

Supplement - Rocket III Roadster

Part Number 3851190 issue 1, 10.2009

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Supplement - Rocket III Roadster

Introduction

This service manual supplement contains additional information for the Rocket III Roadster and must be used in conjunction with the Rocket III/Classic/Touring service manual. To assist in the use of this supplement, it must be inserted into the Rocket III/Classic/Touring service manual, part number 3851160 issue 1 as follows:

- Remove pages 1 and 2 from the service manual and insert pages 1 and 2 from this supplement;
- Remove pages i and ii from the service manual and insert pages i and ii from this supplement;
- Insert the remaining pages of the supplement after chapter 18 of the service manual.

The chapter and page number references mentioned within this supplement refer to the chapter and page number of the above service manual.

When compared to the Rocket III the Roadster has the following new components:

- Gear change mechanism;
- Exhaust silencers;
- Rear brake master cylinder;
- ABS braking system;
- Instruments;
- Main wiring harness.

When servicing the motorcycle use the procedures in the service manual for Rocket III and Classic noting the additional information in the following pages:

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General Information

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General Information

Torque Wrench Settings

The torque figures for the Rocket III Roadster are the same as the Rocket III and Classic, with the exception of the following:

ABS System

Application	Torque (Nm)	Notes
Front wheel speed sensor to fork leg	7	
Rear wheel speed sensor to caliper carrier	7	
Front pulser ring to front wheel hub	5	
Rear pulser ring to rear brake disc	5	
ABS modulator to mounting bracket	9	
ABS modulator mounting bracket to frame	27	
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Modulator heatshield	9	

Exhaust System

Application	Torque (Nm)	Notes
Exhaust silencer to mounting bracket	27	

Front Brakes

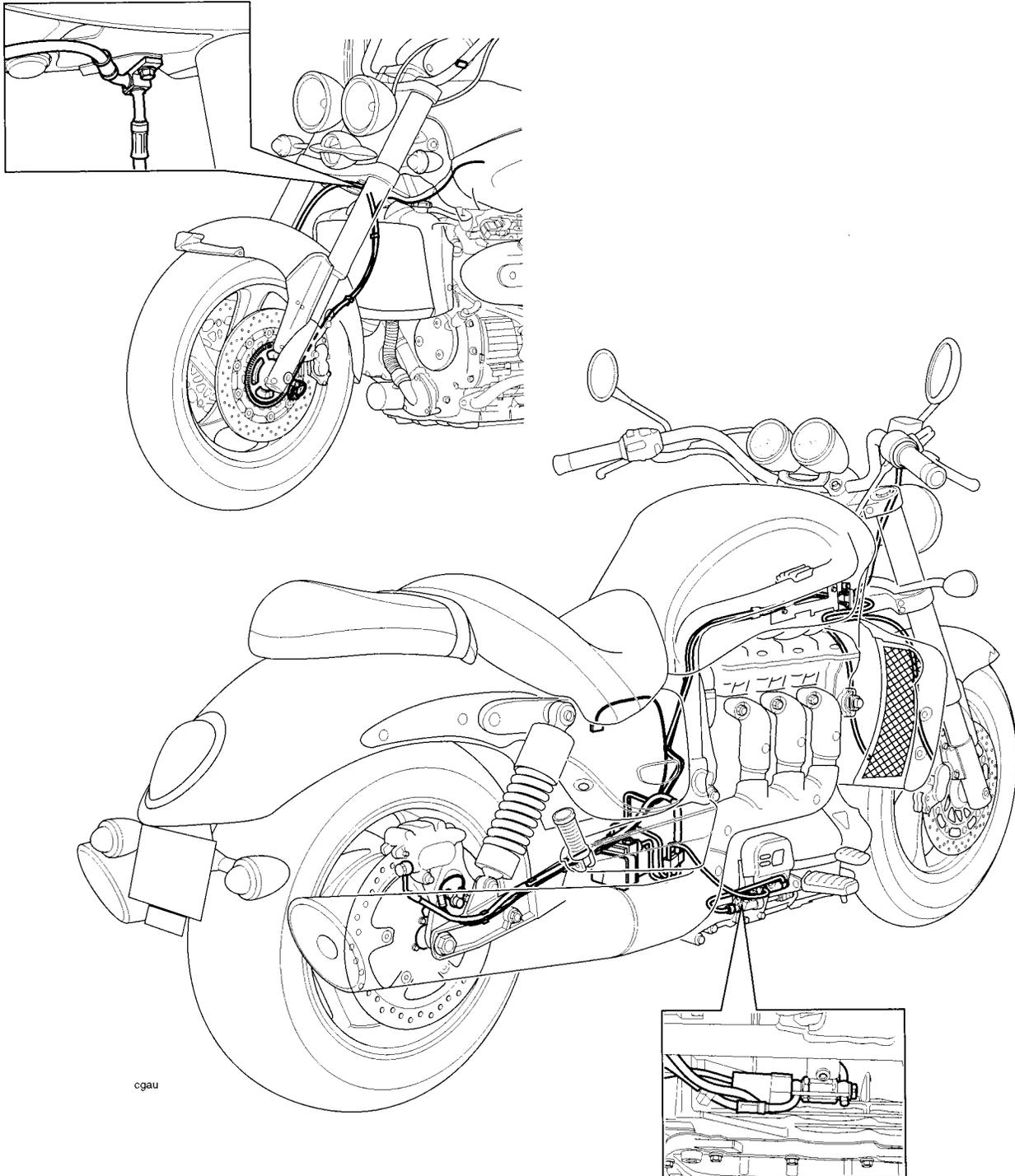
Application	Torque (Nm)	Notes
Master cylinder to handlebar	12	Tighten top bolt first

Rear Brakes

Application	Torque (Nm)	Notes
Master cylinder to frame	18	



Brake Pipe and Hose Routing - Roadster



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General Information

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Transmission

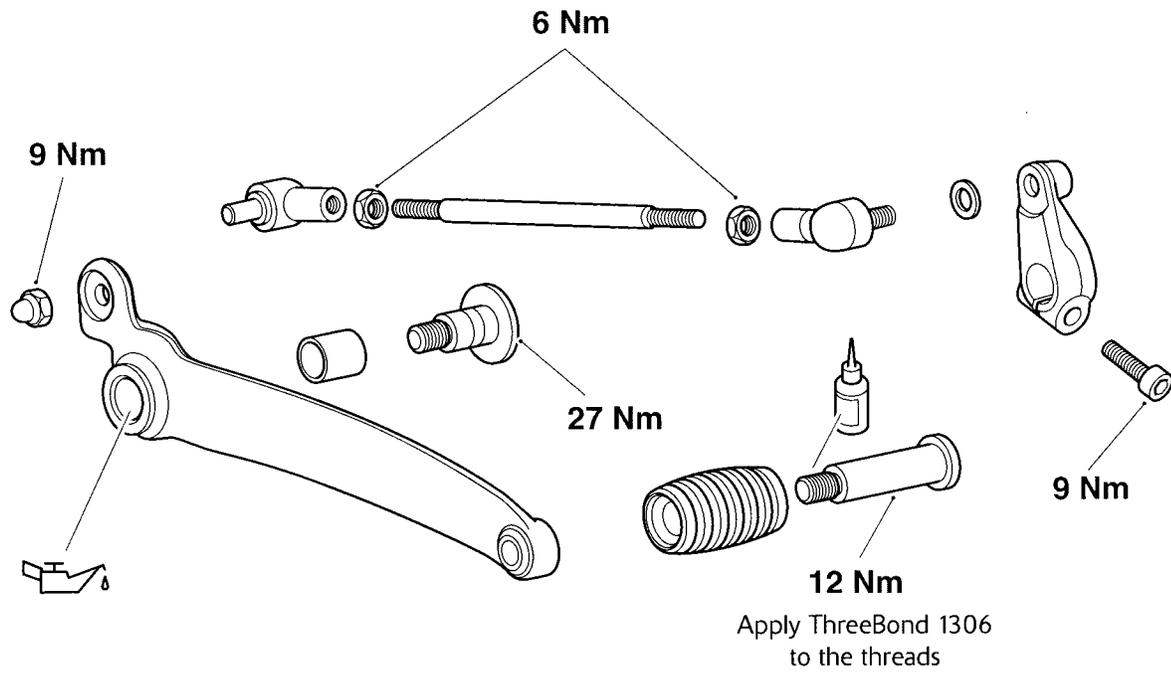
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Transmission

Exploded View - Gear Selector Mechanism



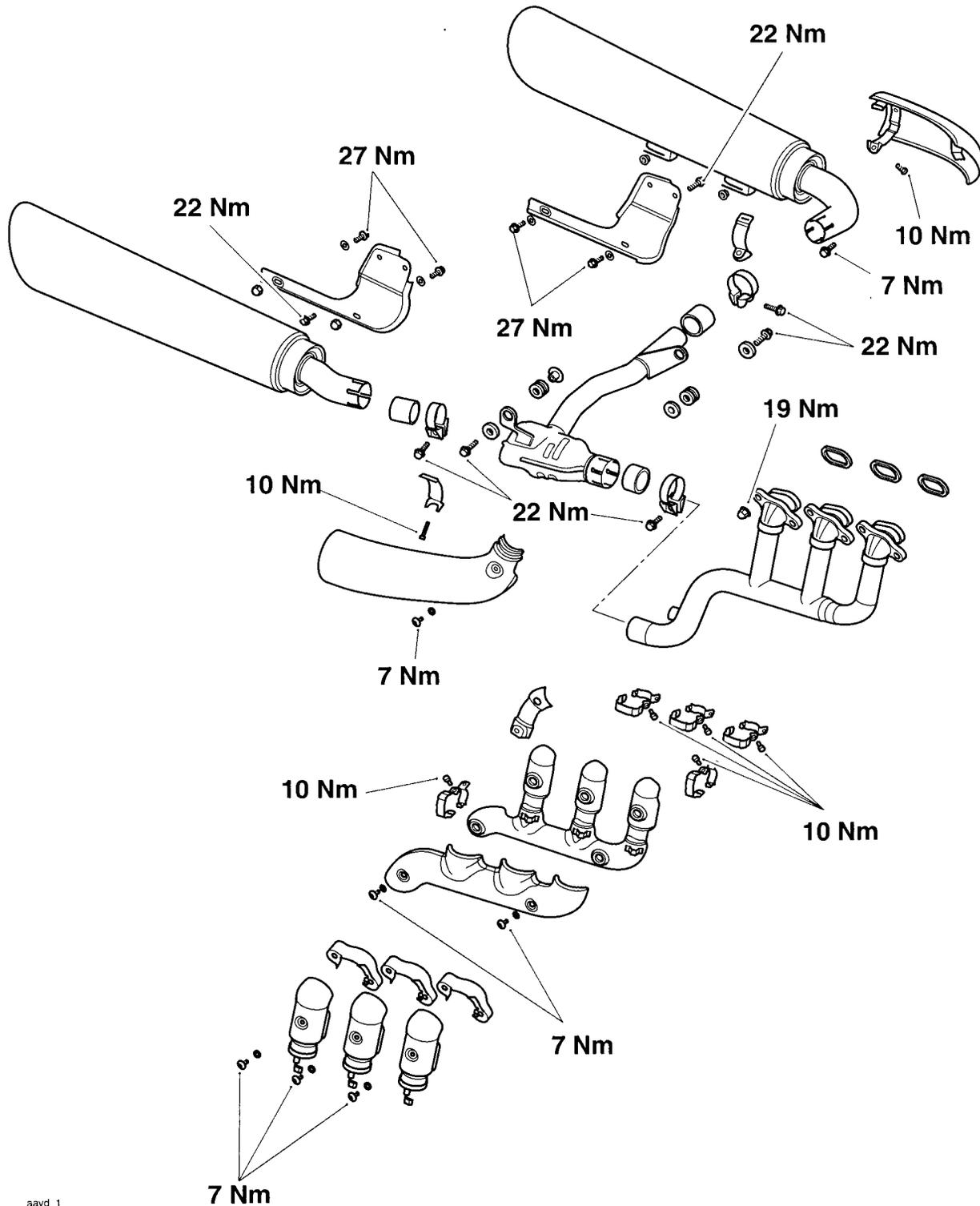
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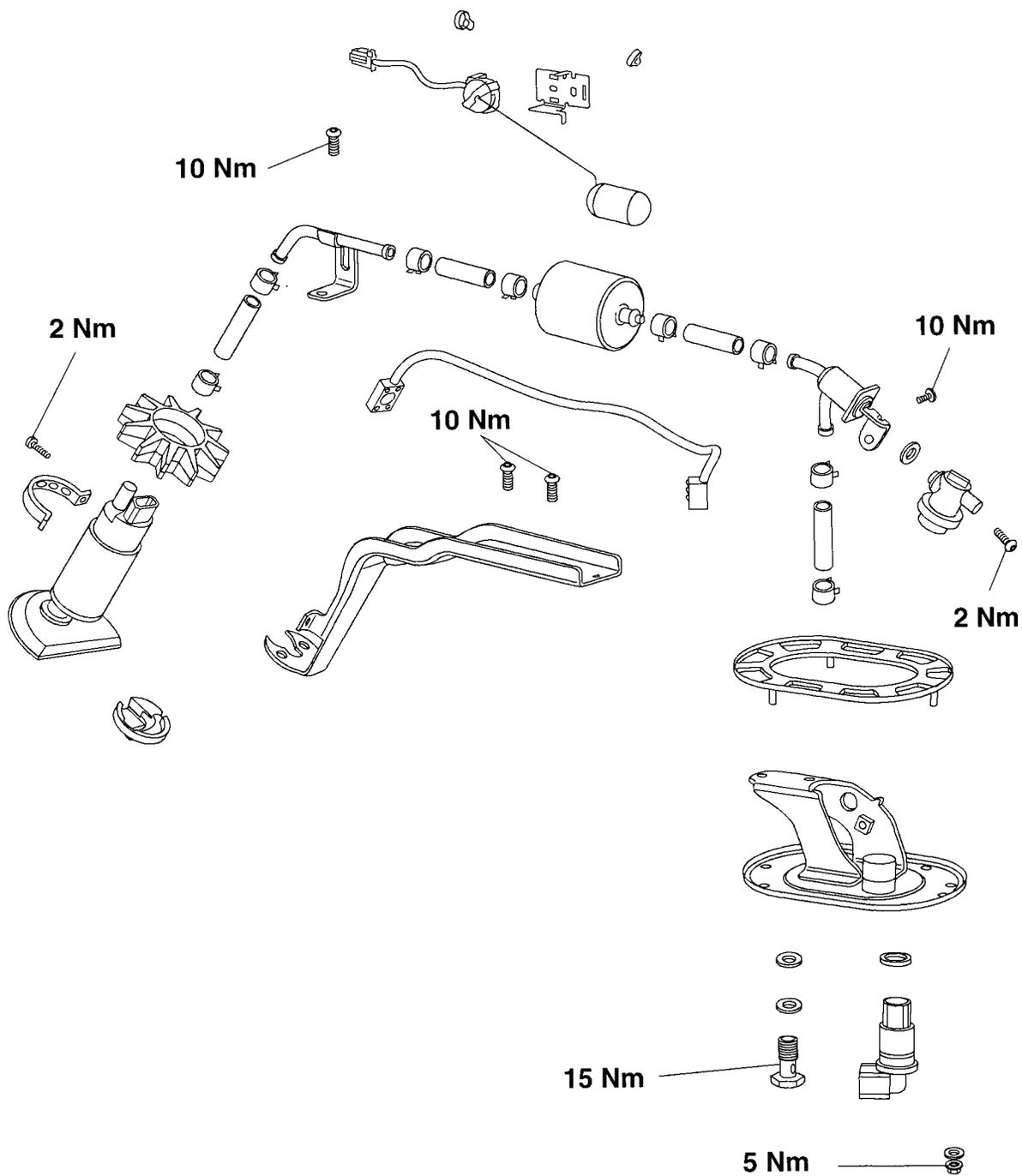
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Fuel System/Engine Management

Exploded View - Exhaust System



Exploded View - Fuel Pump



Fuel System/Engine Management

Engine Management Circuit Diagram

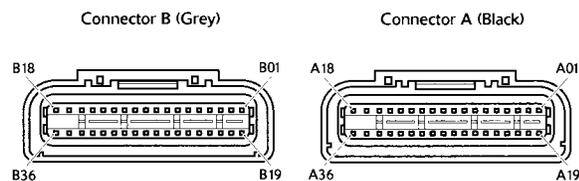
Key To Wiring Circuit Diagram

Key	Item Description
1	Engine Control Module
2	Diagnostic Connector
3	Speedometer
4	Tachometer
5	Clutch Switch
6	Starter Relay
7	Sidestand Switch
8	Vehicle Speed Sensor
9	Gear Position Sensor
10	Crankshaft Sensor
11	Lambda Sensor
12	Fuel Pump and Level Sender
13	Cooling Fan
14	Fuel Pump Relay
15	Cooling Fan Relay
16	Ignition Coils 1, 2 and 3
17	Purge Valve
18	Lambda Sensor
19	MAP Sensor
20	Inlet Air Temperature Sensor
21	Air Pressure Sensor
22	Fall Detection Switch
23	Throttle Position Sensor
24	Second Throttle Position Sensor
25	Coolant Temperature Sensor
26	Idle Speed Control Stepper Motor
27	Second Throttle Actuator
28	Fuel Injector 1
29	Fuel Injector 2
30	Fuel Injector 3
31	Main Fuse Box (Fuse 7)
32	Engine Management System Relay

Key To Wiring Colour Codes

Code	Wiring Colour
B	Black
U	Blue
N	Brown
G	Green
S	Slate/Grey
O	Orange
K	Pink
R	Red
P	Purple
W	White
Y	Yellow
LG	Light Green
LU	Light Blue

ECM Connector Pin Numbering

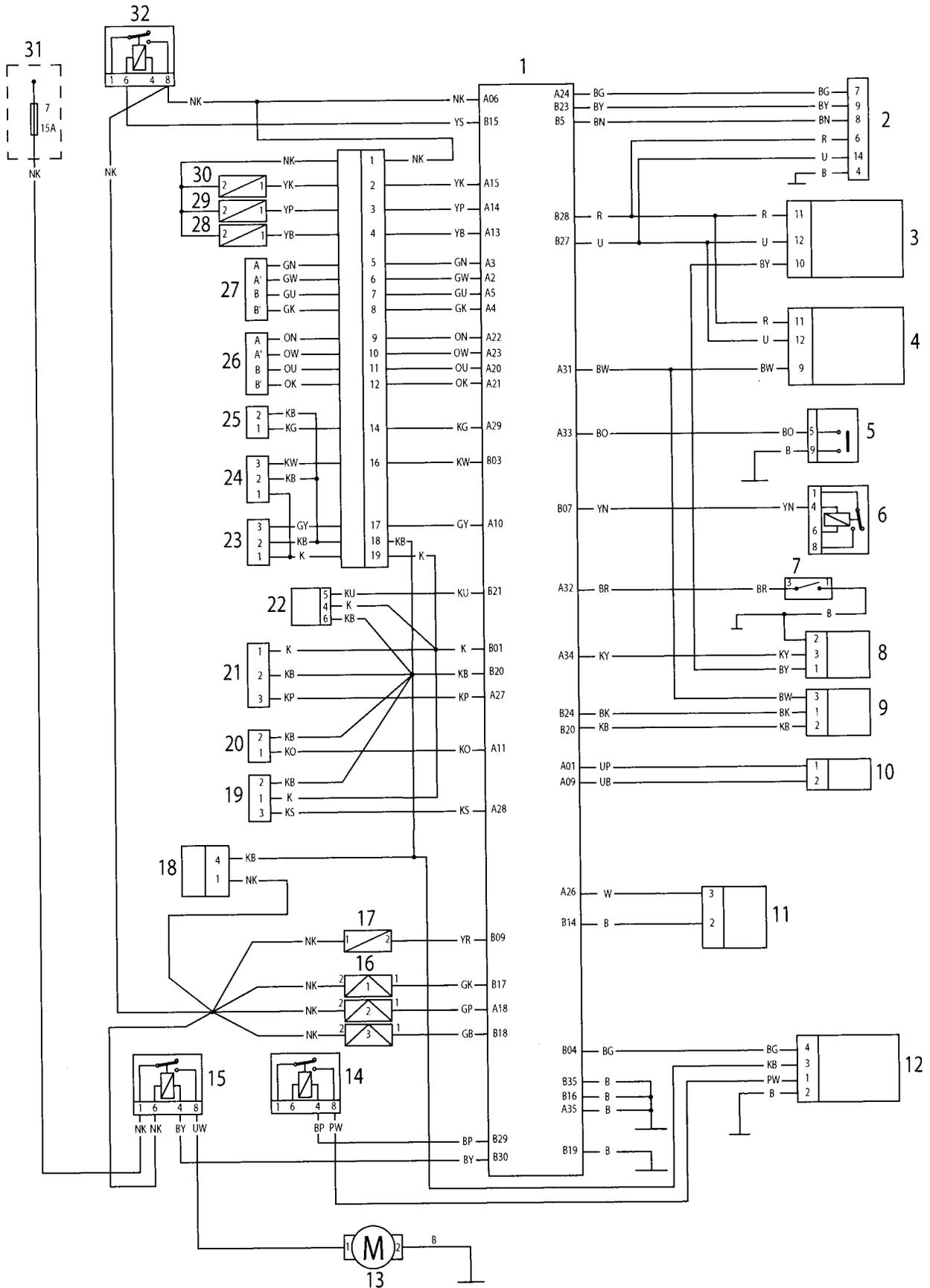


The above illustration shows the pin numbering system used in the engine management circuit diagram.

