CHAPTER 8. DIAGNOSTICS AND TROUBLESHOOTING

This chapter describes the diagnostic messages that are issued and displayed by the CLM, and suggests troubleshooting procedures or recommended actions for each display. These messages provide the user with information on faults, hardware status, and operational status of the system. When needed, request assistance from Indramat (section 1.1.2).

8.1 Status / Diagnostic Display Alphabetical Index

This section is an alphabetical index listing of the CLM diagnostic message displays. It provides a quick reference for locating and identifying displays in question. Following sections describe the meaning and recommended action for each display.

Note that when using the SOT or other host, the diagnostics may be requested through the serial interface port in full text format or as a corresponding diagnostic number. The following index lists the displays in alphabetical order. A similar index in section 8.7 of this chapter correlates the displays in order of the numeric, diagnostic code equivalents.

When using the IDS, its two digit display will show numeric codes for diagnostic messages. The code list index for the IDS is in section 8.8 of this chapter.

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8.2 Diagnostic Display Categories

The faults, errors and diagnostic status messages are separated into four (4) categories:

1. Hard Fault
2. Soft Fault
3. Minor Errors
4. Status Messages

8.2.1 Hard Fault

A hard fault is the indication of a condition that could result in damage to equipment or harm to personnel. It halts all machine operation by dropping the 3-phase power to the motor (single phase on some motors).

The motor is generally stopped as soon as possible, by regenerative braking. At the occurrence of a Hard Fault, the system zeroes out all reference to position. Material in the machine is typically scrapped. The CLM system must be restarted after the fault is corrected.

Upon the detection of a hard fault, or the loss of the EMERGENCY STOPinput (causing a hard fault), the following occurs:

- The E-Stop chain is broken
- The 3-phase power is dropped (drive stops)
- All outputs are switched off (except "System Fault" indicator)
- A diagnostic fault message is issued (displays)

To clear a hard fault:

1. Determine and correct the fault causing condition.
2. Initiate the Clear input (from the user control panel), or the CL key (on the CLM keypad), to initialize the control (the CLM will verify inputs, parameter data, etc. and will clear the fault status and diagnostic message).
3. Restart the CLM control system.

8.2.2 Soft Fault

A soft fault is an indication of a condition that is inhibiting normal operation of the system.

At the occurrence of a soft fault, the following occurs:

- If feeding, the axis decelerates to a stop (the CLM commands zero velocity, axis decelerates at the rate set in parameter for deceleration)
- Outputs remain in the last state they were in (high or low) at the moment of fault detection
- Position value of the axis is maintained by the CLM (remembers position within feed)
- The appropriate fault diagnostic message is issued (displays)

To clear a soft fault:

1. Determine and correct the fault causing condition.
2. Initiate the Clear input, or the CL key, to clear the fault status and diagnostic message.
3. If in Auto Mode and "A: Resume Req'd" is displayed, press Resume Cycle to continue automatic operation. Some faults are issued after the CLM stops the cycle.

8.2.3 Minor Errors

Minor Errors are messages which indicate that a condition required to continue has not been met.

Upon the detection of a Minor Error the following occurs:

- If feeding, the axis decelerates to a stop (the CLM commands zero velocity, axis decelerates at the rate set in parameter for deceleration)
- Outputs remain in the last state they were in (high or low) at moment of error detection
- Position value of the axis is maintained by the CLM (remembers position within feed)
- The appropriate error diagnostic message is issued (displays)

A Minor Error is automatically cleared when the error condition is corrected.

WARNING: *Once the Minor Error condition* FEED INTERRUPT *is corrected, the CLM immediately returns to operation. A Minor Error condition does not require a Clear input signal to continue operation. See description in section 8.4 for further information.*

8.2.4 Status Messages

These information messages indicate the current status of the CLM system, such as: "System Is Ready" or "A: Feeding". A fault or error message will override a status message on the display.

Status messages, as well as fault and error messages, are each described in the following sections.

8.3 Hard Fault Messages

This section provides a complete list of hard fault diagnostic messages, and an explanation of the potential cause(s).

```
CLM System Error
Code #HRD00
```

An internal system fault has occurred in the CLM. The following hard fault system errors can occur: code #HRD00, #PL001, #FXPM0001, #UPRG01, #FLPM0003.

NOTE: *For any CLM system error display, call Indramat home office. Advise them of the error code number displayed.*

```
Parameters Lost!
Clear to Cont.
```

This message indicates the parameters were lost when the CLM was powered up in the Parameter Mode. It is also displayed after installing new firmware. Press the Clear push-button on the user control panel to continue with parameter entry. Check the memory backup battery if parameters were previously entered.

All parameter entries must be reentered and/or Stored again, regardless of the parameter values shown in the CLM display. If/when the data on the display is correct for the parameter, press the STORE key to store/save the data to memory. Repeat this process for each parameter.

NOTE: *Maintain a current log of parameter settings for your system (see Appendix C for an entry form).*

```
Parameters Lost!
Select P - Mode
```

Indicates the parameters were lost when the CLM was powered up in the Automatic, Manual or Setup Mode. It is also displayed after installing new firmware. Select Parameter Mode and re-enter parameter values. Check the memory back-up battery condition if parameters were previously entered. Note that after the "Battery is Low" fault first displays, the battery needs to be replaced within two weeks.

All parameter entries must be reentered and/or stored again, regardless of the parameter values shown in the CLM display. If/when the data on the display is correct for the parameter, press the STORE key to store the data to memory. Repeat this process for each parameter.

