Instruction Manual For Active Ride Control Test Box – ARCTB.

28/1/2009

Contents

Introduction

The Active Ride Control Test box (ARCTB) is designed to integrate with the Active Ride Control Unit (ARCU) and display any faults found within the unit, in a clear and concise manner. The ARCTB has a simple and easy to understand menu (see Appendix B) which is operated by two buttons, a Blue Advance button and a Green Select Button (See Figure1.1).

Active Ride Control Test Box (ARCTB).

Figure 1.1

Connecting the ARCTB

1. Locate the automatic ride control ECU situated above the front passenger's footwell.
2. Remove the blanking plug, situated betweeen the looms from the ECU, to expose the diagnostic socket.
3. Determine if the diagnostic socket is a 10 pin socket or a D-type 9-pin socket and select the correct diagnostic lead.
4. Carefully plug in the correct diagnostic lead into the ECU, connect the other end into the ARCTB.
5. The ARCTB is connected. The Unit will not operate until the ecu is powered by the car when the engine is started. Please review section: turn on ARCU.

Turn On ARCU

1. Ensure that the parking brake is firmly applied
2. Ensure the gear range selector level is in the park position.
3. Remove the gearchange fuse (B1 on fuse panel F1).
4. Start the Engine.
5. The ARCU will be energised if the ARCTB is pluged in the diagnostic socket (See connecting the ARCTB), the unit will light up and be ready for use.
6. Check the Auto Ride inscription in the driver's information and warning panel sequential display is not illuminated. If AUTO RIDE is illumunated, the cause should be investigated by carrying out the 'Fault identifacation' procedure.

Using the ARCTB

The ARCTB has two Buttons (See Figure 1.1) a blue button and a green button.

1. The blue button advances the menu options .

   When the ARCTB is switched on the display shows "1/3 Manual Set ARU" . This message indicates, menu item 1 of 3. If you wish to advance to menu item 2, press the blue button. The Menu will now display, "2/3 Fault Code Menu".

2. The green button selects or performs the operation displayed in the menu .

   If the display is showing, "2/3 Fault Code Menu" and the green button is pressed the unit will enter the fault code menu. The ARCTB will display "1/4 Read Fault Codes", if the green botton is pressed again it will read the fault codes stored in the ARCU and then display them.

You can see a full flow diagram of the menu system in Appendix B. Notice, to return from a sub menu there is always an option at the end of the menu. In the case of the Fault code Menu, it is item 4, displayed as "4/4 Previous Menu". If the Green button is pressed at this stage the ARCTB will return to the main menu.

Reading And Displaying Fault Codes

1. Connect the ARCTB.
2. Turn on ARCU.
3. Select Fault Code Menu.
4. Select Read Fault Codes.
5. The unit will read the fault codes stored in the ARCU. After the ARCTB has received the fault codes it will ask if you want to display the faults. Press the green button to display faults or the blue button to return to the menu.

Clearing Fault Codes

1. Connect the ARCTB.
2. Turn on ARCU.

3. Select Fault Code Menu.
4. Select Clear Faults.
5. The ARCU will reset, this may take a few seconds. After reset the ARCTB will clear the fault codes and return to the fault code menu.

In Car Calibration

The ARCU has 3 internal accelerometers that it uses to dertermine the movment of the vehicle. Over time these accelerometers drift and should be calibrated on a regular basis. If the ARCU is not calibrated and the accelerometers have drifted the ARCU will think the vehicle is accelerating or banking and will change mode unexpectedly or prematurely.

1. The following operation should be carried out on a flat surface.
2. Connect the ARCTB.
3. Turn on ARCU.
4. Select In Vehicle Cal.
5. The ARCTB interrogates the ARCU and if the accelerometers can be calibrated it will, if not it will display an error message.

Manual Set Comfort Mode

1. Connect the ARCTB.
2. Turn on ARCU.
3. Select Manual Set ARU
4. Select Set Comfort Mode.
5. After selecting Comfort Mode the top line will display the Current Mode of the ARCU. If the Current Mode will not set to Comfort then the ARCU is faulty, and you should check the fault codes

Manual Set Normal Mode

1. Connect the ARCTB.
2. Turn on ARCU.
3. Select Manual Set ARU
4. Select Set Normal Mode.
5. After selecting Normal Mode the top line will display the Current Mode of the ARCU. If the Current Mode will not set to Normal then the ARCU is faulty, . and you should check the fault codes

Manual Set Sport Mode

1. Connect the ARCTB.
2. Turn on ARCU.
3. Select Manual Set ARU
4. Select Set Sport Mode.
5. After selecting Sport Mode the top line will display the Current Mode of the ARCU. If the Current mode will not set to Sport then the ARCU is faulty, and you should check the fault codes.

