Machine footprints and operating dimensions are available in the brochure and Pre-Installation Guide.

**GENERAL REQUIREMENTS**

Operating Temperature Range  41°F to 104°F (5 to 40°C)
Storage Temperature Range  -4°F to 158°F (-20 to 70°C)
Ambient Humidity: 20% – 95% relative humidity, non-condensing
Altitude: 0-6000 ft. (Do not operate machine in explosive atmospheres (explosive vapors and/or particulate matter)

**ELECTRICITY REQUIREMENTS**

**IMPORTANT! REFER TO LOCAL CODE REQUIREMENTS BEFORE WIRING MACHINES.**

All machines require:
Three phase 50 or 60Hz power supply.
Line voltage that does not fluctuate more than +/-5%

<table>
<thead>
<tr>
<th>System</th>
<th>Voltage Requirements</th>
<th>High Voltage Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>15 HP System</strong></td>
<td>(195-260V)</td>
<td>(354-488V)</td>
</tr>
<tr>
<td>SL-10 Power</td>
<td>50 AMP</td>
<td>25 AMP</td>
</tr>
<tr>
<td>Haas Circuit Breaker</td>
<td>40 AMP</td>
<td>20 AMP</td>
</tr>
<tr>
<td>If service run from elec. panel is less than 100' use:</td>
<td>8 GA. WIRE</td>
<td>12 GA. WIRE</td>
</tr>
<tr>
<td>If service run from elec. panel is more than 100' use:</td>
<td>6 GA. WIRE</td>
<td>10 GA. WIRE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>20 HP System</strong></th>
<th>Voltage Requirements</th>
<th>High Voltage Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>50 AMP</td>
<td>25 AMP</td>
</tr>
<tr>
<td>Haas Circuit Breaker</td>
<td>40 AMP</td>
<td>20 AMP</td>
</tr>
<tr>
<td>If service run from elec. panel is less than 100' use:</td>
<td>8 GA. WIRE</td>
<td>12 GA. WIRE</td>
</tr>
<tr>
<td>If service run from elec. panel is more than 100' use:</td>
<td>6 GA. WIRE</td>
<td>10 GA. WIRE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>30-40 HP System</strong></th>
<th>Voltage Requirements</th>
<th>High Voltage Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>100 AMP</td>
<td>50 AMP</td>
</tr>
<tr>
<td>Haas Circuit Breaker</td>
<td>80 AMP</td>
<td>40 AMP</td>
</tr>
<tr>
<td>If service run from elec. panel is less than 100' use:</td>
<td>4 GA. WIRE</td>
<td>8 GA. WIRE</td>
</tr>
<tr>
<td>If service run from elec. panel is more than 100' use:</td>
<td>2 GA. WIRE</td>
<td>6 GA. WIRE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>55HP System</strong></th>
<th>Voltage Requirements</th>
<th>High Voltage Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>170 AMP</td>
<td>Must use an external transformer</td>
</tr>
<tr>
<td>Haas Circuit Breaker</td>
<td>150 AMP</td>
<td></td>
</tr>
<tr>
<td>If service run from elec. panel is less than 100' use:</td>
<td>1 GA. WIRE</td>
<td></td>
</tr>
<tr>
<td>If service run from elec. panel is more than 100' use:</td>
<td>1/0 GA. WIRE</td>
<td></td>
</tr>
</tbody>
</table>
WARNING!
A separate earth ground wire of the same conductor size as the input power is required to be connected to the chassis of the machine. This ground wire is required for operator safety and for proper operation. This ground must be supplied from the main plant ground at the service entrance, and should be routed in the same conduit as the input power to the machine. A local cold water pipe, or ground rod adjacent to the machine cannot be used for this purpose.

Input power to the machine must be grounded. For wye power, the neutral must be grounded. For delta power, a central leg ground or one leg ground should be used. The machine will not function properly on ungrounded power. (This is not a factor with the External 480V Option)

The rated horsepower of the machine may not be achieved if the imbalance of the incoming voltage is beyond an acceptable limit. The machine may function properly, yet may not deliver the advertised power. This is noticed more often when using phase converters. A phase converter should only be used if all other methods cannot be used.

The maximum leg-to-leg or leg-to-ground voltage should not exceed 260 volts, or 504 volts for high-voltage machines with the Internal High Voltage Option.

The current requirements shown in the table reflect the circuit breaker size internal to the machine. This breaker has an extremely slow trip time. It may be necessary to size the external service breaker up by 20-25%, as indicated by “power supply”, for proper operation.

The high-voltage requirements shown reflect the Internal 400V configuration which is standard on European machines. Domestic and all other users must use the External 480V option.