NOTE: *Maintain a current log of parameter settings for your system (see Appendix C for an entry form).*

```
EMERGENCY STOP!
EMERGENCY STOP!
```

This indicates the E - Stop chain is broken (X3 - Pin 3). Check the E - Stop chain to determine the reason for the $\overline{\text{EMERGENCY STOP}}$ condition.

```
    Axis 1
Drive Stalled!
```

```
    Axis 2
Drive Stalled!
```

Indicates the position feedback is not being controlled within the tolerance of the position command. The CLM uses a mathematical model of the system to calculate the expected position error (lag). Drive Stalled occurs when the motor is moving too far behind the expected lag. The Monitoring Window Parameter (A112) must be set to a value that is greater than the deviation in position error caused by

normal mechanical and electrical characteristics (see Chapter 5 for parameter description). Axis 2 display is on the CLM-Z only, and requires parameter entry in A212.

The following items should be checked:

1. There is a velocity command but no axis motion - check for a disconnected encoder cable and for a faulty encoder feedback cable.

2. Parameter A103 entry doesn't match lines/rev on the servomotor (too large) - correct the parameter entry to match the data plate information.

3. Max. RPM in Parameter A102 (Drive Input Sensitivity) is greater than that on the Personality module - correct entry.

4. Acceleration rate is too high - correct in Parameter A106.

5. Position Gain is too high for system inertia - correct in Parameter A109.

6. Drive Enable (RF) signal from CLM is not reaching the drive - check cable connections.

```
    Axis 1
Drive Runaway!
```

```
    Axis 2
Drive Runaway!
```

Indicates the position feedback is not being controlled within the tolerance of the position command. The CLM uses a mathematical model of the system to calculate the expected position error (lag). Drive Runaway occurs when the motor is moving too far ahead of the expected lag. The Monitoring Window Parameter (A112) must be set to a value that is greater than the deviation in position error caused by normal mechanical and electrical characteristics (see Chapter 5 for parameter description). Axis 2 display is on the CLM-Z only, and requires parameter entry in A212.

The following items should be checked:

1. Axis motion is detected without a velocity command - ensure that signal feedback and command cables are properly installed.

2. Parameter A111: Direction of Operation is inconsistent with wired polarity - verify the settings correspond to the feedback and polarity of the drive / motor.

3. Parameter A103 entry doesn't match lines/rev on the servomotor (too small) - correct the parameter entry to match the data plate information.

4. Max. RPM in Parameter A102 (Drive Input Sensitivity) is less than that on the Personality module - correct entry.

5. Deceleration rate is too high when Acceleration is okay - correct in Parameter A107.

6. Monitoring Window is too small for calculated Max. lag - correct entry in Parameter A112.

```
Axis 1 Amplifier
Hardware Fault!
```

```
Axis 2 Amplifier
Hardware Fault!
```

Issued when the Amplifier Ready inputs (X3 pin 6, axis 1; X3 pin 7, axis 2) have gone low in Auto Mode or when motion is commanded. Check the wiring from the amplifier to the CLM, and verify proper amplifier operation. Consult the amplifier manual for additional information.

```
  Axis 1 Motor
Has Overheated
```

```
  Axis 2 Motor
Has Overheated
```

The $\overline{\text{MOTOR OVERTEMPERATURE}}$ switch input, X3 - Pin 15 (or X3-28 on CLM-Z axis 2) has gone low.

1. Check for correct input connection to the motor. Trace the +24 Vdc signal from the CLM, through the TAS in the motor, back to the CLM.

2. Check the motor application and mechanical load conditions to determine the reason for the overtemperature condition.

```
Measuring Wheel
Encoder Fault
```

With measuring wheel selected by input, every feed in Automatic Mode will be adjusted for the deviation between the axis (servo encoder) and the measuring wheel encoder. A percent of deviation allowed is set in Parameter B112. This fault occurs when the deviation exceeds that setting. Check cable connections and tracking on material.

```
  CLM System
  Power Loss!
```

The CLM has detected a low supply voltage (less than 20 Vdc) and has shut-down. Correct cause of power fluctuation and power-up system.

8.4 Soft Fault Messages

This section provides a list of soft fault diagnostic messages and an explanation of the potential cause(s).

```
CLM System Error
Code #SFT00
```

An internal system fault has occurred in the CLM. The following soft fault system errors can occur: code #SFT00, #UPRG02, #FLPM0001, #FLPM0002.

NOTE: *For any CLM system error display, call Indramat home office. Advise them of the error code number displayed.*

```
Serial Com Port
Disconnection!
```

This indicates the IDS is not properly connected to the RS-232 port of the CLM when the IDS is selected for the Interface Option in Parameter B102. Check the cable connection of the IDS to the CLM front panel connector. The time for disconnect detection is automatically set to 2 seconds when IDS is enabled.

```
Serial Com Port
Overrun Error
```

This indicates the baud rate of the host is greater than the baud rate of the CLM via the RS-232/422/485 communications port. Check and verify settings are same. Also issued if CLM has missed data due to a faulty cable or port. Chapter 4 describes the serial port communication settings and error diagnostics.

```
Serial Com Port
Framing Error!
```

This occurs when the baud rate of the CLM is greater than the baud rate of the host, or if the start/stop bit parameters are not the same for both. Check and verify settings are same. Also issued if CLM has missed data due to a faulty cable or port. Chapter 4 describes the serial port communication settings and error diagnostics.

```
Serial Com Port
Parity Error!
```

