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Operator's Manual

Model 420 Compu-Cut® Material Cutter

Production Wire Processing Equipment

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Introduction

Thank you for choosing Carpenter Mfg. Co., Inc. for your wire processing equipment needs. For over 70 years Carpenter has been a leader in wire processing technology and service. As an independently-owned, third generation company our philosophy has always been to provide the customer with both quality products and outstanding service. We look forward to a long, healthy relationship with you and our company.

The Model 420 Compu-Cut® can process a wide range of material, as referenced on the following pages. These processing specifications are based upon the most commonly manufactured materials. Special applications may arise with materials that are within the specification limits of the machine but are very difficult or unsuccessful to process. Likewise, materials that exceed the specified limits of the machine may sometimes be processed successfully. Because there are many variables involved in wire processing, we strongly recommend a free material evaluation, to be completed at our factory (http://carpentermfg.com/wire-evaluation/). A demonstration from a Carpenter representative is also recommended to ensure the ultimate success of your material processing application.

This operator's manual explains how to operate the Model 420 Compu-Cut®. To ensure the best performance of your machine, read this manual carefully until you familiarize yourself thoroughly with its operation and features. After you have read through the manual, keep it available for reference.

Use this manual as a quick and handy reference tool for clarifying any questions that may arise. If you have any questions about this machine or service please let us know. Our phone number is (315) 682-9176; we may also be reached by fax at (315) 682-9160. Visit our website (www.carpentermfg.com), or contact us via email (wire@carpentermfg.com).

Carefully unpack the Carpenter Model 420 Compu-Cut®. We recommend that you keep the original box and packaging as it will protect the machine for future transportation, if necessary.

Important Notice

The products in this shipment left our facility in good working condition. Their safe delivery is the responsibility of the carrier that delivered this shipment to you. Our stated shipping terms are F.O.B. our facility at 110 Fairgrounds Drive, Manlius, NY 13104. According to applicable laws, the responsibility for this shipment was transferred to you as soon as the carrier accepted the goods at our warehouse. If concealed damage is discovered after unpacking this shipment, you must submit a damaged freight claim with the carrier. Carpenter Mfg. Co., Inc. cannot submit your claim for you. In order for you to collect for concealed damage, the carrier must be notified within 5 days of the date you receive this shipment. You must leave the damaged items and packing material as is (i.e. return all merchandise and all packing material to the shipping container) until the claim has been inspected by the carrier. It is also important to note that the carrier will not accept a claim if the goods have been moved from the point of the carriers' delivery to another street address. If you have any questions or problems, please give us a call at (315) 682-9176, or email us at wire@carpentermfg.com.

Safety and Pneumatic Notices

CAUTION

This equipment comes equipped with a safety guard and a material exit chute assembly. Both the safety guard and the material exit chute assembly contain a safety interlock switch. The machine will not operate unless the guard is installed and in the closed position and the material exit chute assembly is attached to the Model 420.

IMPORTANT

Do not attempt to defeat the function or purpose of the safety interlock switches. Serious injury to the operator's eyes, fingers or other body parts may result from attempts to operate this equipment with the safety guard in the raised position or with the material exit chute assembly removed from the machine.

This machine contains pneumatic components. It is **extremely important** that this machine is connected to a **clean**, **filtered**, **and lubricated air supply**.

Contaminated air may cause the machine to malfunction. Failure to follow these installation instructions may result in damage to the machine that will **not be covered under warranty**. Refer to the Machine Lubrication subsection of the operator's manual regarding the use of an automatic, inline oiler.

Machine Disassembly Notice

CAUTION

Disassembling the Model 420 is not recommended.

IMPORTANT

Removing the Model 420 face plate without first unplugging and removing the electronic control unit will cause serious damage to the machine.

Please contact Carpenter Mfg. Co., Inc. directly for machine service assistance.

Applications and Machine Specifications

Applications

The Model 420 is designed to measure and cut to length a number of different materials, including solid wire; stranded wire; multi-conductor cable; flat cable; plastic tubing; and shrink tubing.

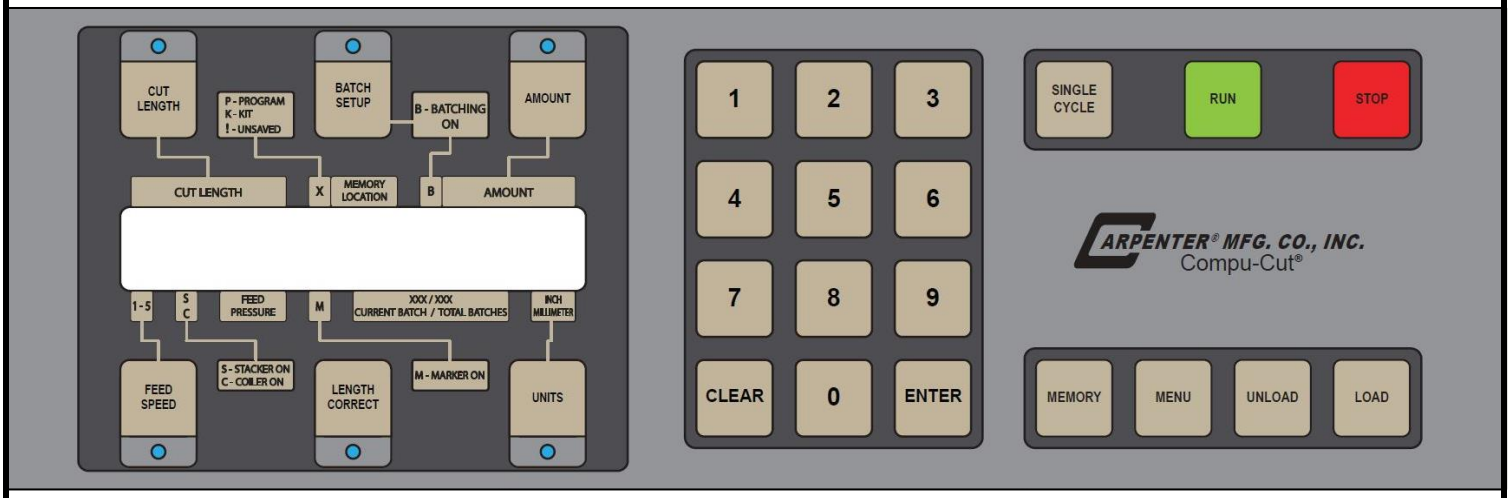
Note: A motorized prefeed may be necessary to assist the Model 420, depending on application. Contact the factory for information on available material prefeed models.

Machine Specifications*

Electrical Connection	88 – 264 VAC, 47 – 63 Hz self-adjusting
Air Supply	80 – 100 PSI (5.5 – 6.9 BAR) ****CLEAN**, **FILTERED**, **AND LUBRICATED AIR ONLY****
Main Fuses	2–5 x 20mm 6.3 AMP fast-action
Maximum Cutting Width	4.000" (101.6mm)
Maximum Cutting Diameter	1.000" (25.4mm) [material dependent]
Cut Length	0.01" – 9,999.99" (0.1mm – 99,999.9mm) [longer lengths obtainable in inches]
Quantity	1 – 999,999 pieces
Short Exit Chute	For lengths 3.0" or less
Unit of Measure	Inches or mm, user-selectable
Transport Speeds	5 programmable
Single Program Memory	999 programs
Kitting Program Memory	500 programs
Password Protection	User-programmable
Dimensions	13.78" (W) X 11" (H) X 20.5" (D) (350mm [W] X 279mm [H] X 521mm [D])
Weight	60 lbs. (29 kg)

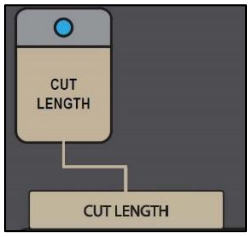
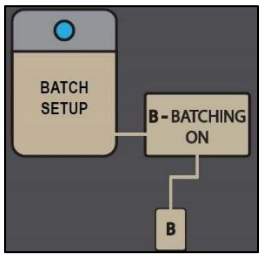
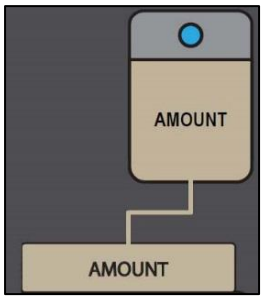
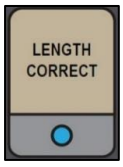
*Machine specifications subject to change without notice.

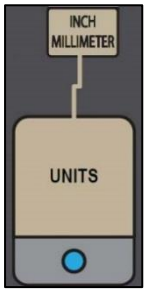
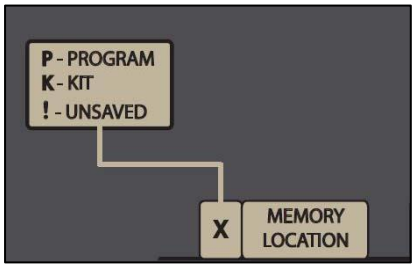
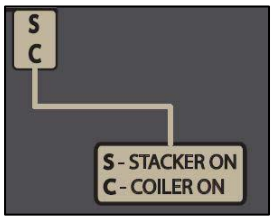
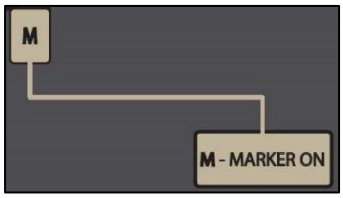
Section 1 – Keypad Display and Button Descriptions



The Model 420 Compu-Cut® features an all-new, easy-to-use electronic control panel. The user-friendly machine software and improved button layout are staples of the Model 420.

The following pages contain basic descriptions of each button.

Button	Description
	This value is the overall length of processed pieces.
	This feature allows the operator to input a certain number of sets of the programmed amount to produce.
	This value is the number of pieces per batch to process.
	This value is the material transport speed.
	This value is the correction for overall length.

Button	Description
	This button allows the operator to process material in either inches or millimeters.
	This section of the machine display alerts the operator to which program is being used; whether or not the kitting function is being used; or if there are unsaved data for the current program.
	Neither a wire stacker nor a wire coiler is to be used with the Model 420. Therefore, this section of the machine display will not read “S” or “C” at any moment.
	The value for feed pressure is not displayed on the Model 420. This section of the machine display will read “N/A”.
	When a wire marker is correctly connected to the machine, this section of the machine display alerts the operator that the wire marker is turned on in the Model 420 menu.

Button	Description
	When the batching feature is on, this section of the machine display alerts the operator to which batch number is currently being processed out of the total number of batches.
	The 0–9 buttons are used to enter numerical data values when processing material. Some of these buttons may also be necessary for certain screen prompts.
	This button is used to erase data when programming material values; when creating new programs; or when navigating the machine menu.
	The machine's universal ENTER button.

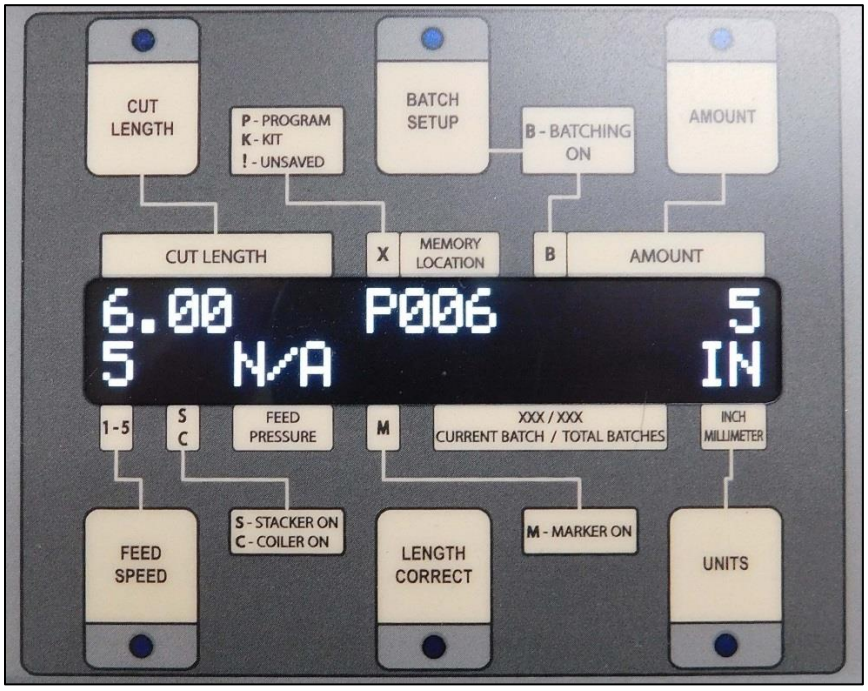
Button	Description
	Selecting this button allows the operator to either store programs to or recall programs from the machine's memory.
	Selecting this button enters the operator into the machine menu.
	Selecting this button allows the operator to clear the loaded material out of the machine.
	Selecting this button allows the operator to load the material into the machine.

Button	Description
	Selecting this button will process one complete test piece, according to the programmed settings.
	Selecting this button will start the processing cycle. The programmed batch amount is processed.
	Selecting this button will immediately stop the processing cycle.

Section 2 – Machine OLED Display Examples

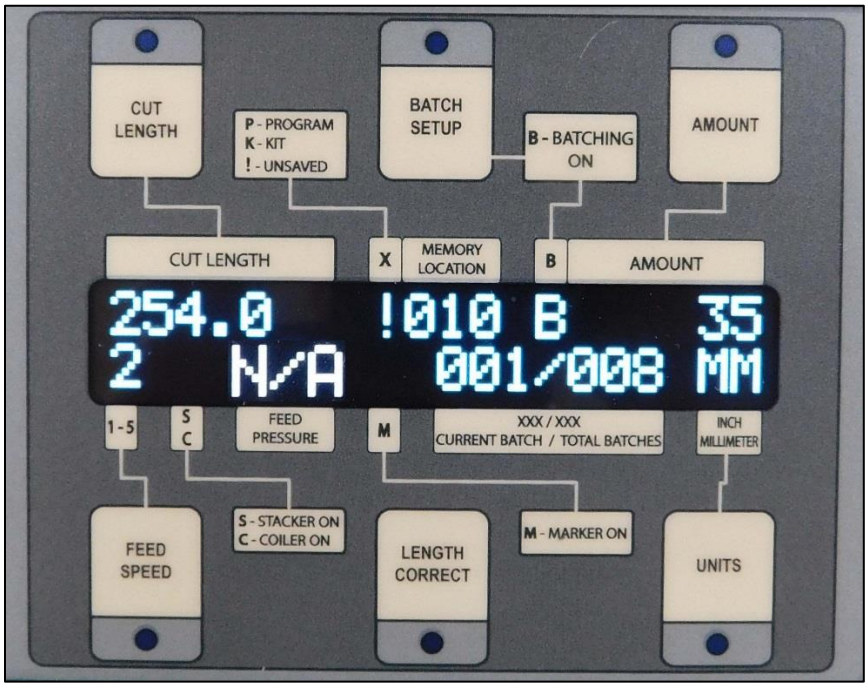
Below are several examples of the OLED display with detailed notes.