<table>
<thead>
<tr>
<th>Machine Type</th>
<th>Main Air Regulator</th>
<th>Input Airline Hose Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT / SL / TL-Series</td>
<td>85 psi</td>
<td>3/8” I.D.</td>
</tr>
</tbody>
</table>

The CNC Lathe requires a minimum of 100 PSI at 4 scfm at the input to the pressure regulator on the back of the machine. This should be supplied by at least a two horsepower compressor, with a minimum 20-gallon tank, that turns on when the pressure drops to 100 PSI.

The recommended method of attaching the air hose is to the barb fitting at the back of the machine with a hose clamp. If a quick coupler is desired, use at least a 3/8”.

NOTE: Excessive oil and water in the air supply will cause the machine to malfunction. The air filter/regulator has an automatic bowl dump that should be empty before starting the machine. This must be checked for proper operation monthly. Also, excessive contaminants in the air line may clog the dump valve and cause oil and/or water to pass into the machine.

NOTE: The nipple between the air filter/regulator and the Bijur oil lubricator (See illustration in "Air Connection" section) reservoir tank below the control box on the back of the machine is for the optional rotary table. DO NOT use this as a connection for an auxiliary air line. Auxiliary connections should be made on the left side of the air filter/regulator.
**Moving the Crate**

**TOOLS REQUIRED**
- Precision bubble level (0.0005 inch per 10")
- Test indicator (0.0005)
- 1 1/8" hex wrench or ratchet
- 3/4" wrench
- 1 1/2" wrench
- Claw hammer

A forklift capable of lifting more than 9,000 pounds (14,000 pounds for the SL-30, 23,000 pounds for SL-40), with forks at least 5' long by 6" wide (6' by 6" wide for SL-30 and 8' by 8" wide for SL-40, SL-40L).

**MATERIALS REQUIRED**
- Wire and air hose or piping as specified in the Service Requirements section
- A small amount of grease
- Way lube for the lubricator (Vactra #2)

**Warning!**

THE LATHE CRATE CAN ONLY BE MOVED WITH A FORKLIFT.

**CAUTION!**
The fork positions are marked on the crate. (Also, note that there are three skids at each side of the pallet. The heavy part of the machine [the back] is positioned over the two skids that are closest together.) If the fork positions are ignored, there is a good chance that the retaining bolts will be sheared off by the forks and also that the machine will tip over when it is picked up.
**Unpacking the Lathe**

**Uncrating**

1. Remove the cover.

   **CAUTION!** Do not put undue pressure on the top of the machine as you remove the cover.

2. Remove the coolant tank. Remove the cleats that held them in place.

3. Remove the ¾" bolts holding the base to the pallet and the plastic thread protecting sleeve from the base.

4. Remove the nuts, on the leveling screws, holding the shipping bracket to the base casting. Remove the shipping brackets.

5. Lift the machine off the pallet.

**Leveling the Lathe**

**Setting in Place**

**CAUTION!** Do not lift the machine any farther than necessary off the floor when moving it, and move as slowly and cautiously as possible. Dropping the machine, even from a height of a few inches, can cause injury, result in expensive repairs, and void the warranty.

1. Unbolt clamp plates. Lift the machine until the bolts clear the pallet.

2. Thread leveling screws through casting until thread is approximately 3/8" above the top of the casting. If a screw is excessively hard to turn, remove it, dress the threads in the hole with a 1-14 tap, and inspect the screw. If the screw has dings, dress the threads with a 60o V file. Install the lock nuts on the leveling screws, but do not tighten. SL-20 machines require the lock nuts to be installed under the leveling foot.

3. Move the machine to where it will be located. Take leveling pads out of the tote kit, grease the dimple in each pad, and locate them under the leveling screws at the four corners. Lower the machine.

4. Remove all banding and packing material around the control panel, monitor and doors.

5. Remove foot switches from inside machine and attach cable to socket located at left end of front support beam, with cable facing downward.
ST-SERIES LEVELING

The lathe should be in place, on the leveling pads and power should be applied to the machine.

1. Remove the back panel from the machine.

2. The only screws that should be in contact with the pads are the four corners. The two middle screws should be backed away from the leveling pad.

3. Jog the tool turret to the middle of travel in both X and Z axis.

4. Place a machinist's level on the back right Z-axis guide as shown

5. Level the lathe in the Z-axis, by adjusting the two left leveling screws.

6. Use the leveling tool (T-2119A), or a ground block across the rear Z-axis linear guide and place the machinist's level on it. The level will now be parallel to the X-axis.

7. Level the machine using only the two front leveling screws.

8. Jog the turret to home in the Z-axis only.

9. Pop-out (disengage) the turret and jog until one of OD surfaces is level. To do this change parameter 43 bit 18 from 1 to 0. Go to MDI and enter M43 and press Cycle Start. Go to jog mode, enter “A” to jog the turret.

