CNC

QUICK SIX

TROUBLESHOOTING AND SPARE PARTS MANUAL

Serial Nr:
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A n error has occurred during setup or cycling of the bar feeder. When an error occurs, an alarm message is generated on the remote control station. Also provided are some possible causes as to why the error has occurred. This troubleshooting guide discusses every alarm that the bar feed may generate. In conjunction with each alarm will be a brief description of what the alarm is and a few tips and procedures of how to correct the problem.
# Chapter 1: Alarms

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Remote control station</td>
</tr>
<tr>
<td>B</td>
<td>Control cabinet</td>
</tr>
<tr>
<td>C</td>
<td>Optional interface cable outlet</td>
</tr>
<tr>
<td>M1</td>
<td>Hydraulic pump motor</td>
</tr>
<tr>
<td>M2</td>
<td>Servo motor</td>
</tr>
<tr>
<td>M3</td>
<td>Motor dropping fingers</td>
</tr>
<tr>
<td>M5</td>
<td>Motor bar loader</td>
</tr>
<tr>
<td>QS1</td>
<td>Main disconnect switch</td>
</tr>
<tr>
<td>SP1</td>
<td>Pneumatic pressure switch</td>
</tr>
<tr>
<td>SP2</td>
<td>Hydraulic pressure switch</td>
</tr>
<tr>
<td>SQ1</td>
<td>Positioning stopper proximity switch</td>
</tr>
<tr>
<td>SQ2</td>
<td>Bar stock presence proximity switch</td>
</tr>
<tr>
<td>SQ3</td>
<td>Opening guiding channel control switch</td>
</tr>
<tr>
<td>SQ4</td>
<td>Closing guiding channel control switch</td>
</tr>
<tr>
<td>SQ5</td>
<td>Bearing blocks 1 open</td>
</tr>
<tr>
<td>SQ6</td>
<td>Bearing blocks 2 closed</td>
</tr>
<tr>
<td>SQ7</td>
<td>Control switch: pusher in rear/park position</td>
</tr>
<tr>
<td>SQ8</td>
<td>Bearing blocks 2 open</td>
</tr>
<tr>
<td>SQ9</td>
<td>Bearing blocks 1 closed</td>
</tr>
<tr>
<td>SQ10</td>
<td>Retraction system in position switch (option)</td>
</tr>
<tr>
<td>SQ11</td>
<td>Main access cover safety switch</td>
</tr>
<tr>
<td>SQ12</td>
<td>Magazine safety switch – transmitter / deflector</td>
</tr>
<tr>
<td>SQ14</td>
<td>Dropping fingers up</td>
</tr>
<tr>
<td>SQ15</td>
<td>Proximity switch dropping fingers 0-point</td>
</tr>
<tr>
<td>SQ16</td>
<td>Signal A (Encoder)</td>
</tr>
<tr>
<td>SQ17</td>
<td>Control switch main cover closed</td>
</tr>
<tr>
<td>SQ18</td>
<td>Dropping fingers safety</td>
</tr>
<tr>
<td>STP</td>
<td>Emergency stop</td>
</tr>
</tbody>
</table>
**ALARM HISTORY**

**Description:**

The Most Recent Alarms feature allows the user to view the 20 most recent alarms that have occurred on the bar feed. This is helpful when determining what to look at as far as troubleshooting problems that have recently taken place, especially when the troubleshooting involves contacting LNS America, Inc. for assistance and the message has already been cleared.

On certain lathes, once the bar feed sends an alarm to the machine, the machine will in return send an emergency stop alarm to the bar feed which overrides any bar feed alarms. Once the bar feed alarm is overridden the only way to pinpoint the original bar feed alarm is to enter into the alarm history.

This menu is located HELP menu, to locate the alarm history follow the steps below:

1. Press the HELP key on the remote control station at any time.
2. Press the PAGE DOWN key 6 times.

Use the PAGE UP and PAGE DOWN keys to scroll through alarms. The alarms are listed with the most recent alarm being the first to appear to the 20th most recent alarm being listed last.
A001 – Emergency Line Open

POSSIBLE CAUSES:
- CONNECTION
- PROBLEM IN CIRCUITRY

**Description:**

The Emergency Stop Line Open alarm occurs whenever the PLC does not detect input (I0.0). The problem is generated anytime the safety circuit contactor (K1) is not energized and all safety switches are in operating position. (Refer to the *Quick Six Instruction Manual*).

**Solution:**

Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
</table>
| 1    | Bit 0 = 0 | MODULE 0 76543210 0 | - Verify that the 1/0 connector is plugged into the PLC correctly.  
- Verify that the circuitry is wired correctly to the electrical diagrams in the *Quick Six Instruction Manual*. |
| 2    | Bit 0 = 1 | MODULE 0 76543210 1 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |

For case 1, after the solutions have been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A003 – Lathe Emergency Stop Line Open

**Description:**

The Lathe Emergency Stop Line Open alarm occurs whenever the PLC does not detect input (I0.3). The problem is generated when the lathe E-stop push button is pressed in.

**Solution:**

Press the HELP key on the remote control station. Press the F4 (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 3 = 1</td>
<td>MODULE 0 76543210 1000</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 3 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Reset the E-stop push button on the lathe.</td>
</tr>
</tbody>
</table>

For case 2, after the solutions have been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A004 – Bar Feeder Emergency Stop

Description:

The Bar Feeder Emergency Stop alarm occurs whenever the PLC does not detect input (I0.2). The problem is generated E-stop push button on the remote control station is pressed in.

Solution:

Press the HELP key on the remote control station. Press the F4 (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 2 = 1</td>
<td>MODULE 0 76543210 100</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 2 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Reset the E-stop push button on the remote control station.</td>
</tr>
</tbody>
</table>

For case 2, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A005 – Oil Pressure Failure

**POSSIBLE CAUSES:**
- PRESSURE SWITCH SP2 DEFECTIVE OR MIS-ADJUSTED
- PUMP FAILURE
- TANK EMPTY

**Description:**
The Oil Pressure Failure alarm occurs whenever the PLC does not detect input (I0.6 – SP2) while the hydraulic pump is running. The problem is generated after 30 seconds when oil pressure is not sufficient, below the factory setting of point of release of 0.8 bars, to activate the oil pressure switch. The bar feed does not alarm out until the chuck is open.

**Solution:**
Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 6 = 1</td>
<td>MODULE 0 76543210 1000000</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 6 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Check the oil level indicator on the side of the hydraulic tank and make sure there is sufficient oil. Recommended 10 gallons of ISO 100 type oil. Replace the oil pressure switch.</td>
</tr>
</tbody>
</table>

For case 2, after the solutions have been completed, Press the STOP key on the remote control station to clear the message and reset the alarm.
A006 – Air Pressure Failure

Description:

The Air Pressure Failure alarm occurs whenever the PLC does not detect input (I0.5 – SP1) after a period of 5 seconds. The problem is generated anytime air pressure is not sufficient, below 45psi, to make the air pressure switch.

Solution:

Press the HELP key on the remote control station. Press the F4 (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 5 = 1</td>
<td>MODULE 0 76543210 100000</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 5 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Raise the incoming air pressure on the air regulator to (recommended) 75 psi. and no higher than 90 psi. Replace the air pressure switch.</td>
</tr>
</tbody>
</table>

For case 2, after the solutions have been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A007 – Main Access Cover Open

Description:
The Main Access Cover Open alarm occurs whenever the PLC detects input (I0.4 – SQ11 / SQ17). The problem is generated, as a safety precaution, when the main access cover or grid protection cover is opened to prevent any movement in the bar feeder if the operator or service technician needs to perform any work inside the unit.

Solution:
Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 4 = 1</td>
<td>MODULE 0 76543210 10000</td>
<td>Close the main access cover / grid protection cover.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 4 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>

For case 2, after the solutions have been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A009 – Bar Feeder Retracted

Description:
The Bar Feeder Retracted alarm occurs whenever the PLC detects input (I0.1 – SQ10). The problem is generated when the bar feeder is retracted for spindle liner changeover.

Solution:
Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 1 = 1</td>
<td>MODULE 0 76543210 10</td>
<td>Put the bar feeder back in its working position and lock in place.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 1 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>

For case 1, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A012 – Bar Magazine Indexing Interrupted

BAR MAGAZINE
INDEZING INTERRUPTED!

POSSIBLE CAUSES:
- REFLECTIVE SENSOR OBSTRUCTED
- REFLECTIVE SENSOR MISALIGNED
- REFLECTIVE SENSOR DEFECTIVE

Description:
The Bar Magazine Indexing Interrupted alarm occurs when the loader rack is indexing and the input signal (I2.0 – SQ12) turns off.

Solution:

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 2 = 1</td>
<td>MODULE 2 76543210</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 2 = 0</td>
<td>MODULE 2 76543210</td>
<td>Check to see if there is any obstruction interfering with the reflector. Make sure that the SQ12 switch is adjusted and aligned correctly. If the input still does not turn on, the problem can be isolated to a defective switch or defective cable. Replace the cable and switch.</td>
</tr>
</tbody>
</table>

For case 2, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A023 – Servo Drive Alarm

SERVO DRIVE ALARM!

- TURN OFF MAIN POWER
- WAIT FOR 2 SECONDS
- RESTORE MAIN POWER

IF PROBLEM PERSISTS
REFER TO INSTRUCTION MANUAL

Description:
The Servo Drive Alarm occurs if the Mitsubishi servo amplifier generates an alarm.

Solution:
Turn the main power off to the Quick Six for 2 seconds and turn the power back on.

Note: If the alarm keeps recurring, check the alarm code on the Mitsubishi servo amplifier and refer to Mitsubishi Servo Amplifier Alarm List.
A024 – Servo Motor Not Ready

Description:
The PLC outputs a signal (Q4.4) to servo amplifier, which engages the servo motor and puts the servo motor in a “servo lock” condition. If the servo amplifier does not recognize the signal after 3 seconds, this alarm is generated.

Solution:
- Verify that the CN1B connector is seated properly in the allotted socket on the servo amplifier.
- Verify that the PLC output (Q4.4) is turning on when the manual or automatic cycle is started.
- Verify that the K1 contactor is activated; input (I0.0) should be on.

If the problem persists please contact LNS America, Inc. for further information.
A025 – Servo Motor Positioning Error

Description:

The Servo Motor Following Error alarm occurs due to a mechanical obstacle preventing the bar stock from feeding out. The torque on the servo motor will build up when the obstacle prohibits the stock from moving, once the torque reaches a certain limit the PLC instructs the servo amplifier to quit pushing and this alarm message appears on the remote control station.

Solution:

<table>
<thead>
<tr>
<th>Seq. #</th>
<th>Solution</th>
</tr>
</thead>
</table>
| ##     | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.  
- Check for any mechanical obstacles that the bar stock may be hitting. Remove obstacle if this is the case.  
- Check the bar stock diameter. Make sure that the actual diameter is the same as the value entered in for the corresponding parameter in the Part Setup menu.  
- Check the alignment between the bar feeder and the lathe. The lathe or the bar feeder may have shifted over a long period if either is not lagged to the floor securely. |

If the problem persists please contact an LNS agency for further information.
A042 – Home Position Proximity Switch SQ7 Missing

**Home Position Proximity Switch SQ7 Signal Missing!**

**Possible Causes:**
- SQ7 signal switch defective or mis-adjusted
- Chain broken

**Description:**
The Home Position Proximity Switch SQ7 Signal Missing alarm occurs if input (I1.5 – SQ7) is not detected by the PLC either during the re-referencing.