Basic Example



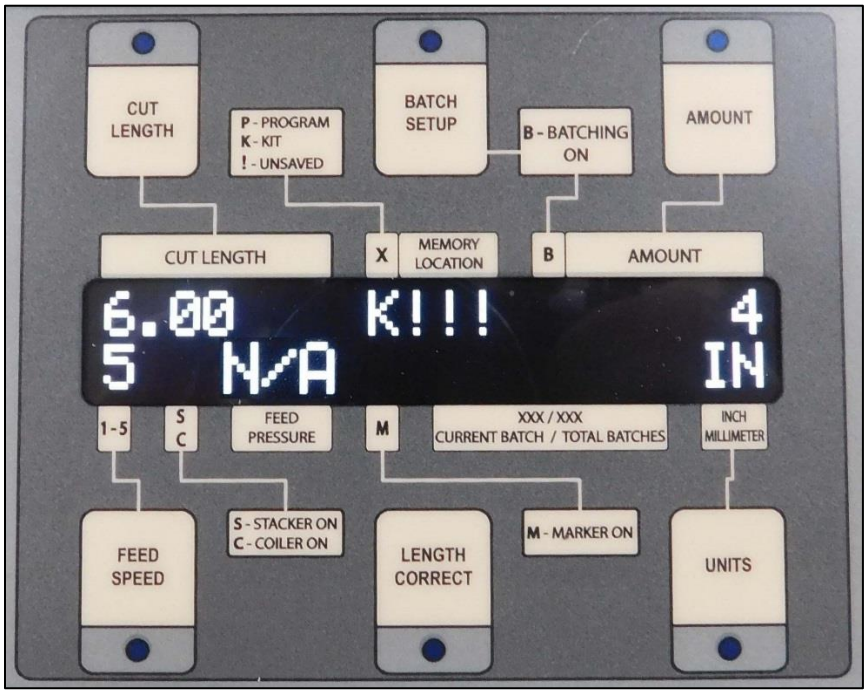
- Processing material in inches (“IN”)
- Cut length per processed piece is 6.00”
- Material feed speed is 5
- Running program 006 from memory (“P006”)
- Cutting (5) pieces (this number decreases with each cycle)

Batching Example



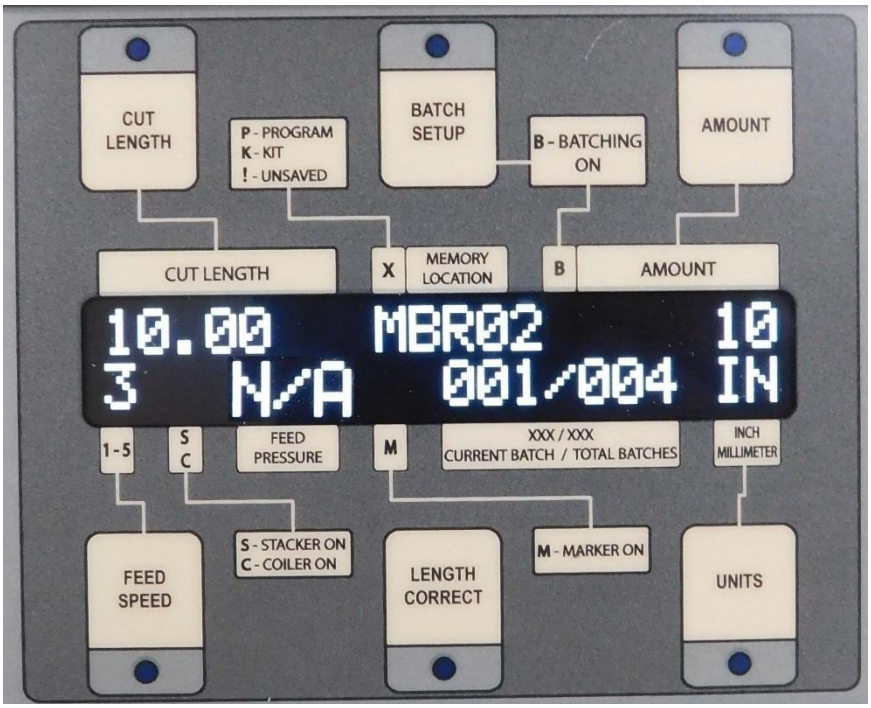
- Processing material in millimeters (“MM”)
- Cut length per processed piece is 254.0 mm
- Material feed speed is 2
- Running program 010 from memory, but with unsaved program data/changes made to program 010 (“!010”)
- Batching feature is on and active (“B”)
- Cutting (35) pieces in the current batch (this number decreases with each cycle)
- The first (001) batch of the total (008) batches is being processed

Kitting Example (Before Processing)



- Processing material in inches (“IN”)
- Cut length per processed piece is 6.00”
- Material feed speed is 5
- Kitting feature is setup and ready to process (kitting program also ready to be saved to memory [“K!!!”])
- Cutting (4) pieces in the first kit member (this number decreases with each cycle)

Kitting Example (During Processing)



- Processing material in inches (“IN”)
- Cut length per processed piece of current kitting member number is 10.00”
- Material feed speed is 3
- The current kitting member number is 02 (“MBR02”)
- Processing the first kit number (001) out of four total kits (004)
- Cutting (10) pieces in the current kitting member (this number decreases with each cycle)

Section 3 – Safety Guarding & Material Exit Chute Assembly Installation

Machine Safety Guard

The Model 420 is equipped with a safety guard. The PN 8292 guard assembly contains a safety interlock switch. The machine will not operate unless the safety guard is installed and in the closed position.

Do not attempt to defeat the function or purpose of the safety interlock switch. Serious injury to the operator's eyes, fingers or other body parts may result from attempts to operate this equipment with the machine safety guard in the raised position.

Note: If the safety guard is not in the closed position when the machine is powered on, "PLEASE CLOSE GUARD THEN PRESS ENTER".

Material Exit Chute Assembly

The Model 420 is equipped with a material exit chute assembly. The material exit chute assembly contains a safety interlock switch. The machine will not operate unless the material exit chute assembly is attached to the Model 420.

Do not attempt to defeat the function or purpose of the safety interlock switch. Serious injury to the operator's eyes, fingers or other body parts may result from attempts to operate this equipment with the material exit chute assembly removed from the machine.

Follow the below steps to properly install the material exit chute assembly onto the Model 420:

1. Insert the PN 3926 material exit chute assembly dowel pin into one of the material exit chute assembly alignment holes located on the PN 6495 front support.

2. Insert PN 6024 guard chute adjustment knob assembly into the PN 6015 brass sleeve above the dowel pin holes. Push the knob and the chute toward the machine face plate; this will engage the spring-loaded PN 6094 chute pivot rod under the material exit chute assembly.

3. Line up the PN 6094 chute pivot rod with the PN 7528 bronze bearing on the PN 6003 back support.

4. Push and turn the PN 6024 guard chute adjustment knob assembly clockwise until the threads catch, then lock into position.

Note: If the material exit chute assembly is not properly installed when the machine is powered on, the OLED display will read "PLEASE INSTALL CHUTE THEN PRESS ENTER".

Never use the material exit chute assembly as a handle when moving the Model 420. Doing so may damage the machine.

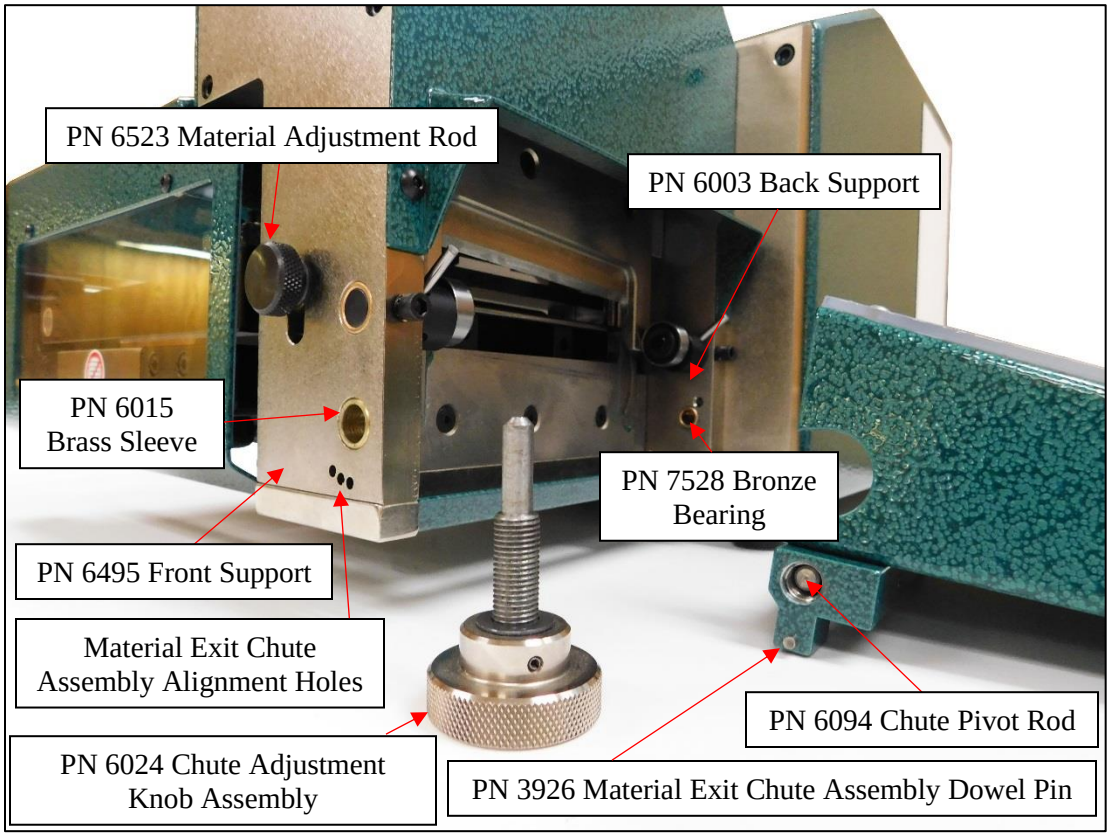


Figure 1: Material Exit Chute Assembly Setup

Section 4 – Initial Machine Setup

Follow the steps below to set up the Model 420.

1. Insert air tubing into the straight connector, located on the back panel of the machine; connect the opposite end to the air supply. Make certain the air supply is clean and filtered with an attached automatic, inline oiler (refer to the Machine Lubrication subsection of the operator's manual regarding the use of an automatic, inline oiler). The absence of an inline oiler may result in failure of the pneumatic cylinder that operates the blade mechanism.

2. Plug the female end of the power cord into the power entry module, located on the left side of the machine. Plug the male end of the power cord into a proper electrical outlet.

3. Turn on the power switch.

   Note: If the safety guard is not in the closed position when the machine is powered on, "PLEASE CLOSE GUARD THEN PRESS ENTER". If the material exit chute assembly is not properly installed when the machine is powered on, the OLED display will read "PLEASE INSTALL CHUTE THEN PRESS ENTER".

Material Setup

Follow the steps below for correct material setup.

1. Open the PN 8292 guard assembly and loosen and separate the PN 7741 wire guides.

2. Using the PN 6023 roller adjustment knob, open the PN 6020 feed rollers to a position larger than the diameter of the processed material.

3. Place material underneath the PN 6048 material rod and through the PN 7741 wire guides. Any material memory or curvature should be against the machine feed platform.

4. Feed material through the PN 6020 feed rollers and the blade opening.

5. Using the PN 6023 roller adjustment knob, close the PN 6020 feed rollers until the material is just snug.

6. Adjust the PN 7741 wire guides to the material allowing approximately 1/64" clearance on both sides of the material. To adjust the wire guides, loosen the PN 3690 and the PN 4846 screw assemblies. After adjustment, retighten the screw assemblies.

7. Inspect the clearance on the material exit chute assembly side of the PN 7741 wire guides. Some materials (shrink tubing, for example) may collapse slightly from the pressure of the PN 6020 feed rollers and reduce the clearance on this end of the PN 7741 wire guides. This may result in a material jam during processing. If necessary, readjust the PN 7741 wire guides just enough to allow for proper clearance.

Note: For maximum blade efficiency, load material through the center of the blades.

