Contents

Salient Features

STYLE :

Renowned HAMARA BAJAJ Indian looks for "Catching selection & attraction" of customers.

- New Bajaj logo on petrol tank gives inspiring confidence look of advanced technology.
- New decals enhances the brand image of Vehicle.
- Sleek & new age headlight fairing on 'BOXER-S'

POWER & PERFORMANCE :

The 'BOXER-S' are brought up with a advanced technology, packed with enhanced Power, Greater Torque spread all across Engine rpm band.

- The improved Engine which deliver 8.2Ps power, makes it the most powerful bike in its class with a mission to cross others on run with big lead.
- The improved Engine delivers a Turning Force of 8.05 N-M, which enables hassle free take off and afford to run the vehicle at lower engine rpm in higher gears.

The 'BOXER-S' engine breath through Keihin 16 mm throat and fires on the optimized 'Lean Burn' principle to cope up severe conditions.

- Low emission of Carbon Monoxide makes the most environment friendly vehicle in its class.
- The 'BOXER-S'comes with 'Digital Twin Map CDI' (DTM) with 'Throttle Responsive Ignition Control System' (TRICS) which optimizes engine performance at all level of work condition.
- The 'DTM' CDI Ignition System ensures highly intensified current working accurately advanced timing for complete combustion of the air fuel mixture for optimum power.
- The 'TRICS' alters the ignition timing as per the engine needs at higher throttle position for consistent power delivery. The other benefit of 'TRICS' are-
- Makes engine High knock resistant at high throttle position.
- The 'BOXER-S' engines have 'Positive Crankcase Ventilation' system
- It avoids scattering of hazardous engine oil fumes in to the atmosphere. Thus reduces the air pollution.
- It also avoids entering of dust particles from the atmosphere in to the engine through breather pipe. Thus eliminating contamination of engine oil, which further minimizes wear and tear of engine components and ensures their life.

Salient Features

CONVENIENCE & COMFORT

The 'BOXER-S' is equipped with upgraded Ceriani Front Telescopic Suspension & Optimized Rear shock absorber.

- The dual rated coil spring in the front suspension enhances damping effect of the hydraulic suspension to give exemplary comfort and no fatigue to rider's shoulders.
- Variable rate coil spring double acting rear shock absorber is mounted in angular plane gives better comfort to rider on rough road and high speed.

Smoother gear shifting is a result of introducing the star and roller mechanism.

- New friction free bush for gear change drum helps in shifting the gear smoothly.
- Star and roller mechanism for gear shifting makes the easy operation of shifting of gear specially in city driving condition.
- Revised transmission gear ratio afforded to run the vehicle in fourth gear in city drive at comparatively low rpm without shifting the gears in lower range.

The 'BOXER-S' M/S gives more comfort by adding value in other mechanism like

- Effort for kicking are minimized by introducing starting kick with increase in leverage.
- Multi focal reflector for brighter head light .
- Chassis is designed to make sure, safe & comfortable driving on rough roads.
- Stylish thick & wider foam seat provided in 'BOXER-S'.

Technical Specifications

ENGINE & TRANSMISSION:

Type		: 4 stroke, Natural air cooled
No. Of cylinders		: One.
Bore		: 53.00 mm.
Stroke		: 45.00mm.
Engine displacement		: 99.27cc.
Compression ratio		: 9.5 $\pm$ 0.5 : 1
Idling Speed		: 1300 $\pm$ 150 rpm (in warm condition)
Maximum net power		: 8.2Ps (6.03kW) @7500rpm
Maximum net torque		: 8.05 Nm at 5500 rpm
Ignition System		: CDI
Ignition Timing		: 10^0 BTDC @ 1300$\pm$200rpm
		: 33^0 BTDC @ 4500$\pm$200rpm
Fuel		: Unleaded petrol.
Carburettor		: Keihin -Fie PB 16
Spark Plug		: Champion PRZ9HC
		: MICO UR 3 AC
Spark Plug gap		: 0.6 to 0.7 mm
Lubrication		: Wet sump, Forced
Starting		: Kick start
Clutch		: Wet, multidisc
Transmission		: 4 speed constant mesh
Overall Gear Ratios		:
	1st Gear	: 37:51 : 1 (37/11)
	2nd Gear	: 20.33: 1 (31/17)
	3rd Gear	: 13.29 : 1 (31/26)
	4th Gear	: 10.38 : 1 (27/29)
Final Drive Ratio		: 03.30 : 1 (47/13)
Primary Gear Ratio		: 03.09 : 1 (71/23)

CHASSIS AND BODY

Frame type		: Tubular.
Suspension		:
	Front	: Ceriani type, Telescopic, Stroke = 110 mm
	Rear	: Trailing arm with coaxial shock absorbers and coil springs
Brakes Type	Front	: Drum type
	Rear	: Drum type
Brake size	Front	: 110 mm (drum)
	Rear	: 130 mm (drum)
Tyres	Front	: 2.75 x 17
	Rear	: 3.0 x 17
Tyre Pressure		:
	Front	: 1.75 kg/cm^2 (24.5 psi)
	Rear (Solo)	: 2.00 kg/cm^2 (28 psi)
	(With Pillion)	: 2.25 Kg/cm^2 (36 psi)
Rims :	Front	: 1.4 x 17, 1.6 x 17
	Rear	: 1.6 x 17, 1.85 x 17
Fuel tank capacity		:
	Full	: 9.3 litr (Aprox)
	Reserve	: 2.2 litr (Aprox)
	Usable Reserve	: 1.2 litr (Aprox)

CONTROLS

Steering		: Handle bar
Accelerator		: Twist grip type on right side of handle bar
Gears		: Left foot pedal operated
Clutch		: Lever operated on left side of handle bar
Brakes	Front	: Lever operated on RH of handle bar
	Rear	: Pedal operated by right foot.

ELECTRICALS

System	: 12 Volts AC + DC
Head lamp	: 35 / 35 W
Tail/stop lamp	: 5 / 10 W
Turn signal lamp	: 10 W
Neutral Ind.. Lamp	: 3W
Turn pilot Indi. lamp	: 3W
Hi beam ind. lamp	: 3W
Speedometer lamp	: 3W
Horn	: 12 V DC
Battery	: 12 V - 2.5 Ah

DIMENSIONS

Length	: 1970 mm
Width	: 770 mm
Height	: 1065 mm
Wheel base	: 1235 mm
Min. Turning radius	: 1900 mm
Ground Clearance	: 150 (Min.)

WEIGHTS

Vehicle kerb weight	: 109 Kg.
Gross vehicle weight	: 239 Kg.

PERFORMANCE

Maximum speed	: 90 km/h with single rider (68kg)
Climbing ability	: 25% (14^0) max.

NOTES

- Values given above are nominal and for guidance only, 15% variation is allowed to cater for production and measurement variation.
- All dimensions are under unladen condition.
- Definitions of terminologies wherever applicable are as per relevant IS / ISO standards.
- Specifications are subject to change without notice.

Do's

- ☑ Blow air filters in opposite to airflow to enable dust to get out freely.
- ☑ Blow dry air and confirm airflow through carburettor passages to enhance proper cleaning of passages.
- ☑ Blow compressed air in all the orifices in the engine parts and oil passages and confirm the cleanliness.
- ☑ Breather slots in the crankcase should always be kept clean to allow to escape oil fumes from engine, otherwise it may lead to oozing out of oil through oil seals and 'O' rings.
- ☑ Always apply oil during assembling, particularly at friction prone area to increase the life of the components.
- ☑ Always fit piston rings as per specified position.
- ☑ Always replace 'copper washer' whenever the engine is overhauled.
- ☑ Confirm seating of circlips by rotating on their seat to avoid further consequences.
- ☑ Confirm the crankshaft centering and free rotation after fitment.
- ☑ Whenever installing the spark plug, first screw by hand and then tighten to specified torque. This is to ensure proper fitment and avoid thread damage.
- ☑ Always ensure correct fitment of magneto rotor by rotating it.
- ☑ Always connect battery with positive terminal first, then negative to avoid damage to the electrical components in case of short circuits.
- ☑ Always maintain correct tyre pressure, otherwise incorrect tyre pressure effects on performance of the vehicle, riding comfort and safety.
- ☑ Always use only genuine Bajaj parts and recommended lubricants to increase the life of the vehicle and long term economy.
- ☑ While replacing the chain lock link, always install the open end of the lock facing against the direction of rotation of chain.
- ☑ While fitting tyres, ensure the lie running alongwith the beed wire should be equidistant to wheel rim circumference.
- ☑ Always keep the work area clean and uncluttered to create good working atmosphere.
- ☑ Clean the vehicle / engine before opening to enable to follow the repair in proper way help in proper diagnosis, etc.
- ☑ Watch for sharp edges. This avoids injury while repairing.
- ☑ Always use correct size spanners / screw drivers to avoid damages to the nuts, bolts, etc.
- ☑ Use special tools wherever recommended to help in smoother, safer and faster work.
- ☑ Whenever some part is jam, check the cause (rust etc.), tap, if necessary, by mallet to avoid damage to the component.
- ☑ Clean the mating surface scratch free to avoid permanent damage to the surface, thus leading to leakage and ultimately cost of replacement of the parts.
- ☑ Inspect the parts visually as well as dimensionally, as applicable.

Working Thumb Rules for First Time Right

Visual	Dimensional / Numerical
Abrasion / Scratches	Abrasion / Scratches
Crack	Alignment
Bent	Warp
Dent	Clearance
Wear	Any other specifications
Play / Slackness	
Seizure	
Deterioration	
Proper Threading	

Note : **Recommended / Allowable Tolerances / Clearance are absolute must.**

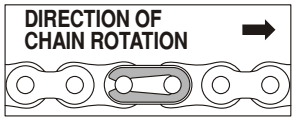
- ☑ Check the oil at drain for - Quantity, Quality, Burr Contents, Contamination, etc. this may help in diagnosing problems.
- ☑ While installing the bearings always tap on the race which is taking seat to avoid damage to the bearing as the standard axial / radial clearances may increase.
- ☑ Always use Loctite to bolts / screws wherever recommended.
- ☑ Tighten the nut / bolts to correct torque to avoid damages to the components.
- ☑ Tighten nut / bolts in criss-cross pattern for mating surface to avoid distortion of the parts which leads to leakage, etc.
- ☑ Always clean the air filter element with Kerosene / Diesel.

