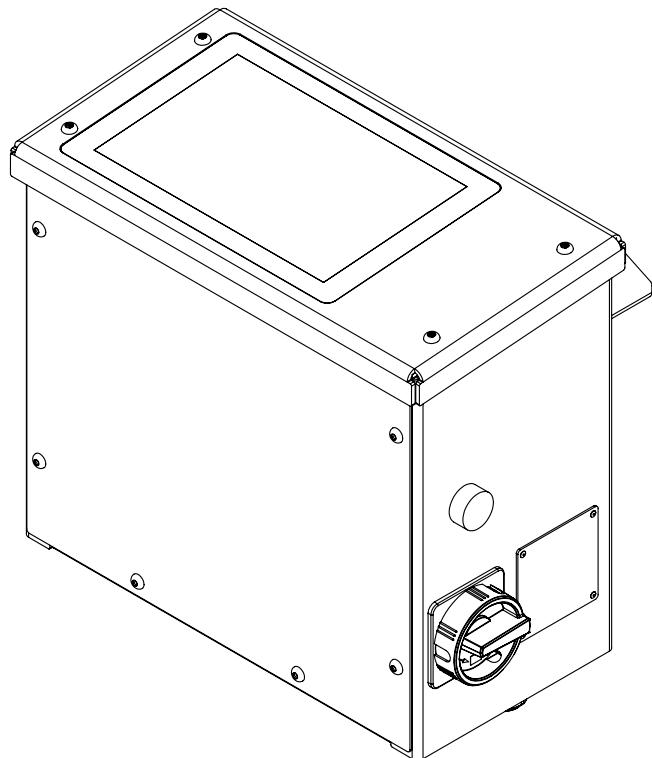


M54 Tube Bender HMI1000 Upgrade Installation



JD Squared, Inc.
2025.12.1

Contents

1	Introduction	1
2	Kit Contents and Required Items	2
3	Old Component Removal	3
4	Handle Bracket Installation	9
5	Encoder Cable Installation	11
6	HMI1000 Enclosure Installation	14
7	Pump Motor Connections and Installation	18
8	Finalize the Installation	21

Introduction

Thank you for purchasing the HMI1000 upgrade kit for the Model 54 Tube Bender. Please read this installation guide thoroughly before beginning the conversion process.

If you have any questions, please reach us by email at support@jd2.com.

1.1 M54 HMI1000 Upgrade Compatibility

The HMI1000 retrofit upgrade kit is compatible with all Model 54 benders. If your machine was manufactured before the beginning of 2017, you may require a low voltage valve in addition to the upgrade kit.

The panel shown in [Figure 1.1](#) does not require any additional components beyond this kit. Remove the access panel from the existing enclosure and you will see the power supply marked **EDR-120-24**

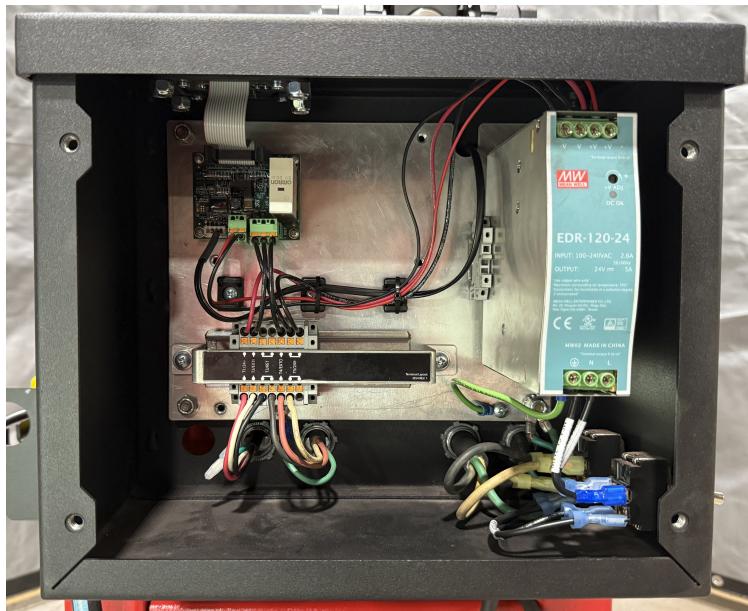


Figure 1.1: Machine with this enclosure already has low voltage valve.

Important

If your machine has a different control enclosure, you must purchase the low voltage valve separately.



Kit Contents and Required Items

2.1 Package Contents

- HMI1000 Control Panel
- Control Pendant
- Spindle Calibration Template
- Handle Brackets (Qty. 2)
- Hardware Box
 - 1/2"-13 x 1 1/4" Hex Bolt (Qty. 8)
 - 1/2" Flat Washer (Qty. 16)
 - 1/2" Hex Nut (Qty. 8)
 - 1/4"-20 x 1 1/2" SHCP (Qty. 3)
 - 1/4" Fender Washer (Qty. 3)
- WIFI / Encoder Cable Box
 - WIFI Antenna
 - Encoder Cable
 - 6" Zip Tie
 - Spindle Encoder Cable
 - Wire Nuts (Qty. 2)

2.2 Required Tools and Items

- 9/16" Drill Bit
- 7/16" Wrench or Socket (2x)
- 3/4" Wrench (2x)
- 7/8" Wrench
- 3/16" Allen Key with extension
- 5/32" Allen Key
- Electrical Tape
- Side Cutters (Zip Tie Removal and Trimming)
- Phillips Head Screw Driver

Old Component Removal

3.1 Open the access panel

Open the access panel by removing the four 1/4"-20 button head screws from the front access panel.



Figure 3.1: Remove the access panel.

3.2 Remove the Pendant

Loosen the cable clamp for the pendant cable.

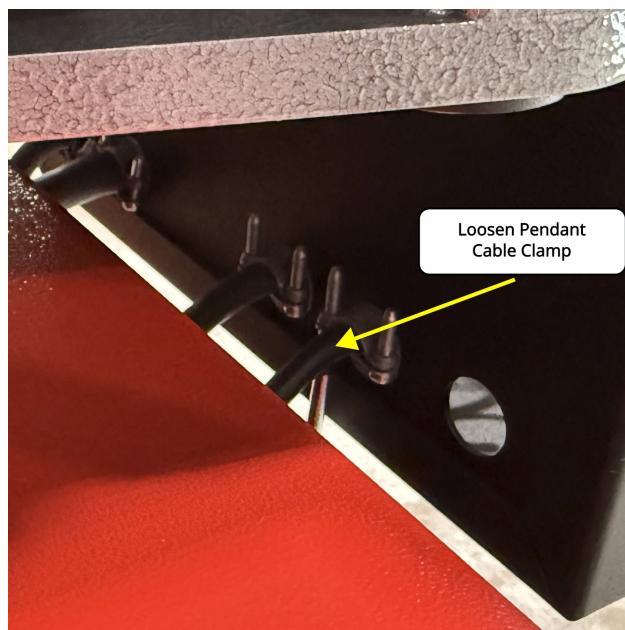


Figure 3.2: Loosen the pendant cable clamp.

