

# **Installation Note**

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**Agilent Technologies ESA Spectrum Analyzers Option A5D  
12 Vdc Cable Installation Kit  
Part Number E4401-60066**



**HP Part Number E4401-90086    Supersedes May 1999**

**Printed in USA    May 2000**

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## 12 Vdc Cable Installation Kit

Product Affected: . . . . .	ESA Spectrum Analyzers: E4401B E4402B E4403B E4404B E4405B E4407B E4408B E4411A E4411B
Serial Numbers: . . . . .	US37450000 and greater  US37369999 and below require an Option R12 power supply upgrade kit
To Be Performed By: . . . . .	Qualified automotive electrician
Estimated Installation Time: . . . . .	0.5 Hour

**WARNING**                      **Do not attempt to install the 12 Vdc cable kit on a spectrum analyzer with an older power supply. Refer to the serial number range above to determine if your analyzer requires the power supply upgrade.**

## Introduction

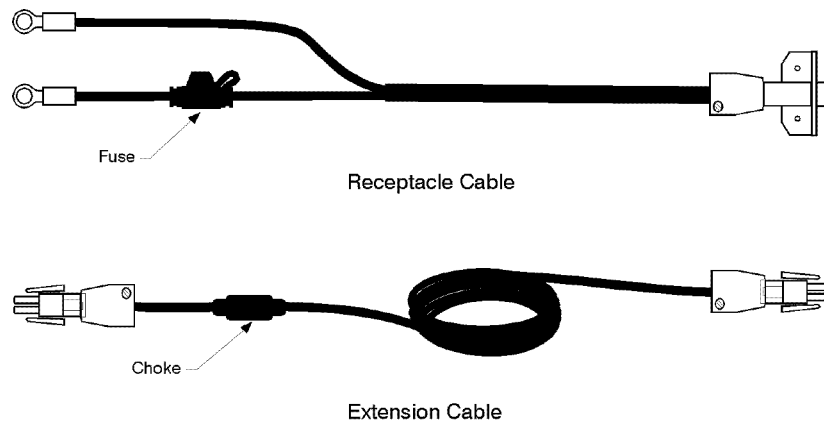
This kit contains the instructions and parts to install the 12 Vdc cable assembly to automotive type batteries for field operation of the ESA-Series spectrum analyzers.

## Installation Kit Parts List

**Table 1**                      **Cable Kit Contents**

Item	Quantity	Description
1	1	12 Vdc Receptacle cable assembly
2	1	12 Vdc Extension cable
3	1	Installation note

**Figure 1**                      **Cables Included**



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## Tools Required

- ☐ Miscellaneous hand tools
- ☐ Small drill

## Hardware Required

- ☐ Two (2) small screws
- ☐ Two (2) adapter bolts (for sidemount batteries only)

## Safety

- |         |   |
|---------|---|
| WARNING | <b>The 12 Vdc cable should not be plugged into an analyzer with an older power supply. Doing this could be dangerous. Spectrum analyzers with serial numbers below US37450000 require the Option R12 upgrade kit when used with dc power.</b> |
| WARNING | <b>Lead acid batteries contain sulfuric acid which can cause severe bodily injury including blindness if contacted directly. Wear appropriate protection for your eyes and body.</b>  |
| WARNING | <b>Hydrogen gas is extremely explosive and is present in and around lead acid batteries. Be careful not to generate any sparks or have any open flames nearby.</b>  |
| WARNING | <b>Automotive batteries are capable of producing hundreds of amperes of electrical current. Use extreme caution not to short the terminals together with any conductive materials or tools.</b>   |
| CAUTION | All work should be done by qualified automotive electricians.   |
| CAUTION | When replacing the fuse, use only a fuse of the same type and rating:<br>20 Amp 32 Volt fast acting MINI Fuse<br>Bussman ATM-20<br>Littelfuse 297020  |
| CAUTION | Do not close the vehicle hood if doing so will pinch the cable.   |