Working Thumb Rules for First Time Right

Don'ts

- ☒ Do not use worn tools / spanners which leads damage to parts / even accident.
- ☒ Do not apply excess force while loosening - check for rusting or jamming.
- ☒ Do not re-use 'o' rings / gaskets ' oil seals / circlips as they loose their strength/properties, once they are opened.
- ☒ Do not wash air filter element with water.
- ☒ Do not wash bearings with water otherwise they will get permanently spoiled.
- ☒ Do not over tighten the carburettor jets, it will spoil the carburettor body.
- ☒ Do not blow compressed air with float assembled otherwise float gets distorted.
- ☒ Do not use hammer for engine parts to avoid damages to the components, because engine components are critical and costly.
- ☒ Do not check the current by earthing the lead cable of ignition coil, it may damage the igniter unit / CDI unit.
- ☒ Do not remove battery terminals during engine running to avoid damages.
- ☒ Don't push start the vehicle as it gives jerks/impacts to the engine components.
- ☒ Never add acid to battery once it has undergone charging to avoid damage to the battery cells.
- ☒ Never quick charge the battery – this shortens the life of the battery. Follow proper procedure to increase the life of the battery cells.
- ☒ Never apply grease to the battery terminals. Always apply petroleum jelly to avoid corrosion at the terminals.
- ☒ Do not apply direct water jet on electrical components, otherwise it will lead to failure of electrical components.
- ☒ Do not tune the carburettor in cold condition. Always remember tuning of carburettor must be done in warm up condition of engine.
- ☒ Do not remove carburettor from engine in hot condition to avoid distortion.
- ☒ Do not adjust spark plug gap and tappet clearance with hacksaw blade or with judgement of eye otherwise, it will effect the engine performance. Always use wire gauge for spark plug and feeler gauge for tappet setting.
- ☒ Do not use of wire or pin to clean the carburettor jets. Otherwise it will damage jet sizes orclogs the jet hole if the wire get break.
- ☒ Do not use ordinary wire in place of fuse. Otherwise it may lead to severe consequences.

Pre-Delivery Inspection

To Check	Check For
ENGINE :	
Engine oil SAE20W40 of API 'SG' + JASO 'MA' grade.	Oil level. Top up if required. Oil leakage if any.
Idling Speed	Check / Adjust if required. (1300 $\pm$ 150 rpm)
Kick operation	Smooth operation.
Fasteners (Check torque and correct if required)	Cylinder head bolts (2.0~2.4 kg.m) Engine mounting bolts (4.0~4.5 kg.m) Oil drain plug (2.7~3.3 kg.m) Spark plug (1.1~1.5 kg.m)
FUEL SYSTEM :	
Fuel Tank / Pipes	Leakages / Fitment.
Fuel Tap	Smooth Operation.
Carburetor	Leakages (External), Pipe connections
FRAME :	
Wheels	
Tyre Pressure : Front Rear (Solo) Rear (Pillon)	 1.75 Kg/cm^2 (25 PSI) 2.00 Kg/cm^2 (28.0 PSI) 2.25 Kg/cm^2 (32.0 PSI)
Rim Run out with tyre	Radial 0.5mm or less Axial 0.8 mm or less
Spokes	Check and Tighten if required
Drive Chain	Slackness (30~35mm) Lubrication (SAE 90) Check chain lock position. 
CONTROLS	
Brakes	Front brake lever play (2~3mm) Rear brake pedal play (15~20mm)
Clutch	Lever free play (2~3mm) Smooth operation
Throttle	Grip free play 2~3 mm. Smooth operation
TPS	Self return, Cable free play, Routing and Functions of TPS
Choke	Working and Smooth operation.

Pre-Delivery Inspection

To Check	Check For
SUSPENSION	
Front Fork	Oil leakage & Smooth operation.
Rear Shockabsorber	Proper notch setting - same on both sides - 2nd notch. Smooth operation.
Steering	Smooth operation (Loose/Tight)
Lock Operation	Steering & Ignition, Fuel tank, Seat lock, Side cover LH.
Fasterners (Check torque and correct if required)	Front axle nut (5.0 $\pm$ 0.5 kgm) Rear axle nut (5.5 $\pm$ 0.5 kgm) Fork lower clamping bolt (3 $\pm$ 0.5 kgm) Trailing arm nut (4.5 $\pm$ 0.5 kgm) Rear shocker mounting nut (4.5 $\pm$ 0.5 kgm) Steering top bolt (2.5 $\pm$ 0.5 kgm) Holder handle upper bolts (4 Nos.) (1.4 $\pm$ 0.2 kgm) Holder handle flanged nuts (2 Nos.) 3.5 $\pm$ 0.3 kgm)
ELECTRICAL	
Battery	Electrolyte level to max level mark. Specific gravity 1.240, Charging status - full Connect -ve terminal & apply petroleum jelly.
	Routing of Breather pipe, Fuse.
All bulbs Working	Head, Pilot, Tail / Stop, Speedometer, Side indicator lights.
Horn	Working
Switch Operation	LH and RH control, Ignition switch, Brake switch (Front/Rear).
TEST DRIVE (4~5 Kms)	
Starting *	Cold start and Warm start. Idling speed (in warm condition) 1300 $\pm$ 150 rpm.
Drive Ability	Throttle response.
	Clutch operation / Gear shifting.
	Brakes (Front & Rear).
	Speedometer & Odometer
CO % Check	CO should be 2.0 % in warm condition.
Cleaning	Wash & Clean vehicle properly.

Any other defects
Look for any external damages in Transit : Please check, record and rectify. **1. Moisture / Oil collecting tube of Air Filter should be properly fitted and routed correctly.**

Periodic Maintenance & Lubrication Chart

Sr. No.	Operation		Whichever comes first		RECOMMENDED FREQUENCY				
					Initial				Subsequent
			OR	Kms	750	2,500	5,000	2,500	Every 2,500 Km
				Days	30	90	150	225	Every 75 days
1.	Servicing				●	●	●	●	●
2.	Valve Clearance	A					●		Every 5000 Kms
3.	Engine oil (SAE 20W40 of API SG + JASO MA)	R			●		●		Every 5000 Kms
4.	Oil Strainer	CL			●				Every 10000 Kms
5.	Air cleaner element *	CL			●	●	●	●	●
6.	Air Cleaner element	R							Every 10000 Kms
7.	Carburetor / Idle speed / CO %	CL,A			●	●	●	●	●
8.	Fuel System leakages	C,R			●	●	●	●	●
9.	Fuel Pipes	R							Every Year
10.	Spark Plug / Gap	CL,A			●	●	●	●	●
11.	Spark Plug	R							Every 10000 Kms
12.	Brake light switch	C,A			●	●	●	●	●
13.	Clutch play	C,A			●	●	●	●	●
14.	Throttle play	C,A			●	●	●	●	●
15.	TPS adjustment and proper functioning	C,A			●	●	●	●	●
16.	Front brake lever play	C,A			●	●	●	●	●
17.	Rear brake pedal play	C,A			●	●	●	●	●
18.	Brake lining wear	C,R			●	●	●	●	●
19.	Steering play	C,A,R			●	●	●	●	●
20.	All fasteners tightness	T			●	●	●	●	●
21.	Tyre tread wear	C,R				●	●	●	●
22.	Spoke tightness & Rim run out	C,A			●	●	●	●	●
23.	General lubrication	L			●	●	●	●	●
24.	Steering stem bearing	L	1 Year						Every 10000 Km
25.	Wheel bearing	L	1 Year						Every 10000 Km
26.	Swing arm pivot pin	L					●		Every 10000 Km
27.	Front Fork	C			●		●		Every 5000 Kms
28.	Front Fork oil	R							Every 10000 Km
29.	Battery electrolyte level	C,A	15 Days		●	●	●	●	●
30.	Rear shock absorber	C,R			●	●	●	●	●
31.	Front Brake Cable	C,R	2 Years						
32.	Drive chain	L			Every 500 Kms				
33.	Drive chain slack	C,A			Every 2500 Kms				
34.	Valve lapping								Every 30000 Kms
35.	Valve oil seal	R							Every 30000 Kms

• : Indicates operation to be performed
* : More frequent cleaning may be required when driving in dusty condition.

Note : Parts / Lubricants to be replaced as per Periodic Maintenance and Lubrication chart are mandatory and the same are chargeable to customer.

