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*The intelligent Solutions for graphic and allied Machinery*

# PRINT-CUT

The Complete Back-gauge Controller Series for Paper Guillotines

## User's Guide

CONFIGURABLE WITH

RELAY LOGIC

SERVOMOTOR & DRIVES

AC DRIVES WITH TERMINALS

AC DRIVES WITH SERIAL PORT

OPTIONAL

JOY STICK FOR MANNUAL MODE

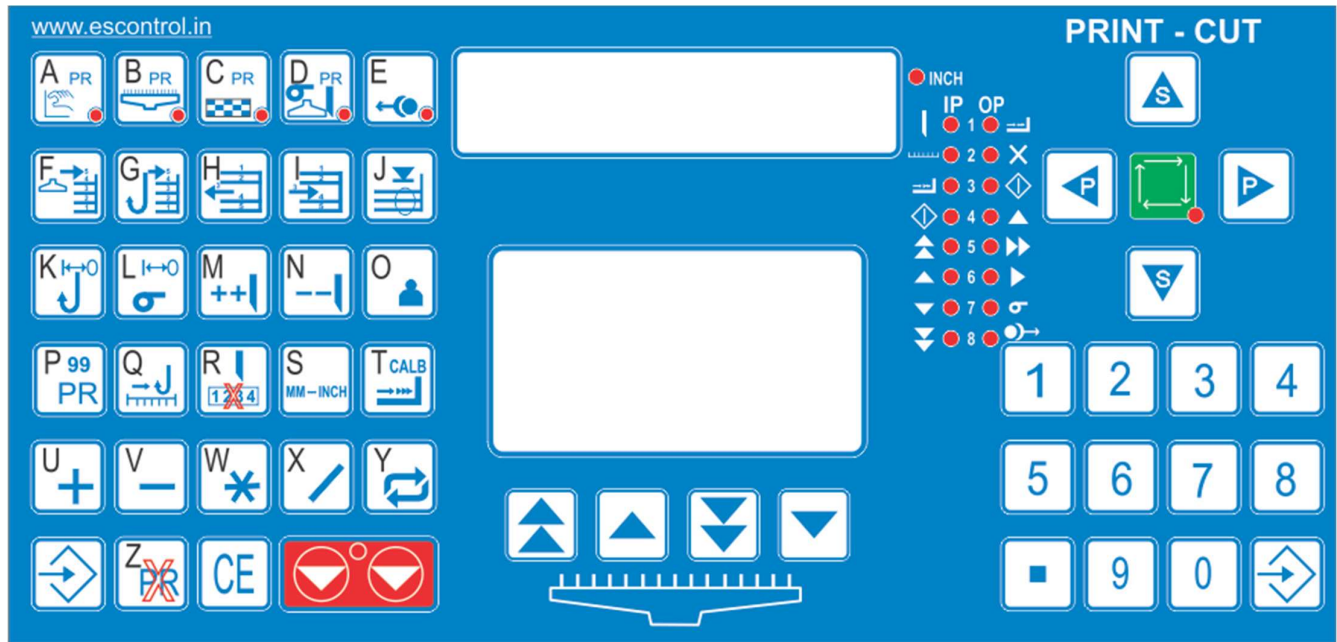
ANALOG OUTPUT FOR KNIFE PRESSURE

ANALOG OUTPUT FOR CLAMP PRESSURE

LIGHT BARRIER SAFETY

CUTTING KNIFE CONTROLLER

# PRINT-CUT THE COMPLETE BACK-GAUGE CONTROLLER SERIES



## 9200 series back-gauge controller

CONTROL OPTIMISED USING RELAYS, AC DRIVES ON SERIAL PORT AND SERVO MOTORS

THE RETROFIT REPLACEMENTS FOR  
POLAR, SEYPA, PERFECTA, WOHLBERG  
SCHNEIDER, ROBOCUT, ITOH, PROTEK, PARX, MEIZE  
AND OTHER PAPER GUILLITONES

## PRINT-CUT user's manual Rev 9204

Since [graphicautomations.com](http://www.graphicautomations.com) constantly strives to improve all of its products, we reserve the right to modify equipment and user guides without prior notice. For Installation please refer to the Installation Procedure as described below.

**Note:** All the features described in the manual are not available on all the hardware and software versions. Additional Features are also available which are available in different hardware and software versions. Specific customer specific developments can also be provided. More details can be provided on requests. Contact us on [info@escontrols.in](mailto:info@escontrols.in)

## Introduction

PRINT-CUT is a new Guillotine Back-gauge Control System running over our advanced closed loop Motion Controller. It takes great advantage of new technology in motion control, making all the movements as accurate as possible. The control system can be optimized using relays, AC drives on control terminals, Delta make AC drives can be used on serial ports and Servo drives. Using AC drives on serial ports helps in total closed loop with variable speed commands and resulting in high positioning accuracy. The controller can also be connected to the Servo-drives in pulse output mode. This results in very high speeds and zero positioning errors. The back-gauge problems due to wear and tear of ball screw are also eliminated using servo-drives.

The 9200 series Back-gauge controllers have 99-9999 Programs depending of the model and the software version installed. The number of Steps available is 75-999. The basic Model comes with 99 Program and 75 Steps with facility for allocating Alpha numeric names for individual programs.

## Installing the PRINT-CUT system:

The Print-Cut Back-gauge Controller is a powerful system with minimum electrical wiring and easy to install. The installation does not require any special training and skills and can be installed with some basic knowledge of electrical wiring and electronic controls. Please refer to the controller configuration for complete details.

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## Operation:

The key functions are self explanatory with innovative graphic designs and menus. Dedicated keys have special functions allotted to them to make the system easy to operate and user friendly for the operator.

Help Menus are self explanatory and easy to understand. Online as well as telephonic customer support is available. For options visit us at [www.graphicautomations.com](http://www.graphicautomations.com)

## CONTROLLER CONFIGURATION

The Complete Back-gauge controller consists of variable speed motion controller, Feedback pulse generator, back-gauge position sensor, knife sensor and the clamp sensor. The variable speed motion controller calculates the position of the back-gauge receiving feedback from the encoder and accordingly moves the motor. The Knife sensor is mounted on the knife moving cam thus providing the feedback to the controller that knife operation has been activated. Care should be taken to mount the knife sensor such that the sensor is activated just before the knife reaches the home position and the sensor should be off at the home position. The clamp pressure should be released and clamp sensor be activated to move the back-gauge to the next step in auto mode. If clamp pressure is not released, the back-gauge will not move in forward direction in manual as well as auto mode.

Find below the detailed configuration and the installation details with various functions:

## The Home Screen

The Graphic display Home Screen displays the information of the Program and the Step Details along with the status of the program. Errors if any are also displayed on the status bar.

