

Electro-Magnetic Compatibility (EMC)

This product complies with Council Directive 89/336/EEC when installed and used in accordance with the relevant instructions.

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User Guide.

Axlog 2000 Axle Overload Warning System

Installation

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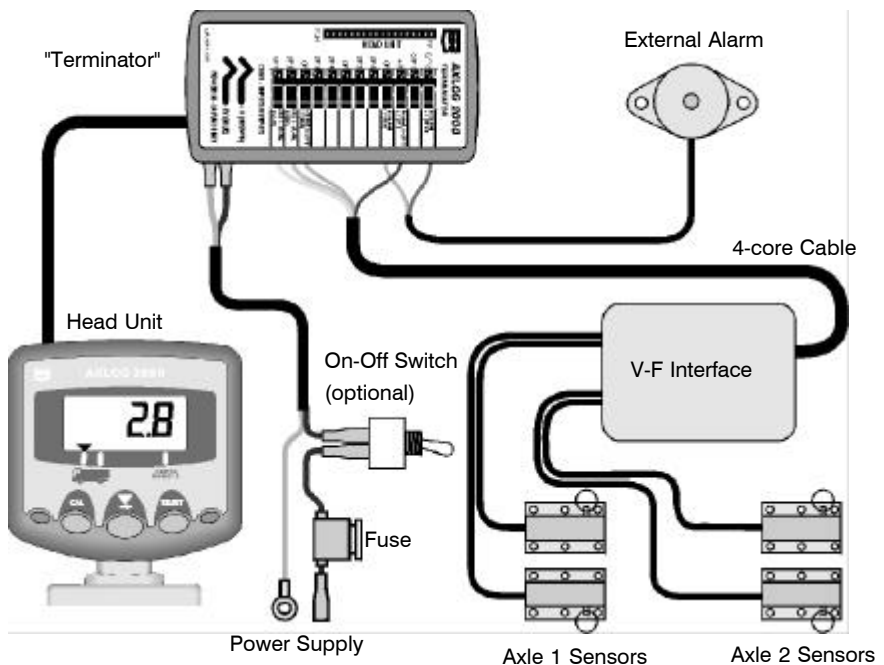
Principle of Operation

The Axlog 2000 Axle Overload Warning System is primarily designed for 2-axle vehicles. On vehicles with leaf spring suspension, load cells (2 per axle) are mounted on the chassis and connected to the axle by extension springs. The load cell measures the spring resistance which will decrease as the vehicle is loaded. The output signals of the left and right load cells are combined to give the axle loading.

System Components

The system comprises;

- (i) Head unit
- (ii) "Terminator" junction box
- (iii) Power supply kit
- (iv) Audible alarm
- (v) V-F Interface
- (vi) Sensor kits (1 per axle)



Installation

A. *Load Cell Sensor Installation*

There are normally two sensors per axle, mounted directly above the spring. The sensor is fixed onto the side of the chassis. A link comprising a tension spring and, depending on the vehicle, an additional length of steel cable, connects the sensor to the axle.

The sensor measures the spring resistance, which will decrease as the vehicle is loaded and vice versa.



IMPORTANT INSTALLATION POINTS!

- The sensors are handed left and right. Ensure that a left-hand and a right-hand sensor are used on each axle.
- The spring/link cable assembly ideally should be as near vertical as possible. A tolerance of up to $\pm 5^\circ$ from the vertical is permissible.
- The sensors must be mounted symmetrically, i.e. any angle on the spring/link cable assembly on one end of the axle must be mirrored exactly on the other end of the axle.
- The spring/link cable assembly must stay taut even with the vehicle fully loaded, and it must not be fitted such that it can stretch, straighten or twist under loading



IMPORTANT SAFETY POINTS!

- It may or may not be necessary to remove the wheels to get access for mounting the sensors. Regardless, please observe all the normal safety precautions and safe practices when either jacking the vehicle or working from an inspection pit.
- Always immobilise the vehicle by suitable means before working underneath.
- Make your intentions absolutely clear at all times to other persons in the vicinity during the installation and calibration procedure.

