DOVER FLEXO ELECTRONICS, INC.
ISO 9001 CERTIFIED

OPERATING INSTRUCTIONS

Digital Tension Controller

STEADYWEB™5

DOC 801-2396

5 YEAR WARRANTY

DOVER FLEXO ELECTRONICS, INC.

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READ THIS!

*** SAFETY INFORMATION ***

Please read this manual prior to installing and operating the controller. Take care to follow local codes and only allow properly trained individuals to operate or service the equipment. Failure to follow the manual's instructions and practice safe working habits could result in property damage, personal injury and/or death.

⚠ WARNING:

Before servicing the SteadyWeb 5, power should be removed from the device. Failure to do so could result in property damage, personal injury and/or death.

⚠ CAUTION:

The SteadyWeb 5 contains circuit boards with static sensitive devices. When working directly with these circuit boards, users should always practice proper grounding techniques, including the use of ground straps.

STEADYWEB™ 5 ORDER CODE

Your unit's order code description matches the labeled digits with your choices.

Example: SW5P-U-E-AC-100-RTA,TLS,

SW5X - X - X - X - XX - OPTIONS (Separated by commas)

OUTPUT	ZONE	PACKAGING	POWER	METER SCALE	OPTIONS
P = Pneumatic V = Electric D = Drive	U = Unwind R = Rewind I = Intermediate	E = Enclosure O = Open (Panel mount)	24 = 24 Vdc AC = 100-240 Vac	1 = 0-1 3 = 0-3 5 = 0-5 7 = 0-7 10 = 0-10 15 = 0-15 20 = 0-20 25 = 0-25 35 = 0-35 50 = 0-50 75 = 0-75 100 = 0-100 125 = 0-125 150 = 0-150 200 = 0-200 250 = 0-250 300 = 0-300 400 = 0-400 500 = 0-500 750 = 0-750 1000 = 0-1000 1250 = 0-1250 1500 = 0-1500 2000 = 0-2000 2500 = 0-2500 3000 = 0-3000 4000 = 0-4000 5000 = 0-5000	230 = 230 Volt Power Input **(1,6)** 24 = 24 Vdc Output **(1,6)** 420 = 4-20mA Output 45 = 45 Vdc Output **(1)** B10 = Bipolar 10V Output DA = Diameter Alarm DB9 = Serial Data Connector **(2)** MPF = Metric Pneumatic Fittings **(3)** NET = Ethernet option Card **(4)** RO = Reverse Output RS23 = RS232 Interface **(4)** RS48 = RS485 Interface **(4)** RTA = Remote Tension Amplifier SFD = Speed Follow by DC Tach SFP = Speed Follow by Pulse Tach TLS = Tension Limit Switch **(5)** TOR = Tension On Relay **(5)** TTD = Taper Tension by DC Tachs TTF = Taper Tension by Diameter Follower TTDP = Taper Tension by DC/Pulse Tachs TTP = Taper Tension by Pulse Tachs Z = Special (SPR)

Notes: **1.** V version only. 230 refers to power input of V module. 24 and 45 refer to output voltage. **2.** Used only for RS23 and RS48 options when having the enclosure configuration. **3.** P version only. **4.** Select only ONE of NET, RS23, or RS48 options. **5.** Select only ONE of TOR or TLS options. **6.** 230 Vac input not compatible with 24 Vdc output.

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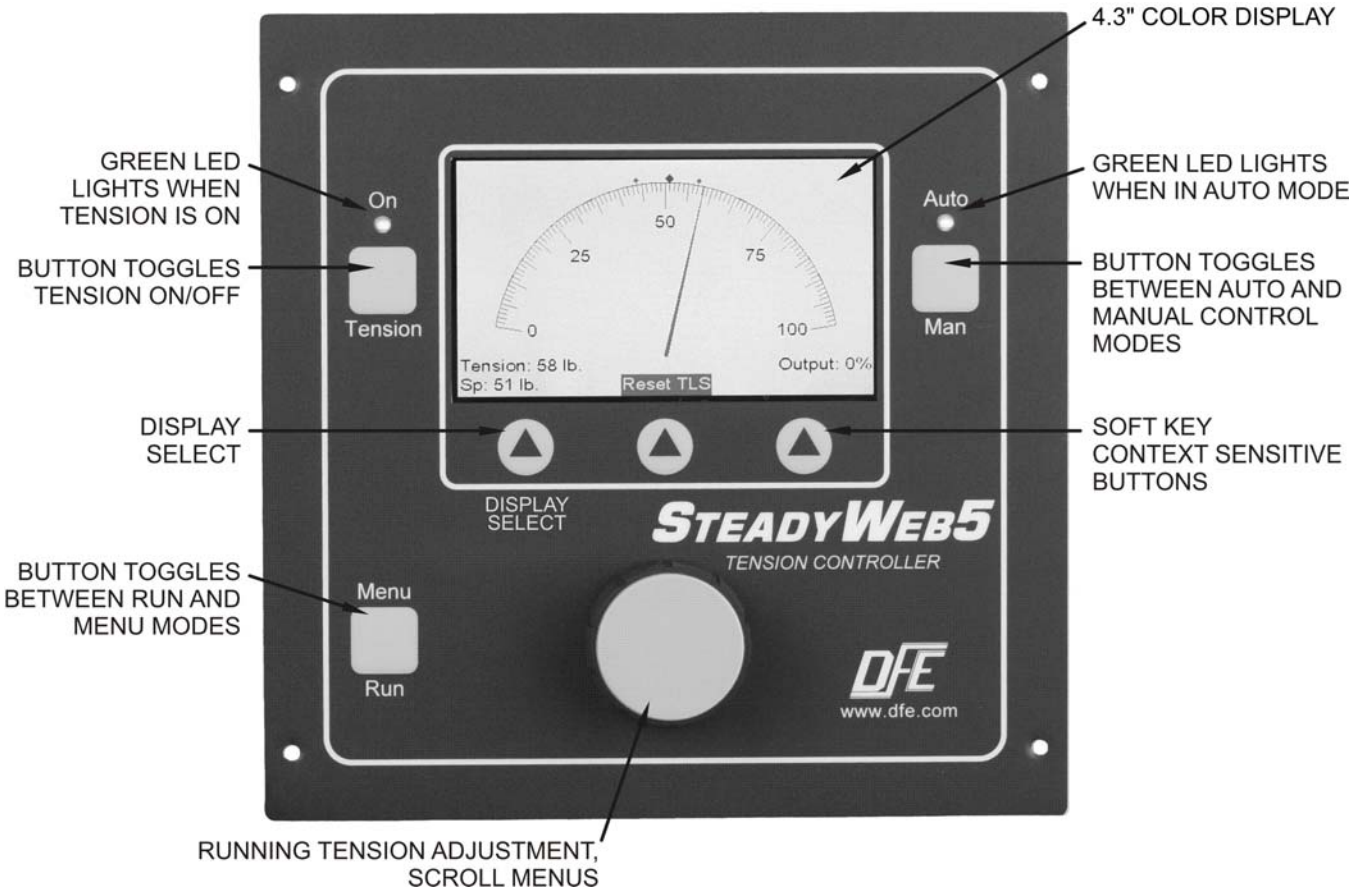

