



16<sup>th</sup> June 2009 001/2009

### Service Bulletin

**Safety recall for replacements of 3<sup>rd</sup>, 4<sup>th</sup> gear and main shaft.  
Models: Bullet Electra EFI/ Bullet EFI / Bullet Classic EFI**

#### **Purpose**

Royal Enfield has determined that a condition relating to motor vehicle safety exists on certain **Bullet Electra EFI/ Bullet EFI / Bullet Classic EFI model motorcycles**.

These motorcycles may experience 3<sup>rd</sup> gear galling on the clutch shaft due to sudden oil starvation, when the motorcycle is driven at speeds above 100 KMPH (70 MPH) continuously in top gear. This condition can possibly cause the 3<sup>rd</sup> gear to seize to the main shaft resulting in a rear wheel lock up. A squealing noise may occur prior to this failure. However there may be cases where there is no warning. This could result in a crash which could cause serious injury or death to the rider. .

In the interest of motor vehicle safety and customer satisfaction, Royal Enfield is initiating a voluntary recall, of certain affected motorcycles, to replace the 3<sup>rd</sup>, 4<sup>th</sup> gear and main shaft.

You are required to perform the recall service on all affected vehicles in your inventory prior to delivering, renting or leasing these motorcycles.

As required by law, you may sell but **not deliver** any affected motorcycles to your customers, dealers until the remedy is completed.

#### **Motorcycles Affected**

This recall applies to certain **Bullet Electra EFI / Bullet EFI / Bullet Classic EFI model motorcycles**.

#### **Customer Notification**

You will need to identify the individual customers to whom the motorcycles, as given in the list, has been sold, either directly or through your dealer network and send them appropriate notice with direction to bring the motorcycle in for the recall service.

To protect the safety of our riders, it is our mutual responsibility to ensure the recall service is performed on all affected motorcycles. Therefore, we strongly urge you to perform the recall service even if the motorcycle was not purchased from your dealership.

A modification kit is available to perform the replacements on the affected motorcycle and these kits are sent to you from the factory at no charge and transportation paid. The detail of the kit is enclosed (Annexure 1). If additional kits are required please inform by email and the same will be sent to you.

RE recognizes that in some places, sufficient labor resources with the time and skills may not be available to expediently complete the repairs. We fully expect RE Authorized distributors and their dealers to recruit additional local mechanics to effect this safety recall. Based on mutual agreement with RE authorized distributors, experienced and trained personnel from the factory will be sent at our expense for handholding and providing "on the job training" to the local personnel to effect the recall service effectively..

Once a month, we expect to collate information across all sources on the overall status of this recall and will appreciate if you can coordinate with your dealers and send us a consolidation of the recalls done for the week in the format that is attached (Annexure 2).

It is unfortunate that this recall campaign has become necessary. However, we believe that it is also an opportunity to demonstrate to our customers that their trust and faith in our motorcycles, our brand, and our company are soundly placed. If we execute this together with precision, it is possible that we will come out of it with our reputation actually enhanced. We know that you will communicate this effectively with our dealers.

**FILING A WARRANTY CLAIM:**

After performing each replacement please use the existing claim form to provide details of the motorcycle on which the parts have been replaced and the requisite labor time and other consumables etc at our agreed man hour rates.

Please do not hesitate to get in touch with me for any further clarifications.

Thank you again for working with us on this. We value your business and look forward to continuing our good partnership.

Sincerely,  
V. Vikram  
Head, International Service  
Royal Enfield Chennai

**SERVICE PROCEDURE:**

- **Refer to the detailed step by step procedure specific to engine disassembly and reassembly procedure, attached to this bulletin.**
- **Wash the motorcycle thoroughly before performing a engine removal from the frame**
- **Disconnect the battery terminals and remove the battery to prevent an accidental short circuit with could cause serious injury or death and in addition damage to the motorcycle.**
- **Place the motorcycle on a suitable vehicle ramp for the convenience to attend to the motorcycle and secure the motorcycle properly so as to avoid it falling over which could cause serious injury or death and in addition damage to the motorcycle.**
- **Store the removed components carefully and in a sequence for ease of reassembly and to minimize the labor time.**
- **Ensure cosmetic parts like painted components, fuel tank etc are stored carefully and away from work area to avoid accidental damage to the same. Take special care when removing and reinstalling the extra accessories.**

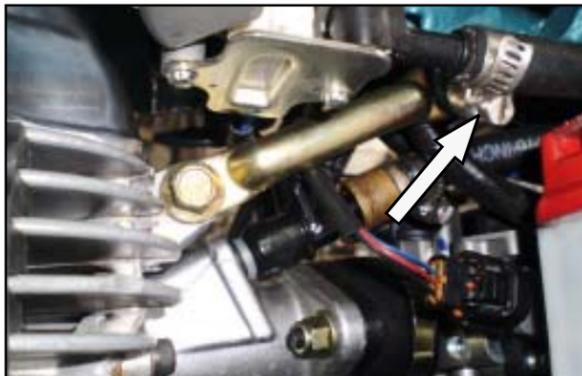
**ENGINE DISMANTLING , INSPECTION AND ASSEMBLY  
COMPONENTS THAT CAN BE  
REMOVED WITH THE ENGINE  
MOUNTED ON THE FRAME.**

- ☆ Cylinder head assembly
- ☆ Cylinder barrel & Piston
- ☆ Crank case Cover RH
- ☆ Crank case Cover LH
- ☆ Clutch assembly
- ☆ Inlet and Exhaust Cam assembly
- ☆ Oil pump Assembly

**NOTE :** Before starting to dismantle engine, crank gently & bring piston to TDC.

**DISMANTLING PROCEDURE**

- ☆ Disconnect fuel hose. Take care to ensure fuel does not spill.
- ☆ Disconnect fuel pump module and low fuel sensor couplers.



- ☆ Remove the front and rear flange nuts, washer at the front & rear mounting of the fuel tank.



- ☆ Lift the tank from the seat side & remove.

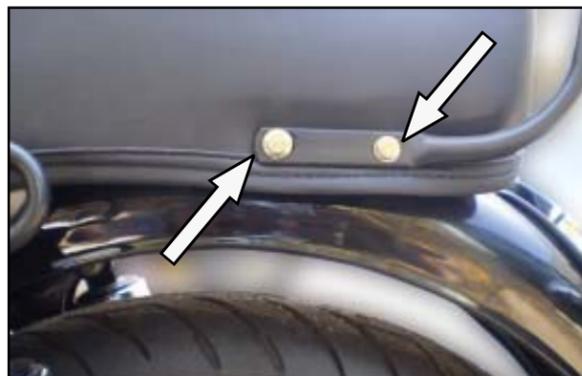


**CAUTION :**

Keep a cloth on the front end of the fuel tank, (below the handle bar clamp) to avoid damage to the fuel tank while removing.

**SEAT REMOVAL BULLET  
ELECTRA EFI (E5/G5)**

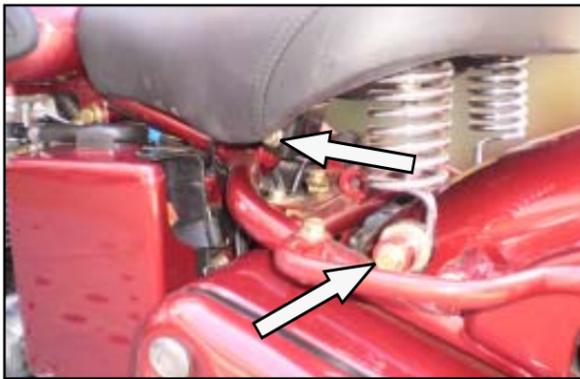
- ☆ Remove 4 nos. flange bolts from both sides of the seats.



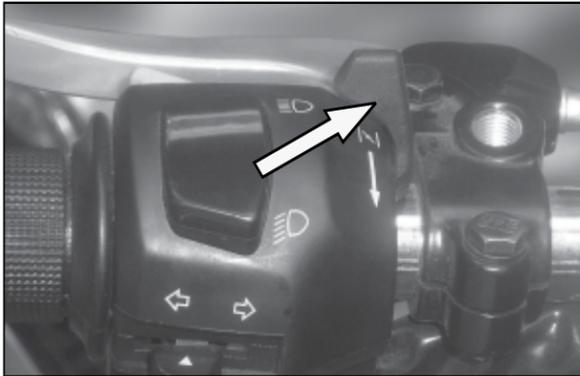
- ☆ Remove the pillion holder, lift from the rear end and pull out the seat

***BULLET CLASSIC EFI (C5)***

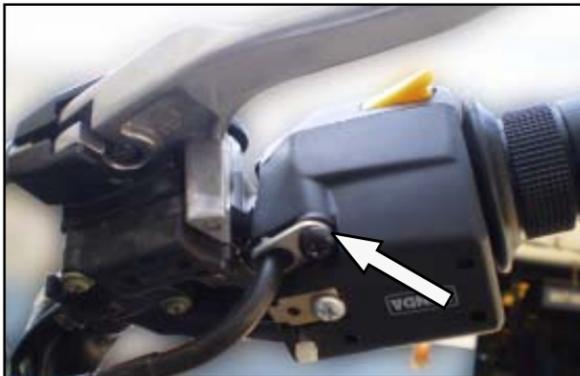
- ☆ Remove the mounting bolts as shown and remove the seat.



- ☆ Manual Bi starter



- ☆ Remove the 2 screws, at the bottom of the LH switch module and separate the module from the handle bar.



- ☆ Disconnect the cable from the lever.

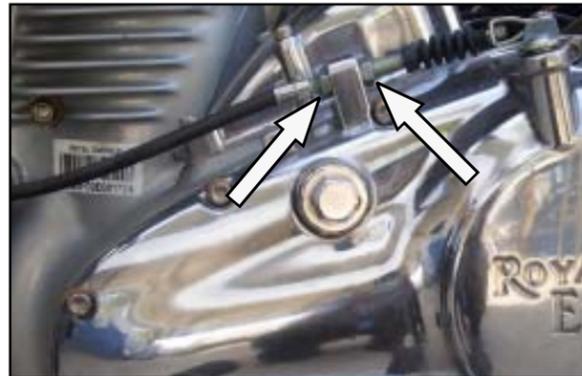


- ☆ Remove cable from the straps in the frame.

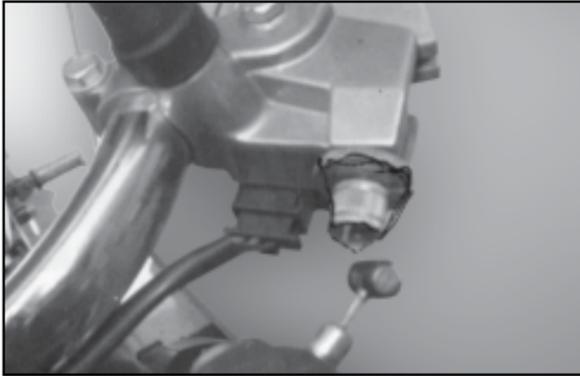


***CLUTCH CABLE REMOVAL***

- ☆ Slacken the adjuster at the clutch cover end and disconnect the cable from the lever.
- ☆ Take out clutch cable from the cover.

