

OPERATIONS MANUAL

BERRIDGE BATCH CONTROL COMPUTER



**A PROGRAMMABLE CONTROLLER
FOR USE WITH ALL BERRIDGE
PORTABLE ROLL FORMERS**

BERRIDGE
B Berridge
Manufacturing
Company
Roofs of Distinction

OWNER: _____

DATE: _____ SER. NO.: _____



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I. GENERAL DESCRIPTION

The Berridge Portable Roll Former Batch Control Computer is available as an option for all models of both newly-purchased and long-term leased roll formers, or as a retrofit kit for all existing Berridge Portable roll Formers.

The Batch Control Computer Retrofit Kit consists of the Applied Microsystems AMS Model MP450B Computer Control with Encoder and Clutch Brake which provides precision control of the roll former electric motor for exact lengths. A standard Berridge Portable Roll Former Mounting Bracket and bolts is also included in the kit. Instructions for mounting the control computer and connecting to the power supply and motor are included in this operations manual.

This precision control computer, which is custom designed for Berridge Portable Roll Formers with their hand-operated entry shear virtually eliminates scrap waste when changing panel lengths and saves valuable man hours on the job site.

This manual also contains detailed instructions for converting the operation of the computer from the factory default of metric to feet and inches.

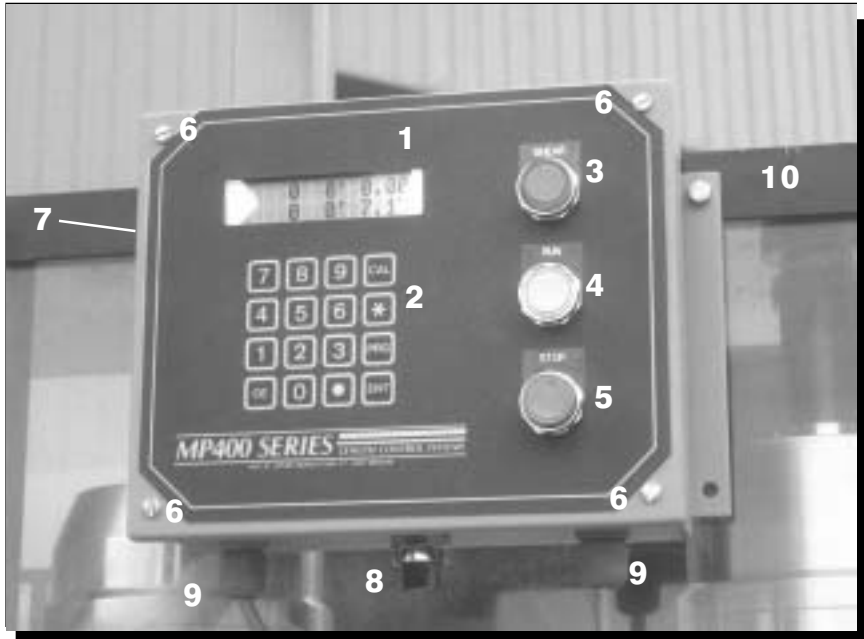


The large, easy-to-read LCD display panel shows programmed quantity, programmed length, quantity of the current length remaining to be formed, and the length of material which has moved past the cutoff.

The heavy-duty case is also moisture resistant and includes an internal heater for cold temperature operation.

II. EQUIPMENT NOMENCLATURE

BERRIDGE BATCH CONTROL COMPUTER



1. LCD DISPLAY PANEL
2. MEMBRANE KEYPAD
3. "SHEAR" LIGHT/BUTTON
4. "RUN" BUTTON
5. "STOP" BUTTON
6. FRONT PANEL COVER SCREWS
7. MODEL NO./SER. NO. PLATE
8. ON/OFF POWER SWITCH
9. POWER CABLES
10. MOUNTING BRACKET

FEATURES

- ï Operates in feet & inches or metric
- ï Accurate to +/- 1/16"
- ï Custom designed for portable, pre-cut rollformers with hand-operated shear.
- ï Easy to operate and program.
- ï No scrap between length change overs.
- ï Current order status display shows:
 - programmed quantity.
 - programmed length.
 - quantity left to make.
 - material past the cutoff.
- ï Simple Automatic Calibration procedure to fine tune lengths.
- ï Moisture resistant enclosure.
- ï Internal heater for cold temperature operation

