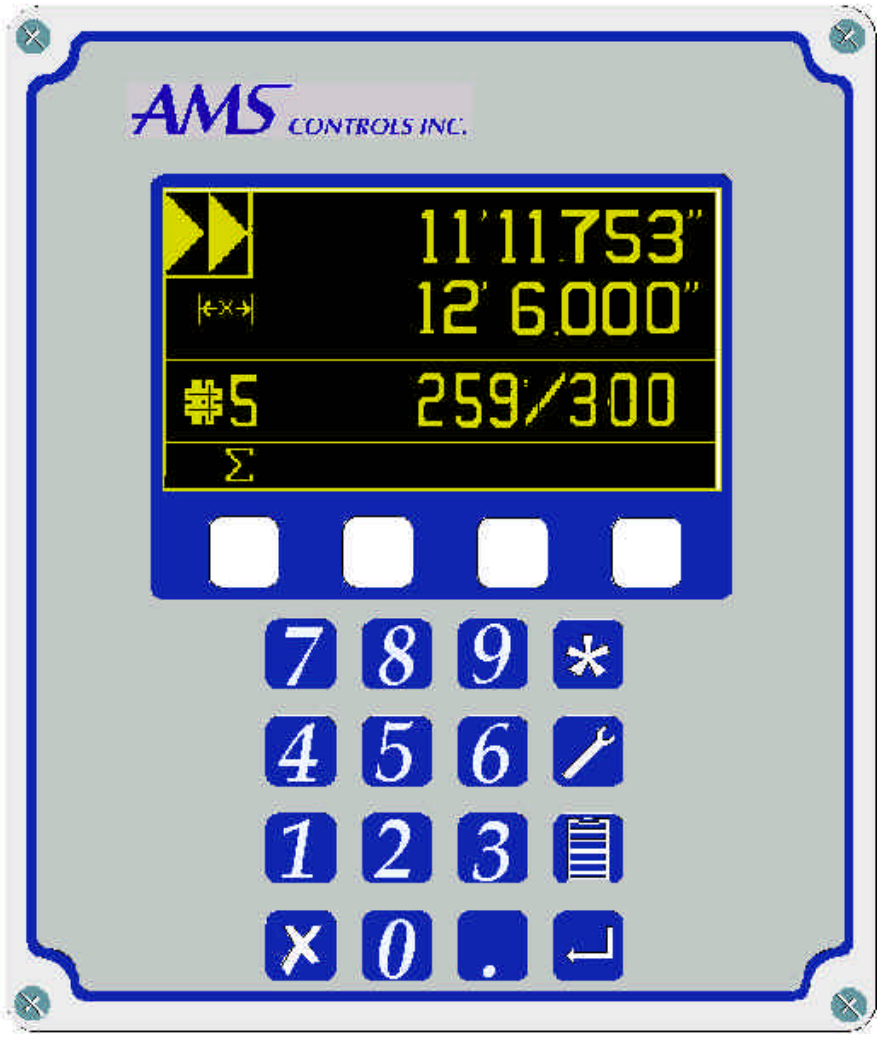


MP550 SERIES

Mobile Rollformer Controller

Operation & Reference Manual

Manual # OM-MP5O-V103

CONTROLS / SOFTWAR / INTEGRATION

Note: AMS Controls reserves the right to change the operation and/or directions within the manual without notice or approval.

Contents

Introduction

The AMS **MP550 SERIES** controller is a length control system commonly used on mobile roll formers and cut-to-length machines that produce parts from coil stock. The **MP550 SERIES** controller is the most advanced mobile control system available and will greatly enhance the performance and productivity of these machines. The AMS controller is a custom designed microcomputer that is exclusively designed for mobile rollformers. This enables the **MP550 SERIES** controller to offer many features not available on simple electronic counters.

AMS Controls had the following goals in mind while seeking to design the newest generation of mobile electronic length controls. These goals have been successfully achieved with the design of the **MP550 SERIES** Controller.

- Improve the length accuracy
- Improve the machine productivity
- Reduce the amount of material waste
- Easy for the operator to use
- Symbol driven interface

Accuracy

On most cut-to-length machines without servo drives, accuracy depends upon the ability of the machine to run at a constant speed and to react consistently for each operation. With simple electronic length controllers, accuracy is lost when machine fluctuations occur. The MP550 SERIES controller, however, constantly monitors the performance of the machine and compensates for these variations resulting in improved accuracy.

Easy to Use

The **MP550 SERIES** Controller is a sophisticated computer running a complex program. This does not, however, mean that a computer expert is required to operate it. The controller has a liquid crystal display (LCD) that prompts the operator for information using easily recognized symbols. On the “Status” display, the operator can see the order that is being run, his progress through the order, the speed of the line, and the present material position.

Easy to Install

The **MP550 SERIES** Controller has built-in logic to handle most machine control functions. The user does not need to add Programmable Logic Controllers (PLCs) or relay logic circuits to get the correct machine sequence and safety features.

Symbol Driven Menus

The **MP550 SERIES** controller uses familiar symbols to direct and prompt the operator. This allows for the controller to be used efficiently despite variances in languages or literacy.

About this Manual

This manual gives detailed information on the installation, operation, and maintenance of the **MP550 SERIES** Controller. Instructions for installing the AMS Controller on most machine types are included. Chapter four of this manual includes a troubleshooting guide to follow if problems should arise.

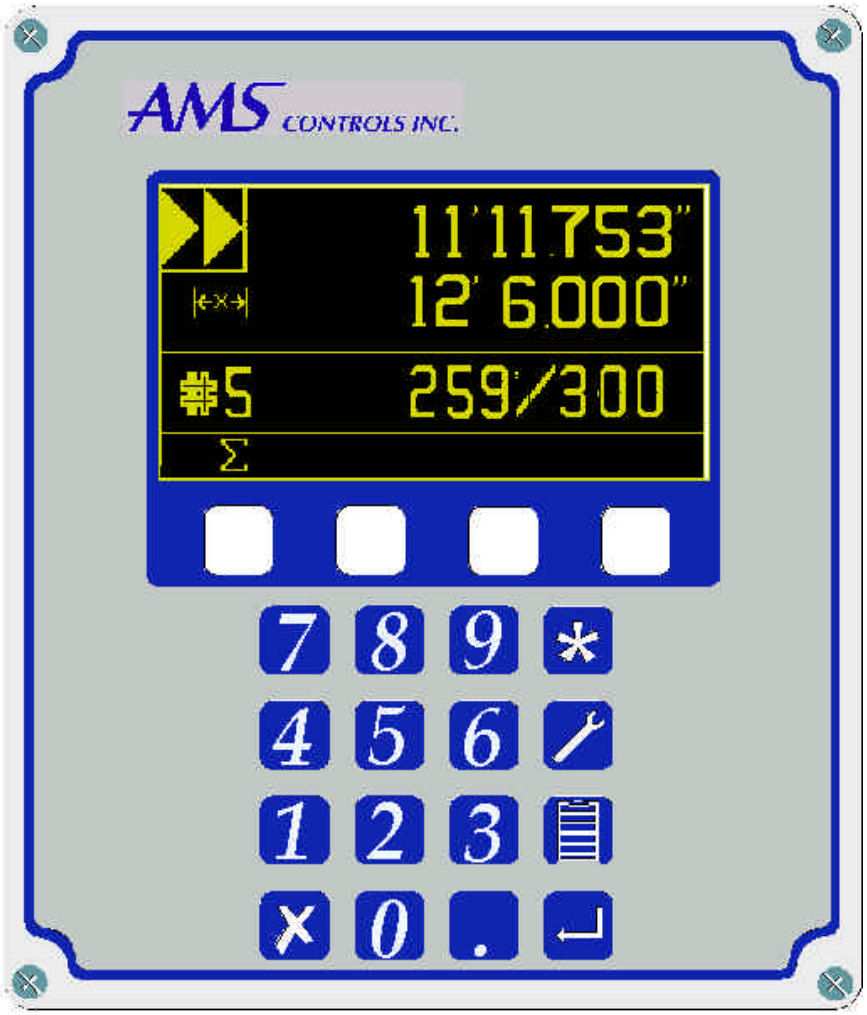
Operation Overview

The MP550 controller performs the following functions:

- Controls the material movement through the machine.
- Measures the amount of material moving past the cutoff press.
- Cycles the cutoff press at the programmed length.
- Stops the machine when the correct number of parts is produced.

