INSTRUCTION MANUAL

AMPLIFIER CURRENT PROBE AM 503

1P/1983

7077

Product Group 75
Revised APR 1985
First Printing SEP 1976
Serial Number

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P.O. Box 500
Beaverton, Oregon

COMMITTED TO EXCELLENCE

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Tectronix, Inc., Beaverton, Oregon, USA
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Instrument Serial Numbers

Each instrument has a serial number on a panel insert tag.

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OPERATOR'S SAFETY SUMMARY

The following text contains a two-part summary of general safety precautions that must be observed during all phases of operation, service, and repair of this instrument.

Protective ground (earth) terminal.

ATTENTION — refer to manual.

Power Source

This product is intended to operate from a power source that will not apply more than 250 volts rms between supply conductors or between either supply conductor and ground. A protective ground conductor in the power cord is essential for safe operation.

GROUNDING THE PRODUCT

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting the product. Connecting the product by way of the grounding conductor in the power cord is essential for safe operation.

DANGER ARISING FROM LOSS OF GROUND

Upon loss of the protective-ground connection, all accessible conductive parts (including knobs and controls) may appear to be insulated. This can put the user at risk for an electric shock.

USE THE PROPER POWER CORD

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition.

SYMBOLOG

In This Manual

This symbol indicates where applicable cautionary or other information is to be found.

As Marked on Equipment

DANGER — High voltage.

Refer to fuse replacement for qualified service personnel.

In This Manual

This symbol indicates where applicable cautionary or other information is to be found.

As Marked on Equipment

Refer to fuse replacement for qualified service personnel.
Do Not Service Alone

Service:

Refer also to the preceding operations safety summary.

FOR QUALIFIED SERVICE PERSONAL ONLY
To remove the AM 503, pull on the release latch.

To reinstall the AM 503 circuit board in the intercommunication jack:

1. Ensure the module is free of any debris or obstructions.
2. Align the upper and lower grooves of the AM 503 chassis with the upper and lower guides of the selected compartment.
3. Push the module into the intercommunication jack of the selected compartment, ensuring the slots on the module align with the slots in the jack.

NOTE: All references to the F600 probe also apply to the AM 503.
Connecting the Am 503

Connect a current probe to the Am 503 input connector.

1. Connect the probe to the instrument's input connector and adjust the probe's sensitivity for the type of signal being measured. Ensure that the probe is properly connected to the instrument.

2. Adjust the instrument's gain to match the probe's sensitivity. This will allow for accurate measurement of the signal.

3. Ensure that the probe's ground connection is properly made. This is important to prevent any unwanted noise from affecting the measurement.

4. The probe should be used in conjunction with the instrument to obtain accurate measurements.

Connecting the Am 503 to the oscilloscope

Connect the Am 503 to the oscilloscope's input connector. This will allow for the measurement of the signal being displayed on the oscilloscope.

CAUTION

When connecting the Am 503 to the oscilloscope, ensure that the probe's ground connection is properly made. Failure to do so may result in inaccurate measurements.

Controls and Connectors

The Am 503 is equipped with a variety of controls and connectors. These are used to adjust the instrument's settings and connect it to other devices.

Introduction

The Am 503 is a versatile instrument that can be used in a variety of applications. It is ideal for measuring signals in circuits and devices.

Operating Considerations

When using the Am 503, it is important to follow the operating instructions carefully. This will ensure accurate and reliable measurements.
INPUL OVERLOAD lamp may be incorrectly with the INPUT OVERLOAD lamp indicator lights when the measured current exceeds the maximum dc current rating of the probe in use. The corresponding switch range if a 10X probe is used (P. 850). The lower range on the CURRENT/OFF switch is displayed. The appropriate range on the CURRENT/OFF switch is displayed. If a 10X probe is used, the input overload error is displayed for the corresponding switch range.

Current is detected for a continuous signal to prevent excessive heating in the probe head. The maximum peak-to-peak currents (approximate) in the probe head are:

**Maximum Currents**

To check for a continuous signal, the probe should be used at the lowest probe sensitivity. The following conditions should be met:

- The probe sensitivity should be set to the lowest available sensitivity.
- The probe should be placed on the conductor to be measured.
- The probe should be connected to the oscilloscope's input.
- The probe should be placed on the conductor to be measured.
- The probe should be connected to the oscilloscope's input.

When measuring, ensure that the probe is positioned correctly at the conductor to be measured. The probe should be connected to the oscilloscope's input. When the probe is connected, the voltage across the probe is measured. The voltage across the probe is proportional to the current flowing through it. The voltage across the probe is proportional to the current flowing through it.

NOTE

**DEPRESS** button to initiate the procedure. Press and release the button to initiate the procedure. Press and release the button to initiate the procedure.
## ELECTRICAL CHARACTERISTICS

**Table 2-1**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Performance Characteristics</th>
<th>Supplemental Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth (−3 dB) Full</td>
<td>DC to at least 100 MHz.</td>
<td>OUTPUT terminated into 50 Ω, DC function</td>
</tr>
<tr>
<td>Amplifier Only</td>
<td>DC to at least 15 MHz.</td>
<td></td>
</tr>
<tr>
<td>with P6303</td>
<td>DC to at least 50 MHz.</td>
<td></td>
</tr>
<tr>
<td>5 MHz</td>
<td>5 MHz, = 1 MHz.</td>
<td>BANDWIDTH Full function in DC, CURRENT/DIV full cw, DC LEVEL</td>
</tr>
<tr>
<td>ac coupled, lower limit</td>
<td>&lt;7 Hz</td>
<td>BANDWIDTH Full function in DC, CURRENT/DIV full cw, DC LEVEL adjusted for zero dc out</td>
</tr>
<tr>
<td>Rise time (full bandwidth)</td>
<td>&lt;3.5 ns</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>&lt;4 mV</td>
<td>BANDWIDTH Full function in DC, CURRENT/DIV full cw, DC LEVEL adjusted for zero dc out</td>
</tr>
<tr>
<td>Ampl random (CURRENT/DIV switch)</td>
<td>&lt;0.8 mV</td>
<td></td>
</tr>
<tr>
<td>Ampl random (CURRENT/DIV switch)</td>
<td>&lt;0.3 mA (Tangentially measured)</td>
<td>BANDWIDTH Full function in DC, CURRENT/DIV full cw, DC LEVEL adjusted for zero dc out</td>
</tr>
<tr>
<td>Ampl random (CURRENT/DIV switch)</td>
<td>Within 3% of indicated Current/DIVision</td>
<td></td>
</tr>
<tr>
<td>Ampl random (CURRENT/DIV switch)</td>
<td>P6302</td>
<td></td>
</tr>
<tr>
<td>Ampl random (CURRENT/DIV switch)</td>
<td>&lt;3 mA (Tangentially measured)</td>
<td></td>
</tr>
<tr>
<td>Attenuator Accuracy</td>
<td>P6303</td>
<td></td>
</tr>
</tbody>
</table>