BATCH CONTROL COMPUTER SPECIFICATIONS

POWER REQUIREMENTS

	AC	DC
Input Voltage	115 VAC	12 VDC
Input Current	1 Amp.	.5 Amp
	+ output load	+ output load

OUTPUTS

Rollformer	Rollformer Forward 12 VDC Relay
Clutch/Brake	1 N.O. .5 Amp max. current

INPUTS

None

CONTROL SWITCHES

Run	Momentary Push Button
Halt	Momentary Push Button
Shear Ready/Complete	Illum. Momentary Push Button

ENCODER INPUT

Type	Quadrature with Complements
Voltage	5 VDC
Max. Encoder Load	200 mA
Max. Pulse Rate	10,000 pulses/second

OPERATION

Max. Nr. of Batches	999
Max. Part Length	999 ft. 11.999 inches
Max. Parts/Batch	999
Units of Measurement	ft/inch or mm

III. OPERATING INSTRUCTIONS

MOUNTING THE BATCH CONTROL COMPUTER ON YOUR BERRIDGE PORTABLE ROLL FORMER:

Depending on the model of Berridge Roll Former which you own or lease, you will be sent one of two types of Batch Control Computer installation kits: One kit will be for rollformers without clutch/brakes, the other for those with clutch/brakes. At this writing, only the Zee-Lock (SP21) machines have clutch/brakes. This manual includes instructions for wiring and mechanical installation of both types of kits.

- section of wiring diagram (fig. 1).
3. Connect wiring as shown in bottom section of Wiring Diagram (fig. 1).
4. Connect one end of the white wire to the white wire from the new Switch Cover. Run the wire through conduit from Switch Box to Motor. Connect the other end to L2 inside of Conduit Box on Motor.
5. Screw new Switch Cover onto Switch Box. The wiring portion of the installation is now complete.
6. Remove the Shear Feed-in-Guide from the operator side of the roll former.

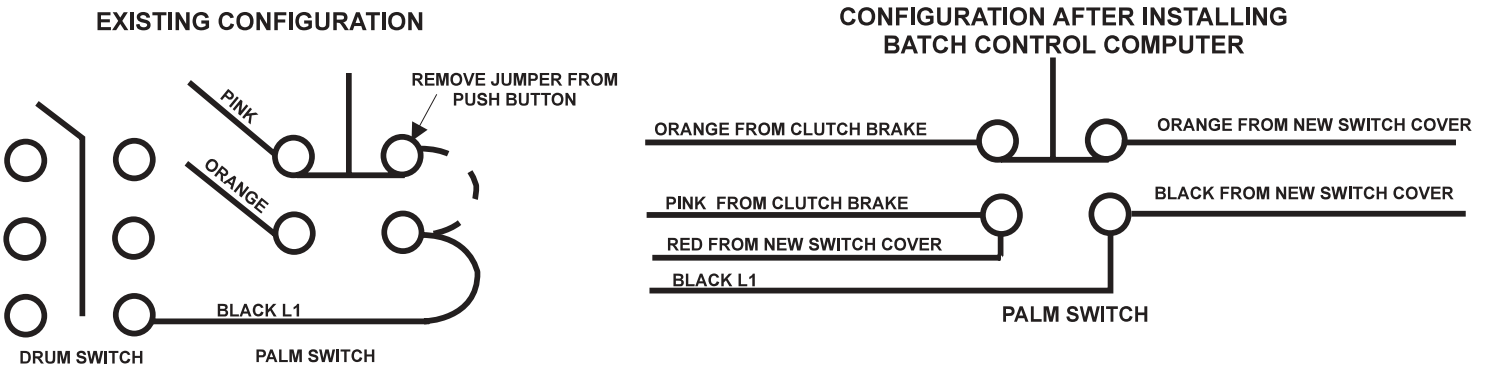


fig. 1: WIRING DIAGRAM FOR INSTALLATION OF BERRIDGE BATCH CONTROL COMPUTER ON ROLLFORMERS WITH CLUTCH BRAKE

INSTALLING THE BERRIDGE BATCH CONTROL COMPUTER ON ROLLFORMERS WITH CLUTCH/BRAKE:

LIST OF COMPONENTS:

- Computer Control Unit
- Cover for Switch Box
- Shear feed-in guide with Encoder attached.
- Angle Bracket for mounting Batch Control Computer
- Single white wire

INSTALLATION INSTRUCTIONS:

1. Remove cover from Switch Box mounted above shear on rollformer.
2. Remove jumper from Palm Switch as shown in top

7. Install the new Feed-in-Guide using the bolts removed in step 6. The wheel on the encoder should be on top, the connection on bottom. (When material is fed into the machine, make sure the wheel on the encoder is making firm contact with the metal. If it is not, the mounting bracket may need to be bent inward slightly. Also, the backer wheel on the back side of the shear may need to be moved toward the encoder by shimming with flat washers.

