



CoPCUT

USER MANUAL



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SAFETY & GENERAL INFORMATION

- » For your safety, please read the document carefully before using the product.
- » Check the product before assembling in case of any damage during the transport or handling.
- » The product is supplied by Doray without safety features, user must ensure a safe environment.
- » Assembling and start-up must be done with well trained mechanical and electrical technicians to avoid any kind of safety risks.
- » Do not use the product near the explosives and combustibles.
- » Do not expose the product to direct sun ray or any other heat source.
- » Do not place magnetic objects (transformers, motors etc.) or interference generating devices (welding machine etc.) near the product.
- » Do not expose the product to excessive humidity to avoid the risk of electric shocks or deterioration of the product.
- » To reduce the effect of electrical noise on the device, the low voltage line (especially the sensor input cable) cables must be separated from high current and voltage lines.
- » The device must be mounted on the panel with its own fixing parts. Do not assemble the device with unsuitable fixing elements.
- » In order to prevent electric shocks and similar accidents, the system should not be energized before all connections of the device are completed.
- » After the device is energized, check if the power LED is on.
- » If there is a danger that may arise from any error or malfunction on the device, turn off the energy of the system and disconnect all electrical connections of the device from the system.
- » In case of malfunction of the product, call a technician.
- » Do not clean the screen with alcohol – solvent – petrol based liquids. Use only soap based natural detergent.
- » Control Panel screen is pressure sensitive. Do not press hard on the screen. Do not use a sharp or pointed objects (sheet metal, screwdriver, pen ball etc.). This kind of damage is out of manufacturer warranty.

WARRANTY TERMS & CONDITIONS

The CopCUT Control Unit is under warranty of two years against the defects in materials and workmanship of the product.

Customer must follow the instructions in this user manual to protect the warranty rights.

HARDWARE SPECIFICATIONS

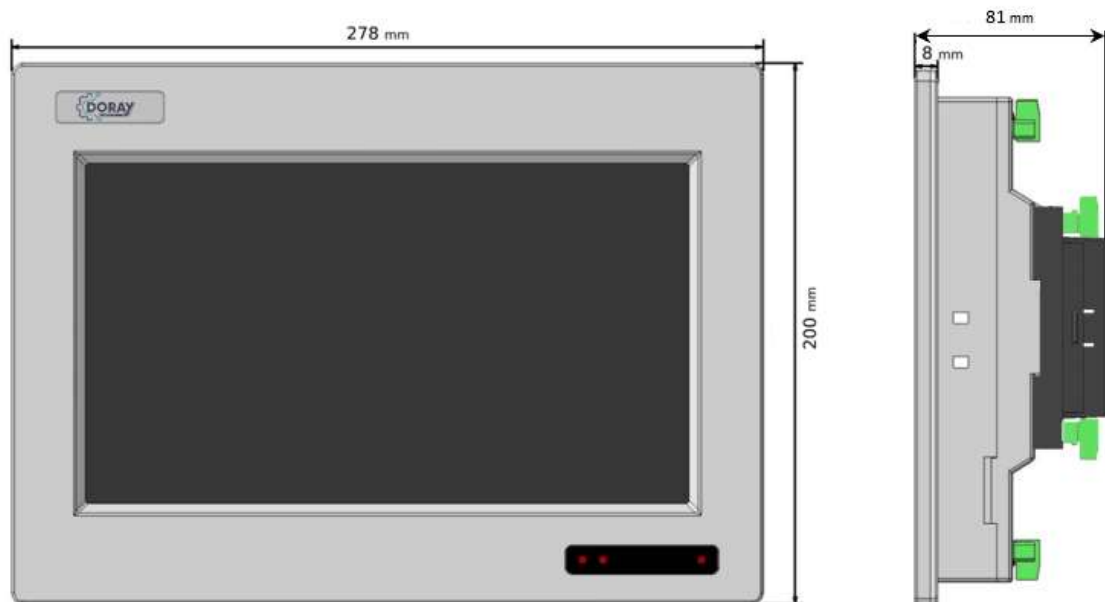
Introduction

The CopCUT Control Unit inventively designed and programmed to control the CNC shears.

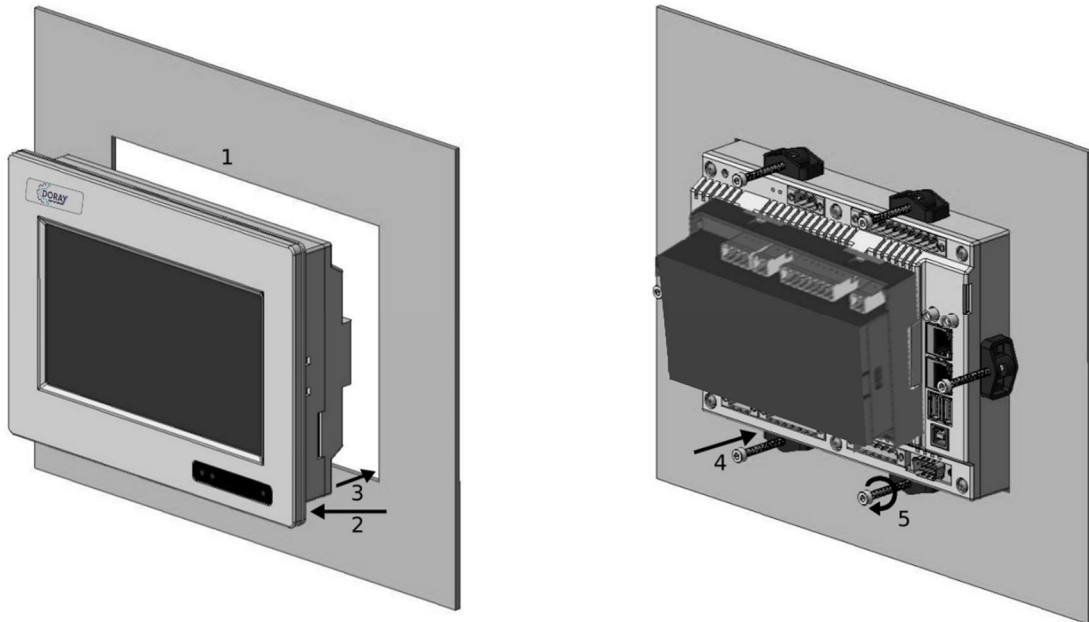
It is the key product of the machine which allows the operator to create the programs and control the machine for a better cutting quality.

Dimensions of the Product

- » Product Dimensions: 206 x 152 x 81 mm
- » Panel Housing Dimensions: 196 x 142 mm

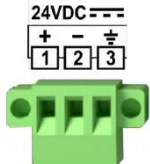


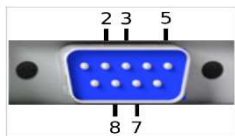
Assembling the CopCUT to Panel

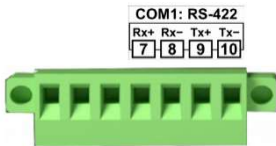


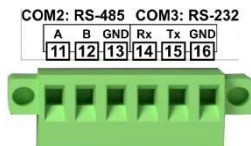
1. Prepare the panel housing according to the given dimensions for assembly.
2. Make sure that the sealing gaskets on the front panel of the device are installed.
3. Place the device in the housing on the panel.
4. Place the mounting brackets in their slots.
5. Fix the device to the panel by tightening the screws of the device.

