

**HSM-DUCTOR  
PNEUMATIC DUCTOR  
CONTROL SYSTEM  
KEYPAD QUICK REFERENCE**

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01/2004

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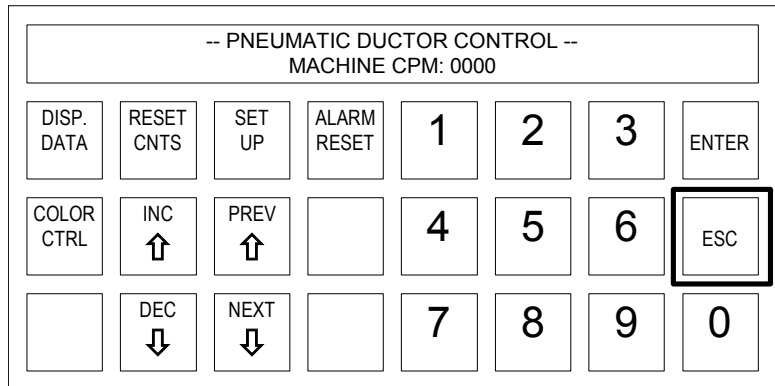


## CONVENTIONS USED IN THIS MANUAL

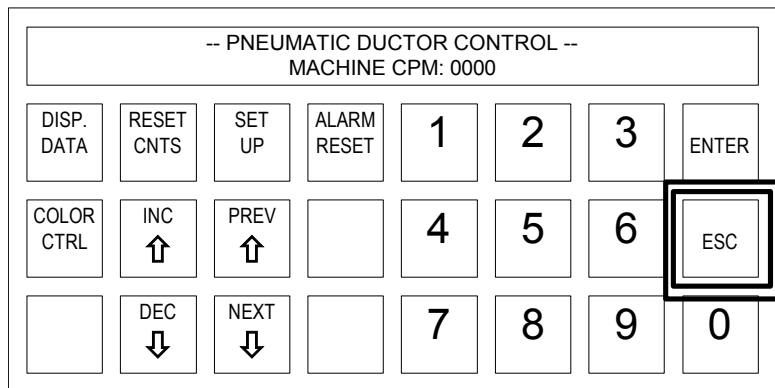
This manual is provided as a quick reference for entering parameters through the HSM-DUCTOR keypad. For complete details on the parameters that can be set through the HSM-DUCTOR keypad or for additional information on the HSM-DUCTOR in general, refer to the HSM-DUCTOR User’s Manual.

The following conventions are used through-out this manual.

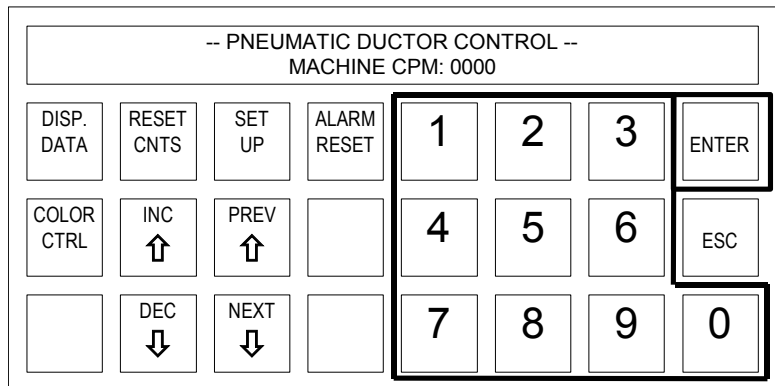
- 1) This indicates to depress that key, one time.



- 2) This indicates to press that key, two or more times as directed.



- 3) Indicates to enter a numeric value on the numeric keypad. Enter the desired number by depressing the corresponding numeric keys and then press the “ENTER” key to enter the number. If keypad entry error is made while a number is being entered, simply press the “ESC” key. The number will revert back to the original value at which time the correct number can be re-entered.



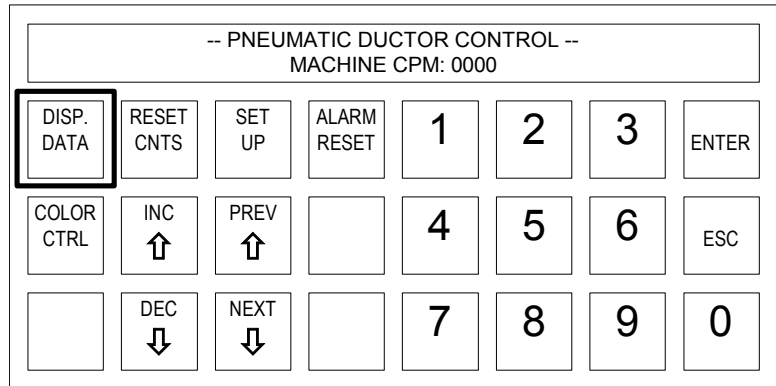
## SECTION 1 VIEWING CYCLIC DUCTOR COUNTS

The “Display Data” menu displays the ductor cycling counts accumulated for each individual ink station. This selection displays “Live” data, 2 stations at a time.

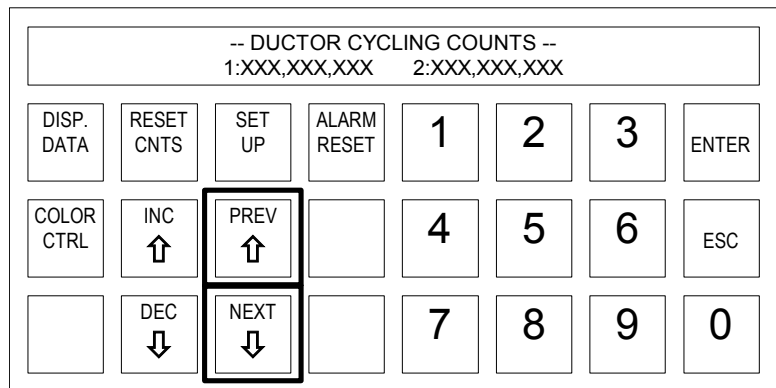
To display the Cyclic Ductor Counts, perform the following:

- 1) Press the “Display Data” key.

