TOYOTA HILUX 2.8L 4x4 6 Speed Automatic

Instructions for Installation of Automatic Lock Up Kit

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Install and operation statement

The installation and use of this modification is at your own risk. Follow all steps in this manual to successfully install and test the lock up kit. Read all steps and ensure you understand what is required before starting this install. Check wiring colors AND pin locations before terminating any wires. Incorrect install may cause damage to vehicle or kit. This is not covered by Richards Auto Electrical.

1. *Check all components against list below.*

   Automatic Controller:

   3x Relay and relay blocks

   Switch Factory Style push button

   Electrical wiring loom

   Fuse Holder and 7.5A Blade Fuse

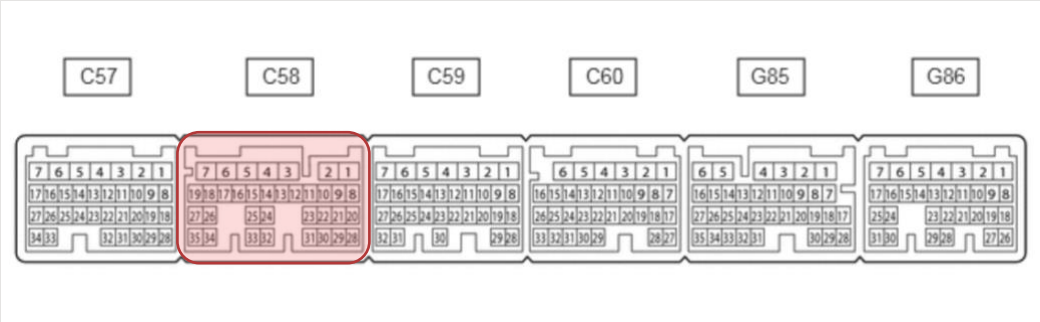
   Zip Ties, Self-Drilling Screw

2. *Remove the Glove Box door by opening and twisting the thumb locks. Lower the door and pull to remove.*

   Behind the glove box locate the Engine control unit (ECU). The picture below shows the ECU and electrical connectors.



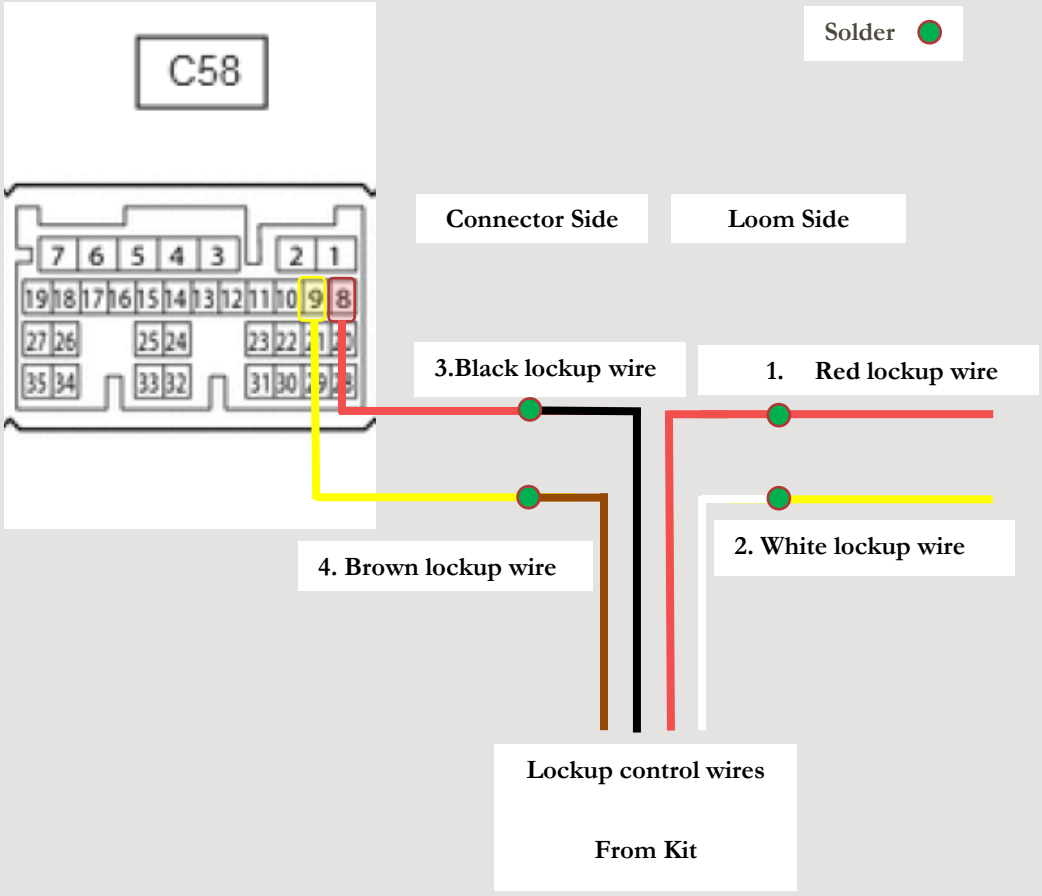
3. *With the ignition switch OFF and key removed from vehicle, disconnect connector C58. This is the second connector from the bottom. Marked red in the drawing below.*