Parts List - Kit Ref: P/AXLOG2000

S/HU/327-2-008	Axlog Head Unit
S/AC/327-1-004	"Terminator"
K/WIZ/MTG/BKT	Instrument Mounting Bracket kit
S/DC/500-10-298	Terminator label
K/INSTRUMENT	Power Supply Kit
S/AC/188-1-020	V-F Interface
S/CB/147-3-021	4-core Cable

plus two out of the following sensor kits (fig. 1) depending on the application.
The only difference between the kits is the tension springs, which are chosen according to the maximum vertical axle travel :

K/AXLOG/SNR/L	- leaf sprung axle: >100 mm axle to bumpstop*
K/AXLOG/SNR/M	- leaf sprung axle: 45-100 mm axle to bumpstop*
K/AXLOG/SNR/H	- leaf sprung axle: <45 mm axle to bumpstop*

*see note in section A.3.

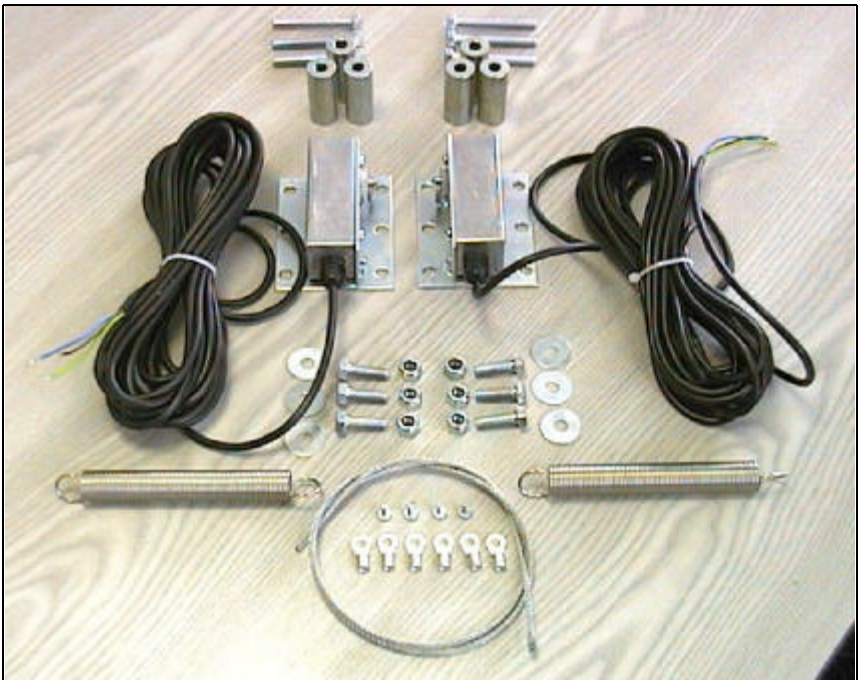


Figure 1 Load Sensor kit (5 metre cable conduit not shown)

