5 SET UP PROCEDURE

The Processor utilizes push buttons in conjunction with Display LED's to program, adjust, calibrate and set up the various features. The push buttons also allow you to access and display information regarding the health of the System. The following paragraphs explain how to locate and use the push buttons and Display LEDs:

5-1 PROCESSOR COMPONENTS USED IN SET UP

Figure 5-1: Typical Processor Cover

- Each Processor has a Display LED and Push Buttons.
- The Display LED can be viewed through a window on the Processor's cover as shown in Figure 5-1:

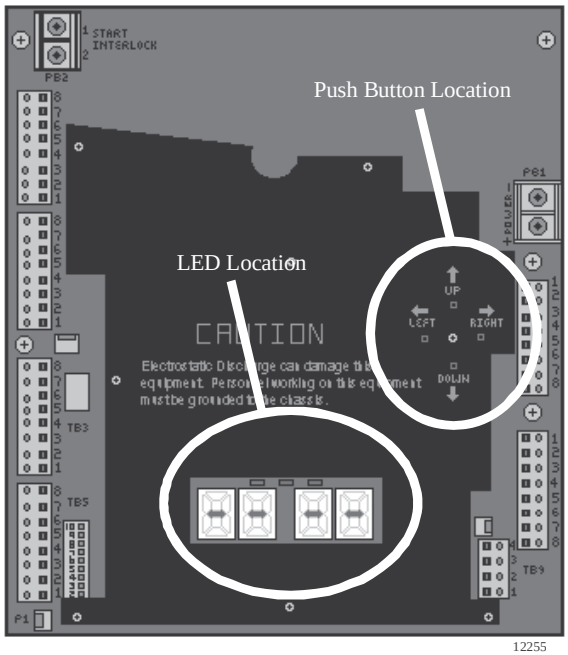
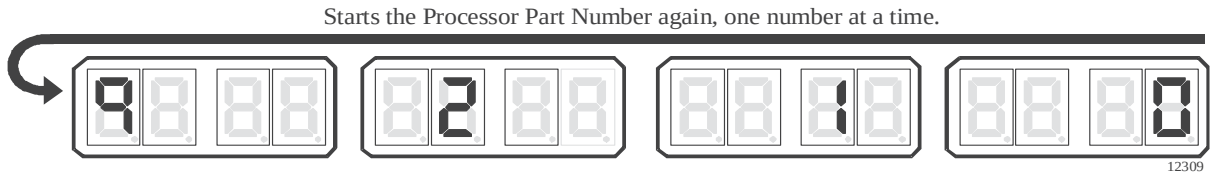


Figure 5-2: Processor Shield Push Button and Display LED Locations

- The Processor enclosure cover must be removed to access the Push Buttons as shown in Figure 5-2:
- The **Display LED** is used to view the Function Codes and the Values for those Functions (Section 5-1.1, page 5-2).
- The **Push Buttons** are used to scroll through Function Codes, select Function Codes and set the Values of the Function Codes. (Section 5-1.2, page 5-2)

5-1.1 Processor Display LED



EXAMPLE: Running Processor Part Number during Normal Operation (9210)

Figure 5-3: Display LED at Normal Operation

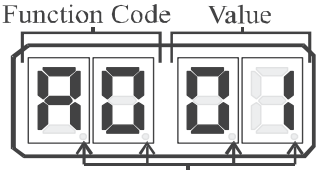


Figure 5-4: Display LED Designations

- The Processor's Display LED has four 7-segment LED's, which light up to show either letters or numbers.
- The Display LED will have the Processor Part Number showing in a running pattern during Normal operation (Figure 5-3:)
- The first two digit Display LED's to the left, indicate the **Function Code**, which is alphanumeric.
- The second two digit Display LED's indicate the numeric **Value** that is programmed into the Processor for the Function Code displayed to the left.
- A **decimal point** indicator is located on the bottom right corner of each Display LED.

5-1.2 Push Buttons

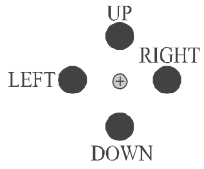


Figure 5-5: Circuit Board Push Buttons

The Processor has four Push Buttons located on the Circuit Board. They are identified by the words LEFT, RIGHT, UP and DOWN silk-screened on the Shield covering the Circuit Board.

5-1.2.1 Up and Down Push Buttons

Pressing the Up or Down Push Buttons once has the following functions:

- Stops Normal Operation Display (running Processor Part Number) and activates the Function Menu.
- While in the Function Menu, scrolls through the Function Codes one at a time.
- When an Error Code (Refer to Section B-1.9, page B-21) is displayed, scrolls through the error messages one at a time.
- When in Set Up Mode, increases (Up) or decreases (Down) the Value one digit at a time.