This indicates the parity type of the CLM does not match that of the host. It is also issued during RS-232/422/485 communication if the parity check fails, indicating a faulty serial cable. Chapter 4 describes the serial port communication settings and error diagnostics.

```
Serial Com Port
IDS FormatError!
```

This indicates the serial communication is not functioning properly for the IDS. Check the cable and connections between the IDS and the RS-232 port of the CLM.

```
Serial Com Port
RS485 Bus Error!
```

This error is issued when data is being sent and received at the same time when SOT operation is selected in Parameter B118. If the device communicating with the CLM is not a CLM-01.3-R or CLM-01.3-Z compatible SOT, or is communicating in full duplex, the Interface mode in B118 should be set to 1. If the CLM is talking to an SOT, this error indicates a faulty cable or port.

```
Feed Angle Lost
  During Feed!
```

This indicates the feed angle input (X3 - Pin 17) went low before the CLM had completed the current feed.

- Check the input connection from the feed angle switch.
- Ensure the mechanical functions and timing are sequenced properly.
- Decrease the feed length or increase the feed rate.
- Increase speed/decrease cycle time of the press (external to CLM).
- If Parameter A113=0, then the material was tugged out of position due to press contact.

```
Movement While
Feed Angle Low
```

Displayed when the axis (material) slips out of the position window after (while) the Feed Angle is low. The setting in Parameter A113 (Low Feed Angle Threshold) is used to determine if the material is tugged out of position due to press contact. To correct this fault condition, raise the Low Feed Angle Threshold, check for other parameters that may be causing instability, check cables or system mechanics for cause of axis movement.

```
Press Timeout
 Has Expired
```

Occurs when the press has not cycled (high-to-low feed angle transition) in Automatic Mode, for a period defined in Parameter B109. Set the time in the parameter, as required for the application. The limits are from 1 to 99 minutes. Set time to 00 to disable. After this fault is cleared, a resume input is required to continue the cycle.

```
Invalid Mode
 Selection!
```

This indicates that the Auto and Setup modes are both selected (both inputs high). Check the following inputs:

X 3 Pin 2	Automatic Mode
X 3 Pin 13	Setup Mode

NOTE: *The Parameter Mode can override any other mode when selected. When de-selected, the CLM returns to the previously selected mode: Auto, Setup or Manual (defaults to Manual Mode when other modes de-selected).*

```
 Press Cycle
Without Feed!
```

Indicates a double hit of the press. Fault occurs if there is more than one press cycle when in the "Roll Delay" state (using Roll Control function) or the FEED INTERRUPT input is active.

```
Correction Dist.
 Exceeds Fdlen.
```

Indicates the Registration Correction distance is larger than the current feed length. This will occur only if there are erroneous feed length or registration parameter entries. Verify the feed length entry, or correct the "Maximum Position Correction per Feed" for Averaging setting in Parameter B115.

```
Zero % Feedrate
  Programmed
```

The feed rate programmed for the part selected to execute in batching (or value downloaded through the serial port from a host) is set to zero. Scroll to the feed programming display page and correct the feed rate (or correct in host device).

```
  Set Up Mode
Cycle Incomplete
```

This indicates the user has tried to exit the Setup Mode without completing the cycle.

Verify the Press Interface Mode ("Press Before Feed" or "Feed Before Press") setting is selected as desired (Parameter B109).

The user has the following two (2) options:

1. Reenter Setup Mode and complete the cycle (press jog key until the entered feed length is complete, and/or cycle the press, if required, to complete the cycle).

2. Press the Clear push-button on the user's control panel or press the CL key on the CLM keypad. This will clear the diagnostic message, and recognize any mode change selection.

```
  Too Many Ref.
  Marks Missed
```

Indicates number of consecutive missed marks (in Registration function) exceeds the "Missed Marks Allowed" limit entered in Parameter B115. Check the reference mark sensor connections, sensitivity or position adjustment, etc. Refer to Chapter 4 for additional information on this function.

```
Aux. Feedlength
   is Zero!
```

Indicates the Auxiliary Feed Length option was selected but Parameter B103 is set at zero. To correct:

1. Turn OFF the Auxiliary Feed Length selection (input).

2. Press Clear and enter the Parameter mode.

3. Enter the desired "Auxiliary Feed Length" in Parameter B103.

```
Count Exceeds
Part Quantity
```

This cycle stop, soft fault is issued if the part quantity entered is less than the current part count. To correct this error, clear the current count by entering a zero in the part quantity, then press the clear key or input.

```
Axis has Changed
  During Cycle
```

On the CLM-Z only, the state of the selected axis enable input (X3, pin 11 for axis 1, pin 12 for axis 2) was changed while cycling in Automatic Mode. Re-enable the axis. If not disabled, check switch function and wiring.

```
 Battery is Low
 Replace it Soon
```

Indicates the RAM Backup Battery is low. Fault will not be issued if an Automatic Mode cycle is in progress or if an axis is feeding. After clearing the fault, it will be issued every 60 minutes as a reminder.

To prevent loss of parameters and batch programming, replace the battery within two weeks of when the fault is first issued. Turn power OFF to the CLM, remove the Memory and Battery Module and replace the 3.5 volt Lithium battery. Before disconnecting the old battery, connect the new battery to the second connector (other side of battery).