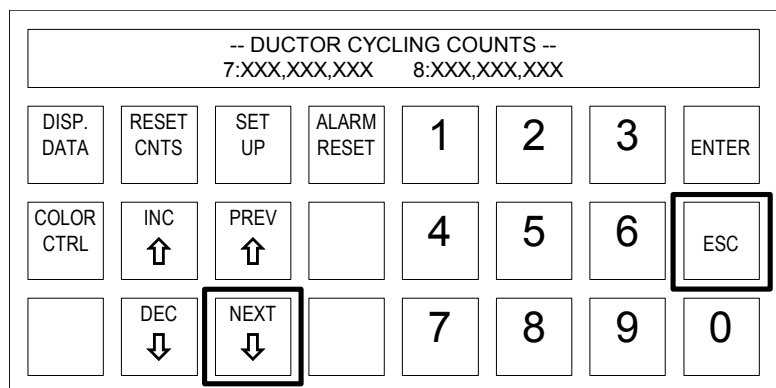
**Note:** This key can be depressed when not viewing the main default display.



- 2) The “Ductor Cycling Counts” for the first two stations is displayed on the first screen. Press the “NEXT” key to view the cycling counts for the next 2 stations or to advance through all the stations. Press the “PREV” key to retard back to the previous display.



- 3) Once the counts for all stations have been observed, the display data menu will exit back to the main display screen. Press the “ESC” key to return to the main display at any time.



## SECTION 2

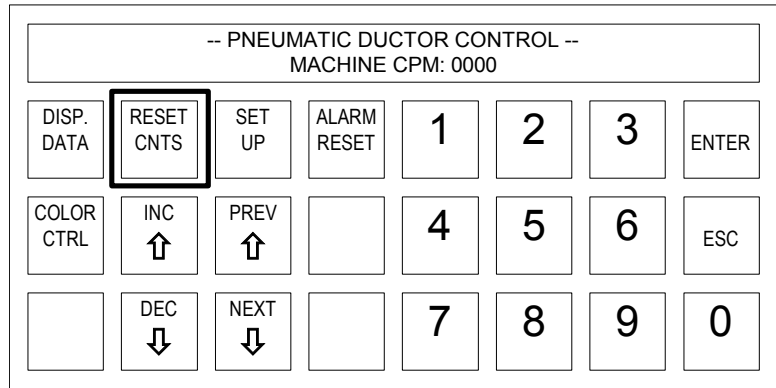
# RESETTING CYCLIC DUCTOR COUNTS

The “Reset Counts” menu allows the user to reset the ductor cycling counts individually by selecting the station number or all stations by pressing the zero key.

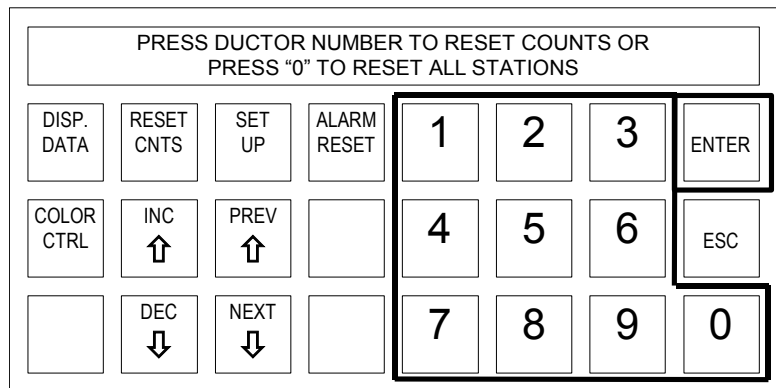
To “Reset” the cyclic ductor counts, perform the following:

- 1) Press the “Reset Counts” key.

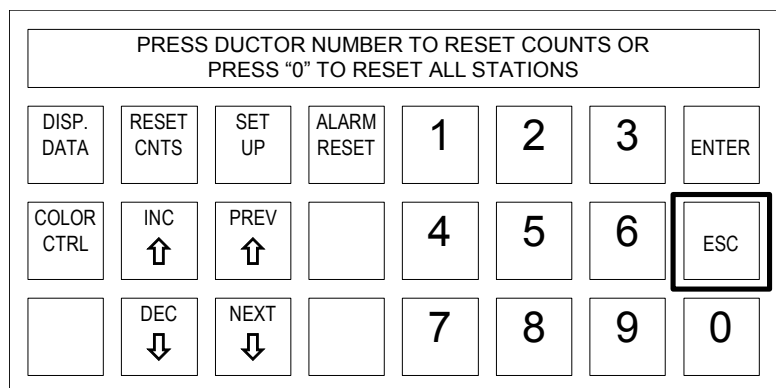
**Note:** This key can be depressed when not viewing the main default display.



- 2) Using the numeric keypad select the station number of the ductor to be reset, or press the [0] key to automatically reset all ductor cycling counts.



- 3) Press the “ESC” key to exit this menu and return to the main display without resetting any ductor counts.



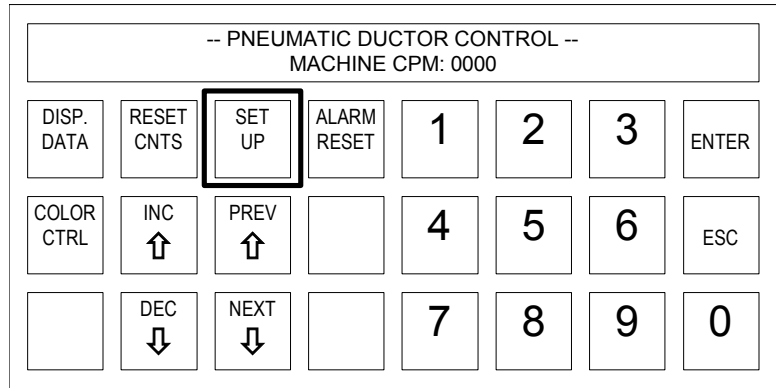
## SECTION 3 SET DUCTOR MAXIMUM CYCLE DURATION

The Maximum Cycle Duration is set to 1/10<sup>th</sup> of a can resolution. The range of this parameter is from 140 to 650 and defines the upper limit or the longest amount of time between ductor cycles. Care should be taken not to set this parameter too low, as this would restrict the operators range of adjustment. The “Cycle” duration is set individually for each ink station and is the rate at which ink is transferred from the fountain roll. Therefore if the desired maximum cycle duration is 35.0 cans, then enter the number 350.