**Solution:**
Press the STOP key on the remote control station to clear the message and reset the alarm. Press the HELP key. Press F4 (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 5 = 1</td>
<td>MODULE 1 76543210 100000</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 5 = 0</td>
<td>MODULE 1 76543210 0</td>
<td>Check to see if there is a mechanical obstruction preventing the carrier flag from reaching the home position. Make sure that the SQ7 switch is adjusted to within a sensing distance of 0.5mm-1mm from the measuring stop. If the input still does not turn on, the problem can be isolated to a defective switch or defective cable. Replace the cable and switch.</td>
</tr>
</tbody>
</table>

For case 2, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
**A044 – Bar Loading Error**

**BAR LOADING ERROR!**
**HEX, SQUARE BARS**

**POSSIBLE CAUSES:**
- **LOADING SAFETY TIME**
  **ELAPSED**
- **BAR STOCK NOT FED**
  **THROUGH THE COLLET**
  **OF THE LATHE**

**Description:**

The Bar Loading Error alarm occurs during the top-cut positioning sequence when loading profiled material. During the loading cycle, for profiled material, the bar stock is brought to the back of the clamping device. When this position is reached, the spindle is jogged at a very low rpm and the pusher begins a pecking motion until the profile of the material and the profile of the chuck jaws are aligned and the bar is fed out to the top-cut position. If the top-cut position is not reached after 20 pecking cycles, this alarm is generated.

**Solution:**

Alarm needs to be cleared. Press the STOP button on the remote control station to clear and reset the alarm. Remove the bar from the spindle and restart the top-cut positioning cycle.

If the problem persists please contact LNS America, Inc. for further information.
Servo Amplifier/PLC Communication Fault

Description:
The Servo Amplifier/PLC Communication Fault alarm occurs when the PLC sends a message to the servo amplifier and the message is not confirmed by the servo amplifier via a checksum or vice versa. This is generated if one of three conditions is not met:

1. The data sent did not match the data received.
2. After 10 seconds, no response from the Servo Amplifier.
3. On power up, the amplifier and PLC parameters do not match.

Solution:

- Verify that the CN3 connector is connected properly on the servo amplifier as well as on the PLC.
- Verify the 24VDC supply for the PLC. Any voltage fluctuation can result in poor performance of the PLC.

If the problem persists please contact LNS America, Inc. for further information.
Description:
The Bar Magazine Indexing Motor Faulty alarm is generated during the loading sequence when the output for the indexing motor (M5) is active and the state of the input (I1.0 – SQ2), bar magazine diameter adjustment proximity switch, does not change.

Solution:
Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.

- Make sure that the SQ2 switch is adjusted to within 0.5mm-1mm from the chain fingers.
- Check that the motor is operational.

If the problem persists please contact LNS America, Inc. for further information.
A046 – Chuck Closed Prior to Feed Out Complete

**Description:**

The Clamping Device Has Closed Prior To Completing The Feed Out alarm occurs if the input for the clamping device closed is detected before the value of the *Input Part Length* parameter is reached.

**Solution:**

- Verify that the clamping device is closing properly and that the *Clamping Signal Active* interface parameter is set in conjunction with how the interface signal is being sent.
- Verify that the correct part length has been entered in the *PARAMETERS RELATED TO APPLICATIONS* menu.
A048 – Safety Time for Part Feed Out

Description:
The Safety Time For Part Feed Out Elapsed alarm occurs if the value set in OVERALL PART LENGTH is not reached within 1 minute after the bar feed is commanded to feed out.

Solution:
Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.
- Make sure that value for the OVERALL PART LENGTH is correct.
- Check for any mechanical obstruction that will not allow the bar feed to reach the feed out distance.

Contact LNS America, Inc. for further information.
A049 – Measuring Cell SQ@ is Activated too Early

Description:

The Measuring Cell SQ@ is Activated Too Early alarm occurs during the loading cycle if input signal (I0.7 – SQ1) turns on too early.

Solution:

- Verify that the length of the bar that was loaded should not exceed 6’4”.
- The pusher is not cut to proper length or does not correspond to the “Length of Feeding Pusher.”
A050 – A2 Interrupted During Loading

**Description:**

The Signal A2 Interrupted During Loading Cycle alarm occurs whenever PLC input (I3.1) drops out during the loading cycle.

**Solution:**

Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. Remove the bar stock from the loading channel and reset the bar feeder and the lathe in automatic cycle.
A053 – Lathe Did Not Resume Its Production Cycle

**Description:**

The Lathe Did Not Resume Its Production Cycle alarm occurs if the bar feed does not recognize the chuck signal input (I3.0 – A1) within 1 minute after reaching top-cut position.

**Solution:**

Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. Restart the bar feeder and the lathe automatic cycle.
**Chapter 1: Alarms**

**Pusher Support Up Motion Not Completed**

![Box with text](image)

**Possible Causes:**
- Signal switch SQ3 missing or SQ4 always present
- SQ3 or SQ4 malfunction
- Mechanical problem

**Description:**

The Pusher Support Up Motion Not Completed alarm occurs if input (I1.1 – SQ3) does not turn on when the channel opens up.

**Solution:**

Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 1 = 1</td>
<td>76543210</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>
| 2    | Bit 1 = 0 | 76543210       | - Check to see if a mechanical obstacle prevents the channel from opening.  
|      |         |                | - Check the channel opening/closing cylinder functionality.                |
|      |         |                | - Check the adjustment and functionality of the SQ3 and SQ4 switch.       |

For case 1, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
### Pusher Support Down Motion Not Completed

**GUIDING CHANNEL MALFUNCTION DURING CLOSING!**

**POSSIBLE CAUSES:**
- CLOSING MECHANISM MALFUNCTION
- SIGNAL SWITCH SQ4 DEFECTIVE OR MIS-ADJUSTED

### Description:
The Guiding Channel Malfunction During Closing alarm occurs if input (I1.2 – SQ4) does not turn on when the channel closes.

### Solution:

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 2 = 1</td>
<td>MODULE 1 76543210 100</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>
| 2    | Bit 2 = 0 | MODULE 1 76543210 0 | • Check to see if a mechanical obstacle prevents the channel from opening.  
• Check the channel opening/closing cylinder functionality.  
• Check the adjustment and functionality of the SQ4 switch. |

For case 2, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
GUIDING CHANNEL FIRST SECTION NOT FULLY OPEN!

POSSIBLE CAUSES:
- SIGNAL SWITCH SQ5 MISSING OR SQ6 ALWAYS PRESENT
- SQ5 OR SQ6 MALFUNCTION
- MECHANICAL PROBLEM

Description:
The Guiding Channel First Section Not Fully Open alarm occurs if input (I1.3 – SQ5) does not turn on when the channel opens up.

Solution:
Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 1 = 1</td>
<td>MODULE 1 76543210</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>
| 2    | Bit 1 = 0 | MODULE 1 76543210 | ▪ Check to see if a mechanical obstacle prevents the channel from opening.  
▪ Check the channel opening/closing cylinder functionality.  
▪ Check the adjustment and functionality of the SQ5 and SQ6 switch. |

For case 1, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
**Guiding Channel First Section Not Fully Closed**

GUIDING CHANNEL
FIRST SECTION NOT
FULLY CLOSED!

POSSIBLE CAUSES:
- SIGNAL SWITCH SQ6
  ALWAYS PRESENT
- SQ6 OR SQ5 MAL-
  FUNCTION
- MECHANICAL PROBLEM

**Description:**

The Guiding Channel First Section Not Fully Closed alarm occurs if input (I1.4 – SQ6) does not turn on when the channel closes.

**Solution:**

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 2 = 1</td>
<td>MODULE 1 76543210 100</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>
| 2    | Bit 2 = 0 | MODULE 1 76543210 0 | ▪ Check to see if a mechanical obstacle prevents the channel from opening.  
▪ Check the channel opening/closing cylinder functionality.  
▪ Check the adjustment and functionality of the SQ6 and SQ5 switch. |

For case 2, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
Chapter 1: Alarms

Guiding Channel Second Section Not Fully Open

GUIDING CHANNEL SECOND SECTION NOT FULLY OPEN!

POSSIBLE CAUSES:
- SIGNAL SWITCH SQ8 MISSING OR SQ9 ALWAYS PRESENT
- SQ8 OR SQ9 MALFUNCTION
- MECHANICAL PROBLEM

Description:
The Guiding Channel Second Section Not Fully Open alarm occurs if input (I1.6 – SQ8) does not turn on when the channel opens up.

Solution:
Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 1 = 1</td>
<td>MODULE 1 76543210 10</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>
| 2    | Bit 1 = 0 | MODULE 1 76543210 0 | ▪ Check to see if a mechanical obstacle prevents the channel from opening.  
▪ Check the channel opening/closing cylinder functionality.  
▪ Check the adjustment and functionality of the SQ8 and SQ9 switch. |

For case 1, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
**Guiding Channel Second Section Not Fully Closed**

**GUIDING CHANNEL SECOND SECTION NOT FULLY CLOSED!**

**POSSIBLE CAUSES:**
- SIGNAL SWITCH SQ9 MISSING OR SQ8 ALWAYS PRESENT
- SQ9 OR SQ8 MAL-FUNCTION
- MECHANICAL PROBLEM

**Description:**

The Guiding Channel Second Section Not Fully Closed alarm occurs if input (I1.7 – SQ9) does not turn on when the channel closes.

**Solution:**

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 2 = 1</td>
<td>MODULE 1 76543210</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>
| 2    | Bit 2 = 0 | MODULE 1 76543210 | *Check to see if a mechanical obstacle prevents the channel from opening.*  
*Check the channel opening/closing cylinder functionality.*  
*Check the adjustment and functionality of the SQ8 and SQ9 switch.* |

For case 2, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
**A082 – Bar Dropping Fingers Malfunction**

BAR DROPPING FINGERS MALFUNCTION!

POSSIBLE CAUSES:
- SIGNAL SWITCH SQ15 DEFECTIVE OF MIS-ADJUSTED
- MECHANICAL PROBLEM
- DEFECTIVE MOTOR

Description:
The Bar Dropping Fingers Malfunction alarm occurs when the bar dropping fingers are returning to the home position and input signal (I2.3 – SQ15) does not turn on.

Solution:
- Force the bar feed to do a home reference. (See Reference Procedure.)
- Check the adjustment and functionality of the SQ15 switch.
- Consult local LNS agency for more information.
A116 – Bar Stock Loading Error

BAR STOCK LOADING ERROR!

