



THE IC2100

The IC2100 is a single axis control system designed specifically for the Print finishing industry. It is flexible, reliable easy to use and can be retro fitted to almost any guillotine with a suitable leadscrew capable of being power driven.

The IC2100 has been developed by SP Electronics over the last 5 year's and offers the performance and reliability of any other retrofit system but at a fraction of the cost. It is currently available in 2 formats either Relay control or AC inverter drive.

CONTENTS

	Page
Contents.	2
A quick tour of the IC2100	
Display	3
Numeric input	3
Mathematical input	3
Mode button	3
Soft keys	4
Power up and self-test	5
Auto - calibration	5
Manual mode	6
Calculator	6
Total cuts	7
Floating Passwords	7
Auto run mode	
New program	8
Load program	9
Save program	9
Delete program	9
Rename program	10
Run program	10
Edit program	10
Sheet divide	11
Label cut	12
Auto learn mode	13
Emergency stop	14
Machine limits	14
Messages	15
Clock / daylight saving	15
Error messages	16
Connections	17
Servicing	18
Your settings	19
Installation notes	20

THE IC2100 QUICK TOUR

The IC2100 display

The IC2100 display is split up into 3 areas.

- 1) The top of the display shows the date, mode and time.
- 2) The middle of the display is the working area, the position, cut number and status of the machine are shown here along with program and error messages if applicable.
- 3) The bottom of the display is split into 4 areas, these areas are known as softkeys, the function of the key may change as the mode changes, for example, if you are in “MANUAL “ the “F1” softkey is used to switching the air ON or OFF whilst in “AUTO RUN” the “F1” softkey is used to run a current program

The IC2100 keyboard

The IC2100 keyboard is split up into 5 areas.

- 1) **Numeric input** (0 through 9)
- 2) **Mathematical input** (+ , - , x , /)

These keys are used in conjunction with the calculator function.

- 3) **Mode keys** (Units, Mode, Auto/Man and Delete)

The Units button allows the user to switch between units of measurement, Inches, Centimetre's and Millimetre's

The Mode button opens the “options “ menu, within this menu you have several options such as load, save and delete programs.

The Auto/man button allows the user to switch between Automatic mode and manual mode, in Automatic mode you can load, run of save programs. In manual mode, you can enter a position and goto it or move using the forward/reverse keys.

4) **Softkeys** (F1 , F2 , F3 , F4)

Softkeys function is dependent upon the current mode of operation

5) **Motion keys** (Move , Forward and Reverse)

These keys allow the user to move the backgauge forwards, backwards or to an absolute position, the forward/reverse buttons also move the cursor in menus *INFORMATION ON SPECIFIC FUNCTIONS CAN BE FOUND LATER IN THIS MANUAL*

The move button is used to move to an absolute position such as 150 mm, there are 2 methods of moving to an absolute position.

- a) Press move followed by the required position then press enter
- b) Enter the required position then press enter

The IC2100 will then move the backgauge to the position entered by the operator, unless the knife or clamp is down or partially down or the position is outside the machine limits.

The backgauge can also be moved manually to a position by way of the of the arrowed buttons (forward/reverse) located next to the move button. To move the backgauge to a position rear of the current position use the “ \wedge ” button, to move forward of the current position use the “ \vee ” button.

If you press and hold either of the arrowed buttons for more than 2 seconds the backgauge speed will increase to reduce the time taken to manually move the backgauge from one position to the next. If the button is pressed and released before 2 seconds has elapsed the backgauge will move in slow speed.

NOTE

The IC2100 is pre programmed with machine maximum and minimum position limits (during installation) if you attempt to move outside of the limits an error message will be displayed on the screen

POWER UP AND SELF TEST

When the IC2100 is switched on it will perform a number of self-tests before allowing the user to operate the unit. These tests are shown on the first screen, in the unlikely event that any of the tests fail, a cross will be displayed, you should contact your authorised service agent or DTS Engineering.

Quoting the software version, date and serial number of your unit along with details of the error or fault, this will enable an engineer to diagnose your problems faster.

(This information is shown on the self-test screen)

AUTO - CALIBRATE

Following the successful self test A "COMPANY logo is displayed, this is then followed by a "REMINDER MESSAGE" if applicable or by "BACKGAUGE CLEAR? ". At this prompt press OK, if it is safe to move the BACKGAUGE, the IC2100 will now calibrate the system and adjust the datum position if necessary.

If for any reason the backgauge has not calibrated correctly the user can adjust it by pressing MODE followed by selecting (8) setup menu; you now select (4) backgauge adjustment. The adjustment is limited to ± 1 revolution of the leadscrew, if the error is greater than this you should adjust in multiples of the leadscrew

Example

Displayed position = 500 mm

Actual position is = 590 mm

The leadscrew pitch is 25 mm

You would have to adjust by 25 mm 3 times and by 15 once.

If the Calibration is consistently incorrect you should contact your supplier and advise them of the error, they will advise you of the quickest method of rectifying your problem.

MANUAL MODE

In manual mode the backgauge can be positioned either by keying in the required dimension and pressing "move" or "enter", or by using the "^" or "v" arrows.

The IC2100 will move the backgauge to the desired position, as each cut is performed the cut total (if enabled) will be incremented by 1, the cut total can be reset to 0 by pressing "F2" the zero cuts key

The air, calculator and brake may also be switched on or off by using: -

"F1" for the air

"F3" for the calculator (see next page)

"F4" for the brake.

CALCULATOR

The calculator may be used for simple calculations or to calculate and then "move" to a position. If the "move" button is pressed with the calculator active the backgauge will move to the calculated value, if it is within the machine limits.

