



**New Tech Machinery**

A **MAZZELLA** COMPANY

# **OPERATION and MAINTENANCE MANUAL**



# **SSQII**

**Quick Change – Commercial/Residential Roof Panel Machine**

[www.NewTechMachinery.com](http://www.NewTechMachinery.com)

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CHAPTER 1  
**SSQII SPECIFICATIONS**

## **SPECIFICATIONS**

|                                |   |  |
|--------------------------------|---|--|
| <b>SSQ II Dimensions:</b>      | Length-14' 4"   | (4.4m) without Angled Slitter                                    |
|                                | Length-15' 4"   | (4.7m) with Angled Slitter                                       |
|                                | Width-5'  | (1.5m)   |
|                                | Height-4' 5"  | (1.3m) with Over Head Rack                                       |
|                                | 2'  | (.6m) without Over Head Rack                                     |
|                                | Weight-4300 lbs.  | (1950kg)   |
| <b>SSQ II on Trailer:</b>      | Length-18' 6"   | (5.6m)   |
|                                | Width-7'  | (2.1m)   |
|                                | Height-6' 7"  | (2.0m) with Over Head Rack                                       |
|                                | Weight-6500 lbs.  | (2950kg)   |
| <b>Speed:</b>                  | 75 ft./min. Approx.   | (23m/min.) Approx.   |
| <b>Drive:</b>                  | Hydraulic via chain, sprocket and gear using 16 polyurethane drive rollers.   |  |
| <b>Shear:</b>                  | Hydraulically Powered, Infinitely adjustable, hardened tool steel dies and blades w/Panel Recognition Proximity Sensor  |  |
| <b>Hydraulic Fluid:</b>        | 32AW – Approximately 15-16 gallons.   |  |
| <b>Coil Width and Max Dia:</b> | 15" to 30" coil width (380mm to 760mm) Note: 30" coil width requires Expandable Arbor or Remote De-coiler Stand. The maximum coil diameter is 32" with the Overhead Reel Rack, and 45" with the Free Standing Decoiler. |  |
| <b>Materials Formed:</b>       | Painted Steel   | 28ga. to 22ga. (.3mm to .8mm)<br>Painted, Galvanized, Aluminized |
|                                | Painted Aluminum  | .019" to .040" (.5mm to 1.0mm)                                   |
|                                | Copper  | 16 oz. to 20 oz. ¾ Hard<br>(.5mm to .7mm)                        |
|                                | Ternecoat Stainless Steel   | 26ga. (.5mm)   |
| <b>Controls:</b>               | Standard:   | Manual Control Box w/Length Control<br>Limit Switch              |
|                                | Optional:   | Computer Batch and Length Control                                |

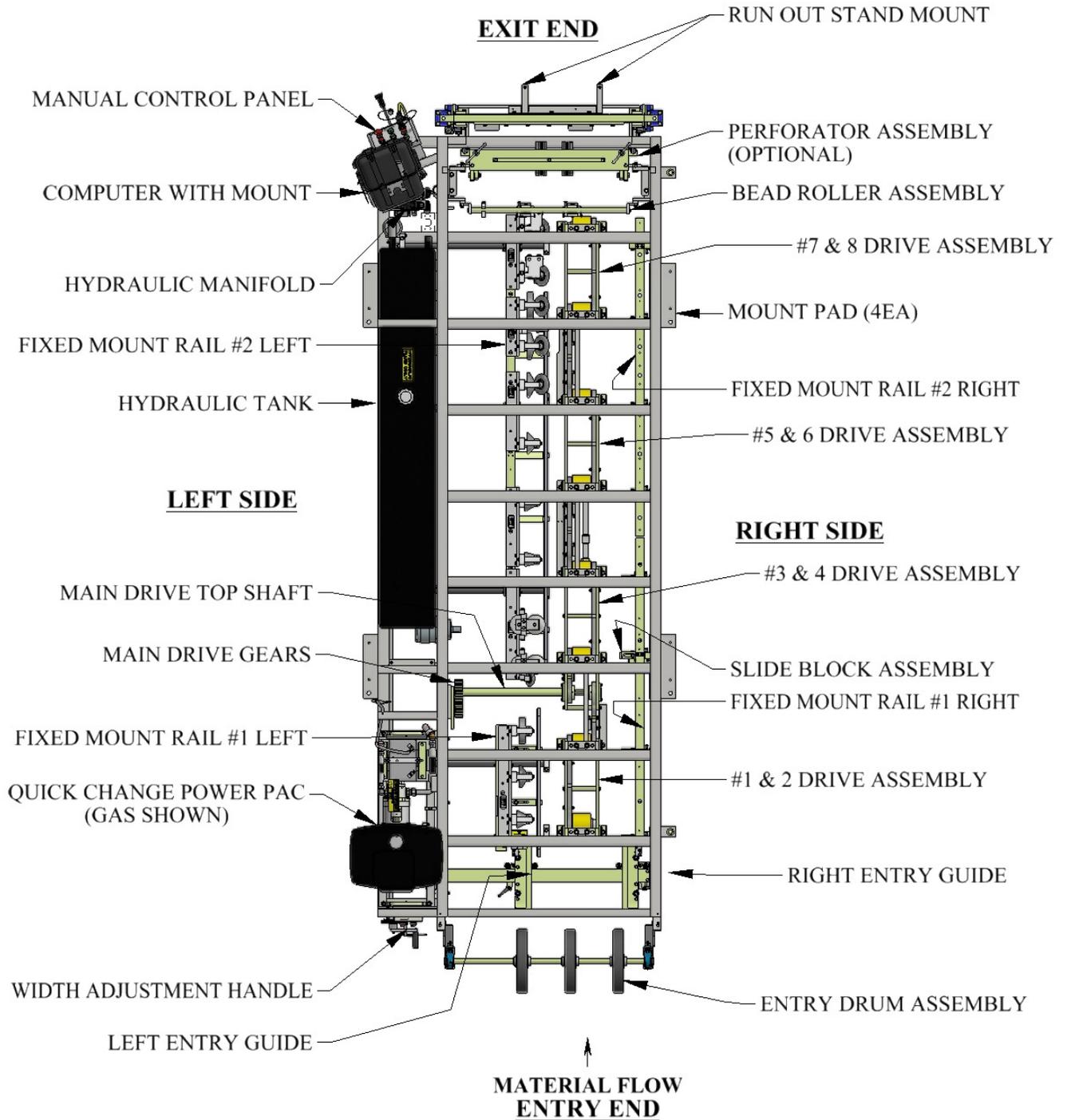
CHAPTER 2  
**PRECAUTIONS**

## **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**

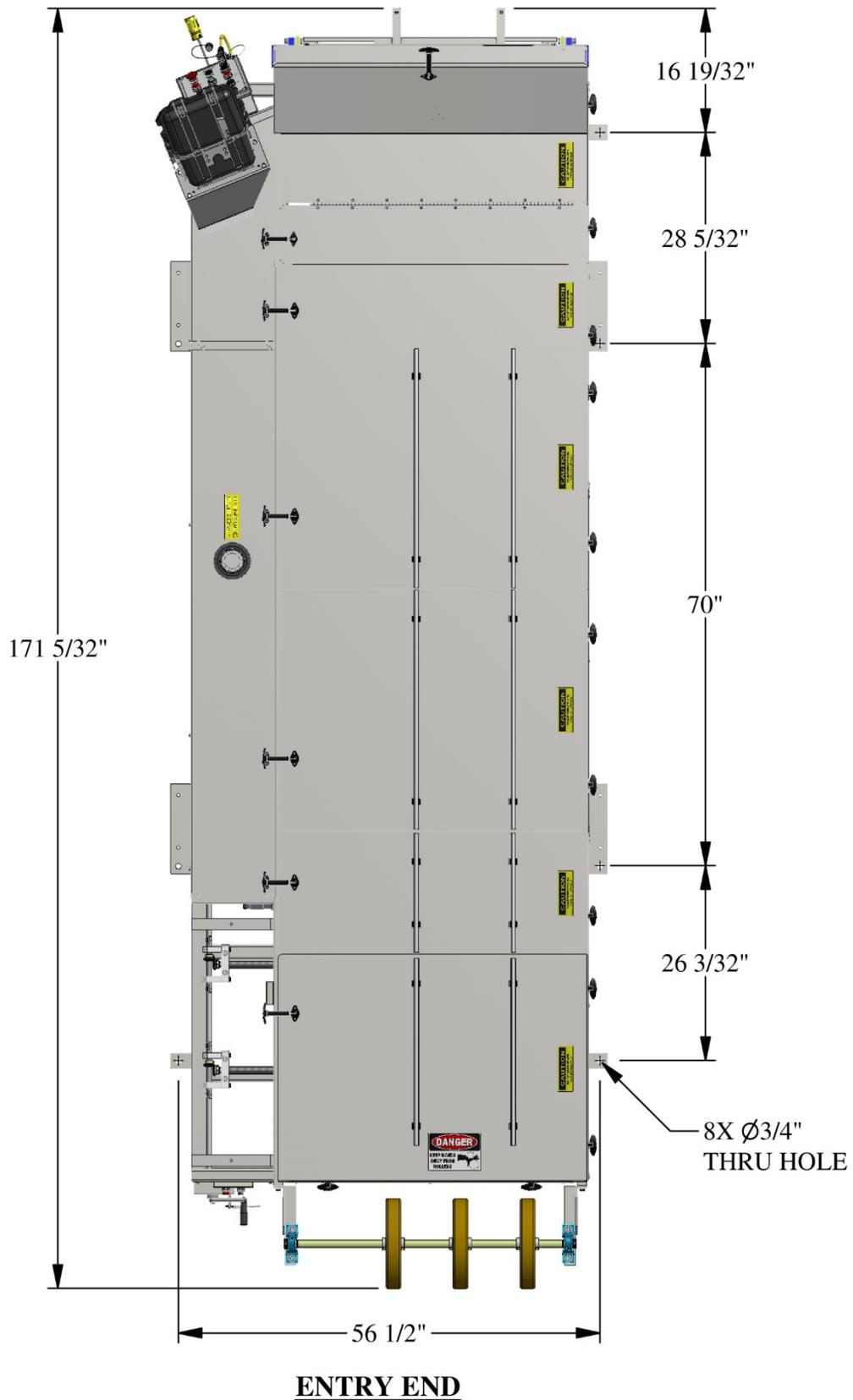
**MACHINE ORIENTATION**



**Figure 1: Machine Orientation**

CHAPTER 3  
**MACHINE ORIENTATION**

**EXIT END**



**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 3 main drive gears a minimum of every 30 hours of operation. Use of an Open Gear Spray Lubricant is recommended. (Figure 19 & Figure 20 on page 30).
8. Keep Entry Guide Carriage (Figure 3 on page 7) clean and lubricate as needed with Spray Lube.
9. Keep Bead Roller Carriage Shafts (Figure 34 on page 44) clean and lubricate with Spray Lube.
10. Lubricate 5 Acme Shafts (Figure 4 on page 8) with Spray Lube as needed.
11. Lubricate Mitre-Gears (Figure 4 on page 8) on ends of Acme Shafts with Spray Lube as needed.
12. Keep Arbor Cradles (Figure 11 on page 20) lubricated with Clear Grease.
13. Lubricate Arbor Nut (Figure 46 on page 57) using a grease gun with EP Grease when threads begin to look dry.
14. Clean Drive Rollers with soap and water and a Scotch Brite Pad. **CAUTION: Do not use harsh chemicals or solvents or damage will occur.**
15. Lubricate both faces of the Shear Blades and Dies (Figure 22 on page 35) a minimum of once daily with Spray Lube. More should be added as needed before the cut edges begin to deteriorate.

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, Bead Roller Carriage Shafts, 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

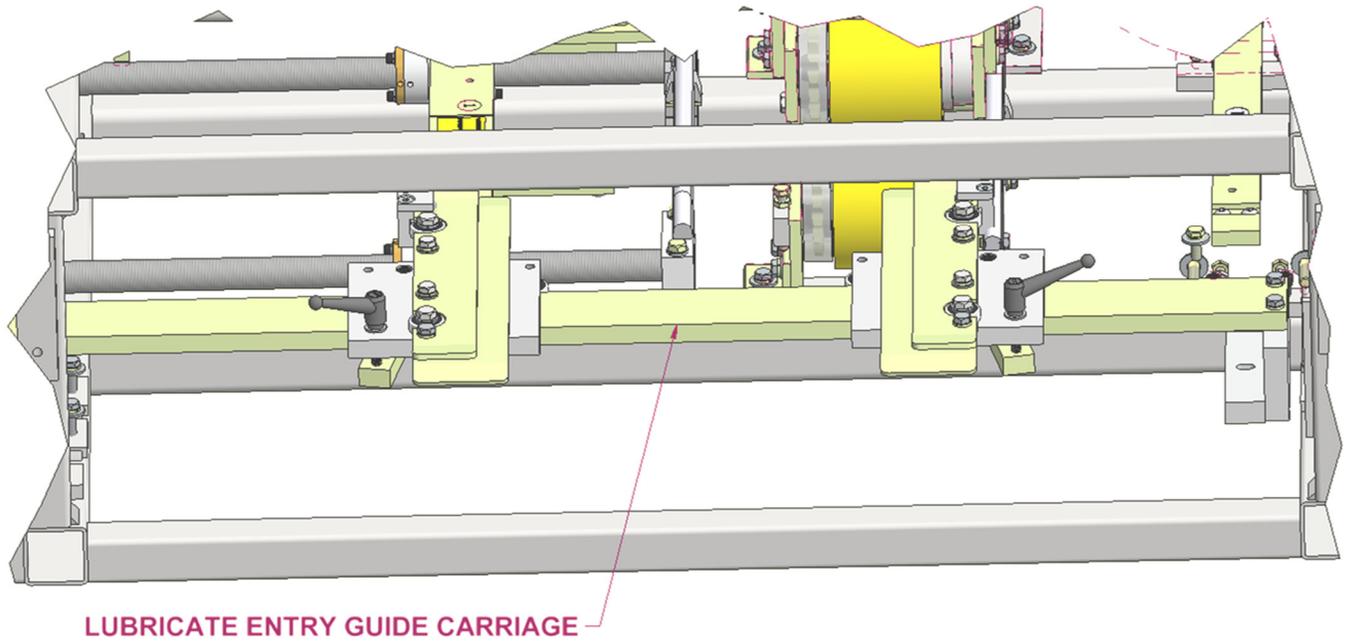
**NTM PN: HYD-200-018** - 5 Gallons

(4 Required)

**Oil for Notchers:**

It is recommend to use a punch and die oil or vanishing oil. The viscosity of the oil cannot exceed 1500 SSU.

CHAPTER 4  
**GENERAL MAINTENANCE**



*Figure 3: Entry Guide*

CHAPTER 4  
**GENERAL MAINTENANCE**

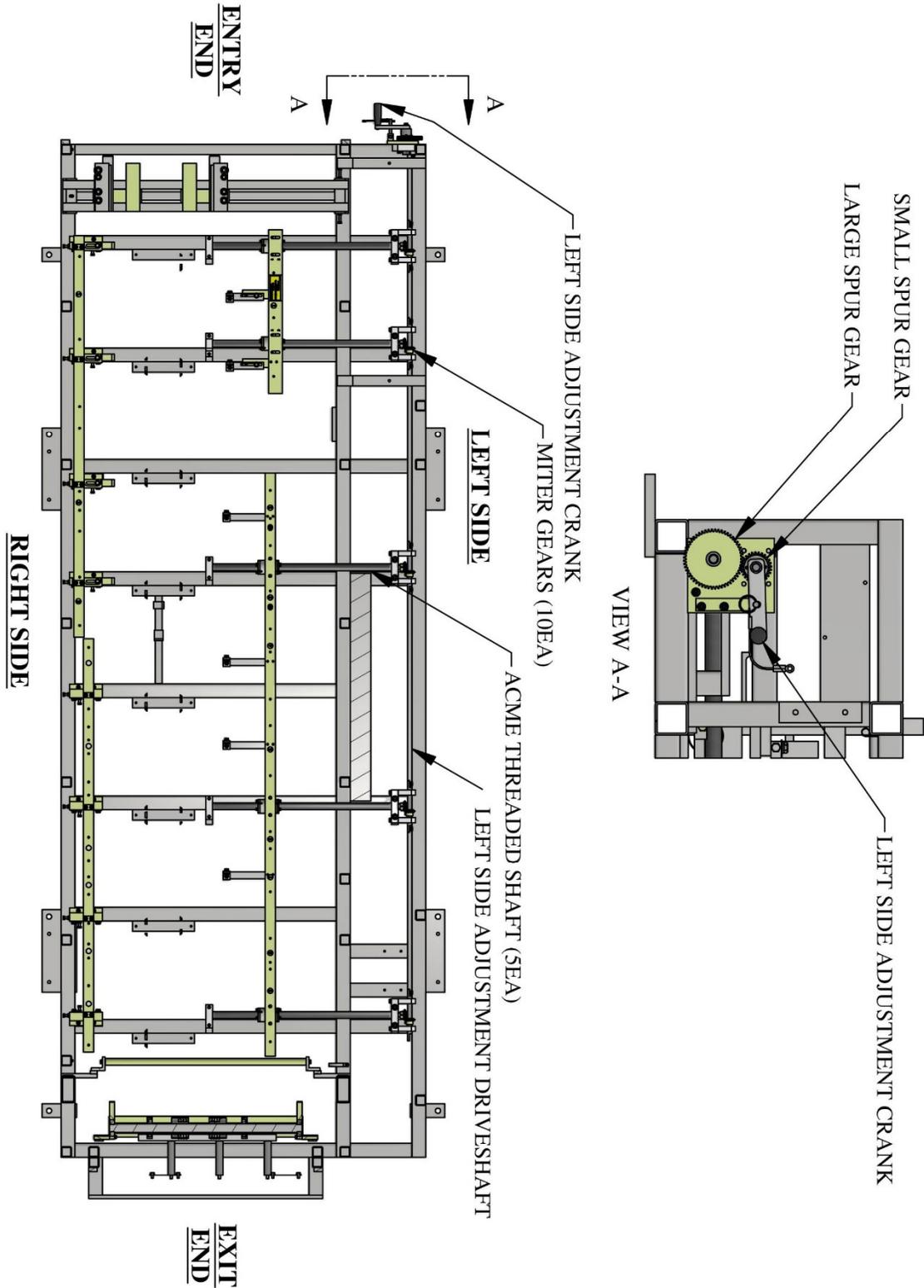


Figure 4: Acme Shafts and Left Side Adjustment

CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

## **ELECTRICAL CONTROLS AND OPERATION**

### **POWER CORD REQUIREMENTS**

For machines equipped with a QCPP-E it is very important to follow the power cord requirement 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 the 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.**

### **MANUAL CONTROL PANEL OPERATION:**

(See Figure 5 on page 11)

- A. 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.**
- B. 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 at the bottom of the Manual Control Box Assembly to run continuously.**
- C. START FEED (Green button at Entry and Exit End)  
This button is used to activate the drive system of the machine. (Jog only unless limit switch is plugged in)
- D. STOP FEED (Red button at Entry and Exit End)  
This button acts as an emergency stop for the drive system when using the Length Control Limit Switch. **Pressing either the entry or exit button will stop the drive system of the machine in case of an emergency.**
- E. SHEAR DOWN (Green button)  
Pressing this button once will cycle the shear to the bottom of its stroke and return the shear blade back to the top or home position. This is one shear cycle
- F. SHEAR UP (Red button)  
Pressing this button during the down cycle of the shear will immediately send the shear blade back to the top or home position.
- G. EMERGENCY STOP-POWER ON (Raised Red Mushroom button)

## **ELECTRICAL CONTROLS AND OPERATION**

### **Function #1 (Power On)**

Pull this button OUT prior to starting the machine.

### **Function #2 (Emergency Stop-Power Off)**

Once the machine is running, pushing this button in will stop all functions and completely shut down the machine including the engine. If the shear is in the down cycle the shear blade will freeze in its current position. The shear will default back to the top or home position once the engine or motor is re-started. This button is also used to shut the machine down when not in use. *Failure to push this button in prior to storage, even overnight, could result in a dead battery on gas engine models.*

### H. ENGINE START (Green button)

**The Emergency Stop button must be pulled out before the Start Button will function.**

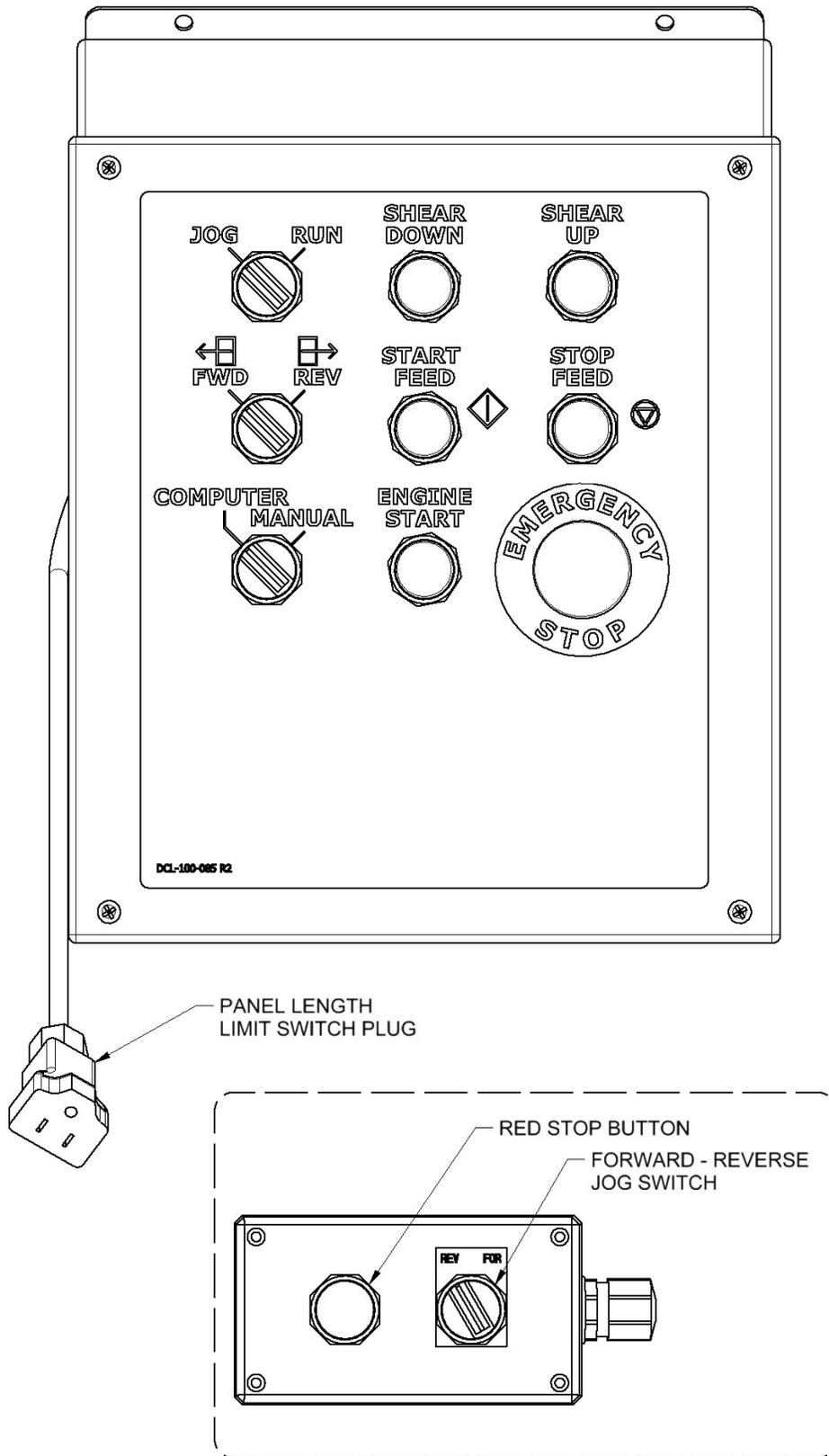
Press this button momentarily to start the Electric Motor machine.

Press and hold this button until the engine starts on a Gas Engine model.

### I. COMPUTER/MANUAL Switch

Set this switch to COMPUTER in order to run the machine automatically using the Batch and Length Controller described in Appendix A. Set the switch to MANUAL to run the machine in manual mode. See the Remote Limit Switch section on page 13 for more information.

CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**



**Figure 5: Controls**

CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

**COMPUTER CABLE**

(See Figure 6)

- A. The computer cable is the communication cable for the touchscreen of the Batch and Length Controller described in the Computer Batch and Length Control Computer covered in Appendix A. This cable must be connected to the face plate of the touchscreen in order for the machine to operate in automatic mode.
- B. The touchscreen should be removed from the machine and stored somewhere safe when the machine is transported. Disconnect the cable and put the attached dust cap over the end to prevent dust and moisture from getting into the exposed end. Use the provided cable clip to keep the end of the cable from swinging during transport.



**COMPUTER CABLE**

**Figure 6: Computer Cable**

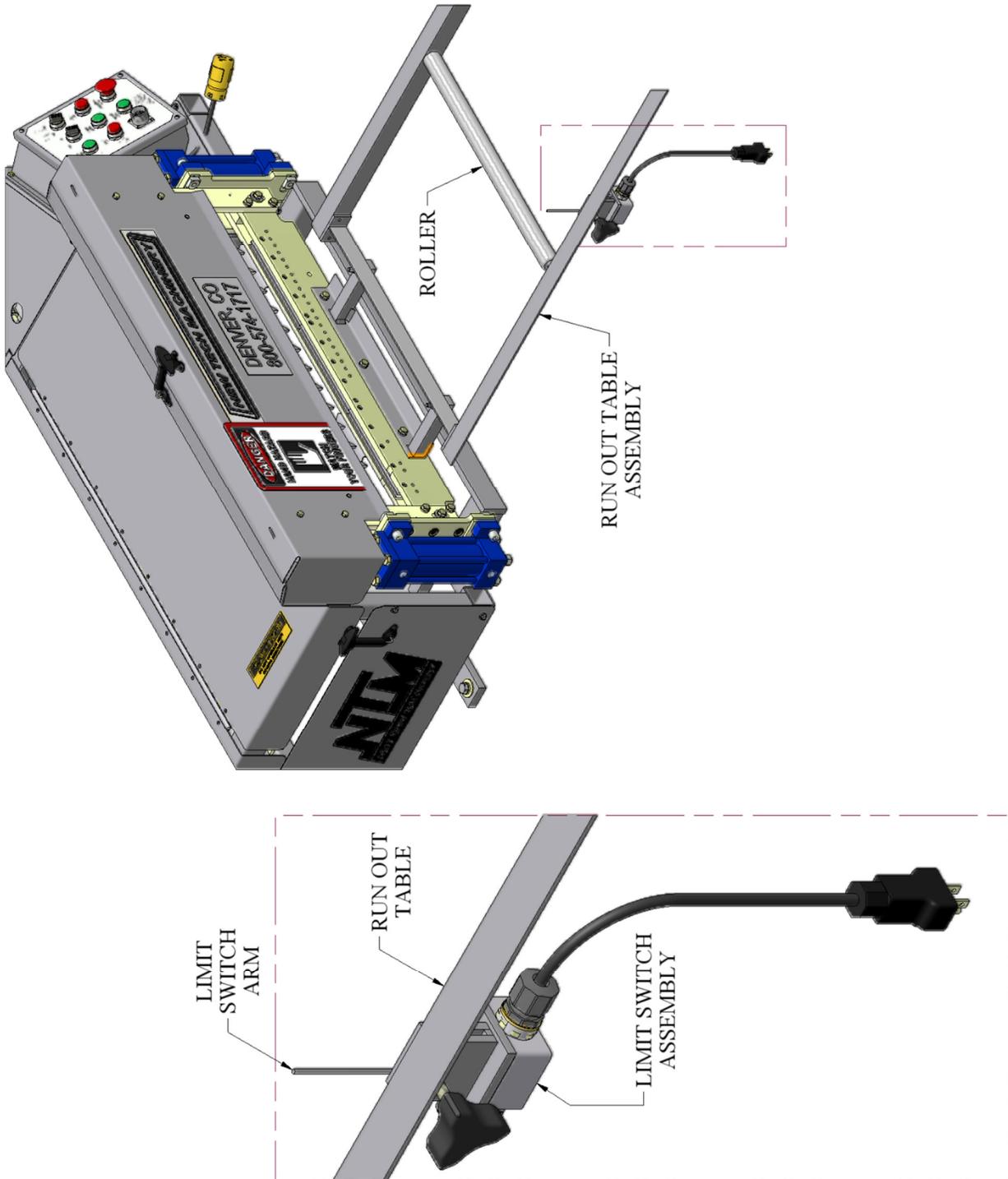
CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

**REMOTE LIMIT SWITCH**

(See Figure 7 on page 14.)

**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. The Remote Limit Switch is designed to attach to the right side of the optional Run Out Tables (see page 122) 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 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 let 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 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 the machine 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 7: Run Out Table and Remote Limit Switch**

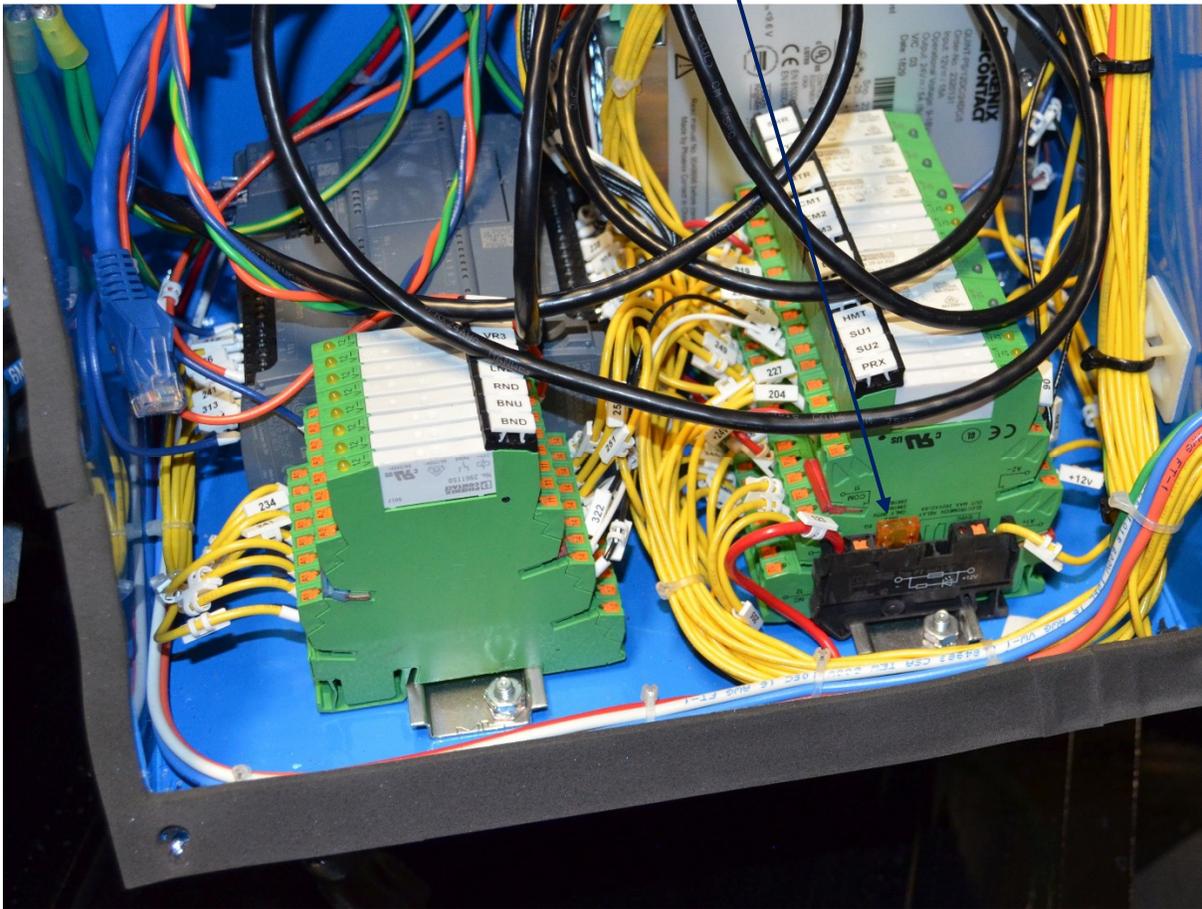
CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

**FUSES**

(Figure 8)

All machines, gas or electric powered, have a 5-amp fuse inside the Electrical Control Panel Assembly. This fuse protects the electrical components. If the fuse is blown, all functions of the machine except Motor Start will be inoperable. **To replace this fuse:** Remove all 4 cover screws and open the front panel of the Control Box. Locate the automotive style in-line fuse near the bottom right hand corner. Visually check the fuse. If the fuse is bad, replace with a new fuse.

**FUSE LOCATION**



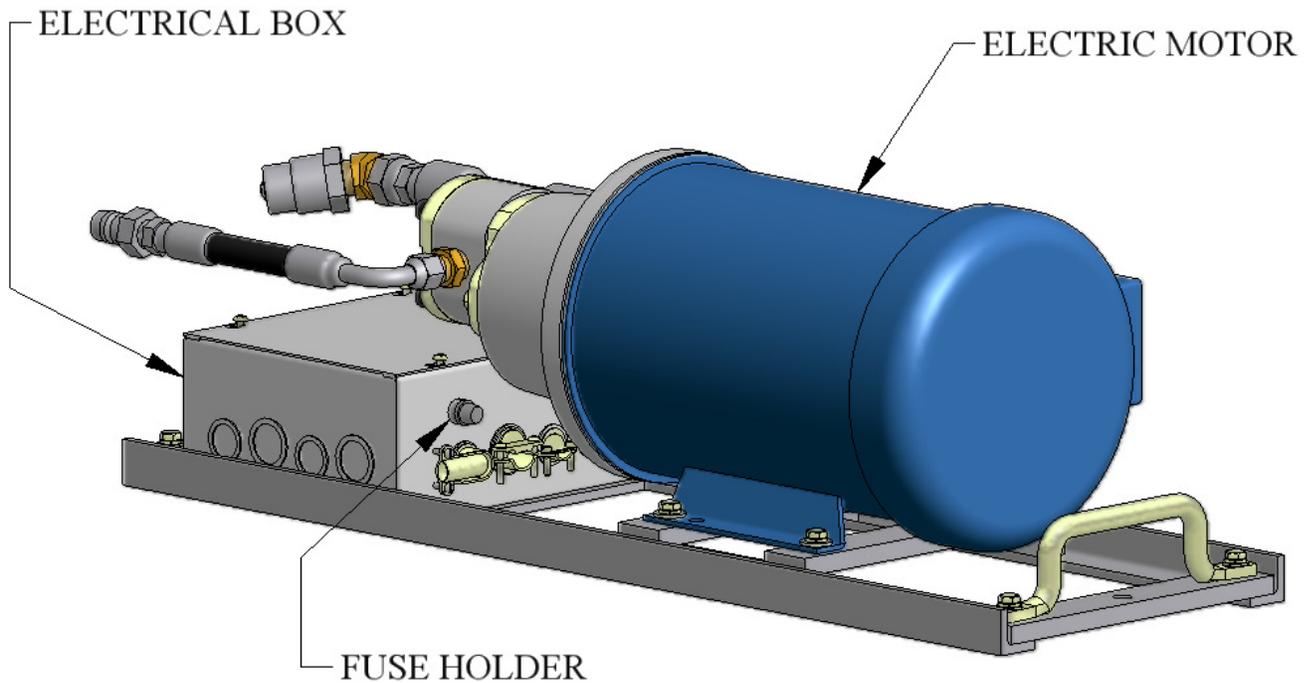
**Figure 8: Main Control Box Fuse**

CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

**ELECTRIC MOTOR MACHINES**

(Figure 9)

Electric motor machines have an additional 10-amp time delay fuse protecting the logic circuit of the Contactor Box. This fuse holder is mounted in the side or top cover of the contactor box located next to the electric motor. Access can be gained by removing the cover of the Quick Change Power Pack. This is a panel mounted, spring loaded fuse holder. **To replace this fuse:** Push in on the cap and turn counterclockwise to release fuse. Check fuse with a continuity tester. If the fuse is bad replace with a new fuse. To re-install, insert fuse into cap. Install fuse and cap assembly into receptacle, push down and turn clockwise to lock in place.



*Figure 9: QCPP E Fuse Location*

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

## **REEL STANDS, REELS AND EXPANDABLE ARBORS**

### **EXPANDABLE ARBOR**

(Figure 10)

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”.

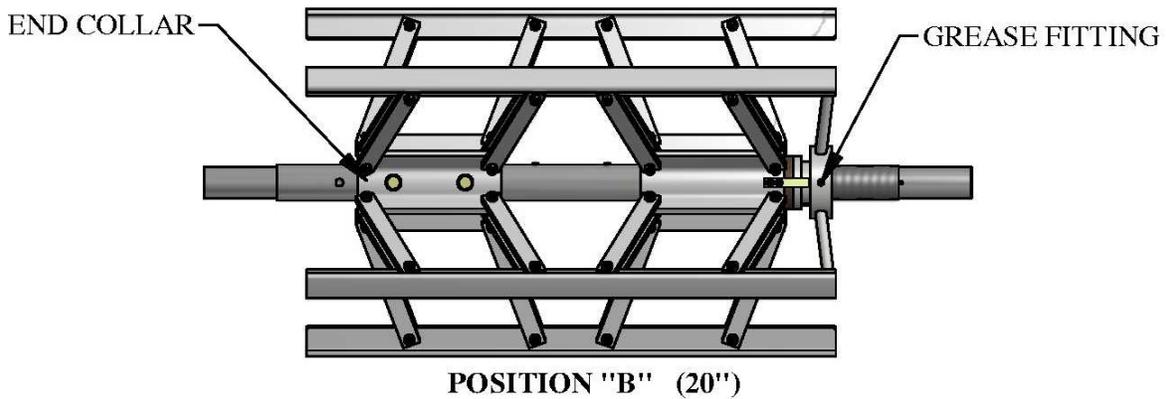
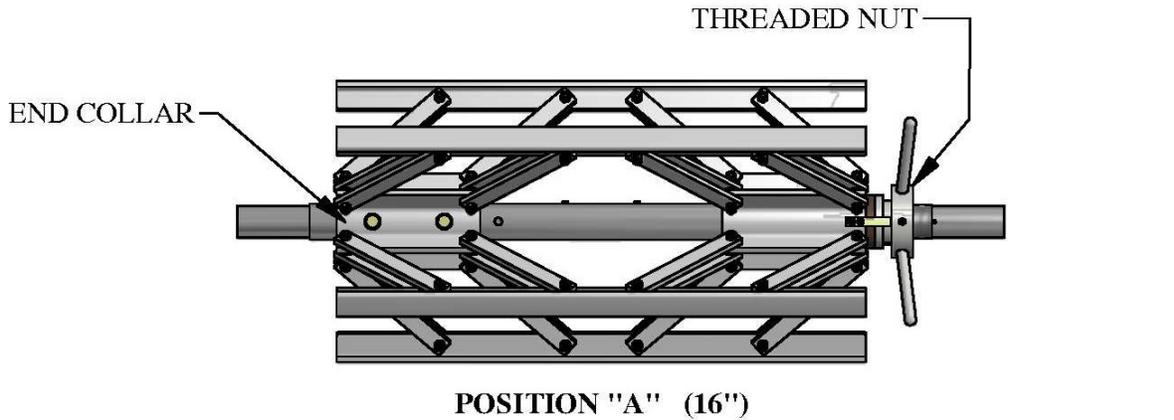
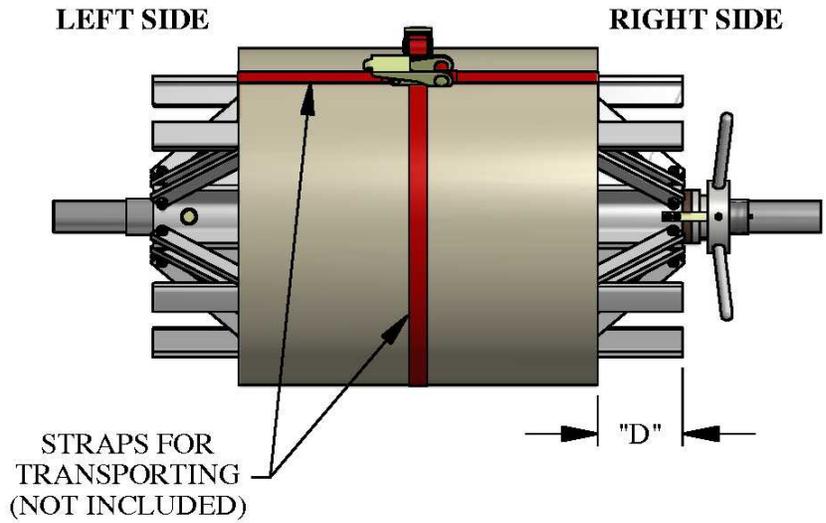
To adjust from one position to the other, remove 2 screws “C” until end collar is free to slide. Slide the collar to the inside position for 20” ID or outside position for 16” ID coil. Align the holes in the collar to the respective threaded holes in the reel shaft. Re-insert and tighten "C" bolts to 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. Using the Reel Set Up Chart, (Figure 10), find the “D” dimension that corresponds to the profile being used.
5. Slide the arbor left or right to get the correct “D” dimension measuring from the edge of the coil to the end of the Support Bar on the Threaded Nut side.
6. Finish by rotating the Threaded Nut clockwise until the Support Bars are very tight against the inside of the coil. Verify that dimension “D” is correct, and re-adjust if necessary. The Coil and Arbor are now ready for loading. (see LOADING REELED COIL on page 21)

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

| SET-UP CHART |        |
|--------------|--------|
| PROFILE      | "D"    |
| BP           | 2"     |
| FF100        | 7/8"   |
| FF150        | -1/8"  |
| FWQ100       | 1/2"   |
| FWQ150       | 0"     |
| SS100        | 1-1/8" |
| SS150        | 5/8"   |
| SS200/210A   | -1/4"  |
| SS275        | -1/4"  |
| SS450/450SL  | -1/4"  |
| SS550        | -1/8"  |
| SS675        | -3/4"  |
| TRQ250       | 0"     |



*Figure 10: Expandable Arbor Set-Up*

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

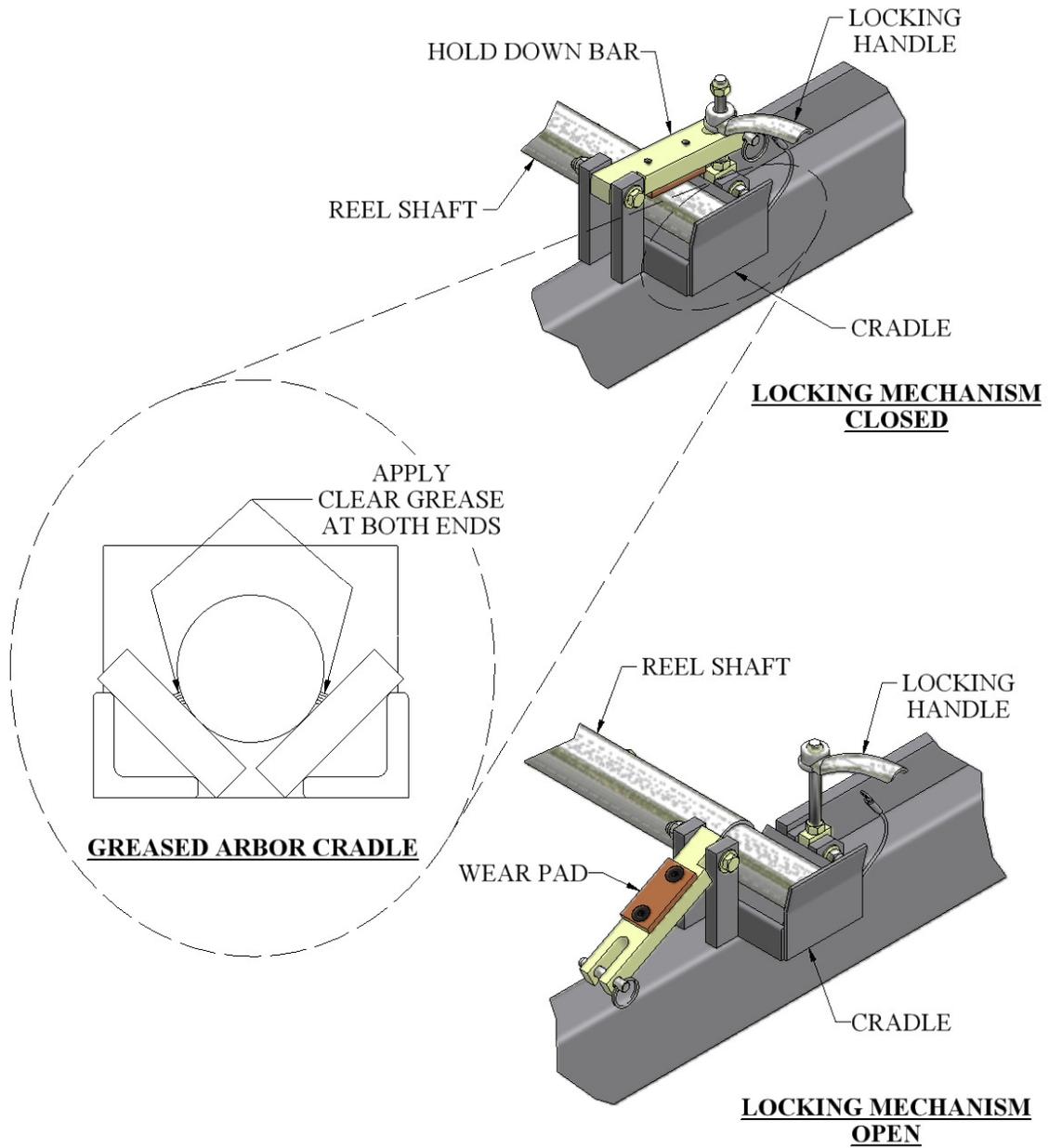
**CAUTION: Always use properly rated lifting devices to load and unload coils.**

Maximum Capacity / Reel: **3,000 lbs.**

Total Capacity for Reel Stand: **6,000 lbs.**

1. The reel shafts must rest in the cradles on the reel rack. Keep the cradles lubricated with synthetic lube to minimize wear. (Figure 11)
2. Use the Hold Down Bars on each cradle to secure the coil and reel to the reel stand during both operation and transit of the machine. The Hold Down Bracket should be used to keep the coil from uncoiling too fast during the fabrication of panels. Apply just enough drag to keep coil tensioned. (Figure 11)  
**Caution: Do not over tighten Hold Down Bars during machine operation.** This will cause excessive load on the drive and electrical systems and premature failure will result.  
**Do tighten Hold Down Bars** tightly prior to transport of the machine.
3. If a Remote Decoiler is used it should be placed 8 to 10 feet behind the machine. Align the decoiler as close as possible to the Right Side Entry Guide, 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 11: Expandable Reel Assembly**

## **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.**

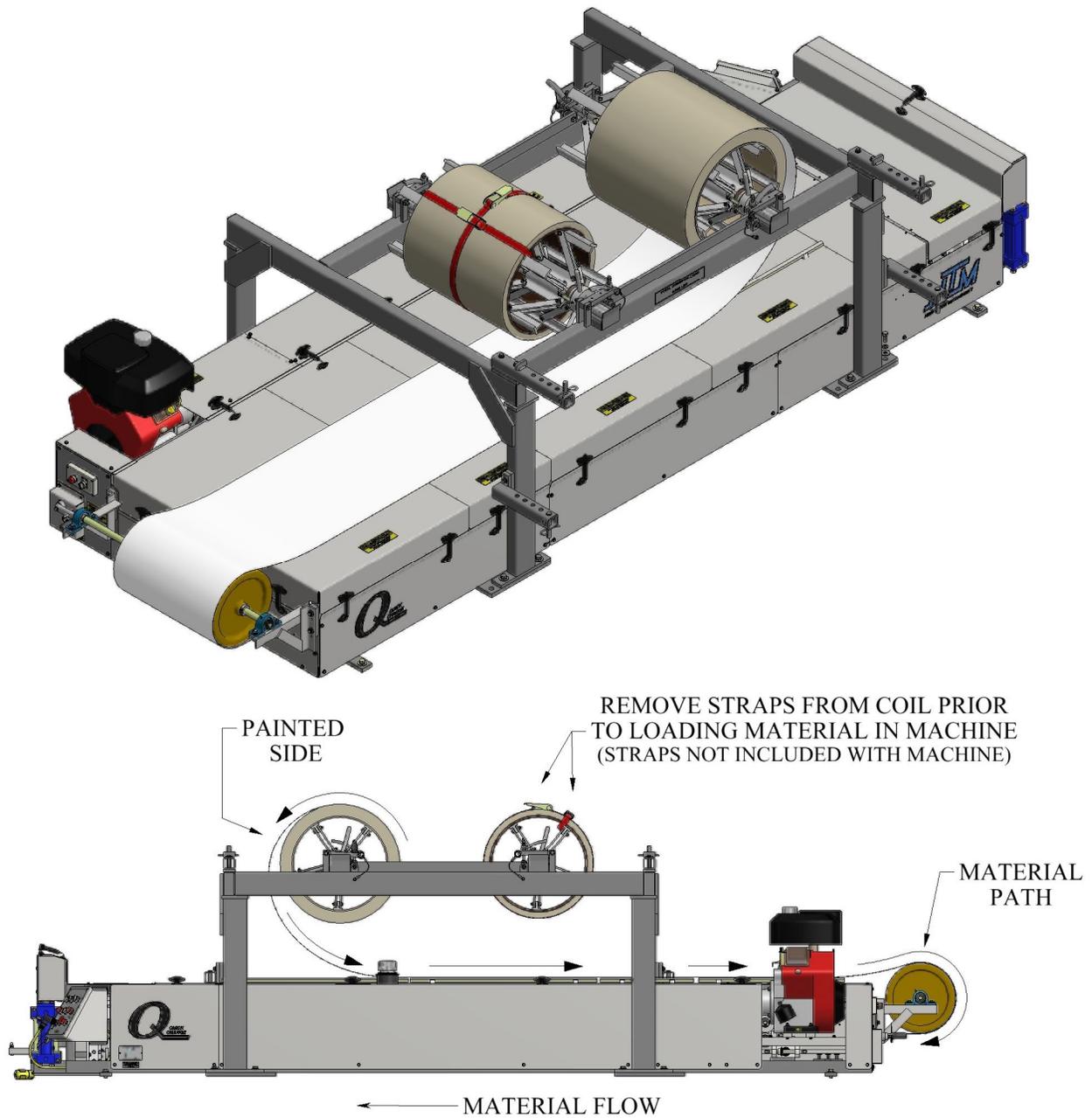
**The Lifting Holes in the Fixed Reel sides are provided to make loading safer and easier.**

**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 11).
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 12) then remove the lifting device.
3. Rotate the Hold Down Bars (Figure 11) 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 10).

**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**



**Figure 12: Material Routing**

**NOTE:** If you are producing the **FWQ100** or **FWQ150** profile then the coil should be loaded in the opposite orientation as shown above. The painted side should face down as it enters the machine.

CHAPTER 7  
**HYDRAULIC SYSTEMS**

## **HYDRAULIC SYSTEMS**

### ***Maintenance***

(Figure 13)

The hydraulic system in the machine is very durable and reliable. The system 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. The fluid level should be approximately 6" below the top of the filler neck. When checking the fluid level, also note the color and condition of the fluid which 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.   |

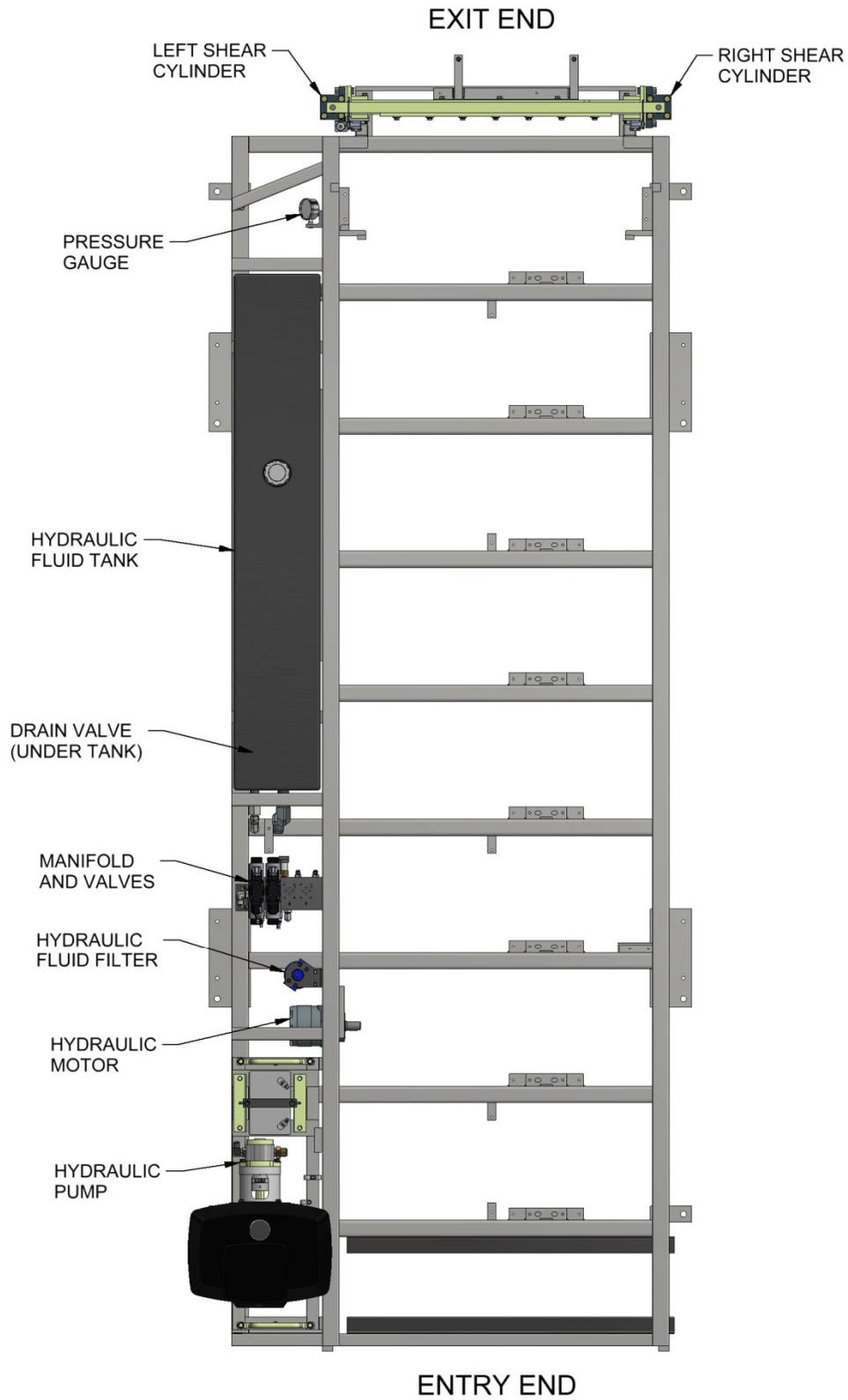
### ***Changing Hydraulic Fluid and Filter***

(Figure 16 & Figure 17)

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. The filter element should be replaced when the red Replacement Indicator sticks up. To change the fluid and filter:

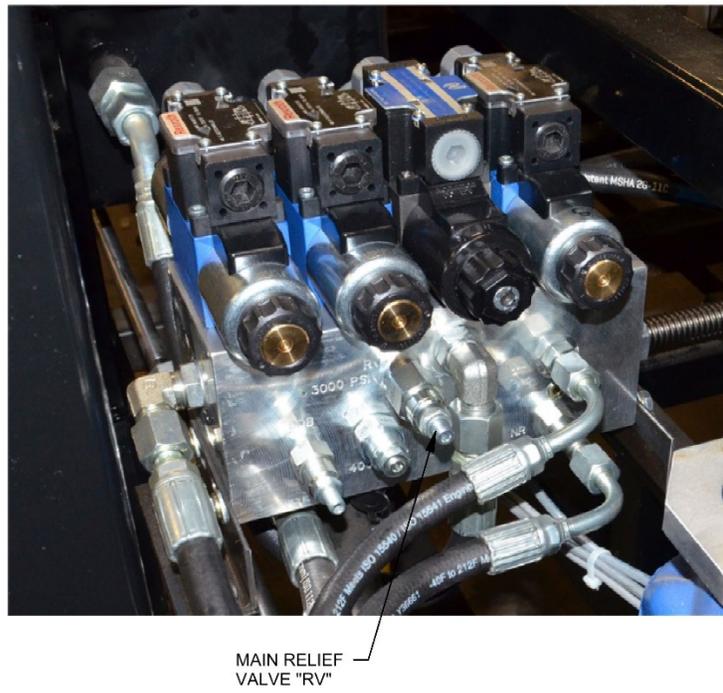
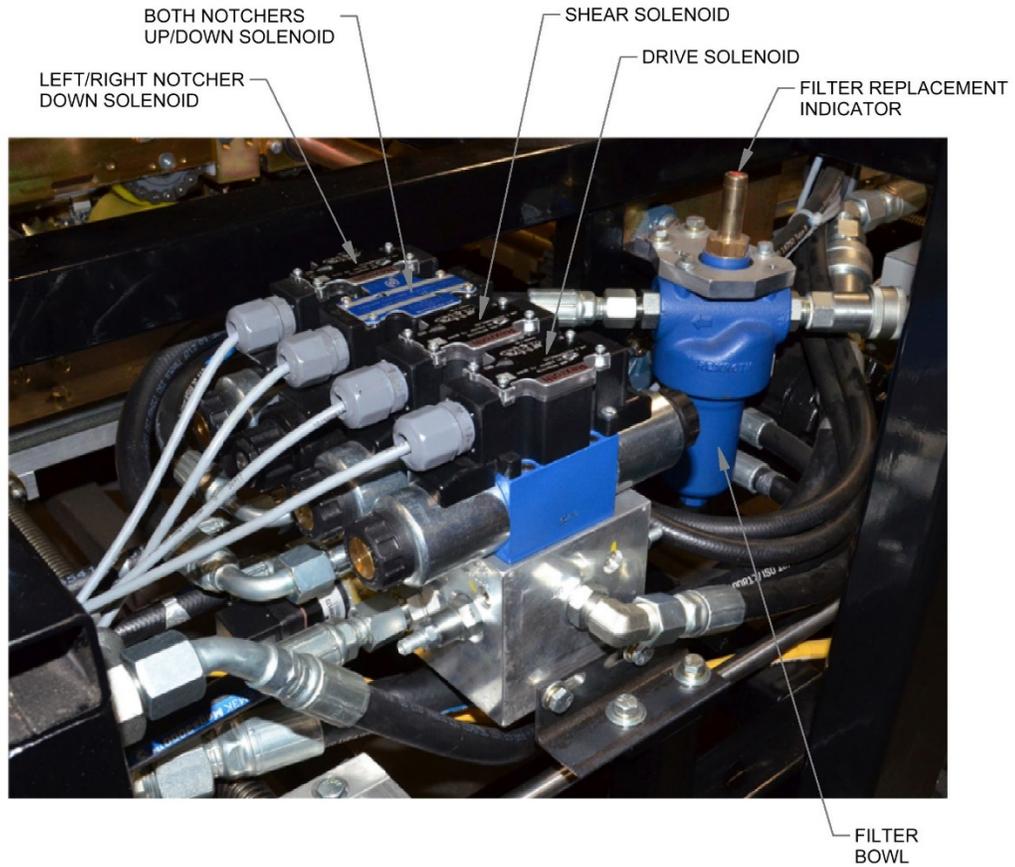
1. Remove the Left Side Covers and set aside.
2. Locate the Drain Hose coiled up under the tank near the manifold.
3. Remove Filler Cap.
4. Uncoil Drain Hose and hang over the side of the machine and trailer.
5. Place a container under the hose to catch the old fluid.
6. Open the Drain Valve and drain the fluid into the container. Discard of Properly.
7. Unscrew the Filter Bowl and discard the old filter element.
8. Install the new filter element (Rexroth R928006647 for machines with Rexroth filters or Hydac 0055D0100N for machines with Hydac filters) and re-attach the Filter Bowl.
9. Fill the tank with fresh 32 weight fluid until the level is **6" below the top of the Filler Neck** (approximately 15-16 gal).