**SPECIFICATION**

**Section 2 — AM 503**

The electrical characteristics are valid only if the AM 503 has been calibrated at an ambient temperature between +20°C and +30°C and operating at an ambient temperature between 0°C and +50°C, unless otherwise stated. Items listed in the Electrical Characteristics column of the Performance Check in this section of the manual are not verified in this manual. The items are either explanatory notes or performance characteristics for which no limits are specified.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-operating</td>
<td>To 8000 feet.</td>
</tr>
<tr>
<td>Operating</td>
<td>To 15000 feet.</td>
</tr>
<tr>
<td>Altitude</td>
<td>Paragraph 4.5.2.</td>
</tr>
<tr>
<td>Procedure 1.0 Acceptable Procedure 1.0 Acceptable in MIL-T-28808 Paragraph 4.5.3.1.2.</td>
<td></td>
</tr>
<tr>
<td>Procedure 1.0 Acceptable Procedure 1.0 Acceptable in MIL-T-810C Method 502.1 Procedure 1.0 Acceptable Procedure 1.0 Acceptable in MIL-T-28808 Paragraph 4.5.3.1.2.</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>-25°C to +75°C.</td>
</tr>
<tr>
<td>Humidity</td>
<td>0°C to +50°C.</td>
</tr>
<tr>
<td>Dewpoint</td>
<td>-55°C to +75°C.</td>
</tr>
</tbody>
</table>

**Table 2-2**

**Electrical Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Performance Characteristics</th>
<th>Supplemental Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 W</td>
<td>Standard Instrument</td>
<td>POWER CONSUMPTION</td>
</tr>
<tr>
<td>20 mA/div</td>
<td>Current/Div set to 5 mA/div.</td>
<td></td>
</tr>
<tr>
<td>Current 0 to +35°C ambient</td>
<td>Current 0 to +35°C ambient</td>
<td></td>
</tr>
<tr>
<td>Thermal drift</td>
<td>Amplifier Only</td>
<td></td>
</tr>
<tr>
<td>P6509</td>
<td>Sequence 1 to 5 A/div.</td>
<td></td>
</tr>
<tr>
<td>P6509</td>
<td>Sequence 1 to 5 A/div.</td>
<td></td>
</tr>
</tbody>
</table>

Specification and Performance Check—AM 503
Tolerances

All test equipment is assumed to be operating within the performance of the equipment under test. Subsection 4.1.2 of the performance section of the instrument applies to the minimum required to verify the following test equipment. Test equipment

**Test Equipment Required**

<table>
<thead>
<tr>
<th>Tolerance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10°C</td>
<td>0°C to +50°C</td>
</tr>
<tr>
<td>±2%</td>
<td>±0.5%</td>
</tr>
</tbody>
</table>

The electrical characteristics in Section 2 are valid only if the AM 503 is calibrated at an ambient temperature of 23°C ± 5°C.

Vibration

The vibration test procedure described in this section is based on an incoming inspection check. The vibration test procedure should be performed. This procedure can also be used by an incoming inspection check to determine the acceptability of a unit. If the vibration test fails to meet the requirements, it is not acceptable. Any information in the Special Section of this section of this manual that appears in the Special Section of this manual does not apply to the vibration test procedure.

**Performance Check**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Weight</td>
<td></td>
</tr>
<tr>
<td>Net Weight</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance</td>
<td></td>
</tr>
<tr>
<td>±1 1/2 in (2.0 cm)</td>
<td></td>
</tr>
<tr>
<td>±2 1/2 in (6.7 cm)</td>
<td></td>
</tr>
<tr>
<td>±3 in (7.6 cm)</td>
<td></td>
</tr>
</tbody>
</table>

**Maximum Overall Dimensions**

**Physical Characteristics**

**Table 2-3**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category II</td>
<td></td>
</tr>
<tr>
<td>Quilled under National Style Test Procedure 1A</td>
<td></td>
</tr>
<tr>
<td>±5 in (12.7 cm)</td>
<td></td>
</tr>
</tbody>
</table>

**Environmental Characteristics**

**Table 2-2 (cont)**

Specification and Performance Check—AM 503
<table>
<thead>
<tr>
<th><strong>Wave Generator</strong></th>
<th><strong>Bandwidth Checks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TektroXIX PG 506 Pulse Generator</td>
<td>Noise, Rise Time, and Fast Rise Amplitude</td>
</tr>
<tr>
<td>TektroXIX DM 506</td>
<td>Bandwidth, Rise Time, and Fast Rise Amplitude</td>
</tr>
</tbody>
</table>

### List of Test Equipment Requirements

<table>
<thead>
<tr>
<th><strong>Example</strong></th>
<th><strong>Usage</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TektroXIX PG 506 Pulse Generator</td>
<td>TektroXIX DM 506</td>
<td>TektroXIX 774A with 716A</td>
</tr>
</tbody>
</table>