Example $25.4 \times 10 = 254$

Press the "move" and the backgauge will goto the calculated position, in this case 254

When using the calculator, the operator must bear in mind that whatever units of measurement are in use (inches, centimetres or millimetres) will be the used by the calculator thus the result of the calculation above could be:-

- 1) 254 inches
- 2) 254 cm
- 3) 254 mm

If the calculated position is too large or too small for the machine the operator will be prompted, in such a case the backgauge will not move to the calculated position

TOTAL CUTS

Total cuts information can be useful for determining several things such as the overall usage of a particular machine or for determining the average life of a blade.

Total Cuts can easily be displayed by pressing: -

- 1) Press the "Mode" button
- 2) Press "8" Setup menu
- 3) Press "5" Show total cuts

To reset the total cuts press reset followed by your password (1066) this will then reset to Total Cuts to Zero

FLOATING PASSWORDS

The Passwords on the IC2100 are continually changing based on an algorithm that uses the date, time and several random multipliers to provide a new password whenever required.

If for any reason you need to go into a secure menu you should contact your dealer or installer for a password, to enable your dealer or installer to give you a password you must provide the six-digit number from the IC2100 screen.

NOTE

If you exit from a password menu the six digit number will change next time you re-enter it, you should ensure that the exit key is not used while you are contacting your dealer or installer. If the exit key is used the password that you have been given will not be correct.

AUTORUN MODE

Autorun mode is used to run programs that have previously been created on the IC2100, the operator can also create new programs edit, save, delete or rename programs, this is done by using the MODE button.

NEW PROGRAM

- 1) Press the MODE button
- 2) Press 1 or enter if "New Program" is highlighted
- 3) Press "F1" 'ins.step' and type the first position then press ENT
Press ENT if 1 cut is required or type in the number of cuts required then press ENT.
- 4) If only one cut is required simply type in your dimension then press ENT
- 5) To enter more steps repeat 3 or 4 to end and run,
press the AUTO/MAN button followed by "F1" (RUN)

POSITION OFFSETS

This facility allows you to enter cuts as an offset from an absolute position your program must NOT start with an offset i.e.

First cut is at 500 mm you then have several cuts to make for 30 mm labels you could use "label mode" or offsets as the example shown

CUT 1 at 500 mm

Offset - 30 (moves to $500 - 30 = 470$)

Offset - 30 (moves to $470 - 30 = 440$)

Offset -30 (moves to $440 - 30 = 410$)

To enter an offset you must start with an absolute position i.e. 500 mm
Then use the + or - button followed by the required offset

Whilst running the program if you find that a program step is in correct you can edit it by using "F2" (EDIT STEP)

- 1) From Auto Run press "F2" (EDIT)
- 2) Press "F3" or "F4" to highlight the step to be edited
- 3) Press "F2" the cursor is now blinking on the position selected for edit
- 4) Key in the correct dimension then ENT

- 5) If the number of cuts are correct press ENT if not type new value then ENT
- 6) Press Auto/man to return to Auto run mode or repeat steps 2,3 and 4

LOAD PROGRAM

- 1) Press the MODE button
- 2) Press 2 or use “√” to highlight “Load Program“ then press ENT
- 3) Any previously saved files will be displayed, select the file required and by typing its number and press ENT ,the display will now revert to Auto run
- 4) Press “F1” to run the loaded program

SAVE PROGRAM

- 1) Press the MODE button
- 2) Press 3 or use ‘√’ to highlight “Save Program” then press ENT
- 3) Use the ‘√’ ‘^’ arrows to scroll through the alphabet and the MOVE button to accept the letter and move onto the next once the program name has been set use the ENT button to save

(PROGRAMS MAY BE SAVED WITH NUMBERS INSTEAD OF NAMES)

If you have previously saved a program, or edited an existing program when you chose save you will be asked if you wish to overwrite the program. If you have changed a program to correct a previous error and wish to retain the program and name press F1, ‘YES’. If you want to save the modified program with a different name press F4, ‘NO’ you are then asked if you wish to save as a new program F1 ‘YES’ will prompt you for a program name, enter as step 3 F4 ‘NO’ you will return to the options screen.

DELETE PROGRAM

- 1) Press the MODE button
- 2) Press 4 or use √ to highlight “Delete Program” then press ENT
- 3) Select the program that you wish to delete and enter its number, the program has now been deleted

RENAME PROGRAM

- 1) Press the MODE button
- 2) Press 5 or use \vee to highlight "Rename program" then press ENT
- 3) Use \vee/\wedge and move, as above to select the new program name or number and ENT to complete the rename.

RUN PROGRAM

In "AUTO RUN" once you have loaded a program you can press the F1 button to run it, the program will run from the highlighted step, for example. F3 or F4 have been used to browse through the program and step 3 is highlighted when run is pressed the program will start at step 3. This allows the operator to stop a program at any point and resume it at any point without the need to go to the beginning.

EDIT PROGRAM

In AUTORUN F2 is the EDIT button, the edit function allows the operator to change the type of step or to change the position or number of cuts for a step. If F2 is pressed you will see the following options.

F1 INS. STEP this allows the insertion of a new step into a current program, the step is inserted BELOW a highlighted step

F2 EDIT STEP this allows a step to be edited you can edit the type of step or simply the position or number of cuts.

F3 PREV. STEP this button is used to move the highlighted bar to the previous line of a program. (/ takes you to the first step)

F4 NEXT. STEP this button is used to move the highlighted bar to the next line of a program. (* takes you to the last step)

EDITING A STEP

From Auto Run press F2 EDIT, select the step to be edited using F3, F4 then F2 EDIT STEP.

F1 EXIT. Exit returns you to auto learn if you have finished editing your program press AUTO/MAN to return to auto run.

