DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TESTER, AIRFLOW RESISTANCE, Q179 NSN 6680-01-021-9803

Headquarters, Department of the Army, Washington, D. C.
24 June 1977

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SECTION I. IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Tester, Airflow Resistance, Q179. The airflow resistance tester will be referred to as the "TI" or test instrument throughout this bulletin.

a. Model Variations. None.

b. Time and Technique. The time required for this calibration is approximately 2 hours, using the physical technique.

2. Calibration Data Card (DA Form 2416). Forms, records, and reports required for calibration personnel at all levels are prescribed by TM 38-750. DA Form 2416 must be annotated in accordance with TM 38-750 for each calibration performed.

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in Table 1.

Table 1. Calibration Description

Test Instrument Parameters	Performance Specifications
Pressure	Range: 0 to 3 inches of water Accuracy: ± 2% of full scale
Airflow	Range: 0 to 6800 cc/min Accuracy: t 2% of full scale

SECTION II.
EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment used in this calibration. The equipment is issued with secondary transfer standards calibration set, NSN 6695-00-621-7877. Alternate items may be used by the calibrating activity when the equipment listed in table 2 is not available. The items selected must be verified to perform satisfactorily prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one accuracy ration between the standard and TI. When the four-to-one ration cannot be met, the actual accuracy of the equipment selected is shown in parenthesis.

5. Accessories Required. Some of the accessories listed in table 3 are issued as indicated in paragraph 4 above, except for the one that is fabricated as shown in figure 1. All are to be used in this calibration procedure. When necessary, the items other than the one fabricated may be substituted by equivalent items.

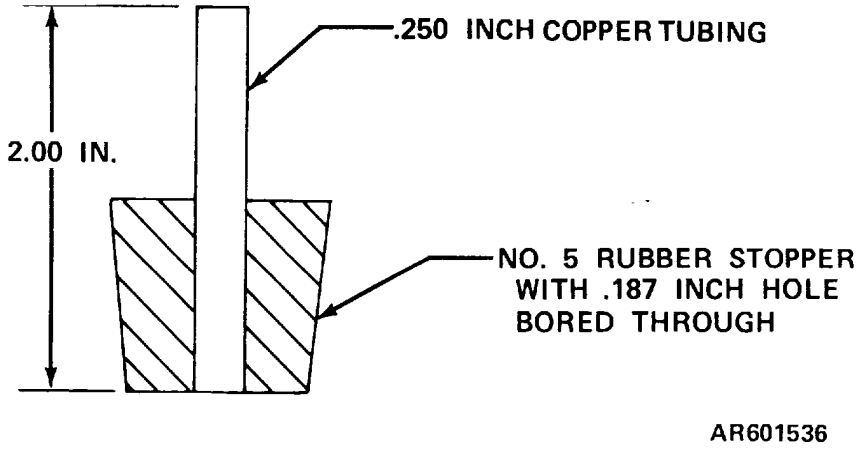

Figure 1. Fabrication instructions for connector (B1).

Table 2. Minimum Specifications of Equipment Required.

ITEM	COMMON NAME	MINUMUM USE SPECIFICATIONS	MANUFACTURER, MODEL, AND PART NUMBER
A1	FLOWMETER *	Range: 2000 cc/min. Accuracy: ±0.5% (±2% full scale)	Shutte and Koerting, Model 18200 series (7907273) Tube - 03-Ryb and Float - R-033; Tube - 1-Ryb and Float - BJ-9
A2	MANOMETER	Range: 0 to 3 inches of water Accuracy: ±0.5%	Wallace and Tiernan, Model 65D-4C-0120X or FA145600.(7912573)

* Procedure Limitations: Accuracy - 2% of full scale. Calibration is performed at 1000 cc/min. and at 3825 cc/min. since the desired airflow rate of 2000 cc/min. can not be measured when using this instrument.

Table 3. Accessories Required

Item	Common Name	Description and Part Number
B1	CPMMECTOR	Fabricate in accordance with figure 1.
B2	TUBING	Plastic, ¼ -inch (R3603F) length as required.

SECTION III.
CALIBRATION PROCESS

NOTE

Unless otherwise specified, verify the results of each test and take corrective action whenever the test requirement is not met before continuing with the calibration.

