

## DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

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**CALIBRATION PROCEDURE FOR TEST STAND, IGNITION MAGNETO HYDRAULIC  
TECHNOLOGY, INC. MODELS 6990A**


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**Headquarters, Department of the Army, Washington, D. C.**  
13 May 1977

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## Section I. IDENTIFICATION AND DESCRIPTION

## 1-1. Test Instrument Identification.

This bulletin provides instructions for the calibration of Ignition Magneto Test Stand. The Ignition Magneto T.S. will be referred to as the "test instrument" throughout this bulletin.

Nomenclature: Ignition Magneto Test Stand  
 FSN: 4920-00-  
 Manufacturer: Hydraulic Technology Inc.  
 Model: 6990 and 6990A  
 Model variation: Only difference is the size.  
 Technique: DC and low frequency

## 1-2. Calibration Description.

Test instrument parameters and performance specifications which pertain to this calibration are listed in table 1-1.

Table 1-1. Calibration Description

Test instrument parameters	Performance specifications
RPM Indicator (dual range)	Range: 0-500, 0-5000 RPM Accuracy: +3.0% of F.S. for each range
AC Ammeter (dual range)	Range: 0-2.5, 0-5.0 amps a.c. Accuracy: +3.0% of F.S. for each range

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1-3. Forms and Records.

Maintenance forms, records, and reports which are to be used by calibration personnel at all calibration levels are listed in and prescribed by TM 38-750.

1-4. Reporting of Errors.

The reporting of errors, omissions, 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 forwarded direct to Commander, US Army Aviation Systems Command, ATTN: AMSAV-F, PO Box 209, St. Louis, Missouri 63166.

Section II. EQUIPMENT REQUIREMENTS

2-1. Equipment Required.

Table 2-1 identifies the specific equipment used in this calibration procedure.

NOTE

*Minimum use specifications are the principal parameters required for performance of the calibration, 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 2-1. Calibration Equipment Required

Item	Common Name	Minimum Use Specifications	Equipment Identification <sup>1</sup>
A1	Stroboscope	Range: 485-4650 RPM Accuracy: $\pm 1.0\%$	TS-805/U
A2	Meter Calibrator	Range: 2.4-5.15 amps ac Accuracy: $\pm 0.5\%$	RFL-829

<sup>1</sup>The calibration equipment utilized in this procedure was selected from those known-to be available at the Department of Defense facilities; and the listing 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 capable of equally satisfactory performance in the procedure.

2-2. Accessories Required.

The accessories listed in table 2-2 are to be used in the calibration procedure.

When necessary, these items may be substituted by equivalent items unless specifically prohibited.

Table 2-2. Accessories Required

Item	Common Name	Accessory Identification <sup>1</sup>
B1	Test Lead	30-in., lead No. 10 AWG with spade lug terminal to pin tip terminal (red)
B2	Test Lead	30-in., lead No. 10 AWG with spade lug terminal to pin tip terminal (black)

<sup>1</sup>See footnote under table 2-1.

### Section III. PRELIMINARY OPERATIONS

#### 3-1. Preliminary Instructions.

a. The instructions outlined in this section are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name and item identification number as listed in tables 2-1 and 2-2. For the identification of equipment referenced by item number prefixed with A, see table 2-1; and for prefix B, see table 2-2.

#### 3-2. Equipment Setup.

#### WARNING

*HIGH ELECTRICAL CURRENT is utilized within the Test Instrument during performance of this procedure. OBSERVE UUT start and stop procedures pertinent to the Test Instrument being calibrated to prevent possible damage to equipment and/or injury to personnel.*

a. Adjust the test instrument tachometer indicator and AC ammeter for mechanical zero by means of screw driver slot located at lower front of indicator.

b. Set test instrument SPEED ADJUST controls both in the fully counterclockwise (CCW) position.

c. Set test instrument DRIVE ROTATION switch to clockwise (CW) position.

d. Mark test instrument generator center drive shaft with a piece of black tape.

- e. Connect test equipment as shown in figure 4-1.
- f. Allow equipment to warm up and stabilize.

#### Section IV. 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.*

#### 4-1. Tachometer Indicator.

##### a. Performance Check.

- (1) Set the test instrument POWER switch to START.
- (2) Adjust test instrument SPEED ADJUST 0-700 RPM control clockwise (CW) to indicate 500 RPM on the low scale of test instrument tachometer indicator, while holding TACH RANGE SEL switch to LOW position.
- (3) Adjust stroboscope (AI) RPM controls until a single motionless image of the back tape appears. Stroboscope will indicate between 485 and 515 RPM. If not, perform b(1) and (2) below.
- (4) Set the TACH range selector to HIGH.
- (5) Set the SPEED ADJUST 0-700 RPM fully clockwise (CW).
- (6) Adjust test instrument SPEED ADJUST 700-50000 RPM control clockwise (CW) for each test instrument tachometer indicator indications as listed in table 4-1. Stroboscope will indicate within the limits specified. If not, perform b(3) and (4) below.
- (7) Set test instrument DRIVE ROTATION control counterclockwise (CCW) position.
- (8) Repeat techniques (2) thru (6) above. Indications will be within the limits specified.