POSSIBLE CAUSES:
- MAGAZINE EMPTY
- BAR SELECTION DEVICE MIS-ADJUSTED
- GUIDING CHANNEL EMPTY DUE TO MIS-LOADING

A116

Description:
The Bar Stock Loading Error alarm occurs if input (I1.2 – SQ3) is still active after the loading flag returns home after positioning the new bar into the spindle for top-cut. This alarm is also generated during the loading cycle if input (I1.2 – SQ3) does not detect a new bar and the v-channel drops to the lower position.

Solution:
Press the STOP key on the remote control station to clear the message and reset the alarm. Press the HELP key. Press F4 (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 2 = 1</td>
<td>MODULE 1 76543210</td>
<td>• Check that the loading flag is pushing the new bar past the measuring cell (SQ3).</td>
</tr>
</tbody>
</table>
| 2    | Bit 2 = 0 | MODULE 1 76543210 | • Load bar stock onto the magazine rack.  
• Check that the loading fingers are set to pick up a single bar. |
A118 – Measuring Cell SQ1 Signal Defective

**Description:**

The Measuring Cell SQ1 Signal Defective alarm occurs during new bar measuring if input signal (I0.7 – SQ1) does not turn off.

**Solution:**

Press the HELP key on the remote control station. Press the F4 key (Page Down icon) twice.

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit 7 = 1</td>
<td>MODULE 0 76543210 10000000</td>
<td>Check to see if there is a mechanical obstruction preventing the measuring stop from dropping. Make sure that the SQ1 switch is adjusted to within a sensing distance of 0.5mm-1mm from the measuring stop. Check the wiring of switch SQ1.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 7 = 0</td>
<td>MODULE 0 76543210 0</td>
<td>Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.</td>
</tr>
</tbody>
</table>

For case 1, after the solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
## Software Sequence

<table>
<thead>
<tr>
<th>Seq. #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Checks if amplifier is O.K.</strong>  &lt;br&gt; Checks torques – forces STOP mode  &lt;br&gt; Initializes unit/startup conditions of PLC</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Channels open</strong>  &lt;br&gt; Checks that the loading flag is in its home position (SQ7 ON).</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Loading flag advances material for measuring</strong>  &lt;br&gt; Detects and measures barstock using SQ1. If using long barstock, the measuring will take place with the loading flag otherwise the pusher will advance the barstock for measuring.</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Loading flag advances past front of pusher</strong>  &lt;br&gt; The loading flag advances 10mm past the front end of the pusher. This is to ensure there is no barstock under the pusher support when it closes.</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Loading flag retracts to its home position</strong>  &lt;br&gt; Confirms that SQ7 is ON.</td>
</tr>
<tr>
<td>6.</td>
<td><strong>Pusher channel closes</strong>  &lt;br&gt; Checks that channels are not still open (SQ3 OFF).</td>
</tr>
<tr>
<td>7.</td>
<td><strong>Confirms pusher support is closed</strong>  &lt;br&gt; Confirms that the pusher support is closed (SQ4 ON).  &lt;br&gt; Front two channels close according to the pusher position.</td>
</tr>
<tr>
<td>8.</td>
<td><strong>Advances barstock for measuring calculation</strong>  &lt;br&gt; If using profiled material, the barstock is positioned to the back of the clamping device. If loading a short barstock, the pusher will advance the bar forward to be measured by SQ1.</td>
</tr>
<tr>
<td>9.</td>
<td><strong>Advances barstock to top-cut position</strong>  &lt;br&gt; Barstock has been measured and proceeds to top-cut position. If using profiled material the pecking cycle is activated.</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Barstock in top-cut position</strong>  &lt;br&gt; Top-cut position is achieved and is waiting for clamping device to close.</td>
</tr>
<tr>
<td>11.</td>
<td><strong>Production cycle</strong>  &lt;br&gt; Channels open according to pusher position.</td>
</tr>
<tr>
<td>12.</td>
<td><strong>Pusher retracts to home position</strong>  &lt;br&gt; The pusher retracts to its home position to initiate the new bar loading (SQ7 ON).</td>
</tr>
</tbody>
</table>
13. **Open Channels**  
Front two channels open then the pusher supports lifts up. (SQ4 OFF)

14. **Pusher support opens**  
Confirms that SQ3 is ON

15. **Loads new barstock**  
The loading fingers rise to except new barstock and the loader rack indexes to load new bar.

16. **Verify that barstock is loaded**  
Confirms that new barstock has been loaded (SQ2 ON) and stop loader rack indexing.

17. **Loading fingers down**  
Loading fingers lower barstock into guiding elements.
# Mitsubishi Servo Amplifier Alarm List

<table>
<thead>
<tr>
<th>No.</th>
<th>Start-up sequence</th>
<th>Fault</th>
<th>Investigation</th>
<th>Possible cause</th>
<th>Reference</th>
</tr>
</thead>
</table>
| 1   | Power on          | 1. LED is not lit.  
2. LED flickers. | Not improved if connectors CN1A, CN1B, CN2 and CN3 are disconnected.  
Improved when connectors CN1A and CN1B are disconnected.  
Improved when connector CN2 is disconnected.  
Improved when connector CN3 is disconnected. | 1. Power supply voltage fault  
2. Servo amplifier is faulty.  
Power supply of CNP1 cabling is shorted.  
1. Power supply of encoder cabling is shorted.  
2. Encoder is faulty.  
Power supply of CN3 cabling is shorted. | Section 11.2  
Section 6.6 of the Mitsubishi Servo Amplifier manual  
Chapter 7 of the Mitsubishi Servo Amplifier manual |
| 2   | Switch on servo-on signal. | Alarm occurs. | Refer to Section Alarm and warning list and remove cause. | Section 11.2 |
| 3   | Gain adjustment | Rotation ripples (speed fluctuations) are large at low speed. | Make gain adjustment in the following procedure:  
1. Increase the auto tuning response level.  
2. Repeat acceleration and deceleration several times to complete auto tuning.  
Large load inertia moment causes the servo motor shaft to oscillate side to side.  
If the servo motor may be run with safety, repeat acceleration and deceleration several times to complete auto tuning. | Gain adjustment fault  
Gain adjustment fault | Chapter 7 of the Mitsubishi Servo Amplifier manual |
| 4   | Cyclic operation | Position shift occurs | Confirm the cumulative command pulses, cumulative feedback pulses and actual servo motor position. | Pulse counting error, etc. due to noise. |
When alarm or warning has occurred

POINT

- Configure up a circuit that will detect the trouble (ALM) signal and turn off the servo-on (SON) signal at occurrence of an alarm.

### Alarms and warning list

When a fault occurs during operation, the corresponding alarm or warning is displayed. If any alarm or warning has occurred, refer to Section Alarm definitions and causes and take the appropriate action. Set "1" in parameter No. 59 to output the alarm code in ON/OFF status across the corresponding pin and SG. Warnings (AL.90 to AL.E9) have no alarm codes. Any alarm code is output at occurrence of the corresponding alarm. In the normal status, the signals available before alarm code setting (CN1B-19, CN1A-18, and CN1A-19) are output.

The alarms marked • in the alarm deactivation column can be deactivated by the corresponding operations.

<table>
<thead>
<tr>
<th>Display</th>
<th>(Note 2) Alarm code</th>
<th>Name</th>
<th>Power OFF→ON</th>
<th>Press “SET” on current alarm screen.</th>
<th>Alarm reset (RES) signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CN1B-19 pin</td>
<td>CN1A-18 pin</td>
<td>CN1A-19 pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL.10</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>Undervoltage</td>
<td>•</td>
</tr>
<tr>
<td>AL.12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Memory error 1</td>
<td>•</td>
</tr>
<tr>
<td>AL.13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Clock error</td>
<td>•</td>
</tr>
<tr>
<td>AL.15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Memory error 2</td>
<td>•</td>
</tr>
<tr>
<td>AL.16</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Encoder error 1</td>
<td>•</td>
</tr>
<tr>
<td>AL.17</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Board error</td>
<td>•</td>
</tr>
<tr>
<td>AL.19</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Memory error 3</td>
<td>•</td>
</tr>
<tr>
<td>AL.1A</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Motor combination error</td>
<td>•</td>
</tr>
<tr>
<td>AL.20</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Encoder error 2</td>
<td>•</td>
</tr>
<tr>
<td>AL.24</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Main circuit error</td>
<td>•</td>
</tr>
<tr>
<td>AL.25</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Absolute position erase</td>
<td>•</td>
</tr>
<tr>
<td>AL.30</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Regenerative error</td>
<td>•</td>
</tr>
<tr>
<td>AL.31</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Overspeed</td>
<td>•</td>
</tr>
<tr>
<td>AL.32</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Overcurrent</td>
<td>•</td>
</tr>
<tr>
<td>AL.33</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Overvoltage</td>
<td>•</td>
</tr>
<tr>
<td>AL.35</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Command pulse frequency error</td>
<td>•</td>
</tr>
<tr>
<td>AL.37</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Parameter error</td>
<td>•</td>
</tr>
<tr>
<td>AL.45</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Main circuit device overheat</td>
<td>•</td>
</tr>
<tr>
<td>AL.46</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Servo motor overheat</td>
<td>•</td>
</tr>
<tr>
<td>AL.50</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Overload 1</td>
<td>•</td>
</tr>
<tr>
<td>AL.51</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Overload 2</td>
<td>•</td>
</tr>
<tr>
<td>AL.52</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Error excessive</td>
<td>•</td>
</tr>
<tr>
<td>AL.8A</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Serial communication time-out error</td>
<td>•</td>
</tr>
<tr>
<td>AL.8E</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Serial communication error</td>
<td>•</td>
</tr>
<tr>
<td>88888</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Watchdog</td>
<td>•</td>
</tr>
<tr>
<td>AL.90</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Home position return incomplete</td>
<td></td>
</tr>
<tr>
<td>AL.92</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Open battery cable warning</td>
<td></td>
</tr>
<tr>
<td>AL.96</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Home position setting warning</td>
<td></td>
</tr>
<tr>
<td>AL.98</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Software limit warning</td>
<td></td>
</tr>
<tr>
<td>AL.9F</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Battery warning</td>
<td></td>
</tr>
<tr>
<td>AL.E0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Excessive regenerative warning</td>
<td></td>
</tr>
<tr>
<td>AL.E1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Overload warning</td>
<td></td>
</tr>
<tr>
<td>AL.E3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Absolute position counter warning</td>
<td></td>
</tr>
<tr>
<td>AL.E6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Servo emergency stop warning</td>
<td></td>
</tr>
<tr>
<td>AL.E9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Main circuit off warning</td>
<td></td>
</tr>
</tbody>
</table>

Note:  
1. Deactivate the alarm about 30 minutes of cooling time after removing the cause of occurrence.
2. 0: Pin-SG off (open)  
   1: Pin-SG on (short)
### Alarm definitions and causes

When an alarm occurs, the trouble (ALM) switches off and the dynamic brake is operated to stop the servo motor. At this time, the display indicates the alarm No.

The servo motor comes to a stop. Remove the cause of the alarm in accordance with this section. The optional servo configuration software may be used to refer to the cause.

