



OPERATION and MAINTENANCE MANUAL



WAV

WALL PANEL MACHINE

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CHAPTER 1
WAV SPECIFICATIONS

SPECIFICATIONS

WAV Dimensions:	Length-22' 8"	(6.7m)
	Width-5' 1"	(1.5m)
	Height-4' 5"	(1.2m) w/Over Head Rack
	2' 7"	(.61m) w/o Over Head Rack
	Weight-5000 lbs.	(2272.7kg)
WAV on Trailer:	Length-27' 10"	(8.2m)
	Width-7' 4"	(2.1m)
	Height-6' 7"	(1.83m) with reel
	Weight-8700 lbs.	(3954.6kg)
Speed:	150 ft./min. Electric	(45.7m/min.)
	75 ft./min. Gas	(22.9 m/min.)
Drive:	Hydraulic via chain, sprocket and gear using 24 polyurethane drive rollers.	
Shear:	Hydraulically Powered, hardened tool steel dies and blades w/Panel Recognition Proximity Sensor	
Hydraulic Fluid:	24 Gallons - 32AW	
Coil Width:	24"	
Materials Formed:	Painted Steel	24ga. to 22ga. (.3mm to .8mm)
		Painted, Galvanized, Aluminized
	.032" and .040" Aluminum (WAV-16-4F Profile only)	
Controls:	Computer Batch and Length Control	

CHAPTER 2
PRECAUTIONS

PRECAUTIONS

1. **Make sure the operator of the machine has read and understands this manual in its entirety before attempting to operate this equipment.**
2. **ALWAYS** keep covers, guards and lids mounted to machine during operation.
3. **OBSERVE and OBEY** all safety and warning signs affixed to the machine.
4. **ALWAYS** adhere to and follow all local and national safety codes concerning the loading and un-loading of reeled coils.
5. **USE ONLY** properly rated devices for lifting reeled coils into or out of the reel stand assembly.
6. **DO NOT** wear loose clothing, jewelry etc. that could become entangled in the moving parts of the machine when operating.
7. **STOP THE MACHINE** and disconnect the power before attempting to make any adjustments, perform any maintenance or changeover procedures.
8. **AVOID** storing the machine outdoors for long periods of time. Cover with a tarp but provide good ventilation to prevent condensation and rust.
9. **DO NOT USE SOLVENTS TO CLEAN DRIVE ROLLERS!**
10. **ALWAYS EMPTY MACHINE OF MATERIAL BEFORE TRANSPORT AND STORAGE.**

CHAPTER 3
MACHINE ORIENTATION

MACHINE ORIENTATION

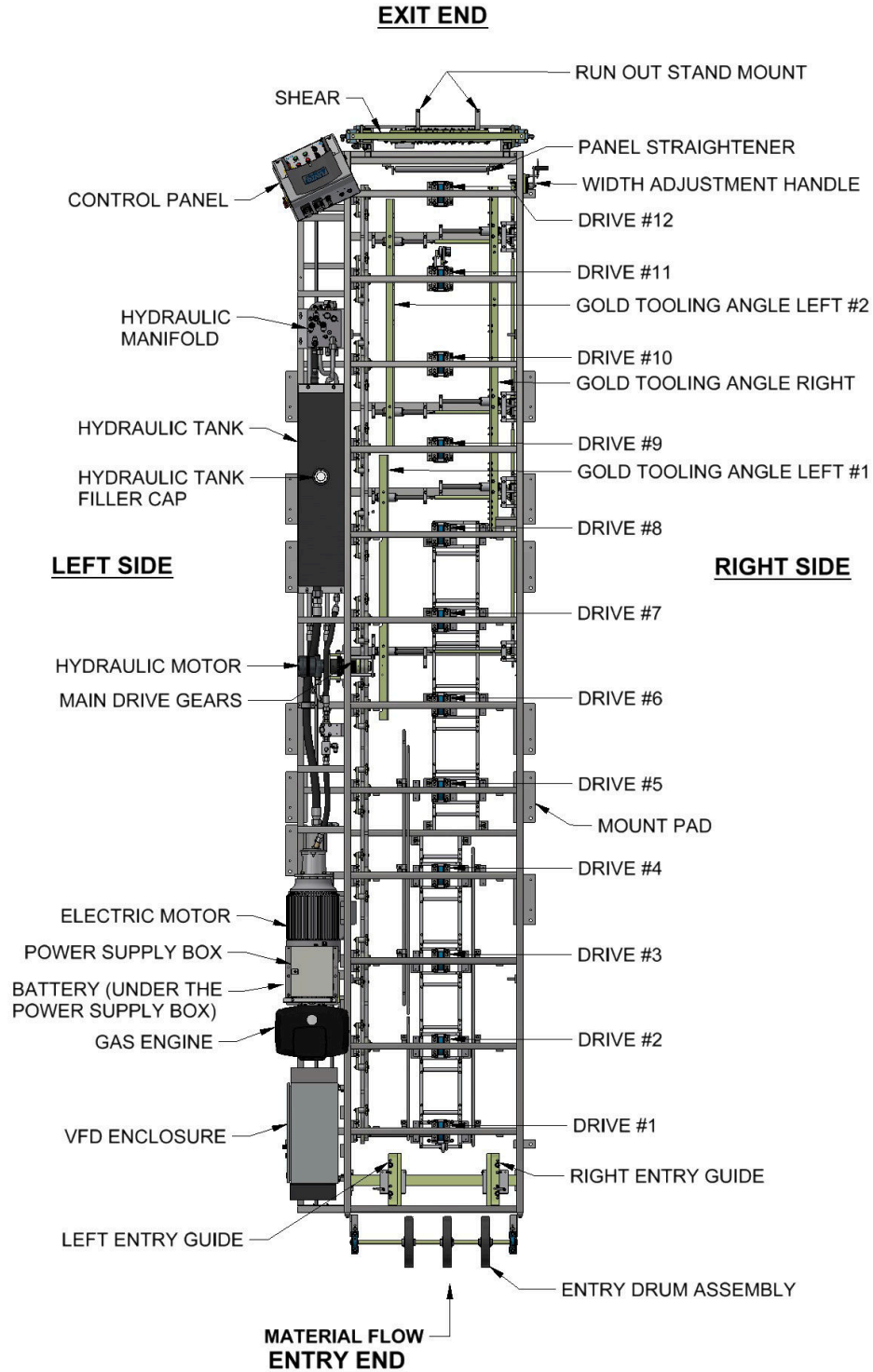


Figure 1: Machine Orientation

CHAPTER 3
MACHINE ORIENTATION

Mounting Foot Detail

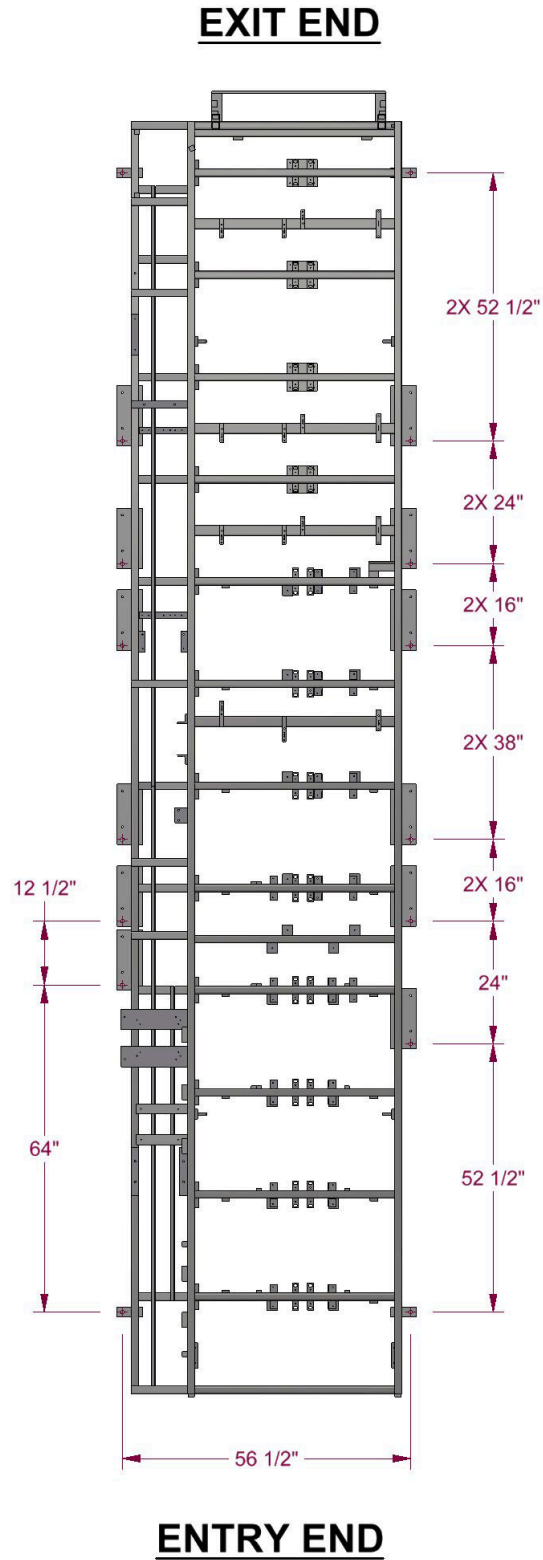


Figure 2: Mounting Foot Detail

CHAPTER 4
GENERAL MAINTENANCE

GENERAL MAINTENANCE

1. Always keep covers on during operation and storage. The covers are for operator safety, but also protect the internal components of the machine from the environment.
2. Avoid storage of the machine outdoors for long periods of time. Cover the machine with a tarp to protect it, but provide good ventilation to prevent condensation and rust.
3. Keep the machine clean. This will increase the life of the machine and make maintenance easier. A clean machine will provide a clean product.
4. Before operating the machine, visually inspect for foreign objects, debris, or anything unusual. If something doesn't seem correct, inspect and remedy prior to operation.
5. Keep chains properly tensioned. This will add to the life of the chains and sprockets. The chains should be just snug. An over-tightened chain is just as bad for the machine as a loose chain. Idler sprockets are provided on each chain for this purpose.
6. Lubricate the chains a minimum of every 40 hours of operation. It is preferable to use a dry motorcycle chain lube or equivalent.
7. Lubricate the 2-main drive gears a minimum of every 30 hours of operation. Use of an Open Gear Spray Lubricant is recommended. (Figure 21 & Figure 22 on page 32).
8. Lubricate 7 Acme Shafts (Figure 3 on page 7) with Spray Lube as needed.
9. Lubricate Mitre-Gears (Figure 3 on page 7) on ends of Acme Shafts with Spray Lube as needed.
10. Keep Arbor Cradles (Figure 14 on page 22) lubricated with Clear Grease.
11. Lubricate Arbor Nut (Figure 13 on page 20) using a grease gun with EP Grease when threads begin to look dry.
12. Clean Forming Rollers as needed with a Scotch Brite Pad and a small amount of solvent.
13. Clean Drive Rollers with soap and water, or mild solvent free spray cleaner. **CAUTION: Do not use harsh chemicals or solvents or damage will occur.**
14. Lubricate both faces of the Shear Blades and Dies (Figure 23 on page 36) a minimum of once daily with Spray Lube. More should be added as needed to prevent the cut edges from deteriorating.

CHAPTER 4
GENERAL MAINTENANCE

Recommended Lubricants and Fluids

The following lubricants are available from New Tech Machinery.

Spray Lube for:

Shear Blades, Shear Dies, Entry Guide, Acme Shafts and Mitre Gears

Super Lube - Multi-Purpose Synthetic Aerosol Lubricant with Syncolon (PTFE)

NTM PN: LUBE-SPRAY - 11oz can

Clear Grease for:

Arbor Cradles

Synthetic Extreme Pressure, High Temperature Grease with Syncolon (PTFE)

NTM PN: LUBE-GEL - 400-gram container

EP Grease for:

Arbor Nuts and Pillow Blocks

Grease - Lubricants Type: Moly Ep Grease

NTM PN: LUBE-GREASE - 14 Ounce Container

Open Gear Spray Lubricant for:

Main Drive Gears

Open Gear and Wire Rope Lubricant

NTM PN: LUBE-GEAR - 11 oz. Aerosol Can

Hydraulic Fluid (32AW) for:

Hydraulic Tank

NTM PN: HYD-200-018 - 5 Gallons

(5 Required)

CHAPTER 4
GENERAL MAINTENANCE

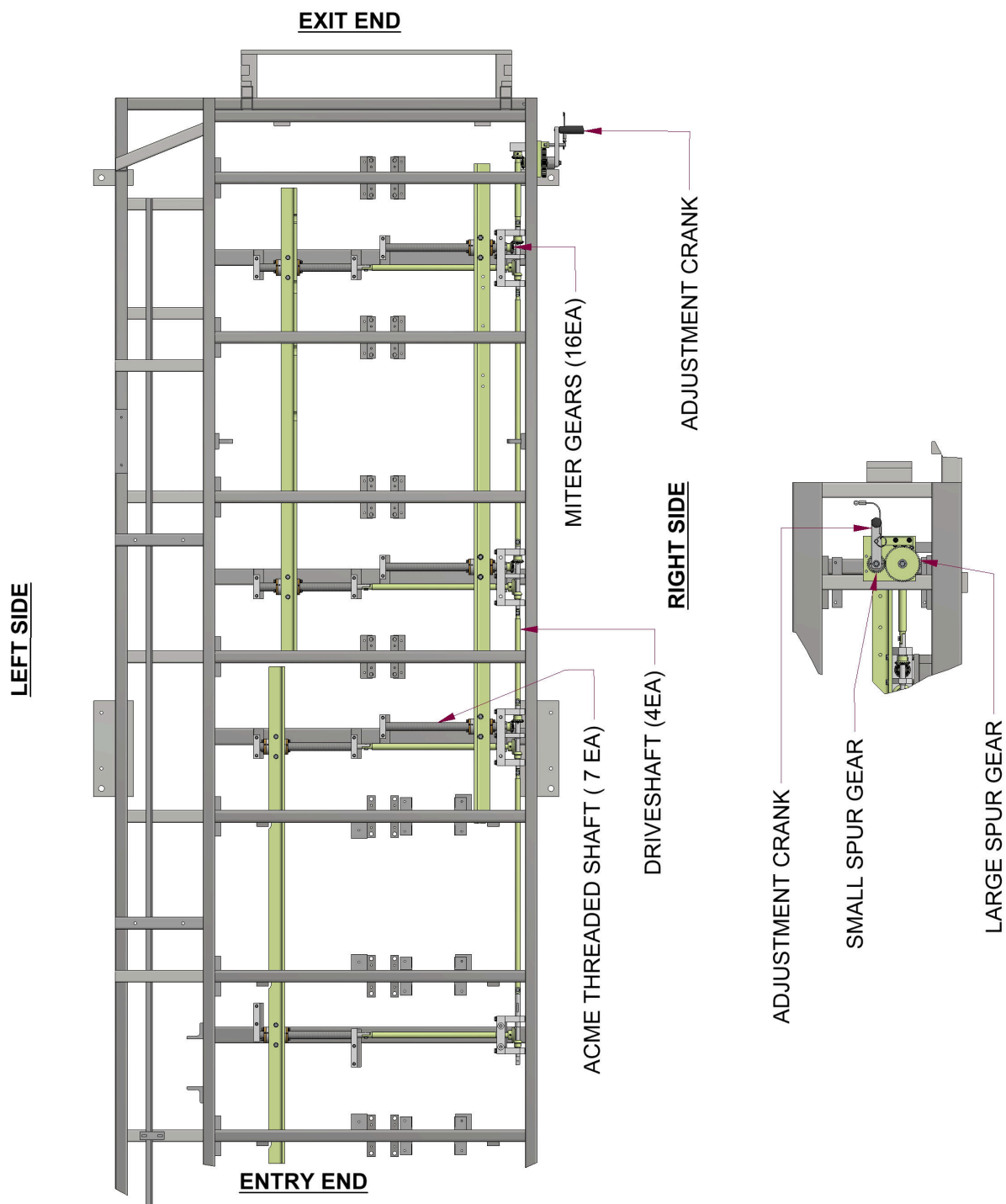


Figure 3: Acme Shafts and Width Adjustment

ELECTRICAL CONTROLS AND OPERATION

ELECTRICAL CONTROLS AND OPERATION

For Models with an Electric Motor or Both Gas and Electric Motors

POWER CORD REQUIREMENTS

It is very important to follow the power cord requirements prescribed by the motor and electrical control manufacturers to maintain their respective warranties. Make sure the cord being used is marked properly. Do not assume that because an extension cord looks heavy enough that it is the right gauge. **Use of the wrong gauge extension cord will void the warranty on motor and electrical controls.**

GENERATOR USE FOR ELECTRIC MOTOR MACHINES

If a generator will be used to power the machine it must be large enough to handle the amp draw requirements of the motor. Contact your local generator supplier for proper sizing and refer to the specification plate on the electric motor. **Use of an improperly sized generator will cause a low voltage situation of the electric motor and controls which will void the warranty.**

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

CONTROL PANEL OPERATION:



Figure 4: Main Control Panel

POWER DISCONNECT SWITCH

Turn this switch clockwise to turn on the machine. Turn it counterclockwise to turn off all features of the machine including the control panel. The switch should be locked in the off position during maintenance and service.

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

AUTO-MAN SWITCH

Turn this switch to Auto in order to run the machine in automatic mode with the touchscreen. When in Auto mode all of the buttons will be disabled except for the Emergency Stop and Motor Start buttons. All other controls should be done with the touchscreen.

Turn this switch to Manual in order to run the machine in manual mode. For instance, during setup and testing it is recommended to switch to Manual. Manual mode can also be used if the touchscreen is not functioning correctly. In this scenario the Remote Limit Switch can be attached to the runout table in order to produce panels at a desired length.

FORWARD-REVERSE SWITCH

This selector switch controls the direction of movement of the material through the machine. Select forward to feed material and run panel through the machine. **NOTE: For operator safety, the machine will not run continuously in reverse.**

STOP FEED

This button will stop the drives when the machine is running in Manual Mode in conjunction with the Remote Limit Switch.

SHEAR UP

This is an indicator light that tells the user if the top of stroke limit switches on the shear are activated. If the shear is up the light should be on. The drives will not function unless both the top left and top right limit switches sense that the shear is up. **NOTE: When the AUTO-MAN switch is in Auto, the Shear Up light is disabled.**

EMERGENCY STOP

Pressing this button will stop the machine functions and shut off the engine/electric motor. The touchscreen will remain on, and jobs can still be entered or edited. To start the machine again, twist the Emergency Stop button counterclockwise and press the Start button.

USB Port

Insert a USB drive into this port when uploading cut lists to the machine. Refer to the Import/Export section for more information.

JOG-RUN Switch

This selector switch allows the machine to run continuously, or jog material through the machine. Select JOG to load coil into machine and to move material through the machine in small increments. Select RUN after material has cleared the shear, and the machine will be ready to run panel.

NOTE: The LENGTH CONTROL LIMIT SWITCH must be plugged in to the Limit Switch Plug underneath the Control Panel to run continuously.

START FEED

This button is used to activate the drive system of the machine. If the Length Control Limit Switch is plugged in and the Jog/Run switch is in Run then the drive will continue to operate

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

after the button is released. The drive will stop when the panel reaches the limit switch or if one of the stop buttons is pressed.

SHEAR DOWN & MAINTENANCE MODE SHEAR DOWN

Press and hold the Shear Down button to activate the shear and cut off the panel. The shear will return to the up position as soon as the button is released. **NOTE: All the covers must be on the machine and the shear guard must be attached or the Shear Down button will not function.** If the shear must be operated with the covers or shear guard removed, during setup for example, then use the Maintenance Mode Shear Down Buttons on the sides of the control panel. Both buttons must be pressed at the same time.

START BUTTON

Press this button momentarily to start the Electric Motor machine. Press and hold this button until the engine starts on a Gas Engine model. **Note: The Power Disconnect Switch must be on and the Emergency Stop buttons must be out in order to start the machine.**

AUXILIARY CONTROLS (AT ENTRY END AND MIDDLE RIGHT SIDE)



Figure 5: Auxiliary Controls

REV/FWD SWITCH

This switch is used for the initial loading of the coil into the machine. Turn the switch to the right to engage the drives forward and to the left for reverse. Once the switch is released it will return to the center position and stop the drives. It is recommended to only jog the material a few inches at a time until the leading edge is all the way through the machine.

EMERGENCY STOP

Pressing this button will stop the machine functions and shut off the engine/electric motor. The touchscreen will remain on, and jobs can still be entered or edited. To start the machine again, twist the Emergency Stop button counterclockwise and press the Start button on the main control panel.

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

VARIABLE FREQUENCY DRIVE (VFD) ENCLOSURE OPERATION:



Figure 6: VFD Enclosure

The Variable Frequency Drive (VFD) is used to control the speed of the electric motor. This allows the operator to set the speed of the machine to suit their needs. It also ramps up and ramps down at the beginning and end of each panel. This reduces the shock loads on the system and increases the accuracy of the panel lengths.

A. GAS-ELECTRIC Switch

For machines equipped with both an electric motor and a gas engine, use this switch to select which power supply will be used.

B. VFD FAULT Light

This light will come on if the VFD is in a fault state. To clear the fault press the Machine Setup button on the control panel touchscreen, then Wave Setup, then Reset.

C. POWER ON Light

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

This light indicates that the machine is connected to the appropriate power supply. It will continue to stay on when the power disconnect switch at the control panel is in the off position.

Cover Interlock Switches

As a safety feature, the machine is equipped with interlock switches on the covers and guards that need to be removed on a regular basis. The covers with interlock switches are shown in Figure 7.

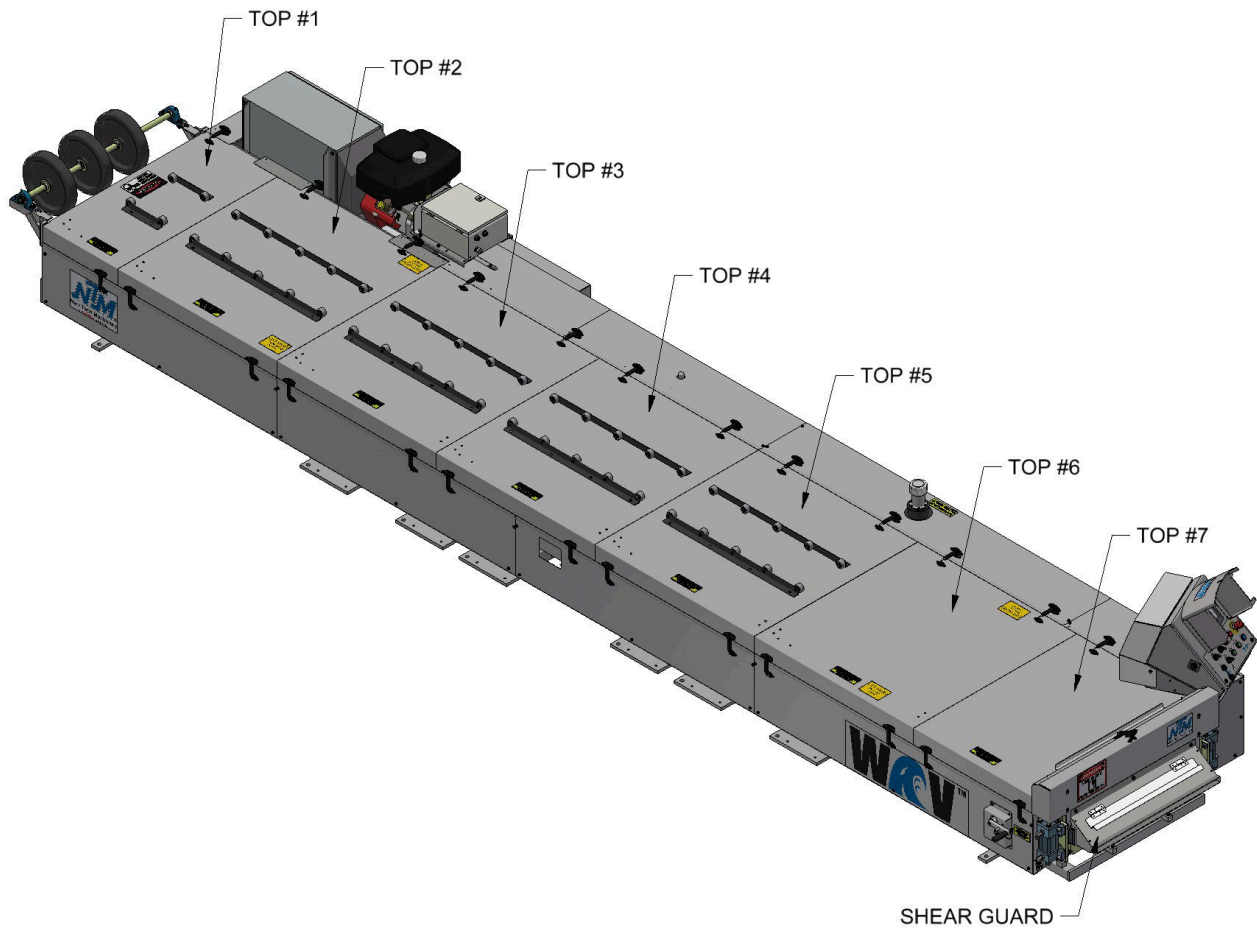


Figure 7: Covers with Interlock Switches

If one of these covers is removed or out of position the machine will be put into maintenance mode, and some functions of the machine are disabled to prevent injury. The drive is limited to jog mode only and the shear will not come down automatically. To operate the shear in maintenance mode, press the two Maintenance Mode Shear Down buttons on the sides of the control panel.

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

If the machine is in maintenance mode and all the covers and guards are in place, then most likely one of them is slightly out of position. Check to make sure that all the top covers are seated fully down. If all the covers seem to be positioned correctly then it's possible one of the magnetic sensors or actuators need to be adjusted. They are mounted in slotted holes and can be moved closer or further away from each other. See the diagram in Figure 8 for the ideal positioning of them and adjust their positions as needed. It's also possible that some metal debris could be stuck to one of the sensors or actuators and be interfering with the functioning. Please clean them off if this is the case.

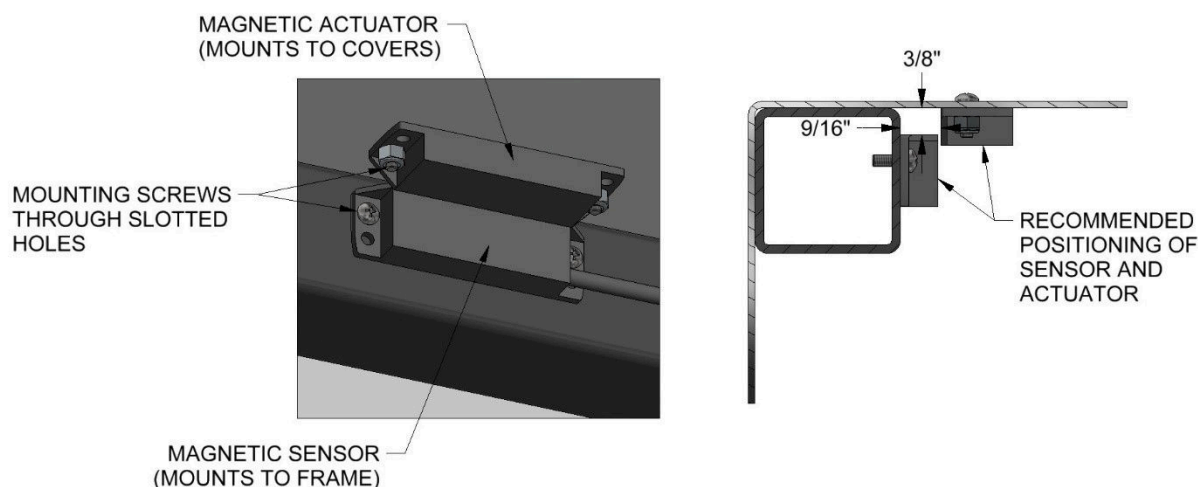


Figure 8: Interlock Switch Detail

CIRCUIT BREAKERS AND FUSES

There is a circuit breakers inside the Main Control Panel, the VFD Enclosure (if present), and the Power Supply Box near the Gas Engine (if present). See Figure 1 for their locations on the machine. These circuit breakers protect the electrical components. If one of the breakers are tripped, none of the control panel lights will come on and the machine will be inoperable. **To reset the breaker(s):** Open the lid to the enclosure. Locate the circuit breaker by referring to Figure 9 through Figure 11. The pictures show the breakers in the un-tripped position. Reset the breaker(s) if necessary.

