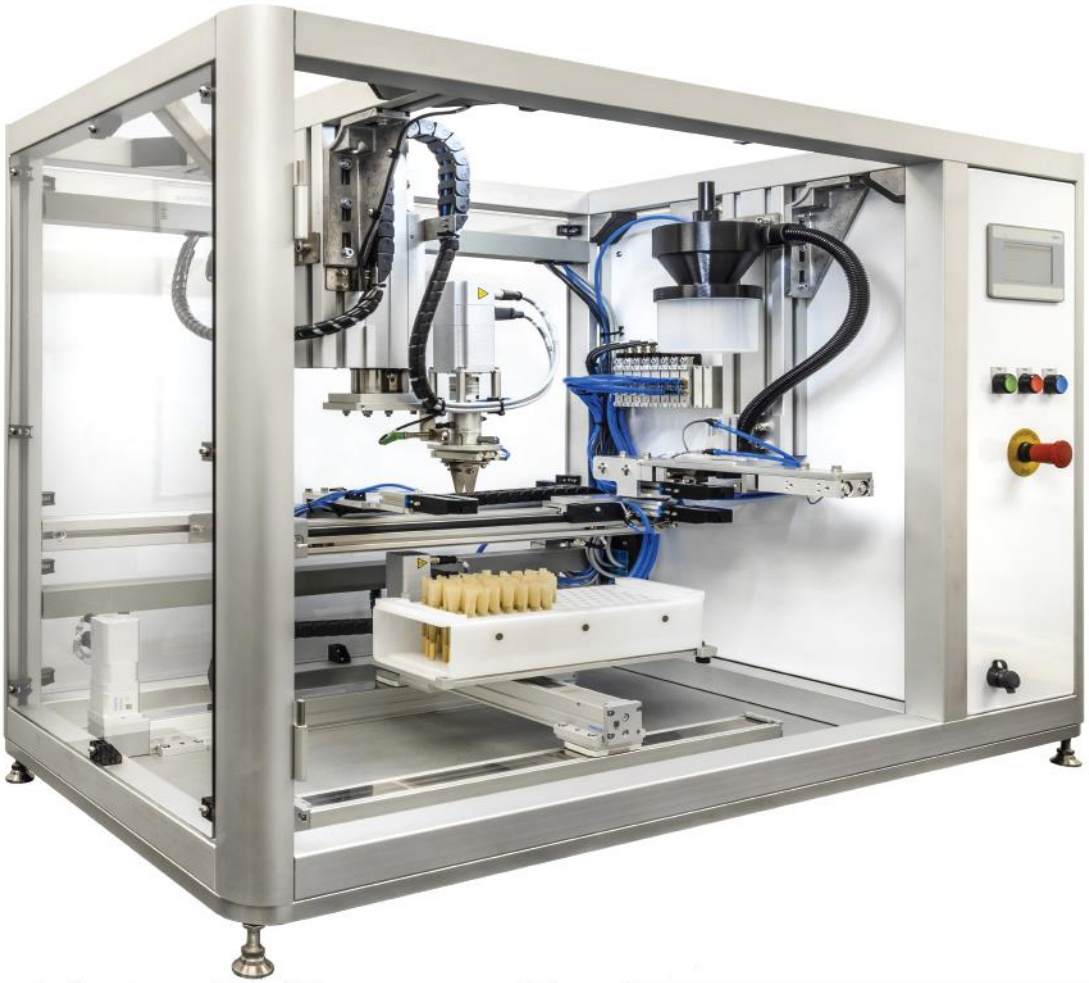

BoxFinish-Er – STANDARD Model

Review Table

Revision #	Revision Title	Release date
00	Initial release	2023-08-11

To Our Customers

This instruction manual covers specific information on installations, operations, and maintenance of the BoxFinish-Er and its components. This equipment is a high-quality machine of rugged design conceived to give long hours of trouble-free service. Continued performance will not be maintained unless the precautions and procedures outlined in this manual for handling, installation, initial operation and maintenance are observed. Save this manual for future reference and keep it readily available.

CAUTION:
Failure to observe the instructions contained in this manual could result in personal injury and property damage and may void the warranty. Read this manual carefully before installing and using the BoxFinish-Er.

If any information about operation and maintenance is not listed in this manual, additional information can be obtained by contacting:

Customer Services

950 Blv Industriel
Terrebonne, QC J6Y 1X1
Tel.: (514) 360-1292
Toll Free: 1-855-360-1292 (USA / CAN)
E-mail: info@preroll-er.com
www.preroll-er.com

PreRoll-Er™

Table of Contents

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1. Introduction

1.1 Overview

The perfect complement for Knockbox filling system, the BoxFinish-Er is designed to reduce cost drastically while producing a higher quality and more consistent product.

The functionality options are:

- Pick / twist
- Pick / twist / cut
- Pick / twist / cut / crown (flat top)

1.2 Technical specifications

Dimensions	
Net Width	47" $^{1}/_{16}$ in [1195.5 mm]
Net Height	37 $^{1}/_{4}$ in [946.3 mm]
Net Depth	27 $^{7}/_{32}$ in [691.3 mm]
Depth with open door	58 in [1473.2 mm]
Weight	350 lbs [158.8 kg]
Compressed air requirements	
Flow rate	5 CFM [142 L/min]
Pressure	90-110 psig [6.2-7.6 bar]
Pneumatic connection	Ø1/4" quick connect
Ambient air conditions	
Operation temperature range	60-65°F [16-18°C]
Optimal humidity range	40% to 60%
Electrical requirements	
Electrical Power	120V/ 5A/ 60Hz

1.3 Warranty

Solid Packaging Robotik (SPR) warrants the equipment it sells new for a period of twelve (12) months from the date of delivery, for a maximum of two thousand (2000) hours of operating time under normal conditions starting on the date of delivery for Parts and Labor included in our plant excluding all wearable parts. Support will be provided remotely by accessing the machine from our factory in Terrebonne. If we decide that a technician must travel onsite, the time spent onsite to fix a problem under warranty is covered. Buyer is solely responsible for complying with all governmental regulations and policies, if any, applicable to a SPR technician accessing the equipment and the facility within in which equipment is located, as well as any costs or fees associated therewith. The travel time and living expenses are chargeable. The warranty is no longer valid if modifications are made to the equipment without our consent. We take no responsibility in achieving a specific speed of the machine; the speed depends on a variety of factors, including but not limited to, the type of input material used by Buyer, the humidity, temperature, particles, grinding sizes, quantity, and cone shapes. These warranties are conditional to the following elements: (i) the manufactured machinery and equipment were being used under normal operating circumstances as established by SPR; and (ii) no modification or alteration of the manufactured machinery or equipment have been made without SPR's prior written consent.

2. Safety

2.1 User safety

User's safety is a priority for installation, operation, and maintenance. Select proper clothing, tools, and handling methods to avoid serious accidents. Use common sense when operating the BoxFinish-Er and follow all safety rules and precautions listed in this manual.

WARNING:

1. Operators must be aware of pneumatic and automated systems to take appropriate safety precautions preventing physical injuries.
2. To avoid risks of serious injuries and property damage, all unprescribed methods to install, operate and maintain the BoxFinish-Er are prohibited. Prohibited methods includes all modifications to the equipment or using none supplied parts with the machine.
3. Contact a BoxFinish-Er service representative before proceeding if there is any uncertainty regarding the appropriate use of the equipment.
4. Electric shock, fire, explosion, physical harm or environment damage may occur if pneumatics actuators are damaged. Do not operate until the problem has been fixed.
5. Operating without safety devices exposes operators to risks of serious injuries or death. Never operate unless the supplied safety devices (guards, etc.) are properly installed and in function.

CAUTION:

1. Risk of injury or/and property damage. (Operating without referring to this manual may cause heating or/and unstable machine function.)
2. Do not remove guards.
3. Do not change or modify service procedures without approval of a BoxFinish-Er service representative.

2.2 Safety rules

Risk of injury or/and property damage

Users must follow those safety rules:

1. Users verify that all guards and safety devices are in place and functional before running the BoxFinish-Er.
2. Users verify that all tooling are properly held in positions and functional before starting any operation.
3. Users verify that the BoxFinish-Er surrounding area has enough light for accurate operation visibility. Users also verifies that this area is dry and free of any obstructions.
4. Users must be given and understand instructions regarding safety listed in this manual. All BoxFinish-Er maintenance and repair work should be performed by users familiar with this manual.
5. Users must NEVER adjust or service while the BoxFinish-Er power is "ON" and controls are in "ON" position.
6. Users should turn OFF the BoxFinish-Er after completing the production run.
7. Users must turn OFF main disconnect switch when changing tooling or performing maintenance work.
8. Use rag or gloves to handle sharp cutting blades in cutting station.
9. Cutting blades must be securely fastened in the machine with the proper accessory. Never try to tighten cutting bits or tools by hand.

2.3 Safety equipment

Risk of injury

Use safety equipment in the work area according to user's company regulations:

1. Safety glasses

2. Protection shoes

3. Hearing protection

4. Protection gloves

5. Mask

6. First-aid kit

2.4 Safety devices

Following safety devices should always be in position and in good working conditions before operating BoxFinish-Er.

2.4.1 Safety enclosure

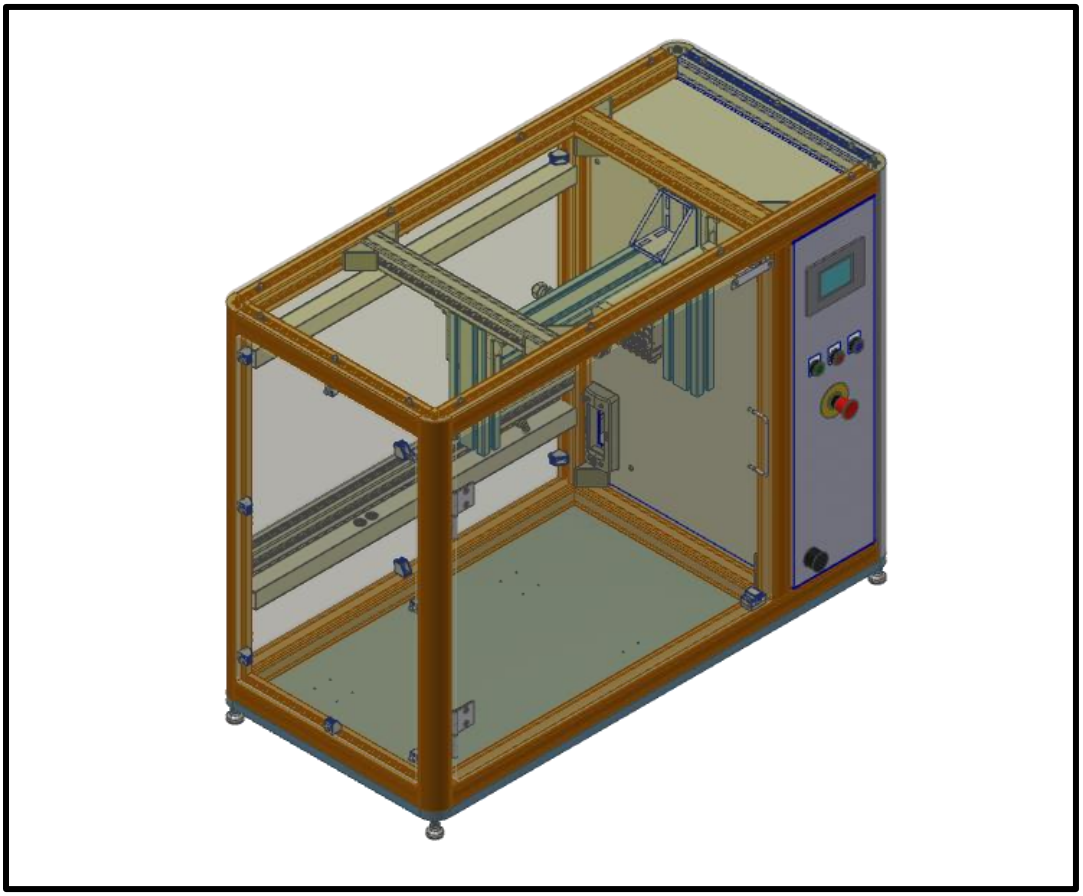


Figure 1: Safety enclosure.

Function: It provides protection against moving parts, flying debris caused by possible equipment failure, cannabis dust and noise. Door opening while BoxFinish-Er is operating will shut off the power and flush residual compressed air from the machine.

2.4.2 Safety interlock switch

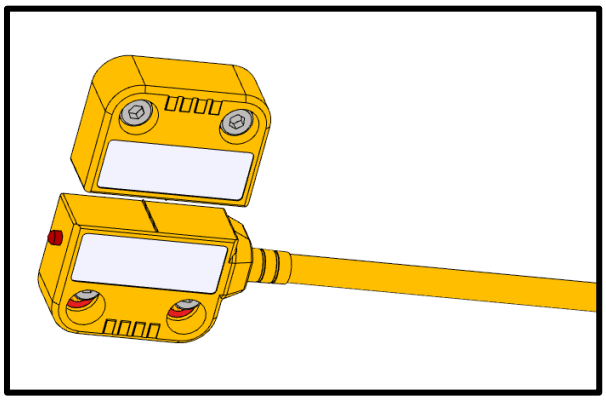


Figure 2: Safety interlock switch.

Function: It monitors the closed/opened positions of the safety enclosure door.

2.4.3 Emergency stop (E-Stop)

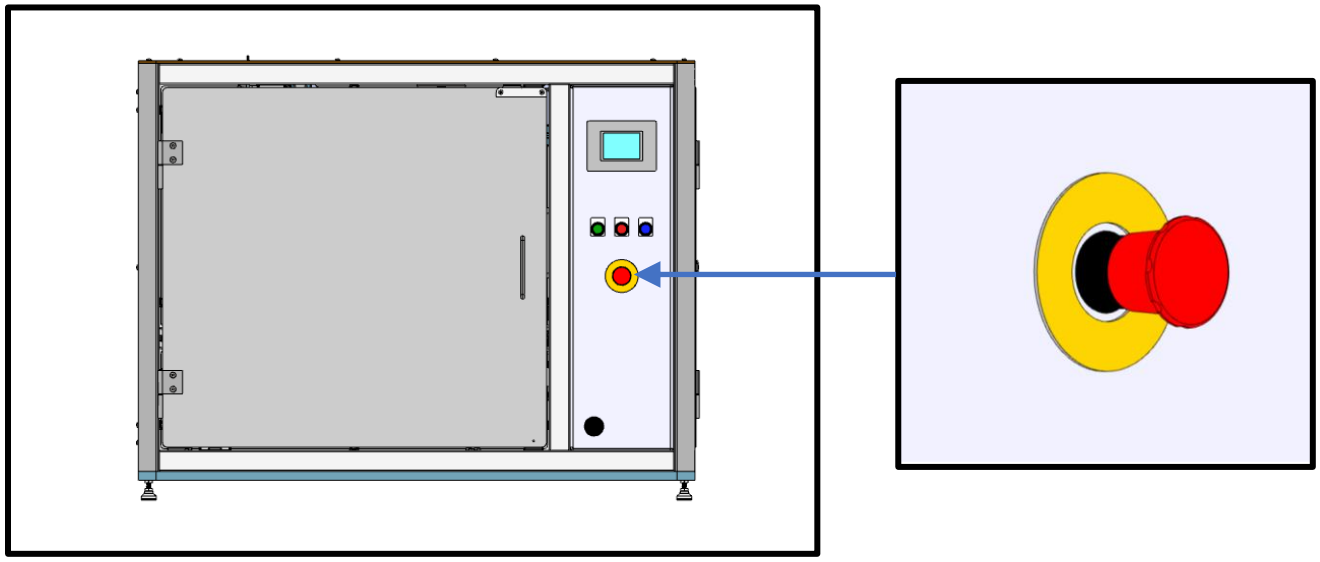


Figure 3: Emergency stop (E-Stop).

Function: It is used for emergency in situations where BoxFinish-Er™ needs to be completely shut off.

A. Push to shut off
B. Twist clockwise (right) to release

2.4.4 Switch disconnector

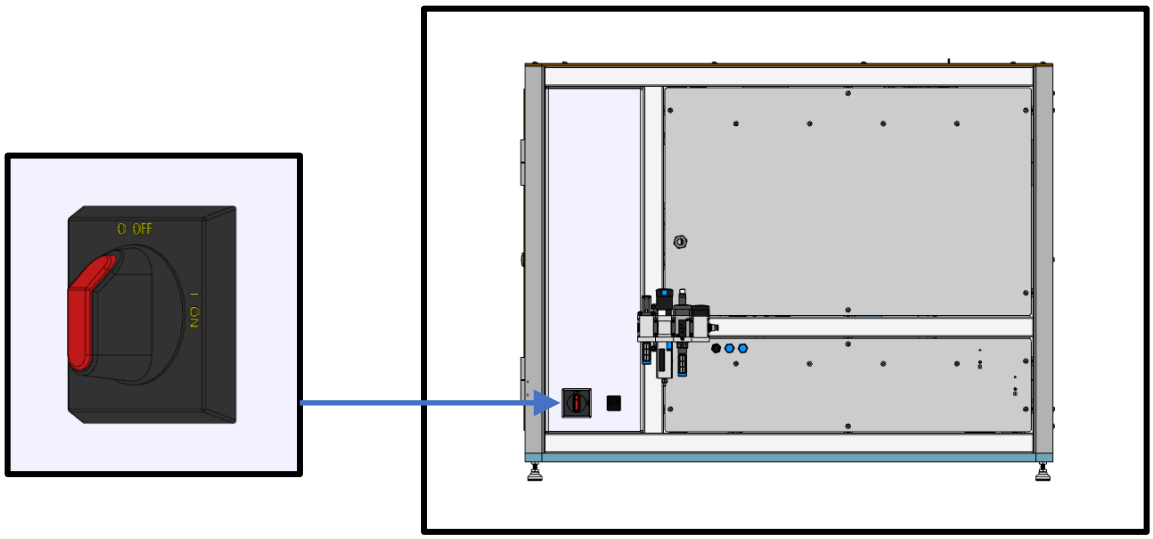


Figure 4: Switch disconnector.

Function: It is the main electrical switch to disconnect the BoxFinish-Er™ power supply.

2.4.5 Pneumatic solenoid valve

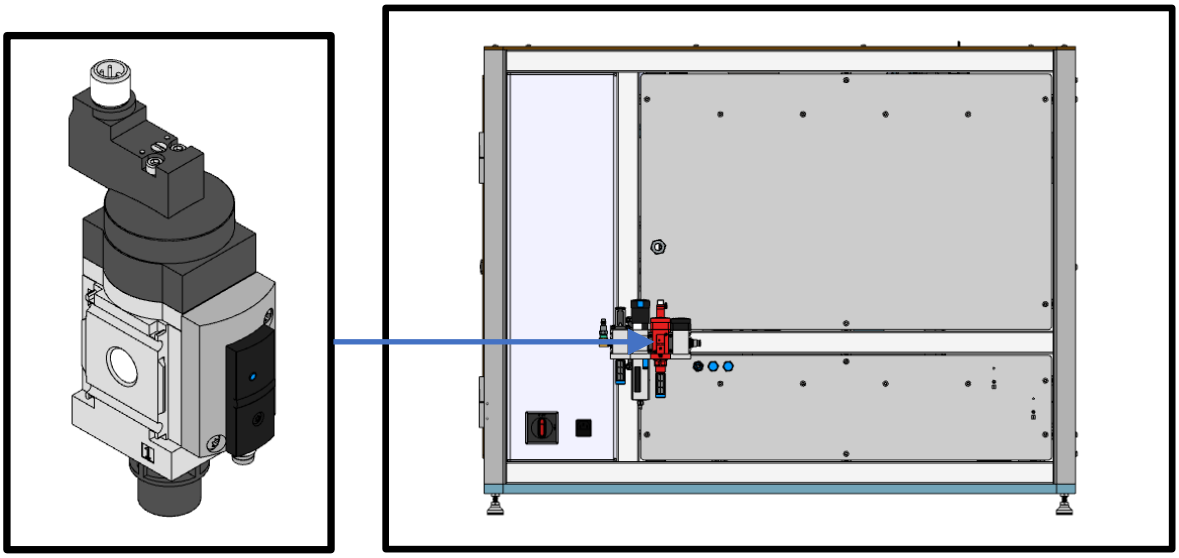


Figure 5: Pneumatic solenoid valve.

Function: It allows the PLC controller to shut-off the compressed air inlet into the machine. If an E-Stop or a safety enclosure door is opened, the compressed air supply will be closed.

2.4.6 Electrical panel lock

Figure 6: Electrical panel lock.

Function: It prevents any accidental or deliberate access to the electrical panel.

3. Get to Know Your BoxFinish-Er

3.1 Compatibility and limitation

- Produces up to 20 PreRolls/Min.
- Compatible with PreRolls standard or reefer size.
- The total length (filter and height of product) of the Pre-rolls must be comprised between 50 mm and 100 mm as presented in Figure below.

Figure 7: Pre-rolls total length compatibility.

- Designed to be used only with the following Knockbox unload stations:
  - KB 50:

Figure 8: Unload station – KB50 Straight.

  - KB 100 straight:

Figure 9: Unload station - KB100 Straight.

  - KB 100 diagonal:

Figure 10: Unload station - KB100 Diagonal.

3.2 Equipment overview and nomenclature

The unit is separated into 4 different stations, all of which work simultaneously to pick, transfer, cut and flatten pre-rolls. See figure below for the locations pf each station contained within the unit.

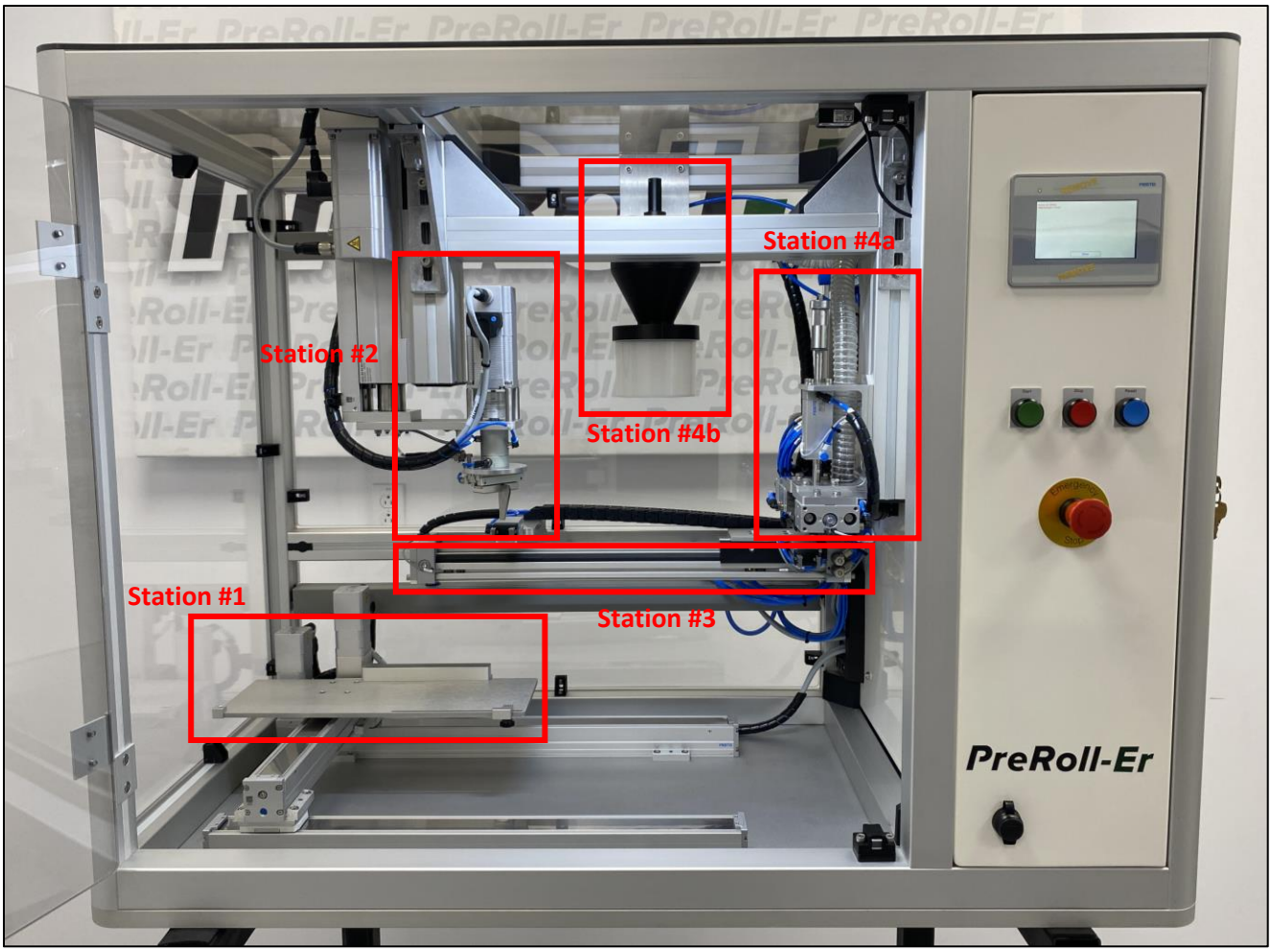


Figure 11: BoxFinish-Er overview.

The following table provides a name and high level description of each station.

Station	Station Name	High Level Description
#1	Pre-Roll Loading Area	Filled and opened pre-rolls are loaded into specific trays to be cycled through the various stations
#2	Pick and Place / Twist	The pick and place arm picks opened pre-rolls from Station #1, moves them to the stationary grippers and closes them with a twist
#3	Transfer	Transfer arm and grippers pick pre-rolls from Station #2 and move them through Station #4
#4	Cut, Flat and Vacuum	Pre-roll twist is cut, excess paper is suctioned out and the top is flattened

3.2.1 Station #1: Pre-Roll Loading Area

Figure 12 shows a close-up view of Station #1 with and without a tray loaded into the tray holder.

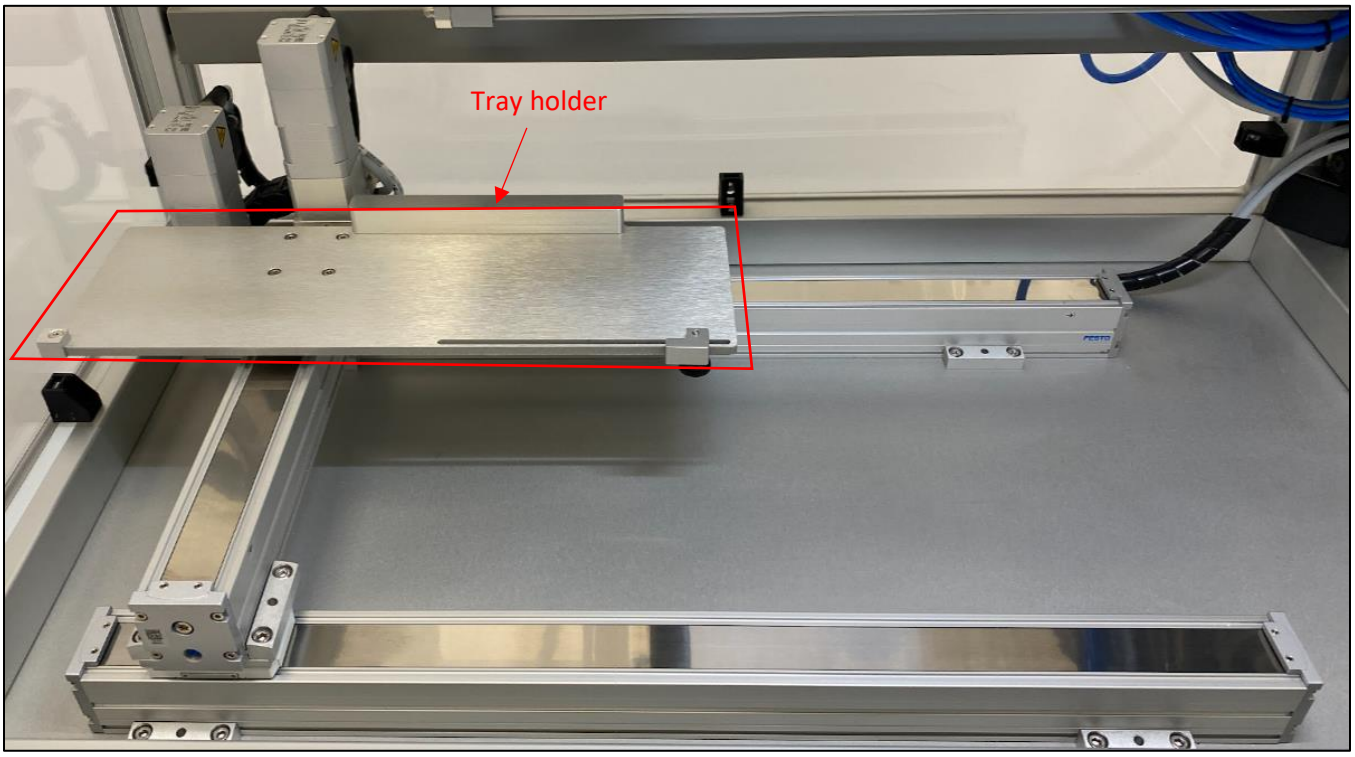


Figure 12: Station #1 - Tray holder overview.

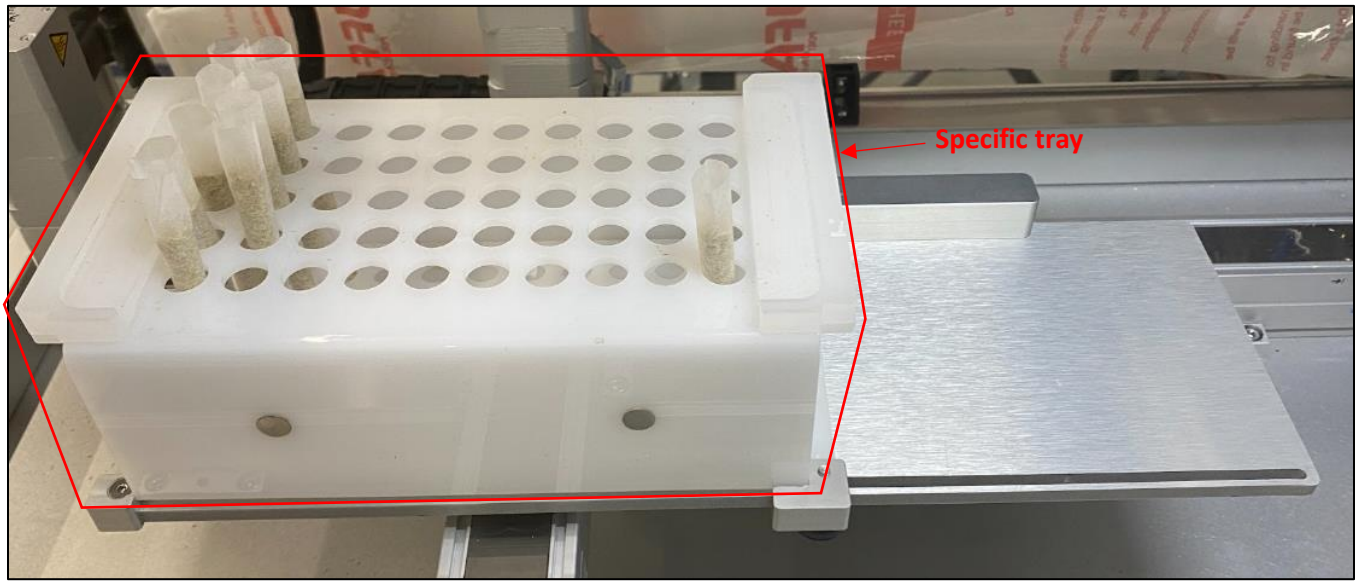


Figure 13: Example of a tray installed in the tray holder.

The width and depth of the tray holder can be adjusted using the adjusting knobs located below the tray holder and shown in the Figure 14 hereafter to accommodate all the compatible trays presented in section 3.1.

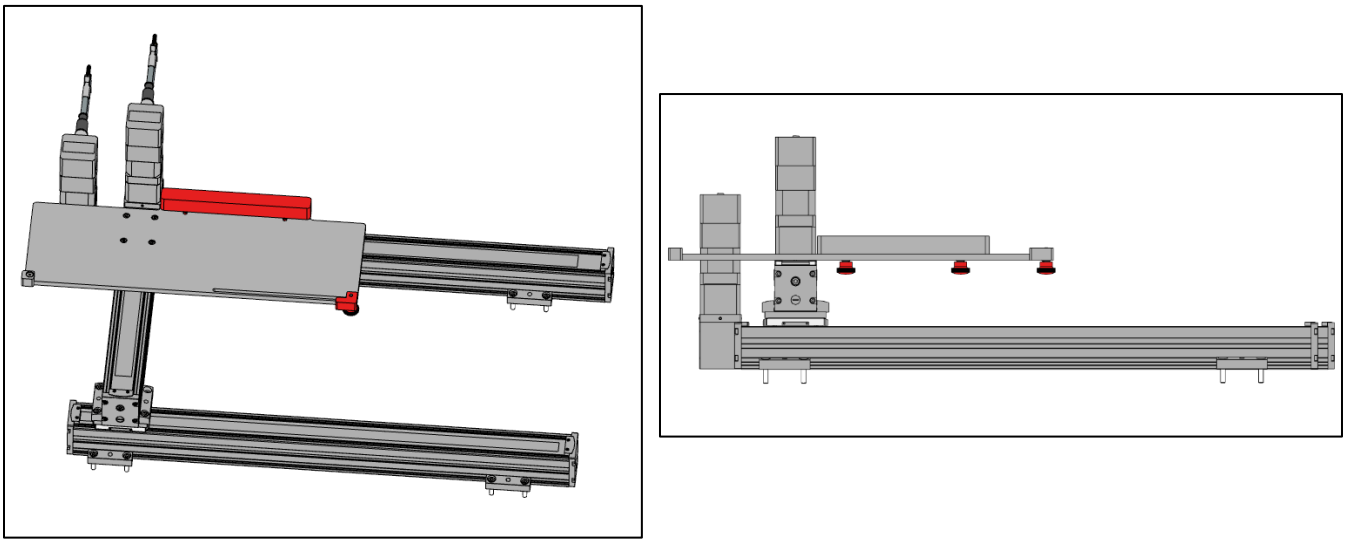


Figure 14: Tray holder – depth and width adjustment.

3.2.2 Station #2: Pick and Place / Twist

Figure 15 shows a close-up view of Station #2 with the Pick and Place Arm and Stationary Grippers (Twist) in the open and closed positions.

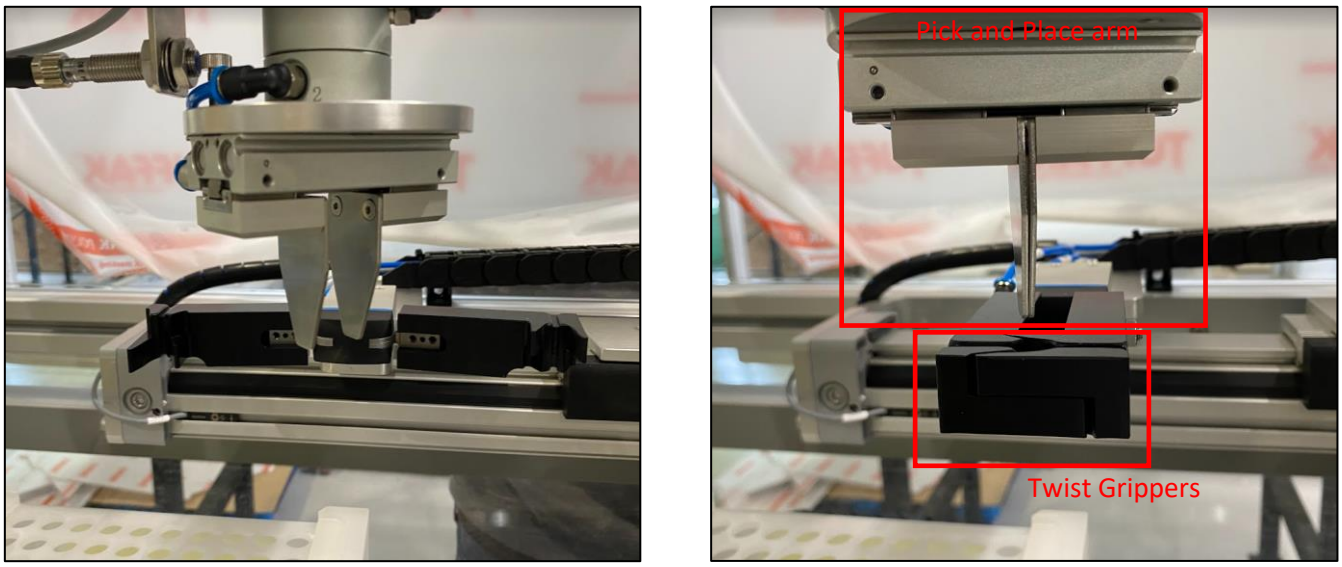


Figure 15: Station #2 showing the Pick and Place Arm and Stationary Grippers (Twist).

The Pick and Place Arm will gently pick up a pre-roll from the tray (Station #1), place it in the Stationary Twist Grippers and close it performing several revolutions while at the same time moving down vertically.

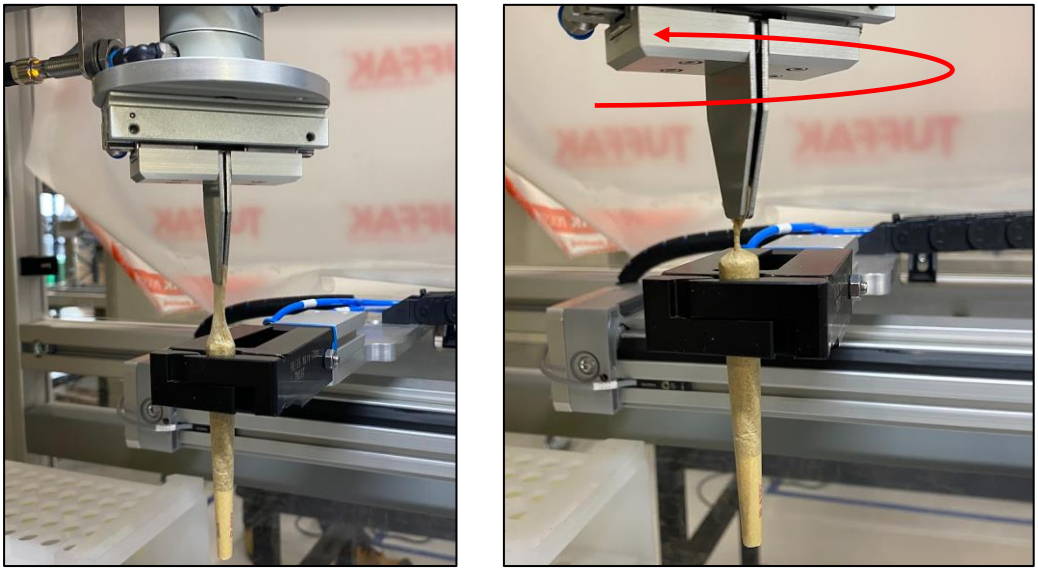


Figure 16: Station #2 showing the Pick and Place Arm and Stationary Grippers (Twist).

3.2.3 Station #3: Transfer

As presented in Figure 17 the transfer arm and grippers pick a pre-roll from the Station #2, move it to the Station #4 and then go back to the Station #2 in order to pick the next pre-roll.

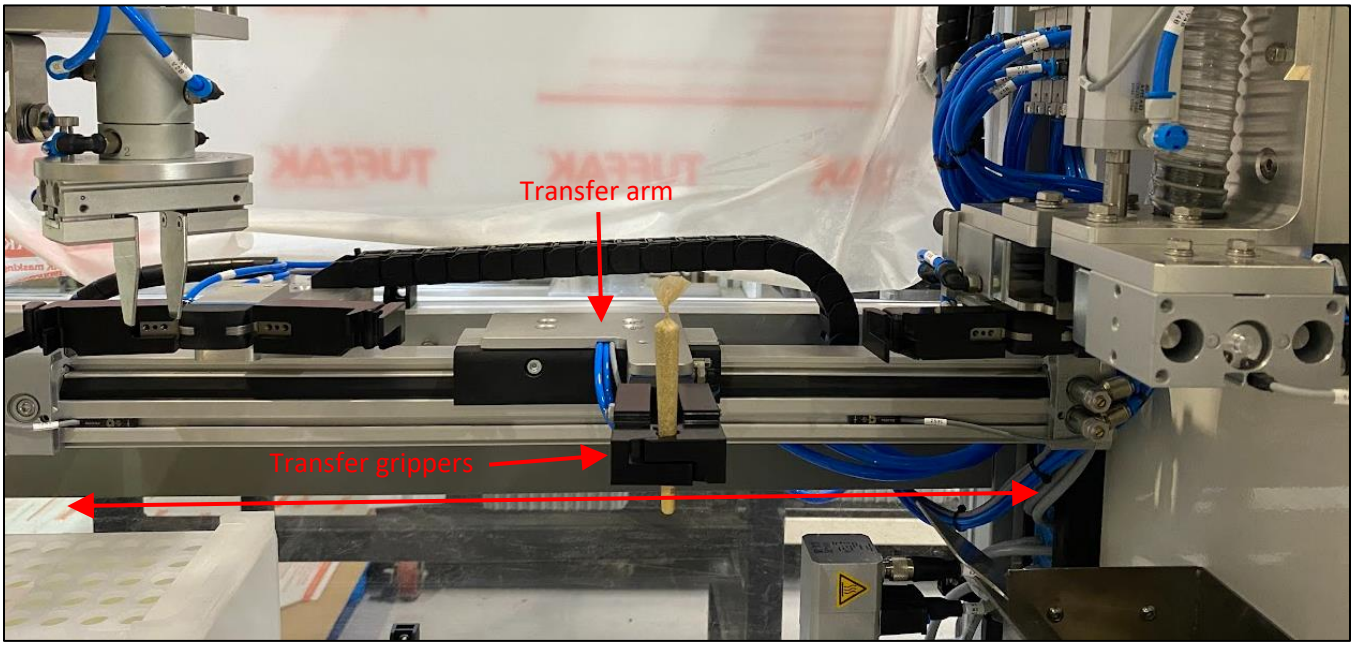


Figure 17: Station #3 showing a twisted pre-roll in the transfer grippers going from Station #2 to Station #4

3.2.4 Station #4: Cut, Flat and Vacuum

Figure 18 presents an overview of the Cut and Flat station.

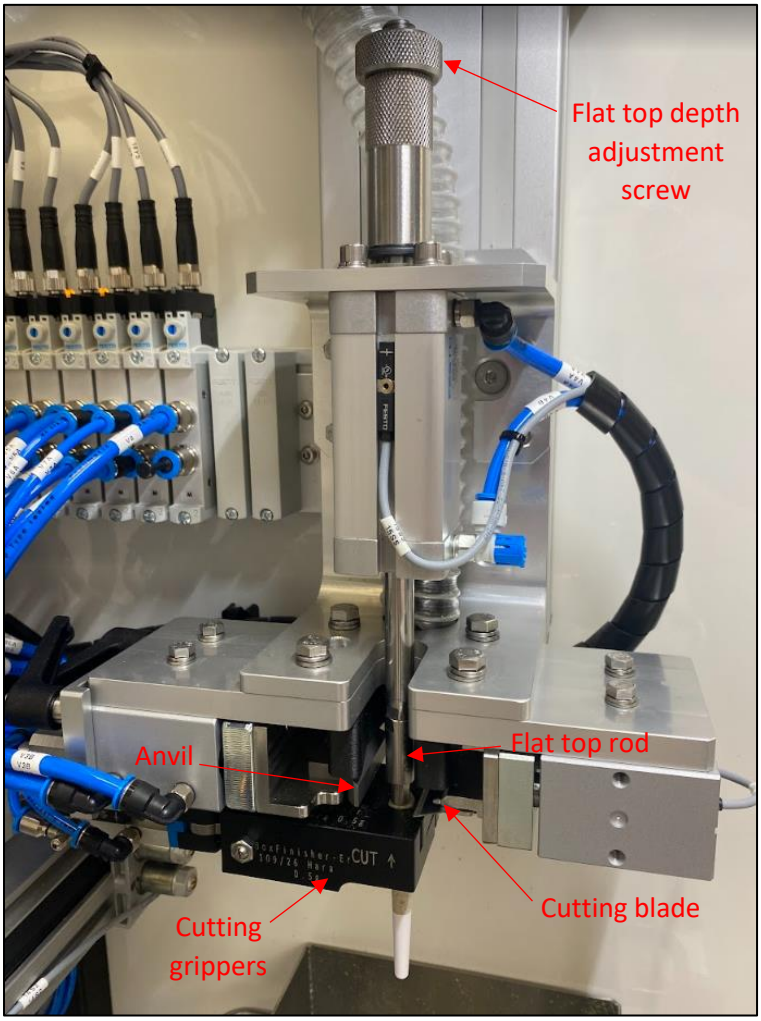


Figure 18: Station #4a – Cut and Flat - overview

Figure 19 presents an overview of the Vacuum station.

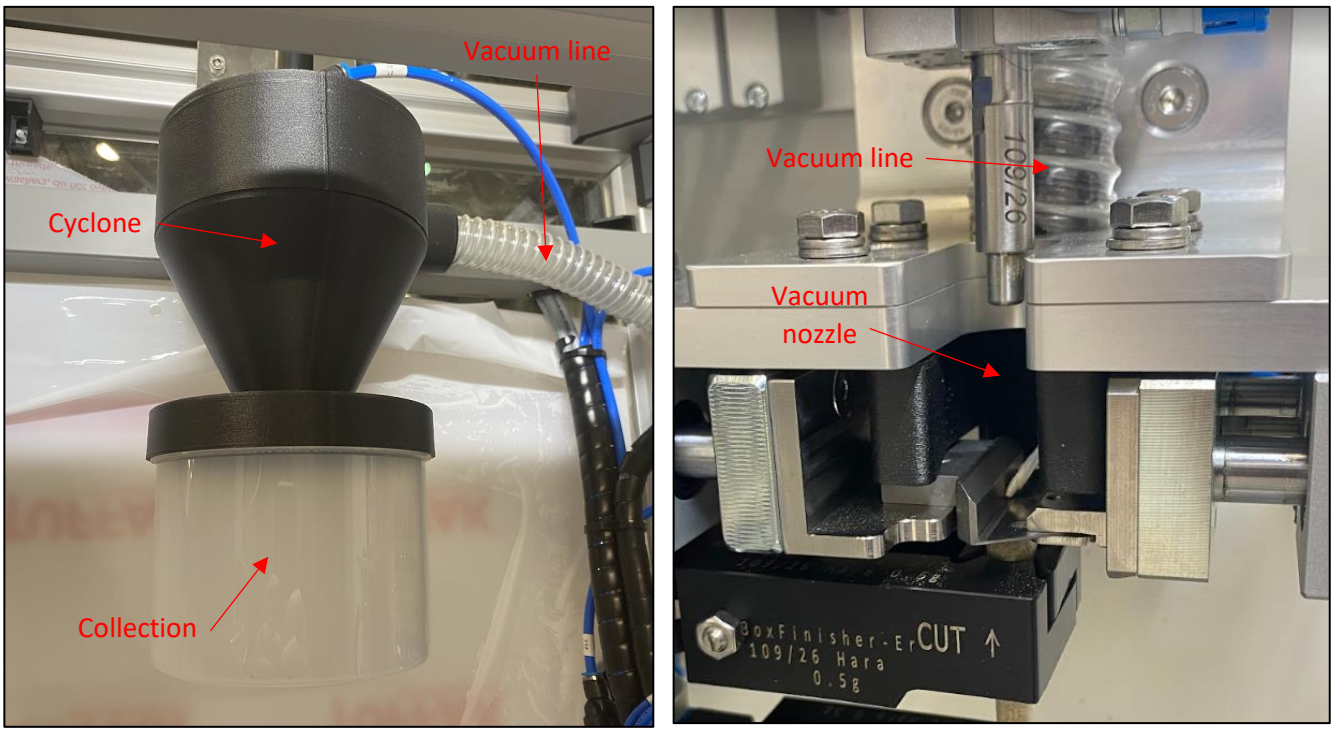


Figure 19: Station #4b – Vacuum - overview

Transfer Grippers, containing a pre-roll, will move horizontally and line itself up with the Cutting Grippers. The Cutting Grippers will close on the pre-roll to secure it prior to the simultaneous Cutting action of the Blade and the Anvil (closing and opening). At the same time, the vacuum will make sure the excess of paper is collected in the bucket.

Once the blade is fully retracted, the flat top rod will press on the top on the pre-roll to perform a crown.

The remaining action of the cycle is the opening of the cutting grippers to let the pre-roll drop in the collecting box.

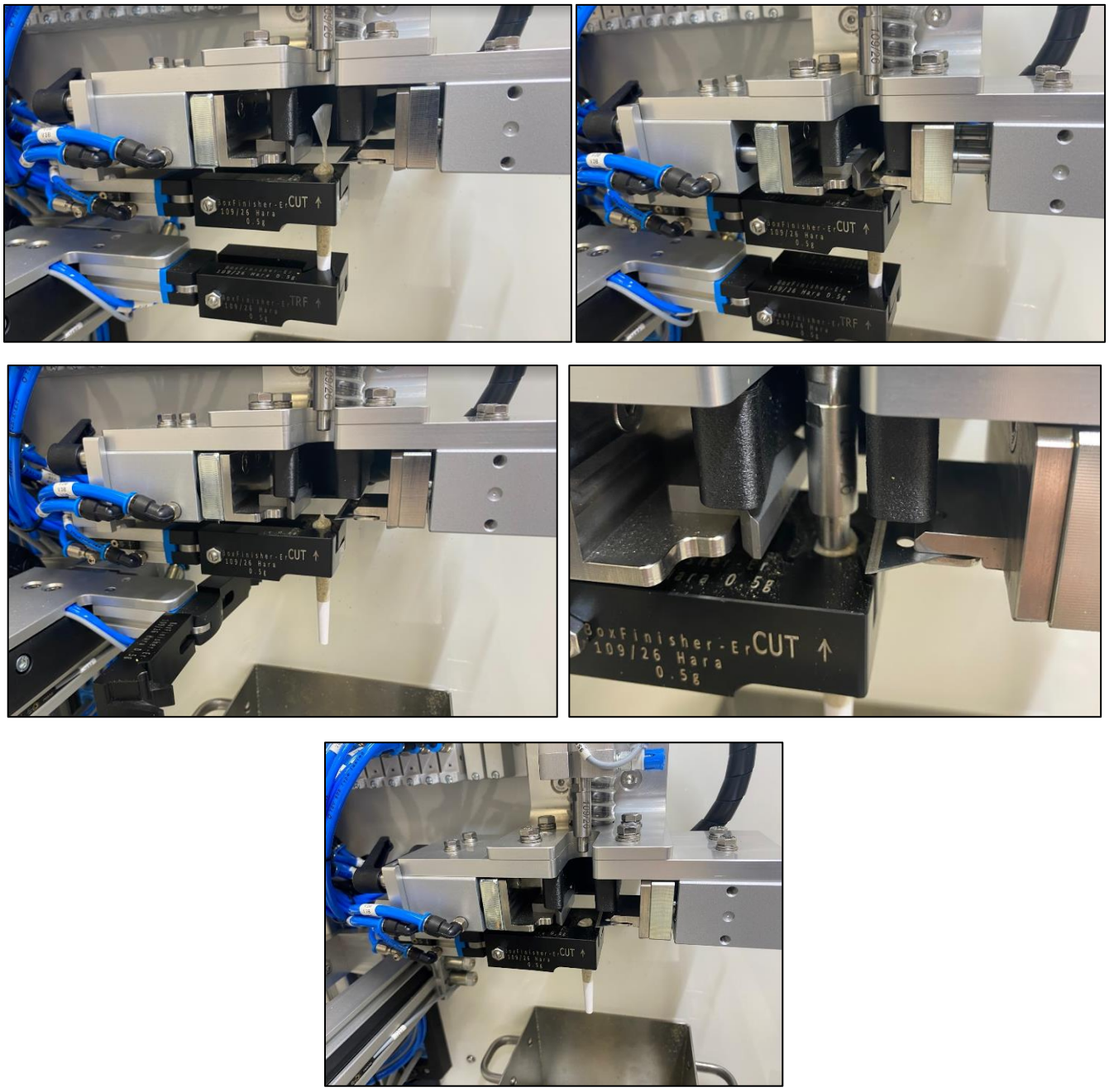


Figure 20: Station #4 – Cut and Flat top – Pictures of the different steps

3.3 Tooling description

A custom set of tooling is required for every format processed with the BoxFinish-Er.

A format means: one brand of paper, one size of paper and one total length of pre-roll (filter + product, refer to Figure 7).

Example:

- 65mm pre-roll in a 84/26 paper brand X: → tooling A
- 70mm pre-roll in a 84/26 paper brand X: → tooling B
- 70mm pre-roll in a 84/26 paper brand Y: → tooling C
- 70mm pre-roll in a 98/26 paper brand Y: → tooling D

Remark: It is possible under certain conditions to use the same tooling for different formats. However, this needs to be tested and assessed on a case-by-case scenario. The performance of the BoxFinish-Er are not guaranteed using a tooling on a different format than the one it has been manufactured for.

One complete set of tooling is comprised of three pairs of grippers, one flat top rod and depending of the format might require an insert (refer to section 3.3.3).

