Vehicle Monitor Kit Installation Instructions

Part Number 591004

Unpacking

Immediately upon receiving the kit, it should be unpacked, and an inventory taken. See Figure 1 for a list of items that should be included. Report any missing items to Allied Systems Company (503.625.2560) immediately.

Installation

The figures in this document illustrate this kit mounted on a CHD100 Chipdozer. This kit will install on many different models of Wagner equipment. Your installation may vary.

Important: Read entire instructions prior to installing this kit, and make sure you understand them. If you have any questions, contact Allied Systems Service department at 503-625-2560.

1. Park the machine on level ground, and lower the carriage or bucket to the ground. Shut off the machine, employ work site lockout/tagout procedures, and disconnect the battery at the switch. Refer to your operator's manual if necessary.
2. Please document the serial number located on the back of the vehicle monitor unit here: _____. You will need to contact your dealer or Allied Systems Company to activate your service and will need to reference both the monitoring system's serial number and the vehicle's serial number in order to do so. Please call for activation 24-hours prior to installation so service can be activated with the service supplier.

Required Tools
Drill
Flat and Phillips screw drivers with magnetic tips
Small drill bit set
Wire cutters
Wire strippers
Wire crimp
Crescent wrench - 8"
Open end wrench - 3/8" and 3/4"

Table 1 *Required Tools List*

3. The kit includes four terminal blocks. Three of these four 4-position terminal blocks replace existing 2-position terminal blocks. The fourth does not replace any existing terminal block, but should be mounted near the other three if possible.
4. The existing terminal blocks to be replaced will typically be inside the console assembly (Chipdozers), or in the terminal panel assembly (Logstackers).
5. These four terminal blocks are labeled "A", "B", "C", and "D" in **Figure 2**. To determine which existing terminal blocks to replace for the blocks labeled "B" and "C", you may need to temporarily close the battery disconnect switch to test for voltage at the terminal block. Make sure to disconnect the battery at the switch again before disconnecting any wires or removing any terminal blocks.

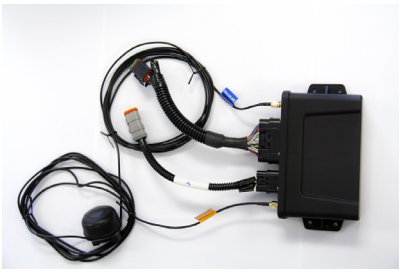
   Terminal A: This terminal block does not replace any existing terminal block. Mount near the other terminal blocks if possible.

   Terminal B: This terminal block replaces an existing 2-position terminal block. Refer to the electrical schematic for your machine. Find an existing 2-position terminal block that connects to the unswitched power and the BATT terminal on the ignition switch. This terminal block should be energized (24 VDC) regardless of keyswitch position. Disconnect and tag the wires from this terminal block, and remove it. Replace with a 4-position terminal block ("B" on **Figure 2**).

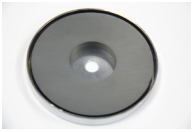
   Terminal C: This terminal block replaces an existing 2-position terminal block. Refer to the electrical schematic for your machine. Find an existing 2-position terminal block that connects to RUN on the ignition switch. This terminal block should be energized (24 VDC) when the keyswitch is on, and not energized when off. Disconnect and tag the wires from this terminal block, and remove it. Replace with a 4-position terminal block ("C" on **Figure 2**).

   Terminal D: This terminal block replaces an existing 2-position terminal block. Refer to the electrical schematic for your machine. Find an existing 2-position terminal block that connects to the chassis ground. Disconnect and tag the wires from this terminal block, and remove it. Replace with a 4-position terminal block ("D" on **Figure 2**).

591003 Mount Assy, Antenna (1)



590865 - Remote Monitor Kit (1)



257786 - Base, Magnet (1)

904334 - Pad, Base (1)

591002 - Bracket (1)

R13811193 - Nut, Lock (1)
16829W - Capscrew (1)
R13803020 - Clip, Insulated (1)
R13811189 - Nut, Lock (1)
18460W - Capscrew (1)

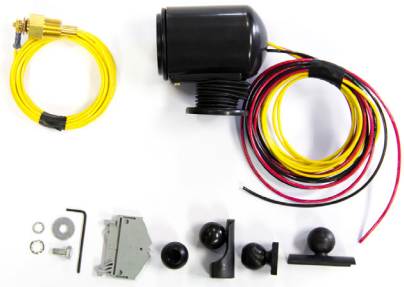
590970 - Wire Harness (1)