F2 LOAD. Load is used to allow the operator to insert the material into the machine, but does not require a cut to be performed. Once the material is in position run is used to move to the first cut position.

F3 PUSH OUT. Push out moves the work to a position in front of the blade to allow it to be rotated safely the push out value can be changed if required.

F4 WAIT. Wait is to delay the backgauge movement to the next step; its delay is in seconds so a value of 5 equals a delay of 5 seconds.

SHEET DIVIDE

Sheet divide is a utility that is used to cut divide material into equal sized pieces for example.

You have a sheet that is 500 mm long and has to be cut into 8 equal pieces, instead of using the calculator to work out each step you simply use this utility.

- 1) Press the mode button
- 2) Press 6 sheet divide
- 3) Enter the sheet size (in our case 500)
- 4) Enter the required number of divisions (8)
- 5) Press ok

You are now asked if you want to add the sheet divide to a current program or if you want to create a new one. If you add to a current program the sheet divide will be inserted above the highlighted step in that program.

If you chose new you are prompted to save the program that was previously being used .Yes will save the old program .No replaces the program with the sheet divide information.

Include sheet trim if selected will perform a cut at the sheet size, in our case 500mm, if you chose no the IC2100 will assume that the sheet has already been cut to size and only needs dividing.

You will now be in Auto learn mode if you want to edit any steps do so from this screen, if you want to run the program press the Auto/man button followed by “F1” run.

NOTE

If you have a created or entered a long program, instead of using the "prev. step" or "next step" buttons you can use the “ / “ button to take you to the beginning of the program or the “ * ” button to take you to the end of the program.

LABEL CUT

Label mode is very similar to Sheet divide; however, in label cut mode you enter the size of the label and the space between the labels, the gutter. The label cut utility will then calculate all the cut positions and create a Program in the same way as sheet divide.

Example.

You have a sheet that is 500mm long and you want to cut labels that are 37 mm with a space or gutter of 14 mm.

- 1) Press the mode button
- 2) Press 7 Label cut
- 3) Enter the sheet size
- 4) Enter the label size
- 5) Enter the gutter size
- 6) Press ok

As with sheet divide you are asked

If you want to add to a current program or create a new one.

If you want to save the current program

If you want to include sheet trim

After you have answered these questions you are left with a program to create your labels. In the example above, you end up with a program containing 19 cut positions. To move to the first program step you can use the " / " button to move to the last step use the " * " button.

AUTO LEARN MODE

Auto learn mode is used during editing of programs OR to create programs, programs can be created in 2 ways; -

- 1) You can create a program by typing each step into the IC2100 and then running the program to see if the dimensions that have been entered are correctly.
- 2) You can teach the IC2100 with a sheet or job that needs to be cut to size

TEACHING

The IC2100 can be taught to position to a given dimension and perform the required number of cuts simply by :-

- 1) From Auto Run mode select new program (press mode, 1)
- 2) Move the backgauge either by hand or using the ‘^’ ‘\’ ‘ buttons then press “ENT” OR perform a cut at the required position.
- 3) Repeat step 2 until all dimensions have been entered then press “AUTO MAN” to take you back to Auto Run mode
- 4) Press “F1” to run the program

Absolute positions can be entered at any time whilst teaching positions to the IC2100 simply type the required position then press enter.

EMERGENCY STOP

During the normal course of operation the IC2100 can be stopped simply by pushing ANY button on the keyboard, the operator can stop the backgauge from moving forward by bringing clamp down. There are however instances when it is not possible or safe to move the knife or clamp, also if auto retry is enabled as soon as the knife or clamp are in the correct position the IC2100 will continue to position the backgauge.

NOTE

This function is designed to assist the operator and *under no circumstance* should it be used as a *failsafe* emergency stop.

The system installer should be consulted if a *true* emergency stop is to be fitted.

MACHINE LIMITS

The machine limits are set at the time of installation if for any reason they are incorrect you must contact your machine installer.

If the limits are not correct damage may be caused to your machine it is recommended that they are checked periodically

MESSAGES

There is a total of 9 messages that can be used to advise the operator of action required, for example a safety check is due, yearly maintenance is due or simply to suggest that the machine should be lubricated.

The message type can be set to: -

- 1) Daily
- 2) Weekly (day selectable)
- 3) Monthly (date selectable)
- 4) 3 Monthly (date selectable)
- 5) 6 Monthly (date selectable)
- 6) 12 Monthly (date selectable)

The message length can be upto 120 characters long and are only accessible from the engineers menu, they should be set up at the time of installation, once set if they are to be changed for any reason you must contact your installer or DTS Engineering.