CHAPTER 7  
**HYDRAULIC SYSTEMS**



*Figure 13: Hydraulic System – Overview*

CHAPTER 7  
**HYDRAULIC SYSTEMS**

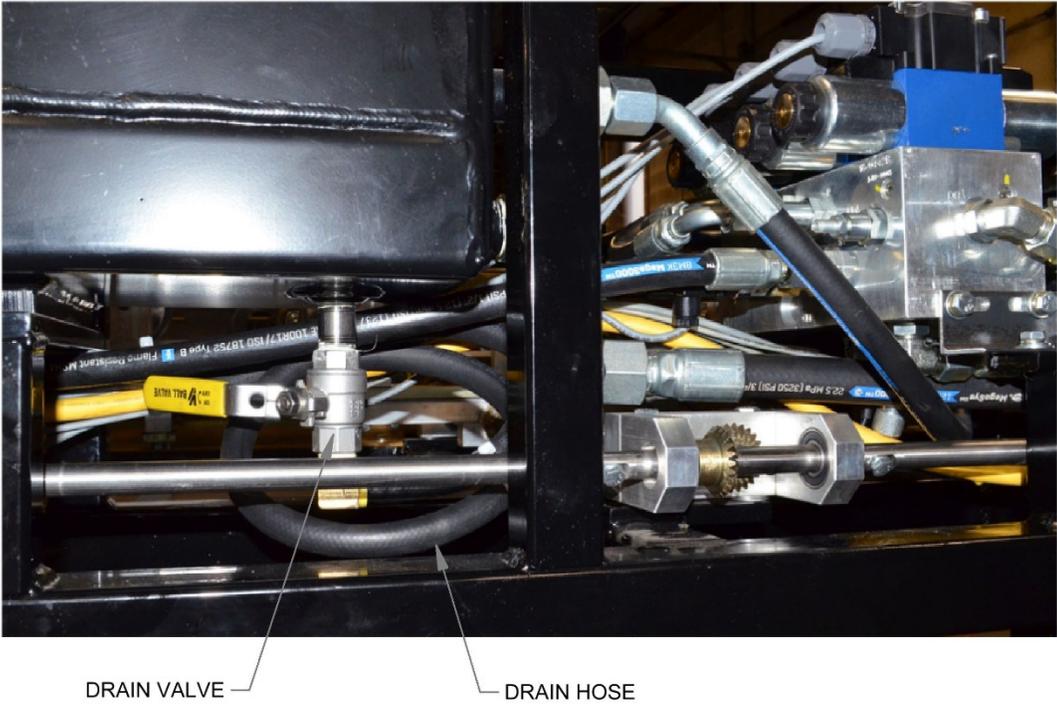


**Figure 14: Hydraulic Manifold**

CHAPTER 7  
**HYDRAULIC SYSTEMS**

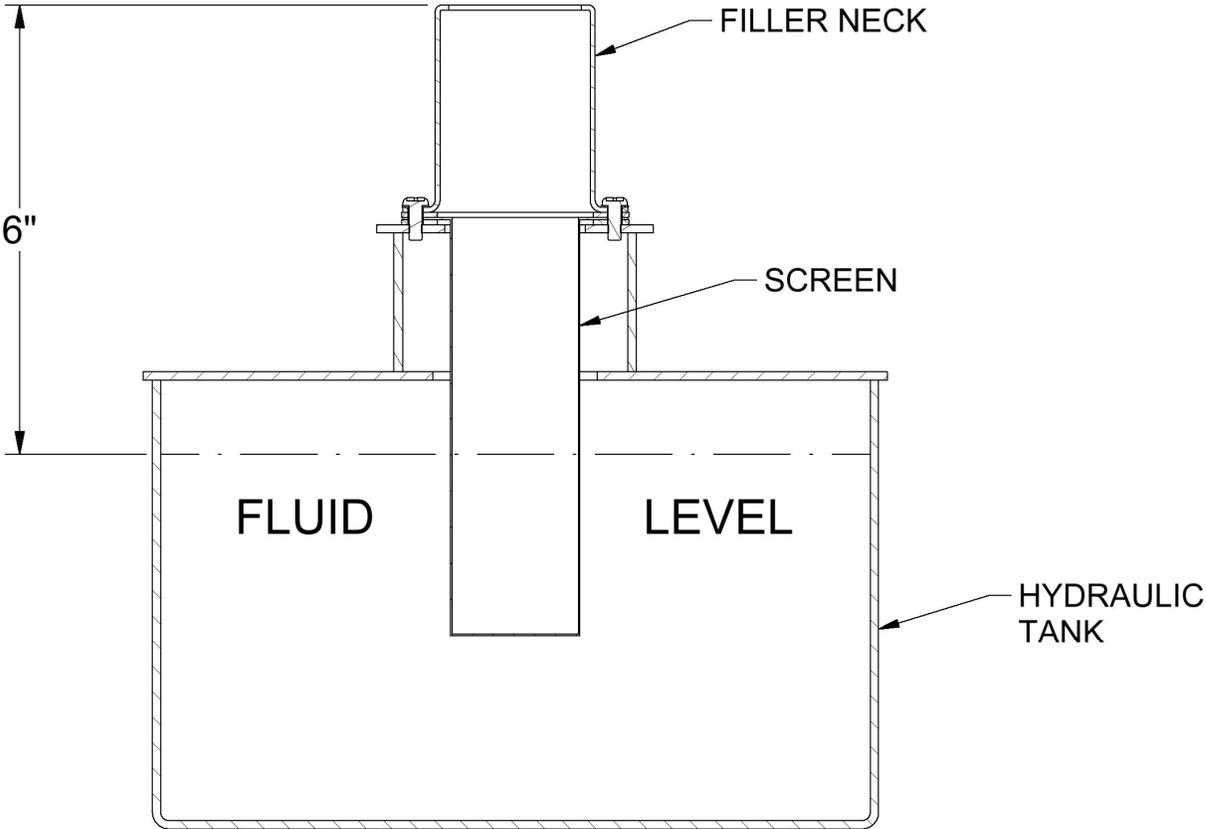


*Figure 15: Quick Disconnects*



*Figure 16: Tank Drain*

CHAPTER 7  
**HYDRAULIC SYSTEMS**



*Figure 17: Hydraulic Fluid Level*

CHAPTER 8  
**DRIVE SYSTEM**

## DRIVE SYSTEM

(Figure 18, Figure 19 & Figure 20)

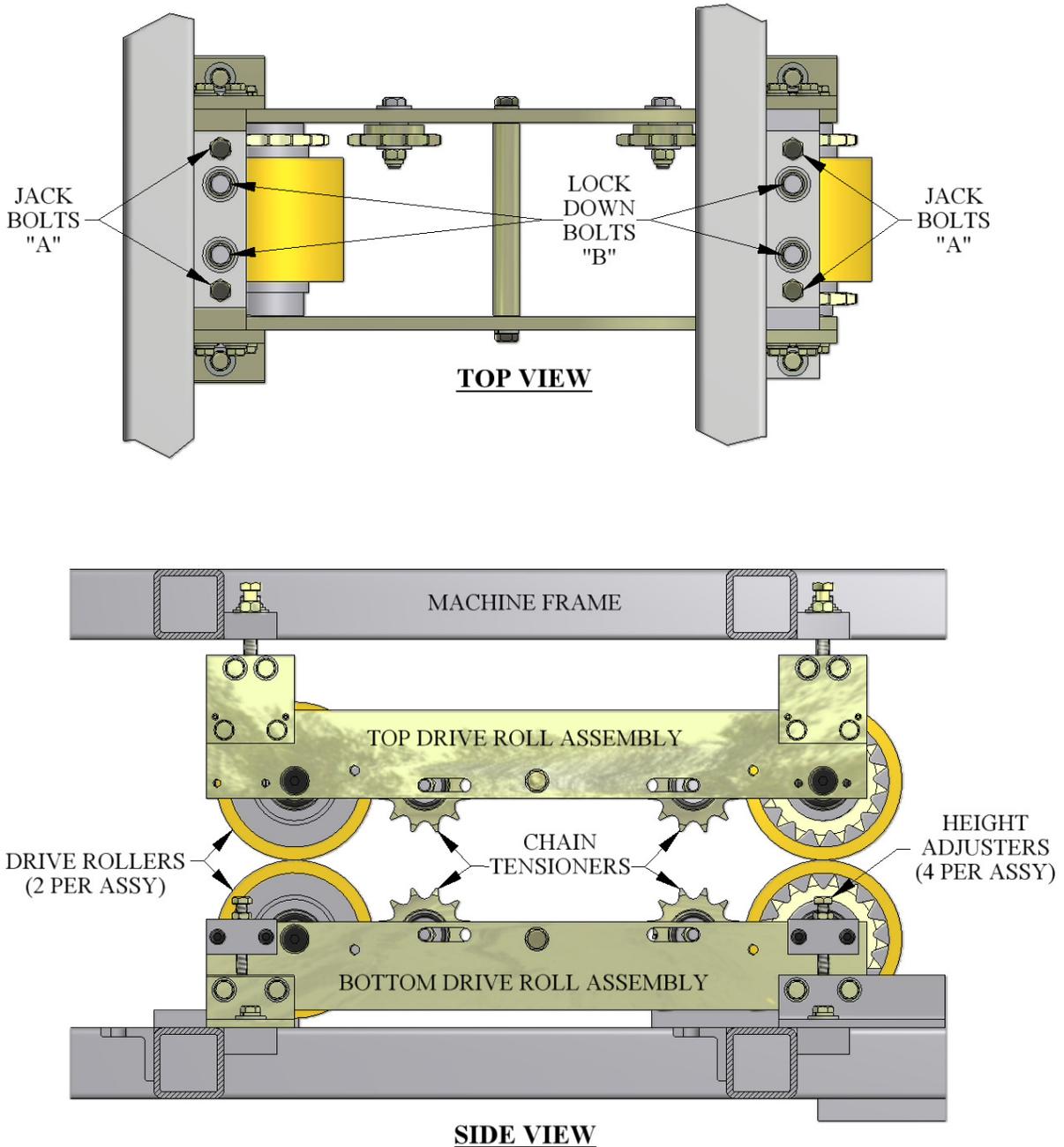
The drive system of the machine consists of eight top and eight bottom polyurethane drive rollers. They are divided into groups of 2 per assembly making 4 Top Drive Roll Assemblies and 4 Bottom Drive Roll Assemblies. They are connected together via chain and sprocket and there are chain tensioner's on 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. though 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.** It is important to adjust only one end of each assembly at a time to maintain side to side alignments.  
**To add pressure:** Loosen two Lock-Down Bolts "B"  $\frac{1}{8}$  of a turn. Loosen lock nuts on two corresponding Jack Bolts "A". Tighten Bolts "A"  $\frac{1}{8}$  of a turn. Re-tighten 2 lock nuts on Jack Bolts "A" to lock in adjustment. Repeat this procedure on the other end of the Drive Assembly and repeat for the other 3 drive assemblies. Test for result and repeat one more time if necessary.  
**To remove pressure:** Loosen two lock nuts on Jack Bolts "A". Loosen two Jack Bolts "A"  $\frac{1}{8}$  of a turn. Tighten two corresponding Lock-Down Bolts "B"  $\frac{1}{8}$  of a turn. Tighten two lock nuts on Jack Bolts "A" to lock in adjustment. Repeat this procedure on the other end of the Drive assembly.
2. There are three different chain tensioners on the machine.
  - A. The first are located in slots on the side plates of the Drive Roll Assemblies. They follow the chain locations alternating from one side to the other. To adjust, slightly loosen the nut on the bolt holding the tensioner sprocket in place. Using a dead blow hammer tap the tensioner assembly toward the drive roller until the chain is snug. Lock into position by tightening the bolt on the assembly.
  - B. The second type is similar. These are located on the top and bottom spreader bars located between the Drive Roll Assemblies. These are used in the same way except there is a bolt located in the edge of the slot on the assembly used to push the tensioner assembly toward the Drive Roller to tension the chain.
  - C. The third is located on the Top #1 Spreader Bar between the sprocket and drive roller. (see detail 'A' Figure 20) Loosen two "D" bolts enough to move the tensioner assembly up toward the chain until snug. Re-tighten the two "D" bolts.
3. The chains used in this system are #50 Roller Chain. See Figure 20 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.**

CHAPTER 8  
**DRIVE SYSTEM**

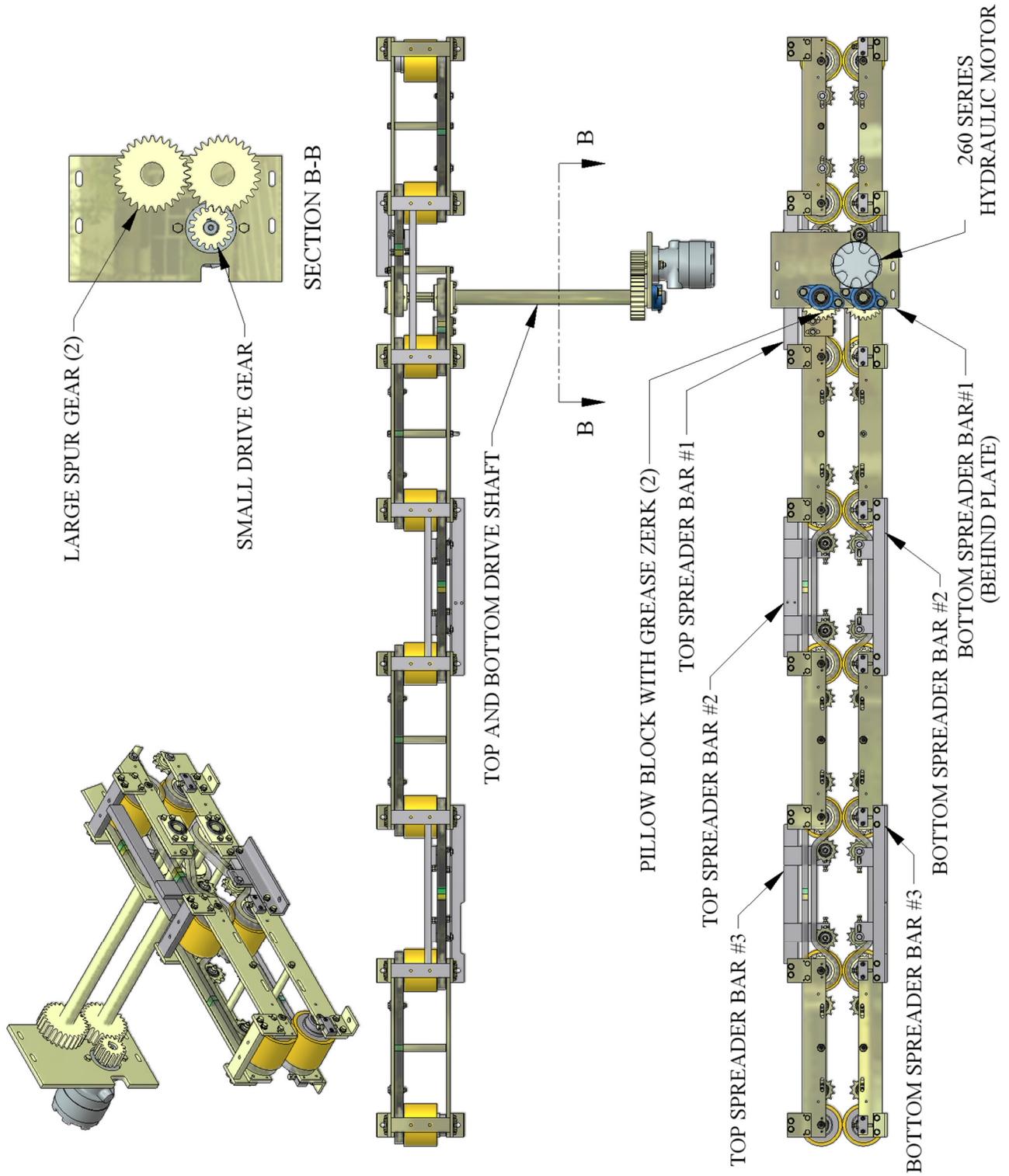
Clean the rollers with mild soap and water and a rag. **Caution must be taken around the moving parts of the machine during the cleaning process.**

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.



**Figure 18: Drive Roll Assembly View**

CHAPTER 8  
**DRIVE SYSTEM**



**Figure 19: Gears and Shafts**

CHAPTER 8  
**DRIVE SYSTEM**

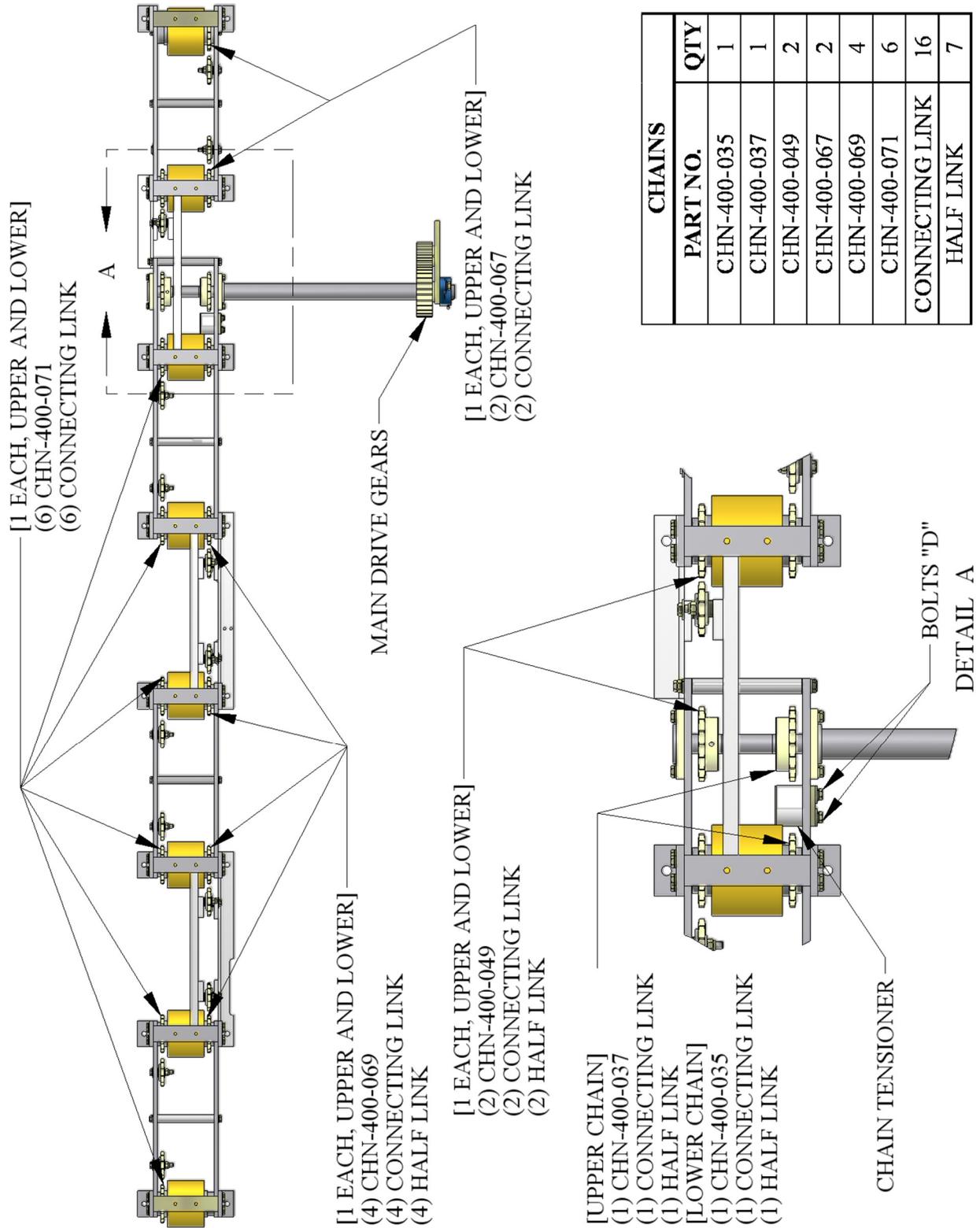


Figure 20: Chains Upper and Lower

CHAPTER 9  
**SHEAR ASSEMBLY**

## SHEAR ASSEMBLY

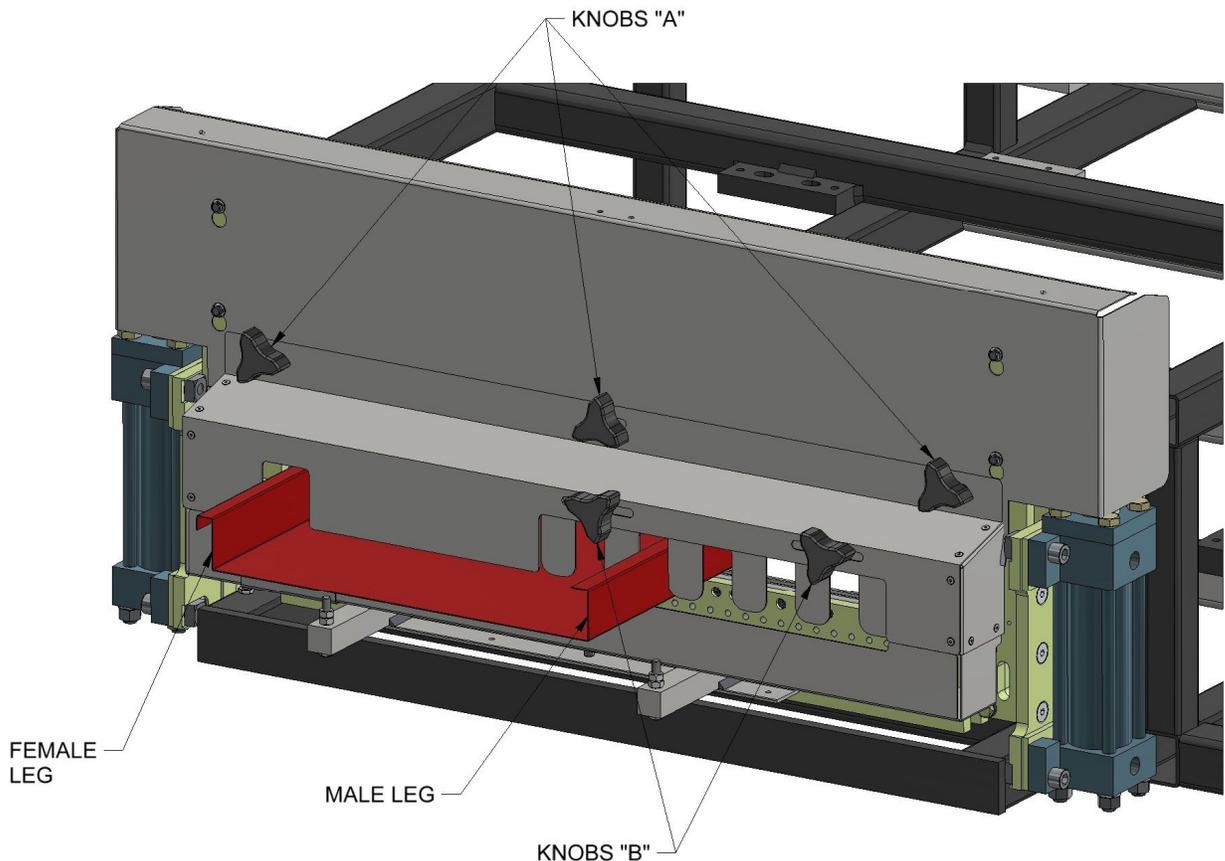
### SHEAR GUARD

The shear is extremely dangerous and can cause serious bodily injury or death. For this reason, the machine is provided with a guard to prevent the operator from reaching into the shear. **It is very important that the guard remain in place at all times when the machine is in operation.** The guard should only be removed for maintenance and adjustment of the shear when power is removed from the machine.

#### Shear Guard Adjustment:

When changing the panel width or profile it may be necessary to adjust the position of the openings in the shear guard to allow the panel to exit the machine. Follow the procedure below and refer to Figure 21.

1. Jog the material forward until the panel is about 1-2” away from the shear guard.
2. Look through the opening for the female leg. If it looks like the panel will hit the guard, loosen Knobs “A” and adjust the shear guard as needed. Re-tighten Knobs “A”.
3. Look through the openings for the male leg. If it looks like the panel will hit the guard, loosen Knobs “B” and adjust the sliding plate until one of the openings lines up with the male leg. Re-tighten Knobs “B”.



**Figure 21: Shear Guard Adjustment**

CHAPTER 9  
**SHEAR ASSEMBLY**

## **OPERATION**

Push the **SHEAR DOWN** button to activate the shear cycle and cut material. **IN CASE OF AN EMERGENCY: Push the SHEAR UP button during the down cycle to immediately send the shear up to the home position.**

The shear is electrically activated and hydraulically driven.

The two Top Limit Switches and single Bottom Pressure 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 Pressure Switch sends the shear back up once the set pressure is reached.

## **SHEAR ADJUSTMENTS**

Bottom Shear Dies (Detail A - Figure 23)

1. 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".
2. Tightening bolts "B" will lower the shear, and loosening them will raise the shear. 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".

## **CHANGING AND ADJUSTING SHEAR DIES AND BLADES**

The Entry and Exit Shear Dies are specific to each roller set and they may need to be changed when changing profiles. The Dies must be adjusted to the proper distance from the vertical legs of the panel. The outside vertical leg of the male and female Entry Dies should be approximately 1/32" away from the outside of the vertical legs of the panel. The Exit Dies should be slightly to the outside of the male and female Entry Dies so that after a cut is made, the panel does not hang up on the Exit Dies. Follow the procedure below to make the adjustments.

## **ADJUSTING THE ENTRY AND EXIT SHEAR DIES**

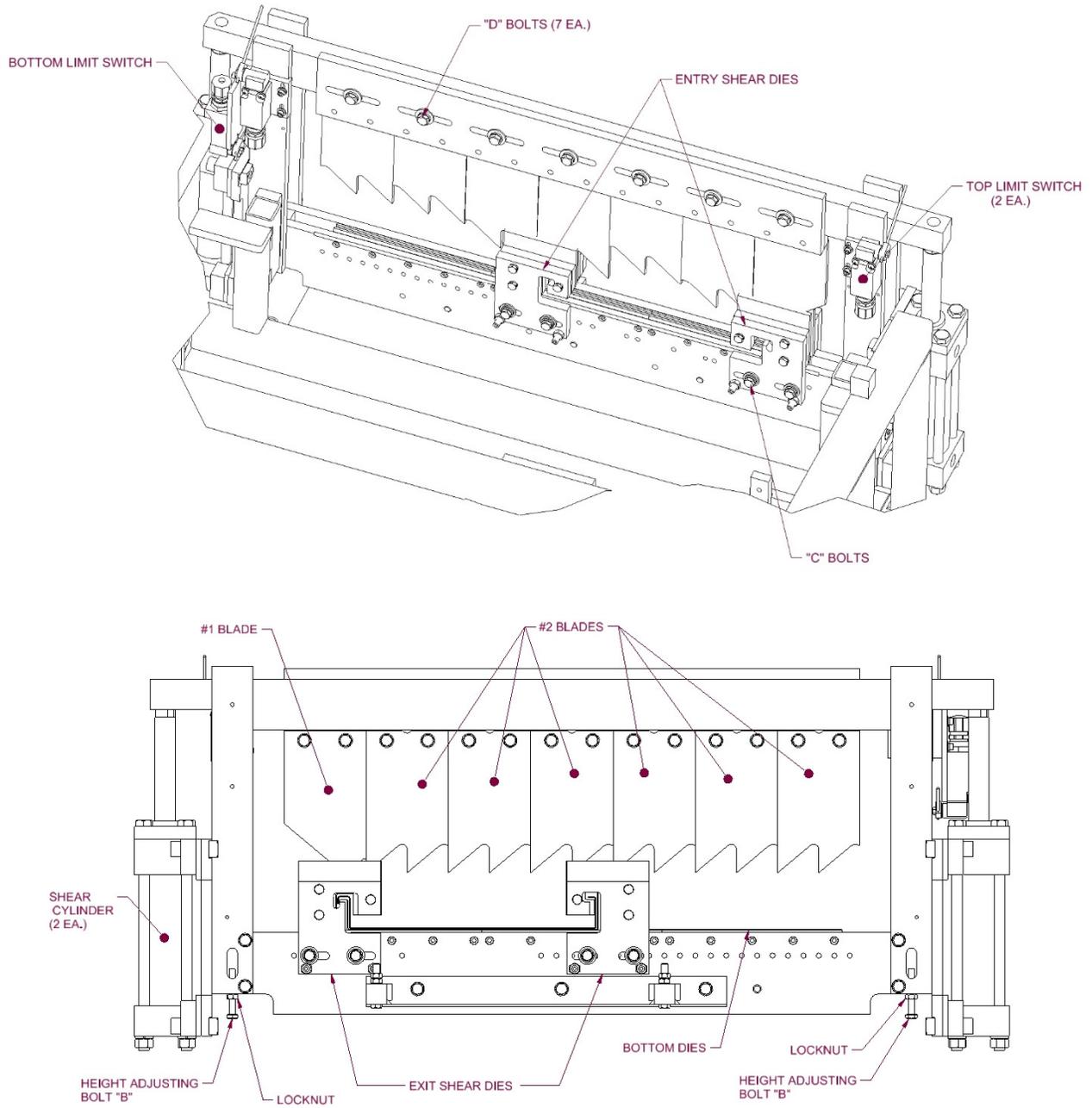
(Figure 22 & Figure 23)

1. Run material through the machine until it is about 6 inches away from the shear, then shut off the machine and disconnect the power.
2. Sight down the legs of the panel to find the approximate location to install the **ENTRY SHEAR DIES**. Hold them in place with the "C" bolts but do not tighten them yet.
3. Start up the machine and carefully jog the material forward while looking through the dies. If it looks like the panel will hit the dies, shut off the machine and disconnect the power, then adjust the dies as necessary so the panel goes through cleanly.
4. Continue jogging the panel forward until it is about an inch or two past the shear dies, then shut off the machine and disconnect power.
5. Adjust the **Entry Shear Dies** until they are about 1/32" away from the outside of the vertical leg of the panel, as shown in the figure for your panel found on pages 36-41. Tighten the "C" bolts.
6. If the Entry Shear Die has a **Mandrel**, it should be positioned as shown in the figure for your panel on pages 37, 40, and 41. If necessary loosen the "E" bolts and adjust the Mandrels. Retighten the "E" bolts.

CHAPTER 9  
**SHEAR ASSEMBLY**

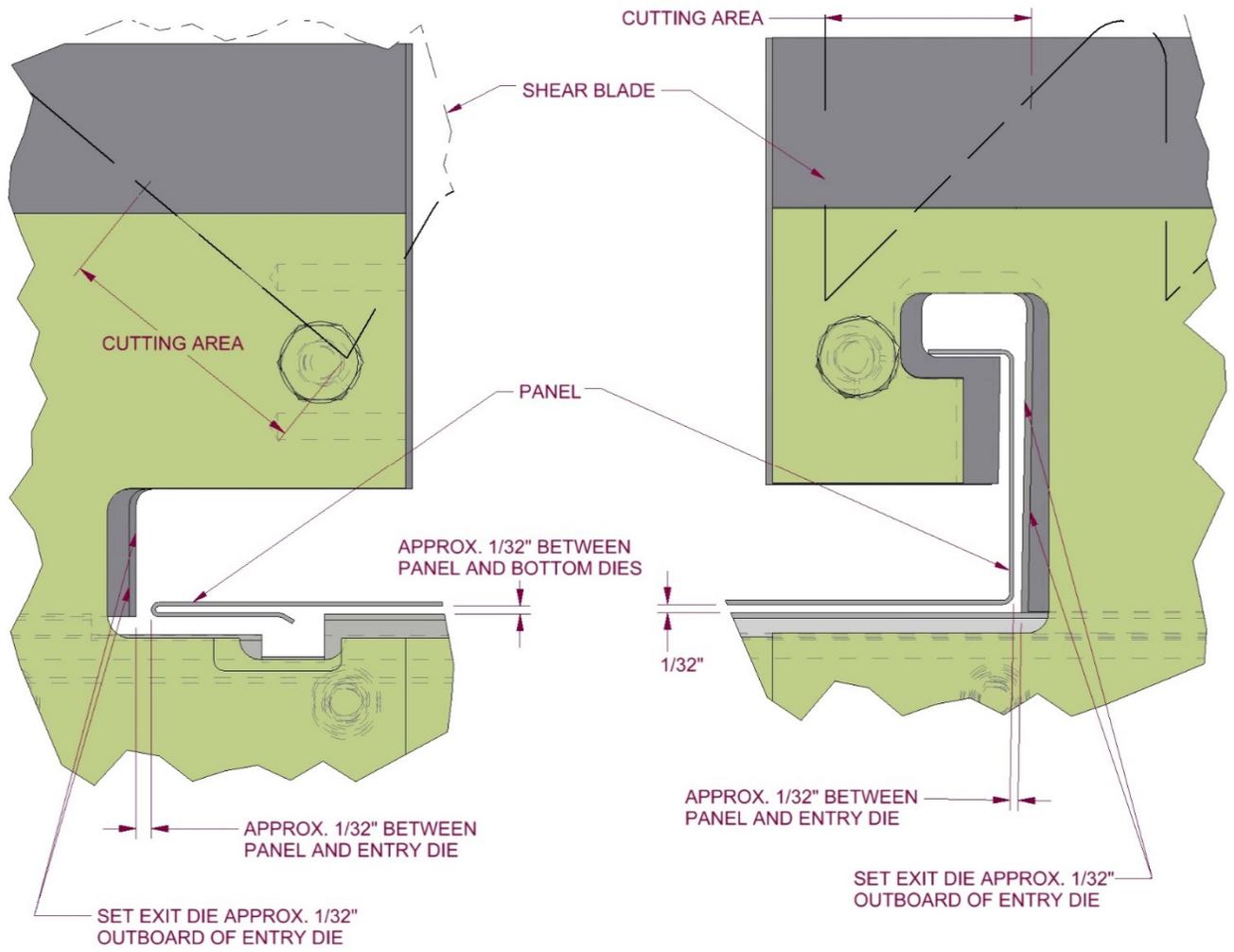
7. Install the **Exit Shear Dies** and adjust them so they are about 1/32” to the outboard of the Entry Shear Dies, as shown in the figure for your panel found on Pages 36-41. Tighten the “C” bolts.
8. Adjust the **Mandrel** on the Exit Shear Die as needed, if it has one.
9. In order to cut properly, the **Top Blades** need to be positioned so that one of the #2 Blade tips is just to the inside of the male leg, as shown in Figure 23-Figure 33 and also the tip of the #1 blade is positioned to the inside of the female leg as shown in Figure 23-Figure 33. The rake or angle of the blades should cut in a scissor action outward against the legs. If necessary, loosen the 7 “D” bolts and move the Top Blades left or right to get them in the correct position. Retighten the bolts.
10. Start the machine and shear off a piece of panel about 12 inches long, then jog the material forward a few inches. Make sure the panel is not scraping on the shear dies, and inspect the quality of the cut on both sides. If any corrections need to be made, shut off the machine and disconnect the power, then adjust the shear dies as needed.

CHAPTER 9  
**SHEAR ASSEMBLY**



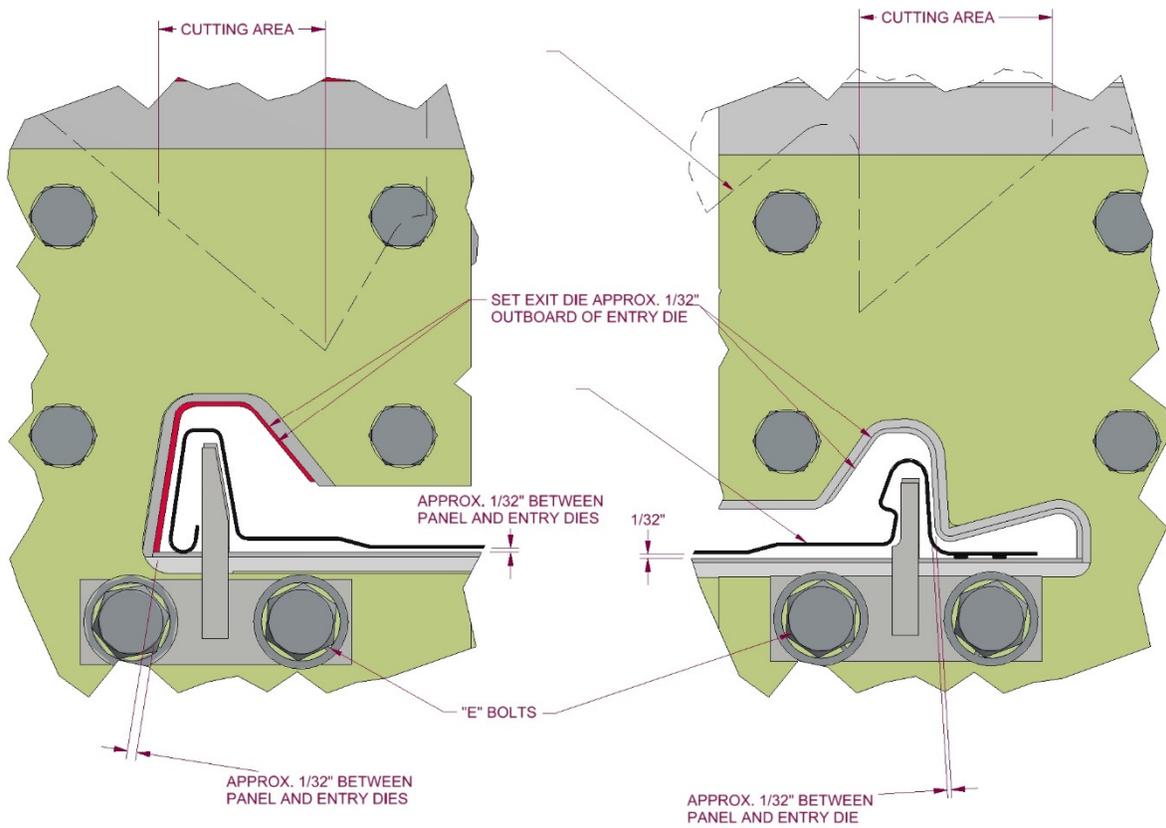
**Figure 22: Entry/Exit Views**

CHAPTER 9  
**SHEAR ASSEMBLY**

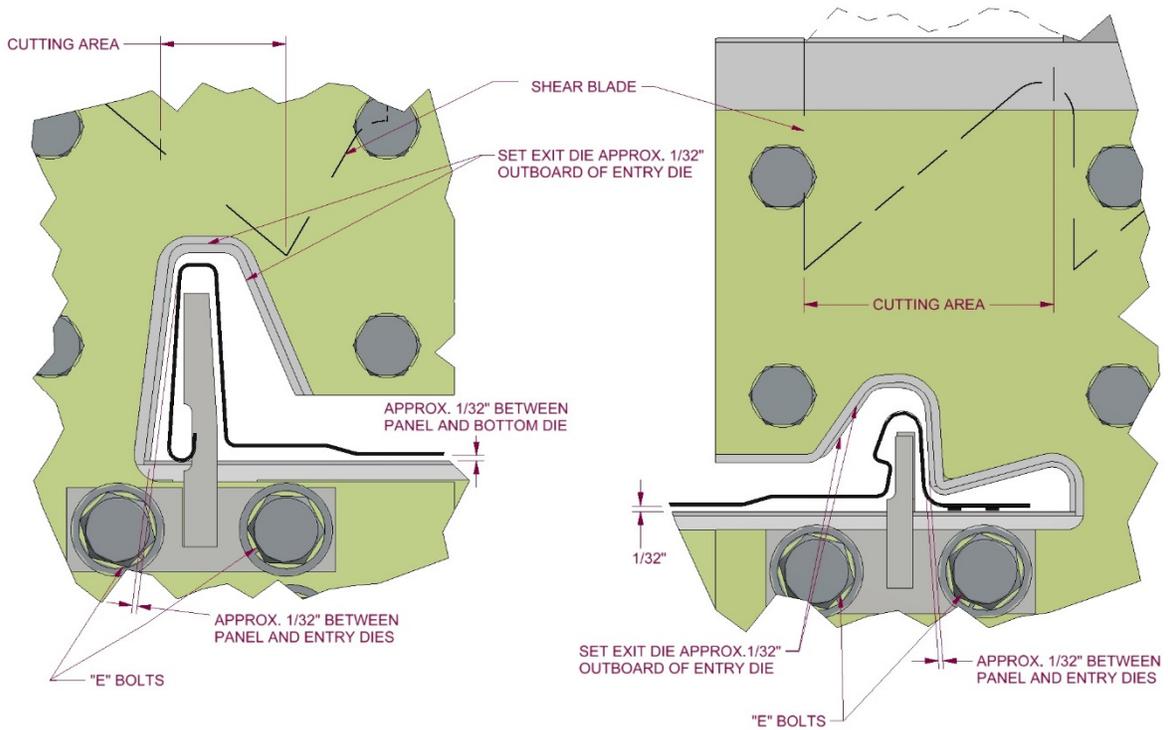


**Figure 23: BP100 / BP150 Shear Dies**

CHAPTER 9  
**SHEAR ASSEMBLY**



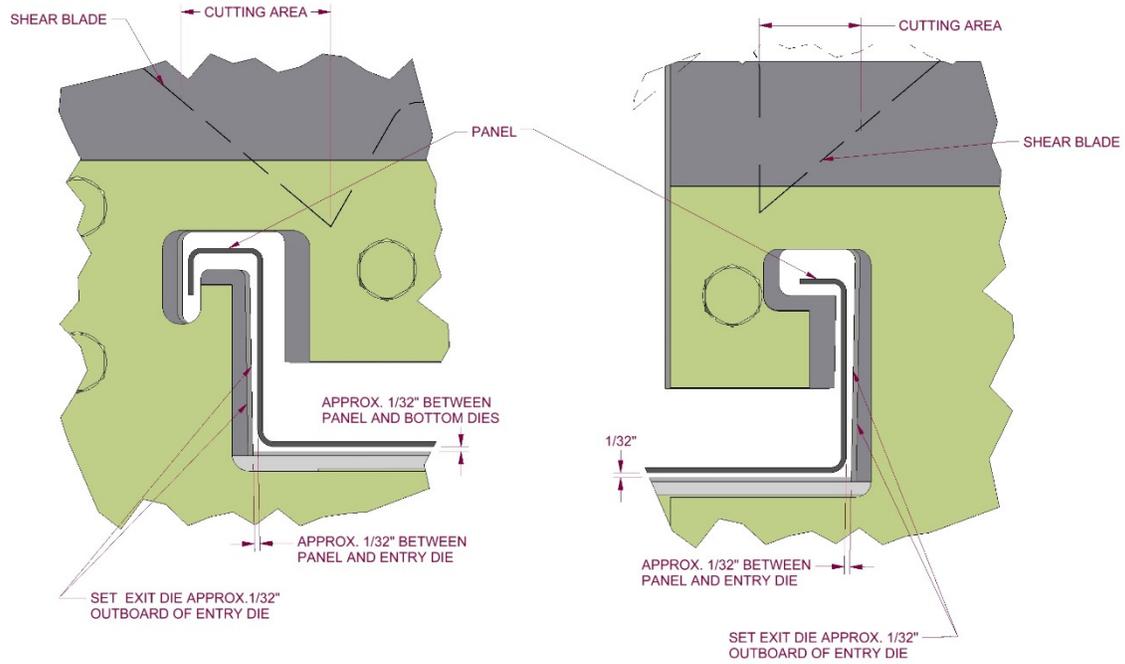
**Figure 24: FF100 Shear Dies**



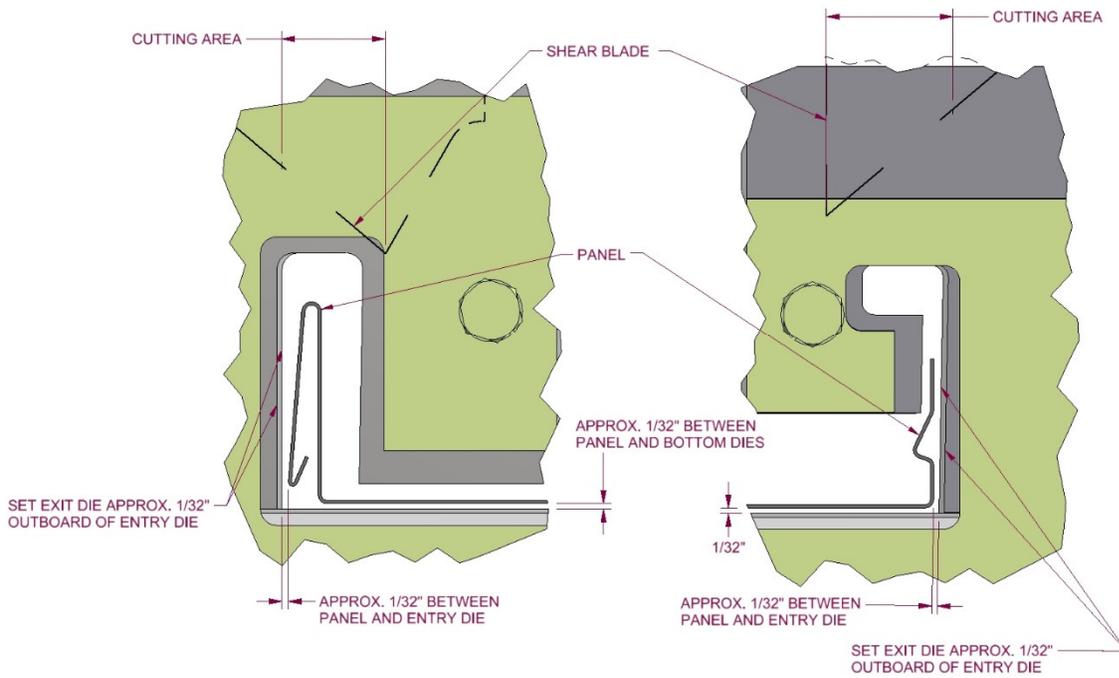
**Figure 25: FF150 Shear Dies**

# CHAPTER 9

## SHEAR ASSEMBLY



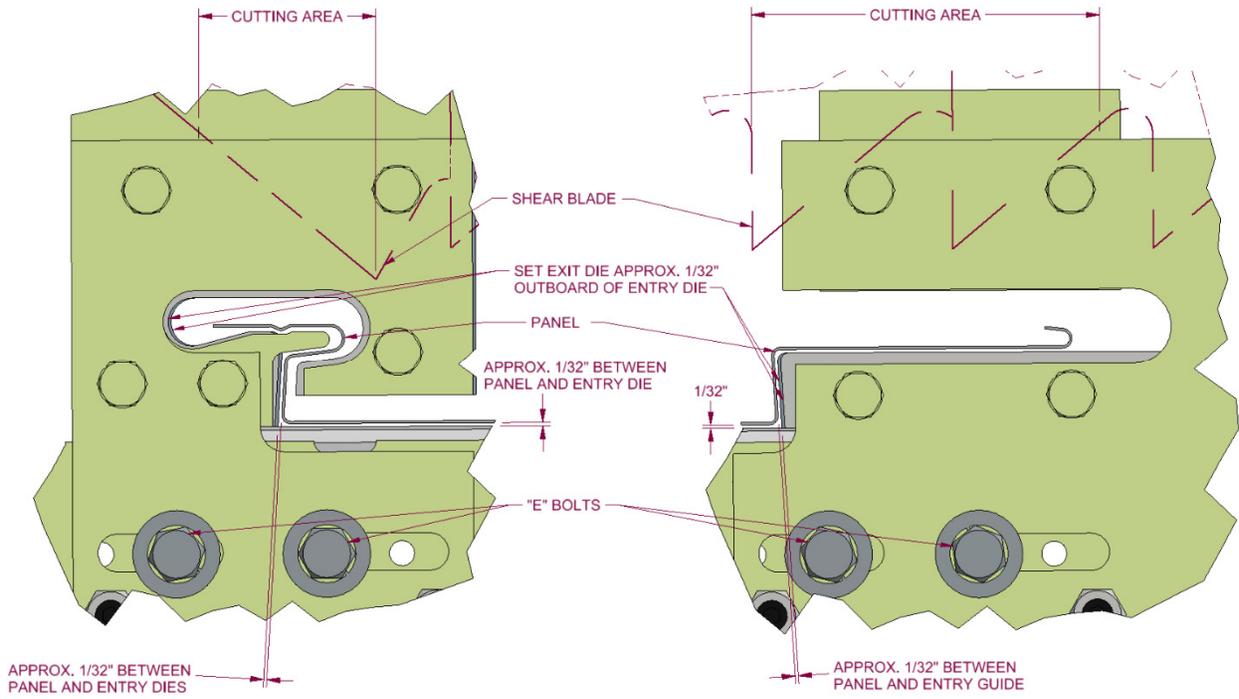
**Figure 26: SS100 / 150 Shear Dies**



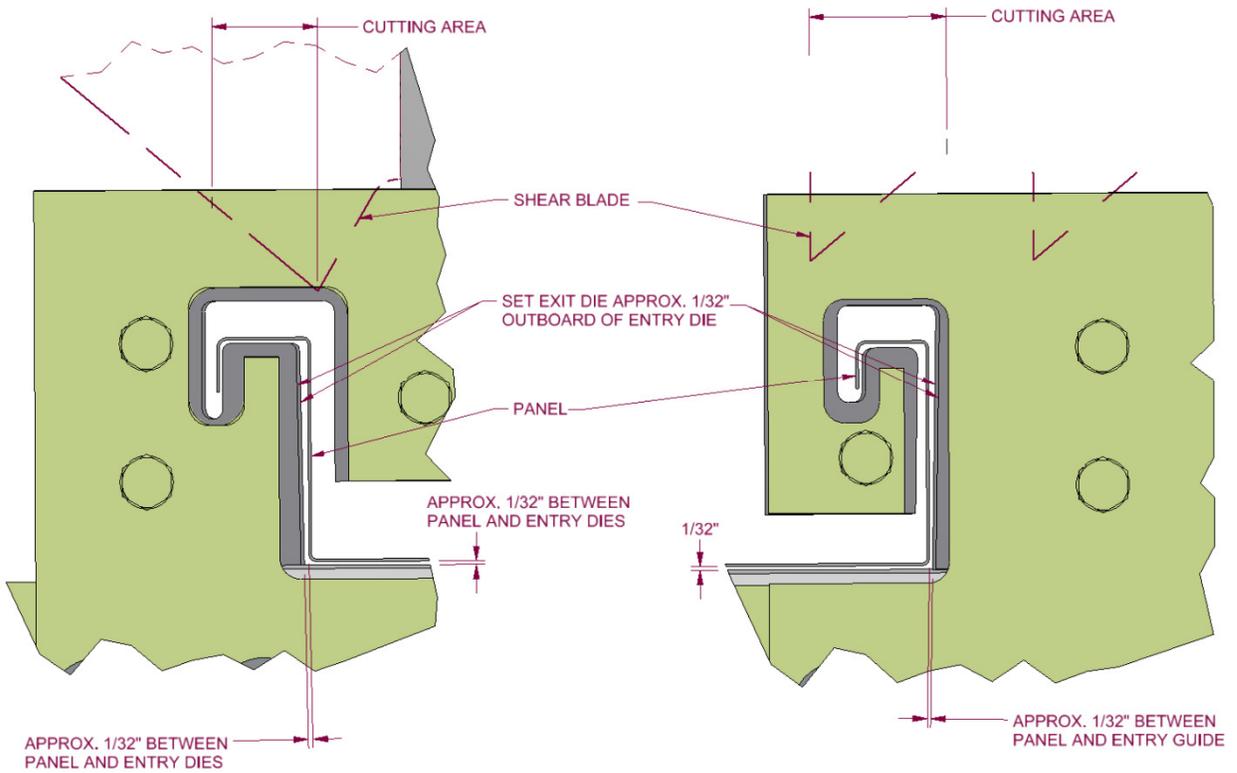
**Figure 27: SS450 Shear Dies**

# CHAPTER 9

## SHEAR ASSEMBLY

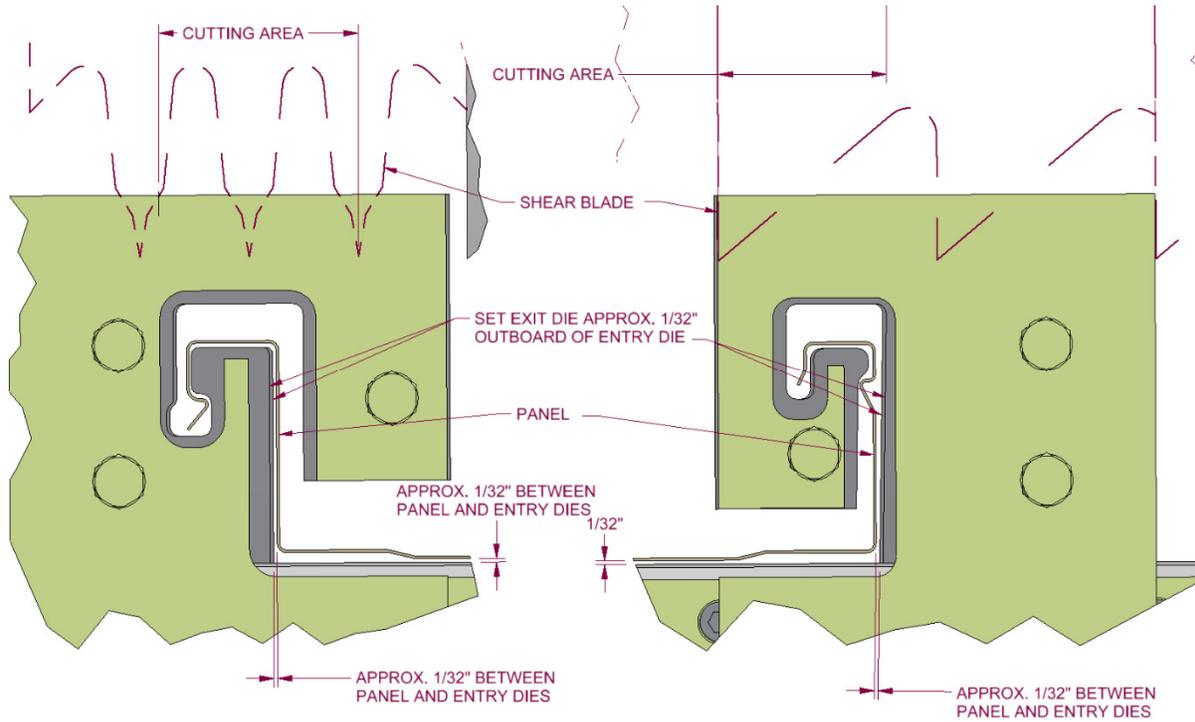


**Figure 28: FWQ100 / FWQ150 Shear Dies**

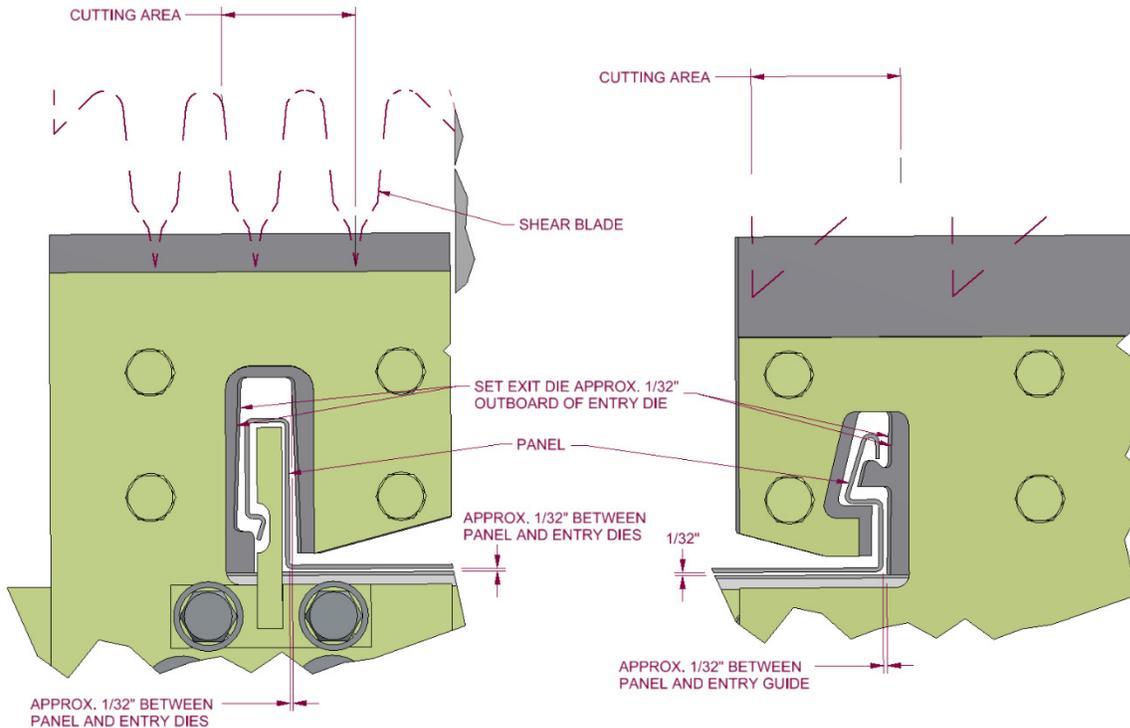


**Figure 29: SS200 / SS210A Shear Dies**

CHAPTER 9  
**SHEAR ASSEMBLY**



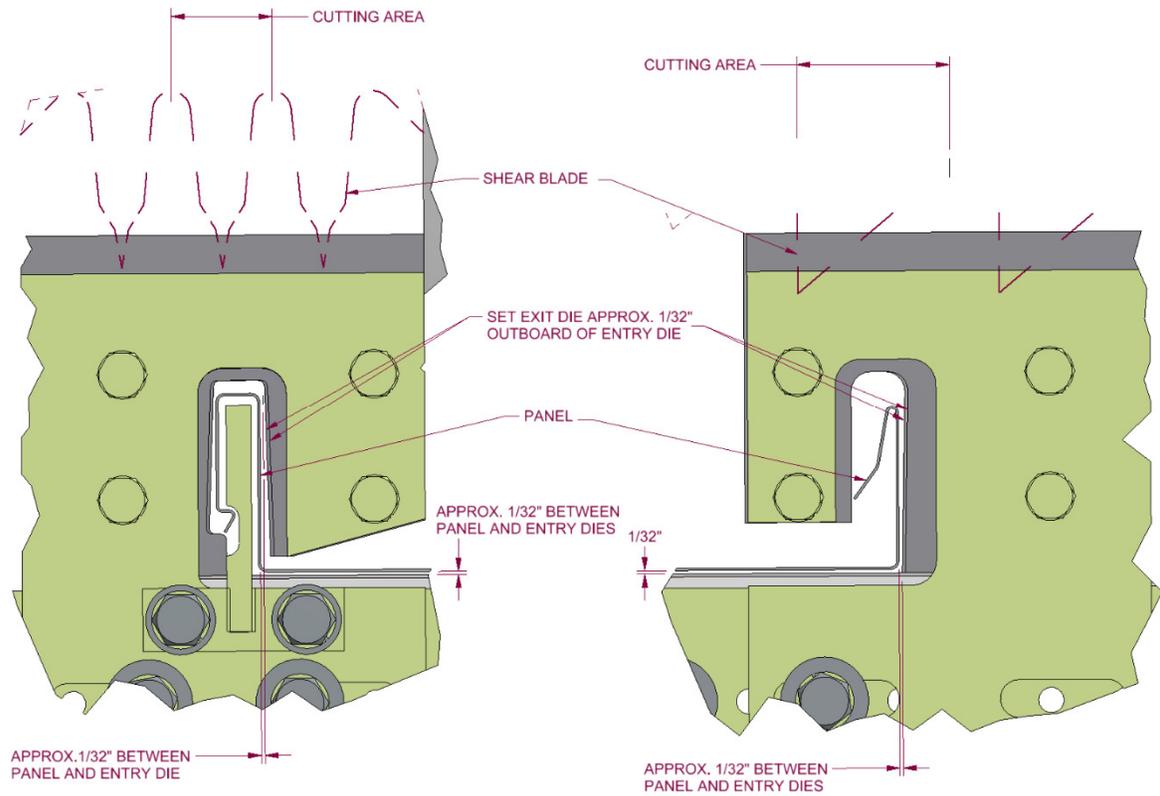
**Figure 30: SS275 Shear Dies**



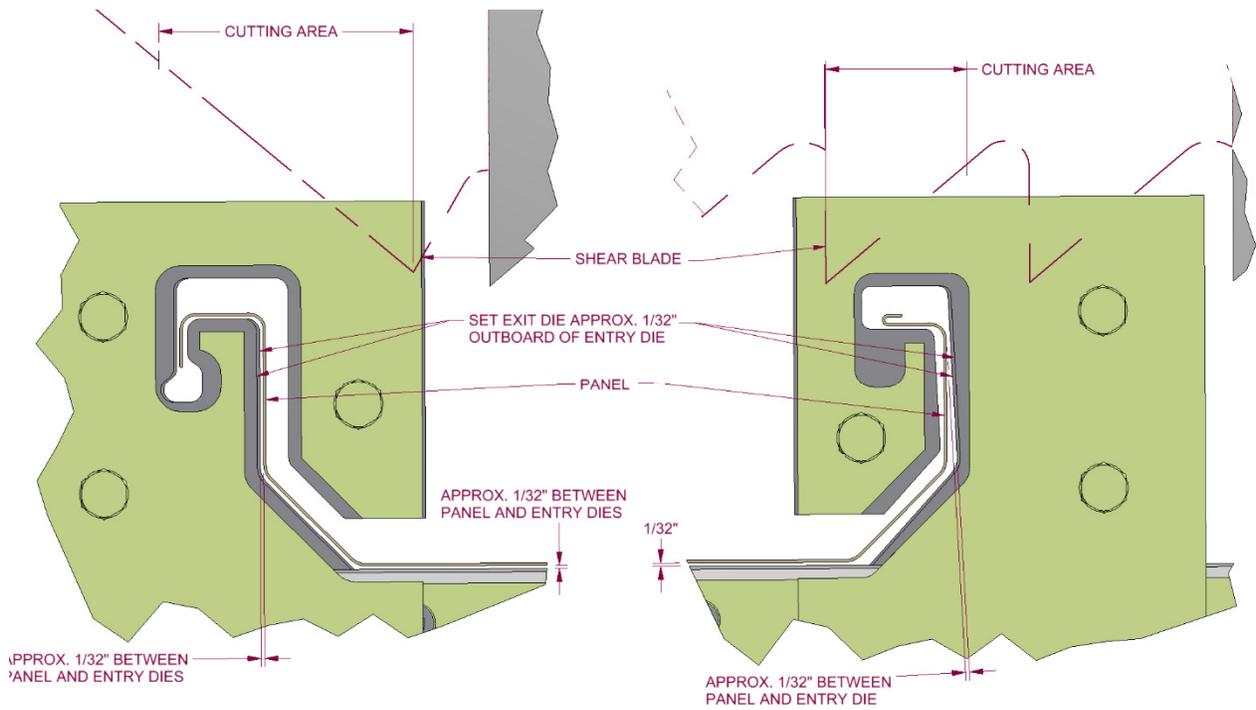
**Figure 31: SS550 Shear Dies**

# CHAPTER 9

## SHEAR ASSEMBLY



**Figure 32: SS675 Shear Dies**



**Figure 33: TRQ250 Shear Dies**

CHAPTER 9  
**SHEAR ASSEMBLY**

**MAINTENANCE**

1. Clean and lubricate the Top Blades, Bottom Dies, and Male/ Female dies at least once a day during normal use, or whenever cutting surfaces look dry. Proper lubrication is essential to clean cuts, rust prevention and longevity.

