



Idle Free Flex Systems® Supplemental Installation Manual
International Workstar 7000 Series Edition

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Flex System Installation Overview

Installing the Flex System includes installation of components on the interior and exterior of the truck.

The exterior modules include the following:

- Coolant Heater
- Engine Start Module (ESM)

The interior modules include the following:

- Touchscreen Control System

Coolant Heater



Touchscreen Control System



Engine Start Module



The following tools are required for installation:

- 3/8 drive ratchet/socket set
- Standard and cross point screwdrivers
- Wire strippers
- Wire crimpers
- Torx wrenches
- Coolant hose clamps
- Coolant hose cutter

Safety

Follow the safety guidelines listed below:

- Always wear safety glasses during all procedures.
- Ensure the work area is clear of trip, slip or fall hazards prior to starting work.
- Wear non-conductive shoes prior to working with electrical components.
- Do not lift heavy objects by yourself; use a lift cart or 2-person procedures.

Coolant Heater Installation

For Coolant Heater Installation instructions, visit this link.

<http://techwebasto.com/documentation/heater/cargoapp/thermo-top-c.html> You will see a link to download the operation manual which also includes the installation instructions on page 401.

Heater Installation

Installation of the coolant heater involves physically mounting the supplied bracket to the firewall inside the engine compartment, and attaching the heater to it. You will then install new coolant hoses, fuel supply, and harness.

Install Coolant Bracket and Heater

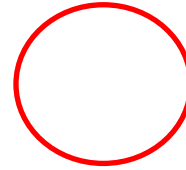
The coolant heater comes with a mounting bracket and hardware.

- 1) Mount the heater bracket with supplied hardware to the firewall inside engine compartment.

- 2) Mount the heater to the heater

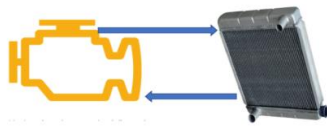


bracket with supplied self-cutting machine screws

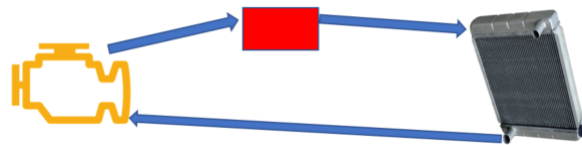


These two images show how the coolant heater is plumbed into coolant circuit.

OEM coolant plumbing from Engine to cab heat exchanger



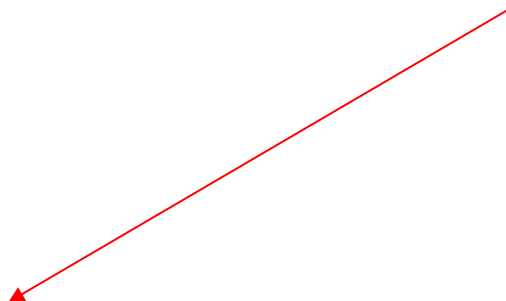
Coolant plumbing with Webasto coolant heater



Install Coolant Hoses

Note: Installation of coolant hoses requires work on the truck's coolant system. Coolant should be removed from the system to avoid coolant loss. *(it may be possible to use pinch pliers)*

1. Installation of the coolant hoses from the coolant heater to the truck's engine requires rerouting the OEM hose, and installation of a new hose.
2. Locate the OEM hose leaving the firewall and going to the top of the truck engine.
3. Remove this hose on the engine end only.
4. Reroute the removed end to the OUTPUT of the coolant heater





5. Next route the supplied hose from the input of the coolant heater to the location on the truck engine where the hose in the previous step was removed. (*Heater connection*)

6. When finished you can replace the coolant removed earlier

* The hose connection on top of the engine is connected to the input of the coolant heater (inlet on circulating pump).

* The hose connection going into the firewall is connected to the output of the coolant heater (see arrow on heater).



Attention: Ensure you have the coolant lines installed properly. Improper installation will result in inadequate heating inside the truck cabin.

Install Fuel Supply to Coolant Heater

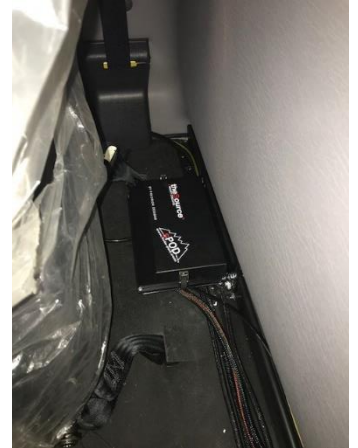
View instructions from previously downloaded Webasto manual.