To set the ductor “Maximum Cycle Duration”, perform the following:

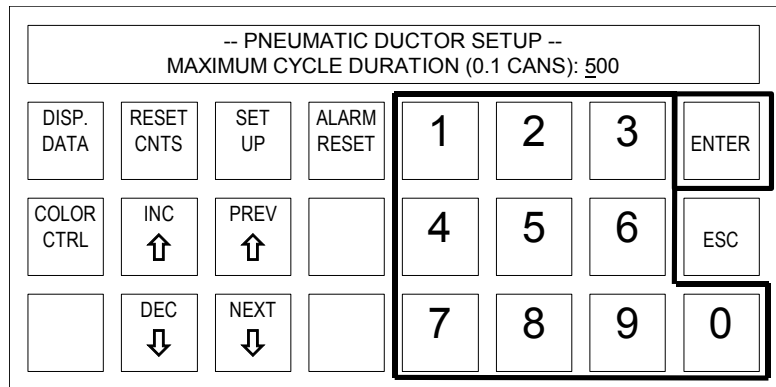
- 1) Press the “Set Up” key,

**Note:** The “Set Up” key is only enabled when the “Set-up Enable” input is ON.

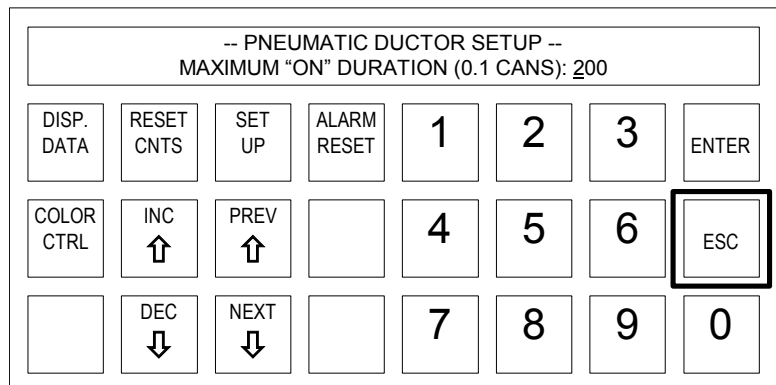


- 2) On the numeric keypad, enter the desired “Maximum Cycle Duration” in 0.1 cans resolution and press “ENTER”.

**Note:** The range is 140 to 650 (0.1 cans).



- 3) The “Maximum Cycle Duration” is now set. Press “ESC” to return to the main display.



## SECTION 4

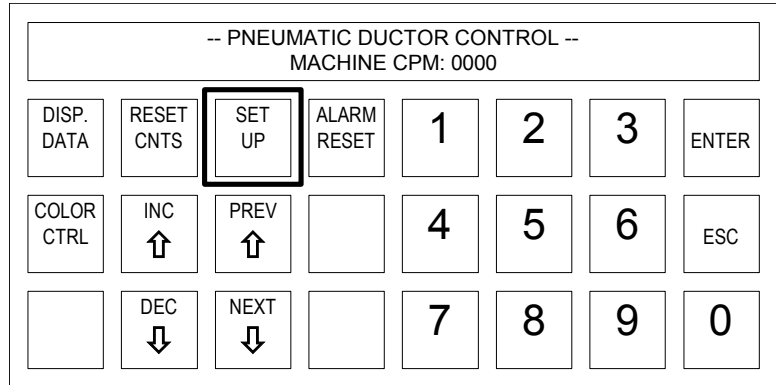
# SET DUCTOR MAXIMUM ON DURATION

The maximum “On” duration is set to 1/10<sup>th</sup> of a can resolution. The range of this parameter is from 0 to 200 and defines the upper limit or the longest amount of time the ductor roll can be in contact with the fountain roll. The “On” duration is set individually for each ink station and is the amount of time the ductor roll is in contact with the fountain roll.

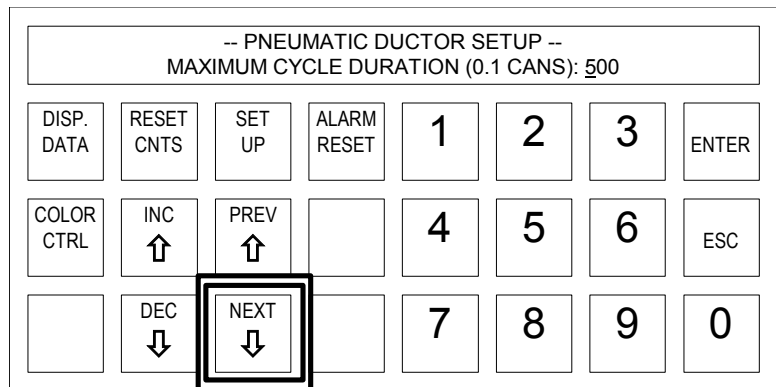
To set the “Maximum ON Duration”, perform the following:

- 1) Press the “Set Up” key.

