

# ANILAM

## 3000 Commando Setup Utility Manual

## **Warranty**

ANILAM warrants its products to be free from defects in material and workmanship for one (1) year from date of installation. At our option, we will repair or replace any defective product upon prepaid return to our factory.

This warranty applies to all products when used in a normal industrial environment. Any unauthorized tampering, misuse, or neglect will make this warranty null and void.

Under no circumstances will ANILAM, any affiliate, or related company assume any liability for loss of use or for any direct or consequential damages.

The foregoing warranties are in lieu of all other warranties expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

The information in this manual has been thoroughly reviewed and is believed to be accurate. ANILAM, Inc. reserves the right to make changes to improve reliability, function, or design without notice. ANILAM, Inc. assumes no liability arising out of the application or use of the product described herein.

Copyright 2002 ANILAM, Inc.

## Section 1 - Builder Setup

Navigating through the Setup Utility .....	1-1
Reference to Keypad Keys .....	1-1
Password Restricted Parameters .....	1-2
Saving Changes to Setup Parameters .....	1-2
Setting Up Parameters in the Setup Utility .....	1-2
Accessing the Setup Utility Menus .....	1-2
Setting Up the Axis Resolution Parameters .....	1-3
Setting Up Axes for Encoder or Linear Scale .....	1-3
Setting the Linear Encoder Resolution .....	1-4
Setting Line Count for Rotary Encoder .....	1-5
Setting Ballscrew Pitch for the Rotary Encoder .....	1-5
Setting the Ratio Between the Ballscrew Pulley and the Motor/Encoder Pulley .....	1-6
Ballscrew Pulley Parameter .....	1-6
Motor/Encoder Pulley Parameter .....	1-6
Setting the Starting Mark .....	1-7
Setting Linear Compensation .....	1-7
Setting In-Position Tolerance .....	1-8
Setting Encoder Phases to Correct Axis Direction Displayed .....	1-9
Setting Up the Axis Ports .....	1-9
Setting Up Z Axis Type .....	1-10
Activating the General I/O interface .....	1-10
Timeout .....	1-10
Output Function Setup .....	1-10
Configuring Output Ports .....	1-11
Assigning Output Ports to M-Function .....	1-13
Input Function Setup .....	1-14
Configuring Input Ports .....	1-14
Assigning Input Ports to a Function .....	1-15
Commando Input Function Usage .....	1-15
Setting Finish Pulse Timeout .....	1-16
Motion I/O Interface Setup .....	1-17
Active Speed Stages .....	1-17
Slowdown Points .....	1-17
Intermotion Delays .....	1-18
Axis Enable Delays .....	1-18
Speed Outputs .....	1-18
Non-Speed Outputs .....	1-19
Output port .....	1-19
Inputs .....	1-19
Type of Motion Block .....	1-20
Theory of Operation .....	1-20
Manual (Manual) .....	1-20
Manual (Auto) .....	1-20
Auto .....	1-21
Tool Setup .....	1-21
Enabling Tool-Length Offsets .....	1-23
Setting Up the Output Signal to Default .....	1-23
Stopping Program Execution on Tool Commands .....	1-23
Setting Up the Default Tool-table File .....	1-23
Force Spindle Off during Tool Change .....	1-24

---

Miscellaneous Setup .....	1-24
Display Resolution .....	1-24
Startup Mode .....	1-24
Setting Up Language Option .....	1-24
Installing an Updated Version of the Software .....	1-25
DNC Setup .....	1-25
Selecting a DNC Execution Mode .....	1-25
Setting the Buffer Size .....	1-26
Enabling/Disabling Tool Comp and CornerRad .....	1-26
Setting Up the DNC Mode to Hold Execution of Program until START is Pressed .....	1-27
Changing the Passwords .....	1-28

### Section 2 - Operator Setup

Control Software Parameters .....	2-2
Communications Setup Parameters .....	2-4
Simulated Draw Mode Setup Parameters .....	2-5
Edit Mode Setup Parameters .....	2-7
Program Directory Parameters .....	2-8
Formatting Display Settings .....	2-9
Formatting Printer Settings .....	2-9
Setting Date and Time .....	2-10
Setting Up the Units in Inch .....	2-10
Configuration Utilities .....	2-10
Save Configuration .....	2-10
Copy Configuration .....	2-11
Restore from Copy .....	2-11
Restore from Backup .....	2-12
Compare Configuration .....	2-12
Print Configuration .....	2-12

### Section 3 - Setup Utility Maps

Map 1 .....	3-2
Map 2 .....	3-3
Map 3 .....	3-4
Map 4 .....	3-5
Map 5 .....	3-6
Map 6 .....	3-7
Map 7 .....	3-8
Map 8 .....	3-9
Map 9 .....	3-10
Map 10 .....	3-11

<b>Index</b> .....	Index-1
--------------------	---------

## Section 1 - Builder Setup

This section describes how to setup the 3000 Commando.

### Navigating through the Setup Utility

The Setup Utility provides access for all settings through a layered organization of menus. Each menu provides access to configuration settings or another menu. Closing a menu reactivates the previous menu.







Each menu contains a list and a highlight. The highlight is used to select one of the listed choices. Highlighted selections are activated by pressing the **ENTER** key.

Some settings are made by using the **ENTER** key to toggle a choice “On” or “Off”; other settings require a specified value. Settings are saved automatically when the **ENTER** key or the **Exit (F10)** control soft key is pressed. Refer to “[Section 3 - Setup Utility Maps](#),” which contains all the maps referenced in this section.

### Reference to Keypad Keys

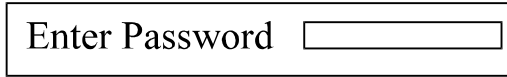
Keys on the keypad of the 3000 Commando console will be referenced as follows: the name of the key is displayed in all-capital letters. Refer to **Table 1-1** for a listing and description of the 3000 Commando keypad keys.

**Table 1-1, Reference to Keypad Keys**

	Key(s)	Description
Axis	  	Before some parameters can be changed, the affected axis must be specified. Press the <b>X</b> , <b>Y</b> , or <b>Z</b> dimension keys to specify the axis. For example, in the text, “Press <b>X</b> ” indicates that the operator should press the <b>X</b> key.
ENTER		In order to enter most parameters into the system, press the <b>ENTER</b> key. In this manual, the instructions for pressing the <b>ENTER</b> key will be written as “Press <b>ENTER</b> ”, without the accompanying graphic.
Arrow		Use the <b>ARROW</b> keys or the UP and DOWN ARROW soft keys ( <b>F3</b> and <b>F4</b> ) to highlight menu selections in the Commando Setup Utility.
Exit		Use the <b>Exit</b> soft key to return to the previous screen.

### Password Restricted Parameters

Some machine setup parameters cannot be changed until the operator enters the required password. When a password is required, a password prompt, shown in **Figure 1-1**, displays on the screen.



**Figure 1-1, Password Prompt**

To access protected parameters, type in the service password at the insertion point, and press **ENTER**. The Commando will then allow changes to the protected settings.

### Saving Changes to Setup Parameters

When the user exits the Setup Utility and/or changes have been made to any parameters, a “Save Changes?” prompt is displayed. Choose Yes (**F1**) to save changes, No (**F2**) to cancel changes, and Cancel (**F9**) to re-enter the Setup Utility.

### Setting Up Parameters in the Setup Utility

To setup a Setup Utility Parameter:

1. Highlight the parameter in the appropriate menu. Press **ENTER**.
2. Setup the parameters in one of the following three methods:
  - Toggle the **ENTER** key to cycle through the available selections.
  - If a pop-up menu is displayed after the parameter is selected, highlight an option in the pop up and press **ENTER**.
  - If an entry field highlights after the parameter is selected, type the appropriate value and press **ENTER**.

### Accessing the Setup Utility Menus

Refer to [Map 1](#), **Menu A, Setup Options Menu**.

To access the Setup Utility Menus:

1. Ensure that the power cord is plugged in at the back of the computer console.

**NOTE:** The control must be plugged into a dedicated line. Failure to do so may lead to improper operation of the control.

2. Turn on the power switch.
3. After the control boots up, the Control software activates. The Control displays informational messages, which let the operator know the status of the boot up.
4. When the software has successfully booted up, an informational screen will appear containing the company name and address information, as well as the software version number.

5. Press the **F10** soft key below the display to continue. The 3000 Commando Startup Screen selection screen activates.
6. Highlight the **Setup Utility** option. Press **ENTER**. The **Setup Options Menu** activates (Menu A). This screen gives the installer access to the parameters needed to setup a standard two- or three-axis system.

### Setting Up the Axis Resolution Parameters

The 3000 Commando Retrofit Systems use feedback from linear encoder, rotary encoder, or an **EverTrack™** encoder. Each axis must be set for the type of feedback device used, either a linear encoder or a rotary encoder.

[Default: **Rotary Encoder**]

### Setting Up Axes for Encoder or Linear Scale

To set the axis encoder type:

1. See the Resolution Setup, Menu D on "[Map 1](#)" in "[Section 3 - Setup Utility Maps](#)." For the remainder of the document, this is described as "See [Map 1](#), **Menu D, Resolution Setup Menu**."
2. Highlight **Type**.

Press **X**, **Y**, **Z**, or **U** for the axis being set, and press **ENTER**. A pop-up window displays the following selections:

- Linear Encoder
- Rotary Encoder
- EverTrack Encoder

Highlight Linear Encoder for axes that use a linear encoder; highlight Rotary Encoder for axes that use a rotary encoder; highlight EverTrack Encoder for axes with linear encoders that have the EverTrack feature, and press **ENTER**. The Commando changes the encoder type to the selected option.

-----

\*\*EverTrack™ EverTrack™ is a Trademark of ANILAM, Inc.

### Setting the Linear Encoder Resolution

Ensure that resolution settings match the installed equipment.

**NOTE:** You can display resolution in the Setup Utility in either MM Mode or Inch Mode. One micron equals 0.001mm.  
[Default: **Inch Mode**]

**NOTE:** If resolution settings do not match those of the installed equipment, positioning errors will occur.

Enter the resolution of the scale/encoder for each axis. Resolution is always given in Microns; regardless of whether the Commando is in Inch or MM Mode. The default is **1 Micron** (0.001 MM/0.00005”). Refer to **Table 1-2** for the Micron-to-Inch conversion used by Anilam for scales and encoders.

[Default: **.0001** for X, Y, Z, and U]

**Table 1-2, Micron-to-Inch Conversion**

1 Micron	0.001 MM	0.00005”
2 Microns	0.002 MM	0.0001”
5 Microns	0.005 MM	0.0002”
10 Microns	0.010 MM	0.0005”

The default resolution for X, Y, Z, and U is 1 Micron. Ensure resolution settings match the supplied equipment.

To set the linear encoder resolution:

1. Refer to [Map 1](#), **Menu D, Resolution Setup Menu**. Highlight **Display Res.**
2. Press **X, Y, Z**, or **U** (axis being set). Press **ENTER**. A pop-up window displays the following selections:
  - 0.5 Micron
  - 1 Micron
  - 2 Micron
  - 5 Micron
  - 10 Micron
3. Highlight the appropriate Resolution. Press **ENTER**.



### Setting Line Count for Rotary Encoder

**NOTE:** This parameter applies only to rotary encoders. Do not use it with a linear encoder.

Enter the number of lines per revolution specified by the rotary encoder. The software accepts line counts of up to 10,000 lines per revolution. [Default: **1000** lines for X, Y, Z, and U]

To enter a rotary encoder line count:

1. See [Map 1](#), **Menu D, Resolution Setup Menu**.
2. Highlight **Rot Enc Lines**.
3. Press **X**, **Y**, **Z**, or **U** for the axis being set. The Commando highlights the encoder line entry field for the axis.
4. Type the rotary encoder line count, and press **ENTER**.

### Setting Ballscrew Pitch for the Rotary Encoder

**NOTE:** This parameter applies only to rotary encoders. Do not use if the axis is using a linear encoder for feedback.

Pitch is linear distance traveled per revolution of the ballscrew. Use the unit of measurement (inch or mm) to which the Commando defaults.

Set the pitch (**Bscrew Pitch**) of the ballscrew. [Default: **0.20000** for X, Y, Z, and U]

To set ballscrew pitch:

1. See [Map 1](#), **Menu D, Resolution Setup Menu**.
2. Highlight **Bscrew Pitch**.
3. Press **X**, **Y**, **Z**, or **U** for the axis being set. The Commando highlights the pitch entry field for the axis.
4. Type the pitch of the ballscrew for that axis, and press **ENTER**.

### Setting the Ratio Between the Ballscrew Pulley and the Motor/Encoder Pulley

The Ratio is the difference in the size of the pulleys, which represent the number of turns of the Encoder relative to the number of rotations of the Ballscrew.

Most encoders today are mounted to the shafts to the motors; therefore, the parameter for Motor Pulley represents the encoder pulley. If your encoder is not mounted to the motor shaft, then the correct entry for the Motor Pulley would be the actual encoder pulley.

For example, if the pulley on the ballscrew has 21 teeth, and the pulley on the motor has 14 teeth: the ratio is 1.5 to 1. You would enter 1.5 for the Ballscrew Pulley parameter, and 1 for the Motor Pulley parameter. If you do not know the actual ratio, you enter the number of teeth on the pulleys: 21 for Ballscrew Pulley, and 14 for the Motor Pulley.

#### Ballscrew Pulley Parameter

To enter the Ballscrew Pulley value:

1. See [Map 1](#), **Menu D, Resolution Setup Menu**. Highlight **Ratio (Bsc Ply)**.
2. Press the appropriate axis key (i.e., **X, Y, Z**, or **U**). The Commando highlights the value entry field for the axis.
3. Type the number of teeth on the Ballscrew pulley (or the Numerator of the ratio), and press **ENTER**.

[Defaults: **1.00000** for X, Y, Z, and U]

<b>NOTE:</b> This parameter applies only to rotary encoders. Do not use it with a linear encoder.
---

#### Motor/Encoder Pulley Parameter

To enter the Motor/Encoder Pulley value:

1. See [Map 1](#), **Menu D, Resolution Setup Menu**. Highlight **Ratio (Mtr Ply)**.
2. Press the appropriate axis key (i.e., **X, Y, Z**, or **U**). The Commando highlights the value entry field for the axis.
3. Type the number of teeth on the Motor/Encoder pulley (or the Denominator of the ratio), and press **ENTER**.

[Defaults: **0.00000** for X, Y, Z, and U]

<b>NOTE:</b> This parameter applies only to rotary encoders. Do not use it with a linear encoder.
---

## Setting the Starting Mark

The Starting Mark entry is the first mark from the right-most end of the encoder (as you look at the encoder). The entry is sign sensitive. If the right-most mark is at the positive end of the axis, then the Starting Mark must be positive. If the right-most mark is at the negative end of the axis, then the Starting Mark must be negative.

[Defaults: X, Y, Z, and U-axis **0**]

**NOTE:** This parameter applies only to EverTrack encoders. Do not use if the axis is using rotary encoder for feedback.

If you know the starting mark number, use the following procedure to set the Starting Mark.

To set the Starting Mark:

1. See [Map 1](#), **Menu D, Resolution Setup Menu**.
2. Highlight **Starting Mark**.
3. Press **X**, **Y**, **Z**, or **U** for the axis being set. The Commando highlights the entry field for the axis.
4. Type the starting mark for that axis, and press **ENTER**.