***Figure 1* – STEADYWEB™5 USER INTERFACE**

1.1 MAIN INTERFACE DESCRIPTION

The SteadyWeb™5 interface consists of a high contrast color LCD (Liquid Crystal Display), multipurpose spinning knob and a mix of "Hard" (dedicated function) and "Soft" (context sensitive) push buttons. The multipurpose knob features a limitless rotation in either direction and its function is context sensitive, based on the current display. In general, the multipurpose knob is used to adjust the setpoint in in the "Run" mode display and to navigate the menu system and adjust controller settings in the "Menu" mode display. For many operations, the knob is speed sensitive, meaning turning the knob faster will cause greater, more coarse adjustments while turning the knob slower will cause smaller, more precise adjustments. The multipurpose knob drives a metal shafted optical encoder designed for long life.

The three Soft Keys underneath the display also have context sensitive functionality based on the current display, and in some situations have no function. In Run mode, the left softkey will cycle through the three run mode displays. See Section 1.3 for details on these displays. In the Menu mode displays, the function of a soft key will be displayed above the key within the Soft Key Function bar. Three dedicated functionality Hard keys perform a consistent operation regardless of display mode. The "Tension" key, to the left of the LCD, toggles the Tension On/Off state. When Tension is On, a green LED (Light Emitting Diode) above the key turns on. The "Auto/Manual" key, to the right of the LCD, toggles the Auto/Manual state of the controller. When the controller is in Auto mode, a green LED above the key turns on. The "Menu/Run" key, located in the lower left corner of the interface panel, toggles the state of the display between Menu and Run mode. More detail is given about these two display modes in the following sections.

1.2 DISPLAY MODES DESCRIPTIONS

The display has two modes of operation, **Run** mode and **Menu** mode. The current mode can be changed by pressing the **Menu / Run** key on the bottom left corner of the front panel. This key toggles between the two modes and can be pressed at any time other than when E-STOP (Emergency Stop) is activated, in which case an E-STOP warning screen overrides the current display mode.

1.3 RUN MODE DISPLAY

The **Run** mode display is used to display real time tension and related process information. This will be the active display the majority of time the controller is in use. The Run mode display is configurable, and the default Run mode view can be set to one of three display options with the **Display Mode** setting, located in the *Operator Menu > Display Configuration* menu. The available Display Mode views are **Bar Graph**, **Analog Meter**, and **Line Graph**. The three display options allow for alternate methods of displaying process information, and the best display for a given situation is subjective to the end user. The Run mode display view can also be toggled at any time from within the Run mode display by pressing the left most soft key (Display Select). Pressing this button will cycle the Run mode view from Bar Graph to Analog Meter, from Analog Meter to Line Graph, and from Line Graph back to Bar Graph. These three views are described in more detail below.

When in the Run mode display, the multipurpose knob takes on **Auto Setpoint** or **Manual Output** adjust functionality (depending upon whether the controller is in **Auto** or **Manual** mode). Turning the knob clockwise in Manual mode with Tension On will increase the output 1% per detent (or click) of the knob until Maximum Output is reached. Turning the knob counterclockwise will decrease the output 1% per detent until Minimum Output is reached. Likewise, turning the knob clockwise in Automatic mode will increase the Setpoint by 1% of the Full Range and turning the knob counterclockwise will decrease the Setpoint by 1% of the Full Range. Adjusting the Setpoints with greater than 1% resolution is achieved through the menu system with the **Manual Setpoint** and **Auto Setpoint** settings, located in the *Operator Menu*.

1. Bar Graph View

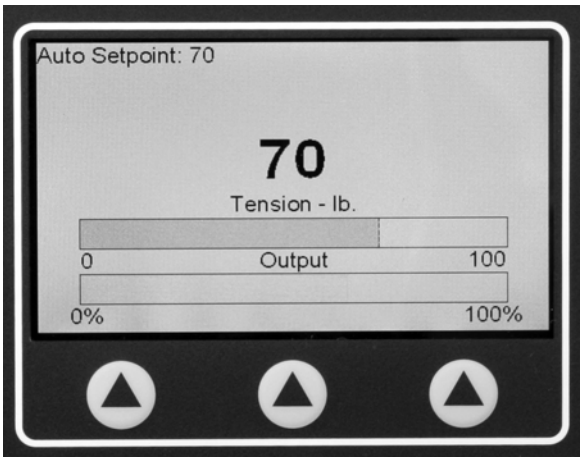

***Figure 2* – DEFAULT BAR GRAPH DISPLAY**

The **Bar Graph** display (**Figure 2**) is the default **Display Mode** view. It displays the current tension reading in large, easily viewable text in the center of the display. Below the tension readout are two bar graphs, one displaying the current tension and a second displaying the current output percentage.

