New Tech Machinery

OPERATION and MAINTENANCE MANUAL

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U.S. PATENT(S) PENDING

SSQ MultiPro™

PLC Controller

Quick Change – Commercial/Residential Roof Panel Machine

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CHAPTER 1

SSQ SPECIFICATIONS

SPECIFICATIONS

SSQ Dimensions:	Length-14’ 3”	(4.3m)
	Width-5’	(1.5m)
	Height-4’ 3”	(1.3m) w/Over Head Rack
	1’ 10”	(.6m) w/o Over Head Rack
	Weight-2200 lbs.	(1450kg)
SSQ on Trailer:	Length-17’ 6”	(5.3m)
	Width-7’	(2.1m)
	Height-6’ 3”	(1.9m) with reel
	Weight-4800 lbs.	(2200kg)
Speed:	75 ft./min. Approx.	(23m/min.) Approx.
Drive:	Hydraulic via chain, sprocket and gear using 16 polyurethane drive rollers.	
Shear:	Hydraulically Powered, Infinitely adjustable, hardened tool steel dies and blades w/Panel Recognition Proximity Sensor	
Hydraulic Fluid:	32AW – Approximately 15-16 gallons.	
Coil Width:	15” to 30” (380mm to 760mm) Note**:** 30” coil width requires Expandable Arbor or Remote De-coiler Stand.	
Materials Formed:	Painted Steel	28ga. to 22ga. (.3mm to .8mm) Painted, Galvanized, Aluminized
	Painted Aluminum	.019” to .040” (.5mm to 1.0mm)
	Copper	16 oz. to 20 oz. ¾ Hard (.5mm to .7mm)
	Ternecoat Stainless Steel	26ga. (.5mm)
Controls:	Standard:	12v Manual Control Box w/Length Control 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.**

MACHINE ORIENTATION

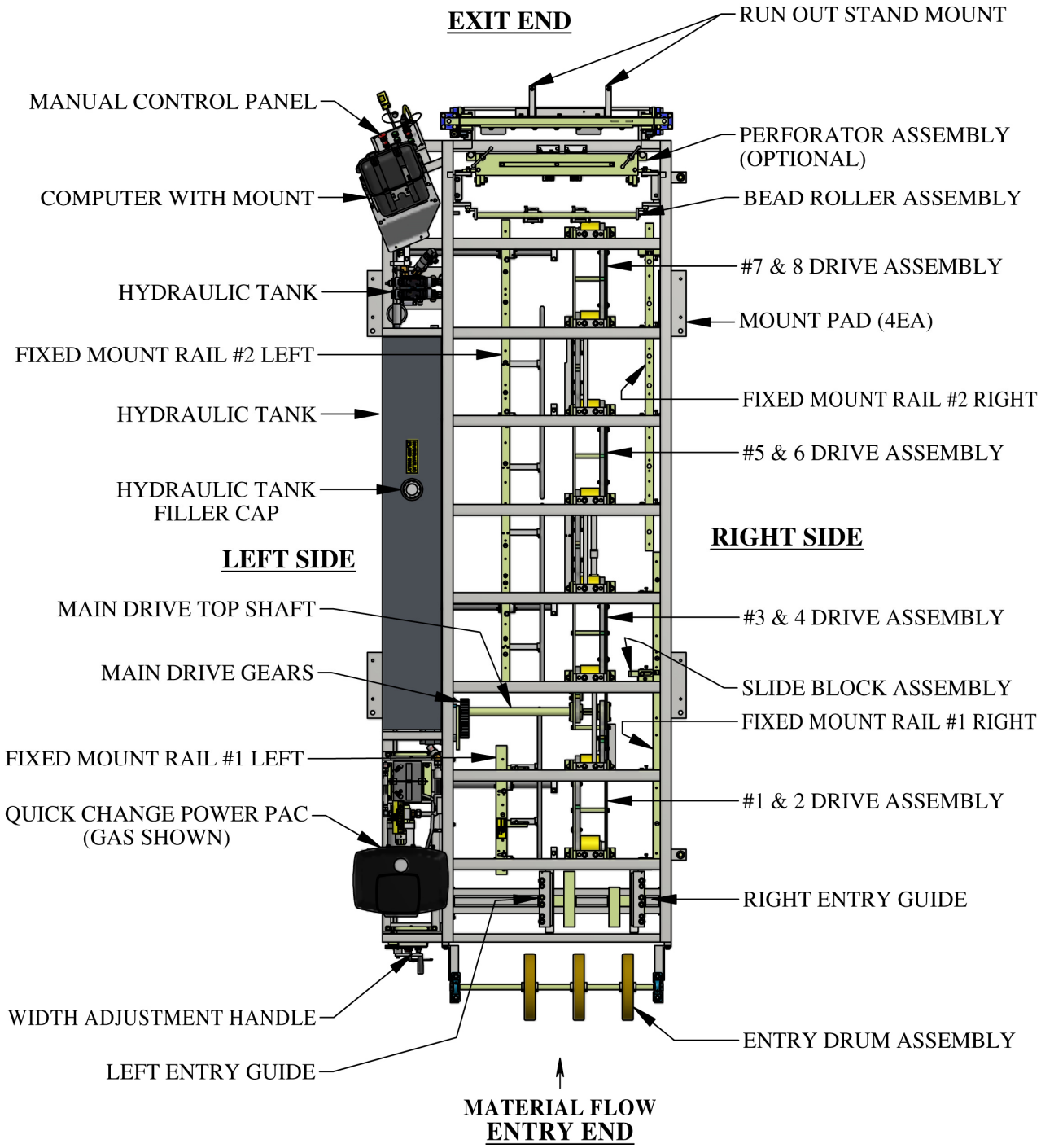
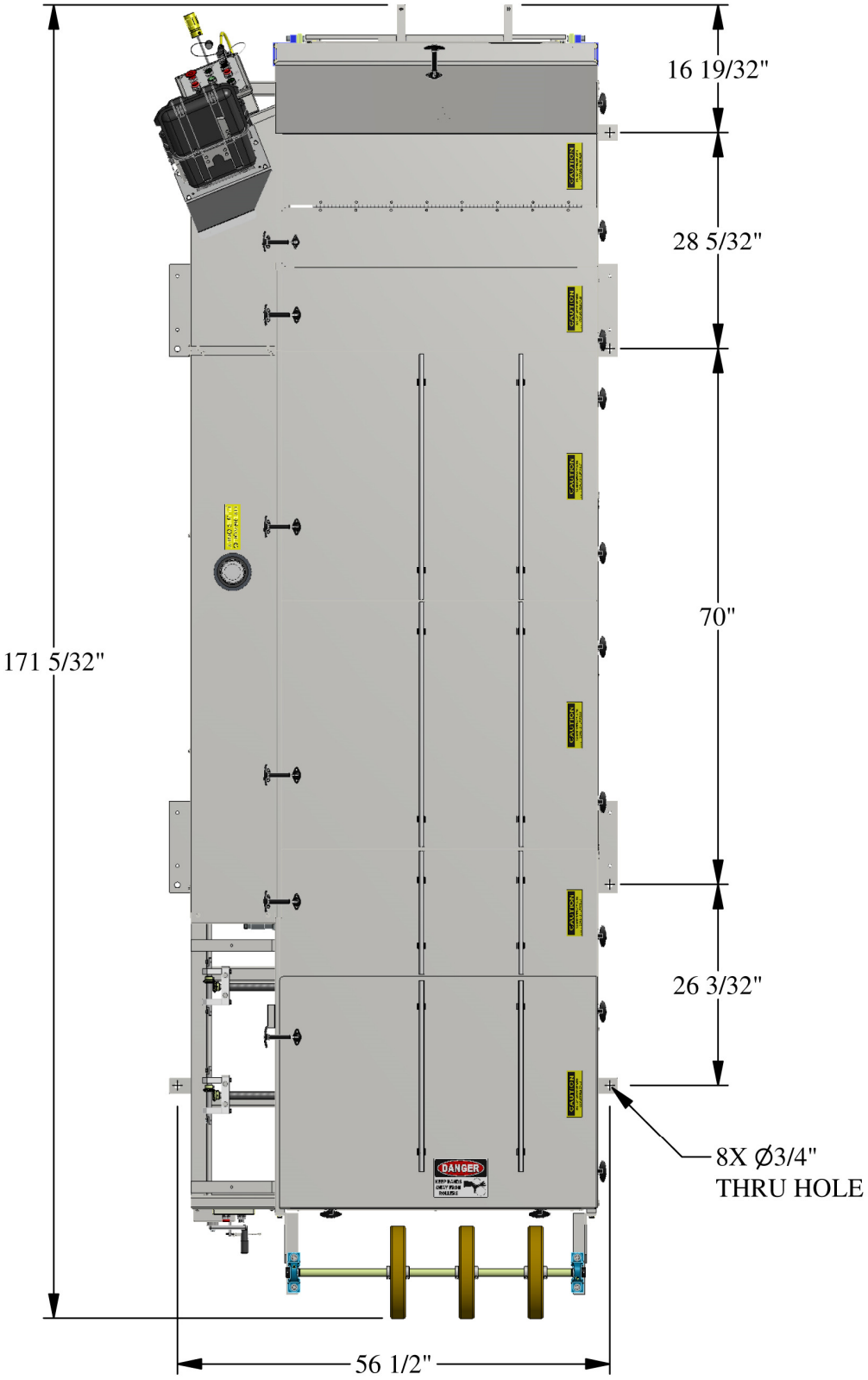


Figure 1: Machine Orientation

CHAPTER 3

MACHINE ORIENTATION

EXIT END



ENTRY END

Figure 2: Mounting Foot Detail

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 17 & Figure 18 on page 29).

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 31 on page 42) 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 43 on page 55) 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 19 on page 33) 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)

CHAPTER 4

GENERAL MAINTENANCE

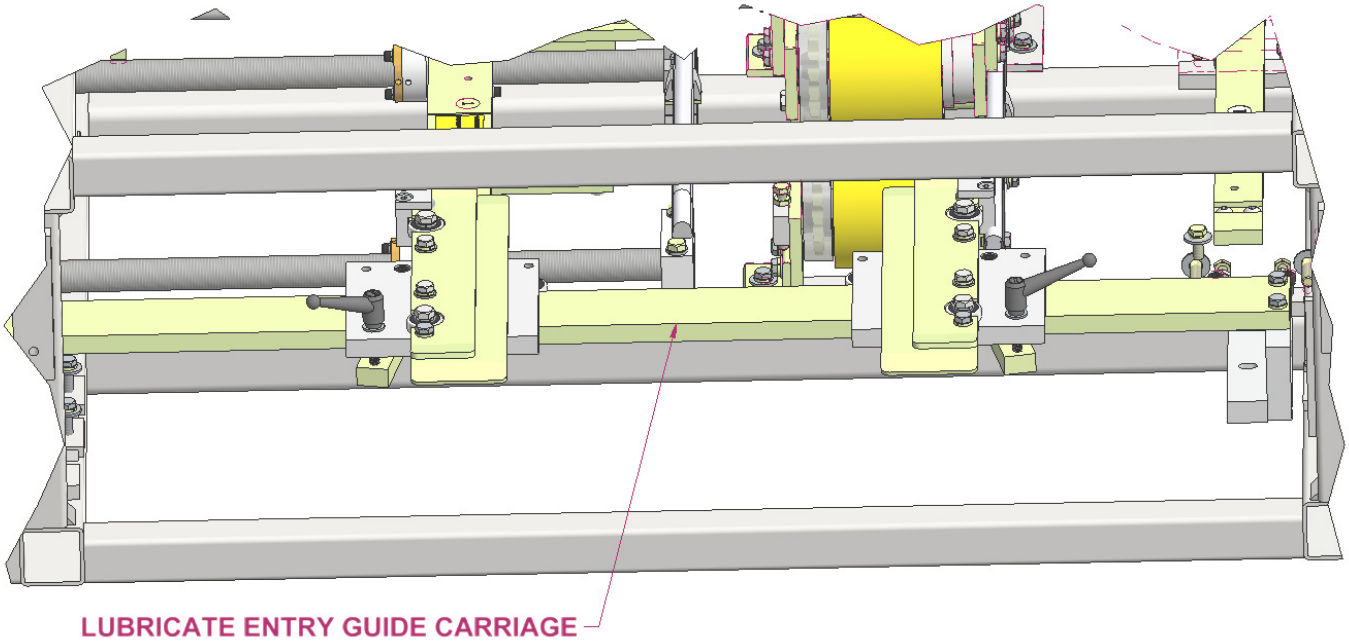


Figure 3: Entry Guide

CHAPTER 4

GENERAL MAINTENANCE

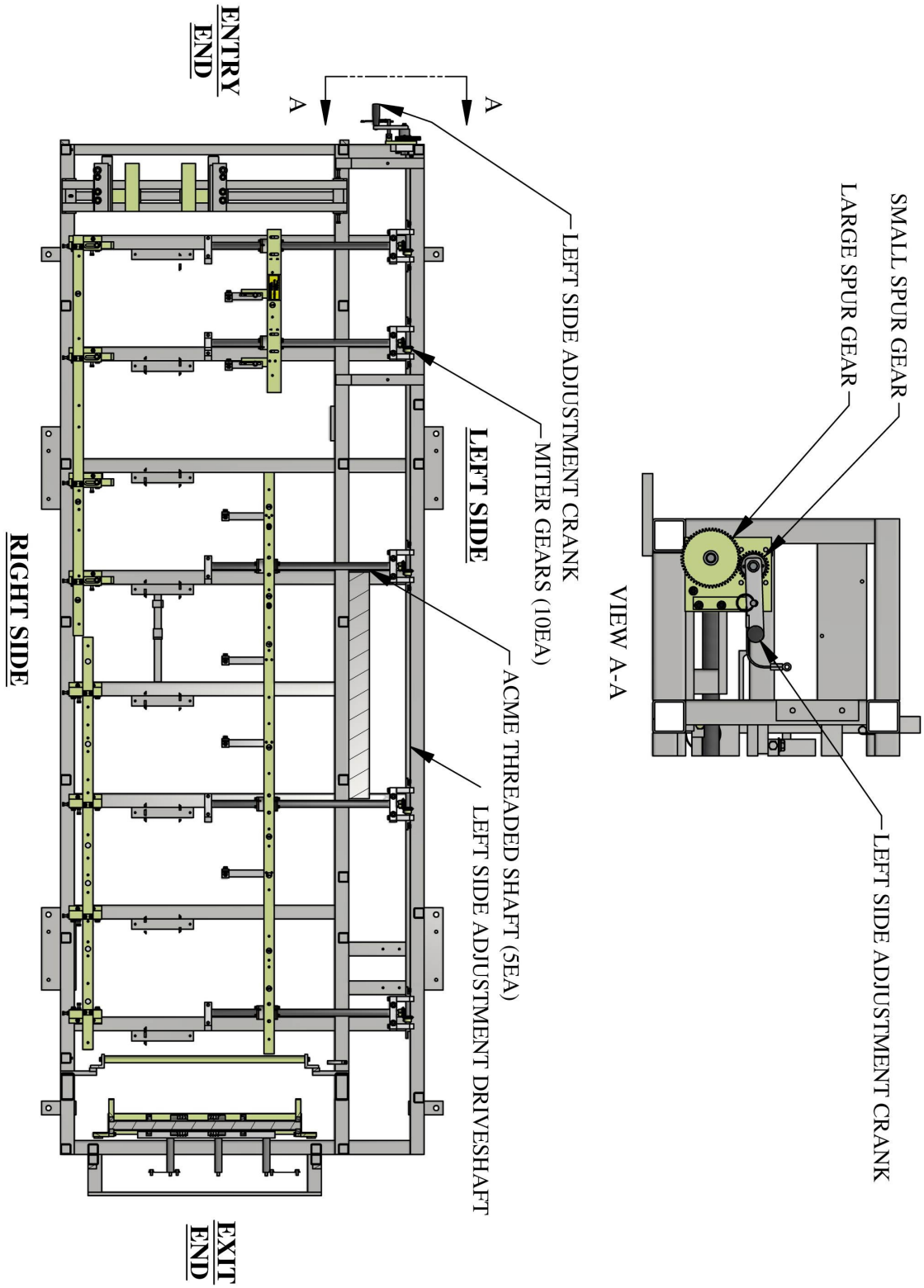


Figure 4: Acme Shafts and Left Side Adjustment

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)

CHAPTER 5

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. MOTOR 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.

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

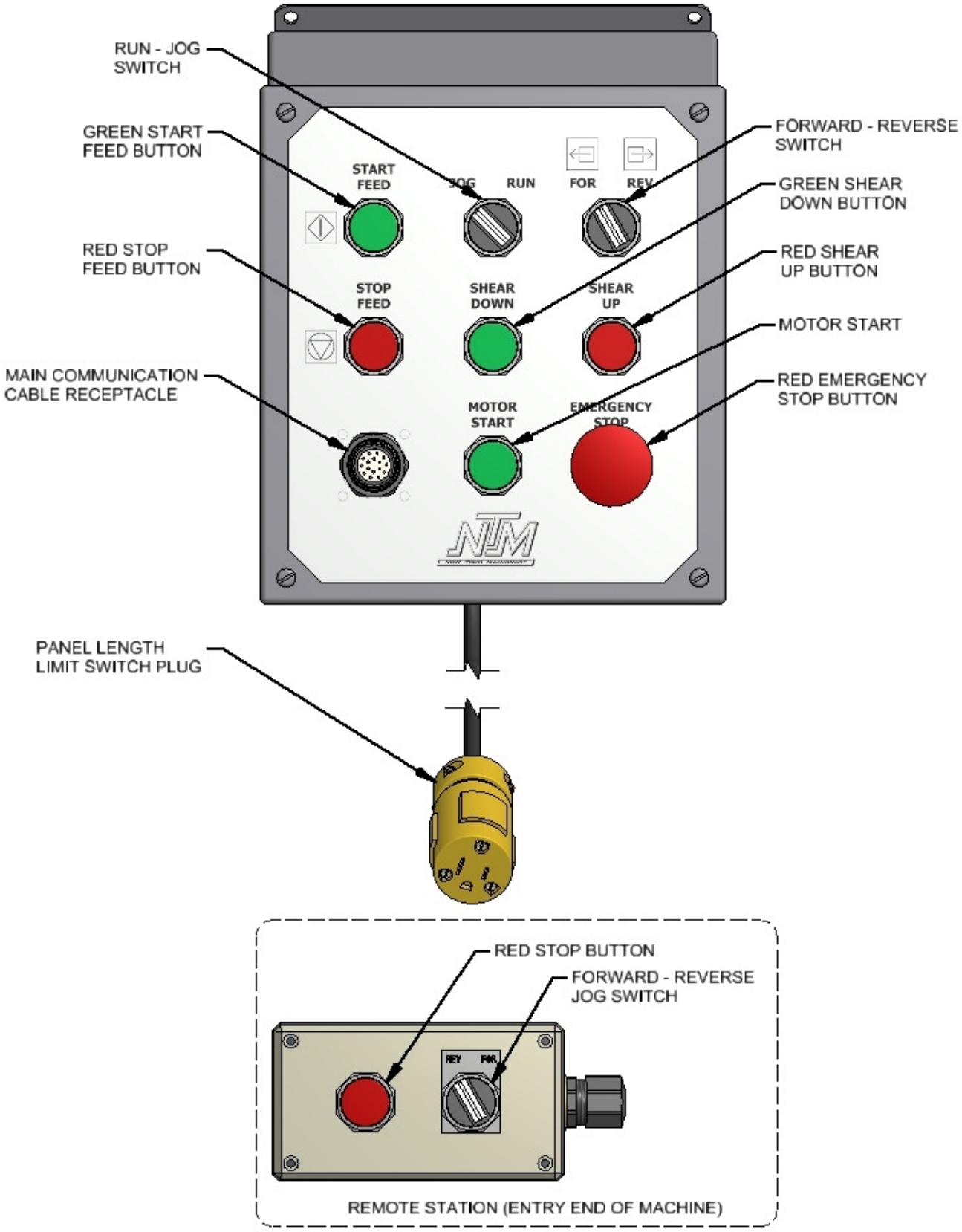


Figure 5: Controls

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

MAIN CONTROL CABLE

(See Figure 6)

A. The main control cable is the communication cable for the Manual Control Panel described above and the Computer Batch and Length Control Computer covered in Appendix A. This cable must be connected to the front of the push button box or the computer controller in order for the machine to operate.

B. The Main Control Cable has a key and slot configuration that must be aligned before the male/female connection can be made on the Manual Control Panel or Batch and Length Control Computer. This prevents misalignment and damage to the pins.

Manual Control Panel Connection

Connect the Female end of the Main Control Cable to the panel mounted male connection located at the bottom left corner of the Manual Control Panel. Make sure that the key and slot are aligned and carefully start the threads on the connection and turn clockwise until snug.

Batch and Length Control Computer Connection

Connect the Female end of the Main Control Cable to the panel mounted male connection located in the bottom of the computer on the right side. Make sure that the key and slot are aligned and carefully start the threads on the connection and turn clockwise until snug.

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

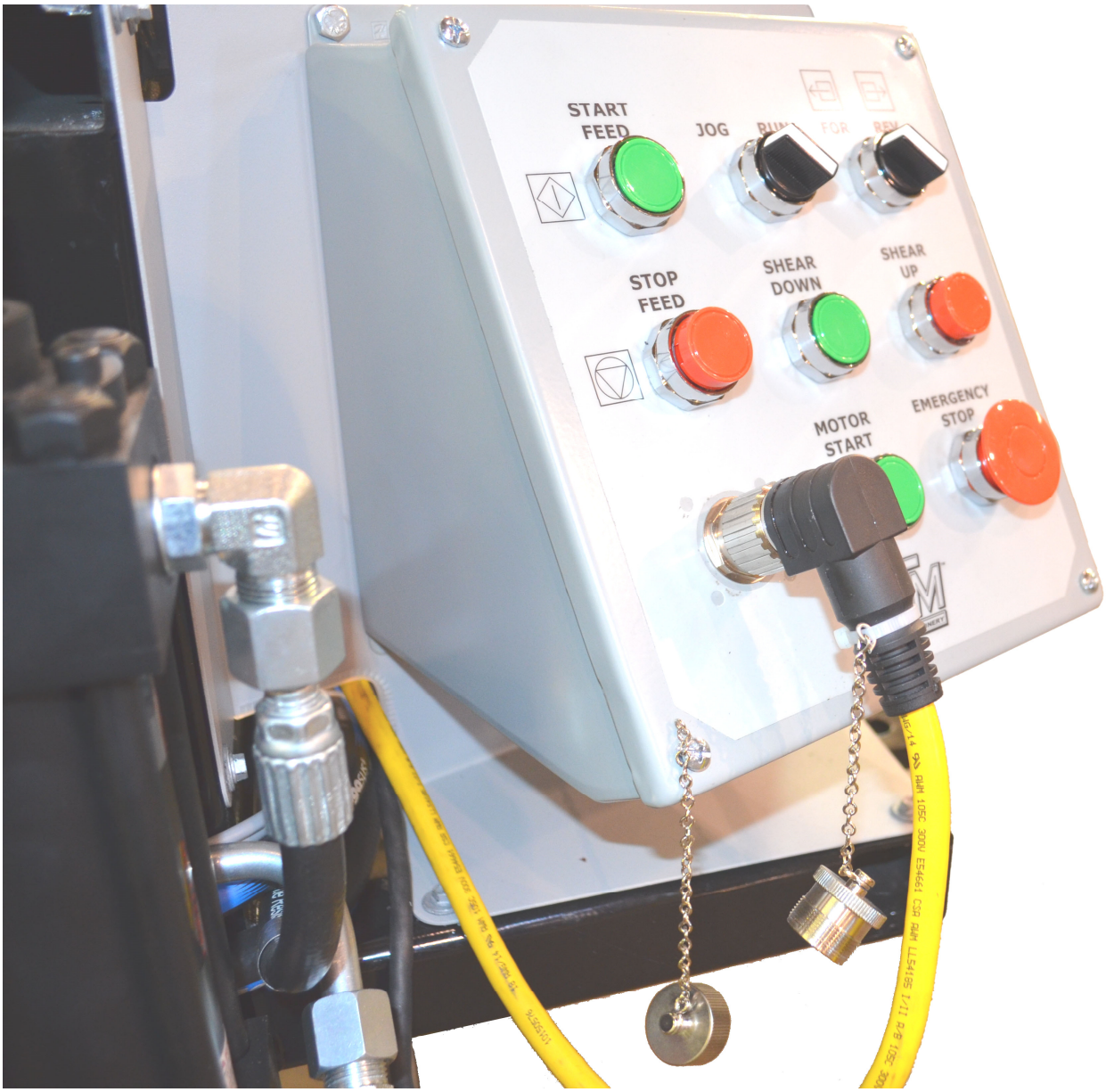


Figure 6: Main Control Cable

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 110) 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.