#### Table 2-4

Table 2-4 is a list of test equipment requirements. The table includes examples of test equipment, their usage, and a brief description of each item. The TektroXIX PG 506 Pulse Generator and TektroXIX DM 506 are examples of equipment listed. The TektroXIX 774A with 716A is an example of bandwidth and rise time usage. These items are essential for the test procedure and should be available and ordered through Tektronix Inc. and can be ordered through your local Tektronix Field Office of Representatives. Special test devices are used where necessary to facilitate the procedure.
<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum Specifications</th>
<th>Usage</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Constant Amplitude Sinewave Generator (cont)</td>
<td>very more than 3% from actual amplitude of 50 kHz reference to 50 MHz</td>
<td>Ac low frequency, approx. 5 Hz to 1 kHz, amplitude, (into 50 Ohm), or 5 V p-p. Amplitude flatness (sin wave), 1.5 dB throughout required frequency range.</td>
<td>Used in all test setups. Tektrokomp Part No. 012-0057-01.</td>
</tr>
<tr>
<td>7. Cable</td>
<td>Impedance, 50 Ohm: length 42 inches, connectors, bnc</td>
<td>Impedance, 50 Ohm: in-line, connectors, bnc</td>
<td>Used in all test setups. Tektrokomp Part No. 103-0030-00.</td>
</tr>
<tr>
<td>10. Adapter</td>
<td>bnc T</td>
<td>Impedance, 50 Ohm: connectors, bnc</td>
<td>Tektrokomp Part No. 103-0030-00.</td>
</tr>
<tr>
<td>11. 10X Attenuator</td>
<td>Impedance, 50 Ohm: connectors, bnc</td>
<td></td>
<td>Tektrokomp Part No. 103-0030-00.</td>
</tr>
</tbody>
</table>

Preliminary Procedure

1. Ensure that all power switches are off.
2. Ensure that all test equipment and the power module into which the AM 503 under test will be installed are suitably adapted to the line voltage to be applied.
3. Install the AM 503 into the power module, and if applicable, install all other TM 500-Series test equipment on and into the power module.
4. Connect the power module(s) and test equipment to a suitable line voltage source. Turn all equipment on and allow at least 20 minutes for the equipment to warm up and stabilize.

* Requires TM 500-Series Power Module.
2.6

1. Set the AM 503 coupling to CAR DC LEVEL.

2. Reset the 503 oscilloscope input coupling to DC.

3. Set the oscilloscope vertical position to the center gridline.

4. Using the AM 503 DC LEVEL control, center the signal.

5. Set the AM 503 coupling to CAR DC LEVEL.

6. Reset the oscilloscope input coupling to DC.

7. Check—DVM should read at least 2.6 volts.

8. Adjust the AM 503 DC LEVEL control. Center the signal vertically.

9. Set the AM 503 coupling to CAR DC LEVEL.

10. Check—oscilloscope display.

11. Position the probe vertically above the gridline.

12. Reset the oscilloscope input coupling to DC.

13. Adjust the AM 503 DC LEVEL control. Center the signal vertically.

14. Set the AM 503 coupling to CAR DC LEVEL.

15. Reset the oscilloscope input coupling to DC.

16. Reset the oscilloscope vertical position to the center gridline.

17. Using the AM 503 DC LEVEL control, center the signal vertically.

18. Check—oscilloscope display.

19. Position the probe vertically above the gridline.

20. Reset the oscilloscope input coupling to DC.

21. Adjust the AM 503 DC LEVEL control. Center the signal vertically.

22. Set the AM 503 coupling to CAR DC LEVEL.

23. Reset the oscilloscope input coupling to DC.

24. Reset the oscilloscope vertical position to the center gridline.

25. Using the AM 503 DC LEVEL control, center the signal vertically.

26. Check—oscilloscope display.

27. Position the probe vertically above the gridline.

28. Reset the oscilloscope input coupling to DC.

29. Adjust the AM 503 DC LEVEL control. Center the signal vertically.

30. Set the AM 503 coupling to CAR DC LEVEL.

31. Reset the oscilloscope input coupling to DC.

32. Reset the oscilloscope vertical position to the center gridline.

33. Using the AM 503 DC LEVEL control, center the signal vertically.

34. Check—oscilloscope display.

35. Position the probe vertically above the gridline.

36. Reset the oscilloscope input coupling to DC.

37. Adjust the AM 503 DC LEVEL control. Center the signal vertically.

38. Set the AM 503 coupling to CAR DC LEVEL.

39. Reset the oscilloscope input coupling to DC.

40. Reset the oscilloscope vertical position to the center gridline.

41. Using the AM 503 DC LEVEL control, center the signal vertically.

42. Check—oscilloscope display.

43. Position the probe vertically above the gridline.

44. Reset the oscilloscope input coupling to DC.

45. Adjust the AM 503 DC LEVEL control. Center the signal vertically.

46. Set the AM 503 coupling to CAR DC LEVEL.

47. Reset the oscilloscope input coupling to DC.

48. Reset the oscilloscope vertical position to the center gridline.

49. Using the AM 503 DC LEVEL control, center the signal vertically.

50. Check—oscilloscope display.
1. Set the AM 503 coupling to DC.

2. Using the AM 503 DC LEVEL control, position the trace to the center graticule line.

3. Set the monitor oscilloscope input coupling to DC.

4. Set the monitor oscilloscope vertical position control so that the trace is on the center graticule line.

5. Set the monitor oscilloscope vertical position control attenuation.

6. Attach the trace to the AM 503 INPUT pin using a 50 Ohm cable and a 50 Ohm termination, connected to the following controls as indicated:

   a. Set the AM 503 coupling to DC.

   b. Using the AM 503 DC LEVEL control, center the trace above the center graticule line.

   c. Using your divisors above the center graticule line, trace your divisions above the center graticule line.

   d. Set the AM 503 coupling to DC.

   e. Using the AM 503 DC LEVEL control, position the trace to the center graticule line.

   f. Set the monitor oscilloscope input coupling to DC.

   g. Using your divisors above the center graticule line, trace your divisions above the center graticule line.

   h. Adjust the AM 503 DC LEVEL control to position the trace to the center graticule line.

   i. Remove the test connections.

   j. Check amplifier noise.

   k. Check DVM—DVM should read at least 26.2 mv rms or greater.

   l. Using the AM 503 DC LEVEL control, center the trace above the center graticule line.

   m. Using your divisors above the center graticule line, trace your divisions above the center graticule line.

   n. Adjust the AM 503 DC LEVEL control to position the trace to the center graticule line.