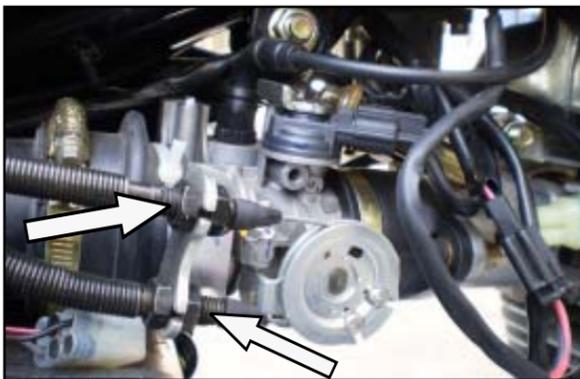


- ☆ Remove the clutch cable from the clutch lever at handle bar end.



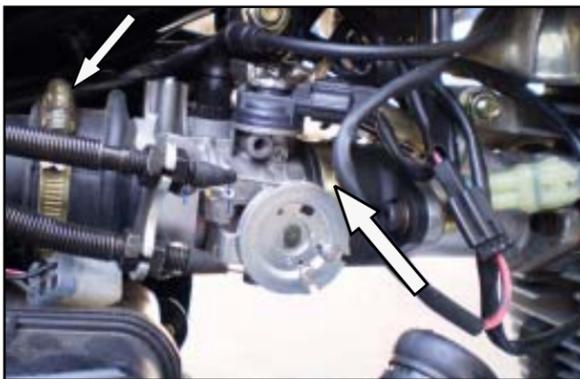
**REMOVAL OF THROTTLE CABLE**

- ☆ Slacken the adjusters at the throttle body end for both cables.



**REMOVAL OF THROTTLE BODY**

- ☆ Loosen the throttle body flange & bellow clip.



- ☆ Remove the throttle body by pushing towards Air Filter box.



**REMOVAL OF SILENCER AND EXHAUST PIPE**

- ☆ Remove the centre silencer bracket mounting screw with plain washer.



- ☆ Remove the rear mounting at the pillion foot rest end (C5).



- ☆ Remove the rear mounting at the pillion foot rest end (E5/G5).



**NOTE :** Loosen the rear brake rod adjuster nut so that the brake pedal can be depressed to allow the exhaust pipe to be removed.

- ☆ Disconnect the Oxygen sensor, loosen and remove from Exhaust pipe.



- ☆ Remove the flange nut 2 nos. from cylinder head.



- ☆ Remove the Silencer Assembly with Exhaust pipe.
- ☆ Remove the Suppressor Cap



### **BATTERY REMOVAL**

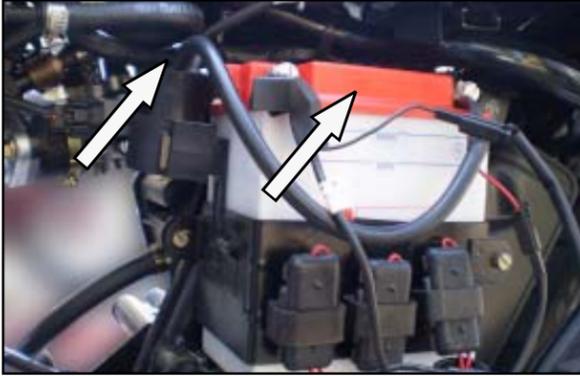
- ☆ Ensure ignition switch is in "OFF" position.
- FOR BULLET ELECTRA EFI (E5 / G5)*
- ☆ Remove side panel LH.



- ☆ Remove the battery flap cover



- ☆ Remove the terminal boot & terminal wires .



- ☆ Remove the black coupler.



- ☆ Remove the fuse carrier plate mounting screws 2 nos.

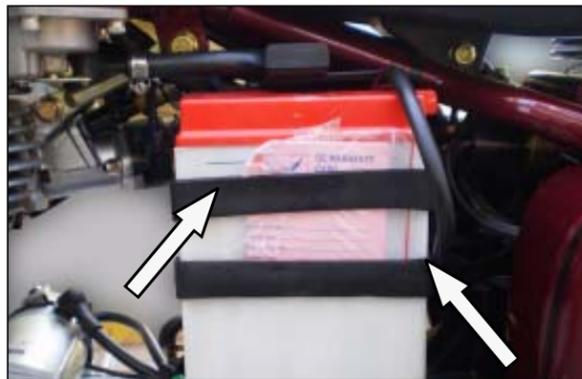


*FOR BULLET CLASSIC EFI(C5)*

- ☆ Remove battery cover on LH side.



- ☆ Remove the battery holding straps pull the battery out & remove terminals.



**CAUTION :**

Always remove earth wire terminal first.

**REMOVAL OF E-START MOTOR**

- ☆ Remove the cover screw



- ☆ Remove the terminal rubber boot.



- ☆ Remove the terminal nut & take out the terminal wire lead.

- ☆ Remove the 2 mounting allen screws.



- ☆ Lift the motor upwards and pull out of the housing in the front.

- ☆ Remove 4 screws of the starter drive housing and tap gently to free the housing.



- ☆ Gently lift the motor and remove the motor along with the housing. Remove the 2 dowels for the housing drive.



#### **REMOVAL OF DRIVE CHAIN**

- ☆ Rotate the rear wheel to bring the chain lock to a convenient position and remove the chain lock.



- ☆ Remove the chain link and the drive chain.

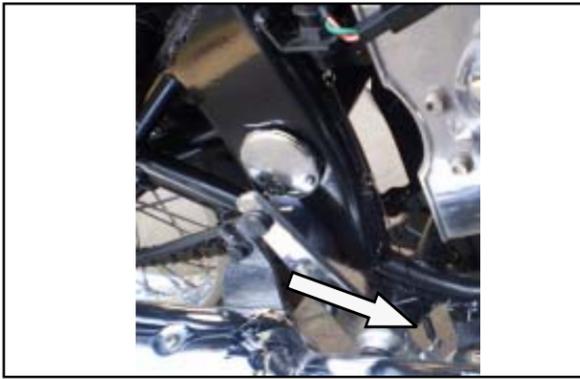
#### **REMOVAL OF SIDE STAND**

- ☆ Disconnect the coupler of the side stand Engine cut off switch from the wiring harness.
- ☆ Remove the mounting nuts and remove the side stand.



### REMOVAL OF REAR BRAKE SWITCH

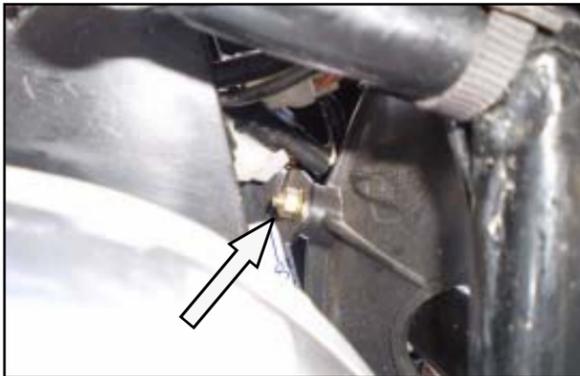
- ☆ Disconnect the brake switch spring from brake lever.



- ☆ Disconnect the rear brake switch coupler from the wiring harness



- ☆ Slacken the nyloc nuts & remove the brake light switch.
- ☆ Remove the piece mudguard bracket bolt along with 2 plain washers & 1 star washer



- ☆ Remove rider foot rest LH & RH (E5/G5)



- ☆ Remove rider foot rest LH & RH (C5)



### Engine oil Drain

*It is best to drain the engine oil in warm condition.*

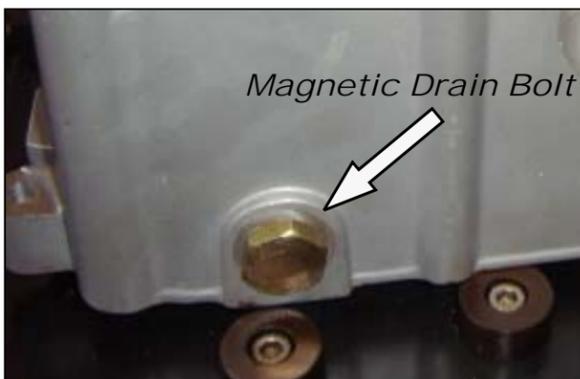
- ☆ Remove the 2 Flanged hex bolts. Remove the drain cap with 'O' ring.



- ☆ Remove suction filter.



- ☆ Remove the magnetic drain plug with washer.

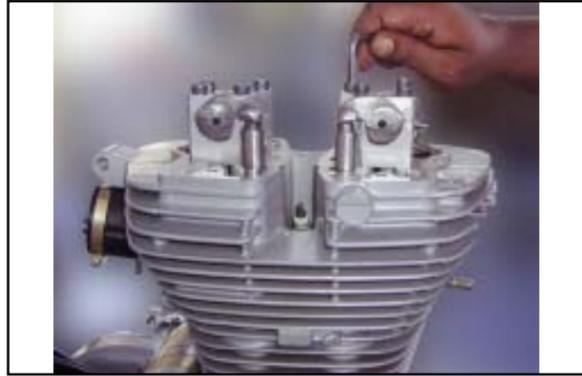


### **CYLINDER HEAD ASSEMBLY**

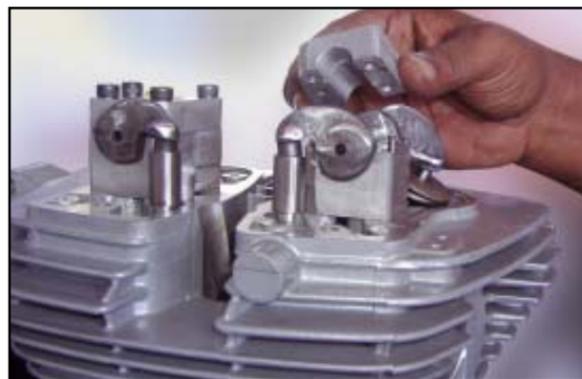
- ☆ Remove the 4 allen screws along with rubber seals from Inlet and exhaust rocker covers.
- ☆ Remove the Inlet & Exhaust Rocker cover, dowel & rubber gasket.



- ☆ Remove the 4 allen screws each on the rocker bearing inlet & exhaust.



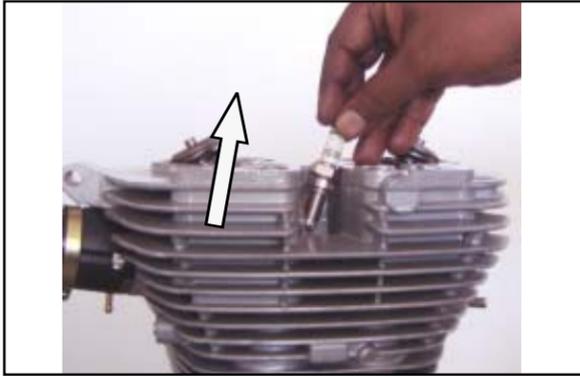
- ☆ Remove the inlet and exhaust rocker bearing with dowel and rocker arm.



