

TECHNICAL MANUAL

POWER SUPPLIES PP-281/GRC, PP-281A/GRC, PP-282/GRC, PP-282A/GRC, AND PP-448/GR

TM 11-5040

CHANGES No. 3

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D C., 14 April 1959

TM 11-5040, 29 November 1950, is changed as follows:

Section III.1. FOURTH ECHELON TESTING PROCEDURES
(Added)

22. 1. General

Testing procedures are prepared for use by Signal field maintenance shops and Signal service organizations responsible for fourth echelon maintenance of signal equipment to determine the acceptability of repaired signal equipment. These procedures set forth specific requirements which repaired signal equipment must meet before it is returned to the using organization. The testing procedures can also be used as a guide for testing equipment repaired at third echelon if the proper tools and test equipments are available.

22.2. Test Equipment and Materials

All test equipment and materials required to perform the tests are authorized under TA 11-17, Signal Field Maintenance Shops, and TA 11-100(11-17), Allowances of Signal Corps Expendable Supplies for Signal Field Maintenance Shop, Continental United States. These items, along with their Federal stock numbers, are listed in paragraphs 22.8 and 22.9. The test equipment and materials required for each test are listed in the heading of each test.

22.3. Test Procedure

a. The instructions in the heading of the test are to be complied with before proceeding with the test. The test is divided into steps, each of

which must be completed before proceeding to the next step.

b. Each step is to be performed by completing the procedure in each column in turn, starting with the left column (control settings, test equipment) and proceeding toward the right-hand side of the page.

22.4. Test Facilities

a. Dc power is required for operation of each of the three power supplies covered by these testing procedures. Requirements are 6 volts for PP-448/GR, 12 volts for PP-281/GRC and 24 volts for PP-282/GRC. It is of the utmost importance to be sure that the correct voltage is applied to each of the power supplies.

Caution: Never operate any of the three power supplies without a load.

b. Since any of the three power supplies may be submitted for repair without associated equipment, dummy load resistances must be used for testing purposes. In these testing procedures, Test Set I-199 or I-199A is to be used for this purpose. Connection of the test set is shown in the figure associated with each individual test.

22.5. Modification Work Orders

The following modification work orders are pertinent to this equipment. A full listing of modification work orders will be found in DA FORM 104. VERBINDUNGSDIENST

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| MWO | Date | Priority | Echelon | Marking | Remarks |
|------------------|-----------|----------|---------|---------------------------|---|
| 11-5040-1 | 18 Jan 54 | Normal | 2 | Near name plate on panel. | |
| 11-5040-1 C 1 | 4 May 55 | Normal | 2 | Near name plate on panel. | Using organizations in shop for repair. Depot stock when unpacked. |

22.6. Moistureproofing and Fungiproofing

Areas, parts, and connections disturbed by repairs and/or testing will be checked for proper moistureproofing and fungiproofing.

22.7. Time Required to Perform Testing Procedures

Approximately 30 minutes per equipment is required.

22.3. Test Equipment Required

| Nomenclature | FSN | Technical references |
|--------------------------------|---------------|----------------------|
| Test Set I-199(*) ^a | 6625-229-1065 | TM 11-2604 |
| Power Supply PP-1097A/G | 6130-669-6640 | TM 11-5111 |

^a Official nomenclature followed by (*) indicates I-199 or I-199A.

22.9. Test Materials Required

| Nomenclature | FSN |
|---|---------------|
| Test lead set, CX-1331/U (p/o TS-352A/U or TS-352B/U), 3 ea | 6625-395-9313 |
| or | |
| Test lead, CX-529/U, (p/o TS-352/U), 6 ea | 6625-356-0214 |