[Defaults: **0** for X, Y, Z, and U]

## Setting Linear Compensation

Linear correction compensation corrects for linear errors due to linear encoders or ballscrews. To determine the amount of correction required, measure the error with a calibration device. When you activate linear correction, the Commando applies the linear correction to the active resolution of the axis.

If no linear correction is required, disable this feature. When enabled, you can specify a different correction value for each axis.

Enter any appropriate correction factor from 0.300000 to 3.000000. A value of 1.00 indicates no linear error correction for the selected axis.

[Defaults: **1.00000** for X, Y, Z, and U Linear compensation]

To set linear correction compensation:

1. See [Map 1](#), **Menu E, Linear Compensation Setup Menu**.
2. Highlight the menu selection that corresponds to the axis being set. (For example, highlight **X Linear compensation** to set the X-axis.) Press **ENTER** to highlight the entry field for each axis.
3. Type the appropriate linear compensation correction, and press **ENTER**.
4. Highlight **Linear correction compensation**. This selection activates/deactivates the option. [Default: **Off** (Disabled)]

5. Press **ENTER** to toggle the selection **On** or **Off** to activate/deactivate compensation values entered. The Commando activates linear compensation for all affected axes.

### Setting In-Position Tolerance

When the Commando has positioned the tool within the in-position tolerance of the target, it calculates the next programmed move. At this time, the Commando displays the in-position indicator. Specify the in-position tolerance for each enabled axis in the Setup Utility.

[Default: **0.0004"** for X, Y, Z, and U]

<b>NOTE:</b> The Commando always executes Rapid moves in In-Position Mode.
--

For linear encoders, as a rule of thumb, tolerance equals two times the resolution of the linear encoder.

When determining in-position tolerance for rotary encoders, tolerance is usually four times the machine resolution (for example, if machine resolution is 0.0002", in-position tolerance will be 0.0008"). Use this as a benchmark from which to adjust this value.

In-position tolerance must be smaller than continuous path tolerance.

To define in-position tolerance:

1. See [Map 1](#), **Menu F, In Position Setup Menu**.
2. Highlight the menu selection that corresponds to the axis being set. (For example, highlight **X In position** to set the X-axis.)
3. Press **ENTER** to highlight the entry field for the axis.
4. Type the appropriate in-position tolerance, and press **ENTER**.

## Setting Encoder Phases to Correct Axis Direction Displayed

Moving an axis in a positive direction should yield a positive count on the axis display. Similarly, moving an axis in a negative direction should yield a negative count on the axis display. If an axis display does not count in the appropriate direction, adjust the **Encoder Phase** settings to correct the problem.

[Default: **Invert** (ed) X, Y, Z, and U-axis]

This is the only way to change the direction of the count without making hardware changes.

To adjust the Encoder Phase A Setting:

1. Refer to [Map 2](#), **Menu D, Encoder Phase Setup Menu**.
2. Highlight the menu selection that corresponds to the axis being set. (Example: Highlight **Phase for X axis** to set the X-axis.) Press **ENTER** to toggle the setting (Not Invert/ Invert). Changing the Encoder Phase setting inverts the direction of count for the adjusted axis.

## Setting Up the Axis Ports

Use the Axis Ports Setup Menu to assign the active axes on the machine. Normally, axes X, Y, Z, and U would be assigned to ports 0–3, respectively. Four axis ports are available (0–3).

To setup the axis ports:

1. Refer to [Map 2](#), **Menu E, Axis Ports Setup Menu**.
2. Highlight a port (0–3). Press **ENTER**.
3. A pop-up menu is displayed containing the available axes (X, Y, Z, or U) and Disable that can be assigned to the selected port. (Refer to **Menu F**.) Highlight the appropriate axis and press **ENTER**. The selected axis is assigned to that port.
4. Repeat the procedure to setup all active axes. For unused ports, choose Disable from the pop-up menu.

## Setting Up Z Axis Type

If Z is a no-control, non-DRO axis, choose **None**. If Z is a controlled axis with position display and feedback loop, choose **Linear**. If Z is a DRO with position display but no motion control, choose **DRO**.

[Default: **Linear**]

To setup the Z Axis Type:

1. Refer to [Map 3](#). Go to **Menu C, Z Axis Type Setup Menu**.
2. The Commando highlights **Z Axis Type** automatically. Press **ENTER**. The **Menu D, Pop-up Selection Menu** is displayed, listing the following options: None, Linear, and DRO.
3. Highlight the appropriate selection. Press **ENTER**. The Commando activates the selected option.

## Activating the General I/O interface

Refer to [Map 3](#), **Menu E, General I/O Interface Setup Menu**.

### Timeout

The default is **10000**. See "[Setting Finish Pulse Timeout](#)."

### Output Function Setup

The I/O Board generates outputs to activate or deactivate various machine devices when commanded by the Commando.

The Commando supports M-function outputs. M-function outputs are activated when programmed M-code blocks are executed and when triggered by specific "conversational language" events.

M-function numbers (1–99) correspond to program M-code numbers (1–99). Execution of an M-code block activates the outputs assigned to like-numbered M-functions.

Refer to [Table 1-3, M-Functions Generated by Conversational Language Events](#).

**Table 1-3, M-Functions Generated by Conversational Language Events**

<b>M-function</b>	<b>Initiating Event</b>	<b>Standard Function Usage (Ref. EIA Standard RS 274-D)</b>
M02	Execution of an "EndMain" program block.	Stops spindle and coolant.
M03	Activation of a tool that lists a FWD spindle direction on the Tool Page.	Start CW spindle rotation.
M04	Activation of a tool that lists a REV spindle direction on the Tool Page.	Start CCW spindle rotation.
M05	Activation of a tool that contains a Tool Page spindle direction "OFF" listing.	Stop spindle in normal manner.
M08	Activation of a tool with coolant "ON" listed on the Tool Page.	Turn coolant pump on.
M09	Activation of a tool with coolant "OFF" listed on the Tool Page.	Turn coolant pump off.

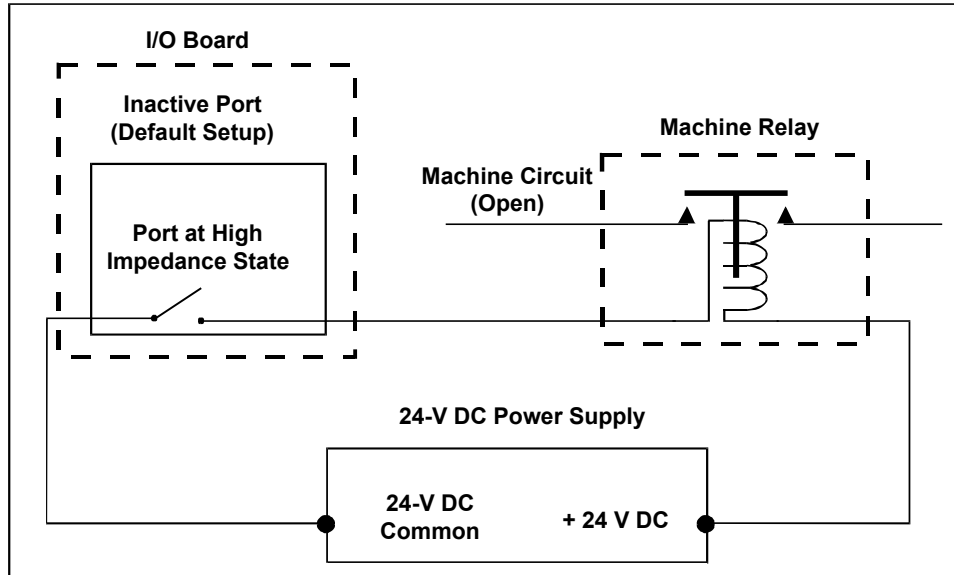
There are two parts to setting up an output port:

1. Configure the port to produce the type and logic of the signal required to control the device on the machine.
2. Assign the port to the functions that will activate and deactivate it. A port can be used by more than one function.

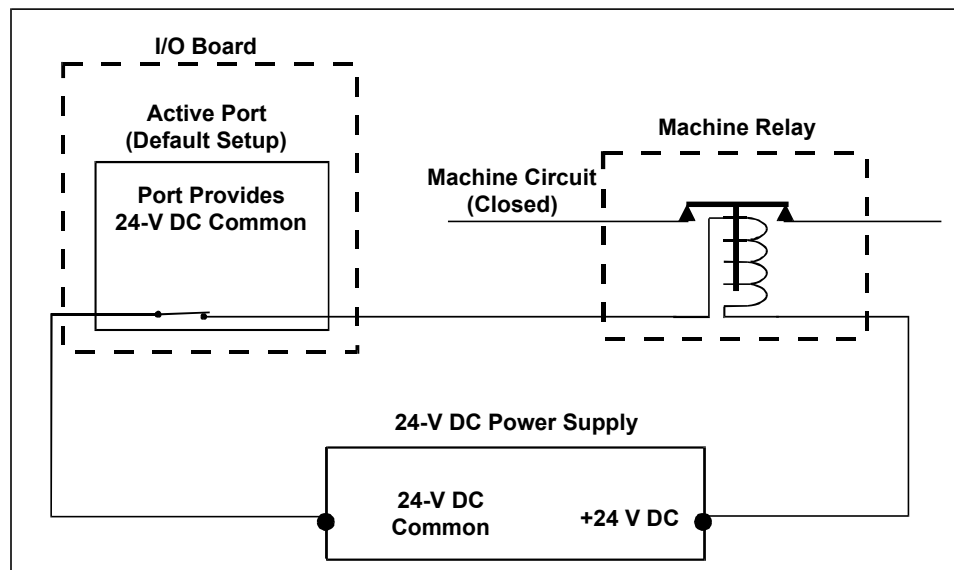
### Configuring Output Ports

Default port settings provide a +24-V common source when the port is active and put the port in a high-impedance state when the port is inactive. Each output port is rated for a 500-mA current. Usually, one function is used to activate a port(s) and another is used to deactivate it (latched output). At other times, the output signal is emitted for a user-specified duration (pulsed output).

The default port settings are designed to open and close relays that operate devices on the machine. Refer to [Figure 1-2, Typical Inactive Port \(Default Port Settings\)](#) and [Figure 1-3, Typical Active Port \(Default Port Settings\)](#).



**Figure 1-2, Typical Inactive Port (Default Port Settings)**



**Figure 1-3, Typical Active Port (Default Port Settings)**

Each port can be independently configured to generate a constant output or a single pulse (of definable width) with either high or low activation logic. Logical combinations of port setup options may be used together.



Refer to [Map 3, Menu F, Output Port Setup Menu](#), and [Map 3, Menu G, M-Function Port Setup Menu](#). Use these menus to configure the output ports as follows:

1. From [Map 3, Menu F](#), highlight the port being configured and press **ENTER** to select Active High (default) or Active Low.
2. Use [Map 3, Menu G, M-Function Port Setup Menu](#) to configure the parameters described below:
  - ❑ **Pulse** (msec) - Port output is maintained for the period specified by the builder. Enter the number of milliseconds, any value from 0–32,000 can be used. If a zero (msec) Pulse is used, output is maintained until port is turned off. The Commando will hold execution of the program for the duration of a nonzero (msec) Pulse.
  - ❑ **Delay** (msec) - Holds program execution for the specified period of time following the completion of the M-function. Enter the number of milliseconds, any value from 0–32,000 can be used. If the Delay is set to zero (msec), there is no delay.
  - ❑ **Finish** - When a function activates an output port that has been set for a finish pulse, the Commando holds execution of the program until an “External finish pulse” input function is received. If no finish pulse is received by the end of the timeout period, the Commando displays an error message and terminates the program. If Finish is specified for a port that has a nonzero (msec) Pulse, the “External finish pulse” is only acknowledged after the Pulse expires.
  - ❑ **Active** - Sets port logic as active high or active low. When set active high, the port provides a +24V common source when activated. When set active low, the port is in a high-impedance state when activated.

### Assigning Output Ports to M-Function

The Commando can be configured to generate M-functions M1 through M99. An M-function can activate or deactivate the ports assigned to it. A port can be assigned to more than one M-function.

Refer to [Map 3, Menus E and H](#). Assign the M-function output ports as follows:

1. From **Menu H, M-Function Setup Menu**, highlight **Ports On** to select the output ports to be activated by the function.

<p><b>NOTE:</b> The <b>Menu H Ports On</b> and <b>Ports Off</b> columns each display a hexadecimal representation of the ports assigned to each M-function. The ports assigned to activate under the <b>Ports On</b> category will be turned on by the M-function. The ports assigned to activate under the <b>Ports Off</b> category will be turned off by the M-function.</p>
---

2. Use the **ENTER** key to toggle ports **On** or **Off**. An **On** setting means the function will activate the port (turn it on); an **Off** setting means the port is ignored by the control when the M-function activates. Close the menu when finished [press **Exit (F10)**].
3. From **Menu H**, highlight **Ports Off** to select the output ports to be deactivated by the function.
4. Select and set ports **On** or **Off**. An **On** setting means the function will deactivate the port (turn it off); an **Off** setting means the port is ignored. Close all menus when through [press **Exit (F10)**].

## Input Function Setup

The input port setup configures the control to interpret inputs from the machine. When any input assigned to a function is received, the I/O board sends the appropriate function signal to the Commando. An input signal is the presence or absence of a +24 VDC common signal.

Each input port can be used as an input function port.

There are two parts to setting up an input port:

1. Configure the port.
2. Assign the port to functions that use it.

### Configuring Input Ports

Input ports must be configured to interpret either a high or low voltage as an active input. A port configured “Active High” is active when it receives a high +24 VDC common input signal. A port configured “Active Low” is active when it does not receive a +24 VDC input signal.

Refer to [Map 3](#), **Menu I, Input Port Menu**. To configure the input ports, highlight the port being configured, and press **ENTER** to toggle the selection between the “High” and “Low” settings.

### Assigning Input Ports to a Function

If any of the ports assigned to a function are active, the I/O board will send a signal back to the Commando. A port can be used by more than one M- function.

Refer to [Map 3](#), **Menus E** and **J**. Assign input function input ports as follows:

1. From **Menu E**, select **Input Function** and press **ENTER**. **Menu J** activates.
2. From **Menu J**, select the ports that will be used to generate the function signal to the Commando. An **On** setting means that an active signal from the port will be needed to generate the function. An **Off** setting means that signals at the port are not required by the function and will be ignored.

**NOTE:** The **Menu J Port** column displays a hexadecimal representation of the ports assigned to the function.

### Commando Input Function Usage

Refer to **Table 1-4**. Each input function causes a specific action by the Commando. The purpose of each function is listed in the table. Refer to [Map 3](#), **Menu J**, **Input Functions Menu**.

**Table 1-4, Input Function Usage and Port**

Input Function	Usage	Port
External finish pulse	The finish pulse is an input signal from a machine device that lets the control know the requested operation is complete.  When an output port configured for a finish pulse is activated, the control is put on hold until a finish pulse input is received.  While on hold, the control will not continue to execute program blocks (if in programmed mode) and will not respond to keypad inputs (if in manual mode).	0000
External start	This input performs the same function as the <b>START</b> key on the control's keypad.	0020
External hold	This input performs the same function as the <b>HOLD</b> key on the control's keypad.	0010
External feed hold	This input holds the program if the control attempts a feed. A spindle off condition normally activates this function.	0000

(Continued...)

