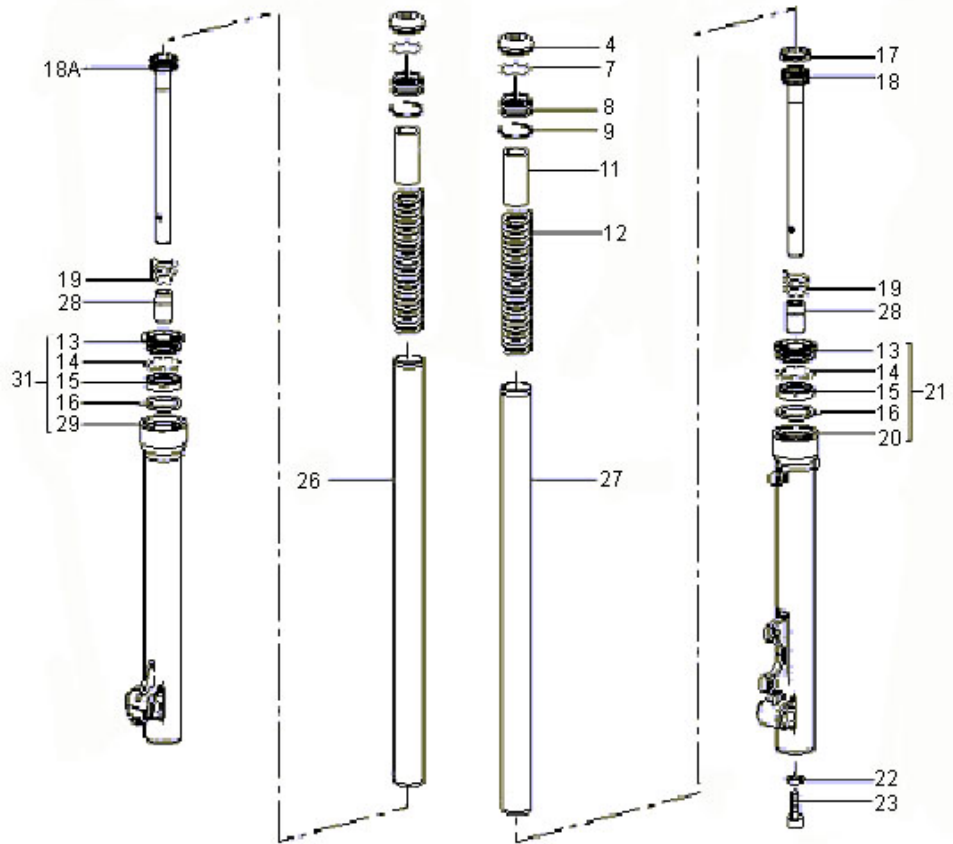


Figure 23

REF #	PART #	DESCRIPTION
4	KCMZ0004	FORK PLUG – BLACK
7	KCMZ0007	SNAP RING FOR FORK CAP
8	KCMZ0008	INNER FORK CAP - WHITE
9	KCMZ0009	O-RING UNDER FORK CAP
11	KCMZ0011	PRELOAD SLEEVE
12	KCMZ0012	FORK SPRING
13	KCMZ0013	SWIPER
14	KCMZ0014	SNAP RING
15	KCMZ0015	FORK SEAL
16	KCMZ0016	WASHER
17	KCMZ0017	SEALING RING FOR REBOUND PISTON
18	KCMZ0018	PISTON ROD - REBOUND
18A	KCMZ0018A	PISTON ROD - COMPRESSION
19	KCMZ0019	REBOUND SPRING
20	KCMZ0020	FORK LEG OUTER LEFT
21	KCMZ0021	FORK LEG – 5 PIECE UNIT – LEFT
22	HCWC0000	WASHER
23	HCBC0806	8 X 30 CS
26	KCMZ0026	FORK TUBE – INNER RIGHT
27	KCMZ0027	FORK TUBE – INNER LEFT
28	KCMZ0028	TOP OUT BUMPER
29	KCMZ0029	FORK LEG – OUTER RIGHT
31	KCMZ0031	FORK LEG – 5 PIECE UNIT – RIGHT
32	HCBC0609	6 X 20 CS

## Parts – Frame – Mounting Hardware I

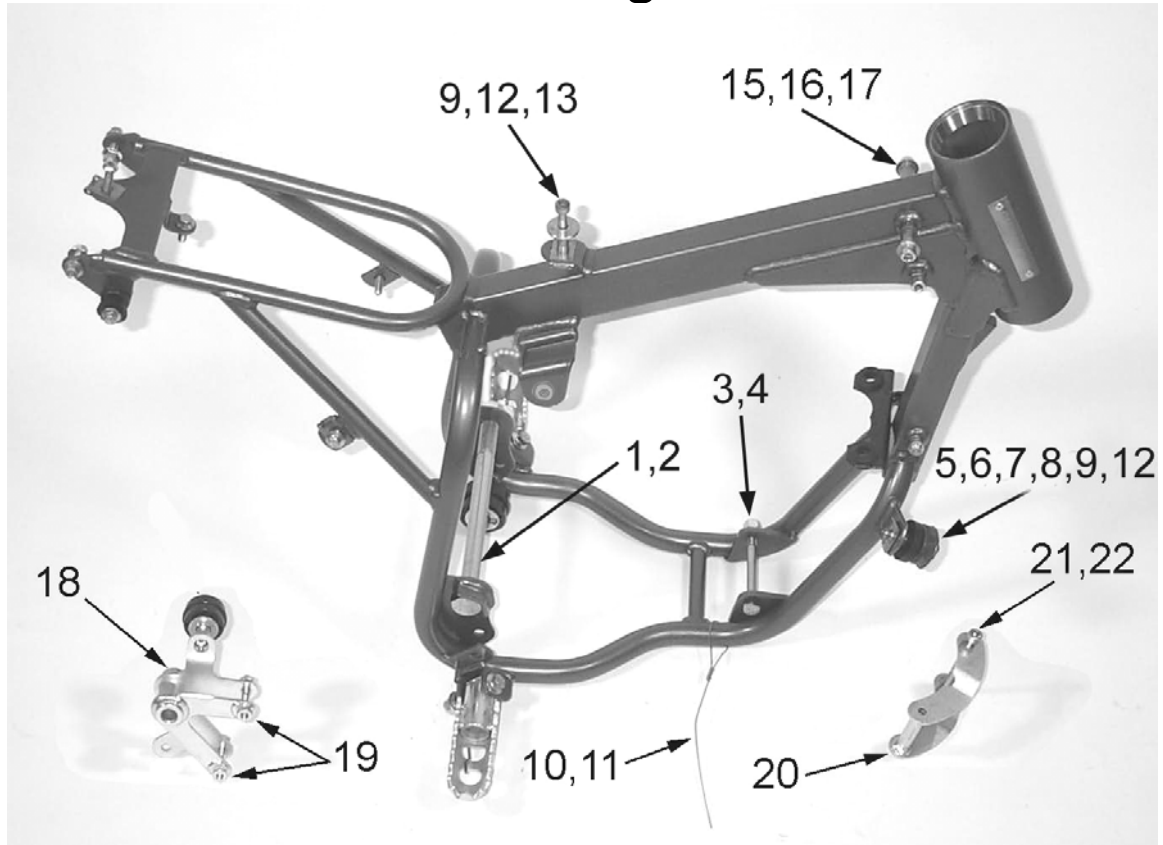


Figure 24

Frame – Engine, Tank, and Pipe Mounts, Brake Snake		
REF #	PART #	DESCRIPTION
	FAMU0004	FRAME 2004 CM50
1	HCBH1403	SWINGARM BOLT
2	HCNL1402	SWINGARM LOCK NUT (M14X1)
3	HCBH0880	M8X80 SOCKET HEAD CAP SCREW
4	HCNL0801	8MM LOCKNUT
5	MCMUGR06	PIPE GROMMET MALE
6	MCMUGR07	PIPE GROMMET FEMALE
7	MCMUSP02	PIPE GROMMET SPACER
8	HCWF1478	PIPE GROMMET WASHER
9	HCHA0003	6MM CLIPNUT
10	BCMU0008	CABLE – BRAKE SNAKE
11	BCMU0009	CRIMP – BRAKE SNAKE
12	HCBF0635	M6X35 FLANGE HEAD BOLT
13	TCHA0004	BUSHING – REAR TANK MOUNTING
15	HCNL0601	6MM LOCKNUT
16	TCHA0006	BUSHING – FRONT TANK MOUNT (2 REQ'D)
17	HCBF0685	M6X85 SHCS
18	FAOI0002	ENGINE MOUNT ASSEMBLY – REAR
19	HCBH0845	M8X45 HEX HEAD CAP SCREW
20	FCOI0001	ENGINE MOUNT ASSEMBLY – FRONT
21	HCBH0880	M8X80 HEX HEAD CAP SCREW
22	HCNL0801	8MM LOCK NUT