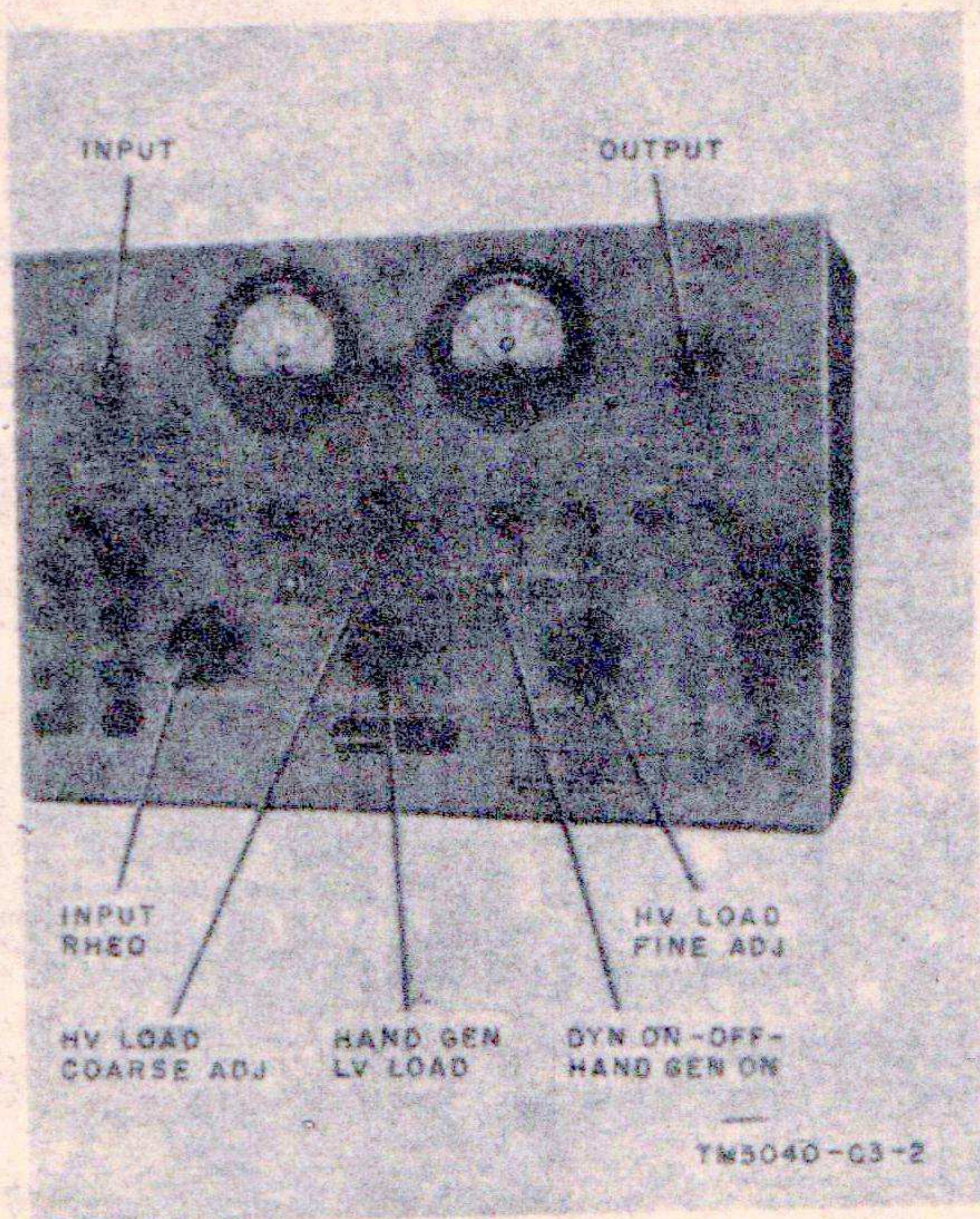


Figure 5.1. (Added) Test equipment.