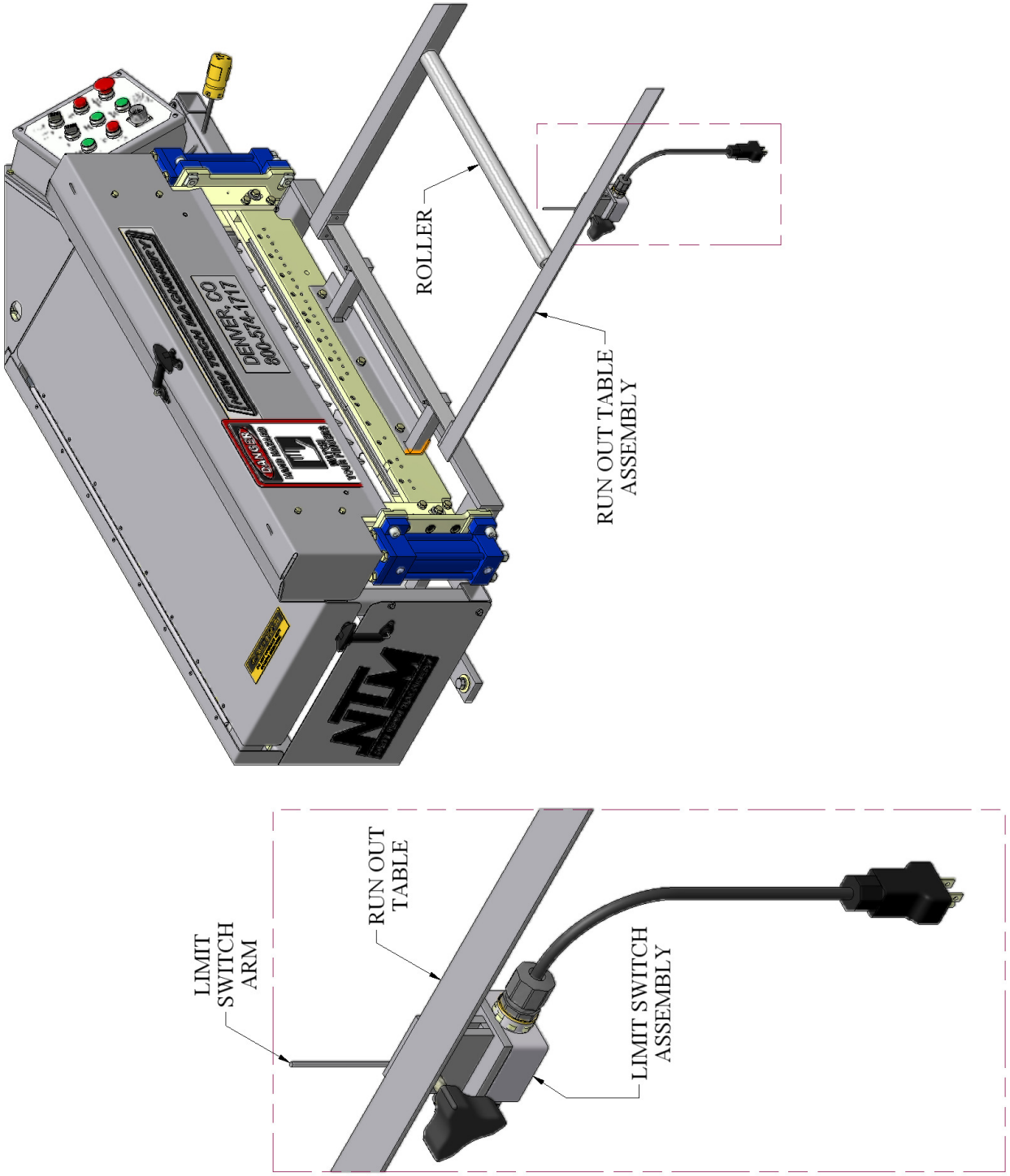


Figure 7: Run Out Table and Remote Limit Switch

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:** Loosen all 4 cover screws (do not remove screws from front panel) 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.

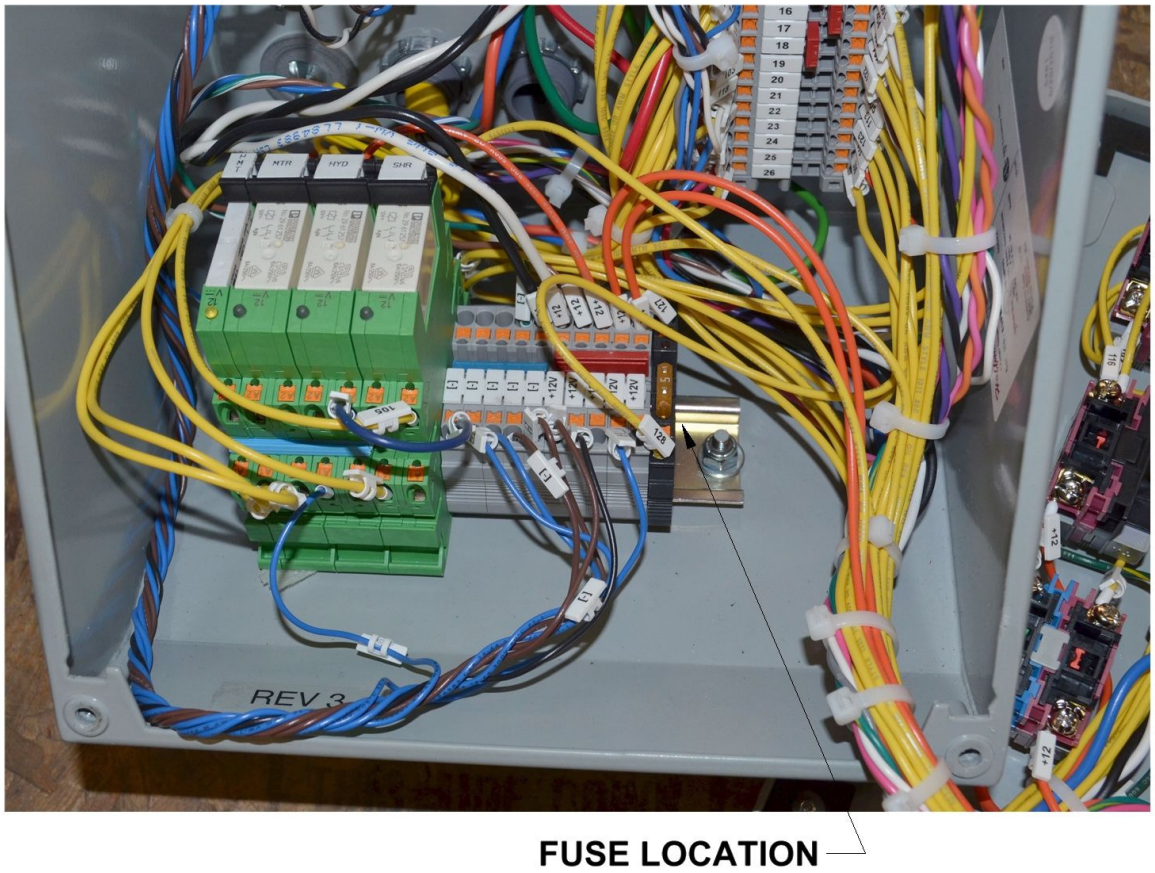


Figure 8: Main Control Box Fuse

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.

CHAPTER 5

ELECTRICAL CONTROLS AND OPERATION

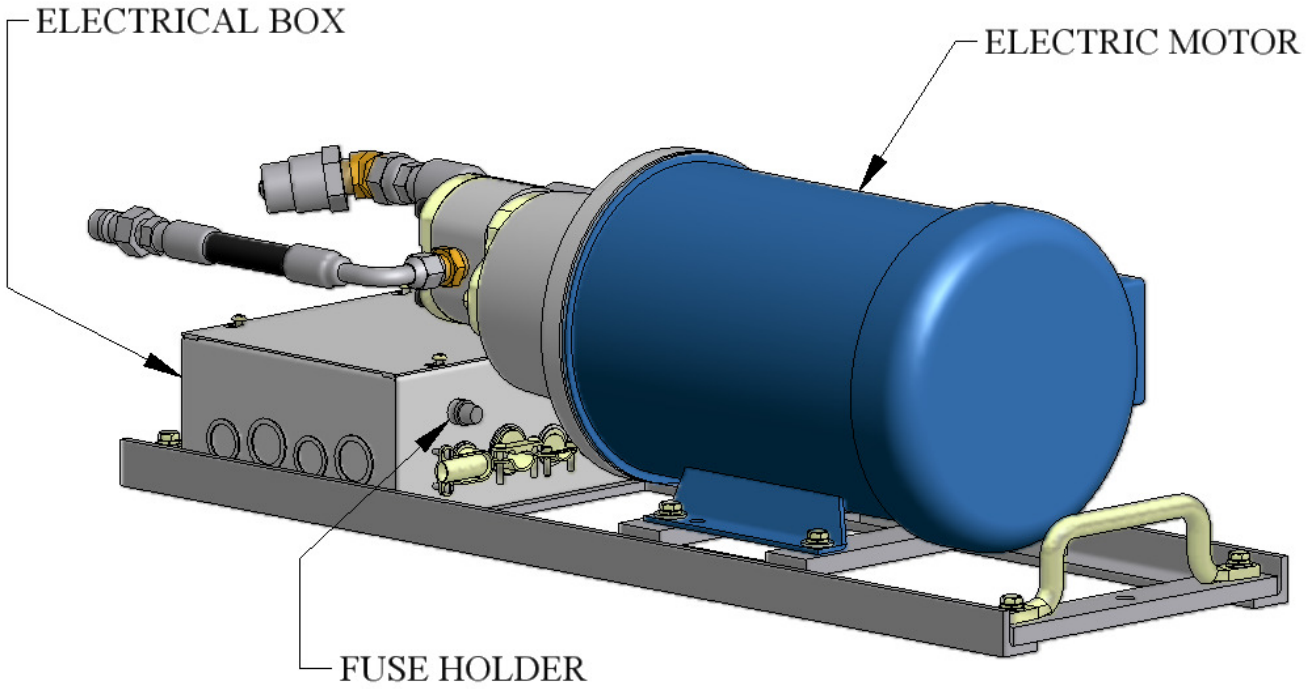


Figure 9: QCPP E Fuse Location

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 in 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"

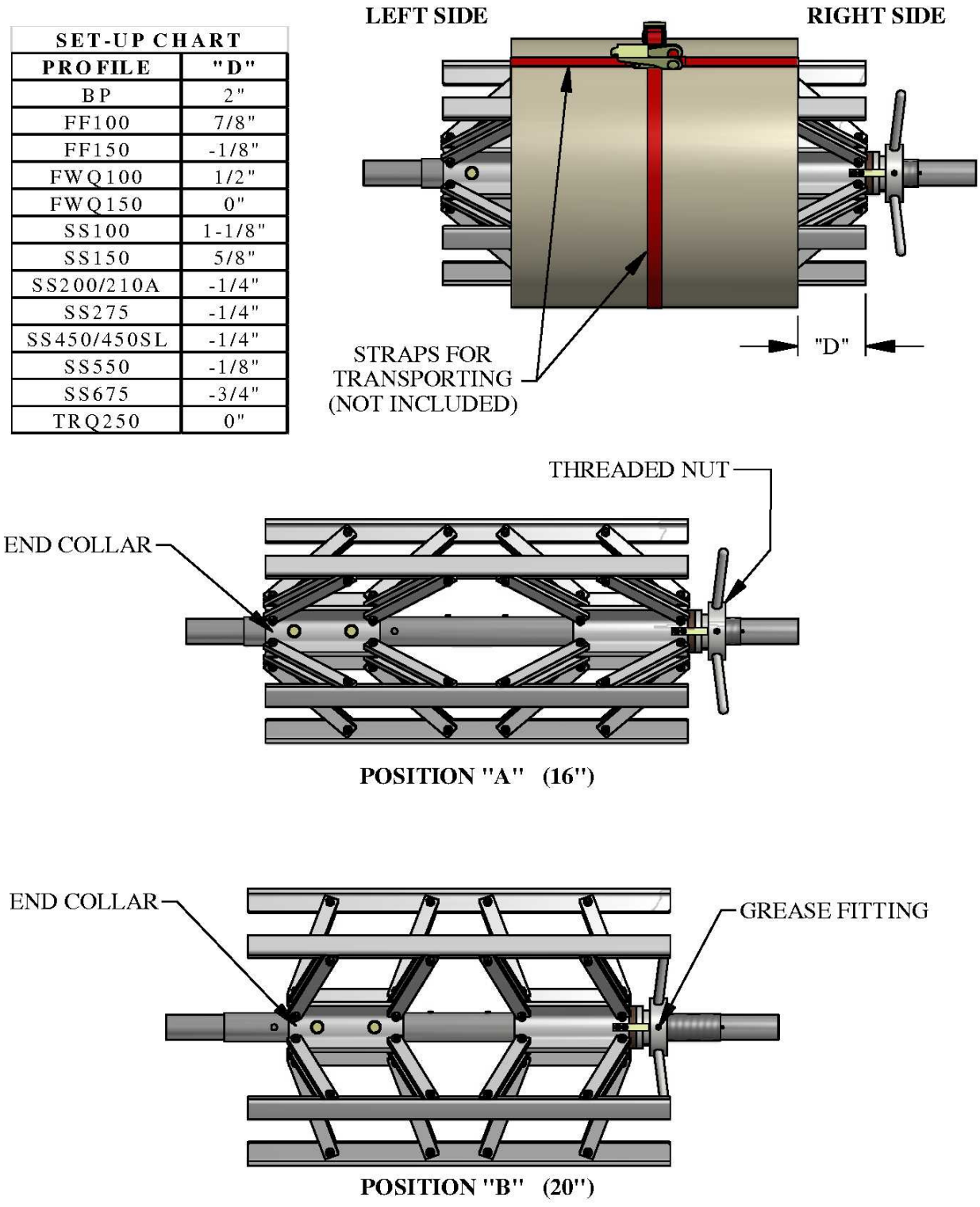


Figure 10: Expandable Arbor Set-Up

CHAPTER 6

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.

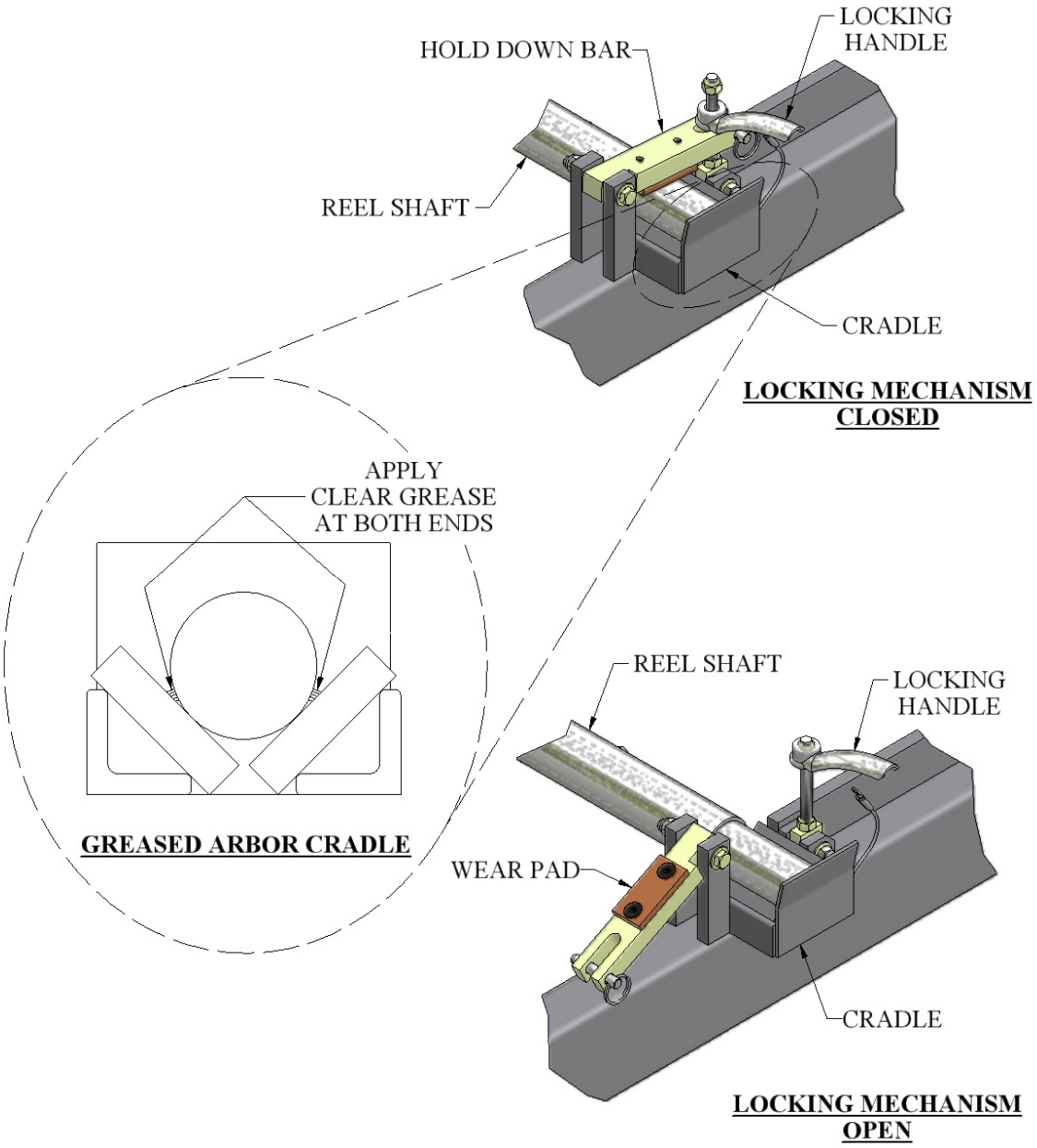


Figure 11: Expandable Reel Assembly

CHAPTER 6

REEL STANDS, REELS, AND EXPANDABLE ARBORS

LOADING REELED COIL

Caution:
Always use a forklift or other approved lifting device to load or unload Fixed Reels or Expandable Arbors loaded with coil.
The Lifting Holes in the Fixed Reel sides are provided to make loading safer and easier.
DO NOT use lifting straps through the lifting holes as the sharp edges may cut the straps.

1. Prepare the reel stand by making sure the Hold Down Bars are in the unlocked and open Position (Figure 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

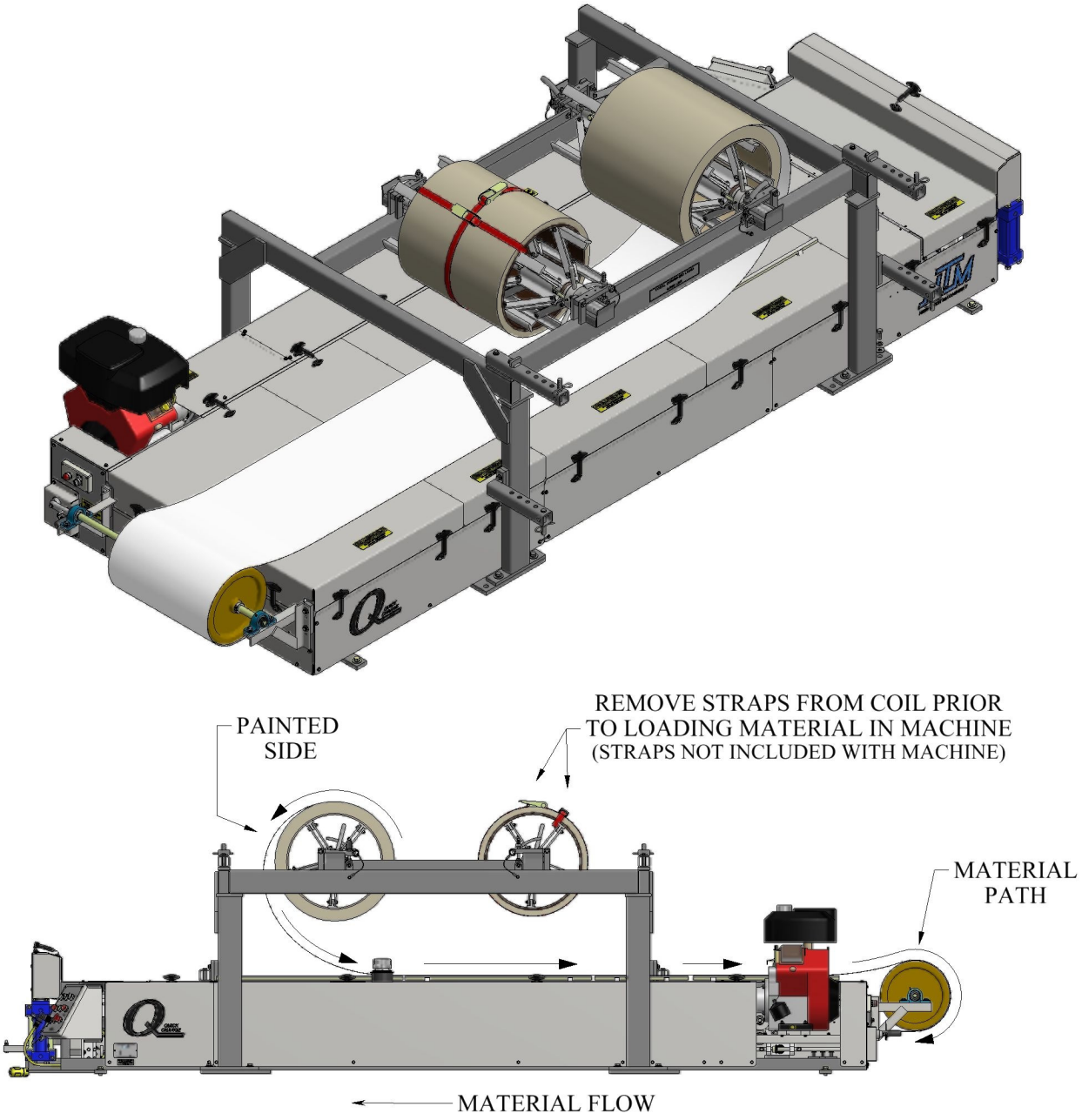


Figure 12: Material Routing

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.

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 5" 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 14 & Figure 15)
The hydraulic fluid should be changed at least once a year. More frequently if the machine is constantly in operation in a dusty environment or if the fluid becomes contaminated. To change the fluid:

1. Remove the Left Side Covers and set aside.
2. Locate the Drain Hose coiled up behind the Hydraulic Filter and the Drain Valve located on the bottom of the Hydraulic Tank on the Filter end of the tank.
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. Loosen, remove and discard the used Hydraulic Filter.
8. Re-install the new hydraulic filter and fill the tank with fresh 32 weight fluid until the level is 7" **below the top of the Filler Neck "F"** (approximately 15-16 gal).