NOTE: *If the battery voltage gets too low, all RAM data (parameters, feed length and rate, batch programming) will be lost and needs to be re-entered after replacing the battery.*

```
  Para Invalid!
  Select P-mode
```

Fault is displayed when power is applied to the CLM or when you switch out of Parameter Mode. In either case, this fault indicates that required parameter's data is missing or incorrectly entered. Switch to Parameter Mode. The display shows the first sequential number of the parameter requiring correction. Enter the data correctly and press STORE for each parameter that appears as invalid. Refer to section 5.3 for added information on this and related "Parameter Is Invalid" fault conditions.

```
Batching Program
   was Lost!
```

This fault is issued if batching data is invalid upon power-up (lost due to battery failure or at initial installation). Default values (see section 4.2.13) are loaded for any part in which data is invalid.

```
 Output was not
  Acknowledged
```

This fault is issued if a gag or auxiliary output is not acknowledged (by input) when the feed angle goes from high to low (i.e. Shear complete input needs go high after executes to acknowledge output request

for shear operation). The press immediate stop is activated during this fault. This function can be enabled/disabled in Parameter B111 (see Chapter 5).

```
    Axis 2
is Interrupted!
```

On the CLM-R only, this error is issued when the $\overline{\text{INTERRUPT AXIS 2}}$ input is low. Unlike other errors, the Axis 2 Drive Enable output is turned OFF after axis 2 has ramped down to zero velocity. Jog reverse for axis 2 is allowed so this error can be corrected (by removing material from the loop to correct full loop condition).

```
    Tail Out
     Stop
```

Displayed when Tail Out enabled and first occurrence of Feed Interrupt after Tail Out sequence begins.

```
 Tail Out Inputs
     Missing
```

Displayed when Tail Out enabled and entry in automatic mode without all three inputs high.

8.5 Minor Error Messages

This section provides a complete list of Minor Error diagnostic messages, and an explanation of the potential cause(s).

```
CLM System Error
  Code #MNR00
```

An internal system fault has occurred in the CLM.

NOTE: *For <u>any</u> CLM system error display, call Indramat home office. Advise them of the error code number displayed.*

```
Zero Feedlength
    Entered
```

This indicates the feed length is set to zero (0) on the CLM (or from the IDS, etc.). If in the Automatic Mode, enter the desired feed length and press the Resume Cycle button to continue the automatic cycle operation.

If in Setup Mode, select the desired feed length and the diagnostic message will clear.

```
Registr. Offset
Exceeds Fdlength
```

The programmed offset is greater than the programmed feed length. The offset can be micro-adjusted from the registration display screen (section 2.2.2). See Chapter 4 for additional information on the registration feature.

```
Zero % Feedrate
   Entered
```

The feed rate entered is set to 0% on the CLM (from the IDS, etc.). If in Automatic Mode, select the desired feed rate % and press the resume button to continue the cycle.

NOTE: *This message does not apply when in Setup Mode, as the feed rate used is the predetermined jog velocity (set in parameter).*

```
Axis 1 Amplifier
 Is Not Ready!
```

```
Axis 2 Amplifier
 Is Not Ready!
```

The input from the respective amplifier (Amplifier Ready) is low (X3 pin 6, axis 1; X3 pin 7, axis 2). On the CLM-R, this error for axis 2 is issued when attempting to jog axis 2 or selecting Loop Automatic while the Drive Ready input is low.

Check/perform the following to correct:

1. Apply Power to the amplifier.
2. Check the amplifier connection.
3. Check the amplifier for a fault.

```
 Axis 1 Has Not
Reached Position
```

```
 Axis 2 Has Not
Reached Position
```

This indicates the input to select Automatic Mode or Setup Mode is high, but the axis is not stopped within the position threshold. Axis 2 error occurs on the CLM-Z only. To correct:

1. Check the "In-Position Threshold" setting in Parameter A110/210. Setting may be too tight.
2. Check for amplifier failure.
3. Verify Encoder (and cable) is functioning properly.

```
  Stop Due To
Interrupt Input!
```

The $\overline{\text{FEED INTERRUPT}}$ input (X3 - Pin 19) has gone low, causing the axis motion to halt.

WARNING: *In Automatic Mode, the feed will resume automatically when this signal returns. Use the Feed Interrupt output to advise operating personnel of this condition.*

```
  Feed Angle
  Is Missing!
```

This error is issued in three different situations:

1. Appears upon entry into Automatic or Setup Mode, if the CLM detects the Feed Angle input is low.
2. After either soft fault "Feed Angle Lost During Feed" or "Movement While Feed Angle Low" is cleared and the Feed Angle input is low.
3. If a Cycle Start is actuated while the Feed Angle input is low.

Check the feed angle switch or sensor and its connections. This error will clear when the Feed Angle input goes high.

```
  Invalid Part
    Selected
```

This error is issued if the Binary or BCD input for part selection exceeds maximum limit (99).

Reference Mark Is Not Aligned

Error is displayed when entering Automatic Mode and the mark is not aligned. Exit Automatic Mode to correct this error. Perform alignment before reentering Automatic Mode (manual jog to near reference mark, then press Jog to Reference Mark). Disabling Position Correction by input will also clear this error.

Change in Fdlgth Exceeds Limit

The "limit" is set in Parameter B106 (Feed length Maximum Change). It is the maximum amount that the programmed feed length can change during a cycle. This limit is checked only during an Automatic Mode cycle. The maximum change window is based upon the first programmed feed length after a Cycle Start or Resume. A new Maximum Change limit will be accepted on the next cycle after it is changed and STORED. The limit may be disabled by entering a zero (0) in the parameter.