6. Preliminary Instructions. *a.* The instructions outlined in this section are preparatory to the calibration process. Personnel should become familiar with the entire bulletin (or specified sections) before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the test by common name and item identification number as listed in tables 2 and 3. For the identification of equipment referenced by item numbers prefixed with A, see table 2, and for prefix B, see table 3.

7. Equipment Setup (fig. 2). *a.* Adjust mechanical zero - adjustment on TI.

b. Set POWER switch to OFF.

c. Turn BLEED VALVE fully counterclockwise.

d. Connect power cable connector to 115-volt, 60 Hz receptacle.

e. Set POWER switch to ON. Motor should operate.

f. Allow TI to operate for at least 10 minutes.

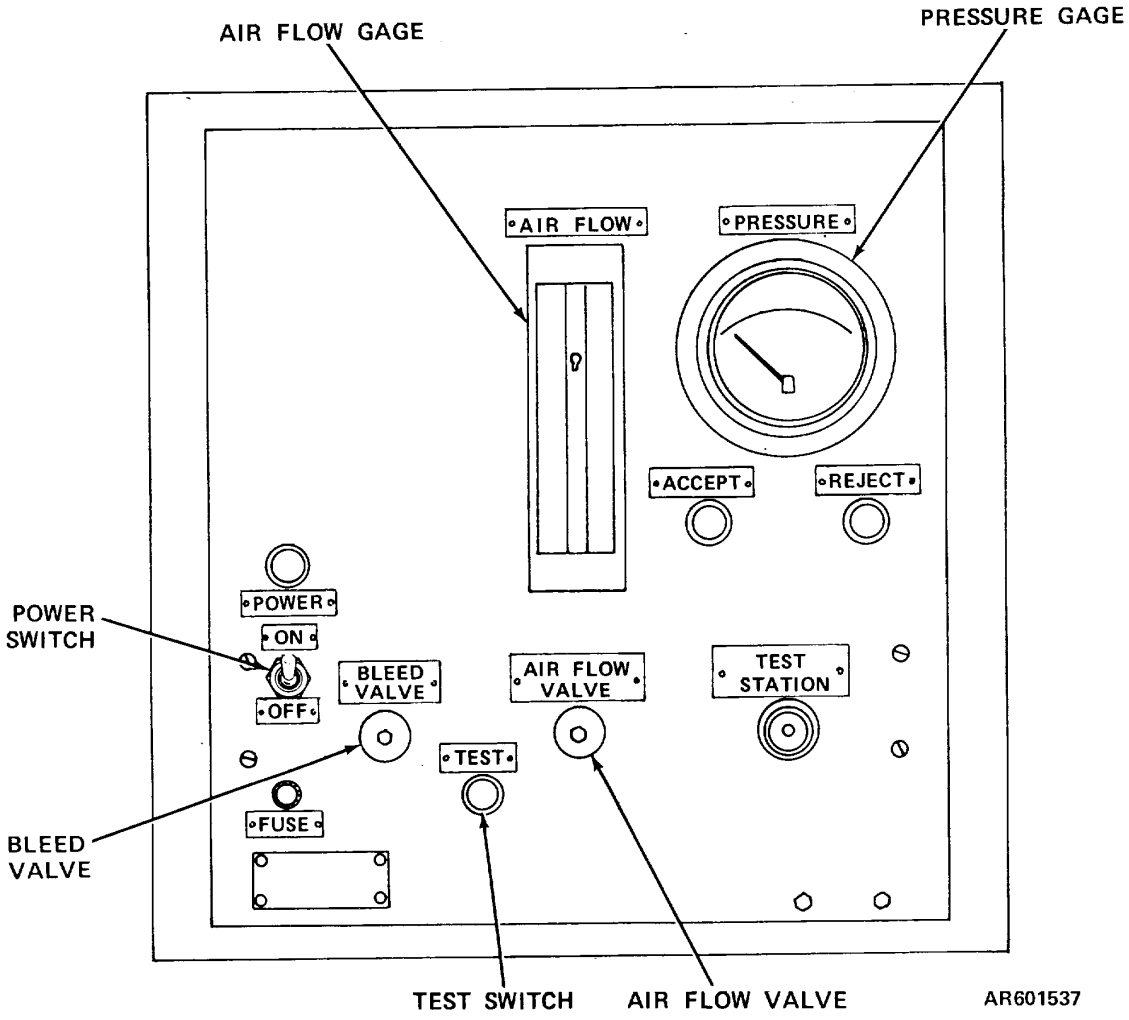

Figure 2. Location of TI controls and instruments used during calibration.

