

# **TORQUE CONVERTER LOCK UP MANUAL CONTROL KIT SUITABLE FOR:**

**LAND ROVER DISCOVERY SERIES 2  
PETROL AND DIESEL 1999 TO 2005  
4 SPEED ZF4HP22**



**Wholesale**  
**AUTOMATIC TRANSMISSIONS**  
**03-9762 8004**

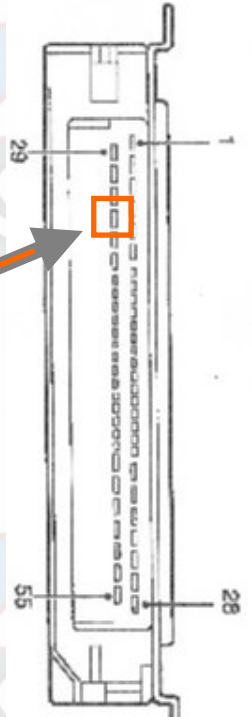
**Please read all instructions before  
commencing work. If you feel  
instructions are not clear, STOP and  
call for advice on 03 9762 8004**

**Carling Switch**

**FDNEG LOOM**

# Discovery Series II Wiring Diagram

Locate TCU under front passenger seat. With the key out of barrel, remove plug from TCU and then locate the following wires:  
PIN 32 — Grey/Orange Trace Wire



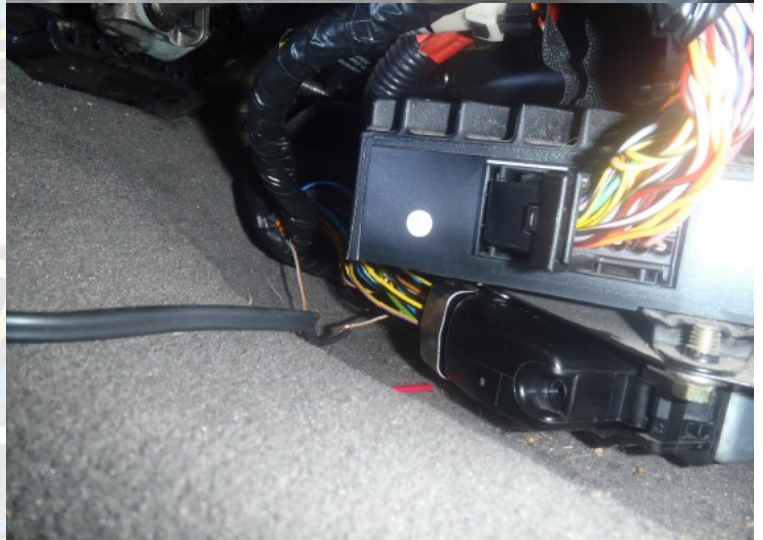
CUT

White wire to Transmission side of Cut

Brown wire to ECU side of CUT

Transmission

Twin Core Wire



Red Wire to Constant 12 Volts (Fused 5A)

Blue Wire to 12v Ignition Switched Source

Black wire to body EARTH/ GROUND

From Lockup Multi Pin Plug



## Torque Converter Lockup Kit - Recommended Use

### On Road:

- For Towing Only, If you are not towing then you will not need to use the Lockup Kit.
- Perfect for Towing where you cannot maintain enough speed for the factory lock-up to stay engaged or the extra weight has a side effect of blocking the lock-up function completely.
- The Lockup Kit can be used as an aid to improve engine braking down steep descent's while changing down through the gears manually. This can be used when towing also.

### Off Road:

- The Lockup Kit can be used to gain 100% engine braking, eliminating all torque convertor runaway for steep downhill descent's in "both" low and high range.
- The Lockup Kit can also be used for beach work where the sand is firm and you are not going fast enough to have reached a speed that the factory lock-up would normally work. This would aid in keeping your transmissions temperature low and also may help with fuel economy.
- Perfect for the never-ending corrugated roads where once again you cannot maintain enough speed for the factory lock-up to be maintained. Using your Lockup Kit under these circumstances will keep your transmission temperature down and aid in improving your fuel economy.