- ☆ Remove inlet and exhaust pushrods



- ☆ Remove the Spark plug



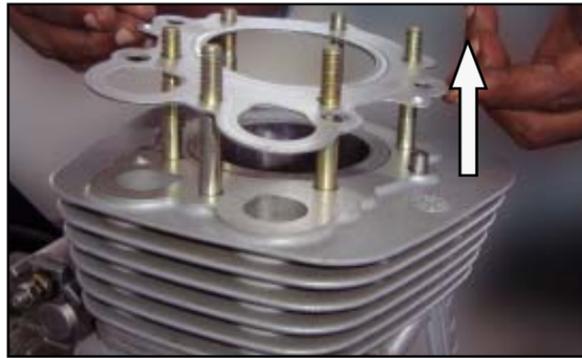
- ☆ Remove the 6 flanged hex nuts, securing the cylinder head.



- ☆ Remove the Cylinder head assy.



- ☆ Remove the multi layer steel (MLS) head gasket.



#### **CYLINDER BARREL SUB ASSEMBLY**

- ☆ Gently tap Cylinder barrel and remove along with 2 dowel pins.



**NOTE :** Ensure piston is at TDC.

- ☆ Remove gudgeon pin and piston.



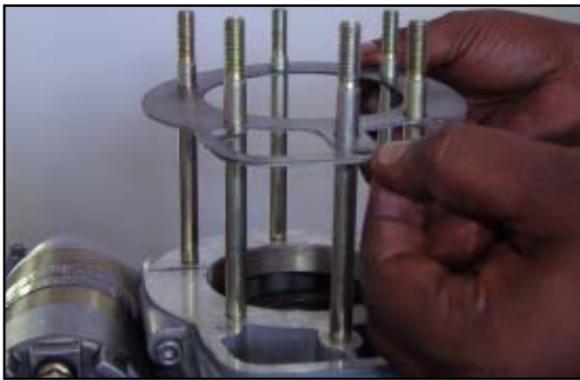
**NOTE :** Carefully remove the piston pin clip from the piston while covering Crank case neck with a shop towel, as shown.

- ☆ Remove gudgeon pin and piston.



**NOTE :** Carefully remove the piston rings from the piston without deforming.

- ☆ Remove Cylinder barrel bottom Gasket.



- ☆ Use Special tool No. ST - 25592-4 to hold connecting rod as shown Fig.



**REMOVAL OF COVER RH SUB ASSEMBLY :**

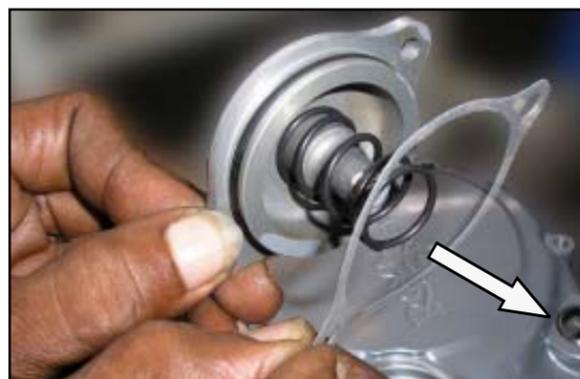
- ☆ Remove kick starter lever. (only for Bullet Electra EFI - E5/G5)



- ☆ Remove oil filter cover bolts.



- ☆ Remove oil filter cap gasket, "O"ring & Spring.



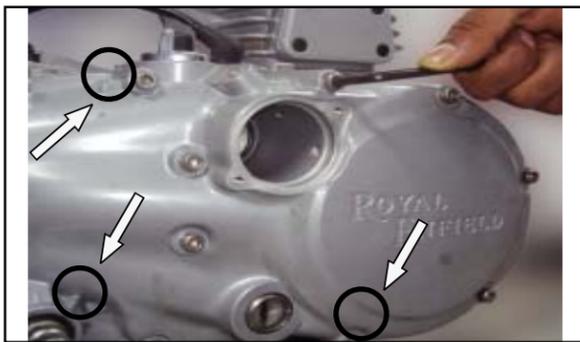
**CAUTION :**

Care must be taken while removing cover due to spring force.

- ☆ Remove the 3 "O" rings, Oil filter element spring cap, washer & Oil filter element.



- ☆ Remove the 11 allen screws securing cover RH. Gently tap & pull out the cover evenly.



- ☆ It may be necessary to tap the cover slightly to remove since the magnetic forces in the rotor can be acting on the stator and making it difficult to remove

**CAUTION :**

Tap only at the places shown to avoid damage to the RH cover



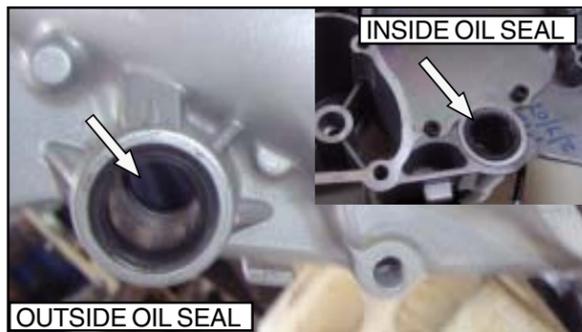
**NOTE :** Remove the stator coupler from the wiring harness before removing RH Cover.

Place a plastic tray below the RH cover for collecting the oil that will drip while removing the cover.

- ☆ Remove RH cover gasket & 2 dowels.



- ☆ Remove the 2 oil seals from the Kick Shaft hole (Electra EFI - E5/G5 only)

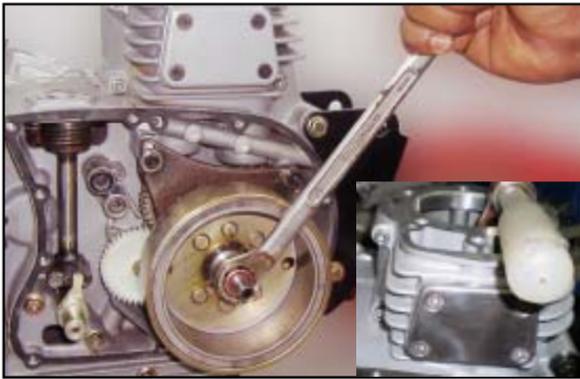


**COMPONENTS DISMANTLING ON CRANKCASE RH**

**REMOVAL OF ROTOR ASSEMBLY**

- ☆ Loosen and remove magneto lock nut and plain washer.

- ☆ Ensure the connecting rod is locked properly with the special tool resting firmly and evenly on the crankcase top position.



- ☆ Use Special tool No. ST - 25128-2 Magneto removing tool to remove rotor assembly.



- ☆ Remove the 3 allen screws & 2 dowels from Cam steady plate.



- ☆ Remove Cam steady plate and the shims.



**NOTE :**

Check the number of shims on inlet and exhaust cams. It is important to reduce noise and axial play between the cam gear face and the cam steady plate.



- ☆ Remove oil pump plastic gear after removing circlip. Observe short boss of pump drive gear should face outwards.



- ☆ Remove Cam gear inlet.



- ☆ Remove Cam gear Exhaust (Auto decompressor sub assy).



- ☆ Remove Gear lever from engine LH cover side.



- ☆ Remove Gear lever shaft with bush (spacer shaft).



- ☆ Rotate rear wheel to bring the chain link lock over final drive sprocket. Remove the link plate and link. Remove the chain-ends from F D Sprocket so that the top run of the chain can be suspended over the swing arm & the bottom run can be placed on the ground.

#### **DISMANTLING COVER LH SUB ASSEMBLY :**

- ☆ Remove the 11 allen screws holding the cover LH.



- ☆ Remove inspection plug along with "O" ring



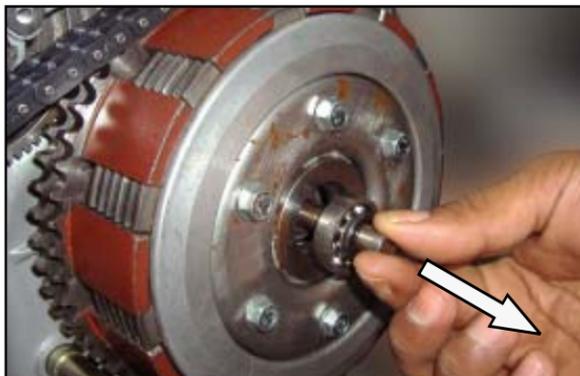
- ☆ Tap and remove the Clutch cover.



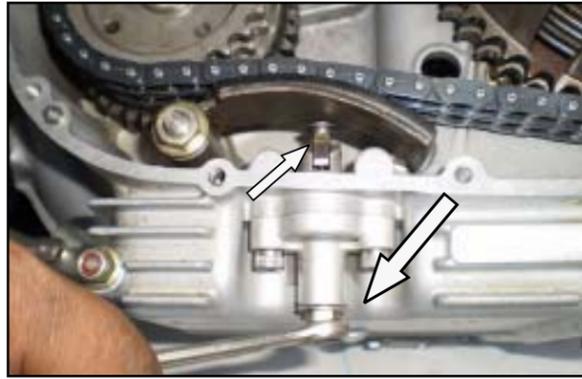
- ☆ It may be necessary to tap the cover slightly to remove.

**COMPONENTS DISMANTLING  
ON CRANKCASE LH  
REMOVAL OF CLUTCH ASSY.**

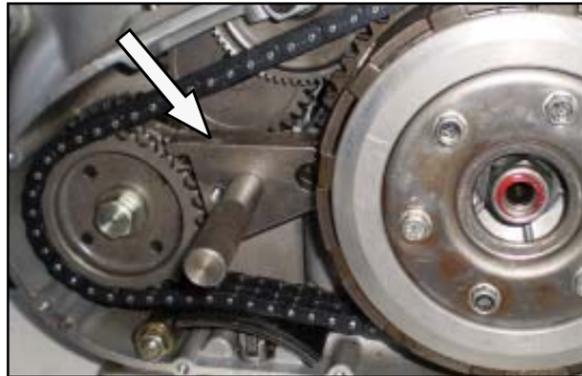
- ☆ Remove clutch push pad, ball bearing & bearing retainer cup.



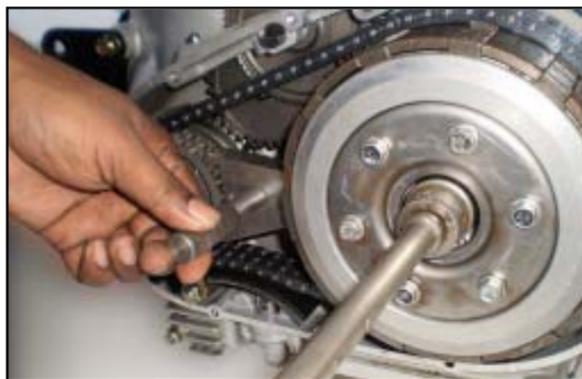
- ☆ Remove auto chain tensioner bottom pin bolt, "O" ring and spring. Unlock clip and press push rod to slacken duplex chain.



