TROUBLESHOOTING AND SPARE PARTS MANUAL

QUICK LOAD SERVO S3

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MADE IN USA
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An 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.
### Designation | Description
---|---
A | Remote control station
B | 24 pin connector with cover (depending on interface)
C | Control cabinet
M1 | Servo motor
M2 | Motor for diameter adjustment
QS1 | Main disconnect switch
SQ1 | Loading channel upper position switch
SQ2 | Loading channel lower position switch
SQ3 | Measuring cell
SQ4 | Proximity switch for diameter adjustment
SQ5 | Home position proximity switch
SQ10 | Main access cover safety switch
SQ11 | Magazine grid cover safety switch
SQ12 | Retraction system in position switch / key
A002 – Emergency Stop Line Open

**EMERGENCY STOP LINE OPEN!**

POSSIBLE CAUSES:
BAR FEEDER OR LATHE
EMERGENCY STOP,
PUSH BUTTON PUSHED IN, CONNECTION OR
WIRING 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 page 4-16 in the *Quick Load Servo S3 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 diagram on page 4-16 in the *Quick Load Servo S3 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 (I0.7). 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 7 = 1</td>
<td>MODULE 0 6543210 10000000</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 7 = 0</td>
<td>MODULE 0 6543210 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

BAR FEEDER
EMERGENCY STOP!

POSSIBLE CAUSES:
- EMERGENCY STOP
  BUTTON PUSHED IN
- WIRING PROBLEM

Description:
The Bar Feeder Emergency Stop alarm occurs whenever the PLC does not detect input (I0.6). 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 6 = 1</td>
<td>MODULE 0 75543210 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 75543210 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.
A006 – Air Pressure Failure

**AIR PRESSURE FAILURE!**

**POSSIBLE CAUSES:**
- AIR PRESSURE BELOW 3 BAR (45PSI)
- AIR PRESSURE SWITCH SP1 MIS-ADJUSTED
- AIR PRESSURE SWITCH DEFECTIVE

**Description:**

The Air Pressure Failure alarm occurs whenever the PLC does not detect input (I0.1 – 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 1 = 1</td>
<td>MODULE 0 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 1 = 0</td>
<td>MODULE 0 76543210</td>
<td>Raise the incoming air pressure on the air regulator to (recommended) 75 psi. and no higher than 90 psi.</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.
Chapter 1: Alarms

A007 – Main Access Cover Open

**Description:**

The Main Access Cover Open alarm occurs whenever the PLC detects input (I0.2 – SQ10). The problem is generated, as a safety precaution, when the main access 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 2 = 1</td>
<td>MODULE 0 76543210 100</td>
<td>Close the main access cover.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 2 = 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.
Chapter 1: Alarms

A009 – Bar Feeder Retracted or Not Locked In It’s Working Position

**Description:**

The Bar Feeder Retracted alarm occurs whenever the PLC detects input (I0.4 – SQ12). 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 4 = 1</td>
<td>MODULE 0 76543210 10000</td>
<td>Put the bar feeder back in its working position and lock the latches.</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 solution has been completed, press the STOP key on the remote control station to clear the message and reset the alarm.
A011 – Magazine Protection Grid Open

**Description:**

The Magazine Protection Grid Open alarm occurs whenever the PLC detects input (I0.3 – SQ11). The problem is generated, as a safety precaution, if the magazine protection grid is raised.

**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 3 = 1</td>
<td>MODULE 0 76543210 1000</td>
<td>Close the magazine protection grid.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 3 = 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 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 A023

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

Solution:
Turn the main power off to the Quick Load Servo S3 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 pg. 1-37.
Chapter 1: Alarms

A024 – Servo Motor Not Ready

SERVO MOTOR
NOT READY!

- VERIFY CN1B CONNECTOR
- CHECK PLC OUTPUT
  Q 4.4 (MUST BE ON)

A024

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 Following 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 LNS America, Inc. for further information.
Chapter 1: Alarms

A042 – Home Position Proximity Switch SQ5 Signal Missing

Description:
The Home Position Proximity Switch SQ5 Signal Missing alarm occurs if input (I1.4 – SQ5) is not detected before the v-channel moves to the upper position and the encoder reads the home position (0.0mm). The problem is normally generated when the switch is mis-adjusted.

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>
</table>
| 1    | Bit 4 = 1 | MODULE 1 76543210
       |        |                | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
| 2    | Bit 4 = 0 | MODULE 1 76543210
       |        |                | • Check the adjustment of the SQ5 switch. |
|      |        |                | • Check the tension of the drive belt. If it is not tight, adjust. Refer to the Quick Load Servo S3 Instruction Manual, pg. 6-14. |
|      |        |                | • Re-reference the bar feeder. |
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.
**A046 – Clamping Device Has 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.
A047 – Signal A2 Interrupted During Loading Cycle

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.
Chapter 1: Alarms

A048 – Safety Time for Part Feed Out Elapsed

SAFETY TIME FOR PART FEED OUT ELAPSED!

POSSIBLE CAUSES:
- PROGRAMMING ERROR
- MECH. INTERFERENCE
- INTERFACE PROBLEM

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:

<table>
<thead>
<tr>
<th>Case</th>
<th>Application</th>
<th>Solution</th>
</tr>
</thead>
</table>
| 1    | Feed out with turret and with m-code | • Check that the position of the turret is correct for the length of the part feed.  
• Check for mechanical obstacle preventing the bar from completing the feed out.  
Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
| 2    | Feed out with turret and without m-code | • Check that the position of the turret is correct for the length of the part feed.  
• Check for mechanical obstacle preventing the bar from completing the feed out.  
Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
| 3    | Feed out without turret and with m-code | • Check for mechanical obstacle preventing the bar from completing the feed out.  
Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
| 4    | Feed out without turret and without m-code | • Check for mechanical obstacle preventing the bar from completing the feed out.  
Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |

Contact LNS America, Inc. for further information.
A049 – *Measuring Cell SQ@ Is Activated Too Early*

**Description:**

The Measuring Cell SQ3 Activated Too Early alarm occurs if input (I1.2 – SQ3) is activated before maximum safety length has been reached during bar measuring.

**Solution:**

Press the STOP key on the remote control station to clear the message and reset the alarm.

Press the MENU key.

Press the #5 (Service) key.

Enter the password (2534) to access the Service parameters.

Press the F3 (ENTER) key.

Press the F3 (ENTER) key again for Bar Feeder Setup Parameters.

Press the F4 (PAGE DOWN) key. *Maximum Bar Stock Length*

The value of this parameter should not exceed the length of the spindle in the lathe. If the value does exceed the length of the spindle, enter the new value and readjust the mechanical limiter of the loading magazine to the correct distance. Measure the length of the bar stock being run. The length should not exceed the value set in this parameter.
**Chapter 1: Alarms**

**A050 – Signal A2 Interrupted During Production Cycle and the Clamping Device Opened**

**Description:**

The Signal A2 Interrupted During Production alarm occurs if the signal for clamping device closed is detected while the bar feed is in automatic production and input (I3.1 – A2) is not active.

**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 3 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. Restart the bar feeder and the lathe automatic cycle.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 1 = 0</td>
<td>MODULE 3 76543210 00</td>
<td>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.</td>
</tr>
</tbody>
</table>
A051 – Bar Stock Loading Error

**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 100</td>
<td>Check that the loading flag is pushing the new bar past the measuring cell (SQ3).</td>
</tr>
<tr>
<td>2</td>
<td>Bit 2 = 0</td>
<td>MODULE 1 76543210 0</td>
<td>Load bar stock onto the magazine rack. Check that the loading fingers are set to pick up a single bar.</td>
</tr>
</tbody>
</table>
A052 – Safety Time for Top-Cut Positioning Elapsed

Description:

The Safety Time For Top-Cut Positioning Elapsed alarm occurs when the bar is being commanded to top-cut position and the position is not reached after 5 minutes.

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 feed and lathe in automatic production.
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.
**A083 – Upper Position Fault**

**Description:**

The Upper Position Fault alarm occurs if the v-channel moves to the lower position and input (I1.1 – SQ2) is still active when input (I1.0 – SQ1) is turned on.