The black connector pins are prefixed A and the grey connector pins B. As viewed on the mating face with the ECM (as per the illustration), pins are numbered from right to left with number one in the top right corner.

Fuel System/Engine Management

Circuit Diagram - Engine Management System



Fuel System/Engine Management

Diagnostic Trouble Codes

Diagnostic trouble codes (DTCs) are as described for Rocket III Touring (see page 11-32).

Further Diagnosis

The pinpoint tests for Rocket III Roadster are as described Rocket III Touring, noting the following:

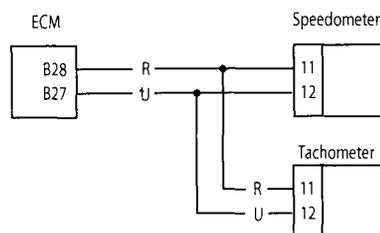
Instrument Communication (CAN)

Fault Code	Possible cause	Action
P1690	Fault in CAN communication between ECM and Instrument pack	View & note 'freeze frame' data if available. View & note 'sensor' data. Ensure Instrument connector is secure. Disconnect ECM and proceed to pinpoint test 1:-

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ECM pin B28 - ECM pin B27 - Speedometer pin 11 - Speedometer pin 12 - Tachometer pin 11 - Tachometer pin 12	OK	Disconnect tachometer and speedometer and proceed to test 2
	Faulty	Rectify fault, proceed to test 4
2 Check cable for short circuit: - ECM pin B28 to ground - ECM pin B27 to ground	OK	Proceed to test 3
	Faulty	Locate and rectify wiring fault, proceed to test 4
3 Check cable continuity: - ECM pin B28 to Speedometer pin 11 - ECM pin B27 to Speedometer pin 12 - ECM pin B28 to Tachometer pin 11 - ECM pin B27 to Tachometer pin 12	OK	Contact Triumph service
	Open circuit	Locate and rectify wiring fault, proceed to test 4
4 Reconnect harness, clear fault code and run engine	OK	Action complete, quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Fuel System/Engine Management

2nd Throttle Actuator

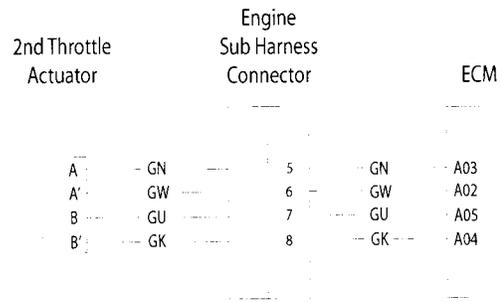
Fault Code	Possible cause	Action
P0638	2nd throttle actuator motor / wiring fault	View & note 'freeze frame' data if available. View & note 'sensor' data. Ensure actuator connector is secure. Disconnect ECM and proceed to pinpoint test 1:-

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ECM pin A03 - ECM pin A02 - ECM pin A05 - ECM pin A04	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 7
2 Check resistance value: - ECM pin A03 to ECM pin A02 - ECM pin A05 to ECM pin A04	4Ω to 10Ω	Disconnect actuator and proceed to test 3
	Open circuit	Proceed to test 4
	Short circuit	Disconnect actuator and proceed to test 5
3 Check cable continuity: - ECM pin A03 to ground - ECM pin A02 to ground - ECM pin A05 to ground - ECM pin A04 to ground	OK	Proceed to test 7
	Short circuit	Locate and rectify wiring fault, proceed to test 7
4 Check cable continuity: - ECM pin A03 to actuator pin A - ECM pin A02 to actuator pin A' - ECM pin A05 to actuator pin B - ECM pin A04 to actuator pin B'	OK	Proceed to test 6
	Open circuit	Locate and rectify wiring fault, proceed to test 7
5 Check cable for short circuit: - ECM pin A03 to ECM pin A02 - ECM pin A05 to ECM pin A04	OK	Proceed to test 6
	Short circuit	Locate and rectify wiring fault, proceed to test 7
6 Check actuator resistance: - Sensor pin A to sensor pin A' - Sensor pin B to sensor pin B'	4Ω to 10Ω	Proceed to test 7
	Faulty	Renew actuator and proceed to test 7
7 Reconnect harness, clear fault code. Run diagnostic tool function test to visually verify operation of actuator	OK	Action complete, quit test
	Fault still present	Contact Triumph service

Fuel System/Engine Management

Circuit Diagram



Fuel System/Engine Management

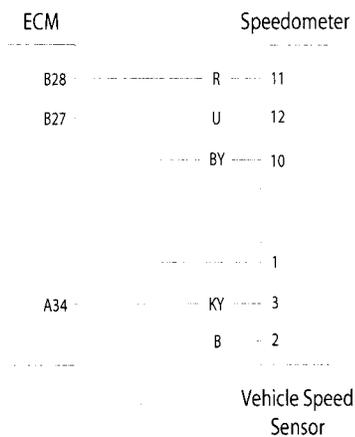
Vehicle Speed Sensor

Fault Code	Possible cause	Action
P0500	Vehicle speed sensor circuit fault	View & note 'freeze frame' data if available. View & note 'sensor' data. Ensure sensor connector is secure. Disconnect ECM and proceed to pinpoint test 1:-

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ECM pin A34 - Speedometer pin 10	OK	Disconnect ambient pressure sensor and proceed to test 2
	Faulty	Rectify fault, proceed to test 4
2 Check cable for short circuit: - ECM pin A34 to ground - ECM pin A34 to ECM pin B01 - ECM pin A34 to battery	OK	Proceed to test 3
	Faulty	Locate and rectify wiring fault, proceed to test 4
3 Check cable for continuity: - ECM pin A34 to sensor pin 3 - Sensor pin 2 to ground - Speedometer pin 10 to sensor pin 1	OK	Renew vehicle speed sensor and proceed to test 4
	Open circuit	Locate and rectify wiring fault, proceed to test 4
4 Reconnect harness, clear fault code and run engine	OK	Action complete, quit test
	Fault still present	Contact Triumph service

Circuit Diagram



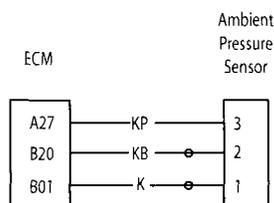
Ambient Pressure Sensor

Fault Code	Possible cause	Action
P1107	Ambient pressure sensor circuit short circuit to ground	View & note 'freeze frame' data if available. View & note 'sensor' data. Ensure sensor connector is secure. Disconnect ECM and proceed to pinpoint test 1:-
P1108	Ambient pressure sensor circuit, short circuit to supply or open circuit	Disconnect ambient pressure sensor and proceed to pinpoint test 4:-

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ECM pin A27 - ECM pin B20 - ECM pin B01	OK	Disconnect ambient pressure sensor and proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check cable for short circuit: - ECM pin A27 to ECM B20	OK	Proceed to test 3
	Short circuit	Locate and rectify wiring fault, proceed to test 5
3 Check cable for continuity: - ECM pin A27 to sensor pin 3 - ECM pin B20 to sensor pin 2 - ECM pin B01 to sensor pin 1	OK	Renew ambient pressure sensor and proceed to test 5
	Open circuit	Locate and rectify wiring fault, proceed to test 5
4 Check cable for short circuit: - ECM pin A27 to ECM pin B01	OK	Renew ambient pressure sensor and proceed to test 5
	Short circuit	Locate and rectify wiring fault, proceed to test 5
5 Reconnect harness, clear fault code and run engine	OK	Action complete, quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Fuel System/Engine Management

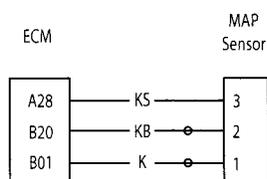
Manifold Absolute Pressure (Map) Sensor

Fault Code	Possible cause	Action
P0107	MAP sensor circuit short circuit to ground	View & note 'freeze frame' data if available. View & note 'sensor' data. Ensure sensor connector is secure. Disconnect ECM and proceed to pinpoint test1:-
P0108	MAP sensor circuit, short circuit to supply or open circuit	Disconnect MAP sensor and proceed to test 4:-
P1105	MAP sensor pipe fault	Check connection/condition of pipe from MAP sensor to throttle body.

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ECM pin A28 - ECM pin B20 - ECM pin B1	OK	Disconnect MAP sensor and proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check cable for short circuit: - ECM pin A28 to ECM B20	OK	Proceed to test 3
	Short circuit	Locate and rectify wiring fault, proceed to test 5
3 Check cable for continuity: - ECM pin A28 to sensor pin 3 - ECM pin B20 to sensor pin 2 - ECM pin B1 to sensor pin 1	OK	Renew MAP sensor and proceed to test 5
	Open circuit	Locate and rectify wiring fault, proceed to test 5
4 Check cable for short circuit: - ECM pin A28 to ECM pin B1	OK	Renew MAP sensor and proceed to test 5
	Short circuit	Locate and rectify wiring fault, proceed to test 5
5 Reconnect harness, clear fault code and run engine	OK	Action complete, quit test
	Fault still present	Contact Triumph service

Circuit Diagram



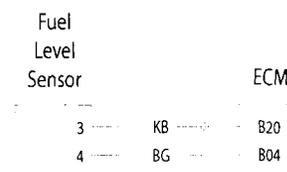
Fuel Level Sensor Circuit

Fault Code	Possible cause	Action
P0460	Fuel level sensor circuit fault	View & note 'freeze frame' data if available. View & note 'sensor' data. Ensure sensor connector is secure. Disconnect ECM and proceed to pinpoint test 1:-

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ECM pin B04 - ECM pin B20	OK	Disconnect sensor and proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check cable for short circuit: - ECM pin B04 to ground	OK	Proceed to test 3
	Short circuit	Locate and rectify wiring fault, proceed to test 5
3 Check cable continuity: - ECM pin B04 to sensor pin 3 - ECM pin B20 to sensor pin 4	OK	Proceed to test 4
	Open circuit	Locate and rectify wiring fault, proceed to test 5
4 Check cable for short circuit: - Sensor pin 3 to sensor pin 4	OK	Renew fuel level sensor and proceed to test 5
	Short circuit	Locate and rectify wiring fault, proceed to test 5
5 Reconnect harness, clear fault code	OK	Action complete, quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Fuel System/Engine Management

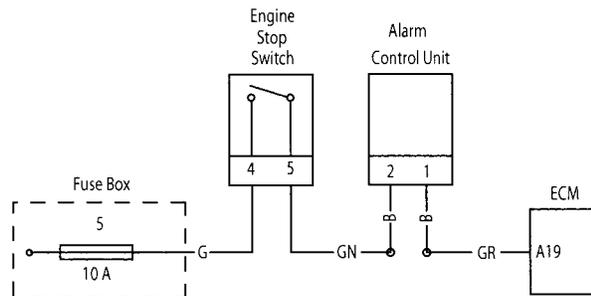
EMS Ignition Voltage Input Circuit

Fault Code	Possible cause	Action
P1659	EMS Ignition Voltage input circuit fault	Disconnect ECM and proceed to pinpoint test 1:-

Pinpoint Tests

Test	Result	Action
1 Check Fuse box Fuse 5 integrity	OK	Proceed to test 3
	Faulty	Proceed to test 2
2 Check cable for short circuit: - ECM pin A19 to ground	OK	Replace Fuse 2 and proceed to test 3
	Short circuit	Locate and rectify wiring fault, replace Fuse 2 and proceed to test 5
3 Check cable and terminal integrity: - ECM pin A19 - Alarm Connector pin 1 - Alarm Connector pin 2 - Right hand switch cube pin 4 - Right hand switch cube pin 5	OK	Proceed to test 4
	Faulty	Rectify fault, proceed to test 5
4 Check cable continuity: - ECM pin A19 to fuse box Fuse 5, note that the engine stop switch must be in the 'RUN' position and any Alarm fitted must be disarmed	OK	Proceed to test 5
	Open circuit	Locate and rectify wiring, immobiliser or engine stop switch fault, proceed to test 5
5 Reconnect harness, clear fault code and run engine to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Airbox, Intake Duct and Hoses

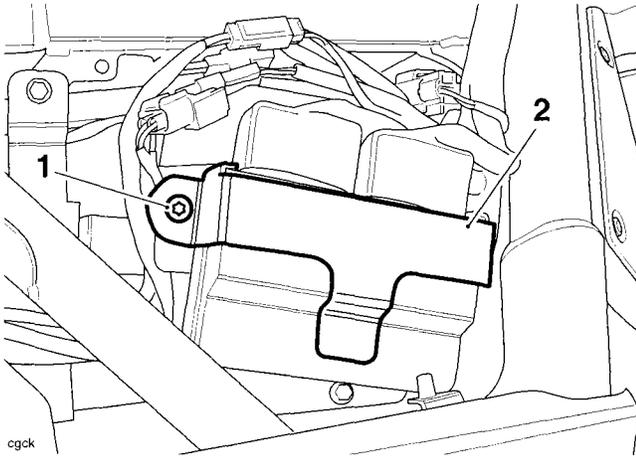
Removal

The removal and installation of the airbox, intake duct and hoses, is as described in the service manual for Rocket III and Rocket III Classic (see page 11-164) noting the following for the ECU, ABS fuse box and battery box assembly:

Note:

- **Before proceeding, make a note of the cable routings around the ECM and ECM bracket.**

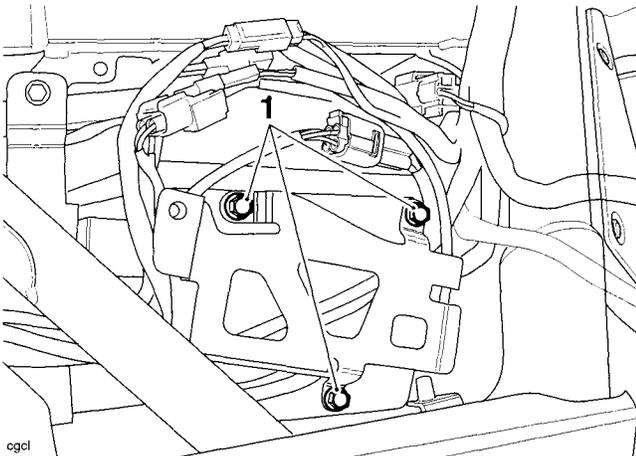
1. Working on the right hand side, detach the ECM from its bracket, then disconnect the two electrical connections.



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1. Screw
2. ECM retaining bracket

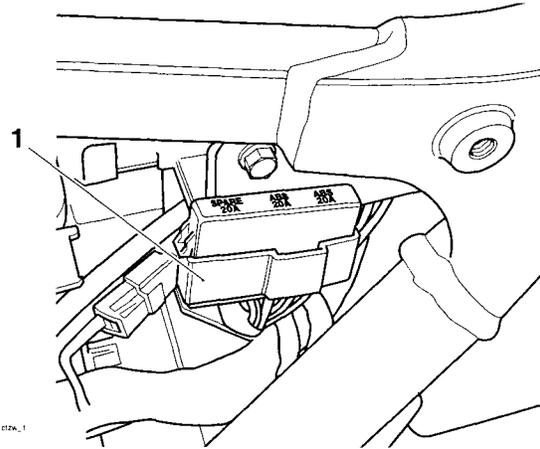
2. Place the ECM to one side.
3. Remove the three screws from the ECM bracket, then detach the bracket.



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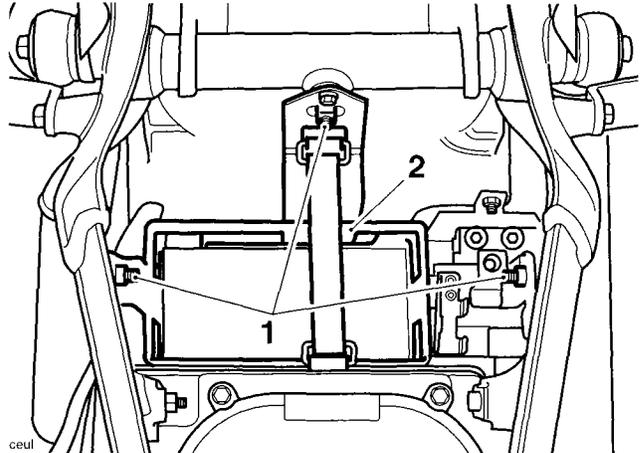
1. Screws

4. Ease the ABS fuse box from the battery box by pushing it upwards and position it to one side.



1. ABS fuse box

5. Release the three screws securing the battery box assembly to the frame.



ceul

1. Screws
2. Battery box

Installation

1. Refit the battery box assembly and tighten the screws to **9 Nm**.
2. Refit the ABS fuse box to the battery box.
3. Arrange the cables to the rear of the ECM bracket as noted prior to removal, refit the ECM bracket and tighten the screws to **3 Nm**.
4. Locate the ECM to its bracket and tighten the screw to **5 Nm**.
5. Reconnect both multiplugs to the ECM.

Throttle Body Balancing

- **The Triumph diagnostic tool does not support the throttle balancing adjustment for Rocket III Roadster.**

For throttle body balancing, refer to Throttle Body Balancing - Rocket III Touring (see page 11-185).

Exhaust System

The removal and installation of the exhaust system is as described in the service manual for Rocket III Touring (see page 11-204) noting the following for the silencer mountings:

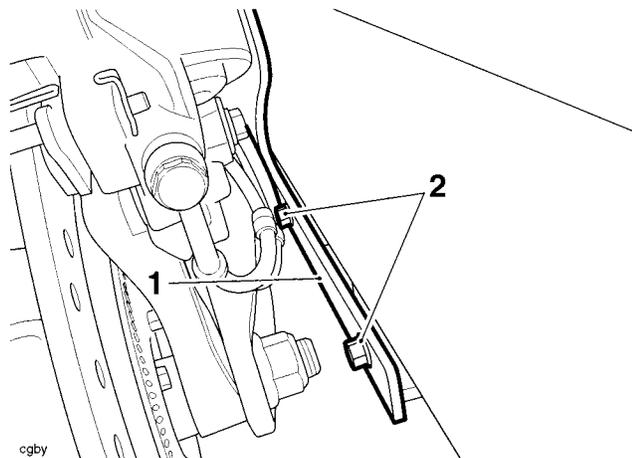
Removal

Warning

If the engine has recently been running, the exhaust components may be hot to the touch. Contact with the hot components may cause damage to exposed skin. To avoid skin damage, always allow the hot parts to cool before working on the exhaust system.

Note:

- **The catalytic converters are located with the silencers. However, in certain countries (depending on their exhaust emission regulation) no catalyst will be fitted.**
 - **Always note the position and orientation of exhaust clamps prior to releasing them, and return them to the noted position and orientation on assembly.**
1. Release the fixings securing the silencer to its bracket and remove the silencer.