**Note:** The “Set Up” key is only enabled when the “Set-up Enable” input is ON.

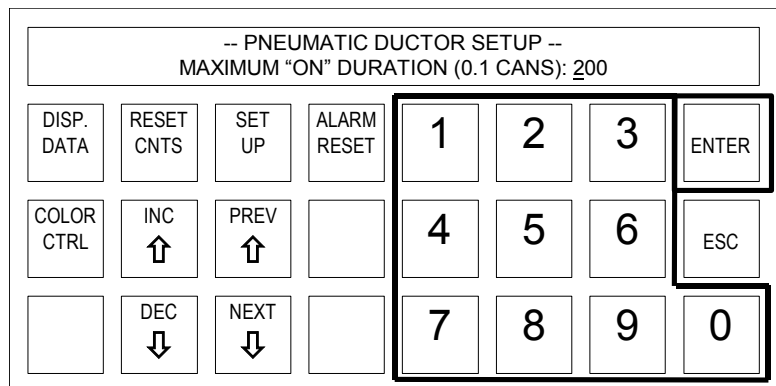


- 2) Press the “NEXT” key until the “Maximum ON Duration” prompt is displayed.



- 3) On the numeric keypad, enter the desired “Maximum ON Duration” in 0.1 cans resolution and press “ENTER”.

**Note:** The range is 0 to 200 (0.1 cans).



## SECTION 4 SET DUCTOR MAXIMUM ON DURATION

- 4) The “Maximum ON Duration” is now set. Press “ESC” to return to the main display.

-- PNEUMATIC DUCTOR SETUP -- RESPONSE TIME COMPENSATION (msec): 25							
DISP. DATA	RESET CNTS	SET UP	ALARM RESET	1	2	3	ENTER
COLOR CTRL	INC ↑	PREV ↑		4	5	6	ESC
	DEC ↓	NEXT ↓		7	8	9	0

## SECTION 5

# SET DUCTOR RESPONSE TIME COMPENSATION

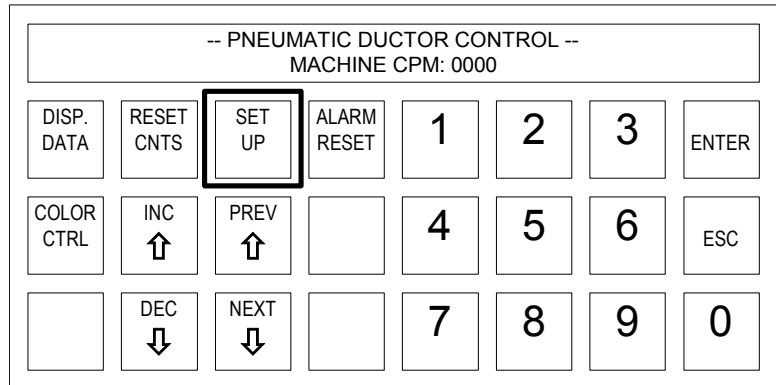
The response time compensation parameter is used to adjust the “On” duration based on the difference between the “ON” and “off” response time of the ductor solenoid. As an example, if the “ON” response time were 40 msec. and the “off” response time was 15 msec., then this parameter would need to be set to 25 msec.

The “ON” response time is defined as the time the ductor is activated to the time it comes in contact with the fountain roll. The “off” response time is the time the ductor is deactivated to the time it lifts off of the fountain roll. If the optional feedback sensors are to be used, this parameter should be set to zero.

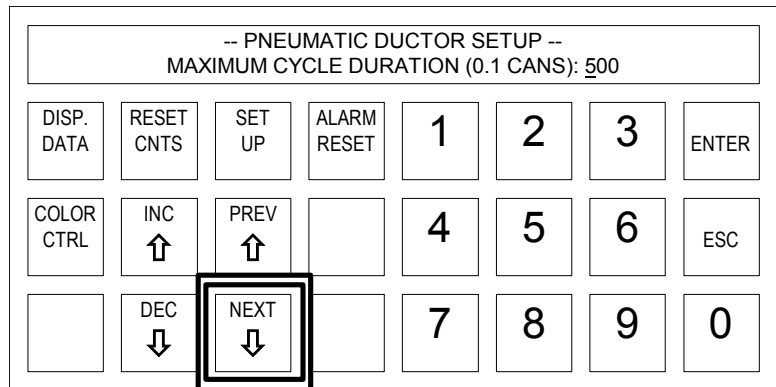
To set the “Response Time Compensation”, perform the following:

- 1) Press the “Set Up” key.

**Note:** The “Set Up” key is only enabled when the “Set-up Enable” input is ON.

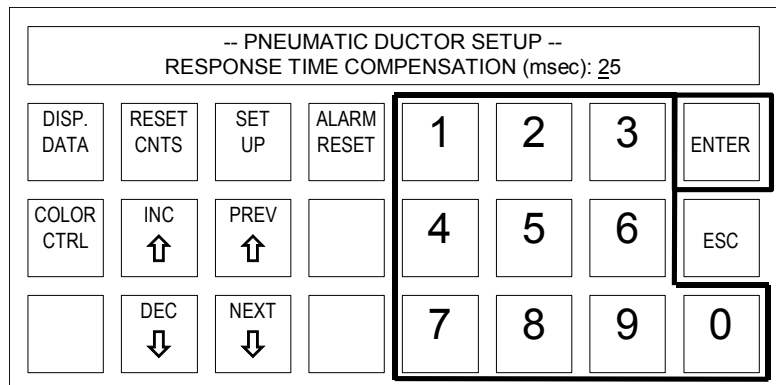


- 2) Press the “NEXT” key until the “Response Time Compensation” prompt is displayed.



- 3) On the numeric keypad, enter the desired “Response Time Compensation” in msec and press “ENTER”.

**Note:** The range is 0 to 65 (msec).



## SECTION 5 SET DUCTOR RESPONSE TIME COMPENSATION

- 4) The “Response Time Compensation” is now set. Press “ESC” to return to the main display.