Installation

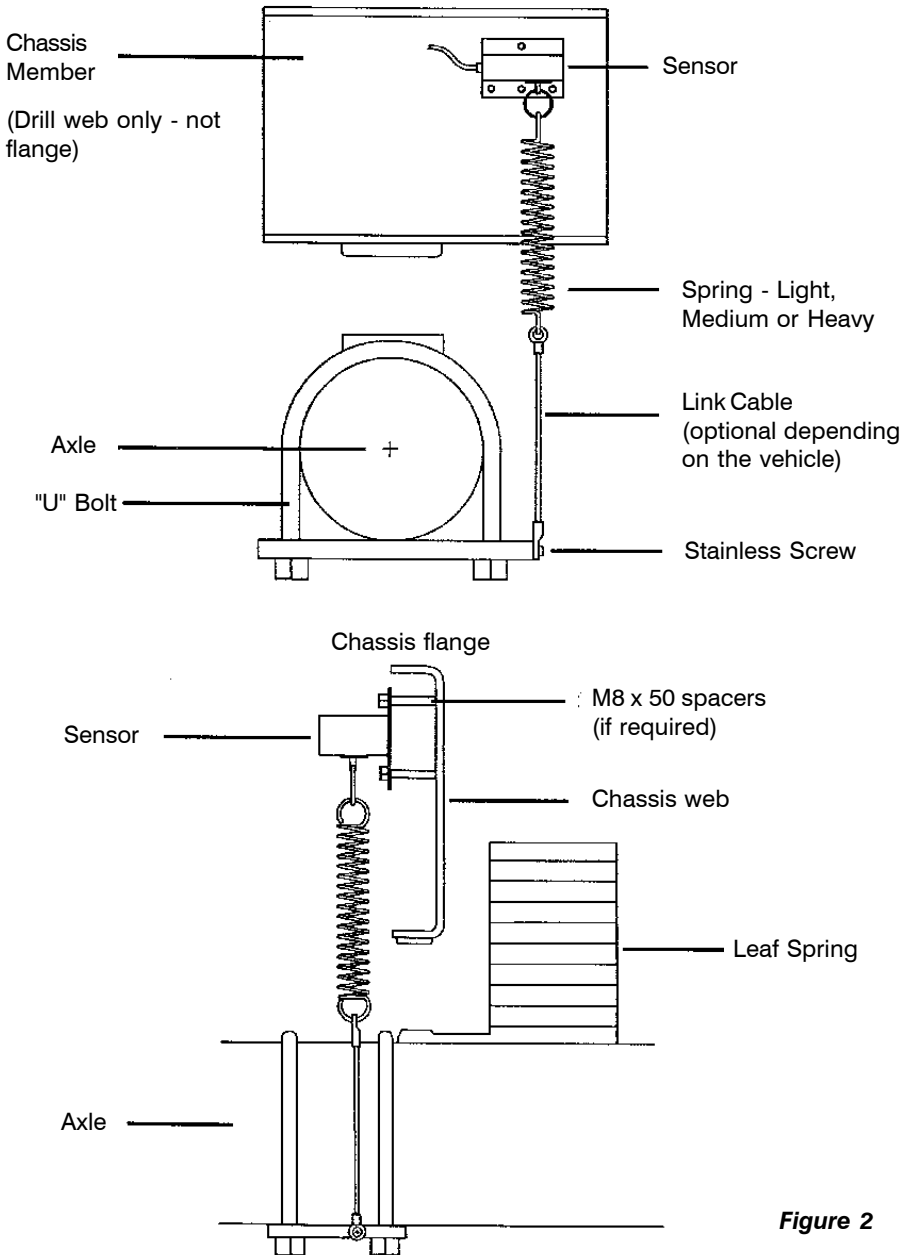


Figure 2

A.1 **Locating the sensors**

In deciding on the location of the sensors, bear in mind the following points;

- (i) The drop from the sensor mounting point to a suitable point on the axle "U" bolt or shock absorber mounting should be unobstructed under all conditions (e.g. throughout the steering angle on the front axle). The spring/cable assembly and sensor body must not be affected by movement of surrounding components, e.g. exhaust, suspension or braking systems.
- (ii) The drop should be vertical if possible. If so, use a plumb-bob to establish the chassis/axle mounting points.
- (iii) If clearance is a problem, suitable spacers/brackets can be made to "pick up" on a suitable spot on the axle.

A.2 **Mounting the sensors**

- (i) Normally mount each sensor as high up on the chassis web as possible to leave enough height for the spring/cable assembly (this may not apply if you can avoid the need for the link cable on lighter duty vehicles).
- (ii) The sensor flange has six alternative fixing holes to allow some flexibility in positioning the sensor. The sensor should be fixed with two or three bolts. Either drill and tap the chassis web M8, or drill clearance holes for 8mm bolts if you can reach the opposite side of the chassis web.

NOTE: *Do not drill through the top or bottom flange on the chassis.*

Fasten each sensor using the M8 x 25 Hex Set screws if the sensor flange is directly onto the chassis. If the sensor has to be spaced off the chassis, 50mm long spacer tubes and longer bolts are provided to enable the sensor to be mounted rigidly.

- (iv) Fit the cable conduit and route the conduits from each sensor back towards the position chosen for the interface box. Cable-tie securely following existing cables/lines.

Installation

A.3 Selecting the spring

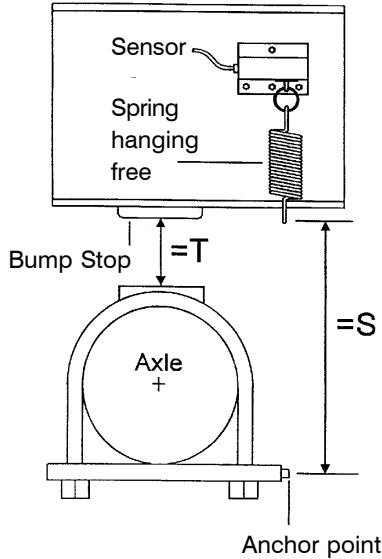
There is a choice of three springs - large, medium and small diameter. They have constant load-extension characteristics particular for the Axlog sensor and must not be substituted with any other similar looking spring.