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

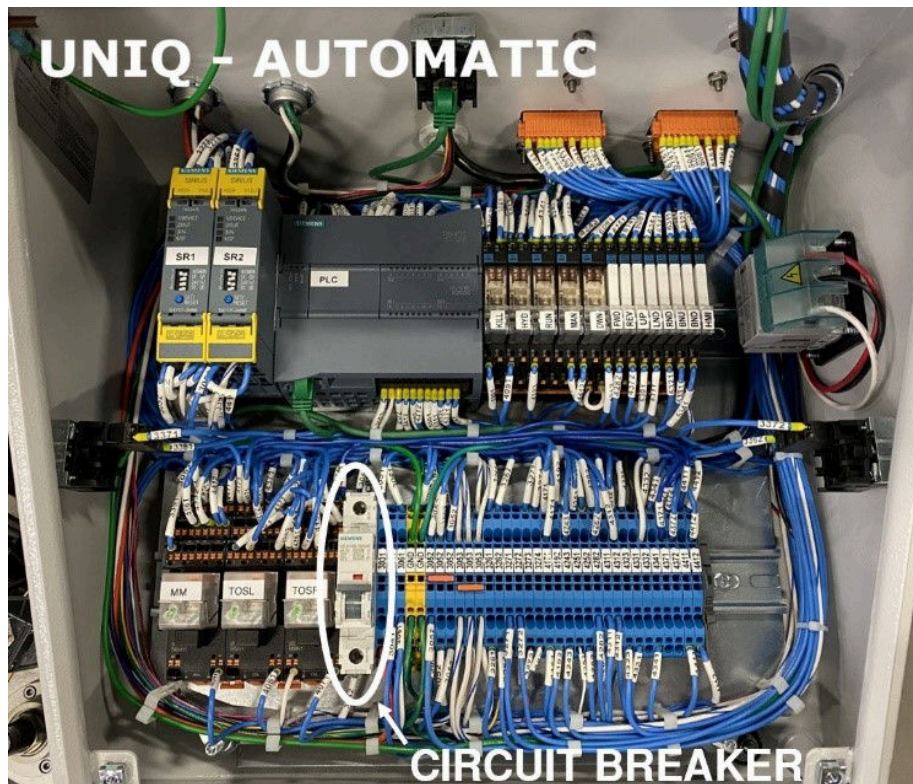


Figure 9: Main Control Panel Circuit Breaker

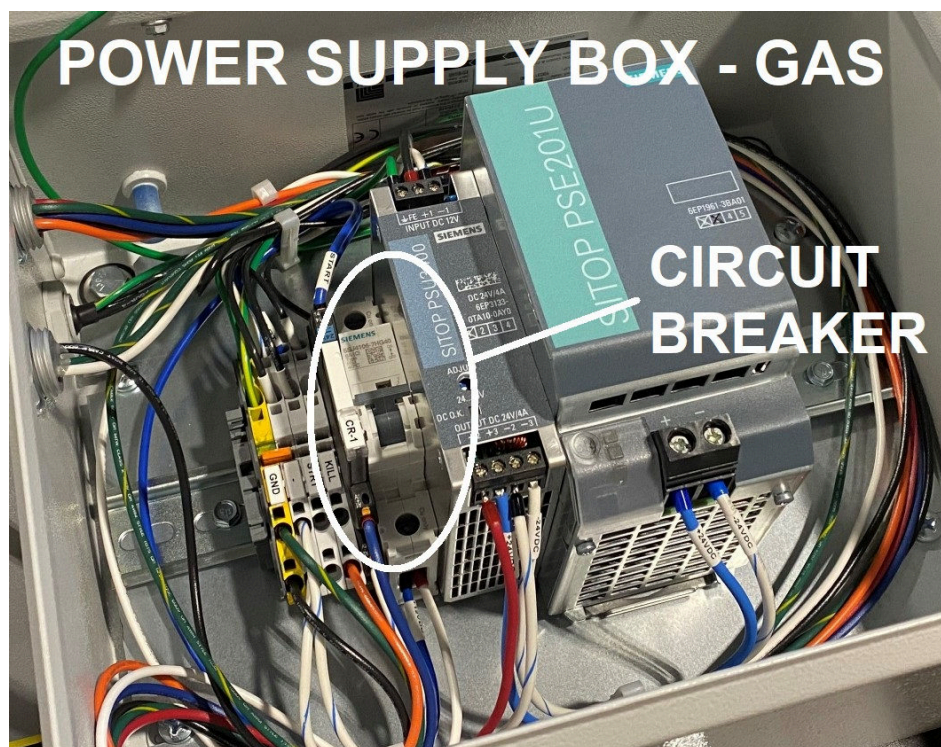


Figure 10: Gas Engine Power Supply Box Circuit Breaker

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

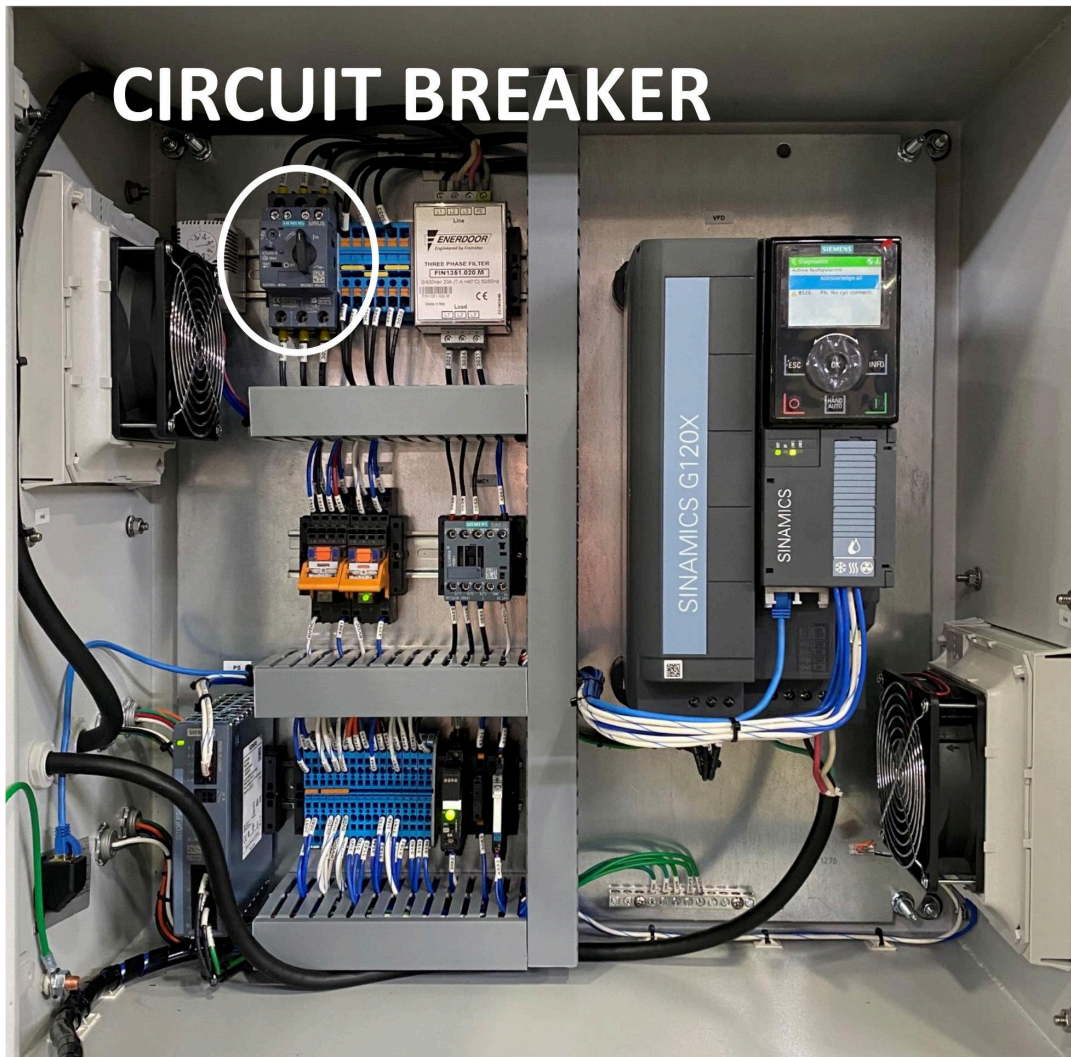


Figure 11: VFD Enclosure Circuit Breaker

REMOTE LIMIT SWITCH

(See Figure 12)

NOTE: The machine will not run continuously in the forward direction unless the Remote Limit Switch is plugged into the machine. The Remote Limit Switch is used for panel length control. It is designed to attach to the right side of the optional Run Out Tables (see page 14) available for the machine. Plug the female end of a 3-wire 14-gage extension cord into the limit switch, and the male end into the female Limit Switch Plug located at the bottom of the Control Panel Assembly. The length of the panel to be ran determines the length of the extension cord needed. Run out a panel to the desired length and stop the machine. Slide the Remote Limit Switch onto the bottom of the angle on the right side of the run out table so that the ARM of the switch is against the end of the panel. Pull the limit switch back toward

ELECTRICAL CONTROLS AND OPERATION

the shear until a click is heard in the Limit Switch Head and secure the limit switch at this location. Cut and remove the set-up panel from the table. Push the start button and run the next panel allowing the limit switch to stop the machine. Measure this second panel before cutting to determine if it stopped in the correct position and make the necessary adjustment to the limit switch to obtain the desired length. Repeat as necessary.

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

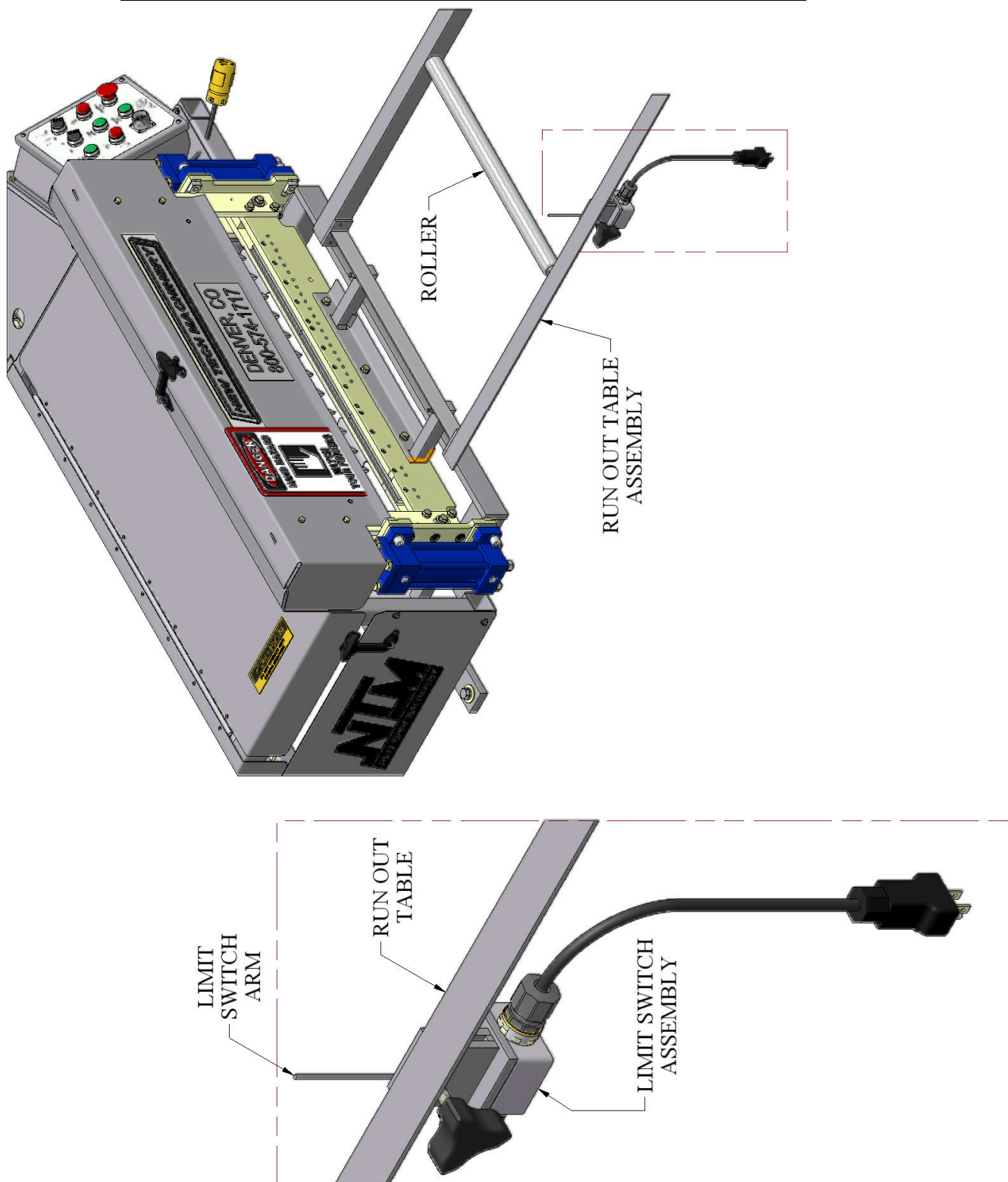


Figure 12: Run Out Table and Remote Limit Switch

CHAPTER 6
REEL STANDS, REELS, AND EXPANDABLE ARBORS

REEL STANDS, REELS AND EXPANDABLE ARBORS

EXPANDABLE ARBOR

(Figure 13)

The Expandable Arbor adjusts to accommodate coils with 16" to 20" inside diameters by expanding into the ID of the coil.

THREADED NUT

The threaded nut should always be on the right side of the machine, and the tail of the coil should always be routed over the top and pointing toward the exit or shear end of the machine.

This threaded nut is used to increase or decrease the outside diameter of the arbor. Turning the nut clockwise will increase the outside diameter of the arbor, and counter-clockwise rotation will decrease the arbor size. There is a grease zerk in the collar of the threaded nut that should be lubricated at least twice a year, or whenever grease is not visible on the threads of the shaft.

END COLLAR

The End Collar has two positions.

Position "A" is used for coils with inside diameters of 16".

Position "B" is used for coils with inside diameters of 20".

To adjust from one position to the other, remove 2 screws "C" until end collar is free to slide. Slide it to the inside position for 20" ID or outside position for 16" ID coil. Align it to the respective threaded holes in the reel shaft. Re-insert and tighten "C" bolts to lock the end collar to the shaft.

LOADING EXPANDABLE ARBORS WITH COIL

1. Using the Threaded Nut, collapse the arbor small enough to fit into the inside diameter of the coil.
2. Slide the Expandable Arbor into the center of the coil making sure the threaded nut is on the right and the tail of the coil is over the top and pointed toward the exit end of the machine.
3. Turn the Threaded Nut clockwise until the Support Bars on the arbor are just snug against the inside of the coil.
4. Slide the arbor left or right to get the correct dimension measuring from the edge of the coil to the end of the Support Bar on the Threaded Nut side. (Figure 13)
5. Finish by rotating the Threaded Nut clockwise until the Support Bars are very tight against the inside of the coil. Verify that the coil location is correct, and re-adjust if necessary. The Coil and Arbor are now ready for loading. (see LOADING REELED COIL on page 23)

CHAPTER 6 **REEL STANDS, REELS, AND EXPANDABLE ARBORS**

SET-UP CHART	
PROFILE	"D"
WAV-16-4F & C	3/4"
WAV-12-1F & C	5 1/16"
WAV-8-1F & C	7 3/4"

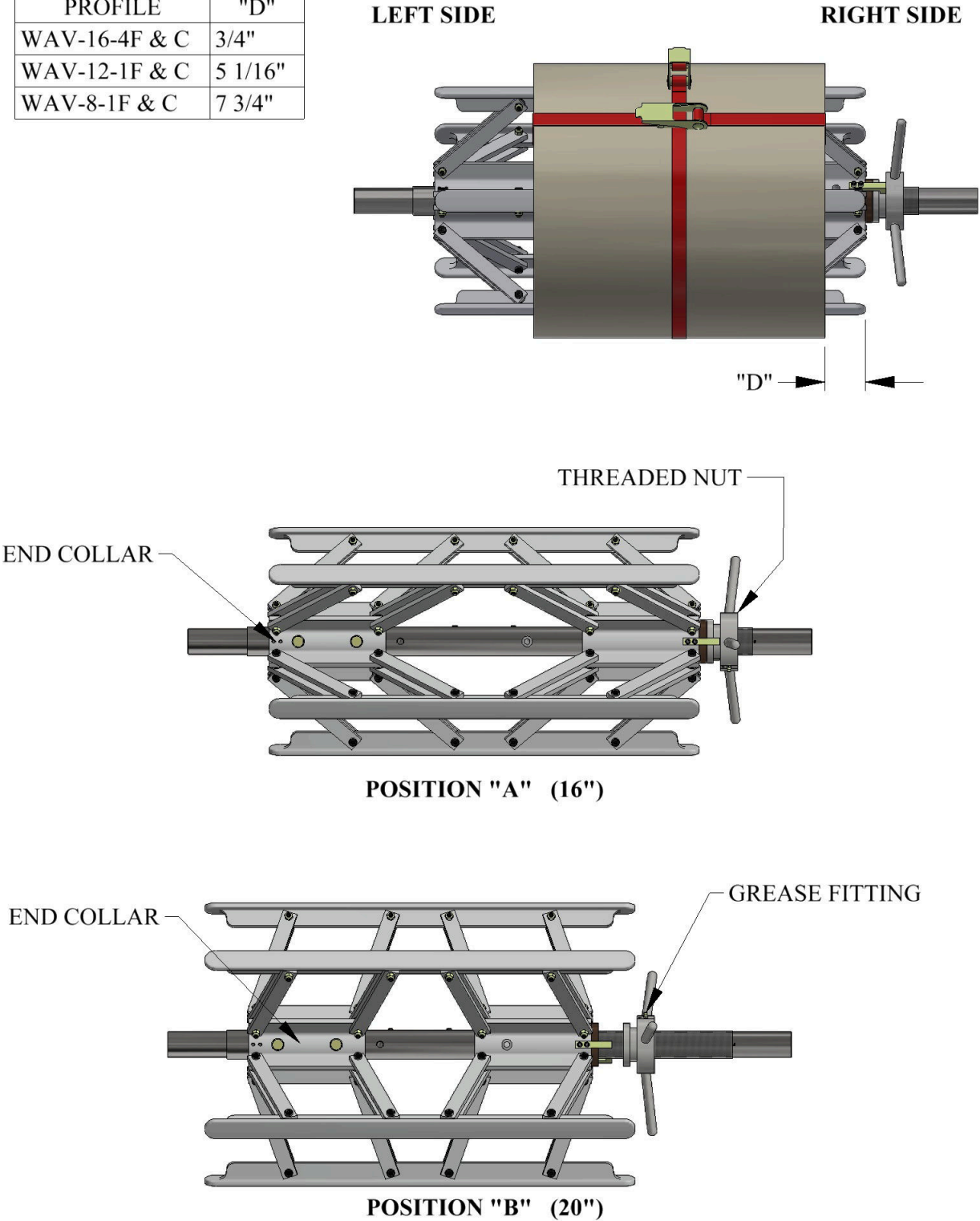


Figure 13: Expandable Arbor Set-Up

CHAPTER 6

REEL STANDS, REELS, AND EXPANDABLE ARBORS

LOADING INSTRUCTIONS FOR THE TRIPLE OVERHEAD REEL RACK

If you have the triple overhead reel rack care must be taken in loading the coils so that the tongue weight of the trailer is in a safe range. Please observe the following guidelines:

1. If you have one coil, load it in the center position.
2. If you have two full coils, load them in the front two positions and take material from the front coil first, then the center coil.
3. If you have three full coils, take material from the rear coil first (the one closest to the shear), then the front coil, then the center coil.
4. If you have coils of varying weights, put the heaviest one in the center position, the second heaviest in the front position, and the lightest one in the rear position.

REMOTE DECOILER

If a Remote Decoiler is used it should be placed 8 to 10 feet behind the machine. Align it as close as possible to the Right-Side Entry Guide line of fire, making the side of the coil and reel parallel to the machine. NOTE: The closer the Decoiler and reel are set to the machine, the more critical this alignment becomes.

CHAPTER 6

REEL STANDS, REELS, AND EXPANDABLE ARBORS

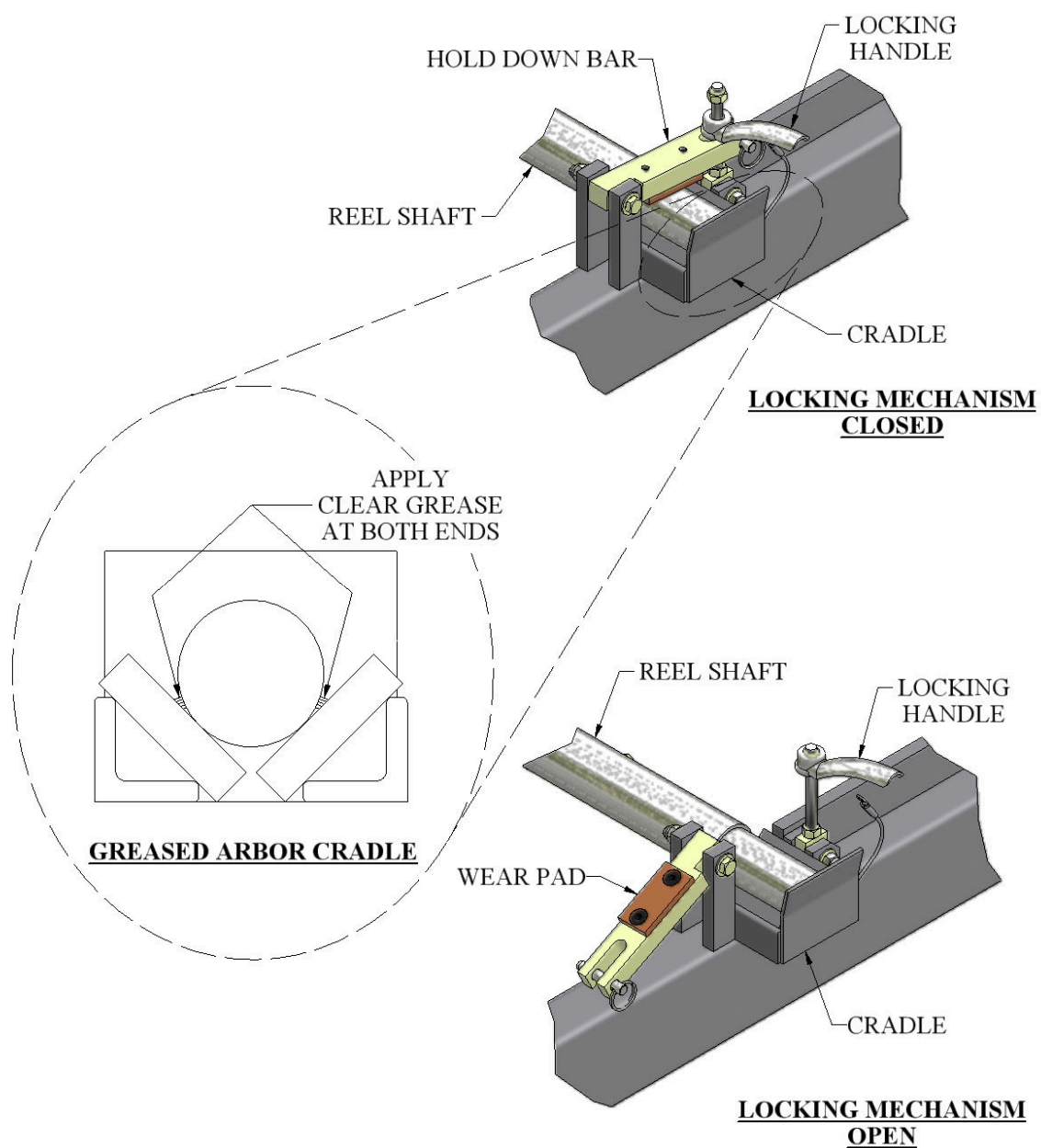


Figure 14: Expandable Reel Assembly

CHAPTER 6

REEL STANDS, REELS, AND EXPANDABLE ARBORS

LOADING REELED COIL

Caution:

Always use a forklift or other approved lifting device to load or unload Fixed Reels or Expandable Arbors loaded with coil.

The Lifting Holes in the Fixed Reel sides are provided to make loading safer and easier.

DO NOT use lifting straps through the lifting holes as the sharp edges may cut the straps.

1. Prepare the reel stand by making sure the Hold Down Bars are in the unlocked and open Position (Figure 14).
2. Using an approved lifting device, lift the reeled coil into the cradles on the reel stand making sure that the tail of the coil is in the correct position (Figure 16) then remove the lifting device.
3. Rotate the Hold Down Bars (Figure 14) to the closed position and thread the handle onto the hold down bolt. If material is going to be used from this coil, tighten the left and right handle just snug. Final adjustment of tension should be made while running a panel to keep reel from unwinding material too fast. As the coil becomes smaller, re-adjustment will need to be made. **Caution: Do Not over tighten Hold Down Bars. Drive and/or electrical system failure may occur.**
4. If the machine will be transported after loading coil, tighten the Hold Down Bars securely to keep coil from unwinding during transport, and secure the loose end of the material to the coil.
5. Before transporting the loaded Expandable Arbor, the coil should be secured around the outside edges through the inside diameter using a strap, rope, etc. to prevent the coil from telescoping (Figure 13).

NOTE: Make sure Hold Down Bars are tightened securely and coil is properly tied off before transporting machine.

CHAPTER 6

REEL STANDS, REELS, AND EXPANDABLE ARBORS

FEEDING COIL INTO THE MACHINE

Before feeding coil into the machine it is necessary to trim the corners of the leading edge to ensure smooth loading. Cut a triangle from the left corner that is about 1" wide. On the right corner, cut it out in the shape shown below. A template has been provided with the machine to make this easier, but if it has been lost you can follow the dimensions in the figure.

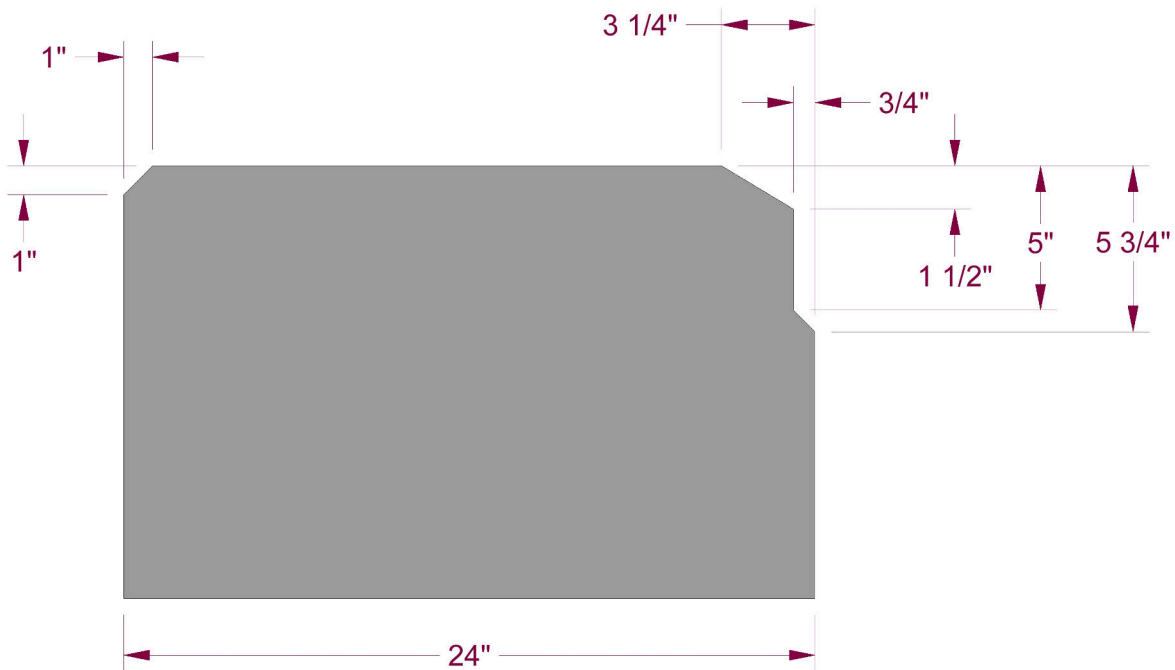


Figure 15: Trim Material

CHAPTER 6

REEL STANDS, REELS, AND EXPANDABLE ARBORS

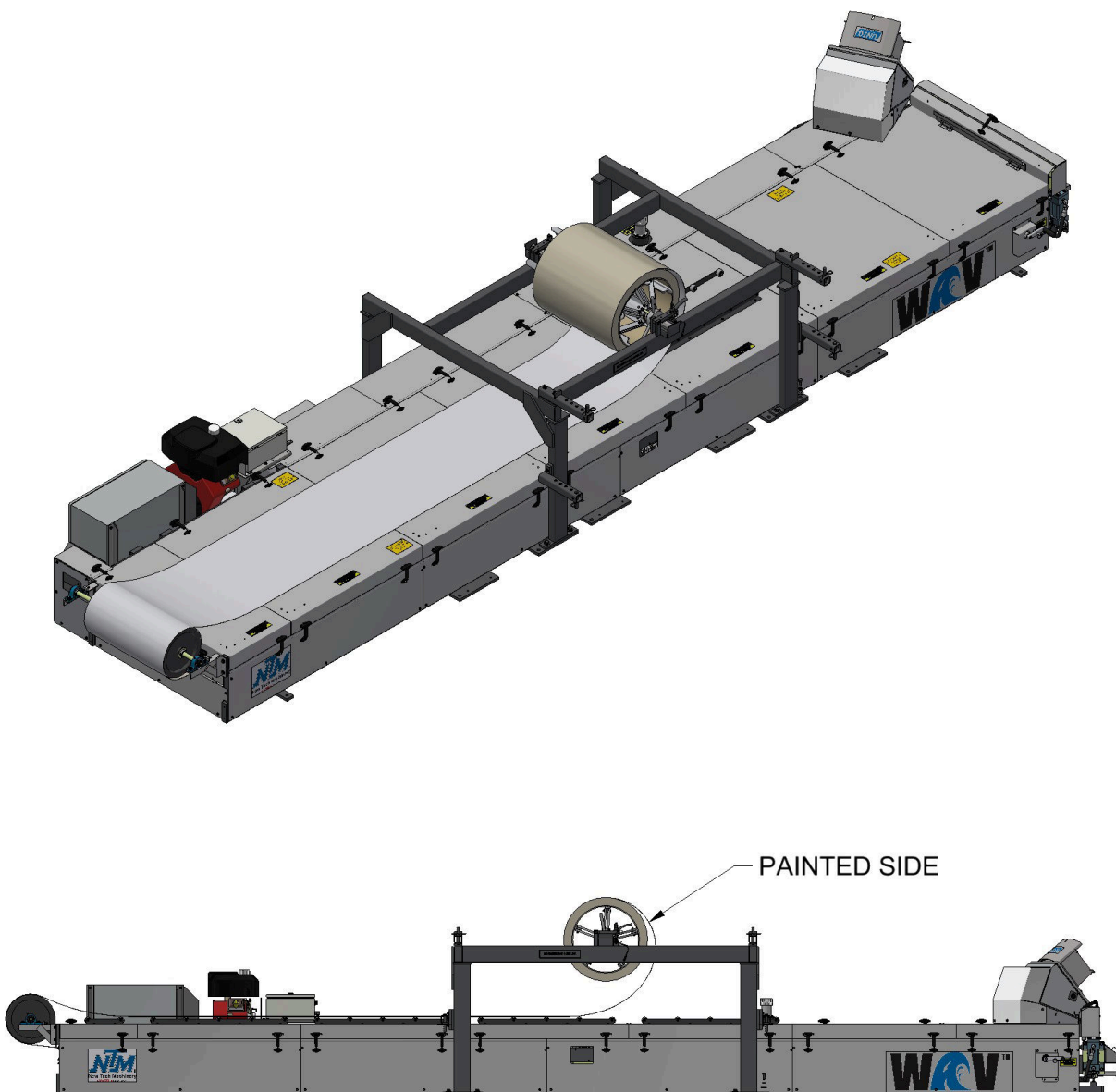


Figure 16: Material Routing

CHAPTER 7
HYDRAULIC SYSTEMS

HYDRAULIC SYSTEMS

Maintenance

(Figure 17)

The hydraulic system in the machine is very durable and reliable. It must be properly maintained to ensure trouble free operation and longevity. The factory has installed a 32 weight AW hydraulic fluid. Because this equipment is used primarily outdoors and exposed to the elements, it is recommended that the oil be changed annually. Hydraulic oil will degrade if it remains stagnate in the system for long periods of time. Check the fluid level weekly. It should be approximately 6-1/2" below the top of the filler neck. When checking the fluid level, also note the color and condition of the fluid. It should be clear in color.