10. Put the machinist’s level on the top of the turret as shown. Handle jog the turret forward 6” at a time and use the front leveling screws to remove any twist (.0005” max deviation).

11. Lower the middle two leveling screws and torque to 25 ft lb. Jog the Z-axis back and forth to check for twist in the axis. If necessary loosen the front middle leveling screw to remove the twist.

12. Tighten the jam nuts.

**SL-Series Leveling**

Leveling the machine is required to provide proper coolant and lubrication drainage and to ensure equal loading on all four of the casting feet for consistent cutting performance. Please read through entire sequence before starting.

1. Position the turret close to the chuck (shipping position). Remove right-end rear panel to access the Z-axis linear guide rails.

2. Place a machinist's level across linear guides to level front-to-back. Place level along linear guides to level machine left-to-right. **Take care to avoid damage to linear guide rails.**

3. Level machine by rotating leveling screws. Adjust adjacent screws alternately to maintain proper loading.

4. Adjust machine height (see figure). Verify that each leveling screw requires approximately the same torque to turn. This will ensure proper loading. Tighten lock nuts.

**Initial Setup**

**WARNING!**
At this point, there should be NO electrical connection to the machine. The electrical panel should be closed and secured.

Set the main switch at the upper right of the electrical panel on the back of the machine to OFF. Using a screwdriver to unlock the two latches on the panel door, unlock the cabinet with the key, and open the door.

Take sufficient time to check all the components and connectors associated with the circuit boards. With the power off, push on them gently to make sure that they are seated in their sockets. Look for any cables that have become disconnected, look for any signs of damage and loose parts in the bottom of the panel box. If there are any signs that the machine was mishandled, be extremely careful in powering up the machine (be ready to shut it off IMMEDIATELY). Or if there are obvious problems, call the factory BEFORE proceeding.
**Support Arm End Cap**

The tote kit supplied will include one support arm end cap with an O-ring. The end cap is placed on the machine end of the controller support arm.

![End Cap](image)

**Thin Pendant**

The thin pendant assembly is shipped in place on the front of the lathe, covered with corrugated cardboard padding. When unpacking, remove the cardboard and shipping bolt (accessed through the glove box).

**Pendant Leveling**

The pendant leveling feature allows the adjustment of the pendant angle.

1. Rotate the pendant to the position in the following figure for proper leveling. Loosen the two (2) screws on the end cap. Use a wrench on the leveling screw to change the pendant angle.

   ![Leveling Screw](image)

2. Tighten the two (2) screws on the end cap once the pendant is level.

3. Rotate the pendant 90° forward and check the level again. Repeat the procedure if necessary.

**Air Connection**

- **CAUTION!** Working with air service required for the lathe can be hazardous. Be sure that pressure has been removed from the air line before you connect it to the machine, disconnect it from the machine, or service parts of the air system.

   1. When the machine leaves the factory, the air filter is in place, and air lubricator and the lubricator reservoir tank are full. They should be checked and serviced before compressed air is supplied to the machine.
2. With the pressure off in the air line, connect the air supply to the hose barb next to the air filter/regulator (below the electrical panel). If the fitting supplied is not compatible, simply replace it.

3. Start the compressor, set it between 100 and 150 PSI. Set the regulator on the machine to 85 to 90 PSI.

4. Prime the lubricator to make sure it is working. To prime the lubrication system, pull up on the handle on top of the reservoir tank. DO NOT push down on the primer handle.

**NOTE:** Depending on the position of the cam that drives it, the lubrication system may not activate until a few minutes after the machine is started. However, if there is a problem with the system, an alarm will stop the machine.

**Electrical Connections**

**CAUTION!** Working with electrical services required for the lathe can be extremely hazardous. The electrical power must be off and steps taken to ensure it is not turned on while working. In most cases this means turning off a circuit breaker in a panel, then locking the panel door. However, if this is not the case or are not sure how to do this, check with appropriate personnel or otherwise obtain the necessary help before continuing.

**NOTE:** The machine must have air pressure at the air gauge, or a "Low Air Pressure" alarm will be present on power up.

**WARNING!**

The electrical panel should be closed and secured at all times except during installation and service. At those times, only qualified electricians should have access to the panel. When the main circuit breaker is on, there is high voltage throughout the electrical panel (including the circuit boards and logic circuits) and some components operate at high temperatures. Therefore, extreme caution is required.

1. Hook up the three power lines to the terminals on top of the main circuit breaker at upper right of electrical panel. Connect the separate ground line to the ground bus to the left of the terminals.
2. After the line voltage is connected to the machine, make sure that main circuit breaker (at top-right of rear cabinet) is OFF. Turn ON the power at the source. Using a digital voltmeter and appropriate safety procedures, measure the voltage between all three pair phases at the main circuit breaker and write down the readings. The voltage must be between 195 and 260 volts (360 and 480 volts for high voltage option).