## Parts – Frame – Mounting Hardware II

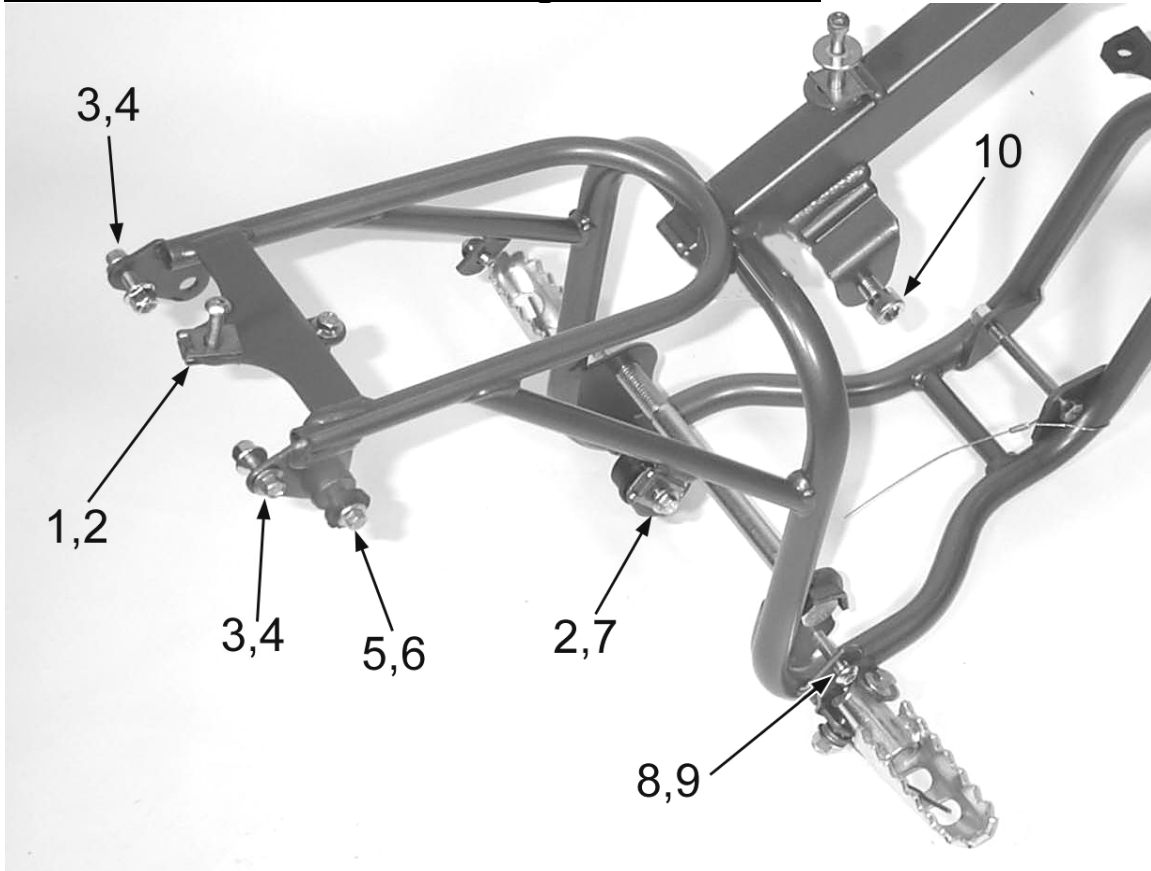


Figure 25

Frame – Seat, Fender, Right Side Panel, Brake Pedal, Silencer & Shock Mounts		
REF #	PART #	DESCRIPTION
	FAMU0004	FRAME 2004 CM50
1	HCBB0635	M6X35 BUTTON HEAD CAP SCREW
2	HCHA0003	6MM CLIPNUT
3	HCBF0620	M6X20 FLANGE HEAD BOLT
4	HCNF0602	6MM NYLOC FLANGE NUT
5	HCBF0630	M6X30 FLANGE HEAD BOLT
6	MCMUGR04	GROMMET – SILENCER (2 REQ'D)
7	HCBF0616	M6X16 FLANGE HEAD BOLT
8	HCBB0803	M8X40 BUTTON HEAD SCREW
9	HCNL0801	8MM LOCK NUT
10	HCBC1001	M10X45 SOCKET HEAD CAP SCREW