591014 - Wire Harness (1)

239317 - Terminal Block (3)

233244 - Machine Screw (6)

591041 - Gauge Assembly (1)



209505 - Fitting (1)

Figure 1 *Vehicle Monitor Kit 591004*

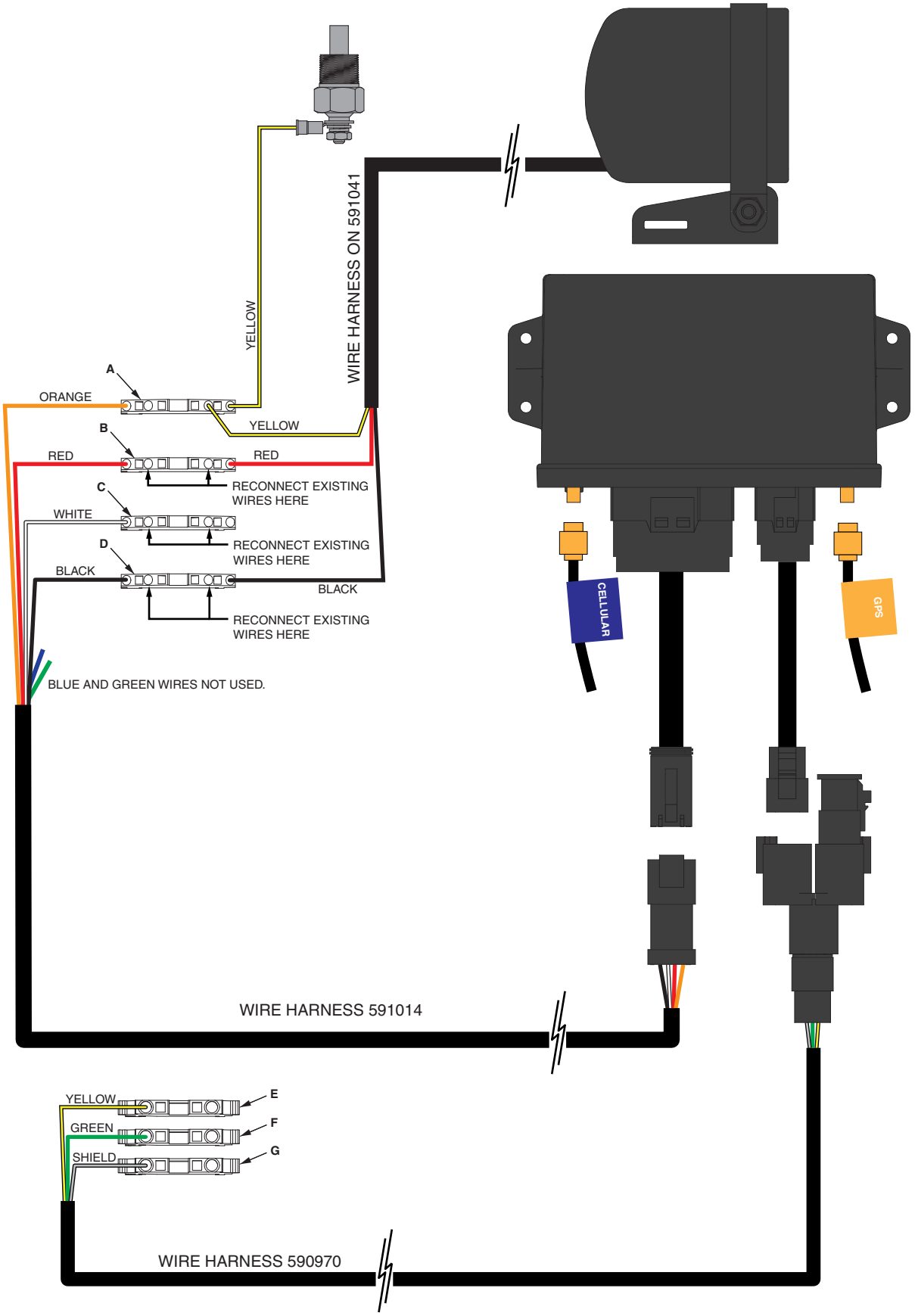


Figure 2 *Installation Wiring Diagram*

Terminal	Description
A	New 4-position terminal, does not replace any existing terminal.
B	New 4-position terminal, replaces existing 2-position terminal that connects to unswitched power, BATT on ignition switch.
C	New 4-position terminal, replaces existing 2-position terminal that connects to RUN on ignition switch.
D	New 4-position terminal, replaces existing 2-position terminal (chassis ground).
E	Existing 2-position terminal, originally connected to J1939 terminating resistor pigtail.
F	Existing 2-position terminal, originally connected to J1939 terminating resistor pigtail.
G	Existing 2-position terminal, originally connected to J1939 terminating resistor pigtail.