### DO NOT's:

- Do not use the Lock-Up Control for crawling over rough terrain
- Do not use the Lock-Up Control for uphill climbs or overtaking
- Do not use the Lock-Up Control with more than 50% throttle
- Do not use the Lock-Up Control on soft sand or mud

The use of the Lock-Up Control under these applications prevents the Torque Converter from doing it's job of multiplying the torque of the engine and from absorbing the shock from the drive train under heavy throttle.

Please remember that if you have the Lock-Up Control engaged and you come to a complete stop, the vehicle could stall just like a Manual Gearbox if you didn't push in the clutch pedal. Always remember to disengage the Lock-Up Control as you are coming to a stop.

**Note:** The switches displayed in this instruction are for illustrative purposes. The supplied switch may vary depending on your vehicle model.

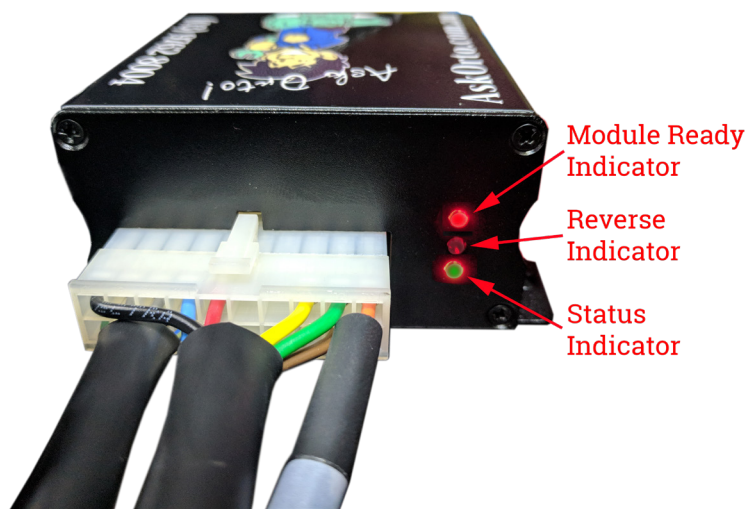
# Lockup Module Installation and Diagnostics Ver 2.7

**NOTE: Scotch locks, quick connects or other wire connection devices MUST NOT BE USED.**

**All wire connections must be soldered and protected with tape or heat shrink.**

Follow the directions in the Wiring Diagram to install your Lockup Module. Trouble shooting instructions are provided later in this document for your use if required.

The Lockup Module supplied provides information about the state of the GENII Lockup System.



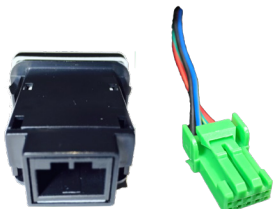
### States:

- “Module Ready Indicator” illuminates red to indicate the GENII Lockup System is ready to operate.
- “Reverse Indicator” illuminates orange to indicate reverse (A750 transmissions only).
- “Status Indicator” illuminates red to indicate the GENII Lockup System is engaged.
- Either the “Module Ready Indicator” or “Status Indicator” may flash to provide diagnostic information - see trouble shooting section.

In addition to the required wiring please install the main resistor and OEM Style Lockup Switch as follows:



The main resistor supplied with your kit **must be mounted to a metal surface** as it can become hot.



The green connector from the Module Loom must be connected to the OEM Style Switch. Ensure that the grooves on the top of the green connector align with the grooves in the hole on the back of the OEM Style Switch.

**If the connector does not slide in easily check the alignment of the grooves.**

## Switch Installation and Diagnostics

The OEM Style Switch supplied provides information about the state of the Lockup Module.