## Parts - Frame – Mounting Hardware III

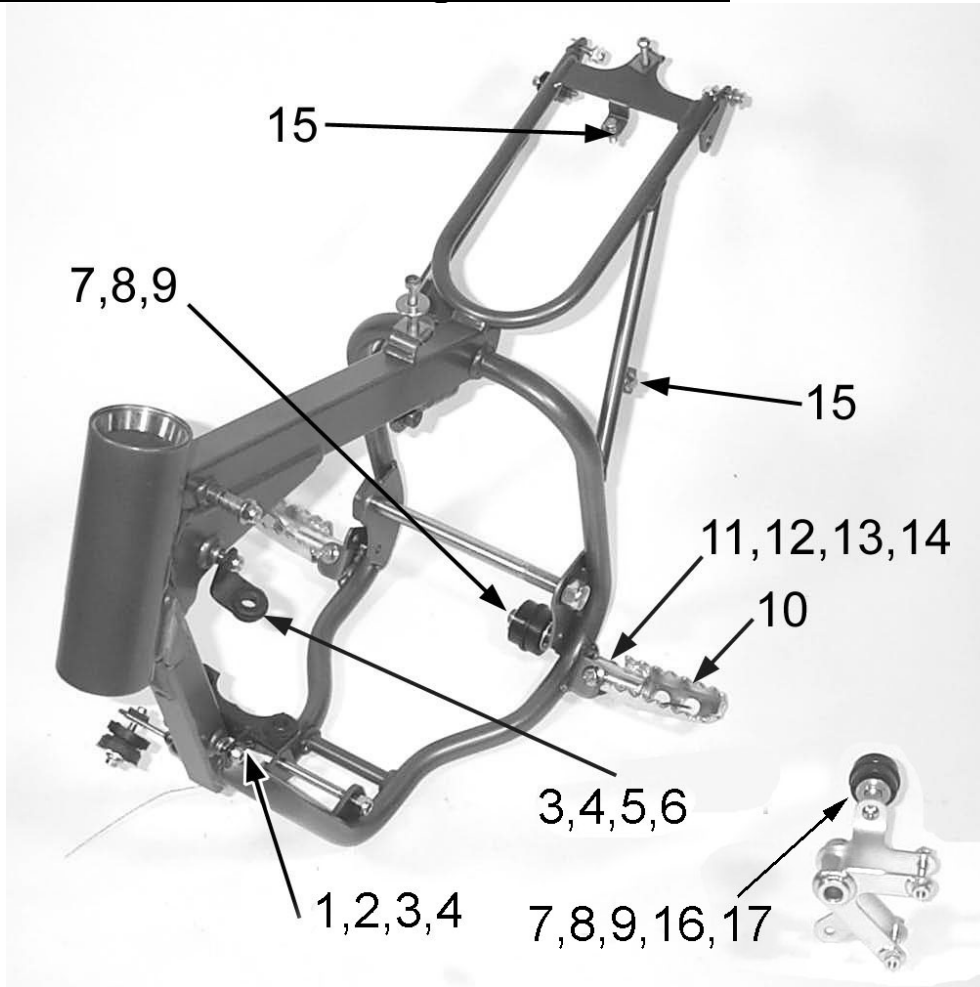


Figure 26

Frame – Radiator, Footpeg, Chain Roller, and Airbox Mounts		
REF #	PART #	DESCRIPTION
	FAMU0004	FRAME 2004 CM50
1	ECHA0003	MOUNTING BRACKET – RADIATOR BOTTOM
2	HCBC0607	M6X50 SOCKET HEAD CAP SCREW
3	HCNL0601	6MM LOCK NUT
4	MCKGGR00	GROMMET – RADIATOR MOUNT (2 REQ'D ON BOTTOM, 1 ON TOP BRACKET)
5	ECHA0109	MOUNTING BRACKET – RADIATOR TOP
6	HCBC0660	M6X60 SOCKET HEAD CAP SCREW
7	FCMU0057	CHAIN ROLLER
8	HCWF1201	WASHER FLAT, CHAIN ROLLER (2 REQ'D)
9	HCCP0002	COTTERPIN 3/32 X 1 (2 REQ'D)
10	TCMU0014	FOOTPEGS (SET OF 2)
11	TCMU0102	SPRINGS – FOOTPEG (SET OF 2)
12	HCBB0804	M8X50 BUTTON HEAD BOLT
13	HCWF5601	FLAT WASHER
14	HCNL0801	8MM LOCK NUT
15	HCBF0616	M6X16 FLANGE HEAD BOLT
16	HCBB0802	M8X20 BUTTON HEAD BOLT
17	FCOI0003	CHAIN ROLLER SHAFT

# Parts – Front Brakes

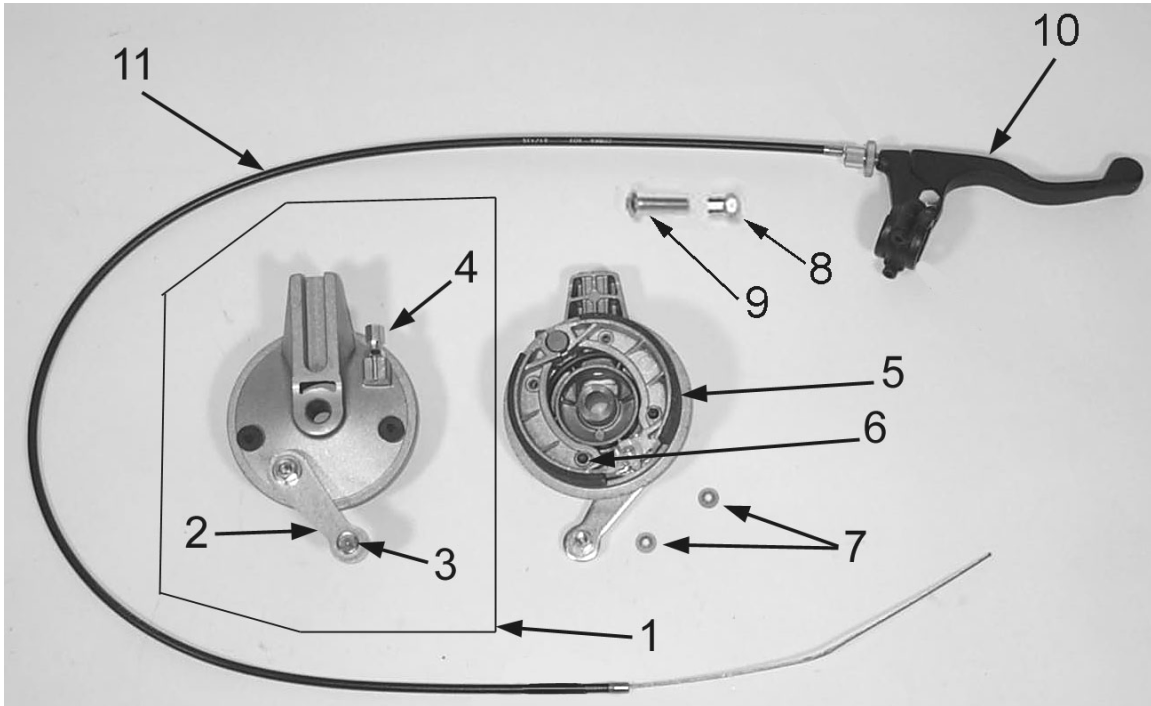


Figure 27

Front Brakes		
REF #	PART #	DESCRIPTION
1	WCPW0103	BRAKE HUB – FRONT
2	BCMU0113	BRAKE ARM – FRONT
3	BCMU0005	CABLE CLAMP, WASHER & NUT
4	BCMU0006	CABLE ADJUSTOR
5	BCMU0110	BRAKE SHOE (PAIR)
6	BCMU0010	SPRING – BRAKE RETURN
7	BCMU0011	PUSH NUT – BRAKE SPRING (2 REQ'D)
8	BCMU0007	BRAKE STOP
9	HCBH0808	M8X30 BUTTON HEAD SCREW
10	BCMU0100	BRAKE LEVER / PERCH ASSEMBLY WITH ADJUSTOR
11	BCMU0108	BRAKE CABLE
NOT SHOWN	BCMU0013	LEVER PIVOT COVER

# Parts – Front Wheel

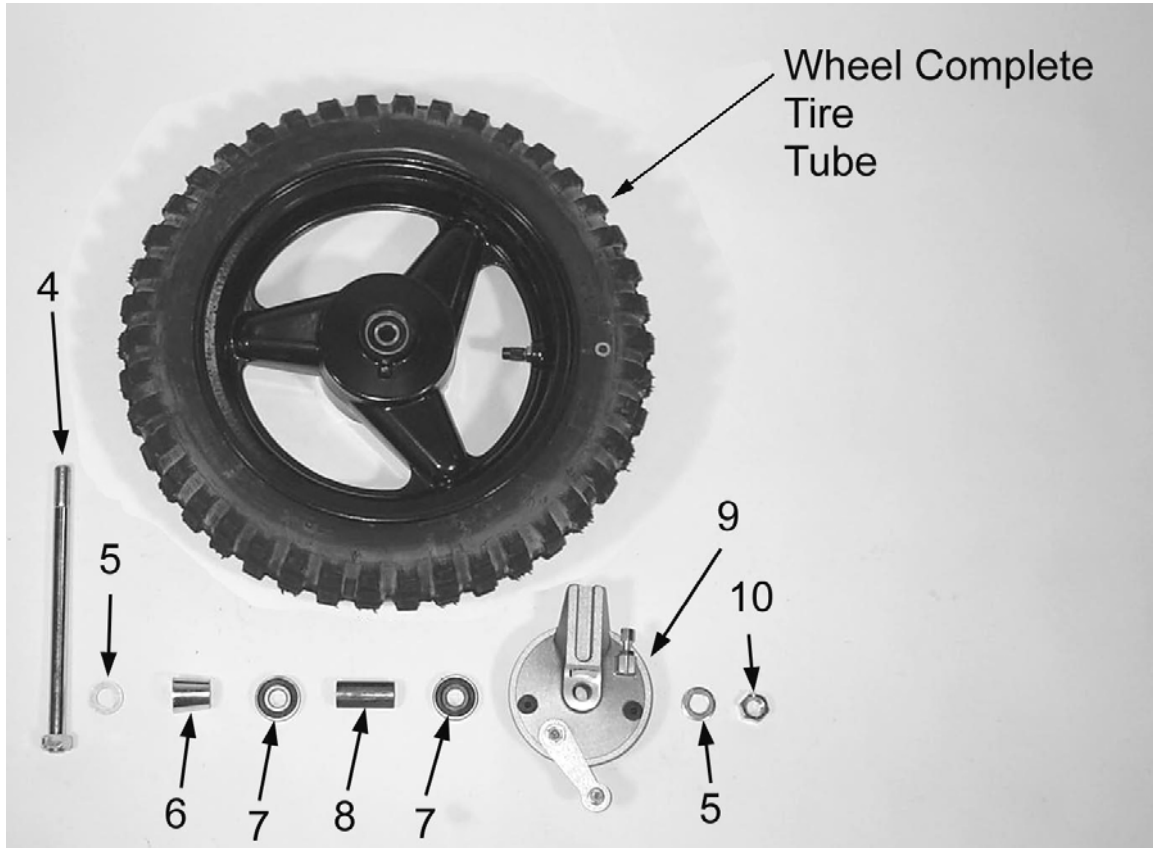


Figure 28

Front Wheel		
REF #	PART #	DESCRIPTION
1	WAPW0001	FRONT WHEEL COMPLETE
NOT SHOWN	WCPW0001	RIM WITH BEARINGS
2	WCMU0018	FRONT TIRE
3	WCMUTU10	TUBE 10"
4	WCMU0014	FRONT AXLE
5	HCWF1202	WASHER – AXLE
6	WCPW0005	FRONT WHEEL SPACER
7	WCMU0020	BEARING – WHEEL (2 REQ'D)
8		SPACER – WHEEL BEARING FRONT
9	WCPW0003	BRAKE HUB – FRONT
10	HCNS1201	NUT - AXLE