The measuring device is an optical shaft encoder, also called an “encoder” or “pulse generator”. A wheel with a known circumference is attached to the encoder and rides on the material. As the material moves through the machine, the wheel rotates and the encoder generates electrical pulses proportional to the amount of material moved. The controller counts these pulses to determine how much material has moved through the machine. When the material past the cutoff press is equal to the length of the part programmed, the controller cycles the shear press and increments the quantity that is “DONE”. When the quantity DONE is equal to the programmed quantity, the controller will halt the machine or proceed to the next job depending on how the “Halt” control is set for each job. If a specific job has a ⏚ symbol, it will stop after the last part is made. If the “⏚ “ symbol is set the line will continue to run the next job in sequence.

MP550 SERIES Controller Hardware Description



MP550 SERIES Front Panel

Microcomputer

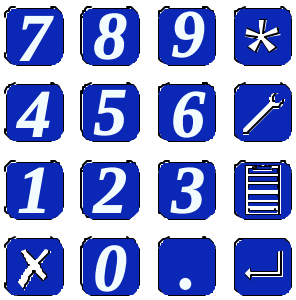
The **MP550 SERIES** controller is an advanced length control system. It is similar to a personal computer packaged in a rugged industrial enclosure. Programs are stored in PROM (Programmable Read Only Memory) memory, instead of a disk. These programs were written by AMS to perform the specific task of length control. The PROM is factory programmed.

The user does not have to write programs for the controller. Order data only needs to be entered. This data is stored in RAM (Random Access Memory). In some systems this memory is erased when power to the PC is removed. In the **MP550 SERIES** controller, a battery maintains this memory when the controller is off and user data is automatically saved when power is removed. RAM memory is also used to store machine setup data and job information data.

Operator Interface

Controller Keys and Functions

The **MP550 SERIES** controller has a 5” LCD (Liquid Crystal Display) screen and keypad. The keypad has 16 dedicated keys and 4 function keys for information entry. To help the operator become familiar with the keys on the controller, a brief description of the function of each key will be given.



MP550 SERIES Keypad

Pushbutton controls will be provided via a separate Interface box that will be customized to the individual machine.

Status

Press the STATUS key to allow the operator to view the immediate order information such as:

- Current job number for production
- Current position of the material past the shear
- Part Length of the current batch
- Number of parts programmed for the current batch
- Number of parts left to run for the current batch

Calibrate

This feature is used to perform the Calibrate Trim procedure. Press the CALIBRATE key to correct for any consistent length errors by changing the correction factor for a given encoder system.

Program

Press the PROGRAM key to program job data. Once the program screen is displayed, the operator can program new jobs or view existing and completed jobs. The next job to be produced can be selected in the program screen. The program screen also allows each

individual job to be set to either halt after its completion or to allow the controller to continue running the next successive job without halting.

CE

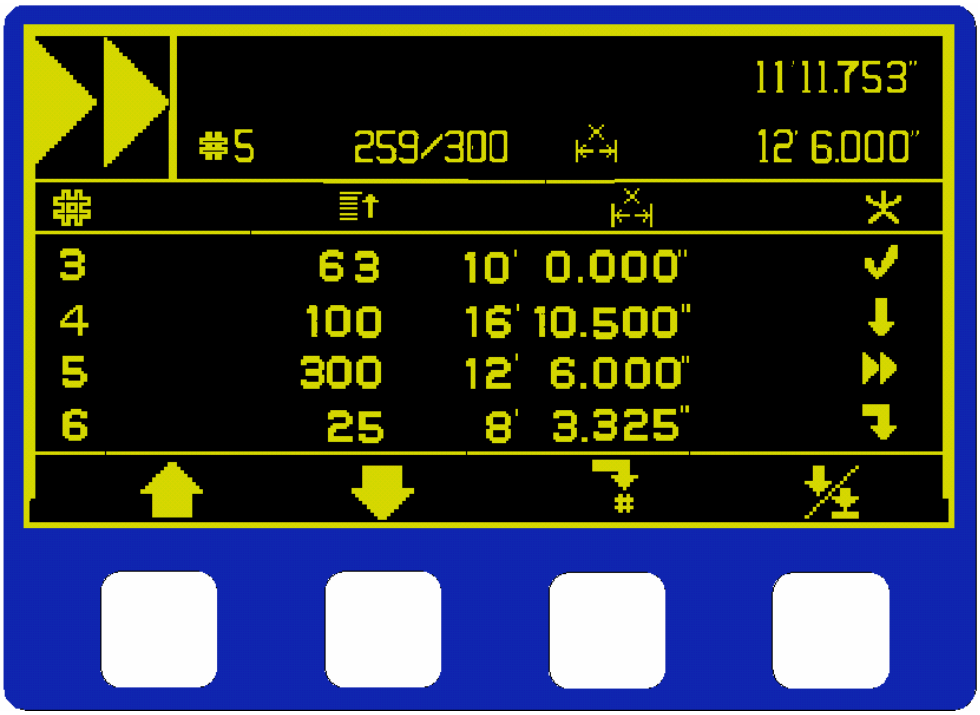
This is a “CLEAR ENTRY” key. This key is used to correct the entered data when a mistake is made. Pressing this button will clear out the previously entered data so that the data can be re-entered. It is also used to clear error messages.

ENTER

The ENTER key can be defined as a “take it” key. Data that is will not accepted by the controller until the Enter key is pressed.

Soft Keys

Four “soft” keys are included on the face of the controller. The function of the “soft” key will depend on which screen is being displayed. A description of each key will be displayed directly above them on the screen. Different screens may use all, none, a portion of these special purpose keys. The programming screen is shown below with soft keys used to navigate “UP” and “DOWN” to highlight different jobs, to set the “Next” job to be ran, and to select the each job’s “Halt Mode”.



“Soft Keys” being used to navigate a display

Icon Driven

The **MP550 Series** Controller was developed for easy use with a minimal learning curve. This has been accomplished by creating an interface that is entirely icon driven. Each icon is easily recognized and may be familiar to icons used on many commercial electronic devices.

Mode Cross Reference

 Controller Running

 Controller halted

 Controller in Pause Mode

Programming Icon Cross Refence

 Job Number

 Next Job to run, Don't Halt when completed

 Part Quantity

 Job ready to run, Don't Halt when completed

 Part Length

 Next Job to run, Halt after completion

 Job Status

 Job is ready to run; Halt after completion

 Set Job to "Next"

 Job in Work Mode

 Select "Don't Halt"/"Halt"

 Job Completed

Calibration Icon Cross Reference

 Perfrom Manual Calibration

 Programmed Part Length

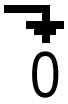
 Accept New Calibration

 Actual Measured Part Length

 Set Correction to 100%

Totalizer Icon Cross Reference

 Display Totalizer Screen

 Set this Total to “Zero”

 Total # of Parts Made

 Total Length of Material Used

Interface Keyboard Icon Cross Reference

 Key to display “Status Page”

 Key to display “Calibration Screen”

 Key to display “Program Screen”

 “Enter” Key

 “Clear Entry” Key

Special Features

The **MP550 SERIES** Controller has been designed to offer advanced features for length control that are not available on simple electronic counters. These features offer better accuracy and reduce the amount of waste that can occur. They also eliminate the need for additional control circuits to control the machine.

Adaptive Compensation for Stopping Machines

The controller uses material speed to calculate an advanced target, stopping the machine so that it coasts into the exact shear point. The AMS controller measures the amount of overshoot (or undershoot) on each move and adjusts its internal parameters to match the characteristics of the machine. The user can specify a tolerance so that accuracy is assured.

The AMS controller has a feature called ‘Stopping Reaction” that is automatically calculated. This feature determines how far in advance to halt the machine in order to accurately stop on the target, even under fluctuating machine conditions. The **MP550 SERIES** controller continually monitors how accurately the machine is stopping then automatically self-adjusts.

The result is that the **MP550 SERIES** controller can be adapted to most machines with a minimum amount of external electrical components and improved overall accuracy.

Entering Orders

An order consists of a Job Number, a Quantity, a Length, and a Halting Option. The ability to program more than one job at a time gives the user the potential to change sizes without stopping the machine.

The efficiency of a multiple batch controller can be lost if the controller is not easy to program and understand. The **MP550 Series** controller solves this problem with its clear method of programming.

Job Number

Enter the Programming Mode by pressing the PROGRAM key. Data may be entered into job numbers 1through 50. The user may review and correct jobs previously programmed. Press the  (Enter) key to confirm the present Job Number.

Quantity

After the Job Number is entered, the Quantity will be flashing. Simply key in the desired quantity and press ENTER to confirm the number. If you enter a quantity of 0 on a previously programmed job, that job will be erased. The Quantity can be set from 1 to 999 pieces.