A : Adjust **CL : Clean**
C : Check **L : Lubricate**
T : Tighten **R : Replace**

Service Wise Part Kit

Kms limit	Days	Item Description	Qty
500 - 750	30 - 45	Engine Oil	900 ml
		Clutch Cover Gasket	1
2000 - 2500	240	NIL	NIL
4500 - 5000		Engine Oil	900 ml
		Drive Chain lock and link set	1
7000 - 7500		NIL	NIL
9500 - 10,000	75 days from the last service	Engine oil	900 ml
		Clutch Cover Gasket	1
		Fork Oil	300 ml
		Fork Oil Seal and Dust Seal Kit	1
		Air Breather Tube	1
		Air Filter Foam element	1
		Air Filter Cover "O" Ring	1
		Rear Wheel Damper	1
		Drive Chain Lock and Link Set	1
12000 - 12500		NIL	NIL
14500 - 15000	75 days from the last service	Engine Oil	900ml
		Drive Chain lock and link set	1
		Brake Shoes (if worn out)	1 pair
		Steering stem bearing (If required)	2
		Spark Plug	1
		Cylinder head gasket (If required)	1
17000 - 17500		Nil	Nil
19500 - 20000		Engine oil	900 ml
		Clutch Cover Gasket	1
		Fork Oil	300 ml
		Fork Oil Seal and Dust Seal Kit	1
		Air Breather Tube	1
		Air Filter Foam element	1
		Air Filter Cover "O" Ring	1
		Rear Wheel Damper	1
		Drive Chain Lock and Link Set	1
		Clutch plate (If required)	1
22000 - 22500		NIL	NIL
24500 - 25000		Engine oil	900 ml
		Chain sprocket kit (If required)	1

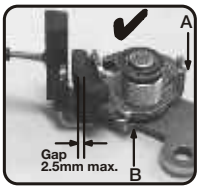
Service Wise Part Kit

Kms limit	Days	Item Description	Qty
27000 - 27500	75 days from the last service	NIL	NIL
29500 - 30000		Engine Oil	900ml
		Clutch Cover Gasket	1
		Air Filter Foam element	1
		Air filter cover O ring	1
		Air breather tube	1
		Spark Plug	1
		Fork Oil	300 ml
		Fork Oil Seal and Dust Seal Kit	1
		Drive Chain lock and link set	1
		Brake shoes (If worn out)	1 pair
		Cylinder head gasket (If required)	1
		Valve oil seal	1
		Steering stem bearing (If required)	2
		Rear Wheel Damper	1
		Front brake cable	1
		Acclerator cable	1
		Clutch cable	1
		Carburettor duct	1
		Fuel pipes	1

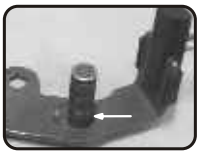
Engine Tune-Up for Getting Optimum Mileage

TPS: PERIODIC MAINTENANCE

Check swivel bracket movement by roating it with hand. It should not be sticky in operation and should return back itself on releasing.



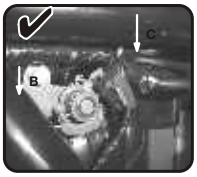
- Return spring should be OK.
- End point should be intact properly at point (A) and (B).



- Magnet should not touch with reed switch
- Gap between Magnet and Reed switch should not be more than 2.5 mm.
- Movement of accelerator/TPS cable should be free.
- **Greasing on TPS pin at every 5000 Km.**

TPS : SETTING

- Accelerator cable play : 2 ~ 3 mm (A)



- TPS cable free play - Zero
- Note : TPS cable free play should always be zero.(B)

- Swivel bracket must rest on stopper as shown in picture.(c)
- Never foul TPS cable by external accessories

TPS : CHECKING

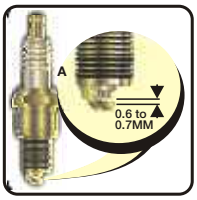
Fig.1

- Keep throttle at zero position (Fig.1).
- On connecting multimeter to TPS coupler it should show continuity.
- When throttle is open and TPS magnet crosses to straight edge of fix bracket (Fig.2) multimeter should show discontinuity.

Fig.2

- On De-acceleration, when TPS magnet re-coinsides with straight edge of fix bracket (Fig.2). Multimeter should show continuity.

ENGINE TUNE -UP



SPARK PLUG : UR 3AC, PRZ 9HC.
SPARK PLUG : 0.6 to 0.7 mm **gap**
Replace at every : 10,000Km.

AIR FILTER :
- Clean every 2,500 Km
- Replace every 10,000 Km.

COMPRESSION PRESSURE
- Std Limit : 12~14 Kg/cm^2
- Service Limit: 10.5Kg/cm^2

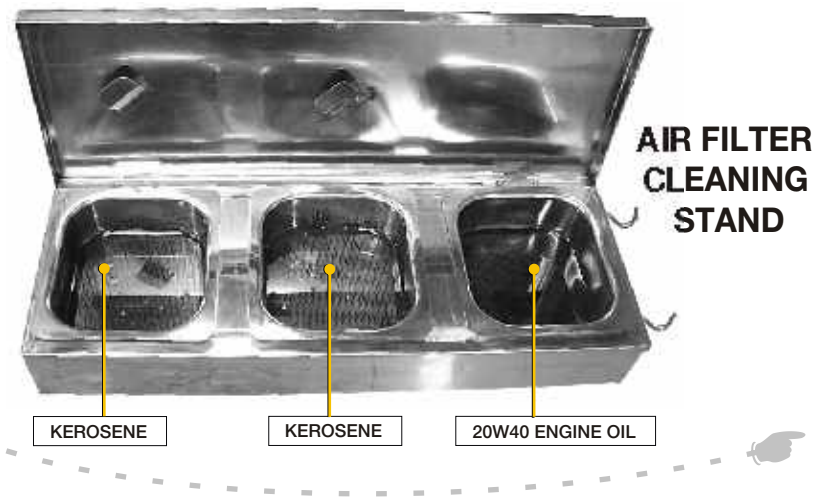
TAPPET CLEARANCE
- Inlet valve: 0.05 mm
- Exhaust valve: 0.08 mm

CARBURATTOR :
- Idling: 1300 $\pm$ 150 rpm.
- Jet needle 'E' clip position 4th from top.
- Air screw setting: 2.5$\pm$1.5 turns
- CO % : 1.5 to 2.5 %.

OTHER MANDATORY CHECKS

a. Ensure no fuel leakage through fuel cock, fuel lines.
b. Ensure free rotation of both wheels.
c. Ensure correct tyre pressure - Front wheel : 25 PSI, Rear wheel : 28 PSI (Solo) 32 PSI (Pillion)
d. Set control cable free play:
   - Clutch lever 2~3 mm.
   - Choke Cable 2~3 mm
   - Accelerator Cable 2~3 mm
   - Front brake lever 2~3 mm.
   - Rear brake pedal 20~30 mm.
e. Chain slackness : 30 to 35 mm.
f. Gap between Sensor strip of Magneto Rotor & Pole of Pick-up coil 0.5~0.7 mm

Air Filter Cleaning Procedure



Primary & Secondary Air Foam Filter

Precautions :

1. Never use high flash point petrochemicals for cleaning air filter foam.

This increases :

- ***Possibility of foam catching flame.***
- ***Poracity & may lead to dust passing through it inlong term.***

2. Don't twist air filter foam, as it may lead to tear / bulge.
3. Foam lubrication is utmost important since dry foam can lead to dust entry inside engine.
4. Never use other grade oil for lubrication of the foam.
5. Dry excess amount of oil by cotton cloth.
6. Replace kerosene and engine oil after cleaning 20 to 25 foams.
7. In dusty area, increase cleaning frequency of foam.

1st Stage: Clean With Kerosene

Squeeze

2nd Stage: Clean With Kerosene Again

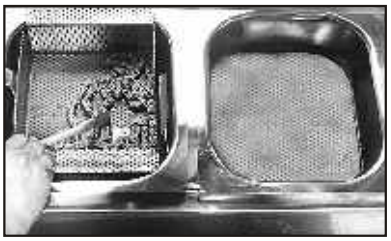
Blow Low Pressure Compressed Air

3rd Stage: Dip Into Engine Oil (20W40)

Squeeze & Remove Excess Oil

Dry With Cotton Cloth

Chain Cleaning Procedure



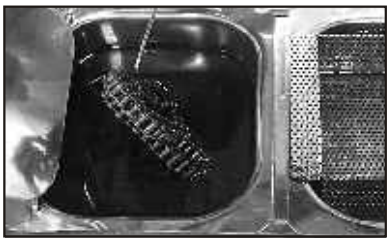
1st Stage

Clean with Kerosene

2nd Stage:

Clean with Cleaner Kerosene again

Blow Compressed Air



3rd Stage

Dip into SAE 90 Oil

Soak into SAE 90 Oil

Final Stage

Hook Chain for dripping of excess oil

Service Data - Engine

Cam Sprocket Diameter

Standard	56.71
Service Limit	56.40

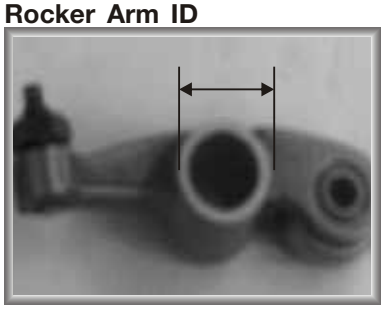
Rocker Arm Shaft Diameter

Standard	9.98 ~ 9.99
Service Limit	9.95

Valve Spring Free Length

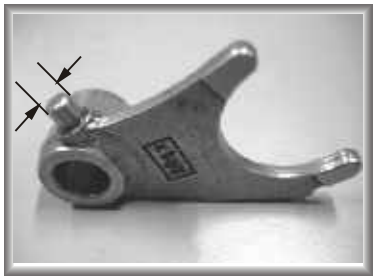
Standard	39.55
Service Limit	36.10

Rocker Arm ID



Standard	10 ~ 10.015
Service Limit	10.05

Shift Fork Guide Pin Diameter



Standard	3.9 ~ 4.0
Service Limit	3.8

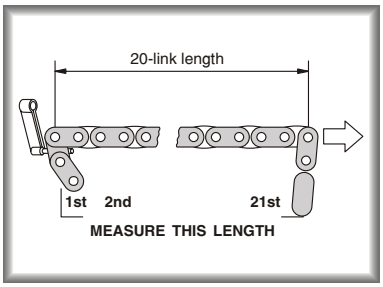
Cylinder Head Warpage

Standard	
Service Limit	0.05

Shift Drum Groove Width

Standard	5.05 ~ 5.20
Service Limit	5.30

Camshaft Chain 20 Links

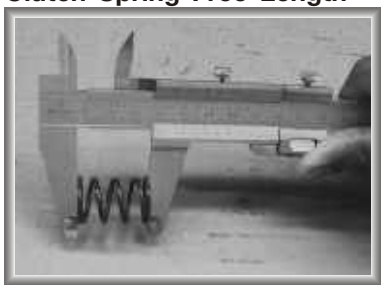


Standard	127.00 ~ 127.48
Service Limit	128.90

Friction Plate Thickness

Standard	2.90 ~ 3.05
Service Limit	2.70

Clutch Spring Free Length

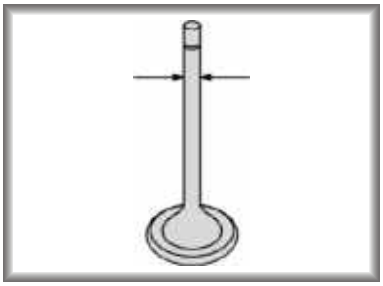


Standard	26.4 ~ 27.0
Service Limit	26.0

Valve Clearance

	Inlet	Exhaust
Standard	0.05	0.1
Service Limit		

Valve Clearance Dia



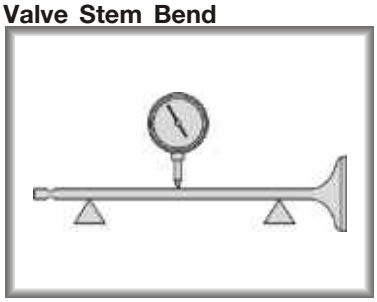
	Inlet	Exhaust
Standard	5.49~5.51	5.48~5.49
Service Limit	5.48	5.47