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

Catalog No. 11016

11 oz. Aerosol Can

Available from:

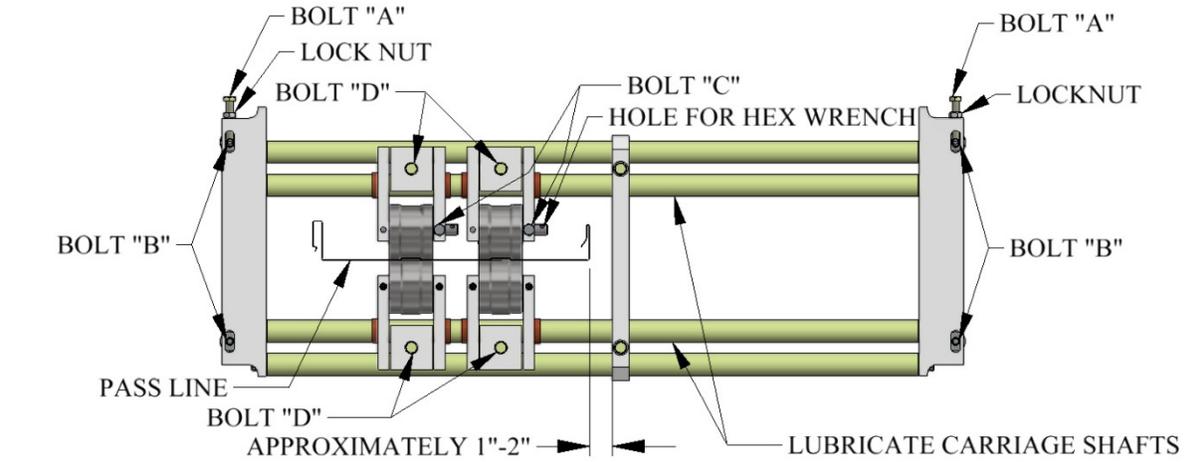
**MSC Supply at 1-800-645-7270**

CHAPTER 10  
**BEAD ROLLER ASSEMBLY**

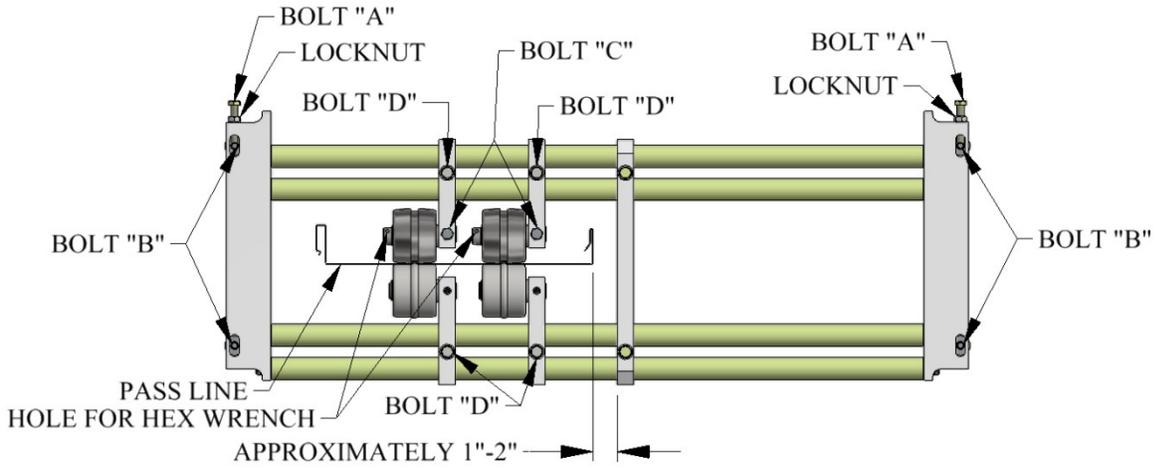
## **BEAD ROLLER ASSEMBLY**

1. The Bead Roller assembly is located behind the shear and is accessed by removing top cover #3. These rollers can be engaged or disengaged as needed and can also be moved left or right to accommodate different panel widths.
2. The bottom bead forming roller should be set 1/32" above the drive roller to ensure proper entry into the shear. If adjustment is necessary, loosen the four frame mount bolts "B", and lock nuts on the two vertical adjustment bolts "A". Raise or lower the roller assembly by using the vertical adjustment bolts "A" to obtain the proper height. Then re-tighten the mount bolts and lock nuts on the two adjustment screws "A".
3. Next loosen the eccentric shaft lock down screw "C". Place a 5/32" Allen Wrench in the small hole at the end of the eccentric shaft, and rotate the top roller up until it clears the bottom roller. Loosen the two top and two bottom slide lock down screws "D". Bring the panel material up to the rollers but not past them. **SHUT OFF THE MACHINE AND DISCONNECT THE POWER BEFORE CONTINUING.**
4. Locate the bottom rollers to the desired position by sliding the assembly on the bottom slide bars. Tighten the bottom slide lock-down screws "D". Restart the machine and back up the panel until access is gained to the top slide lock-down screws. **SHUT OFF THE MACHINE AND DISCONNECT THE POWER BEFORE CONTINUING.**
5. Loosen the top slide lock-down screws, and slide them into position so the top roller is directly over the bottom roller. Tighten the top slide lock-down screws "D". Next rotate the eccentric shaft down to the desired bead depth. **DO NOT** go below .045" minimum clearance; excessive bead depth will distort the panel. Re-tighten screws "C".
6. Keep slide bars lightly greased to allow bead or striation assemblies to slide smoothly.

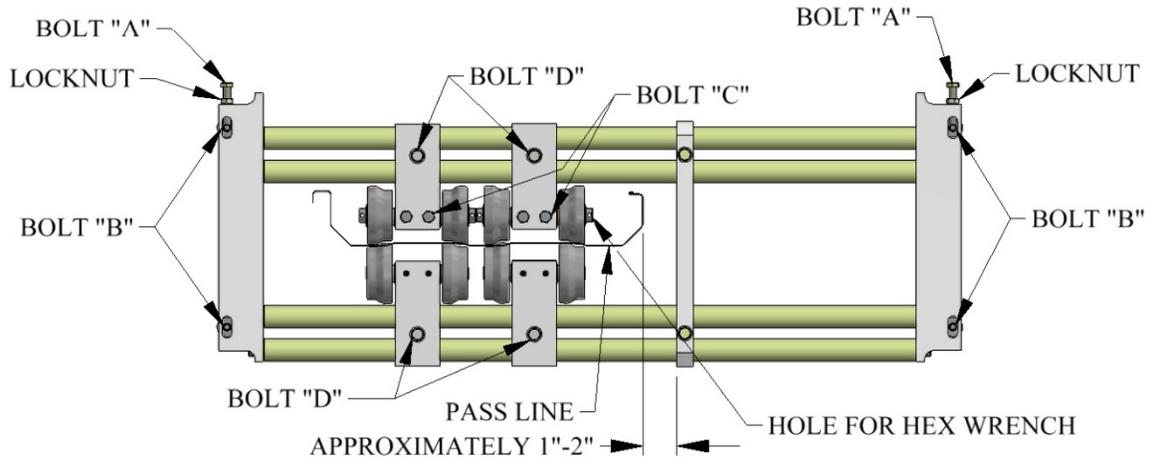
CHAPTER 10  
**BEAD ROLLER ASSEMBLY**



**RR1, RR2, RR3, RR7**



**RR4, RR5**



**RR12**

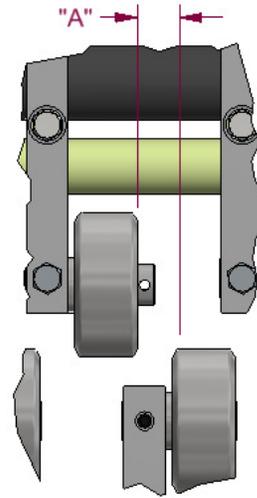
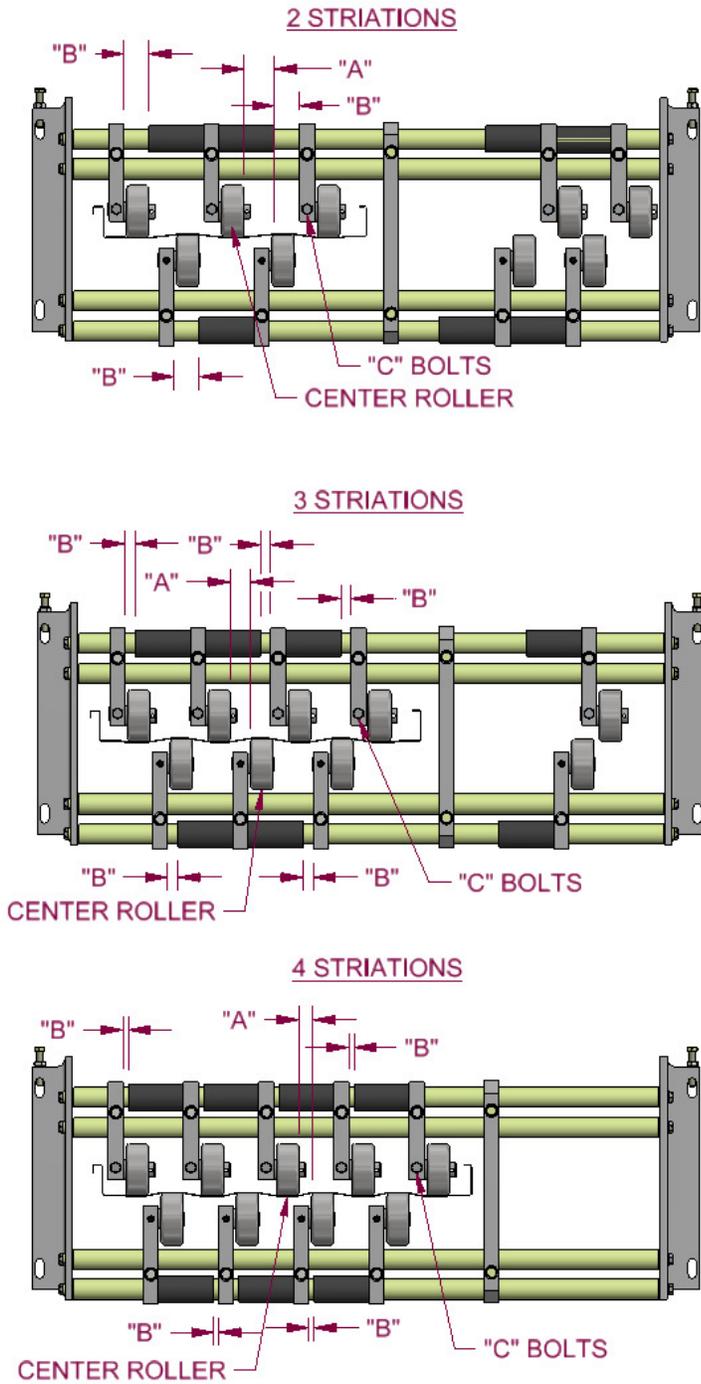
**Figure 34: Bead Roller Assembly**

CHAPTER 10  
**BEAD ROLLER ASSEMBLY**

## **STRIATION ROLLER ADJUSTMENT**

1. Jog the panel through the machine and stop a few inches before the striation rollers.
2. Measure the width of the panel and mark the center with a marker.
3. Look up your panel width in the striation spacing chart to determine if you need 2, 3, or 4 striations.
4. Referring to Figure 35, align the middle of the center roller with the center mark on the panel.
5. Position the remaining striation rollers as shown in Figure 35, using the “A” and “B” dimensions found in the striation chart.
6. Position the Stiffener Bars an inch or two outside of the panel as shown.
7. Jog the panel a few inches past the striation rollers and check if the striation appearance is acceptable. If not, adjust the positions of the striation rollers as needed. The striation depth can be adjusted by loosening the “C” bolts and rotating the eccentric shafts.

CHAPTER 10  
**BEAD ROLLER ASSEMBLY**



| 2 STRIATIONS         |               |               |
|----------------------|---------------|---------------|
| Panel Coverage       | "A" Dimension | "B" Dimension |
| 12" to 12-15/16"     | 1-1/8"        | 3/4"          |
| 13" to 13-15/16"     | 1-3/8"        | 1-1/4"        |
| 3 STRIATIONS         |               |               |
| Panel Coverage       | "A" Dimension | "B" Dimension |
| 14" to 14-11/16"     | 3/4"          | 0"            |
| 14-3/4" to 15-7/16"  | 7/8"          | 1/4"          |
| 15-1/2" to 16-3/16"  | 1"            | 1/2"          |
| 16-1/4" to 16-15/16" | 1-1/8"        | 3/4"          |
| 17" to 17-11/16"     | 1-1/4"        | 1"            |
| 4 STRIATIONS         |               |               |
| Panel Coverage       | "A" Dimension | "B" Dimension |
| 17-1/2" to 18-7/16"  | 3/4"          | 0"            |
| 18-1/2" to 19-7/16"  | 7/8"          | 1/4"          |
| 19-1/2" to 20-7/16"  | 1"            | 1/2"          |
| 20-1/2" to 21-7/16"  | 1-1/8"        | 3/4"          |
| 21-1/2" to 22-7/16"  | 1-1/4"        | 1"            |
| 22-1/2" to 23-7/16"  | 1-3/8"        | 1-1/4"        |
| 23-1/2" to 24"       | 1-1/2"        | 1-1/2"        |

*Figure 35: Striation Spacing Chart*

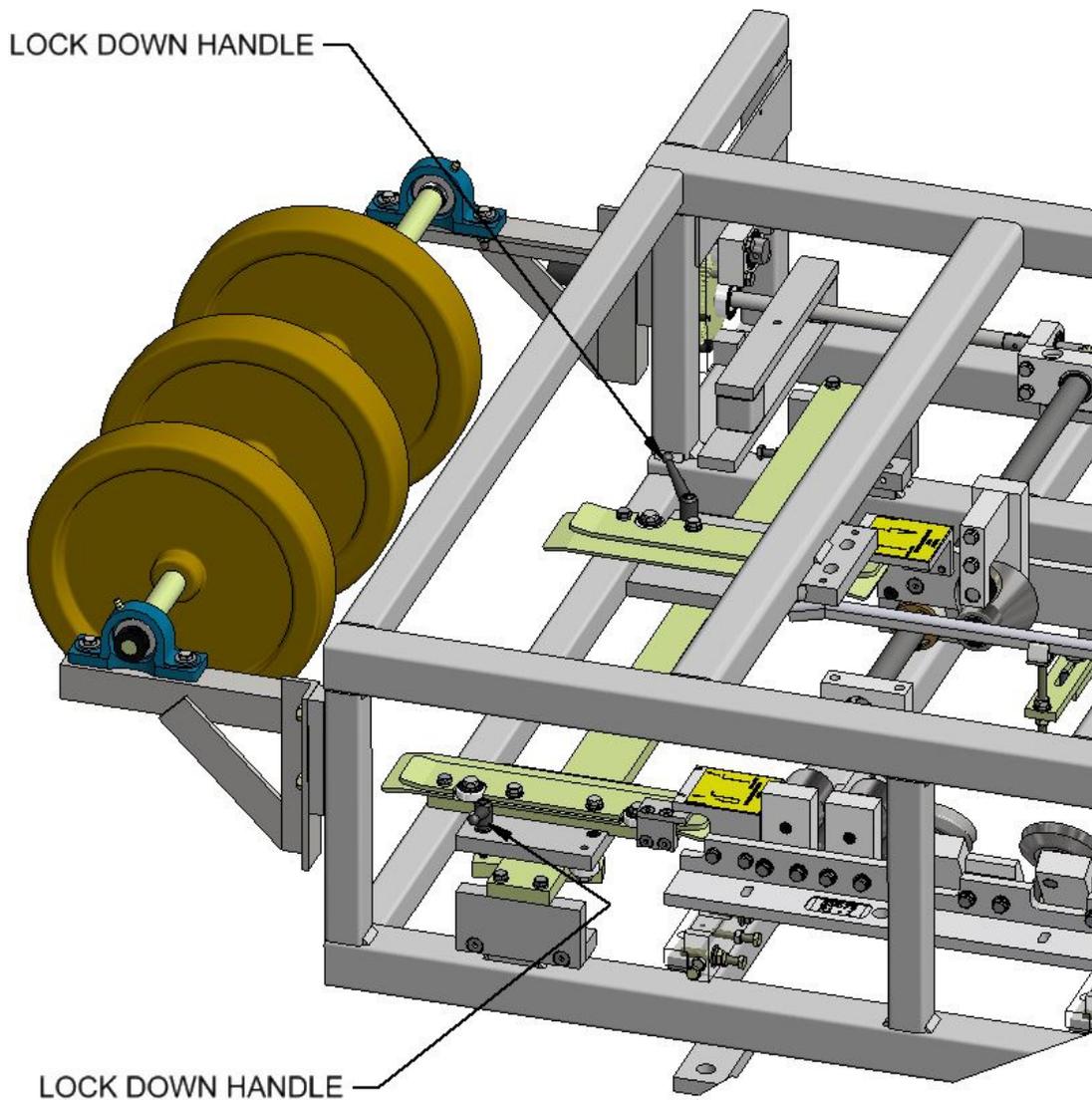
CHAPTER 11  
**ENTRY GUIDE ASSEMBLY**

## **ENTRY GUIDE ADJUSTMENT**

(Figure 36 & Figure 37)

The entry guides are used to set the material to the correct position in relation to the forming rollers of the machine. They also hold the material and feed it straight into the machine. If the entry guides are not set correctly the material will not feed into the machine properly.

1. The Right Entry Guide is set to the Tooling Rail Marker Plate mounted to the R1 Tooling Rail.
2. To align, loosen the Lock Down Handle on the Right Entry Guide (Figure 36). Slide the entry guide to the left or right until the Entry Guide Alignment Notch is directly under one of the notches on the Tooling Rail Marker Plate. Make sure to choose the notch on the Marker Plate that corresponds to the desired leg configuration as noted on the decal on the top of the Marker Plate. (Figure 37)

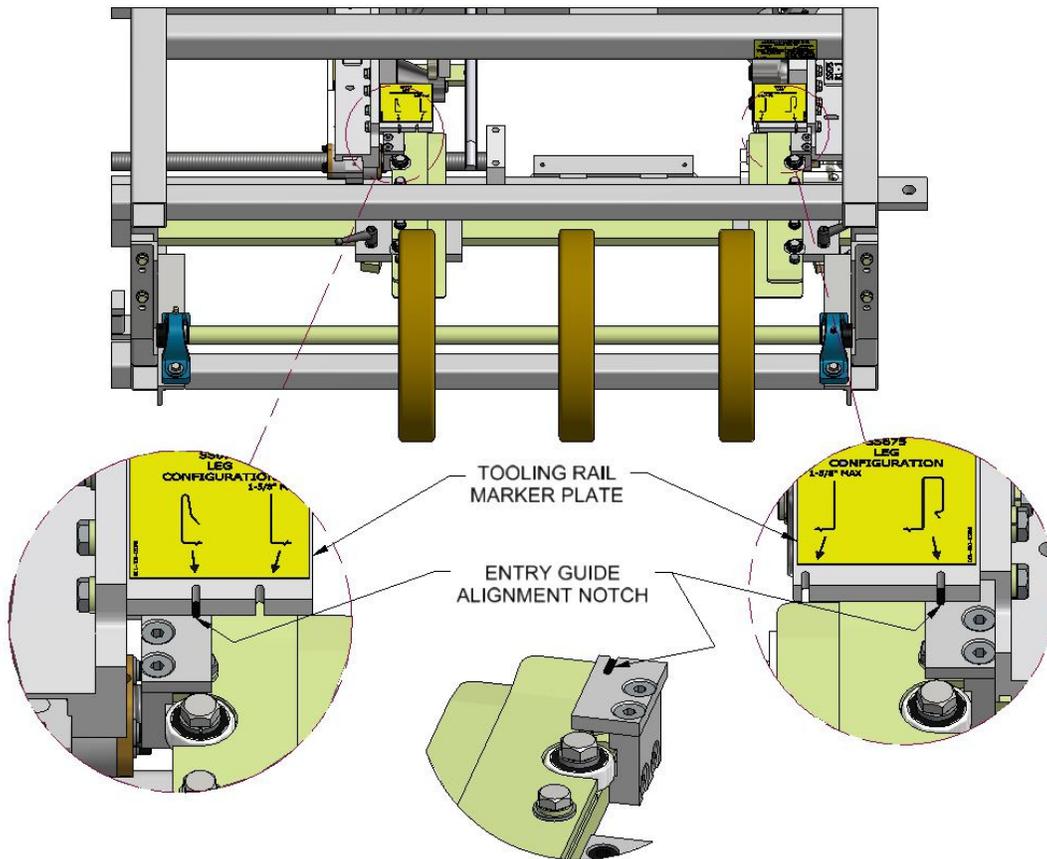


**Figure 36: Entry Guide Lock Down Handles**

3. Tighten the Lock Down Handle on the right entry guide.

CHAPTER 11  
**ENTRY GUIDE ASSEMBLY**

4. Loosen the Lock Down Handle on the left entry guide.
5. Cut a 12" long piece of gage material from the coil that will be used in the machine.
6. Slide gage material between the left and right entry guides.
7. 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.



**Figure 37: Entry Guide Alignment**

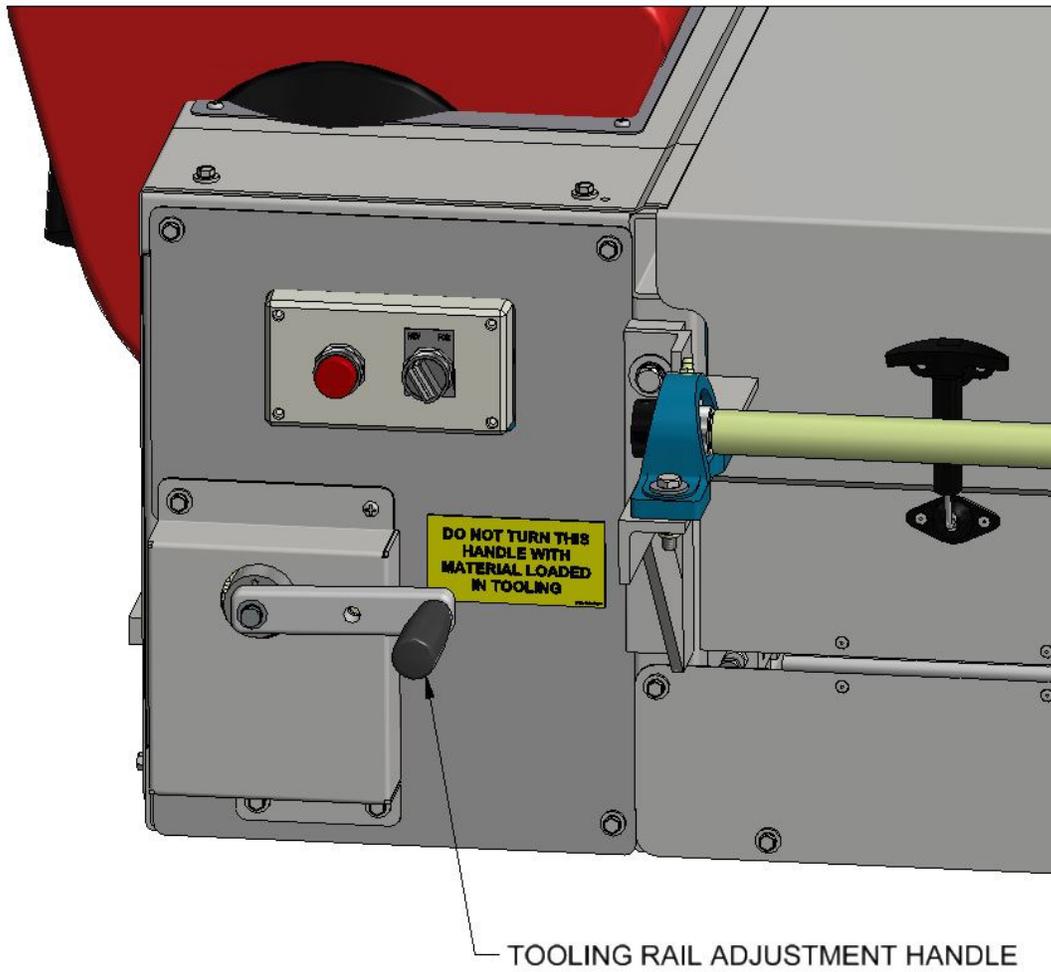
**LEFT TOOLING RAIL TO ENTRY GUIDE ALIGNMENT**

(Figure 38 to Figure 40)

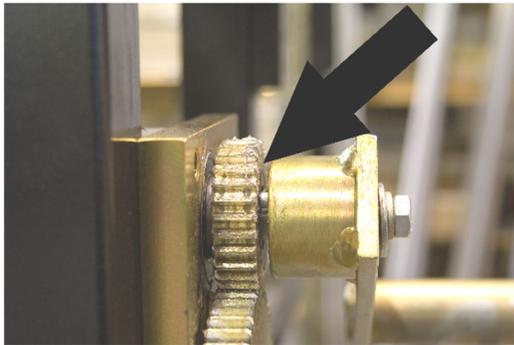
The Tooling Rail Adjustment Handle is used to move the Left Tooling Rails assemblies to the left or right to align them to the Left Tooling Rail Marker Plate whenever a width change or tooling change has been made.

1. Using the Tooling Rail Adjustment Handle (Figure 38) align the notch on the tooling rail marker plate to the alignment notch located on the Left Entry Guide. The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 39). Press the handle inward (Figure 40) to engage the width adjustment gear and turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward. Make sure to choose the notch on the marker plate that corresponds to the desired leg configuration as noted on the decal on the marker plate.

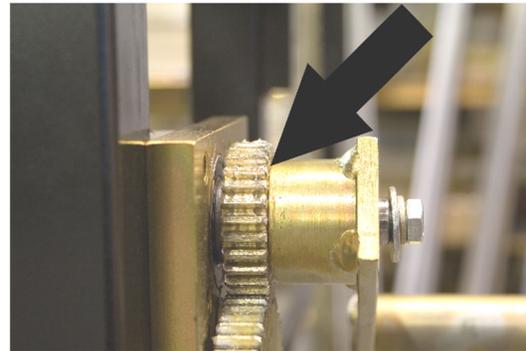
CHAPTER 11  
**ENTRY GUIDE ASSEMBLY**



**Figure 38: Tooling Rail Adjustment Handle**



**Figure 39: Disengaged**



**Figure 40: Engaged**

CHAPTER 12  
**CLIP RELIEF ROLLER ASSEMBLY**

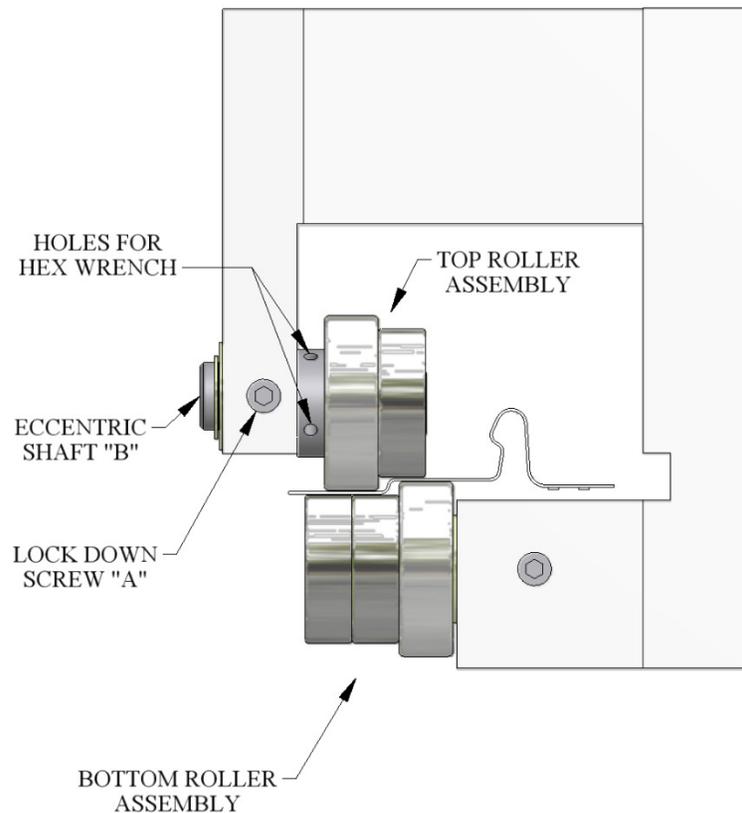
## **CLIP RELIEF ROLLER ASSEMBLY**

1. Clip Relief Rollers (Figure 41) provide a raised area next to the male and female legs of the panel. This helps hide the clip and screws used in installation. They rollers can be engaged or disengaged as needed.

***Find the Tooling Rail Sheet corresponding to the profile installed in the machine (***

2. Figure 97 - Figure 88).  
Note the location of clip relief assembly's on left and right tooling rails, and locate them on the tooling set in the machine.
3. To engage the clip relief rollers loosen lock down screw "A" and insert a 5/32" Allen wrench into the small hole on the top eccentric shaft "B".
4. Rotate the eccentric shaft to engage or disengage the top roller assembly from the bottom roller assembly. Adjust both left and right bead assemblies to the desired depth using a feeler gage. Recommend factory setting is 0.080 inches gap between top and bottom rollers.

**NOTE:** The FF100 and FF150 profiles must always be engaged for proper male/female lock to occur.



**Figure 41: Clip Relief Roller Assembly**

CHAPTER 13  
**PERFORATOR**

## **PERFORATOR**

Note: The perforator for the FWQ100 or FWQ150 Roller System is an optional accessory and is not included with these roller sets.

### **CAUTION**

**WHEN TRANSPORTING THE MACHINE, THE PERFORATOR ASSEMBLY MUST BE SET TO THE LOCKED POSITION. FAILURE TO DO THIS WILL DAMAGE THE PERFORATOR CUTTERS AND TOP ROLLERS.**

### **PERFORATOR SET-UP**

(Figure 42 & Figure 43)

The Perforator has four (4) independent adjustment screws; each set of screws is used to correctly align two critical parameters, the pass-line and the perforator depth for optimal operation.

The pass-line should be a one-time set-up and will be set from the factory. The correct pass-line is achieved when 24ga material is run through the machine and the TOP of the material runs tangent to the bottom of the Top Rollers. Should the perforator's pass-line no longer be set correctly, the Outboard Mounting Plates are used for adjustment. Perform the following:

**CAUTION: SHUT THE MACHINE OFF BEFORE PROCEEDING.**

### **ADJUSTING THE PERFORATOR PASS-LINE**

1. Loosen Crank Handles so that the lower Male Perforator cutters are disengaged to allow material to pass thru freely.
2. Loosen (do not remove) both Perforator Mounting Bolts "B", located on the Outboard Mounting Plates.
3. With a 1/2" wrench loosen the Lock Nuts (back off 1/4-1/2 of a turn as needed).
4. Turn the Jacking Bolts "A" until the desired height is achieved for the pass-line.
5. Tighten both Perforator Mounting Bolts "B".
6. Tighten both Lock Nuts on the Jacking Bolts "A".

The cutting depth (perforator depth) is an adjustment that will be made at the discretion of the operator. Should a nominal perforation depth setting satisfy all material thicknesses, then no additional adjustments will be needed.

CHAPTER 13  
**PERFORATOR**

**ADJUSTING THE PERFORATOR DEPTH**

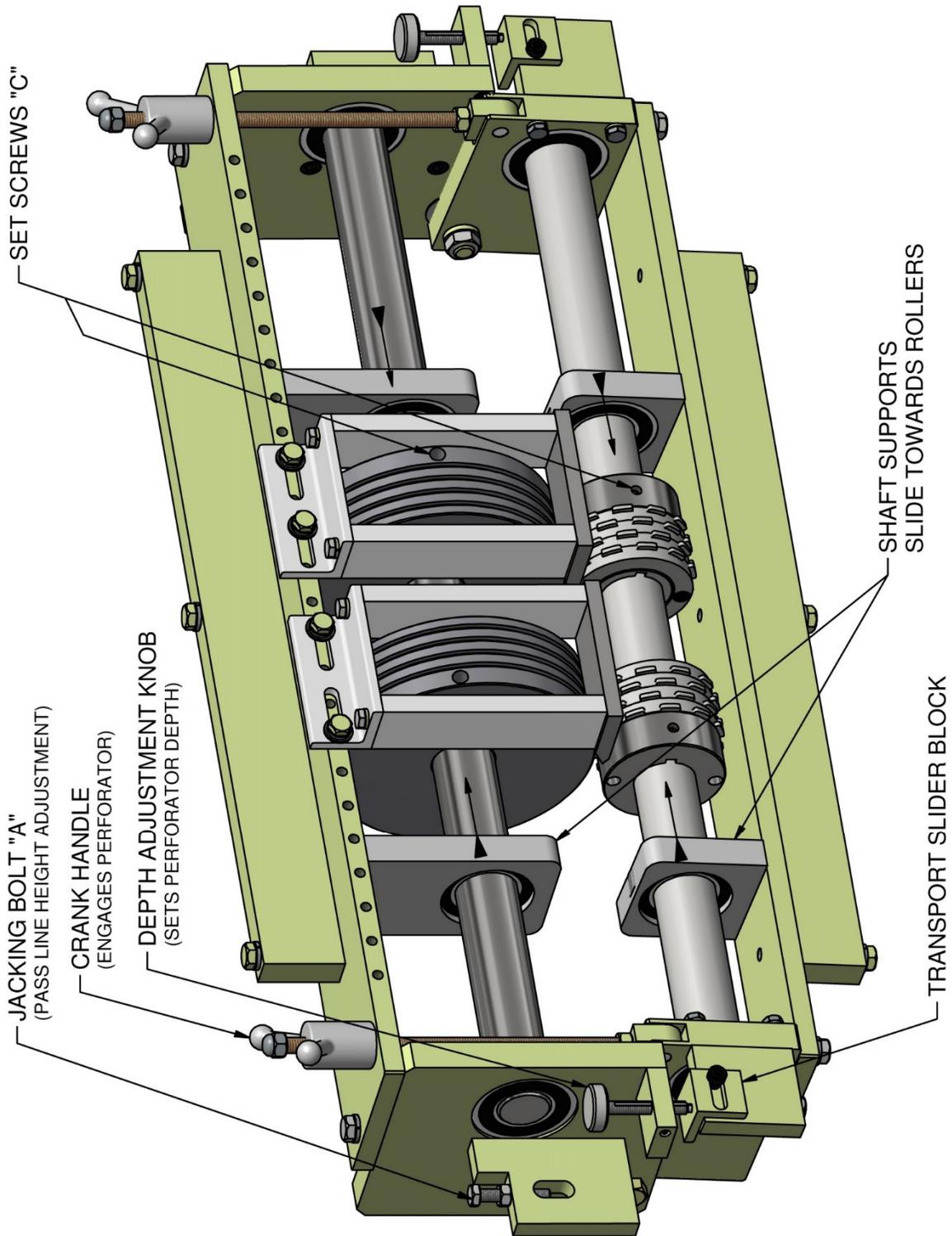
(See Figure 42)

1. Loosen the Crank Handles and push down on both handles to unclamp the perforator assembly.
2. Turn the Depth Adjustment Knobs CW to decrease cutting depth or CCW to increase cutting depth as needed, ¼ turn at a time to achieve the desired cutting depth.
3. Verify that the Top Rollers and Perforator Cutters (dies) are aligned before tightening the Crank Handles. If re-alignment of rollers is need continue with step 5 and 6, otherwise skip to step 7.
4. Using a 5/32 hex wrench, loosen (but do not remove) the Perforator Cutter Set Screws "C" and slide in position to achieve required alignment.
5. Tighten the Perforator Cutter Set Screws "C".
6. Re-tighten the Crank Handles.
7. Run material and check for desired perforation depth.
8. Once a ball-park depth is established, turn the Depth Adjustment Knobs CW/CCW using the "click" to more accurately set to final position.  
**NOTE:** Before turning the Depth Adjustment Knobs, loosen the Crank Handles.
9. Tighten the Crank Handles.
10. Reposition the two Shaft Supports (will move side-to-side by hand without material in the perforator). The preferred final position is as close to the sides of the top and bottom dies as possible without touching the dies.

**ADJUST THE POSITION/SPACING OF THE PERFORATOR CUTTERS**

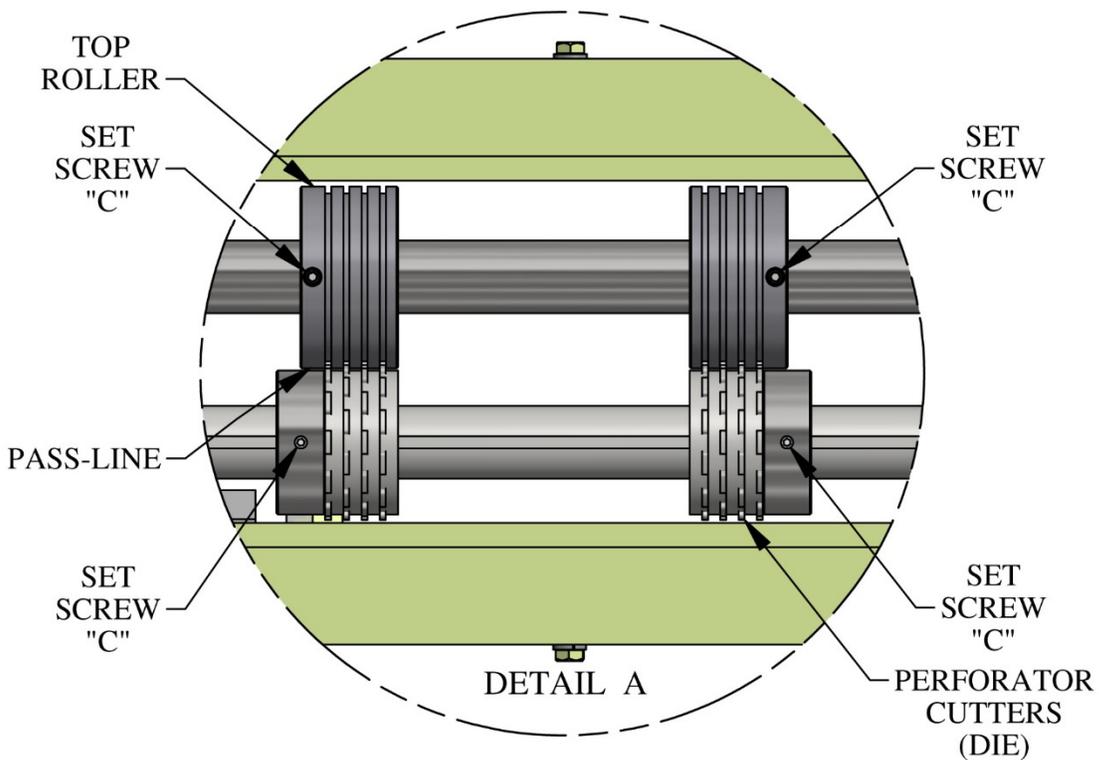
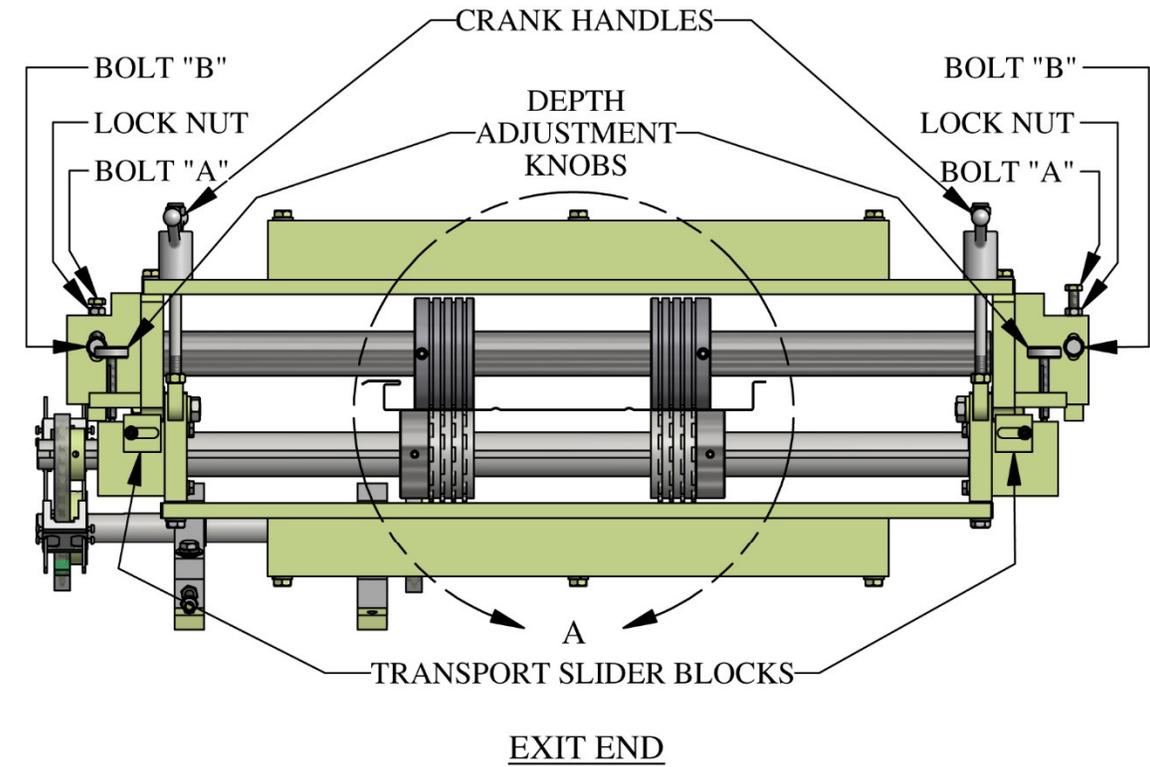
1. Using a 5/32 hex wrench, loosen (but do not remove) the Perforator Cutter and Top Roller Set Screws "C".
2. Slide the Cutter and Roller as a unit(s) to the desired position.
3. Hand tighten the Top Roller Set Screw(s) "C".
4. Verify that the Perforator Cutter(s) are aligned. Re-align as stated above in steps 5, 6, 8 and 11.

CHAPTER 13  
**PERFORATOR**



*Figure 42: Perforator Assembly*

CHAPTER 13  
**PERFORATOR**



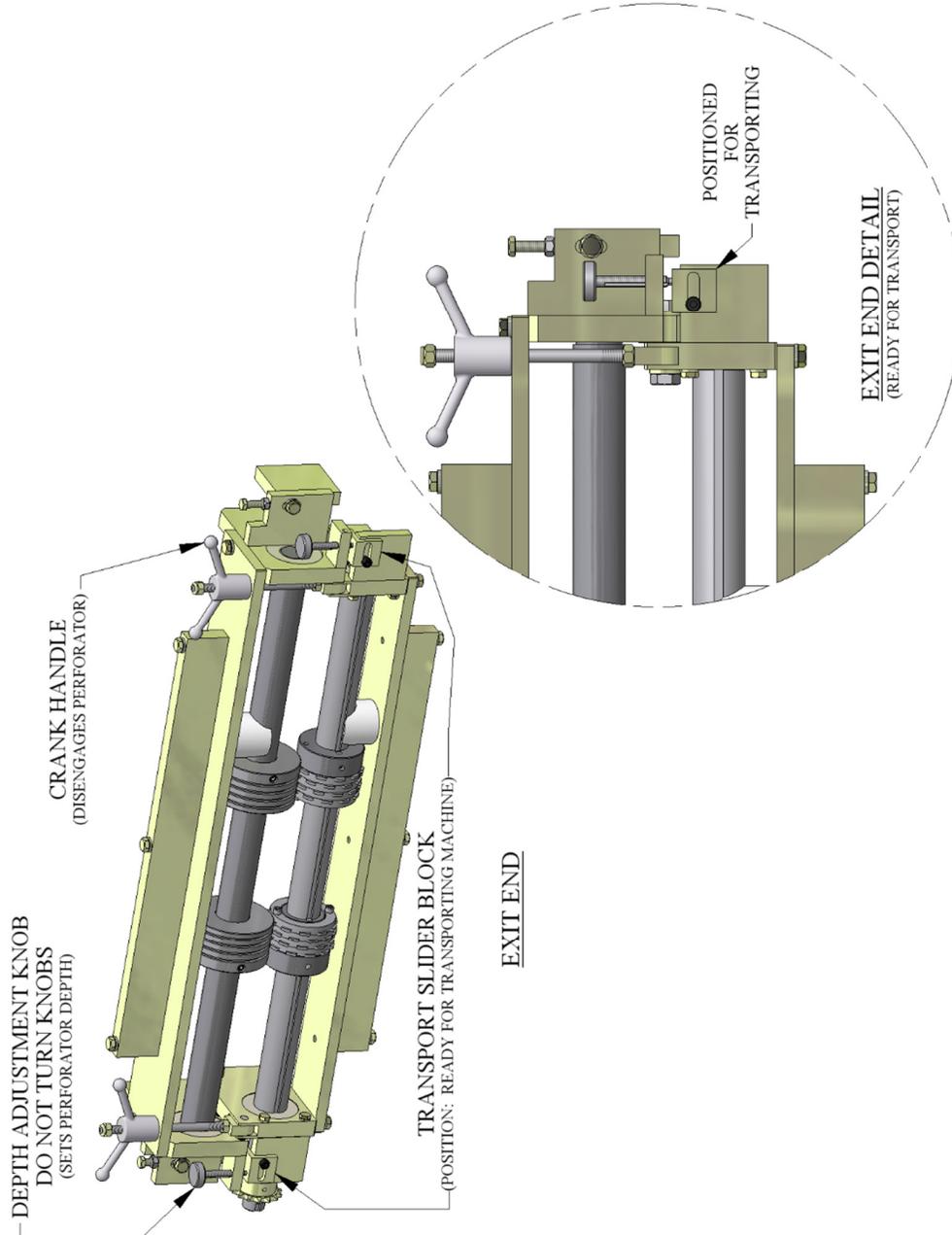
**Figure 43: Perforator Adjustment**

CHAPTER 13  
**PERFORATOR**

**LOCKING THE PERFORATOR FOR TRANSPORTATION**

(Figure 44)

1. Turn the Crank Handles to disengage the Perforator Cutters from the Top Rollers as required to slide the Transport Slider Blocks underneath the Depth Adjustment Knobs. **DO NOT** turn the Depth Adjustment Knobs to provide this clearance.
2. Slide the Blocks under the ends of the Depth Adjustment Knobs.
3. Re-tighten the Crank Handles
4. Empty machine of material before transport/storage.



**Figure 44: Perforator Locked for Transport**

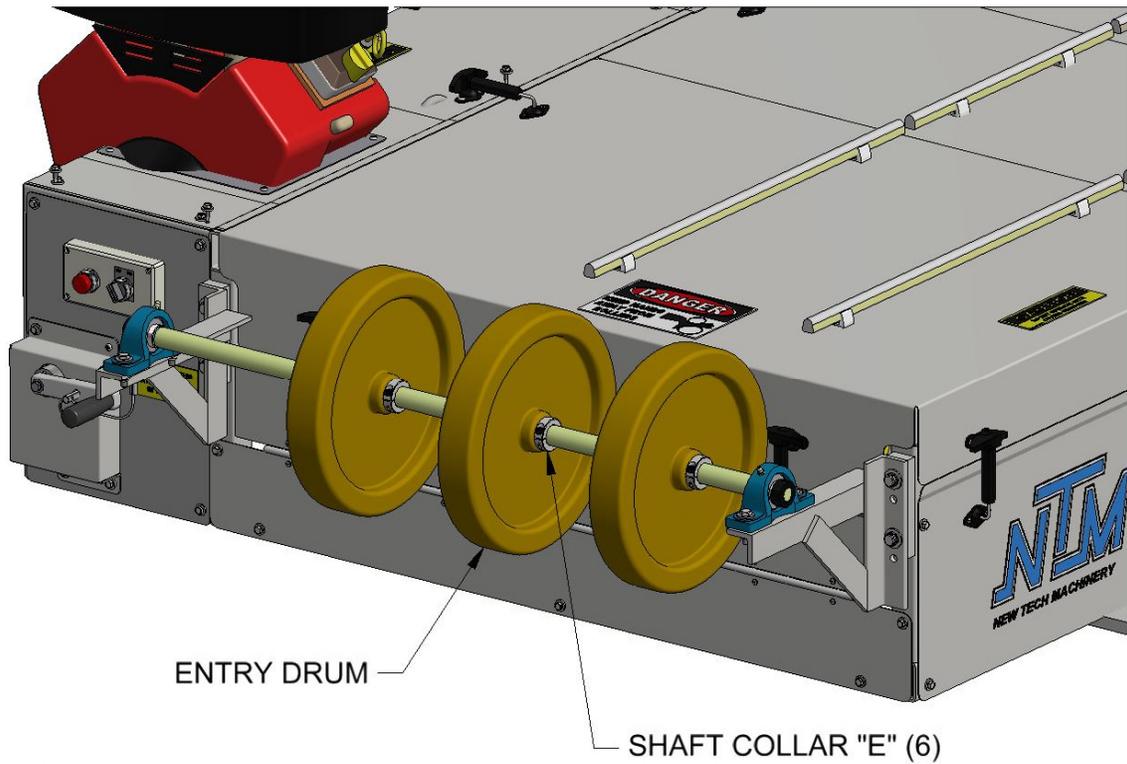
CHAPTER 14  
**ENTRY DRUM ASSEMBLY**

## **ENTRY DRUM ASSEMBLY**

The Entry Drum Assembly is necessary when feeding coil off of the optional DR1/ Dual Overhead Reel Stand. The Entry Drums need to be adjusted whenever a width change is made and possibly when a profile change is made. The outside drums should be aligned with the edges of the material and the center drum should be centered on the material.

To adjust the entry drums:

1. Using a 3/16" Allen wrench, loosen the Shaft Collars "E", on either side of the drum. (Figure 45)
2. Slide the drum over until it is lined up in the necessary position.
3. Slide the Shaft Collars "E" against the sides of the drum and lock them into place.



**Figure 45: Entry Drum**

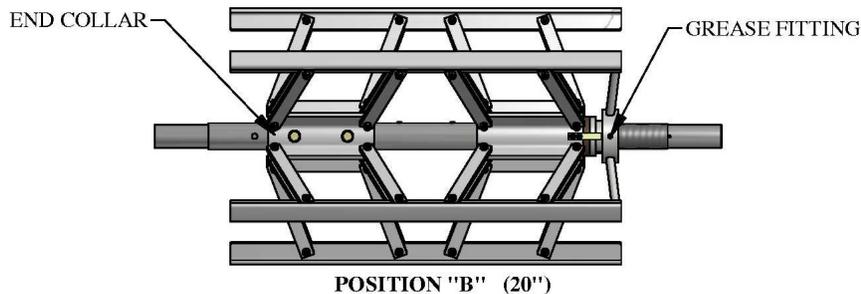
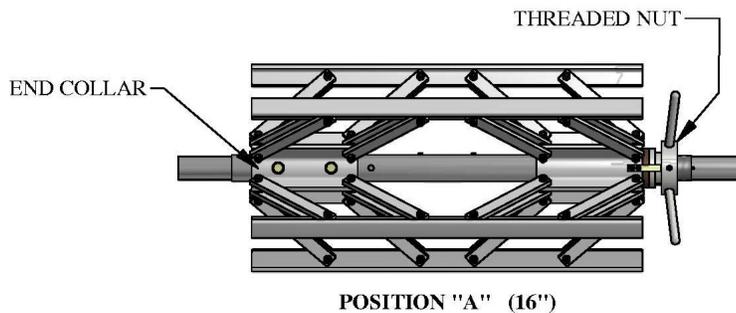
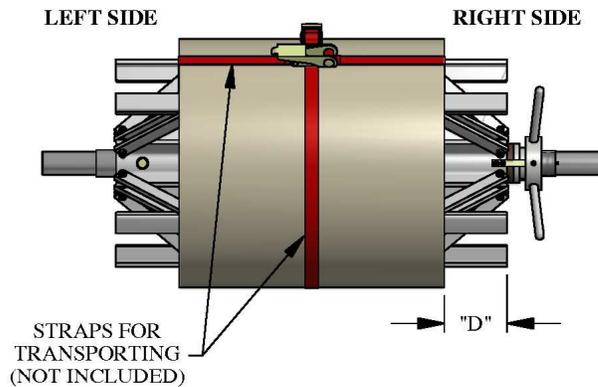
CHAPTER 15  
**WIDTH CHANGE PROCEDURE**

## WIDTH CHANGE PROCEDURE

**CAUTION:** Always make sure the machine is shut down prior to making any adjustments. **DO NOT reach through the opening of the shear while the machine is running. EVER!** To do so could result in serious injury.

1. Set the Entry Guides for the new coil width. See section ENTRY GUIDE ADJUSTMENT beginning on page 47 for details. If you have a Notcher System refer to the section Notcher Width Adjustment on page 81 instead.
2. Load material onto the Expandable Arbor and align it to the correct position using the chart on (Figure 46). Note: Also see REEL STANDS, REELS AND EXPANDABLE ARBORS for more information.

| SET-UP CHART |        |
|--------------|--------|
| PROFILE      | "D"    |
| BP           | 2"     |
| FF100        | 7/8"   |
| FF150        | -1/8"  |
| FWQ 100      | 1/2"   |
| FWQ 150      | 0"     |
| SS100        | 1-1/8" |
| SS150        | 5/8"   |
| SS200/210A   | -1/4"  |
| SS275        | -1/4"  |
| SS450/450SL  | -1/4"  |
| SS550        | -1/8"  |
| SS675        | -3/4"  |
| TRQ250       | 0"     |



**Figure 46: Expandable Arbor Setup**

CHAPTER 15  
**WIDTH CHANGE PROCEDURE**

3. Load the reeled coil onto the machine using a fork lift or other rated lifting device. Making sure the tail of the coil goes over the top and points toward the shear end of the machine. See coil routing diagram (Figure 12).
4. Cut a 1” triangle off of the 2 leading corners of the coil and feed it into the entry guides. (Figure 47)



**Figure 47: Loading Material**

5. Start the machine and use the Jog button on the Manual Control Box or Computer, to jog the material through the machine 6 to 8 inches at a time until it exits the last forming stations,

***IF THERE WILL NOT BE BEADS OR STRIATIONS IN THE PANEL, GO TO STEP 17.***

***CAUTION: Always make sure the machine is shut down prior to making any adjustments. DO NOT reach through the opening of the shear while the machine is running. EVER! To do so could result in serious injury.***

***SHUT THE MACHINE DOWN BEFORE PROCEEDING.***

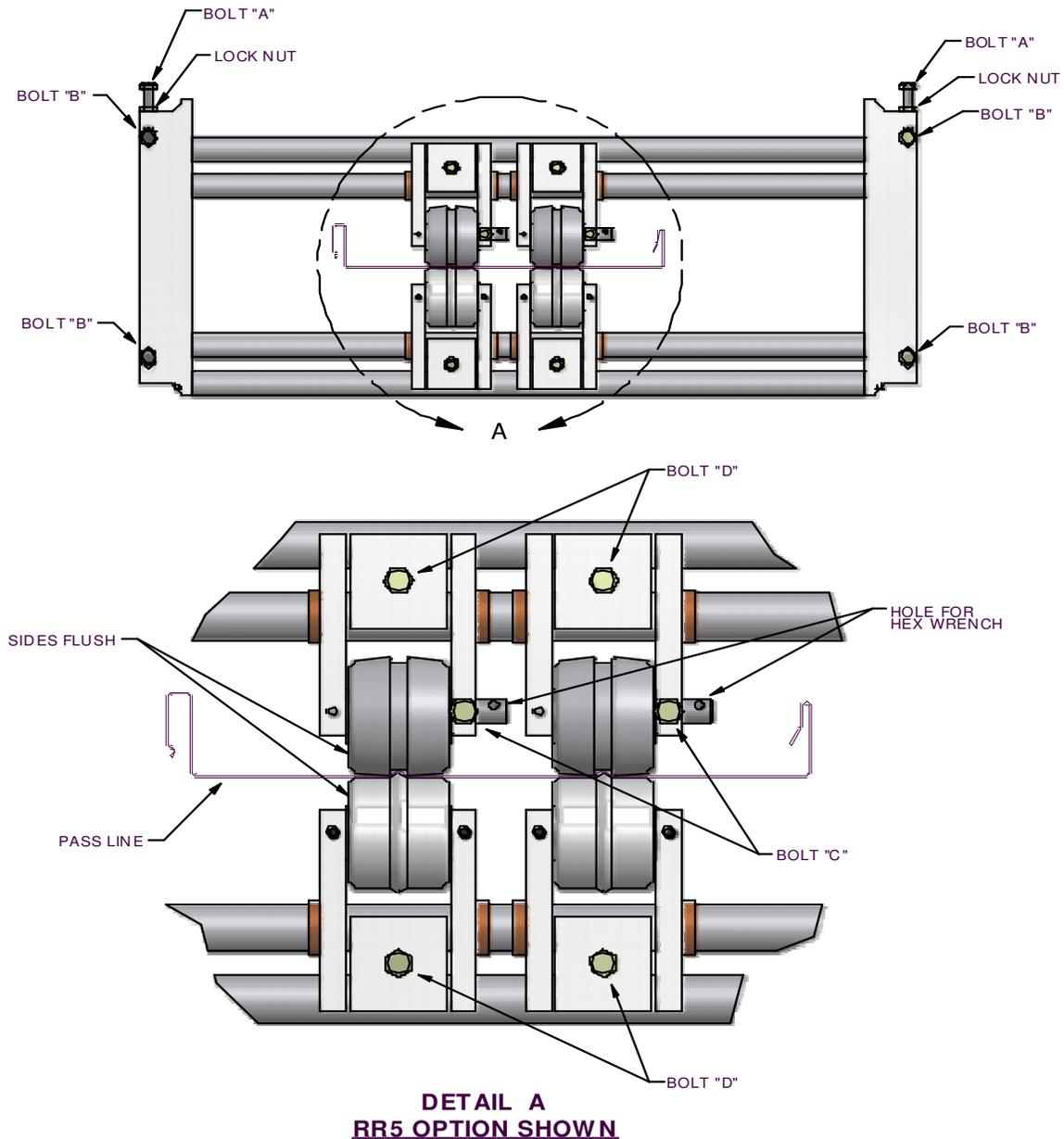
CHAPTER 15  
**WIDTH CHANGE PROCEDURE**



**Figure 48: Bead Roller Alignment**

6. If the panel requires beads, determine the spacing needed. For Example: a 12” wide panel with 2 beads centered on the panel would give 3 equal spaces or 12” divided by 3 equals 4” from center to center of each bead. Hook the end of the tape measure on the outside bottom corner of the female leg. Use a magic marker or grease pencil to mark the 4” and 8” locations on the panel. There will now be 3 equal spaces.
7. Loosen the slide lock bolts on the top and bottom bead assemblies (Figure 49) and slide each bottom and top roll assembly left or right to center them on the 4” and 8” marks on the panel.
8. Lock the two top bead assemblies in the correct position by tightening the slide lock bolt “D” on each assembly. Next align the bottom bead rollers to the tops so that the ends of the top and bottom rollers are flush with each other and tighten the bottom slide lock bolts on these 2 assemblies.