Additional process information, such as line speed and roll diameter, can also be displayed as selected by the **Line Speed Display** and **Diameter Display** settings located in the *Operator Menu > Display Configuration* menu. These settings allow an **On/Off/Auto** selection for the Line Speed and Diameter options. When **Auto** is selected, the controller displays the selected variables based on the context of the controller settings (e.g. if **Taper** is activated, roll diameter information will be displayed). When active, diameter information is displayed in text form and as a circular graph on the right side of the display (**Figure 3**). When active, line speed is displayed in text form in the upper right

1.3 RUN MODE DISPLAY *continued...*

hand corner of the display and in a split bar graph with the Output. This is beneficial in Line Speed Follow modes of control, where the output is trimmed to the Line speed signal. The setpoint is displayed in the upper left hand corner of the screen and also as a dotted line in the tension bar graph. This dotted line represents the *dynamic* setpoint while the text in the upper left hand corner represents the *programmed* setpoint. The dynamic setpoint may change based on the mode of control and the current process settings. If **Taper** is activated, for example, the dynamic setpoint will decrease as the roll diameter increases in accordance with the programmed **Taper** settings. When the TLS (Tension Limit Switch) High or Low feature is activated, a solid half line appears on the tension bar graph representing each setting. A vertical line that starts from the bottom of the bar graph and travels to the center of the bar graph is positioned at the **TLS Low** set point value (if set) and a vertical line that starts from the top of the bar graph and travels to the center of the bar graph is positioned at the **TLS High** set point value (if set) as can be seen in the rightmost screen shot in **Figure 3**.

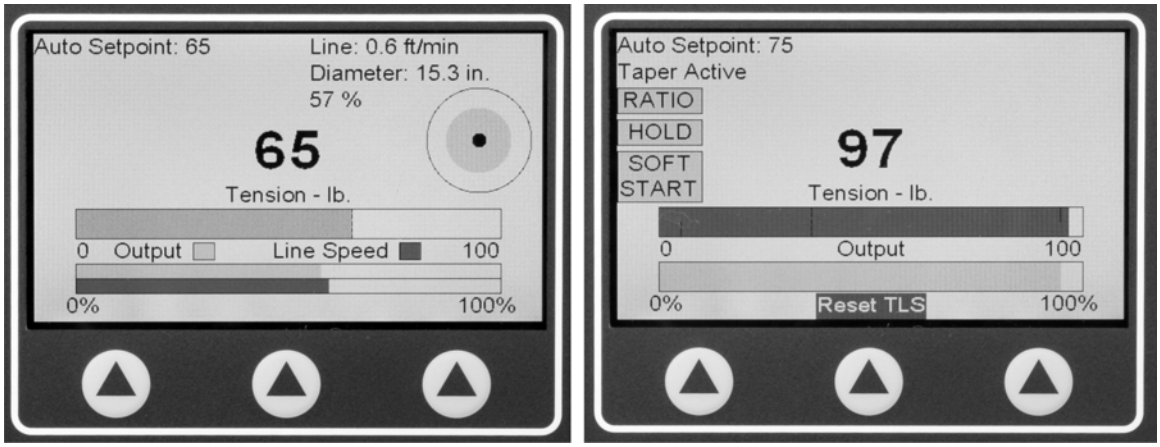

***Figure 3* – BAR GRAPH SCREENS SHOWING PROCESS INFORMATION**

Dynamic messages are displayed on the screen based upon the context of the current process parameters. If **Taper** is active, "Taper Active" is printed below the Setpoint. Status messages for the **Ratio**, **Sample and Hold**, and **Soft Start** states are displayed on the left side of the display, enclosed in clearly visible yellow boxes, when any or all are active. During a TLS (Tension Limit Switch) event, the tension bar graph turns red, and a **Reset TLS** alarm, with flashing text, is displayed over the center soft key. When the TLS alarm is set to **Latched** mode, the TLS alarm will remain active even after tension has returned to a normal range. The operator must press the center soft key to clear the alarm (see Section 2.6, Resetting TLS Alarms, for more detail).

2. Analog Meter View

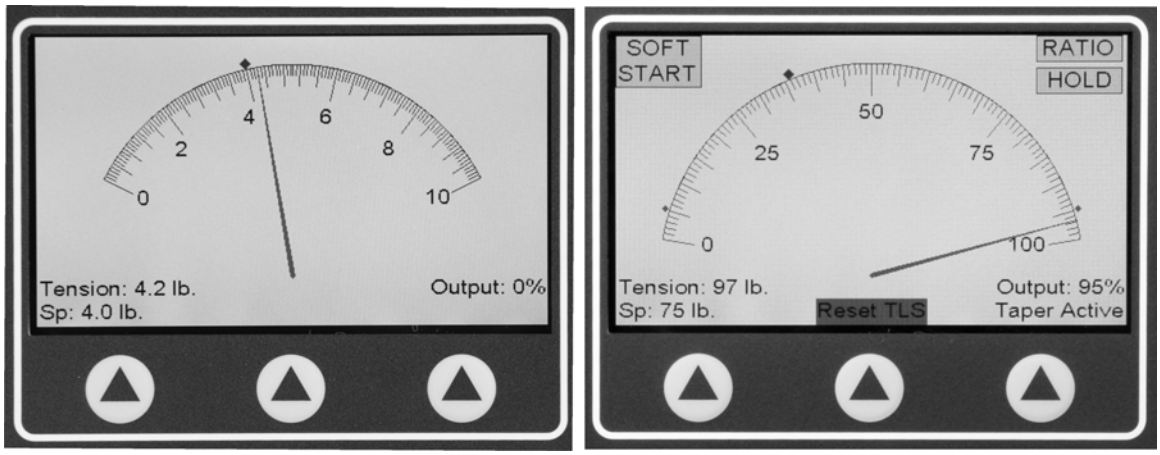

***Figure 4* – ANALOG METER DISPLAYS**

1.3 RUN MODE DISPLAY *continued...*

The **Analog Meter** display (**Figure 4**) is an alternate Run mode display option that presents tension information in the form of a traditional analog meter. The tension is displayed in a large analog meter in the center of the display, with the meter scale based on the full range tension value. The tension and setpoint are displayed in text form in the lower left corner of the display, and the output percentage is displayed in the lower right corner. The setpoint is also displayed as a green diamond around the periphery of the analog meter scale at the setpoint. This green diamond represents the *dynamic* setpoint while the text in the lower left corner represents the *programmed* setpoint. The dynamic setpoint may change based on the mode of control and the current process settings.