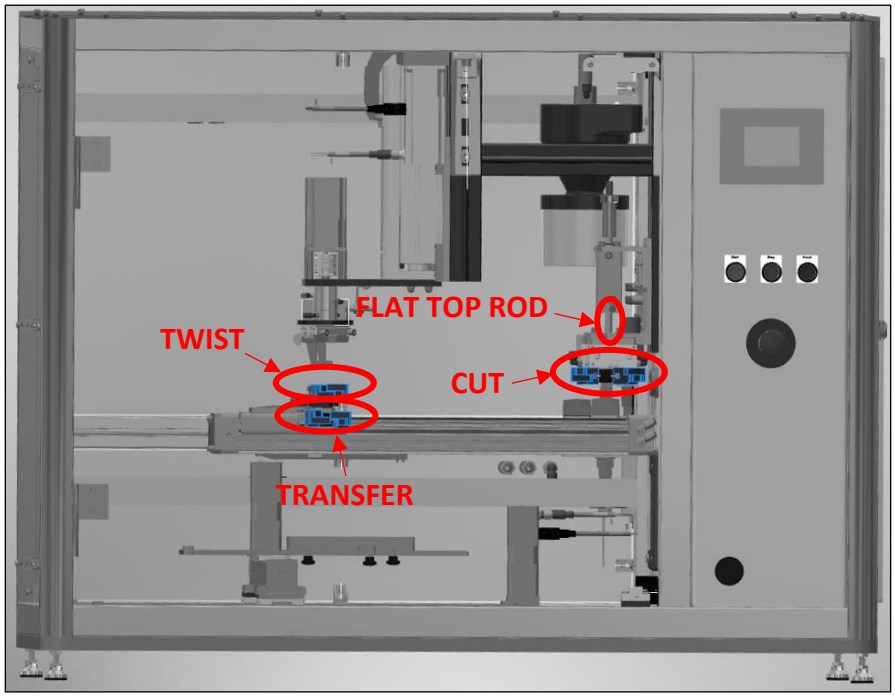


Figure 21: Tooling parts locations

3.3.1 Grippers

Location	Total length of pre-roll (mm), refer to Figure 7	Part Number	QTY	Description	OFFSET (mm)
TWIST	N/A	CAPRT003294	1	LEFT GRIPPER	N/A
		CAPRT003295	1	RIGHT GRIPPER	N/A
CUT	N/A	CAPRT003294	1	LEFT GRIPPER	N/A
		CAPRT003295	1	RIGHT GRIPPER	N/A
TRANSFER	50 à 60 mm	CAPRT003294	1	LEFT GRIPPER	0 mm
		CAPRT003295	1	RIGHT GRIPPER	
	60 à 70 mm	CAPRT003300	1	LEFT GRIPPER	7 mm
		CAPRT003301	1	RIGHT GRIPPER	
	70 à 80 mm	CAPRT003298	1	LEFT GRIPPER	14 mm
		CAPRT003299	1	RIGHT GRIPPER	
	80 à 90 mm	CAPRT003302	1	LEFT GRIPPER	26 mm
		CAPRT003303	1	RIGHT GRIPPER	
	90 à 100 mm	CAPRT003296	1	LEFT GRIPPER	36 mm
		CAPRT003297	1	RIGHT GRIPPER	

All grippers are identified with orientation and format indications. An o-ring is added on cut and twist grippers to allow some flexibility (+/- 2mm on the total length of a pre-roll).

Figure 22: Picture of a gripper as example

3.3.2 Flat top rods

Tip diameter (mm)	Part Number	Recommended paper size
4.5	CAPRT003585	98/26 reefer
5	CAPRT003583	84/26 standard, 70/21 standard, TUBE
6	CAPRT002900	98/26 standard
6.5	CAPRT003584	109/26 standard

All flat top rods are identified with paper size indications.

Figure 23: Picture of a flat top rod as example

3.3.3 Inserts

Small diameter type of pre-rolls:

It is recommended to use an insert inside the Knockbox unload stations while processing pre-rolls with smaller diameter (as for example 98/26 reefer). These inserts are used to make sure the pre-rolls stay centered inside the Knockbox unload station holes.

Part Number	Description
CASSY000772	INSERT TRAY REEFER FOR KB50
CASSY000773	INSERT TRAY REEFER FOR KB100 STRAIGHT
CASSY000774	INSERT TRAY REEFER FOR KB100 OFFSET

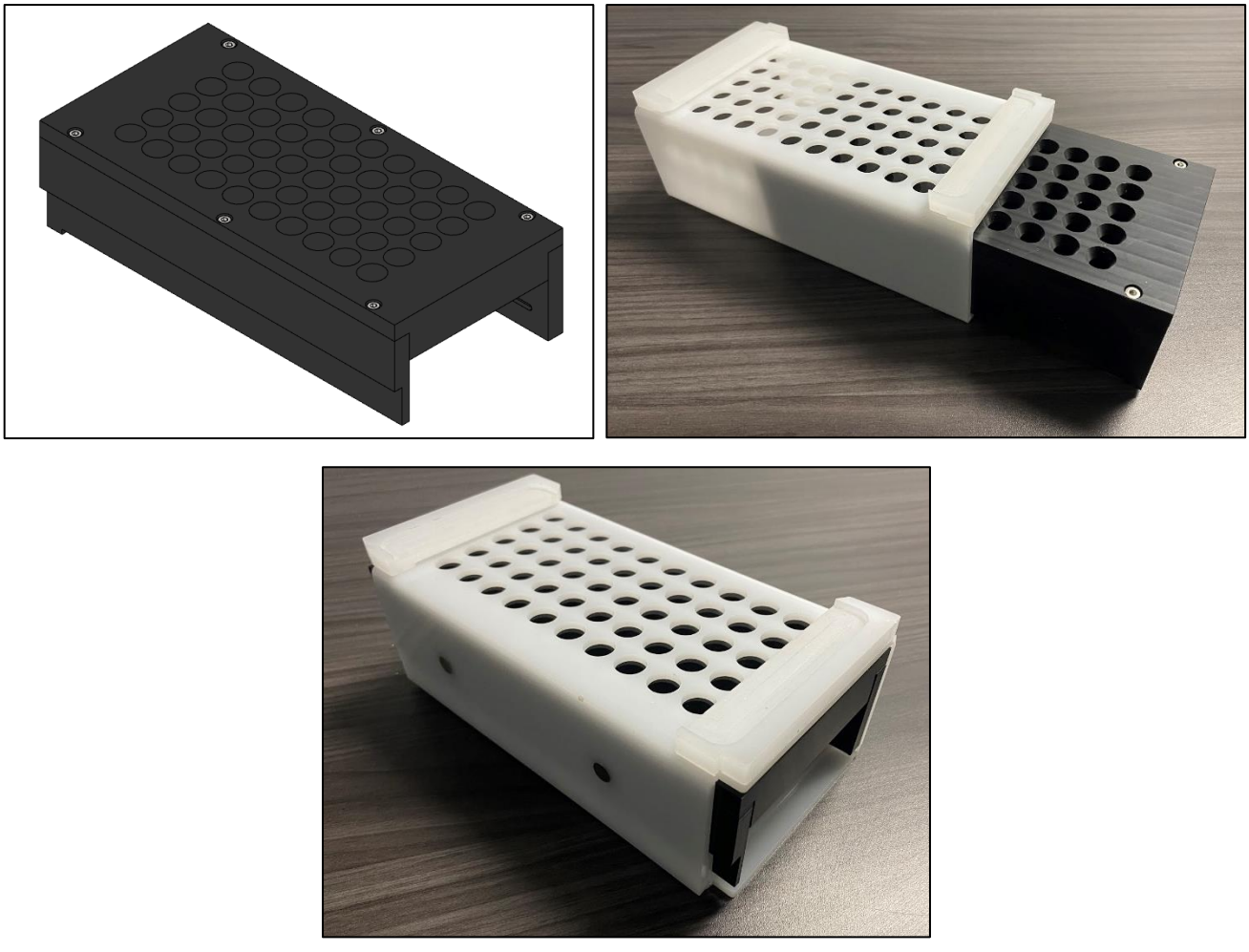


Figure 24: Picture of the KB50 insert tray

Short paper size type of pre-rolls:

It is recommended to use the same inserts presented in the previous page in conjunction with a raising plate while using paper sizes of 84 mm and shorter. This allows the top of the pre-rolls to stick out enough from the Knockbox unload station for the pick and place arm to pick them.

Part Number	Description
CAPRT003753	INSERT RAISING PLATE FOR KB50
CAPRT003751	INSERT RAISING PLATE FOR KB100 STRAIGHT
CAPRT003752	INSERT RAISING PLATE FOR KB100 OFFSET

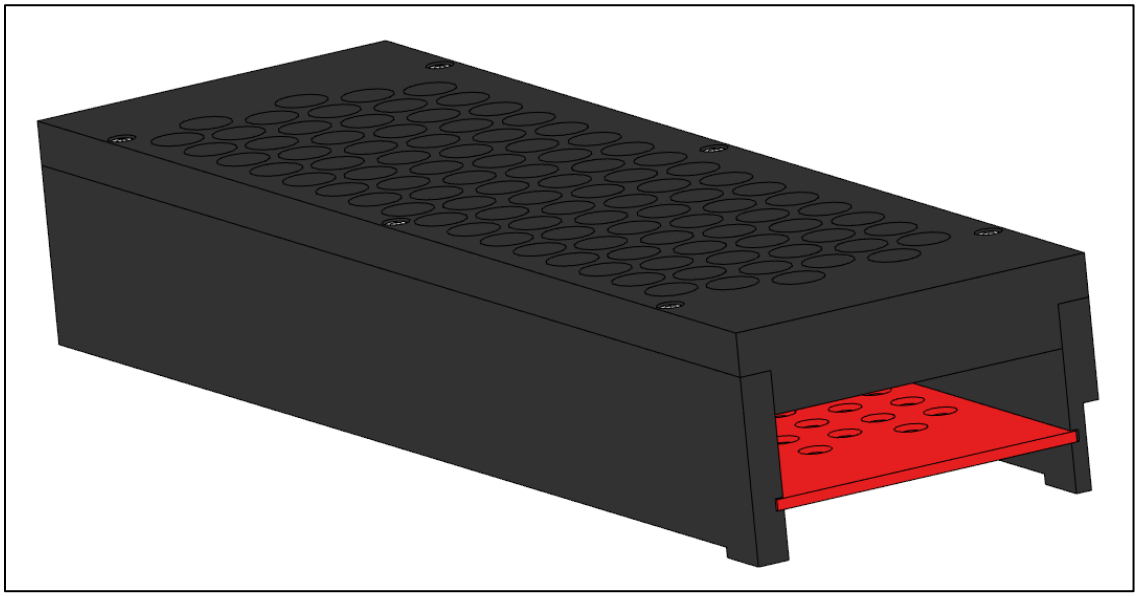


Figure 25: Picture of the KB100 offset insert tray with raising plate

4. Preparing Your BoxFinish-Er for Use

4.1 Pre-Start Up

- Open the magnetic interlock door and remove any items that may interfere with the unit's movement.
- Wipe any visible dust, cannabis or extract that is visible on the machine using isopropyl alcohol.
- Remove the specific tray (if inserted) from the tray holder.
- Close the magnetic interlock door.

4.2 Start Up – Power and Utilities

- The BoxFinish-Er utilizes standard 120V power and requires clean, dry compressed air.
- Plug the power cord into a standard 120V outlet.
- Connect the compressed air line into pressure regulator inlet located on the back of the unit. See Figure 26 for a visual on where to plug the compressed airline into. The connection is a 1/4" quick-connect.

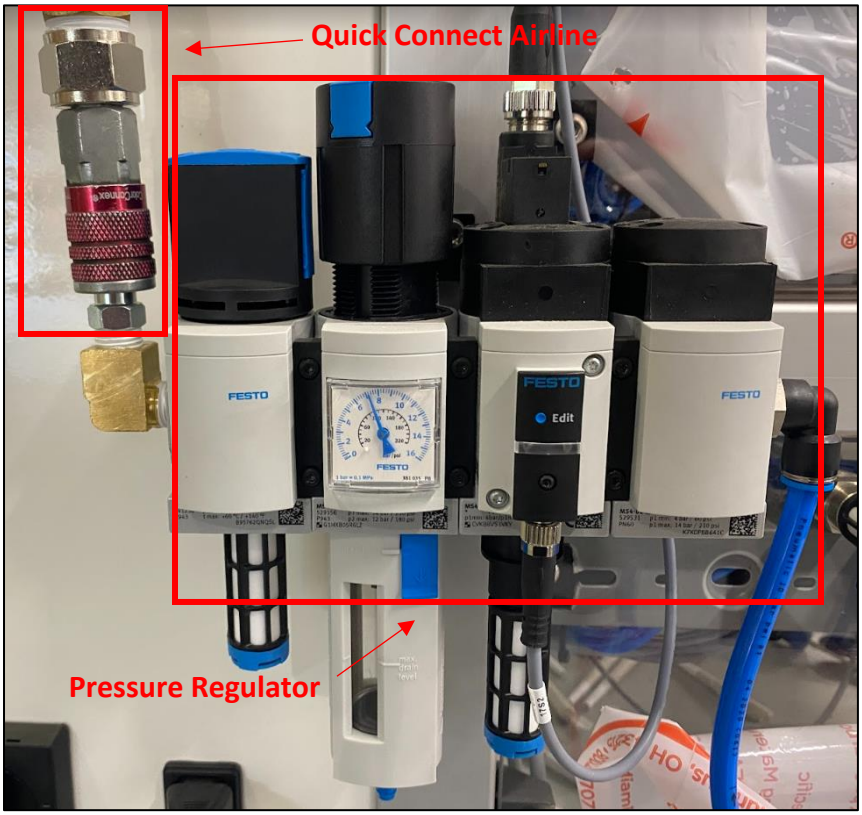


Figure 26: Compressed air inlet and pressure regulator system

5. Using Your BoxFinish-Er

5.1 HMI screens

On the HMI (Human-Machine Interface) welcome screen, there are 1 option menu and 3 shortcuts to the login, Tray and Cone parameters. This screen also offers the possibility of activating/deactivating the different stations and gives the real time running speed.

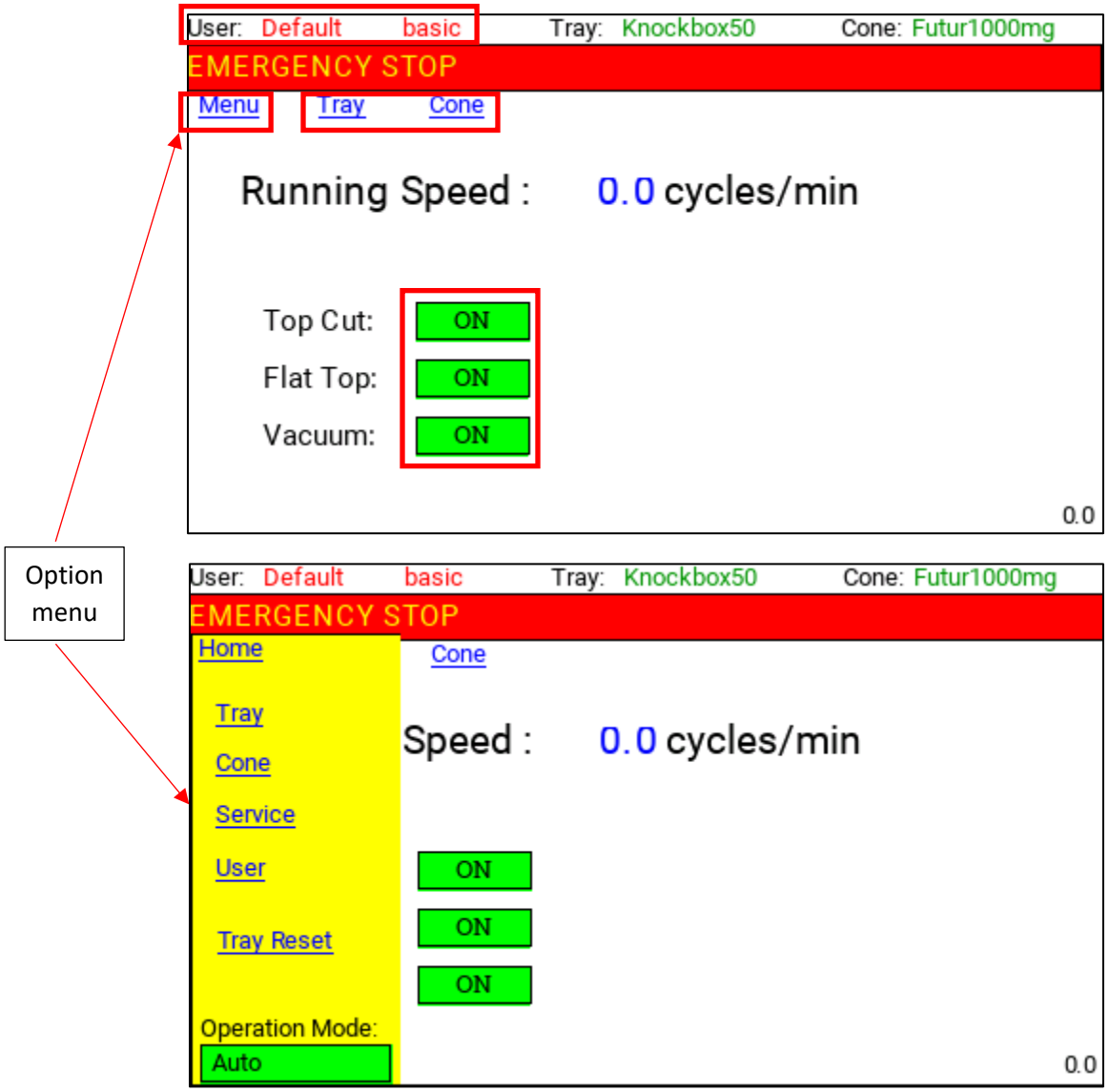


Figure 27: HMI welcome screen

5.1.1 HMI login

The login access window is reached pressing the shortcut shown in previous page (top left corner of the HMI).

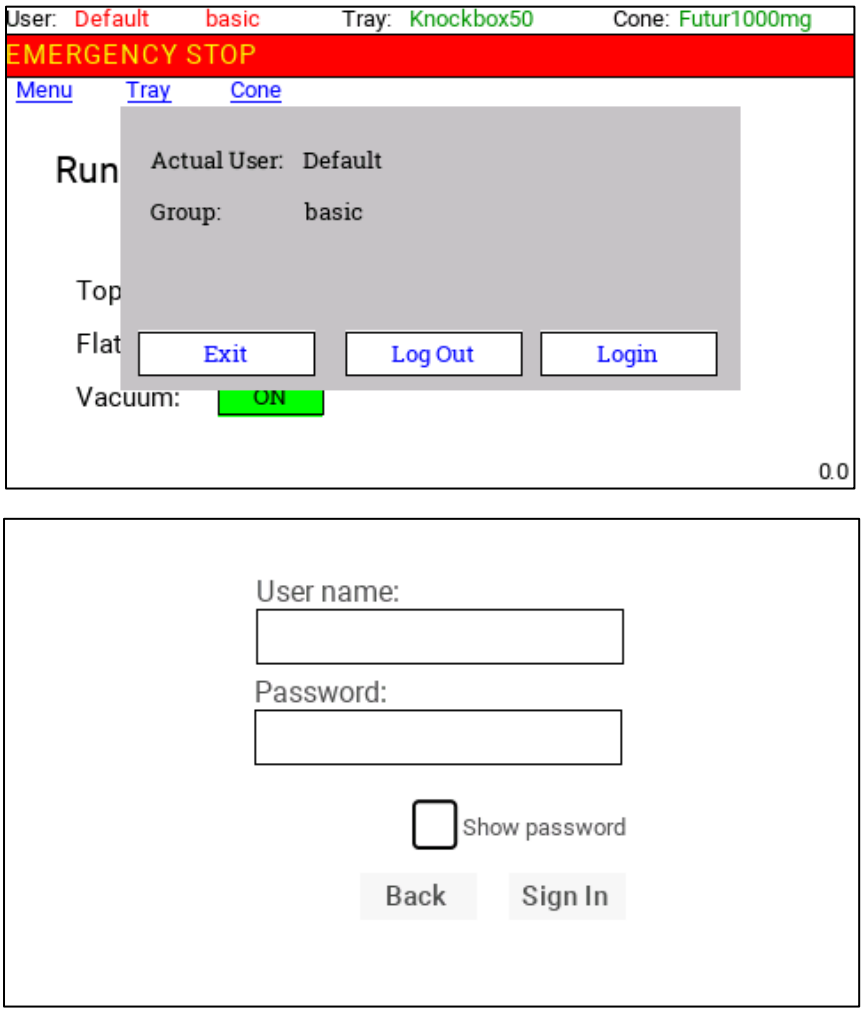


Figure 28: HMI welcome screen

Note some of the features and adjustments described in the following sections are only applicable to employees with Administrator Access.

By default, the Administrator Access is: **admin / admin**

WARNING: Log in using Administrator Access should only be done with proper training and extreme caution. Exercise utmost care responsibility while performing any actions. Under Administrator Access, the security and reliability of the equipment relies on responsible usage. Thank you for your understanding and cooperation.

Once logged in with Administrator Access, it is possible to add and/or delete user accounts and to assign different access level to these users.

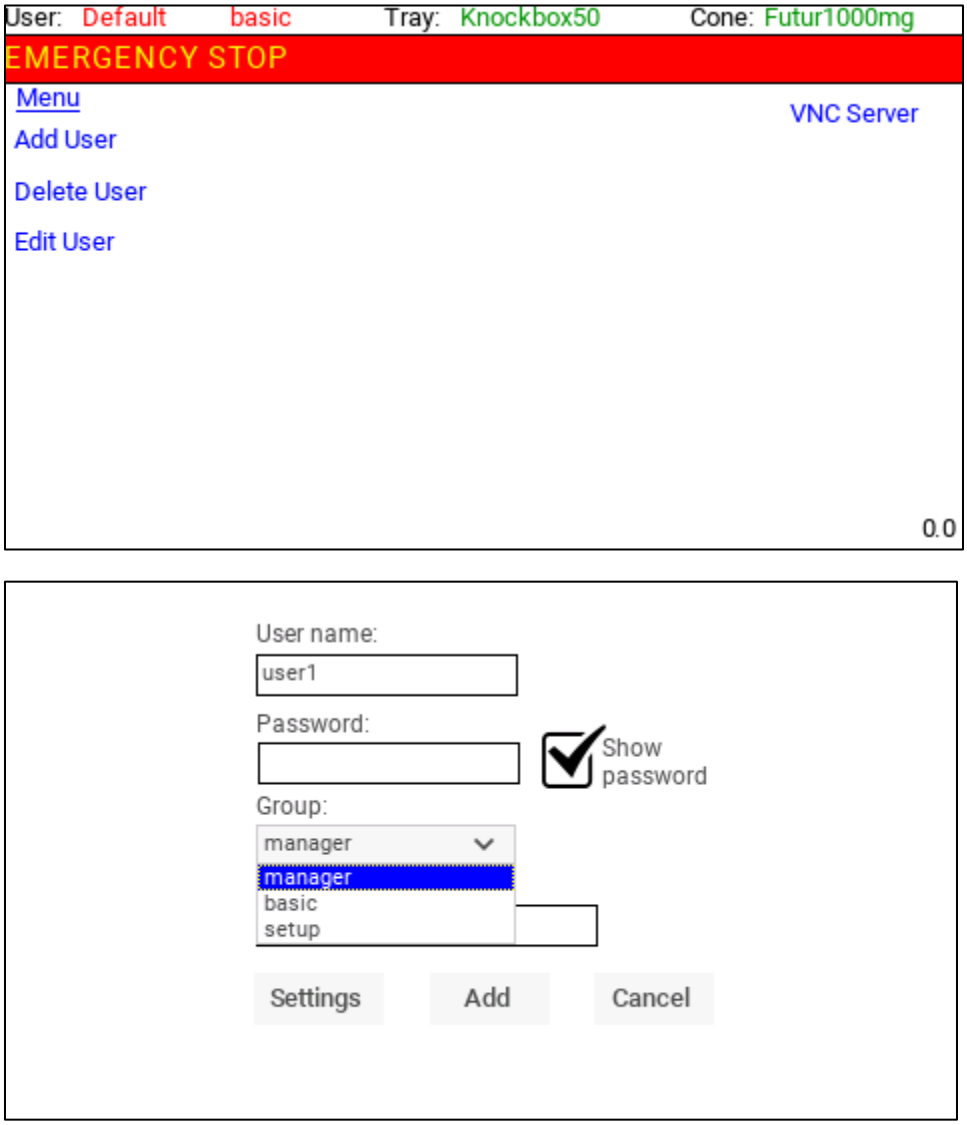


Figure 29: HMI user parameters screens

Three access levels are available as follow:

- "basic": recommended for operators and day to day production tasks
- "setup": recommended to establish the different recipes used by the operators
- "admin": only recommended for the power users (highly skilled users, maintenance technicians…)

5.1.2 HMI Option menu

Figure 30 below shows what the Option menu looks like. Within this menu, the user can:

- Access **Tray** menu, refer to section 5.1.3 for details.
- Access **Cone** menu, refer to section 5.1.4 for details.
- Access **Service** menu, refer to section 7.2 for details.
- Access **User** menu, refer to section 5.1.1 for details.
- **Reset tray** → To be used when the user wants to restart a full tray cycle. The BoxFinish-Er stores the most recently picked pre-roll location on the Tray and will continue operating based on that stored location. Unless the **Reset tray** button is pressed which will result in the BoxFinish-Er to proceed with the first pre-roll location of the Tray.

- Select the **Operation Mode**: "Auto" or "Step by Step" (The BoxFinish-Er will stop after every task and wait for the operator to press **Start** button. This mode is used for troubleshooting and setup)

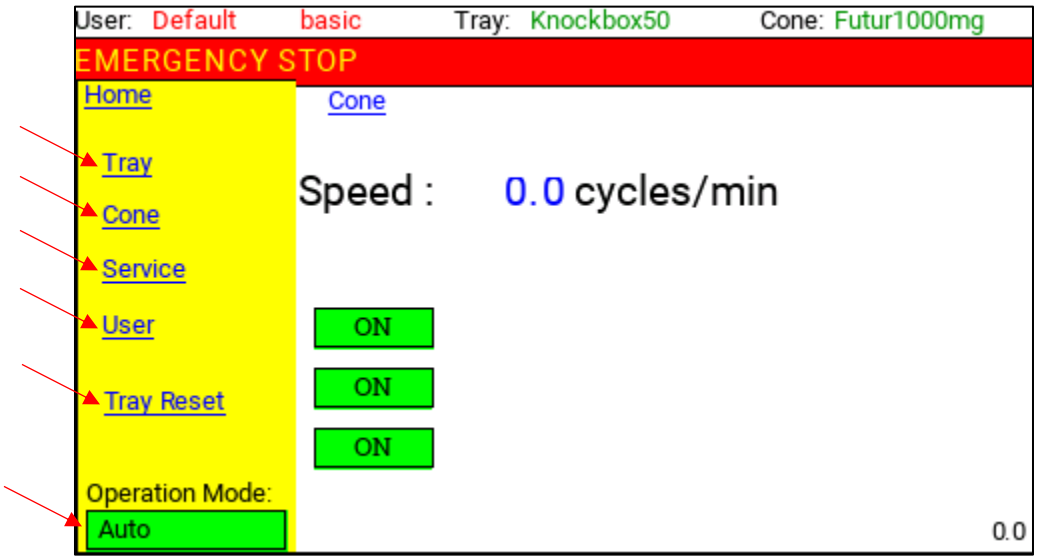


Figure 30: HMI Option menu

5.1.3 HMI Tray menu

The "Tray Recipes" screen is used to tell the machine which Pre-Roll Specific tray you intend on using for the production run and the currently selected tray. Select your new tray type by using the "Select One" dropdown menu followed by pressing "Download to PLC". Once the new Tray is selected and Downloaded to the PLC, it will appear on the "Actually Running:" display below.

Figure 31: HMI Tray Recipes selection screen

The specific trays can be created, saved, renamed, or deleted using the screen shown above. To create a new specific tray, you can create a copy of an existing tray using the "Save as" function and modify it as described in the next pages.

Remark: The Knockbox50, Knockbox100 straight and Knockbox100 diagonal presented in section 3.1 are already configured in the HMI and ready to use.

The following parameters specific to each Tray can be adjusted in the "Tray Setup" screen:

- Number of Columns
- Number of Rows
- Pitch between Columns (in millimeters)
- Pitch between Rows (in millimeters)
- Diagonal Offset (in millimeters)

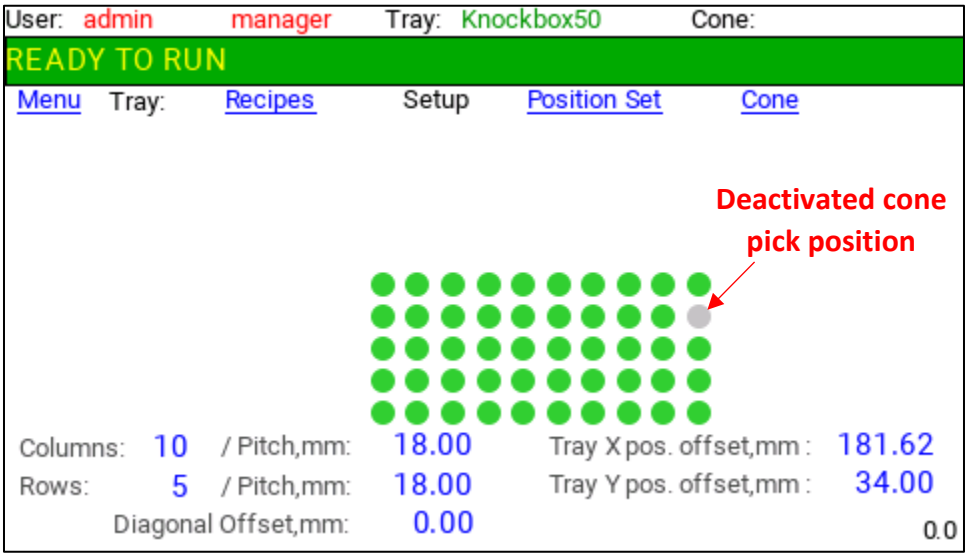


Figure 32: HMI Tray Setup screen

Each cone pick position can be activated or deactivated by pressing on them manually. The deactivated positions appear in grey. They activated positions appear in green.

A "deactivated position" means the machine ignores this position during operation and goes to the next "activated" one.

The "Tray Position Set" screen is used to define the "Tray ZERO Position". The "Tray ZERO Position" corresponds to the front right position in the tray which is the first pick up position treated by the machine after a "Reset tray" (refer to 5.1.2 for details).

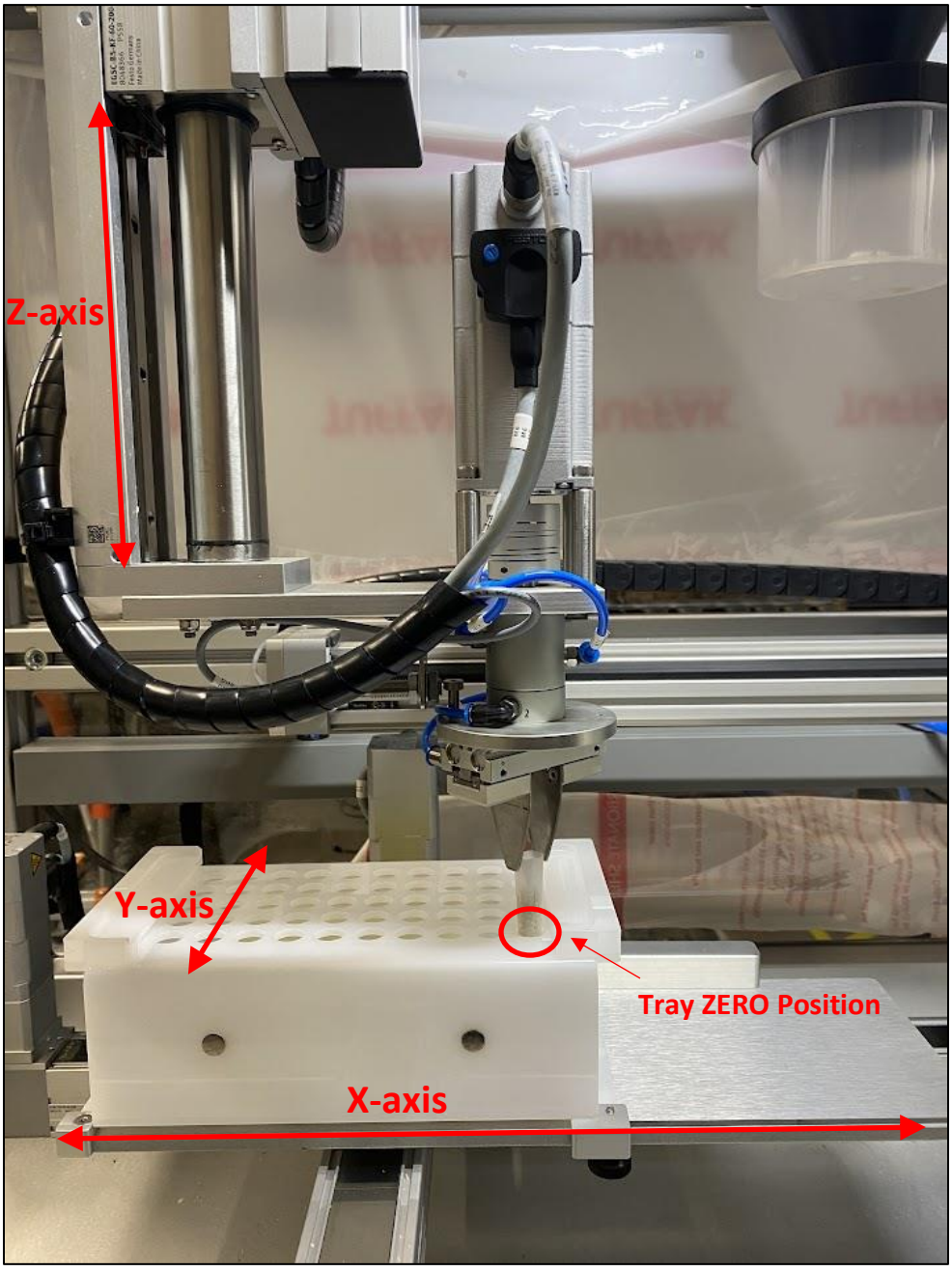


Figure 33: Tray ZERO Position and XYZ axis

The "Tray ZERO Position" (first pickup position) for the KB100 diagonal tray is shown in figure below.

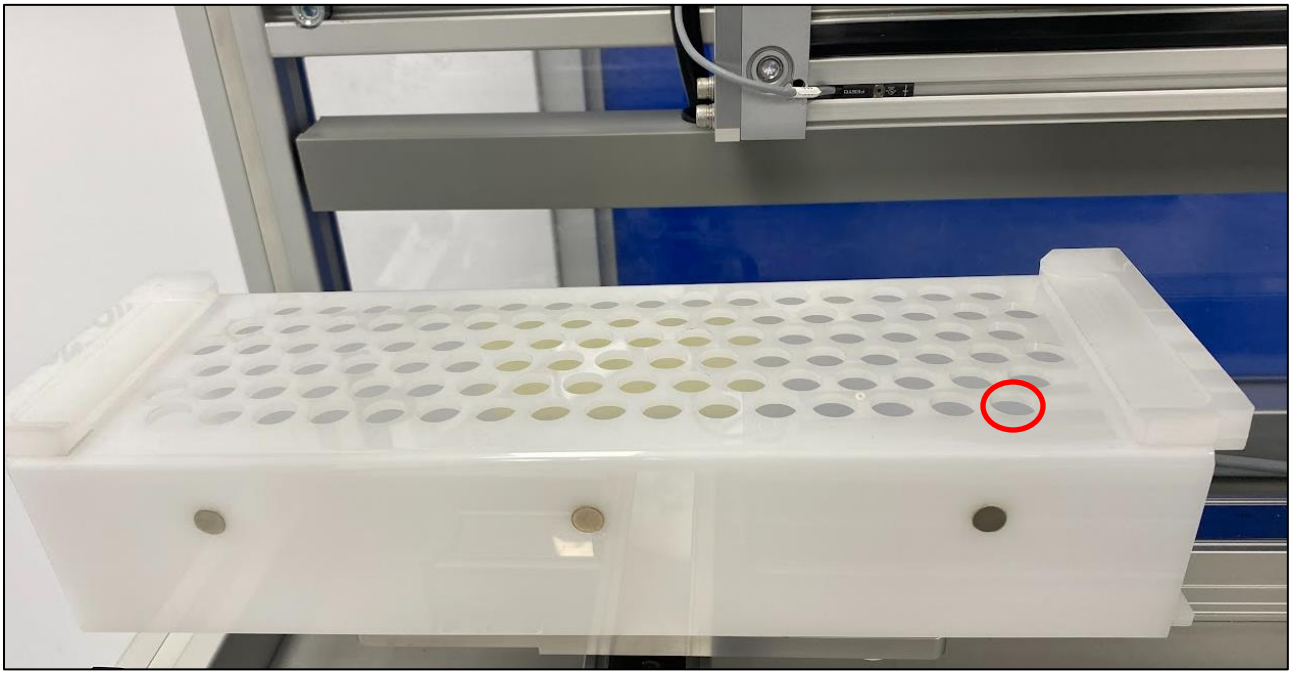


Figure 34: Tray ZERO Position – KB100 diagonal

To define the Tray ZERO Position:

- Close the door
- Rearm the equipment by pressing the reset button (make sure the emergency stop is not pressed)
- Adjust the Pick and Place arm position using the Z+ and Z- buttons shown below
- Open the door
- Move the tray manually in the X and Y axis to the location presented in Figure 33
- Once the Pick and Place Arm is aligned with the first pick up position, press the "Teach" button shown below

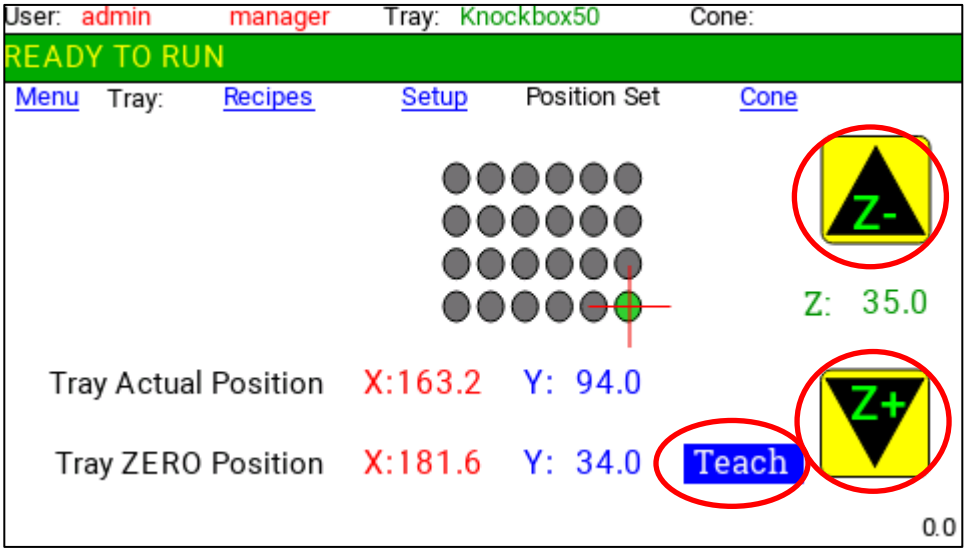


Figure 35: HMI Tray Position Set screen

5.1.4 HMI Cone menu

The "Cone Recipes" screen is used to tell the machine which specific Pre-Roll you intend on using for the production run and the currently selected Pre-Roll. Select your new Pre-Roll type type by using the "Select One" dropdown menu followed by pressing "Download to PLC". Once the new Pre-Roll is selected and Downloaded to the PLC, it will appear on the "Actually Running:" display below.

Figure 36: HMI Cone Recipes selection screen

The specific Pre-Roll recipes can be created, saved, renamed, or deleted using the screen shown above. To create a new Pre-Roll recipe, you can create a copy of an existing recipe using the "Save as" function and modify it as described in the next pages.

The following parameters specific to each Pre-Roll recipe can be adjusted in the "Twist Setup" screen:

- Pick position (in millimeters)
- Lift position (in millimeters)
- Bottom position at the end of the vertical displacement during twist motion (in millimeters)
- Number of revolutions during twist motion
- Twist rotation speed (in revolutions per second)
- Vertical displacement speed during twist motion (in millimeters per second)

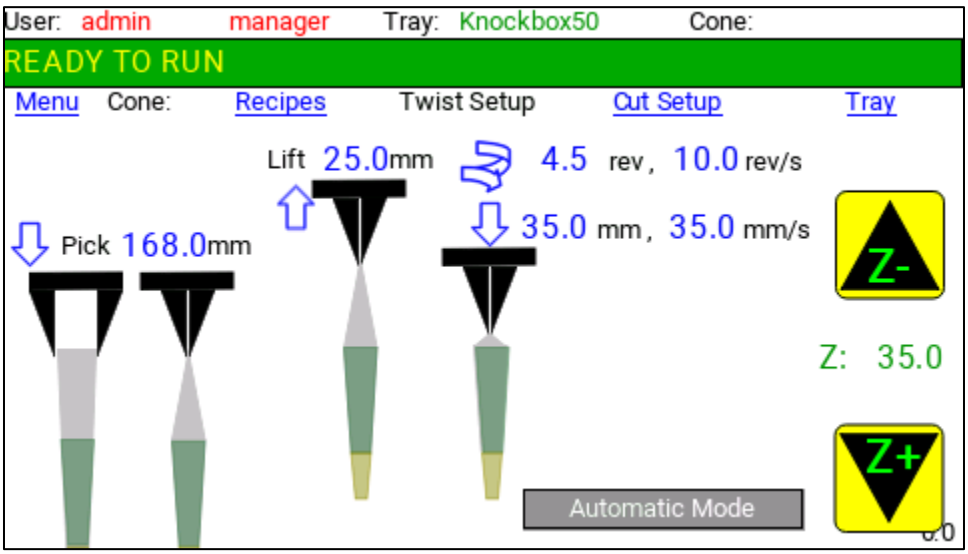


Figure 37: HMI Cone Twist Setup screen

The "Cut Setup" screen is used to define the Cutting, Top Crushing and Vacuum parameters:

- Cutting time: time during which the blade is closed (recommended value of 350 ms)
- Top Crushing Time: time during which the flat top rod remains in low position (recommended value of 350 ms)
- Cutter activation: ON/OFF
- Flat Top activation: ON/OFF
- Vacuum activation: ON/OFF

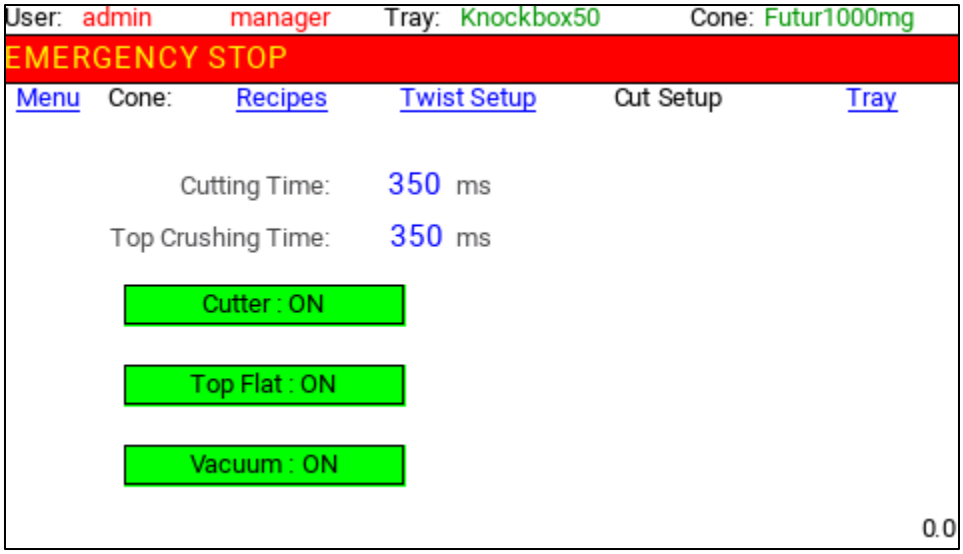


Figure 38: HMI Cone Cut Setup screen

5.2 Pre-Production Setup

5.2.1 Twist Setup

- Reset the Tray Cycle.

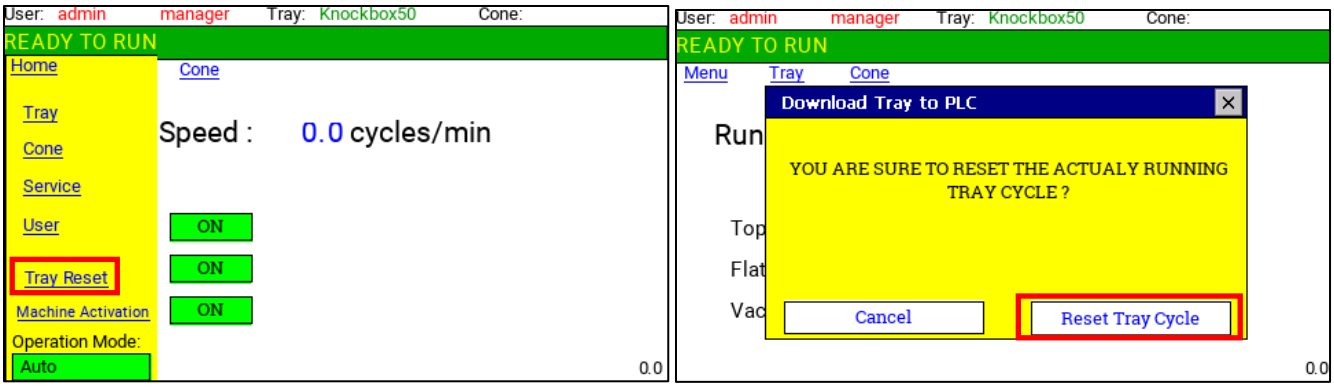


Figure 39: Reset Tray Cycle

- Open the "Cone Twist Setup" menu. Select the "Step by Step" operation mode.

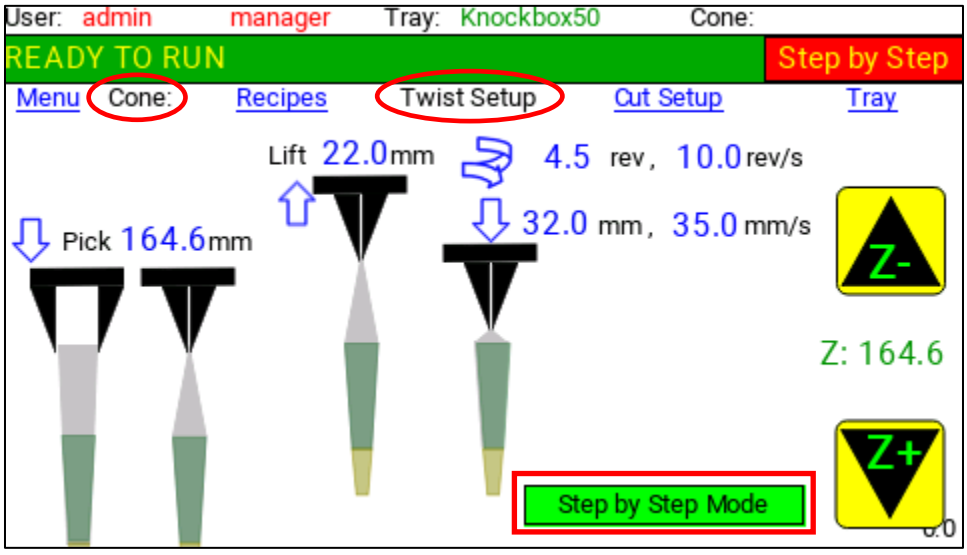


Figure 40: Step by Step mode selection

- Open the door, place an empty tray in the equipment.

- Place a Preroll in the second pick position (first column, second row).

- Close the door, press the reset (blue) button and press once on the start (green) button.
  ➔ The Pick and Place arm will go down to pick a Preroll (in the first pick position left empty) and stop.

- Set the Cone pick position as shown below. (A 15 mm gap between the tip of the Pick and Place arm and the level of product is recommended. This value can be adjusted if judged necessary.)

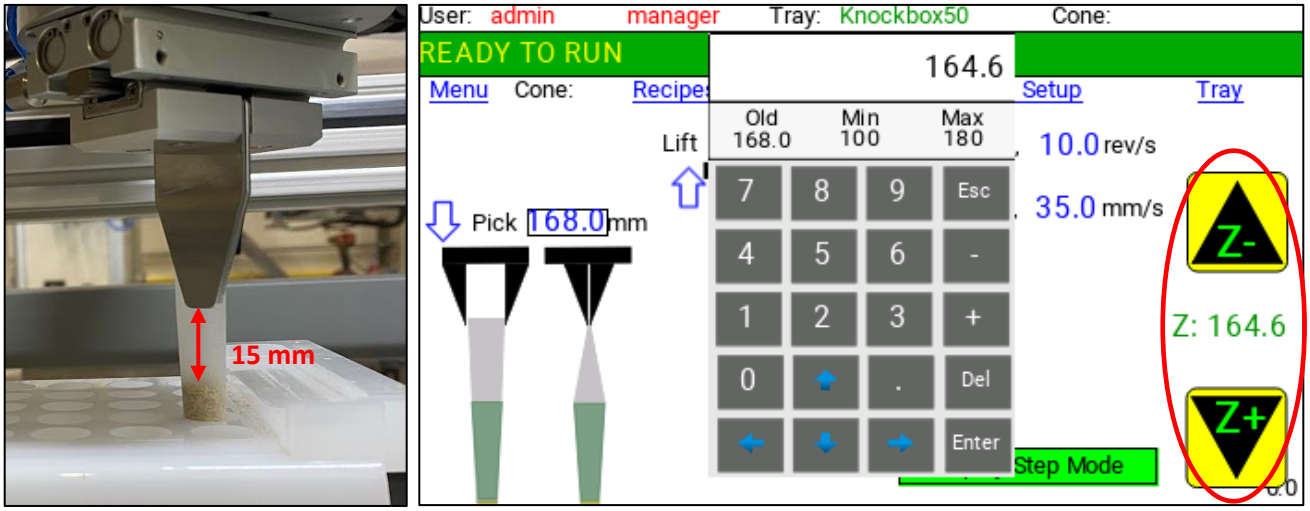


Figure 41: Cone Pick position setup

- Press several times on the start (green) button until the Pick and Place arm picks up the Preroll in the second position from the tray and places it in the Stationary Twist Grippers.

- Set the Cone Lift position as shown below. (A 3 mm gap between the top of Stationary Twist Grippers and the level of product is recommended. This value can be adjusted if judged necessary.)

  To test the lift position value:

  - Open the door
  - Remove manually the Preroll from the Pick and Place Arm
  - Place the Preroll in the next pick position of the tray
  - Close the door
  - Press the reset (blue) button
  - Press the start (green) button
  - Check the updated Cone Lift position and repeat the process if necessary.

Figure 42: Cone Lift position setup

- Adjust the following parameters:

  - Bottom position at the end of the vertical displacement during twist motion: Recommended value = Lift position value + 12 mm (in the example below: 22.1 + 12 = 34.1 mm)
  - Number of revolutions: Recommended value between 4 and 5
  - Twist rotation speed: Recommended value = 10 rev/s
  - Vertical displacement speed during twist motion: Recommended value = 35 mm/s

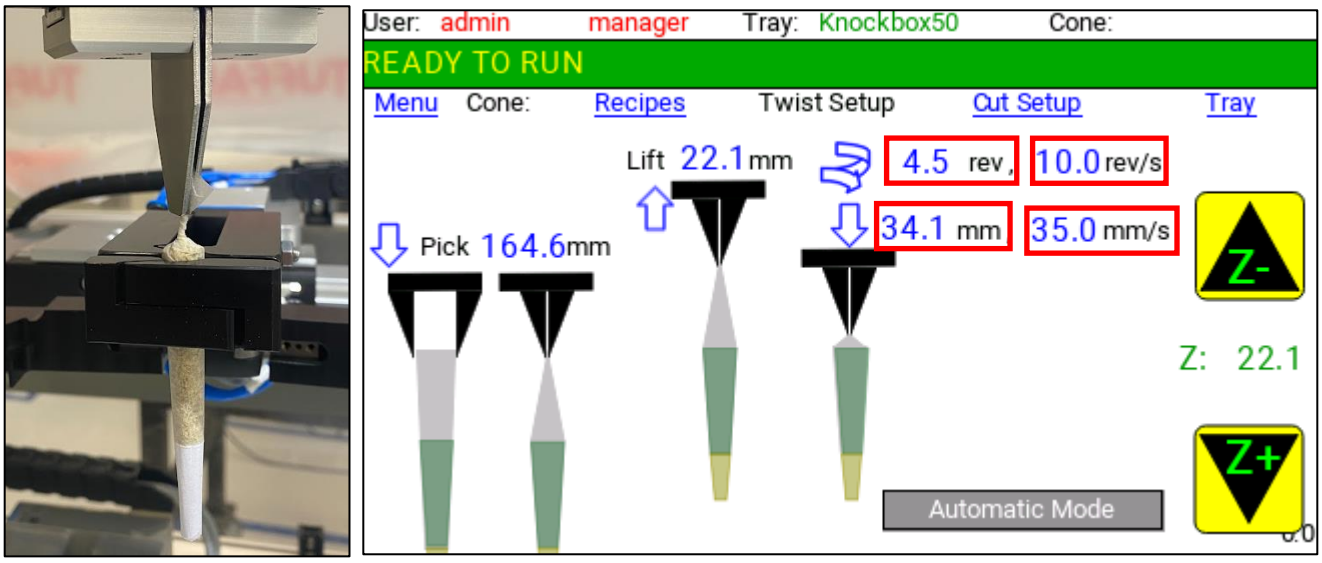


Figure 43: Cone Twist Setup recommended parameters

5.2.2 Transfer Setup

- It is important to make sure the Transfer Grippers are adapted to the length of the PreRolls. The grippers should hold the Prerolls by the cut to prevent any damage on the Prerolls. Refer to the section 3.3.1 for the different PART NUMBERS of the Transfer Grippers.

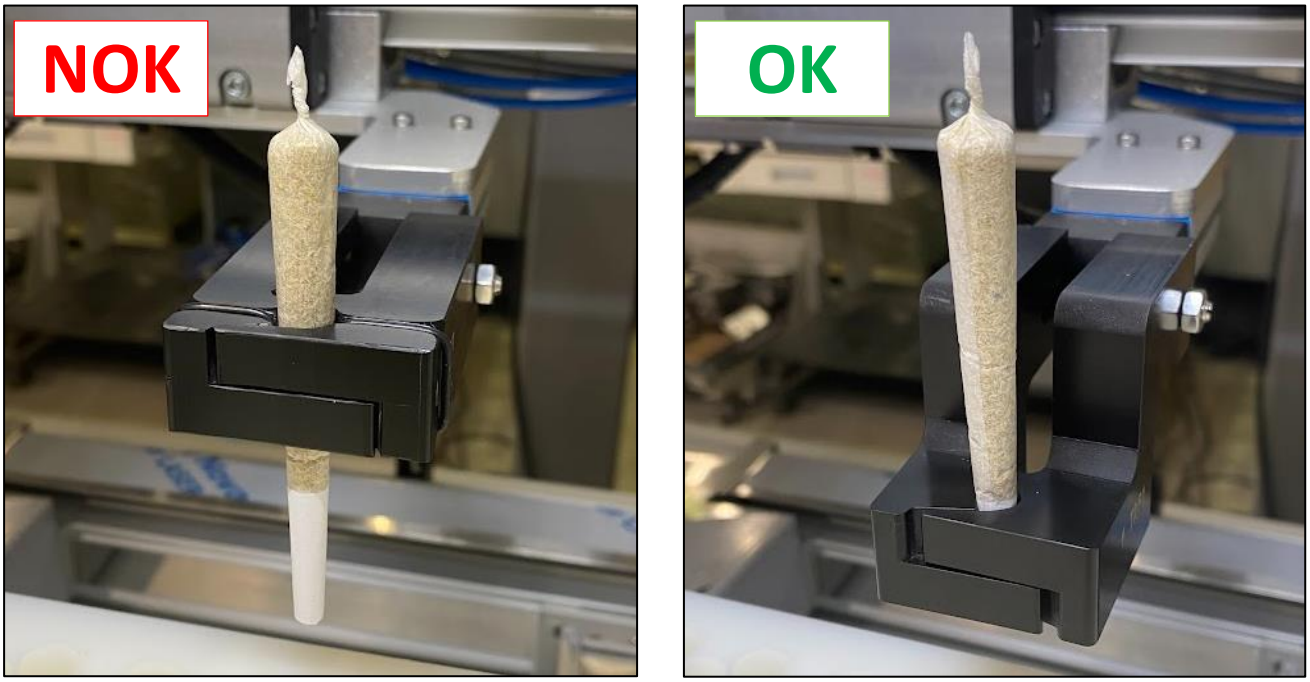


Figure 44: Transfer Grippers

5.2.3 Cut, Flat and Vacuum Setup

- Adjust the position of Cut Grippers as shown below. (A 3 mm gap between the top of Cut Grippers and the level of product is recommended. This value can be changed if judged necessary). Use the adjustable handles shown below to adjust the Grippers vertically.

