TRAILAIR
TYRE MONITOR & HITCHING AID

BY

LAND ROVER

Operation Manual
&
Owners Guide

Contents

1) Introduction

Thank you for purchasing the TrailAir by Land Rover™ tyre pressure monitoring and hitch assist system.

This system has been designed to enable the monitoring of vehicle and trailer tyre pressures and trailer tyre temperatures and to provide the driver with low pressure or abnormal temperature warnings. Any Tyre Pressure Monitoring (TPM) system is NOT a substitute for manually checking tyre pressures or condition of tyres for wear or damage. Tyre pressures should be checked regularly using an accurate pressure gauge when cold and should not be adjusted while hot. Failure to properly maintain your tyre pressures could increase the risk of tyre failure, with consequential loss of vehicle control and personal injury.

Before using the system for the first time, the system must learn the position of the tyre. Refer to the learn process for details. **It is vitally important to research the correct tyre pressures for the vehicle and trailer (with consideration to loading) - prior to starting the learn process. Caution:- The tyre pressure monitoring system (TPMS) is not a substitute for manually checking tyre pressures. The TPMS only provides a low tyre pressure warning and does not re-inflate the tyres. The TPMS cannot register damage to a tyre. Regularly check the condition of your tyres, especially if the vehicle is driven off road.**

The system provides a Hitch Assist™ feature, using a camera near the towing ball to guide the driver when reversing to the trailer. This is designed to allow single person hitching and can be of particular use when hitching in the rain or to a very heavy trailer.

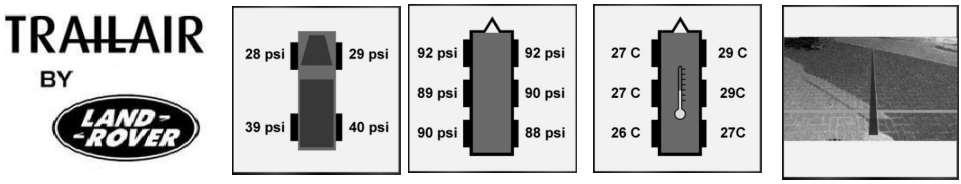


Figure 1 – Example screen shots of TrailAir by Land Rover™ system

How the system works

Tyre pressure and trailer tyre temperature information is transmitted by radio frequency from sensors in the wheels to a receiver on the vehicle and displayed on the mirror display. The user can choose to monitor this information manually by pressing a switch on the mirror to show the screen views as shown in fig.1 or the system will automatically provide a warning when an under-inflated or over-heated tyre is detected. The display will emit an audible warning to alert the driver and a screen will show the tyre with the fault highlighted and with the pressure value or temperature reading. Each tyre pressure sensor's battery is also monitored and a low battery condition will be highlighted on the screen.

Learning the tyre/sensor position

An important part of the system is the flexibility that any sensor can be fitted to any wheel. The Learn Process enables the vehicle and trailer tyres to be identified and stored by the system. The system learns the position of the wheel when it is fitted to the vehicle or trailer/caravan. This allows a large number of trailers/caravans to be used with a single vehicle. Up to 164 wheels can be programmed into any system (for example 82 two wheel trailers or 34 six wheel trailers), to support commercial users. This learn process also means that a trailer can be learned and then used on an unlimited number of vehicles so that, for example, the same caravan can be monitored with two cars.

Installation of the system

System installation should be carried out as detailed in the fitting document by an expert. Assembly instructions are enclosed as a separate document. The hitch guidance camera has an optional line overlaid onto the camera image view to assist with lining up with the hitch, the correct positioning of this camera is therefore essential if this guidance line is to be used.

2) Normal Operation

At ignition ON the mirror will display the TrailAir by Land Rover™ logo which will fade to a blank mirror after 40 seconds. The mirror will then function as a normal electrochromic mirror with automatic dimming. The tyre pressures of the Vehicle or Trailer tyres may be viewed and cycled through at any time by a short press on the mirror switch (see Figure 2). The temperature of the Trailer tyres can also be viewed and will give an indication of loading of the tyres after 10-15 minutes of continuous driving the trailer by the relative temperature differences. (Note however that this can also be affected by environmental conditions such as strong sunlight on the side of a Trailer increasing the pressure of the tyres on that side.)