3. Check the connections on the transformer at the bottom-right corner of the rear cabinet. The three black wires labeled 74, 75, and 76 must be moved to the terminal block triple which corresponds to the average voltage measured in step 2 above. There are four positions for the input power for the 260 volt transformer and five positions for the 480 volt transformer. The labels showing the input voltage range for each terminal position is shown in the following illustration:

4. Transformer T5 supplies 24VAC used to power the main contactor. The transformer has two input connectors located about two inches from the transformer, which allow it to be connected to either 240V or 200V. Users that have 220V-240V RMS input power should use the connector labeled 240V, while users with 190-220V input power should use the connector labeled 200V. Failure to use the correct input connector will result in either overheating of the main contactor or failure to reliably engage the main contactor.
5. Set the main circuit breaker to ON. Check for evidence of problems, such as the smell of overheating components or smoke. If such problems are indicated, immediately set the main circuit breaker to OFF and call the factory.

6. After the power is on, measure the voltage across the bottom terminals on the main circuit breaker. It should be the same as the measurements where the input power connects to the main breaker. If there are any problems, check the wiring.

7. Apply power to the control by pressing the Power-On switch on the front panel. Check the high voltage buss on the Vector Drive (pin 2 with respect to pin 3 on the terminal bus at the bottom of the drive). It must be between 310 and 360 volts. If the voltage is outside these limits, turn off the power and recheck steps 2 and 3. If the voltage is still outside these limits, call the factory. Next, check the DC voltage displayed in the second page of the Diagnostic data on the display. It is labeled DC BUS. Verify that the displayed voltage matches the voltage measured at pins 2 and 3 of the Vector Drive +/- 7 VDC.

If the displayed voltage exceeds the measured voltage by 12 volts or more, install a ferrite EMI filter (65-1452) to the current command cable near its connection to the vector drive. Secure with a cable tie (See photo). Recheck voltage.

Warning!
High Pressure Coolant (HPC) pump is three phase and must be phased correctly. Improper phasing will damage the HPC pump and void the warranty. Refer to the HPC start up section, if equipped.
8. Electrical power must be phased properly to avoid damage to your equipment. The Power Supply Assembly PC board incorporates a "Phase Detect" circuit with neon indicators. When the orange neon is lit (NE5), the phasing is incorrect. If the green neon is lit (NE6), the phasing is correct. If both neon indicators are lit, you have a loose wire; check the connections. Adjust phasing by swapping L1 and L2 of the incoming power lines at the main circuit breaker.

**WARNING!**
ALL POWER MUST BE TURNED OFF AT THE SOURCE PRIOR TO ADJUSTING PHASING.

9. Turn off the power and set the main circuit breaker to OFF. Close the door, lock the latches, and turn the power back on.

10. Remove the key from the control cabinet and give it to the shop manager.

**Installation Procedure for External 480V Transformer**

**Introduction**
The external transformer adds to overall machine reliability and performance, however it does require extra wiring and a place to locate it. The external transformer provides electrostatically shielded isolation. This type of transformer acts to isolate all common mode line transients and improve EMI conducted emissions.

The external transformer has a 45 KVA rating. It is a 480V 60Hz only transformer.

**Installation**
The transformer should be located as close to the machine as possible. The input and output wiring of the transformer should conform to the local electrical codes and should be performed by a licensed electrician. The following is for guidance only, and should not be construed to alter the requirements of local regulations.

The input wire should not be smaller than the 6AWG for the 45KVA transformer. Cable runs longer than 100" will require at least one size larger wire. The output wire size should be 4 AWG.

The transformer is 480V to 240V isolation transformers with delta wound primary and secondary windings. The primary windings offer 7 tap positions, 2 above and 4 below the nominal input voltage of 480V.

The primary side should be wired as follows:

**Input Voltage Range**

<table>
<thead>
<tr>
<th>Range</th>
<th>Tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>493-510</td>
<td>1 (504)</td>
</tr>
<tr>
<td>481-492</td>
<td>2 (492)</td>
</tr>
<tr>
<td>469-480</td>
<td>3 (480)</td>
</tr>
<tr>
<td>457-468</td>
<td>4 (468)</td>
</tr>
<tr>
<td>445-456</td>
<td>5 (456)</td>
</tr>
<tr>
<td>433-444</td>
<td>6 (444)</td>
</tr>
<tr>
<td>420-432</td>
<td>7 (432)</td>
</tr>
</tbody>
</table>