CHAPTER 15  
**WIDTH CHANGE PROCEDURE**



**Figure 49: Bead Roller Width Change**

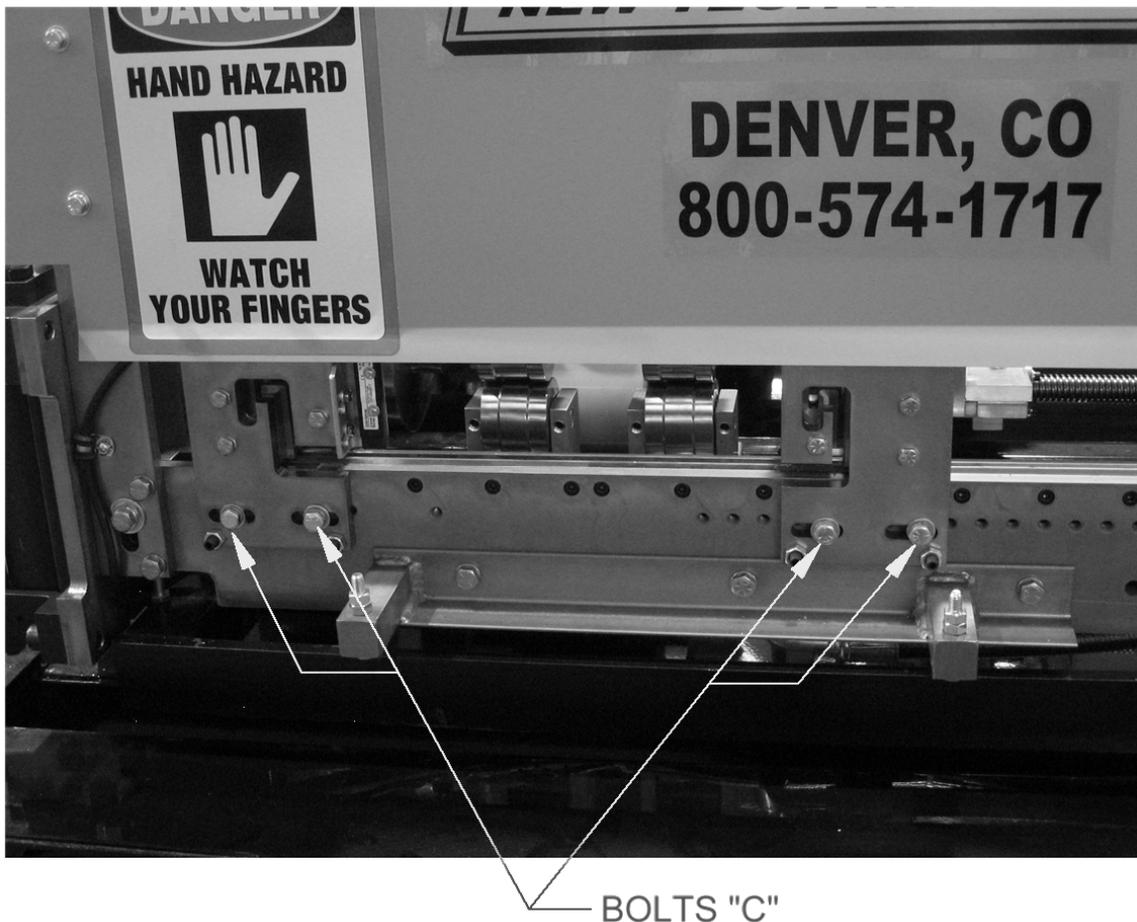
9. Check the gap between the top and bottom bead rollers using a feeler gauge. An approximate setting of  $1\frac{1}{2}$  times the material thickness is recommended. This setting can be adjusted slightly in either direction according to preference.
10. To set or change the gap between top and bottom beads, loosen the "C" bolt on both top rollers (Figure 49).
11. Insert the correct feeler gage between one of the top and bottom rollers. Locate the feeler gage on the flat of the roller next to the side plate of the assembly.

CHAPTER 15  
**WIDTH CHANGE PROCEDURE**

12. Rotate the top shaft from the 12:00 position toward the shear to decrease the gap, or away from the shear to increase the gap until the feeler gage is captured.
13. Tighten the “C” bolt to lock the position of the shaft.
14. Repeat steps 9 through 13 for the remainder of the bead rollers.
15. Start the machine, jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies.
16. Inspect the beads for depth and re-adjust as necessary.

***SHUT THE MACHINE OFF BEFORE PROCEEDING.***

17. Remove the two “C” bolts located in the slotted holes at the bottom edge of the exit male shear die assembly and set the bolts and assembly aside. (Figure 50)

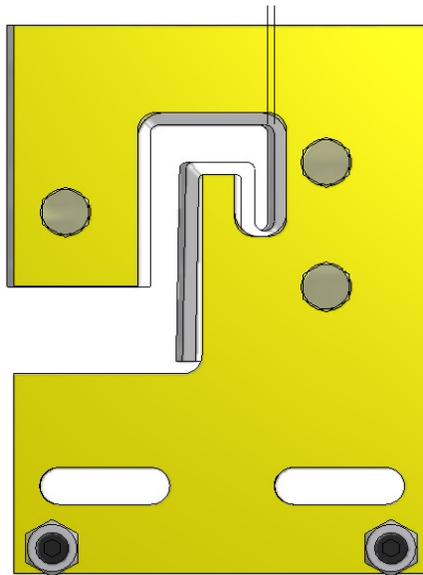


***Figure 50: Shear Bolts***

18. Remove the two “C” bolts in the slotted holes on the entry male shear die assembly.
19. Visually site through the male entry die and rough align it to the forming tool “line of fire” by sliding it left or right. Re-install the two “C” bolts into holes that correspond to the slots. Do not tighten the bolts at this time, just snug them up.

CHAPTER 15  
**WIDTH CHANGE PROCEDURE**

20. Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.
  21. Start the machine and carefully jog the panel up to the shear. Check to see if the panel will pass through the shear die. If not **FIRST SHUT THE MACHINE OFF**, then move the entry die so that the panel will pass through it.
- Adjust the entry die so that it is as close to the outside vertical portion of the leg as possible without touching it. Once this is done, tighten the two “C” bolts on the entry male shear die assembly.
22. Check the exit shear die to ensure that the material will pass through it. If not adjust as necessary.
  23. Start the machine again and slowly jog the panel approximately 6” past the exit male shear die assembly and stop. Again, **TURN THE MACHINE OFF**.
  24. Adjust the exit male shear die assembly so that it is offset to the outside of the entry die by approximately 1/64” and lock down the two “C” bolts (Figure 51) *This offset is necessary so that after a cut is made, the leading edge of the panel does not hang up on the exit die.*



EXIT VIEW

**Figure 51: Exit Die Adjustment**

25. Look down the leg of the panel and make sure that the entry and exit male shear die assemblies are not touching the panel as it passes through them.
26. Make sure that one of the points of the top shear blade is inboard of the vertical portion of the male leg. This part of the leg should be cut with the angle or rake of the blade to cut in a scissor action against the vertical die. See **TOP SHEAR BLADE ADJUSTMENT** (Figure 22 & Figure 23) if adjustment is necessary.
27. Start the machine and press the shear down button to cut off the panel, then jog the material through the shear again and stop.

**WIDTH CHANGE PROCEDURE**

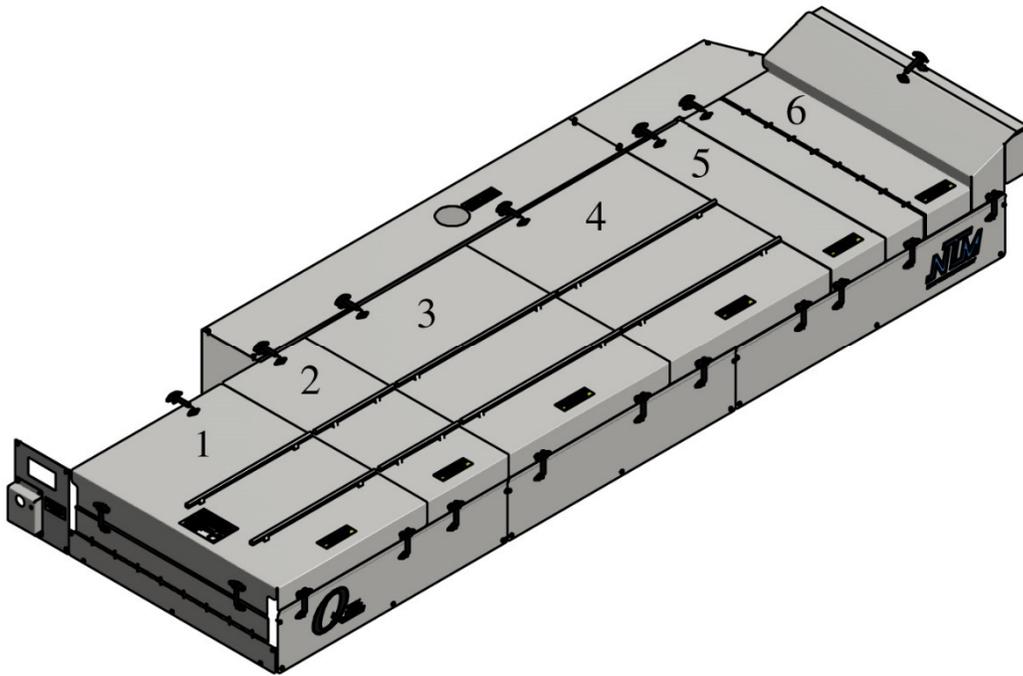
- 28.** Inspect the two cuts and adjust the dies as necessary until an acceptable cut is made. Again, **TURN THE MACHINE OFF BEFORE MAKING ANY ADJUSTMENTS.**
- 29.** Once you are satisfied with the cut being made, you are ready to run panel.

CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**

## PROFILE CHANGEOVER PROCEDURE

**CAUTION:** *Always make sure the machine is shut down prior to making any adjustments. DO NOT reach through the opening of the shear while the machine is running. EVER! To do so could result in serious injury.*

1. Remove Top Covers number 1, 2, 3, 4, and 5 (Figure 52) and set aside.



**Figure 52: Remove Top Covers**

2. Using a 1/2" wrench, remove the bolts holding the right and left Tooling Rails to the Fixed Rail Mounts (Figure 53). Store the tooling and set the hardware near the machine for use when installing the next profile. Note: the **SS100**, **SS150**, **SS450/450SL**, and **BP** profiles all share the same left-side rollers, so when changing between these profiles, only the right-side Tooling Rails will need to be changed. Likewise, the **FF100** and **FF150** profiles also share the same left-side rollers, so when changing between these profiles, only the right-side Tooling Rails will need to be changed

CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**



**Figure 53: Removing Tooling Rails**

3. Refer to the SSQ Slide Block chart (Figure 54) and find the profile that will be installed into the machine. It will show if the Right Side Fixed Mount Rail #1 needs to be in the Inboard position or Outboard position (Figure 55).

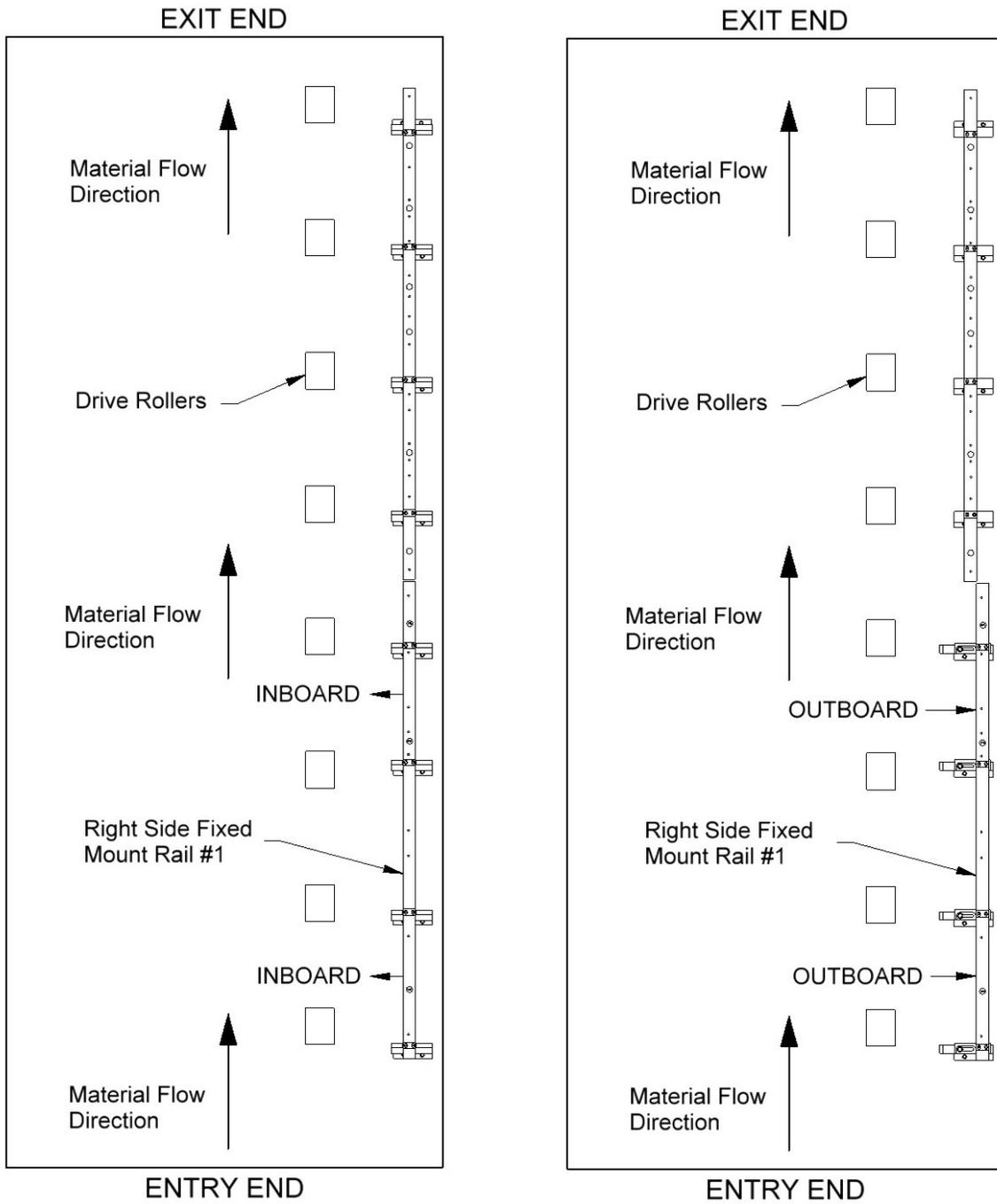
**IF THE RAIL IS NOT IN THE CORRECT POSITION, GO TO STEP 4.**

**IF THE RAIL IS IN THE CORRECT POSITION GO TO STEP 6.**

| <b>SSQ SLIDE BLOCK CHART</b>                                      |                                       |
|---|---------------------------------------|
| <b>PROFILE</b>  | <b>RIGHT SIDE FIXED MOUNT RAIL #1</b> |
| BP, FF100, SS100, SS150, SS275,<br>FWQ100, FWQ150                 | INBOARD                               |
| FF150, SS200, SS275, SS450, SS275,<br>SS275, SS550, SS675, TRQ250 | OUTBOARD                              |

**Figure 54: Block Chart**

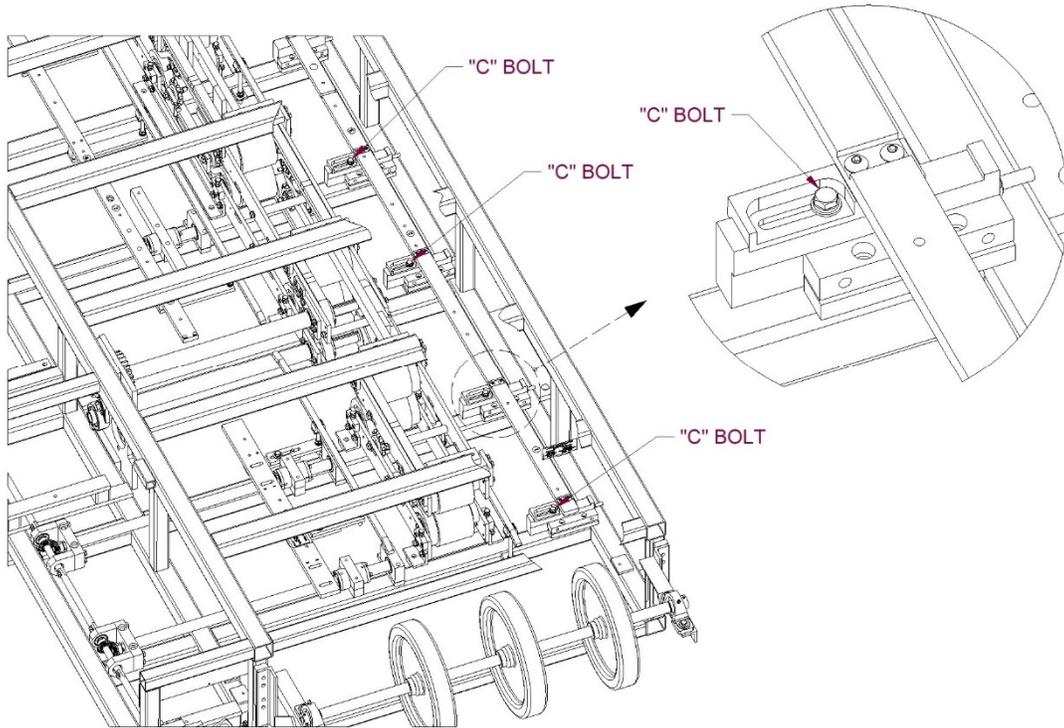
CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**



**Figure 55: Inboard/Outboard Positions**

CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**

4. Loosen bolt “C” on the first 4 Slide Block assemblies (Figure 56).



*Figure 56: April 2009 and later*

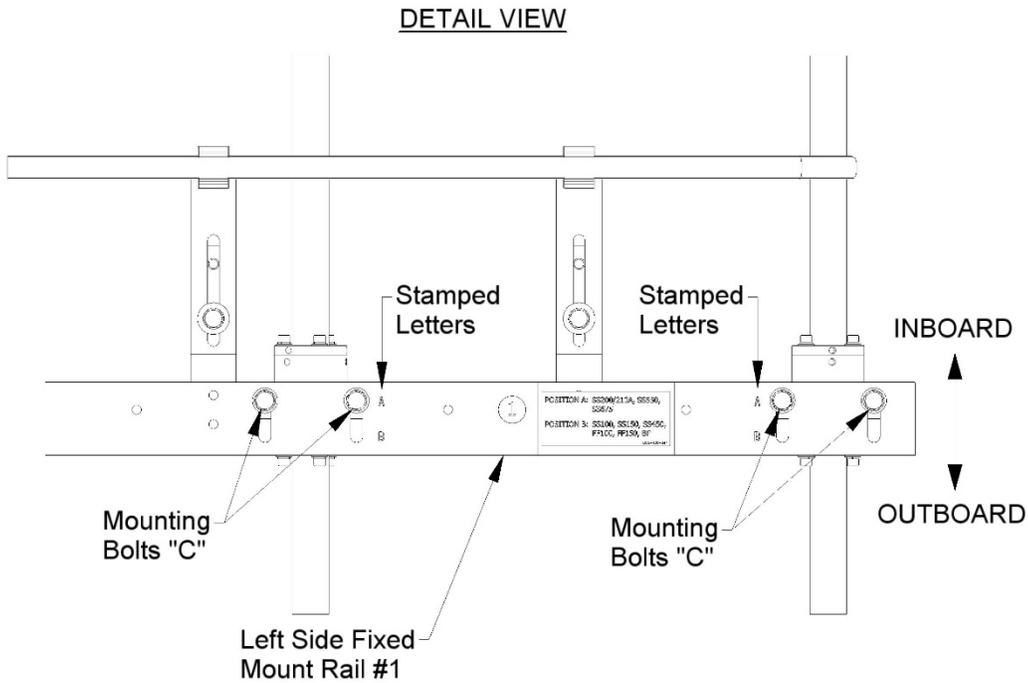
5. Once all 4 bolts are loose, slide the Right Side Fixed Mount Rail #1 to the correct position (Figure 57), either “inboard” or “outboard”. Make sure that it is fully in position and then tighten the “C” bolts (Figure 56).



*Figure 57: Right Side Fixed Mount Rail*

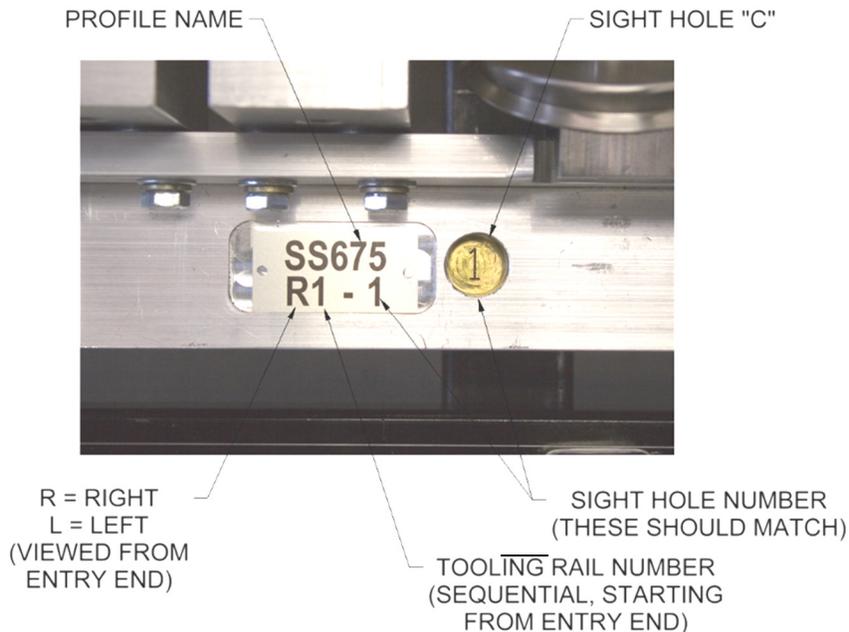


CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**



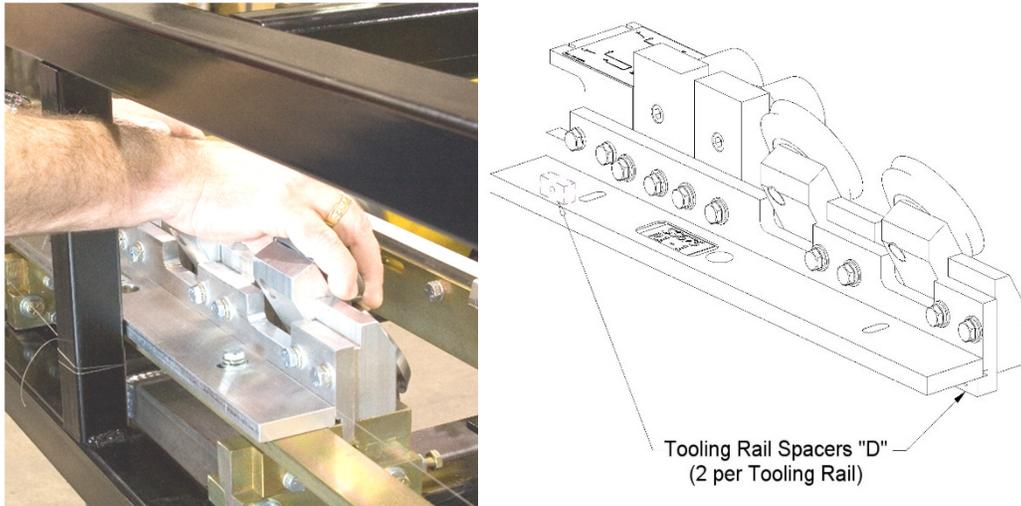
**Figure 60: Shown in the “A” position**

7. Find the R1 Tooling Rail and set it flat on top of the Right Side Fixed Mount Rail #1 making sure the correct number shows in Sight Hole “C” (Figure 61). Thread the two mounting bolts into the slots of the rail and finger-tighten them. Pull the Tooling Rail assembly toward the outside of the machine until the two Tooling Rail Spacers “D” (Figure 62) contact the face of the mounting rail. Hold it in place while tightening the mounting bolts.



**Figure 61: Tooling Rail Identification**

CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**



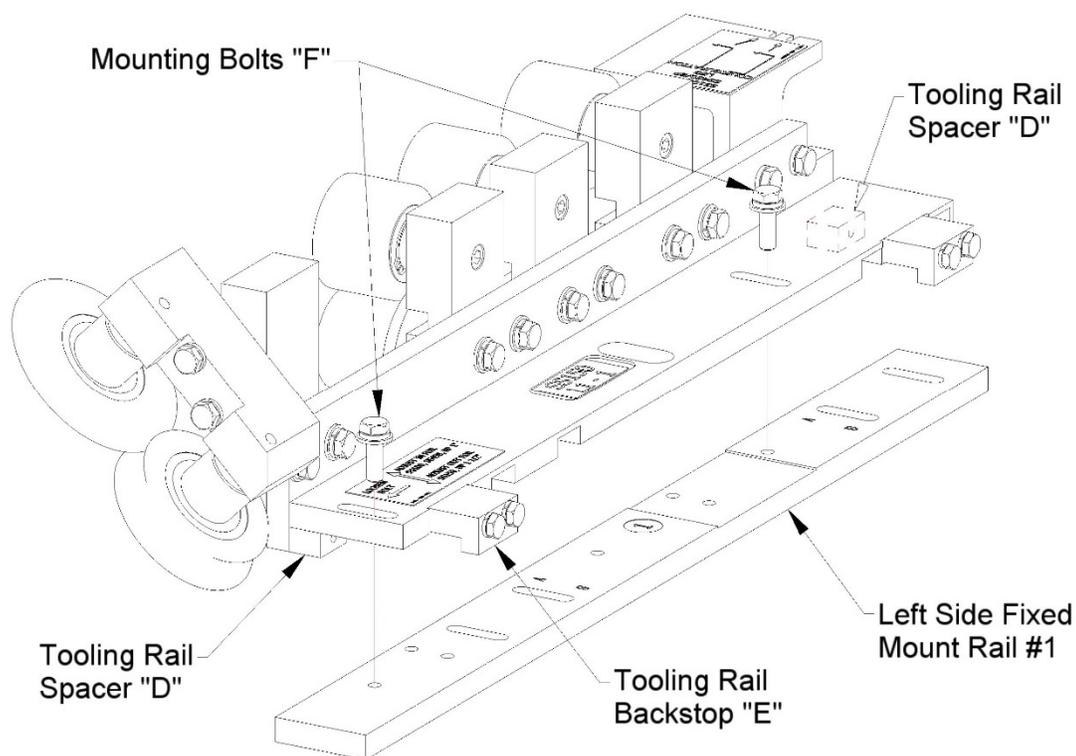
**Figure 62: R1 Tooling Rail Spacers**

8. Continue installing the remainder of the right and left tooling rails in sequence as described above.

**Special Instructions for the SS100, SS150, SS450, and BP Profiles:**

The Left #1 Tooling Rail Assembly (L1-1) for these profiles can be mounted in one of two possible positions based on the required height of the male leg. When mounting this Tooling Rail Assembly for use with the **SS150, SS450** or **BP 1½"** profiles pull it toward the outside of the machine until the two Tooling Rail Spacers "D" contact the face of the Left Side Fixed Mount Rail #1 (Figure 63). When mounting the Tooling Rail Assembly for use with the **SS100** or **BP 1"** profiles push the Tooling Rail Assembly toward the center of the machine until the Tooling Rail Backstops "E" contact the Left Side Fixed Mount Rail #1. Once the Tooling Rail Assembly is positioned properly, tighten the two Mounting Bolts "F".

CHAPTER 16  
**PROFILE CHANGEOVER PROCEDURE**



**Figure 63: L1-1 Special Instructions**

9. If you have a Notcher System in your machine you may need to change one or both Notcher Cartridges. See the section Notcher Cartridge Change on page 81 for more details.
10. To align the Right Entry Guide, loosen the Lock Down Handle on the Right Entry Guide (Figure 36). Slide the entry guide to the left or right until the Entry Guide Alignment Notch is directly under one of the notches on the Tooling Rail Marker Plate. Make sure to choose the notch on the Marker Plate that corresponds to the desired leg configuration as noted on the decal on the top of the Marker Plate (Figure 37). **Note: If you have a Notcher System installed you would instead loosen the Notcher Positioning Bolt "B" on the right notcher, slide it left or right until the marker lines up with the tooling, and retighten the bolt (see Figure 69).**
11. Tighten the Lock Down Handle on the right entry guide.
12. Loosen the Lock Down Handle on the left entry guide. **Note: For notcher systems loosen the Notcher Positioning Bolt "B" on the left notcher (see Figure 69).**
13. Cut a 12" long piece of gage material from the coil that will be used in the machine. Slide gage material between the left and right entry guides.
14. 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: For notcher systems slide the Left Notcher left or right to capture the material then tighten the Notcher Positioning Bolt "B" (see Figure 69).**
15. Using the Tooling Rail Adjustment Handle (Figure 38), align the notch on the tooling rail marker plate to the alignment notch located in the Left Entry Guide.

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Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the marker plate. Turning the handle clockwise moves the tooling out-ward, turning it counter-clockwise moves move it in-ward. The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 39). Press the handle inward (Figure 40) to engage the width adjustment gear and turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

16. Load material onto the Expandable Arbor and align it to the correct position (Figure 10).
17. Load the reeled coil onto the machine using a fork lift or other rated lifting device.
18. Cut a 1” triangle of material off the 2 leading corners of the coil and feed it into the entry guides.



**Figure 64: Preparing Coil for Loading**

19. Start the machine and use the Jog button on the Manual Control Box or Computer to jog the material through the machine 6 to 8 inches at a time until it exits the last forming stations.

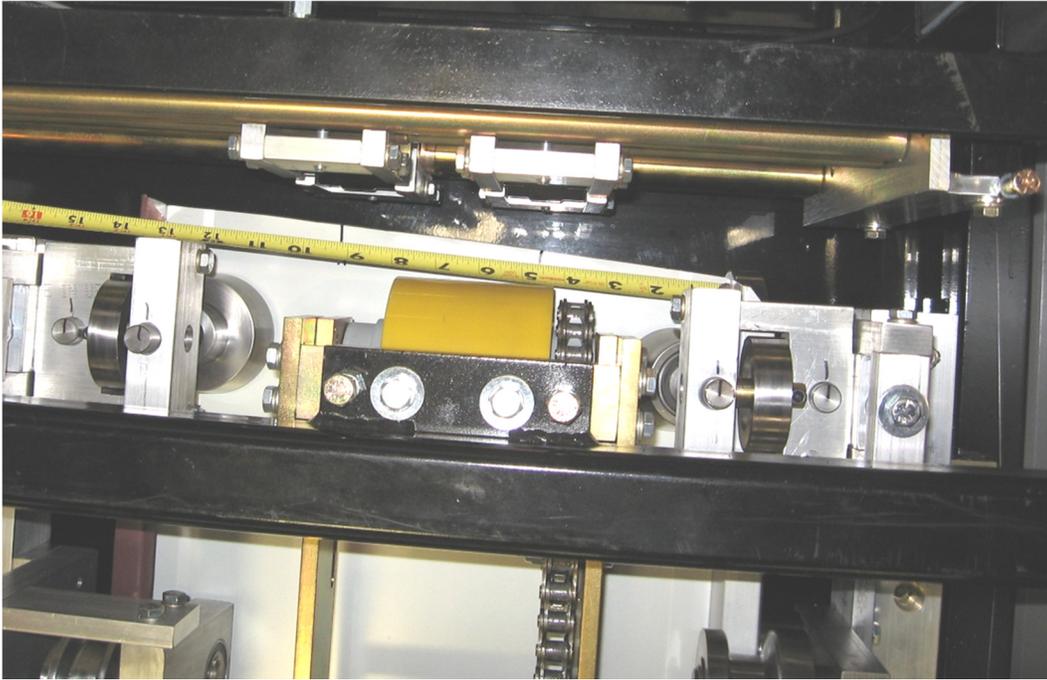
***IF THERE WILL NOT BE BEADS OR STRIATIONS IN THE PANEL, GO TO STEP 24.***

**CAUTION: Always make sure the machine is shut down prior to making any adjustments. DO NOT reach through the opening of the shear while the machine is running. EVER! To do so could result in serious injury.**

20. If the panel requires beads, determine the spacing needed. For Example: a 12” wide panel with 2 beads centered on the panel would give 3 equal spaces or 12” divided by 3, which equals 4” from center to center of each bead. Hook the end of the tape measure on the outside bottom corner of the female leg. Use a magic

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marker or grease pencil to mark the 4" and 8" locations on the panel. There will now be 3 equal spaces. (Figure 65)



**Figure 65: Spacing Bead Rollers**

21. Loosen the Slide Lock Bolts "D" on the top and bottom bead assemblies (
22. Figure 34) and slide each bottom and top roll assembly left or right to center them on the 4" and 8" marks on the panel.

***Lock the two top bead assemblies in the correct position by tightening the "D" bolt on each assembly (***

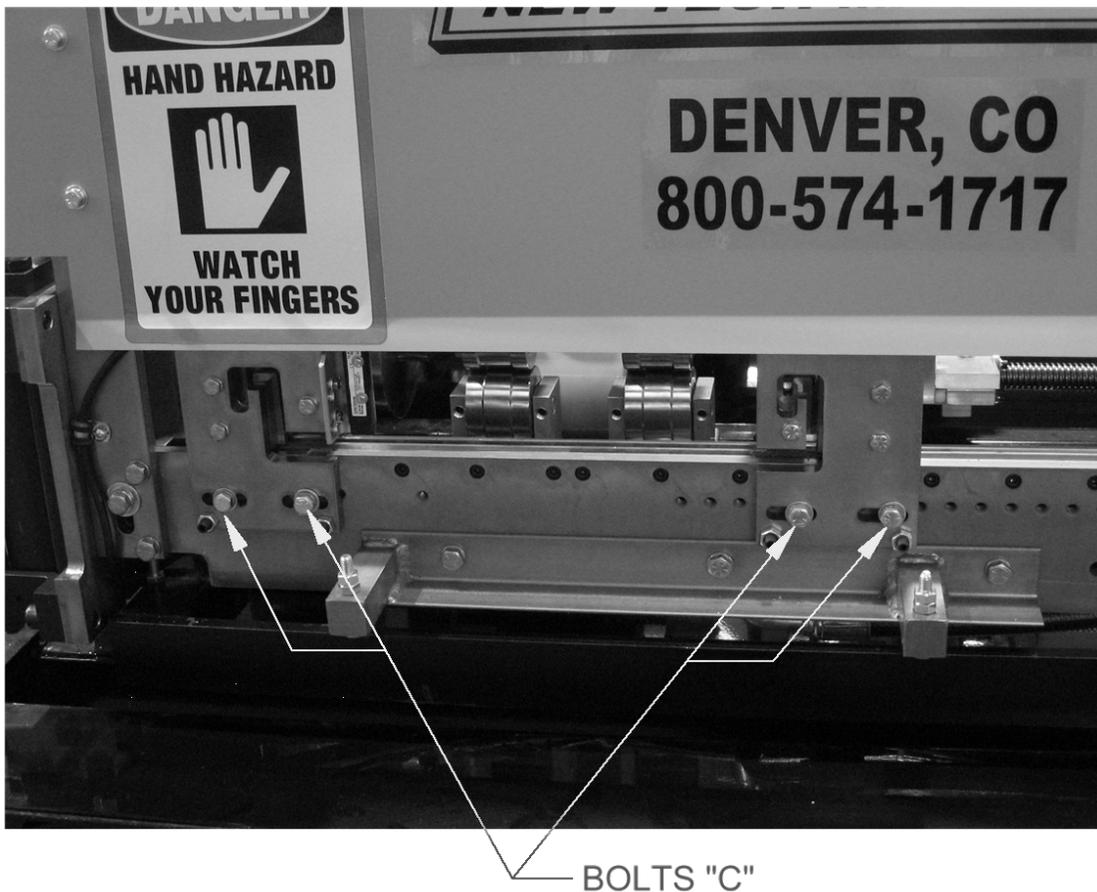
23. Figure 34). Next align the bottom bead rollers to the tops so that the ends of the top and bottom rollers are flush with each other and tighten the bottom "D" bolts on these 2 assemblies.
24. Using a 7/16" wrench, remove the Shear Cover and set aside.

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*Figure 66: Removing Shear Cover*

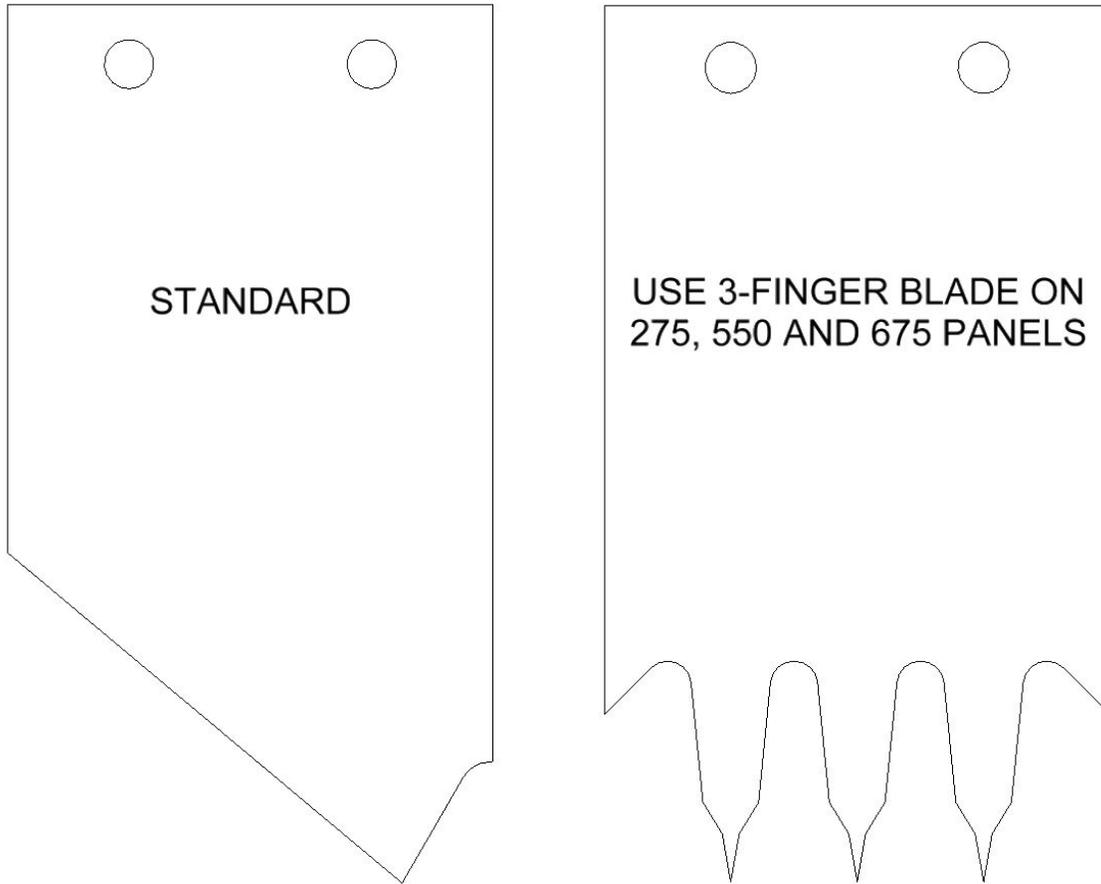
25. Remove the two “C” bolts on the exit male and female shear die assemblies located in the slotted holes at the bottom edge of the die holder (Figure 67). Store the shear dies with the profile just removed and set the bolts aside for use when installing the new shear dies.



*Figure 67: Remove Shear Bolts*

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26. Remove the two “C” bolts from the slotted holes on the entry male and female shear die assemblies as described previously.
27. If changing to or from an SSQ275, SSQ550 or SSQ675 profile, the #1 shear blade will need to be changed.



**Figure 68: Shear Blade #1**

28. Locate the shear dies that correspond to the profile installed. Separate the male and female entry and exit shear dies.
29. Set the Male Entry Die on top of the Bottom Die (Figure 23 - Detail A on page 36). Visually sight through the male entry die and roughly align it to the forming tool “line of fire” by sliding it left or right. Re-install the two “C” bolts into the holes that correspond to the slots. Do not tighten the bolts at this time, just snug them up.
30. Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.
31. Repeat steps 29 and 30 for the Female Dies.
32. Start the machine and carefully jog the panel up to the shear. Check to see if the panel will pass through the entry male and female shear dies. If not, **FIRST SHUT THE MACHINE OFF**, then move the male and/or female entry dies so that the panel will pass through.  
Adjust the entry die so that it is as close to the outside vertical portion of the leg as possible without touching it. Once this is done, tighten the two “C” bolts on these assemblies.

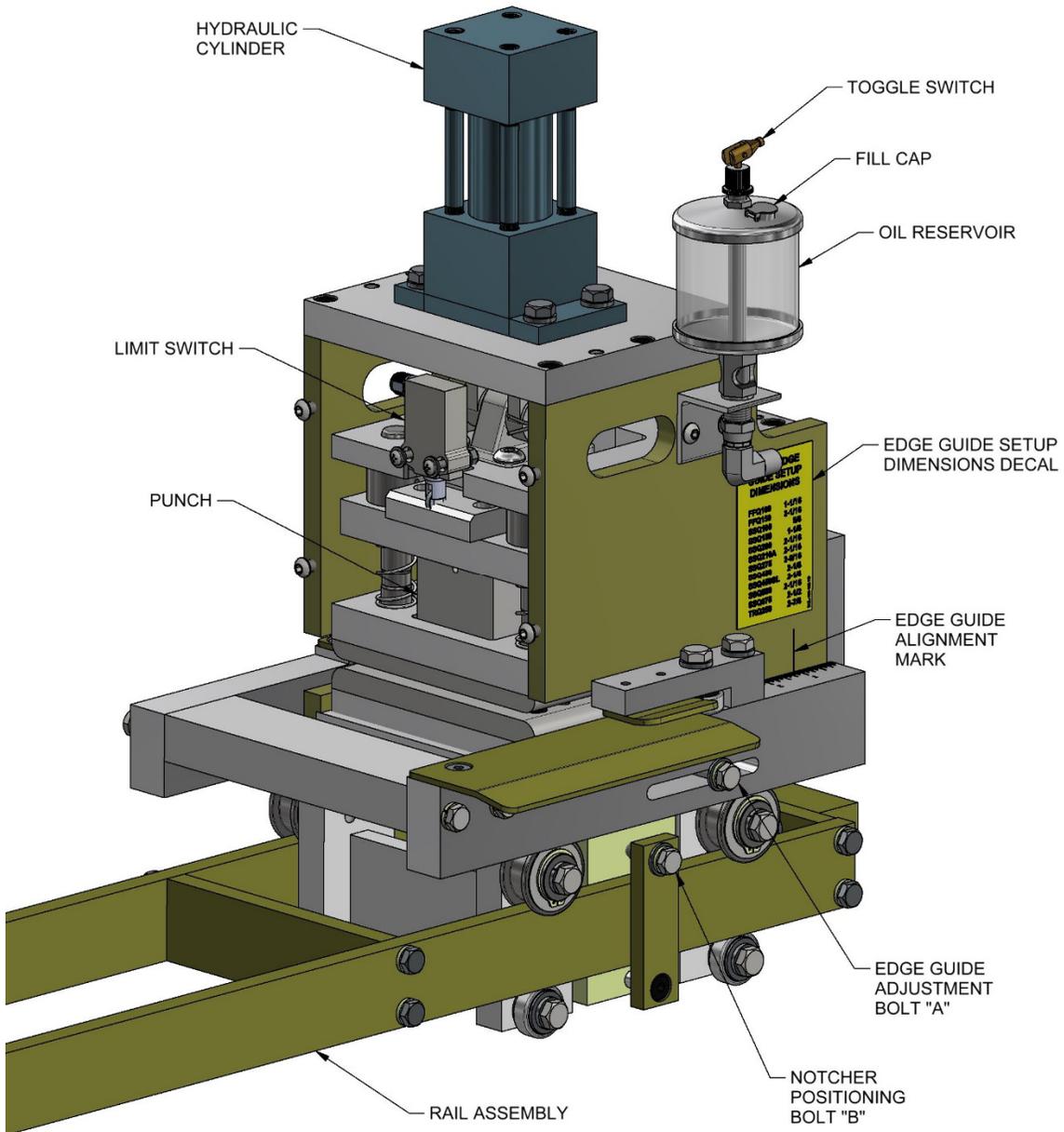
**PROFILE CHANGEOVER PROCEDURE**

33. Start the machine again and slowly jog the panel approximately 6” past the exit die and stop. Again, **TURN THE MACHINE OFF.**
34. Adjust the male and female exit dies so that they are offset to the outside of the entry die by approximately 1/64” and lock down the two “C” bolts (Figure 51) on each assembly. *This offset is necessary so that after a cut is made, the leading edge of the panel does not hang up on the exit die.*
35. Start the machine and press the shear down button to cut off the panel.
36. Inspect the two cuts and adjust the dies as necessary until an acceptable cut is achieved. Again, **TURN THE MACHINE OFF BEFORE MAKING ANY ADJUSTMENTS! NEVER REACH THROUGH THE SHEAR WHILE THE MACHINE IS RUNNING. SERIOUS INJURY COULD RESULT!**  
When the cut is acceptable, the machine is ready to start panel production.
37. Reinstall covers.

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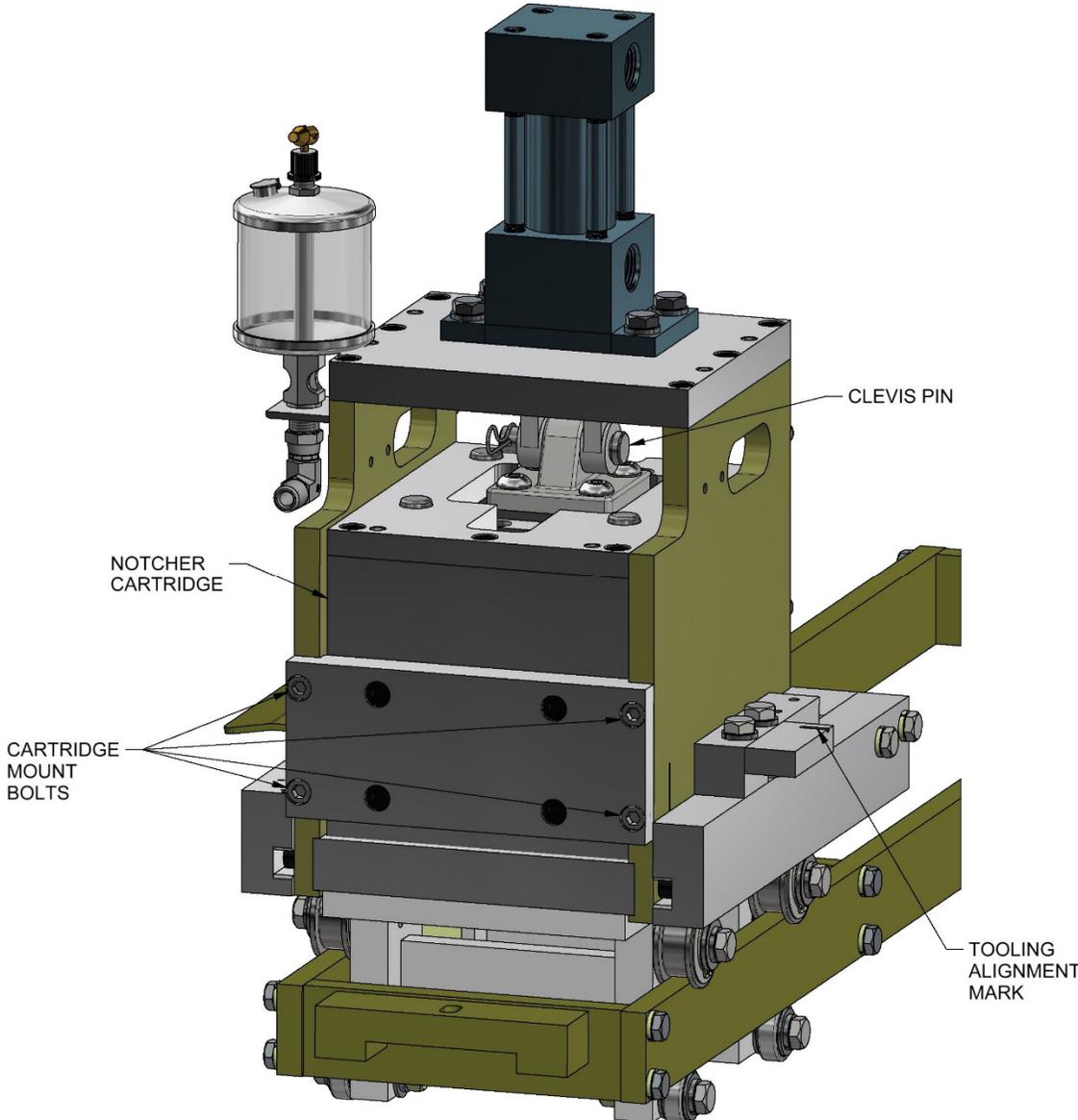
# NOTCHER SYSTEM

## *Notcher Overview*



**Figure 69: Notcher Overview #1**

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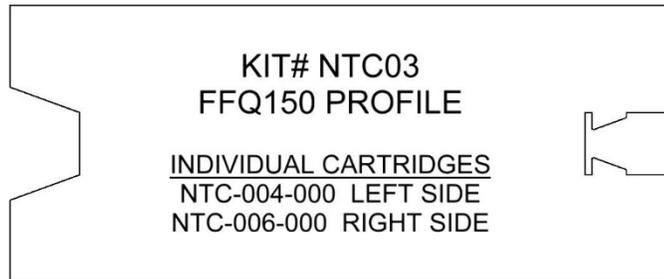


*Figure 70: Notcher Overview #2*

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***Notcher Cartridge Profile Summary***

We offer two basic types of notcher profiles – a rectangular profile and contoured profiles that provide a closure flap for the finished panel leg. The rectangular profile cartridges should always be used on the SSQ100, SSQ150, SSQ200, SSQ210A, SSQ275, SSQ450, SSQ450SL, SSQ550, and TRQ250 roller sets. They can also be used on FFQ100, FFQ150, and SSQ675 roller sets although you will not have a closure flap. The contoured profiles have a right side cartridge that is specific to the roller set, and a tapered left side profile that provides relief in the panel in order to prevent the flap from being pushed out. Note – the contoured profiles all share the same left side cartridge.



**Figure 71: Notcher Profiles**

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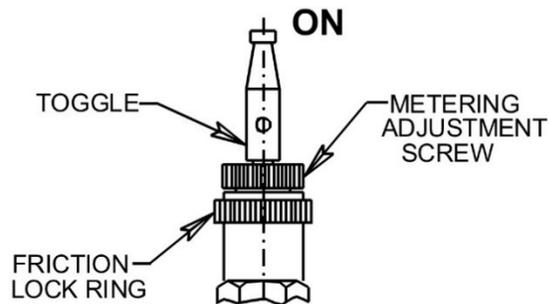
***Oil Dispenser***

Before running the machine, turn on the flow of oil from the reservoir by flipping the toggle up. During operation keep an eye on the oil level and refill if necessary using an oil can. The dispensers are accessed by lifting the window up (**NOTE: Turn off the machine before lifting the window.**) It is recommend to use a punch and die oil or vanishing oil. The viscosity of the oil cannot exceed 1500 SSU. When you have finished running the machine, turn off the flow of oil by flipping the toggle down.

***Toggle Valve Adjustment***

**MINIMUM LIFT CONDITION – FIG. 1**

1. Loosen friction lock-ring
2. Raise toggle to "on" position and turn metering adjustment screw in until toggle and screw just clear each other.
3. The toggle is now in a no lift condition. Fluid will not flow since the port will not be open.
4. Gradually start turning metering adjustment screw out with the toggle in the "on" positions, and at the same time observe drip rate at the nozzle.
5. When proper drip rate is established, hold metering adjustment screw in place and turn down friction lock-ring to lock setting.
6. To stop flow, flip toggle to "off" position.
7. To start flow, raise toggle to "on" position. Drip rate, as previously set is retained.

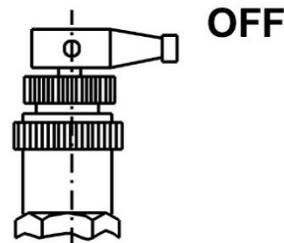


**FIG. 1**

Set until light can be seen between mating surfaces or until a slight free wiggle of toggle can be felt.

**MAXIMUM LIFT CONDITION – FIG. 2**

1. Loosen friction lock-ring.
2. Flip toggle to "off" position and turn metering adjustment screw out until toggle and metering adjustment screw just clear each other.
3. Do not turn metering adjustment screw beyond this point. Doing so will lift valve stem off of the seat, allowing uncontrolled flow of fluid and no shut-off.
4. Raise toggle to "on" position and observe drip rate at the nozzle.
5. If flow is too great, turn metering adjustment screw in until desired drip rate is reached, hold metering adjustment screw in place and turn down friction lock-ring to lock setting.
6. To stop flow, flip toggle to "off" position.
7. To start flow, raise toggle to "on" position. Drip rate, as previously set is retained.



**FIG. 2**

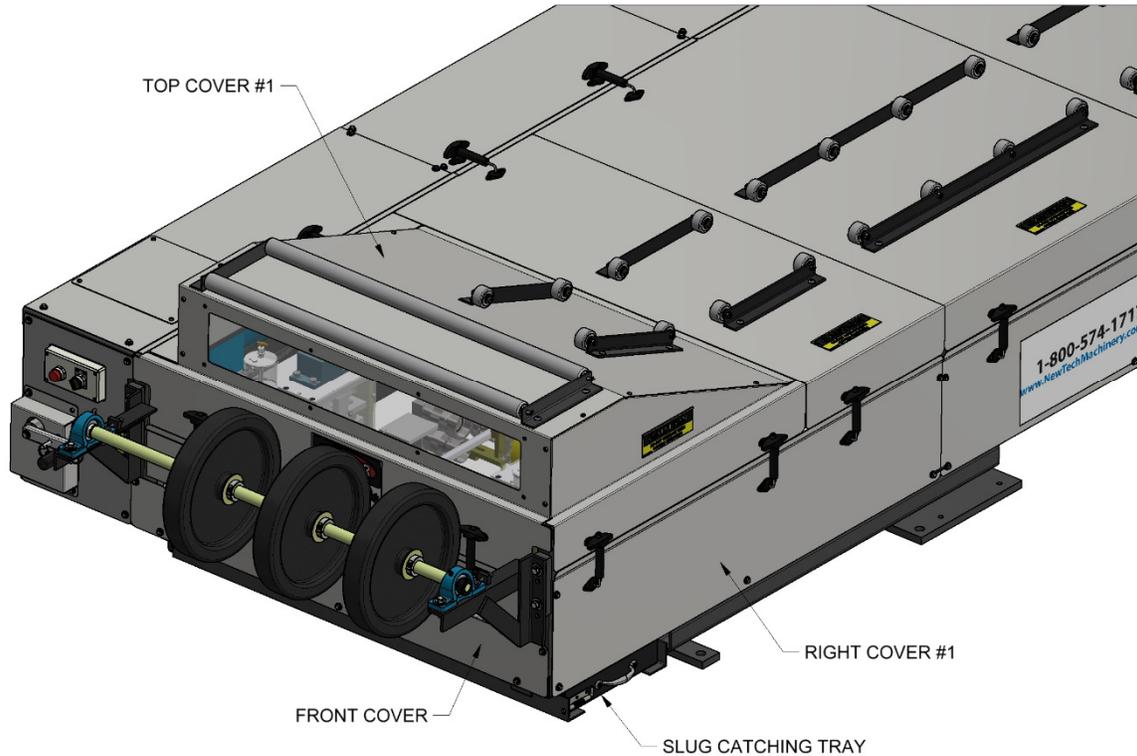
Toggle valves are normally shipped with toggle in "off" position but with some lift when raised to "on" position. This setting may not be required. Please check and adjust the setting to your specific needs.

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**NOTCHER SYSTEM**

***Notcher Width Adjustment***

When adjusting the panel width, the location of the left Notcher will need to be adjusted as well. The right Notcher does not need to be moved. To position the left Notcher follow the steps below.

1. Turn off the machine and disconnect the power.
2. Remove Top Cover #1 and the Front Cover as shown below.



**Figure 72: Notcher Covers**

3. Cut off a 12” long piece of the coil you will be using.
4. Loosen the Notcher Positioning Bolt “B” on the left Notcher (see Figure 69). Slide the left Notcher left or right as needed and insert the piece of coil into the Notchers.
5. Push the left Notcher tight against the piece of coil and retighten bolt “B”.
6. Align the left Tooling Rail to the Tooling Alignment Mark on the left Notcher. See the section LEFT TOOLING RAIL TO ENTRY GUIDE ALIGNMENT on page 48 for details.

***Notcher Cartridge Change***

(Refer to Figure 69 through Figure 72)

When changing roller sets in your machine, you may also need to change one or both notcher cartridges. See the Notcher Cartridge Profile Summary section on page 79 for a description of the different profiles. If you are changing from rectangular notchers to one of the contoured notchers or vice versa, then you will need to change both cartridges. If you are changing from a contoured notcher to one of the other contoured notchers, then

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you only need to change the right side cartridge. Follow the procedure below to change the cartridge(s).

1. Turn off the machine and disconnect the power.
2. Remove Top Cover #1, Right Cover #1, and the Front Cover as shown in Figure 72.
3. Shut off the oil reservoir by flipping the toggle down.
4. Remove the tube from the oil reservoir by pushing the retaining ring in and pulling the tube out.
5. Remove the Clevis Pin (see Figure 70).
6. Loosen the Edge Guide Adjustment Bolt “A” (see Figure 69).
7. Remove the four Cartridge Mount Bolts (see Figure 70) using a ¼” allen wrench.
8. Pull the Cartridge out of the housing.
9. Install the new Cartridge by reversing the steps above.
10. When changing cartridges you will also need to adjust the notcher depth. See the section Adjusting Notcher Depth below for details.