## Parts – Oil Reservoir



Figure 29

Oil Reservoir		
REF #	PART #	DESCRIPTION
	TCPW0101	OIL RESERVOIR WITH FITTING
	TCPW0005	FITTING – OIL RESERVOIR
	MCMUCL06	CLAMP - HOSE
	TCPW0002	CAP – OIL RESERVOIR
	TCPW0004	HOSE – OIL INJECTION
	ZCPW0001	O’RING – FITTING SEAL

## Parts – Plastic Bodywork & Seat

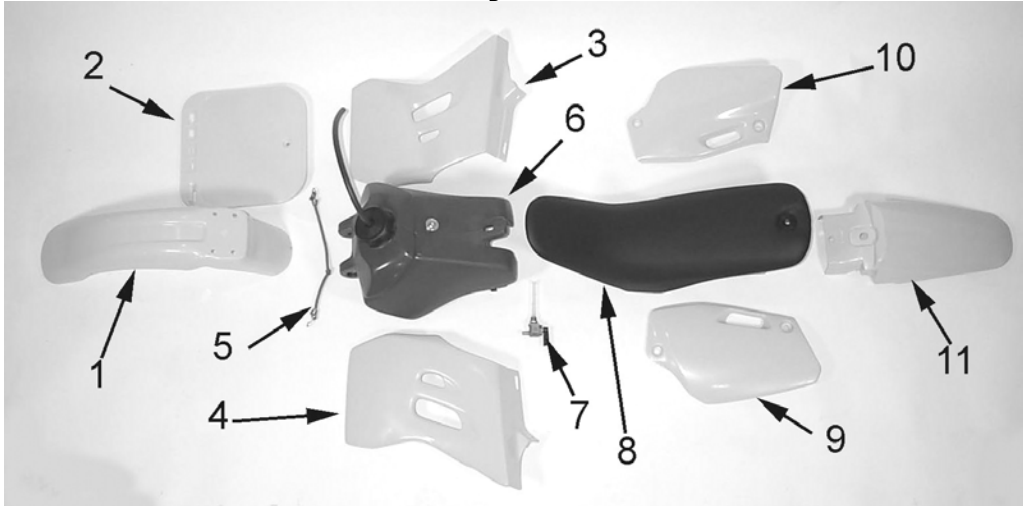


Figure 30

Plastic and Seat		
REF #	PART #	DESCRIPTION
NOT SHOWN	TCMU0020	GRAPHIC KIT
NOT SHOWN	TCMU0020	GRAPHIC KIT
1	TCHA0107	FRONT FENDER
NOT SHOWN	HCBF0616	FENDER BOLT, M6X16 FLANGE HEAD (4 REQ'D)
2	TCMU0005	NUMBER PLATE - FRONT
NOT SHOWN	HCBF0635	M6X35 FLANGE HEAD BOLT – FRONT NUMBER PLATE MOUNT
NOT SHOWN	TCKG0001	SPACER – FRONT NUMBER PLATE
3	TCHA0008	RADIATOR SHROUD - RIGHT
4	TCHA0009	RADIATOR SHROUD - LEFT
5	MCMUBC01	BUNGEE CORD – SHROUD HOLDING
6	TCHA0001	FUEL TANK – NOT COMPLETE
NOT SHOWN	TCHA0002	CAP – FUEL TANK
NOT SHOWN	TCHA0003	HOSE – FUEL CAP
NOT SHOWN	HCSF0620	M6X20 PHILIPS HEAD SCREW – SEAT & SHROUD HOLD
NOT SHOWN	TCHA0005	SPACER – SEAT & SHROUD HOLD
NOT SHOWN	TCHA0006	SPACER – FRONT TANK MOUNT (2 REQ'D)
NOT SHOWN	HCBC0685	M6X85 SHCS – FRONT TANK MOUNT
NOT SHOWN	HCNL0601	6MM LOCK NUT – FRONT TANK MOUNT BOLT
NOT SHOWN	HCBC0645	M6X45 SOCKET HEAD CAP SCREW
NOT SHOWN	TCHA0004	BUSHING – REAR TANK MOUNTING
7	TCMU0000	FUEL PETCOCK '06 STYLE LEVER
Not Shown	FCMU0026	FUEL LINE
Not Shown	MCMUCL04	HOSE CLAMPS – FUEL LINE
8	TCHO0001	SEAT
NOT SHOWN	HCBB0635	M6X35 BUTTON HEAD CAP SCREW – SEAT HOLDING
9	TCHA0011	NUMBER PLATE – LEFT REAR
NOT SHOWN	HCBF0616	M6X16 FLANGE HEAD BOLT – FRONT SECURE
NOT SHOWN	HCBF0620	M6X20 FLANGE HEAD BOLT – FENDER & REAR SECURE
NOT SHOWN	HCNF0602	6MM NYLOC FLANGE NUT
10	TCHA0010	NUMBER PLATE – RIGHT REAR
NOT SHOWN	HCBF0616	M6X16 FLANGE HEAD BOLT – FRONT SECURE
NOT SHOWN	HCBF0620	M6X20 FLANGE HEAD BOLT – FENDER & REAR SECURE
NOT SHOWN	HCNF0602	6MM NYLOC FLANGE NUT
11	TCHA0112	FENDER – REAR
NOT SHOWN	HCBF0616	M6X16 FLANGE HEAD BOLT – FENDER & AIRBOX SECURE