Remove the three pendant wires from the terminal block in the positions shown. Press the orange button and gently pull the cable to depress the spring lock and remove the ferrule from the terminal.

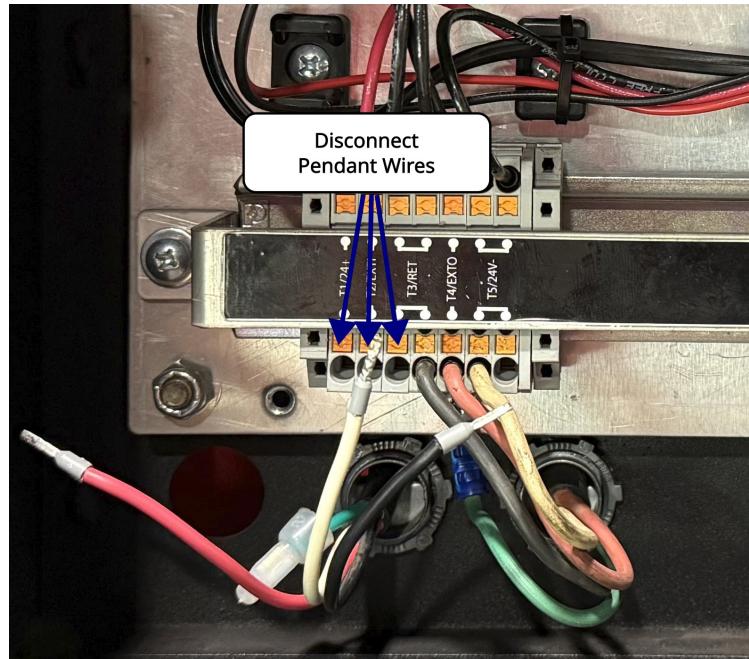


Figure 3.3: Remove the pendant wires.

Pull the pendant and cable away from the enclosure. The pendant is not reused.

3.3 Remove the Encoder Cable

Unplug the encoder cable from the white connector on the small pcb. Cut the zip ties holding the cable to the backplane. When the enclosure is removed, the encoder cable will feed through the hole in the rear of the box and stay in the machine frame.

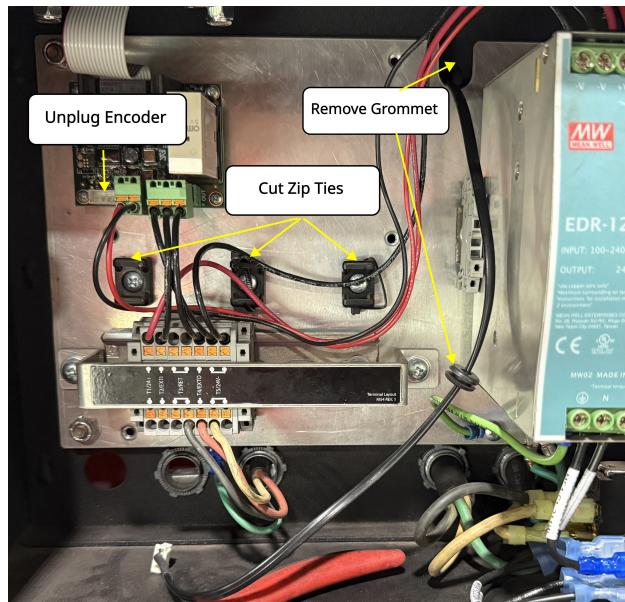


Figure 3.4: Prepare the encoder cable for panel removal.

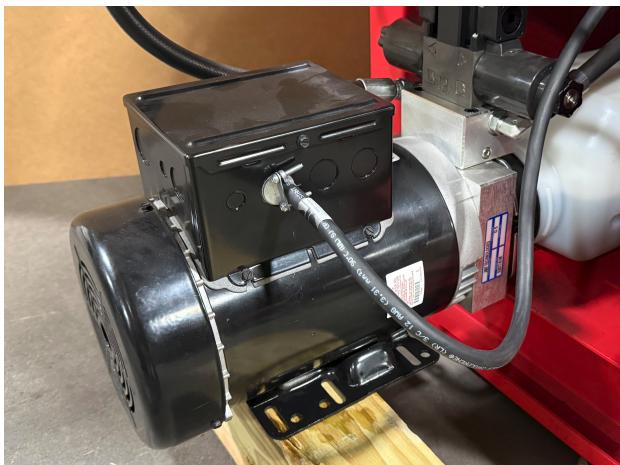
3.4 Position the Pump Motor

The pump motor unit can be moved partially out of the stand to allow easier access to wiring. Support the motor unit to prevent excess pressure on the tank or hydraulic hoses.

Remove the motor mount bolts (4) using two 7/16" wrenches. Each bolt is a through bolt with a hex nut under the stand. Keep the hardware to reinstall the motor pump unit later.



(a) Remove the motor mount bolts.



(b) Support the motor with blocking.

Figure 3.5: Preparing the pump motor unit.

Note

Your motor cable may be too short to fully slide the valve out of the stand as shown. In that case, slide the pump motor unit back far enough to remove the motor cable. Next, move the support blocks and continue removing the valve cable as shown in this guide.

3.5 Remove the Motor Cable

Open the motor wiring cover.

Take a note of the wire bundle that the black and white wire from the cable are connected in your machine. For example, Black is connected to T1/T3 and White is connected to T2/T4 in Figure 3.6.

Important

Different motors installed in machines may have different connections than the photos included here. Make sure you connect the black and white wire for the new motor cable to the correct bundle for your pump motor later.

Taking a picture before you remove the wire nuts or cut the factory crimps is highly recommended.



Figure 3.6: Note the wires in each bundle on **your** machine.

Remove the ground wire from the motor housing. Use an appropriate sized nut driver or socket, commonly 1/4", instead of a flat head screw driver if available.



Figure 3.7: Remove the ground wire from the motor frame.