The First Line shows the Program number followed by the Name of the Program. The number is 2 digits and name can be 19 digit combinations of alpha numeric and special character as on keys.

The second Line is the status Bar and displays the information of the error if any else the Set Value of Back-gauge and the number of Counts for that particular Program in healthy position.

Below the Status Bar is a multi column chart that displays the information for the Program selected and the details of the Steps.

Each column is explained below:

### 1. "No."

Represents the Step number of the program and maximum 75 steps can be stored in any program. Five steps are shown at a time and the cursor on the left points the selected step. The operator can scroll through the steps using the Step Up and Step down leys as explained further.

### 2. "LENGTH"

This shows the Back-gauge position corresponding to the particular step. The value is entered using the numeric key and the 'F' key functions. The Back-gauge position programmed must be more than minimum gauge position and less than maximum gauge position else error shall be generated showing 'Range Exceeds Limit' which has to be acknowledged by pressing any key.

### 3. "Ret"

It is a Pile push out function which will be effective after the cut of the previous step has been executed. The Back-gauge shall position to the Push Out reading Programmed and then go to the next step. The Pile push function at any reading can be enabled or disabled using edit program and K key at any step as explained in the manual.

### 4. "Air"

The user can select between turn 'ON' or 'OFF' the air table after each individual cut is executed. The air table can be toggled by using the 'L' key. This feature is not available on all models and depends on the hardware and software versions.

### 5. "CUTS"

Number of cuts for the particular step are shown in this column. By default it will be 1 cut. The number of cuts can be increased or decreased using the 'M' and 'N' keys in the edit function menu. This feature is not available on all models and depends on the hardware and software versions.

## DIGITAL INPUTS INDICATOR LED:

The LED indicators display various inputs to the controllers and are helpful for the fault findings. The Function is as explained below for the various LED's as:



IP 1: Knife run over. This led glows when the sensor at the knife actuator sensing knife movement and enables the back-gauge movement to the next step after clamp pressure is released.

IP 2: Clamp pressure Released: This LED glows when the clamp pressure is released and the clamp has reached its top end sensing the sensor mounted on it. Backgauge will not move in manual mode if this LED does not glow.

IP 3: Back-Gauge Home sensor: This LED indicates the sensor at the back-gauge has sensed the backgauge position and is calibrating the back-gauge for fine tuning.

IP 4: External Ready: The LED indicates external signals from synchronised devices are ready and the back-gauge can be moved.

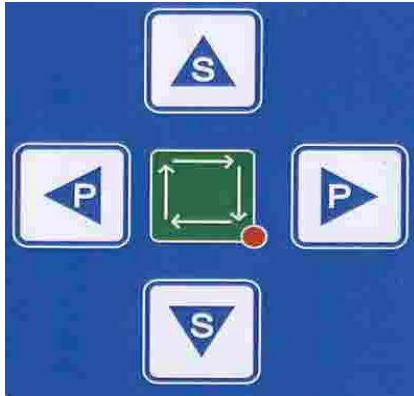
IP 5-8: Joy Stick commands. These are the external interface for the Joy stick command to move the machine in manual mode for fast backward, slow backward, slow and fast forward. Refer to Joy stick description for further details.

## DIGITAL OUTPUT INDICATOR LED:



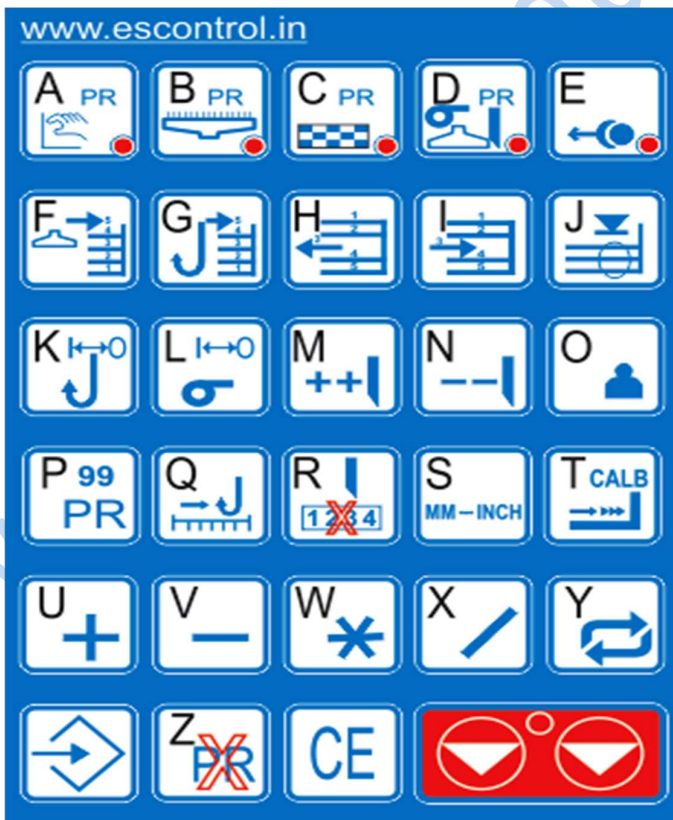
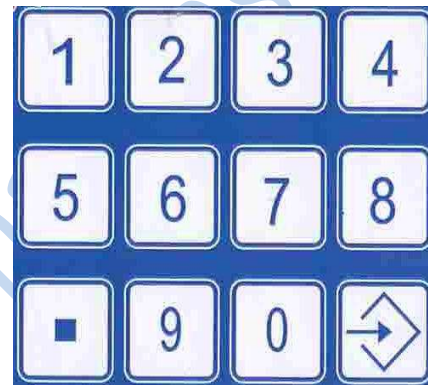
The LED indicators display various inputs to the controllers and are helpful for the fault findings. The Function is as explained below for the various LEDs as:

## PROGRAM AND STEP SELECTION KEYS:



These keys are used to select the next program or the previous program using **<P and P> keys**. Rollover occurs when Program 99 or 1 is selected. Similarly S^ is used for the next step and previous steps. Rollover occurs at the last step programmed and stored.

The **numeric key-board** is used to enter the arithmetical data and do not have any allied function associated to it. The Back-gauge position for each column is entered using the number keys on the keypad and use the UP/DOWN arrow keys for moving the cursor through the different steps.



The **alphabetical keys** on the left side have dual functions. The alphabetical keys are enabled when we have to create a Name for a particular Program and the controller functions are disabled. These keys are indicated in black. Normally the keys execute the function allotted to them as indicated by the graphical representations in blue color. The function keys can have multiple functions assigned to them depending on the menus and the sub menu executing. The detailed explanation of the menus and sub-menus is given for reference further.

## Quick Start

### Welcome Menu

When the controller is turned ON it will display Calibration menu shown below.



