ALCOLOCK™ LR

ALCOHOL INTERLOCK

ACS

ALCOHOL COUNTERMEASURE SYSTEMS

Installation Manual

Alcohol Countermeasure Systems Corp
60 International Boulevard
Toronto, Ontario M9W 6J2 CANADA
acs-corp.com

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1.0 ALCOLOCK LR alcohol interlock – product profile

The ALCOLOCK LR alcohol interlock device controls the normal operation of a vehicle through connection with the power, starting and control systems. To start the vehicle engine, the driver must provide an accepted breath test with an alcohol concentration (BrAC) below the preset limit. During operation of the vehicle, the driver will be requested to provide additional breath tests to maintain compliance with program requirements. The ALCOLOCK LR alcohol interlock device will never cause the vehicle engine to stop.

The ALCOLOCK LR device consists of a Handset (HS) to conduct breath alcohol tests, and an Electronic Control Unit (ECU) that is connected with the power and control circuits of the vehicle. The ALCOLOCK LR device includes a GPS patch antenna – connected separately – which logs the coordinates of the vehicle.

The ALCOLOCK LR device is used in alcohol interlock programs under the direction of a jurisdictional authority and conforms to international regulations for alcohol interlocks being used in compliance programs.

2.0 The ALCOLOCK LR device installation manual

This manual contains procedures for the installation, monitoring and removal of the ALCOLOCK LR device, as well as wiring diagrams and a glossary of terms.

ATTENTION!

- ***This manual is intended for authorized service technicians only***
- ***Before starting the engine, ensure that there is sufficient ventilation for vehicle exhaust fumes. Failure to do so may cause injury***
- ***Before starting the vehicle engine, ensure that the vehicle is in the park or neutral position (with parking brake engaged) to prevent the vehicle from moving***
- ***Before beginning the installation, ensure that the vehicle is functioning properly (Refer to section 8.0 "Inspecting the vehicle electrical system" in this manual)***
- ***If any vehicle components are not functioning, it is the client's responsibility to have the vehicle repaired before beginning the installation***
- ***This device is intended for installation in vehicles with +12 volt or +24 volt electrical systems***
- ***The ALCOLOCK LR alcohol interlock is a low current device. Use a supplied external relay on vehicles with high-current starter circuits (above 2 amps)***
- ***Do not connect the ECU to the ECU cable (13-001102) until after the cable has been installed and visually inspected. Failure to do so may result in damage to the ECU***
- ***The installed device must never interfere with the functioning of the vehicle***

3.0 How to read this manual

- For installation of the ALCOLOCK LR device, read sections 5.0 to 20.0 of this manual, in the order provided
- For wiring diagrams (with and without the external relay), refer to appendix 3 and 4 of this manual
- For the HS install procedure (completed by following the steps on the HS display), read section 16.0 of this manual
- For the HS monitor procedure (completed by following the steps on the HS display), read section 21.0 of this manual
- For information about the tamper report procedure, refer to section 24.3 of this manual
- For technical definitions and terms related to the alcohol interlock program, refer to the glossary in appendix 2 of this manual
- For removal of the ALCOLOCK LR device, read section 22.0 of this manual, in the order provided

4.0 Other required manuals

- The ALCOLOCK LR device instruction manual provides information about the general usage of the device
- The ALCOLOCK LR device compliance manual provides specific program requirements
- The INTERTRACK™ enterprise (ITE) application manual provides procedures for ITE transactions and is for authorized technicians only
- The ALCOLOCK LR device troubleshooting manual provides device error and recall codes and is for authorized technicians only

5.0 Parts and equipment supplied by ACS (the Service Provider)

This section lists parts supplied by ACS, which are required by the Service Centre for the alcohol interlock program, including installation, monitoring, calibration and removal of the ALCOLOCK LR device.

Contact ACS to order the following parts (for contact information, refer to acs-corp.com).

Part #	Part	Qty	Description
93-002351	ALCOLOCK LR kit	1	LR device hardware
79-007308	L series HS	1	Taking breath test
13-001100	L series HS cable	1	Connecting HS to ECU
	LR instruction manual	1	Reference material
13-001102	LR series vehicle-ECU cable	1	Connecting ECU to vehicle circuits
79-007307	LR ECU (with GPS)	1	Connected to vehicle circuits
04-000001	GPS patch antenna	1	Logging vehicle coordinates
58-000568	HS holder	1	In-vehicle HS holder
27-000028	Automotive fastening system (3M brand)	1	Affixing components to vehicle
79-008957	LR Install Kit	1	Fastening and sealing hardware
27-000026	Tie wrap	20	Securing wires / mounting hardware
27-000075	Tie wrap	5	Securing wires / mounting hardware
45-000054	Screw	2	Connecting ground wire to vehicle
79-000251	Heat shrink	7	Securing wiring, anti-tampering
79-000252	Heat shrink	4	Securing wiring, anti-tampering
65-000070	Tamper-proof label	3	Anti-tampering
21-000022	Ring terminal	2	Ground wire connection
93-002362	LR OBD-II kit	1	Connecting ECU to vehicle OBD-II port
79-000262	Heat shrink, printed black ¾" D x 10cm L	1	Securing wiring, anti-tampering
79-008959	LR OBD-II cable assembly	1	Connecting ECU to vehicle OBD-II
79-007620	Security enclosure assembly	1	Securing ECU connector opening, anti-tampering

58-000529	Front clip with brass insert	1	Enclosure
65-000070	Rear clip	1	Enclosure
58-000527	Screw	2	Fastening rear and front clip
45-000129	Plastic plug	2	Covering screw (front clip)
58-000528	Tamper-proof label	1	Covering plastic plug (front clip)

Accessories and consumable items for alcohol interlock program:

Part #	Part	Description
79-008953	External relay (12V)	Additional relay (high-current starter circuit)
79-008961	External relay (24V)	Additional relay (high-current starter circuit)
94-001960	Lamp flasher module (12V negative)	Visual alarm, vehicle indicators
94-001961	Lamp flasher module (12V positive)	Visual alarm, vehicle indicators
79-000300	Alarm flasher	Exterior visual alarm or interior retest alarm (for hearing impaired)
79-000916	Alarm horn	Audible alarm
95-000145	Mouthpiece (bag of 25)	Inserting into HS, taking breath test
95-000305	Alcohol reference solution (50 mg/dL)	Calibration

Other equipment for alcohol interlock program:

Part #	Part	Description
94-001890	Digital tach sensor (DTS)	Providing tach (rpm) signal to ECU
79-007303	Universal Calibration Station (UCS)	Calibration and ITE transactions
79-008954	Download Station (DS)	ITE transactions
93-002356	Presentation stand	Product demonstration
13-001105	USB cable	Connecting UCS or DS to PC
79-008958	HS/UCS cable	Connecting HS to UCS

6.0 Tools and equipment supplied by the Service Centre (service facility)

This section lists parts supplied by the Service Centre, which are required for the installation, monitoring and removal the ALCOLOCK LR device.

6.1 Power tools

- Portable reversible battery operated drill with bits
- Electric soldering gun and spool of rosin core solder
- Portable butane soldering gun
- Heat shrink gun
- Industrial strength battery charger

6.2 Hand tools and test equipment

- Automotive tach finder (for locating tach / rpm signal)
- Digital multimeter w/10 Mohm resistance
- Automotive battery load tester
- Wire stripper (16-28 gauge)
- Diagonal side cutters
- Scissors
- Computer-safe test probe
- Mechanic's trouble light with receptacles
- Set of screwdrivers (Phillips, flat head, Robertson)
- Socket / ratchet set (metric and imperial)
- Utility knife
- Needle-nose pliers
- Extension cord

6.3 Other material

- Fender cover
- Electrical tape (3M brand or equivalent)
- Shop towels
- Hand cleaner
- Eight 6" tie straps (for restoring the vehicle at end of program)
- Heat-shrink tubing: 3/16", 1/4", 3/32" and 3/8" sizes as required (for restoring the vehicle at end of program)
- Fire wall probe
- Methyl hydrate cleaner

7.0 Installation overview

To install the ALCOLOCK LR device, complete the following steps in the order provided in this manual.

- Inspecting the vehicle electrical system
- Mounting the ECU, alarm horn, and (if required) alarm flasher
- (If required) Locating the tach signal (using DTS, if applicable)
- Connecting the ECU cable assembly, alarm horn and (if required) alarm flasher
- Connecting the tach wire or OBD-II assembly
- Running the HS install procedure and ITE install transaction
- Post-installation device testing
- Assembling the ECU security enclosure
- Attaching the GPS patch antenna
- Sealing connections and restoring the vehicle

> ⚠ ***ATTENTION!***
>
> - ***If any vehicle components are not functioning, it is the client's responsibility to have the vehicle repaired before beginning the installation***
> - ***At end of program, the vehicle must be returned to the same condition as before installation***
> - ***Install the device in a vehicle location that allows the least amount of drilling or modification***
> - ***Use existing hardware and holes to minimize vehicle modification***
> - ***Before beginning installation ensure that there is sufficient ventilation for vehicle exhaust fumes. Failure to do so may cause injury***
> - ***Before starting the engine, ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***

8.0 Inspecting the vehicle electrical system

Ensure that the vehicle electrical system is properly functioning by checking the battery, starting and charging systems.

8.1 Inspecting the vehicle battery

1. Visually inspect the battery for corrosion, cracks, holes, leakage, and other damage.
2. Visually inspect the cleanliness of the battery case and posts.
3. Perform a battery load test on the vehicle battery and observe the battery voltage. If the battery is detected to be fully discharged (*dead*), the client must replace the battery before continuing with the installation.

8.2 Inspecting the vehicle charging system

1. Visually inspect the condition of all wires and belts that connect to the starter, alternator, and battery.
2. Check if the battery warning light on the dashboard is on, or observe the voltmeter in the dashboard for at least 14 volts (for the 12 volt device), or at least 26 volts (for the 24 volt device).

8.3 Inspecting the vehicle starting system

If a vehicle starting problem is detected, attach a digital multimeter to the battery terminals and observe the voltage as the vehicle engine cranks.

If the voltage is below 9 volts (for the 12 volt device), or below 19 volts (for the 24 volt device), or there is no cranking, it is the client's responsibility to have the vehicle repaired before continuing the installation.

9.0 Mounting the ECU

1. Locate an ECU mounting position that is convenient and accessible – preferably under the dashboard. Ensure that there is sufficient space for the ECU cable wires to be securely incorporated into the vehicle wire loom.

ATTENTION!

- ***The ECU and cabling must not obstruct the normal operation of the vehicle***
- ***Do not install the ECU near the vehicle brake and accelerator pedals***

2. Position the ECU so that it is elevated, with the cable connector opening facing downwards. This is to protect the open side of the ECU from contaminants, such as water leakage and dust.
3. Fasten the ECU to the mounting position with the supplied tie wraps.

   NOTE: *Always use existing hardware and holes to minimize vehicle modification.*

4. Ensure that the connection is tight and secure.

10.0 Mounting the alarm horn

The alarm horn (79-000916) is installed under the hood and sounds when the client has failed to respond to a retest request past the set limit.

ATTENTION! The alarm horn is intended for installation on vehicles with +12 volt electrical systems only.

1. Locate an alarm horn mounting position under the hood. Ensure that there is sufficient clearance, so that closing the hood does not damage the hood or the alarm horn.