1. **Silencer bracket (right hand side shown)**
2. **Fixings**

Installation

1. Tighten each silencer mounting fixings to **27 Nm**.
2. Tighten each silencer clamp to **22 Nm**.



Brakes

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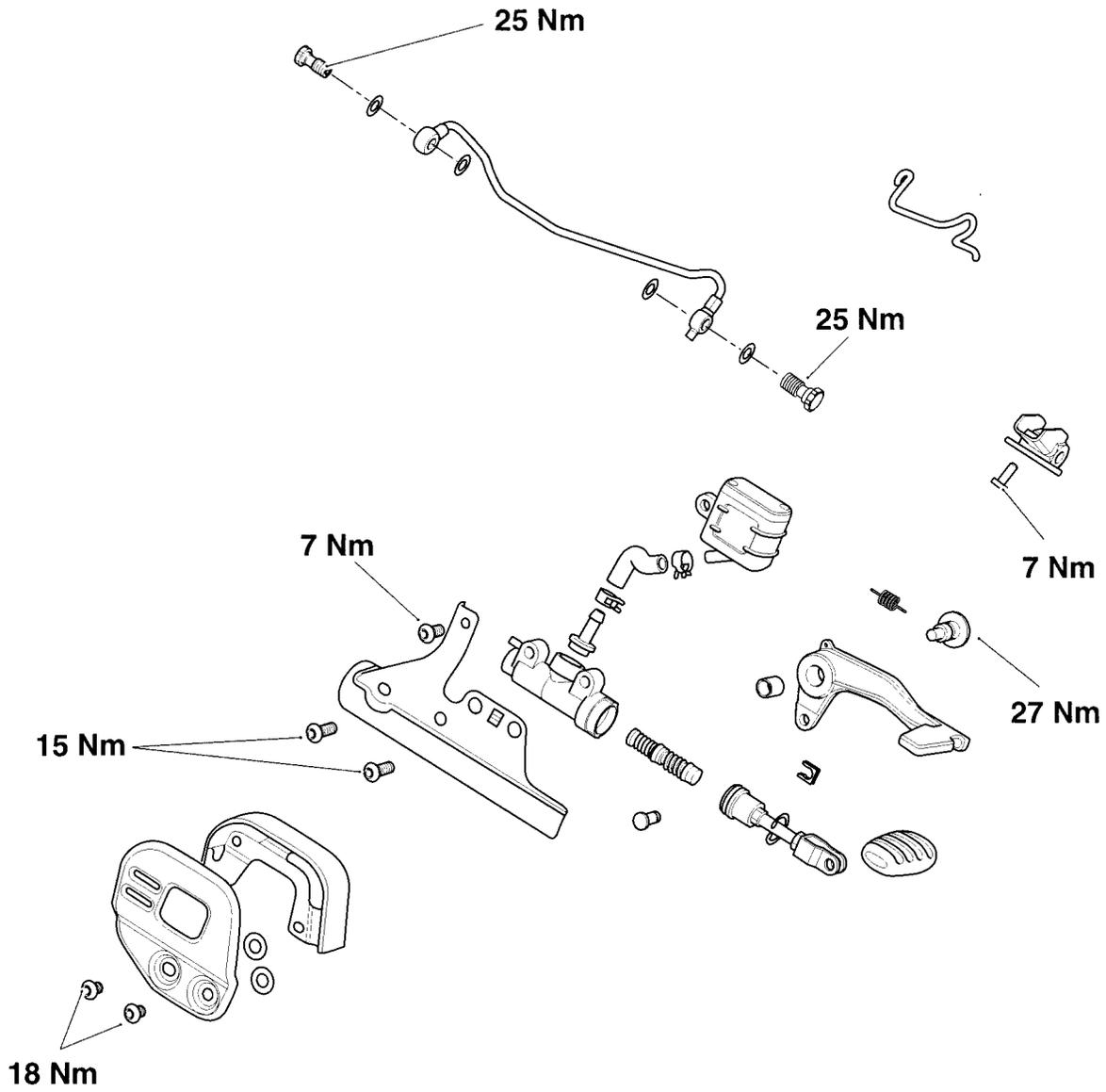
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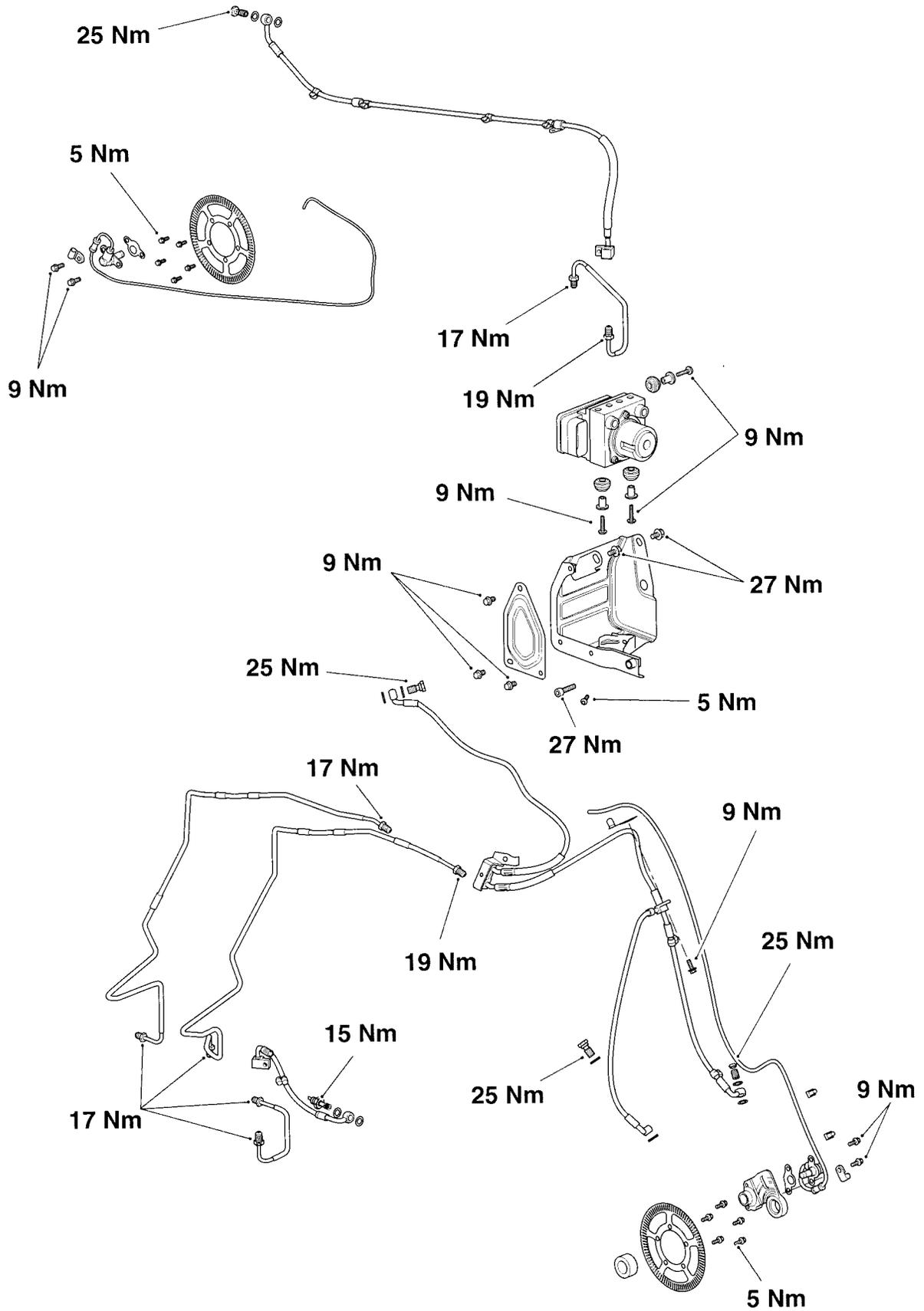
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Brakes

Exploded View - Rear Brake Master Cylinder



Exploded View - ABS System



Brakes

Bleeding the Front Brakes, Renewing Brake Fluid - ABS

Using the Triumph diagnostic tool, it is possible to bleed the ABS modulator of trapped air. This is necessary when the hydraulic brake system has been dismantled, or the ABS modulator renewed.

The following procedure is the method to be used for bleeding the front brakes.

1. Complete the brake bleed procedure as for models without ABS brakes (see page 15-12) to step 24. Do not remove the bleed tube from the bleed nipple.
2. Connect the Triumph diagnostic tool (see page 19-46).
3. Follow the on screen menu to ABS Diagnostics. From the menu, select **BLEED SYSTEM** (see page 19-47).

Note:

- **On pressing the Start button, the diagnostic software will send a command to the ABS ECM to open the 2nd circuit solenoid.**
 - **When the ABS modulator 2nd circuit is activated by the bleed command, the front brake lever travel will increase as the ABS modulator solenoids are opened and will then decrease as the solenoids are automatically closed.**
 - **Pressure must be applied to the front brake lever before operating the bleed sequence on the diagnostic tool. An assistant will be required to open the bleed nipple while pressure is applied to the brake lever.**
4. Apply pressure to the front brake lever, press the **Start** button to activate the bleed sequence on the diagnostic tool, and with assistance, release one of the bleed nipples.
 5. Get an assistant to slowly pull the brake lever to the handlebar.
 6. With the lever held fully against the handlebar, close the bleed nipple. Once the bleed nipple is closed, release the brake lever.
 7. Repeat steps 5 and 6 until no more air appears in the bleed tube, maintaining the brake fluid level between the upper and lower reservoir levels whilst bleeding is being carried out.
 8. The bleed sequence will run for a maximum of 90 seconds. Press the **Stop** button to end the bleed sequence at any time. Once the bleed sequence has completed the diagnostic tool will display a message **ABS system bleed complete**.



Caution

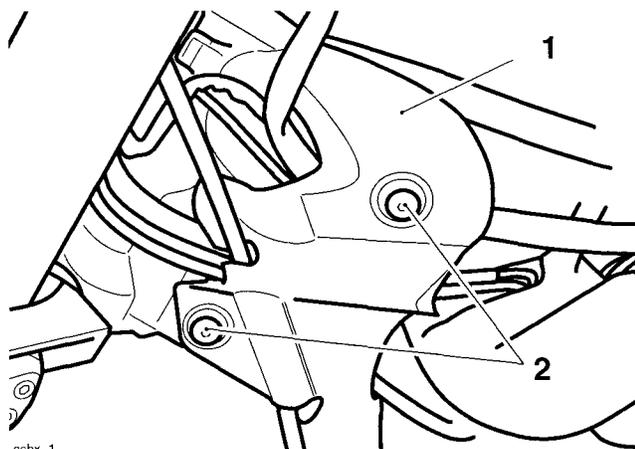
The ABS module must be allowed to cool between bleeding operations. Always allow the ABS module to cool for 5 minutes before starting the bleed procedure again. Failure to follow this instruction may result in damage to the ABS module.

9. Repeat the above procedure as necessary until all air is expelled from the system.
10. When all air has been expelled from the system, apply pressure to the brake lever and close the bleed nipple. Tighten the nipple to **5 Nm**.
11. Repeat the complete brake bleed procedure as for models without ABS brakes (see page 15-12).

Front ABS Wheel Speed Sensor

Removal

1. Remove the rider's seat (see page 17-17).
2. Disconnect the battery, negative (black) lead first.
3. Raise and prop the fuel tank (see page 11-147).
4. Remove the left hand headstock cover.



1. Headstock cover
2. Fixings

5. Disconnect the wheel speed sensor multiplug identified as the white connector.
6. Release the wheel speed sensor harness from the brake hose clips.
7. Detach and support the left hand brake caliper.

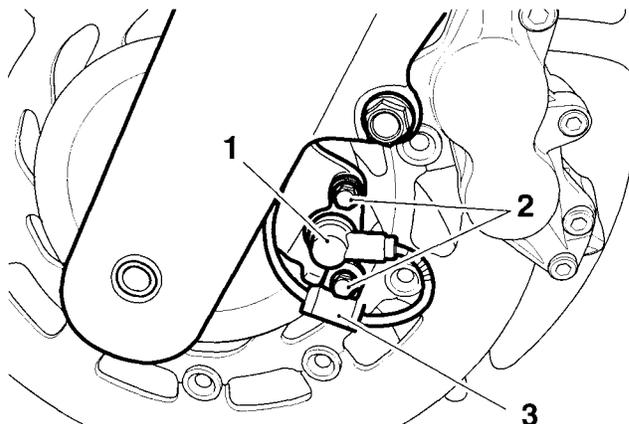
Note:

- It is not necessary to disconnect the brake hose.

Warning

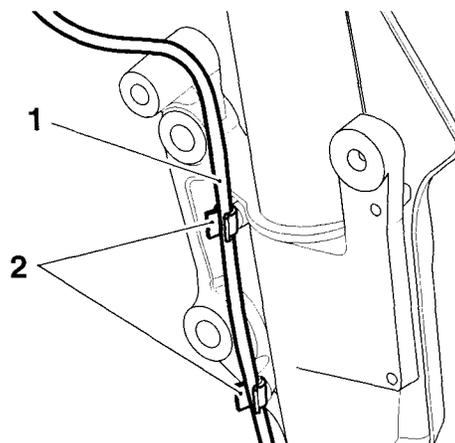
Do not allow the caliper to hang on the brake hose as this may damage the hose. A damaged hose could cause brake failure leading to loss of control and an accident.

8. Release the bolts securing the wheel speed sensor to the fork leg.



1. Front ABS wheel speed sensor
2. Fixings
3. P-clip

9. Release the wheel speed sensor harness from the two clips on the fork leg and remove the sensor along with the P-clip.



1. Harness
2. Clips

Installation

1. Position the wheel speed sensor and harness P-clip to the fork leg and tighten the fixings to **7 Nm**.
2. Secure the wheel speed sensor harness to the two clips on the fork leg.
3. Refit the brake caliper and tighten the bolts to **50 Nm**.
4. Secure the wheel speed sensor harness to the brake hose clips.
5. Connect the wheel speed sensor multiplug.
6. Refit the left hand headstock cover and tighten the fixings to **3 Nm**.
7. Lower and secure the fuel tank (see page 11-149).
8. Reconnect the battery, positive (red) lead first.
9. Refit the rider's seat (see page 17-17).

Brakes

Front ABS Pulsar Ring

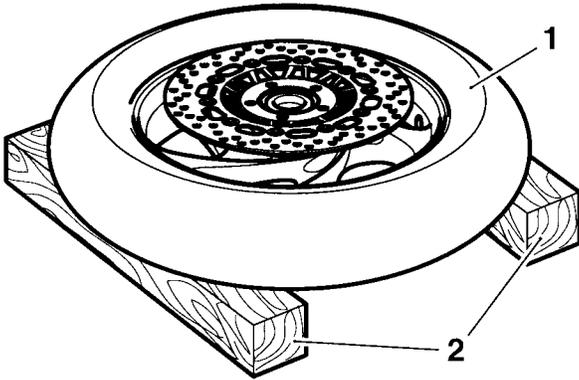
Removal

1. Remove the front wheel (see page 16-10).

Warning

Damage to the wheel centre could cause misalignment of the wheel when refitted. A dangerous riding condition leading to an accident could result if this warning is ignored.

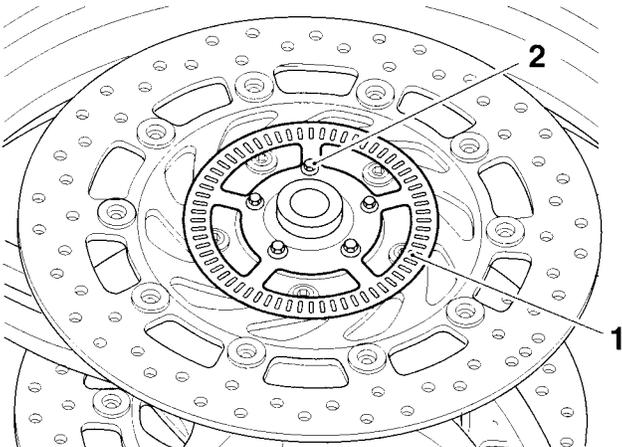
2. Support the wheel on blocks as illustrated to avoid damage to the wheel centre.



cbzh

1. Wheel
2. Support blocks

3. Remove and discard the five bolts and remove the pulser ring.



1. Pulsar ring
2. Bolts

Inspection

1. Check the pulser ring for damaged, missing or cracked teeth or distortion. Renew the pulser ring as necessary.

Installation

1. Locate the pulser ring on the wheel. Fit new bolts and tighten to **5 Nm**.
2. Refit the front wheel (see page 16-11).

Bleeding the Rear Brakes, Renewing Brake Fluid, ABS

Using the Triumph diagnostic tool, it is possible to bleed the ABS modulator of trapped air. This is necessary when the hydraulic brake system has been dismantled, or the ABS modulator renewed.

The following procedure is the method to be used for bleeding the rear brakes.

1. Complete the brake bleed procedure as for models without ABS brakes (see page 15-27) to step 11. Do not remove the bleed tube from the bleed nipple.
2. Connect the Triumph diagnostic tool (see page 19-46).
3. Follow the on screen menu to ABS Diagnostics. From the menu, select **BLEED SYSTEM** (see page 19-47).

Note:

- **On pressing the Start button, the diagnostic software will send a command to the ABS ECM to open the 2nd circuit solenoid.**
 - **When the ABS modulator 2nd circuit is activated by the bleed command, the rear brake pedal travel will increase as the ABS modulator solenoids are opened and will then decrease as the solenoids are automatically closed.**
 - **Pressure must be applied to the rear brake pedal before operating the bleed sequence on the diagnostic tool. An assistant will be required to open the bleed nipple while pressure is applied to the brake pedal.**
4. Apply pressure to the rear brake pedal, press the **Start** button to activate the bleed sequence on the diagnostic tool, and with assistance, release the bleed nipple.
 5. Slowly depress the brake pedal and, holding the pedal fully down, close the bleed nipple. Repeat until no more air appears in the bleed tube, maintaining the brake fluid level between the upper and lower reservoir levels whilst bleeding is being carried out.
 6. When all air has been expelled from the system, hold down the brake pedal and close the bleed nipple. Tighten the nipple to **8 Nm**.
 7. The bleed sequence will run for a maximum of 90 seconds. Press the **Stop** button to end the bleed sequence at any time. Once the bleed sequence has completed the diagnostic tool will display a message **ABS system bleed complete**.



Caution

The ABS module must be allowed to cool between bleeding operations. Always allow the ABS module to cool for 5 minutes before starting the bleed procedure again. Failure to follow this instruction may result in damage to the ABS module.

8. Repeat the above procedure as necessary until all air is expelled from the system.
9. When all air has been expelled from the system, hold down the brake pedal and close the bleed nipple. Tighten the nipple to **8 Nm**.
10. Repeat the complete brake bleed procedure as for models without ABS brakes (see page 15-27).

Brakes

Rear Master Cylinder

Removal

Warning

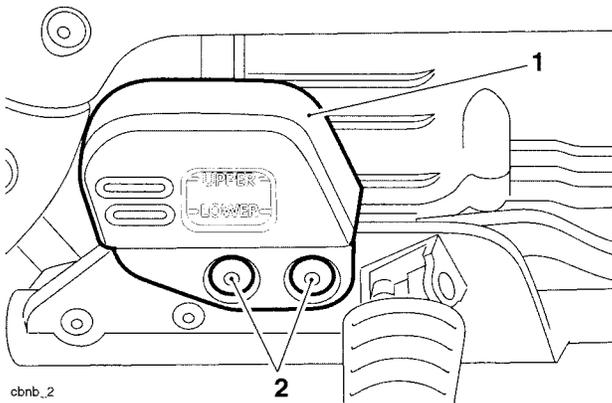
Before starting work, ensure the motorcycle is stabilised and adequately supported. This will help prevent it from falling and causing injury to the operator or damage to the motorcycle.

1. Remove the rider's seat (see page 17-17).
2. Disconnect the battery, negative (black) lead first.

Warning

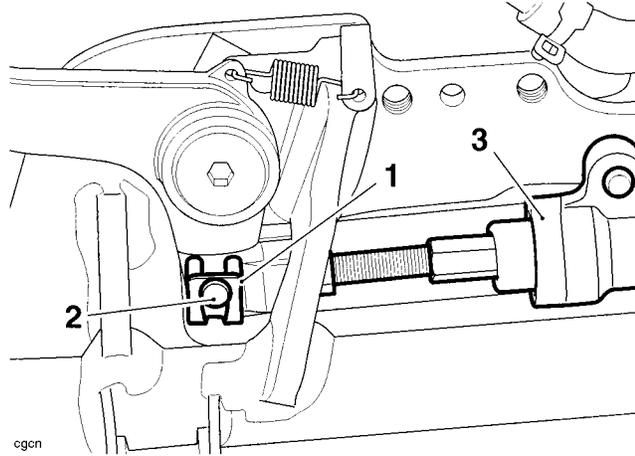
To prevent paint damage, do not spill brake fluid onto any area of the bodywork. Spilled brake fluid will damage paintwork.

3. Drain the fluid from the master cylinder by bleeding the system at the rear caliper until the all fluid has been expelled.
4. Remove the master cylinder heel guard.