This should produce a voltage on the secondary side of 234-243 V RMS L-L. Verify this and readjust the taps as required. At the machine, connect the cables at the input of the internal 230V transformer to the 227-243V taps. Apply power to the machine and verify that the DC voltage between pins 2 and 3 of the Vector Drive (2nd and 3rd pins from the left) is 329-345VDC. If not, return to the 480V isolation transformer and readjust the taps as required. Do not use the taps on the internal 230V transformer to adjust the voltage.
50Hz Installations
The external transformers are 60Hz rated, and cannot be used at 50Hz without derating the input voltage. For these applications, the internal 230V transformer should be tapped on the lowest setting (195-210V RMS). The external transformer should be tapped according to the following table. If these tap settings do not produce a DC bus voltage between pins 2 and 3 on the Vector Drive between 320 and 345VDC, readjust the taps on the external transformer as required. Do not move the taps on the internal transformer from the lowest position.

<table>
<thead>
<tr>
<th>Input Voltage Range</th>
<th>Tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>423-440</td>
<td>1 (504)</td>
</tr>
<tr>
<td>412-422</td>
<td>2 (492)</td>
</tr>
<tr>
<td>401-411</td>
<td>3 (480)</td>
</tr>
<tr>
<td>391-400</td>
<td>4 (468)</td>
</tr>
<tr>
<td>381-390</td>
<td>5 (456)</td>
</tr>
<tr>
<td>371-380</td>
<td>6 (444)</td>
</tr>
<tr>
<td>355-370</td>
<td>7 (432)</td>
</tr>
</tbody>
</table>

**Optional Chip Auger Installation**

1. Unpack the auger and discharge tube.
2. Slide the auger into the discharge tube opening and then slip opposite end onto motor hub. Fasten to motor hub with the 5/16-18 x 2½” bolt.

3. Install gasket and slide the discharge tube into the opening. Attach the discharge tube with bolts and locking washers and tighten uniformly.
4. After machine start-up, check the operation of the auger to ensure the direction of rotation will move the chips toward the discharge tube. If the auger is turning so that the chips are not being moved toward the discharge tube, change PARAM 209 bit 12 from 1 to 0 or 0 to 1 to establish a new forward direction.
**SL-10 CHIP AUGER DISCHARGE TUBE INSTALLATION**

1. Remove the screws that secure the inner front and rear wings. Remove the inner front and rear wings. Slide the chip auger assembly towards the rear of the machine.

2. Unpack the discharge tube. Install gasket and slide the discharge tube into the opening. Attach the discharge tube with bolts and locking washers and tighten uniformly.

3. Slide the chip auger assembly back into its original location. Reinstall the inner front and rear wings using the BHCS removed in step 1.

4. After machine start-up, check the operation of the auger to ensure the direction of rotation will move the chips toward the discharge tube. If the auger is turning so that the chips are not being moved toward the discharge tube, change PARAM 209 bit 12 from 1 to 0 or 0 to 1 to establish a new forward direction.

**SL-10 PARTS BASKET**

**Installation**

Place the parts basket tray over the chip auger trough. Set the parts basket on the parts catcher tray. Position the basket underneath the chuck.
**Optional Chip Conveyor**

1. Unpack the chip conveyor and locate the conveyor discharge cover. Remove the side and nose wings from the conveyor pickup area.

2. Attach a lift to the hoist loops, raise the conveyor and reorient the caster wheels in the operating position.

3. Slide conveyor into opening on the right side of the machine until the incline start point is near the machine enclosure. Adjust caster wheels to support the conveyor 1/8" to 1/4" above the lip of the enclosure pan.

4. Install the side and nose wings, and discharge cover.

5. Route the chip cable through the hole in the bottom of the control cabinet. Thread it in and back out of the central cable trough. Plug the connector to the I/O Board at input P38 and close the cabinet door.

**Note:** On a machine with a safety circuit, the chip conveyor will only run with the door closed regardless of the Conveyor Door Override bit.

**Foot Switch Installation**

To connect the foot switch assembly, remove the retaining cover, plug in the foot switch, then replace the cover.

**Note:** A replacement foot switch cable (RJ12 6P6C Straight Wiring Coil Cord) is packed in the lathe’s control cabinet.
Coolant System

Coolant Tank

1. Position the coolant tank at the front of the machine. Connect the coolant pump and the auger cables to the connectors located on the control cabinet.

2. The Coolant Level Float Assembly is shipped in a separate box. It consists of a housing, float and cable. Install the Coolant Level Float Assembly by lowering the float through the tank lid. Line up the slots in the housing with the dimples on the side of the tank and press down so the float assembly clips onto the tank.

3. Insert a plastic push wire mount into the hole in the tank lid, then route the cable towards the right side of the lathe. Use the plastic push wire-mounts as needed to ensure the cable does not get damaged. Tie wrap the coolant float cable to other cables, when available, when routing from the coolant tank.