Heater Harness Installation

The heater harness is routed from the heater to three locations.

Attention: Do not run the harnesses near any heat producing devices, and do not attach to fuel lines.

- 1) Route the 3-wire harness to the relay package installed under or behind the passenger seat (see photo). Only the yellow wire in this harness is used. Terminate the yellow wire to an output on the relay board.
- 2) Route the 2-wire power harness to the battery box. This two-wire harness has a black conductor and a red conductor that connect to 12 VDC battery power in the battery box.
- 3) Route the 2-wire fuel pump harness to where the fuel pump is located. This two-wire harness has a black conductor and a white conductor. Using the Webasto manual previously downloaded, terminate the conductors with the supplied terminals and connector.



Engine Start Module(ESM) Installation

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For Engine Start Module (ESM) Installation instructions, visit http://www.maxwell.com/images/documents/1017462_5_installation_guide_and_user_manual_12v_esm.pdf

1. Per the Maxwell ESM instructions, the positive output of the ESM must be isolated on the on the engine starter positive terminal. To accomplish this the large jumper shown here must be removed. This jumper connects the trucks *starter* positive (+) terminal to a *junction block* on the inside of the truck frame. ***THIS JUMPER MUST BE REMOVED***

2. In the installation kit you will find a 12' red battery cable. This cable will be routed from the junction block in the previous step to the truck battery box. When the installation is complete, connect to the positive (+) connection in battery box.



Attention: When finished the only conductor remaining on the positive stud of the truck's engine starter, is the largest cable. This cable is routed to the output terminal of the Engine Start Module (ESM), output terminal.

Touchscreen System Installation

For touchscreen system installation instructions, visit

http://www.4x4spod.com/v/vspfiles/assets/PDF_Files/SE_UNIVERSAL_Touchscreen.pdf

Install Touchscreen

(photo shows typical location on side of plow control pedestal)

Do not install touchscreen on top of dash (direct sunlight).
Install in a location where the driver can easily see and access
from driver's seat.



1. Using supplied screws, install the RAM ball mount in the desired location of the touchscreen.



Ball Mount

2. Attach touchscreen to ball mount using supplied adjustable RAM arm.



Adjustable Arm

Install Relay Assembly Under Passenger Seat

1. Use two self-tapping screws and attach provided aluminum

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strap between back legs of seat near floor.

2. Attach relay assembly to steel strap with provided hardware.
3. Determine which circuits will be powered when the truck's ignition is turned "OFF".
Examples below

- Coolant heater
- Two-way radio
- HVAC controls on dash
- Body strobes
- Other...

These pieces of equipment must be wired into the control module outputs using supplied wiring harnesses.

Note: At the tie-in point for all circuits, a diode MUST be installed to prevent feedback (see photo below). Cut the circuit conductor you are tying into.

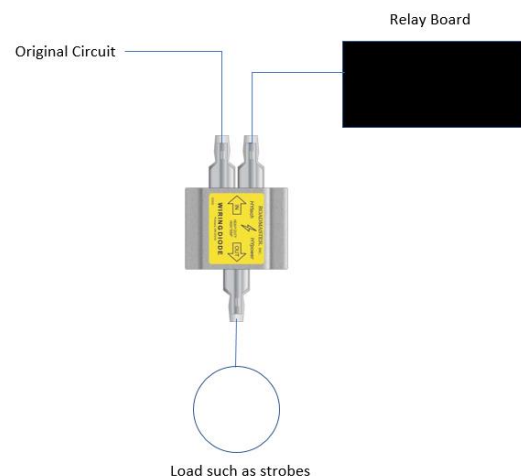
INPUT: Hot side of circuit you are tying into

INPUT: Conductor from control module output

OUTPUT: Conductor going to load being powered



Diode Installation



Circuit 1 – This circuit will be used to power the Webasto coolant heater and OEM HVAC control module located in truck dash. Route the Webasto heater switch leg to output 1 in the control module (Positive output terminal). **Note: Webasto switch leg does not require diode**

Remove HVAC control head from truck dash and locate conductor A73A. Cut the conductor

and install diode. Using supplied harness (4-conductor), tie into circuit and rout back to circuit 1 output at control module.

