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**All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note (Doc No. 71110321).

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I Read I Learn



- Identification
- Silent Features
- Technical Specifications
- Frequently Asked Questions (FAQ's)
- Read Before You Ride

Identification Data



The Engine and Frame serial numbers are used to register the vehicles. They are the only means of identifying your particular vehicle from the other of the same model and type. These serial numbers may be needed by your dealer when ordering the parts. In the event of theft, the investigating authorities will require both these numbers in addition to the model, type and any special features of your vehicle that can help identifications.



LOCATION OF PARTS



- | | |
|---|---|
| 1. Control Switch RH | 5. Hall Sensor for Auto Cancellation of Indicator |
| 2. LCD Speedo Console | 6. Vehicle Speed Sensor |
| 3. Control Switch LH | 7. ExhaustTEC |
| 4. DC Body Control Unit
(Placed Inside Head Light Fairing) | 8. Cat Converter |
| | 9. Tail Light LED display |

Salient Features

STYLE :



Features :

- Brawny masculine looks
- 2 piece grab rail
- Wolf-eyed head lamp
- Black styling
- Thicker and pinched clamped fork
- Naked chain
- Stylish split seats
- Tank spoiler
- LED tail Lamp
- Clip-on handlebar

Advantages :

- A bold assertive stance, Neat looks. Brains, brawn and definitely male.

Benefit :

- The styling and looks that let you break free

POWER & PERFORMANCE :



Features :

Engine :

- 4 stroke, DTS-i 150cc - 14.09 Ps
- 4 stroke, DTS-i 180cc - 17.02 Ps
- State-of-the-art features at the heart of digital biking: Digital Twin Spark Ignition, Digital DC CDI unit, TRICS-III, CV Carburetor
- Controlled lubrication system.
- DC ignition system
- Bigger ExhaustTEC.
- Bigger catalytic converter

Advantages :

- Legendary DTS-i engine unmatched in industry.
- Optimum ignition timing for any engine rpm, better throttle response and reduced emissions.
- Ease in starting the bike at all conditions.
- Optimum transmission cooling system & smoother feel of gear shift.

Benefit :

- Crisp Throttle response for consistent engine output for varying load and speed conditions at different levels of acceleration. More power, more mileage, ultimate refinement
- Well refined engine & Optimum performance with more power.

Salient Features

COMFORT & CONVENIENCE :



Features :

- LCD Speedo Console
- Self cancelling indicators
- Thicker front fork & swing arm with needle roller bearing.
- DC ignition system.

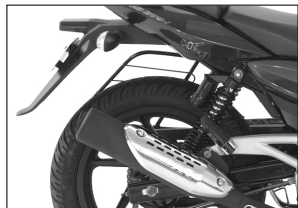
Advantages :

- Easy to read & understand digital speedo, odometer display with two trip meters having resetting facility & warning signal.
- Switching OFF the indicators automatically after completion of turn.
- The telescopic front suspension with anti friction bush & supported with Nitrox shock absorber on rear.
- Easy starting.
- No head light fluctuations even at lower engine rpm.

Benefit :

- Excellent riding pleasure.
- Feather touch self start.
- Safe night riding.

MANEUVERABILITY & STABILITY :



Features :

- Tubeless tyre (For 180 cc)
- Beefy frame with longer wheel base.

Advantages :

- More strength with Superior high-speed dynamics
- Tubeless tyres do not deflate suddenly in case of a puncture and help in reducing unsprung mass. Less rolling resistance ensures complete road stability

Benefit :

- High stability and good maneuverability.

SAFETY :



Features :

- Front ~ large ventilated disc brake
- Rear ~ Drum Brake

Advantages :

- Larger front Disc brake ensures effective braking comes to an instant halt.

Benefit :

- Enhances safety and handling.

Technical Specifications (Pulsar 150cc)

Engine and Transmission

Type	: Four stroke DTS-i, Natural air cooled.
No. of cylinders	: One
Bore	: 58.00 mm.
Stroke	: 56.40 mm.
Engine displacement	: 149.01 cc
Compression ratio	: 9.5 ± 0.5:1
Idling Speed	: 1400 ± 100 rpm.
Max. net power	: 14.09 Ps @ 8500 RPM
Max. net torque	: 12.76 Nm @ 6500 RPM
Ignition System	: Microprocessor controlled digital C.D.I.
Ignition Timing	: 10° BTDC at 1400 rpm.
	: 25° BTDC at 3000 rpm.
Fuel	: Unleaded petrol
Carburettor	: UCAI-MIKUNI-BS26, Side-Draught, CV-Type.
Spark Plug	: 2 Nos. Champion RG4HC (Resistive)
Spark Plug Gap	: 0.6 to 0.8 mm.
Lubrication	: Wet sump, Forced.
Starting	: Kick start / Electric start.
Clutch	: Wet, Multidisc type.
Transmission	: 5 speed constant mesh.
Primary Reduction	: 3.47 : 1 (66/19)
Gear Ratios:	1st gear : 28.20 : 1 (36/13) 2nd gear : 19.17 : 1 (32/17) 3rd gear : 14.05 : 1 (29/21) 4th gear : 11.03 : 1 (26/24) 5th gear : 9.40 : 1 (24/26)
Final drive ratio	: 2.93 : 1 (44/15)

CHASSIS & BODY

Frame Type	: Double cradle.
Suspension	Front : Telescopic Fr. fork with Antifriction bush (Stroke 135mm) Rear : Trailing arm with coaxial hydraulic cum gas filled adjustable shock absorbers, and triple rate coil springs.
Brakes	Front : Hydraulically operated disc type. Rear : Mechanically expanding shoe and drum type.
Tyres	Front : 2.75 x 17, 41 P Rear : 100-/90 x 17, 55-P
Tyre Pressure	Front : 1.75 kg/cm ² (25.0 Psi) Rear Solo : 2.00 kg/cm ² (28.4 Psi) Rear Pillion : 2.25 kg/cm ² (32.0 Psi)
Rims (Alloy Wheels)	Front : 1.60 x 17 Rear : 2.15 x 17

Technical Specifications (Pulsar 150cc)

Fuel Tank Capacity	: 15 liters Full
	: 3.2 liters Reserve
	: 2.0 liters Usable reserve

CONTROLS

Steering	: Handle bar
Accelerator	: Twist grip type on RH side of handle bar
Gears	: Left foot pedal operated
Clutch	: Lever operated on LH side of handle bar
Choke	: Push-Pull knob on carburettor
Brakes	Front : Lever operated on RH side of handle bar
	Rear : Pedal operated by right foot

ELECTRICALS

System	: 12 V (DC)
Battery	: 12V 9 Ah MF type.
Head Lamp	: 35/35 W-HS1
Pilot Lamp	: 5W - 2 Nos.
Tail/Stop lamp	: LED / LED
Turn signal lamp	: 10 W (2 Nos.)
Turn signal pilot lamp	: LED
Side stand indicator lamp	: LED
Hi beam indicator lamp	: LED
Neutral indicator lamp	: LED
Speedometer lamp	: LCD display
Rear number plate lamp	: 5 W
Horn	: 12V DC

DIMENSIONS

Length	: 2055 mm.
Width	: 790 mm.
Height	: 1100 mm.
Wheel base	: 1320 mm.
Turning circle radius	: 2320 mm. (Minimum)
Ground clearance	: 165 mm. (Minimum)

WEIGHTS

Vehicle kerb weight	: 143 Kg.
Gross vehicle weight	: 273 Kg.

PERFORMANCE

Climbing ability	: 28% (16° Maximum)
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Notes:

- Values given above are nominal and for guidance only, 15% variations 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.

Technical Specifications (Pulsar 180cc)

Engine and Transmission

Type	: Four stroke DTS-i, Natural air cooled.
No. of cylinders	: One
Bore	: 63.50 mm.
Stroke	: 56.40 mm.
Engine displacement	: 178.60 cc
Compression ratio	: 9.5 ± 0.5:1
Idling Speed	: 1400 ± 100 rpm.
Max. net power	: 12.52 KW (17.02 Ps) @ 8500 RPM
Max. net torque	: 14.22 Nm / 1.45 Kgm @ 6500 RPM
Ignition System	: Microprocessor controlled digital C.D.I.
Ignition Timing	: 10° BTDC at 1400 rpm.
	: 25° BTDC at 3000 rpm.
Fuel	: Unleaded petrol
Carburettor	: UCAI-MIKUNI-BS29, Side-Draught, CV-Type.
Spark Plug	: 2 Nos. Champion RG4HC (Resistive)
Spark Plug Gap	: 0.6 to 0.8 mm.
Lubrication	: Wet sump, Forced.
Starting	: Electric start.
Clutch	: Wet, Multidisc type.
Transmission	: 5 speed constant mesh.
Primary Reduction	: 3.47 : 1 (66/19)
Gear Ratios:	1st gear : 26.93 : 1 (36/13)
	2nd gear : 18.31 : 1 (32/17)
	3rd gear : 13.43 : 1 (29/21)
	4th gear : 10.54 : 1 (26/24)
	5th gear : 8.98 : 1 (24/26)
Final drive ratio	: 2.78 : 1 (39/14)

CHASSIS & BODY

Frame Type	: Double cradle.
Suspension	Front : Telescopic Fr. fork with Antifriction bush (Stroke 130mm)
	Rear : Trailing arm with coaxial hydraulic cum gas filled adjustable shock absorbers, and triple rate coil springs.
Brakes	Front : Hydraulically operated disc type.
	Rear : Mechanically expanding shoe and drum type.
Tyres	Front : 90 x 90 x 17, 49 P (Tubeless)
	Rear : 120 / 80 x 17, 61 P (Tubeless)
Tyre Pressure	Front : 2.00 kg/cm ² (28.4 Psi)
	Rear Solo : 2.00 kg/cm ² (28.4 Psi)
	Rear Pillion : 2.15 kg/cm ² (30.5 Psi)
Rims (Alloy Wheels)	Front : 1.85 x 17
	Rear : 2.50 x 17

Technical Specifications (Pulsar 180cc)

Fuel Tank Capacity	: 15 liters Full
	: 3.2 liters Reserve
	: 2.0 liters Usable reserve

CONTROLS

Steering	: Clip-on type handle bar
Accelerator	: Twist grip type on RH side of handle bar
Gears	: Left foot pedal operated
Clutch	: Lever operated on LH side of handle bar
Choke	: Push-Pull knob on carburettor
Brakes	Front : Lever operated on RH side of handle bar
	Rear : Pedal operated by right foot

ELECTRICALS

System	: 12 V (DC)
Battery	: 12V 9 Ah MF type.
Head Lamp	: 35/35 W-HS1
Pilot Lamp	: 5W - 2 Nos.
Tail/Stop lamp	: LED / LED
Turn signal lamp	: 10 W (2 Nos.)
Turn signal pilot lamp	: LED
Side stand indicator lamp	: LED
Hi beam indicator lamp	: LED
Neutral indicator lamp	: LED
Speedometer lamp	: LCD display
Rear number plate lamp	: 5 W
Horn	: 12V DC

DIMENSIONS

Length	: 2035 mm.
Width	: 750 mm.
Height	: 1165 mm.
Wheel base	: 1350 mm.
Turning circle radius	: 2500 mm. (Minimum)
Ground clearance	: 165 mm. (Minimum)

WEIGHTS

Vehicle kerb weight	: 147 kg.
Gross vehicle weight	: 280 Kg.

PERFORMANCE

Climbing ability	: 28% (16° Maximum)
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Notes:

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- 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.

Frequently Asked Questions (FAQ's)

- ❗ What are other distinguish features of new 'Pulsar DTS-i 180 cc' motorcycle in comparison with 'New Pulsar DTS-i 150 cc'?

🔗 Following are the overall features in comparison at a Glance.

Features	Pulsar DTS-i 180 cc	Pulsar DTS-i 150 cc
Cubic Capacity	178.60 cc	149.01 cc
Horse Power	17.02 PS	14.09 PS
Torque	14.22 Nm	12.76
DC Ignition	YES	YES
Starting Mechanism	Self Start Only	Self & Kick Start
Tubeless Tyre	YES	NO
Intelligent Digital CDI	YES	YES
ExhaustEC	YES	YES
Controlled Lubrication	YES	YES
Digital Control	YES	NO
Wheel Base	1350 mm	1320 mm
Front Suspension with anti friction Bush	YES	YES
Rear Suspension with Nitrox Shockers	YES	YES
LED Tail Lamp	YES	YES
Split Type Seat	YES	NO
Wheel Size (17")	YES	YES
Head Lamp Fairing	Head Lamp Fairing	Head Lamp Fairing
Decals	New decals to match to the profile of the vehicle	
Clip on type Handle Bar	YES	NO
Elliptical type swing arm with needle roller bearing	YES	NO

- ❗ What is the function of Battery icon popping up in speedometer?

🔗 The icon provided in the speedometer console indicates the status of battery. When the battery voltage drops down below 11.9 volts then only it will pop up & warns the rider that battery needs charging.

- ❗ What is DC Ignition & lighting system?

🔗 System works on DC electrical energy of battery. For Ignition system, supply comes from battery instead of exciter coil located inside magneto. The vehicle battery is always kept charged by the magneto.

- ❗ Can we ride the bike by removing the battery?

🔗 No, not at all. Disconnecting the battery from the vehicle will disable the starting / Ignition system & vehicle cannot be started.