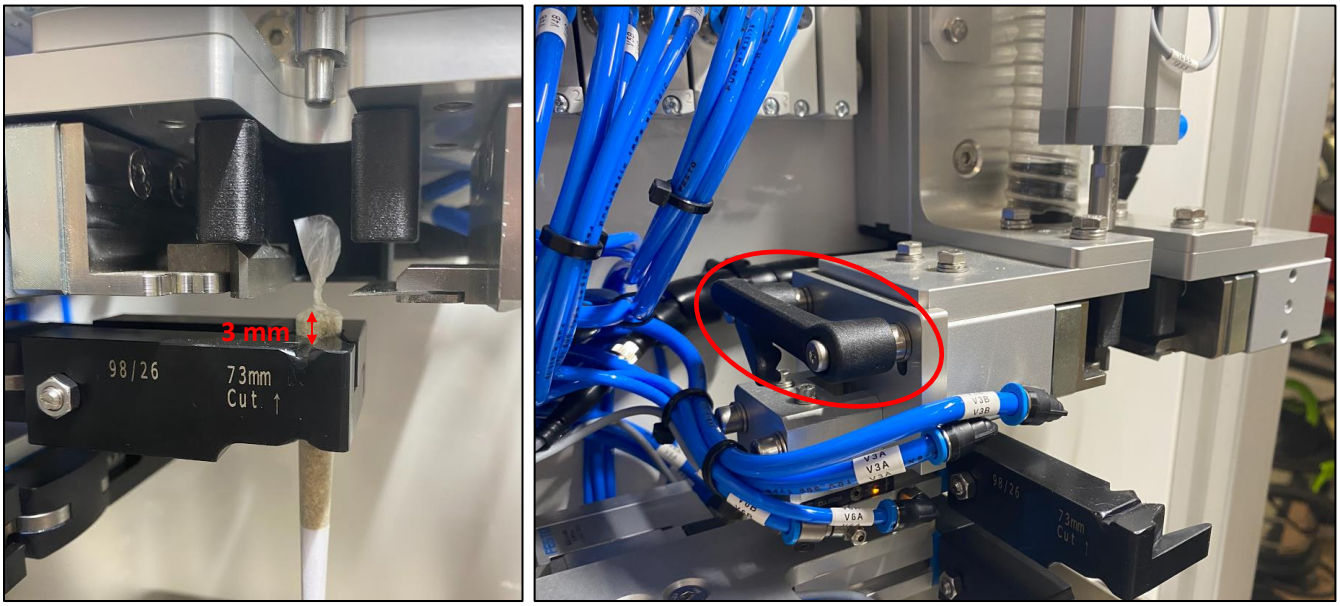


Figure 45: Cut Grippers setup

- Adjust the depth of the Flat Top rod as shown below. (A depth of 1 mm below the top of Cut Grippers is recommended. The depth can be increased or decreased if judged necessary). Use the micrometric adjustment screw shown below to adjust the depth.

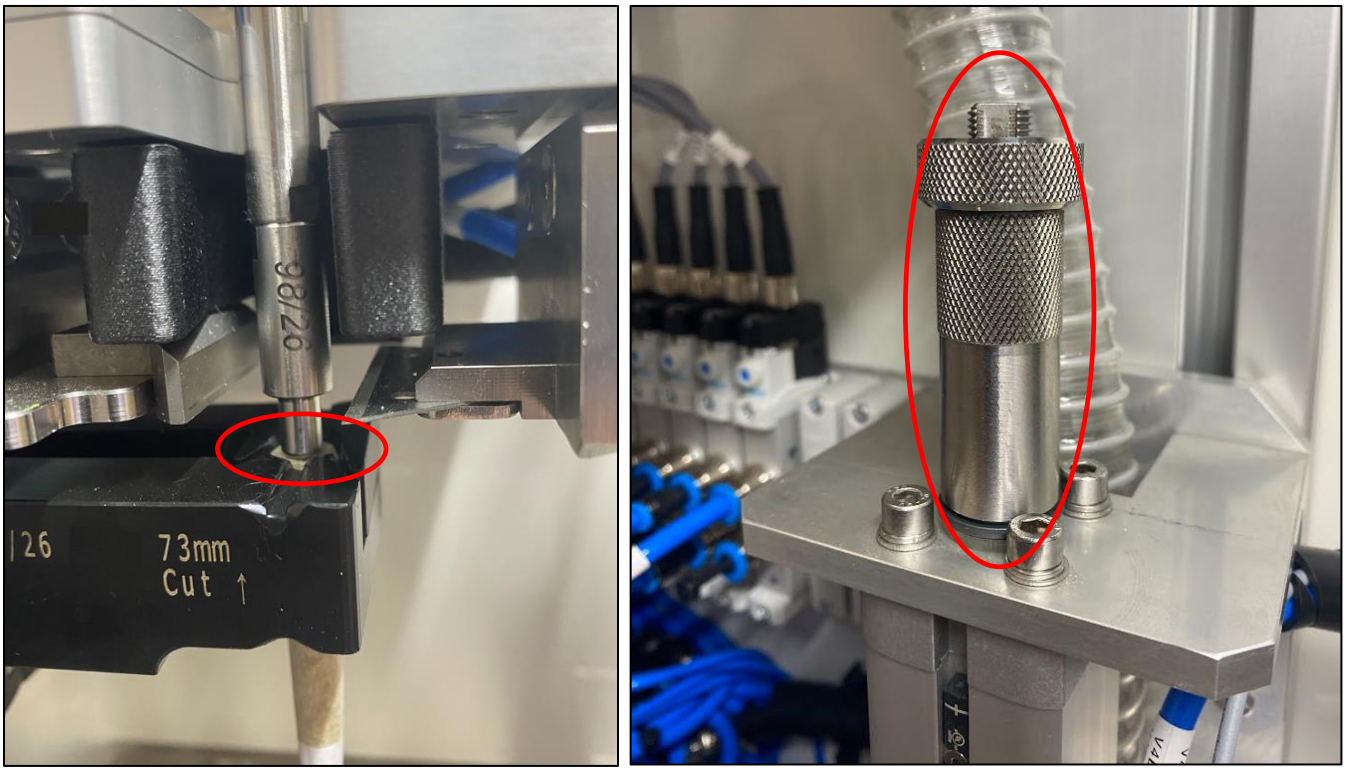


Figure 46: Flat Top rod depth setup

5.3 Equipment Operation

- Confirm appropriate "Tray recipe" has been selected. Refer to 5.1.3 for details.
- Confirm appropriate "Cone recipe" has been selected. Refer to 5.1.4 for details.
- Make sure the **Operation Mode** is set to "Auto" and the Tray has been reset. Refer to 5.1.2 for details.
- Open interlocking door and load appropriate tray with pre-rolls into the tray holder.
- Close interlocking door.
- Press 'Reset' (blue) button
- Press 'Start'. The machine will begin picking, transferring, cutting and flatening pre-rolls.
- Once the cycle is complete and all mechanical components are in the home position and stationary, open the interlocking door and remove the empty tray.

6. Preventive Maintenance

As the manufacturer of your BoxFinish-Er, we are committed to providing you with the highest quality and reliable machinery. To ensure optimal performance and longevity of your equipment, we have prepared the following preventive maintenance guidelines.

6.1 Recommended tools and materials

Please find below a list of suggested tools to have close to the machine during startup and for maintenance:

- Small metric wrenches – 4 to 11mm
- Metric wrenches – 7mm / 8mm / 10mm / 13mm
- Complete set of metric Allen Key
- Allen key SAE – 7/64
- Flat screw driver – 1/8
- Flat screw driver – 1/16
- Stainless Steel ruler – 150mm
- Digital caliper – 6 inches

As for cleaning materials, the decision is up to the customer and their requirements.
It is recommended to use disposable wipes, such as Tork dry wipers or cloths in conjunction with Isopropyl Alcohol 70%.

It is also handy to have an air blow gun and a venturi vacuum near the equipment.

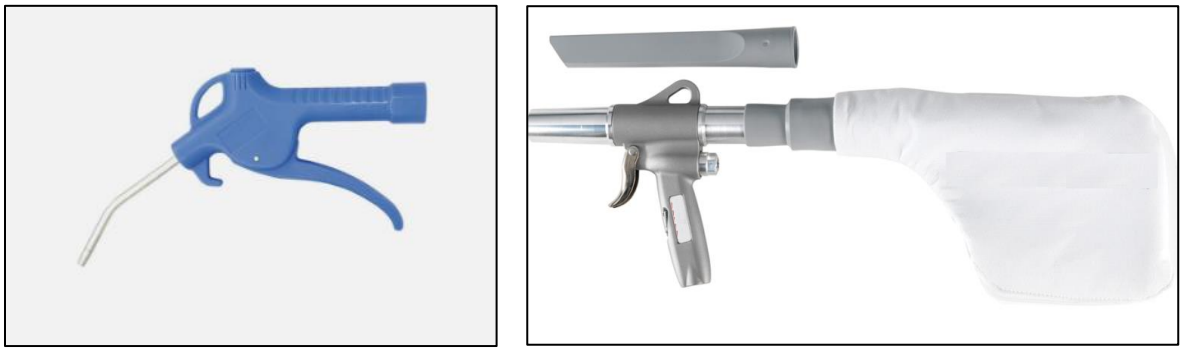


Figure 47: Air blow gun and venturi vacuum

6.2 Cleaning

Recommended Frequency: every 4 hours of operation and/or after each production run

- Thoroughly clean the equipment using mild, non-abrasive cleaning agents (Isopropyl Alcohol 70% is recommended).
- Pay particular attention to areas prone to residue buildup such as grippers, flat top rod and X/Y Axis mechanism.
- Empty the vacuum container.

6.3 Inspection and parts replacement

- Ensure that all safety devices and interlocks are in place and functioning correctly.
- Regularly inspect all moving parts for signs of wear, damage, or misalignment.

6.4 Scheduled Maintenance

- Develop a preventive maintenance schedule tailored to your production volume and intensity.
- Plan for scheduled maintenance downtime to conduct thorough inspections, cleanings, and parts replacements as needed.

6.5 Operator Training and Care

- Train operators in the proper operation and handling of the equipment to prevent misuse or accidental damage.
- Encourage operators to report any abnormal equipment behavior immediately.

6.6 Spare Parts Inventory

- Maintain an inventory of essential spare parts and consumables. Refer to 8.3 for a list of recommend spare parts.
- Replace worn-out or damaged parts promptly to minimize production interruptions.

6.7 Environmental Control

- Ensure the equipment is located in a clean, temperature-controlled environment within the specified operating range.
- Protect the equipment form dust, humidity and other contaminants that may affect its performance.

6.8 Documentation and Record Keeping

- Keep detailed records of all maintenance activities, including cleaning, inspections, repairs, and part replacements.
- Maintain a log of any issues encountered and their resolution.

6.9 Safety First

- Prioritize safety in all maintenance activities. Make sure the equipment is shut-off before any intervention.
- Provide operators and maintenance personal with appropriate personal protective equipment (PPE).

6.10 Technical Support and Services

- Reach out to our technical support team for any questions or concerns related to maintenance or equipment operation.
- If required, schedule professional service by our authorized technicians for complex repairs or technical issues.

7. Troubleshooting

7.1 HMI Message/Error List

The HMI of the BoxFinish-Er is equipped with a comprehensive message/error reporting system to assist operators identifying and resolving issues. Below is a list of common message/error codes that may appear on the HMI, along with their descriptions and recommended actions:

Error Code: READY TO RUN

- Description: The BoxFinish-Er is ready to run.
- Action: Press the "start" (green) button.

Error Code: RUN

- Description: The BoxFinish-Er is running.
- Action: N/A

Error Code: OPERATOR STOP

- Description: The operator presses the "stop" (red) button.
- Action: Press the "start" (green) button to run the machine.

Error Code: DOOR IS OPEN

- Description: The safety interlock switch detects that the door is opened.
- Action: Make sure the door is closed properly.

Error Code: EMERGENCY STOP

- Description: Emergency stop activated.
- Action: Release the emergency stop button and press the "reset" (blue) button.

Error Code: NO TRAY SELECTED

- Description: No trays have been downloaded to the PLC.
- Action: Select and download a tray recipe to the PLC. Refer 5.1.3 to for details.

Error Code: ACTUAL TRAY IS DONE. INSTAL NEW FULL TRAY

- Description: The cycle is complete, all the Prerolls in the tray have been processed.
- Action: Remove the empty tray, install a new full tray.

Error Code: Machine Activation: LockedOut !!!

- Description: The BoxFinish-Er has been temporarily locked-out.
- Action: Contact the technical support team.

Error Code: Machine Activation Warning !!!

- Description: The BoxFinish-Er will soon be temporarily locked-out.
- Action: Contact the technical support team.

Error Code: POWER OFF

- Description: The BoxFinish-Er is shut-off. The safety relay is not engaged.
- Action:
    - Make sure the door is closed properly.
    - Make sure the emergency stop is released.
    - Press the "reset" (blue) button.
    - If the error code does not disappear:
        - Check the state of the safety relay. Both lights highlighted below should be "ON" for the BoxFinish-Er to start.

Figure 48: Safety relay

Error Code: CHECK AIR PRESSURE

- Description: Error due to low or fluctuating air pressure levels, which can affect the BoxFinish-Er's performance and the quality of the products. Proper air pressure is essential for the functioning of various components, such as actuators, cylinders, and air-driven mechanisms.
- Action:
    - Check the pressure ON/OFF valve and the pressure regulator valve. Adjust the pressure settings if necessary, the pressure should be set between 90 and 110 psi.
    - Check the air supply source to ensure it is properly connected, and there are no leaks or blockages in the air lines. Make sure the air compressor is functioning correctly.

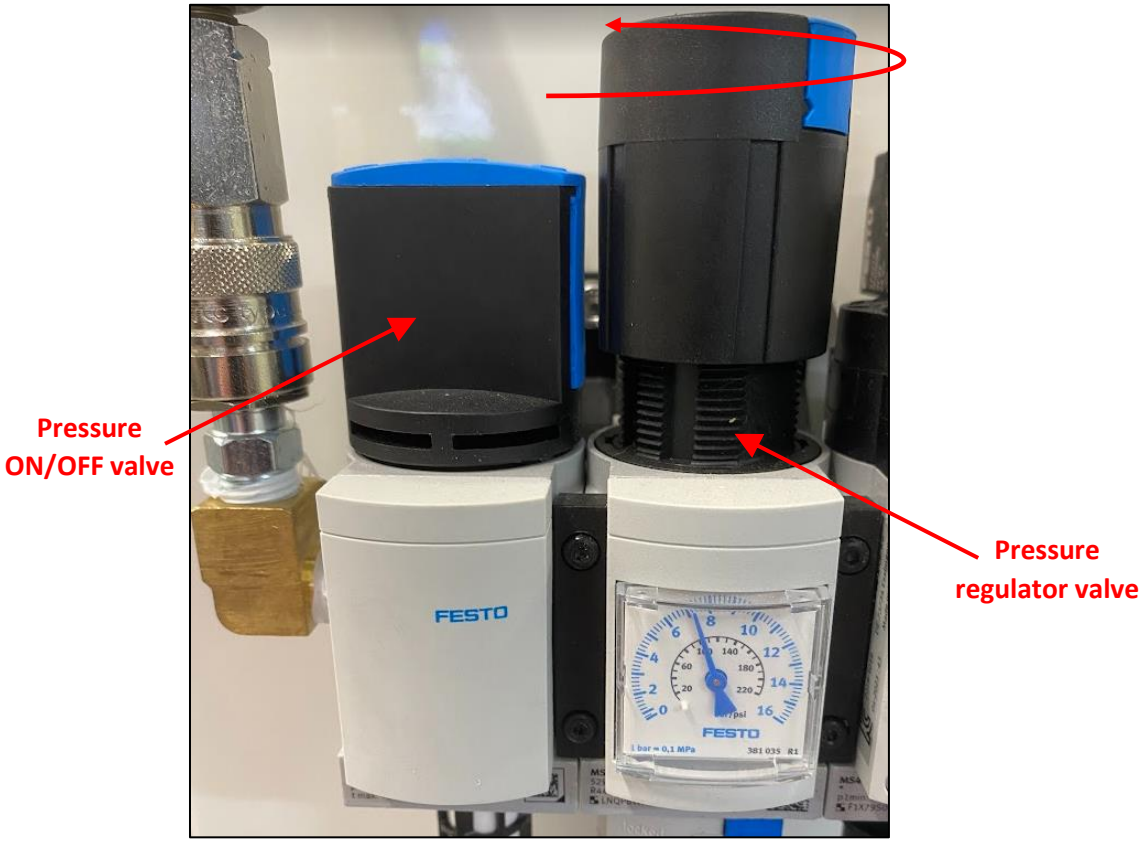


Figure 49: Pressure ON/OFF valve and pressure regulator valve

Error Code: Twist_Gripper_Lift_Drive_Err

- Description: The drive of the Pick and Place Arm (Z-Axis) detected an overload or could not perform its homing. Pick and Place Arm has encountered a physical obstruction or restriction in its operation.
- Action:
    - Carefully inspect the BoxFinish-Er. Pay particular attention to the Pick and Place Arm (Z-Axis) actuator to identify any source of obstruction or restriction.
    - If an object or material is found causing the obstruction, safely remove it from the equipment.
    - Inspect the equipment for any signs of damage or misalignment. Ensure that no components have been bent, broken, or displaced.
    - If any components or parts have shifted due to the obstruction, carefully reposition them to their correct location. Make sure all parts are securely fastened and the equipment is free from any potential restrictions.

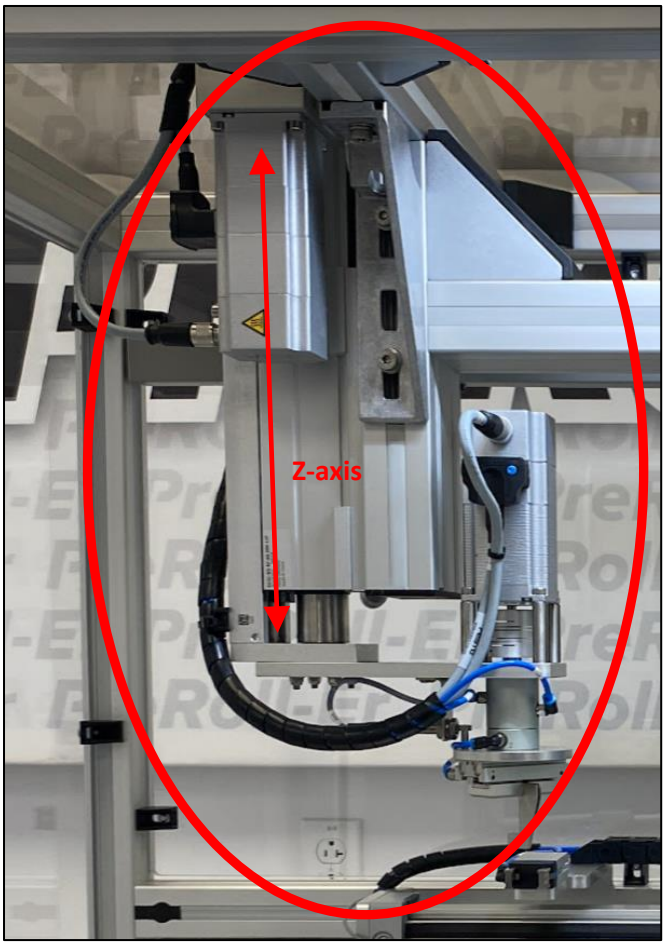


Figure 50: Pick and Place Arm – Z-axis

Error Code: Twist_Motor_Drive_Err

- Description: The drive of the Twist Motor detected an overload or could not perform its homing.
- Action:
  - Carefully inspect the twist components shown in figure below to identify any source of obstruction or restriction.
  - Make sure that the twist rotation speed parameter is not set too high (recommended value of 10 rev/s). Refer to 5.1.4 for details.
  - Make sure the twist sensor is adjusted properly. (the light should be ON when positionned in front of the shoulder screw, see figure below)
  - Make sure the coupling is securely fastened.

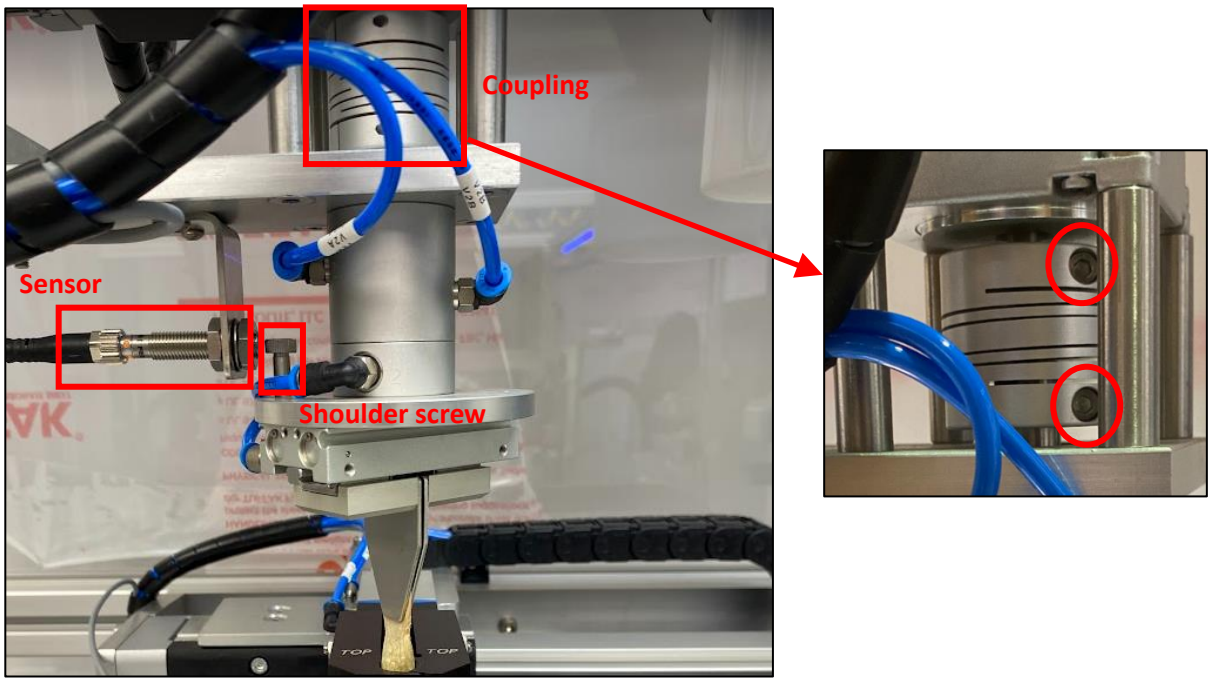


Figure 51: Twist components

Error Code: "Tray_Table_Axis_X_Drive_Err" / "Tray_Table_Axis_Y_Drive_Err"

- Description: The drive of Tray X-axis / Y-axis detected an overload or could not perform its homing. The Tray X-axis has encountered a physical obstruction or restriction in its operation.
- Action:
  - Carefully inspect the BoxFinish-Er. Pay particular attention to the Table Tray X-axis/Y-axis to identify any source of obstruction or restriction.
  - If an object or material is found causing the obstruction, safely remove it from the equipment.
  - Inspect the equipment for any signs of damage or misalignment. Ensure that no components have been bent, broken, or displaced.
  - If any components or parts have shifted due to the obstruction, carefully reposition them to their correct location. Make sure all parts are securely fastened and the equipment is free from any potential restrictions.

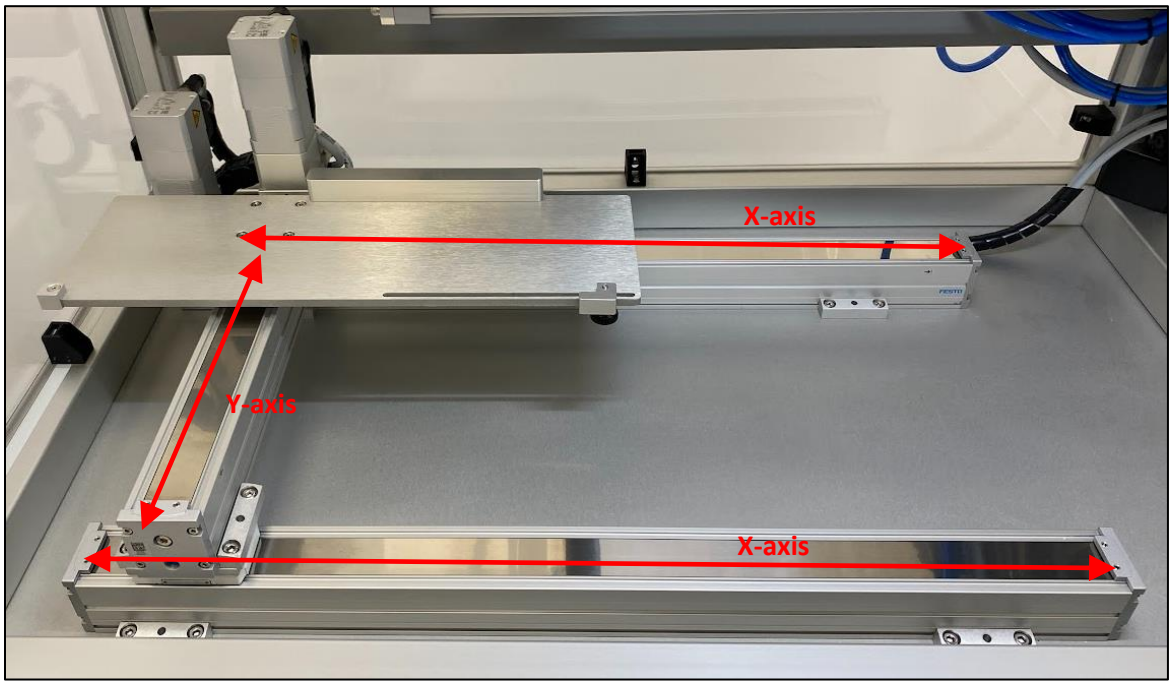


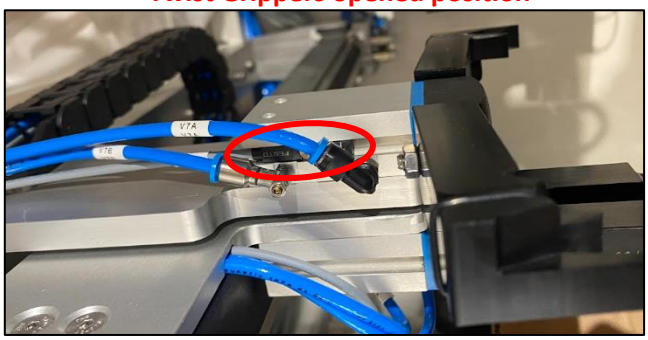
Figure 52: Table Tray – X-axis/Y-axis

Error Code: "Twist Cone Gripper Opening Err" / "Transfer Gripper Opening Err" / "Cutter Gripper Opening Err"

- Description: The **Twist** / **Transfer** / **Cutter** Gripper Opening Errors indicate that there is an issue during the opening motion of the respective (Twist / Transfer / Cutter) Grippers. The PLC does not receive the confirmation that the grippers are fully opened.
- Action:
  - Visually inspect the grippers mechanism. Check for any obstructions, air leak, foreign objects, or material that might be hindering the opening movement or causing misalignment.
  - Make sure the reed switch sensors are properly installed and detect the opened position of the grippers. The light on the reed switch sensors should be ON when the grippers are opened, see figure below.

Transfer Grippers opened position

Twist Grippers opened position



Cutter Grippers opened position

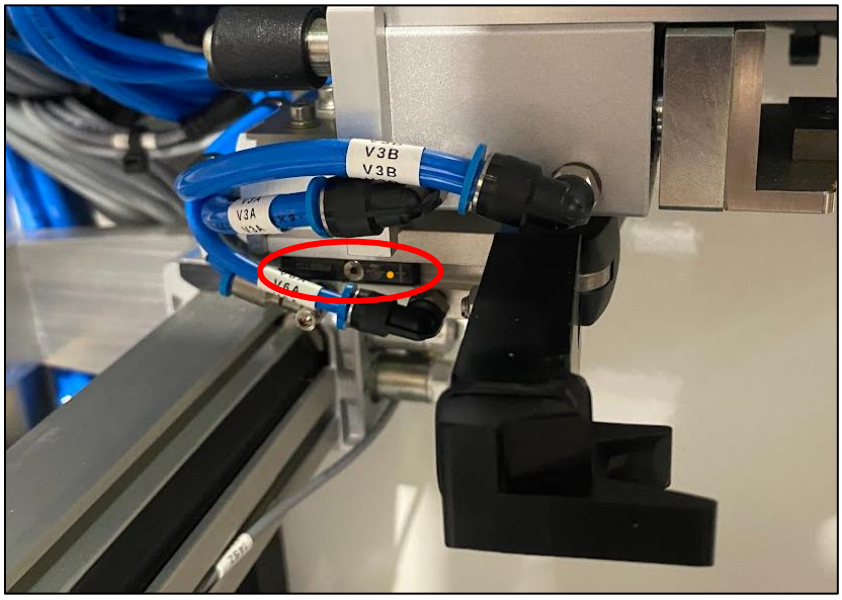


Figure 53: Twist / Transfer / Cutter Grippers opened positions

Error Code: "Cone Transfer at Cutter position Err" / "Cone Transfer at Twist position Err"

- Description: The **Cone Transfer at Cutter / Cone Transfer at Twist position** Errors indicate that there is an issue during the transfer motion. The PLC does not receive the confirmation that the transfer arm successfully reached the Cutter or Twist stations.
- Action:
  - Visually inspect the transfer mechanism. Check for any obstructions, air leak, foreign objects, or material that might be hindering the transfer movement or causing misalignment.
  - Make sure the reed switch sensors are properly installed and detects the position of the transfer arm at the end of its movements. The light on the reed switch sensors should be ON when the transfer arm is positioned under the Cutter or Twist stations, see figure below.

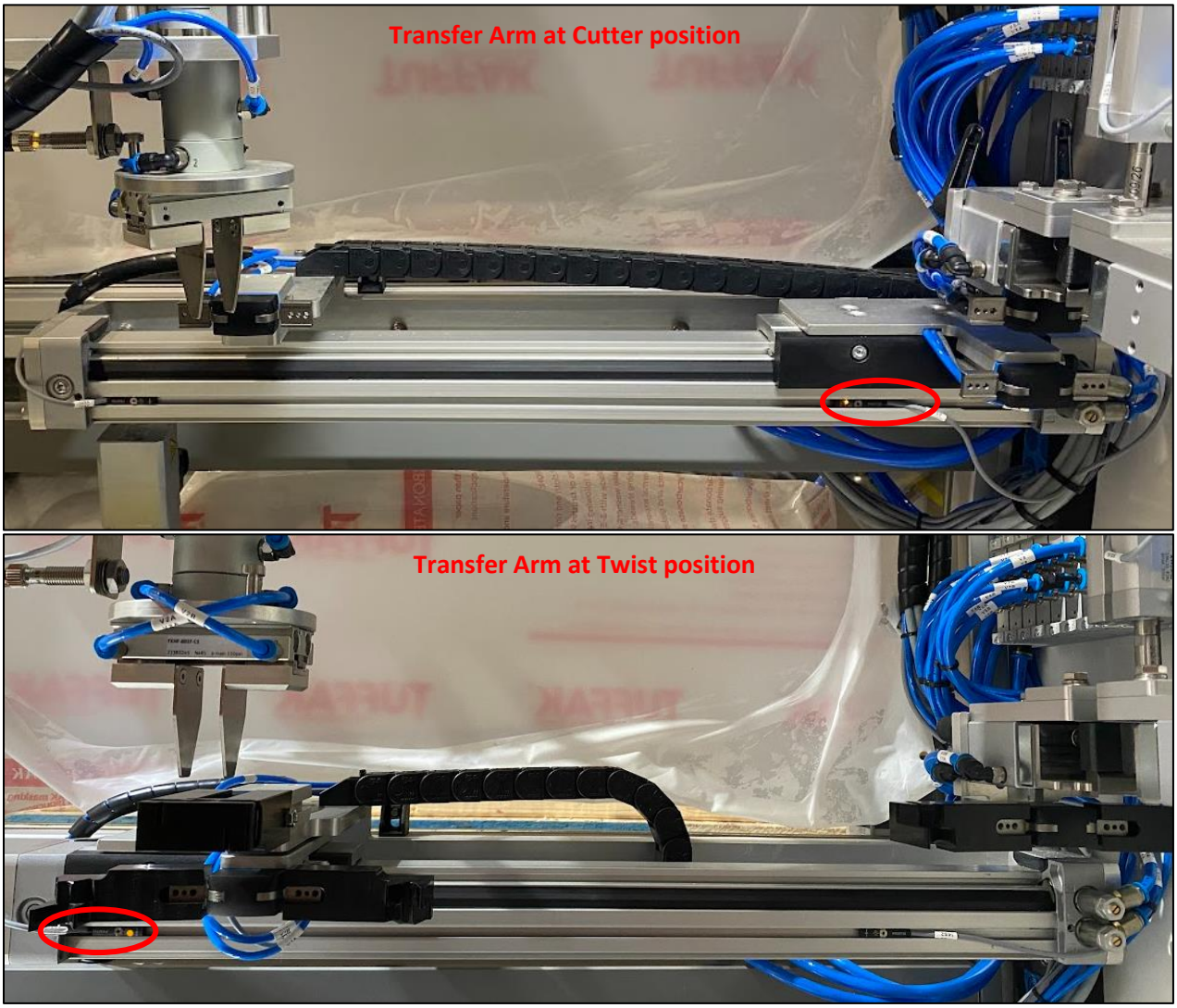


Figure 54: Cone Transfer at Cutter and Twist positions

Error Code: Cutter Front blade Opening Err

- Description: The **Cutter Front blade Opening** Error indicates that there is an issue during the opening motion of the blade. The PLC does not receive the confirmation that the blade is fully retracted.
- Action:
    - Visually inspect the cutting blade mechanism. Check for any obstructions, air leak, foreign objects, or material that might be hindering the cutter blade movement or causing misalignment.
    - Make sure the reed switch sensor is properly installed and detects the position of the blade in retracted position. The light on the reed switch sensors should be ON when the blade is fully retracted, see figure below.

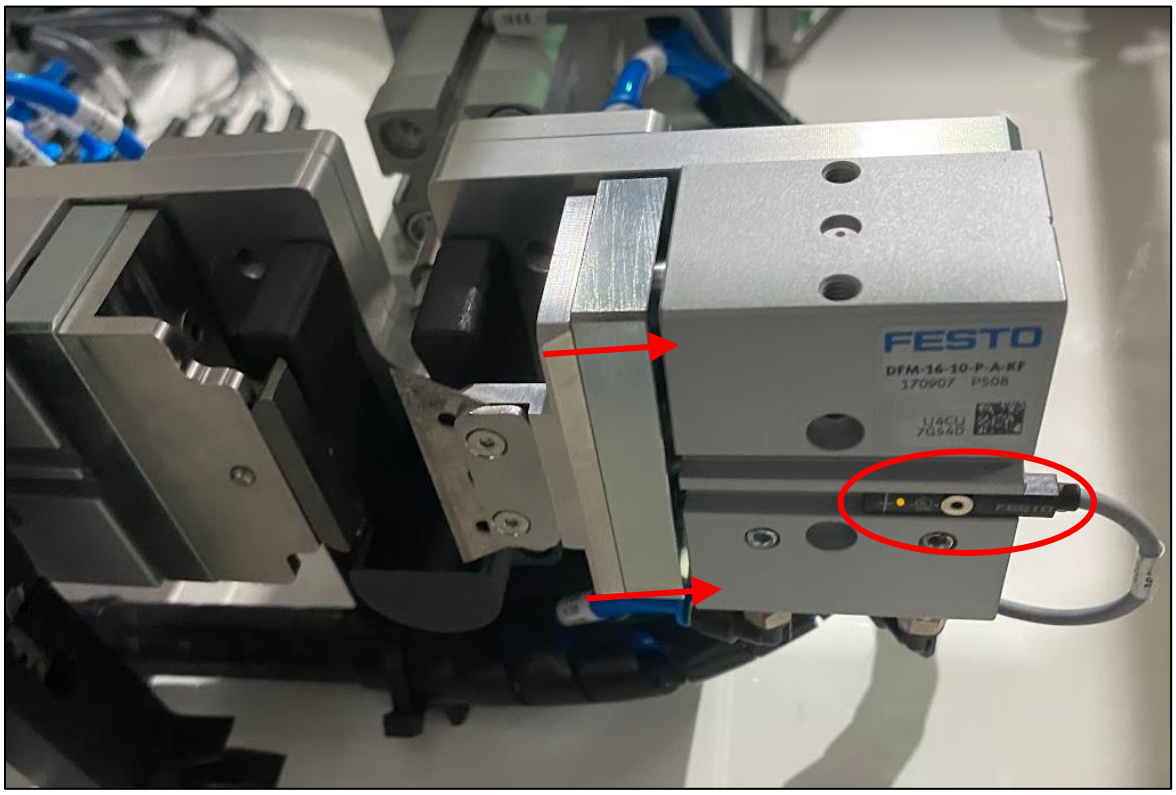


Figure 55: Cutter Blade Opening position

Error Code: Cutter Top Crusher Home pos.Err

- Description: The **Cutter Top Crusher Home position** Error indicates that there is an issue during the raising motion of the Top Crusher. The PLC does not receive the confirmation that the Top Crusher is fully retracted.
- Action:
    - Visually inspect the top crusher mechanism. Check for any obstructions, air leak, foreign objects, or material that might be hindering the top crusher movement or causing misalignment.
    - Make sure the reed switch sensor is properly installed and detects the position of the top crusher in retracted position. The light on the reed switch sensors should be ON when the top crusher is fully retracted, see figure below.

Figure 56: Top Crusher Home position

7.2 HMI Service Menu

The HMI is not just a user interface; it serves as a gateway to optimizing the performance and efficiency of the BoxFinish-Er. The Service Menu gives the ability to adjust and optimize velocity and timer values of the actuators.

Warning: While the HMI Service Menu empowers you to make adjustments, we urge caution and recommend that only trained personnel access these advanced settings. Safety is paramount, and you should always refer to our guidelines before making any changes. For additional support or if you encounter any challenges, our customer support team and authorized service technicians are here to assist you.

Your BoxFinish-Er comes preconfigured with default values that work well for most standard operations. We provide recommended values in the Service Menu to assist you in achieving the best results for your products. These recommended values are based on extensive testing and expertise to ensure smooth and efficient production.

The recommended values for each parameter are shown in figure below. A value set to ”0” means that a sensor (reed switch) is used instead of a timer.

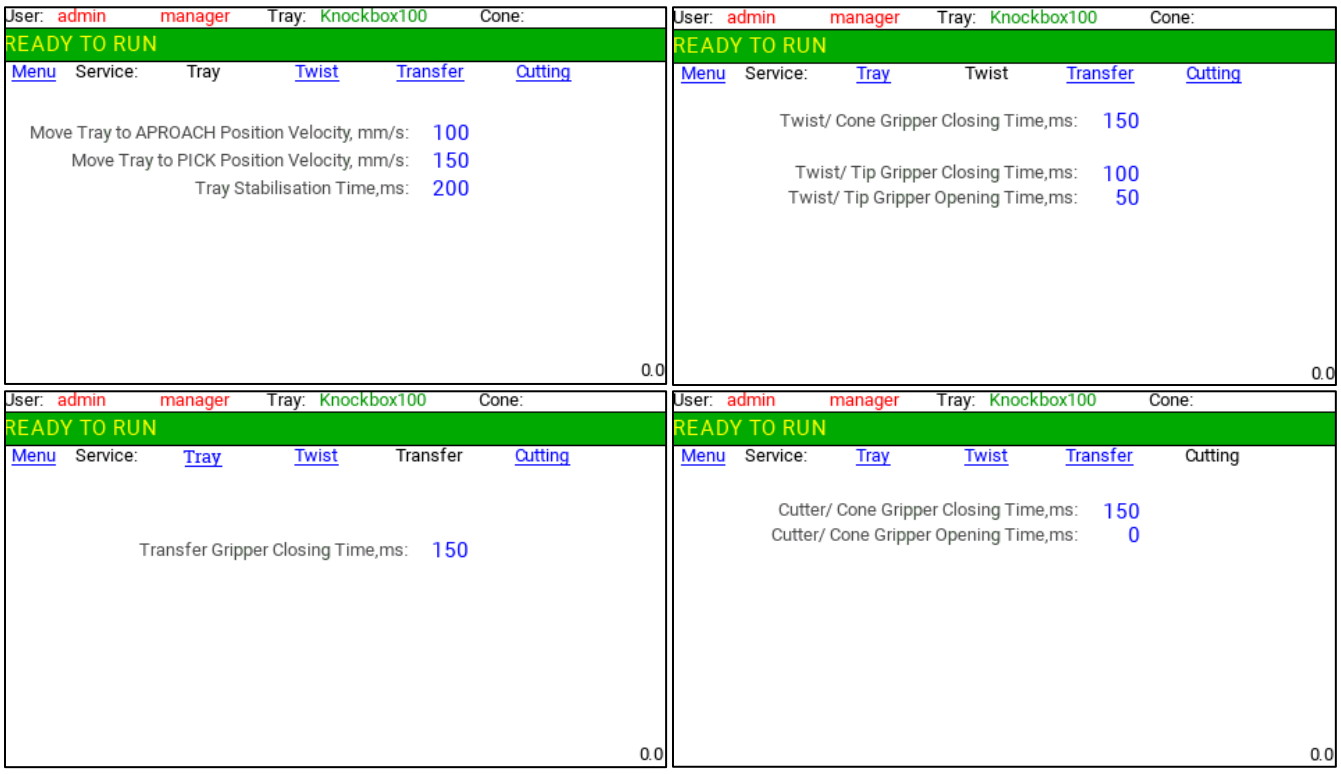
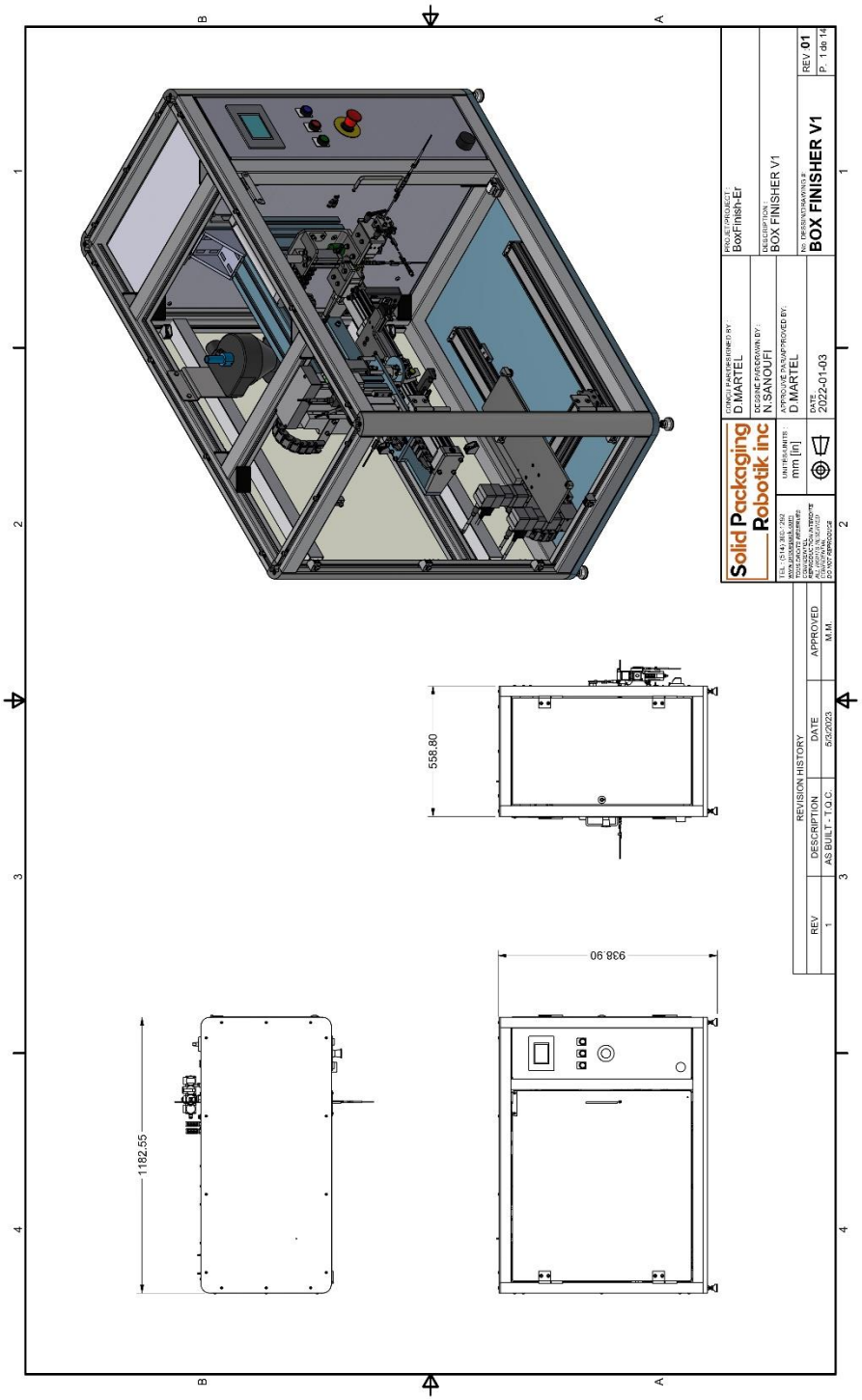
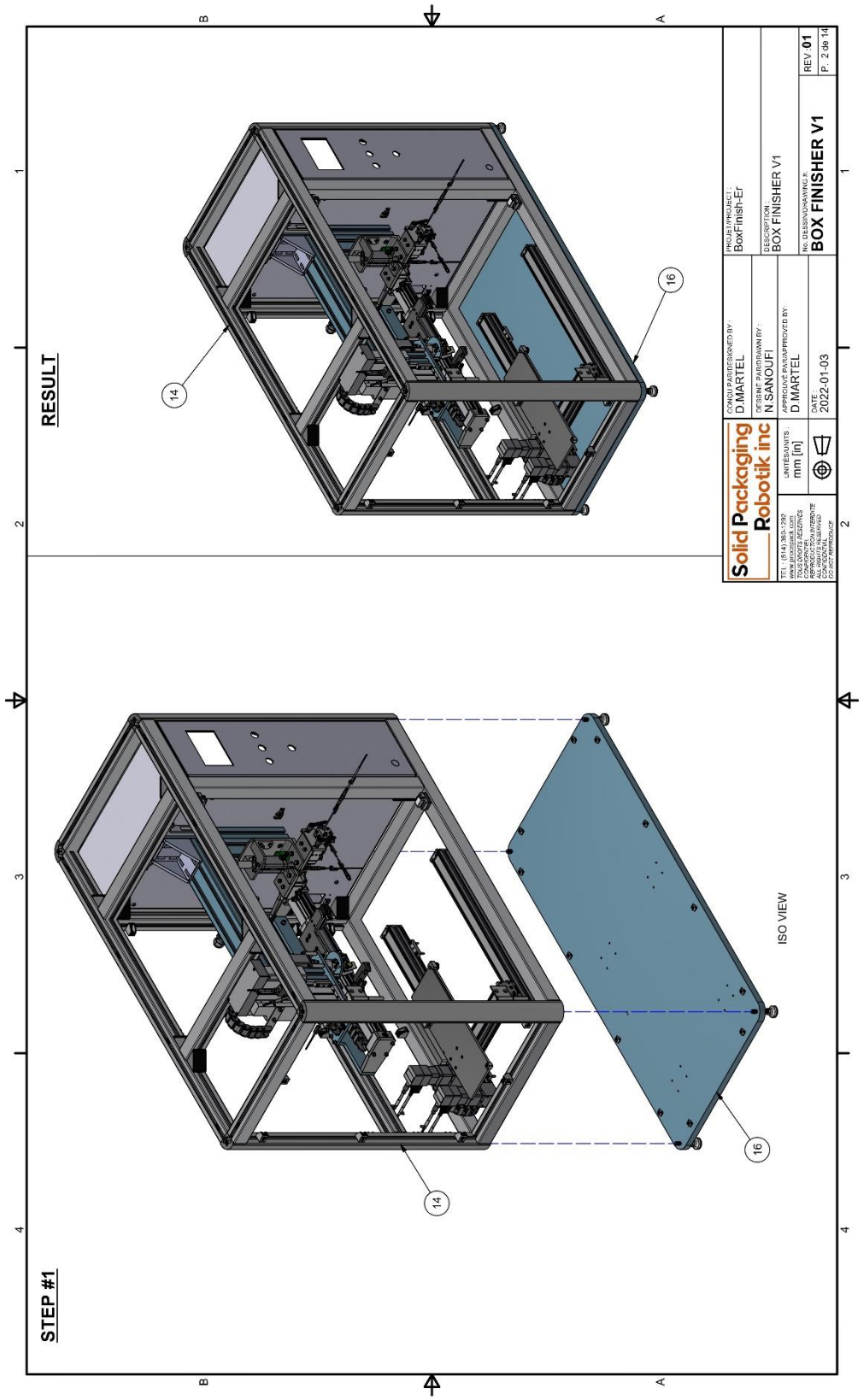


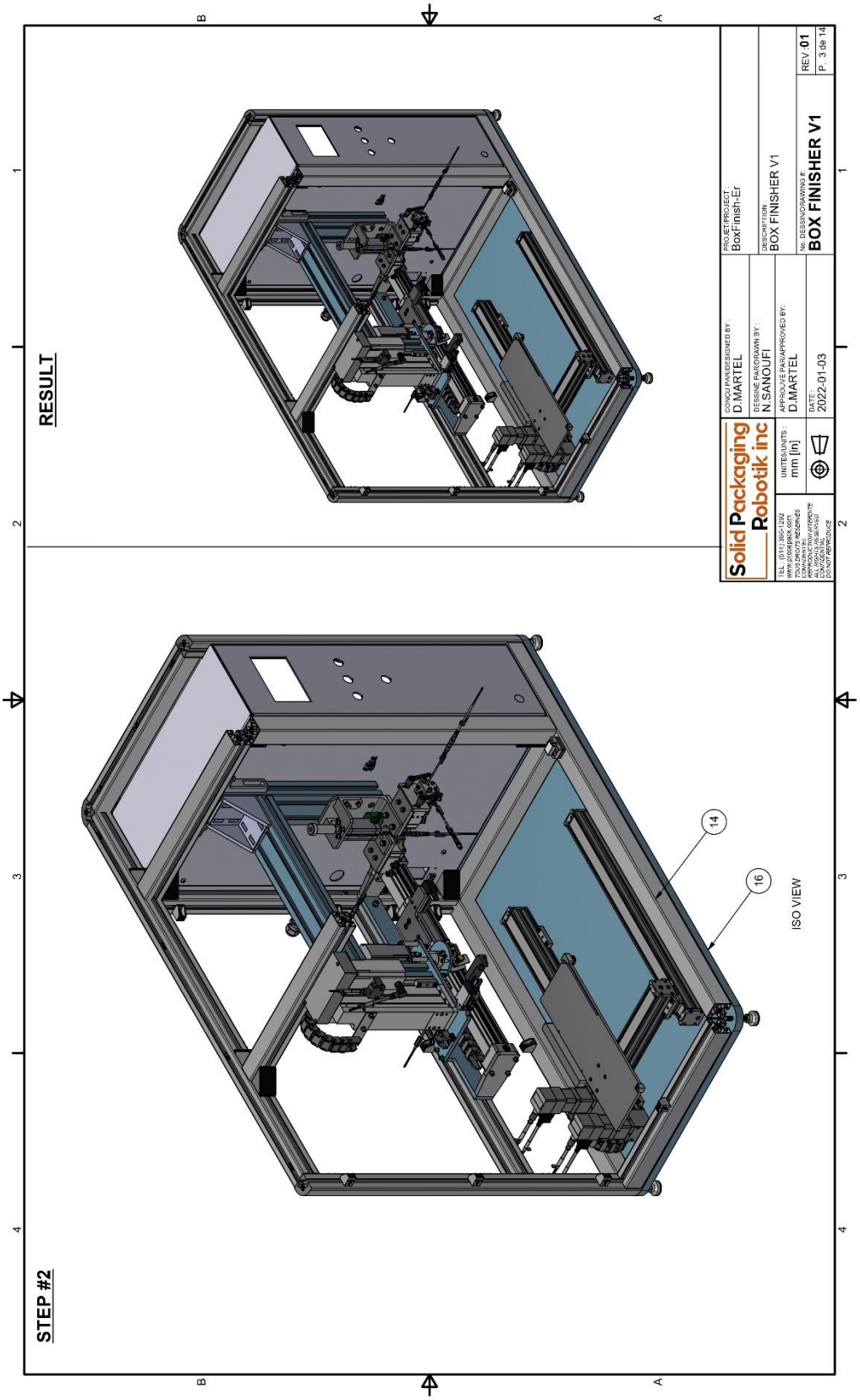
Figure 57: HMI Service menu – Recommended values

