MP465 Controller

for Cut-to-Length Machines

Operator Manual

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The most current version of this manual is always available at www.amscontrols.com.

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Chapter 1: Introduction

Overview

The AMS Controls MP465 is an industrial controller used to control cut-to-length machinery. Figure 1 shows the front panel of MP465.

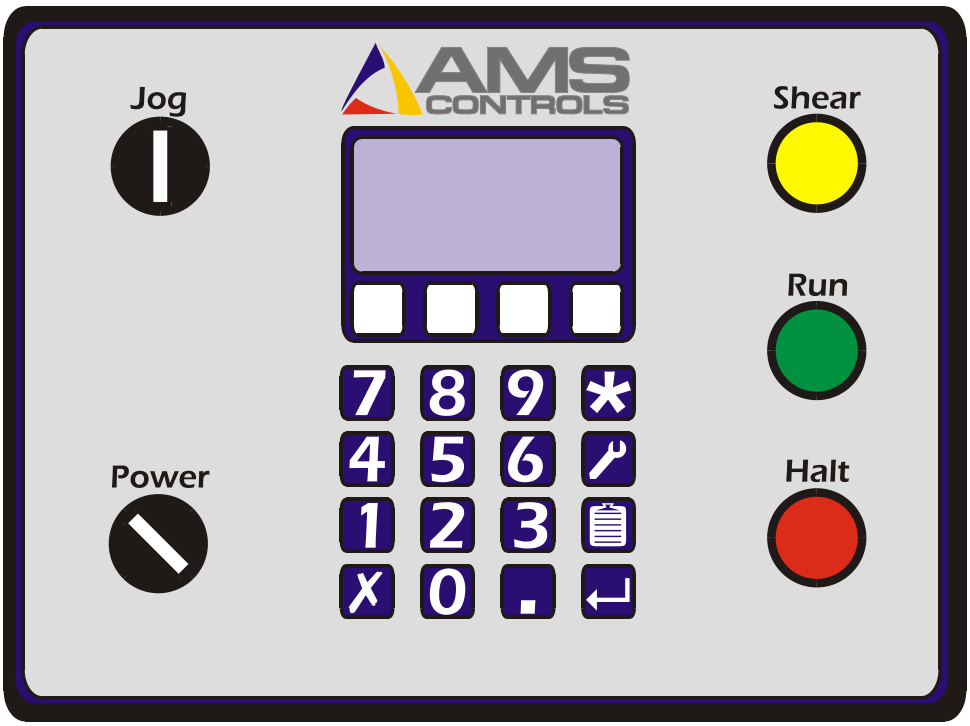


Figure 1: The AMS Controls MP465 Controller

Features

The MP465 controller's features include:

- Accurate length control
- Simple programming
- Easy calibration

Chapter 2: Manual Operations

Jogging Material

- *To jog material forward* using the MP465, turn the jog switch 

on the controller to the left (counter-clockwise).
- *To jog material in reverse* using the MP465, turn the jog switch 

on the controller to the right (clockwise).

Manual Shear

To fire the shear manually, press the Yellow [**Shear**] Button 

.

To immediately return the shear to the home or top of stroke position press the Red [**Halt**] Button 

.

Note: The controller must be in Manual mode (i.e., the Green 

[**Run**] button is not lit).

Chapter 3: Production Procedures

Screen Navigation

Keypad

The keypad uses hot keys to enable quick entry into certain screens.

	Program Key	Press **[Program]** Key to program a Job Number, Quantity, and Length; press it again to specify the next job to run.
	Status Key	Press **[Status]** Key to exit the current screen and return to the Status screen.
	Calibration Key	Press **[Calibration]** Key to calibrate the length management system; by pressing it again you can display other screens like the Production Totalizer and Stopping Reaction.
	Enter Key	Press **[Enter]** Key to enter or store the current value. [Enter] can also be used to move to the next value.
	Clear Key	Press **[Clear]** Key to clear or set an entry back to its original value.

Push Button and Front Panel Selector Switches

	Shear Button	Press Yellow **[Shear]** Button to manually activate the shear. **Note:** The MP465 controller allows this switch to operate when the machine is stopped.
	Halt Button	Press Red **[Halt]** Button to stop the machine drive or return the shear to the home or top of stroke position.