5-1.2.2 Left and Right Push Buttons

Pressing and holding the Left and Right Push Buttons simultaneously has the following functions:

- Activates Set Up Mode as indicated by the blinking Display LED. (must hold the buttons until the blinking begins)

- While in Set Up Mode, deactivates Set Up Mode, saves the displayed Value to memory and returns to the Function Menu. (must hold the button until the blinking stops)

5-1.2.3 Left Push Button Only

Pressing the Left Push Button once has the following functions:

- Deactivates Set Up Mode <u>without</u> any changes to the Value being stored to memory. The Left Push Button must be held down until function code stops blinking. The default value will then be displayed.

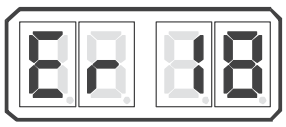


Figure 5-6: Display LED Error Menu Example

- While in Function Menu, changes the Display LED to the Error Menu, if any errors are present. (has no effect if there are no errors stored)
- While in the Error Menu, changes the Display LED back to the Function Menu.

5-1.2.4 Right Push Button Only

Pressing the Right Push Button once has the following functions:

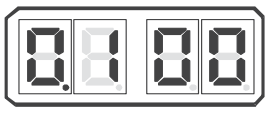


Figure 5-7: Display LED Four Digit Value

- While in the Error Menu, clears inactive errors. (Active errors blink, inactive do not)
- While in Set Up Mode or Function Menu, allows the Value of the current Function Code to be displayed with all four Display LEDs.

5-2 ACTIVATING SET UP MODE

NOTE: TO **ESCAPE** FROM THE SET UP PROCEDURE AT ANY TIME WITHOUT SAVING THE CHANGED VALUE TO MEMORY, DEPRESS THE **LEFT PUSH BUTTON.** THE FUNCTION CODE WILL STOP FLASHING AND THE FUNCTION WILL BE SAVED WITH THE ORIGINAL VALUE.

A) The Display LED is in Normal operating condition with the red running Processor Part Number.

B) Depressing either the Up or Down Push Button will activate the Function Menu.

C) Depressing the Up or Down Push Button will scroll through the Function Codes one at a time.

D) Once the desired Function Code is visible on the Display LED, press and <u>hold</u> down the Left and Right Push Buttons simultaneously, until the Function Code begins to blink.

E) Depressing the Up Push Button will increase the Value of the Function, while pressing the Down Push Button will decrease the Value of the Function. (Pressing and <u>holding</u> the Up or Down Push Button will increase or decrease the Value rapidly)

5-3 STORING VALUES TO MEMORY

Once the desired Value has been reached in Set Up Mode, the Value is stored to memory as follows:

A) Depress and hold the right push button first. Then while still depressing the right button, depress and hold the Left push button until the Function Code stops blinking.

- The new Value is now programmed into memory.
- Set Up Mode is exited.

B) Depress the Up or Down Push Button until the next required Function Code is reached.

C) Reactivate Set Up Mode.

NOTE: IF NO PUSH BUTTONS ARE PRESSED FOR FIVE MINUTES, THE SELECTED MODE OF OPERATION IS AUTOMATICALLY EXITED AND THE SYSTEM RETURNS TO NORMAL MODE. IF NO PUSH BUTTONS ARE PRESSED FOR FIVE MINUTES WHILE IN SET UP MODE, IT WILL BE EXITED WITHOUT THE CHANGES STORED TO MEMORY.

5-4 SET UP FUNCTION CODES AND VALUES

The following tables list the Function Codes' Name, Default Value and Range or available Options. Each of the Function Codes are explained in further detail in the referenced sections.

NOTE: **SINGLE SCREW APPLICATIONS:** THE FUNCTION VALUES MAY BE ENTERED AND STORED IN ANY ORDER.
TWIN SCREW APPLICATIONS: THE **A1** FUNCTION MUST BE SET FIRST, AND THE **A0** FUNCTION MUST BE SET SECOND. THE REST OF THE FUNCTION VALUES MAY BE ENTERED AND STORED IN ANY ORDER.