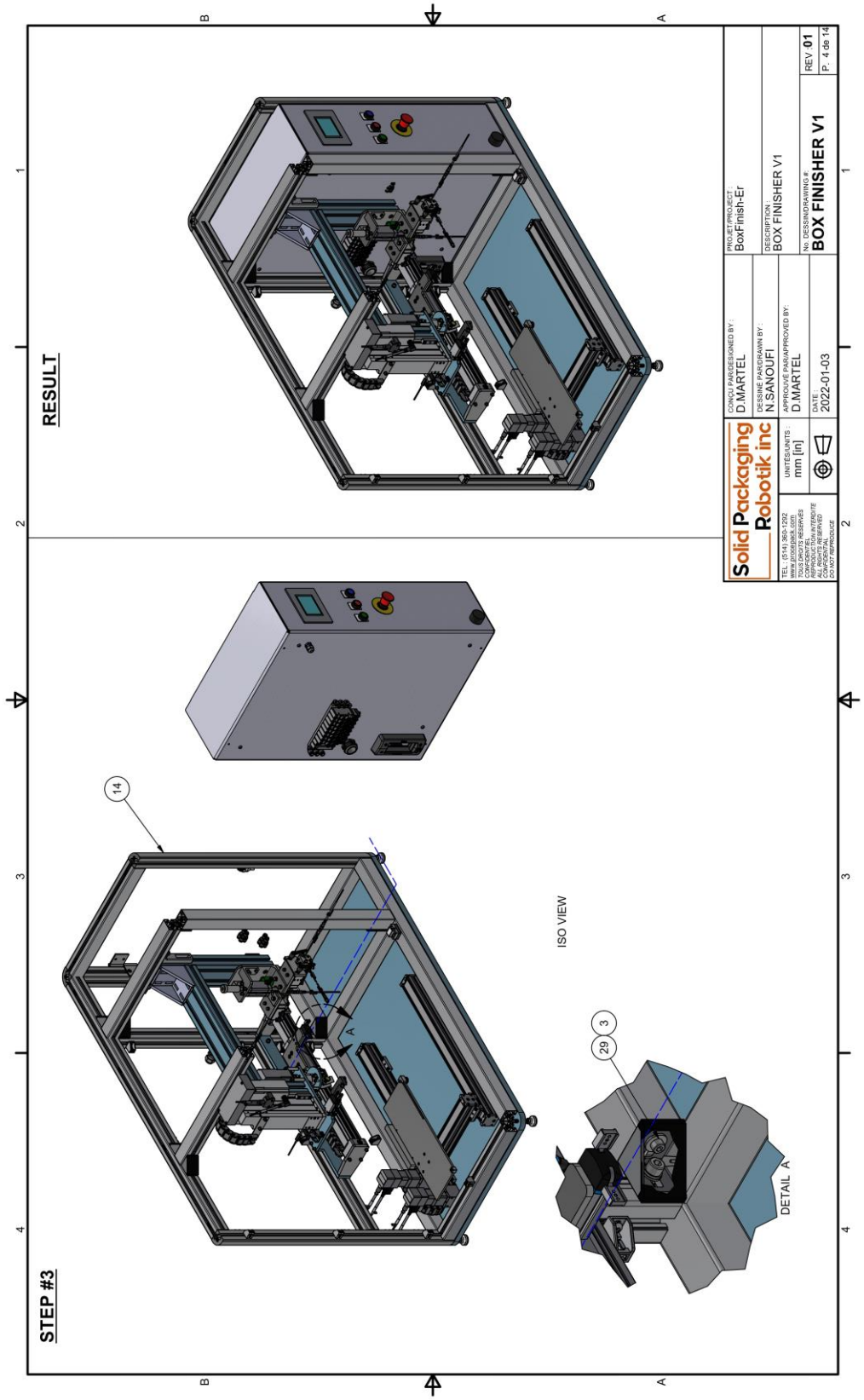
8. Drawings and Parts Lists

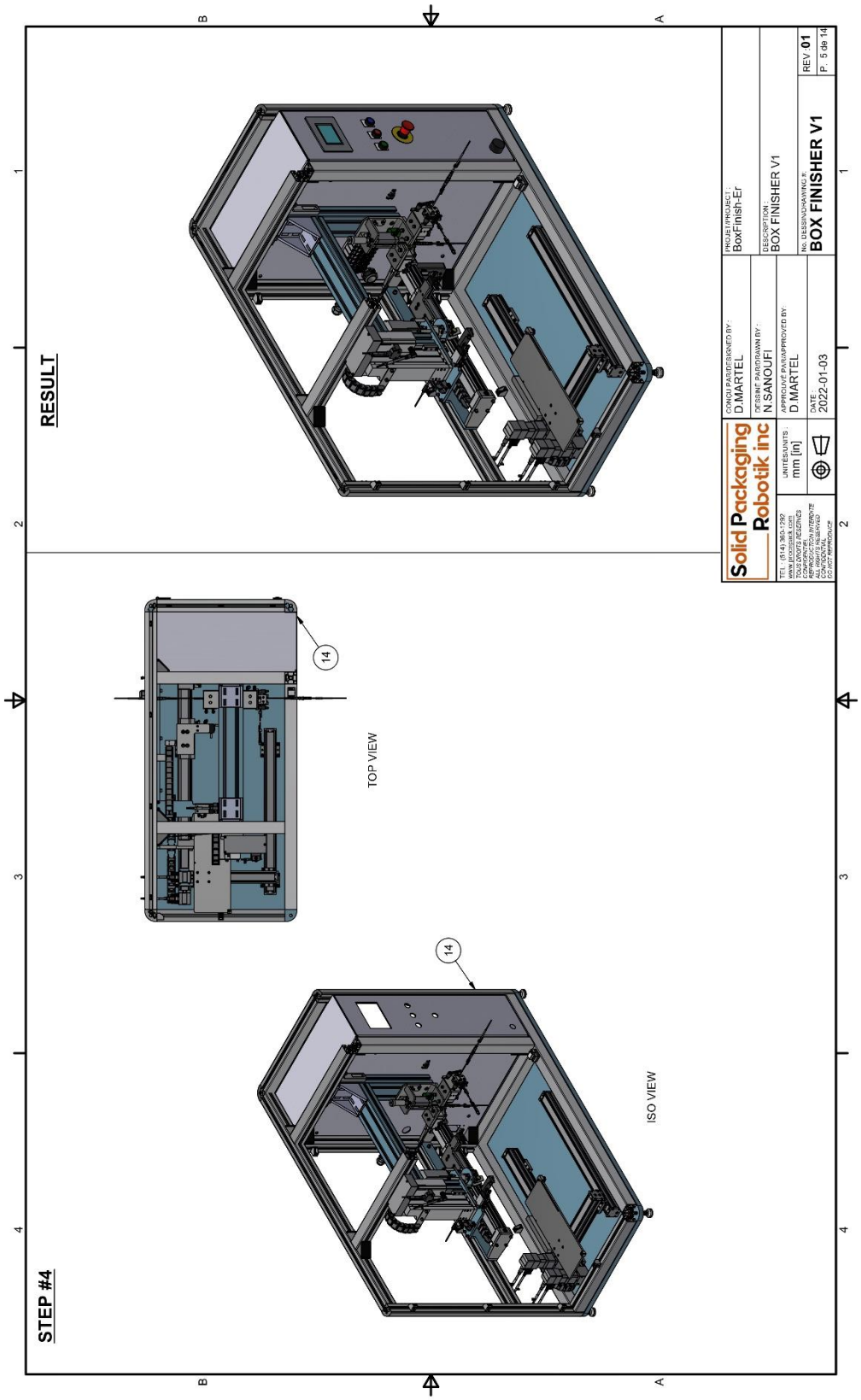
8.1 Mechanical drawings

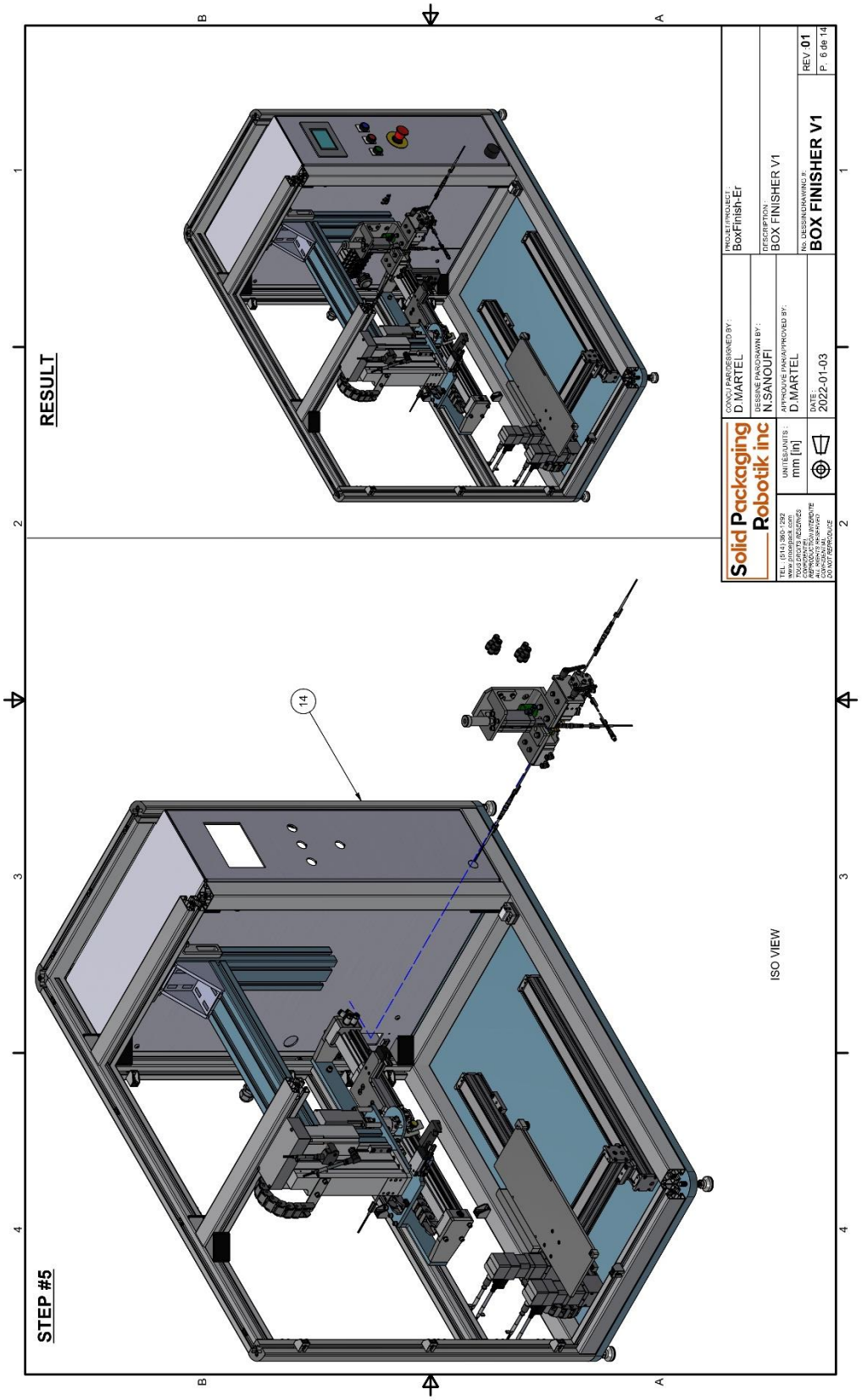


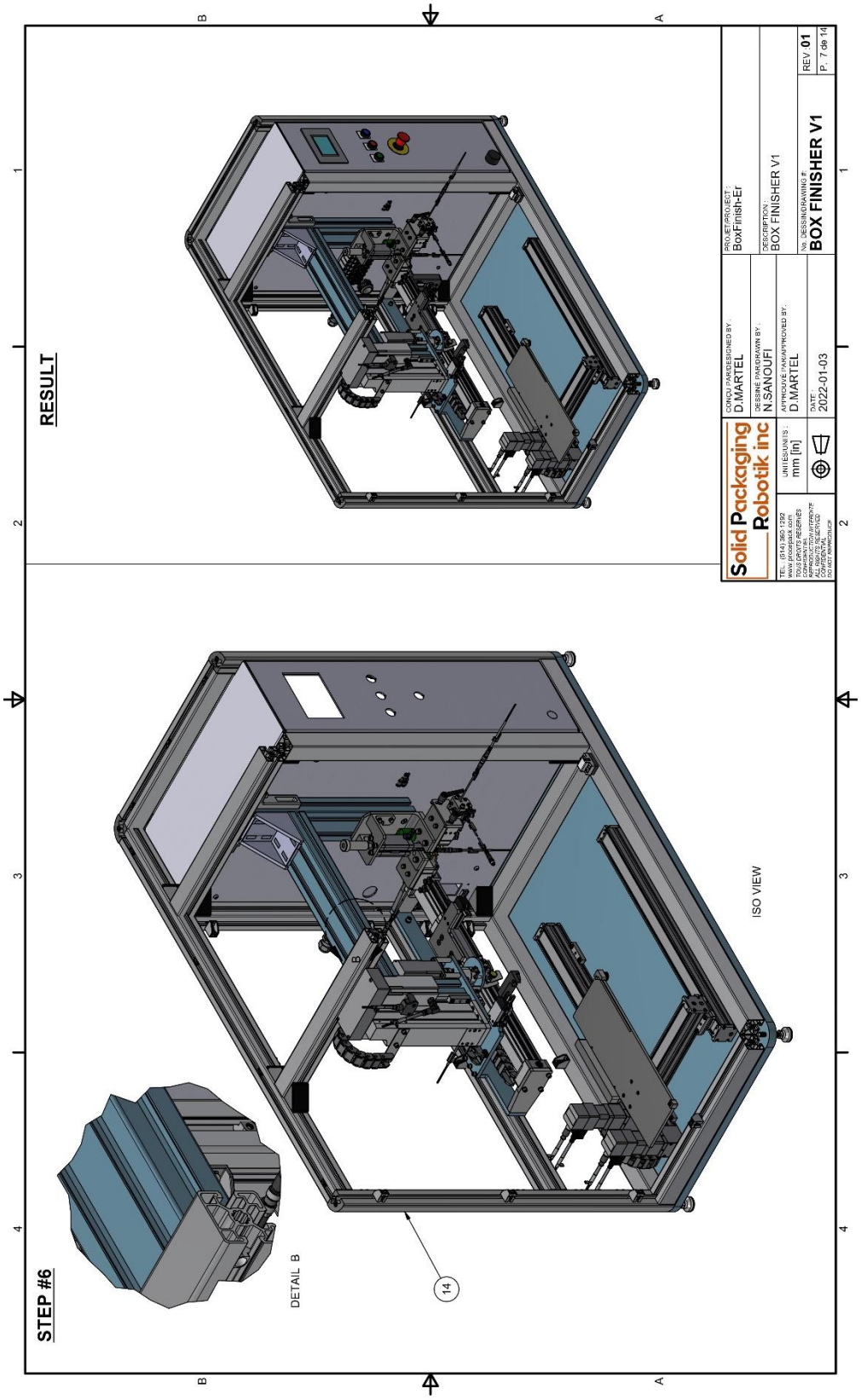

RESULT
STEP #1
ISO VIEW
14
16
14
16
Solid Packaging Robotik inc
DESIGNED BY: D.MARTEL
DESSINÉ PAR/DRAWN BY: N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-01-03
UNITÉS/UNITS: mm [in]
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: BOX FINISHER V1
No. DESSIN/DRAWING #: BOX FINISHER V1
REV 01
P. 2 de 14

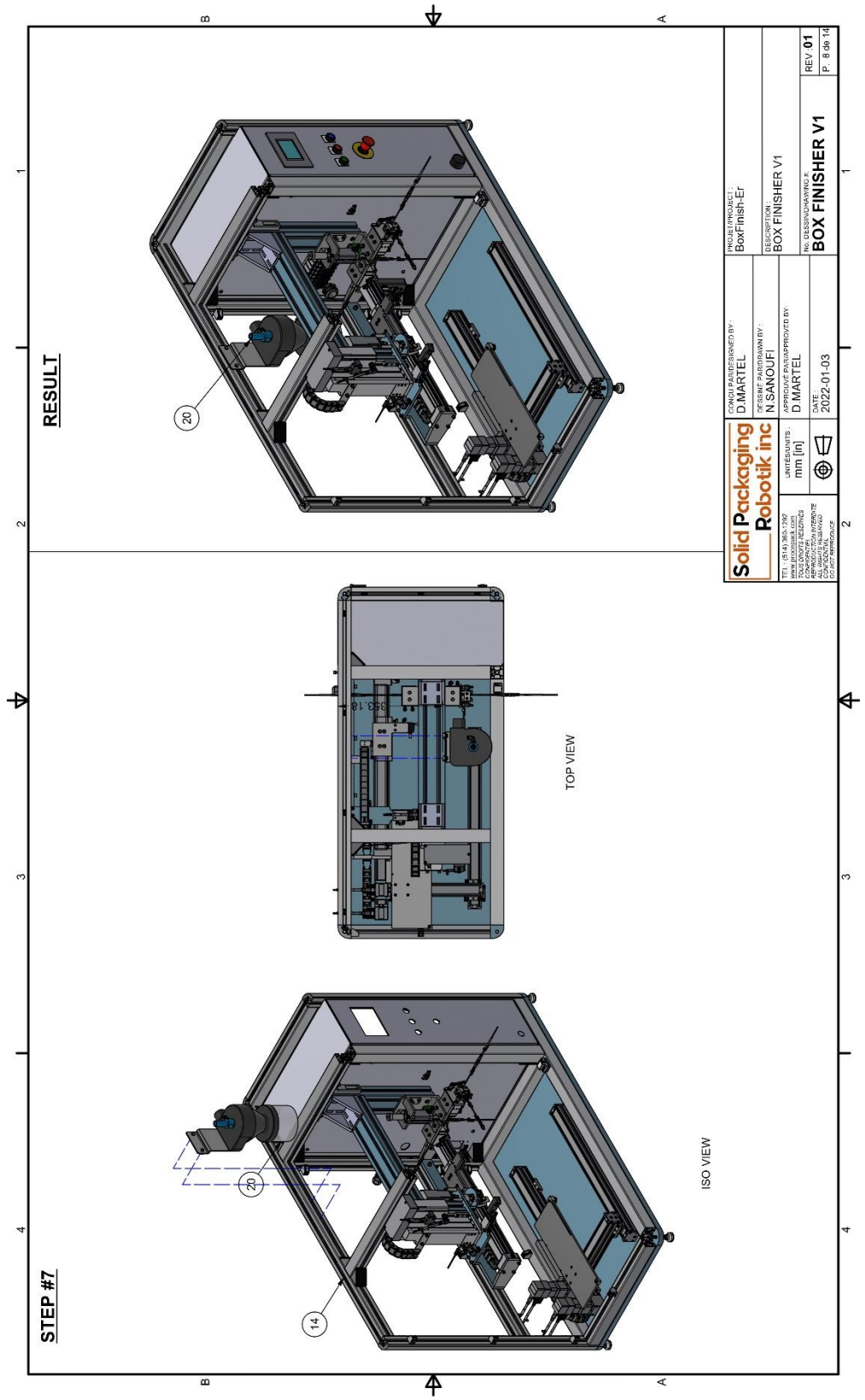

RESULT
STEP #2
ISO VIEW
14
16
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY :
D.MARTEL
DESSINÉ PAR/DRAWN BY :
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE :
2022-01-03
UNITÉS/UNITS :
mm [in]
PROJET/PROJECT :
BoxFinish-Er
DESCRIPTION :
BOX FINISHER V1
No. DESSIN/DRAWING #:
BOX FINISHER V1
REV: 01
P. 3 de 14

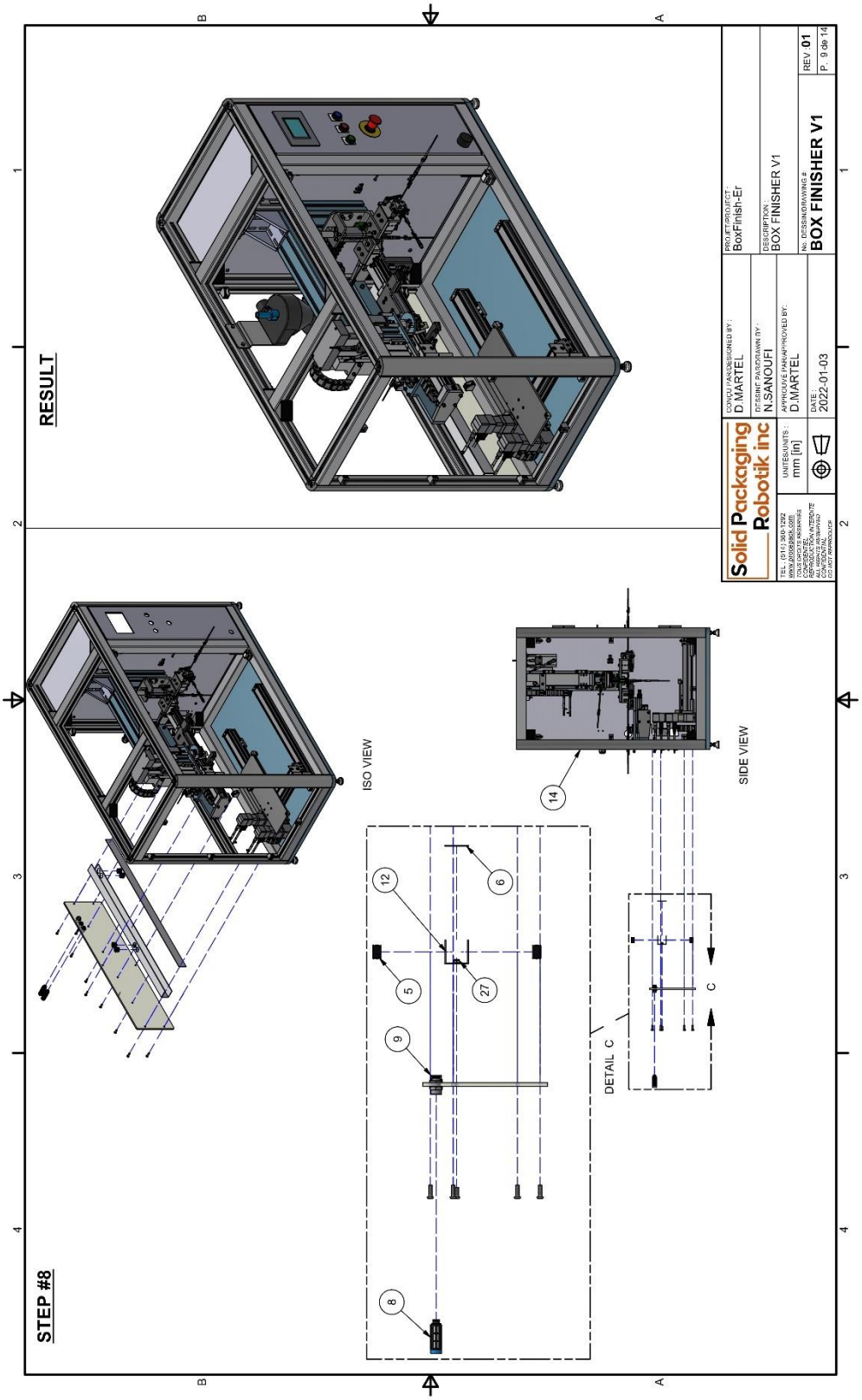

RESULT
STEP #3
ISO VIEW
DETAIL A
14
3
29
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY : D.MARTEL
DESSINÉ PAR/DRAWN BY : N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE 2022-01-03
UNITÉS/UNITS : mm [in]
PROJET/PROJECT BoxFinish-Er
DESCRIPTION BOX FINISHER V1
No. DESSIN/DRAWING # BOX FINISHER V1
REV 01
P. 4 de 14

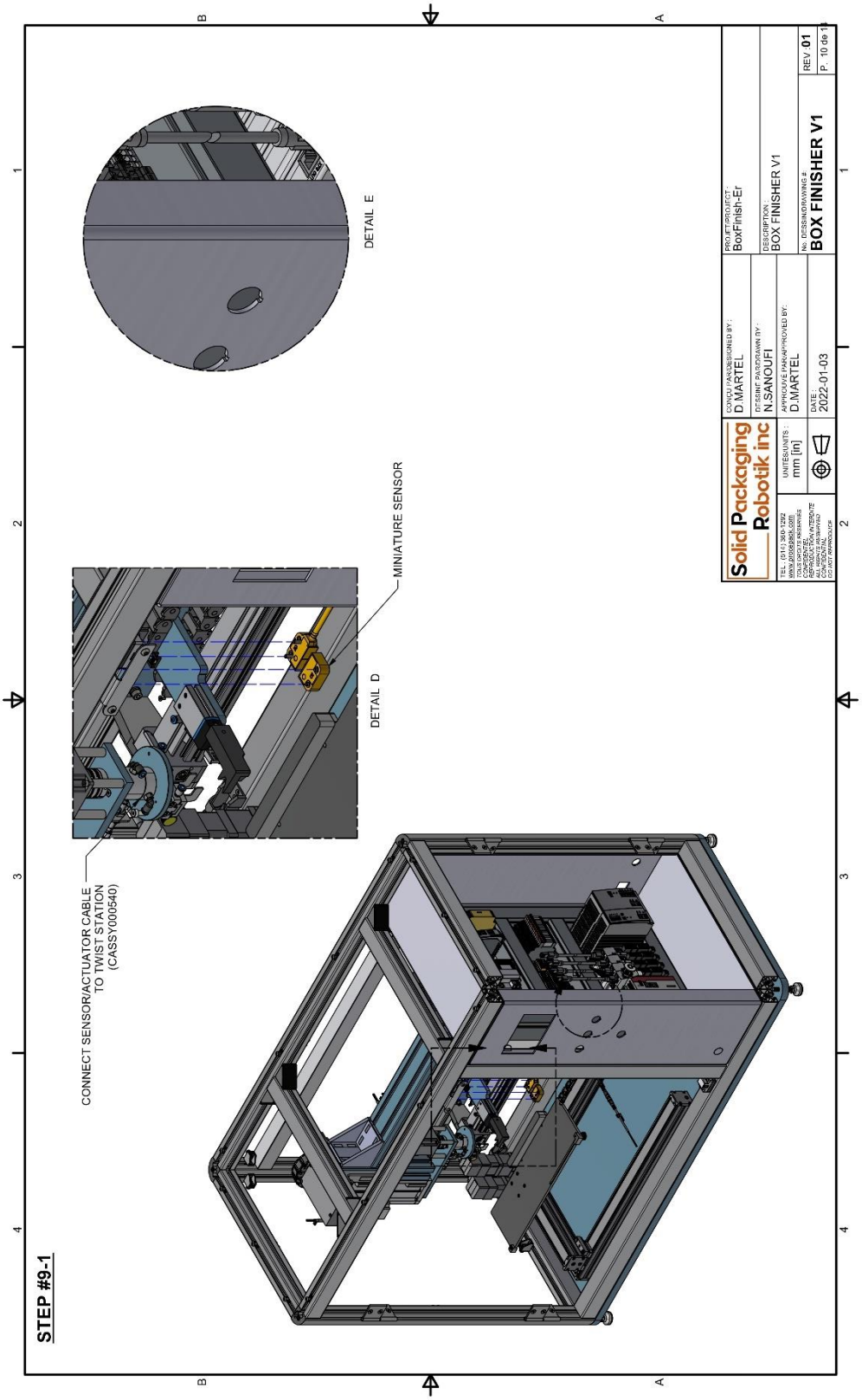

RESULT
STEP #4
TOP VIEW
ISO VIEW
14
14
Solid Packaging Robotik inc
PROJET / PROJECT:
BoxFinish-Er
DESCRIPTION
BOX FINISHER V1
No. DESSIN/DRAWING #:
BOX FINISHER V1
REV 01
P. 5 de 14
CONÇU PAR/DESIGNED BY:
D.MARTEL
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY
D.MARTEL
DATE
2022-01-03
UNITÉS/UNITS:
mm [in]

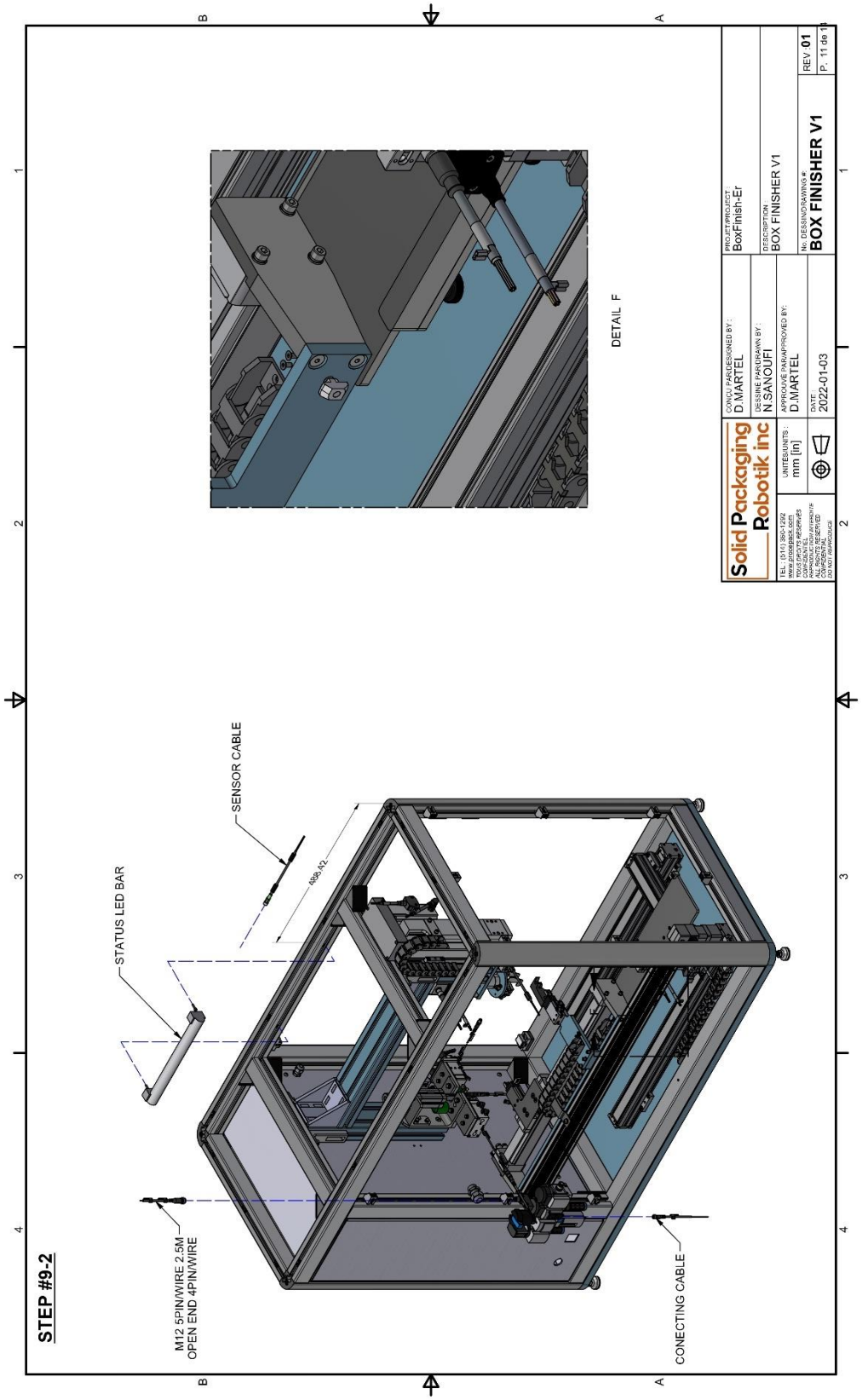

RESULT
STEP #5
ISO VIEW
14
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY :
D.MARTEL
DESSINÉ PAR/DRAWN BY :
N.SANOUFI
APPROUVÉ PAR/APPROVED BY :
D.MARTEL
DATE :
2022-01-03
UNITÉS/UNITS :
mm [in]
PROJET/PROJECT :
BoxFinish-Er
DESCRIPTION :
BOX FINISHER V1
No. DESSIN/DRAWING # :
BOX FINISHER V1
REV 01
P. 6 de 14

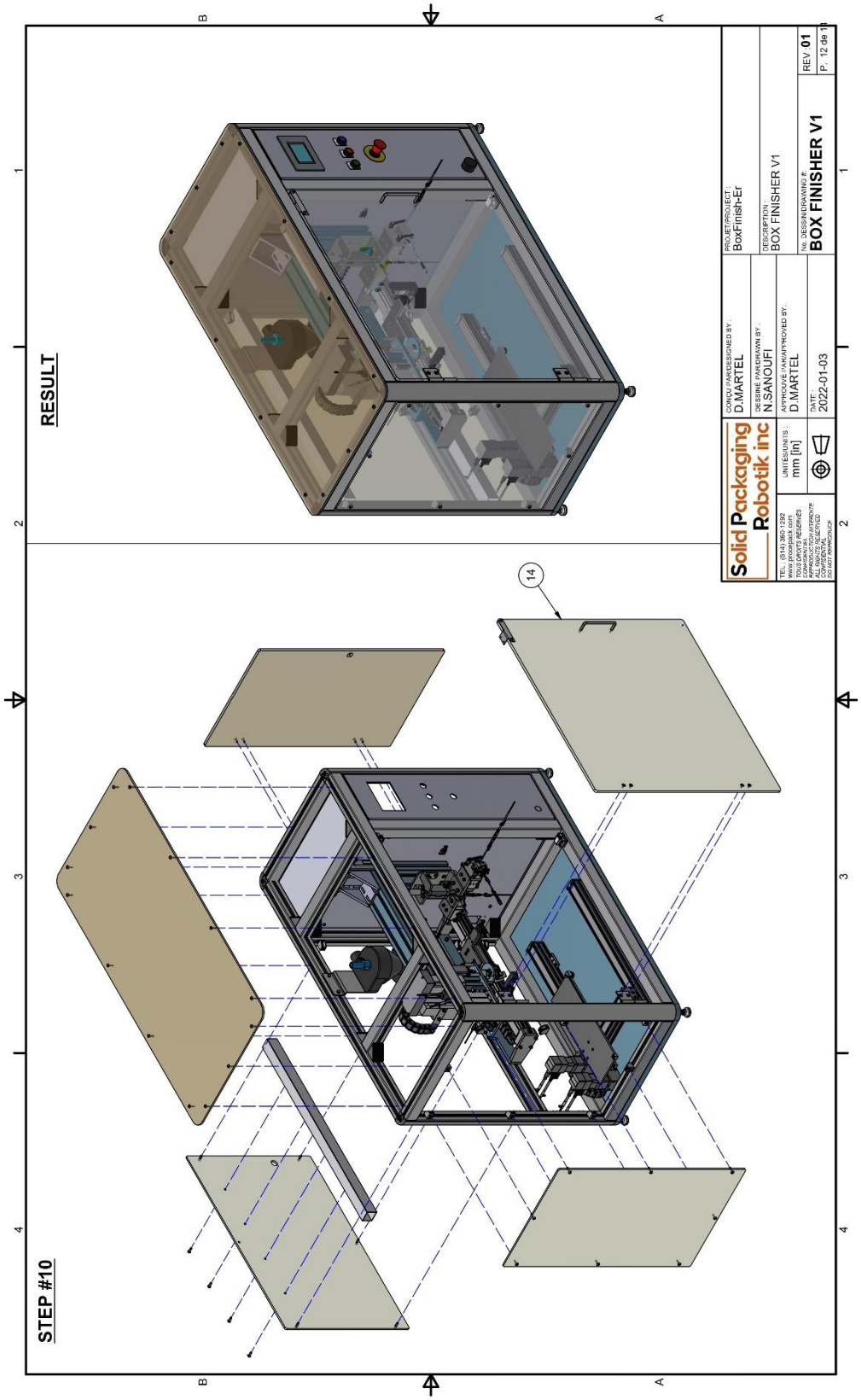

RESULT
STEP #6
ISO VIEW
DETAIL B
14
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY:
D.MARTEL
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-01-03
UNITÉS/UNITS:
mm [in]
PROJET/PROJECT:
BoxFinish-Er
DESCRIPTION:
BOX FINISHER V1
No. DESSIN/DRAWING #:
BOX FINISHER V1
REV 01
P. 7 de 14

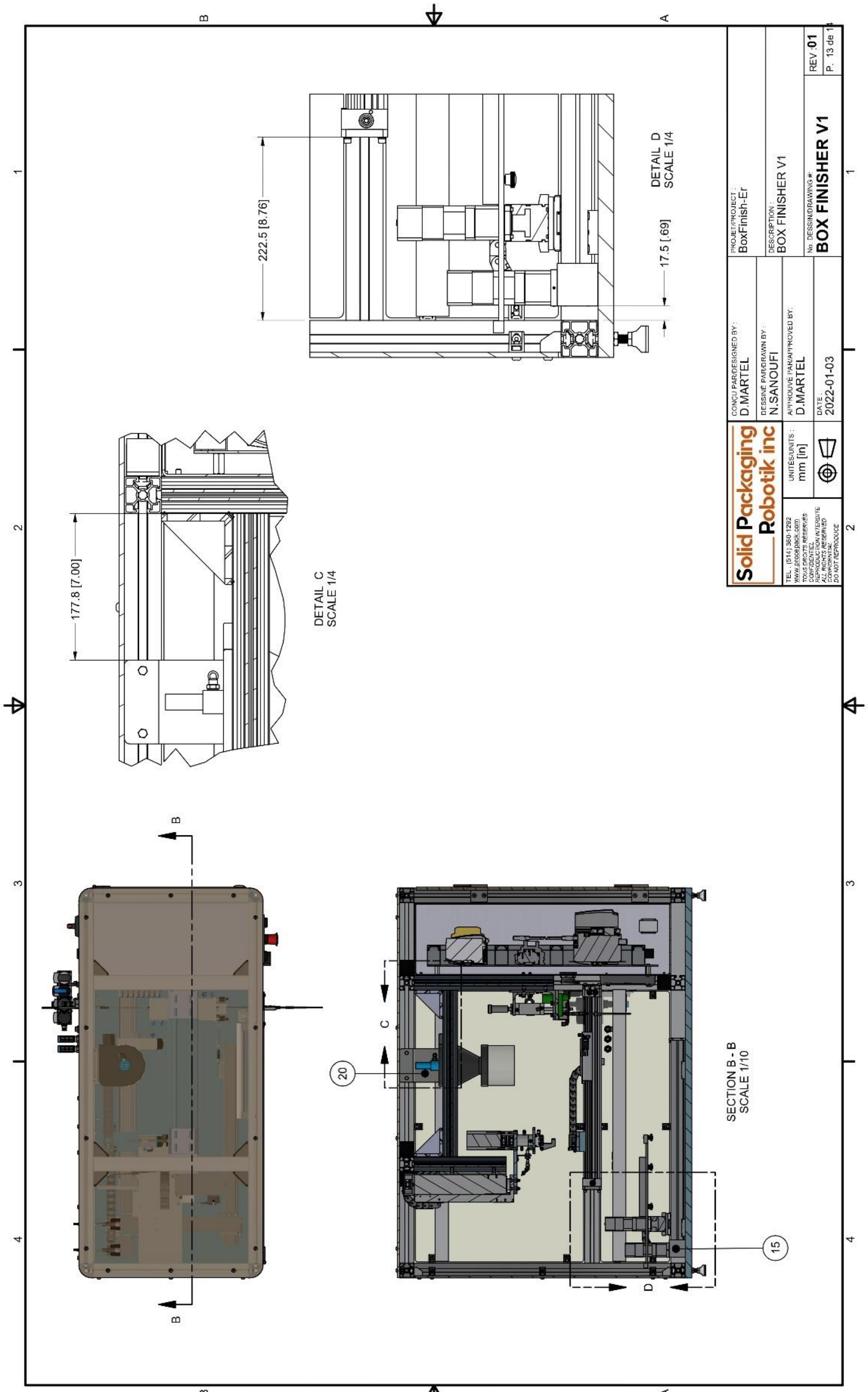

RESULT
20
TOP VIEW
ISO VIEW
STEP #7
20
14
Solid Packaging Robotik inc
PROJET/PROJECT:
BoxFinish-Er
DESCRIPTION:
BOX FINISHER V1
No. DESSIN/DRAWING #:
BOX FINISHER V1
REV 01
P. 8 de 14
CONÇU PAR/DESIGNED BY:
D.MARTEL
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE:
2022-01-03
UNITÉS/UNITS:
mm [in]


RESULT
ISO VIEW
SIDE VIEW
DETAIL C
STEP #8
Solid Packaging Robotik inc
PROJECT/PROJECT:
BoxFinish-Er
DESCRIPTION:
BOX FINISHER V1
No. DESSIN/DRAWING #:
BOX FINISHER V1
REV. 01
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE:
2022-01-03
UNITÉS/UNITS:
mm [in]


DETAIL E
MINIATURE SENSOR
DETAIL D
CONNECT SENSOR/ACTUATOR CABLE TO TWIST STATION (CASSY000540)
STEP #9-1
Solid Packaging Robotik inc
PROJECT/PROJECT: BoxFinish-Er
DESCRIPTION: BOX FINISHER V1
No. DESSIN/DRAWING #: BOX FINISHER V1
REV .01
P. 10 de 13
DATE: 2022-01-03
UNITES/UNITS : mm [in]


DETAIL F
SENSOR CABLE
STATUS LED BAR
M12 5PIN/WIRE 2.5M
OPEN END 4PIN/WIRE
CONECTING CABLE
STEP #9-2
Solid Packaging Robotik inc
BOX FINISHER V1
BoxFinish-Er
D.MARTEL
N.SANOUFI
D.MARTEL
2022-01-03
mm [in]
REV 01


RESULT
STEP #10
14
Solid Packaging Robotik inc
PROJET/PROJECT:
BoxFinish-Er
DESCRIPTION
BOX FINISHER V1
No. DESSIN/DRAWING #:
BOX FINISHER V1
REV. 01
CONÇU PAR/DESIGNED BY:
D.MARTEL
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-01-03
UNITÉS/UNITS:
mm [in]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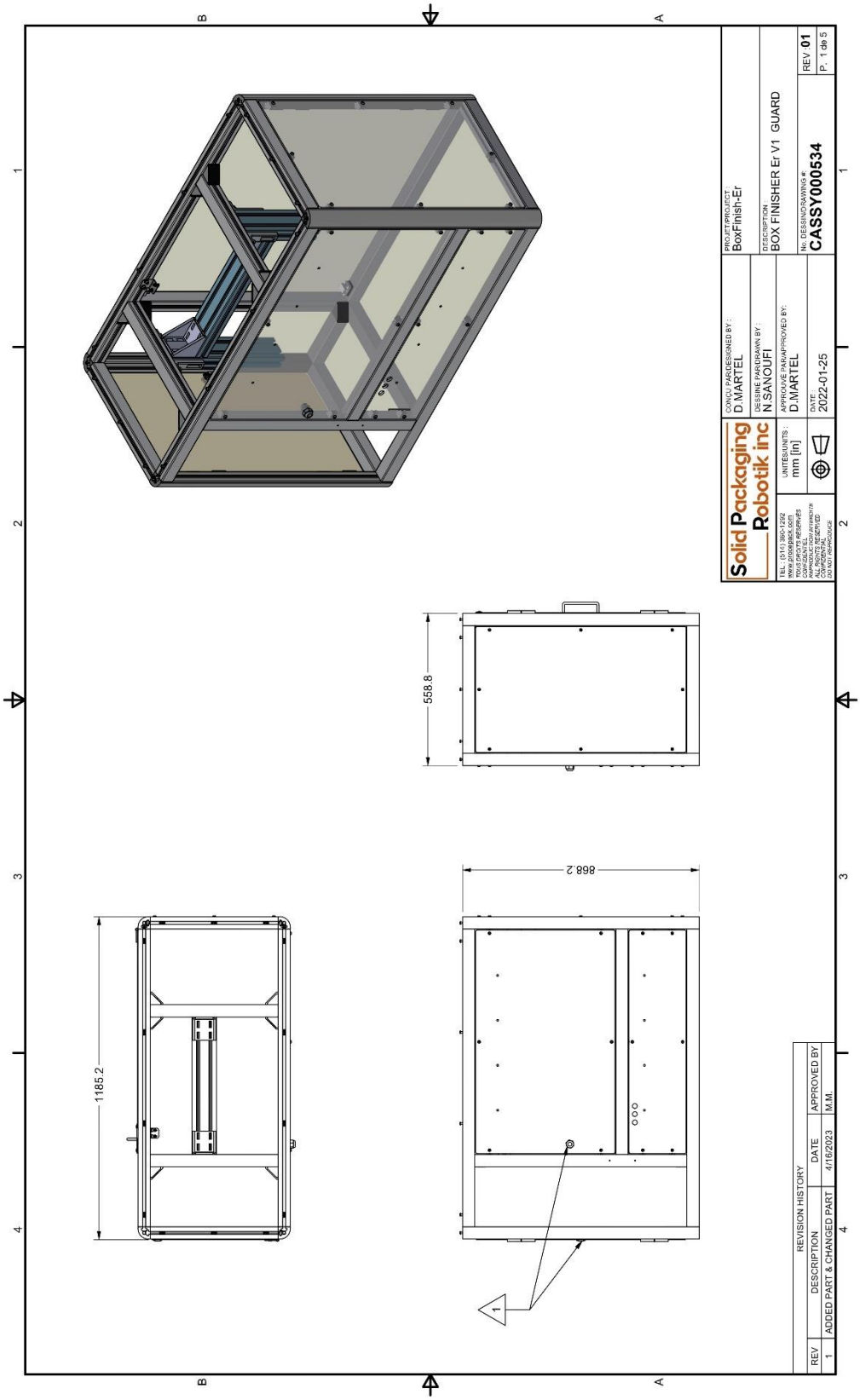
17.5 [.69]
DETAIL D
SCALE 1/4
177.8 [7.00]
DETAIL C
SCALE 1/4
SECTION B - B
SCALE 1/10
20
15
C
D
B
B
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: BOX FINISHER V1
No. DESSIN/DRAWING #: BOX FINISHER V1
REV :01
CONCU PAR/DESIGNED BY: D.MARTEL
DESSINÉ PAR/DRAWN BY: N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-01-03
UNITÉS/UNITS: mm [in]
Solid Packaging Robotik inc

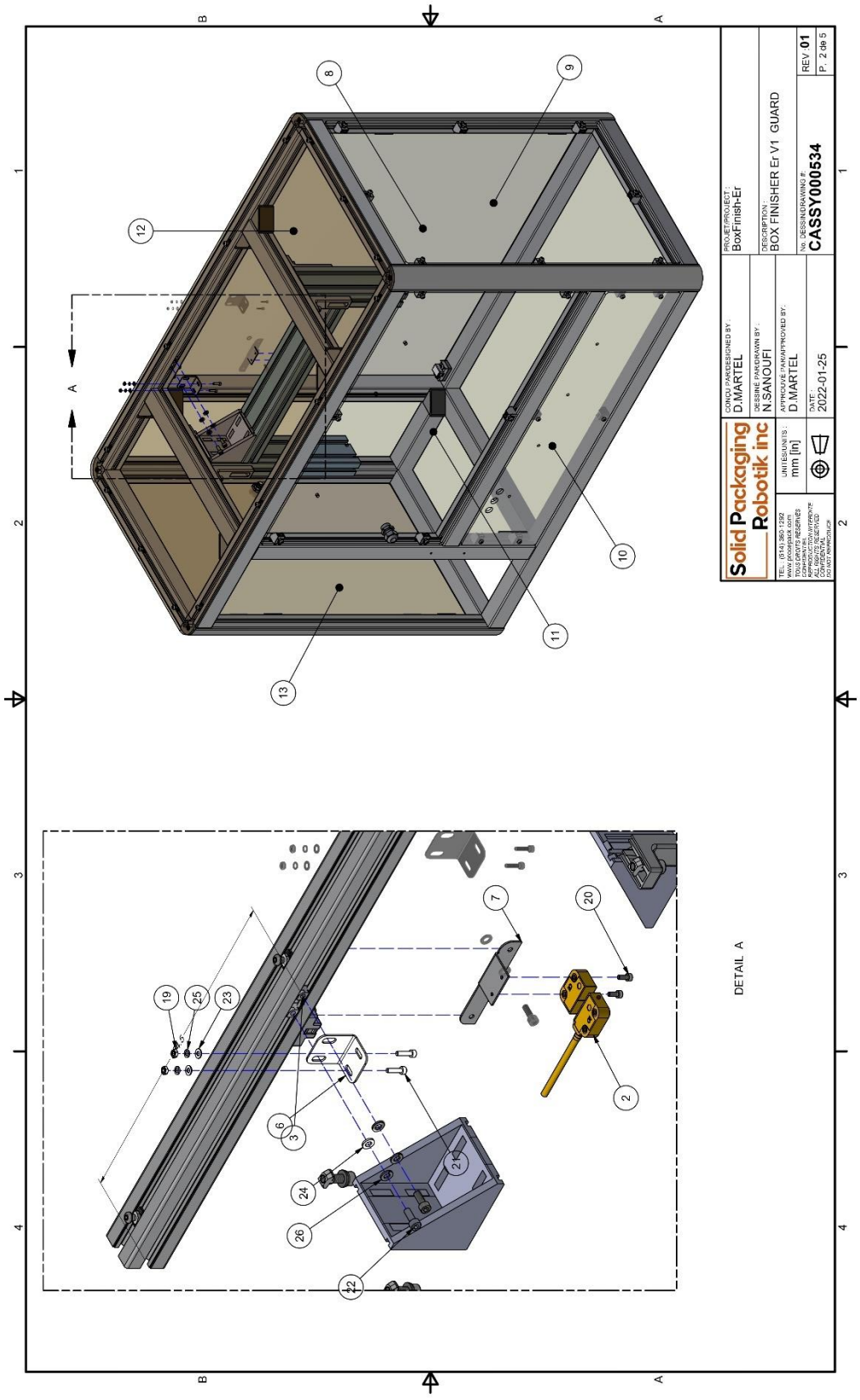
PARTS LIST

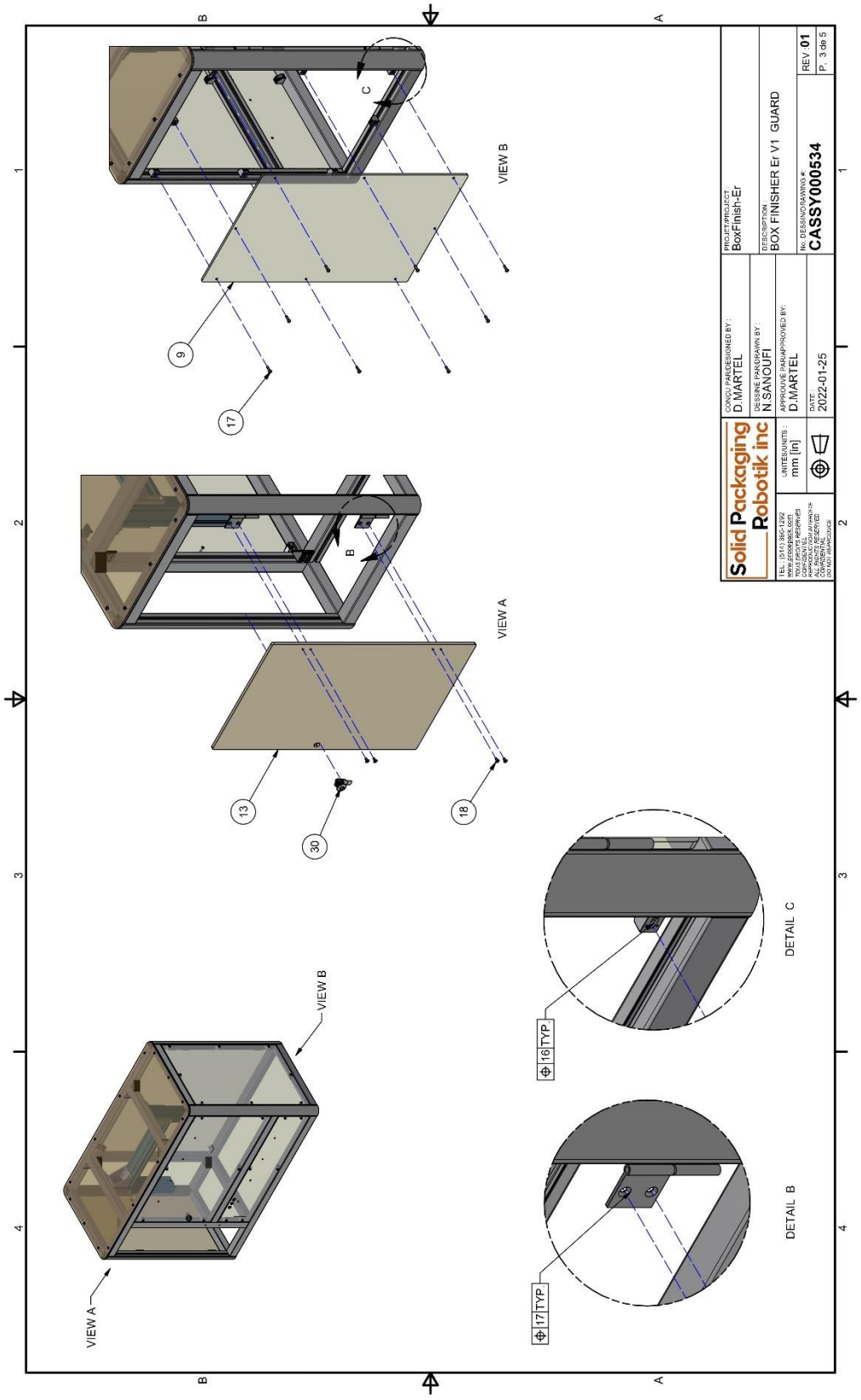
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	CAMEC001279	T-NUT M5
2	4	CAMEC000174	T- NUT M6 SS - PROFILE 10
3	4	CAMEC000263	OVERSIZED FLAT WASHER
4	4	CAMEC000648	T NUT KATIM M4 - PROFILE 10
5	8	CAMEC000882	GROMMETS
6	2	CAMEC001039	COVER FOR CABLE DUCT
7	1	CAMEC001264	POWER TRACK CON TRAY STATION
8	2	CAPNE000251	SILENCER
9	3	CAPNE000312	BULKHEAD G1/4 FEMALE Ø8MM
10	1	CAPNE000320	COUDE G1/4 Ø8MM
11	1	CAPRT003034	BRACKET - CABLE SUPPORT
12	1	CAPRT003037	CABLE DUCT
13	1	CAPRT003038	CABLE DUCT
14	1	CASSY000534	BOX FINISHER Er V1 GUARD
15	1	CASSY000535	CON TRAY STATION
16	1	CASSY000536	BASE
17	1	CASSY000540	TWIST STATION
18	1	CASSY000541	ELECTRIC BOX
19	1	CASSY000542	GRIPPER STATION
20	1	CASSY000711	CYCLONE
21	1	CASSY000722	AIR INFEED
23	8	S-BHCS - M6 x 16	BUTTON HEAD CAP SCREW
24	4	S-FHCS - M3x8	HEX SOCKET FLAT HEAD CAP SCREW
26	2	SN-NYLON LOCK NUT - M3	NYLON LOCK NUT
27	8	SN-NYLON LOCK NUT - M6	NYLON LOCK NUT
28	2	S-SHCS - M5 x 50	SOCKET HEAD CAP SCREW
29	4	S-SHCS - M6 x 16	SOCKET HEAD CAP SCREW
30	2	SW-FLAT WASHER - M5	FLAT WASHER
32	2	SW-SPLIT LOCK WASHER - M5	SPLIT LOCK WASHER
28	2	S-SHCS - M4 x 16	SOCKET HEAD CAP SCREW
39	1	CASSY000730	CUT MECHANISM
40	1	CAPRT003294	LEFT GRIPPER