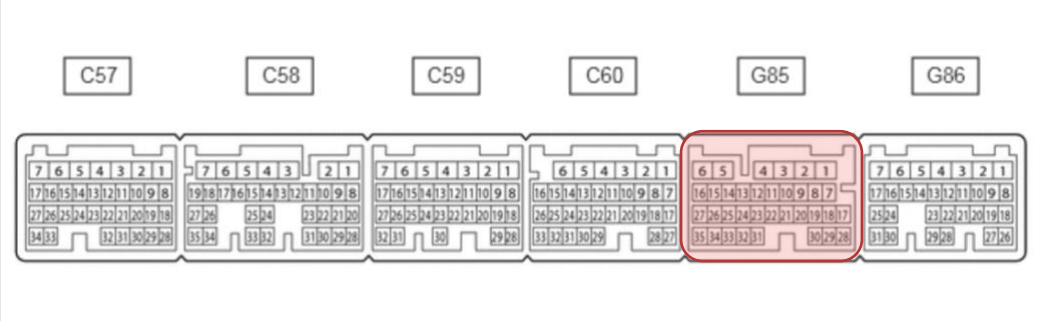
With connector removed from ECU Locate Pin's 8 & 9. Cut both wires approx. 50mm from the connector leaving enough length to strip back and solder to cut end.

Find the 4 loose ends of the Red, Black, Brown and White lock up controller wires.

1. *Solder the **Red** lockup wire to the **loom** side of the cut Red wire C58 **Pin 8.***
2. *Solder the **White** lockup wire to the **loom** side of the cut Yellow wire of C58 **Pin 9**.*
3. *Solder the **Black** lockup wire to the **connector** side of the cut Red wire C58 **Pin 8**.*
4. *Solder the **Brown** lockup wire to the **connector** side of the cut Yellow wire C58 **Pin 9**.*
5. *Double check every connection against illustration below and then Insulate all solder connections.*