<table>
<thead>
<tr>
<th>Display</th>
<th>Name</th>
<th>Definition</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL.10</td>
<td>Undervoltage</td>
<td>Power supply voltage dropped. MR-J2S-CP:160V or less MR-J2S-CP1:83V or less</td>
<td>1. Power supply voltage is low.</td>
<td>Review the power supply.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. There was an instantaneous control power failure of 60ms or longer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Shortage of power supply capacity caused the power supply voltage to drop at start, etc.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Power was restored after the bus voltage had dropped to 200VDC. (Main circuit power switched on within 5s after it had switched off.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Faulty parts in the servo amplifier</td>
<td>Change the servo amplifier.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method Alarm (AL.10) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables.</td>
<td></td>
</tr>
<tr>
<td>AL.12</td>
<td>Memory error 1</td>
<td>RAM, memory fault</td>
<td>Faulty parts in the servo amplifier</td>
<td>Change the servo amplifier.</td>
</tr>
<tr>
<td>AL.13</td>
<td>Clock error</td>
<td>Printed board fault</td>
<td>Checking method Alarm (any of AL.11 to 13 and 15) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables.</td>
<td></td>
</tr>
<tr>
<td>AL.15</td>
<td>Memory error 2</td>
<td>EEP-ROM fault</td>
<td>1. Encode connector (CN2) disconnected</td>
<td>Connect correctly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Encoder fault</td>
<td>Change the servo motor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Encoder cable faulty (wire breakage or short)</td>
<td>Repair or change the cable.</td>
</tr>
<tr>
<td>AL.16</td>
<td>Encoder error 1</td>
<td>Communication error occurred between encoder and servo amplifier.</td>
<td>1. Encode connector (CN2) disconnected</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Encoder fault</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Encoder cable faulty (wire breakage or short)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Wrong combination of servo amplifier and servo motor</td>
<td>Use correct combination.</td>
</tr>
</tbody>
</table>
### Chapter 1: Alarms

<table>
<thead>
<tr>
<th>Display</th>
<th>Name</th>
<th>Definition</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL.17</td>
<td></td>
<td>Board error</td>
<td>CPU/parts fault</td>
<td>Faulty parts in the servo amplifier. Change the servo amplifier.</td>
</tr>
<tr>
<td>AL.19</td>
<td>Memory error 3</td>
<td>ROM memory fault</td>
<td>Checking method Alarm (A.17 or A.18) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables.</td>
<td></td>
</tr>
<tr>
<td>AL.1A</td>
<td>Motor combination error</td>
<td>Wrong combination of servo amplifier and servo motor.</td>
<td>Wrong combination of servo amplifier and servo motor connected. Use correct combination.</td>
<td></td>
</tr>
<tr>
<td>AL.20</td>
<td>Encoder error 2</td>
<td>Communication error occurred between encoder and servo amplifier.</td>
<td>1. Encoder connector (CN2) disconnected. Connect correctly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Encoder fault</td>
<td>Change the servo motor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Encoder cable faulty(wire breakage or shorted)</td>
<td>Repair or change the cable.</td>
</tr>
<tr>
<td>AL.24</td>
<td>Main circuit error</td>
<td>Ground fault occurred at the servomotor outputs (U, V and W phases) of the servo amplifier.</td>
<td>1. Power input wires and servo motor output wires are in contact at main circuit terminal block (TE1). Connect correctly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Sheathes of servo motor power cables deteriorated, resulting in ground fault.</td>
<td>Change the cable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method AL.24 occurs if the servo is switched on after disconnecting the U, V, and W power cables from the servo amplifier.</td>
<td></td>
</tr>
<tr>
<td>AL.25</td>
<td>Absolute position erase</td>
<td>Absolute position data in error</td>
<td>1. Reduced voltage of super capacitor in encoder After leaving the alarm occurring for a few minutes, switch power off, then on again. Always make home position setting again.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Battery voltage low</td>
<td>Change battery.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Battery cable or battery is faulty.</td>
<td>Always make home position setting again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Super capacitor of the absolute position encoder is not charged</td>
<td>After leaving the alarm occurring for a few minutes, switch power off, then on again. Always make home position setting again.</td>
</tr>
<tr>
<td>AL.30</td>
<td>Regenerative alarm</td>
<td>Permissible regenerative power of the built-in regenerative brake resistor or regenerative brake option is exceeded.</td>
<td>1. Wrong setting of parameter No. 0 Set correctly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Built-in regenerative brake resistor or regenerative brake option is not connected.</td>
<td>Connect correctly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. High-duty operation or continuous regenerative operation caused the permissible regenerative power of the regenerative brake option to be exceeded.</td>
<td>1. Reduce the frequency of positioning. 2. Use the regenerative brake option of larger capacity. 3. Reduce the load.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method Call the status display and check the regenerative load ratio.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Power supply voltage is abnormal. MR-J2S- CP:260V or more MR-J2S- CP1:135V or more Review power supply.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Built-in regenerative brake resistor or regenerative brake option faulty.</td>
<td>Change servo amplifier or regenerative brake option.</td>
</tr>
<tr>
<td></td>
<td>Regenerative transistor fault</td>
<td>6. Regenerative transistor faulty.</td>
<td>Checking method 1) The regenerative brake option has overheated abnormally. 2) The alarm occurs even after removal of the built-in regenerative brake resistor or regenerative brake option.</td>
<td></td>
</tr>
</tbody>
</table>

**Quick Six**

[Image of Quick Six]
<table>
<thead>
<tr>
<th>AL.31</th>
<th>Overspeed</th>
<th>Speed has exceeded the instantaneous permissible speed.</th>
<th>1. Input command pulse frequency exceeded the permissible instantaneous speed frequency.</th>
<th>Set command pulses correctly.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2. Small acceleration/deceleration time constant caused overshoot to be large.</td>
<td>Increase acceleration/deceleration time constant.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Servo system is instable to cause overshoot.</td>
<td>1. Re-set servo gain to proper value. 2. If servo gain cannot be set to proper value: 1) Reduce load inertia moment ratio; or 2) Reexamine acceleration/deceleration time constant.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Electronic gear ratio is large (parameters No. 4, 5)</td>
<td>Set correctly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Encoder faulty.</td>
<td>Change the servo motor.</td>
<td></td>
</tr>
<tr>
<td>AL.32</td>
<td>Overcurrent</td>
<td>Current that flew is higher than the permissible current of the servo amplifier.</td>
<td>1. Short occurred in servo amplifier output phases U, V and W.</td>
<td>Correct the wiring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Transistor (IPM) of the servo amplifier faulty.</td>
<td>Change the servo amplifier.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Checking method Alarm (AL.32) occurs if power is switched on after U, V and W are disconnected.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. External noise caused the overcurrent detection circuit to misoperate.</td>
<td>Take noise suppression measures.</td>
<td></td>
</tr>
<tr>
<td>AL.33</td>
<td>Overvoltage</td>
<td>Converter bus voltage exceeded 400V.</td>
<td>1. Lead of built-in regenerative brake resistor or regenerative brake option is open or disconnected.</td>
<td>1. Change lead. 2. Connect correctly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Regenerative transistor faulty.</td>
<td>Change servo amplifier</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Wire breakage of built-in regenerative brake resistor or regenerative brake option</td>
<td>1. For wire breakage of built-in regenerative brake resistor, change servo amplifier. 2. For wire breakage of regenerative brake option, change regenerative brake option.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Capacity of built-in regenerative brake resistor or regenerative brake option is insufficient.</td>
<td>Add regenerative brake option or increase capacity.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Power supply voltage high.</td>
<td>Review the power supply.</td>
<td></td>
</tr>
<tr>
<td>AL.35</td>
<td>Command pulse frequency error</td>
<td>Input pulse frequency of the command pulse is too high.</td>
<td>1. Pulse frequency of the manual pulse generator is too high.</td>
<td>Change the pulse frequency to a proper value.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Noise entered the pulses of the manual pulse generator.</td>
<td>Take action against noise.</td>
<td></td>
</tr>
<tr>
<td>AL.37</td>
<td>Parameter error</td>
<td>Parameter setting is wrong.</td>
<td>1. Servo amplifier fault caused the parameter setting to be rewritten.</td>
<td>Change the servo amplifier.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Regenerative brake option not used with servo amplifier was selected in parameter No.0.</td>
<td>Set parameter No.0 correctly.</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>Name</td>
<td>Definition</td>
<td>Cause</td>
<td>Action</td>
</tr>
<tr>
<td>---------</td>
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<td>--------</td>
</tr>
<tr>
<td>AL.45</td>
<td>Main circuit device overheat</td>
<td>Main circuit device overheat</td>
<td>1. Servo amplifier faulty.</td>
<td>Change the servo amplifier.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. The power supply was turned on and off continuously by overloaded status.</td>
<td>The drive method is reviewed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Air cooling fan of servo amplifier stops.</td>
<td>1. Exchange the cooling fan or the servo amplifier.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2. Reduce ambient temperature.</td>
</tr>
<tr>
<td>AL.46</td>
<td>Servo motor overheat</td>
<td>Servo motor temperature rise actuated the thermal protector.</td>
<td>1. Ambient temperature of servo motor is over 40°C.</td>
<td>Review environment so that ambient temperature is 0 to 40°C.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Servo motor is overloaded.</td>
<td>1. Reduce load.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2. Review operation pattern.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. Use servo motor that provides larger output.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Thermal protector in encoder is faulty.</td>
<td>Change servo motor.</td>
</tr>
<tr>
<td>AL.50</td>
<td>Overload 1</td>
<td>Load exceeded overload protection characteristic of servo amplifier.</td>
<td>1. Servo amplifier is used in excess of its continuous output current.</td>
<td>1. Reduce load.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Load ratio 300%: 2.5s or more</td>
<td>2. Servo system is instable and hunting.</td>
<td>2. Review operation pattern.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Load ratio 200%: 100s or more</td>
<td></td>
<td>3. Use servo motor that provides larger output.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2. Install limit switches.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Encoder faulty.</td>
<td>Change the servo motor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method</td>
<td>When the servo motor shaft is rotated with the servo off, the cumulative feedback pulses do not vary in proportion to the rotary angle of the shaft but the indication skips or returns midway.</td>
</tr>
<tr>
<td>AL.51</td>
<td>Overload 2</td>
<td>Machine collision or the like caused max. output current to flow successively for several seconds.</td>
<td>1. Machine struck something.</td>
<td>1. Review operation pattern.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Servo system is instable and hunting.</td>
<td>Connect correctly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method</td>
<td>When the servo motor shaft is rotated with the servo off, the cumulative feedback pulses do not vary in proportion to the rotary angle of the shaft but the indication skips or returns midway.</td>
</tr>
<tr>
<td>Display</td>
<td>Name</td>
<td>Definition</td>
<td>Cause</td>
<td>Action</td>
</tr>
<tr>
<td>---------</td>
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<td>------------</td>
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<td>--------</td>
</tr>
<tr>
<td>AL.52</td>
<td>Error excessive</td>
<td>The droop pulse value of the deviation counter exceeded the encoder resolution x 10 [pulse].</td>
<td>1. Acceleration/deceleration time constant is too small. &lt;br&gt;2. Internal torque limit 1 (parameter No.28) is too small.</td>
<td>Increase the acceleration/deceleration time constant. Increase the torque limit value.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Motor cannot be started due to torque shortage caused by power supply voltage drop.</td>
<td>1. Review the power supply capacity. 2. Use servo motor that provides larger output.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Position control gain 1 (parameter No.7) value is small.</td>
<td>Increase set value and adjust to ensure proper operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Servo motor shaft was rotated by external force.</td>
<td>1. When torque is limited, increase the limit value. 2. Reduce load. 3. Use servo motor that provides larger output.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7. Encoder faulty</td>
<td>Change the servo motor.</td>
</tr>
<tr>
<td>AL.8A</td>
<td>Serial communication time-out error</td>
<td>RS-232C or RS-422 communication stopped for longer than the time set in parameter No.23.</td>
<td>1. Communication cable breakage.</td>
<td>Repair or change communication cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Communication cycle longer than parameter No. 23 setting.</td>
<td>Set correct value in parameter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Wrong protocol.</td>
<td>Correct protocol.</td>
</tr>
<tr>
<td>AL.8E</td>
<td>Serial communication error</td>
<td>Serial communication error occurred between servo amplifier and communication device (e.g. personal computer).</td>
<td>1. Communication cable fault (Open cable or short circuit)</td>
<td>Repair or change the cable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Communication device (e.g. personal computer) faulty</td>
<td>Change the communication device (e.g. personal computer).</td>
</tr>
<tr>
<td>88888</td>
<td>Watchdog</td>
<td>CPU, parts faulty</td>
<td>Fault of parts in servo amplifier</td>
<td>Change servo amplifier.</td>
</tr>
</tbody>
</table>