**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 = 1      | MODULE 1 76543210 | • Check the adjustment of upper position switch SQ2.  
        | Bit 1 = 1      |                   | • Check the functionality of upper position switch SQ2. |
| 2    | Bit 0 = 1      | MODULE 1 76543210 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.  
        | Bit 1 = 0      |                   |                                               |
## A088 – Loading Channel Will Not Move to Lower Position

### Description:

The Loading Channel Will Not Move To Its Lower Position alarm occurs if input (I1.0 – SQ1) becomes active while in the upper position, after the loading flag has positioned the new bar into the spindle for top-cut, the carrier flag has retracted to the home position and the v-channel is ready to drop to the lower position.

### Solution:

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
</table>
| 1    | Bit 0 = 1  
Bit 1 = 1 | **MODULE 1**  
76543210  
11 | • Check the functionality of lower position switch SQ1.  
• Check the wiring of lower position switch SQ1. |
| 2    | Bit 0 = 0  
Bit 1 = 1 | **MODULE 1**  
76543210  
10 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
Chapter 1: Alarms

A091 – Measuring Cell SQ3 Signal Defective

Description:
The Measuring Cell SQ3 Signal Defective alarm occurs if input (I1.2 – SQ3) is active for longer than 1 second before the v-channel moves to the upper or lower position.

Solution:

<table>
<thead>
<tr>
<th>Case</th>
<th>Input</th>
<th>Remote Pendant</th>
<th>Solution</th>
</tr>
</thead>
</table>
| 1    | Bit 2 = 1 | MODULE 1 76543210 100 | • Remove any obstacle that measuring cell might be picking up.  
• Check the measuring cell adjustment (refer to Measuring Cell Adjustment – SQ3, pg. 3-21) |
| 2    | Bit 2 = 0 | MODULE 1 76543210 00 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
Lower Position Fault

POSSIBLE CAUSES:
LOWER POSITION
SWITCH SQ1 DEFECTIVE
OR MIS-ADJUSTED
(SIGNAL ALWAYS ON)

Description:
The Lower Position Fault alarm occurs if the v-channel moves to the upper position and input (I1.0 – SQ1) is still active when input (I1.1 – SQ2) is turned on.

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 = 1 Bit 1 = 1 | MODULE 1 7654321011 | • Check the adjustment of lower position switch SQ1.  
• Check the functionality of lower position switch SQ1. |
| 2    | Bit 0 = 0 Bit 1 = 1 | MODULE 1 7654321010 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
Chapter 1: Alarms

Loading Channel Upper Position Default

### Description:

The Loading Channel Upper Position Default alarm occurs if the loading channel moves to the upper position and input (I1.1 – SQ2) does not turn on within 10 seconds and input (I1.0 – SQ1) and output (Q4.1 – YV1B) are still active.

### 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 = 1  
      | Bit 1 = 0  | MODULE 1  
          | 76543210 | • Check the functionality of the lifting cylinders.  
      |              |              | • Check the functionality of lower position switch SQ1.  
      |              |              | • Check the wiring of lower position switch SQ1.         |
| 2    | Bit 0 = 0  
      | Bit 1 = 1  | MODULE 1  
          | 76543210 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |

Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.
Loading Channel Upper Motion Default

**Description:**

The Loading Channel Upper Motion Default alarm occurs if the loading channel moves to the upper position and input (I1.1 – SQ2) does not turn on within 10 seconds, output (Q4.1 – YV1B) is still active and input (I1.0 – SQ1) is inactive.

**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 1 = 0 | MODULE 1 765432 | • Check the functionality of the lifting cylinders.  
       |       | 00 10         | • Check for air leaks on the air valve assembly.  
       |       |               | • Check the adjustment of upper position switch SQ2.  
       |       |               | • Check the functionality of upper position switch SQ2. |
| 2    | Bit 1 = 1 | MODULE 1 765432 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm.  
       |       | 00 10         |          |
Chapter 1: Alarms

Loading Channel Lower Motion Default

POSSIBLE CAUSES:
- LOWER POSITION SWITCH SQ1 DEFECTIVE OR MIS-ADJUSTED
- MECHANICAL OBSTACLE
- PNEUMATIC PROBLEM
- MOTION INTERRUPT

Description:
The Loading Channel Lower Motion Default alarm occurs if the loading channel moves to the lower position and input (I1.0 – SQ1) does not turn on within 10 seconds, output (Q4.0 – YV1A) is still active and input (I1.1 – SQ2) is inactive.

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 1 76543210 | • Check the functionality of the lifting cylinders.  
• Check for air leaks on the air valve assembly.  
• Check the adjustment of lower position switch SQ1.  
• Check the functionality of lower position switch SQ1. |
| 2    | Bit 0 = 1 | MODULE 1 76543210 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
Loading Channel Did Not Reach Its Lower Position

Description:
The Loading Channel Did Not Reach Lower Position alarm occurs if the v-channel is moving to the lower position and input (I1.0 – SQ1) is not detected after 10 seconds and input (I1.1 – SQ2) is still active.

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 0 = 1, Bit 1 = 0</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>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Check the functionality of the lifting cylinders.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Check for air leaks on the air valve assembly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Check the functionality of upper position switch SQ2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Check the wiring of upper position switch SQ2.</td>
</tr>
<tr>
<td>2</td>
<td>Bit 0 = 0, Bit 1 = 1</td>
<td>MODULE 1 76543210</td>
<td></td>
</tr>
</tbody>
</table>
**Drive For Diameter Adjustment Error**

**Description:**

The Drive For Diameter Adjustment Error alarm occurs when the diameter adjustment motor is activated and one of the following conditions occurs:

1. Input (I1.3 – SQ4) is on for longer than 1 second.
2. Input (I1.3 – SQ4) is off for longer than 1 second.
3. Relays KA1 or KA2 are on for longer than 1 minute.

**Solution:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
</table>
| 1         | • Check the adjustment of the proximity switch  
           | • Recalibrate the loading table (refer to Calibration of the Loading Table, pg. 3-31) |
| 2         | • Check the adjustment of the proximity switch  
           | • Recalibrate the loading table (refer to Calibration of the Loading Table, pg. 3-31) |
| 3         | • Replace the diameter adjustment motor - M2 (refer to Diameter Adjustment Motor Replacement, pg. 3-14)  
           | • Recalibrate the loading table (refer to Calibration of the Loading Table, pg. 3-31) |
**Door Lathe Open**

The Door Lathe Open message occurs only on Guildemeister machines when the door of the lathe is opened. A separate input signal (I0.5) is added as a safety precaution for the operator. When the lathe door is open the bar feed generates this message preventing the bar feeder from pushing.

**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 5 = 1 | 76543210 100000 | • Close the lathe door.  
• If the door was opened during a part feed out, the 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 feed and lathe in automatic production. |
| 2    | Bit 5 = 0 | 76543210 | Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. |
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.
**Diameter Change Control Device Is Out of Sync**

ATTENTION!
THE DIAMETER CHANGE CONTROL DEVICE IS OUT OF SYNC!

MOVE LOADING CHANNEL TO ITS UPPER POSITION AND PROCEED TO ITS RECALIBRATION

**REFER TO MANUAL**

**Description:**

The Diameter Change Control Device Is Out Of Sync alarm occurs if there is a mechanical problem after entering a new diameter in the Part Setup menu.

**Solution:**

Alarm needs to be cleared. Press the STOP key on the remote control station to clear the message and reset the alarm. Press the function key on the remote control station corresponding to the Manual Mode icon. Press the function key on the remote control station corresponding to the V-channel Upper Position icon. Follow the [Calibration of the Loading Table pg. 3-31](#) procedure in Chapter 2: Common Issues.

QUICK LOAD SERVO S3
**SPS No Response**

**Description:**
The SPS No Response alarm occurs when there is a communication problem between the remote control station and the LNS PLC.