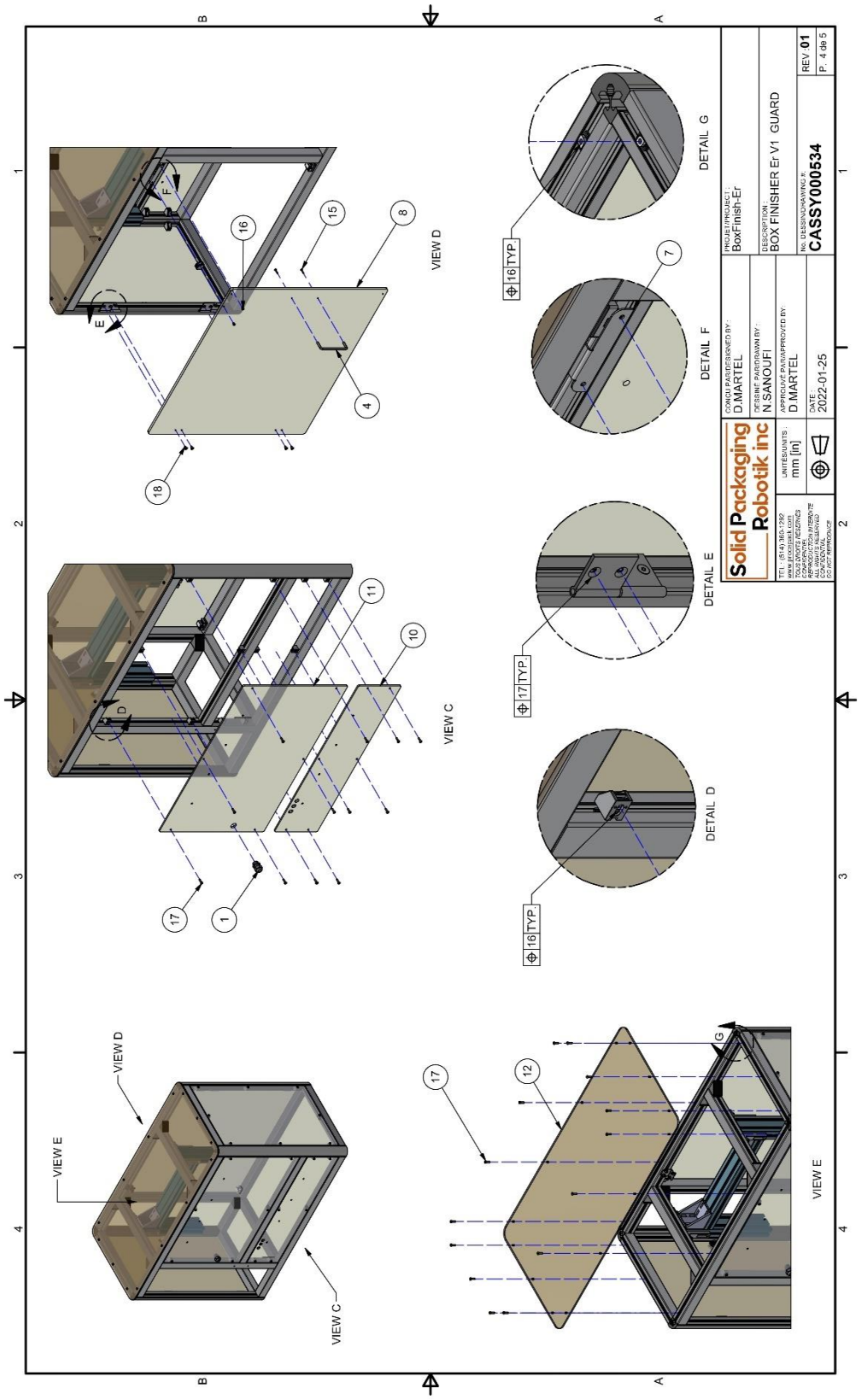
Solid Packaging Robotik inc
TEL : (514) 360-1292
www.procepack.com

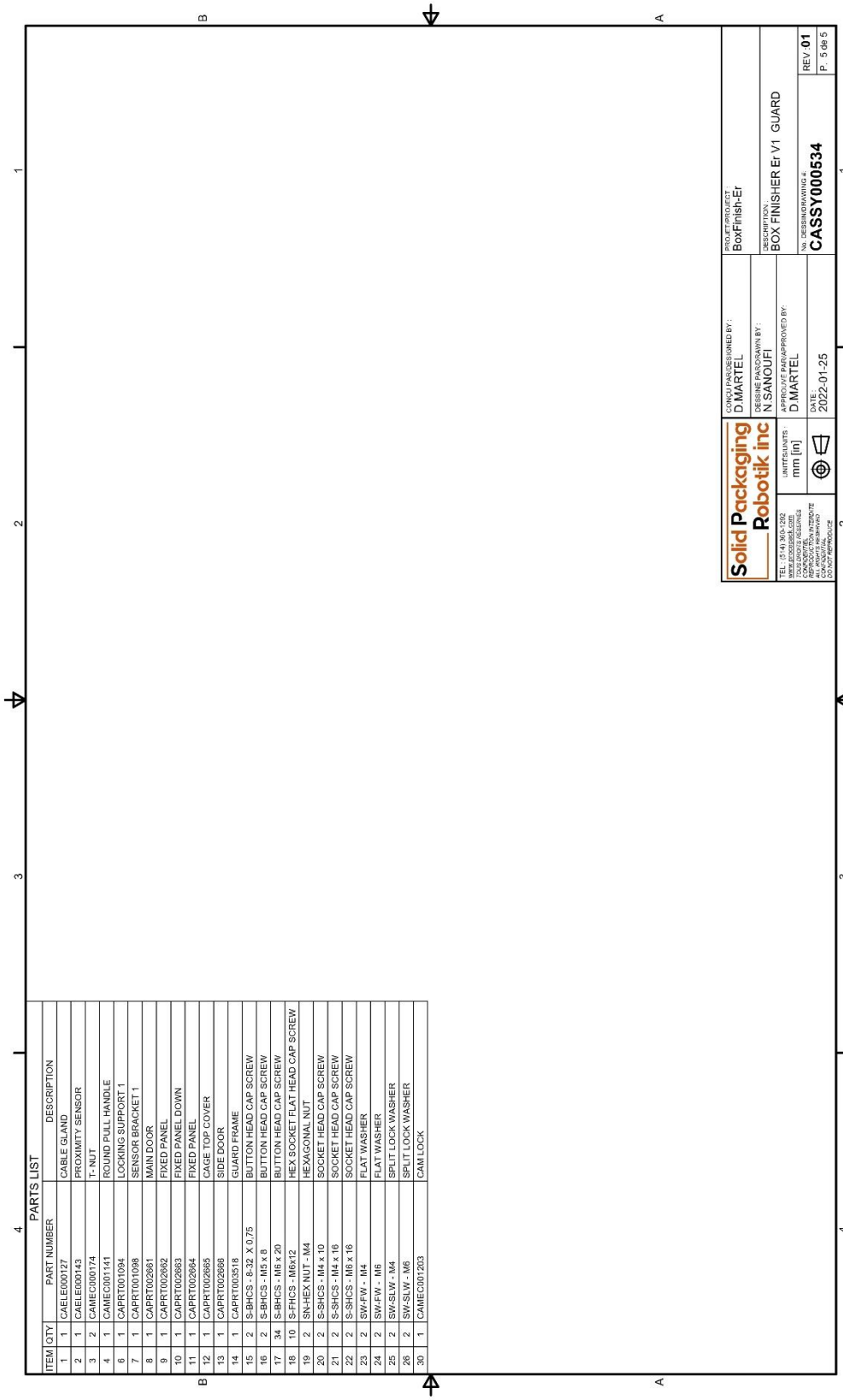
UNITÉS/UNITS : mm [in]	CONÇU PAR/DESIGNED BY : D.MARTEL	PROJET/PROJECT : BoxFinish-Er	
	DESSINÉ PAR/DRAWN BY : N.SANOUFI	DESCRIPTION : BOX FINISHER V1	
	APPROUVÉ PAR/APPROVED BY: D.MARTEL	No. DESSIN/DRAWING #: BOX FINISHER V1	REV :01
	DATE : 2022-01-03		P. 14 de 14


558.8
868.2
1185.2
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY : D.MARTEL
DESSINÉ PAR/DRAWN BY : N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE 2022-01-25
UNITÉS/UNITS : mm [in]
PROJET/PROJECT BoxFinish-Er
DESCRIPTION BOX FINISHER Er V1 GUARD
No. DESSIN/DRAWING # CASSY000534
REV 01
P. 1 de 5
REVISION HISTORY
REV | DESCRIPTION | DATE | APPROVED BY
1 | ADDED PART & CHANGED PART | 4/16/2023 | M.M.


DETAIL A
Solid Packaging Robotik inc
PROJET/PROJECT:
BoxFinish-Er
DESCRIPTION
BOX FINISHER Er V1 GUARD
No. DESSIN/DRAWING #:
CASSY000534
REV 01
P. 2 de 5
CONÇU PAR/DESIGNED BY:
D.MARTEL
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE:
2022-01-25
UNITÉS/UNITS:
mm [in]

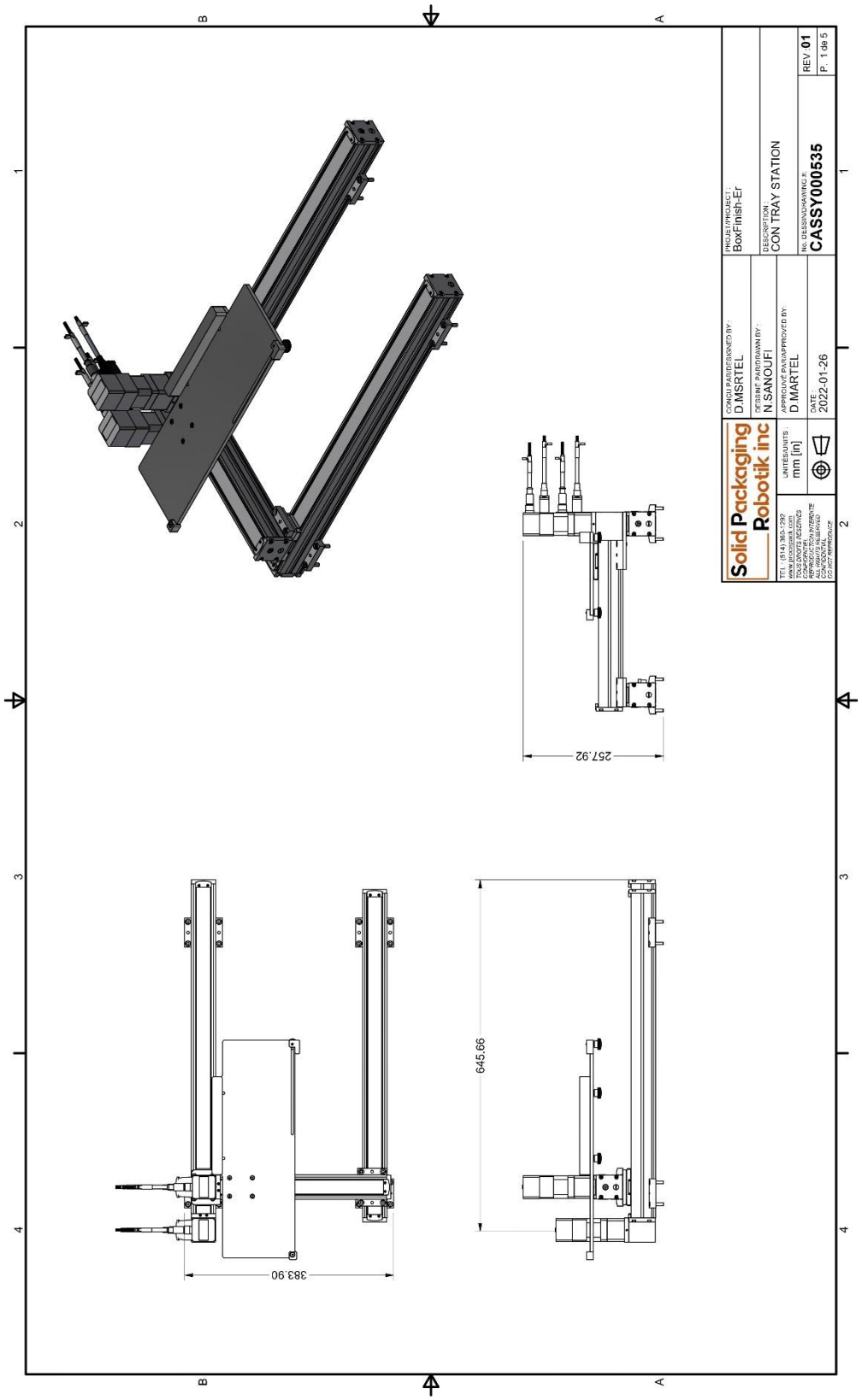

VIEW B
VIEW A
DETAIL C
DETAIL B
Solid Packaging Robotik inc
PROJET/PROJECT
BoxFinish-Er
DESCRIPTION
BOX FINISHER Er V1 GUARD
No. DESSIN/DRAWING #
CASSY000534
REV 01
P. 3 de 5
CONÇU PAR/DESIGNED BY :
D.MARTEL
DESSINÉ PAR/DRAWN BY :
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-01-25
UNITÉS/UNITS :
mm [in]

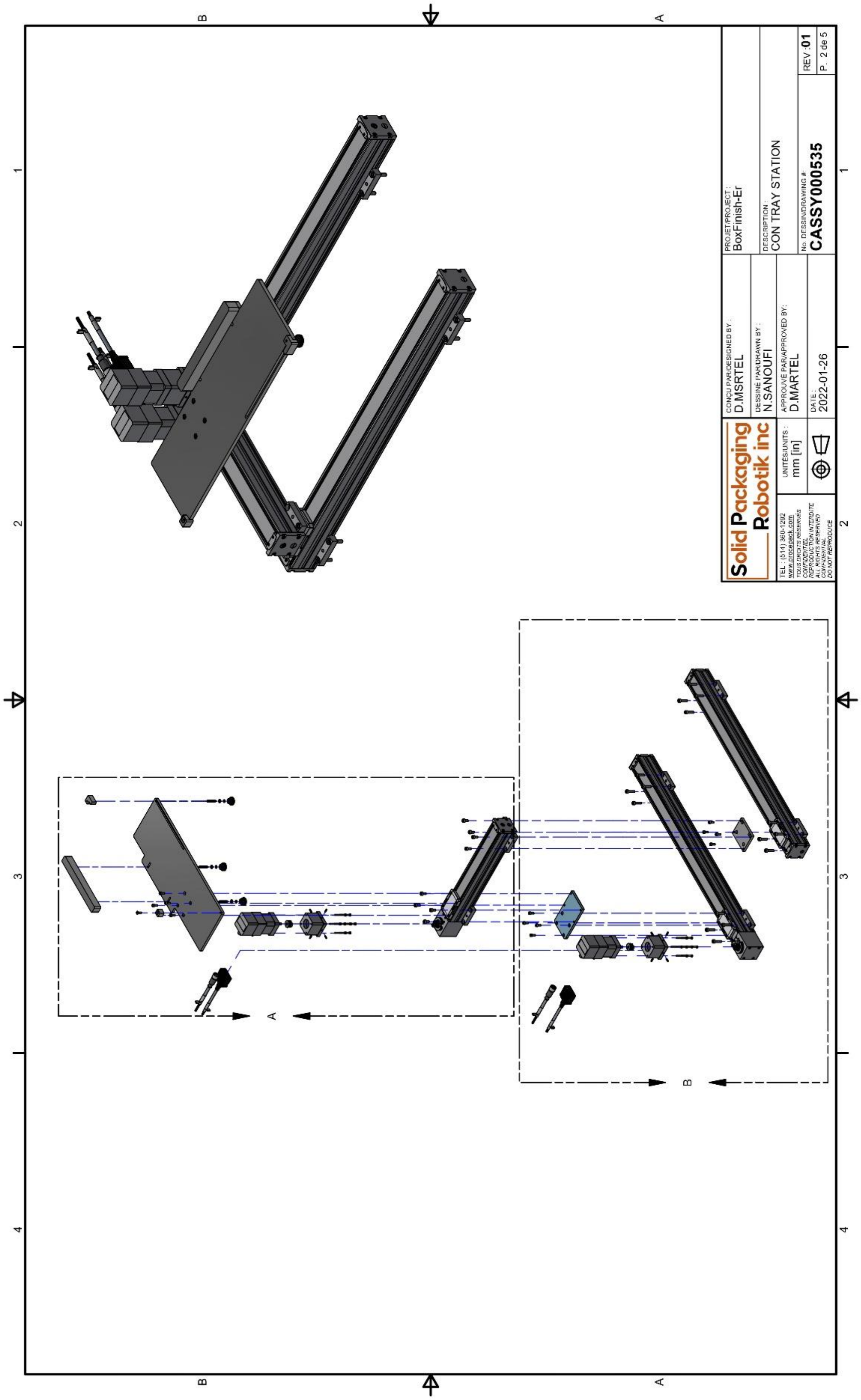

VIEW D
VIEW C
VIEW E
DETAIL G
DETAIL F
DETAIL E
DETAIL D
16 TYP
17 TYP
Solid Packaging Robotik inc
D.MARTEL
N.SANOUFI
D MARTEL
2022-01-25
BoxFinish-Er
BOX FINISHER Er V1 GUARD
CASSY000534
REV 01
P: 4 de 5

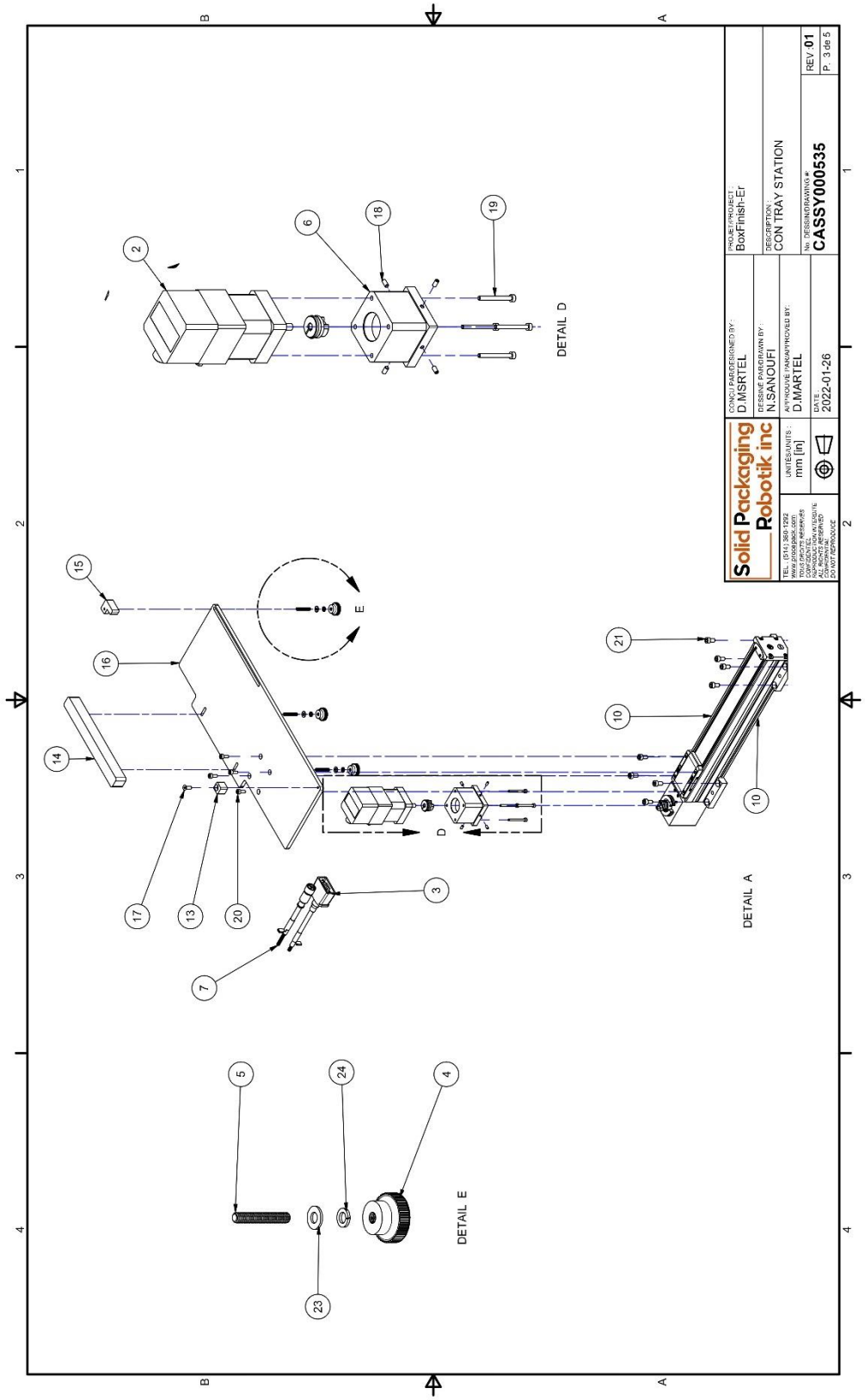


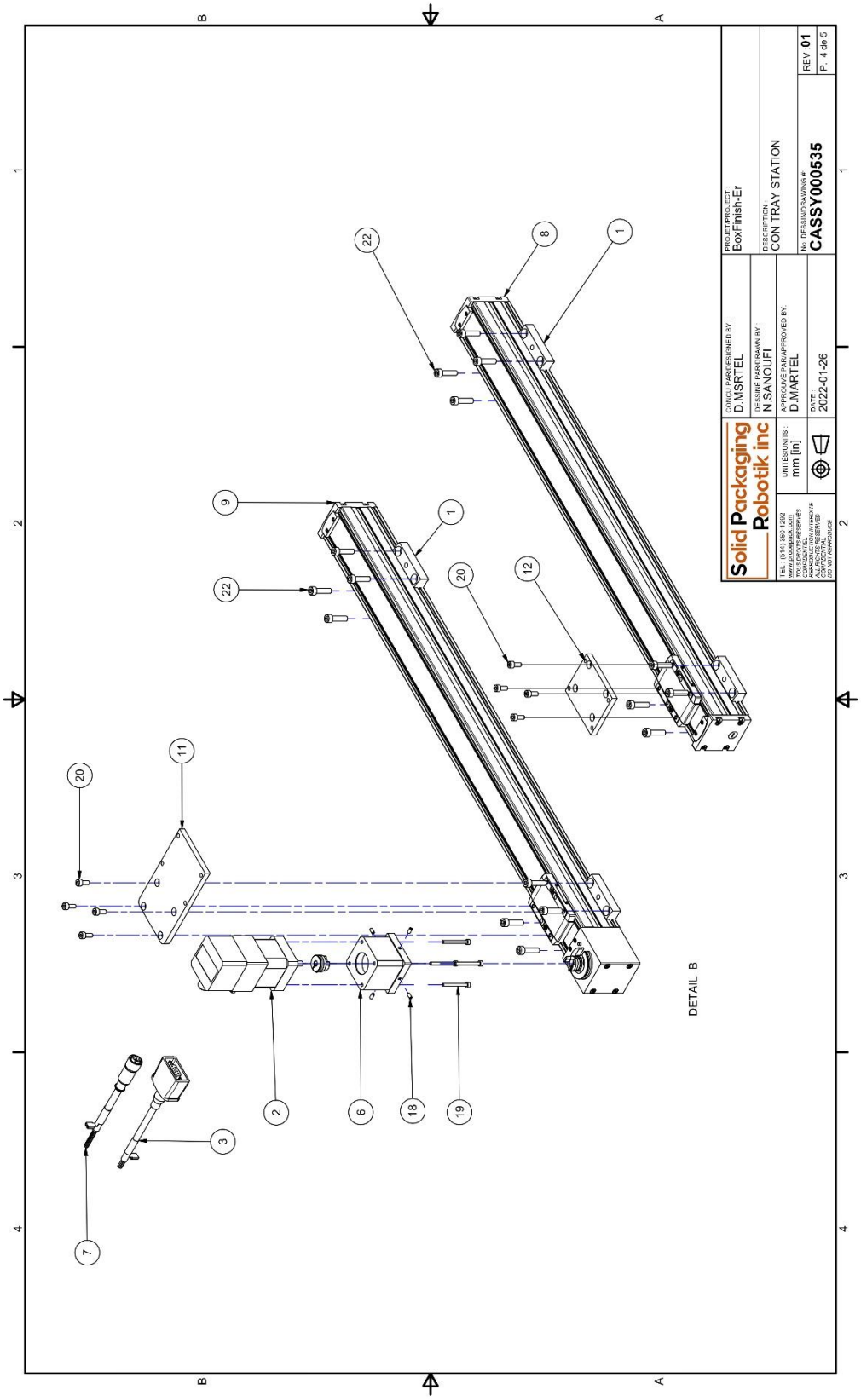
PARTS LIST

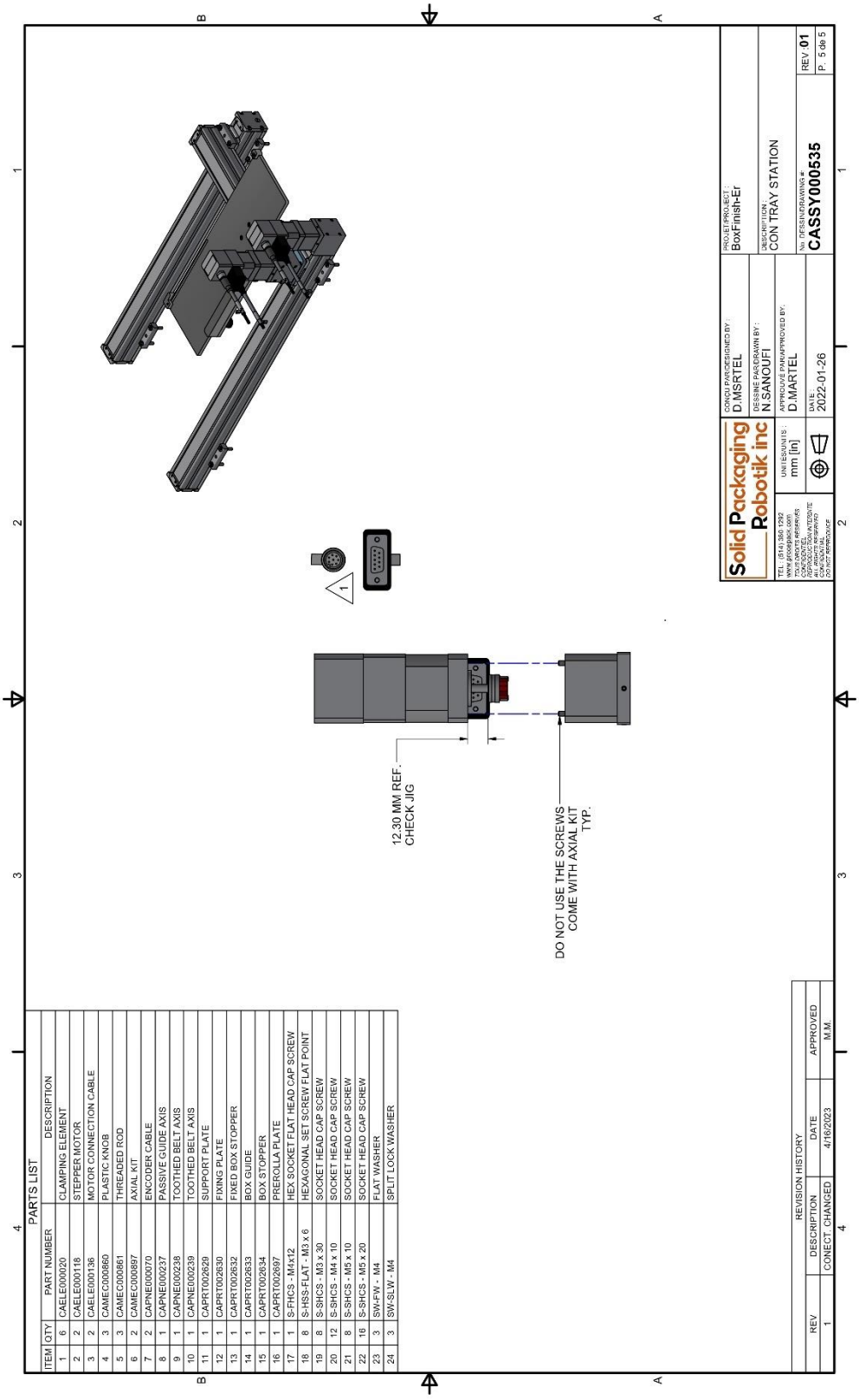
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CAELE000127	CABLE GLAND
2	1	CAELE000143	PROXIMITY SENSOR
3	2	CAMEC000174	T- NUT
4	1	CAMEC001141	ROUND PULL HANDLE
6	1	CAPRT001094	LOCKING SUPPORT 1
7	1	CAPRT001098	SENSOR BRACKET 1
8	1	CAPRT002661	MAIN DOOR
9	1	CAPRT002662	FIXED PANEL
10	1	CAPRT002663	FIXED PANEL DOWN
11	1	CAPRT002664	FIXED PANEL
12	1	CAPRT002665	CAGE TOP COVER
13	1	CAPRT002666	SIDE DOOR
14	1	CAPRT003518	GUARD FRAME
15	2	S-BHCS - 8-32 X 0,75	BUTTON HEAD CAP SCREW
16	2	S-BHCS - M5 x 8	BUTTON HEAD CAP SCREW
17	34	S-BHCS - M6 x 20	BUTTON HEAD CAP SCREW
18	10	S-FHCS - M6x12	HEX SOCKET FLAT HEAD CAP SCREW
19	2	SN-HEX NUT - M4	HEXAGONAL NUT
20	2	S-SHCS - M4 x 10	SOCKET HEAD CAP SCREW
21	2	S-SHCS - M4 x 16	SOCKET HEAD CAP SCREW
22	2	S-SHCS - M6 x 16	SOCKET HEAD CAP SCREW
23	2	SW-FW - M4	FLAT WASHER
24	2	SW-FW - M6	FLAT WASHER
25	2	SW-SLW - M4	SPLIT LOCK WASHER
26	2	SW-SLW - M6	SPLIT LOCK WASHER
30	1	CAMEC001203	CAM LOCK

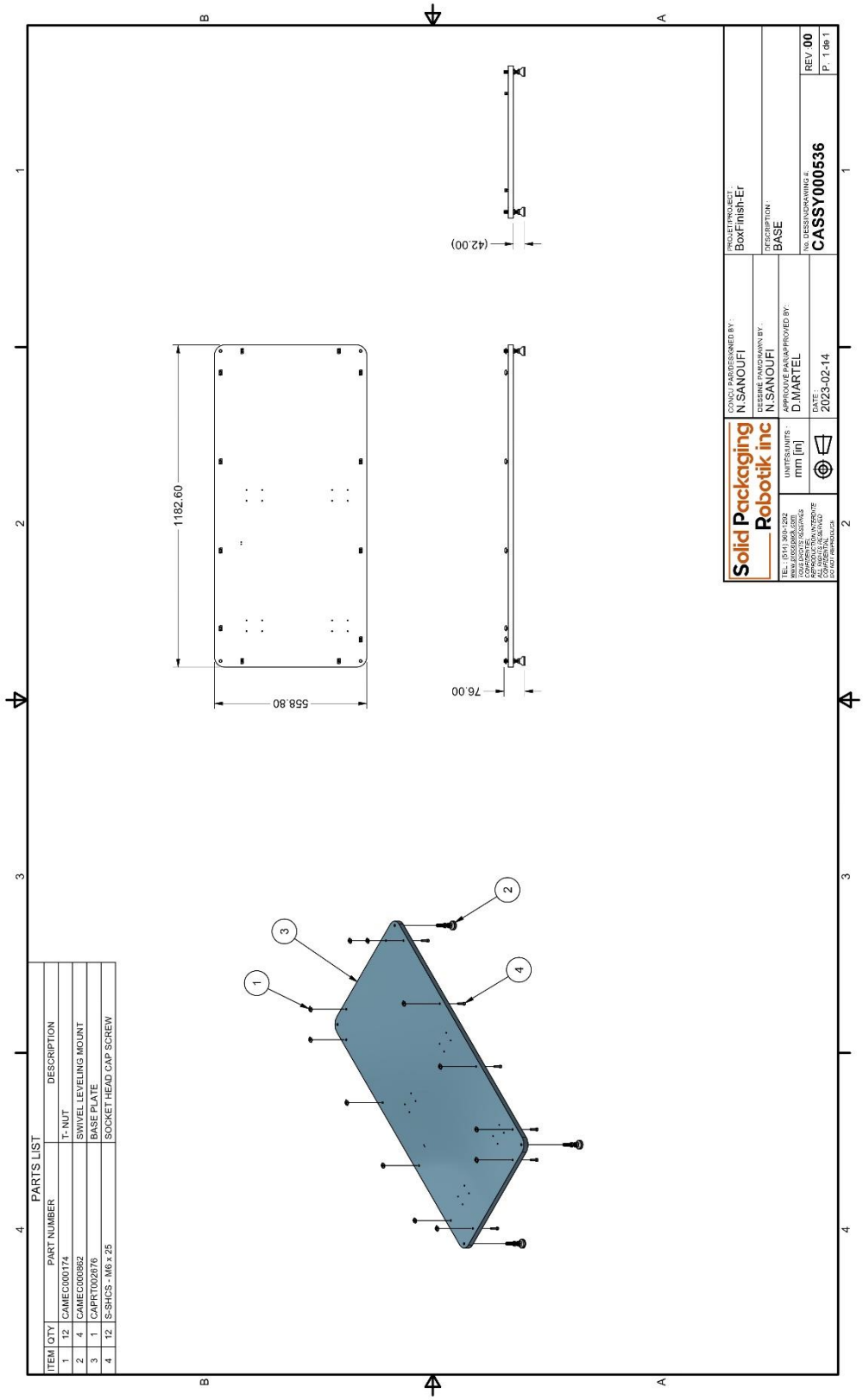

257.92
383.90
645.66
Solid Packaging Robotik inc
PROJET/PROJECT:
BoxFinish-Er
DESCRIPTION:
CON TRAY STATION
No. DESSIN/DRAWING #:
CASSY000535
REV 01
P: 1 de 5
CONÇU PAR/DESIGNED BY:
D.MSRTEL
DESSINÉ PAR/DRAWN BY:
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE:
2022-01-26
UNITÉS/UNITS:
mm [in]

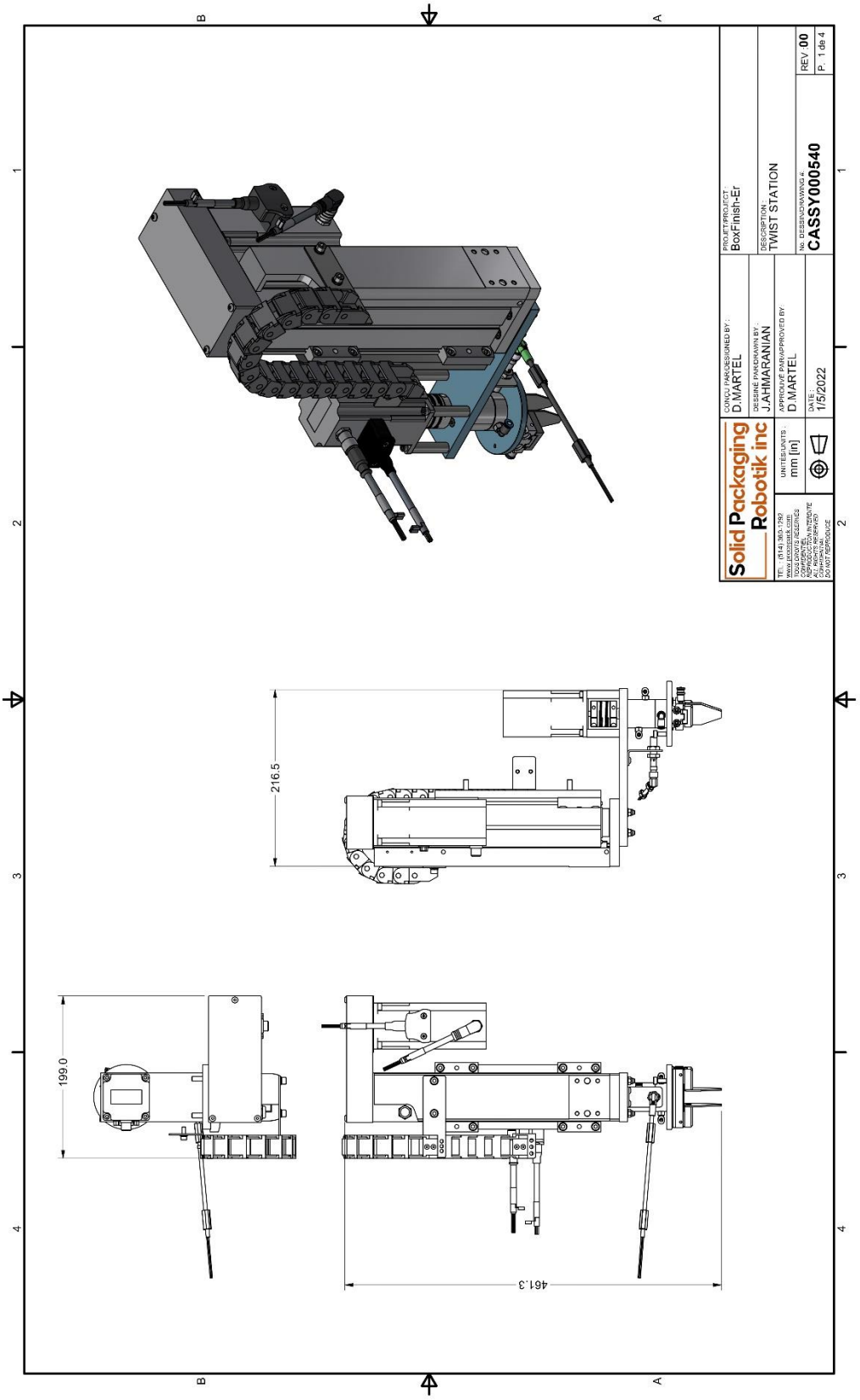

PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: CON TRAY STATION
No. DESSIN/DRAWING #: CASSY000535
REV.01
P. 2 de 5
CONÇU PAR/DESIGNED BY: D.MSRTEL
DESSINÉ PAR/DRAWN BY: N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-01-26
UNITÉS/UNITS: mm [in]
Solid Packaging Robotik inc

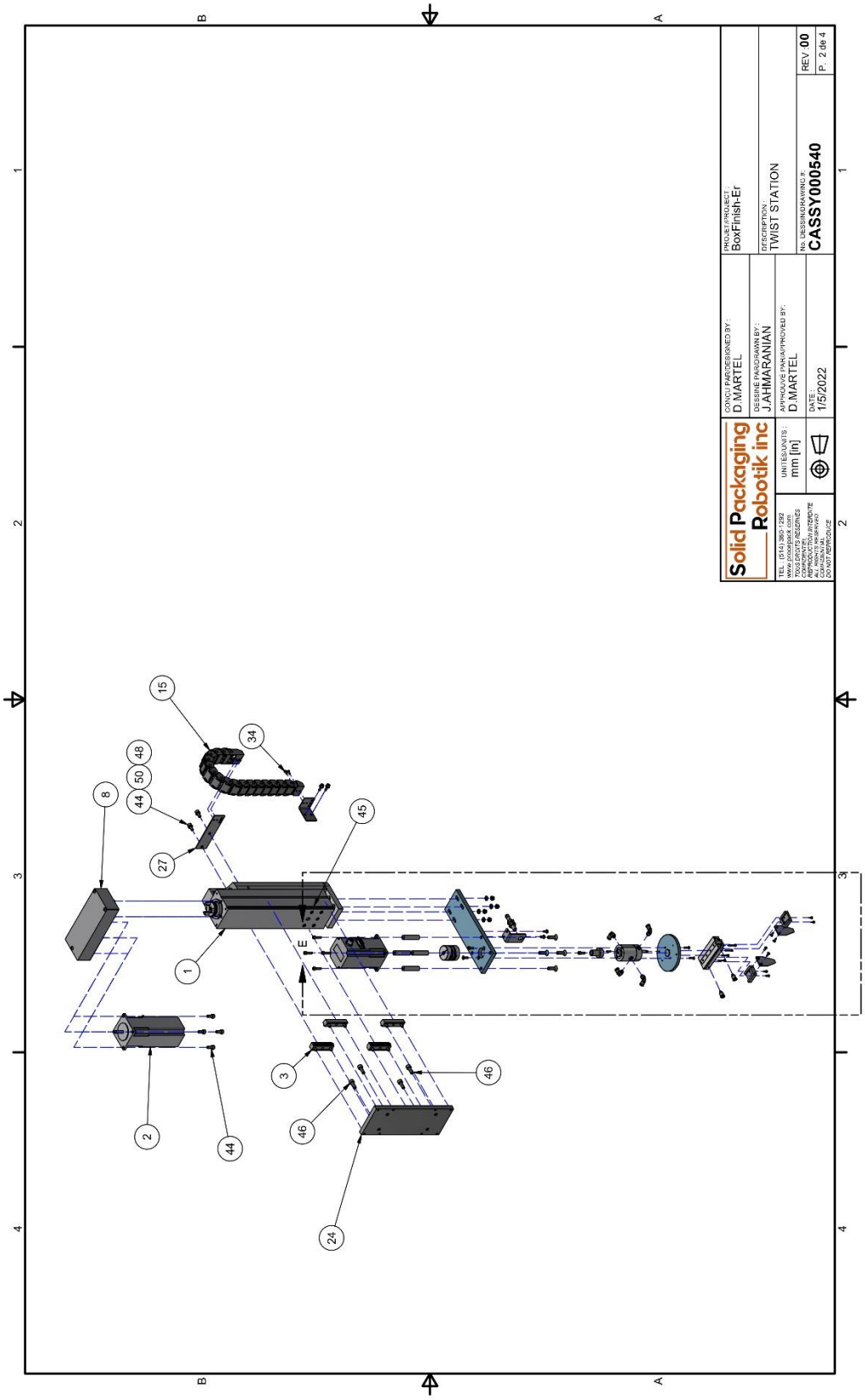

DETAIL D
DETAIL A
DETAIL E
Solid Packaging Robotik inc
PROJET/PROJECT
BoxFinish-Er
DESCRIPTION
CON TRAY STATION
DESSINÉ PAR/DRAWN BY :
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-01-26
UNITÉS/UNITS :
mm [in]
N° DESSIN/DRAWING #
CASSY000535
REV. 01
P. 3 de 5

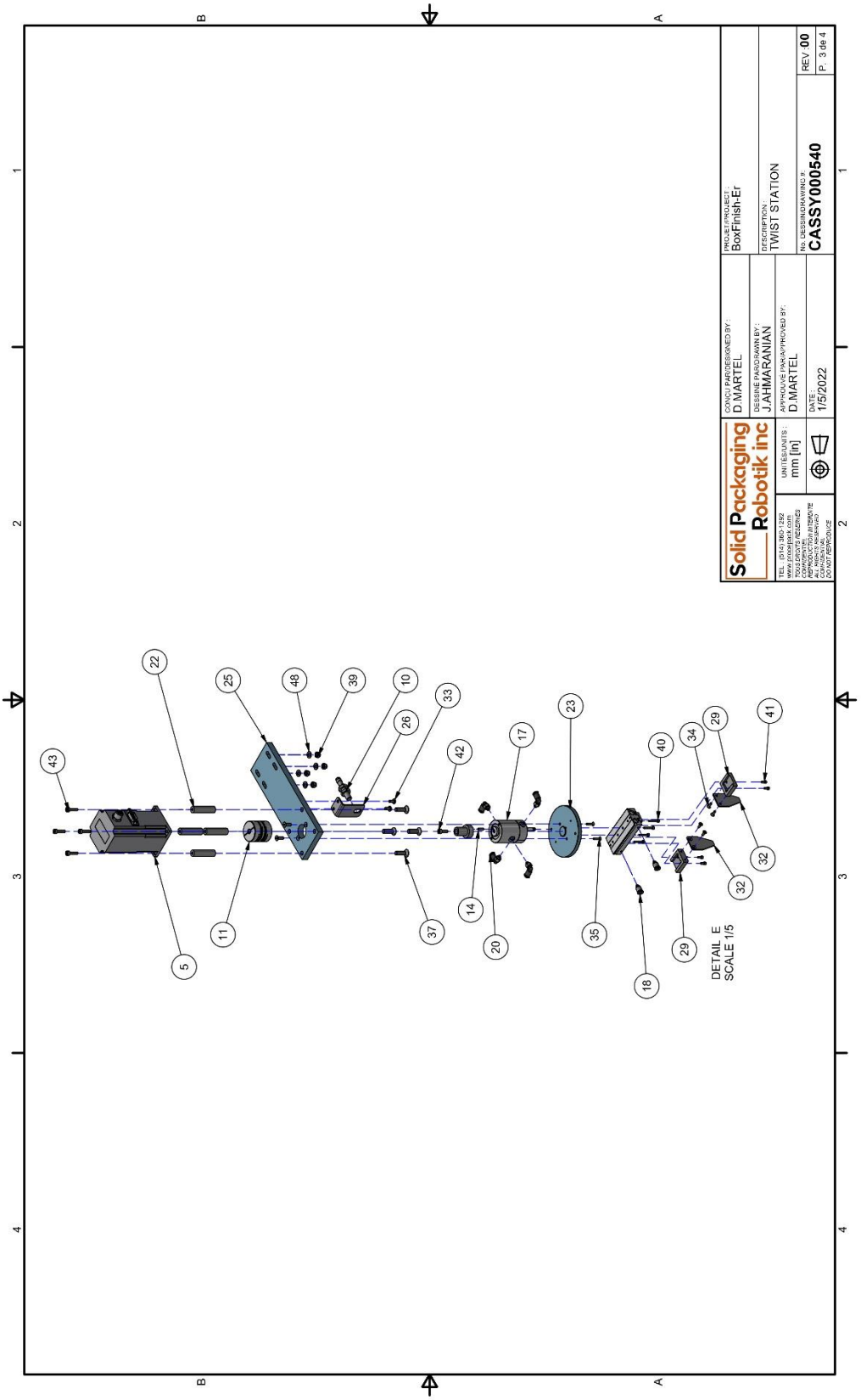

PROJET/PROJECT
BoxFinish-Er
DESCRIPTION
CON TRAY STATION
No. DESSIN/DRAWING #
CASSY000535
REV 01
P. 4 de 5
CONÇU PAR/DESIGNED BY :
D.MSRTEL
DESSINÉ PAR/DRAWN BY :
N.SANOUFI
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-01-26
UNITÉS/UNITS:
mm [in]
Solid Packaging Robotik inc
DETAIL B

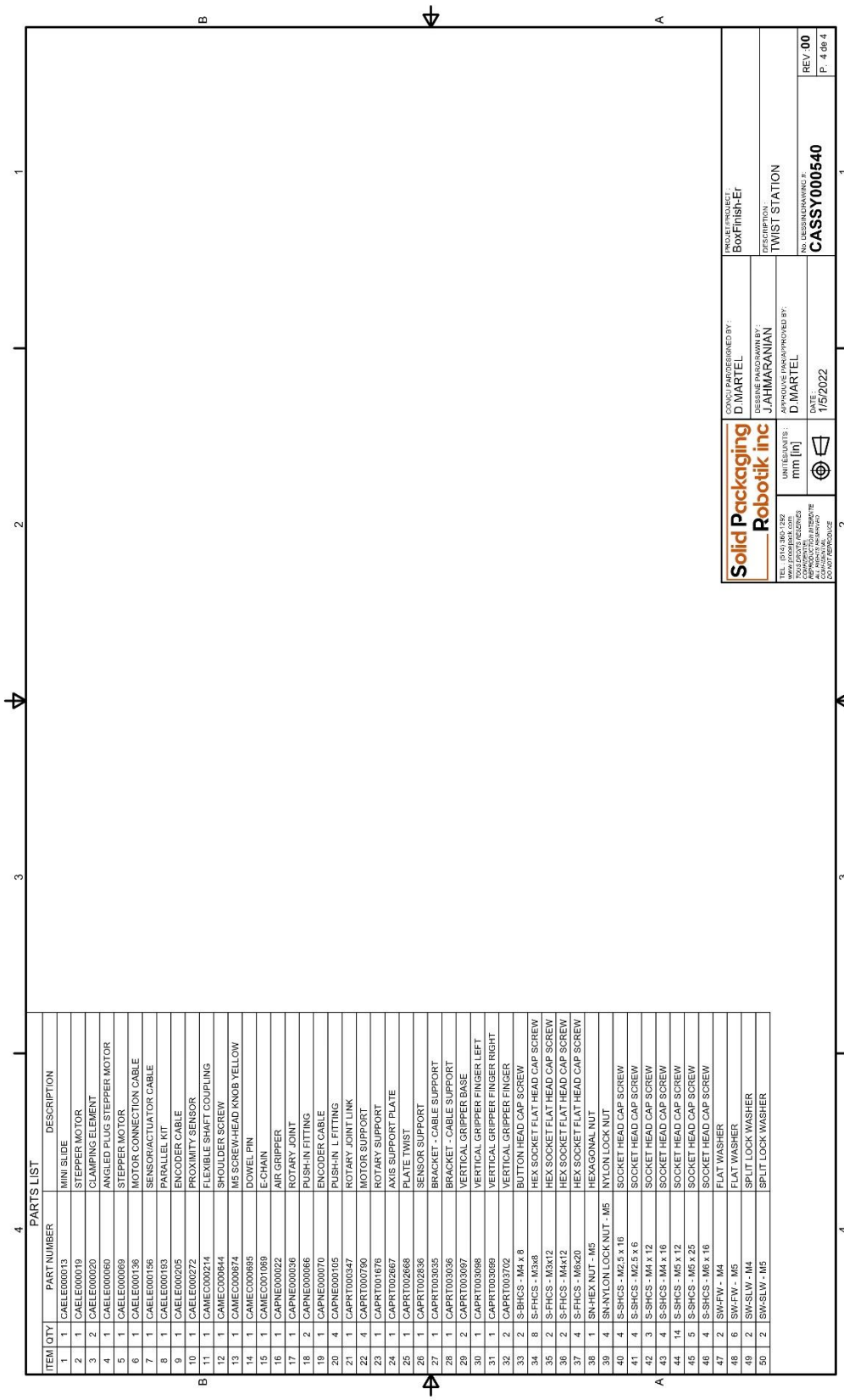

PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 6 CAELE000020 CLAMPING ELEMENT
2 2 CAELE000118 STEPPER MOTOR
3 2 CAELE000136 MOTOR CONNECTION CABLE
4 3 CAMEC000860 PLASTIC KNOB
5 3 CAMEC000861 THREADED ROD
6 2 CAMEC000897 AXIAL KIT
7 2 CAPNE000070 ENCODER CABLE
8 1 CAPNE000237 PASSIVE GUIDE AXIS
9 1 CAPNE000238 TOOTHED BELT AXIS
10 1 CAPNE000239 TOOTHED BELT AXIS
11 1 CAPRT002629 SUPPORT PLATE
12 1 CAPRT002630 FIXING PLATE
13 1 CAPRT002632 FIXED BOX STOPPER
14 1 CAPRT002633 BOX GUIDE
15 1 CAPRT002634 BOX STOPPER
16 1 CAPRT002697 PREROLLA PLATE
17 1 S-FHCS - M4x12 HEX SOCKET FLAT HEAD CAP SCREW
18 8 S-HSS-FLAT - M3 x 6 HEXAGONAL SET SCREW FLAT POINT
19 8 S-SHCS - M3 x 30 SOCKET HEAD CAP SCREW
20 12 S-SHCS - M4 x 10 SOCKET HEAD CAP SCREW
21 8 S-SHCS - M5 x 10 SOCKET HEAD CAP SCREW
22 16 S-SHCS - M5 x 20 SOCKET HEAD CAP SCREW
23 3 SW-FW - M4 FLAT WASHER
24 3 SW-SLW - M4 SPLIT LOCK WASHER
REVISION HISTORY
REV DESCRIPTION DATE APPROVED
1 CONECT. CHANGED 4/16/2023 MM
12.30 MM REF.
CHECK JIG
DO NOT USE THE SCREWS
COME WITH AXIAL KIT
TYP.
Solid Packaging Robotik inc
DESSINÉ PAR/DRAWN BY: N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
UNITÉS/UNITS: mm [in]
DATE: 2022-01-26
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: CON TRAY STATION
No. DESSIN/DRAWING #: CASSY000535
REV .01
P. 5 de 5


PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 12 CAMEC000174 T- NUT
2 4 CAMEC000862 SWIVEL LEVELING MOUNT
3 1 CAPRT002876 BASE PLATE
4 12 S-SHCS - M6 x 25 SOCKET HEAD CAP SCREW
1182.60
558.80
(42.00)
76.00
Solid Packaging Robotik inc
DESSINÉ PAR/DRAWN BY: N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2023-02-14
UNITÉS/UNITS: mm [in]
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: BASE
No. DESSIN/DRAWING #: CASSY000536
REV. 00
P. 1 de 1


PROJET/PROJECT:
BoxFinish-Er
DESCRIPTION:
TWIST STATION
No. DESSIN/DRAWING #:
CASSY000540
REV 00
P. 1 de 4
CONÇU PAR/DESIGNED BY:
D.MARTEL
DESSINÉ PAR/DRAWN BY:
J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE:
1/5/2022
UNITÉS/UNITS:
mm [in]
Solid Packaging Robotik inc
216.5
199.0
461.3