Feedlength Exceeds Maximum

The feed length "Maximum Limit" is set in Parameter B104. This error is immediately displayed if the programmed feed length exceeds this limit while not in an Automatic Mode cycle. While an Automatic Mode cycle is in progress, the programmed feed length is checked only when a feed is about to begin (change not recognized until start of next cycle). This prevents a feed from being interrupted by an erroneous feed length entry (during the current cycle). An erroneous entry will cause the error to display and turn off the Permit Press output. Change length to within limits and press Resume Cycle to continue.

Feedlength Less Than Minimum

The feed length "Minimum Limit" is set in Parameter B105. This error is immediately displayed if the programmed feed length is less than this limit while not in an Automatic Mode cycle. While an Automatic Mode cycle is in progress, the programmed feed length is checked only when a feed is about to begin (change not recognized until start of next cycle). This prevents a feed from being interrupted by an erroneous feed length entry (during the current cycle). An erroneous entry will cause the error to display and turn off the Permit Press output. Change length to within limits and press Resume Cycle to continue.

```
Invalid Axis
  Selected
```

On the CLM-Z only, axis 1 or axis 2 or both can be enabled by parameter and by input. This error indicates that an axis enabled by input is not also enabled by parameter. Disable the axis that is not enabled in parameter.

```
Axis has Changed
  During Jog
```

On the CLM-Z only, the state of the selected axis enable input (X3, pin 11 for axis 1, pin 12 for axis 2) was changed while the jog input was high (jogging). Re-enable the axis. If not disabled, check the switch function and wiring.

```
Axis 1 Required
for Registration
```

On the CLM-Z only, axis 1 is required for the registration function. This display indicates that axis 1 is not enabled by input (must also be enabled by parameter) while the registration function is enabled by input (and by parameter). Enable axis 1 or disable registration function.

```
Loop Auto Exit
  Required
```

Displayed upon power up/reset when Loop Automatic input is high. Also displays when exiting from Feeder Auto mode, once Tail Out Mode is entered.

8.6 System Status Messages

This section provides a complete list of status messages provided by the CLM. Certain messages are dependent on the selected mode of operation. These are described separately in this section.

8.6.1 General Messages

The following messages are not exclusive to a particular operating mode.

```
Initializing Sys
```

This message indicates the CLM is performing the system self test following a power up. It performs computations based on the parameter values. If all conditions are correct, a mode specific

status report message will display. Should any condition not be met, the CLM will display the appropriate diagnostic message.

CLM PARAMETER MODE

This indicates the CLM is in Parameter Mode and appears only in the optional vacuum florescent tube remote display. The CLM control panel display shows the actual parameter and its data (A100, etc.).

NOTE: *If Parameter B102 (Interface Option) is changed from the IDS option to the standard CLM configuration, the remote display will retain the message "PARAMETER MODE" regardless of the CLM mode or operation.*

NOTE: *The SOT can display "CLM PARAMETER MODE" as acknowledgment of the CLM mode of operation.*

Open & Close On

This indicates both of these manual roll control inputs are high. This condition must be corrected before normal operation can continue. The four (4) manual roll control inputs should be wired to momentary, push-button switches (open-close feed rolls, X3 - pins 31 & 32; open-close anti-backup rolls, X3 - pins 29 & 30).

1. Check switches for proper operation.

2. Check switch wiring.

Both Jogs High

This indicates both the Jog Forward and the Jog Reverse inputs (X3 - pins 9 & 10 or using CLM-R pins 11 & 12) are high when entering the Manual or Setup Mode. As a result, with the forward and reverse jogs being equal, the signals cancel each other and the motor remains in a hold state. This condition must be corrected before normal operation can continue. Inputs should be wired into normally-open, momentary, push-button switches (input signal drops when button released).

1. Check both Jog buttons for proper operation.

2. Check Jog switch wiring.

```
Jog Input Active
```

This indicates the Jog Forward or the Jog Reverse input (X3 - pins 9 & 10 or using CLM-R pins 11 & 12) is high when entering the Manual or Setup Mode. Inputs should be wired into normally-open, momentary, push-button switches (input signal drops when button released). Also, if toggled between Step Mode and Jog Mode while the motors are in motion, the motors will ramp down and this message will be displayed.

1. Check both Jog buttons for proper operation.

2. Check Jog switch wiring.

```
Roll Inpt Active
```

This indicates a manual roll control input is high when entering the Manual or Setup Mode (X3 - pins 29 - 32).

1. Check input switch buttons for proper operation.

2. Check switch wiring.

```
No Axis Selected
```

On the CLM-Z only, an axis must be enabled by input (X3, pin 11 for axis 1, pin 12 for axis 2) before executing a command. Either one or both axis may be enabled by input if also enabled by parameter.

8.6.2 Automatic Mode Messages

The following status messages are displayed in Automatic Mode.

```
A: No Cycle Start
```

This message indicates the system is ready and waiting for a momentary Cycle Start input. This message appears only after the CLM is powered up and initialized or upon entry into Automatic Mode.

A: Cycle Stop

This indicates the CYCLE STOP button was pressed to cause the CLM to stop automatic cycling at the completion of the current cycle.

A: Feeding

Indicates the axis is feeding. This may display if the Position Threshold parameter setting is too small.

A: Wait Fd Angle

Indicates the CLM is waiting for the Feed Angle input to go high. This signal indicates when the press ram is away from the material and the CLM can safely feed.