Target Length

After the Quantity is programmed, the Length field will flash. Enter here the length of the part to be made (do not count the shear kerf; the controller will automatically add in this amount, if any). Enter the length in whatever Unit format (English inches or Metric millimeter) was selected when the **MP550 SERIES** controller was installed. The longest length the AMS controller will accept is 999 ft. (304 Meters).

When entering lengths, no leading or trailing zeros are required. The following entries (in English mode) each produce the same 10 foot part:

“10” “010” “10.” “10.00” “10.000”

Job Status

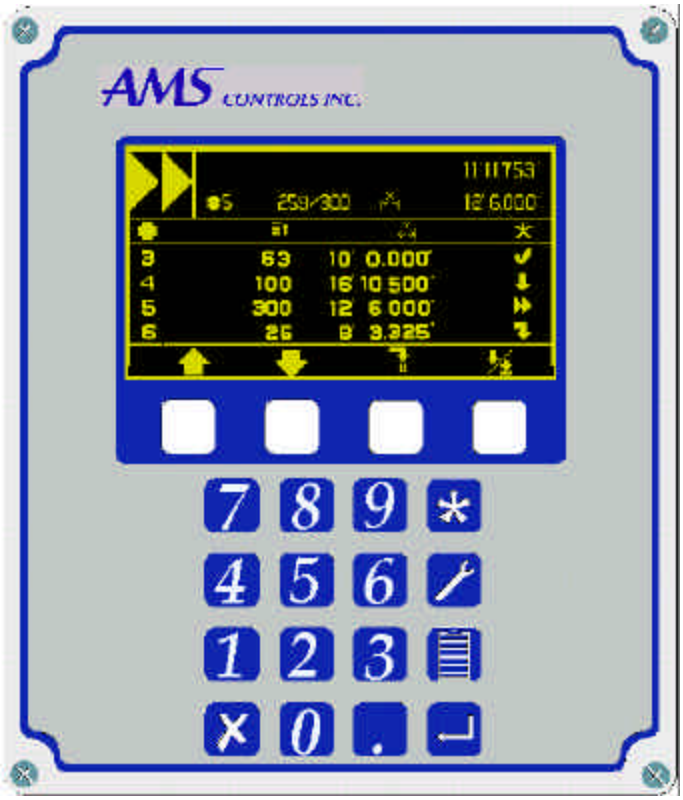
The job status is used to set the how the machine will run and displays all jobs, whether running, ready to run, or completed. Anytime an item is highlighted on a specific job line. The two job control function keys can be used to change the job status of the highlighted batch.

"Next Job" Selection

During normal operation, the **MP550** Series controller will run the first job programmed (lowest job number) and continue running to the last job. The third function key "#" is used to set a specific batch to be the "Next Job" to run. Simply highlight the desired job number by using the first and second soft keys move up or down the program list (or). Once the desired batch is highlighted, press the "Next Job" to set that batch to run next. The line that will run next is always identified by a status arrow that is turned 90 degrees such as or .

"Halt" or "Don't halt" mode selection

Each job can be independently set to stop after the last part of that batch is completed or to continue running the next job. This is done by toggling the key. A bar at the bottom of the arrow means that the job will stop after the last part is made.



MP550 Program Screen

Exiting the Program Mode

The SETUP  key is used to exit the PROGRAM mode and revert to the normal running display. It is also used to exit the SETUP mode.

Referencing Controller to the Material

The MP550 SERIES controller measures relative movement of the material through the machine and has no way of measuring the absolute amount of material that is past the shear. In order to cut accurate lengths, the controller must know how much material is past the shear at some point in time and then it can make relative measurements thereafter. This is a process called referencing.

To “Reference” the MP550, simply load the material into the machine and jog the material past the shear. Perform a manual cutoff cycle. The length counter is set to zero at the bottom of the shear stroke and the controller is referenced.

The **MP550 SERIES** controller re-references itself to the material on each automatic cut at the bottom of the shear cycle. This is done to improve accuracy.

The material can overshoot or undershoot the shear point on each feed. With simple electronic counters, an overshoot on one cut followed by an undershoot on the next cut will cause the second part to be short by the sum of the overshoot plus the undershoot. By re-referencing the controller during each cut, the controller will limit the error to either an undershoot or an overshoot which effectively cuts the error in half.

Running the Machine

Status Display

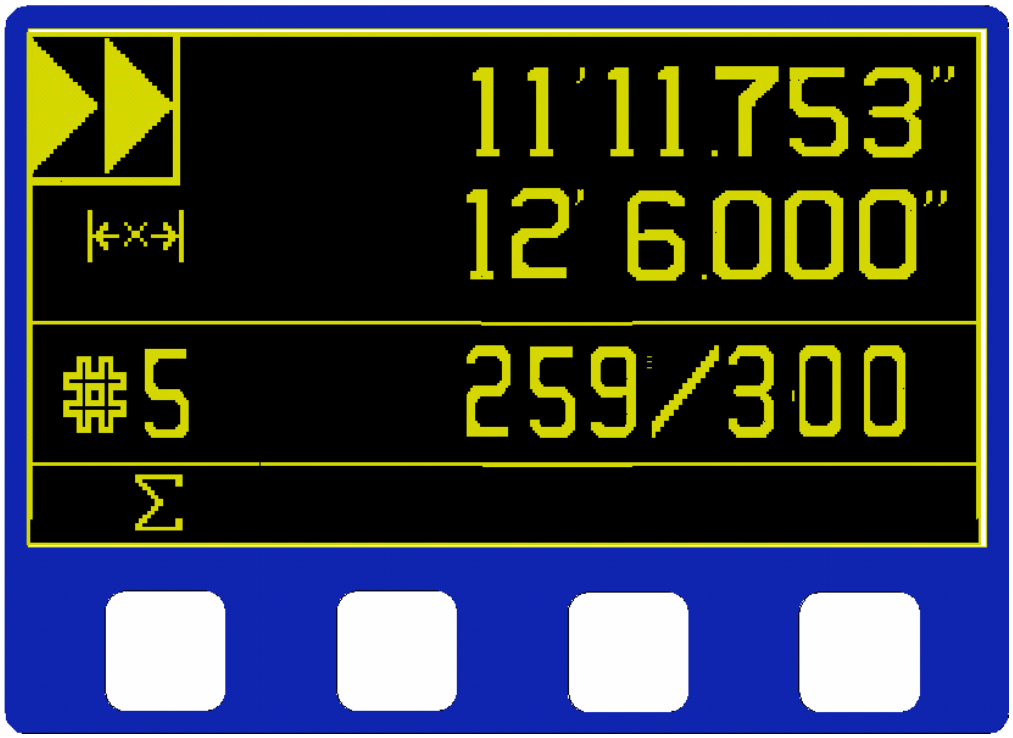
The “Status Display” screen provides the operator with the critical information for the currently running batch. The Icon in the upper-left shows the current “Mode” of operation, whether the line is running, halted, or in a “Pause” state. The sample display below shows that the line is in “Run” mode.

RUN

HALT

PAUSE

The “Status” screen also displays the Job number currently being ran, the number of parts done/number of parts programmed, the length of the current parts, and the length of material past the shear.



Status Display Screen with current batch information

Σ Totalizers

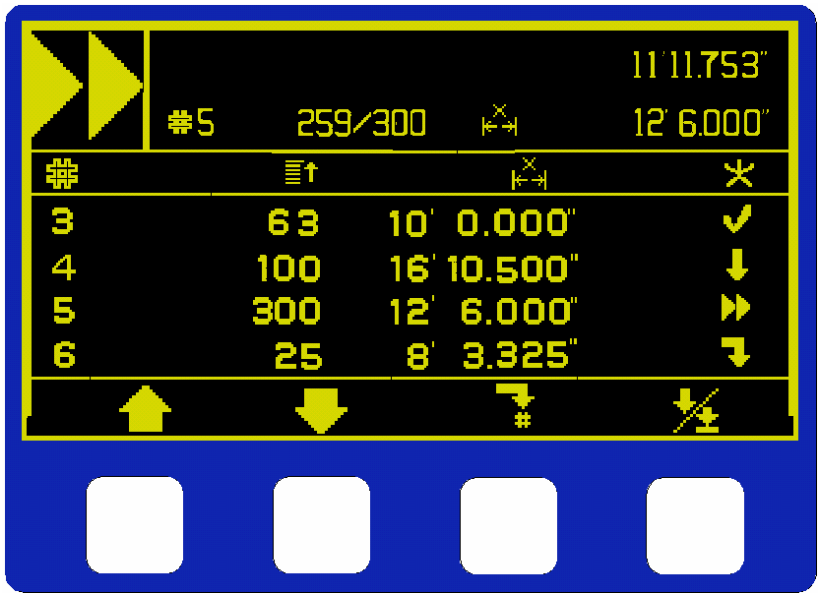
The summation key allows the operator to access the totalizer screen where the total number of parts made and the total length produced it tallied. Select the Σ key to access both totalizers.