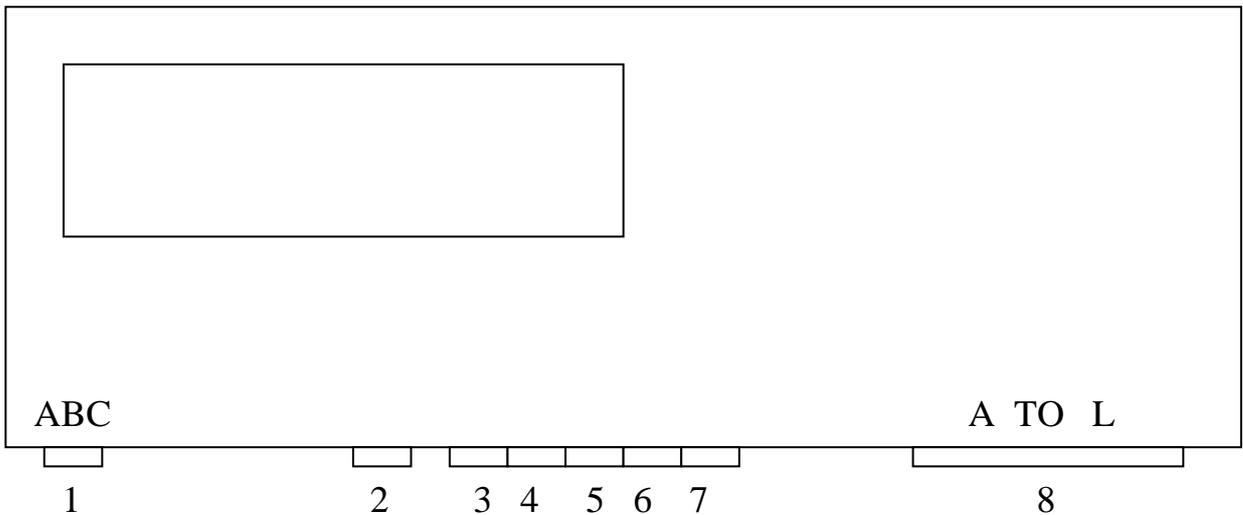
DAYLIGHT SAVING

The clock within the IC2100 will allow for daylight saving. The clock is updated on the first Sunday in April and the last Sunday in October. If required the clock can updated from the supervisor's menu.

ERROR MESSAGES

<u>Message</u>	<u>Meaning or cause</u>
Action aborted by operator	During backgauge movement a button on the keyboard was pushed
Attempt to move past limit	During a manual move the operator attempted to move the backgauge past the min or max machine size.
Invalid password	An attempt to enter a supervisor or engineers password was made however the number was incorrect
Motor error, no movement	The IC2100 has tried to move the motor and did not see any movement this message can also indicate a faulty or loose encoder.
Positioning error, overran	The IC2100 failed to find the programmed position, this is often caused by dry or worn leadscrew
No clamp	During a cut cycle either the clamp did not move or the clamp switch has moved or failed
Reposition Gauge	The backgauge has been moved or knocked off position if "yes" is pressed the backgauge will move To the correct position.
Knife / Clamp	An attempt to move the backgauge when the knife or clamp are down will give this error.
Display flashing	This suggests that the program Memory has been corrupted.

CONNECTIONS



Mains input (240/110V AC)

- 1
 - a) Live
 - b) Earth
 - c) Neutral

Low voltage inputs

- 2 RS 232 (Requires PC software, option)
- 3 Encoder input
- 4 Switch inputs
- 5 Switch inputs
- 6 Switch inputs

Relay outputs (C to L are voltage free contacts)

- 8
 - A Analogue output (INVERTER ONLY)
 - B Analogue earth/common (INVERTER ONLY)
 - C + D Forward relay
 - E + F Reverse relay
 - G + H Brake relay
 - I + J Air relay
 - K + L Slow relay

SERVICING

The IC2100 is a microprocessor controlled system which contains several Microprocessors and a wide range of support components consequently there are **NO USER SERVICEABLE PARTS INSIDE**

In the unlikely event of a failure you **MUST** contact your system installer

Installer details

Name

Address.....

.....

.....

Contact

Tel

Fax.....

SP Electronics
11 Fulwood Ave
Tarleton
Preston
Lancashire
PR4 6RP

Tel 0870 321 5116

Fax 0870 321 5118

SP Electronics (TARLETON) cannot be held liable for any damage, loss or injuries as a result of improper or incorrect use of our equipment. Nor can we be held liable for any damage, loss or injury as a result of poor or improper installation carried out by a third party or as a result of equipment failure. If you have any reservations you should contact us in writing stating the nature of your concern this will enable us to look into it more deeply.

Every effort has been made to ensure correct operation of this equipment if you as a customer find anything that you consider to be incorrect operation please advise us we can then endeavour to correct it. Due to ongoing development we reserve the right to change specification without prior notice

YOUR SETTINGS

This section of the manual is for Engineer use only, it details all of the settings that are applicable to your machine and may be needed at some point in the future.

FUNCTION	DEFAULT	YOUR SETTING
MISC. SETUP		
POWER UP UNITS	mm (0.99)	
MIN POSITION DISTANCE	20.00	
PUSHOUT DISTANCE	0.00	
DISPLAY CUTS	YES	
AUTO REPOSITION	NO	
BRAKE TO STOP	NO	
CONFIG I/O		
KNIFE UP	YES	
CLAMP UP	NO	
FALSE CLAMP IN	YES	
AUTO DATUM	(1)LOW	
BRAKE ON	NO	
AIR	NO	
AIR PULSE	NO	
CONFIG I/O BOARD (RELAY)		
FORWARD RELAY	HIGH	
REVERSE RELAY	HIGH	
LEVEL FOR FAST	HIGH	
BRAKE LEVEL	HIGH	
CONFIG I/O BOARD (INVERTER)		
NUDGE SPEED	20	
FAST SPEED	127	
PITCH & CONFIG		
ENCODER PULSE / REV	360	
LEAD SCREW PITCH	10 mm	
REVERSE DIRECTION	NO	
MACHINE DIMENSIONS		
MAX POSITION	3000 mm	
MIN POSITION	10 mm	
MIN POSITION IF CLAMP IN	100 mm	
AUTO DATUM POSITION	0.00 mm	
CURRENT POSITION	10 mm	
POSITIONING SETUP		
No OF ATTEMPTS	4	
POSITIONING TOLERANCE	0.09 mm	
DRIFT TOLERANCE	0.09 mm	
SLOW SPEED AT DISTANCE	10.00 mm	
SAMPLES UNTIL STALLED	250	
APPROACH DIRECTION	FORWARD	

INSTALLATION NOTES



THE IC2100

The IC2100 is a single axis control system designed specifically for the Print finishing industry. It is flexible, reliable easy to use and can be retro fitted to almost any guillotine with a suitable leadscrew capable of being power driven.