Manual Set Auto Mode

1. Connect the ARCTB.
2. Turn on ARCU.
3. Select Manual Set ARU
4. Select Set Auto Mode.
5. After selecting Auto Mode the top line will display the Current Mode of the ARCU. You can now drive the vehicle and the ARCTB will display the mode changes,. and you should check the fault codes

Mobile test

1. Warning. The following operation should only be carried out on a suitable road surface and when road and traffic conditions make it save to do so. Also, the unit is designed to be operated by the passenger, leaving the driver to consentrate on the driving.
2. Perform tasks in the previous section (Manual set Auto Mode).
3. After Starting the engine The ARCTB should display 'Current Mode = Sport", indicating the ARCU is in Sport mode.
4. **Speed Sinal Check**, drive away slowly and check that the system changes to comfort mode when the speed exceeds 5 KPH (3 MPH). Bring the car to a halt and check the system returns to Sport Mode.
5. **Steering Rotary encoder check**, Drive the car at 32 KPH (20 MPH) on a smooth straight road. When it is safe to do so, give the steering wheel a short sharp pull to the left or right. Check that the 'Current Mode' changes immediatly to Sport mode and the returns to comfort mode via the normal mode.
6. **Brake Signal Check.** Drive the car at 32 KPH (20 MPH) on a smooth straight road. When it is safe to do so brake gently and check that the 'Current Mode' changes from comfort to normal. Increase the speed to 48 KPH (30 MPH) then brake hard check that the 'Current mode' changes to Sport.

Static Damper Test

1. Connect the ARCTB.
2. Turn on ARCU.
3. Select Manual Set ARU
4. Select Set Comfort Mode.
5. When in comfort mode bounce the front of the car noting any difference in the dampner resistance between left and right-hand sides.
6. Select Normal Mode.
7. Again bounce the front of the car and check that the damping resistance has increased.
8. Select Sport Mode.
9. Check the resistance has further increased.
10. Repeat operations 4 to 9 inclusive on the rear of the car.
11. Check the ARCU for any stored faults (see Reading and displaying fault codes). Rectify any faults and clear the memory, (see clearing Memory).
12. If a variation in the damping resistance between the left and the right-hand sides of the car is evident, and the ARCU does not indicate a fault the cause is in within the damper/strut.

Dis Codes in Mem(Display Codes in memory).

1. Warning. The ARCTB retains the last fault codes recorded in memory, but as soon as the ARCTB reads a new set of fault codes the memory is over-written.
2. Connect the ARCTB.
3. Turn on ARCU.
4. Select Dis Codes In Mem.
5. The Fault codes will be displayed use the blue or green button to advance through them.

Appendix A. Complete List Of ARCU Fault Codes.

111 High current fault on right, front comfort (RFC)
112 High current fault on left, rear comfort (LRC)
113 High current fault on right, rear comfort (RRC)
114 High current fault on left, front comfort (LFC)

121 High current fault on right, front normal (RFN)
122 High current fault on left, rear normal (LRN)
123 High current fault on right, rear normal (RRN)
124 High current fault on left, front normal (LFN)

131 This code is unused, and should not be transmitted
132 This code is unused, and should not be transmitted
133 This code is unused, and should not be transmitted
134 This code is unused, and should not be transmitted
141 This code is unused, and should not be transmitted
142 This code is unused, and should not be transmitted
143 This code is unused, and should not be transmitted
144 This code is unused, and should not be transmitted

211 Low current fault on right, front comfort (RFC)
212 Low current fault on left, rear comfort (LRC)
213 Low current fault on right, rear comfort (RRC)
214 Low current fault on left, front comfort (LFC)

221 Low current fault on right, front normal (RFN)
222 Low current fault on left, rear normal (LRN)
223 Low current fault on right, rear normal (RRN)
224 Low current fault on left, front normal (LFN)

231 This code is unused, and should not be transmitted
232 This code is unused, and should not be transmitted
233 This code is unused, and should not be transmitted
234 This code is unused, and should not be transmitted

311 Latacc accelerometer readings out of range.
312 Vacc accelerometer readings out of range.
313 Facc accelerometer readings out of range.
314 Extacc 10 Hz bandpass readings out of range.

321 No pulses from steering sensor.
322 No pulses from speed sensor.
323 No pulses from phase A of steering sensor.
324 No pulses from phase B of steering sensor.