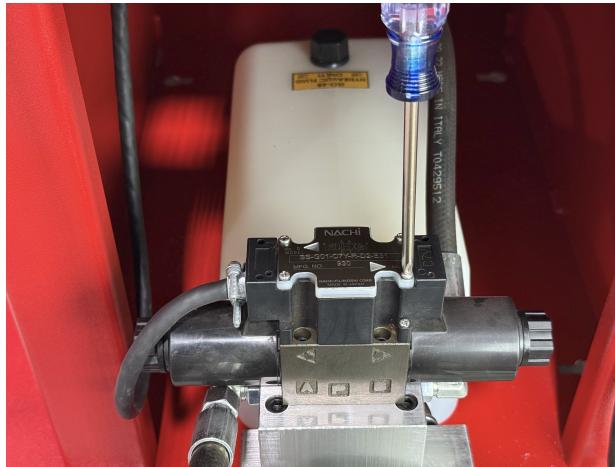
Loosen the motor cable clamp and remove the cable from the motor wiring box.



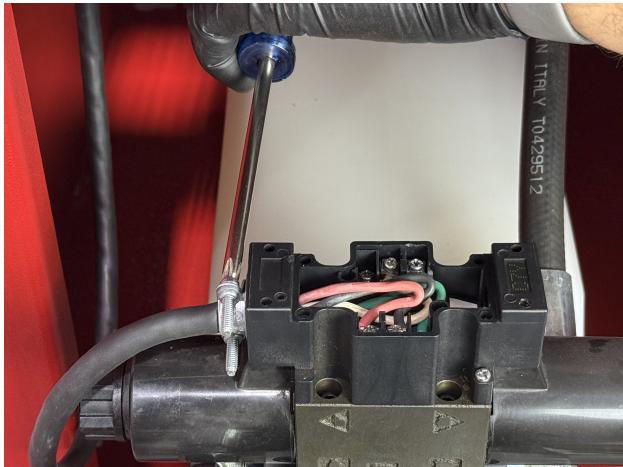
Figure 3.8: Loosen the motor cable clamp and remove the cable.

3.6 Remove the Valve Cable

Remove the cover from the hydraulic control valve. Take note of the orientation of the cover for reinstallation later. Loosen the valve cable clamp.



(a) Remove the directional valve cover.



(b) Loosen the valve cable clamp.

Figure 3.9: Remove the valve cover and loosen the cable clamp.

Loosen all wire terminals that have a wire connection. Remove the valve cable from the valve wiring box. Remove the jumper from the valve box. The two terminals that the jumper bridges are the negative terminals of the two directional coils (A-, B-). Replace the screws and wire cages in the terminal block after removing the jumper.



(a) Remove the valve cable.



(b) Remove the negative terminal jumper (A-/B-).

Figure 3.10: Remove the valve wiring and the jumper bar.

Note

The position of the A and B coil wire terminals are divided by a small line molded into the bottom of the valve wiring box. Each coil is labeled in an arrow in the casting as "a" or "b".

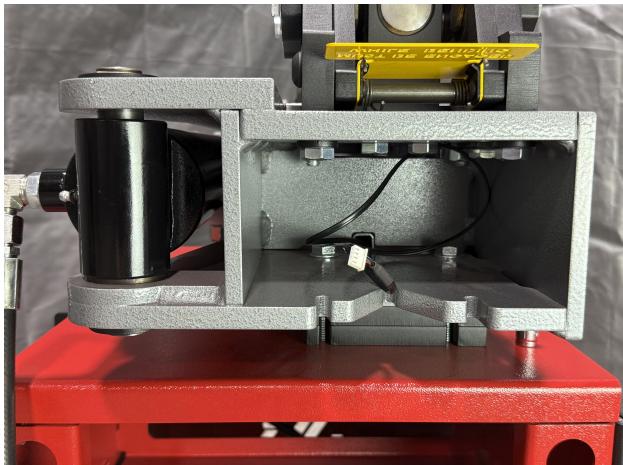
3.7 Remove the Old Control Enclosure

Loosen the three 1/4"-20 socket head cap screws that attach the enclosure to the machine frame. A long socket extension with a hex key socket is recommended.

Slide the enclosure off the frame. The encoder cable, with the connector cut off, will feed itself through the grommet in the rear of the enclosure.



(a) Loosen the mounting bolts.

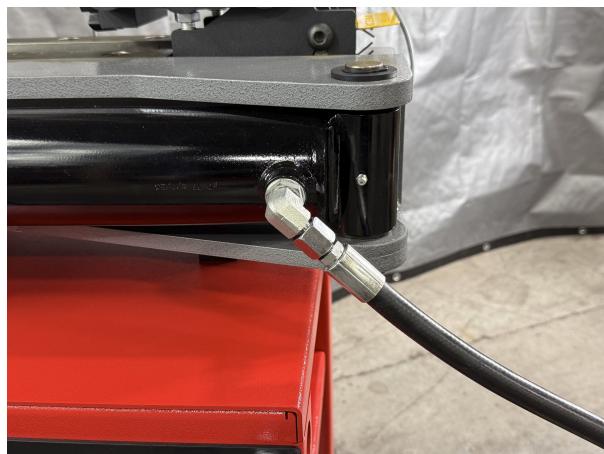


(b) Old encoder cable remains in machine frame.

Figure 3.11: Removing the enclosure.

3.8 Adjust the Cylinder Hydraulic Hose Fitting

The rear hydraulic hose fitting on the cylinder needs to be in the down position shown in Figure 3.12 to clear the new enclosure. Adjust the fitting using a 3/4" wrench on the hose and a 7/8" wrench on the fitting.



(a) Hydraulic Hose Angled (Incorrect)



(b) Hydraulic Hose Down (Correct)

Figure 3.12: Point the hydraulic hose fitting down to clear the new enclosure.

Handle Bracket Installation

The HMI1000 enclosure is wider than the original enclosures supplied with the Model 54 tube bender. Multipurpose handle brackets are included to allow attaching handles to the machine with the new enclosure installed.

4.1 Drill Bracket Holes

Use the handle bracket as a drill guide. Align the bracket as shown in [Figure 4.1](#) with the rear of the bracket flush with the rear of the stand.