Frequently Asked Questions (FAQ's)

- What is the benefit / advantage of having DC system?
- Constant & Consistent high intensity current is available even at low engine rpm which gives improved combustion & better startability.
- No head light voltage fluctuations resulting into brighter head light illumination consistently. It is the same existing battery i.e. MF battery (A low maintenance battery)
- The main features of this MF battery are :-
- Electrolyte level checking is not required frequent.
 - The unique vent mechanism provided that do not allow loss of electrolyte.
 - No drain pipe unlike in conventional type battery so no chances of spillage of electrolyte.
- Does DC system vehicle cost more in maintenance?
- No. It is important to ensure Good health of Battery that's all ! Care should be that, adding extra accessories will lead to faster draining of battery.
- What is the warranty limit for this MF Battery?
- The warranty for the MF battery is 18 months from the date of vehicle sold against any manufacturing defect observed.
- Why is there no Kick starter provision in Pulsar DTSi 180cc?
- Normally sports bike having larger CC engine, do not have kick-starters for the reason that riders footrest comes in the way of kick operation necessitating folding of the footrest etc. Even if battery is discharged to the level of not able crank the engine through self start, Engine can be started by push start. (Min voltage required for ignition system i.e. 7.8 V where as self start needs 11.5 V).
- Since this vehicle is with DC lighting system, will it be having headlamp control unit?
- No. It will have a BCU (Body Control Unit) as like earlier Pulsar DTSi.
- Can the spoilers of New Pulsar DTSi be fitted on old Pulsar DTSi?
- No, it is not possible as the mounting brackets for fixing the spoilers are welded on petrol tank at precise location only.
- Is the tube less tyre used in both Pulsar DTSi 150cc & Pulsar DTSi 180cc?
- The tube less tyres are used only in Pulsar DTSi 180cc only.
- What is a tubeless tyre & What are its advantages?
- The name 'Tubeless' it self indicates that the tyre is without tube. In this tyre there is inner tube which is an integral part of the tyre known as inner. The air is held between the rim & the tyre. The air filling valve is fixed air tightly on wheel rim.
- Advantages :
- Better fuel efficiency.
 - Better heat dissipation.
 - Less chance of damage in case of flat running.
 - Slow air leak.
 - No tube related problems.
 - Cost saving on tube.
- Is the tubeless tyre repairable if get punctured?
- YES. Puncture of Tubeless tyres can be repaired locally. There are various methods like -
1. Filter Method
 2. Plug (Mushroom) Method
 3. Patch Method
- But Bajaj Auto Limited recommends. Plug (Mushroom) method since it is more effective & safe.

Read Before You Ride

know your bike

Digital LCD Speedo Console

Function

To show display & analogue display of....

- Warning Indicators : A digital display through icon of key maintenance factors -



Drop in battery voltage



- Tachometer
A analogue display tachometer showing 0-12 x 1000 rpm display for understanding the engine rpm.
- Fuel Gauge
A vertical 12 bar equally segmented graphical indicator indicates fuel level inside the fuel tank.
- Low Fuel Level Indicator
A red colour LED bulb will glow continuously when the fuel level drops below 3.5 liters thus reminding the rider for refueling.
- Easy to read Digital Speedo Display showing
 - Vehicle speed - Km/Hr.
 - Odometer - Kms covered.
 - Resetting trip meter - for recording distance covered in trip with resetting provision.
- Various Indicator Lamps Showing
Side indicators, Neutral position, High beam 'ON' & Side stand 'ON' indicator functioning.

How to Operate

- Put 'ON' ignition key. The battery voltage icon on top will pop-up and will vanish away automatically. All other will show static display until the vehicle moves on road.

Benefits

- When the battery voltage drops below 11.9 V, the low battery icon will pop-up and will start blinking stating that the needs to be charged / needs maintenance. Thus rider is cautioned & can get necessary repairs done.
- Easy to read speedo console displaying the digits.

Starting the Bike

Choke



Function

- For easy starting of engine during cold condition.

How to Operate

- 2 stage pull / push type. Manual operation.

Do not open throttle (accelerator) while starting.

Benefits

- Smooth & easy start.

Soft Self Start



Function

- Cranks engine just by feather touch.

How to Operate

- Switch 'ON' ignition & kill switch. Put vehicle into neutral or declutch if in gear.
- Press self start button (0.2 second).

Do not open throttle (accelerator) while starting. Once engine starts do not rev up engine while vehicle is parked on the stand.

Benefits

- Comfort.
- Hassle free starting.

Protection Against Over Cranking

Function

On starting the engine by self starter button, if engine doesn't start & starter button is operated for more than 3 times at one go, then, the power supply to starter motor is disabled and would be possible to crank only after a lapse of 20 seconds or you switch 'OFF' & then 'ON' the ignition key.

Benefits

- Protects starter motor.
- Safe guards battery from getting drained.
- Enhances battery life.

Read Before U Ride

Side Stand Indicator

Function

- It gives indication of side stand 'ON'.

How to Operate

- This operates when vehicle is put on side stand & ignition is 'ON'.
- Visual Signal : Side stand indicator red lamp in speedometer will glow, this is an indication that side stand is to be removed.



Immediately put off side stand while taking vehicle for a ride.

Benefits

- Great safety.
- Reminds you to put off side stand before riding.

Side Indicator

Feature

- Car type self cancelling indicators.

Advantage

- No manual operation for putting 'OFF' the indicators. After completing the turn when the rider positions handle bar straight ahead the indicators are put 'OFF' automatically.



Benefits

- Convenience & comfort.

Tubeless Tyre (Applicable for 180 cc only)

Advantage

- Tubeless Tyre do not deflate suddenly in case of puncture & helps in reducing unsprung mass. Less rolling resistance ensures complete road stability.

Benefits

- High stability.
- Ease of puncture repair. Can be done by self.
- Less maintenance.

Battery

Feature

- Low maintenance battery.

Advantage

- No frequent charging. No frequent top up.

Benefits

- Low maintenance cost.



ride your bike

Fuel Saving Tips

- Drive in economy zone i.e. driving at a constant speed @ 40-50 kmph in top gear.
- Avoid following :-
 - Sudden pick-up & frequent braking.
 - Needless & excessive idling.
 - Excessive high speed riding.
- Check & Refill tyre pressure once in a week.
- Fill petrol at reputed petrol pumps.

Safe Riding Tips

- Always wear an ISI std. helmet while driving.
- Never use mobile phones while driving.
- Always keep rear view mirrors clean.
- Use both, front & rear brakes simultaneously. Applying only one brake may cause loss of control & skidding or diving.
- Do not apply front brake when cornering or at turns.
- Familiarise yourself well with seating posture, starting, acceleration & braking of the vehicle.
- Use side indicators before turning.

Read Before You Ride

care your bike

Battery

How to Keep Battery Healthy

- Switch 'OFF' ignition when engine is not running.
- Do not press brake pedal / brake lever while running otherwise brake light would glow continuously & drain the battery.
- Do not switch 'ON' & 'OFF' ignition switch unnecessarily.
- Get your battery checked / charged during periodic services.
- Use choke if engine refuses to start in 1st attempt.



Monsoon Care



Fit and Finish Parts

- It is suggested to take proper care in heavy monsoon / high rainfall area. The appropriate surface preventive coat is to be applied to avoid rusting / poor surface finish on account of adverse atmospheric conditions.
- Clean and lubricate all the important parts as detailed in a Periodic Maintenance Chart given in Owner's Manual.
- Do not obstruct engine & engine oil cooler by adding protection sheet from front otherwise engine cooling system gets affected.

Tubeless Tyre (Applicable for 180 cc only)

Puncture Repair Method (Filler Type)

Tools & Material Used :

Repairing Tool (Wrench) - Used for placing or piercing the repair compound in place perfectly.

Repair Compound - Used for filling the puncture. It forms bond with the tyre compound after application.

Solution - Adhesive used for applying the filler material (Few compounds come with self adhesive material also).

Blades - Used for trimming the extra compound above puncture surface, outside the tyre.



Process :

Wrench

Step 1 : Identify the puncture hole and Pierce the wrench.



Repair Compound in Tyre

Step 2 : Pierce repair compound into the puncture hole with needle type wrench & pull out the wrench.



Cut Excess Compound

Step 3 : Cut the excess compound with blade.



Care and Maintenance of Tyre

- Ensure correct tyre pressure.
- Rim should be free from dirt, rust and should not have any dents.
- Clean the tyre & rim interiors before placing the tyre on rim.
- Lubricate tyre beads with mild soap solution before assembling & removing the tyre from rim.

Tyre Pressure - 150 cc	
Front	: 1.75 kg/cm ² (25.0 Psi)
Rear Solo	: 2.00 kg/cm ² (28.4 Psi)
Rear Pillion	: 2.25 kg/cm ² (32.0 Psi)

Tyre Pressure - 180 cc	
Front	: 2.00 kg/cm ² (28.4 Psi)
Rear Solo	: 2.00 kg/cm ² (28.4 Psi)
Rear Pillion	: 2.15 kg/cm ² (30.5 Psi)

- Follow only recommended puncture repair procedure for removing puncture.
- As far as possible use tyre mounting machine for tyre fitting & removal of tyre from rim to avoid damage to alloy wheels.

Recommended Oil Grade and Qty	
Grade For 150 cc	SAE 20W40 of API 'SJ' or 'SL' + JASO 'MA' grade or superior.
Grade For 180 cc	SAE 20W50 of API 'SJ' or 'SL' + JASO 'MA' grade or superior.
Quantity	Drain & Refill 1000 ml. Engine Overhaul 1100 ml.

Notes

I Check I Maintain

- PDI SOP**
- PDI Checklist
- Periodic Maintenance & Lubrication
- Periodic Service SOP**
- Service wise Part Kit
- Scheduled Maintenance**
- Standard Checking Procedure**
- Special Tools

***All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note*

Pulsar DTS-i 150/180 Training Notes

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Dealer Development Center, Pune



- PDI SOP**
- PDI Checklist
- Periodic Maintenance & Lubrication
- Periodic Service SOP**
- Service wise Part Kit
- Scheduled Maintenance**
- Standard Checking Procedure**
- Special Tools

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PDI Check List

Frame No.

Engine No.

Dealer's Name _____ Dealer's Code _____

Date of PDI _____ PDI done by _____

Please ensure that following checks are carried out during PDI before delivery of vehicle.

To Check	Check For	☑ if OK or ☒ if NOT OK	Observations / Remarks
ENGINE:			
Engine Oil : For 150 cc SAE 20W40 API SJ or SL + JASO MA) For 180 cc SAE 20W50 API SJ or SL + JASO MA)	Oil level OK / Top up if required	☐	
	Oil Leakage if any - specify source of oil leakage	☐	
Idling rpm (warm up)	Check / adjust if required (1400 ± 100 rpm)	☐	
Kick operation (Applicable for 150 cc)	Smooth operation, Tightness of Kick boss bolt	☐	
Fasteners (Check Torque)	Engine mounting bolts (M 8 2.2 Kgm, M 10 : 2.4 Kgm)	☐	
	Silencer mounting bolt (3.5 ~ 4.0 Kgm)	☐	
	Silencer mounting nut (1.4 ~ 1.9 Kgm)	☐	
	Drain bolt (2.5 Kgm)	☐	
FUEL SYSTEM			
Fuel Tank / Pipes	No leakage / Correct Fitment	☐	
Carburettor	No leakage / Correct Fitment	☐	
Fuel Cock	Smooth Operation	☐	
FRAME			
Tyre Pressure	Front	For 150 cc 1.75 Kg/Cm ² (25.0 PSI)	For 150 cc 2.00 Kg/Cm ² (28.4 PSI)
	Rear Solo	2.00 Kg/Cm ² (28.4 PSI)	2.00 Kg/Cm ² (28.4 PSI)
	Rear (Pillion)	2.25 Kg/Cm ² (32.0 PSI)	2.15 Kg/Cm ² (30.5 PSI)
CONTROLS			
Brakes	Front Brake lever free play (2~3 mm)	☐	
	Rear Brake Pedal free play (25~30 mm)	☐	
Throttle	Grip free play (2~3mm) & smooth operation	☐	
Clutch	Smooth operation, No juddering, Free play 2~3mm	☐	
Clutch Cable	Routing through the bracket located near lower 'T' on vehicle RH side	☐	
Drive Chain	Slackness standard : 25~35 mm	☐	
SUSPENSION			
Front Fork	No leakage / Smooth working	☐	

PDI Check List

To Check	Check For	☑ if OK or ☒ if NOT OK	Observations / Remarks
Rear Shock Absorber	Spring Adjuster notch position : 1st notch (Standard)	☐	
Steering	Smooth operation (No play / sticky movement)	☐	
Lock Operation	Steering cum Ignition, Rider Seat (Pillion + Rider for 180cc), LH / RH side cover lock	☐	
Fasteners (Check Torque)	Front axle nut (150cc - 4~5 Kgm, 180cc - 8~9 Kgm)	☐	
	Rear axle nut (150cc - 8~10 Kgm, 180cc - 8~10 Kgm)	☐	
	Torque rod nut (150 cc & 180cc - 3~4 Kgm)	☐	
	Handle bar bolts (150cc - 3.5Kgm, 180cc - 2~2.2Kgm)	☐	
	Steering cap bolt (150cc - 3.5 Kgm, 180cc - 5 Kgm)	☐	
	RSA mtg. dome nut (150 cc & 180cc - 3.5~4.0 Kgm)	☐	
	Swing arm pivot nut (150 cc & 180cc - 8~10 Kgm)	☐	
	Caliper install bolts (150 cc & 180cc - 2.2~2.8 Kgm)	☐	
	Brake disc allen bolts (150 cc & 180cc - 2.6~3.2 Kgm)	☐	
	Pinch clamp bolt (180cc - 2.0~2.2 Kgm)	☐	
ELECTRICAL			
Battery	Charge status (12.5V open circuit terminal Voltage)	☐	
	Tightness of Battery - Terminals / Cables	☐	
	Position of Fuse box (2 Nos.)	☐	
All Bulbs Working	Head light, Pilot Lights (2), LED Tail /Stop, Side-Indicator, Speedometer LEDs, Number plate lamp	☐	
	Turn pilot, High beam, Neutral indicator, Tale tail icons on switch LH/RH, Auto cancellation of indicators	☐	
Switch Operation	LH & RH Control, Ignition, Fr & Rr brake & Kill switch	☐	
Starter Motor	Proper working / Engagement	☐	
TEST DRIVE			
Starting	Cold Start & Warm Start	☐	
	Idling Speed (warm Condition) (1400 ± 100 rpm)	☐	
Drive ability	Throttle response	☐	
	Brakes (Front & Rear)	☐	
	Digital speedometer, Odometer, Trip meters, Fuel gauge & Fuel indicator red lamp	☐	
CO % Check	CO should be 2% in engine warm condition at Idling rpm	☐	
Cleaning	Wash & Clean vehicle properly	☐	

IMPORTANT NOTE : Look for any external damages in transit : Please check, record & rectify send report with photos.

- Moisture / Oil collecting tube of Air filter should be properly fitted and routed correctly.
- Both LH & RH side spark plug caps must be tightly secured and ensure proper functioning of Spark Plugs.
- TPS on carburettor for functioning.