Solid Packaging Robotik inc
PROJET/PROJECT :
BoxFinish-Er
DESCRIPTION :
TWIST STATION
No. DESSIN/DRAWING # :
CASSY000540
REV 00
P. 2 de 4
CONÇU PAR/DESIGNED BY :
D.MARTEL
DESSINÉ PAR/DRAWN BY :
J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY :
D.MARTEL
DATE :
1/5/2022
UNITÉS/UNITS :
mm [in]
15
34
48
50
44
8
27
45
1
E
3
46
2
44
46
24


PROJET / PROJECT :
BoxFinish-Er
DESCRIPTION :
TWIST STATION
No. DESSIN / DRAWING # :
CASSY000540
REV 00
P. : 3 de 4
CONÇU PAR / DESIGNED BY :
D.MARTEL
DESSINÉ PAR / DRAWN BY :
J.AHMARANIAN
APPROUVÉ PAR / APPROVED BY :
D.MARTEL
DATE :
1/5/2022
UNITÉS / UNITS :
mm [in]
Solid Packaging Robotik inc
DETAIL E
SCALE 1/5



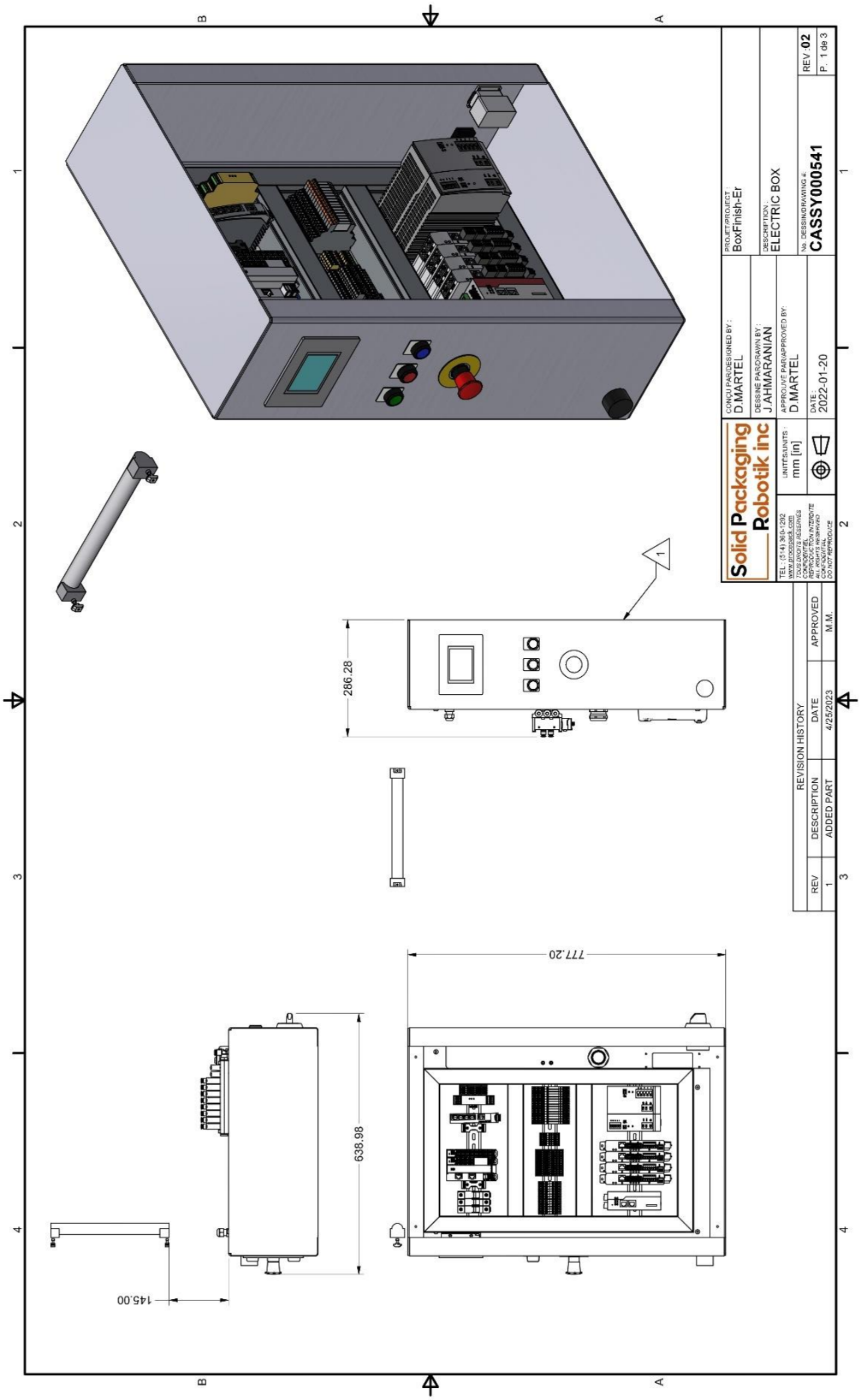
PARTS LIST

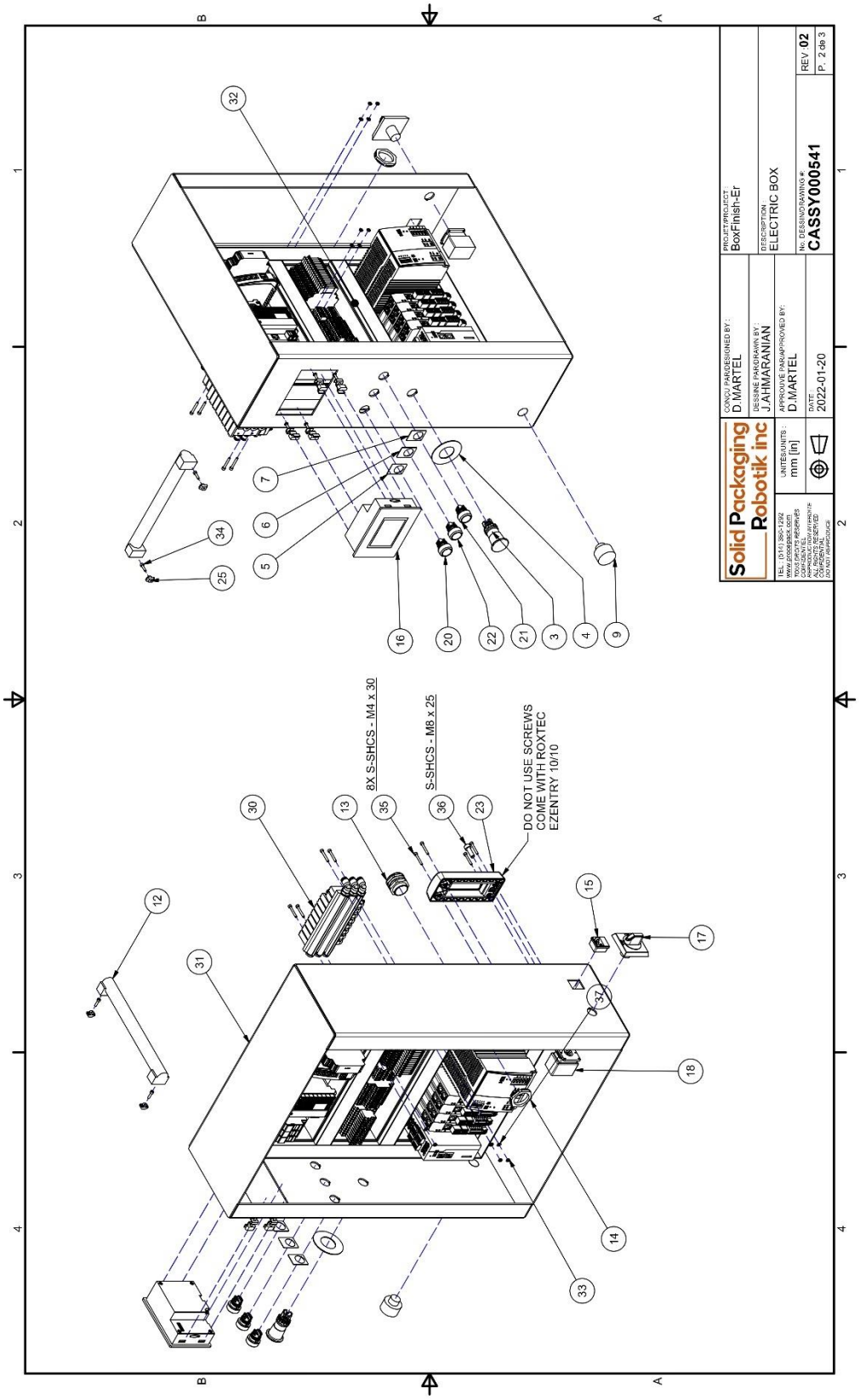
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CAELE000013	MINI SLIDE
2	1	CAELE000019	STEPPER MOTOR
3	2	CAELE000020	CLAMPING ELEMENT
4	1	CAELE000060	ANGLED PLUG STEPPER MOTOR
5	1	CAELE000069	STEPPER MOTOR
6	1	CAELE000136	MOTOR CONNECTION CABLE
7	1	CAELE000156	SENSOR/ACTUATOR CABLE
8	1	CAELE000193	PARALLEL KIT
9	1	CAELE000205	ENCODER CABLE
10	1	CAELE000272	PROXIMITY SENSOR
11	1	CAMEC000214	FLEXIBLE SHAFT COUPLING
12	1	CAMEC000644	SHOULDER SCREW
13	1	CAMEC000674	M5 SCREW-HEAD KNOB YELLOW
14	1	CAMEC000695	DOWEL PIN
15	1	CAMEC001069	E-CHAIN
16	1	CAPNE000022	AIR GRIPPER
17	1	CAPNE000036	ROTARY JOINT
18	2	CAPNE000066	PUSH-IN FITTING
19	1	CAPNE000070	ENCODER CABLE
20	4	CAPNE000105	PUSH-IN L FITTING
21	1	CAPRT000347	ROTARY JOINT LINK
22	4	CAPRT000790	MOTOR SUPPORT
23	1	CAPRT001676	ROTARY SUPPORT
24	1	CAPRT002667	AXIS SUPPORT PLATE
25	1	CAPRT002668	PLATE TWIST
26	1	CAPRT002836	SENSOR SUPPORT
27	1	CAPRT003035	BRACKET - CABLE SUPPORT
28	1	CAPRT003036	BRACKET - CABLE SUPPORT
29	2	CAPRT003097	VERTICAL GRIPPER BASE
30	1	CAPRT003098	VERTICAL GRIPPER FINGER LEFT
31	1	CAPRT003099	VERTICAL GRIPPER FINGER RIGHT
32	2	CAPRT003702	VERTICAL GRIPPER FINGER
33	2	S-BHCS - M4 x 8	BUTTON HEAD CAP SCREW
34	8	S-FHCS - M3x6	HEX SOCKET FLAT HEAD CAP SCREW
35	2	S-FHCS - M3x12	HEX SOCKET FLAT HEAD CAP SCREW
36	2	S-FHCS - M4x12	HEX SOCKET FLAT HEAD CAP SCREW
37	4	S-FHCS - M6x20	HEX SOCKET FLAT HEAD CAP SCREW
38	1	SN-HEX NUT - M5	HEXAGONAL NUT
39	4	SN-NYLON LOCK NUT - M5	NYLON LOCK NUT
40	4	S-SHCS - M2.5 x 16	SOCKET HEAD CAP SCREW
41	4	S-SHCS - M2.5 x 6	SOCKET HEAD CAP SCREW
42	3	S-SHCS - M4 x 12	SOCKET HEAD CAP SCREW
43	4	S-SHCS - M4 x 16	SOCKET HEAD CAP SCREW
44	14	S-SHCS - M5 x 12	SOCKET HEAD CAP SCREW
45	5	S-SHCS - M5 x 25	SOCKET HEAD CAP SCREW
46	4	S-SHCS - M6 x 16	SOCKET HEAD CAP SCREW
47	2	SW-FW - M4	FLAT WASHER
48	6	SW-FW - M5	FLAT WASHER
49	2	SW-SLW - M4	SPLIT LOCK WASHER
50	2	SW-SLW - M5	SPLIT LOCK WASHER

Solid Packaging Robotik inc

CONÇU PAR/DESIGNED BY : D.MARTEL
DESSINÉ PAR/DRAWN BY : J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY : D.MARTEL
DATE : 1/5/2022

PROJET/PROJECT : BoxFinish-Er
DESCRIPTION : TWIST STATION
No. DESSIN/DRAWING # : CASSY000540
REV 00
P. 4 de 4


286.28
777.20
638.98
145.00
Solid Packaging Robotik inc
PROJECT/PROJET: BoxFinish-Er
DESCRIPTION: ELECTRIC BOX
No. DESSIN/DRAWING #: CASSY000541
REV 02
P. 1 de 3
CONÇU PAR/DESIGNED BY: D.MARTEL
DESSINÉ PAR/DRAWN BY: J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-01-20
UNITÉS/UNITS: mm [in]
REVISION HISTORY
REV | DESCRIPTION | DATE | APPROVED
1 | ADDED PART | 4/25/2023 | M.M.

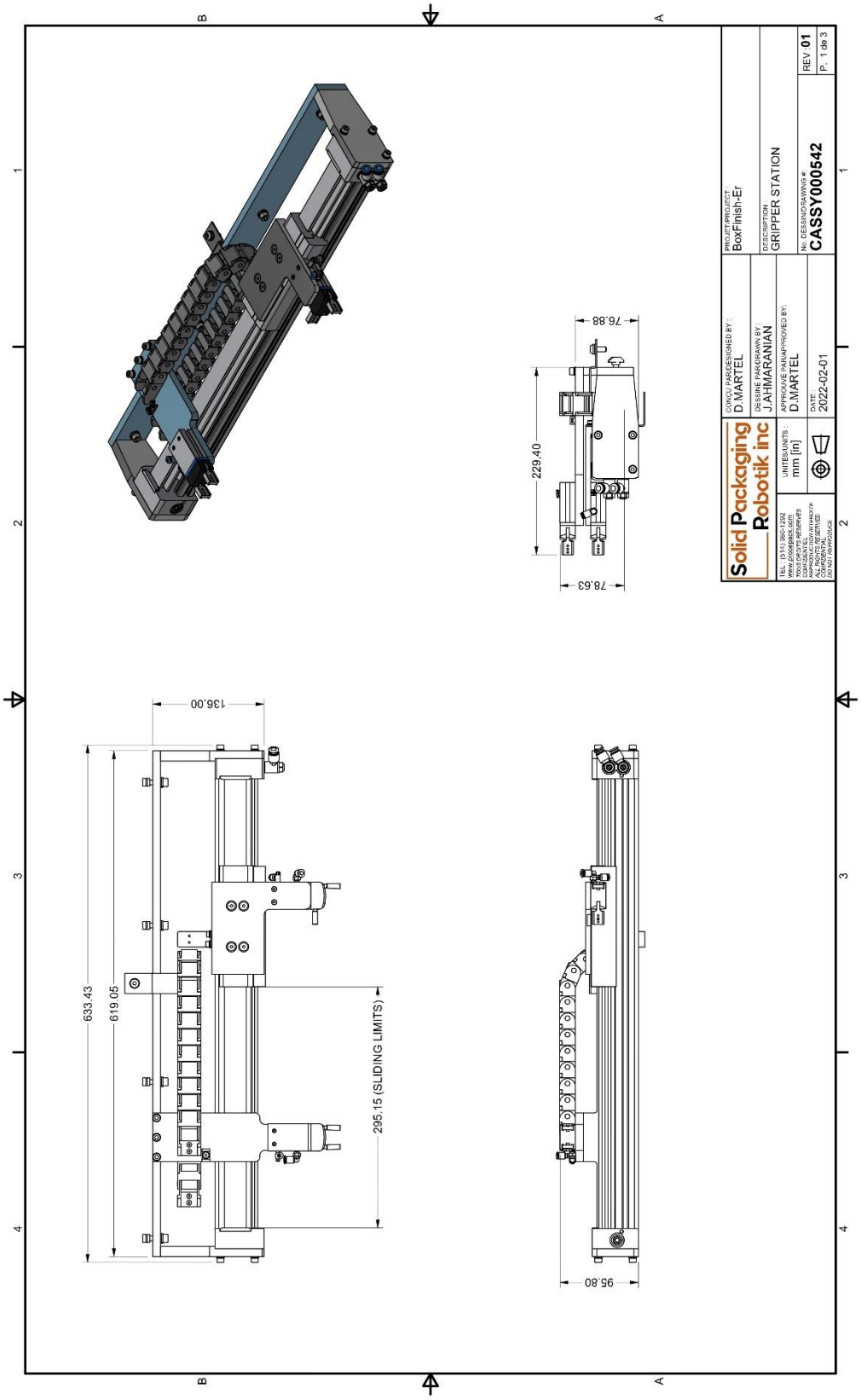

8X S-SHCS - M4 x 30
S-SHCS - M8 x 25
DO NOT USE SCREWS COME WITH ROXTEC EZENTRY 10/10
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY : D.MARTEL
DESSINÉ PAR/DRAWN BY: J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE 2022-01-20
UNITÉS/UNITS : mm [in]
PROJET/PROJECT BoxFinish-Er
DESCRIPTION ELECTRIC BOX
No. DESSIN/DRAWING # CASSY000541
REV 02
P. 2 de 3

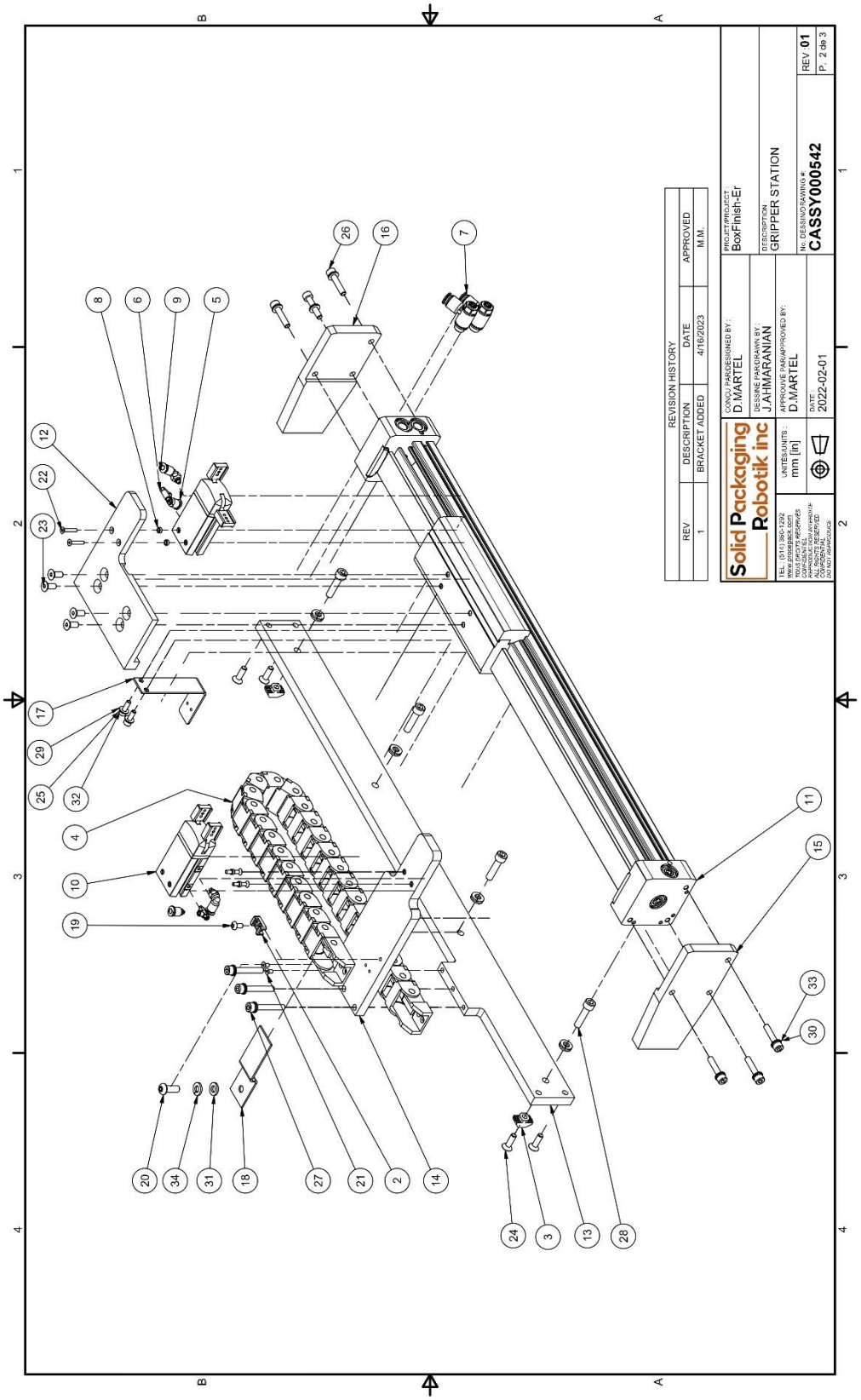
PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CAELE000045	CABLE GLAND
2	3	CAELE000060	ANGLED PLUG STEPPER MOTOR
3	1	CAELE000078	E-STOP PUSH BUTTON
4	1	CAELE000082	LEGEND PLATE EMERGENCY
5	1	CAELE000084	LEGEND PLATE START
6	1	CAELE000085	LEGEND PLATE STOP
7	1	CAELE000086	LEGEND PLATE RESET
8	1	CAELE000091	SENSOR CABLE
9	1	CAELE000128	NETWORK CABLE
10	1	CAELE000136	MOTOR CONNECTION CABLE
11	1	CAELE000143	PROXIMITY SENSOR
12	1	CAELE000162	STATUS LED BAR
13	1	CAELE000206	CABLE GLAND
14	1	CAELE000207	LOCK NUT NYLON GREY
15	1	CAELE000221	POWER ENTRY CONNECTOR PLUG 250VAC X 10A
16	1	CAELE000260	CDPX
17	1	CAELE000297	DISCONNECT SWITCH
18	1	CAELE000298	3pole Switch-disconnector
19	1	CAELE000325	M12 5PIN/WIRE 2.5M OPEN END 4PIN/WIRE
20	1	CAELE000347	PUSH BUTTON GRN
21	1	CAELE000349	PUSH BUTTON BLUE
22	1	CAELE000350	PUSH BUTTON RED
23	1	CAELE000356	ROXTEC EZENTRY 10/10
24	1	CAELE000424	CONNECTING CABLE
25	2	CAMEC000648	T NUT KATIM M4 - PROFILE 10
26	1	CAMEC000668	HIGH FLEXIBLE FABRIC LABLE MM-EMLC (EX12)R C1 WH/BK
27	16	CAPNE000064	CONNECTING CABLE
28	1	CAPNE000070	ENCODER CABLE
29	1	CAPNE000073	CONECTING CABLE
30	1	CAPNE000304	VALVE TERMINAL
31	1	CAPRT002679	ELECTRIC CONTROL BOX
32	1	CASSY000870	BOX FINISHER ELECTRIC PANEL
33	4	SN-HEX NUT - M4	HEXAGONAL NUT
34	2	S-SHCS - M4 x 16	SOCKET HEAD CAP SCREW
35	8	S-SHCS - M4 x 30	SOCKET HEAD CAP SCREW
36	1	S-SHCS - M8 x 25	SOCKET HEAD CAP SCREW
37	4	SW-FW - M4	FLAT WASHER

Solid Packaging Robotik inc
TEL : (514) 360-1292
www.procepack.com

CONÇU PAR/DESIGNED BY :	D.MARTEL
DESSINÉ PAR/DRAWN BY :	J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY:	D.MARTEL
DATE :	2022-01-20
UNITÉS/UNITS :	mm [in]
PROJET/PROJECT :	BoxFinish-Er
DESCRIPTION :	ELECTRIC BOX
No. DESSIN/DRAWING #:	CASSY000541
REV :	02
P.	3 de 3

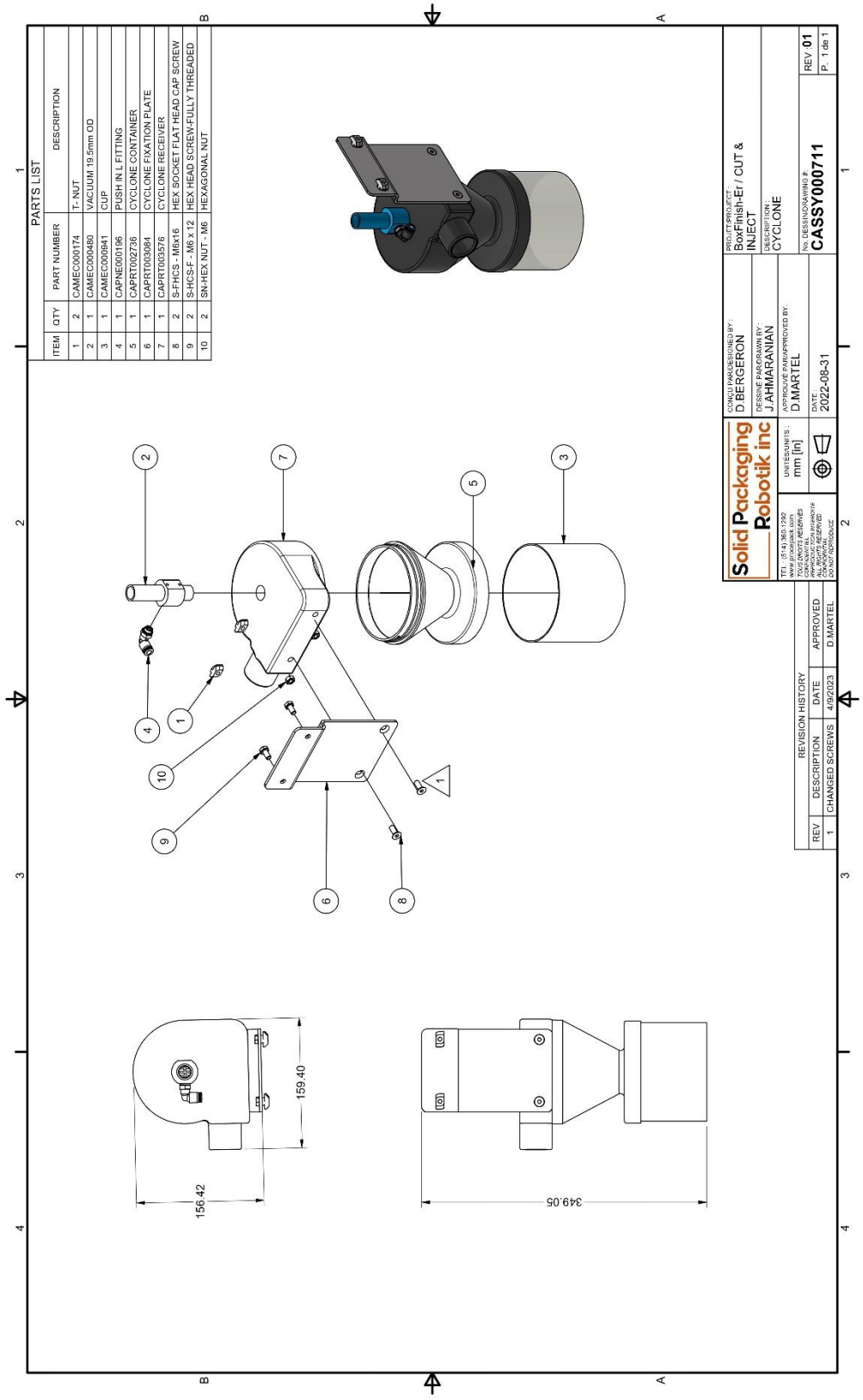

76.88
229.40
78.63
136.00
633.43
619.05
295.15 (SLIDING LIMITS)
95.80
Solid Packaging Robotik inc
PROJET/PROJECT
BoxFinish-Er
DESCRIPTION
GRIPPER STATION
No. DESSIN/DRAWING #
CASSY000542
REV 01
P. 1 de 3
CONÇU PAR/DESIGNED BY :
D.MARTEL
DESSINÉ PAR/DRAWN BY :
J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-02-01
UNITÉS/UNITS :
mm [in]

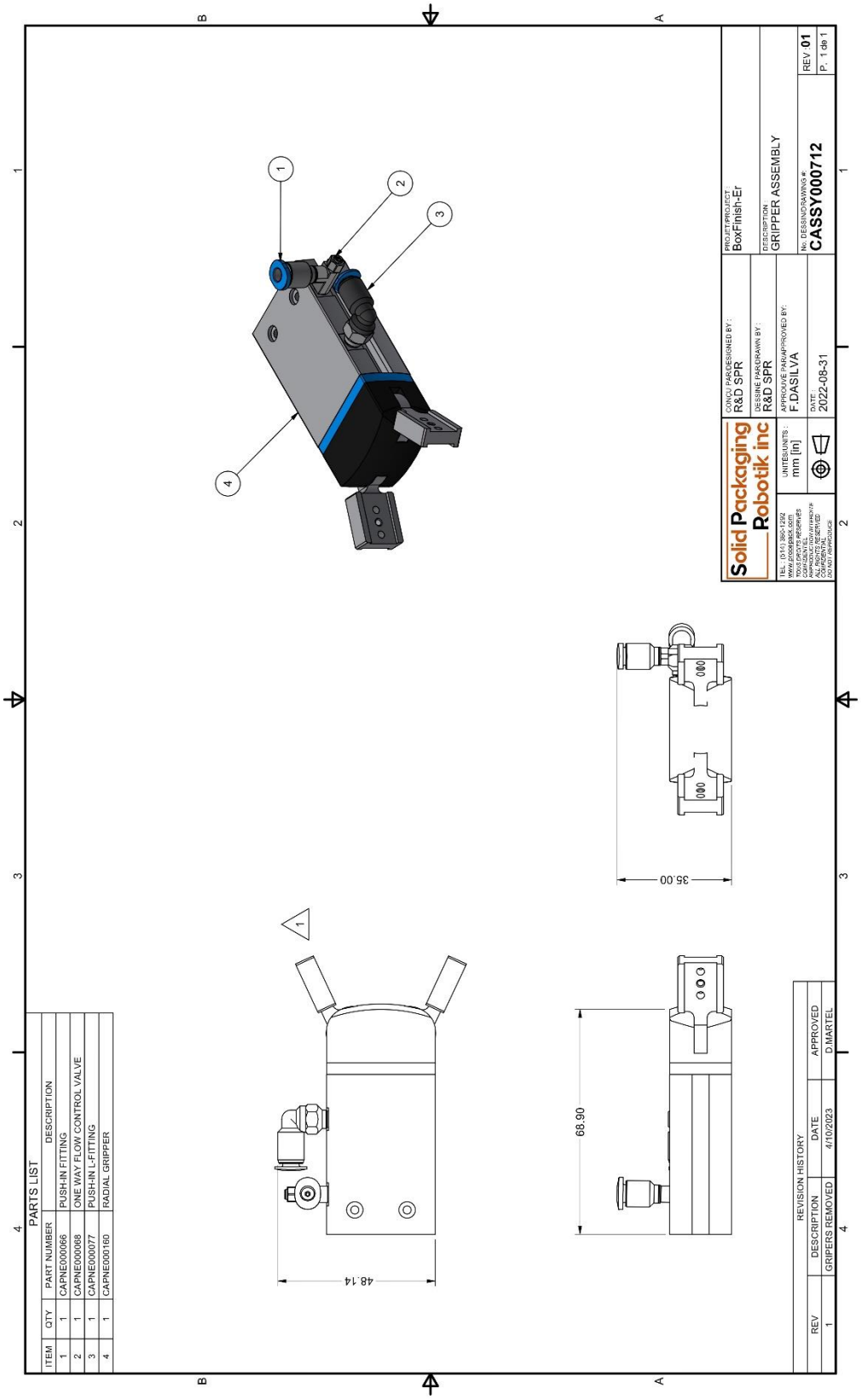

REVISION HISTORY
REV
DESCRIPTION
DATE
APPROVED
1
BRACKET ADDED
4/16/2023
M.M.
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY :
D.MARTEL
DESSINÉ PAR/DRAWN BY :
J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY:
D.MARTEL
DATE
2022-02-01
UNITÉS/UNITS :
mm [in]
PROJET/PROJECT
BoxFinish-Er
DESCRIPTION
GRIPPER STATION
No. DESSIN/DRAWING #
CASSY000542
REV 01
P. 2 de 3

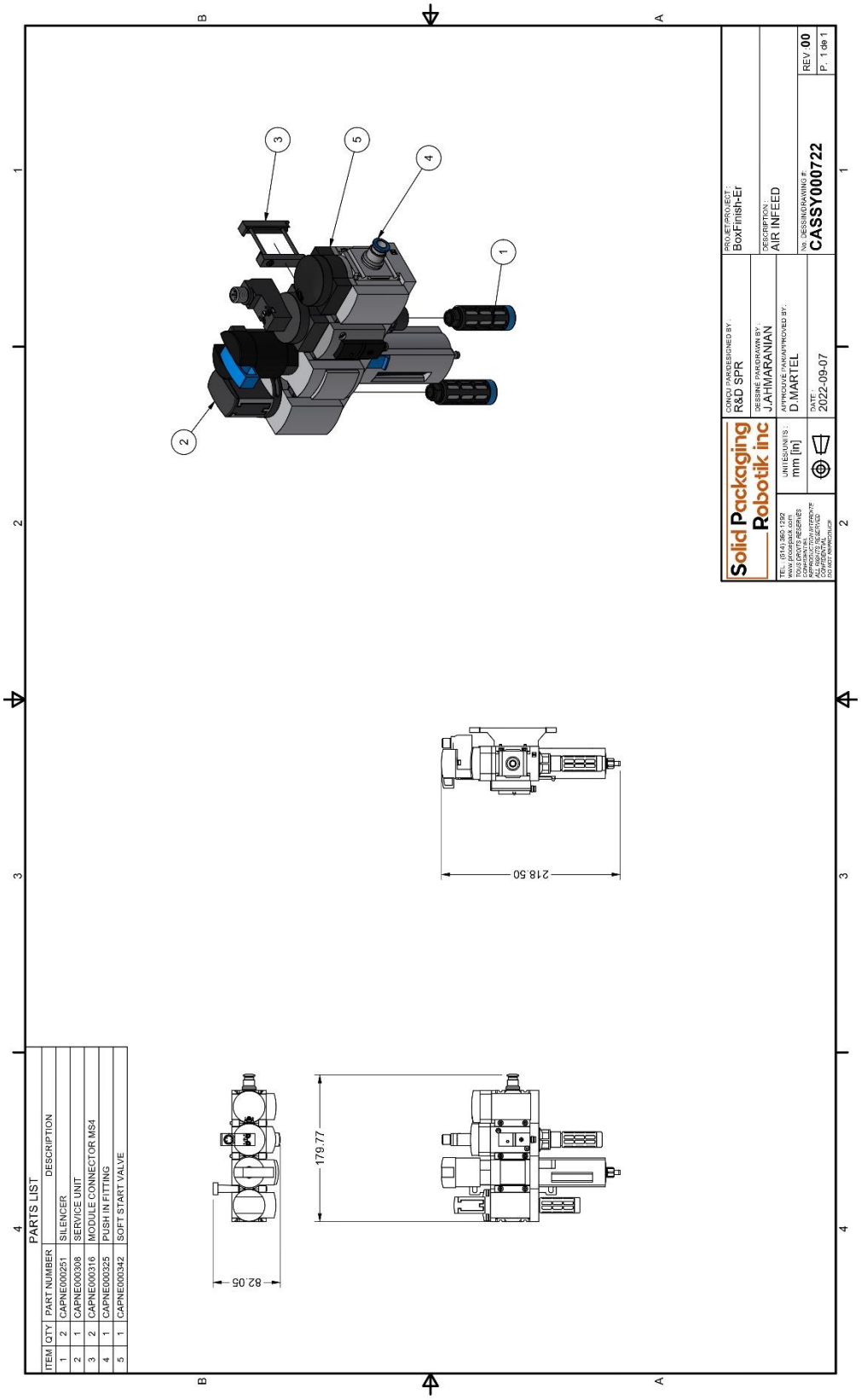
PARTS LIST

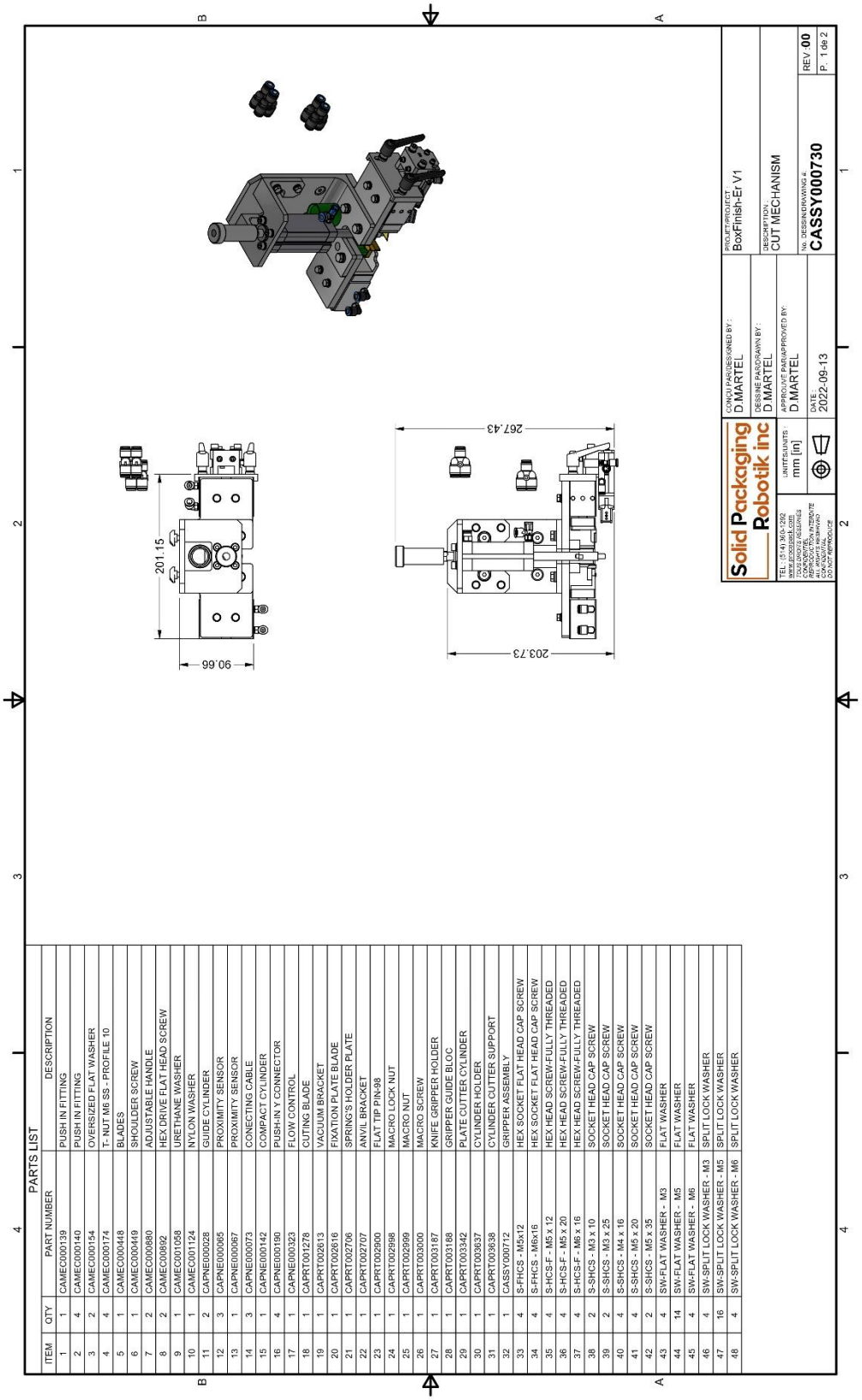
ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	CAELE000189	PROXIMITY SENSOR
2	1	CAELE000195	CABLE TIE MOUNT
3	4	CAMEC000174	T- NUT
4	1	CAMEC001263	POWER TRACK GRIPPER STATION
5	2	CAPNE000066	PUSH-IN FITTING
6	2	CAPNE000068	ONE WAY FLOW CONTROL VALVE
7	2	CAPNE000071	AIR FITTING
8	4	CAPNE000075	CENTERING SLEEVE
9	2	CAPNE000077	PUSH-IN L-FITTING
10	2	CAPNE000160	RADIAL GRIPPER
11	1	CAPNE000274	LINEAR DRIVE
12	1	CAPRT002677	GRIPPER SUPPORT
13	1	CAPRT002799	SUPPORT CYLINDER
14	1	CAPRT002800	PISTON SUPPORT
15	1	CAPRT003338	RIGHT CYLINDER SUPPORT
16	1	CAPRT003339	LEFT CYLINDER SUPPORT
17	1	CAPRT003340	CABLE TRAY SUPPORT
18	1	CAPRT003639	
19	1	S-BHCS - M4 x 8	BUTTON HEAD CAP SCREW
20	1	S-BHCS - M6 x 16	BUTTON HEAD CAP SCREW
21	4	S-FHCS - M3x6	HEX SOCKET FLAT HEAD CAP SCREW
22	4	S-FHCS - M3x16	HEX SOCKET FLAT HEAD CAP SCREW
23	4	S-FHCS - M5x12	HEX SOCKET FLAT HEAD CAP SCREW
24	4	S-FHCS - M5x16	HEX SOCKET FLAT HEAD CAP SCREW
25	2	S-SHCS - M4 x 12	SOCKET HEAD CAP SCREW
26	6	S-SHCS - M5 x 25	SOCKET HEAD CAP SCREW
27	3	S-SHCS - M5 x 35	SOCKET HEAD CAP SCREW
28	4	S-SHCS - M6 x 25	SOCKET HEAD CAP SCREW
29	2	SW-FW - M4	FLAT WASHER
30	9	SW-FW - M5	FLAT WASHER
31	5	SW-FW - M6	FLAT WASHER
32	2	SW-SLW - M4	SPLIT LOCK WASHER
33	9	SW-SLW - M5	SPLIT LOCK WASHER
34	5	SW-SLW - M6	SPLIT LOCK WASHER

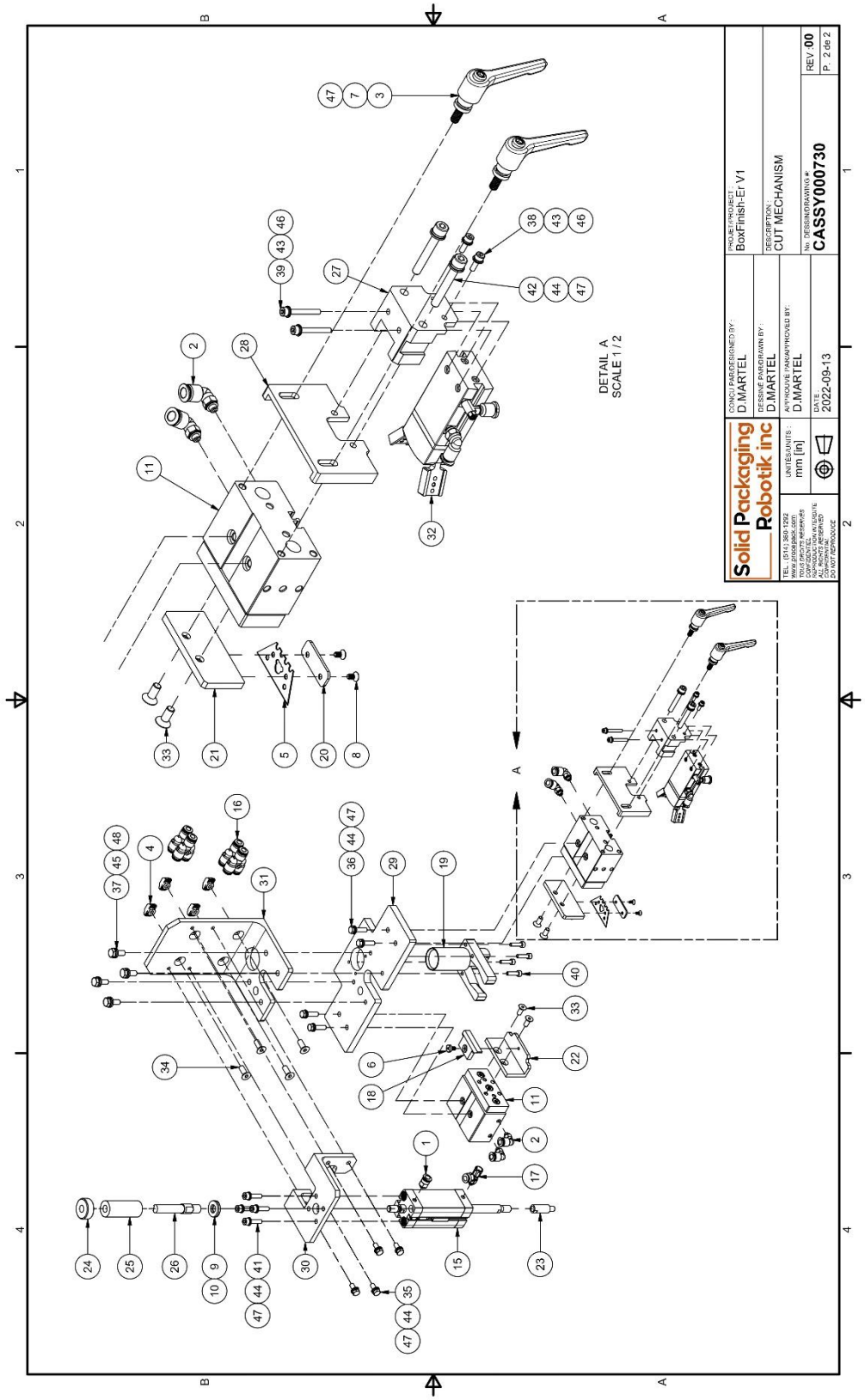
Solid Packaging Robotik inc	CONÇU PAR/DESIGNED BY : D.MARTEL	PROJET/PROJECT : BoxFinish-Er
	DESSINÉ PAR/DRAWN BY : J.AHMARANIAN	DESCRIPTION : GRIPPER STATION
TEL : (514) 360-1292 www.procepack.com — UNITÉS/UNITS : mm [in]	APPROUVÉ PAR/APPROVED BY: D.MARTEL	No. DESSIN/DRAWING #: CASSY000542 — REV :01
TOUS DROITS RÉSERVÉS CONFIDENTIEL REPRODUCTION INTERDITE ALL RIGHTS RESERVED CONFIDENTIAL DO NOT REPRODUCE	DATE : 2022-02-01	P. 3 de 3

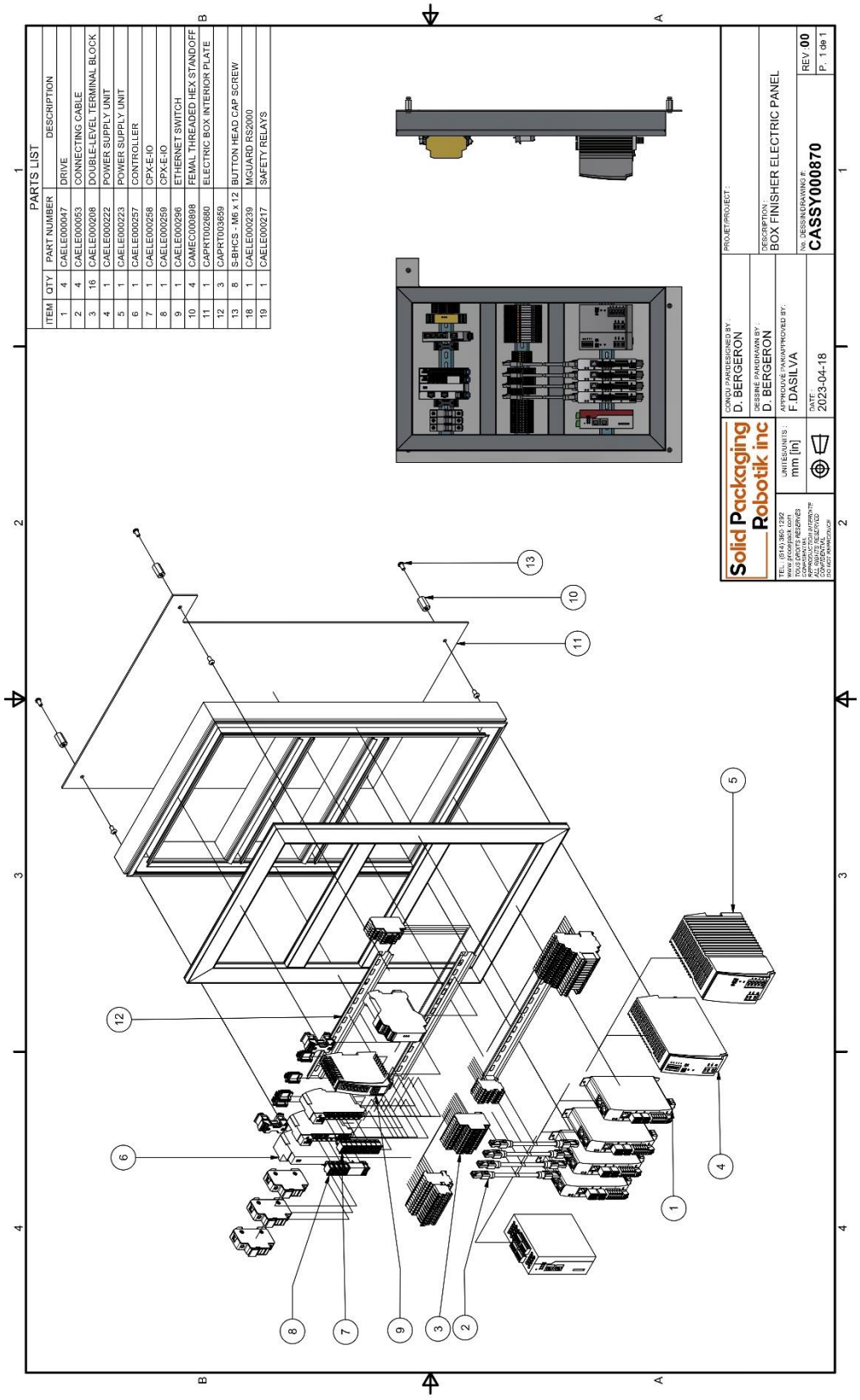

PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 2 CAMEC000174 T- NUT
2 1 CAMEC000480 VACUUM 19.5mm OD
3 1 CAMEC000841 CUP
4 1 CAPNE000196 PUSH IN L FITTING
5 1 CAPRT002736 CYCLONE CONTAINER
6 1 CAPRT003084 CYCLONE FIXATION PLATE
7 1 CAPRT003576 CYCLONE RECEIVER
8 2 S-FHCS - M6x16 HEX SOCKET FLAT HEAD CAP SCREW
9 2 S-HCS-F - M6 x 12 HEX HEAD SCREW-FULLY THREADED
10 2 SN-HEX NUT - M6 HEXAGONAL NUT
REVISION HISTORY
REV DESCRIPTION DATE APPROVED
1 CHANGED SCREWS 4/9/2023 D.MARTEL
Solid Packaging Robotik inc
CONCU PAR/DESIGNED BY: D.BERGERON
DESSINÉ PAR/DRAWN BY: J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-08-31
UNITÉS/UNITS: mm [in]
PROJET/PROJECT: BoxFinish-Er / CUT & INJECT
DESCRIPTION: CYCLONE
No DESSIN/DRAWING # CASSY000711
REV. 01
P. 1 de 1
159.40
156.42
349.05


PARTS LIST
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 1 | CAPNE000066 | PUSH-IN FITTING
2 | 1 | CAPNE000068 | ONE WAY FLOW CONTROL VALVE
3 | 1 | CAPNE000077 | PUSH-IN L-FITTING
4 | 1 | CAPNE000160 | RADIAL GRIPPER
REVISION HISTORY
REV | DESCRIPTION | DATE | APPROVED
1 | GRIPERS REMOVED | 4/10/2023 | D.MARTEL
Solid Packaging Robotik inc
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: GRIPPER ASSEMBLY
No. DESSIN/DRAWING #: CASSY000712
REV 01
P. 1 de 1
CONÇU PAR/DESIGNED BY: R&D SPR
DESSINÉ PAR/DRAWN BY: R&D SPR
APPROUVÉ PAR/APPROVED BY: F.DASILVA
DATE: 2022-08-31
UNITÉS/UNITS: mm [in]
35.00
68.90
48.14


PARTS LIST
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 2 | CAPNE000251 | SILENCER
2 | 1 | CAPNE000308 | SERVICE UNIT
3 | 2 | CAPNE000316 | MODULE CONNECTOR M5/4
4 | 1 | CAPNE000325 | PUSH IN FITTING
5 | 1 | CAPNE000342 | SOFT START VALVE
218.50
179.77
82.05
Solid Packaging Robotik inc
DESSINÉ PAR/DRAWN BY: J.AHMARANIAN
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE 2022-09-07
UNITÉS/UNITS: mm [in]
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: AIR INFEED
No. DESSIN/DRAWING #: CASSY000722
REV 00
P. 1 de 1


PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 1 CAMEC000139 PUSH IN FITTING
2 4 CAMEC000140 PUSH IN FITTING
3 2 CAMEC000154 OVERSIZED FLAT WASHER
4 4 CAMEC000174 T- NUT M6 SS - PROFILE 10
5 1 CAMEC000448 BLADES
6 1 CAMEC000449 SHOULDER SCREW
7 2 CAMEC000880 ADJUSTABLE HANDLE
8 2 CAMEC00892 HEX DRIVE FLAT HEAD SCREW
9 1 CAMEC001058 URETHANE WASHER
10 1 CAMEC001124 NYLON WASHER
11 2 CAPNE000028 GUIDE CYLINDER
12 3 CAPNE000065 PROXIMITY SENSOR
13 1 CAPNE000067 PROXIMITY SENSOR
14 3 CAPNE000073 CONECTING CABLE
15 1 CAPNE000142 COMPACT CYLINDER
16 4 CAPNE000190 PUSH-IN Y CONNECTOR
17 1 CAPNE000323 FLOW CONTROL
18 1 CAPRT001278 CUTING BLADE
19 1 CAPRT002613 VACUUM BRACKET
20 1 CAPRT002616 FIXATION PLATE BLADE
21 1 CAPRT002706 SPRING'S HOLDER PLATE
22 1 CAPRT002707 ANVIL BRACKET
23 1 CAPRT002900 FLAT TIP PIN-98
24 1 CAPRT002598 MACRO LOCK NUT
25 1 CAPRT002999 MACRO NUT
26 1 CAPRT003000 MACRO SCREW
27 1 CAPRT003187 KNIFE GRIPPER HOLDER
28 1 CAPRT003188 GRIPPER GUIDE BLOC
29 1 CAPRT003342 PLATE CUTTER CYLINDER
30 1 CAPRT003837 CYLINDER HOLDER
31 1 CAPRT003638 CYLINDER CUTTER SUPPORT
32 1 CASSY000712 GRIPPER ASSEMBLY
33 4 S-FHCS - M5x12 HEX SOCKET FLAT HEAD CAP SCREW
34 4 S-FHCS - M6x16 HEX SOCKET FLAT HEAD CAP SCREW
35 4 S-HCS-F - M5 x 12 HEX HEAD SCREW-FULLY THREADED
36 4 S-HCS-F - M5 x 20 HEX HEAD SCREW-FULLY THREADED
37 4 S-HCS-F - M6 x 16 HEX HEAD SCREW-FULLY THREADED
38 2 S-SHCS - M3 x 10 SOCKET HEAD CAP SCREW
39 2 S-SHCS - M3 x 25 SOCKET HEAD CAP SCREW
40 4 S-SHCS - M4 x 16 SOCKET HEAD CAP SCREW
41 4 S-SHCS - M5 x 20 SOCKET HEAD CAP SCREW
42 2 S-SHCS - M5 x 35 SOCKET HEAD CAP SCREW
43 4 SW-FLAT WASHER - M3 FLAT WASHER
44 14 SW-FLAT WASHER - M5 FLAT WASHER
45 4 SW-FLAT WASHER - M6 FLAT WASHER
46 4 SW-SPLIT LOCK WASHER - M3 SPLIT LOCK WASHER
47 16 SW-SPLIT LOCK WASHER - M5 SPLIT LOCK WASHER
48 4 SW-SPLIT LOCK WASHER - M6 SPLIT LOCK WASHER
201.15
90.66
267.43
203.73
Solid Packaging Robotik inc
UNIT/EQUNITS : mm [in]
CONÇU PAR/DESIGNED BY : D.MARTEL
DESSINÉ PAR/DRAWN BY : D.MARTEL
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-09-13
PROJET/PROJECT: BoxFinish-Er V1
DESCRIPTION: CUT MECHANISM
No. DESSIN/DRAWING #: CASSY000730
REV 00
P. 1 de 2


DETAIL A
SCALE 1 / 2
Solid Packaging Robotik inc
PROJET/PROJECT: BoxFinish-Er V1
DESCRIPTION: CUT MECHANISM
No. DESSIN/DRAWING # CASSY000730
REV. 00
P. 2 de 2
DONÉ PAR/DESIGNED BY: D.MARTEL
DESSINÉ PAR/DRAWN BY: D.MARTEL
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2022-09-13
UNITÉS/UNITS: mm [in]



PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	CAELE000047	DRIVE
2	4	CAELE000053	CONNECTING CABLE
3	16	CAELE000208	DOUBLE-LEVEL TERMINAL BLOCK
4	1	CAELE000222	POWER SUPPLY UNIT
5	1	CAELE000223	POWER SUPPLY UNIT
6	1	CAELE000257	CONTROLLER
7	1	CAELE000258	CPX-E-IO
8	1	CAELE000259	CPX-E-IO
9	1	CAELE000296	ETHERNET SWITCH
10	4	CAMEC000898	FEMAL THREADED HEX STANDOFF
11	1	CAPRT002680	ELECTRIC BOX INTERIOR PLATE
12	3	CAPRT003659	
13	6	S-BHCS - M6 x 12	BUTTON HEAD CAP SCREW
18	1	CAELE000239	MGUARD RS2000
19	1	CAELE000217	SAFETY RELAYS

Solid Packaging Robotik inc

CONÇU PAR/DESIGNED BY: D. BERGERON

DESSINÉ PAR/DRAWN BY: D. BERGERON

APPROUVÉ PAR/APPROVED BY: F. DASILVA

DATE: 2023-04-18

UNITÉS/UNITS: mm [in]

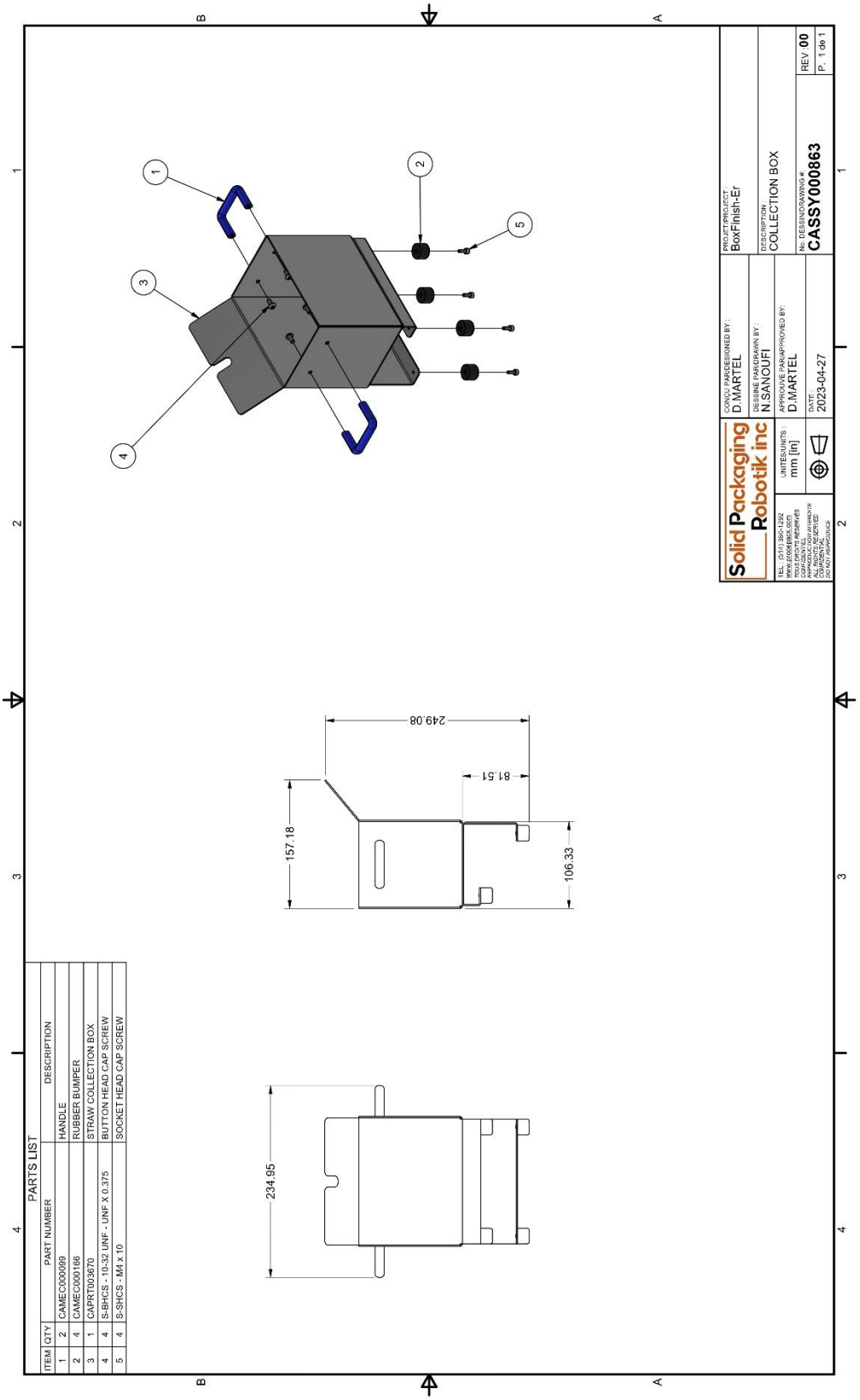
PROJET/PROJECT:

DESCRIPTION: BOX FINISHER ELECTRIC PANEL

No. DESSIN/DRAWING #: CASSY000870

REV: 00

P. 1 de 1


PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 2 CAMEC000099 HANDLE
2 4 CAMEC000166 RUBBER BUMPER
3 1 CAPRT003670 STRAW COLLECTION BOX
4 4 S-BHCS - 10-32 UNF - UNF X 0.375 BUTTON HEAD CAP SCREW
5 4 S-SHCS - M4 x 10 SOCKET HEAD CAP SCREW
249.08
81.51
157.18
106.33
234.95
Solid Packaging Robotik inc
CONÇU PAR/DESIGNED BY: D.MARTEL
DESSINÉ PAR/DRAWN BY: N.SANOUFI
APPROUVÉ PAR/APPROVED BY: D.MARTEL
DATE: 2023-04-27
UNITÉS/UNITS: mm [in]
PROJET/PROJECT: BoxFinish-Er
DESCRIPTION: COLLECTION BOX
No. DESSIN/DRAWING #: CASSY000863
REV 00
P. 1 de 1

8.2 Electrical diagrams

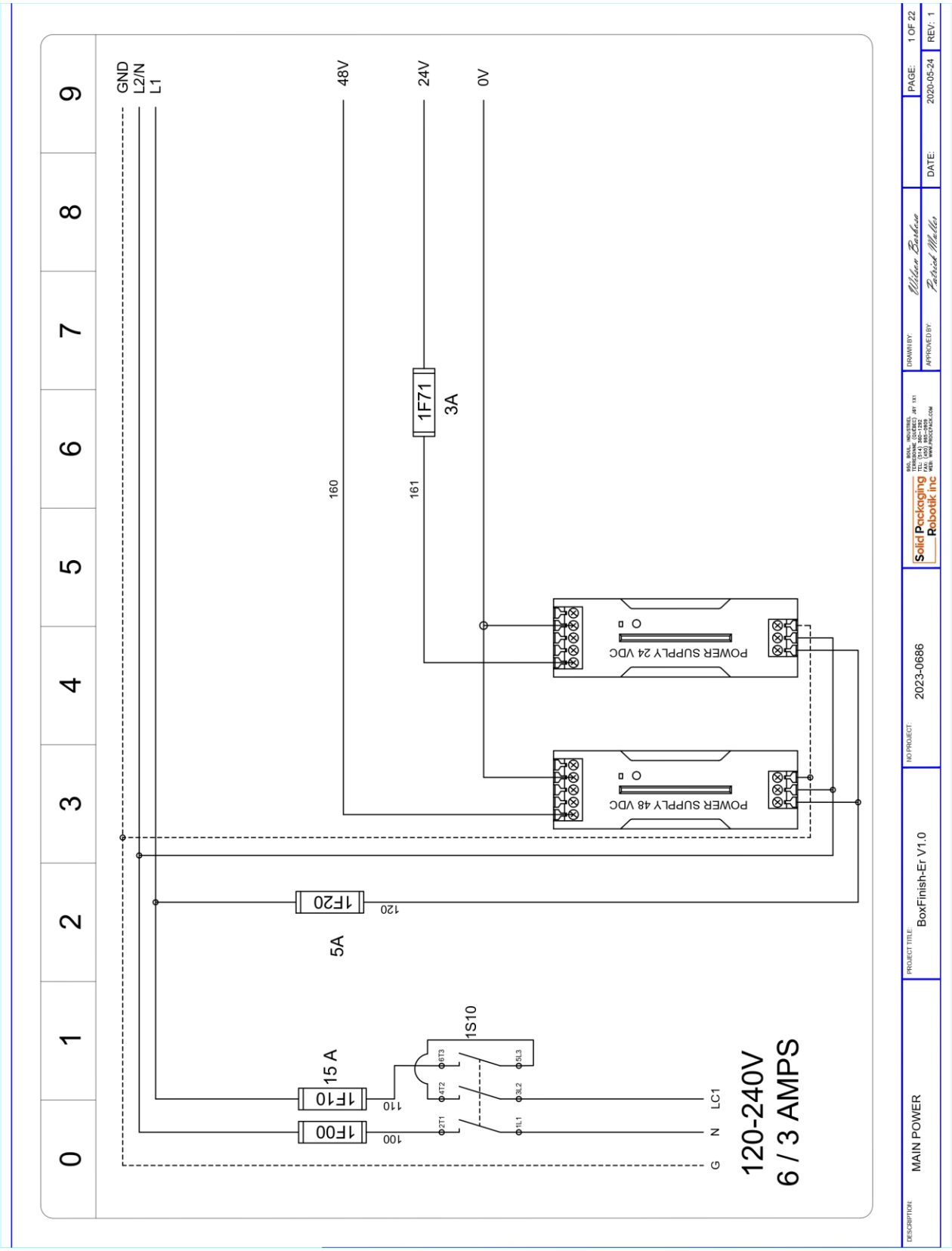
Solid Packaging Robotik inc

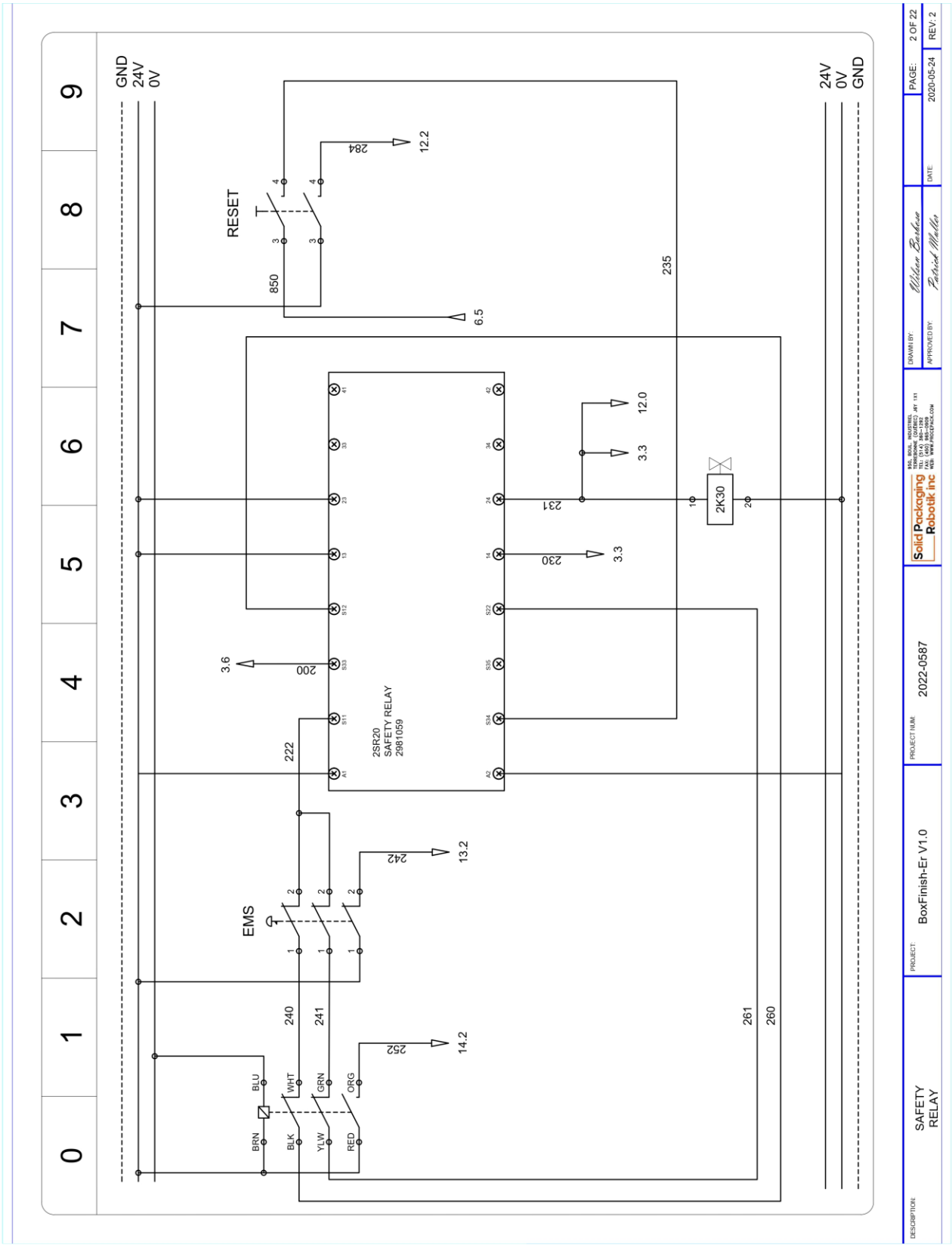
ELECTRIC DIAGRAM

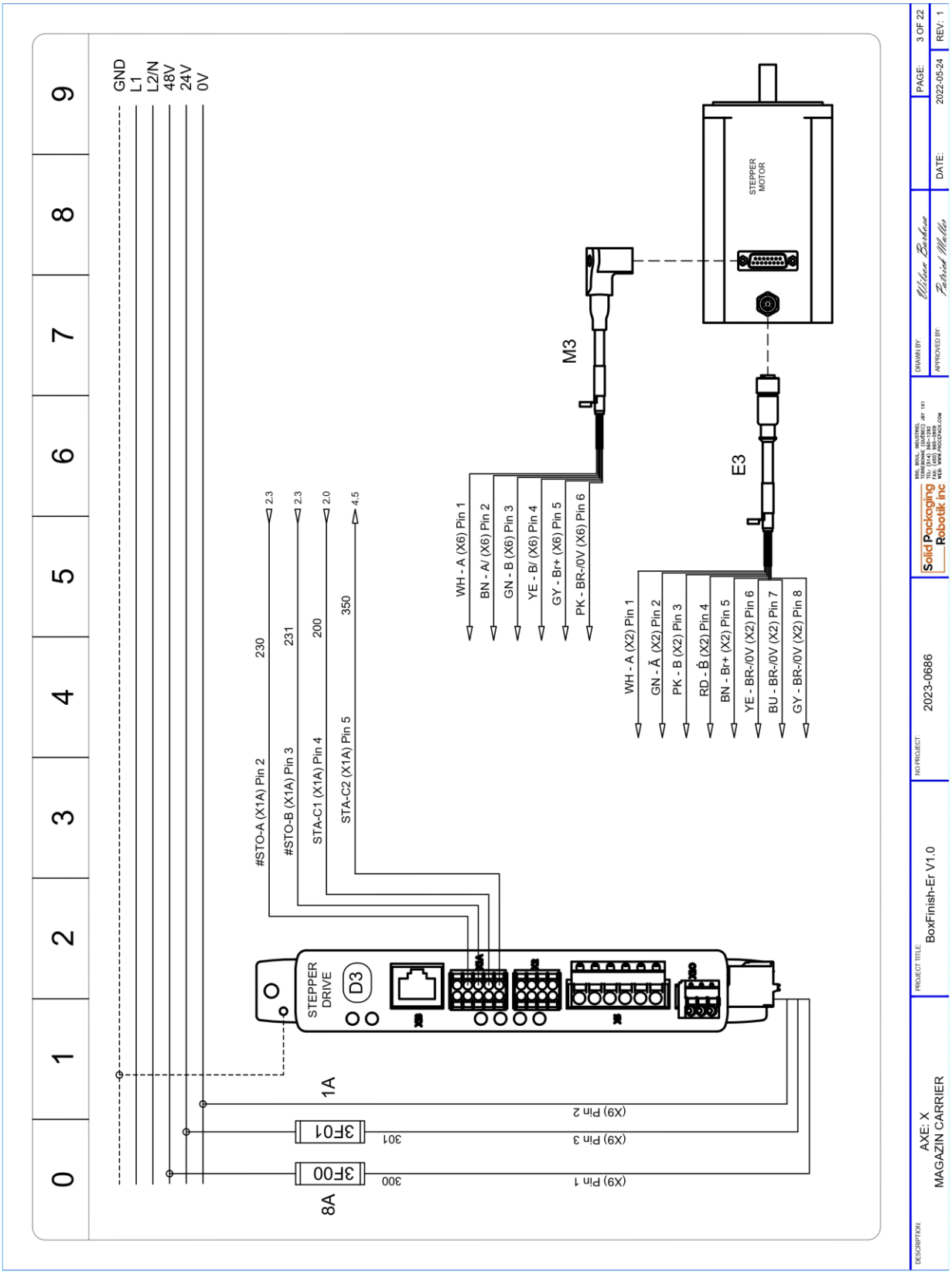
PROJECT: BoxFinish-Er V1.0

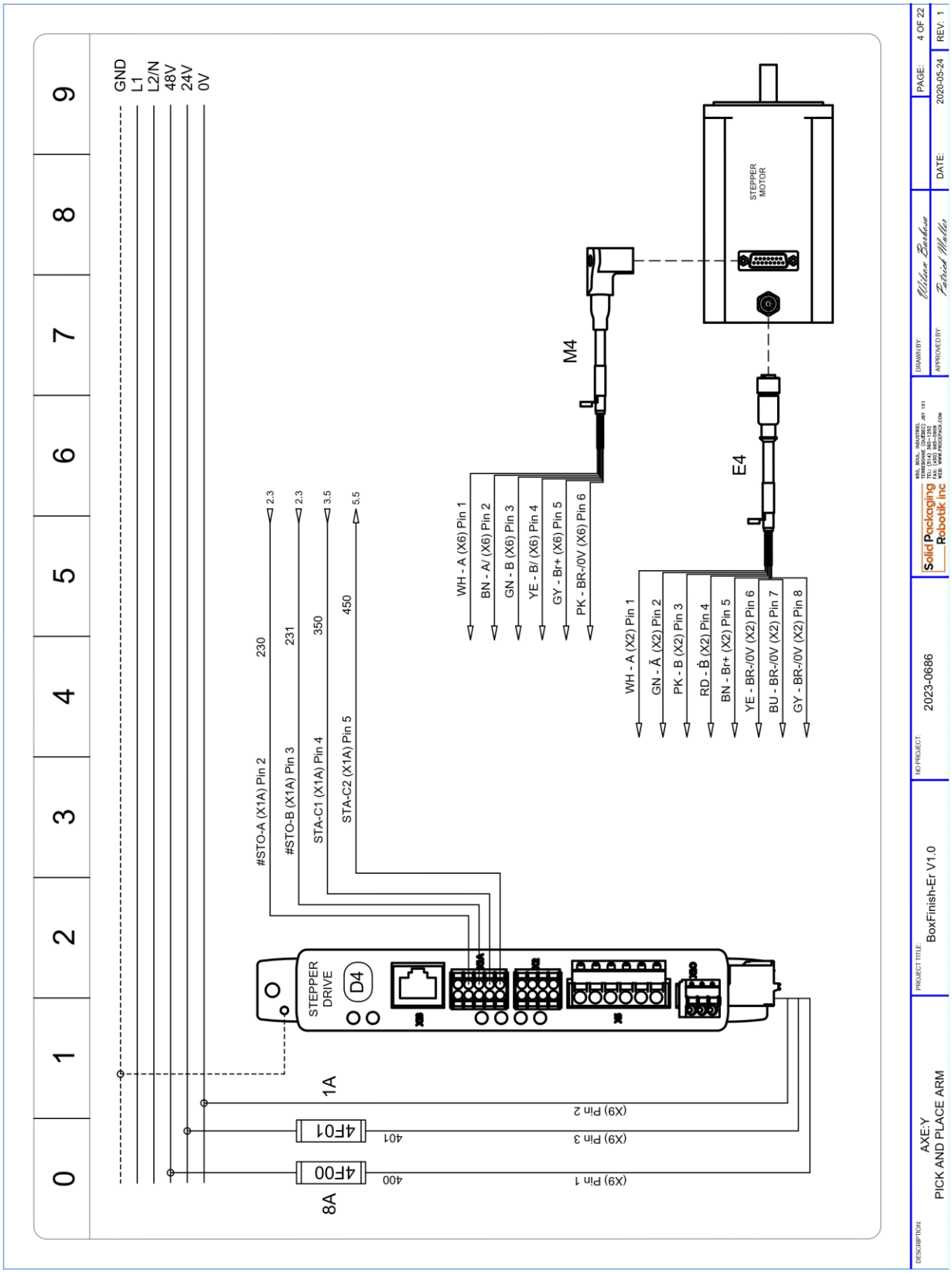
PROJECT NUM.: 2023-0686

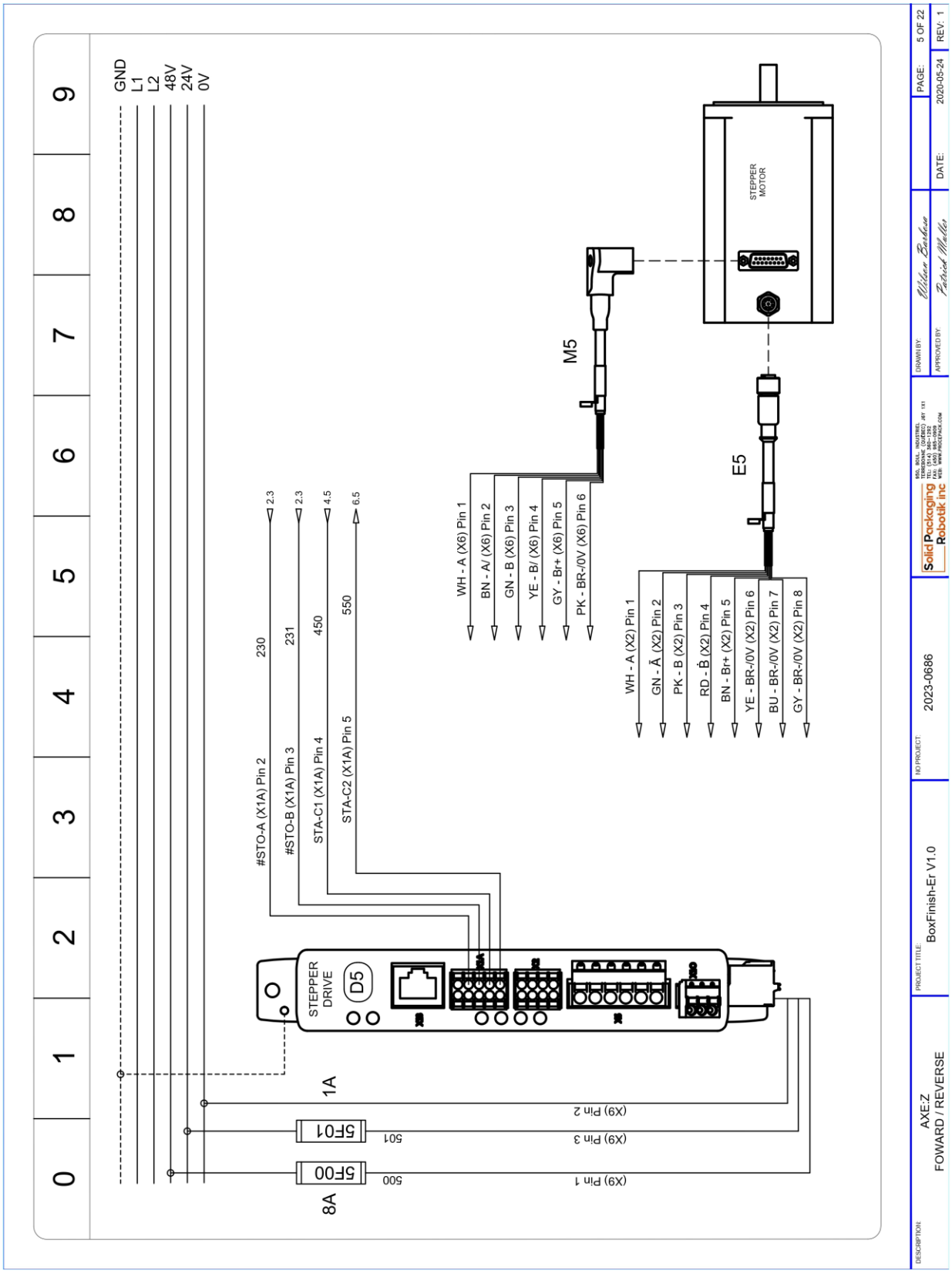
950, BOUL. INDUSTRIEL
TERREBONNE (QUÉBEC) J6Y 1X1
TEL: (514) 360-1292
FAX: (450) 965-0909
WEB: WWW.PROCEPACK.COM

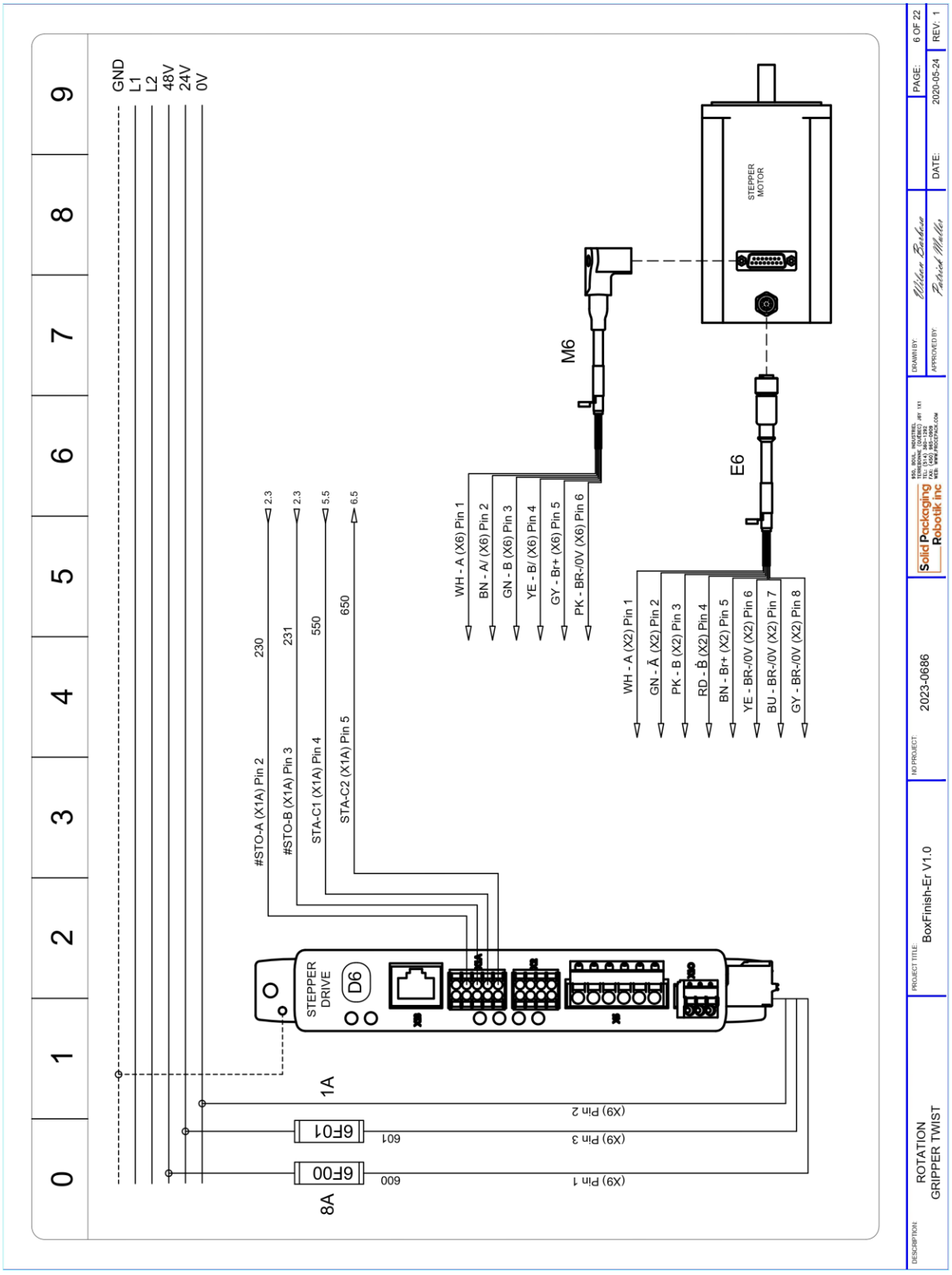

GND
L2/N
L1
48V
24V
0V
1F71
3A
160
161
POWER SUPPLY 24 VDC
POWER SUPPLY 48 VDC
1F20
5A
120
1S10
15 A
1F10
1F00
110
100
6T3
4T2
2T1
5L3
3L2
1L1
LC1
N
G
120-240V
6 / 3 AMPS
0
1
2
3
4
5
6
7
8
9
DESCRIPTION:
MAIN POWER
PROJECT TITLE:
BoxFinish-Er V1.0
NO PROJECT
2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2020-05-24
PAGE:
1 OF 22
REV: 1

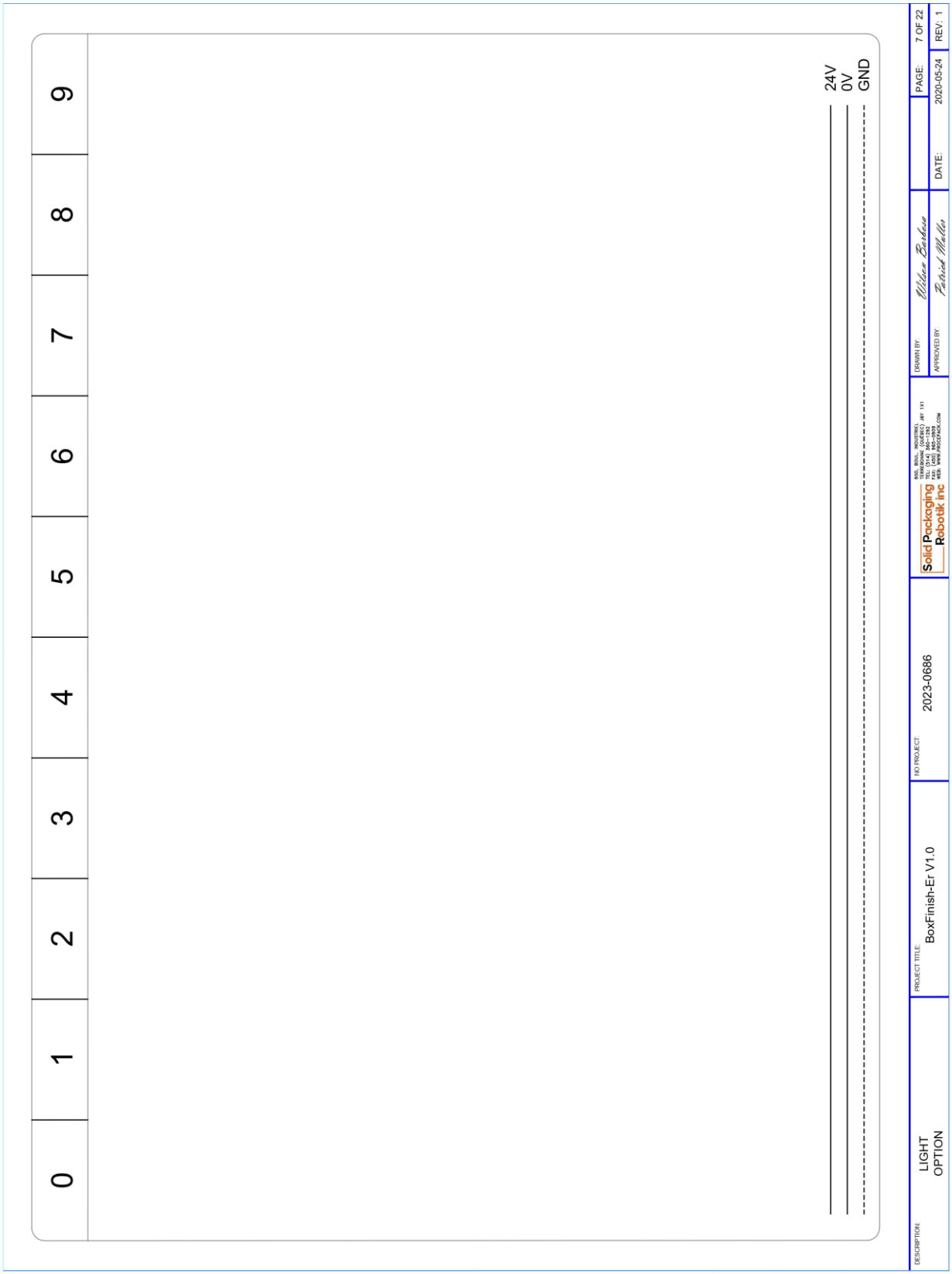

GND
24V
0V
RESET
284
12.2
850
6.5
235
2SR20
SAFETY RELAY
2981059
222
3.6
200
231
12.0
3.3
230
3.3
2K30
EMS
242
13.2
240
241
252
14.2
261
260
BRN
BLK
YLW
RED
BLU
WHT
GRN
ORG
SAFETY RELAY
BoxFinish-Er V1.0
2022-0587
Solid Packaging Robotik inc
2 OF 22
REV: 2
2020-05-24

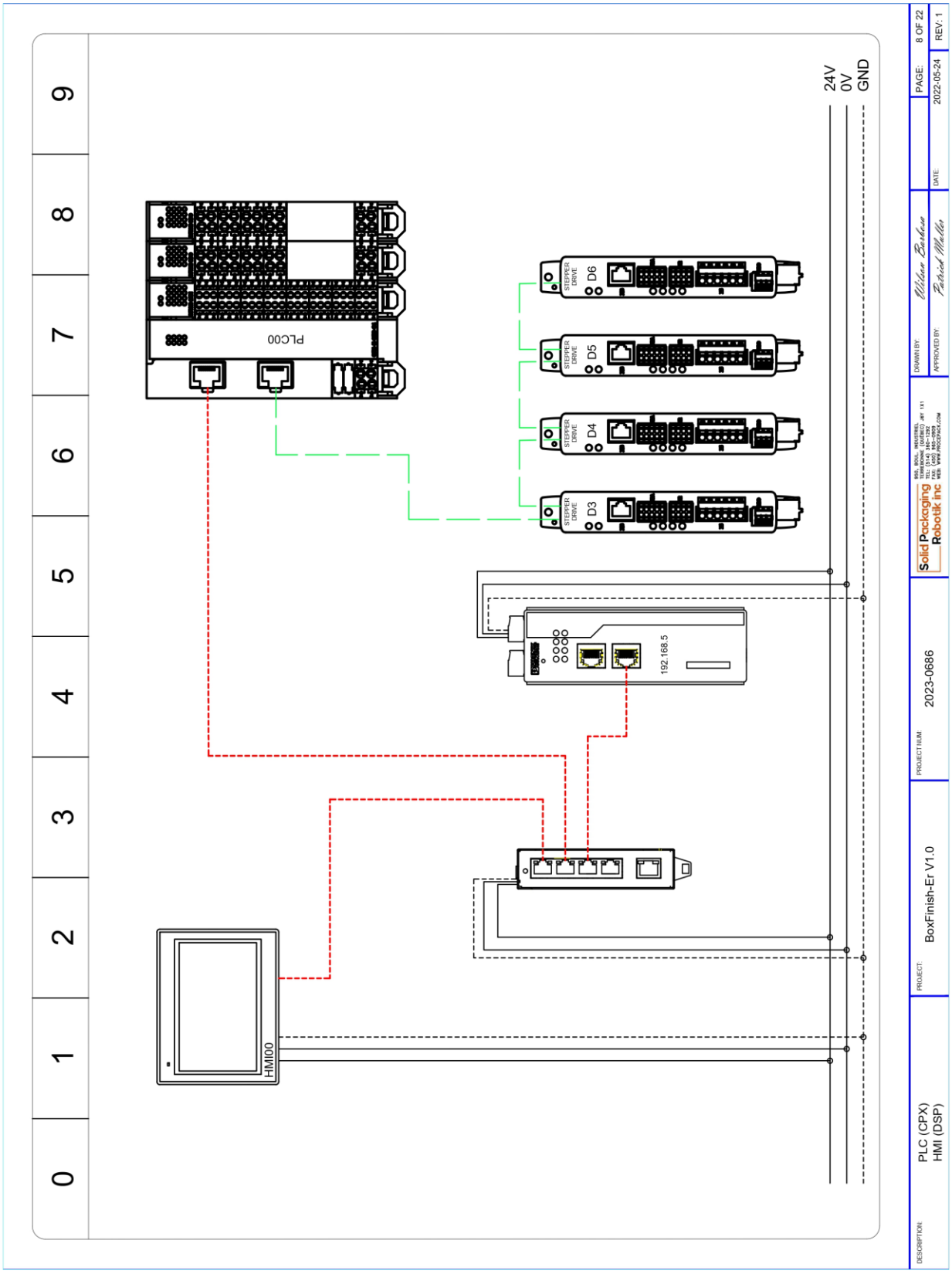

GND
L1
L2/N
48V
24V
0V
STEPPER MOTOR
M3
E3
WH - A (X6) Pin 1
BN - A/ (X6) Pin 2
GN - B (X6) Pin 3
YE - B/ (X6) Pin 4
GY - Br+ (X6) Pin 5
PK - BR-/0V (X6) Pin 6
WH - A (X2) Pin 1
GN - Ā (X2) Pin 2
PK - B (X2) Pin 3
RD - B̄ (X2) Pin 4
BN - Br+ (X2) Pin 5
YE - BR-/0V (X2) Pin 6
BU - BR-/0V (X2) Pin 7
GY - BR-/0V (X2) Pin 8
#STO-A (X1A) Pin 2
#STO-B (X1A) Pin 3
STA-C1 (X1A) Pin 4
STA-C2 (X1A) Pin 5
230
231
200
350
2.3
2.3
2.0
4.5
STEPPER DRIVE
D3
1A
8A
3F01
3F00
301
300
(X9) Pin 2
(X9) Pin 3
(X9) Pin 1
0
1
2
3
4
5
6
7
8
9
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE: 2022-05-24
PAGE: 3 OF 22
REV: 1
NO PROJECT: 2023-0686
PROJECT TITLE: BoxFinish-Er V1.0
DESCRIPTION: AXE: X MAGAZIN CARRIER

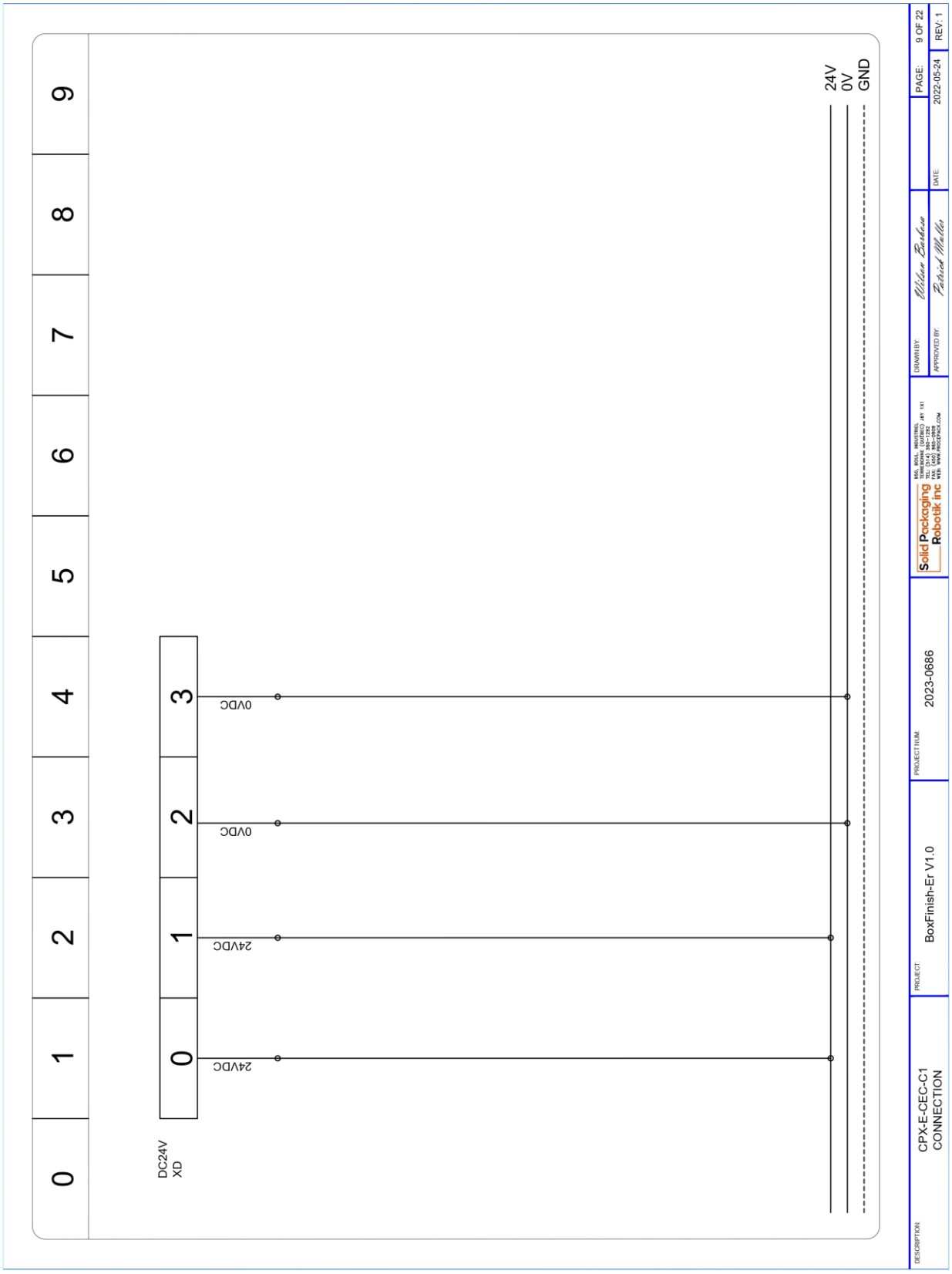

GND
L1
L2/N
48V
24V
0V
STEPPER MOTOR
M4
E4
WH - A (X6) Pin 1
BN - A/ (X6) Pin 2
GN - B (X6) Pin 3
YE - B/ (X6) Pin 4
GY - Br+ (X6) Pin 5
PK - BR-/0V (X6) Pin 6
WH - A (X2) Pin 1
GN - Ā (X2) Pin 2
PK - B (X2) Pin 3
RD - B̄ (X2) Pin 4
BN - Br+ (X2) Pin 5
YE - BR-/0V (X2) Pin 6
BU - BR-/0V (X2) Pin 7
GY - BR-/0V (X2) Pin 8
#STO-A (X1A) Pin 2
#STO-B (X1A) Pin 3
STA-C1 (X1A) Pin 4
STA-C2 (X1A) Pin 5
230
231
350
450
2.3
2.3
3.5
5.5
STEPPER DRIVE
D4
1A
8A
4F01
4F00
401
400
(X9) Pin 2
(X9) Pin 3
(X9) Pin 1
Solid Packaging Robotik inc
PROJECT TITLE: BoxFinish-Er V1.0
NO PROJECT: 2023-0686
DESCRIPTION: AXE:Y PICK AND PLACE ARM
DRAWN BY:
APPROVED BY:
DATE: 2020-05-24
PAGE: 4 OF 22
REV: 1

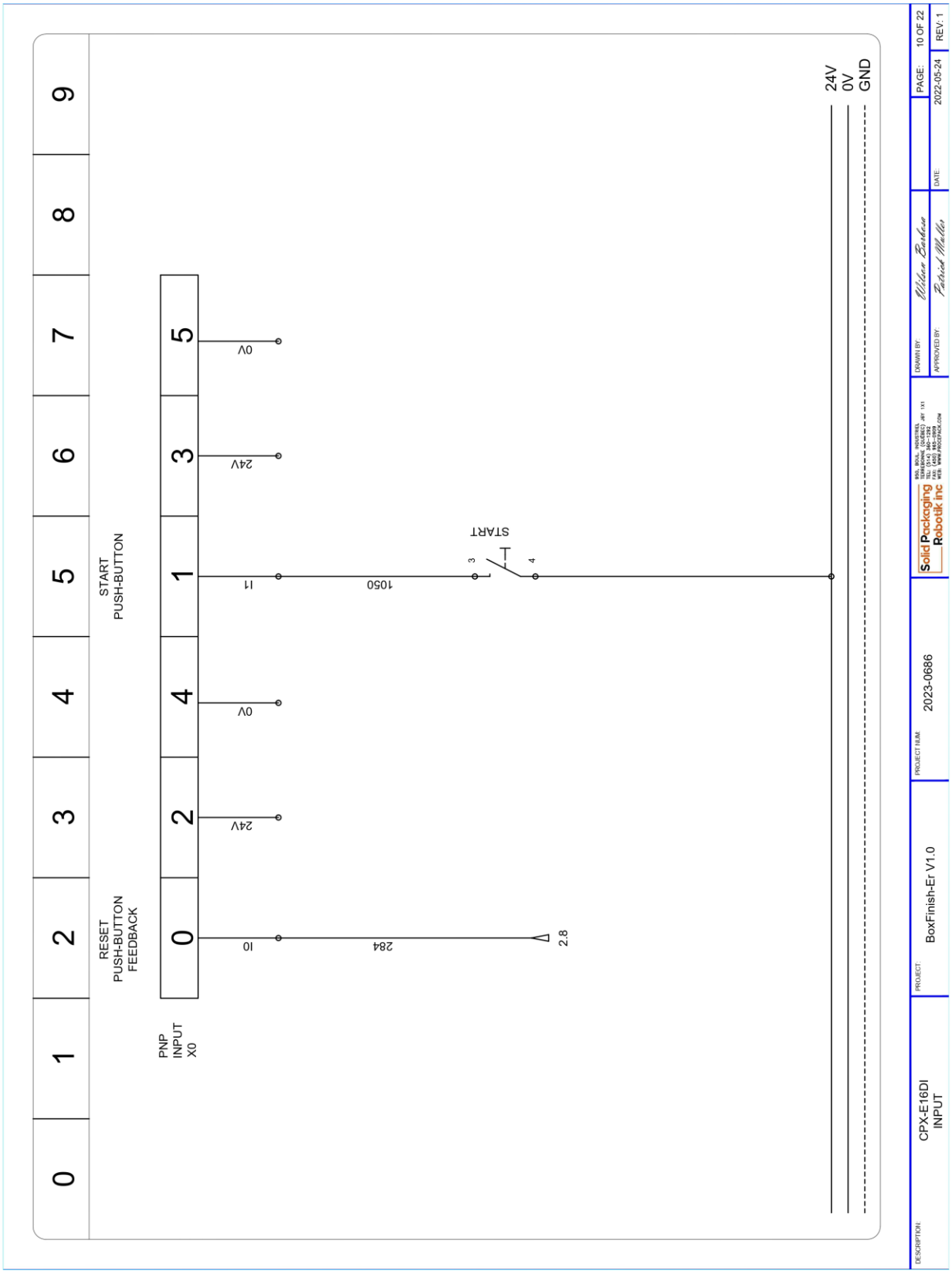

GND
L1
L2
48V
24V
0V
STEPPER MOTOR
M5
E5
WH - A (X6) Pin 1
BN - A/ (X6) Pin 2
GN - B (X6) Pin 3
YE - B/ (X6) Pin 4
GY - Br+ (X6) Pin 5
PK - BR-/0V (X6) Pin 6
WH - A (X2) Pin 1
GN - Ã (X2) Pin 2
PK - B (X2) Pin 3
RD - B̃ (X2) Pin 4
BN - Br+ (X2) Pin 5
YE - BR-/0V (X2) Pin 6
BU - BR-/0V (X2) Pin 7
GY - BR-/0V (X2) Pin 8
#STO-A (X1A) Pin 2
#STO-B (X1A) Pin 3
STA-C1 (X1A) Pin 4
STA-C2 (X1A) Pin 5
230
231
450
550
2.3
2.3
4.5
6.5
STEPPER DRIVE
D5
1A
8A
5F01
5F00
501
500
(X9) Pin 2
(X9) Pin 3
(X9) Pin 1
0
1
2
3
4
5
6
7
8
9
PROJECT TITLE:
BoxFinish-Er V1.0
NO PROJECT:
2023-0686
AXE:Z
FOWARD / REVERSE
DESCRIPTION:
DRAWN BY:
APPROVED BY:
DATE:
2020-05-24
PAGE:
5 OF 22
REV: 1
Solid Packaging Robotik inc

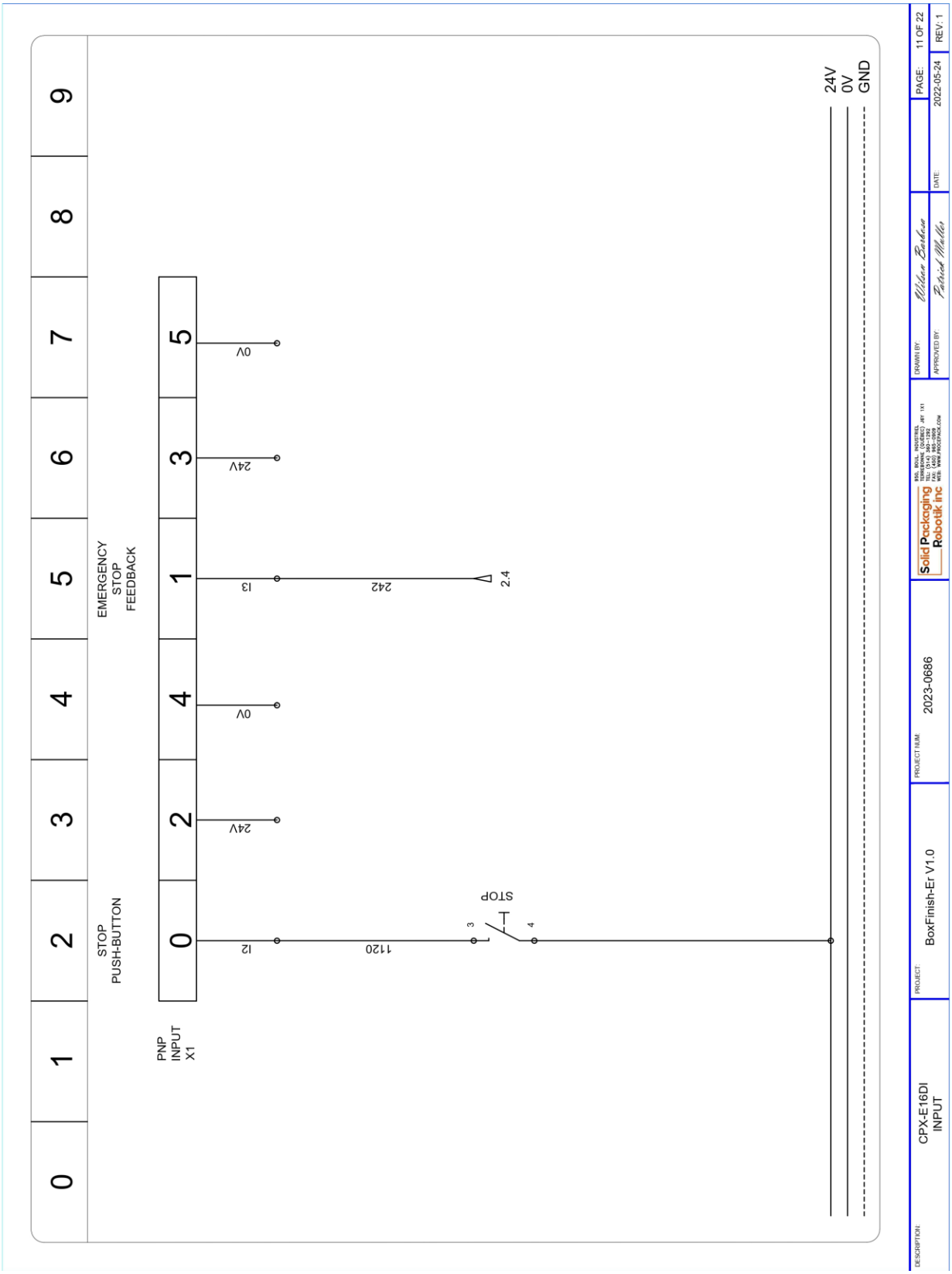

GND
L1
L2
48V
24V
0V
STEPPER MOTOR
M6
E6
WH - A (X6) Pin 1
BN - A/ (X6) Pin 2
GN - B (X6) Pin 3
YE - B/ (X6) Pin 4
GY - Br+ (X6) Pin 5
PK - BR-/0V (X6) Pin 6
WH - A (X2) Pin 1
GN - Ā (X2) Pin 2
PK - B (X2) Pin 3
RD - B̄ (X2) Pin 4
BN - Br+ (X2) Pin 5
YE - BR-/0V (X2) Pin 6
BU - BR-/0V (X2) Pin 7
GY - BR-/0V (X2) Pin 8
#STO-A (X1A) Pin 2
#STO-B (X1A) Pin 3
STA-C1 (X1A) Pin 4
STA-C2 (X1A) Pin 5
230
231
550
650
2.3
2.3
5.5
6.5
STEPPER DRIVE
D6
1A
8A
6F01
6F00
601
600
(X9) Pin 2
(X9) Pin 3
(X9) Pin 1
0
1
2
3
4
5
6
7
8
9
DESCRIPTION
ROTATION GRIPPER TWIST
PROJECT TITLE
BoxFinish-Er V1.0
NO PROJECT
2023-0686
Solid Packaging Robotik inc
DRAWN BY
APPROVED BY
DATE:
2020-05-24
PAGE:
6 OF 22
REV: 1