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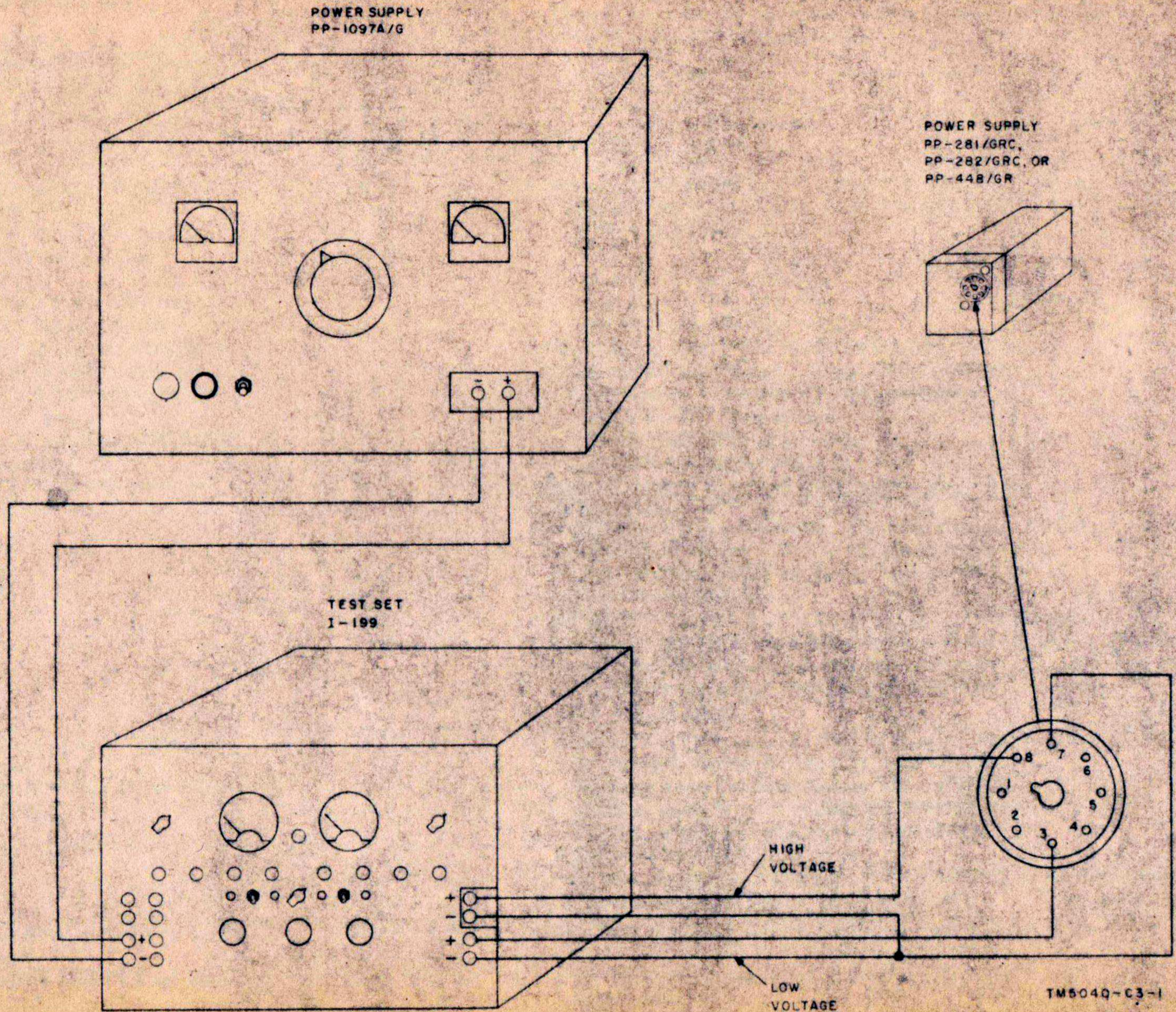


Figure 5.2. (Added) Operation test.

22.10. Operation Test

Test Equipment and Materials Required

PP-1097A/G

I-199(*)

Test leads (See par. 22.9)

Test Connections and Conditions

Connect as shown in figure 5.2. Leave all power turned off until instructed to apply power while performing tests.

| Step No. | Control settings | | Test procedure | Performance standard |
|----------|--|-------------------|--|--|
| | Test equipment | Equip. under test | | |
| 1 | PP-1097A/G POWER switch: OFF. OUTPUT VOLTAGE ADJUST: See step 1a. I-199(*) DYN ON-OFF-HAND GEN ON switch: OFF. INPUT switch: VOLTS INPUT RHEO: max ccw H. V. LOAD COARSE ADJ: max cw H. V. LOAD FINE ADJ: max ccw OUTPUT switch: M.A. | N/A | a. Turn POWER switch on PP-1097A/G to ON. Adjust OUTPUT VOLTAGE ADJ. for indication on DC VOLTS meter as follows: For PP-448/GR—7.5 volts. For PP-281/GR—14.0 volts For PP-282/GR—28.0 volts. b. Set Test Set I-199(*) DYN ON-OFF-HAND GEN ON switch to DYN ON. Adjust INPUT RHEO for indication on the INPUT meter as follows: For PP-448/GR—6.3 volts. For PP-281/GRC—12.6 volts. For PP-282/GRC—25.2 volts. <i>Note.</i> For increased accuracy in this adjustment, depress the INPUT 60-30 VOLTS switch and use the bottom center scale on the INPUT meter. c. Depress OUTPUT 600-120MA switch and adjust H.V. LOAD FINE ADJ. for 120-ma indication (full scale) on OUTPUT meter. Release OUTPUT 600-120MA switch. d. Set OUTPUT switch to VOLTS e. Depress the OUTPUT 1200-300 volts switch. Read and record the indication on the OUTPUT meter (bottom center scale). Release OUTPUT 1200-300 VOLTS switch. | a. None. b. None. c. None. d. None. e. OUTPUT meter must indicate between 125-145 volts. |
| 2 | Same as at end of step 1 except: I-199(*) OUTPUT switch: RIPPLE. | N/A | a. Depress FILTER switch. If OUTPUT meter does not indicate, depress RIPPLE 12 volts switch at the same time. If indication on the OUTPUT meter is below 3 volts, release the RIPPLE 12 VOLTS switch and depress both the FILTER and RIPPLE 3 VOLTS switches. b. Read and record the indication of the OUTPUT meter. (Use top scale 3 VOLT RIPPLE.) | a. None. b. OUTPUT meter must read not more than .5 volt. |
| 3 | Same as at end of step 1 except: I-199(*) OUTPUT switch: VOLTS. | N/A | a. Set DYN ON-OFF-HAND GEN ON switch to OFF. Set OUTPUT VOLTAGE ADJUST on PP-1097A/G for indication on DC VOLTS meter as follows: | a. None. |