A: Cycle Delay

Indicates the cycle is complete, and the CLM is currently waiting for the "Minimum Cycle Time" delay (set in Parameter B109 for Press Intermittent mode of operation) to expire before starting the next automatic feed cycle.

A: Roll Delay

Indicates the CLM is waiting for the roll delay time to expire before executing the feed cycle. In the Roll Control Parameter (B110), the "Roll Delay Time" entry specifies the delay time before a feed, when changing direction, using Aux. Feed Length or Batching in Automatic Mode.

A: Resume Req'd

Displayed after clearing a fault to indicate a "Resume Cycle" input is required. Pressing the Resume button causes the CLM to continue the automatic feeding cycle from where the axis stopped.

```
A: Waiting Press
```

Indicates the CLM is waiting for the press to continue its stroke cycle until the Feed Angle (input) is available, indicating it is safe to feed material.

```
A: C.Stop Active
```

Displayed if the $\overline{\text{CYCLE STOP}}$ input is low (active) while in Automatic Mode, but not cycling. This message also displays when single-stepping during batching (pressing Cycle Stop and Cycle Start together causes the CLM to step one feed and press stroke at a time).

If the Cycle Stop button was not pressed as described for either case above, check the push-button switch, connectors and wiring for an electrical open.

```
A: Start Active
```

Displayed if the Cycle Start input was high upon entering Automatic Mode.

This message could indicate the Cycle Start input is wired incorrectly, or the Normally Open push-button is not functioning properly.

```
A: Resume Active
```

Displayed if the Resume Cycle input was high upon entering Automatic Mode.

If the button was not pressed, check for a malfunction of the normally open push-button or a wiring error to the input.

```
A: P.Stop Active
```

Displayed if the Part Stop input is low (active) at cycle start when batching is enabled. It is also displayed when single-stepping in batching (pressing Part Stop and Cycle Start together will cause the CLM to step one complete part at a time).

```
A: Part Stop
```

Displayed when the Part Stop input has gone high and the CLM stopped the cycle after the current part was complete or when the Batching program (last part executes) is complete.

```
A: Waiting Shear
```

Displayed when the Press Hold is active and the CLM is waiting for the Shear Feed Angle input (acknowledgment) before resuming normal cycling.

```
A: No Run Loop
```

Displayed when the Run Loop input is false (Cycle Start is inhibited) when not cycling in Automatic Mode and Loop Control is enabled in Parameter B121.

```
A: No Loop Auto
```

Displayed when Loop Auto Mode is not selected when not cycling in Automatic Mode and Loop Control is enabled in Parameter B121.

```
A:Tail Out Resume
```

Displayed after "Tail Out Stop" condition and automatic cycle is resumed

```
End of Material
```

Displayed when the Tail Out sequence is complete.

8.6.3 Manual Mode Messages

The following status messages are displayed in Manual Mode.

```
M: No Jog Cmd
```

Indicates that neither the Jog Forward nor the Jog Reverse inputs are high (in Manual Mode).

```
M: Feed Forward
```

Indicates the axis is feeding in the forward direction (Jog Forward active in Manual Mode).

```
M: Feed Reverse
```

Indicates the axis is feeding in the reverse direction (Jog Reverse active in Manual Mode).

```
M: Roll Delay
```

Indicates the CLM is waiting for the roll delay time to expire before executing the feed. In the Roll Control Parameter (B110), the "Roll Delay Time" entry specifies the delay time between jog button activation and feed motion when changing direction in Manual Mode.

```
M: Wait Fd Angle
```

Indicates that the Feed Angle input (X 3 - Pin 17) is low. The CLM will not allow the axis to jog until the feed angle is available, indicating that the press ram is clear of the material.

```
M: Ref. Search
```

```
M: Ref. Aligned
```

With the Registration function, the reference mark must be aligned before entering Automatic Mode. To perform the alignment, use the Jog Forward and Jog Reverse inputs to move to a point near the reference mark. Then, activate the Jog to Reference Mark input. The material will feed while the input is active, until reaching the reference mark. The display shows "M: Ref. Search" during the jog feed movement.

As soon as the rising edge of the mark is reached (input transitions from 0 volts to 24 volts) and the offset distance (if enabled) is fed, the feed will decelerate to a stop, and the status message "M: Ref. Aligned" will be displayed. The Aligned with Reference Mark output will be turned ON.

If the Jog to Reference Mark input is activated while the mark is aligned, movement is disabled and the status message "M: Ref. Aligned" is displayed.

8.6.4 Setup Mode Messages

The following messages are displayed in Setup Mode.

```
S: Feed Forward
```

Indicates the axis is feeding in the forward direction (Jog Forward input active in Setup Mode causes the CLM to feed the entered feed length, then stop).

```
S: Feed Reverse
```

Indicates that the axis is feeding in the reverse direction.

```
S: Fd Incomplete
```

Indicates that the jog button has been released before the end of the feed (entered feed length) for setup. Press and hold the jog button until setup feed is complete.

```
S: Wait Fd Angle
```

Indicates that the Feed Angle input is low, (X 3 - Pin 17). The CLM will not allow the axis to jog until the feed angle is available, indicating that the press ram is clear of the material.

```
S: Waiting Press
```

Indicates the CLM is waiting for the press to complete its stroke cycle before allowing the next feed cycle to start (after completing the jog feed length, manually initiate a press cycle, then initiate the next jog feed).

```
S: Start of Feed
```

Indicates that the axis is at the start of the feed position.

```
S: Roll Delay
```

Indicates the CLM is waiting for the roll delay time to expire before executing the feed. In the Roll Control Parameter (B110), the "Roll Delay Time" entry specifies the delay time between jog button activation and feed motion when changing direction in Setup Mode.

```
S: Release Jog
```

Indicates the CLM is ready to start the next feed, but the jog button has not been released since the previous feed.