INSTALLING THE BERRIDGE BATCH CONTROL COMPUTER ON ROLLFORMERS WITHOUT CLUTCH/BRAKE:

LIST OF COMPONENTS:

- Computer Control Unit
- Warner Clutch/Brake pre-wired with Palm Switch Box

III. INSTALLING THE BATCH CONTROL COMPUTER & CLUTCH/BRAKE

- Shear feed-in guide with Encoder attached.
- Angle Bracket for mounting Batch Control Computer

INSTALLATION OF CLUTCH/BRAKE UNIT

lead from the Clutch/Brake into the hole in the Junction Box.

3. Connect the two wires from the Clutch/Brake in the following manner: black to black from power cord and

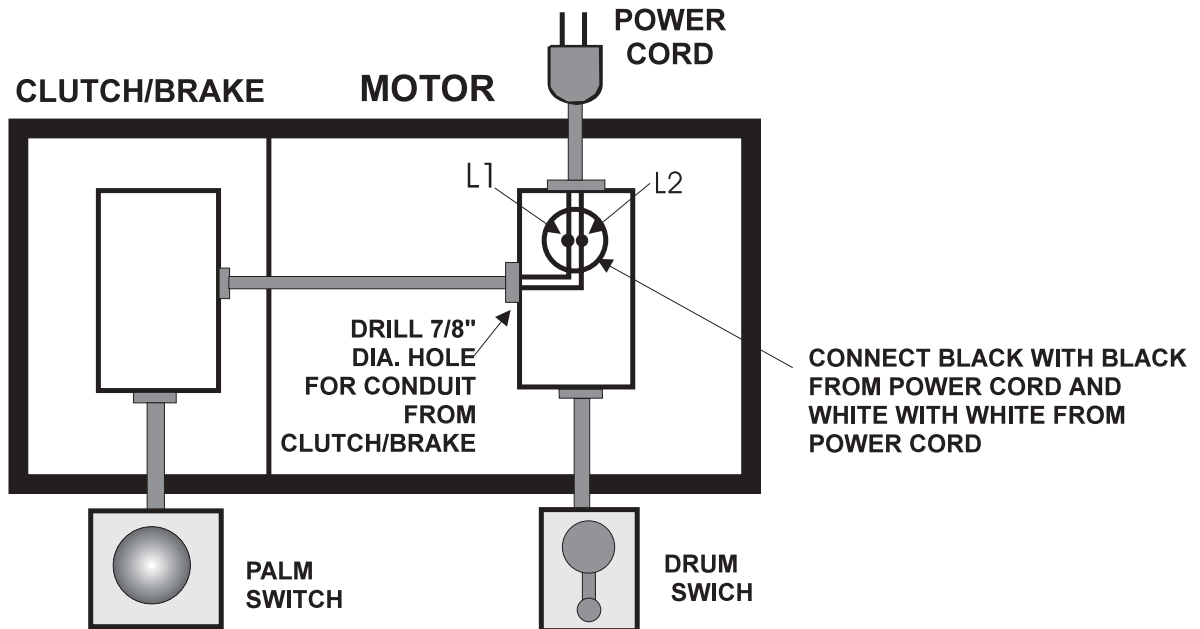


FIG. 2: INSTALLATION SCHEMATIC FOR BERRIDGE BATCH CONTROL COMPUTER UNIT (ROLLFORMERS WITHOUT CLUTCH/BRAKE)

Mechanical Installation:

1. Unbolt the motor from the Gear Box housing. Note the position of the Lovejoy coupling on the motor shaft and remove.
2. Place the Lovejoy coupling at the same position on the output shaft of the Clutch/Brake.
3. Remove the key on the motor shaft and place the Clutch/Brake onto the motor. Use a 1/8" Allen wrench to help align the output shaft of the Motor and the input sleeve of the clutch/brake. Bolt the Clutch/Brake to the motor using the four bolts provided and then tighten the two Allen set screws to the Motor shaft.
4. Bolt the Clutch/Brake and Motor Assembly to the Gear Box housing.

