

TOOL OPERATING MANUAL

317-7492 Wireless Radio

SMCS: 1900-38

Important Safety Information



Think Safety

Most accidents that involve product operation, maintenance, and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills, and tools to perform these functions properly.

Improper operation, lubrication, maintenance, or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance, or repair on this product until you have read and understood the operation, lubrication, maintenance, and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons.

The hazards are identified by the “Safety Alert Symbol” and followed by a “Signal Word” such as “DANGER”, “WARNING”, or “CAUTION”. The Safety Alert “WARNING” label is shown below.

▲ WARNING

The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is Involved.

The message that appears under the warning explains the hazard and can be either written or pictorially presented.

Operations that may cause product damage are identified by “NOTICE” labels on the product and in this publication.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all-inclusive. If a tool, procedure, work method, or operating technique that is not specifically recommended by Caterpillar is used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose.

The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job.

▲ WARNING

When replacement parts are required for this product, Caterpillar recommends using Caterpillar replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength, and material.

Failure to heed this warning can lead to premature failures, product damage, personal injury, or death.

Contents

Literature Information

Safety Section	3
General Information Section	3
Operation Section	3
Tooling Configurations Section	4
Service Parts Section.	4
Regulatory Information Section	4

General Information Section

Introduction	4
Safety-Blast Zone Warning	4
Minimum PC Requirements	4
Additional Contact Information	4
Specifications.	5
Nomenclature.	6
Component Storage.	6

Operation Section

Install/Configure the Wireless (W-CA3) Radio	7
Connecting the W-CA3 to the CA3	7
Configuring the PC for Communication With the W-CA3	8
Creating a Wireless Profile on the PC	8
Electronic Technician Configuration for the W-CA3	16
Activating and Changing the Internal Settings of the W-CA3	19
Connecting the W-CA3 to a PC.	19
Installing the USB Drivers for the W-CA3	20
Viewing/Changing the Internal Settings for the W-CA3	22
Additional Settings Available for Modification in the W-CA3.	254
Upload Configuration File:	31
Download Configuration File:.	31

Tooling Configurations Section

Tooling Configurations	34
W-CA3 to PC	34
W-CA3 to CA3 to DataLink	34
Magnetic Mount W-CA3 to CA3	34
Using the Remote Antenna	35
Using the Suction Cup Mount	35

Service Parts Section

317-7492 Wireless Radio Group	36
317-7512 Suction Cup Mount	36
326-9607 Antenna Group	37

Related Components	37
317-7484 Communications Adapter 3 (CA3) Group	37

Regulatory Information Section

Regulatory Information and Certifications	38
Statement To Original Equipment Manufacturer (OEM) Integrators	39

Literature Information

This manual should be stored with the tool group.

This manual contains safety information, operation instructions, and maintenance information.

Some photographs or illustrations in this publication show details that can be different from your service tool. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your service tool, which are not included in this publication.

Whenever a question arises regarding your service tool or this publication, please consult Dealer Service Tools (DST) for the latest available information.

Read and understand the precautions listed about safety before operating this service tool.

General Information Section

The General Information section describes tooling functions and features. It provides useful information on safety, individual parts, additional tooling, and resources.

Operation Section

The Operation section is a reference for the new operator and a refresher for the experienced operator.

Photographs and illustrations guide the operator through correct procedures for using the tool group.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the service tool and its capabilities.

Literature Information (continued)

Tooling Configurations Section

The Tooling Configurations section describes methods of connecting the wireless USB radio to 317-7484 Communications Adapter 3, the PC, and optional tooling for various functions.

Service Parts Section

The Service Parts section describes tooling replacement parts and part number availability.

Regulatory Information Section

The Regulatory Information section describes Federal Communications Commission (FCC) requirements, compliance, and the manufacturer statement of authorized use.

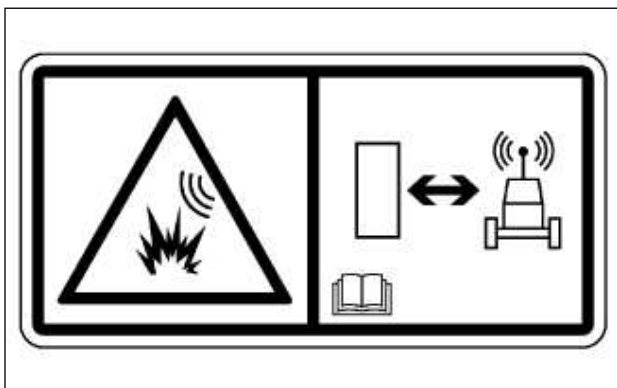
General Information Section

Introduction

The 317-7493 Wireless Radio is designed to be used outdoors with the 317-7484 Communications Adapter 3 and related components for transmitting data from a machine to a remote PC (dealer supplied) for data logging and analysis.

Safety-Blast Zone Warning

1. If the machine is equipped with a 317-7493 Wireless Radio, make sure the proper warning film(s) are clearly visible to the operator (such as on the dash) during normal operation of the machine.



230-1340 Film

⚠ WARNING



If the machine is required to work within 12 m (40 ft) of a blast area, the operator must disable and remove the 317-7492 Wireless Radio. Failure to do so could result in serious injury or death.

2. If the machine is required to work within 12 m (40 ft) of a blast area, disconnect and remove the wireless radio from the machine. This will prevent any signals from being transmitted during machine operation.

Minimum PC Requirements

A dealer supplied PC (Laptop Computer) is required to configure the 317-7493 Wireless USB Radio.

Minimum PC requirements are:

- IBM® PC compatible with Pentium IV 2.4 GHz processor
- 512 MB RAM minimum
- 1 GB of available hard disk drive
- 40X speed CD-ROM drive or 8X speed DVD drive or greater
- 14.1" XGA screen (800x600) or greater
- Built-in pointing device or mouse
- Microsoft Internet Explorer 6.0 or greater

Additional Contact Information

For additional product support questions concerning this tool, contact the Caterpillar Dealer Service Tools Hotline at:

U.S.A.: 1-800-542-8665

Illinois: 1-800-541-8665

Canada: 1-800-523-8665

World: 1-309-675-6277

Fax: 1-309-494-1355

dealerservicetool_hotline@cat.com

Specifications

317-7493 Wireless Radio

317-7493 Wireless Radio (W-CA3)	
Description	Specification
Operating Voltage	5 VDC at 700 mA maximum
Operating Temperature	-40° to 85°C (-40° to 185°F)
Dimensions	122 x 104 x 40 mm (4.82 x 4.08 x 1.57 in)
Antenna Connections	2 x RP-TNC
Mounting Magnet	Integrated 3.6 kilogauss neodymium
Reliability	SAE J1455/1960 standard
Wireless LAN Interface	
Standard:	IEEE 802.11a/b/g
Frequency:	2.4/5 GHz
Data Rate:	Up to 54 Mbps with automatic fallback
Modulation:	DBPSK (1 Mbps) DQPSK (2 Mbps) CCK (11, 5.5 Mbps) BPSK (6, 9 Mbps) QPSK (12, 18 Mbps) 16-QAM (24, 36 Mbps) 64-QAM (48, 54 Mbps)
WLAN Security	
	WEP (Wired Equivalent Privacy) WPA/WPA2/802.11i - 128-bit TKIP/CCMP/(AES) encryption - Enterprise mode (802.1X) · LEAP (WEP only), PEAP, TTLS, TLS · GTC, MD5, OPT, PAP, CHAP, · MSCHAP, MSCHAPv2, LS-MSCHAPv2
USB Interface	
Type:	USB 2.0 Device (full/low speed)
Connector:	8-pin circular DIN RNDIS software support

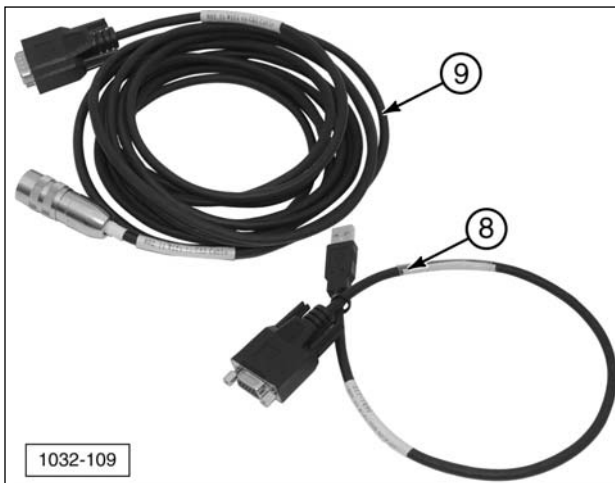
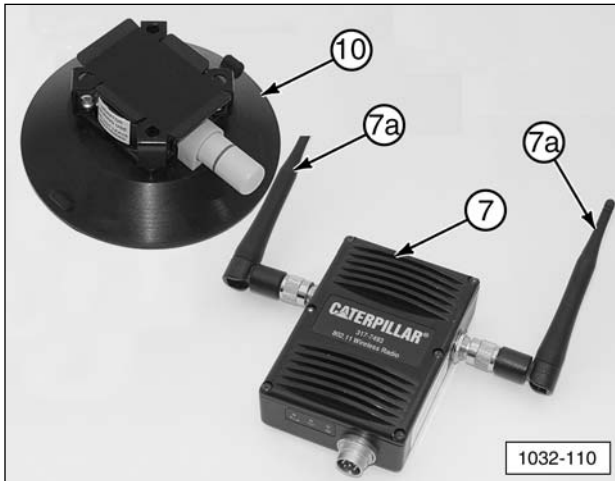
326-9606 Wireless Radio Antenna	
Description	Specification
Frequency Bands Of Operation	2.4 GHz, 4.9 to 5.8 GHz
Gain	2.2 dBi
326-9607 Magnetic Mount Antenna	
Description	Specification
Frequency Bands Of Operation	2.4 GHz, 4.9 to 5.8 GHz
Gain	3 dBi

317-7493 Wireless Radio (W-CA3) Frequency Specifications			
Band	Frequency	Channel	Location
2.4 GHz	2412, 2417, 2422, 2427, 2432, 2437, 2442, 2447, 2452, 2457, 2462	1-11	North America, EU
	2467, 2472	12, 13	EU
4.9 GHz	4920, 4940, 4960, 4980	L184, L188, L192, L196	Japan ¹
5260-5320 MHz	5260, 5280, 5300, 5320	52, 56, 60, 64	EU ²
5470-5725 MHz	5500, 5520, 5540, 5560, 5580, 5600, 5620, 5640, 5660, 5680, 5700	100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140	EU ²
5725-5825 MHz	5745, 5765, 5785, 5805, 5825	149, 153, 157, 161, 165	North America

¹ Channel Use in Japan Only. ² Dynamic Frequency Selection Only

NOTE: The 317-7493 Wireless Radio is intended for outdoor use.

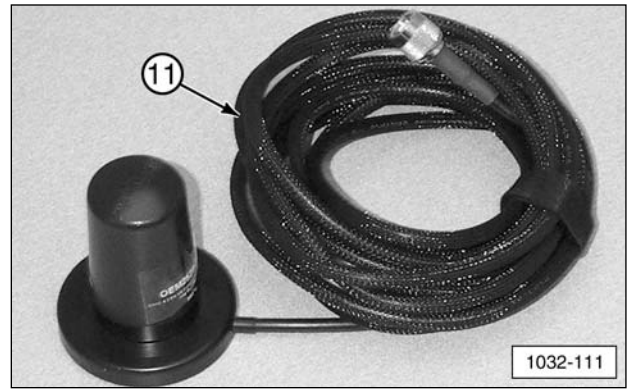
Nomenclature



317-7492 Wireless Radio (W-CA3) Kit

Item	Part No.	Description	Qty
7	317-7493	Wireless Radio Group (W-CA3)	1
7a	326-9606	Antenna	2
8	317-7496	WiFi/USB PC Cable Assembly	1
9	317-7510	WiFi/CA3 Cable Assembly	1
10	317-7512	Suction Cup Mount (optional)	1

NOTE: Throughout this manual the 317-7493 Wireless Radio is also referred to as the “W-CA3”. In addition, the 317-7485 Communications Adapter 3 can be referred to as the “CA3”.

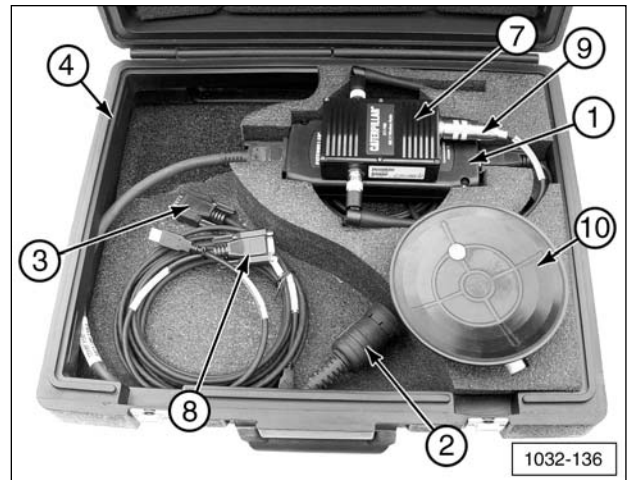


326-9607 Antenna Assembly (Optional)

Item	Part No.	Description	Qty
11	326-9607	Antenna Assembly	1

Component Storage

NOTE: The 317-7493 Wireless Radio and related components can be stored with the 317-7484 Communications Adapter 3 Group, as shown.