With no load on the vehicle, measure the distance between the axle and the bump stop and select the correct spring as follows;

Height "T" (fig. 3)

less than 45mm	= large diameter spring
45 - 100mm	= medium diameter spring
greater than 100mm	= small diameter spring

Figure 3



If the vehicle axle regularly hits the bump stop (evident by marks or a polished surface), THEN USE THE NEXT SMALLEST SPRING i.e.

Height "T"

less than 45mm	= medium diameter spring
45mm or more	= small diameter spring

NOTE: *The spring extension with the vehicle unladen should always be greater than the drop in ride height under full load, ideally by 70 - 90 %.*

A.4 Making up the Link Cable

NOTE: Depending on the particular installation, you may not need to make up link cables if the sensor to axle distance can be taken up by the spring alone, without over-extending it.

- (i) Hook the tension spring through the eye in the sensor.
- (ii) Measure the distance "S" between the loop of the spring and the anchor hole (fig. 3) and subtract the pre-load extension of the chosen spring from this measurement:-

Spring pre-load extension		Link cable length "D"
Large diameter	= 30 mm	$D = S - 30 \text{ mm}$
Medium diameter	= 70 mm	$D = S - 70 \text{ mm}$
Small diameter	= 130 mm	$D = S - 130 \text{ mm}$

- (iii) Crimp the eyelets provided onto both ends of the link cable (a suitable heavy duty crimp tool is required), so that the distance between the fixing eyes equals the distance calculated in step (ii).
- (iv) Hook one end of the cable onto the spring loop and secure the lower end to the fixing point on the axle using an M4 x 10 Taptite screw. Bend the eyelet if necessary to ensure the tension cable is straight. Ensure that the cable will remain unobstructed as the axle moves.

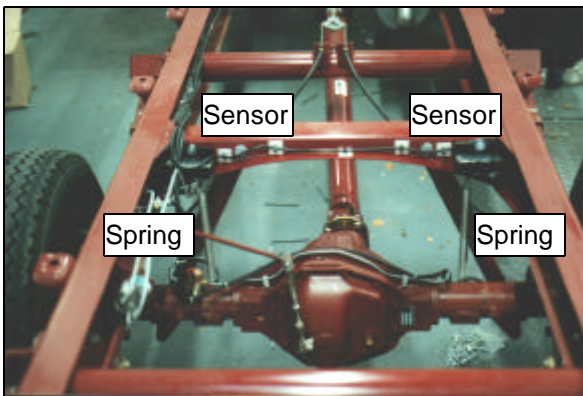


Figure 4 - Example of rear axle installation

Installation



Figure 5 - Example of front axle installation

A.5 *Wiring up the interface box*

The interface box provides power supply and V-F signal conversion for the sensors. You can wire 2 pairs of sensors into the box.

The interface box is spray resistant but not totally sealed. Therefore locate it where it will be protected from direct rain, hosing, pressure washing or steam cleaning. Normally the best location is up behind the front grille, inside or close to the cab (fig. 6).



Figure 6 - Interface box in an under-bonnet position

- (i) Connect each sensor cable onto the terminal block, following the screen printed ID adjacent to the connector (fig. 7).

Sensor cable :- colours:

Red = 12V

Blue = 0V

Green = Signal

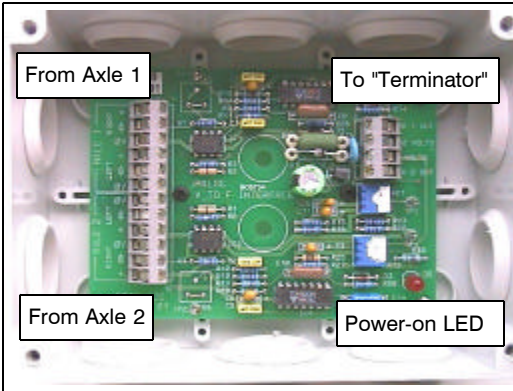


Figure 7 - V-F Interface S/AC/188-1-020

- (ii) Connect the 4-core cable to the 4-way connector block (fig. 7) and route this cable to the "Terminator" junction box. Connect the 4-core cable to the connectors on the Terminator, as shown on the junction box lid (fig. 8).