4. Connect the cable to the Coolant Level Gauge receptacle on the right side panel. Remove the cover from the RJ-12 style connector, plug in the coolant level sensor cable, and replace the cover.

5. Select the Current Commands screen on the operator’s pendant and move the float up and down to ensure that the display reflects a corresponding change in the coolant level.

6. Attach the coolant hose to the pump fitting located at the base of the coolant pump.

7. Slide the coolant tank into place beneath the machine. Insure the cables and hoses are not damaged as the coolant tank is pushed in.

8. Fill the tank with the approximately 35 gallons of coolant (50 gallons for SL-30, 75 gallons for the SL-40). Fill with water based coolant only.*

   *Mineral cutting oils will damage rubber based components throughout the machine and void the warranty.

SL-10 Coolant Pump

Priming the Coolant Pump

After machine installation, or extended periods of non-use, add coolant to inlet side of the pump until full.
**Auxiliary Filter for Standard Coolant Systems**

1. Place the Auxiliary Filter system next to the coolant tank of the machine. Connect the output of the Standard Coolant pump to the input of the Auxiliary Filter. Connect the Auxiliary Filter output hose to the coolant hose of the machine.

2. The Auxiliary Filter tank must be filled with coolant before use. To fill the Auxiliary Filter tank from the Standard Coolant tank, turn on the Standard Coolant Pump. Open the ball valve, located on the top of the Auxiliary Filter tank. Wait for coolant to appear in the drain-back hose. Close the ball valve; the Auxiliary Filter tank is full.

**Optional High Pressure Coolant System**

**Installation**

1. Connect the intake filter hose to the coolant pickup connection next to the coolant pump on the coolant tank.

2. Route the 1/4" OD plastic hose attached to the high pressure coolant pump down into the coolant tank. Insert it in to the 1/4" OD connector next to the coolant pickup. Route the 3/8" OD plastic hose from the bottom of the HPC unit to the 3/8" OD push-in elbow next to the coolant pump.

3. Attach the 1/2" braided hose to the standard coolant pump. Prime the high pressure coolant system.

4. Run the standard coolant pump and check all connections for leaks.

*Installed High Pressure Coolant System*
Optional Auxiliary Filter for High Pressure Coolant

Installation

1. Attach the hose from the top of the auxiliary filter to the hose connector on the coolant pickup.

2. Disassemble the fittings on the primary coolant pump. Reassemble with two (2) 1/2” 45° fittings, a male to male 1/2” fitting, a cross fitting, and a 1/2” hose fitting on the other end of it. On one of the two remaining sides of the cross fitting, install a 1/2” to 1/4” reducer and a 1/4” push-in elbow. On the other side, install a 1/2” plug. (See Auxiliary Filter Priming System figure.) Note that the illustration shows the cross fitting rotated 90° ccw for clarity. The 1/4” push-in elbow should face the Auxiliary Filter.

3. Insert 1/4” OD plastic hose into the push-in elbow on the pump. Route the hose along the intake filter hose and around the intake line of the auxiliary filter. Trim the plastic hose to length and insert it into the push-in elbow at the top of the filter. Secure the plastic hose to the inlet hose with the supplied cable ties.

4. Attach the hose from the bottom of the auxiliary filter to the inlet of the high pressure pump.

5. Check that the filter lid is securely closed.

6. Run the primary coolant system for ten minutes to prime the auxiliary filter before using the high pressure system.

NOTE: The intake filter on high pressure coolant is not used when the auxiliary filter is installed.

1000 Psi High Pressure Coolant Installation

Place the 1000psi HPC assembly next to the standard coolant pump.
1. Connect the power cable for the pump assembly to an external source in order to power the motor. Note that the CNC control does not provide power to the pump motor. Customer supplied external power must be supplied at the time of installation. Power required is 208-230 volt 3-phase 50/60Hz, protected by a 20-amp circuit breaker. The pump assembly is pre-wired with a NEMA L15-20 plug.

The pump assembly can also use an alternate power source, these are: 240-230V 50/60HZ @ 20A or 480V 50/60HZ @ 10A

To power the pump assembly from an alternate source, first replace the plug at the end of the cable with an appropriate plug for the voltage being used. Then, rewire the pump motor according to the directions on the side of the motor.

2. Connect the 1” diameter intake hose from the HPC pump to the cover plate assembly on the coolant pump mount. Connect the 1/2” diameter bypass hose from the pressure regulator to the coolant tank.

3. Insert the 1/4” diameter nylon tubing from the HPC pump to the connector on the standard coolant pump.

**INITIAL START-UP**

Ensure that a correct style tool is in place; a tool and tooling block with coolant passages. Before using the 1000psi system the auxiliary filter must be primed. Run the standard coolant pump for 5 minutes, this will fill the auxiliary tank, through the priming hose.

