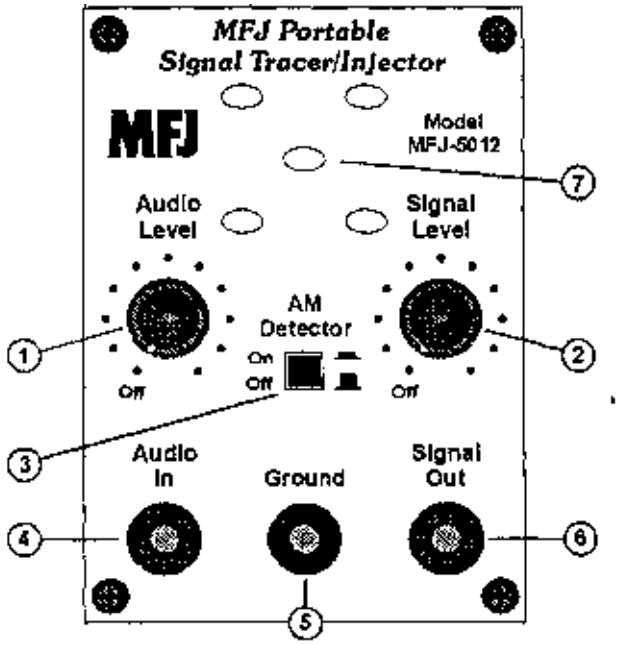
INTRODUCTION

The multi-purpose *MFJ Portable Signal Tracer/Injector* is used to quickly find defective stages in all kinds of signal amplifiers, radio receivers, and transmitters. This includes home theater systems, hi-fi amplifiers, public address systems, guitar amplifiers, AM/FM/ TV receivers, CB radios, Ham transceivers, cordless phones, police scanners, shortwave receivers and cell phones.

It can also be used to find opens and shorts in cables and wires. It can identify and locate individual wires in multi-conductor cables. It's perfect for trouble shooting and repairing the cabling and wiring in computer networks, telephones, home theater, stereos, sound systems, public address systems and almost any system that uses wiring and cabling.

The *MFJ Portable Signal Tracer/Injector* accomplishes these functions with a harmonic rich variable level signal source, an AM detector and a variable gain audio amplifier.

CONTROLS AND CONNECTORS



1. **Audio Level:** This knob turns the audio amplifier on and controls the speaker volume.

2. **Signal Level:** This knob turns the signal generator on and controls the amount of signal injected into the device under test.

3. AM **Detector:** This switch turns the detector on and off.

4. Audio In: The audio signal from the device under test enters through this terminal.

5. **Ground:** The ground of the device under test is connected to this terminal. 6.

Signal Out: The output of the signal generator is located at this terminal. 7.

Speaker: Audio from the device under test is heard through the speaker.

The MFJ-5012 is power by a 9 volt battery. The battery connector is accessed by removing the four screws on the cover. There is a holder mounted in the bottom of the box for the battery

OPERATION

There are two basic ways or techniques to test amplifier stages in a device using the *MFJ Portable Signal Tracer/Injector.* These two techniques are reflected in the name itself. The first way is by signal tracing. This is accomplished by checking for a signal and/or a signal increase at each stage of the device under test. The second technique is signal injection. This is done by introducing a signal at each input stage of the device under test and checking for an output.

Signal Tracing

The signal tracing technique is applying a signal to the main input of the _device Wider lest (DUT) and then checking for the presence of the signal at the input and output of each stage. When a stage with an input and no output is found, chances are the problem area has been located. With the DUT and MFJ-5012 off (both level controls and AM detector), connect the DUT ground to the MFJ5012 ground terminal. Connect a wire or something you can probe with to the Audio In connector and connect the Signal Out connector to the input of the DUT. Keep all connections as short as possible, especially the ground connection. Turn the Audio Level control and the Signal Level control on. Place both controls in the 12 o'clock position. This is just a starting point; you will have to adjust these controls to accommodate the device that is being tested. Next turn the DUT on. Use the "probe" to check the input and output to each stage from the main input to the final output Use the first stage to adjust the level controls. At each amplifier stage an increase in signal level should occur. Continue to use the Audio Level control as needed.

Note: If you are testing a device that's using amplitude modulation, make sure **the** AM Detector is on.

Signal Injecting

The signal injection technique is applying a signal at each amplifier stage of the device under lest (DUT) and listening for audio at the DUT speaker. When a stage with an input and no audio is found, you have found the defective stage. With the DUT and MFJ-5012 off (both level controls and AM detector), connect the DUT ground to the MFJ-5012 ground terminal. Connect a wire or something you can probe with to the Signal Out. Keep all connections as short as possible, especially the ground connection. The Audio Level control remains off. Place the Signal Out control in the 12 o'clock position. This is just a starting point; you will have to adjust this control to accommodate the device that is being tested. Next turn the DUT on. Starting at the DUT output (the speaker) use the "probe" to inject a signal. If audio is heard through the speaker (use the Signal Level control as needed), then move to the input of the last audio stage. If audio is heard through the speaker back up one more stage. Audio should increase somewhat as you add each stage. Continue this process until you have a loss of audio. At that point you have found the defective stage.

Note: If you are testing a device that's using amplitude modulation, make sure the AM Detector is on.

OTHER USES

You can check a single amplifier stage. This is by injecting a signal (using Signal Level and Signal Out) into the input of a particular stage and listening for the signal at the output of the stage (using Audio Level and Audio In).
Locating defective cables/wires or identifying them is very simple. Just inject a signal into a wire or cable and use the amplifier/speaker to find the signal on the other end of the wire or cable.

TECHNICAL ASSISTANCE

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call *MFJ Technical Service* at 662-323-0549 or the *MFJ Factory* at 662-323-5869. You will be best helped if you have. your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.
You can also send questions by mail to *MFJ* Enterprises, Inc., 300 Industrial Park Road, Starkville, MS *39759* by Facsimile to 662-323-6551 or by email to techinfo@mfjenterprises.com. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.