### States:

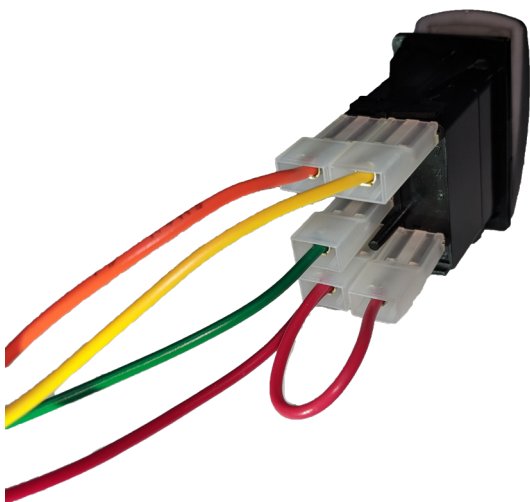
- “Lock Up” illuminates red to indicate the GENII Lockup System is engaged.
- “TCC” (Torque Converter Clutch) illuminates red to indicate the GENII Lockup System is ready to operate
- Either “Lock Up” or “TCC” may flash to provide diagnostic information - see trouble shooting section.

**PLEASE CHECK THE GREEN SWITCH CONNECTOR IS INSERTED THE CORRECT WAY UP BY LINING UP THE GUIDES AS PER THE WIRING DIAGRAM.**

The switch has two red lights: LOCK UP and TCC that replicate the Module Ready Indicator and the Status Indicator on the lockup module. The red TCC light will flash twice on start up to indicate system checks are complete and no fault found. The red LOCKUP light will only light up when the GENII Lockup System is engaged.

If the switch has been left on or has been activated accidentally before vehicle is started, the red TCC light on the switch and the lockup module will flash indicating that it is in safety mode and will not engage the torque converter until the switch is turned off. You may then continue to use the lockup system as usual.

**To connect the OEM Style Switch to the Module Loom follow the below diagram:**



**Please take care when installing this unit. Incorrect wiring may result in damage to the micro processor controller. Incorrect installation is not covered under warranty.**

**The Wiring looms are Vehicle Specific, if there are discrepancies DO NOT Install, call your place of purchase for advice.**

# Trouble Shooting Guide

Most problems with your Torque Converter Lockup Kit can be resolved using this trouble shooting guide.

## Step 1: Check Your Installation

Double check the installation has been completed according to the wiring diagram provided. In particular:

- Check green connector has been plugged into the OEM Style Switch the correct way around.
- Check pins in the connector hole in the back of the OEM Style Switch have not been accidentally bent during installation.
- Check you have wired up the Module Loom as per the wiring diagram in this instruction. Confirm that:
  - All soldering joints look clean and complete.
  - Transmission Wiring Loom wires that must be cut are the correct colours as per the wiring diagram AND that these wires are joined in the ECU in the pin positions indicated. Confirming wires joined in the specified pin location is essential as the Transmission Wiring Loom contains multiple wires that have identical colouring.
  - Module Loom wires that join to cut wires are joined to the correct side of the cut. The wiring diagram shows which join to the Transmission Wiring Loom side of the cut and which join to the ECU side of the cut.
  - Module Loom wires that splice into uncut wires are joined to the correct colour wires as per the wiring diagram AND that these wires are joined in the ECU in the pin positions indicated. Confirming wires joined in the specified pin location is essential as the Transmission Wiring Loom contains multiple wires that have identical colouring.

## Step 2: Trouble Shoot Using Indicator Lights

The OEM Style Switch and Lockup Module both have lights that indicate their state as described previously. These lights provide valuable diagnostic information that will be used for trouble shooting.

To troubleshoot your vehicle using the indicator lights:

1. Turn your ignition to on.
2. Check the state of the OEM Style Switch and Lockup Module indicator lights.

Apply the steps in the below instructions that match the state of your indicator lights.

### Scenario One:

OEM Style Switch:	TCC is OFF	
Lockup Module:	Module Ready Light is ON	

Possible Cause	Solution
The green connector that plugs into the OEM Style Switch has been connected upside down.	<ol style="list-style-type: none"> <li>1. Remove the green connector from the OEM Style Switch.</li> <li>2. If the pins in the OEM Style Switch are bent straighten them using long nose pliers.</li> <li>3. Reinstall the green connector into the Switch as per the wiring diagram.</li> </ol>
The green connector that plugs into the OEM Style Switch is not fully engaged.	Check green connector is oriented correctly and push the connector home.
OEM Style Switch or Lockup Module has a fault.	<ol style="list-style-type: none"> <li>1. Set a multi-meter to DC voltage measurement mode.</li> <li>2. Check if there is 5 volts or more across the black wire and the blue with yellow stripe wire leading into the green connector. Note: Take care not to short these wires.</li> <li>3. If more than 5 volts was found it is possible that the LED light in the OEM Style Switch is faulty. Replace switch or contact your place of purchase for further assistance.</li> <li>4. If under 5 volts was found then contact your place of purchase for further assistance.</li> </ol>

**Scenario Two:**


OEM Style Switch:	TCC is ON	
Lockup Module:	Module Ready Light is OFF	

Possible Cause	Solution
Lockup Module has a fault.	Contact your place of purchase for further assistance.