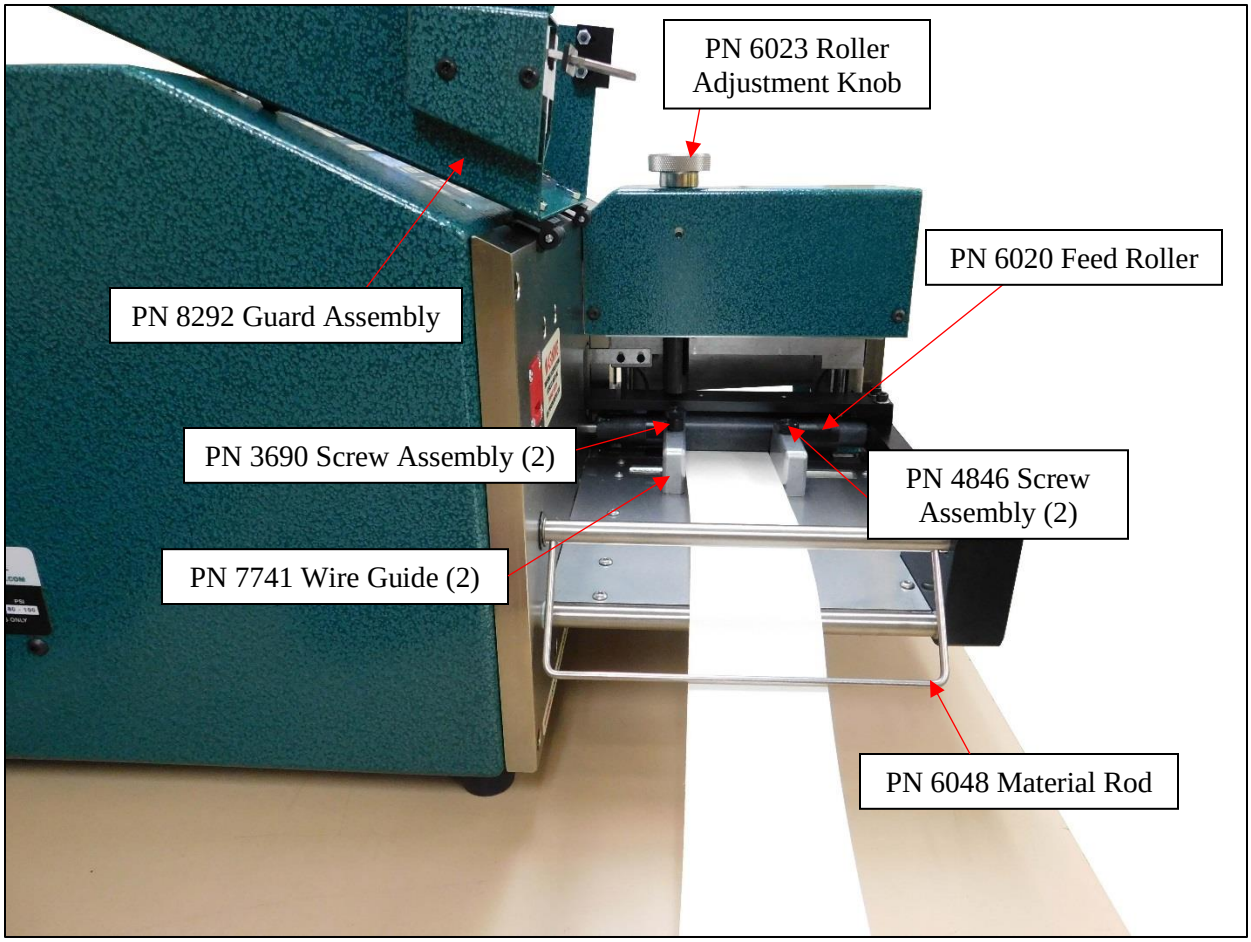


Figure 2: Material Setup

Material Support Rod

The Model 420 is equipped with an adjustable PN 6523 material support rod. This feature is designed to aid in tracking smaller-diameter materials from 32 AWG to 0.375" in diameter. Use of the material support rod is recommended due to excessive memory or curvature associated with smaller-diameter materials. The material support rod will keep the material against the machine feed platform, helping avoid material curling back onto the PN 6020 feed rollers and causing a jam.

When using the PN 6523 material support rod, the threaded portion of the knob must be threaded into the captured nut. Feed material under the rod and adjust the assembly accordingly to keep material against the machine feed platform. Tighten the PN 6523 material support rod into place.

When processing larger material, unthread the PN 6523 material support rod and remove from the machine.

Magnetic Sheet

The Model 420 is supplied with a PN 6106 magnetic sheet. This may be used when processing cut material 3/8" or shorter. Installation of the PN 6106 magnetic sheet covers the gap between the material exit chute assembly and the PN 6019 bottom blade. This allows the cut material to slide down the material exit chute assembly instead of falling between the material exit chute assembly and the blades.

Install the PN 6106 magnetic sheet by sliding it into the open end of the material exit chute assembly until it touches the PN 6019 bottom blade. If the PN 6018 top blade makes contact with the PN 6106 magnetic sheet when processing, pull the sheet slightly away from the PN 6019 bottom blade.

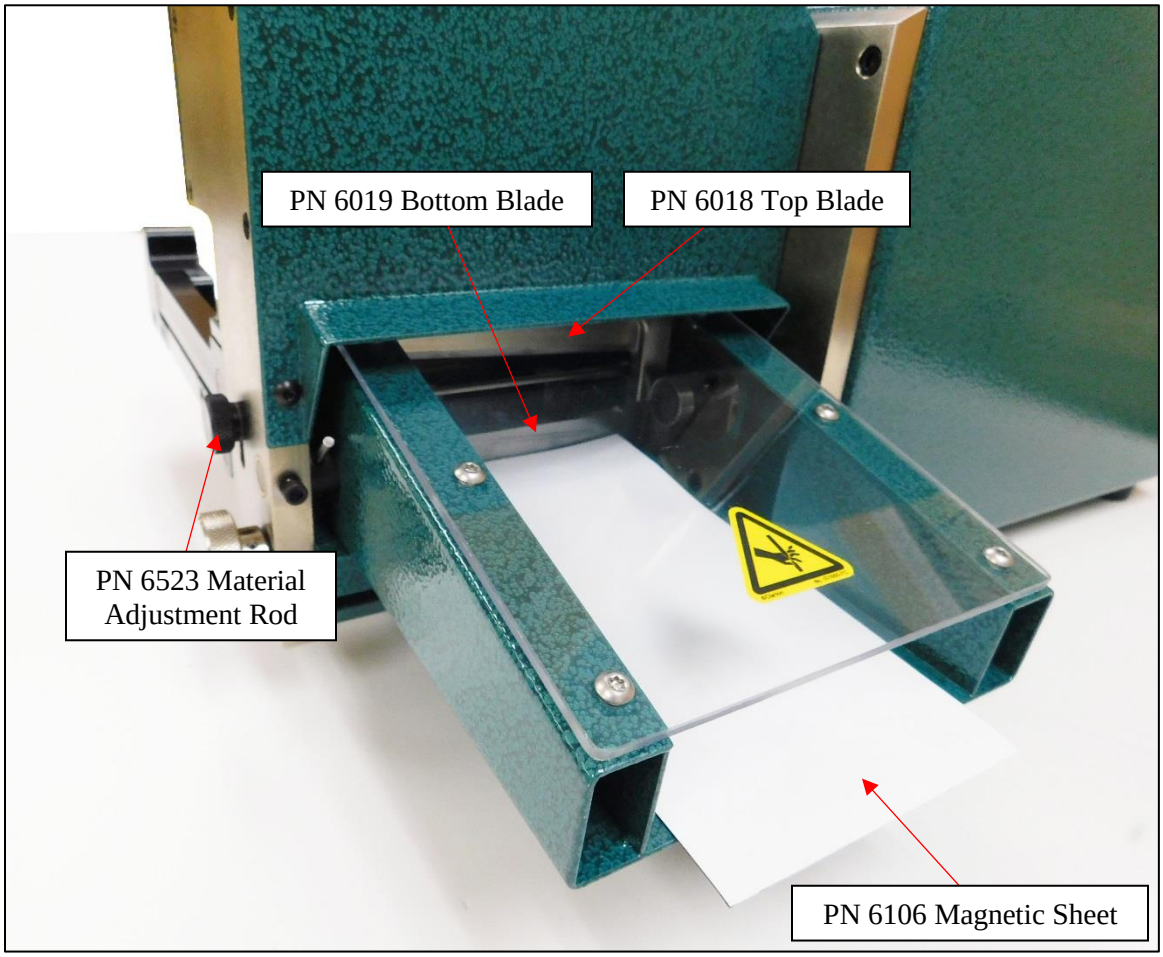


Figure 3: Material Exit Chute Assembly with Magnetic Sheet

Section 5 – Programming

DO NOT USE SHARP OBJECTS ON KEYPAD. FINGERTIP PRESSURE IS SUFFICIENT.

There are several possible step-by-step combinations to program the machine. The following step-by-step procedure is meant to be used as a guide and is just one of the many ways the machine may be programmed to process material.

1. Power the machine on and press **ENTER**.

   Note: If the safety guard is not in the closed position when the machine is powered on, "PLEASE CLOSE GUARD THEN PRESS ENTER". If the material exit chute assembly is not properly installed when the machine is powered on, the OLED display will read "PLEASE INSTALL CHUTE THEN PRESS ENTER".

2. After correct material setup, press the **LOAD** button and keep it pressed down until the material has been fed completely through the machine. Once the material exits the machine, release the **LOAD** button.

3. Press the **UNITS** button to toggle between inches and millimeters.

4. Press the **CUT LENGTH** button. This value is the overall length of processed pieces. Input the length dimension and press **ENTER**.

5. Press the **AMOUNT** button. This value is the number of pieces per batch to be processed. Input the number of pieces per batch to be processed and press **ENTER**.

   a. Pressing the **BATCH SETUP** button allows the operator to process required pieces in multiple batches.

   b. To process required pieces in multiple batches, input the number of batches to process (up to 999) and press **ENTER**. If the number of batches to run is 1, the OLED display will not show the batching symbol ("B"). If the number of batches to run is greater than 1, the OLED display will show the batching symbol ("B").

   c. The OLED display shows which batch is currently being processed ("CURRENT BATCH") and the total number of batches ("TOTAL BATCHES").

6. Press the **FEED SPEED** button. This value determines the speed of the material passing through the machine. Select a feed speed and press **ENTER**.

   a. 1: slow
      2: slow/medium
      3: medium

4: medium/fast
5: fast

The Model 420 is now programmed to measure and cut material to length. The operator is now ready to run a sample piece and check for initial setup quality. Continue with the following procedures to assist in processing a sample.

Single Cycle

Select the **SINGLE CYCLE** button to produce a sample piece to check for accuracy. This feature will cut off the end that is protruding through the blades from the setup and then measure and cut a single piece. If corrections are necessary, proceed to length correction for adjustments.

Length Correction

The Model 420 has a length correct feature which allows the operator to make adjustments from the pre-programmed length versus the actual sample length. Small variations are normal due to differences in material, tension, friction, wire diameter, etc. If the sample piece was not the correct length, press the **LENGTH CORRECT** button to make adjustments.

1. Measure the length of the produced sample piece. Input this value and press **ENTER**. The Model 420 will automatically calculate the necessary correction. The next sample should be the exact programmed length.

Run Program

After a satisfactory sample piece is produced and all settings are correct, press **RUN**. This will process the current program.

Stop Program

If at any time the operator must stop processing, press **STOP**.

Unloading Material

Unload material by pressing the **UNLOAD** button. Material will automatically feed backward through the machine as long as the button is depressed.

Section 6 – Machine Memory (Program Storage)

The OLED display shows the current loaded program under the "MEMORY LOCATION" section of the keypad. For example, if the operator is running saved program 050, the OLED display will read "P050".

Storing Programs

The Model 420 will store up to 999 programs. The operator may access this function by pressing the **MEMORY** button.

1. To store a program, press the **MEMORY** button and press **1** on the numerical keypad. Input up to any three-digit program number and press **ENTER**.

    a. If the operator enters a number already stored in the Model 420, the OLED display will ask the operator to press **1** to overwrite or press **CLEAR**. Input **1** to overwrite the previously stored program, or press **CLEAR** to keep the previously stored program.

Recalling Programs

1. To recall a program, press the **MEMORY** button, press **2** on the numerical keypad, then press **1** on the numerical keypad for program. Input the stored three-digit program number and press **ENTER**.

Unsaved Program Data/Changes Made to Programs

When processing material, if any value is changed after a stored program is recalled from memory the OLED display will alert the operator to unsaved program data/changes made to the loaded program.

For example, if the operator recalls program 050 from memory and then changes the programmed cut length, the OLED display will read "!050". The "!" character denotes unsaved data.

Using the steps above in the Storing Programs subsection of the operator's manual, the operator may overwrite the existing program with the new value(s) or may store a new program altogether

Section 7 – Special Features

To access the Model 420 special features, press the **MENU** button. Continue to press the **MENU** button to scroll through the options. To select a feature press **ENTER** and follow appropriate instructions.

Kitting

The Model 420 is equipped with a kitting feature. This feature allows the operator to create a kit of different lengths of the same material. A kit may contain up to twenty members. Each member may be one of 999 previously stored programs. A maximum of 500 kit programs may be stored in the machine's memory and recalled at any time.

Information Needed When Setting Up the Kitting Feature

Before programming a kit, the operator must have determined the four items below.

1. Which previously stored programs will be processed
2. The amount of pieces to process for each selected program
3. The number of kits to process
4. Which pause setting (auto or manual) is preferred at the end of each kit

Processing Material with the Kitting Feature

1. After selecting the kitting option, the **CLEAR** button will toggle between "ON" / "OFF". To turn kitting on, press **CLEAR**, then press **ENTER**.

2. A member is each number within the kit. The software will assign each member number as the operator enters the kit information. Input the program number of the first member of the kit and press **ENTER**.

3. Input the amount for the first member of the kit and press **ENTER**.

4. The Model 420 will repeat steps 2 and 3 above for each member of the kit. When all of the kit members are entered, input program number "000" to end the sequence.

5. Input the number of kits to run and press **ENTER**.

6. Press **CLEAR** to toggle between manual pause mode or auto pause mode and press **ENTER**.

    a. Manual pause mode will stop the machine at the end of each kit and require the operator to press **ENTER** to proceed to the next kit.

i. Begin processing by pressing **RUN**.

ii. To run the next kit, press **ENTER**, or press **CLEAR** to quit. The machine will return to the run screen if **CLEAR** is pressed.

1. After pressing **CLEAR**, to continue with the current kit program, press **RUN**, or reprogram the machine for a different operation.

iii. The operator may stop the processing sequence at any moment by pressing **STOP**, and may restart by pressing **RUN**.

b. Auto pause mode will set a time delay between kits to allow the operator to gather the pieces before the next kit starts.

i. Input the pause time between kits and press **ENTER**.

ii. Begin processing by pressing **RUN**.

iii. The machine will pause for the programmed time and then proceed to the next kit.

iv. The operator may stop the processing sequence at any moment by pressing **STOP**, and may restart by pressing **RUN**.

Note: If the operator attempts to change any of the general programming values when a kitting program is loaded and ready for processing, the OLED display will alert the operator to turn kitting off before values are changed ("TURN KITTING OFF PRESS ENTER TO RESET").