Electrical Installation:

1. Note the Junction Box on the electric Motor where the electrical conduit is fastened. A 7/8" diameter hole must be drilled into this box on the side that faces the Clutch/Brake.
2. After the hole from step 1 is drilled, attach the conduit

white to white from power cord.

INSTALLATION OF PALM SWITCH:

1. Hook the bracket attached to the Palm Switch over the top plate of the rollformer in the space where the shear is located.
2. Tighten the set screws in the top of the bracket. Tighten only enough to hold the bracket in place - **DO NOT OVERTIGHTEN.**

INSTALLATION OF BATCH CONTROL COMPUTER UNIT:

The Berridge Batch Control Computer is to be mounted to the left of the shear on the operator side of the rollformer. Mount as follows:

1. On the operator side of the rollformer to the left of the manual shear, there are two gold vertical framing members, one immediately after the shear and another down toward the exit end of the machine. These uprights are attached to the top plate with two bolts.

III. INSTALLATION (CONTINUED)

- Remove the top bolts from these two uprights.
- Place the angle bracket on the machine with the bolt holes aligned and replace the bolts removed in step 1.
- Attach the Batch Control Computer using the bolts in the Angle Bracket.
- Attach the leads from the Batch Control Computer to the Encoder and the Switch Box.

INSIDE THE CONTROLLER

CAUTION: NEVER REMOVE THE COVER OF THE BERRIDGE BATCH CONTROL COMPUTER WITH POWER APPLIED. POWER MUST BE REMOVED FROM THE SOURCE BEFORE THE COVER MAY BE REMOVED. SIMPLY TURNING OFF THE POWER SWITCH OF THE CONTROLLER IS NOT GOOD ENOUGH.

There are two functions you may need to perform which require you to take the cover off the controller and look inside. These functions are:

1. Changing the counting direction of the controller from clockwise to counter clockwise (inverting the counter wheel assembly will necessitate this modification). *Note: Because of the manner in which Berridge instructs the controller to be mounted on the provided bracket, the controller/encoder will only operate in the clockwise (positive measurement) direction, thus it will not be necessary to change the counting direction unless the mounting bracket and procedure is modified).*
2. Changing the Display from English (feet & inches) to Metric.

The photograph in figure 3 shows you the Berridge Batch Control Computer circuit board and the location of the two adjustments previously described. These adjustments should only need to be made once.

ADJUSTMENTS INSIDE THE BATCH CONTROL COMPUTER:

- 1. Changing the Counting Direction of the Computer:**
The encoder cable attaches to the circuit board on the connector located in the lower left-hand corner. The cable is made with two separate connectors, one for clockwise (CW) encoder rotation and one for counter-clockwise (CCW) rotation. If the encoder counts negative when coil is moving in the forward direct, swap the encoder connector on the back of the computer circuit board. (See above note)

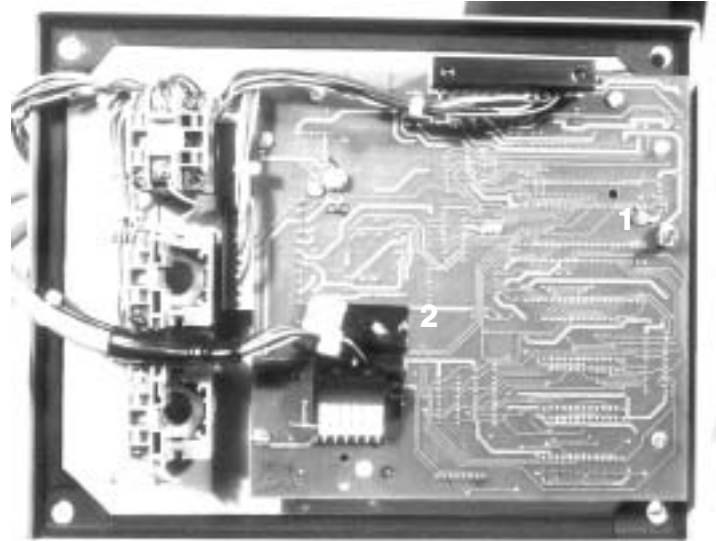


FIG. 3: BATCH CONTROL COMPUTER PC CIRCUIT BOARD

1. ENGLISH/METRIC TOGGLE SWITCH
2. ENCODER CONNECTOR PLUGS

2. Changing the Display from English to Metric

The Berridge Batch Control Computer can be configured to read in English units (feet and inches) or Metric units (millimeters). This parameter can be modified by changing the position of the toggle switch on the right hand side of the computer circuit board. Please note that changing the position of this switch will erase all of the calibration data and job data which is stored in the computer's memory.