CHAPTER 7

HYDRAULIC SYSTEMS

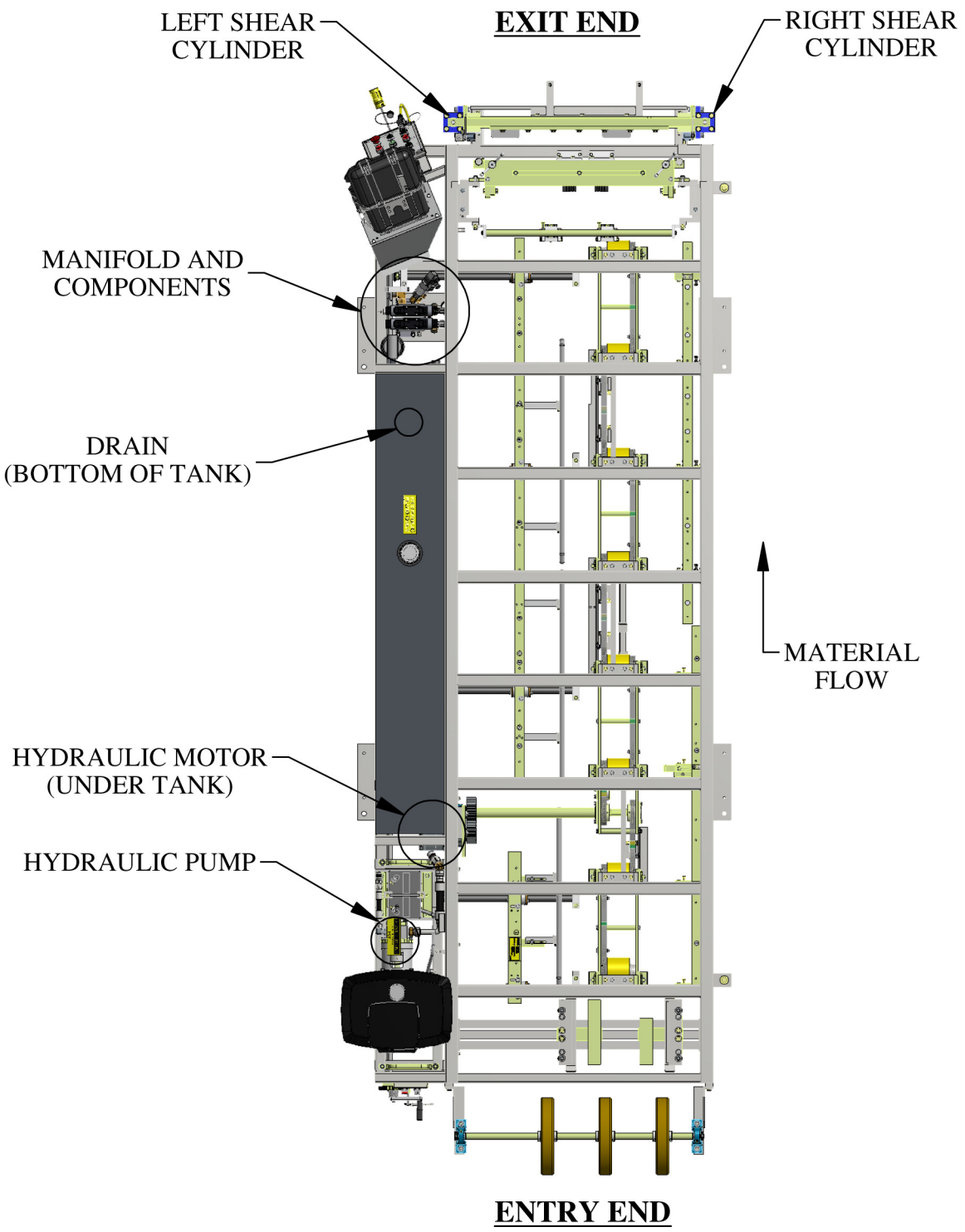
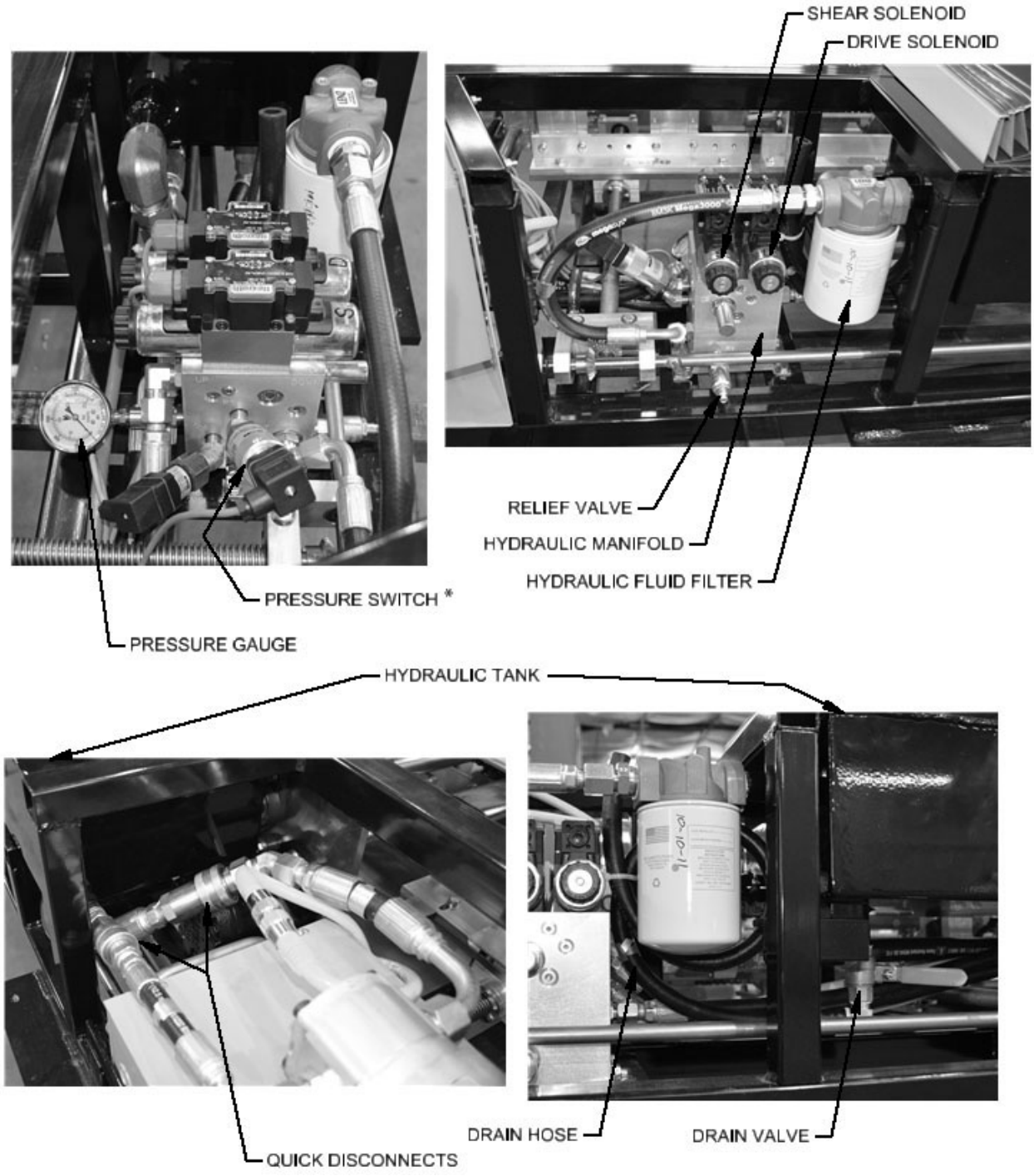


Figure 13: Hydraulic System – Overview

CHAPTER 7

HYDRAULIC SYSTEMS



* Note: Machines made after April 2013 do not have a pressure switch.

Figure 14: Hydraulic System – Details

HYDRAULIC SYSTEMS

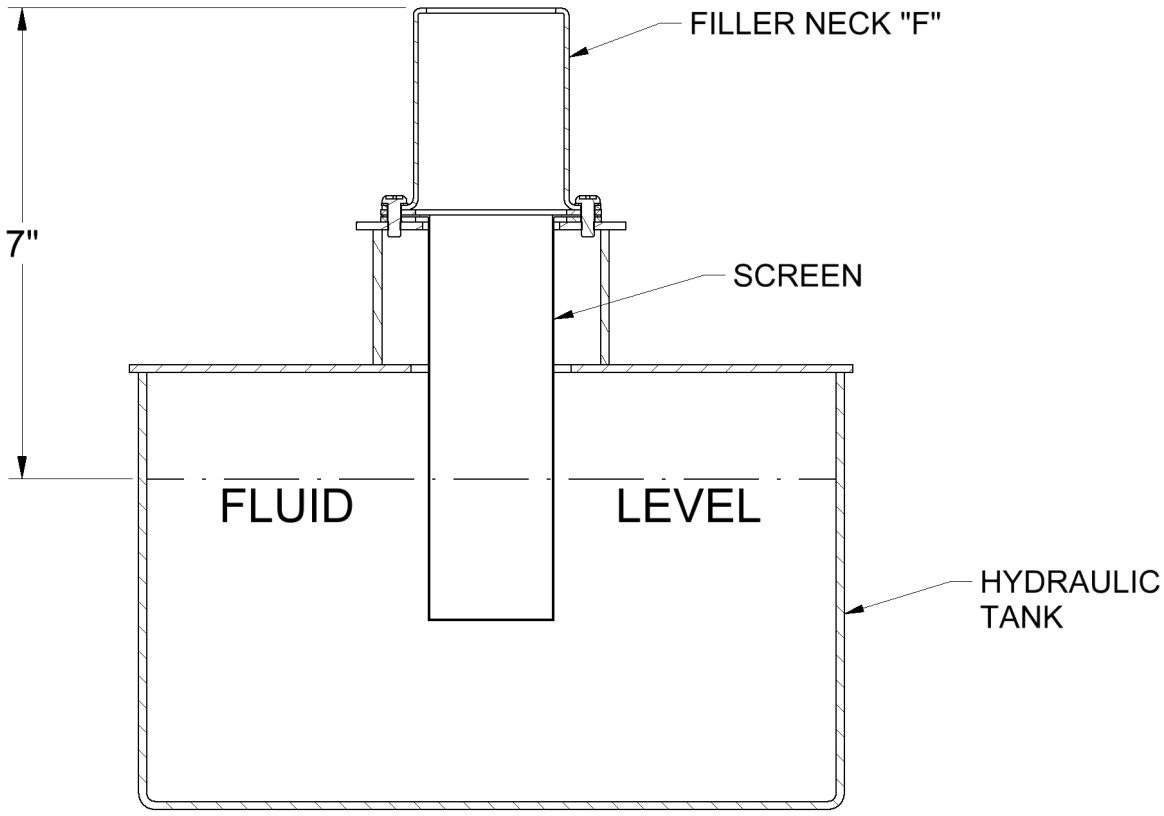


Figure 15: Hydraulic Fluid Level

DRIVE SYSTEM

(Figure 16, Figure 17 & Figure 18)
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 ¾ 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 ¼ 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" 1/8 of a turn. Loosen lock nuts on two corresponding Jack Bolts "A". Tighten Bolts "A" 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" 1/8 of a turn. Tighten two corresponding Lock-Down Bolts "B" 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.

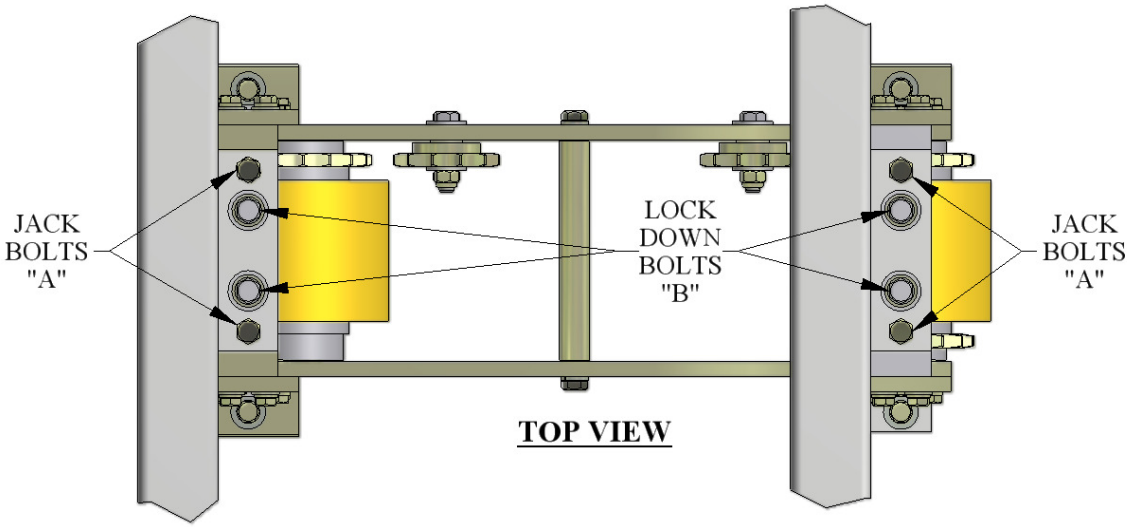
2. There are three different chain tensioners on the machine.
A. The first are located in slots on the side plates of the Drive Roll Assemblies. They follow the chain locations alternating from one side to the other. To adjust, slightly loosen the nut on the bolt holding the tensioner sprocket in place. 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 18) 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 18 for chain locations and lengths if chain replacement is necessary.

4. The polyurethane drive rollers will eventually need cleaning. This will become evident when they start leaving a stripe the width of the drive roller on the formed panels that doesn't come off easily or if a material is used with an oily film on it. Avoid cleaning the drive rollers with harsh chemicals or solvent. These products will attack the polyurethane and cause irreversible damage. **Use of these products will void the warranty on the drive rollers.**

Clean the rollers with mild soap 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.



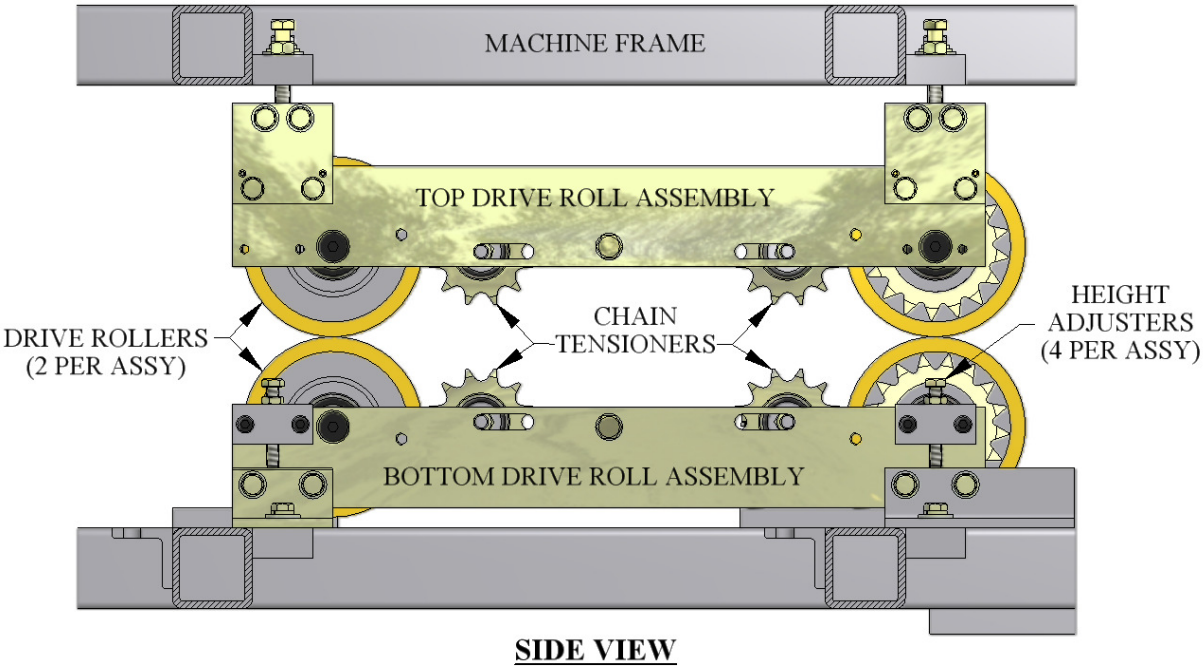


Figure 16: Drive Roll Assembly View

CHAPTER 8

DRIVE SYSTEM

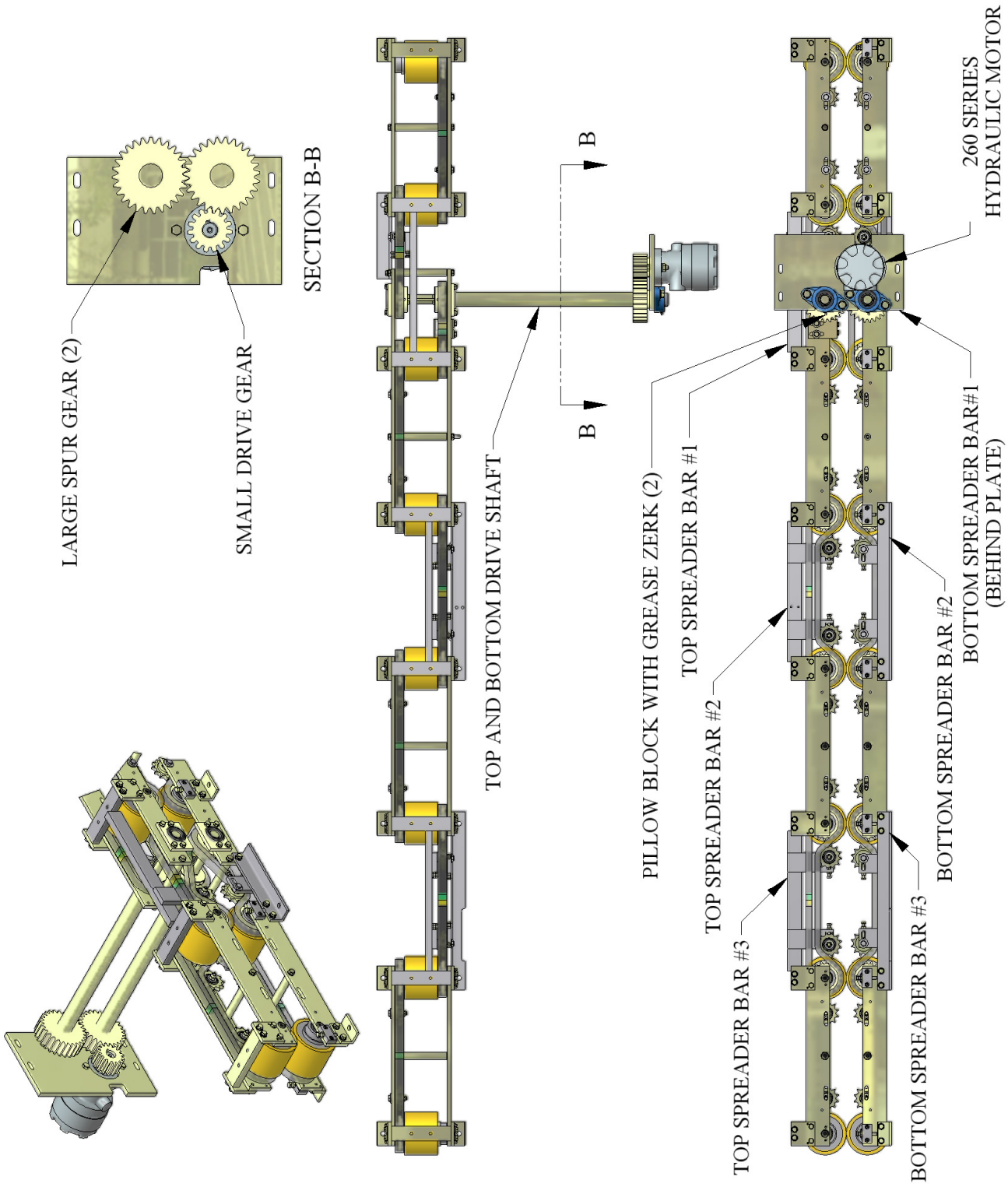
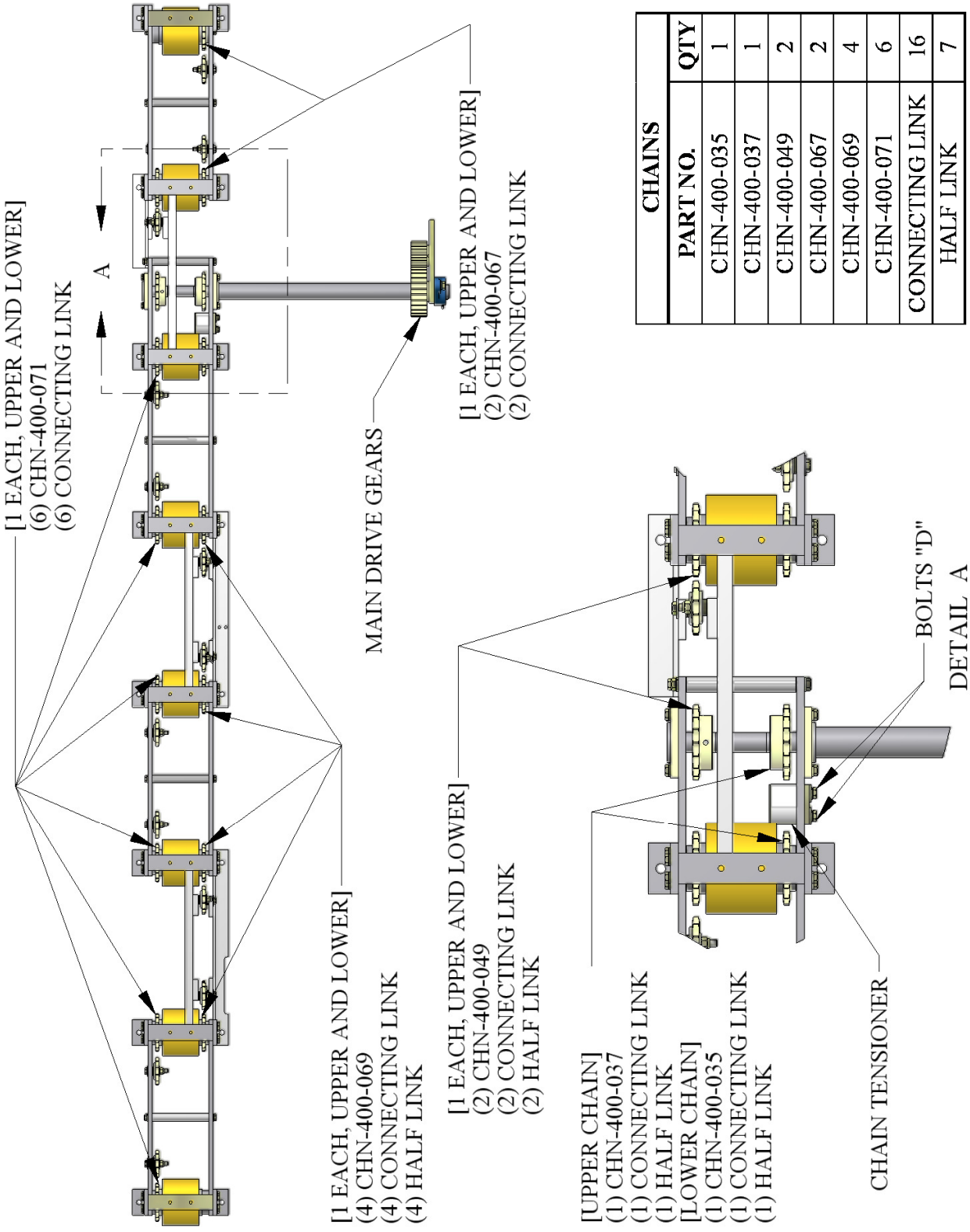


Figure 17: Gears and Shafts

DRIVE SYSTEM



CHAINS	
PART NO.	QTY
CHN-400-035	1
CHN-400-037	1
CHN-400-049	2
CHN-400-067	2
CHN-400-069	4
CHN-400-071	6
CONNECTING LINK	16
HALF LINK	7

Figure 18: Chains Upper and Lower

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 20)

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 19 & Figure 20)

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 34-39. 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 35, 38, and 39. If necessary loosen the "E" bolts and adjust the Mandrels. Retighten the "E" bolts.
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 34-39. 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 20-Figure 30 and also the tip of the #1 blade is positioned to the inside of the female leg as shown in Figure 20-Figure 30. 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