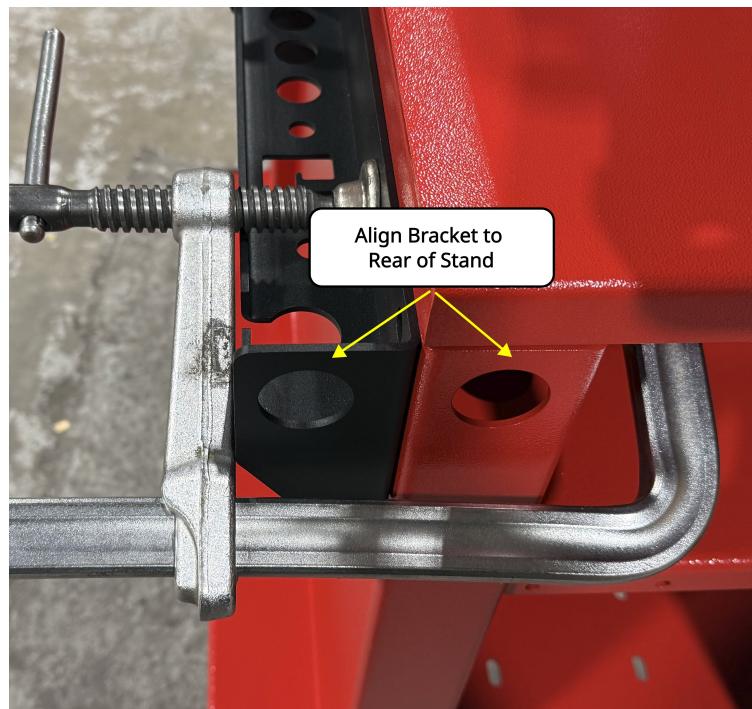


Figure 4.1: Handle bracket should be flush with rear of stand.

The top of the bracket should align with the bottom of the laser cut notch in the side of the stand as shown in [Figure 4.2](#). Make sure the distance between the top of the stand and the top of the bracket remains the same across the length of the bracket.



Figure 4.2: Handle bracket aligns with laser cut slot in side panel.

Clamp the handle bracket to the side of the stand.



Figure 4.3: Clamp the bracket to the side with a spacer block inside the cabinet.

Mark the hole locations and remove the bracket. Drill the four holes using a 9/16" drill bit.

4.2 Install Handle Bracket

Install the handle bracket using the supplied hardware. Use one 1/2"-13 x 1 1/4" bolt, two 1/2" washers (inside and outside), and one 1/2" hex nut per hole.



Figure 4.4: Installed handle bracket.

Repeat for the second handle bracket on the other side of the stand.

Encoder Cable Installation

5.1 Remove the Encoder Cover

Remove the spindle encoder cover using 5/32" hex key.

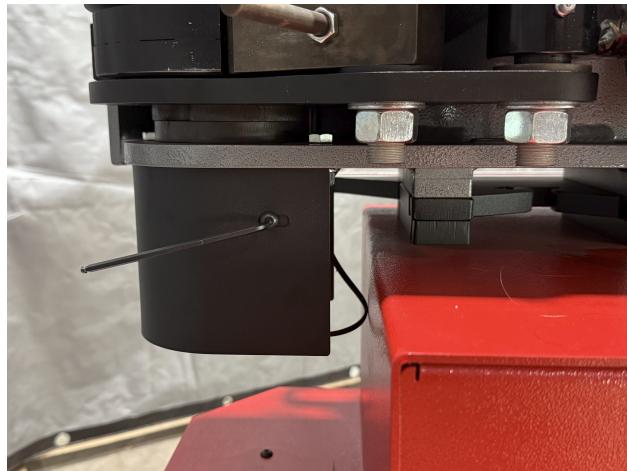


Figure 5.1: Remove the spindle encoder cover.

Cut the zip tie holding the encoder cable to the strain relief bracket. Note the orientation of the small connector housing in the encoder and disconnect the encoder cable plug.

Important

The encoder plug is keyed to prevent reversed connection, but it is delicate.

Forcing the encoder plug into the receptacle in the wrong orientation can cause permanent damage to the encoder or cable.

When removing the plug, take a note of the housing orientation and use it as a reference when connecting the new encoder cable plug.

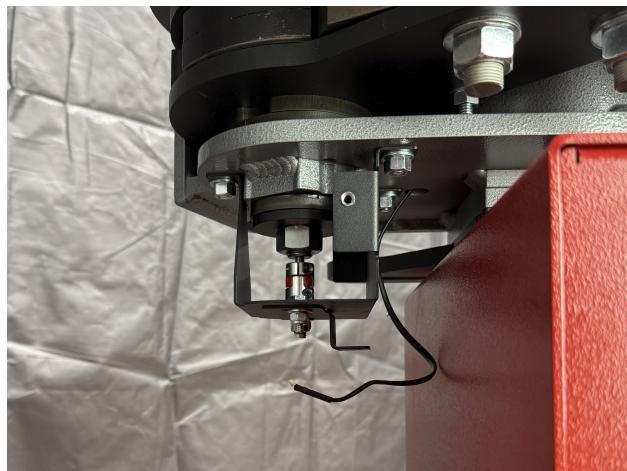


Figure 5.2: Disconnect the old encoder cable plug from the encoder.

5.2 Prepare to Pull the Encoder Cable

The encoder cable for the HMI1000 kit is supplied separately with a plastic wrap cover rubber banded to the encoder end of the cable. The plastic is included to protect the connector from any tape residue, oil, or grease exposure while pulling the cable through the machine frame.

Cut the white connector off the end of the old encoder cable. Align the plastic covered end of the new encoder cable with the end of the old encoder cable.

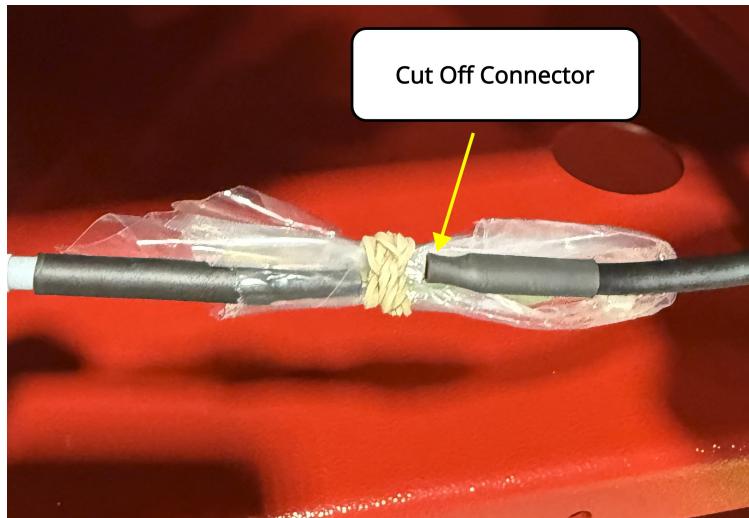


Figure 5.3: Prepare to use the old cable as a pull fish for the new encoder cable.