Technical Support:

If you need assistance with the installation of the Berridge Batch Control Computer unit, call Berridge Manufacturing Company Rollformer Operations in Seguin, Texas at (210)-303-3107 or (800)303-0811. Be prepared to give the model number and serial number of your rollformer.

YOU ARE NOW READY TO BEGIN PRODUCTION WITH THE BERRIDGE BATCH CONTROL COMPUTER SYSTEM.

IV. CALIBRATION, PROGRAMMING & OPERATION

INITIAL TESTS

After the wiring has been completed, you are ready to apply power to the controller. Turn on the power switch and watch the display. It will look like this:

MP450B Ver. 1.00
© 1991 by AMS

After a few second, the display will change to:

0 0 0' 0.00"
0 0' 0.00"

Attach the encoder to the encoder cable and turn the counter wheel by hand. Be sure to turn the wheel in the direction that the material will cause it to turn when it moves in the forward direction. Watch the display to verify that the length is counting in the positive direction.

With the controller in the HALT mode, the roll former may be jogged with the external JOG push button. Test the operation of the JOG circuit.



FIG. 4: PRESS THE "RUN" BUTTON TO VERIFY THE OPERATION OF THE COMPUTER AND TO BEGIN PRODUCING PANELS.

The Berridge Batch Control Computer enters the RUN mode by pressing the RUN (figure 4) push button on the computer's front panel. Verify the operation of the RUN and HALT push buttons.

Once the proper operation of all of the control switches has been verified the machine may be loaded with coil and the controller may be calibrated.

CALIBRATION

Once the Berridge Batch Control Computer has been tested and the initial adjustments have been made, you are ready to run some panels on your Berridge Portable Roll Former.

Make sure the Batch Control Computer is mounted properly. The counter wheel must be parallel to the direction of material flow and must be at a right angle to the coil material, with **NO SLIPPAGE** between the wheel and the material.

Calibration is a process whereby the Batch Control Computer corrects itself for inaccuracies in the size of the measuring wheel. We assume the wheel is exactly 12" in circumference when in actuality this is not the case. When a calibration is performed, an internal correction factor is calculated so that the part length you program is the actual part length produced by the Batch Control Computer.

Calibrate the computer by pressing the CAL key and following the direction on the readout. The Berridge Batch Control Computer need only be calibrated once.



FIG. 5: PRESS THE "PRG" KEY TO ENTER THE PROGRAM MODE.

PROGRAMMING

When programming the Berridge Batch Control Computer, there are three pieces of information required -- the BATCH (or job) NUMBER, the QUANTITY of pieces needed, and the LENGTH of the pieces. Follow these steps to program the computer:

1. Press the PRG key (Fig. 5) to enter the program mode.
2. Enter the BATCH Number that you want to program. Press the ENT key to accept this information.

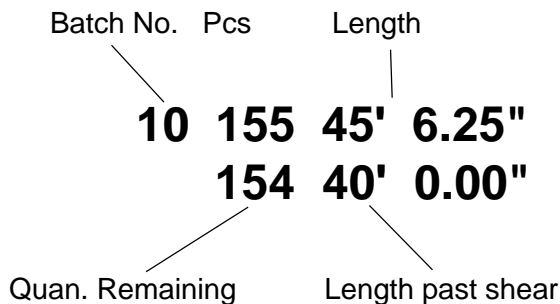
IV. OPERATION (CONTINUED)

3. Enter the QUANTITY of pieces in this batch. Press the ENT key.
4. Enter the LENGTH in feet and press the ENT key, then enter the inches and press the ENT key.
5. The computer will ask if you would like to halt (pause) after this BATCH (Job Number XX). Press any number key (0-9) to toggle the response from NO to YES. If NO is selected, the Batch Control Computer will begin without hesitation to produce parts from the next sequential BATCH (Job Number) when the first BATCH is completed. Enter as many BATCHES (jobs) as you wish, then press the PRG key when your programming is complete.

The * key returns you to the Main Status Display. The top row shows the current Job Number, the Quantity programmed for this job, and the programmed Part Length. The bottom row shows the Quantity remaining to be made for this job and current length of material which is out past the shear.

If you make a mistake during the programming process, press the CE key to clear the entry and enter the correct information. When programming has been completed and the computer has returned to the main display, there will be two rows of numbers visible (fig. 6)

Fig. 6



The top row shows the current batch number, the quantity in this batch, and the length of the parts. The bottom row shows the quantity remaining and the length of material past the shear.