-- PNEUMATIC DUCTOR SETUP -- COLOR GAIN (CG-100% PER 2000CPM): 100%							
DISP. DATA	RESET CNTS	SET UP	ALARM RESET	1	2	3	ENTER
COLOR CTRL	INC ↑	PREV ↑		4	5	6	ESC
	DEC ↓	NEXT ↓		7	8	9	0

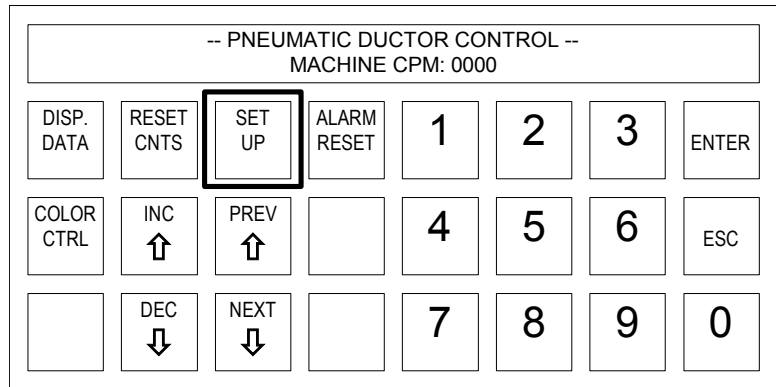
## SECTION 6 SET DUCTOR COLOR GAIN

This parameter allows the color density to be increased proportionately up or down as a function of machine speed. The valid range of this parameter is 50% to 150% per 2000 CPM. When set to 100%, no increase or decrease, as a function of speed will occur. When set to 50%, the color density will drop 50% from 0 to 2000CPM. When set to 150% the color density will increase by 50% from 0 to 2000CPM. This parameter is used to compensate for ink atomization (misting) as a function of speed (higher speed = proportionately higher ink misting).

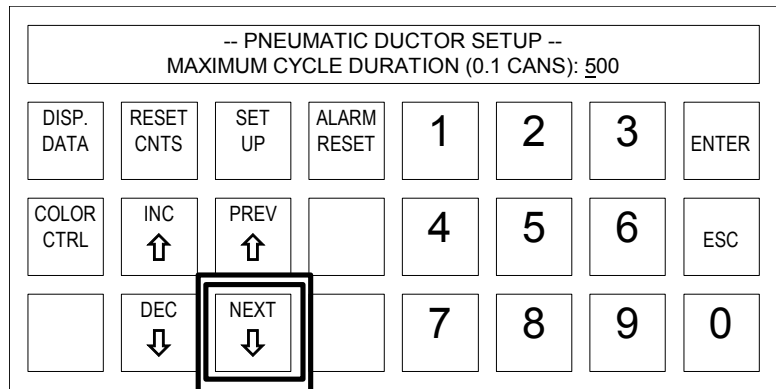
To set the “Color Gain”, perform the following:

- 1) Press the “Set Up” key.

**Note:** The “Set Up” key is only enabled when the “Set-up Enable” input is ON.

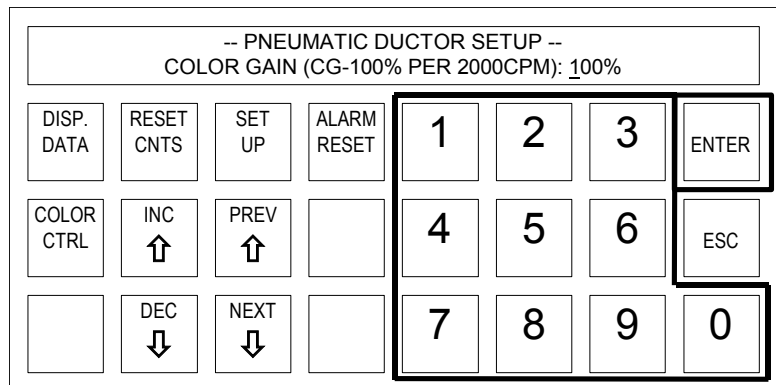


- 2) Press the “NEXT” key until the “Color Gain (CG-100% per 2000cpm)” prompt is displayed.



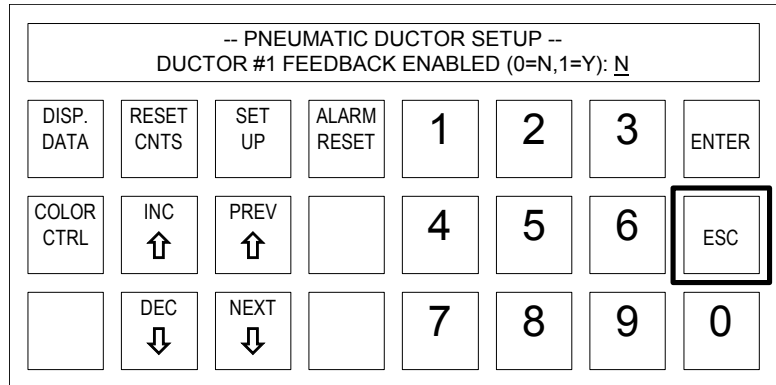
- 3) On the numeric keypad, enter the desired “Color Gain” press “ENTER”.

**Note:** The range is 50% to 150%.



## SECTION 6 SET DUCTOR COLOR GAIN

- 4) The “Color Gain” is now set. Press “ESC” to return to the main display.



## SECTION 7 ENABLE / DISABLE DUCTOR FEEDBACK

The HSM-DUCTOR can interface with sensors mounted on the machine which sense the actuation of the ductors. This provides a feedback from each ductor to verify that the ductor is cycling correctly (air cylinder or solenoid has not failed). These feedback sensors generally are used to sense the ductor actuation arm and must toggle "on" and "off" every time the ductor cycles. This feature is optional and can be individually disabled if the sensors are not installed.