- (1) 317-7485 Communications Adapter 3 (CA3).
- (2) 317-8981 Cable Assembly.
- (3) 317-7487 Cable Assembly.
- (4) 6V-7145 Case.
- (7) 317-7493 Wireless Radio (W-CA3).
- (8) 317-7496 Cable Assembly.
- (9) 317-7510 Cable Assembly.
- (10) 317-7512 Suction Cup Mount (optional).

Install/Configure the Wireless (W-CA3) Radio

IMPORTANT NOTE:

To comply with US and Canadian regulatory requirements, read, understand, and follow the guidelines in the Regulatory Information section in this manual when configuring and operating the 317-7493 Wireless Radio (W-CA3) and related components.

The 317-7492 Wireless Radio Kit connects to the 317-7485 Communications Adapter 3 in order to create an 802.11 wireless connection to an Electronic Technician enabled PC.

IMPORTANT NOTE:

When the 317-7492 Wireless Radio Kit is purchased, it is deactivated by default. Before operating the wireless radio (W-CA3) for the first time, it must be configured for the country it will be used in. Perform the steps in the “Viewing/Changing the Internal Settings of the W-CA3” section. Once complete, return to this section to proceed with the setup of the CA3 and wireless radio.

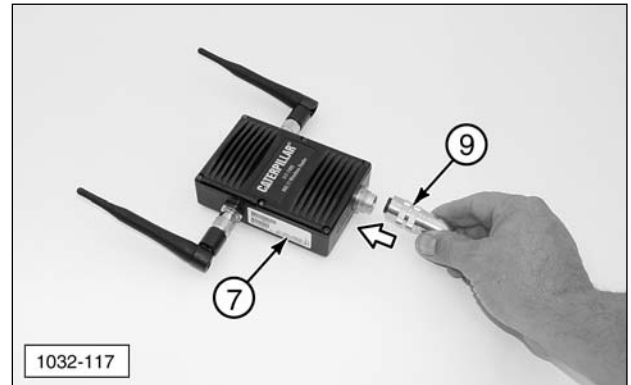
Connecting the W-CA3 to the CA3

1. Connect 317-7493 Wireless Radio (W-CA3) (7) to the 317-7485 CA3 (1) with provided 317-7510 Cable Assembly (9).



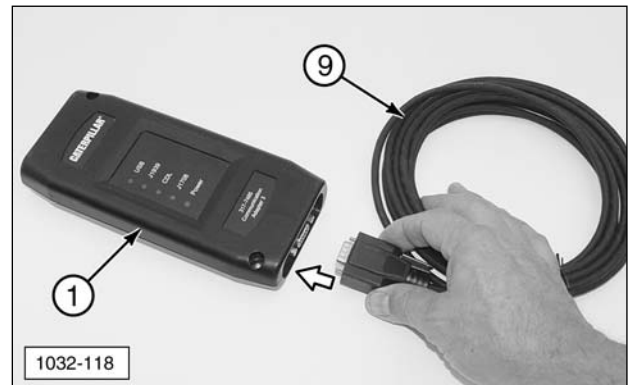
(9) 317-7510 Cable Assembly.

2. Connect 317-7510 Cable Assembly (9) round DIN connector to 317-7493 Wireless Radio (W-CA3) (7) plug.



(7) 317-7493 Wireless Radio (W-CA3).
(9) 317-7510 Cable Assembly.

3. Plug 317-7510 Cable Assembly (9) DB style connector into 317-7485 Communications Adapter 3 (CA3) (1).



(1) 317-7485 Communications Adapter (CA3).
(9) 317-7510 Cable Assembly.

4. This illustration shows the completed wireless radio setup.



Completed CA3/W-CA3 configuration.

Configuring the PC for Communication With the W-CA3

NOTE: The W-CA3 does not need to be connected to the PC in order to configure communication between the W-CA3 and the PC.

The W-CA3 can be used with any 802.11a or 802.11b/g enabled wireless card. In order to communicate with the W-CA3, a “Profile” in the “Wireless Client Utility” must be set up for the wireless card. The following is one example for configuring this profile.

NOTE: These steps are shown as an example and may not appear exactly the same on the PC being used. There are numerous wireless card and software manufacturers on the market and Caterpillar cannot accurately portray every example here. The important thing to remember is that **each** of these steps **MUST** be completed in the “Wireless Client Utility” for the PC being used in order for Cat ET to be able to communicate through the wireless radio (W-CA3).

NOTE: It is advisable to consult with the IT Department of the dealership to complete these steps. Many users may not have the authority to make the changes documented. The IT Department should also be involved in evaluating whether the use of the W-CA3 radio will interfere with the wireless network for the dealership/business. If the settings for the W-CA3 radio need to be changed to account for this interference, proceed to the section “Changing the Internal Settings of the W-CA3” of this manual.

Default Settings for the W-CA3:

- SSID: W-CA3
- Wireless Band: 802.11 b or g
- Wireless Mode: Ad-Hoc (Auto IP enabled check box is found under network settings)
- Channel Number Search: Channel 11 (eleven)
- Security: WEP (104/128 bit)
- Security Key:
35373c57222750362a334c6a71

Creating a Wireless Profile on the PC

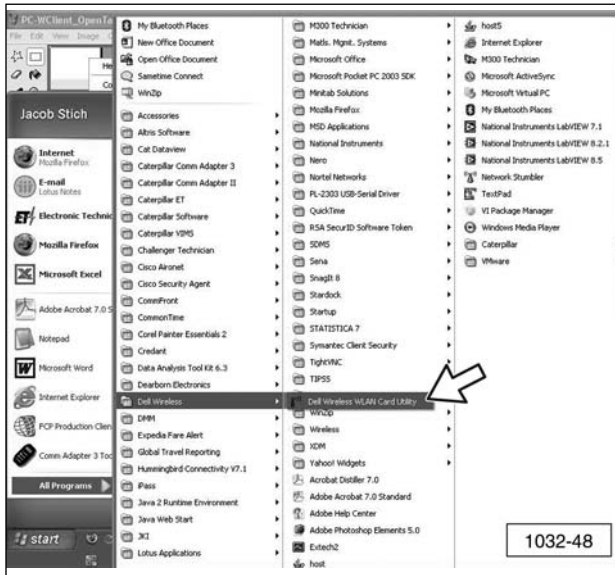
In order for the Cat ET enabled PC to communicate with the W-CA3 radio, the PC wireless card must be set up appropriately. These steps are shown for reference only, and the instructions listed here may not be the same for every PC.

1. Open the “Client Manager Utility” for the wireless card that is intended for use with the W-CA3. The example shown here is for a Dell D610 laptop. The “Client Manager Utility” can be opened in one of two ways. Choose one of the methods to open the utility.
 - a. Right click on signal strength bars icon (a) on the task bar. Click “Open Utility.”



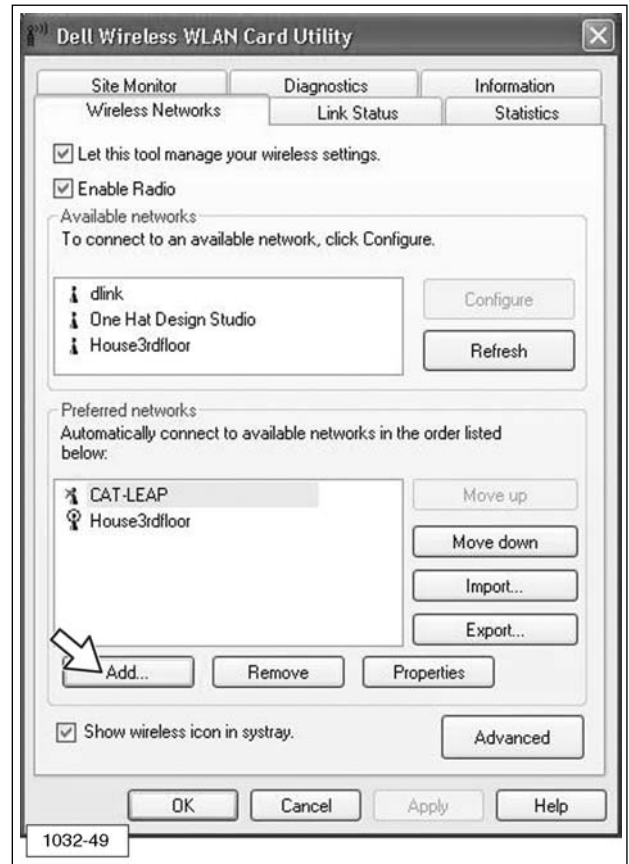
(a) Signal Strength Bars.

- b. Go to “Start” >> “All Programs” >> “Dell Wireless” >> “Dell Wireless WLAN Card Utility.”



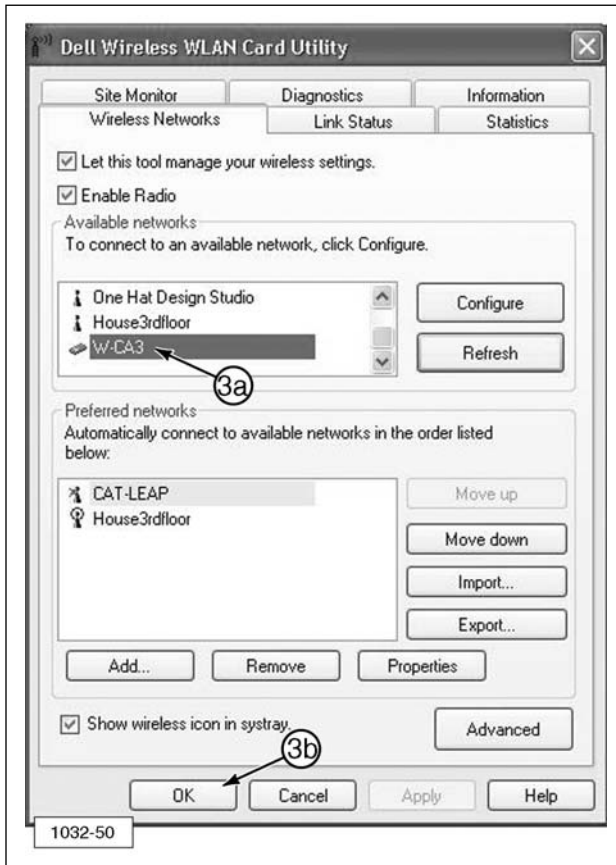
2. When the utility opens, click “Add.”

NOTE: Variations on different computers might include the following: “New,” “New Profile,” “Add Profile,” “Create New Connection,” and others not listed here.

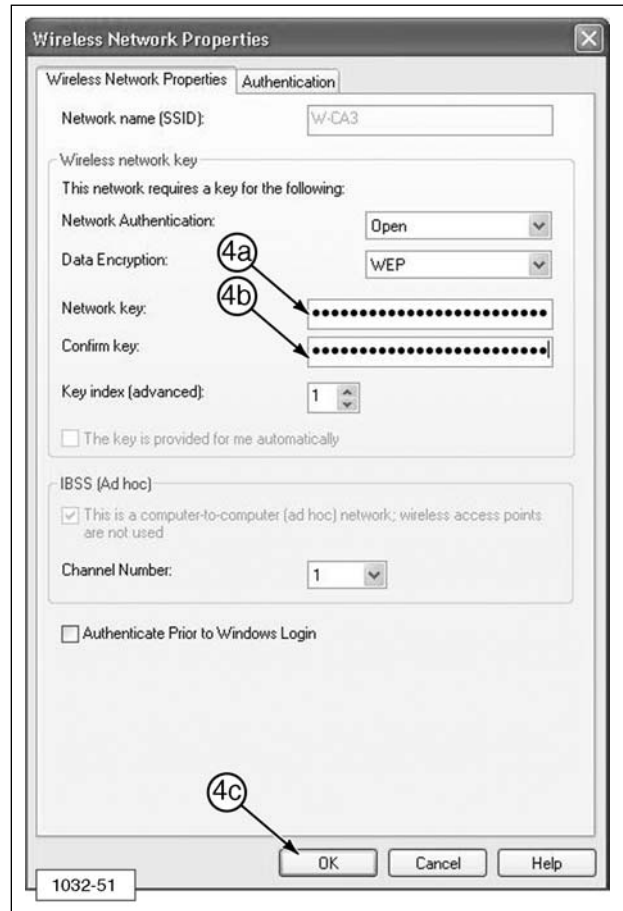


NOTE: Many wireless client utilities provide the ability to “Scan” or “Monitor” for available networks. In this example, there is an “Available Networks” box that will show the W-CA3 radio is available for connection. If “W-CA3” is double-clicked, the “Add” menu appears and automatically completes all of the necessary settings, except for the security settings. The security settings listed in the “Configuring the PC for Communication With the W-CA3” section can be added to complete the profile.

3. W-CA3 appears in the “Available Networks” area of the Dell Wireless WLAN Card Utility window.
 - a. Double-click on “W-CA3” to add.
 - b. When ready, click “OK.”