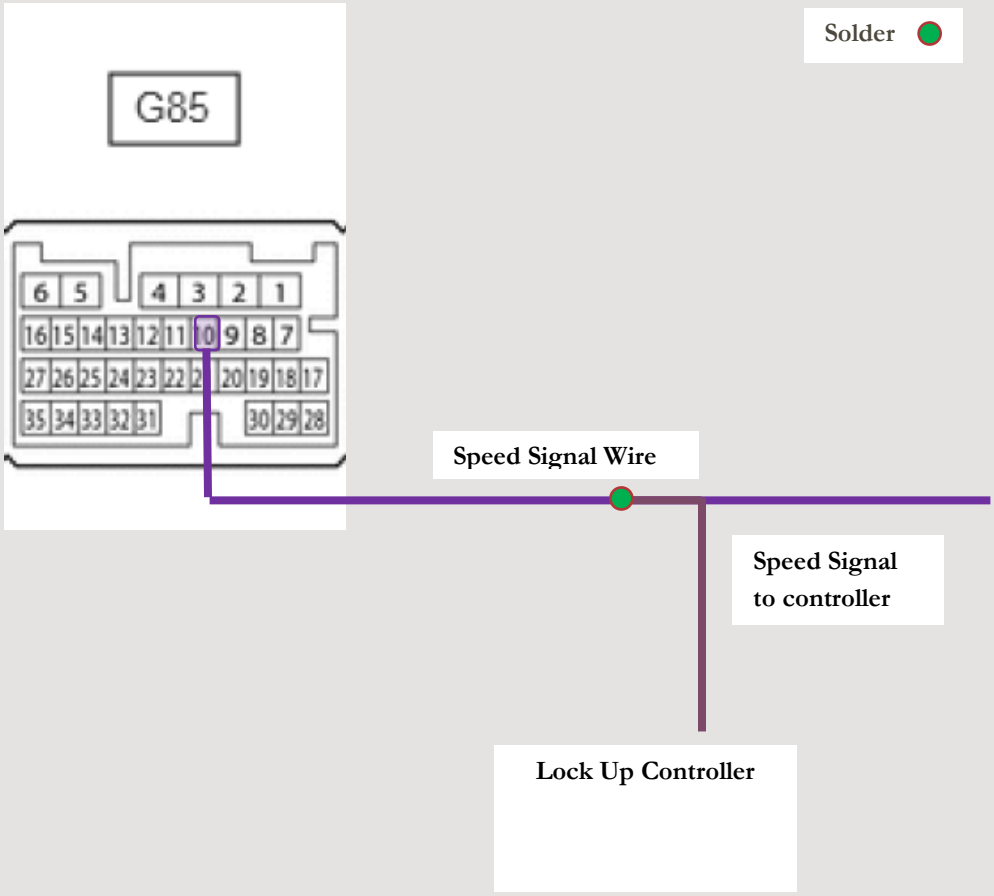
3. *Locate and disconnect connector G85. This is the second connector from the TOP. Marked red in the drawing below.*



With connector removed from ECU Locate Pin 10. Strip back a small length of the insulation leaving bare copper to solder to.

Find the Purple wire coming from the lock up controller.

1. *Solder the **Purple** Speed pickup wire to the bared copper section.*
2. *Insulate the solder connection.*



4. *Locate the factory fuse box on the LHS of passenger's foot well.*

   Remove the fuse marked for Accessory PWR. 15A

   1. *Find the end of the **RED** Wire cut off fuse connector and solder this to the accessory 12V+ wire at the rear of the cigarette lighter. You can also use the fuse tap and connect to appropriate ignition-controlled fuse in interior fuse box.*
   2. *Run The **orange** wire of our kit to Battery +. Using the inline fuse and holder supplied fuse this circuit with 7.5A fuse.*
   3. *Grey Wire can be run to the Battery -ve post.*

5. *Mount The Gold Resistor to a metal surface using the supplied self-drilling screw. Make sure when mounted there is NO carpet or plastic trim in contact with the resistor as it will build up heat when in use.*

6. *Route the switch harness across the center of vehicle behind dash to suitable location.*

   Install switch into switch blank

i *When driving vehicle to test operation of the Torque converter lockup kit, it is important that Safety is maintained at all times. Adhere to road and traffic rules when test driving vehicle. You may need to drive at speeds up to 80km/h. This needs to be done within a speed zone which allows. There is no reason to press any buttons while driving to test Lockup kit operation.*

7. *Testing the operation of The Lock Up controller – Start vehicle.*

Off – Factory Operation.

1. ***While Stationary, Press the AUTO Disengage or Outward position. Should be BLUE***
2. ***Drive Vehicle to 80km/h accelerating slowly and observe normal operation.***

High Speed Automatic Lockup.