Figure 1: Calibration Screen

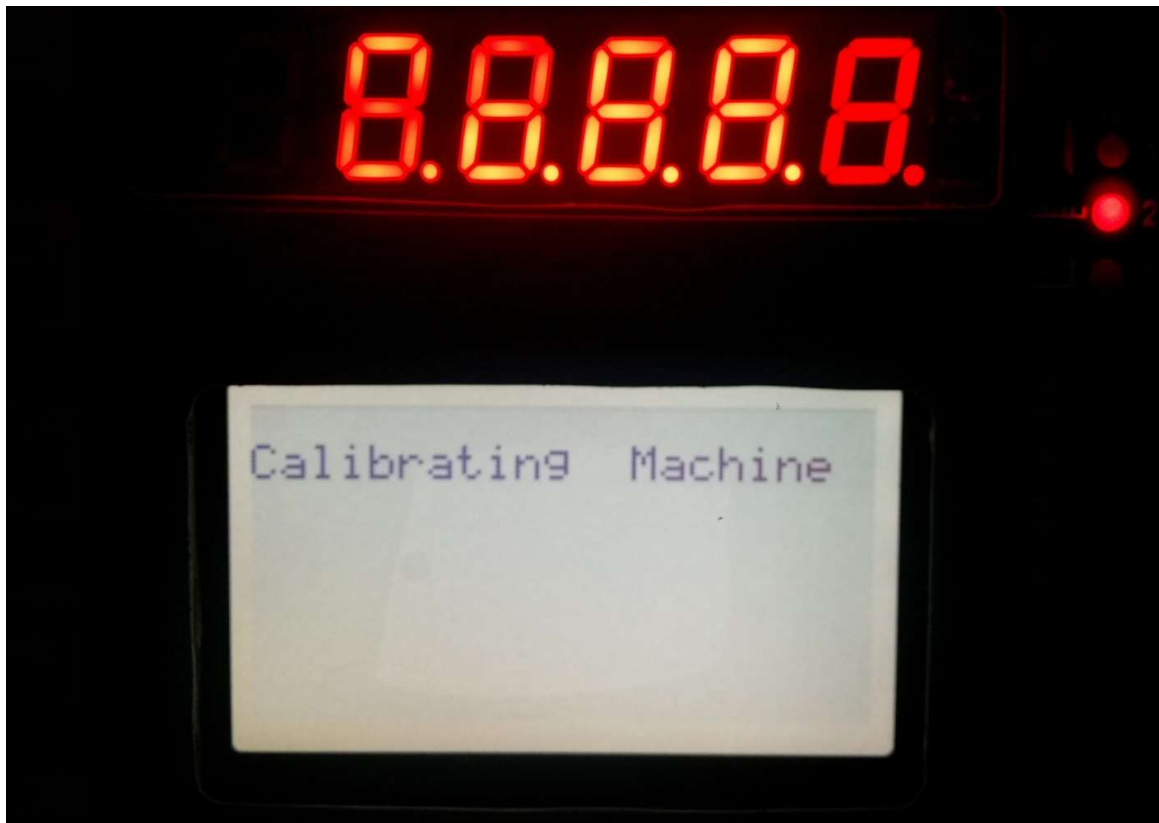
On the startup screen there is note displaying “**PRESS T TO CALIBRATE**”, the user will have to press below shown key to calibrate the controller to enter running mode. After pressing the controller’s key. The Back gauge will start moving backward for calibration and it will stop at the sensor sensing for the home position. The back-gauge then moves forward at slow speed and calibrates the size of the back-gauge position. If the size is not as per indicated on the LED Display, please correct the size by setting the parameter as explained in setting menu.



The calibration can be cancelled at any given time by pressing the stop key and the LED display exits the calibration mode and enters the run mode without size calibration. The machine can be run in complete manual mode without correct sizes. **Care should be taken as the Size Limits do not work in non-calibrated modes and back-gauge can over shoot causing injury to human.**



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This key executes the enter function and has many sub functions associated with it while programming and executing any program.



This key executes the cancel functions and is used to cancel the present parameter programming value. Pressing the key while entering a value reset the programmed value to the original value. It also has sub functions associated with it while programming or executing a program.



This key is the STOP key and is used to stop the back-gauge while it is executing a particular gauge positioning command. The command is exited immediately on pressing the STOP key.

This key is also used to exit the run program function or AUTO function and enter the manual mode.

## Manual mode:

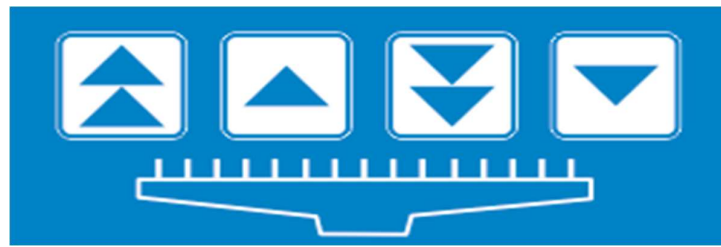


Fig 17: Manual Mode Keys

Below The Graphic Screen, we have the Back-Gauge Manual Move Keys as shown. There are Two Modes of Operation for the manual movement of the back-gauge.

The back-Gauge can be moved manually with function keys as shown below:



**Forward Fast** This control is to move the backgauge forward at the maximum speed set up in the speed settings or programmed by the drive or high speed of the motor



**Forward slow**

This control is to move the backgauge forward at a slow fixed speed as programmed in the drive or the slow speed of the motor.



**Reverse Fast**

This control is to move the backgauge in the reverse direction at the high speed programmed in the drive or the high speed of the motor.



**Reverse slow**

This control is to move the backgauge in the reverse direction at a slow fixed speed as programmed in the drive or the slow speed of the motor.

## Manual Go to Mode:

The second line from the top displays the target values. This option will be activated when entering into the manual positioning mode. Enter the desired new Position of the Back-Gauge using the numeric keys and press the ENTER key to move to that position.

By pressing the '+', '-', '\*', or '/' keys and then a numerical value, the backgauge will index or subtract or multiply or divide the current set value to the target position. Arithmetical functions are called as desired.

After Calibration if the desired position is 500, press 5, 0, 0, enter. The back gauge moves and positions itself to 500.00 within the error limits or an error message is generated.



If movement of back-gauge backwards 200mm is desired, press keys as +, 2, 0, 0, enter. The controller moves the back-gauge back by 200 mm within error limits.



If movement of back-gauge forward 200mm is desired, press keys as - 2, 0, 0, enter. The controller moves the back-gauge forward by 200 mm within error limits.



If movement of back-gauge multiplied by 2 is desired, press keys as \* 2 enter. The controller moves the back-gauge to double the set reading within error limits.



If movement of back-gauge divided by 2 is desired, press keys as /, 2, enter. The controller moves the back-gauge to half the set reading within error limits.