Service Data - Engine

Piston Ring End Gap

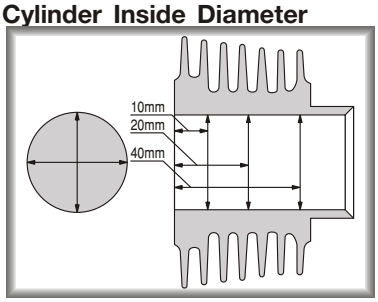
	Top	Second
Standard	0.20~0.35	0.35~0.50
Service Limit	0.65	0.85

Valve Stem Bend



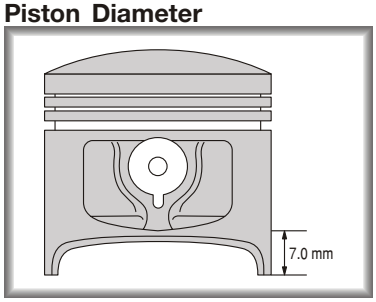
Standard	
Service Limit	0.05

Cylinder Inside Diameter



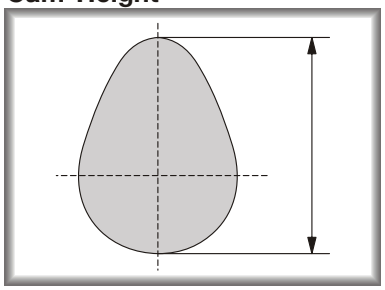
Standard	Group A: 52.997~53.003 Group B: 53.003~53.009

Piston Diameter



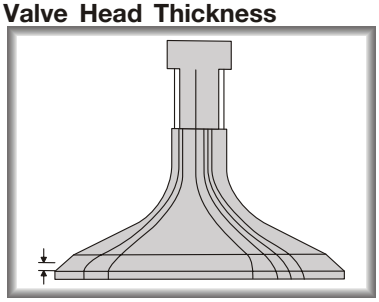
Standard	Group A: 52.981~52.986 Group B: 52.987~52.993

Cam Height



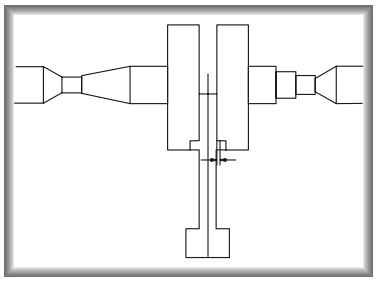
	Inlet	Exhaust
Standard	29.000	29.000
Service Limit	28.925	28.925

Valve Head Thickness



	Inlet	Exhaust
Standard	0.55~0.80	0.85~1.15
Service Limit	0.4	0.5

Conrod Big End Axial Clearance



Standard	0.1 ~ 0.2
Service Limit	0.7

Crankshaft Run Out

Standard	TIR 0.02 Max.
Service Limit	TIR 0.05

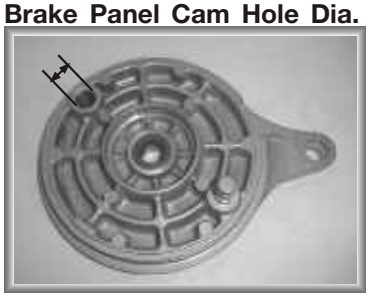
ALL DIMENSIONS ARE IN MM

CARBURETTOR SPECIFICATIONS

Item	
Make & Type	Keihin PB 16
Idling speed	1300±150 rpm
Air screw	1.5 ± 1 Turn
Jet needle clip position	4TH from Top
Main jet	# 78
Pilot jet	# 40
Jet needle no.	# NFHA
Float height	11.7mm

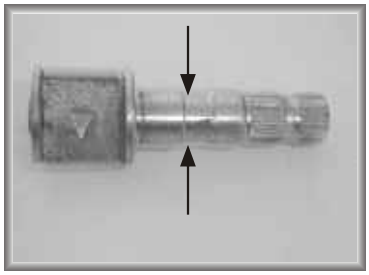
Service Data - Frame

Brake Panel Cam Hole Dia.



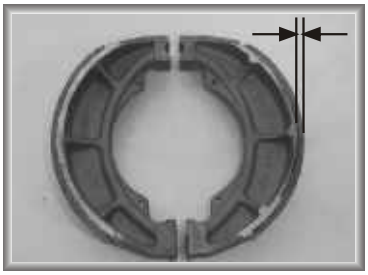
Standard	12.0 ~ 12.03
Service Limit	12.8

Brake Cam Diameter



Standard	11.95 ~ 11.98
Service Limit	11.88

Brake Shoe Lining Thickness

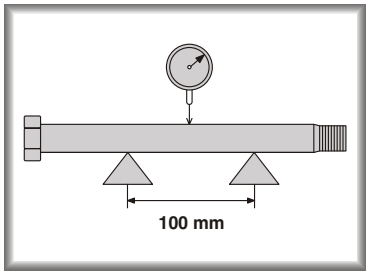


Standard	3.9 ~ 4.5
Service Limit	2.5

Brake Drum Inside Diameter

Standard	110.00 ~ 110.16
Service Limit	110.75

Axle Run Out



Standard	TIR 0.05
Service Limit	TIR 0.2

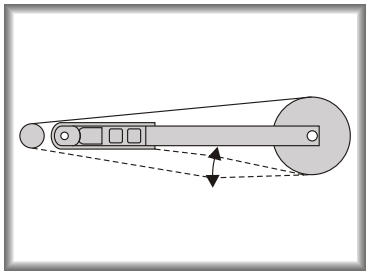
Axial Wheel Run Out

Standard	TIR 1.0 or Less
Service Limit	TIR 2.0 or Less

Radial Wheel Run Out

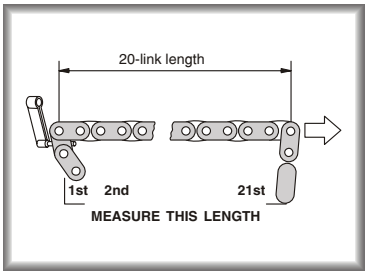
Standard	TIR 0.8
Service Limit	TIR 2.0

Drive Chain Slack



Standard	20 ~ 30
Service Limit	> 30

Drive Chain Length



Standard	254 ~ 254.6
Service Limit	260

Rear Sprocket Warp

Standard	TIR 0.4 or Less
Service Limit	TIR 0.5 or Less

Rear Tyre Tread Depth

Standard	7.0
Service Limit	1.0

Front Tyre Tread Depth

Standard	5.0
Service Limit	1.0

Important Assembly Skill Tips

While removing cam chain sprocket -

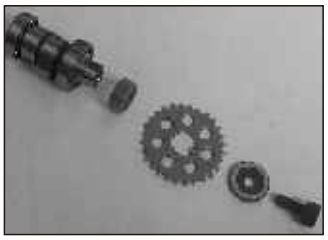
Use special tool No - E6101200 (A) to Hold Cam Sprocket to loosen & tighten centre allen bolt.

Note: i) Allen bolt has RH thread

ii) Use loctite no - 242

Always Use special tool No E6101100 (A) for fitting bush for gear drum change (B) in Crankcase

Always ensure fitting of a washer provided below 2nd gear Input.



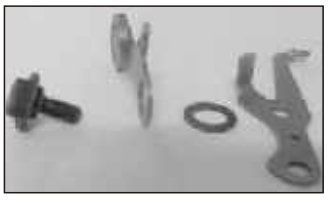
While fitting cam chain sprocket -

Fit one coller cam (A) below the Sprocket (B) and one washer special (C) above Cam sprocket before tightening the allen bolt.

Groove side surface of washer special should be kept towards Cam Sprocket.

For removing & tightening centrifugal filter nut-

Use Special Tool - 3710 DJ43



Fit one washer (A) stopper cam gear shift (B) and coller type bolt (C).

The stopper cam gear shift should not get jam after tightening the bolt

Torque - .9 to 1.1 kgm

Use loctite no - 242.

Special Tools - Engine

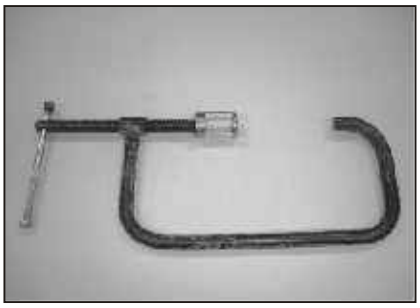
Dia. = 25.9±0.1

Special Nut

Drawing No.:
37 10DJ 43

Application :
Used to remove / fit of centrifugal oil filter nut.