**Solution:**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
</table>
| Bad connection       | • Check the connectors between the PLC and the remote control station, located inside the cross piece to make sure they are attached correctly.  
                       | • Check for continuity between the PLC and the remote control station and also at the connectors. |
| PLC program loss     | • If the battery voltage in the PLC is low the Battery LED (red) will illuminate.  
                       | If the bar feed is powered off during this time the PLC will lose its memory. Replace the PLC battery (3VDC Lithium/CD2032). Download the PLC program from the Smart Media Card; refer to PLC fault. |
| Low voltage          | • Check the incoming voltage to the PLC. Fluctuation in the DC voltage can cause the PLC as well as the remote control station to function improperly. |
## Position control mode

### (1) Troubleshooting

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

When alarm or warning has occurred

<table>
<thead>
<tr>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL.10</td>
</tr>
<tr>
<td>AL.12</td>
</tr>
<tr>
<td>AL.13</td>
</tr>
<tr>
<td>AL.15</td>
</tr>
<tr>
<td>AL.16</td>
</tr>
<tr>
<td>AL.17</td>
</tr>
<tr>
<td>AL.19</td>
</tr>
<tr>
<td>AL.1A</td>
</tr>
<tr>
<td>AL.20</td>
</tr>
<tr>
<td>AL.24</td>
</tr>
<tr>
<td>AL.25</td>
</tr>
<tr>
<td>AL.30</td>
</tr>
<tr>
<td>AL.31</td>
</tr>
<tr>
<td>AL.32</td>
</tr>
<tr>
<td>AL.33</td>
</tr>
<tr>
<td>AL.35</td>
</tr>
<tr>
<td>AL.37</td>
</tr>
<tr>
<td>AL.45</td>
</tr>
<tr>
<td>AL.46</td>
</tr>
<tr>
<td>AL.50</td>
</tr>
<tr>
<td>AL.51</td>
</tr>
<tr>
<td>AL.52</td>
</tr>
<tr>
<td>AL.8A</td>
</tr>
<tr>
<td>AL.8E</td>
</tr>
<tr>
<td>88888</td>
</tr>
</tbody>
</table>

### 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 “□□□” 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 following operations:

<table>
<thead>
<tr>
<th>(Note 2) Alarm code</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>CN1B-19 pin</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>CN1A-18 pin</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CN1A-19 pin</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Alarm deactivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undervoltage</td>
<td>☐</td>
</tr>
<tr>
<td>Memory error 1</td>
<td>☐</td>
</tr>
<tr>
<td>Clock error</td>
<td>☐</td>
</tr>
<tr>
<td>Memory error 2</td>
<td>☐</td>
</tr>
<tr>
<td>Encoder error 1</td>
<td>☐</td>
</tr>
<tr>
<td>Board error</td>
<td>☐</td>
</tr>
<tr>
<td>Memory error 3</td>
<td>☐</td>
</tr>
<tr>
<td>Motor combination error</td>
<td>☐</td>
</tr>
<tr>
<td>Encoder error 2</td>
<td>☐</td>
</tr>
<tr>
<td>Main circuit error</td>
<td>☐</td>
</tr>
<tr>
<td>Absolute position erase</td>
<td>☐</td>
</tr>
<tr>
<td>Regenerative error</td>
<td>☐</td>
</tr>
<tr>
<td>Overspeed</td>
<td>☐</td>
</tr>
<tr>
<td>Overcurrent</td>
<td>☐</td>
</tr>
<tr>
<td>Overvoltage</td>
<td>☐</td>
</tr>
<tr>
<td>Command pulse frequency error</td>
<td>☐</td>
</tr>
<tr>
<td>Parameter error</td>
<td>☐</td>
</tr>
<tr>
<td>Main circuit device overheat</td>
<td>☐</td>
</tr>
<tr>
<td>Servo motor overheat</td>
<td>☐</td>
</tr>
<tr>
<td>Overload 1</td>
<td>☐</td>
</tr>
<tr>
<td>Overload 2</td>
<td>☐</td>
</tr>
<tr>
<td>Error excessive</td>
<td>☐</td>
</tr>
<tr>
<td>Serial communication time-out error</td>
<td>☐</td>
</tr>
<tr>
<td>Serial communication error</td>
<td>☐</td>
</tr>
<tr>
<td>Watchdog</td>
<td>☐</td>
</tr>
<tr>
<td>Home position return incomplete</td>
<td>☐</td>
</tr>
<tr>
<td>Open battery cable warning</td>
<td>☐</td>
</tr>
<tr>
<td>Home position setting warning</td>
<td>☐</td>
</tr>
<tr>
<td>Software limit warning</td>
<td>☐</td>
</tr>
<tr>
<td>Battery warning</td>
<td>☐</td>
</tr>
<tr>
<td>Excessive regenerative warning</td>
<td>☐</td>
</tr>
<tr>
<td>Overload warning</td>
<td>☐</td>
</tr>
<tr>
<td>Absolute position counter warning</td>
<td>☐</td>
</tr>
<tr>
<td>Servo emergency stop warning</td>
<td>☐</td>
</tr>
<tr>
<td>Main circuit off warning</td>
<td>☐</td>
</tr>
</tbody>
</table>

### Notes:

1. Deactivate the alarm about 30 minutes of cooling time after removing the cause of occurrence.
2. 0: Pin-SG off (open)
3. 1: Pin-SG on (short)

Removing the cause of occurrence deactivates the alarm automatically.
**CAUTION**

- When any alarm has occurred, eliminate its cause, ensure safety, then reset the alarm, and restart operation. Otherwise, injury may occur.
- If an absolute position erase alarm (AL.25) occurred, always make home position setting again. Otherwise, misoperation may occur.

**POINT**

- When any of the following alarms has occurred, always remove its cause and allow about 30 minutes for cooling before resuming operation. If operation is resumed by switching control circuit power off, then on to reset the alarm, the servo amplifier and servo motor may become faulty.
  - Regenerative error (AL.30)
  - Overload 1 (AL.50)
  - Overload 2 (AL.51)
- The alarm can be deactivated by switching power off, then on press the "SET" button on the current alarm screen or by turning on the reset (RES).
For details, refer to Alarms and warning list.

### 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.</td>
<td>1. Power supply voltage is low.</td>
<td>Review the power supply.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MR-J2S-CP: 160V or less</td>
<td>2. There was an instantaneous control power failure of 60ms or longer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MR-J2S-CP1: 83V or less</td>
<td>3. Shortage of power supply capacity caused the power supply voltage to drop at start, etc.</td>
<td></td>
</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</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>AL.15</td>
<td>Memory error 2</td>
<td>EEPROM fault</td>
<td>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.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>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></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