Storing Kitting Programs

The Model 420 will store up to 500 kitting programs. After setting up the kitting program according to the steps above, and before running the kitting program, the OLED display will show "K!!!" under the "MEMORY LOCATION" section of the keypad.

1. To store a kitting program, press the **MEMORY** button and press **1** on the numerical keypad. Input up to any three-digit kit number and press **ENTER**.

    a. If the operator enters a number already stored in the Model 420, the OLED display will ask the operator to press **1** to overwrite or press **CLEAR**. Input **1** to overwrite the previously stored kit, or press **CLEAR** to keep the previously stored kit.

Recalling Kitting Programs

1. To recall a kitting program, press the **MEMORY** button and press **2** on the numerical keypad. Input the three-digit stored kit number and press **ENTER**.

2. Press **RUN** to begin processing kit(s).

Wire Marking

Refer to the Wire Marker subsection of the operator's manual for more information.

Foot Switch On/Off

Refer to the Foot Switch subsection of the operator's manual for more information.

Wire Sensor On/Off

The Model 420 is equipped with an out of material sensor. This sensor is connected to the PN 6048 material rod. It may be necessary to turn the sensor off when processing light gauge/weight material that may not support the PN 6048 material rod. If the sensor is activated, the Model 420 will automatically stop processing when it runs out of material. If the sensor is inactive, the machine will continue to run and finish the current program until the programmed amount reaches zero. Press **CLEAR** to toggle between "WIRE SENSOR ON" and "WIRE SENSOR OFF" and press **ENTER**.

Turn Password On/Off

The Model 420 is equipped with a password feature. When the password is activated, the ability to change program data is prohibited unless the correct password is entered. Press **CLEAR** to toggle between "PASSWORD : ON" and "PASSWORD : OFF" and press **ENTER**.

1. If this option is turned on for the first time, the OLED display will prompt the operator to enter old password. Input the factory-set password, "123", and press **ENTER**.

Store New Password

This option will allow the operator to change the password at their discretion.

1. Input old password and press **ENTER**.

2. Input the desired password number, up to six digits, and press **ENTER**.

Blade Change

Refer to the Blade Change subsection of the operator's manual for blade change instructions.

Representatives Only

This submenu is to be accessed only by trained Carpenter Mfg. Co., Inc. sales representatives.

Reserved

This submenu is to be accessed only by Carpenter Mfg. Co., Inc. staff.

Show Serial Number

This submenu displays to the operator the machine's serial number.

Section 8 – Accessory Control

Wire Marker

The Model 420 will interface with various hot stamp wire marking units. It is important to read the specific hot stamp wire marking unit operator's manual before proceeding.

To interface the Model 420 with a wire marker, a PN 9613 wire marker interface cable and a PN 9686 accessory board kit must be purchased from Carpenter Mfg. Co., Inc.

To activate the interface between the Model 420 and wire marker, install the PN 9613 wire marker interface cable between both units after the PN 9686 accessory board kit is installed in the Model 420. Plug the cable into any of the (5) accessory inputs on the Model 420 PN 9686 accessory board kit.

To access the wire marking option within the machine, press the **MENU** button to toggle through the options and press **ENTER** when "WIRE MARKING" is shown. Press **CLEAR** to toggle between "WIRE MARKER: ON" and "WIRE MARKER: OFF" and press **ENTER**.

When the wire marker option is activated, "M" will appear on the OLED display.

All dimensions entered during setup will correspond with the unit of measure that is programmed into the machine.

1. Refer to the specific hot stamp wire marking unit operator's manual for suggested settings.

2. With a tape measure or similar tool, measure the distance from the center of the marking disc to the center of the blade on the Model 420 ("ENTER MARKER OFFSET"). Input this measurement and press **ENTER**.

3. Input a print time ("ENTER PRINT TIME") and press **ENTER**.

4. Input a release time ("ENTER RELEASE TIME") and press **ENTER**.

5. The lead end mark distance is the distance from the leading end (right end) of the wire to the center of the mark on the wire. Input this measurement ("ENTER LEAD END MARK") and press **ENTER**. The maximum distance is (wire length/2).

6. The trail end mark distance is the distance from the trailing end (left end) of the wire to the center of the mark on the wire. Input this measurement ("ENTER TRAIL END MARK") and press **ENTER**. The maximum distance is ((wire length/2) – 0.20).

7. The Model 420 wire marker interface allows the operator to program continuous marking along the wire. To choose this option, input the distance between each marking along the wire. Input "0.00" to bypass this option. Input the desired value ("ENTER MARK SPACING") and press **ENTER**.

8. After entering the mark spacing in the step above, the OLED display will read "MEASURED LEAD MARK". Before any test pieces have been processed, input "0.00" and press **ENTER**.

9. Press either the **RUN** or **SINGLE CYCLE** button to activate the marker setup cycle. At this point, the Model 420 and the interfaced wire marker will go into a setup cycle. The two units are now automatically synchronized to apply the marks in the locations along the wire as previously programmed.

10. Process a few sample pieces. Measure the location of the center of the leading end mark from the leading end of the wire. If the measured dimension is not equal to the programmed lead end mark dimension, proceed to lead end mark distance correction.

    a. Before making any lead end mark corrections, be certain the overall length is correct. Refer to the Length Correction subsection of the operator's manual for more information.

    b. Press the **MENU** button to toggle through the options and press **ENTER** when "WIRE MARKING" is shown.

    c. Scroll through the wire marking options by pressing **ENTER** until the "MEASURED LEAD MARK" option is displayed. Carefully measure from the leading end of the cut wire to the center of the mark. If the measured dimension is different than the programmed leading end mark distance, proceed to the instructions below.

        i. Measure the distance from the lead end of the cut material to the center of the lead end mark. Input this measured dimension and press **ENTER**.

        ii. Press either the **RUN** or **SINGLE CYCLE** button to activate the marker initialization cycle. When this cycle is complete, the marks will have been shifted to their correct locations and normal processing may begin.

    d. A marker correction value may only be entered once. If, after running a second test piece, the entered marker correction value is incorrect, the operator must clear the previously entered correction value. To clear this value, run the procedure below.

        i. Press the **MENU** button to toggle through the options and press **ENTER** when "WIRE MARKING" is shown.

ii. Scroll through the wire marking options by pressing **ENTER** until the "MEASURED LEAD MARK" option is displayed. Press **CLEAR**, and then press **ENTER**. This will reset the correction value back to its original setting.

iii. Press the **SINGLE CYCLE** button. This will produce a test piece using the original programmed settings. On this test piece, measure the distance from the lead end of the cut material to the center of the lead end mark.

iv. Press the **MENU** button to toggle through the options and press **ENTER** when "WIRE MARKING" is shown.

v. Input the measured dimension from step iii above and press **ENTER**.

vi. Press either the **RUN** or **SINGLE CYCLE** button to activate the marker initialization cycle. When this cycle is complete, the marks will have been shifted to their correct locations and normal processing may begin.

Foot Switch

The Model 420 may be equipped with a PN 9599 foot switch assembly for use when processing material.

To interface the Model 420 with a PN 9599 foot switch assembly, a PN 9686 accessory board kit must be purchased from Carpenter Mfg. Co., Inc.

To activate the interface between the Model 420 and the PN 9599 foot switch assembly, after the PN 9686 accessory board kit is installed in the Model 420, install the foot switch assembly cable into any of the (5) accessory inputs on the Model 420 PN 9686 accessory board kit.

To access the foot switch option within the machine, press the **MENU** button to toggle through the options and press **ENTER** when "FOOTSWITCH ON/OFF" is shown. Press **CLEAR** to toggle between "FOOTSWITCH ON" and "FOOTSWITCH OFF" and press **ENTER**.

1. With the foot switch option activated and the machine programmed to the operator's desired settings, press the **RUN** button.

2. The OLED display will read "PRESS FOOTSWITCH OR PRESS STOP".

3. To continue processing material with the PN 9599 foot switch assembly, the operator must physically press the foot switch assembly. After each cycle the operator must continue to physically press the foot switch assembly to continue processing material, or must press **STOP**.

Section 9 – Maintenance Procedures

Material Debris Removal

To remove material debris from the blades and surrounding areas, use a small bristle brush.

Blade Change

Follow the steps below to change the PN 6018 top blade and the PN 6019 bottom blade.

1. To access the blade change option within the machine, press the **MENU** button to toggle through the options and press **ENTER** when "BLADE CHANGE" is shown.
2. Follow the display prompts and disconnect the air supply and power off the Model 420.
3. Remove the material exit chute assembly.
4. Loosen (2) PN 3876 screws and remove (2) PN 6570 eccentric assemblies.
5. Remove (3) PN 7570 screws from PN 6018 top blade and (3) PN 7570 screws from PN 6019 bottom blade and remove blades. **CAUTION**: **BLADE EDGE IS SHARP**.
6. Clean all surface areas with a soft bristle brush.
7. Install PN 6019 bottom blade. Reinstall (3) PN 7570 screws and tighten.
8. Install PN 6018 top blade. (Before top blade installation, read and follow the instructions in the Monthly/Periodic Machine Lubrication subsection of the operator's manual). Reinstall (3) PN 7570 screws and tighten.
9. Reinstall (2) PN 6570 eccentric assemblies. Adjust pressure until the roller will not spin and the dowel pin is in the upright position. Tighten (2) PN 3876 screws.
10. Reinstall the material exit chute assembly.
11. Plug the power cord back in, reconnect the machine to the air supply, power on the machine, and press **ENTER**.

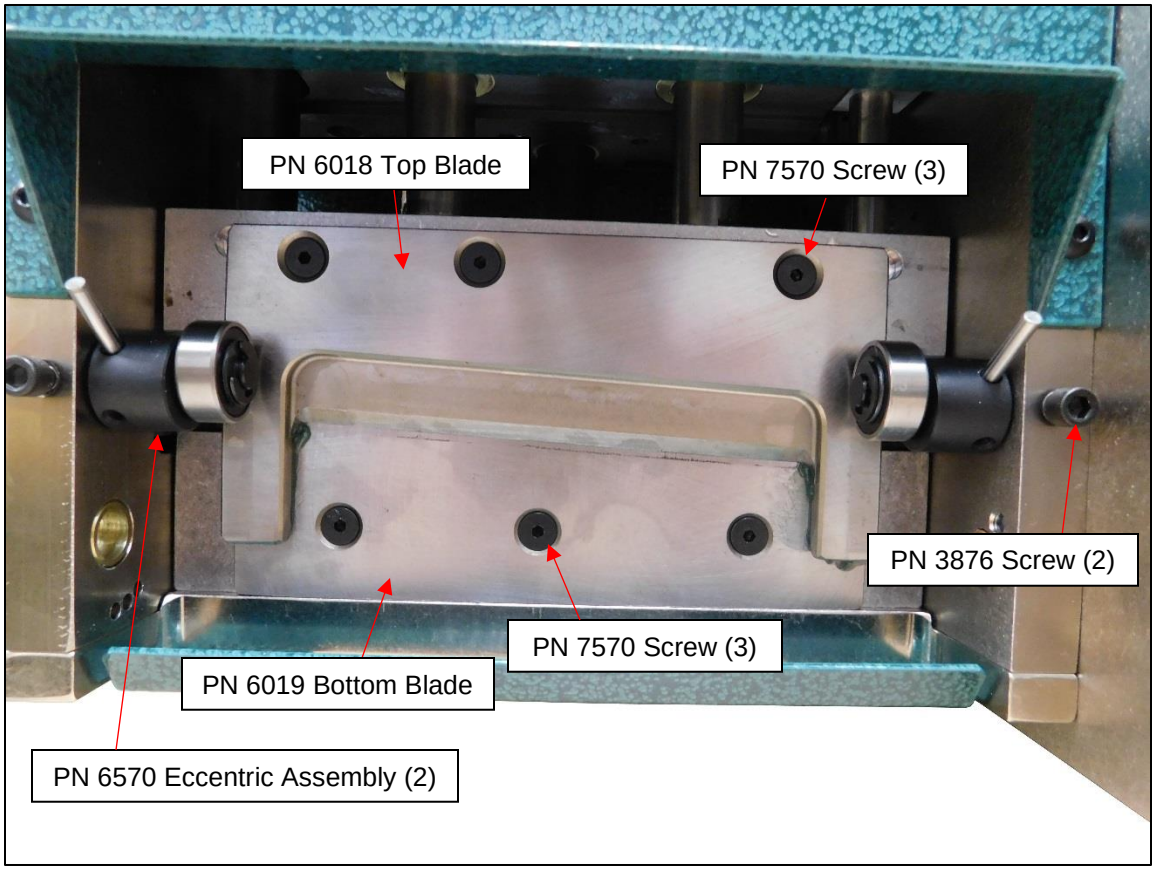


Figure 4: Blade Change

Machine Lubrication

The Model 420 requires lubrication maintenance both daily/operational and monthly/periodic.

Daily/Operational Machine Lubrication

It is very important to lubricate the pneumatic cylinder that operates the blade mechanism. Use of an automatic, inline oiler filled with standard pneumatic tool oil is required. The automatic inline oiler should be set so that he Model 420 receives approximately one drop of pneumatic tool oil every 10 – 12 minutes of continuous cutting (80 PSI).

Operating the machine without an automatic inline oiler may result in damage to the pneumatic cylinder and other machine components.

Monthly/Periodic Machine Lubrication

It is recommended that the Model 420 receive the following lubrication on a monthly basis. This schedule may be adjusted depending on machine usage.

1. PN 6018 Top Blade Lubrication

    a. The PN 6018 top blade must be removed to access the back side where lubrication is necessary. Follow the instructions in the Blade Change subsection of the operator's manual until step 5 and remove only the PN 6018 top blade.

    b. Place the blade flat side up and apply a thin coat of grease to the two outside "fingers," or the portions of the blade that contact and slide against the PN 6019 bottom blade.

    c. Proceed with blade change steps 8 through 11 to reinstall the PN 6018 top blade.

2. PN 6318 Quick Shaft Lubrication

    a. Two PN 6318 quick shafts (blade block assembly guide rods) should be lubricated with several drops of a general-purpose oil. The PN 6322 blade block assembly slides up and down the quick shafts.

    b. This service may be performed from the feed roller side of the blade mechanism, while the blades are in the blade change position and the machine has been powered off and the power input cord has been unplugged.