Hydraulic Fluid Troubleshooting

CONDITION	SOLUTION
1 White milky color indicates water contamination.	Change the fluid.
2 Dark fluid usually indicates a dirty oil filter.	Replace the oil filter.
3 Foamy fluid will cause a noisy pump and slow erratic operation of the system. The cause is usually low oil level or air in the system.	Check fluid level and bleed off air by pushing the shear down button and holding for 10 seconds.
4 Machine runs slow after continuous operation. Check hydraulic fluid temperature, it should be no more than 140°F (60°C).	Allow to cool down. Move to a shaded area if possible.

Changing Hydraulic Fluid and Filter

(Figure 18 & Figure 19)

The hydraulic fluid should be changed at least once a year. More frequently if the machine is constantly in operation in a dusty environment or, if the fluid becomes contaminated. To change the fluid:

1. Remove the left side cover that goes over the hydraulic tank and set it aside.
2. Locate the Drain Plug located on the bottom of the Hydraulic Tank as shown in Figure 17.
3. Remove Filler Cap.
4. Place a container under the drain plug to catch the old fluid.
5. Remove the Drain Plug and drain the fluid into the container. Discard of Properly.
6. Loosen, remove and discard the used Hydraulic Filter. Replace with part # HYD-200-152.
7. Re-install the plug and new hydraulic filter and fill the tank with fresh 32 weight fluid until it is 6-1/2" **below the top of the Filler Neck "F"** (approximately 24 gal).

CHAPTER 7

HYDRAULIC SYSTEMS

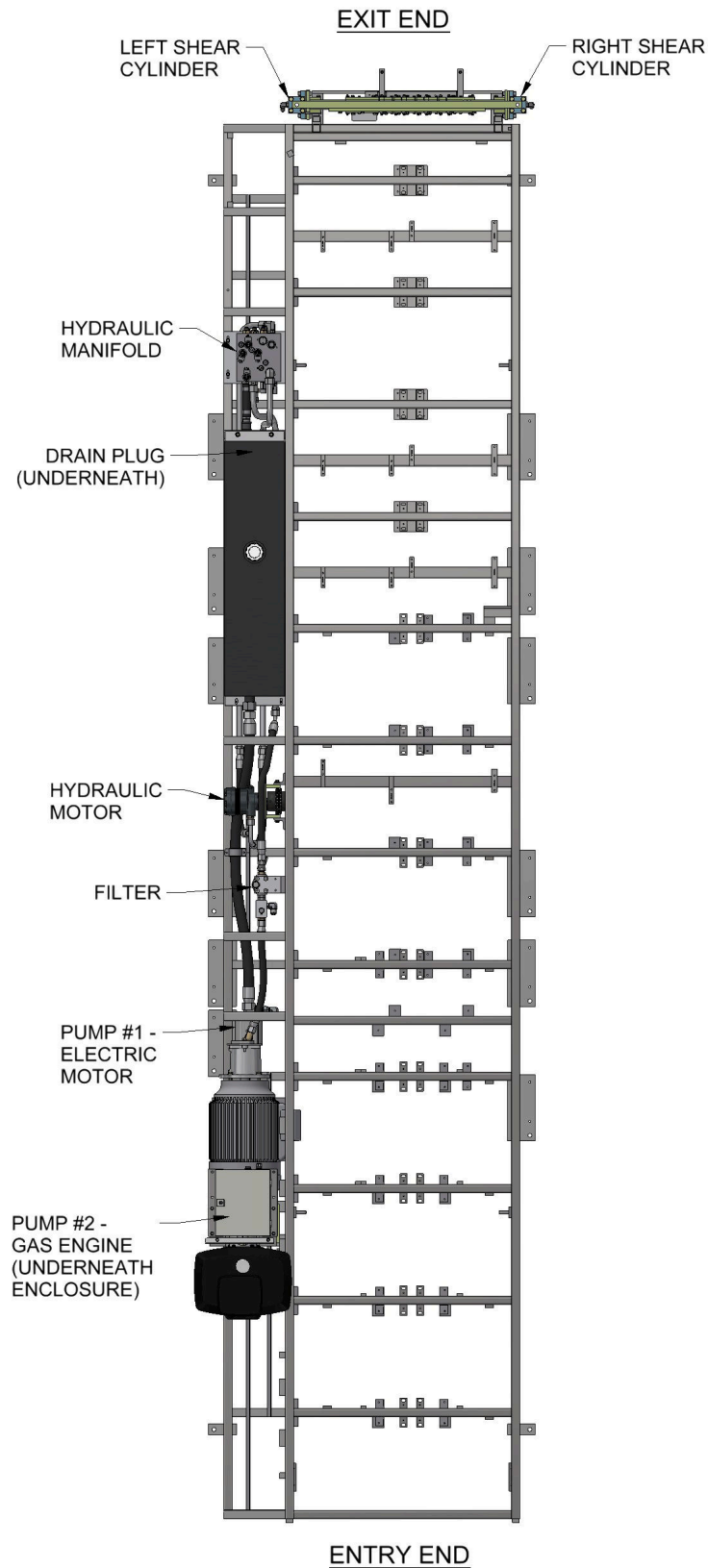


Figure 17: Hydraulic System – Overview

CHAPTER 7

HYDRAULIC SYSTEMS

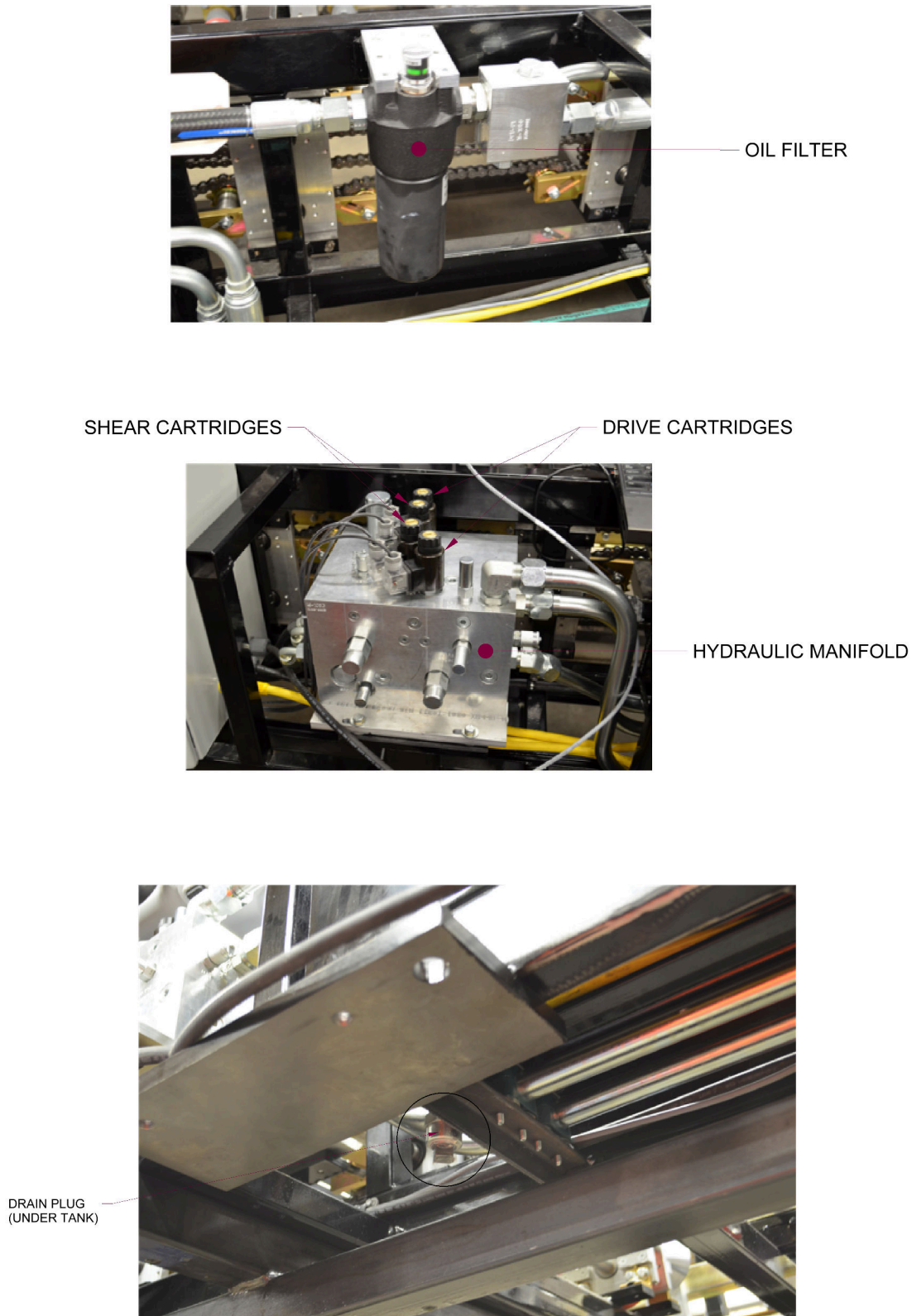


Figure 18: Hydraulic System – Details

CHAPTER 7
HYDRAULIC SYSTEMS

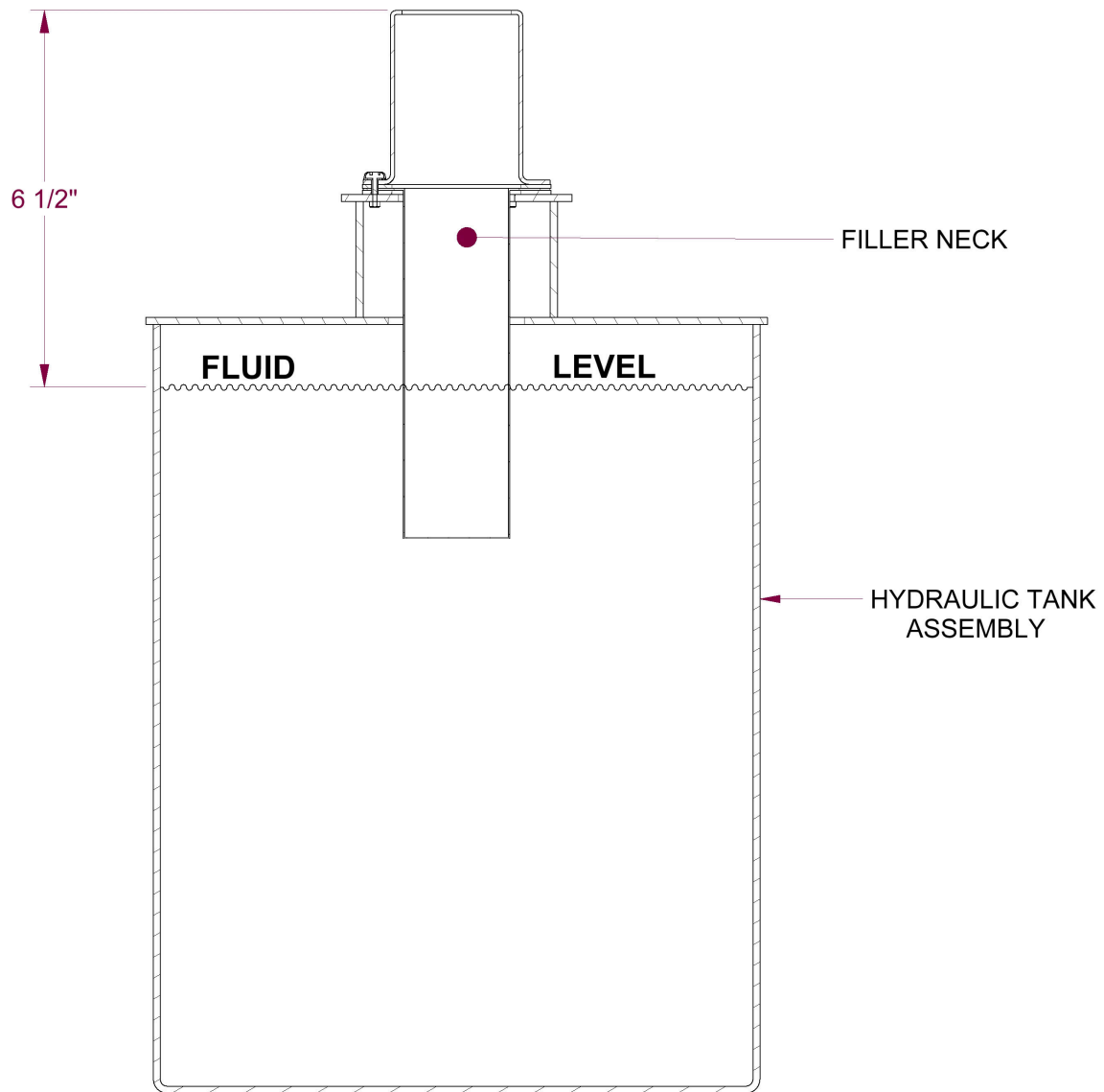


Figure 19: Hydraulic Fluid Level

CHAPTER 8

DRIVE SYSTEM

DRIVE SYSTEM

(Figure 20, Figure 21 & Figure 22)

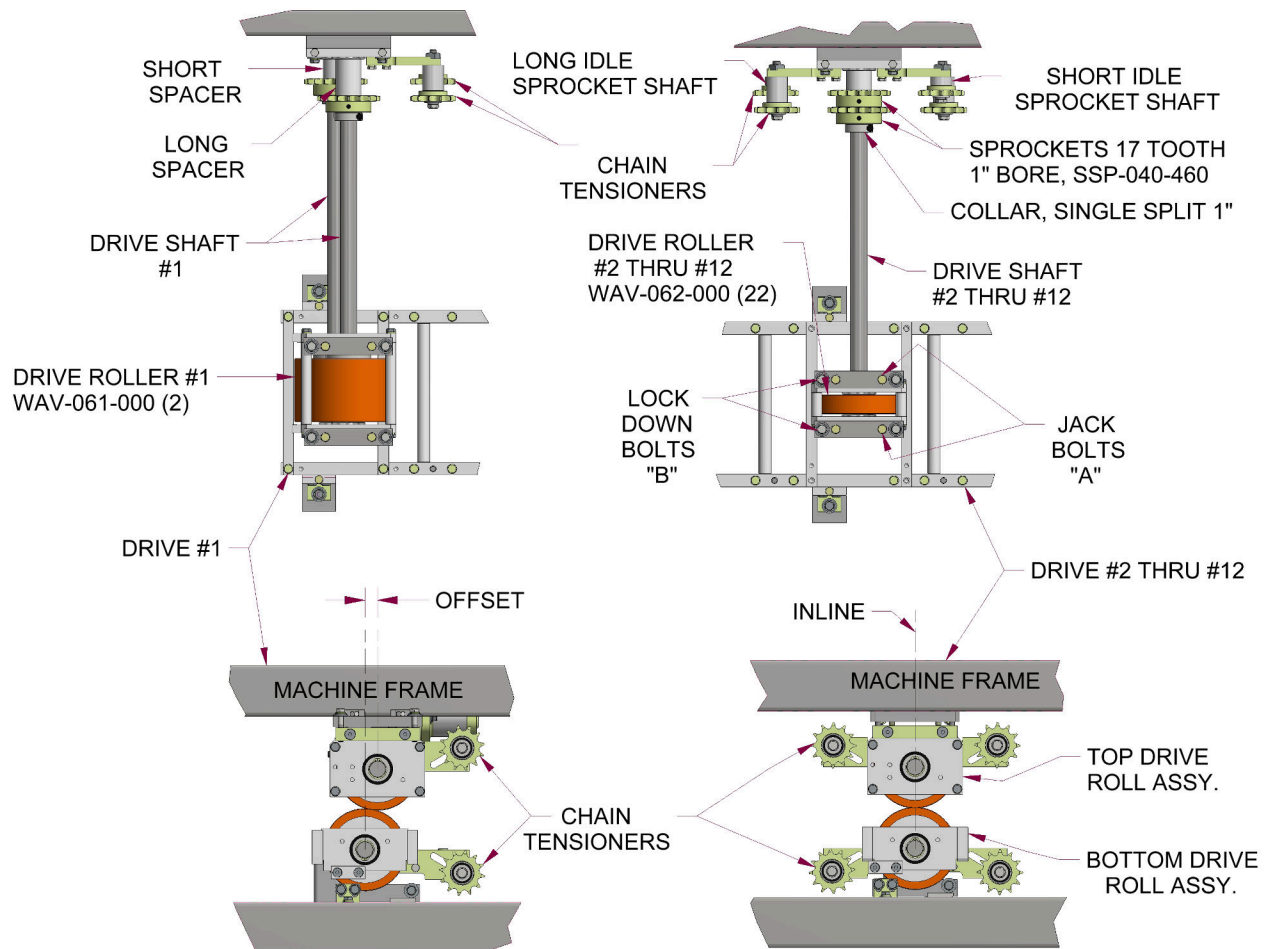
The drive system of the machine consists of twelve top and twelve bottom polyurethane drive rollers. They are connected together via chain and sprocket and there are chain tensioners on each assembly. The drive system is powered by a hydraulic motor which transfers power to the drive assemblies using spur gears and a top and bottom drive shaft.

1. Clearance between the top and bottom drive rollers is factory set at $\frac{3}{4}$ of a turn of pressure past the point of contact. This will drive material up to 22ga. through the machine without the need for adjustment. If adjustment becomes necessary due to slippage, pressure can be added. **Do not add more than $\frac{1}{4}$ turn beyond the factory setting.**
To add pressure: Loosen two Lock-Down Bolts “B” $\frac{1}{8}$ of a turn. Loosen lock nuts on the two corresponding Jack Bolts “A”. Tighten Bolts “A” $\frac{1}{8}$ of a turn. Re-tighten the 2 lock nuts on Jack Bolts “A” to lock in adjustment. Repeat this procedure for the other 11 drive assemblies. Test for result and repeat one more time if necessary.
To remove pressure: Loosen the two lock nuts on Jack Bolts “A”. Loosen the two Jack Bolts “A” $\frac{1}{8}$ of a turn. Tighten the two corresponding Lock-Down Bolts “B” $\frac{1}{8}$ of a turn. Tighten the two lock nuts on Jack Bolts “A” to lock in adjustment. Repeat this procedure for the other 11 drive assemblies.
2. To adjust chain tension, loosen the bolts on the idle sprockets, move the sprocket as needed, and tighten the bolt. The chains should be snug, but not too tight.
3. The chains used in this system are #50 Roller Chain. See Figure 22 for chain locations and lengths if chain replacement is necessary.
4. The polyurethane drive rollers will eventually need cleaning. This will become evident when they start leaving a stripe the width of the drive roller on the formed panels that doesn't come off easily or if a material is used with an oily film on it. Avoid cleaning the drive rollers with harsh chemicals or solvent. These products will attack the polyurethane and cause irreversible damage. **Use of these products will void the warranty on the drive rollers.**
Clean the rollers with mild soap, water and a rag. **Caution must be taken around the moving parts of the machine during the cleaning process.**
5. Covers should be kept on the machine during operation and storage. Ultraviolet light will attack the polyurethane drive rollers and cause deterioration. Again, this type of damage is not covered under the warranty.

CHAPTER 8

DRIVE SYSTEM

TOP VIEW



SIDE VIEW

Figure 20: Drive Roll Assembly View

CHAPTER 8

DRIVE SYSTEM

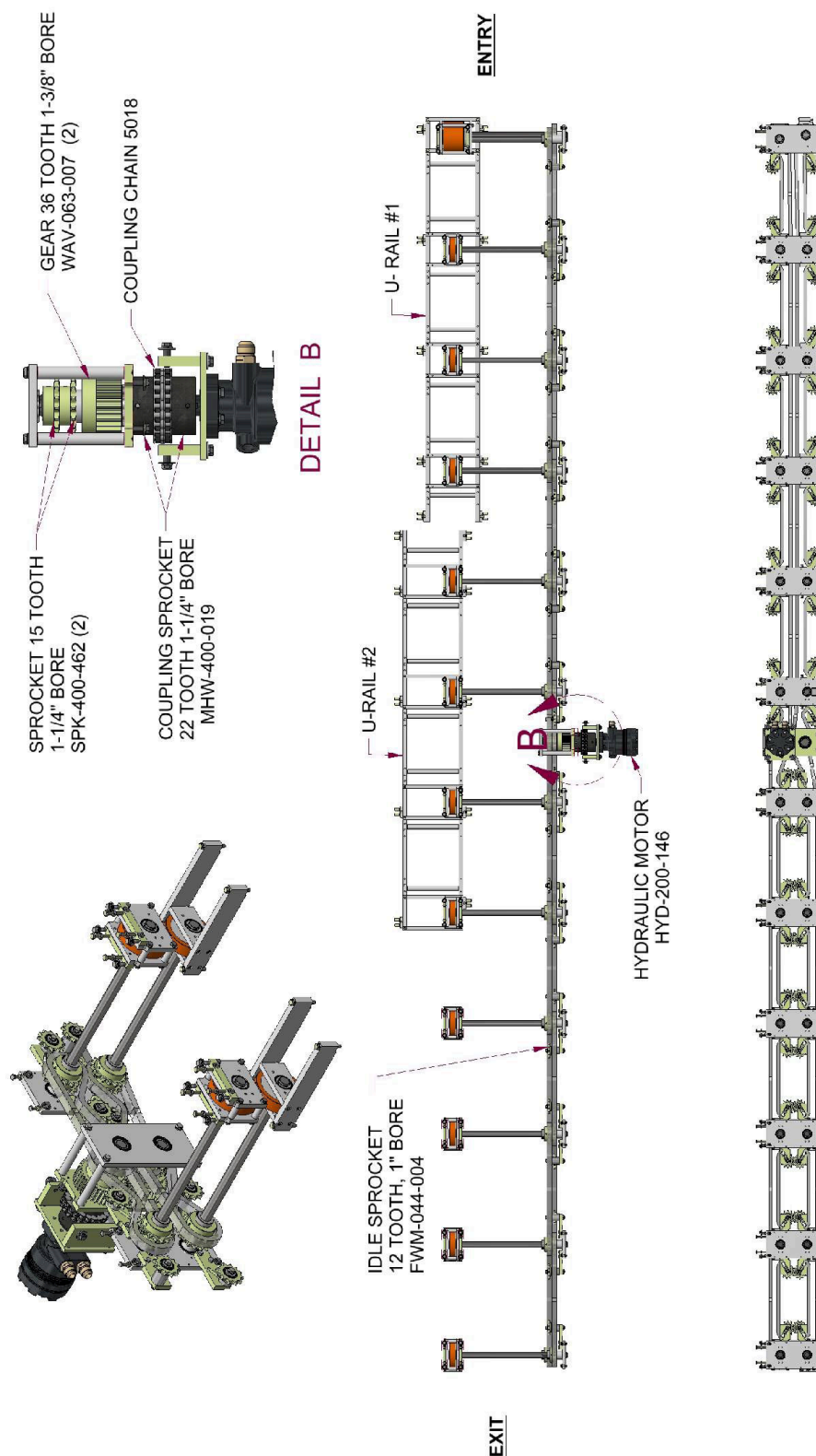


Figure 21: Gears and Shafts

CHAPTER 8

DRIVE SYSTEM

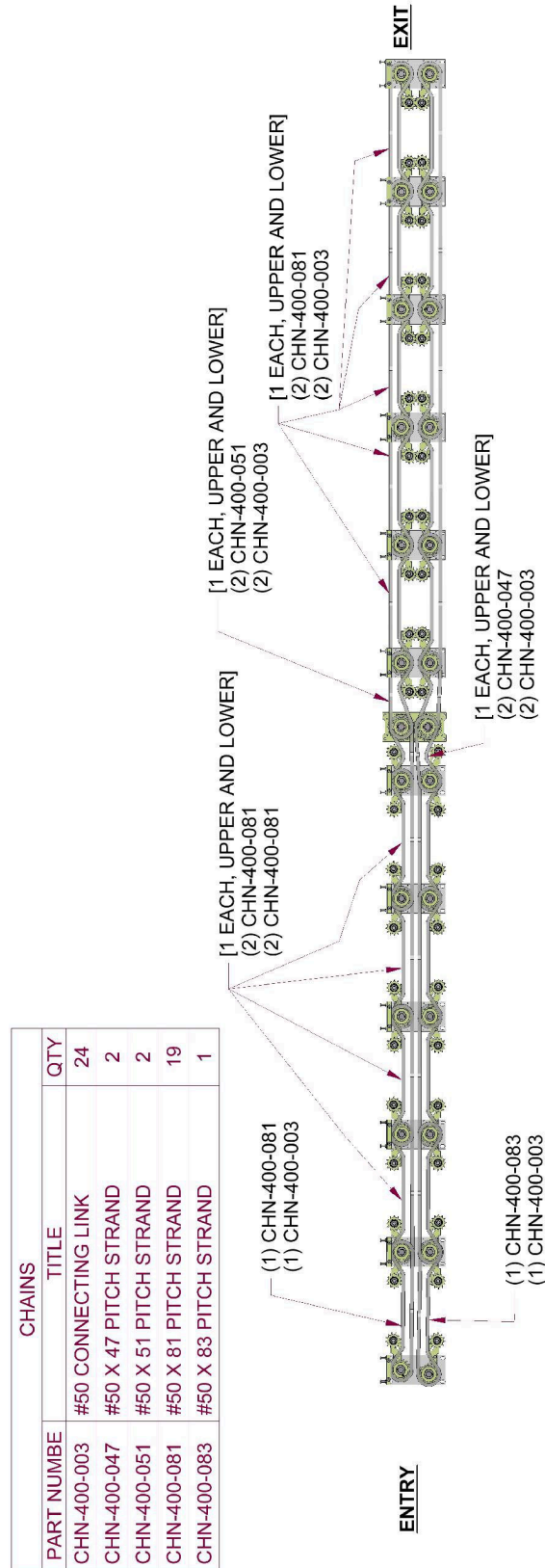


Figure 22: Chains Upper and Lower

CHAPTER 9

SHEAR ASSEMBLY

SHEAR ASSEMBLY

OPERATION

The shear is electrically activated and hydraulically driven.

The two Top Limit Switches and single Bottom Limit Switch control the cycle of the shear. The Top Limit Switches electronically lock out the drive system when the shear is in motion. The Bottom Limit Switch sends the shear back up once the end of the stroke is reached.

See the Electrical Controls and Operation Section for information on how to operate the shear using the manual push buttons on the control panel. See the

SHEAR ADJUSTMENTS (Figure 23)

The shear is adjusted at the factory and should not need to be adjusted. However, if the panel is rubbing on the shear dies or hanging up on them follow the procedure below to correct the problem. **WARNING: When working near the shear it is essential that you turn off the machine and remove the power. The blades are powerful and can cut through your hand or finger.**

Bottom Shear Dies (Detail A)

1. The bottom dies should be adjusted 1/32" below the bottom corners of the panel. Loosen the (2) "A" bolts on the left and right Front Vertical Plates. Loosen the (2) lock nuts on the (2) Height Adjustment bolts "B". (See Figure 23)
2. Tightening bolts "B" will lower the shear, and loosening them will raise it. Adjust each side as needed to properly set the bottom dies to the correct spacing from the bottom corners of the panel.
3. After adjustments have been made, tighten (2) "A" bolts and (2) Lock Nuts on Height Adjustment Bolts "B".

Right Side Dies and Rib Dies

If the panel is rubbing on any of these dies you may need to adjust them either left or right so they no longer touch the panel. With the panel extending a few inches past the shear look through the dies at the gap between the panel and the dies. The gap should be about the same on the left and right sides of the dies. If they need to be adjusted follow the steps below.

1. Loosen the "C" bolts for whichever dies need to be moved. You may need to back the panel up to access the bolts on the back side of the shear.
2. Move the dies left or right as needed to get the gap even on either side.
3. Re-tighten the "C" bolts.