8. PRESSURE Gage. *a. Performance Check.*

(1) Connect the test equipment as shown in figure 3.

(2) Close BLEED VALVE.

(3) Slowly adjust AIR FLOW valve on TI until the PRESSURE gage pointed indicates "1" on the scale. The manometer (A2) must indicate as shown in table 4.

(4) Repeat (3) above for each major division on the PRESSURE gage scale.

CAUTION

Since a sudden change in pressure could damage the TI, do not disconnect the equipment before returning the TI to atmospheric pressure.

(5) After the performance check is completed, slowly open the BLEED VALVE to return the TI and

b. Adjustments. No adjustments can be made.

manometer (A2) to atmospheric pressure.

(6) Disconnect the test equipment.

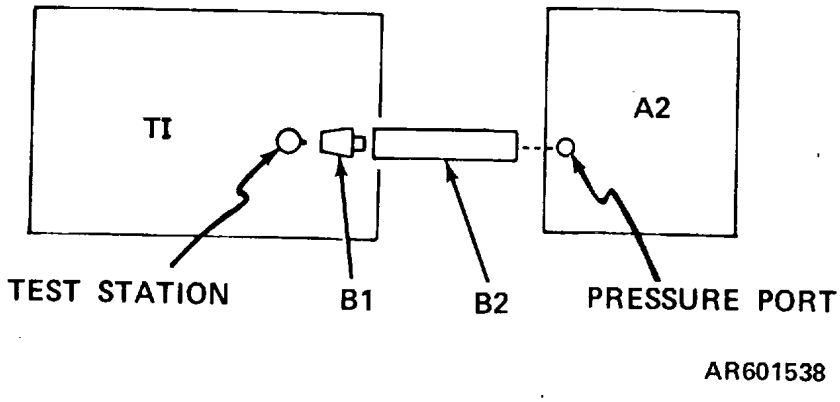

Figure 3. PRESSURE gage performance check, equipment setup.

Table 4. Pressure Gage Performance Limits

Scale major Division Indications	Acceptable Manometer Indications (inches of water)	
	Min.	Max.
1	0.94	1.06
2	1.94	2.06
3	2.94	3.06

9. AIR FLOW Gage. *a Performance Check.*

(1) Connect the test equipment as shown in figure 4.

(2) Adjust AIR FLOW VALVE to obtain a reading of "4" on the AIR FLOW gage. Flowmeter (Al) must indicate between 82.6 and 87.4.

(3) Repeat (2) above for " 10" on the AIR FLOW gage. Flowmeter (Al) must indicate between 32.6 and 37.4.

(4) Release the TEST switch.

(5) Disconnect the test equipment.

b. Adjustments. No adjustments can be made.

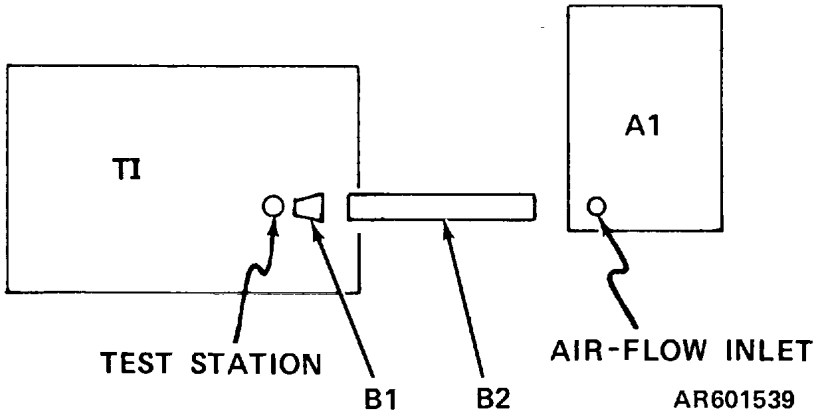

Figure 4. AIR FLOW gage performance check, equipment setup.

10. Final Procedure. *a.* Deenergize and disconnect all equipment.

b. In accordance with TM 38-750, annotate and affix DA Label 80 (US Army Calibration System). When the TI does not indicate within the limits specified in paragraph 8a or 9a, annotate and affix DA Form 2417 (Unserviceable or Limited Use) tag.

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