#### Quick Load Servo S3

<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>Board error</td>
<td>CPU/parts fault</td>
<td>Faulty parts in the servo amplifier</td>
<td>Change the servo amplifier.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>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.19</td>
<td>Memory error 3</td>
<td>ROM memory fault</td>
<td>Checking method</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>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.</td>
<td>Use correct combination.</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.</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 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).</td>
<td>Connect correctly.</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>
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<td></td>
<td>Checking method</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>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</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></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>Power was switched on for the first time in the absolute position detection system.</td>
<td></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</td>
<td>Set correctly.</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>
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</tr>
<tr>
<td></td>
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<td></td>
<td>Checking method</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>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</td>
<td>Review power supply</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></td>
<td></td>
<td>Regenerative transistor fault</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6. Regenerative transistor faulty.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checking method</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1) The regenerative brake option has overheated abnormally.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2) The alarm occurs even after removal of the built-in regenerative brake resistor or regenerative brake option.</td>
<td></td>
</tr>
<tr>
<td>AL.31</td>
<td>Overspeed</td>
<td>Speed has exceeded the instantaneous permissible speed.</td>
<td>1. Input command pulse frequency exceeded the permissible instantaneous speed frequency.</td>
<td>Set command pulses correctly.</td>
</tr>
<tr>
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<td>--------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<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>3. Servo system is instable to cause overshoot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Re-set servo gain to proper value.</td>
<td>2. If servo gain cannot be set to proper value:</td>
<td>1) Reduce load inertia moment ratio; or 2) Re-examine acceleration/deceleration time constant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Electronic gear ratio is large (parameters No. 4, 5)</td>
<td>5. Encoder faulty.</td>
<td>Change the servo motor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AL.32</th>
<th>Overcurrent</th>
<th>Current that flew is higher than the permissible current of the servo amplifier.</th>
<th>1. Short occurred in servo amplifier output phases U, V and W.</th>
<th>Correct the wiring.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2. Transistor (IPM) of the servo amplifier faulty.</td>
<td>Change the servo amplifier.</td>
<td>Checking method Alarm (AL.32) occurs if power is switched on after U, V and W are disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Ground fault occurred in servo amplifier output phases U, V and W.</td>
<td>Correct the wiring.</td>
<td>4. External noise caused the overcurrent detection circuit to misoperate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Lead of built-in regenerative brake resistor or regenerative brake option is open or disconnected.</td>
<td>1. Change lead.</td>
<td>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.</td>
<td>2. For wire breakage of regenerative brake option, change regenerative brake option.</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>5. Power supply voltage high.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Pulse frequency of the manual pulse generator is too high.</td>
<td>Change the pulse frequency to a proper value.</td>
<td>Review the power supply.</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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AL.37</th>
<th>Parameter error</th>
<th>Parameter setting is wrong.</th>
<th>1. Servo amplifier fault caused the parameter setting to be rewritten.</th>
<th>Change the servo amplifier.</th>
</tr>
</thead>
<tbody>
<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>
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<td>---------</td>
<td>-------------------------------------------</td>
<td>------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<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. 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. 2. Review operation pattern. 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. 2. Review operation pattern. 3. Use servo motor that provides larger output.</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>1. Repeat acceleration/ deceleration to execute auto tuning. 2. Change auto tuning response setting. 3. Set auto tuning to OFF and make gain adjustment manually.</td>
</tr>
<tr>
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<td>Load ratio 200%: 100s or more</td>
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<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></td>
</tr>
<tr>
<td></td>
<td></td>
<td></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>
<td></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. Servo motor locked: 1s or more</td>
<td>1. Machine struck something.</td>
<td>1. Review operation pattern. 2. Install limit switches.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Servo system is instable and hunting.</td>
<td>1. Repeat acceleration/deceleration to execute auto tuning. 2. Change auto tuning response setting. 3. Set auto tuning to OFF and make gain adjustment manually.</td>
</tr>
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<tr>
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<td></td>
<td>Checking method</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></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>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>Name</td>
<td>Definition</td>
<td>Cause</td>
<td>Action</td>
</tr>
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<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<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 \times 10 [pulse].</td>
<td>1. Acceleration/deceleration time constant is too small.</td>
<td>Increase the acceleration/deceleration time constant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Internal torque limit 1 (parameter No.28) is too small.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>2. Use servo motor that provides larger output.</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>4. Position control gain 1 (parameter No.7) value is small.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>5. Servo motor shaft was rotated by external force.</td>
<td>1. When torque is limited, increase the limit value.</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>2. Reduce load.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. Use servo motor that provides larger output.</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>2. Install limit switches.</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>
## 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.</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>
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</tr>
<tr>
<td></td>
<td></td>
<td>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 setting. 2. Home position setting speed could not be decreased to creep speed. 3. Limit switch was actuated during home position setting starting at other than position beyond dog.</td>
<td>1. Perform home position setting. 2. Review home position setting 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. Regenerative power increased to 85% or more of permissible regenerative power of built-in regenerative brake resistor or regenerative brake option. Checking method Call the status display and check regenerative load ratio.</td>
<td>1. Reduce frequency of positioning. 2. Change regenerative brake option for the one with larger capacity. 3. Reduce load.</td>
<td></td>
</tr>
<tr>
<td>AL.E1</td>
<td>Overload warning</td>
<td>There is a possibility that overload alarm 1 or 2 may occur. Load increased to 85% or more of overload alarm 1 or 2 occurrence level. Cause, checking method Refer to AL.50, AL.51.</td>
<td>Refer to AL.50, AL.51.</td>
<td></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. External emergency stop was made valid. (EMG-SG opened.)</td>
<td>Ensure safety and deactivate emergency stop.</td>
<td></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>Switch on main circuit power.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 2: Common Issues

The Quick Load Servo S3 is designed to be a user-friendly, simple, and reliable bar feeder, covering a range of diameters \( \frac{1}{4} \)" to 4 \( \frac{3}{4} \)". 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 Load Servo S3 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) |
| 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 |
Chapter 2: Common Issues

**Vibration Issues**

The term “vibration” is being used regarding the Quick Load Servo S3, 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, within the confines of the spindle of the lathe that is detrimental to the machining process.

Various items can cause or enhance a lathe spindle vibration issue, requiring the reduction of the spindle rpm to bring the anomaly back to a normal controlled rotation. These items can be related to the material, the lathe, or the bar feed.

**Material**

The material must be reasonably straight. LNS has a specification of 0.5mm / meter (non-accumulative). Remember when running a spindle liner for a Quick Load, the ID of the liner may be only 0.040” over the stock size (which is 0.5m per side). This means you may not only have a vibration issue, but the material may also be caught in a bind as it is loaded through the liner, if it doesn’t meet our straightness specification.

If the material has been saw cut, the sharp edges and burrs must be removed.

If the material is a hot roll type it may 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 can lead to mis-positioning during part feed out, depending on the surface area that the Quick Load’s pusher is pushing against, as the bar has rotated in it’s orientation inside the spindle.*

**Lathe**

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

The headstock / actuator assembly should have minimal run out. *

Proper chucking device should be selected to match the machining application. *

The chucking device should have proper clamping pressure. *

The surface of the jaws or pads must make proper contact with the material. *

*Please reference OEM specifications.*

**Bar feed**

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

Since the pusher of the Quick Load is a fixed component and does not rotate, it cannot come in contact with the ID of the spindle or with the rear of the bar stock unless the spindle is stopped.

Remember the pusher must also back off of the bar stock after the lathe’s collet closes prior to the spindle rotating (refer to **Pusher Reversing Distance, pg. 3-24**).

**Spindle Liner**

Ensure that the properly sized spindle liner has been installed (0.040” ideal gap).

Ensure the liner is straight (check total run out), and has all o-rings intact.
Servo Motor Following Error During Sequence 12

Description:

The Servo Motor Following Error! During Sequence Number [12] alarm occurs after the new bar has been measured and is being advanced to top-cut position. The torque on the servo motor will build up when an 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>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitting back of spindle</td>
<td>• Check that the correct bar stock diameter is entered for the parameter.</td>
</tr>
<tr>
<td></td>
<td>• Check that the correct spindle reduction tube is installed.</td>
</tr>
<tr>
<td></td>
<td>• Verify the alignment of the bar feeder. If the alignment is off; realign and then recalibrate the loading table, refer to Alignment Procedure pg. 3-3 and Calibration of the Loading Table pg. 3-31.</td>
</tr>
<tr>
<td>Hitting back of clamping system</td>
<td>• Verify the correct collet/chuck is installed for the material being run.</td>
</tr>
</tbody>
</table>
Part Feed Out Accuracy

Description:

The accuracy of the part positioning can be affected by many factors. Choosing the correct bar feed application and setting the barfeed parameters correctly are crucial to ensuring the proper accuracy.

Part Setup Parameter:

1. Input overall part length (Located in: 1. Part setup menu)
   The parameter determines how far the push rod will advance the barstock during a part feed out. This value should include the finished part length, cut-off and facing. Otherwise, how much material must be fed out to make a complete part.

Application Selection: (Located in: 2. Application Setup)

1. Feed without help of the turret
   This application requires that the lathe be equipped with a pull-to-close type clamping system. If a push-to-close type clamping system is used then the “Feed with help of the turret” application must be selected. It is recommended by LNS that when feeding without the help of the turret that a dead-length, parallel gripping type clamping device be used. This type of clamping system will prevent the barstock from moving forward when the clamping device is closed, thus losing the positioning accuracy.

2. Feed with help of the turret
   This application can be selected when either a pull-to-close or push-to-close type clamping system is installed but must always be selected when a push-to-close type clamping system is installed. This is due to the barstock moving forward as the draw tube pushes forward to close the clamping device.

For more information on setting up different applications see Chapter 5 - Bar feed Applications.

Parameters related to clamping device: (located in: 4. Miscellaneous Functions menu)

1. Time for clamping device to close (Parameter 74)
   Once the clamping device close signal is output from the lathe the barfeed will wait for the time entered in this parameter to expire then the push rod will reverse off the back of the part.

   If this time is set to low then the push rod may reverse before the clamping device is physically closed. When this occurs with a pull-to-close clamping system then the push rod will not be in place to support the barstock as the clamping device closes. The push rod can overcome the weight of the barstock moving in the draw tube but can not overcome the force of the clamping device this is why a dead-length, parallel gripping type clamping device is recommended.