1. Heel guard
2. Fixings

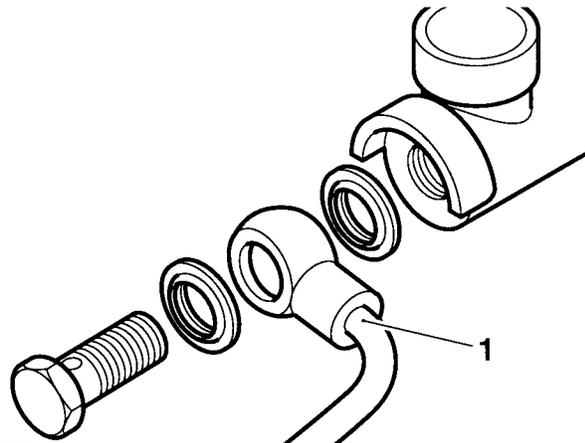
5. Remove the clip from the brake pedal clevis pin (footrest mounting bar removed for clarity).



cgcn

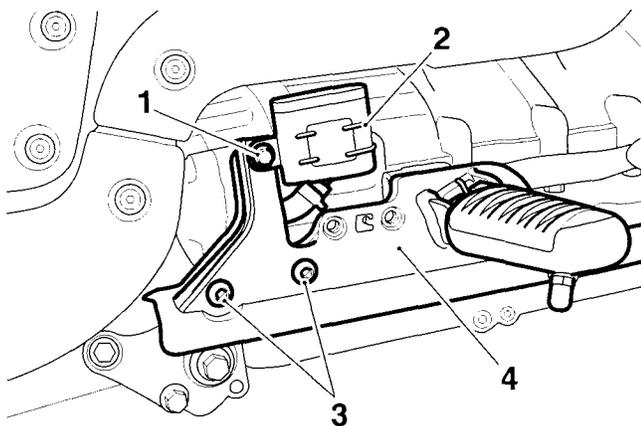
1. Clip
2. Clevis pin
3. Master cylinder

6. Disconnect the brake pipe from the master cylinder (discard the sealing washers).



1. Brake pipe
7. Detach the brake fluid reservoir from the master cylinder cover.

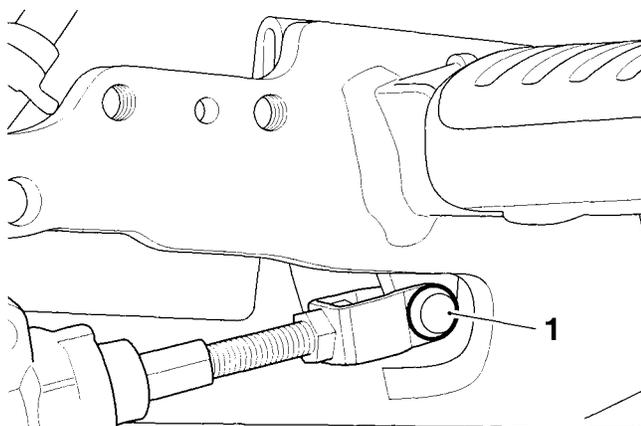
- Release the fixings and remove the master cylinder cover.



cgcm

- Reservoir fixing**
- Brake fluid reservoir**
- Cover fixings**
- Cover**

- Remove the clevis pin and the master cylinder.



cgco

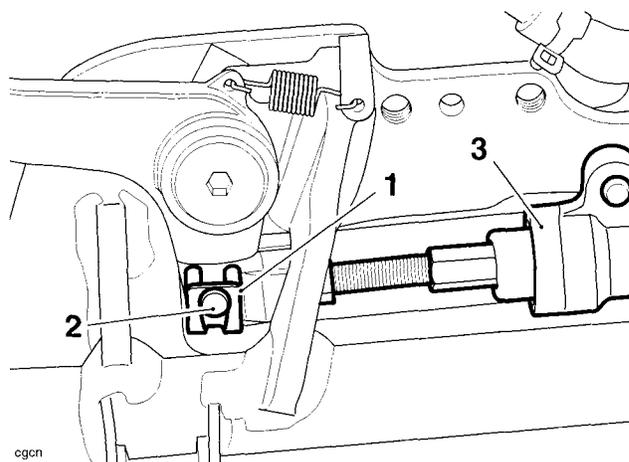
- Clevis pin**

Disassembly and Assembly

The disassembly and assembly of the rear brake master cylinder is as described in the service manual (see page 15-34).

Installation

- Align the brake pedal with the push rod and fit the clevis pin.
- Position the master cylinder and its cover to the footrest mounting bar.
- Secure with the two fixings and tighten to **18 Nm**.
- Secure the fluid reservoir to the footrest bar and tighten the fixing to **7 Nm**.
- Incorporating new washers to either side of the union, fit the brake pipe. Tighten the union bolt to **25 Nm**.
- Secure the clevis pin with its clip. Ensure the clip is fitted as shown below (footrest mounting bar removed for clarity).



cgcm

- Clip**
- Clevis pin**
- Master cylinder**



Warning

Use only DOT 4 specification brake fluid as listed in the general information section of the service manual. The use of brake fluids other than those DOT 4 fluids listed in the general information section may reduce the efficiency of the braking system leading to loss of control and an accident. Observe the brake fluid handling warnings given in the brakes section of the service manual.

- Fill and bleed the rear brake system (see page 19-33).
- Refit the heel guard tightening the fixings to **18 Nm**.
- Reconnect the battery, positive (red) lead first.

Brakes

10. Check the operation of the rear brake. Rectify as necessary.



Warning

It is dangerous to operate the motorcycle with defective brakes and you must have your authorised Triumph dealer take remedial action before you attempt to ride the motorcycle again. Failure to take remedial action may reduce braking efficiency leading to loss of control and an accident.

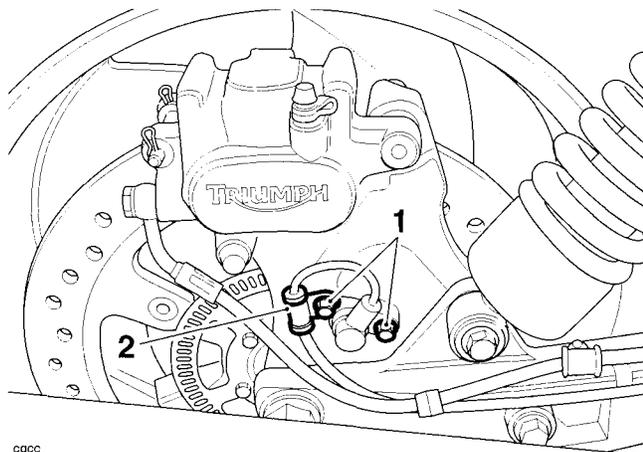
Rear ABS Wheel Speed Sensor

Removal

1. Remove the rider's seat (see page 17-17).
2. Remove the right hand side cover (see page 17-19).
3. Disconnect the battery, negative (black) lead first.

Note:

- **Note the routing of the wheel speed sensor harness to aid installation.**
4. Disconnect the wheel speed sensor multiplug identified as the white connector.
 5. Release the wheel speed sensor harness from the brake hose clips.
 6. Release the bolts securing the wheel speed sensor to the rear brake caliper carrier and remove the sensor along with the P-clip.



cgpc

1. Bolts
2. P-clip

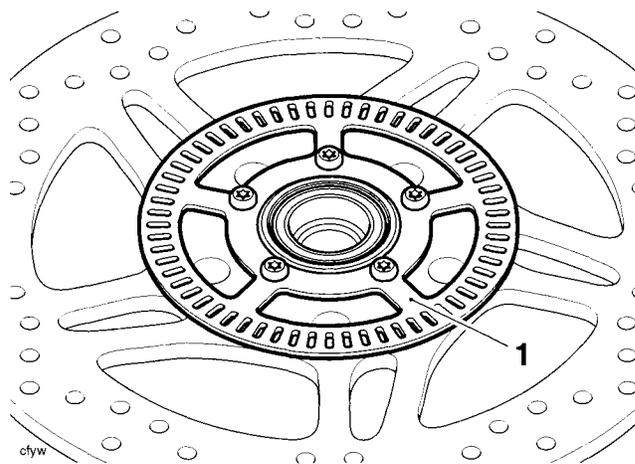
Installation

1. Position the wheel speed sensor and harness P-clip to the rear caliper carrier and tighten the bolts to **7 Nm**.
2. Route the speed sensor harness as noted for removal and secure it to the brake hose clips.
3. Connect the wheel speed sensor multiplug.
4. Reconnect the battery, positive (red) lead first.
5. Refit the right hand side cover (see page 17-19).
6. Refit the rider's seat (see page 17-17).

Rear ABS Pulsar Ring

Removal

1. Remove the rear wheel (see page 16-13).
2. Remove and discard the five bolts and remove the pulser ring.



1. Pulsar ring

Inspection

1. Check the pulser ring for damaged, missing or cracked teeth or distortion. Renew the pulser ring as necessary.

Installation

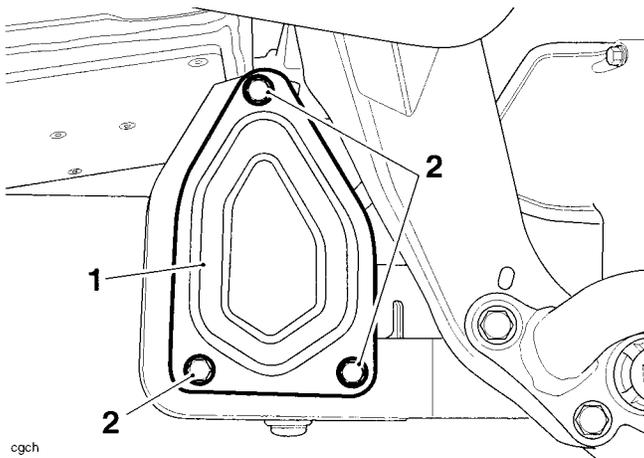
1. Locate the pulser ring on the wheel. Fit new bolts and tighten to **5 Nm**.
2. Refit the rear wheel (see page 16-14).

Brakes

ABS Hydraulic Modulator/ECM

Removal

1. Remove the rider's seat (see page 17-17).
2. Disconnect the battery, negative (black) lead first.
3. Remove the exhaust silencers (see page 19-24).
4. Remove the exhaust link box and the exhaust header (see page 11-204).
5. Remove the starter motor (see page 18-25).
6. Remove the heatshield from the modulator bracket.



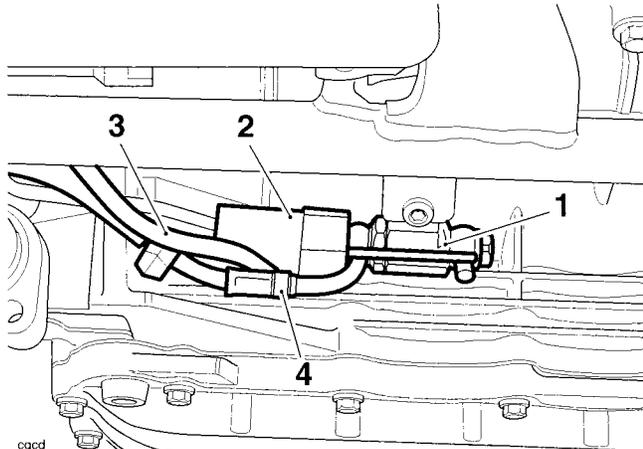
- 1. Heatshield**
2. Fixings

Caution

To prevent body damage, do not spill brake fluid onto any area of the bodywork or wheels.

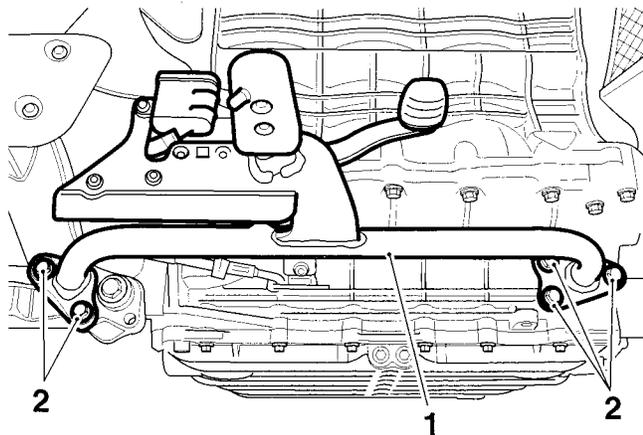
7. Drain the fluid from the front master cylinder by bleeding the the system at one of the front calipers until all fluid has been expelled (see page 15-12).
8. Drain the fluid from the rear master cylinder by bleeding the system at the rear caliper until all fluid has been expelled (see page 15-27).
9. Reposition the rubber boot and disconnect the rear brake light switch.

10. Disconnect the rear brake pipe and brake light switch from the inline adapter. Discard the sealing washers.



- 1. Inline adapter**
2. Rubber boot
3. Brake light switch harness
4. Rear brake line

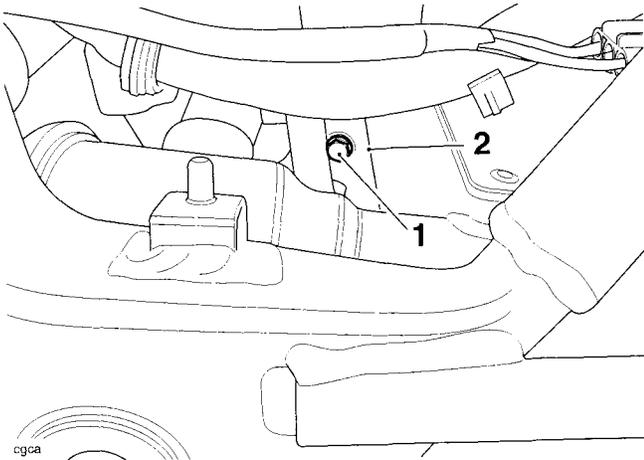
11. Remove the right hand foot control assembly.



- 1. Foot control assembly**
2. Bolts

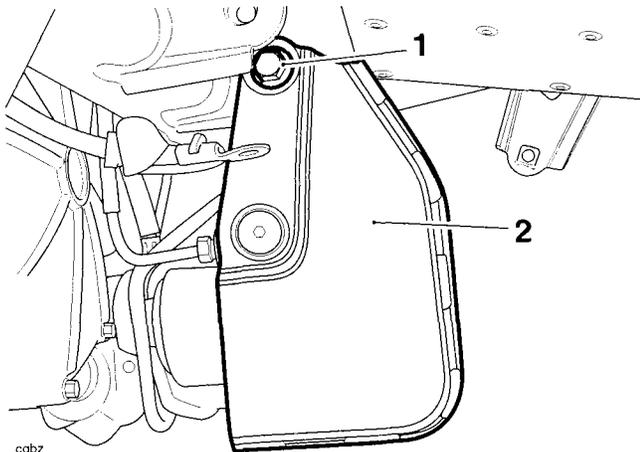
12. Remove the left hand side cover (see page 17-19).

13. Remove the bolt on the upper right hand side of the modulator bracket.



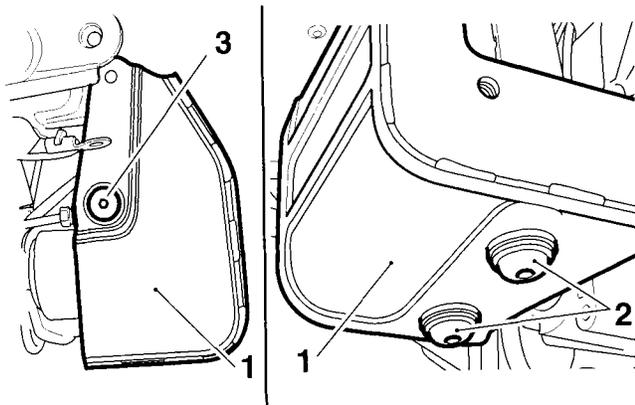
- cgca
1. Bolt
2. Bracket

14. Remove the bolt on the upper left hand side of the modulator bracket.



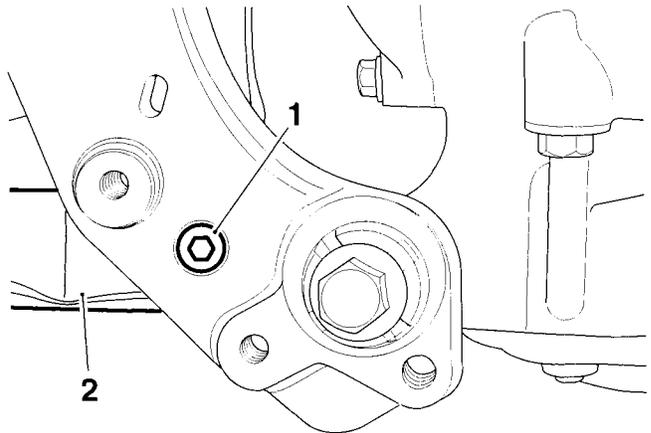
- cgbz
1. Bolt
2. Bracket

15. Remove the three screws securing the modulator to its bracket.



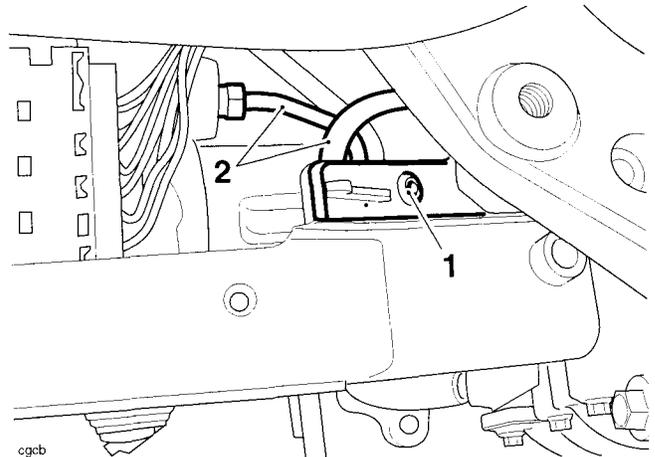
- cgce_1
1. Screw, left hand side
2. Screws, lower
3. Bracket

16. Remove the screw securing the modulator bracket to the frame.



- cgcj
1. Screw
2. Bracket

17. Detach the rear brake inline adapters from the modulator bracket and remove the bracket.



- cgcb
1. Screw
2. Rear brake lines

18. To prevent the brake lines from bending, support the ABS modulator.

19. Disconnect the ABS modulator multiplug (see page 19-52).

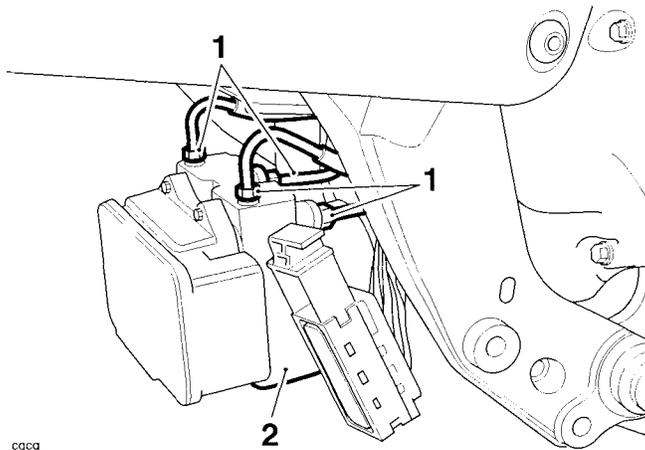
Warning

Before the disassembly of any brake lines in the ABS hydraulic circuit, make a note of their position so that they can be returned to the same position when assembled.

If the brake lines are incorrectly assembled the performance of the ABS system will be seriously compromised, leading to loss of motorcycle control and an accident.

Brakes

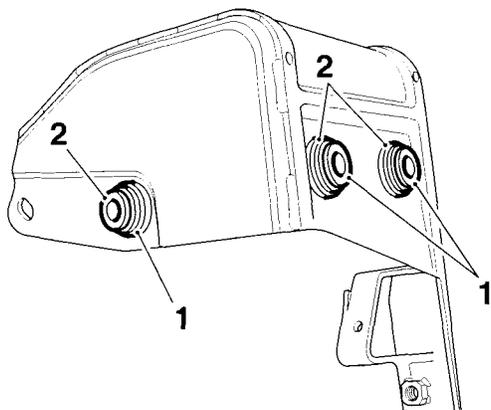
20. Loosen the 4 brake line unions and, taking care not to bend the brake lines, detach the brake lines and remove the modulator.