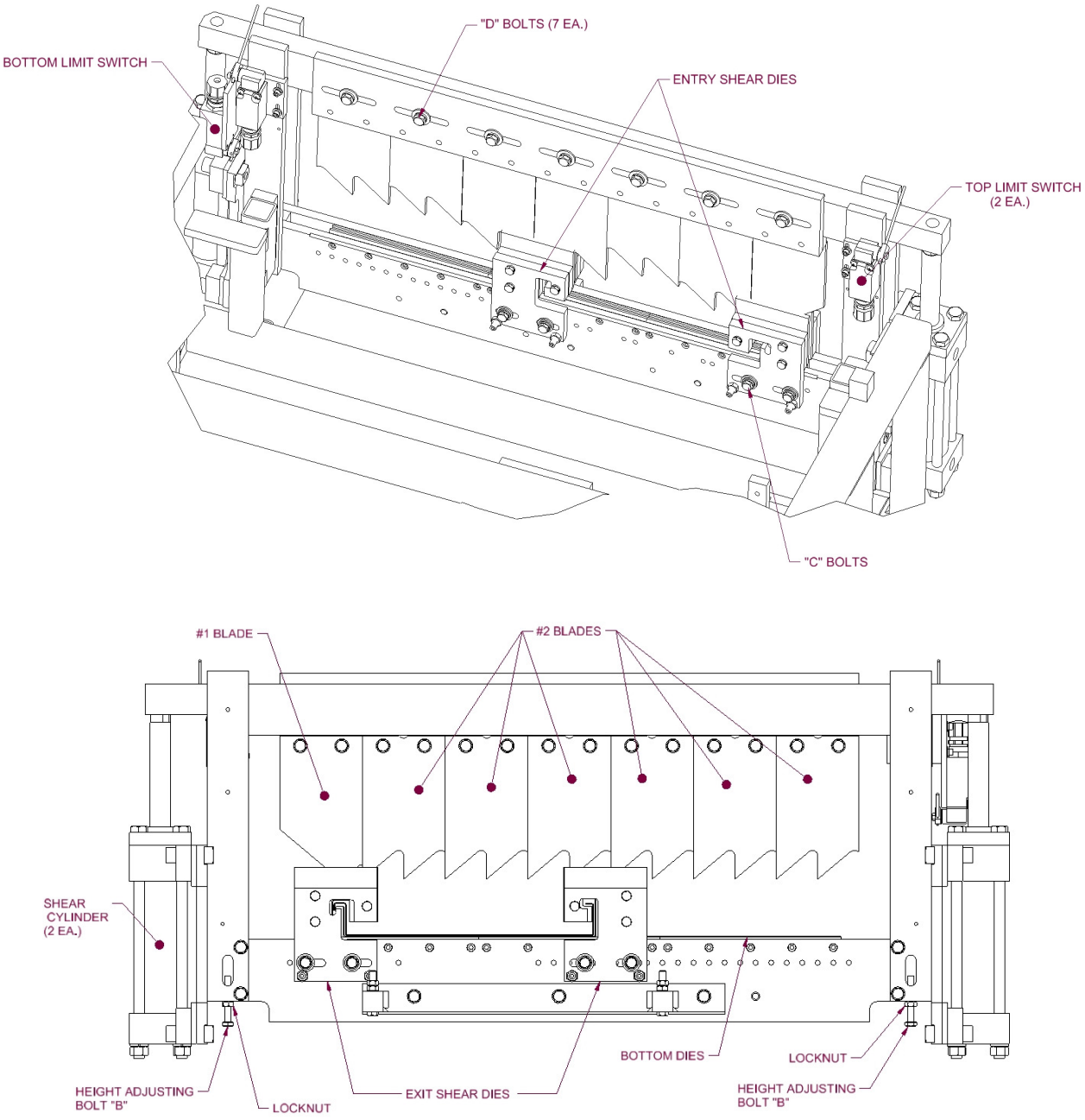


Figure 19: Entry/Exit Views

CHAPTER 9

SHEAR ASSEMBLY

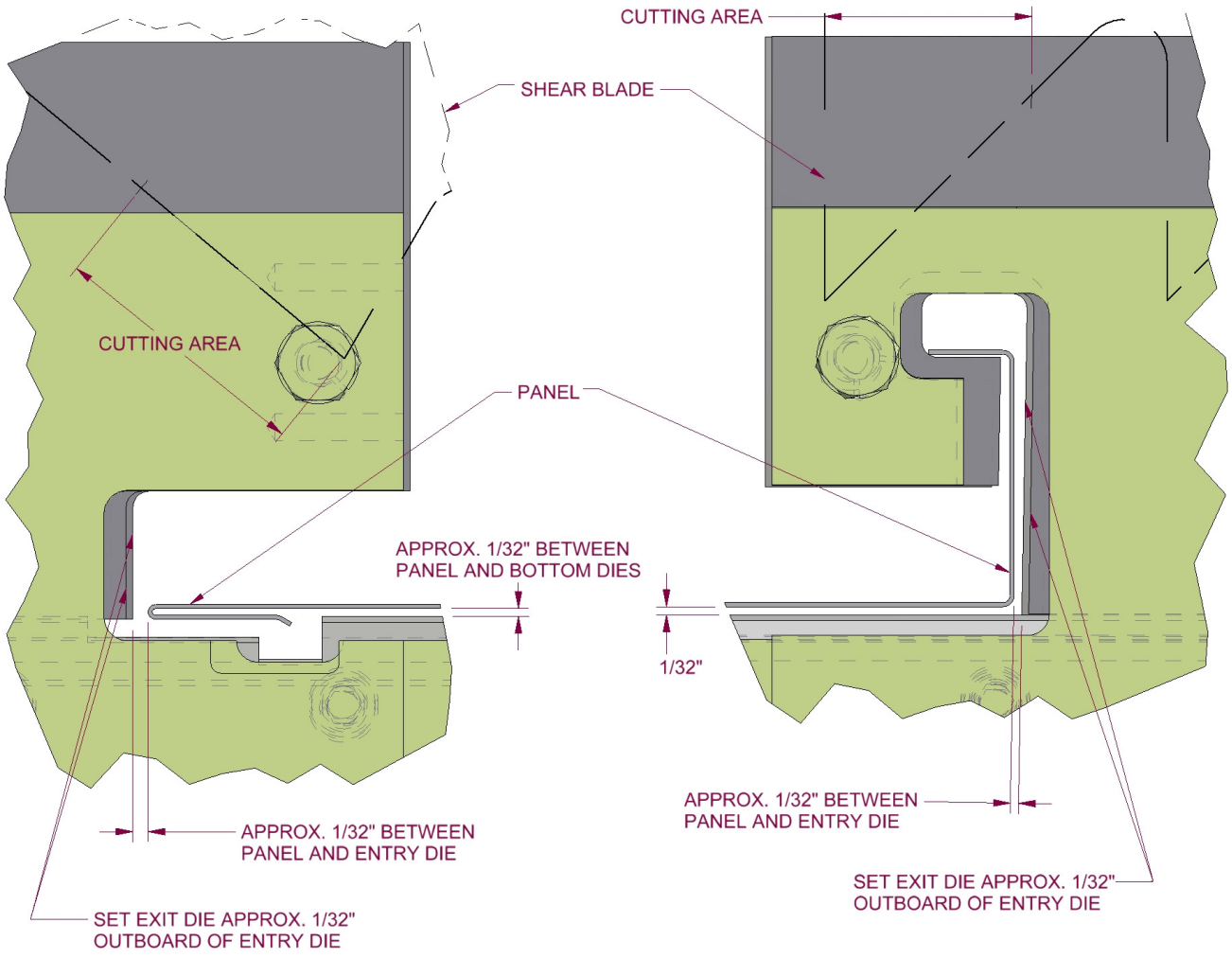


Figure 20: BP100 / BP150 Shear Dies

CHAPTER 9

SHEAR ASSEMBLY

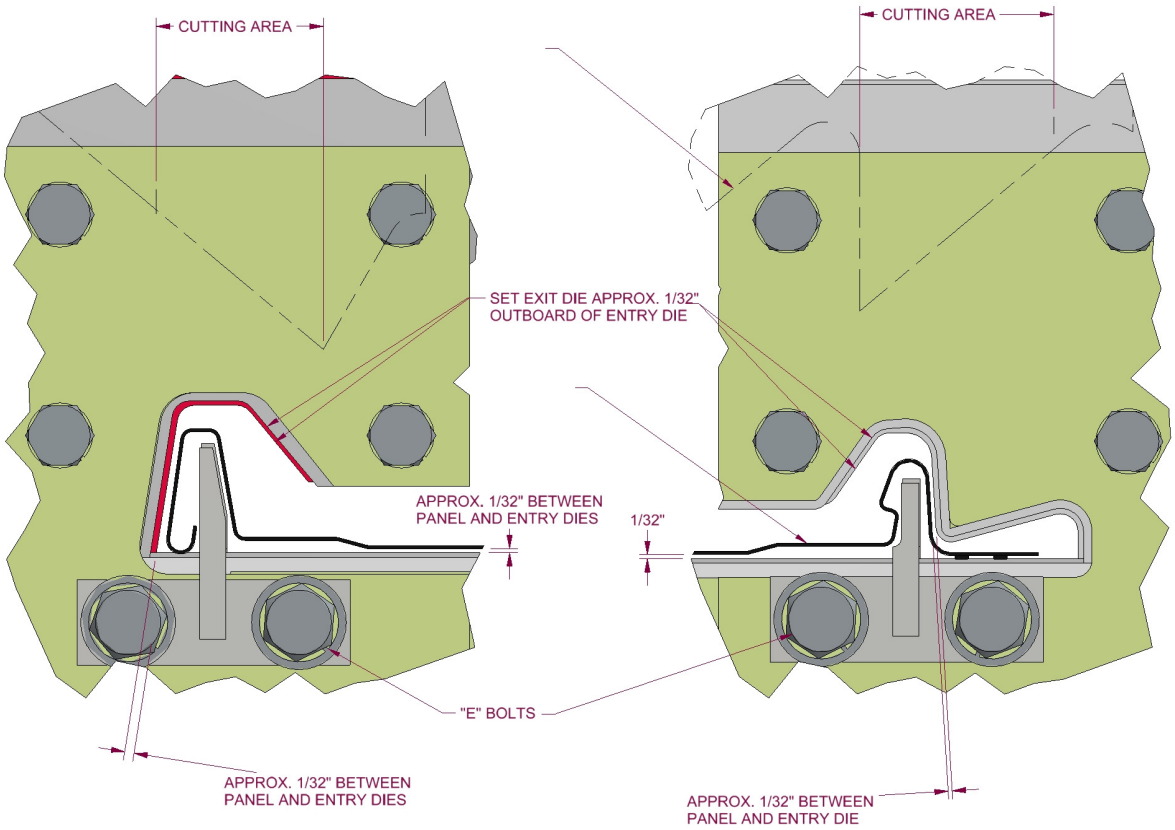


Figure 21: FF100 Shear Dies

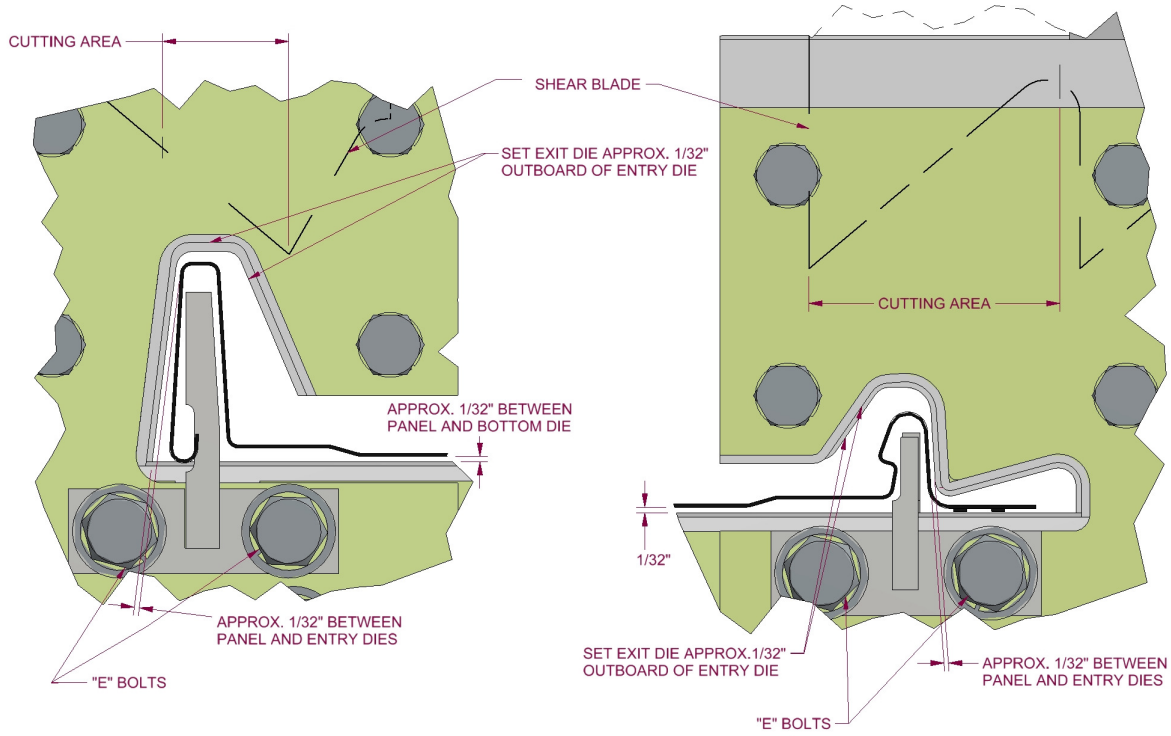


Figure 22: FF150 Shear Dies

CHAPTER 9

SHEAR ASSEMBLY

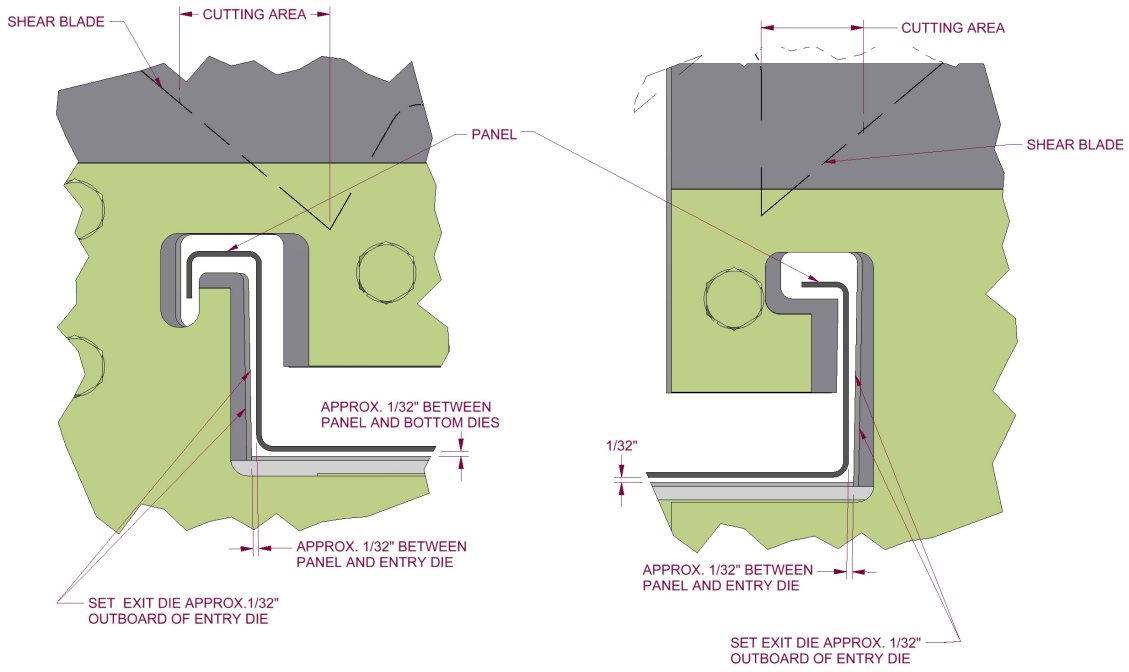


Figure 23: SS100 / 150 Shear Dies

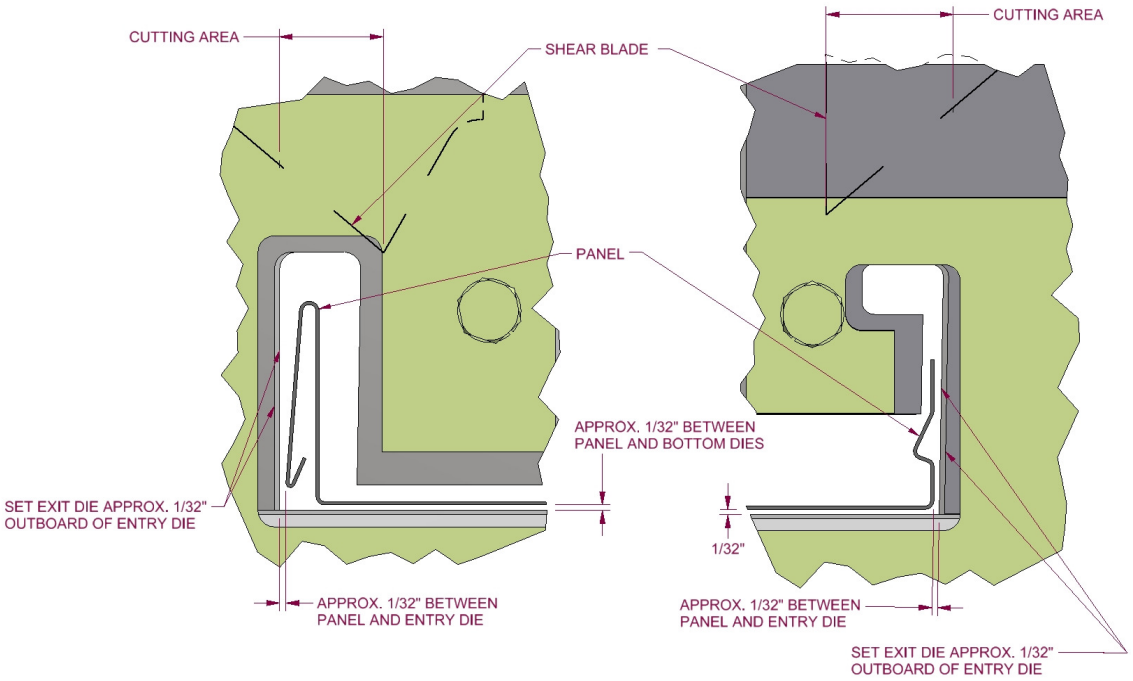


Figure 24: SS450 Shear Dies

CHAPTER 9

SHEAR ASSEMBLY

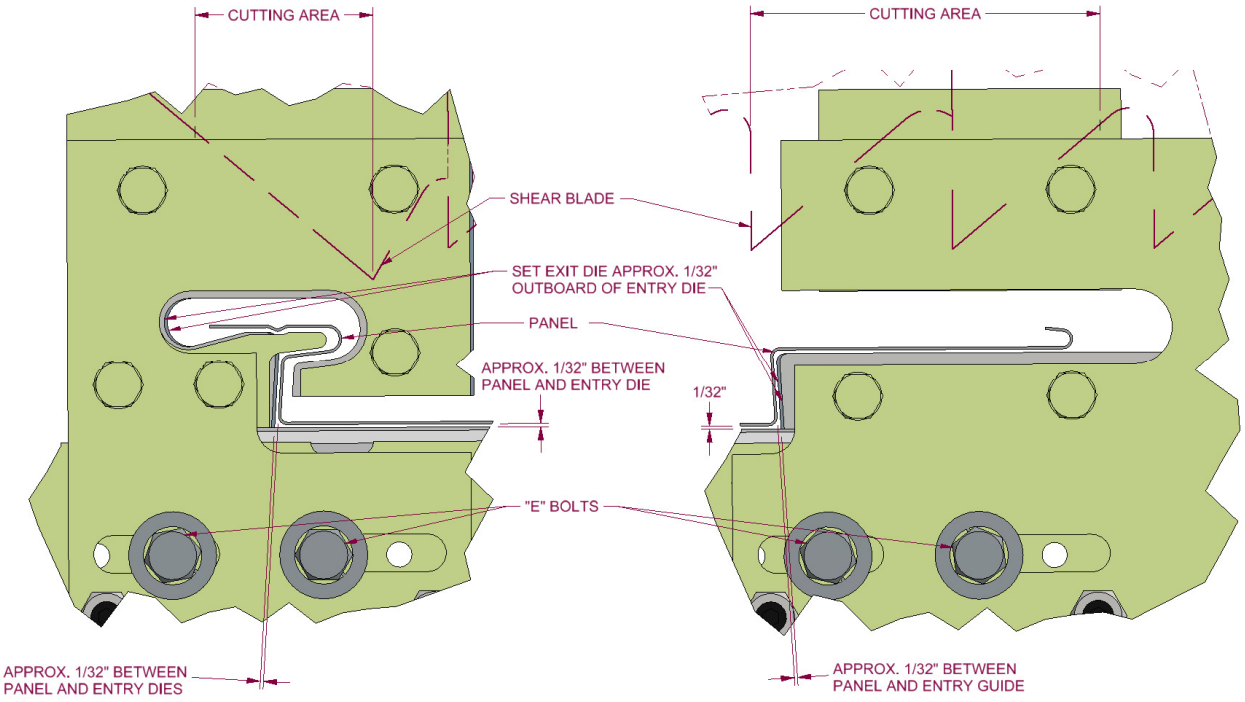


Figure 25: FWQ100 / FWQ150 Shear Dies

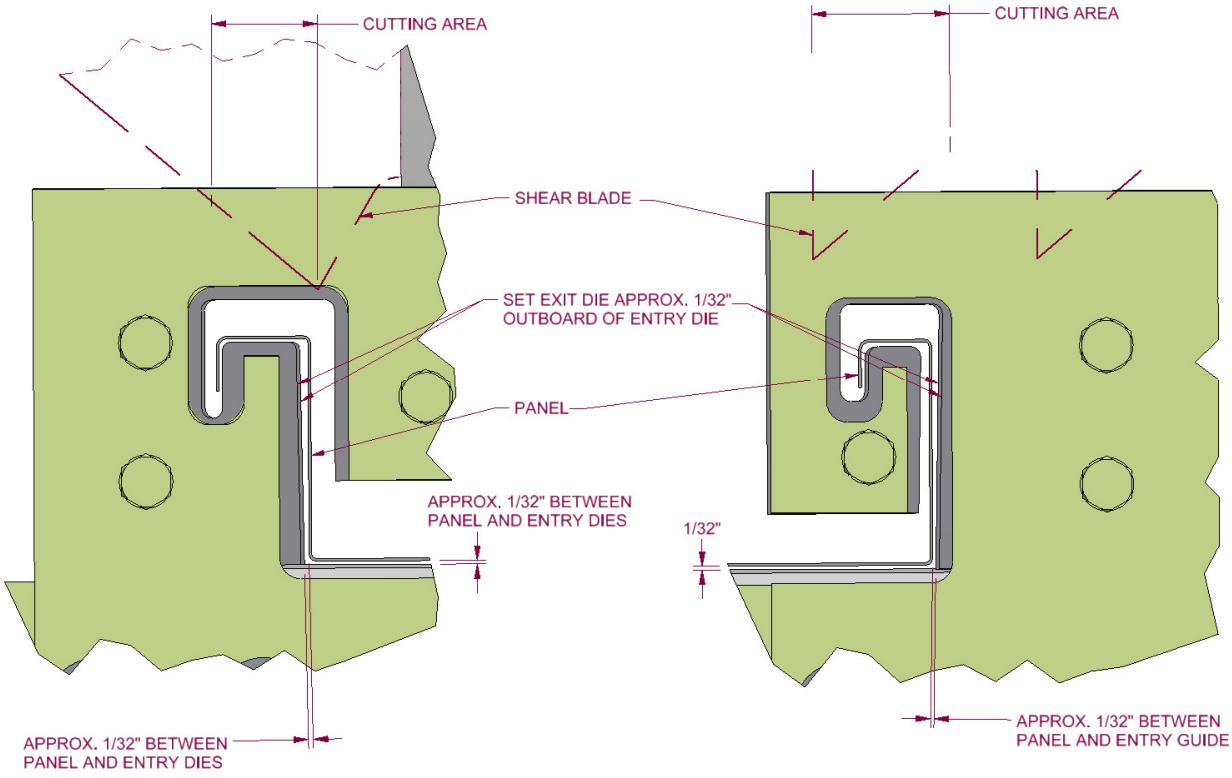


Figure 26: SS200 / SS210A Shear Dies

CHAPTER 9

SHEAR ASSEMBLY

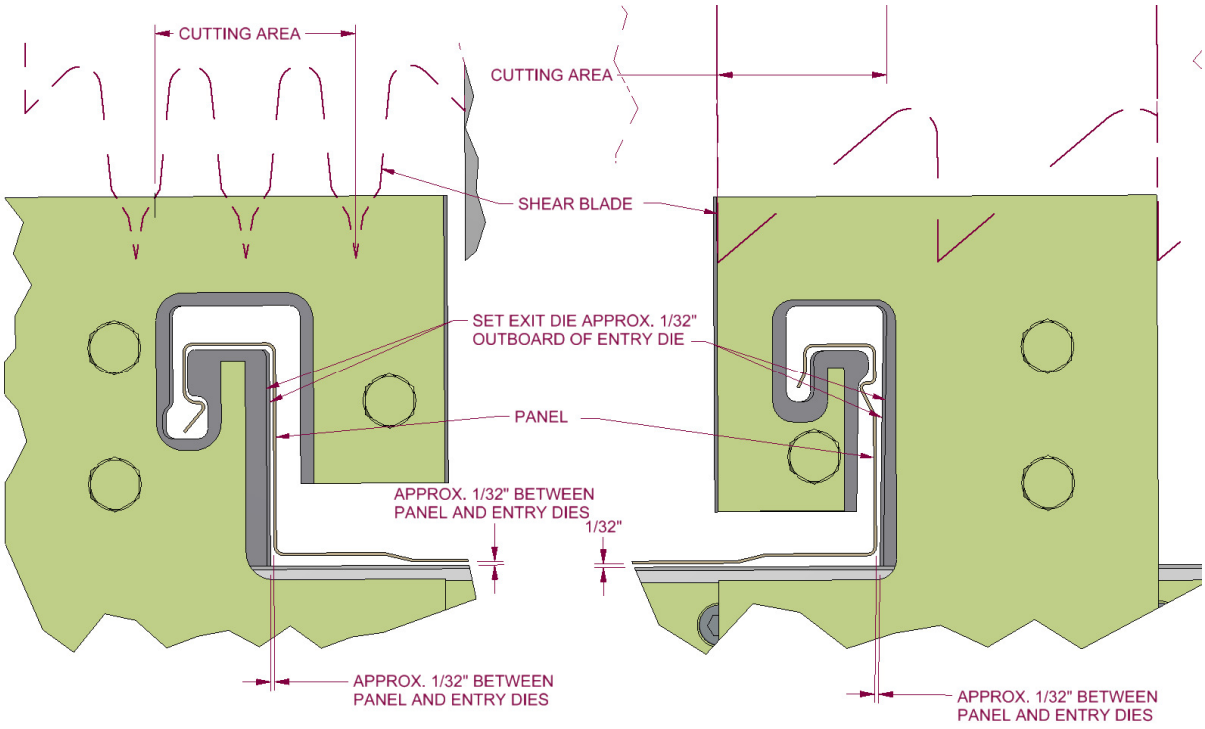


Figure 27: SS275 Shear Dies

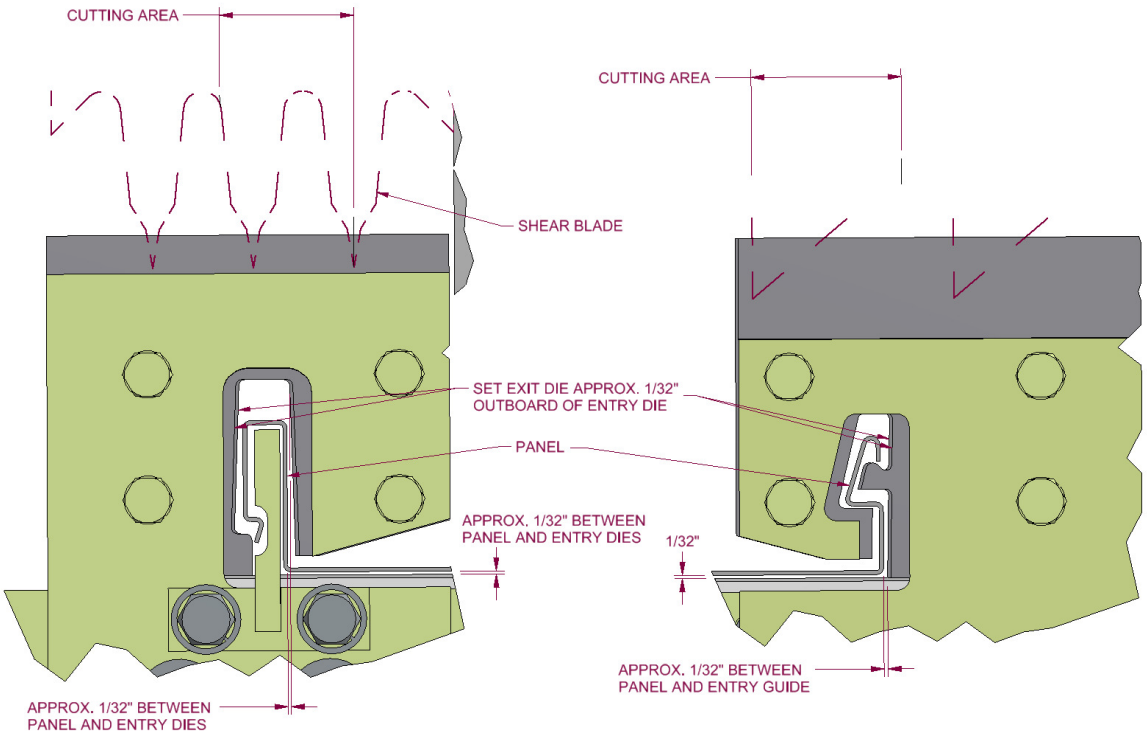


Figure 28: SS550 Shear Dies

CHAPTER 9

SHEAR ASSEMBLY

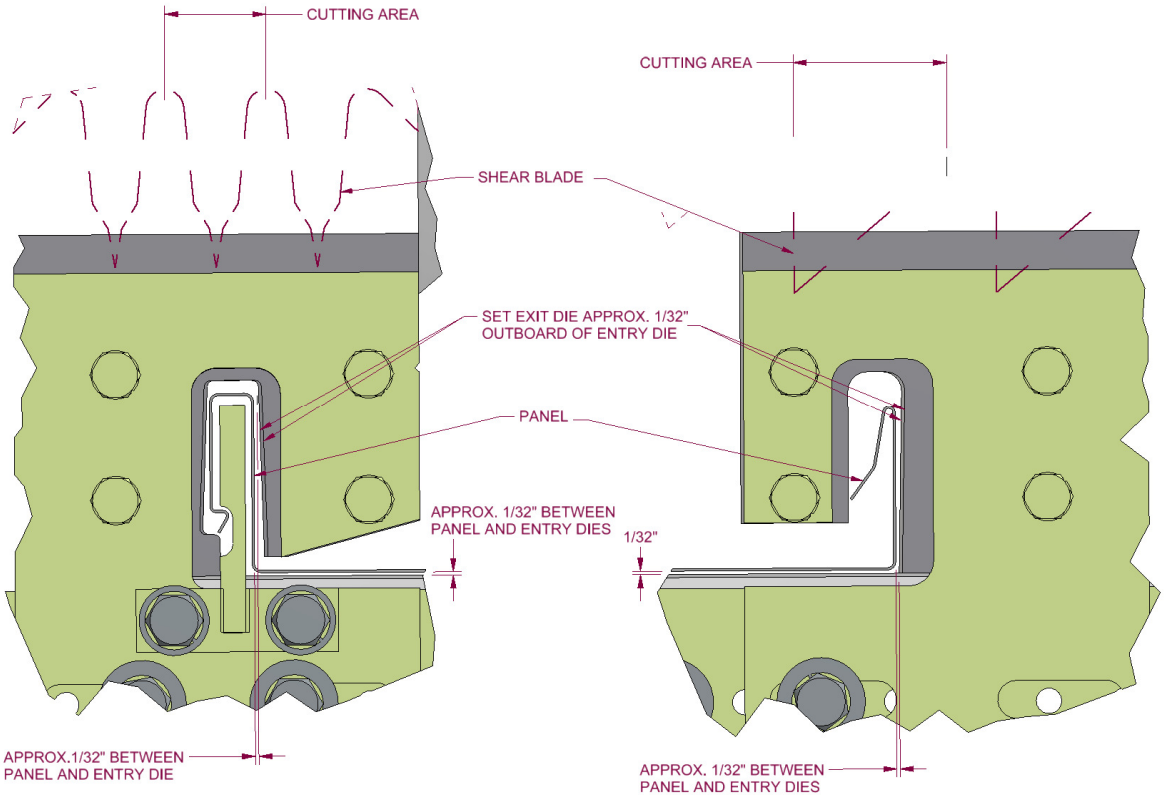


Figure 29: SS675 Shear Dies

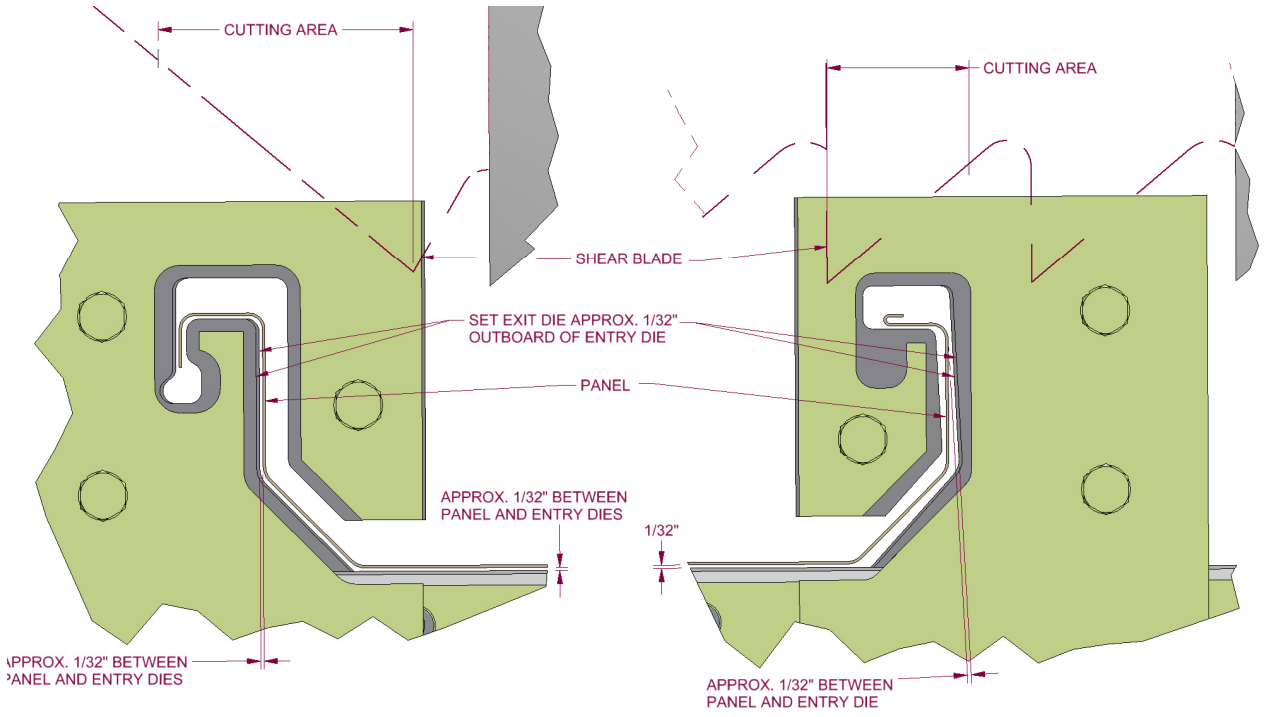


Figure 30: TRQ250 Shear Dies

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.

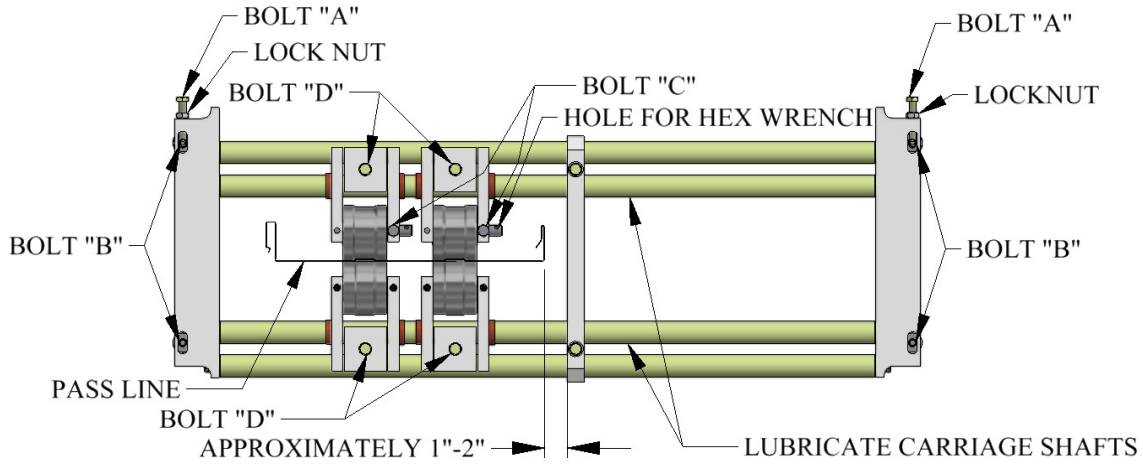
Super Lube - Multi-Purpose Synthetic Dri Film Aerosol Lubricant with Syncolon (PTFE)
Catalog No. 11016
11 oz. Aerosol Can
Available from:
MSC Supply at 1-800-645-7270

BEAD ROLLER ASSEMBLY

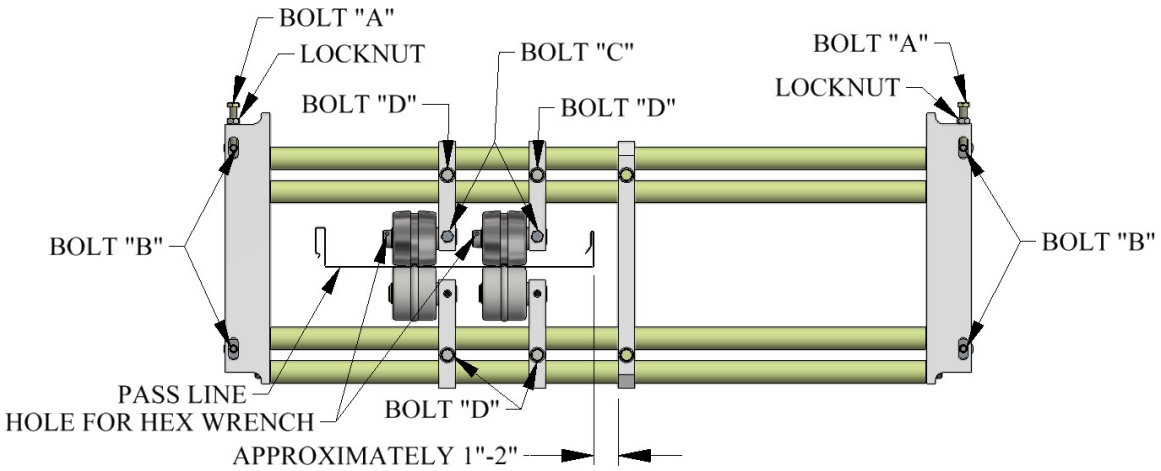
1. The Bead Roller assembly is located behind the shear and is accessed by removing top cover #3. These rollers can be engaged or disengaged as needed and can also be moved left or right to accommodate different panel widths.
2. The bottom bead forming roller should be set 1/32" above the drive roller 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