Checking method
Alarm (88888) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables.
**Remedies for warnings**

If AL.E6 occurs, the servo off status is established. If any other warning occurs, operation can be continued but an alarm may take place or proper operation may not be performed. Use the optional servo configuration software to refer to the cause of warning.

<table>
<thead>
<tr>
<th>Display</th>
<th>Name</th>
<th>Definition</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL 90</td>
<td>Home position return incomplete</td>
<td>In incremental system: 1. Positioning operation was performed without home position return. 2. Home position return ended abnormally. In absolute position detection system: 1. Positioning operation was performed without home position setting. 2. Home position setting ended abnormally.</td>
<td>1. Positioning operation was performed without home position return. 2. Home position return speed could not be decreased to creep speed. 3. Limit switch was actuated during home position return starting at other than position beyond dog.</td>
<td>1. Perform home position return. 2. Review home position return speed/creep speed/moving distance after proximity dog.</td>
</tr>
<tr>
<td>AL 92</td>
<td>Open battery cable warning</td>
<td>Absolute position detection system battery voltage is low.</td>
<td>1. Battery cable is open. 2. Battery voltage dropped to 2.8V or less.</td>
<td>Repair cable or changed. Change battery.</td>
</tr>
<tr>
<td>AL 96</td>
<td>Home position setting warning</td>
<td>Home position setting could not be made.</td>
<td>1. Droop pulses remaining are greater than the in-position range setting. 2. Command pulse entered after clearing of droop pulses. 3. Creep speed high.</td>
<td>Remove the cause of droop pulse occurrence. Do not enter command pulse after clearing of droop pulses. Reduce creep speed.</td>
</tr>
<tr>
<td>AL 98</td>
<td>Software limit warning</td>
<td>Software limit set in parameter is reached.</td>
<td>1. Software limit was set within actual operation range. 2. Point table of position data in excess of software limit was executed. 3. Software limit was reached during JOG operation or manual pulse generator operation.</td>
<td>Set parameter No. 48 to 51 correctly. Set point table correctly. Perform operation within software limit range.</td>
</tr>
<tr>
<td>AL 9F</td>
<td>Battery warning</td>
<td>Voltage of battery for absolute position detection system reduced.</td>
<td>Battery voltage fell to 3.2V or less.</td>
<td>Change the battery.</td>
</tr>
<tr>
<td>AL E0</td>
<td>Excessive regenerative warning</td>
<td>There is a possibility that regenerative power may exceed permissible regenerative power of built-in regenerative brake resistor or regenerative brake option.</td>
<td>Regenerative power increased to 85% or more of permissible regenerative power of built-in regenerative brake resistor or regenerative brake option.</td>
<td>1. Reduce frequency of positioning. 2. Change regenerative brake option for the one with larger capacity. 3. Reduce load.</td>
</tr>
<tr>
<td>AL E1</td>
<td>Overload warning</td>
<td>There is a possibility that overload alarm 1 or 2 may occur.</td>
<td>Load increased to 85% or more of overload alarm 1 or 2 occurrence level.</td>
<td>Refer to AL.50, AL.51.</td>
</tr>
<tr>
<td>AL E3</td>
<td>Absolute position counter warning</td>
<td>Absolute position encoder pulses faulty.</td>
<td>1. Noise entered the encoder. 2. Encoder faulty.</td>
<td>Take noise suppression measures. Change servo motor.</td>
</tr>
<tr>
<td>AL E6</td>
<td>Servo emergency stop warning</td>
<td>EMG-SG is open.</td>
<td>External emergency stop was made valid. (EMG-SG opened.)</td>
<td>Ensure safety and deactivate emergency stop.</td>
</tr>
<tr>
<td>AL E9</td>
<td>Main circuit off warning</td>
<td>Servo was switched on with main circuit power off.</td>
<td></td>
<td>Switch on main circuit power.</td>
</tr>
</tbody>
</table>
Chapter 2: Common Issues

The Quick Six is designed to be a user-friendly, simple, and reliable bar feeder, covering a range of diameters 5/16” to 3 1/8”. Although easy to use, including extremely quick changeovers and the capability for unmanned operation this unit is not flawless. A list of common issues that have been documented by service technicians and problems relayed back from customers has been compiled in this manual. This chapter discusses the most common problems that have been observed. Along with each problem, a brief description is given as well as quick reference charts of symptoms/solutions, sequences, and procedures for adjustments, changeovers and alignment.
**Low Voltage / PLC Shutdown**

**Description:**

The Quick Six uses a LNS PCD2 controller (PLC) to send/receive inputs/outputs. The PLC is powered by a +24VDC input supplied by a transformer. The input supply voltage must be regulated to ensure proper functioning. The remote control station, which is used to send/receive data back and forth with the PLC, is powered by the +24VDC on the PLC.

Through the remote control station, the user can command the bar feeder to perform different functions by sending data to the PLC. The PLC will then transfer data back to the remote control station to either inform the user the status of what the bar feeder is doing or is waiting for the user to command the next task.

The following chart discusses possible problems, which may be occurring between the PLC and the remote control station:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause/s</th>
<th>Solution/s</th>
</tr>
</thead>
</table>
| SPS No response                              | - The PLC toggle switch is not in the RUN position  
- A sudden drop in the supply voltage has caused a communication problem between the PLC and the remote control station  
- The battery was either removed or battery voltage was low while the bar feed was powered down which caused the PLC to lose its program | - Flip the toggle switch on the PLC to the RUN position  
- Check the supply voltage on the PLC, can be low due to a low incoming 3 phase voltage from the lathe  
- Check the battery voltage, if it is low it will need to be replaced with a 3VDC Lithium/CD2032 battery and the program will need to be restored (refer to Chapter 4) |
| No operator action possible on the remote control station | - The PLC toggle switch is not in the RUN position  
- Low supply voltage on the PLC | - Flip the toggle switch on the PLC to the RUN position  
- Check the supply voltage on the PLC, can be low due to a low incoming 3 phase voltage from the lathe |
**Cannot Change Application Setup Parameters**

In order to change the values of any parameters in the bar feed, it must be in “STOP” mode. To determine whether the bar feed is in “STOP” mode, look at the “STOP” key on the remote control station. When the “STOP” key is pressed, two red LED’s will illuminate on either side of the remote.

In certain cases, as a precaution, the bar feed will not allow the parameters in the PARAMETERS RELATED TO APPLICATION menu to be changed unless a few conditions are met. The following conditions are required to change these parameters:

- Guiding channels must be open.
- Bar stock (if any) must be removed.

When removing the bar stock, the bar feed must recognize that the bar has been removed. In order for the bar feed to recognize that the bar has been removed follow the steps below:

1. Press the manual mode icon.
2. Press the remove bar stock icon. Note: If the remove bar stock icon is not present, skip the next step and go to Step 4.
3. After pressing the remove bar stock icon, it will ask you to verify if the bar has been removed. Remove the bar from the channel and press and hold the confirmation icon.
4. Press the “STOP” key on the remote control station and proceed with changing the parameters.

---

**Multiple Bars have been Loaded into the Channel**

**Two bars loaded at a time**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch SQ2 is out of adjustment.</td>
<td>Adjust switch SQ2. See pg. 3-14 for the procedure to properly adjust the switch.</td>
</tr>
</tbody>
</table>
Oil Is Leaking on the Floor / In the Machine

The outboard support, located in front of the bar feed system, stabilizes the guidance of the bar. The support, which incorporates a guiding element of synthetic material, is supplied with hydraulic oil throughout the entire automatic cycle. At the outlet of the support, a portion of the hydraulic oil from the bar is recovered by centrifugal force. An air blast, positioned right in front of the bearing element, blows the residual oil off of the bar before entering the spindle. This is to keep the oil from mixing with the coolant in the machine.

The front bearing element inside the outboard support unlike the other bearing elements is asymmetrical in design and must be inserted in a particular manner. If inserted incorrectly, the hydraulic oil will not drain back into the body of the bar feed the way it is intended. Instead, the oil accumulates inside the support and eventually will leak out the front onto the floor or inside the machine (if the support extends inside the machine). Refer to the Replacing Guide Elements procedure for the proper installation of the front bearing element.

Vibration Issues

The term “vibration” is being used regarding the Quick Six, to indicate that the RPM performance of the lathe is physically deteriorated, to the point of creating an unbalanced rotational oscillation of the bar stock that is detrimental to the machining process.

Various items can cause the bar stock to vibrate, requiring the reduction of the spindle rpm to bring the anomaly back to a normal controlled rotation. These items can be related (but not limited to) the material, the lathe, the spindle reduction tubes, or the bar feed.

Material

The material must be reasonably straight. LNS has a specification of .5mm / meter (non-accumulative).

If the material is a hot roll type it will not meet our specifications.

If the material has been “cropped” to length the last 6”-12” of the end of the bar may be unusable due to being bent severely in the process.

Note: Also, there is a possibility to have a severe angle on the end of the bar, which has been cropped. This might cause the mis-loading of a new bar into the collet of the bar feed.

When running profiled material (hex, square, etc.), vibration is more likely to occur due to the physical properties of the material, especially with extremely odd shaped material, in which case a lower rpm is recommended.

The composition of the material also has an effect on the guiding of bar stock. Steel and aluminum bars are relatively easy to guide, but because of the flexibility and specific weight of brass it is generally going to be more difficult to guide at high speeds.

Lathe

The lathe should be level and on a solid foundation. LNS recommends that the lathe be bolted to the floor.