- cgcg
1. Brake lines
 2. Modulator

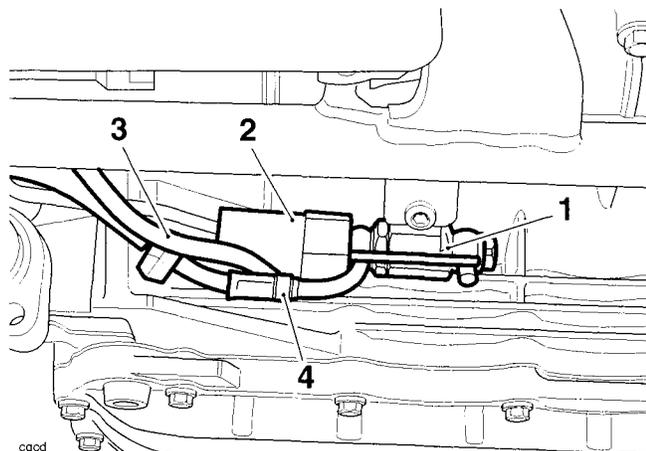
Installation

1. Taking care not to bend the brake lines, refit the lines to the ABS modulator and tighten to **17 Nm**.
2. Support the modulator.
3. Connect the modulator multiplug, ensuring the locking device is fully engaged (see page 19-52).
4. Ensure the rubber mounts and flanged sleeves are fitted to the mounting bracket.



- cgcf
1. Rubber mount
 2. Flanged sleeves

5. Align the mounting bracket to the modulator and attach the rear brake inline adapters, tighten the screw to **5 Nm**.
6. Align the mounting bracket and modulator assembly to the frame. Fit the left and right hand upper mounting bolts and tighten them to **27 Nm**.
7. Secure the lower right hand side of the bracket to the frame and tighten the screw to **27 Nm**.
8. Secure the mounting bracket to the modulator and tighten the screws to **9 Nm**.
9. Fit the heatshield to the bracket and tighten the screws to **9 Nm**.
10. Refit the right hand foot control assembly and tighten the bolts to **27 Nm**.
11. Incorporating new washers to either side of the union, refit the brake light switch and rear brake pipe to the inline adapter, tighten the brake light switch to **15 Nm**.
12. Reconnect the brake light switch multiplug and refit the cover.



- cgcd
1. Inline adapter
 2. Brake light switch cover
 3. Harness
 4. Rear brake line

13. Refit the left hand side panel (see page 17-19).
14. Refit the starter motor (see page 18-25).
15. Refit the exhaust header and exhaust link box (see page 11-207).
16. Refit the silencers (see page 19-24).
17. Reconnect the battery, positive (red) lead first.



 **Warning**

Use only DOT 4 specification brake fluid as described in the general information section of the service manual. The use of brake fluid other than those DOT 4 fluids listed in the general information section may reduce the efficiency of the braking system leading to an accident. Observe the brake fluid handling warnings given in the service manual.

18. Bleed the front brakes (see page *19-30*).
19. Bleed the rear brakes (see page *19-33*).

 **Warning**

It is dangerous to operate the motorcycle with defective brakes; you must have your authorised Triumph dealer take remedial action. Failure to take remedial action may reduce braking efficiency leading to loss of motorcycle control and an accident.

20. Refit the rider's seat (see page *17-17*).
21. Check that the brakes operate correctly.

Brakes

Anti-lock Brake System (ABS)

System Description

The Rocket III Roadster is fitted with an electronic anti-lock brake system which is designed to prevent the wheels from locking or skidding by reducing braking effort to the front or rear brake caliper when wheel lock is sensed.

The system consists of a hydraulic modulator and electronic control module (ECM) assembly mounted to a bracket near the exhaust system link box, a front wheel speed sensor mounted to the front fork and a rear wheel speed sensor mounted to the rear brake caliper carrier. Both front and rear wheels have a pulser ring mounted on to the wheel hub.

The front and rear master cylinders are connected via lines to the modulator and from the modulator the lines connect to the brake calipers. The calipers and master cylinders are identical to the non-ABS equipped motorcycle.

The front and rear brake circuits operate as separate systems. The front and rear brakes are not connected in any way inside the modulator.

The modulator ECM continuously measures the front and rear wheel speeds, and from these inputs the ECM calculates the motorcycle speed, wheel deceleration/acceleration, front/rear wheel speed difference and the wheel slip (skid) rate. The latter is calculated by comparing the wheel speeds with the vehicle speed, so that if one wheel speed deviates significantly from the other two readings, this wheel is calculated to be slipping (skidding).

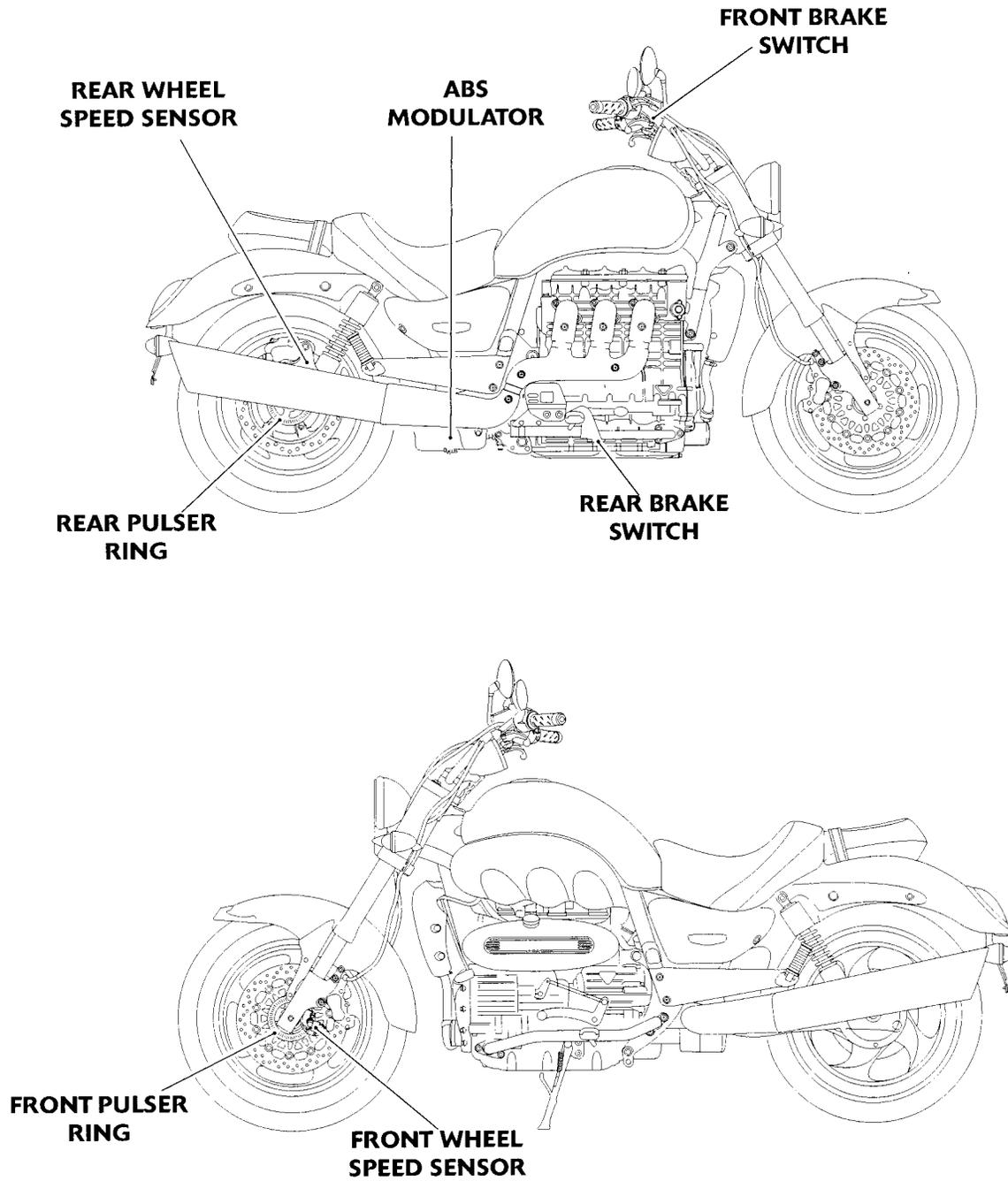
Under braking, if the modulator detects that either wheel is slipping (skidding), due to the brake force exceeding the available traction between the tyre and road surface, the ECM very rapidly releases and re-applies the brake pressure to prevent the wheel from slipping. This is felt through the brake pedal or lever as a rapid 'pulsing'.

If the rider reduces braking effort, or traction increases (so that traction exceeds braking force, the wheel will rotate once more) the wheel will no longer lock up. The ABS system will detect this and stop controlling brake pressure, and return to its monitoring state.

The system has a self diagnostic function built-in which monitors the fail safe relay, solenoid valves, motor relay, wheel speed sensors, power supply and ground, as well as internal ECM functions. In the event of a malfunction being detected, the ECM will illuminate the ABS warning light, and store a diagnostic trouble code in the system memory. This stored data can then be recovered using the Triumph diagnostic tool which is mandatory for all Triumph dealers. In this way, precise diagnosis of a fault can be made and the fault quickly rectified.

Under normal operation, the ABS warning light will stay illuminated after ignition on until the vehicle speed exceeds 6 mph (10 km/h). The ABS performs a self check and if no faults are found the light is extinguished. If a trouble code is stored the ABS warning light will stay illuminated and the ABS will not function, however the brakes will operate normally. If the ABS warning light does not extinguish, or illuminates whilst the motorcycle is being ridden, refer to the ABS system diagnostics (see page 19-46).

Component Locations



Brakes

ABS system Circuit Diagram

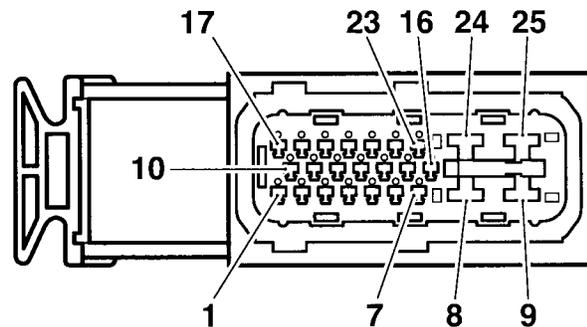
Key To Wiring Circuit Diagram

Key	Item Description
1	ABS Modulator
2	Speedometer
3	Brake Light
4	Rear Wheel Speed Sensor
5	Front Brake Light Switch
6	Front Wheel Speed Sensor
7	Rear Brake Light Switch
8	Engine Control Module
9	Diagnostic Connector
10	Starter Relay
11	Main Fuse Box (Fuse 9)
12	ABS Fuse Box

Key To Wiring Colour Codes

Code	Wiring Colour
B	Black
U	Blue
N	Brown
G	Green
S	Slate/Grey
O	Orange
K	Pink
R	Red
P	Purple
W	White
Y	Yellow
LG	Light Green
LU	Light Blue

ABS ECM Connector Pin Numbering

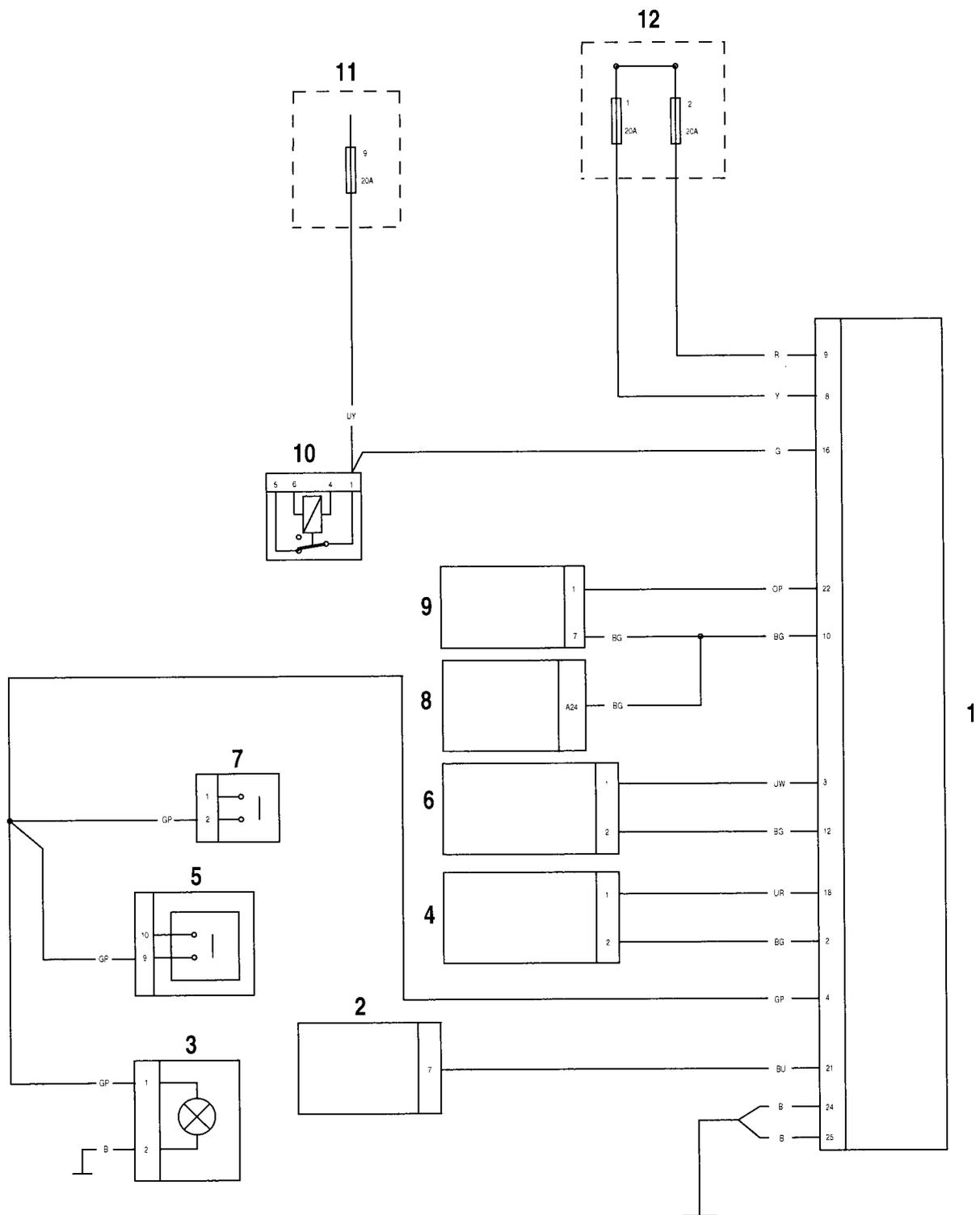


odhg

The above illustration shows the pin numbering system used in the ABS circuit diagram.

As viewed on the mating face with the ABS ECM (as per the illustration), pins are numbered from left to right with number one in the bottom left hand corner.

ABS System Circuit Diagrams



Brakes

System Diagnostics

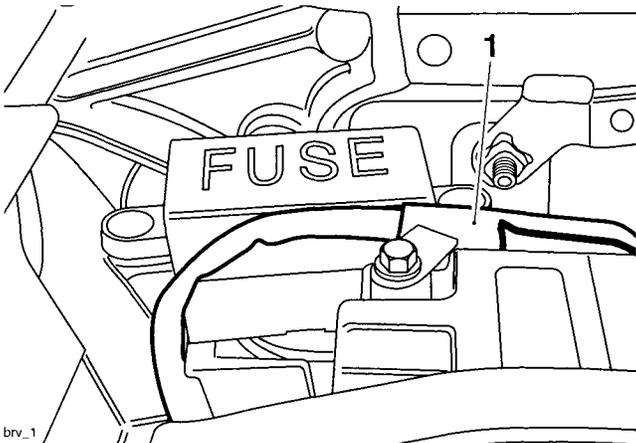
The ABS system has an on-board diagnostics feature which allows service technicians to retrieve stored data from the ECM using Triumph diagnostic software. **Full details of the Triumph diagnostic software operation and how to interpret the results are given in the Triumph Diagnostic Tool User Guide.**

The software is connected, via an interface cable, to the motorcycle using a dedicated diagnostic plug situated beneath the rider's seat. By using a dedicated plug, no electrical connectors associated with the system are disturbed, reducing potential connector damage.

The software allows the user to retrieve data associated with the system sensors and actuators, test various component functions, read build data and make minor adjustments to the set-up of the system. The data and tests available are described on the following pages.

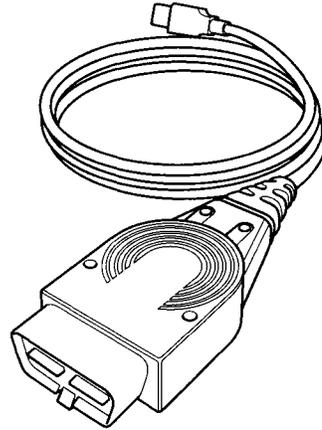
Diagnostic Tool Connection

1. To connect the Triumph diagnostic interface to the motorcycle, remove the rider's seat (see page 17-17) and release the diagnostic connector from its location.



1. Diagnostic connector

2. Plug the diagnostic interface directly in to the diagnostic connector.



Diagnostic interface

3. When the diagnostic session is completed, disconnect the diagnostic interface.
4. Refit the diagnostic connector to its location and refit the rider's seat (see page 17-17).

Triumph Diagnostic Tool

Described on the following pages is the range of information which can be retrieved from the ECM's memory and the adjustments which can be performed using the Triumph diagnostic software.

The tables indicate which tests are performed by the on-board system and what information can be retrieved by the Triumph diagnostic software.

Note:

- **Full details of how to operate the software and how to interpret the data can be found in the Triumph Diagnostic Tool User Guide, which can be downloaded by authorised Triumph dealers from www.triumphonline.net.**

Build Data

The **Build Data** screen will display the following information:

Function Examined
ECM type
ECM ID number
Software version number

Current Data

The **Current Data** screen will display the following information:

Function Examined	Result Reported (Scale)
Front wheel speed	Kph
Rear wheel speed	Kph
Brake switch status	On/Off
ABS warning light status	On/Off

Bleed System

Using the Triumph diagnostic tool, it is possible to bleed the ABS modulator of trapped air. This is necessary when the hydraulic brake system has been dismantled, or the ABS modulator renewed.

Full details of this procedure are provided on page 19-30 for front brakes or page 19-33 for rear brakes.

Brakes

Diagnostic Trouble Codes

Diagnostic trouble codes (DTCs) are logged in the ABS ECM memory when there is a confirmed fault in the system.

The codes are reported to the Triumph diagnostic tool as a four digit code.

DTCs can be removed at any time using the Triumph diagnostic tool.

The system will log the diagnostic trouble codes listed below:

Diagnostic Trouble Code (DTC)	Fault Description
C1611	Front Wheel Sensor Open Circuit/Short Circuit
C1612	Front Wheel Sensor Abnormal Input/Losing Contact
C1613	Rear Wheel Sensor Open Circuit/Short Circuit
C1614	Rear Wheel Sensor Abnormal Input/Losing Contact
C1621	Front Wheel Pulser Gear Missing Teeth
C1623	Rear Wheel Pulser Gear Missing Teeth
C1631	Front Wheel Input Solenoid Open/Short Circuit
C1632	Front Wheel Output Solenoid Open/Short Circuit
C1633	Rear Wheel Input Solenoid Open/Short Circuit
C1634	Rear Wheel Output Solenoid Open/Short Circuit
C1641	Front Wheel Actuator (Hydraulic Control) Wheel Lock
C1643	Rear Wheel Actuator (Hydraulic Control) Wheel Lock
C1651	Motor - Lock
C1652	Motor - Stuck OFF
C1653	Motor - Stuck ON
C1654	Solenoid Relay - Stuck OFF/ON
C1661	Power Source Voltage Drop
C1662	Power Source Voltage Rise
C1671	Different Tyre Diameter
C1681	Abnormal ECU



Diagnostic Trouble Codes

Dependant on the DTC stored, the ABS ECM will act in one of two ways:

- Inhibit ABS operation immediately, irrespective of the ABS operating mode;

or

- Allow the ABS operation to complete before inhibiting the ABS.

Once the ABS ECM has inhibited ABS function, the ECM will act in one of three ways:

- Allow the ABS to resume operation if the fault clears;

or

- Allow ABS operation after an ignition cycle if the fault clears;

or

- Inhibit the ABS function until the fault is rectified and the DTC erased.