   Setting this time to high will not effect the part positioning. However, if this time is set to high the push rod may not reverse off the barstock before the spindle begins to rotate. This can create excessive noise and possibly damage the push rod.

2. Time for clamping device to open (Parameter 75)
   Once the clamping device open signal is output from the lathe the barfeed will wait for the time entered in this parameter to expire then the push rod will advance the part the distance programmed.

   If this time is set to low then the push rod may hit the back of the clamping device before it is physically open. This can cause a variation of unexpected results.

For further information on part feed out accuracy with special applications (i.e. Shaft Loading) please contact your local LNS representative.
### Solution:

<table>
<thead>
<tr>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
</table>
| 1st Part feed out after top-cut positioning too short/long | - Verify that the top-cut position is programmed correctly  
- If performing a cut-off or facing operation on the barstock during top-cut, verify that the end of the barstock is in the same location as if a part was cut-off after the cut-off or facing operation is complete. |
| Part feed out to short | - Verify that the correct value is entered into the “Input overall part length” parameter  
- If using a pull-to close type clamping system ensure that the time entered into the “Time for clamping device to close” parameter is correct.  
- Make sure that the clamping device is not forcing the barstock back when closing  
- Verify that the lathe program is correct  
- Verify that the barstock is concentric and clean of debris |
| Part feeds out too long | - Verify that the correct value is entered into the “Input overall part length” parameter  
- If using a push-to-close type clamping system ensure the turret is being used to locate the part and that the turret is in the correct location  
- Verify that the barstock is concentric and clean of debris |
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. Along with some of these procedures are video clips which show the actual procedure being performed in case the written procedure is too difficult to follow. The video clips can be viewed on a PC with a compatible video card from the CD-ROM version of this manual.
End of Bar Adjustment

Procedure:

Conditions:
- Bar feed power on.
- Air pressure set at 5 bar (75psi.).
- No bar stock in spindle.
- V-channel in the lower position.
- Bar feed in STOP mode.

Step 1: Press the MENU key on the remote control station.
Step 2: Press the #3 (Position/Torque) key on the remote control station.
Step 3: Press the F3 (SET) key on the remote control station.
Step 4: Press the F2 (TEACH IN) key on the remote control station.
Step 5: Press and hold the F-key corresponding to the pusher forward icon, until the pusher is ¼” behind the clamping system.
Step 6: Press and hold the F3 (ENTER) key on the remote control station. The End Of Bar is now set.
Step 7: Press the F2 (ESC) key on the remote control station.

Procedure complete.
**Alignment Procedure**

This procedure is used to align the barfeed.

**Procedure:**

**Conditions:**
- Bar feed power off.
- No air pressure.

**Step 1:** Position the bar feed as close as possible to the rear of the lathe. The distance between the front of the bar feed and the back of the spindle should be as small as possible. Note: If obstacles prevent the bar feed from being positioned within 8 inches of the back of the spindle an extension will be required.

**Step 2:** Level the bar feed in the x and y axis using a torpedo level. The level can be placed on the linear belt rail to verify the y-axis and on the retract rails to verify the x-axis. Use the leveling screws on the retract to adjust unit to level.
Step 3: Carefully loosen the 16 screws located in the slots on the base of the unit. This will allow the unit to be adjusted up and down.

Step 4: Using the central jackscrew and the hexagonal tube supplied with the bar feed; adjust the unit so that the pusher is centered up and down at the back of the spindle. Make sure that the unit raises or lowers uniformly.
Chapter 3: Procedures

Step 5: Once the pusher is centered up and down, tighten the 16 screws to secure unit and recheck the level of the unit.

Step 6: Align the unit side to side by centering the pusher in the back of the spindle and then extending the pusher to the back of the collet and centering it there. Adjust the rear of the bar feed when centering to the rear of the spindle and the front of the bar feed when centering to the rear of the collet. Once the pusher is centered at the back of the collet recheck the alignment at the back of the spindle by pulling the pusher back. Continue until the pusher is centered at the rear of the spindle and the rear of the collet.

Step 7: Once the bar feed has been aligned, anchor it using the ½ inch anchor bolts supplied with the unit.
Step 8: After anchoring the unit, recheck the level and the alignment of the unit.

Step 9: After the alignment has been rechecked, power and air will need to be hooked up to the bar feeder.

Step 10: Once the power and air have been hooked up, the bar feed must be calibrated. Refer to Calibration of the Loading Table, pg. 3-31. After calibrating the bar feed, return to this procedure and move on to Step 11 for the final alignment.

Step 11: For final alignment, load a bar into the v-channel and verify that it can be loaded into the spindle of the lathe without hitting the sides of the spindle or spindle liner. If the bar hits side to side the alignment will have to be adjusted.

Bar stock should centered inside the spindle or spindle liner.

Procedure complete.
Pusher Changeover

Procedure:

Conditions:
- Bar feed power on.
- V-channel in the lower position.
- Pusher at the mechanical home position against the reference plate.
- Bar feed in STOP mode.

Step 1: Open the main access cover.

Step 2: Measure the distance of the End-of-Bar bushing.

Step 3: Pull the carrier away from the home position.
Step 4: Loosen up the setscrews to release the pusher.

Step 5: Pull out the guide bushing from the front ring.

Step 6: Remove the pusher from the bar feed.
Step 7: Put the new pusher in the bar feed.
Step 8: Push the guide bushing in the front ring.

Step 9: Place the rear end of the pusher in the carrier and tighten the setscrews.
Chapter 3: Procedures

Step 10: Close the main access cover.

Procedure complete.

The following is a video clip of the Pusher Changeover procedure. Must have the electronic file to play. This movie may take several seconds to begin.
Carriage Unit Belt Tension Adjustment

Procedure:

Conditions:
- Bar feed power on.
- Bar feed in STOP mode.

Step 1: Open the main access cover.

Step 2: Pull the carriage unit forward towards the middle of the linear rail.

Step 3: On each end of the carriage unit are black plastic end caps. In the center of the end cap on either side, right above the belt is an opening with a 3mm allen head tensioning screw inside. Turn the screw CW to add tension to the belt and CCW to release tension.
Step 4: Close the main access cover.

Procedure complete.

The following is a video clip of the Carriage Unit Belt Tension Adjustment procedure. Must have the electronic file to play. This movie may take several seconds to begin.
Servo Motor Belt Tension Adjustment

Procedure:

Conditions:
- Bar feed power off.
- Bar feed in STOP mode.

Step 1: Open the main access cover.

Step 2: Loosen the four nuts on the motor mount plate.

Step 3: Using a lever (ex. screwdriver), raise the motor to create tension on the belt.
Step 4: Holding the belt taut, tighten the four nuts on the motor mount plate.

Step 5: Remove the lever and close the main access cover.

Procedure complete.

The following is a video clip of the Servo Motor Belt Tension Adjustment procedure. Must have the electronic file to play. This movie may take several seconds to begin.
Diameter Adjustment Motor Replacement

Procedure:

Conditions:
- Bar feed power on.
- Bar feed in STOP mode.

Step 1: Remove the front panel on the sub-base.

Step 2: Remove the two rear panels on the sub-base.

Step 3: Remove the four screws holding on the chain guard cover plate.
Step 4: Remove the two screws holding on the adjustment motor.

Step 5: Disconnect the SQ4 cable from the mounted proximity switch.

Step 6: Disconnect the M2 cable from the XP1 connector and remove the bad motor.

Step 7: Insert the new motor and connect the M2 cable to the XP1 connector.
Step 8: Connect the SQ4 cable to the new mounted proximity switch and reconnect the chain.

Step 9: While pulling the motor toward the front of the bar feed to keep the chain taut, tighten the two screws for the motor assembly.

Step 10: Reassemble the chain guard.

Step 11: Reassemble the front panel.
Chapter 3: Procedures

Step 12: Reassemble the two back panels.

Procedure complete.

The following is a video clip of the Diameter Adjustment Motor Replacement procedure. Must have the electronic file to play. This movie may take several seconds to begin.
Home Position Proximity Switch Adjustment – SQ5

Conditions:
- Bar feed power on.
- Pusher at the mechanical home position against the reference plate (Servo amplifier should read “0.0”)
- Bar feed in STOP mode.

Tools:
- Home Position Bracket

Procedure:

Step 13: Re-reference the bar feed. (Refer to the Reference Procedure, pg. 3-25).