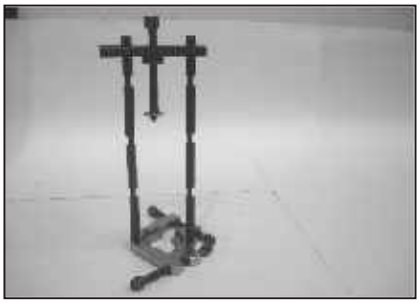
Note : Existing tool can be used by reducing diameter to 25.9 ± 0.1 mm



Adaptor & Valve Spring compressor

Adaptor - Drawing No.: 37 10DJ 78
Valve Spring Compressor - Drawing No.: 37 1031 07

Application :
Used for assembling / dismantling inlet, exhaust valves by compressing spring in cylinder head.



Bearing Race Extractor

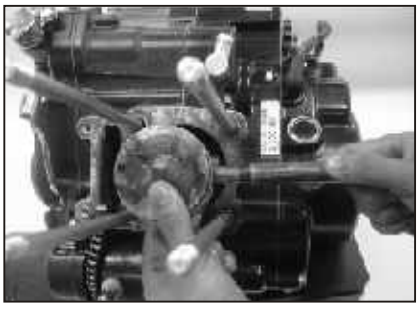
Drawing No.:
37 00DJ 01

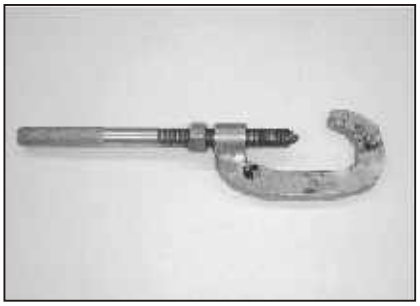
Application :
Used for removing the lower bearing race from 'T'

Drift

Drawing No.:
74 9309 89

Application :
To remove piston pin.

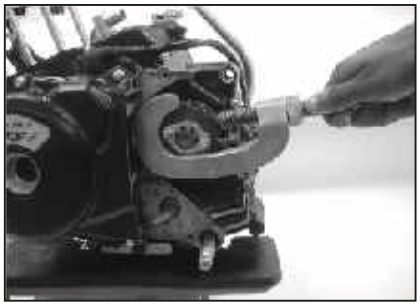




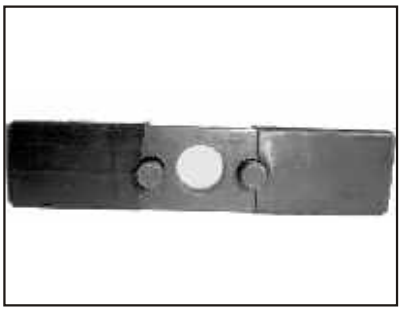
Output Sprocket Holder

Drawing No.:
37 1030 53

Application :
To hold the output sprocket while removing sprocket bolt



Special Tools - Engine



Cam Sprocket Holder

Part No. : F41AJA08

Application:

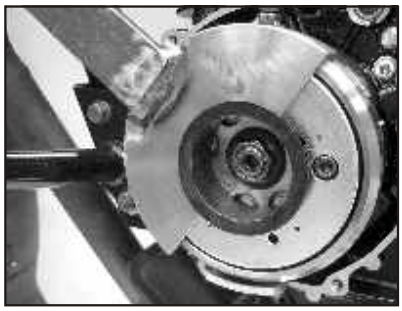
For holding sprocket during removal / refitting of Cam sprocket allen bolt.

Magneto Rotor Holder

Part No. : F41AJA09

Application :

To hold rotor while loosening / tightening its nut.

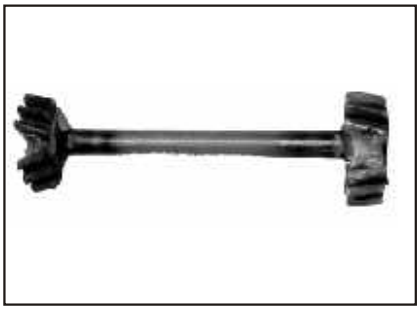


Magneto Rotor Puller

Part No. : F41AJA10

Application :

To pull out the rotor from crankshaft assembly.



Primary Gear Holder

Part No. : F41AJA11

Application :

To hold primary & secondary gear while loosening / tightening the primary gear nut & special nut securing clutch.

Socket for Clutch Nut

Part No. : F41ZJA54

Application :

To loosen / tighten special nut securing clutch.

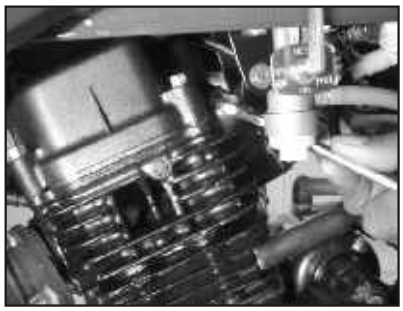
Special Tools - Engine

Spark Plug Spanner

Part No. : 37 1040 51

Application :

For removing & refitting spark plug exhaust & Intake side.



Valve Tappet Adjuster

Part No. : 37103153

Application :

To hold Valve Tappet screw while adjusting tappet clearance.

Drift Piston Pin

Part No. : 37 1010 06

Application :

To remove refit piston pin.

Special Tools - Vehicle

Fork Oil Seal Driver

Part No. : 37 1830 07

Application :

To fit fork oil seal in its seat provided at outer pipe ID.

Stem Bearing Driver

Part No. : 37 1830 05

Application :

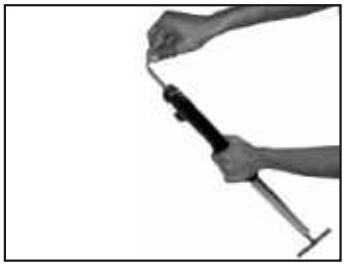
To fit bearing race on fork under holder bracket.

Front fork cylinder holder handle with adaptor

Part No. : 37 1830 06

Application :

To hold fork cylinder while loosening / tightening fork allen head bolt at bottom.



Installer Upper & Lower Bearing Race Frame

Part No. : 37 1801 06

Application :

To install upper & lower steering races / cones into their seats inside frame.

Bearing Race Extractor

Part No. : 37 1030 48

Application :

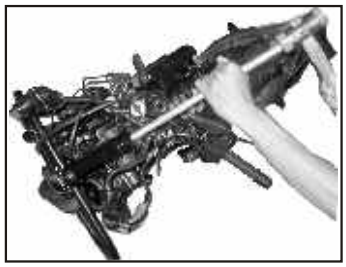
To Pull out steering race from ' Fork Under Holder bracket'

Steering Cone Remover

Part No. : 37 1805 06

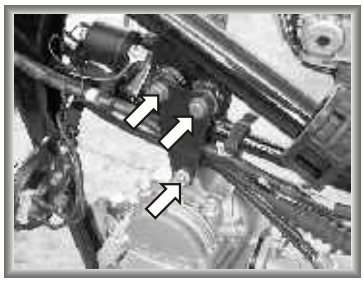
Application :

To remove steering cones from frame.



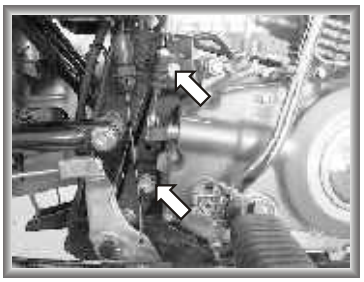
Tightening Torques - Engine

Engine Mounting Bolts



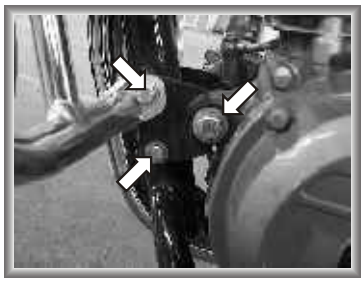
M8-2.3-2.9 Kg-m / M10-4.0-4.5 Kg-m

Engine Mounting Bolts



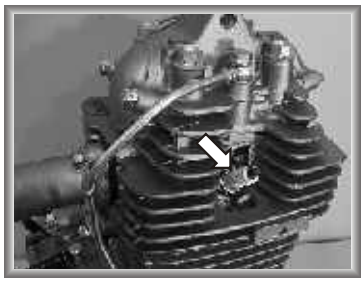
M8-2.3-2.9 Kg-m / M10-4.0-4.5 Kg-m

Engine Mounting Bolts



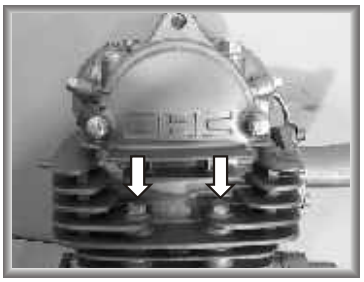
M8-2.3-2.9Kg-m / M10-4.0-4.5 Kgm

Spark Plug



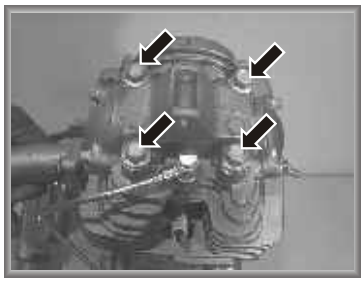
1.1 to 1.5 kgm.

Cylinder Head Bolts



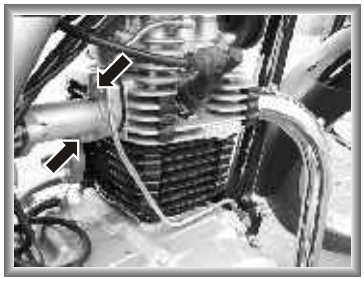
M8 - 0.9 to 1.1 kgm

Cylinder Head Bolts



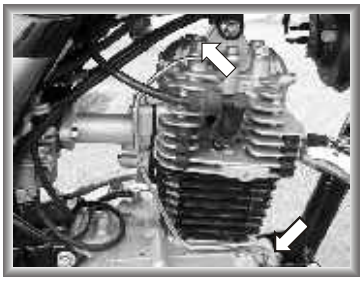
M8 - 2.0 to 2.4 kgm.