The IC2100 has been developed by SP Electronics over the last 5 year's and offers the performance and reliability of any other retrofit system but at a fraction of the cost. It is currently available in 2 formats either Relay control or AC inverter drive.

CONTENTS

	Page
Contents.	2
A quick tour of the IC2100	
Display	3
Numeric input	3
Mathematical input	3
Mode button	3
Soft keys	4
Power up and self-test	5
Auto - calibration	5
Manual mode	6
Calculator	6
Total cuts	7
Floating Passwords	7
Auto run mode	
New program	8
Load program	9
Save program	9
Delete program	9
Rename program	10
Run program	10
Edit program	10
Sheet divide	11
Label cut	12
Auto learn mode	13
Emergency stop	14
Machine limits	14
Messages	15
Clock / daylight saving	15
Error messages	16
Connections	17
Servicing	18
Your settings	19
Installation notes	20

THE IC2100 QUICK TOUR

The IC2100 display

The IC2100 display is split up into 3 areas.

- 1) The top of the display shows the date, mode and time.
- 2) The middle of the display is the working area, the position, cut number and status of the machine are shown here along with program and error messages if applicable.
- 3) The bottom of the display is split into 4 areas, these areas are known as softkeys, the function of the key may change as the mode changes, for example, if you are in "MANUAL" the "F1" softkey is used to switching the air ON or OFF whilst in "AUTO RUN" the "F1" softkey is used to run a current program

The IC2100 keyboard

The IC2100 keyboard is split up into 5 areas.

- 1) **Numeric input** (0 through 9)
- 2) **Mathematical input** (+ , - , x , /)

These keys are used in conjunction with the calculator function.

- 3) **Mode keys** (Units, Mode, Auto/Man and Delete)

The Units button allows the user to switch between units of measurement, Inches, Centimetre's and Millimetre's

The Mode button opens the "options" menu, within this menu you have several options such as load, save and delete programs.

The Auto/man button allows the user to switch between Automatic mode and manual mode, in Automatic mode you can load, run of save programs. In manual mode, you can enter a position and goto it or move using the forward/reverse keys.

4) **Softkeys** (F1 , F2 , F3 , F4)

Softkeys function is dependent upon the current mode of operation

5) **Motion keys** (Move , Forward and Reverse)

These keys allow the user to move the backgauge forwards, backwards or to an absolute position, the forward/reverse buttons also move the cursor in menus *INFORMATION ON SPECIFIC FUNCTIONS CAN BE FOUND LATER IN THIS MANUAL*

The move button is used to move to an absolute position such as 150 mm, there are 2 methods of moving to an absolute position.

- a) Press move followed by the required position then press enter
- b) Enter the required position then press enter

The IC2100 will then move the backgauge to the position entered by the operator, unless the knife or clamp is down or partially down or the position is outside the machine limits.

The backgauge can also be moved manually to a position by way of the of the arrowed buttons (forward/reverse) located next to the move button. To move the backgauge to a position rear of the current position use the “ \wedge ” button, to move forward of the current position use the “ \vee ” button.

If you press and hold either of the arrowed buttons for more than 2 seconds the backgauge speed will increase to reduce the time taken to manually move the backgauge from one position to the next. If the button is pressed and released before 2 seconds has elapsed the backgauge will move in slow speed.

NOTE

The IC2100 is pre programmed with machine maximum and minimum position limits (during installation) if you attempt to move outside of the limits an error message will be displayed on the screen

POWER UP AND SELF TEST

When the IC2100 is switched on it will perform a number of self-tests before allowing the user to operate the unit. These tests are shown on the first screen, in the unlikely event that any of the tests fail, a cross will be displayed, you should contact your authorised service agent or DTS Engineering.

Quoting the software version, date and serial number of your unit along with details of the error or fault, this will enable an engineer to diagnose your problems faster.

(This information is shown on the self-test screen)

AUTO - CALIBRATE

Following the successful self test A "COMPANY logo is displayed, this is then followed by a "REMINDER MESSAGE" if applicable or by "BACKGAUGE CLEAR? ". At this prompt press OK, if it is safe to move the BACKGAUGE, the IC2100 will now calibrate the system and adjust the datum position if necessary.

If for any reason the backgauge has not calibrated correctly the user can adjust it by pressing MODE followed by selecting (8) setup menu; you now select (4) backgauge adjustment. The adjustment is limited to ± 1 revolution of the leadscrew, if the error is greater than this you should adjust in multiples of the leadscrew

Example

Displayed position = 500 mm

Actual position is = 590 mm

The leadscrew pitch is 25 mm

You would have to adjust by 25 mm 3 times and by 15 once.

If the Calibration is consistently incorrect you should contact your supplier and advise them of the error, they will advise you of the quickest method of rectifying your problem.

MANUAL MODE

In manual mode the backgauge can be positioned either by keying in the required dimension and pressing "move" or "enter", or by using the "^" or "v" arrows.

The IC2100 will move the backgauge to the desired position, as each cut is performed the cut total (if enabled) will be incremented by 1, the cut total can be reset to 0 by pressing "F2" the zero cuts key

The air, calculator and brake may also be switched on or off by using: -

"F1" for the air

"F3" for the calculator (see next page)

"F4" for the brake.

CALCULATOR

The calculator may be used for simple calculations or to calculate and then "move" to a position. If the "move" button is pressed with the calculator active the backgauge will move to the calculated value, if it is within the machine limits.