	Run Button	Press Green **[Run]** Button to start the machine after a job has been programmed and the program number is called up.
	Jog (Forward and Reverse)	When the machine is in manual mode (i.e., the [**Run**] button is not lit), turn and hold the [**Jog**] switch to jog the material forward, turn and hold the [**Jog**] switch to jog the material in reverse. This switch is inactive when the [**Run**] switch is lit.
	Power	This switch turns the controller on and off. • Turn the switch to the right (clockwise) to apply power to the controller unit. • Turn the switch to the left (counter-clockwise) to remove power

Note: If the controller unit has been wired to bypass this switch, the position of the switch will have no effect on the controller.

Program a Job

Jobs are composed of a quantity of a specified length. You can program up to 50 different quantities and lengths into the controller. To program a job,

1. Press **[Program]** Key. The current data entry field highlights; once new data has been entered, the data field starts blinking.

   Note: Pressing **[Clear]** Key while the data field is blinking re-loads the original value into the data field. Pressing **[Enter]** Key saves new data and highlights the next field.

2. In the **Job Number** field, enter a number to assign to this job (a value between 1 and 50). Then press **[Enter]** Key.
3. In the **Quantity** field, enter the number of parts you want to create (up to 999). Then press **[Enter]** Key.
4. In the **Length** field, up to 999 feet and 11.999 inches. Then press **[Enter]** Key.

5. The controller displays the message *"Pause After Job xx?"* (where xx is the job number assigned in step 1). Select:
   - **Yes** to have the machine halt automatically after the selected job number is finished.

     Note: To restart the machine after an automatic halt, press Green **[Run]** Button 

.
   - **No** to have the machine change lengths "on-the-fly" and run the job following the selected job without first stopping.

Note: Pressing any numbered key toggles between Yes and No. Pressing **[Enter]** Key  stores the value.

Note: To increase productivity, additional jobs can be programmed while the machine is running previously programmed jobs.

6. The program screen will reappear and you can either continue to enter additional Jobs or Press **[Status]** Key  to exit the Program screen.

Automatic Operation

The MP465 runs all programmed jobs automatically.

- Jog material through the machine until it is past the shear blade.
- Press Yellow **[Shear]** Button 

to manually activate the shear and zero out the system.

  Note: The controller will display the negative shear kerf value.
- After all desired jobs have been programmed you need to select which Job to run by first pressing the **[Program]** Key  twice. Then enter the desired Job number and press the **[Enter]** Key  to store the value.
- The Status screen should now display the desired Job number in the upper right corner.

- Press Green **[Run]** Button 

to begin the automatic operation.
- To stop the machine at any time, press Red **[Halt]** Button 

.

The machine halts automatically when all programmed jobs are completed.

Note: If the encoder is counting in the negative direction, change the direction in the Setup Screen as described previously.

Length Calibration

Note: Calibration is typically required only during machine commissioning or when the machine no longer produces parts within tolerance. This can happen after changing coil stock.

Length calibration adjusts for errors in the size and tracking of the measuring wheel and is expressed as a percentage, with 100% being no correction. Increasing the correction factor causes the parts to become longer and decreasing the value shrinks the parts.

The MP465 controller's length calibration feature automatically computes a new correction factor by comparing the desired (Programmed) length to the actual (Measured) length. Length Calibration should be used any time part lengths are incorrect in a consistent manner (e.g., all parts 1mm too long, etc.). Length calibration will not fix a situation where parts are inconsistent (e.g., parts vary +10 to -10mm).

Note: When calculating the correction factor, make several parts and use the average of these parts for the part length. The first part produced should not be used in this calculation since it may be inaccurate due to shear reaction or other variances.

To calibrate the MP465 controller,

1. The controller can be calibrated anytime the measured part length is not matching programmed part length.
2. With the controller powered on, press **[Calibration]** Key  until the screen title says "CALIBRATE-1". The display shows you the current correction factor. Press **[Clear]** Key  to begin the calibration process.

3. When the prompt “ENTER PROGRAM LENGTH” displays, enter the part length of the part you are attempting to produce.

   Note: The longer the part is that you attempt to calibrate on, the more accurate the calibration will be.

4. When the prompt “ENTER MEASURED LENGTH” displays, enter the part length of the part you actually measured. Using an average of several measured parts will provide the most accurate result.

5. The screen title will change to “CALIBRATE-4 and show the OLD and NEW correction factors. The controller is now calibrated.

   Note: If the computed correction factor is greater than 110% or less than 90%, the “Calibration Out of Range” error message displays and the calibrate cycle is ignored.