Left Side Dies

The left side dies feature a pivoting shear die on each side of the blade that supports the hem so it does not get crushed when shearing the panel. In order to work correctly, the left dies should be located so that the etched line is roughly aligned with the tip of the folded over hem (see Detail B of Figure 23). The dies have been aligned at the factory to the WAV-16-4F profile and should only need to be moved if the machine is being set up for the 8" or 12" panels. To adjust them, follow the steps below.

CHAPTER 9

SHEAR ASSEMBLY

1. Loosen the “C” bolts on the left dies and the “D” bolts on the shear blades.
2. The dies and blades need to both be moved the same amount. Adjust them both and make sure the blade is against the pin in the die.
3. Re-tighten the “C” and “D” bolts.

CHAPTER 9

SHEAR ASSEMBLY

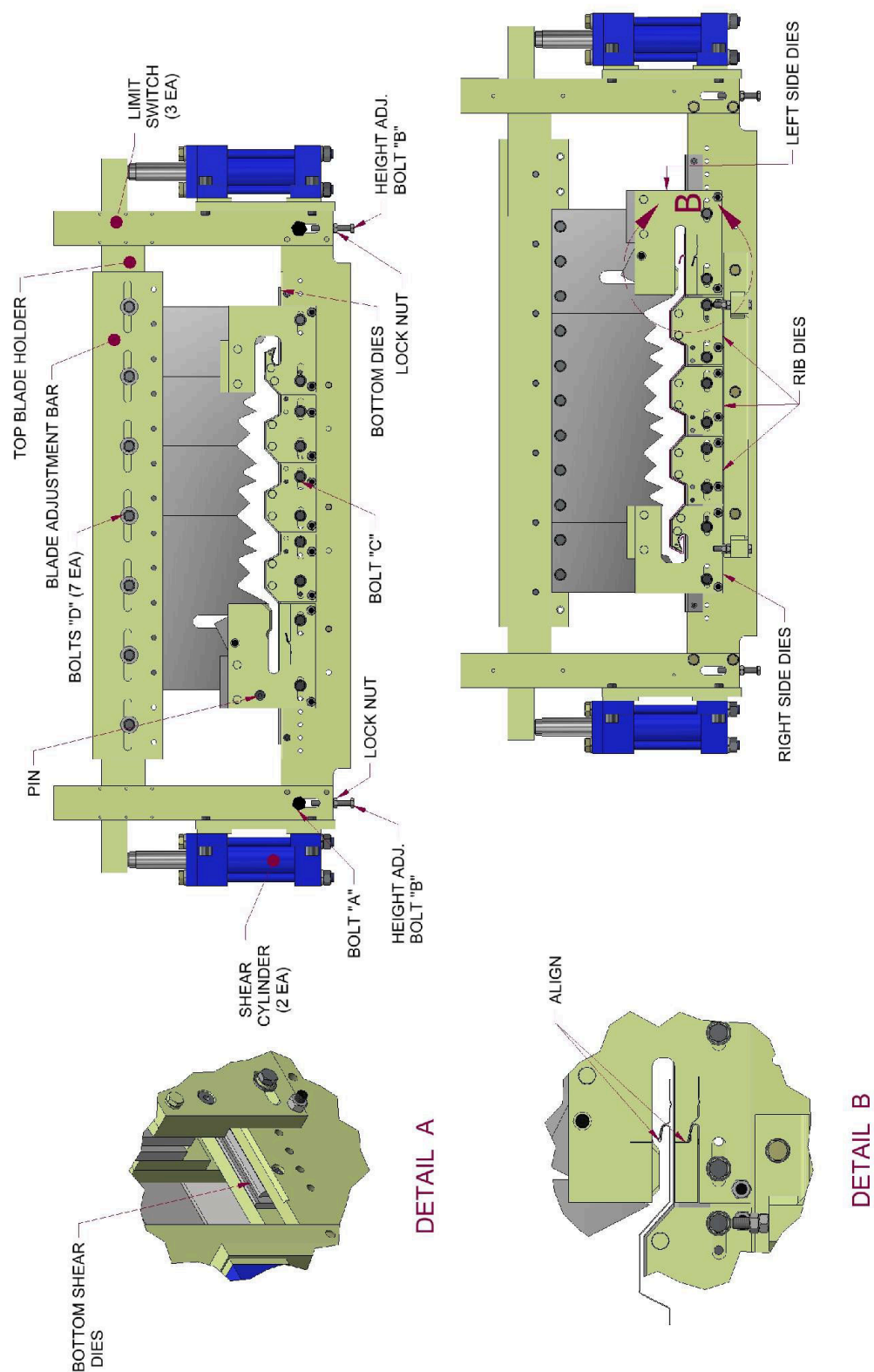


Figure 23: Entry/Exit Views

CHAPTER 9
SHEAR ASSEMBLY

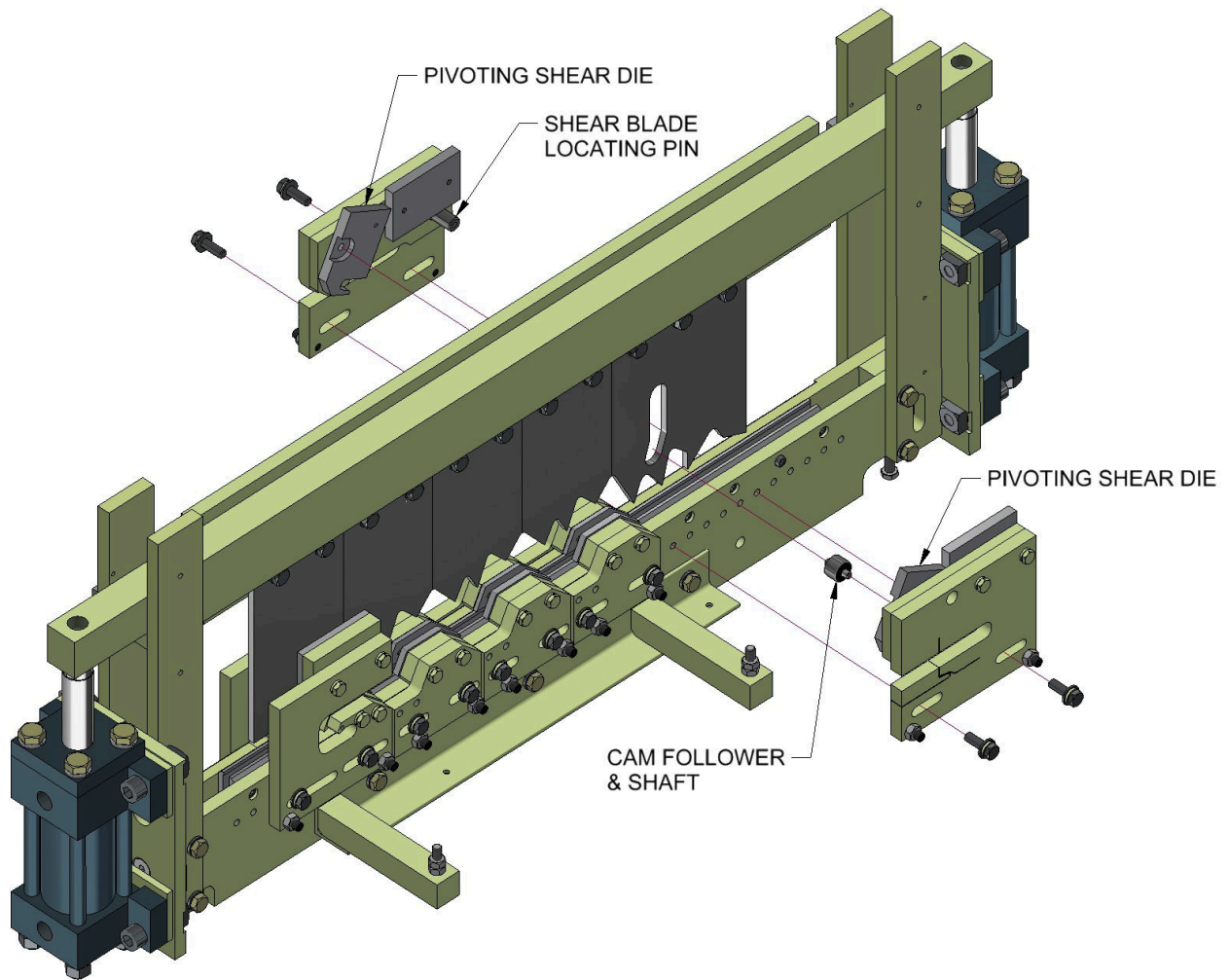


Figure 24: Left Shear Die Detail

CHAPTER 10
PROFILE CHANGEOVER

PROFILE CHANGEOVER

The Wave Machine can be reconfigured to produce two additional profiles besides the standard WAV-16-4F profile: the WAV-12-1F and WAV-8-1F are 12” and 8” wide respectively and do not have ribs. No additional tooling is needed to run these profiles. The process of converting the machine over to these profiles is explained in detail in this section.

1. Empty the machine of coil, shut it off, and remove the power.
2. Remove the top covers and shear cover.
3. Disengage the top rollers of stations 1-14 as shown in Figure 25 below.

CHAPTER 10

PROFILE CHANGEOVER

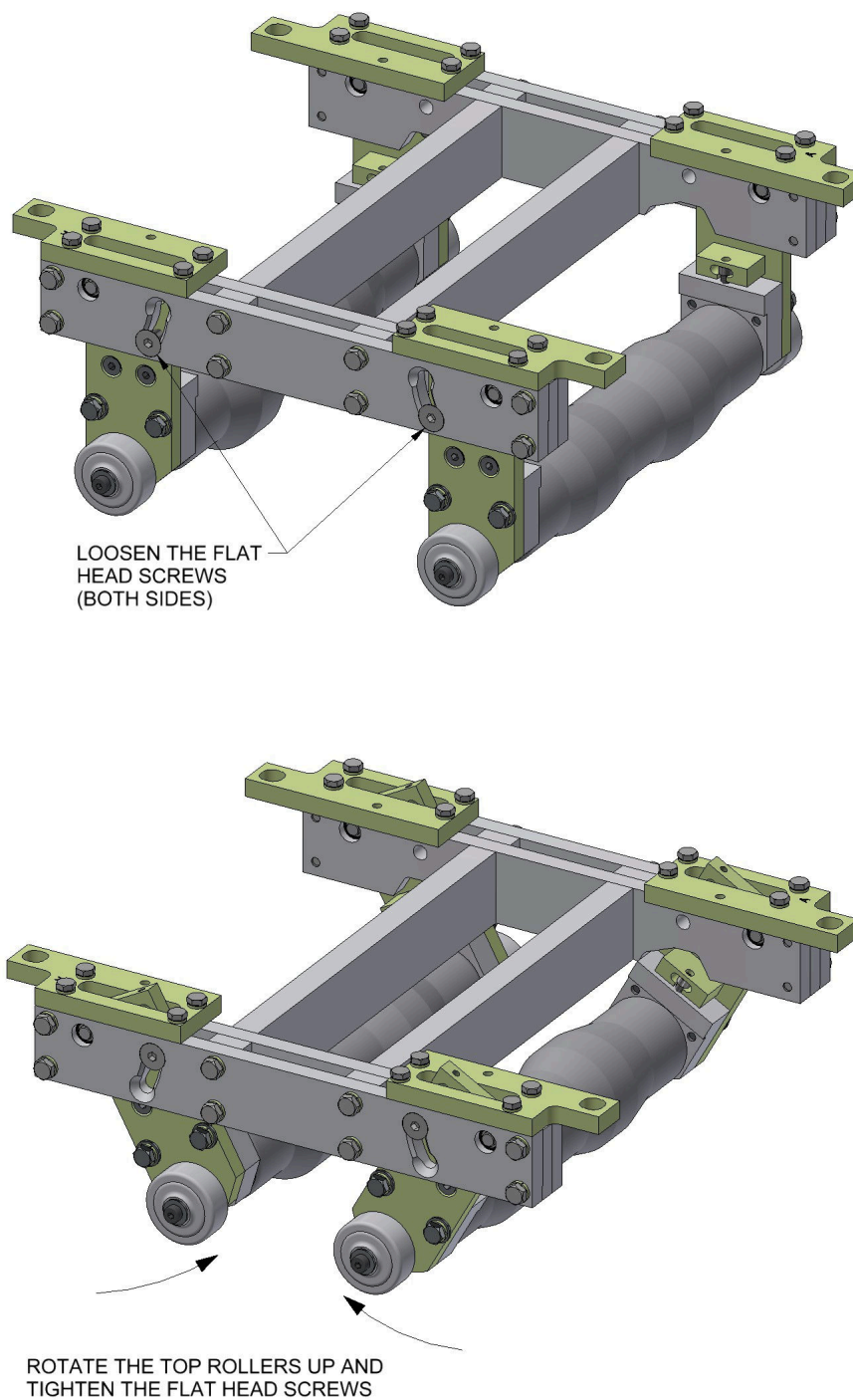


Figure 25: Disengaging the Top Rollers

4. Make sure the location of the right entry guide shoe is marked for the standard profile. Mark it if it is not.
5. Loosen the handle on the right entry guide shoe and move it as follows:
 - a. 4 5/16" to the left for the WAV-12-1F profile

CHAPTER 10

PROFILE CHANGEOVER

- b. 7" to the left for the WAV-8-1F profile
6. Measure the distance between the left and right tooling rails when in the standard (16") position and record it for reference. Shown as "A" in Figure 26 below. It should be about 22 3/16" but your machine may vary slightly.

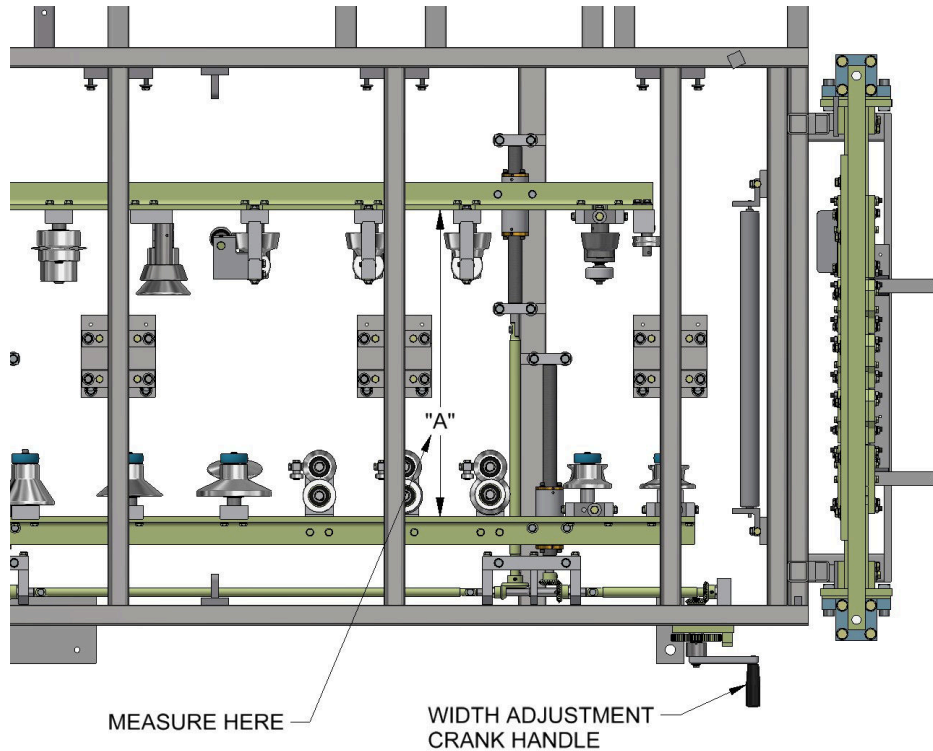


Figure 26: Tooling Rail Width Measurement

7. Engage the Width Adjustment Crank Handle by pushing it in and slowly rotating it until it locks into place. While still pushing inward, turn the handle to adjust the distance between the left and right tooling rails. Turn it clockwise to increase the width and counter-clockwise to decrease the width. Set the width as follows:
 - a. 4" less than the standard profile for the WAV-12-1F profile.
 - b. 8" less than the standard profile for the WAV-8-1F profile.
8. Install the Long Auxiliary Guide Rod as shown in Figure 27 below. This guide rod and the shorter one below are needed to prevent the material from bunching up between the drive rollers.

CHAPTER 10

PROFILE CHANGEOVER

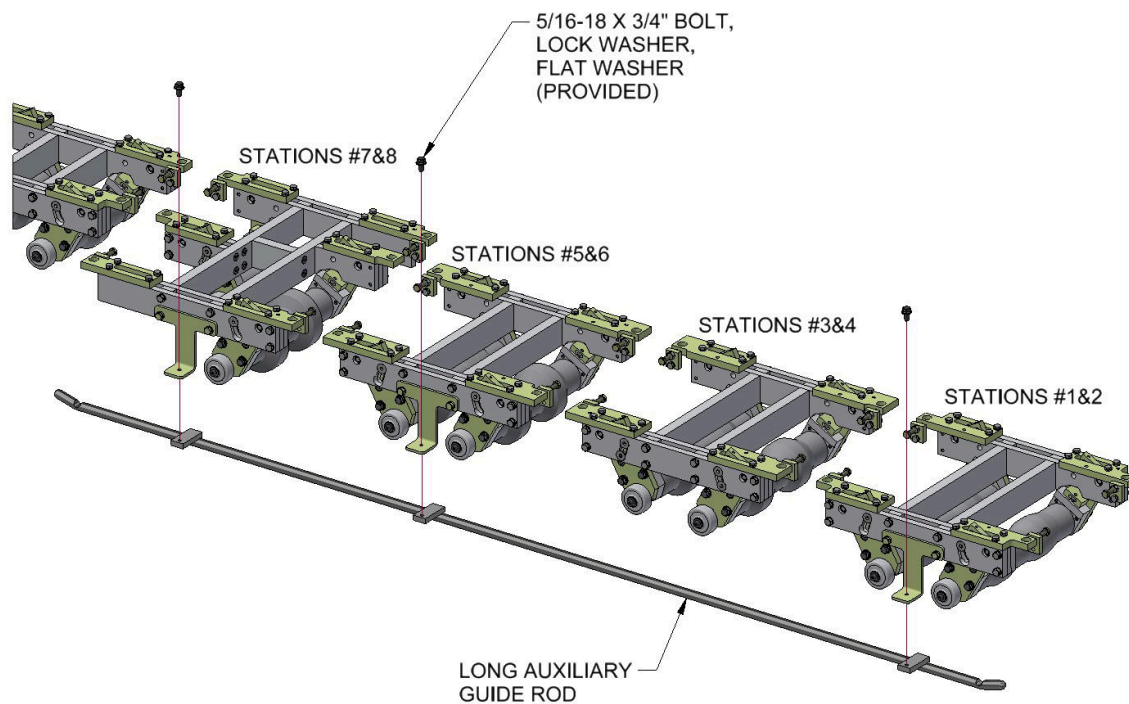


Figure 27: Long Auxiliary Guide Rod Installation

9. Install the Short Auxiliary Guide Rod as shown in Figure 28 below.

CHAPTER 10

PROFILE CHANGEOVER

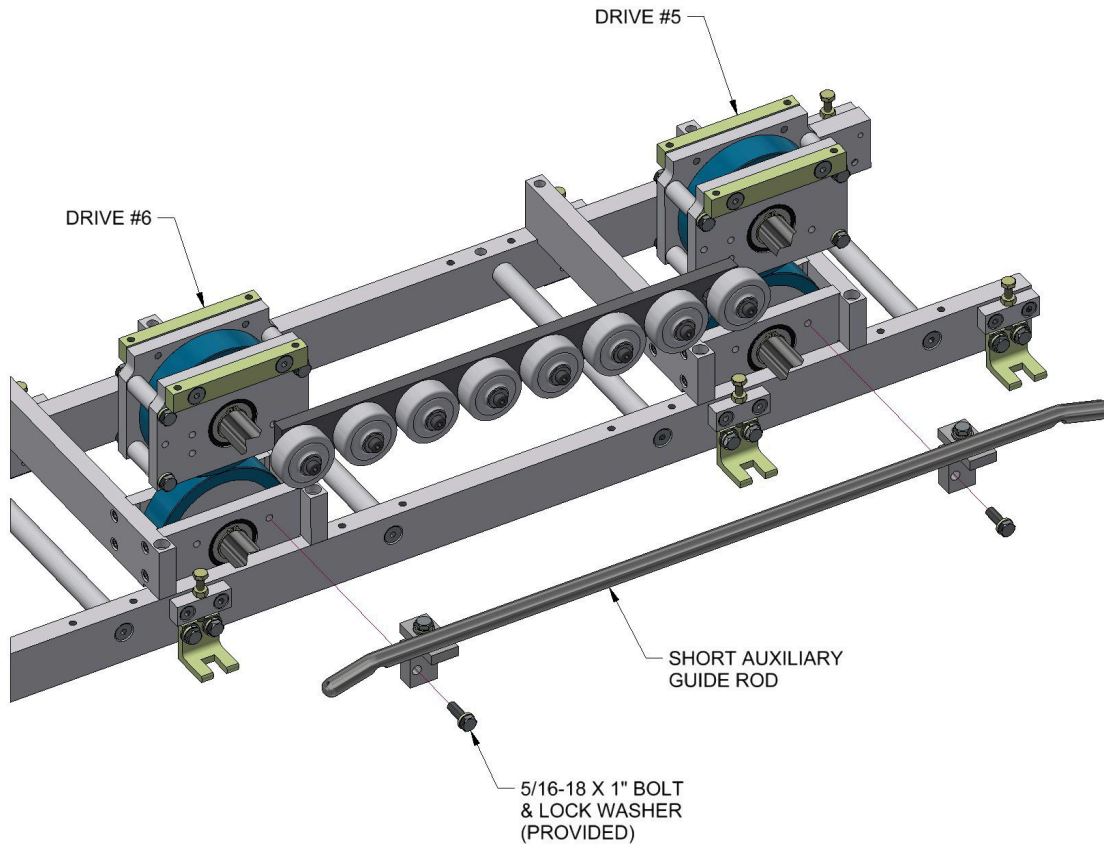


Figure 28: Short Auxiliary Guide Rod Installation

10. Cut a piece of material at least 7 feet long and feed it into the entry guide.
11. Bring the left entry guide shoe tight against the material and tighten it down.
12. Start the machine, jog the material carefully through and stop a few inches before the shear.
13. Shut off the machine and remove the power.
14. Remove the right and center shear dies.
15. Remove and/or reposition the center blades as needed to fit the profile. See Figure 29 below for the configurations for the WAV-12-1F and WAV-8-1F profiles.
16. Move the left shear dies and blade over to their new position. The alignment marks should line up with the tip of the hem. Take care when removing the left dies because there is a cam follower that sits in the groove machined into the left blade. When reinstalling the left dies the shaft in the cam follower needs to engage the pivoting shear dies. Refer to Figure 24: Left Shear Die Detail.
17. Move the right shear blade to the position needed to fit the profile. See Figure 29 below.
18. Install the alternate right shear die that was provided. See Figure 29 below.
19. Start the machine and carefully jog the material up to the shear dies. Sight through the shear and see if it looks like the panel will go through. If adjustments need to be made shut off the machine, remove the power, and move the shear dies as needed.

CHAPTER 10
PROFILE CHANGEOVER

20. Jog the material through the shear, make a test cut, and inspect the panel. If the cut is not satisfactory shut off the machine, remove the power, and move the shear dies as needed.
21. Replace the covers.
22. Load the appropriate width of coil onto the expandable arbor. Refer to Figure 13 for the location to set the coil to, and Figure 49 to Figure 50 for the correct coil width.

CHAPTER 10
PROFILE CHANGEOVER

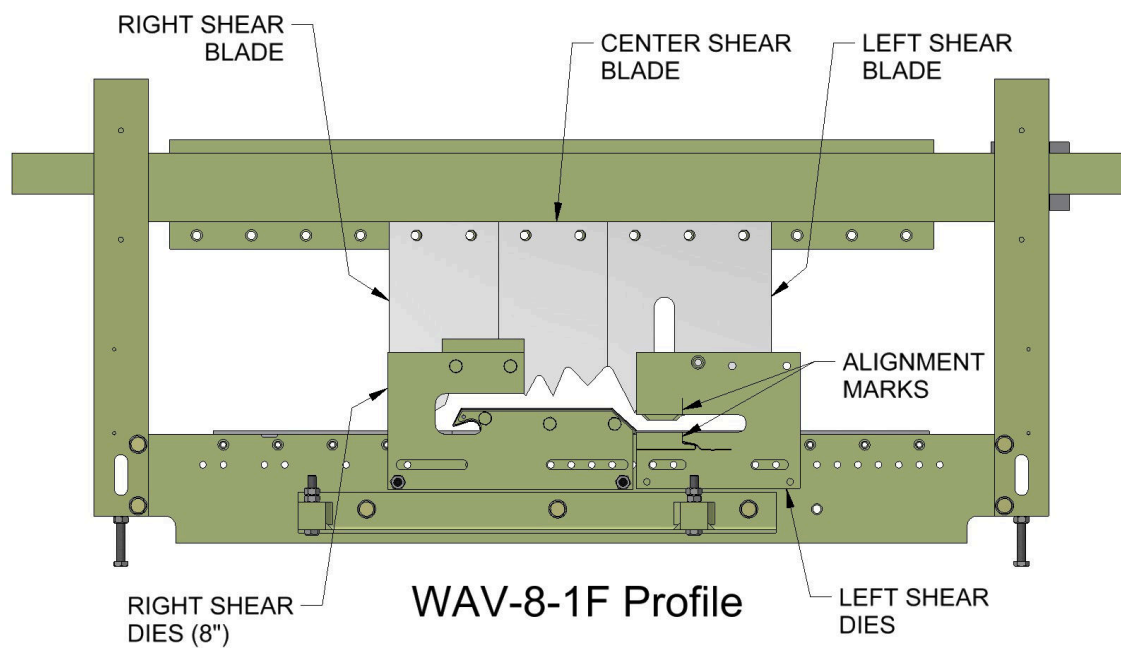
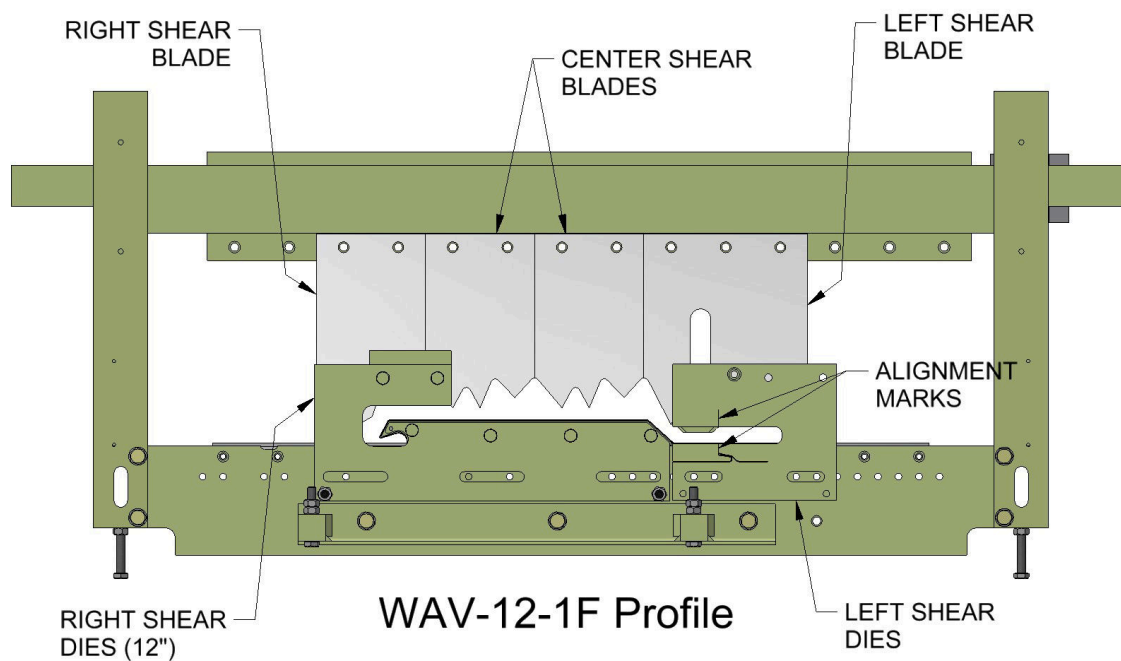


Figure 29: Shear Setup for 8" & 12" Profiles

CHAPTER 11
ENTRY DRUM ASSEMBLY

ENTRY DRUM ASSEMBLY

The Entry Drum Assembly supports the panel as it goes through the entry guide. The Entry Drums should be positioned so that the left and right drums are lined up with the edges of the panel and the center drum is in the center of the panel.

To adjust the entry drums:

1. Using a 3/16" Allen wrench, loosen the Shaft Collars "E", on either side of the Entry Drums that need to be adjusted (Figure 30).
2. Slide the Entry Drums to the correct position.
3. Slide the Shaft Collars "E" against the sides of the drums and lock them into place.