Periodic Maintenance & Lubrication Chart

Pulsar DTS-i 150/180 Training Notes	18	Dealer Development Center, Pune
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Periodic Maintenance & Lubrication Chart

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

Model	Grade	Quantity
Pulsar 150 CC	SAE 20W40 of API 'SJ' or 'SL' + JASO 'MA' Grade or Superior	Drain & Refill = 1000 ml.
Pulsar 180 CC	SAE 20W50 of API 'SJ' or 'SL' + JASO 'MA' Grade or Superior	Engine Overhaul = 1100 ml.

Service Wise Part Kit

Pulsar DTS-i 150/180 Training Notes	20	Dealer Development Center, Pune
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Service Wise Part Kit

Use always Genuine Bajaj Auto parts & recommended lubricants.
 Engine Oil : SAE 20W40 API 'SJ' or 'SL' + JASO 'MA' grade - For 150 cc
 Engine Oil : SAE 20W50 API 'SJ' or 'SL' + JASO 'MA' grade - For 180 cc

Pulsar DTS-i 150/180 Training Notes	21	Dealer Development Center, Pune
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Special Tools

Details of Exclusive Special Tool

For carrying out repairs / overhauls, 5 new special tools are identified for Pulsar 180 cc. These 5 new special tools were developed earlier exclusively for Pulsar DTS-i 200cc & Pulsar DTS-Fi 220cc. Rest of the special tools required remains the same which were earlier used for Pulsar, Pulsar DTSi UG-II, Pulsar DTSi UG III.



Crankshaft Bearing Extractor :

Drawing No : JC1010 01

Application :

To remove the bearing from crankshaft.

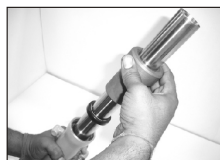


Fork oil seal fitment punch :

Drawing No : 37 1740 03

Application :

To fit fork oil seal on outer pipe.



Fork Inner & Outer Tube Extractor :

Drawing No : 37 1740 04

Application :

Used for removing front fork inner tube from outer tube.



Fork Holder :

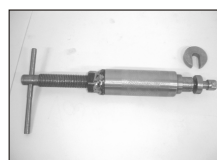
Drawing No : 37 1740 05

Application :

Used for holding the fork piston from inside.



Special Tools



Needle Bearing Puller :

Drawing No : 74 9309 93

Application :

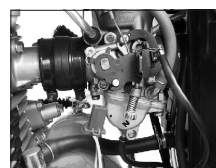
To remove & refit needle roller bearing from swing arm.



Details of Other Common Special Tool

Special Tool Name	Special Tool No.	Application
Sprocket Catcher	37 10DH 36	For holding sprocket during removal / refitting of Cam sprocket allen bolt.
Camshaft Big Bearing Puller	37 10DH 32	To remove bigger bearing
Camshaft Small Bearing Puller	37 10DH 31	To remove small bearing of camshaft.
Rocker Shaft Remover	37 10DH 35	To remove rocker shaft from cylinder head cover.
Silent Bush Puller	37 10DH 33	To remove & refit silent bush from cylinder head cover.
Rotor Puller with Butt Pin	37 10DJ 32	Used to pull out the rotor from crankshaft assembly.
Primary Gear Holder	37 10DJ 28	Use to hold primary gear while loosening / tightening the clutch nut.
Balancer Gear Holder	37 10DJ 63	Used to load pre-tensioned scissor gears of Assly balancer Idler gear.
Special Nut	37 10DJ 43	Used to remove / fit of centrifugal oil filter nut.
Bearing Race Extractor	37 00DJ 01	Used for removing the lower bearing race from 'T'
Bearing Extractor	37 10DJ 76	Used to extract the input shaft bearing from crankcase LH.
Bearing Puller	37 10DJ 77	Used to pull out the bearing for body balancer from crankcase LH.
Adaptor & Valve Spring Compressor	37 10DJ 78 / 37103107	Used for assembling / dismantling inlet, exhaust valves by compressing spring in cylinder head.
Rotor Holder	H6 0721 00	To hold rotor while loosening bolt.
Drift	74 9309 89	To remove piston pin.
Thrust Plate Aligner / Holder	T 10111 68	To align the clutch hub concentric w.r.t clutch wheel, clutch housing and thrust plate for assembly of clutch.
Output Sprocket Holder	37 1030 53	To hold the output sprocket while removing sprocket bolt
Bearing Driver Set	37 1030 61	Common bearing 'driver' set for fitting and removing bearings from crankcase.
Rear Shock Absorber Adjuster	37 00DH 14	For adjusting the notch position of RSA to achieve hard or soft rear suspension.
Piston Ring Holder	37 10DJ 30	Used for compressing the piston rings when assembling piston in the cylinder block.

Fuel System



- Fuel Supply System**
- Dismantling/Assembling Fuel Cock**
- Working of Various CV Carburettor Circuits**
- Dos & Don'ts**
- Carburettor Specifications
- Tune up for Getting Optimum Mileage

***All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note*

Carburettor Specifications



Carburettor Specifications of Pulsar 150 cc :

Make and Type	Ucal-Mikuni BS26, CV type
Identification No.	DH - U3
Idling Speed	1400 $\pm$ 100
VC Screw setting	2.5 $\pm$ 2 turns out
Main Jet	107.5
Jet needle mark	4DMP23
Needle jet mark	P-1
Jet needle clip Position	2nd from top
Pilot Jet	12.5
Starter jet	Fixed type
Throttle valve	Fixed type
Choke Lever	2 stage with push-pull type mechanism (ON / OFF)



Carburettor Specifications of Pulsar 180 cc :

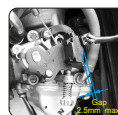
Make and Type	Ucal-Mikuni BS26, CV type
Identification No.	DJ - U4
Idling Speed	1400 $\pm$ 100
VC Screw setting	2.5 $\pm$ 2 turns out
Main Jet	112.5
Jet needle mark	4078
Needle jet mark	P-1
Jet needle clip Position	2nd from top
Pilot Jet	17.5
Starter jet	Fixed type
Throttle valve	Fixed type
Choke Lever	2 stage with push-pull type mechanism (ON / OFF)



Tune-Up for Optimum Mileage

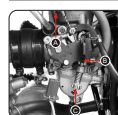
Reed Switch : Maintenance

Check throttle lever movement by rotating it with hand. It should not be sticky in operation and should return back it self on releasing.



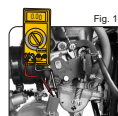
- Magnet should not touch with reed switch.
- Gap between Magnet & Reed Switch should not be more than 2.5 mm.
- Movement of throttle lever with magnet assy and Reed Switch fitted should be free.

Reed Switch : Setting



- Accelerator cable play: 2-3 mm by adjusting the Adjuster (A).
- Protude stopper (B) of the throttle lever bracket must on idling screw (C) tip.

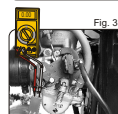
Reed Switch : Checking



- Keep throttle at zero position. (Fig. 1).
- On connecting multimeter to Reed Switch coupler it should show continuity.

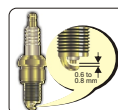


- When throttle is open and Reed Switch magnet crosses to straight edge of fix bracket of Reed Switch (Fig. 2) multimeter should show discontinuity.



- On De-acceleration, when of Reed Switch magnet re-coincides with straight edge of fix bracket of Reed Switch (Fig. 3) Multimeter should show continuity.

Engine Tune up



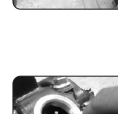
SPARK PLUG: Champion RG4HC
Spark Plug Gap :
0.6 to 0.8 mm.
Replace at Every :
15,000 Kms.



AIR FILTER:
• Clean at every 2,500 Kms.
• Replace at every 15,000 Kms.



COMPRESSION PRESSURE (For 150cc)
• Std : 6.0~10.0 Kg/cm²
• Service Limit : 5.0~10.0 Kg/cm²



COMPRESSION PRESSURE (For 180cc)
• Std : 11.0~13.0 Kg/cm²
• Service Limit : 9.0~10.0 Kg/cm²



TAPPET CLEARANCE
• Inlet valve: 0.05 mm
• Exhaust valve: 0.1 mm



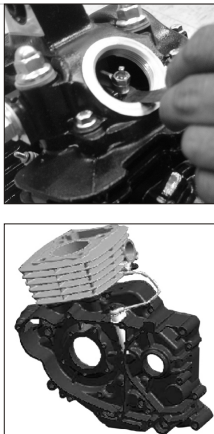
CARBURATTOR
• Idling: 1400 $\pm$ 100 rpm.
• Air Screw Setting : 2.5 $\pm$ 1 turn.
• CO %: 1.75 to 2.25 %

Other Mandatory Checks

- Ensure no fuel leakage through fuel cock, fuel lines.
- Ensure free rotation of both the wheels.
- Ensure correct tyre pressure (For 150 cc) -
Front wheel: 1.75 Kg/Cm² (25.0 PSI)
Rear wheel: 2.00 Kg/Cm² (28.4 PSI) Solo
2.25 Kg/Cm² (32.0 PSI) Pillion
Ensure correct tyre pressure (For 180 cc) -
Front wheel: 2.00 Kg/Cm² (28.4 PSI)
Rear wheel: 2.00 Kg/Cm² (28.4 PSI) Solo
2.15 Kg/Cm² (30.5 PSI) Pillion
- Set control cable free play:
 - Front brake lever 2 ~ 3 mm.
 - Rear brake pedal 25 ~ 30 mm.

Notes

Engine & Transmission



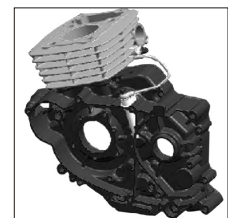
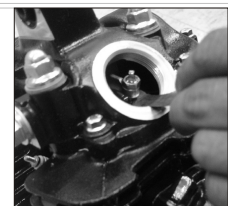
- Importance Points to Remember During Engine Overhauling**
- Removal of Engine from Frame**
- Dismantling of Engine**
- Dismantling Engine Sub Assembly**
- Part inspection Parameters**
- Assembling Engine**
- Service Data
- Tightening Torque
- CAT Converter
- Controlled Lubrication System

***All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note*

Pulsar DTS-i 150/180 Training Notes

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Dealer Development Center, Pune



- Importance Points to Remember During Engine Overhauling**
- Removal of Engine from Frame**
- Dismantling of Engine**
- Dismantling Engine Sub Assembly**
- Part Inspection Parameters***
- Assembling Engine**
- Service Data
- Tightening Torque
- CAT Converter
- Controlled Lubrication System

****All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note**

Service Data (For 150 cc & 180 cc)

Compression Pressure

	Standard Limit	Service Limit
Pulsar 150 cc	6.0~10.0 Kg/Cm ²	5.0~10.0 Kg/Cm ²
Pulsar 180 cc	11.0~13.0 Kg/Cm ²	9.0~10.0 Kg/Cm ²

Valve Clearance

	Standard Limit	Service Limit
Pulsar 150 cc	Inlet 0.05 Exhaust 0.10	Inlet 0.05 Exhaust 0.15
Pulsar 180 cc	Inlet 0.05 Exhaust 0.10	Inlet 0.03 Exhaust 0.08

Rocker Arm Shaft Dia.

	Standard Limit	Service Limit
Pulsar 150 cc	7.994~8.0	7.98
Pulsar 180 cc	7.994~8.0	7.98

Cam Sprocket Diameter

	Standard Limit	Service Limit
Pulsar 150 cc	61.285 ~ 61.165	61.1
Pulsar 180 cc	61.165 ~ 61.285	61.1

Cam Height

	Standard Limit	Service Limit
Pulsar 150 cc	Inlet 31.0 Exhaust 30.4	Inlet 30.8 Exhaust 30.2
Pulsar 180 cc	Inlet 31.3 Exhaust 31.0	Inlet 31.1 Exhaust 30.8

Valve Spring Free Length

	Standard Limit	Service Limit
Pulsar 150 cc	Inner 39.10 Outer 43.6	Inner 39.0 Outer 42.6
Pulsar 180 cc	Inner 38.6 Outer 41.4	Inner 37.6 Outer 40.4

Valve Stem Diameter

	Standard Limit	Service Limit
Pulsar 150 cc	Inlet 4.48 Exhaust 4.46	Inlet 4.40 Exhaust 4.41
Pulsar 180 cc	Inlet 4.483 Exhaust 4.464	Inlet 4.63 Exhaust 4.444

Valve Stem Bend

	Standard Limit	Service Limit
Pulsar 150 cc	TIR 0.01	TIR 0.03
Pulsar 180 cc	TIR 0.01	TIR 0.03

Valve Head Thickness

	Standard Limit	Service Limit
Pulsar 150 cc	Inlet 0.05 Exhaust 0.8	Inlet 0.3 Exhaust 0.6
Pulsar 180 cc	Inlet 0.05 Exhaust 0.8	Inlet 0.3 Exhaust 0.6

Cylinder Head Warp

	Standard Limit	Service Limit
Pulsar 150 cc	0.05	--
Pulsar 180 cc	0.05	--

Service Data (For 150 cc & 180 cc)

Camshaft Chain Length 20 Links

	Standard Limit	Service Limit
Pulsar 150 cc	127.00 ~ 127.20	128.0
Pulsar 180 cc	127.00 ~ 127.20	128.0

Cylinder Inside Diameter

	Standard Limit	
Pulsar 150 cc	Group A 58.010 ~ 58.025	Group B 58.017 ~ 58.033
Pulsar 180 cc	Group A 63.50 ~ 63.508	Group B 63.508 ~ 63.515

Piston Diameter

	Standard Limit	Service Limit
Pulsar 150 cc	58.000 ~ 58.008	57.975 ~ 57.981
Pulsar 180 cc	63.500 ~ 63.508	63.475 ~ 63.481

Piston / Cylinder Clearance

	Standard Limit	Service Limit
Pulsar 150 cc	0.019	0.039
Pulsar 180 cc	0.019	0.039

Piston Ring / Groove Clearance

	Standard Limit	Service Limit
Pulsar 150 cc	Top 0.025 ~ 0.065 Second 0.02~0.06	Top 0.16 Second 0.15
Pulsar 180 cc	Top 0.02 ~ 0.06 Second 0.01~0.05	Top 0.16 Second 0.15

Piston Ring End Gap

	Standard Limit	Service Limit
Pulsar 150 cc	Top 0.15~0.30 Second 0.30~0.45	Top 0.55 Second 0.70
Pulsar 180 cc	Top 0.15~0.30 Second 0.30~0.45	Top 0.55 Second 0.70

Clutch Spring Free Length

	Standard Limit	Service Limit
Pulsar 150 cc	37.00	35.00
Pulsar 180 cc	37.00	35.00

Friction Plate Thickness

	Standard Limit	Service Limit
Pulsar 150 cc	2.9 ~ 3.1	2.75
Pulsar 180 cc	2.9 ~ 3.1	2.75

Pressure Plate Warp

	Standard Limit	Service Limit
Pulsar 150 cc	0.2	0.3
Pulsar 180 cc	0.2	0.3

Shift Fork Guide Pin Diameter

	Standard Limit	Service Limit
Pulsar 150 cc	4.49	4.40
Pulsar 180 cc	4.49	4.40

Service Data (For 150 cc & 180 cc)

Shift Drum Groove Width

		Standard Limit	Service Limit
	Pulsar 150 cc	7.5	7.65
	Pulsar 180 cc	7.5	7.35

	Standard Limit	Service Limit
Pulsar 150 cc	7.5	7.65
Pulsar 180 cc	7.5	7.35

Crankshaft Run Out

	Standard Limit	Service Limit
Pulsar 150 cc	0.02 Max	0.05
Pulsar 180 cc	0.02 Max	0.05

	Standard Limit	Service Limit
Pulsar 150 cc	0.02 Max	0.05
Pulsar 180 cc	0.02 Max	0.05

Notes :

Tightening Torque (For 150 cc & 180 cc)

Cyl. Head Bkt. Mtg. Bolts

A close-up photograph of the engine's cylinder head bracket mounting area. Two red arrows point to the mounting bolts. The bolts are located on the cylinder head bracket, which is a dark, curved metal component. The surrounding area includes various engine parts, hoses, and wiring.

