

# FACTORY CALIBRATION PROCEDURE

## CONTENTS:

General	1
Equipment required	2
Factory test limits	3
Factory calibration procedure	4

## INTRODUCTION:

This is the guide for calibrating brand-new instruments, it therefore, calls out many procedures and adjustments that are rarely required for subsequent recalibration. *This procedure is company confidential.* In this procedure, all front panel control labels or Tektronix equipment names are in capital letters (VOLTS/DIV, etc.) internal adjustment labels are capitalized only (Gain Adj, etc.).

Tek form number:

0-442

August 1967

For all serial numbers.



TYPE 410  
POWER PACK  
(016-0107-00)

## FACTORY TEST LIMITS:

We initially calibrate the instrument to Factory Test Limits. These limits are often more stringent than advertised performance requirements. This helps insure that the instrument will meet advertised requirements after shipment, allows for inaccuracies of test equipment used, and may allow for changes in environmental conditions.

## QUALIFICATION:

Factory test limits are qualified by the conditions specified in the main body of the calibration procedure. The numbers and letters to the left of the limits correspond to the factory calibration procedure steps where the check or adjustment is made. Instruments may not meet factory test limits if calibration or check-out methods and test equipment differ substantially from those in this procedure.

## ABBREVIATIONS:

Abbreviations in this procedure will be found listed in TEKTRONIX STANDARD A-100.

## CHANGE INFORMATION:

This procedure has been prepared by Product Manufacturing Staff Engineering. For information on changes that have been made to this procedure, to make suggestions for changing this procedure, or to order additional copies: please contact PMSE, 47-261. (DC)



EQUIPMENT REQUIRED:

The following equipment is necessary to complete this procedure:

a. *TEKTRONIX Instruments*

1 TYPE 410 PHSIOLOGICAL MONITOR

b. *Test fixtures and accessories*

1 2A Constant Current Generator (PMPE Dwg. #1752A)

1 Timer (Lux Minute Minder or equivalent)

c. *Other Equipment*

2 20,000 $\Omega$ /VDC Multimeter, Triplett 630NA or equivalent

Substitute test equipment may be used. The Plant Staff Engineer must approve any substitutions. All equipment listed must perform within its manufacturer's specifications, unless otherwise stated.

It is assumed that all equipment is provided with BNC connectors; if equipment used has other than BNC connectors, adapters, not listed, may be needed.

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## FACTORY TEST LIMITS

### QUALIFICATION

Factory test limits are qualified by the conditions specified in the main body of the calibration procedure. The numbers and letters to the left of the limits correspond to the factory calibration procedure steps where the check or adjustment is made. Instruments may not meet factory test limits if calibration or checkout methods and test equipment differ substantially from those in this procedure.

#### 1. PRELIMINARY INSPECTION

#### 2. REED SWITCH OPERATION:

Power cord connected: sw601 and 602 closed

Power cord removed: sw601 and 602 open

#### 3. POWER PACK CHARGE

b. Charge Ni Cd cells: 30A minutes of charge

#### 4. CHARGER CURRENT

180ma  $\pm$ 20ma, max

#### 5. 115/230 VAC OPERATION

#### 6. OPERATION UNDER LOAD

Within green zone on BATTERY CHECK

1. PRELIMINARY INSPECTION

*a. Make General Examination*

Remove the cover and check that Ni Cd cells are properly connected. Check for unsoldered joints, rosin joints, lead dress and long leads. Check for loose hardware and protruding parts. Correct all defects found.

*b. Check fuses*

Line voltage fuses (F601 and F602)  
 0.1A miniature fuse 159-0059-00 (coded red - red)  
 Output fuses (F641 and F643)  
 5A miniature fuses 159-0060-00 (coded brown - black)

2. REED SWITCH OPERATION

*Power cord removed: sw601 and 602 open*  
*Power cord connected: sw601 and 602 closed*

Set a multimeter to  $\Omega X1$  and check for no continuity through sw601 and 602 as shown in Fig. 1. Plug a power cord into p601 but not into an AC power source.