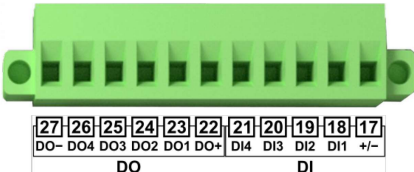
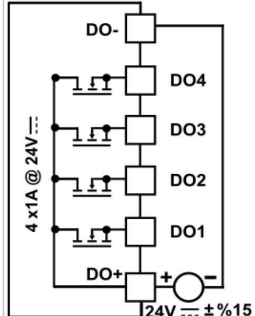
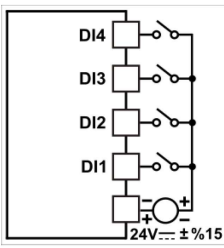
Pin Connections

POWER SUPPLY INPUTS	
	Terminal
	+
	-

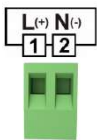
COM4	
	Terminal
	2- Rx
	3- Tx
	5- GND
	7- RTS
	8- CTS

COM1	
	Terminal
	Rx+
	Rx-
	Tx+
	Tx-

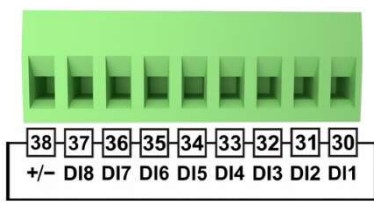
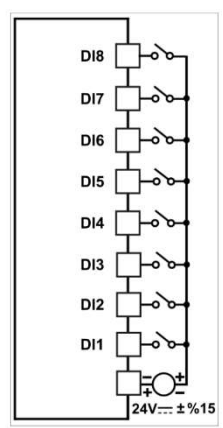
COM2 – COM3	
	Terminal
	A
	B
	GND
	Rx
	Tx
	GND

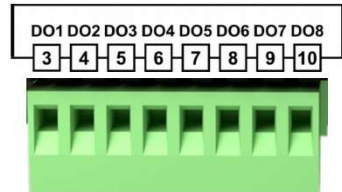
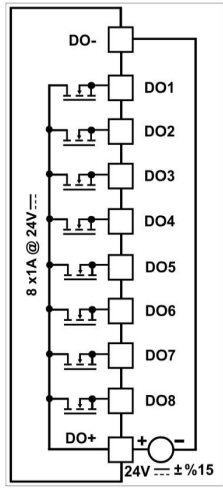
DIGITAL INPUTS / OUTPUTS			
	Terminal	Explanation	Wiring Schema
	DO-	Digital Output Supply -	
	DO4	Digital Outputs	
	DO3		
	DO2		
	DO1		
	DO+	Digital Output Supply +	
	DI4	Digital Inputs	
	DI3		
	DI2		
	DI1		
	+/-	Digital Inputs NPN / PNP Choices	

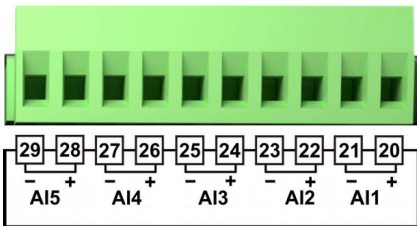
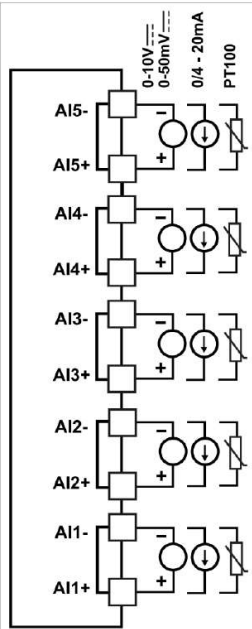
I/O Module Card Connections

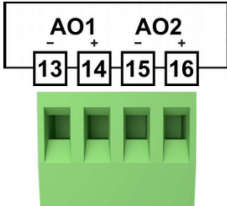
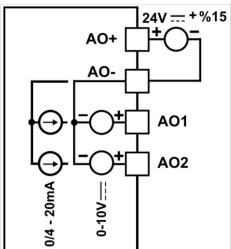
I/O CARD POWER SUPPLY INPUTS	
	Terminal
	+
	-

HMI COMMUNICATION INPUTS	
	Terminal
	A
	B
	GND

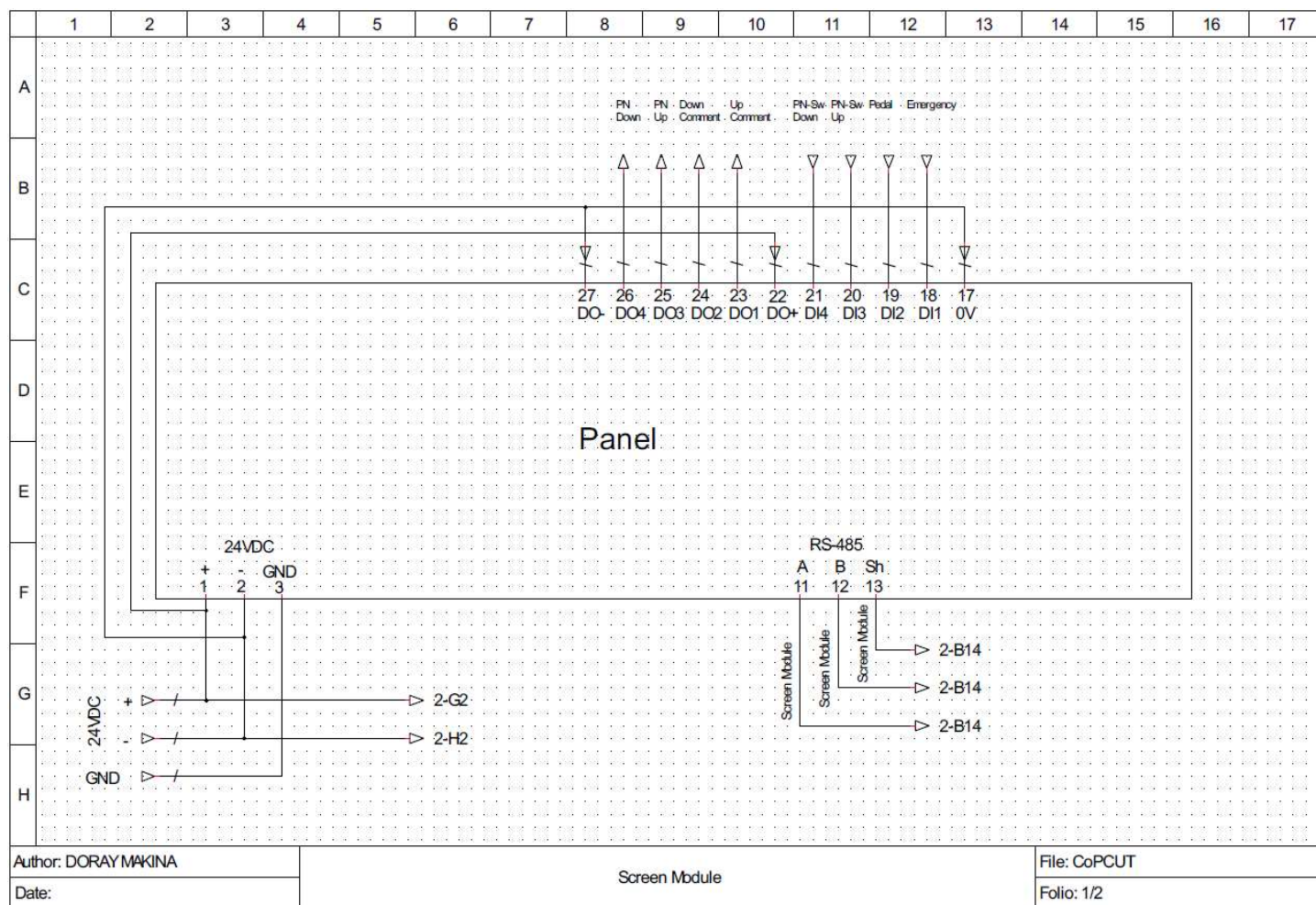
DIGITAL INPUTS			
	Terminal	Explanation	Wiring Schema
	DI8	Digital Inputs	
	DI7		
	DI6		
	DI5		
	DI4		
	DI3		
	DI2		
	DI1		
	+/-	Digital Inputs NPN / PNP Choices	

DIGITAL OUTPUTS			
	Terminal	Explanation	Wiring Schema
	DO1	Digital Outputs	
	DO2		
	DO3		
	DO4		
	DO5		
	DO6		
	DO7		
	DO8		

ANALOG INPUTS			
	Terminal	Explanation	Wiring Schema
	AI5-	Analog Input5	
	AI5+		
	AI4-	Analog Input4	
	AI4+		
	AI3-	Analog Input3	
	AI3+		
	AI2-	Analog Input2	
	AI2+		
	AI1-	Analog Input1	
	AI1+		

ANALOG OUTPUTS			
	Terminal	Explanation	Wiring Schema
	AO+	Analog Output Supply	
	AO-		
	AO1	Analog Outputs	
	AO2		

ELECTRICAL WIRING SCHEMAS



STARTING WITH THE CoPCUT

- » “[Index Page](#)” screen welcomes when you start the CoPCUT. After referencing, you are directed to the Working Page.
- » To go to the Main Page, you need to click the Home Button.