2. Position the alarm horn facing downwards. This is to protect the alarm horn opening from contaminants, such as water leakage and dust.
3. Mount the alarm horn bracket to the vehicle.

   NOTE: *Always use existing hardware and holes to minimize vehicle modification.*

4. Ensure that the connection is tight and secure.
5. Attach the alarm horn wires to a probe. Feed the wires through the vehicle firewall and leave sufficient wire clearance under the dashboard.

11.0 Mounting the alarm flasher (if required)

The alarm flasher (79-000300) is installed to the exterior of the vehicle – usually the front license plate – and flashes when the client has failed to respond to a retest request past the set limit.

NOTE: *Skip this section if a retest alarm is not required.*

⚠ ***ATTENTION! The alarm flasher and cabling must not obstruct the normal operation of the vehicle.***

1. Locate an alarm flasher mounting position – preferably under the front licence plate.
2. Mount the alarm flasher bracket using screws or tie wraps.

   NOTE: *Always use existing hardware and holes to minimize vehicle modification.*

3. Ensure that the connection is tight and secure.
4. Attach the alarm flasher wires to a probe. Feed the wires through the vehicle firewall and leave sufficient wire clearance under the dashboard.

12.0 Mounting the retest alarm (for hearing impaired)

An alarm flasher (79-000300) may be separately used as a retest alarm for hearing impaired drivers. It is connected to the vehicle interior and flashes when a retest is required. When an alarm flasher is used as a retest alarm, it uses a different ECU wire connection than the exterior alarm flasher.

NOTE: *Skip this section if a retest alarm is not required.*

⚠ ***ATTENTION! The retest alarm (alarm flasher) and cabling must not obstruct the normal operation of the vehicle.***

1. Locate a mounting position in the vehicle interior, within the driver's view – preferably on the dashboard.
2. Mount the alarm flasher bracket using an automotive fastening system (27-000028).

3. Ensure that the connection is tight and secure.
4. Run the wires neatly to the ECU location under the dashboard.

13.0 Locating the tachometer signal wire

NOTE: *Skip this section if the vehicle tach reading will be obtained using vehicle OBD-II.*

ATTENTION! ***Never use an individual coil pack or fuel injector as a tach source. Doing so may damage the vehicle fuel injector.***

Use the tach finder or the digital multimeter to locate and verify the tachometer signal wire.

To verify the rpm, (with the vehicle in park or neutral) press the accelerator pedal and steadily increase the engine rpm.

NOTE: *If a tachometer signal is not located, use DTS (94-001890) on the alternator. Refer to the automotive diagnostic tool instruction manual.*

14.0 Connecting the ECU cable

Connect the ECU cable (13-001100) only after doing the following:

- Inspecting the vehicle electrical system
- Mounting the ECU, alarm horn, and alarm flasher (if required)
- Locating the tach signal (if OBD-II is not being used)

This section will provide an overview and steps for the connection of ECU cable, alarm horn and the alarm flasher (if required).

ATTENTION!

- ***Do not solder or apply heat shrinks or tamper proof labels until all wires have been attached, and post installation testing has been performed***
- ***The ALCOLOCK LR alcohol interlock is a low current device. Use a supplied external relay on vehicles with high-current starter circuits (above 2 amps)***
- ***Do not connect the ECU cable to the ECU until instructed. This may result in damage to the ECU***
- ***Do not use the vehicle fuse panel for the wire connections. In most cases, it is easily accessible and vulnerable to tampering***
- ***To avoid damaging the ECU, always connect the ground wires to the vehicle first***
- ***Each connection must be as neat and secure as possible – use solder point connections and supplied heat shrinks***

- ***Do not use butt or clip connectors to seal wiring, as this may lead to corrosion and intermittent power***
- ***Use supplied, heat shrinks or tamper resistant labels on all solder connections. Refer to section 20.0 of this manual***
- ***Use supplied tie wraps to neatly incorporate wires into the vehicle wire loom. Keep wires away from vehicle components that move, or that become excessively hot***

14.1 ECU cable-wire summary

The following table lists the wires from the ECU cable (13-001102), for basic reference.

NOTE: *Refer to the appendix 3 and 4 at the back of this manual for wiring diagrams (with and without the external relay).*

Wire #	Colour	Location
1	Red	+12 volt or +24 volt (main power)
8	Black	Ground
3	White	Ignition (+12 volt or +24 volt, switched **on** position only)
2	Green	Tachometer
4	Blue-White	CAN-Low (CAN-)
5	Yellow-Red	CAN-High (CAN+)
10	Blue-Yellow	Starter (coming from the ignition switch)
9	Light Blue	Starter (going to the starter)
12	Orange	Alarm horn + (positive)
13	Brown	+12 volt (main power)

Retest flasher (hearing impaired)

Wire #	Colour	Location
6	Pink	12 volt (retest flasher main power)
11	Violet	Output

14.2 ECU wire-connection steps

1. Prepare the ECU wires: using the wire strippers, expose 1/2” of the ECU wires.
2. Place the supplied heat shrinks over all wires in the table below, except ECU wires 1 (Red), 8 (Black) and 3 (White).

79-000252	• Wire 9 (Light Blue) • Wire 10 (Blue-Yellow) **x2**
79-000251	• Wire 2 (Green) • Wire 12 (Orange) • Wire 13 (Brown)

3. Fasten a ring terminal (21-000022) to ECU wire 8 (Black). Using the tamper-proof screw (45-000054), connect the ring terminal to a vehicle ground point.
4. Using the computer-safe test probe, locate a continuous (un-switched) source wire of +12 or +24 volts, from the vehicle main harness. Test the source wire by moving the ignition switch through all positions (including **start** and **accessories**). +12 or +24 volts must be present at all times.

   NOTE: *For vehicles with push-button keyless starters: refer to the vehicle instruction manual for the ignition switch positions (e.g., start and accessories).*

5. Expose 1/2” of the continuous (un-switched) source wire.
6. Twist the end of ECU wire 1 (Red) around the continuous (un-switched) source wire.

   NOTE: *Twist the wire as follows:*

7. Using the computer-safe test probe, locate a non-continuous (switched) source wire of +12 or +24 volts from the vehicle main harness. Test the source wire by moving the ignition switch through all positions. +12 or +24 volts must be present only when the ignition switch is in the **on** or **start** position, and must be absent in all the other positions.
8. Expose 1/2” of the non-continuous (switched) source wire.
9. Twist the end of ECU wire 1 (White) around the non-continuous (switched) source wire.
10. Using the computer-safe test probe, locate the wire coming from the ignition switch and going to the starter relay or solenoid (depending on the vehicle make). This wire supplies the **start** signal.
11. Cut the wire (that supplies the **start** signal). Expose 3/4” of wire from each cut end.

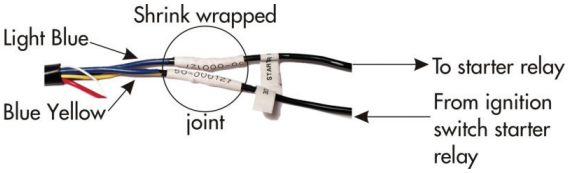
12. Move the vehicle ignition switch to the **start** position – the starter must not engage.

ATTENTION!

- ***The ALCOLOCK LR alcohol interlock is a low current device. Use an external relay on vehicles with high-current starter circuits (above 2 amps)***
- ***Refer to appendix 4 at the back of this manual for the wiring diagram that includes the external relay***

13. Connect ECU wire 10 (Blue-Yellow) to the cut end of the wire ***coming from*** the ignition switch.
14. Connect ECU wire 9 (Light Blue) to the cut end of the wire ***going to*** the starter relay or solenoid (depending on the vehicle make).

NOTE: *Step 11 and 12 connections should look as follows: (This illustration shows a sealed connection – do not seal until the installation is verified. Refer to section 20.0 of this manual.)*



15. Use supplied tie wraps to neatly incorporate ECU wires with the vehicle wire loom. Keep wires away from vehicle components that move, or that become excessively hot.

14.3 Alarm horn wire-connection steps

NOTE: *Section 10.0 provides instructions for mounting the alarm horn and feeding the alarm horn wires through the fire wall with a probe.*

1. Fasten a ring terminal (21-000022) to the black (ground) alarm horn wire. Connect the ring terminal to the same vehicle ground connection used by ECU wire 8 (Black).

NOTE*: The ground connection should look as follows: (This illustration shows a sealed connection – do not seal until the installation is verified. Refer to section 20.0 of this manual.)*

2. Connect ECU wire 13 (Brown) to ECU wire 1 (Red).
3. Connect ECU wire 12 (Orange) to the red (positive) alarm horn wire.
4. Use supplied tie wraps to neatly incorporate the alarm horn wires with the vehicle wire loom. Keep wires away from vehicle components that move, or that become excessively hot.

14.4 Alarm flasher wire-connection steps (if required)

NOTE: *Section 11.0 provides instructions for mounting the alarm flasher and feeding the alarm flasher wires through the fire wall with a probe.*

1. Fasten a ring terminal (21-000022) to the black (ground) alarm flasher wire. Connect the ring terminal to the same vehicle ground connection used by ECU wire 8 (Black).

   NOTE*: The ground connection should look as follows: (This illustration shows a sealed connection – do not seal until the installation is verified. Refer to section 20.0 of this manual.)*

2. Connect ECU wire 13 (Brown) to ECU wire 1 (Red).
3. Connect ECU wire 12 (Orange) to the red (positive) alarm flasher wire.

14.5 Retest alarm wire-connection step (for hearing impaired)

NOTE:

- *Skip this section if a retest alarm (for hearing impaired drivers) is not required*
- *Section 12.0 provides instructions for mounting the retest alarm (alarm flasher) and feeding the wires to the ECU cable location*

1. Fasten a ring terminal (21-000022) to the black (ground) retest alarm wire. Connect the ring terminal to the same vehicle ground connection used by ECU wire 8 (Black).
2. Connect ECU wire 6 (Pink) to the red (positive) wire of the retest alarm.
3. Connect ECU wire 11 (Violet) to the ECU wire 1 (Red).
4. Use supplied tie wraps to neatly incorporate the retest alarm wires with the vehicle wire loom. Keep wires away from vehicle components that move, or that become excessively hot.

14.6 Tachometer wire-connection steps

NOTE:

- *Skip this section if the vehicle tach reading will be obtained using vehicle OBD-II*
- *Section 13.0 provides instructions for locating the tach signal wire from under the hood*

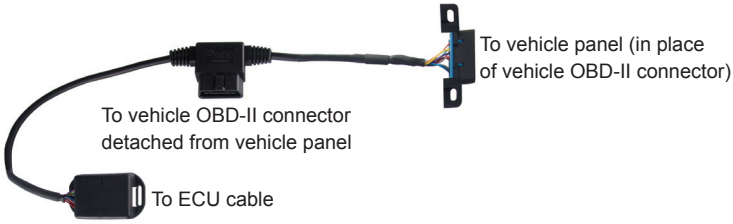
Attach the vehicle tach signal wire to ECU wire 2 (Green).

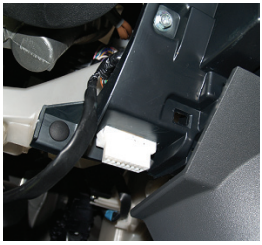
Use supplied tie wraps to neatly incorporate the tach connection with the vehicle wire loom. Keep wires away from vehicle components that move, or that become excessively hot.