- ☆ Use Special tool No. ST - 25591-4 Clutch centre nut holding tool to lock Clutch outer sprocket and engine drive sprag clutch.



- ☆ Remove nyloc nut & plain washer.



- ☆ Remove 17mm Hex bolt on the Engine sprocket.



- ☆ Remove hex nut and washer to remove chain tensioner pad.



- ☆ Remove Duplex chain along with Sprag clutch and Clutch assembly.



- ☆ Remove Auto chain tensioner body assy. by removing the 2 Nos. allen screws.



- ☆ Remove special distance washer sprag clutch on Crankshaft LH.



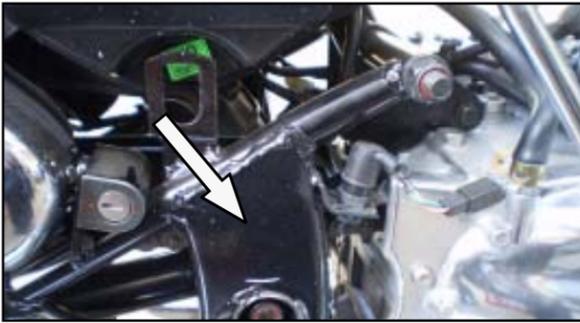
- ☆ Remove the rear engine mounting nut along with the washer.



☆ Remove the front engine mounting nut



☆ Loosen chain stay bolt



☆ Remove centre stand & footrest supports.

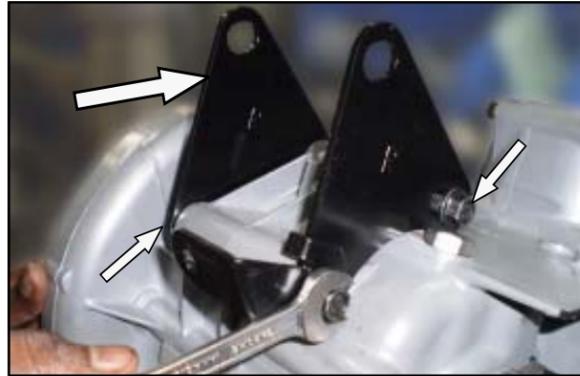


☆ Remove the front and rear engine studs & slide the engine assembly off the frame.

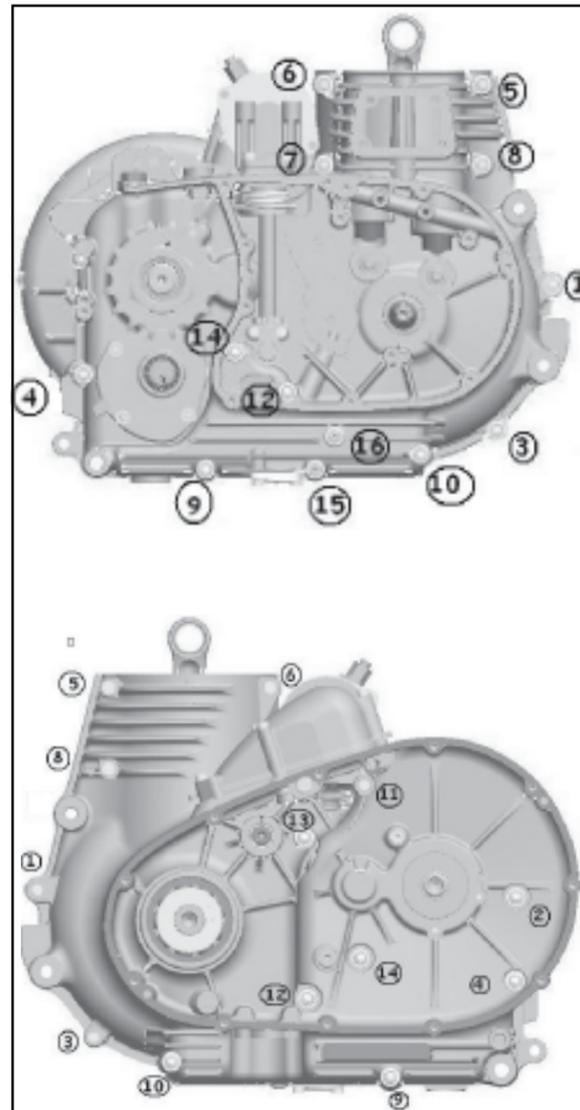
☆ Remove Engine Front Mounting Bracket.



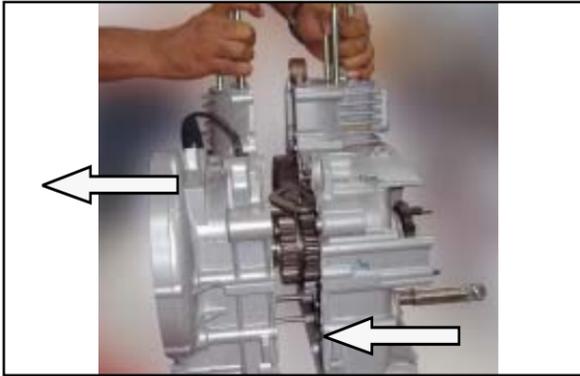
☆ Remove Mudguard mounting clip & Rear Engine Mounting Bracket.



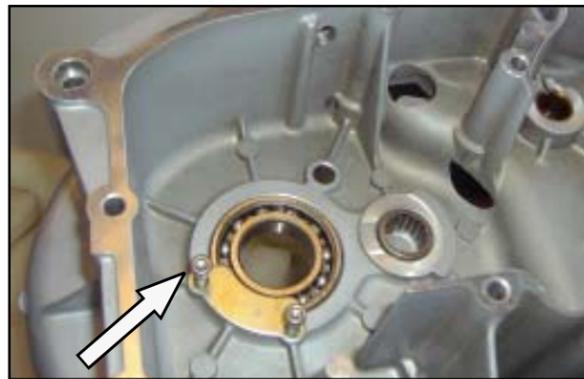
☆ Loosen the crankcase stud nuts and allen screws as per the following sequence.



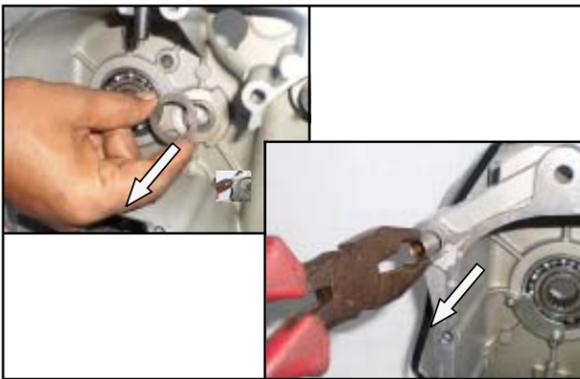
☆ Tap gently and remove the crankcase LH.



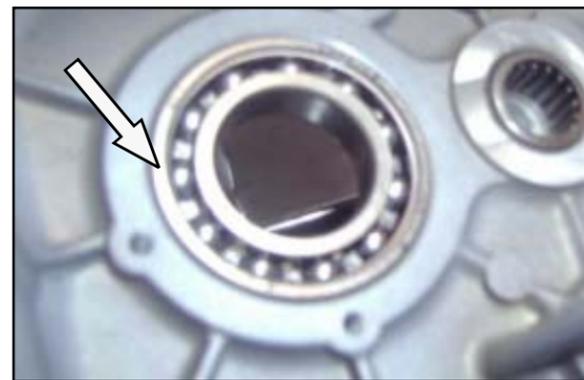
☆ Remove clutch bearing retainer plate holding screws and remove the retainer plate from crankcase LH.



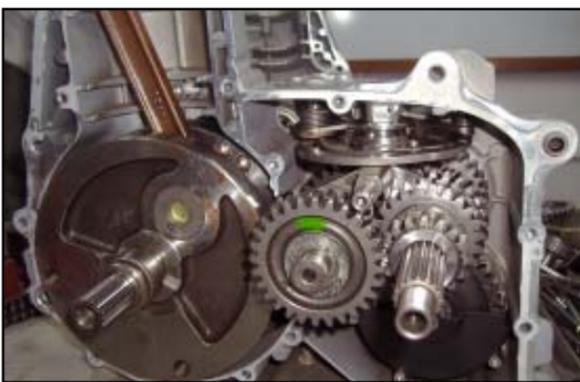
☆ Remove special thrust washer (layshaft) from Crank case LH & 2 Nos. Dowel pins.



☆ Remove clutch ball bearing from crankcase LH.



☆ Pull out the crank shaft from the crankcase RH.



☆ Remove needle roller bearing for lay shaft from crankcase LH.



- ☆ Remove roller bearing NU 305 from crankcase LH.



- ☆ Remove crank shaft needle roller bearing from crankcase RH.



- ☆ Remove spacer, circlip, crank shaft bearing 6305 from crankcase LH.



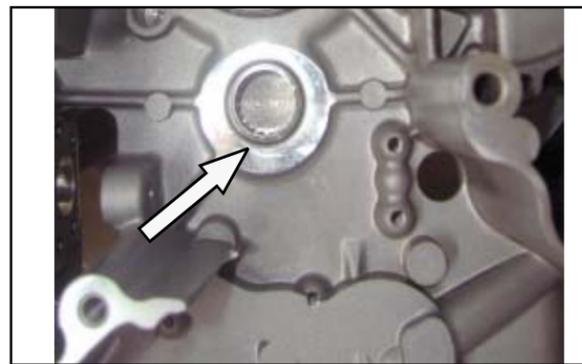
- ☆ Remove circlip and sleeve gear ball bearing 6007 from crankcase RH.



- ☆ Remove last circlip from crankcase LH.



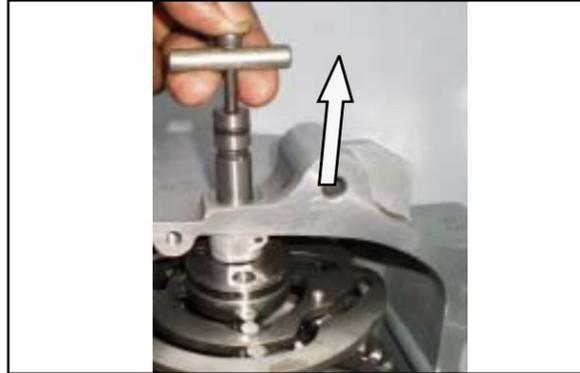
- ☆ Remove lay shaft needle bearing from crankcase RH.



- ☆ Remove nyloc nut, machined washer, pawl - camplate, return spring and bolt pawl from crankcase RH.



- ☆ Pull out cam plate pivot pin with "O" ring by using special tool No. ST 25153-4 Extractor shown below.

