

# **INSTRUCTION MANUAL**

## **TI6 Tension Indicator**

**DOVER FLEXO ELECTRONICS  
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# TI-6 TENSION INDICATOR

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WARRANTY

DIAGRAMS

## INSTALLATION AND OPERATION

### Tension Indicator, Model TI-6

#### INSTALLATION

1. Install the tension transducers. Refer to the transducer installation instructions included.
2. Mount the Indicator cabinet in a convenient location away from heat and vibration.
3. Connect a transducer cable to each transducer. Use the longer cable on the one farthest away from the Indicator.
4. Connect the other end of the cables to the receptacles on the bottom of the Indicator cabinet.
5. Plug the power cord into the cabinet, and plug the other end into a 117 volt 60 Hz. receptacle.

#### OPERATION

Operation of the Indicator is fully automatic. Flip the toggle switch (on the front of the cabinet) "up" to apply power. The red pilot light will glow as long as power is on. If the switch is on but the light doesn't glow, check the 117 volt source and the  $\frac{1}{2}$  amp fuse on the Indicator panel.

Repeat the above procedure for all Tension Indicators.

## CALIBRATION

### Tension Indicator, Model TI-6

#### TARE (ZERO) ADJUSTMENT

1. Turn off power to the Indicator. Observe the tension meter. If the needle is not on zero, adjust the screw on the meter face until the needle rests on zero.
2. Turn on power and allow the Indicator to warm up for five minutes.
3. Open the door of the Indicator and, using a small screwdriver, turn the ZERO potentiometer until the meter reads zero. The needle moves upscale when the pot. is turned clockwise (CW).

#### CALIBRATION ADJUSTMENT

4. Thread a length of rope over the center of the tension sensing roll following the exact same path the web will take. Do not pass the rope over dead-bars, driven rolls, braces or any other non-free wheeling member. The sliding friction introduced by these members will cause inaccurate calibration. Fasten one end of the rope securely.
5. Attach a weight of known value to the other end of the rope. Its weight should be about half the maximum scale reading of the tension meter. A spring scale can also be used to apply the required force.
6. Turn the CALIBRATE potentiometer until the tension meter reads the same as the weight.
7. Remove the load from the sensing roll and observe the tension meter. If it doesn't read zero, repeat step 3.
8. Apply the load to the sensing roll again and repeat step 6.
9. Repeat steps 6,7,8 until the tension meter reads the same as the applied weight and returns to zero when the weight is removed.

THIS COMPLETES THE CALIBRATION PROCEDURE

### AUXILIARY OUTPUTS

#### Tension Indicator, Model TI-6

1. 100 millivolt output. Terminals 14 (+) and 15 (-). This output is usually fed to a tension recorder for permanent record of tension patterns and levels. Output is 100 mv when tension meter reads full scale, and varies directly with meter. Minimum input resistance of recorder should be 10,000 ohms.
2. Voltage output, 0-5v DC, available at terminals 8(+) and 9 (-). Output is 5v DC when meter reads full scale. This output is directly proportional to tension and can be used for display or control purposes. Minimum load resistance should be 10,000 ohms.

## PREVENTIVE MAINTENANCE

Preventive maintenance for electronic equipment consists of keeping it clean. Layers of dust cause overheating of electronic components. If the dust is conductive it can cause short circuits and produce all kinds of strange behavior.

Check the equipment at least once a month. It doesn't take long and could prevent costly down-time.

DO NOT USE COMPRESSED AIR FOR CLEANING. DAMAGE COULD RESULT.