Chain Tensioner Mtg. Bolts



A close-up photograph of the chain tensioner mounting bolts. Two red arrows point to the bolts that secure the chain tensioner to the frame.

Crankcase Joining Bolts

A black and white photograph of a crankcase with red arrows pointing to the locations of the joining bolts on both the left and right halves.

Pulsar DTS-i 150/180 Training N

Engine Mounting Bolts

A close-up photograph of the engine mounting area. Two red arrows point to the mounting bolts. One arrow points to a bolt on the left, and the other points to a bolt on the right. The bolts are silver and appear to be in good condition. The surrounding area is dark and metallic.

Output Sprocket Bolts



A close-up photograph of the output sprocket assembly. Two red arrows point to the bolts that secure the sprocket to the shaft.

Crankcase Joining Bolt

A close-up photograph of the crankcase joining bolt on a motorcycle engine. A red arrow points to the bolt, which is a large, dark, hexagonal head bolt used to secure the crankcase halves.

A close-up photograph of a mechanical assembly, likely a bearing housing. A red arrow points to a specific feature on the inner ring of a bearing, which is the area of interest for the study.

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Engine Mounting Nuts

A close-up photograph of the engine mounting area. A red arrow points to a black plastic engine mounting nut. Other similar nuts and engine components are visible in the background.

Silencer Mounting Bolt

A close-up photograph of the silencer mounting bolt on the engine. A red arrow points to the bolt, which is a small, silver-colored screw. The silencer is a black, cylindrical component with a ribbed texture. The engine block is visible in the background, showing various mechanical parts and a black handle.

A close-up photograph of the crankshaft assembly. A red arrow points to the crank pin, which is the central shaft of the crankshaft.

Clutch Cover Bolts

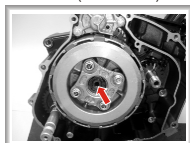


A black and white photograph of a motorcycle engine with red arrows pointing to the bolts on the clutch cover. The arrows indicate the locations of the bolts around the perimeter of the clutch cover, which is a large, dark, circular component. The arrows are positioned at approximately the 12, 1, 2, 3, 4, 5, 6, 7, 8, and 9 o'clock positions.

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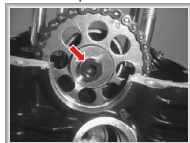
Tightening Torque (For 150 cc & 180 cc)

Clutch Nut (LH Threads)



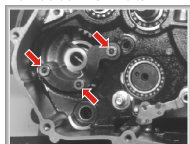
7.0 Kg.m

Camshaft Sprocket Allen Bolt



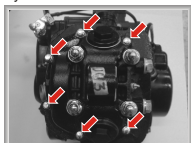
1.4 Kg.m (Loctite 243)

Kick Guide Allen Bolts



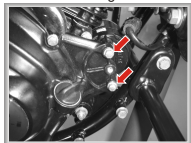
1.2 Kg.m

Cylinder Head Cover Bolts



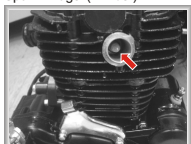
3.5 Kg.m

Starter Motor Mtg. Bolts



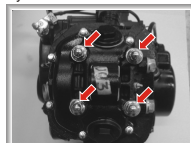
1.1 Kg.m

Spark Plugs (2 Nos.)



1.4 Kg.m

Cylinder Head Cover Nuts



1.0 ~ 1.5 Kg.m

Rotor Mounting Bolt



4.5 Kg.m

Drain Bolt



2.5 Kg.m

Dos & Don'ts

■ ■ ■ Dos

- Always set / adjust valve tappet clearance in engine cold condition.
Intake : 0.05mm Exhaust : 0.10mm
- Always blow compressed air into clutch cover oil passage inner gallery in opposite to the direction of flow of oil
- Always tighten engine foundation bolts as per recommended sequence.
- Always replace engine oil by recommended quantity & quality of oil.
Recommended grade : 20W40 (for Pulsar 150cc) & 20W50 (for Pulsar 180cc) API 'SJ' or 'SL' + JASO 'MA' grade.
- Always keep breather passage in clean condition & confirm it is clear by blowing compressed air. This will facilitate oil fumes to escape from engine crankcase otherwise clogged breather passage would lead to oozing out of oil through oil seals, 'O' Rings, Gaskets & Breather pipe.
- Whenever installing Spark Plugs, first screw by hand & then tighten to specified torque. This is to ensure proper fitment & avoid thread damage.
- Always use wire gauge for setting spark plug electrode gap.
- Use feeler gauge for setting valve clearance.
- Always follow loosening / tightening sequence of cylinder head bolts otherwise its surface may get warped.
- Always fit piston ring as per standard SOP & ensure their end position.
- Always use Loctite to bolts, screws & nuts wherever recommend.
- Always rotate 'Gear Starter Clutch' in clockwise direction & pull it out immediately.
place plastic cap into one way clutch rollers for securing them their position.
- Tighten nut-bolts in criss-cross pattern for matching of mating surfaces to avoid distortion otherwise it leads to oil leakage.
- Ensure crankcase / clutch cover oil passages are clear by pumping oil using a 'Oil Can'.
- Always replace circlips & locks of transmission gears, kick shaft assembly if removed. Circlips / locks tend to loose their spring tension once removed.
- While assembling cylinder block, always apply thin layer of engine oil to cylinder walls & piston rings for ease of fitment & to prevent dry running.
- Blow dust free / moisture free air in all the orifices, passages of the engine components & confirm that the oil passages are clear.
- Always apply oil during assembling engine components, particularly at friction prone area to avoid dry running.
- Confirm seating of circlip locks by rotating on their seat to avoid further consequences.
- While installing engine bearings always tap / pressed on the race which is taking seat to avoid damage to the bearing otherwise axial / radial clearance may increase.

Dos & Don'ts

Don'ts

- Don't reuse 'O' rings, gaskets, Oil seals, Circlip locks as they use their strength & properties, once they are opened.
- Don't adjust spark plug electrode gap by hacksaw blade or with judgement of eye otherwise it will affect the engine performance.
- Don't adjust valve tappet clearance by hacksaw blade or with judgement of eye otherwise it will affect the engine performance.
- Don't set valve tappet clearance in engine hot condition.
- While removing rotor, don't rest the rotor holder & special tool against gear change lever.
- Don't over tighten cylinder head cover bolts.
- Don't fit 2nd piston ring 'UP' side 'Down'. This could lead to smokey exhaust & higher engine oil consumption.
- Don't wash engine bearings with water.
- Don't blow compressed air on engine bearing otherwise they will get permanently spoiled.

CAT Converter

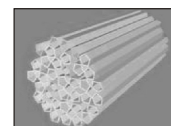
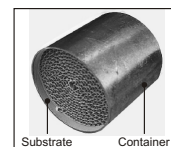
Function

The air fuel mixture which is burnt inside the combustion chamber does not burn completely and give rise to harmful gases like carbon monoxide (CO); Hydrocarbon (HC) and Nitrogen oxide (NO_x). The cat converter converts these harmful gases into harm less gases. The catalyst is a material in the catalytic converter that causes the chemical change without being a part of chemical reaction. In effect the catalyst encourages chemicals to react with each other.

Construction

A catalytic converter is fitted inside the silencer body after the ExhaustTEC port and consist of 4 main parts.

1. The substrate or the support which is of honeycomb ceramic type or metallic type.
2. The wash coat or intermediate layer such as alumina which provides a suitable surface for adhesion of the noble metals on to substrate surface and facilitate high thermal stability during the chemical reaction.
3. Catalyst material (noble material) like Palladium, Platinum, Rhodium in different proportions are (which is thin layer) deposited on the wash coat.
4. Housing or canning is the outer cover of the unit which can be interfaced with the vehicle exhaust system.

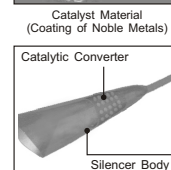


Working

When the engine starts the temperature at the exhaust port is around 500°C. The cat converter operates at 250 - 300°C. As the exhaust gases pass over the larger surface area coated with catalyst the chemical reaction takes place. The harmful gases are converted into harmless gases because of the chemical reaction.



Thus it converts hazardous gases into harmless gases.



Gases Present	- Converted into
• Carbon monoxide CO	- Carbon Dioxide CO ₂
• Hydrocarbons HC	- Carbon Dioxide CO ₂ and Water Vapour H ₂ O
• Nitrogen Oxide No _x	- Nitrogen N ₂

A catalytic converter may have two different catalysts. One catalyst treats the HC and CO The other treats No_x. The catalyst for HC and CO encourages the HC to unite with Oxygen to become H₂O (Water) and CO₂ (carbon dioxide). It also encourages the CO to unite with Oxygen to become CO₂ or Carbon Dioxide. This type of converter is an oxidizing converter, because it oxidizes the HC and CO (To oxidize means to combine with oxygen). The metals like Platinum and Palladium are used as oxidizing catalysts.

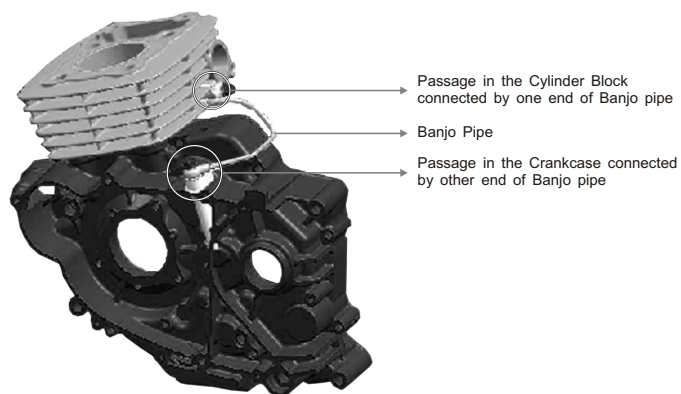
The catalyst for the No_x works differently. It splits the oxygen from the Nitrogen. The No_x becomes harmless Nitrogen and Oxygen. This type of converter is a reducing converter. The metal Rhodium reduces the NO_x to Nitrogen and Oxygen.

The silencer with the catalytic converter has been matched and designed to give optimum engine performance and very good reduction in emission level to meet the emission norms.

Don'ts

1. Do not pour 2T oil / Engine oil into silencer.
2. Do not turn off the ignition key when the vehicle is in gear / running condition. Bring the engine into neutral & then put off the ignition.
3. In case of carburettor flooding / overflow immediately rectify the defect too rich mixture flowing down the cat converter might lower down its efficiency.

Controlled Lubrication System



The key changes for controlled lubrication with closed clutch are as mentioned below -

- Separate oil passage in Cylinder Block & Crankcase. Both passages are connected by banjo & pipe.
 - Passage in cylinder block supplies forced oil coming from oil pump.
 - Passage in the crankcase connects to Input shaft on magneto side end.
- Hole on the input shaft (clutch end) is converted to orifice of 1.5 mm diameter for controlled supply of oil to clutch.
- Clutch housing has been modified to closed type to retain required quantity of oil consistently.