Intake Pipe Bolts



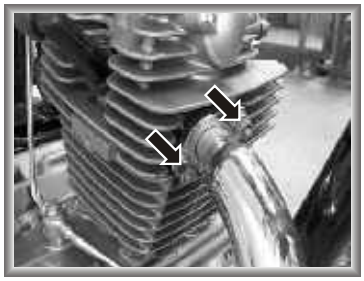
1.3 to 1.6 kgm.

Oil Pipe Banjo Bolts



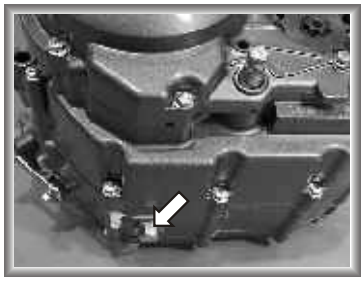
A - 1.3~1.7 kgm / B - 2.2~2.8 kgm

Silencer Mounting Nuts



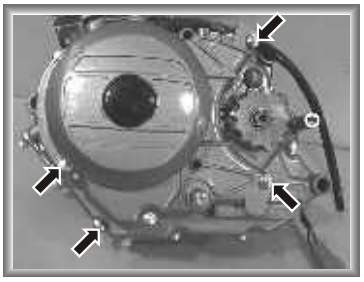
1.4 to 1.9 kgm.

Engine Drain Bolt



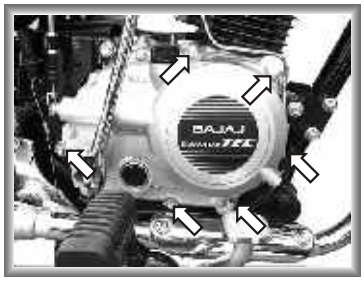
2.7 to 3.3 kgm.

Generator Cover Mtg. Bolts



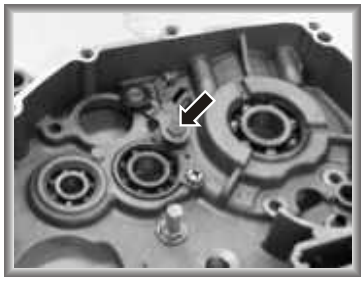
0.9 to 1.1 kgm

Clutch Cover Mtg. Bolts



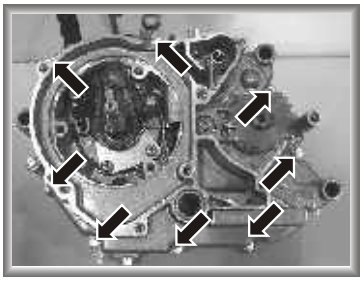
0.9 to 1.1 kgm.

Shift Drum Position Lever Nut



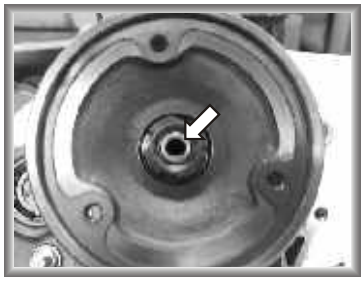
0.9 to 1.1 Kg-m (Loctite-243)

Crankcase Joining Bolts



1.0 to 1.1 kgm.

Fly Wheel Nut



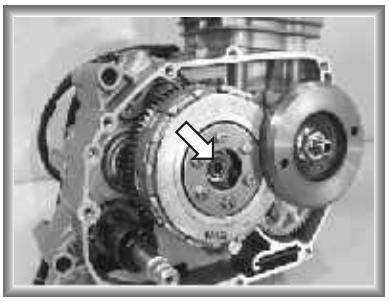
5.4 to 5.6 kgm (Loctite 243)

Tightening Torques - Engine

Rotor Nut

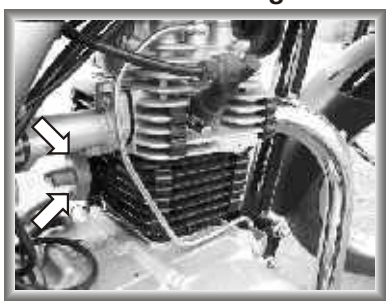
4.0 to 4.5 kgm.

Clutch Nut



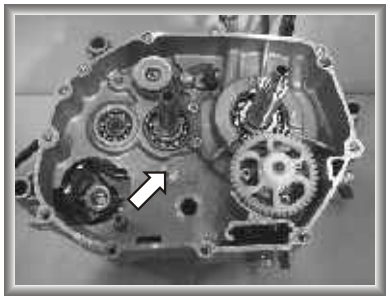
9.0 to 10.0 kgm

Chain Tensioner Mtg. Bolts



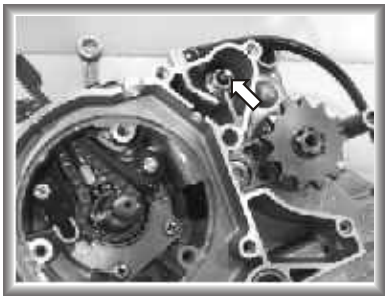
0.45 to 0.61 kgm

Shift Shaft Return Spring Pin



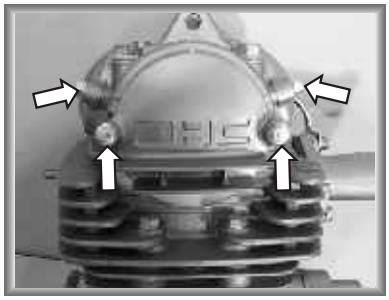
2.8 to 3.2 kgm (Loctite 638)

Neutral Switch



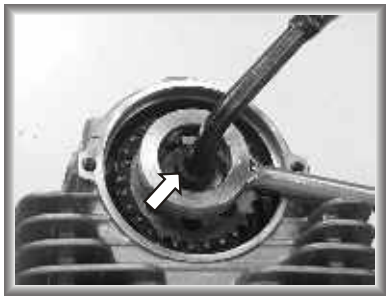
1.1 to 1.3 kgm (Loctite 243)

OHC & Tappet Cover Mtg. Bolts



0.45 to 0.61 kgm.

Cam Sprocket Mtg. Bolt



1.3 to 1.5 kgm (Loctite 243)

Valve Adj. Screw Lock Nut

0.8 to 1.0 kgm

Tightening Torques - Frame

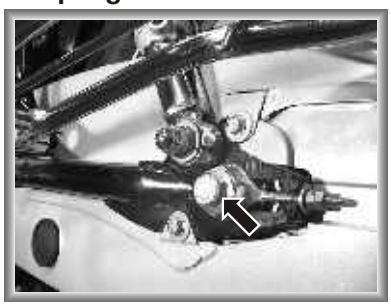
Front Axle Nut

5.0 ± 0.5 kgm

Rear Axle Nut

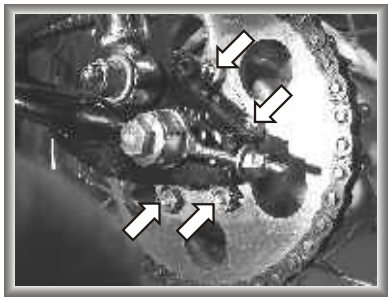
5.5 ± 0.5 kgm

Coupling Sleeve Nut



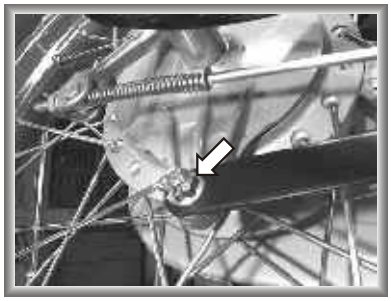
6.5 ± 0.5 kgm

Rear Sprocket Mtg. Nut



3.5 ± 0.3 kgm

Torque Link Nut

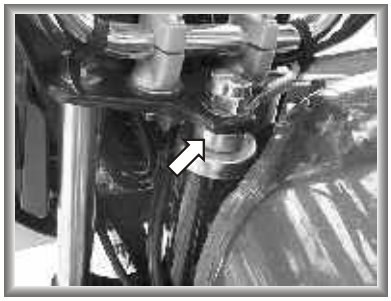


2.5 ± 0.3 kgm

Steering Stem Head Bolt

2.5 ± 0.5 kgm

Steering Stem Lock Nut



0.5 ± 0.1 kgm.

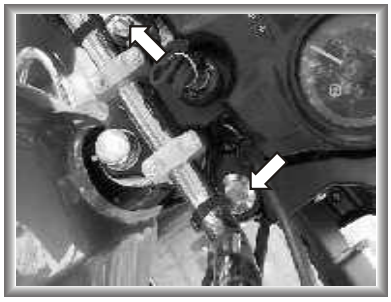
Handle Bar Clamp Bolts

1.4 ± 0.2 kgm

Front Fork Clamp Bolt

3.0 ± 0.5 kgm.

Front Fork Top Bolt

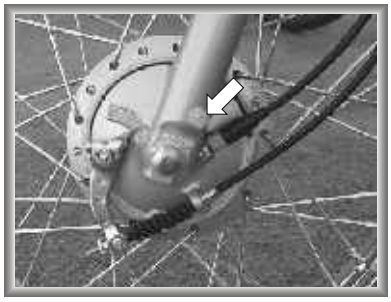


2.5 ± 0.5 kgm.

Front Fork Bottom Allen Bolt

2.0 ± 0.5 kgm

Front Fork Oil Drain Plug



0.6 ± 0.9 kgm.