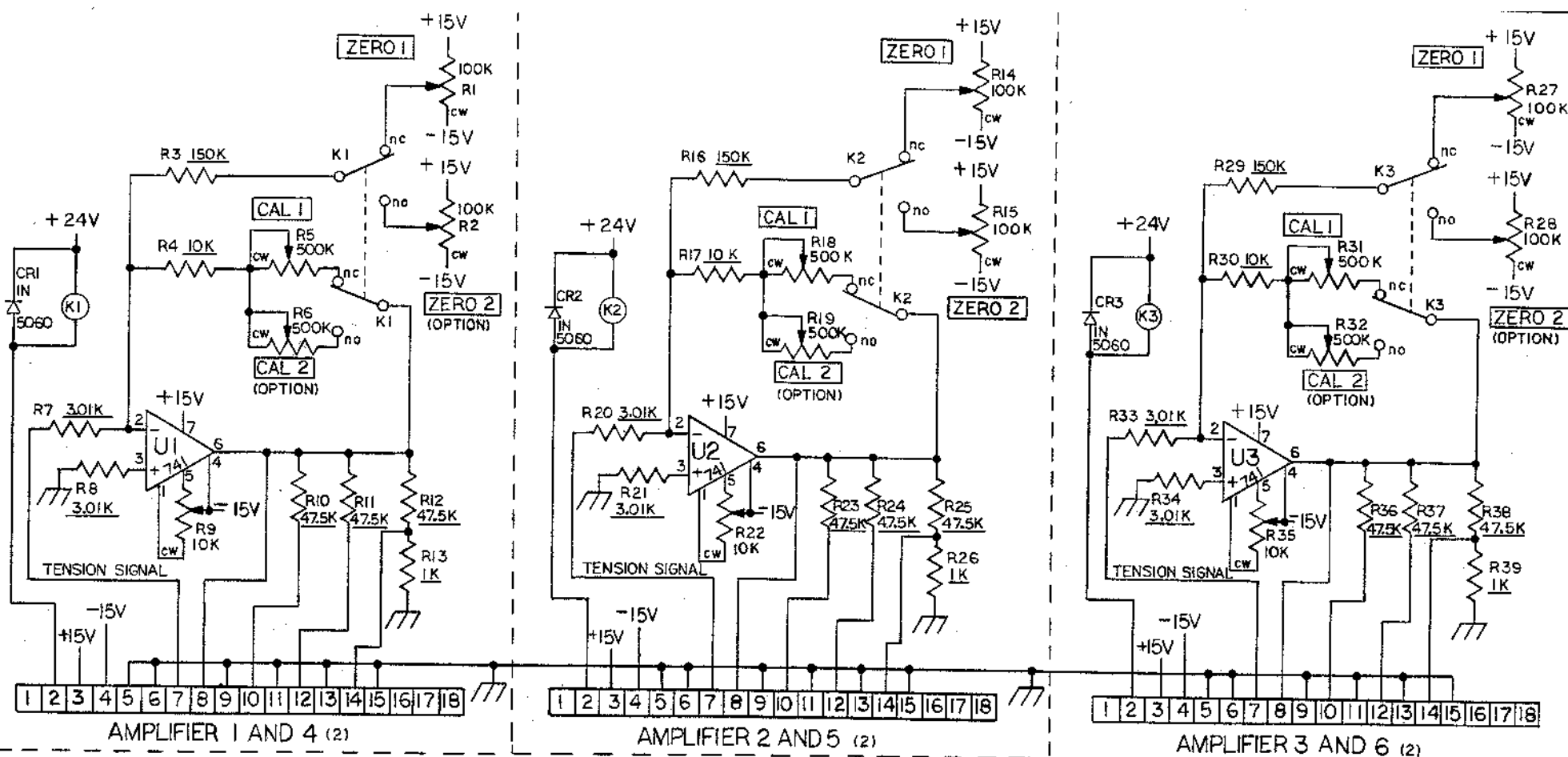
Use a dry, soft brush to remove dust.

If a solvent is necessary, use denatured alcohol.

