PROGRAMMABLE BACKGAUGE

Operating Instructions

AMADA

PROG.B/G-E04-198609

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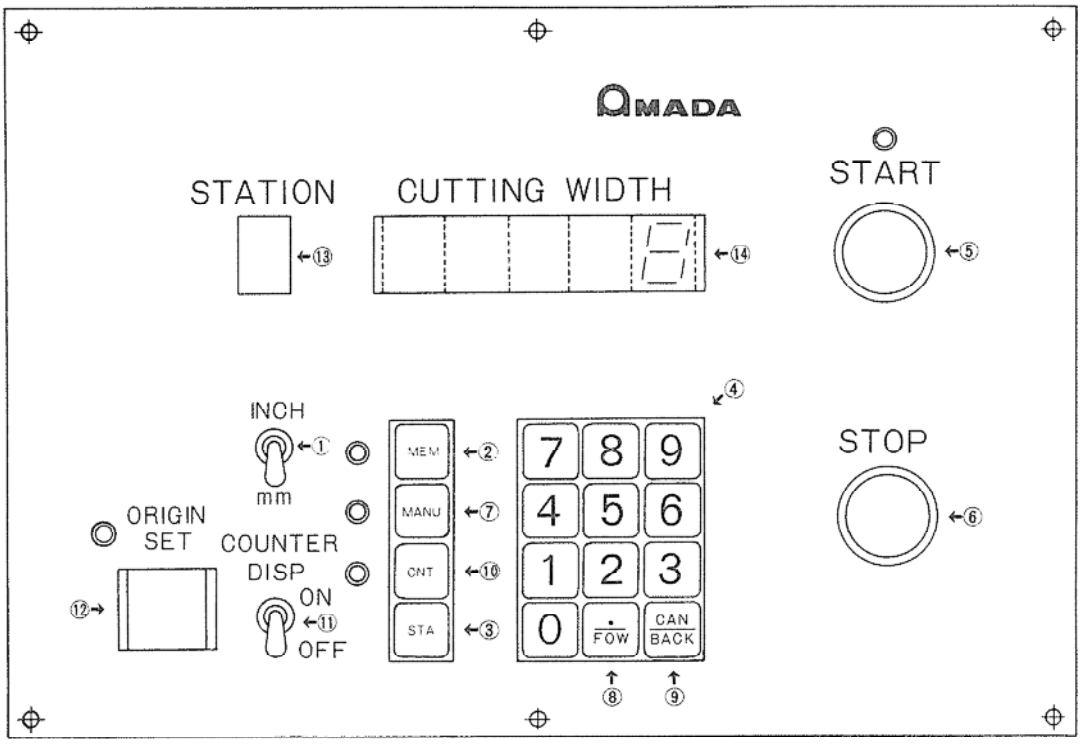
CONTROL DESCRIPTION



1. INCH-mm SELECT switch

Set this switch to INCH when entering the backgauge position in inches and to mm when entering it in millimeters.

NOTE: Do not move this switch when the ORIGIN SET LED is blinking or when the MEM LED is on. If the switch is moved, the ORIGIN SET, MEM, and START LEDs will blink simultaneously, all numerical inputs will be erased, and an error code will appear on the CUTTING WIDTH display.

2. MEM button

This button is used to set the backgauge position or check a backgauge position that has already been set in memory. To set or check the position, push this button. When the MEM LED lights, a program number will appear on the STATION display, and the backgauge position stored at that program number will be shown on the CUTTING WIDTH display.
When a new backgauge position is entered through the numeric keypad, the position which had previously been stored will be cleared and the new position will be stored in memory and shown on the CUTTING WIDTH display. A total of nine backgauge positions can be set in memory by selecting the program numbers with the STA button and then entering the positions in the respective program numbers.

After the backgauge position has been entered, push the MEM button again. The MEM LED will go off and the current position of the backgauge will be shown on the CUTTING WIDTH display. If the backgauge position that has been entered is outside the movement range, the ORIGIN SET, MEM, and START LEDs will blink simultaneously, the program number where the out-of-range position has been stored will be shown on the STATION display, and an error code will be shown on the CUTTING WIDTH display. To clear the error, press the $\frac{\text{CAN}}{\text{BACK}}$ key.

When the START button is pushed after the backgauge position has been entered, the backgauge will automatically move to the position entered in the program number shown on the STATION display. The MEM LED will go off and the backgauge position will be shown on the CUTTING WIDTH display. If the position entered in memory is outside the movement range, the backgauge will not move and an error code will appear on the CUTTING WIDTH display.

NOTE: If the COUNTER DISP switch is turned ON before turning on the MEM LED, backgauge positions cannot be entered in memory.