Feed Roller Change or Removal

To change or remove the PN 6020 feed rollers, follow the instructions below.

1. Disconnect the Model 420 from the air supply, power off the machine, and unplug the power input cord.

2. Using a 9/64" hex wrench, remove (2) PN 8724 screws and (2) PN 5418 washers from the PN 6044 adjustable roller arm. Slide off the arm and the upper PN 6020 feed roller together. (The feed roller is spring-loaded).

3. Using a 9/64" hex wrench, remove (2) PN 8591 screws from the PN 6043 fixed roller arm. Slide off the arm and the lower PN 6020 feed roller together. (The feed roller is spring-loaded).

4. Install the lower PN 6020 feed roller by aligning the slots in the feed roller with the pinned drive shafts. Hold the feed roller into place and reinstall the PN 6043 fixed roller arm. Reinstall and tighten (2) PN 8591 screws. Repeat this procedure for the upper PN 6020 feed roller.

5. To check feed roller alignment, press down on the PN 6044 adjustable roller arm until the PN 6020 feed rollers make contact with each other. Check for any gaps between the upper and lower PN 6020 feed rollers. If adjustment is necessary, loosen (2) PN 8591 screws on the PN 6043 fixed roller arm. Press the upper PN 6020 feed roller against the lower PN 6020 feed roller and retighten (2) PN 8591 screws.

6. Plug the power cord back in, reconnect the machine to the air supply, power on the machine, and press **ENTER**.

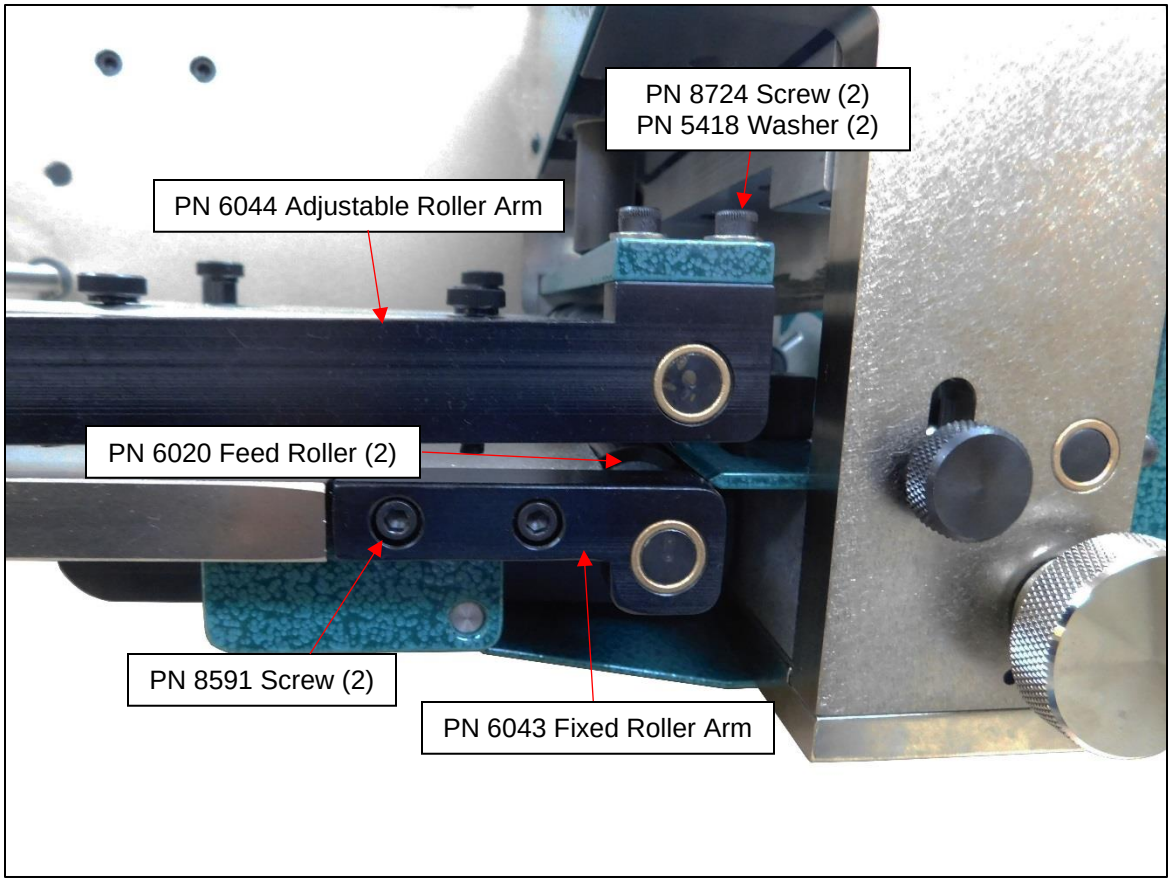


Figure 5: Feed Roller Change

Section 10 – Recommended Spare Parts

The below items are recommended spare parts for the Model 420 Compu-Cut®.

Quantity per Machine	Carpenter Part Number	Description
1	6018	Top Blade
1	6019	Bottom Blade
2	6020	Feed Roller

Section 11 – Optional Accessories

The below items are optional accessories for the Model 420 Compu-Cut®.

Carpenter Part Number	Description
420AB	Air Blast Kit
6307	Material Exit Chute Assembly (Short)
6551	Regulator/Filter/Oiler Assembly
7764	Prefeed Stop Interface Cable Assembly (Internal)
8925	Emergency Stop Switch Assembly
8989	Prefeed Stop Interface Cable Assembly (External)
9599	Foot Switch Assembly
9613	Wire Marker Interface Cable
9686	Accessory Board Kit

Air Blast Kit

When processing short lengths of material, the optional air blast kit aids in safely removing processed pieces from either the standard or the short material exit chute assemblies.

Instructions on how to correctly install the optional air blast kit are provided below.

Note: A digital file of the optional air blast kit installation drawings in the succeeding pages is available. Please contact the factory for assistance.

When the air blast kit is correctly installed according to the drawings in the succeeding pages, a quick burst of clean, dry air will occur at the cutting mechanism, aiding in safely removing processed pieces from either the standard or the short material exit chute assemblies.