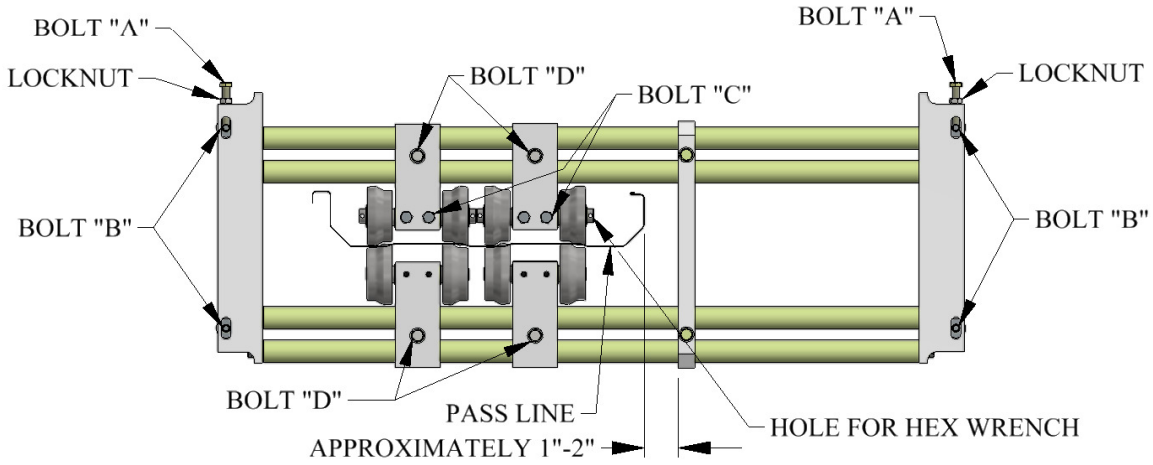
BEAD ROLLER ASSEMBLY



RR1, RR2, RR3, RR7



RR4, RR5



RR12

Figure 31: Bead Roller Assembly

CHAPTER 10

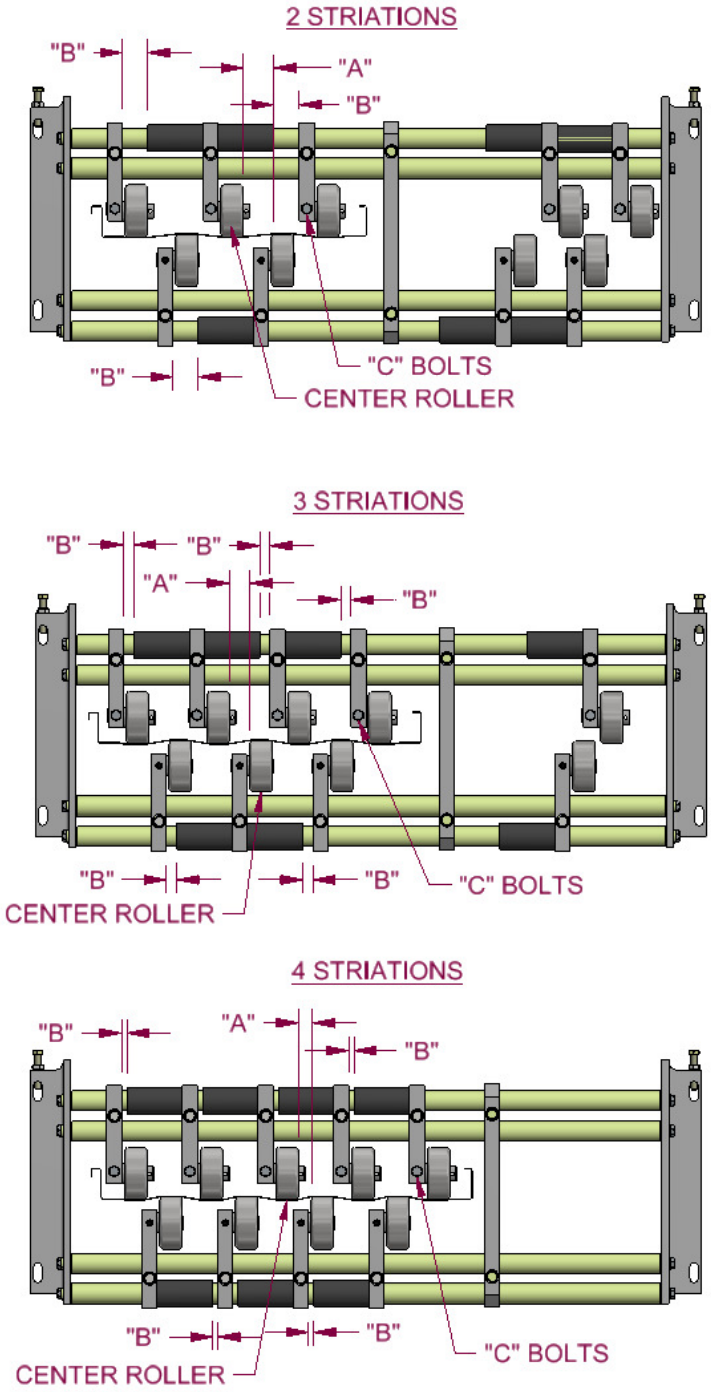
BEAD ROLLER ASSEMBLY

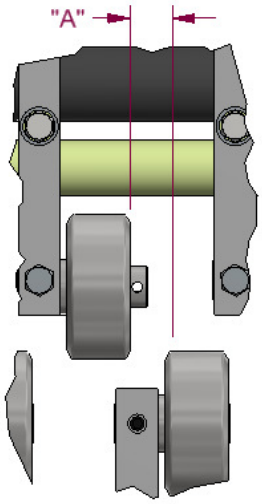
STRIATION ROLLER ADJUSTMENT

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 32, align the middle of the center roller with the center mark on the panel.
5. Position the remaining striation rollers as shown in Figure 32, 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 32: Striation Spacing Chart

CHAPTER 11

ENTRY GUIDE ASSEMBLY

ENTRY GUIDE ADJUSTMENT

(Figure 33 & Figure 34)

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 33). 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 34)

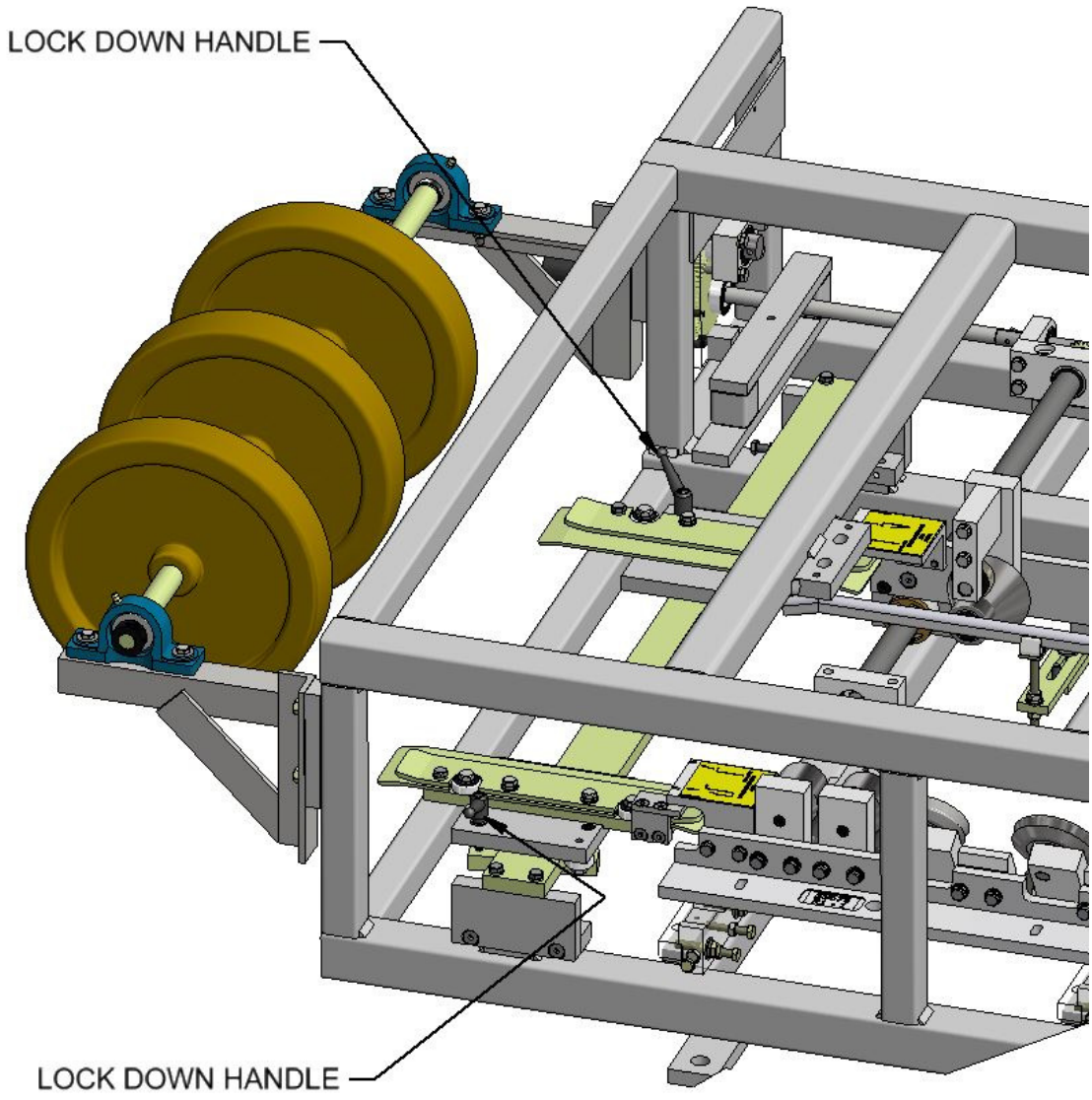


Figure 33: Entry Guide Lock Down Handles

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

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.

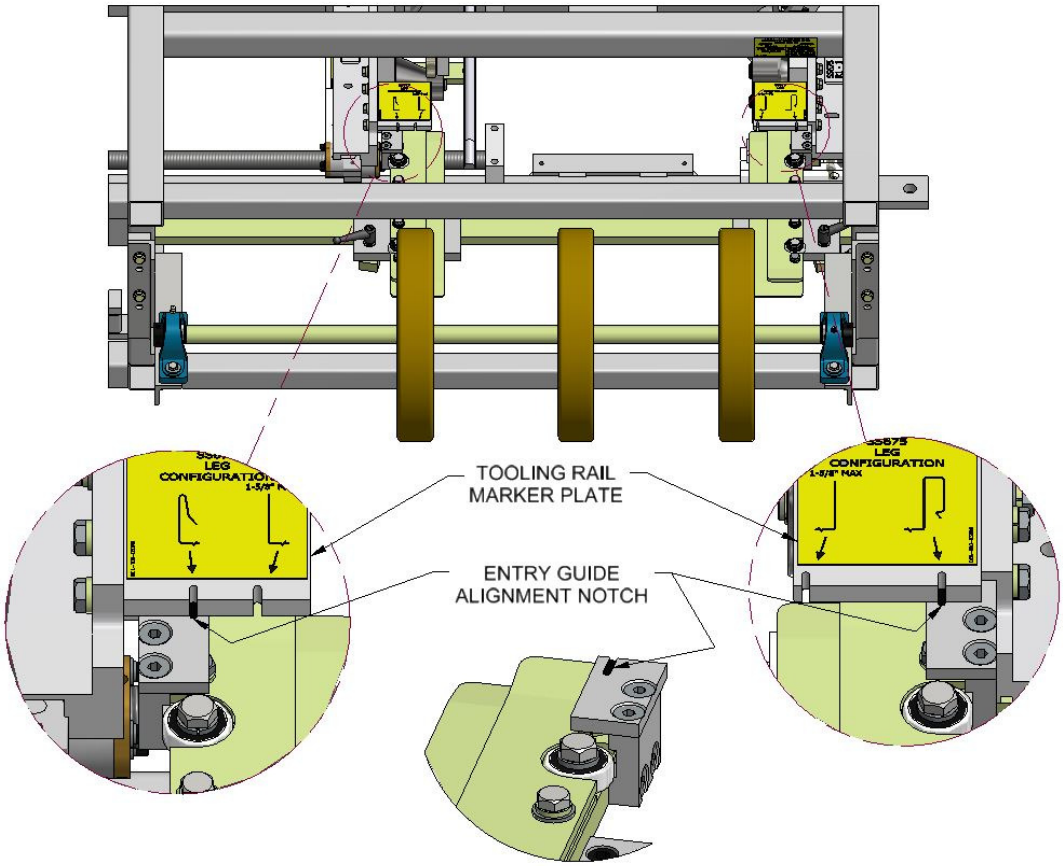


Figure 34: Entry Guide Alignment

LEFT TOOLING RAIL TO ENTRY GUIDE ALIGNMENT

(Figure 35 to Figure 37)

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 35) 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 36). Press the handle inward (Figure 37) 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

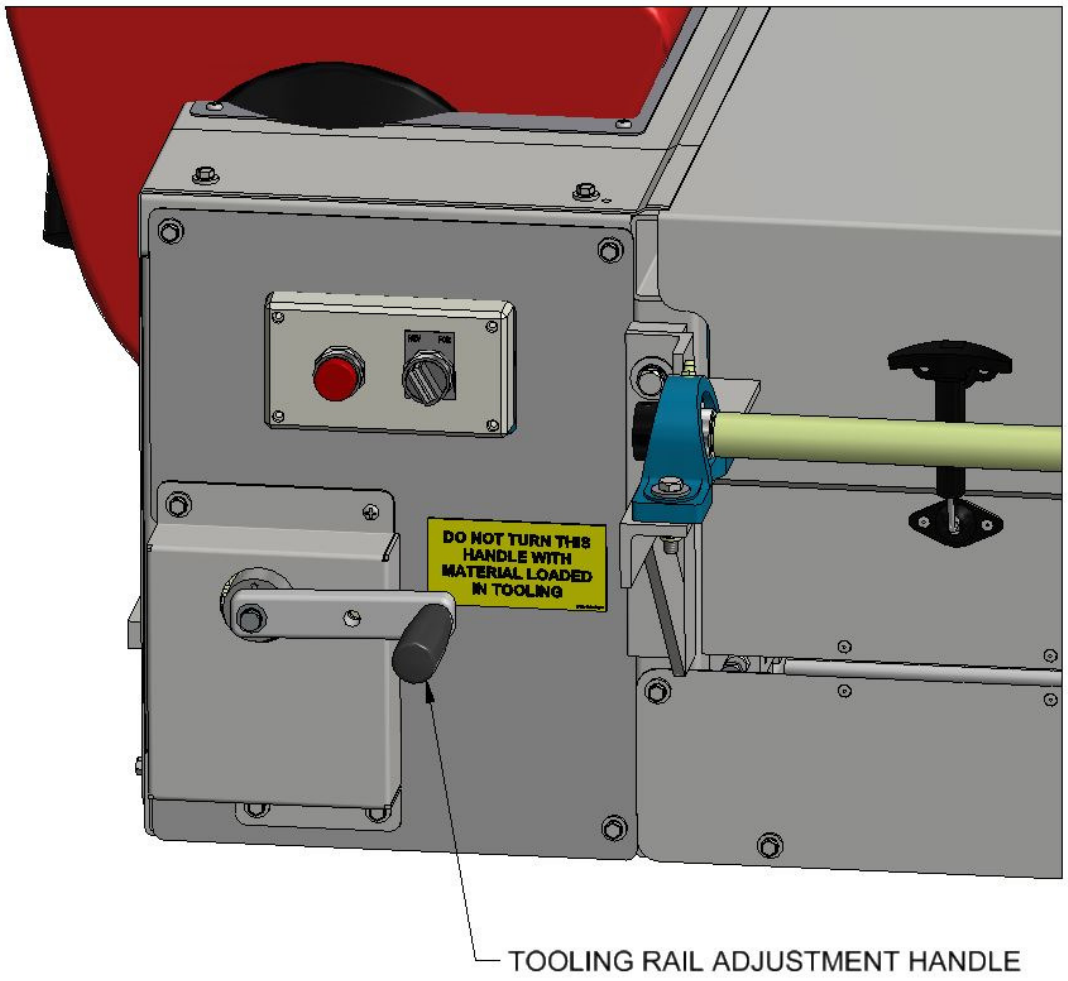


Figure 35: Tooling Rail Adjustment Handle

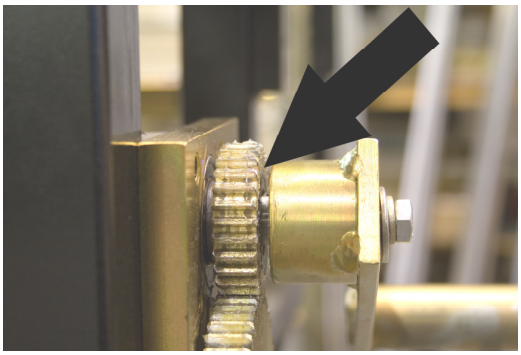


Figure 36: Disengaged

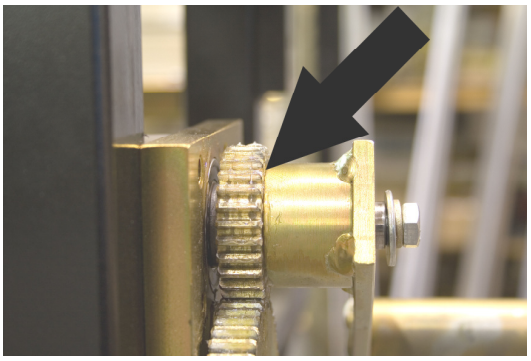


Figure 37: Engaged

CHAPTER 12

CLIP RELIEF ROLLER ASSEMBLY

CLIP RELIEF ROLLER ASSEMBLY

1. Clip Relief Rollers (Figure 38) 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 87 - Figure 78).
   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.