- » Then “Main Page” automatically shows off.
- » Main Page is the home screen of the CoPCUT.
- » Each time you press the “Home Button”, you will be directed to the Main Page where you can have the main functions of the control unit.

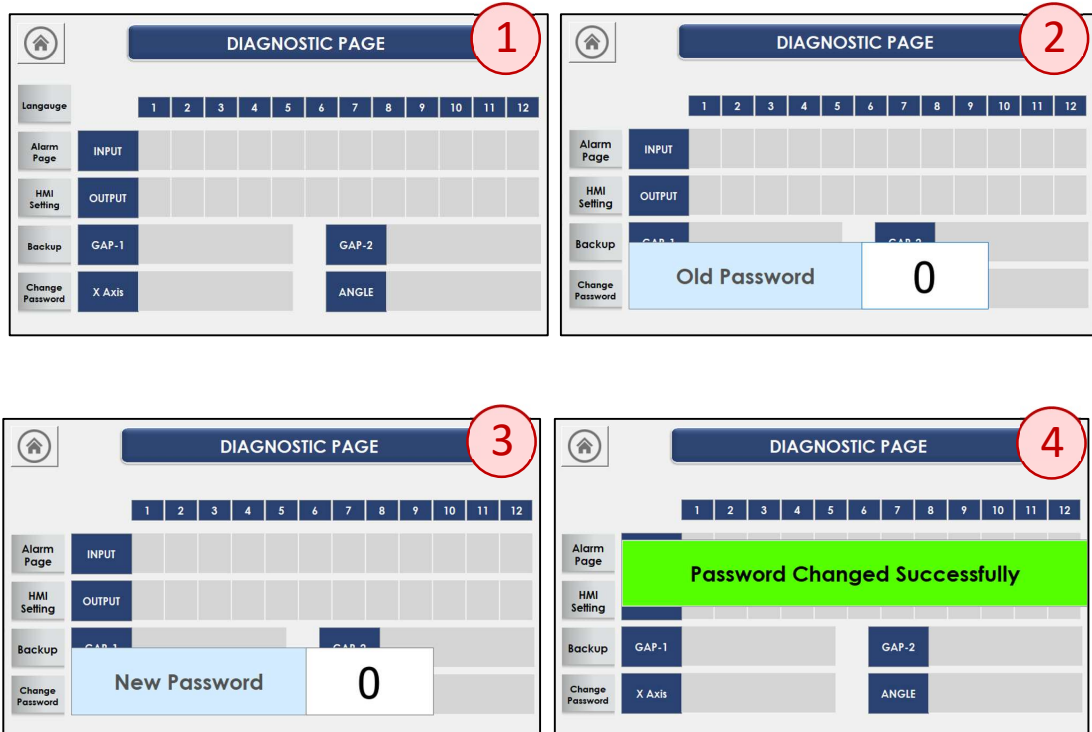


GENERAL SETTINGS

Password Change

- » You need to enter the password to access the settings of the Control Unit.
- » For changing the password you must follow the below flow:

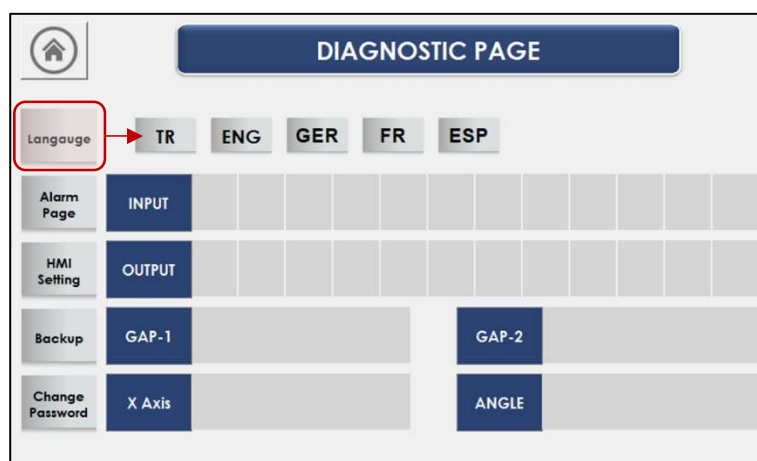
Main Page → Diagnostic Page → Change Password
- » You will be asked to enter the default password for accessing the [Diagnostic Page](#).
- » Default password setted as “3”
- » Then you need to follow:
 1. Click “Change Password” button
 2. Enter the Old Password (“3” as default)
 3. Enter the New Password
 4. Password Changed Successfully



Language Settings

- » You can change the language of the Control Unit from one of available five languages under “[Diagnostic Page](#)”
- » For changing the language you must follow the below flow:

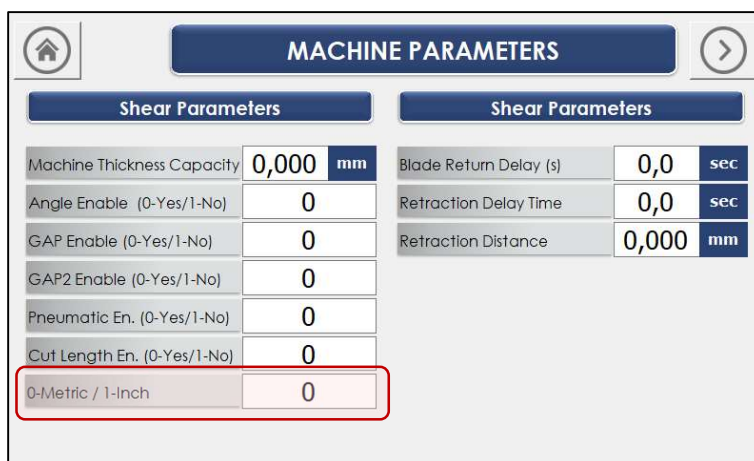
Main Page → Diagnostic Page → Language
- » You will be asked to enter the password for accessing the Diagnostic Page.
- » Then you can click the “Language” button for choosing one of the available languages:



Length Unit Settings

- » You can change / set the length units mm or inch
- » For changing the length unit, you must follow the below flow:

Main Page → Machine Parameters
- » You will be asked for password to Access the "[Machine Parameters](#)" Page.
- » For setting the length unit:
 1. Enter "0" for mm.
 2. Enter "1" for inch.



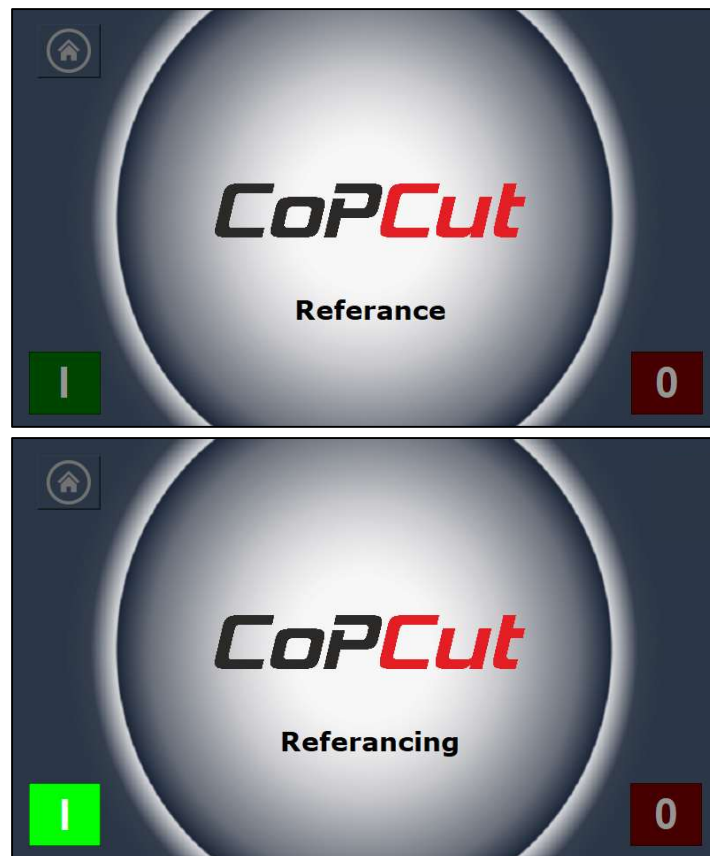
MACHINE PARAMETERS		
Shear Parameters		
Machine Thickness Capacity	0,000	mm
Angle Enable (0-Yes/1-No)	0	
GAP Enable (0-Yes/1-No)	0	
GAP2 Enable (0-Yes/1-No)	0	
Pneumatic En. (0-Yes/1-No)	0	
Cut Length En. (0-Yes/1-No)	0	
0-Metric / 1-Inch	0	
Shear Parameters		
Blade Return Delay (s)	0,0	sec
Retraction Delay Time	0,0	sec
Retraction Distance	0,000	mm