Example $25.4 \times 10 = 254$

Press the "move" and the backgauge will goto the calculated position, in this case 254

When using the calculator, the operator must bear in mind that whatever units of measurement are in use (inches, centimetres or millimetres) will be the used by the calculator thus the result of the calculation above could be:-

- 1) 254 inches
- 2) 254 cm
- 3) 254 mm

If the calculated position is too large or too small for the machine the operator will be prompted, in such a case the backgauge will not move to the calculated position

TOTAL CUTS

Total cuts information can be useful for determining several things such as the overall usage of a particular machine or for determining the average life of a blade.

Total Cuts can easily be displayed by pressing: -

- 1) Press the "Mode" button
- 2) Press "8" Setup menu
- 3) Press "5" Show total cuts

To reset the total cuts press reset followed by your password (1066) this will then reset to Total Cuts to Zero

FLOATING PASSWORDS

The Passwords on the IC2100 are continually changing based on an algorithm that uses the date, time and several random multipliers to provide a new password whenever required.

If for any reason you need to go into a secure menu you should contact your dealer or installer for a password, to enable your dealer or installer to give you a password you must provide the six-digit number from the IC2100 screen.

NOTE

If you exit from a password menu the six digit number will change next time you re-enter it, you should ensure that the exit key is not used while you are contacting your dealer or installer. If the exit key is used the password that you have been given will not be correct.

AUTORUN MODE

Autorun mode is used to run programs that have previously been created on the IC2100, the operator can also create new programs edit, save, delete or rename programs, this is done by using the MODE button.

NEW PROGRAM

- 1) Press the MODE button
- 2) Press 1 or enter if "New Program" is highlighted
- 3) Press "F1" 'ins.step' and type the first position then press ENT
Press ENT if 1 cut is required or type in the number of cuts required then press ENT.
- 4) If only one cut is required simply type in your dimension then press ENT
- 5) To enter more steps repeat 3 or 4 to end and run,
press the AUTO/MAN button followed by "F1" (RUN)

POSITION OFFSETS

This facility allows you to enter cuts as an offset from an absolute position your program must NOT start with an offset i.e.

First cut is at 500 mm you then have several cuts to make for 30 mm labels you could use "label mode" or offsets as the example shown

CUT 1 at 500 mm

Offset - 30 (moves to $500 - 30 = 470$)

Offset - 30 (moves to $470 - 30 = 440$)

Offset -30 (moves to $440 - 30 = 410$)

To enter an offset you must start with an absolute position i.e. 500 mm
Then use the + or - button followed by the required offset

Whilst running the program if you find that a program step is in correct you can edit it by using "F2" (EDIT STEP)

- 1) From Auto Run press "F2" (EDIT)
- 2) Press "F3" or "F4" to highlight the step to be edited
- 3) Press "F2" the cursor is now blinking on the position selected for edit
- 4) Key in the correct dimension then ENT

- 5) If the number of cuts are correct press ENT if not type new value then ENT
- 6) Press Auto/man to return to Auto run mode or repeat steps 2,3 and 4

LOAD PROGRAM

- 1) Press the MODE button
- 2) Press 2 or use “√” to highlight “Load Program“ then press ENT
- 3) Any previously saved files will be displayed, select the file required and by typing its number and press ENT ,the display will now revert to Auto run
- 4) Press “F1” to run the loaded program

SAVE PROGRAM

- 1) Press the MODE button
- 2) Press 3 or use ‘√’ to highlight “Save Program” then press ENT
- 3) Use the ‘√’ ‘^’ arrows to scroll through the alphabet and the MOVE button to accept the letter and move onto the next once the program name has been set use the ENT button to save

(PROGRAMS MAY BE SAVED WITH NUMBERS INSTEAD OF NAMES)

If you have previously saved a program, or edited an existing program when you chose save you will be asked if you wish to overwrite the program. If you have changed a program to correct a previous error and wish to retain the program and name press F1, ‘YES’. If you want to save the modified program with a different name press F4, ‘NO’ you are then asked if you wish to save as a new program F1 ‘YES’ will prompt you for a program name, enter as step 3 F4 ‘NO’ you will return to the options screen.

DELETE PROGRAM

- 1) Press the MODE button
- 2) Press 4 or use √ to highlight “Delete Program” then press ENT
- 3) Select the program that you wish to delete and enter its number, the program has now been deleted

RENAME PROGRAM

- 1) Press the MODE button
- 2) Press 5 or use \vee to highlight "Rename program" then press ENT
- 3) Use \vee/\wedge and move, as above to select the new program name or number and ENT to complete the rename.

RUN PROGRAM

In "AUTO RUN" once you have loaded a program you can press the F1 button to run it, the program will run from the highlighted step, for example. F3 or F4 have been used to browse through the program and step 3 is highlighted when run is pressed the program will start at step 3. This allows the operator to stop a program at any point and resume it at any point without the need to go to the beginning.

EDIT PROGRAM

In AUTORUN F2 is the EDIT button, the edit function allows the operator to change the type of step or to change the position or number of cuts for a step. If F2 is pressed you will see the following options.

F1 INS. STEP this allows the insertion of a new step into a current program, the step is inserted BELOW a highlighted step

F2 EDIT STEP this allows a step to be edited you can edit the type of step or simply the position or number of cuts.

F3 PREV. STEP this button is used to move the highlighted bar to the previous line of a program. (/ takes you to the first step)

F4 NEXT. STEP this button is used to move the highlighted bar to the next line of a program. (* takes you to the last step)

EDITING A STEP

From Auto Run press F2 EDIT, select the step to be edited using F3, F4 then F2 EDIT STEP.

F1 EXIT. Exit returns you to auto learn if you have finished editing your program press AUTO/MAN to return to auto run.

F2 LOAD. Load is used to allow the operator to insert the material into the machine, but does not require a cut to be performed. Once the material is in position run is used to move to the first cut position.