4. From the “Wireless Network Properties” screen:
 - a. Enter **35373c57222750362a334c6a71** in Network key field
 - b. Enter **35373c57222750362a334c6a71** in Confirm key field.
 - c. Click “OK.”



5. If the wireless client utility did not provide the functionality described in Steps 3 and 4, proceed with the following steps. If the utility did provide the functionality and created the profile, proceed to Step 12.
6. Enter W-CA3 into the "SSID" area of the Wireless Network Properties window. This is sometimes called "Network" or "Network Name."



7. Select "Open" for the "Network Authentication."



8. Select “WEP” for “Data Encryption.” This is sometimes called “Security Type” or “Encryption Method.”



9. Enter **35373c57222750362a334c6a71** for “Network Key” and again for “Confirm Key.” This is sometimes called “WEP Key,” “Security Key,” or “Pre-Shared Key.”



NOTE: Some wireless client managers do not accept lower case letters, so the use of capital letters is acceptable.

10. Select “This is a computer-to-computer (ad hoc) network; wireless access points are not used.”



11. Select 11 (eleven) for “Channel Number.”

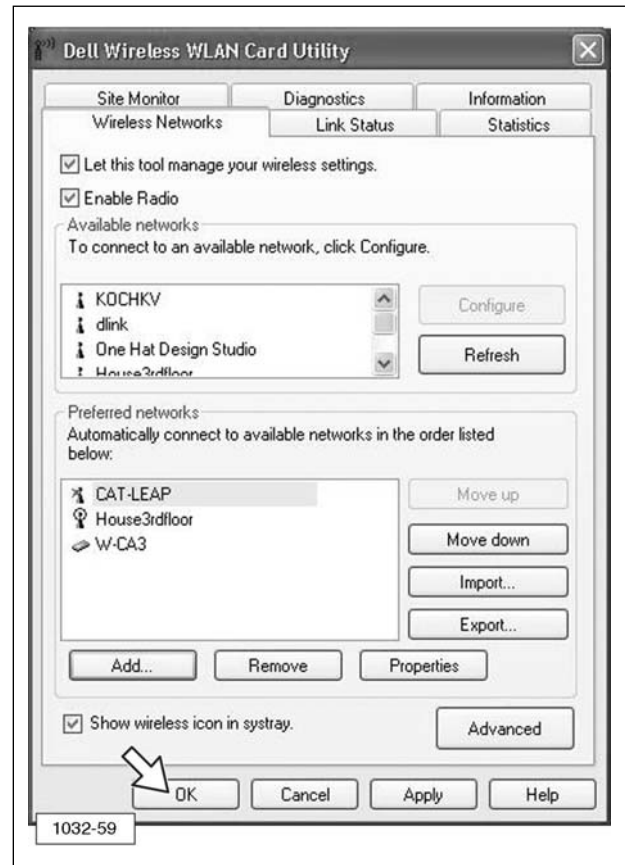
NOTE: Consult the IT Department at the dealership to make sure Channel 11 does not interfere with the local wireless network that may exist at the dealer/business.



12. Click "OK" to create the profile.



13. Click "OK" again to close the wireless client utility.



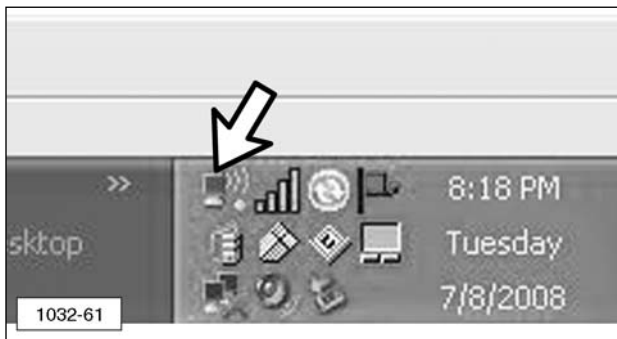
- If the wireless card is not attempting to connect to the radio, right click on signal strength bars (5) on the task bar and select "Connect To" >> "W-CA3."

NOTE: Some client utilities may not allow connection to the radio in this manner. There may be a "Connect" or "Activate" button present in the client utility itself.



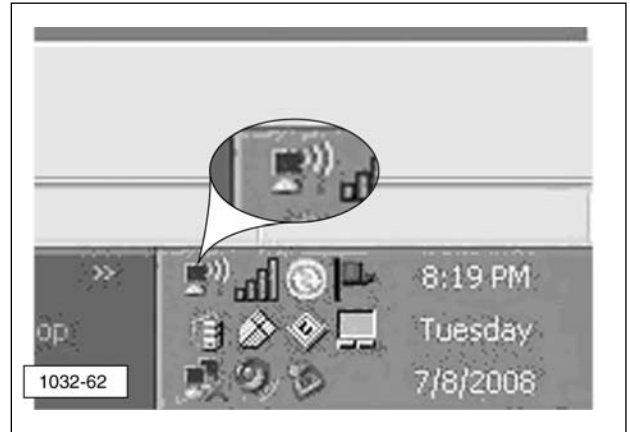
- The PC should now attempt to connect to the W-CA3 radio and an icon may display, similar to one shown below. This icon indicates that the PC and W-CA3 radio are connecting to each other and configuring their IP addresses.

NOTE: This process could take up to one minute.



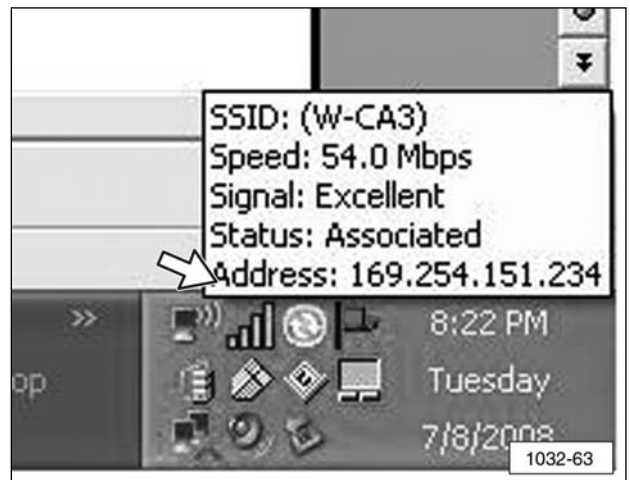
- When the connection is complete, the following icon will display.

NOTE: This icon (above) **must** appear before attempting to connect to a machine with CAT Electronic Technician.



- If the mouse cursor is moved over the top of the signal bars (do not click, just "hover" over the top), a "Status" screen may display showing the IP address of the PC. The address must start with 169.254. If it does not, the connection is not fully established.

NOTE: This address may take approximately 15-20 seconds to update and have 169.254 at the beginning of it. Wait until the address updates before attempting to connect with Cat ET.



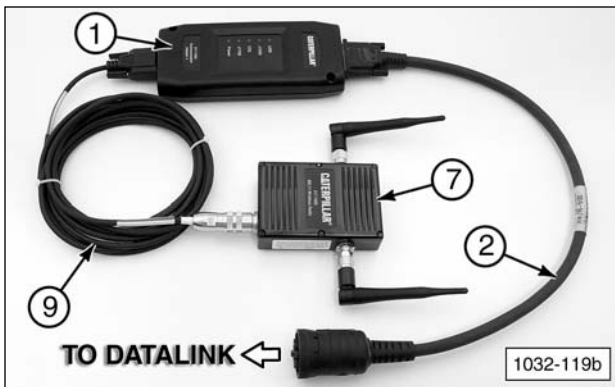
When connecting to a machine with CAT ET, using the W-CA3 in Auto-IP mode (default setting), it may take up to one minute for the process to complete. Using the Auto-IP mode is recommended.

NOTE: To use a static IP, the W-CA3 must be configured with a static IP address and the wireless card on the PC will also have to have an IP address set. Advanced users should refer to the “Changing the Internal Settings of the W-CA3” section of this manual for information on how to access the internal settings of the W-CA3.

Electronic Technician Configuration for the W-CA3

Configure Cat ET for communication through the 317-7485 Communications Adapter 3 (CA3) and the 317-7493 Wireless USB Radio (W-CA3).

1. Use 317-8981 Cable Assembly (2) to connect 317-7485 Communications Adapter3 (CA3) (1) to DataLink on the machine to be serviced. Use 317-7510 Cable Assembly (9) to connect the CA3 to 317-7493 Wireless Radio (W-CA3) (7).



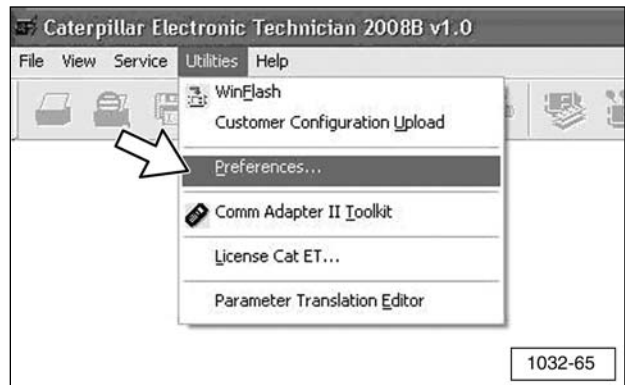
- (1) 317-7485 CA3. (2) 317-8981 Cable Assembly.
 (7) 317-7493 W-CA3. (9) 317-7510 Cable Assembly.

The Power lights for both the CA3 and W-CA3 should be ON.

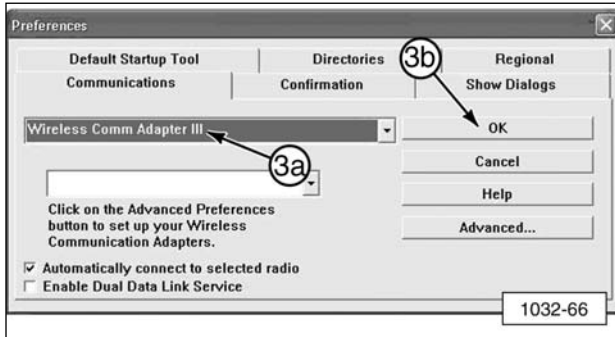


NOTE: The other two lights on the W-CA3 may also be ON. This is acceptable. It does not indicate a problem with the radio.

2. On the PC, open Caterpillar Electronic Technician and go to “Utilities” >> “Preferences.”



3. The “Preferences” window will display.
 - a. Select “Wireless Communication Adapter 3.”
 - b. Click “OK.”



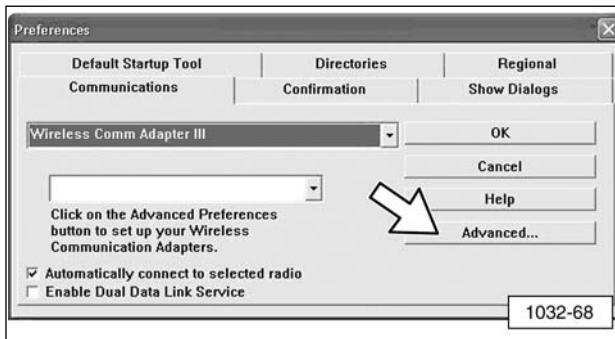
4. Click the “Connect” icon



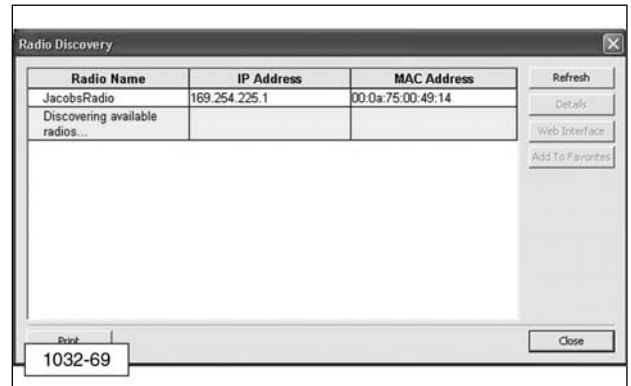
and the following dialog will display:

Saving the W-CA3 as a favorite for faster connection later.

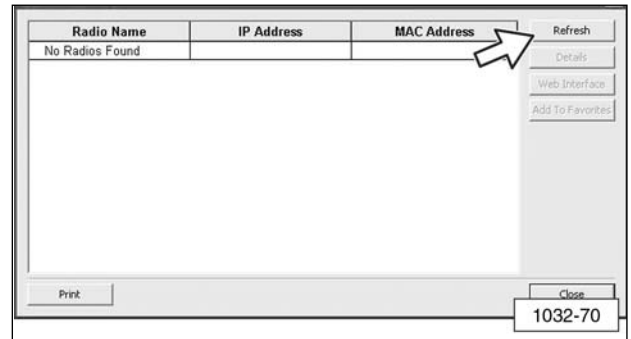
5. Click the “Advanced...” button to set the specifics for the radio.



6. The “Radio Discovery” window will display and, if the wireless network between the radio and the PC is already established (verify by making sure the network card is connected to the W-CA3 and has full signal strength), then the wireless radio should be automatically discovered and appear on the list. If the radio is not on the list, proceed to Step 7. If it is on the list, proceed to Step 10.