Table 2 *Terminal Key*

6. Do not reconnect the existing wire connections to the new terminal blocks yet.
7. Terminals “E”, “F”, and “G” are existing terminal blocks. Refer to the electrical schematic for your machine. Find the J1939 terminating resistor pigtail. It should have wires labeled “Green”, “Yellow”, and “Shield” on the schematic, and look similar to **Figure 3**.
8. Note the terminal numbers, and remove the J1939 terminating resistor pigtail. Retain pigtail if kit is later removed.
9. Install the Vehicle Monitor in a convenient location, near the console, terminal panel assembly, or wherever the terminal blocks from step 4 are mounted. Leave sufficient clearance for installation of wire harnesses and cables.

   Figure 4 illustrates the monitor mounted to the side of the console assembly in a Chipdozer. Your installation may vary.

   Use the self-tapping screws included in the kit

Figure 3 *J1939 Terminating Resistor Pigtail Example*

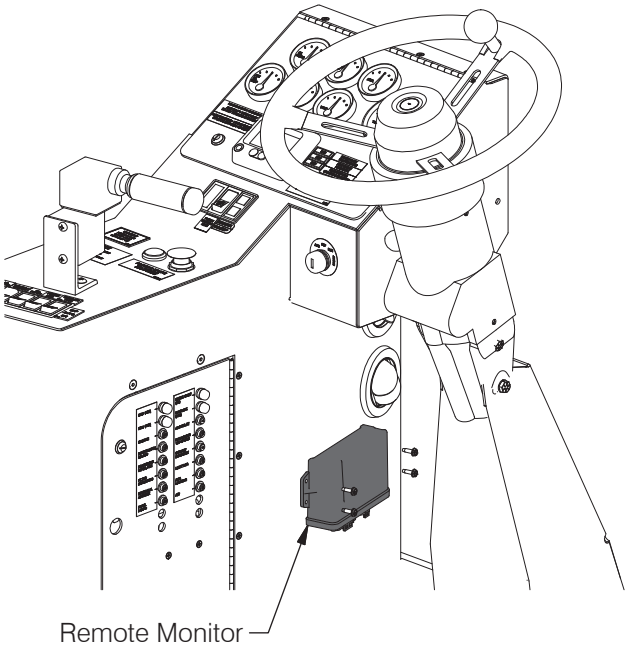


Figure 4 *Vehicle Monitor mounted to Console*

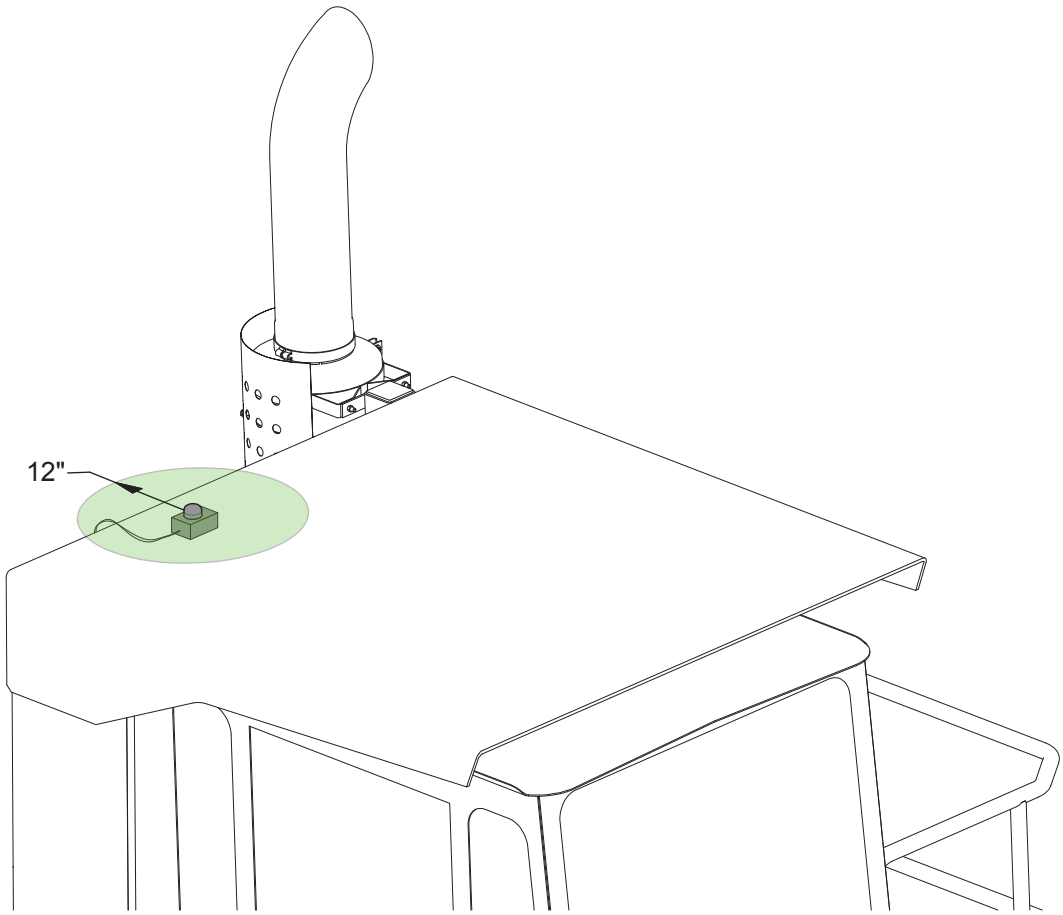


Figure 5 *Antenna Mounting (Chipdozer)*

to mount the monitor. Use a 11/64” drill for pilot holes.

10. Mount the antenna on a flat surface, in a location on the machine with nothing above it (a clear view to the sky), and no obstructions within 12” laterally of the antenna. See **Figure 5**.
11. Alternatively, the magnet may be removed, and the bracket bolted directly to a surface.

⚠ CAUTION

Never alter a ROPS structure in any way. If the antenna is to be mounted on top of the ROPS structure as shown above, the magnet mount MUST be used.

12. Route the antenna cables inside the cab, to the vehicle monitor. Connect the CELLULAR and GPS cables to the vehicle monitor as shown in **Figure 2**.
13. Route wire harness 590970 from the vehicle monitor (do not plug in yet) to the terminals previously identified as “E”, “F”, and “G” in **Figure 2**. The wire harness may be cut to length, but do not cut too short.
14. Strip 5/16” of the insulation from the individual wires on wire harness 590970. Connect to terminals “E”, “F”, and “G” as shown in **Figure 2**. Do not connect the plug end to the vehicle monitor yet.
15. Route wire harness 591014 from the vehicle monitor (do not plug in yet) to the terminals previously identified as “A”, “B”, “C”, and “D” in **Figure 2**. The wire harness may be cut to length, but do not cut too short.