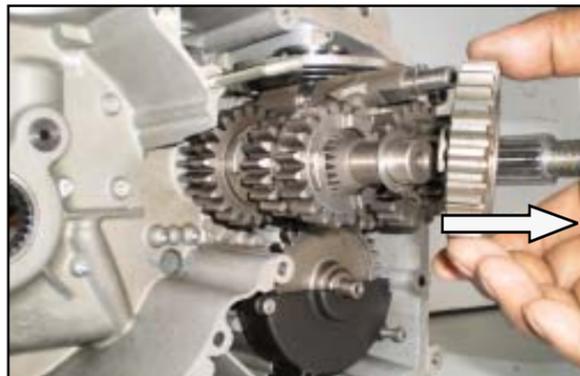


### GEAR TRAIN REMOVAL

- ☆ Remove the bolt, copper washer, cap pivot pin and "O" ring above the cam plate pivot pin.



- ☆ Remove LS 1st gear and thrust washer from the Layshaft.



- ☆ Remove the 3mm roller locating pin.



- ☆ Gently slide out the gear train assembly along with the cam plate, Fork shaft, Forks, Lay shaft double gear (LS3 & LS4) and main shaft with all gears.

**NOTE:** Turn cam plate to select 3rd gear position before removing for ease of removal / reassembly.



- ☆ Remove special thrust washer (Layshaft) from Crank case RH



- ☆ Check that the 4 rollers are in place in the cam plate correctly while removing to avoid damage to the pins or its location in the cam plate.

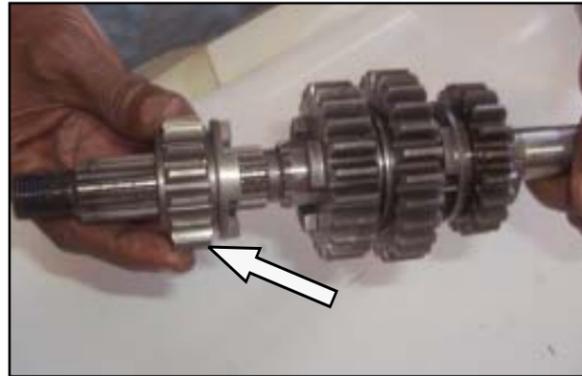


**MAIN SHAFT SUB ASSEMBLY**



**DISMANTLING OF MAINSHAFT SUB ASSEMBLY**

- ☆ Remove main shaft 1st gear.



- ☆ Remove the main shaft 2nd gear.



- ☆ Remove the main shaft 3rd gear.



- ☆ Remove circlip & 1st. thrust washer.



- ☆ Remove 4th gear and 2nd thrust washer.



- ☆ Main shaft



### *UNIDIRECTIONAL FITTINGS LIST*

- ☆ Gear rocker shaft bottom pivot bearing- Smooth machined surface side facing upwards.
- ☆ Main shaft 2nd Gear- Selector fork groove side facing towards M.S. 4th Gear.
- ☆ Special thrust washer Lay shaft RH - Profile towards sleeve gear side on RH Crank case.

- ☆ Special thrust washer Lay shaft LH - Profile towards Crank shaft bearing side on LH Crank case.

- ☆ Rear engine mounting plate-"R" index mark side facing RH ( FD sprocket) side.

- ☆ Gear jack shaft - Flat face facing outwards.

- ☆ Distance washer sprag clutch - Double step facing inside (should rest on Crankshaft and Crankcase LH side bearing).

- ☆ FD sprocket- Side face circular groove facing outwards.

- ☆ Cam Gear sub assy. exhaust- The teeth in between two punch marks must align with Crankshaft timing pinion gear punch mark.

- ☆ Cam Gear Inlet- Single punch mark must align with single punch mark of Cam gear exhaust.

## ENGINE ASSEMBLY

Please ensure all the parts are cleaned and stored in a sequence for inspection and reassembly.

Lubricate all moving parts prior to reassembly.

While fixing bearings or bushes in the crankcases, it is necessary to heat the crankcase for ease of fixing.

Cool the crankcases after the fixing the bearings / bushings before further assembly.

- ☆ Assemble cleaned suction filter element into Crank case RH.



- ☆ Assemble magnetic drain plug assy. (Torque 2 KG-M) with washer on crankcase RH.



### NOTE :

Apply LOCKTITE 542 thread sealant before assembling the drain plug.

- ☆ Assemble 2 Nos. of Flanged hex bolts (Torque 0.6 KG-M) to fix drain cap with "O" ring.



### ASSEMBLING OF MAINSHAFT SUB ASSEMBLY

- ☆ Smear oil and assemble the 1st thrust washer and then the 4th gear on the main shaft.



- ☆ Assemble 2nd thrust washer and fix circlip to lock the 4th Gear.



- ☆ Assemble main shaft 2nd gear as shown.



**NOTE :** Ensure 2nd gear selector fork groove side is facing towards MS 4th gear.

- ☆ Smear oil on the 3rd & 4th gear with bush before assembly on Mainshaft.



- ☆ Assemble main shaft 1st gear.

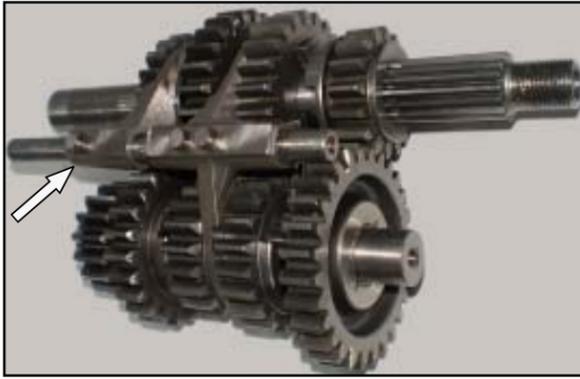


### **MAIN SHAFT SUB ASSEMBLY**

- ☆ Assemble main shaft 3rd gear.



- ☆ Assemble selector fork sub assembly over main and Layshaft sub assy. as shown in Fig.



- ☆ Always assemble the cam plate on selector fork sub assembly in 3rd gear position & ensure the 4 rollers are in good condition and located properly.

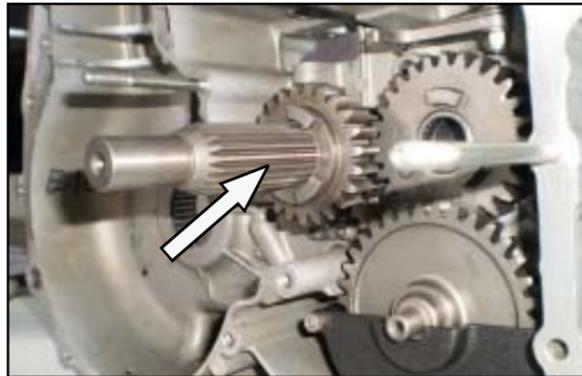


- ☆ Locate special thrust washer (Layshaft) on Crank case RH and stick using grease.

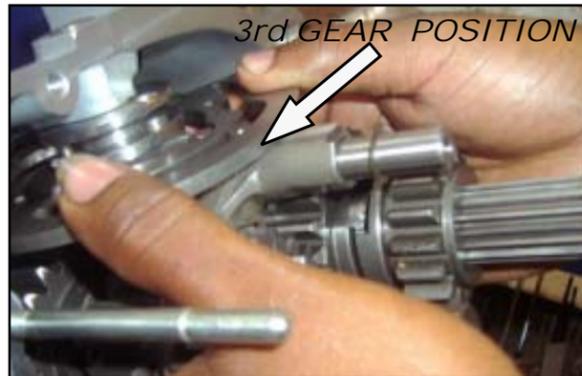


**NOTE :** Ensure special thrust washer profile is facing towards sleeve gear.

- ☆ Assemble the thrust washer, LS2nd gear & High gear with Lay shaft mounted on the Crank case RH as shown in Fig.

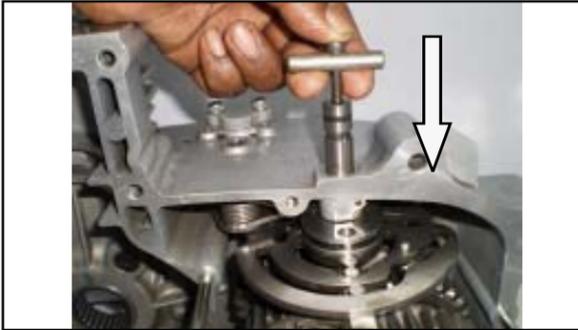


- ☆ Hold the cam plate and gear train sub assembly along with Fork shaft, Forks, Lay shaft double gear (LS3 & LS4) and main shaft with all gears (in 3rd gear position). Gently slide inside the crankcase RH.



**NOTE :** Ensure alignment of main shaft with sleeve gear hole, fork shaft with fork hole inside the Crank case RH and sliding gear with lay shaft.

- ☆ Insert cam plate pivot pin with “O” ring with special tool No. ST 25123-4 as shown in Fig.

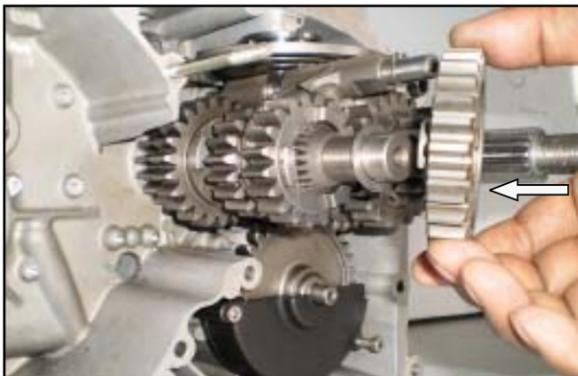


**NOTE :** Apply LOCTITE 577 thread sealant to pivot pin to avoid oil seepage if any.

- ☆ Insert 3 mm locating pin to lock pivot pin as shown in Fig.



- ☆ Assemble thrust washer and then LS 1st gear on the Layshaft.



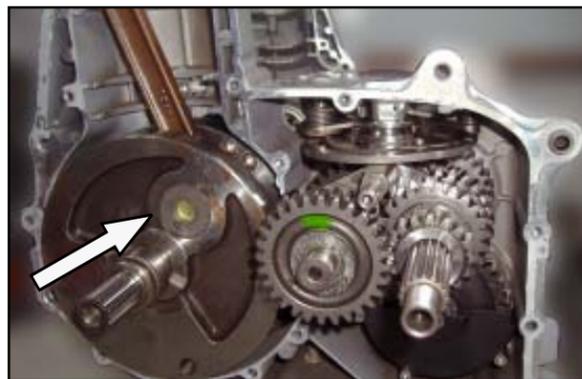
**NOTE :**

Check Gear shifting system by rotating Cam plate and Main shaft sub assy while rotating the shafts simultaneously. Check for smooth gears engagement.

- ☆ Assemble “O” ring, cap pivot, copper washer and tighten bolt (Torque 1 KG-M).