| Step No. | Control settings | | Test procedure | Performance standard |
|----------|---------------------------|-------------------|---|---|
| | Test equipment | Equip. under test | | |
| | | | <p>For PP-448/GR—6 volts. For PP-281/GR—12 volts. For PP-282/GR—24 volts.</p> <p>b. Set DYN ON-OFF-HAND GEN ON switch to DYN ON. Adjust INPUT RHEO for indication on INPUT meter as follows: For PP-448/GR—5.0 volts. For PP-281/GRC—10.0 volts. For PP-282/GRC—20.0 volts.</p> <p>c. Depress OUTPUT 1,200-300 volts switch. Read and record the indication on the OUTPUT meter. (Use bottom center scale.)</p> <p>d. Turn DYN ON-OFF-HAND GEN ON switch to OFF. Wait 10 seconds. Turn switch back to DYN ON. Repeat 3c above.</p> <p>e. Repeat 3d above five times.</p> | <p>b. None.</p> <p>c. None.</p> <p>d. None.</p> <p>e. OUTPUT meter must indicate not less than 90 volts each time switch is turned to DYN ON.</p> |
| 4 | Same as at end of step 3. | N/A | <p>a. Set DYN ON-OFF-HAND GEN ON switch to OFF. Adjust OUTPUT VOLTAGE ADJ on PP-1097A/G for indication on DC VOLTS meter as follows: For PP-448/GR—12 volts. For PP-281/GRC—20 volts. For PP-282/GRC—32 volts.</p> <p>b. Set DYN ON-OFF-HAND GEN ON switch to DYN-ON. Adjust INPUT RHEO for indication on INPUT meter as follows: For PP-448/GR—8.0 volts. For PP-282/GRC—16.0 volts. For PP-282/GRC—32.0 volts.</p> <p><i>Note.</i> If necessary, adjust PP-1097A/G OUTPUT VOLTAGE ADJ for more voltage in order to obtain the above voltages.</p> <p>c. Depress OUTPUT, 1,200-300 VOLTS switch. Read and record indication of OUTPUT meter. Release OUTPUT 1,200-300 VOLTS switch and turn DYN ON-OFF-HAND GEN ON switch to OFF. Turn PP-1097A/G POWER switch to OFF.</p> | <p>a. None.</p> <p>b. None.</p> <p>c. OUTPUT meter must not indicate more than 235 volts.</p> |

22.11. Test Data

Personnel may find it convenient to arrange test data in a manner similar to that shown below:

TEST DATA

Power Supplies PP-281/GRC, PP-281A/GRC, PP-282/GRC, PP-282A/GRC, and PP-448 GR

Serial No. _____
Work Order No. _____
Date _____

Technician _____
Inspector _____

| | Test data | Performance standard |
|--------------------|-----------|----------------------|
| 1. Normal input | _____ | 125-145 volts |
| 2. Ripple test | _____ | .5 volt max |
| 3. Low-input test | _____ | 90 volts min |
| 4. High-input test | _____ | 235 volts max |

[AG 413.44 (25 Mar 59)]

By Order of *Wilber M. Brucker*, Secretary of the Army:

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

Official:

R. V. LEE,
Major General, United States Army,
The Adjutant General.