If same operation has to be repeated, press key Y and repeated movements can be accomplished. For example if the current position is 1000mm and we select - 100, the back gauge moves to 900mm. On pressing Y the gauge moves to 800, pressing again to 700 and so on until minimum size is reached and error is displayed. Similarly we can add, multiply and divide the operations. Only the last operation accomplished is stored in the memory.

## Program Management



### SELECT PROGRAM NUMBER:

To Load/ Select a program number, press the P key. Pressing the numeric keys the desired program is selected. For e.g. we want to load program number 35, press P, 3, 5 and program number 35 data is displayed on the screen. If program number is less than 10, press number and enter for e.g. press P, 5, enter for program number 5.

Program number can be incremented or decremented using the P> and <P keys. This helps in quick navigation through programs for running con current Jobs.



### DELETE CURRENT PROGRAM

To delete a program first select the program number as above. Then Press the Z key. The status bar shows Press Enter to Delete Program. The confirmation is extended pressing the enter key and the whole program is deleted with no reading displayed on the graphic screen. Pressing any other keys exits the delete mode.

## **EDIT/CREATE PROGRAMS**

From this menu the operator will be able to create a program, modify a program, open a program and execute a program.

### **CREATING PROGRAM:**

There are different modes for creating a program

- a) Creating program without back gauge movement from pre-defined steps and functions by using **A** key. We need to have pre-defined specific positions for complete program.
- b) Creating program along with back gauge movement for creating program from a printed sheet without measurements by using **B** key.
- c) Creating a Label Optimized program with several similar printed patterns along the length and width of the paper using the **C** key.



## CREATE/EDIT PROGRAMS:

This mode is used for creating and editing program without back-gauge movement. If we have a pre-defined program with fixed positions known, then we use this mode. Pressing the A key displays PR-Kbrd in the 2<sup>nd</sup> line of the graphic screen. The LED at the bottom of A illuminates and the current setting of the program are shown. For programming a new program, we can simply enter the values and each value is stored when we press the enter key.

If want to create program with values 500, 400, 300, 200, we proceed as follows:

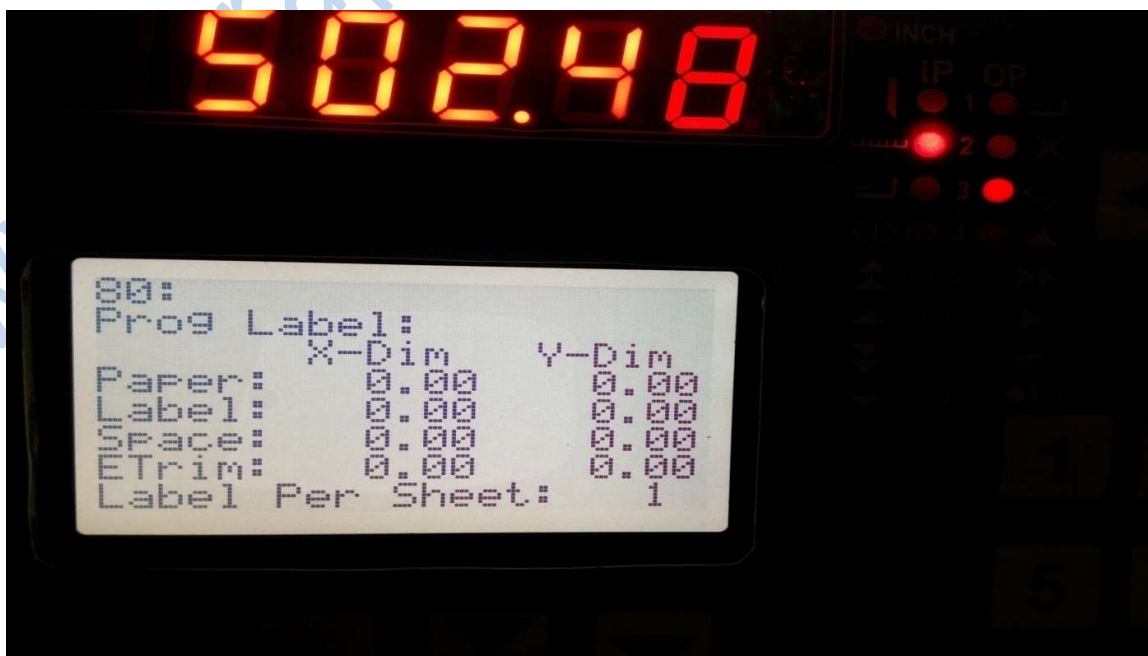
Press key A to create a new program. The A led glows. Press 5, 0, 0 enter to store first reading, Press 4, 0, 0 enter to store the next reading, Press 3, 0, 0 enter to store next reading and 2, 0, 0 enter to store the last reading. Pressing key J terminates the program and all readings further are deleted. Function keys F—J are available for control as defined further.



This mode is used for creating and editing program when pre-defined values are not known and we want to create program from the printed sheets. We press the B key to select this mode, the LED at the bottom glows and status bar shows PR B-gauge. The back-gauge is positioned to the desired reading using manual mode by goto function and manual keys. When we want to store a reading we press the F key and the current position of the back-gauge is stored in the memory. Pressing the J key terminates the program and all further readings are deleted. Function keys F—J are available for control as defined further.



This mode is used for creating a cutting program for the sheets with repeated patterns such as labels. The complete calculations are done in the program execution. The label programs are programmable only from Program number 80-99 so careful selection should be done. Selecting a label optimising mode from a lower program selects program number 80 as defaults.



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Selecting the Label Optimising mode by pressing the key C shows the programmed values if any. New values can be entered as below:

- A: Length of the paper
- F: Width of the paper
- B: Length of the Label or the Repeated printed pattern
- G: Width of the Label or the repeated printed pattern
- C: Spacing in between the Labels along the Length
- H: Spacing in between the Labels along the Width
- D: Trim waste along the length
- I: Trim waste along the Width.

When the requisite values have been entered, pressing the Y key calculates the complete cutting program and displays the pre defined program. The program created is the optimized program and may need some corrections before executing the program in run mode as different jobs need different configurations and individual alignments



This key can be used to switch on/Off the compressor for blower if connected to the output.

This key is also used for creating a cutting program for running in the AUTO mode. Here the knife can be actuated automatically after the backgauge has positioned itself on the predefined positions. Since this requires high security features, for the knife control as well these functions are not available as a standard modules.

## FUNCTION KEYS DURING CREATE/EDIT PROGRAM:

### OPTION FUNCTIONS



Pressing the F key stores the current value of the backgauge in the selected step during creating/editing a Program.