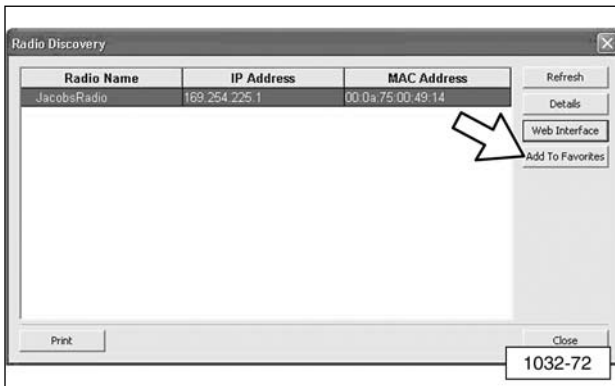
7. Click the “Refresh” button one or two times to verify that the radio is not found. If the radio is found this time, proceed to Step 9. If it is not found, proceed to Step 8.



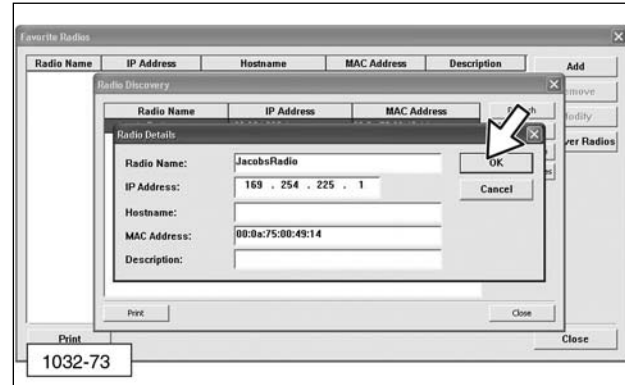
- Verify that the wireless card is connected with full signal strength and that the PC has obtained an IP address. If using the radio with its default settings, Auto IP is enabled and it can take up to one minute for an IP address to be established on the PC. When fully connected, these two icons may appear in the task bar.



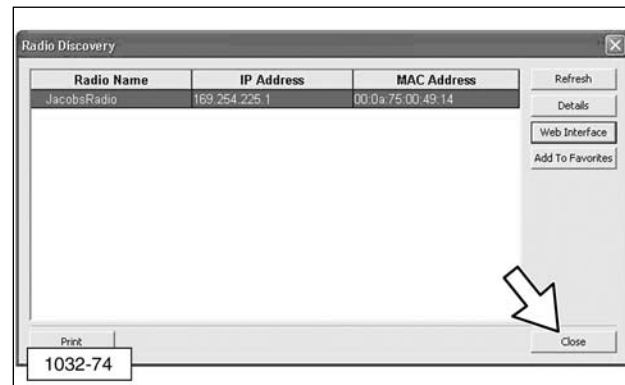
- If the connection to the W-CA3 still cannot be established, return to the “Configuring the PC Wireless Card for Communication With the Radio” section of this manual and verify that the configuration on the PC was performed correctly.
- When the W-CA3 has been discovered, make sure it is highlighted and click “Add To Favorites” to save the W-CA3. This will allow for easy connection to the wireless radio at a later time.



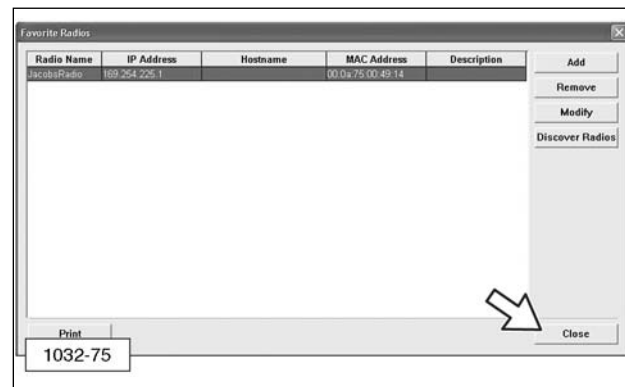
- When the “Favorite Radios” window displays, the “Hostname” and “Description” fields can be completed for identification purposes, but it is not required. Click “OK” and the W-CA3 will be saved as a “Favorite” radio for connecting at a later time.



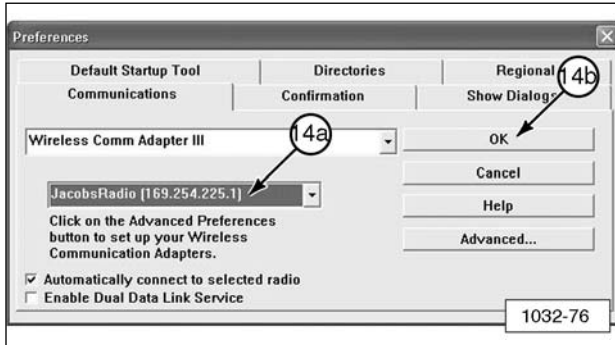
- Click “Close.”



- Click “Close” again.



14. The “Preferences” window will display.
 - a. From the drop-down menu, select the W-CA3 that was just discovered.
 - b. Click “OK” to initiate an ET connection.



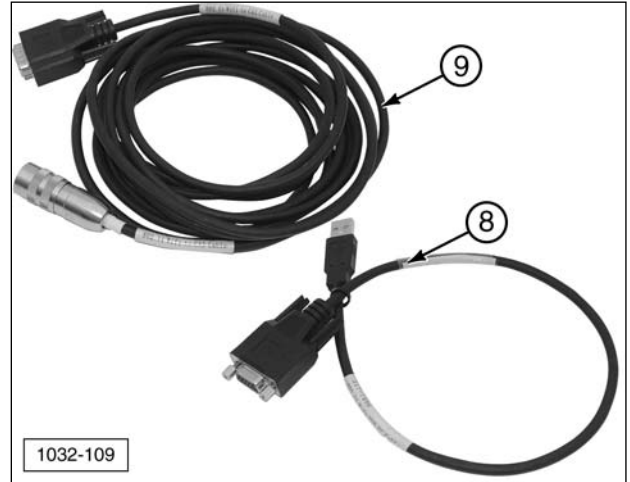
Activating and Changing the Internal Settings of the W-CA3

Included in the W-CA3 is the ability for the user to change the internal operating settings in order to make it behave differently. For example, the W-CA3 security key and settings can be changed. The wireless channel or mode can be changed, plus many other settings, in order for the W-CA3 to be configured to avoid interference, or to provide compatibility with the W-CA3 and a particular shop’s internal wireless network.

NOTE: Because of possible wireless certification noncompliance around the world, the W-CA3 is deactivated by default when purchased. In order to make the W-CA3 functional, the user must perform the following steps and configure the radio for the country where it will be used.

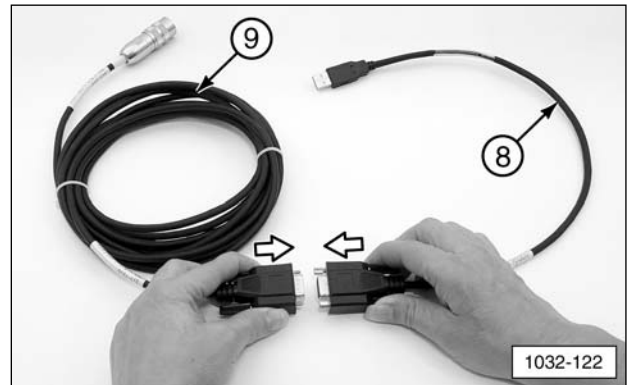
Connecting the W-CA3 to a PC

Although it is possible to change the internal settings of the W-CA3 wirelessly, it is recommended that the radio be connected to a PC via 317-7496 Cable Assembly (8) and 317-7510 Cable Assembly (9).



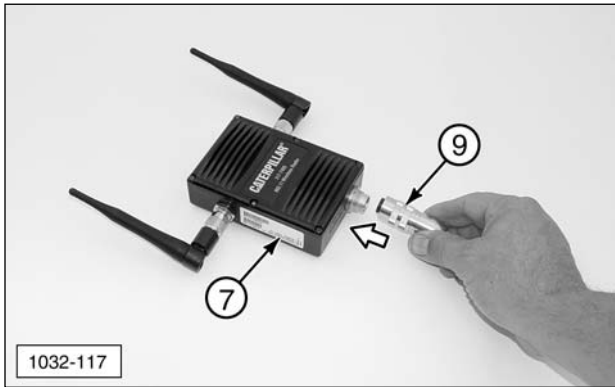
- (8) 317-7496 Cable Assembly.
- (9) 317-7510 Cable Assembly.

1. Connect 317-7496 Cable Assembly (8) to 317-7510 Cable Assembly (9).



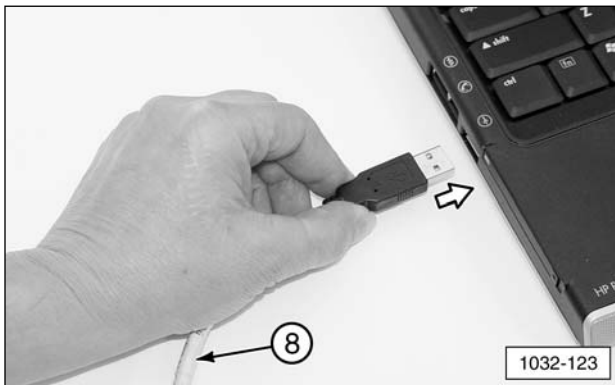
- (8) 317-7496 Cable Assembly.
- (9) 317-7510 Cable Assembly.

2. Connect 317-7510 Cable Assembly (9) round DIN connector to W-CA3 (7) plug.



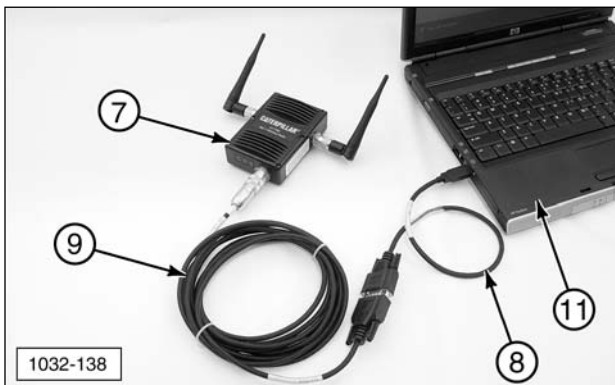
(7) 317-7493 W-CA3. (9) 317-7510 Cable Assembly.

3. Connect the USB end of 317-7496 Cable Assembly (8) to the PC USB port.



(8) 317-7496 Cable Assembly.

4. Completed configuration.



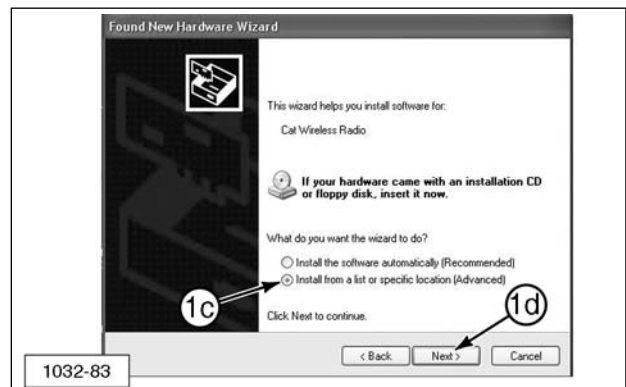
(7) 317-7493 W-CA3. (8) 317-7496 Cable Assembly. (9) 317-7510 Cable Assembly. (11) PC.

Installing the USB Drivers for the W-CA3

1. When the W-CA3 is connected to the PC for the first time, the “Found New Hardware Wizard” will display.
 - a. To install the drivers for the W-CA3, select “No, not this time.”
 - b. Click “Next.”



- c. Select “Install from a list of specific the locations (Advanced).”
- d. Click “Next.”



e. Select "Include this location in the search:"

f. Click "Browse."



2. Specify where the Hardware Wizard can find the drivers for the radio by browsing to the folder "W-CA3 USB Drivers." Click "OK."



3. Click "Next" to install the drivers.



4. The following Hardware Installation pop-up window message may display on the "Found New Hardware Wizard" window:

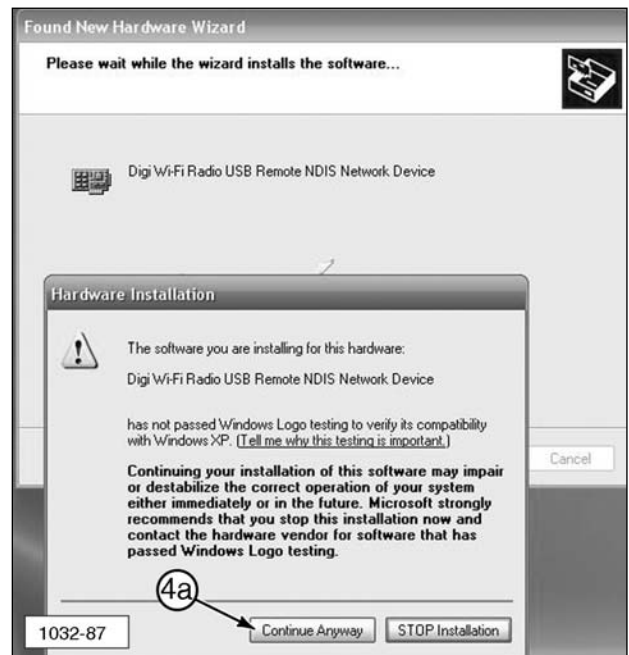
The software you are installing for this hardware:

DIGI Wi-Fi Radio USB Remote NDIS Network Device

has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

a. Click "Continue Anyway."