3. STA button

This button is used to select the desired program number. When the STA button is pushed with the MEM LED lighted, the program number shown on the STATION display will advance one count and the backgauge position stored in the new program number will be shown on the CUTTING WIDTH display. If the STA button is pushed when the MEM LED is off and the ORIGIN SET LED is not blinking (and when the backgauge is not moving and error codes are not appearing), only the program number will change.

4. Numeric keypad

These keys are used to enter backgauge positions, parameters, etc. into memory.

5. START button

When this button is pushed, the backgauge will move to the position stored in the program number shown on the STATION display. The numbers on the CUTTING WIDTH display will follow the backgauge movement, and the START LED will blink. When the backgauge reaches the programmed position, the START LED will stay on.

6. STOP button

If this button is pushed while the backgauge is moving to the programmed position, the backgauge will stop immediately, and the START LED will go off.

7. MANU button

This button is used to move the backgauge manually. When the $\frac{\cdot}{\text{FOW}}$ key and the MANU button are pressed at the same time, the backgauge will move forward. When the $\frac{\text{CAN}}{\text{BACK}}$ key and the MANU button are pressed at the same time, the backgauge will move backward. When either the key or the button is released, the backgauge will stop.

8. $\frac{\cdot}{\text{FOW}}$ key

This key has two functions:

(a) It inserts a decimal point when backgauge positions are being entered into memory.

(b) It moves the backgauge forward when both it and the MANU button are pressed at the same time. The backgauge stops when either the key or the button is released.

9. $\frac{\text{CAN}}{\text{BACK}}$ key

This key has four functions:

(a) It resets backgauge position numbers to zero when an entry error has been made.

(b) It moves the backgauge backward when it and the MANU button are pressed at the same time. The backgauge stops when either the key or the button is released.

(c) It clears error codes (alarm state).

(d) It resets the stroke count to zero when the CNT LED is on. This function is effective only when the ORIGIN SET LED is not blinking, the MEM LED is off, and when no error code is being displayed.

10. CNT button

When this button is pushed and the CNT LED lights, the number of cutting strokes will be counted. The count increases each time the ram makes its downward stroke up to a maximum of 99,999 counts. The number of cutting strokes will be shown on the CUTTING WIDTH display by turning the COUNTER DISP switch to ON. When the CNT LED is on, pressing the $\frac{\text{CAN}}{\text{BACK}}$ key will reset the stroke count to zero.

NOTE: The number of cutting strokes is not counted and the count cannot be reset to zero when the ORIGIN SET LED is blinking, the MEM LED is on, or when an error code is being displayed.

11. COUNTER DISP switch

When this switch is set to ON, the number of cutting strokes will be shown on the CUTTING WIDTH display if the ORIGIN SET LED is not blinking and the MEM LED is off.

NOTE: When the COUNTER DISP switch is ON, the origin setting and the backgauge position setting cannot be done.

12. ORIGIN SET button

This button is used when the origin setting needs to be corrected due to the difference between the actual backgauge position and the position shown on the CUTTING WIDTH display. The button has a hinged cover so that it cannot be pushed inadvertently during machine operation.

13. STATION display

This display shows the current program number, from 1 to 9.

14. CUTTING WIDTH display

This display indicates the backgauge position, error codes, stroke count, and backgauge movement parameters.

OPERATION

ORIGIN SETTING

When the actual backgauge position differs from the position shown on the CUTTING WIDTH display, perform the origin setting as follows:

(1) Set COUNTER DISP switch to OFF.

↓

(2) Push ORIGIN SET button. ..... The ORIGIN SET LED blinks.

↓

(3) Enter actual backgauge position through numeric keypad. ..... The new position is shown on the CUTTING WIDTH display.

↓

(4) Push ORIGIN SET button again. ..... The ORIGIN SET LED stays on, indicating that the origin setting has been completed.

NOTE: If the position entered is outside the movement range, the ORIGIN SET, MEM, and START LEDs will blink simultaneously and an error code will appear on the CUTTING WIDTH display. To clear the error, press the $\frac{\text{CAN}}{\text{BACK}}$ key, then start with step (2).

CAUTION: When the backgauge was moved manually with the power turned OFF, be sure to perform the origin setting.

BACKGAUGE POSITION SETTING

To enter the backgauge position and to move the backgauge to the programmed position, proceed as follows:

(1) Set COUNTER DISP switch to OFF.

(2) Push MEM button. ..... The MEM LED lights.

(3) Enter backgauge position through numeric keypad. ..... The new position is shown on the CUTTING WIDTH display.