The ABS system will act on the DTC stored according to the following table:

Fault Description	ABS warning light illuminated when fault is logged	ABS operation is inhibited when fault is logged	ABS continues to operate when fault is logged (Only when ABS is Active. When ABS is no longer active, operation is inhibited)	ABS will resume operation if fault clears
Front Wheel Sensor Open Circuit/Short Circuit	Yes	Yes		No
Front Wheel Sensor Abnormal Input/Losing Contact	Yes	Yes	Yes	Yes, if after ignition cycle, no fault is detected. DTC remains stored
Rear Wheel Sensor Open Circuit/Short Circuit	Yes	Yes		No
Rear Wheel Sensor Abnormal Input/Losing Contact	Yes	Yes	Yes	Yes, if after ignition cycle, no fault is detected. DTC remains stored
Front Wheel Pulser Gear Missing Teeth	Yes		Yes	Yes, if after ignition cycle, no fault is detected for 1 second and speed exceeds 30 km/h. DTC remains stored
Rear Wheel Pulser Gear Missing Teeth	Yes		Yes	Yes, if after ignition cycle, no fault is detected for 1 second and speed exceeds 30 km/h. DTC remains stored
Front Wheel Input Solenoid Open/Short Circuit	Yes	Yes		No
Front Wheel Output Solenoid Open/Short Circuit	Yes		Yes	No

Brakes

Fault Description	ABS warning light illuminated when fault is logged	ABS operation is inhibited when fault is logged	ABS continues to operate when fault is logged (Only when ABS is Active. When ABS is no longer active, operation is inhibited)	ABS will resume operation if fault clears
Rear Wheel Input Solenoid Open/Short Circuit	Yes	Yes		No
Rear Wheel Output Solenoid Open/Short Circuit	Yes		Yes	No
Front Wheel Actuator (Hydraulic Control) Wheel Lock	Yes		Yes	Yes, if after ignition cycle, no fault is detected. DTC remains stored
Rear Wheel Actuator (Hydraulic Control) Wheel Lock	Yes		Yes	Yes, if after ignition cycle, no fault is detected. DTC remains stored
Motor - Lock	Yes		Yes	No
Motor - Stuck OFF	Yes		Yes	No
Motor - Stuck ON	Yes		Yes	No
Solenoid Relay - Stuck OFF/ON	Yes	Yes		No
Power Source Voltage Drop	Yes, Light will extinguish if fault clears	Yes		Yes, if voltage rises above a preset threshold for more than 10 seconds
Power Source Voltage Rise	Yes, Light will extinguish if fault clears	Yes		Yes, if voltage drops below a preset threshold for more than 10 seconds
Different Tyre Diameter	Yes	Yes		No
Abnormal ECU	Yes	Yes		No

Electrical Connectors

Before beginning any diagnosis, the following connector related information should be noted:

Note:

- **A major cause of hidden electrical faults can be traced to faulty electrical connectors.**

For example:

- Dirty/corroded terminals.
- Damp terminals.
- Broken or bent cable pins within multi-plugs.

For example, the ABS electronic control module (ABS ECM) relies on the supply of accurate information to enable it to monitor and control the brake system. One dirty terminal will cause an excessive voltage drop resulting in an incorrect signal to the ECM.

If, when carrying out fault diagnosis, a fault appears to clear by simply disconnecting and reconnecting an electrical plug, examine each disconnected plug for the following.

Before Disconnection:

- If testing with a voltmeter, the voltage across a connector should be virtually battery volts (unless a resistor is fitted in the circuit). If there is a noticeable change, suspect faulty/dirty connections.

When Disconnecting a Connector:

- Check for a security device that must be released before the connector can be separated. E.G. barb, hook and eye etc.

When Inspecting a Connector:

- Check that the individual pins have not been bent.
- Check for dampness/dirt/corrosion.
- Check cables for security.
- Check cable pin joints for damage.

When Connecting a Connector:

- Ensure there is no dirt around the connector/seal.
 - Push together squarely to ensure terminals are not bent or incorrectly located.
 - Push the two halves together positively.
-

Brakes

Disconnection of ABS ECM connector

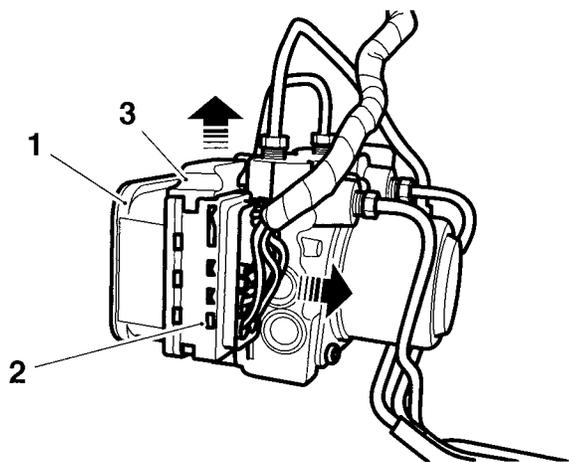
Caution

When disconnecting a connector, never pull directly on the wires as this may result in cable and connector damage.

Caution

Never disconnect the ABS ECM when the ignition switch is in the ON position as this may cause multiple fault codes to be logged in the ECM memory. Always disconnect an ECM after disconnecting the battery negative (black) lead first.

1. Lift up the locking device and gently pull back on the connector to release it from the ECM.



cfyr_5

1. ABS modulator
2. Connector
3. Locking device

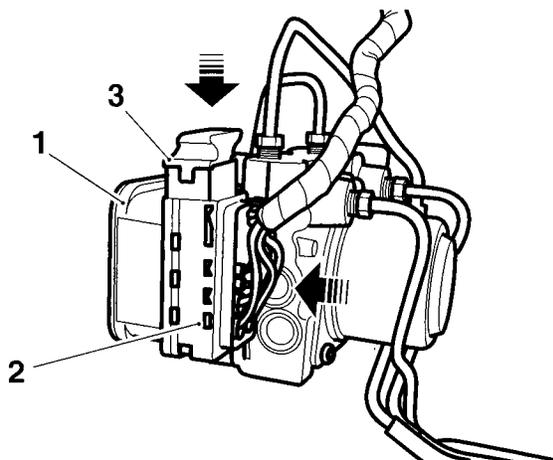
Note:

- The ABS ECM is an integral part of the ABS modulator. Under no circumstances should the ECM be removed from the ABS modulator. If a new ECM is required, repair is by replacement of the ABS modulator and ECM as an assembly only.

Reconnection of ABS ECM connector

Caution

Damage to the connector pins may result if an attempt to fit the connectors incorrectly is made.



cfyr_2

1. ABS modulator
 2. Connector
 3. Locking device
2. Fit the connector into its socket and, whilst holding the connector in place, push down gently on the locking device until it locks.

Further Diagnosis

The tables that follow will, if used correctly, help to pinpoint a fault in the system once a diagnostic trouble code has been stored.

Pinpoint Tests

Before starting pinpoint tests:

1. Delete the stored DTCs.
2. Switch the ignition OFF and ON.

 **Warning**

If the ABS is not functioning, the brake system will continue to function as a non-ABS braking system. Do not continue to ride for longer than is necessary with the indicator light illuminated. Ride with extreme caution when performing diagnostic troubleshooting on a non-functioning ABS system. In this situation braking too hard will cause the wheels to lock resulting in loss of motorcycle control and an accident.

3. Ride the motorcycle at a road speed in excess of 30 Km/h. If the DTC is repeated proceed to the relevant pinpoint test.
4. If the DTC is not repeated this indicates the DTC may have been stored due to external influences such as bad road surfaces or electrical interference.

After completion of the pinpoint tests:

1. Delete the stored DTCs.
2. Switch the ignition OFF and ON.
3. Ride the motorcycle at a road speed in excess of 30 Km/h. If the DTC is repeated proceed to the relevant pinpoint test.
4. If a DTC is stored there is a further fault. Read the stored DTC and refer to the relevant pinpoint test.

Brakes

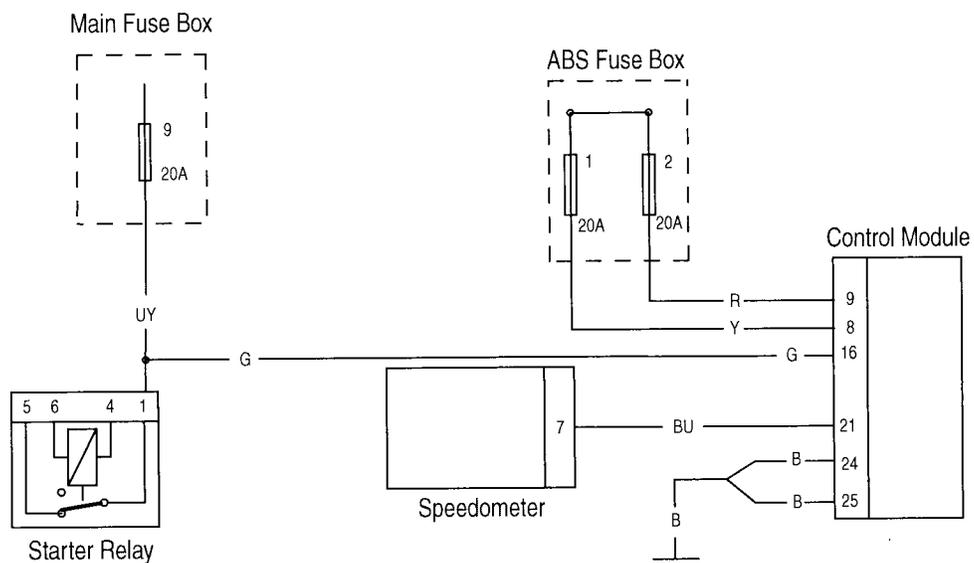
ABS Warning Light ON (No DTCs Stored)

Fault Code	Possible cause	Action
ABS Warning Light ON (No DTCs Stored)	ABS Ignition supply fuse/circuit fault ABS Warning light circuit fault	Ensure ABS ECM connector is secure. Disconnect ABS ECM connector and proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ABS ECM connector pin 16 and Ground pin 24	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check cable continuity of the ABS ignition supply circuit: With the Ignition 'ON', check voltage between: - ABS ECM connector pin 16 and Ground	Same as 'across battery' voltage	Proceed to test 3
	Less than 'across battery' voltage	Locate and rectify wiring fault, proceed to test 5
3 Check cable continuity of the ABS warning light circuit: Check voltage between: - ABS ECM connector pin 21 and Ground	Voltage greater than 1.5 V	Proceed to test 4
	Voltage less than 1.5 V	Locate and rectify fault, proceed to test 5
4 Check cable continuity of the ABS warning light circuit: - Short ABS ECM connector pin 21 and Ground pin 24 together: Turn Ignition 'ON'	ABS warning light 'OFF'	Proceed to test 5
	ABS warning light 'ON'	Locate and rectify fault, proceed to test 5
5 Reconnect ABS ECM harness, clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Brakes

ABS Warning Light Does not Illuminate (No DTCs Stored)

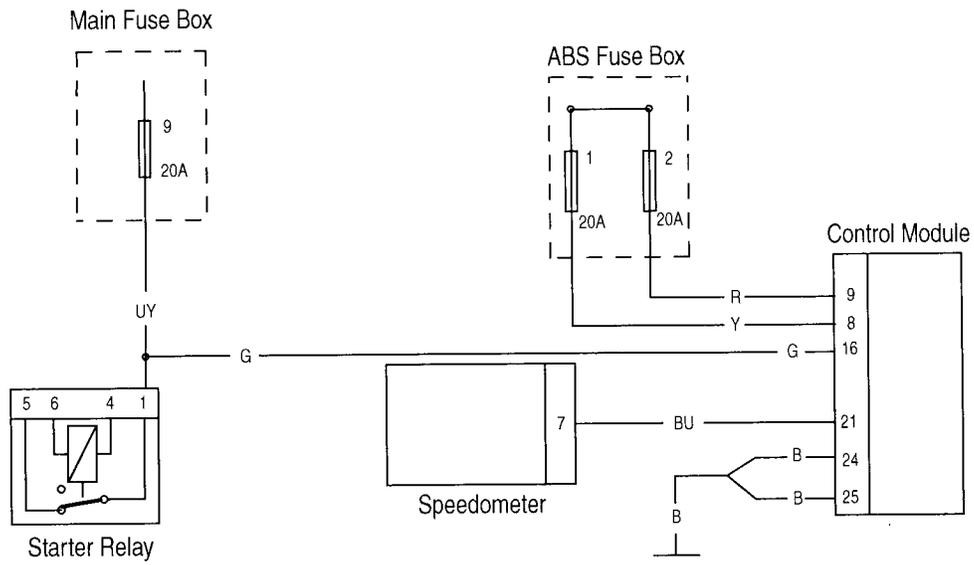
Fault Code	Possible cause	Action
ABS Warning Light OFF (No DTCs Stored)	Warning light circuit fault ABS ECM ground circuit fault	Ensure ABS ECM connector is secure. Ensure ABS ECM ground connection is secure. Disconnect ABS ECM connector and proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ABS ECM connector pin 16 and Ground	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 6
2 Check the ABS warning light circuit fuse (fuse 9 in the main fuse box):	OK	Proceed to test 3
	Faulty	Replace fuse, proceed to test 6
3 Check cable for short to voltage: With Ignition 'OFF', check voltage between: - ABS ECM connector pin 16 and Ground	0 V	Proceed to test 4
	Above 3 V	Locate and rectify wiring fault, proceed to test 6
4 Check cable for short to ground: With ignition 'ON', Check the ABS warning light circuit voltage between: - ABS ECM connector pin 21 and Ground	Voltage greater than 1.5 V	Proceed to test 5
	Voltage less than 1.5 V	Locate and rectify fault, proceed to test 6
5 Check cable for continuity: ABS ECM connector pin 24 and Ground: Turn Ignition 'ON'	OK	Proceed to test 6
	Faulty	Locate and rectify fault, proceed to test 6
6 Reconnect ABS ECM harness, clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service



Circuit Diagram



Brakes

Front Wheel Sensor Open Circuit/Short Circuit

Fault Code	Possible cause	Action
C1611	Front wheel speed sensor circuit fault	Ensure ABS ECM connector is secure. Ensure wheel speed sensor connector is secure. Disconnect ABS ECM connector and proceed to pinpoint test 1:

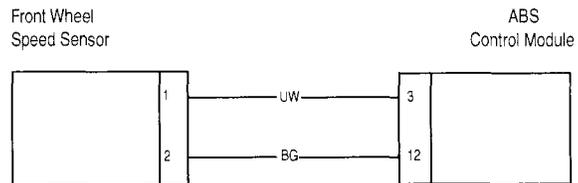
Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ABS ECM connector pin 3 and ABS ECM connector pin 12	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 9
2 Check cable for short circuit: - ABS ECM connector pin 12 and Ground	OK	Proceed to test 4
	Short circuit	Proceed to test 3
3 Disconnect the front wheel speed sensor connector. Check cable for short circuit: Wheel speed sensor connector pin 2 (motorcycle harness side) and Ground	OK	Replace the wheel speed sensor, proceed to test 9
	Short circuit	Locate and rectify wiring harness fault, proceed to test 9
4 Check cable for short circuit: - ABS ECM connector pin 3 and Ground	OK	Proceed to test 6
	Short circuit	Proceed to test 5
5 Check cable for short circuit: - Wheel speed sensor connector pin 1 (motorcycle harness side) and Ground	OK	Replace the wheel speed sensor, proceed to test 9
	Short circuit	Locate and rectify wiring harness fault, proceed to test 9
6 Check cable continuity: - ABS ECM connector pin 12 and Wheel speed sensor connector pin 2 (motorcycle harness side)	OK	Proceed to test 7
	Open circuit	Locate and rectify wiring harness fault, proceed to test 9
7 Check cable continuity: - ABS ECM connector pin 3 and Wheel speed sensor connector pin 1 (motorcycle harness side)	OK	Proceed to test 8
	Open circuit	Locate and rectify wiring harness fault, proceed to test 9
8 Reconnect the front wheel speed sensor connector. Check the wheel speed sensor operation: - Connect a suitable voltage supply between 4.5 V and 16 V between ABS ECM connector pin 12 (positive) and pin 3 (negative), and measure the current consumption of the wheel speed sensor	3 mA to 14 mA	Proceed to test 9
	Faulty	Replace the wheel speed sensor, proceed to test 9
9 Reconnect ABS ECM harness, clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram

Wheel speed sensor current consumption data under typical conditions:

Voltage	Min	Typical	Max
Low (4.5 V)	3.1 mA	4.1 mA	5.3 mA
High (16V)	8.1 mA	10.5 mA	13.6 mA



Brakes

Rear Wheel Sensor Open Circuit/Short Circuit

Fault Code	Possible cause	Action
C1613	Rear wheel speed sensor circuit fault	Ensure ABS ECM connector is secure. Ensure wheel speed sensor connector is secure. Disconnect ABS ECM connector and proceed to pinpoint test 1:

Pinpoint Tests

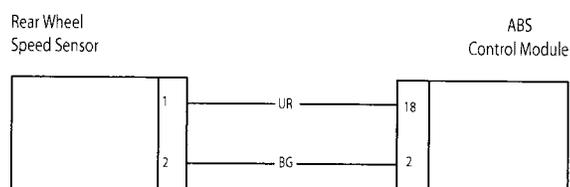
Test	Result	Action
1 Check cable and terminal integrity: - ABS ECM connector pin 2 and ABS ECM connector pin 18	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 9
2 Check cable for short circuit: - ABS ECM connector pin 2 and Ground	OK	Proceed to test 4
	Short circuit	Proceed to test 3
3 Disconnect the front wheel speed sensor connector. Check cable for short circuit: - Wheel speed sensor connector pin 2 (motorcycle harness side) and Ground	OK	Replace the wheel speed sensor, proceed to test 9
	Short circuit	Locate and rectify wiring harness fault, proceed to test 9
4 Check cable for short circuit: - ABS ECM connector pin 18 and Ground	OK	Proceed to test 6
	Short circuit	Proceed to test 5
5 Check cable for short circuit: - Wheel speed sensor connector pin 1 (motorcycle harness side) and Ground	OK	Replace the wheel speed sensor, proceed to test 9
	Short circuit	Locate and rectify wiring harness fault, proceed to test 9
6 Check cable continuity: - ABS ECM connector pin 2 and Wheel speed sensor connector pin 2 (motorcycle harness side)	OK	Proceed to test 7
	Open circuit	Locate and rectify wiring harness fault, proceed to test 9
7 Check cable continuity: - ABS ECM connector pin 18 and Wheel speed sensor connector pin 1 (motorcycle harness side)	OK	Proceed to test 8
	Open circuit	Locate and rectify wiring harness fault, proceed to test 9
8 Reconnect the front wheel speed sensor connector. Check the wheel speed sensor operation: - Connect a suitable voltage supply between 4.5 V and 16 V between ABS ECM connector pin 2 (positive) and pin 18 (negative), and measure the current consumption of the wheel speed sensor	3 mA to 14 mA	Proceed to test 9
	Faulty	Replace the wheel speed sensor, proceed to test 9

Test	Result	Action
9 Reconnect ABS ECM harness, clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram

Wheel speed sensor current consumption data under typical conditions:

Voltage	Min	Typical	Max
Low (4.5 V)	3.1 mA	4.1 mA	5.3 mA
High (16 V)	8.1 mA	10.5 mA	13.6 mA



Brakes

Front Wheel Sensor Abnormal Input/Losing Contact

Fault Code	Possible cause	Action
C1612	Front wheel speed sensor poor signal Incorrect Wheel speed sensor air gap Damaged or dirty pulser ring Loose or incorrectly installed wheel speed sensor	Ensure ABS ECM connector is secure. Ensure wheel speed sensor connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Measure the air gap of the front wheel speed sensor between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 2
	Faulty	Rectify the fault and proceed to test 5
2 Check the pulser ring for damage or contamination by road grime or ferrous metal fillings	OK	Proceed to test 3
	Faulty	Clean or replace the ABS pulser ring, proceed to test 5
3 Check the wheel speed sensors for correct installation, and the fixings for correct torque	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 5
4 Check the wheel speed sensor circuit (see page 19-58)	OK	Contact Triumph service
	Faulty	Rectify the fault and proceed to test 5
5 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Rear Wheel Sensor Abnormal Input/Losing Contact