Attach the two using multiple wraps of electrical tape. Folding a small flag at the end of the wraps helps to remove the tape later.



Figure 5.4: Connect the old cable to the new encoder table with tape.

Pull the old encoder cable out of the bottom of the front of the machine frame by the spindle. This will feed the new encoder cable through the frame guide channel, and out of the hole by the spindle encoder mount.

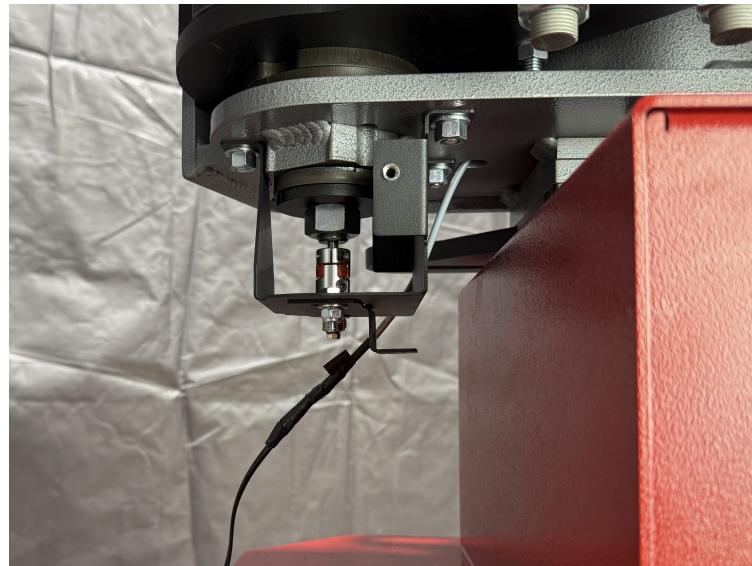


Figure 5.5: Pull the new encoder cable through the frame using the old encoder cable as a guide.

Remove the tape, rubber band and plastic cover from the new encoder cable. Connect the encoder cable to the encoder, and attach the cable to the strain relief as shown in [Figure 5.6](#) with a zip tie. Pull excess cable slack back into the machine frame.

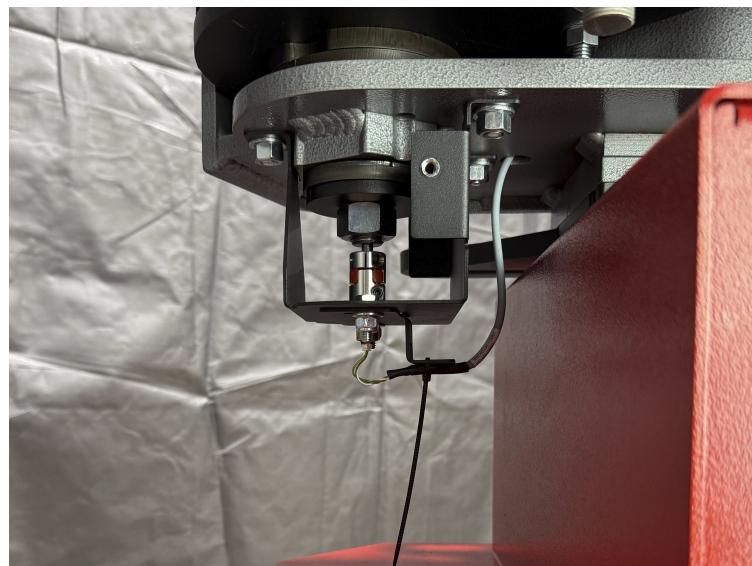


Figure 5.6: Connect new encoder cable plug and strain relief.

Note

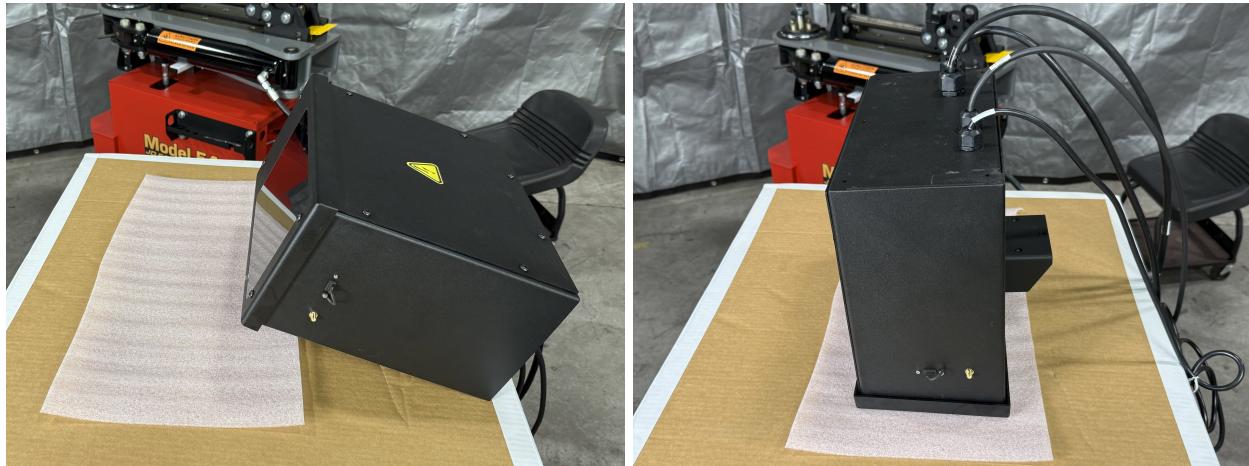
The encoder orientation may need to be adjusted by loosening the coupling during calibration. Leave the encoder cover off until after the spindle calibration process has been performed.

HMI1000 Enclosure Installation

The HMI1000 enclosure is shipped mostly assembled from the factory. Before installation, the mounting hardware must be installed, and the access panel must be removed.

6.1 Preparation

Use the shipping foam from the packaging to make a safe surface to place the top of the box on without damaging the display.



(a) Tilting the box onto the top. (b) Make sure the box is not going to fall off the table.

Figure 6.1: Place the enclosure top on the shipping foam.

Loosely install the three supplied 1/4"-20 x 1 1/2" socket head cap bolts and fender washers into the enclosure gusset. Keep the distance between the washer and the mounting bracket greater than 5/8" to allow sliding onto the machine frame.