If the Jog button is not pressed, check push-button switch operation and wiring.

8.7 SOT Status / Diagnostic Codes Index

When using the SOT or other host, the diagnostics may be requested through the RS-232/422/485 serial port in expanded text format or as a corresponding diagnostic code number (refer to Serial Interface in Chapter 4). The index at the beginning of this chapter lists the CLM displays in alphabetical order. The following index correlates the CLM displays in order of the numeric, diagnostic code equivalents. Diagnostic codes on the IDS are listed in the next section.

SOT Code Display ..... Page

System Messages

01 M: No Jog Command 8-26
02 M: Feed Forward 8-26
03 A: No Cycle Start .. 8-23
04 A: Cycle Stop 8-23
05 A: Feeding 8-24
06 A: Wait Fd Angle ... 8-24
07 A: Cycle Delay 8-24
08 M: Roll Delay 8-27
09 S: Feed Forward 8-28
0A S: Fd Incomplete ... 8-28
0B S: Wait Fd Angle ... 8-28
0C S: Waiting Press ... 8-28
0D S: Start of Feed ... 8-28
0E CLM PARAMETER MODE . 8-21
0F Open & Close On 8-22
10 S: Roll Delay 8-29
11 A: Roll Delay 8-24
12 S: Release Jog 8-29

SOT Code Display ..... Page

13 Both Jogs High 8-22
14 M: Wait Fd Angle ... 8-27
15 A: Resume Req'd 8-24
16 S: Feed Reverse 8-28
17 M: Feed Reverse 8-27
18 Initializing Sys ... 8-21
19 A: Waiting Press ... 8-24
1A A: C.Stop Active ... 8-25
1B A: Start Active 8-25
1C A: Resume Active ... 8-25
1D M: Ref. Aligned 8-27
1E M: Ref. Search 8-27
1F No Axis Selected ... 8-23
20 Jog Input Active ... 8-22
21 Roll Inpt Active ... 8-23
22 A: P.Stop Active 8-25
23 A: Part Stop 8-26
24 A: Waiting for Shear 8-26