F3 PUSH OUT. Push out moves the work to a position in front of the blade to allow it to be rotated safely the push out value can be changed if required.

F4 WAIT. Wait is to delay the backgauge movement to the next step; its delay is in seconds so a value of 5 equals a delay of 5 seconds.

SHEET DIVIDE

Sheet divide is a utility that is used to cut divide material into equal sized pieces for example.

You have a sheet that is 500 mm long and has to be cut into 8 equal pieces, instead of using the calculator to work out each step you simply use this utility.

- 1) Press the mode button
- 2) Press 6 sheet divide
- 3) Enter the sheet size (in our case 500)
- 4) Enter the required number of divisions (8)
- 5) Press ok

You are now asked if you want to add the sheet divide to a current program or if you want to create a new one. If you add to a current program the sheet divide will be inserted above the highlighted step in that program.

If you chose new you are prompted to save the program that was previously being used .Yes will save the old program .No replaces the program with the sheet divide information.

Include sheet trim if selected will perform a cut at the sheet size, in our case 500mm, if you chose no the IC2100 will assume that the sheet has already been cut to size and only needs dividing.

You will now be in Auto learn mode if you want to edit any steps do so from this screen, if you want to run the program press the Auto/man button followed by “F1” run.

NOTE

If you have a created or entered a long program, instead of using the "prev. step" or "next step" buttons you can use the “ / “ button to take you to the beginning of the program or the “ * ” button to take you to the end of the program.

LABEL CUT

Label mode is very similar to Sheet divide; however, in label cut mode you enter the size of the label and the space between the labels, the gutter. The label cut utility will then calculate all the cut positions and create a Program in the same way as sheet divide.

Example.

You have a sheet that is 500mm long and you want to cut labels that are 37 mm with a space or gutter of 14 mm.

- 1) Press the mode button
- 2) Press 7 Label cut
- 3) Enter the sheet size
- 4) Enter the label size
- 5) Enter the gutter size
- 6) Press ok

As with sheet divide you are asked

If you want to add to a current program or create a new one.

If you want to save the current program

If you want to include sheet trim

After you have answered these questions you are left with a program to create your labels. In the example above, you end up with a program containing 19 cut positions. To move to the first program step you can use the " / " button to move to the last step use the " * " button.

AUTO LEARN MODE

Auto learn mode is used during editing of programs OR to create programs, programs can be created in 2 ways; -

- 1) You can create a program by typing each step into the IC2100 and then running the program to see if the dimensions that have been entered are correctly.
- 2) You can teach the IC2100 with a sheet or job that needs to be cut to size

TEACHING

The IC2100 can be taught to position to a given dimension and perform the required number of cuts simply by :-

- 1) From Auto Run mode select new program (press mode, 1)
- 2) Move the backgauge either by hand or using the ‘^’ ‘\’ ‘ buttons then press “ENT” OR perform a cut at the required position.
- 3) Repeat step 2 until all dimensions have been entered then press “AUTO MAN” to take you back to Auto Run mode
- 4) Press “F1” to run the program

Absolute positions can be entered at any time whilst teaching positions to the IC2100 simply type the required position then press enter.

EMERGENCY STOP

During the normal course of operation the IC2100 can be stopped simply by pushing ANY button on the keyboard, the operator can stop the backgauge from moving forward by bringing clamp down. There are however instances when it is not possible or safe to move the knife or clamp, also if auto retry is enabled as soon as the knife or clamp are in the correct position the IC2100 will continue to position the backgauge.

NOTE

This function is designed to assist the operator and *under no circumstance* should it be used as a *failsafe* emergency stop.

The system installer should be consulted if a *true* emergency stop is to be fitted.

MACHINE LIMITS

The machine limits are set at the time of installation if for any reason they are incorrect you must contact your machine installer.

If the limits are not correct damage may be caused to your machine it is recommended that they are checked periodically

MESSAGES

There is a total of 9 messages that can be used to advise the operator of action required, for example a safety check is due, yearly maintenance is due or simply to suggest that the machine should be lubricated.

The message type can be set to: -

- 1) Daily
- 2) Weekly (day selectable)
- 3) Monthly (date selectable)
- 4) 3 Monthly (date selectable)
- 5) 6 Monthly (date selectable)
- 6) 12 Monthly (date selectable)

The message length can be upto 120 characters long and are only accessible from the engineers menu, they should be set up at the time of installation, once set if they are to be changed for any reason you must contact your installer or DTS Engineering.

