ALCOHOL COUNTERMEASURE SYSTEMS

Installation Overview
Ignition Interlock Model WR3

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NOTE: 1. This document provides a technical overview of how the WR3 Ignition Interlock System is installed in a vehicle. It is not intended for use as an installation manual.

2. The contents of this document shall be deemed to be "Confidential Information" as defined in the confidentiality and non-disclosure agreement governing its release, and are not to be viewed by or released to any person not bound by such agreement.

1.0 Introduction

The WR3 Ignition Interlock is an electronic breath alcohol analyzer, which connects with the ignition and other control systems of a motor vehicle. It measures the BAC of the intended driver and prevents the vehicle from being started if the BAC exceeds a preset limit.

It is comprised of a Interface Module and detachable Handset. The WR3 is soldered to the vehicle in a tamper resistant fashion.

2.0 Parts List

2.1 Parts and Equipment Available from Alcohol Countermeasure Systems

WR3 Ignition Interlock Interface Module
WR3 Ignition Interlock Handset
Plastic Mouthpiece
Adhesive Backed Velcro® Strips (hook)
Adhesive Backed Velcro® Strips (loop)
8 X 18 X 1/2 inch Hex Self Drilling Screw
12 Volt Power Bar
ACS Auto Calibration Unit
15 Watt, 8 Ohm, dc 12 volt Alarm Horn (Siren)
Computer Communicator cord
Ethyl Alcohol Standard Solution (50 mg%)
Tamper Seal Stickers

2.2 Power Tools to be Supplied by Installer

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

2.3 Hand Tools and Test Equipment to be Supplied by Installer

Wire Stripper (16-22 Gauge)
Diagonal Side Cutters
Scissors
12 Volt Test Probe
Mechanic's Trouble Light with Receptacles
Set of Screwdrivers (Phillips, Flathead, Robertson)
Socket/ Ratchet Set (Metric and Imperial)
Electrical Tape
Utility Knife
Digital Volt Meter
Needle Nose Pliers
Extension Cord

2.4 Materials to be Supplied by Installer

Fender Cover
Shop Towels
Hand Cleaner
8-6 inch Tie Straps
Heat Shrink Tubing: 3/16, 1/4, 3/32, and 3/8 inch sizes as required
16-18 Gauge Tach Wire
Fire Wall Probe
Methyl Hydrate Cleaner

3.0 Inspection

3.1 Inspecting the Electrical System

In order for the WR3 Ignition Interlock System to operate correctly, it is essential that the vehicle's electrical system be in good operating condition. The key components that must be inspected are the battery, the charging system and the starting system.

If any of these areas are found to be defective or inoperative, it is the client's responsibility to have the vehicle repaired prior to the installation.

3.2 Battery Inspection

1. Visually inspect the battery for cracks, holes, leakage, and other damage.

2. Visually inspect the cleanliness of the battery case and posts.

3. Visually check the electrolyte level of the battery.

4 If a battery is detected to be fully discharged (dead) a charge/or boost might be required to get the vehicle started.

3.3 Charging System Inspection

1. Visually inspect the condition of all wires and belts connected to the starter, alternator (or generator/voltage regulator) and battery.

2. Visually inspect the charging system warning light to see if it is on, or check the voltmeter in the dash to see if it is at least 14 volts.

3.4 Starting System Inspection

1. If a starting problem is detected, attach a voltmeter across the battery terminals and notice the voltmeter reading when the engine is cranking. If the voltage is below 9.0 volts or there is no cranking, recommend that the starting system be inspected and repaired.

4.0 Interface Module Installation

Once the vehicle's electrical, charging, and starting systems have been tested and found to be in a satisfactory condition, the WR3 Ignition Interlock system can be installed. Installation consists of the following steps:

- Mounting the INTERFACE MODULE in an appropriate location

- Mounting and connecting the 15 watt 8 ohm ALARM HORN
- Locating and attaching the TACHOMETER SIGNAL WIRE
- Connecting the INTERFACE MODULE CABLE ASSEMBLY
- Testing the installed system.
- Connecting and mounting the HANDSET

While performing the installation it is necessary to keep in mind that the system will one day be removed from the vehicle and that the vehicle must be returned to the same condition as it was prior to the installation. Therefore, it is necessary to choose a location that permits installation of the system with the least amount of drilling/modification to the vehicle. Always attempt to utilize existing hardware and holes to minimize any modifications to the vehicle.

4.1 Mounting the Interface Module

1. Locate a convenient, easily accessible area to install the INTERFACE MODULE (preferably under the dashboard in a position where it will not obstruct the functioning of the vehicle, Example: away from the brake and gas pedal). Wherever possible, try to utilize existing screws and holes. Keep in mind that the module must be positioned so that the handset cable can be securely connected.

NOTE: The module must be positioned so that it does not interfere with the normal operation of the vehicle.

2. Use Velcro® or cable ties to attach the interface module to a secure location

3. Securely tighten all hardware, and inspect the finished assembly.

NOTE: Place the interface module in the correct mounting position. Run all wires to the interface module ensuring that all wire will be hidden once the installation is complete.

4.2 Mounting and Connecting the Alarm Horn

1. Remove the existing bracket from the alarm horn. Open the vehicle's hood and attach the bracket to either the fire wall, fender well or any suitable location.

2 Make sure when mounting the alarm horn to the bracket that there is enough clearance when the hood is closed so it does not damage the hood or the alarm horn.

3. Attach the alarm horn and the tachometer wires to the probe and feed them through the firewall, making sure you have enough slack under the dashboard.

4. Solder the connections to the alarm horn.

5. Tuck the alarm horn wire neatly under the vehicle's existing wiring, wire loom and cable tie it away from moving and excessively hot vehicle components.