SOT Code Display.....Page

25 A: No Run Loop Input .8-26

26 A: No Loop Auto 8-26

27 End Of Material 8-26

28 A: Tail Out Resume ..8-26

Minor Errors

40 CLM SYSTEM ERROR
Code #MNR00 8-16

41 Zero Feedlength
Entered 8-16

42 Registr. Offset
Exceeds Fdlength 8-17

43 Zero % Feedrate
Entered 8-13

44 Axis 1 Amplifier
Is Not Ready! 8-18

45 Axis 2 Amplifier
Is Not Ready! 8-18

46 Axis 1 Has Not
Reached Position 8-18

47 Axis 2 Has Not
Reached Position 8-18

48 Stop Due To
Interrupt Input! 8-18

49 Feed Angle
Is Missing! 8-19

4A Invalid Part
Selected 8-19

4B Reference Mark
Is Not Aligned ..8-19

SOT Code Display ..... Page

4C Change in Fdlgth
Exceeds Limit 8-19

4D Feedlength
Exceeds Maximum 8-20

4E Feedlength Less
Than Minimum 8-20

4F Invalid Axis Selected 8-20

50 Axis has Changed
During Jog 8-20

51 Axis 1 Required
for Registration 8-21

52 Loop Auto Exit
Required 8-15

Soft Faults

60 CLM SYSTEM ERROR
Code #SFT00 ...8-10

61 Serial Com Port
Disconnection! 8-10

62 Serial Com Port
Overrun Error 8-11

63 Serial Com Port
Framing Error! 8-11

64 Serial Com Port
Parity Error! 8-11

65 Serial Com Port
IDS Format Error! ..8-11

66 Feed Angle Lost During Feed! 8-12

67 Serial Com Port RS485 Bus Error! ... 8-11

SOT Code Display.....Page

68 Movement While Feed Angle Low 8-12

69 Press Timeout Has Expired 8-12

6A Invalid Mode Selection! 8-12

6B Press Cycle Without Feed! 8-13

6C Correction Dist. Exceeds Fdlen. 8-13

6D Zero % Feedrate Programmed! 8-13

6E Set Up Mode Cycle Incomplete ... 8-13

6F Too Many Ref. Marks Missed 8-14

70 CLM SYSTEM ERROR Code #UPRG02 ... 8-10

71 CLM SYSTEM ERROR Code #FLPM0001 8-10

72 CLM SYSTEM ERROR Code #FLPM0002 8-10

73 Aux Feedlength is Zero! 8-14

74 Count Exceeds Part Quantity 8-14

75 Axis has Changed During Cycle! 8-14

76 Battery is Low! Replace it Soon 8-14

SOT Code Display ..... Page

77 Para. Invalid! Select P-mode! 8-15

78 Batching Program was Lost! 8-15

79 Output was not Acknowledged 8-15

7A Axis 2 Is Interrupted! 8-25

7B Tail Out Stop 8-27

7C Tail Out Inputs Missing 8-27

Hard Faults

80 CLM SYSTEM ERROR Code #HRD00 8-6

81 Parameters Lost! Clear to Cont. 8-7

82 Axis 1 Drive Runaway! 8-8

83 Axis 2 Drive Runaway! 8-8

84 CLM SYSTEM ERROR Code #PL001 8-6

85 CLM SYSTEM ERROR
Code #FXPM0001 8-6

86 Parameters Lost!
Select P - Mode 8-7

87 CLM SYSTEM ERROR
Code #UPRG01 8-6

88 EMERGENCY STOP!
EMERGENCY STOP!.....8-7

89 Axis 1 Amplifier
Hardware Fault! 8-9

SOT Code Display.....Page

8A Axis 2 Amplifier
Hardware Fault! 8-9

8B Axis 1 Motor
Has Overheated 8-9

8C Axis 1
Drive Stalled! 8-8

8D Axis 2
Drive Stalled! 8-8

8E CLM SYSTEM ERROR
Code #FLPM0003 8-6

8F Axis 2 Motor
Has Overheated! 8-9

90 Measuring Wheel
Encoder Fault! 8-10

91 CLM System
Power Loss! 8-10

8.8 IDS Status / Diagnostic Codes Index

When using the IDS, the diagnostics appear on the two digit display in a corresponding diagnostic code number. The index at the beginning of this chapter lists the displays in alphabetical order. The following index correlates the CLM displays in order of the numeric, diagnostic code equivalent display on the IDS.

IDS Code Display ..... Page

System Messages

00 Initializing Sys ... 8-21

01 M: No Jog Command 8-27

02 M: Feed (Jog) Forward 8-26

S: Feed Forward 8-28

03 M: Feed (Jog) Reverse 8-27

S: Feed Reverse 8-28

04 A: No Cycle Start .. 8-23

05 S: Waiting Press (Waiting for Press) 8-28

A: Waiting Press ... 8-24

06 M: Wait Fd Angle (Waiting Feed Angle) 8-27

S: Wait Fd Angle ... 8-28

A: Wait Fd Angle 8-24

07 A: Feeding 8-24

08 A: Cycle Delay 8-24

09 A: Cycle Stop 8-22

10 A: Resume Required . 8-23

11 M: Roll Delay (see display for type) .. 8-26

IDS Code Display ..... Page

S: Roll Delay 8-29

A: Roll Delay 8-24

12 M: Ref. Search 8-27

13 M: Ref. Aligned 8-27

14 S: Start of Feed (Setup Mode Feed) .. 8-29

15 S: Fd Incomplete (Setup Mode feed inc) 8-28

16 S: Release Jog (Setup Mode feed done) 8-29

17 CLM PARAMETER MODE . 8-21

18 CLM Input Active (see display for type)

19 A: No Run Loop Input 8-26

20 A: No Loop Auto (mode not selected) 8-26

21 End Of Material 8-26

22 A: Tail Out Resume .. 8-26

Minor Errors

40 Zero Feedlength Entered 8-16

41 Zero % Feedrate Entered 8-13

IDS Code Display .....Page

42 Feedlength Less Than Minimum 8-20

43 Feedlength Exceeds Maximum 8-20

44 Change in Fdlgth Exceeds Limit 8-19

45 Axis 1 Amplifier Is Not Ready! 8-18

46 Axis 2 Amplifier Is Not Ready! 8-18

47 Axis 1 Has Not Reached Position 8-18

48 Axis 2 Has Not Reached Position 8-18

49 Stop Due To Interrupt Input! 8-18

50 Feed Angle Is Missing! 8-19

51 Reference Mark Is Not Aligned ...8-19

52 Registr. Offset Exceeds Fdlength 8-17

53 Axis 1 Required for Registration 8-21

54 Invalid Axis Selected 8-20

55 Axis has Changed During Jog 8-20

56 Loop Auto Exit Required 8-15

IDS Code Display..... Page

Soft Faults

60 Feed Angle Lost During Feed! 8-12

61 Movement While Feed Angle Low 8-12

62 Press Cycle Without Feed! 8-13

63 Press Timeout Has Expired 8-12

64 Invalid Mode Selection! 8-12

65 Aux Feedlength is Zero! 8-14

66 Set Up Mode Cycle Incomplete ...8-13

67 Axis has Changed During Cycle! 8-14

68 Too Many Reference Marks Missed 8-14

69 Correction Distance Exceeds Feedlength ...8-13

70 Para. Invalid! Select P-mode! 8-15

71 Battery is Low! Replace it Soon 8-14

72 Axis 2 Is Interrupted! 8-15

73 Tail Out Stop 8-17

74 Tail Out Inputs Missing 8-15

IDS Code Display ..... Page

Hard Faults

80 EMERGENCY STOP! 8-7

81 Axis 1 Drive Runaway! . 8-8

82 Axis 2 Drive Runaway! . 8-8

83 Axis 1 Drive Stalled! . 8-8

84 Axis 2 Drive Stalled! . 8-8

85 Axis 1 Amplifier Hardware Fault! 8-9

86 Axis 2 Amplifier Hardware Fault! 8-9

87 Axis 1 Motor Has Overheated 8-9

88 Axis 2 Motor Has Overheated! 8-9

89 Measuring Wheel Encoder Fault! 8-10

90 Parameters Lost! Select P - Mode 8-7

91 CLM System Power Loss! 8-10

99 Communications or System Error: See CLM Display