Pressing the G key stores the Pile Push out Value as the next step with the return command. The backgauge shall position itself to the push out value and the go to the next reading when executing the run program mode. To program Pile push out select the edit/create mode using A or B key. Bring the cursor to the reading to be programmed as Pile Push and Press G. The current reading is replaced by the Pile Push command. If a new step is desired as Pile Push, use the Insert Step as defined below. This command replaces the current stored memory so careful programming is needed.

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Pressing the H key can be used to delete the current selected reading that is stored in the memory. To delete a stored reading in the current program, select the program number and edit mode by pressing key A or B. Bring the cursor to the desired reading by using the UP and Down Key. Press the H key and the controller asks for the confirmation displaying on the status bar as: Press Enter To delete reading. If enter key is pressed, the reading is deleted and if any other key pressed the mode is exited.



Pressing the I key is used to enter a new step in a pre programmed program. To insert a new step, Select the program number and edit mode by pressing key A or B. Bring the cursor to the desired reading by using the UP and Down key where a new step needs to be programmed. Press the I key and the Status Bar displays: To insert Step press key. Pressing the F key enters the backgauge reading as the new step, Pressing G key enters the Pile Push out step or reading can be numerically entered using the numeric key.



Pressing the J key terminates the program. All readings beyond the step selected by the cursor are deleted and the controller exits the create/edit program mode.

## ALIIED FUNCTIONS



This function helps in programming Pile Push at the desired steps at the desired positions in lieu of Pile Push Value. To program/remove Pile Push function at any step, we need to select the program enter the program edit menu using A or B key. The cursor is moved to desired step using UP and DOWN keys and then pressing the L key toggles on/ off the gauge return function at the desired stored value. The pile push function can be created at any desired reading using this function.



This function helps in programming Air Solenoid cushion for the paper movement bed at the desired steps at the desired positions. To program/remove Air Solenoid Select function at any step, we need to select the program enter the program edit menu using A or B key. The cursor is moved to desired step using UP and DOWN keys and then pressing the K key toggles on/ off Air Solenoid Control at the desired stored value. This feature is not standard and depends on version number of hardware and software.



This function is used to program multiple cuts at a particular position. To increase the number of cuts at a particular position, Select function at any desired step, we need to select the program enter the program edit menu using A or B key. The cursor is moved to desired step using UP and DOWN keys and then pressing the M key increases the number of cuts at the desired stored value.



This function is used to program multiple cuts at a particular position. To decrease the number of cuts at a particular position, Select function at any desired step, we need to select the program enter the program edit menu using A or B key. The cursor is moved to desired step using UP and DOWN keys and then pressing N key decreases the number of cuts at the desired stored value.



This function is used to create a name for a particular program. To create a name for a program, we select the desired program using program number key or Prog UP Prog DOWN key and then enter edit program mode using A or B key. Pressing this key displays Enter Name of the Program in the status bar. 19 Digit Alpha numeric Title for the Program selected can be created as the name of the program. This helps in easily classifying the programs and storing in sub menus. Sorting of programs using alphabets is not a standard feature.

## **Push out**



When in the manual mode or in edit program with Back-gauge, this control is to help the operator to push the paper out bringing the back-gauge at the Pile push out reading.

## **Goto after Push Out**



Pressing this key asks for the positioning target. The backgauge positions to the Pile Push Out value and goes to the entered desired value.

## **Cut Counter Reset**



This function is used to reset the cut counter at the selected Program. To reset counter for the cuts count for a particular program, we select the desired program using program number or Program UP/DOWN key. Pressing R key resets the totalized counts for that program.

## **Units:**



On this function the user can select between Millimetres and Inches. By selecting this option the values will change automatically and the screen will display the units selected in with an accuracy of 0.01mm or 0.001 Inches. The operator can toggle between these two using 'S' key and the Inch Led glows when displaying Inches. . The function is not available during program run or Program editing.

## **Calibrate Back-Gauge or Setup**



This Function is used to calibrate the back-gauge according to the set parameters. Calibration is needed to put the controller in the run mode and the machine needs to be calibrated if parameters are programmed again.

## **Brake Enable/Disable**



Manually Disable and enable the Back-Gauge Brake. This helps in slight adjustment of the back-gauge for minor errors and offset.



## RUN A STORED PROGRAM



This option as shown will allow the user to start the program from the selected line. To start/Run a program, select the program using the select program number menu. The desired step can be selected using the UP/DOWN keys. On pressing the enter key, the back-gauge goes to the selected desired position. Pressing the enter key sequentially, positions the back-gauge to the next steps.

In case of overflow, the 1<sup>st</sup> step reading position is selected.

When running in the program run command, when the knife of the Guillotine is activated and the clamp pressure released, the back-gauge moves to the next step automatically.

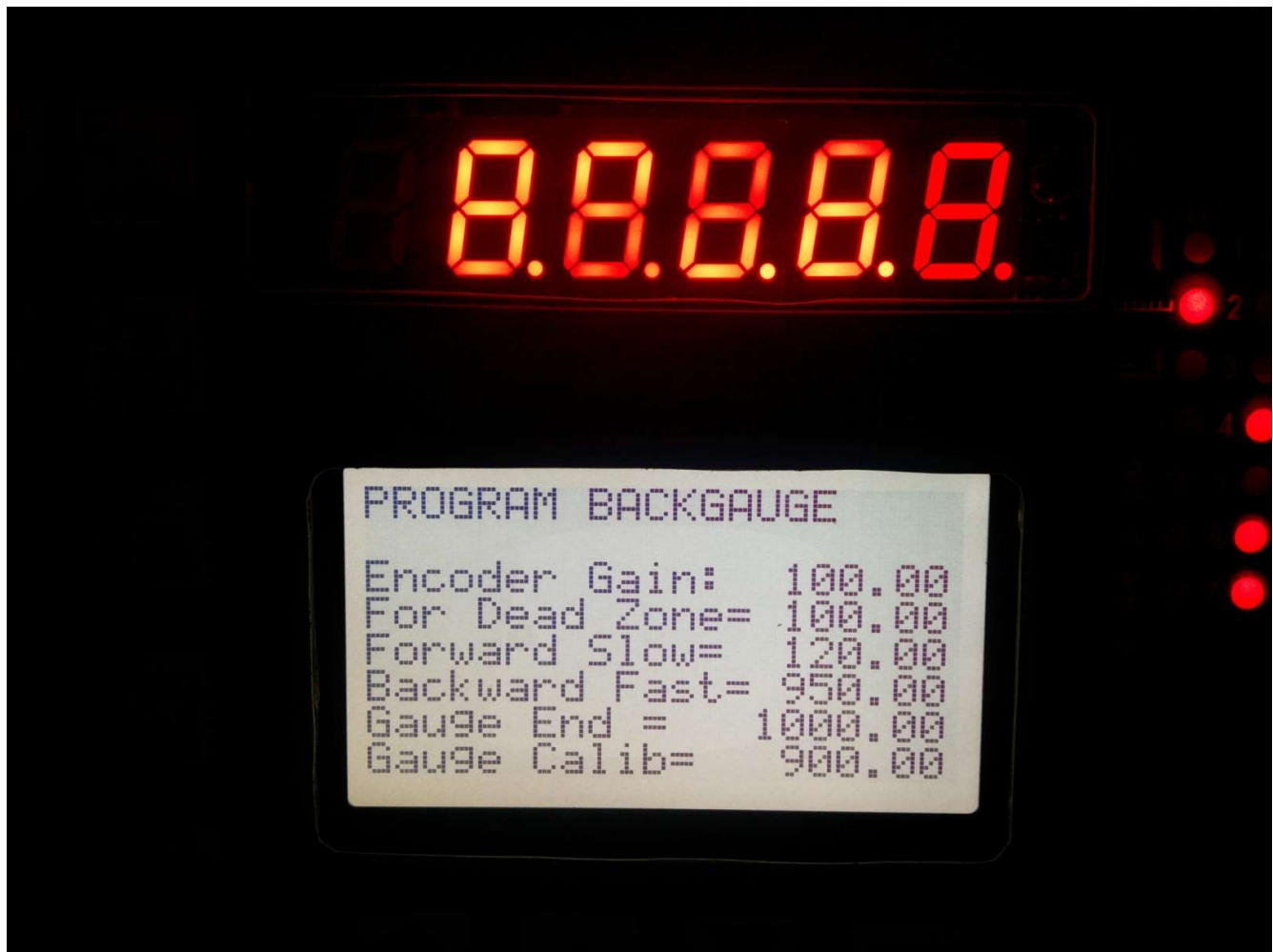
RUN program menu can be exited at any stage by pressing the STOP key.