# Parts – Rear Brake

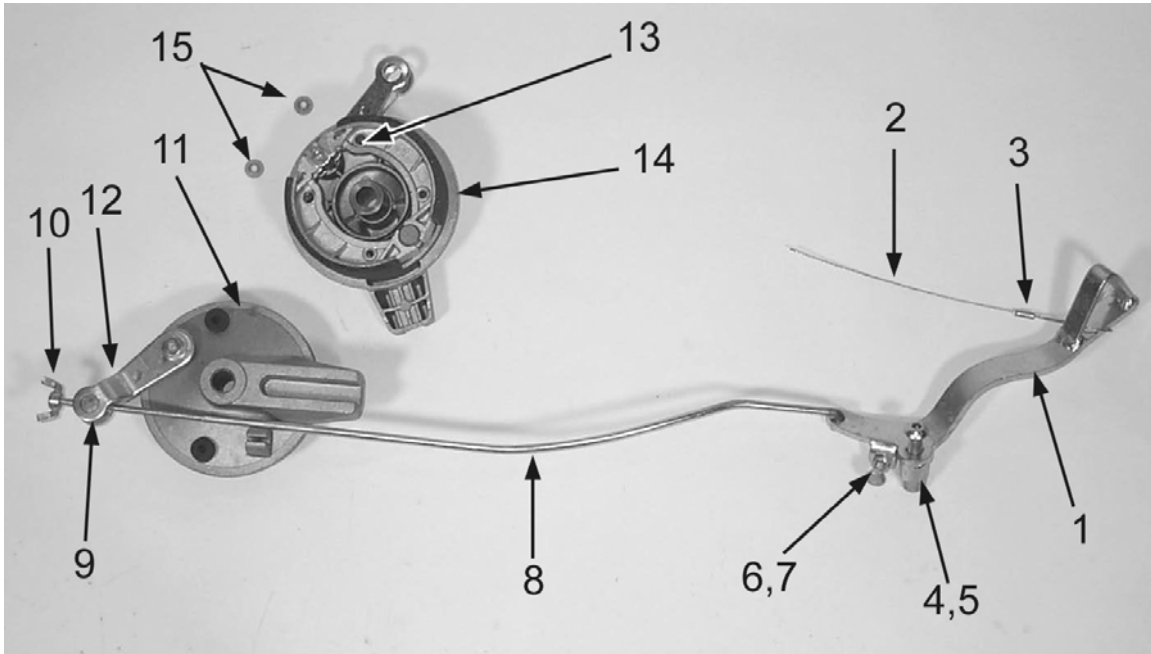


Figure 31

Rear Brake System		
REF #	PART #	DESCRIPTION
1	BAMU0000	BRAKE PEDAL
2	BCMU0008	CABLE – BRAKE SNAKE
3	BCMU0009	CRIMP – BRAKE SNAKE
4	HCBB0803	M8X40 BUTTON HEAD SCREW
5	HCNL0801	8MM LOCK NUT
6	HCBH0602	M6X25 HEX HEAD BOLT (BRAKE STOP ADJUST)
7	HCNS0601	6MM NUT
8	BCCM0105	BRAKE ROD
9	BCMU0111	BRAKE ROD BARREL
10	HCNW0001	BRAKEROD WINGNUT
11	WCPW0004	BRAKE HUB - REAR
12	BCMU0112	BRAKE ARM – REAR
13	BCMU0010	SPRING – BRAKE RETURN
14	BCMU0110	BRAKE SHOE (PAIR)
15	BCMU0011	PUSH NUT – BRAKE SECURE (2 REQ'D)
16	HCCP0001	COTTER PIN - 3/32 X 1/2
17	HCWF0502	5MM FLAT WASHER

# Parts – Rear Wheel

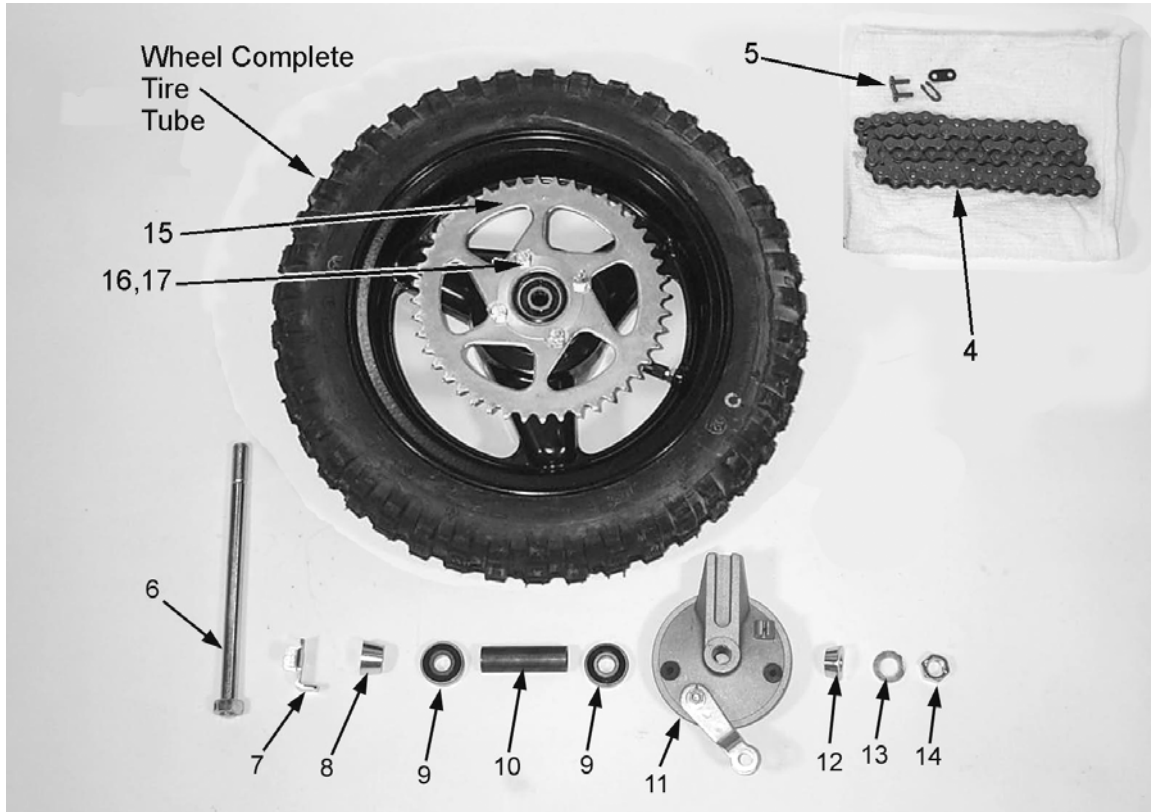
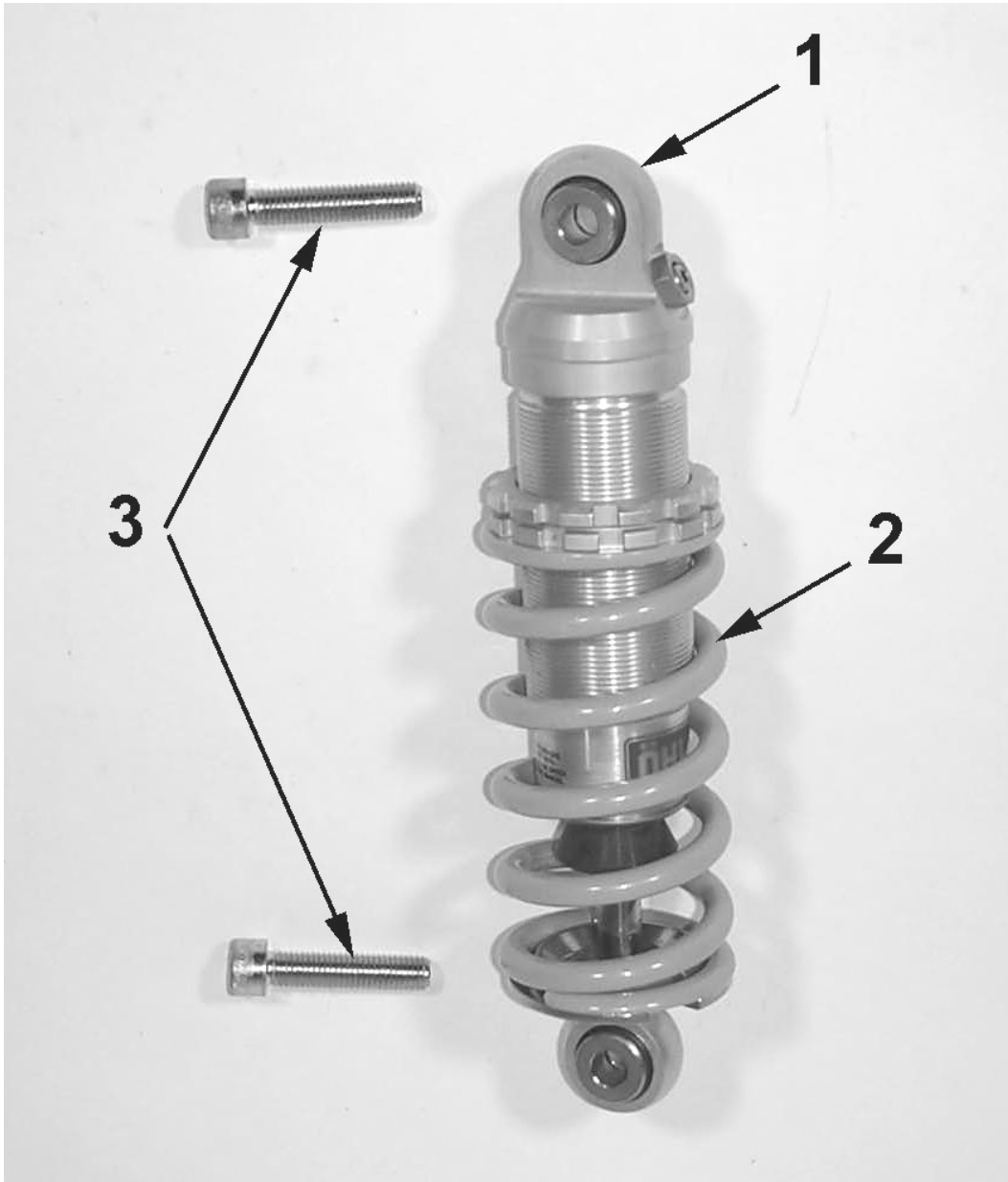