##### b. Adjustments.

- (1) Set the stroboscope to indicate 500 RPM.
- (2) Adjust the test instrument SPEED ADJUST 0-700 RPM control until a single motionless image of the black tape appears on stroboscope. Adjust the test instrument TACH CAL LOW potentiometer (located behind the tachometer indicator) for 500 RPM on the tachometer, while holding TACH RANGE SEL switch to LOW position,
- (3) Set the stroboscope to indicate 4500 rpm.
- (4) Adjust the test instrument SPEED ADJUST 700-5000 RPM control until

a single motionless image of the black tape appears on stroboscope. Adjust the test instrument TACH CAL HIGH potentiometer (located behind the tachometer indicator) for 4500 rpm on the tachometer.

TABLE 4-1. TACHOMETER INDICATOR CHECK

Test Instrument Tachometer Indicator Indications (RPM)	Stroboscope (A1)	
	MIN	MAX
1500	1350	1650
2000	1850	2150
3000	2850	3150
4500	4450	4650

4-2. AC Ammeter Check.

a. Performance Check.

- (1) Connect meter calibrator (A2) test leads B1 and B2 to the test instrument AC ammeter test jacks.
- (2) Set test instrument AC ammeter RANGE SEL switch to LOW position.
- (3) Adjust meter calibrator for 2 amperes indication on test instrument AC ammeter. Meter calibrator will indicate between 1.925 and 2.075 amperes ac.
- (4) Set test instrument AC ammeter RANGE SEL switch to HIGH position.
- (5) Adjust meter calibrator for each of the test instrument AC ammeter indications as listed in table 4-2. Meter calibrator will indicate within the limits specified.

b. Adjustments. No adjustments can be made.

TABLE 4-2. AC AMMETER CHECK

Test Instrument AC Ammeter Indications (amps ac)	Meter Calibrator Indication (amps ac)	
	MIN	MAX
3	2.85	3.15
4	3.85	4.15
5	4.85	5.15

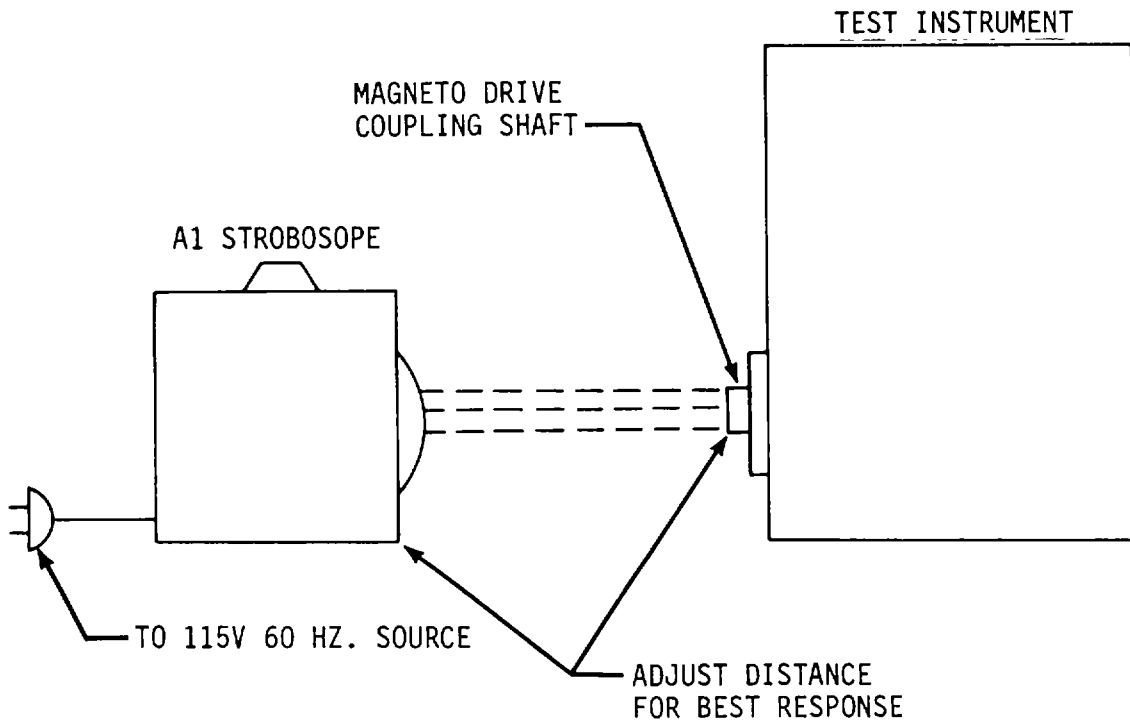


Figure 4-1. Tachometer Indicator Check Equipment Setup

4-3. Final Procedure.

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA Label 80, US Army Calibration System, In accordance with TM 38-750. When the test instrument cannot be adjusted within tolerance, annotate and affix DA Form 2417, Unserviceable or Limited Use Tag.

**By Order of the Secretary of the Army:**

Official:

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*Major General, United States Army  
The Adjutant General*

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