Rotate the enclosure so the front panel is facing up. Remove the access panel from the HMI1000 enclosure using a 5/32" hex key.



(a) Install enclosure mounting bolts and washers.

(b) Remove access panel.

Figure 6.2: Enclosure preparation.

6.2 Installation

Remove the rubber grommet from the encoder cable enclosure hole if installed. Feed the encoder cable plug into the enclosure.

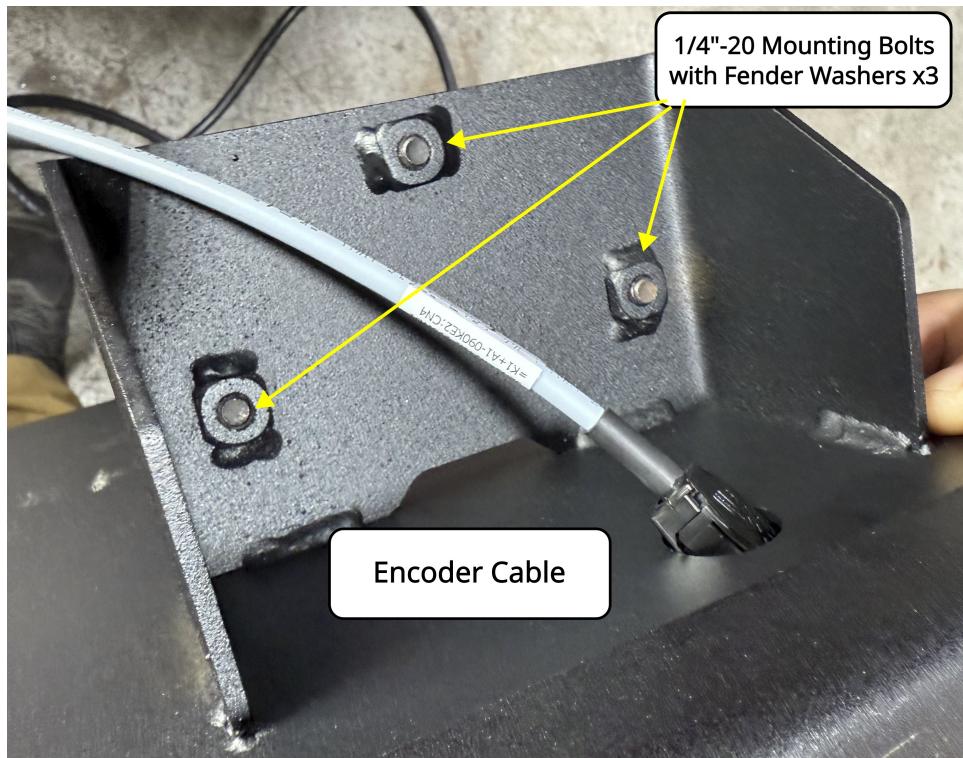


Figure 6.3: Prepare enclosure to mount on frame.

Slide the enclosure onto the machine with the bolts aligned with the mounting slots and the fender washers below the bottom surface of the frame plate.



Figure 6.4: Enclosure mounting bolts from below.

Align the lid of the box parallel to the machine frame and leave a small gap approximately 1/16". Tighten the three mounting bolts from below.

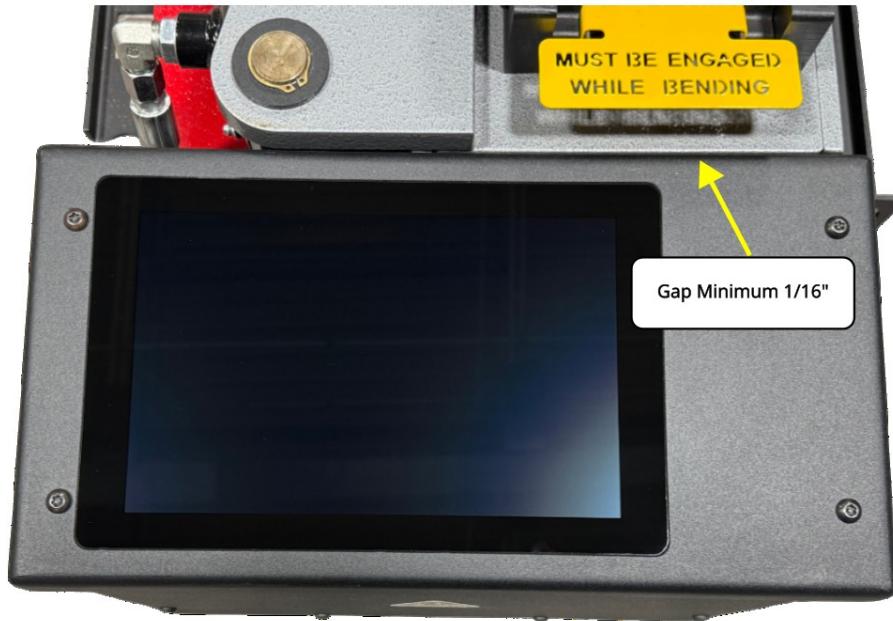


Figure 6.5: Align the enclosure with a minimum 1/16" gap between the lid and the frame.

Route the encoder cable through the enclosure as shown in Figure 6.6. The cable should pass through the preinstalled zip ties, down the left side of the enclosure. Connect the plug to the encoder position of the CS9010 io controller.