Clear Controller Memory

A quick way to clear out all of the Jobs from the controller is to clear its memory. All of the controllers other internal settings like correction factor and stopping reaction time will be preserved.

To reset the memory on the controller,

6. Turn the device off, then back on.

7. Press **[5]** Key while the startup screen is showing.

Caution: Clearing the controller memory clears out *all* jobs that are programmed into your controller!

Chapter 4: Administrative Screens and Functions

Production Totalizer

Total production of the machine is counted by the controller. You can view the production counter by pressing and releasing the **[Calibration]** Key  until the screen title displays “PRODUCTION-1”.

> **Note:** To reset the totalizer to zero press **[Clear]** Key  . When the prompt “ENTER CODE TO CLEAR TOTAL” displays; enter `1984` and press **[Enter]** Key  .

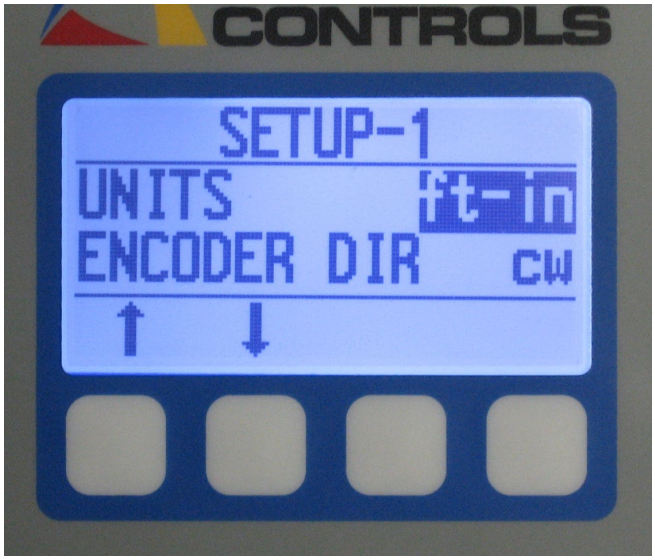
Set Up

The Set Up screen is used to change the units of measure (mm, in, ft-in) as well as the encoder direction (clockwise (cw) or counter clockwise (ccw)).

Units of Measure

1. Hold the **[9]** Key while turning the device off and back on.
2. Release **[9]** Key when the screen title displays “SETUP-1”.

3. Press the white button below the up or down arrows to move between the Units and Encoder Direction fields.



4. With the UNITS field highlighted, press any number Key to scroll between mm, in and ft-in.

5. When the appropriate unit is displayed, press **[Enter]** Key.

Encoder Direction

1. With the ENCODER DIR field highlighted, press any number key to scroll between cw and ccw.

2. With the appropriate direction displayed, press **[Enter]** Key.

3. Press **[Status]** Key to exit the Set Up screen.

Reset Calibration

Length calibration is accomplished using an internal parameter called Correction Factor. The Correction Factor is used to compensate for wear and manufacturing tolerances in the encoder wheel and variances in material surfaces.

Calibration is covered in the Length Calibration section of Chapter 3.

The calibration can be reset to its default value. Press and release the **[Calibration]** key until the screen title displays “CALIBRATE-7”.

Note: To reset the Correction Factor to 100%, press **[Clear]**  . When the prompt "ENTER CODE TO CLEAR TOTAL" displays, enter `1984` and press **[ENTER].**

Reaction Time

Stopping Reaction is an internal parameter that the controller calculates over the span of several parts. It is used to compensate for the time it actually takes for the machine to stop after the controller tells it to stop.