NORMAL OPERATION

When using the computer, the Drum Switch Lever must be toggled to either forward or reverse. The green Palm Switch Button functions as a job button when loading a new coil or running the last part of a coil out of the

rollformer.

1. To load a coil, place the coil on the uncoiler table, feed the coil into the slot in the lexan housing and jog the leading edge of the coil past the shear as would normally be done in manual operation.
2. Shear off the leading edge of the coil.
3. When programming is complete and you are ready to commence production, press the SHEAR Button on the front panel of the Batch Control Computer. (Notice that this causes the length reading on the bottom line of the LED Display to zero out -- If the bottom row of numbers is NOT zeroed out immediately after programming and before you run your first panel, press the SHEAR button to zero out the LED display, then press the RUN button)
4. Press the RUN Button (fig. 7) to begin running the first panel.
5. When the material reaches the programmed length, the rollformer will automatically stop and the SHEAR Button will light up.
6. Shear the material and press the SHEAR Button to begin running the next panel in the batch.

The RUN Button needs to be pressed only when starting the first panel or to restart the machine when the red HALT Button has been pressed. The Batch Control Computer will continue to run panels until the programmed quantity is reached or until the HALT button is pressed.

After an automatic halt, the computer may be restarted by pressing the RUN button, provided there are more jobs still programmed to run.

Jobs may be programmed "on the fly", meaning that new jobs or batches may be programmed into the Batch Control Computer while currently programmed jobs are being run, in order to maximize your production and save even more manhours.

To change from one batch to another, press the PRG key to enter the programming mode, then select the batch that you want by entering the appropriate batch number.

IV. MAINTENANCE INSTRUCTIONS

Although the Berridge Batch Control Computer unit is an enclosed encoder unit which requires no periodic maintenance, care must be exercised to prevent damage to the unit, either by impact from job site equipment or exposure to the elements. In order to protect sensitive electronic components inside the housing, the unit must be kept clean and dry.

V. SAFETY

It is important to abide by normal safety rules when operating the Berridge portable roll formers or other electrical equipment. While Berridge recommends the following minimum safety practices, the company accepts no responsibility for personal injury or property damage incurred while operating the machine.

- A. Make sure electrical outlet is grounded.
- B. Do not operate machine in rain or stand in water while operating .
- C. Make sure electrical cord is free of cuts and exposed wire.
- D. Keep hands and clothing out of the rolls and the shear blade.
- E. Keep wheels locked on the machine except when necessary to physically move it.
- F. Do not stand under coil when loading or unloading machine.
- G. Do not operate machine with plexiglass panels removed.

VI. BATCH CONTROL COMPUTER PARTS LIST

FOR ROLLFORMERS WITH CLUTCH/BRAKE AL- READY INSTALLED:

- ï Batch Control Computer Unit
- ï Cover for Switch Box
- ï Shear Feed-In Guide w/Encoder Attached
- ï Angle Bracket for mounting Batch Control Computer unit
- ï Single White Wire.

FOR ROLLFORMERS WITHOUT CLUTCH/BRAKE:

- ï Batch Control Computer Unit
- ï Angle Bracket for Mounting Computer Unit
- ï Shear Feed-In Guide w/Encoder Attached
- ï Clutch/Brake, pre-wired w/Palm Switch Box



BATCH CONTROL COMPUTER RETURN INFORMATION

If it should become necessary to return your Berridge Batch Control Computer for any reason, please use this form to supply the information required to properly identify your unit and resolve the problem.

DATE RETURNED _____

MODEL # _____

SERIAL # _____

DESCRIPTION OF PROBLEM: _____

FILL OUT & MAIL OR FAX TO:

BERRIDGE MANUFACTURING COMPANY
ROLL FORMER OPERATIONS
2201 Rudeloff Road
Seguin, TX 78155
Fax: 210-303-0530

***THIS PORTION TO BE COMPLETED BY
BERRIDGE ROLL FORMER OPERATIONS:***

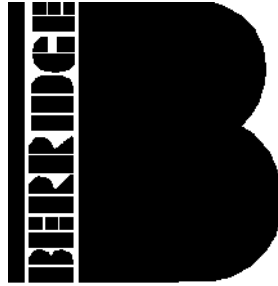
REPAIRS: _____

LABOR COST: _____

PARTS COST: _____







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