DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR THREE-PHASE INPUT POWER CONTROL (Raytheon Part No. 490132-1)

Headquarters, Department of the Army, Washington, D.C.
25 July 1974

SECTION I

GENERAL

1. Introduction and Description. *a.* This manual contains the information necessary to calibrate the ac voltmeter and ammeter in the Three-Phase Input Power Control (Raytheon Part Number 490132-1). The Three-Phase Input Power Control (fig. 1) is a portable test set used to provide a variable ac power source for the frequency changer and power supply-battery charger used in Communications Central AN/TSC-38B. The test set includes an ac control panel which provides three ac measurement and control circuits, one each for phases A, B, and C of the 3-phase 208-Vac voltage supplied to the frequency changer and power supply-battery charger. The three ac control circuits are monitored by an ac voltmeter and an ac ammeter under control of two separate meter function switches. The procedure for calibrating the ac voltmeter and ammeter can be performed using the phase A, phase B, or phase C switch position. Phase B is used in this procedure for convenience.

b. Integrated within this bulletin are illustrations showing the location of all operational controls and components used in the calibration procedure, as well as diagrams showing equipment setups.

2. Reporting of Technical Bulletin Improvements. The reporting of errors, ommissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, U.S. Army Electronics Command, ATTN: AMSEL-MA-DS, Fort Monmouth, NJ 07703.

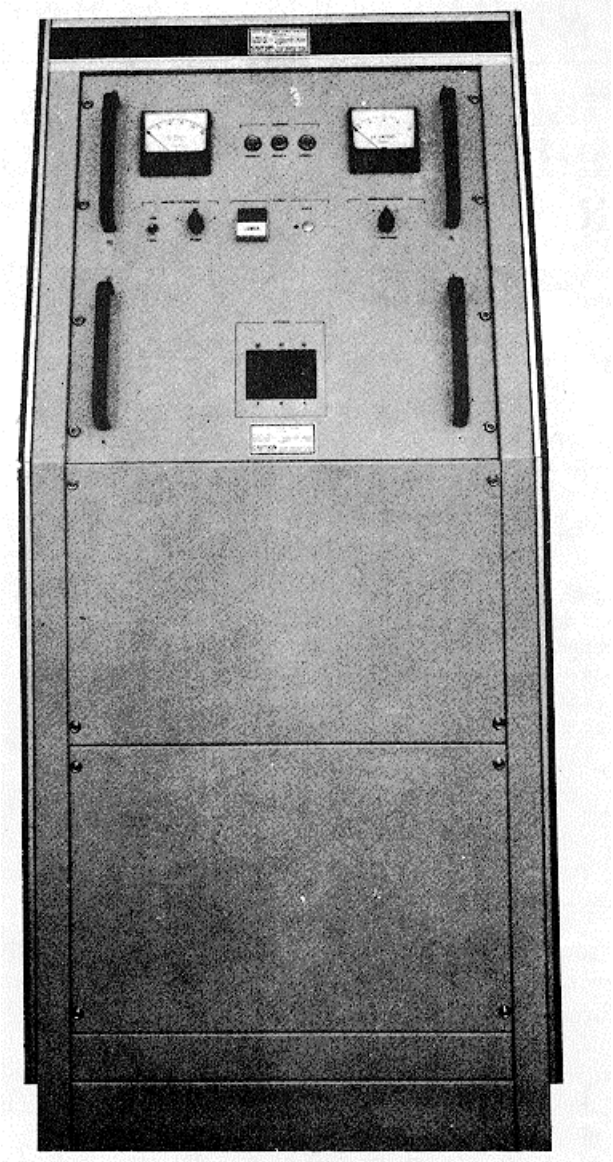
3. General Instructions. The following instructions are applicable to the calibration and reporting requirements for: the Three-Phase Input Power Control, Raytheon Part Number 49132-1.

a. Calibration Reporting. During the performance of the calibration in accordance with this procedure, annotate DA Form 2416 (Calibration Data Card) in accordance with TM 38-750.

b. Equipment and Accessory Identification. The measurement and calibration equipment and the supporting accessory items referred to throughout this bulletin are identified in table 1.

c. Terms. The Three-Phase Input Power Control will be referred to as the "unit under test."

d. Equipment Setup Changes. Disconnection instructions are given following each calibration procedure. Complete setup instructions are given prior to each calibration procedure.



EL6625-2675-35-TB-1

Figure 1. Three-phase input power control-front panel view.

