

*Dynaweb, Inc.*

**SP100A**

**Ultrasonic Tension Controller**

**Instruction Manual**

*Dynaweb SP-100A*

Installation:

A) Control:

The control should be mounted in an area convenient to the machine operator. The mounting position is not critical, but the control should not be near sources of high temperature or extreme vibration. The ultrasonic sensor and servo leads may be run in the same conduit, but the 115VAC supply leads should be run separately to avoid electrical noise pick-up in the control.

B) Ultrasonic Sensor:

Mount the ultrasonic sensor in a position that is clear of the largest roll and no more than 39" from the surface of the core. The sensor must be aimed directly at the center of the core. Avoid placing it in a position which would allow other parts of the machine or personnel to come between the sensor and the target roll. The mount should be rigid enough to prevent excessive vibration of the sensor.

The self-contained, ultrasonic analog output sensor provides an analog output signal that is inversely proportional to the object position relative to the analog span limits. The analog output is at 10volts when an object is at or farther than the far analog span limit. The analog output is at 0 volts when an object is at or closer that the near analog span limit. Objects as small as 10 mm (3/8 inch), transparent, opaque, plastic, glass, metal, liquid or solid can be detected within the sensing range. A multicolor LED indicates the zone of the object and a red LED indicated the magnitude of the 0 to 10 volt analog output.

### C) Servo Assembly:

The mounting position is not critical, however, it is recommended that the assembly be mounted vertically with the control cable and connector on top. The air supply line between the servo and brake are not critical since this is a dead ended application. However, the lines should be free of leaks and restriction. Note that the servo valve consists of two parts. The first stage is the cylindrically shaped valve to which the cable connects. The second stage is the booster regulator that is connected to the first stage with a short pipe nipple. Both stages must be supplied with air.

#### START-UP, POWER OFF:

- 1) Turn on the supply air to the servo. Lower pressures may be used depending on the brake design. The ideal input pressure is 100 PSI. The servo may be operated down to 80 PSI or lower however, linearity will be affected.

#### START-UP, POWER ON:

- 1) Turn the power ON. **BE CAREFUL!** There are 110 volts present on the board.

#### ULTRASONIC TRANSDUCER:

- 1) Install full roll. Point the transducer at the core. Using a voltmeter, connect the common lead to terminal #11 (common) on the board. Connect the DC volts lead to terminal #7 on the board. The voltage should be approximately +/- 0.0 volts with a full roll. Depress the SETUP pushbutton (the multicolor LED rapidly flashes amber to indicate the pushbutton is pressed) until the multicolor LED flashes green (about 3 seconds), release the SETUP pushbutton. Press the SETUP pushbutton once. Upon release of the SETUP pushbutton, the multicolor LED flashes amber indicating the first limit is set and the sensor is waiting for the second limit.
- 2) Replace the full roll with an empty core. Press the SETUP button once more. Upon release of the SETUP button, the multicolor LED turns to green indicating that the second limit has been found. If the LED stays amber, either the distance to the core surface is more than 39", or the sensor is not aligned correctly. Small aiming adjustments should produce the steady green LED signal. The second limit is now set. At this time, the voltmeter should read 10 VDC.

## CIRCUIT BOARD:

- 1) The voltage at TP1 must be calculated since it is a function of roll diameter change:

$$TP1 = 10 \left( 1 - \frac{\text{Core O.D.}}{\text{Full Roll O.D.}} \right)$$

- 2) The voltage with core installed, measure the voltage at test point (TP1). Adjust until the meter reads the voltage calculated about. The LED (D4) is not used in this application.

This completes the adjustments. Disconnect the meter and close the enclosure door.