4-core cable :- colours:

Red = 12V

Blue = 0V

Yellow = Axle 1 signal

Green = Axle 2 signal

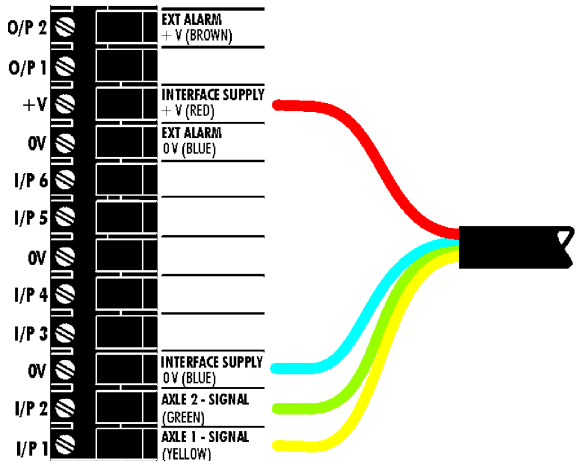


Figure 8

Installation

A.6 Fitting the Head Unit

Confirm with the machine operator on where to mount the head unit in the cab. It must not restrict the view out of the cab, nor impede the use of the controls. The head unit is fitted with a 1 metre flying lead terminating with an 8/10-way IDC type connector, ready for connection into the "Terminator" junction box.

Mounting the Head Unit

The head unit is supplied with a separate mounting kit ref: K/WIZ/MTG/BKT comprising the following parts (fig. 9):

- 1 Long Bracket
- 1 Short Bracket
- 3 Clamping Knobs
- 1 Cover Plate
- 1 Mounting Plate
- 2 Self Tapping Screws

The instrument mount is designed to offer maximum flexibility in positioning the head unit, either from the right hand side of the cab, from the dashboard or from an overhead position. Either the long or short bracket can be attached to the head unit, which ever enables the most suitable orientation, and you can index each pivot point on the mounting bracket to angle the head unit in relation to the mounting plate.



Fig. 9 Head Unit Bracket

- (i) Snap the cover plate into the recess of the long bracket (it only fits one way).
- (ii) Assemble the two brackets and mounting plate with the clamping knobs, and attach to the head unit.
- (iii) Having established the orientation for the bracket, fix the mounting plate to the cab with the self tapping screws provided.



Do not attempt to adjust the mounting bracket assembly without first slackening off the clamping knobs, otherwise you might damage the bracket.

A.7 "Terminator" Junction Box

The "Terminator" junction box, connects the head unit, interface box and power supply.



The Terminator is not sealed. It must be located where it will be protected from EXCESSIVE MOISTURE AND DIRT

- (i) Fix the base moulding using the screws provided.
- (ii) Connect the head unit lead onto the PCB header PL2.

NOTE: *The red wire on the 10-way plug goes to pin 1 on the PCB connector. The blue/red wire on the 8-way plug goes to pin 11 on the PCB connector (fig. 10).*

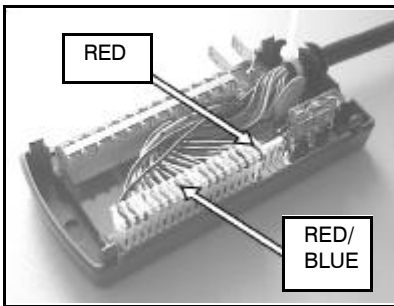


Fig. 10 Connecting the Head Unit

- (iii) Locate the cable grommet onto the moulding, and cable-tie the head unit lead onto the moulded cable saddle to provide strain relief.
- (iv) Connect the 4-core cable from the interface box. The wiring connections are printed on the lid of the Terminator, and are also given in section A.5.

NOTE: *No means of strain relief is provided. It is recommended that you cable-tie them securely in a suitable manner to prevent strain on the screw terminal connections.*

Installation

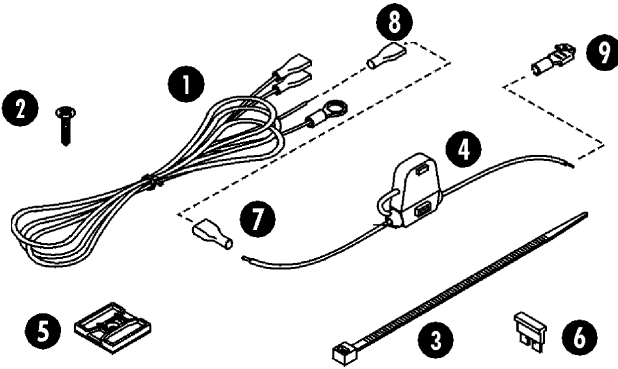
A.8 Power Supply

Kit Ref: K/INSTRUMENT

The instrument operates satisfactorily over the voltage range 11-30V DC. The junction box is fitted with a 3-amp fuse, varistors for protection from voltage transients and a power-on LED.