16. Strip 5/16” of the insulation from the individual wires on wire harness 591014. Connect to terminals “A”, “B”, “C”, and “D” as shown in **Figure 2**. Note that the green and blue wires are not used, and should be folded back and taped. Do not connect the plug end of the harness to the vehicle monitor yet.

⚠ CAUTION

DO NOT plug the wire harnesses to the monitor yet.

17. To install the temperature sensor, an unused drain plug in the hydraulic tank must be removed.
18. Either drain the hydraulic tank prior to removing the plug in step 20, or use a vacuum to create negative pressure in the tank as described in step 19.
19. To create negative pressure in the tank:
    a. Relieve pressure in the hydraulic tank by opening the petcock
    b. Remove the petcock/air breather assembly. See **Figure 6**.
    c. Attach a vacuum to the open port to create negative pressure in the tank. The negative pressure will allow the drain plug to be removed without spilling oil.
20. Remove a 3/4" drain plug from the side of hydraulic tank integral to the chassis. See **Figure 7**.
21. Install the bushing and temperature sensor as shown in **Figure 7**.
22. The temperature sensor has NPTF threads, and does not require pipe sealant. Use a light application of pipe sealant to the external bushing threads. Metal to metal contact is required at the threads for proper sensor grounding.
23. With the temperature sensor securely installed, turn off the vacuum, and reinstall the petcock/air breather assembly.
24. Route the yellow wire from the temperature sensor to the terminal block labeled "A" in **Figure 2**. Secure the wire so that it will not be damaged or snagged during normal operation or maintenance. Strip 5/16" of the insulation from the wire, and install at the terminal as shown in **Figure 2**.
25. Mount the hydraulic temperature gauge in the cab, in a location visible to the operator, where it does not obscure any other gauge or control. Use the self-tapping screws included in the kit to mount the gauge. Use a 11/64" drill for pilot holes.
26. Route the temperature gauge wire harness back to the console or terminal panel assembly. The wire harness may be cut to length to simplify installation and wire routing. Make sure not to cut the wire harness too short.
27. Strip 5/16" of the insulation from the wire, and install at terminals "A", "B", "C", and "D" as shown in **Figure 2**.
28. At this time, reconnect the wires that were previously disconnected from the 2-position terminal