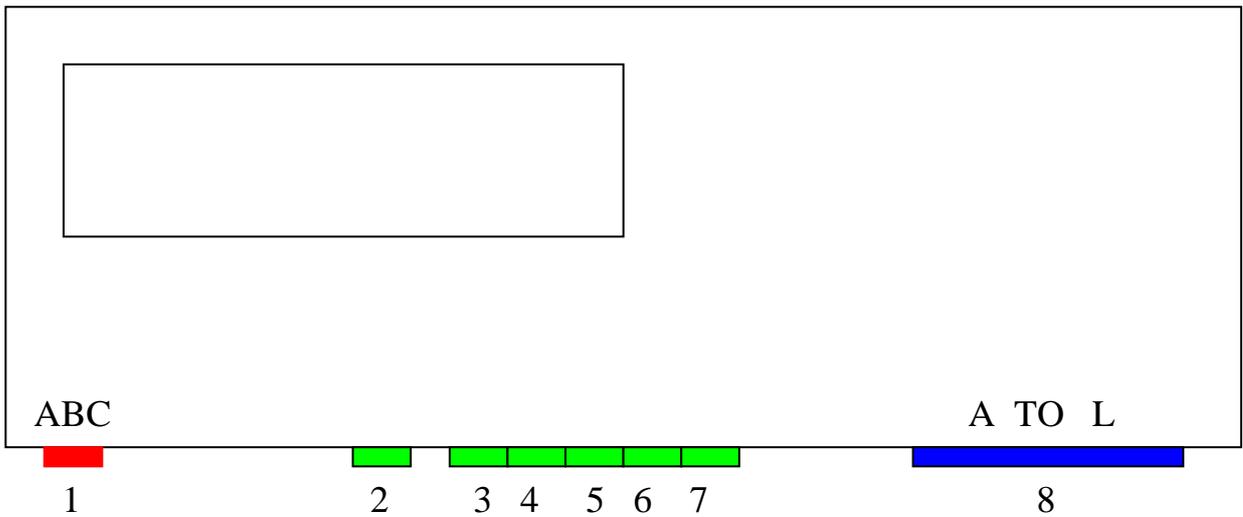
DAYLIGHT SAVING

The clock within the IC2100 will allow for daylight saving. The clock is updated on the first Sunday in April and the last Sunday in October. If required the clock can updated from the supervisor's menu.

ERROR MESSAGES

<u>Message</u>	<u>Meaning or cause</u>
Action aborted by operator	During backgauge movement a button on the keyboard was pushed
Attempt to move past limit	During a manual move the operator attempted to move the backgauge past the min or max machine size.
Invalid password	An attempt to enter a supervisor or engineers password was made however the number was incorrect
Motor error, no movement	The IC2100 has tried to move the motor and did not see any movement this message can also indicate a faulty or loose encoder.
Positioning error, overran	The IC2100 failed to find the programmed position, this is often caused by dry or worn leadscrew
No clamp	During a cut cycle either the clamp did not move or the clamp switch has moved or failed
Reposition Gauge	The backgauge has been moved or knocked off position if "yes" is pressed the backgauge will move To the correct position.
Knife / Clamp	An attempt to move the backgauge when the knife or clamp are down will give this error.
Display flashing	This suggests that the program Memory has been corrupted.

CONNECTIONS



Mains input (240/110V AC)

- | | |
|---|------------|
| 1 | a) Live |
| | b) Earth |
| | c) Neutral |

Low voltage inputs

- | | | |
|---|---------------|--------------------------------|
| 2 | RS 232 | (Requires PC software, option) |
| 3 | Encoder input | |
| 4 | Switch inputs | |
| 5 | Switch inputs | |
| 6 | Switch inputs | |

Relay outputs (C to L are voltage free contacts)

- | | | | |
|---|-------|-----------------------|-----------------|
| 8 | A | Analogue output | (INVERTER ONLY) |
| | B | Analogue earth/common | (INVERTER ONLY) |
| | C + D | Forward relay | |
| | E + F | Reverse relay | |
| | G + H | Brake relay | |
| | I + J | Air relay | |
| | K + L | Slow relay | |

SERVICING

The IC2100 is a microprocessor controlled system which contains several Microprocessors and a wide range of support components consequently there are **NO USER SERVICEABLE PARTS INSIDE**

In the unlikely event of a failure you **MUST** contact your system installer

Installer details

Name

Address.....

.....

.....

Contact

Tel

Fax.....

SP Electronics

Tarleton

Tel 0870 321 5116

Fax 0870 321 5118

Email sp@sp-electronics.co.uk

SP Electronics (TARLETON) cannot be held liable for any damage, loss or injuries as a result of improper or incorrect use of our equipment. Nor can we be held liable for any damage, loss or injury as a result of poor or improper installation carried out by a third party or as a result of equipment failure. If you have any reservations you should contact us in writing stating the nature of your concern this will enable us to look into it more deeply.

Every effort has been made to ensure correct operation of this equipment if you as a customer find anything that you consider to be incorrect operation please advise us we can then endeavour to correct it. Due to ongoing development we reserve the right to change specification without prior notice

YOUR SETTINGS

This section of the manual is for Engineer use only, it details all of the settings that are applicable to your machine and may be needed at some point in the future.

FUNCTION	DEFAULT	YOUR SETTING
MISC. SETUP		
POWER UP UNITS	mm (0.99)	
MIN POSITION DISTANCE	20.00	
PUSHOUT DISTANCE	0.00	
DISPLAY CUTS	YES	
AUTO REPOSITION	NO	
BRAKE TO STOP	NO	
CONFIG I/O		
KNIFE UP	YES	
CLAMPUP	NO	
FALSE CLAMP IN	YES	
AUTO DATUM	(1)LOW	
BRAKE ON	NO	
AIR	NO	
AIR PULSE	NO	
CONFIG I/O BOARD (RELAY)		
FORWARD RELAY	HIGH	
REVERSE RELAY	HIGH	
LEVEL FOR FAST	HIGH	
BRAKE LEVEL	HIGH	
CONFIG I/O BOARD (INVERTER)		
NUDGE SPEED	20	
FAST SPEED	127	
PITCH & CONFIG		
ENCODER PULSE / REV	360	
LEAD SCREW PITCH	10 mm	
REVERSE DIRECTION	NO	
MACHINE DIMENSIONS		
MAX POSITION	3000 mm	
MIN POSITION	10 mm	
MIN POSITION IF CLAMP IN	100 mm	
AUTO DATUM POSITION	0.00 mm	
CURRENT POSITION	10 mm	
POSITIONING SETUP		
No OF ATTEMPTS	4	
POSITIONING TOLERANCE	0.09 mm	
DRIFT TOLERANCE	0.09 mm	
SLOW SPEED AT DISTANCE	10.00 mm	
SAMPLES UNTIL STALLED	250	
APPROACH DIRECTION	FORWARD	

INSTALLATION NOTES