3. ***While Stationary, Press the Auto button in to engage the On position. A GREEN illumination will appear to confirm on position.***
4. ***Press the low switch so that it is not engaged (out position) Should be BLUE***
5. ***Select S5 Gear.*** *This is only for testing as Lockup will work in Gears S2 to S 6 or DRIVE.*
6. ***Drive the vehicle accelerating slowly towards 80km/h. At approx. 78km/h notice the automatic engagement of the Torque Converter Lock Up. This can be noticed by a slight drop in RPM, as well as the illumination of the Low Switch to GREEN. After the engagement you will notice the acceleration of the vehicle is direct to the RPM.***
7. ***Slowing down from 80km/h you should notice at approximately 75km/h the illumination of low switch will go BLUE. At this point the Automatic Lock Up has disabled and is back to factory mode.***

   Automatic is the mode in which the vehicle can be left in indefinitely.

Low Speed Automatic Lockup.

1. ***While Stationary, Press the Auto button in to engage the On position. A GREEN illumination will appear to confirm on position.***
2. ***Press the LOW switch so that it is now engaged (Inward position) So there is GREEN illumination On.***
3. ***Select S2 Gear.*** *This is only for testing as Lockup will work in Gears S2 to S 6 or DRIVE.*
4. ***Drive the vehicle accelerating slowly towards 40km/h. At approx. 35km/h notice the automatic engagement of the Torque Converter Lock Up. This can be noticed by a slight drop in RPM. After the engagement you will notice the acceleration of the vehicle is direct to the RPM. You can Select gears up and down in this mode to achieve no slip while accelerating up hills or into head winds. It is important to select gears according to RPM so that the engine does not Labor.***
5. ***Slowing down from 40 + km/h you should notice below approximately 30km/h the tacho will fall too idle. At this point the Automatic Lock Up has disabled and is back to factory mode.***

   It is only recommended to use Low Speed mode in conjunction with the Sports Select. You need to ensure that the engine RPM is kept within the torque range and does not labor the engine. Much the same as a Manual geared vehicle.

   When Slowing to a complete stop, it is not necessary to disable the low speed mode. This is done Automatically.

   However, when taking off ensure you start from a low gear such as 2nd and select up through the gears only when there is sufficient RPM for the next gear. Apply the principles of a manual transmission to get the most from Low Speed Lockup mode.

HOW TO USE THE AUTOMATIC LOCKUP KIT DUAL SWITCH

AUTOMATIC MODE



To activate the lock up in High Speed Auto Mode; press the top switch called AUTO.
This will illuminate the Green Led light to show the Auto mode is active.

When the vehicle is driven and the lock up speed is achieved (80km/h the torque converter will lock) the bottom switch led will change from blue to light blue/ turquoise to show locked converter. The converter will remain locked until slowing to below the unlock speed, 75km/h.

We suggest driving in this mode at all times. When slowing from speeds above 80 where the converter is locked, you do not have to dis-engage the AUTO button as it is automatically un-locked.



FACTORY MODE

When the switches are off and lights are both blue illuminated, the lock up controller is not active, the torque converter is controlled by the factory ECU signals only.

LOW SPEED MODE



To activate the Low Speed Lock Up, press the bottom LOW switch. The switch will turn Green. Both switches will then be green. The Torque Converted will automatically lock at 35km/h and then unlock below 30km/h. It is important that when driving in this Low Speed Setting you select the gears as if driving a manual vehicle. This prevents any lugging on the motor by the transmission being in a too higher gear.

The controller is pre-configured out of the shop for automatic lock up at approx. 80km/h. We suggest this is the ideal speed when driving in the 'D' Mode with a locked converter. When slowing from speeds above 80 where the converter is locked, you do not have to dis-engage the converter as it is automatically un-locks the torque converter at approx. 75km/h.

These settings have been chosen through many processes and testing and allows the best control and subtle locking and unlocking actions. It also allows the vehicle to slow from highway speeds to 80km/h zones while maintaining a locked converter for accelerating back to highway speeds, i.e. traveling through country town.

We recommend when traveling at highway speeds with locked converter, use the 'S' mode for tip-tronic selection in gear S6. This can help to get the transmission to select 6th gear more frequently.

Simply depress the low speed button to go back to Auto mode.