3. Check for ramping signal.

Fig. 2-1. Test setup for AC dynamic range check.
1. Check—Input the rise time is 3.5 ms or less.
2. Measure the rise time (10%—90% point).
3. Check a display of the waveform leading edge of the test oscilloscope to internal triggering and adjust the waveform triggering level and horizontal position control.

Input:
Set the test oscilloscope to internal triggering and adjust the display amplitude to the divisions using the knob.

4. Check the display amplitude to the divisions using the knob.

5. Remove the 10x attenuator or use the input impedance of the oscilloscope.

Oscilloscope:
Input the 500Ω (input impedance) and 50Ω (cable connected) channel.

Monitor Oscilloscope
Input
0.2 V/div
20 V/div
100 mV/div
Space 10x10
Direction
Time/div
Amplitude
1 4
Freq
Mode
Waveform
V/div

Calibration Generator
DC
0.2 V/div
20 v/div
CURRENT/DIV
50 ma

AM 503
Set the following controls as indicated:

4. Check the rise time Bandwidth

NOTE

AM 503 CURRENT/DIV control.
P. Repeat parts 1 and 2 for all remaining settings of the

O. Check—for a maximum of 0.8 mV of noise.

6. Decrease the calibration generator output amplitude until the two traces just merge (no dark area between the

twocases, see Fig. 2-7).
Monitor Oscilloscope

AM 503
Set the following controls as indicated:

DC Level and Balance

Set the function generator amplitude control for a 50% display.

5. Set the function generator amplitude control for a 6 X division display.

6. Time/div 10 ms 50 ms

7. Adjust the trace balance until the display amplitude is reduced to 4.2 divisions.

8. Increase the frequency of the sine-wave generator for a 6 X division display.

9. Check—then the sine-wave generator frequency is at least 100 MHz.

10. Check—then the sine-wave generator frequency is at least 4 MHz and not more than 8 MHz.

Specification and Performance Check—AM 503
This complete the performance check.

1. Remove test set-up.

2. Level position and the DC position on the AM 503.
3. Shift micro switch monitor oscilloscope trace between the CML DC position and the DC position so there is a minimal difference.
4. Adjust the AM 503 coupling to DC.
5. Reset the AM 503 coupling to DC.

NOTE

- Monitor oscilloscope input coupling to DC.
- Set monitor oscilloscope input coupling to and position trace vertically at the center of the CRT.
- Using a 50 Ω cable and a 50 Ω feed-through ter-
- mictron, connect the AM 503 OUTPUT to the input of the
- IF the trace has moved from the ground setting, there is
Adjustment

Table 3-1

<table>
<thead>
<tr>
<th>Test Equipment Required</th>
<th>Adjustment Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Check—Indicates that the instrument is out of adjustment.</td>
<td>1. Adjustment is made to correct the instrument for error.</td>
</tr>
<tr>
<td>2. Examine—usually precedes an adjustment instruction.</td>
<td>2. Performance check cannot be completed satisfactorily.</td>
</tr>
<tr>
<td>3. Adjust—determines which adjustment to use to make</td>
<td>3. Performance check is unsatisfactory.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
c. Adjust—each supply voltage within the indicated range.
d. Install the other TM 500-Series equipment into the power module for the line voltage to be applied and connected to the line voltage source. Be sure that the power switch is off. Set the power module snaps into place! Cover outwards from the side of the instrument (the cover access to the adjustments. Pull the rear and of the side of the instrument. Pull the rear and of the side of the instrument.

e. Turn on all test equipment and allow 20 minutes for warm up and stabilization.

1. Adjust Power Supply Voltages

Preparation

Requires TM 500-Series Power Module.

<table>
<thead>
<tr>
<th>See Fig. 3-1</th>
<th>AM 503</th>
<th>Special Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>306-041-00-00</td>
<td>Degauss adjustment</td>
<td>3 W, 5%</td>
</tr>
<tr>
<td>306-049-01</td>
<td>Tektronix Part No.</td>
<td>Fixed wire-wound, 3 KΩ</td>
</tr>
<tr>
<td>012-000-01</td>
<td>Tektronix Part No.</td>
<td>All measurements</td>
</tr>
<tr>
<td>011-004-01</td>
<td>Tektronix Part No.</td>
<td>All measurements</td>
</tr>
</tbody>
</table>

| Tektronix P6101 | Gain adjustment | 1% |
|                 | Tektronix DM 5024 | TX |
|                 | Check Power supply voltage | Digital Multimeter |

| Tektronix PG 506 | Test Generator, calibration and compensation | Gain and Compensation |

Examples

Applications

Performance Requirements

Description

*Digitally adjusted to ±0.2% within 0.2% Range, 0 to 20 V, accuracy. Voltmeter, Range 0.5 to 10 MΩ, input 50 Ω, leading edge abberations ≤2%. Duty cycle, 50% amplitude, Pulse output period 1 to 10 ms.*
<table>
<thead>
<tr>
<th>Supply</th>
<th>Test Point</th>
<th>Limits</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>-16 V</td>
<td>R422</td>
<td>-16 V</td>
<td>to -15.9 V</td>
</tr>
<tr>
<td>+19.3 V</td>
<td>R415</td>
<td>+19.3 V</td>
<td>to +21.5 V</td>
</tr>
<tr>
<td>-19.3 V</td>
<td>Q460 emitter</td>
<td>-19.3 V</td>
<td>to -18 V</td>
</tr>
</tbody>
</table>

2. Adjust Gain
Set the following controls as indicated:

- \[ \text{CURRENT/DIV} \]
- \[ \text{DC} \]
- \[ \text{FULL} \]
- \[ \text{BANDWIDTH} \]

3. Adjust Compensation
Set the following controls as indicated:

- \[ \text{AM 503} \]
- \[ 5 \text{mA} \]
- \[ \text{DC} \]
- \[ \text{CURRENT/DIV} \]
- \[ \text{Coupling} \]