14.7 OBD-II wire-connection steps

NOTE: *Skip this section if vehicle OBD-II was not used or unavailable, and a tach signal was obtained from under the hood.*

The OBD-II cable assembly (79-008959) is interfaced with the ECU and the vehicle.





1. Locate the vehicle OBD-II connector that is attached to the vehicle panel – usually located within 2 feet of the driver's wheel.

2. Detach the vehicle OBD-II connector from the vehicle panel, keeping the wires connected.

3. Plug the vehicle OBD-II connector (detached in the previous step) into the male connector of the OBD-II cable assembly.

4. Mount the female connector of the OBD-II cable assembly in place of the connector detached in step two.

5. Locate the white, 5-pin connector from the ECU cable and place the black heat shrink (79-000262) over it. Do not seal heat shrink until instructed.

6. Connect the 5-pin white connector from the ECU cable to the 5-pin port of the OBD-II cable assembly (on the electrical box).

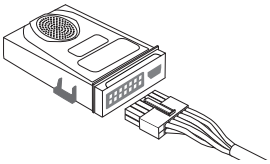
7. Use supplied tie wraps to neatly incorporate the OBD-II cable assembly with the vehicle wire loom. Keep cabling away from vehicle components that move, or that become excessively hot.

15.0 Attaching the HS and ECU

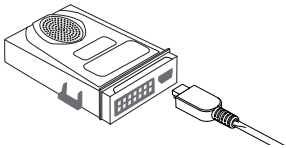
Before attaching the HS and the ECU, the ECU must be mounted and all ECU wires must be connected.

⚠ ***ATTENTION! Do not solder or apply heat shrinks or tamper-proof labels until all wires have been attached and post-installation testing has been performed.***

1. Connect the ECU cable (13-001102) to the ECU main input. The cable clicks into place and the ECU beeps.

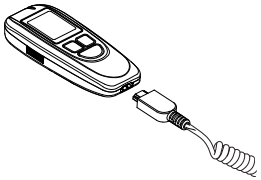


2. Connect the non-coiled end of the HS cable (13-001100) to the ECU HDMI port.



ATTENTION! ***Do not install the HS enclosure until instructed.***

3. Connect the coiled end of the HS cable to the HS HDMI port.



4. Use a tie wrap (27-000026) to neatly wrap the unused length of the HS cable. Tuck the unused length of the HS cable under the dashboard, away from vehicle components that move, or that are excessively hot.
5. Position the HS holder (58-000568) so that the HS will be easily accessible to the driver.

ATTENTION! ***The HS holder and HS cable must not interfere with vehicle operation.***

6. Mount the HS Holder using an automotive fastening system (3M brand) (27-000028).

16.0 HS install procedure and ITE install transaction

After the ALCOLOCK LR device has been connected to the vehicle, perform the HS install procedure by following the steps that appear on the HS screen. The purpose of the HS install procedure is to activate the device and test device functions.

The HS install procedure includes the following:

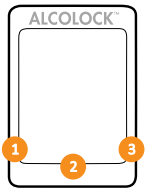
- Entering the HS install procedure and testing device functions
- Setting the tach threshold (or speed threshold for hybrid vehicles)
- Setting the odometer reading
- Performing an ITE install transaction

At the end of the HS install procedure, detach the HS from the vehicle and connect it to a PC, via a Download Station (79-008954) or Universal Calibration Station (79-007303), to perform an ITE install transaction. The ITE install transaction programs the device.

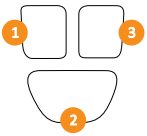
ATTENTION!

- ***Complete the HS install procedure on the HS display before performing an ITE install transaction***
- ***Before beginning the procedure ensure that there is sufficient ventilation for vehicle exhaust fumes. Failure to do so may cause injury***
- ***Before beginning the procedure ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***

USING HANDSET BUTTONS:



HS screen options will appear at the bottom of the display (at the left, right or bottom-centre).



*Press the **left, right** or **bottom** navigation button to select a corresponding screen-command option.*

NOTE:

- *To access the HS install procedure, a daily service code is required – obtained from ITE*
- *To exit the procedure at any time, press and hold the bottom button to select **Exit***
- *Remaining in any screen for 5 minutes will exit the procedure*
- *Refer to the ITE instruction manual for the install transaction procedure*

16.1 Performing the HS install procedure

1. Press any navigation button to power up the device.

   Wait… is briefly displayed as the HS powers up.

Handset Not Activated is automatically displayed.

2. Press and hold the *left* button to enter **Menu**.

3. In **Menu**, press **Prev** or **Next** to scroll to **Service**, then press **Select**.

4. Input the daily 4-digit service code (press **+** or **–** to change a digit, and press **Select** to move to the next digit).

5. After setting the last digit, press **Select**.

6. With the correct code entered, press **Accept**; otherwise, press **Correct** to re-enter the service code, or press **Cancel** to return to **Main Menu**.

7. In the **SERVICE** menu, press **Prev** or **Next** to scroll to **Install**, then press **Select**.

Wait is briefly displayed as the install procedure loads.

NOTE: INSTALL *will display at the top of the screen during the HS install procedure.*

8. **HANDSET LED & Buzzer** is displayed. The HS LED light flashes from red to green to amber. On each flash, the HS beeps with a descending pitch. After this sequence, **OK** appears.

> ***If there is no LED flash or HS beep, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the HS cable and replace the HS.***

ECU Speaker is displayed. The HS LED light is off. The ECU beeps and the pitch descends for three beeps. After this sequence, **OK** is displayed.

9. If the test is successful, press **OK**.

> ***If the ECU does not beep, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable connections and replace the ECU.***

VEHICLE Alarm is displayed. The HS LED light is off. The alarm horn sounds and (if used) the alarm flasher flashes. After the alarm horn sounds three times and the alarm flasher flashes three times (if used), **OK** is displayed.

10. If the test is successful, select **OK**.

> ***If the vehicle alarm horn does not sound, or (only if used) the alarm flasher does not flash, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable alarm horn and alarm flasher connections, and replace the ECU alarm horn or alarm flasher.***

Retest Alarm is displayed (even if not used). The HS LED light is off. (If used) the retest alarm flashes. After the retest alarm flashes 3 times, **OK** is displayed. (If a retest alarm is not used, wait for **OK** to display).

11. If the test is successful, select **OK**.

> ***If the retest alarm does not flash (only if not used), or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable and alarm flasher connections and replace the ECU and alarm flasher.***

Turn Ignition ON is displayed.

Ignition: OFF and **Relay: OFF** are displayed.

12. Turn the ignition key to the **on** position.

The vehicle engine cannot be started because the **Relay** is **OFF**.

Turn Ignition OFF is displayed.

Ignition: ON and **Relay: OFF** are displayed.

13. Turn the key to the **off** position.

Turn Ignition ON is displayed.

Ignition: OFF and **Relay: ON** are displayed.

ATTENTION!

- ***Before starting the ignition, ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***
- ***Leaving the vehicle engine on for too long will cause the vehicle alarm horn to sound***

14. Turn the key to the **start** position.

The vehicle engine will start because the **Relay** is **On**.

Start Engine is briefly displayed. Continue to the next section.

16.2 OBD-II Select

1. **OBD-II SELECT** is automatically displayed.

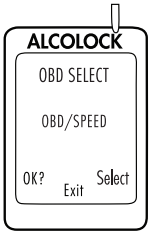
For conventional / non-hybrid vehicles, the ALCOLOCK LR device must obtain a tach (rpm) reading from under the hood.

For non-hybrid vehicles with OBD-II, a tach signal may be obtained by connecting the ECU to vehicle OBD-II.

For hybrid vehicles, tach is not available – an OBD-II speed threshold is already programmed into the software. The ECU must be connected to the vehicle OBD-II source.

2. Press **Select** to scroll to one of the 3 following options:

OBD / TACH – for non-hybrid vehicles connected to OBD-II.



OBD / SPEED – for hybrid vehicles connected to OBD-II.

NO OBD – for vehicles not connected to OBD-II, and instead connected to a direct tach source under the hood.

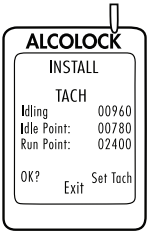
3. After the correct option has been selected, based on the vehicle and installation type, press **OK**.

   Read only one of the following sections of this manual, based on the step 2 selection:

   - **OBD / TACH** – section 16.2.1
   - **OBD / SPEED** – section 16.2.2
   - **NO OBD** – section 16.2.3

16.2.1 OBD / TACH

NOTE: *Read this section for non-hybrid vehicles where the tach was obtained through OBD-II.*



After selecting the **OBD / TACH** option in the previous screen, **TACH** is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading

> ***If the "Idling" rpm reading is lower than the "Idle Point" rpm value on the second line, "Stopped" will be displayed instead of "Idling".***
>
> ***If the "Idling" rpm reading is higher than the "Run Point" rpm value on the third line, "Running" will be displayed instead of "Idling".***
>
> ***If the rpm reading on the first line is not set to "Idling", check ECU OBD-II connection.***
>
> ***If the problem continues, obtain the tach signal from a location under the hood. Refer to section 13.0 and 14.6 of this manual. The ECU and HS may need to be exchanged.***

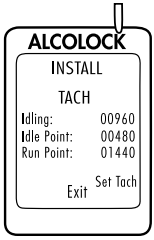
- **Idle Point** – a preset rpm threshold value
- **Run Point** – a preset rpm threshold value

> ***The initial Idle Point and Run Point values may vary, depending on the vehicle.***

1. Check that the **Idling** rpm reading reflects the reading on the dashboard rpm gauge.

2. If the **Idling** rpm reading is acceptable, press **Set Tach** to reset the rpm thresholds.

> ***After "Set Tach" is pressed, the "Idling" rpm reading (on the first line) is used to reset the "Idle Point" and "Run Point" tach thresholds (the second and third lines).***



TACH is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading
- **Idle Point** – reset to 0.5 x the **Idling** engine rpm
- **Run Point** – reset to 1.5 x the **Idling** engine rpm

Next is displayed at the bottom-left of the screen.

3. If the tach thresholds are correct, press **Next** (otherwise press Set Tach until a correct tach threshold is obtained).

After **Next** is pressed, **ACCELERATE** is displayed, along with the following:

- **Idling** – the current engine rpm
- **Idle Point** – the reset rpm threshold value
- **Run Point** – the reset rpm threshold value

ATTENTION! ***Ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving.***

4. Press the accelerator pedal and steadily increase the engine rpm to a point slightly above the **Run Point** rpm threshold value on the third line. (This is to validate the **Run Point** rpm threshold value that was reset in step 3.)

If the **Run Point** value is correct, **Turn Off Engine** is automatically displayed after the engine rpm exceeds the value on the third line.

5. Turn the key to the **off** position. (Press **Cancel** to return to the **Install** menu.)

Skip sections 16.2.2 and 16.2.3 and continue to section 16.3 to input the odometer reading.

16.2.2 OBD Speed

NOTE: *Read this section for hybrid vehicles only.*

After selecting the **OBD/SPEED** option in section 16.2 “OBD Select”, **CHECK SPEED** is displayed.

Speed is displayed at 0, however the value may slightly fluctuate.