DOVER FLEXO ELECTRONICS		MODEL TI-6			MODEL DIAGRAM REF.	
DES	PART NO.	DESCRIPTION			QTY	MFR
1						
2						
3						
4						
5						
6						
7						
8		D I A G R A M S				
9	E658B	T1 Schematic			1	
10	E659B	PS2 Schematic			1	
11	E660D	External Wiring			1	
12						
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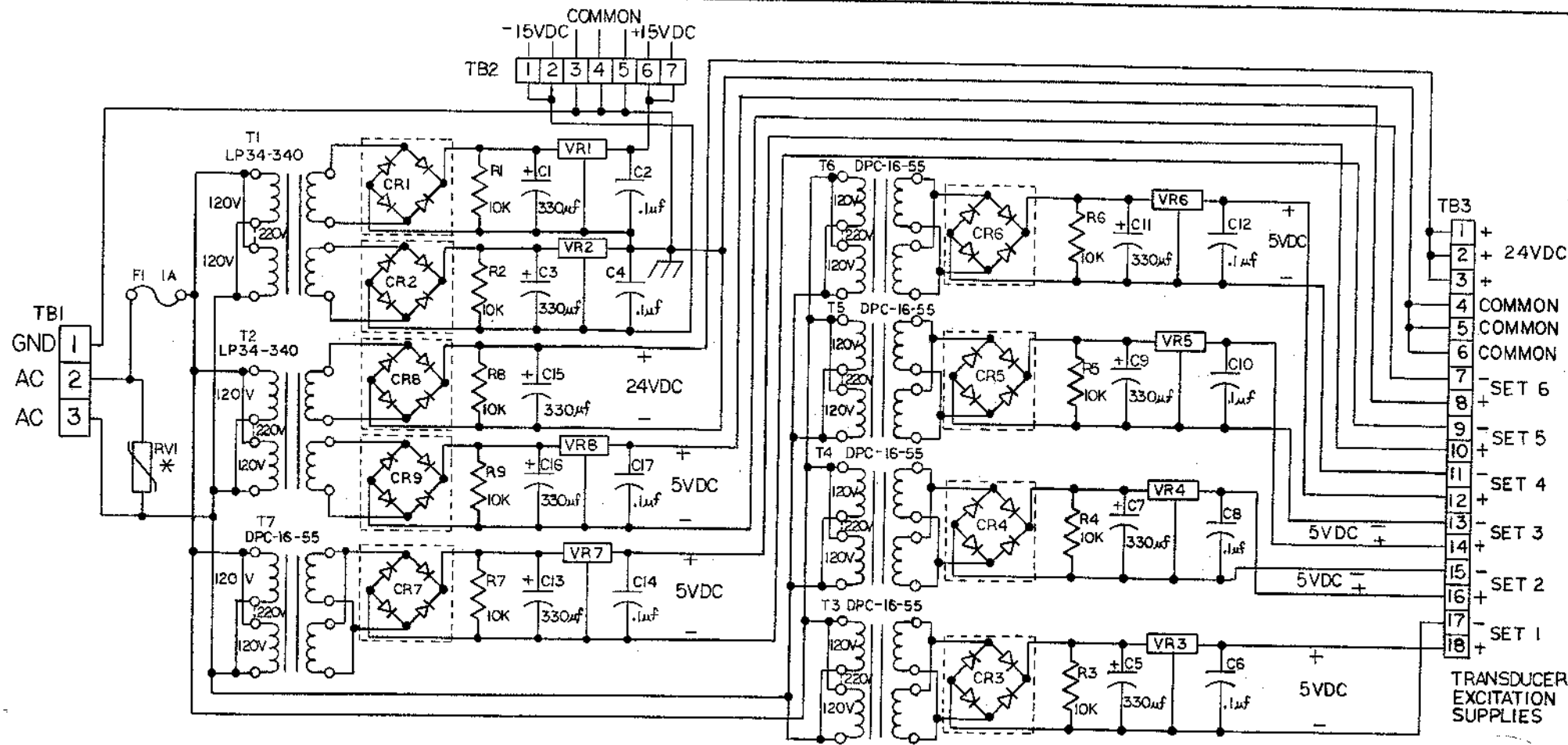
# NOTES:

- (1) RELAYS K1, K2, AND K3 INSTALLED FOR DUAL CAL OPTION. JUMPERS INSTALLED IN NC CONTACTS FOR STANDARD.
- (2) TWO TI CARDS USED WHEN 4 OR MORE INDICATORS ARE INSTALLED. NUMBERS 4, 5, AND 6, REFER TO SECOND TI CARD.

ES

MATL.			REF.	PART	DOVER FLEVO		
MACHINED LIMITS OTHERWISE SPECIFIED			DIMENSION UNLESS SPECIFIED	SCHEMATIC OF AMPLIFIER CARD	ELECTRONICS INC.		
.X ± .04			.XX ± .02	MODEL T1	ROCHESTER, N.H. 03867		
.XXX ± .005				USE T16	DR. BY SHARON DATE 1-30-89 SCALE		
BY	DATE	REV.			DRAWING NO. E658B		





# NOTES:

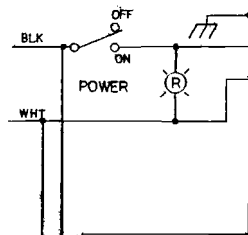
(1) AC INPUT: 120VAC; JUMPER PRIMARY OF TRANSFORMERS AS SHOWN BY SOLID LINES.

220VAC; JUMPER PRIMARY OF TRANSFORMERS AS SHOWN BY DASHED LINES.

\* RV1 USE TNR23G20IKM WITH 120VAC AND TNR23G39IJM FOR 220VAC OR EQUIVALENT.