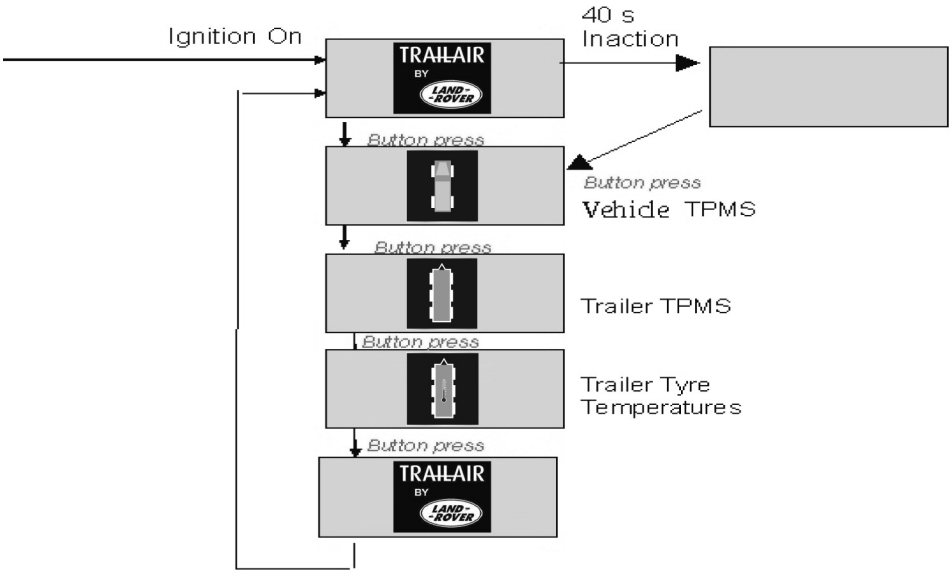


Figure 2 – TrailAir by Land Rover™ flow diagram

A warning both audible and visual will occur if any of the tyres, trailer or vehicle drops in pressure below the limit of approximately 10% of the learned pressure. The display will show the appropriate graphic and the tyre or tyres will change from white to black (the display will wake from the blank mirror if necessary). On pressing the switch the audible warning may be cancelled but the out of limit tyre/s will continue to be displayed in black. Re-inflating will cancel the alarm and turn the tyre/s from black to white but will re-alarm if the pressure drops again.

If a trailer tyre overheats above the set limit of approximately 65 degrees C, an audible alarm will sound (as for a pressure drop) with the tyre/s concerned changing from white to black, the audible warning may be cancelled

with a switch press. The black tyres on the trailer will be visible on both the pressure and temperature display regardless of the source of the problem.

When an alarm is triggered, the driver should stop the vehicle as soon as it is safe to do so and investigate the tyre in question. A decision may then be made by the driver as to the course of action to be taken. **It is vitally important to research the correct tyre pressures for the vehicle and trailer (with consideration to loading) - prior to the time of learning**. The tyre pressure for the trailer can be adjusted for various loads using the last option in the learn process.

It is well known that reducing the tyre pressures and thereby increasing the tyre footprint can help in situations where the vehicle is stuck or liable to get stuck on a very soft surface like sand or mud. From Advanced options - option 3 enables the tyre pressure limits to be dropped by 50% by setting a new lower pressure Alarm limit to prevent Alarm situations when the tyre pressure is temporarily reduced. During the time this is selected a letter 'S' will be displayed on all display options including the blank mirror after the logo timeout to remind he driver that the option has been selected. It should not be used on public roads. Tyre pressures should not be reduced unless the driver has a method of re-inflating them before going back onto public roads and the Normal pressure option 4 should be selected from the Advanced Options menu to restore the pressure limits to the initially set values.

3) Advanced Options

The following Advanced options can be accessed by pressing and holding the switch down whilst turning on the vehicle ignition and releasing when requested by the message on the display. The options can then be accessed by repressing and again holding the switch down whilst they are cycled through. Selection occurs when the desired option is displayed and the switch is released. A further press of the switch will then select the option and the program will return to the Logo and normal operation.

If an option is selected by mistake by releasing the switch too early or too late, the Ignition may be cycled before the confirmation press of the switch. The process can then be repeated to select the correct option.