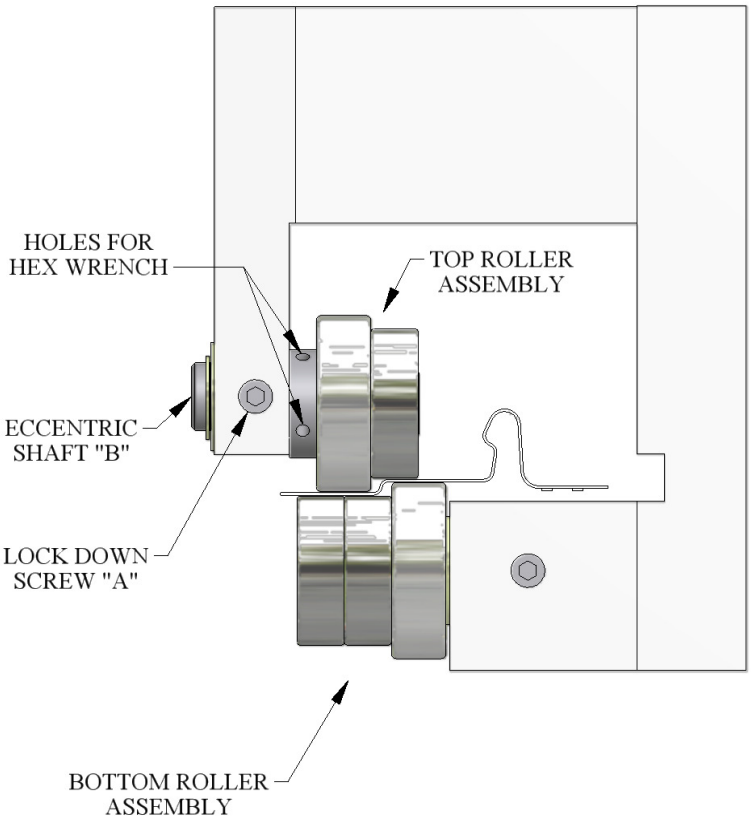


Figure 38: Clip Relief Roller Assembly

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 39 & Figure 40)

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 39)

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

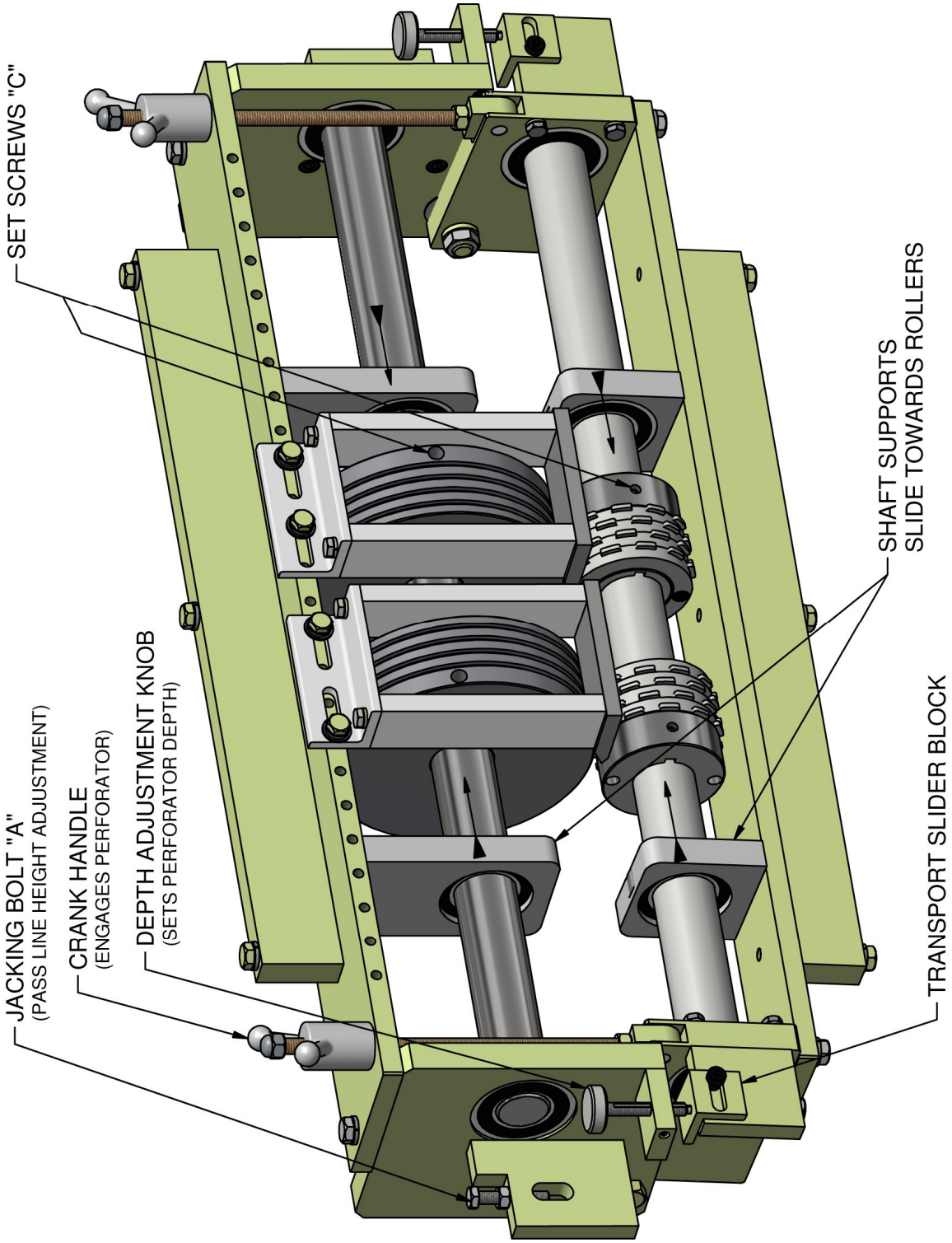
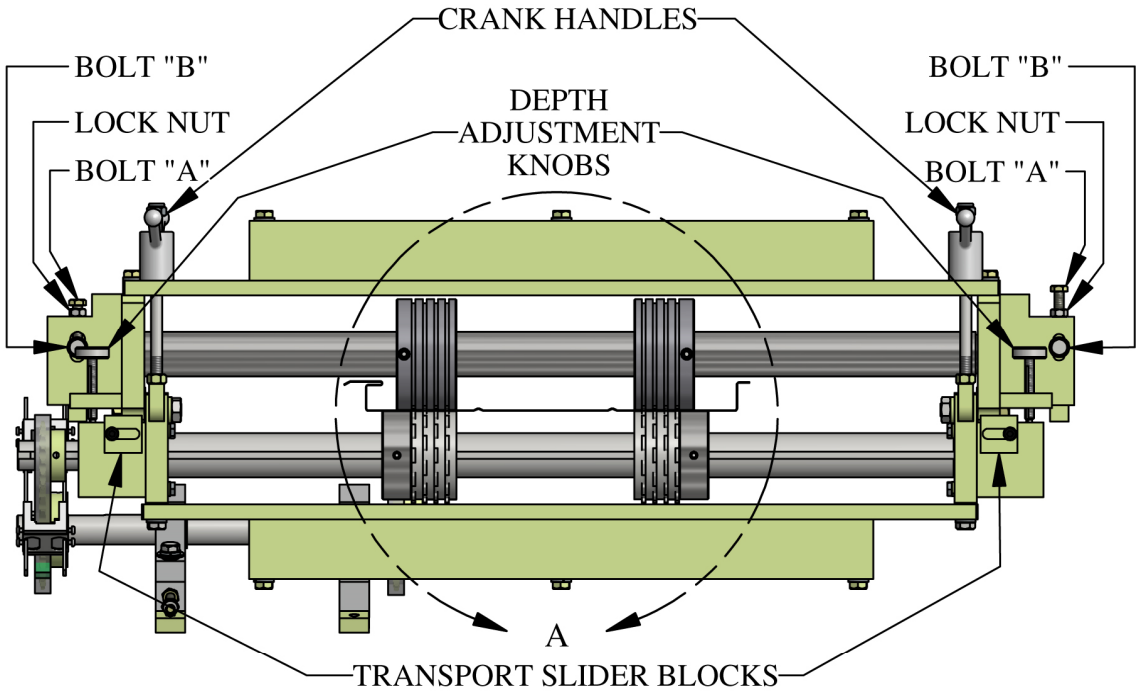


Figure 39: Perforator Assembly

CHAPTER 13

PERFORATOR



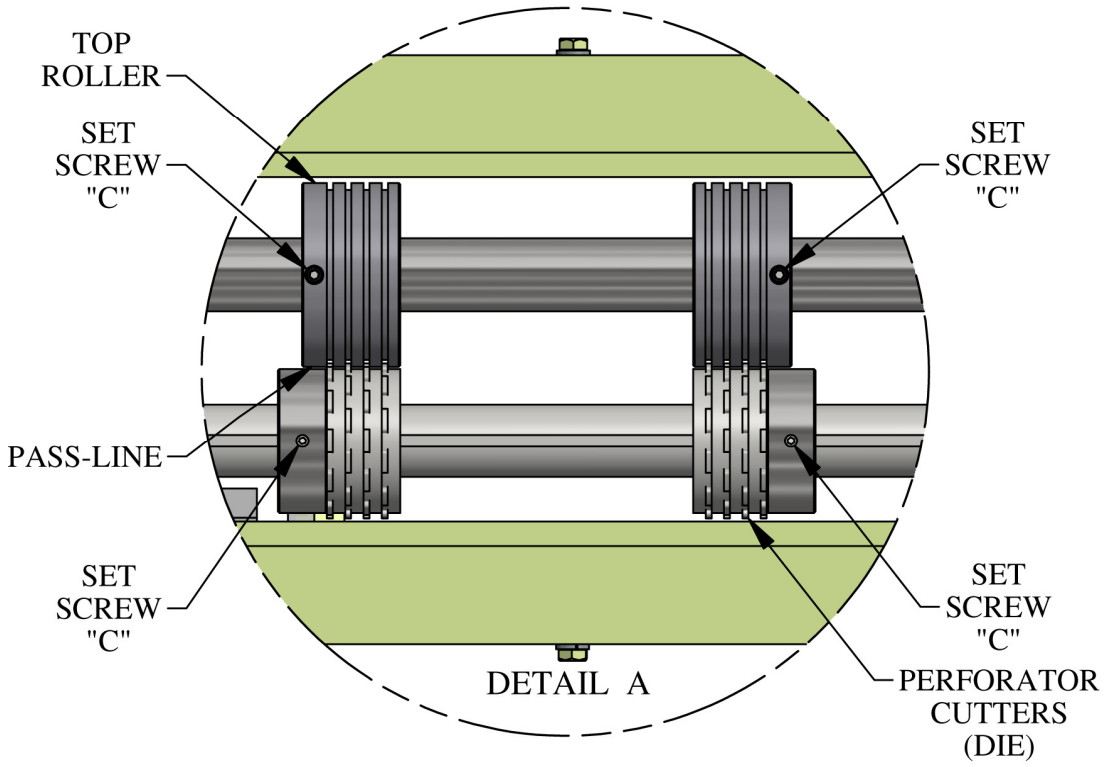


Figure 40: Perforator Adjustment

CHAPTER 13

PERFORATOR

LOCKING THE PERFORATOR FOR TRANSPORTATION

(Figure 41)

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.

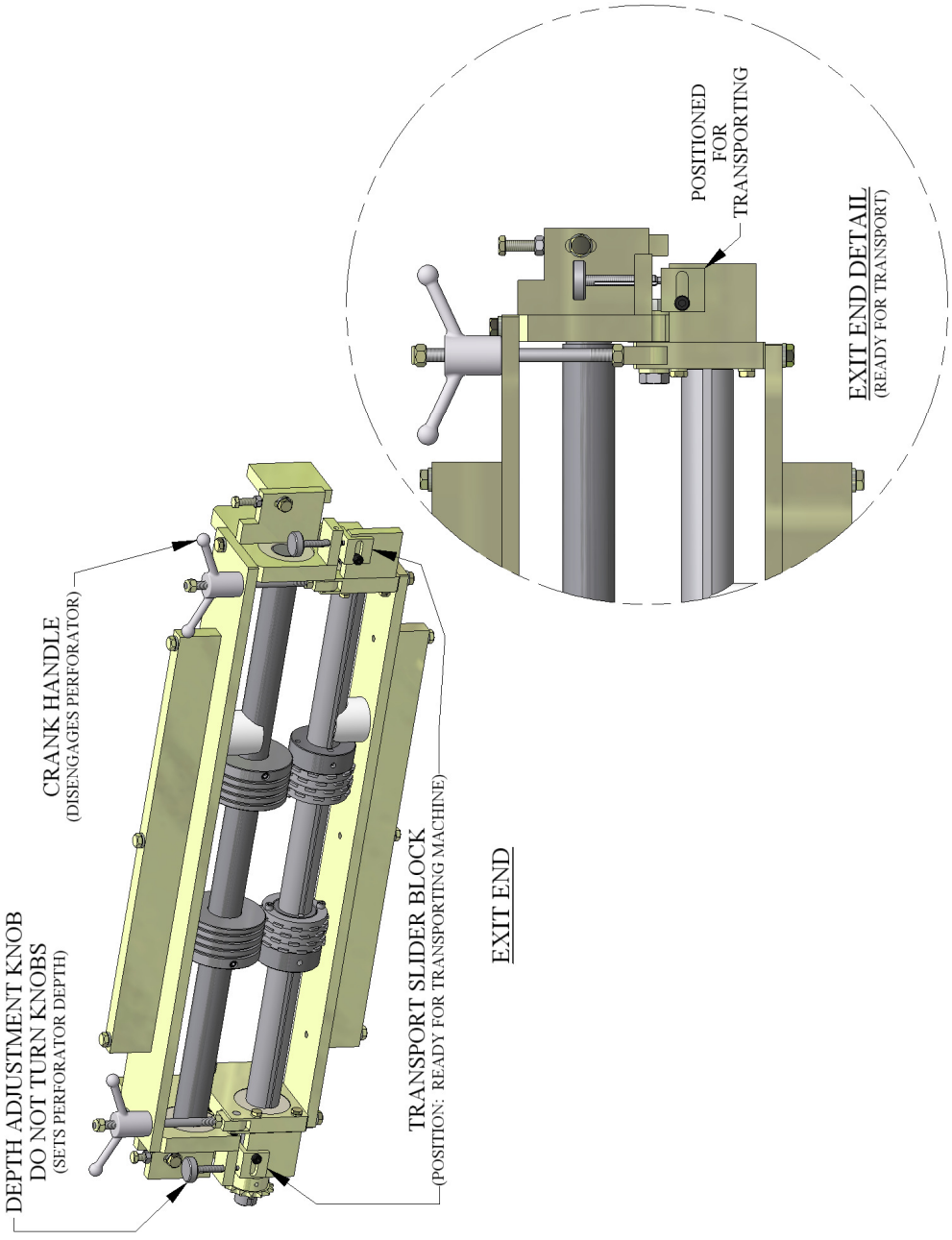


Figure 41: Perforator Locked for Transport

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 42)
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.

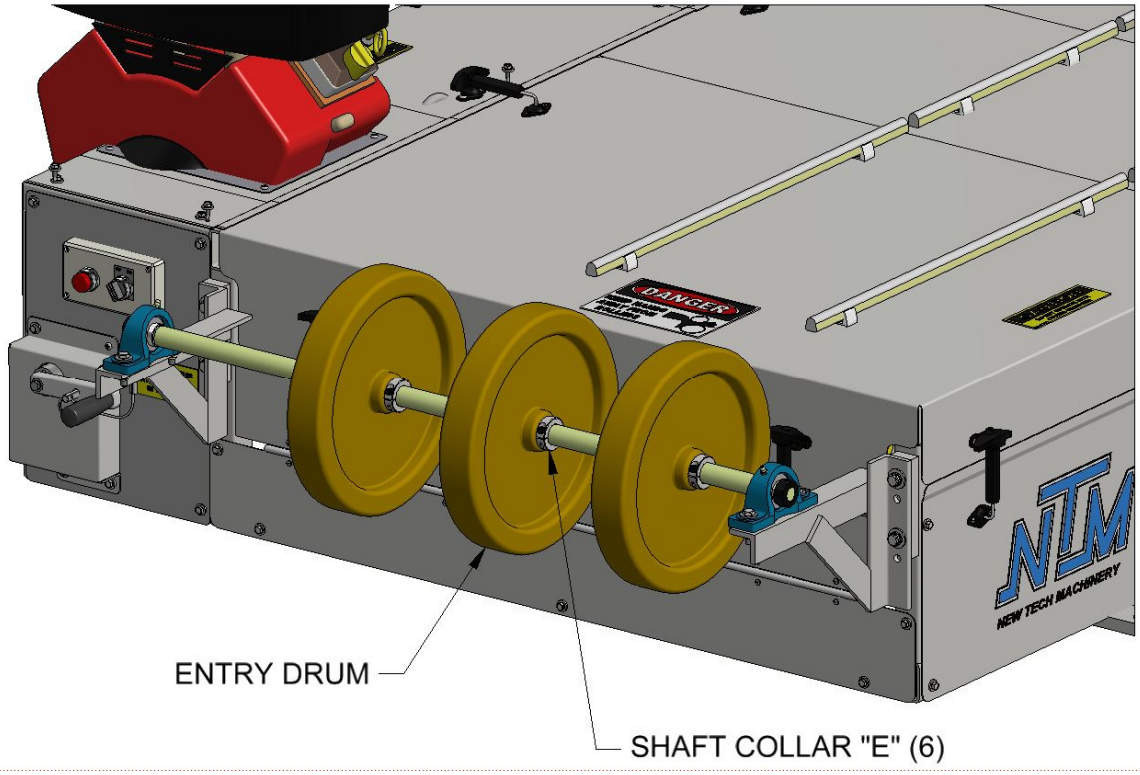


Figure 42: Entry Drum

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 45 for details.
2. Load material onto the Expandable Arbor and align it to the correct position using the chart on (Figure 10
3. Load material onto the Expandable Arbor and align it to the correct position using the chart on (Figure 43).

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"
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"

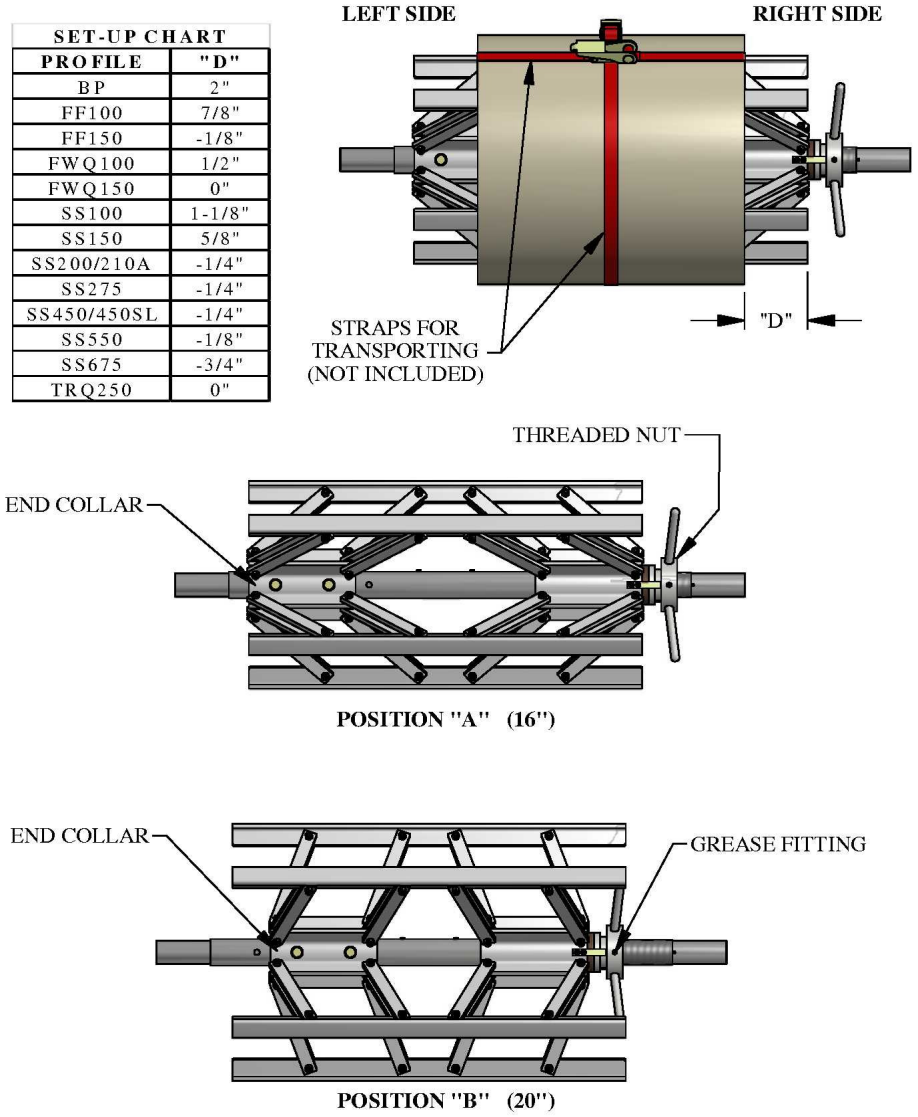


Figure 43: Expandable Arbor Setup

CHAPTER 15

WIDTH CHANGE PROCEDURE

4. 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).
5. Cut a 1" triangle off of the 2 leading corners of the coil and feed it into the entry guides. (Figure 44)

Figure 44: Loading Material

6. 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 18.