INDEX PAGE

- » Index Page allows you to send the machine to the reference point.
- » To secure your work, each time of starting the machine, you face with Index Page. Before doing anything on the control unit, you need to be sure that the machine is at the reference point.
- » You can also send the machine to the reference point during a work. For accessing the Index Page, you need to follow the below flow:

Main Page → Index Page

- » For referencing the machine, basically press START / ON Button. Then you will read on the screen that the machine is referencing.  → 
- » In case of any urgency, you can press the STOP / OFF button for stopping the machine.  → 
- » Once the machine is referenced, you will be automatically directed to the [Working Page](#).

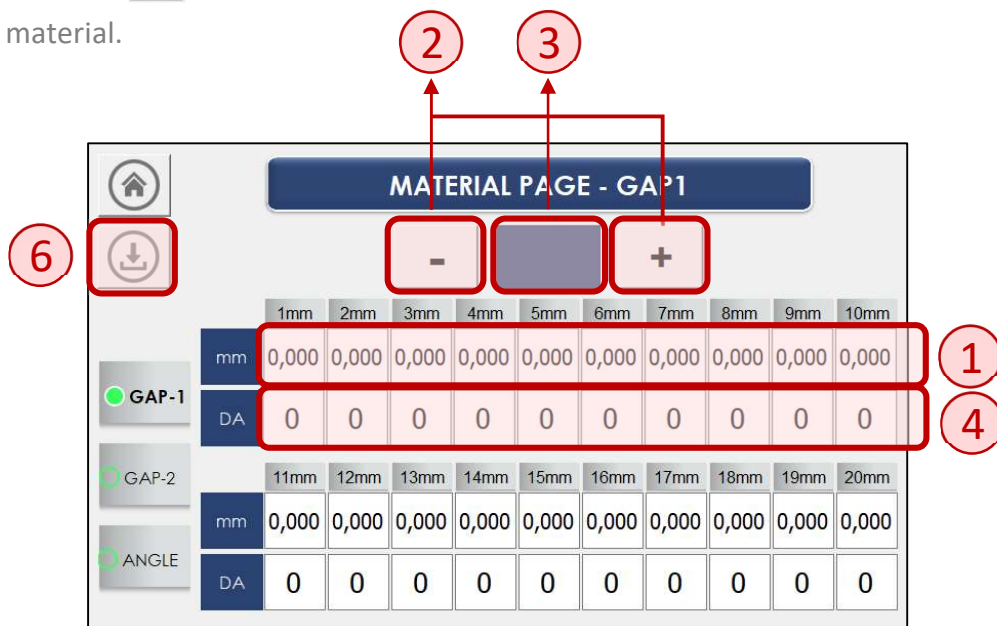


MATERIAL PAGE

- » Material Page allows you to set the GAP and ANGLE values for different material types.
- » While working on the “Working Page”, program automatically calculates the Correct Gap and/or Angle for optimum cutting quality for different material thicknesses according to set values.
- » For accessing the Material Page, you need to follow the below flow:

Main Page → Material Page

- » According to the shear machine features, you can enable/disable GAP-1 / GAP-2 / ANGLE from “[Machine Parameters](#)” page.
- » For setting the values:
 1. You must enter your standard Gap values acc to the standard thicknesses in line with your knowhow.
 2. Then move your machine manually forward (+) or backward (-) to catch the gap values that you entered at the 1st step.
 3. Shows you the DA value that potentiometer reads when you move the machine.
 4. Enter the DA values that you read at 3rd step.
 5. Repeat the steps 1 to 4 for GAP-2 and ANGLE – if available
 6. Click the  icon and open the material list to record the values to specified material.



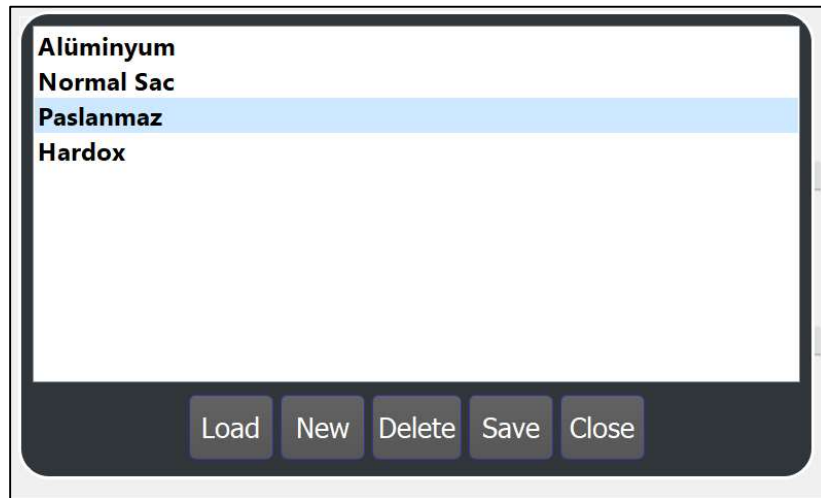
The screenshot shows the 'MATERIAL PAGE - GAP1' interface. It features a table for setting gap values for different material thicknesses. The table has columns for thicknesses (1mm to 10mm) and rows for 'mm' and 'DA' values. A red box labeled '1' highlights the 'mm' row for GAP-1. A red box labeled '4' highlights the 'DA' row for GAP-1. A red box labeled '2' highlights the '-' button, and a red box labeled '3' highlights the '+' button. A red box labeled '6' highlights the download icon in the bottom left corner. A red box labeled '1' highlights the 'mm' row for GAP-1.

		1mm	2mm	3mm	4mm	5mm	6mm	7mm	8mm	9mm	10mm
GAP-1	mm	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	DA	0	0	0	0	0	0	0	0	0	0
GAP-2	mm	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	DA	0	0	0	0	0	0	0	0	0	0

» As specified at 6th step, for opening the material list, you must click  icon.

» On the opened window, you will be able to:

1. Create new material by clicking → 
2. Save the entered values to a material by first selecting the material then click → 
3. Load the values that you recorded before for the specific material by first selecting the material then click → 



PROGRAM PAGE

- » Program Page allows you to work on Creating / Adjusting / Deleting programs.
- » For accessing the Program Page, you need to follow the below flow:

Main Page → Program Page

Creating a New Program

» For creating a new program:

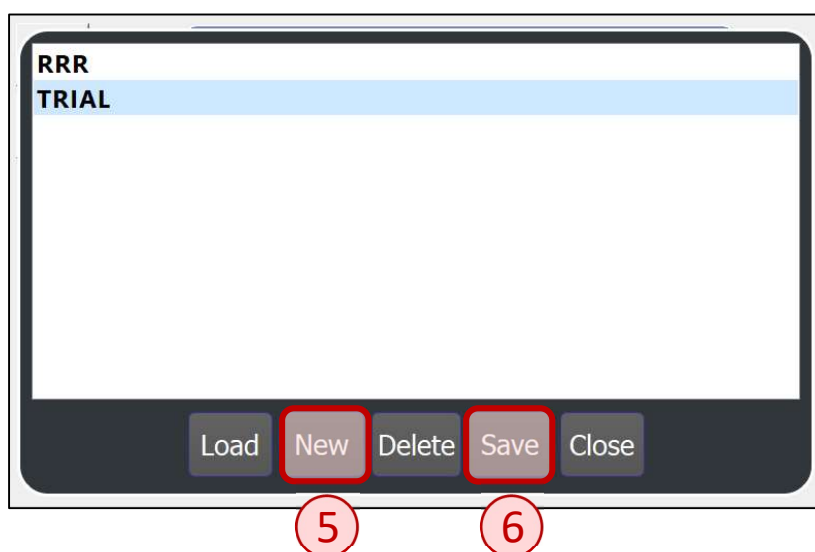
1. Enter the Cutting Length of the sheet metal.
2. Enter the Thickness of the material.
3. Fill in the Step information.
You can prepare your program up to 10 Steps for desired cutting lengths.
4. Click  icon to give a name and save the program.