If **Taper** is activated, for example, the dynamic setpoint will decrease as the roll diameter increases in accordance with the programmed **Taper** settings.

Unlike in the **Bar Graph** display, Line speed and Diameter information are not displayed in the Analog Meter display, regardless of the **Line Speed Display** or **Diameter Display** settings. When the TLS (Tension Limit Switch) High or Low settings are activated, small red diamonds appear around the periphery of the analog meter scale at the trip setpoints (**Figure 4**).

Dynamic messages are displayed on the screen based upon the context of the current process parameters. If **Taper** is active, "Taper Active" is displayed below the Output. Status messages for the **Ratio**, **Sample and Hold**, and **Soft Start** states are displayed on either side of the analog meter, enclosed in clearly visible yellow boxes, when any or all are active. During a TLS event, a **Reset TLS** alarm, with flashing text, is displayed over the center soft key. When the TLS alarm is set to **Latched** mode, the TLS alarm will remain active even after tension has returned to a normal range. The operator must press the center soft key to clear the alarm (see Section 2.6, Resetting TLS Alarms, for more detail).

3. Line Graph View

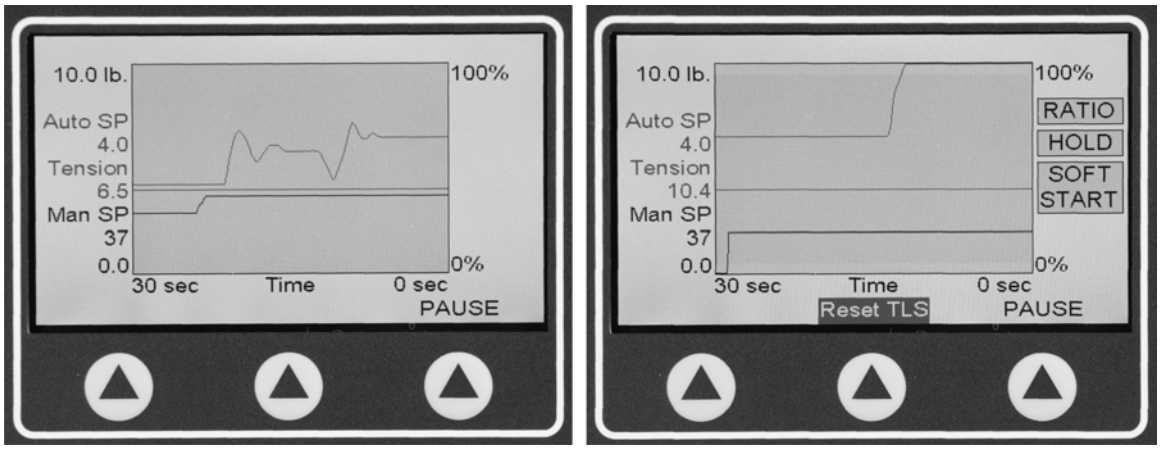

***Figure 5* – LINE GRAPH DISPLAYS**

The **Line Graph** display (**Figure 5**) is an alternate display option that presents information in the form of a real time line graph. The Setpoint, Output and measured Tension are graphed in different colors to allow visual distinction between the various signals. The signals move across the screen from right to left. The length of time required for a signal to travel completely across the graph window, and thus the speed the signals move across the screen, is determined by the **Line Graph Update Time** setting, located in the *Operator Menu* > *Display Configuration* menu. The available selections are 30 seconds, 60 seconds, 2 minutes, 5 minutes, 10 minutes or 30 minutes. Longer time settings allow for viewing a greater sample of data but with a loss of resolution. The Setpoint and Tension lines are referenced to the left axis, which is in units of tension. The output is referenced to the right axis, which represents the percent of full output. In addition to the line graph information, real time Setpoint, Tension and Output values are displayed in text form towards the left of the line graph window. The graphed setpoint line represents the *dynamic* setpoint while the text to the left of the graph represents the *programmed* setpoint. The dynamic setpoint may change based on the mode of

1.3 RUN MODE DISPLAY *continued...*

control and the current process settings. If **Taper** is activated, for example, the dynamic setpoint will decrease as the roll diameter increases in accordance with the programmed **Taper** settings.

Unlike the **Bar Graph** display mode, Line speed and Diameter information are not displayed in the Line Graph display, regardless of the **Line Speed Display** or **Diameter Display** settings. When the TLS (Tension Limit Switch) High or Low settings are activated, the TLS regions are shaded yellow on the graph background.

Dynamic messages are displayed on the screen based upon the context of the current process parameters. If **Taper** is active, "Taper Active" is displayed above the line graph window. Status messages for the **Ratio**, **Sample and Hold**, and **Soft Start** states are displayed to the right of the line graph window, enclosed in clearly visible yellow boxes, when any or all are active. During a TLS event, a **Reset TLS** alarm, with flashing text, is displayed over the center soft key. When the TLS alarm is set to **Latched** mode, the TLS alarm will remain active even after tension has returned to a normal range. The operator must press the center soft key to clear the alarm (see Section 2.6, Resetting TLS Alarms, for more detail).

The Line Graph display can be paused at any time by pressing the right most soft key "PAUSE" and can then be resumed by once again pressing the right most soft key "RESUME".