Advantages

1. Smoother gear shift feel.
2. Controlled clutch lubrication.

Frame & Suspension



- Tightening Torque
- Service Limits
- Tubeless Tyre & Its Puncture Repair Procedure
- SOP for Tubeless Tyre Removal
- Dismantling & Assembling Front Fork
- Front Disc Brake**

***All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note*

Service Data (For 150 cc & 180 cc)

		Standard Limit	Service Limit
	Pulsar 150 cc	12.0~12.03	12.15
	Pulsar 180 cc	14.0~14.03	14.15

	Standard Limit	Service Limit
	Pulsar 150 cc 11.95 ~ 11.98	11.88
	Pulsar 180 cc 13.95 ~ 13.98	13.88

		Standard Limit	Service Limit
	Pulsar 150 cc	7.4	3.8
	Pulsar 180 cc	7.4	3.8

	Standard Limit	Service Limit	
	Pulsar 150 cc	3.85~4.15	2.0
	Pulsar 180 cc	3.85~4.15	2.0

		Standard Limit	Service Limit
	Pulsar 150 cc	130.0 ~ 130.16	130.75
	Pulsar 180 cc	130.0 ~ 130.16	130.75

	Standard Limit	Service Limit
	Pulsar 150 cc TIR 0.1 or Less	TIR 0.2
	Pulsar 180 cc TIR 0.1 or Less	TIR 0.2

		Standard Limit	Service Limit
	Pulsar 150 cc	TIR 1.0 or Less	TIR 2.0
	Pulsar 180 cc	TIR 1.0 or Less	TIR 2.0

		Standard Limit	Service Limit
	Pulsar 150 cc	TIR 0.8 or Less	TIR 2.0
	Pulsar 180 cc	TIR 0.8 or Less	TIR 2.0

	Standard Limit	Service Limit
	Pulsar 150 cc 25 - 35	40 - 50
	Pulsar 180 cc 25 - 35	40 - 50

	Standard Limit	Service Limit	
	Pulsar 150 cc	254.0 ~ 254.6	259.0
	Pulsar 180 cc	301.6 ~ 302.1	307.0

Service Data (For 150 cc & 180 cc)

	Standard Limit	Service Limit
	Pulsar 150 cc 0.4 or Less	0.5
	Pulsar 180 cc 0.4 or Less	0.5

		Standard Limit	Service Limit
	Pulsar 150 cc	Front 5.0	Front 1.0
		Rear 6.8	Rear 1.5
	Pulsar 180 cc	Front 5.0 Rear 7.3	Front 1.0 Rear 2.0

		Standard Limit	Service Limit
	Pulsar 150 cc	398.50	391.0
	Pulsar 180 cc	373.0	368.0

		Grade	Quantity
	Pulsar 150 cc	SAE 10W20	Drain & Refill - 145±2.5 ml Overhaul - 165 ml
	Pulsar 180 cc	SAE 10W20	Drain & Refill - 295±2.5 ml Overhaul - 320 ml

Notes :

Tightening Torque (For 150 cc & 180 cc)

A close-up photograph of a motorcycle's front wheel hub. A red arrow points to the axle nut, which is the component that secures the axle in place. The hub has a multi-spoke design, and the axle is visible passing through the center.

	Pulsar 150 cc	4.0 ~ 5.0
	Pulsar 180 cc	8.0 ~ 10.0

		Torque Value in Kg.m
	Pulsar 150 cc Pulsar 180 cc	2.0 ~ 2.2 (150 cc Photo not illustrated) 2.0 ~ 2.2

		Torque Value in Kg.m
	Pulsar 150 cc	8.0 ~ 10.0
	Pulsar 180 cc	8.0 ~ 10.0

		Torque Value in Kg.m
	Pulsar 150 cc	3.5
	Pulsar 180 cc	5.0

A close-up photograph showing a coiled metal spring being attached to a metal frame. A small metal pin is being inserted through the spring and the frame. A pair of pliers is shown holding the pin, and a red arrow points to the pin's location.

		Torque Value in Kg.m
	Pulsar 150 cc	3.0 ~ 4.0
	Pulsar 180 cc	3.0 ~ 4.0

		Torque Value in Kg.m
	Pulsar 150 cc	0.5
		
	Pulsar 180 cc	0.5

		Torque Value in Kg.m
	Pulsar 150 cc	7.0 ~ 8.0
	Pulsar 180 cc	-- NA --

		Torque Value in Kg.m
	Pulsar 150 cc	1.8 ~ 2.0
	Pulsar 180 cc	1.8 ~ 2.0

		Torque Value in Kg.m
	Pulsar 150 cc	1.8 ~ 2.5 (Loctite 243)
	Pulsar 180 cc	3.0 ~ 3.2 (Loctite 243)

A close-up photograph of a mechanical assembly, likely a piston and connecting rod. A red arrow points to a specific component, possibly a pin or a bolt, which is highlighted in the image.

		Torque Value in Kg.m
	Pulsar 150 cc	2.5 ~ 3.5
	Pulsar 180 cc	2.5 ~ 3.5

Pulsar DTS-i 150/180 Training Notes

Tightening Torque (For 150 cc & 180 cc)

A close-up photograph of a vehicle's shock absorber assembly. A red arrow points to the top mounting nut, which is the point of failure described in the text.

		Torque Value in Kg.m
	Pulsar 150 cc	3.5 ~ 4.0
	Pulsar 180 cc	3.5 ~ 4.0

		Torque Value in Kg.m
	Pulsar 150 cc	2.6 ~ 3.2 (Loctite 243)
	Pulsar 180 cc	2.6 ~ 3.2 (Loctite 243)

		Torque Value in Kg.m
	Pulsar 150 cc	8.0 ~ 10.0
	Pulsar 180 cc	8.0 ~ 10.0

		Torque Value in Kg.m
	Pulsar 150 cc	2.2 ~ 2.8
	Pulsar 180 cc	2.2 ~ 2.8

		Torque Value in Kg.m
	Pulsar 150 cc	2.2 ~ 2.8
	Pulsar 180 cc	2.2 ~ 2.8

	Pulsar 150 cc	2.0 ~ 2.2
	Pulsar 180 cc	2.0 ~ 2.2

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Tubeless Tyre & Its Puncture Repair Procedure

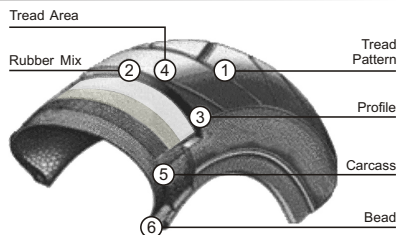
(Applicable for Pulsar DTS-i 180 cc only)

Function

1. Supporting vehicle weight.
2. Transferring traction and braking forces to the road surface.
3. Changing and Maintaining direction of travel.
4. Absorbing road shocks.

Construction

1. Tread Pattern:
The grooves in the tyre enable it to evacuate water from the contact patch when the road is wet.
2. Rubber Mix:
The rubber chemical composition determines the durability and grip.
3. Profile:
The tyre's profile influences the stability and maneuverability.
4. Tread Area:
The only point of contact between the motorcycle and ground. This absorbs bumps and ensures comfortable ride.
5. Carcass:
Supports the load of the motorcycle and contributes to comfort & stability.
6. Bead:
Bead consists of steel wires & it holds the tyre on rim. It is supported with bead filters which provides high durability and maneuverability.



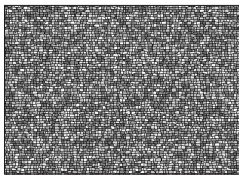
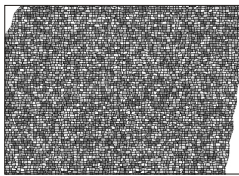
Difference between Tube Type & Tubeless

Tubeless	Tube Type
The inner tube is integral within the tyre, known as inner liner. The valve is permanently fixed to the rim. The assy is airtight.	Components : Tyre, Tube with Valve and Rim.
Loss of air is very slow, after getting punctured, because air can escape through the point of puncture only.	Instant air leakage. The air under pressure finds a way between the tube, tyre and through the rim hole.

Tubeless Tyre & Its Puncture Repair Procedure

(Applicable for Pulsar DTS-i 180 cc only)

Construction Difference

Tubeless	Tube Type
Inner liner is made of Butyl Rubber. Advantage : Air permeability of butyl rubber is very low.	Inner liner is made of Natural Rubber. Advantage : Air permeability of natural rubber is very high.
	
Note : Construction of Tubeless & Tube Type differ in compound of inner liner.	

Advantages of Tubeless Tyres

Advantages	Reason / Remark
• Slow air leak.	• Air can escape through the point of puncture only.
• Better fuel efficiency.	• Lightness in weight of tubeless tyre.
• Less chance of damage in case of flat running.	• No instant air loss.
• Better heat dissipation.	• Air in direct contact with rim.
• Cost saving on tube.	• No tube required.
• No tube related problems.	• Tube not present.

Limitations of Tubeless Tyres

Limitations	Remedies
• Air leaks, if rim bends.	• Get rim straightened by rim straightening machine.
• Air leakage through bead damages.	• Always follow proper mounting procedure.

Tubeless Tyre & Its Puncture Repair Procedure

(Applicable for Pulsar DTS-i 180 cc only)

Puncture Repairing Methods of Tubeless Tyres

In the market 3 Repairing Methods are available as below:

1. Filler Method - Commonly used in the market.
2. Plug Method (Mushroom type) - BAL recommends this method as it is more effective.
3. Patch Method - BAL does not recommend.

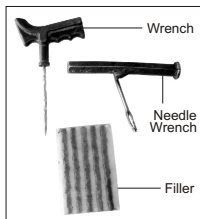
BAL recommends only Filler and Plug Method (Mushroom type) for Tube less damage repair.

BAL strictly prohibits patch method of repairing, as it is very unsafe and improper method of repair. Applying a patch inside the tyre stops air leakage due to puncture, but get exposed to water, moisture, dust etc. from outside that will lead to cut separation damage.

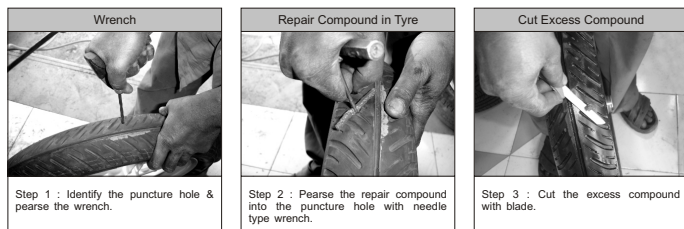
Filler Method

Tools & Material Used :

- | | |
|-------------------------|---|
| Repairing Tool (Wrench) | - Used for placing or pearsing the repair compound in place perfectly. |
| Repair Compound | - Used for filling the puncture. It forms bond with the tyre compound after application. |
| Solution | - Adhesive used for applying the filler material (Few compounds come with self adhesive material also). |
| Blades | - Used for trimming the extra compound above puncture surface, outside the tyre. |



Process :



Advantages :

In this method it is not necessary to remove the tyre from rim, and also there is no chance of bead damage. This method is cost effective and saves labor & time.

Disadvantages :

Stiff ridges are formed on the inner liner of the tyre due to hardening of the repair compound which prohibits use of tubes with the tyre. (If tube has to be used, then proper grinding of tyre inner surface has to be done, to remove the hardened repairing compound).

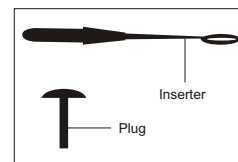
Tubeless Tyre & Its Puncture Repair Procedure

(Applicable for Pulsar DTS-i 180 cc only)

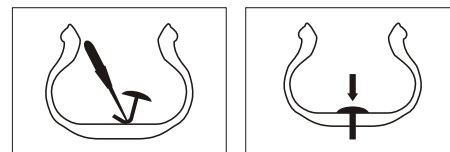
Plug (Mushroom) Method

Tools & Material Used :

- | | |
|------------|--|
| Hand Drill | - Used for cleaning and making the hole proper. |
| Insertor | - Used for inserting the plug stem into puncture hole. |
| Solution | - Adhesive used for applying the plug. |
| Blades | - Used for trimming the extra compound above puncture surface. |
| Cup Rasp | - For buffing area around the punctured location. |



Process :



Advantages :

This method is the most proper and effective method of repair. This repair from tyre inside gives a permanent, strong and airtight repairing.

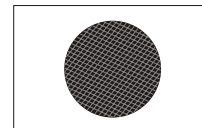
Disadvantages :

Complete tyre needs to remove from the rim for repairs.

Patch Method

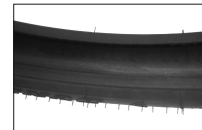
Tools & Material Used :

- | | |
|----------|---|
| File | - For roughening the surface of the area to be repaired. |
| Patches | - Ready-made patches are available in the market, price depending upon the size used. Some repairs use their own patches made out of damaged tubes. |
| Solution | - Adhesive used for applying the patch. |



Process :

Remove the tyre & put the patch at the leakage location from inside of the tyre.



Disadvantages :

Applying a patch inside the tyre stops air leakage due to pressure, but get exposed to water, moisture, dust etc., from outside which will lead to Cut Separation Damage.

Note : BAL does not recommend repair using Patch Method.

Tubeless Tyre & Its Puncture Repair Procedure

(Applicable for Pulsar DTS-i 180 cc only)

Why Inflation Pressure is Important?

1. Air inside the tyre sustains the load of the vehicle.
2. Tyre is just a container of air.
3. Effect of Inflation Pressure.

Inflation Pressure	Heat Generation	Deflection	Damage Chance				Riding Comfort	Steering	Over all Performance
			Irregular Wear	Cut	Impact	Run Flat			
High	Low	Low	Center Wear	High	High	No	Poor	Poor	Poor
Proper	Medium	Medium	Uniform Wear	Low	Low	No	Good	Good	Optimum
Low	High	Large	Both Side Shoulder Wear	High	Low	High	Good	Poor	Poor

Maintaining recommended Inflation Pressure is very important.

Care & Maintenance of Tyre

- Always mount tyres on correct size rim.
- Rim should be free of dirt, rust & should be free of bends.
- Rim valve hole should be round and smooth.
- Clean tyre interiors before placing the tyre inside.
- Lubricate tyre beads with mild soap solution before assembling and while removing the tyre.
- As far as possible use tyre mounting machine for tyre fitting & tyre removing from wheel rim.
- Also ensure proper usage of tools so that bead area doesn't get damaged. If the rim gets damaged it has to be replaced as there will be a permanent air leakage between rim and tyre.
- Before inflating the tyre, check whether the beads are seating correctly on the rim seats.
- Slightly exceed the tyre pressure to seat the beads. After beads are seated adjust inflation pressure to as recommended below.

Tyre Pressure - 150 cc	
Front	: 1.75 kg/cm ² (25.0 Psi)
Rear Solo	: 2.00 kg/cm ² (28.4 Psi)
Rear Pillion	: 2.25 kg/cm ² (32.0 Psi)

Tyre Pressure - 180 cc	
Front	: 2.00 kg/cm ² (28.4 Psi)
Rear Solo	: 2.00 kg/cm ² (28.4 Psi)
Rear Pillion	: 2.15 kg/cm ² (30.5 Psi)

SOP for Tubeless Tyre Removal

(Applicable for Pulsar DTS-i 180 cc only)

To avoid scratches on the paint & damages to wheel rim portion, it is essential to take certain care & precautions while carrying out puncture repair job. Following steps must be followed.

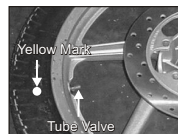
SOP for Removal of Tyre :

A : Air Leakage between Wheel Rim & Tyre

- First remove dust & dirt from Tyre and Wheel Rim by soft cotton cloth.
- Check the tyre for yellow paint mark on the sidewall aligning w.r.t. Valve position as shown in photo.
- If the marking is not visible/not noticeable, put a paint mark in line with the Valve & then proceed further.
- If the marking is not visible/not noticeable, put a paint mark in line with the Valve & then proceed further.