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

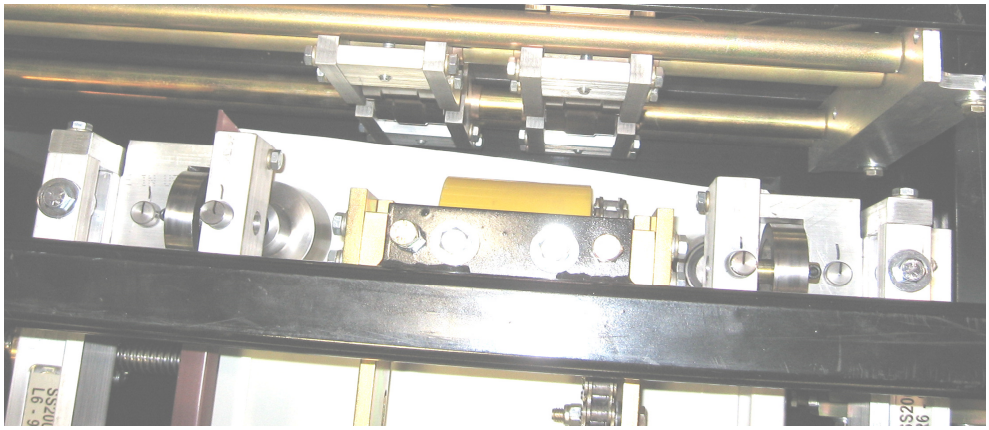


Figure 45: Bead Roller Alignment

7. 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.
8. Loosen the slide lock bolts on the top and bottom bead assemblies (Figure 46) and slide each bottom and top roll assembly left or right to center them on the 4" and 8" marks on the panel.
9. 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

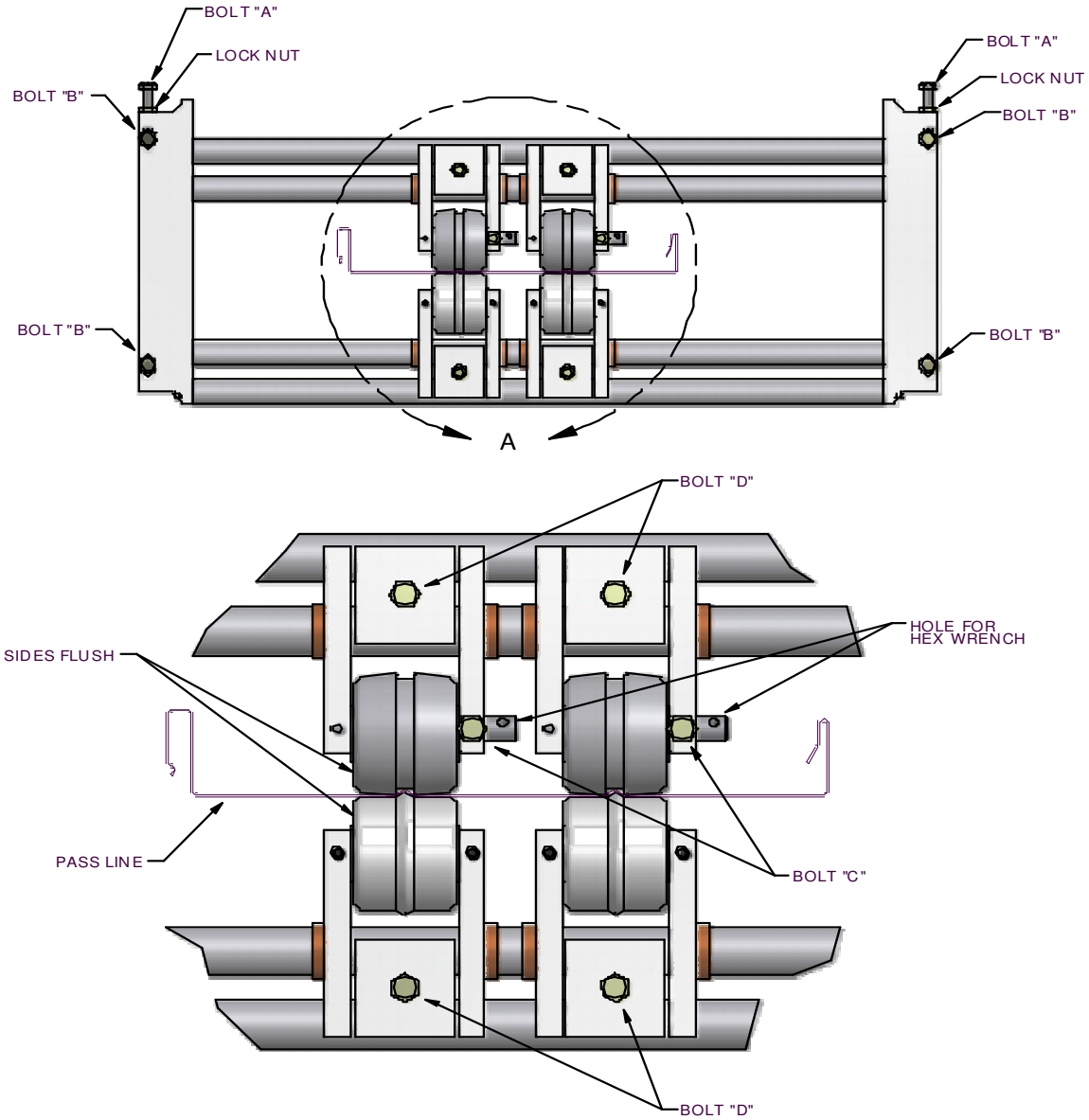


Figure 46: Bead Roller Width Change

10. Check the gap between the top and bottom bead rollers using a feeler gauge. An approximate setting of 1½ times the material thickness is recommended. This setting can be adjusted slightly in either direction according to preference.

11. To set or change the gap between top and bottom beads, loosen the "C" bolt on both top rollers (Figure 46).

12. 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.

13. 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.
14. Tighten the "C" bolt to lock the position of the shaft.
15. Repeat steps 10 through 14 for the remainder of the bead rollers.
16. Start the machine, jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies.
17. Inspect the beads for depth and re-adjust as necessary.

SHUT THE MACHINE OFF BEFORE PROCEEDING.

18. 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 47)

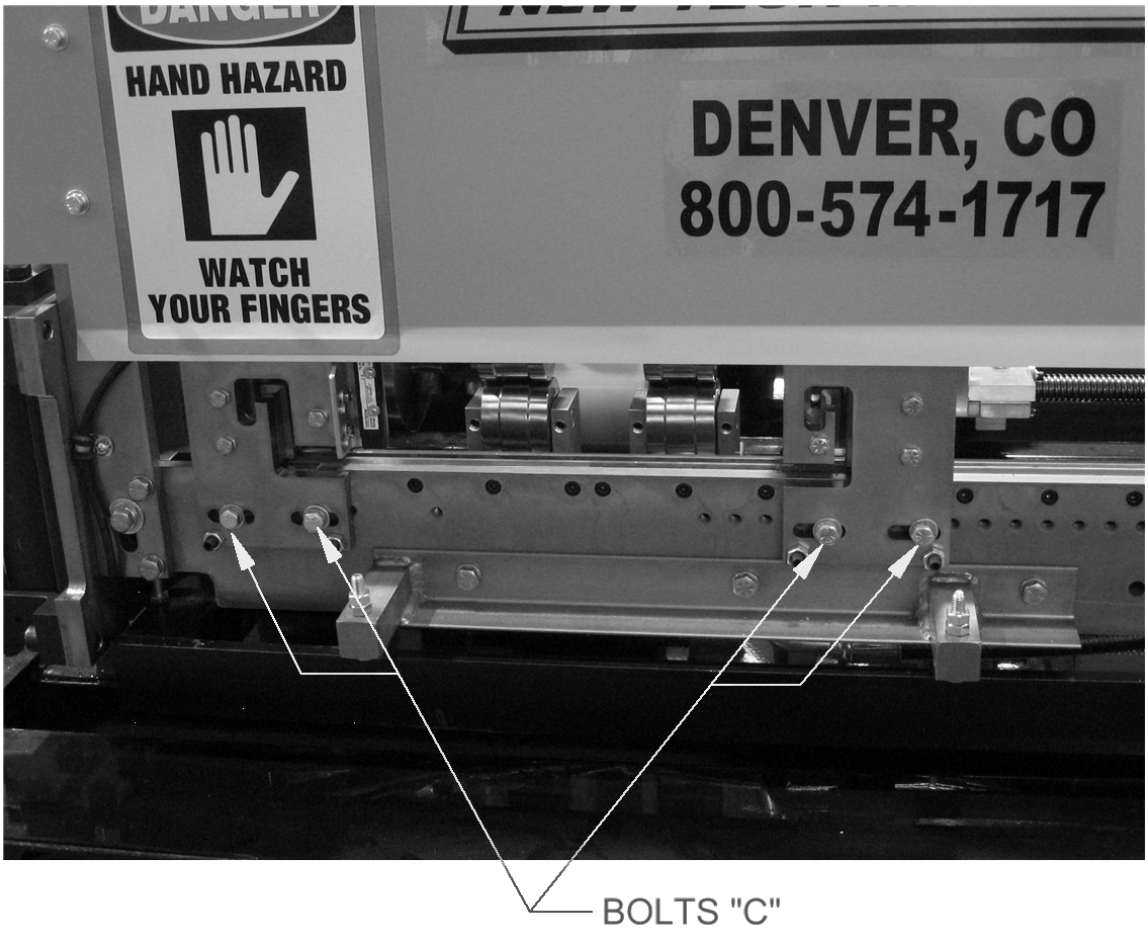


Figure 47: Shear Bolts

19. Remove the two "C" bolts in the slotted holes on the entry male shear die assembly.
20. 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.

21. Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.

22. Start the machine and carefully jog the panel up to the shear. Check to see if the panel will pass through the entry 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.

23. Check the exit shear die to ensure that the material will pass through it. If not adjust as necessary.

24. 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.**

25. 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 48) ***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.***

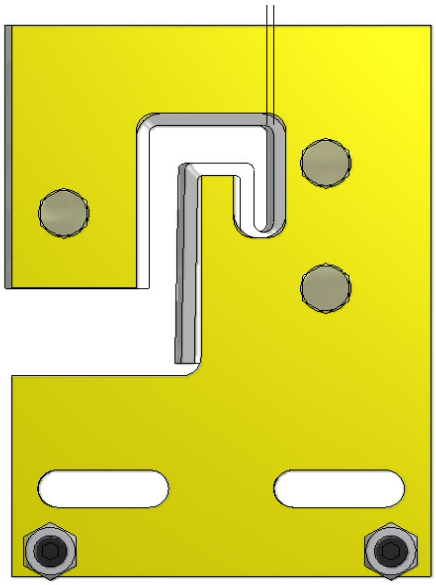


Figure 48: Exit Die Adjustment

26. 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.

27. 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 19 & Figure 20) if adjustment is necessary.

28. 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

29. 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.**

30. Once you are satisfied with the cut being made, you are ready to run panel.

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 49) and set aside.

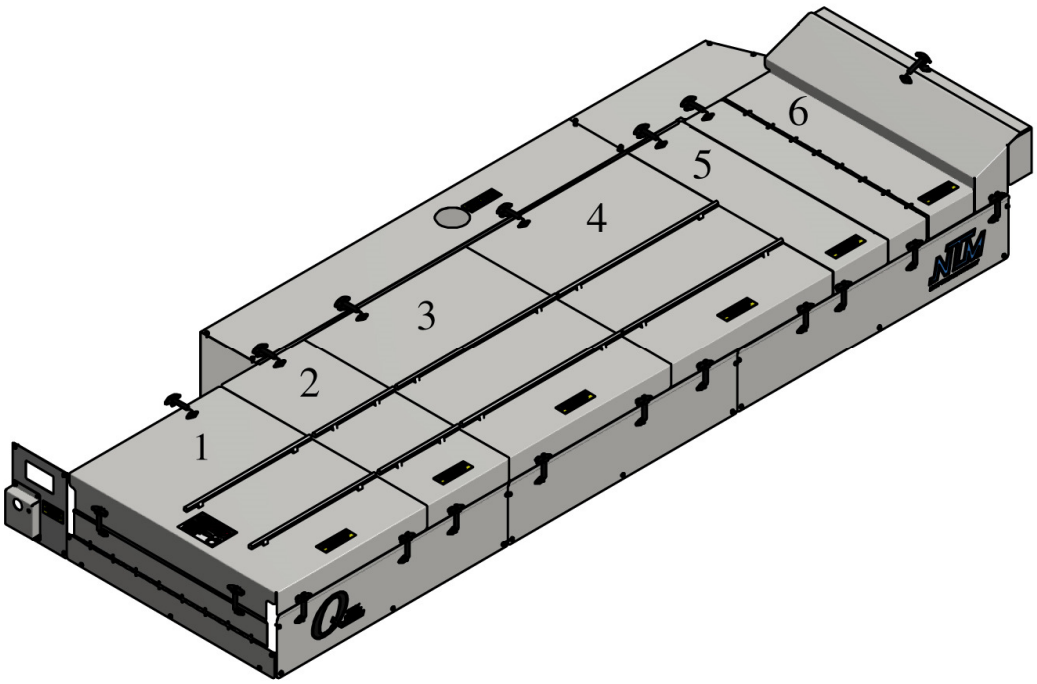


Figure 49: Remove Top Covers

2. Using a ½" wrench, remove the bolts holding the right and left Tooling Rails to the Fixed Rail Mounts (Figure 50). 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 50: Removing Tooling Rails

3. Refer to the SSQ Slide Block chart (Figure 51) 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 52).

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.

SSQ SLIDE BLOCK CHART	
PROFILE	**RIGHT SIDE FIXED MOUNT RAIL #1**
BP, FF100, SS100, SS150, SS275, FWQ100, FWQ150	INBOARD
FF150, SS200, SS275, SS450, SS275, SS275, SS550, SS675, TRQ250	OUTBOARD

Figure 51: Block Chart

CHAPTER 16

PROFILE CHANGEOVER PROCEDURE

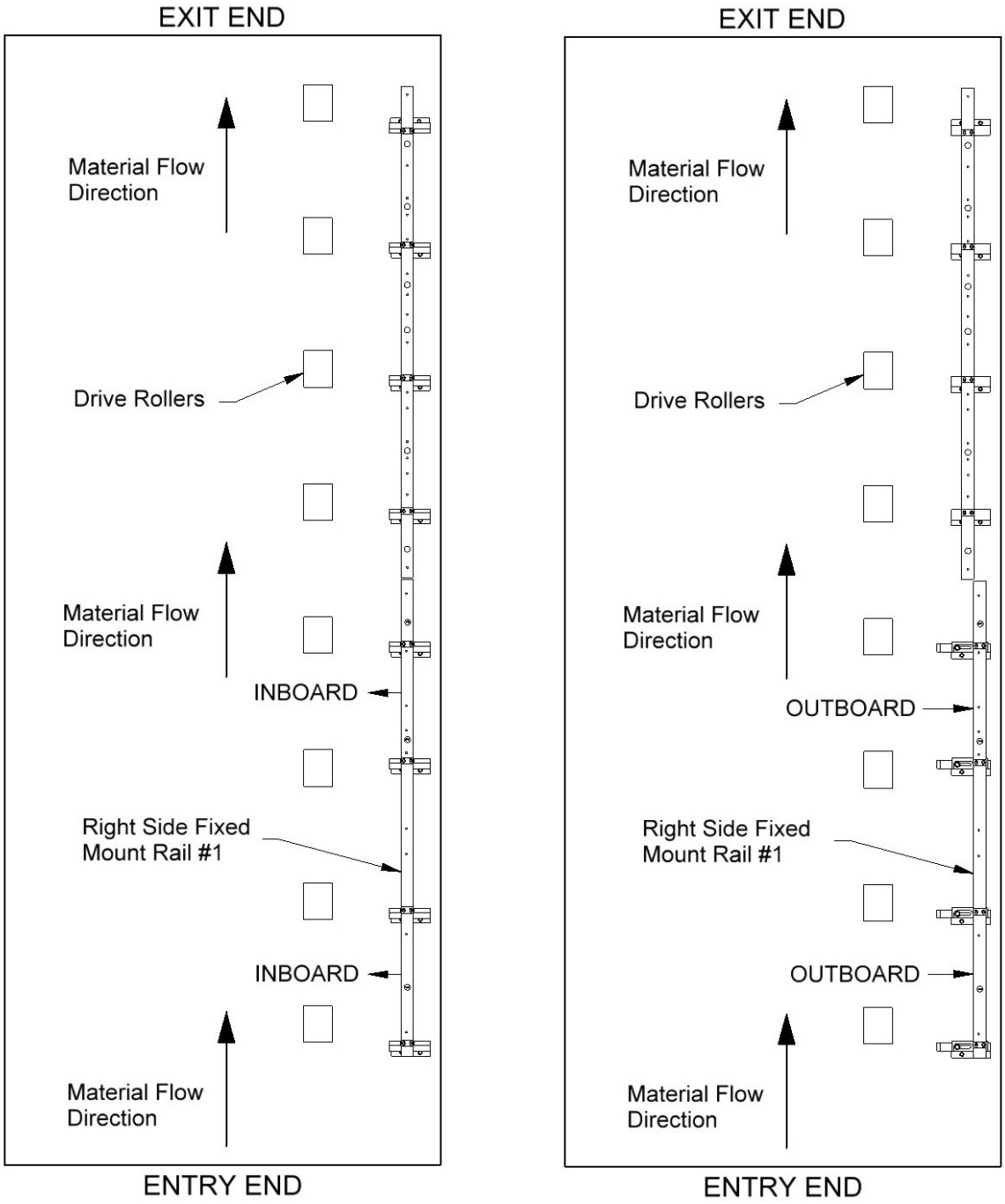


Figure 52: Inboard/Outboard Positions

4. Loosen bolt “C” on the first 4 Slide Block assemblies (Figure 53 or Figure 54).

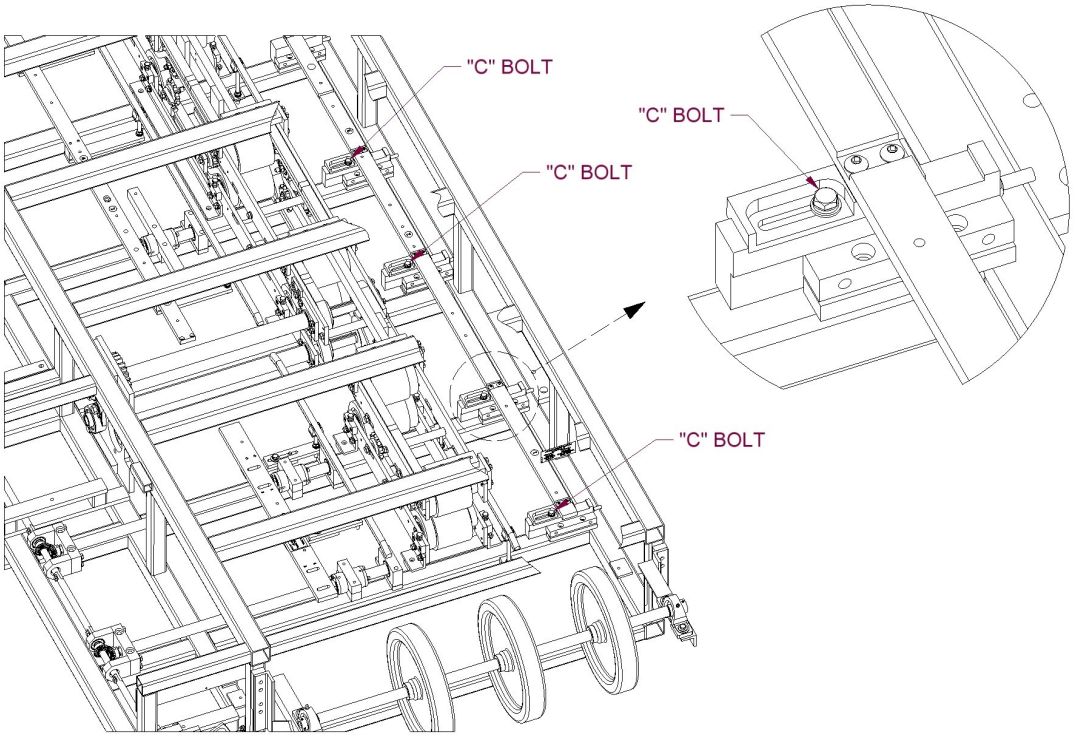


Figure 53: April 2009 and later

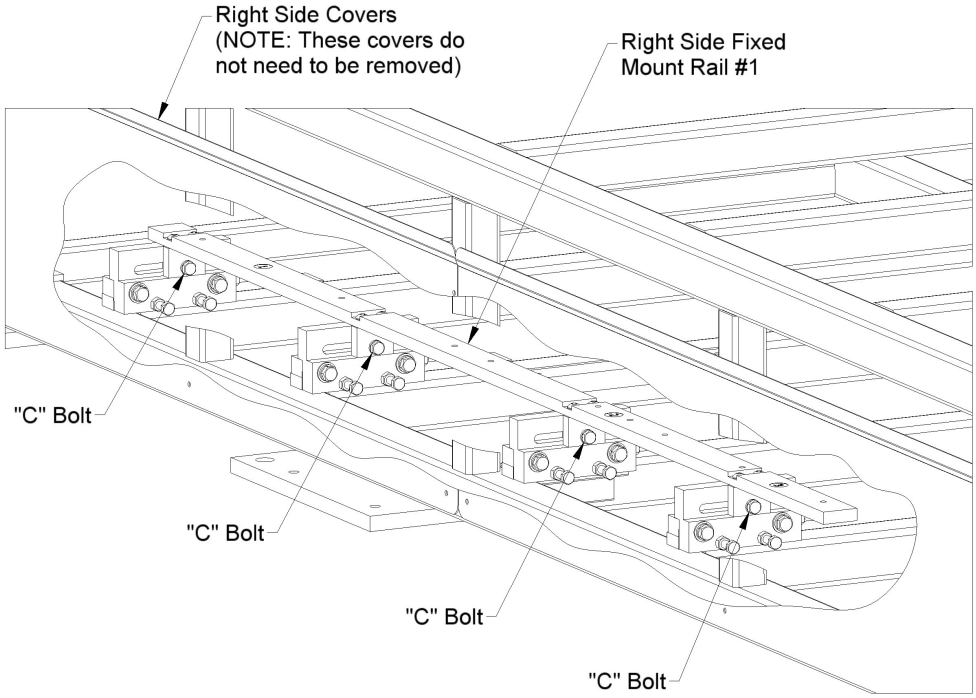


Figure 54: Machines made before April 2009

5. Once all 4 bolts are loose, slide the Right Side Fixed Mount Rail #1 to the correct position (Figure 55), either “inboard” or “outboard". Make sure that it is fully in position and then tighten the “C” bolts (Figure 53 or Figure 54).

Figure 55: Right Side Fixed Mount Rail

6. Locate the profile in the chart below to see what position the Left Side Fixed Mount Rail #1 needs to be in.

PROFILE	LEFT SIDE FIXED MOUNT RAIL #1 POSITION
SS200/210A, SS275, SS550, SS675, TRQ250	POSITION "A", OUTBOARD
SS100, SS150, SS450, FF100, FF150, FWQ100, FWQ150, BP	POSITION "B", INBOARD

Figure 56: Profile Chart

Now look at the machine to see what position the Left Side Fixed Mount Rail #1 is currently in. The stamped letter closest to the mounting bolts "C" indicates the position (Figure 58). If it is in the correct position proceed to Step 7, otherwise, loosen the four mounting bolts "C", slide the Left Side Fixed Mount Rail #1 as far as it will go in either the "inboard" or "outboard" direction, and re-tighten the bolts.

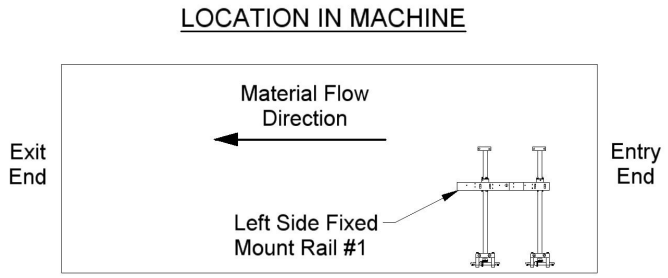


Figure 57: Left Side Fixed Mount Rail

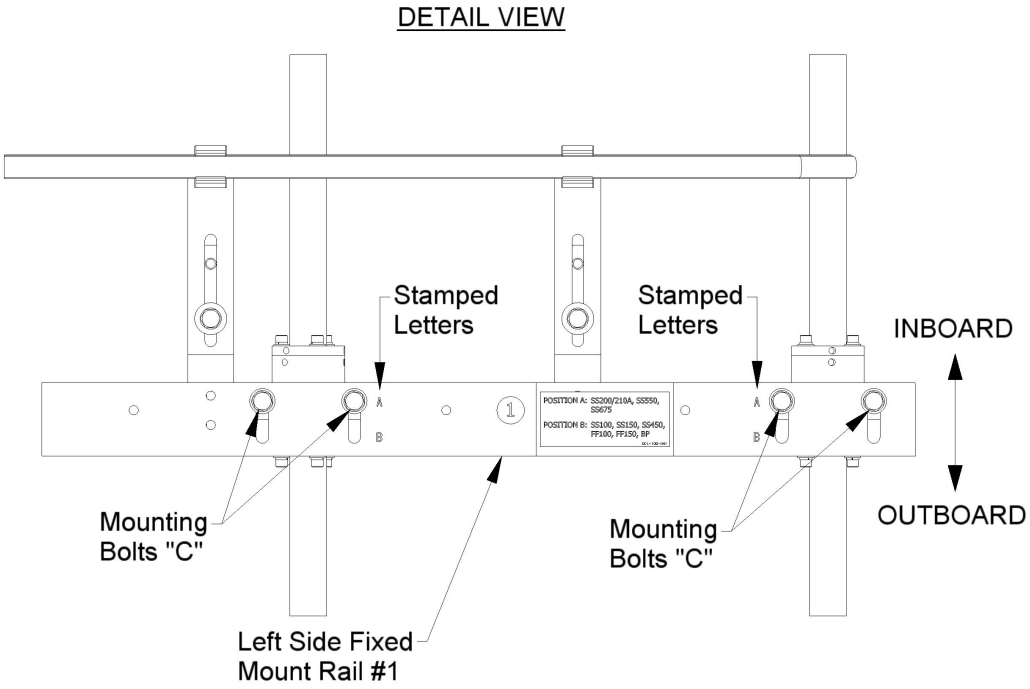


Figure 58: Shown in the "A" position

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 59). 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 60) contact the face of the mounting rail. Hold it in place while tightening the mounting bolts.