- The message “The wizard has finished installing the software for: Digi Wi-Fi Radio USB Remote NDIS Network Device” will appear. Click “Finish” to close the wizard.

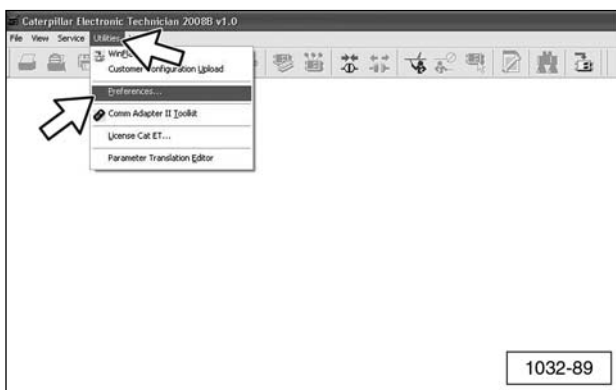


Viewing/Changing the Internal Settings for the W-CA3

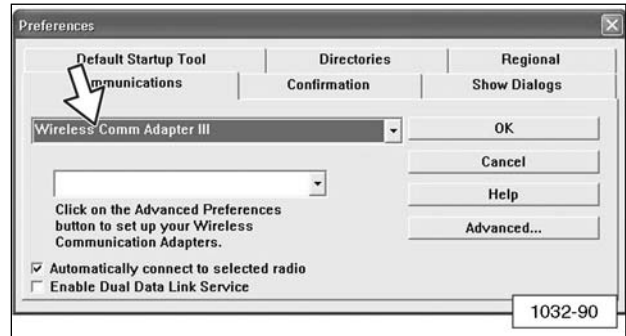
IMPORTANT NOTE:

When the 317-7492 Wireless Radio Kit is purchased, it is deactivated by default. In order for the radio to be used and to obtain the best performance, the 317-7493 Wireless Radio (W-CA3) must be configured for the country it will be used in. Perform the following steps to select the country of use.

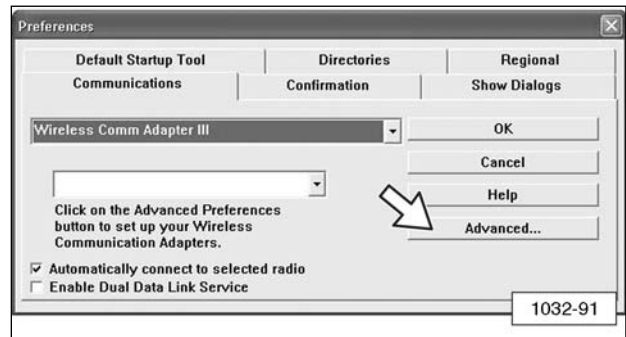
- Access the W-CA3 through Cat ET.
- Go to “Utilities” >> “Preferences.”



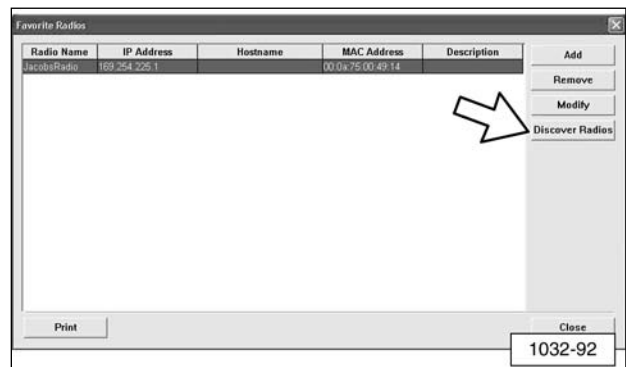
- Make sure the adapter selected in the “Preferences” window is “Wireless Comm Adapter 3.”



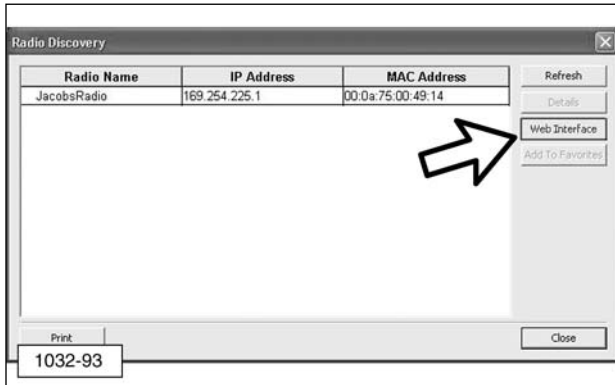
- Click “Advanced...”



- The “Favorite Radios” window will display. Click “Discover Radios.”



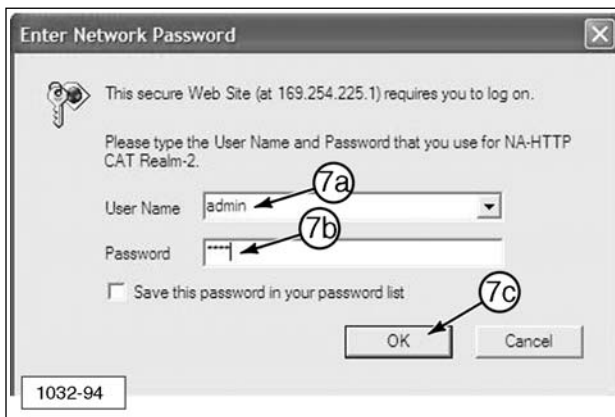
- Make sure that the radio is discovered in the “Radio Discovery” window and click “Web Interface.”



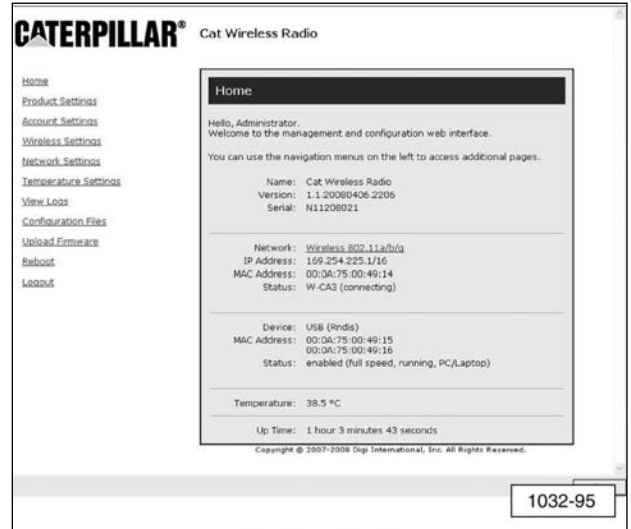
NOTE: Make sure that the correct adapter is selected if more than one appears. If the wrong adapter is selected, changes may be made to the wrong W-CA3. Multiple radios can appear if there are others nearby and they might be discovered wirelessly. This can be avoided by disabling the wireless card on the PC while changes are being made to the W-CA3 via the USB cable.

- The “Enter Network Password” window will display.

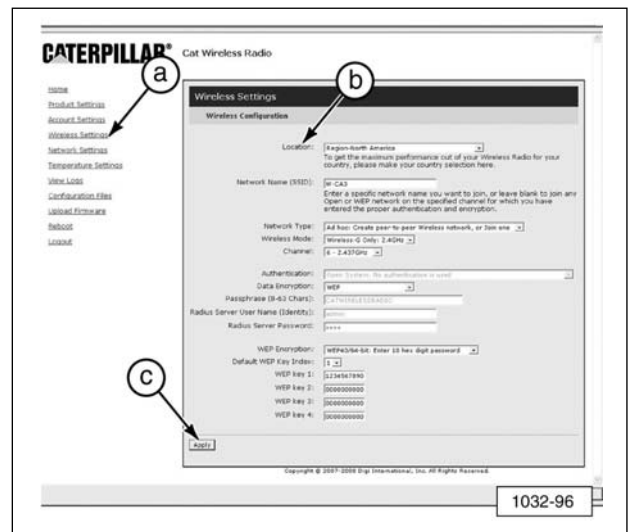
- Type “admin” as default user name.
- Type “wca3” as default password.
- Click “OK.”



- The Home Page screen will display.



- Select “Wireless Setting” (a) from the sidebar to display the Wireless Settings window.



10. "Location" field (b) must be configured in order for the radio to be functional. Select the country where the W-CA3 will be used from the drop-down list.

NOTICE

This setting will configure the radio for the maximum performance allowed by law for the area that the W-CA3 will be used in. The user is legally obligated and responsible for choosing the correct country of use. Disregard for this requirement is punishable by law.

11. Once the country is selected, click "Apply" (c) at the bottom of the screen. A note will display at the top of the screen stating the W-CA3 must be "rebooted" for the changes to take effect. If this is the first time the radio has been used and no other setting changes are desired, unplug the radio from the PC and return to "Install/Configure the Wireless CA3 (W-CA3) Radio." If more setting changes are desired, click the "Reboot" selection on the left and then click the "Reboot" button that appears. This applies the country setting and allows other setting changes to be made.

Additional Settings Available for Modification in the W-CA3

The following screens show each of the W-CA3 setting pages and the options available. Consult the IT Department before making any changes to the configuration of the W-CA3. This will ensure that the setting chosen for the W-CA3 does not conflict with any other wireless networks in the area.

The Home Page screen contains several status parameters for the W-CA3. Those of particular interest are as follows.

- b.** Version - The current version of the software loaded onto the W-CA3.
- c.** IP Address - The current IP address that the W-CA3 is using.
- d.** Temperature - The internal temperature of the radio.
- e.** Up Time - The total time the W-CA3 has been powered up.

The screenshot displays the 'Home' page of the Caterpillar Cat Wireless Radio management interface. The page features a navigation menu on the left with links for Home, Product Settings, Account Settings, Wireless Settings, Network Settings, Temperature Settings, View Logs, Configuration Files, Upload Firmware, Reboot, and Logout. The main content area, titled 'Home', provides a welcome message and instructions. It lists several status parameters, with callouts (b) through (e) pointing to specific values: (b) Version: 1.1.20080406.2206, (c) IP Address: 169.254.225.1/16, (d) Temperature: 38.5 °C, and (e) Up Time: 1 hour 3 minutes 43 seconds. The footer includes the copyright notice 'Copyright © 2007-2008 Digi International, Inc. All Rights Reserved.' and a 'Close' button.

Parameter	Value
Name	Cat Wireless Radio
Version	1.1.20080406.2206
Serial	N11208021
Network	Wireless 802.11a/b/g
IP Address	169.254.225.1/16
MAC Address	00:0A:75:00:49:14
Status	W-CA3 (connecting)
Device	USB (Rndis)
MAC Address	00:0A:75:00:49:15 00:0A:75:00:49:16
Status	enabled (full speed, running, PC/Laptop)
Temperature	38.5 °C
Up Time	1 hour 3 minutes 43 seconds

(b) Version. (c) IP Address. (d) Temperature. (e) Up Time.

The Product Settings screen contains the "Device Name" field. This field can be changed to give the radio a unique name or identifier.

CATERPILLAR® Cat Wireless Radio

[Home](#)
[Product Settings](#)
[Account Settings](#)
[Wireless Settings](#)
[Network Settings](#)
[Temperature Settings](#)
[View Logs](#)
[Configuration Files](#)
[Upload Firmware](#)
[Reboot](#)
[Logout](#)

Product Settings

Mode:
 CA3 Router Mode (single IP, NAT and Port Routing to CA3)

Device Name:
Device Name (1-31 chars):

Board Parameters:
Serial Nr:
MAC Address:
Nr. MAC Addresses:

Wired Device Type:
 Enable Rndis (USB)

Copyright © 2007-2008 Digi International, Inc. All Rights Reserved.

1032-126

The Account Settings screen reads as follows.

Welcome to the Accounts Manager.

Please define an Admin user with a secure password, and check the 'Admin' permission checkbox for that user. You can also define a Guest User that has read-only access to most of the information for this device; do not check the 'Admin' checkbox for Guest users. The 'Admin' user has full access to the device, and can perform operations that read and write objects, such as configuration files. The 'Guest' user has read-only access to the device.

The user name and password can be up to 31 characters each.

Always use secure passwords for all accounts.

At least one 'Admin' account name must be defined.

The Account Name (f) and Account Password (g) allows multiple users to have accounts on the W-CA3 and to log into the W-CA3 configuration individually. Only those users who have "Admin Permission?" (h) checked will be allowed to make changes to the settings of the W-CA3. All others will only be able to view the settings of the W-CA3.

Click on "Apply" (i) to accept any changes.