## *Parameter Menu*

This is an engineering menu protected with a password, here is where the engineer has to setup the controller for the first time or change some values due to wear and tear of the mechanical system. The menu is password protected and needs to be entered before accessing the machine basic parameters. This avoids error programming. The operator can navigate between the screens using S> and <S keys.

The values are saved only after RUN key has been pressed to exit the mode and calibration done again.

## PROGRAM-BACKGAUGE:



**Encoder Gain:** This is the multiplying constant and is used to generate the electronic gearing in percentage terms. This parameter offset any error between the displayed Back-gauge reading and the actual measurement of the position. An optimum value is 100.00 normally used.

**Note:** The encoder gain should be programmed first before changing any other parameter as all the parameters are dependent on this.

**For Dead Zone:** This is the minimum position of the back-gauge that can be attained by the program. Readings beyond this are not programmable and error message is generated while entering position values less than this. The value is entered in mm.

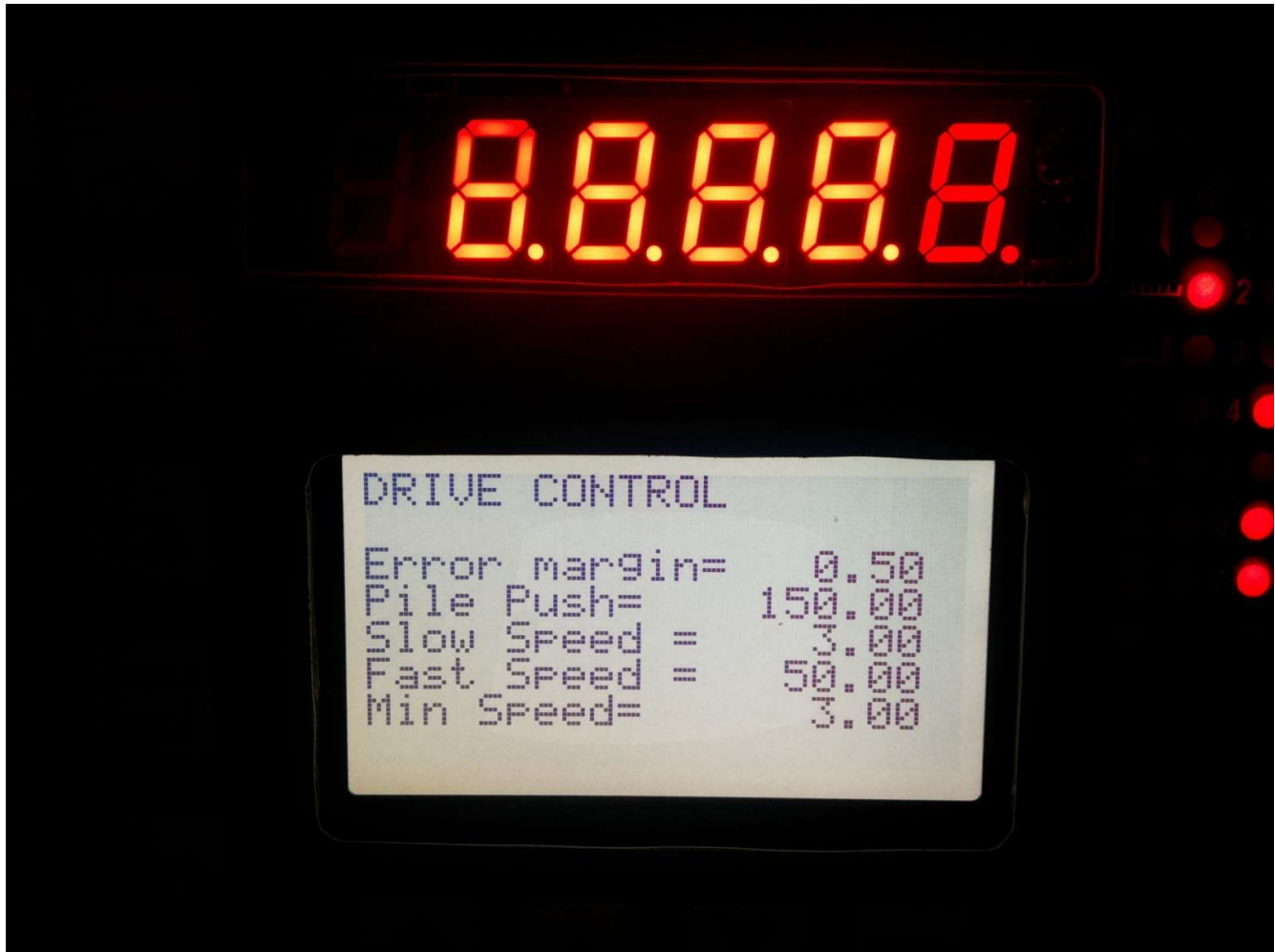
**Forward Slow:** This is the Back-gauge position towards the operator side beyond which the back-gauge moves at the slow speed.

**Backward Fast:** This is the backward position of the Back-gauge up to which it moves at the maximum speed. Beyond this the back-gauge moves at a slow speed.