Advanced options include:

- **PSI** Select Units in psi (pounds per square inch)
- **BAR** Select Units in bar and tenths of a bar (1 bar = 14.7 psi)
- **SAND MODE** The Vehicle tyres are monitored at a lower pressure. Note – For use on very soft surfaces only, to gain extra traction and should not be used on public roads because it allows the tyres to be deflated by 50% lowering the pressure limit threshold to prevent false alarms while driving but still providing warnings if further pressure loss is detected. Note that an 'S ' will be displayed when in sand mode as a reminder to the driver. Any **TOW MODE** extra rear tyre pressure selection will be ignored during the use of **SAND MODE (see below)**
- **EXIT SAND MODE** Select normal pressure alarm limit
- **NORMAL TOW MODE** Select normal (0% increase) vehicle rear tyre pressure Alarm limit
- **115% TOW MODE** Select 115% (normal pressure + 15%) Alarm limit (will need 15% extra pressure to be added to vehicle rear tyres)
- **130% TOW MODE** Select 130% (normal pressure + 30%) Alarm limit (will need 30% extra pressure to be added to vehicle rear tyres)

Note – The last three options enable the tyres on the rear of the vehicle to be adjusted automatically when a trailer is connected according to the manufactures specification to accommodate the extra weight of a Trailer. Three

limit settings Normal, Normal +15% and Normal+30% can be reached through Advance Options. These settings only affect the limit at which a drop in tyre pressure will be detected and in the case of the 15% and 30% option will necessitate the rear vehicle tyres being increased to prevent the pressure alarm from triggering. In the absence of a trailer the limit reverts to 100% automatically (Remember to reduce the Vehicle tyre pressure to standard if not towing the trailer). Be aware that any tyre pressure adjustment should only be performed with reference to the manufacturers specification relating to the vehicles towing capacity. Do not attempt to tow a trailer above the permitted weight for the towing vehicle.

- **DEALER DIAGNOSTIC** Select Instantaneous RSSI (Relative Signal Strength Index) mode. Caution, normal pressure warnings may be disrupted or incorrect in this mode
- **DEALER DIAGNOSTIC** Select Averaged RSSI mode. Caution, normal pressure warnings may be disrupted or incorrect in this mode
- **MEMORY CLEAR** Allows the removal of ALL stored records and return to original factory settings. This option is protected by two user confirmations to prevent accidental deletion of all stored vehicle and trailers. The user is ultimately responsible for the final key press which completes the process.

Caution:- The tyre pressure monitoring system (TPMS) is not a substitute for manually checking tyre pressures. The TPMS only provides a low tyre pressure warning and does not re-inflate the tyres. The TPMS cannot register damage to a tyre. Regularly check the condition of your tyres, especially if the vehicle is driven off road.

4) The Learn Process

4.1) Important information before attempting the learn process.
It is vitally important to research the correct tyre pressures for the vehicle and trailer (with consideration to loading) - prior to the time of learning. Before entering the learn process, you should have to hand a reliable air pump and be able to reach all tyre valves. It is recommended to select the Units (psi or bar) before proceeding with the learn process to avoid confusion (see Advanced options).

The vehicle or trailer can be learned first. If the wrong option is selected, turn the ignition OFF and back ON before learning a tyre and re-enter the Learn Process to begin again. **When attempting to learn a new vehicle or trailer, failure to complete all tyres in the process may lead to complete record deletion being necessary. Do not turn off the vehicle ignition until the new item is fully learned.**

The vehicle and any trailer present must be out of direct sunlight and in a stationary position for at least one minute in before attempting the learn process or to update the overall pressure of the trailer tyres. This is to allow the TPM's to stop transmitting if the Vehicle has been driven to the location. Direct sunlight can cause a temperature rise and therefore pressure increase and cause the TPM's to transmit. So that the system can identify the TPMs in their correct positions, they must be learned one at a time in the correct order. TPMs still transmitting could get learned out of order, always suspect this if more than one tyre appears to learn when only one has been triggered. **If this happens, continue the learn process until complete and then re-learn.**

The program will not allow the mirror switch to advance the display until the current item (vehicle or trailer) is fully learned, but is available for user response in accepting pressures during the process.

In the event that the trailer tyre pressure is found to be incorrect, possibly indicated by an abnormal temperature rise which can be due to a high load or too low pressures when learned, the last option enables the overall

pressure limit to be adjusted by increasing the tyre pressures without re-learning the entire Trailer. Any changes must always be completed in accordance with the requirements of the given trailer manufacturers specifications and correctly related to the load present in the trailer at the time of adjustment.