4. Calibration Generator

- \[ \text{Period} \]
- \[ 1 \mu \text{s} \]
- \[ \text{Fast Rise} \]
- \[ \text{Minimum} \]
- \[ -1 \text{V to 0 V} \]

5. Monitor Oscilloscope

- \[ \text{Volts/Div} \]
- \[ 50 \text{mV} \]
- \[ 5 \text{mV} \]
- \[ \text{Time/Div} \]
- \[ 200 \text{ns} \]
- \[ 5 \text{ns} \]

h. Set the current/Div on the AM 503 to 50 mA.
(i) Connect a jumper wire between \( P346 \) (see Fig. 3-3) and ground.
(j) Examine for a display of 4.4 to 4.6 divisions.

k. Adjust \( R346 \) for a display of 4.5 divisions.

l. Connect a jumper wire between \( P346 \) (see Fig. 3-3) and ground.

m. Examine for a display of 4.4 to 4.6 divisions.

n. Set the monitor oscilloscope to 10 mV.

o. Examine for a four-division display on the monitor oscilloscope.
Fig. 3-3. Gain and compensation adjustment locations.

e. Examine front corner of waveform for correct compensation (ignoring long-term roll-off caused by L202).

f. Adjust R345, R344, C363, and R363 for optimum compensation.

Refer to Fig. 3-4 for example.

Fig. 3-4. Example of correct compensation.

h. Remove test connections.

4. Adjust DeGauss Offset/Signal Amplitude

AM 503

CURRENT/DIV

Fully clockwise

R135

Fully counterclockwise

CAL DC LEVEL

Volts/Div

10 mV

Time/Div

1 ms

Triggering

Input Coupling

Monitor Oscilloscope

REV JAN 1983
Adjustment—AM 503

a. Connect a 50 Ω coaxial cable from the AM 503 output to the monitor oscilloscope input.

b. Position trace to the center graticule line using the monitor oscilloscope vertical position control.

c. Set monitor oscilloscope input coupling to DC.

d. Using the AM 503 DC LEVEL control, re-position the trace to the center graticule line.

e. Set the AM 503 Coupling to DC.

f. Press and hold the AM 503 DEGAUSS button.

This completes the AM 503 Adjustment Procedure.
Obtaining Replacement Parts

Given here are contracts to replace components in the instrument are
Basic Maintenance consists of component
Corrective maintenance consists of component

Corrective Maintenance

Problems: Fig. 4 for Instrument Instructions, so that the instrument does not get the correct results. Refer to the supplied service manual for further information. The service manual is available from Tektronix distributors. Other

Non-reusable materials and instrument is not reusable. Reusing the means of switch and panel, a button with a button, or pressing down on the instrument is not reusable. Use of switch and panel, a button with a button, or pressing down on the instrument is not reusable.

CAUTION

CAUTION

Cleaning

The maintenance is just before instrument calibration. The AM 503 should be cleaned and component

Preventive Maintenance

Preventive maintenance, corrective maintenance, and

This section of the manual contains information about

Section 4—AM 503
In order to narrow the search, consider the following steps:

1. Check the circuit diagram to identify the component that is suspected of causing the problem.
2. Verify that all connections are secure and properly soldered.
3. Check for signs of overheating or damage to any parts.
4. Ensure all power supplies are turned off before making any connections.

Some specific parts are labeled on the circuit diagram. If a part is missing or damaged, replace it with the specified part number.

**Figure 4.1: Troubleshooting Procedure**

1. **Identify the Problem**
   - Ensure the instrument is powered on.
   - Check for any visible damage.

2. **Apply Power**
   - Turn on the instrument.
   - Listen for any unusual sounds.

3. **Check Connections**
   - Verify all connections are secure.
   - Check for loose or damaged connectors.

4. **Run Tests**
   - Perform diagnostic tests on the instrument.
   - Check for any error messages.

**TROUBLESHOOTING**

- **4. Tektronix part number**
  - Include the Tektronix part number in the description of the circuit.

- **3. Instrument serial number**
  - Include the serial number of the instrument in the description of the circuit.

- **1. Instrument type**
  - Include the type of instrument and its specifications.

**NOTE**

When selecting replacement parts, it is important to consider the instrument's specifications and ensure compatibility.

**Maintenance—AM 503**
VOLTAGES AND WAVEFORMS

Diodes. Do not use an ohmmeter that has a high internal current. High currents may damage the diode.

A diode may be checked for an open or shorted condition by measuring the resistance between terminals. With an ohmmeter set to high resistance, the ohmmeter on the X scale should be very high in one direction and very low when the leads are reversed.

Capacitors. A leaky or shorted capacitor can be detected by checking resistance with an ohmmeter on the X scale. Resistors are usually replaced if their resistance readings are not normal. The resistor value is given in the schematic or in the calibration procedure. The ohmmeter reading should be high after initial charge, or by checking whether it passes AC signals.

Resistors. Check the resistors with an ohmmeter. Resistance tolerances are given in the schematic and in the calibration procedure. The ohmmeter reading should be high after initial charge, or by checking whether it passes AC signals.

SEMICONDUCTOR CHECKS

Periodic checks of the semiconductors in the AM 503 are recommended. The best check of the instrument is to obtain the output voltage and compare it with the calibration procedure documentation. If the output voltage differs, replace the component.

COMPONENT CHECKING

If a component cannot be isolated from the circuit, then the effects of the associated circuitry must be considered when evaluating the component. For example, if a capacitor is suspected, first check that the power supply is correct. If the power supply is correct, then the capacitor can be checked.

TRANSISTORS AND IC'S. Turn the power switch off before removing or replacing any semiconductor.

POWER SUPPLY TOLERANCES

The power supply is within the tolerance given in Table 4-1. If the power supply is within the tolerance, the supply may be adjusted as shown in the calibration procedure of the manual. If the power supply is within the tolerance, the supply may be adjusted as shown in the calibration procedure of the manual.

