1.0   SCOPE

1.1   Instructions for calibrating the conveyor belt on a TP Solar (TPS) infrared furnace.

2.0   TOOLS REQUIRED

2.1   Tape Measure

2.2   Stop Watch

2.3   Small Object to ride on belt

3.0   PROCEDURE

3.1   The belt speed is calibrated by first placing the furnace in the calibrate mode and after measuring the amount of time it takes for an object to travel from the entrance of the furnace to the exit, the speed is calculated and entered on the calibration screen.

$$\textbf{Belt speed = distance / time}$$

$$s = d / t$$

4.0   DISTANCE MEASUREMENT

4.1   Note the belt speed units on the process screen (in/min, cm/min or mm/min). Measure the distance from the face of the inlet to the outlet of the furnace in the distance units shown on the process screen for belt speed (inches or centimeters).
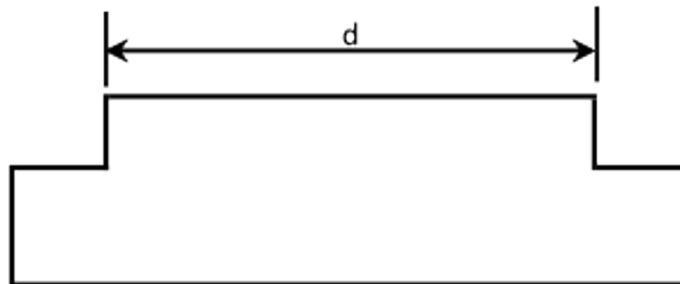
$$\textbf{Example: distance s = 315 ¼ inches}$$

$$s = 315.25 \textbf{ inches}$$

5.0   FURNACE CALIBRATION SCREEN

5.1   Start furnace normally.

5.2   In the furnace software, start belt and go to Service screen:

1.   To access the Calibration screens, click on **Service** button in the menu bar   **Service**

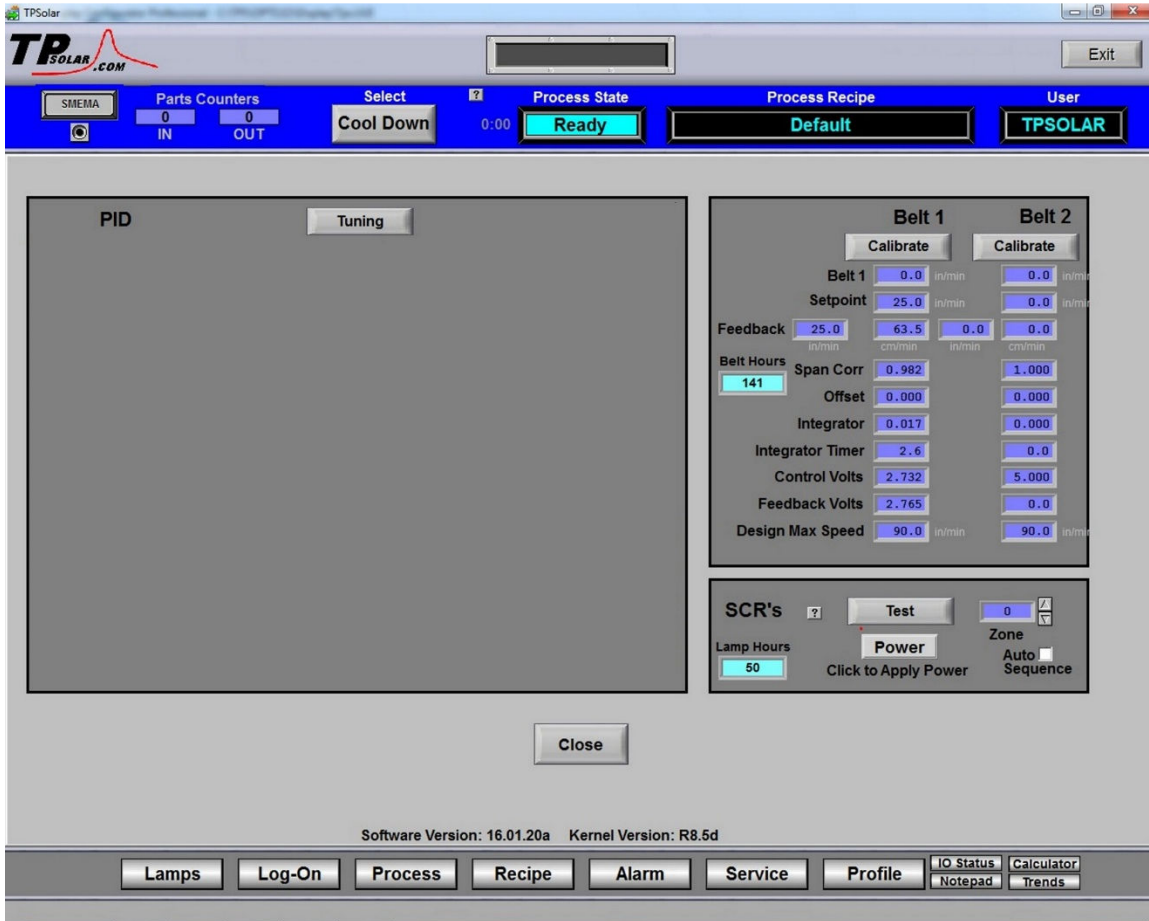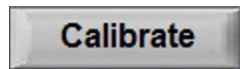2. The following screen will appear.