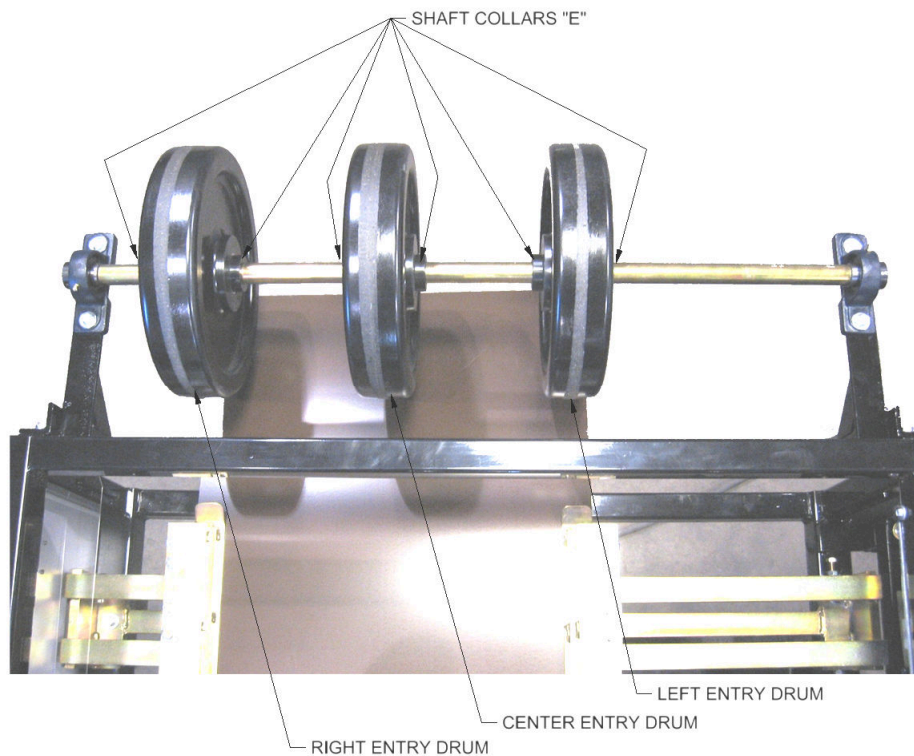


Figure 30: Entry Drum

CHAPTER 11

ENTRY DRUM ASSEMBLY

ENTRY DRUM POSITIONS

The Entry Drum can be mounted in two different positions on the entry end of the frame. There is an upper position for use with the Overhead Reel Rack, or a lower position for use of any floor mounted Decoiler. (See Figure 31).

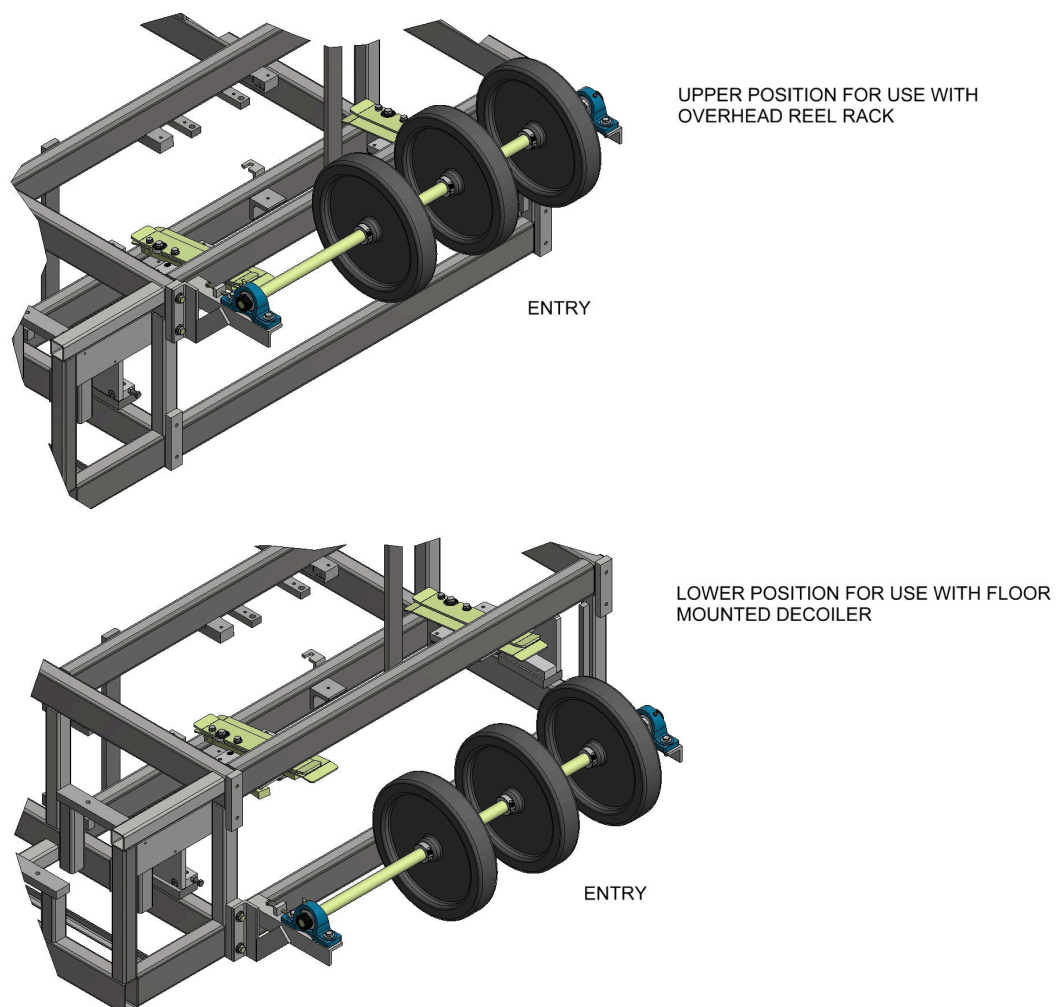


Figure 31: Entry Drum Upper/Lower Position

CHAPTER 12
PROFILE ADJUSTMENTS

PROFILE ADJUSTMENTS

Care must be taken when making any adjustments to the roller systems. A slight change can have dramatic effects.

ECCENTRIC SHAFTS

This machine is equipped with eccentric shafts on selected sub stations for adjusting the angles and gaps in the panel.

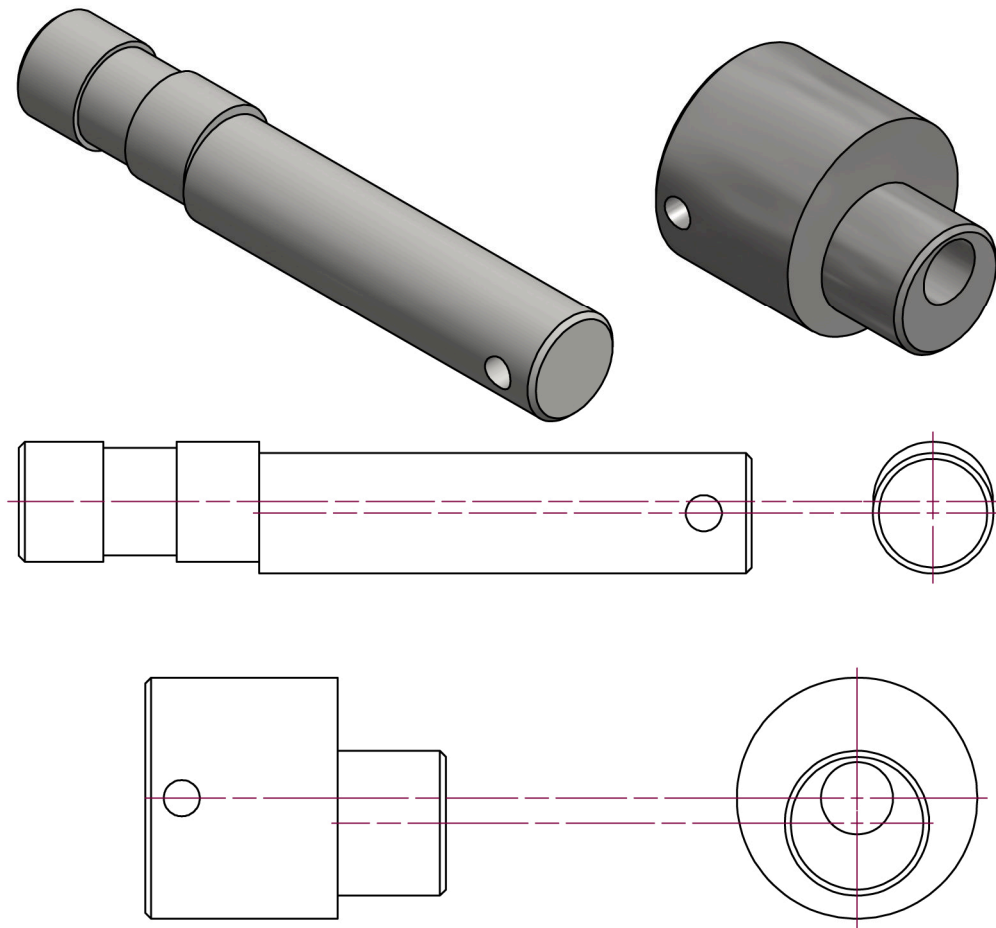


Figure 32: Eccentric Shafts

To adjust an eccentric shaft, use the following procedure:

1. Mark the current orientation of the shaft to serve as a starting point of reference and a point to return to if the adjustment yields negative results.
2. Loosen the set screw and/or bolt that holds the shaft in place.
3. Rotate the shaft to the desired angle (See Figure 34 - Figure 36).
4. Re-tighten the set screw and/or bolt.

CHAPTER 12
PROFILE ADJUSTMENTS

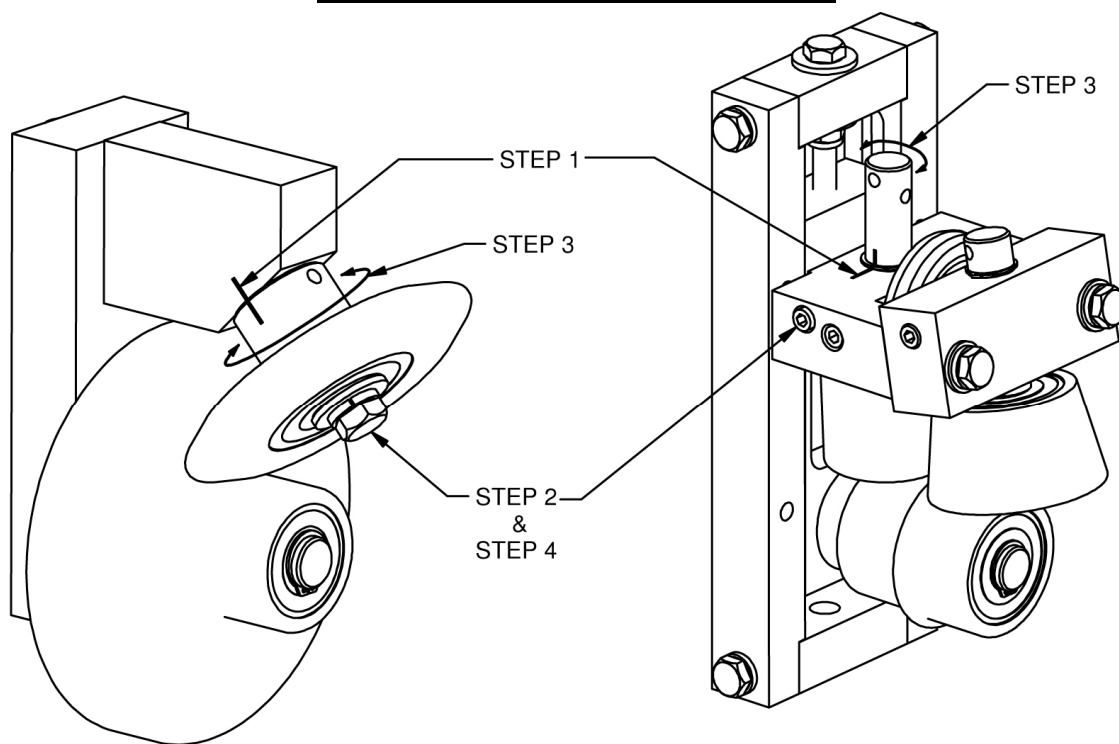


Figure 33: Adjusting Eccentric Shafts

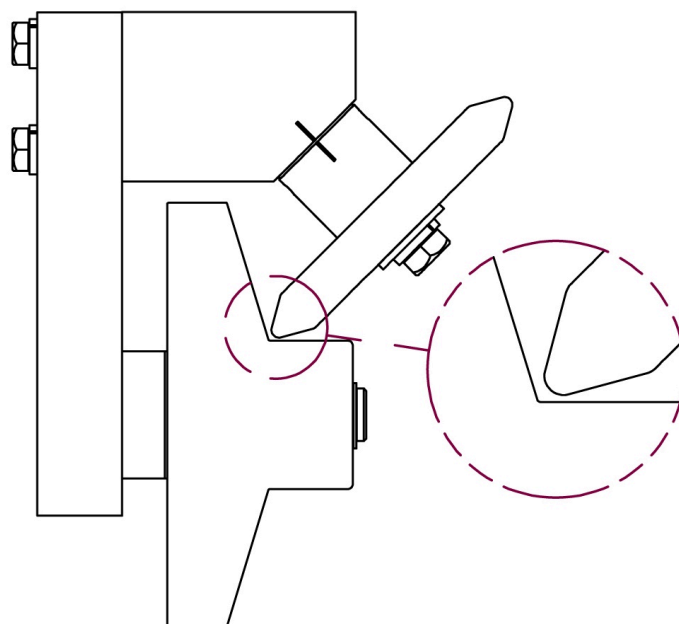


Figure 34: Eccentric Shaft Proper Adjustment

CHAPTER 12
PROFILE ADJUSTMENTS

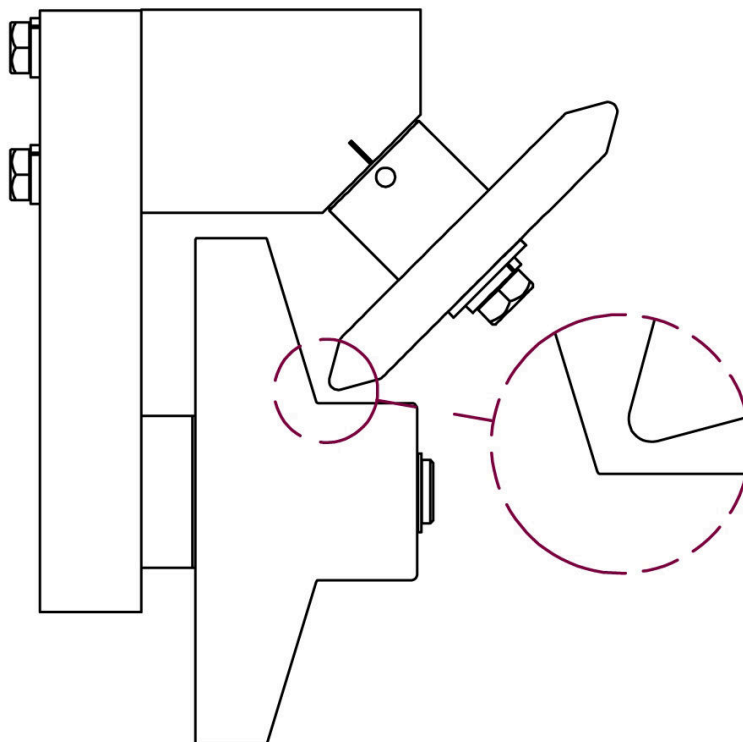


Figure 35: Eccentric Shaft Too Loose

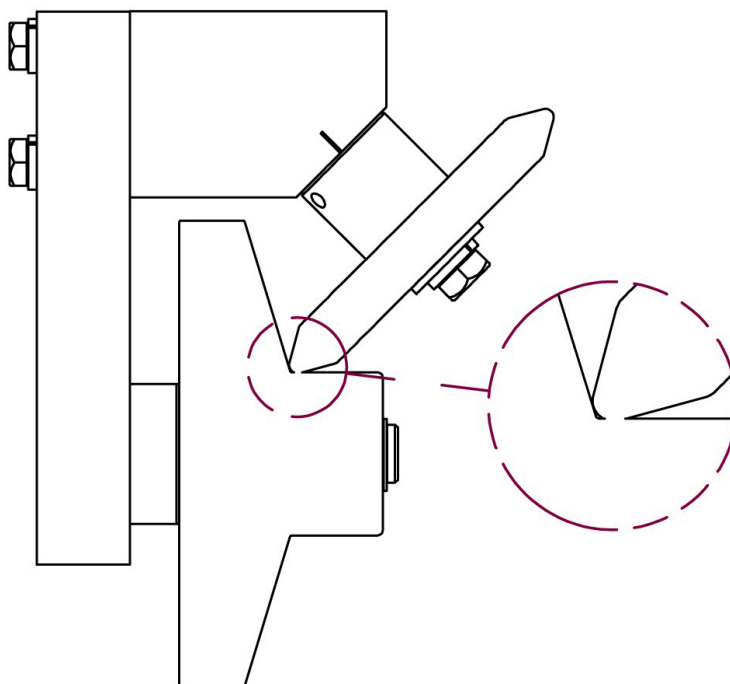


Figure 36: Eccentric Shaft Too Tight

CHAPTER 12

PROFILE ADJUSTMENTS

To fine tune the bends in panel refer to Figure 37 through Figure 40 to determine which station will change the bend needing adjustment.

STATION R-6

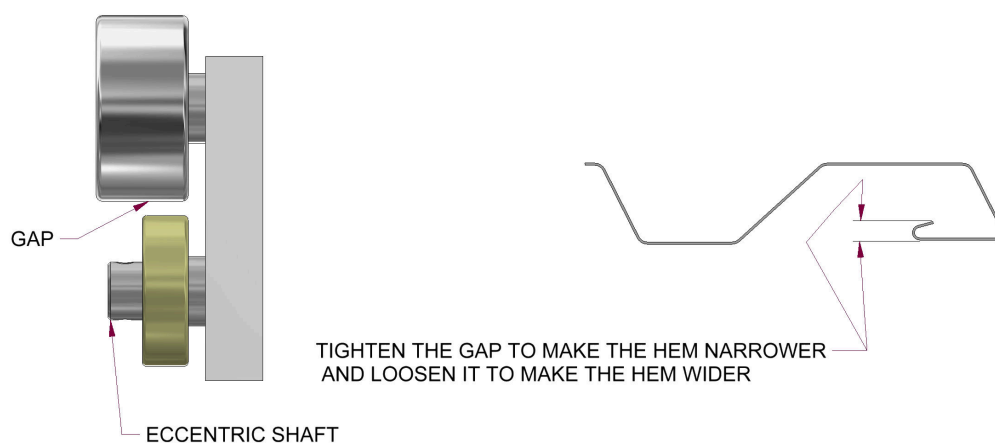


Figure 37: Adjusting Station R-6

STATION R-10



Figure 38: Adjusting Station R-10

CHAPTER 12

PROFILE ADJUSTMENTS

STATION R-15

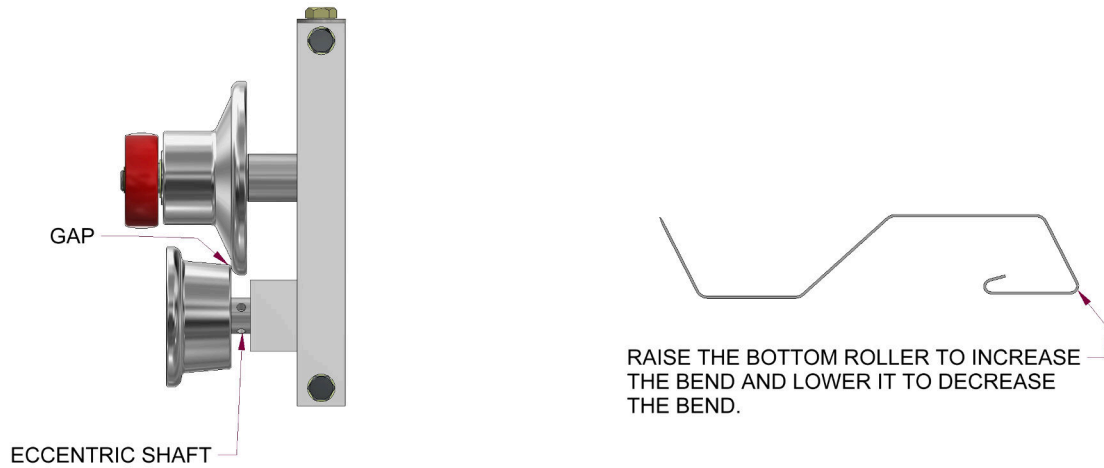


Figure 39: Adjusting Station R-15

STATION L-14

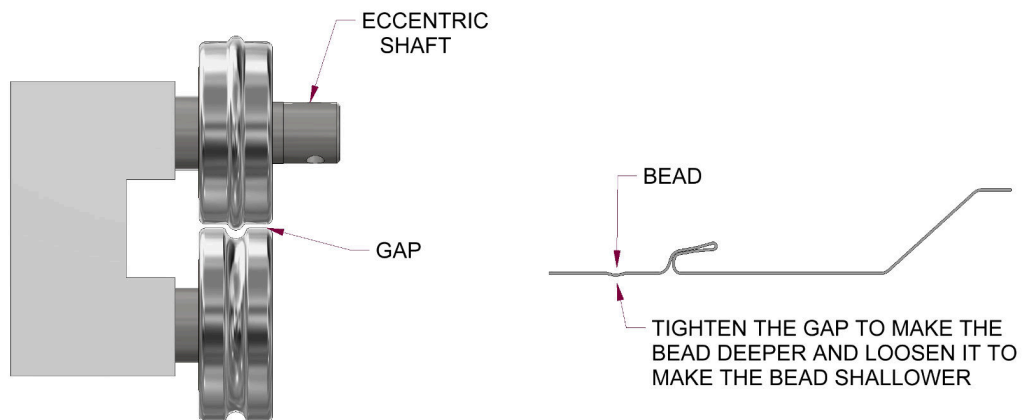


Figure 40: Adjusting Station L-14

CAMBER STATIONS

This machine is equipped with two camber stations toward the exit end of the machine (L-13 and R-14) that can be used to make the panel run straight if it is going uphill or downhill. (See Figure 41).

CHAPTER 12
PROFILE ADJUSTMENTS

NOTE: SOME PARTS HAVE
BEEN REMOVED FOR
CLARITY

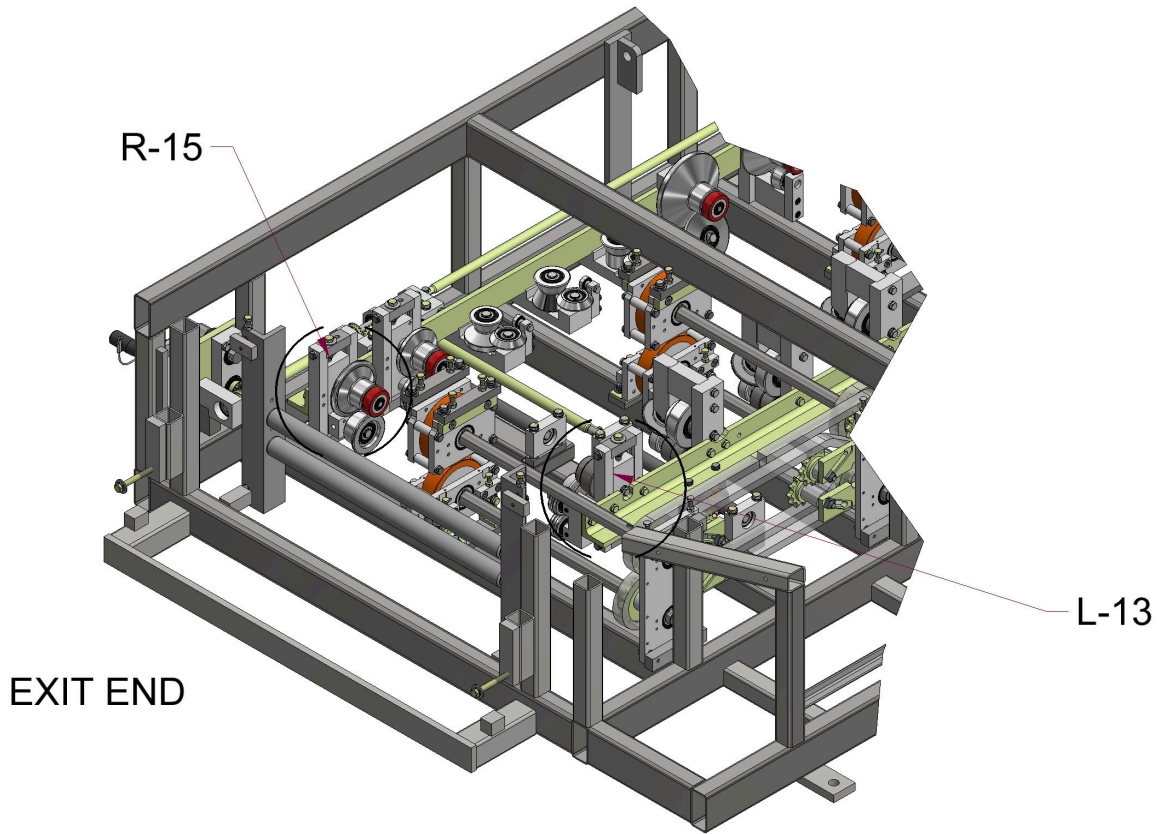


Figure 41: Camber Adjustment - Uphill/Downhill

If the panel is going uphill (away from the house) or downhill (into the house), ensure that the run-out stands are properly adjusted for height and that the panel is able to run straight out of the machine. If the run-out stands are in the correct alignment, adjust the camber stations as necessary using the following procedure:

1. Create a base point to start from by marking the top camber bolt as well as scribing a line across the center block and the two uprights.
2. If the panel is running downhill, adjust either L-13 or R-15 by turning the top bolt counterclockwise. If the panel is running uphill, adjust either L-13 or R-15 by turning the top bolt clockwise.

Note: It is recommended to make small adjustments such as a 1/8 turn. Then run a panel to see the results after each adjustment. Over adjusting the stations can have unpredictable results.

CHAPTER 12
PROFILE ADJUSTMENTS

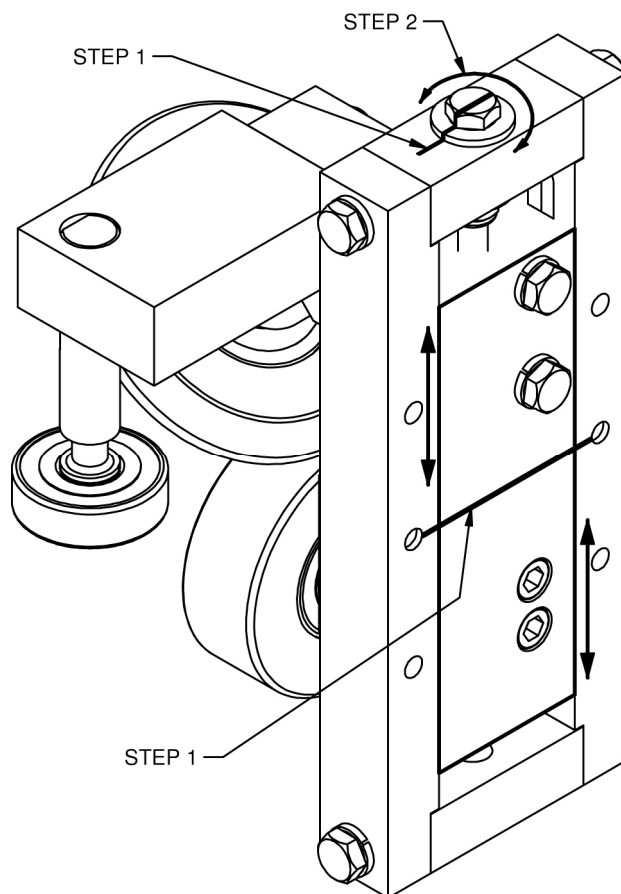


Figure 42: Camber Adjustment

CHAPTER 13
USING UNDERSIZED COIL

USING UNDERSIZED COIL

Undersized coil can be used in the Wave machine by moving the left Entry Guide Shoe to the right and adding shims behind station L-1. This will make the nail flange narrower but keep the coverage the same. Follow the procedure below:

1. Loosen the Lock Down Handle on the left entry guide (Figure 43).
2. Cut a 12" long piece of gage material from the coil that will be used in the machine.
3. Slide gage material between the left and right entry guides.
4. Slide the Left Entry Guide to the left or right to accept the new coil width. Make sure that the material is captured snugly between the entry guides and re-tighten the Lock Down Handle.