This Line Graph display is also used in the **PID Tune View** displays, which allow for real time P, I, and D adjustments while viewing the Line Graph display (see Section 1.5, PID Tune View, for more information).

1.4 MENU MODE DISPLAY

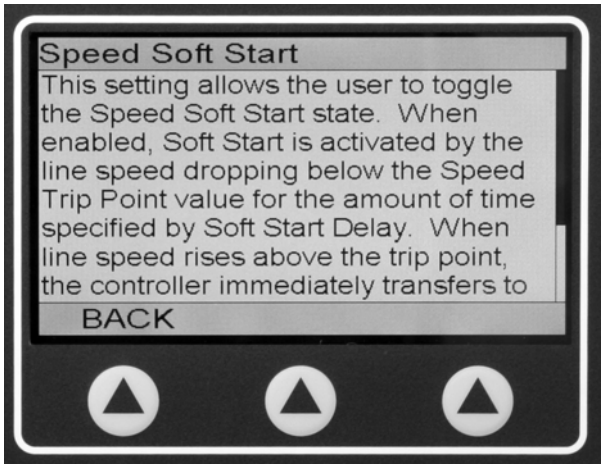

***Figure 6* – MENU MODE DISPLAY**

The **Menu** mode display is used to access and adjust the controller's settings, perform calibration and save or load Setups.

The menu system is presented as scrollable lists that the operator navigates using the three soft keys along with the multipurpose spinning knob. The soft keys' functionality varies based on the context of the current display. At all times, the function of each soft key is printed on the display immediately above the key in the Soft Key Function bar (**Figure 6, Menu Mode Display**). In some situations, certain soft keys will have no functionality and the area above them will be blank. The multipurpose knob is used to navigate through the menu hierarchy and to adjust setting values. While in Menu mode, the current menu selection is highlighted dark blue. Turning the knob clockwise moves the selection bar down and turning it counterclockwise moves it up. For menu displays that contain lists longer than physically viewable in the display, a scroll bar on the right hand side of the display shows the current position in the vertical list of menu items.

1.4 MENU MODE DISPLAY *continued...*

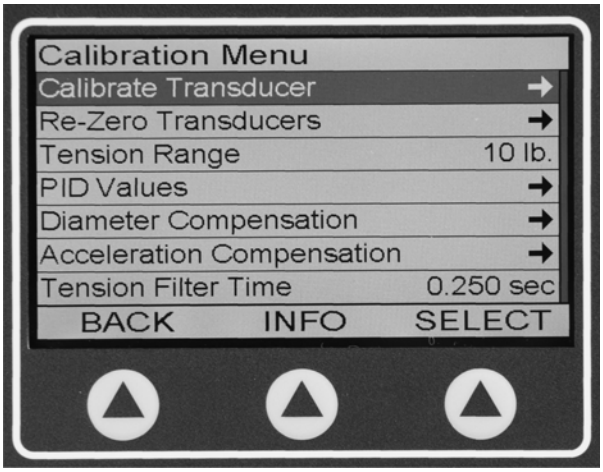

***Figure 7* – EXAMPLE of INFORMATION PAGE**

Within the menu navigation display, the three soft keys take on the function of **Back**, **Information**, and **Select**. Pressing the BACK, or left most soft key, causes the menu display to return to the previous menu or screen. Pressing the INFO, or center soft key, presents a scrollable information page about the currently highlighted menu item (**Figure 7, Example Info Page**). This allows for what is effectively an on-screen manual. Detailed information for each menu, setting and function is provided. Pressing the SELECT, or right most soft key, selects the currently highlighted menu item. This will either lead to a sub-menu, a setting adjust screen or a function screen. Sub-menu and function items are indicated by a right pointing arrow and settings typically display their currently saved value towards the right side of the menu display. While in the menu system, the current menu location is printed on the top of the display in the Menu Title Bar.

After selecting a setting through the menu system. The display will enter a Setting Adjust screen. These screens vary based on the selected setting, but all serve the same general purpose; to allow the user to adjust a given controller setting.

Each Setting Adjust screen contains a Setting Title Bar that contains the name of the setting and a Soft Key Function bar displaying the function (if any) for each of the soft keys (**Figure 8, Soft Start Output Level Adjust Display**). Most Setting Adjust screens also contain the currently saved setting value, as well as the range of possible values for the particular setting.

The soft keys and the multipurpose knob are used to adjust and save setting values. At any time, a Setting Adjust screen may be exited by hitting the BACK, left most soft key. The adjustment of the various settings is relatively straight forward due to the descriptive and intuitive nature of each of the Setting Adjust screens. **Figure 8, Soft Start Output Level Adjust Display** and **Figure 9, Select Tension Zone Display** show some examples of Setting Adjust screens.

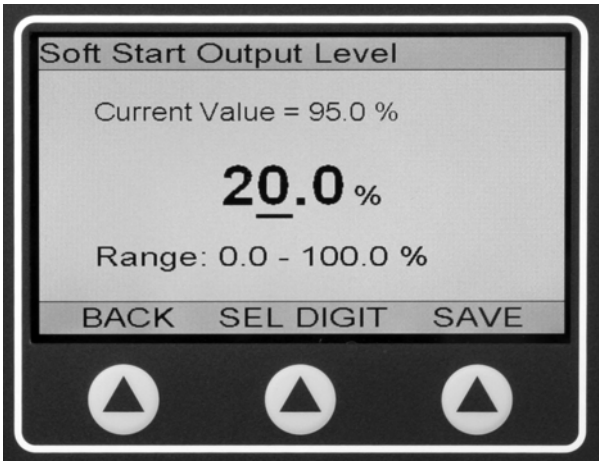

***Figure 8* – SOFT START OUTPUT LEVEL ADJUSTMENT DISPLAY**

1.4 MENU MODE DISPLAY *continued...*

The **Soft Start Output Level Adjust Display** (**Figure 8**), shows the currently saved value and the range of possible values. Turning the multipurpose knob allows adjustment of the new setting. Turning the knob clockwise increments the underscored digit and turning the knob counterclockwise decrements the underscored digit. The middle soft key, SEL DIGIT, selects the underscored digit position. The underscore moves left one digit every time the SEL DIGIT soft key is pressed, wrapping around to the least significant digit from the most significant digit. Using the SEL DIGIT soft key in combination with the multipurpose knob allows fast and accurate setting of a value. The multipurpose knob is also speed sensitive, meaning turning it faster will cause faster, more coarse adjustments and turning it slower will cause slower, more precise adjustments. Once the desired **Soft Start Output Level** is selected, the right most soft key, SAVE, is pressed to save the desired value to the controller's non-volatile memory. After pressing SAVE, a "Saving..." window will appear for approximately one second while the setting is stored.