			MATL.	REF.	PARTSCHEMATIC OF POWER SUPPLY CARD	DOVER FLEVO ELECTRONICS INC.		
			MACHINED LIMITS OTHERWISE	DIMENSION UNLESS SPECIFIED	MODEL PS2	ROCHESTER, N.H. -03867		
SD	1-31-89	A	.X	± .04	USE T16	DR. BY SHARON	DATE 1-31-89	SCALE ~
BY	DATE	REV.	.XX	± .02		DRAWING NO.		
			.XXX	± .005		E659B		

AC INPUT



1 2 3

AC AC GND

\* WIRING FOR UNITS  
IN ENCLOSURELO  
HIDUAL CAL  
SWITCH  
(OPTION)PS2 POWER SUPPLY BOARD  
REF: E659B104 105 106  
1 2 3 4 5 6 7  
TB2EXCITATION  
SUPPLIES

TB3

1 107

2 108

3 109

4 110

5 111

6 112

7 113

8 114

9 115

10 116

11 117

12 118

13 119

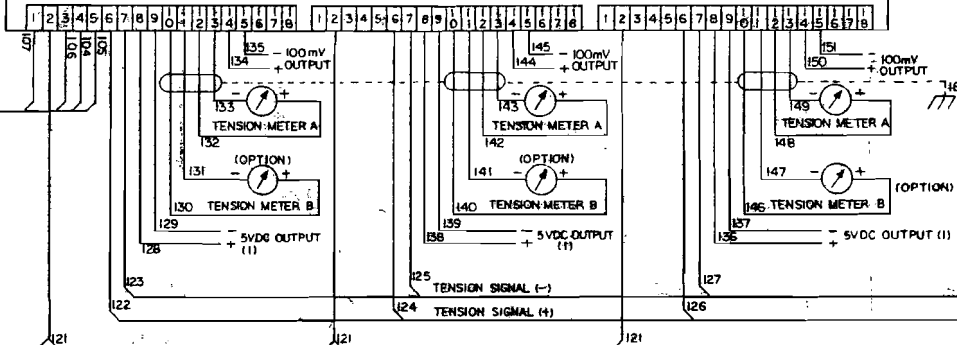
14 120

T1 TENSION AMPLIFIER BOARD  
REF: E658B

AMPLIFIER 1

AMPLIFIER 2

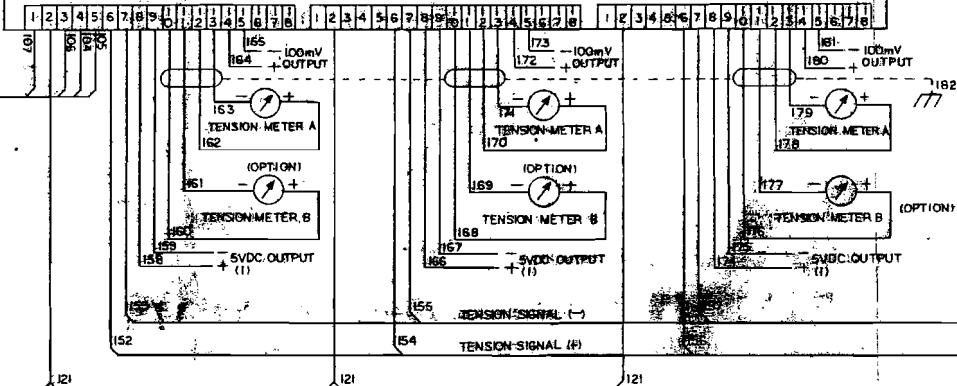
AMPLIFIER 3

T1 TENSION AMPLIFIER BOARD  
REF: E658B

AMPLIFIER 4

AMPLIFIER 5

AMPLIFIER 6



TRANSDUCER SET 1

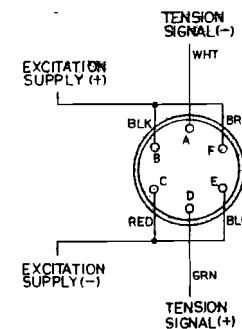
TRANSDUCER SET 2

TRANSDUCER SET 3

TRANSDUCER SET 4

TRANSDUCER SET 5

TRANSDUCER SET 6



TR/NW TRANSDUCER CONNECTIONS

NOTES:

- (1) 5VDC OUTPUT: NOMINAL, PROPORTIONAL TO TENSION, NOT ADJUSTABLE.
- (2) OPTIONAL DIGITAL METERS ARE CONNECTED TO TB14(+) AND TB15(-) ON THE AMPLIFIER BOARDS. THE VALUE OF THE RESISTORS IN THE 100mV OUTPUT CIRCUIT MAY CHANGE TO ACCOMMODATE VARIOUS METER SCALES.