Spindle Reduction Tube

Ensure that the properly sized spindle liner has been installed (matches guiding channel size).

Ensure that the spindle liner is straight (check total run out).

Ensure that the liner is securely fastened.

Bar Feed

The bar feed must be within proper alignment to the spindle of the lathe.

The proper guiding elements should be used to provide minimal gap between the I.D. of the elements and the O.D. of the bar stock diameter. Should not exceed 10mm overall gap (5mm per side).

LNS recommends running ISO 100 hydraulic oil in the bar feed. In certain cases, a thicker oil (ISO 150) may produce better results when guiding profiled material.
The following chapter includes simple step-by-step procedures for mechanical adjustments, replacing damaged or faulty components and to resolve other issues related to the bar feeder.
Belt Tension Adjustment

This procedure is used to adjust the belt tension. After a certain amount of use, the belt may need to be tightened. When adjusting the belt, make sure that while adjusting the belt that it remains under tension in order not to lose the reference point. If this should happen, perform the Reference Procedure or call for service assistance.

Tools List:
- 17mm open end wrench

Procedure

Conditions:
- Main guiding channels open
- Main lid cover open
- Grid cover open

Step 5: Loosen the 17mm fixed hex nut.

Step 6: Loosen the 13mm jam nut.

Step 7: Turn the belt tensioner bolt clockwise to tighten and counter-clockwise to relieve tension. The belt should be tightened so it does not sag, but it should be set firmly. Be careful not to over-tighten the belt. The belt tension should measure 5N.u.
Step 8: Once the belt tension is adjusted correctly, tighten the jam nut.

Step 9: Tighten the 17mm fixed hex nut.

Procedure complete.
Pusher Changeover

This procedure is used to change the pusher. To run 8mm (5/16") to 20mm (3/4") bar stock diameter, use the 8mm pusher. To run 21mm (13/16") to 80mm (3 1/8") bar stock diameter, use the 15mm pusher.

Tools List:
- 3mm hex key
- 6mm hex key

Procedure

Conditions:
- Main bar feed power on
- Main guiding channels open

Step 1: Remove the pusher by pulling it out of the rear support and gently sliding it out of the pusher support bushing.

Step 2: Remove the pusher support bushing by loosening the 3mm bolt.

Step 3: Turn the pusher support bushing 90° and install it back onto the pusher support arm and tighten the 3mm bolt.
Chapter 3: Procedures

Step 4: Remove the two scissor support pieces by loosening the 6mm bolts. (The scissor support pieces are located by the front rest)

Step 5: Rotate the scissor support pieces 180° and install them back onto the scissor support arms and tighten the 3mm bolts.

Step 6: Loosen the 6mm bolt on the pusher flag and remove the pusher connector from the pusher.

Step 7: Attach the new pusher and the pusher connector together and tighten the 6mm bolt.

Step 8: Gently slide the pusher through the pusher support bushing and insert the pusher connector into the rear support. When inserting the pusher connector into the support, make sure that the countersink on the pusher connector is lined up with the ball detent set screw on the rear support.

Procedure complete.
Cutting the Pusher

This procedure is used to cut the Quick Six 8mm and 15mm pushers to run bar stock up to 6’4” in length. In this procedure, both pushers will be cut.

Tools List:
- 3mm hex key
- 6mm hex key
- Tape measure
- Scribe (or tool to mark the pusher)
- M6 Drill and tap

Procedure

Conditions:
- Main lid cover open
- Main guiding channels open

Step 1: Insert a tape measure up through the spindle of the lathe and measure back from the face of the collet / chuck 76.5” towards the bar feed.

Step 2: Using a scribe or another tool, make a mark on the pusher at exactly 76.5”.

Mark the pusher at 76.5”
Step 3: Remove the pusher by pulling it out of the rear support and gently sliding it out of the pusher support bushing.

Step 4: Loosen the 6mm bolt on the pusher flag and remove the pusher connector from the pusher.

Step 5: Remove the pusher tips on both pushers (8mm and 15mm pushers).
Note: Do not completely remove the screw from the 15mm pusher tip. Loosen the screw just enough so that the tip pops out.

Step 6: Cut both pushers at the EXACT same length on the mark made on the first pusher.

Step 7: Drill and tap the small diameter pusher.
Chapter 3: Procedures

Step 8: Insert the tips back on the pushers.

15mm pusher

Install tip

8mm pusher

Install tip

Step 9: Gently slide the pusher through the pusher support bushing and insert the pusher connector into the rear support. When inserting the pusher connector into the support, make sure that the countersink on the pusher connector is lined up with the ball detent set screw on the rear support.

Procedure complete.
Reference Procedure

This procedure is used for resetting the home position of the Quick Six. This parameter allows the user to purge a reference if the bar feeder loses track of its position. BAR FEEDER LOCATION and ROTATION OF SERVO MOTOR in the BAR FEEDER SETUP should be set prior to requesting a reference.

Procedure

Conditions:
- Main bar feed power on
- Air pressure set at 5 bar (75psi)
- Main guiding channels open
- No bar stock in the channel
- Bar feed in STOP mode

Step 1: At the HOME PAGE, press the MENU key on the remote control station.

Step 2: Press the F4 (PAGE DOWN) key on the remote control station until Parameters Related to Miscellaneous Functions appears.

Step 3: Press the F3 (ENTER) key on the remote control station to open this menu.

Step 4: Press the F4 (PAGE DOWN) key on the remote control station until the “Request for Reference Point Settings” option appears.
Step 5: Press and hold the F3 (ENTER) key until the screen returns to the Home Page.

Step 6: Press the F1 key on the remote control station for Manual Mode and a Positioning Error! will occur on the screen.

Step 7: Press the F1 key on the remote control station to begin the self-referencing sequence.

Sequence: The carrier flag retracts toward the home position. The PLC waits to detect the proximity switch-SQ7 (input I1.5) and the servo amplifier looks for the torque to build up after hitting the mechanical stop simultaneously. Once the carrier flag has reached the home position, the bar dropping fingers rotate counter-clockwise to reset the bar dropping finger home position which is detected by SQ15 (input I2.3).

Procedure complete.
**Replacing Guide Elements**

The purpose of this procedure is to replace the guiding elements correctly. Use the correct size of guiding elements according to the diameter of the bar stock.

Tools List:
- Flat plated screw driver

**Procedure**

Conditions:
- Main guiding channels open
- Main lid cover open
- Grid cover open

Step 1: Remove the top and bottom guiding elements from the bearing blocks.

*Note: The top guiding elements may be easier to pry out using a flat plated screw driver.*

Step 2: Loosen the thumb screw on the outboard support.

Step 3: Remove the front nose guiding element from the inside of the outboard support.
Step 4: Insert the correct size of guiding element into the outboard support with the through-hole up, the slotted key way on the side, and the drainage slot at the bottom. Make sure that the through-hole on top is vertically aligned with the thumb screw on top of the outboard support.

Step 5: Tighten the thumb screw on the outboard support once the guiding element is in place.

Step 6: Insert the correct size of guiding elements according to bar stock diameter into the bearing blocks.

Procedure complete.
**SQ1 Adjustment – Measuring Cell**

This procedure is used to adjust the measuring cell switch.

**Tools List:**
- Small screw driver
- Two 7mm open end wrench

**Procedure**

**Conditions:**
- Main bar feed power on
- Main guiding channels open
- Smallest diameter guiding elements available (bottom blocks only)

**Step 1:** Place the bar stock in the guiding channel.

**Step 2:** Run the bar stock forward by hand.

**Step 3:** Check the vertical alignment of the sensing beam on the material. The beam should be centered on the bar stock. If the beam is not centered on the bar stock, loosen the two 7mm bolts and adjust the sensor so that it is centered. Retighten the bolts when the sensor is adjusted correctly.

**Step 4:** With a small screw driver, turn the yellow screw **counter-clockwise** to its limit.

**Step 5:** Using the small screw driver, turn the yellow screw **clockwise** until the LED light illuminates.

**Step 6:** From the point when the LED light first illuminates, turn the yellow screw one full **clockwise** revolution.

**Procedure complete.**
**SQ2 Adjustment – Bar Loading Detection Switch**

This procedure is used to adjust the bar loading detection switch. This switch detects the bar stock rolling down the loading ramp.

**Tools List:**
- Two 7mm open end wrenches
- Small screw driver

**Procedure**

**Conditions:**
- Main bar feed power on
- Grid cover open
- Main lid closed

**Step 1:** Loosen both mounting bolts with two 7mm open end wrenches on SQ2.

**Step 2:** Tilt the top of the switch all the way back and tighten both mounting bolts while holding the switch in place.

**Step 3:** With the small screw driver, turn the yellow screw on the switch clockwise to its limit to gain adjustment. The LED light will illuminate.
Step 4: With the small screw driver, turn the yellow screw on the switch **counter-clockwise** until the LED light turns off.

![Turn counter-clockwise until the LED light turns off](image)

Step 5: Open the lid of the bar feed and confirm that LED light does NOT turn on. If the light does illuminate, turn the yellow screw on the switch **counter-clockwise** until the LED light is off when the lid is open.

![Lid open and LED light off](image)

Procedure complete.
SQ7 Adjustment – Home Position Proximity Switch

The purpose of this procedure is to adjust the home position proximity switch.

Tools List:
- 13mm open end wrench
- Feeler gauge

Procedure

Conditions:
- Main bar feed power on
- Main guiding channels open
- Bar feed in home position

Step 1: Loosen the lock nut on the proximity switch, SQ7.

Step 2: Using a feeler gauge, adjust the switch so that there is a .5mm gap between that switch and the carrier flag.

Step 3: Once the correct gap is set, tighten the lock nut on the proximity switch to hold the correct position.

Procedure complete.
Chapter 3: Procedures

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SQ12 Adjustment – Safety Reflector Switch

This procedure is used to adjust the safety reflector switch (SQ12). When performing this procedure, make sure that there is nothing interfering with the switch.

Tools List:
- 3mm hex key

Procedure

Conditions:
- Main bar feed power on
- Bar feed in STOP mode

NOTE: Make sure that there is nothing interfering with the SQ12 switch. There is a light reflector on the other side of the bar feed that repels the light beam.

Step 1: Loosen the two cap screws with a 3mm hex key on SQ12.

Step 2: Adjust the switch up and down until the LED light illuminates. (The LED light is barely visible in the picture below. The LED light is located on top on the switch below the bracket.)
Step 3: Once the LED light is illuminated, tighten both cap screws while holding the switch in place.

Procedure complete.
SQ14 Adjustment – Dropping Finger Counting Proximity Switch

This procedure is used to adjust the Dropping Finger Counting Proximity Switch.

Tools List:
- Two 13mm open end wrench
- Feeler gauge

Procedure

Conditions:
- Main bar feed power on
- Grid cover open

Step 1: Loosen both nuts on each side of the proximity switch. (The second nut is not visible)

Step 2: Using a feeler gauge set the gap between the switch and the dropping finger at 1mm.
Note: Do not set a gap any smaller than 1mm. Setting the gap too small may cause the dropping finger to “clip” the switch.