Σ **This symbol displays the "Total Length" produced on the line since last being totalizer clear.**

Σ **This symbol displays the "Total Number of Parts" produced on the line since the last totalizer clear.**

Setting the Next Job to Run

If the current job number is not the job that you wish to run, press the "Program" key and then highlight the batch that is to be the "Next Job". Once the desire batch is highlighted, press the function key marked by the to set that job to next. The status column icon will change to a "turned" start arrow.



Set Next Job to Run Screen

The machine must be halted in order to select the "Next Job". The newly selected Job Number will begin as soon as the machine is placed in RUN.

The previous example above shows four batches, each bearing a different status.

Batch#3	63 parts at 10 ft., Status is **"Completed"**
Batch#4	100 parts at 16 ft., 10.5 inches, Status is **"Ready"**
Batch#5	300 parts at 12 ft., 6 inches. Status is **"Running"**. The status display at the top of the page shows that 259 of the 300 parts are left to be made.
Batch#6	25 parts at 8 ft., 3.325 inches, Stutas shows this job is set to **"Next Job"**.

Starting the Machine

After the NEXT JOB is set, the machine is placed in the RUN mode by engaging the run circuit for the specific machine. The run circuit will hold the run input to the controller "ON". The **MP550 SERIES** controller will begin shearing parts to the programmed length and decrement the quantity remaining for each piece cut.

When the quantity "Remaining" equals the "0", the controller will halt the machine if the if the just-completed batch was set to "Batch Halt". OR

Halting Production

At any time, the operator can halt the line by opening the run input to the controller. Pressing the "Halt" switch for the line typically does this.

Shear Pause Feature

The MP550 Series controller has a unique feature that enables the material motion to pause after a shearing operation in order to allow the operator time to remove the last cut sheet from the machine. This input inhibits the line from feeding material until the lst sheet has been removed by the operator. Input #9 is the Shear Pause input.

When this input turns on, the material motion outputs will halt after the next shear cycle occurs. The forward output will not turn off until the line stops for the next shear. Once the shear occurs, the forward output will remain off until the input is taken away.

Warning!! If the controller is in automatic mode and the "Shear Pause" input is removed, the line will begin running again. Adequate warning lights and safety measures are the sole responsibility of the customer to make sure the operator knows that the machine is still in automatic mode.

!! Note !!
The line stays in Automatic mode while halted during the "Shear Pause" input. The line must first be in Automatic mode before the Shear Pause input has any effect.

Special Procedures

Changing Coils

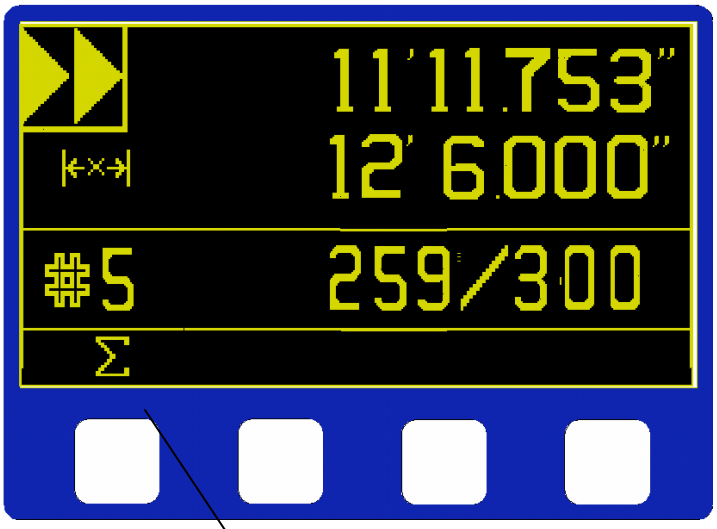
The following procedure should be used when changing coils to ensure proper accounting of the material used on a coil and an accurate first part after the new coil is loaded:

- If the coil has been completely consumed or the material has been cut free of the stock reel, as is the case with most roll formers, feed the material through the shear in the forward direction and dispose of the scrap piece.
- On a cut-to-length machine with no roll former involved, all of the unused material can be rewound on the mandrel for later use. In this case, back the material out through the entrance end of the shear until it is out from under the encoder.
- After the machine is empty, press the CYCLE switch on the interface panel. This registers all material used in the footage totalizer.
- Press "Σ" key to display the footage totalizer screen.
- Press the F1 "0" key to clear the totalizer if desiring to reset the count.
- Thread the next coil into the machine until a clean edge is past the shear and the material is under the encoder.
- Press the CYCLE switch to reference the new coil.

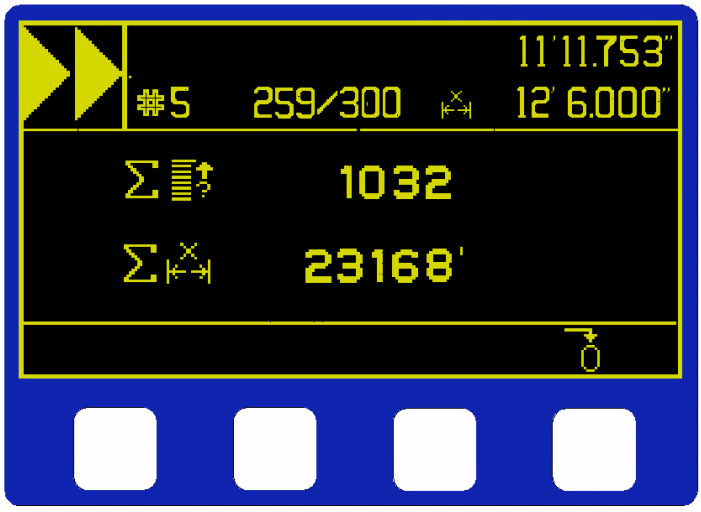
Monitoring Production

The **MP550 SERIES** controller has a footage totalizer available for monitoring production. The totalizer shows the amount of footage that has gone past the shear as well as the total number of parts cut since the last time the totalizer was cleared.

To access the totalizers from the Status screen, press the function key under the icon Σ.



Pressing the first "soft" key will open the "Totalizer" screen as shown below.



Totalizer Screen

As shown on the above example, **1,032 pieces** have been produced for a length total of **23,168 feet**. These totals can be cleared by pressing the soft key marked 0.

Summation Key Descriptions:

This symbol displays the “Total Length” produced on the line since last being totalizer clear.

This symbol displays the “Total Number of Parts” produced on the line since the last totalizer clear.

This icon marks the soft key that is used to initialize both totalizers back to zero. Pressing this key will set both totals to “0”.

Machine Calibration and I/O

Initial Machine Tests

Manual Shear

The shear can be manually activated using the “Manual Shear” or “Manual Cutoff” function included on a specific machine. This causes the SHEAR DOWN output to turn on until the BOTTOM OF STROKE input switch closes. Make adjustments to the SHEAR DWELL time or the position of the Bottom of Stoke (BOS) switch until the shear cycles properly. Keep in mind that come variations may occur due to the wiring of different machinery.

Stopping Reaction Time

An internal STOPPING REACTION time parameter is used to keep the controller stopping accurately. The “Stopping Reaction” is not a visible parameter that can be viewed on the controller. It represents the time delay from when the controller turns off the movement outputs until the material actually stops. Using this reaction time, the **MP550 SERIES** controller turns off the movement outputs prior to the actual shear or punch point to allow for the momentum and inertia of the machine. A new STOPPING REACTION time is calculated after each stop based on the average stopping time for several cycles. This parameter will be modified on each successive part that is run.