### ***Adjusting Notcher Depth***

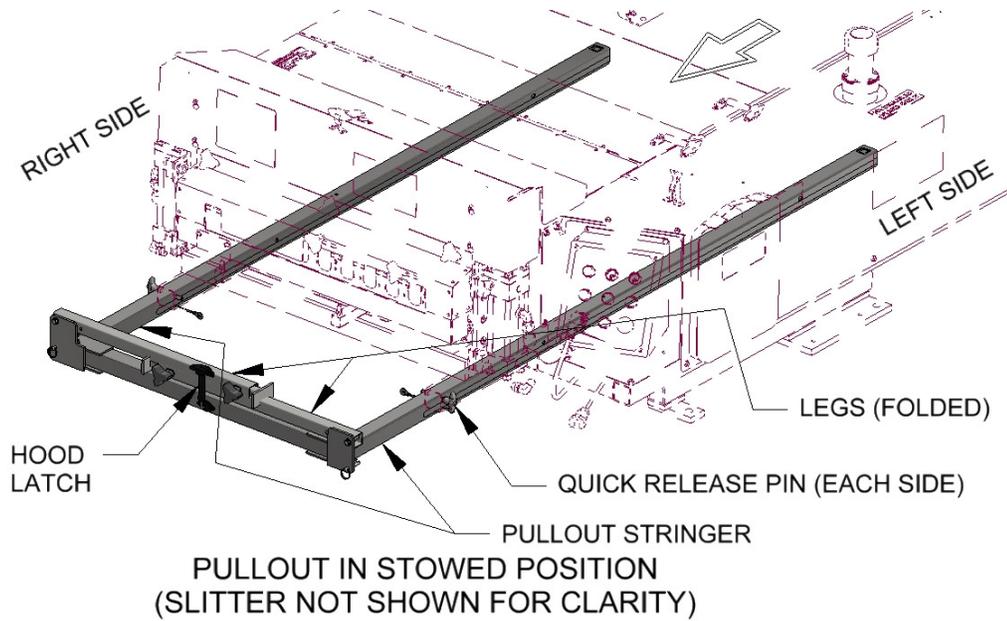
(see Figure 69 and Figure 70)

The notcher depth is the distance from the edge of the panel to the inside of the notch. The correct depth is dependent on the panel profile being formed. When changing from one panel profile to another the depth of one or both notchers will likely need to be adjusted, which can be done by following the procedure below.

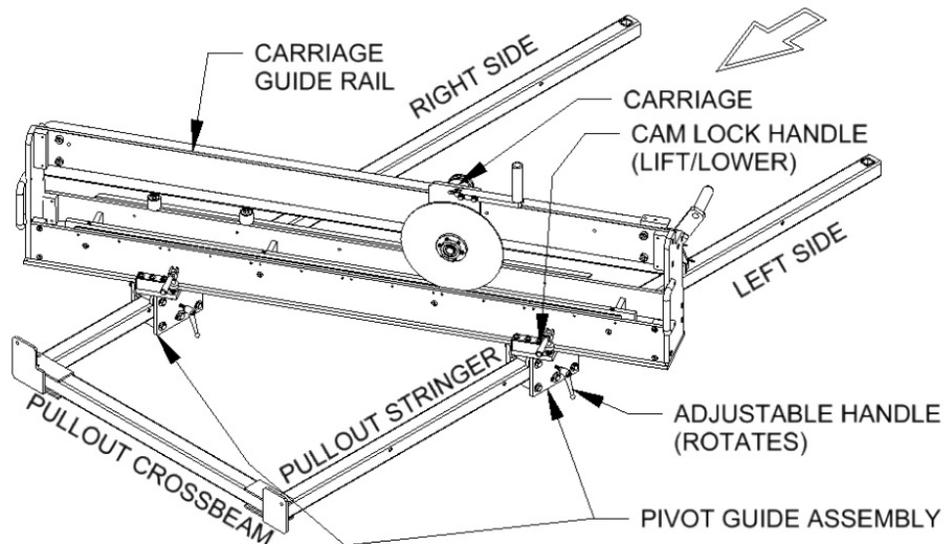
1. Turn off the machine and disconnect the power.
2. Loosen the Edge Guide Adjustment Bolt “A”.
3. Find the correct roller set listed on the Edge Guide Setup Dimensions Decal and adjust the Edge Guide until the Edge Guide Alignment Mark is in line with the correct dimension.
4. Tighten the Edge Guide Adjustment Bolt “A”.
5. Loosen the Notcher Positioning Bolt “B”.
6. Slide the notcher left or right until the Tooling Alignment Mark lines up with the mark on the tooling.
7. Tighten the Notcher Positioning Bolt “B”.

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**ANGLED SLITTER**

## ANGLED SLITTER



**Figure 73: Pulling Slitter Out From Machine**



**Figure 74: Pivot Guides and Stringers**

### **Slitter Setup**

To deploy the slitter, first remove the two T-Handle Quick Release Pins (see Figure 73). They are at the exit end of the machine down below the shear guard. One is on the left side and one is on the right side of the machine.

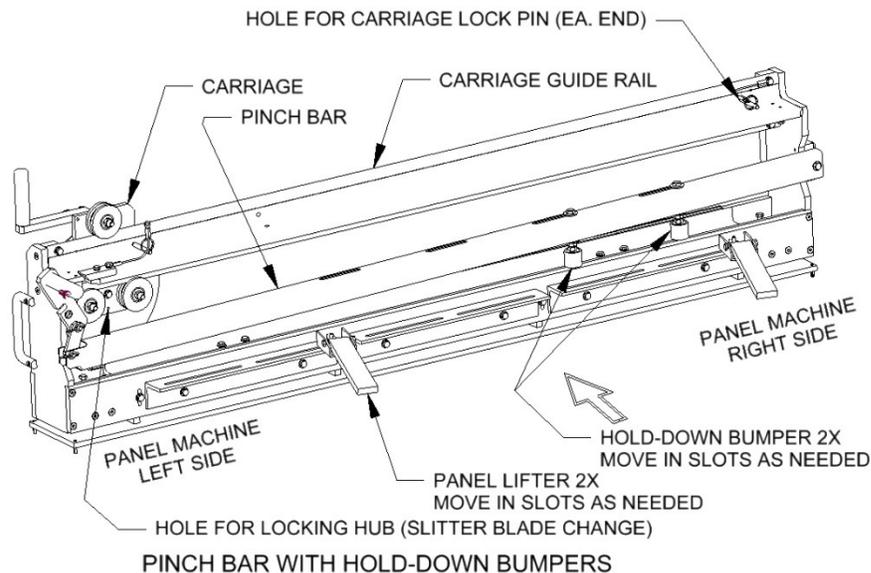
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Note that there are two pivot guide assemblies and that each of them has two handles. The lower 'Adjustable Handle' rotates and controls the entire pivot guide assembly being able to roll along the pullout stringer. When this one is tightened down the pivot guide locks down on the stringer. The upper 'Cam Lock Handle' lifts and lowers by 90° and controls sliding of the entire slitter across the top surface of the pivot guide. Lifting the handle allows this motion while lowering the handle prevents it.

Loosen the adjustable handles on both Pivot Guide Assemblies (see Figure 74). Firmly grasp the Pullout Crossbeam, lift lightly, and pull away from the machine about 5 ft (1.5 m) until the Pullout Stops engage. Install both Quick Release Pins to lock the Pullout in this operating position. Fold down both legs and adjust the length of each to firmly support the end of the Pullout.

Determine the direction of cuts to be made with the slitter and move each Pivot Guide Assembly as far away from the shear guard as needed to approximate the expected angle. Lift both Cam Lock Handles and slide the slitter lengthwise until the overhangs at each end are about equal. Reach across and lower the Cam Lock Handle on the right side. Five steps are required before running panels through the machine:

1. Raise the Pinch Bar.
2. Move the Hold-Down Bumpers along the length of the Pinch Bar to ensure the Bumpers will clear both the male and female legs of the panels to be run.
3. Pull the pin locking the Carriage to the Guide Rail.
4. Check that the slitter blade clears the path of the panel and both panel legs. Move the blade to clear if necessary.
5. Rotate the Panel Lifters to be in-line with the panel. They may need to be moved in or out to position them as near to the panel edges as possible



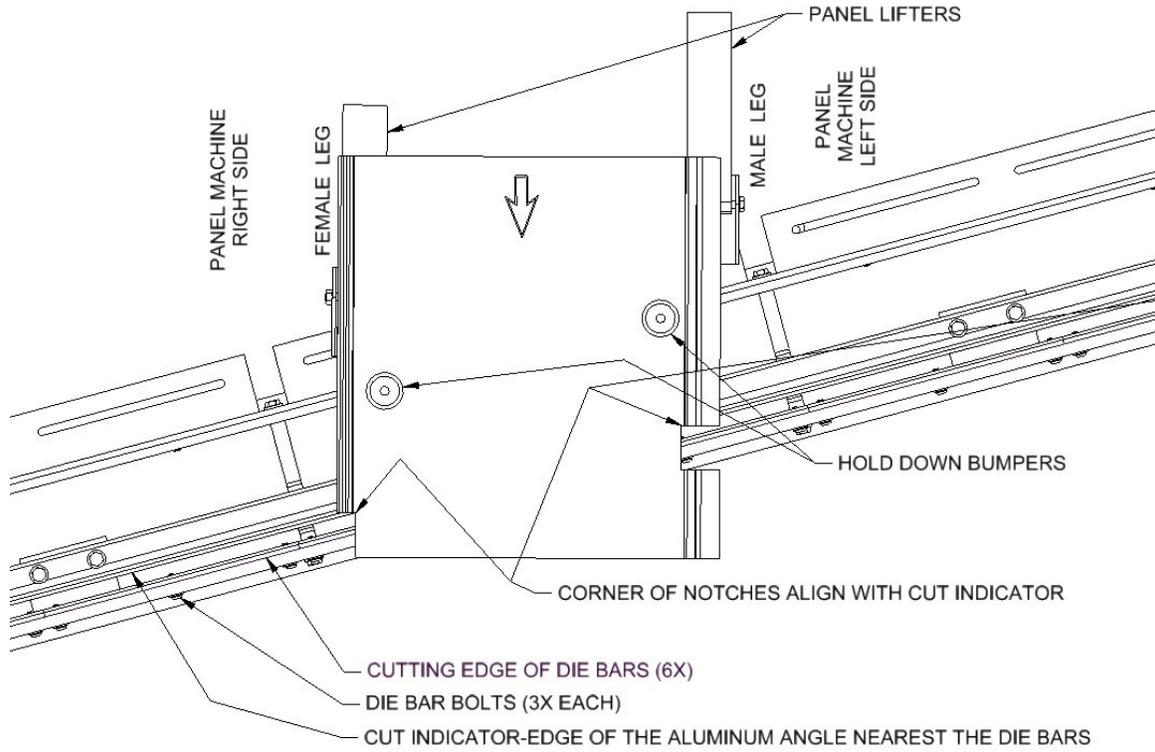
**Figure 75: Pinch Bar**

Panels may now be run. Run the first panel that requires an angled cut. The machine will pause for the cut to be made. Final adjustments can now be made to prepare for the cut (See Figure 75 and Figure 76). Slide the whole slitter along the length of the pullout until the edge of the Cut Indicator aligns with the corner of the right (female) notch. Clamp down the Adjustable Handle on the right side. This Pivot Guide will remain locked in position while adjustments are made on the left side Pivot Guide. Move the left

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# ANGLED SLITTER

side Pivot guide along the Pullout until the Cut Indicator aligns with the notch on this side.



CUT INDICATOR, HOLD-DOWN BUMPERS AND PANEL EDGE LIFTERS

**Figure 76: Cut Indicator, Hold-down Bumpers, and Panel Lifters**

While adjusting the angle to align with the left side notch, the right-side (female) notch will have moved away from the corner of its notch. Move the left side Pivot Guide until the Cut Indicator is parallel to a line connecting the two notch corners. Lock down both Cam Lock Handles and the slitter will hold the angle needed for the slits.

Loosen both Adjustable Handles if needed and move the slitter along the Pullout until the Cut Indicator aligns with the corner of both notches. Make any additional adjustments to the angle and position as needed. Lock down both Cam Lock Handles and Adjustable Handles.

Prior to making the cut, the panel needs to be secured to the Slitter. Lower the Pinch Bar to clamp down on the panel. Push the Carriage across the Guide Rail to complete the cut and pull it back to its starting position. Raise the Pinch Bar. Remove the triangular piece of scrap and discard. Press Resume on the Control Panel.

Additional cuts should require few if any adjustments to the angle or position of the slitter. When all parts of one side of a hip or valley have been completed it will be necessary to flip the direction of cut. Lift both Cam Lock Handles and loosen both Adjustable Handles. Move both Pivot Guides and slide the slitter lengthwise as needed. Complete adjustments as described above to align the slitter with the notches. Lock down all Cam Lock and Adjustable Handles and lower the pinch bar prior to making a cut.

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### **Stowing the slitter for transport**

Loosen both Cam Lock Handles and Adjustable Handles. Rotate the Slitter until it is parallel to the hydraulic shear. Raise the adjustable feet on each of the legs and lock them in the raised position. Rotate both legs up to the top side of the crossbeam to their storage position. Note that the leg with the lower pivot bolt must be put into storage position first. Engage the hood latch to keep the folded legs in position.

Remove both Quick-Release Pins from the Pullout Stringers. Grasp the Pullout Crossbeam and firmly push the Pullout toward the machine until it is about a foot [300] from the stowed position. Move the Slitter as close to the Pullout Crossbeam as it will go and secure both Adjustable Handles. Rotate both Edge Supports to the side so they are parallel to the shear. Push the Pullout the rest of the way in so that the Slitter rests adjacent to the shear guard. When the Pullout is fully stowed, the holes will align for insertion of the Quick Release Pins. Slide the entire slitter assembly lengthwise as needed until it aligns with the machine. Neither end of the slitter should project beyond the trailer or truck bed. Install the transport braces and both Pins locking the pullout in the stowed position. The transport braces mount on the quick-release pin at one end and bolt to the slotted holes of the panel lifter support angles at the other end. Firmly lock down both Cam Lock Handles. Return the Carriage to one of the end positions and secure in place with the locking pin.

### **Panel machine usage when the Angled Slitter is not needed**

When panels are square on both ends the Angled Slitter will not be used. The Slitter can remain locked in place adjacent to the hydraulic shear. Four steps are required before running panels through the machine:

1. Raise the Pinch Bar. Check it occasionally to make sure that it remains in this position while panels are being produced.
2. Lift both Cam Lock Handles and push the entire slitter assembly toward the right side of the machine to clear the area in front of the Control Panel. Lower both Cam Lock handles to keep the slitter in this position.
3. Move the Hold-Down Bumpers along the length of the Pinch Bar to ensure the Bumpers will clear both the male and female legs of the panels to be run.
4. Check that the slitter blade clears the path of the panel and both panel legs. If needed, pull the pin locking the Carriage to the Guide Rail. Move the Carriage to the other end of the Guide Rail and secure in place with the pin provided.

### **Pinch Bar Adjustment**

The function of the Pinch Bar is to hold the panel firmly in place so it can't move while the cut is made. The Hold Down Bumpers have two adjustments:

1. They may be moved along the length of the Pinch Bar. They should be spaced as far apart as possible while also being clear of the moving panel legs. Move them to different slots if needed.
2. Pressure exerted by the bumper to hold the panel in place may be increased or decreased as needed. Raise the pinch bar before making any adjustments. Loosen the jam nut at the top of the bumper. Turn the bumper 'down' to increase pressure or 'up' to decrease. Tighten the jam nut to hold the setting. The upper nut holds the assembly from moving in the slot.

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It is best to have equal pressure exerted on both bumpers. This can be estimated by looking at the bulge on the sides of the bumper when the pinch bar is locked down. If one bulges more than the other, adjustments should be made until they both bulge about the same amount. If the panel slides during a cut pressure on both bumpers should be increased.

### **Changing the Slitter Blade**

When the blade is dull it may be flipped over to use the other cutting edge. To change the blade first move the carriage to one end of the guide rail and secure it in place with the hitch pin. Rotate the blade until the punch mark on the face of the hub is at the Bottom Dead Center (BDC) position. Two hex keys will be needed. One is inserted into the hole at the bottom-rear edge of the carriage body under the guide rail (See Figure 75). If needed rotate the blade slightly until this hex key bottoms out and the hub is locked from rotating. The other hex key is used to remove the screws from the blade retainer. Pull the blade retainer off and replace the blade. The edge of the blade contacting the die bars must be a sharp edge. Replace the retainer and screws and securely tighten. Remove the hex key and pull the hitch pin to resume operation. Care should be taken when handling the slitter blade to maintain its sharpness and flatness.

### **Changing the Die Blades**

Each of the die blades is held in place with 3 socket head screws. Remove the screws. Each die blade has two cutting edges so the blade may be turned over and reinstalled. Replace all blades that are dull and reinstall all screws finger tight. Note that a gap between die bars is not acceptable. Start installation in the center and work outward. Tap the end of each bar as it is installed to remove any gap. After all bars are in place with all screws finger-tight, proceed to torque down all screws. Order new die blades and a slitter blade so a fresh set can be installed as needed.

### **Carriage is loose on the guide rail**

The carriage body is guided along the guide rail by three wheels. The guide wheel on the top side of the guide rail is used to make adjustments. Two wrenches are needed to hold the bolt head and loosen the nut securing this wheel. With the nut slightly loosened, tap the bolt head with a wrench until the bolt moves a small amount. The bolt slides in an inclined slot. Moving the bolt to the left will tighten the wheel grip on the guide rail while moving the other direction will loosen it. Repeat making small adjustments until the carriage glides freely along the guide rail without binding.

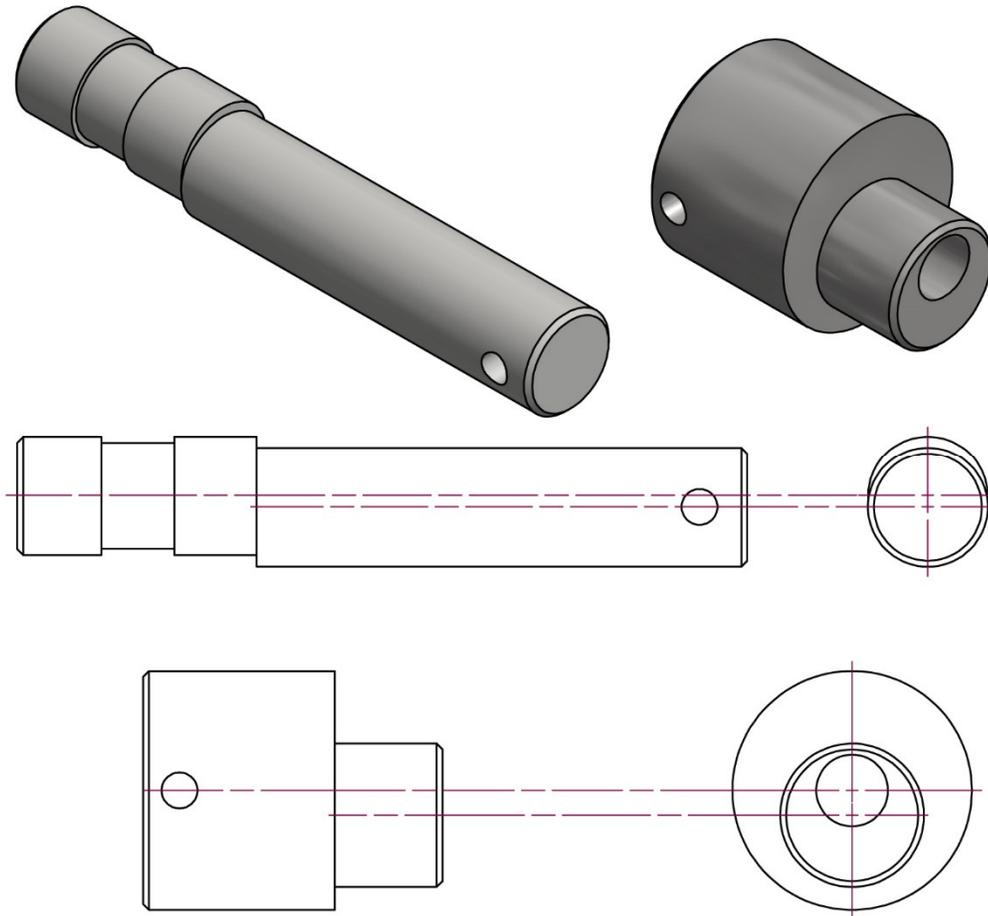
CHAPTER 19  
**PROFILE ADJUSTMENTS**

## **PROFILE ADJUSTMENTS**

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

### **ECCENTRIC SHAFTS**

Every roller set is equipped with eccentric shafts on selected sub stations for adjusting the angles and gaps in the panel.

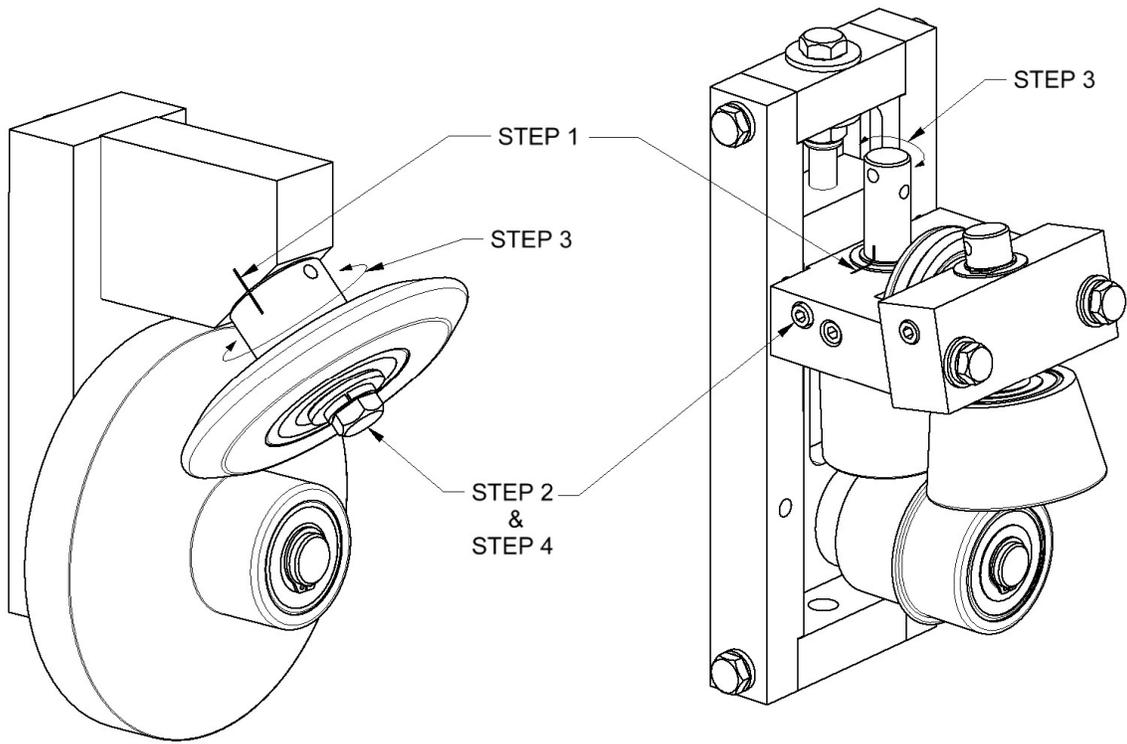


**Figure 77: Eccentric Shafts**

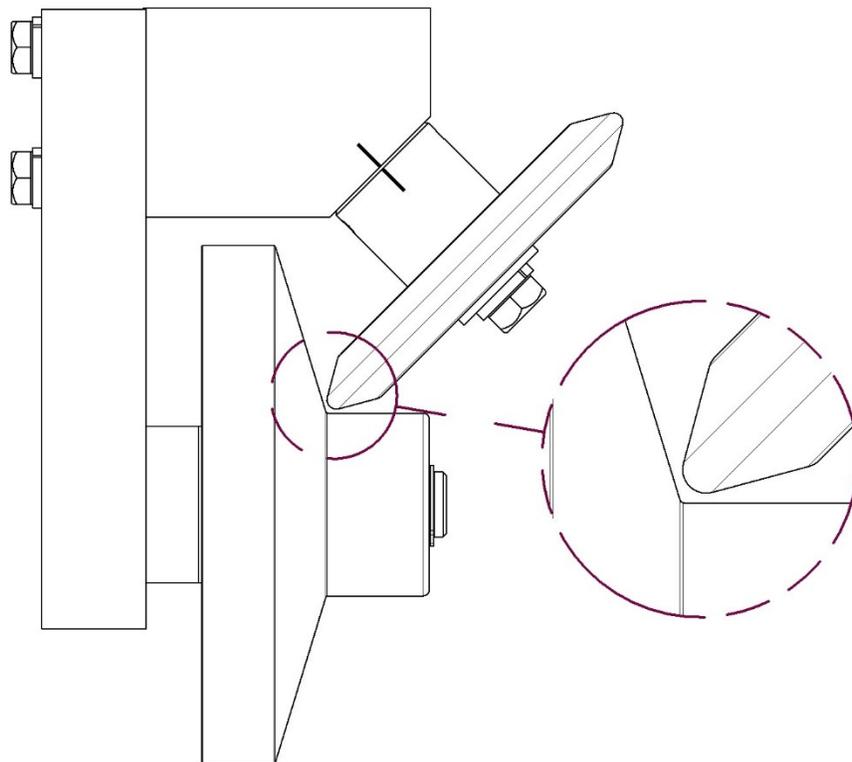
To adjust an eccentric shaft, use the following procedure:

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 79 - Figure 81).
4. Re-tighten the set screw and/or bolt.

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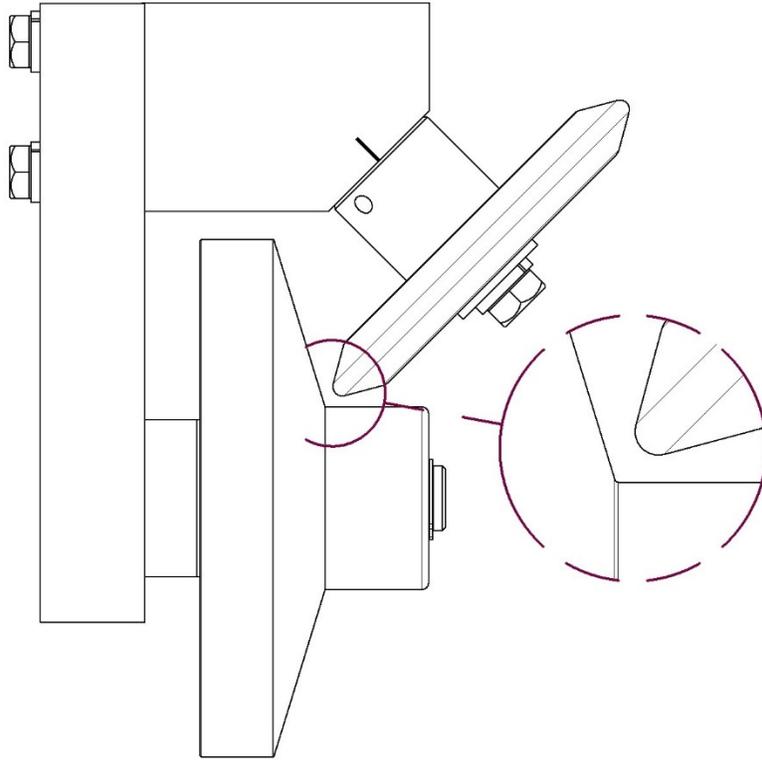


**Figure 78: Adjusting Eccentric Shafts**

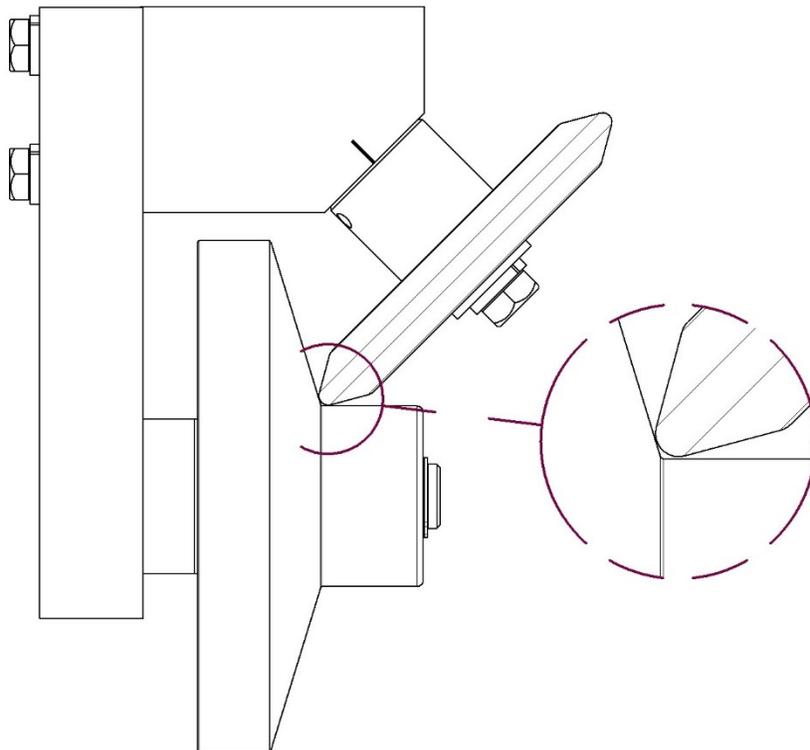


**Figure 79: Eccentric Shaft Proper Adjustment**

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**Figure 80: Eccentric Shaft Too Loose**

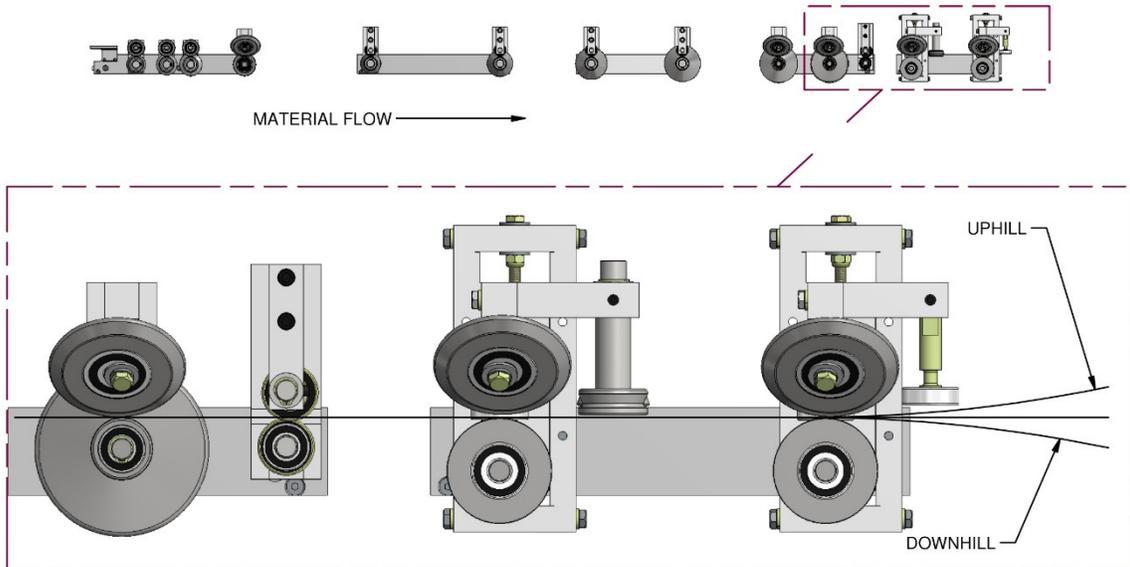


**Figure 81: Eccentric Shaft Too Tight**

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**CAMBER STATIONS**

Every roller set is equipped with one or more camber stations toward the exit end of the machine. The camber station adjustment can be used to make the panel run straight if it is going uphill or downhill.



**Figure 82: Camber Adjustment - Uphill/Downhill**

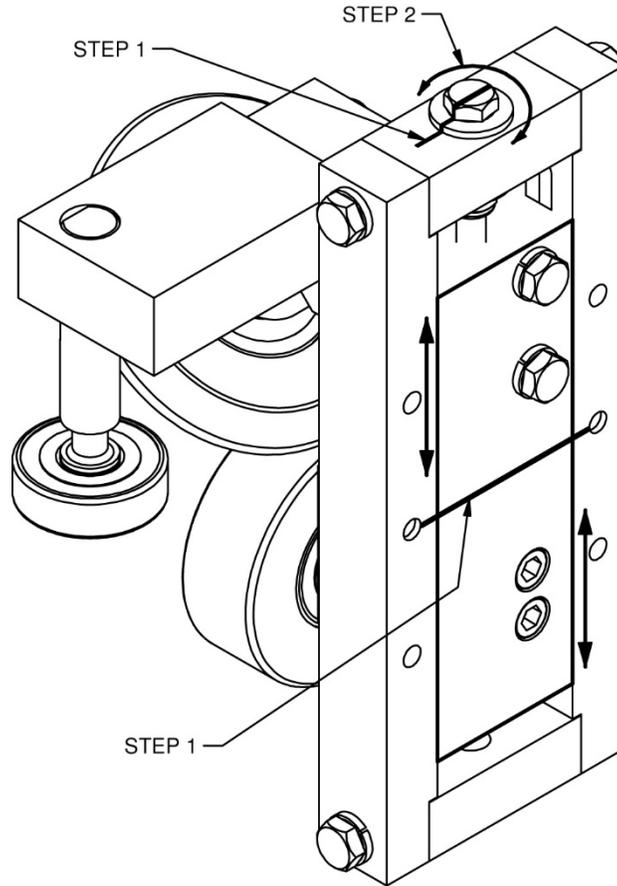
If the panel is going uphill or downhill, ensure that the run-out stands are properly adjusted for height and that the panel is able to run straight out of the machine. If the run-out stands are in the correct alignment, adjust the camber stations as necessary using the following procedure:

(See Figure 83)

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 the 2<sup>nd</sup> to last station down by turning the top bolt counter-clockwise. If the panel is running uphill, adjust the 2<sup>nd</sup> to last station up 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.

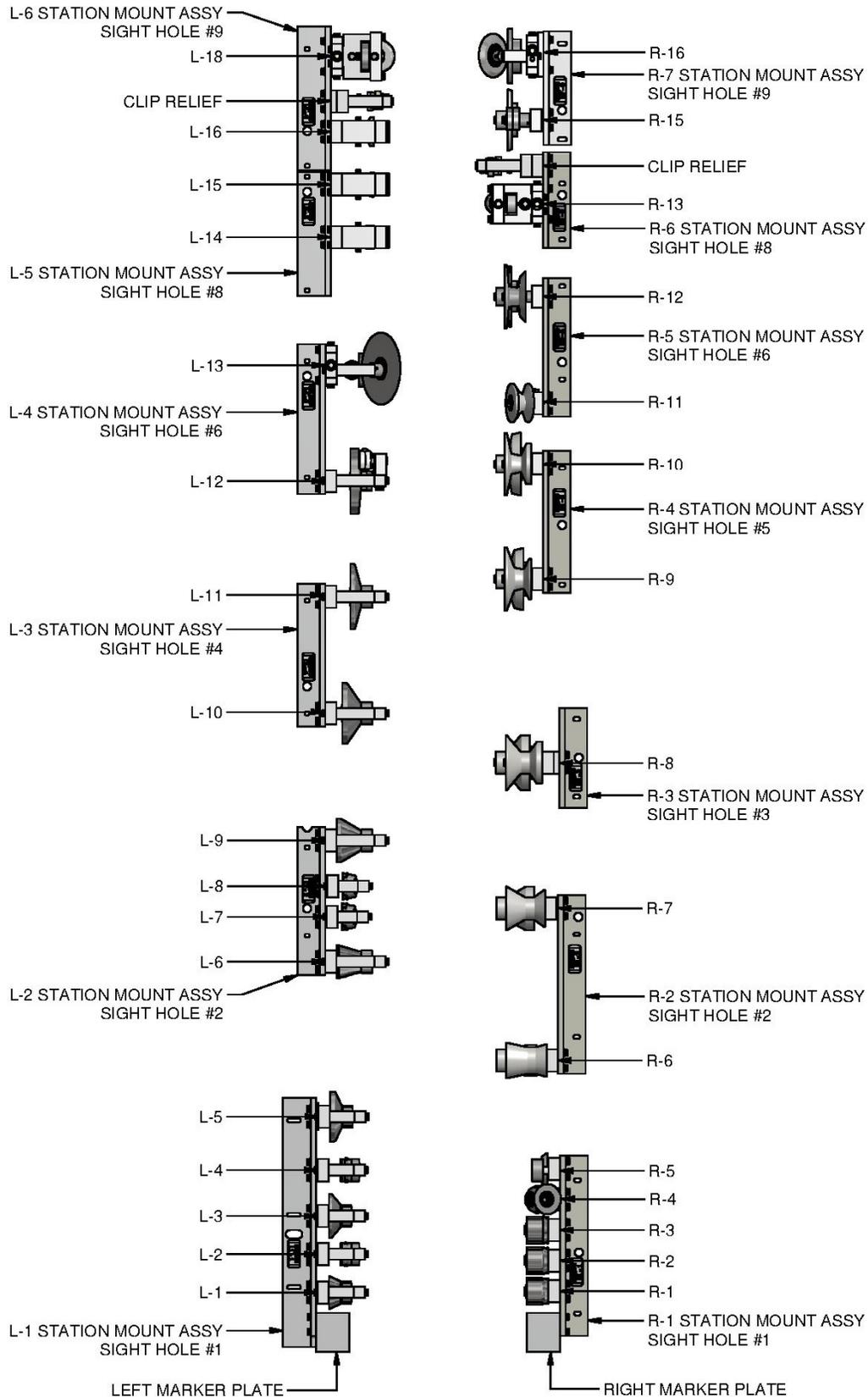
CHAPTER 19  
**PROFILE ADJUSTMENTS**



**Figure 83: Camber Adjustment**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 84: 275 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

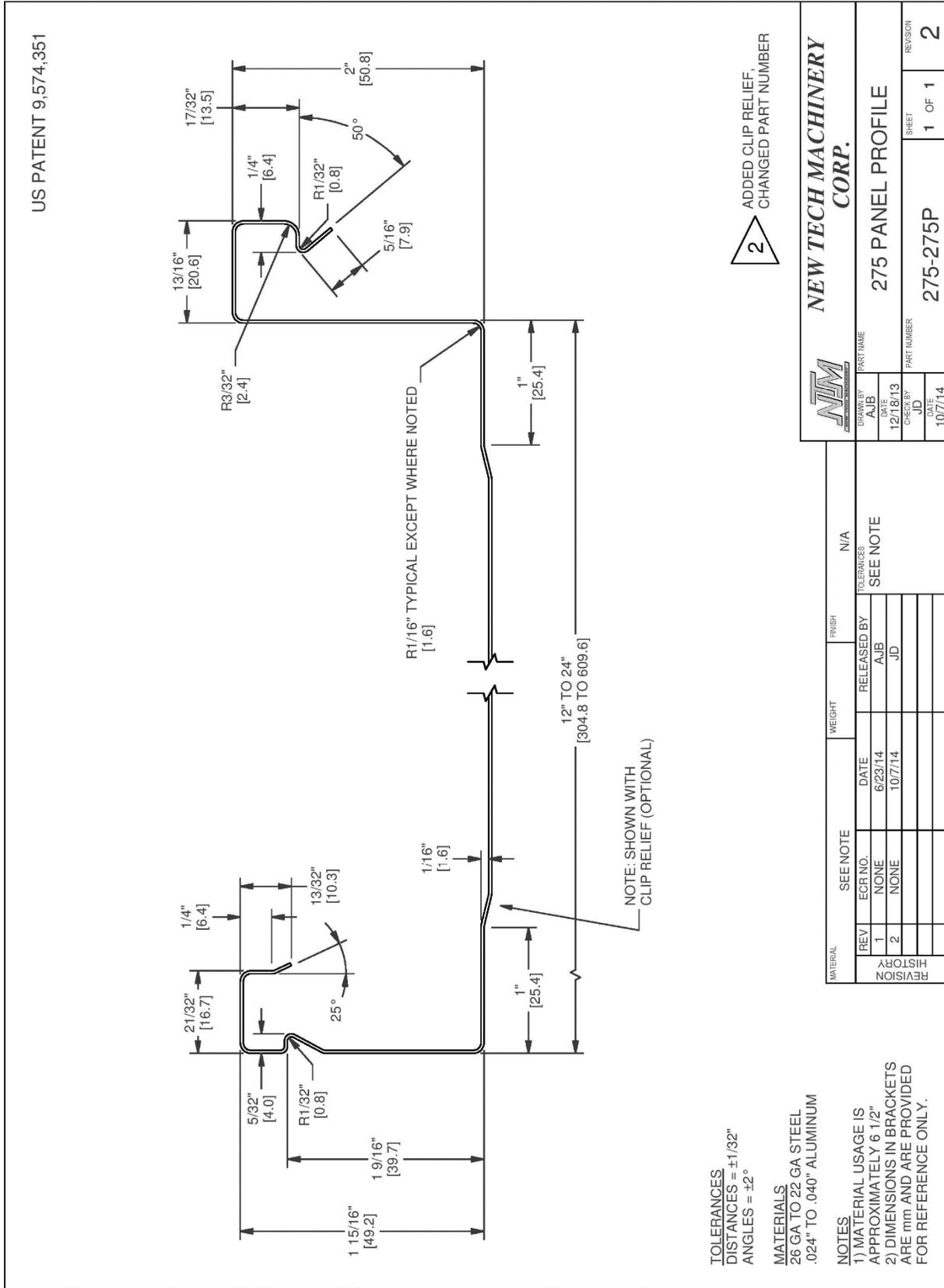
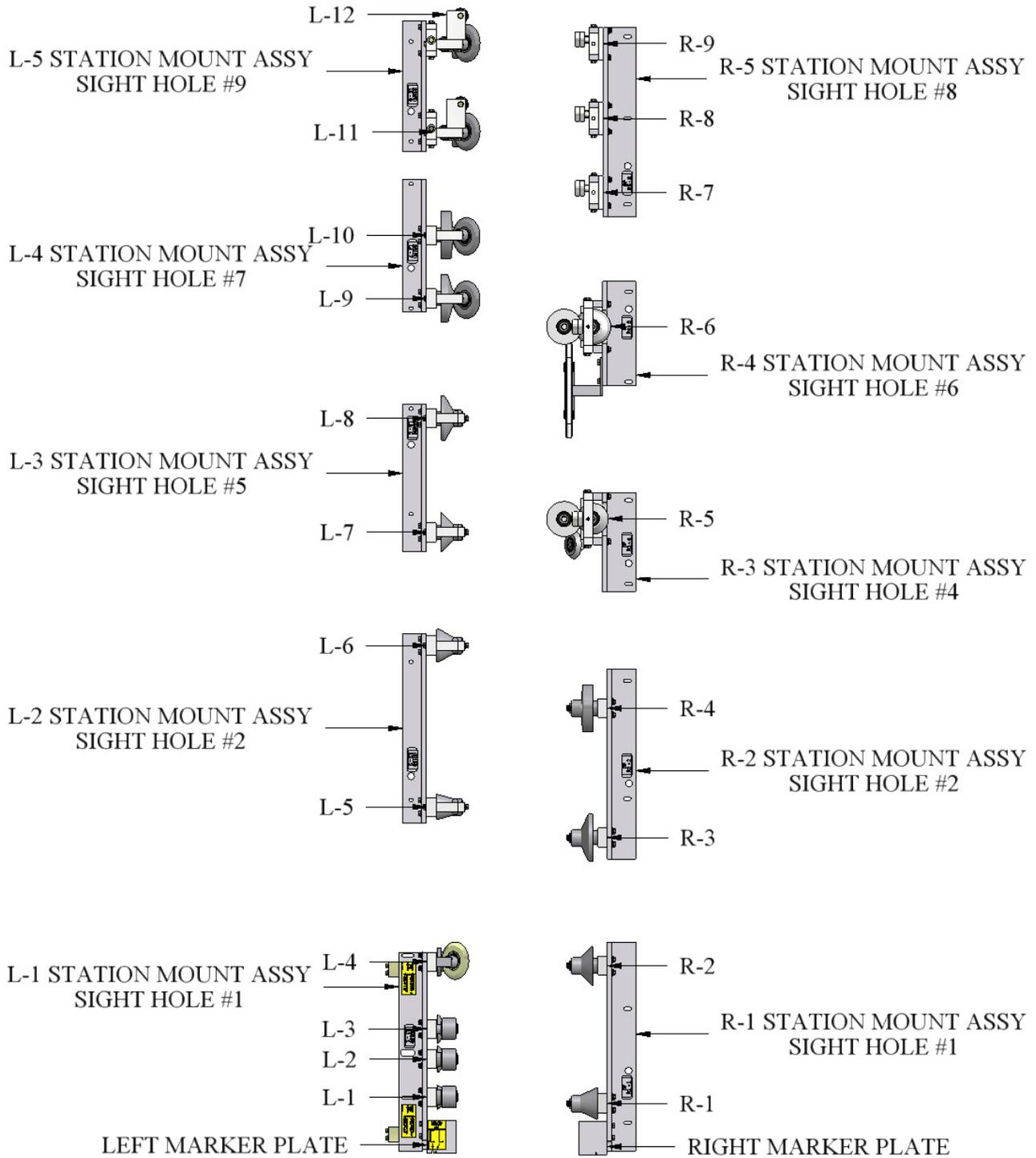


Figure 85: 275 Panel Profile

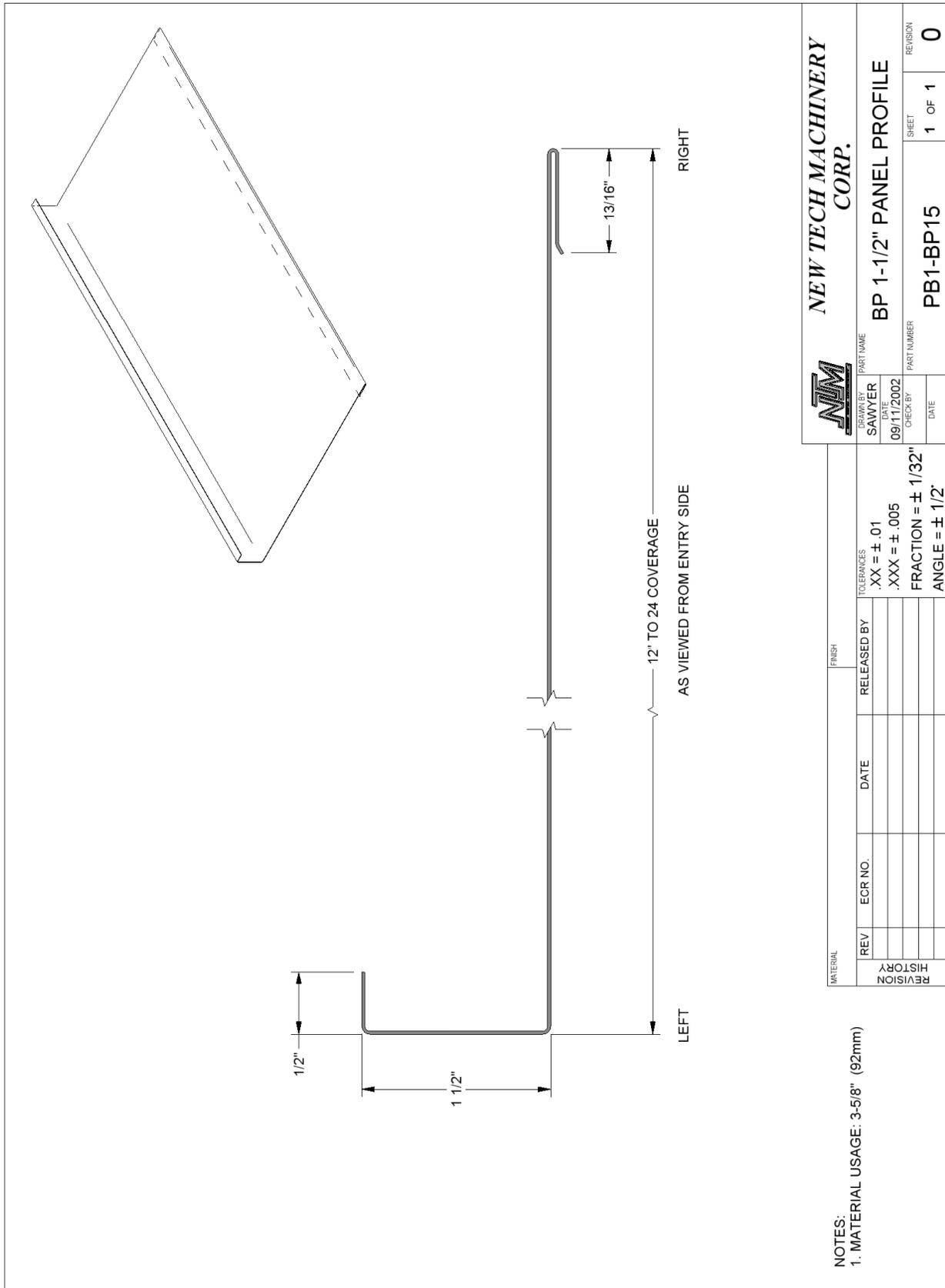
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 86: SSQBP Roller System**

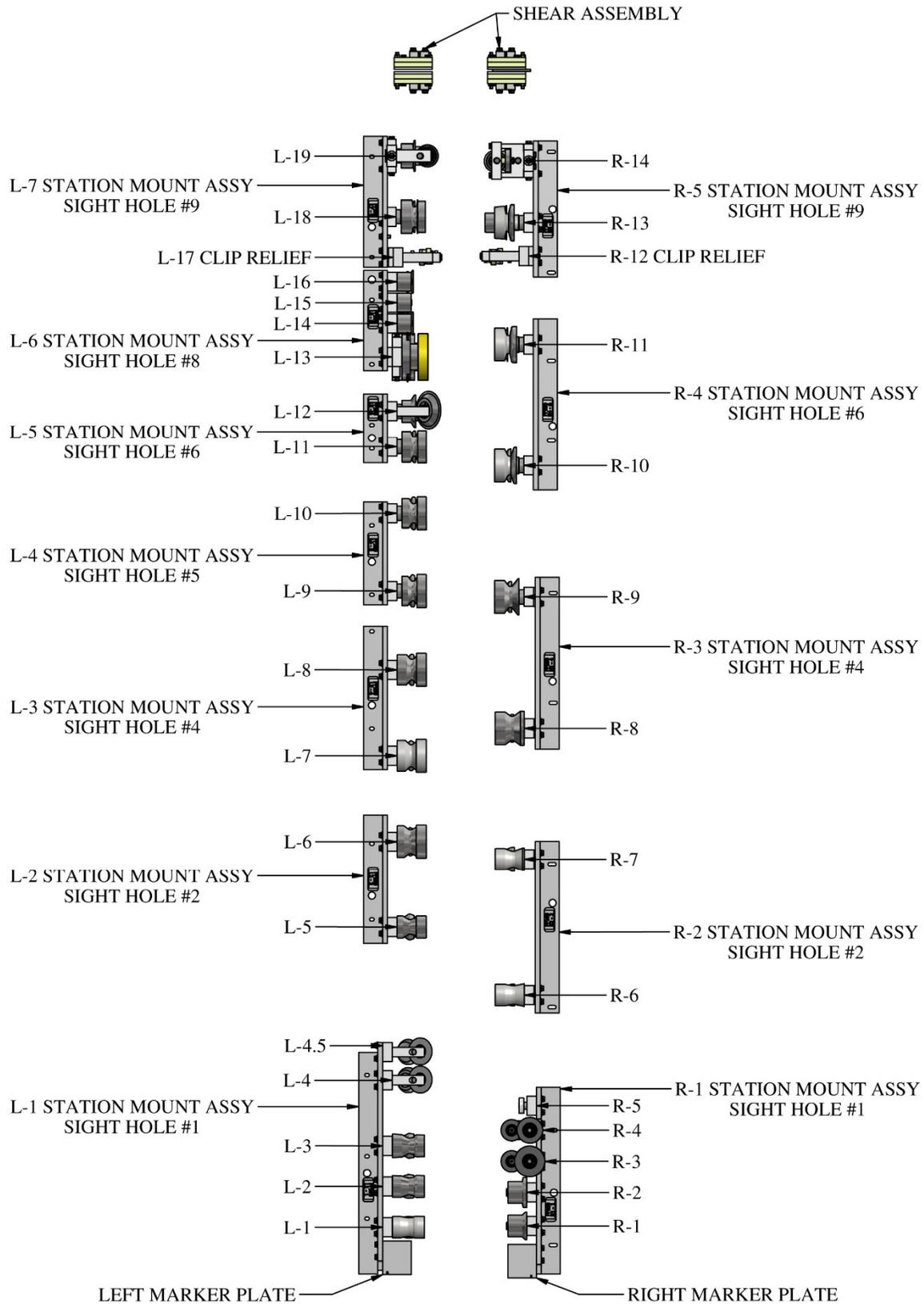


**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 88: BP 1 1/2" Panel**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 89: FFQ100 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

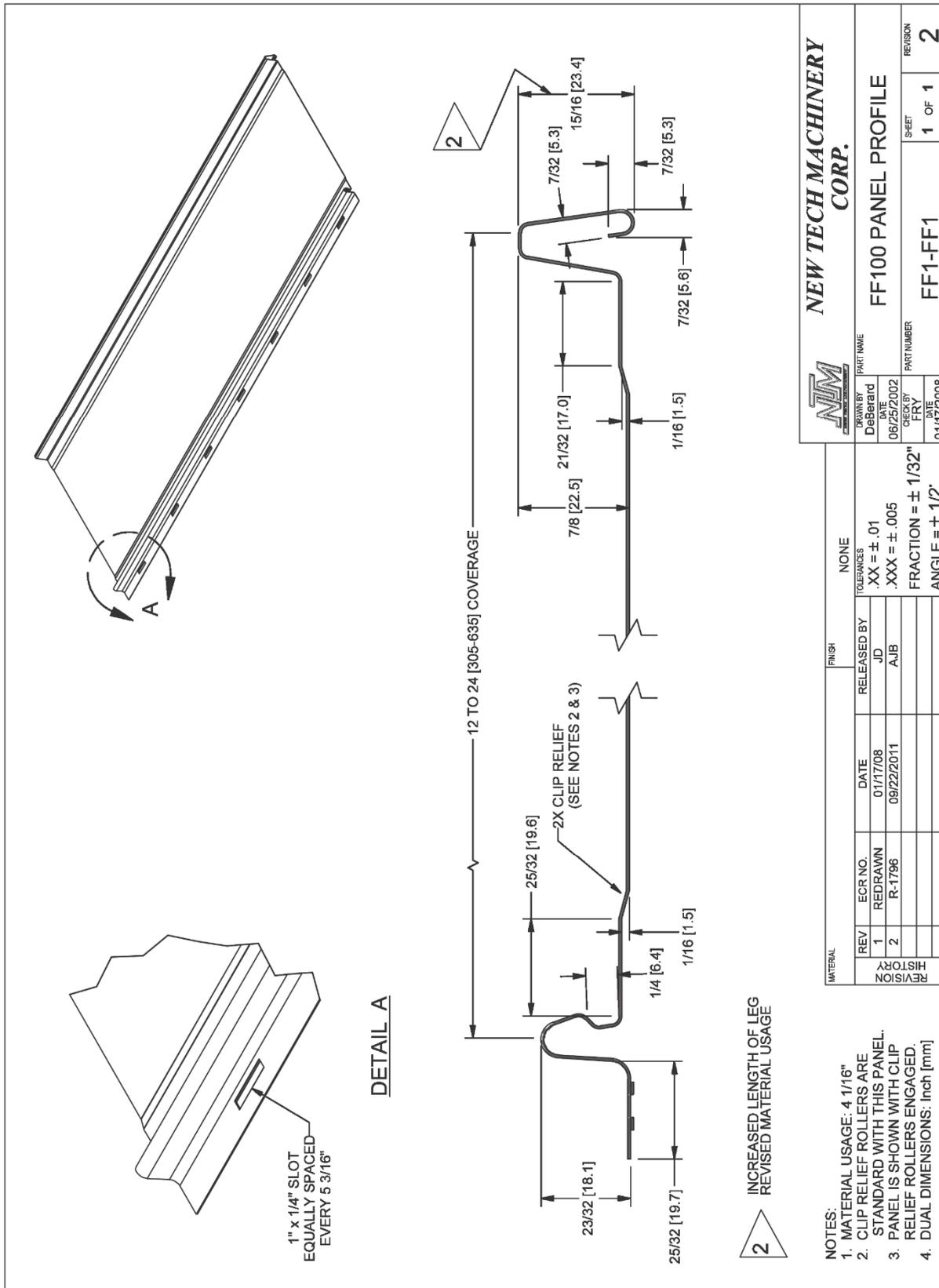
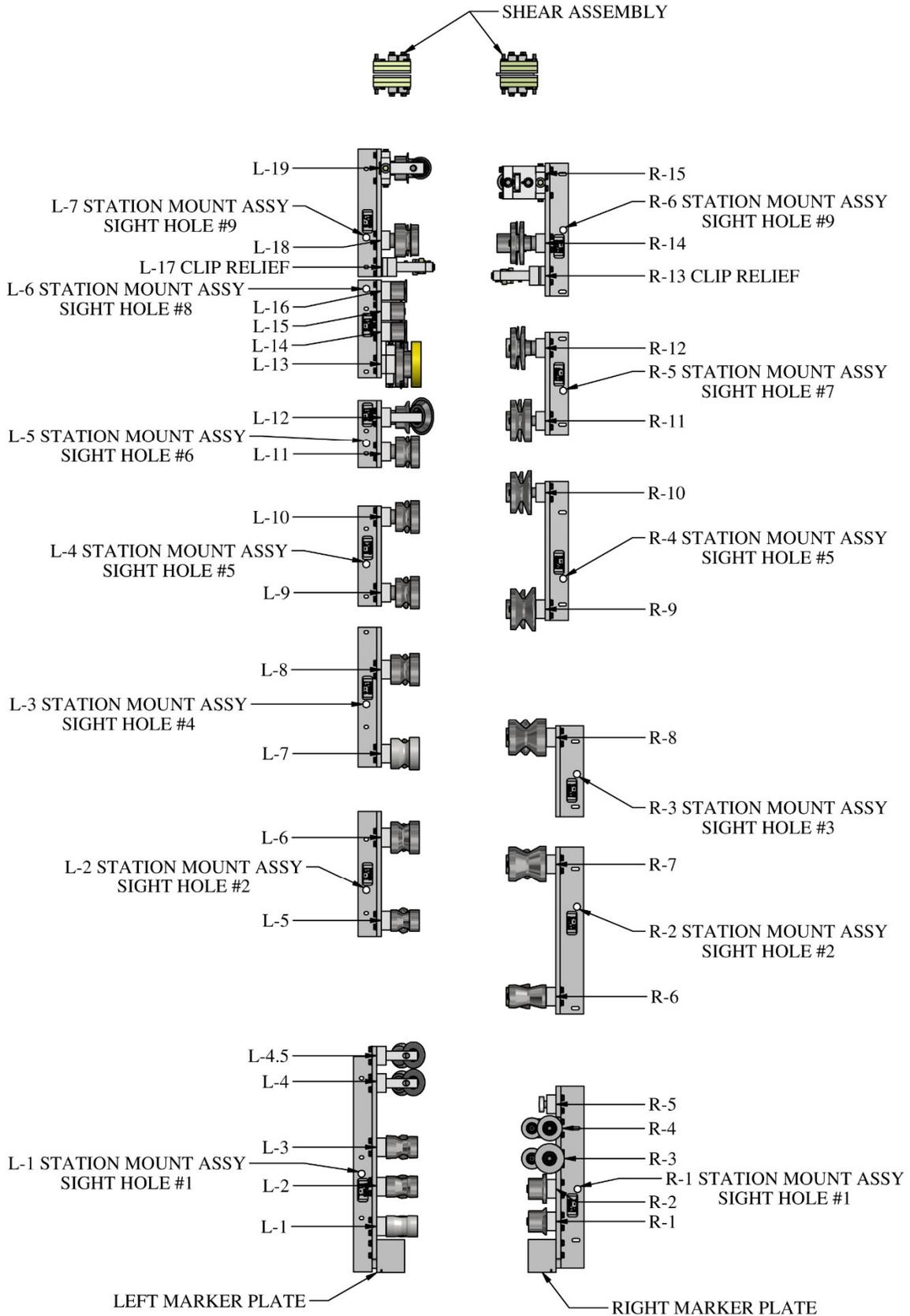


Figure 90: FF100 Panel

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 91: FFQ150 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