The screenshot shows the 'PROGRAM PAGE' interface. At the top, there is a header bar with a home icon and a 'PROGRAM PAGE' title. Below the header, there are two input fields: 'Cutting Length' (set to 2000,000 mm) and 'Material Thickness' (set to 2,000 mm). Below these, there is a table with 10 steps for cutting lengths. A red box highlights the 'Cutting Length' and 'Material Thickness' fields, with callout 1 pointing to the 'Cutting Length' field and callout 2 pointing to the 'Material Thickness' field. Another red box highlights the table of steps, with callout 3 pointing to the table. A third red box highlights the 'Download' icon (a circle with a downward arrow), with callout 4 pointing to it.

Step	Length (mm)
Step - 1	10,000
Step - 2	20,000
Step - 3	30,000
Step - 4	40,000
Step - 5	50,000
Step - 6	60,000
Step - 7	0,000
Step - 8	0,000
Step - 9	0,000
Step - 10	0,000

5. To give a name the program click → **New**
6. To Save the program, first select the program name then click → **Save**

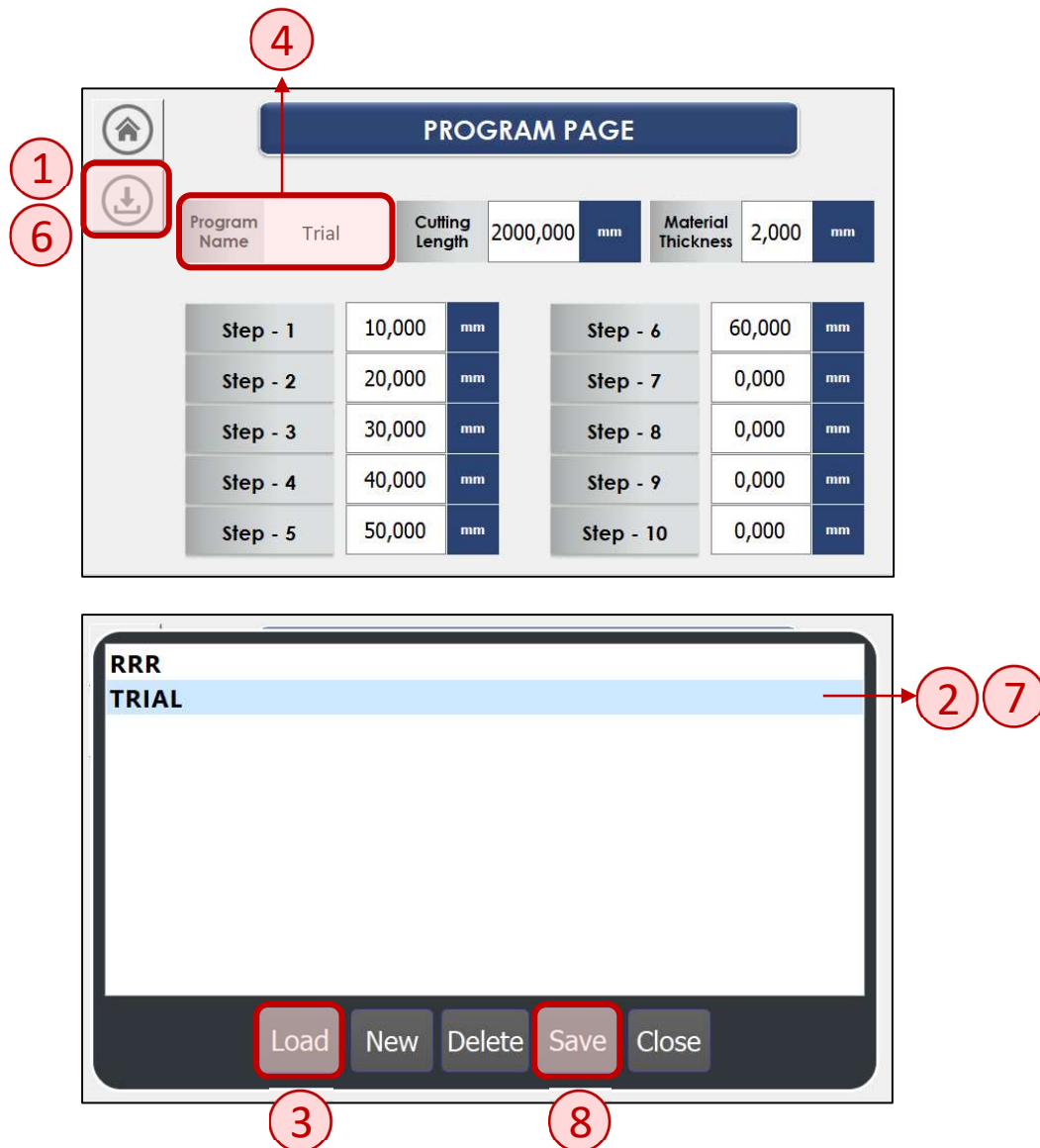


The screenshot shows a screen with a list of program names. The first two names are 'RRR' and 'TRIAL'. Below the list, there are five buttons: 'Load', 'New', 'Delete', 'Save', and 'Close'. A red box highlights the 'New' button, with callout 5 pointing to it. Another red box highlights the 'Save' button, with callout 6 pointing to it.

Adjusting an Existing Program

» For making updates / adjustments on an existing program:

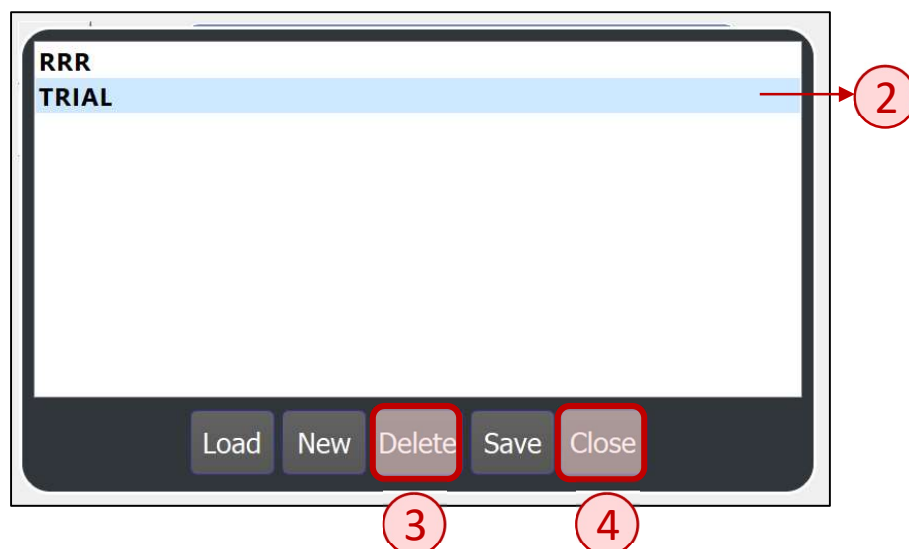
1. Click  icon to open the program list.
2. Select the program name that you want to update.
3. Click **Load** icon.
4. Make sure that the selected program is correct by checking the Program Name.
5. Do the necessary changes on Program Page (i.e. Thickness change or Step change)
6. Click  icon to open the program list.
7. Select the program name again.
8. Then click the **Save** button to save the updates that you made on the selected program.



Deleting an Existing Program

» For deleting an existing program:

1. Click  icon to open the program list.
2. Select the program that you want to delete.
3. Click **Delete** icon.
4. For exiting the program list window, click **Close** button.