The OBD-II speed threshold is already programmed into the software and does not need to be set during installation. Do not move the vehicle.

1. Press **OK** to proceed.

If the speed is correct, **Turn Off Engine** is displayed.

2. Turn the key to the **off** position. (Press **Cancel** to return to the **Install** menu.)

Skip section 16.2.3 and continue to section 16.3 to input the odometer reading.

16.2.3 No OBD

NOTE: *Read this section for non-hybrid vehicles where the tach was not obtained through OBD-II.*

After selecting the **NO OBD** option in section 16.2 “OBD Select”, **TACH** is displayed, along with the following:

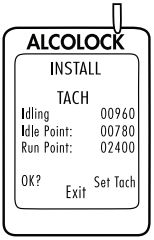
- **Idling** – the vehicle engine rpm reading

> ***If the “Idling” rpm reading is lower than the “Idle Point” rpm value on the second line, “Stopped” will be displayed instead of “Idling”.***
>
> ***If the “Idling” rpm reading is higher than the “Run Point” rpm value on the third line, “Running” will be displayed instead of “Idling”.***
>
> ***If the rpm reading on the first line is not set to “Idling”, check the tach source and the ECU connection. A new tach source may be required.***
>
> ***If the problem continues, obtain the tach signal using a digital tach sensor (DTS). The ECU or HS may need to be exchanged.***

- **Idle Point** – a preset rpm threshold value
- **Run Point** – a preset rpm threshold value

> ***The initial “Idle Point” and “Run Point” values may vary, depending on the vehicle.***

1. Check that the **Idling** rpm reading reflects the reading on the dashboard rpm gauge.



2. If the **Idling** rpm reading is acceptable, press **Set Tach** to reset the rpm thresholds.

> ***After "Set Tach" is pressed, the "Idling" rpm reading (on the first line) is used to reset the "Idle Point" and "Run Point" tach thresholds (the second and third lines).***

TACH is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading
- **Idle Point** – reset to 0.5 x the **Idling** engine rpm
- **Run Point** – reset to 1.5 x the **Idling** engine rpm

Next is displayed at the bottom-left of the screen.

3. If the tach thresholds are correct, press **Next** (otherwise press Set Tach until a correct tach threshold is obtained).

After **Next** is pressed, **ACCELERATE** is displayed, along with the following:

- **Idling** – the current engine rpm
- **Idle Point** – the reset rpm threshold value
- **Run Point** – the reset rpm threshold value

ATTENTION! ***Ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving.***

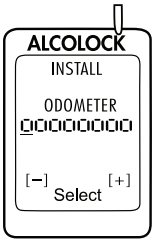
4. Press the accelerator pedal and steadily increase the engine rpm to a point slightly above the **Run Point** rpm threshold value on the third line. (This is to validate the **Run Point** rpm threshold value that was reset in step 3.)

If the **Run Point** value is correct, **Turn Off Engine** is automatically displayed after the engine rpm exceeds the value on the third line.

5. Turn the key to the **off** position. (Press **Cancel** to return to the **Install** menu.)

   Continue to the next section.

16.3 Input odometer reading



After the tach or speed threshold has been set, **Odometer** is displayed.

1. Set the odometer value (press **–** or **+** to change a digit, and press **Select** to move to the next digit).

2. After entering the last digit value, press **Select**, then press **ACCEPT**. (Press **Correct** to reset the odometer value.) Continue to the next section.

16.4 Performing an ITE install transaction

After the odometer value has been accepted, **Install Complete Connect to PC** is displayed.

1. Disconnect the HS from the HS cable.
2. Using the USB cable (79-008958), connect the HS to the UCS or DS and perform an ITE install transaction.

   NOTE: *Refer to the ITE application manual for the install transaction procedure.*

3. When the ITE transaction is complete, connect the HS back to the ECU.

Install Complete is displayed.

4. Press and hold the *right* navigation button.

Ready for Test is displayed along with the client's last name.

The HS install procedure and ITE install transaction are complete. Continue to the next section.

17.0 Post-installation testing

After the HS install procedure and ITE install transaction are complete, insert a new mouthpiece and provide an accepted breath test. With the vehicle in park or neutral, turn on the vehicle engine for a short period.

NOTE: *Refer to the instruction manual for more information about using the ALCOLOCK LR device.*

18.0 Attaching the security enclosure

Attach the security enclosure only after doing the following:

- Connecting the ECU, alarm horn and alarm flasher wires (if required)
- Performing an HS install and ITE transaction
- Performing post-installation testing

The security enclosure assembly (79-007620) is attached to the cable connector opening of the ECU, to prevent tampering with the cable connections.

The security enclosure assembly consists of the following:

- Rear clip (58-000529)
- Front clip with brass insert (58-000527)
- Screw (45-000129)
- Plastic plug (58-000528)
- Tamper-proof label (65-000070)

1. With the top of the ECU face-forward (as shown), attach the front clip (58-000527) by aligning the grooves of the clip with the ridges of the ECU ❶ ❷.
2. Fit the ECU and HS cable ❸ ❹ onto their slots at the top of the clip.

   NOTE: *Ensure that the brass screw insert ❺ of the front clip is not covered by wires.*

3. Attach the rear clip by aligning the grooves of the clip with the ridges of the ECU ❶ ❷, and fitting the slots at the top of the clip over the HS and ECU cables ❸ ❹.

   The rear-clip screw hole ❺ lines up with the front-clip brass insert.
4. Click the enclosure clips into place so that there are no gaps between the front and rear clips.

5. Insert the screw (45-000129) into the rear-clip screw hole, to fasten the clips.

6. Insert the plastic plug (58-000528) into the screw hole of the rear clip, covering the screw.

7. Apply a tamper-proof label (65-000070) to the rear clip, over the glossy rectangular area that surrounds the plastic plug.

19.0 Attaching the GPS antenna (If required)

The GPS module (04-000001) is attached separately to the ECU. The GPS module consists of a cable plug and an antenna with an adhesive strip.

1. Attach the GPS cable plug onto the communication port at the bottom of the ECU.
2. Run the antenna cable from the ECU to the vehicle interior.

ATTENTION! ***The GPS antenna module must not interfere with vehicle operation.***

3. Position the GPS antenna in an area of the vehicle interior that has a direct line of sight with the sky – preferably on the dashboard.
4. Remove the plastic covering from the adhesive patch at the back of the antenna, and mount the antenna onto the surface.

20.0 Sealing connections and restoring the vehicle

Seal all connections and restore the vehicle only after doing the following:

- Connecting the ECU, alarm horn and alarm flasher wires (if required)
- Performing an HS install and ITE transaction
- Performing post-installation testing
- Attaching the security enclosure and GPS patch antenna (if required)

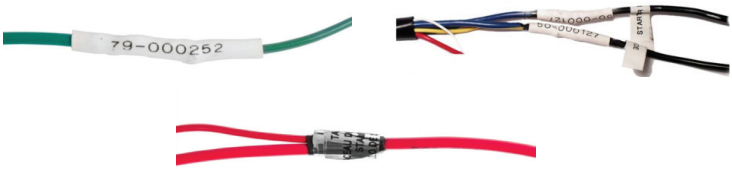
ATTENTION!

- ***Each connection must be as neat and secure as possible – use solder point connections and supplied heat shrinks***
- ***Do not use butt or clip connectors to seal wiring, as this may lead to corrosion and intermittent power***
- ***Use supplied, heat shrinks or tamper resistant labels on all solder connections. Refer to section 24.0 of this manual***
- ***Use supplied tie wraps to neatly incorporate wires into the vehicle wire loom. Keep wires away from vehicle components that move, or that become excessively hot***

1. Solder all wiring connections, except for the ground connections.
2. Place a tamper proof label over the ground connection, as shown:

3. Seal the heat shrinks over the soldered wire connections (where applicable).

   Examples of correctly sealed connections:



4. If OBD-II was used, seal heat shrink over the connection between ECU cable and the OBD-II cable assembly.
5. Seal the alarm horn wiring connections with electrical tape (3M brand or equivalent) and a tamper-proof label.
6. If an alarm flasher or retest alarm was used, seal the connections with electrical tape (3M brand or equivalent) and a tamper proof label.
7. Reinstall all vehicle panels.
8. Perform a final visual inspection. Ensure that the vehicle is returned to its original appearance.

You have completed the installation of the ALCOLOCK LR alcohol interlock device

21.0 HS monitor procedure and ITE monitor transaction

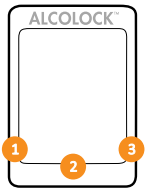
During routine monitoring appointments, perform the HS monitor procedure by following the steps that appear on the HS screen. The purpose of the HS monitor procedure is to test device functions.

At the end of the HS monitor procedure, detach the HS from the vehicle and connect it to a PC, via a Download Station (79-008954) or Universal Calibration Station (79-007303), to perform an ITE monitor transaction. The ITE monitor transaction is for downloading event logs.

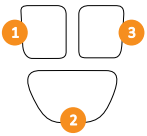
ATTENTION!

- ***Complete the HS monitor procedure on the HS display before performing an ITE monitor transaction***
- ***Before beginning the procedure ensure that there is sufficient ventilation for vehicle exhaust fumes. Failure to do so may cause injury***
- ***Before beginning the procedure ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***

USING HANDSET BUTTONS:



HS screen options will appear at the bottom of the display (at the left, right or bottom-centre).



*Press the **left, right** or **bottom** navigation button to select a corresponding screen-command option.*

NOTE:

- *To access the HS monitor procedure, a daily service code is required – obtained from ITE*
- *To exit the procedure at any time, press and hold the bottom button to select **Exit***
- *Remaining in any screen for 5 minutes will exit the procedure*

21.1 Performing the HS monitor procedure

1. Press any navigation button to power up the device.

   Wait… is briefly displayed as the HS powers up.

   Ready for Test is automatically displayed.

2. Press and hold the *left* button to enter **Menu**.

3. In **Menu**, press **Prev** or **Next** to scroll to **Service**, then press **Select**.

4. Input the daily 4-digit service code (press **+** or **–** to change a digit, and press **Select** to move to the next digit).

5. After setting the last digit, press **Select**.

6. With the correct code entered, press **Accept**; otherwise, press **Correct** to re-enter the service code, or press **Cancel** to return to **Main Menu**.

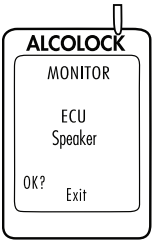
7. In the **SERVICE** menu, press **Prev** or **Next** to scroll to **Monitor**, then press **Select**.

Wait is briefly displayed as the monitor procedure loads.

***NOTE: MONITOR** will display at the top of the screen during the HS monitor procedure.*

8. **HANDSET LED & Buzzer** is displayed. The HS LED light flashes from red to green to amber. On each flash, the HS beeps with a descending pitch. After this sequence, **OK** appears.

> ***If there is no LED flash or HS beep, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the HS cable and replace the HS.***



ECU Speaker is displayed. The HS LED light is off. The ECU beeps and the pitch descends for three beeps. After this sequence, **OK** is displayed.

9. If the test is successful, press **OK**.

> ***If the ECU does not beep, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable connections and replace the ECU.***

VEHICLE Alarm is displayed. The HS LED light is off. The alarm horn sounds and (if used) the alarm flasher flashes. After the alarm horn sounds three times and the alarm flasher flashes three times (if used), **OK** is displayed.