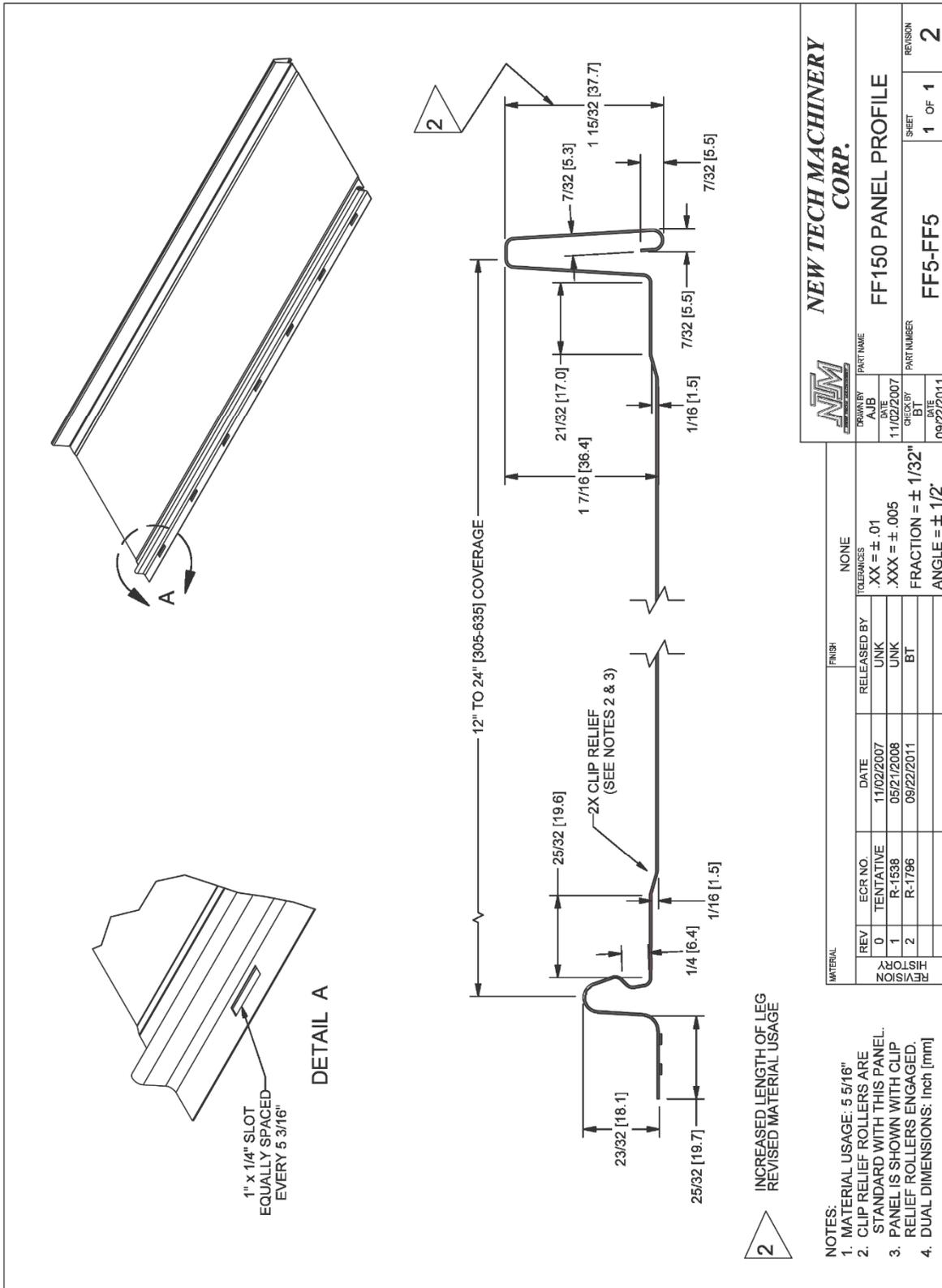
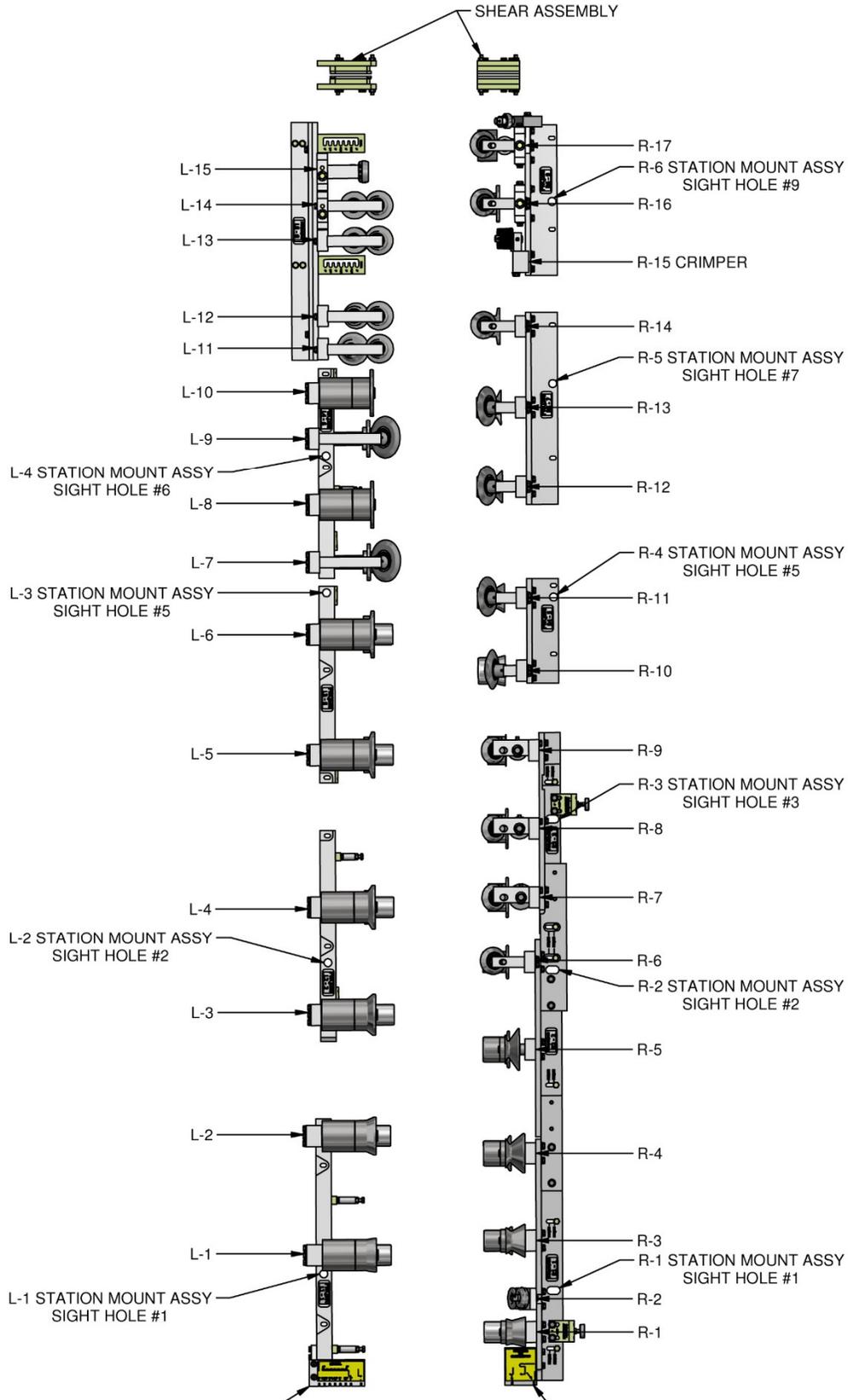


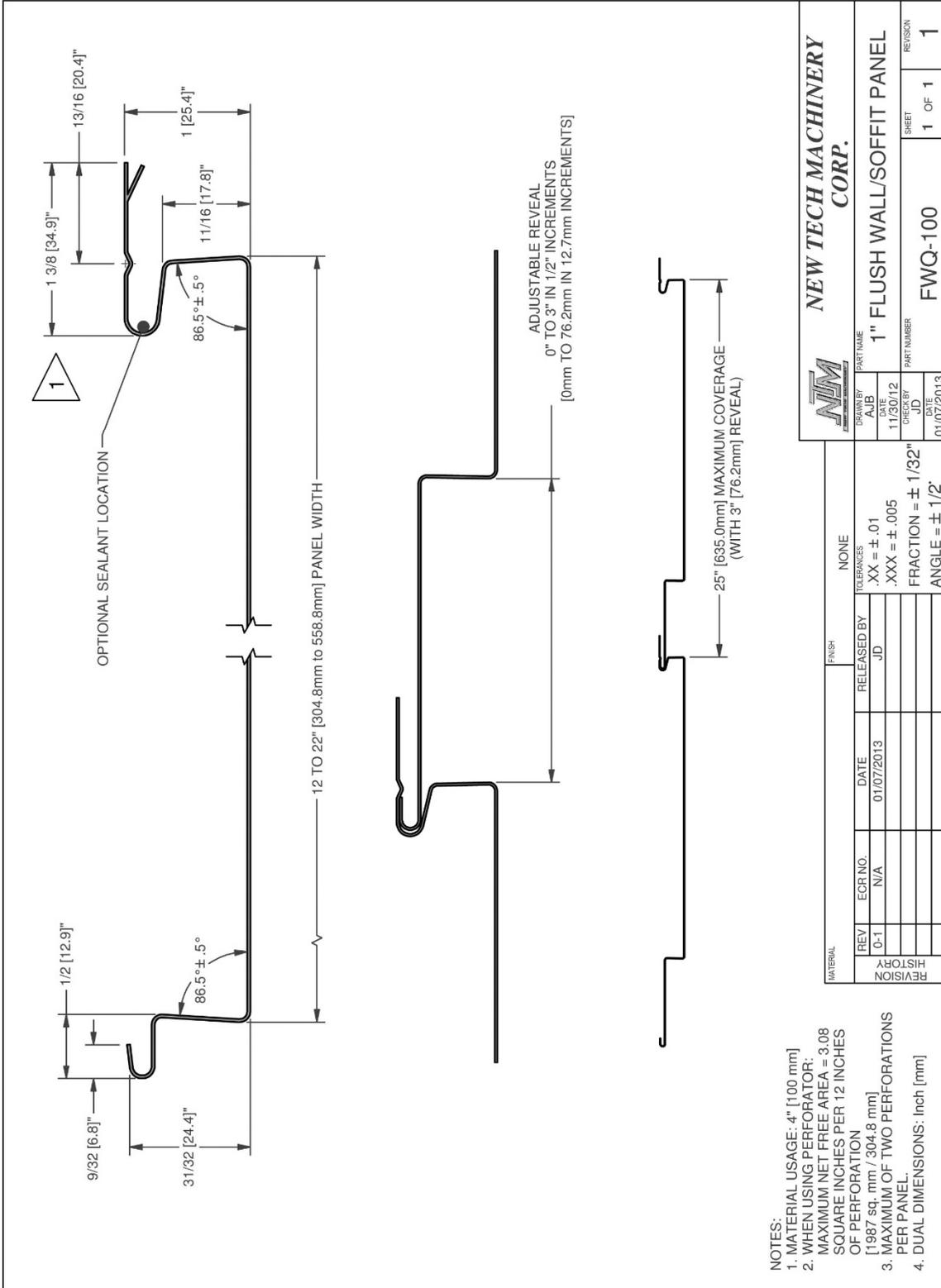
Figure 92: FF150 Panel Profile

CHAPTER 20  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 93: FWQ100 Roller System**

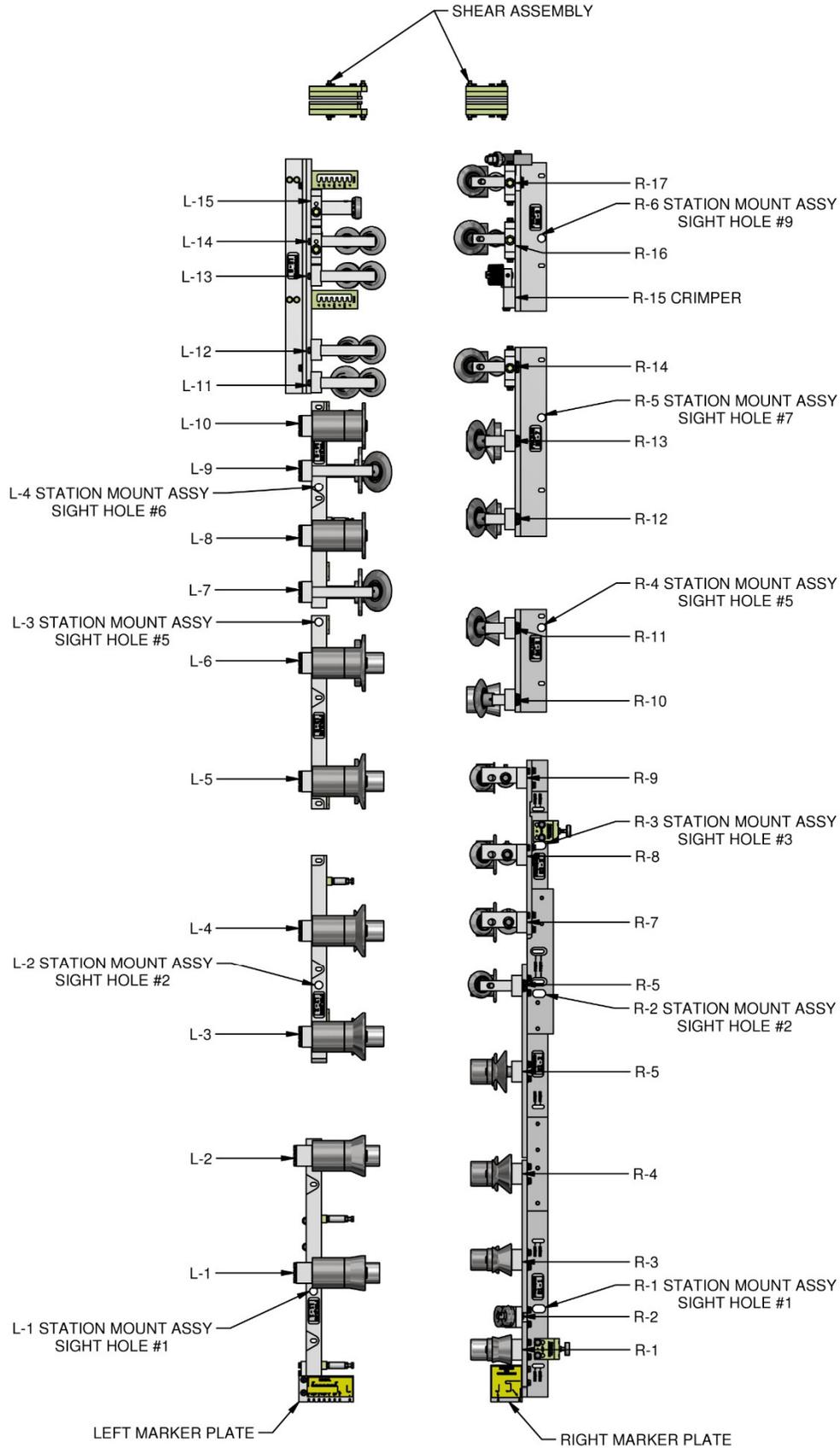
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 94: FWQ100 Panel Profile**

# CHAPTER 20

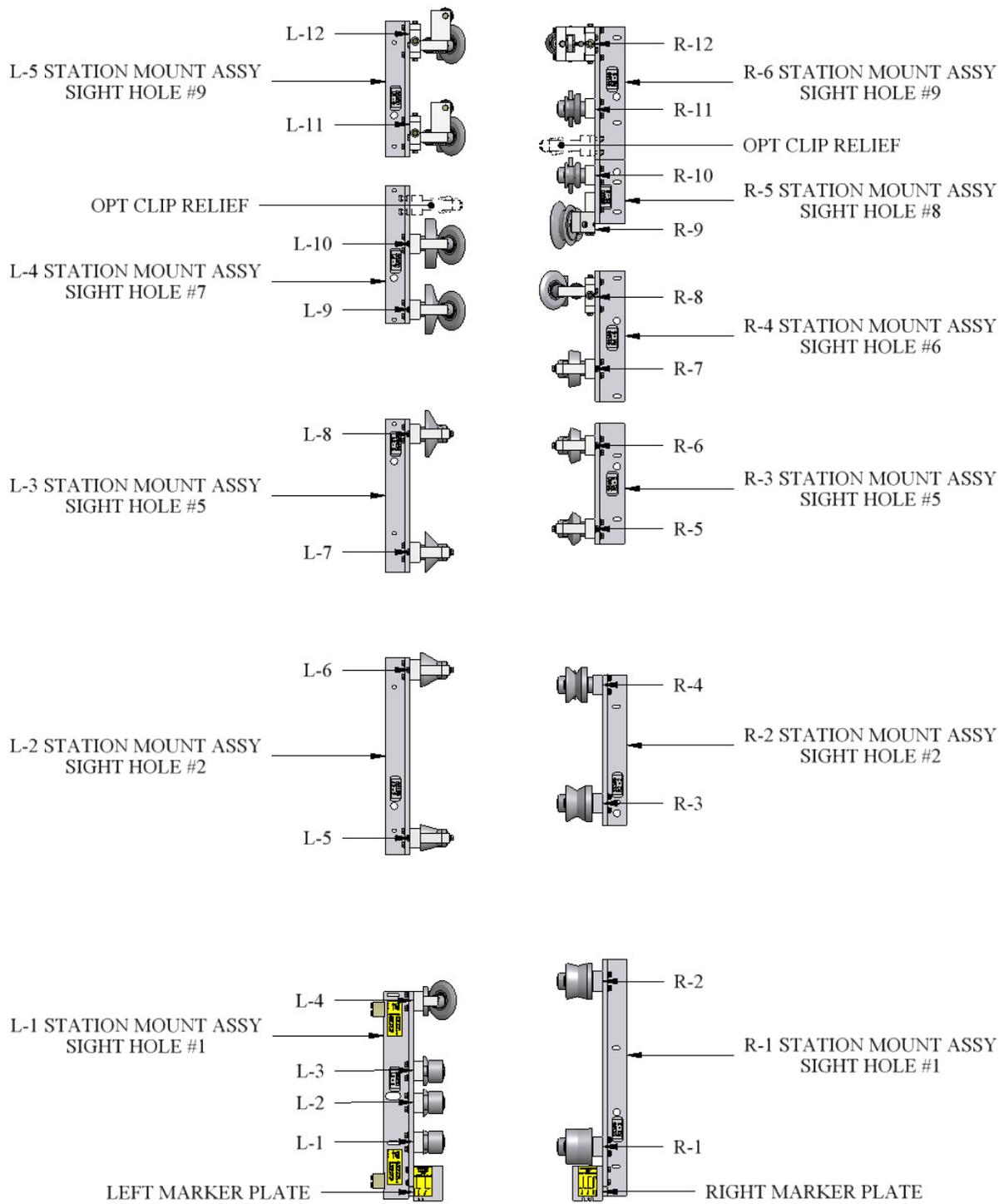
## ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS



**Figure 95: FWQ150 Roller System**



**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 97: SSQ100 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

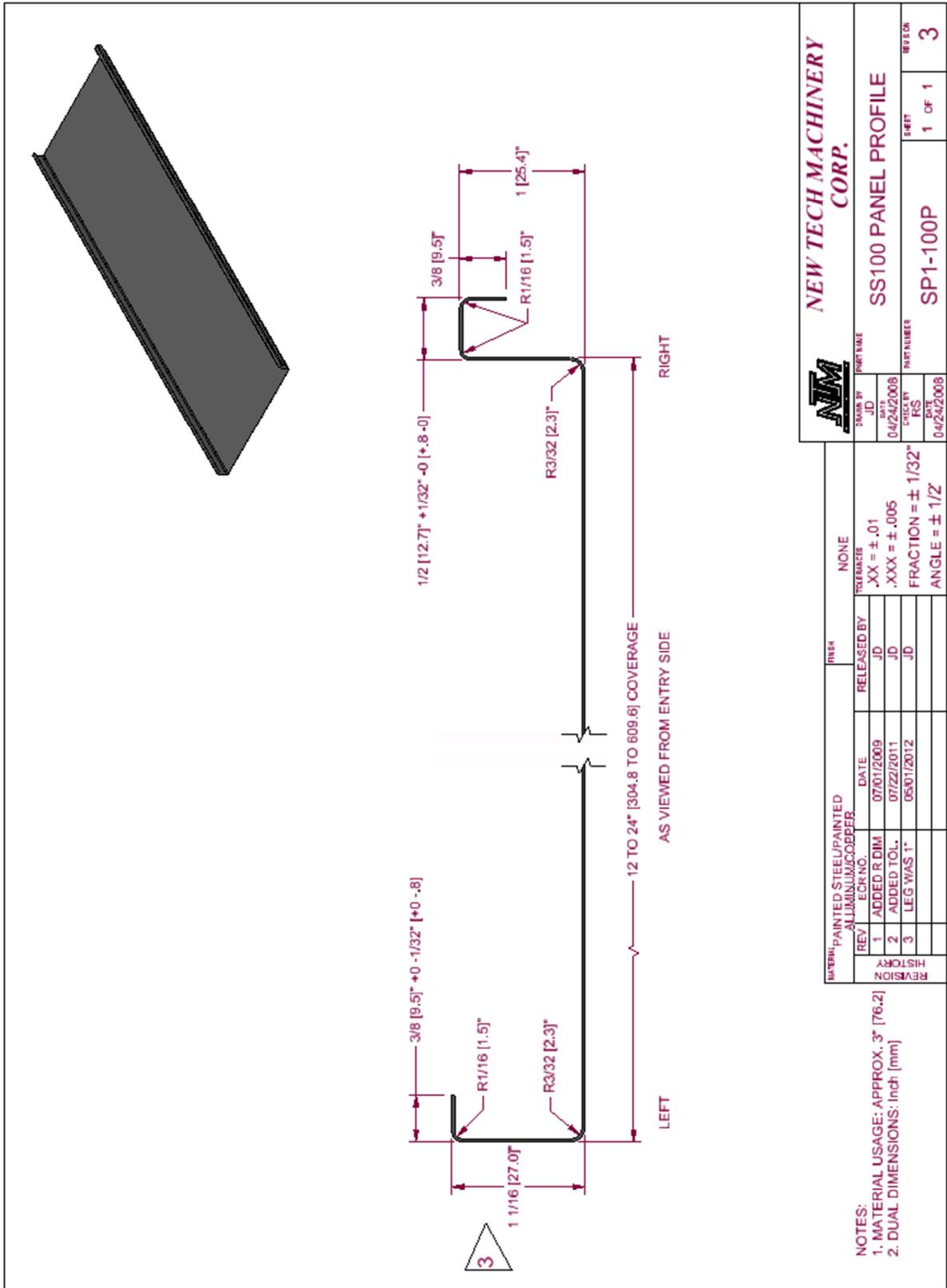
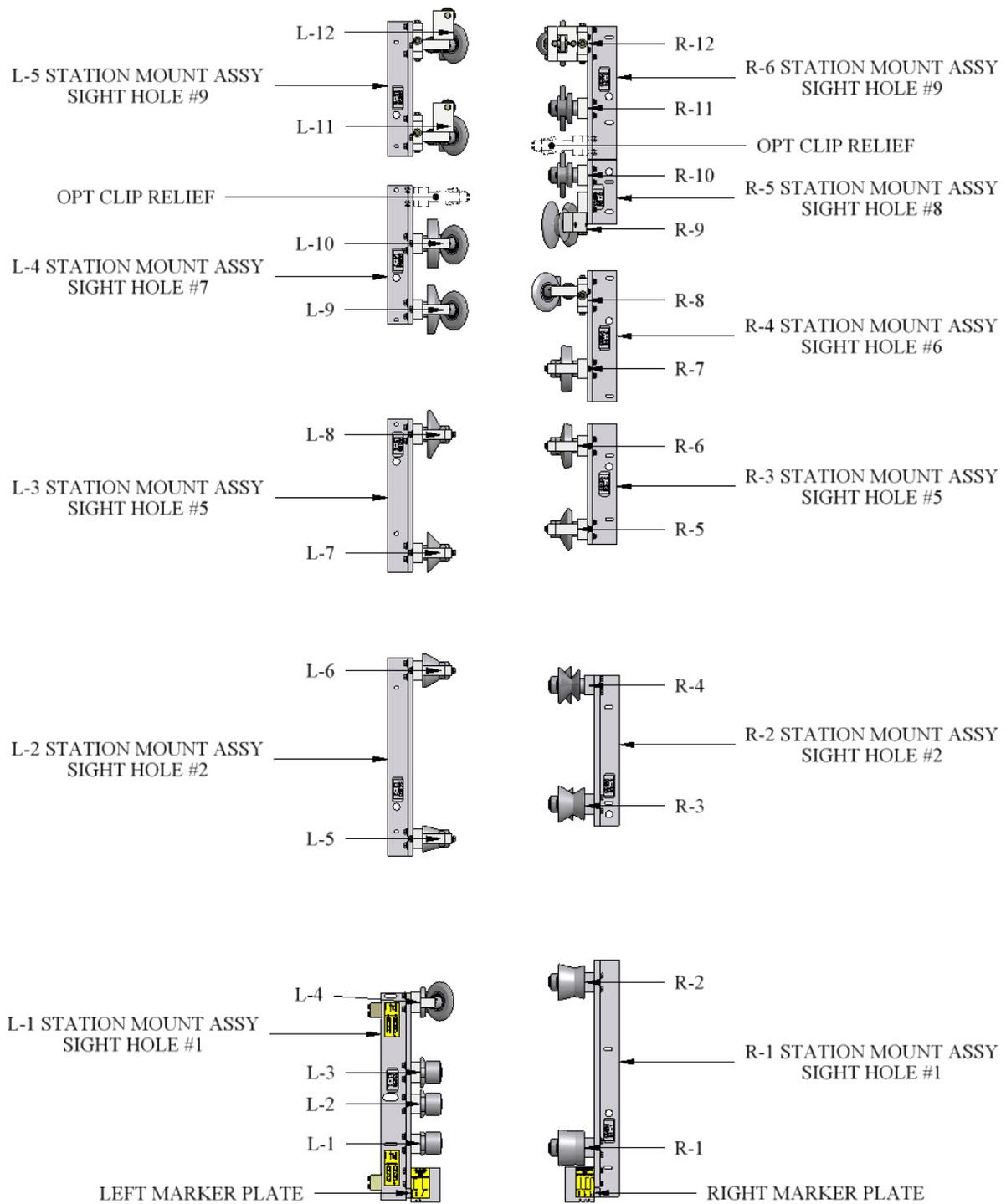


Figure 98: SS100 Panel Profile

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 99: SSQ150 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

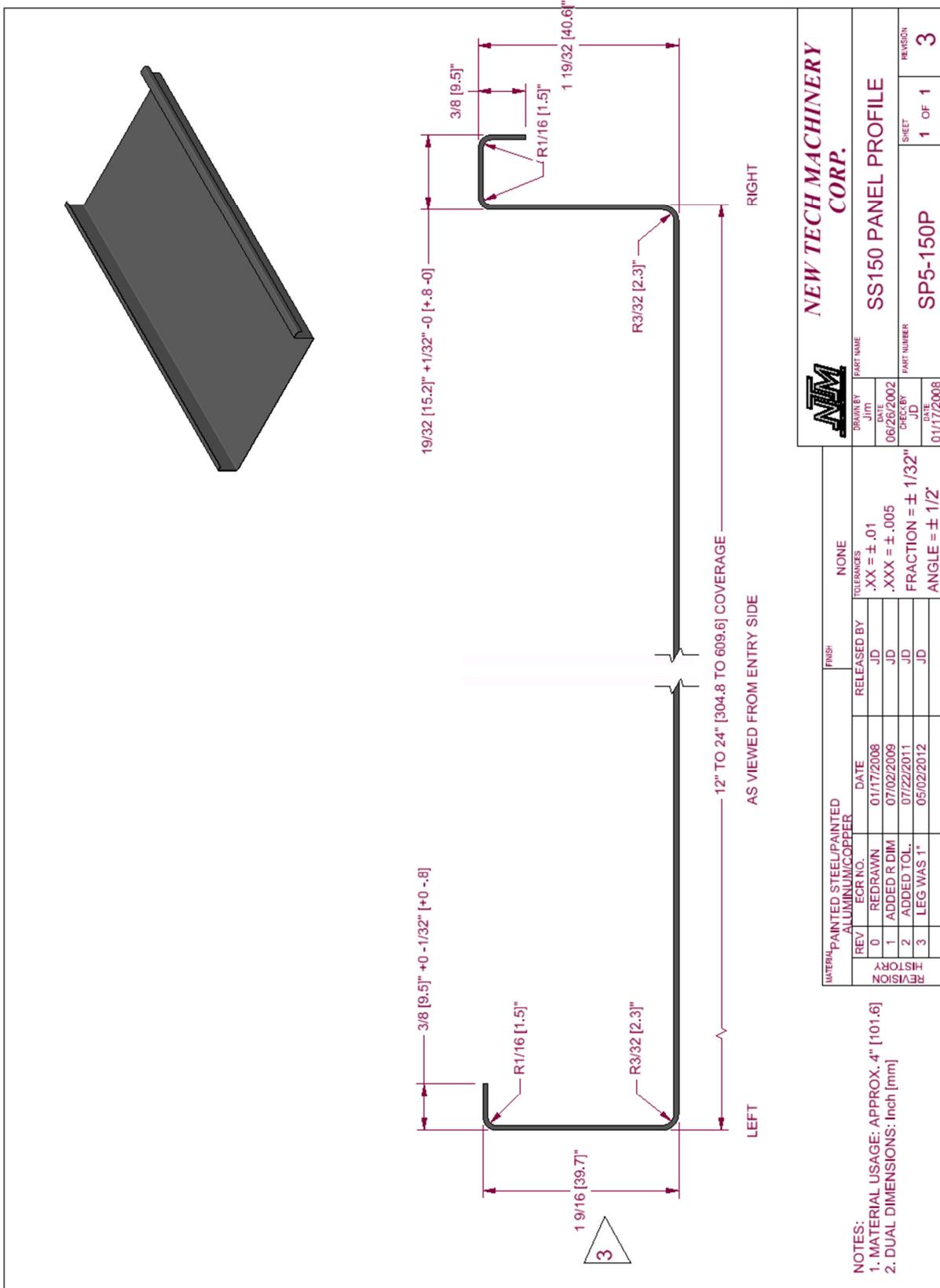
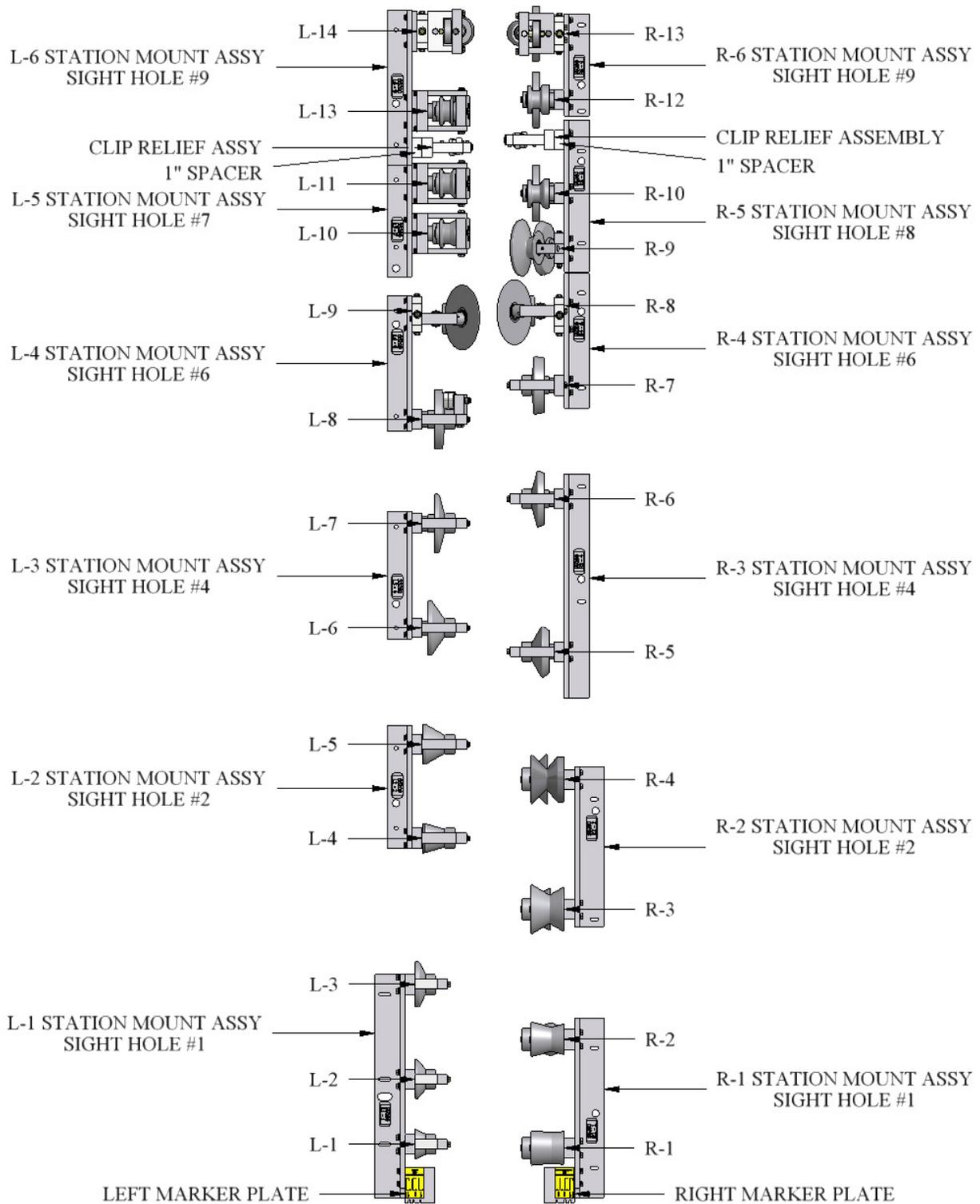


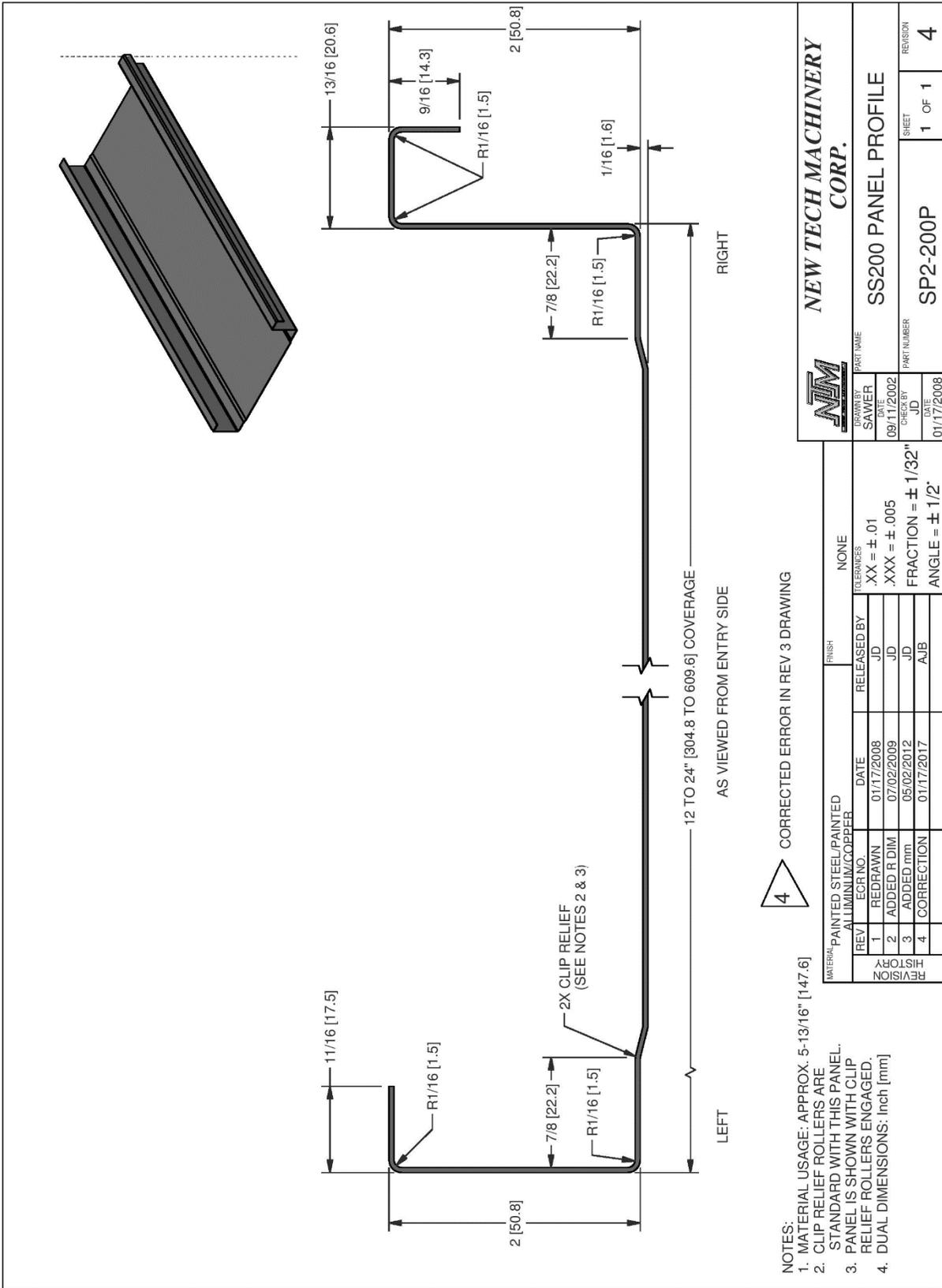
Figure 100: SS150 Panel Profile

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 101: SSQ200/210A Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 102: SS200 Panel Profile**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

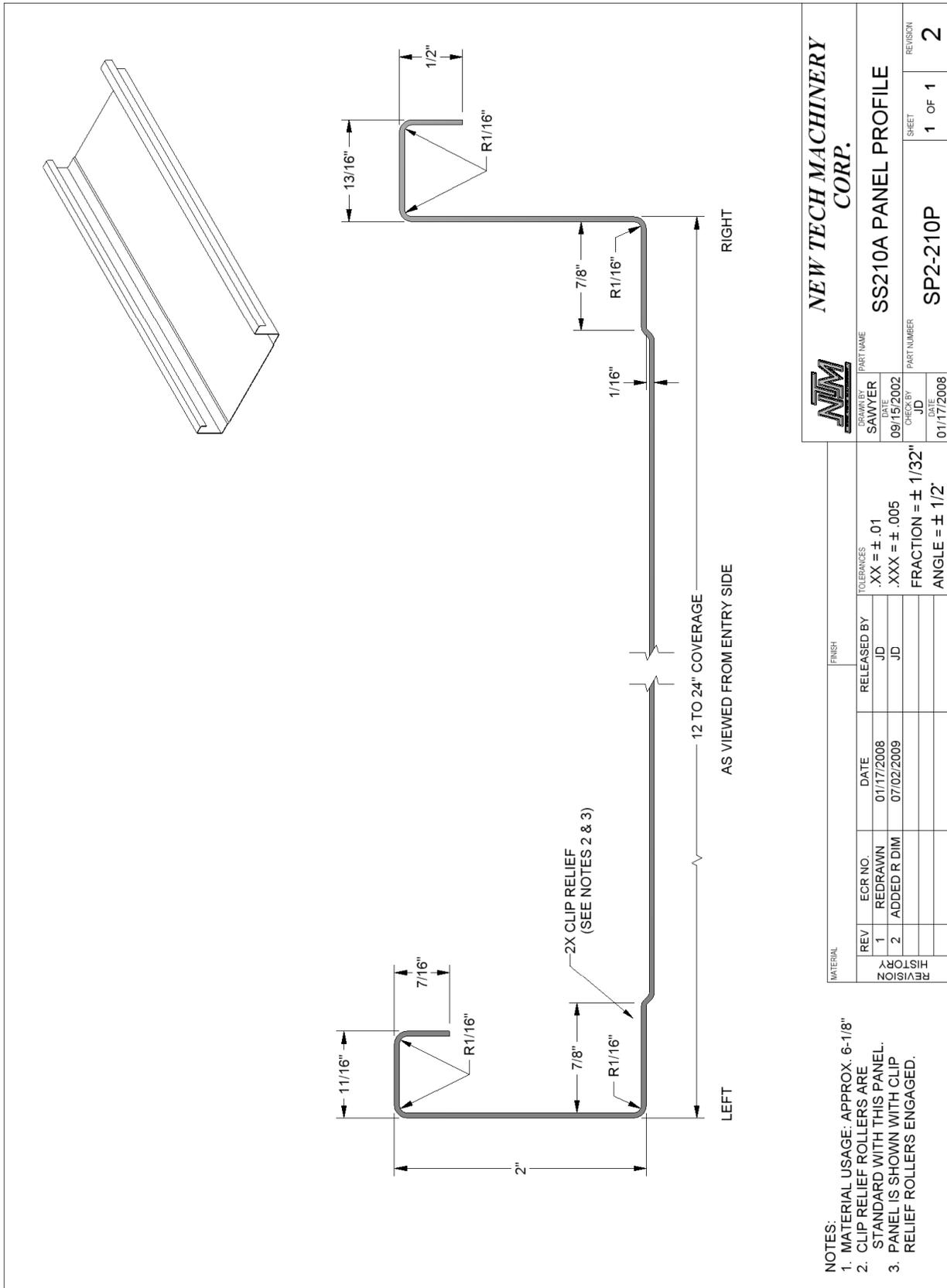
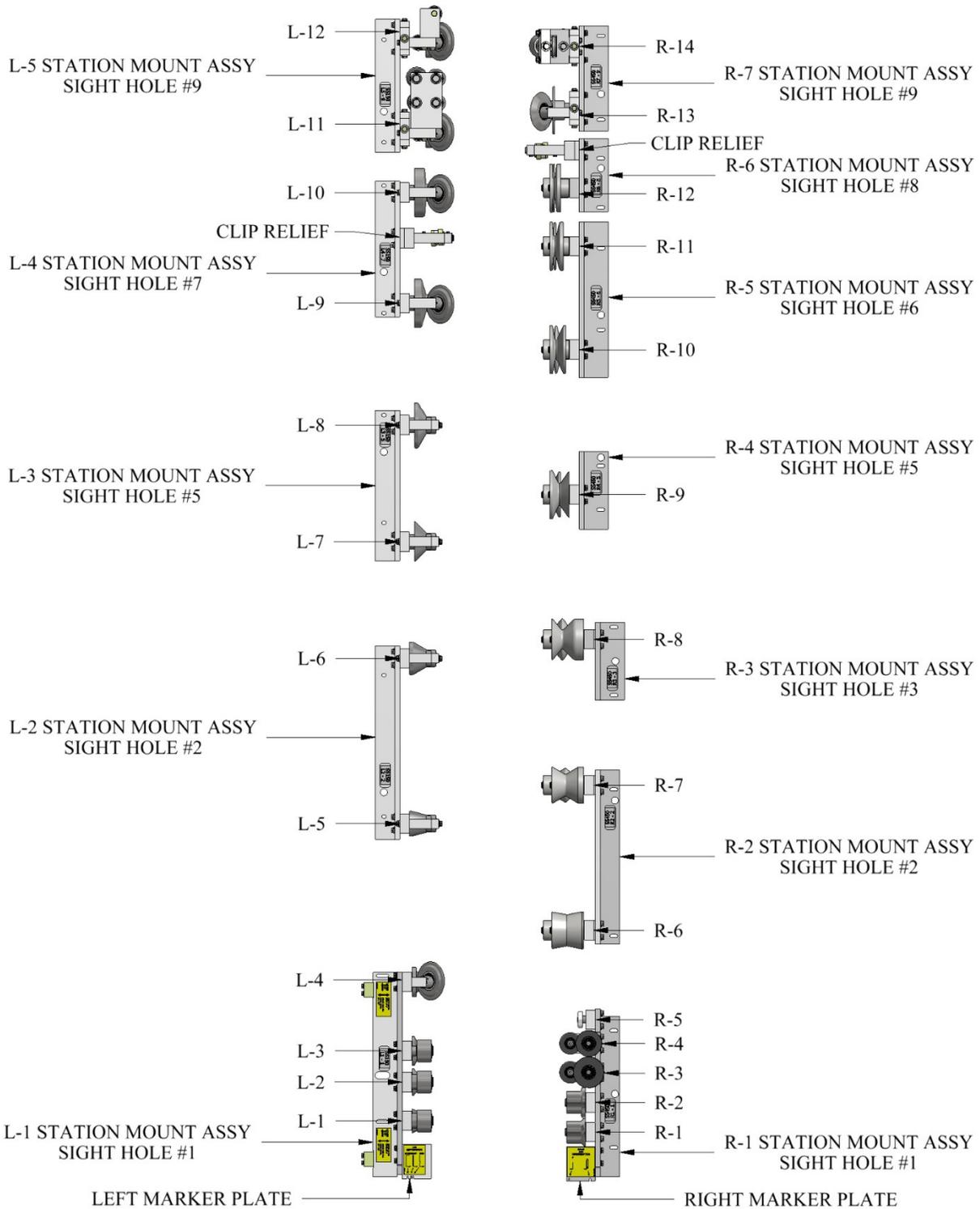


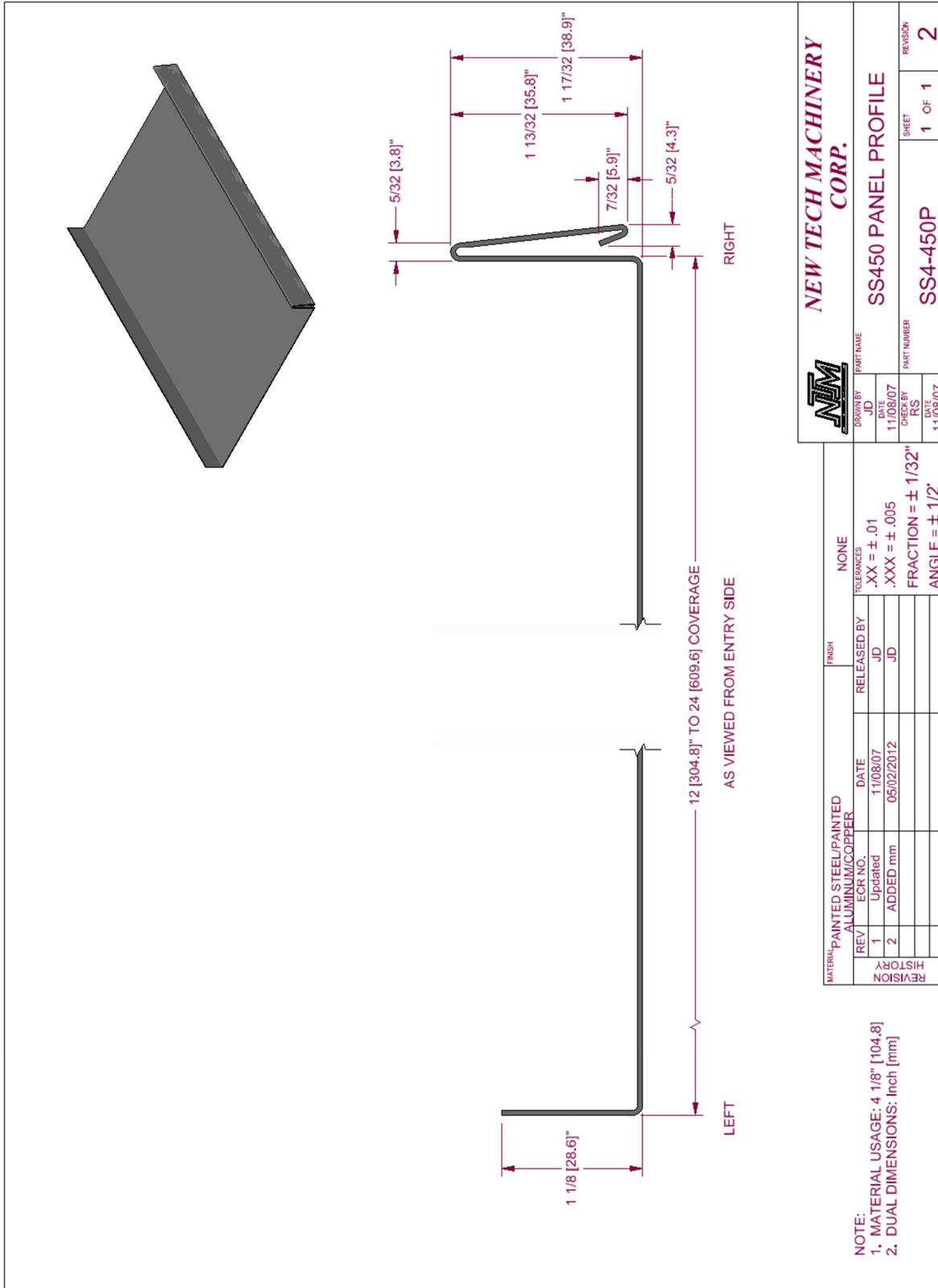
Figure 103: SS210 Panel Profile

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 104: SSQ450/450SL Roller System**

CHAPTER 20  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 105: SS450 Panel Profile**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

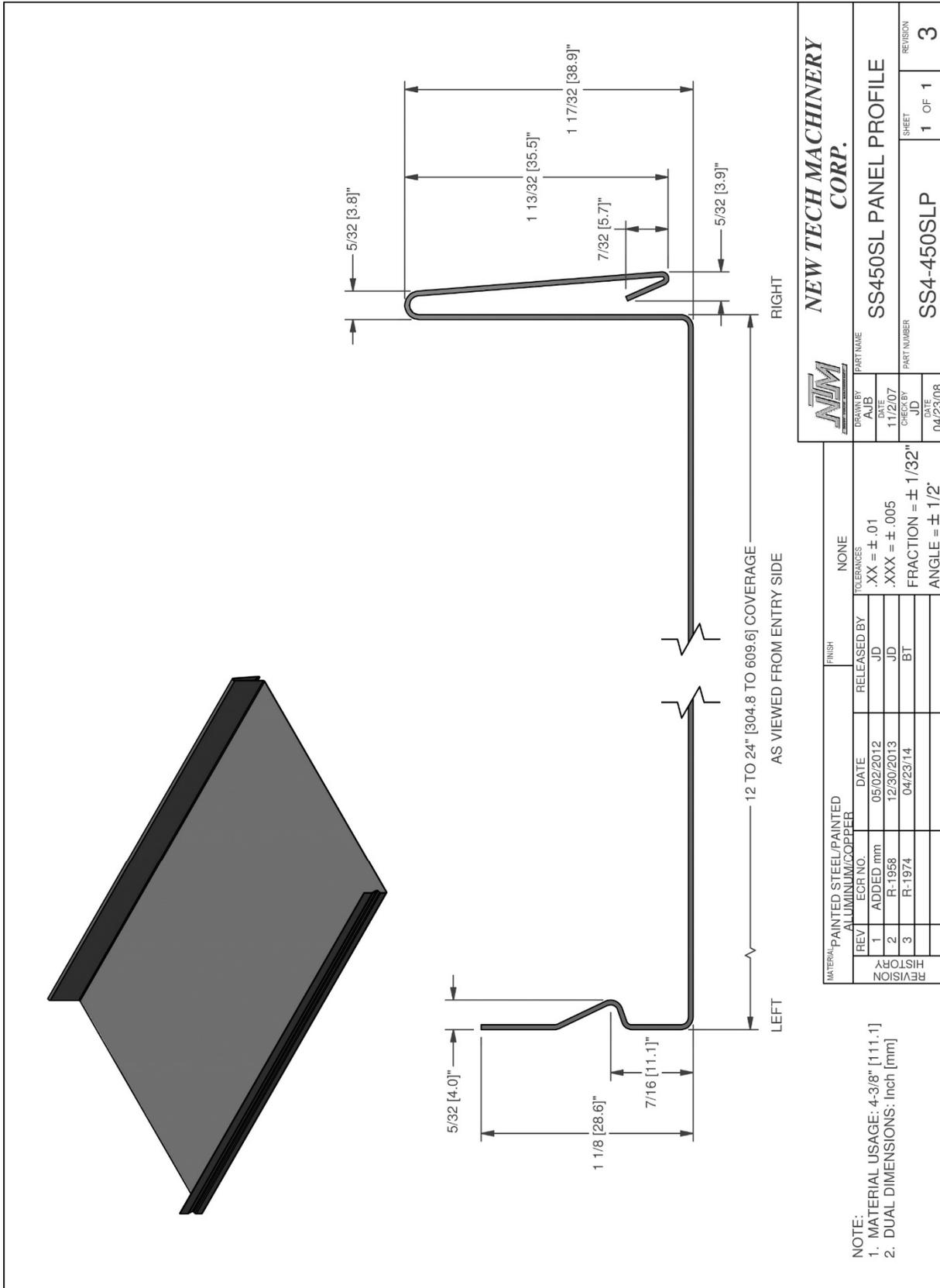
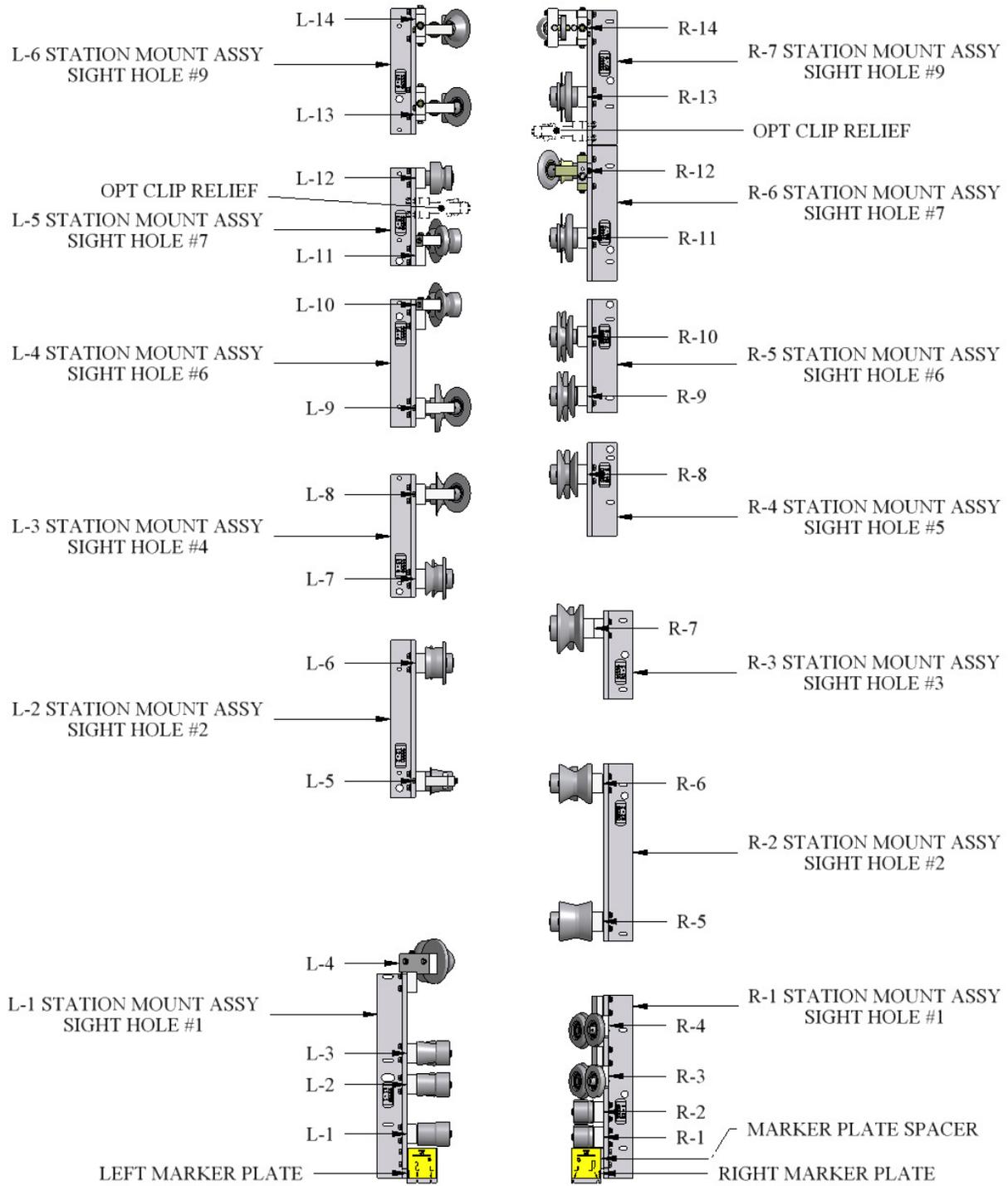


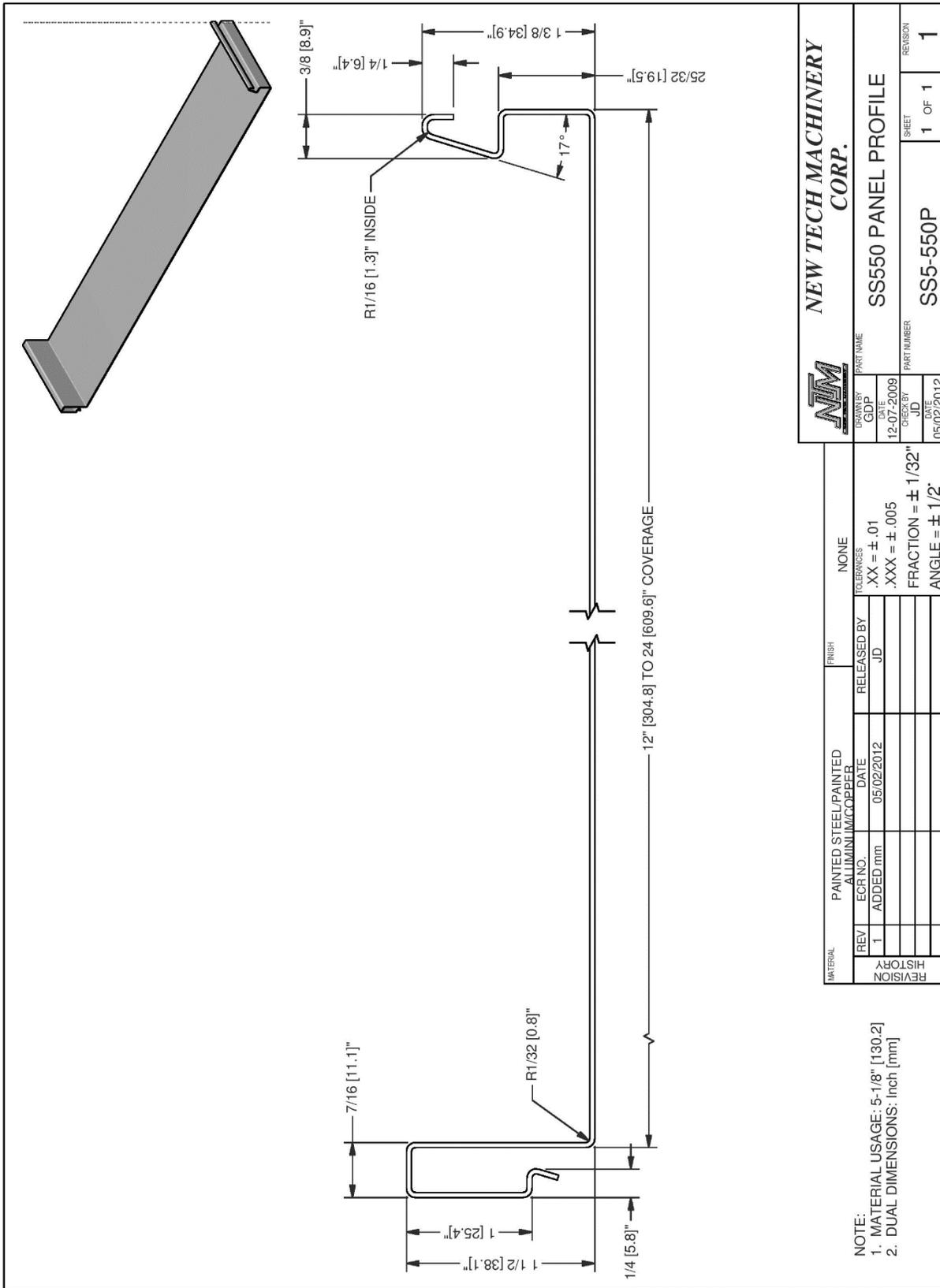
Figure 106: SS450SL Panel Profile

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



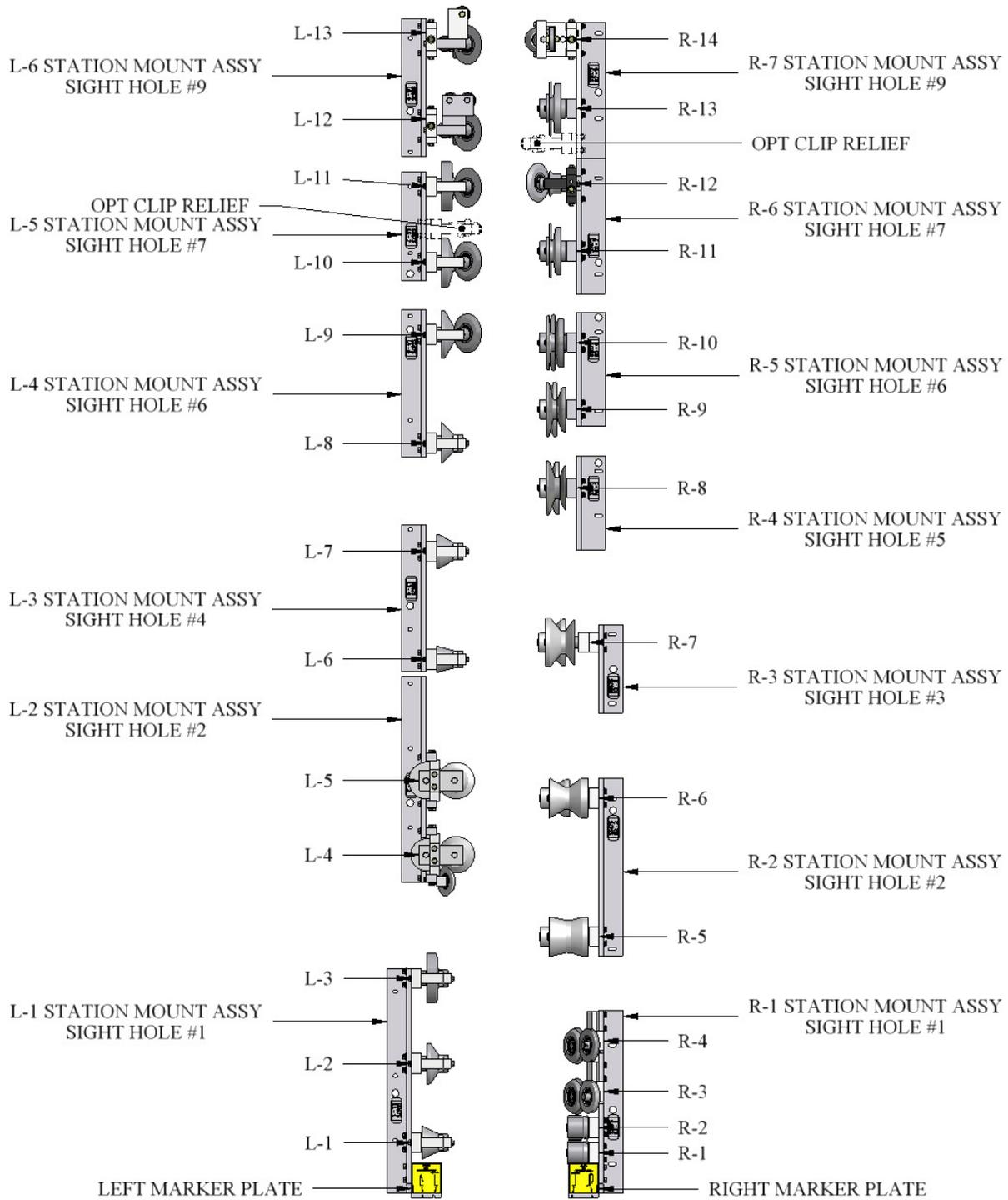
**Figure 107: SSQ550 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