Pickup Coil:

Range	Connection		Reading
	Meter +ve	Meter -ve	(Ohms)
(Ohms)	White / Red	White / Green	180 - 240

Excitor Coil :

Range	Connection		Reading
	Meter +ve	Meter -ve	(Ohms)
(Ohms)	Red	White / Green	270 - 350

Battery Charging Coil :

Range	Connection		Reading
	Meter +ve	Meter -ve	(Ohms)
(Ohms)	Blue / White	White / Green	0.5 - 1.0

Lighting Coil :

Range	Connection		Reading
	Meter +ve	Meter -ve	(Ohms)
(Ohms)	Yellow / Red	White / Green	0.5 - 1.0

Rectifier & Regulator Assembly

AC voltage measurement:

Range	Meter +ve	Meter -ve	Reading
AC 25 V	Red / Black	Black / Yellow	13 - 14 V at 4000 rpm

DC charging voltage measurement:

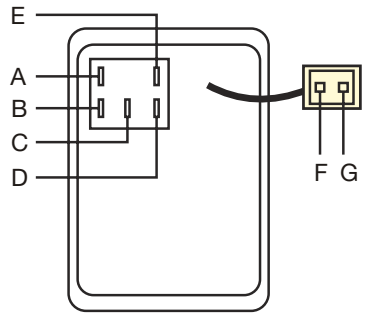
Range	Meter +ve	Meter -ve	Reading
DC 25 V	White wire of RR unit	Battery - ve terminal	13 - 15 V at 4000 rpm

DC charging current measurement:

Range	Meter +ve	Meter -ve	Reading
20 A	White wire of RR unit	Battery + ve terminal	1 - 2 Amp at 4000 rpm

CDI Unit

Range / Diode	Meter positive (+ve) lead connection							
Meter negative (-) lead connection		A	B	C	D	E	F	G
	A		∞	∞	∞	∞	∞	∞
	B	∞		∞	∞	∞	0	∞
	C	∞	0.7-1.5		0.5-1.0	∞	0.7-1.5	∞
	D	∞	0.5-1.0	∞		∞	0.5-1.0	∞
	E	∞	∞	∞	∞		∞	∞
	F	∞	0	∞	∞	∞		∞
	G	∞	∞	∞	∞	∞	∞	



Note : Use Digital Multimedia of make Kusum - Model 603

Electricals and Battery Maintenance

1. Resistance values of charging coil, pick up coil, lighting coil & Battery charging coil
   a. Lighting coil resistance between Y & B/Y – 0.4 ± 0.04 ohms
   b. Battery charging coil resistance bet L/W & B/Y - 0.5 ± 0.05 ohms
   c. Exciter coil resistance bet Red & B/Y – 310 ± 30 ohms
   d. Pulser coil resistance bet R/W & B/Y – 220 ± 20 ohms

2. Resistance values of H.T. Coil
   a. Primary coil winding - 0.45 ± 0.04 ohms
   b. Secondary coil winding - 4.7 ± 0.4 K ohms

3. Battery charging procedure
   a. Each cell of battery is to be filled up with battery grade sulphuric acid (electrolyte) of sp. gravity 1.24 ± 0.01 up to max (upper) level mark. the initial temperature of the electrolyte should not exceed 35°c.
   b. Keep the batteries for a period of 2 hrs. top up the electrolyte level to the upper level mark if required with electrolyte of specific 1.24 ± 0.01.
   c. Ensure that the temperature of electrolyte has fallen below 40°c. then charge the battery at the rate of 0.25 amp (in constant current mode) for min. 12 hrs and check for,
      - All the cells are gassing freely.
      - Terminal voltage & specific gravity readings for 3 consecutive hrs.

Values of voltage & specific gravity remain constant at the end of charging.

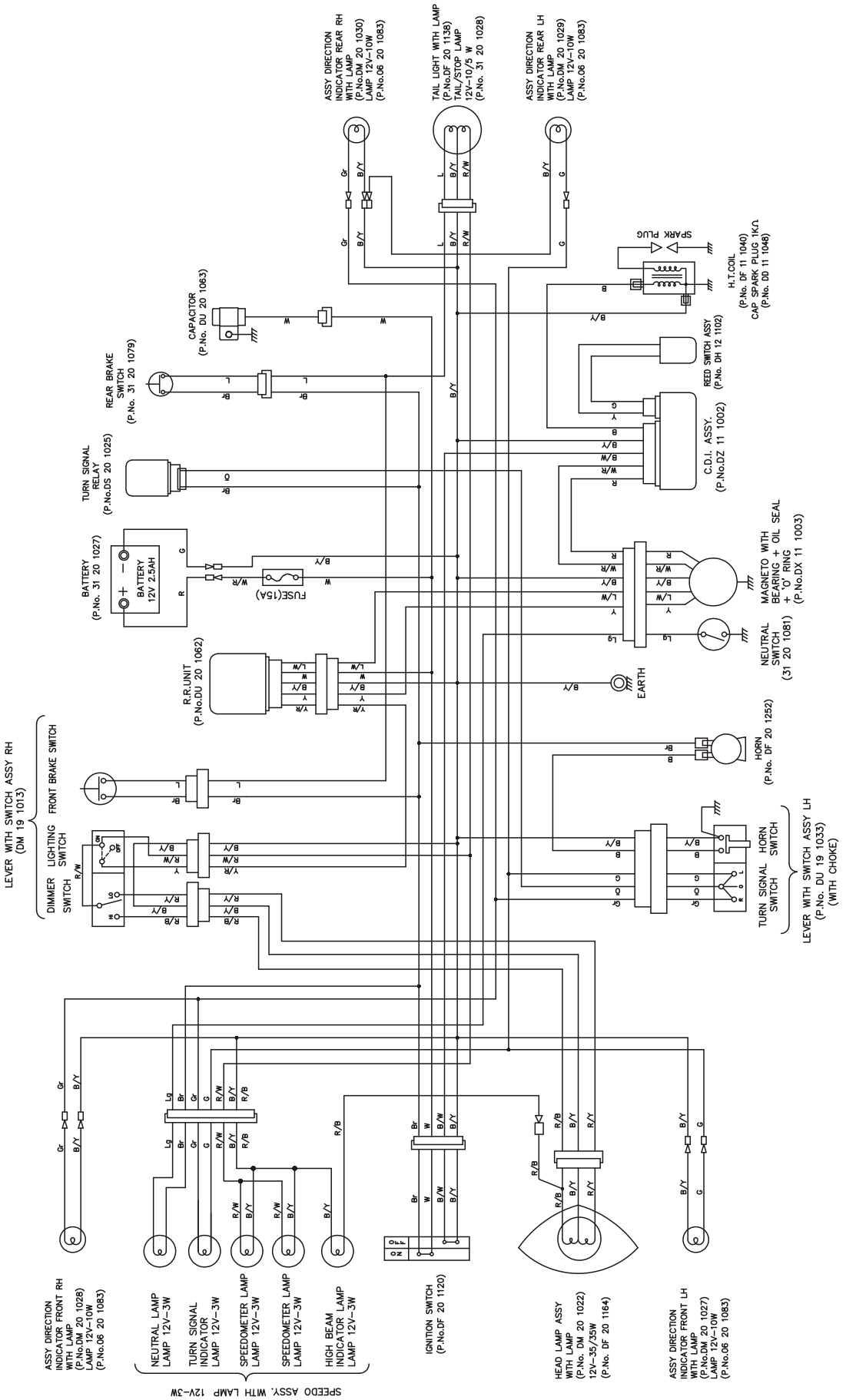
This is known as full charged condition of a battery. at this point, specific gravity of electrolyte should be 1.24 ± 0.01.

If electrolyte sp. gravity is noted to be more or less than the specified range as mentioned above, adjust the same by either diluting with distilled water or topping with electrolyte of sp. gravity 1.24 ± 0.01.

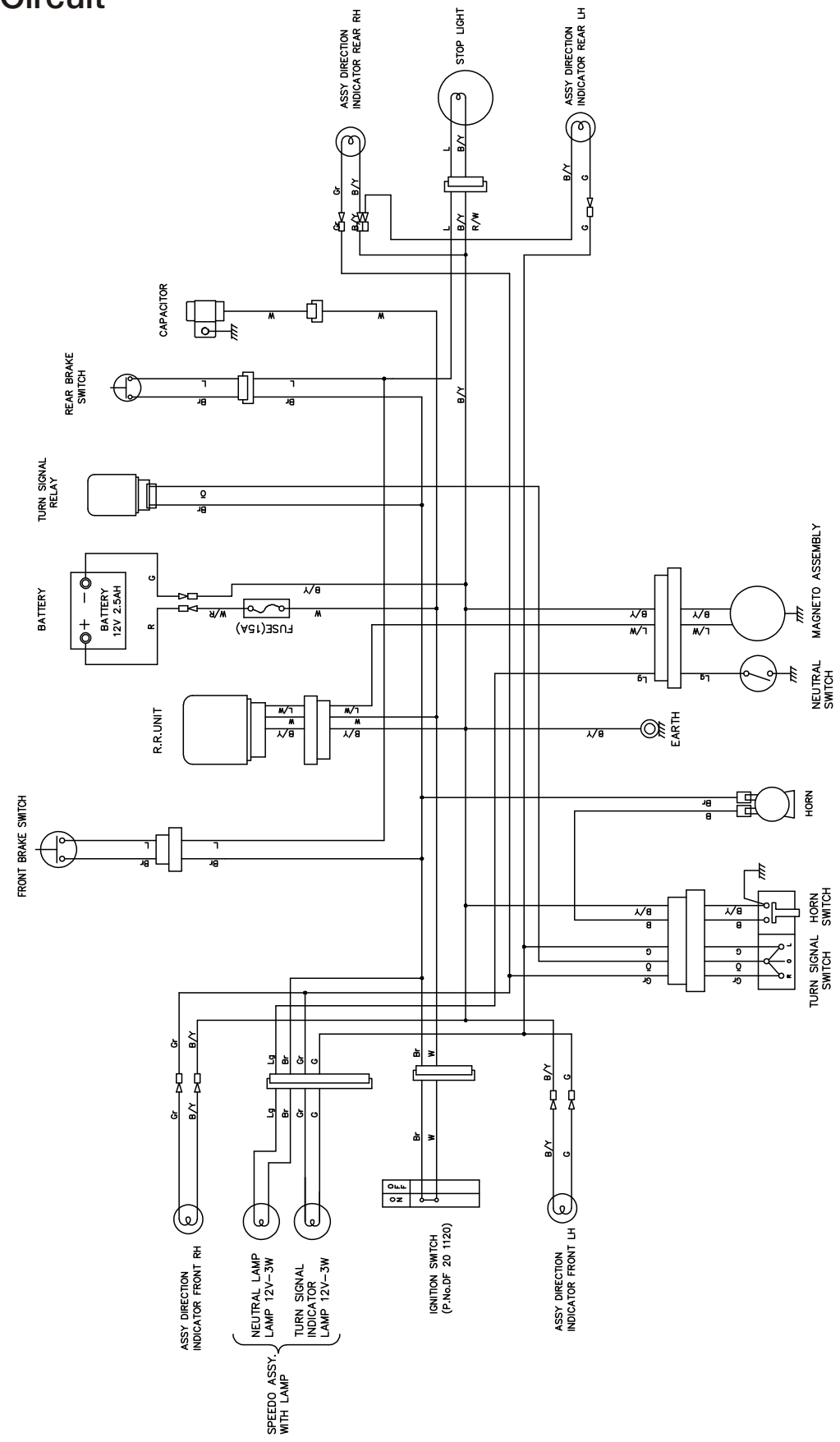
But each correction must be followed by about one hour charging for proper mixing before sp. gravity reading is taken again. ensure proper final levels.