**Table 1-4, Input Function Usage (Continued)**

Input Function	Usage	Port
External manual select	This input enables non-commanded machine move. Position display is generated from encoder inputs. In this mode, the control no longer commands axis motion. This feature lets an operator move the machine with the hand wheels, using the control as a digital read out. This function is used with the Auto/Manual switch included in the kit.	0008
General Error input message	This function holds the program and generates an Error message. The condition generating the input signal must be corrected before the program can be restarted.	
General Warning input message	This function generates a Warning message at the control, while allowing the control to continue execution of a program.	

### Setting Finish Pulse Timeout

When an output port that is configured for a finish pulse is activated, the control is put on hold until an **External finish pulse** is received. While on hold, the control will not execute program blocks (in Programmed Mode) and will not respond to keypad inputs (in Manual Mode).

The finish pulse is a signal from a machine device that lets the control know the requested operation is complete.

**NOTE:** To regain control of a Commando holding for a finish pulse, press and reset the **E-Stop**.

If finish pulse is not received by the end of the timeout period, the Commando displays an error message.

Refer to [Map 3](#), **Menu E, General I/O Interface Setup Menu**. To set the Timeout:

1. Highlight **Timeout** and press **ENTER**. The Timeout entry field highlights.
2. Type in the number of milliseconds and press **ENTER**.

**NOTE:** The default setting is 10,000 (10 sec). Any number from 0–600,000 may be keyed in. A zero millisecond value causes the Commando to hold for the finish pulse indefinitely.

## Motion I/O Interface Setup

Refer to [Map 4](#), **Menu C, Motion I/O Interface Setup Menu**.

### Active Speed Stages

This entry allows the builder to configure which speed stages are active when the machine is running. When this entry is selected, the Active Speed Stages screen activates. Refer to **Figure 1-4**. See also [Map 4](#), **Menu D, Active Speed Stages Setup Menu**.

Active speed stages - Setup	
1. Rapid.....	Yes
2. Rapid-slow.....	No
3. Feed.....	Yes
4. Creep.....	Yes
5. BackCreep.....	Yes

**Figure 1-4, Active Speed Stages Setup Screen**

The active speed stages are determined by the machines' capabilities. Disabling a speed stage disables all functions associated with that speed stage.

### Slowdown Points

This entry allows the builder to configure the slowdown points. When this entry is selected, the Slowdown Points screen activates. Refer to **Figure 1-5**. See also [Map 4](#), **Menu E, Slowdown Points Setup Menu**.

Slowdown points - Setup				
	X	Y	Z	U
1. Rapid Positive	1.0000	0.7500	1.0000	1.0000
2. Rapid Negative	0.7500	1.0000	0.1000	0.1000
3. Rapid-slow Positive	0.7000	0.5000	0.7000	0.7000
4. Rapid-slow Negative	0.5000	0.7000	0.7000	0.7000
5. Feed Positive	0.5000	0.2500	0.5000	0.5000
6. Feed Negative	0.2500	0.5000	0.5000	0.5000
7. Creep Positive	0.2000	0.1000	0.2000	0.2000
8. Creep Negative	0.1000	0.2000	0.2000	0.2000
9. Duration of BackCreep	1000	1000	1000	1000

**Figure 1-5, Slowdown Points Setup Menu**

Parameters 1 through 8 define the distance to target at which each speed stage is deactivated for X, Y, Z, and U positive and negative direction. The distances must be decreasing and are assumed to be in the current units to which Setup is configured.

Parameter 9 defines the duration of the BackCreep.

These parameters may need to be adjusted over time to compensate for changes in the machine response.

### Intermotion Delays

This entry allows the Installation Technician to configure the Intermotion Delay, which is the time the outputs remain off when switching from one speed stage to the next. When the builder selects this entry, the Intermotion Delays screen activates. Refer to **Figure 1-6**. See also [Map 4](#), **Menu F, Intermotion Delays Setup Menu**.

Intermotion delays - Setup	
1. Rapid.....	500
2. Rapid-slow...	500
3. Feed.....	500

**Figure 1-6, Intermotion Delays Setup Screen**

The delay time is expressed in ms and is accurate to approximately 20 ms. For example, if the builder specifies 37 ms, the delay is 40 ms. The smallest delay that can be specified is 0 ms, which means no delay necessary.

### Axis Enable Delays

This entry allows the Installation Technician to delay turn on of the axis select relay.

Refer to [Map 5](#), **Menu E, Axis Enable Delays Setup Menu**.

### Speed Outputs

This entry allows the Installation Technician to designate the port that the individual speed output is sent to.

Refer to **Table 1-5**, [Map 5](#), **Menu F, Speed Outputs Setup Menu (Sequential)** and **Menu G, Speed Outputs Setup Menu (Simultaneous)**.

**Table 1-5, Description of Speed Outputs and Ports**

Output	Description	Sequential Ports X, Y, Z, and U	Simultaneous Ports			
			X	Z	Y	U
Rapid	Output for Rapid stage.	0004	0000	0000	0000	0000
Rapid – slow	Output for Rapid – slow stage.	0008	0000	0000	0000	0000
Feed	Output for Feed stage.	0010	0000	0000	0000	0000
Creep	Output for Creep stage.	0020	0000	0000	0000	0000
Move positive	Output when move is positive.	0001	0000	0000	0000	0000
Move negative	Output when move is negative.	0002	0000	0000	0000	0000

## Non-Speed Outputs

This entry allows the Installation Technician to designate the non-speed output. See **Table 1-6**.

Refer to [Map 5](#), **Menu H, Non-Speed Outputs Setup Menu**.

**Table 1-6, Description of Non-Speed Outputs and Ports**

Output	Description	Port
Rapid enable	Output when a move is Rapid (positioning), regardless of the speed stage.	00000000
Manual/Auto	Not used	—
X enable	Output when moving X-axis.	00000000
Y enable	Output when moving Y-axis.	00000000
Z enable	Output when moving Z-axis.	00000000
U enable	Output when moving Z-axis.	00000000

## Output port

Output ports are configured to send a high or low voltage as an active output. A port configured “Active High” is active when it sends a high +24 VDC output signal. A port configured “Active Low” is active when it does not send a +24 VDC output signal. Default is **Active High**.

Refer to [Map 4](#), **Menu G, Output Port Setup Menu**. To configure the output ports, highlight the port being configured, and press **ENTER** to toggle the selection between the “High” and “Low” settings.

## Inputs

This entry allows the Installation Technician to configure the inputs associated with each axis. When the Installation Technician selects this entry, the Inputs screen activates.

Refer to **Figure 1-7** and [Table 1-7, Description of Commando Inputs and Default Port or Time](#). See also [Map 4](#), **Menu H, Inputs Setup Menu**.

Inputs – Setup		
1.	Acknowledge timeout....	3000
2.	Estop	0000
3.	X acknowledge	0000
4.	Y acknowledge	0000
5.	Z acknowledge	0000
6.	U acknowledge	0000

**Figure 1-7, Inputs Setup Screen**

**Table 1-7, Description of Commando Inputs and Default Port or Time**

Input	Description	Default Port or Time
Acknowledge timeout	Number of ms that the Commando will wait for an axis ack. If set to 0, ack is <b>not</b> required.	3000 (ms)
Estop	Active when <b>Estop</b> pressed.	0000
X acknowledge	Active when ok to move X.	0000
Y acknowledge	Active when ok to move Y.	0000
Z acknowledge	Active when ok to move Z.	0000

External finish pulse, External start, External hold, and External manual select are available through the standard Input functions (Interface screen). The **HOLD** key function has the effect of removing the speed and direction output signal until **START** is pressed. Refer to **Table 1-7**.

### Type of Motion Block

This entry defines if moves are executed in Simultaneous or Sequential mode. For the simultaneous mode, all programmed axes move together during a rapid move. For the sequential mode, the axes programmed in a block are executed in X, Y, Z, and then U order.

[Default: **Sequential**]

### Theory of Operation

The Commando operates in any one of three modes:

- Manual (Auto/Manual switch must be set to **Manual**.)
- Manual (Auto/Manual switch must be set to **Auto**.)
- Auto

The paragraphs below describe each mode.

#### Manual (Manual)

The Auto/Manual switch must be set to **Manual**. The Commando allows the machine to be operated as it was before the Commando was installed. No MDI, Jog, or Auto are allowed. Position tracking is active. The Manual/Auto output is off.

#### Manual (Auto)

The Auto/Manual switch must be set to **Auto**. Press the **F4 (Manual)** soft key. In this mode, the machine is under the control of the Commando.

The Jog keys may be used to move the machine in any one of three modes:

- Rapid
- Feed
- Creep



The mode is selected using the Hand or Resolution key. When jogging, the corresponding output activates (Rapid, Feed, or Creep) and remains active until the Jog key is released. Slowdown points cannot be used during jogging. MDI commands can also be executed and behave as if the Commando was in Auto (that is, slowdown points are active).

## Auto

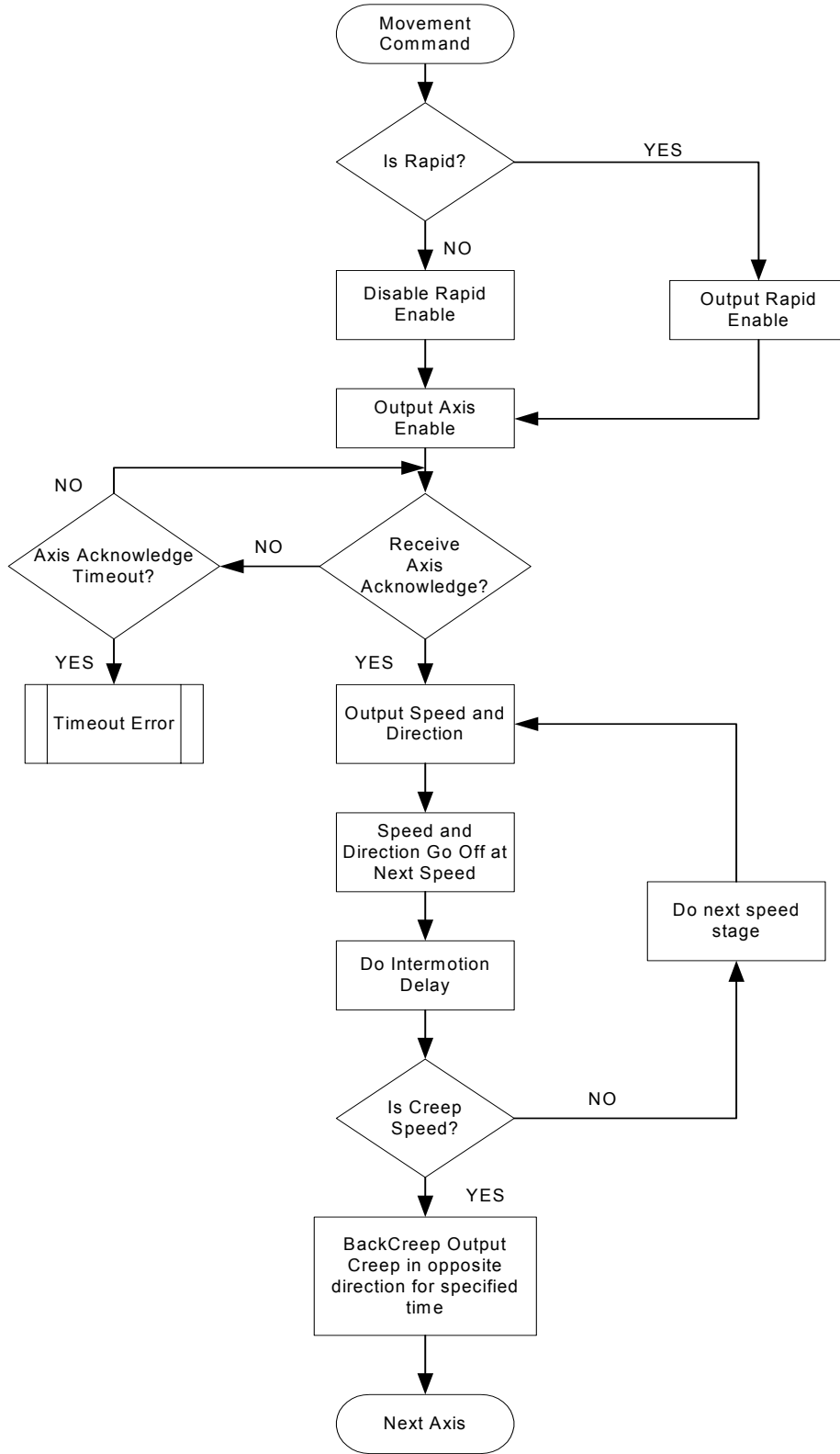
The Auto/Manual switch must be set to **Auto**. Press the **F6 (Auto)** soft key. In this mode, the machine is under the control of the Commando, and a program is about to run. Once the **START** key is pressed, the selected program runs. The program may be run in Auto or S. Step.

The sequence of outputs generated by the Commando depends on the type of move being executed. If the move is a Rapid move (a positioning move), the Rapid Enable output activates, and remains on throughout the duration of the move. The speed can be any combination of Rapid, Feed, or Creep depending on the distance from target position. The only time Rapid Enable is not active is during a Line (Feed) move within a program (such as in a milling operation). Proper use of the Rapid Enable output allows for a preset feed speed to be used during positioning moves, and selectable feed speeds for milling, and so forth. The Rapid Enable output will stay on until a Feed move is executed. In either case (Feed or Rapid), the enable output of the programmed axis activates (X enable, Y enable, or Z enable). The machine must then respond with the axis acknowledge for the corresponding axis. The acknowledge must be received within the time specified for the Acknowledge Timeout parameter, or a timeout error is generated. Once the acknowledge is received, the direction and speed output are activated. The proper speed output is determined by the type of move and the distance to target. Once the next slowdown point is reached, the speed and direction output are deactivated. The output(s) remain off according to the *intermotion delay* for the current speed stage. Once the intermotion delay expires, the same direction and new speed is activated. After the Creep speed is executed, it needs to be turned on again in the opposite direction. The amount of time the output stays active is determined by the time specified for the Duration of BackCreep parameter. Once the BackCreep time expires, speed, direction, and axis enable go off. BackCreep is used to unwind the tension on the screw. It does not position the machine.

For Jog, the exception is that the slowdown points are not used; however, the enables, acknowledge, direction, and speeds are used. Refer to [Figure 1-8, Commando Axis Movement Sequence](#).

## Tool Setup

The Commando system only supports manual tool change operations. Refer to [Map 6, Menu C, Tool Management Setup Menu](#).



**Figure 1-8, Commando Axis Movement Sequence**

### Enabling Tool-Length Offsets

Use the **Activate tool length offset** parameter to activate the Tool-Length Offset whenever a tool number is activated. To activate the Tool-Length Offset:

1. Go to [Map 6](#), **Menu C**. Highlight **Activate tool length offset**, and press **ENTER**. **Menu D** activates.
2. In **Menu D**, highlight **On Tn**, and press **ENTER**.
3. Press **Exit (F10)** to exit the menu. The Commando will now activate Tool-Length Offsets for the currently active Tool Number.