4.3 Attaching the Tachometer Signal Wire

1. The location of the tachometer signal must first be determined.

2. The tachometer signal can be verified using the WR3 Handset *Genius*™ diagnostic procedure.

3. To prevent tampering, this wire must be soldered onto the tachometer signal wire, shrink-wrapped and tamper sealed.

4. Tuck the tachometer wire neatly under the vehicle's existing wiring, wire loom and cable tie it away from moving and excessively hot vehicle components.

4.4 Connecting The Interface Module Cable Assembly

The interface module cable assembly consists of 18 colored wires and one handset cable. Eight of these wires must be connected to specific points in the vehicle's wiring system. The other wire is used to connect the alarm horn. It is important that each connection be made as neatly and securely as possible (by soldering and then shrink-wrapping) to insure the correct operation of the WR3 Ignition Interlock system. Tamper proof (*T*P*S*) shrink-wrap tubing is to be used on all solder connections or, if necessary, a tamper seal. The other 9 wires are for future development.

NOTE: Do not use the vehicle's fuse box as a source for the wire connections. In most cases it is easily accessible and vulnerable to tampering.

The eighteen wires comprising the Interface Module Cable Assembly are:

Wire #	Colour	Location
4	Red	+12 Volts (Main Power)
13	Red-Yellow	+12 Volts (Main Power)
5	Black	Ground
1	Black-Yellow	Ground
24	White	Ignition (+12 Volts Switched on position only)
19	Blue/Yellow	Starter (coming from the Ignition switch)
10	Light Blue	Starter (going to the starter)
8	Orange	Alarm horn + (positive)
15	Light Green	Tachometer
26	None	Connector Tamper Detection
27	None	Connector Tamper Detection
Handset	**CPC Cable**	
2,3,6,11, 12,20,21,22	7 wire molded cable	Handset connector cable
Optional	**Wires**	**(For Future Development)**
14	Yellow	Brake
23	Gray	Remote Starter
25	Pink	Trip
7	Yellow-Red	CAN BUSS
9	Dark Blue-White	CAN BUSS
17	Dark Green-Yellow	RS232
16	Light Green-Black	RS232
18	Brown	Spare
28	Brown-Red	Spare
29	Brown-White	Spare

1. Prepare the Interface Module Cable Assembly by stripping back the wires approximately 1/2 inch and applying heat shrink tubing to all wires except wire # 4 & 13, wire # 1 & 5 and wire # 3.

2. Locate wire # 1 & 5 in the Interface Module Cable Assembly and connect it to a ground point using a ring terminal and a tamper proof screw.

NOTE: It is recommended that the ground be connected to the Interlock first so that the interface module is not damaged.

3. Locate the wire # 4 & 13 in the Interface Module Cable Assembly. Wire # 4 & 13 must be connected to a continuous (unswitched) source of +12 volts fused at 10 amp (minimum).

   Using the test probe, locate the appropriate source and test it by moving the ignition switch through all positions including the START and ACCESSORIES position. The + 12 volts must be present at all times.

   Using the strippers, expose 1/2 inch of the source wire and twist the end of wire # 4 & 13 around the +12 volt continuous source.

NOTE: Do not solder connections until all wires are attached and the system has been tested.

4. Locate wire # 24 in the Interface Module Cable Assembly and connect it to a source of +12 volts that is present only when the ignition switch is in the ON and the START position.

   Using the test probe, locate the appropriate source and test it by moving the ignition switch through all positions. The +12 volts must be present only when the ignition switch is in the ON and the START position and must be off in the accessories position.

   Using the strippers expose 1/2 inch of the source wire and twist the end of wire # 3 around it.

5. Locate wire # 19 and wire # 10 in the Interface Module Cable Assembly. These wires must be connected in series to the wire running between the ignition switch and the starter relay or solenoid (depending on the make of the vehicle).

   Use the test probe to locate the wire coming from the ignition switch supplying the “start” signal.

   Clip the wire in two and remove 3/4 inch of insulation from each end. Test the wire by moving the ignition switch to the Start position. You should not hear the starter engage.

   Wire # 19 must be connected to the wire coming from the ignition switch. Wire # 10 must be connected to the wire going to the starter relay or solenoid.

6. Locate wire # 8 in the Interface Module Cable Assembly. This wire is to be connected to the red wire coming from the alarm horn under the hood.

   Attach wire # 8 from the interface module to the (“+”red) positive wire of the alarm horn. Attach the (“-”black) ground wire of the alarm horn to wire # 1 & 5’s connection point.

7. Locate wire # 14 from the Interface Module Cable Assembly. Attach it to the wire coming from the tachometer location under the hood.

4.5 Testing The Installed System

To check the installed system, the WR3 handset *Genius*™ (a proprietary diagnostic and programming feature) must be used. At this point all wires and connections should NOT be soldered.

The *WR3 handset* is connected to the Interface Module's handset port and set to operate in Diagnostic mode. The two buttons on the handset allow the user to navigate through the menus to manually carry out a multi-step test procedure in order to verify that the Interface Module has been installed correctly and that all critical functions are performing within established tolerance limits.

NOTE: After the test sequence has been completed successfully, all connections can then be soldered, shrink-wrapped, taped and neatly tie strapped. Tamper seals are to be applied to the alarm horn and tach wires to prevent tampering. All vehicle panels are then to be reinstalled. A final visual inspection should be done to ensure that the vehicle is returned to its original appearance.

4.6 Connecting and Mounting the Handset

1. Mount the Handset Clip Fixture in a convenient location for the participant using Velcro®. Make certain that the Handset or Handset coil cable does not obstruct any function of the vehicle's normal operation.

2. Plug the Handset into the Interface Module and place the Handset in the Clip Fixture.