The **Select Tension Zone Display** (**Figure 9**), demonstrates another example of a Setting screen. A graphic representation of a web processing line is presented with labeled tension zones underneath. The currently selected zone is shown in a darker text, and is outlined in a blue box. Turning the multipurpose knob clockwise will move the current zone selection to the right and turning it counterclockwise will move the current zone selection to the left. Alternatively, the center soft key, SELECT, cycles the currently selected zone to the right upon each press, wrapping around from Rewind to Unwind. Once the desired zone is selected, the right most soft key, SAVE, is pressed to save the desired zone to the controller's non-volatile memory. Other setting adjust screens are just as intuitive as those shown above. The Menu mode screens may be exited at any time by pressing the Menu / Run key.

***Figure 9* – SELECT TENSION ZONE DISPLAY**

1.5 PID TUNE VIEW

The **PID Tune View** screen (**Figure 10**) is a function screen that deserves special attention due to its usefulness and somewhat greater complexity than other function screens. The PID Tune View screen is based off of the **Line Graph Display**, described in Section 1.3, **Run Mode Display**. The display allows viewing the real time Tension, Setpoint and Output in line graph form. The PID Tune View screen adds the capability of real time Proportional, Integral and Derivative tuning adjustments. It can be accessed from the *Calibration Menu > PID Values* menu for the standard (Core) PID values, or from the *Calibration Menu > Diameter Compensation* menu for the Full Roll PID values when using Diameter Compensation (see Section 6.5, Diameter Compensation, in the Technical Reference Manual).

1.5 PID TUNE VIEW *continued...*

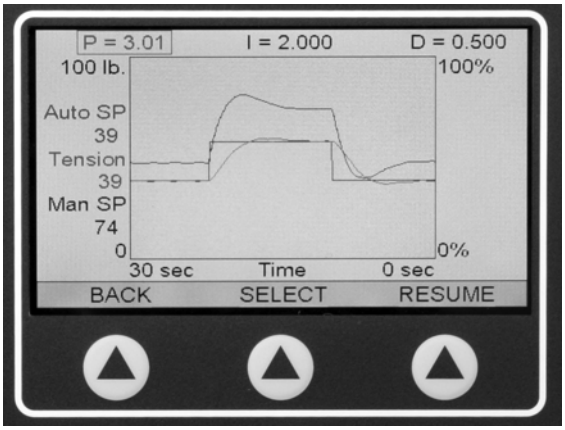

***Figure 10* – PID TUNE VIEW**

All adjustments are made with the multipurpose knob and center soft key (SELECT). Pressing the SELECT key cycles clockwise through the various adjustable parameters; the manual setpoint (Man SP), the Auto Setpoint (Auto SP), and the P, I and D terms. The currently selected parameter is highlighted within a blue rectangle. Turning the multipurpose knob clockwise will increase this value and turning it counterclockwise will decrease the value. The knob is speed sensitive, meaning turning it faster will cause faster, more coarse adjustments to the selected value and turning it slower will cause slower, more precise adjustments. All PID changes are automatically saved to the controller's non-volatile memory in the ACTIVE Setup. For a detailed description of the tuning parameters and tuning procedure, see Section 6, Tuning Adjustments, in the Technical Reference Manual.The PID Tune View screen, like the Line Graph Display, has the ability to pause the display. This can be accomplished by pressing the right most soft key (PAUSE / RESUME).

SECTION 2 OPERATING INSTRUCTIONS

2.1 BASIC OPERATION

When the controller has been properly set up and the control loop has been tuned, it should maintain constant tension while the machine is running and while speed, roll diameter, or other conditions change. However, during start up of a new roll you may want to change modes, setpoint or other settings. Usually, the only thing the operator will need to do is turn Tension On or Off, toggle between Auto and Manual modes, and change the Auto or Manual setpoint.

With tension Off, to turn Tension On and enable output, press the Tension On/Off key to the left of the LCD. The Tension On LED will turn on. With Tension On, the output will be enabled. If the controller is in Auto mode, the output will ramp up or down from 0 in order to bring tension up to the Auto Setpoint value. If the controller is in Manual mode, the output will simply go to the Manual Setpoint value. The Auto/Manual mode can be selected by pressing the Auto/Man key to the right of the LCD. When in Auto mode, the Auto LED will turn on.

While in Manual mode, the Manual setpoint (and thus the output) can be adjusted by turning the multipurpose knob while in the Run mode display. Turning the knob clockwise will increase the output and turning it counterclockwise will decrease the output. This mode has no PID or control function. Think of it as a 0-10V potentiometer feeding your drive, brake or clutch.

While in Auto mode, the Auto setpoint can be adjusted by turning the multipurpose knob. Turning the knob clockwise will increase the setpoint and turning it counterclockwise will decrease the setpoint.

2.2 DISPLAY ADJUSTMENTS

The Run mode display can be configured for the operator's preference. The three possible run mode display options are described in detail in Section 1.3, Run Mode Display. The desired mode, **Bar Graph**, **Analog Meter** or **Line Graph** can be set with the **Display Mode** setting, located in the *Operator Menu > Display Configuration* menu. This setting specifies the default Run mode display option, which is entered upon power up or after exiting the Menu mode display. The active display option can be changed at any time from within the Run mode display, however, by pressing the left most soft key (DISPLAY SELECT).