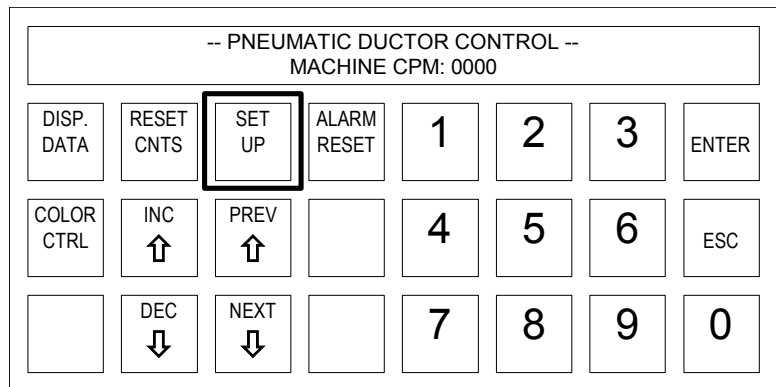
If the ductor feedback sensors are to be used, enable the particular stations that have feedback. If the ductor feedback is not used, disable all stations. This parameter enables the individual feedback faults and should only be enabled when the optional feedback sensors are used. Once enabled, the M4500 will verify that the ductor is cycling properly. If a ductor is not detected as cycling properly, the "Ductor Feedback Fault" is energized, indicating a problem with the ductor cycling control.

If a "Ductor Feedback Fault" does occur, the ductors should be manually activated to verify proper cycling operation, as well as, the sensor for proper feedback operation. The feedback sensor should be set such that it is only "ON" when the ductor is in contact with the fountain roll.

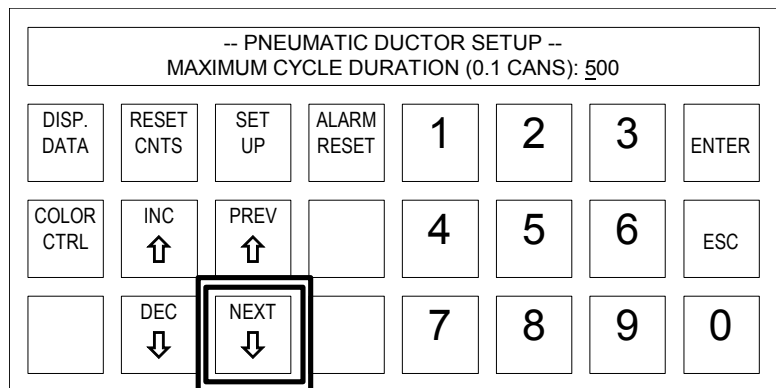
To enable or disable the "Ductor Feedback" option, perform the following:

- 1) Press the "Set Up" key.

**Note:** The "Set Up" key is only enabled when the "Set-up Enable" input is ON.

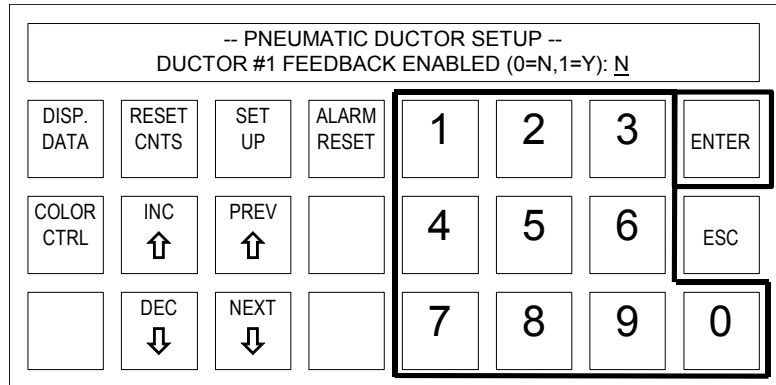


- 2) Press the "NEXT" key until the "Ductor #1 Feedback Enabled" prompt is displayed.

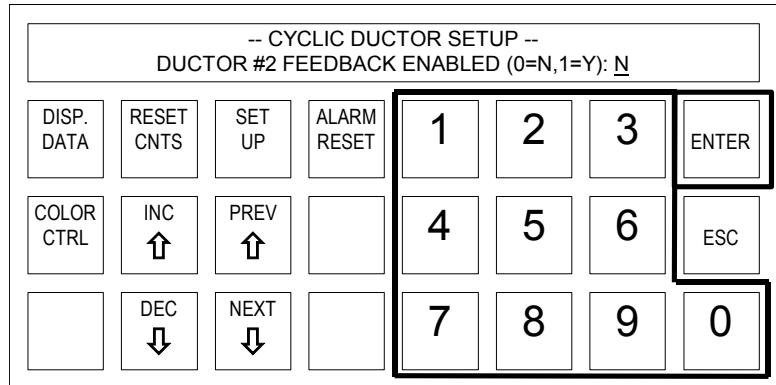


## SECTION 7 ENABLE / DISABLE DUCTOR FEEDBACK

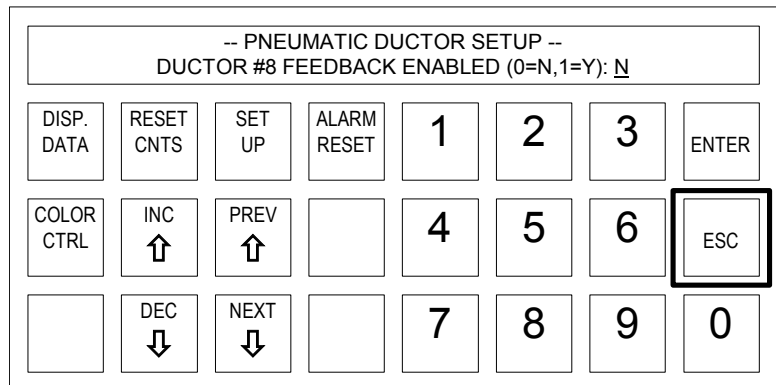
- 3) On the numeric keypad, enter the desired state of the “Feedback” option. Press the [1] key to enable the ductor feedback, press [0] to disable the ductor feedback.



- 4) Continue to set the feedback option for the rest of the ductors.



- 5) The “Ductor Feedback” option is now set. Press “ESC” to return to the main display.