**Gauge End:** This is the maximum distance up to which the back-gauge shall move. Reading beyond this is not accepted by the controller and error messages are generated while programming.

**Gauge Calib:** This is the Back-gauge position when the home position sensor senses the back-gauge. Any error between the displayed Back-gauge position and the actual position is corrected using this parameter. The error between the two can be eliminated by adding the error value to the Gauge Calibration. This parameter is entered in mm.

## DRIVE-CONTROL:



**Error Margin:** This is the error offset beyond which the controller does not generate an error. This is programmed in mm.

**Pile Push:** This is the set reading for Pile push. Entering the Pile push step in Program creating/editing shall allocate this value to that step. This is programmed in mm.

**Slow Speed:** This is the Reference value used in moving the Back-gauge at the Slow manual forward and backward mode. This is used only if using ac drives on serial port or the servo-motor drive configurations.

**Fast Speed:** This is the Reference value used in moving the Back-gauge at the Fast manual forward and backward mode. This is used only if using ac drives on serial port or the servo-motor drive configurations.

**Min Speed:** This is the minimum speed that is generated by the controller while in closed loop positioning mode. Any values below minimum shall generate minimum speed as calculated by controller. This is very important to attain the highest level of accuracy while in the positioning mode. This is used only if using ac drives on serial port or the servo-motor drive configurations.

## GAUGE CONTROL:



**Brake Time:** This parameter is used to program the delay between brake release and the forward move command. A higher value can delay the movement of the back-gauge and very low values can overheat the back-gauge motor. This is set to the lowest possible time. An optimum value shall ensure high speed and good maximum accuracy.

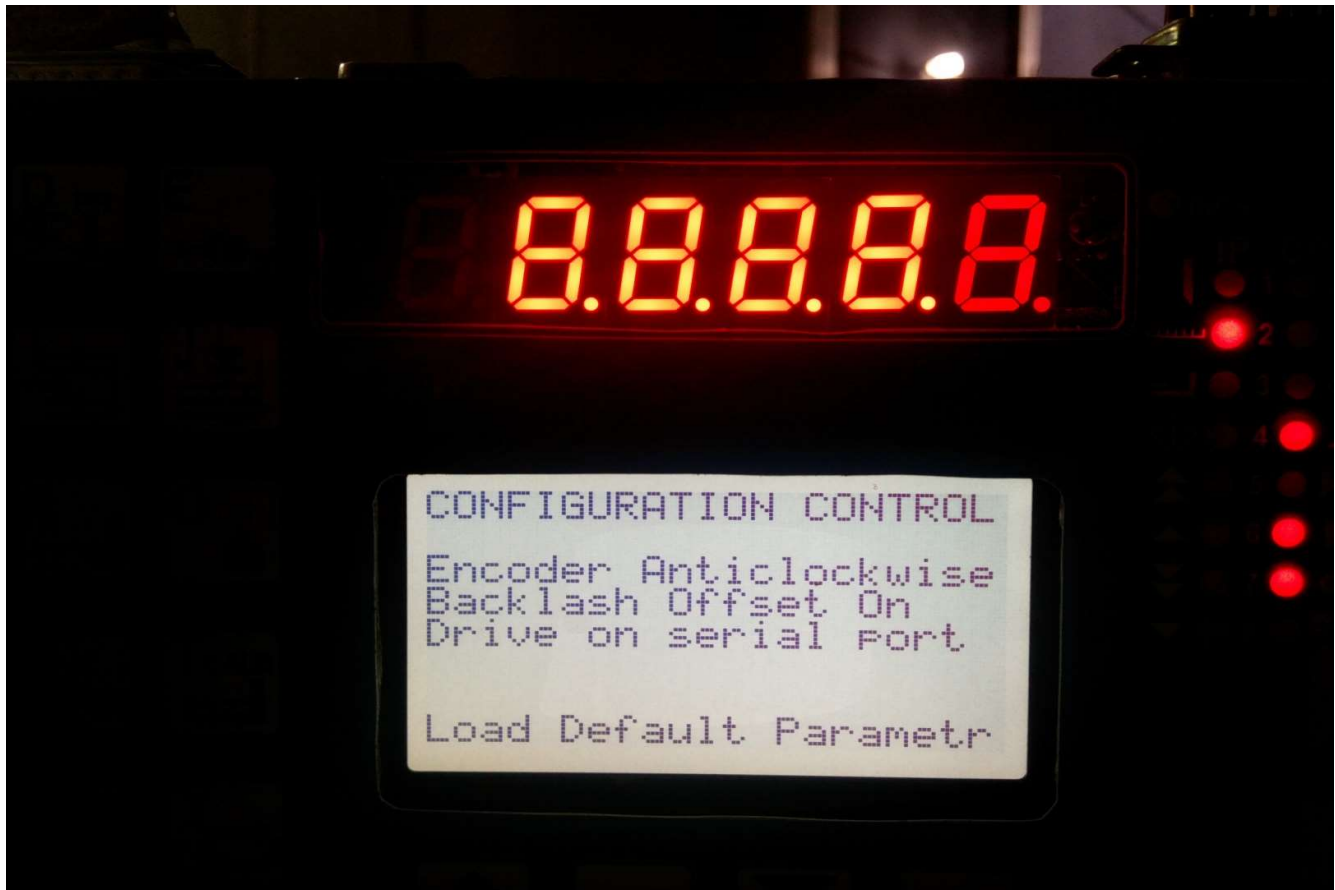
**Fast Slow:** This Parameter is used to program delay when the controller activates the back-gauge slow command while the controller is already moving in fast mode. Very Low values can cause the Back-gauge motor to trip for overloads and larger values delays and erratic movements of back-gauge. An optimum value shall ensure high speed and good maximum accuracy.

**Forw Back:** This Parameter is used to program delay when the controller activates the back-gauge forward command while the controller is already moving in backward mode. Very Low values can cause the Back-gauge motor to trip for overloads and larger values delays and erratic movements of back-gauge. An optimum value shall ensure high speed and good maximum accuracy.

**Error Time:** This Parameter is used to program delay for calculating the error between the set value of the Back-gauge and the actual Value of the Back-gauge as measured by the controller.

**Baud Rate:** This is the Baudrate for the communication interface between the controller and the AC drive or the servo drive interfaed to the controller on serial port. RS-485 configuration enables connecting multiple devices on the same bus.

## CONFIGURATION CONTROL:



**Encoder Direction:** This parameter is used to configure the direction of movement of back-gauge as per actual calculation of the controller. If the direction of movement of the Back-gauge is opposite to that calculated by the controller, this parameter can be changed using the 'A' key. For e.g. if the back-gauge moves in the forward direction and reading increases, change this parameter.