Check for continuity through sw601 and 602 as shown in Fig. 1. Remove the power cord.

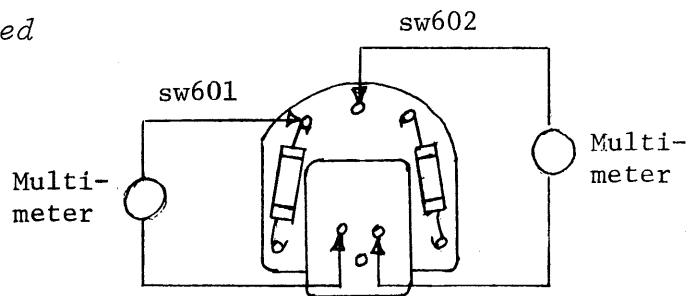
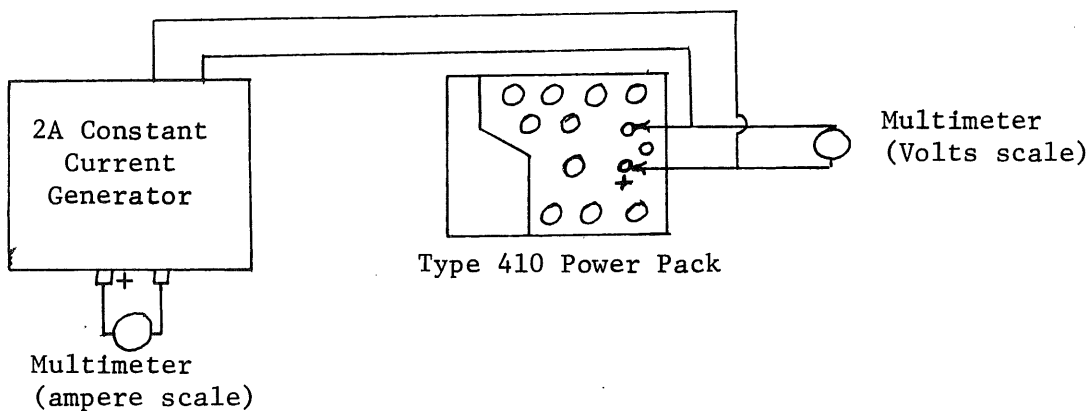


Fig. 1

3. POWER PACK CHARGE

*a. Setup*

Make connections as in the following diagram:



## 3. (cont'd)

- b. *Charge Ni Cd cells:  
30A minutes of charge*

Turn the 2A Constant Current Generator Power on and check the multimeter for approximately 2 amperes. Set the timer for a period suitable to give 30A minutes of charge. Example: 2A x 15 minutes = 30A minutes. Check for 13 to 15V across the battery after 5 or 10 minutes. When the timer bell rings turn the 2A Constant Current Generator Power off and remove the leads from the TYPE 410 power pack.

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4. CHARGER CURRENT      180ma  $\pm$ 20ma, max

Set a multimeter to a range suitable to measure 0.7V and connect the meter leads across R635. Plug the Power Cord into the power pack receptacle and into a source of 115 VAC. Check for a multimeter reading of from 0.61 VDC to 0.76 VDC.

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5. 115/230 VAC OPERATION

Set multimeter to a range suitable to measure 30 VDC and connect the meter leads across C615. Note the meter reading then change sw603 to 230 VAC. Check for approximately one-half the DC voltage reading previously obtained.

Return sw603 to the 115 VAC position. Remove the meter leads and replace the power pack cover.

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6. OPERATION UNDER LOAD      Within green zone  
on BATTERY CHECK

Connect the TYPE 410 POWER PACK to a TYPE 410 PHYSIOLOGICAL MONITOR. Set the SWEEP SPEED to BATTERY CHECK. Check that the spot falls within the green zone on the battery check scale of the graticule.

THE END