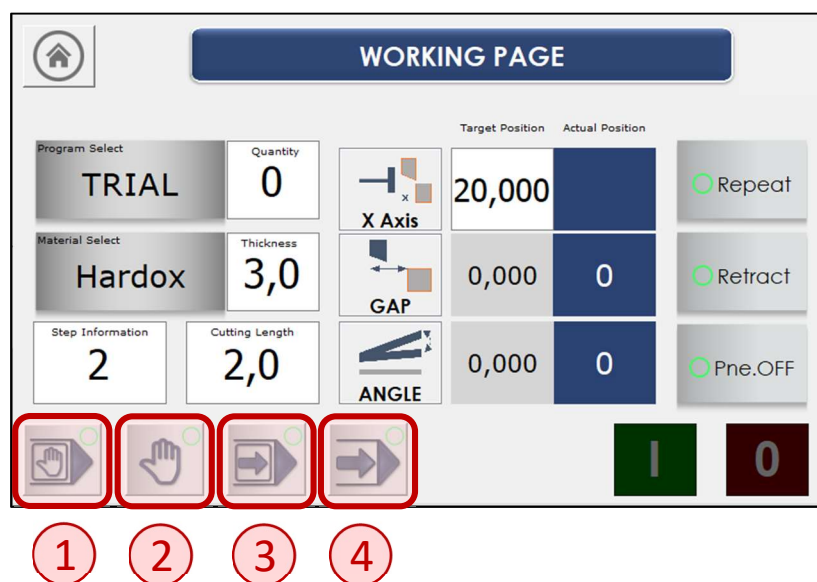


WORKING PAGE

- » Working Page allows you to operate and control the shear machine.
- » For accessing the Working Page, you need to follow the below flow:

Main Page → Working Page

- » While working on the “Working Page”, you will be able to operate the shear in four different modes:
 1. Edit Mode
 2. Manuel Mode
 3. Semi-Automatic Mode
 4. Automatic Mode
- » You need to click on the Icon to activate that you want to work on that particular mode.
- » Without making any mode selection, rest of the buttons will be de-activated.



Edit Mode

- » When you push the Edit Mode Button, green light will be ON and screen will let you to work on.  → 
- » Edit mode is the key screen where you can make the all the necessary selections like Program Select and Material Select.
- » You can define the Quantity of your work.
- » You can edit the Thickness – Cutting Length – Step – X Axis positions.
- » You can activate / deactivate the Repeat – Retract – Pneumatic modes.

 Repeat	Repeat function allows you to do over the same program.
 Retract	Retract function allows to create a safety gap on the back gauge for better cutting quality. Retract lenght can be adjusted from "Machine Parameters"
 Pne.ON	Pneumatic function activates the supporting system while working with the thin sheet metals against bending problem

- » For your work piece security, you will not be able to run the machine while you work on "Edit Mode".
- » ON & OFF Buttons will be deactivated, and you will not be able to press →  



WORKING PAGE

Program Select TRIAL	Quantity 0	 X Axis	Target Position 10,000	Actual Position 	 Repeat
Material Select Alüminyum	Thickness 1,1	 GAP	Target Position 0,055	Actual Position 55	 Retract
Step Information 1	Cutting Length 2850,0	 ANGLE	Target Position 0,055	Actual Position 55	 Pne.OFF



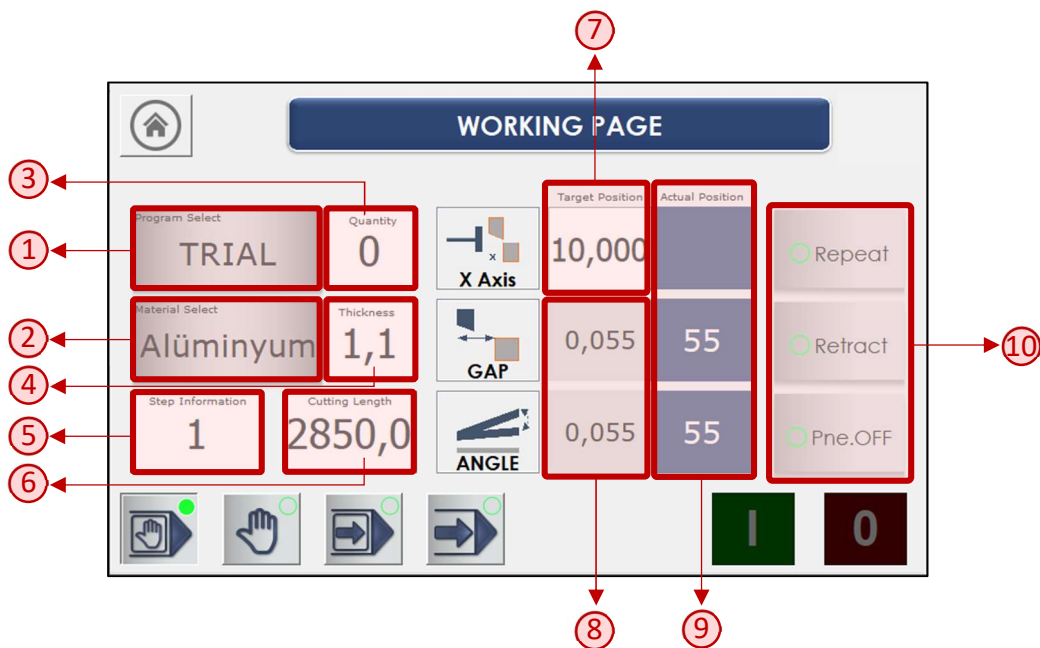






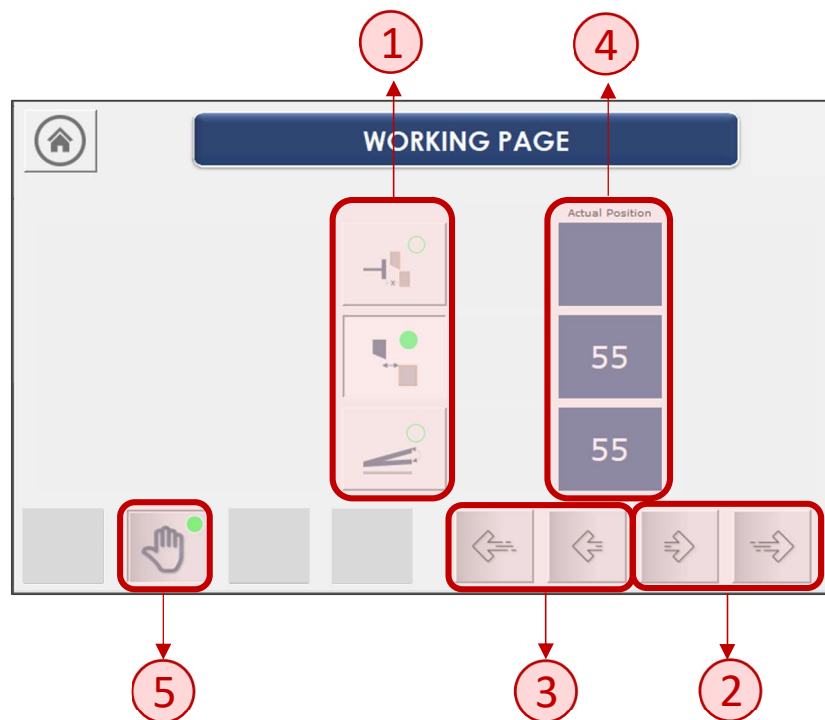
» For working on the Edit Mode:

1. Click “Program Select” to choose the program from your Program List.
2. Click “Material Select” to choose the material from your Material List.
3. Click “Quantity” to enter the quantity of your work.
4. “Thickness” will automatically come when you select the material.
However, you can click and edit for the desired thickness of your work piece.
5. “Step Information” will automatically start from 1.
However, you can click and edit the Step from 1 to 10.
6. “Cutting Length” will automatically come when you select the program.
However, you can click and edit for desired cutting length.
7. “X AXIS - Target position” will automatically come according to the step information.
However, you can click and edit for desired length.
8. “GAP & ANGLE - Target position” will be automatically calculated according to the given thickness.
And you will not be able to edit.
Program will calculate the optimum values for best cutting quality.
9. “Actual Position” of X AXIS – GAP – ANGLE will let you to read the real position of the machine.
10. “Repeat – Retract – Pne.OFF” buttons can be click to be activated. Once you click the buttons, green lights will be ON.