SECTION II

CALIBRATION

4. Calibration Equipment. *a.* The equipment required for calibration of the unit under test is listed in table 1, together with the minimum use specifications for each item and the recommended instruments for each equipment type.

NOTE

Minimum use specifications are the principal parameters required for performance of this calibration procedure and are included to assist in the selection of alternate equipment, which may be used at the discretion of the calibrating activity. Satisfactory performance of alternate items shall be verified prior to use. All applicable equipment must bear evidence of current calibration.

Table 1. Equipment Required for Calibration

Item	Minimum use specification	Calibration equipment
Differential voltmeter	Voltmeter calibration: 0 to 120 Vac ±- 4.5V	ME-202/U
Ammeter	AC ammeter calibration: 0 to 50A ± 4A	ME65/U
Special test cable assembly	Interconnection of test equipment with UUT	AC load input connector cable (W30) (Raytheon Part No. 577067-W30)
Ac load panel	Current load during ammeter calibration: 0-40 A/120 Vac.	Inverter Load Panel (Raytheon Part No. 490121)
3ϕ power connector cabel	Interconnection of UUT to ac load panel.	Three-Phase Input Power Control variable output connector cable (W36) (Raytheon Part No. 577067-W36).

b. The calibration equipment used in this procedure was selected from a list of equipment known to be available at Department of Defense facilities, and any reference by make or model number carries no implication of preference, recommendation, or approval by the Department of Defense for use by other agencies. It is recognized that equivalent equipment produced by other manufacturers may be equally satisfactory in the performance of this procedure.

NOTE

It is recommended that personnel familiarize themselves with the entire procedure prior to performing the calibration.

5. Unit Under Test Preparation.

a. Power Equipment Setup.

WARNING

Set the AC POWER circuit breaker on the ac control panel to OFF (down) on the front panel of the UUT before performing power equipment setup. Upon completion of calibration, depress the OUTPUT LOWER pushbutton and return the output voltage to zero.

(1) Connect the three-phase 120/208-Vac 5060 Hz variable power output cable from the Three-Phase Input Power Control to the AC LOAD connector located on the front of the Control and DC Load Panel, using the special test cable and the three-phase variable output connector cable as shown in figure 2.

(2) Connect a single-phase ac power source to AC POWER connector J7 on the rear panel of the Control and DC Load Panel.

b. Test Equipment Setup.

CAUTION

Insure that all circuit breakers on the Control and DC Load Panel are in the OFF (down) position before continuing.

(1) Connect an ammeter in series with the AC Control Panel ammeter by connecting one input lead to the common lead from pins A, B, and C of the AC LOAD test connector and the other lead to the ϕ B (red) three-phase connector cable terminal.

(2) Connect a differential voltmeter in parallel with the panel voltmeter by connecting the positive (+) input terminal to the ϕ B (red) terminal on the three-phase connector cable and connecting the negative (-) terminal to the neutral (white) three-phase connector cable terminal.

(3) Turn the LOAD ADJUST controls on the three AC Load Panels on the Inverter Load Panel Test Set fully counterclockwise (minimum load).

(4) Set the AC LOAD circuit breaker (located on the Control and DC Load Panel) to the ON (up) position. Set the BLOWER POWER switch to ON.