Step 3: Tighten both nuts on each side once the correct gap is set.

Procedure complete.
With the help of the latest technological innovations, it is possible to update new software and restore lost data through the use of Smart Media. Smart Media, which is mainly used in photography, has been integrated for use with the user-friendly remote control station. The Smart Media Card holds a backup program for the Quick Six if at anytime there has been a power failure or any error has occurred in the user program. In addition, it automatically backs up any application-interface parameters that have been set for the most recent application being ran. Following a few systematic procedures is all it takes to be up and running with the most up to date software or restoring lost PLC programs and/or parameters.
To ensure that the right procedure is used to perform a Software Update or to restore software, check the display on the bar feed to determine its firmware version: 1.17a or 2.08.

In order to check the version of the firmware, turn the main bar feed power off and then back on again. During the power up, the first screen will show the firmware version of the display.

If the display has firmware version 1.17a, proceed to page 4-3. If the display has firmware version 2.08, proceed to page 4-20.
PLC Fault
Restore PLC Program From Memory Card to PLC – v1.17a

This procedure is used due to a defective battery or a new PLC was installed.

Procedure

Step 1: Turn off the power to the bar feed.
Step 2: Make sure the RUN/STOP switch on the PLC is in the RUN position.
Step 3: Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

Step 4: Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.

Black side facing up

Chamfered edge away from you
Step 5: Press and hold the menu button while turning on the bar feed. You may release the menu button when the following screen appears.

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

Step 9: There are 4 menu choices on this screen, press the F3 key for PLC Fault.
Step 10: When the PLC fault screen appears (seen below) press the F3 key (ENTER).

PLC memory empty due to defective battery or New PLC installed

ESC  ENTER

Step 11: Press F3 (ENTER) on the first screen that displays to Restore PLC Program from Memory Card to PLC.

Restore PLC Program From Memory Card To PLC

ESC  ENTER  PAGE DOWN

Step 12: The PLC program will now be saved from the memory card to the PLC. This may take several minutes.

Restore PLC Program From Memory Card To PLC

sending clear...

restore program...

done.

OK


Step 14: Turn off power to bar feeder.

Step 15: Move the RUN/STOP switch to RUN position.

Step 16: Restore power to the bar feeder.

Procedure complete.
PLC Fault
Restore Bar Feeder Parameters from MMI to PLC – v1.17a

Procedure

Step 1: Turn off the power to the bar feed.
Step 2: Make sure the RUN/STOP switch on the PLC is in the RUN position.
Step 3: Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

Step 4: Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.
Chapter 4: Software Update/Restore

Step 5: Press and hold the menu button while turning on the bar feed. You may release the menu button when the following screen appears.

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

Step 9: There are 4 menu choices on this screen, press the F3 key for PLC Fault.
Step 10: Press F4 (PAGE DOWN) until Restore Bar Feeder Parameters from MMI to PLC screen is displayed. Press F3 (ENTER).

Step 11: The parameters will then be restored from the MMI to the PLC.


Step 13: Turn off power to bar feeder.

Step 14: Move the RUN/STOP switch to RUN position.

Step 15: Restore power to the bar feeder.

Procedure complete.
Chapter 4: Software Update/Restore

Software Update
Restore Bar Feeder Parameters From MMI to PLC – v1.17a

Procedure

Step 1: Turn off the power to the bar feed.

Step 2: Make sure the RUN/STOP switch on the PLC is in the RUN position.

Step 3: Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

Step 4: Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.
Step 5: Press and hold the menu button while turning on the bar feed. You may release the menu button when the following screen appears.

![Menu Screen]

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

![Password Screen]

Step 9: There are 4 menu choices on this screen, press the F2 key for Software Update.

![Menu Options]

1: Display Adjust.
2: Software Update
3: PLC Fault
4: LNS Service Only
Press Appropriate F-key To Select

1 2 3 4
Step 10: When you reach the Update PLC screen, press F3 (ENTER).

Step 11: Press F4 (PAGE DOWN) until you reach the screen to Restore Bar Feeder Parameters From MMI to PLC, and press F3 (ENTER).

Step 12: The bar feeder parameters will now be saved from the display to the PLC.


Step 14: Turn off power to bar feeder.

Step 15: Move the RUN/STOP switch to RUN position.

Step 16: Restore power to the bar feeder.

Procedure complete.
Software Update

Restore Display Data from Memory Card to MMI – v1.17a

This procedure is used to update the PLC software.

Procedure

Step 1: Turn off the power to the bar feed.

Step 2: Make sure the RUN/STOP switch on the PLC is in the RUN position.

Step 3: Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

Step 4: Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.

Black side facing up  
Chamfered edge away from you
Step 5: Press and hold the menu button while turning on the bar feed. You may release the menu button when the following screen appears.

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

Step 9: There are 4 menu choices on this screen, press the F2 key for Software Update.
Step 10: When you reach the Update PLC screen, press F3 (ENTER).

Step 11: Press F3 to restore data from memory card to the display (text and icons).

Step 12: The registers will then be restored from the memory card to the display.


Step 14: Turn off power to bar feeder.
Step 15: Move the RUN/STOP switch to RUN position.

Step 16: Restore power to the bar feeder.

Procedure complete.
**Software Update**  
*Restore PLC Program from Memory Card to PLC – v1.17a*

*YOU WILL NEED TO RECORD YOUR PARAMETERS BEFORE PERFORMING THIS PROCEDURE.*  
The current parameter settings will not be saved. The parameters will need to be reprogrammed after the PLC program has been restored.

**Procedure**

**Step 1:** Turn off the power to the bar feed.

**Step 2:** Make sure the RUN/STOP switch on the PLC is in the RUN position.

**Step 3:** Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

**Step 4:** Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.

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*Quick Six*
Chapter 4: Software Update/Restore

Step 5: Press and hold the menu button while turning on the bar feed.
You may release the menu button when the following screen appears.

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

Step 9: There are 4 menu choices on this screen, press the F2 key for Software Update.

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Quick Six
Step 10: When you reach the Update PLC screen, press F3 (ENTER).

Step 11: Press F4 (PAGE DOWN) until you reach the screen to Restore PLC Program from Memory Card to PLC, press F3 (ENTER).

Step 12: The PLC program will now be saved from the memory card to the PLC. This may take several minutes.

Step 14: Turn off power to bar feeder.

Step 15: Move the RUN/STOP switch to RUN position.

Step 16: Restore power to the bar feeder.

Procedure complete.
PLC Fault – v2.08

This procedure is used due to a defective battery or a new PLC was installed.

Procedure

Step 1:  Turn off the power to the bar feed.
Step 2:  Make sure the RUN/STOP switch on the PLC is in the RUN position.
Step 3:  Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

Step 4:  Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.

Black side facing up

Chamfered edge away from you
Step 5: Press and hold the menu button while turning on the bar feed.
You may release the menu button when the following screen appears.

![Menu Screen]

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

![Password Entry]

Step 9: There are 4 menu choices on this screen, press the F3 key for PLC Fault.

![Menu Choices]

**QUICK SIX**
Step 10: When the PLC fault screen appears (seen below) press the F3 key (ENTER).

Step 11: The current parameter settings will be saved. The display will then restore the PLC program to the PLC and the parameters will then be restored to their previous settings.


Step 13: Turn off power to bar feeder

Step 14: Move the RUN/STOP switch to RUN position.

Step 15: Restore power to the bar feeder.

Procedure complete.
**Software Update – v2.08**

This procedure is used to update the PLC software.

**Procedure**

Step 1: Turn off the power to the bar feed.

Step 2: Make sure the RUN/STOP switch on the PLC is in the RUN position.

Step 3: Remove the 9 screws on the back of the pendant, and then carefully separate the back half from the front half.

Step 4: Once the 2 halves are separated insert the Smart Media card (solid back side facing up and chamfered edge away from you) into the slot.
Step 5: Press and hold the menu button while turning on the bar feed.
You may release the menu button when the following screen appears.

![Screenshot of menu screen]

Step 6: Wait until the PLC run light indicator goes from a flashing to a solid state. (This may take a few seconds.)

Step 7: Once the light is in a solid state, flip the RUN/STOP switch to STOP position. (The run light indicator will turn off)

Step 8: A password is required at this point using the number buttons on the pendant enter 3; 1; 4; 1; 5.

![Input of password]

Step 9: There are 4 menu choices on this screen, press the F2 key for Software Update.

![Menu options]

1: Display Adjust
2: Software Update
3: PLC Fault
4: LNS Service Only

Press appropriate F-key to select.
Step 10: When you have reached the Update PLC screen press the F3 key (ENTER).

Step 11: The current parameter settings will be saved. The PLC program will then be updated and the parameters will then be restored to their previous settings.


Step 13: Turn off power to bar feeder

Step 14: Move the RUN/STOP switch to RUN position.

Step 15: Restore power to the bar feeder.

Procedure complete.
Periodic maintenance of the Quick Six bar feeding system can only serve to improve the operation and prolong its useful life. Following a few simple steps can be extremely helpful and takes relatively no time at all. The list of maintenance procedures has been broken down into four groups determined by the frequency with which each procedure should be followed, however, some items should be checked more often depending on the operating environment that the equipment is exposed.
Chapter 5: Preventative Maintenance

Daily Maintenance

Verify the Air Pressure
The recommended setting for operation with optimum performance should be at a minimum pressure of 5 bar (75 psi.) and a maximum pressure of 6 bar (90 psi.).

Weekly Maintenance

Verify that the Air Decanter is Empty
The air-filtering device is equipped with and automatic drainage valve, but depending on how much water is in the pneumatic circuit of the building, the water that is recuperated can build up faster than it can be drained. Excess water in the air lines can cause pneumatic cylinders to become defective. The water causes the o-rings inside the cylinder to swell up and no longer function correctly.

Hydraulic Oil Level
When checking the level of the hydraulic oil, allow the bar feed to set idle for at least one hour so that the oil inside the coffin has time to drain back into the tank. If the oil is not allowed this time to drain back into the tank, the tank may look low, and if the oil is added it may cause an overflow.

Monthly Maintenance

Cleaning of the bar feeder
Wipe down the outside of the bar feeder with a cloth and any regular detergent. For cleaning the inside of the bar feed use a cloth or brush. However, do not use the detergents on any of the guiding channels or any other parts made of synthetic materials. The use of compressed air for cleaning is not advisable, because chips and other particles can become lodged in sensitive areas and can impede the proper operation of the bar feeder.

Hydraulics
Check the cleanliness of the hydraulic oil. It is important to wipe down the bars (even briefly) before loading them on the magazine rack. The bar feed recirculates the oil; excessive dirt and metal chips can form a deposit at the base of the coffin which can slow the oil return. The metal chips can also become lodged in the hydraulic pump causing the pump to lock up and/or the pump motor to overheat.

Rotating sleeves
In order to guarantee the correct operation of the bar feeder, the rotating sleeve must function perfectly. Although the construction of the sleeve is very sturdy and reliable, it is recommended to verify periodically that it rotates without friction. If a defect should be present, please contact your local agent. This is a wear item and it is recommended to keep spares on hand, refer to Recommended Spare Parts List.