Clearing Controller Memory

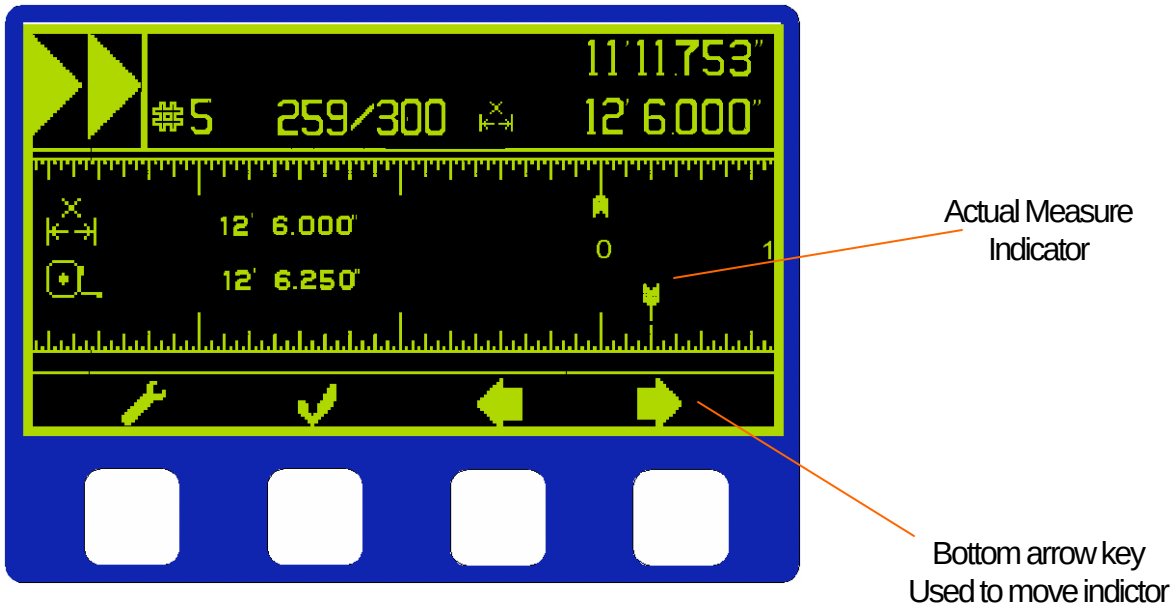
You can clear all storage in the **MP550 SERIES** (including Order data) by following the sequence below:

- Turn off power to the controller.
- Wait five seconds.
- Press the '5' key while you
- Turn the controller's power back on.
- Hold down the '5' key for at least five seconds after you turn the power on.

If you are experiencing controller problems, it is not recommended that you clear the memory unless you have made extensive troubleshooting checks (see the section in the back of the controller manual titled **“Troubleshooting”**). The steps listed include: making sure you have checked the encoder, the shear, the calibration procedure, rechecked setups, used the built-in diagnostic features, checked the incoming power, and cycled power off and on. Do not clear the memory unless you have recorded all batch information for re-entry.

Calibrate Trim

The **MP550 SERIES'** CALIBRATE TRIM feature automatically computes a new CORRECTION FACTOR, which is used in the controller's length calculations to adjust for errors in the size of the measuring wheel. From the "Status" screen, the CALIBRATE TRIM mode can be entered by pressing the Calibrate key.



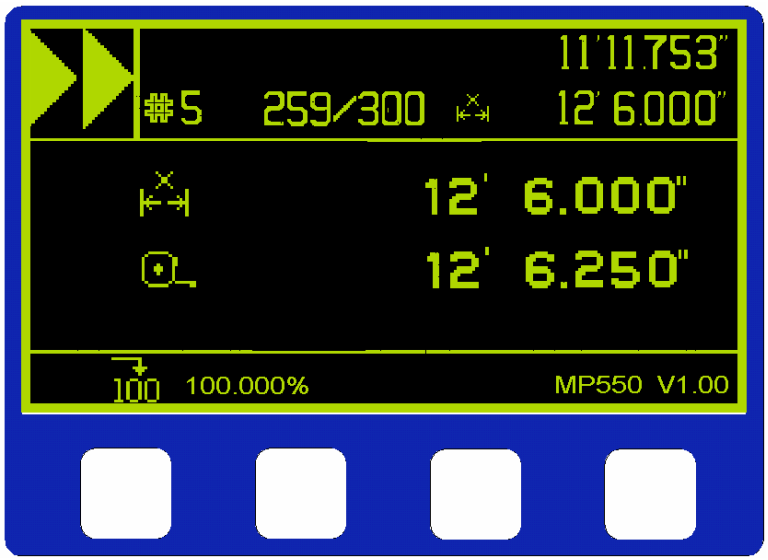
Calibrate Trim Screen

The Calibration screen displays the image of a ruler that contains increments of 1/32 inch. The controller will display the programmed length on within the upper half of the ruler next to the icon . A perfect part should show "0.000" inches on the upper tolerance indicator. (This screen is only active when in English Mode).

If the actual measurement is different, the operator uses the left and right arrow keys to move the bottom sliding target indicator to what the part is actually measuring. In the example, a part 12 foot and 6 inches long has been produced. The bottom indicator has been moved to the right to indicate that the part was .25 inches longer when actually measured. The Actual length display on the lower half of the ruler displays the length next to the "actual length" icon .

Once the actual length has been indicated, a new correction factor will be created by pressing the checkmark symbol . The calibration screen can be escaped by pressing the status key .

IF the operator desires to input the actual measured part length rather than use the graphic ruler, he may do so by pressing the soft key marked . This opens up the Correction factor screen. This is the only available option if the controller is set to metric format.



Programmable Calibrate Trim Display

The controller knows the programmed length of the last part cut and displays it at the top of the display. The controller prompts the user to enter the actual measured length of the last part cut on the second row of the display.

The operator inputs the measured length and presses the (Enter) button. The controller then calculates a new CORRECTION FACTOR and displays it at the bottom of the screen.

CALIBRATE TRIM should be used any time part lengths are incorrect but in a consistent pattern (i.e. all parts 3/16" long, etc.).

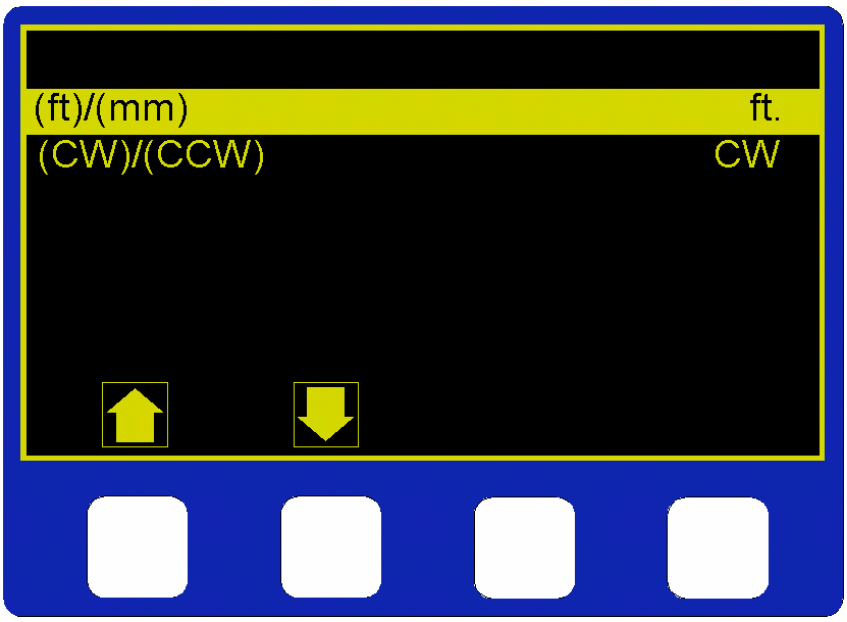
The correction factor can be set back to 100% by selecting the function key marked 100.

Setting Special Options

The MP550 Series controller can be ran in English measurement or in Metric measurement standards. When in “English” mode, the length will display in feet and decimal inches. When in Metric mode, the length will display in millimeters. The format can be selected in the special “Options” screen.

The encoder direction can also be set according to the needs of the application. “Clockwise” or “Counter-clockwise” counting direction is selected in this “Options” screen.

The OPTIONS screen can only be viewed by special procedure when the controller is powered up. Upon powering up, the controller goes through a memory test. While this test is being performed, press the “9” key and hold for two seconds. The controller will go through the remainder of the memory test. Once the test is completed, the following Option screen will be displayed.



“Options” Display Screen

Use the soft keys (Arrow Up & Arrow Down) to select the desired parameter setting. Once the desired parameter is highlighted, press any number key on the controller’s keypad to toggle the parameter setting. Once the desired setting has been changed, press the enter “↵” key to save the new setting.

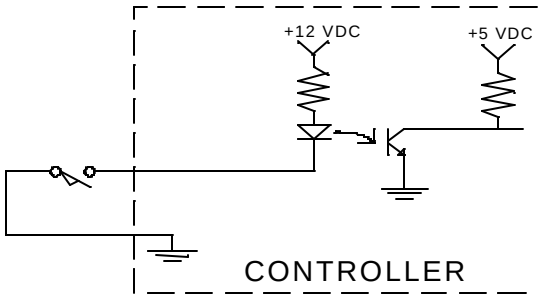
Input / Output Description

Inputs

There are nine discrete inputs into the **MP550 SERIES** controller. They sense continuity between an input and a common connection. A typical diagram of a sinking input circuit is shown below. This circuit requires a 12 to 24 VDC biasing circuit that is provided either by the user or by the AMS controller, depending on the controller configuration.