Table 4-1

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Voltage</th>
<th>Maximum Ripple</th>
<th>Peak-To-Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>+16 V</td>
<td>15.9 to 16.1</td>
<td>2 mV</td>
<td></td>
</tr>
<tr>
<td>-16 V</td>
<td>15.9 to 16.1</td>
<td>2 mV</td>
<td></td>
</tr>
<tr>
<td>+19.3 V</td>
<td>18.3 to 20.3</td>
<td>150 mV</td>
<td></td>
</tr>
<tr>
<td>-19.3 V</td>
<td>18.3 to 20.3</td>
<td>150 mV</td>
<td></td>
</tr>
</tbody>
</table>

LOAD CONFIGURATIONS

Load configurations for the semiconductors used in this instrument are shown in Fig. 4-2.
For metal terminals (e.g., switch terminals, potentiometers, etc.) a higher wettability soldering iron tip is required.

Soldering should be done with extreme care to prevent breaking the connections to the center conductor. Only experienced personnel should attempt repair of these boards.

The circuit board in this instrument is a multi-layer type board with conductive pads laminated between the top and bottom board layers. All through holes are filled with conductive paste laminated to the circuit board. To avoid electric shock, disconnect the instrument from the power source before soldering.

**WARNING**

The choice of soldering iron is determined by the repairman. Soldering should be done with extreme care to prevent breaking the connections to the center conductor. Only use a 15 to 60-watt pencil-type soldering iron with a 1/8-inch wide, wedge-shaped tip. Keep the tip properly heated for best heat transfer to the solder joint. Avoid excessive heat. Apply only enough heat to the joint to make a good joint. Use only 60/40 rosin-core solder. Make sure to use a high-solder joint.

When soldering, use a 15 to 60-watt pencil-type soldering iron with a 1/8-inch wide, wedge-shaped tip. Keep the tip properly heated for best heat transfer to the solder joint. Avoid excessive heat. Apply only enough heat to the joint to make a good joint. Use only 60/40 rosin-core solder. Make sure to use a high-solder joint.

**SOLDERING TECHNIQUES**

Fig. 4-2. Solder-connection lead configurations.

**INTEGRATED CIRCUIT**

**TRANSISTOR**

**DUAl PACK**

**METAL CASE**

**DUAl DIODE**

**METAL CASE**

**PLASTIC CASE TRANSISTORS**

**NOTE**

Due to vendor changes or instrument modifications, lead configurations and case styles are typical but may vary. Lead configurations and case styles are typical but may vary. Due to vendor changes or instrument modifications, lead configurations and case styles are typical but may vary. Lead configurations and case styles are typical but may vary.
6. Open the area around the socket connection with a board (if not clipped off in step 3).
5. Clip off the excess lead that protrudes through the board into the component. Reassess the component and the solder joint with a pair of long-nose pliers. The amount of solder to make a solid joint should be removed.
4. Touch the iron to the connection and apply a small amount of solder on the new component to fill the holes into place.
3. Bend the leads of the new component to fill the holes with the solder.
2. Remove the leads from the O'CAL DVM switch.
1. Remove the knob from the O'CAL DVM switch and pull the knob off of the AC/DC LEVEL-DC switch.

Circuit Board Removal

1. Disconnect all cables that terminate on the circuit board.
2. Remove the knob from the O'CAL DVM switch.
3. Touch the iron to the connection and apply a small amount of solder on the new component to fill the holes into place.
4. Touch the iron to the connection and apply a small amount of solder on the new component to fill the holes into place.
5. Clip off the excess lead that protrudes through the board into the component. Reassess the component and the solder joint with a pair of long-nose pliers. The amount of solder to make a solid joint should be removed.
6. Open the area around the socket connection with a board (if not clipped off in step 3).

NOTE

Removing the opposite end of the component

1. When the solder begins to melt, gently pull the lead. If a component is extremely difficult to remove, it is recommended to place during a low-temperature process. The bare lead aids in the process. Some component leads may be difficult to remove if not handled properly.

2. When the solder begins to melt, gently pull the lead. If a component is extremely difficult to remove, it is recommended to place during a low-temperature process. The bare lead aids in the process. Some component leads may be difficult to remove if not handled properly.

3. The soldered connection on the board with a metal connector or pins while heating may be helpful to stabilize the leads on the back side of the component. Edges were used during manufacture in the process. This bare lead aids in the process. Some component leads may be difficult to remove if not handled properly.

5. Clip off the excess lead that protrudes through the board into the component. Reassess the component and the solder joint with a pair of long-nose pliers. The amount of solder to make a solid joint should be removed.
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3. The soldered connection on the board with a metal connector or pins while heating may be helpful to stabilize the leads on the back side of the component. Edges were used during manufacture in the process. This bare lead aids in the process. Some component leads may be difficult to remove if not handled properly.
CIRCUIT-BOARD PINS. Replacement of circuit-board pins is only necessary if damage or replacement is required due to spillage of conductive fluids. CAUTION: Pins should only be replaced if damage is evident.

To avoid component damage, follow these steps:

1. **Identify the Pins**: Identify the pins that need replacement. Pins are typically color-coded for easy identification.
2. **Identify the Pins**: Identify the pins that need replacement. Pins are typically color-coded for easy identification.
3. **Replacement Instructions**:
   - **Remove Components**: Carefully remove the components from the board.
   - **Replacement**: Replace the pins with new, compatible ones. Ensure that the color codes match.
   - **Reassemble**: Reassemble the board, making sure all components are securely in place.

**WARNING**

- Never attempt to replace pins without propertraining or replacement parts.
- Replacing pins incorrectly can damage the circuit board or other components.
- Always consult the manufacturer's guidelines for proper pin replacement.
Troubleshooting Procedure:

1. When the solder begins to melt, gently pull the damaged pin from the board. Leave the ferule in the hole.

2. If possible, refer to Fig. 4.4. If not, use a soldering iron to heat the pin at the solder connection. Do not heat by iron directly on the board, as the board may be damaged.

3. If the ferule is removed with the damaged pin, carefully clean out the hole using a solder-removing wick and a solder ferule. Then press the replacement pin, with its attached solder ferule, into the hole. Then press the replacement pin, with its attached solder ferule, into the hole.

4. Position the replacement pin in the same manner as the old pin.

5. Refit the pin to the circuit board on each side of the board.

6. Spare ferule. Special procedure for component location. These should be checked for the component location guides followed by a check procedure. If the components number of possible locations, the trouble symptom is likely to be caused by a problem.