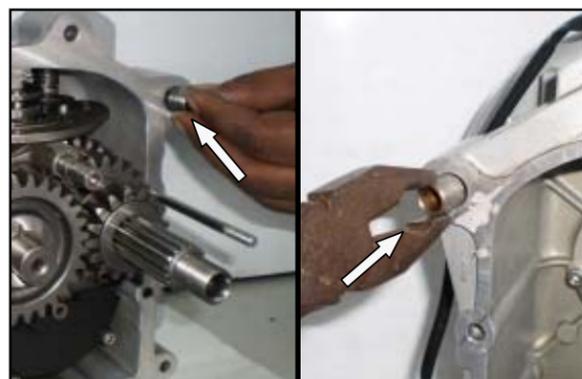
- ☆ Assemble the crank shaft into the crankcase RH.



**NOTE :**

Ensure the bearing inner races (small one on timing shaft & big one on drive shaft) are fitted on the crank shaft before assembling in the crankcase RH.

- ☆ Assemble the 2 dowel pins on the crankcase and apply LOCKTITE 5699 RTV silicon liquid gasket on the RH Crank case seating surface.



- ☆ Assemble special thrust washer (lay shaft) on Crank case LH.



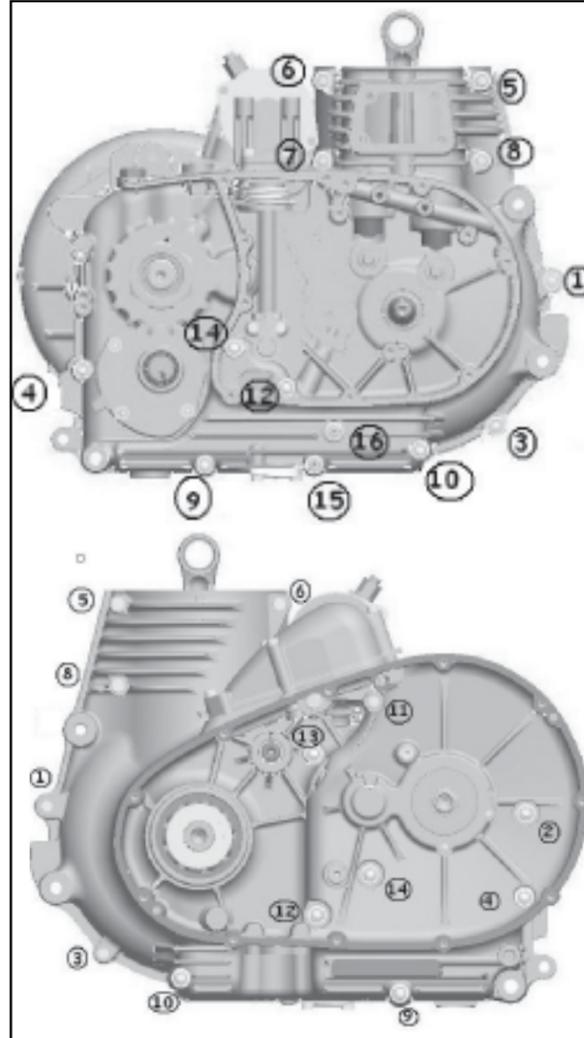
**NOTE :**

Ensure special thrust washer profile facing towards Crank shaft bearing side on LH Crank case.

- ☆ Assemble the crankcase LH over RH Crank case by tapping gently. Simultaneously holding self motor jack shaft carefully.



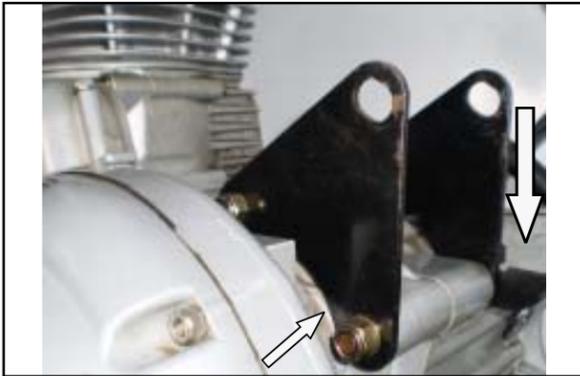
- ☆ Tighten the crankcase stud nuts and allen screws as per the following sequence.



- ☆ Assemble Front Engine Mounting Brackets and tighten bolts (Torque 2.5 KG-M).

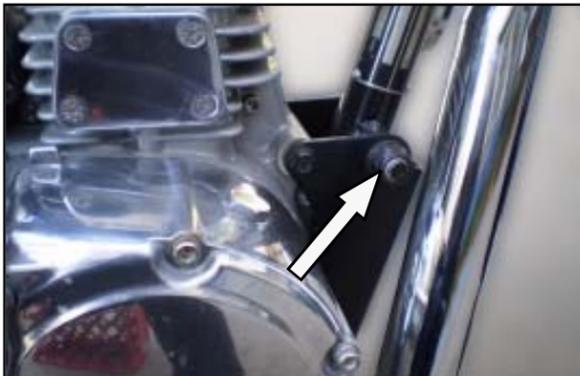


- ☆ Assemble Rear Engine Mounting Bracket and the piece mudguard holding bracket (Torque 2.5 KG-M).



**NOTE :** Ensure “ R ” index mark side is facing towards RH side (FD Sprocket) of the engine.

- ☆ Locate the crankcase on the frame and fit the front engine mounting stud.



- ☆ Fit the rear engine mounting stud.

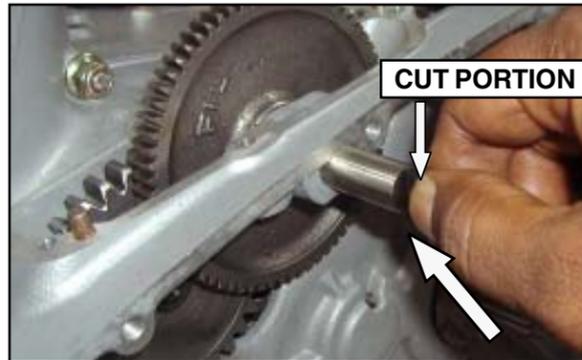


- ☆ Fit the centre stand and foot rest supports.

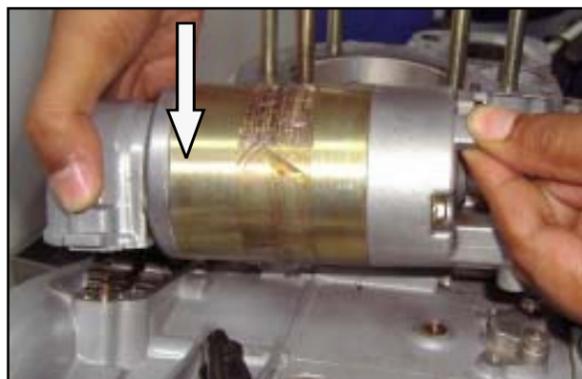


**NOTE :** Ensure step face of jack shaft gear should face inside (Towards Crank case LH)

- ☆ Ensure cut portion of shaft is facing upwards.



- ☆ Fix the dowels in the crankcase and carefully fix the motor with housing starter drive. Apply LOCKTITE 5699 RTV silicon liquid gasket on the joint face.



- ☆ Fix the 4 Allen screws of housing starter drive and tighten (Torque 0.6 KG-M).



- ☆ Fix the main cable on the starter motor on tighten. Insert rubber boot properly.



- ☆ Fix the E-Start motor with 2 allen bolts (Torque 1 KG-M) along with earth cable.



**NOTE :**

Apply LOCKTITE 577 thread sealant to mounting bolts to avoid oil seepage if any.

- ☆ Fix the E-Start motor cover.



- ☆ Assemble spacer (distance washer) on Crankshaft LH.



**CAUTION:** This double stepped face should be inside.

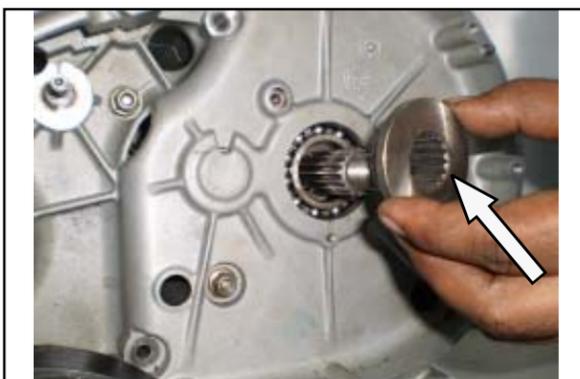
- ☆ Assemble the primary chain auto chain tensioner body assy. with "O" ring and tighten with 2 allen screws (Torque 1 KG-M).



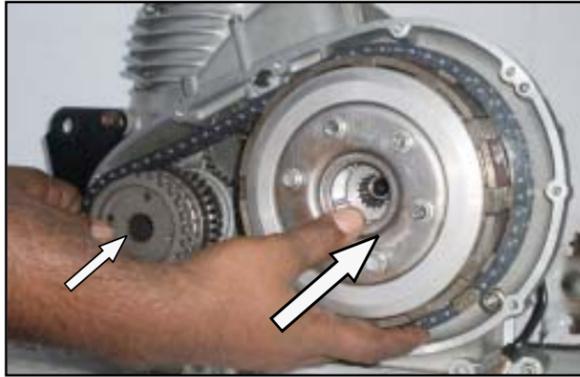
- ☆ Assemble chain tensioner pad, washer and hex nut ( Torque 2.5 KG-M).



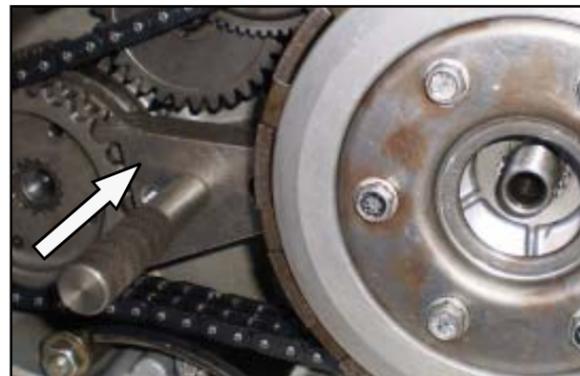
- ☆ Assemble collar on main shaft (distance collar on Crankcase LH).



- ☆ Assemble Duplex chain over Engine sprag clutch sprocket and Clutch assembly. Mount on main shaft.



- ☆ Use Special tool No. ST 25591-4 Clutch centre holding tool to lock Clutch sprocket and engine sprag clutch assy.



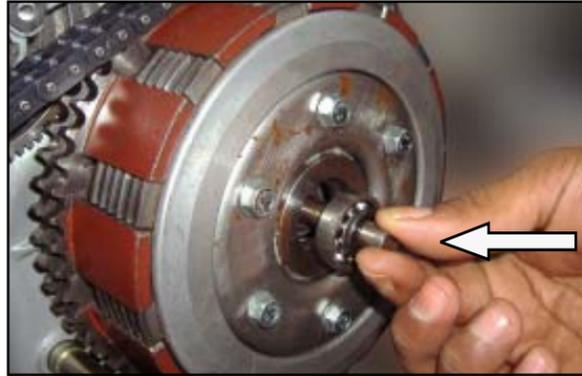
- ☆ Fix 17 mm hex head bolt with washer on sprag clutch assy. (Torque 4.8 KG-M).