## TEST:

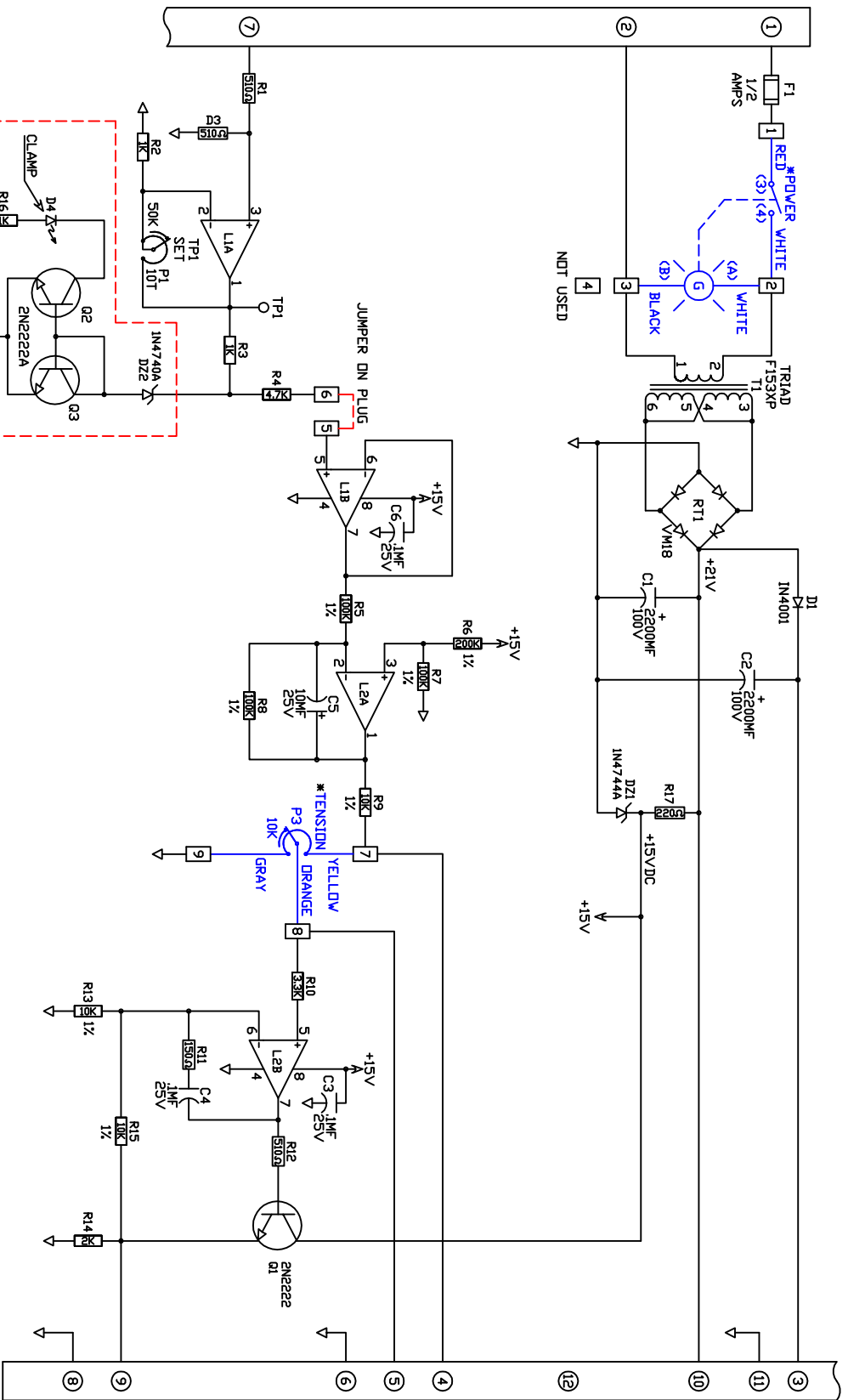
With a full roll of material in position on the unwind, manually adjust the tension pot clockwise to obtain air pressure to the brake. Note that the brake pressure will increase linearly as the pot is turned. With 100 PSI system pressure, the brake pressure should be zero when the pot is at zero and 50 PSI when the pot is at 50% and 70 PSI when the pot is at 70% and up to about 100 PSI at 100% if everything is calibrated properly.

If only 80 PSI system pressure is available, the brake pressure will follow the pot as before. However, above 80% on the pot, the system will saturate and brake pressure will not increase further. For this reason 100 PSI system pressure is recommended.

## TROUBLESHOOTING:

### **No air pressure to the brake:**

- Check 115 VAC at terminals #1 and #2
- Check the fuse
- Check all connections
- Measure 18 VDC (unregulated) between terminals #10 (positive) and #11 (common)
- Check air pressure to servo
- Measure 18 VDC (unregulated) between terminals #3 (positive) and #11 (common)



This option no longer used. Do not mount parts on board.