## Procedure

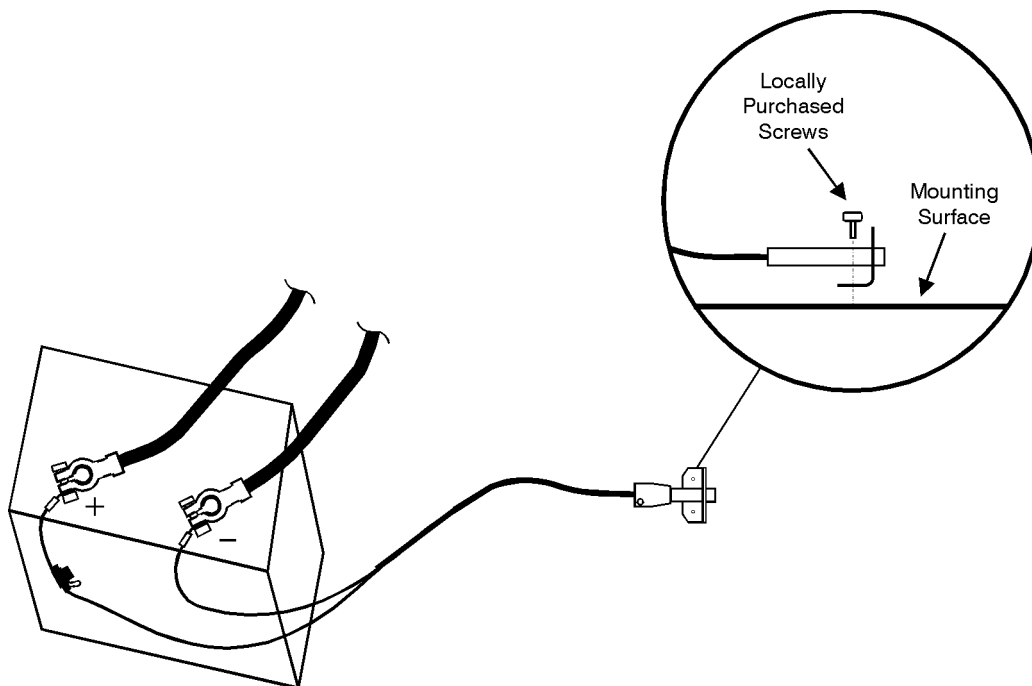
### Install the 12 Vdc Receptacle Cable

Follow these steps to connect the 12 Vdc receptacle cable assembly directly to the battery (or as close as possible) for best electrical performance. In most cases the leads may be connected using the existing hardware of the battery cables.

1. Locate the vehicle battery.
2. Attach the cable's red lead directly to the (+) positive terminal of the battery, and the brown lead to the (-) negative terminal.
3. Mount the bracket to a suitable surface close to the battery. See Figure 2. Drill two small holes in the mounting surface, and attach the bracket with two small locally purchased screws.

**CAUTION** Make sure the bracket and cable do not interfere with mechanical devices such as fans, pumps, or hinges. Also, do not allow the cable to come in contact with hot surfaces such as exhaust manifolds.