### Scenario Three:

OEM Style Switch:	TCC is OFF	
Lockup Module:	Module Ready Light is OFF	

Possible Cause	Solution
No power getting to the Lockup Module	<ol style="list-style-type: none"> <li>1. Set a multi-meter to DC voltage mode.</li> <li>2. Check if there is battery voltage available between the black and red wires on the Module Loom as per the below picture:                     <div data-bbox="815 1249 1270 1659" data-label="Image">  </div> </li> <li>3. If no power is available then check the 5 amp fuse supplied with the Lockup Module. Replace blown fuse if required.</li> <li>4. If the 5 amp fuse is not blown then check your soldered connections are adequate and match the wiring diagram provided.</li> <li>5. If all connections are correct check factory fuses in your vehicle have not blown. Replace blown fuses if required.</li> </ol>


### Scenario Four:

OEM Style Switch:	TCC is FLASHING	
Lockup Module:	Module Ready Light is FLASHING	

Possible Cause	Solution
Lockup switch was engaged at the time of vehicle ignition.	<p>Disengage lockup switch and wait for TCC light to change from flashing to being constantly on.</p> <p>Lockup Module will now operate correctly.</p>


### Scenario Five:

OEM Style Switch:	Lock up is ON AND TCC is OFF	
Lockup Module:	Module Ready Light is ON (top light) AND Status Indicator Light is FLASHING (bottom light)	

Possible Cause	Solution
<p>The Lockup Module has identified a problem with the "ID Resistor" in the Wiring Loom.</p>	<ol style="list-style-type: none"> <li>Set a multi-meter into resistance measurement mode.</li> <li>Probe the two grey wires in the Module Loom as per the photo below.</li> </ol> <div data-bbox="863 1256 1426 1653" data-label="Image">  </div> <ol style="list-style-type: none"> <li>If the resistance is not 2200 ohms then please contact your place of purchase or you may gently pull the two grey wires from the sheathe to reveal the resistor. Remove the factory resistor and replace with 2200 ohm resistor.</li> </ol>

### Scenario Six:

<p>OEM Style Switch:</p>	<p>Lock up is FLASHING AND TCC is FLASHING</p>	
<p>Lockup Module:</p>	<p>Module Ready Light is FLASHING (top light) AND Status Indicator Light is FLASHING (bottom light)</p>	

Possible Cause	Solution
<p>Power supply to the Lockup Module has insufficient current.</p>	<ol style="list-style-type: none"> <li>1. Check the Module Loom is correctly plugged in.</li> <li>2. If the problem persists, set a multi-meter to DC voltage mode.</li> <li>3. Check if there is battery voltage available between the black and red wires on the Module Loom as per the below picture:                     <div data-bbox="817 1249 1270 1659" data-label="Image">  </div> </li> <li>4. If battery voltage is present contact your place of purchase for assistance.</li> <li>5. If battery voltage is not present, it is possible a problem fuse is causing insufficient voltage to be present in the active (red) wire.</li> <li>6. Follow the red wire backwards checking the voltage before and after each fuse. Check relevant vehicle fuses supplying power to the system.</li> <li>7. Replace any fuses where the voltage before the fuse is battery voltage but the voltage after the fuse is less than battery voltage (or is zero).</li> </ol>

## Contact Us

We are here to help you get the best from your Lockup Kit. If you have any inquiries or wish to discuss specific circumstances the lock-up kit maybe useful for, please do not hesitate to contact us.

## Factory Vehicle Warranty

If you have any questions about how this kit will impact any factory warranty please contact the vehicle manufacturer.

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