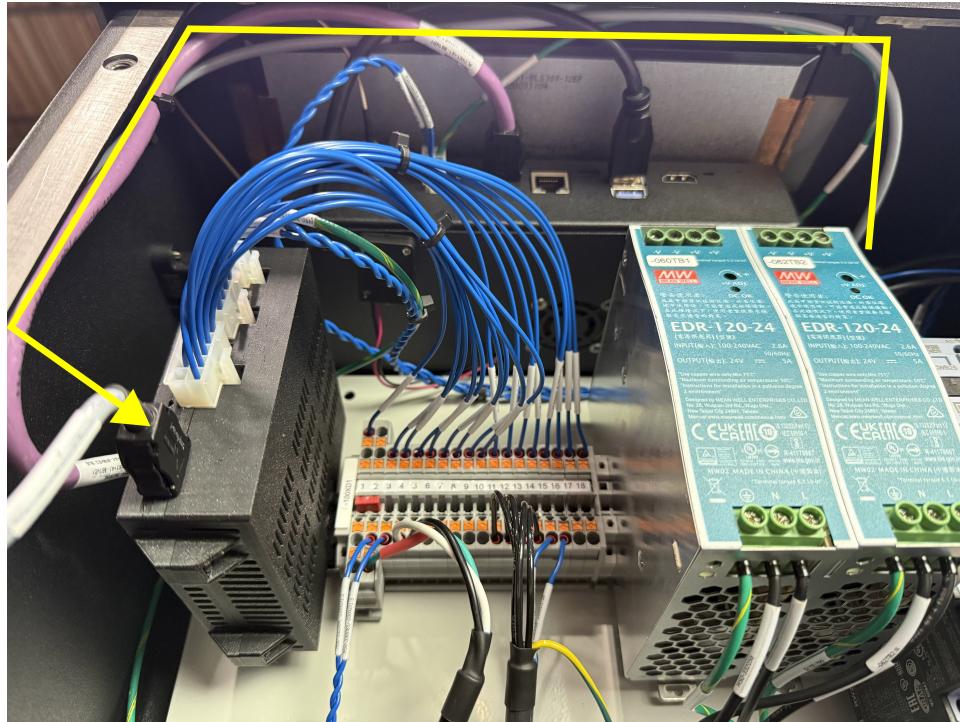
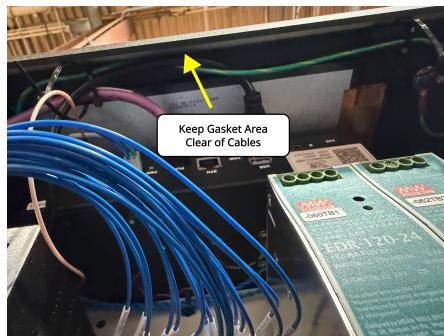
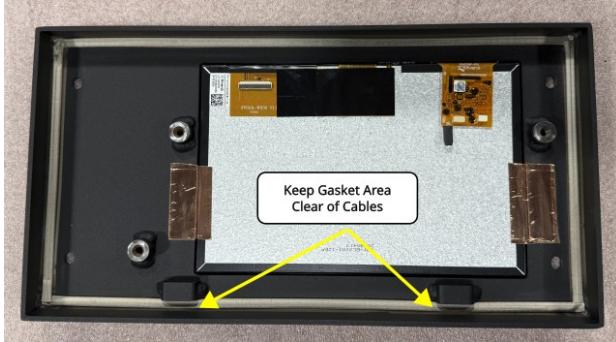


Figure 6.6: Route the encoder cable through the enclosure and connect it to the CS9010.

Tighten the zip ties by pulling the tag end toward the rear of the box making sure to keep the gasket area of the lid clear. The access panel must slide into this gap and make solid contact with the lid gasket without pinching any cable.



(a) Access panel gasket gap



(b) Lid gasket area

Figure 6.7: Keep the access panel gasket area clear of cables or zip tie ends.

Install the split grommet over the encoder cable and into the hole in the rear of the enclosure.

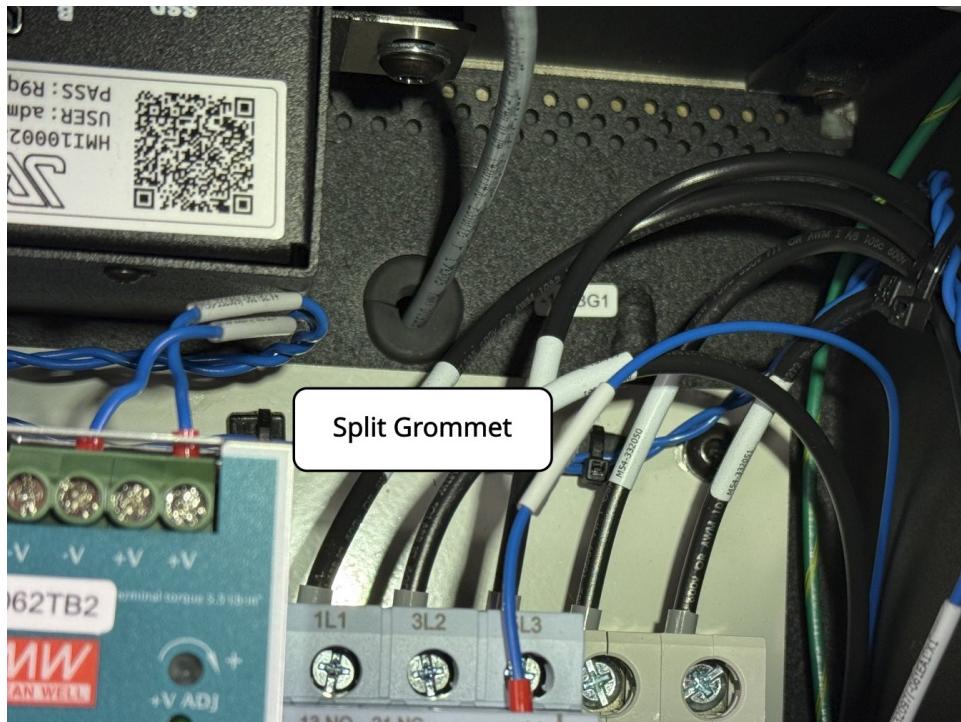


Figure 6.8: Install the encoder cable protection grommet.



Pump Motor Connections and Installation

Route the cables for the pump motor and directional valve through the holes in the stand shelf as shown in [Figure 7.1](#). The motor cable goes through the right shelf hole. The valve cable goes through the left shelf hole.



Figure 7.1: Route the motor and valve cables.

7.1 Directional Valve Connection

Insert the valve directional cable (332082) through the cable clamp in the valve wire housing.

Connect the grounding wire to the terminal marked with a ground symbol.

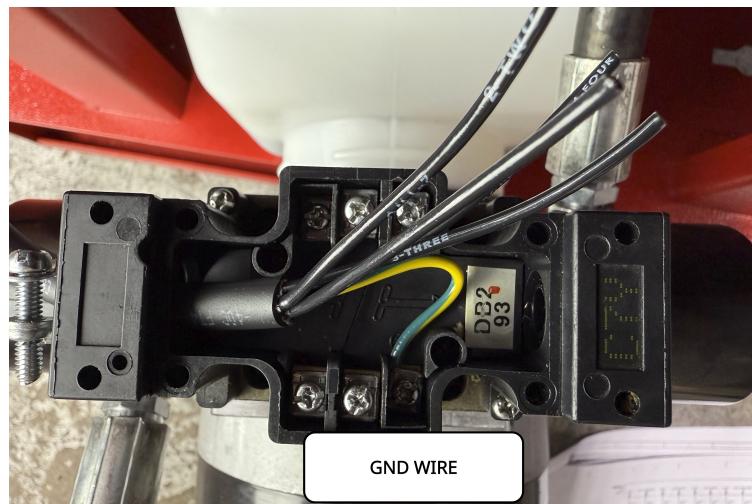


Figure 7.2: Insert cable through strain relief and connect the ground wire.