The default setting is **On Tn**.

### Setting Up the Output Signal to Default

The **Output signal** parameter refers to the T-Code data being sent to the Programmable Controller. The output signal feature does not affect machine operation in Commando systems. The Commando system does not support a Programmable Controller. Set the parameter to the default, **On Tn**.

To set the parameter to the default:

1. Go to [Map 6](#), **Menu C**. Highlight **Output signal**, and press **ENTER**. **Menu D** activates.
2. In **Menu D**, highlight **On Tn**, and press **ENTER**.

### Stopping Program Execution on Tool Commands

This feature is commonly used to halt program operation on Tn commands to give the operator time to change the tool. Resume program operation by pressing the **START** key.

To configure a control to stop program execution on Tn commands:

1. Go to [Map 6](#), **Menu C**. Highlight **Stop program execution**, and press **ENTER**. **Menu D** activates.
2. In **Menu D**, highlight **On Tn**, and press **ENTER**. When a Tool Number is activated, the Commando holds execution of the program and displays a message.  
– or –
3. Highlight **No**, and press **ENTER**. The Commando continues program execution on Tn commands (for example, during Dry Run Mode when no tool change is performed).

The default setting is **On Tn**.

### Setting Up the Default Tool-table File

To enter the default tool-table file, go to [Map 6](#), **Menu C**. Highlight **Default tool-table file**, and press **ENTER**. In the highlighted entry field, type in the name of the file. The default is P3CTOOL.DAT.

### **Force Spindle Off during Tool Change**

The CNC will generate an error message if tool change is attempted with spindle running. With an automatic tool changer, the tool change would normally handle turning off the spindle. To set the force spindle off during tool change:

1. See [Map 6](#), **Menu C, Tool Management Setup Menu**.
2. Highlight **Force spindle off during tool change**, and press **ENTER** to toggle between **Yes** or **No**.

### **Miscellaneous Setup**

Refer to [Map 6](#), **Menu E, Miscellaneous Setup Menu**.

#### **Display Resolution**

The Display Resolution parameter allows you to specify the display resolution of the system. The selections available are VGA (640x480) [Default] and SVGA (800x600). All CRT display systems should use VGA, while all 12.1" flat-panel systems should use SVGA. To set the display resolution:

1. See [Map 6](#), **Menu E, Miscellaneous Setup Menu**.
2. Highlight **Display Resolution**, and press **ENTER** to toggle between **SVGA** and **VGA**.

The SVGA setting for flat panels applies to flat-panel based CNC console assemblies purchased from ANILAM as well as flat panels in laptops for use with off-line software.

#### **Startup Mode**

The Commando Startup mode parameter allows you to specify the startup mode for the system. The selections available are Sfwr (Software) Options [Default] and Ctrl (Control) Software. To set the startup mode:

1. See [Map 6](#), **Menu E, Miscellaneous Setup Menu**.
2. Highlight **Commando Startup mode**, and press **ENTER** to toggle between **Sfwr Options** or **Ctrl Software**.

The Control Software option automatically loads the control software. You do not have the option to select the Software Option startup screen.

### **Setting Up Language Option**

Refer to [Map 6](#), **Menu F, Language Setup Menu**. The default setting is **English**.

## Installing an Updated Version of the Software

To install an updated version of the Commando Control software:

1. Insert the disk containing the updated version of the Commando software.
2. Go to [Map 6](#), **Menu B, Builder Setup Menu**. Highlight **Software Update**.
3. Follow the prompts on the screen to complete the installation. The process takes less than 5 minutes. If the system cannot install the new version for any reason, it displays an error message. Otherwise, the system displays messages when it has completed each stage of the installation procedure (Extracting Control software, and so forth).
4. The system displays a message when installation is complete and automatically reboots.

## DNC Setup

The Direct Numeric Control (DNC) feature allows the operator to execute a program that is not stored in the Commando's memory. Programs can be executed that are larger than the Commando's memory, usually generated from CAD or CAM software. The program is sent via RS-232 link from a computer, another Commando, or any other device capable of RS-232 communications.

### Selecting a DNC Execution Mode

Refer to [Map 6](#), **Menu G, DNC Setup Menu**. The **Execution Mode** parameter tells the Commando to execute the transmitted data in Drip Feed or Buffered Mode. Buffered is the default setting.

In **Buffered Mode**, the Commando stores incoming data in a buffer (Received Buffer) until the buffer is full. Then, the data is transferred to the Execution Buffer and the Commando executes the transferred blocks. While the Commando executes the Execution Buffer data, it stores more data in the Received Buffer. When all the data in the Execution Buffer has been executed, the Commando transfers the contents of the Received Buffer into the Execution Buffer and continues executing the program. The Received Buffer fills up with new data. The process continues until the entire program has been transmitted and executed.

Buffered Mode is the default mode for DNC communications.

In **Drip Feed Mode**, the program is transmitted via RS-232 one block at a time. Blocks are executed as soon as they are received. There is no initial delay.

To select Buffered/Drip Feed Mode, go to [Map 6](#), **Menu G, DNC Setup Menu**. Highlight **Execution Mode**. Press **ENTER** to toggle the selection to **Drip Feed** or **Buffered**.

### Setting the Buffer Size

This parameter allows the operator to specify the amount of memory that should be reserved for DNC in Buffered Mode. The choices are listed below:

- 16K
- 32K
- 64K - Default
- 128K
- Max

**Max** means that the control will intelligently estimate the maximum amount of memory that can be allocated. Depending on the size of the program and the amount of RAM available on the Commando, choosing Max might allow the entire program to be transmitted before execution begins. The default is 64K.

To set the Buffer size, go to [Map 6, Menu G, DNC Setup Menu](#). Highlight the amount of memory to be devoted to the Buffer. Press **ENTER**.

### Enabling/Disabling Tool Comp and CornerRad

The operator can enable/disable processing for tool radius compensation and corner rounding. While in DNC, these features should be disabled unless absolutely required. If these features are enabled, even if a program does not use them, the Commando will waste background cycles looking for them.

To enable/disable Tool Comp and CornerRad, perform the following steps:

1. Go to [Map 6, Menu G, DNC Setup Menu](#). Highlight **Ignore ToolComp and CornerRad**.
2. Press **ENTER** to toggle the selection. Choose **Yes** to ignore Tool Comp and CornerRad. Choose **No** to enable Tool Comp and CornerRad during DNC. **Yes** is the default.

### Setting Up the DNC Mode to Hold Execution of Program until START is Pressed

Refer to [Map 6](#), **Menu G, DNC Setup Menu**. Locate the **Wait for Start** parameter. Use this parameter to specify whether the control will hold execution of the transmitted data until the **START** key is pressed. Refer to **Table 1-8**.

**Table 1-8, Wait for Start Parameter Choices**

	<b>No Parameter</b>	<b>First Parameter</b>	<b>Every Parameter</b>
Drip Feed	Executes DNC data as soon as it is available.	Requires the <b>START</b> key to be pressed before the execution of the first block.	Requires the <b>START</b> key to be pressed before the execution of every block.
Buffered	Executes DNC data as soon as it is available.	Requires the <b>START</b> key to be pressed before the execution of the first block. Default setting.	Do not use. To execute program block by block, switch to Single Step Mode.

To set the Wait for Start parameter, perform the following steps:

1. Go to [Map 6](#), **Menu G, DNC Setup Menu**. Highlight **Wait for Start**. Press **ENTER**. The options pop-up menu activates.
2. Highlight an option and press **ENTER** to activate it.

The default setting is **First**.

### Changing the Passwords

**CAUTION:** The manufacturer discourages the operator from changing the passwords controlling access to the Setup Utility. If the password is forgotten, the operator has to erase the current configuration file and reinstall the software (restoring the default password).

**Before erasing the configuration file, make a printed copy. The settings will have to be manually input after the software is reinstalled.**

Some machine parameters are protected by passwords. The Commando provides two access levels of passwords. Operators are assigned limited access that allows them to set parameters used in normal machine operations. Service technicians require a higher level of access. See **Table 1-9** for default machine passwords.

**Table 1-9, Default Machine Passwords**

Access Level	Password Level
Limited – Operator	159
Service Technician	Z48

To change protected parameters, type a password when the Commando displays the password prompt.

**NOTE:** You are only required to type a password once during Setup. However, when you exit the Setup Utility and re-enter, you will again be prompted for a password.

To change the password, perform the following steps:

1. Go to [Map 6](#), **Menu H, Security Setup Menu**. Highlight the level of the password to be changed. Press **ENTER**. The Commando prompts for the old password.
2. Type the old password and press **ENTER**. The Commando prompts for the new password.
3. Type the new password and press **ENTER**. The Commando prompts for confirmation of the new password.
4. Re-type the new password, and press **ENTER**. The Commando activates the new password.



## Section 2 - Operator Setup

Refer to “[Section 3 - Setup Utility Maps.](#)” [Map 7](#), **Operator Setup, Menu B**. The Operator Setup allows the user to configure settings for the following parameters:

- ❑ [Control Software](#)
- ❑ [Communications](#)
- ❑ [Draw](#)
- ❑ [Editor](#)
- ❑ [Program](#)
- ❑ [Display](#)
- ❑ [Printer](#)
- ❑ [Date and Time](#)

### Control Software Parameters

Refer to [Map 7](#), **Menu C, Control Software Setup Menu**. This menu accesses settings affecting the Commando control software. Refer to **Table 2-1** for descriptions and setting information. The default is highlighted in bold when more than option is available by pressing the **ENTER** key to toggle a choice.

**Table 2-1, Control Software Parameters**

<b>Control Software Parameter</b>	<b>Function</b>	<b>Settings</b>
Default units	Toggles the default measurement units (Inch/MM Modes).	<b>Inch</b> - Activates Inch Mode as default. Original setting. [Default] MM - Activates MM Mode as default.
Default axis values	Toggles Absolute / Incremental default mode (determines how axis values for arcs, lines and other moves are measured).	<b>Absolute</b> - Every move is made in reference to an Absolute Zero position (Program Zero or Part Zero). [Default] Incremental - Each move is made in reference to the last programmed endpoint.
Internal accuracy	Maximum internal accuracy available on a Commando system (system resolution).	0.00000100 [Default]
External accuracy	Maximum accuracy for external data (i.e. program data) machine resolution.	0.00010000 [Default]
Compensation cutoff angle	Prevents or reduces wasted travel on acute angle.	15.0 (degrees) [Default]

*(Continued...)*

**Table 2-1, Control Software Parameters (Continued)**

<b>Control Software Parameter</b>	<b>Function</b>	<b>Settings</b>
Disk access marker	Activates/deactivates the Disk access marker.	<b>On</b> - Activates the Disk access marker. When the Commando is reading/writing information from/to a disk or other medium, the Disk access marker appears in the upper left corner of the screen. The Disk access marker looks like a small arrow. [Default] <b>Off</b> - Deactivates Disk access marker.
Max memory allocated (in MB-bytes)	Limits the amount of memory available to the software. Prevents the Commando program from tapping into virtual memory used for off-line systems.	Valid range is <b>2</b> to <b>18</b> . [Default: <b>4</b> ]
Forces simulation mode	Forces Commando to simulation mode.	<b>Yes</b> – Commando operates in simulation mode. [Default] <b>No</b> – Commando operates in sequential mode.
Screen blanking delay (minutes)	Sets the screen blanking delay.	5 (minutes) [Default]

### Communications Setup Parameters

Refer to [Map 8](#), **Menu C, Communications Setup Menu** for the available Communications Parameters. Refer to **Table 2-2** for a description of each parameter and its settings. The default is highlighted in bold when more than option is available by pressing the **ENTER** key to toggle a choice.

**Table 2-2, Communications Parameters**

Communications Parameter	Function	Settings
Port	Select communications port (Com2) or disable. Must enable to perform DNC or other remote communications.	<b>Com2</b> [Default] Disabled
Baud rate	Select a Baud rate.	110 150 300 600 1200 2400 4800 <b>9600</b> [Default] 19,200
Parity	Select parity.	None Odd <b>Even</b> [Default]
Data Bits	Toggle between 7 or 8 data bits.	<b>7</b> [Default] 8
Stop Bits	Toggle between 0 and 1 stop bits.	0 <b>1</b> [Default]
Software	Refers to "Xon" or "Xoff" or "handshaking" (transmission/receipt of data via RS-232 channels) in commercial communications packages.	<b>On</b> - Enables handshaking. [Default] Off - Disables handshaking.

## Simulated Draw Mode Setup Parameters

Refer to [Map 8](#), **Menu G, Draw Setup Menu** for the available Draw Mode Parameters. The parameters affect both Real-time and Simulated Draw Modes. Refer to **Table 2-3** for a description of each parameter and its settings. The default is highlighted in bold when more than option is available by pressing the **ENTER** key to toggle a choice.

**Table 2-3, Draw Mode Setup Parameters**

Draw Mode Parameter	Function	Settings
Restore to previous session	Sets the Commando to re-activate the last active session when the user re-enters Draw.	<b>Yes</b> - Commando reactivates last session when Draw activated. [Default] No - Commando ignores parameter.
Default program block mode	Sets default mode for Draw.	<b>Auto</b> [Default] S.Step Motion
Axis display	Determines whether axis displays appear in Draw Mode.	<b>On</b> - Shows axis displays. [Default] Off - Does not show axis displays.
Display program text	Determines whether program text appears in Draw Mode.	<b>Yes</b> - Shows program text. [Default] No - Does not show program text.
Automatic re-run	Toggles the automatic rerun function on and off.	<b>Yes</b> - Each time a soft key is pressed, the program will be redrawn. [Default] No - Commando won't redraw the graphic until the operator presses the Run (F3) soft key.
Grid	Activates/deactivates grid as a dotted or solid line.	<b>None</b> - Deactivates grid. [Default] Solid - Activates solid line grid. Dotted - Activates dotted line grid.
Grid Size	Determines the size of the grid. The grid size will be in the active measurement unit Inch or MM.	Type a value. ( <b>Example:</b> The default value is 1. If the Commando is in Inch Mode, each square in the grid will be one square inch in size for this setting.) <b>NOTE:</b> The Commando converts the set grid value if the measurement unit is changed. For example, if the Grid Size is set for 1 in Inch Mode and the user switches to MM Mode, the Commando changes the Grid Size to 25.4 MM.

(Continued...)

**Table 2-3, Draw Mode Setup Parameters (Continued)**

Draw Mode Parameter	Function	Settings
Tool display	Turns the tool display On or Off.	<b>On</b> - Enables tool display. [Default] Off - Disables tool display.
Default tool type	Determines shapes of displayed tool.	None - No tool shown. <b>Flat</b> - Flat-end tool shown. [Default] Ball - Ball-end tool shown.
Auto erase	Toggles the automatic erase function Off and On.	<b>On</b> - Each time a program is Run in Draw, the Commando automatically erases the display graphics and text before running the program. [Default] Off - Does not automatically erase graphic display before running a program. <b>NOTE:</b> The user can still clear the display by pressing DISPLAY (F5), highlighting the Erase option and pressing ENTER. The Commando erases the graphic display.
Cutter compensation in draw	Activates/deactivates cutter compensation in Draw Modes.	Ignore - Commando will not show compensated moves (if any) used in the program. Use - Commando shows compensated and noncompensated programmed moves. <b>Both</b> - Commando runs the program twice. First, the program is run without compensated moves. Second, the program is run showing compensated moves. This allows the user to compare the two paths and determine programming errors related to compensation. [Default]
Draw view	Determines perspective of Draw view.	XY (top view) - Views program in X and Y. XZ - Program viewed in X and Z. YZ - Program viewed in Y and Z. <b>ISO</b> - Program viewed in X, Y and Z. [Default]
Aspect ratio correction factor	Corrects for distortion in displayed graphics. (Flattened circles, etc.)	1.47 [Default] <b>CAUTION:</b> Only qualified technicians should adjust this setting.