[Entering some backgauge positions]

(4) Push STA button. ..... The program number advances one count.

(5) Repeat steps (3) and (4) as required. ..... A maximum of 9 positions can be entered.

(6) Push MEM button again. ..... The MEM LED goes off and the CUTTING WIDTH display shows the current position of the backgauge.

NOTE: If the position entered is outside the movement range, the ORIGIN SET, MEM, and START LEDs will blink simultaneously, the program number in which the out-of-range position has been entered will be shown on the STATION display, and an error code will be shown on the CUTTING WIDTH display. To clear the error, press the $\frac{\text{CAN}}{\text{BACK}}$ key, then start with step (2).

(7) Push START button. ..... The backgauge moves to the position stored in the program number shown on the STATION display. The numbers on the CUTTING WIDTH display follow the movement of the backgauge, and the START LED blinks until the backgauge reaches its programmed position. The START LED stays on to indicate that the backgauge has been positioned properly.

PROGRAM RECALL

To move the backgauge by recalling the backgauge position stored in memory, proceed as follows:

(1) Push MEM button. ..... The MEM LED lights.

(2) Push STA button to select program number in which required position has been stored. ..... The program number selected is shown on the STATION display, and the backgauge position stored at that program number is shown on the CUTTING WIDTH display.

(3) Push START button. ..... The MEM LED goes off, and the backgauge moves to the position shown on the CUTTING WIDTH display.

MANUAL OPERATION

To move the backgauge manually, proceed as follows:

[Forward] ..... Press the $\frac{\bullet}{\text{FOW}}$ key while pushing the MANU button. Release either the key or the button to stop the backgauge.

[Back] ..... Press the $\frac{\text{CAN}}{\text{BACK}}$ key while pushing the MANU button. Release either the key or the button to stop the backgauge.

BACKGAUGE RELEASE OPERATION

To release the backgauge on the machine equipped with a manual or automatic release backgauge, proceed as follows:

(1) Set COUNTER DISP switch to OFF.

(2) Push MEM button. ..... The MEM LED lights.

(3) Enter any number from 1500.0 to 1600.0 when INCH-mm SELECT switch is set to mm and from 59.100 to 62.900 when INCH-mm SELECT switch is set to INCH.

(4) Push START button. .....

Automatic release backgauges

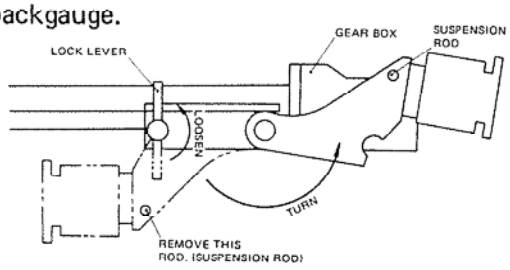
The backgauge moves backward and is released automatically. "END" appears on the CUTTING WIDTH display, indicating that the backgauge has been released.

Manual release backgauges

The backgauge moves backward. After the backgauge stops and "END" appears on the CUTTING WIDTH display, release the backgauge by hand.

To release the backgauge, proceed as follows:

1. Support the backgauge by hand, then loosen the lock lever located on each end of the backgauge.
2. Remove the suspension rod, then turn the backgauge as shown in the figure below.
3. Install the suspension rod again to hold the backgauge.



Warning: When loosening the lock lever, be sure to support the backgauge by hand.

ERROR MESSAGES

When an error occurs, the ORIGIN SET, MEM, and START LEDs will blink simultaneously and an error code will appear on the CUTTING WIDTH display.

CODE	MEANING	REMEDY
4E00	Backgauge position entered its greater than movement range.	Press CAN/BACK key, then perform backgauge position setting or origin setting again.
4E01	Backgauge position entered is smaller than minimum range.	
4E02	Origin setting number is not entered in memory.	Press CAN/BACK key, then perform origin setting.
4E03	START button is pushed when indicated backgauge position is zero.	Press CAN/BACK key, then perform backgauge position setting.
4E04	START button is pushed with origin setting number not entered.	Press CAN/BACK key, then perform origin setting.
4E06	INCH-mm SELECT switch is moved when ORIGIN SET LED is blinking or when MEM LED is lighting.	Press CAN/BACK key, then perform origin setting and/or backgauge position setting again.
3E00	Maximum range overtravel	Manually move backgauge within movement range, then press CAN/BACK key. If error does not clear, contact AMADA. (Rotary encoder wiring and limit switches need to be checked.)
3E01	Minimum range overtravel	
3E02	Maximum and minimum range overtravel	Contact AMADA. (Rotary encoder wiring and limit switches need to be checked.)
0E00	ROM failure	Contact AMADA. (Control circuit needs to be checked and ROM needs to be replaced.)
0E01	RAM failure	Contact AMADA. (Control circuit needs to be checked and RAM needs to be replaced.)
0E02	Incorrect data	Press CAN/BACK key. If error will not clear, contact AMADA. (RAM and batteries need to be replaced.)
0E05	Power failure during origin setting	Press CAN/BACK key, then perform origin setting again.
0E07	Power failure while backgauge moving in autopositioning mode	
0E08	Power failure while backgauge moving manually	