!! Note !!
Do NOT connect any voltage source to any input.
Doing so can severely damage the controller.

Relay contacts, limit switches, or control switches are the most common inputs used. The input may also be the collector of an open collector NPN transistor that has its emitter connected to the common terminal



Typical Input Circuit

The inputs described are the common inputs for all **MP550 Series Controllers**. Each control will use all or a portion of the inputs described. Different models may have variations.

Run

This input is normally from a switch or dry contact of a relay. When closed, the controller is placed in the Run mode to make parts. When open, the controller is in the “Halt” mode. To be in the Run mode, other conditions must be met in the controller, such as orders being programmed. If the controller is not programmed, or if an alarm condition exist, the control will not go into the Run mode.

Bottom of Stoke (BOS)

The BOS is an input is used to signify that the shear is at the bottom of it’s stroke. This can be from a limit switch, a proximity switch or similar device. The use of the input is optional.

Its function is to inform the controller to remove the shear down signal to the solenoid and to insure that the shear die is not over-driven.

External Manual Shear

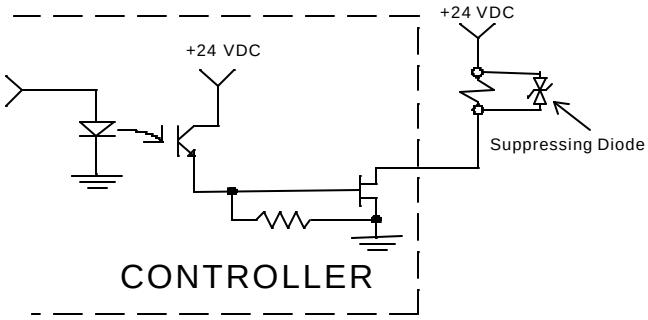
This is a momentary switch input. This input is used to cycle the shear and manually cut parts when the input is closed.

Shear Die NOT in up position

This is a momentary switch input from the top of stroke switch. The input is normally closed, but held open when the die is in the up position. This input informs the controller to NOT allow material motion unless the press is up.

Outputs

The Standard DC output of the **MP550 SERIES** controller is a 4-Ampere open collector J-FET. This is available in all configurations and for all outputs. A diagram of a sinking output circuit is shown below. The biasing voltage for the load can be from 12 to 24 volts. If this voltage source comes from outside of the **MP550 SERIES**, the common of this supply must be connected to the common of the controller. The suppressing diode shown reduces the noise generated by inductive loads when the transistor turns off. The load can be either a DC solenoid or a DC Relay.



Typical Output Circuit

The outputs described below are common outputs for all **MP550 Series Controllers**. Each control will use a combination of, or all the outputs described depending on the model.

Forward

The “Forward” output is used to put the material into forward motion.

Shear Down

The shear output is connected to a solenoid that drives the cutoff die to cut the material. The output turns off after receiving the “Bottom of Stroke” input.

Run/Auto

This output turns on whenever the controller is in “Automatic” mode. The controller will be in automatic mode whenever it is running, whether or not the “Shear Pause” is on or not on.

Troubleshooting

The **MP550 SERIES** is a very reliable product, but things can go wrong.

We have many years of experience with all types of length controls and coil processing equipment. Our experience shows that problems are grouped into:

- **Machine problems** (most common)
- **Operator mistakes**
- **Incorrect Setup data**
- **Corrupted controller memory**
- **Cable damage**
- **Controller fault** (least common)

Troubleshooting is simply a logical series of steps, which leads to the likely cause of a problem. The only tools you need are an accurate scale or steel tape, and perhaps a multimeter (for voltage and resistance readings).

This guide is a “self help guide” for the user to help troubleshoot the system. Follow these suggestions in the order listed.

Troubleshooting Guide

When did the Problem Start?

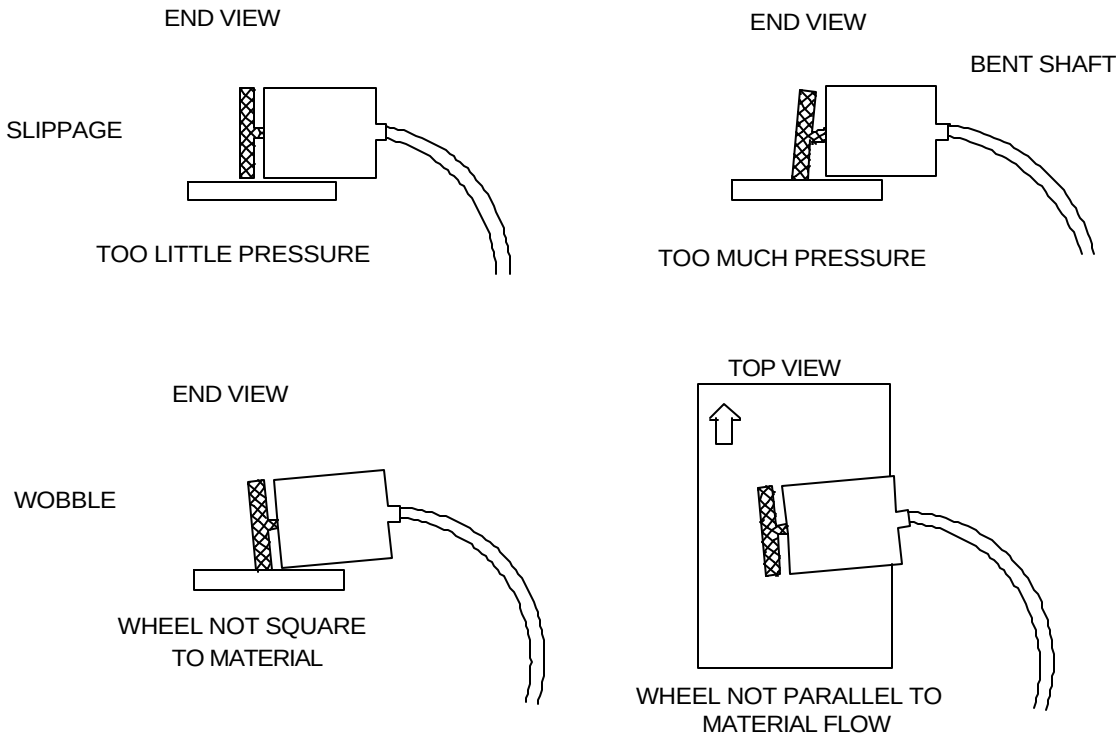
Did the machine work properly at one time? If not, have you done the Calibration procedure?

If the machine **did** work properly at one time, what has changed since then?

Did the problem start after routine maintenance, after electrical panel work, after a material change, or after an operator change? Trace backwards in time to find out what's different.

Check the Machine

- Check the **Encoder** to make sure it tracks the material perfectly.



- The encoder **wheel** must be at right angles to the material. The wheel must rotate exactly parallel to the direction of material movement.
- The wheel must be in firm contact with the material. **No slippage** is allowed!
- Re-run the length **Calibration** procedure after any changes to the encoder mounting.

- Check the encoder **cable** connections. They may have worked loose from material movement or vibration. Make sure there are no nicks or cuts in the cable.
- Check the **shear** press to make sure that it returns fully to its home position after each cycle. The press will make accurate cuts **only** if it starts from a known position for each cycle.
- Re-run the length **Calibration** procedure after any changes to either press.
- Visually check **other** parts of the machine for loose fasteners, excessive wear, proper lubrication, proper material feed, and roll former adjustment.
- Re-run the length **Calibration** procedure after any changes to the machine.

Collect Data

Commonly, problems are associated with the machine making out-of-tolerance parts. To deal with this type of problem, carefully measure the parts made and compare these numbers with those that were programmed. Also take note of the order in which the shear cut the parts.

Write down these measurements for possible later reference.

If length and punch placement seem to vary at random, check the encoder mounting very carefully. The encoder must move with the material, and cannot be allowed to slip. If dimensions are off in a consistent pattern, run the **Calibration** procedure.

Perform the Calibration

When you do the Calibration, take great care to make accurate measurements. Be sure that you know how to reduce measuring error as much as possible with the scale or steel tape you use. A loose tip on your steel tape can add a large error into your measurements. Make sure to measure straight down the part, making sure the tape is parallel to the part.