331 Power unit is/was over operating temperature.
332 Stemp sensor failure.

333 Brake sensor failure. (Inhibited)
334 Eeprom checksum failure.

341 Too many coils energised.
342 Fault light over current.
343 This code is unused, and should not be transmitted
344 This code is unused, and should not be transmitted

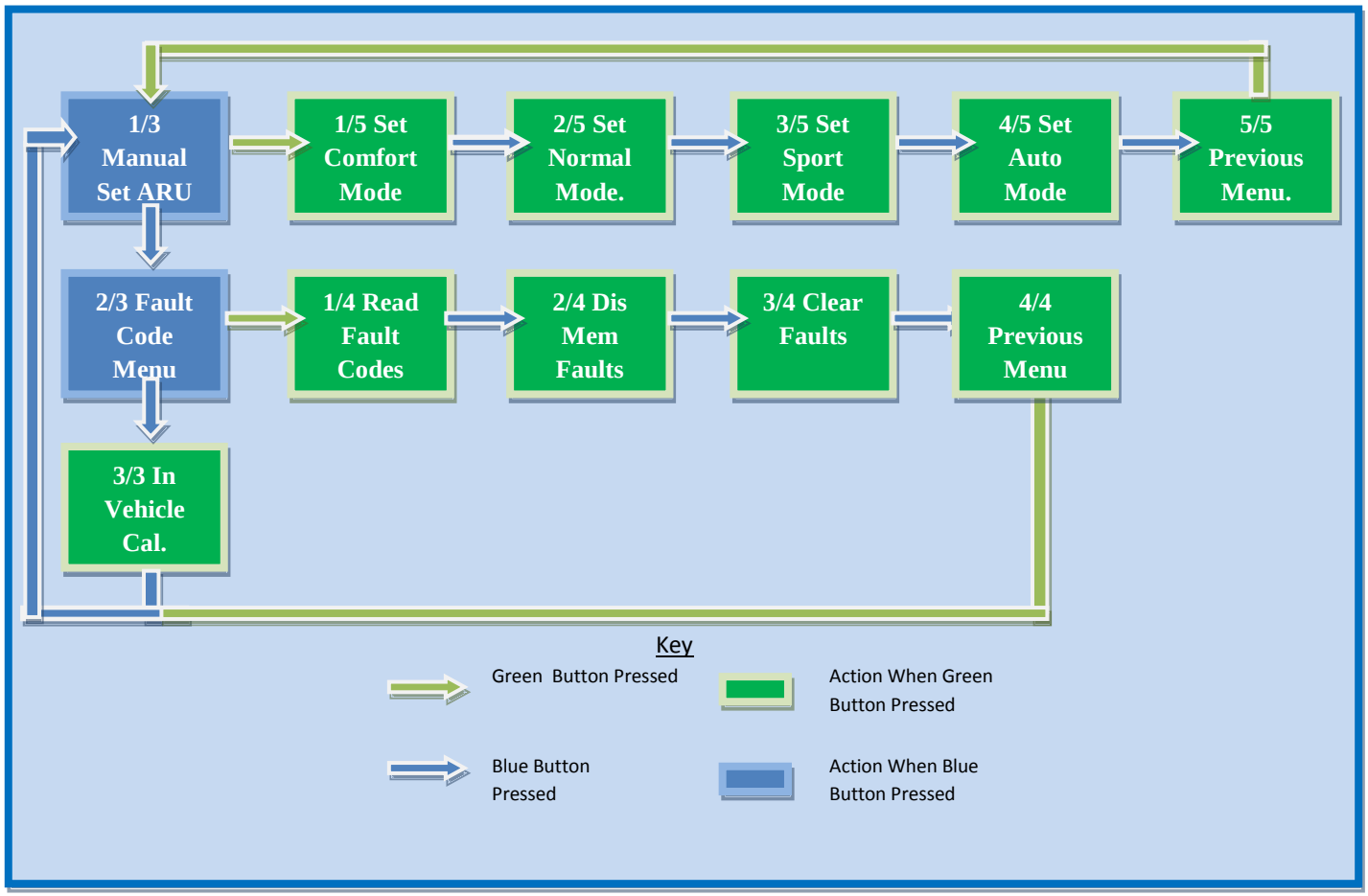
411 This code is unused, and should not be transmitted
412 This code is unused, and should not be transmitted
413 This code is unused, and should not be transmitted
414 This code is unused, and should not be transmitted

421 This code is unused, and should not be transmitted
422 This code is unused, and should not be transmitted
423 This code is unused, and should not be transmitted
424 This code is unused, and should not be transmitted

431 This code is unused, and should not be transmitted
432 This code is unused, and should not be transmitted
433 This code is unused, and should not be transmitted
434 This code is unused, and should not be transmitted

441 This code is unused, and should not be transmitted
442 This code is unused, and should not be transmitted
443 This code is unused, and should not be transmitted
444 This code is unused, and should not be transmitted

Appendix B. Graphical Representation Of ARCTB Functions And Menu System.



Notes