Fig. 4.4: Circuit-board pin and ferule assembly.

Fig. 4.3: Installation of lead-end connectors.
| CHECK | 1. ±16 V Supply | 2. Check bias voltages on schematics 2 and 3. | 3. Wiper of R502 adjusts between -15 and +15 volts with no sudden discontinuities. | 4. Voltage at P202 with DEGAUSS button depressed is 11.1 V, p-p (with probe connected). | 5. Voltage at P202 with DEGAUSS button depressed and P202 are properly installed. | 6. Press and release DEGAUSS button and set level at P202 to zero volt with BALANCE control. Voltage at P202 control should be 20 mV, p-p. | 7. Set Coupling to CAL DC LEVEL control or zero volt out of OUTPUT connector. | 8. Rotate CURRENT DIV throughout its full range and note that there is no sudden loss of signal at R210, R212, or R214. |}

<p>| 1. | a. F402, F406 | b. Q402, Q406 | c. U135, Q166 | d. F412, Q412 | e. VR100 | f. Q145 | g. Q150, Q151 | h. U370 | i. Q210, Q215, Q225 |</p>
<table>
<thead>
<tr>
<th>Troubleshooting (cont)</th>
<th>Troubleshooting (cont)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4-2</td>
<td>Table 4-2</td>
</tr>
</tbody>
</table>

### Section 6

**Adaptations Procedure**

1. Adjust for step C2 in (F144).
   - If necessary, replace components and replace
     - Check: PH, CR, V, V, P, and P.

<table>
<thead>
<tr>
<th>D</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>0.155</td>
<td>0.166</td>
<td>0.140</td>
<td>0.320</td>
<td>0.385</td>
<td>0.340</td>
</tr>
</tbody>
</table>

**SCs and SCs**

- 1. Supply V. 2. Supply 2. V.

### Section 7

**Adaptations Procedure**

1. Adjust for step C2 in (F144).
   - If necessary, replace components and replace
     - Check: PH, CR, V, V, P, and P.

<table>
<thead>
<tr>
<th>D</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>0.155</td>
<td>0.166</td>
<td>0.140</td>
<td>0.320</td>
<td>0.385</td>
<td>0.340</td>
</tr>
</tbody>
</table>

**SCs and SCs**

- 1. Supply V. 2. Supply 2. V.

### Section 8

**Adaptations Procedure**

1. Adjust for step C2 in (F144).
   - If necessary, replace components and replace
     - Check: PH, CR, V, V, P, and P.

<table>
<thead>
<tr>
<th>D</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>0.155</td>
<td>0.166</td>
<td>0.140</td>
<td>0.320</td>
<td>0.385</td>
<td>0.340</td>
</tr>
</tbody>
</table>

**SCs and SCs**

- 1. Supply V. 2. Supply 2. V.

### Section 9

**Adaptations Procedure**

1. Adjust for step C2 in (F144).
   - If necessary, replace components and replace
     - Check: PH, CR, V, V, P, and P.

<table>
<thead>
<tr>
<th>D</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>0.155</td>
<td>0.166</td>
<td>0.140</td>
<td>0.320</td>
<td>0.385</td>
<td>0.340</td>
</tr>
</tbody>
</table>

**SCs and SCs**

- 1. Supply V. 2. Supply 2. V.

### Section 10

**Adaptations Procedure**

1. Adjust for step C2 in (F144).
   - If necessary, replace components and replace
     - Check: PH, CR, V, V, P, and P.

<table>
<thead>
<tr>
<th>D</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
<th>V</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>0.155</td>
<td>0.166</td>
<td>0.140</td>
<td>0.320</td>
<td>0.385</td>
<td>0.340</td>
</tr>
</tbody>
</table>

**SCs and SCs**

- 1. Supply V. 2. Supply 2. V.
**Troubleshooting**

<table>
<thead>
<tr>
<th>G. TROUBLE SYMPTOM: Excessive Line-Frequency Ripple at AM 503 OUTPUT connector (cont.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Voltage level across C402 or C406 should be between 24 and 34 volts with maximum ripple 4.5 V, p-p.</td>
</tr>
<tr>
<td>a. U410</td>
</tr>
<tr>
<td>b. F402, F406</td>
</tr>
<tr>
<td>3. ± 16 V Supply level and ripple shown in Table 4-1.</td>
</tr>
<tr>
<td>a. Q450, Q480</td>
</tr>
<tr>
<td>b. VR452, VR462</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. ± 19.3 V Supply level and ripple shown in Table 4-1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADJUSTMENT AFTER REPAIR</td>
</tr>
<tr>
<td>After any electrical component has been replaced, the adjustment of that particular circuit should be checked, as well as other closely related circuits. Refer to the Adjustment section of the manual.</td>
</tr>
</tbody>
</table>

**Maintenance—AM 503**

<table>
<thead>
<tr>
<th>F. TROUBLE SYMPTOM: Excessive Pulse Aberrations or Poor Bandwidth (cont.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. and 3 in Section 9.</td>
</tr>
<tr>
<td>a. U310</td>
</tr>
<tr>
<td>b. Q310, Q320</td>
</tr>
<tr>
<td>c. Q315, Q325</td>
</tr>
<tr>
<td>5. Press and release DEGAUSS button and set voltage out at U202 to zero. Voltage at P202 should be 20 mV, p-p, with less than 3% ripple with a 40 mA P-P into P302 probe.</td>
</tr>
</tbody>
</table>

**CHECK**

1. Is AM 503 grounded to display device (monitor oscilloscope)?

If necessary.

2. Be sure AM 503 is grounded to display device.
**Circuit Description**

Section 5—AM 505

The DC amplifier (on the Output Amplifier block diagram) attenuates the signal from the output of the output transformer (O.D.T.) and amplifies it to a level suitable for driving the next stage. The attenuation provides current-per-division sensitivity for reading the output signal strength.

The OC amplifier provides a 25 μA input current for the DC amplifier. A probe slide is not completely closed to cocked. A probe usually constitutes a differential amplifier that indicates the presence of the signal.