The Vehicle TPM may be re-learned at any time, any old record of pressures will automatically be deleted during the learn process as this always occupies the same memory locations so there is no reduction in memory capacity. Replacing a tyre with the spare will require a re-learn of all the Vehicle tyres. However the Vehicle maybe driven temporarily with the spare missing although this will trigger a display of the Vehicle every five minutes showing the missing pressures from the substituted wheel.

A new trailer can be learned using wheels containing TPMs from an already learned trailer, the existing trailer will be deleted from the records and this space in memory will be lost. Tyres may be swapped in this way multiple times but memory will be used in accordance with the trailer storage capacity in the specifications. See specifications for details of numbers of Trailers that can be accommodated. Learning each new trailer will occupy the next available spaces in memory.

4.2 Learning the tyre/sensor position.

The Learn Process can be entered at any time with the ignition on (and not in reverse) by pressing and holding the switch. With the switch held, the screen will initially show "Entering learn mode". If the switch continues to be held, the options cycle through the sequence shown in figure 3.

When the required vehicle/trailer screen appears, release the switch. To confirm the correct screen, press the switch again.

After selection, the tyre pressures will appear as "--".

After selecting a trailer and moving to the first tyre (see figure 3 for the sequence), increase or decrease the pressure until the correct pressure is displayed. Do not move on to the next tyre until the current tyre being learnt appears in the mirror with its correct pressure value. During this process an audible bleep will signal the sensor has transmitted a pressure and the tyre has been accepted to the position..

Repeat this procedure for each tyre, in the sequence shown in figure 3.

When learning the last tyre of a trailer, you will be prompted to accept or adjust the pressure setting for all tyres (see figure 4). Until the TPM transmits, the current setting of pressure will be displayed in the mirror. The tyre should be adjusted to the correct pressure for the trailer and the switch pressed to accept. The pressure limits are now automatically calculated and saved in permanent memory.

Before driving off the remaining trailer tyres should be adjusted to the same pressure.

Learning the vehicle is the same as the trailer except that tyre pressures may all be the same, or different front to back, but always in accordance with the manufacturers specifications. When the rear left tyre (no.3) of the Vehicle is learned you will be prompted to accept the displayed pressure value as correct for both rear tyres. Adjust this pressure if necessary and press the switch, this process will repeat for the last tyre, front left (no.4), to set the pressure limit for the front tyres.

All the pressure limits for the various options are now automatically calculated and saved in permanent memory and the learn process is now complete.