**Backlash Offset:** This parameter is used to avoid the backlash in the back-gauge due to mechanical wear and tear. Enabling this function, shall overshoot the Back-gauge beyond the set value in the backward direction according to the overshoot parameter and then position the back-gauge. The operator can toggle between the modes using 'F' key.

**Drive Configuration:** Various Drive configurations can be used with the controller. The user can interface the relay logic for Forward, Reverse and Fast outputs or enables Backward and Fast configurations for the back-gauge control. The configuration can be selected using 'K' 'P' and keys.

The controller can be connected to M series Delta AC Variable frequency drives on serial 485 ports directly using 1:1 configuration. This mode has the maximum efficiency and accuracy. The configuration can be selected using 'U' key.

**Load Default Parameters:** This option can be used to reset all parameters to factory settings. The used is advised to note all the values before using this feature as limits have to be programmed again and wrong values programmed can lead to injury or accidental breakdowns.

## BACK-GAUGE CONTROL:

**Overshoot:** This parameter is used when the backlash configuration is enabled. This programs the offset value that the Back-gauge shall move beyond the set point while moving in the backward direction.

**Move Slow:** This Parameter is used to program the distance the back-gauge shall move in slow speed before disabling the back-gauge motor.

**Release Motor:** This Parameter is the distance before which the back-gauge motor is disabled and brake enabled before coming to stand still.

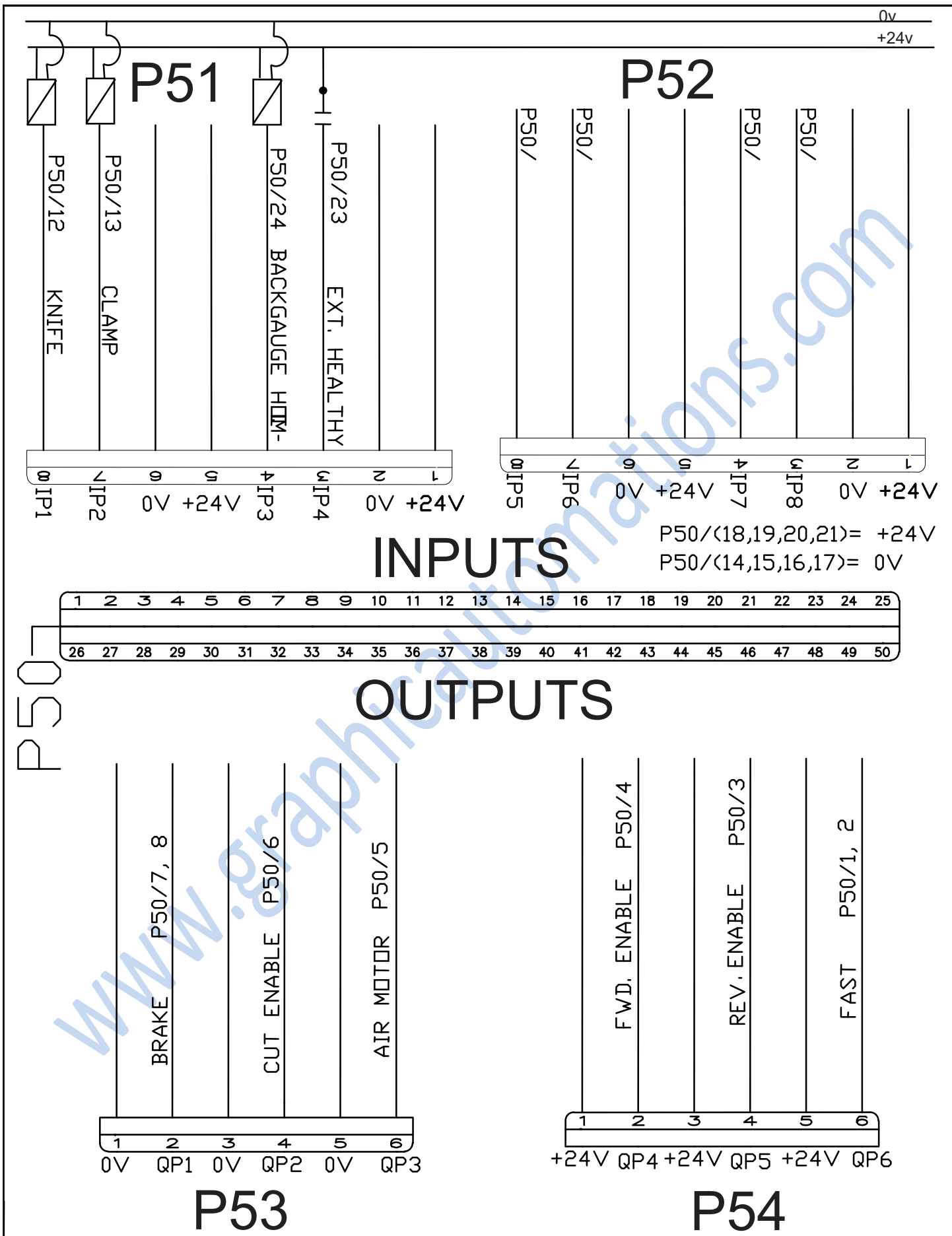
**Dead Band For:** This is the offset value between the set value of Back-gauge and the actual value of back-gauge below which the back-gauge shall move in backward direction before positioning.

**Dead Band:** This is the offset value of the back-gauge below which the back-gauge shall not move.

**Speed Gain:** This is the Gain value for the closed loop and is used in serial port configuration and servo drive configuration. The greater the gain the more is the speed of positioning. Very High Gains can lead to non stable loops and drives can trip or back-gage overshoot.

## ERRORS:

1. Range Exceeds Limit The set point value calculated is more than Gauge Length or less than Forward Limits. Check the Set value or the Parameter Values.
2. Displayed Gauge Length And Actual Back-gauge position do not match. Calibrate again else correct the parameter Back-gauge Calib in set up according to error.
3. Back-gauge does not move forward but moves back ward. Check the clamp up sensor signal. Check the Led is glowing when the clamp is at top position.
4. The output Led Glows but back-gauge does not move. Check the Back-gauge motor tripped or drive has tripped.
5. The Gauge position reading decreases when back-gauge moves backward. Toggle the Encoder Direction in Parameter Set up clockwise or anti clockwise.
6. The back-gauge does not come to the forward limit. Check the Back-gauge parameters.
7. The current Value of back-gauge is not linear. Check for Encoder Calibration parameter in set up.
8. Back-gauge overshoots the set value and caused Gauge Positioning Error. Change the Over shoot, Move slow and release motor parameters in the Back Gauge set up.
9. Back-gauge hits the Limits forward or backward. Check the Set up parameters and back-gauge size.



# PRINT-CUT THE COMPLETE BACK-GAUGE CONTROLLER SERIES