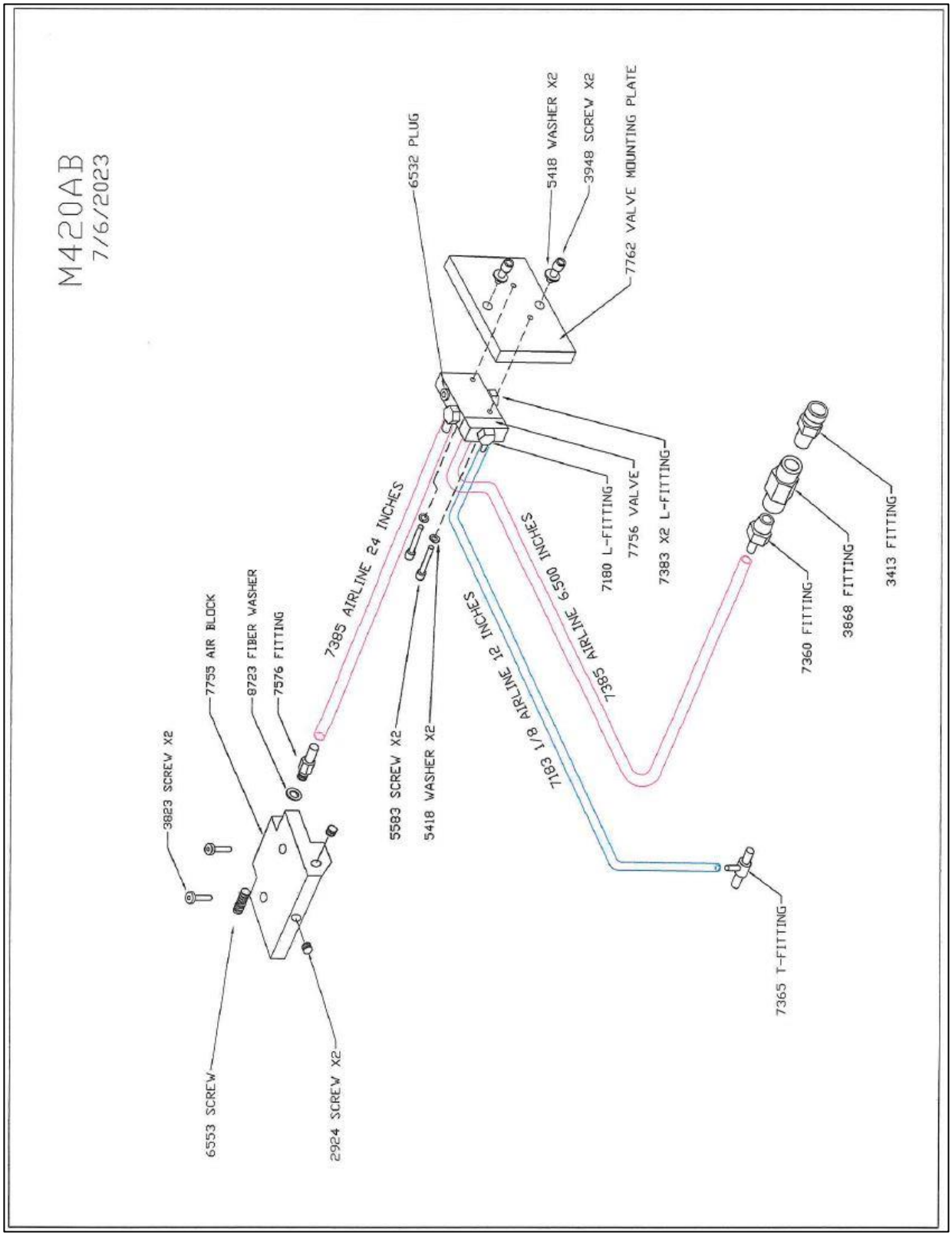


Figure 6: Air Blast Kit Parts Breakout

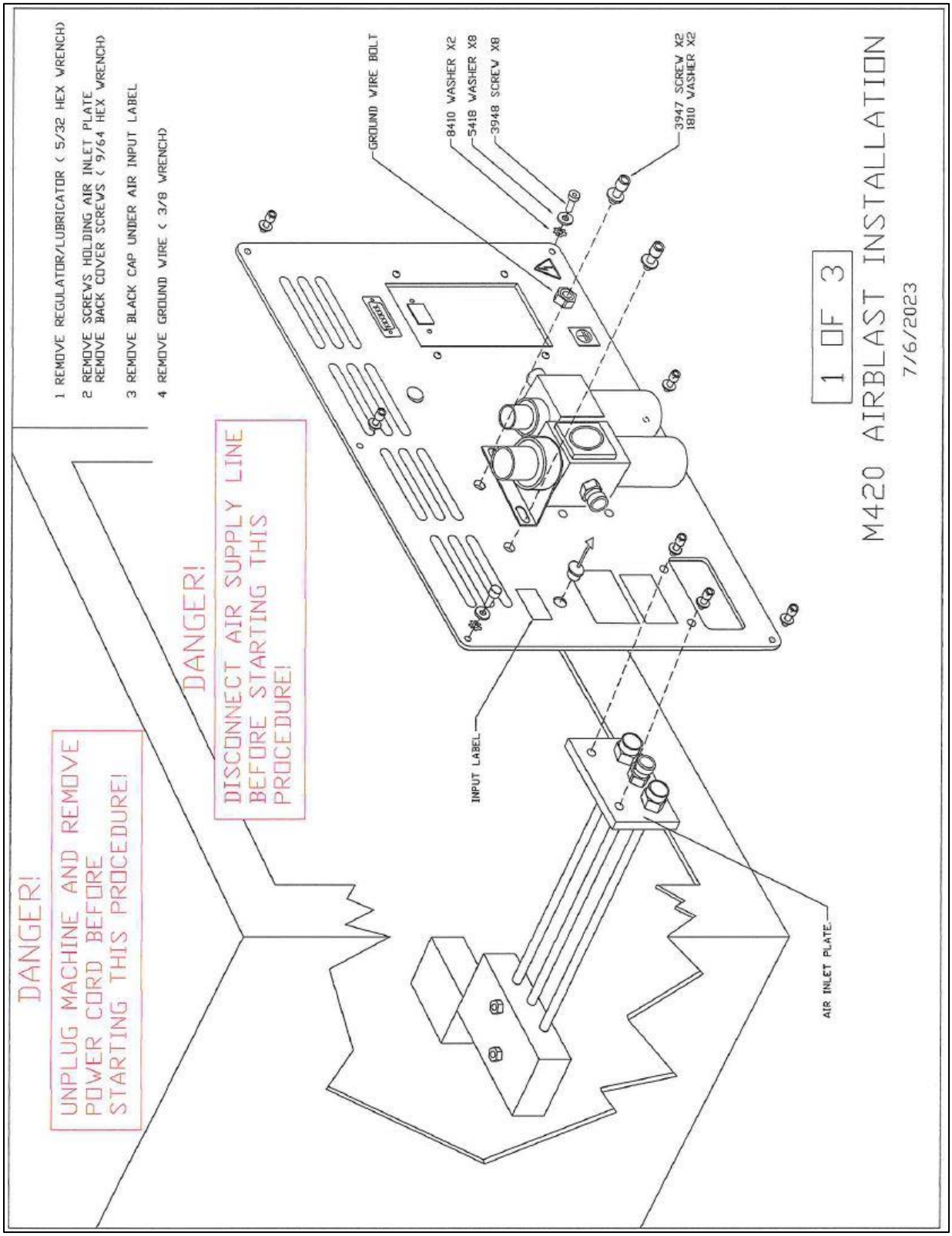


Figure 7: Air Blast Kit Installation Instructions, Step 1

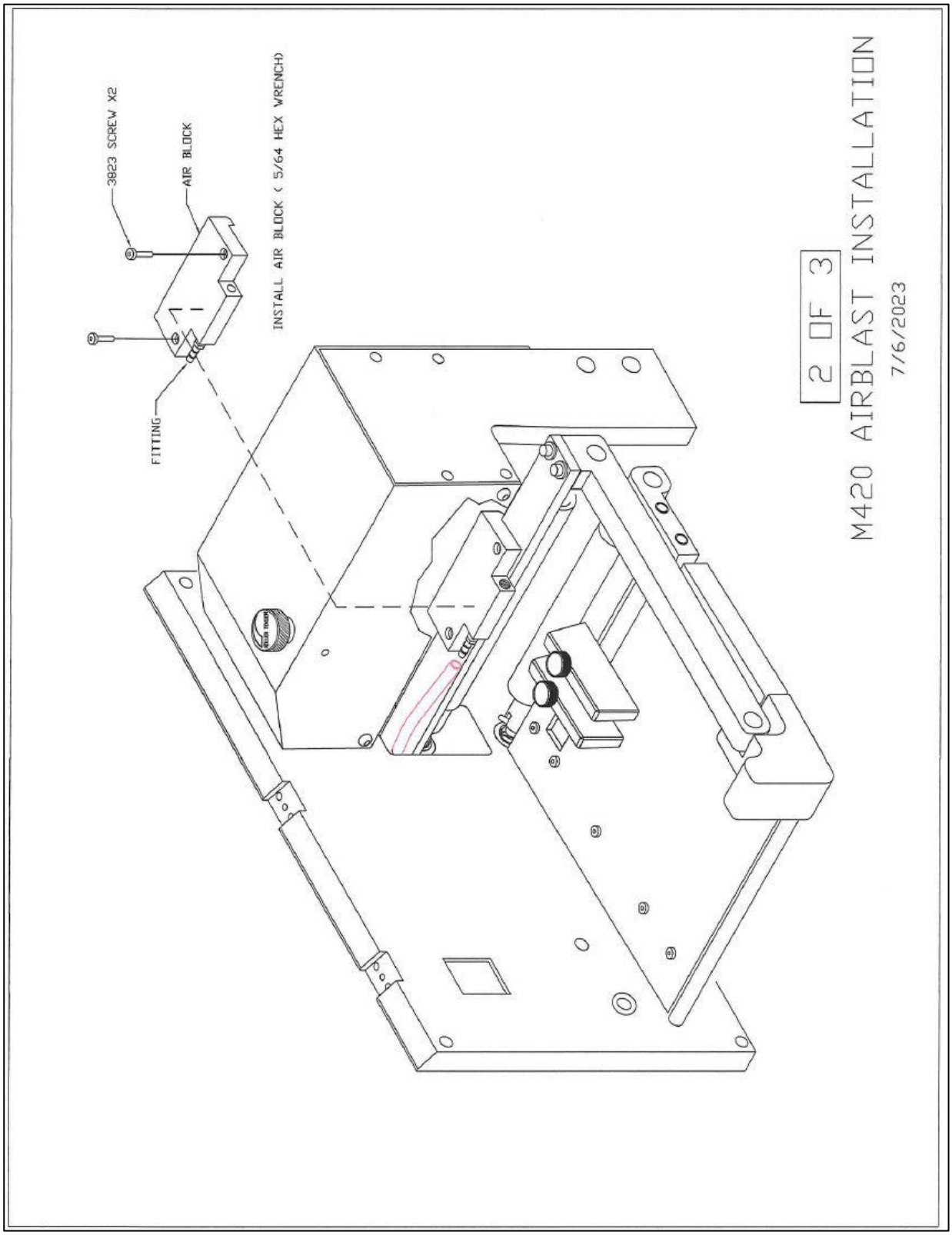


Figure 8: Air Blast Kit Installation Instructions, Step 2

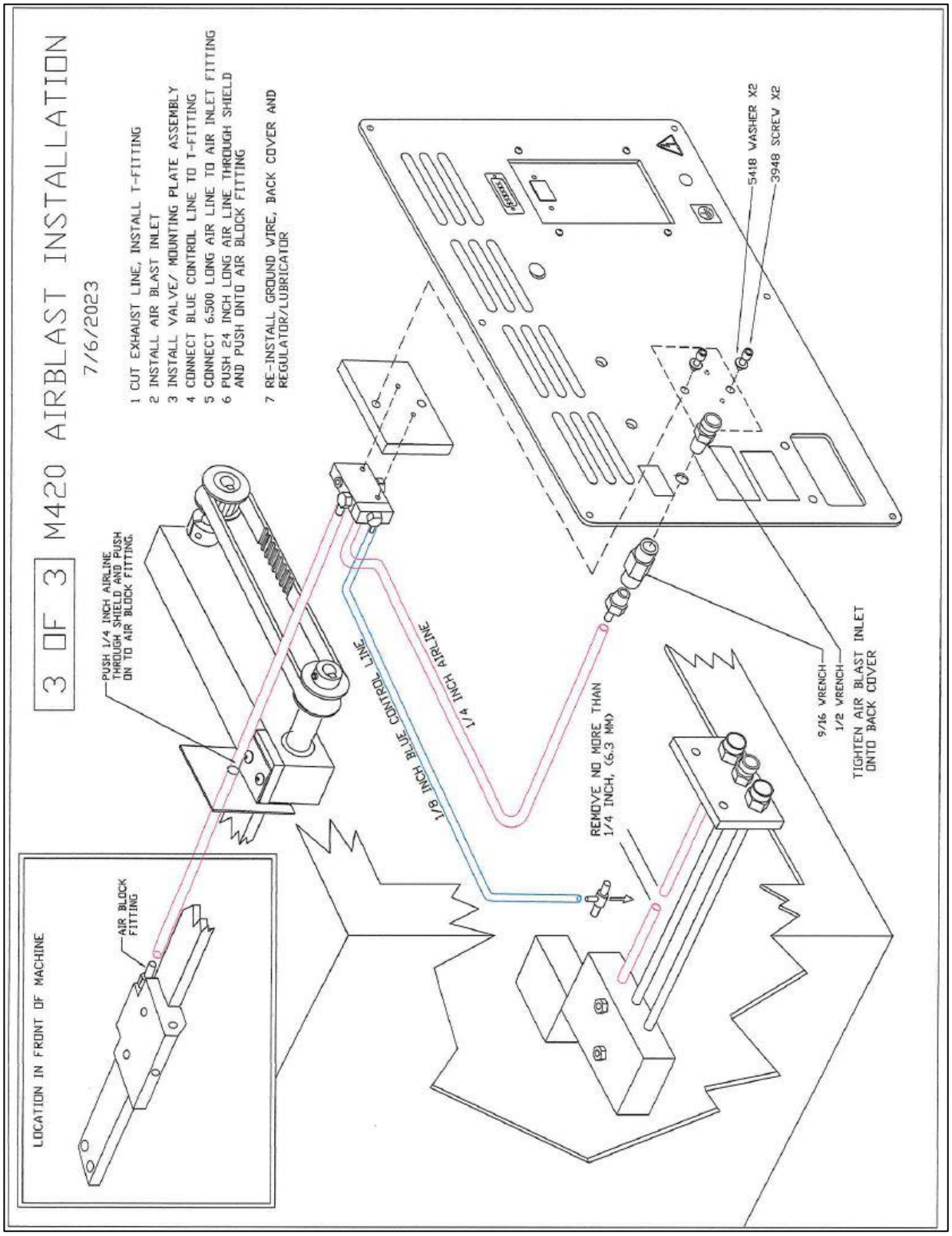


Figure 9: Air Blast Kit Installation Instructions, Step 3

Material Exit Chute Assembly (Short)

A short material exit chute assembly is available for use with cut material lengths of 3.0” or less. Refer to the Material Exit Chute Assembly subsection of the operator’s manual for installation instructions.

Figure 10: PN 6307 Material Exit Chute Assembly (Short)

Prefeed Stop Interface (Material Jam/Overload Protection)

A motorized prefeed may be necessary to assist the Model 420.

The Model 58D or Model 59 Wire Prefeed and Dereeler may interface directly with the Model 420 for material jam/overload protection.

Installing the Prefeed Stop Interface Cable Assembly (Internal)

To interface the Model 420 with Carpenter's Model 58D or Model 59 Wire Prefeed and Dereeler, a PN 7764 prefeed stop interface cable assembly (internal) must be purchased from Carpenter Mfg. Co., Inc.

Instructions on how to correctly install the PN 7764 prefeed stop interface cable assembly (internal) are provided below. Navigate to the back cover of the Model 420 to begin installation.

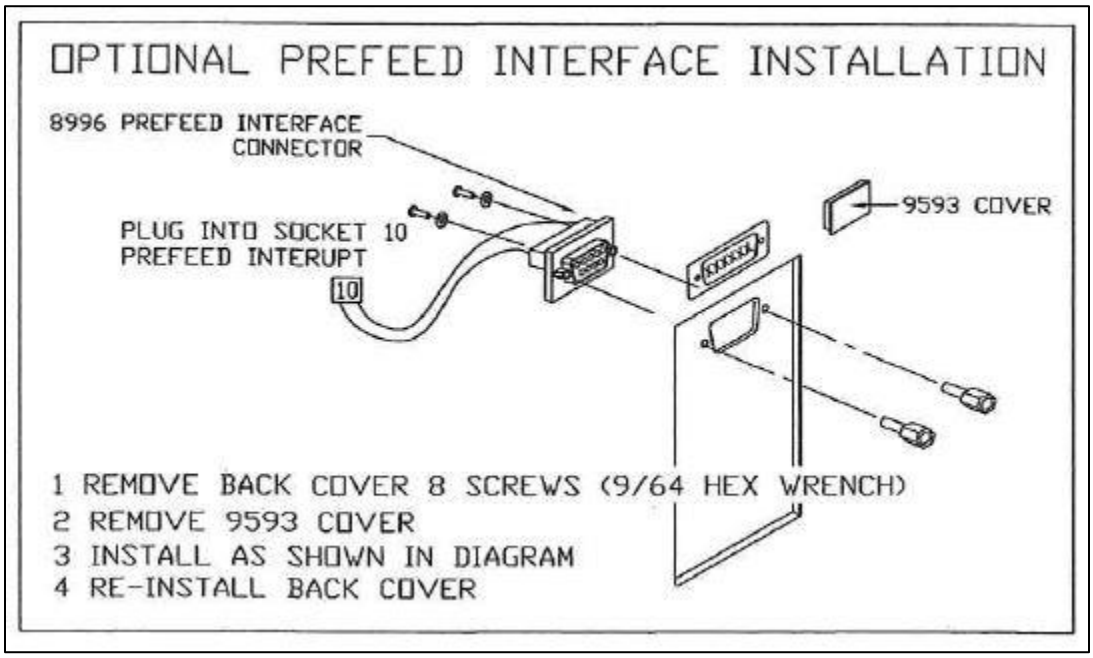


Figure 11: Prefeed Stop Interface Cable Assembly (Internal) Installation Instructions

Installing the Prefeed Stop Interface Cable Assembly (External)

To interface the Model 420 with Carpenter's Model 58D or Model 59 Wire Prefeed and Dereeler, a PN 8989 prefeed stop interface cable assembly (external) must be purchased from Carpenter Mfg. Co., Inc.

To activate the interface between the Model 420 and the Model 58D or Model 59, install the external interface cable assembly between both units. Locate the PN 7764 prefeed stop interface cable assembly (internal) on the back of the Model 420. Plug the 15-pin "D" end of the PN 8989 prefeed stop interface cable assembly (external) into the PN 7764 prefeed stop interface cable assembly (internal) on the back of the Model 420. Plug the 9-pin "D" end of the PN 8989 prefeed stop interface cable assembly (external) into the input on the side of the Model 58D or Model 59.

Figure 12: PN 7764 Prefeed Interface Cable Assembly (Internal)

Note: If a PN 9686 accessory board kit is purchased with the machine and installed, the Model 420 will not need the PN 7764 prefeed stop interface cable assembly (internal). The operator would install the PN 8989 prefeed stop interface cable assembly (external) into the PN 9686 accessory board kit the same way as described above.

Understanding the Prefeed Stop Interface

After successfully connecting the two units per the above instructions, the prefeed stop interface engages when either the Model 58D or Model 59 bottom accumulator pulley reaches its upper limit and makes contact with the jam sensor switch assembly, or when the prefeed overload protection activates.

The Model 58D or Model 59 will send a signal to the Model 420 indicating there is either a wire jam or overload condition. When the Model 420 receives this signal, the machine will immediately stop processing. (If a Model 84 Material Coiling Unit is interfaced with the Model 360, this machine will also stop).

If either a wire jam or overload condition is detected, the OLED display will alert the operator to an error ("** PRE-FEED ERROR ** PRESS ENTER TO RESET"). Remove the wire jam/overload condition from the machines. Press the LOAD WIRE button to eject the unfinished piece.

The prefeed stop interface (**wire jam/overload protection**) **is compatible only with the Model 58D or Model 59 Wire Prefeed and Dereeler**.

Accessory Board Kit

The Model 420 may be equipped with an accessory board kit to work in conjunction with a Carpenter Model 58D or Model 59 Wire Prefeed & Dereeler (for wire jam/overload protection), a foot switch assembly, or a wire marker. To interface the Model 420 with any of the above controls, a PN 9686 accessory board kit must be purchased from Carpenter Mfg. Co., Inc. The accessory board kit is to be used only in conjunction with Carpenter-approved equipment.

Instructions on how to correctly install the accessory board kit are provided below.

Note: A digital file of all PN 9686 accessory board kit installation drawings in the succeeding pages is available. Please contact the factory for assistance.