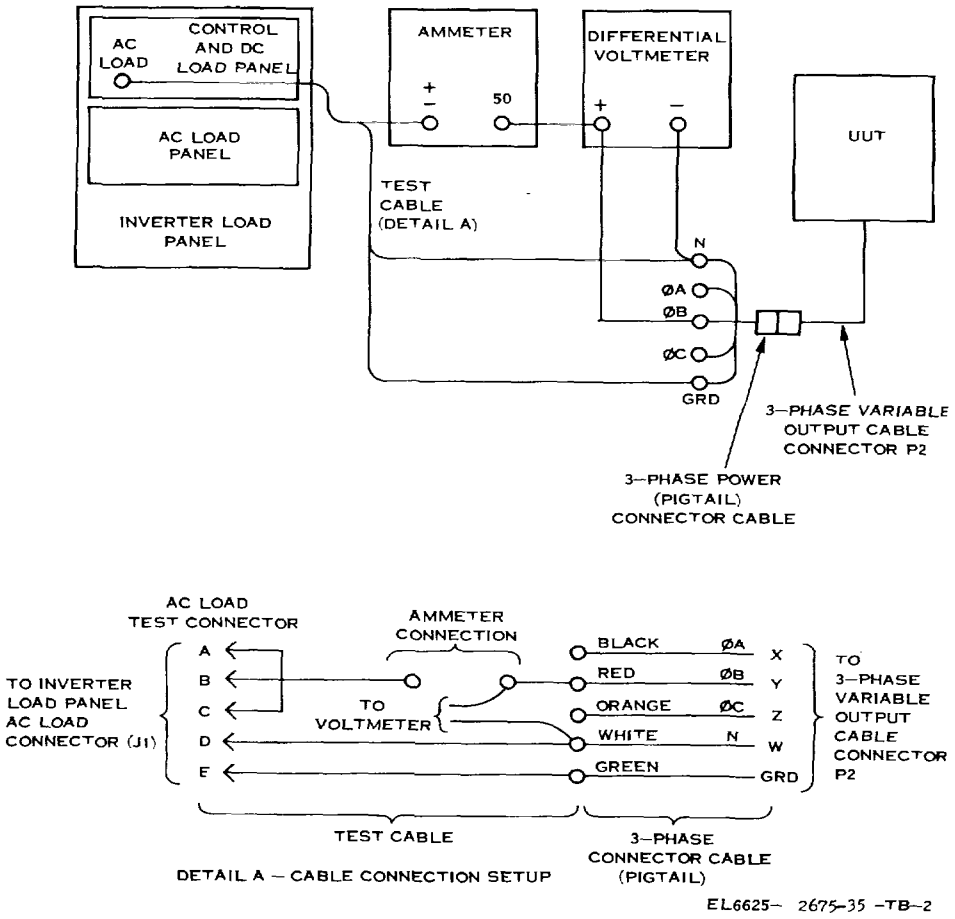


Figure 2. Three-Phase Input Power Control, AC Control Panel-calibration equipment setup.

(5) Set the VOLTMETER FUNCTION PHASE selector switch (located on the AC Control Panel) to the B position; set the LINE-LOAD toggle switch to the LOAD position.

(6) Set the AMMETER FUNCTION LOADPHASE selector switch on the UUT to the B position.

6. Ac Voltmeter calibration. *a. Performance Check.*

(1) Set the AC POWER circuit breaker on the UUT to the ON position.

(2) Set all three LOAD ADJUST controls fully counterclockwise.

(3) Vary the load voltage input to the AC Load Panel using the RAISE and LOWER pushbuttons on the UUT.

(4) Check the UUT AC Voltmeter at the 30, 90, and 120 volt indications.

(5) Monitor these indications with the differential voltmeter allowing a tolerance of ± 3%

b. Adjustments. No adjustments can be made.

7. Ac Ammeter Calibration. *a. Performance Check*.

(1) Set the line voltage at 120 Vac.

(2) Simultaneously adjust the ϕA, ϕB, and ϕC AC Load Panel LOAD ADJUST controls so that the load current (as measured on the ammeter) equals 40 amperes and is nearly equally divided between the three AC Load Panels as indicated on the individual panel AC ammeters.

CAUTION

To prevent damage to the AC Load Panel, do not adjust an individual LOAD ADJUST control beyond the point where the panel ammeter indicates 15 amperes.

(3) Observe and certify that the ac ammeter on the AC Control Panel indicates 40 amperes (±4.0 A).

(4) Using any convenient sequence, decrease the ϕA, ϕB, and ϕC ac loads using the individual LOAD

ADJUST controls on the ϕA, ϕB, or ϕC AC Load Panels so that the load current (as indicated on the ammeter) decreases from 40 amperes to 0 amperes, stopping to make meter calibrations when the load current reaches 30, 20, and 10 amperes, respectively.

(5) Observe and certify that the AC ammeter on the UUT indicates 30, 20, and 10 amperes (± 4.0 A) when the load current shown on the ammeter is stopped at 30, 20, and 10 amperes, respectively.

b. Adjustments.. No adjustments can be made.

8. Final Procedure. *a.* Deenergize and disconnect all test equipment.

b. In accordance with TM 38-750, annotate and affix calibration DA Label 80 (U.S. Army Calibration System). When the panel being tested cannot be certified within the specified tolerances, annotate and affix DA Form 2417 (Unserviceable or Limited Use) (red tag).

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-34, Section II (qty rqr block no. 5) requirements for Calibration Procedures Publications.

GPO 870 626

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER	SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ▸ ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 012917-000