Manual Mode

- » When you push the Manual Mode Button, green light will be ON and you will be directed to the manual mode screen.
- » This screen allows you to move the X AXIS – GAP – ANGLE manually.
- » You can test the Axes by moving them manually incase of any error message saying that axes are not moving.
- » You can move the upper body gradually during the shear adjustment.
- » For working on the manual mode, basically:
 1. Click on one of the axes. I.e., at below example, GAP is selected.
 2. To move Forward, press  for **normal speed** or press  for **high speed**.
 3. To move Backward, press  for **normal speed** or press  for **high speed**.
 4. You can read the position once you move the axis.
 5. For exiting the screen press on Manual Mode Button again.

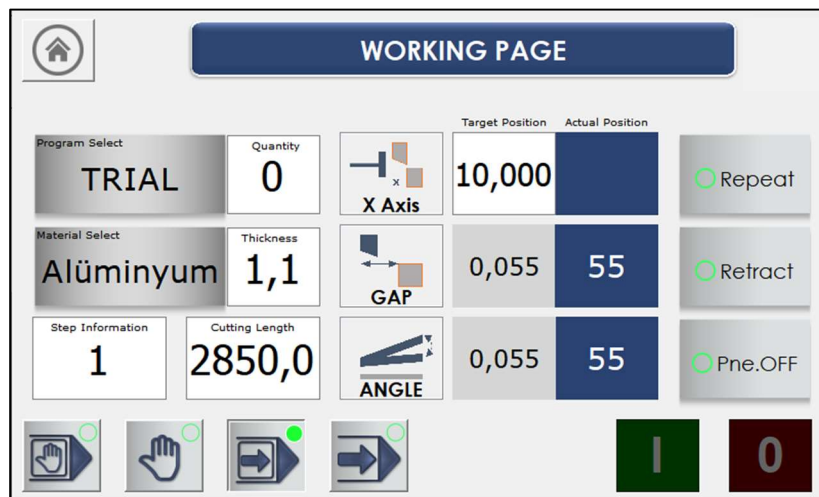


Semi-Automatic Mode

- » You will be able to run the machine in Semi-Automatic mode.
- » This mode **allows** you to make **cutting for the selected step only**. I.e. at below screen, you will be able to cut step 1 only.
- » You **cannot make any parameter changes** in this screen.
- » Screen only allows you to run the machine.
- » For making any changes, you need to switch to "[Edit Mode](#)".
- » To run the machine, basically click ON button then button light will be on and machine will get started to work.



- » To turn off the machine, click OFF button and OFF button light will turn ON.

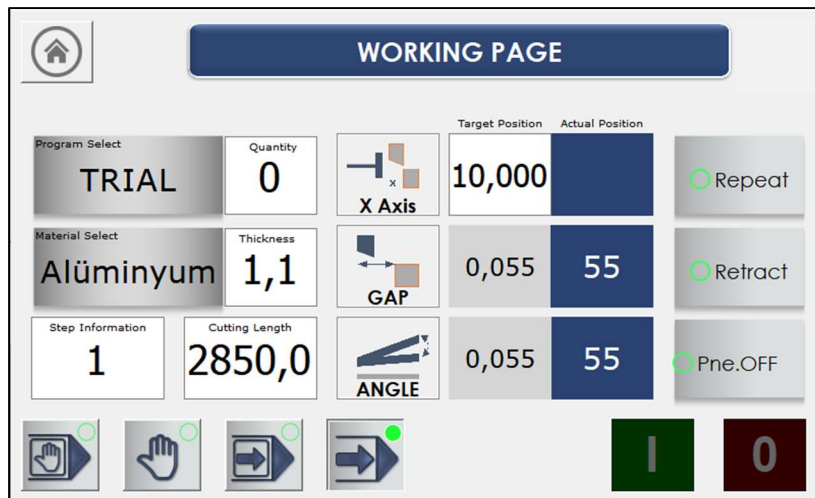


Automatic Mode

- » You will be able to run the machine in Automatic mode.
- » This mode **allows** you to make **cutting automatically for the whole program** starting from the 1st step to 10th step.
- » You **cannot make any parameter changes** in this screen.
- » Screen only allows you to run the machine.
- » For making any changes, you need to switch to "[Edit Mode](#)".
- » To run the machine, basically click ON button then button light will be on and machine will get started to work.



- » To turn off the machine, click OFF button and OFF button light will turn ON.



MACHINE PARAMETERS

» Machine Parameters allows you to control and/or set up the essential points of the machine.

» For accessing the Machine Parameters Page, you need to follow the below flow:

Main Page → Machine Parameters

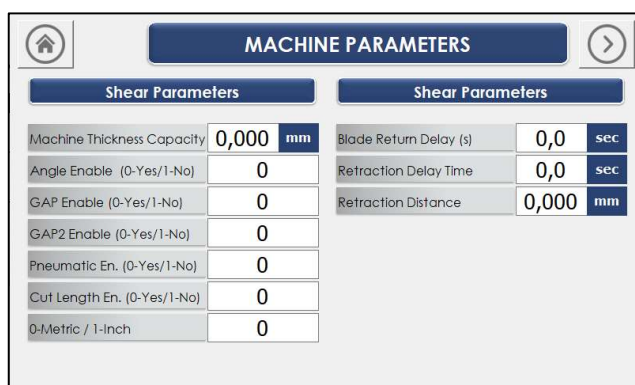
» You will be asked to enter the Password for accessing the Machine Parameters.

» For going to next/previous pages, click →  

» For going to Main Page, click → 

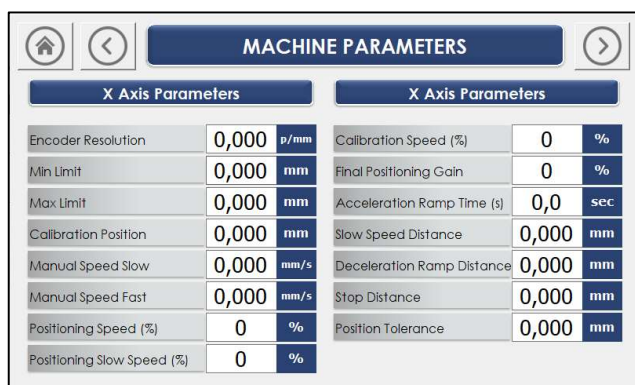
» On this page, you can control the below Parameters:

1. Shear Parameters:



SHEAR PARAMETERS	
Machine Thickness Capacity	0,000 mm
Angle Enable (0-Yes/1-No)	0
GAP Enable (0-Yes/1-No)	0
GAP2 Enable (0-Yes/1-No)	0
Pneumatic En. (0-Yes/1-No)	0
Cut Length En. (0-Yes/1-No)	0
0-Metric / 1-Inch	0

2. X Axis Parameters:



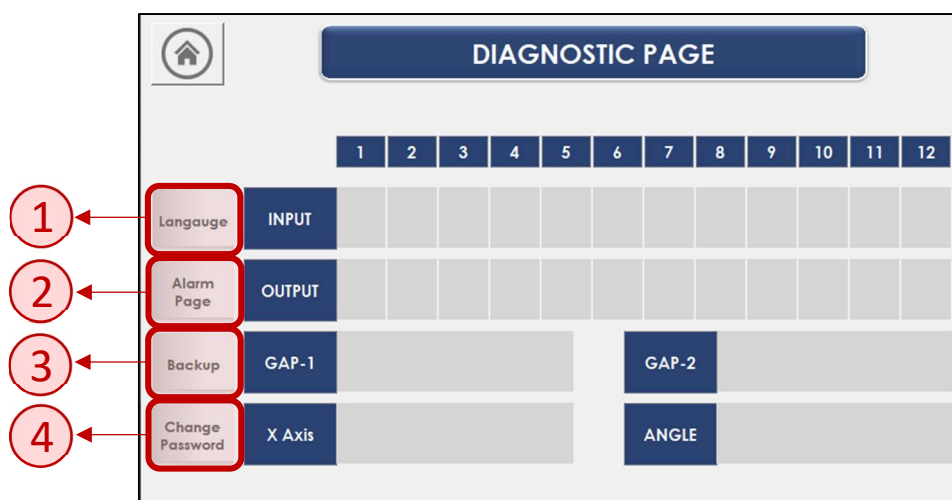
X AXIS PARAMETERS	
Encoder Resolution	0,000 p/mm
Min Limit	0,000 mm
Max Limit	0,000 mm
Calibration Position	0,000 mm
Manual Speed Slow	0,000 mm/s
Manual Speed Fast	0,000 mm/s
Positioning Speed (%)	0 %
Positioning Slow Speed (%)	0 %