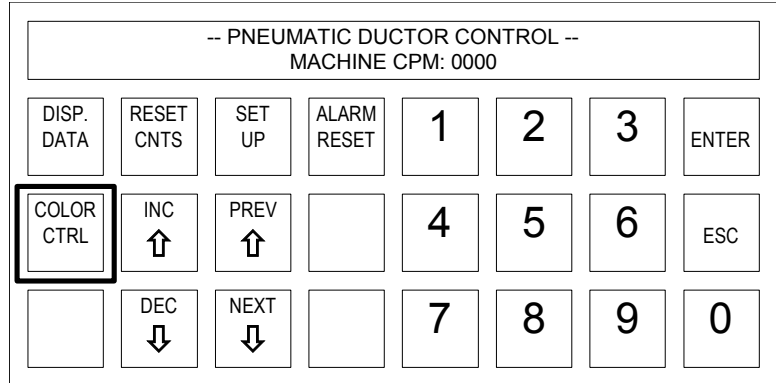


## SECTION 8 SELECTING THE LABEL NUMBER

The current label number defines how much ink will be transferred to the ductor rolls. Once a label has been set-up, it can be recalled the next time the label is run. Changing the label number automatically resets the ductors duty cycle control. The current label number cannot be changed if the decorator is not at zero speed.

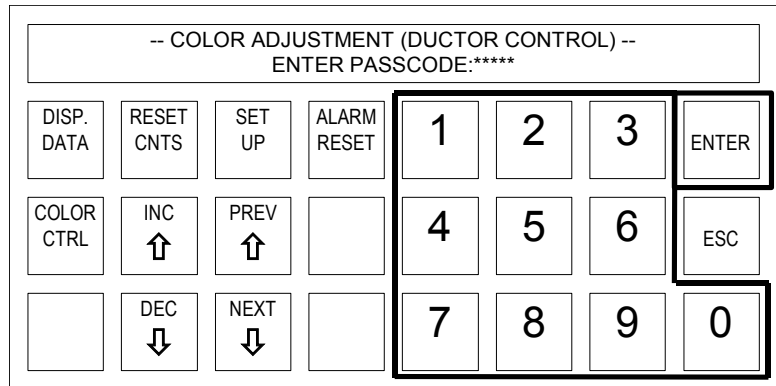
To select a “Label Number”, perform the following:

- 1) Press the “Color Control” key.

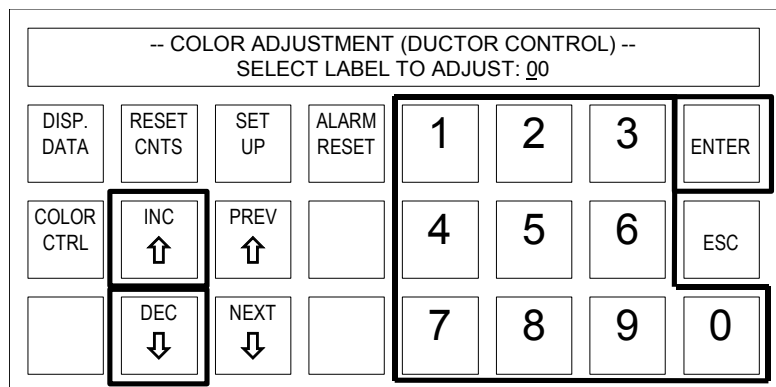


- 2) Enter the 5 digit passcode on the numeric keypad and press “ENTER”.

**Note:** The passcode is set by the user as desired. Refer to the HSM-DUCTOR User’s Manual for details on setting the passcode.

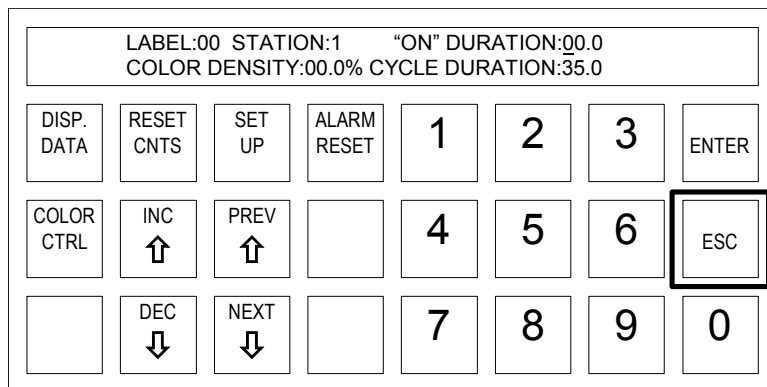


- 3) Use the Numeric keypad to enter the desired label number and press “ENTER” or simply press the “INC” or “DEC” keys.



## SECTION 8 SELECTING THE LABEL NUMBER

- 4) The "Label Number" is now set. Press "ESC" to return to the main display.



## SECTION 9 LIGHT/DARK COLOR ADJUSTMENT

The “On” duration and “Cycle” duration for each ink station can be set individually for each label number. The “On” duration can be viewed as a “Course” adjustment and the “Cycle” duration can be viewed as a “Fine” adjustment. Observe how changing either the “On” duration or “Cycle” duration, changes the relative “Color Density”.

**Note:** If an ink station is not used, simply set its “On” duration to zero to disable the cycling operation.

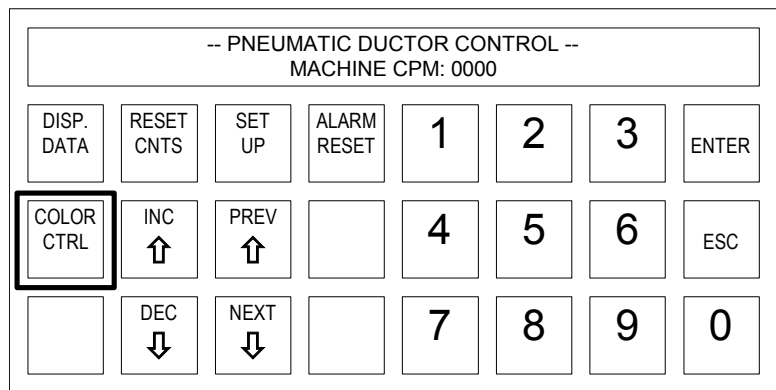
Use the “Color Density” display as an indication of the amount of ink being transferred by the ductor. Different settings of the “On” and “Cycle” durations will achieve the same “Color Density”.