**Figure 2** Installing the Receptacle Cable Assembly

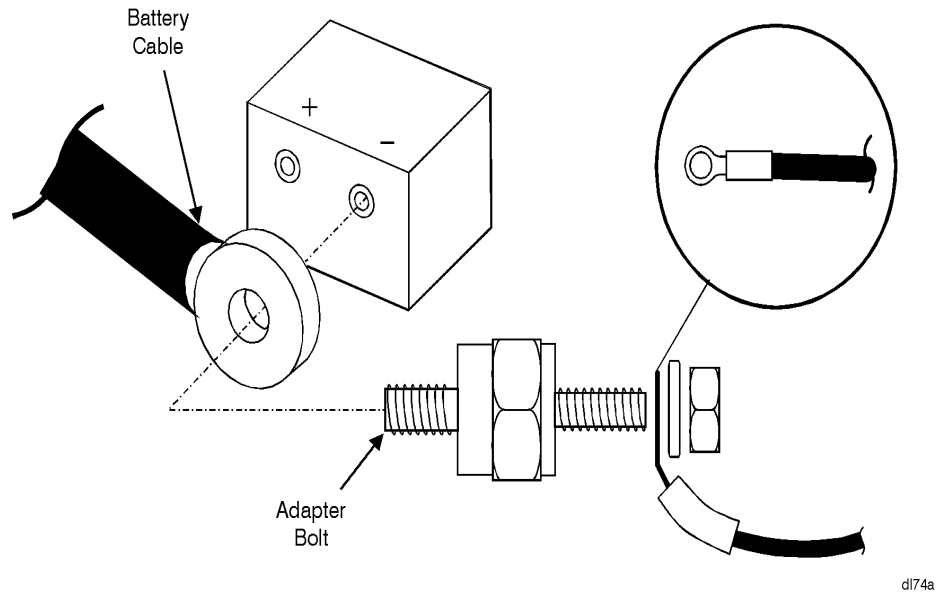


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## Side-mount Terminals

If the battery has side-mount terminals, you may need to purchase adapter bolts from an auto parts or car stereo store. Replace the existing bolts with the adapter bolts securing the cables to the battery, then attach the cable assembly as shown in Figure 3.

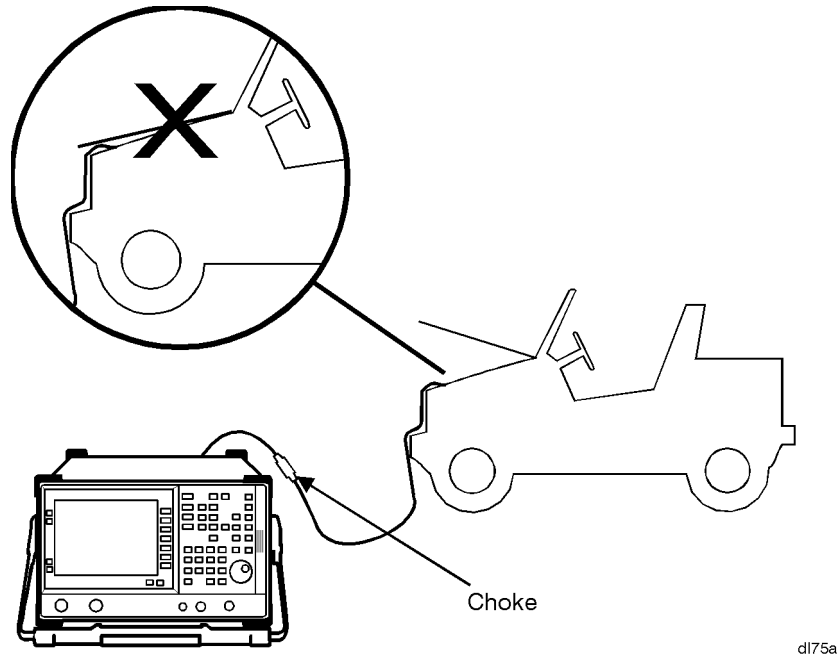
**Figure 3**      **Connecting to Side-mount Terminals**



## Connecting to the Spectrum Analyzer

Connect the extension cable to the receptacle connector first, and always connect to the spectrum analyzer last. There is a ferrite-bead choke near one end of the extension cable (the choke-end). Connect the choke-end to the analyzer. See Figure 4. When finished using the analyzer, disconnect in the reverse order.

**Figure 4** Connecting the Cable to the Instrument



- CAUTION** Remove the spectrum analyzer ac connector (power cord) prior to connecting the 12 Vdc cable.
- CAUTION** Avoid pinching the cable by not closing the hood. See Figure 4.
- CAUTION** Always disconnect the extension cable when not in use. Store the cable safely away.

## Operation

It is recommended to have the engine running while operating the spectrum analyzer to avoid drawing down your battery. When connected to the vehicle, the instrument is drawing energy from the vehicle's electrical system. Be aware of the condition of your battery and the load of the instrument so you don't excessively discharge your battery.

- CAUTION** Do not set the spectrum analyzer on its rear feet with the 12 Vdc cable attached, or connector damage will result. The handle can be used to tilt the instrument. Only vertical operation should be avoided.