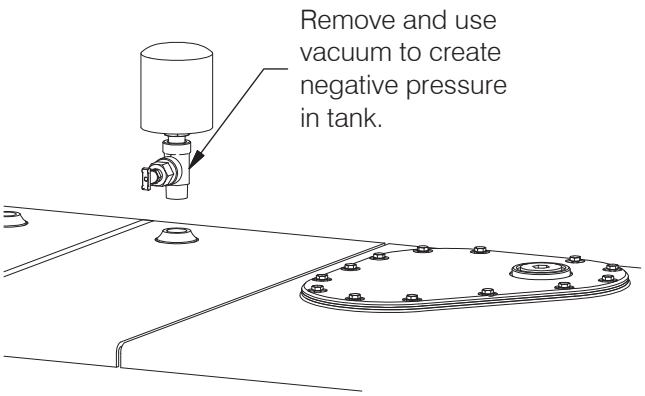


Figure 6 *Hydraulic Tank Breather*

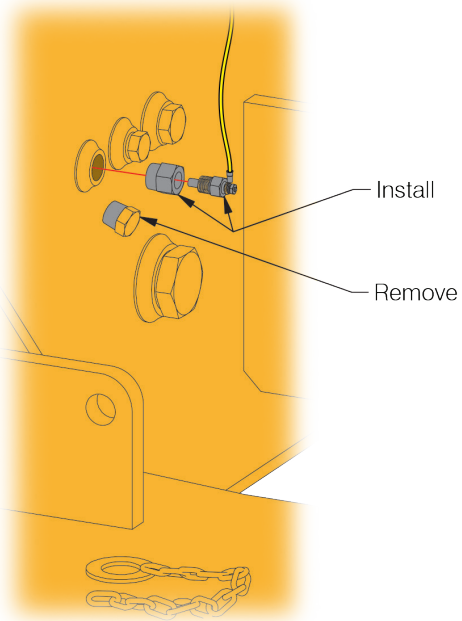


Figure 7 *Sensor Installation*

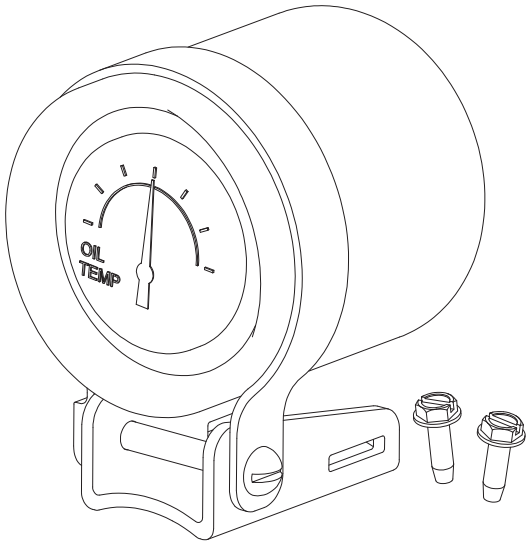


Figure 8 *Hyd Oil Temp Gauge*

Testing

Required tool: Multi-meter

Make sure that the wire harnesses are not plugged into the vehicle monitor kit before performing the electrical tests detailed below. The test will ensure that the wire harnesses are connected to the appropriate terminals.

⚠ CAUTION

Equipment damage hazard.

Make sure the wire harnesses are not plugged into the vehicle monitor prior to reconnecting the batteries at the switch.

Closing the switch with the wire harnesses incorrectly connected may cause equipment damage.