**Note:** To reduce “Light” and “Dark” variations in print between cycle times, adjust both the “On” duration and “Cycle” duration down to achieve the same “Color Density”.

For a new label or existing label that needs color adjustment, perform the following.

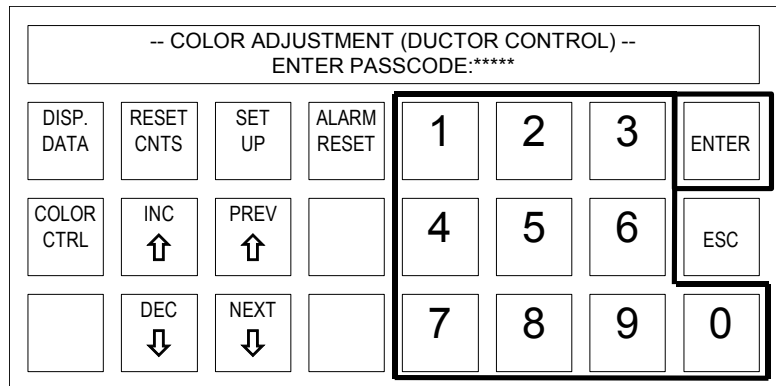
To adjust the either the “On Duration” or the “Cycle Duration”, perform the following:

- 1) Press the “Color Control” key.



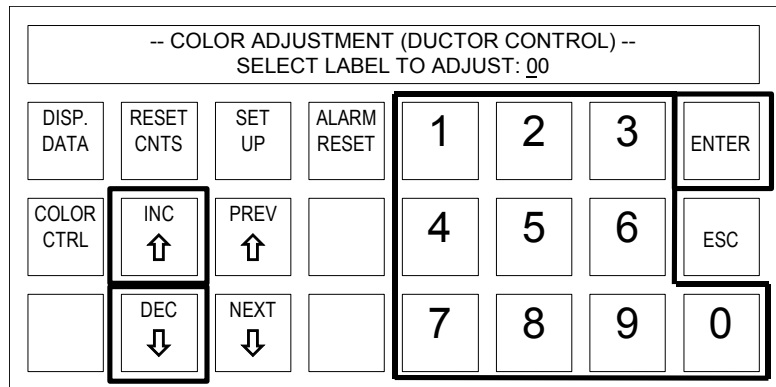
- 2) Enter the 5 digit passcode on the numeric keypad and press “ENTER”.

**Note:** The passcode is set by the user as desired. Refer to the HSM-DUCTOR User’s Manual for details on setting the passcode.

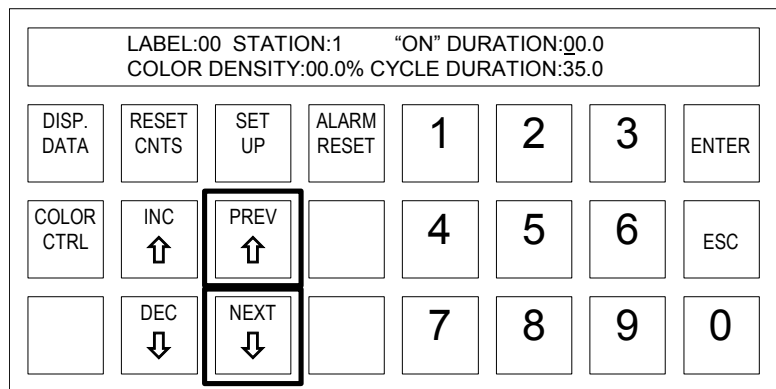


## SECTION 7 ADJUSTING THE INK STATION COLOR CONTROL

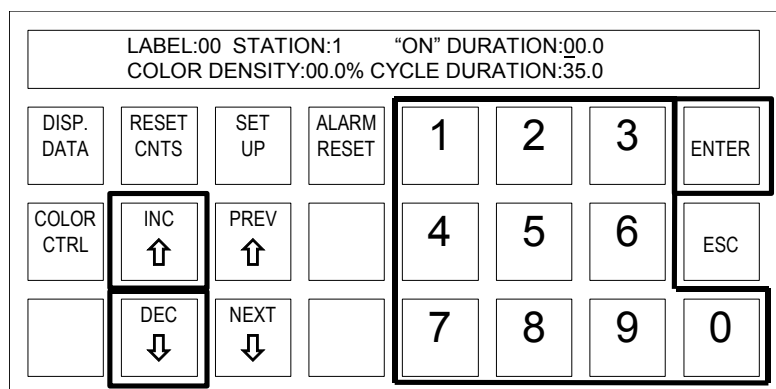
- 3) Use the Numeric keypad to enter the desired label number and press “ENTER” or simply press the “INC” or “DEC” keys.



- 4) Press the “NEXT” or “PREV” keys to select either the “On Duration” or “Cycle Duration” of the desired ink station.



- 5) Use the Numeric keypad to enter the desired value and press “ENTER” or simply press the “INC” or “DEC” keys to change value by one. If either the “INC” key or the “DEC” key is held down, the value will continuously increase or decrease.



## SECTION 9 LIGHT/DARK COLOR ADJUSTMENT

- 6) The “On Duration” or “Cycle Duration” is now set. Press “ESC” to return to the main display, or press the “NEXT” or “PREV” keys to select another ink station to adjust.

LABEL:00 STATION:1 "ON" DURATION:00.0 COLOR DENSITY:00.0% CYCLE DURATION:35.0							
DISP. DATA	RESET CNTS	SET UP	ALARM RESET	1	2	3	ENTER
COLOR CTRL	INC ↑	PREV ↑		4	5	6	ESC
	DEC ↓	NEXT ↓		7	8	9	0