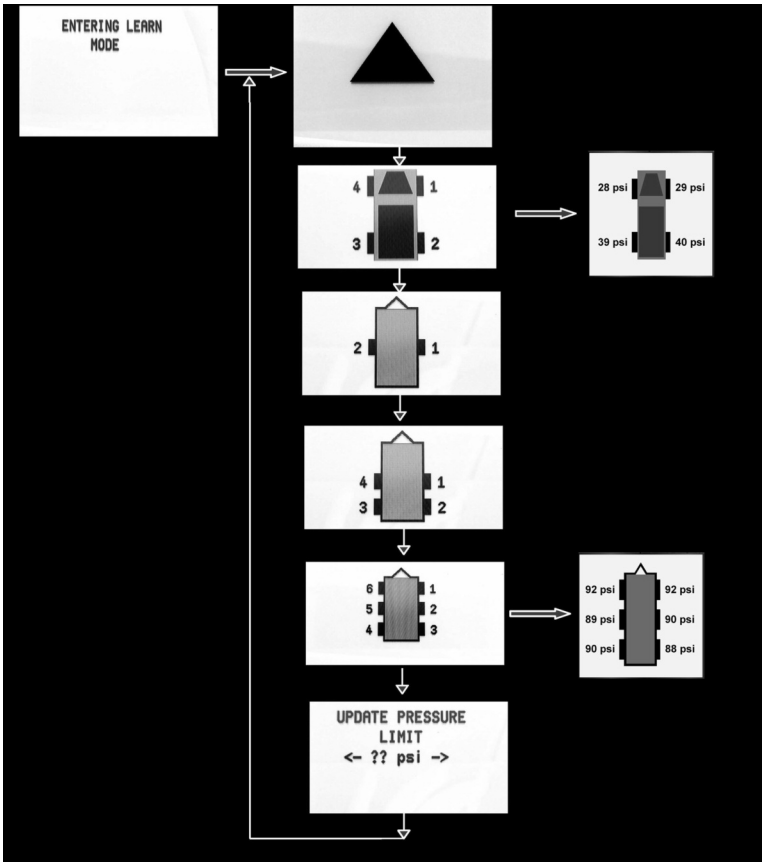


Figure 3 – The learn process flow diagram

Figure 4 - Setting the limits

To re-adjust the limits on a trailer, begin by entering the learn mode and hold the mirror switch down until the last option is reached (see Fig.3 and Fig.4) and release mirror switch. You will be prompted by the display to alter the pressure in the last tyre learned on the trailer, this will be the front left hand (near side) wheel of a four or six wheel trailer or the left hand (near side) wheel of a two wheel trailer. During tyre pressure adjustment the pressure value will appear on the display and will track the adjustment until the desired pressure is reached, a further press of the switch at this point will accept the pressure and set the new limits. The pressure must be monitored on the calibrated pressure gauge at the inflation site during adjustment.

All the remaining tyre pressures must now be adjusted to match the adjusted tyre pressure.

5) Hitch assist

In addition to tyre pressure monitoring, the system includes a Hitch Assist camera which is automatically displayed in the mirror whenever reverse gear is selected. The Hitch Assist system comprises of a camera mounted close to the tow ball with optional guidance lines overlaid onto the display to help with the alignment of the to hitch to the tow ball. The position and depth of field is optimised for the best view of the to ball.

When reversing up to a caravan/trailer, care must be taken as the hitch may appear to speed up as it gets closer to the tow ball.

The camera is not intended as a general purpose reversing camera and should not be used as the primary means of reversing.

A number of options can be selected as detailed in Camera Settings which include selectable lines to accommodate variations in camera position and a distance line which marks a position on the ground at a fixed distance from the rear of the vehicle.

The red distance line provides a useful marker to assist in parking manoeuvres. This represents a distance from the back of the vehicle to a point 0.5m at ground level.

6) Camera settings

If the camera cannot be mounted centrally, there are guide lines within the software to accommodate variations of 25mm and 50mm offset from the central position. You can select these alternative, yellow lines, while in reverse by pressing the switch which will cycle through the selectable line options. There is also an option to have no lines. When the vehicle is taken out of reverse the selected option is saved, this will be confirmed by an audible beep.

The options will show the offset and central position of the yellow guidance line, with and without the red distance line and no lines present.

7) Installation guidelines

The electrical connections to the vehicle should, wherever possible, be made to the towing electrics rather than the vehicle main harness. The connections into the vehicle are Ignition (IGN), Ground (GND) and Reverse (REV). These are clearly marked on the wires and the ground is a ring terminal which should be bolted to a suitable earth stud. The appropriate wire colours should be identified prior to commencing fitting. The appropriate installation manuals are included in the kit, which should be followed.

The camera position is important for the correct view of the tow ball and aligning the Hitch Assist™ line. Care should be taken to ensure that the camera is positioned so that the image is level.

Tyre sensors. The sensors can be fitted by most specialist tyre fitters. If your trailer has tyre pressures in excess of 80psi or has clampin sensors, please contact our technical department for advice.

Typical system components as Figures 5 & 6. Each system is supplied with six sensors sufficient for a vehicle and single axle trailer. Additional sensors may be purchased from your dealer or online via www.landrovertrailair.co.uk.

If you need further advice please contact our technical department on 0845 676 9774.

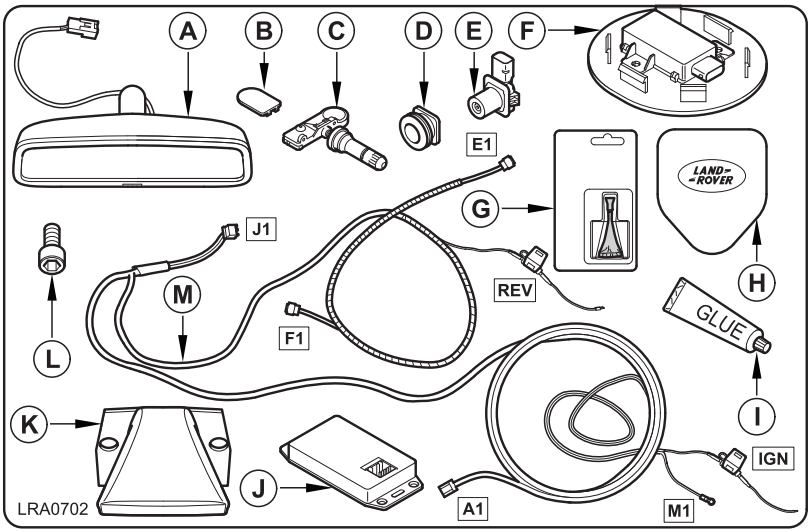


Figure 5 - Defender Components

A) Electrochromic mirror with video display **B)** Mirror mounting button **C)** Tyre pressure sensor x 6
D) Camera grommet (with spacer) **E)** Camera **F)** Pressure receiver ECU mounted to cover
G) Rear mirror bonding kit **H)** Label **I)** Glue (optional) **J)** ECU **K)** Camera mounting bracket
L) Cap head screw x 2 **M)** Wiring Harness