The fuse in the junction box will only protect the junction box circuitry and the head unit. It will NOT protect the power supply cable.



Key	Part	Qty
1.	Power Lead	1
2.	S.T. Screw	2
3.	Cable Tie	50
4.	Fuse Holder	1
5.	Cable Tie Base	6
6.	Fuse - 5A	2
7.	1/4" Crimp - female	2
8.	1/4" Crimp - male	1
9.*	1/4" Crimp - piggyback	1

*May be part of cable assembly

The standard power supply lead is a 2-core lead with two 1/4" female terminals at one end, and a ring terminal and piggyback connector at the other end

- (i) Connect the blue 0V and brown +V wires onto the spade connectors of the Terminator box

NOTE: Do not connect the power supply to any of the screw terminals on the PCB.

- (ii) Route the power lead back to a switched, fused point, e.g. from the back of the ignition switch or from the fuse box.
- (iii) Connect the in-line fuse to the brown wire of the power supply lead using the male and female crimp provided.
- (iv) Connect the 0V ring terminal to the bodywork/chassis. Ensure connection onto bare metal and that the connection point gives a good grounding path to the battery.
- (vi) Fit the piggyback crimp connector to the other end of the fuse, and connect to the supply point.

NOTE: *The head unit does not have an integral On-Off switch, and is normally powered on via the ignition circuit. However, a toggle switch (Part No: S/AC/199-2-134 :- not supplied) can be wired in-line with the +v supply.*

If required, panel-mount the toggle switch at a suitable point (1/2" dia drill required) and connect into the +V (brown) wire of the supply lead.

Reverse Polarity and Power LED

The head unit has reverse polarity protection and will not be damaged if you inadvertently have the power supply connections reversed. The LED on the Terminator PCB (fig. 11) will not light if the 0V and +V connections are reversed.

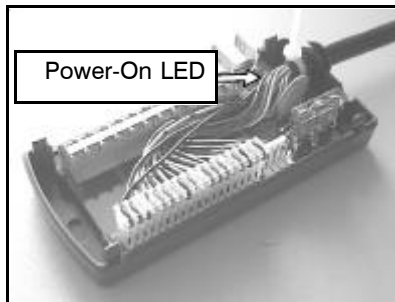


Figure 11

If the instrument does not power up when you switch the ignition on, then:

- (a) check you have connected to a suitable point on the vehicle electrical system as described above.
- (b) If (a) is OK but the LED is not lit, check the polarity is correct.
- (c) If the LED is lit but the head unit does not come on, check that the 18-way connector is properly connected.

Once all is OK, clip the lid on the Terminator. To remove the lid, squeeze the sides of the base inward to release the clips.

Installation

A.9 External Alarm

- (i) Mount the alarm buzzer where it will stay dry. Fix the buzzer with 2 self-tapping screws.



Do not over-tighten the screws.



Fig. 12 - External Alarm

- (ii) Connect to the Terminator (fig. 13).

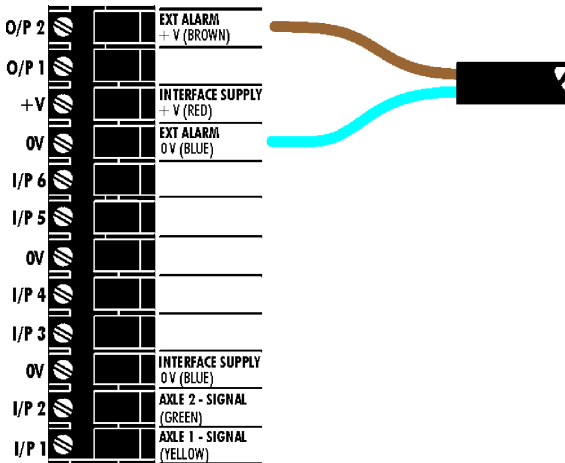


Fig. 13 - External Alarm Connection

A.10 Testing the System

- (i) Switch the vehicle ignition on.

The alarm should beep once and the display will come on. The red LED in the interface box should come on.

- (ii) On the head unit, select axle 1.

The display may show 0.0 or a number (which is meaningless until the system is calibrated). If the display shows "Err" then there is no signal being received from the interface unit. Check the sensor wiring.

- (iii) Rock the vehicle.

The number on the display should change to indicate that the sensors for that axle are responding.

- (iv) Repeat the above for axle 2

- (v) Proceed with the calibration.

Notes

Issue 1: 29/8/01 Original Issue