Two settings are available to adjust the tension display update, both located in the *Operator Menu > Display Configuration* menu. The **Tension Update Time** setting specifies the interval at which the display is updated with new numerical tension and process information. Longer update times may make the display more readable by preventing the digits from fluctuating quickly, with the drawback of delayed visual response to tension changes.

The **Display Tension Damping** setting, not to be confused with the **Tension Filter Time** setting located in the Calibration Menu, is used to filter the displayed tension value. This has a similar effect to the damping potentiometer for analog meter displays. Increasing the display filter time decreases visible tension fluctuations and makes the tension changes appear smoother. It is for visual purposes only, and has no effect on the control loop.

When using the **Bar Graph** display mode, real time Line speed and diameter information can optionally be displayed in addition to the tension and output information. Line speed and diameter display are configured with the **Line Speed Display** and **Diameter Display** settings, both located in the *Operator Menu > Display Configuration* menu. The default setting for each of these is **Auto**, where the control software will display the relevant information based upon the control mode. When the controller is configured for Line Speed Follow mode of control, for example, Line speed information will automatically be displayed. The settings can also optionally be manually set to On or Off, to force the display of the respective information On or Off.

When using the **Line Graph** display mode, the **Line Graph Update Time** setting allows for an operator adjustable time base. A longer time base allows more information to be shown while a shorter time base

2.2 DISPLAY ADJUSTMENTS *continued...*

provides greater resolution. This setting applies to both the Run mode Line Graph display and the PID Tune View displays.

The **Display Brightness** setting allows the LCD backlight brightness to be adjusted as a percentage from 10-100% to account for varied lighting conditions.

2.3 SAVING AND RECALLING SETUPS

Changes made to the controller's configuration are automatically saved in the controller's permanent memory so that if power is removed, the controller will be able to operate properly when it is powered up again. Setting changes are always saved into the controller's ACTIVE Setup.

The ACTIVE Setup can be saved into additional Setup slots in the controller's permanent memory. Up to 31 different Setups (in addition to the ACTIVE Setup) can be stored and later recalled. When recalling a Setup, it is written into the ACTIVE Setup. The important fact to remember about this is that if a saved Setup is recalled into ACTIVE, and then changes are made, those changes are only made to the ACTIVE Setup. The changes must be saved back to the original Setup if desired. This provides a double buffer to the saved Setups. Setups are saved, deleted or recalled through the *Operator Menu > Store / Delete Setup* and *Operator Menu > Recall Setup* menus. In order to keep track of the last Setup loaded into or saved from the ACTIVE Setup, an asterisk appears next to the most recently saved or recalled setup in both the *Store / Delete Setup* and *Recall Setup* menus.

1. Saving a Setup

To save a Setup, navigate to the *Operator Menu > Store / Delete Setup* menu. The *Store / Delete Setup* menu contains 32 “slots” (including the ACTIVE Setup slot – 1) to store Setups. Setups may be saved to any slot other than 1, which is reserved for the ACTIVE Setup.

Use the multipurpose knob to highlight the desired slot to save the Setup. If an empty slot is chosen, you will be asked to program a name for the new Setup. If an existing Setup is chosen, you will be asked to confirm saving into the existing Setup. In this case, the name cannot be changed. If you want to overwrite an existing Setup and change its name, you must first delete the existing Setup.

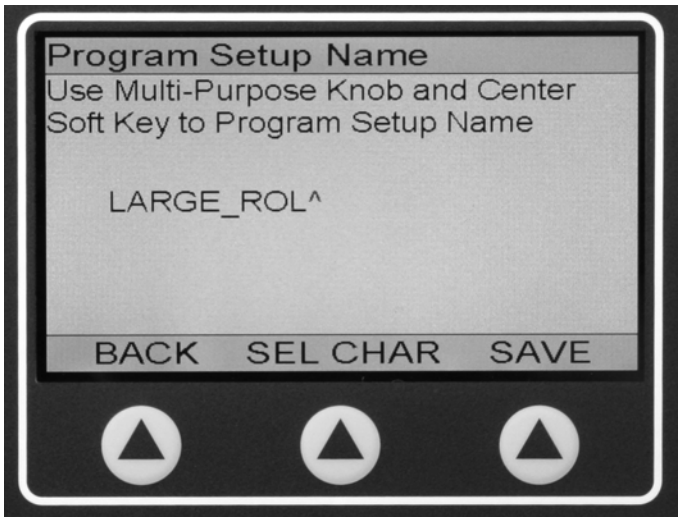

***Figure 11* – PROGRAM SETUP NAME**

After highlighting the desired slot, press the right most soft key (SAVE). For a new Setup, this will take you to the **Program Setup Name** screen (**Figure 11, Program Setup Name**) where you must enter the alphanumeric name of the Setup. Names can consist of numbers, capital letters and the underscore "_" symbol. The name is programmed using a combination of the multipurpose knob and the middle soft key (SEL CHAR). Turning the knob clockwise scrolls first through the digits 0 through 9 followed by the uppercase letters A through Z, looping back around to the digits, for the currently selected character. Pressing the middle soft key (SEL CHAR) moves the character selector over to the right, creating a new character at the end of the name, and looping back to the first character from

2.3 SAVING AND RECALLING SETUPS *continued...*

there. A new character, which has not yet been given a value, displays the the caret '^' symbol. The name can be up to 14 characters long. The currently selected character position is highlighted red. All other characters are black.

Once the name is programmed, pressing the right most soft key (SAVE) presents a verification screen asking you to confirm your desire to save. At any time, the left most soft key (BACK) may be pressed to exit the **Program Setup Name** screen without saving. Pressing the right most "soft" key (SAVE) saves the current ACTIVE setup to the desired slot with the programmed name. The last saved or recalled asterisk now appears to the right of your newly saved Setup.