Figure 32

Rear Wheel		
REF #	PART #	DESCRIPTION
1	WAPW0002	WHEEL COMPLETE – REAR
NOT SHOWN	WCPW0002	RIM WITH BEARINGS
2	WCMU0018	TIRE – REAR
3	WCMUTU10	TUBE – 10"
4	PCMU0100	CHAIN –100 LINKS 420
5	PCMU0001	MASTER LINK – 420 CHAIN
6	WCMU0016	REAR AXLE
7	HCPA0002	AXLE HEAD FIXING PLATE
8	WCMU0001	REAR WHEEL SPACER, LARGE (SPROCKET SIDE)
9	WCMU0020	WHEEL BEARING (2 REQ'D)
10	WCMU0003	WHEEL BEARING SPACER - REAR
11	WCPW0004	BRAKE HUB - REAR
12	WCPW0007	REAR WHEEL SPACE, SMALL (BRAKE SIDE)
13	HCWF1202	WASHER – AXLE
14	HCNS1201	NUT – AXLE
15	PCMU0144	SPROCKET – 44T
16	WCPW0008	PLATE – SPROCKET BOLT HEAD LOCK
17	HCBH0701	M7X35 HEX HEAD BOLT (4 REQ'D)

# Parts – Shock



**Figure 33**

REAR SHOCK		
REF#	PART #	DESCRIPTION
1	SAPW2004	SHOCK ABSORBER
2	SCMUOH05	SPRING – STANDARD (285 lb/in) yellow
	SCMUOH04	SPRING – LIGHT (275 lb/in) red
	SCMUOH06	SPRING – HEAVY (295 lb/in) white
3	HCBC1001	M10X45 SHCS

## Parts – Swingarm Assembly

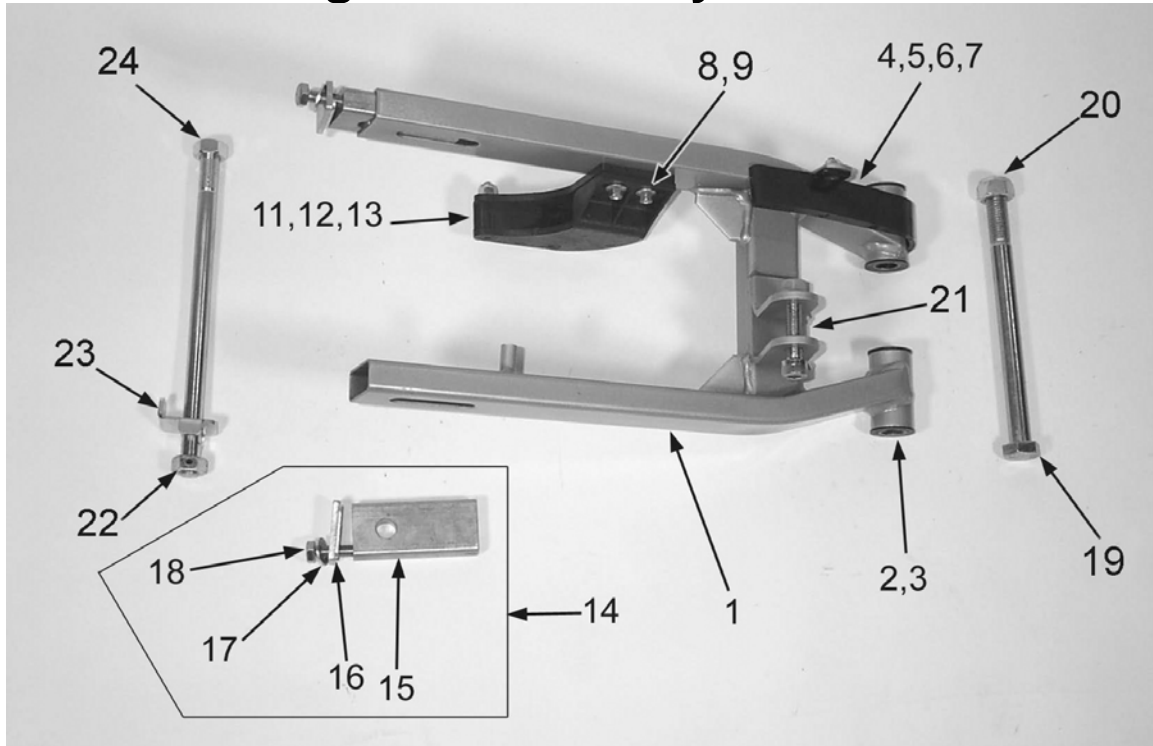


Figure 34

Swingarm		
REF #	PART #	DESCRIPTION
	GACM2004	SWINGARM ASSEMBLY (CONTAINS ITEMS 1 - 13)
1	GAMU0004	SWINGARM
2	GCMU0001	SWINGARM BUSHING (SINGLE PIECE)
3	GCMU0009	SPACER - PIVOT TUBE
4	GCMU0017	CHAIN GUARD
5	HCFH0516	M5X16 FLAT HEAD SCREW
6	HCWF0501	5MM FLAT WASHER
7	HCNL0501	5MM LOCK NUT
8	HCBF0620	M6X20 FLANGE HEAD BOLT (2 REQ'D)
9	PKOI 0001	CHAIN GUIDE – ASSEMBLY COMPLETE
11	PCKG0004	CHAIN GUIDE - BOTTOM SLIDER
12	HCBFT640	M6 X 40 FLAT HEAD BOLT
13	HCNL0601	6MM LOCKNUT
14	FAMU0005	WHEEL PULL ASSEMBLY
15	FCMU0203	WHEEL PULL
16	FCMU0202	WHEEL PULL ENDCAP
17	HCWF5601	5/16" FLAT WASHER
18	HCBH0810	M8X65 HEX HEAD BOLT (FULL THREAD)
19	HCBF1403	SWINGARM PIVOT BOLT
20	HCNL1402	14MM LOCK NUT
21	HCBC1001	M10X45 SOCKET HEAD CAP SCREW
22	WCMU0016	AXLE BOLT
23	HCPA0002	AXLE HEAD FIXING PLATE
24	HCNS1201	12MM LOCKNUT

# Service

## Engine

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

If you don't feel comfortable with the service work, log on to [www.cobramotorcycle.com](http://www.cobramotorcycle.com) to find a Cobra dealer or Call 517 437 9100.

## Clutch

If the adjustment, or 'timing', of the three shoes becomes unbalanced, clutch engagement will not be performed adequately as one shoe attempts to engage before another. To readjust the timing one must remove the clutch from the engine and 'retime' it on the Morini clutch fixture (ECMU0069).

### Tools recommended for clutch timing:

- Morini clutch nut socket
- Torque wrench
- Morini clutch fixture

### Procedure

1. Drain the coolant
2. Drain the clutch lubricant
3. Remove the clutch cover
4. Remove the clutch nut with the Morini clutch nut socket

### CAUTION:

The clutch nut has LEFT HAND THREADS. Remove it with clockwise rotation of the tool.