Check incoming Power

Check incoming power for proper voltage. If you suspect fluctuations, watch the voltage indication with a volt-meter to see if they show up.

More advanced line monitors are available for stubborn cases that you can't see with ordinary meters. Use a recording line monitor to find problems that seldom show up. Your local power company may be able to help with this.

Cycle Power

Cycle power off and on. Try this if the controller "locks up" (won't respond to the keyboard). This **may** restore normal operation after an electrical surge. If not, clear the controller's memory.

Clear Memory

Clearing memory will erase all Setup and Batch information in the **MP550 Series**' memory. Do not clear the memory unless you have written down all Batch information for re-entry, and you have tried everything else above.

You can clear all storage in the **MP550 SERIES** by following the sequence below.

- Turn off power to the controller.
- Wait five seconds
- Press and hold the "5" key as you turn controller's power back on.
- Hold down the "5" key for at least two seconds after you turn the power on.

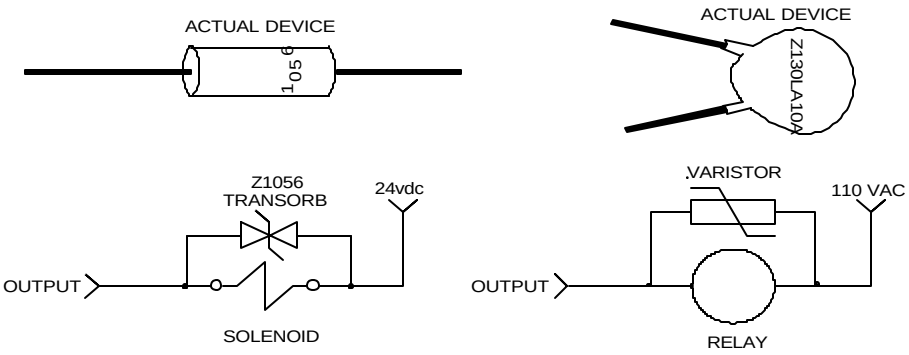
Electrical Noise

The **MP550 SERIES** should **not** lock up frequently. If it does, you should suspect that electrical noise is present. One cause could be electrical noise. These problems can be very hard to locate. The best way to avoid noise is by using good cable layout and wiring methods. Also, noise suppressor devices such as **Transorbs** are needed in some cases.

110 VAC Outputs

When an inductive load is turned off, it can produce a high voltage, high frequency noise spike. These noise spikes can travel long distances through conductive devices such as wire, conduit or the machinery itself. This spike can cause problems to processor-based control systems. Problems like faulty memory, false encoder counts or improper operation can occur. Filtering devices such as varistors (MOV's) or R-C filters can drastically reduce the effects of output noise. Varistors, such as the Z120LA10A used by AMS, are preferable because they work over a higher frequency range than R-C networks do. These varistors are also available for 220VAC devices.

It is best to install the filter as close to the actual output device as possible. Devices such as relays and contactors are easily reached, but devices such as solenoids on presses, spray devices, directional cylinders, etc. may be easily missed or hard to get to. However, even these devices may require noise suppression.



Noise Suppression Devices

24VDC Devices

24VDC solenoids, relays and other output loads require different types of noise suppression. AMS Controls uses the Z1056 transorb. This is also known as a zener-butterfly diode. It resembles a diode, but unlike the diode, can be installed either direction across the coil without regard to the polarity. Diodes can also be used, but they should be high-speed diodes and attention needs to be given to the polarity of the diode.

It is sometimes difficult to get to some to some of the valves that must have the protection installed on them. A junction box that is close to the valve will work fine for installing suppression on instead of directly on the valve. Where these boxes are not installed, the suppressor must be put on the valve coil itself. This will pay of in the form of good operation.

Contact AMS

If you can't fix the problem without our help, call AMS and speak with our experts. Call us toll-free at **1-800-334-5213** or through our website at Support@amscontrols.com.

Have your **Model, Serial, and Software Version numbers** ready when you call. These can be recorded from the display screen while the controller is initially powered up.

AMS Controls, Inc.
12180 Prichard Farm Road
Maryland Heights, MO 63043

Tel: 314-344-3144
Fax: 314-344-9996
www.amscontrols.com

Specifications

Mechanical

Size	7.69" X 6.55" X 2.863"
Weight	5lbs.

Electrical

Input Voltage	12 to 24 VDC
Input Current	1 Amp.

Output Characteristics

Type	Open Collector Transistor
Maximum Current	4 ADC
Maximum Applied Voltage	24 VDC

Encoder Input

Type	Quadrature with Complements
Voltage	5VDC
Maximum Encoder Load	200 milliamperes
Maximum Pulse Rate	5,000 pulses/second