10. If the test is successful, select **OK**.

> ***If the vehicle alarm horn does not sound, or (only if used) the alarm flasher does not flash, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable alarm horn and alarm flasher connections, and replace the ECU alarm horn or alarm flasher.***

Retest Alarm is displayed (even if not used). The HS LED light is off. (If used) the retest alarm flashes. After the retest alarm flashes 3 times, **OK** is displayed. (If a retest alarm is not used, wait for **OK** to display).

11. If the test is successful, select **OK**.

> ***If the retest alarm does not flash (only if not used), or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable and alarm flasher connections and replace the ECU and alarm flasher.***

Turn Ignition ON is displayed.
Ignition: OFF and **Relay: OFF** are displayed.

12. Turn the ignition key to the **on** position.

    The vehicle engine cannot be started because the **Relay** is **OFF**.

Turn Ignition OFF is displayed.

Ignition: ON and **Relay: OFF** are displayed.

13. Turn the key to the **off** position.

Turn Ignition ON is displayed.

Ignition: OFF and **Relay: ON** are displayed.

ATTENTION!

- ***Before starting the ignition, ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***
- ***Leaving the vehicle engine on for too long will cause the vehicle alarm horn to sound***

14. Turn the key to the **start** position.

The vehicle engine will start because the **Relay** is **On**.

Start Engine is briefly displayed. Continue to the next section.

21.2 OBD-II Select

1. **OBD-II SELECT** is automatically displayed.

> ***For conventional / non-hybrid vehicles, the ALCOLOCK LR device must obtain a tach (rpm) reading from under the hood.***
>
> ***For non-hybrid vehicles with OBD-II, a tach signal may be obtained by connecting the ECU to vehicle OBD-II (refer to section.***
>
> ***For hybrid vehicles, tach is not available – an OBD-II speed threshold is already programmed into the software. The ECU must be connected to the vehicle OBD-II source.***

2. Press **Select** to scroll to one of the 3 following options:

OBD / TACH – for non-hybrid vehicles connected to OBD-II.

OBD / SPEED – for hybrid vehicles connected to OBD-II.

NO OBD – for vehicles not connected to OBD-II, and instead connected to a direct tach source under the hood.

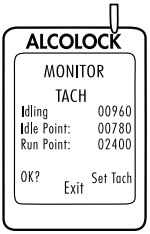
3. After the correct option has been selected, based on the vehicle and connection type, press **OK**.

   Read only one of the following sections of this manual, based on the step 2 selection:

   - **OBD / TACH** – section 21.2.1
   - **OBD / SPEED** – section 21.2.2
   - **NO OBD** – section 21.2.3

21.2.1 OBD / TACH

NOTE: *Read this section for non-hybrid vehicles where the tach was obtained through OBD-II.*



After selecting the **OBD / TACH** option in the previous screen, **TACH** is displayed, along with the following:

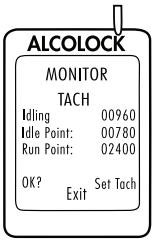
- **Idling** – the vehicle engine rpm reading

> ***If the "Idling" rpm reading is lower than the "Idle Point" rpm value on the second line, "Stopped" will be displayed instead of "Idling".***
>
> ***If the "Idling" rpm reading is higher than the "Run Point" rpm value on the third line, "Running" will be displayed instead of "Idling".***
>
> ***If the rpm reading on the first line is not set to "Idling", check ECU OBD-II connection.***
>
> ***If the problem continues, obtain the tach signal from a location under the hood. Refer to section 13.0 and 14.6 of this manual. The ECU and HS may need to be exchanged.***

- **Idle Point** – a preset rpm threshold value
- **Run Point** – a preset rpm threshold value

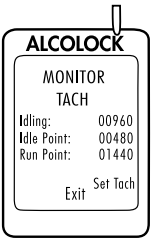
> ***The initial "Idle Point" and "Run Point" values may vary, depending on the vehicle.***

1. Check that the **Idling** rpm reading reflects the reading on the dashboard rpm gauge.



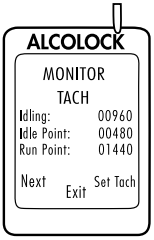
2. If the **Idling** rpm reading is acceptable, press **Set Tach** to reset the rpm thresholds.

> ***After "Set Tach" is pressed, the "Idling" rpm reading (on the first line) is used to reset the "Idle Point" and "Run Point" tach thresholds (the second and third lines).***



TACH is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading
- **Idle Point** – reset to 0.5 x the **Idling** engine rpm
- **Run Point** – reset to 1.5 x the **Idling** engine rpm



Next is displayed at the bottom-left of the screen.

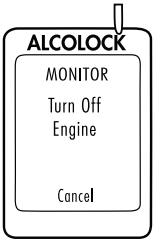
3. If the tach thresholds are correct, press **Next** (otherwise press Set Tach until a correct tach threshold is obtained).

After **Next** is pressed, **ACCELERATE** is displayed, along with the following:

- **Idling** – the current engine rpm
- **Idle Point** – the reset rpm threshold value
- **Run Point** – the reset rpm threshold value

ATTENTION! ***Ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving.***

4. Press the accelerator pedal and steadily increase the engine rpm to a point slightly above the **Run Point** rpm threshold value on the third line. (This is to validate the **Run Point** rpm threshold value that was reset in step 3.)



If the **Run Point** value is correct, **Turn Off Engine** is automatically displayed after the engine rpm exceeds the value on the third line.

5. Turn the key to the **off** position. (Press **Cancel** to return to the **Monitor** menu.)

Skip sections 21.2.2 and 21.2.3 and continue to section 21.3 to input the odometer reading.

21.2.2 OBD Speed

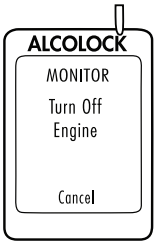
NOTE: *Read this section for hybrid vehicles only.*

After selecting the **OBD/SPEED** option in section 21.2 “OBD Select”, **CHECK SPEED** is displayed.

Speed is displayed at 0, however the value may slightly fluctuate.

The OBD-II speed threshold is already programmed into the software and does not need to be set. Do not move the vehicle.

1. Press **OK** to proceed.



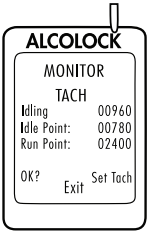
If the speed is correct, **Turn Off Engine** is displayed.

2. Turn the key to the **off** position. (Press **Cancel** to return to the **Monitor** menu.)

Skip section 21.2.3 and continue to section 15.3 to input the odometer reading.

21.2.3 No OBD

NOTE: *Read this section for non-hybrid vehicles where the tach was not obtained through OBD-II.*



After selecting the **NO OBD** option in section 21.2 “OBD Select”, **TACH** is displayed, along with the following:

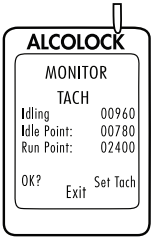
- **Idling** – the vehicle engine rpm reading

> ***If the “Idling” rpm reading is lower than the “Idle Point” rpm value on the second line, “Stopped” will be displayed instead of “Idling”.***
>
> ***If the “Idling” rpm reading is higher than the “Run Point” rpm value on the third line, “Running” will be displayed instead of “Idling”.***
>
> ***If the rpm reading on the first line is not set to “Idling”, check the tach source and the ECU connection. A new tach source may be required.***
>
> ***If the problem continues, obtain the tach signal using a digital tach sensor (DTS). The ECU or HS may need to be exchanged.***

- **Idle Point** – a preset rpm threshold value
- **Run Point** – a preset rpm threshold value

> ***The initial “Idle Point” and “Run Point” values may vary, depending on the vehicle.***

1. Check that the **Idling** rpm reading reflects the reading on the dashboard rpm gauge.

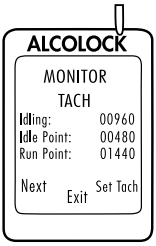


2. If the **Idling** rpm reading is acceptable, press **Set Tach** to reset the rpm thresholds.

> ***After "Set Tach" is pressed, the "Idling" rpm reading (on the first line) is used to reset the "Idle Point" and "Run Point" tach thresholds (the second and third lines).***

TACH is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading
- **Idle Point** – reset to 0.5 x the **Idling** engine rpm
- **Run Point** – reset to 1.5 x the **Idling** engine rpm



Next is displayed at the bottom-left of the screen.

3. If the tach thresholds are correct, press **Next** (otherwise press Set Tach until a correct tach threshold is obtained).

After **Next** is pressed, **ACCELERATE** is displayed, along with the following:

- **Idling** – the current engine rpm
- **Idle Point** – the reset rpm threshold value
- **Run Point** – the reset rpm threshold value

ATTENTION! ***Ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving.***

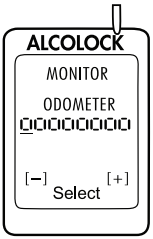
4. Press the accelerator pedal and steadily increase the engine rpm to a point slightly above the **Run Point** rpm threshold value on the third line. (This is to validate the **Run Point** rpm threshold value that was reset in step 3.)

If the **Run Point** value is correct, **Turn Off Engine** is automatically displayed after the engine rpm exceeds the value on the third line.

5. Turn the key to the **off** position. (Press **Cancel** to return to the **Monitor** menu.)

Continue to the next section.

21.3 Input odometer reading



After the tach or speed threshold has been set, **Odometer** is displayed.

1. Set the odometer value (press **–** or **+** to change a digit, and press **Select** to move to the next digit).

2. After entering the last digit value, press **Select**, then press **ACCEPT**. (Press **Correct** to reset the odometer value.) Continue to the next section.

21.4 Performing an ITE monitor transaction

After the odometer value has been accepted, **Monitor Complete Connect to PC** is displayed.

1. Disconnect the HS from the HS cable.
2. Using the USB cable (79-008958), connect the HS to the UCS or DS and perform an ITE monitor transaction.

NOTE: *Refer to the ITE application manual for the monitor transaction procedure.*

3. When the ITE transaction is complete, connect the HS back to the ECU.

Monitor Complete is displayed.

4. Press and hold the *right* navigation button.

Ready for Test is displayed along with the client's last name.

The HS monitor procedure and ITE monitor transaction are complete. Continue to the next section.

22.0 Device removal overview

A device removal is performed at the end of program. The following procedures must be completed in the order provided:

- Running an HS removal procedure, following the steps that appear on the HS display
- Running an ITE removal transaction
- Detaching the ECU, alarm horn and alarm flasher from the vehicle
- Restoring the vehicle to the condition that it was in before the installation

⚠ ***ATTENTION!*** ***Before running the HS removal procedure, visually inspect the ECU, the HS and the wiring harness for any signs of tampering. For more information about tampering, refer to section 24.0 of this manual.***

22.1 Running an HS removal procedure and ITE removal transaction

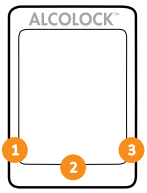
Perform the HS removal procedure by following the steps that appear on the HS screen. The purpose of the HS removal procedure is to test device functions.

At the end of the HS monitoring procedure, detach the HS from the vehicle and connect it to a PC, via a Download Station (79-008954) or Universal Calibration Station (79-007303), to run an ITE removal Transaction.