Important Note :

The yellow dot mark on the tyre indicates the lightest area of the tyre. The tyre balancing is ensured by aligning this mark w.r.t. Tube Valve.



- Inflate the tyre.
- Immerse the tyre into water tank & check for leakage.
- If confirmed for air leakage between rim & tyre proceed further.
- Mount the wheel assy on the tyre removing machine.



- Slowly rotate the wheel & remove the tyre.
- Separate the tyre from wheel rim.



Important Note :
Never use bare levers directly as this may damage edges of wheel rim portion.
Damaged wheel rim edges may cause repeated air leakage problems. Replace rim if required.



- Check tyre and rim inner surface for any foreign material, caught in between tyre and wheel rim inner surface if required clean it thoroughly.

SOP for Tubeless Tyre Removal

(Applicable for Pulsar DTS-i 180 cc only)



SOP for Fitment of Tyre :

- Place the tyre on any used old tyre and apply soap water on the beading portion of the tyre.

Important Note : Soap water enables smooth sliding-in of the wheel rim inside the tyre beading portion.

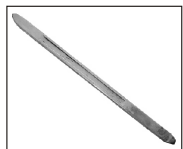


- Place the wheel rim over the tyre and align it properly from all the sides with respect to inner diameter of the tyre beading portion.

Important Note :
Do not forget to align the yellow paint mark on the tyre w.r.t. Valve hole on the wheel rim.



- Mount the wheel assy on the machine.
- Apply soap water by brush at tyre bead portion for easy fitment.
- Rotate and press the tyre gently in to the rim till tyre encompasses all around the wheel rim.



- Carefully press the tyre bead portion with crowbar to fit the bead portion in the wheel rim.



- Inflate the tyre to little more pressure than specification. You will hear a noise that indicates that the bead portion has taken correct seat in rim.
- Now correct the tyre pressure as per specification.

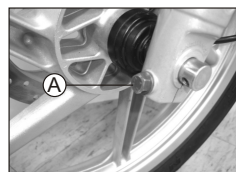


- Dip the wheel assy into water and confirm for leakage between tyre & rim.

Important Note :
Always ensure that tyre fitment line mark provided on tyre side wall must be circumferentially parallel to the wheel rim circumference.

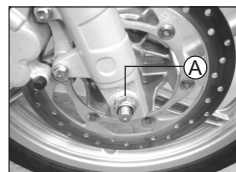
Dismantling & Assembling Front Fork

(Applicable for Pulsar DTS-i 180 cc only)



Remove :

- Pinch clamp bolt (A)

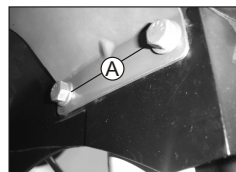


Remove :

- Axle Nut (A)
- Axle
- Wheel sensor case complete
- Wheel Assembly

Note :

Place a wedge between pads of front caliper assy as a precaution

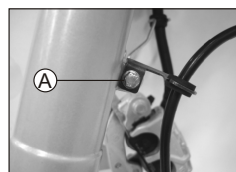


Remove :

- 4 Bolts (A)
- Brace fender
- Mudguard

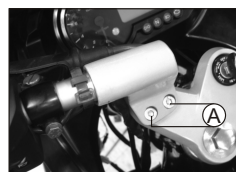
Note :

Painted parts should be handled with almost care to avoid scratches when dismantled



Remove :

- Bolt (A)
- Bracket with wheel sensor case complete
- Wheel sensor harness coupler



Remove :

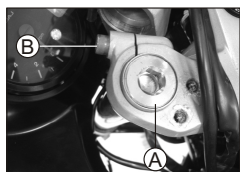
- Allen bolt (A)
- Slide aside handle bar LH

Note :

Painted parts should be handled with almost care to avoid scratches when dismantled.

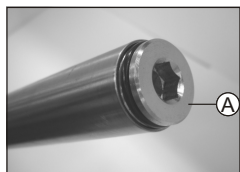
Dismantling & Assembling Front Fork

(Applicable for Pulsar DTS-i 180 cc only)



Loosen :

- Allen bolt (A)
- Allen bolt (B)



Remove :

- Allen bolt (A)



Remove :

- Drain the oil in the container
- Washer
- Spring

Recommended Oil Capacity Per Fork Tube (For Pulsar DTS-i 180 cc)
Approx. 295 ± 2.5 ml (Drain & Refill), 320 ml (Overhaul)

Note :

Ensure that the washer is collected from the drained oil container as it gets dropped into the oil.



Remove :

- Dust seal
- Snap ring

Dismantling & Assembling Front Fork

(Applicable for Pulsar DTS-i 180 cc only)



Using Special Tool 37 1740 05

Remove :

- Allen bolt
- Copper plated washer

Note :

Mount the special tool firmly on the bench vice and insert the fork pipe. In special tool for firm locking.



Using Special Tool 37 1740 04

Remove :

- Insert the fork pipe assy into the lower 'T' & tighten lower 'T' bolt.
- Rotate the special tool handle for separation of inner and outer pipe.

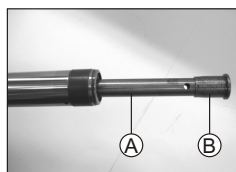
Note :

Ensure that the snap ring and the bottom allen bolt is removed first.



Collect all the front fork parts as ;

- Oil seal
- Spacer
- Guide bush
- Fork piston complete
- Spring
- Stay fork piston



Assembling Front Fork

Fit :

- Fork piston comp (A) with spring in fork inner pipe
- Stay fork piston (B)



Using Special Tool 37 1740 05

Fit :

- Outer pipe
- Washer
- Allen bolt



Dismantling & Assembling Front Fork

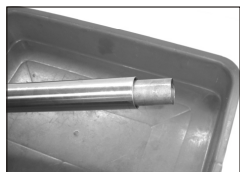
(Applicable for Pulsar DTS-i 180 cc only)



Using Special Tool 37 1740 03

Fit :

- Guide bush
- Washer
- Oil seal
- Snap ring
- Dust seat

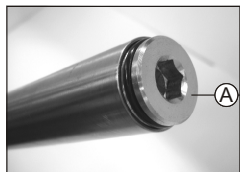


Fit :

- Spring
- Washer
- Collar
- Fill fork oil

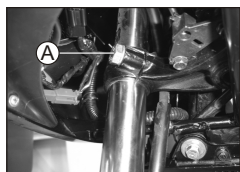
Recommended Oil Capacity Per Fork Tube (For Pulsar DTS-i 180 cc)

Approx. 295 ± 2.5 ml (Drain & Refill), 320 ml (Overhaul)
--



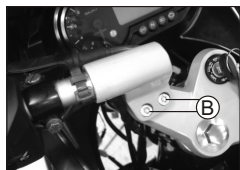
Fit :

- Allen bolt (A)



Fit :

- Slide the front fork assly in the fork holder
- Bolt (A)

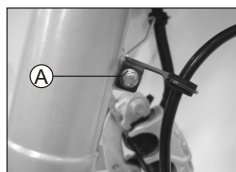


Fit :

- Allen bolt
- Handle bar
- 2 Allen bolts (B)

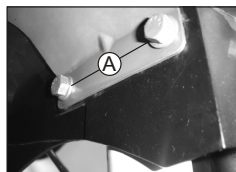
Dismantling & Assembling Front Fork

(Applicable for Pulsar DTS-i 180 cc only)



Fit :

- Bracket with wheel sensor case complete
- Bolt (A)
- Wheel sensor harness coupler



Fit :

- Mudguard
- Brace fender
- 4 bolts (A)

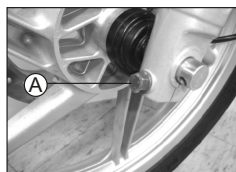


Fit :

- Wheel sensor case on front wheel
- Wheel assly
- Axle
- Axle nut (A)

Note :

Remove the wedge placed between pads of front caliper assly.



Fit :

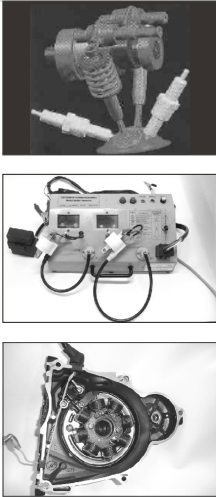
- Pinch clamp bolt (A)

Note :

The dismantling of front fork assembly for Pulsar DTS-i 150 cc is common with Pulsar DTS-i 150 / 180 cc. For more details refer Pulsar DTS-i 180 cc training note Page no. 121 onwards.

This image shows a blank sheet of white paper designed for note-taking. At the top left, there is a grey rectangular tab. To its right, the word "Notes" is printed in a bold, black, sans-serif font. The rest of the page is filled with horizontal dashed lines, providing space for writing.

Electricals



- Digital Twin Spark Ignition (DTS-i)
- DC Ignition System
- Maintenance Electrical
- Dos & Don'ts
- Electrical Checking Procedure

Information on Digital Speedo Console, Vehicle Speed Sensor, LED Tail Lamp, Backlit, Non-Contact Type Switches, Working of Indicator, Auto Cancellation, Working of BCU etc.

Individual Circuit Diagrams for Brake light, Horn, Speedometer / Tachometer, Side indicator, Fuel indicator, Neutral light, Side stand.

All these topics are similar with Pulsar DTS-i 180cc Training Note. For more details refer Pulsar DTS-i 180cc Training Note.

DTS-i Ignition & DC Ignition System

DTS-i (Digital Twin Spark Ignition) Ignition System



1. The most obvious feature is the Twin Spark Plug configuration of the Engine. The cylinder head has 2 spark plugs one on either side. The spark plugs are of the same Heat range (Champion RG4HC (Resistive) and have similar electrode gaps. These also spark simultaneously, This has been done to improve the combustion process by reducing the time of combustion. The end results are low emissions, good fuel economy and good drive-ability
2. To enable the sparking of the 2 spark plugs, a intelligent CDI capable of handling this was developed. Further more, the ignition timing has been optimised to give the best output from engine (10° BTDC @ 1400 rpm, 25° BTDC @ 3000 rpm). To enable optimum ignition timing for part throttle loads and full throttle loads, there are separate ignition maps stored in the memory of the CDI. These are activated depending on the throttle opening and engine speed. The Digital CDI has a bit Microprocessor which handles all these inputs and gives out the required and correct spark advance.
3. To enable switching the required ignition maps, a magnetically operated need switch is incorporated on the carburettor throttle shaft and carburettor body. This is known as TRICS. Throttle Responsive Ignition Control System.
4. This engine has been extensively tuned for more Power and Torque.
5. The DTS-i technology has enabled the Pulsar to meet 2009 norms without any Secondary air injection devices.

DC Ignition System



DC Ignition System works on DC electrical energy given by battery. The vehicle battery is always kept charged by the magneto through DC voltage regulator which is incorporated in the R.R. unit. Hence the role of the battery is very important and you can not disconnect the battery from the vehicle. Disconnection of the battery will disable the starting of the vehicle.

Advantage

- Constant & Consistent high intensity current is available even at low engine RPM which gives improved combustion and better startability.
- No head light voltage fluctuations even at lower rpm resulting into safe night ride.

Maintenance - Electrical

Battery

Technical Specification :

• Type & Capacity	12V - 9 AH
• Specific gravity of electrolyte for initial filling of new battery	1.24 for use above 10°C
• Specific gravity of electrolyte for initial filling of new battery	1.28 for use below 10°C
• Initial charging duration	10 ~ 15 hrs
• Initial charging current	0.9 to 1 Amp



Initial Charging Procedure

1. Fill each cell with battery grade sulfuric acid of the correct Sp. gravity (1.24 at room temp. for use above 10°C and 1.28 at room temp. for use below 10°C).
2. Allow the battery to stand for 30 min. after filling.
3. Keep vent plugs open. Connect battery to charger and charge at 0.9 Amp.
4. Charge continuously for 10-15 hours taking Sp. gravity readings every hour. Fully charged condition is indicated when all cells are gassing freely and evenly and show no rise in specific gravity over 3 successive readings.
5. After charging push vent plugs strip firmly into place and wash off acid spillage with water and dry the battery.
6. Using the battery load tester confirm for good indication of state of charge of battery.

Checking the Specific Gravity

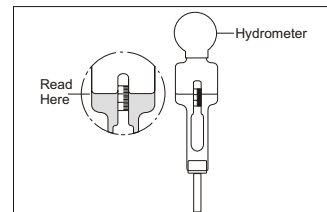
The charge condition of the individual cell can be checked by measuring Sp. gravity of electrolyte in that cell. The specific gravity of electrolyte can be checked by using Hydrometer having small diameter spout.

For measuring the Sp. gravity bring the electrolyte in the Hydrometer to eye level, and read the graduations on the float scale bordering on the lower meniscus (i.e. curved down portion of electrolyte surface) as shown in the figure. After charging is over, fit the filling caps strip, wash acid spillage with water. Dry the battery. Ensure terminals are clean.

Battery Installation:

Install the battery on vehicle as described below

- a. Ensure that in all six cells the level of electrolyte is near the maximum level mark.
- b. To clean and dry the surface wipe the top of the battery with a clean cloth. Install the



battery inside the box provided on floor board. Fasten the battery firmly with bracket & allied fasteners.

- c. Connect cables to the positive and negative terminals properly. Reverse connections will damage the charging system permanently.
- d. Always connect "negative (earthing) terminal" at last.
- e. Clean battery terminals and cable connections. Smear them with petroleum jelly to avoid corrosion.
- g. Check that the battery cable connections are firm and cables do not rub against any metal components.

Battery Charging Procedure :

This is a M.F (Maintenance Free) battery. This battery is not having any exhaust tube instead it has a unique vent mechanism.

The electrolyte level in this M.F. battery needs to be topped up with distilled water not exceeding the max level if found that the electrolyte level is below min level / dropped down. In case battery in discharged and needs to be charged using battery charged procedure is as follows :

- Remove battery from vehicle
- Clean battery thoroughly
- Remove gang bar strip.