   d. Temperature of electrolyte in any of the cells during charging should not allowed to exceed 50°c. if this occurs charging is to be interrupted. charging can be continued after the temperature of the electrolyte in the cells has fallen below 40°c.
   e. Battery terminal voltage at the end of the charging & in connected condition to the charger should be 16.0v min & specific gravity should be 1.24 ± 0.01. battery charging current should be 0.25 amp const.
   f. Terminal voltage of the battery after settlement of 24 hrs. should be 12.4v min.
   g. After completion of charging, batteries are to be washed under tap water & then to be cleaned, dried properly.

Main Electrical Wiring Diagram

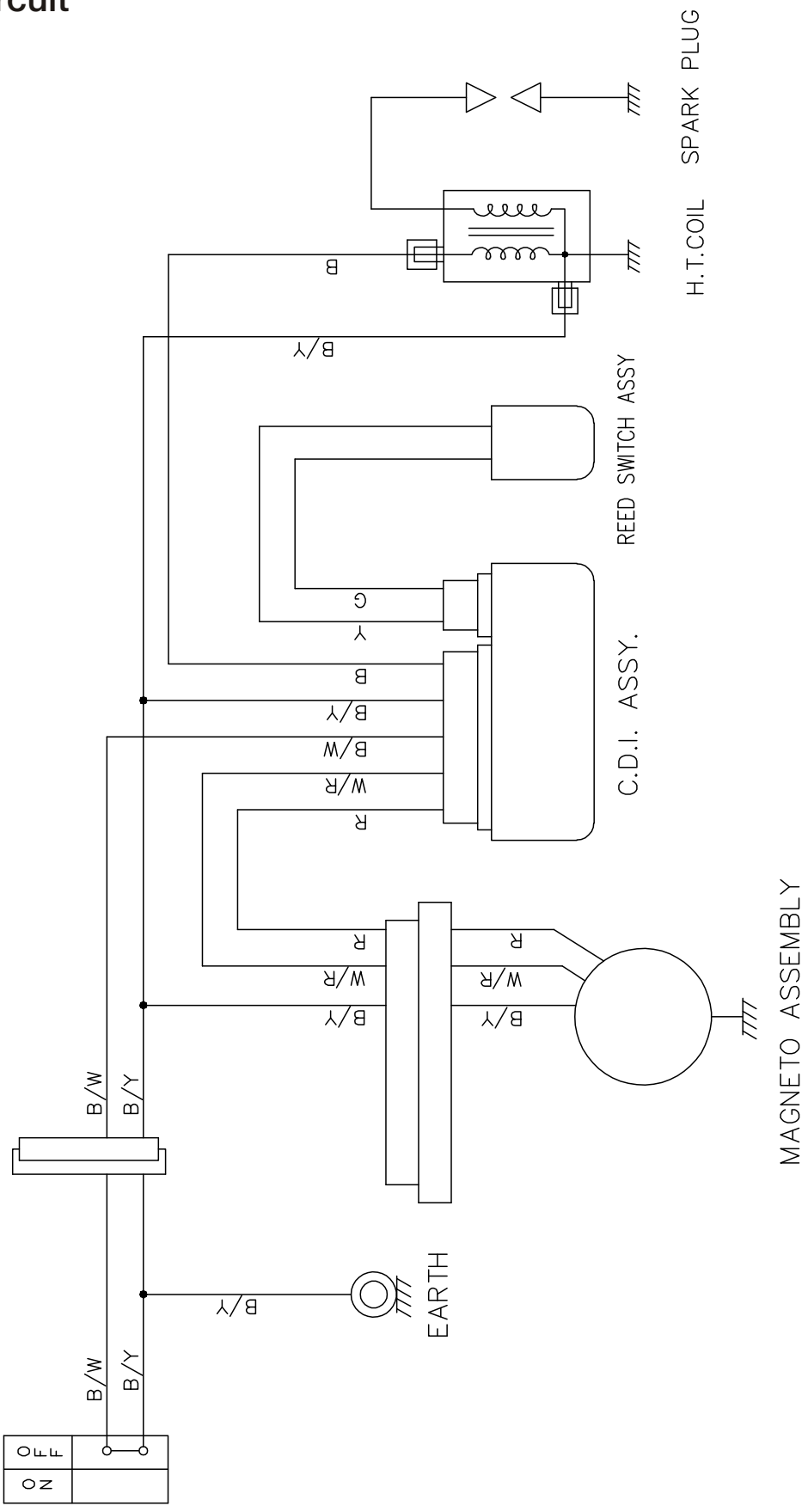


Battery Circuit



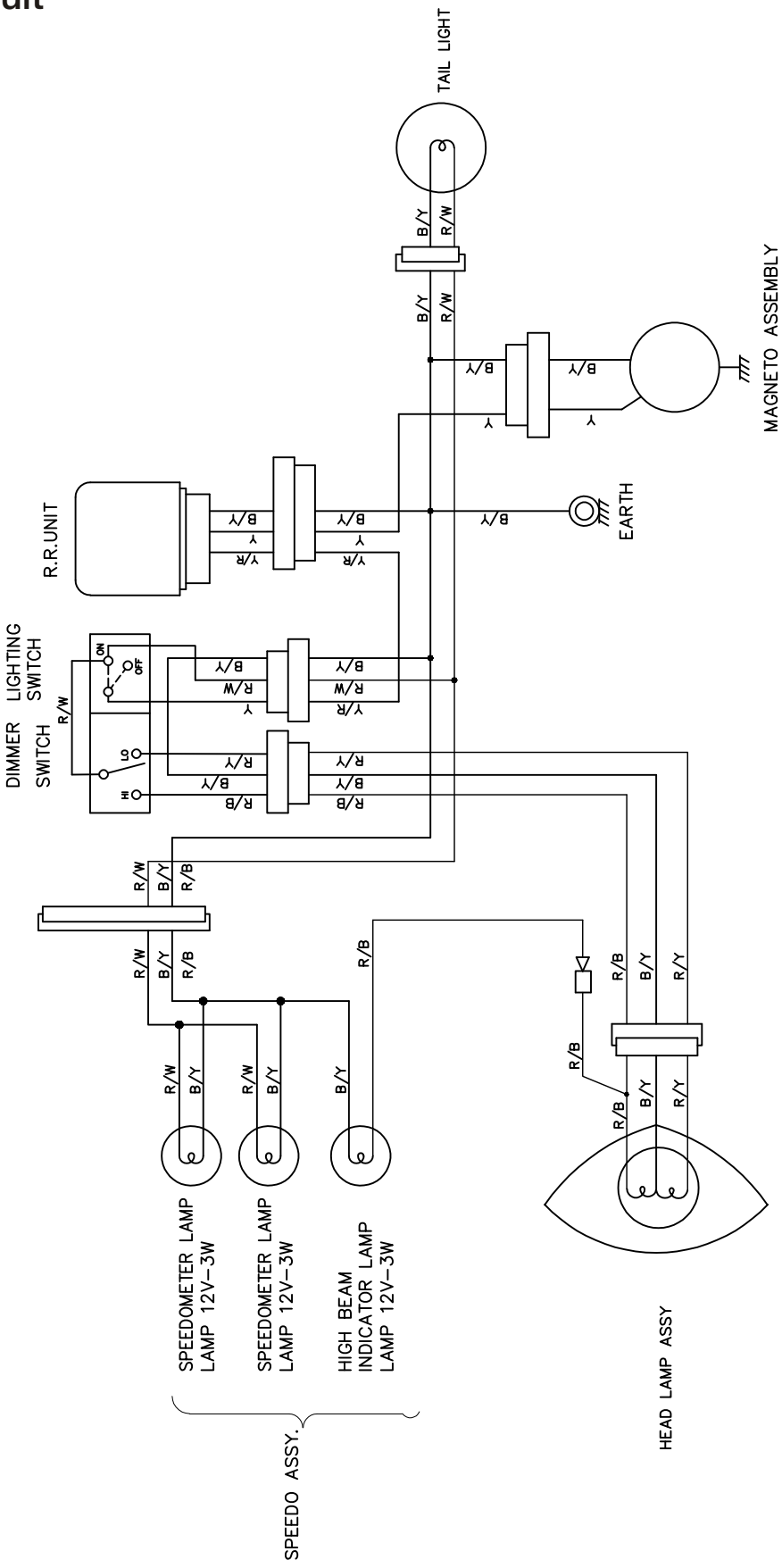
Individual Electrical Circuit Diagrams

Ignition Circuit



Individual Electrical Circuit Diagrams

Battery Circuit



Notes