Step 14: Open the main access cover.

Step 15: Using the servo drive belt, move the carrier away from the home position until the proximity switch is turned off. Slowly rotate the drive belt until the switch just turns back on. At this point, the servo amplifier should read between 0.4 – 0.7. Adjust the slotted home position bracket until 0.4 – 0.7 value is achieved.

Step 16: Close the main access cover.
Step 17: Press the STOP key on the remote control station to clear and reset the alarm.

Procedure complete.

The following is a video clip of the Home Position Proximity Switch Adjustment procedure. Must have the electronic file to play. This movie may take several seconds to begin.
Magazine and Loading Finger Adjustment

The slope of the magazine rack needs to be adjusted when the shape of the material being loaded changes from round to profiled or vise versa.

When loading round stock, if the slope of the magazine is too much it is possible for the material to stack up and cause double loading if the weight of the material is great enough (especially when loading smaller diameter stock). Therefore, the slope must be reduced.

When loading profiled (ex. square/hex) stock, if the slope of the magazine is not great enough it can prohibit the ability of the material to slide down the rack. Therefore, the slope must be increased.

Procedure: Round ➔ Profiled

Conditions:
- No stock on the magazine.
- Bare feed in STOP mode.

Step 1: Rotate the loader rack adjustment axle CCW to increase the slope of the magazine until the indicator on the side of the magazine references the profiled material. Note: if there is not enough adjustment on the threaded rod, remove the pin and lift the magazine up to the next hole and reinsert the pin. Caution when removing the pin, the magazine rack will drop if not supported properly.

Procedure complete.

The following is a video clip of the Magazine and Loading Finger Adjustment from Round to Profiled procedure. Must have the electronic file to play. Movie may take several seconds to begin.

Procedure: Profiled ➔ Round

Conditions:
- No stock on the magazine.
- Bare feed in STOP mode.

Step 1: Rotate the loader rack adjustment axle CW to decrease the slope of the magazine until the indicator on the side of the magazine references the round material. Note: if there is not enough adjustment on the threaded rod, remove the pin and drop the magazine down to the next hole and reinsert the pin. Caution when removing the pin, the magazine rack will drop if not supported properly.

Procedure complete.

The following is a video clip of the Magazine and Loading Finger Adjustment from Profiled to Round procedure. Must have the electronic file to play. Movie may take several seconds to begin.
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Measuring Cell Adjustment – SQ3

Procedure:

Conditions:
- Bar feed power on.
- V-channel in the upper position.
- Bar feed in STOP mode.

Step 1: Retract the bar feed for access to the front of the unit.
Step 2: Open the main access cover.

Step 3: Place a piece of 6mm (or smallest diameter stock available) into the v-channel and set parameter NEW BAR STOCK DIAMETER for the corresponding diameter. (Note: the stock must be straight to obtain the ideal adjustment).

Step 4: Push the stock up so that it is sticking out the front of the bar feeder.
Step 5: Turn the gain adjustment on the measuring cell to the max position.
Step 6: Loosen screws and adjust the cell so that the “red” sensor is reflecting off the center of the bar and tighten the cell down.

Step 7: Turn the gain adjustment CCW to the minimum position.

Step 8: From the minimum position slowly turn the gain adjustment CW until the sensor detects the bar. Once the sensor detects the bar continue to turn the gain CW another ½ turn.

Step 9: Remove the material from the v-channel and close the main access cover.
Step 10: Press the STOP key on the remote control station to clear the Main Access Cover Open alarm.

Procedure complete.

The following is a video clip of the Measuring Cell Adjustment procedure. Must have the electronic file to play. This movie may take several seconds to begin.
**Pusher Reversing Distance Adjustment**

The pusher reverses a specified distance, after the chuck closes, so that it is not making contact with the rotating bar or the spindle. Generally, the smaller the diameter of the pusher the greater the reversing distance. This is due to deflection (or sagging) of the pusher, which is caused when the pusher is far up in the spindle of the lathe and can no longer support its own weight so the tip of the pusher begins to sag.

**Procedure:**

**Conditions:**
- Bar feed power on.
- V-channel in the lower position.
- No bar stock in the spindle.
- End of Bar Position is set.

**Step 1:** Press the icon for manual mode.
   Run the pusher forward until the tip of the pusher sags and is touching the spindle (or spindle liner if one is installed). (Note: if the pusher does not touch the spindle before the End of Bar position is reached, then the default value will remain as the value for the Pusher Reversing Distance parameter. If this is the case, then return the pusher to the home position and this procedure is complete, otherwise go to Step 3.)

**Step 2:** Reverse the pusher just slightly until there is ¼” clearance between the pusher and the bottom of the spindle.

**Step 3:** Record the value of the pusher position on the remote control station.
   Take this value and subtract if from the value of the End of Bar position. Take this new value and enter it as the value for the Pusher Reversing Distance parameter.

**Procedure complete.**
Reference Procedure

Procedure:

Conditions:
- Bar feed power on.
- Air pressure set at 5 bar (75psi).
- Loading channel in the lower position.

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

Step 2: At the MAIN MENU, press the #4 key on the remote control station.

Step 3: Press the F4 (PAGE DOWN) key on the remote control station until the “Request for Reference Point Settings” option appears.

Step 4: Press and hold the F3 (ENTER) key until the screen returns to the Home Page.

Step 5: Press the F1 key on the remote control station for Manual Mode.
Step 6: Press the F1 key on the remote control station to begin the self-referencing sequence.

Sequence:
- The carriage unit retracts toward the home position, simultaneously, the PLC waits to detect the proximity switch-SQ5 (input I1.4) and the servo amplifier looks for the torque to build up after hitting the mechanical stop.

- Once the home position is set, the HOME PAGE will reappear on the remote control station.

Procedure complete.

The following is a video clip of the Reference Procedure. Must have the electronic file to play this movie.
Chapter 3: Procedures

Reset Interface Parameters

Procedure:

Conditions:
- Bar feed power on.
- Bar feed in STOP mode.
- PLC in RUN mode.

Step 1: Press the MENU button on the remote control station.

Step 2: Press the #2 button on the remote control station.

Step 3: Press the F4 button on the remote control station.
Step 4: Press the #8 button on the remote control station.

Step 5: Press the F3 button on the remote control station.

Step 6: Press the #2 button on the remote control station.

Step 7: Press the #5 button on the remote control station.
Step 8: Press the #0 button on the remote control station.

Step 9: Press the #3 button on the remote control station.

Step 10: Press the F3 button on the remote control station.

Step 11: Press the #1 button on the remote control station.
Step 12: Press the F3 button on the remote control station.

Step 13: Press the F1 button on the remote control station.

Step 14: Press the F1 button on the remote control station.

Procedure complete.
**Calibration of the Loading Table**

To obtain optimal loading, the bar must be perfectly centered on the spindle, regardless of its diameter or profile. Whenever the diameter or the profile is changed, the position of the loading table is automatically adjusted according to the parameters entered by the operator. If, for any reason whatsoever, the position of the loading table would be incorrect (either too low or too high), it can be corrected.

**Procedure:**

**Conditions:**
- Bars are on the magazine.
- The loading table is in the low position.
- Must be in Normal Operation.

**Step 1:** Select manual mode by pressing the [F2] key.
- Bring the loading table in upper position [F2].
- The bar now faces the spindle of the lathe.

**Step 2:** Press the [F3] key.

**Step 3:** Four icons are displayed:
- [F1] raise the table
- [F2] ESC (exit without saving)
- [F3] ENTER (save)
- [F4] lower the table.

**Note:**

The pneumatic cylinders, controlling the vertical movement of the table, release the pressure to allow motor M2 to proceed with the setting. After the setting is complete, they are reactivated.

Each time the [F1] or [F4] key is pressed, the vertical position of the table is modified by 0.25 mm. For substantial adjustments, keep pressing the key to keep the table moving in a continuous motion.