NOTE: SOME PARTS HAVE BEEN
REMOVED TO SHOW CLARITY

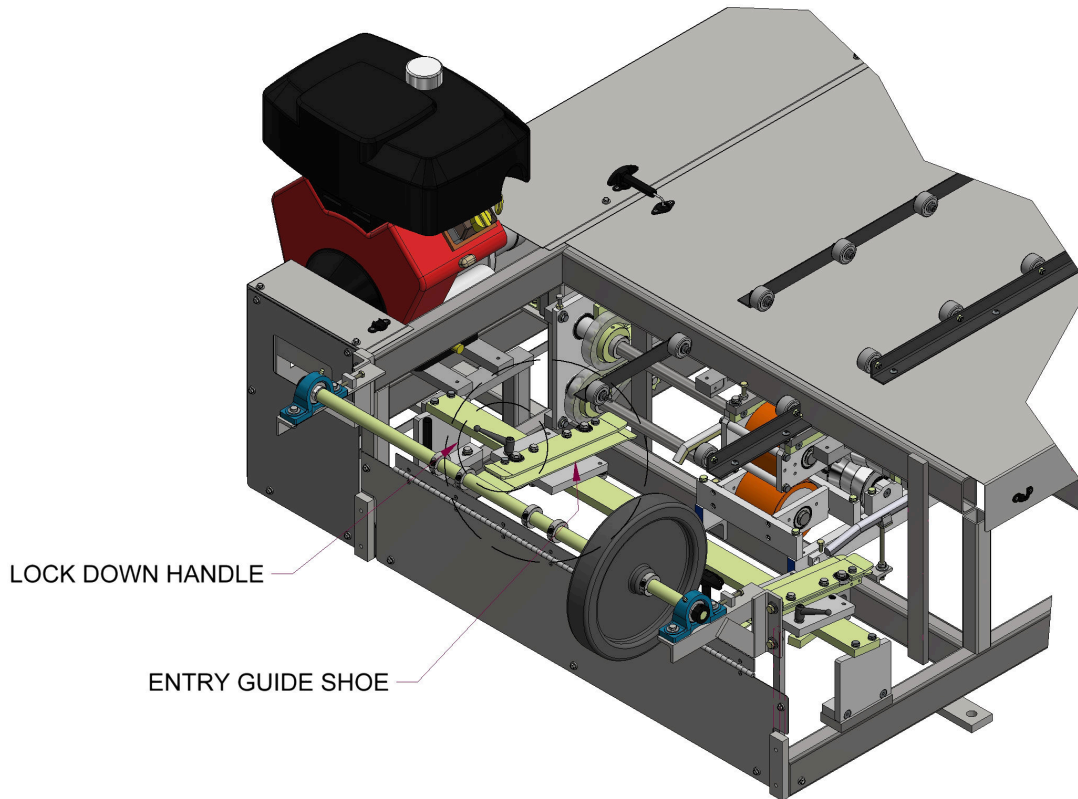


Figure 43: Entry Guide Shoe and Lock Down Handle

5. Measure the width of the coil and subtract it from 24". That will be the amount you need to shim Station L-1 away from Tooling Rail.

CHAPTER 13

USING UNDERSIZED COIL

6. Unbolt Station L-1 and add the shims calculated above. Bolt the station back to the rail. (Longer bolts may be needed) Figure 44.

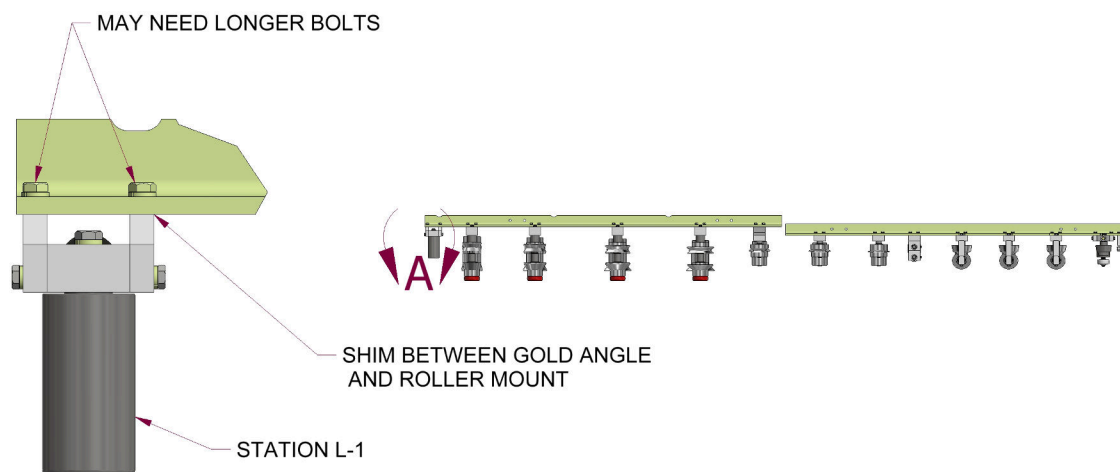


Figure 44: Shim Placement

CHAPTER 14
SETTING UP MACHINE FOR ALUMINUM COIL

SETTING UP MACHINE FOR ALUMINUM COIL

In order to run aluminum coil it is recommended that the L-5 Station be exchanged with the alternate L-5 Station that was supplied with the machine. These two stations are labelled “STEEL” and “ALUM” for steel and aluminum respectively. The difference between them is that the steel version has a built in over-bend that if used with aluminum coil will produce an over-bent panel in that area. Changing out the L-5 station will eliminate that problem. Other adjustments may be necessary when changing materials. See the Profile Adjustments section of this manual for more information.

To change the L-5 station follow the steps below.

1. Shut off the machine and remove the power supply.
2. Remove the top cover above the L-5 station. It is the fifth one from the entry end.
3. Referring to Figure 45, remove the “A” bolts securing the L-5 Station.
4. Remove the L-5 Station and replace it with the alternate L-5 Station. The support hook built into the station will help hold the station in place.
5. Re-insert the “A” bolts and tighten them.
6. Replace the top cover.

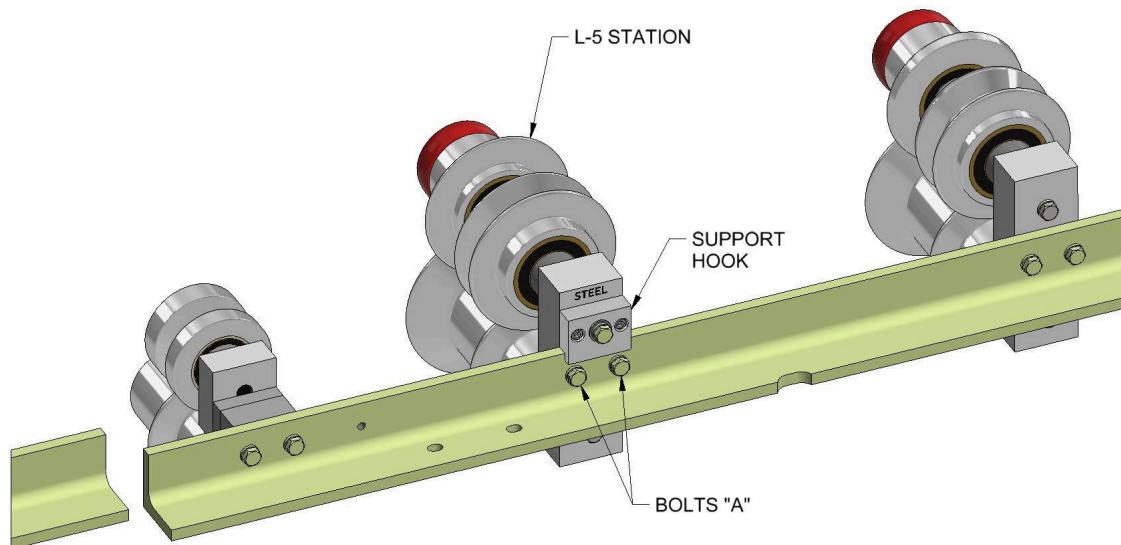


Figure 45: L-5 Station

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

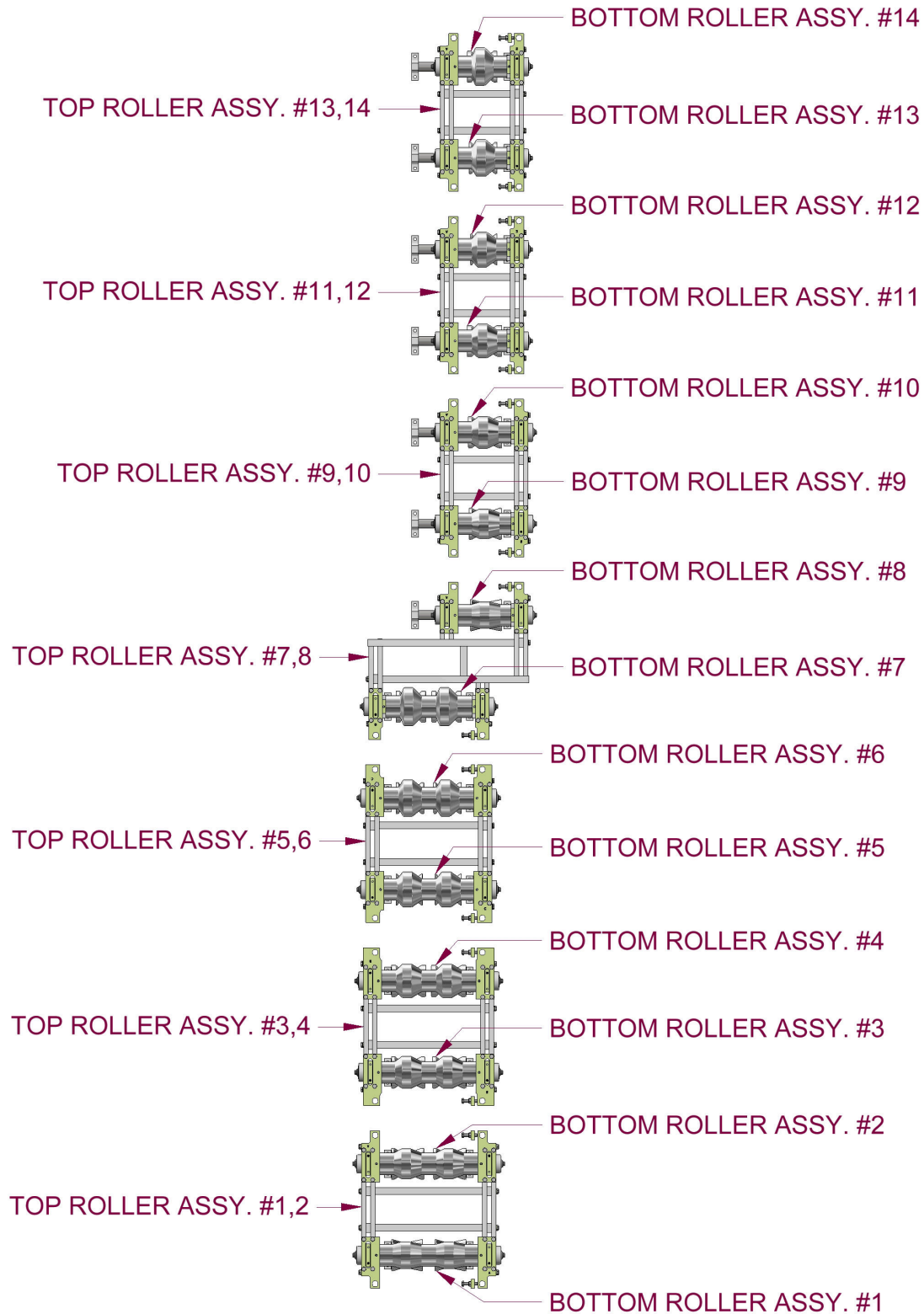


Figure 46: Wav Center Roller System

CHAPTER 15

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

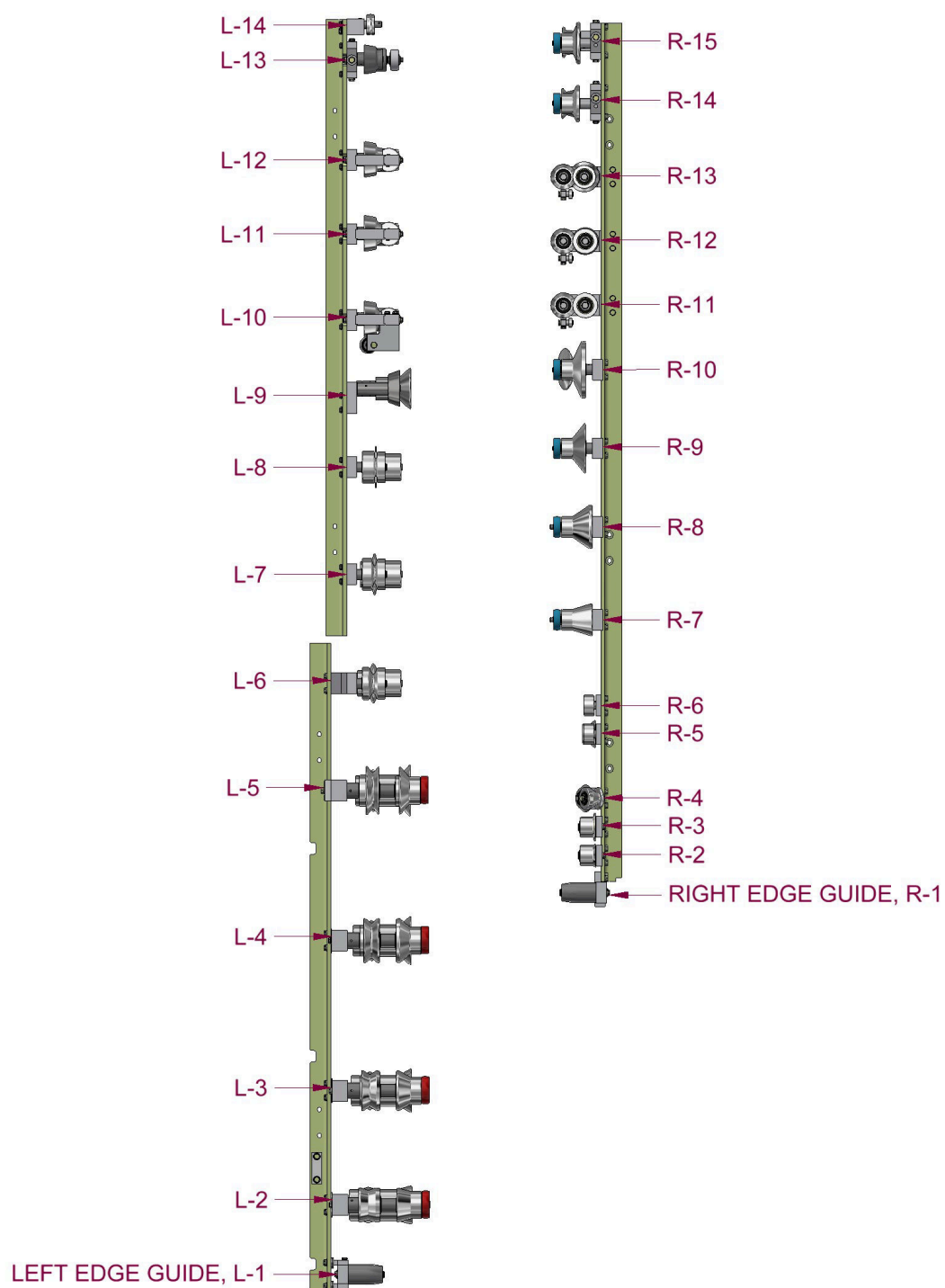


Figure 47: Wav Left and Right Roller System

CHAPTER 15

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

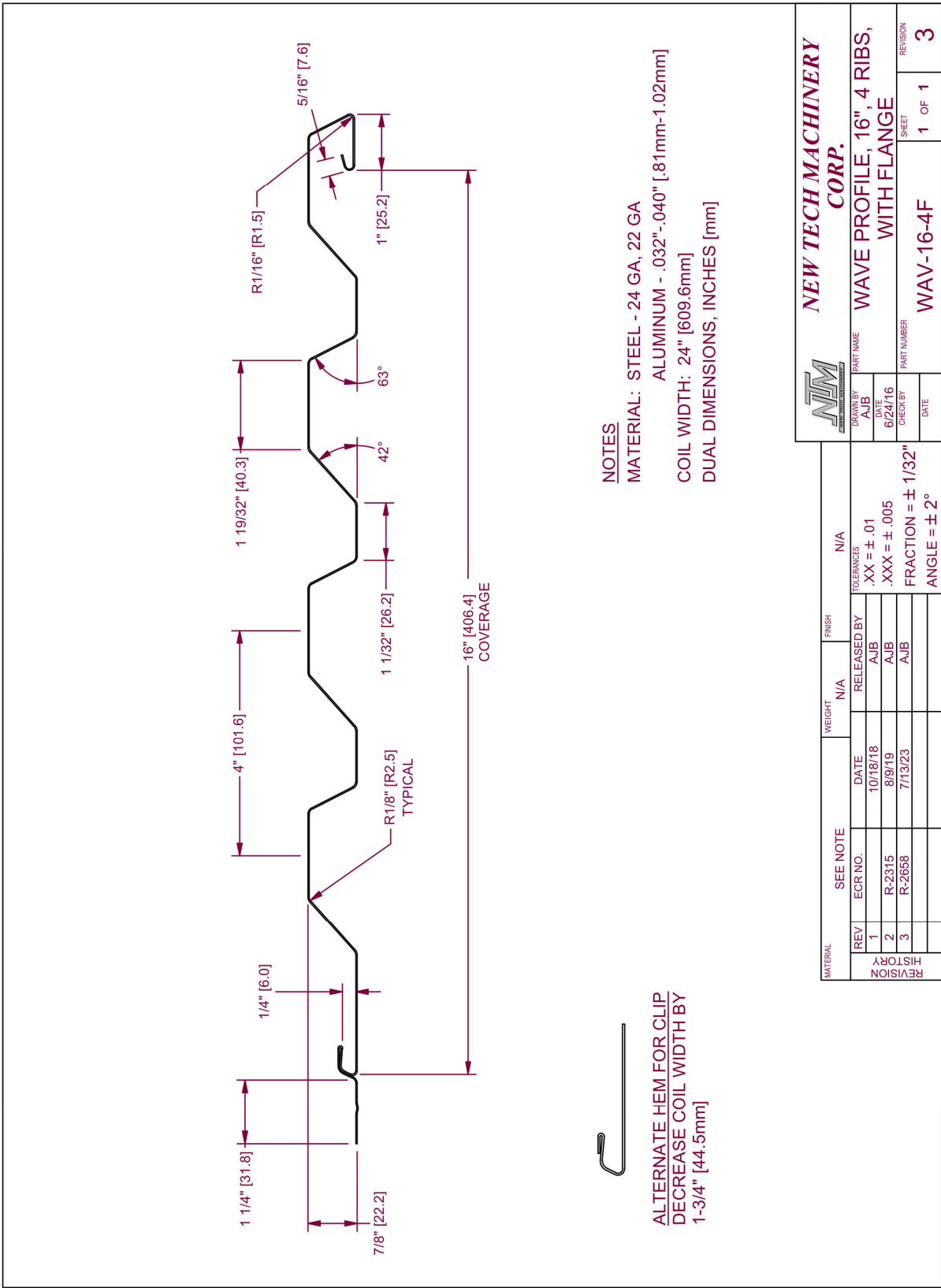
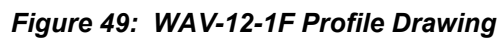


Figure 48: WAV-16-4F Profile Drawing



ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

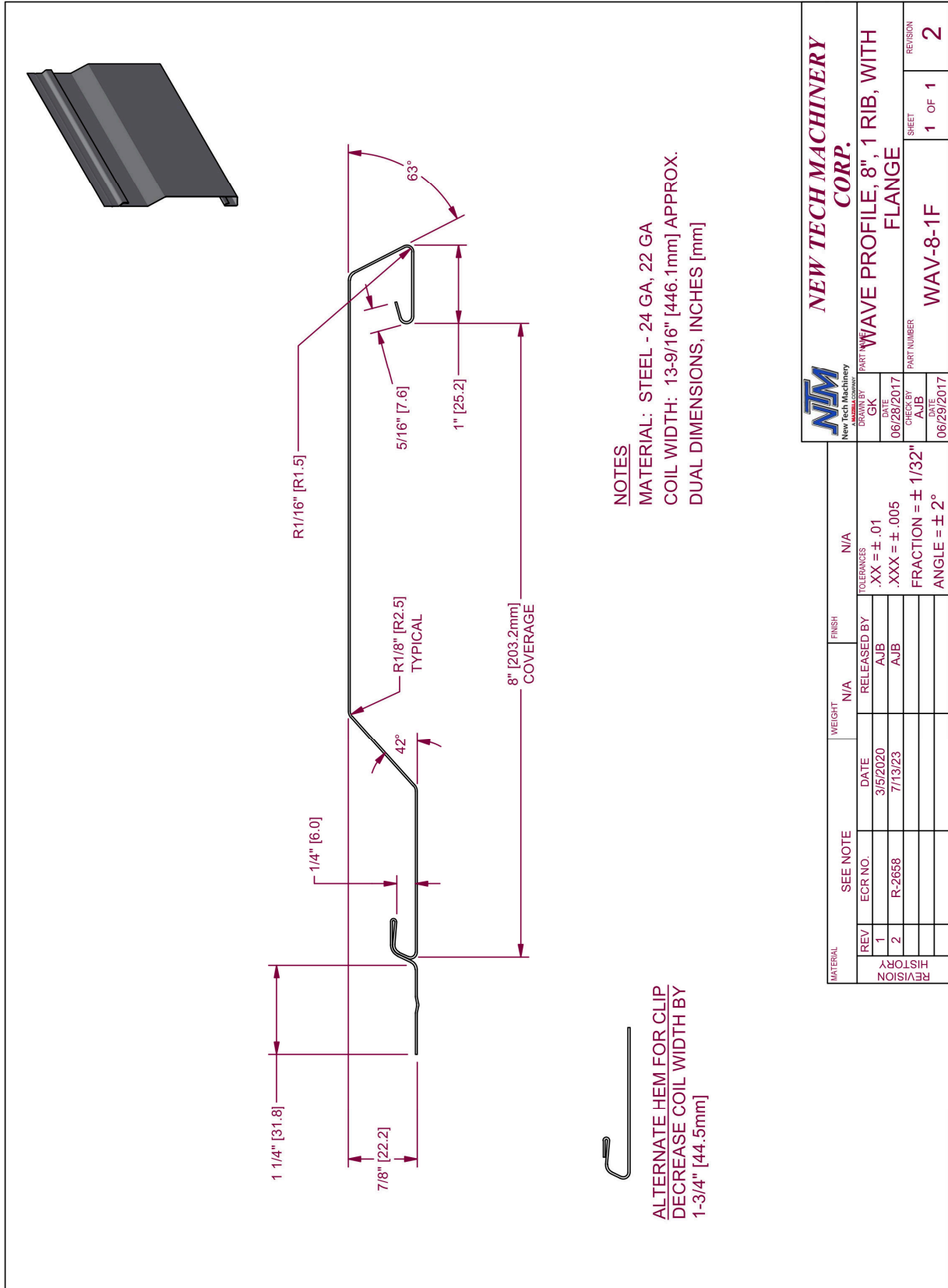


Figure 50: WAV-8-1F Profile Drawing

CHAPTER 16

RUN OUT TABLES AND REMOTE LIMIT SWITCH

RUN OUT TABLES AND REMOTE LIMIT SWITCH

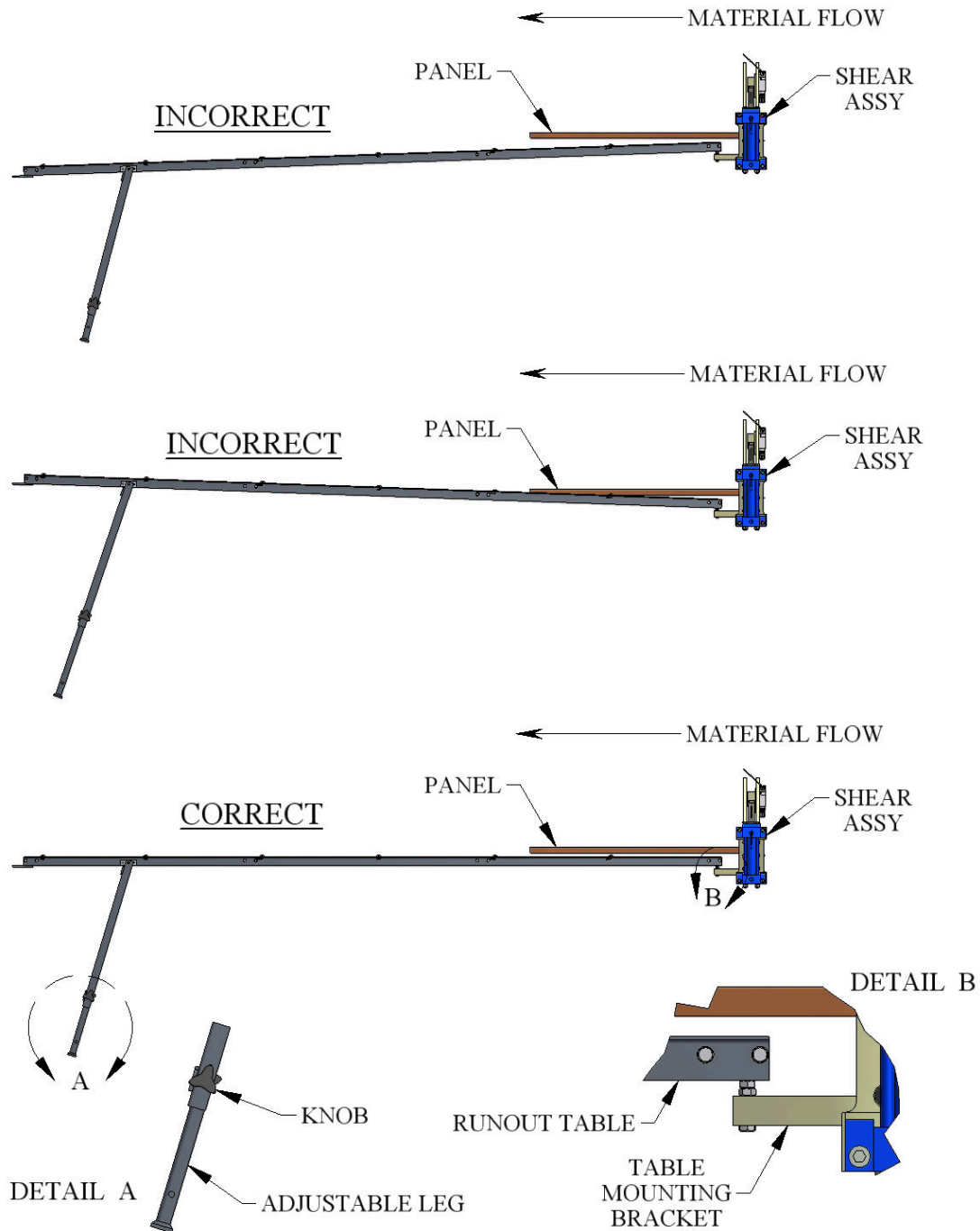


Figure 51: Run Out Tables

CHAPTER 17
TROUBLE SHOOTING

TROUBLESHOOTING

The hydraulic system operates the Shear and Drive assemblies. They are interfaced together and electronically activated. The hydraulic system pressure is factory set at 2900 psi and should not be changed. Some of the common problems that occur and their solutions follow below.

- 1. Shear travels to the bottom of the stroke, stops, and the hydraulic system continues laboring. Pushing the Red Shear Up Button returns it to the top of stroke.**

SOLUTION: Loosen Screws “A” (Figure 52). Press Shear Down. While the hydraulic system is laboring and the shear is stuck in the lower position, raise the Bottom of Stroke Limit switch until it clicks and the Shear Goes up. Tighten Screws “A”. **Note:** If the limit switch is adjusted too far up, problem #2, below, will be seen on the next cut made.

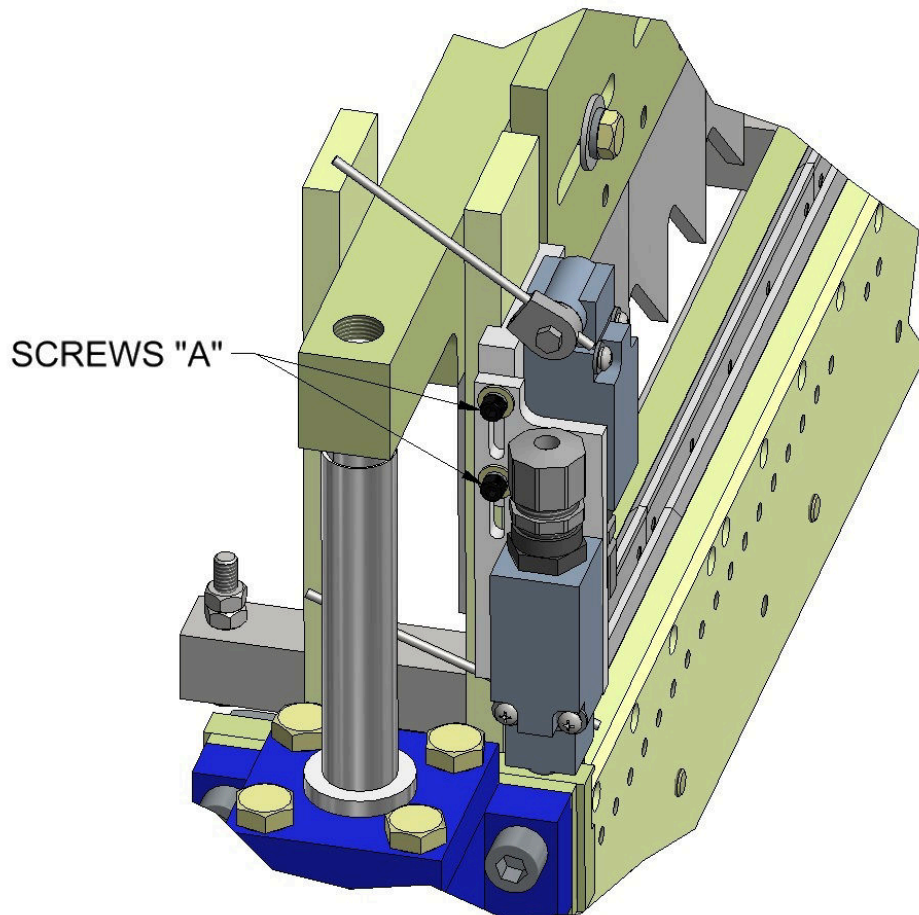


Figure 52: Bottom of Stroke Limit Switch

- 2. Shear travels to the bottom of the stroke and returns to the top of the stroke without cutting the panel completely through.**

CHAPTER 17

TROUBLE SHOOTING

SOLUTION: Loosen Screws “A” (Figure 52). Lower the Bottom of Stroke Limit switch. Tighten Screws “A”. Press the Shear Down button and repeat adjustment if necessary. **Note:** If the limit switch is adjusted too far down, problem #1, above, will be seen on the next cut made.