## Edit Mode Setup Parameters

Refer to [Map 8](#), **Menu M, Editor Setup Menu**, for the available Edit Mode Parameters. Refer to **Table 2-4** for a description of each parameter and its settings. The default is highlighted in bold when more than option is available by pressing the **ENTER** key to toggle a choice.

**Table 2-4, Edit Mode Parameters**

<b>Edit Mode Parameter</b>	<b>Function</b>	<b>Settings</b>
Create backup program	A backup program is created when an edit is made. The Commando updates the backup file each time the program is edited. The backup program will not contain an edit until a new edit is made.	Yes - Backup program is created and maintained. <b>No</b> - No backup programs are created. [Default]
Delete internal file when program saved	When the program is saved, the Commando automatically deletes the existing internal file (*.S files) and replaces it with the saved file.	<b>Yes</b> - Deletes internal file when the user saves a file and replaces it with updated file. [Default] No - Commando does not delete internal file when the user saves a program
Case sensitive Find	Determines whether the Find feature will look for capital letters and lower case letters to determine a match.	Yes - Find search parameter looks for words that exactly match the typed word regarding capitalization and style. <b>No</b> - Find search parameter looks for typed in word regardless of capitalization and style. [Default]
Memory reserved from Editor (in K-bytes)	Specifies maximum memory allocation for the Editor.	Type a value. Default is <b>200</b> .

### Program Directory Parameters

Refer to [Map 9](#), **Menu C, Program Setup Menu**, for the available Program Parameters. These parameters concern the way program information is displayed in the Program Directory; whether backup files will be deleted during optimization; and whether and how often the disk is checked via software.

Refer to **Table 2-5** for a description of each parameter and its settings. The default is highlighted in bold when more than option is available by pressing the **ENTER** key to toggle a choice.

**Table 2-5, Program Parameters and Selections**

<b>Program Directory Parameter</b>	<b>Function</b>	<b>Settings</b>
Program directory pattern	Type of programs stored.	*.M (program file extension) <b>NOTE:</b> Do not change this parameter.
Program directory display mode	Specifies what program information will be display in the Program Directory.	<b>Short</b> - Filename and extension only. [Default] Long - Detailed program information, including file size, etc.
Program directory sort order	Specifies order in which program are listed in the Program Directory.	Ignore - Commando ignores parameter. <b>Name</b> - Alphanumerical order by filename. [Default] Extension - Alphanumerical order by filename Extension. Size - By file size. Date - By date program was created.
Automatically check disk at startup	For machines equipped with a hard drive, specifies whether and how often Commando will check the hard drive.	Always Daily Weekly Monthly <b>Never</b> [Default]
Delete backup files during optimize	For machines equipped with a hard drive, specifies whether backup files will be deleted during hard drive optimization.	<b>Yes</b> - Backup files deleted during optimization process. [Default] No - Backup files maintained during optimization process.
Directory for user program	Commando will store user programs in specified directory.	Type user directory location. C:\USER [Default]



## Formatting Display Settings

Refer to [Map 9, Menu F, Display Setup Menu](#), for the available Display Parameters. The listed parameters control how text and graphics are displayed on the screen. There are separate settings for the Editor, Commando Control, and Help screens and the displayed soft keys.

## Formatting Printer Settings

Refer to [Map 9, Menu H, Printer Setup Menu](#), for the available Printer Parameters. Refer to **Table 2-6** for a description of each parameter and its settings. The default is highlighted in bold when more than option is available by pressing the **ENTER** key to toggle a choice.

**Table 2-6, Printer Parameters and Settings**

Printer Parameter	Function	Settings
Default output devices	Specifies where file will be printed.	Type PRN to send file to the printer. Type drive, path, and filename with extension to print to another file. If the filename typed is not a current file, the Commando creates the file and transfers the data to the file. If the filename typed is an existing file, the Commando overwrites the data in the file with the print file data. PRN is the default. <b>NOTE:</b> The user directory for Commando systems is D:\USER.
Lines per page	Number of lines to be printed per page (8.5" x 11").	Type value (default: 55).
Page heading	Prints a page heading including filename, date and time and page number.	<b>Yes</b> - Print heading. [Default] No - Do not print heading.
Line numbers	Prints line numbers on hard copy of file.	Yes - Choose Yes to print line numbers. <b>No</b> - Choose No if no line numbers are desired. [Default]
Print quality	Sets print quality. Generally, the lower the printer quality, the faster the file prints.	NLQ - Near Letter Quality, highest quality, lowest speed. Utility - Middle quality, middle speed. High Speed - Low quality, high speed. <b>Ignore</b> - Uses printer defaults. [Default].

(Continued...)

**Table 2-6, Printer Parameters and Settings (Continued)**

Printer Parameter	Function	Settings
Characters per inch	Sets the number of characters to be printed per inch. Choosing Ignore will cause the Commando to print at the default value.	<b>10</b> - Characters per Inch (CPI) [Default] 12 - CPI 17 - CPI 20 - CPI Ignore - Uses printer defaults.
Wrap Text	Wraps text to the next line if program is longer than 80 characters.	<b>Yes:</b> Select to wrap text. <b>No:</b> Select to print beyond 80 characters.

### Setting Date and Time

Refer [Map 8](#), **Menu B, Operators Setup Menu** to set the correct date and time used when programs are created or edited.

### Setting Up the Units in Inch

Refer to [Map 1](#), **Menu A, Setup Options Menu**. Press **ENTER** to toggle Inch or Metric. Your unit selection is used to display all data in the configuration file and the screens. The default is **Inch**.

### Configuration Utilities

Use Utilities to configure information saved in the Setup Utility. Refer to [Map 10](#).

#### Save Configuration

The **Save Configuration** feature “force saves” a configuration file regardless of whether any changes were made to the existing file in the Setup Utility.

**NOTE:** ANILAM recommends that you save your file before you use any other Configuration Utilities option.

1. Go to [Map 10](#), **Menu B, Utilities Setup**. Highlight **Save Configuration** and press **ENTER**. The system prompts for a password.
2. Type the limited access password, and press **ENTER**. The configuration will be saved. The backup filename is P3CCFG.BAK.

## Copy Configuration

This feature enables the user to make copies of the configuration and save the copies to various locations using new filenames, if desired.

1. Go to [Map 10](#), **Menu B, Utilities Setup**. Highlight **Copy Configuration**, and press **ENTER**. The system prompts for a password.
2. Type the limited access password, and press **ENTER**. Menu C is displayed.
3. Highlight **A:** to copy the configuration to a floppy diskette. The configuration will be saved as A:\P3CCFG.CFG.
4. Highlight **Other..** to save the configuration to another drive or under another filename.
5. Type in the drive to which you wish to save the configuration and the new filename; for example, C:\HOME\FILE\_1.CFG.

**NOTE:** If you select a filename that already exists, the system will warn you that a file already exists. Unless you change the new filename, the system will overwrite the existing file.

## Restore from Copy

Use this feature to restore a copy of the configuration from the A drive (A:\P3CCFG.GFG) and save it as the new configuration file:

**NOTE:** If you restore your configuration file from a copy or a backup, you will need to reboot when the system prompts you to do so. You will be prompted for an automatic reboot.

1. Go to [Map 10](#), **Utilities Setup, Menu B**. Highlight **Restore from Copy**, and press **ENTER**. The system prompts for a password.
2. Refer to "[Table 1-9, Default Machine Passwords](#)." Type the limited access password, and press **ENTER**. **Menu D** is displayed.
3. Highlight **A:** to restore the configuration from a floppy diskette. The configuration will be restored from **A:\P3CCFG.CFG**.
4. Highlight **Other..** to restore the configuration from another drive or another filename. Type in the drive from which you wish to restore the configuration and the new filename; for example, **C:\HOME\FILE\_1.CFG**.

### Restore from Backup

When the configuration is saved, the system creates a backup file automatically. Use this feature to “swap” the backup file with the current file:

1. Go to [Map 10, Utilities Setup, Menu B](#). Highlight **Restore from Backup**, and press **ENTER**. The system prompts for a password.
2. Refer to Limited Access Passwords. Type the limited access password, and press **ENTER**. The system automatically swaps the current file with the backup file.

### Compare Configuration

Use the **Compare Configuration** feature to determine if your current configuration file is the same as another file either on the A drive or elsewhere.

1. Go to [Map 10, Utilities Setup, Menu B](#). Highlight **Compare Configuration**, and press **ENTER**. **Menu G** is displayed.
2. Highlight **A:** to compare the current file with P3CCFG.CFG on the A:-drive.
3. Highlight **Other..** **Menu H** is displayed. Type the directory with which you wish to compare files. For example, **C:\Home\FILE\_1**.

### Print Configuration

Use the **Print Configuration** feature to print a file to a printer.

<b>NOTE:</b> If there is no printer connected to your parallel port, an Error message is displayed.
---

1. Go to [Map 10, Utilities Setup, Menu B](#). Highlight **Print Configuration**, and press **ENTER**.
2. The **Print Options Setup Menu, Menu F** is displayed.
3. Highlight **Printer**, and press **ENTER**. Press **Yes (F1)** to print to your printer. Press **No (F2)** to return to **Menu B**.

– or –

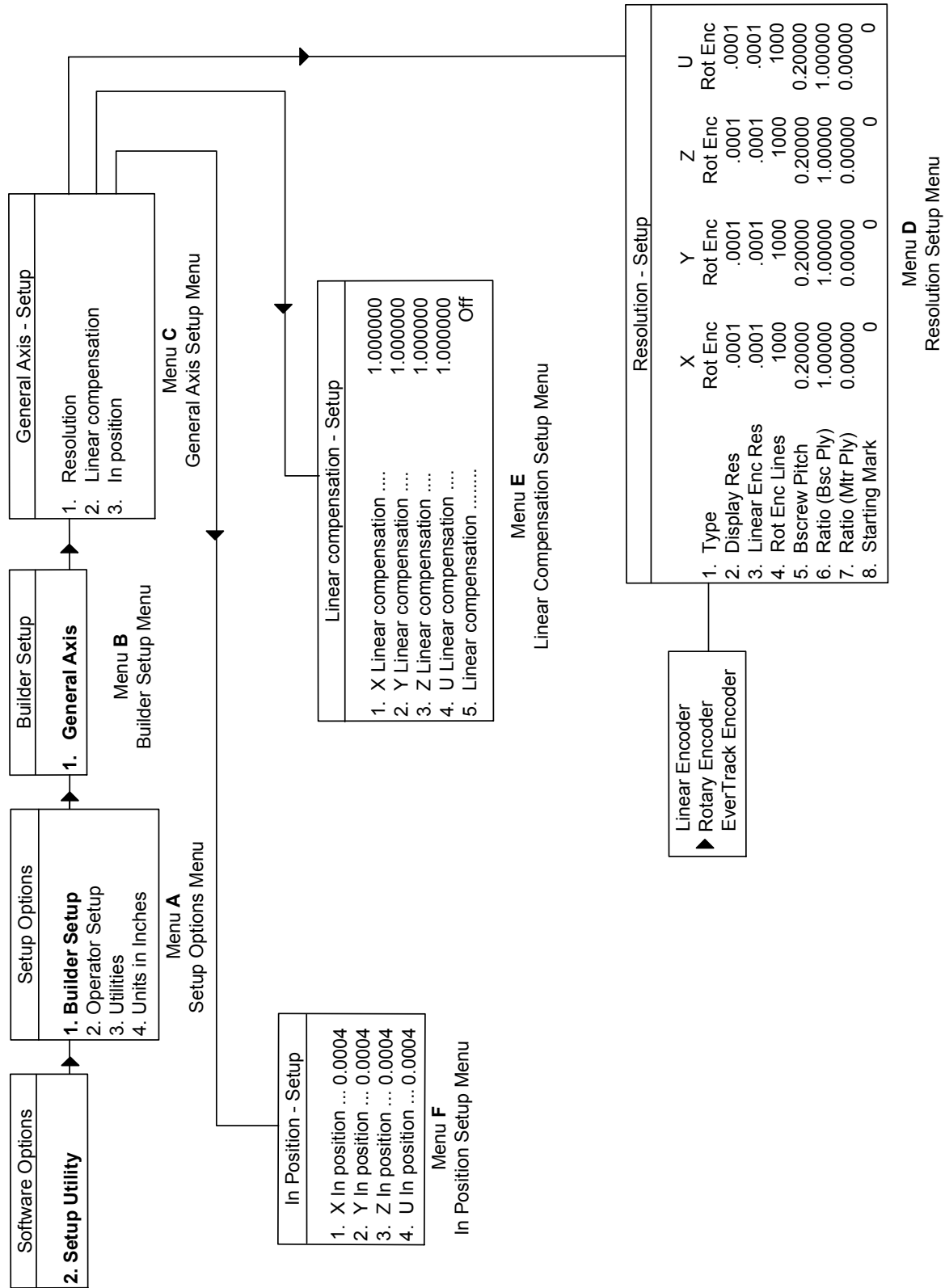
Highlight **Text File (A:)**, and press **ENTER**. **P3cfg.TXT** will be the filename. Press **Yes (F1)** to print to you're A:-drive. Press **No (F2)** to return to **Menu B**.