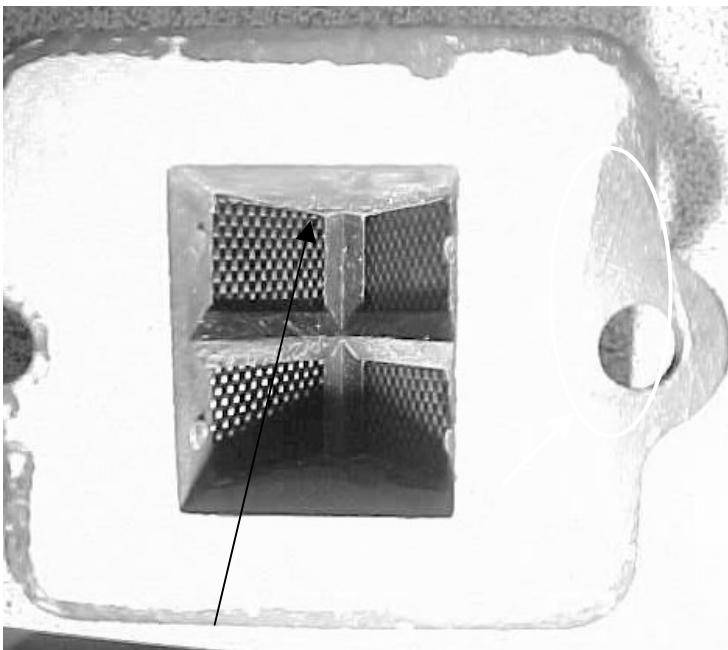
5. Clean and dry the clutch
6. Install it in the Morini clutch fixture with a washer underneath and secure with the nut and tighten by hand (when properly positioned, the clutch rotation will be limited as the end of a shoe will come in contact with the threaded pin).
7. Using a torque wrench set to 75 in-lb, rotate the center nut holding the clutch to the fixture. This will load the shoe in contact with the threaded pin, making it 'spring' out towards the measurement pin.
8. Adjust the clutch spring adjustment screw until the clearance between the shoe and measurement pin is 0.013" (0.33mm) while the being loaded with 75 in-lb (8.5 Nm) torque applied to center nut.
9. Reposition the clutch to the other two shoes and adjust in a similar manner.

10. Reinstall the clutch in the engine and torque the clutch nut to 30 ft-lb (42 Nm).
11. Reinstall clutch cover
12. Add coolant and clutch lubricant

## 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. (See figure 35)



**Figure 35**

The presence of light indicates that the reeds should be replaced, or possibly turned over.

# Carburetor

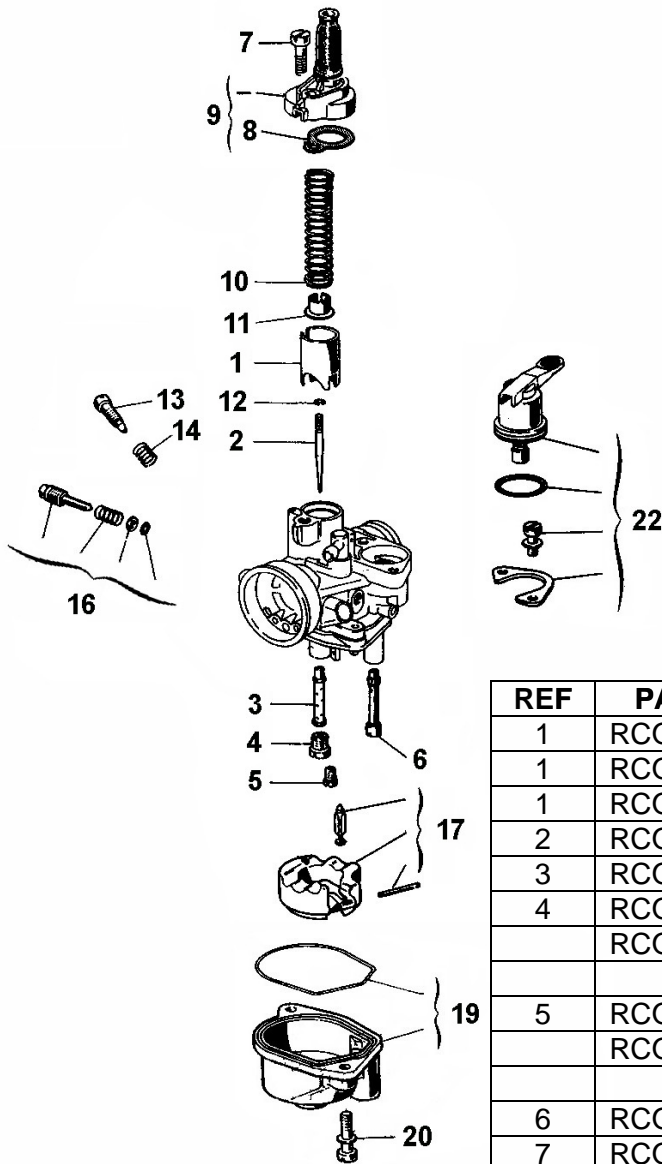


Figure 36, carburetor

REF	PART #	DESCRIPTION
1	RCOI0001	SLIDE - 40 - STOCK
1	RCOI0030	SLIDE - 30
1	RCOI0050	SLIDE - 50
2	RCOI0002	NEEDLE FOR SLIDE
3	RCOI0003	ATOMIZER
4	RCOI0004	MAIN JET-82 STOCK
	RCOI00##	ADDITIONAL MAIN JETS, 74 - 94 <i>EXAMPLE RCOI0094 FOR 94 MAIN</i>
5	RCOI0005	PILOT JET-42 STOCK
	RCOI00##	ADDITIONAL PILOT JETS, 38 - 45 <i>EXAMPLE RCOI0045 FOR 45 PILOT</i>
6	RCOI0006	CHOKE JET
7	RCOI0007	TOP CARB SCREW
8	RCOI0008	O-RING FOR CARB TOP
9	RCOI0009	CARB TOP W/ O-RING
10	RCOI0010	SLIDE SPRING
11	RCOI0011	NEEDLE RETAINER PLATE
12	RCOI0012	NEEDLE CLIP
13	RCOI0013	IDLE ADJUSTMENT SCREW
14	RCOI0014	IDLE ADJUSTMENT SPRING
16	RCOI0016	FUEL MIXTURE SCREW KIT-4 PIECE
17	RCOI0017	FLOAT KIT - 3 PIECES
19	RCOI0019	FLOAT BOWL WITH O-RING - 2 PC
20	RCOI0020	BOTTOM CARB SCREW
22	RCOI0022	CHOKE ASSEMBLY - 4 PIECES
23	RCOI0023	REBUILD KIT

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 2 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.

**NOTE:** Also before changing jetting, insure that your carburetor has a proper float height of 5

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.

### STOCK CARBURETOR SETTINGS

The 2004 PW3 stock carburetor settings from the factory are:

- 42 pilot jet
- 82 main jet
- Air screw ½ to 3 turns out

### Cleaning the carburetor:

#### **⚠ WARNING**

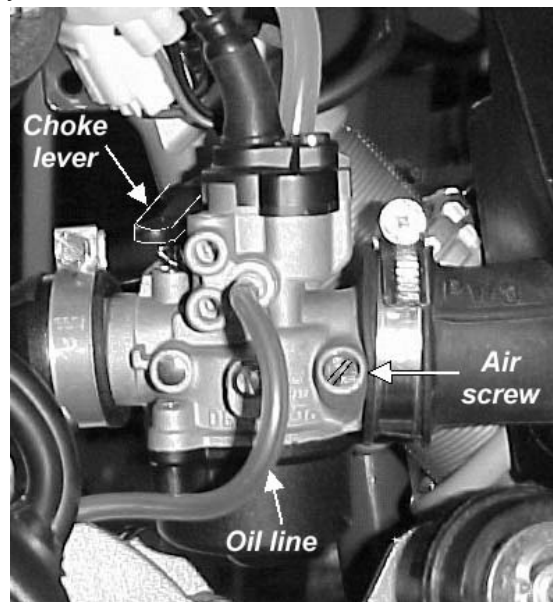
Clean the carburetor in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area; this includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvent to clean the carburetor.

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

#### **CAUTION:**

1. 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 37.