Fault Code	Possible cause	Action
C1614	Rear wheel speed sensor poor signal Incorrect Wheel speed sensor air gap Damaged or dirty pulser ring Loose or incorrectly installed wheel speed sensor	Ensure ABS ECM connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Measure the air gap of the front wheel speed sensor between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 2
	Faulty	Rectify the fault and proceed to test 5
2 Check the pulser ring for damage or contamination by road grime or ferrous metal filings	OK	Proceed to test 3
	Faulty	Clean or replace the ABS pulser ring, proceed to test 5
3 Check the wheel speed sensors for correct installation, and the fixings for correct torque	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 5
4 Check the wheel speed sensor circuit (see page 19-60)	OK	Contact Triumph service
	Faulty	Rectify the fault and proceed to test 5
5 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Brakes

Front Wheel Pulser Gear Missing Teeth

Fault Code	Possible cause	Action
C1621	Incorrect Wheel speed sensor air gap Damaged or dirty pulser ring Loose or incorrectly installed wheel speed sensor Damaged/incorrect wheels	Ensure ABS ECM connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Measure the air gap of the front wheel speed sensor between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 2
	Faulty	Rectify the fault and proceed to test 5
2 Check the pulser ring for damage or contamination by road grime or ferrous metal filings	OK	Proceed to test 3
	Faulty	Clean or replace the ABS pulser ring, proceed to test 5
3 Check the wheel speed sensors for correct installation, and the fixings for correct torque	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 5
4 Check the motorcycle wheel for damage/incorrect size	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 5
5 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Rear Wheel Pulser Gear Missing Teeth

Fault Code	Possible cause	Action
C1623	Incorrect Wheel speed sensor air gap Damaged or dirty pulser ring Loose or incorrectly installed wheel speed sensor Damaged/incorrect wheels	Ensure ABS ECM connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Measure the air gap of the front wheel speed sensor between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 2
	Faulty	Rectify the fault and proceed to test 5
2 Check the pulser ring for damage or contamination by road grime or ferrous metal filings	OK	Proceed to test 3
	Faulty	Clean or replace the ABS pulser ring, proceed to test 5
3 Check the wheel speed sensors for correct installation, and the fixings for correct torque:	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 5
4 Check the motorcycle wheel for damage/incorrect size	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 5
5 Clear fault code and test ABS to verify fault cleared.	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Brakes

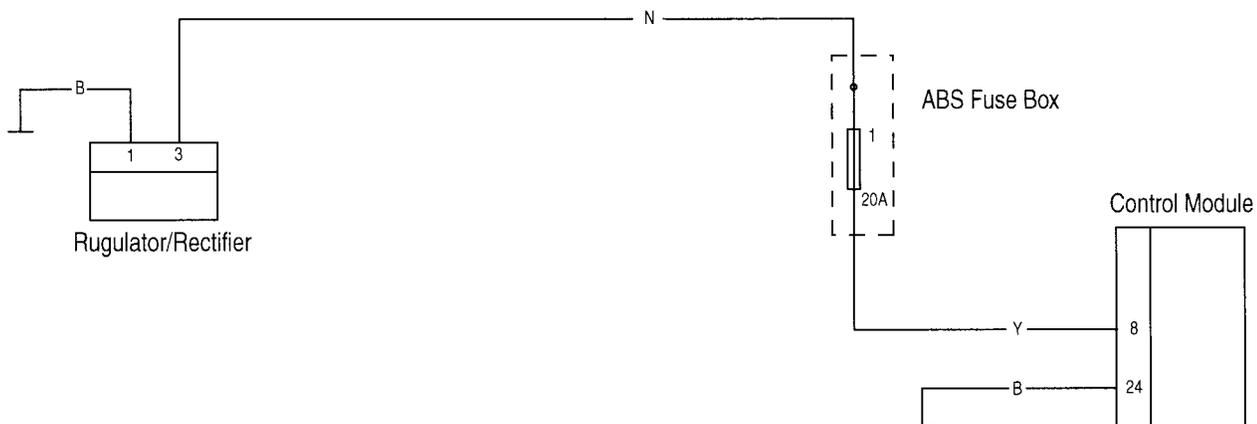
Front or Rear Input/output solenoid Open/Short Circuit

Fault Code	Possible cause	Action
Front: C1631; C1632 Rear: C1633; C1634 C1654	ABS solenoid circuit fault	Ensure ABS ECM connector is secure. Disconnect ABS ECM connector and proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ABS ECM connector pin 8 and Ground	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check the ABS solenoid fuse (fuse 1 in ABS fuse box):	OK	Proceed to test 3
	Faulty	Replace fuse, proceed to test 5
3 Check cable continuity: With Ignition 'ON', check voltage between - ABS ECM connector pin 8 and Ground	Same as 'across battery' voltage	Proceed to test 4
	Less than 'across battery' voltage	Locate and rectify wiring fault, proceed to test 5
4 Check cable for continuity: - ABS ECM connector pin 24 and Ground	OK	Proceed to test 5
	Faulty	Locate and rectify fault, proceed to test 5
5 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Front or Rear Wheel Actuator (Hydraulic Control) Wheel Lock

Fault Code	Possible cause	Action
C1641; C1643	Binding brake Incorrect Wheel speed sensor air gap Loose or incorrectly installed wheel speed sensor	Ensure ABS ECM connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check the relevant wheel for brake bind caused by caliper or master cylinder faults, or other mechanical causes	OK	Proceed to test 2
	Faulty	Rectify the fault and proceed to test 4
2 Measure the air gap of the wheel speed sensor between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 3
	Faulty	Rectify the fault and proceed to test 4
3 Check the wheel speed sensors for correct installation, and the fixings for correct torque	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 4
4 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Brakes

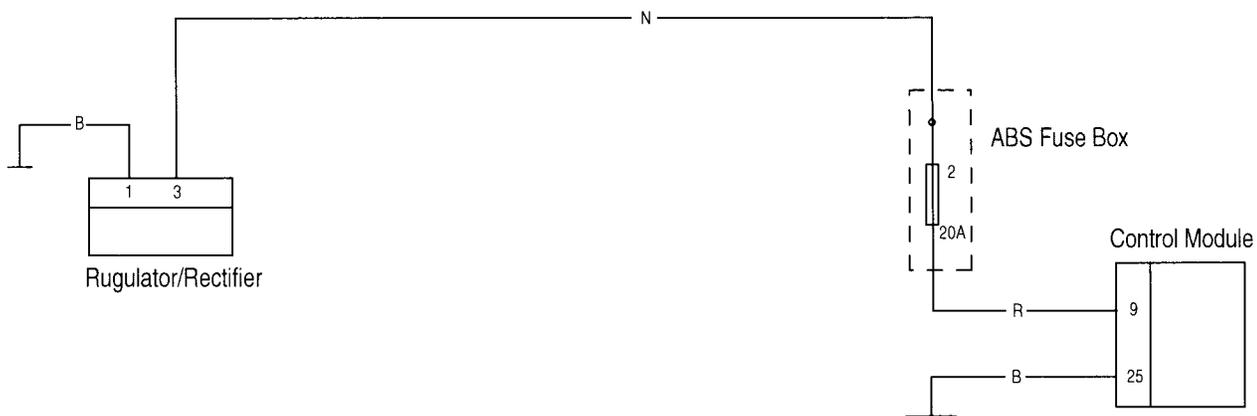
Motor - Lock; Motor Stuck OFF; Motor stuck ON

Fault Code	Possible cause	Action
C1651; C1652; C1653	Motor circuit fault Motor runs continually Motor does not run at all	Ensure ABS ECM connector is secure. Turn the ignition 'ON'. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check the motor function: Check that with the motorcycle stationary and the ABS ACM modulator connected, the motor does not operate	OK	Proceed to test 2
	Motor runs continually	Contact Triumph service
2 Check the ABS motor circuit fuse (fuse 2 in ABS fuse box)	OK	Proceed to test 3
	Faulty	Replace fuse and proceed to test 5
3 Check cable continuity: With Ignition 'ON', check voltage between: - ABS ECM connector pin 9 and Ground	Same as 'across battery' voltage	Proceed to test 4
	Less than 'across battery' voltage	Locate and rectify wiring fault, proceed to test 5
4 Check cable for continuity: - ABS ECM connector pin 25 and Ground	OK	Proceed to test 5
	Faulty	Locate and rectify fault, proceed to test 5
5 Reconnect ABS ECM harness, clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram



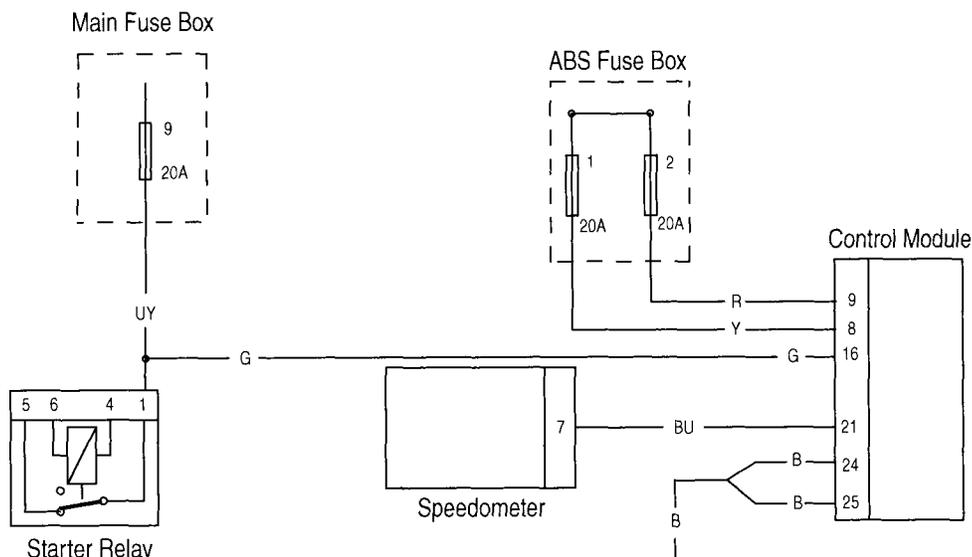
Power Source Voltage Drop/Voltage Rise

Fault Code	Possible cause	Action
C1661; C1662	Power supply circuit fault Battery charging circuit fault	Ensure ABS ECM connector is secure. Disconnect ABS ECM connector and proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check cable and terminal integrity: - ABS ECM connector pin 16 and Ground pin 24	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check the cable for continuity: - ABS ECM connector pin 24 and Ground	OK	Proceed to test 3
	Faulty	Rectify wiring harness fault, proceed to test 5
3 Check battery voltage: With ignition 'ON', Check the voltage between: - ABS ECM connector pin 16 and Ground pin 24	Voltage greater than 10 V	Proceed to test 4
	Voltage less than 10 V	Locate and rectify fault, proceed to test 5
4 Check battery voltage: Reconnect ABS ECM connector and start the engine, Check the voltage between: - Battery positive (red) terminal and negative (black) terminal	Voltage between 10 V and 16 V	Proceed to test 4
	Voltage greater than 16 V	Check the battery charging circuit. Locate and rectify fault, proceed to test 5
5 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Circuit Diagram



Brakes

Different Tyre Diameter

Fault Code	Possible cause	Action
C1671	Incorrect diameter wheels installed Incorrect tyre pressures Incorrect wheel speed sensor air gap Damaged or dirty pulser ring	Ensure ABS ECM connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Check for installation of wheels and tyres of the correct size	OK	Proceed to test 2
	Faulty	Rectify fault, proceed to test 5
2 Check the tyre pressures	OK	Proceed to test 3
	Faulty	Rectify fault, proceed to test 5
3 Check the pulser ring for damage or contamination by road grime or ferrous metal filings	OK	Proceed to test 4
	Faulty	Clean or replace the ABS pulser ring, proceed to test 5
4 Measure the air gap of the front wheel speed sensor between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 5
	Faulty	Rectify the fault and proceed to test 5
5 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Abnormal ECU

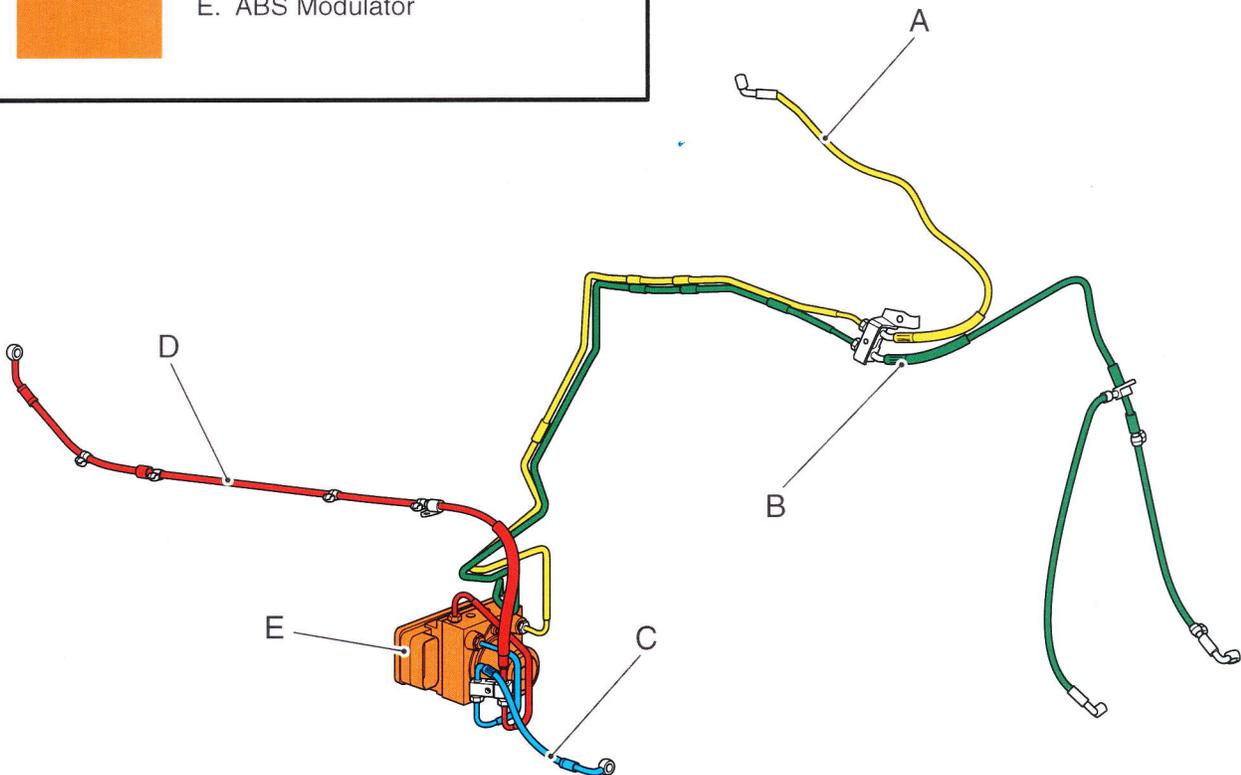
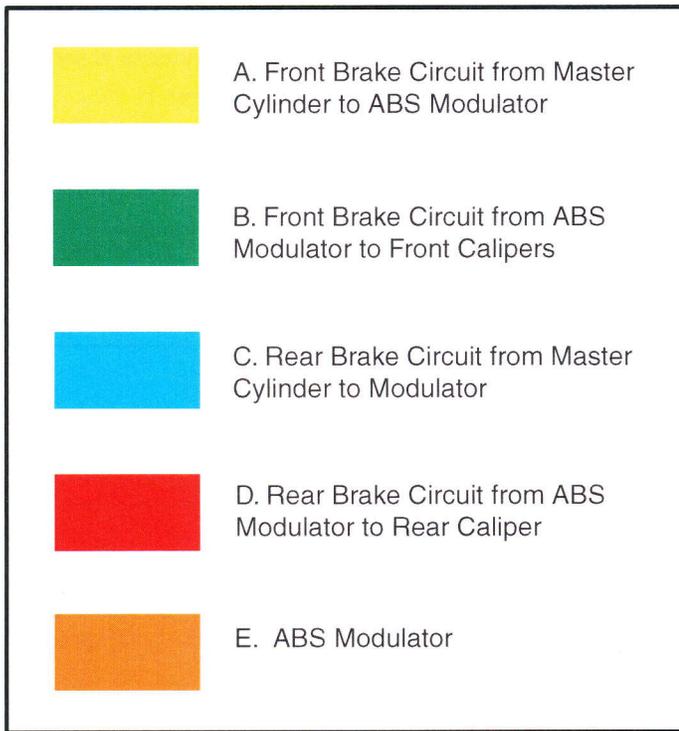
Fault Code	Possible cause	Action
C1681	Incorrect Wheel speed sensor air gap Damaged or dirty pulser ring Loose or incorrectly installed wheel speed sensor	Ensure ABS ECM connector is secure. Proceed to pinpoint test 1:

Pinpoint Tests

Test	Result	Action
1 Measure the air gap of the wheel speed sensors between the sensor and the pulser ring: - Air gap between 0.1 mm to 1.5 mm	OK	Proceed to test 1
	Faulty	Rectify the fault and proceed to test 4
2 Check the pulser rings for damage or contamination by road grime or ferrous metal filings	OK	Proceed to test 2
	Faulty	Clean or replace the ABS pulser ring, proceed to test 4
3 Check the wheel speed sensors for correct installation, and the fixings for correct torque	OK	Proceed to test 4
	Faulty	Rectify the fault and proceed to test 4
4 Clear fault code and test ABS to verify fault cleared	OK	Action complete - quit test
	Fault still present	Contact Triumph service

Brakes

ABS Hydraulic Circuit Layout



cgcp



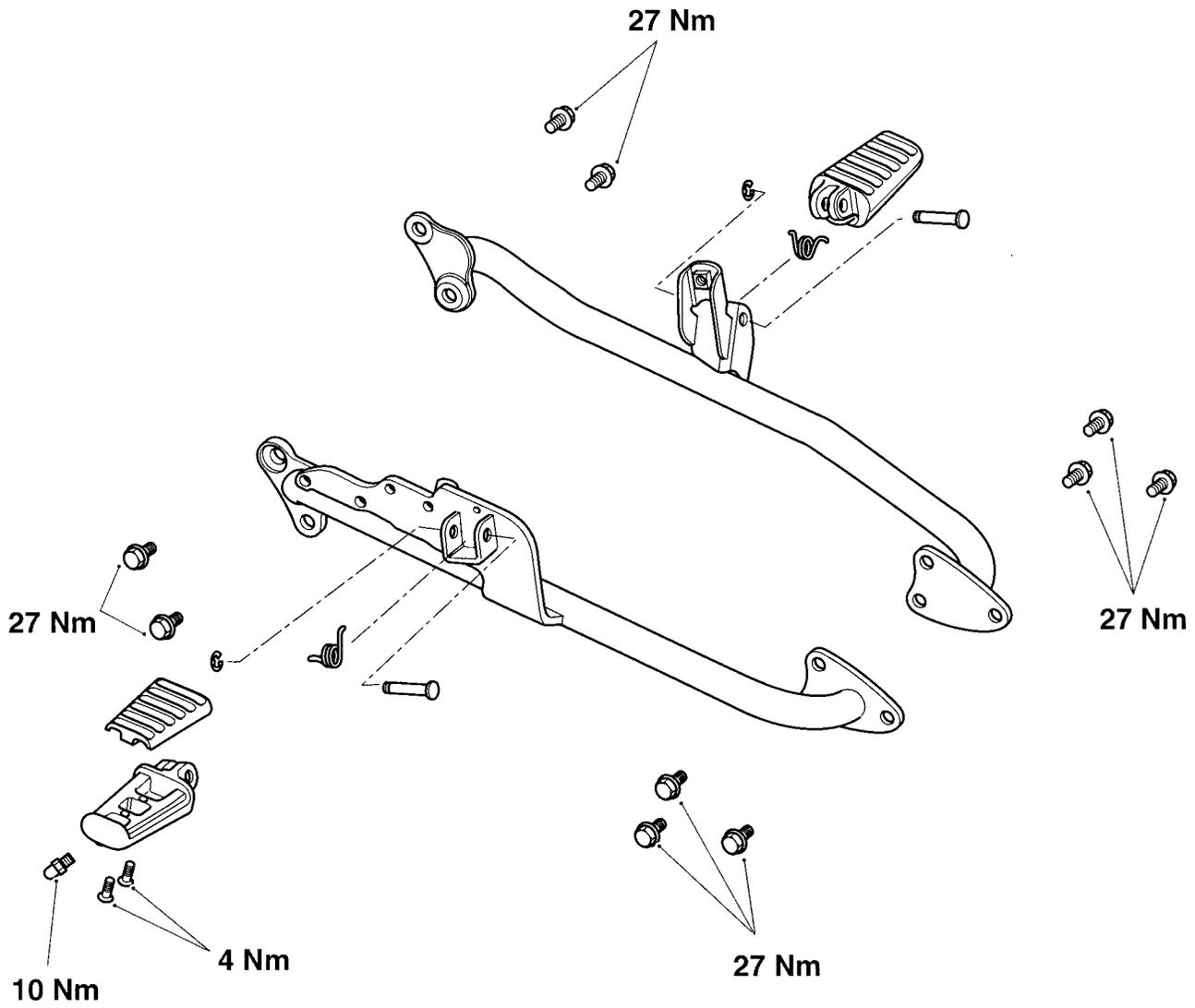
Frame

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Exploded View - Front Footpegs