2. Recalling a Setup

To recall a Setup, navigate to the *Operator Menu > Recall Setup* menu. The *Recall Setup* menu contains a list of the 32 Setup slots. Not all slots may have a saved setup, and empty slots will appear blank. Trying to recall an empty slot will cause a message to appear informing you it is not possible to recall a Setup that has not been saved. It is also not possible to recall the ACTIVE Setup (slot 1) as this is always the current Setup. Recalling a Setup copies that Setup into the ACTIVE Setup. Any changes made after a Setup is recalled are made to the ACTIVE Setup. The ACTIVE Setup must be saved back to the recalled Setup if it is desired to make any changes a permanent part of that Setup. In both the *Recall Setup* and *Store / Delete Setup* menus, an asterisk appears next to the last saved or recalled Setup.

3. Deleting a Setup

To delete a Setup, navigate to the *Operator Menu > Store / Delete Setup* menu. Use the multipurpose knob to highlight the desired slot to delete and press the center soft key (Delete). Upon selection of a Setup, you will be asked for confirmation before deleting the Setup. Once deleted, the Setup is completely removed from memory and cannot be recovered. The slot can now be used to save a new Setup.

2.4 SETTING AUTO AND MANUAL SETPOINTS

The Auto and Manual setpoints can be set with the multipurpose knob from the Run mode display with 1% accuracy. The setpoints can be set with a higher degree of precision from within the menu system. Setpoint adjustments made in the Run mode display with the multipurpose knob are based upon the current control mode. When the controller is in Manual mode, the multipurpose knob controls the manual setpoint. When the controller is Auto mode, the multipurpose knob controls the Auto setpoint. If it is desired to adjust the Auto setpoint while in Manual mode, or the Manual setpoint while in Auto mode, the menu system setpoint adjustments can be used.

The *Operator Menu > Manual Setpoint* setting allows the Manual setpoint to be adjusted and saved. The *Operator Menu > Auto Setpoint* setting allows the Auto setpoint to be adjusted and saved.

2.5 USING TAPER

If your controller is used in a rewind application, it may be factory-configured for the Taper function. Taper causes the Auto setpoint to automatically decrease as the diameter increases. This helps to produce a better quality roll by eliminating telescoping, crushed cores and too tight or too loose rolls.

Taper is controlled with the **Taper Enable** and **Taper Percentage** settings, both located in the *Operator Menu > Configure Taper* menu. The **Taper Enable** setting allows for toggling the Taper function On and Off. Even though a controller may be set up for Taper, a particular job may not require it, and so this setting allows the user to turn it off while allowing its use for a later time. The **Taper Percentage** setting controls the amount of effect the Taper function has when enabled. The Taper function causes a setpoint multiplier to change from unity at core to a multiplier value of 100% minus the taper setting at full roll.

For example: With a setpoint of 50 lbs., and a **Taper Percentage** setting of 20%, the Auto setpoint will be 50 lbs. at core, decreasing linearly to (100% - 20%) x 50 lbs. = 40 lbs. at full roll.

Finding the right Taper configuration settings for a particular process may take some experimentation in adjusting both the tension setpoint and the **Taper Percentage**. See the table below for common winding defects and the corresponding corrective action.

Location	Tight/Loose	Example	Move
Core	Tight	Blocking, Crushed Core	Decrease Tension
Core	Loose	Telescope During Unwinding	Increase Tension
Outside	Tight	Baggy Lane Due to Gage Variation	Increase Taper
Outside	Loose	Out-of-Round Roll	Decrease Taper
Global	Tight	Telescope During Winding, Starring	Increase Tension and Taper

Roisum, David R. What is the Best Taper to Run on My Winder? Converting Magazine, ©November 2007.

2.6 RESETTING TLS ALARMS

When the TLS (Tension Limit Switch) alarm is activated by either a Tension High or Tension Low condition, a flashing **Reset TLS** window appears above the center soft key in the Run mode display. If the TLS alarm is configured in Momentary mode, the alarm will automatically disappear from the display when tension goes back into a valid range. If TLS is configured in Latched mode, the alarm will persist after tension has returned into a valid range until the **Reset TLS** soft key is pressed to clear the alarm. In either Momentary or Latched mode, the TLS alarm cannot be cleared until tension has returned to within a valid range.

If **Control During TLS** is set to **Off**, Tension will automatically turn off upon entering a TLS condition. If it is desired to turn tension On while tension is still not in a valid range and **Control During TLS** is set to **Off** , the operator must hold down the **Reset TLS** soft key and simultaneously press the Tension On/Off key. The operator must then continue to hold down the **Reset TLS** soft key until tension has returned to a valid range. See Section 5.7, Tension Limit Switch Setup, in the Technical Reference Manual for more information on configuring the TLS Alarms.

Pressing the middle softkey will reset the relay no matter what the status is. The relay will remain reset only while the key is pressed if TLS is still active. If reset with tension in the desired range, it will remain reset.

2.7 RESETTING DIAMETER ALARM

When the diameter alarm is activated by either minimum or maximum diameter condition, a flashing **Reset DA** flag appears above the center soft key in the run mode display to inform the operator the diameter alarm has been triggered. The alarm can only be reset by pressing the center soft key, otherwise it will persist even after the diameter has returned into a valid range. If the diameter alarm is cleared while the diameter is still above or below the trip point, it will not trigger again until the diameter has returned to within a valid range and crosses the trip point again. See section 5.8, Diameter Alarm Setup, in the technical reference manual for more information on configuring the diameter alarm.

2.8 ZEROING TENSION

The tension transducers may be zeroed at any time while no web is on the tension roll. Tension zero may be performed without calibration using the **Set Zero Tension** function, located in the *Calibration Menu*.

Note: Do NOT use this function with web on the transducers. The current tension value will become the new zero, ruining the calibration.

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