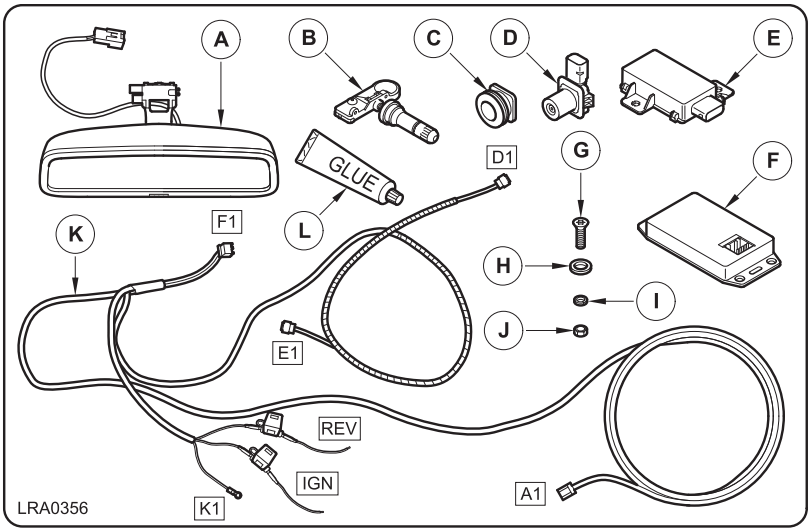
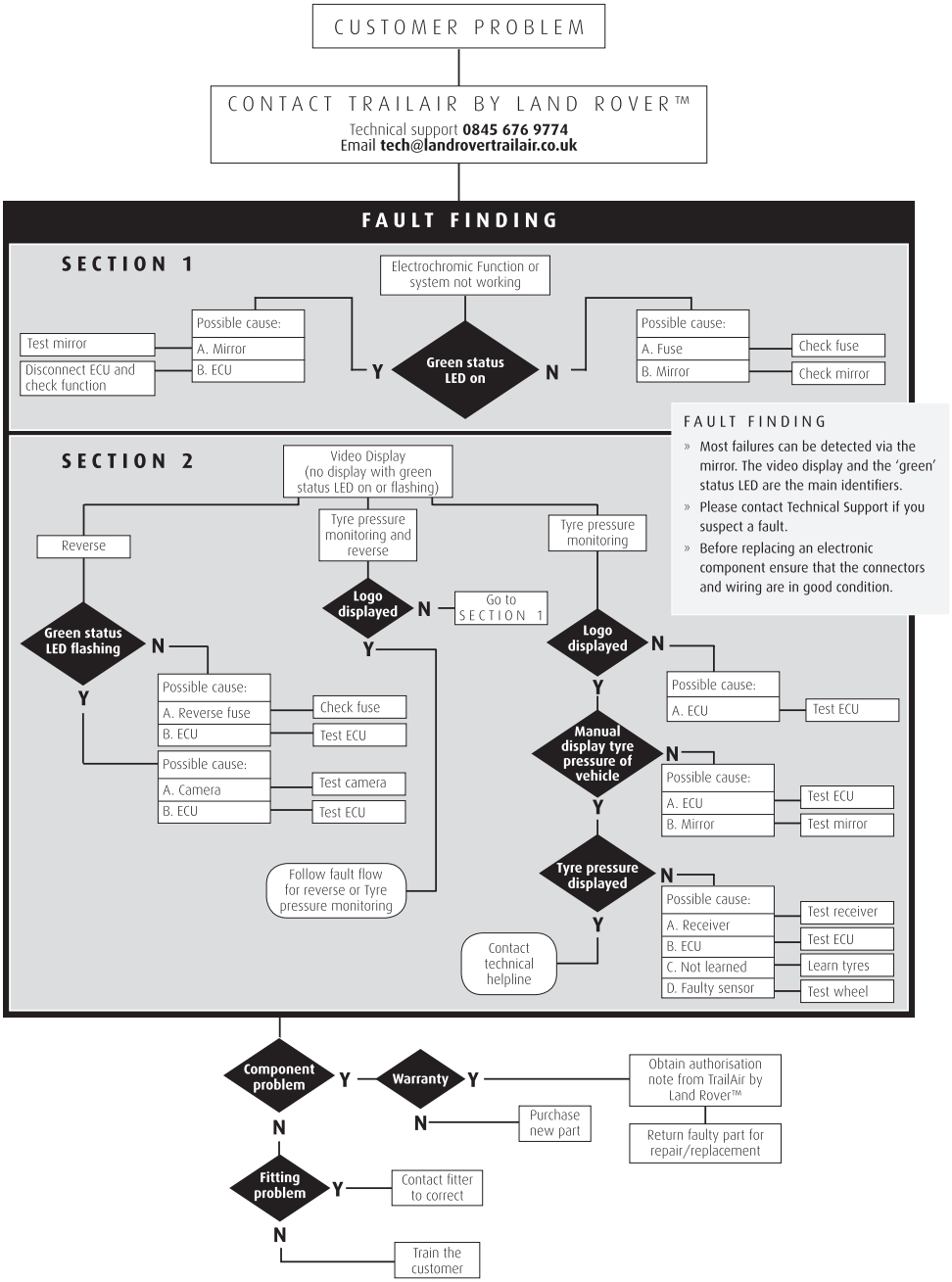