Table 5-1: Function Codes

Function Code	Function Name	Value Range or Options
PROCESSOR FUNCTIONS (Section 5-6.1, page 5-8)		
A0	Processor Identification	01, 02, 03, 04, 05
A1	Number of Engines	01, 02, 03, 04, 05
A2	One Lever Operation	00 – Disabled 01 – Enabled
A3	SE (Station Expander)	00 – Disabled 01 – Enabled
A4	Neutral Indication Tone	00 – No Tone 01 – Tone upon engaging Neutral Detent 02 – Tone upon shifting to Neutral
THROTTLE FUNCTIONS (Section 5-6.2, page 5-14)		
E0	Engine Throttle Profile OR Throttle Servo Direction	01 - Caterpillar (PWM) (* to 92%) 02 - Cummins Centry (Voltage) (0.9 to 4.5 VDC) 03 - Cummins Quantum (Voltage) (0.9 to 1.2 - 4.0 VDC) 04 - Detroit Diesel (Voltage) (0.64 to 4.65 VDC) 05 - MTU or MAN (Current) (4.0 to 20.0 mA) 06 - Scania (Voltage (0.42 to 2.95 VDC) 07 - John Deere (Voltage) (0.5 to 4.5 VDC) 08 - Volvo (Voltage) (0.6 to 3.6 VDC) 09 - Detroit Diesel (Frequency) (120.64 to 360.9 Hz) 10 - Detroit Diesel (Frequency) (120.64 to 463.5 Hz) 20 – Pull [Retracted] for Throttle Increase 21 – Push [Extended] for Throttle Increase
E1	Throttle in Neutral	00.0 to 25.0% of Throttle Range
E2	Throttle Minimum	00.0 to 20.0% Will always be 10% or more below Maximum.
E3	Throttle Maximum	10.0 to 100.0% Will always be 10% or more above Minimum.
E4	Throttle Maximum Astern	00.0 to 100.0% of Throttle Maximum

Table 5-1: Function Codes

Function Code	Function Name	Value Range or Options
THROTTLE FUNCTIONS continued (Section 5-6.2, page 5-14)		
E5	Throttle Pause Following Shift	00.0 to 05.0 Seconds
E6	High Idle	00.0 to 20.0% of Throttle Maximum
E7	Synchronization	00 – Equal Throttle (Open Loop) Synchronization 01 - Active (Closed Loop) Synchronization (reverts to Equal if Tach Signal lost) 02 - No Synchronization 03 - Active (Closed Loop) Synchronization (no synchronization if Tach Signal is lost)
CLUTCH FUNCTIONS (Section 5-6.3, page 5-21)		
C0	Clutch Pressure Interlock	00 – Not Installed 01 – Installed 02 – Throttle Clutch Pressure Interlock Mode
C1	Clutch Interlock Delay	00.5 to 10.0 Seconds
C2	Proportional Pause	00 – In-Gear 01 – Neutral 02 – Fixed Neutral Delay Enabled (NOTE: If C2 is set to 02, C3 will set Fixed Neutral Delay duration.)
C3	Proportional Pause Time	00 to 99 Seconds
C4	Proportional Pause Ratio	00 – 2:1 Ahead to Astern vs. Astern to Ahead 01 – 1:1 Ahead to Astern vs. Astern to Ahead
C5	Shift Solenoid Type OR Clutch Servo Direction	00 - All Shift Solenoids except ZF-Hurth 01 - ZF-Hurth Proportional Solenoids with 12V Power 02 - ZF-Hurth Proportional Solenoids with 24V Power 20 – Pull [Retracted] for Ahead 21 – Push [Extended] for Ahead
C6	ZF-Hurth Duty Cycle Ahead OR Clutch Ahead	00 to 100% ZF-Hurth Ahead Lockup Percentage PWM
C7	ZF-Hurth Duty Cycle Astern OR Clutch Astern	00 to 100% ZF-Hurth Astern Lockup Percentage PWM
TROLL FUNCTIONS (Only Available and Displayed When Troll is Enabled) (Section 5-6.4, page 5-29)		
L0	Troll Enable and Control Head Troll Lever Range	00 – No Troll 01 – 20 Degrees- Type 1 02 – 35 Degrees- Type 2 03 – 45 Degrees- Type 3 (Throttle limited to 75%) 04 – 55 Degrees- Type 4 (Throttle limited to 10%))
L1	Troll Valve Function or Troll Servo Direction	0 - Normal, No Current when at Lock-up 01 - Inverse, No Current when at Lock-up 02 - Normal, Maximum Current when at Lock-up. Preset for ZF220-550, 12VDC Systems. 03 - Normal, No Current when at Lock-up. Preset for ZF220-550, 24VDC Systems. 04 - Normal, No Current when at Lock-up. Preset for ZF2000, 24 VDC Systems. 05 - Inverse, No Current when at Lock-up. Preset for ZF6000, 1900 or 2500, 24VDC Systems. 06 - Preset for 12VDC ZF Hurth Systems. 07 - Preset for 24VDC ZF Hurth Systems20 – Cable Fully Retracted at Lock-up. 21 – Cable Fully Extended at Lock-up.
L2	Troll Minimum Pressure	01.0 to 80.0% Will always be at least 10% below Maximum.
L3	Troll Maximum Pressure	20.0 to 100.0% Will always be at least 10% above Minimum.
L4	Troll Throttle Limit	00 to 20% of Maximum Throttle.
L5	Troll Pulse Duration	00.0 to 09.9 Seconds.
L6	Troll Pulse Percentage	00.1 to 100.0% of available Troll Servo range.