**Figure 37** Proper carburetor installation.



# 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.

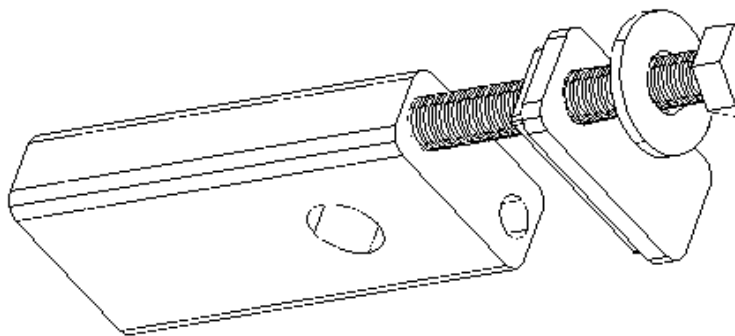
## CAUTION:

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 38

## 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).

# Tuning

## 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 (optional 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. Fork height
    - 1.3.1. Rise in clamps for quicker turning.
    - 1.3.2. Lower in clamps for improved straight line stability.
2. Rear shock
  - 2.1. Shock spring (optional spring)
    - 2.1.1. Stiffer spring – stiffer throughout the travel.
    - 2.1.2. Less stiff spring – less stiff throughout the travel.
  - 2.2. Compression damping (optional valve)
    - 2.2.1. Harder (more damping, slower) – adds resistance to the suspension motion when the suspension is compressing.
    - 2.2.2. Softer (less damping, quicker) – reduces resistance to the suspension motion when the suspension is compressing.
  - 2.3. Rebound damping (optional valve)
    - 2.3.1. Harder (more damping, slower) – adds resistance to the suspension motion when the suspension is returning to full length.
    - 2.3.2. Softer (less damping, quicker) - reduces resistance to the suspension motion when the suspension is returning to full length

### Front Forks Bottoming Too Frequently

### Fork oil level

If the front forks bottom harshly more than a couple of times per lap and the fork springs are proper for the weight of rider (as detailed above), try raising the fork oil level in increments of 10mm. Raising the fork oil level, reduces the air volume, and increases the stiffness of the forks late in the travel, thus adding a progressive' feel.

### Front forks feel too stiff over small bumps.

### Fork oil weight

If the forks feel too stiff over small bumps try decreasing the weight (increasing the viscosity) of the fork oil.

## Rear suspension troubleshooting.

## Damping

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 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

## 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.

## Rear shock

The rear shock on your Cobra is adjustable to your riders weight and riding style by changing the spring rate (stiffness) of the spring and / or by changing the damping valves.

Due to the complexities of the shock absorber internals, Cobra recommends that you either send the shock back to us for damping valve changes or send the shock to a competent suspension specialist such as PR2.

Cobra offers stiffer and softer shock springs depending on the weight of your rider. See the Parts Shock section or the Optional component section at the beginning of the manual for these other components.

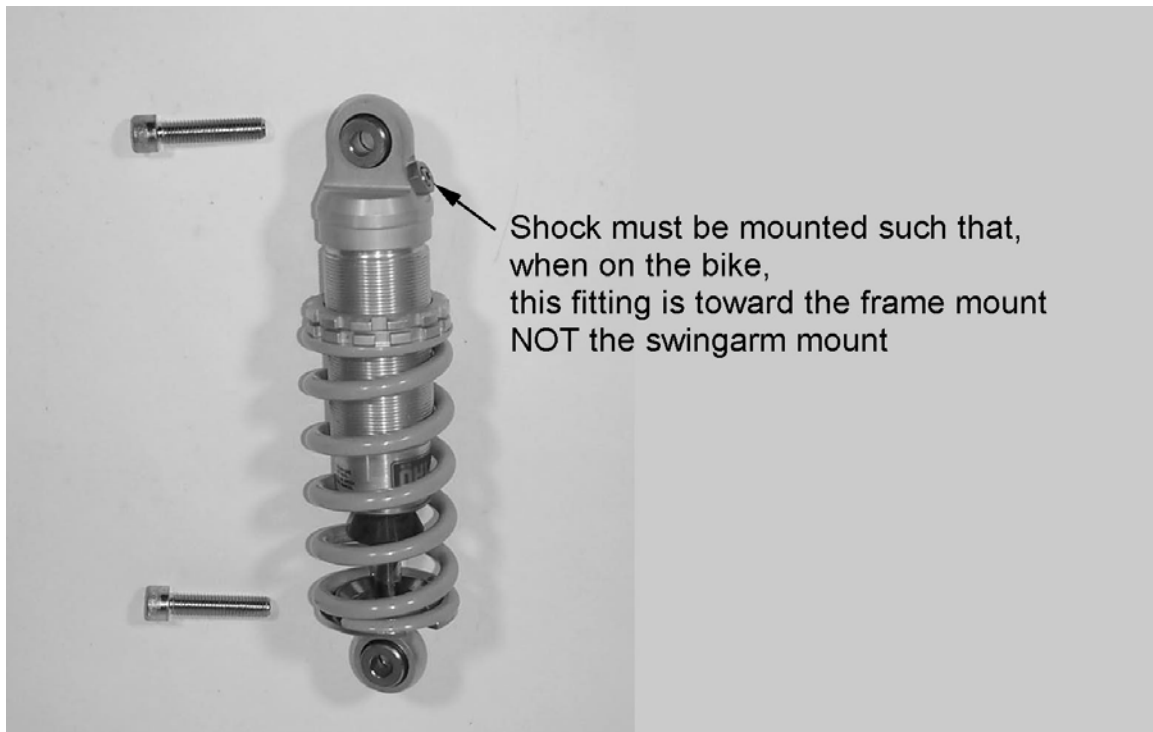


Figure 40

## Front Forks

Cobra offers stiffer and softer fork springs depending on the weight of your rider. See the Parts Shock section or the Optional component section at the beginning of the manual for these other components.

The front forks are designed with the damping components in separate fork legs. The **compression damping** duties are performed in the **right fork leg** and the **rebound damping** duties are performed in the **left fork leg**. This allows easy adjustment of the damping characteristics by appropriately changing the viscosity of the fork oil in the fork leg controlling the damping characteristic that needs changed.

Example: if stiffer compression damping is required, switch from 20 (standard) weight fork oil to 25 or 30 weight oil in the right leg. If softer rebound damping is desired, switch from 20 (standard) to 15 or 10 weight fork oil in the left leg.

### **NOTE:**

Fork oil level affects bottoming harshness, and oil viscosity affects valving speed.

# Gearing

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

What happens with improper gearing?

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

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

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

Front Sprocket	Rear Sprocket	Gear Ratio
10	37	3.70
	11	3.73
10	38	3.80
	11	3.82
10	39	3.90
	11	3.91
10	40	4.00
	11	4.00
	11	4.09
10	41	4.10
	11	4.18
10	42	4.20
10	43	4.30
10	44	4.40
10	45	4.50
10	46	4.60

Ratio Write © Cobra  
R&D 2004

## Carburetion

Although your Cobra is sent from the factory with the carburetor jetted for optimal performance, you may find it necessary to adjust 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.

<b>Environmental and altitude related mixture adjustments</b>		
<b>Condition</b>	<b>Mixture will be</b>	<b>Required adjustment</b>
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).



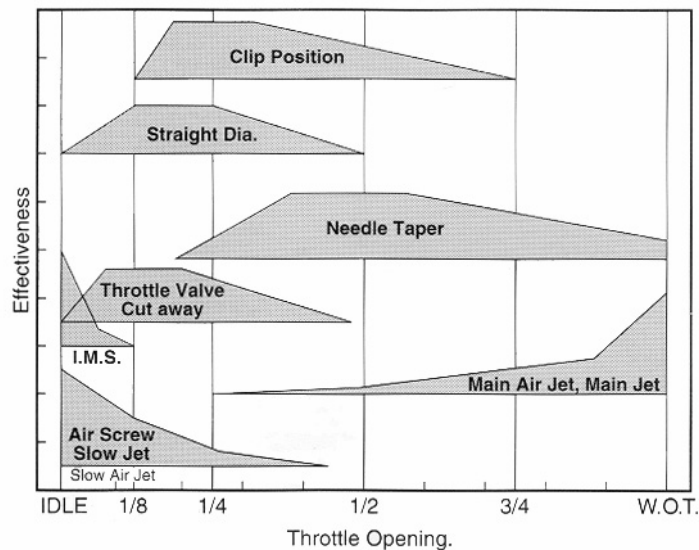


Figure 59

**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 screw driver for adjustment. After adjusting for maximum idle speed, use the idle screw to adjust the desired idle speed.

**NOTE:**

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

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

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

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

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

**PART THROTTLE Adjust for desired acceleration**

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

# Troubleshooting

## **1) Engine 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 WD40 or the like
- 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)
- e) Exhaust pipe
  - i) Has excess carbon buildup
  - ii) Has large dent in it
- f) Compression is low
  - i) Piston
  - ii) Rings
- g) Reeds are damaged
- h) 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

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