3. Shear is at the top of the stroke; the hydraulic system continues laboring and the next panel cannot be run.

SOLUTION: Remove the Shear Cover. Lift the arms on the limit switches (Figure 53) one at a time. If one of them stops the hydraulic system laboring then that Limit Switch arm needs to be adjusted. If neither of them stops it, lift both arms at the same time to see if it stops. If it does then both arms need adjusting.

ADJUSTMENT: Shut off the machine and disconnect the power. Loosen the Top Limit Switch Adjustment Screws (Figure 53) just enough so that the Mount Plate can be moved, and slide the Mount Plate all the way up. Slowly lower it back down until the switch clicks. Re-tighten the screws. Adjust one or both sides as required from the test above. Start the machine. If the adjustment(s) were done correctly, the hydraulic system should no longer be laboring and the next panel can be produced.

CHAPTER 17

TROUBLE SHOOTING

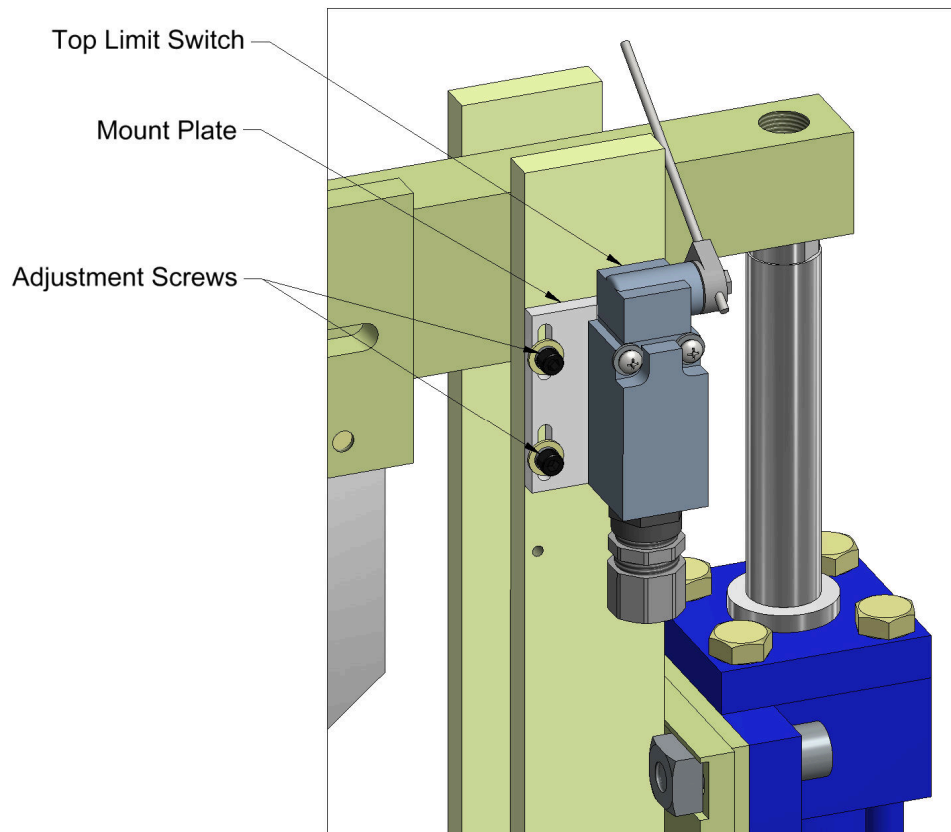


Figure 53: Limit Switch Adjustment

4. The Touchscreen does not come on when the power disconnect is turned on.

SOLUTION #1: If the machine is in electric mode, check if the power cord is plugged in.
If the machine is in gas mode, check if the battery is dead.

SOLUTION #2: Check if a circuit breaker is tripped. See Figure 9 through Figure 11 for circuit breaker locations.

APPENDIX A
UNIQ AUTOMATIC CONTROLLER

UNIQ AUTOMATIC CONTROLLER

Introduction

This guide covers the operation of Version 2 (V2) of the software on the touchscreen panel of the UNIQ Control. The software allows the user to enter quantities and lengths of panels to be run, import and export cut lists, perform calibration, and other features as shown on the following pages.

Navigation

Along the left edge of screen are navigation buttons that will bring up the primary screens of the controller. Pressing any of these buttons will display the associated screen.



Machine State Display

The top of the screen displays what state the controller is in and can be a helpful reference if the machine is not behaving as expected. The possible states are listed below.

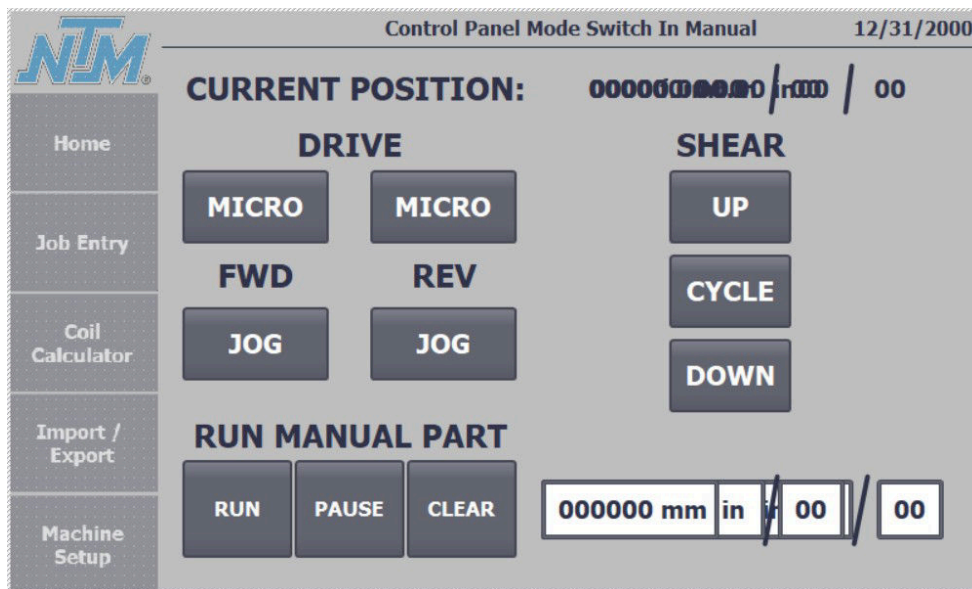
- Control Panel Mode Switch In Manual
- No Hydraulic Pressure
- System Idle
- Manual Mode – Run Part

APPENDIX A
UNIQ AUTOMATIC CONTROLLER

- Manual Mode – Shear Down
- Manual Mode – Shear Up
- Auto Mode – Run Part
- Auto Mode – Shear Down
- Auto Mode – Shear Up
- Auto Mode – Wait for Material Removal
- Auto Mode – Delay Before Next Part
- Auto Mode – Decide Next Part
- Auto Mode – Request Next Part
- Maintenance Mode
- Emergency Stop

Home Screen

The Home Screen is the first screen to appear after powering up and it allows for simple control of the machine as described below.



Current Position: This displays how much material is currently out past the shear. When loading a new coil, it will not display the correct length until after the leading edge has been jogged past the shear and the shear has been cycled.

Jog Forward and Reverse: Pressing these buttons will activate the drives in either the forward or reverse direction while the button is held down. When the button is released, the drives will stop.

Micro Jog: These buttons will advance the material a small distance in either the forward or reverse direction.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

Shear Up: The shear will travel up while the button is held and stop when it is released.

Shear Cycle: Pressing this button will cause the shear to make one complete down and up cycle.

Shear Down: The shear will travel down while the button is held and stop when it is released.

Note: The Shear buttons will not operate if one of the machine guards has been removed. If the shear must be operated with the guards removed switch the machine into manual mode and use the two-button controls on the sides of the control panel. Ensure that the shear path is clear before pressing the buttons.

Run Manual Part: This is a convenient way to produce a single panel of a specified length. Enter the desired length in the adjacent box and press **Run**. The machine will drive forward until the length is reached and then cycle the shear. Pressing the **Pause** button will stop the drives if it becomes necessary and pressing Run again will continue the part. The **Clear** button resets the part length to zero.

Job Entry

This screen is used to enter and edit the cut list, and to run the machine in Auto mode.

Panel	Section	Completed	Length	Stop After
000	000	000 / 000	000000000 / 000 / 00	✓
000	000	000 / 000	000000000 / 000 / 00	✓
000	000	000 / 000	000000000 / 000 / 00	✓
000	000	000 / 000	000000000 / 000 / 00	✓

Current Position: This displays how much material is currently out past the shear. When loading a new coil, it will not display the correct length until after the leading edge has been jogged past the shear and the shear has been cycled.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

Add Part: This will add a new part to the cut list. When pressed, a popup screen will appear allowing the user to select if the part should be added above the currently selected part, below it, or at the end of the list. The Part Entry screen will then appear, which is described below. As an alternative to Add Part, the user can also select a blank line and press Edit Part.

Edit Part: Pressing this button will bring up the Part Entry Screen, described below, where the panel properties can be modified.

Run: This button will run the currently selected panel. As the panel is produced, input from a rotary encoder measures the length. When the specified length is reached, the controller stops the drives, cycles the shear, then waits until the panel has been removed from the exit area of the machine. Once it is removed, the next panel will start to run automatically unless the Stop After Last Part feature prevents it. See the Part Entry section for more information.

Pause: While a job is running, the Pause button will stop the drives if they are running or prevent them from starting again if the shear was cycling or if the controller was waiting for the user to remove a panel. The motor will continue to run, and the machine will stay paused until the Run button is pressed. While paused, the cut list can be edited, including the part that is currently being produced. The Pause button is not meant to be used in an emergency. In an emergency, the E-Stop button should be used instead since it will immediately shut off power to the drives and shear.

Delete Current Part: Deletes the currently selected part.

Delete All Parts: Deletes all the parts in the list. A confirmation will pop up first asking the user to confirm they want to delete all the parts.

Scroll Arrows: The single up and down arrows will move through the cut list one part at a time. The double arrows will move through the list four parts at a time.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

Part Entry

The screenshot shows a 'PART ENTRY' window with the following fields and controls:

- Part Number:** 000
- Section:** 000
- Quantity:** 000
- Part Length:** 000000 mm, followed by a unit dropdown menu currently showing 'n', and two decimal place input fields each containing '00'.
- Stop After Last Part:** A green checkmark icon is selected, with 'YES' and 'NO' buttons also visible.
- Navigation:** 'CANCEL' and 'SAVE' buttons at the bottom.

Section: This is an optional field that can be used to help organize panels by roof section. It does not affect the operation of the machine and can be left blank.

Quantity: The quantity to be produced. The maximum that can be entered is 255.

Part Length: The length to be produced.

Stop After Last Part: If “Yes” is selected, the machine will stop after the job is done running. The user will then need to press Run to start the next job. If “No” is selected, the machine will automatically start running the next job.

Stopping Distance

In order to produce accurate lengths, the controller needs to adjust for variations in the stopping distance of the machine. The stopping distance is the distance that the machine coasts after the drives are shut off and is usually about 0.25 to 1.0 inches. The controller will stop the drives just before reaching the specified length in order to account for this coasting. The stopping distance varies based on the type of material being formed and the thickness, the outside temperature, the hydraulic fluid temperature, and other reasons. The controller automatically updates the stopping distance as panels are produced by comparing the current stopping distance to the actual coasting distance. If they differ it will make an adjustment to the stopping distance, but to prevent over-correction it only changes it by a small amount at a time. If the stopping distance is off by a large amount, it may take five or even ten panels for it to get dialed back in.

APPENDIX A
UNIQ AUTOMATIC CONTROLLER

Machine Setup

Control Panel Mode Switch In Manual

Set Machine Units of Measure

	Decimal Inches	Decimal Feet / Inches	Fractional Inches	Fractional Feet / Inches	Metric
Home					
Job Entry	Delay Before Part Shear 00.0 sec				
Coil Calculator	Pause After Part Removal 00.0 sec				
Import / Export	Part Removal Timeout 00 min				
Machine Setup	Notching Settings	Hot Melt Settings	Language	Advanced Settings	WAV Setup
	Status	Service Data	Machine Calibration	Program Information	Exit HMI

Units: Select the preferred units of length here. When changing units, the cut list will automatically update so nothing will need to be re-entered.

Delay Before Part Shear: This is the delay between when the drives stop and when the shear starts to come down. The default is 0.1 seconds.

Pause After Part Removal: This is the delay from when a part is removed from the outfeed area to when the drives start again. The default is 1.0 seconds.

Part Removal Timeout: This is the time after which a warning will appear if the part is not removed from the outfeed area. The default is 1 minute.

Notching Settings:

- **Notching Installed Yes/No** – Set this to Yes if a notching system is installed on your machine (only available on the SSQ2) and you would like to notch panels. If you do not want to notch panels, it is recommended to set this to No.
- **Always Notch Ends Yes/No** – Setting this to Yes will notch the ends of every panel by default.
- **Enable Angle Slitter Yes/No** – If you have the optional Angled Slitter set this to Yes. It will cause the machine to pause at a fixed location in order to allow the operator to slit the panel.

Hot Melt Settings:

- **Enable Hot Melt Yes/No** – This turns on the hot melt interface relay to run while material is moving forward.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

- **Hot Melt Purge** – Pressing this button will cause sealant to flow out of the hot melt nozzle while the button is held down. It is disabled when the emergency stop is pressed or when the drives are running.

Language: Selects between English and Spanish

Advanced Settings:

- **BOS Relay Installed** – This is a piece of hardware installed in earlier UNIQ Control System panels. Inside the control panel on the door, there is a serial number. If the serial number is earlier than UNIQ1-0016 then YES should be selected for the panel to function properly. Otherwise, NO should be selected.

WAV Setup: These are settings that are specific to the WAV Wall Panel Machine

- **WAV VFD Enable Yes/No** – Set this to Yes if you have a WAV Machine with a Variable Frequency Drive (VFD). All WAV Machines with an electric motor have a VFD.
- **VFD Jog/Manual Speed** – This sets the speed that the machine will run at while jogging and when running a manual part from the Home Screen. The maximum is 50%.
- **VFD Auto Part Run Speed** – This sets the speed that the machine will run at while producing panels in Auto Mode. 20% is about 30 ft/min and 100% is about 150 ft/min.
- **VFD Error Code** – If the VFD has faulted an error code will be displayed here.
- **VFD Fault Status and Reset Button** – During normal operation this will display Status OK in a gray box. If the VFD has faulted this will turn red. Press the Reset button to clear the fault.

Status: This button will open another screen displaying information on the current state of the machine.

- **Sensor Status Indicators** – These display the current state of the various sensors throughout the machine. Green is on and black is off.
 - **Hydraulic Pressure** – This senses if there is hydraulic pressure present and should be on whenever the motor or engine is running.
 - **Shear Top of Stroke** – There are two limit switches at the top of the shear that sense if the shear is up. This indicator should be on whenever the shear is up.
 - **Shear Bottom of Stroke** – The shear has a single limit switch at the bottom of the cross bar that tells the machine when to stop the downward stroke and start the upward stroke. This indicator should be off unless the shear is all the way down.
 - **Proximity Switch** – This is a small cube-shaped sensor at the exit end of the machine that senses if material is present above it. It is used to prevent the machine from starting the next panel until the previous one has been removed from the exit area of the machine.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

- **Male/Female Notch TOS (Top of Stroke)** – The optional Notching System uses a limit switch inside of each notcher to verify that the punch is up before activating the drive. The status should show on when the notchers are up.
- **Encoder Wheel Circumference** – This displays the calculated value of the encoder wheel circumference based on the machine calibration. The default value is 7.902 inches. If your machine is producing panels that are off by a large amount and this value is greatly different than the default value you should reset this to default. See the Machine Calibration section below.
- **Stopping Distance** - The stopping distance is the distance that the machine coasts after the drives are shut off and is usually about 0.25 to 1.0 inches. It updates automatically based on feedback from the encoder.
- **Length of Last Part (via Encoder)** – This displays what the length of the last part produced should be based on the encoder counts and is useful for troubleshooting problems with panel length.
- **Service Data:** This section displays information that is helpful for servicing the machine, such as the total length of material that has been run, the total hours that the machine has been running, and the number of times the shear has been cycled.

Machine Calibration: See the next section for calibration instructions.

Program Information: Pressing this button will display the current version of the controller software.

Exit HMI: This button is only needed when updating the controller software. Refer to the instructions that come with the update for more information.

Machine Calibration

Machine calibration refers to calibrating the encoder so that the controller can produce accurate panel lengths. It is important to note that there are several possible causes for the lengths to be wrong, and calibration may not solve the problem. If a panel comes out at the wrong length, go to the Status Screen under Machine Setup and check the Encoder Length of Last Part reading. If it matches the length of the panel, then the encoder is correctly measuring the panel length and calibration should not be performed. **Only calibrate if the Encoder Length of Last Part does not match the actual length of the panel produced.**

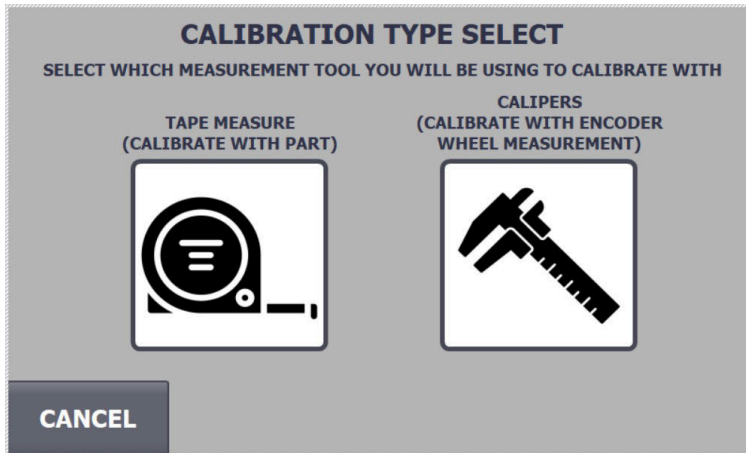
We provide two different methods for performing calibration – measuring a panel with a tape measure and measuring the encoder wheel diameter with calipers. See below for instructions on how to calibrate with either method.

Calibrate with Panel Measurement

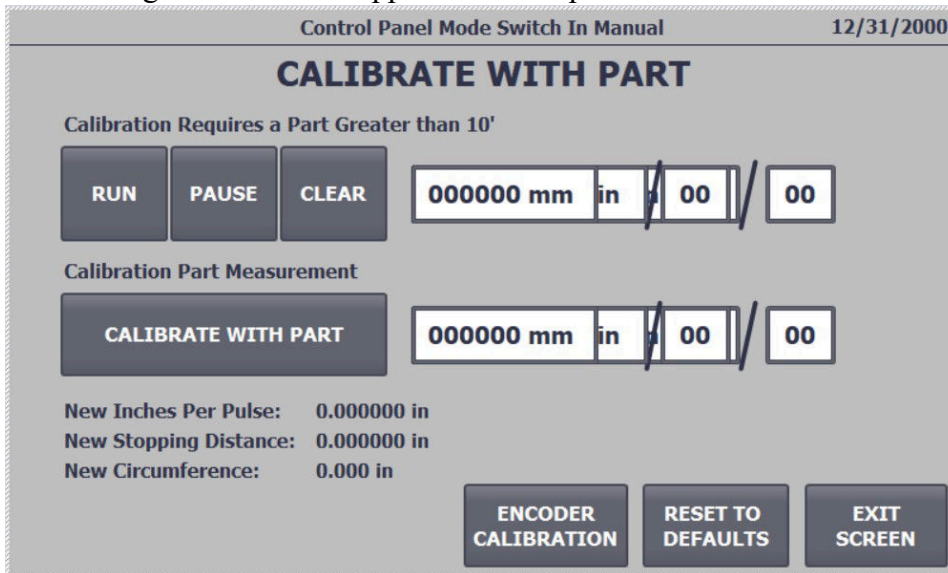
1. Go to Machine Setup then press Machine Calibration. **Note – the motor must be running and the covers must be on in order to continue.**
2. The Calibration Type Select screen pops up. Press Tape Measure (Calibrate With Part).

APPENDIX A

UNIQ AUTOMATIC CONTROLLER



3. Enter a length to run in the upper field. The panel must be at least 10 feet long.

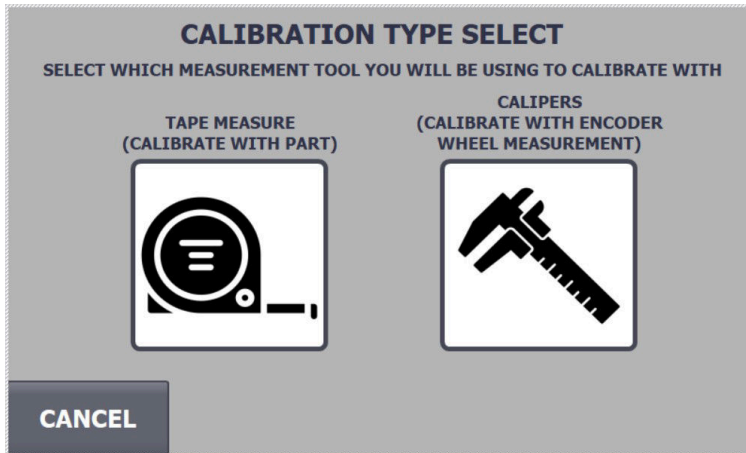


4. Press RUN.
5. Measure the panel carefully and enter the length into the lower field.
6. Press CALIBRATE WITH PART.

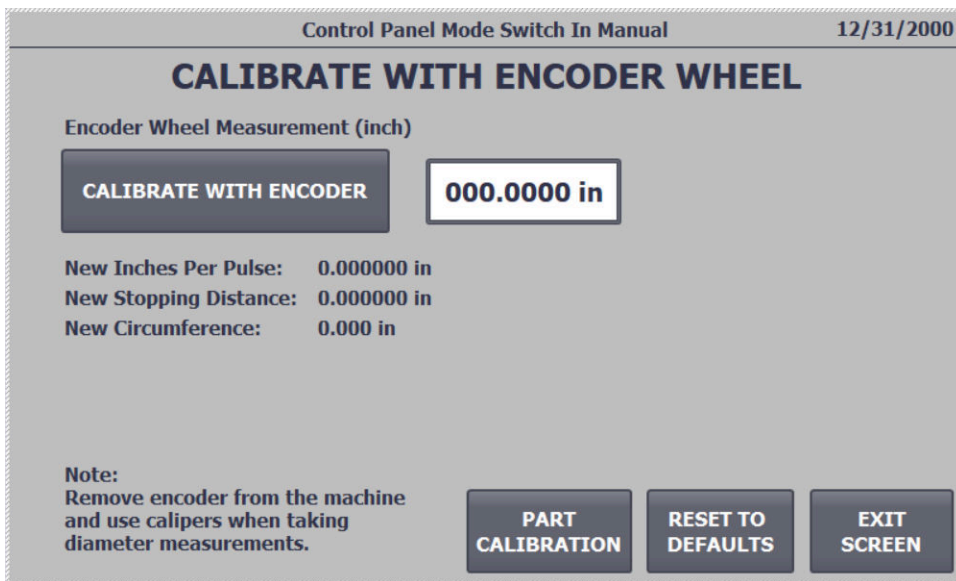
Calibrate with Encoder Wheel Measurement

1. Go to Machine Setup then press Machine Calibration.
2. The Calibration Type Select screen pops up. Press Calipers (Calibrate with Encoder Wheel Measurement).

APPENDIX A
UNIQ AUTOMATIC CONTROLLER



3. Remove the encoder from the machine.
4. Measure the encoder wheel diameter with a pair of calipers. Check it in a few different places to make sure the wheel does not have a slight oval shape. If the measurements are not consistent then the Panel Measurement method above should be used instead.
5. Enter the diameter measurement into the field.



6. Press Calibrate With Encoder.

Reset to Defaults

Note – on both the Calibrate With Part and Calibrate With Encoder Wheel screens there is a Reset To Defaults button. Pressing this will set the controller back to the default encoder calibration value.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

Maintenance Mode

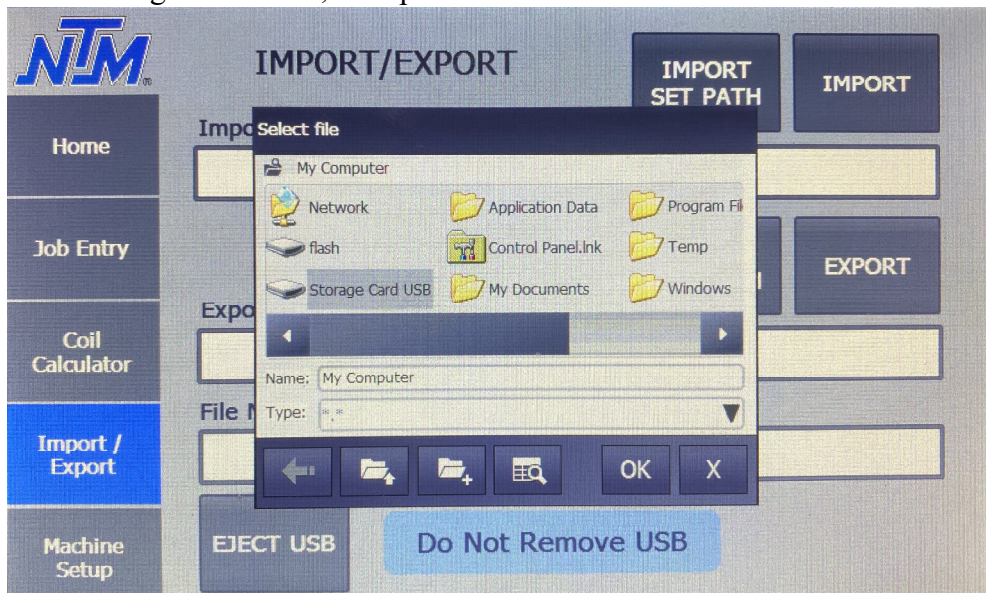
As a safety precaution, if any of the machine covers are removed the controller will go into Maintenance Mode. In this mode the Status page will be displayed, and the machine cannot be controlled from the touchscreen. If it is necessary to run the machine with the covers removed, for setup or maintenance for example, move the Manual/Auto switch to the Manual position and use the push buttons below the touchscreen. Replace the covers to return the machine to normal operation.

Import/Export

Importing a Cut List

A cut list can be imported into the controller from a USB drive. This can speed up the process of entering data by allowing the user to type it into the Excel spreadsheet we provide. The spreadsheet can be found on our website by going to the Resources section then clicking Cut List Generator, or by following this link: <https://newtechmachinery.com/learning-center/resource/cutlist-generator/>. The roofing software Applicad can also export a cut list into a format that the Uniq controller can import. Follow the instructions below to import a cut list from a USB drive.

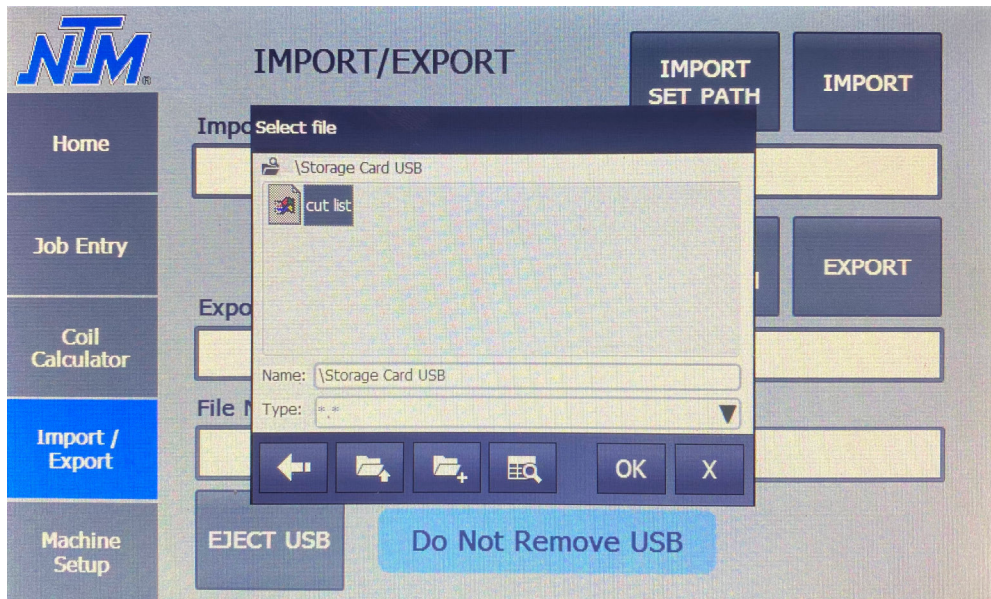
1. Save the cut list to a USB drive by following the directions in the Cut List Generator spreadsheet or in Applicad.
2. Insert the USB drive into the USB port on the front of the control panel.
3. Press the Import/Export button on the left side of the screen.
4. Press the Import Set Path button.
5. Press Storage Card USB, then press OK.