DIAGNOSTIC PAGE

- » Diagnostic Page is the screen that where you will have the access and control of some basic parameters for the Control Panel such as Language – password change – Wi-Fi connections – Alarm Page etc.
- » You will be able to read the Inputs and Outputs from this screen.
- » For accessing the Diagnostic Page, you need to follow the below flow:

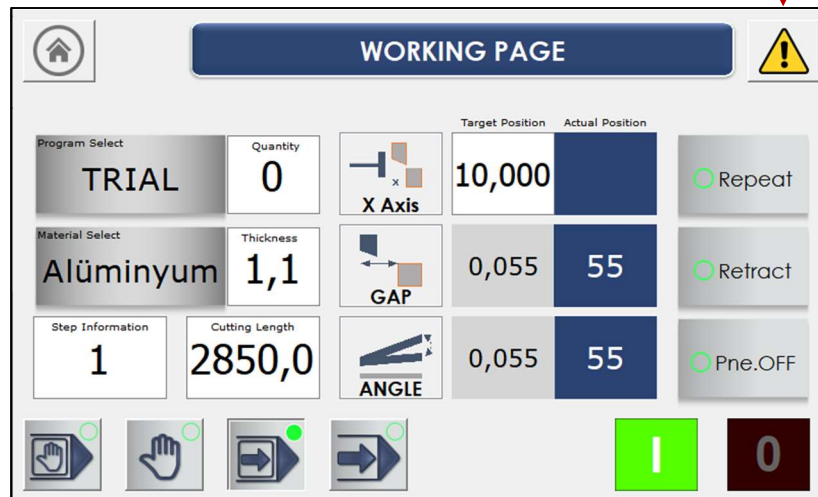
Main Page → Diagnostic Page

- » You will be asked to enter the password to reach the Diagnostic Page.
- » As you can see below, you can have the access to:
 1. [Change the Language](#)
 2. Control the Alarm Page
 3. Control the Backups
 4. [Change the Password](#)



Alarm Page & Warning Pop-Ups

- » While you are in the “Working Page”, you may face with some problems on the machine, those problems will **alert** you with a **Warning Pop-Up** on the upper right corner of the screen.

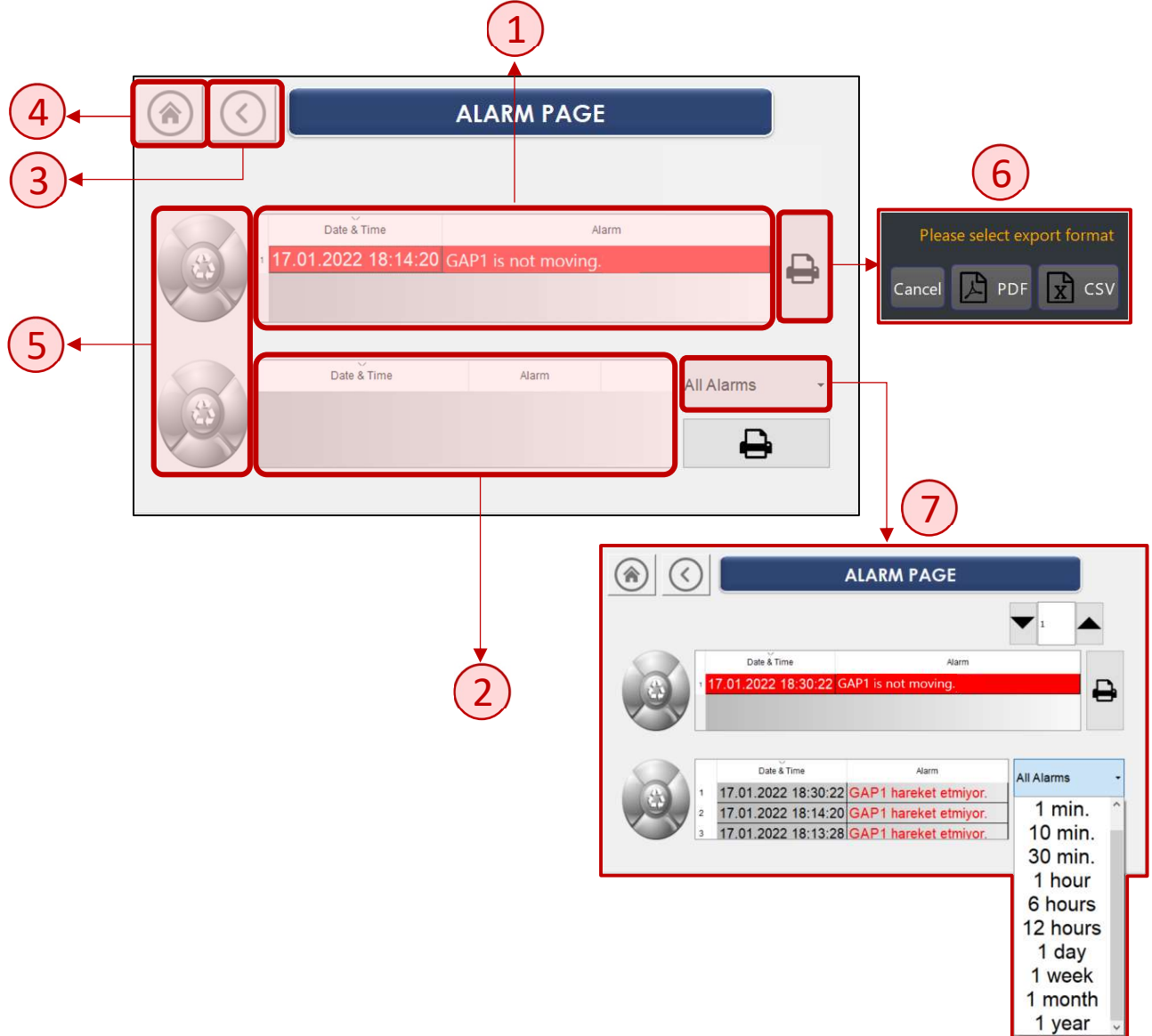


- » Once you click the  icon, you will be directed to the Alarm Page where you can see the details of the alert.

» On the Alarm Page:

1. You can see the listed current alert(s).
2. You can see the whole alerts listed according to your chosen time period.
3. You can go back to the **Working Page** by clicking the  icon.
4. You can go back to the **Main Page** by clicking the  icon.
5. You can go up-down & right-left with the control button. You can click the middle to see the whole list.
6. You can export the alarm list in .pdf or .csv format.
7. You can list the old alarms according to your chosen time period. Till 1 year back.

» You can see the whole [Warning List](#) at the end of this User Manual.



Backup & Restore Page

- » This page allows you to get the backups and restores of the Programs – Materials and Parameters.
 - » **BACKUP** allows you to upload the data **from HMI to USB device** so that you can keep the whole parameters, programs and material properties copied in a USB device.
 - » **RESTORE** allows to upload the data **from USB device to HMI** once you change the control panel to another, you can reload the programs, parameters and materials by using restore button.
 - » You can go back to the **Diagnostic Page** by clicking the  icon.
 - » You can go back to the **Main Page** by clicking the  icon.
1. Parameter Backup → Allows to get the backups of the whole [Machine Parameters](#) from HMI to a USB Device.
 2. Parameter Restore → Allows to upload stored [Machine Parameters](#) from a USB device to HMI.
 3. Recipe Backup → Allows to get the backups of the whole [Programs](#) and [Materials](#) from HMI to a USB Device.
 4. Recipe Restore → Allows to upload stored [Programs](#) and [Materials](#) from a USB device to HMI.



WARNING LIST