When the desired position is reached, press the [F3] ENTER key to validate the choice and recalibrate the device at this new position. Since the calibration must be changed, the command automatically accesses the PART SETUP menu. The command asks the operator to confirm the setting of the diameter. Using the keypad, enter the diameter of the bar used to center the table. Press the [F3] ENTER key twice to validate. (Also refer to Alignment Procedure, pg. 3-3)
Chapter 4:
Software Update/Restore

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 Load Servo S3 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 run. 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.
Determining Display Firmware

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:

```
A ar t e c AC
K on s o le
KB31E
Pass w or o
```

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.

```
3 1 4 1 5
```

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

```
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 the PLC fault screen appears (seen below) press the F3 key (ENTER).

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

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
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.

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.
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.

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 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.

```
AartecAC
Konsolle
KB310
Password
```

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.

```
3 ➔ 1 ➔ 4 ➔ 1 ➔ 5
```

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

```
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 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  
*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.
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.

```
AarteCAC
Konsole
KB31D
Password
```

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.

```
3 → 1 → 4 → 1 → 5
```

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

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

```
1 2 3 4
```

QUICK LOAD SERVO S3
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.

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).

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.

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 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.
Selecting the correct application is a critical step in setting up the bar feed. This chapter defines the individual applications choices found in the Application Setup. The differences between each of the applications determine how the feed out process of the bar feeder will occur. Reference this section of the manual when changing applications on the lathe to achieve ideal operating conditions and also to attain maximum efficiency of the Quick Load Servo S3 automated bar feeding unit.
**Application Setup**

The Quick Load Servo S3 is equipped with 7 pre-defined applications and 1 custom application defined in any configuration by the user.

An “application” is defined as a specific function of the barfeed in automatic operation coinciding with the material processing of the lathe.

The pre-defined applications when selected will automatically enable the required “Application” parameters on the barfeed to allow the base application to function without having to select each one individually.

There are three types of parameters “Application”, “Variable” and “Interface”.

---

**Parameter types defined**

A.  **Application Parameter**
    Parameter that alters the automatic operation of the bar feed. (Set by selecting application)

B.  **Variable Parameter**
    Parameter containing a value used in a calculation. (Must change when Dia., Part length or Application changes)

C.  **Interface Parameter**
    Parameter related to the electrical interface between the barfeed and lathe. (Not affected by changing applications)

---

**Applications defined**

1.  **FEED W/TURRET AND WITH M-CODE**
   - The turret of the lathe will control the positioning of the material as it is advanced by the barfeed.
   - To advance the material the clamping device of the lathe must be open and an M-Code output from the lathe sent to the barfeed to enable the feeding sequence.
   - This application assumes that pre-loading of the material in the barfeed is required.

   Parameters enabled: 6=2, 8A=3, 9=2, 16=2, 19=2, and 83=1 (all other “Application” type parameters set to =1)

2.  **FEED W/TURRET AND WITHOUT M-CODE**
   - The turret of the lathe will control the positioning of the material as it is advanced by the barfeed.
   - To advance the material the clamping device of the lathe must be open and an M-Code output from the lathe sent to the barfeed to enable the feeding sequence.
   - This application assumes that pre-loading of the material in the barfeed is required.

   Parameters enabled: 6=2, 8A=3, 9=2, 19=2, and 83=1 (all other “Application” type parameters set to =1)

3.  **FEED W/O TURRET AND WITH M-CODE**
   - The turret of the lathe is NOT required to control the positioning of the material as it is advanced by the barfeed. The servo positioning capabilities of the barfeed will control the distance the material is advanced based upon the value entered into the “Input overall part length” parameter located in “1. Part Setup”.
   - A pull-to-close type clamping system is required by this application for positioning accuracy. If a push-to-close type system is used the turret must be used for positioning.
   - To advance the material the clamping device of the lathe must be open and an M-Code output from the lathe sent to the barfeed to enable the feeding sequence.
   - This application assumes that pre-loading of the material in the barfeed is required.
5-3

Chapter 5: Barfeed Applications

4. **FEED W/O TURRET AND W/O M-CODE**
   - The turret of the lathe is NOT required to control the positioning of the material as it is advanced by the barfeed. The servo positioning capabilities of the barfeed will control the distance the material is advanced based upon the value entered into the “Input overall part length” parameter located in “1. Part Setup”.
   - A pull-to-close type clamping system is required by this application for positioning accuracy. If a push-to-close type system is used the turret must be used for positioning.
   - To advance the material an M-Code output from the lathe is not required. The barfeed will advance the material when the clamping device opens and all other required conditions are satisfied.
   - This application assumes that pre-loading of the material in the barfeed is required.

   Parameters enabled: 6=2, 8A=1, 19=2, and 83=1 (all other “Application” type parameters set to =1)

5. **SUB-SPINDLE STANDARD**
   - This parameter is not visible by default, a password is required to unlock. Contact LNS America, Inc. for more information.
   - The sub-spindle is required to pull the material to the desired position. The turret is NOT used to position the material.
   - NO M-Code is used to advance the material.
   - The headstock of the lathe must be none sliding type (NO Z-axis movement).
   - “Variable” Parameter No. 83 “Number of clamping device openings for the overall part length” must correspond to the number of times the clamping device opens on the lathe to make one complete part.
   - If more than one clamping device opening is required, “Variable” parameter “Input overall part length” must equal the total distance of the number of sub-spindle pulls.
   - The pusher will remain in its home position except for the loading of the new material into the spindle.
   - When the number of clamping device openings of the lathe equal Parameter No. 83 in continuous cycle, the length of one part which is entered into Parameter “Input overall part length” is deducted from the overall material length as was determined when the material was initially loaded or calculated after a restart. This process continues until the barfeed has determined that not enough material remains to make another part. At this point the End of Bar signal is output to the lathe.
   - If the lathe is removed from automatic cycle and the clamping device opened the barfeed will drop out of automatic cycle. When the barfeed is restarted in automatic cycle the pusher will advance to locate the back end of the material. Once the material is located the remaining length of the bar stock is recalculated.
   - The material is loaded to its pre-load position and will remain there until: clamping device is open and a M-Code output from lathe to barfeed confirming its is safe to load the new material into the spindle.

   Parameters enabled: 3=2, 6=2, 8A=3, 19=2, 25=2, 28=2, and 83=1 (all other “Application” type parameters set to =1)

6. **SUB-SPINDLE SLIDING HEADSTOCK**
   - This parameter is not visible by default, a password is required to unlock. Contact LNS America, Inc. for more information.
   - The sub-spindle is required to pull the material to the desired position. The turret is NOT used to position the material.
   - NO M-Code is used to advance the material.
   - The headstock of the lathe is sliding type (move in a Z-axis movement).
   - “Variable” Parameter No. 83 “Number of clamping device openings for the overall part length” must correspond to the number of times the clamping device opens on the lathe to make one complete part.
   - If more than one clamping device opening is required, “Variable” parameter “Input overall part length” must equal the total distance of the number of sub-spindle pulls.
Chapter 5: Barfeed Applications

5-4

- The pusher will remain in its home position except for the loading of the new material into the spindle.
- When the number of clamping device openings of the lathe equal Parameter No. 83 in continuous cycle, the length of one part which is entered into Parameter "Input overall part length" is deducted from the overall material length as was determined when the material was initially loaded or calculated after a restart. This process continues until the barfeed has determined that not enough material remains to make another part. At this point the End of Bar signal is output to the lathe.
- If the lathe is removed from automatic cycle and the clamping device opened the barfeed will drop out of automatic cycle. When the barfeed is restarted in automatic cycle the pusher will advance to locate the back end of the material. Once the material is located the remaining length of the bar stock is recalculated.
- The material is loaded to its pre-load position and will remain there until: clamping device is open, output from lathe to barfeed confirming the headstock is in its home position and a M-Code output from lathe to barfeed confirming its is safe to load the new material into the spindle.

Parameters enabled: 3=2, 6=2, 8A=3, 19=2, 25=2, 26=2, 28=2, and 83=1 (all other "Application" type parameters set to =1)

7. **ONE-SHOT SHAFT LOADING (High Speed Loading)**

- This parameter is not visible by default, a password is required to unlock. Contact LNS America, Inc. for more information.
- A pull-to-close type clamping system is required by this application for positioning accuracy. If a push-to-close type system is used the turret must be used for positioning.
- Each piece of material is equal to one complete part
- NO pusher is to be installed on the barfeed.
- The headstock of the lathe can be either none sliding or sliding type (see point below for sliding type).
- The loading flag must be configured to a specific length as to position the material to its desired position inside the clamping device of the lathe ("Top-Cut Position").
- Parameter No. 69 "Loading flag position" must equal the physical length of the modified loading flag.
- The material is loaded to its pre-load position and will remain there until: clamping device is open and a M-Code output from lathe to barfeed confirming its is safe to load the new material into the spindle.
- If using a sliding type headstock lathe parameter 26 "Headstock home confirmation signal connected to PLC input A7" must be set to 2. For more information on how to do this please contact LNS America, Inc.