---

**Diagram**: 
- **(a)** Resultant waveform seen at the output
- **(b)** Power amplifier to input of OC amplifier
- **(c)** High-frequency information from trans.
- **(d)** Low-frequency information from hall.

---

The DC amplifier core is designed to remove residual magnetization from the transformer. The degauss function helps align the core with the signal. The degauss coil forces the core into a state of zero magnetization. The degauss function is repeated twice to ensure the core is properly aligned.

---

**Introduction**

The section of the manual contains a description of the output transformer's role in the circuit. Using the block diagram shown in the diagrams section, this section provides a detailed description of the output stage's operation.
Connecting a 10x probe (6.9' P6030) to the Input at about 15S, high jump OS815 (1x) through H182.

The DM201A is connected to the Output. With O282 biased into saturation, the collector is driven through a diode network. With O282 biased at least 0.6V with O282 biased at least 0.6V, the detector rectifier is selected. The appropriate output of the detector is connected to the collector of the transistor using ungrounded connection. With a 1x probe (6.9' P6030) connected to the Input, detection of the waveform is shown on the oscilloscope.

The circuit consists of: 6536, 6536W, 6558, 6570, 6590A, 6590C.

Detailed Circuit Description

The detailed circuit diagram for this amplifier is included in the following page. The circuit diagram shows the connections and components of the amplifier, including the power supply, the input and output stages, and the associated components.

The power supply provides a regulated voltage to the circuit. The output of the amplifier provides a choice of output levels, with a switch selection.

The selectable-gain amplifier provides a choice of levels control for the output level. The 6536A amplifier provides a linear range for the probe and another.

The DM201A is connected to the Output. With O282 biased into saturation, the collector is driven through a diode network. With O282 biased at least 0.6V with O282 biased at least 0.6V, the detector rectifier is selected. The appropriate output of the detector is connected to the collector of the transistor using ungrounded connection.
OUTPUT AMPLIFIER

ATTENUATOR

ATTENUATOR RANGE

Attenuator range is to upper termination throughout the full 020A, 021, and the attenuator sections provides a

Attenuator Range

enables the C1709 (10%2.5V) and C1710 (10%2.5V) to provide a drop from the output of C1710’s

Zeroes tri167 and VR166 (back to back) to provide

When the DEGASW SWITCH is engaged, R170 feeds a current into the 02100 kΩ-1kHz resistance in

The 02100 kΩ-1kHz resistance feeds through R170, C1709, and C1710 to provide smooth transition in

The negative voltage is applied to pin 2 of N157-0165, VR166

The circuit consists of U167, C165, U155, VR156

Power Amplifier

amplifier circuits, de-gassing the probe case. The

The circuit consists of U135, R135, and associated components in

The oscillator circuit is realized by C130 and R130

The oscillator circuit (U135) output is limited by an

The oscillator circuit provides the feedback to the probe transformers

Circuit Description—AM 503

This circuit consists of Q101 and Q102, Q302, and

+2 Gain Amplifier

The circuit consists of U157 and U156, Q302, and Q303. Q303 provides all of the signal to the input attenuators.

From dc to the crossover region, the hall device

Circuit are protection devices.

The circuit consists of C150, Q150, and associated components in

020A is a source follower, with 020A providing

020A gate voltage swing to about ± 1 V. 0230 gate voltage swing provided external protection by

0230 is a source follower with 0230 providing

The circuit consists of U157 and U156, Q302, and Q303. Q303 provides all of the signal to the input attenuators.

Circuit are protection devices.

The circuit consists of C150, Q150, and associated components in

020A is a source follower, with 020A providing

020A gate voltage swing provided external protection by

020A is a source follower with 020A providing

The circuit consists of U157 and U156, Q302, and Q303. Q303 provides all of the signal to the input attenuators.

Circuit are protection devices.

The circuit consists of C150, Q150, and associated components in

020A is a source follower, with 020A providing
VT380 (normally not conducting); is protection for U370.
VT380, this minimizing common-mode dc bias differential
common-mode signal is fed back from VT380 to the base
established by the voltage level set by C385 circuitry. A
C386 is a current-source for U370, C362 current levels
passing the low-pass filter network.

Network L380-L383, C380-C383 to C390
U70 output is from pins 5, 6, & pin 8 through a low-pass filter
with the BANDWIDTH switch in the FULL position. The

R372, R373-R374
Bandwidth select switch S370 and networks R370-
potential, including RF (R389); LF current (R349).

This amplifier consists of U370 and associated com-

Selectible-Bandwidth Amplifier

R44 is a gain adjust and R345 is high-frequency
compensation.

Two, this gain is adjustable by R44.

When P345 is at ground potential (through pin 5 of
control R46 & associated components, the
Selectible-Gain Amplifier consists of U350, gain

The Selectible-Gain amplifier consists of R390
ampolifier at the 50 ohm connector (J390)

DC Level control (R390) sets the dc level of the output

gain of 2X.

Associated components in a cascade amplifier having a

Circuit Description—AM 503
ABBREVIATIONS

Unless otherwise specified, the L.S. Federal Cartridge Company Handbook No. 1 can be used as a guide. Some abbreviations have been used to simplify the text.

**ITEM NAME**

Part removed after this serial number.

X000

Part first added at this serial number.

X000

**SPECIAL NOTES AND SYMBOLS**

Changes in information italicized at the rear of the manual.

Changes in information have been replaced with a new or improved part, your local field office should be contacted for more information.

**PARTS ORDERING INFORMATION**

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The vertical amplifier schematic is a complex circuit diagram that includes various components such as resistors, capacitors, and diodes. The diagram illustrates how these components are interconnected to form the vertical amplifier. Symbols and reference designators are used to identify the components and their functions, which are essential for understanding the operation of the circuit. The text on the diagram provides additional context and instructions for interpreting the schematic.
Set voltage at output to zero volts (into 50 ohms) with DC level control.

AC:CAL DC Level—DC set to CAL DC level.

Bandwidth set to full.

Probe not connected to input.

DC Voltages on Schematics

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