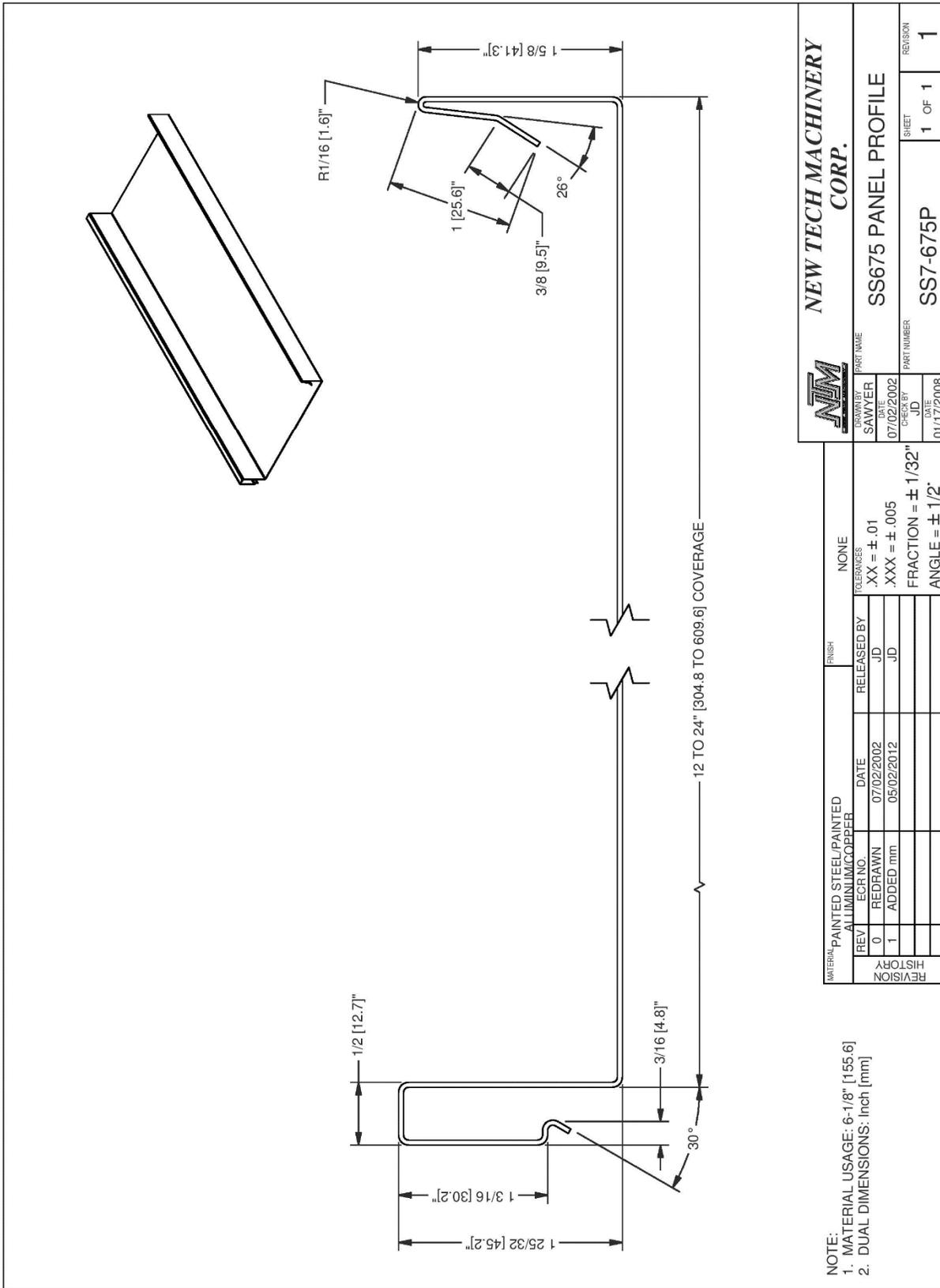
**Figure 108: SS550 Panel Profile**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



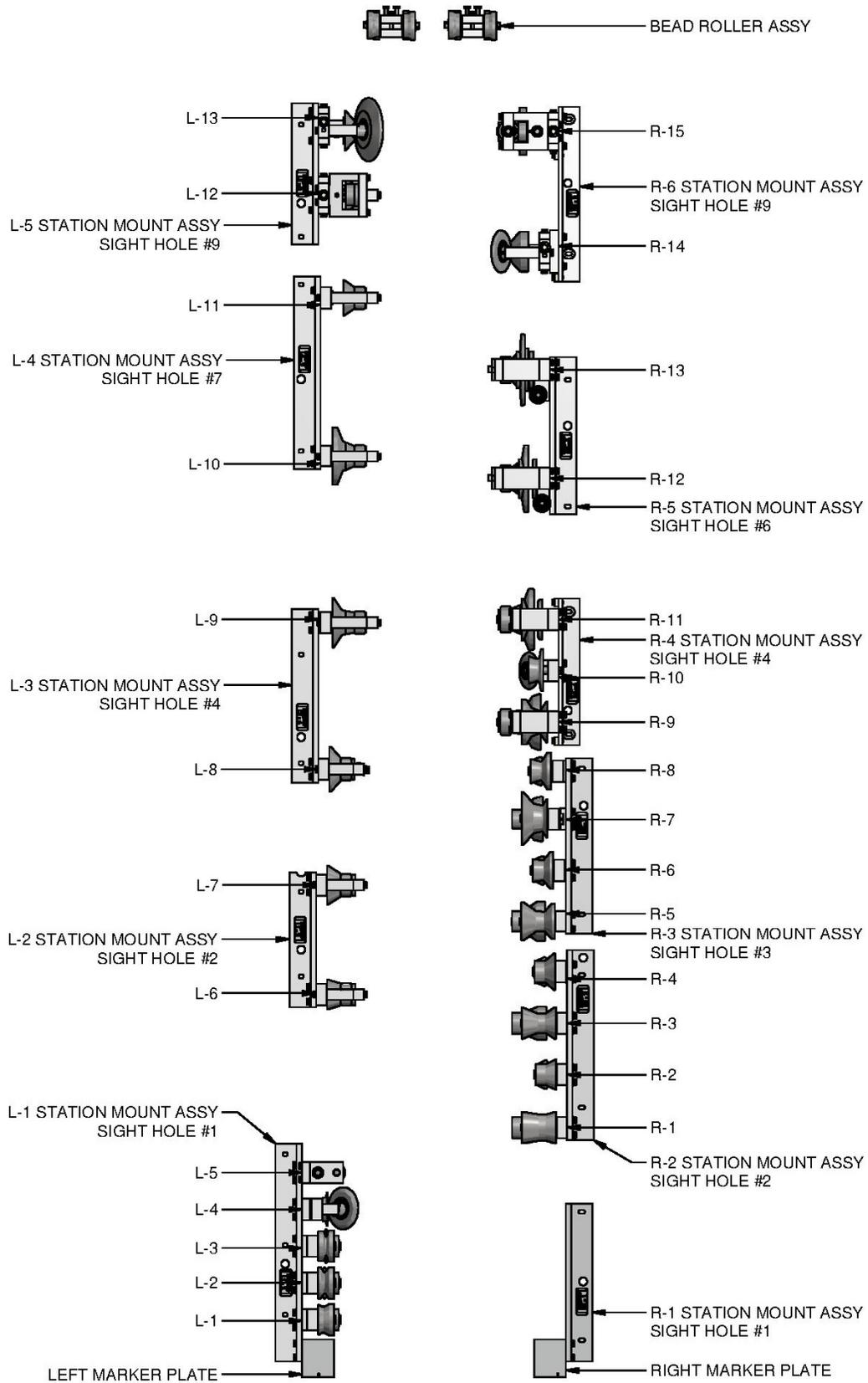
**Figure 109: SSQ675 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



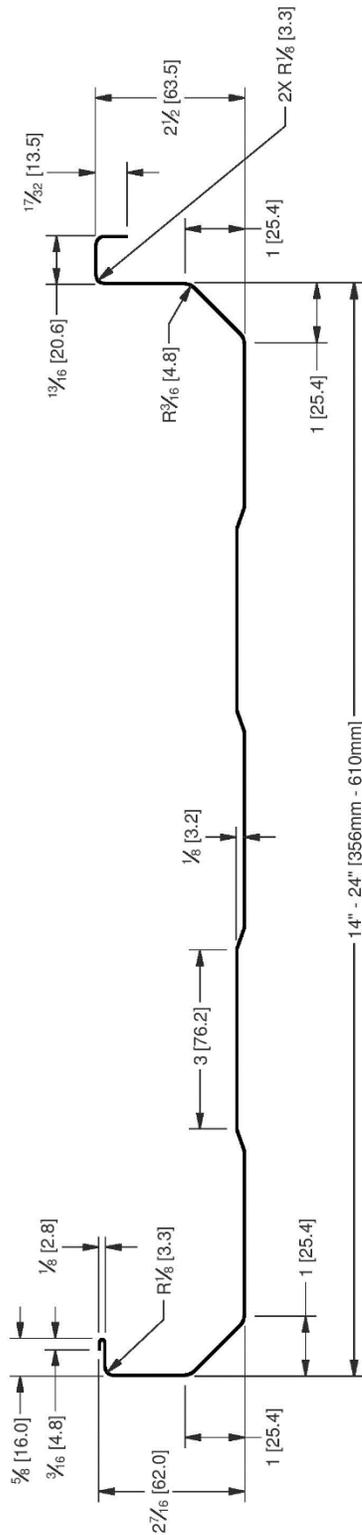
**Figure 110: SS675 Panel Profile**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 111: TRQ250 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



ALL RADIUS DIMENSIONS  
ARE TO INSIDE OF BEND  
DUAL DIMENSIONS: Inch [mm]  
MATERIAL USAGE = 5 5/8" [143mm] APPROX.

TOLERANCES  
LENGTH = ±.030 (1/32")  
ANGLE = ±2°

MATERIALS  
26 GA TO 22 GA STEEL  
.024" TO .040" ALUMINUM

|                  |         |          |             |                          |        |          |
|------------------|---------|----------|-------------|--------------------------|--------|----------|
| MATERIAL         |         | SEE NOTE | WEIGHT      | N/A                      | FINISH | N/A      |
| REV              | ECH NO. | DATE     | RELEASED BY | TOLERANCES               |        |          |
| 0                | R-1985  | 8/19/14  | JD          | SEE NOTE                 |        |          |
| REVISION HISTORY |         | DATE     | CHECKED BY  | PART NUMBER              | SHEET  | REVISION |
|                  |         | 8/19/14  | JD          | T25-250P                 | 1 OF 1 | 0        |
|                  |         |          |             | NEW TECH MACHINERY CORP. |        |          |
|                  |         |          |             | TRQ250 PANEL PROFILE     |        |          |

Figure 112: TRQ250 Panel Profile

## **RUN OUT TABLES AND REMOTE LIMIT SWITCH**

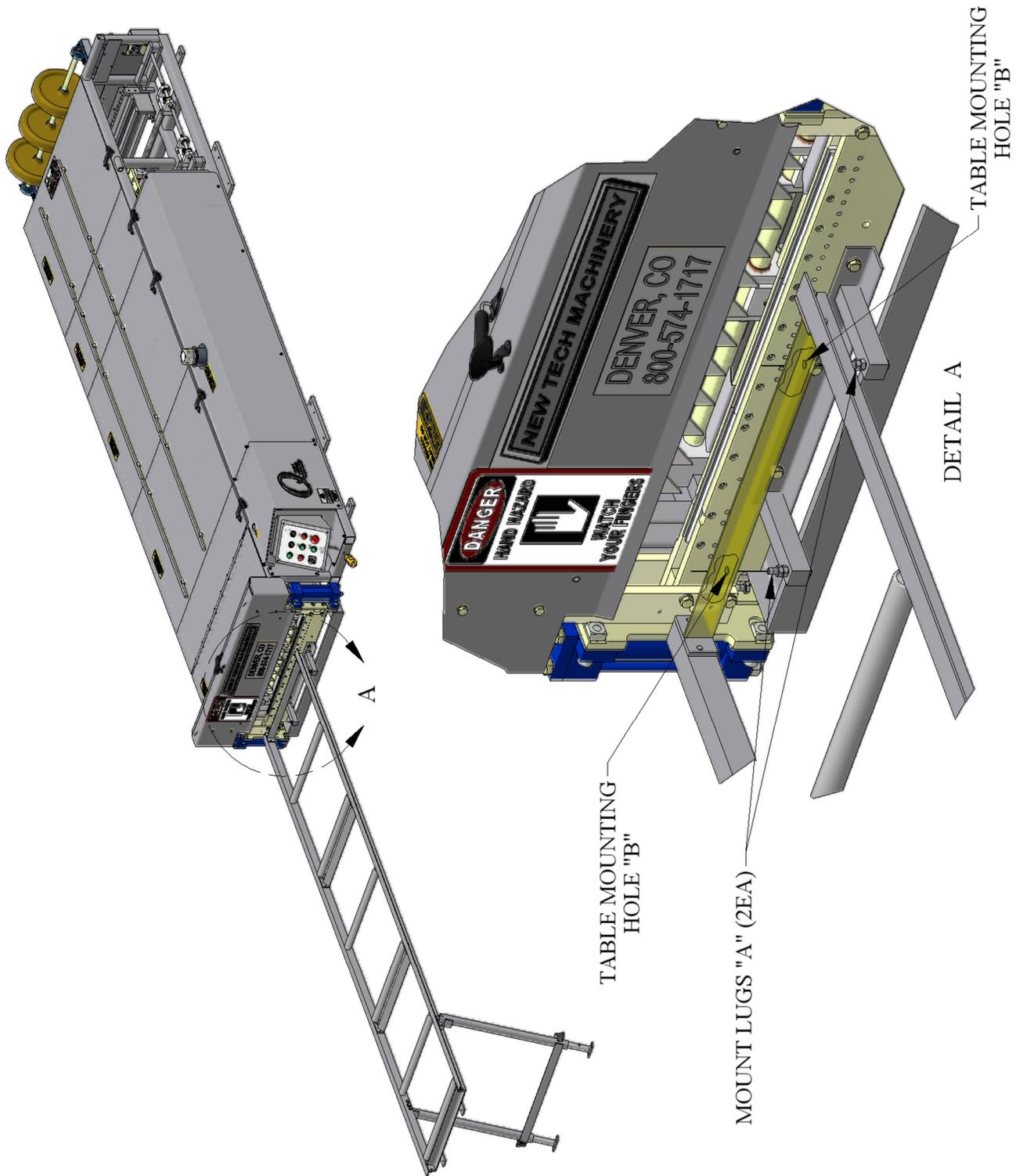
### **RUN OUT TABLES AND REMOTE LIMIT SWITCH**

(Figure 113 & Figure 114)

The Run-Out Table attaches to the Exit End of the Shear assembly, and is used to support the panel as it exits the machine. The Run Out Tables are available in 10 ft. long sections that fasten together and have adjustable legs so they can be set to the correct height. The Remote Limit Switch (Figure 118 on page 130) is designed to be used with the run out tables for controlling panel length.

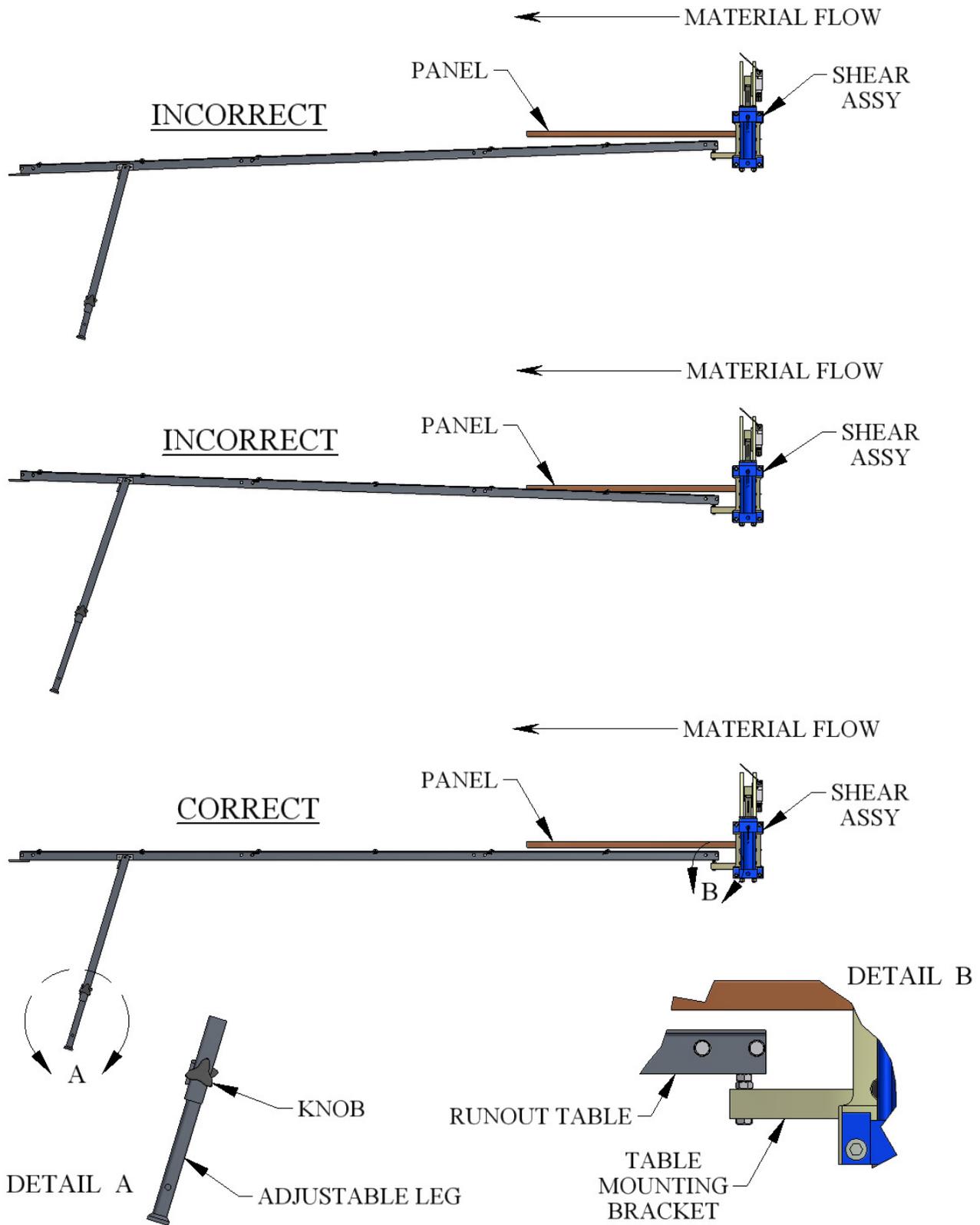
1. Set the first Run-Out Table on its side and in front of the machine with the leg assembly away from the shear.
2. Open the leg assembly and set it upright on the ground.
3. Lift the attachment end of the table and drop it over the 2 threaded bolts on the Shear Run-Out Table Bracket.
4. Loosen the 2 knob-handles on the leg assembly and allow the legs to fall free. Sight the height of the table on the left and right side adjusting it level to the machine using the knob-handles to lock the legs in place. See Figure 114 for correct and incorrect set up and details.
5. Repeat the above procedures for each succeeding table and attach it to the bracket on the end of the previous table.

CHAPTER 21  
**RUN OUT TABLES AND REMOTE LIMIT SWITCH**



**Figure 113: Run Out Table**

CHAPTER 21  
**RUN OUT TABLES AND REMOTE LIMIT SWITCH**



*Figure 114: Run Out Table Setup*

CHAPTER 22  
**QUICK CHANGE POWER PAC**

## **QUICK CHANGE POWER PAC**

The Quick Change Power Pac for the machine allows a change from one power source to another very quickly. For example, it is useful to run the machine at the jobsite with a gas engine and use it in a factory or indoor setting as well. **It requires two people to lift the Power Pac out of and into the machine.** To change the power pac see below.

Refer to Figure 115

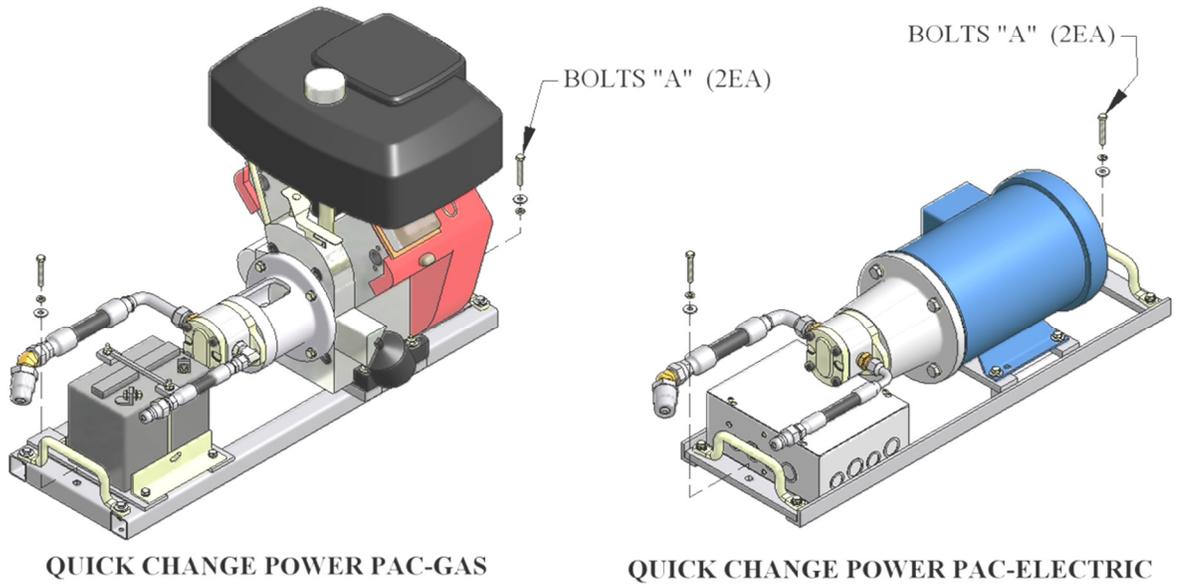
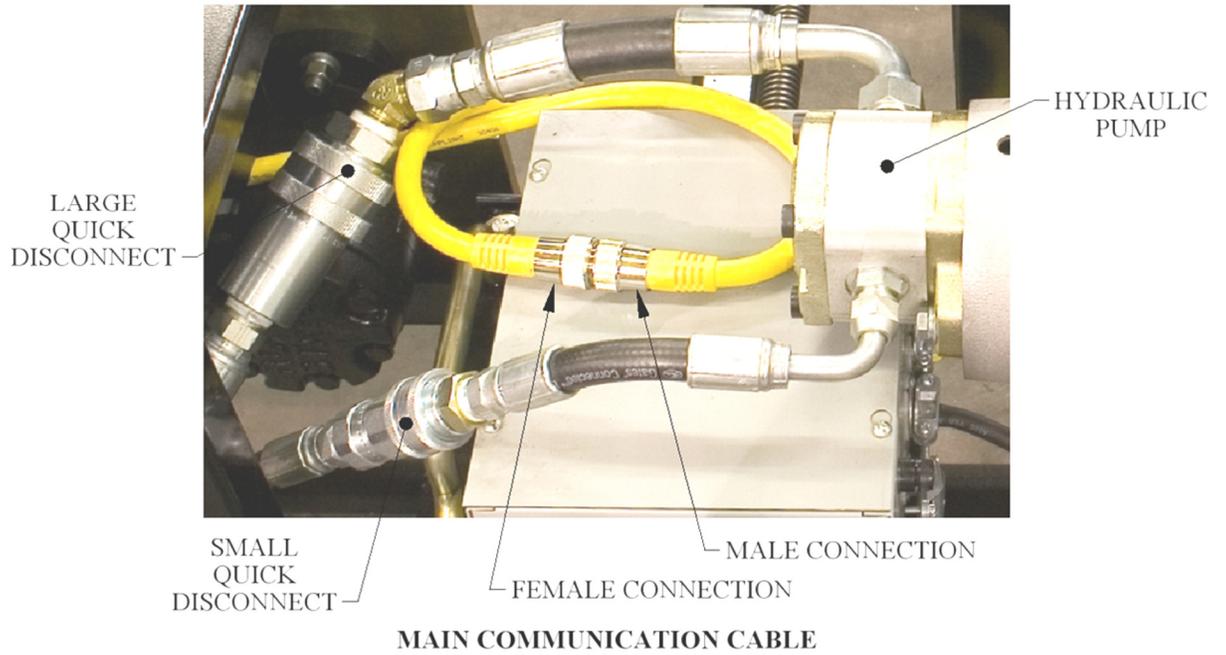
### **POWER PAC REMOVAL**

1. Remove the screws holding the #1 Left Cover on the machine. Set cover aside.
2. Using a 9/16" wrench, remove the two "A" bolts and set aside for later use.
3. Separate the Male /Female Connectors of the Main Communication Cable by unscrewing them from each other.
4. Un-couple the Large and Small Quick Disconnect hydraulic fittings.
5. Using the two handles, lift the Quick Change Power Pac out of the machine and set it aside.

### **POWER PAC INSTALLATION**

1. Using the two handles provided, lift the new Power Pac into position on the machine.
2. Align the two mounting holes under the handles of the Power Pac to the threaded holes in the frame of the machine. Use the two mounting bolts "A" removed above to fasten the Power Pac into place and tighten with the 9/16" wrench.
3. Locate the Male and Female Main Communication Cable and fasten them together. Note that there is a notch in one and a key in the other that must be aligned for the two to mate together correctly.
4. Connect the Large and Small Quick Disconnect fittings.

CHAPTER 22  
**QUICK CHANGE POWER PAC**



**Figure 115: Cable Connections and Fasteners**

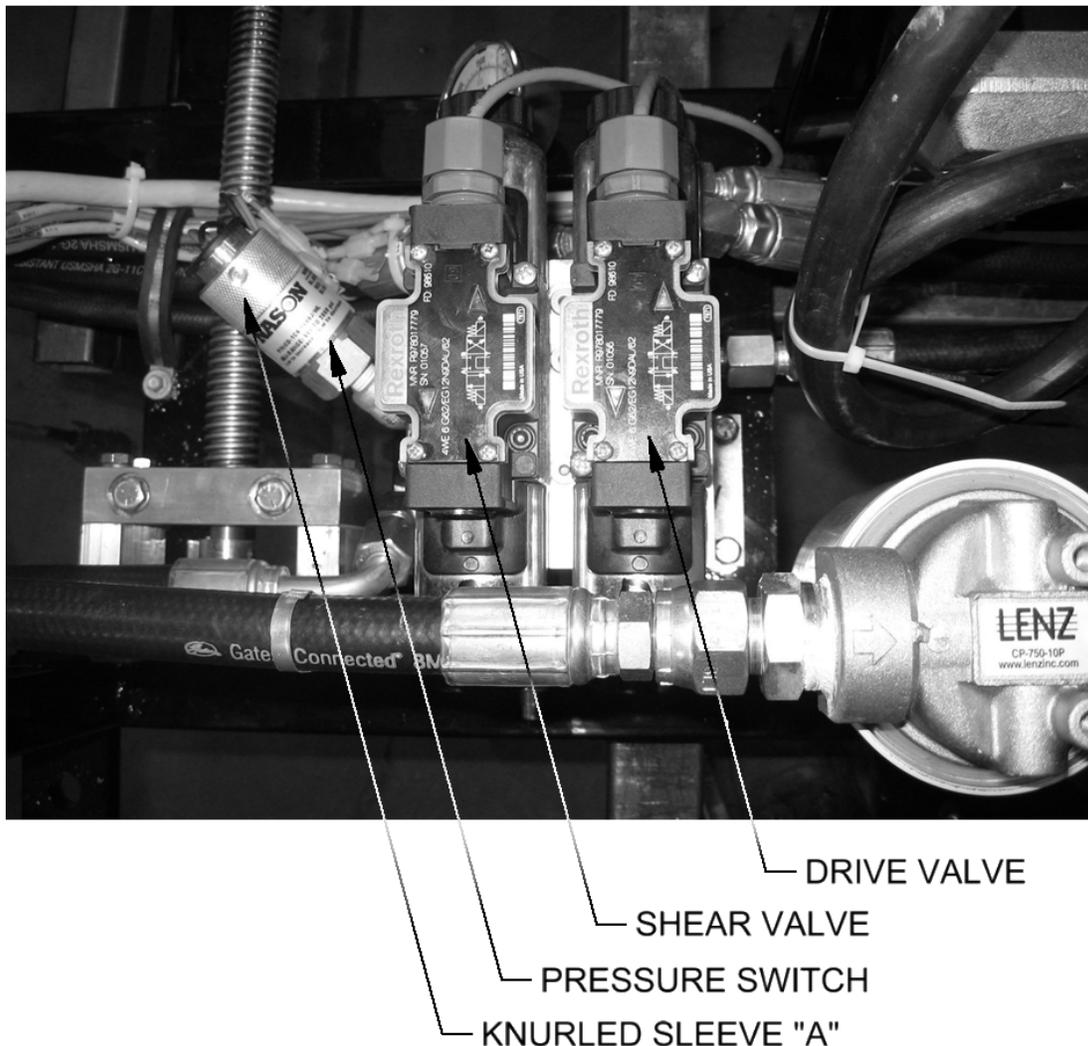
CHAPTER 23  
**TROUBLESHOOTING**

## 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 2000 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 and does not return to the top of the stroke. The hydraulic system continues laboring and pushing the Red Shear Up Button does not return it to the top of stroke.**

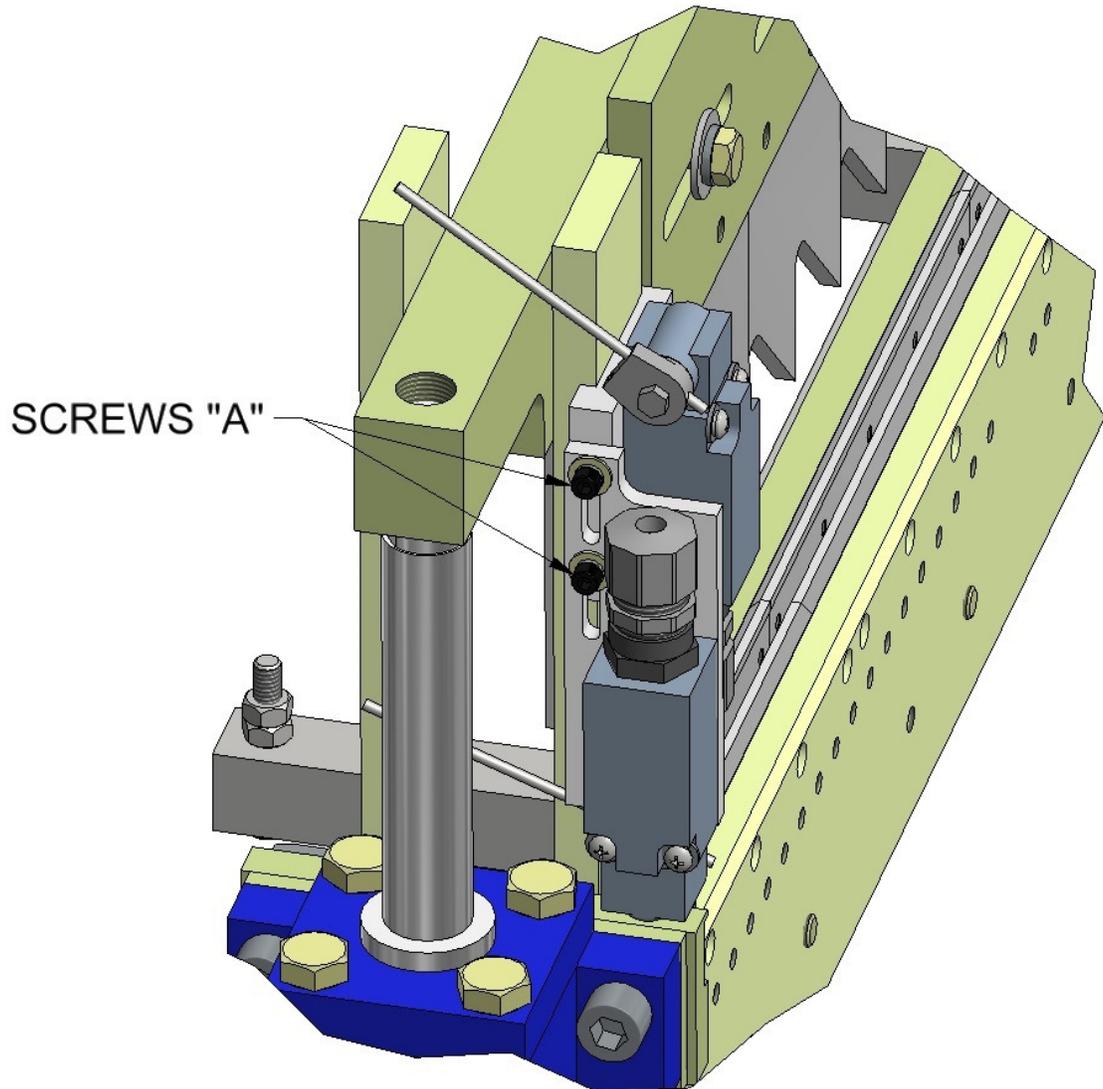
**SOLUTION** for serial numbers lower than SSQ293xxx with an adjustable pressure switch: Adjust the pressure switch (Figure 116) by turning the silver knurled sleeve "A" **counterclockwise** until the shear goes up. **Note:** If the sleeve is turned too far CCW, problem #2, below, will be seen on the next cut made.



**Figure 116: Pressure Switch Adjustment**

CHAPTER 23  
**TROUBLESHOOTING**

SOLUTION for serial numbers higher than SSQ293xxx with an adjustable limit switch: Loosen Screws “A” (Figure 117). 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 117: 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.**

SOLUTION for serial numbers lower than SSQ293xxx with an adjustable pressure switch: Press and hold the Green Shear Down Button until the panel is cut off. Remove the cut panel and jog material out 2 or 3 inches past the shear. Adjust the pressure switch (Figure 116) by turning the silver knurled sleeve “A” clockwise 1/8 of a turn. Press the Shear Down Button again. Check to see if the panel is cut off completely. If not, repeat this procedure until the cut is made with one stroke of the shear. **Note:** If

CHAPTER 23  
**TROUBLESHOOTING**

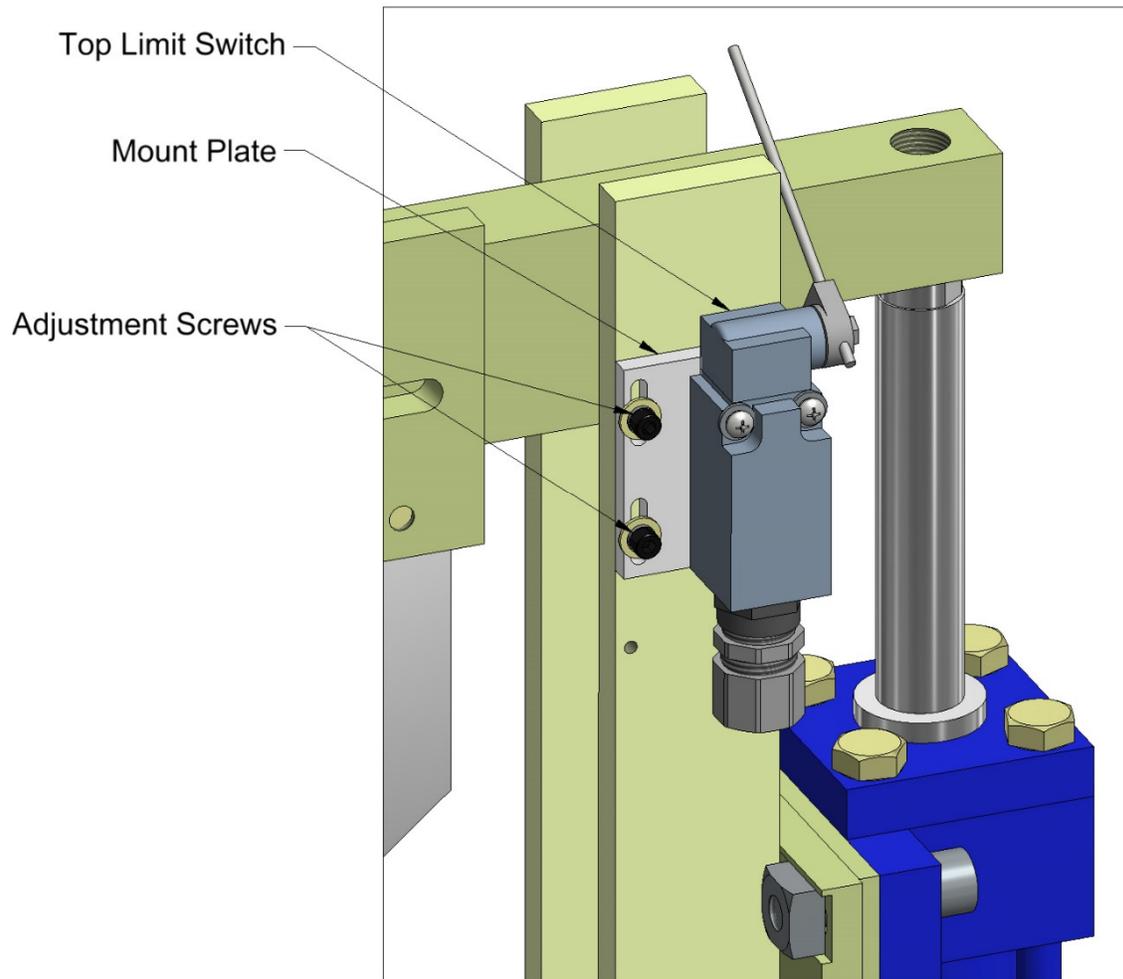
the sleeve is turned too far CW, problem #1, above, will be seen on the next cut made.

SOLUTION for serial numbers higher than SSQ293xxx with an adjustable limit switch: Loosen Screws “A” (Figure 117). 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 118) 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 118) 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 23  
**TROUBLESHOOTING**



**Figure 118: Limit Switch Adjustment**

4. After making a cut, the male or female leg of the next panel gets caught on the exit shear die and damages the panel.

**SOLUTION:** This problem normally shows up after making a roller system/shear die change. The entry dies both male and female should be as close to the vertical leg of the panel as possible without touching. Once this is achieved, the exit die should be set just outside the vertical leg of the entry die so that as the fresh cut edge of the panel passes by the exit die it doesn't get caught (Figure 23-Figure 33 on pages 36-41).

5. **The male and or female leg gets crushed when shearing.**

**SOLUTION #1:** Check the Shear Blades directly over the male and female legs to make sure that the points of the blades are in the correct position (Figure 22 & Figure 23 on page 35).

CHAPTER 23  
**TROUBLESHOOTING**

SOLUTION #2: Make sure that the shear blades and dies are well lubricated on both sides with the proper lubricant (See GENERAL MAINTENANCE on page 6).

**6. Manual Control Panel buttons do not work.**

SOLUTION #1: Check fuse inside of Manual Control Box. Replace if blown with a 10-amp time delay fuse (Figure 8 on page15).

SOLUTION #2: If the machine is equipped with a gasoline engine, check the condition of the battery. The control system requires 12 volts to operate properly. Replace or charge battery as required.

APPENDIX A  
**NTM200 COMPUTER CONTROLLER**

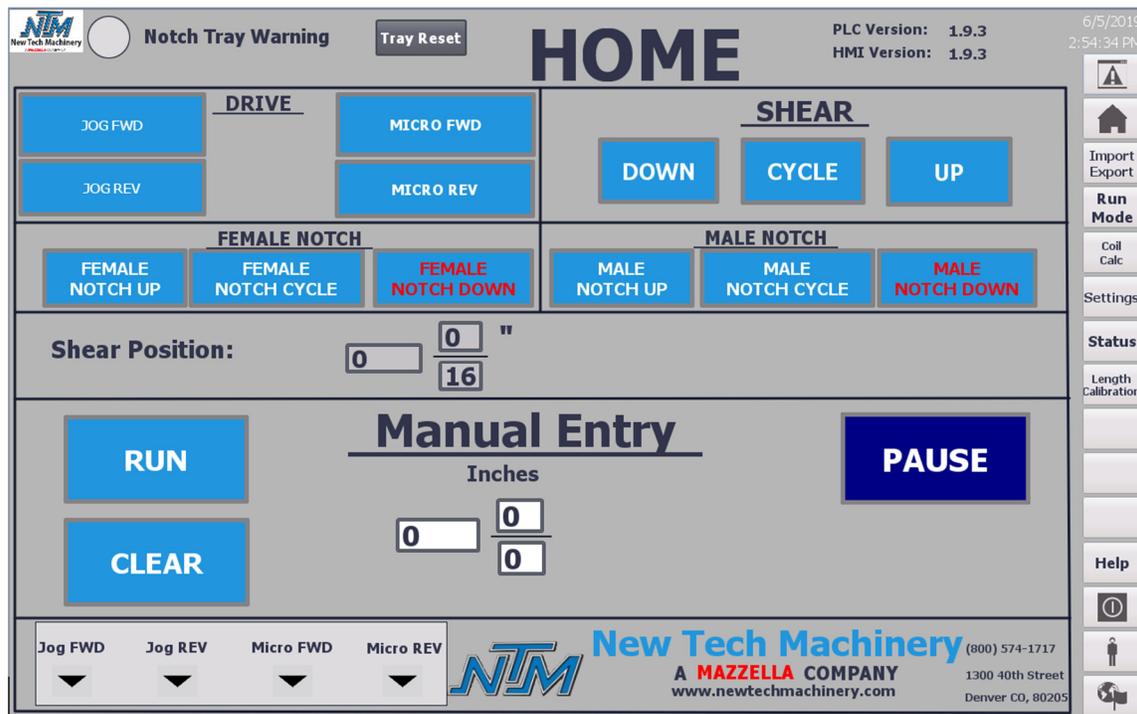
## NTM200 COMPUTER CONTROLLER

### **Home**

When the controller is turned on, the home screen will be displayed after start-up. On the Home screen and all other screens, there is access to other computer functions by pressing buttons on the right side of the screen.

On the Home screen, there are manual control buttons to control the functions of the machine, a Shear Position read-out and a Manual Entry section.

The Notch Tray Warning light alerts the user that the tray underneath of the notchers needs to be emptied. It will come on after 60 notches and can be reset with the Tray Reset button on the right side of the screen. The Notch Tray Warning can be disabled on the Settings Page.



**Figure 119: Home Screen**

### **Manual Operation:**

#### **DRIVE:**

FWD and REV JOG buttons will jog the machine forward and reverse for as long as the button is depressed. When the JOG buttons are released, the action will stop. The MICRO FWD and REV buttons will jog the material approximately 1/8" each time the button is pressed. This operation can be useful when jogging the leading edge of the material through the shear. The Micro jog buttons are not available on the WAV machine since the material speed ramps up slowly.

APPENDIX A  
**NTM200 COMPUTER CONTROLLER**

**SHEAR:**

The shear UP and DOWN buttons are momentary and will act in a similar manner to the jog buttons. The SHEAR CYCLE button only needs to be pressed once and the shear will go to the bottom of the stroke and back up to the top. During the shearing cycle a red STOP SHEAR button will appear on the screen that will stop the shear if pressed and send it back up.

**NOTE:** The shear will stop **without** returning to the top if the E-Stop pushbutton is pressed. This button turns off all machine operation. After the E-Stop is reset and the motor started, the shear will need to be returned to the top manually.

**MOTOR ON (WAV machines only):**

On the WAV machine, a Motor ON/OFF button will appear in place of the MICRO FWD button. This button will turn the motor on or off. Alternatively, pressing any of the manual control buttons on the screen will turn the motor on and as well as initiate the drive or shearing operation. When the motor is running, a countdown timer will appear below the Motor OFF button. The countdown timer will be reset when the drive or shear operations are utilized. When the countdown is complete, the motor will turn off. The countdown timer is adjustable from 1-60 seconds, 15 seconds is the factory setting. This adjustment can be found under settings menu (Page 8).

***Manual Entry:***

The Manual Entry feature is a quick and easy way to run panels from the home screen. CLEAR will clear the fields in the Manual Entry section.

Simply input a length on the screen, press RUN, and the machine will produce the desired panel. To run the same length more than once, press RUN again after the previous panel has been cleared from the runout area. Press CLEAR to reset the fields.

APPENDIX A  
**NTM200 COMPUTER CONTROLLER**

**Run Mode:**

Panels can be programmed to run automatically. On the right side of the screen, press the Run Mode button.

The screenshot shows the 'Part Entry Screen' in 'RUN MODE'. At the top, there's a status bar with 'RUN MODE' and a 'New Coil' button. Below this, there's a control area with a 'PAUSE' button and a 'RUN' button. To the right of these buttons are input fields for 'Leading Offset' and 'Trailing Offset', both set to 0/16. There are also 'No' buttons for 'Notch Ends?' and 'Stop After Last Part?'. Below the control area is a table titled 'Upcoming Parts' with columns for Panel, Plane, Quantity, Length, Inches, Quantity Completed, and Stop After Last Part?. The table lists panels 2 through 7, all with Plane 0, Quantity 0, Length 0, Inches 0, and Stop After Last Part? set to 'No'. Each row has a 'Notch Settings' button. On the right side of the screen, there's a vertical sidebar with icons for Home, Import Export, Run Mode, Coil Calc, Settings, Status, Length Calibration, and Help.

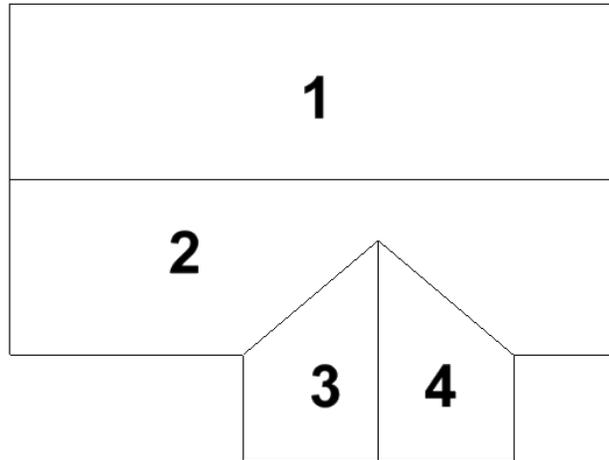
**Figure 120: Part Entry Screen**

The controller can contain up to 600 unique panels. **Note:** If the machine is turned off the memory will only retain the first 200 panels, and any panels beyond 200 will be lost. If a job requires more than 200 unique panels then it is necessary to have them on a USB drive at the job site.

The **Panel Number** is displayed on the left under Panel. The Panel Number is a set number and not adjustable.

The **Plane** designation is optional. The Plane field is useful if the job has distinguished areas where the operator will be dropping sets of panels in the different areas to be installed later. See the following image for an example:

APPENDIX A  
**NTM200 COMPUTER CONTROLLER**



*Figure 121: Roof Plane Designation Example*

**Quantity** is the number of parts that will be produced at the length and notch conditions entered.

**Length** is the total length of the panel. When producing notched panels the length includes the 1” flaps at each end. Lengths can be entered in feet and inches, inches only, or millimeters. Go to the Settings page to change the units.

**End Notches** will add a 1” deep notch to each end of the panel. Note – the optional Notcher System needs to be installed in the machine in order to add notches to the panel.

**Side Offset Type** refers to the additional notch that can be added to the panel to make cutting them at an angle easier. The additional notch can be added to either the leading or trailing edge of the panel and the male or female leg as needed. See Figure 122 for more information on notch locations. When offset notches are used, the machine will pause to allow the operator to make the angled cut. Once the cut is made press the Run button to resume. The **Leading and Trailing Offset** is the distance from the end notch to the offset notch as shown in Figure 122.

The **Stop After Last Part** option will determine how the machine operates after each panel. If Yes is selected, the machine will stop after the panel number is complete. The user would then be required to press Start to run the next panel number. If No is selected, the machine will run the current panel and automatically start running the next panel.

The **Load New Coil** feature will need to be used if there is no material in the machine. Insert the leading edge of the coil into the entry guide up to the first drive roller, then press the **New Coil** button, and then press the **Load Material** button. The next steps depend on whether the machine has notchers or not:

- **Machines with Notchers** – The controller will then drive the material forward until it gets to the first encoder, about 18” past the first drive roller. Note – the

APPENDIX A  
**NTM200 COMPUTER CONTROLLER**

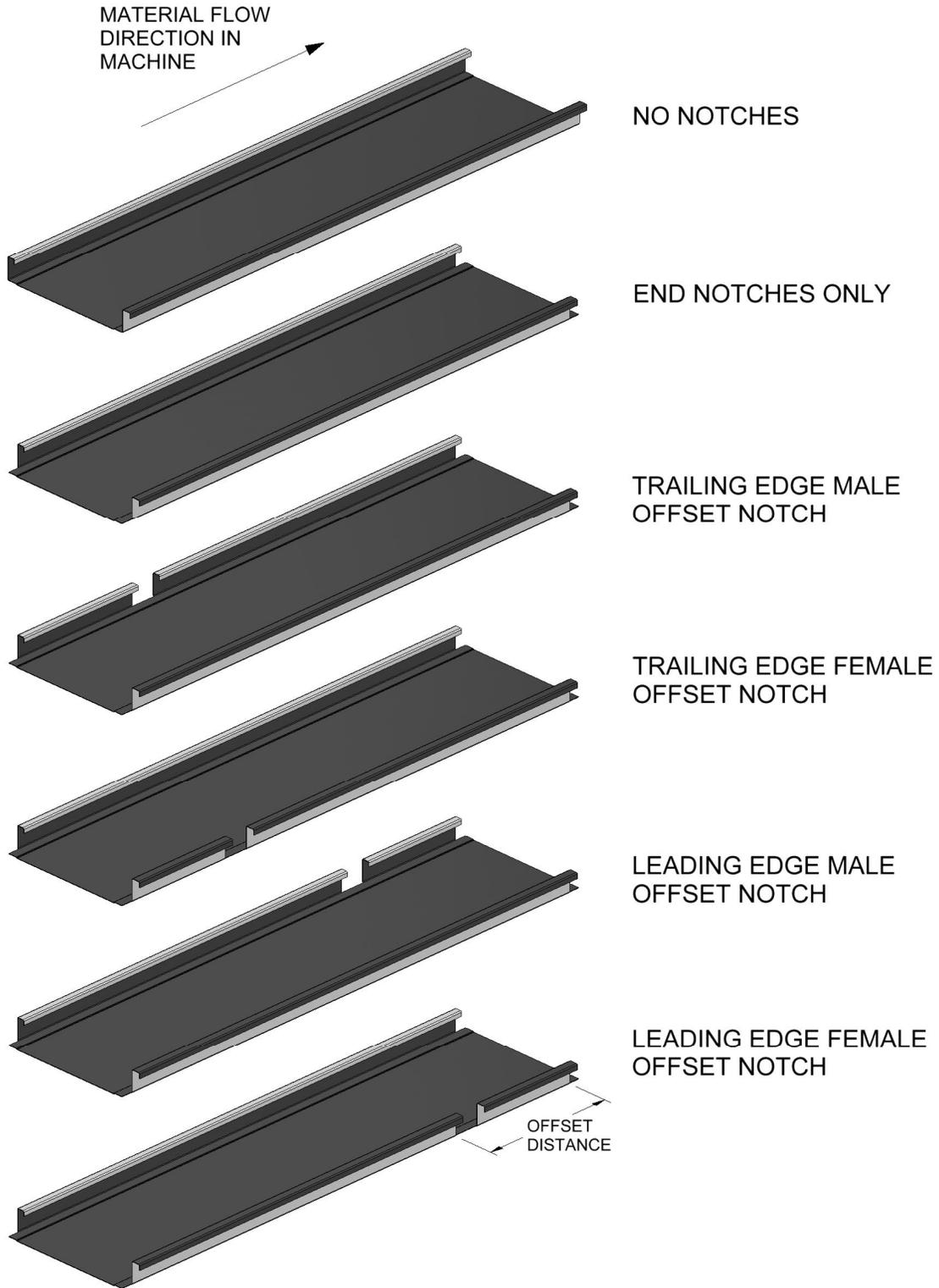
coil may need to be nudged into the drive roller to get it started. The Run button will then be displayed. See the Run section below.

- **Machines without Notchers** – When the Load Material button is pressed the user will be prompted to jog the material carefully through the machine past the shear. *It is important to use the controls on the touchscreen to do this rather than the manual controls or the machine may not function properly.* Once the proximity sensor senses the material, the Cycle Shear button will be displayed. Press this button then remove the piece that is cut off. The Run button will then be displayed. See the Run section below.

**Run.** Once the material is loaded, or if the machine was already loaded with material, the Run button can be pressed and the first panel in the cut list will be produced. Once that piece has been removed from the runout area, the controller will go on to the next panel. The machine will continue until the entire cut list is complete. At the appropriate time the machine will pause and display a notice to cut off the coil when the end of the list is near. Note – if the machine is already loaded with material and the first piece in the list contains notches then the material between the shear and the notchers will be scrapped.

The **Quantity Complete** field shows how many panels have been produced of the total number entered.

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**Figure 122: Notch Location Overview**

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***Loading a Cut List from a USB drive:***

Panels can be entered in manually or transferred from a USB flash drive. Using the spreadsheet provided by NTM (which can be downloaded at [www.newtechmachinery.com/Resources](http://www.newtechmachinery.com/Resources)), generate a .csv file with the panel length and quantity information. This file must be named “record.csv”. Place the record.csv file on a USB flash drive. It must be placed at the root level of the drive, not in a subfolder. If the file is not named correctly or not in the specified folder structure, loading the file to the controller will not work properly.

Insert the USB flash drive into the front of the controller. On the Import/Export screen, press Import Cut List from USB. The screen will display “In Progress” while it is loading. When “In Progress” changes to “Completed” press Download Cut List To Controller. When “In Progress” again changes to “Completed” go to the Run Mode page to begin producing panels. NOTE: Loading a new cut list will over write any values in the part entry table.

The cut list can also be exported from the controller to a USB drive. Insert a USB drive, go to the Import/Export screen, press Upload Cut List From Controller, wait until “In Progress” changes to “Completed” then press Export Cut List to USB. Again, wait until “In Progress” changes to “Completed” then remove the USB drive.

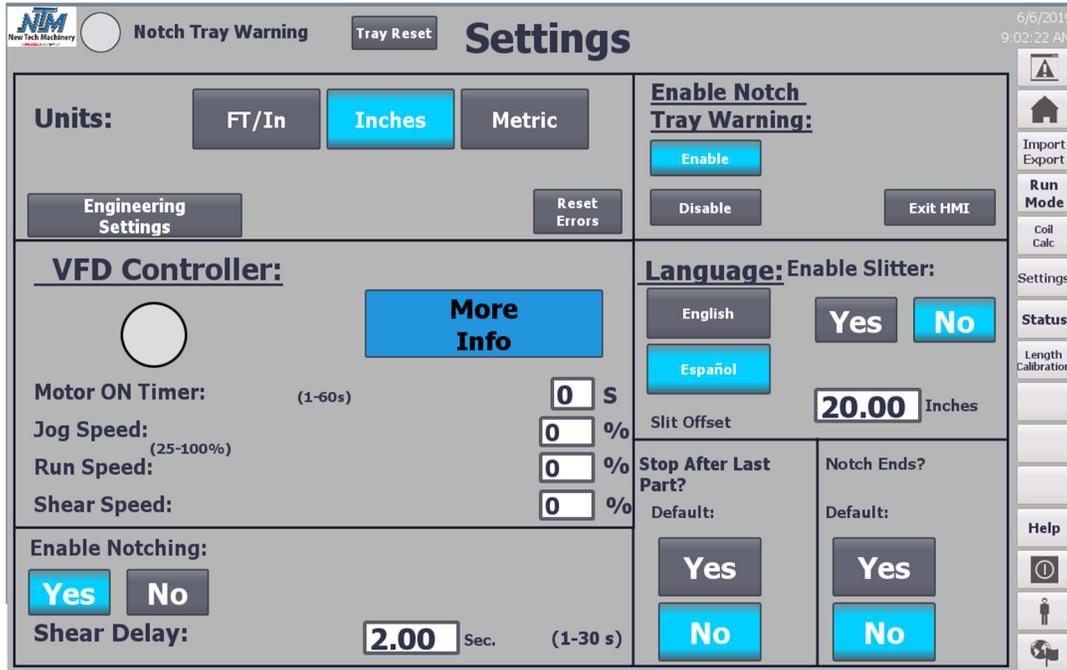


**Figure 123: Import/Export Screen**

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**Settings:**

Press the Settings button on the right side to make changes to the controller settings such as, units of measure, language, etc.