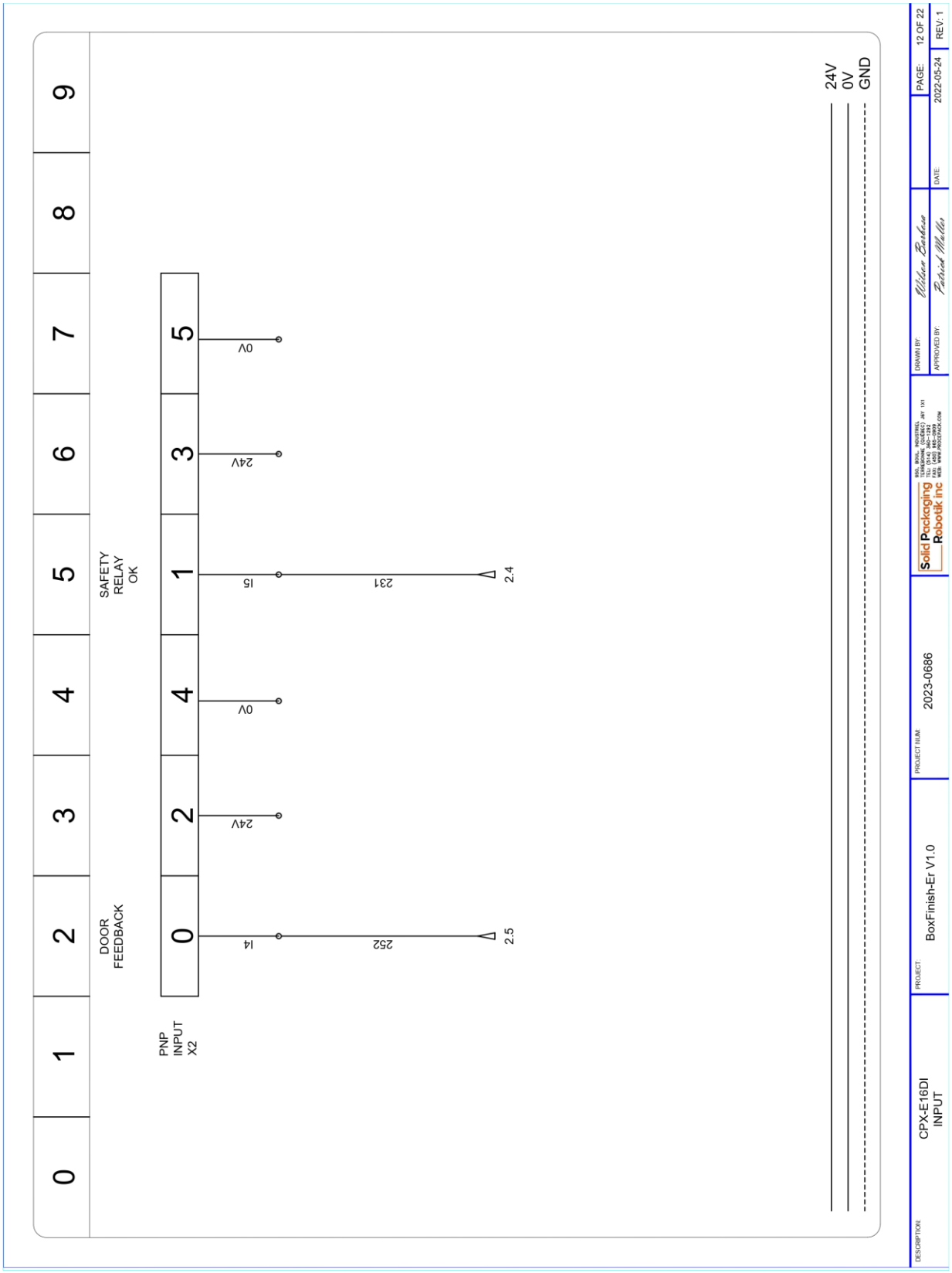

0
1
2
3
4
5
6
7
8
9
24V
0V
GND
DESCRIPTION:
LIGHT OPTION
PROJECT TITLE:
BoxFinish-Er V1.0
NO PROJECT:
2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2020-05-24
PAGE:
7 OF 22
REV: 1

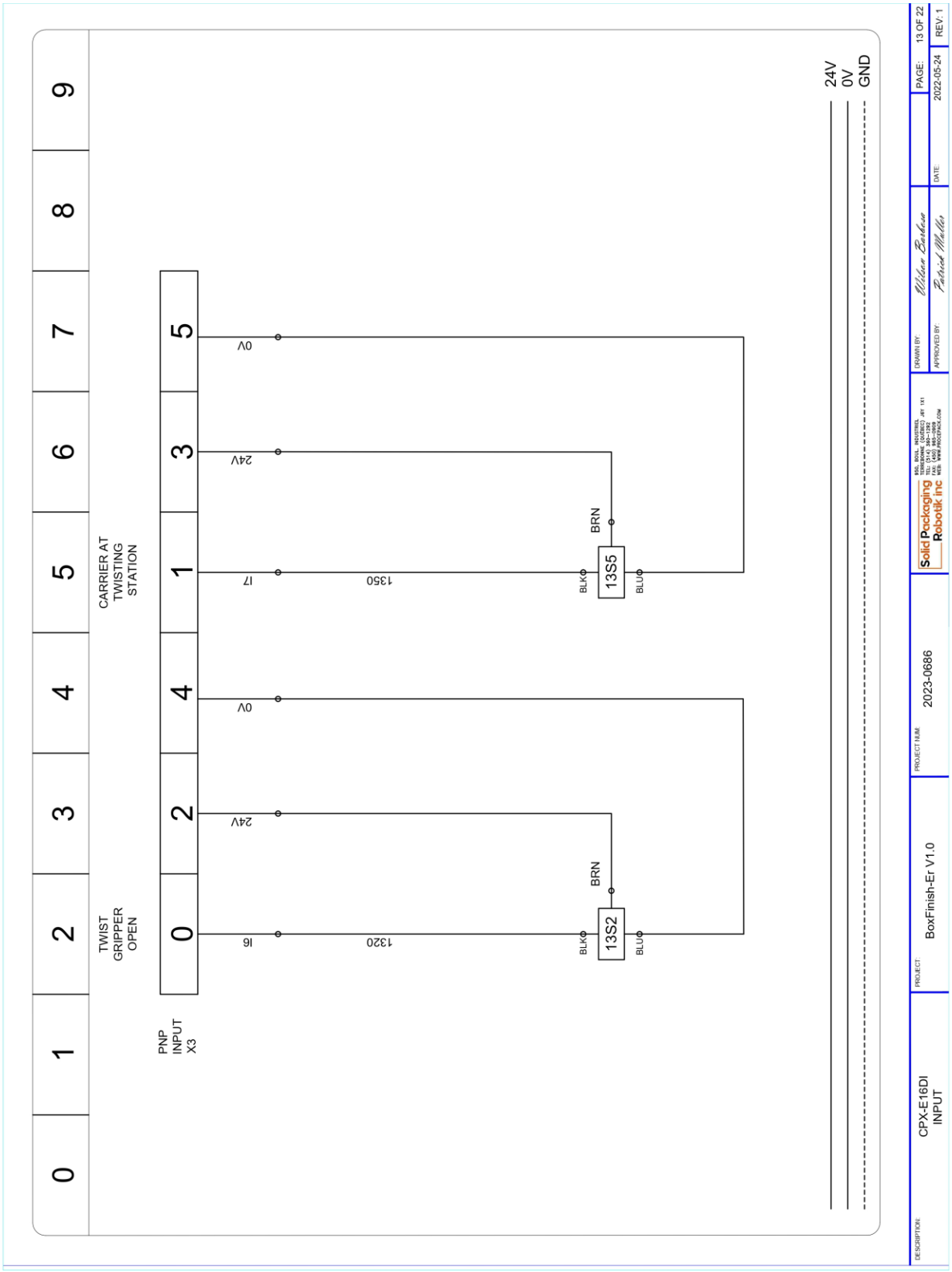

24V
0V
GND
PLC00
STEPPER DRIVE D6
STEPPER DRIVE D5
STEPPER DRIVE D4
STEPPER DRIVE D3
192.168.5
HMI00
PAGE: 8 OF 22
REV: 1
DATE: 2022-05-24
DRAWN BY: Wilson Barbosa
APPROVED BY: Patrick Mailloux
Solid Packaging Robotik inc
PROJECT NUM: 2023-0686
PROJECT: BoxFinish-Er V1.0
DESCRIPTION: PLC (CPX) HMI (DSP)

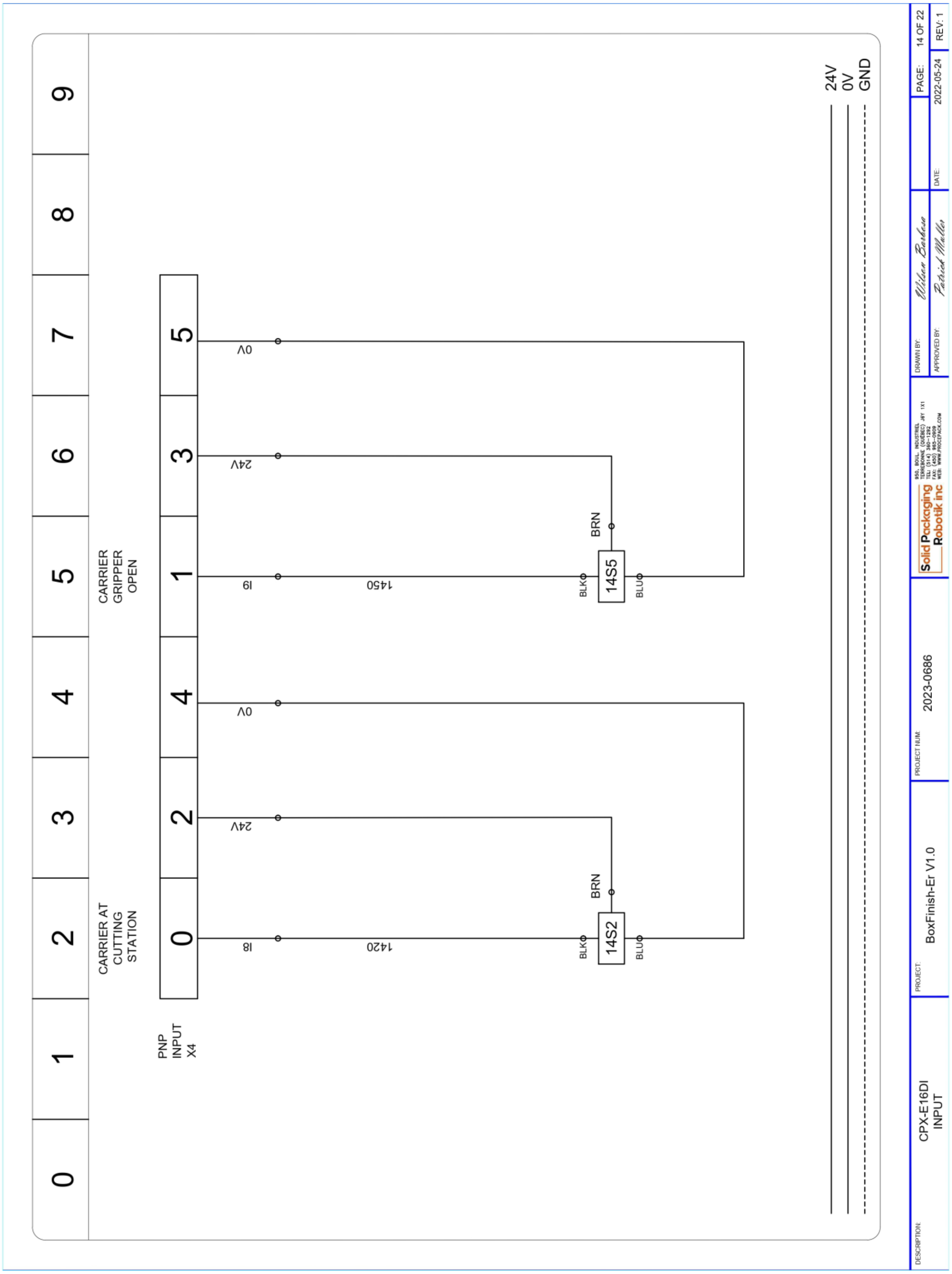

0 1 2 3 4 5 6 7 8 9
24V
0V
GND
DC24V
XD
0
1
2
3
24VDC
24VDC
0VDC
0VDC
DESCRIPTION:
CPX-E-CEC-C1
CONNECTION
PROJECT:
BoxFinish-Er V1.0
PROJECT NUM:
2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2022-05-24
PAGE:
9 OF 22
REV: 1

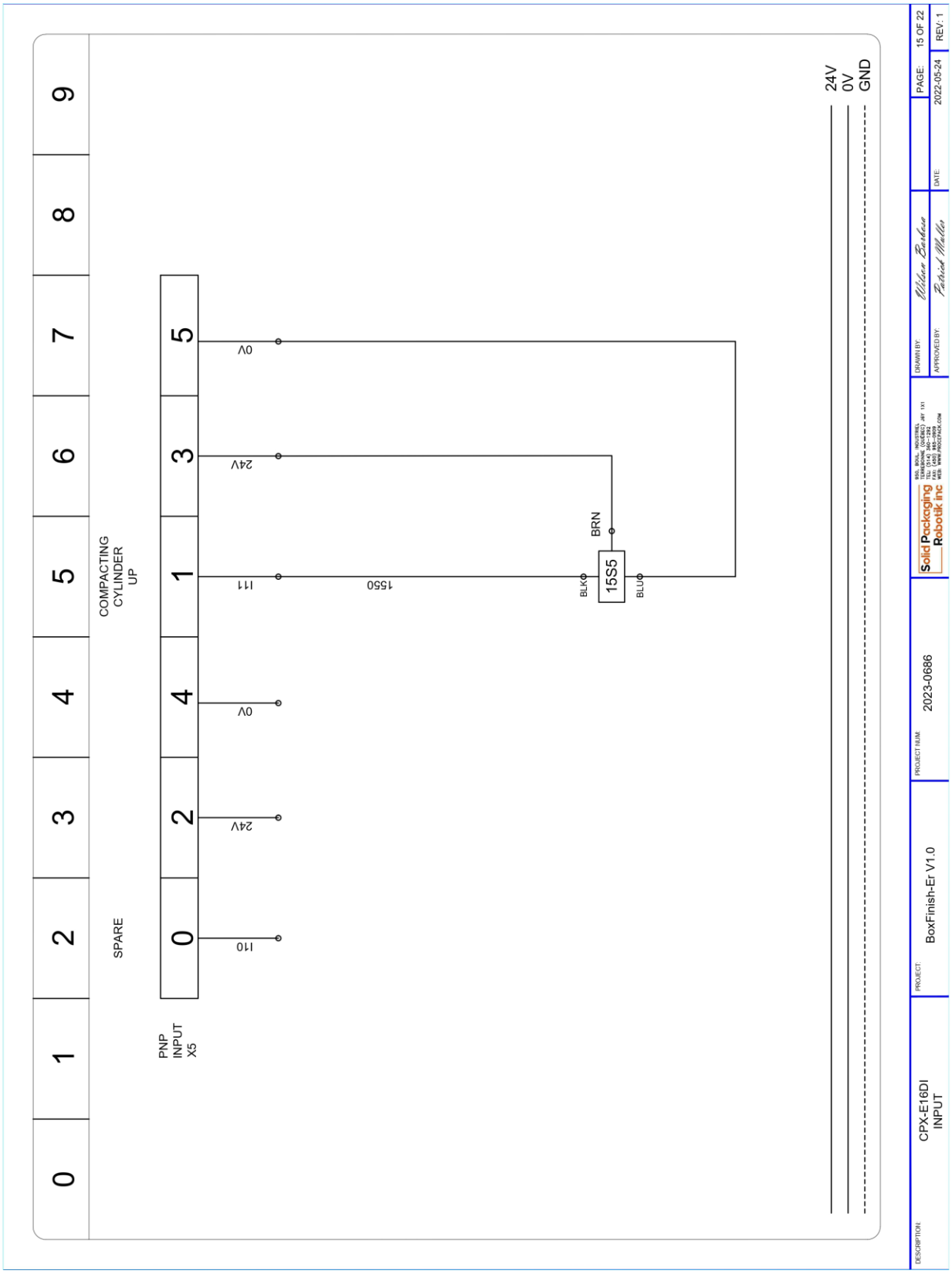

24V
0V
GND
START
PUSH-BUTTON
RESET
PUSH-BUTTON
FEEDBACK
PNP
INPUT
X0
0V
24V
0V
24V
START
1050
284
2.8
PAGE: 10 OF 22
REV: 1
DATE: 2022-05-24
DRAWN BY: Wilson Barbosa
APPROVED BY: Patrick Mailloux
Solid Packaging Robotik inc
PROJECT NUM: 2023-0686
PROJECT: BoxFinish-Er V1.0
DESCRIPTION: CPX-E16DI INPUT

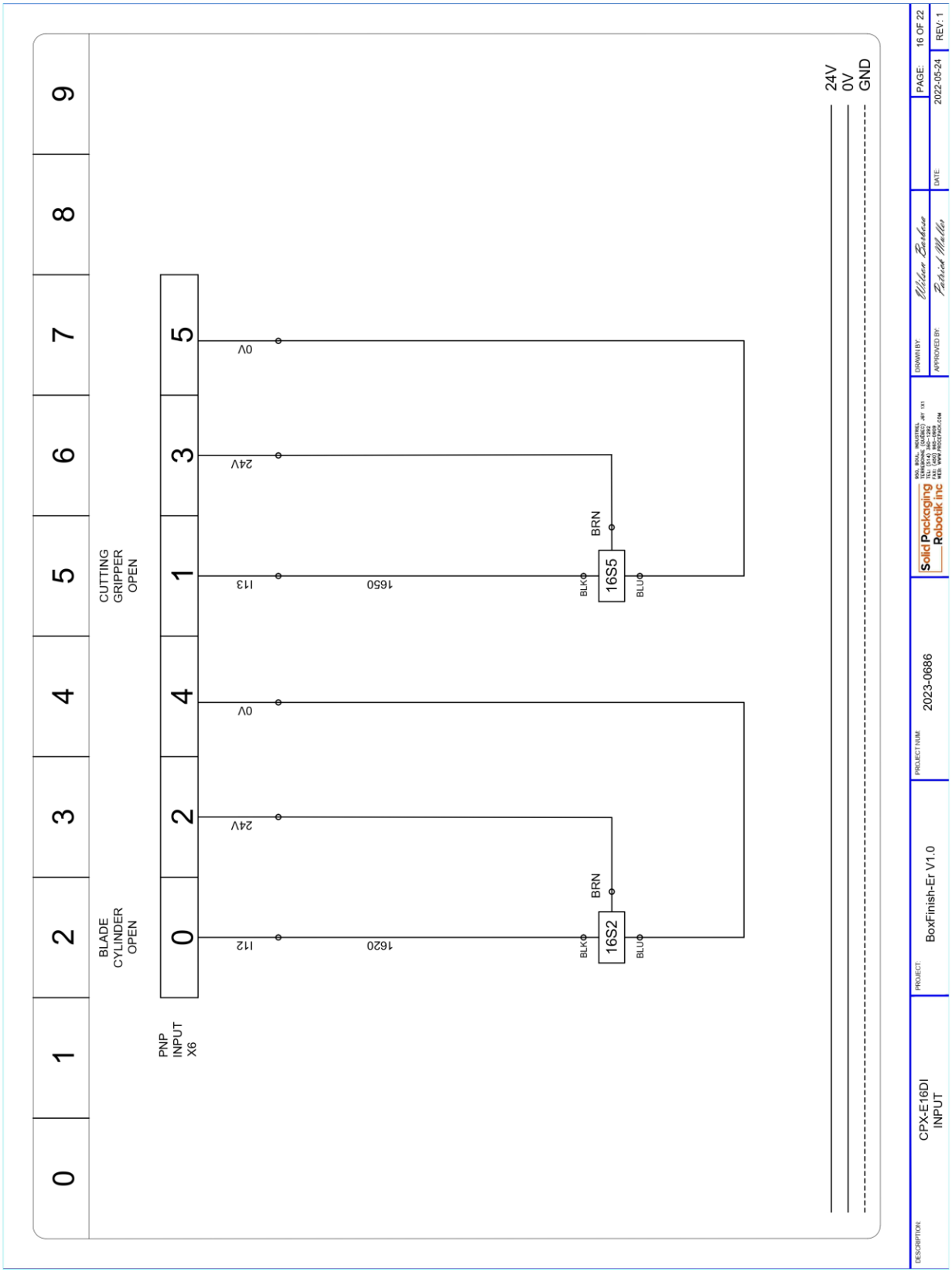

0 1 2 3 4 5 6 7 8 9
PNP INPUT X1
STOP PUSH-BUTTON
EMERGENCY STOP FEEDBACK
0V
24V
0V
24V
0V
24V
12
1120
STOP
3
4
13
242
2.4
24V
0V
GND
CPX-E16DI INPUT
PROJECT:
BoxFinish-Er V1.0
PROJECT NUM:
2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2022-05-24
PAGE: 11 OF 22
REV: 1

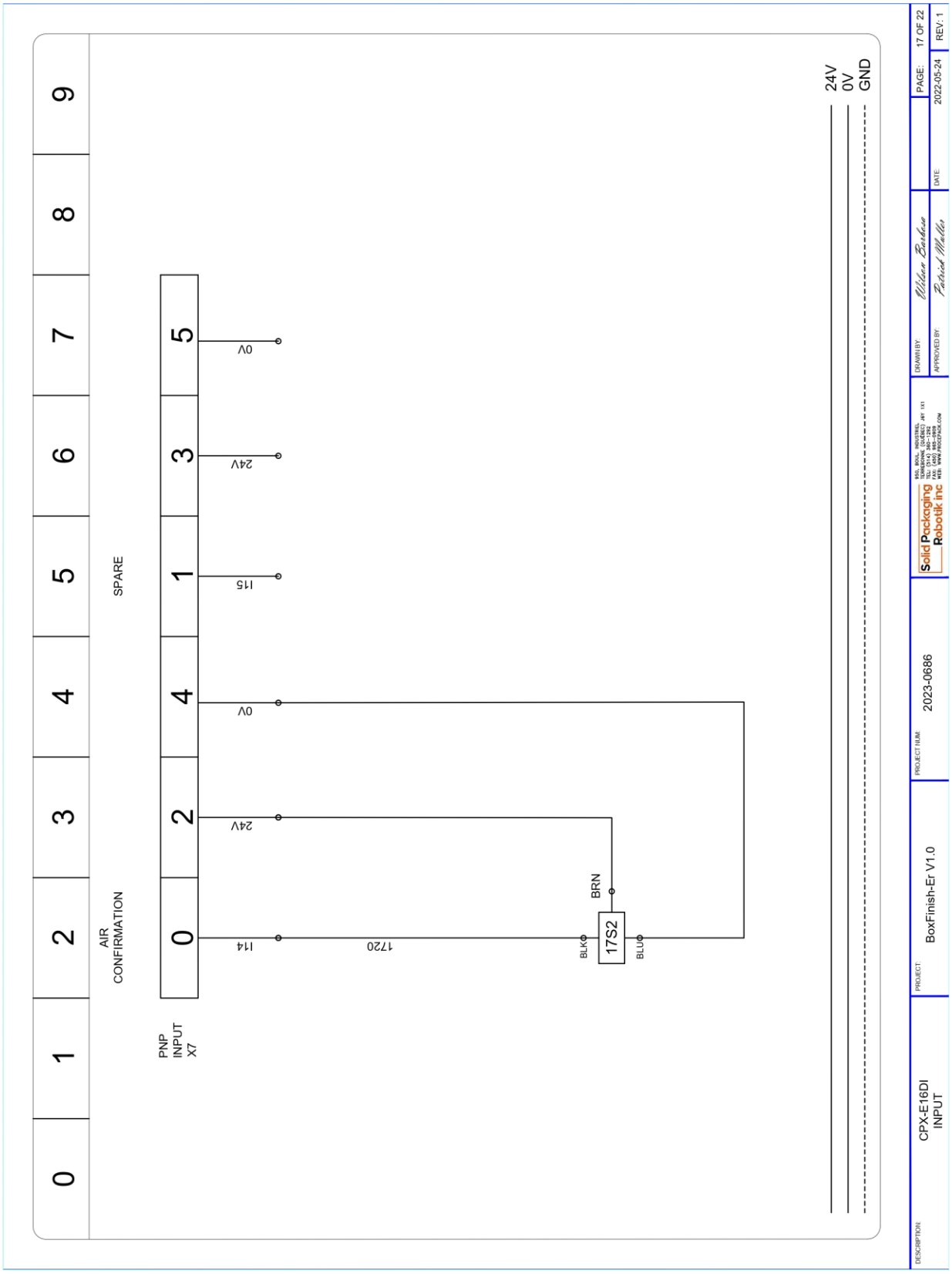

0
1
2
3
4
5
6
7
8
9
DOOR FEEDBACK
SAFETY RELAY OK
PNP INPUT X2
24V
0V
GND
0V
24V
15
231
2.4
0V
24V
14
252
2.5
CPX-E16DI INPUT
PROJECT:
BoxFinish-Er V1.0
PROJECT NUM:
2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2022-05-24
PAGE:
12 OF 22
REV: 1

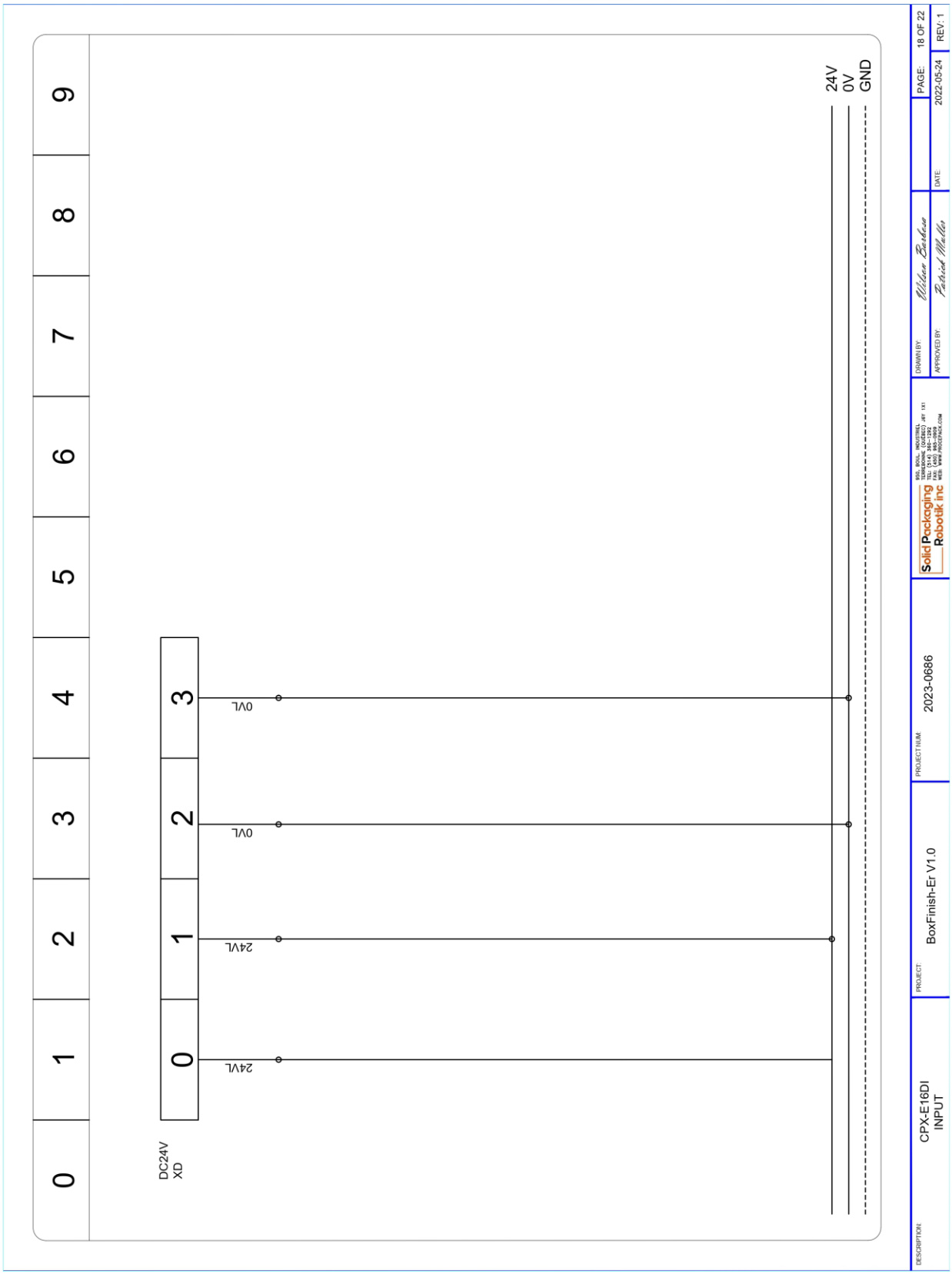

0
1
2
3
4
5
6
7
8
9
PNP INPUT X3
TWIST GRIPPER OPEN
CARRIER AT TWISTING STATION
0V
24V
I6
1320
BLK
BRN
13S2
BLU
I7
1350
13S5
24V
0V
GND
CPX-E16DI INPUT
DESCRIPTION:
BoxFinish-Er V1.0
PROJECT:
2023-0686
PROJECT NUM:
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2022-05-24
PAGE:
13 OF 22
REV: 1

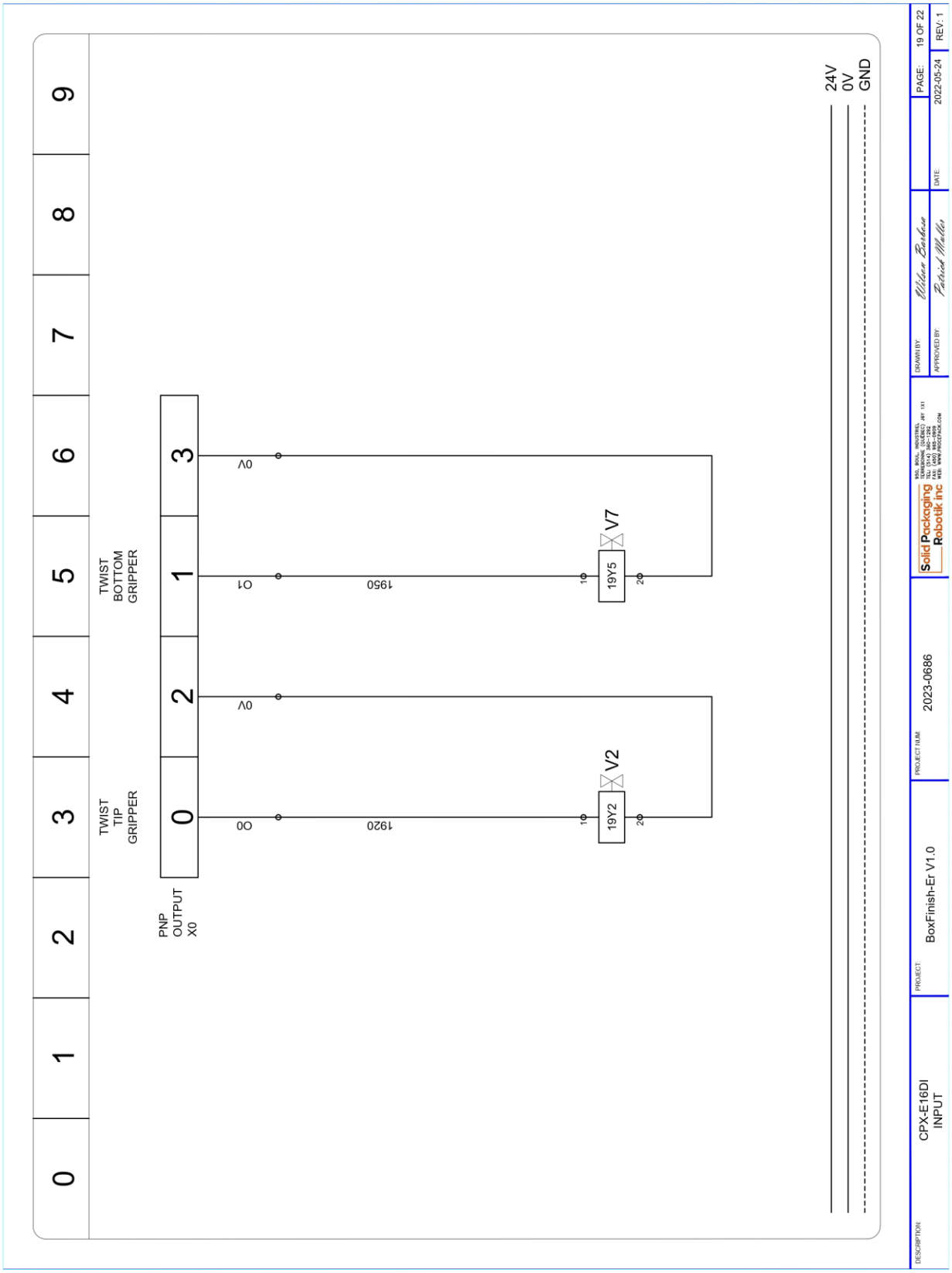

0
1
2
3
4
5
6
7
8
9
PNP
INPUT
X4
CARRIER AT
CUTTING
STATION
CARRIER
GRIPPER
OPEN
0
2
4
1
3
5
I8
24V
0V
I9
24V
0V
1420
1450
BLK
BRN
BLU
14S2
14S5
24V
0V
GND
DESCRIPTION:
CPX-E16DI
INPUT
PROJECT:
BoxFinish-Er V1.0
PROJECT NUM:
2023-0686
Solid Packaging
Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
PAGE:
14 OF 22
2022-05-24
REV: 1

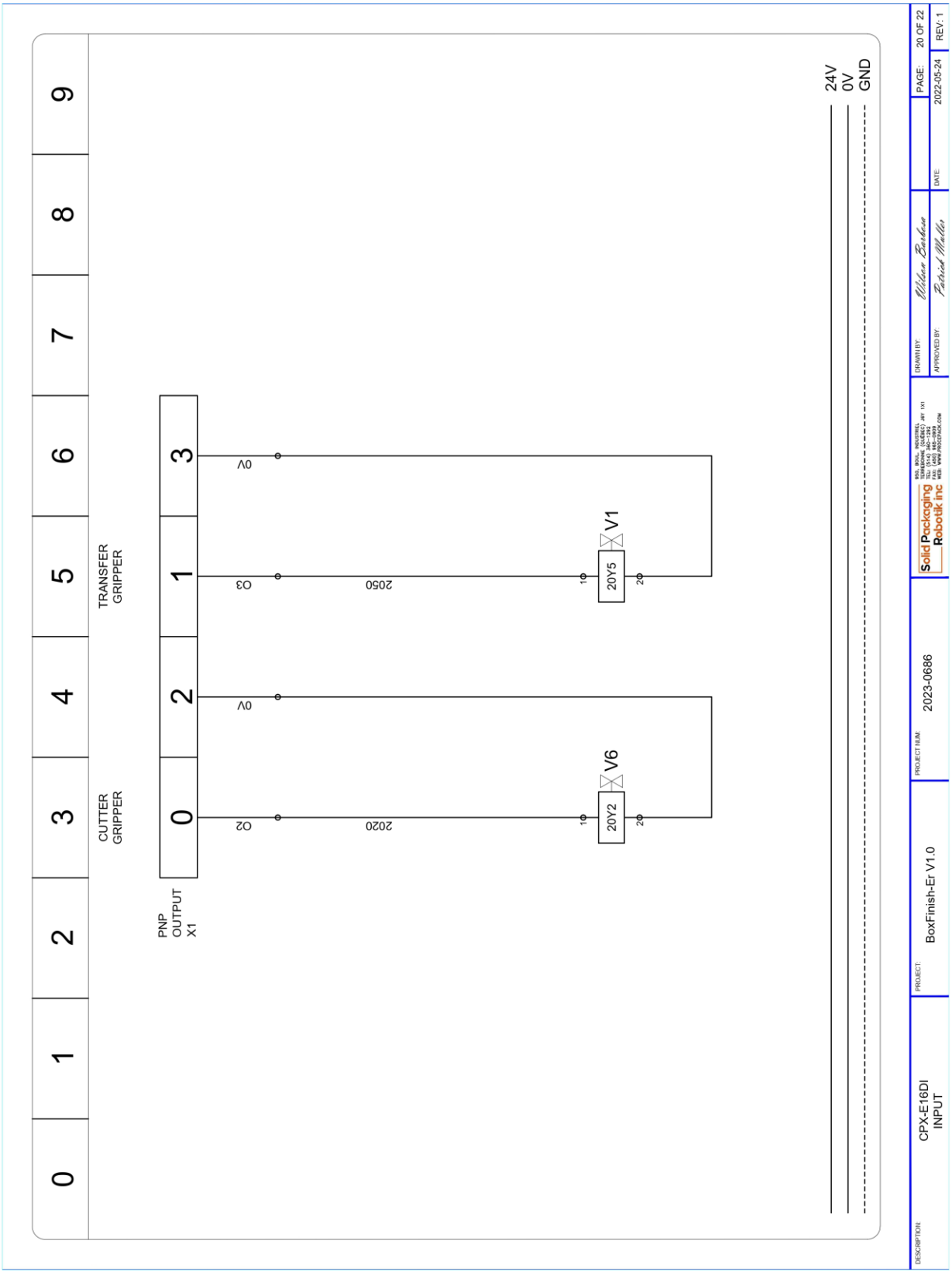

24V
0V
GND
PNP INPUT X5
SPARE
COMPACTING CYLINDER UP
0
1
2
3
4
5
6
7
8
9
110
24V
0V
111
1550
BRN
BLK
15S5
BLU
24V
0V
PAGE: 15 OF 22
REV: 1
DATE: 2022-05-24
DRAWN BY:
APPROVED BY:
Solid Packaging Robotik inc
PROJECT NUM: 2023-0686
PROJECT: BoxFinish-Er V1.0
DESCRIPTION: CPX-E16DI INPUT

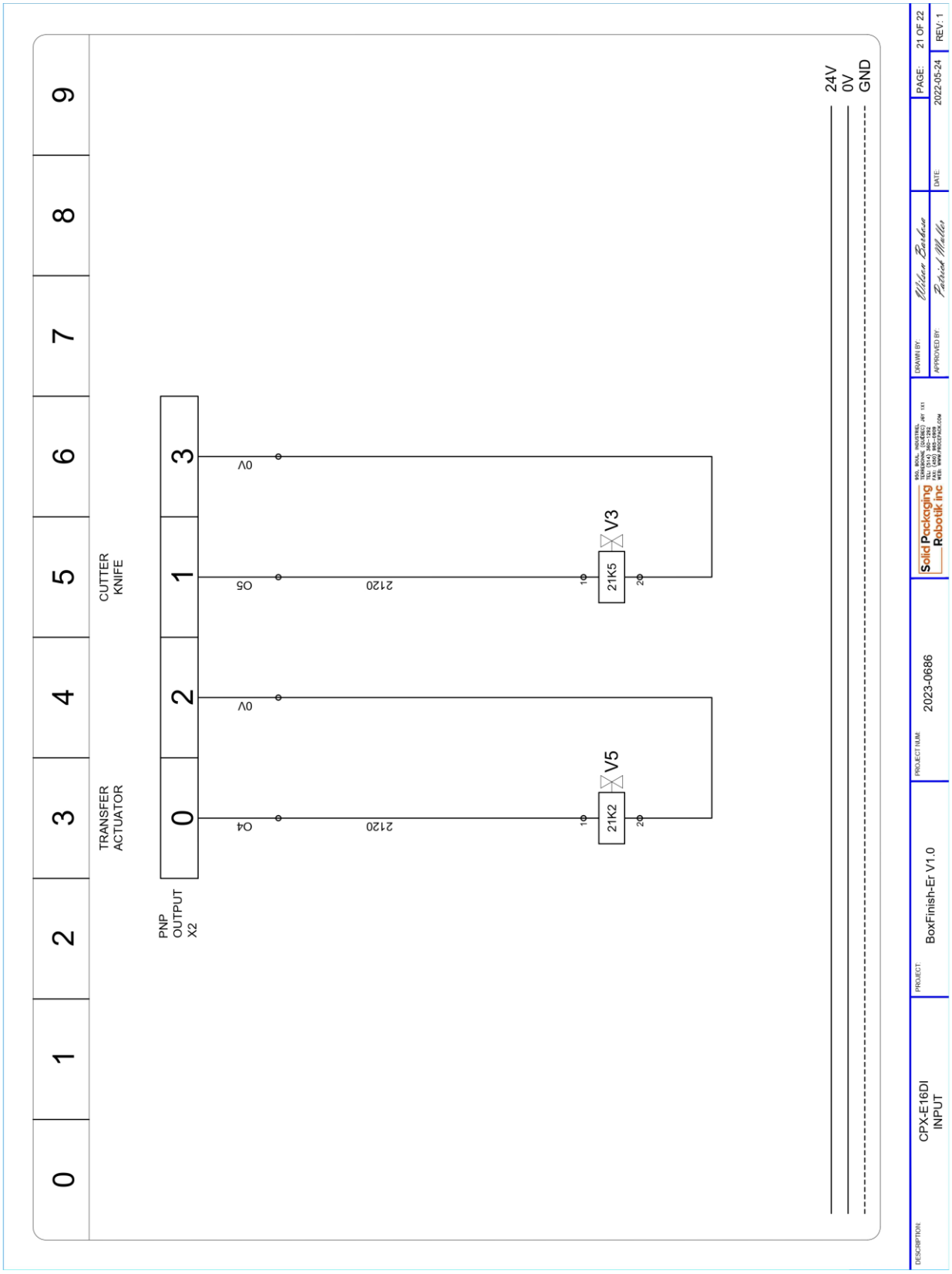

0
1
2
3
4
5
6
7
8
9
24V
0V
GND
PNP INPUT X6
BLADE CYLINDER OPEN
CUTTING GRIPPER OPEN
0V
24V
0V
24V
BRN
16S2
BLK
BLU
1620
112
16S5
1650
113
CPX-E16DI INPUT
BoxFinish-Er V1.0
2023-0686
Solid Packaging Robotik inc
2022-05-24
PAGE: 16 OF 22
REV: 1


0 1 2 3 4 5 6 7 8 9
SPARE
AIR CONFIRMATION
PNP INPUT X7
0 1 2 3 4 5
0V
24V
115
0V
24V
114
1720
BLK
17S2
BLU
BRN
24V
0V
GND
CPX-E16DI INPUT
BoxFinish-Er V1.0
2023-0686
2022-05-24
PAGE: 17 OF 22
REV: 1
Solid Packaging Robotik inc


0 1 2 3 4 5 6 7 8 9
24V
0V
GND
DC24V
XD
0 1 2 3
24VL
24VL
0VL
0VL
DESCRIPTION: CPX-E16DI INPUT
PROJECT: BoxFinish-Er V1.0
PROJECT NUM: 2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE: 2022-05-24
PAGE: 18 OF 22
REV: 1


0 1 2 3 4 5 6 7 8 9
24V
0V
GND
TWIST BOTTOM GRIPPER
TWIST TIP GRIPPER
PNP OUTPUT X0
0 1 2 3
0V
O1
1950
19Y5
V7
0V
O0
1920
19Y2
V2
CPX-E16DI INPUT
BoxFinish-Er V1.0
2023-0686
Solid Packaging Robotik inc
2022-05-24
PAGE: 19 OF 22
REV: 1


0 1 2 3 4 5 6 7 8 9
TRANSFER GRIPPER
CUTTER GRIPPER
PNP OUTPUT X1
0 1 2 3
0V
O3
2050
20Y5
V1
0V
O2
2020
20Y2
V6
24V
0V
GND
CPX-E16DI INPUT
PROJECT: BoxFinish-Er V1.0
PROJECT NUM: 2023-0686
Solid Packaging Robotik inc
DRAWN BY: William Barbeau
APPROVED BY: Patrick Mailloux
DATE: 2022-05-24
PAGE: 20 OF 22
REV: 1


0
1
2
3
4
5
6
7
8
9
24V
0V
GND
CUTTER KNIFE
TRANSFER ACTUATOR
PNP OUTPUT X2
0
1
2
3
0V
0V
0V
O4
O5
2120
2120
21K2
21K5
V5
V3
10
20
10
20
CPX-E16DI INPUT
BoxFinish-Er V1.0
2023-0686
Solid Packaging Robotik inc
DRAWN BY:
APPROVED BY:
DATE:
2022-05-24
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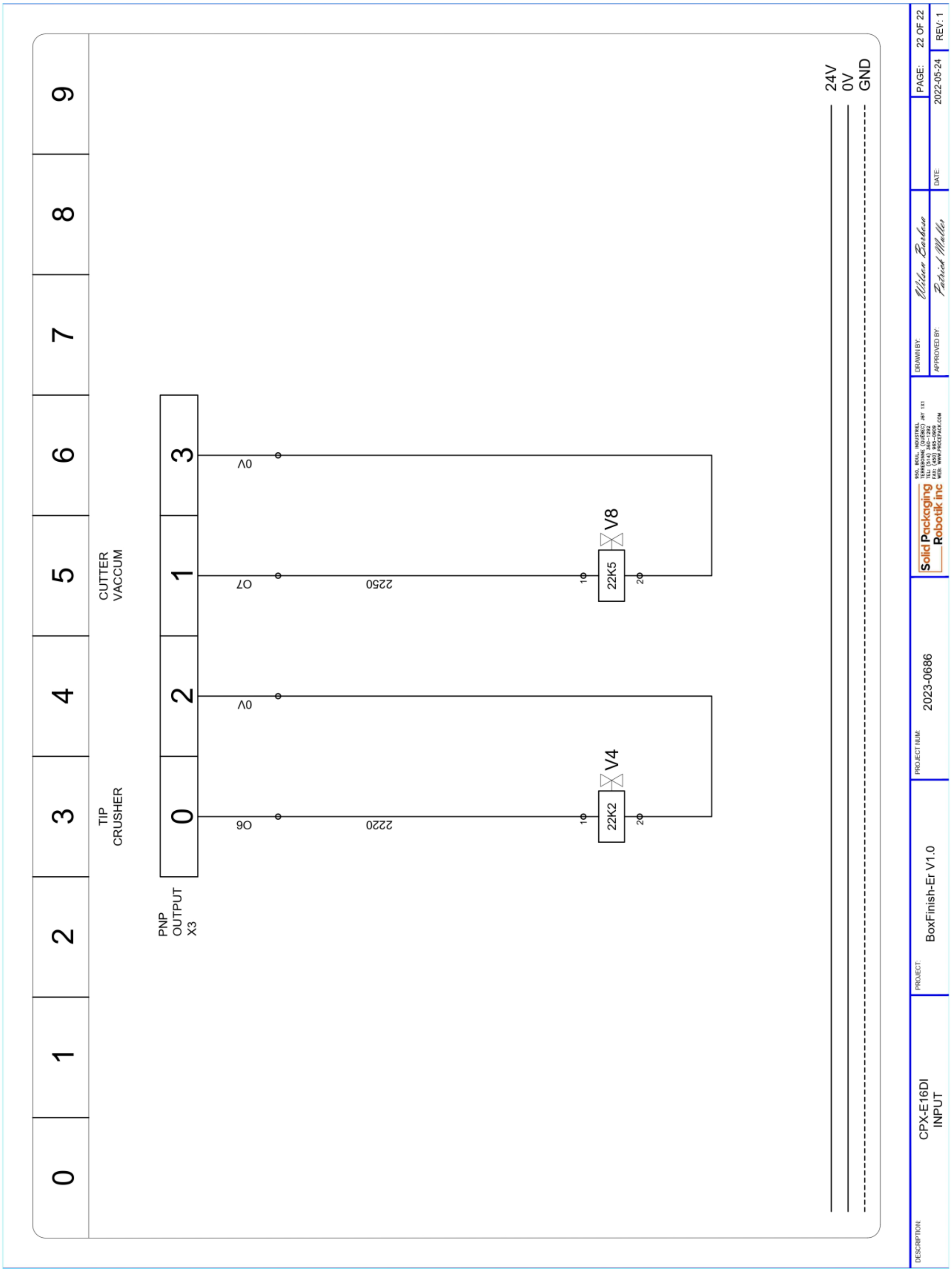
REV: 1


0
1
2
3
4
5
6
7
8
9
TIP CRUSHER
CUTTER VACCUM
PNP OUTPUT X3
0
2
1
3
O6
0V
O7
0V
2220
2250
22K2
22K5
V4
V8
24V
0V
GND
DESCRIPTION:
CPX-E16DI INPUT
PROJECT:
BoxFinish-Er V1.0
PROJECT NUM:
2023-0686
Solid Packaging Robotik inc
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APPROVED BY:
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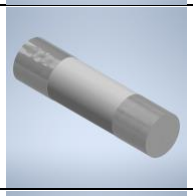
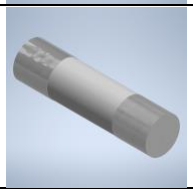
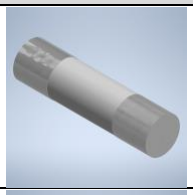
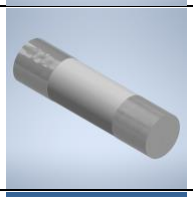
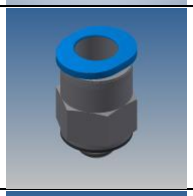
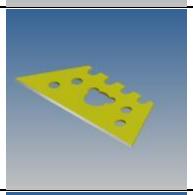
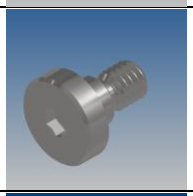
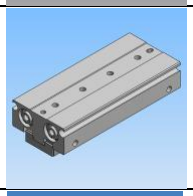
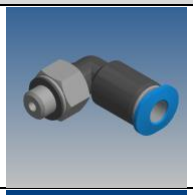
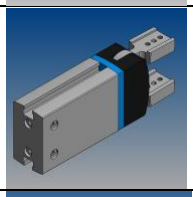
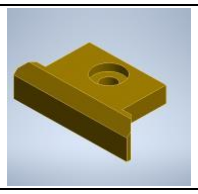
8.3 Spare Parts

Please find below a list of suggested spare parts to have close to the machine for maintenance:

Part Number	Thumbnail	Description	QTY per equipment	QTY recommended
CAELE000136		MOTOR CONNECTION CABLE	4	1
CAELE000143		DOOR PROXIMITY SENSOR	1	1
CAELE000156		SENSOR/ACTUATOR CABLE TWIST	1	1
CAELE000167		NETWORK CABLE	7	1
CAELE000272		PROXIMITY SENSOR TWIST	1	1
CAELE000453		FUSE GLASS 8A 250VAC 5X20MM	4	1
CAELE000455		5×20 GLASS FUSE 1A 250 VAC	4	1

Part Number	Thumbnail	Description	QTY per equipment	QTY recommended
CAELE000456		5×20 GLASS FUSE 3A 250 VAC	1	1
CAELE000458		5×20 GLASS FUSE 5A 250 VAC	1	1
CAMEC000139		PUSH IN FITTING 6MM	1	1
CAMEC000448		CUTTING BLADE	1	3
CAMEC000449		ANVIL SHOULDER SCREW	1	1
CAMEC000088		O-RING	4	4
CAPNE000022		AIR GRIPPER TWIST	1	1
CAPNE000036		ROTARY JOINT TWIST	1	1

Part Number	Thumbnail	Description	QTY per equipment	QTY recommended
CAPNE000064		CONNECTING CABLE	16	2
CAPNE000065		PROXIMITY SENSOR STRAIGHT	3	1
CAPNE000066		PUSH-IN FITTING 4MM	5	2
CAPNE000067		PROXIMITY SENSOR 90 DEGREES	1	1
CAPNE000068		ONE WAY FLOW CONTROL VALVE	3	2
CAPNE000070		ENCODER CABLE	4	1
CAPNE000073		CONECTING CABLE	3	1
CAPNE000077		PUSH-IN L-FITTING 4MM	3	2

Part Number	Thumbnail	Description	QTY per equipment	QTY recommended
CAPNE000105		PUSH-IN L FITTING 4MM TWIST	4	2
CAPNE000160		RADIAL GRIPPER	3	1
CAPNE000190		PUSH-IN Y CONNECTOR	2	1
CAPNE000323		FLOW CONTROL	1	1
CAPRT001278		CUTTING ANVIL	1	1
CAPRT003294		LEFT GRIPPER	3 per tooling. Need to be custom machined.	3
CAPRT003295		RIGHT GRIPPER	3 per tooling. Need to be custom machined.	3