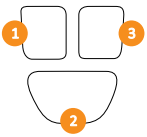
ATTENTION!

- ***Complete the HS removal procedure on the HS display before performing an ITE removal transaction***
- ***Before beginning the procedure ensure that there is sufficient ventilation for vehicle exhaust fumes. Failure to do so may cause injury***
- ***Before beginning the procedure ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***

USING HANDSET BUTTONS:



HS screen options will appear at the bottom of the display (at the left, right or bottom-centre).



*Press the **left, right** or **bottom** navigation button to select a corresponding screen-command option.*

NOTE:

- *To access the HS removal procedure, a daily service code is required – obtained from ITE*
- *To exit the procedure at any time, press and hold the bottom button to select **Exit***
- *Remaining in any screen for 5 minutes will exit the procedure*

22.2 Performing the HS removal procedure

1. Press any navigation button to power up the device.

   Wait… is briefly displayed as the HS powers up.

Ready for Test is automatically displayed.

2. Press and hold the *left* button to enter **Menu**.

3. In **Menu**, press **Prev** or **Next** to scroll to **Service**, then press **Select**.

4. Input the daily 4-digit service code (press **+** or **–** to change a digit, and press **Select** to move to the next digit).

5. After setting the last digit, press **Select**.

6. With the correct code entered, press **Accept**; otherwise, press **Correct** to re-enter the service code, or press **Cancel** to return to **Main Menu**.

7. In the **SERVICE** menu, press **Prev** or **Next** to scroll to **Removal**, then press **Select**.

Wait is briefly displayed as the removal procedure loads.

***NOTE: REMOVAL** will display at the top of the screen during the HS removal procedure.*

8. **HANDSET LED & Buzzer** is displayed. The HS LED light flashes from red to green to amber. On each flash, the HS beeps with a descending pitch. After this sequence, **OK** appears.

> ***If there is no LED flash or HS beep, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the HS cable and replace the HS.***

ECU Speaker is displayed. The HS LED light is off. The ECU beeps and the pitch descends for three beeps. After this sequence, **OK** is displayed.

9. If the test is successful, press **OK**.

> ***If the ECU does not beep, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable connections and replace the ECU.***

VEHICLE Alarm is displayed. The HS LED light is off. The alarm horn sounds and (if used) the alarm flasher flashes. After the alarm horn sounds three times and the alarm flasher flashes three times (if used), **OK** is displayed.

10. If the test is successful, select **OK**.

> ***If the vehicle alarm horn does not sound, or (only if used) the alarm flasher does not flash, or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable alarm horn and alarm flasher connections, and replace the ECU alarm horn or alarm flasher.***

Retest Alarm is displayed (even if not used). The HS LED light is off. (If used) the retest alarm flashes. After the retest alarm flashes 3 times, **OK** is displayed. (If a retest alarm is not used, wait for **OK** to display).

11. If the test is successful, select **OK**.

> ***If the retest alarm does not flash (only if not used), or "OK" is not displayed, press and hold the bottom button to exit the procedure.***
>
> ***Restart the procedure and if the problem persists, check the ECU cable and alarm flasher connections and replace the ECU and alarm flasher.***

Turn Ignition ON is displayed.

Ignition: OFF and **Relay: OFF** are displayed.

12. Turn the ignition key to the **on** position.

    The vehicle engine cannot be started because the **Relay** is **OFF**.

Turn Ignition OFF is displayed.

Ignition: ON and **Relay: OFF** are displayed.

13. Turn the key to the **off** position.

Turn Ignition ON is displayed.

Ignition: OFF and **Relay: ON** are displayed.

ATTENTION!

- ***Before starting the ignition, ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving***
- ***Leaving the vehicle engine on for too long will cause the vehicle alarm horn to sound***

14. Turn the key to the **start** position.

    The vehicle engine will start because the **Relay** is **On**.

Start Engine is briefly displayed. Continue to the next section.

22.3 OBD-II Select

1. **OBD-II SELECT** is automatically displayed.

> ***For conventional / non-hybrid vehicles, the ALCOLOCK LR device must obtain a tach (rpm) reading from under the hood.***
>
> ***For non-hybrid vehicles with OBD-II, a tach signal may be obtained by connecting the ECU to vehicle OBD-II.***
>
> ***For hybrid vehicles, tach is not available – an OBD-II speed threshold is already programmed into the software. The ECU must be connected to the vehicle OBD-II source.***

2. Press **Select** to scroll to one of the 3 following options:

OBD / TACH – for non-hybrid vehicles connected to OBD-II.

OBD / SPEED – for hybrid vehicles connected to OBD-II.

NO OBD – for vehicles not connected to OBD-II, and instead connected to a direct tach source under the hood.

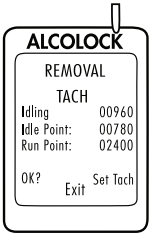
3. After the correct option has been selected, based on the vehicle and connection type, press **OK**.

   Read only one of the following sections of this manual, based on the step 2 selection:

   - **OBD / TACH** – section 22.3.1
   - **OBD / SPEED** – section 22.3.2
   - **NO OBD** – section 22.3.3

22.3.1 OBD / TACH

NOTE: *Read this section for non-hybrid vehicles where the tach was obtained through OBD-II.*



After selecting the **OBD / TACH** option in the previous screen, **TACH** is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading

If the "Idling" rpm reading is lower than the "Idle Point" rpm value on the second line, "Stopped" will be displayed instead of "Idling".

If the "Idling" rpm reading is higher than the "Run Point" rpm value on the third line, "Running" will be displayed instead of "Idling".

If the rpm reading on the first line is not set to "Idling", check ECU OBD-II connection.

If the problem continues, obtain the tach signal from a location under the hood. Refer to section 13.0 and 14.6 of this manual. The ECU and HS may need to be exchanged.

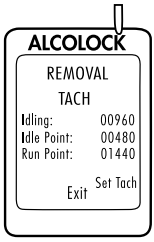
- **Idle Point** – a preset rpm threshold value
- **Run Point** – a preset rpm threshold value

The initial Idle Point and Run Point values may vary, depending on the vehicle.

1. Check that the **Idling** rpm reading reflects the reading on the dashboard rpm gauge.

2. If the **Idling** rpm reading is acceptable, press **Set Tach** to reset the rpm thresholds.

After "Set Tach" is pressed, the "Idling" rpm reading (on the first line) is used to reset the "Idle Point" and "Run Point" tach thresholds (the second and third lines).

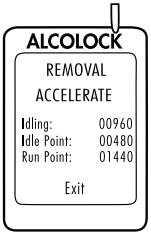


TACH is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading
- **Idle Point** – reset to 0.5 x the **Idling** engine rpm
- **Run Point** – reset to 1.5 x the **Idling** engine rpm

Next is displayed at the bottom-left of the screen.

3. If the tach thresholds are correct, press **Next** (otherwise press Set Tach until a correct tach threshold is obtained).



After **Next** is pressed, **ACCELERATE** is displayed, along with the following:

- **Idling** – the current engine rpm
- **Idle Point** – the reset rpm threshold value
- **Run Point** – the reset rpm threshold value

ATTENTION! ***Ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving.***

4. Press the accelerator pedal and steadily increase the engine rpm to a point slightly above the **Run Point** rpm threshold value on the third line. (This is to validate the **Run Point** rpm threshold value that was reset in step 3.)

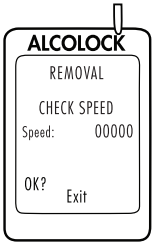
If the **Run Point** value is correct, **Turn Off Engine** is automatically displayed after the engine rpm exceeds the value on the third line.

5. Turn the key to the **off** position. (Press **Cancel** to return to the **Removal** menu.)

Skip sections 22.3.2 and 22.3.3 and continue to section 22.4 to input the odometer reading.

22.3.2 OBD Speed

NOTE: *Read this section for hybrid vehicles only.*



After selecting the **OBD/SPEED** option in section 22.3 “OBD Select”, **CHECK SPEED** is displayed.

Speed is displayed at 0, however the value may slightly fluctuate.

The OBD-II speed threshold is already programmed into the software and does not need to be set. Do not move the vehicle.

1. Press **OK** to proceed.

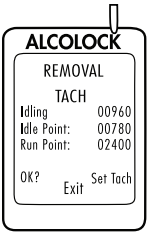
   If the speed is correct, **Turn Off Engine** is displayed.

2. Turn the key to the **off** position. (Press **Cancel** to return to the **Removal** menu.)

   Skip section 22.3.3 and continue to section 22.4 to input the odometer reading.

22.3.3 No OBD

NOTE: *Read this section for non-hybrid vehicles where the tach was not obtained through OBD-II.*



After selecting the **NO OBD** option in section 21.2 “OBD Select”, **TACH** is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading

> ***If the “Idling” rpm reading is lower than the “Idle Point” rpm value on the second line, “Stopped” will be displayed instead of “Idling”.***
>
> ***If the “Idling” rpm reading is higher than the “Run Point” rpm value on the third line, “Running” will be displayed instead of “Idling”.***
>
> ***If the rpm reading on the first line is not set to “Idling”, check the tach source and the ECU connection. A new tach source may be required.***
>
> ***If the problem continues, obtain the tach signal using a digital tach sensor (DTS). The ECU or HS may need to be exchanged.***

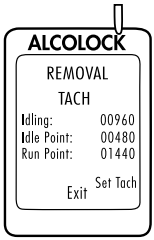
- **Idle Point** – a preset rpm threshold value
- **Run Point** – a preset rpm threshold value

> ***The initial Idle Point and Run Point values may vary, depending on the vehicle.***

1. Check that the **Idling** rpm reading reflects the reading on the dashboard rpm gauge.

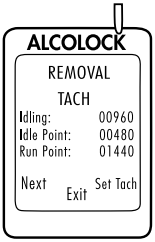
2. If the **Idling** rpm reading is acceptable, press **Set Tach** to reset the rpm thresholds.

> ***After "Set Tach" is pressed, the "Idling" rpm reading (on the first line) is used to reset the "Idle Point" and "Run Point" tach thresholds (the second and third lines).***



TACH is displayed, along with the following:

- **Idling** – the vehicle engine rpm reading
- **Idle Point** – reset to 0.5 x the **Idling** engine rpm
- **Run Point** – reset to 1.5 x the **Idling** engine rpm



Next is displayed at the bottom-left of the screen.

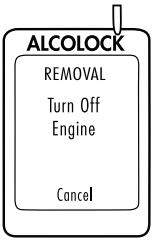
3. If the tach thresholds are correct, press **Next** (otherwise press Set Tach until a correct tach threshold is obtained).

After **Next** is pressed, **ACCELERATE** is displayed, along with the following:

- **Idling** – the current engine rpm
- **Idle Point** – the reset rpm threshold value
- **Run Point** – the reset rpm threshold value

ATTENTION! ***Ensure that the vehicle is in the park or neutral position, with parking brake engaged, to prevent the vehicle from moving.***

4. Press the accelerator pedal and steadily increase the engine rpm to a point slightly above the **Run Point** rpm threshold value on the third line. (This is to validate the **Run Point** rpm threshold value that was reset in step 3.)

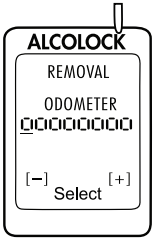


If the **Run Point** value is correct, **Turn Off Engine** is automatically displayed after the engine rpm exceeds the value on the third line.