Belt
Over time, it is possible that the tension of the belt may loosen up. To tighten the belt, refer to Belt Tension Adjustment procedure.
Annual Maintenance

Check the PLC battery
The PLC backup battery saves the PLC program in case of any power failure. The battery used in the LNS PCD2 is a non-rechargeable 3VDC Lithium/CD2032 battery. Over time, the battery will slowly discharge and an alarm message will appear on the remote control station (Low PLC Battery Alarm). The following chart shows the average life expectancy of the battery:

<table>
<thead>
<tr>
<th>Use of Automation</th>
<th>Avg Life Expectancy: 25°C</th>
<th>Avg Life Expectancy: 55°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% off</td>
<td>0% on</td>
<td>3 years</td>
</tr>
<tr>
<td>0% off</td>
<td>100% on</td>
<td>5 years</td>
</tr>
<tr>
<td>30% off</td>
<td>70% on</td>
<td>4 years</td>
</tr>
</tbody>
</table>

Verify the alignment of the bar feeder
Check alignment of bar feeder to lathe spindle to make sure neither have shifted.
Note: When ordering parts the following information will be needed to ensure better customer support:

- Bar feeder type
- Bar feeder Serial Number (found on the hydraulic tank next to the air regulator)
- Bar stock diameter
- Lathe type (make and model)
Recommended Spare Parts List

As an extended courtesy, a list of recommended spare parts has been compiled for the end user. The list consists of mechanical and electrical parts that over time may become faulty due to everyday wear on the item. For machines that are running production during multiple shifts or even 24/7, keeping an inventory of these spare parts can vastly minimize downtime. Keeping an inventory can also be very cost effective since shipping costs can escalate immensely, especially in cases where rush delivery is necessary.

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Order #</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.348</td>
<td>3.348-A</td>
<td>Air regulator</td>
</tr>
<tr>
<td>1</td>
<td>023.30.164</td>
<td>822-008.A</td>
<td>8mm pusher tip</td>
</tr>
<tr>
<td>1</td>
<td>023.30.094</td>
<td>822-015.A</td>
<td>15mm tightening sleeve</td>
</tr>
<tr>
<td>1</td>
<td>023.30.104</td>
<td>822-015.B</td>
<td>15mm pusher tip</td>
</tr>
<tr>
<td>1</td>
<td>11.002</td>
<td>822-015.C</td>
<td>15mm coupling for pusher tip</td>
</tr>
<tr>
<td>1</td>
<td>023-030-043</td>
<td>822-008</td>
<td>8mm pusher assembly</td>
</tr>
<tr>
<td>1</td>
<td>023-030-033</td>
<td>822-015</td>
<td>15mm pusher assembly</td>
</tr>
<tr>
<td></td>
<td>4.772</td>
<td>4.772</td>
<td>SQ1 &amp; SQ12 photo eye</td>
</tr>
<tr>
<td>1</td>
<td>4.790</td>
<td>822-019</td>
<td>SQ3, 4, 5, 6, 8, 9 proximity switch</td>
</tr>
<tr>
<td>1</td>
<td>4.391</td>
<td>4.391</td>
<td>SQ2, 7, 13, 15 proximity switch</td>
</tr>
<tr>
<td>1</td>
<td>4.484</td>
<td>4.484</td>
<td>SQ10, 17, 18 proximity switch</td>
</tr>
<tr>
<td>1</td>
<td>4.808</td>
<td>822-020.A</td>
<td>SQ16 absolute encoder</td>
</tr>
<tr>
<td>1</td>
<td>4.773</td>
<td>4.773</td>
<td>SQ12 reflector</td>
</tr>
<tr>
<td>1</td>
<td>4.050</td>
<td>4.050-A</td>
<td>SP2 pressure switch</td>
</tr>
</tbody>
</table>

When ordering parts, to ensure better customer support, please specify the following information:
Type of bar feeder, bar feeder serial number, bar stock diameter, and lathe type (refer to *Parts Order Form* pg. 6-3).

Spindle Liners

Ensure that the properly sized spindle liner has been installed (matches guiding channel size).
Ensure that the spindle liner is straight (check total run out).
Ensure that the liner is securely fastened.
Parts Order Form

LNS America, Inc.

Date: ________________

P.O. # ________________

Phone #: __________________________

Bill to: __________________________   Ship to: __________________________

______________________________   ________________________________

______________________________   ________________________________

______________________________   ________________________________

______________________________   ________________________________

Contact: __________________________   Attn: __________________________

Ship via: __________________________

Model of Bar feeder: ________________   Serial # of Bar feeder: ________________

Model of Lathe: ________________   Bar stock diameter: ________________

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: To place an order, this form should be photocopied, completed and faxed to (513) 528-8320
Please call (513) 528-5674 for price and availability of parts.
## Electrical Box Components

<table>
<thead>
<tr>
<th>Designation</th>
<th>LNS SA Part #</th>
<th>LNS USA Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>6.106-A</td>
<td>Interface terminal blocks (X2)</td>
</tr>
<tr>
<td>AJ1</td>
<td>4.705</td>
<td>4.705</td>
<td>Mitsubishi servo amplifier</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>6.105-A</td>
<td>Emergency Stop circuit (X3)</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td>6.108-A</td>
<td>24VDC terminal blocks (X1)</td>
</tr>
<tr>
<td>F</td>
<td>3.540</td>
<td>822-023</td>
<td>Pneumatic valves block</td>
</tr>
<tr>
<td>FU ½</td>
<td>4.416</td>
<td>6.107-A</td>
<td>Fused terminal / 2Amp for motor protection</td>
</tr>
<tr>
<td>K1</td>
<td>4.507</td>
<td>6.100-A</td>
<td>Main contactor</td>
</tr>
<tr>
<td>KM1</td>
<td>4.507</td>
<td>6.100-A</td>
<td>Hydraulic pump motor contactor</td>
</tr>
<tr>
<td>KM4</td>
<td>4.507</td>
<td>6.100-A</td>
<td>Chain loader rack motor contractor (M6)</td>
</tr>
<tr>
<td>KA1</td>
<td>4.606</td>
<td>6.102-A</td>
<td>Relay: Motor “M3” dropping finger down</td>
</tr>
<tr>
<td>KA2</td>
<td>4.606</td>
<td>6.102-A</td>
<td>Relay: Motor “M3” dropping finger up</td>
</tr>
<tr>
<td>QF1/2</td>
<td>4.138</td>
<td>6.113-A</td>
<td>Main circuit breaker (5amp)</td>
</tr>
<tr>
<td>QS1</td>
<td>4.242</td>
<td>4.242</td>
<td>Main disconnect switch</td>
</tr>
<tr>
<td>QM1</td>
<td>4.503 / 4.634</td>
<td>4.503 / 4.634</td>
<td>Main circuit breaker/Aux. contact</td>
</tr>
<tr>
<td>R1-R5</td>
<td>4.606</td>
<td>6.102-A</td>
<td>Interface relays</td>
</tr>
<tr>
<td>T1</td>
<td></td>
<td>4.688</td>
<td>3 Amp Transformer</td>
</tr>
<tr>
<td>T2</td>
<td></td>
<td>6.115-A</td>
<td>5 Amp, 24 VDC power supply</td>
</tr>
</tbody>
</table>
Chapter 6: Spare Parts

Stands

[Diagram of Stands]
Chapter 6: Spare Parts

Carriage Assembly L/R
6-8  Chapter 6: Guiding Channel Cylinder

QUICK SIX

Guiding Channel Cylinder

<table>
<thead>
<tr>
<th>REF</th>
<th>QTY</th>
<th>PART NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>023-84-104</td>
<td>Connecting fork</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>023-84-174</td>
<td>Mounting bracket</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>023-84-274</td>
<td>Connecting rod</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>023-84-334</td>
<td>Connecting rod</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>032-10-264</td>
<td>Air line</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0155010121P</td>
<td>Bearing sleeve</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>0358162</td>
<td>Washer</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>0155010282</td>
<td>Washer</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>0155010347</td>
<td>Air line union</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>0155010482</td>
<td>Air cylinder</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>0155010612</td>
<td>Magnetic sensor</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>0155010667</td>
<td>Cylinder head bolt</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>0155010727</td>
<td>Hex socket set screw</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>0155010817</td>
<td>Hex head bolt</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>0155010827</td>
<td>Hex head bolt</td>
</tr>
</tbody>
</table>

Use loctite 243
Encoder Sub-Assembly L/F

Quick Six Left/Front Driveshaft

Fabrique de machines
CH 2534 Ervin

REF | QTY | PART No. | DESCRIPTION
--- | --- | --- | ---
1 | 1 | 023-05-454 | Switch support
2 | 1 | 023-05-494 | Encoder support bracket
3 | 1 | 11.2015.05.05 | Solid coupling
4 | 4 | 1254.04 | Washer
5 | 2 | 1258.05.7 | Washer
6 | 1 | 4,212 | PG11 cable connector
7 | 1 | 4,391 | Proximity switch detector
8 | 1 | 4,484 | Loading finger overtravel stop
9 | 1 | 4,787 | Absolute encoder
10 | 3 | 91230308.2 | Round head bolt
11 | 2 | 9120412.2 | Round head bolt
12 | 2 | 9120495.5 | Round head bolt
13 | 2 | 9330516.7 | Hex head bolt

TOLERANCES GENERALES: \( \pm 0.1 \) \( \pm 0.01 \) \( \pm 0.001 \)
ARRES: \( \pm 0.02 \) MISESAGES: \( \pm 0.02 \)

CE BESOIN, REMIS CONFIDENTIELLEMENT, NE PEUT ETRE COPIER NI COMMUNIQUER SANS NOTRE CONSENTEMENT ECRIT

MATTERE: -
TRAITEMENT: -

ECHELLE: 1:1
DRESSAGE: Guillot
DATE: 19/04/04

023-005-074 INDEX: -
Main Chassis and Cover L/R
Retract Switch Assembly L/R

<table>
<thead>
<tr>
<th>REF</th>
<th>QTY</th>
<th>PART No.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>023-10-094</td>
<td>Switch support bracket L/R</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>023-10-104</td>
<td>Detection plunger</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1991</td>
<td>Compression spring</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1038042</td>
<td>Washer</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1038062</td>
<td>Washer</td>
</tr>
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<td>6</td>
<td>1</td>
<td>4212</td>
<td>PG II cable connector</td>
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<td>7</td>
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<td>4484</td>
<td>Retraction switch</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>912.04.35Z</td>
<td>Round head bolt</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>912.06.70Z</td>
<td>Round head bolt</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>934.06Z</td>
<td>Nut</td>
</tr>
</tbody>
</table>

Quic Six Left/Rear Retraction Assembly

Fabrique de machines
CH 2534 Orvin

023-010-034
Chapter 6: Spare Parts

Retract Switch Assembly L/F

Quick Six Left/Front

Retraction Assembly
Flexible Track Assembly L/F
1.06 and 16.36 must be lubricated.
The pins should not extend past support.

Insert washers 988.08.14 ref. in rank 9 and 10, to eliminate play. Play should be between 0.05 and 0.15 mm.