Maintenance - Electrical

- Top up level with distilled water to max level when the electrolyte level is less than half of min & max level.
- Connect battery to charge & ensure respective terminal are connected properly.
- Set charging current at 0.9 A DC.
- Charge battery for 3/4 hrs., then check voltage and special gravity.
- Battery open circuit voltage should be > 12.5 volts (when disconnected from charger) & special gravity in all 6 cells should be 1.240. This is a confirmation check for a fully charged battery.
- Disconnect the battery from the charger.
- Fit gang bar plug firmly.
- Using the battery load tester confirm for good indication of state of charge of battery.
- Connect battery on to vehicle.
- Apply petroleum jelly on battery terminal.

Battery Maintenance

For the optimum performance and longer battery life the maintenance of battery is important.

- Always keep the battery clean and dry.
- Visually inspect the surface of the battery container. If there are any signs of cracking or electrolyte leakage from battery, replace the battery.

Never add acid or ordinary tap water for topping up since this will shorten Battery life.

Non Use Maintenance

When the vehicle is likely to remain off-road for longer, time (say more than a month) then Non Use Maintenance should be carried out as follows otherwise the battery may get sulphated and permanently damaged.

- Remove the battery from vehicle.
- Maintain electrolyte at 'Upper Level'.
- During off service period, battery should be charged once a month or if the battery DC voltage drops below 12.3 V.
- Keep the battery fully charged.
- Store the battery in cool, dry place.
- Keep the battery away from rain, dew, moisture and direct sunlight.

Battery Sulphation

A sulphated battery is one which has been left standing in a discharged condition or undercharged to the point where abnormal lead sulphate has formed on the plates (Sulphate cells looks like white crystal like sugar). Where this

happens, the chemical reactions within the battery are affected and results in loss of capacity. Mostly the causes of sulphation are as under :

- Undercharging.
- Standing in a partially or completely discharge condition for long time.
- Low electrolyte level : If electrolyte level is permitted to fall below the top of the battery plates, then the exposed surfaces will harden and will become sulphated.
- Adding acid : If acid is added to a cell in which sulphation exists the condition will be aggravated.
- High specific gravity : If specific gravity is higher than the recommended value, then sulphation may occur.
- High temp.: High temperature accelerates sulphation, particularly of an idle, partially discharged battery.

Voltage of the sulphated battery :-

Cells of the sulphated battery will show low specific gravity. Follow the procedure given below.

- Check voltage before charging.
- Charge for 2 hours
- Check voltage every 1 hour. If voltage increases then continue charging. But if voltage does not increase, discontinue charging. Otherwise battery charger will get permanently damaged. If battery is not badly sulphated (i.e. voltage more than 9 volts), then battery can be revived by special treatment. In such case it is advisable to give sulphated battery to authorised dealer of battery manufacturer for necessary special treatment.

How to Determine Condition of Battery

Specific gravity check: - Whether battery is fully charged or partially charged, it will always show same "no load voltage" of 12 volts or more (unless battery cells are damaged due to sulphation etc). But specific gravity of the fully charged battery and partially charged battery will be different. Fully charged battery will show Sp. gravity of 1.240 while partially charged battery will show less specific gravity. Therefore, specific gravity check is very important to know condition of the battery.

Note :

Use of battery load tester will give the correct indication of state of charge of battery on load conditions.

Maintenance - Electrical



Switches :

Front Brake Light Switch Inspection :

- Turn ON the ignition switch.
- The brake Light LED Blank should get on when the front brake (Lever is pressed) is applied.
- If it does not, check the Front brake switch.

	Brown	Blue
Lever Pressed	●	●
Lever Released	●	●



Rear Brake Light Switch Timing Inspection :

- Turn ON the ignition switch.
- Check the operation of the rear brake light switch by depressing the brake pedal
- If it does not operate as specified, adjust the brake light switch or check the switch.

	Brown	Blue
Pedal Pressed	●	●
Pedal Released	●	●



Neutral Switch :

- The neutral switch will be in ON position only when the engine is in neutral.
- The neutral light will not glow when vehicle is in gear.

	Light Green	Battery +ve
'ON' (Vehicle in neutral)	●	●
'OFF' (Vehicle in gear)	●	●



Ignition Switch :

	Brown/Blue	White
'OFF'	●	●
'OFF'	●	●

Maintenance - Electrical



Stator Plate Coils Inspection :

- Disconnect stator plate coupler
- Set multi meter on ohm range. (Ohm Meter)

Pickup Coil Resistance :

Range	Connections		Reading
2 K Ω	Meter +ve	Meter -ve	215 $\pm$ 20 ohm
	White/Red	Black/Yellow	

Battery Charging Coil :

Range	Meter +ve	Meter -ve	Reading
200 Ω	Blue/White	Blue/White	0.9~1.1 Ω at 25°C

CDI Unit and H. T. Coil Inspection :

- CDI unit can be checked using OK H.T. coil on Electronic Test jig
- Similarly H.T. Coil can be checked using OK CDI unit on electronic Test jig

H.T. Coils : (Inspection Using Multimeter)

- Measure the primary winding resistance as follows
- Connect the hand tester between the coil terminals.
- Measure the secondary winding resistance as follows
- Remove the plug cap by turning it counter clockwise.
- Connect the tester between the spark plug leads.
- Measure primary winding resistance.
- Measure secondary winding resistance.
- If the valve does not match as per, replace the coil.

Primary Winding	0.40 to 0.49 Ohms
Secondary Winding	4.23 to 5.17 K Ohms

- If the meter reads as specified, the ignition coil windings are probably good. However, if the ignition system still does not perform as it should after all other components have been checked test replace the coil with one known.
- Visually inspect the secondary winding lead.
- If it shows any damage, replace the coil.



Maintenance - Electrical



Fuse :

Main Fuse Inspection (Capacity = 10 Amp) / Secondary Fuse Inspection (Capacity = 5 Amp)

- Inspect the fuse element
- If it is blown out, replace the fuse.
- If a fuse fails during operation, the electrical system to determine the cause, and then replace it with a new fuse of proper amperage.

Caution : When replacing a fuse be sure the new fuse matches the specified fuse rating for that circuit. Installing of a fuse with a higher rating may cause damage to wiring and components.

Relay :

Solenoid Relay (Inspection Using Multi meter)

Coil Resistance	Meter +ve	Meter -ve	Reading
X 200 Ohm	Red/Yellow	Black	3.8 $\pm$ 2.0 Ohm



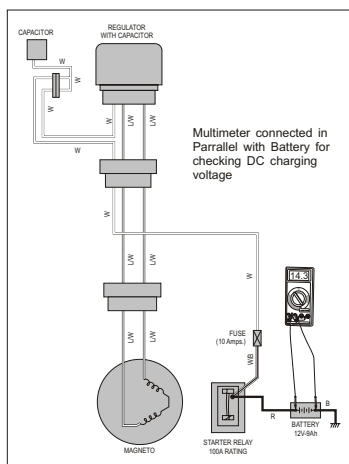
Clutch Switch :

The clutch switch has 3 wires and it has contact configuration of this vehicle is not having interlock relay Instead its working is taken care of by clutch switches.

	Meter -ve	Meter +ve	Black/Yellow
Both ON & OFF Clutch Lever Released		0.3 ~ 0.7 V	
ON Clutch Lever Pressed	●	●	●

Check this parameter in Diode mode of multi meter.

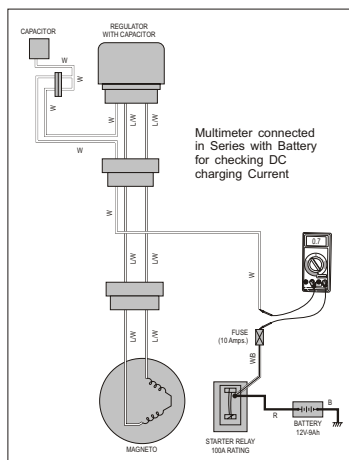




DC Charging Voltage Measurement : (Use fully charged battery while measuring)

To measure the DC voltage; set the meter at 20VDC range. Connect the meter +ve lead to white from RR unit and meter -ve lead to ground. Start the engine and set it at 4000±25 RPM. Measure the voltage with and without headlight switch to the ON position. Stop the engine disconnect the meter leads.

Meter Range	Specification at 4000±25 RPM
DC 20 Volt	14.3 to 14.7 V



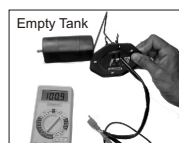
Battery DC Charging current : (Use fully charged battery ensuring battery voltage = 12.5 ± 0.3 V before measuring)

To measure the DC charging current, set the meter at 20ADC. Connect meter+ve lead to White/black lead from RR Unit and meter -ve lead to battery +ve lead.

Start the engine and set it at 4000±25 RPM. Measure the DC charging current. The DC charging current should be 0.7 A max stop the engine and disconnect meter leads. Connect the RR unit and battery.

Meter Range	Connection		Specification
DC10A	Meter +ve White/Black terminal of R/R	Meter -ve Battery (+) lead (White)	0.7 A max at 4000±25 RPM

Note : Connect multi meter in series with the circuit while conducting above test.



Fuel Gauge - Tank Unit

Measuring & Testing Equipment : Multimeter

Meter Range	Connections		Standard Value
	Meter +ve White / Yellow	Meter -ve Black / Yellow	
200 Ohms			As per chart given below

Standard Value : (For 150 CC)

Fuel Level	Fuel Quantity	Standard value	Graphical Bar on Instrument cluster
Empty Tank	1.25±0.3 Liter	93~101 Ohm	0 Bar
Reserve	2.8 Liter	67~77 Ohm	2 Bars
Just Above Reserve	3.5 Liter	58~62 Ohm	3 Bars
Half Tank	4.5 Liter	36~44 Ohm	4 Bars
Full Tank	8.5 Liter	6~10 Ohm	6 Bars

Note: Before checking the above, please confirm

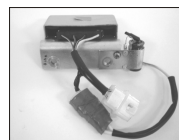
- Battery Voltage
- Speedometer coupler & fuel gauge tank unit coupler connection is firm.

Standard Value : (For 180 CC)

Fuel Level	Fuel Quantity	Standard value	Graphical Bar on Instrument cluster
Empty Tank	1.25±0.3 Liter	93~101 Ohm	0 Bar
Reserve	2.8 Liter	67~77 Ohm	2 Bars
Just Above Reserve	3.5 Liter	58~62 Ohm	3 Bars
Half Tank	4.5 Liter	36~44 Ohm	4 Bars
Full Tank	8.5 Liter	6~10 Ohm	6 Bars

Note: Before checking the above, please confirm

- Battery Voltage
- Speedometer coupler & fuel gauge tank unit coupler connection is firm.



Capacitor

Checking Method :

- Touch +ve wire of capacitor to earth. Spark will occur.
- This Indicates capacitor is OK.

Note: Capacitor is very important for Battery charging function, so ensure capacitor coupler is always firmly connected.

Maintenance - Electrical



Horn

Measuring & Testing Equipment : DC Clamp Meter

Meter Range	Connections	Standard Value
200 DCA	Encircle clamp meter jaws around Brown wire of horn	2.2 Amps

SOP :

- Encircle clamp meter jaws around Brown wire of Horn.
- Press horn switch & check instantaneous current drawn by horn.

Starter Motor - Current Drawn

Measuring & Testing Equipment : DC Clamp Meter

Meter Range	Connections	Standard Value
200 DC A	Encircle clamp meter transformer jaws around thick Red wire of starter motor	20 ~ 32 Amps Spark Plug Caps removed (Measured at 27°)

SOP :

- Switch 'ON' Ignition Key & disconnect both spark plug caps (care to be taken so that spark plug does not jump to metal part)
- Select range & set clamp meter Zero reading.
- Encircle red input wire of starter motor by clamp meter jaws.
- Crank engine by pressing self starter button.
- Press self starter button 3 seconds & check cranking current displayed on clamp meter LCD display.



Dos & Don'ts

HORN

Do's



Ensure that horn is firmly fitted on frame



Ensure that horn is free from dust and mud accumulation.



Ensure that horn wires are intact.



Ensure that horn switch button is operating freely.



Ensure that battery is fully charged.



- Adjust horn by phillips screw driver
- without removing silicon sealant from the adjustment screw.
- by rotating the screw in the direction of arrow provided in the screw.

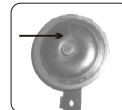


Ensure that resonator is not pressed by any portion of cables or wiring harness as it will result in distorted sound.

Don'ts



Never remove resonator cap as it could result in water entry & subsequent malfunctioning of horn



Do not apply pressurised water jet directly on horn resonator.



Never adjust nut on horn cap side & bracket end (back side) as it will result in horn malfunctioning & failure.



Do not remove silicon sealant from adjustment screw as it will result in water entry in horn.



Do not hit by mallet / screw driver on horn resonator.

Dos & Don'ts

BATTERY

Dos

- Always install recommended capacity of battery on the bike.
- Secure battery firmly in its box / cage.
- Always keep battery terminals clean & in firmly tightened condition
- Connect Red colour wire of the harness to the +ve terminal of the battery & Black colour wire of the harness to -ve terminal of the battery.
- Ensure presence of petroleum jelly to the battery terminals. Apply if not.
- Always maintain electrolyte level above half of maximum & minimum level marks & top-up with distilled water only.
- Keep the top cover of battery clean & tight
- Check battery charging current/ voltage periodically. Over charging / under charging is harmful for battery Life.
- Re-charge battery by specified constant current (0.9 Ampere)
- Check specific gravity of each cell for understanding charge status of the battery
- Ensure that rubber grommet provided on +ve & -ve terminals of battery is intact.
- Ensure that vent mechanism of the battery is free from dirt / dust & grime.
- Apply WD-40 Rust Spray to jammed battery terminals to remove rust.
- Always confirm the charge condition of battery using a Battery load tester at PDI stage & before installing battery on vehicle booster charge it.

Don'ts

- Do not install a lower / higher capacity battery than what is recommended.
- Never add acid into the battery.
- Do not top-up battery with mineral water or tap water as the chlorine & iron content in water will reduce battery life.
- Do not blow hammer on battery terminals & clamps.
- Do not apply grease on battery terminals / cable clamps.
- Do not over fill the battery.
- Do not keep your battery idle for more than three to four weeks.
- Never quick charge the battery with high current, as this will seriously affect battery life.
- Do not add extra electrical load on battery as it will draw more current & will reduce battery life.
- Do not cover vent mechanism of battery by cloth / paper or any other object.