Electrical Test

1. Close the battery disconnect switch.
2. With the keyswitch in the “OFF” position:
   a. Measure the voltage between terminals “C” and “D”. The multimeter should display 0 VDC.
   b. Measure the voltage between terminals “B” and “C”. The multimeter should display 24 VDC.
3. With the keyswitch in the “ON position:
   a. Measure the voltage between terminals “C” and “D”. The multimeter should display 24 VDC.
   b. Measure the voltage between terminals “B” and “C”. The multimeter should display 24 VDC.
4. If any voltage readings vary from the values listed above, troubleshoot the wiring. DO NOT plug in the wire harnesses to the vehicle monitor until you observe values as described above.

Functional Test

1. Once established that the wiring is correct, turn the keyswitch to the “OFF” position.
2. Plug the wire harnesses into the vehicle monitor.
3. Ensure that all connections are snug and secure.
4. Provided that you have contacted the Allied Systems Service Department and verified the vehicle monitor has been activated, either work with your account administrator or use your Near Me™ app in conjunction with the following steps to verify that the vehicle monitor is wired correctly and functioning as expected.

NOTE: It is important that as many J 1939 faults as possible are simulated to validate that the equipment provides the alarms you would expect to see on the Web Center Alarms screen when the faults occur. As you move through the test of each fault, be sure that the fault is displayed on the Alarm screen in Web Center or on your NearMe™app.

5. Start the machine. Refer to your operator’s manual if necessary.
6. After the machine has been started, confirm that the status LED’s on the vehicle monitor are active. Refer to **Table 3** and **Table 4** for LED status behavior and definitions.
7. Once the vehicle monitor is determined to be up and running, wait 5 minutes and then check the asset in Near Me™ or Web Center to see if it has communicated successfully. If there’s any issue, contact the Allied Systems Service Department to determine next steps.
8. If you can see the asset in NearMe™ (or Web Center) confirm the following:
    a. Vehicle monitor is communicating with the Web Center
    b. Equipment running status indicates that the equipment is running
    c. Battery voltage level displayed for the equipment matches the expected equipment battery voltage level (24 VDC)
    d. Confirm that the Map location appears to be correct

NOTE: The vehicle monitor Low Battery Voltage alarm threshold is set to 23.5 VDC. If it is necessary to have the threshold adjusted otherwise, please contact the Allied Systems Service Department.

9. After 5 to 10 minutes, check Near Me™ or Web Center (for best results, use Google Chrome or Mozilla Firefox browser for displaying tracking data) and review the interval data that has been received from the vehicle monitor to be sure the data makes sense according to the conditions of the run. You may need to refresh your Near Me™ view to be sure it is displaying the most current information that has been received from the vehicle monitor.
10. Once the interval data has been reviewed, turn the machine off.
11. After test data and communications are verified, testing is complete.
12. Once equipment is off, record the equipment run hours and contact the Allied Systems Service Department to have them update the run hours on the vehicle monitor. Please be sure the equipment control panel is still on for this step in order for the vehicle monitor to receive the run hours update properly. Failure to do so will prevent the vehicle monitor from being properly updated and equipment run hours will be incorrect.

LED Status Charts

Com 1 LED (Orange) Definitions	
Condition	**LED**
Modem Off	Off
Comm On - Searching	Slow Blinking
Network Available	Fast Blinking
Registered but no Inbound Acknowledgment	Alternates from Solid to Fast Blink every 1s
Registered and Received Inbound Acknowledgment	Solid

Table 3 *Com 1 LED Definitions*

GPS LED (Yellow) Definitions	
Condition	**LED**
GPS Off	Off
GPS On	Slow Blinking
GPS Time Sync	Fast Blinking
GPS Fix	Solid

Table 4 *GPS LED Definitions*

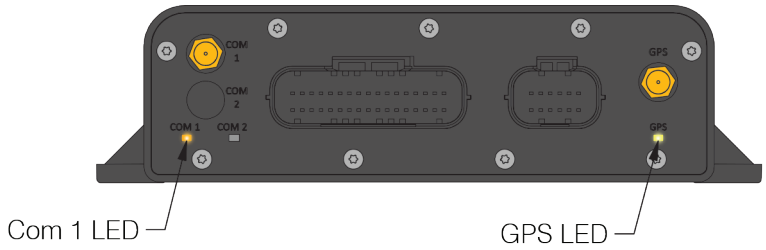


Figure 9 *LED Locations*

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