Figure 6 - Freelander Components

A) Electrochromic mirror with video display **B)** Tyre pressure sensor x 6
C) Camera grommet **D)** Camera **E)** Pressure receiver ECU
F) TrailAir by Landrover ECU **G, H, I, J)** Fixings for Pressure receiver
K) Wiring Harness **L)** Glue (optional)

8) Troubleshooting

For a list of FAQ's, please visit the website www.landrovertrailair.co.uk



9) Warranty

TrailAir by Land Rover ™ is supplied with a twelve month (365 days) parts warranty from the date of original purchase. If, during the warranty period the product fails under normal usage because of a manufacturing defect we will replace or arrange repair of the system. In this instance please call our sales team for assistance on 0845 676 9774 and they will advise on the warranty process.

Warranty does not cover Tyre valves. The use of software as supplied as a part of the system can not be guaranteed to be uninterrupted or error free.

Our total liability shall not exceed the price of the goods purchased from us.

This warranty will not apply in respect of any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions or failure to follow ATP Consultants Ltd instructions (whether oral or in Writing). Repair or attempted repair by anyone other than an ATP Consultants Ltd approved agent will void this warranty.

Where goods are sold under a consumer transaction the statutory rights of the Buyer are not affected by these terms. Please take a few moments to protect your investment by registering your system for warranty online at www.landrovertrailair.co.uk. If installed by a Land Rover dealer, we recommend that they complete this information on your behalf.

10) Technical Specifications

System

- System range from 0 to 99 psi
- Accommodates up to 50 trailers. Any combination of 2,4,6 wheel trailers up to a total of 164 wheels with automatic tyre positioning
- Initial readings displayed within 30 seconds of travelling at more than 20mph
- Changes in temperature or pressure displayed typically within one second

Tyre Pressure Sensor

- 10 year/100,000 miles sensor life (system doesn't transmit when stationary thereby preserving battery life)
- Snap-in mechanical design sensors - compatible with the widest range of wheel trims
- Pressure measurement resolution of 0.4psi
- Tyre temperature measurement accuracy 1°C
- Carrier Centre Frequency: 433.92MHz
- Operational temperature min -30°C to max 100°C

Mirror

- Incorporates 3.5" TFT display. 16:9 aspect ratio video
- Electrochromic automatic dipping
- Video hidden until required

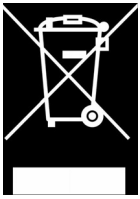
Camera

- Guidance line for Hitch Assist to trailer/caravan
- Guidance line providing distance indicator from rear of vehicle

ATP Consultants Ltd. are the official Licensee of TrailAir by Land Rover™

For more information about this unique towing system, please visit our website or contact us at:
0845 676 9774

TrailAir by Land Rover · Unit 21 · Bold Business Centre · St. Helens · Merseyside · WA9 4TX · UK



V.0910