**Figure 124: Setup Screen**

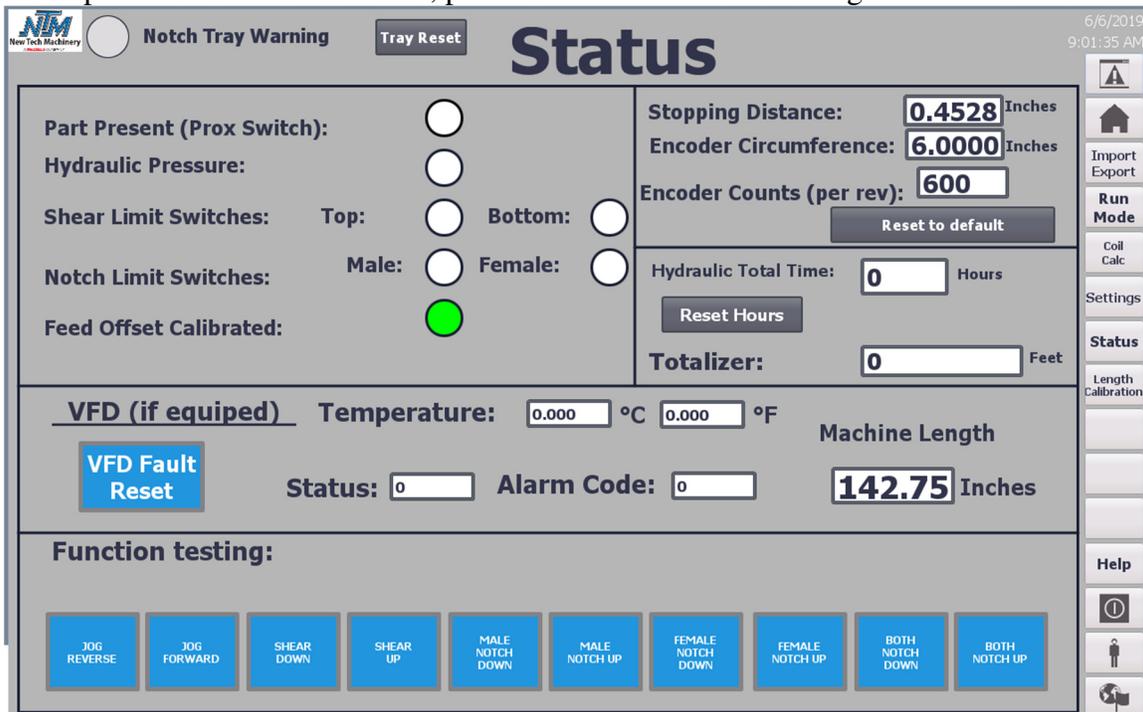
- The units can be changed from Feet and Inches, Inches only, or Metric.
- The Engineering Settings are set at the factory and should not be adjusted. This section is protected by a password.
- The VFD Controller is reserved for machines that utilize a Variable Frequency Drive for the motor. This feature is currently only available on WAV machines. This setting must be OFF for machines that do not have a VFD or when the VFD is not being used.
- Enable Notching is used to disable the notching function of the controller if the notching system is not present on the machine. It is recommended that Enable Notching be set to No when producing a panel without notches to avoid accidental notching.
- The shear Delay is adjustable. This is the time, in seconds, between when the panel is removed from the run-out stand until the machine begins to run the next panel.
- Enable Notch Tray Warning. When enabled this will remind the user to empty the catch tray after every 60 punches. This can be disabled if desired. For example, if the machine is in-plant and there is another means of handling the punch slugs then the warning is not needed.
- Exit HMI Program. If it becomes necessary to update the touchscreen software, pressing this button will return to the welcome screen where this can be done.

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- The language can be changed.
- Enable Slitter – If the optional Angled Slitter is present, setting this to Yes will cause the machine to pause while the slit is being made. The Slit Offset value tells the machine how far to extend the leading edge past the machine before making this pause. Adjust this value up or down as needed for the panel being produced.
- The Stop After Last Part setting is typically operator preference. By default, the values can be set to Yes or No. If this setting is changed, the parts list will have to be reset by pressing clear all parts on the Part Entry screen before the change will take effect. When Stop After Last Part is set to “YES”, then after all the pieces of the current length are complete, the controller will advance to the next panel and wait for the operator to press Start. When Stop After Last Part is set to “NO”, then after all the pieces of the current length are complete, the controller will advance to the next panel and automatically start.
- The Notch Ends Default will set the end notches of all the parts on the Run Mode page to be either Yes or No.

**Status/Diagnostics:**

To help troubleshoot the machine, press the Status button on the right side of the screen.



**Figure 125: Status Screen**

This screen displays the following:

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- Part Present (Prox Switch) – When a metallic object is within approximately 2” of the proximity sensor then the lamp will illuminate.
- Hydraulic Pressure – When the hydraulic system is pressurized, this lamp will illuminate.
- Shear Limit Switches – As the shear moves up and down, the upper bar triggers mechanical limit switches at the top and bottom of the stroke. When these switches are engaged, the lamps will illuminate. The machine utilizes (2) limit switches for the top of stroke, one on each side, to ensure proper shear blade alignment. Refer to the Shear section in the machine manual for limit switch adjustment.
- Notch Limit Switches – These switches sense if the notchers are in the up position. When these switches are engaged, the lamps will illuminate.
- The VFD Status area shows the temperature, the status code and the last alarm code from the VFD. If the VFD is in a fault, the red light on the VFD enclosure will be ON. The fault can be reset by pressing the VFD Fault Reset button. The red light on the VFD enclosure should extinguish and the machine will operate as normal.

If the VFD temperature exceeds 185°F (85°C), the machine will be inoperable to prevent damage to the machine components.

- Machine Length is the distance from the notchers to the shear. This is set at the factory and should not need to be adjusted, but if the machine is consistently not shearing in the center of the notch it may need to be adjusted. Contact New Tech Machinery for help with this.
- Stopping Distance displays the current estimate of how far the machine will coast after stopping the drive. The controller uses this to anticipate when to stop the drives in order to get the correct panel length. This is continually updated by the controller and should not be adjusted manually.
- Encoder Circumference and Encoder Counts are set at the factory and should not be adjusted.
- The controller is supplied with a Totalizer, a counter that tracks all the material that is run by the computer.
- To help troubleshoot functions of the machine, the machine can be controlled with the Function Testing buttons from the Status screen. Pressing the buttons to Jog or Shear on this screen bypasses all logic of the controller. For example, if the machine has material and the shear is in the down position, the machine will not jog forward if the Jog Fwd button on the Home screen is pressed. The shear must be up to jog forward. Since the controls on this screen bypass all logic, the machine could be jogged forward with the shear down causing the material to crash. Therefore, use extreme caution when pressing these function testing buttons.

***Length Calibration:***

If the machine is consistently producing panels that are an incorrect length, it can be calibrated using the Length Calibration feature. Press Length Calibration on the right hand side of the screen. Enter the expected length of the part under “Enter Programed

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Length of Part” and the actual length under “Enter Actual Measured Length”. Then press the Calibrate button. The controller will make the necessary corrections. Note: If you have a gas engine model it is best to calibrate the length with the engine running at the same RPM you would normally run it at.

***Coil Length Calculator:***

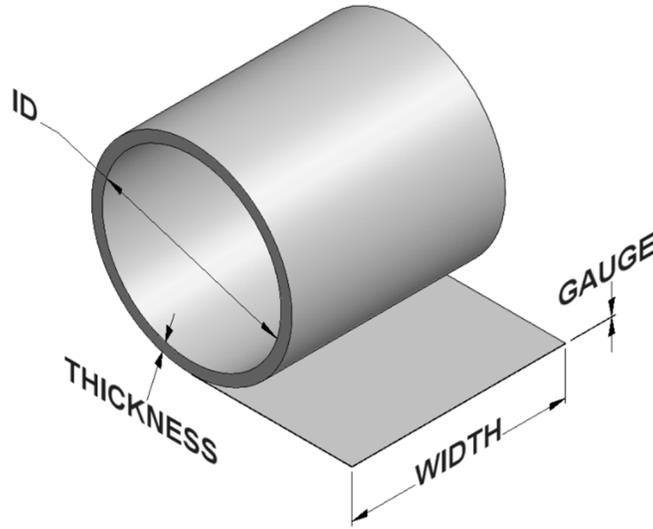
The controller has a built-in calculator to estimate the length of a coil based on the dimensions of the coil. From any screen press the Coil Calc button on the right side.



***Figure 126: Length Calculator Screen***

Select the thickness material to the right of the material type. If the material is not listed, enter the thickness of the material manually, in thousandths of an inch. Enter in the inside diameter of the coil and thickness of the coil. The thickness of the coil is the difference between the Inside Diameter (ID) and the Outside Diameter (OD). When all the fields are populated, the calculator estimates the length of the coil. Press the Close button to close the calculator screen.

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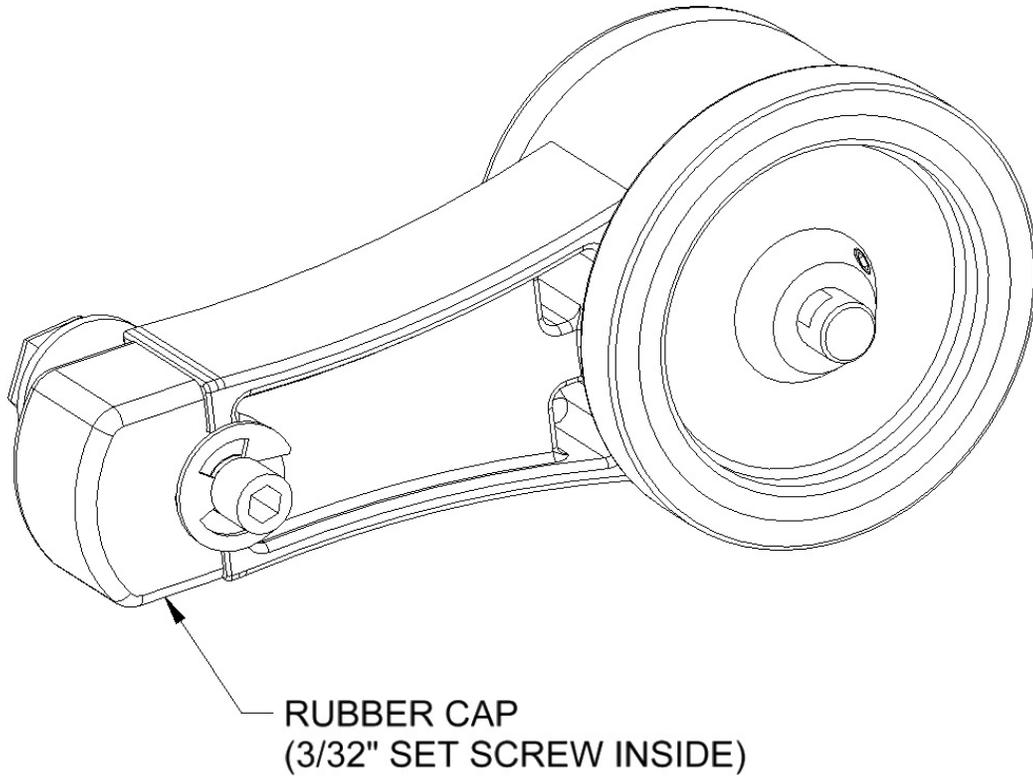
*Figure 127: Coil Dimensions*

### ***Encoder Adjustment***

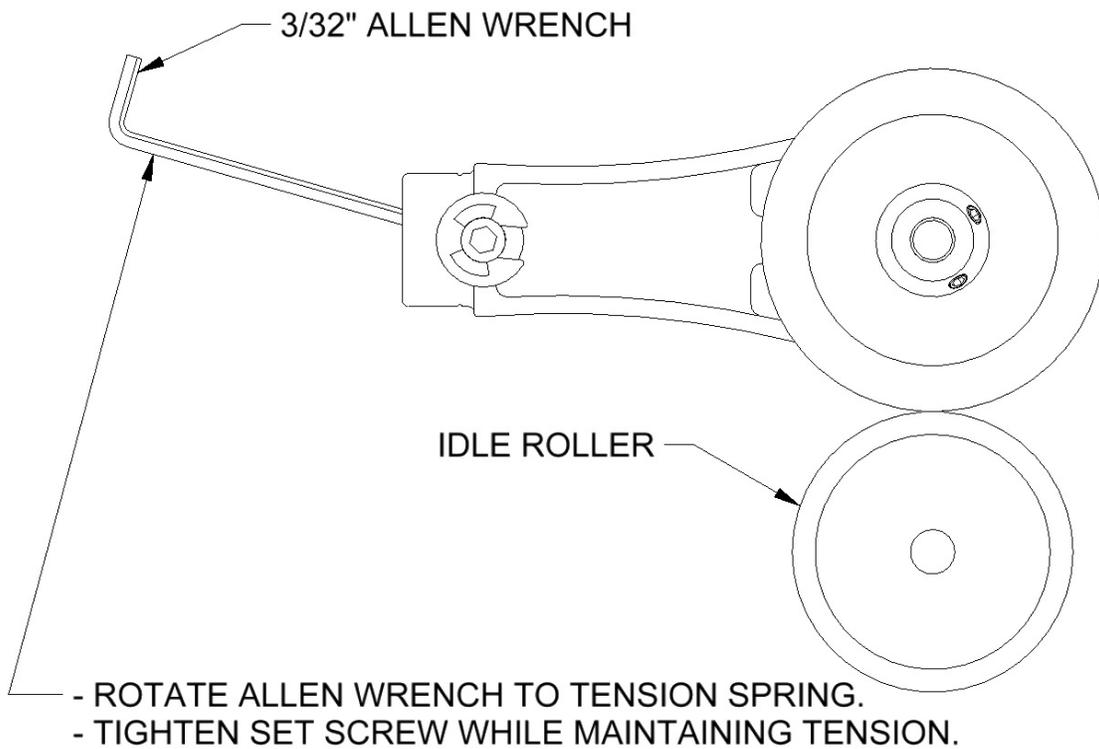
The encoder should have tension on the material in order to track the material accurately. To check the tension on the encoder, gently lift up on the wheel. The encoder should be able to be lifted 1/8" – 1/4" from the surface of the material. If the encoder does not spring back down into position, adjustment may be necessary.

1. Remove the rubber cap from the back of the encoder near the mounting screw.
2. Using a 3/32" Allen wrench, loosen the set screw on the adjustment collar.
3. Rotate the encoder until the wheel contacts the encoder idle roller.
4. Using the Allen wrench for leverage, rotate the adjustment collar around the pivot shaft to increase tension against the idle roller.
5. While maintaining tension on the Allen wrench and adjustment collar, tighten the set screw.
6. Check the tension against the idle roller by pulling up the encoder wheel. Repeat steps if the encoder does not have sufficient tension against the idle roller.
7. Replace rubber cap.

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*Figure 128: Encoder Rubber Cap*

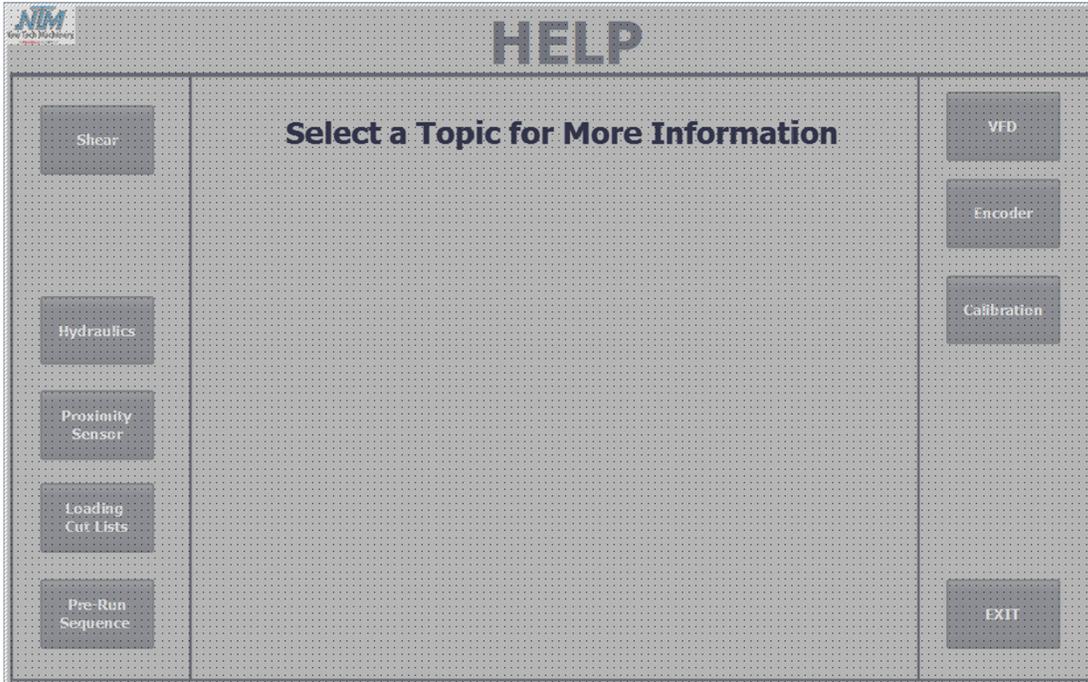


*Figure 129: Encoder Adjustment*

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**Help:**

From any screen press the help button on the bottom right side of the screen. Choose the topic on either the left or right of the help menu for more information. Press the Exit button on the bottom right of the help screen to return to the previous screen.



**Figure 130: Help Screen**

**Troubleshooting**

**Problem:** Notch settings do not appear in the Run Mode page and the manual notch controls do not appear on the Home page.

**Solution:** Go to the Settings page and enable the notching functionality.

**Problem:** The buttons on the touchscreen (ie. Jog, Run, Shear, etc.) do not operate the machine.

**Solution:** Move the selector switch on the blue control box from Manual to Computer.

**Problem:** The jog buttons on the Home screen don't work but the shear buttons do.

**Solution:** If the machine does not have notchers check to make sure that Enable Notching is set to No on the Settings page. If it does have notchers check if the notcher limit switches are activated on the Status page. If they are not, then that indicates one of the notchers is down which will prevent the machine from activating the drives. Press the Female Notch Up or Male Notch Up button to raise the notcher.

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**Problem:** The numeric displays on the touchscreen are all #####.

**Solution:** The communication between the touchscreen and the PLC has been lost. As a test, a new ethernet cable can be run directly from the back of the touchscreen to the PLC inside the blue control panel. If the new cable works, check the receptacles that the green cable plugs into for damage, and/or replace the green cable.

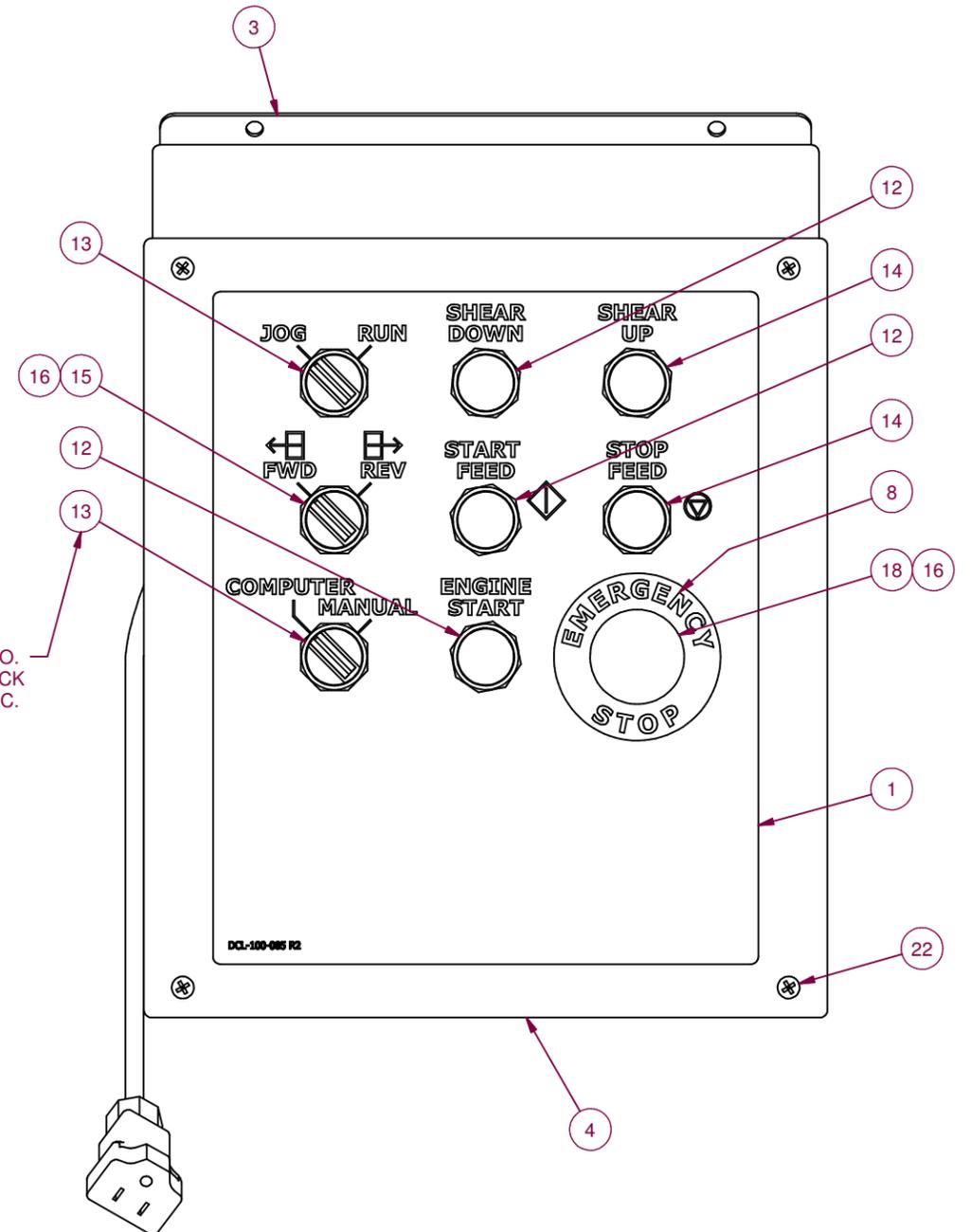
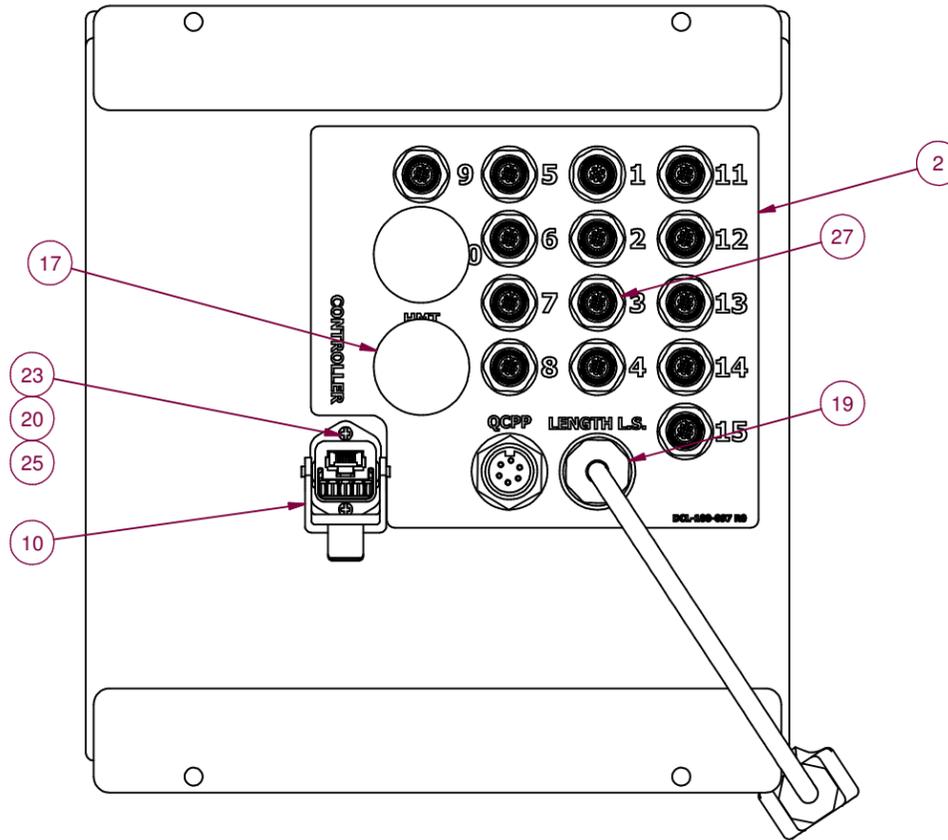
APPENDIX B  
**ELECTRICAL SCHEMATICS**

## **ELECTRICAL SCHEMATICS**

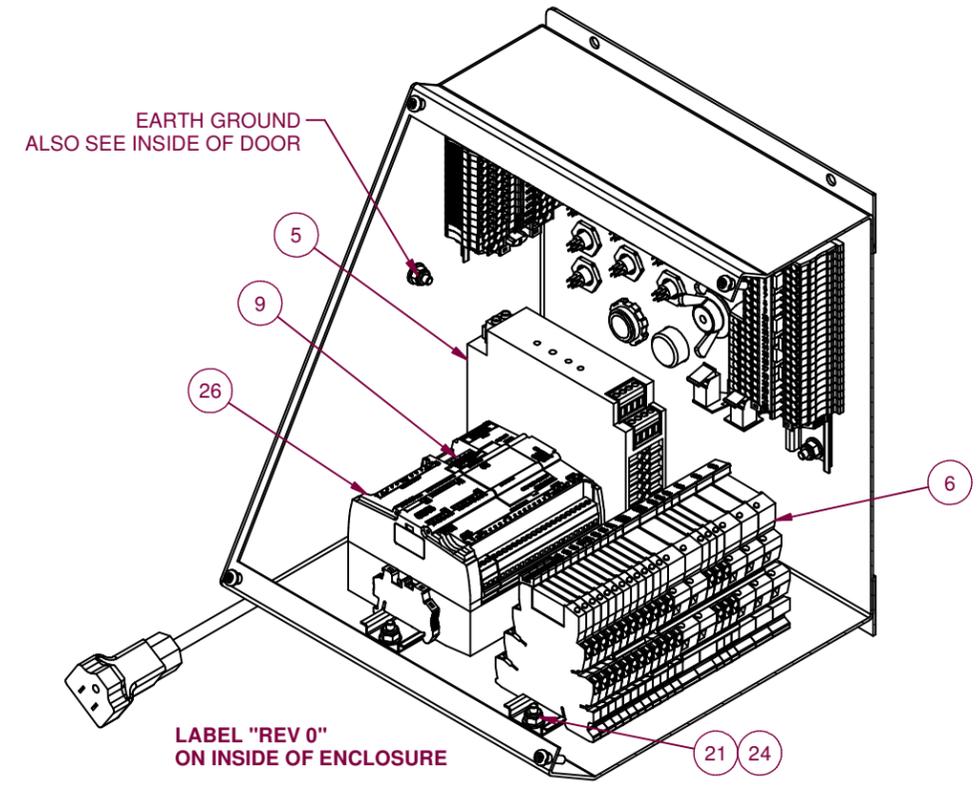
| <u>Drawing Number</u> | <u>Sheet<br/>Number</u> | <u>Description</u>        |
|-----------------------|-------------------------|---------------------------|
| NTM-381-000           | 1                       | Electrical Parts List     |
|                       | 2                       | Wiring Details            |
|                       | 3                       | Wiring Details, continued |
|                       | 4                       | Ladder Logic              |
|                       | 5                       | Ladder Logic, continued   |



| PARTS LIST |     |                |                                     |
|------------|-----|----------------|-------------------------------------|
| ITEM       | QTY | PART NUMBER    | TITLE                               |
| 1          | 1   | DCL-100-085    | PUSH BUTTON BOX OVERLAY             |
| 2          | 1   | DCL-100-097    | DECAL, RECEPTACLE OVERLAY, NTM200   |
| 3          | 1   | ELC-100-080    | PUSH BUTTON ENCLOSURE, NTM200       |
| 4          | 1   | ELC-100-081    | ENCLOSURE COVER, 9-HOLES            |
| 5          | 1   | ELC-110-050    | POWER SUPPLY, PHX 2320131           |
| 6          | 1   | ELC-160-000    | TERMINAL BLOCK/RELAY ASSEMBLY - SSQ |
| 7          | 1   | ELC-180-309    | CABLE, SNAP LOCK, HMI (NOT SHOWN)   |
| 8          | 1   | ELC-180-334    | E-STOP NAMEPLATE, NWAR-27           |
| 9          | 1   | ELC-190-003    | COMMUNICATION MODULE, SIEMENS       |
| 10         | 1   | ELC-190-012    | RECEPTACLE, ETHERNET & POWER        |
| 11         | 1   | ELC-190-013    | ETHERNET CABLE, 1 FT (NOT SHOWN)    |
| 12         | 3   | ELC-300-103    | PUSH BUTTON, GREEN                  |
| 13         | 2   | ELC-300-104    | SELECTOR SWITCH, W/1 N.O.           |
| 14         | 2   | ELC-300-107    | PUSH BUTTON, RAISED RED             |
| 15         | 1   | ELC-300-109    | SELECTOR SWITCH, w/1 N.O. & 1 N.C.  |
| 16         | 3   | ELC-400-018    | IDEC #HW-C01 N/C CONTACT BLOCK      |
| 17         | 2   | ELC-400-045    | HOLE SEAL, 1/2" KO                  |
| 18         | 1   | ELC-400-061    | BUTTON, MUSHROOM, PUSH/PULL         |
| 19         | 1   | ELC-450-006    | STRAIN RELIEF, 1/2" NPT .10-.30"    |
| 20         | 2   | FAS-NUM-394    | HEX NUT, #4-40                      |
| 21         | 10  | FAS-NUY-186    | NYLOC HEX NUT, #10-32               |
| 22         | 4   | FAS-SPN-340    | SCREW, PAN HEAD, 10-32 x 3/4", PHIL |
| 23         | 2   | FAS-SPN-397    | PHILLIPS HEAD SCREW, 4-40 x 1/2"    |
| 24         | 10  | FAS-WSF-344    | WASHER, FLAT, #10 SAE               |
| 25         | 2   | FAS-WSL-398    | #4 SPLIT LOCK WASHER                |
| 26         | 1   | NTM200-381-005 | PLC, SIEMENS, PROGRAMMED            |
| 27         | 1   | NTM200-390-000 | NTM200 PUSH BUTTON BOX WIRING KIT   |



REPLACE N.O. CONTACT BLOCK WITH N.C.



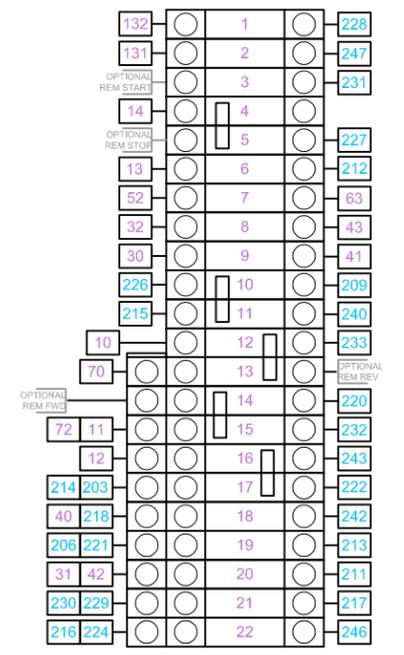
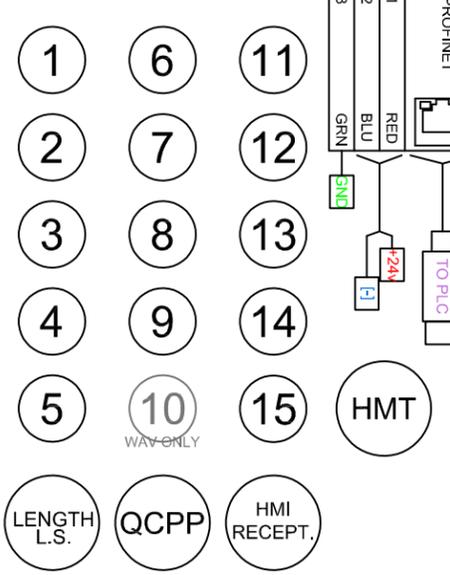
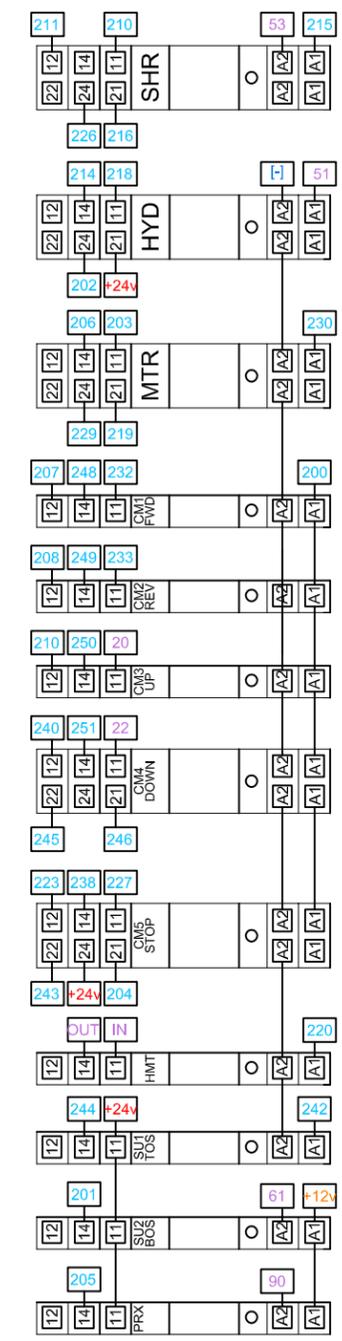
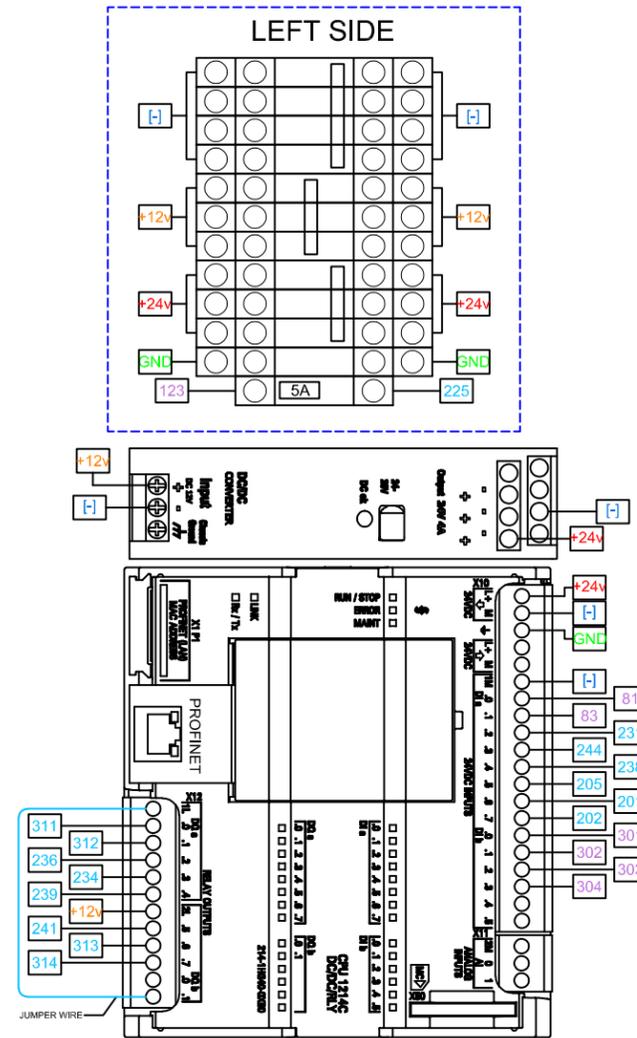
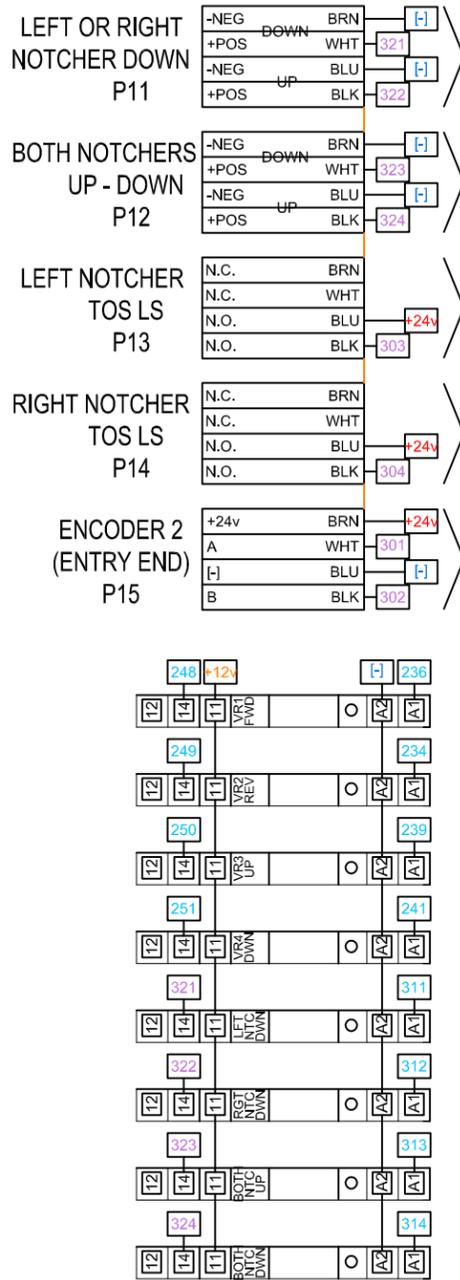
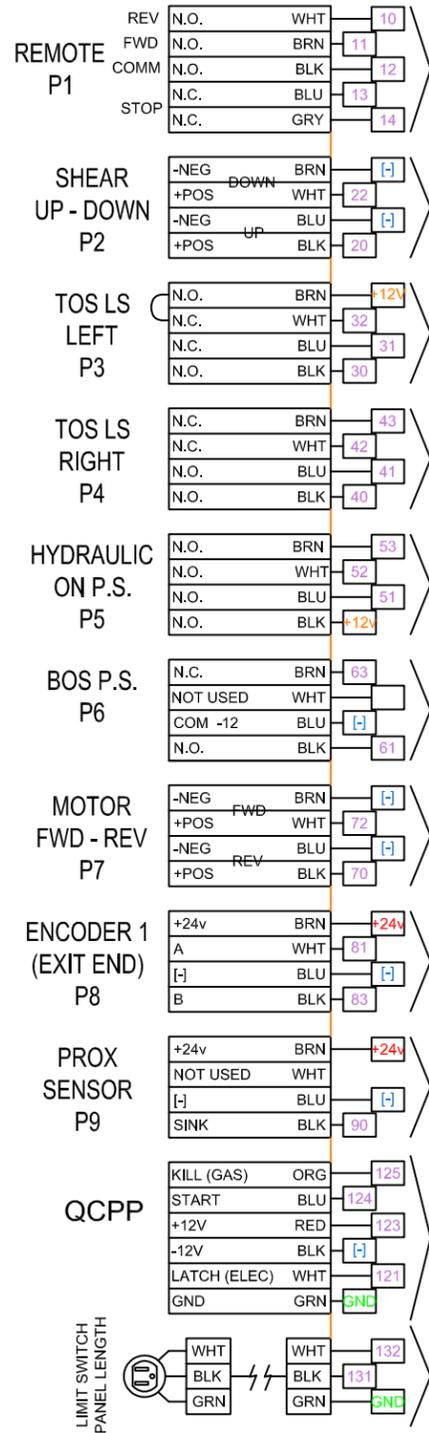
| REV | ECR NO. | DATE | RELEASED BY |
|-----|---------|------|-------------|
|     |         |      |             |
|     |         |      |             |
|     |         |      |             |
|     |         |      |             |

**NTM** NEW TECH MACHINERY CORP.

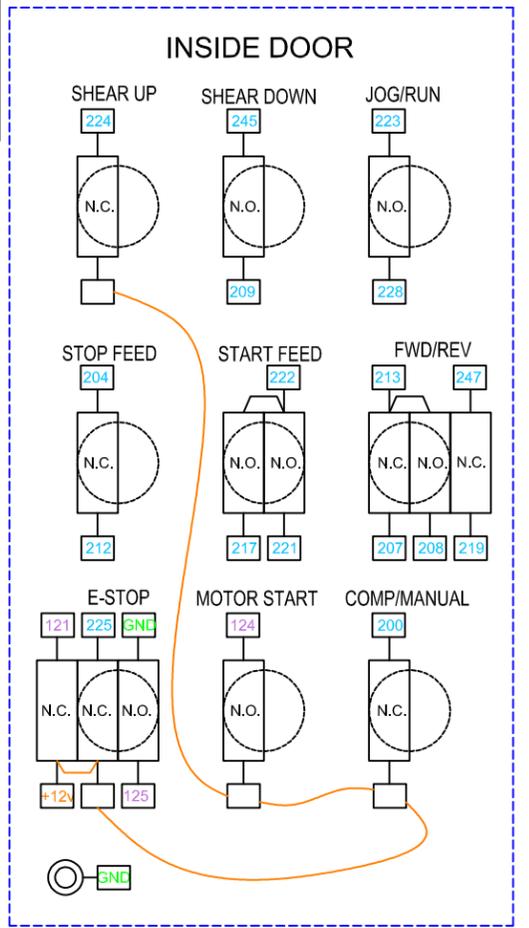
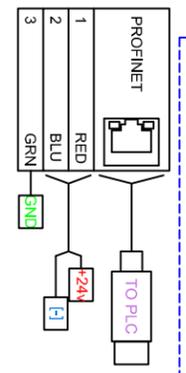
Drawn by: **AJB**  
 Date: **10/5/18**  
 Check by:   
 Date:

Part Name: **CONTROL BOX ASSEMBLY, NTM200**  
 Part Number: **NTM200-381-000**  
 Sheet: **1 OF 5**  
 Revision: **0**

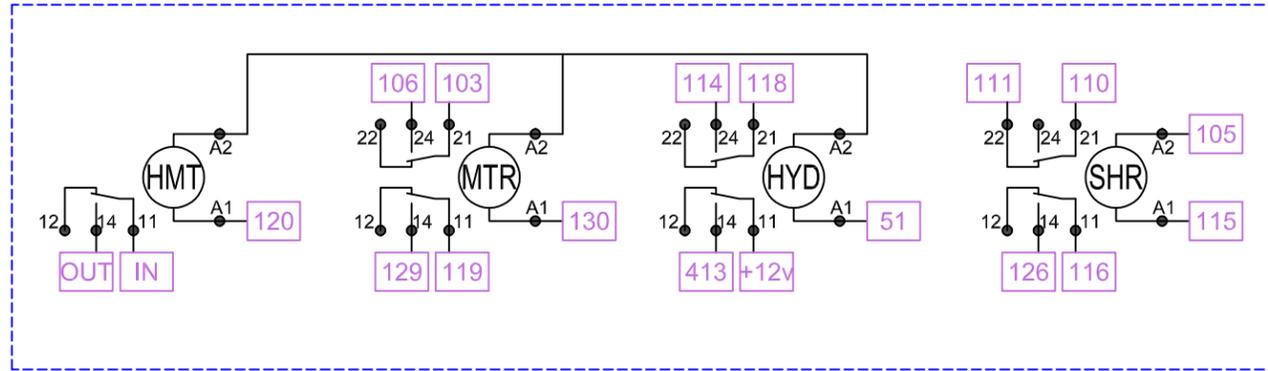
Tolerances:  
 .XX = ± .01  
 .XXX = ± .005  
 FRACTION = ± 1/32"  
 ANGLE = ± 1/2°



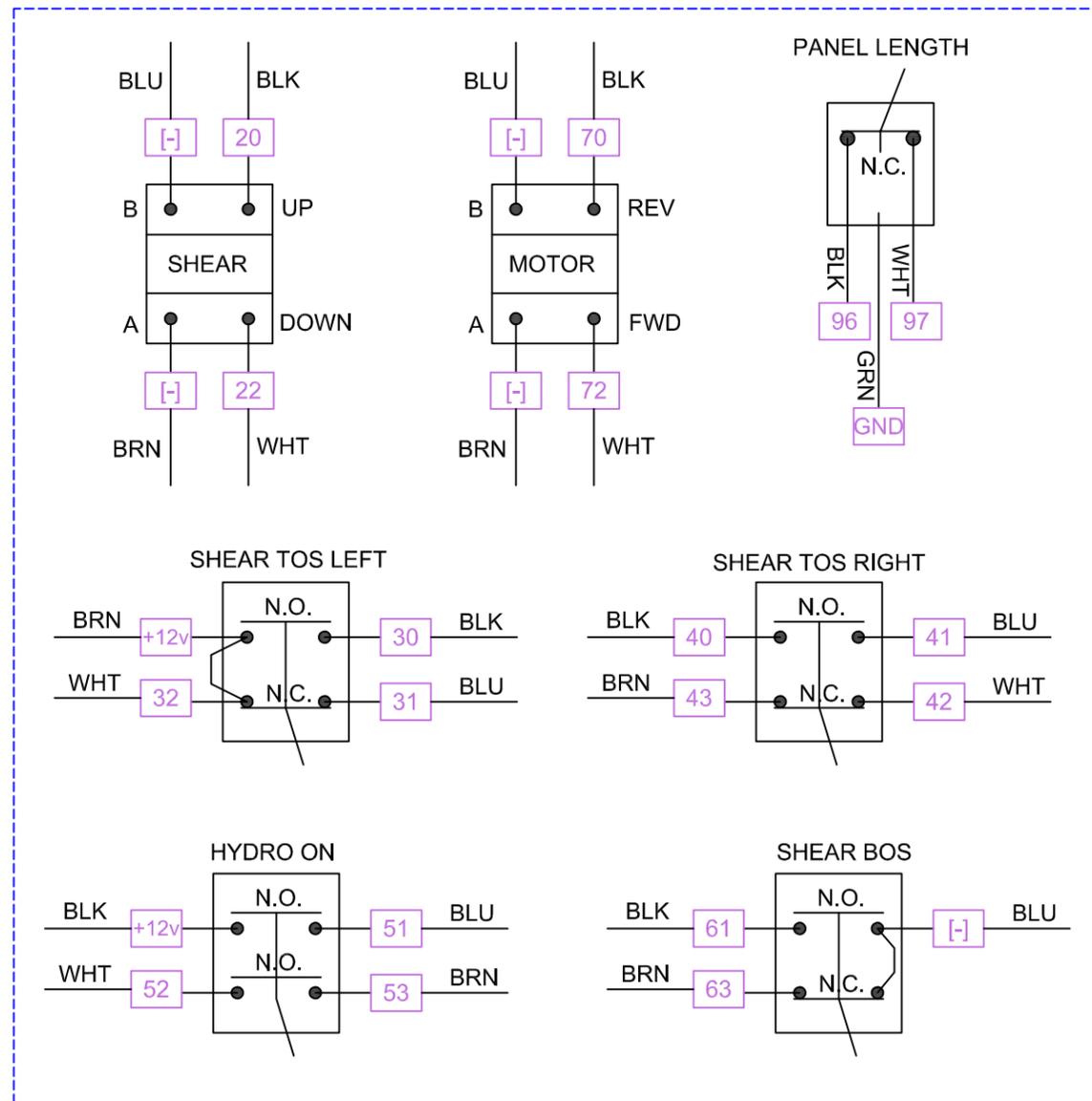
**HMI RECEPTACLE**



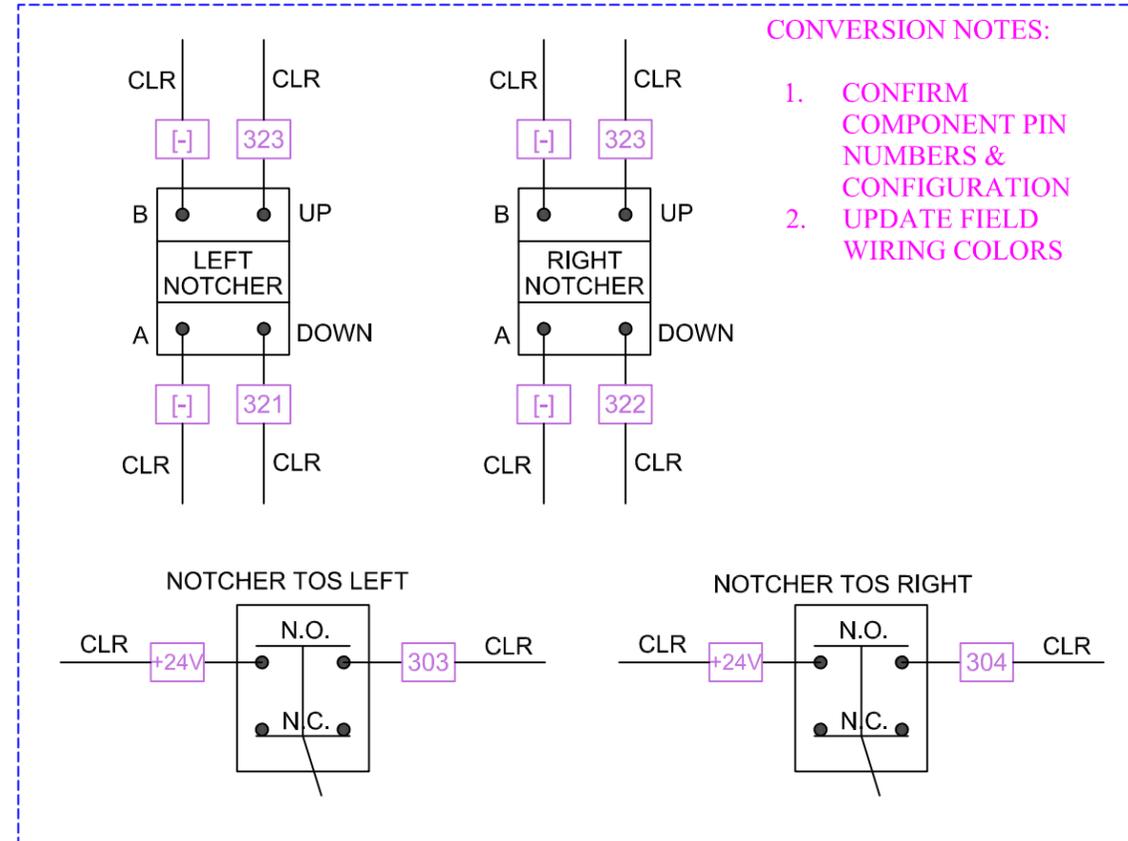
## CONTROL RELAYS



## COMPONENTS



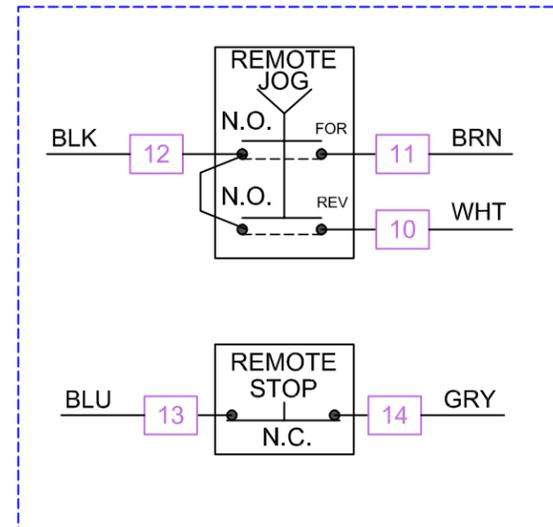
## NOTCHER COMPONENTS



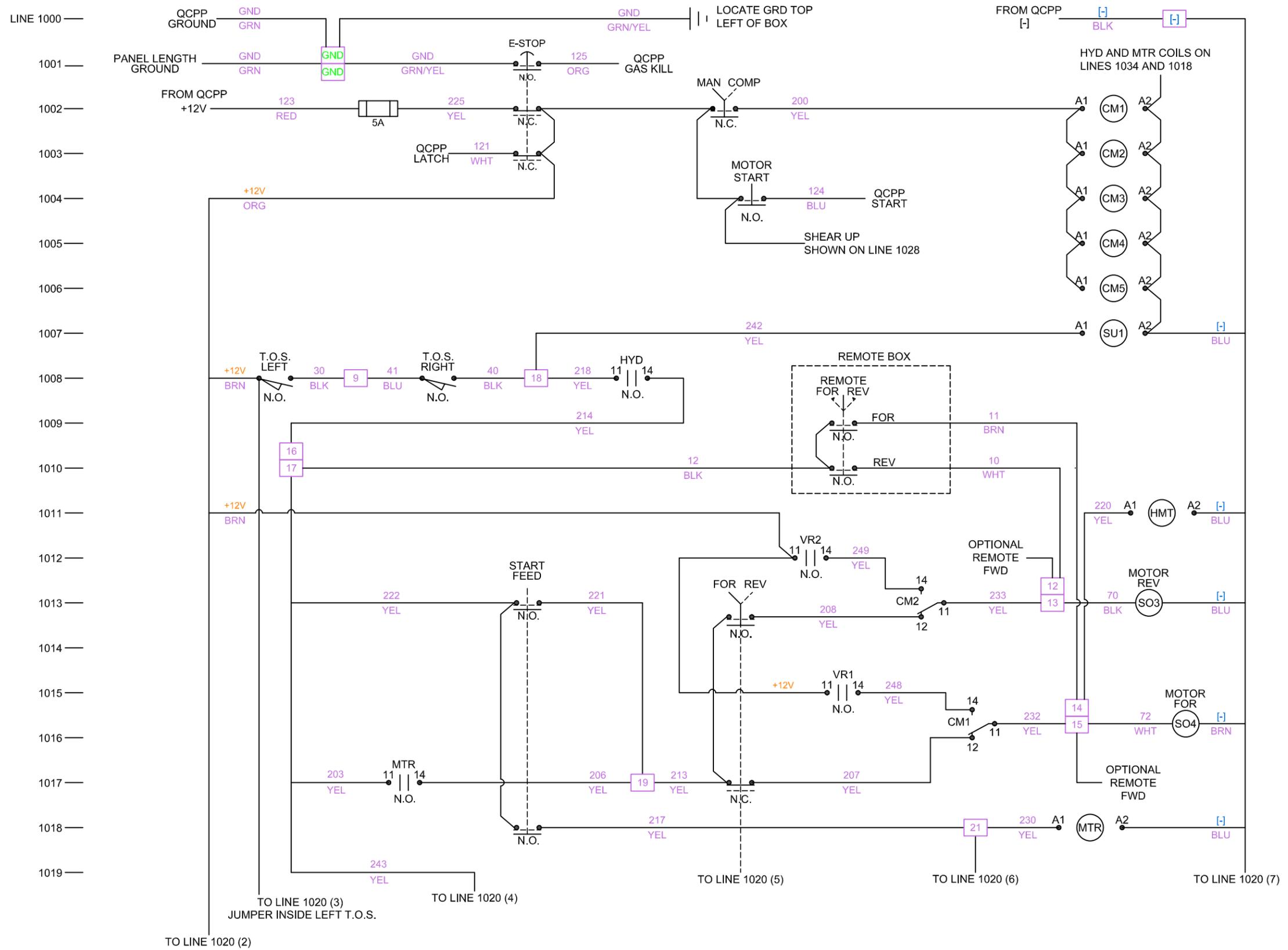
### CONVERSION NOTES:

1. CONFIRM COMPONENT PIN NUMBERS & CONFIGURATION
2. UPDATE FIELD WIRING COLORS

## ENTRY END/REMOTE CONTROL

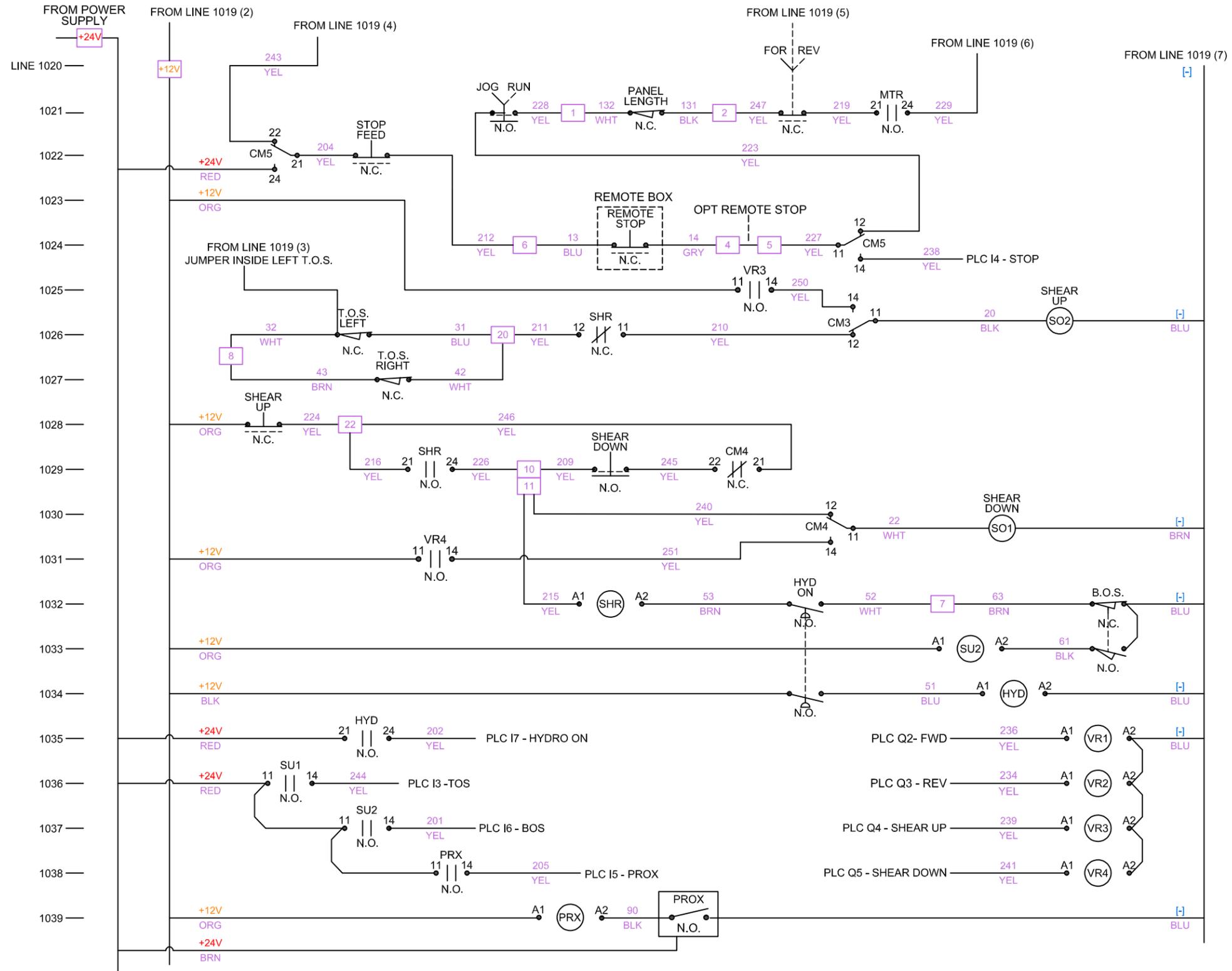


| LEGEND |                                  |
|--------|----------------------------------|
|        | TERMINAL BLOCK                   |
|        | PIN NUMBER                       |
|        | FUSE                             |
|        | CONTACT (N.O.)                   |
|        | CONTACT (N.C.)                   |
|        | MUSHROOM HEAD PUSH BUTTON (N.O.) |
|        | MUSHROOM HEAD PUSH BUTTON (N.C.) |
|        | PUSH BUTTON (N.O.)               |
|        | PUSH BUTTON (N.C.)               |
|        | LIMIT SWITCH (N.O.)              |
|        | LIMIT SWITCH (N.C.)              |
|        | PRESSURE SWITCH (N.O.)           |
|        | PRESSURE SWITCH (N.C.)           |
|        | CONTROL RELAY COIL               |
|        | SOLENOID RELAY COIL              |
|        | SELECTOR SWITCH                  |
|        | SPRING RETURN SELECTOR SWITCH    |
|        | MOMENTARY SWITCH                 |
|        | ROTARY ENCODER                   |



**LEGEND**

|  |                                  |
|--|----------------------------------|
|  | TERMINAL BLOCK                   |
|  | PIN NUMBER                       |
|  | FUSE                             |
|  | CONTACT (N.O.)                   |
|  | CONTACT (N.C.)                   |
|  | MUSHROOM HEAD PUSH BUTTON (N.O.) |
|  | MUSHROOM HEAD PUSH BUTTON (N.C.) |
|  | PUSH BUTTON (N.O.)               |
|  | PUSH BUTTON (N.C.)               |
|  | LIMIT SWITCH (N.O.)              |
|  | LIMIT SWITCH (N.C.)              |
|  | PRESSURE SWITCH (N.O.)           |
|  | PRESSURE SWITCH (N.C.)           |
|  | CONTROL RELAY COIL               |
|  | SOLENOID RELAY COIL              |
|  | SELECTOR SWITCH                  |
|  | SPRING RETURN SELECTOR SWITCH    |
|  | MOMENTARY SWITCH                 |
|  | ROTARY ENCODER                   |





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**SSQ2-MAN | Revision 3 | 09-16-2019**