To reduce wear and prolong the life of the auxiliary filter, the 1/4" nylon hose is connected between the standard coolant pump and the auxiliary filter which will maintain the coolant level in the filter tank.

**PRESSURE REGULATOR ADJUSTMENT**

The pressure regulator has been set at 1000psi and tested at the factory. No further adjustment is required. However, to change the pressure, loosen the regulator jam nut. Turn the adjusting bolt clockwise to increase the pressure or counter clockwise to decrease the pressure. (Note, the system does not need to be on to change pressure) Tighten the regulator nut once the pressure has been set.
Installation

1. Hang the auxiliary filter assembly from the coolant tank handle and secure it with two 1/4-20 screws as shown.

2. Connect the hose attached to the spindle head to the hose connection on the Standard Coolant Pump.

3. Separate the hoses coming from the Auxiliary Filter. They have been connected together for shipping.

4. Attach the Auxiliary Filter male connector (top hose) to female connector on the HPC Coolant Pump Assembly (Items labeled “1” in the previous illustration).

5. Attach the Auxiliary Filter female connector (bottom hose) to the short hose with the male connector on the HPC Coolant Pump Assembly (Items labeled “2” in the previous illustration).

6. Connect the plastic tubing (shipped tied to the Auxiliary Filter) from the small elbow fitting on the top of the Auxiliary Filter to the small elbow fitting on the Standard Coolant Pump hose connector.

7. Connect the hose attached to the HPC Coolant Pump Assembly to the HPC Filter Assembly.

8. Make sure the filter lid is securely closed.

9. Run the primary coolant system for ten minutes to prime the bag filter housing before using the HPC system.
1000 Psi High-Pressure Coolant Installation

Place the 1000psi HPC assembly next to the coolant tank behind the machine with the hose connections facing the back of the machine. Use the following coolant schematic as an aid for hose routing.

1. Connect the power cable for the pump assembly to an external source in order to power the motor. Note that the CNC control does not provide power to the pump motor. Customer supplied external power must be supplied at the time of installation. The power required is 208-230 volt 3-phase 50/60Hz, and have a 20-amp circuit breaker. The pump assembly is pre-wired with a NEMA L15-20 plug.

The pump assembly can also use an alternate power source, these are:
240-230V 50/60HZ @ 20A or 480V 50/60HZ @ 10A

To power the pump assembly from an alternate source, first replace the plug at the end of the cable with an appropriate plug for the voltage being used. Then, rewire the pump motor according to the directions on the side of the motor.

2. Plug the HPC cable from HPC junction box (J-box) to the HPC amphenol port on the side of the control cabinet.

3. Connect the hose attached to the coolant connection on the spindle head to the hose connection on the Standard Coolant Pump.

4. Connect the hose attached to the HPC input on the machine’s head to the connector labeled “1000 psi Out” on the HPC1000 connector panel (located on the side opposite the handle).

5. Attach the supply hose from the coolant tank lid to the connector labeled “Supply In” on the HPC1000 connector panel (items labeled “1” in the following illustration).

6. Connect the filter drain line from the coolant tank lid to the connector labeled “Filter Drain” on the HPC1000 connector panel (items labeled “2” in the following illustration).

7. Connect the plastic tubing (ships tied to the Auxiliary Filter) from the connector labeled “Prime Line” on the HPC1000 connector panel to the small elbow fitting on the Standard Coolant Pump hose connector (items labeled “3” in the following illustration).
INITIAL START-UP

Before using the 1000psi system the auxiliary filter must be primed. There are two ways to do this. The first is to run the standard coolant pump for 5 minutes. This will fill the auxiliary tank, through the priming hose.

The second method is to attach the wash down hose to the standard coolant pump. Turn on the standard coolant system (press "MDI", then "Coolant"). It may be necessary to turn the valve(s) on the standard coolant pump to divert coolant to the hose. Open the auxiliary filter tank cover and use the wash down hose to fill the auxiliary filter with coolant. Replace the auxiliary tank cover and tighten securely.

NOTE: To ensure the HPC pump does not lose its priming, a 1/4" nylon hose is connected between the standard coolant pump and the auxiliary filter to maintain the coolant level in the filter tank.

Pressure Regulator Adjustment

MACHINE POWER ON

WARNING!

DO NOT press POWER UP/RESTART on the control panel while the shipping bracket is in place.

With the main switch on the electrical panel set to ON, press and release POWER ON at the upper left of the control panel. After a few seconds, the display will appear on the screen.

HYDRAULIC UNIT PHASING

The achine must be phased properly. Improper phasing will cause damage to the hydraulic unit and void the warranty.