CATERPILLAR® Cat Wireless Radio

[Home](#)
[Product Settings](#)
[Account Settings](#)
[Wireless Settings](#)
[Network Settings](#)
[Temperature Settings](#)
[View Logs](#)
[Configuration Files](#)
[Upload Firmware](#)
[Reboot](#)
[Logout](#)

Account Settings

Welcome to the Accounts Manager.

Please define an Admin user with a secure password, and check the 'Admin' permission checkbox for that user. You can also define a Guest User that has read-only access to most of the information for this device; do not check the 'Admin' checkbox for Guest users. The 'Admin' user has full access to the device, and can perform operations that read and write objects, such as configuration files. The 'Guest' user has read-only access to the device.

The user name and password can be up to 31 characters each.

Always use secure passwords for all accounts.

At least one 'Admin' account name must be defined.

	Account Name	Account Password	Admin Permission?
1	root		<input checked="" type="checkbox"/>
2			<input type="checkbox"/>
3			<input type="checkbox"/>
4			<input type="checkbox"/>
5			<input type="checkbox"/>
6			<input type="checkbox"/>
7			<input type="checkbox"/>
8			<input type="checkbox"/>

Copyright © 2007-2008 Digi International, Inc. All Rights Reserved.

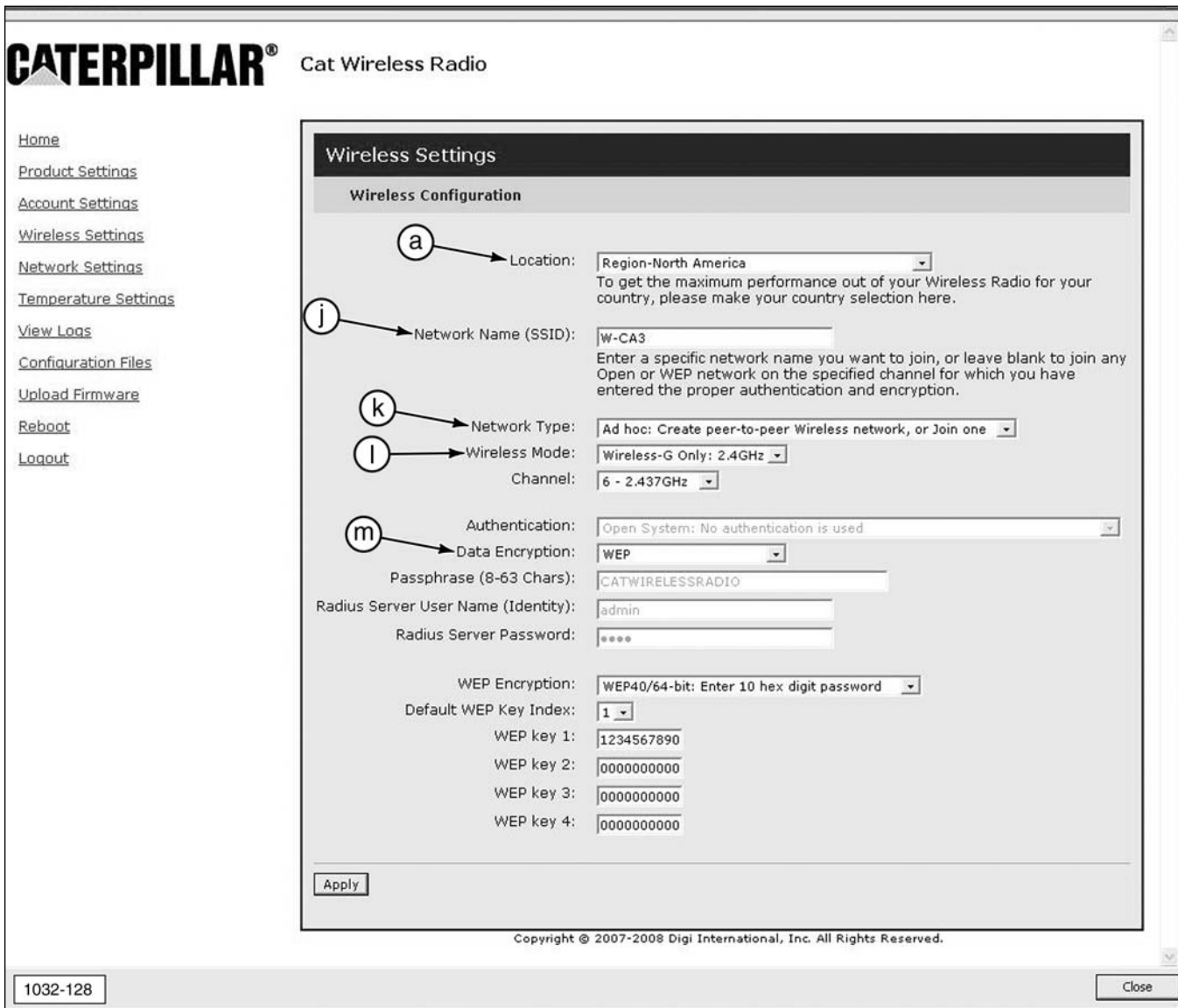
1032-127

(f) Account Name. (g) Account Password. (h) Admin Permission? (i) Apply.

The Wireless Settings screen contains the settings that pertain to the wireless setup of the W-CA3.

- a. Location - Specifies the country where the W-CA3 will be used. To obtain the maximum performance from the W-CA3, the country must be selected.
- j. Network Name - This specifies the name of the wireless network that the W-CA3 creates in order for the PC to connect to it.
- k. Network Type - Specifies whether the radio will connect to an internal wireless network (infrastructure) or directly to a PC (ad hoc).

- l. Wireless Mode - 802.11 a, b, or g mode can be chosen, or a combination of these.
- m. Data Encryption - Specifies how the wireless data will be encrypted.



(a) Location. (j) Network Name (SSID). (k) Network Type. (l) Wireless Mode. (m) Data Encryption.

The Network Settings screen allows the user to specify how the radio will obtain an IP address. If more than one of these settings is enabled, the radio will acquire the IP address in the following order.

- n. DHCP - Obtains an IP address from a server located on a local wireless network.
- o. Static IP - Allows the user to specify the exact address the W-CA3 will use.
- p. Auto IP - The W-CA3 will use an address in the Auto IP range (169.254.x.x).

Network Settings

Radio IP - Obtain the Radio IP using one or more of the following methods (Acquisition method priorities: DHCP is highest priority, Static IP, Auto IP is lowest priority)

(n) Use DHCP Server on Wireless Network.
NOTE: This mode is used when connecting to a wireless network that has a server to assign addresses to each client that joins the network.

(o) Use Static IP (Fill in the following fields).
NOTE: When this mode is used, the wireless interface on the PC must have a static IP address in the same range (not the exact same address) that is chosen here.

IP v4 Address:

Subnet Mask:

Default Gateway:

(p) Use Auto IP (Always active).
Auto IP is the default configuration and can be used in conjunction with Ad Hoc mode to prevent users from having to change the default TCP/IP addressing scheme on their PC. NOTE: Although convenient, this mode takes approximately one minute to establish the connection between the PC and the radio.

Wired Device IP - Specify the DHCP server assigned- or Statically assigned- IP and Subnet Mask for the wired device.

The device MAC address is optional. If it is available, then it is used to form a route from wireless PC's to the wired device. If it is left blank or all zeroes, then the Radio will attempt to discover the device's MAC address to complete the route information it needs.

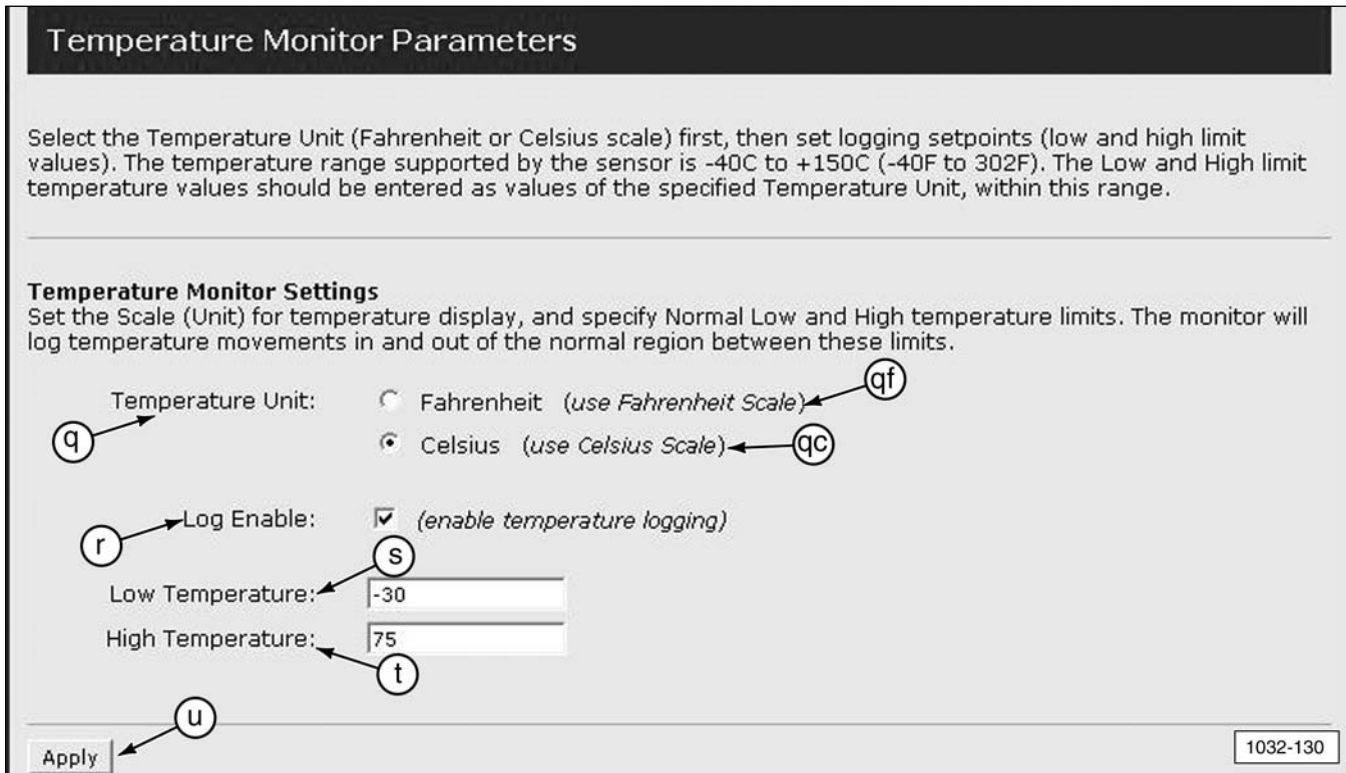
If you have configured the wired device to use DHCP to acquire it's IP address, then it will be given the IP and Subnet Mask that you enter here.

If you have configured the wired device with a fixed (Static) IP and Subnet Mask, you should specify those values here. This allows the radio to discover the device's MAC address, so that wireless traffic to the device can be properly routed to the wired device.

Device	Configure Device	Device MAC Address	Device IP v4 Address	Device Subnet Mask
USB	<input checked="" type="checkbox"/>	<input style="width: 100px;" type="text" value="00:00:00:00:00:00"/>	<input style="width: 100px;" type="text" value="192.168.1.201"/>	<input style="width: 100px;" type="text" value="255.255.255.0"/>

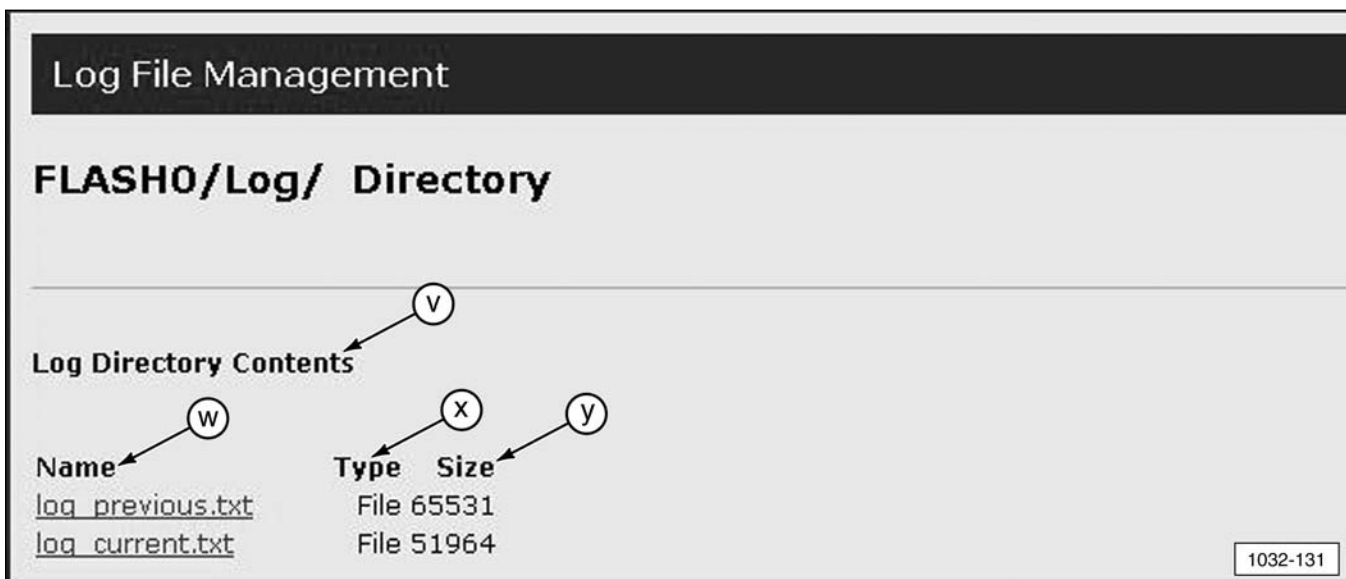
(n) Use DHCP Server on Wireless Network. (o) Use Static IP (Fill in the following fields). (p) Use Auto IP (Always active).