- ☆ Fix the washer and nyloc hex nut 24 mm over clutch assembly and tighten.



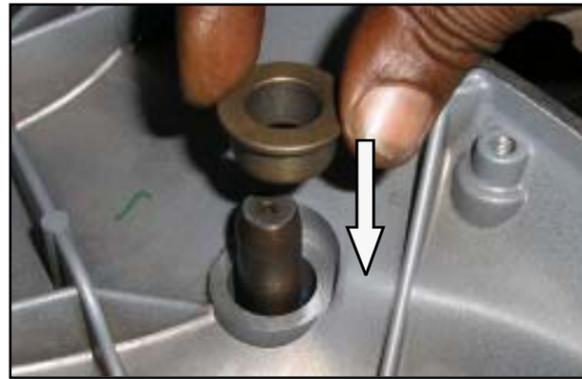
- ☆ Assemble clutch bearing cup, ball bearing (6001) & clutch push pad.



- ☆ Use Torque wrench to tighten the nyloc nut on Clutch (Torque 4.2 KG-M).



- ☆ Assemble gear lever shaft bush.



- ☆ Fix the spring and bolt with "O" ring for the auto chain tensioner (Torque 1 KG-M).



- ☆ Assemble oil filler plug with "O" ring.

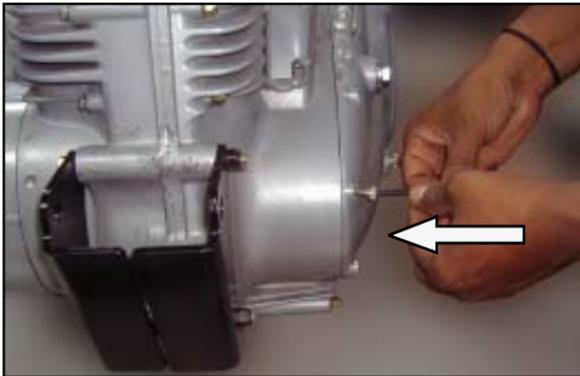


- ☆ Assemble the cover LH on Crank case LH.



**NOTE :** Ensure 2 Nos. dowel pins are located properly. Apply LOCKTITE 5699 RTV silicon liquid gasket.

- ☆ Locate 11 allen screws on cover LH and tighten (Torque 1 KG-M).



- ☆ Assemble clutch cable on Crank case cover LH and fix to clevis.



- ☆ Fix Rear Chain master link, plate and lock clip.



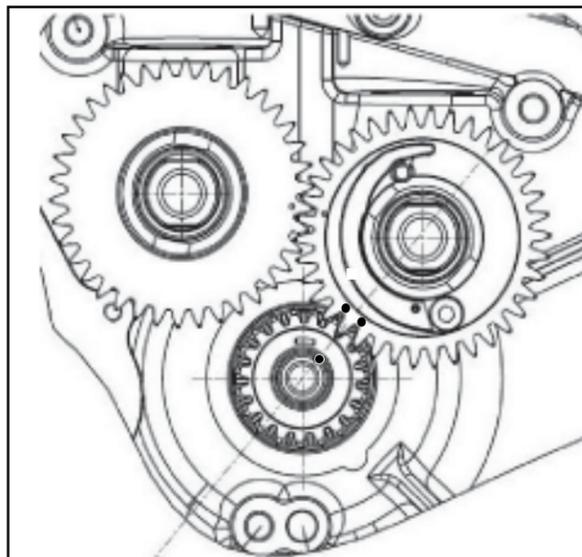
- ☆ Assemble Gear lever shaft assembly into RH Crank case window and then fix gear shaft spacer.



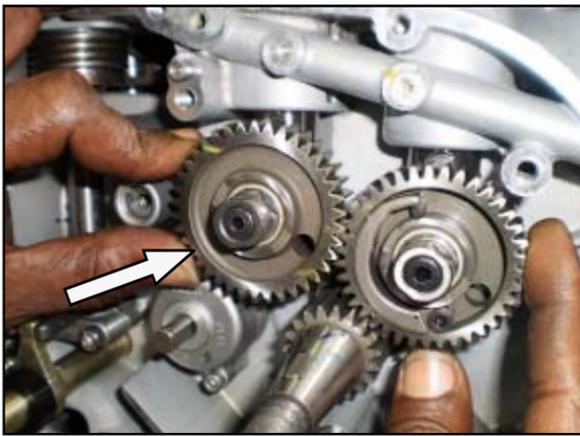
#### VALVE TIMING

- ☆ Bring piston to TDC so that the woodruff key in the timing shaft is at 12' Clock position.

#### ASSEMBLY PROCEDURE OF CAM GEARS



- ☆ Locate the exhaust cam on the spindle and ensure the 2 punch marks on the cam aligns with the punch mark on the timing shaft gear.
- ☆ Locate the inlet cam on the spindle and align the single punch marks on the inlet and exhaust cams.

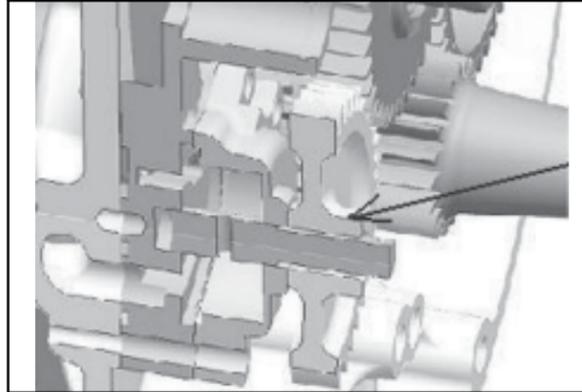


**NOTE :** After assembling both cam gears, adjust Eccentric cam to reduce gear backlash (Torque 2 KG-M).

- ☆ Fix oil pump drive pinion and lock it with the circlip.



**NOTE :** Ensure the short boss of the gear is facing outwards.



- ☆ Add one shim each on inlet and exhaust cam.



**NOTE :** To reduce axial play in between Cam Gears outer surface and steady late, additional shim may be added as per need.

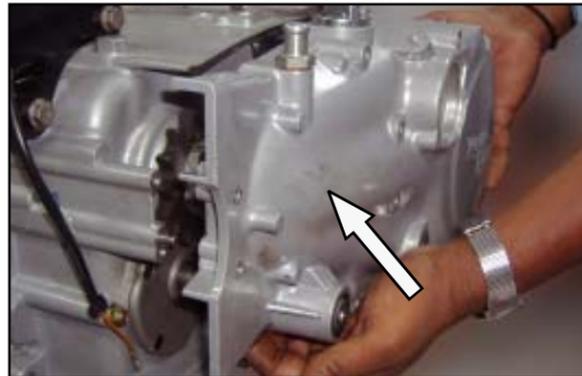
- ☆ Fix Cam steady plate and check for axial play of Cam Gears to avoid noise problem.



- ☆ Assemble the dowels and allen screws on Cam steady plate and tighten (Torque 1 KG-M).



- ☆ Assemble cover RH carefully by aligning kickshaft and dowels.



- ☆ Assemble magneto rotor, plain washer and nut and tighten (Torque 4.8 KG-M).



- ☆ Fix cover RH and tighten with 11 allen screws (Torque 1 KG-M).



**NOTE :** Use special tool No. ST 25592-4 to lock connecting rod movement during tightening magneto nut.

- ☆ Assemble the "O" rings, Oil filter element, washer and plate as shown.

- ☆ Assemble 2 dowels and RH Crank case cover gasket.

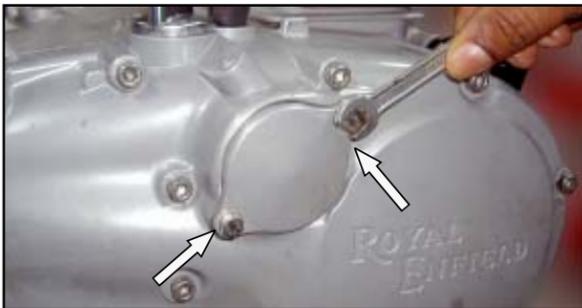


- ☆ Assemble "O"ring, Spring and gasket oil filter cap.



**CAUTION :** Care must be taken while fixing cover due to spring force and gasket.

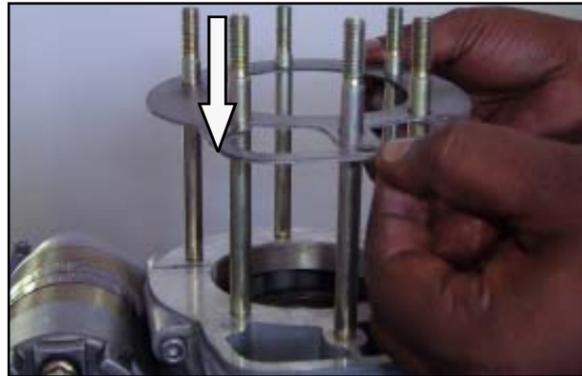
- ☆ Assemble oil filter cover (Torque 0.60 KG-M).



- ☆ Assemble kickstarter lever (**only for Bullet Electra EFI (E5/G5)**) (Torque 2.5 KG-M).



- ☆ Fix Cylinder barrel bottom Gasket.



**CAUTION :** Ensure the open end of any piston ring does not align with the piston pin boss.

- ☆ Locate the piston on the connecting rod and insert the piston pin into the piston.

- ☆ Fit the circlips on either side and ensure they are located properly in the grooves.



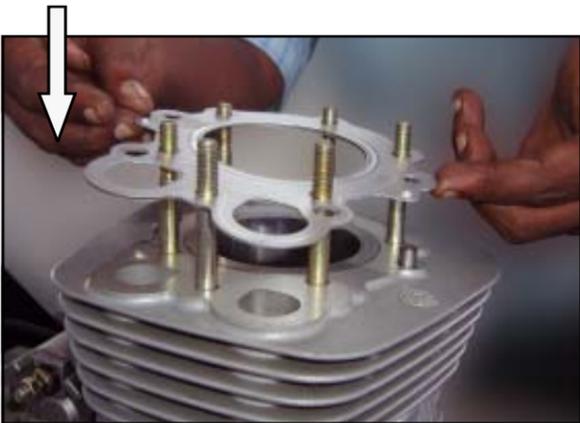
**NOTE :** Carefully fix the piston pin clip into the piston boss while covering Crank case neck by shop towel / chamois cloth as shown in Fig.

- ☆ Thoroughly lubricate cylinder bore with fresh engine oil and then assemble over the piston by gently twisting and tilting.