1. Press and release the RESET button twice (or until all alarms are cancelled) to turn the axis motors on. (The message "ALARM" appears at the lower right of the screen if one or more alarms are in effect.)

NOTE: The hydraulic pump runs whenever the axis motors are energized.
2. Check the pump pressure gauge on the hydraulic unit. The hydraulic pump is located on the left side of the lathe. If the pressure reads zero, immediately power off the machine.

**CAUTION!** If the hydraulic pump is allowed to run for more than 30 seconds in this condition, serious damage will occur.

When pressure reads zero, it means the machine is not properly phased, and the pump is rotating backward. If the pressure gauge shows a proper pressure, the phasing is correct, and no further action is required.

3. To properly phase the machine:
   - Make sure there is no power at the input side (top) of the main circuit breaker. **MEASURE THE VOLTAGE!**
   - Exchange any two wires at the input side (top) of the main circuit breaker
   - Close the control box.
   - Return to Step 1 and retest for proper phasing.

**Removing Shipping Bracket**

1. With a 1 1/4" box wrench, remove the 3/4-10" x 7" HHB, nut and spacer.

2. Press ZERO RET key, Z key, then ZERO SINGL AXIS key (the turret will move away from the spindle). Do not press power up/restart.

3. Remove the three 3/8"-16 x 1" SHCS then remove the shipping bracket (see figure). Replace the three 3/8"-16 x 1" SHCS with the three 3/8"-16 x 1/2" BHCS that are in bag attached to the turret.

4. Unclamp the chuck, to release the chuck wrench. Loosen and release the tool holder wrench from the tool holder on the turret.

5. Press the SETNG/GRAPH key. Then page down to the last page (press Page Down several times). Cursor to Setting 53, Jog w/o Zero Return (with the cursor **down** key). To turn this setting on, press and release the **right** cursor key and then press and release the Write key at the extreme lower right of the control panel. Turning on Jog w/o Zero Return bypasses the zero return interlock.
6. Press and release the Reset button twice, or until there are no alarms, to turn the axis motors on. (The message “Alarm” appears at the lower right of the screen if one or more alarms are in effect.)

**NOTE:** If any alarms are present and cannot be cleared with the Reset button, press and release ALARM/MESGS for more information on the alarms. If you are unable to clear the alarms, write down the alarm numbers and call the factory.

7. Press and release the Handle Jog button and check the screen for the “Jogging Z Axis Handle .001” message. Verify that the carriage travels slowly (not more than 0.001 inch per impulse — the “.001” part of the Z-axis message). If the message does not read .001, press and release the .001 button next to Handle Jog.

8. Once you are certain that the Z-axis is working correctly. Make sure that all alarms are clear by checking for the “Alarm” message at the lower right of the screen. Next, close the doors and press and release the Zero Return button followed by the Auto All Axes button. The Z-axis moves to the right slowly. Then, after it has reached its home position, the X-axis moves to its home position.

**Optional Tool Probe**

The Tool Probe is secured in place for shipping with a cable tie. Before operating the turning center, cut the cable tie. Remove screw holding cable clamp in place, remove cable clamp and re-install the screw.

![Optional Tool Probe Image]

**SL-10 Leveling**

1. Remove all weight from the right-front (RF) leveling screw. Place a machinist’s level on the leveling tool as shown. If the lathe has a VDI turret, install a VDI tool holder and clamp the leveling tool in the tool holder. Then place a machinist’s level on the leveling tool. Use the remaining 3 leveling screws to put the machine base within the measuring range of the level.

2. Jog the Z-axis back and forth and adjust the pressure on the RF screw to remove roll from the Z-axis. Maximum acceptable roll deviation is 0.0005”/10 throughout the entire Z-axis travel.

**Crane Arm Installation Instructions for SL-30 and SL-40**

1. Remove crane arm from the shipping base.
2. Slide the Top Flange Bearing onto the shaft of the boom with the flange facing the bearing stop. Slide the Lower Bearing onto the shaft and fasten in place with the Ø.38" pin.

3. Lift crane arm into position over crane pivot weldment. There is a hole in the boom especially for lifting.

4. Lower the crane arm into place inside the crane pivot weldment.

CABLE HANDLING/STORAGE

Complete the machine installation by looping and storing the extra lengths of electrical cables. Use the following techniques when dealing with excessive cable length.

• Loop cables individually, being careful to not force the cable into too sharp a bend and tie-wrap the loop. The cable bend radius should not be less than 4 times the diameter of the cable.

• Place the loop in the cable out of sight, hidden by the machine sheet metal, if possible.

• Do NOT allow the cables to rest on the floor.

• Do NOT coil a cable around another piece of machinery (such as a pump motor).