Dos & Don'ts

IGNITION SYSTEM

Dos

- Always install recommended capacity of battery on the bike.
- Always replace spark plug by correct heat range plug.
- Check & adjust spark plug gap periodically. Adjust it to 0.6~0.8 mm by feeler gauge / wire gauge.
- Replace spark plug at every 15,000 kms.
- Check for firm fitment of spark plug in cylinder head.
- Ensure H.T. cable secondary connection is firmly fitted in spark plug cap and H.T. coil.
- Check that CDI coupler is tightly fitted.
- Check for proper functioning of TPS - Hall sensor.
- Always use a right size socket during removal and re-installation of spark plug.

Don'ts

- Do not replace spark plug by non recommended one (different heat range).
- Never short circuit H.T. coil primary wire to ground. It could lead to CDI failure.
- Do not remove grease from CDI and magneto coupler as it is provided for rust prevention.
- Do not adjust the spark plug gap with any instruments like screw Driver, pliers etc.
- Do not drive the vehicle without battery. Driving motorcycle in battery removed condition could cause damage to electrical components like voltage regulator because of no load Condition.

LIGHTS

Dos

- Check that all bulbs are firmly fitted in bulb holder.
- Ensure that all fixing screw of bulb housing are intact.
- Ensure that Reflector / Glass of Head Lamp, Tail Lamp, Side indicator is intact.
- Check that couplers and wires of bulbs are in good condition.

Don'ts

- Do not install a lower / higher capacity battery than what is recommended.
- Do not use Higher / Lower wattage Bulbs.
- While washing Vehicle do not direct pressurized water jet on Head Light, Tail Light, Indicators.
- Do not ride on brakes.
- Do not start Vehicle with light control switch in ON condition.

Dos & Don'ts

SWITCHES

 Dos

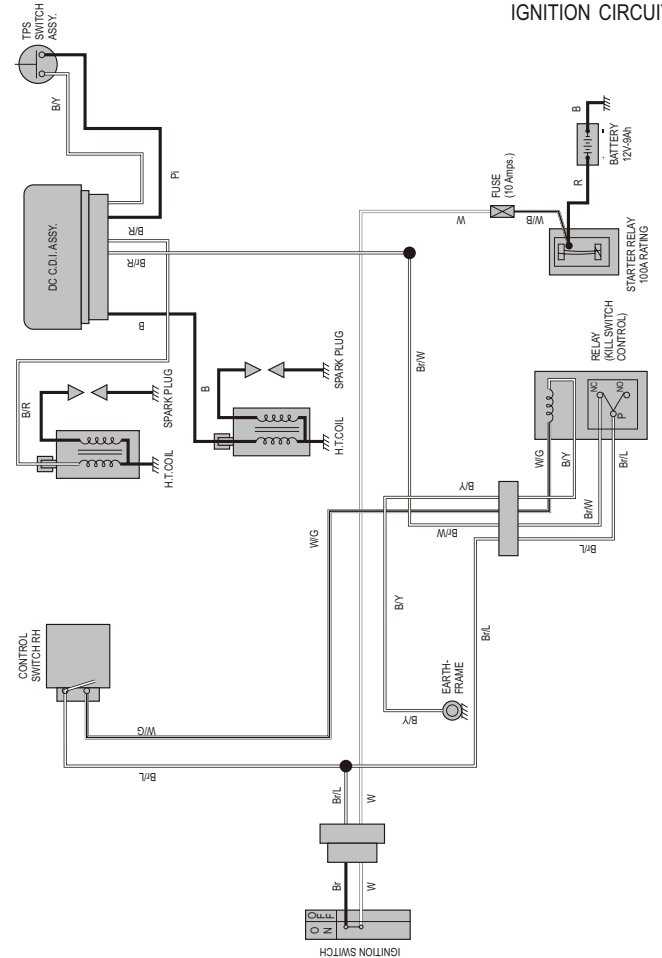
- After washing the vehicle ensure to apply dry air on switches before operation.
- Always ensure that grommets provided on clutch switch, front brake switch and rear brake switch are intact.
- Always apply WD-40 Rust Spray to sticky switches.

Don'ts

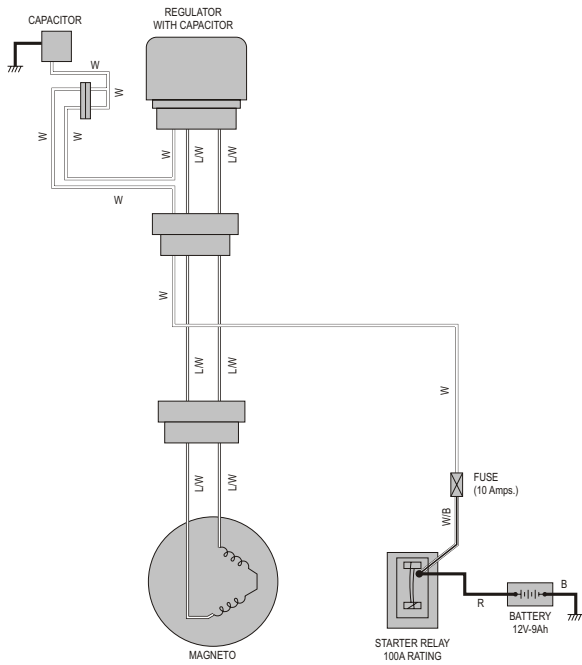
- Do not apply direct pressurized water jet on control switches.
- Do not lubricate electrical switches by oil or grease.
- Do not over tighten the switches.
- During warranty period do not dismantle control switches.
- Do not add extra electrical loads e.g. musical horns, additional horns, buzzers as it will reduce switch contact life & battery life
- Do not operate switch immediately after water servicing.

Electrical Circuit Diagrams

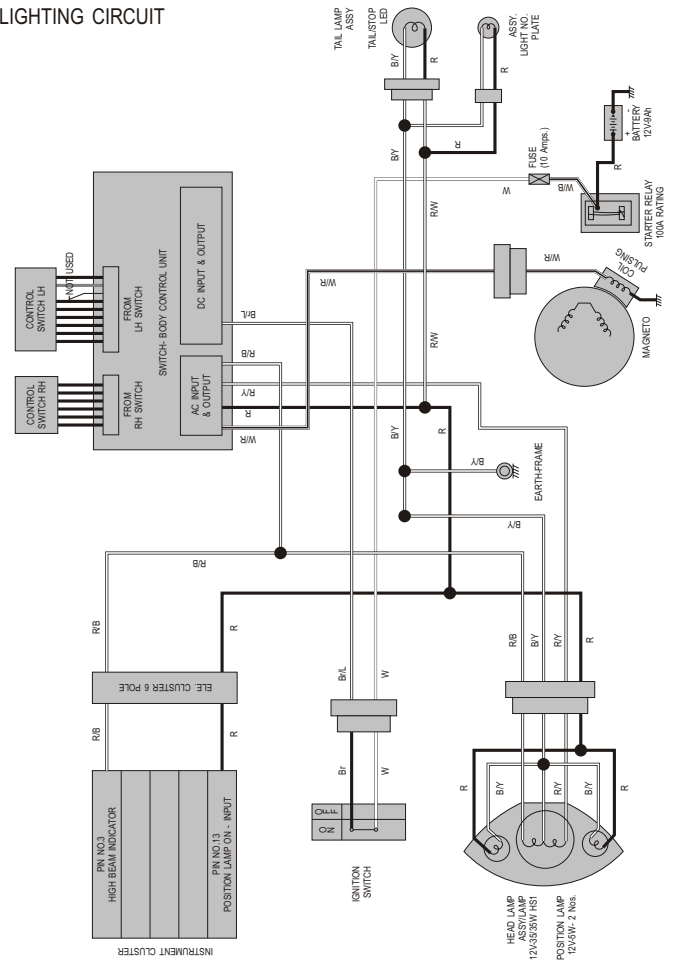
IGNITION CIRCUIT



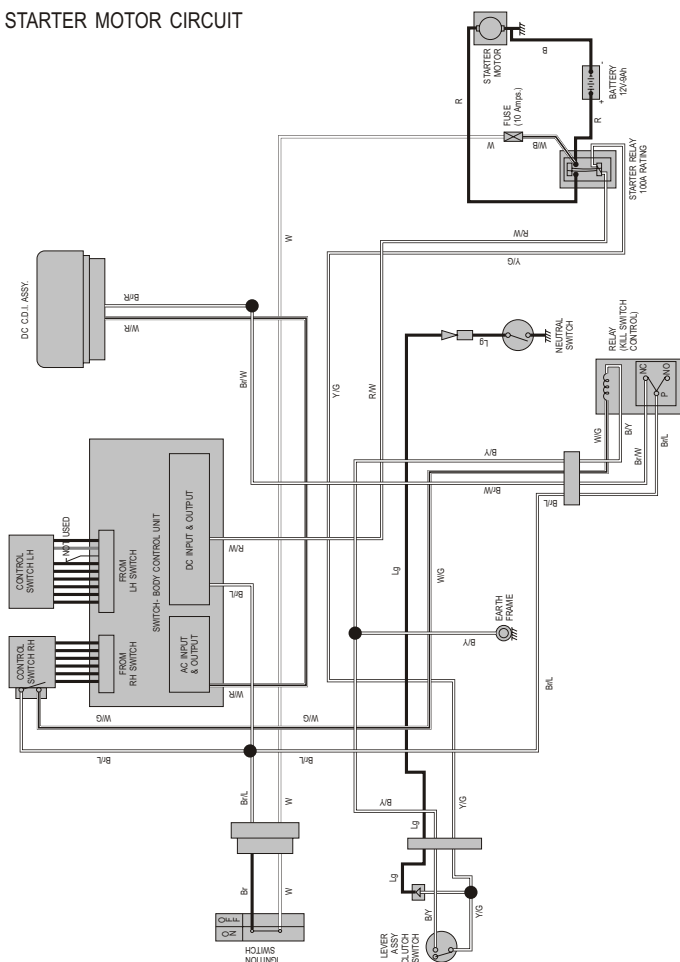
BATTERY CHARGING CIRCUIT



LIGHTING CIRCUIT



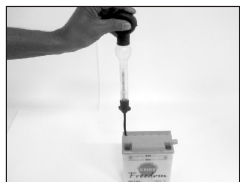
STARTER MOTOR CIRCUIT



Workshop Safety



- o Precautions to be taken while handling Hydro-Electric Lift
 - While raising / lowering the lifter bay ensure that vehicle is firmly hold on the lifter bay to avoid accident.
 - After raising the lifter bay, lock the lift.
 - Don't put leg/hand in between while raising / lowering the lifter Bay.
- **Safety Tips**
 - Do not lower the lifter bay table without unlocking the mechanical lift lock.
 - Do not keep your leg between the top and bottom frame while lowering the lifter bay.
 - Do not work with loose clothing while working on the lifter bay.
 - Do not keep hydraulic joints loose.
 - Do not stand on the lifter bay's top, when it is being operated.
 - Special care is to be adopted to avoid injuries if either leg or hand is entangled between.
 - Keep off direct fire near the power pack.
 - Avoid oil spillage around the working area for safety reasons.



- o Brake Shoe Cleaning
 - Don't inhale brake shoe lining dust. The dust could be Cancerous.
- o Battery Acid Handling
 - Use hand gloves.
 - Wear Apron.
 - Wear Safety Goggle
 - Avoid contact of battery acid with skin
 - Use plastic trays for keeping batteries while charging.
 - Avoid Spillage of battery acid.
- o Brake Fluid Handling
 - Store brake fluid in sealed container
 - Avoid contact of brake fluid with skin.
 - Don't spill the brake fluid on painted components
- o Electrical Wiring
 - Carry out periodic checks & repairs
 - Electrical board & Main Switch must be located such that they are easily accessible.

Workshop Safety



- o Technicians must put on shoes & dressing should not be very loose.
- o Technicians must use Personnel Protective Equipment (PPE) like - Hand Gloves
 - Mask
 - Safety Goggle
 - Ear Plug
- o Wear Nitrile Rubber Hand Gloves while handling petrochemicals like petrol, Oil, Kerosene etc.
- o Precautions to be taken while handling MRTB Test
 - Take care that the vehicle is properly clamped in the clamping device, otherwise it may go back with a force and can injure the rider.
 - Keep yourself cool while taking tests. It is very necessary to be alert.
 - Mount the vehicle in the center of the rollers.
 - Fuel pipe should not touch heated part of the vehicle, it may cause fire.
 - Make sure to put on air blower while conducting test to avoid engine overheating.
 - Lock The Front Wheel Properly
 - Ensure that exhaust blower is running.
 - Wear Helmet
 - Wear ear plugs
- o Precautions to be taken while handling CO Gas Analyser
 - Use hand gloves for protection from hot silencer.
 - Use mask for protection from exhaust gases.
 - Ensure proper ventilation.
- o Fire Extinguisher
 - Install 'ISI' approved. Fire extinguishers - CO₂ gas cylinders.
 - Refill CO₂ before the gas expires.
 - Install CO₂ gas cylinder at appropriate place so that there is no obstruction / good accessibility.

Workshop Safety



o Safety Precautions while Operating Air Tools

Air tools operate on compressed air supplied by the shop air system (Compressor & Air supply system).

Observe the following safety related precautions when using an air tool.

- It is advisable to fit a pressure regulator (FRL:- Filter Regulator Lubricator) in the pneumatic line which supplies air pressure to the air tool. It regulates the outlet pressure to @6.5 Kg/cm². This avoids the risk of personal injury.
- Never use the blow gun to blow dust off your clothes and never point it at anyone. The air pressure can drive dust particles at high speed. These particles can penetrate into the flesh or eyes. High pressure air hitting on open wound can force air into the blood stream. This can result in death.
- Never look into the air outlet of a pneumatic tool.
- Never blow-clean brake or clutch parts. This could put asbestos dust particles into the air which are harmful to inhale. (These particles are cancerous - can lead to Cancer).

o Hand Tools

- Do not use worn out hand tools.

o Calibration of Workshop Equipment

- Calibrate all Workshop and M & T Equipment once in a year.

o Avoid direct body contact with Petrol, Kerosene.

Caution : Prolonged contact of used oil may cause cancer.

o Waste Oil Disposal

- Sell used oil to Government approved re-cycle agencies.
- Collect used oil in oil disposer / barrel.
- Don't throw oil into sewage line.
- Don't spill oil on the floor.