– or –

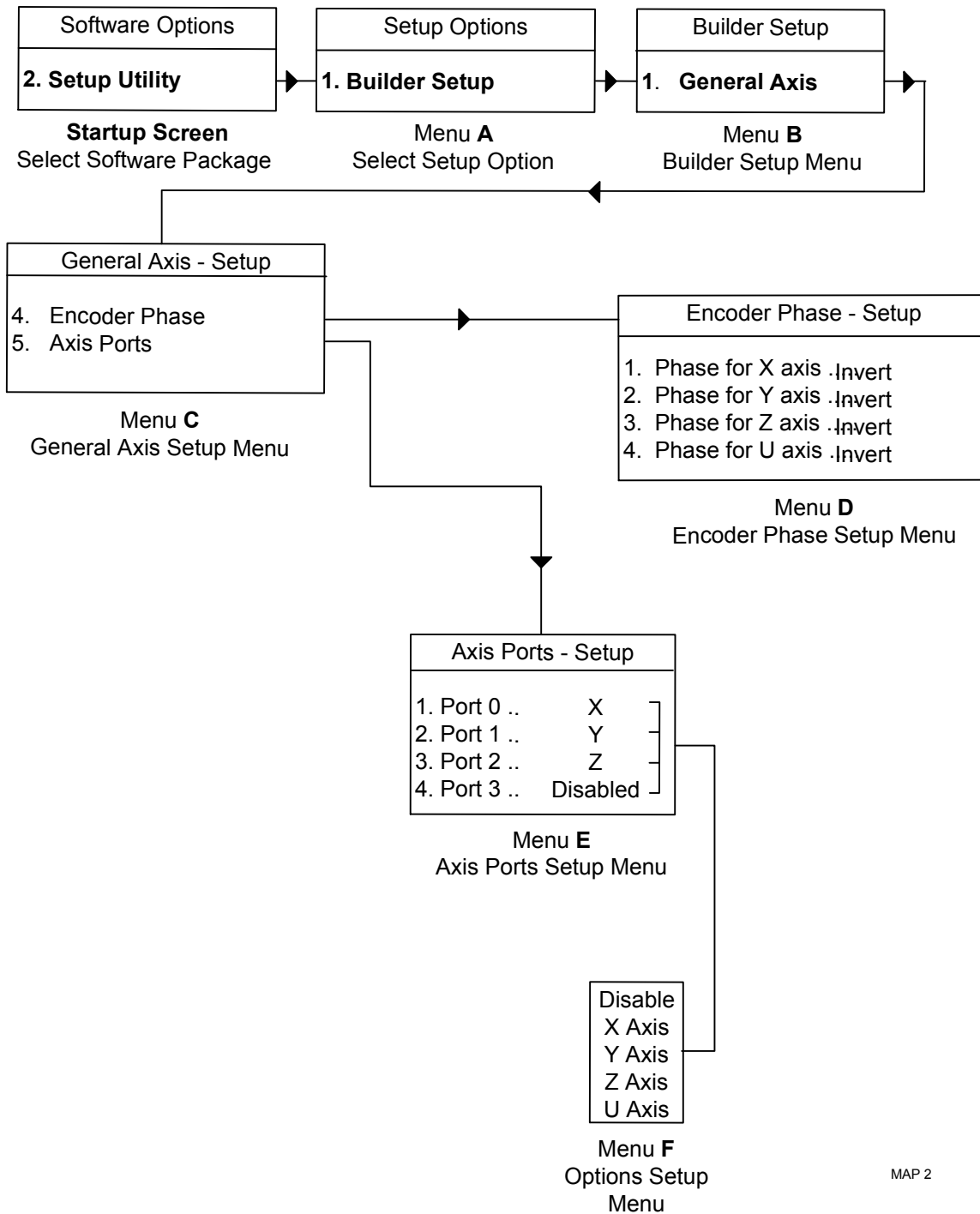
Highlight **Text File (Other)**, and press **ENTER**. Type the directory name and filename to which you wish to print.

## **Section 3 - Setup Utility Maps**

This section contains maps referenced in "[Section 1 - Builder Setup.](#)" Refer to the section "[Navigating through the Setup Utility.](#)" for instructions on using the software and maps.