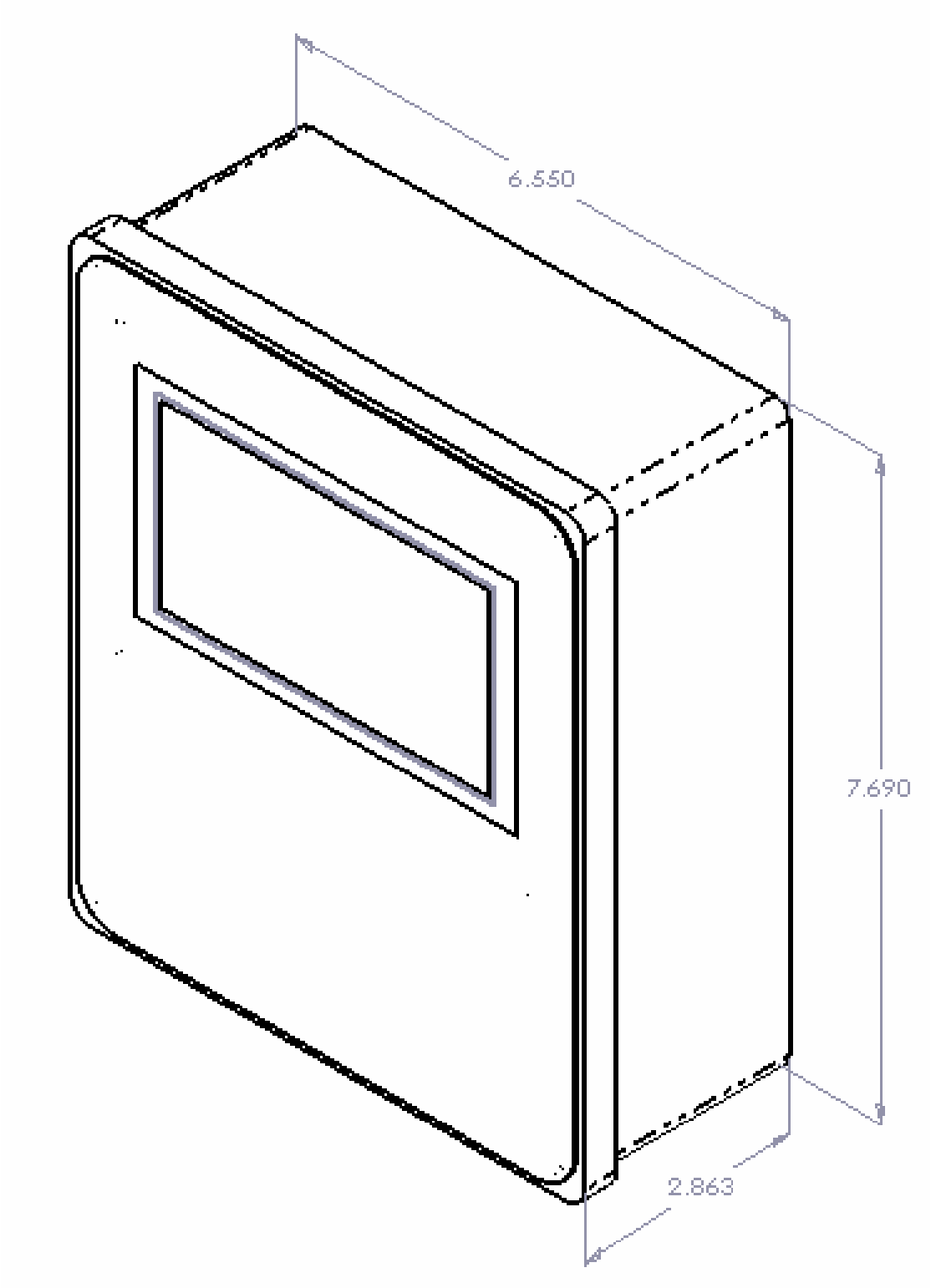
Operation

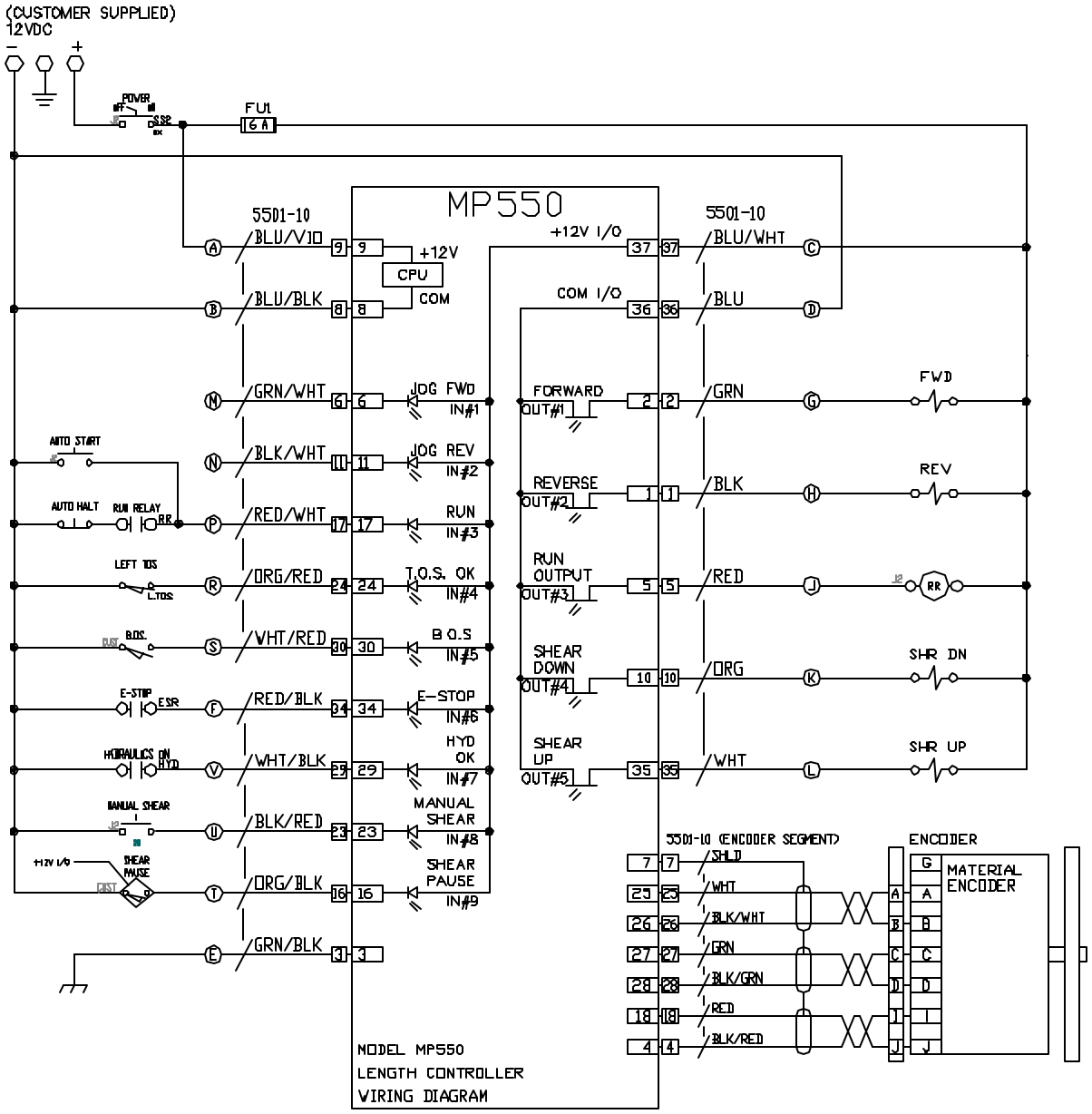
Number of Batches	50
Maximum Part Length	12,000.000 inches (1000 Ft.) 30,480 centimeters (304 M) 304,800 millimeters
Maximum Parts/Batch	999
Units of Measurement	Feet-Decimal Inch or Metric millimeters
Footage Totalizers	1
Maximum Footage/Totalizer	1,000,000 feet 1,000,000 meters

Features

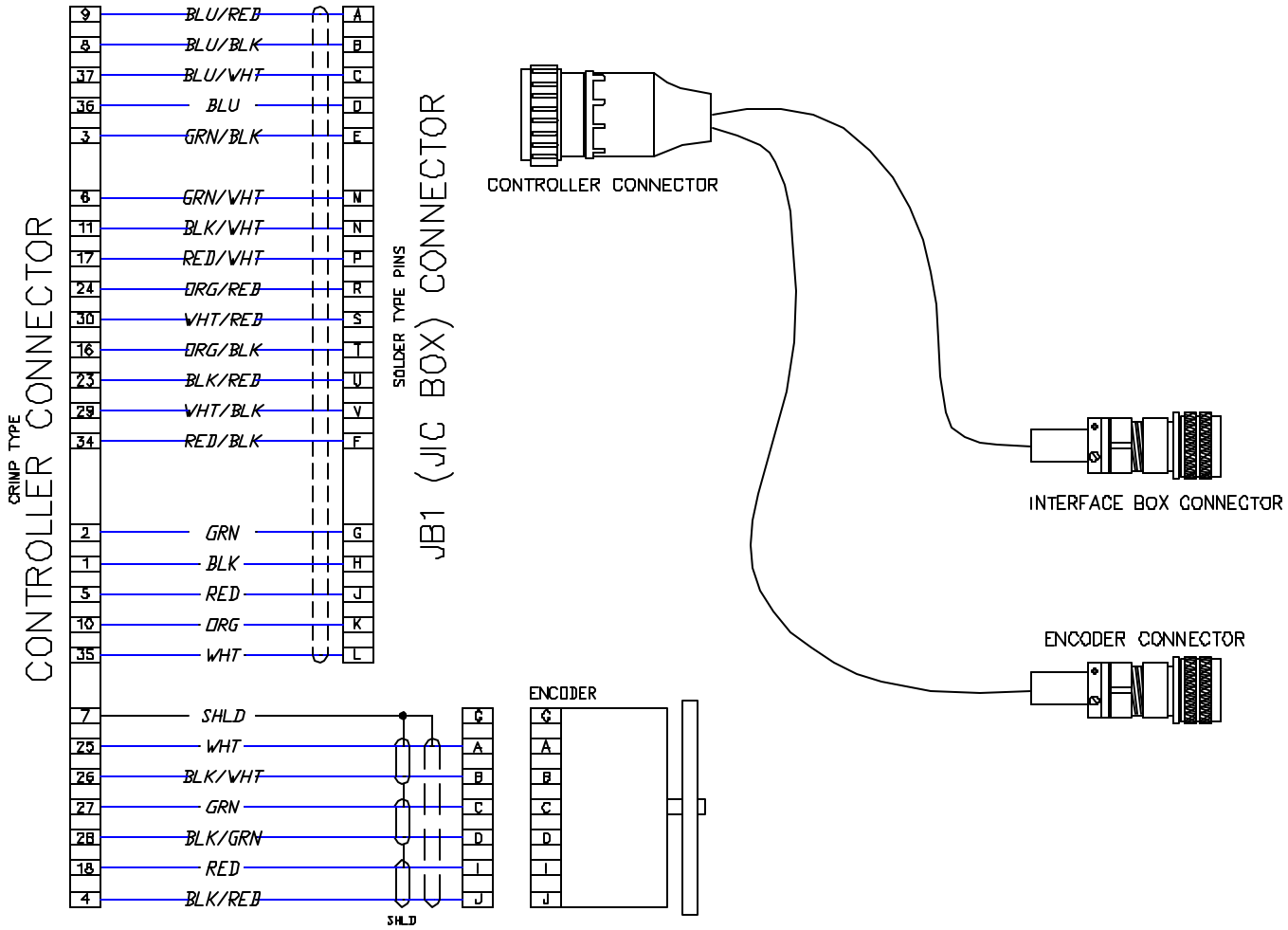
Display	5 inch LCD Graphic Display
Keys	16 Dedicated, 4 function

Generic Language Icon driven interface





Generic Wiring Diagram for MP550 Controller



5501-05 Interface Cable

!! IMPORTANT NOTE !!

Actual wiring diagram for machine will vary depending on the manufacturer of the machinery. Please use Machine Supplier prints when troubleshooting or modifying machine wiring.

Manual # OM-MP5O-V103