Figure 5.2.1 Service Screen

6.0   PROCEDURE

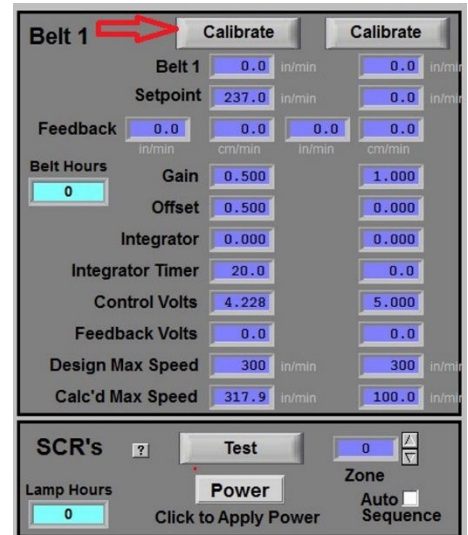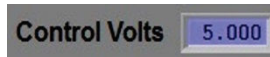6.1   In the **Belt Calibration** window, click on the

Belt 1 **Calibrate** button:

Color will change to green and show test:

Control voltage will show **5.000 volts**

6.2 **Manually measure belt speed**.

    6.2.1 Place an object on the belt at the entrance of the furnace.

    6.2.2 As the trailing edge of the object passes into the furnace start the stop watch timer.

    6.2.3 As the object exits the furnace, stop the timer as the object trailing edge passes from the furnace.

    6.2.4 Convert the time from minutes and seconds to minutes as in the following example:
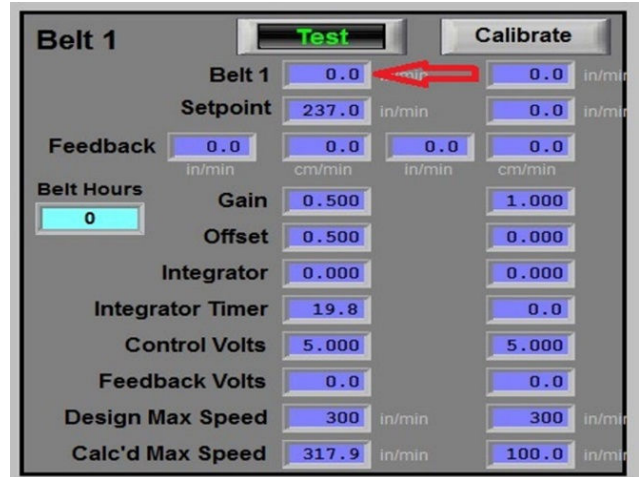
$$t = 15 \text{ minutes } 24 \text{ seconds} = 15 + 24/60 \text{ minutes} = 15.40 \text{ minutes}$$

    6.2.5 Divide the distance travelled in primary units of the furnace (inches or centimeters) by the time to determine the speed.

$$\textbf{Example: } s = d / t$$

$$s = 315.25 \text{ in} / 15.4 \text{ min} = 20.4708 \text{ in/min}$$

6.3 Click on Belt 1 field and enter the newly calculated speed in the Belt 1 field.

Computer will adjust parameters and then switch TEST button back to CALIBRATE, belt speed will resume at setpoint and control volts will show values.

6.4 Belt speed calibration is complete.

7.0 BELT SPEED CALIBRATION

Distance, inches (or cm), decimal	d	
Time, min-sec	t	
Time, minutes, decimal	t	
Speed, inches (or cm) per minute	s=d/t	