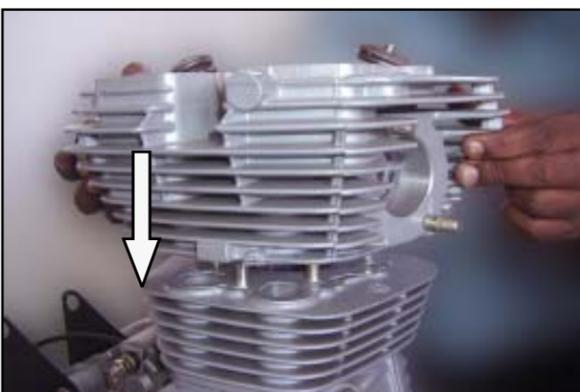


**NOTE :** Do not use any sharp objects to press piston rings against groove. Use thumb finger force to locate rings in its position properly.

- ☆ Assemble the multi layer steel (MLS) head gasket on the barrel & 2 Nos. dowels.



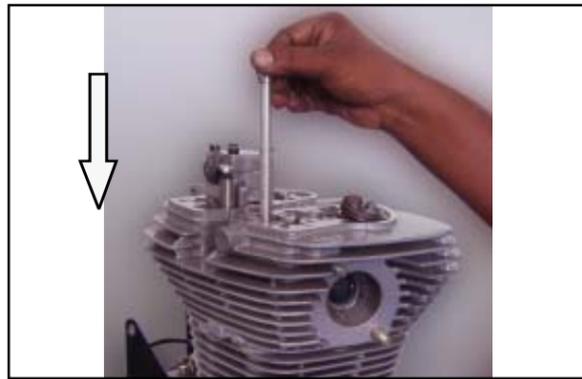
- ☆ Assemble the Cylinder head assy. on the Barrel.



- ☆ Tighten the 6 flanged hex nuts diagonally and evenly.



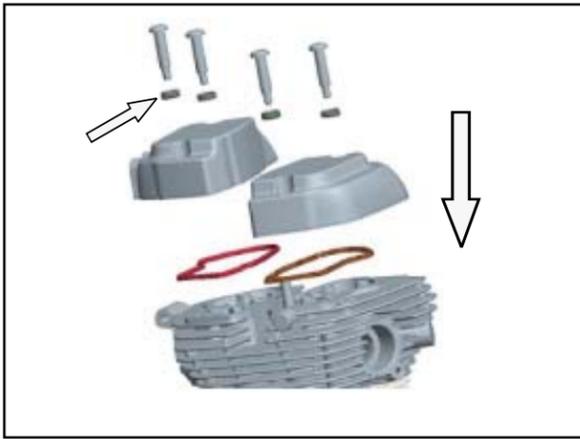
- ☆ Assemble inlet and exhaust pushrods.



- ☆ Assemble the inlet and exhaust rocker bearing with dowel and tighten allen screws



- ☆ Assemble the Inlet & Exhaust Rocker covers, dowels & rubber gasket then tighten rocker cover bolt with rubber washer (Torque 1 KG-M) .



- ☆ Tighten the swing arm nut to specified torque.



- ☆ Tighten the front engine mounting stud nuts to the specified torque.



- ☆ Tighten the rear engine stud nuts to the specified torque.



- ☆ Tighten the centre stand and foot rest nuts to the specified torque.



- ☆ Assemble throttle body and connect the throttle cables.



- ☆ Fill recommended the engine oil to the correct level and tighten filler cap with “O” ring.



- ☆ Assemble the exhaust pipe and silencer in the reverse order of disassembly.
- ☆ Fix the oxygen sensor & connect to wiring harness.
- ☆ Fix the clutch cable & the manual Bi Starter to the handle bar levers.
- ☆ Connect all the electrical couplers.
- ☆ Connect the brake light switch to the pedal.
- ☆ Connect the fuel hose to the pump.
- ☆ Assemble the battery & connect the terminals. Check for proper working of all electrical equipments.
- ☆ Fix the dual seat.
- ☆ Start machine and run in idle RPM for few minutes. Switch off & check oil level add oil to bring level below “Max” level.
- ☆ Adjust rear brake and chain terminals. Align the rear wheel.

## TORQUE SPECIFICATION - ENGINE

S. No	PART No.	DESCRIPTION	LOCATION	TORQUE VALUE	
				Kg / M.	N / M.
1	570013	HEX SOCKET HD CAP SCREW, M5 X 16	RETAINER PLATE / SUCTION FILTER MTG	0.60	6
2	570016	HEX.SOCKET HD.CAP SCREW, M5 X 45	E START HOUSING COVER	0.60	6
3	570094	HEX.SOCKET HD.CAP SCREW, M5 X 25	E START HOUSING COVER	0.60	6
4	570232	HEX.SOCKET HD.CAP SCREW, M6 X 12	STOP PLATE, PIVOT PIN / COVER LH / PIVOT BRG LOWER	1.00	10
5	570020	HEX FLANGE BOLT	CRANK CASE SET ASSY	2.50	25
6	145879	FLANGED HEX. BOLT M8 X 112	FRONT ENGINE MTG PLATE	2.50	25
7	145867	FLANGED HEX. NUT M8 X 1.25	FRONT ENGINE MTG PLATE / EXHAUST PIPE MTG	2.50	25
8	570088	STUD 168L (M6)	CRANKCASE SET ASSY	1.00	10
9	570090	STUD 106L (M6)	CRANKCASE SET ASSY	1.00	10
10	570089	STUD 196L (M6)	CRANKCASE SET ASSY	1.00	10
11	570024	HEX.SOCKET HD.CAP SCREW, M6 X 50	CRANKCASE SET ASSY	1.00	10
12	570085	DOWEL, STUD (M6)	CRANKCASE SET ASSY	1.00	10
13	570025	HEX.SOCKET HD.CAP SCREW, M6 X 90	CRANKCASE SET ASSY	1.00	10
14	570086	STUD 226L (M6)	CRANKCASE SET ASSY	1.00	10
15	570087	STUD 133L (M6)	CRANKCASE SET ASSY	1.00	10
16	570091	STUD 80L (M6)	CRANKCASE SET ASSY	1.00	10
17	145866	FLANGED HEX. NUT M6 X 1	CRANKCASE SET ASSY	1.00	10
18	570030	HEX.SOCKET HD.CAP SCREW, M6 X 20	AUTO CHAIN TENSIONER ASSY / COVER LH	1.00	10
19	570095	CHAIN TENSIONER STUD, (M8)	AUTO CHAIN TENSIONER ASSY	2.50	25
20	141051	HEX.NUT M8	AUTO CHAIN TENSIONER ASSY / KS CRANK	2.50	25
21	570100	NUT (M10 X 1)	CAM SPINDLE SLEEVE NUT	2.00	20
22	570421	HEX.SOCKET HD.CAP SCREW, M6 X 30	CAM STEADY PLATE	1.00	10
23	570132	HEX.SOCKET HD.CAP SCREW, M6 X 25	CAM STEADY PLATE	1.00	10
24	500355	HEX.SOCKET HD.CAP SCREW M6 X 16,	BRACKET, PIN, HYD, TAPPET / INLET FLANGE	1.00	10
25	570198	CSK SOCKET HEAD SCREW M5 X 0.8 X 12	TAPPET DOOR	0.60	6
26	570051	HEX.SOCKET HD.CAP SCREW, M4 X 30	OIL PUMP HOUSING ASSY	0.60	6
27	570064	HEX.HEAD SCREW M12 X 1.25 X 20	SHAFT LH	4.80	48
28	550025	HEX NUT M12 X 1.25	SHAFT RH	4.80	48
29	570463	HEX.SOCKET HD.CAP SCREW, M6 X 60	E START MOTOR MOUNTING / COVER RH	1.00	10

## TORQUE SPECIFICATION - ENGINE

S. No	PART No.	DESCRIPTION	LOCATION	TORQUE VALUE	
				Kg/M.	N/M.
30	570215	BOLT, PAWL (M6 X 1)	GEAR BOX INDEX	1.00	10
31	570233	HEX.SOCKET HD.CAP SCREW, M5 X 40	PIVOT BEARING, ROCKER SHAFT LOWER	0.60	6
32	550138	CSK SOCKET HEAD SCREW M5 X 0.8 X 16,	COVER, KICKSTART SHAFT	0.60	6
33	145090	HEX SCREW M6 X 16	KICKSTART, SPRING	1.00	10
34	570240	HEX.SOCKET HD.CAP SCREW, M5 X 35	COVER K.S. GEAR	0.60	6
35	142291	HEX SCREW M8 X 22.5	STOP PLATE, KICK PAWL	2.50	25
36	111914	HEX.BOLT M8 X 40	ASSY, KICK START CRANK	2.50	25
37	143498	HEX. SCREW M6 X 25	GEAR LEVER	1.00	10
38	141060	HEX. NUT M6	GEAR LEVER	1.00	10
39	570246	NUT (M35 X 1.5)	FD SPROCKET	8.00	80
40	570440	HEX SCREW M6 X 1 X 35	CLUTCHASSY	1.00	10
41	560525	HEX. NUT WITH NYLOCK INSERT M16X1.5,	MAIN SHAFT, CLUTCH SIDE	4.80	48
42	570444	BOLT, BREATHER (M12)	BREATHERASSY	2.00	20
43	570422	HEX.SOCKET HD.CAP SCREW, M6 X 100	COVER RH	1.00	10
44	570130	HEX.SOCKET HD.CAP SCREW, M6 X 85	COVER RH	1.00	10
45	570423	HEX.SOCKET HD.CAP SCREW, M6 X 40	COVER RH	1.00	10
46	570021	HEX.SOCKET HD.CAP SCREW, M6 X 80	COVER RH	1.00	10
47	570425	HEX.SOCKET HD.CAP SCREW, M5 X 12	COVER PLATE, BREATHER CHAMBER	0.60	6
48	570431	HEX FLANGE BOLT	CAP, OIL FILTER	0.60	6
49	570131	HEX.SOCKET HD.CAP SCREW, M6 X 60	ROCKER BEARING	1.00	10
50	570129	HEX HEAD SCREW ROCKER COVER MTG	ROCKER COVER	1.00	10
51	570175	FLANGED HEX. BOLT M8 X 90	STEADY BRACKET CYL. HEAD	2.50	25
52	570177	HEX NUT WITH NYLON INSERT, M8	STEADY BRACKET CYL. HEAD	2.50	25
53	500327	FLANGE NUT M8	CY.HEAD MOUNTING	2.50	25
54	500104	STUD, M8 X 128	CY.HEAD MOUNTING	2.50	25
55	570304	HEX SOCKET HEAD CAP SCREW M6 X 12	PIVOT BEARING, UPPER	1.0 0	10
56	550095	ALLEN SCREW M6 X 30	STATOR COIL MOUNTING	1.00	10
57	570276	MAGNETIC PLUG ASSY	CRANKCASE DRAIN	2.00	20
58	500339	STUD EXHAUST	EXHAUST PIPE MTG	0.60	6
59	572025	SPARK PLUG		2.80	28