Connect the wires in the valve cable according to the drawing shown in [Figure 7.3](#). The number next to the terminal position in the drawing corresponds to the number marked on the wire in the valve cable.

Note

The jumper bar removed in earlier steps is bridging the A- and B- coil terminals. You can tell the side of the wiring box for the A coil or the B coil by finding the cast "a" and "b" on the directional valve housing, and comparing it to the line molded in the bottom of the wiring box.

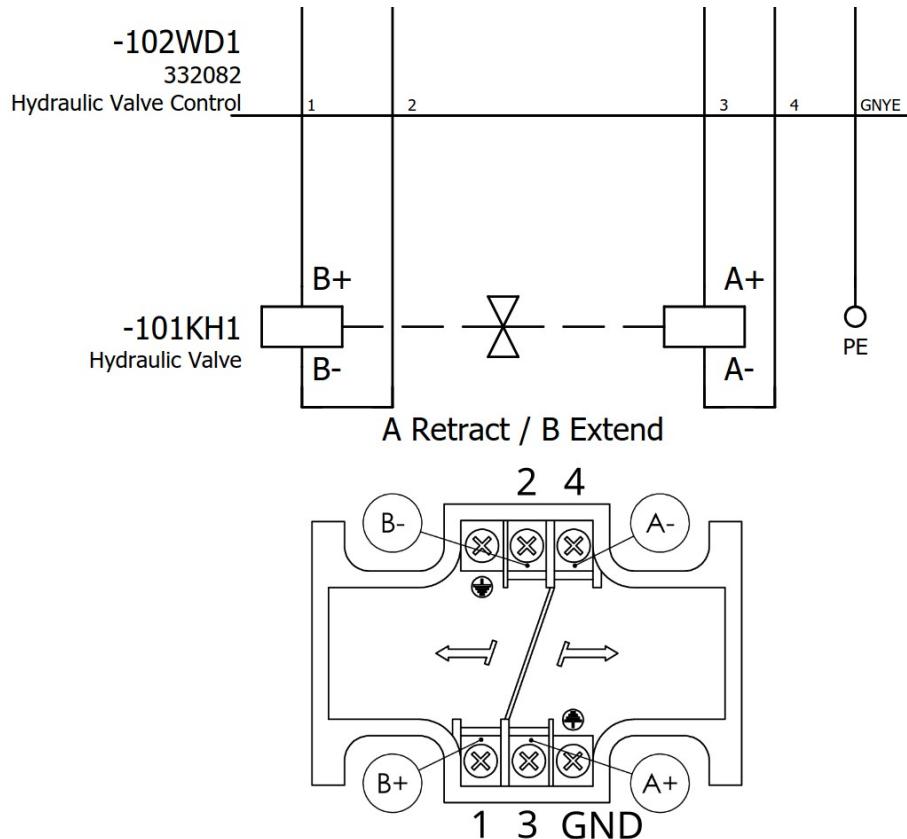


Figure 7.3: Valve cable wire connection locations.

7.2 Motor Connection

Insert the end of the motor cable (**332062**) into the motor wire housing through the cable clamp. Connect the cable black and white wires to their respective motor wire bundles recorded earlier with the supplied wirenuts. Connect the green grounding wire ring terminal to the motor housing.

Important

Make sure no copper strands extend outside of the wirenuts.

Finally, tuck the wires into the motor wire housing and tighten the cable clamp as shown in Figure 7.4.



Figure 7.4: New motor cable connections.

Install the motor wire cover panel.



Figure 7.5: Motor wire cover installed.

7.3 Pump Motor Install

Slide the pump motor forward into the cabinet and install the four mounting bolts, washers, and nuts removed previously.

Finalize the Installation

8.1 Install the Wifi Antenna



Figure 8.1: Install the WIFI antenna.

8.2 Connect Power

Ensure the circuit breaker in the right side of the control panel is in the on (up) position.

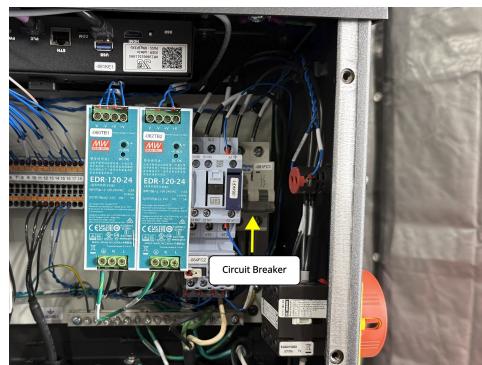


Figure 8.2: Make sure circuit breaker is on.

Plug in the machine to an appropriate outlet and power on the machine using the disconnect.

8.3 Test Pump and Direction Valve

After the machine powers on, the user interface will load.

1. Navigate to Main Menu->Single Bend Mode.
2. Rotate the spindle, the encoder readout should update.
3. Select the Pump button in the left navigation bar. The pump should turn on.
4. Rotate the spindle by hand until the bend angle is less than the bend target.
5. Press the up button on the pendant. The ram should extend.
6. Press the down button on the pendant. The ram should retract.
7. Select the Pump button in the left navigation bar. The pump should turn off.

8.4 Safely shutdown the machine

To safely turn off the machine:

1. Navigate to Main Menu->Power->Shutdown Machine.
2. Wait until the screen turns off.
3. turn off the main disconnect.
4. Wait until the red power LED above the disconnect extinguishes.
5. Wait at least 15 seconds before continuing.

8.5 Install the access panel

Install the access panel making sure not to pinch any cables or wires between the top of the panel and the lid gasket. The panel has a rest block that will help hold the panel in place while installing the first bolt. Lift the panel up into the gasket while installing bolts to ensure contact with the gasket.

 **Important**

Make sure there is continuous contact between the panel and the lid gasket by pushing upwards on the panel while tightening the bolts.



(a) Slide access panel up into the lid gasket.



(b) Lift the access panel while installing bolts.

Figure 8.3: Installing the access panel.

8.6 Calibrate the Spindle Encoder

Follow the instructions in the operators manual to calibrate the spindle encoder, and then install the encoder cover.

After calibrating the spindle encoder, continue with the normal setup instructions for the HMI1000 in the operators manual.