The “Temperature Monitor Parameters” screen allows the user to specify the operating temperature limits that will cause temperature changes to be recorded in the log file.



(q) Temperature Unit. (qf) Fahrenheit (use Fahrenheit Scale). (qc) Celsius (use Celsius Scale). (r) Log Enable. (s) Low Temperature. (t) High Temperature. (u) Apply.

The “Log File Management” screen allows the user to view the log files which contain debugging information relating to the operation of the W-CA3.



(v) Log Directory Contents. (w) Name. (x) Type. (y) Size.

The “Managing Configuration Files” screen reads as follows.

Welcome to the Configuration File manager.

A file named ‘config.txt’ can be saved after downloading, or chosen when uploading, and will contain text-formatted parameter strings that define all configurable parameters.

You can download the current settings, then save into a file named ‘config.txt’, then modify the current parameters directly using a text editor of your choice, then upload the ‘config.txt’ file again to install the new parameters.

Upload Configuration File:

Upload a new configuration text file and install it into flash, by entering the file path or clicking Browse and selecting the file, then click Upload.

(A configuration text file must be called config.txt.)

Download Configuration File:

Download the current parameters by clicking on the link below. After this file is displayed, save a copy of this file by using File Save, and enter ‘config.txt’ as the file name.

NOTE: The “Managing Configuration Files” screen allows for the current configuration of the radio to be downloaded and uploaded to another W-CA3 to save time when configuring multiple W-CA3 with the same settings.

Managing Configuration Files

Welcome to the Configuration File manager.

A file named 'config.txt' can be saved after downloading, or chosen when uploading, and will contain text-formatted parameter strings that define all configurable parameters.

You can download the current settings, then save into a file named 'config.txt', then modify the current parameters directly using a text editor of your choice, then upload the 'config.txt' file again to install the new parameters.

Upload Configuration File:

Upload a new configuration text file and install it into flash, by entering the file path or clicking Browse and selecting the file, then click Upload.
(A configuration text file must be called *config.txt*.)

Select Configuration File:

Download Configuration File:

Download the current parameters by clicking on the link below. After this file is displayed, save a copy of this file by using File Save, and enter 'config.txt' as the file name.

[Download \('config.txt'\)](#)

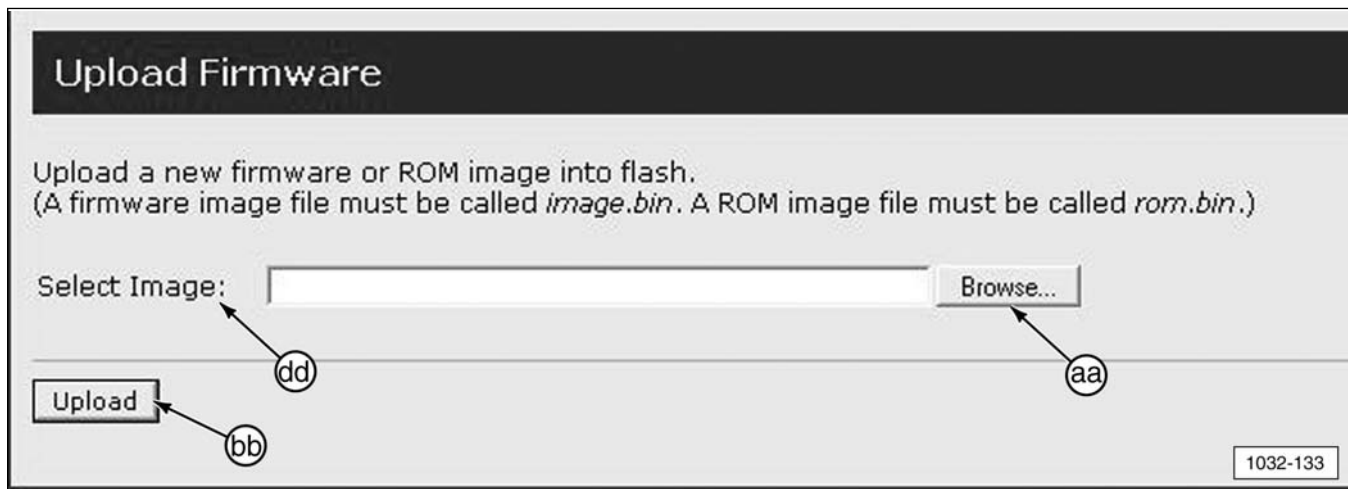
1032-132

(z) Select Configuration File. (aa) Browse. (bb) Upload. (cc) Download ('config.txt').

The "Upload Firmware" screen allows new firmware for the W-CA3 to be loaded into the internal memory of the unit. This screen reads as follows.

Upload a new firmware or ROM image into flash.

"(A firmware image file must be called image.bin. A ROM image file must be called rom.bin.)"



(aa) Browse. (bb) Upload. (dd) Select Image.

The "Reboot" screen reads as follows.

Click Reboot to reboot this device.

This screen allows the user to reboot the W-CA3 through software. This is the same as power-cycling the W-CA3. Any time settings are changed in the radio and applied, the W-CA3 must be rebooted for the settings to become active.

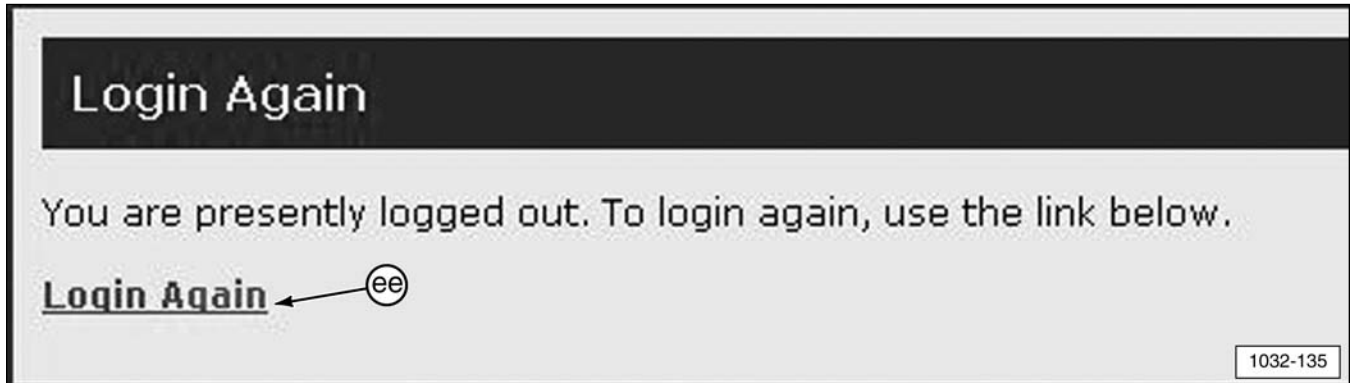


(cc) Reboot.

The "Login Again" screen reads as follows.

You are presently logged out. To login again, use the link below.

This screen displays when the user clicks "Logout" on the shortcuts list at the left side of the Home Page screen. The current user will be logged out, which allows another user to log in.



(ee) Login Again.

Tooling Configurations

There are several options for configuring the 317-7493 Wireless Radio (W-CA3) for various functions and uses.

IMPORTANT NOTE:

To comply with US and Canadian regulatory requirements, read, understand, and follow the guidelines in the Regulatory Information section in this manual when configuring and operating the 317-7493 Wireless Radio (W-CA3) and related components.

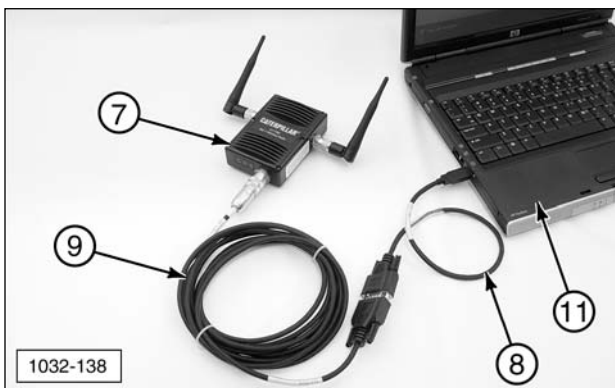
⚠ WARNING



If the machine is required to work within 12 m (40 ft) of a blast area, the operator must disable and remove the 317-7492 Wireless Radio. Failure to do so could result in serious injury or death.

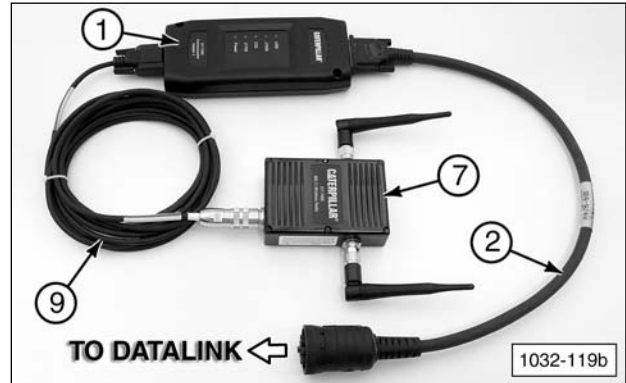
NOTE: For more information on connecting the W-CA3, refer to specific sections in this manual.

W-CA3 to PC



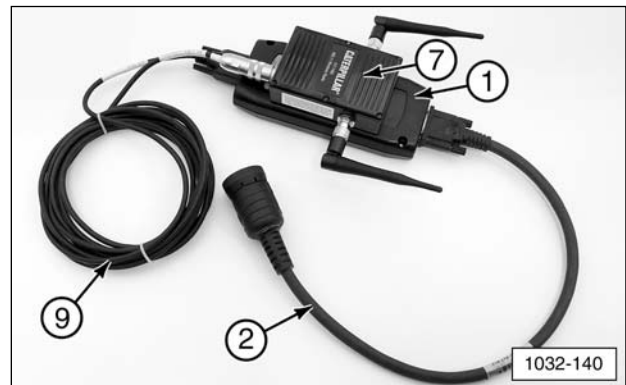
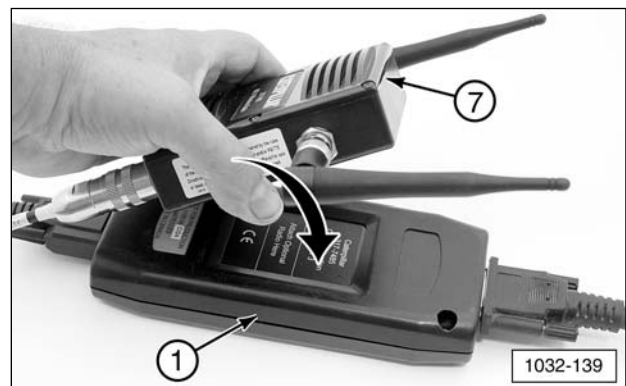
(7) 317-7493 W-CA3 connected to PC (11) USB port with 317-7496 Cable Assembly (8) and 317-7510 Cable Assembly (9) (for configuring the wireless radio).

W-CA3 to CA3 to DataLink



(7) 317-7493 Wireless Radio (W-CA3) connected to 317-7485 Communications Adapter3 (CA3) (1) with 317-7510 Cable Assembly (9). Ready for connection to DataLink with 317-8981 Cable Assembly (2).

Magnetic Mount W-CA3 to CA3



Magnetically attach W-CA3 (7) onto the back side of 317-7485 CA3 (1). (2) 317-8981 Cable Assembly. (9) 317-7510 Cable Assembly.

Using the Remote Antenna

The 326-9607 Remote Antenna enables better “line of sight” antenna placement for W-CA3 communication with a remote PC. It features a magnetic base for temporary mounting on equipment.

1. Unthread (counterclockwise) fitting and remove standard 326-9606 Antenna (7a) on the side of 317-7493 Wireless Radio (W-CA3) (7) closest to the “C” in the CATERPILLAR label displayed on the front of the radio. Save the removed antenna for reuse.



317-7493 Wireless Radio (W-CA3) (7).
326-9606 Antenna (7a).

2. Thread (clockwise) the connector fitting of optional 326-9607 Remote Antenna (11) onto 317-7493 Wireless Radio (W-CA3) (7) finger tight.