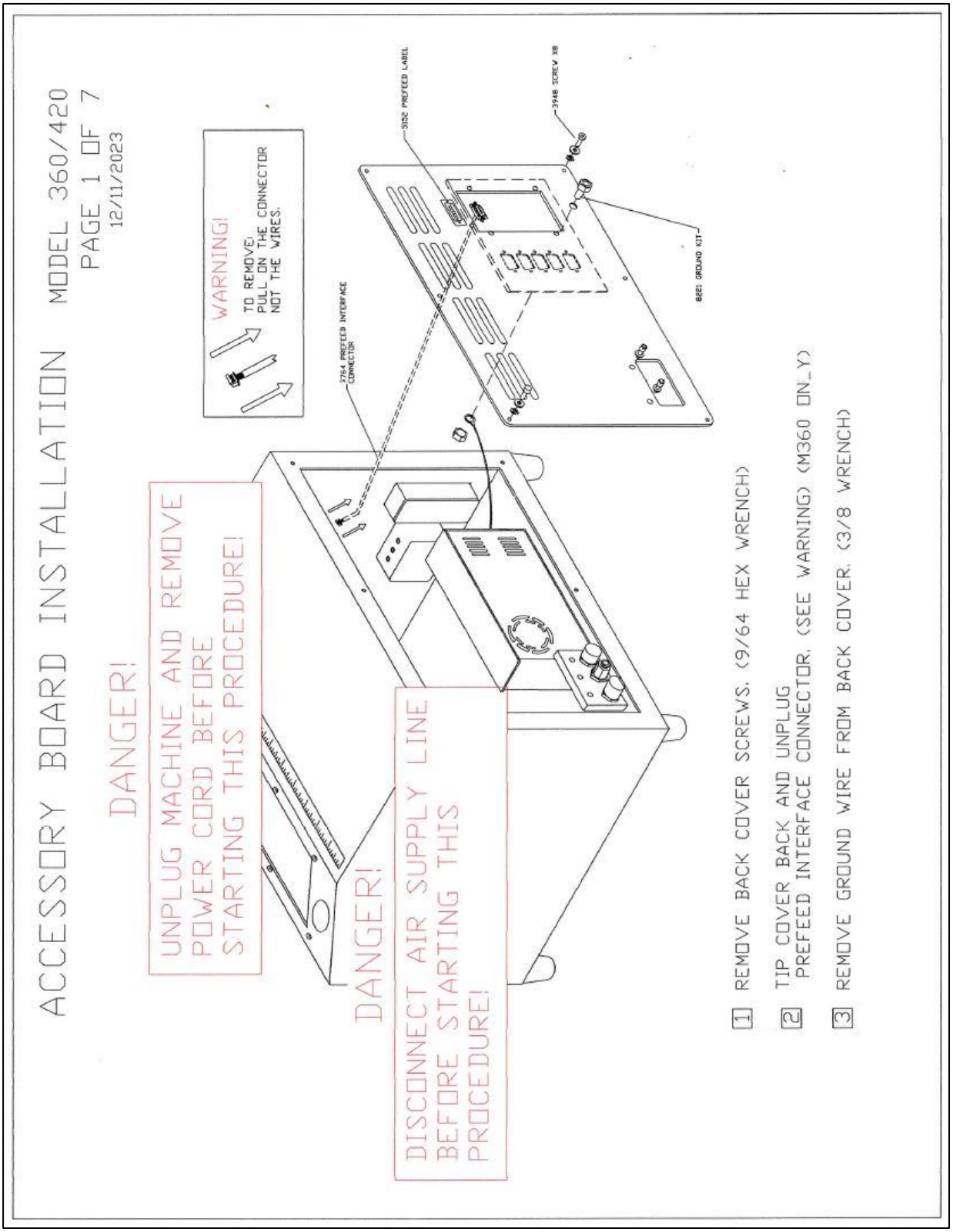


Figure 13: Accessory Board Kit Installation Instructions, Step 1

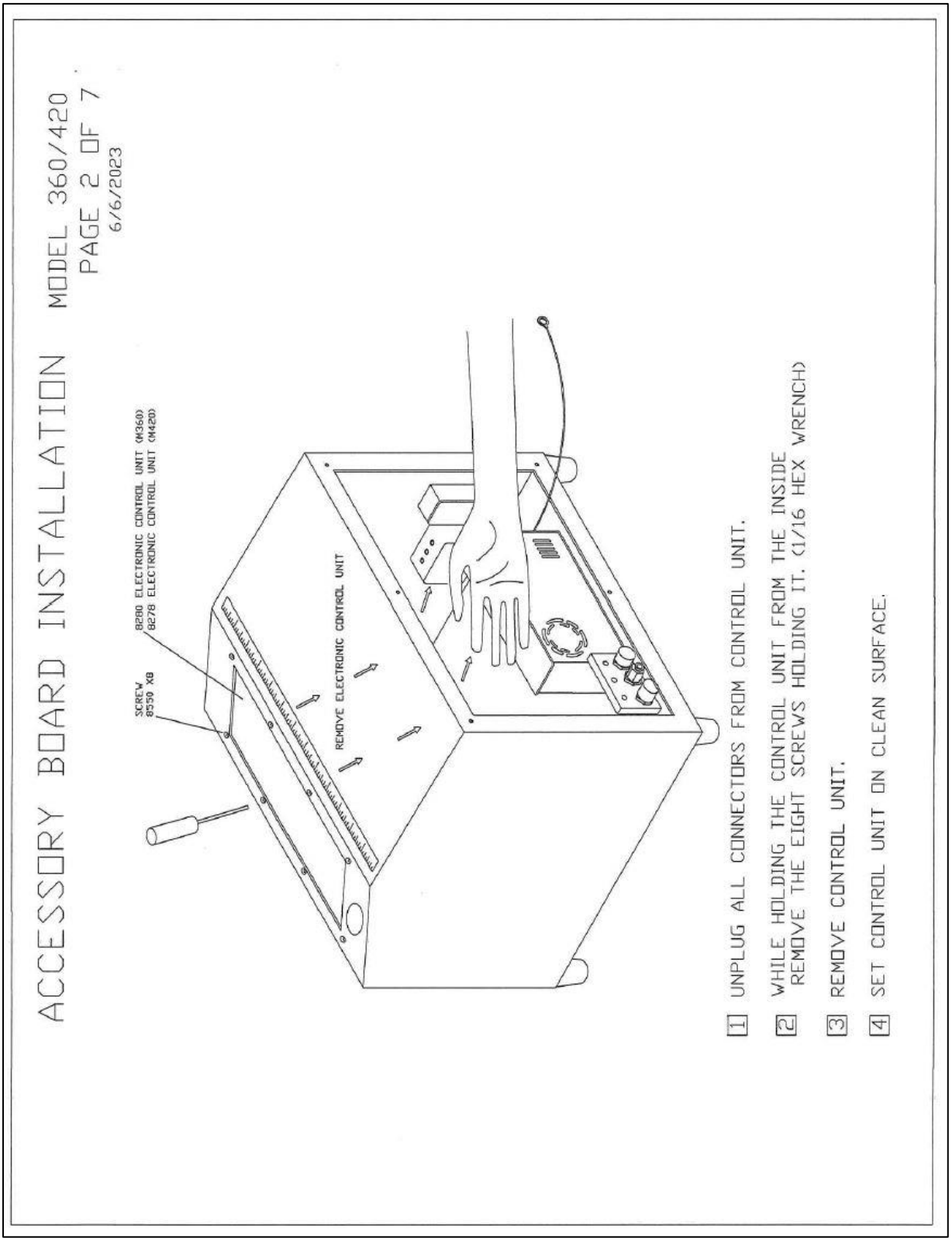


Figure 14: Accessory Board Kit Installation Instructions, Step 2

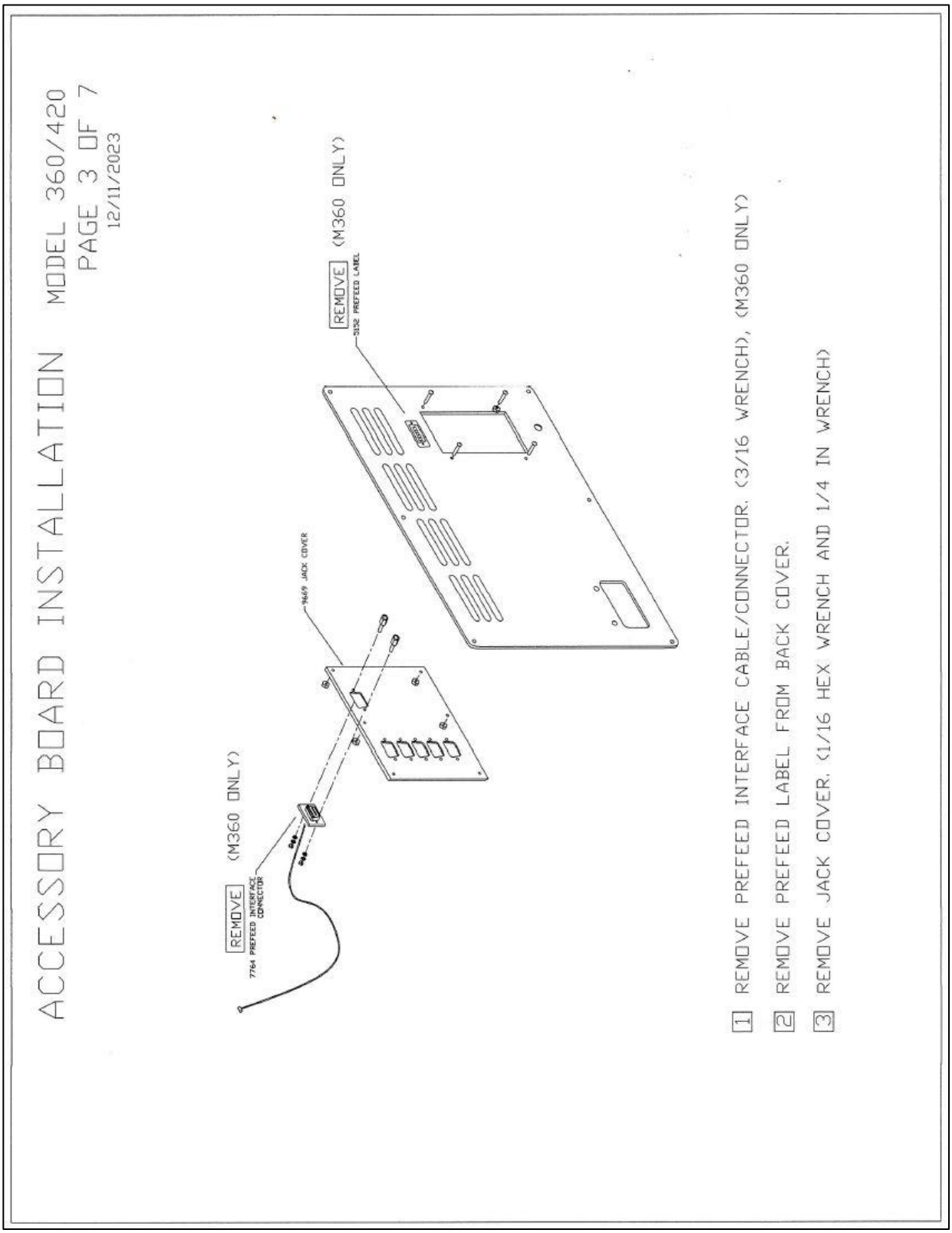


Figure 15: Accessory Board Kit Installation Instructions, Step 3

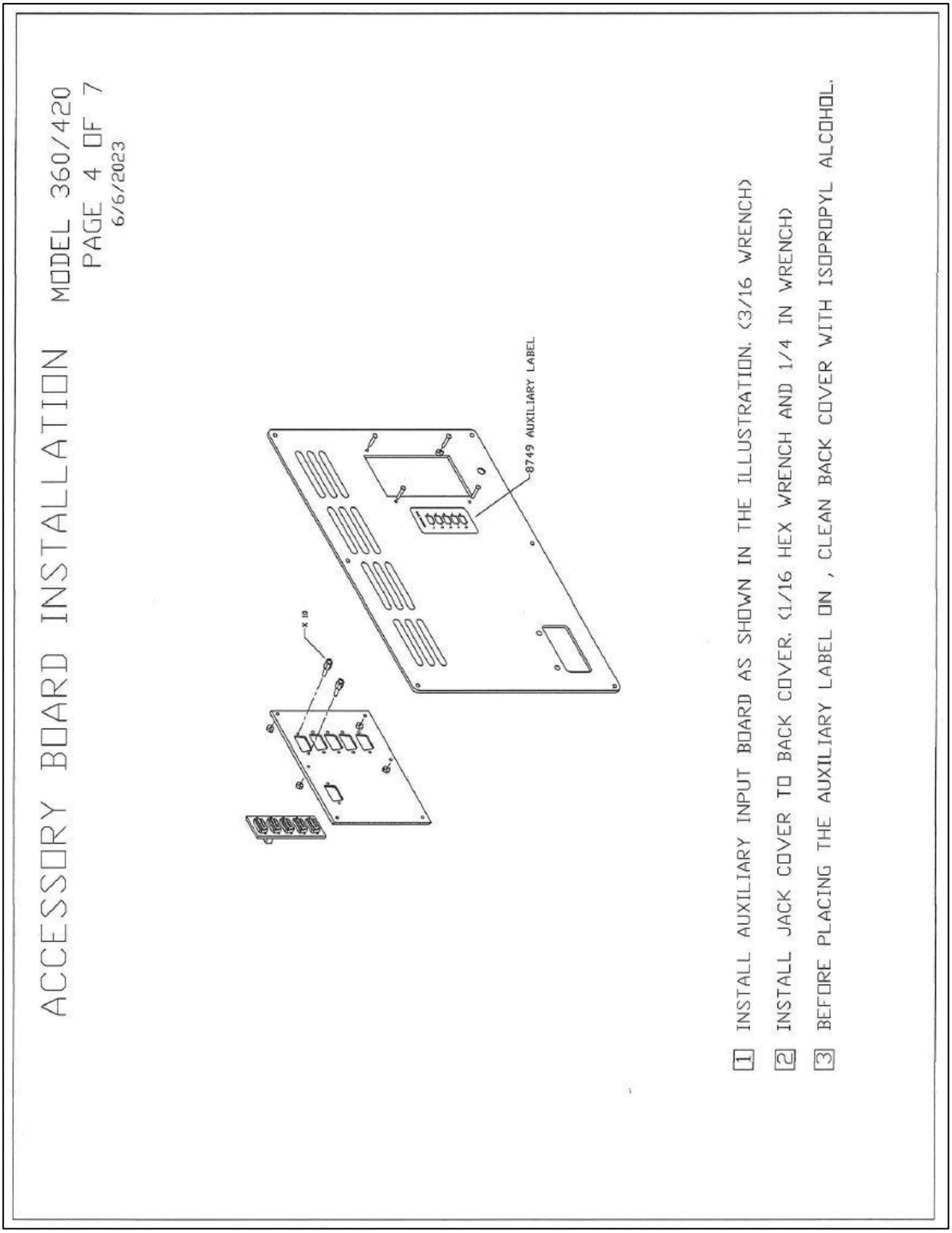


Figure 16: Accessory Board Kit Installation Instructions, Step 4

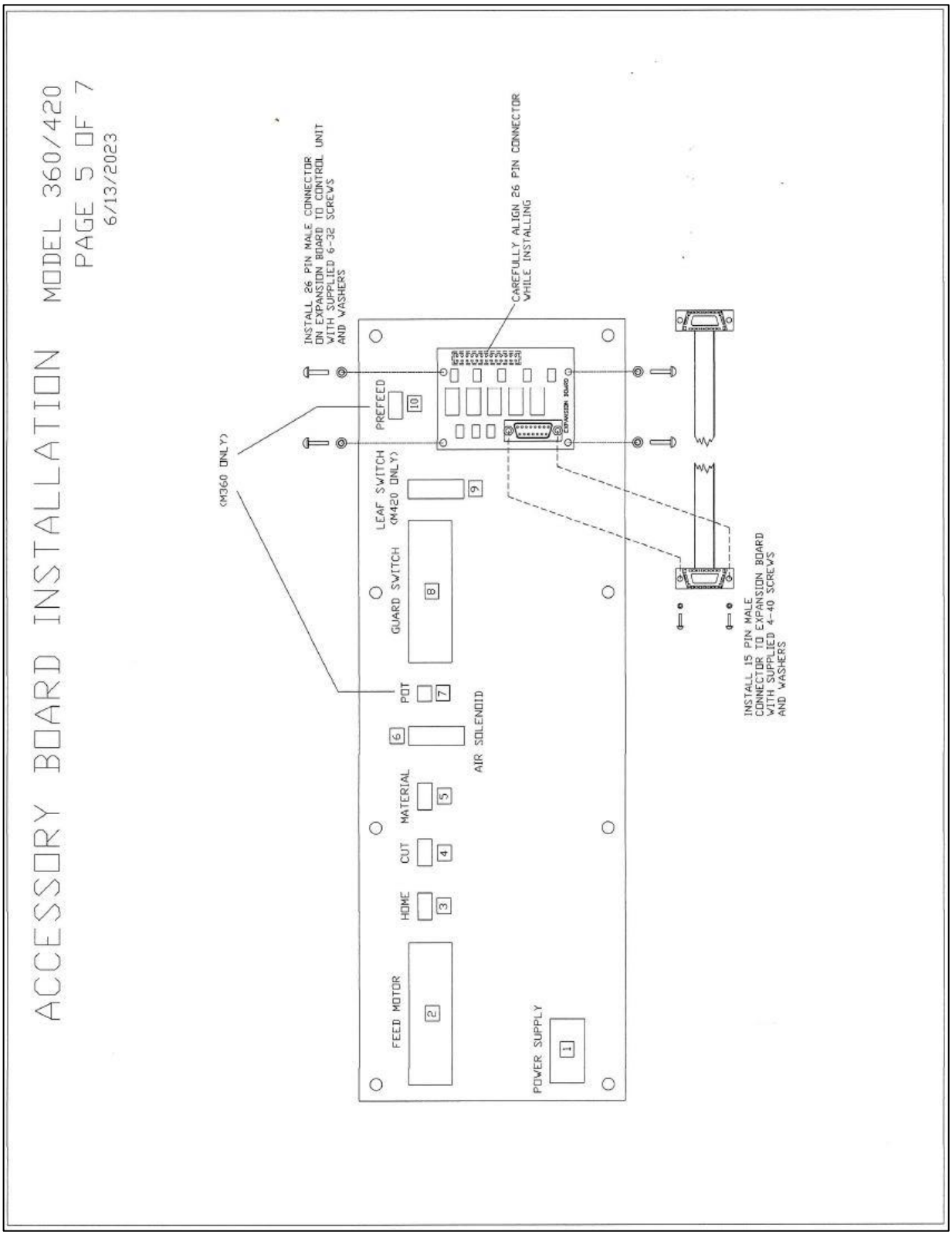


Figure 17: Accessory Board Kit Installation Instructions, Step 5

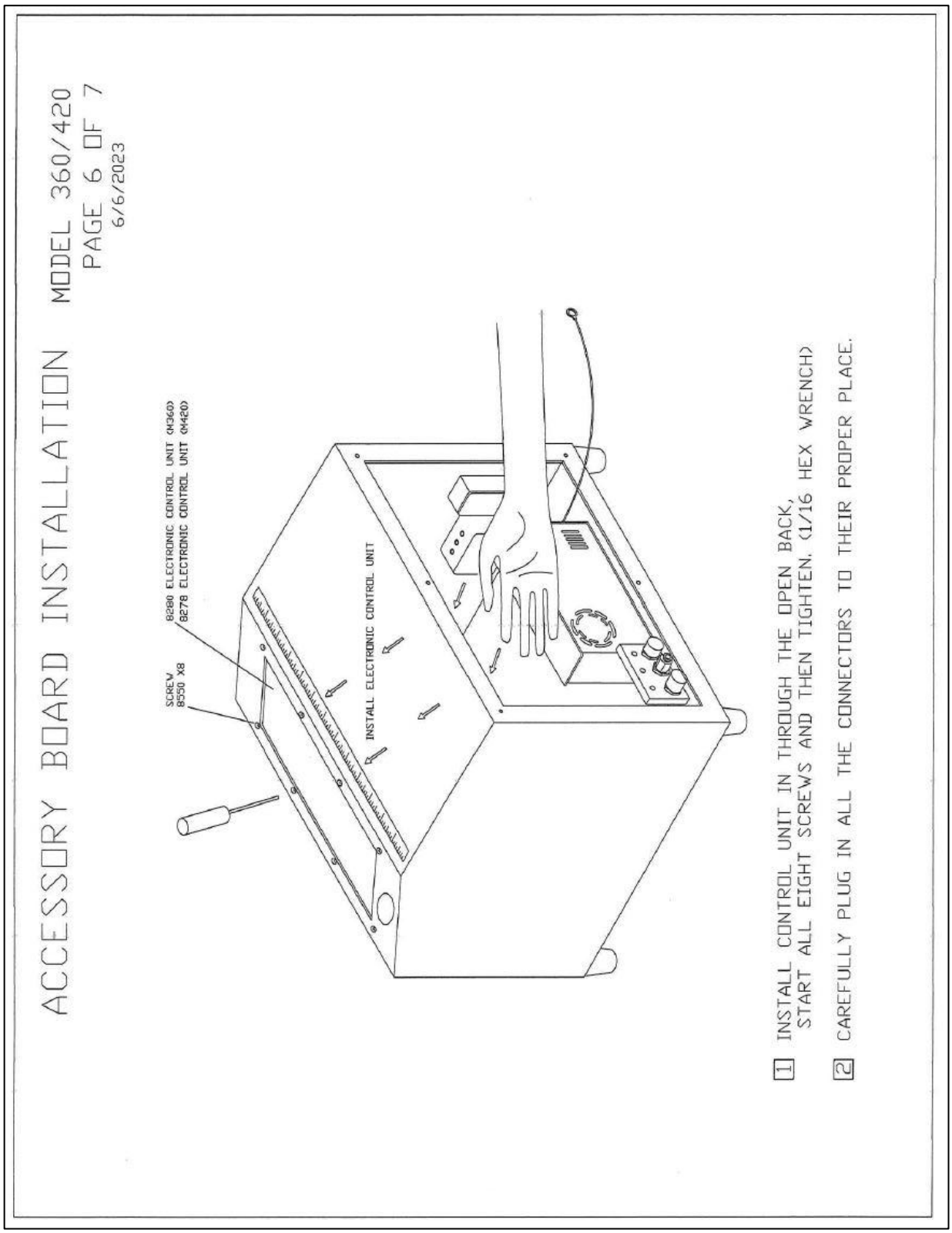


Figure 18: Accessory Board Kit Installation Instructions, Step 6

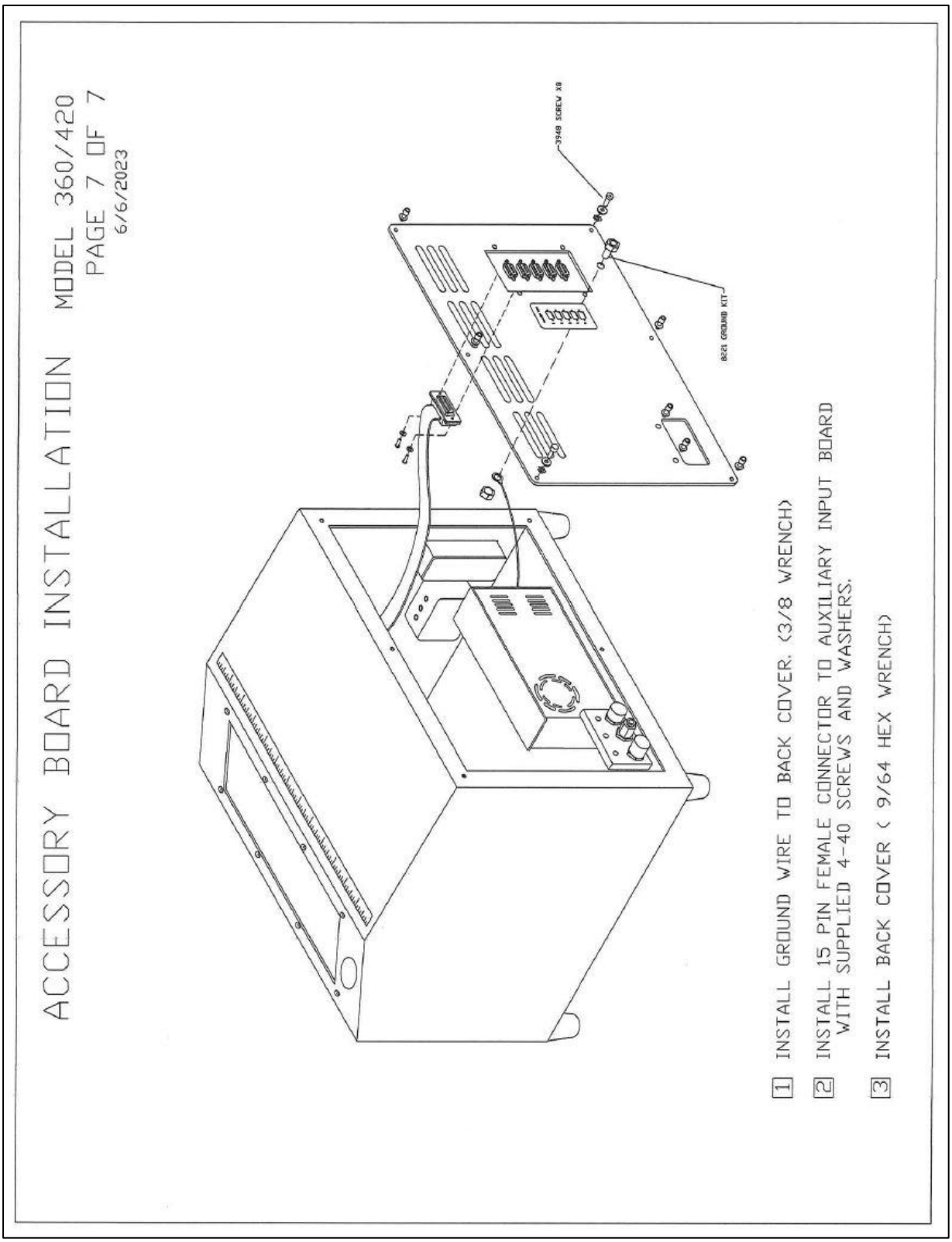


Figure 19: Accessory Board Kit Installation Instructions, Step 7

Section 12 – Important Elements for Trouble-Free Operation

For trouble-free operation, follow the guidelines below.

1. The unit must be plugged into a proper electrical outlet, and the machine must be turned on.

2. The air tubing must be properly connected to the air source and to the machine.

3. The feed roller tension must be adjusted properly for the current application.

4. The data entered into the fields must be correct and accurate.

5. Use of a motorized prefeed may be required for certain applications.

Common Problem	List of Checks
Blade Error	1. Verify air tubing is properly attached and air supply is turned on 2. Check that material does not exceed machine cutting limits 3. Check air pressure (current air pressure setting may be too low)

Common Problem	List of Checks
Length Inaccuracies	1. Check feed speed 2. Check feed roller pressure 3. Verify material length setting 4. Check wire guide clearance 5. A motorized prefeed may be required

Common Problem	List of Checks
Material Jams	1. Check wire guide clearance 2. Check feed speed 3. Check feed roller pressure 4. Check for possible material splice 5. Check for presence of foreign material/debris