CODE	MEANING	REMEDY
0E09	Inching movement faulty	Contact AMADA. (Control circuit needs to be checked and electronic parts need to be replaced.)
0E10	Rotary encoder faulty output	Contact AMADA. (Control circuit and rotary encoder wiring need to be checked.)
0E12	Rotary encoder data faulty	Press CAN/BACK key. If error will not clear, contact AMADA. (Batteries need to be replaced.)
0E15	The power is down instaneously.	Press Machine's DRIVE switch.

NOTE: "0E02" or "0E15" may be displayed occasionally on the time of installation and changing the batteries or RAM.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
1. No power to control unit	a. Blown power fuse	• Replace fuse.
2. Position data cannot be entered, backgauge does not move	a. Blown control fuse b. Program memory faulty c. Control PC board faulty	• Replace fuse. • Contact AMADA. (ROM needs to be replaced.) • Contact AMADA. (PC board needs to be replaced.)
3. Backgauge hunts around near programmed position	a. Parameter #3 incorrect b. Backgauge motor brake worn	• Contact AMADA. (Parameter needs to be reset.) • Contact AMADA. (Brake gap needs to be adjusted.)
4. Rotary encoder faulty output (0E10)	a. Main motor stops. b. Backgauge is being reversed. (In case with manual release backgauge) c. Return conveyor stops or it is supporting the material. (In case with return conveyor) d. Rotary encoder faulty	• Repair the malfunction, then press CAN/BACK key to clear the error and perform origin setting. • If error cannot be clear, contact AMADA. (Rotary encoder needs to be repaired.)

SPECIFICATIONS

Input method	Numeric keypad
Min. input unit	0.1 mm/0.001 in.
Movement range	700 mm backgauge: 5 mm (0.197 in.) to 700 mm (27.559 in.) 1000 mm backgauge: 5 mm (0.197 in.) to 1000 mm (39.370 in.)
Max. movement speed	50 Hz: 725 mm (28.54 in.)/minute 60 Hz: 855 mm (33.66 in.)/minute
Position detector	Rotary encoder (10 pulses per rev.)
Drive motor	3-phase, induction type w/brake, 4P, 0.4 kW (0.75 kW . . . w/auto-release function)
Power requirement	200 VAC, +10%, −15%, 50/60 Hz
Ambient conditions	Temperature: 0 to 40° C (32 to 104° F) Relative humidity: 10 to 90%

PARAMETER CHECKING AND SETTING

When testing the machine, performing periodic inspections, or after battery replacement, check or set the parameters as follows:

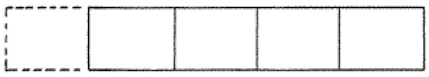
1. Set the COUNTER DISP switch to OFF.
2. Push the MEM button. The MEM LED will light.
3. Press numeric key 5 while pushing the STOP button. The ORIGIN SET LED will blink.
4. With the STA button select program numbers 3 and 9. When program number 3 is selected, a parameter (parameter #3), which controls the inching movement of the backgauge, will be shown on the CUTTING WIDTH display. When program number 9 is selected, a parameter (parameter #9), which sets the backgauge movement range, will be displayed.

   NOTE: After the batteries are replaced, these parameters will not be displayed.
5. To change or set parameters, enter the new parameter through the numeric keypad.
6. Push the MEM button. The MEM LED will go off and the ORIGIN SET LED will stay on. Parameter checking and setting are finished.

CAUTION: Never enter incorrect parameters. Incorrect parameters are not detected as errors, and cause the backgauge to operate erratically or not at all.

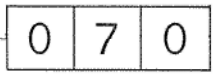
PARAMETERS

Parameter #3

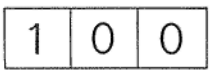


(Set this parameter so that inching movement of backgauge is approx. 0.1 mm.)

Parameter #9



..... For 700 mm backgauge



..... For 1000 mm backgauge

... Mechanical shear without backgauge release mechanism

... Hydraulic shear with manual or automatic release backgauge, and Mechanical shear with automatic release backgauge

AMADA COMPANY, LTD.
200, Ishida, Isehara , Kanagawa , JAPAN