6. Select the file to be imported, then press OK.

APPENDIX A

UNIQ AUTOMATIC CONTROLLER

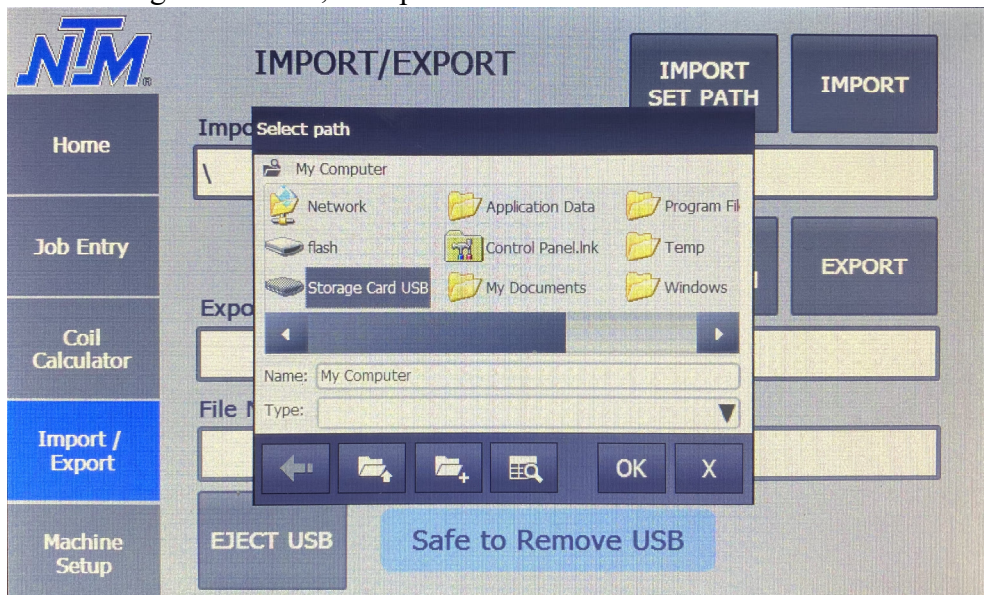


7. After a moment the message “Import completed, no errors” will appear.
8. Press the Eject USB button, then remove the USB drive.

Exporting a Cut List

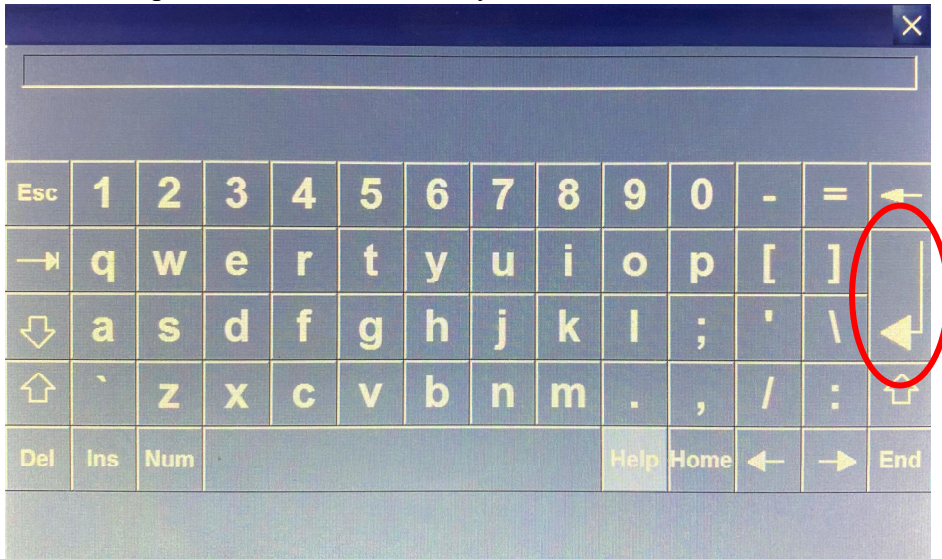
The cut list on the Uniq controller can also be exported to a USB drive for later use or for record-keeping purposes. To export follow the steps below.

1. Insert a USB drive into the USB port on the front of the control panel.
2. Press the Export Set Path button.
3. Press Storage Card USB, then press OK.



APPENDIX A
UNIQ AUTOMATIC CONTROLLER

4. Press the empty field under File Name. A keypad will appear on the screen. Enter a file name, then press Enter. The Enter key is circled in red.



5. Press the Export button.



6. The message “Export in progress” is displayed. When it is complete, press the Eject USB button.
7. Remove the USB drive.

APPENDIX A
UNIQ AUTOMATIC CONTROLLER

Coil Length Calculator

NTM

COIL CALCULATOR

Select Material:

CHOOSE MATERIAL

Selected Thickness

Internal Diameter (ID) of Coil:

000000 mm in 00 00 *NOT Including Material

Coil Thickness:

000000 mm in 00 00 *NOT Material Thickness
*NOT Including Cardboard Core

CALCULATE LENGTH Estimated Length: 00000 FT 00000 M

The controller has a built-in calculator to estimate the length of a coil based on the dimensions of the coil. To use it follow the steps below.

1. Press Choose Material to select the material thickness. The thickness can also be entered manually if none of the options are suitable.

MATERIAL: (SELECT ONE)

ALUM: 0.027 0.032 0.040 0.050

STEEL: 22ga 24ga 26ga 28ga 30ga

COPPER: 16oz 20oz

ENTER MATERIAL THICKNESS MANUALLY:

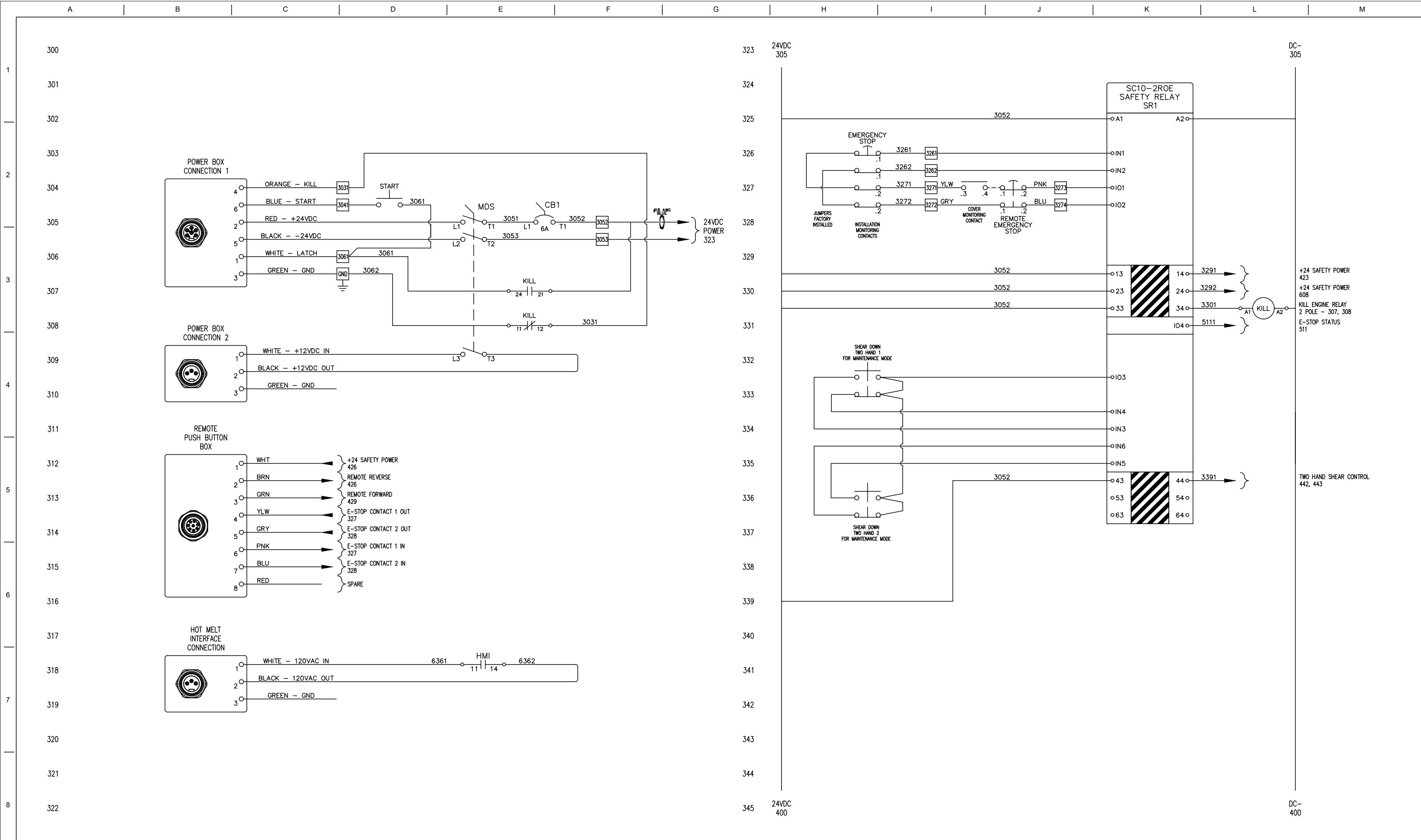
000000 mm in 00 00 ENTER

2. Enter the Internal Diameter (ID) of the coil. Measure to the metal coil itself and not the core.
3. Enter the coil thickness which is the distance from the outside of the coil to the internal diameter.
4. Press the Calculate Length button and the estimated length remaining on the coil will be displayed.

APPENDIX B
ELECTRICAL SCHEMATICS

ELECTRICAL SCHEMATICS

<u>Drawing Number</u>	<u>Description</u>
HTA-NTM-030220-000-00	Automatic Control Panel
HTA-NTM-030220-400-00	Gas Engine Power Supply Box
HTA-NTM-030220-404-00	Variable Frequency Drive (VFD) Enclosure



BCB	O	5/17/2023	CHANGED PILOT DEVICES TO METAL VERSION
BCB	N	05/12/2023	CHANGED SAFETY RELAY PART NUMBERS / WIRING
ELN	M	3/17/2023	CHANGED SAFETY RELAY PART NUMBERS / WIRING
BCB	L	11/10/2022	ADDED CONNECTOR FOR HOT MELT
ELN	K	9/17/2022	CHANGES PER PRODUCTION
BY	REV	DATE	DESCRIPTION


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PLC CONTROL PANEL
WIRING DIAGRAM

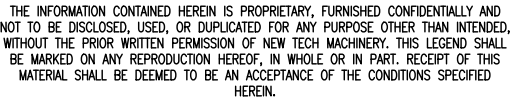
NEW TECH MACHINERY
UNIQ CONTROL SYSTEM
AUTO CONTROL PANEL

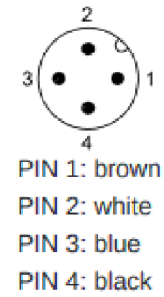
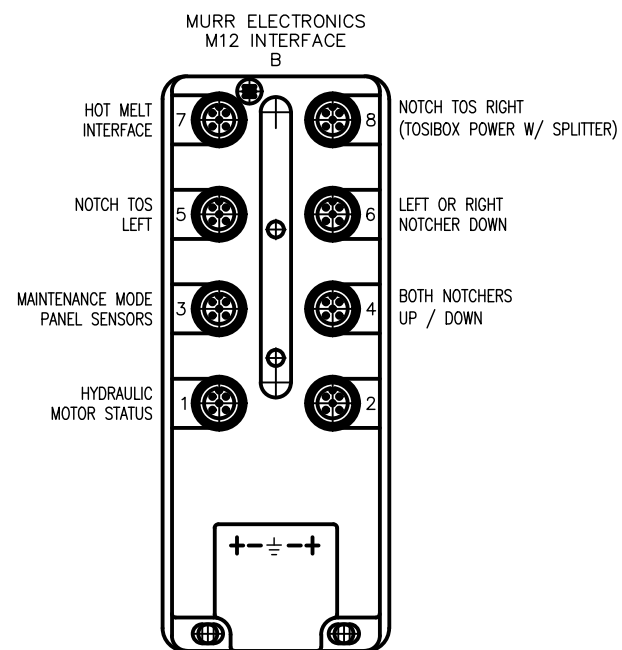
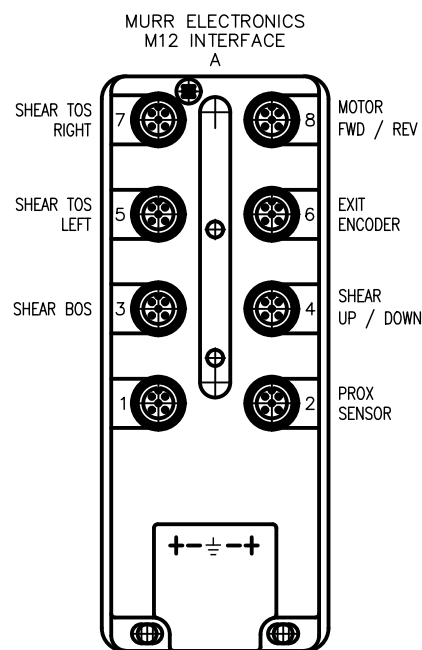
DRAWN BY	ELN	CHECKED BY	—
DRAWN DATE	06-04-2020	CHECKED DATE	—
SCALE	NTS	SHEET	3 OF 9

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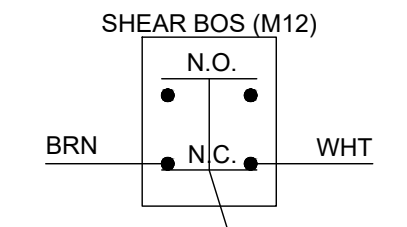
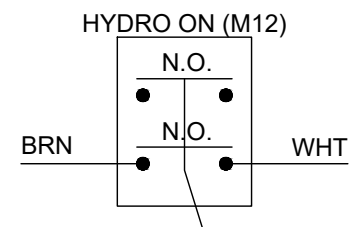
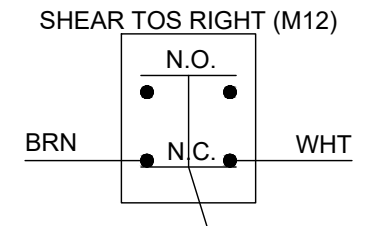
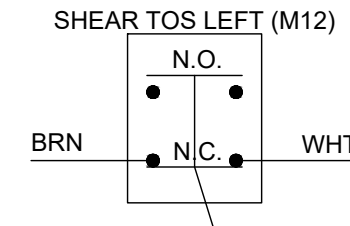
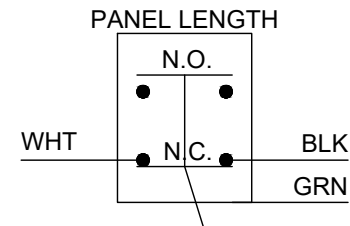
DWG NO. HTA-NTM-030220-000-00

REV. 

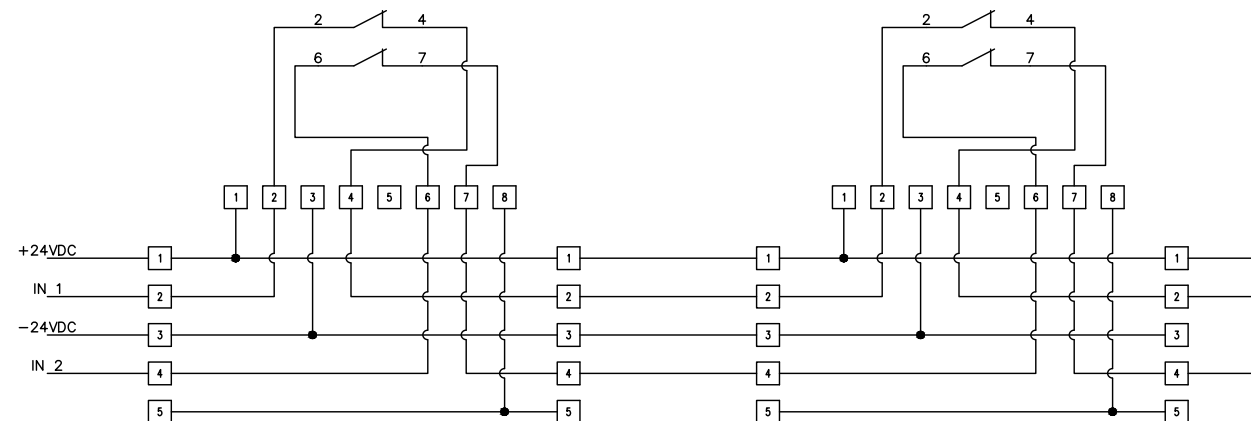




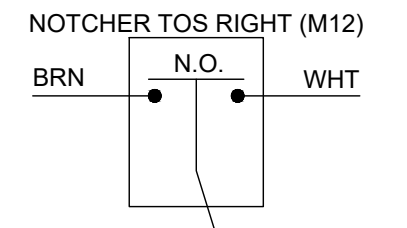
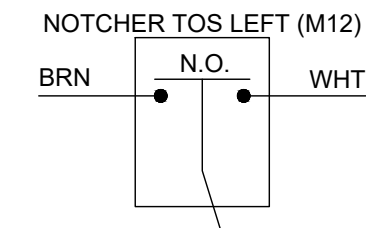
COMPONENTS



PANEL SENSORS



NOTCHER COMPONENTS




BCB	O	5/17/2023	CHANGED PILOT DEVICES TO METAL VERSION
BCB	N	05/12/2023	CHANGED SAFETY RELAY PART NUMBERS / WIRING
ELN	M	3/17/2023	CHANGED SAFETY RELAY PART NUMBERS / WIRING
BCB	L	11/10/2022	ADDED CONNECTOR FOR HOT MELT
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BY	REV	DATE	DESCRIPTION

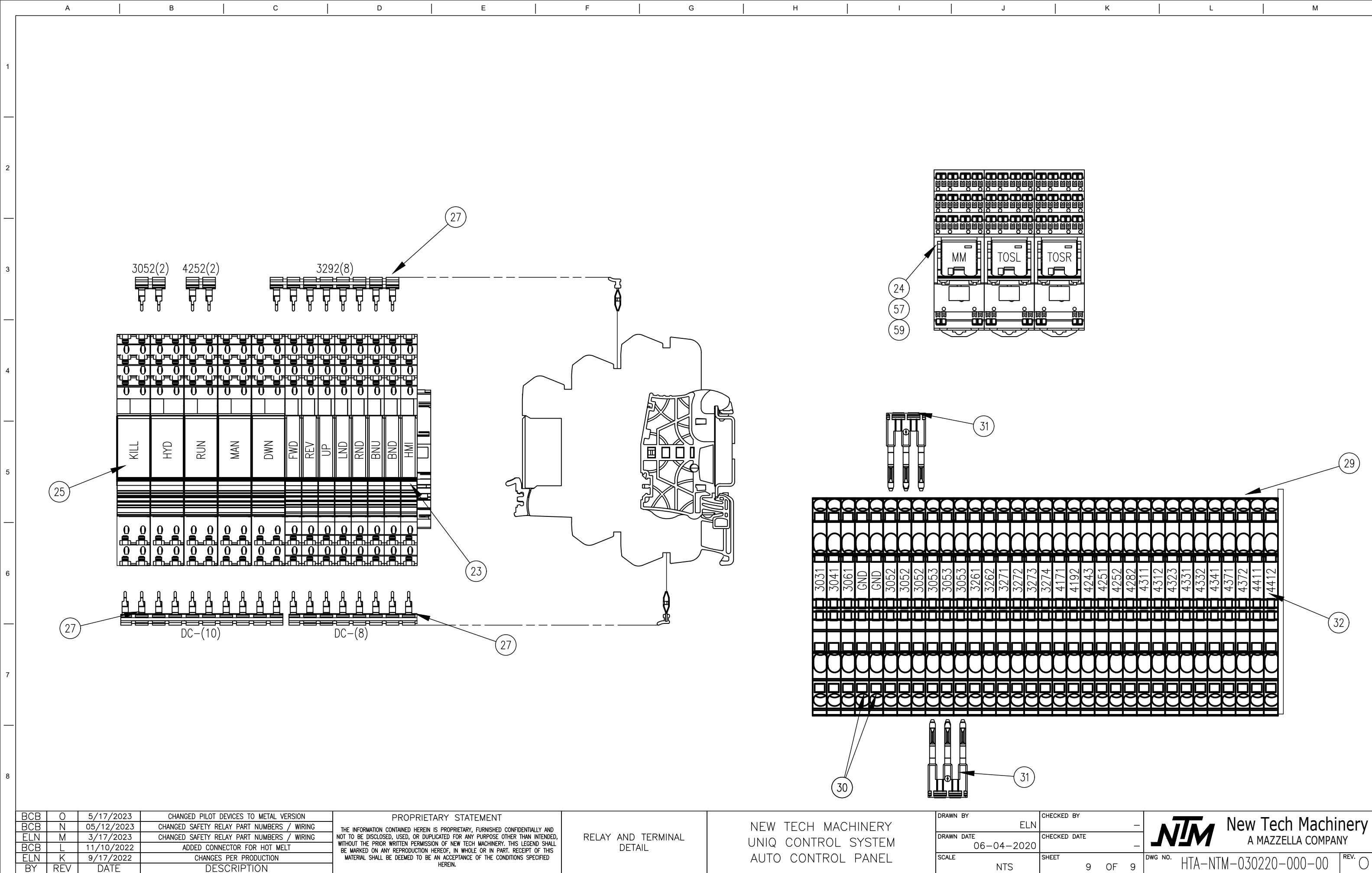
PROPRIETARY STATEMENT

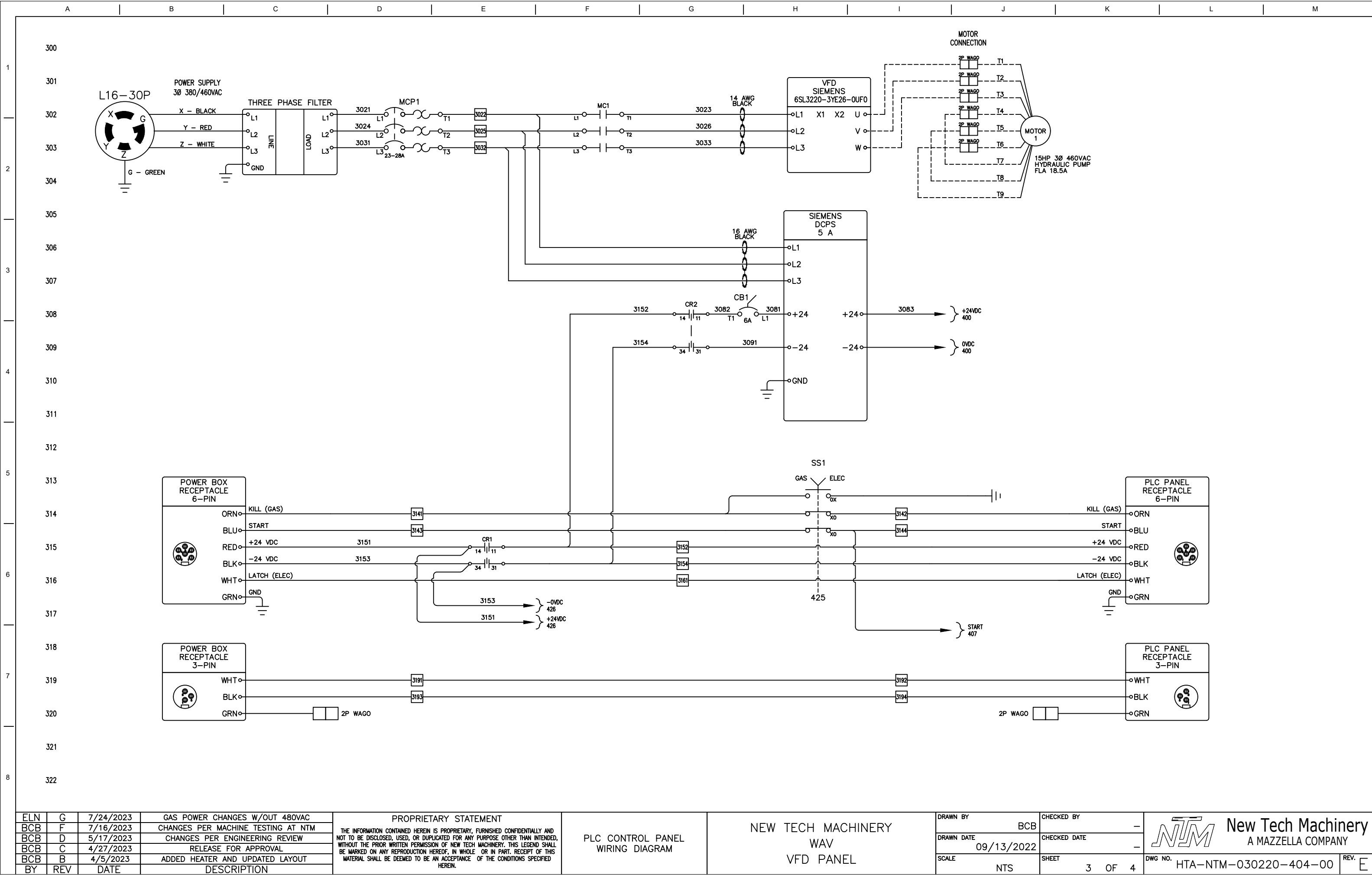
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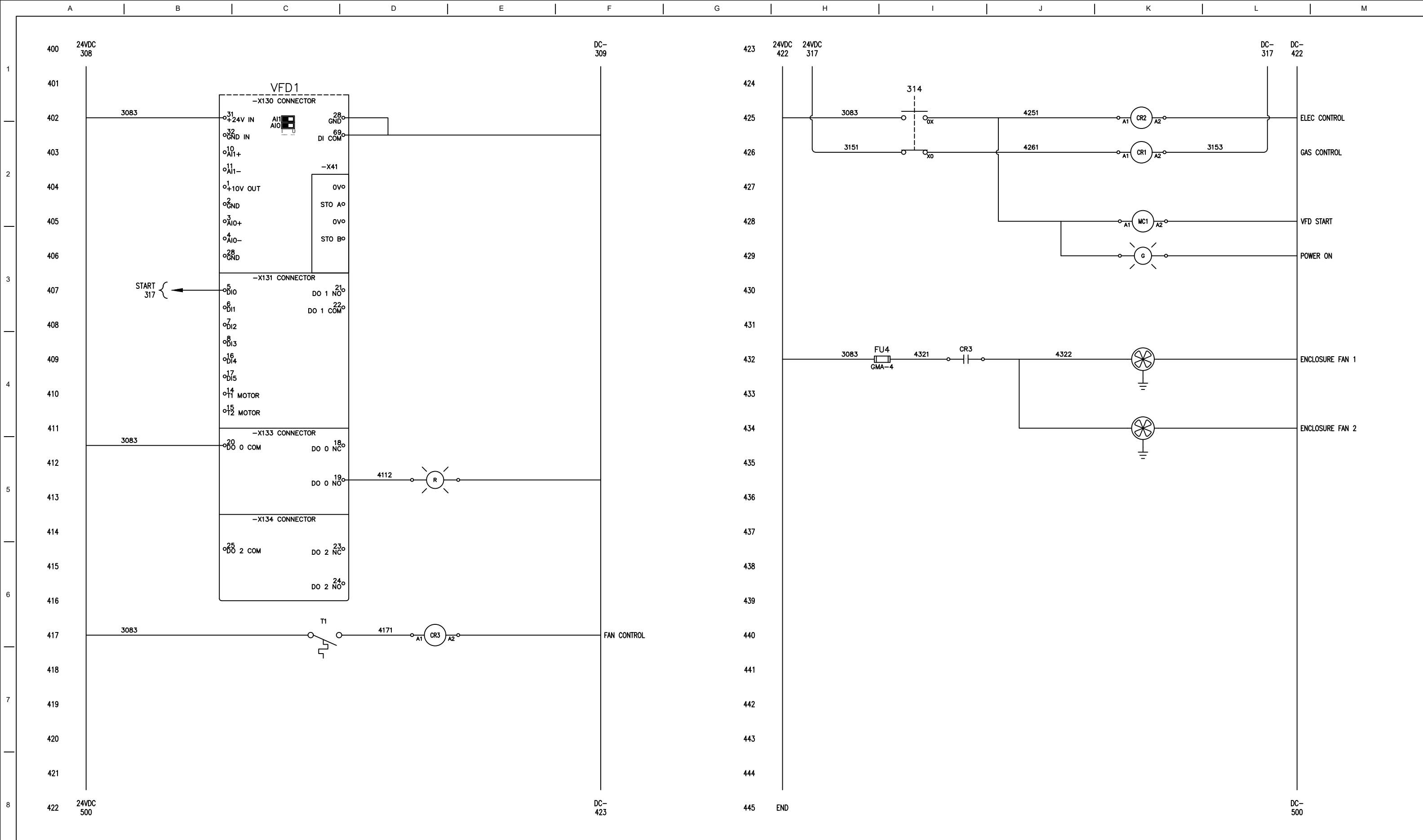
ACCESSORY REFERENCE WIRING DIAGRAMS

NEW TECH MACHINERY
UNIQ CONTROL SYSTEM
AUTO CONTROL PANEL

DRAWN BY ELN	CHECKED BY —	 New Tech Machinery A MAZZELLA COMPANY
DRAWN DATE 06-04-2020	CHECKED DATE —	
SCALE NTS	SHEET 7 OF 9	DWG NO. HTA-NTM-030220-000-00 REV. <input type="radio"/>







ELN	G	7/24/2023	GAS POWER CHANGES W/OUT 480VAC
BCB	F	7/16/2023	CHANGES PER MACHINE TESTING AT NTM
BCB	D	5/17/2023	CHANGES PER ENGINEERING REVIEW
BCB	C	4/27/2023	RELEASE FOR APPROVAL
BCB	B	4/5/2023	ADDED HEATER AND UPDATED LAYOUT
BY	REV	DATE	DESCRIPTION


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PLC CONTROL PANEL
WIRING DIAGRAM

NEW TECH MACHINERY
WAV
VFD PANEL

DRAWN BY	BCB	CHECKED BY	-
DRAWN DATE	09/13/2022	CHECKED DATE	-
SCALE	NTS	SHEET	4 OF 4

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1300 40th Street | Denver, Colorado 80205
303-294-0538 | 800-574-1717 | Fax: 303-294-9407
www.NewTechMachinery.com

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