Common Problem	List of Checks
Material Tracking Incorrectly through Feed Rollers	1. Check feed roller alignment

Common Problem	List of Checks
Non-Square Cuts	1. Check wire guide clearance 2. Check material for excessive memory or curvature

Common Problem	List of Checks
Material Sticking in Material Exit Chute Assembly due to Static Charge	1. Apply a light coating of talcum powder to inside of material exit chute assembly and magnetic sheet 2. The optional air blast kit may be required

Section 13 – Warranty

Carpenter Mfg. Co., Inc. manufactures its products to be free from defects in materials and workmanship. Should any defect occur within the warranty period, Carpenter Mfg. Co. Inc. will, at its option, exchange or repair the defective device.

At the discretion of Carpenter Mfg. Co., Inc., repairs or adjustments to equipment under warranty can be performed at our factory or at the customer location. In most cases a 1- or 2-day turnaround time will be necessary to repair equipment at our facility. When equipment is returned to our factory for repair or replacement, the customer is responsible for all freight charges.

This is a limited warranty and is in lieu of all other representations and expressed and implied warranties (including the implied warranties of merchantability and fitness for use). Under no circumstances shall Carpenter Mfg. Co., Inc. be liable for any incidental or consequential property damages or losses subsequent to misuse or improper maintenance of this equipment.

The following are not covered by the latter warranty:

- Consumable parts (blades, belts, guides, springs, inserts, stripping wheels, etc.)
- Cosmetic problems (nicks, scratches, etc.)
- Damages caused by any repairs or modifications by unauthorized personnel
- Abuse
- Damages caused by shipping
- Damages caused by environmental and/or atmospheric conditions
- Damages caused by the use of contaminated compressed air