Electrical

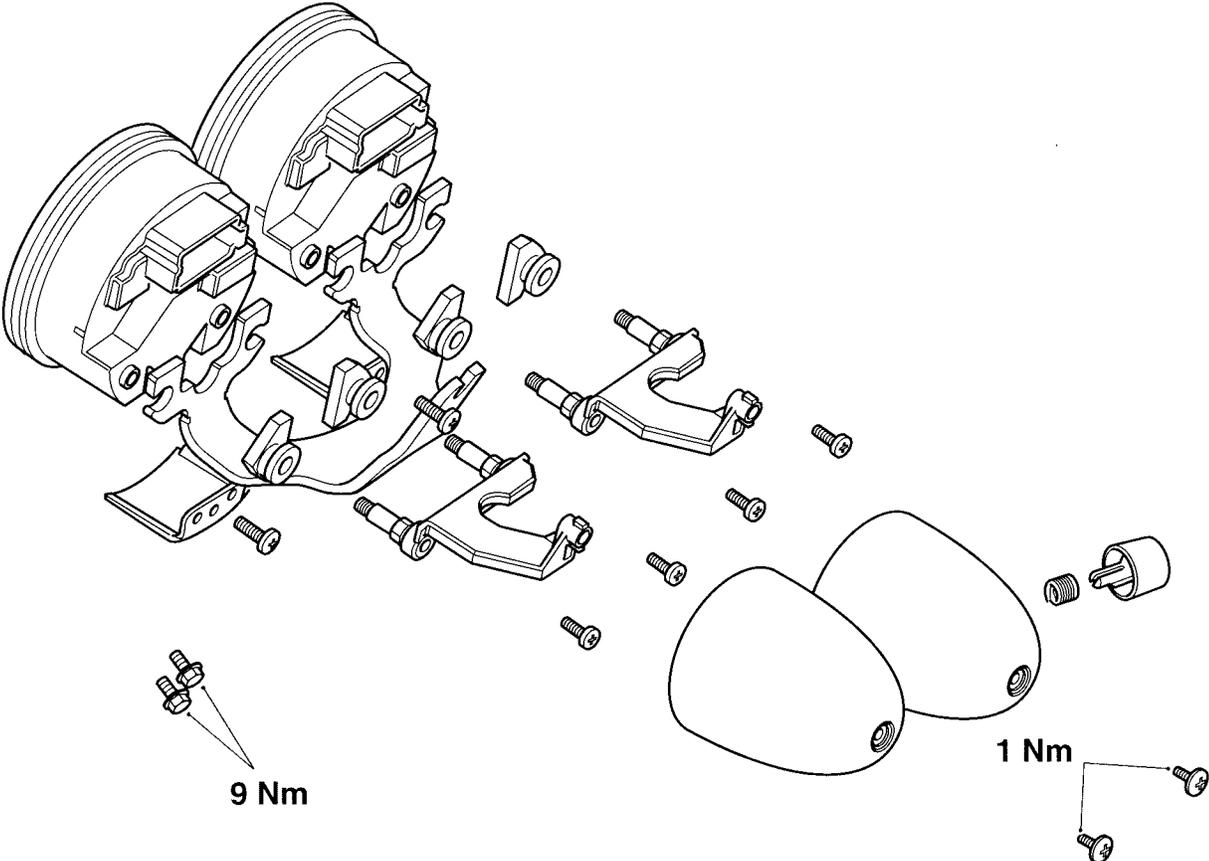
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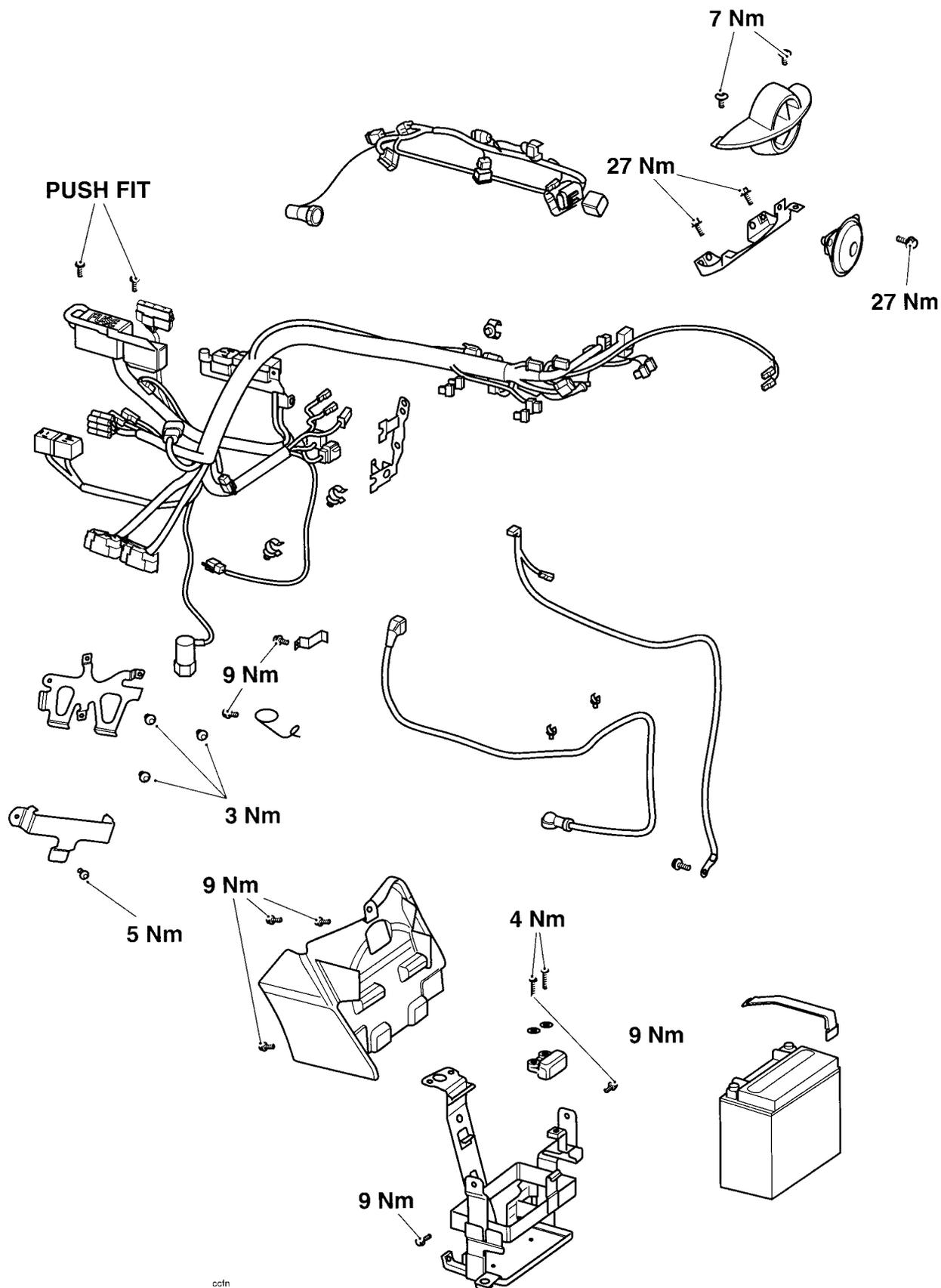


Electrical

Exploded View - Instruments



Exploded View - Battery, Horn and Wiring



Electrical

Lighting Circuit

Key to Circuit Diagram

Key	Item Description
1	Main Fuse Box (Fuses 1 and 2)
2	Ignition Switch
3	Licence Plate Lamp
4	Tail Lamp
5	Oil Pressure Switch
6	Engine Sub-Harness Connector
7	Tachometer, Oil Pressure Warning Light
8	Tachometer, Main Beam Indicator Light
9	Headlamp 1
10	Headlamp 2
11	Accessory Lights
12	Headlamp Dip Switch
13	Accessory Heated Handlebar Grips
14	Accessory Clock
15	Main Fuse Box (Fuses 3, 9 and 10)
16	Starter Relay

Key To Wiring Colour Codes

Code	Wiring Colour
B	Black
U	Blue
N	Brown
G	Green
S	Slate/Grey
O	Orange
K	Pink
R	Red
P	Purple
W	White
Y	Yellow
LG	Light Green
LU	Light Blue

Electrical

Starting and Charging Circuit

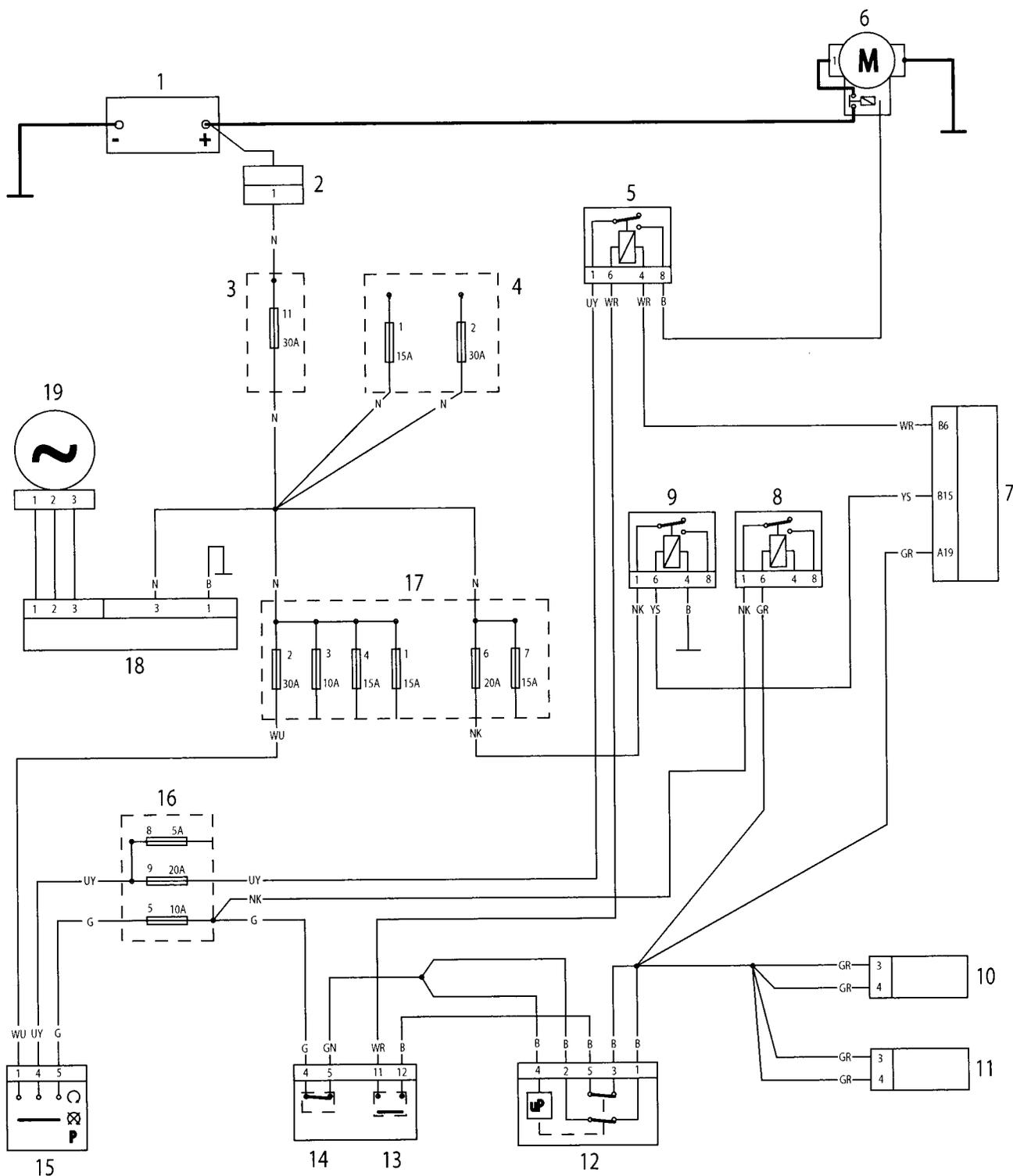
Key to Circuit Diagram

Key	Item Description
1	Battery
2	Battery Sub-Harness Connection
3	Main Fuse Box (Fuse 11)
4	ABS Fuse Box (Fuses 1 and 2)
5	Starter Relay
6	Starter Motor
7	Engine Control Module
8	Fuel Pump Relay
9	Engine Management System Relay
10	Speedometer
11	Tachometer
12	Alarm
13	Starter Button
14	Engine Kill Switch
15	Ignition Switch
16	Main Fuse Box (Fuses 5, 8 and 9)
17	Main Fuse Box (Fuses 1, 2, 3, 4, 6 and 7)
18	Rectifier/Regulator
19	Alternator

Key To Wiring Colour Codes

Code	Wiring Colour
B	Black
U	Blue
N	Brown
G	Green
S	Slate/Grey
O	Orange
K	Pink
R	Red
P	Purple
W	White
Y	Yellow
LG	Light Green
LU	Light Blue

Circuit Diagram - Starting and Charging



Electrical

Auxiliary and Accessory Circuit

Key to Circuit Diagram

Key	Item Description
1	Main Fuse Box (2, 3, and 4)
2	Ignition Switch
3	Right Hand Switch Cube
4	Brake Lamp
5	Diagnostic Connector
6	Rear Left Direction Indicator
7	Rear Right Direction Indicator
8	Accessory Alarm Control Unit
9	Front Right Direction Indicator
10	Front Left Direction Indicator
11	Speedometer
12	Tachometer
13	Direction Indicator Switch
14	Horn Switch
15	Direction Indicator Unit
16	Clock
17	Accessory Heated Handlebar Grips
18	Accessory Socket
19	Horn
20	Rear Brake Switch

Key To Wiring Colour Codes

Code	Wiring Colour
B	Black
U	Blue
N	Brown
G	Green
S	Slate/Grey
O	Orange
K	Pink
R	Red
P	Purple
W	White
Y	Yellow
LG	Light Green
LU	Light Blue



Electrical

Circuit Diagram - Complete System Rocket III Roadster

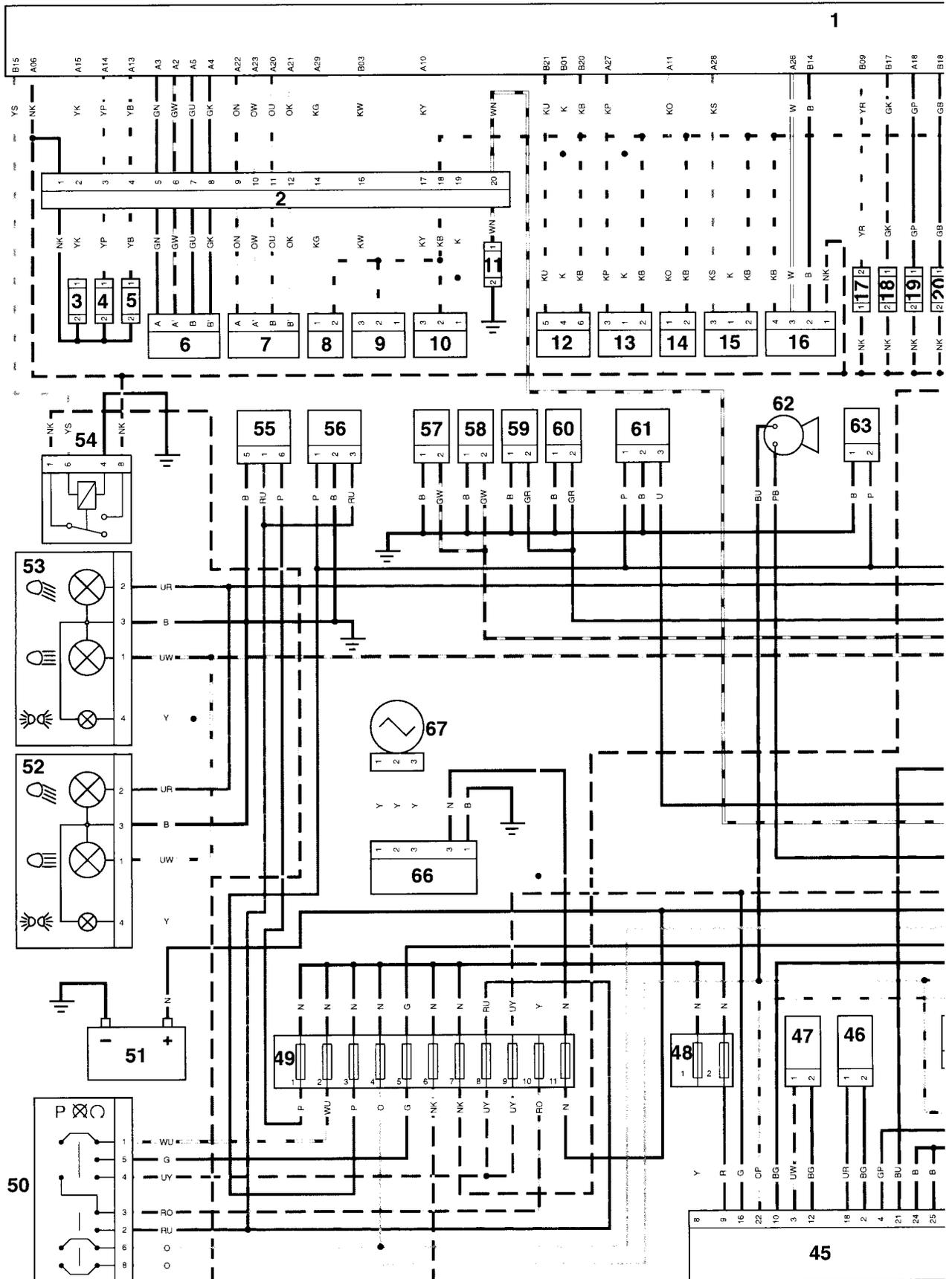
Key to Circuit Diagram

Key	Item Description
1	Engine Control Module
2	Engine Sub-Harness Connector
3	Ignition Coil 1
4	Ignition Coil 2
5	Ignition Coil 3
6	2 nd Throttle Actuator
7	Idle Speed Control Actuator
8	Coolant Temperature Sensor
9	2 nd Throttle Potentiometer
10	Throttle Potentiometer
11	Oil Pressure Switch
12	Fall Detection Switch
13	Ambient Pressure Sensor
14	Inlet Air Temperature Sensor
15	MAP Sensor
16	Lambda Sensor
17	Purge Valve
18	Ignition Coil 1
19	Ignition Coil 2
20	Ignition Coil 3
21	Cooling Fan Relay
22	Cooling Fan
23	Fuel Pump Relay
24	Fuel Pump and Fuel Level Sender
25	Crankshaft Sensor
26	Gear Position Sensor
27	Vehicle Speed Sensor
28	Sidestand Switch
29	Diagnostic Connector
30	Speedometer
31	Tachometer
32	Clutch Lever Switch
33	Horn Switch
34	Direction Indicator Switch
35	Headlamp Dip Switch
36	Direction Indicator Unit

Key	Item Description
37	Licence Plate Lamp
38	Tail Lamp
39	Brake Lamp
40	Alarm Unit
41	Starter Switch
42	Front Brake Lever Switch
43	Engine Stop Switch
44	Rear Brake Lever Switch
45	ABS Module
46	Rear Wheel Speed Sensor
47	Front Wheel Speed Sensor
48	ABS Fuse Box
49	Main Fuse Box
50	Ignition Switch
51	Battery
52	Headlight 1
53	Headlight 2
54	Engine Management System Relay
55	Accessory Lights
56	Accessory Clock
57	Right Hand Indicator Front
58	Right hand Indicator Rear
59	Left Hand Indicator Front
60	Left Hand Indicator Rear
61	Heated Handlebar Grips (Accessory)
62	Horn
63	Accessory Socket
64	Starter Relay
65	Starter Motor
66	Rectifier/Regulator
67	Alternator



Circuit Diagram - Complete System - Rocket III Roadster



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