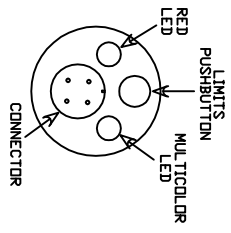
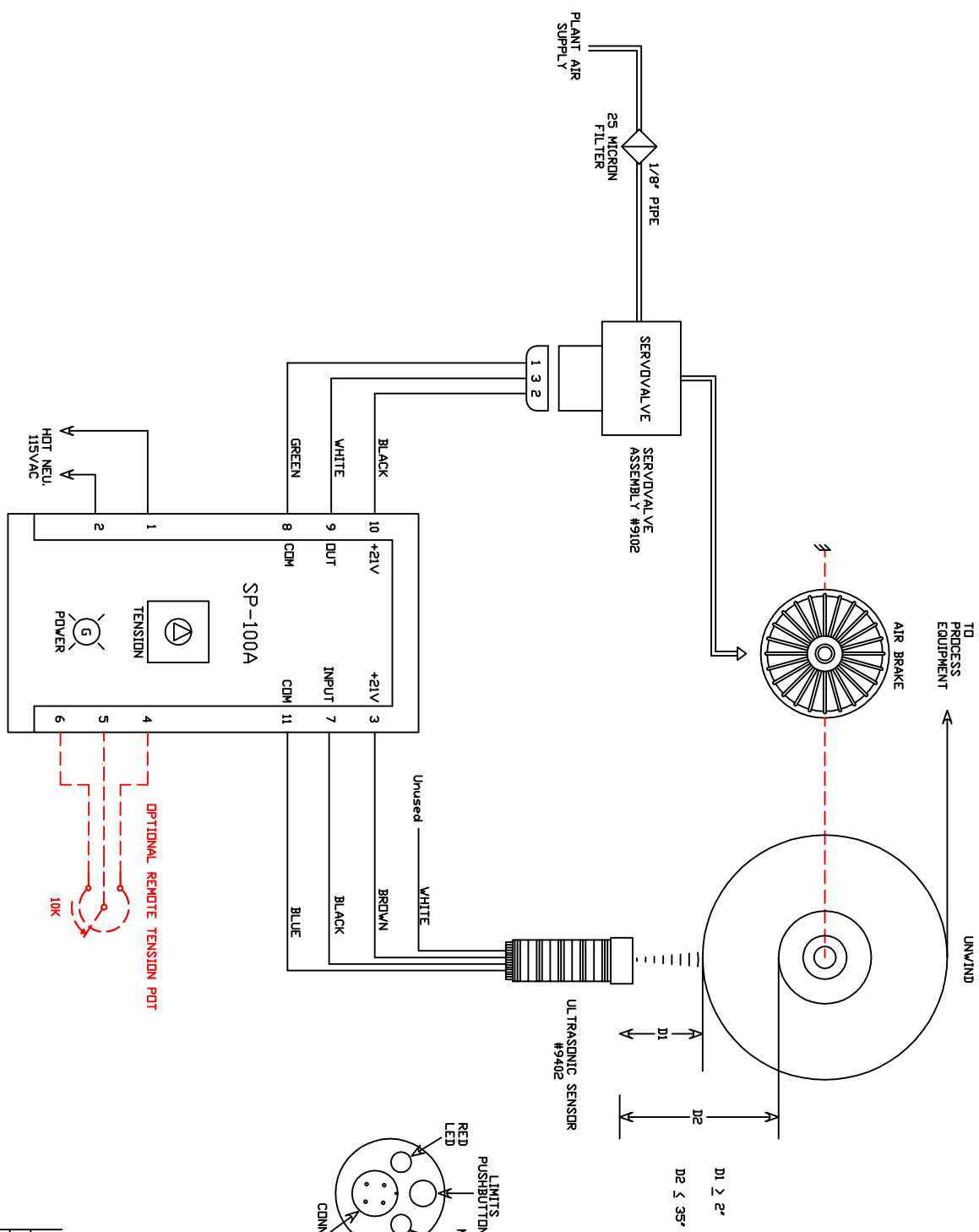
NOTES: 1) L1 AND L2 ARE LM358AN  
 2) ALL RESISTORS ARE 1/4 WATT  
 3) D5 IS HP# 5082-4657  
 4) \* LOCATED ON DOOR  
 5) □ TB-2 PANDUIT CONNECTOR  
 6) NDV USING HYDIE PARK SENSOR  
 4.7"-39" #SM956A-1000000  
 4.7"-79" #SM956A-4000000  
 7) SAME BOARD USED FOR LR&STANDARD

REV.	DATE	DESCRIPTION
A	8/27/09	ADDED NOTE REMOVE CLAMP CIRCUIT.

**dynamac**

LIVERMORE, CA

SCALE	NONE	CUSTOMER	
DATE	9/20/00	APPROVED BY	LIV
SUBJECT	SP100-A ULTRASONIC TENSION	SHEET	OF 1
PROJECT	SP100A-BRD	DRAWING NUMBER	SP100A-BRD



REV.	DATE	DESCRIPTION

<b>dynamed</b>		LIVERMORE, CA	
SCALE	NONE	CUSTOMER	
DATE	9/20/00	DRAWN BY	DF
SUBJECT	ULTRASONIC OPEN LOOP TENSION CONTROL	APPROVED BY	JD
		SHEET	OF
PROJECT	SP100A HOOK UP DIAGRAM Standard Unit	DRAWING NUMBER	SP100A-HU