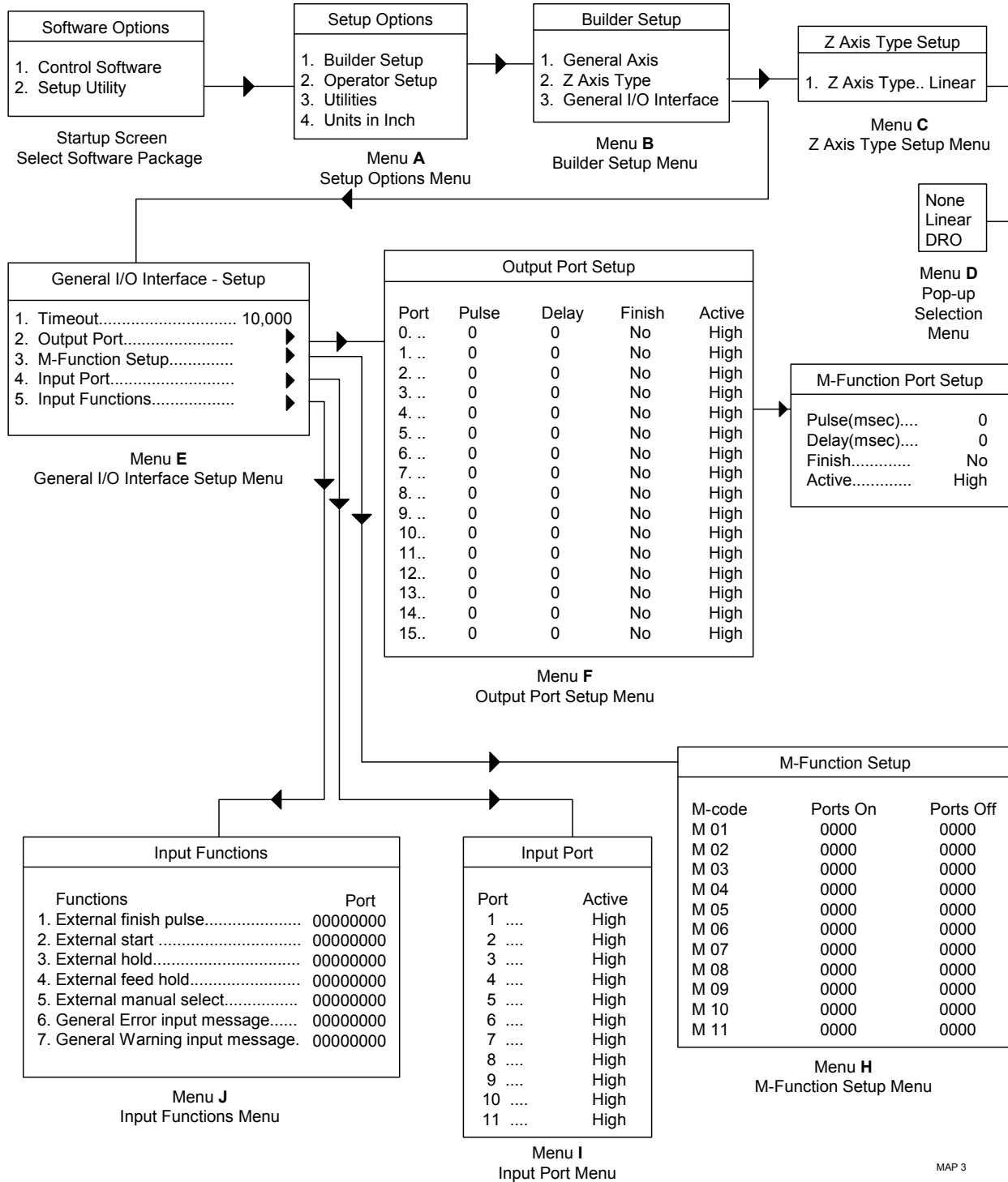


**Map 1**



MAP 2

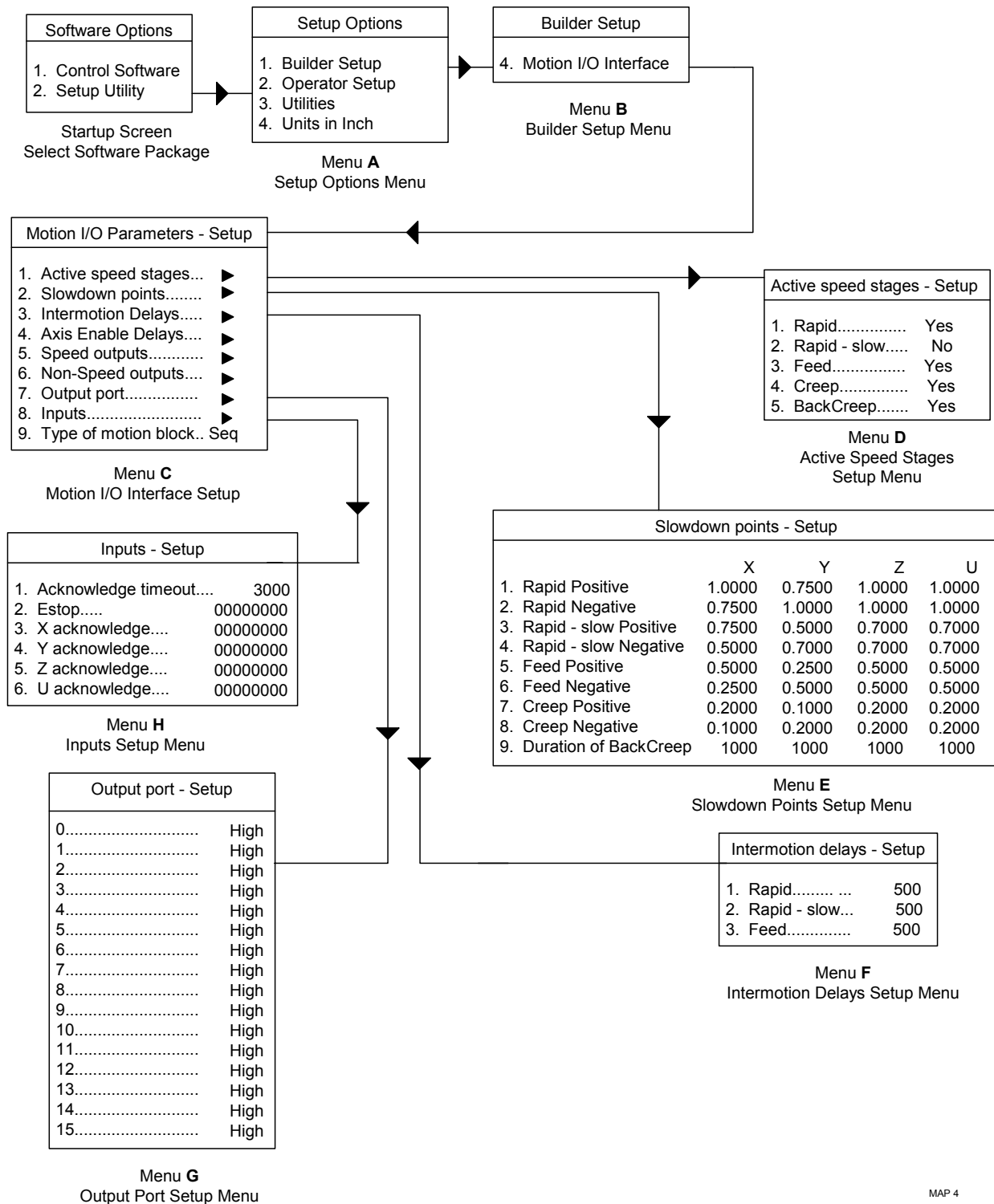
**Map 2**



**Map 3**

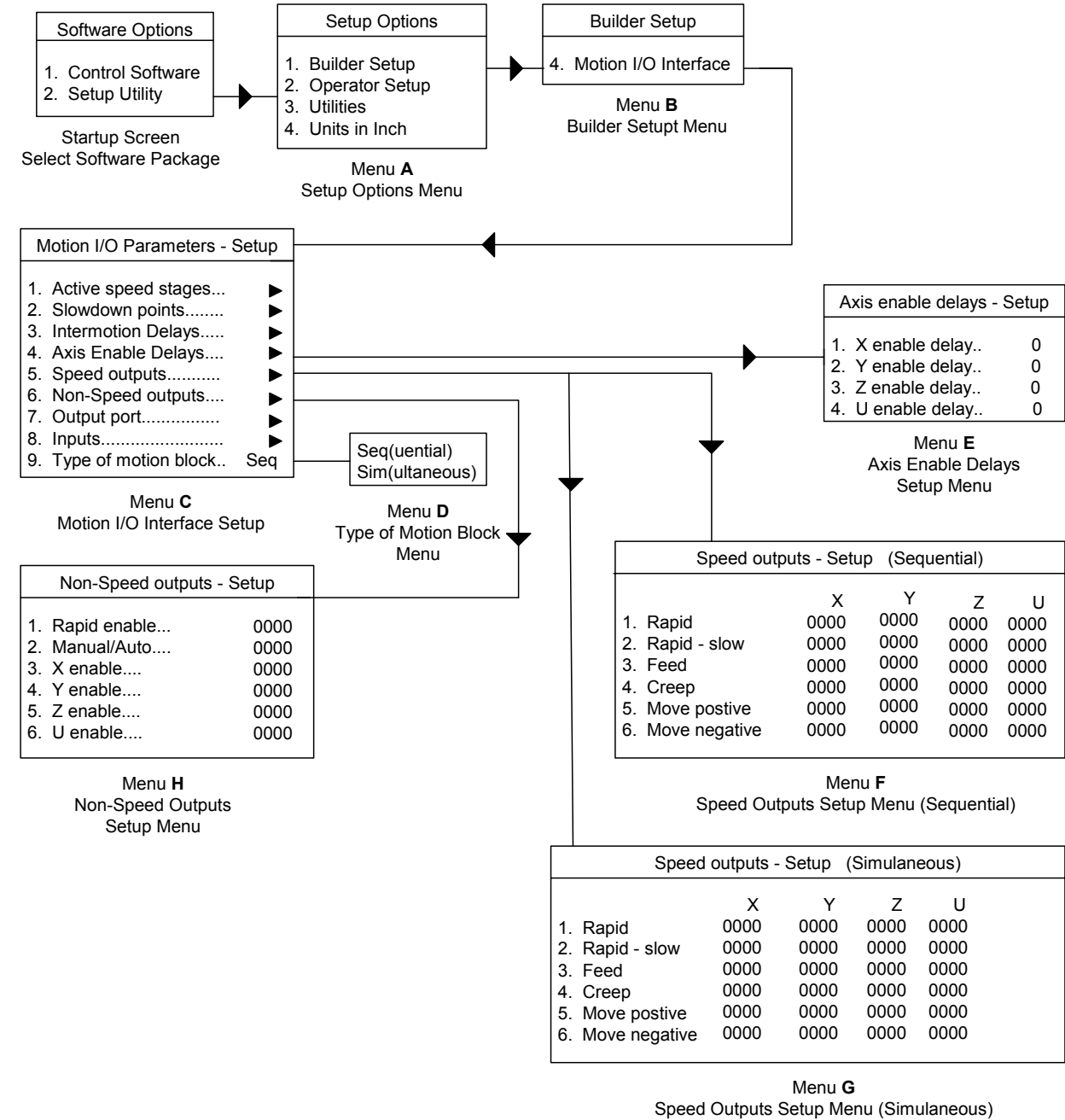
MAP 3





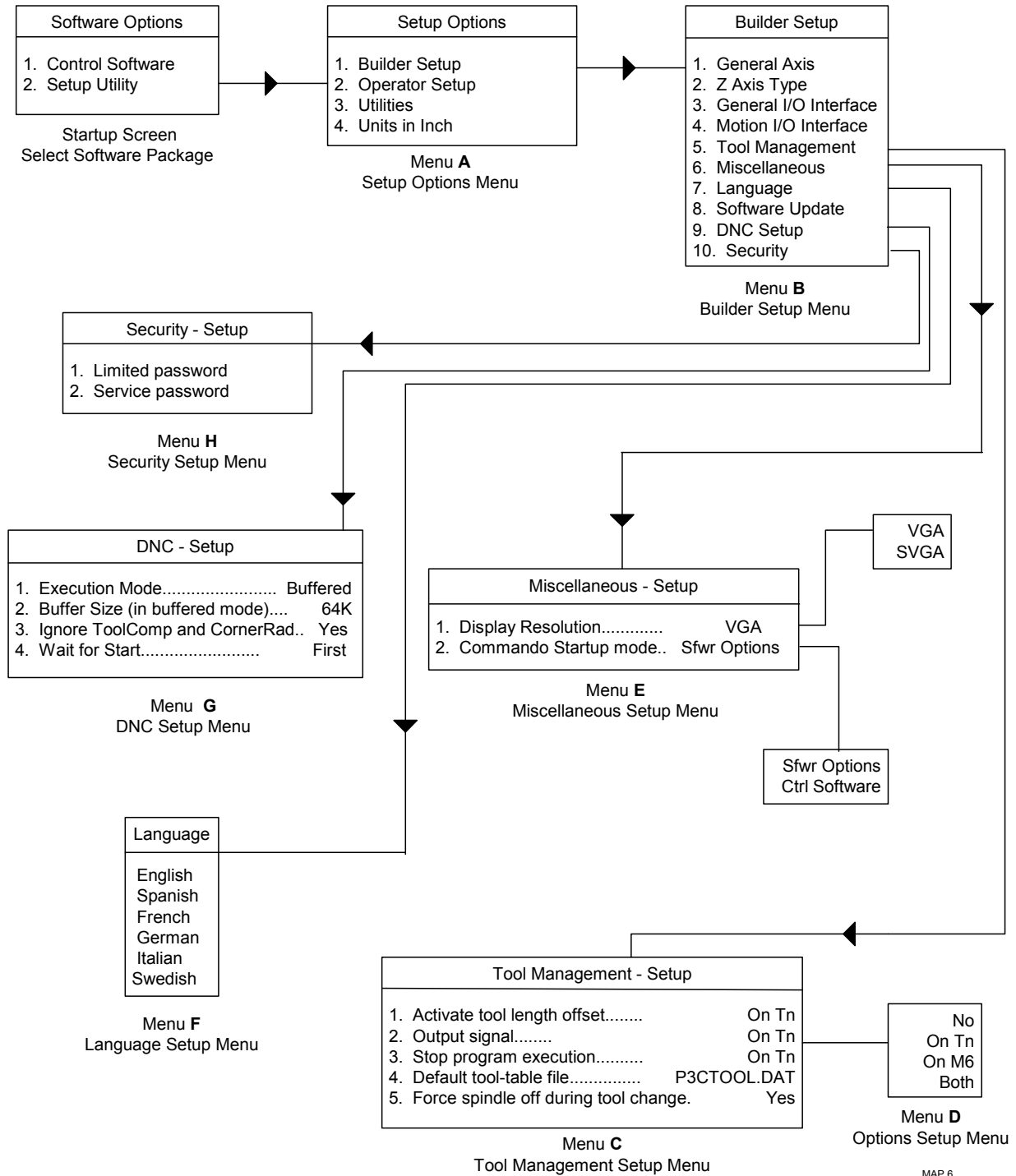
**Map 4**

MAP 4

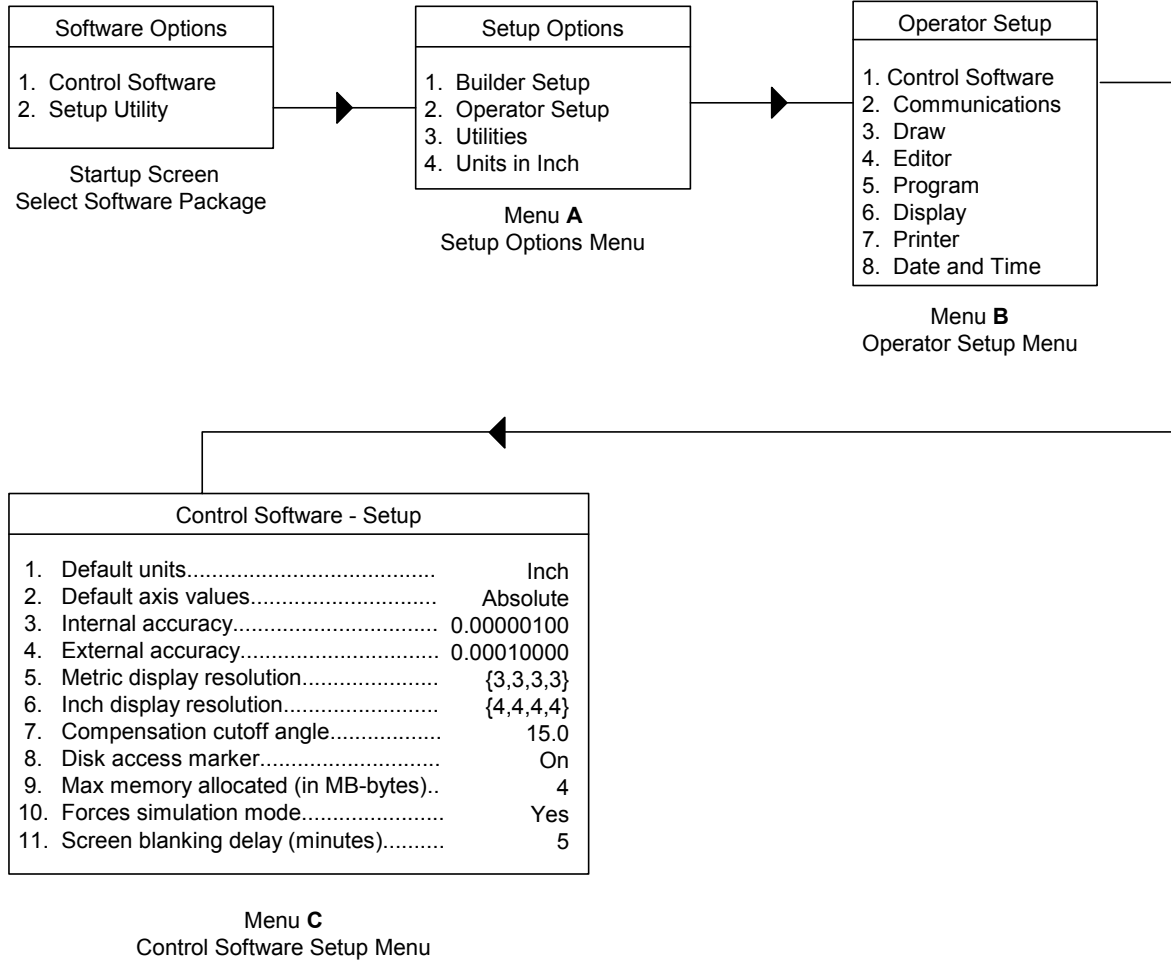


MAP 5

### Map 5

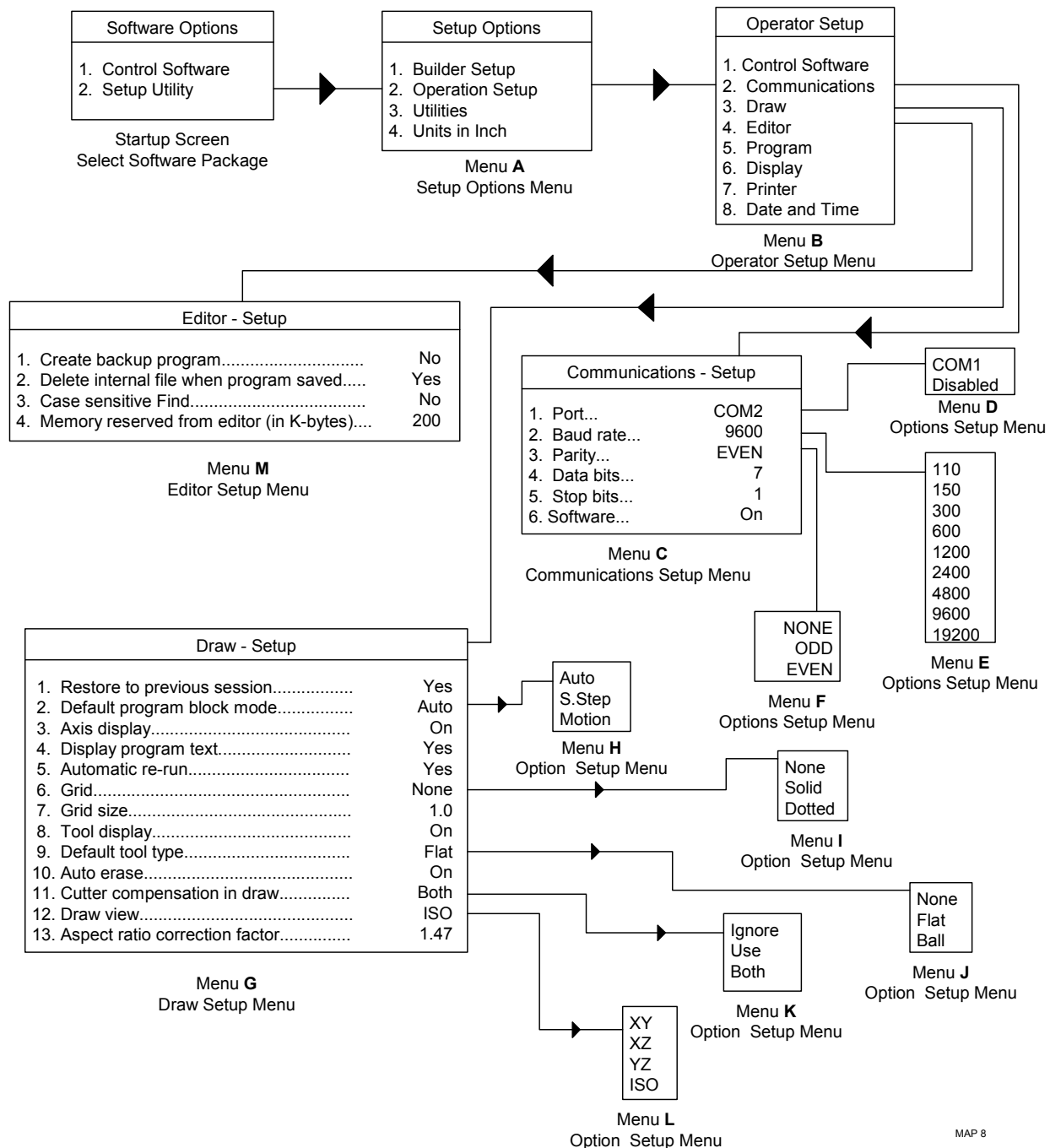


**Map 6**

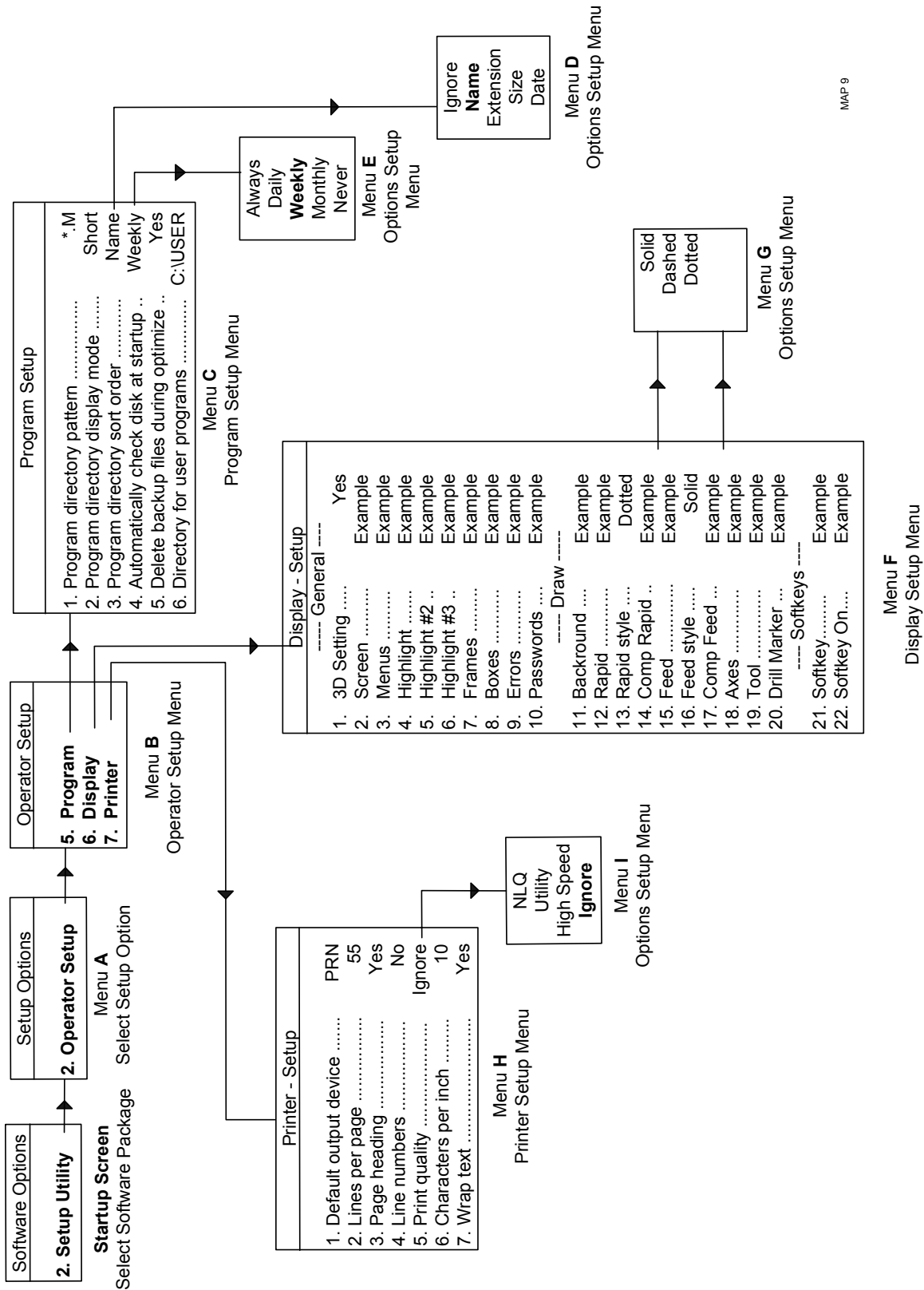


MAP 7

### Map 7

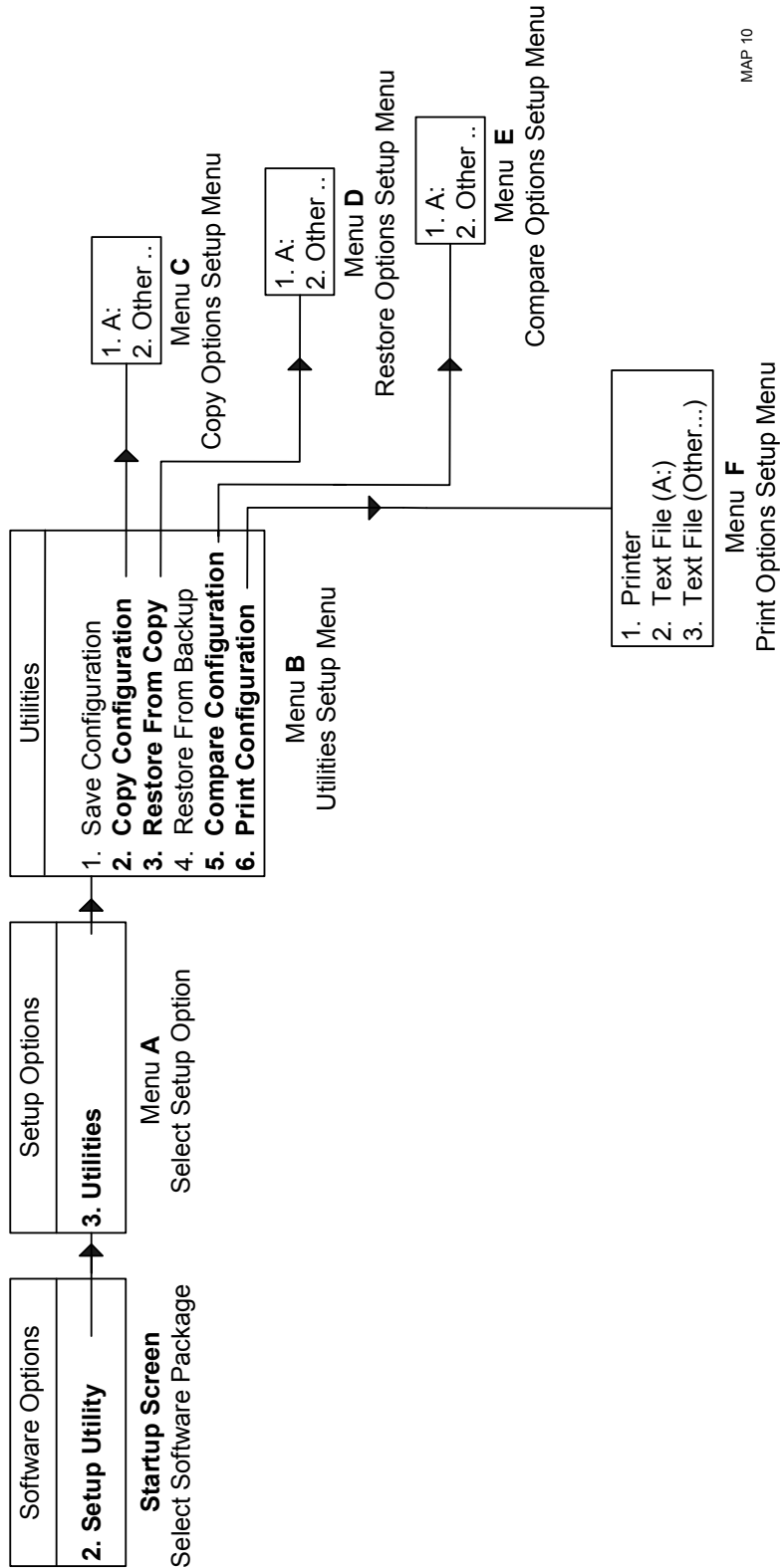


**Map 8**



MAP 9

Map 9



MAP 10

**Map 10**

**A**

active port, illustration, 1-12  
active, speed stages, 1-17  
auto, operation, 1-21  
axis  
  enable delays, to setup, 1-18  
  movement sequence, illustration, 1-22  
  ports, setup, 1-9  
  resolution, 1-4  
    EverTrack encoder, 1-3  
    linear encoder, 1-3  
    parameter, setup, 1-3  
    rotary encoder, 1-3

**B**

BackCreep, 1-21  
backup, restore from, 2-12  
ballscrew  
  pitch, to set, 1-5  
  pulley ratio, to enter, 1-6  
baud rate, parameter, 2-4  
buffer size, listed, 1-26  
buffered mode, 1-25  
builder setup  
  DNC setup, 1-25  
  language option, setup, 1-24  
  security, 1-28  
  software update option, setup, 1-25

**C**

changes, saving, 1-2  
characters per inch, printer  
  parameter, 2-10  
Commando, startup mode, to  
  select, 1-24  
communications setup,  
  parameters, 2-4  
compare, configuration, 2-12  
compensation cutoff angle, 2-2  
configuration  
  compare, 2-12  
  copy, 2-11  
  print, 2-12  
  restore, from backup, 2-12  
  restore, from copy, 2-11  
  save, 2-10  
  utilities, 2-10

control software  
  parameters, 2-2  
  startup mode, 1-24  
copy configuration, description,  
  2-11  
copy, restore from, 2-11  
corner rounding, 1-26  
CornerRad, 1-26  
count direction, to adjust, 1-9

**D**

data bits, parameter, 2-4  
date and time, setting, 2-10  
default axis values, 2-2  
default units, 2-2  
default, output devices, printer  
  parameter, 2-9  
Direct Numeric Control. See  
  DNC  
disclaimer, iii  
disk access marker, 2-3  
display resolution  
  linear encoder, setup, 1-4  
  to set, 1-4, 1-24  
display settings, formatting, 2-9  
DNC  
  buffer size, 1-26  
  description, 1-25  
  execution mode, 1-25  
  ignore, ToolComp and CornerRad, 1-26  
  wait for start, 1-27  
Draw mode  
  aspect ratio correction factor, 2-6  
  auto erase, 2-6  
  automatic re-run, 2-5  
  axis display, 2-5  
  cutter compensation in draw, 2-6  
  default program block mode, 2-5  
  default tool type, 2-6  
  display program text, 2-5  
  draw view, 2-6  
  grid, 2-5  
  grid size, 2-5  
  restore to previous session, 2-5  
  simulated, parameters setup, 2-5  
  tool display, 2-6  
drip feed mode, 1-25



**E**

## edit mode

- case sensitive find, 2-7
- create backup program, 2-7
- delete internal file when program saved, 2-7
- memory reserved, 2-7
- parameter, setup, 2-7

## encoder

- ballscrew pitch, to set, 1-5
- count direction, to adjust, 1-9
- line count, 1-5
- phase, to adjust, 1-9
- setup, 1-3

## EverTrack encoder

- setup, 1-3
- starting mark, to set, 1-7

## execution mode, 1-25

## external accuracy, 2-2

**F**

## finish pulse timeout, setting, 1-16

## force spindle off, during tool change, 1-24

## force, simulation mode, 2-3

**G**

## general I/O interface

- input function, 1-15
- input port, to configure, 1-14
- input ports, to assign, 1-15
- M-function setup, 1-13
- output port, 1-11
- output port, to setup, 1-11
- timeout, 1-16
- timeout, description, 1-10
- timeout, finish pulse, description, 1-16

**I**

## I/O board, function, 1-10

## I/O interface, general

- input function, 1-15
- input port, to configure, 1-14
- input ports, to assign, 1-15
- M-function, setup, 1-13
- output port, to setup, 1-11
- timeout, description, 1-10
- timeout, finish pulse, description, 1-16

## I/O interface, motion

- active speed stages, to set, 1-17

## axis enable delays, to setup, 1-18

## inputs, to setup, 1-19

## intermotion delays, to setup, 1-18

## non-speed outputs, to setup, 1-19

## output port, to setup, 1-19

## slowdown points, to set, 1-17

## speed outputs, to setup, 1-18

## type of motion block, to setup, 1-20

## inactive port, illustration, 1-12

## inch-to-micron, table, 1-4

## in-position error check, setting, 1-8

## in-position tolerance, 1-8

## input function

## general I/O interface, 1-15

## setup, 1-14

## usage, table, 1-15

## input ports

## assigning, 1-15

## configuring, 1-14

## general I/O interface, 1-15

## motion I/O interface, to setup, 1-19

## inputs

## description, 1-19

## setup, 1-19

## intermotion delay, 1-21

## intermotion delays, to setup, 1-18

## internal accuracy, 2-2

**J**

## jog modes, listed, 1-20

**K**

## keypad keys, illustrated, 1-1

**L**

## language option, setup, 1-24

## Leadscrew. See ballscrew

## line count, setup, 1-5

## line count, to enter, 1-5

## line numbers, printer parameter, 2-9

## linear correction compensation, setting, 1-7

## linear encoder

## scale setup, 1-4

## setup, 1-3

## lines per page, printer

parameter, 2-9

---

**M**

manual (auto), operation, 1-20  
 manual (manual), operation,  
     1-20  
 manual, operation, 1-20  
 Map 1, 3-2  
 Map 10, 3-11  
 Map 2, 3-3  
 Map 3, 3-4  
 Map 4, 3-5  
 Map 5, 3-6  
 Map 6, 3-7  
 Map 7, 3-8  
 Map 8, 3-9  
 Map 9, 3-10  
 max memory allocated, 2-3  
 max, buffer size, 1-26  
 menus, setup utility, accessing,  
     1-2  
 M-function  
     output, description, 1-10  
     output, ports, assign, 1-13  
     setup, general I/O interface, 1-13  
 micron-to-inch, table, 1-4  
 miscellaneous  
     display resolution, 1-24  
     setup, description, 1-24  
     startup mode, 1-24  