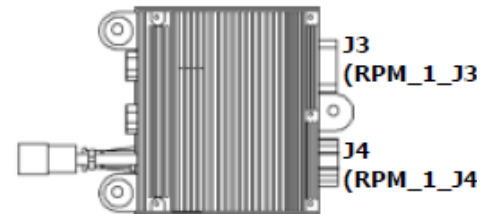
Note: Circuit 1 will power both the coolant heater and HVAC controls



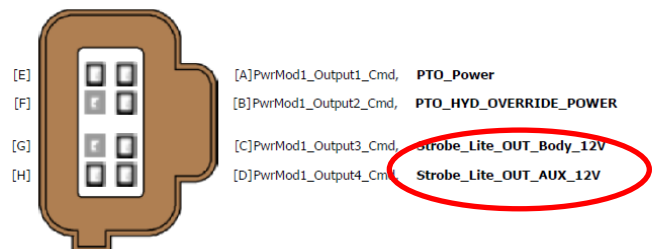
Circuit 2 – Locate control circuit for two-way radio. Install diode and tie into output 2 at relay module.

Circuit 3 – Locate body strobe-control circuit and tie into as many outputs as required to power lights required for safety. More than one output may be required. ***It may be necessary to contact body builder for information on circuit control location.***

Note: On bodies built by Airflo you may find the body control module behind the driver’s seat on the floor. See photo at right:



On the Airflo module the connector shaped like this contains the strobe outputs. These are the two conductors in which the diodes would be tied into to power the strobes. **Install Ignition Sense Relay (inside dash)**



The ignition sense relay senses what state

the truck's ignition switch is in. This circuit controls when the touchscreen is powered "on" and "off". The touchscreen should only power up when the ignition is "off" and the battery voltage is => 12.9 VDC.

1. Secure relay under passenger side of dash

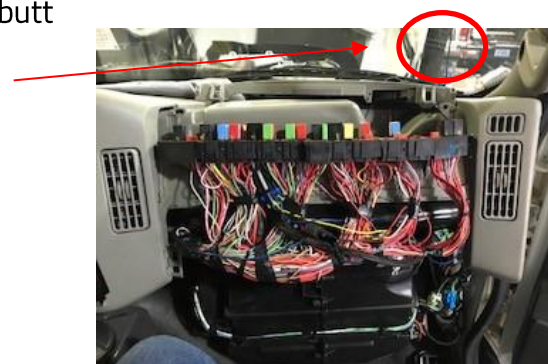


2. 12 VDC "ACCESSORY POWER" for the "ignition sense" relay can be found in the fuse panel. Route BLUE and BLACK wires under the panel and see the next step to locate splice point.



3. Locate fuse F11F on the far-right side of the fuse panel. Test with meter to insure it has 12VDC power with ignition switch in "ACCESSORY" position.

4. On the bottom side of the fuse, locate the hot wire. This is where you will splice the blue wire from the ignition sense relay using a butt splice.