5. Turn the key to the **off** position. (Press **Cancel** to return to the **Removal** menu.)

Continue to the next section.

22.4 Input odometer reading



After the tach or speed threshold has been set, Odometer is displayed.

1. Set the odometer value (press **–** or **+** to change a digit, and press **Select** to move to the next digit).

2. After entering the last digit value, press **Select**, then press **ACCEPT**. (Press **Correct** to reset the odometer value.) Continue to the next section.

22.5 Performing an ITE removal transaction

After the odometer value has been accepted, **Removal Complete Connect to PC** is displayed.

1. Disconnect the HS from the HS cable.
2. Using the USB cable (79-008958), connect the HS to the UCS or DS and perform an ITE removal transaction.

NOTE: *Refer to the ITE application manual for the removal transaction procedure.*

3. When the ITE transaction is complete, connect the HS back to the ECU.

Removal Complete is displayed.

4. Press and hold the *right* navigation button.

Handset not Activated is displayed.

The HS removal procedure and ITE removal transaction are complete. Continue to the next section.

22.6 Removing ECU and restoring the vehicle

ATTENTION!

- ***Before removing the device, you must perform an HS removal procedure and an ITE removal Transaction***
- ***Before beginning the procedure, ensure that the key is not in the ignition***
- ***To avoid damaging the ECU, the ground point should be disconnected last***
- ***Before turning on the vehicle engine, ensure that there is sufficient ventilation for vehicle exhaust fumes. Failure to do so may cause injury***

1. If the ECU was connected to a tach location under the hood do the following: (otherwise continue to step 2).
   A. Disconnect ECU wire 2 (Green) from the wire from the tachometer location under the hood.
   B. Use a heat shrink to restore the tachometer wire to its original condition.
2. If the ECU was connected to OBD-II, disconnect the ECU OBD-II assembly from the vehicle OBD-II port.
3. Disconnect ECU wire 12 (Orange) from the red (positive) wire of the alarm horn and alarm flasher.
4. If a retest alarm was used (for the hearing impaired) disconnect ECU wire 6 (Pink) from the red (positive) wire of the retest alarm and disconnect ECU wire 11 (Violet) from ECU wire 1 (Red).

5. Disconnect ECU wires 10 (Blue-Yellow) and 9 (Light Blue) from the wire that was cut during installation (Wire 10 and Wire 9 are connected in series with this wire). This wire was originally running between the ignition switch and the starter relay or solenoid (depending on the make of the vehicle).

   ***NOTE**: Refer to appendix 4 at the back of this manual for the wiring diagram that includes an external relay.*

6. Reconnect the two ends of the cut wire. Test the wire by moving the ignition switch to the **start** position. The starter should engage. Once the connection is checked, solder and heat-shrink the wire back together.
7. Disconnect ECU wire 3 (White) from the +12 volt or +24 volt source wire that was found during installation.
8. Using electrical tape (3M brand or equivalent) seal the part of the +12 volt or +24 volt wire that was exposed during installation.
9. Disconnect ECU wire 1 (Red) from the continuous (un-switched) source of +12 volt or +24 volt that was found during installation.
10. Using electrical tape seal the exposed part of the +12 volt or +24 volt source wire.
11. If OBD-II was used:
    A. Disconnect the OBD-II connector of vehicle from the OBD-II cable assembly.
    B. Detach the female OBD-II connector that was mounted to the vehicle panel.
    C. Mount the vehicle OBD-connector to the vehicle panel (its original place).
    D. Disconnect the 5-pin white connector of the ECU cable from the OBD-II cable assembly.
12. Disconnect ECU wire 8 (Black) and the black wires from the alarm horn, alarm flasher or retest alarm (if used) from the ground point (the connection to the ground point during installation was made using a ring terminal and a tamper-proof screw).
13. Ensure that all the wires that were cut and reconnected are soldered together, then resealed with tape and heat shrinks.
14. Solder all connections. Shrink-wrap, tape and neatly tie-strap them.
15. Reinstall all vehicle panels.
16. Perform a final inspection. Ensure that vehicle is returned to its original appearance.

23.0 Recycling the ALCOLOCK LR device

Following the removal, devices (ECU, HS, or both) that are functioning correctly will remain at the Service Centre. Devices in need of repair, or at the end of their service life, must be returned to ACS.

24.0 Tampering

This section will outline signs and examples of tampering as well as the tamper reporting procedure.

24.1 Signs of tampering

If there are signs of tampering (indicated by an HS Recall or during routine vehicle inspection), inspect the entire ECU wire harness for cuts and tamper seal removal. Check the ECU and the HS for any signs of tampering.

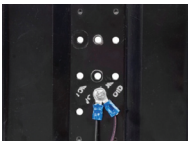
Look for the following:

- Cut or stripped wiring
- Damaged seals
- A **VOID** marking in the place of a removed seal

24.2 Examples of tampering – before and after

The following are areas of the interlock where tampering is likely to take place. The left side shows areas where tampering has not occurred. The right side shows those same areas after tampering has occurred.

⚠ ***ATTENTION!*** ***Instances of tampering are not limited to these areas, and you must check the entire device wiring assembly and all components for signs of tampering.***

Before tampering	After tampering
Tamper resistant label over wiring: 	***NOTE:*** *Look for any traces of the* ***VOID*** *marking left under a removed seal.* 
	
Tamper resistent label over vehicle grounding: 	

Tamper seal over security enclosure (front clip): 	
HS screw plugs (x4): 	

24.3 Tamper report procedure

The below table lists interlock events that are associated with tampering. If any interlock event appears in the event log, the client must fill out an occurrence report that provides an explanation for that event.

For more information refer to the ALCOLOCK LR compliance manual and troubleshooting manual.

ATTENTION!

- ***Any signs of tampering must be detailed in the Tamper Report (refer to appendix 1 in this manual)***
- ***Tampering is not limited to these areas. Inspect the entire ALCOLOCK LR device***

Event (with recall number)	Description	Where to Inspect
Start Violation (7)	Vehicle was started without passing a breath test (hot wiring, push starting).	Inspect the starter wires for cuts at or around the seals. ***NOTE**: (For manual transmissions) The vehicle may have been push started, in which case there may be no visible sign of tampering.*
Extended missed retest (5) or failed retest (6)	Failure to respond to a **Retest** or **Pull Over**, **Turn Off Engine** message within the set time limit.	Inspect the alarm horn and all associated wiring for cuts or removed seals.
Short (8) or long (14) power interrupt	Vehicle battery was disconnected (refer to compliance guide).	Inspect wires that are connected from the ECU to the ground, and to the main power source. ***NOTE**: If the battery was disconnected, there may not be any visible signs of tampering.*

If the event was caused by service at an auto repair facility:

The client must present a work order that matches the date and time of the logged Recall. Even if a valid work order is provided by the client, the service technician must contact the mechanic to verify the work order and inspect the vehicle.

The service technician must resolve any matters surrounding the functioning of the ALCOLOCK LR device.

***NOTE**: If the event was not caused by a mechanic, it must be documented in the occurrence report.*

If the event did not result from service at an auto repair facility:

- Inspect the vehicle and photograph any sign of tampering
- Fill out a tamper report detailing the event

***NOTE:** A sample tamper report is attached in appendix 1 of this manual.*

Appendixes

Appendix 1: Tamper report

Compliance Monitoring

Vehicle tamper report

Surname:	**Program #:**
First Name:	**Driver's Licence #:**
Tel.:	**Transaction #:**
Vehicle Model:	**Year:**
Centre No.:	**Contact:**
Handset S/N:	**ECU S/N:**
Date:	**Time:**
Tamper Type:	
Date of Tamper:	**Time of Tamper:**
Comments:	

Violation Type	**Indicate all Violations**
Power Off/ Power On Recall	**Yes** ☐ **No** ☐ **Picture** ☐
Start Violation	**Yes** ☐ **No** ☐ **Picture** ☐
Other	**Yes** ☐ **No** ☐ **Picture** ☐
Other	

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ALCOLOCK @_____

Appendix 2: Glossary

accepted breath sample: A breath sample that fulfills the requirements for volume, flow, exhalation time and other considerations such as human recognition (e.g., humming). The acceptance of the breath sample is independent of alcohol concentration.

accepted breath test: An accepted breath sample with a BrAC below the preset limit.

alcohol interlock: A device that prevents a vehicle engine from being started until an accepted breath test is presented.

alcohol interlock program: A structured activity in which the client is enrolled during a period of license restriction or probation, during which the alcohol interlock is installed in the client's vehicle, and for which there are requirements for monitoring of the activity, periodic servicing of the alcohol interlock, and completion of compliance reports to the administering authority for the program.

BrAC: Mass concentration of ethanol in a breath sample, used to measure a person's level of alcohol intoxication.

blocked state: State in which the alcohol interlock is inhibiting the vehicle's engine from being started.

bypass: Starting of the vehicle engine without providing an accepted breath test or using an emergency override.

calibration: The process of comparing a breath alcohol test from an alcohol interlock device to a reference standard, then setting the device to meet the reference standard. Calibration is periodically required to maintain breath alcohol test accuracy.

circumvention: An attempt to bypass an alcohol interlock, whether by providing samples other than the natural unfiltered breath of the driver, starting the vehicle engine without using the ignition switch, or any other act intended to start the vehicle without first providing an accepted breath test.

Download Station (DS): A device, produced by ACS, which downloads and analyzes the alcohol interlock event log.

DTS (Digital Tach Sensor): A device, produced by ACS, installed from the ECU to a location under the hood, to provide a tach value for the alcohol interlock. A DTS is used when the tach signal wire cannot be found or the tach signal is weak.

electronic control unit (ECU): Part of the ALCOLOCK LR device, connected with the vehicle power and control circuits and to the HS.

emergency override code: A reset code inputted into the alcohol interlock HS to move the device from a blocked to an unblocked state.

exchange transaction (HS or ECU): Performed on ITE when an installed HS or ECU requires replacement.

handset (HS): Part of the ALCOLOCK LR device that is used to conduct breath alcohol tests and communicate with the driver.

HDMI (high-definition multimedia interface): The ALCOLOCK LR device HS and ECU are each equipped with an HDMI receptacle.

GPS: Global positioning system.

idle threshold: The tach signal (rpm) value at which the vehicle engine is turned on without pressing the accelerator pedal. During the HS install, monitor and removal procedures, the alcohol interlock device sets the idle threshold at 0.5 x idling engine rpm.

INTERTRACK Enterprise (ITE): A proprietary computer-software application, and its suite of applications, developed by ACS and provided as a service over the internet for use by Service Providers, Service Centres, and others authorized by ACS for the delivery of Program Services – including any upgrades thereto.

installation appointment: The initial Service Centre appointment for reviewing client status, physically inspecting the vehicle, installing the alcohol interlock, activating and testing alcohol interlock functions, and providing client training.

install HS procedure: Performed on the HS display, during alcohol interlock installation, to activate and test the device.

install transaction: Performed on ITE, during device installation, to activate the device – initiated after performing an install HS procedure.

monitoring appointment: A regularly scheduled Service Centre appointment for reviewing client status, physically inspecting the vehicle, testing alcohol interlock functions, and downloading the device event log.

monitor HS procedure: Performed on the HS display, during monitoring appointments, to test the alcohol interlock.

monitor transaction: Performed on ITE, during monitoring appointments, to download the event log – initiated after performing a monitor HS procedure.

mouthpiece: A hygienic and disposable interface between the client and the alcohol interlock, which must be used to provide an accepted breath sample.