 motion I/O interface  
     active speed stages, to set, 1-17  
     axis enable delays, to setup, 1-18  
     inputs, to setup, 1-19  
     intermotion delays, to setup, 1-18  
     non-speed outputs, to setup, 1-19  
     output port, to setup, 1-19  
     setup, description, 1-17  
     slowdown points, to set, 1-17  
     speed outputs, to setup, 1-18  
     type of motion block, to setup, 1-20  
 motor pulley ratio, to enter, 1-6

**N**

non-speed outputs, to setup,  
     1-19

**O**

operation mode  
     auto, 1-21  
     listed, 1-20  
     manual (auto), 1-20

    manual (manual), 1-20  
     operator setup, description, 2-1  
     output  
         signal, to set, 1-23  
     output function, setup, 1-10  
     output port  
         configuring, 1-11  
         general I/O interface, 1-11  
         motion I/O interface, to setup, 1-19  
     output signal, default, setup,  
         1-23  
     outputs, speed  
         to setup, 1-18

**P**

P3CTOOL.DAT, tool-table file,  
     default, 1-23  
 page heading, printer parameter,  
     2-9  
 parameters  
     communications setup, 2-4  
     protected, changing, 1-28  
     restricted, password, 1-28  
     setup, 1-2  
 parity, parameter, 2-4  
 password  
     changing, 1-28  
     default machine, 1-28  
     description, 1-2  
     entering, 1-28  
     protected parameters, changing, 1-28  
 port  
     active, illustration, 1-12  
     inactive, illustration, 1-12  
     parameter, 2-4  
 print configuration, 2-12  
 print quality, printer parameter,  
     2-9  
 printer parameter  
     characters per inch, 2-10  
     default output devices, 2-9  
     line numbers, 2-9  
     lines per page, 2-9  
     page heading, 2-9  
     print quality, 2-9  
     wrap text, 2-10  
 printer settings, formatting, 2-9  
 program, 2-8  
 program directory, parameters  
     automatically check disk at startup, 2-8  
     delete backup file,s during optimize, 2-8

- description, 2-8
- directory for user program, 2-8
- display mode, 2-8
- sort order, 2-8
- program, stop execution, tool
  - command, 1-23

**R**

- ratio
  - ballscrew pulley, to enter, 1-6
  - motor pulley, to enter, 1-6
  - pulley, description, 1-6
- resolution
  - scale/encoder, 1-4
- restore from
  - backup, 2-12
  - copy, 2-11
- rotary encoder
  - ballscrew pitch, to set, 1-5
  - ballscrew pulley ratio, to enter, 1-6
  - in-position tolerance, 1-8
  - line count, to enter, 1-5
  - motor pulley ratio, to enter, 1-6
  - setup, 1-3

**S**

- save configuration, 2-10
- saving, changes, 1-2
- screen, blanking delay, 2-3
- screens
  - Inputs Setup, 1-19
  - Intermotion Delays Setup, 1-18
  - startup, 1-3
- security, passwords, changing, 1-28
- sequential motion, 1-20
- setup utility
  - maps, 3-1
  - menus, accessing, 1-2
  - navigating, 1-1
  - parameters, setting, 1-2
  - password, 1-28
  - protected parameters, changing, 1-28
  - resolution, 1-4
- simulated Draw mode, setup, 2-5
- simulation mode, force, 2-3
- simultaneous motion, 1-20
- slowdown points, to set, 1-17
- software
  - control, parameters, 2-2
  - control, startup mode, 1-24

- install update, 1-25
- options, startup mode, 1-24
- parameter, 2-4
- update version, 1-25
- speed outputs
  - port, defaults, 1-18
  - to setup, 1-18
- speed stages, active, 1-17
- spindle, force off during tool change, 1-24
- starting mark, setting, 1-7
- startup mode, to select, 1-24
- startup screen, 1-3
- stop bits, parameter, 2-4
- stop program execution, tool
  - command, 1-23
- SVGA (800x600), 1-24

**T**

- time, setting, 2-10
- timeout
  - description, 1-10
  - finish pulse, description, 1-16
  - general I/O interface, 1-16
- tool change, force spindle off during, 1-24
- tool change, setup, 1-21
- Tool Comp, 1-26
- tool length offsets, to enable, 1-23
- tool management
  - default tool-table file, to set, 1-23
  - output signal, to set, 1-23
  - stop program execution, 1-23
  - tool length offsets, to enable, 1-23
- tool radius compensation, 1-26
- tool-table file, default, setup, 1-23
- type of motion block, motion I/O interface, to setup, 1-20

**U**

- units in inch, to set up, 2-10
- updating, software version, 1-25

**V**

- VGA (640x480), 1-24

**W**

- wait for start, 1-27

warranty, iii

wrap text, printer parameter,  
2-10

**Z**

Z axis type, setup, 1-10

# ANILAM

## U.S.A.

ANILAM

One Precision Way  
Jamestown, NY 14701

☎ (716) 661-1899

☎ (716) 661-1884

✉ anilaminc@anilam.com

## ANILAM, CA

16312 Garfield Ave., Unit B  
Paramount, CA 90723

☎ (562) 408-3334

☎ (562) 634-5459

✉ anilamla@anilam.com

**Dial "011" before each number when calling  
from the U.S.A.**

## France

ANILAM S.A.R.L.

2 Ave de la Cristallerie  
B.P. 68-92316

Serves Cedex, France

☎ +33-1-46290061

☎ +33-1-45072402

✉ courrier@acu-rite.fr

## Germany

ANILAM GmbH

Fraunhoferstrasse 1  
D-83301 Traunreut

Germany

☎ +49 8669 856110

☎ +49 8669 850930

✉ info@anilam.de

## Italy

ANILAM Elettronica s.r.l.

10043 Orbassano

Strada Borgaretto 38  
Torino, Italy

☎ +39 011 900 2606

☎ +39 011 900 2466

✉ info@anilam.it

## Taiwan

ANILAM, TW

No. 246 Chau-Fu Road  
Taichung City 407

Taiwan, ROC

☎ +886-4 225 87222

☎ +886-4 225 87260

✉ anilamtw@anilam.com

## United Kingdom

ACI (UK) Limited

16 Plover Close, Interchange Park  
Newport Pagnell

Buckinghamshire, MK16 9PS

England

☎ +44 (0) 1908 514 500

☎ +44 (0) 1908 610 111

✉ sales@aciuk.co.uk

## China

Acu-Rite Companies Inc.(Shanghai Representative Office)

Room 1986, Tower B

City Center of Shanghai

No. 100 Zunyi Lu Road

Chang Ning District

200051 Shanghai P.R.C.

☎ +86 21 62370398

☎ +86 21 62372320

✉ china@anilam.com