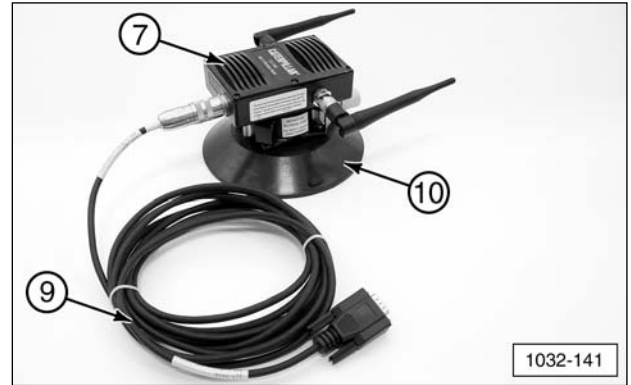


(11) 326-9607 Remote Antenna (optional).

NOTE: For wireless communication to function, the W-CA3 antenna(s) must have “line of sight” with the dealer supplied PC. Place the magnetic base of the remote antenna on a metal surface high up on the machine, away from any heat source.

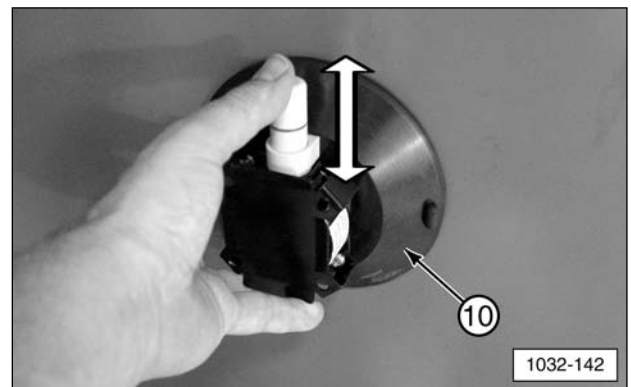
Using the Suction Cup Mount

Optional 317-7512 Suction Cup Mount (10) allows placement of the magnetic 317-7493 Wireless Radio (W-CA3) (7) on a nonmetallic surface, such as the window of a cab.



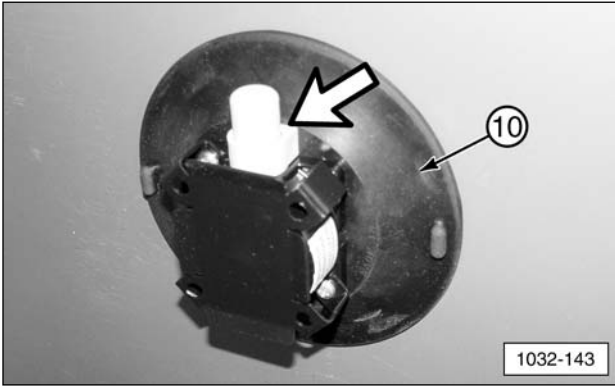
(7) 317-7493 Wireless Radio (W-CA3).
(9) 317-7510 Cable Assembly. (10) 317-7512 Suction Cup Mount.

1. Place suction cup mount (10) on a clean, dry, flat surface, away from any heat source. Pump the white plunger several times to adhere the mount to the surface.



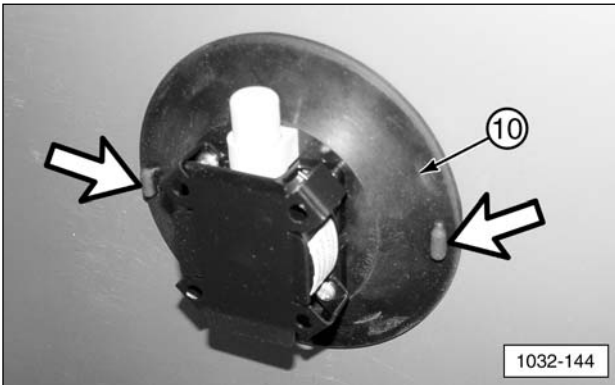
(10) 317-7512 Suction Cup Mount (pump plunger).

- The mount is secure when the RED line on the plunger is no longer visible.



(10) 317-7512 Suction Cup Mount (red line on plunger not visible).

- To release the suction cup mount, support the mount and firmly push inward (toward the center) on either one of the soft tabs near the suction cup edge.



(10) 317-7512 Suction Cup Mount (release tabs).

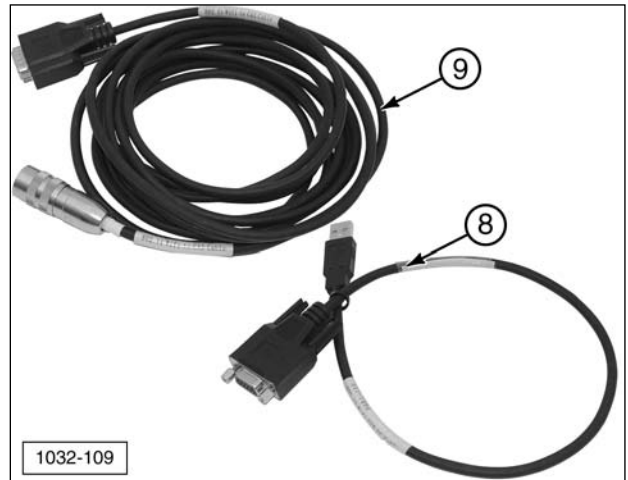
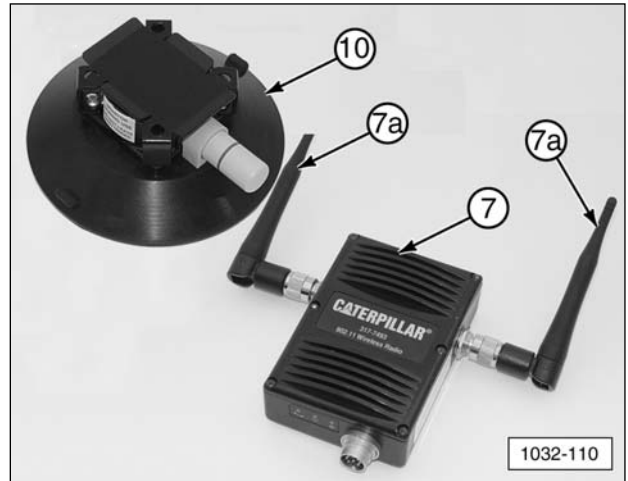
NOTICE

Monitor the 317-7512 Suction Cup Mount during use. To avoid damage to the W-CA3, suction cup mount, and/or related components, do not leave unattended.

Service Parts Section

317-7492 Wireless Radio Group

317-7512 Suction Cup Mount



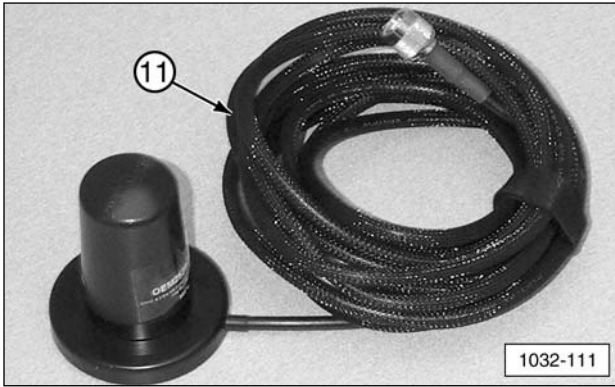
317-7492 Wireless USB Radio (W-CA3) Kit

Item	Part No.	Description	Qty
7	317-7493	Wireless Radio Group (W-CA3)	1
7a	326-9606	Antenna	2
8	317-7496	WiFi/USB PC Cable Assembly	1
9	317-7510	WiFi/CA3 Cable Assembly	1

317-7512 Suction Cup Mount (Optional)

Item	Part No.	Description	Qty
10	317-7494	Suction Cup Mount	1

326-9607 Remote Antenna



326-9607 Antenna (Optional)

Item	Part No.	Description	Qty
11	326-9607	Remote Antenna	1

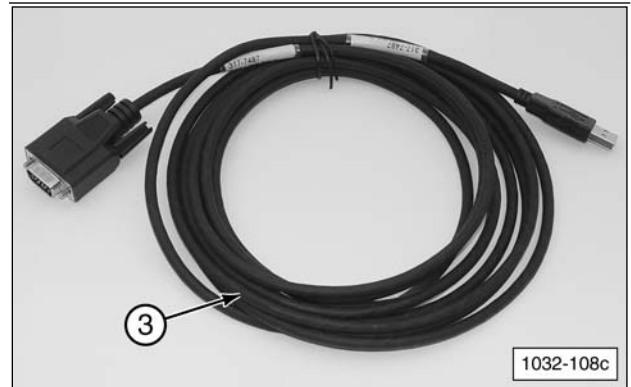
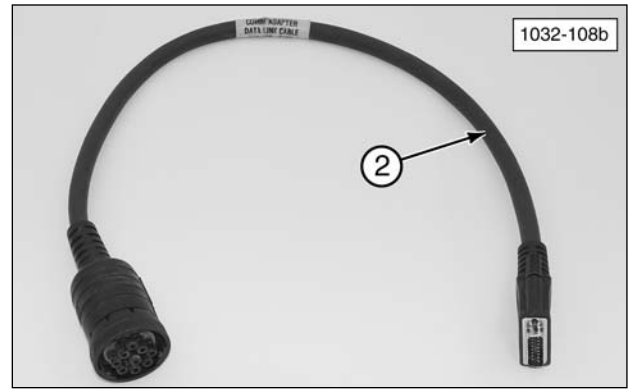
NOTE: At the end of the tools operational life, destroy the component. Recycle electrical equipment according to all Federal, state, and local guidelines.

Related Components

317-7484 Communications Adapter3 (CA3) Group

The 317-7493 Wireless Radio is designed to be used with 317-7484 Communications Adapter 3 and related components. For reference, this tooling is shown here.

NOTE: For more information on the 317-7484 Communications Adapter 3, refer to NEHS1032 Tool Operating Manual.



317-7484 Communications Adapter 3 (CA3) Group

Item	Part No.	Description	Qty
1	317-7485	Communications Adapter 3 (CA3)	1
2	317-8981	CA3/DataLink Cable Assembly	1
3	317-7487	CA3/PC Cable Assembly	1
4	6V-7145	Case	1
4a	317-7513	Foam Insert Assembly	1
—	NETG5057	Media CD	1
—	NEHS1032	Tool Operating Manual	1

Regulatory Information Section

NOTE: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Regulatory Information And Certifications

RF Exposure Statement

Caterpillar 802.11 a/b/g Radio complies with the RF exposure limits for humans as called out in the FCC guidance for Specific Absorption Rate (SAR).

IMPORTANT NOTE:

To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm (7.9 in) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. OEM installers must consider suitable module and antenna installation locations in order to assure this 20 cm (7.9 in) separation, and end users must be also be advised of the requirement.

FCC Certifications

These devices comply with part 15 of the FCC rules. Operation is subject to the following two conditions:

- These devices may not cause harmful interference.
- These devices must accept any interference received, including interference that may cause harmful operation.

Radio Frequency Interference (RFI) (FCC 15.247 and 15.407)

This equipment has been tested and found to comply with the limits for digital devices pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in automotive environments. This equipment generated, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other equipment, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver.
- Consult the dealer or an experienced technician for help.

IMPORTANT NOTE:

To comply with US and Canadian regulatory requirements, when the 317-7493 Wireless Radio is used outdoors, the channels in the band 5150-5250 MHz must be disabled.

Users are cautioned to take note that high-power radars are allocated as primary users (meaning they have priority) of the bands 5250-5350 MHz and 5650-5850 MHz. The 317-7493 Wireless Radio complies with IEEE 802.11h - Spectrum Managed 802.11a (5 GHz) devices. Therefore, the use of these two bands will enable Dynamic Frequency Selection (DFS) in which the detection of radar and spectrum management of either an Infra-Structure or Ad hoc network is automatic.

Industry Canada

This digital apparatus does not exceed the limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'ement pas de bruits radioelectriques depassant les limites. A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere de Communications du Canada.

IMPORTANT NOTE:

To comply with RSS-210 section A9.2(2) E.I.R.P. limits, the maximum antenna gain permitted in the bands 5250-5350 MHz and 5470-5725 MHz is:
250mW conducted power - 1.0W max E.I.R.P.

To comply with RSS-210 section A9.2(3) E.I.R.P. limits, the maximum antenna gain permitted in the bands 5725-5825 MHz is:
1W conducted power - 4.0W max E.I.R.P.

The 326-9606 Antenna and 326-9607 Remote Antenna meet these requirements.

Statement To Original Equipment Manufacturer (OEM) Integrators

This device is intended only for OEM integrators under the following conditions:

- The antenna must be installed such that 20 cm (7.9 in) is maintained between the antenna and users for all installations.
- The transmitter module may not be co-located with any other transmitter or antenna.

NOTE: In the event that any of these conditions can not be met (for example portable configurations, co-location with another transmitter, or use of a different antenna), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for reevaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

For information on service tools or shop supplies,
contact Dealer Service Tools on:

Dealer Service Tools
501 S. W. Jefferson
Peoria, IL U.S.A. 61630-2125
U.S.A.: 1-800-542-8665
Illinois: 1-800-541-8665
Canada: 1-800-523-8665
World: 1-309-675-6277
Fax: 1-309-494-1355
dealerservicetool_hotline@cat.com