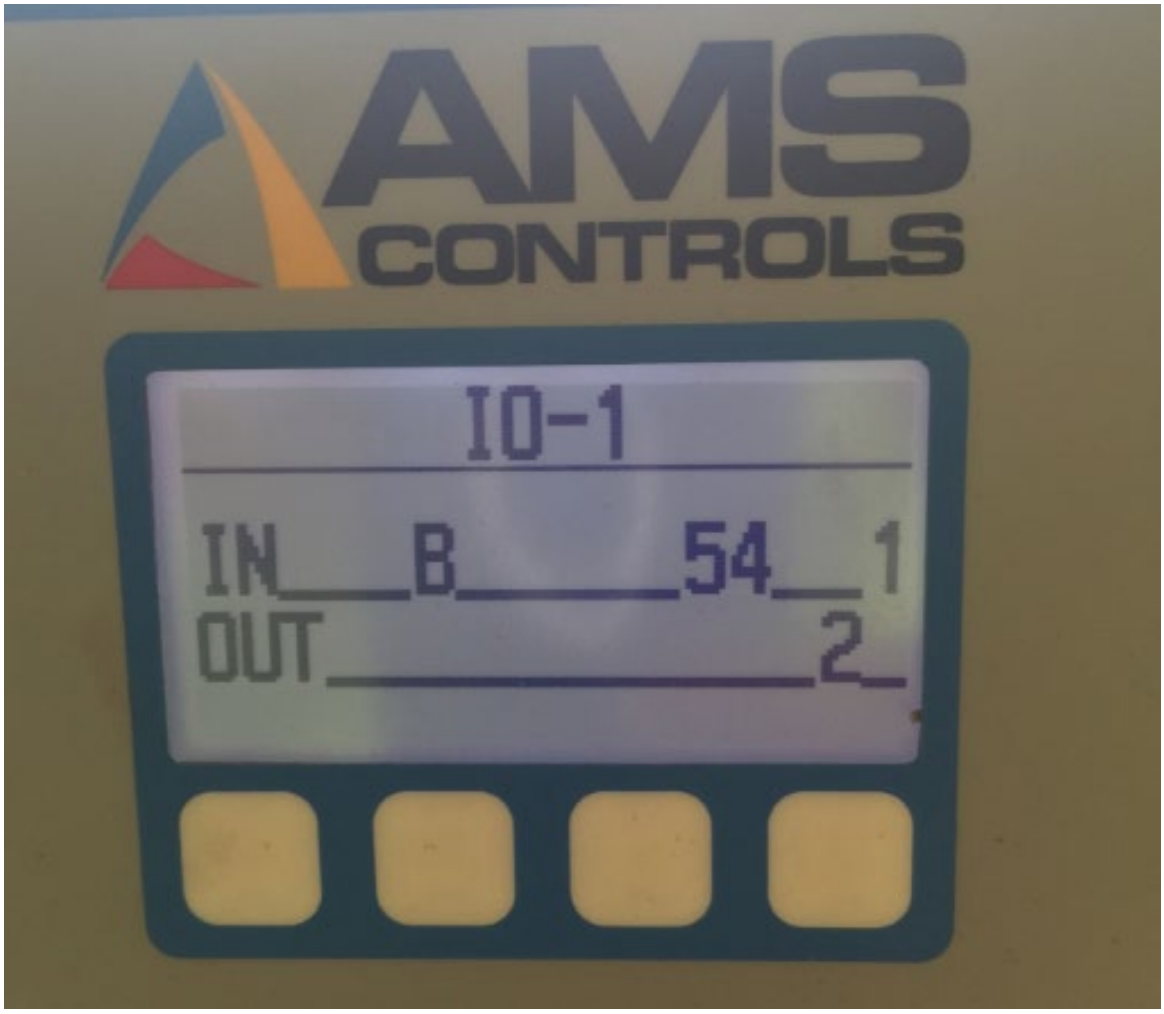
The Stopping Reaction can be viewed by pressing and releasing the **[Calibration]**  key until the screen title displays "REACTION-1".

Note: To reset the reaction time to zero, press **[Clear]**  . When the prompt "ENTER CODE TO CLEAR REACTION" displays, enter `1984` and press **[ENTER].**

Chapter 5: Diagnostic IO Screen

IO Screen

Total production of the machine is counted by the controller. You can view the production counter by pressing and releasing the **[Calibration]** Key until the screen title displays “IO-1”.



This screen is helpful to diagnose issues with Inputs, Outputs and some of the Manual and Automatic Operation buttons and switches. Each input, output, switch, or button is assigned a number or letter that will be displayed if that input, output, switch, or button is active. The function of each input or output is defined in the supplied table. The function of the outputs change depending on the software model.

IO	Input	Output (B Model)	Output (All other Models)
1	Shear Up(TOS)	NA	Fast Fwd
2	Knife Up	Brake	Shear Down
3	Shear Down(BOS)	Clutch(FWD)	Reverse
4	Remote Run	Shear Down	Shear Up
5	E Stop Status	NA	Slow
6	Shear Button	NA	NA
7	Run Button	NA	NA
8	Halt Button	NA	NA
9	Jog FWD Switch	NA	NA
A	Jog Rev Switch	NA	NA
B	Jog Off Switch	NA	NA

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