OBD-II (On-board diagnostic): A computer system, built in vehicles, which can be accessed to provide important vehicle information – such as engine rpm. The service technician may connect the alcohol interlock to the vehicle OBD-II system to obtain a tach reading.

permanent lockout: The alcohol interlock is in a blocked state that may only be unblocked at an authorized Service Centre. A permanent lockout arises when the client fails to return to the Service Centre within a set date.

preset limit: The BrAC limit set by an administrative authority. An accepted breath test must be below the preset limit.

recall (immediate or early): A condition entered by the alcohol interlock. The device must be reset at an authorized Service Centre before a set date or the device will enter a Permanent Lockout. Recalls arise from program violations or service matters.

removal appointment: A final Service Centre appointment for reviewing client status, physically inspecting the vehicle, testing alcohol interlock functions, downloading the event log, removing the device and restoring the vehicle.

removal HS procedure: Performed on the HS display, during alcohol interlock removal, to activate and test the device.

removal transaction: Performed on ITE, during monitoring appointments, to download the event log – initiated after performing a monitor HS procedure.

reset code: Randomly generated, daily codes inputted to the alcohol interlock HS to change service dates, recall dates, and lockout dates, and to use the emergency override.

rpm (revolutions per minute): The rate of revolution of a vehicle engine, which may be read by a tachometer.

run threshold: The tach signal (rpm) value at which the vehicle engine is on with the accelerator pedal pressed. During the HS install, monitor and removal procedures, the ALCOLOCK LR device sets the vehicle-run threshold at 1.5 x idling engine rpm.

Service Centre: A party authorized by ACS to provide selected program services for clients in a fixed facility and through mobile services, which includes training of Clients; and installation, monitoring, calibration and removal of the product.

service codes: Inputted to the HS by service personnel to access the HS Service menu. These codes are randomly generated and change daily.

Service Provider: A party authorized by ACS to offer program services to clients.

tach (tachometer signal): A value of vehicle engine rpm, as measured by a tachometer instrument. The alcohol interlock requires a tach reading, which may be obtained from OBD-II or from under the hood. Note that for hybrid vehicles, tach is not available and a speed threshold is already programmed into the software.

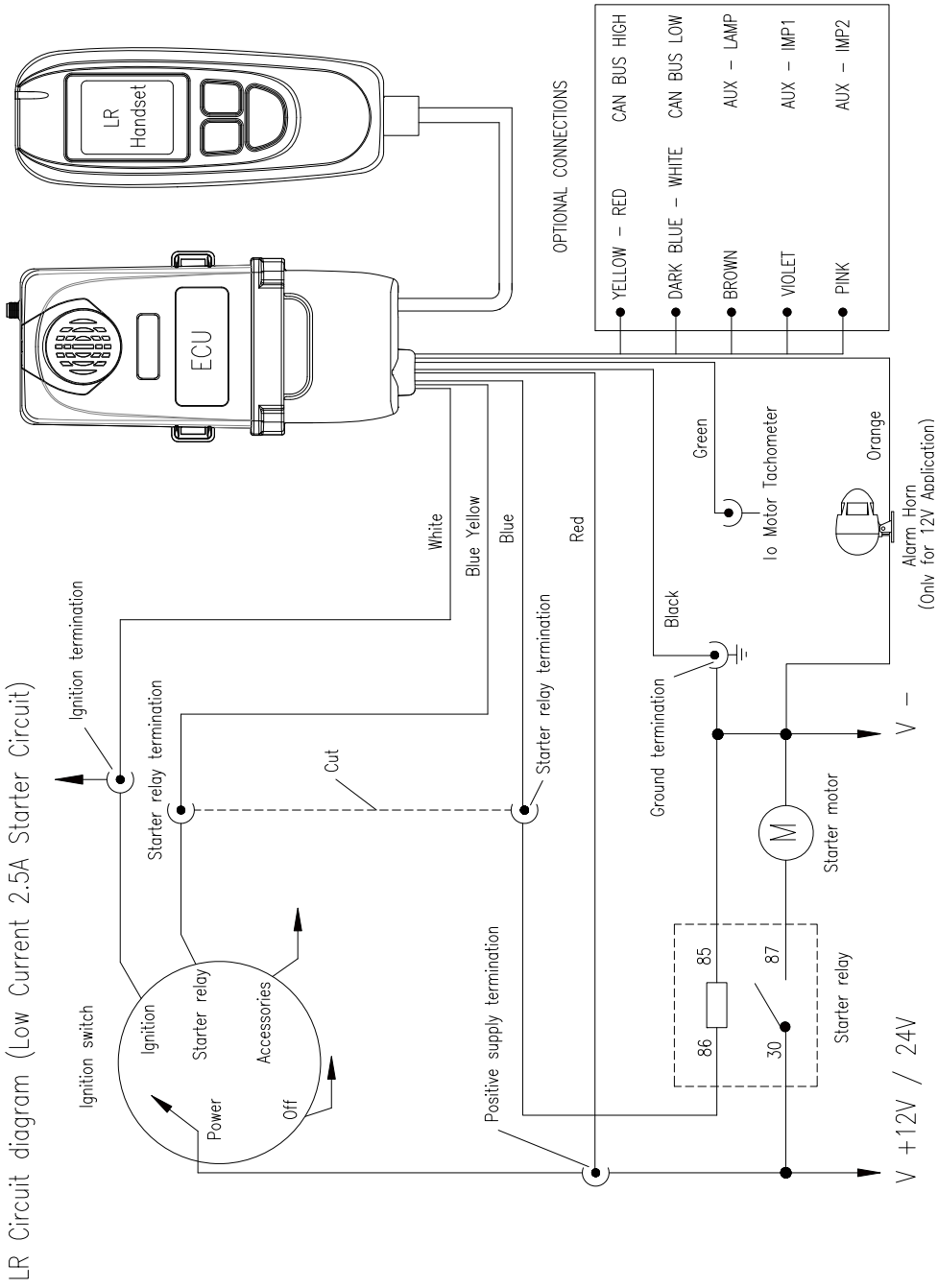
tampering: An unauthorized change to, or interference with, the alcohol interlock or its installation in the vehicle.

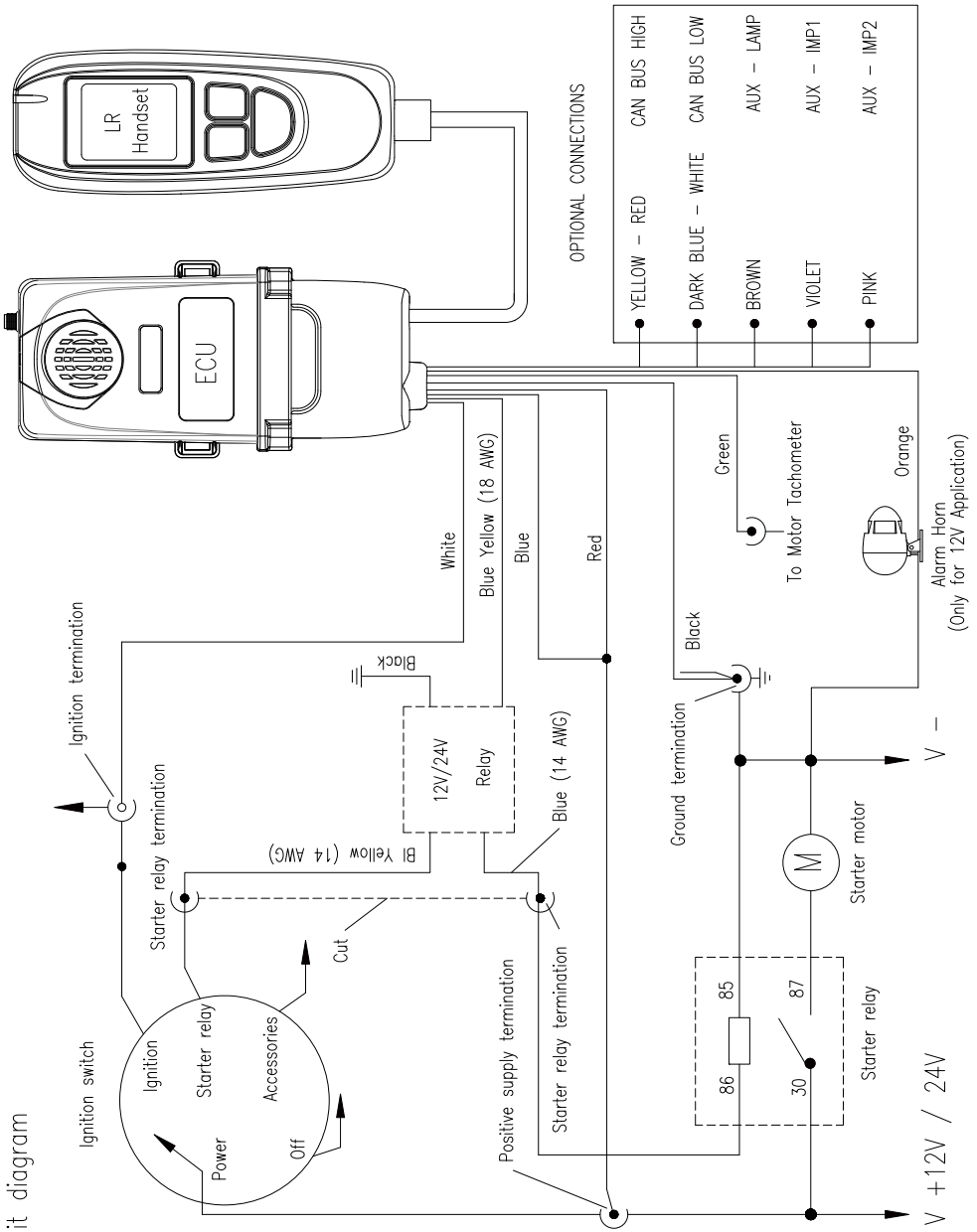
third party maintenance: Maintenance provided on the client vehicle by a repair shop.

unblocked state (unblocking): State in which the alcohol interlock allows the vehicle engine to be started.

Universal Calibration Station (UCS): A device, produced by ACS, which performs alcohol interlock calibration and downloads and analyzes alcohol interlock event logs.

Appendix 3: LR circuit diagram (low-current vehicles)




LR Circuit diagram
LR Handset
ECU
OPTIONAL CONNECTIONS
YELLOW – RED
CAN BUS HIGH
DARK BLUE – WHITE
CAN BUS LOW
BROWN
AUX – LAMP
VIOLET
AUX – IMP1
PINK
AUX – IMP2
White
Blue Yellow (18 AWG)
Blue
Red
Green
To Motor Tachometer
Orange
Alarm Horn
(Only for 12V Application)
Black
Ground termination
Ignition termination
Starter relay termination
Bl Yellow (14 AWG)
12V/24V
Relay
Blue (14 AWG)
Cut
Ignition switch
Ignition
Starter relay
Accessories
Power
Off
Positive supply termination
Starter relay termination
85
87
86
30
Starter relay
Starter motor
V –
V +12V / 24V

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