8. **CUSTOM**

- Password required
- Allows the user to select any combination of parameters to accommodate special applications.
- For information on how to use this function please contact LNS America, Inc.
Chapter 6: Preventative Maintenance

Periodic maintenance of the Quick Load Servo S3 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.
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 an 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.

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 feeder use a cloth or brush, however, do not use these on any of the rollers 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.

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. The following chart shows the average life expectancy of the battery:

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<tbody>
<tr>
<td>100% off</td>
<td>0% on</td>
<td>3 years</td>
</tr>
<tr>
<td>0% off</td>
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<tr>
<td>30% off</td>
<td>70% on</td>
<td>4 years</td>
</tr>
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</table>

Verify the alignment of the bar feeder

Check alignment of bar feeder to lathe spindle to make sure neither have shifted. In case the bar feeder or lathe has shifted, refer to the Alignment Procedure pg. 3-3.

Belt Tension

After certain periods of time the linear rail belt may need to be tightened, refer to Belt Tension Adjustments pg. 3-10 & 3-12.
Chapter 7: 
Spare Parts

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 sub-base)
- Bar stock diameter
- Lathe type (make and model)
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.

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* Three feeding pusher are necessary to cover the entire range of the Quick Load Servo S3 bar feed system. Each pusher has a defined range of operation (refer to the Instruction Manual pg. 6-13).

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. 7-3).
# Parts Order Form

LNS America, Inc.

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

### Designation | LNS SA Part # | LNS USA Part # | Description
--- | --- | --- | ---
A | - | N/A | Interface terminal blocks (X2)
B | 4.705 | N/A | Mitsubishi servo amplifier
C | - | N/A | Emergency Stop circuit (X3)
D | * | N/A | LNS PCD2 (PLC)
E | - | N/A | 24VDC terminal blocks (X1)
F | - | N/A | Inputs / Outputs (X1)
FU 1 | - | N/A | Fused terminal / 1Amp for M2 motor protection
K1 | 4.507 | 6.100-A | Main contactor
KA1 | 4.606 | 6.102-A | Relay: Motor M2 “up”
KA2 | 4.606 | 6.102-A | Relay: Motor M2 “down”
QF1-QF2 | 4.138 | 6.113-A | Main circuit breaker
QS1 | 4.242 | 4.242 | Main disconnect switch
R1-R5 | 4.606 | 6.102-A | Interface relays
T1 | 4.192 | 4.688 | Transformer
T2 | - | 6.115-A | 24 Vdc power supply

* Not shown in this picture. The LNS PCD2 is located on the electrical panel door.
Loading Table sub-assembly (Left/Rear Load)
Loading Table sub-assembly (Left/Rear Load)
Loading Table sub-assembly (Left/Rear Load)
Chapter 7: Spare Parts

Pusher Locking sub-assembly (Left/Rear Load)
Pusher Locking sub-assembly (Left/Rear Load)
### Loading Table sub-assembly (Left/Front Load)

**QUICK LOAD SERVO S3**

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main Body</td>
</tr>
<tr>
<td>2</td>
<td>Servo Motor</td>
</tr>
<tr>
<td>3</td>
<td>Encoder</td>
</tr>
<tr>
<td>4</td>
<td>Limit Switch</td>
</tr>
<tr>
<td>5</td>
<td>Load Cell</td>
</tr>
<tr>
<td>6</td>
<td>Control Panel</td>
</tr>
<tr>
<td>7</td>
<td>Limit Switch</td>
</tr>
<tr>
<td>8</td>
<td>Handle</td>
</tr>
<tr>
<td>9</td>
<td>Cable</td>
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</tbody>
</table>

![Diagram of Loading Table sub-assembly](image-url)
Loading Table sub-assembly (Left/Front Load)
Loading Table sub-assembly (Left/Front Load)
Chapter 7: Spare Parts

Pusher Locking sub-assembly (Left/Front Load)
Pusher Locking sub-assembly (Left/Front Load)
<table>
<thead>
<tr>
<th>REF</th>
<th>QTY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>021.01.114</td>
<td>Plate</td>
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<td>2</td>
<td>1</td>
<td>4212</td>
<td>Cable fitting PG11</td>
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<tr>
<td>3</td>
<td>1</td>
<td>4484</td>
<td>Switch</td>
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<tr>
<td>4</td>
<td>2</td>
<td>912.04.35.2</td>
<td>Mounting screw</td>
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**QUICK LOAD SERVO S3**

Loading Table Microswitch sub-assembly

LNT

Fabrique de machines
CH 2534 Orvin

021-002-044 -
QUICK LOAD SERVO S3

Chapter 7: Spare Parts

Spare Parts

Servo Motor sub-assembly

<table>
<thead>
<tr>
<th>REF</th>
<th>QTY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>021.05.354 B</td>
<td>Notched Pulley z=15 HTD 13-3M-15</td>
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<td>2</td>
<td>1</td>
<td>021.05.555</td>
<td>Mounting plate for Servo Motor</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>021.05.904</td>
<td>Spacer</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>18785.04.20</td>
<td>Pin (European version only)</td>
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<td>5</td>
<td>1</td>
<td>4.756</td>
<td>Servo Motor HC KPS43 N°2501643</td>
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<td>6</td>
<td>4</td>
<td>5.20108</td>
<td>Nut</td>
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<tr>
<td>7</td>
<td>4</td>
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</table>

Pencer goussier au montage
sechage a temperature ambante 6 heures
## Linear Rail Assembly

<table>
<thead>
<tr>
<th>Item #</th>
<th>Item Description</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Belt guide table</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>8 x 24 mm bolt, washer</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>8 x 25 mm eccentric bolt, nut, washer</td>
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<tr>
<td>4</td>
<td>Belt guide bearings, grooved OD</td>
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</tr>
<tr>
<td>5</td>
<td>End caps black plastic</td>
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</tr>
<tr>
<td>6</td>
<td>4 x 12 mm screws, DIN 7971</td>
<td>16</td>
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<tr>
<td>7</td>
<td>Felt wiper</td>
<td>4</td>
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<tr>
<td>8</td>
<td>Spring</td>
<td>4</td>
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<tr>
<td>9</td>
<td>Plastic cover</td>
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<tr>
<td>10</td>
<td>Belt, 3868 mm</td>
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<tr>
<td>11</td>
<td>Belt clamp assembly</td>
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<tr>
<td>12</td>
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<tr>
<td>13</td>
<td>Bottom, profile</td>
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<tr>
<td>14</td>
<td>3 x 5 mm belt clamp screws</td>
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<td>15</td>
<td>Belt tensioner</td>
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<td>4 x 10 mm screws &amp; washers</td>
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<td>17</td>
<td>4 x 35 mm adjustment screws</td>
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<td>18</td>
<td>Drive box</td>
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<tr>
<td>19</td>
<td>Bearing housing</td>
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<tr>
<td>20</td>
<td>4 x 12 mm screws, DIN 7984</td>
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<td>21</td>
<td>4 mm serrated Belleville washer</td>
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<tr>
<td>22</td>
<td>Adapter plates</td>
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<td>5 x 14 mm adapter plate screws, DIN 7984</td>
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</tr>
<tr>
<td>24</td>
<td>5 x 16 mm adapter plate screws, DIN 912</td>
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<tr>
<td>25</td>
<td>5 x 25 mm adapter plate screws, DIN 7984</td>
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<tr>
<td>26</td>
<td>5 mm serrated Belleville washers</td>
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<tr>
<td>27</td>
<td>Gear shafts</td>
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<tr>
<td>28</td>
<td>Drive box bearings</td>
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<td>20 x 3 mm key</td>
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<tr>
<td>30</td>
<td>Extrusion, 1830mm</td>
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<tr>
<td>31</td>
<td>Rod, 1828 mm</td>
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<tr>
<td>32</td>
<td>T-slot</td>
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