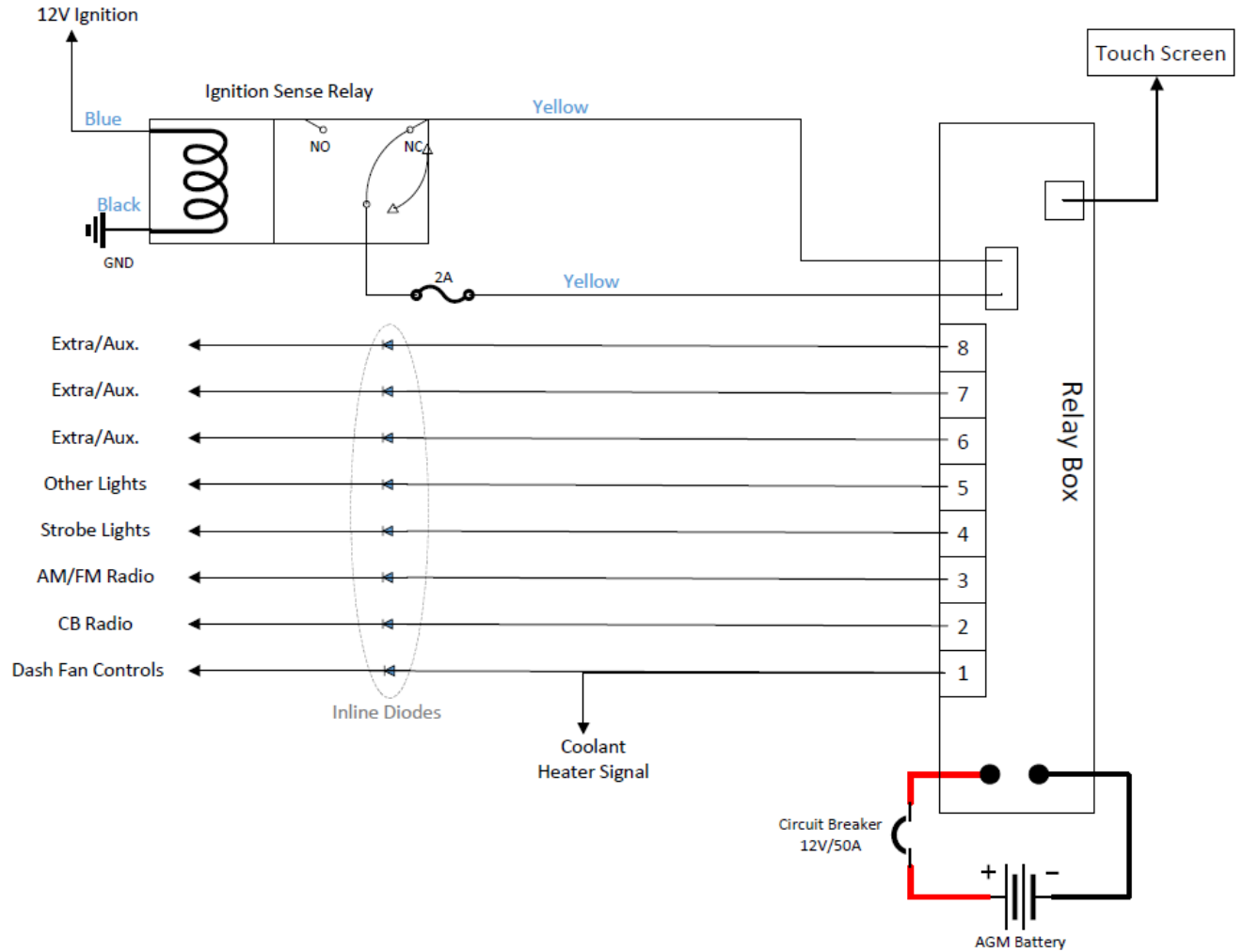


5. Attach the black wire to a ground point.

6. Route both yellow conductors to the relay box under the passenger seat. Remove the 2-amp fuse on the circuit board and insert the spade terminals on the black and blue wires into the fuse slots.

See schematic below for detailed information

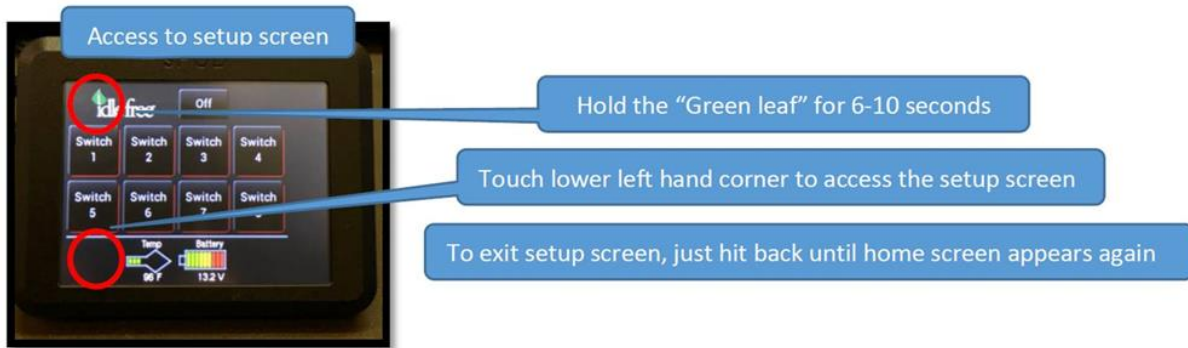
Relay package wiring schematic



Programming the Touchscreen

Note: Use a stylus or pencil eraser when programming the system.

1. Access the programming area using the directions below (see below)



2. Select the switch you are programming and enter the name of the switch. For example, enter "Strobe Lights" for the body strobes on the truck. Notice there are multiple lines for programming and separating words makes it easier to read on the screen.
3. It is recommended to remove default labels on switches not being used, or enter the word "Spare" or "Not Used".
4. Save every screen before leaving or you will lose your work.

Completing the Installation and Warranty Registration

Place provided stickers in driver compartment so they are visible to the operator. In this photo the stickers are attached to the center console for plow controls.



Attach the serial number sticker on the driver-side door jamb. Locate it near the other stickers displaying truck information such as truck VIN.



Finally make sure to register the system for warranty. Your installation trainer will show you how to do this to ensure warranty coverage.