CHAPTER 16

PROFILE CHANGEOVER PROCEDURE

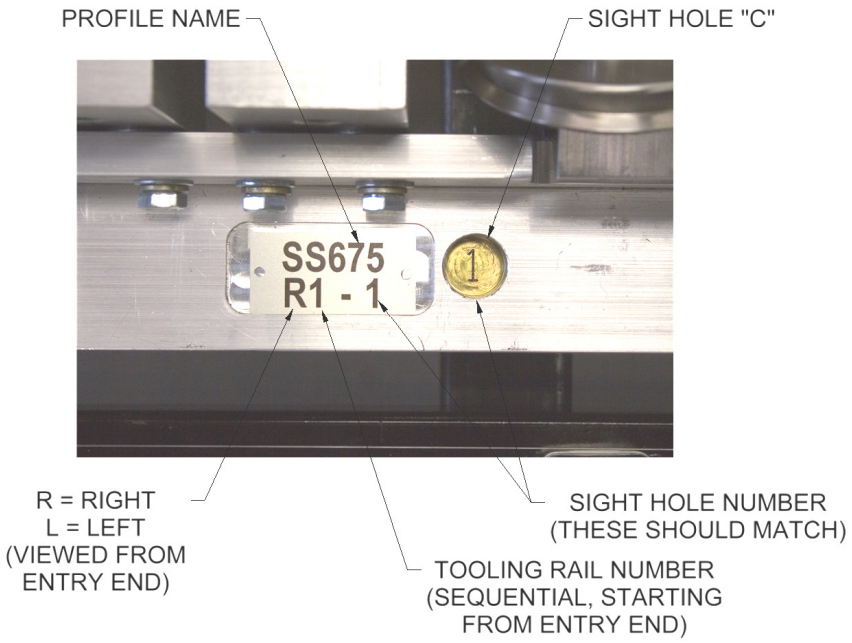


Figure 59: Tooling Rail Identification

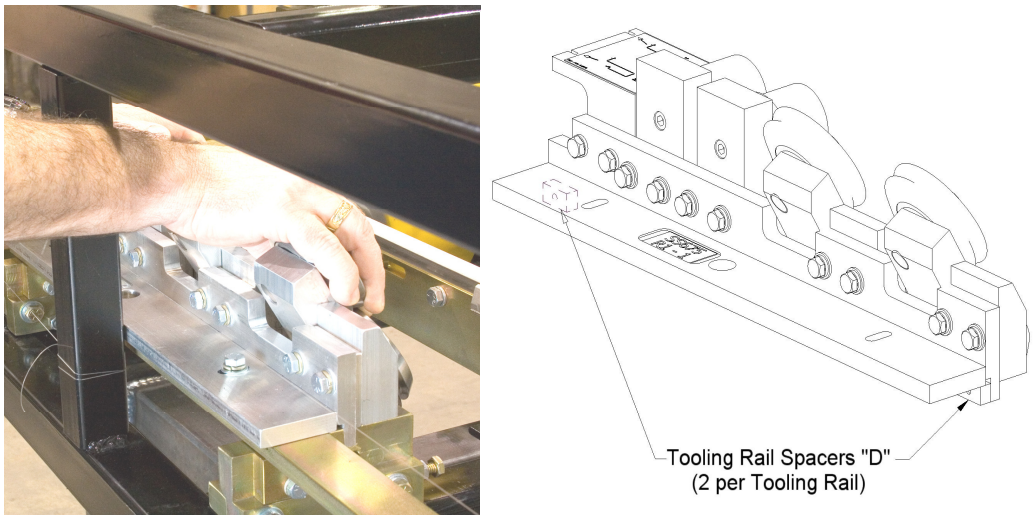


Figure 60: R1 Tooling Rail Spacers

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 61). 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".

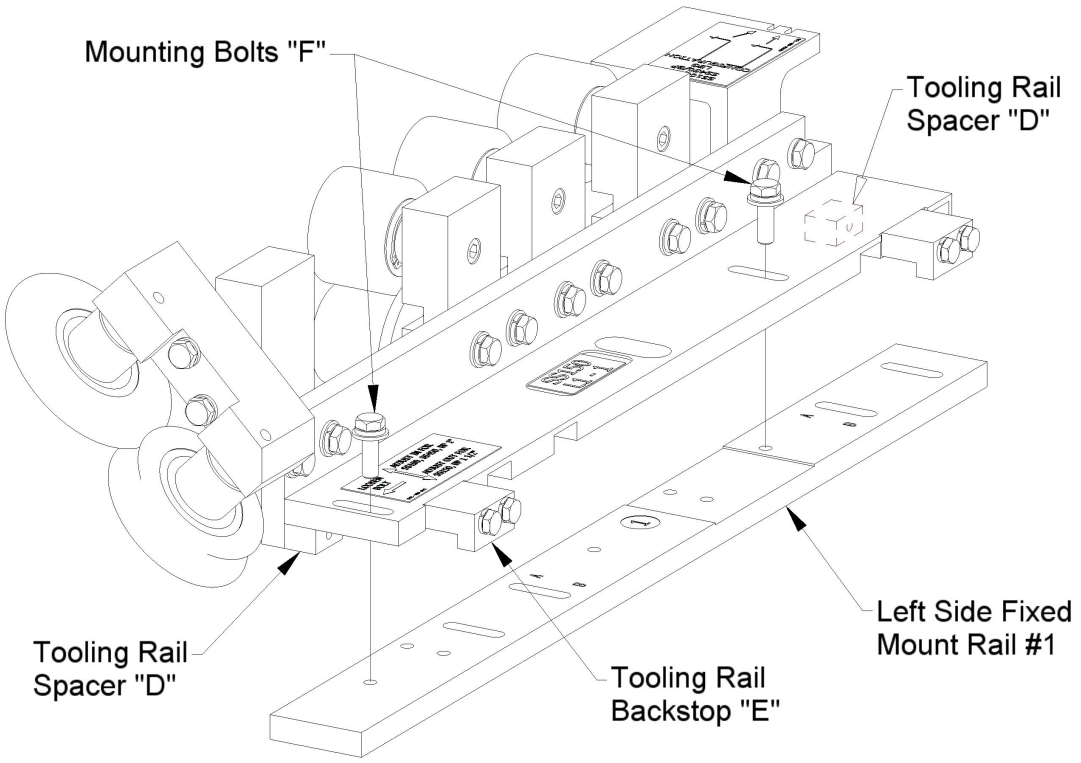


Figure 61: L1-1 Special Instructions

9. To align the Right Entry Guide, loosen the Lock Down Handle on the Right Entry Guide (Figure 33). 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 34)

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

11. Loosen the Lock Down Handle on the left entry guide.

12. 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.

13. 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.

14. Using the Tooling Rail Adjustment Handle (Figure 35), align the notch on the tooling rail marker plate to the alignment notch located in the Left Entry Guide. 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 36). Press the handle inward (Figure 37) to engage the width adjustment gear and turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

15. Load material onto the Expandable Arbor and align it to the correct position (Figure 10).

16. Load the reeled coil onto the machine using a fork lift or other rated lifting device.

17. Cut a 1" triangle of material off the 2 leading corners of the coil and feed it into the entry guides.

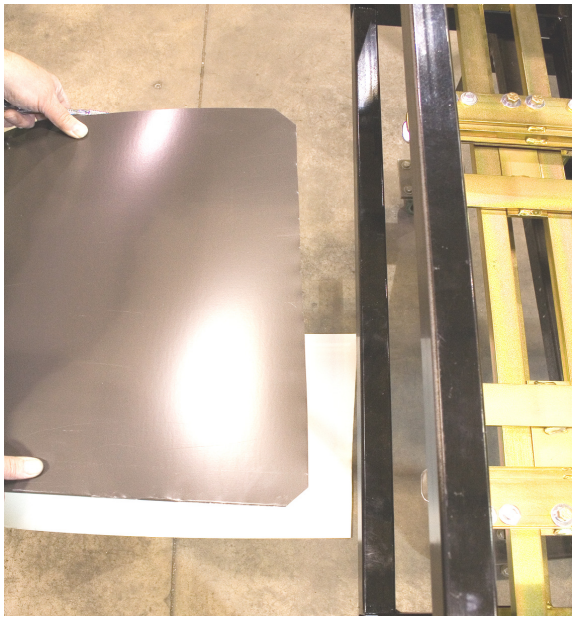


Figure 62: Preparing Coil for Loading

18. 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 22.

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.**

19. 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 marker or grease pencil to mark the 4" and 8" locations on the panel. There will now be 3 equal spaces. (Figure 63)

CHAPTER 16

PROFILE CHANGEOVER PROCEDURE

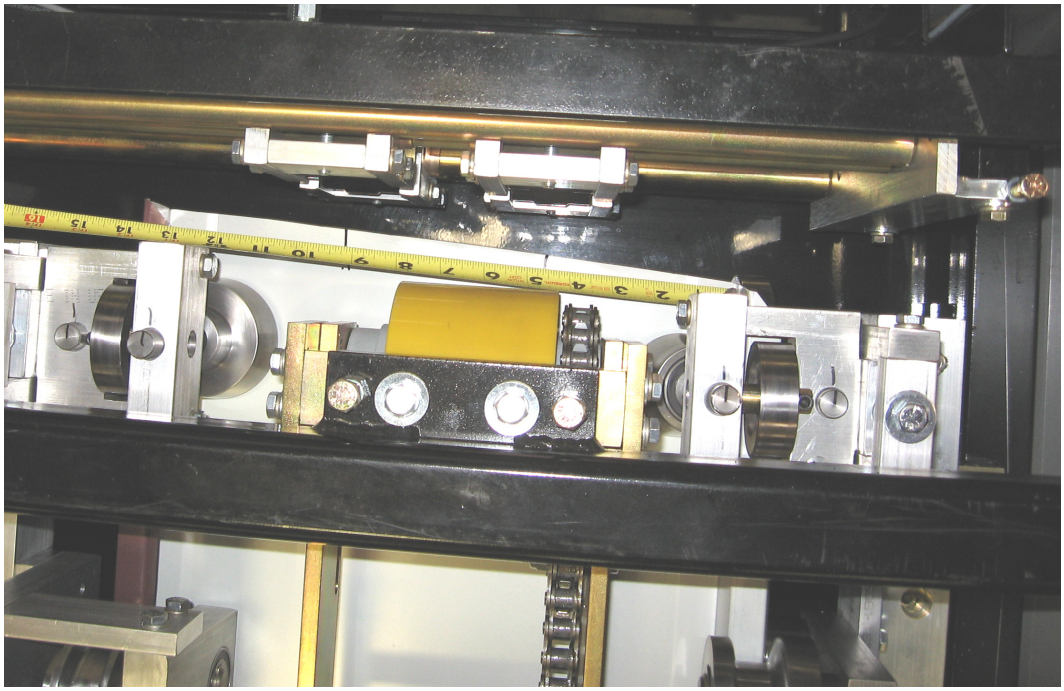


Figure 63: Spacing Bead Rollers

20. Loosen the Slide Lock Bolts “D” on the top and bottom bead assemblies

(

Figure 31) 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 (

21. Figure 31). 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.

22. Using a 7/16” wrench, remove the Shear Cover and set aside.

CHAPTER 16

PROFILE CHANGEOVER PROCEDURE

Figure 64: Removing Shear Cover

23. 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 65). Store the shear dies with the profile just removed and set the bolts aside for use when installing the new shear dies.

CHAPTER 16

PROFILE CHANGEOVER PROCEDURE

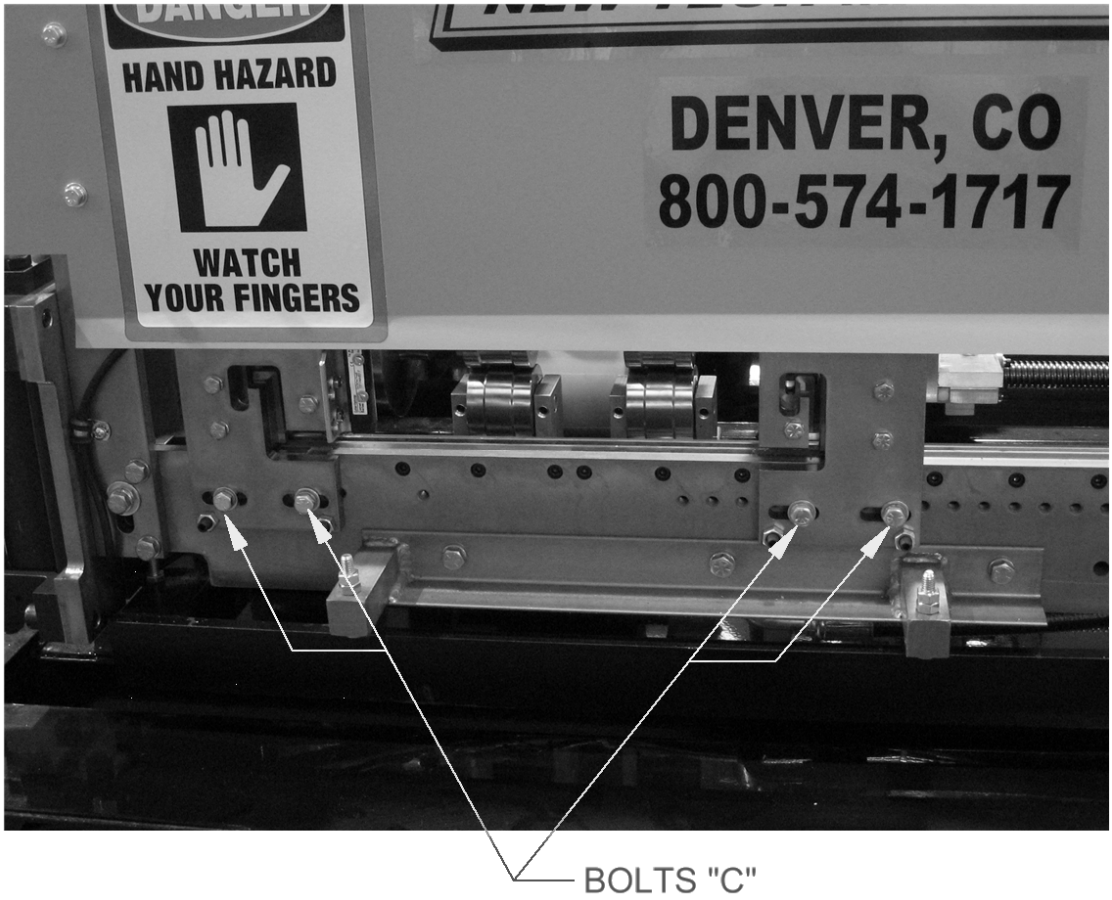


Figure 65: Remove Shear Bolts

24. Remove the two "C" bolts from the slotted holes on the entry male and female shear die assemblies as described previously.

25. If changing to or from an SSQ275, SSQ550 or SSQ675 profile, the #1 shear blade will need to be changed.

PROFILE CHANGEOVER PROCEDURE

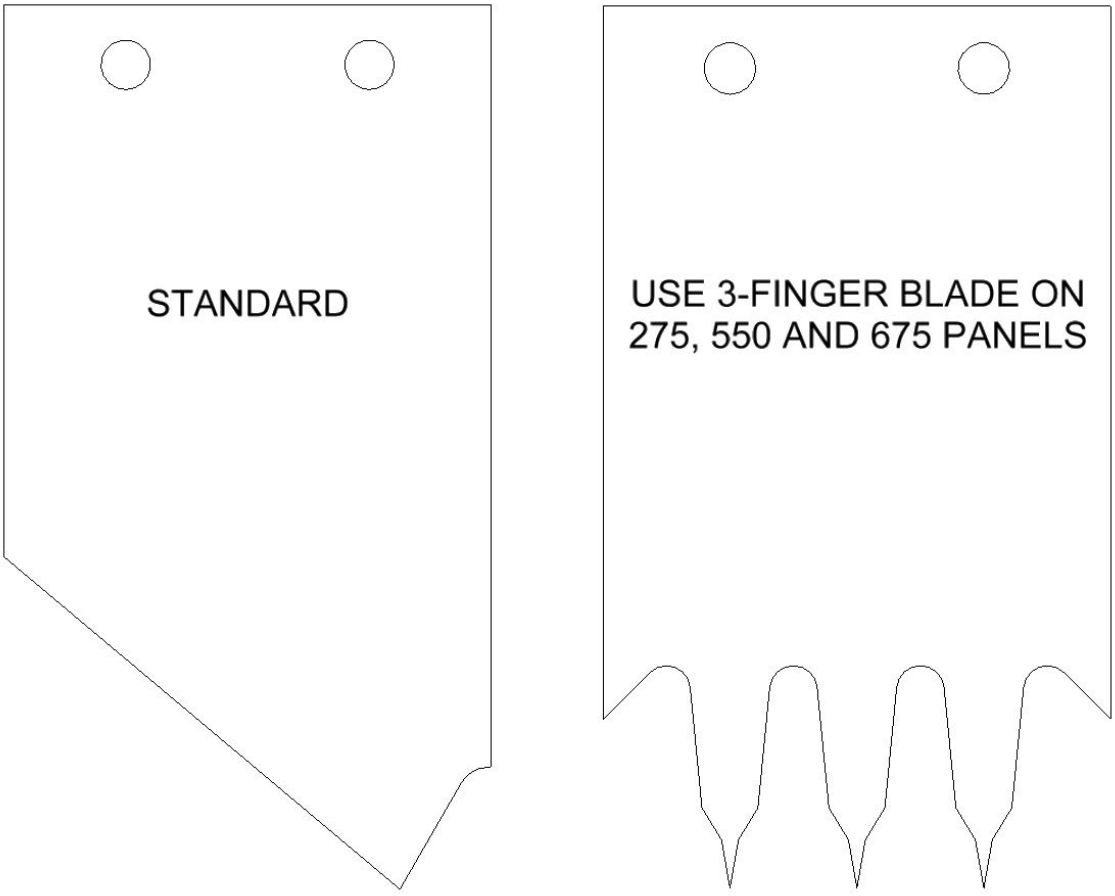


Figure 66: Shear Blade #1

26. Locate the shear dies that correspond to the profile installed. Separate the male and female entry and exit shear dies.

27. Set the Male Entry Die on top of the Bottom Die (Figure 20 - Detail A on page 34). 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.

28. Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.

29. Repeat steps 27 and 28 for the Female Dies.

30. 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.

31. Start the machine again and slowly jog the panel approximately 6" past the exit die and stop. Again, **TURN THE MACHINE OFF.**

32. 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 48) 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.***

33. Start the machine and press the shear down button to cut off the panel.

34. 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.

35. Reinstall covers.

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.

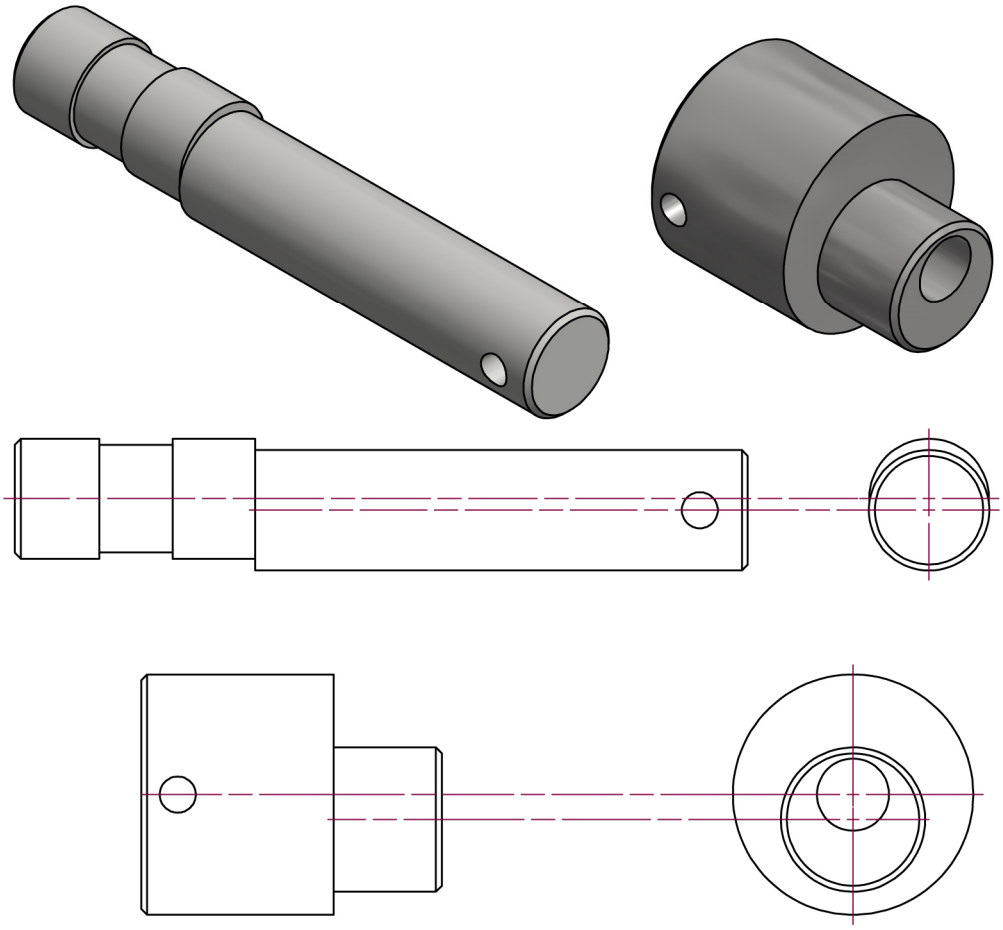


Figure 67: Eccentric Shafts

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 69 - Figure 71).
4. Re-tighten the set screw and/or bolt.

CHAPTER 17

PROFILE ADJUSTMENTS

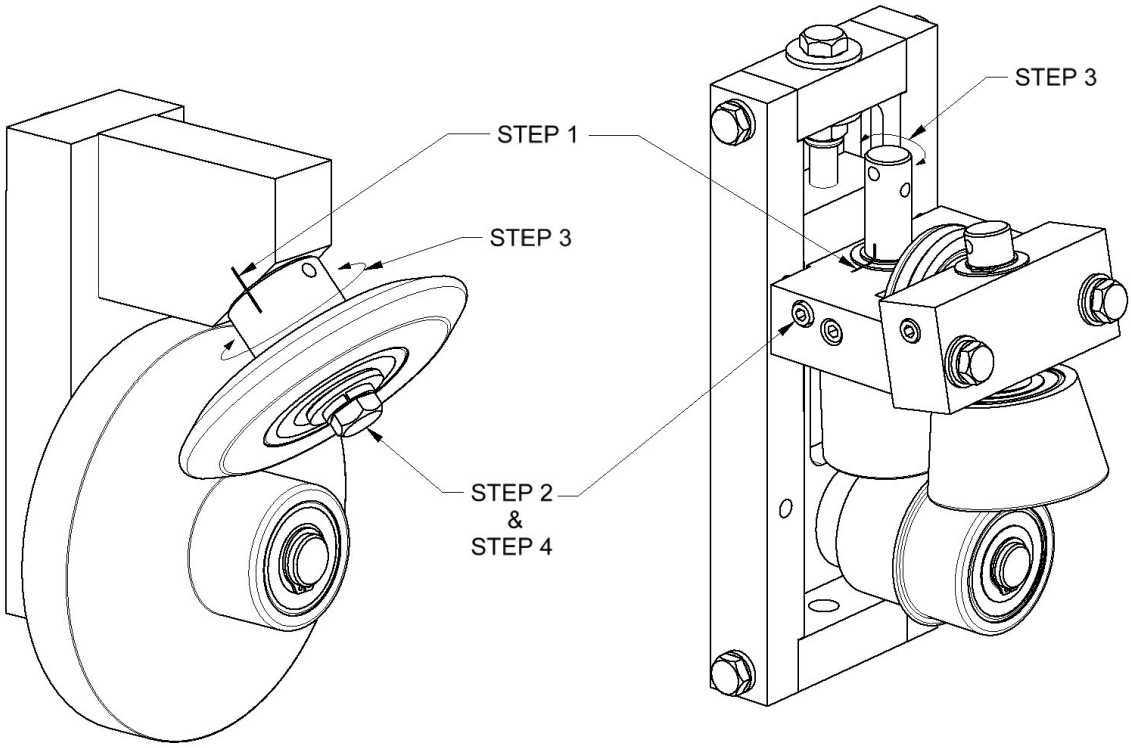


Figure 68: Adjusting Eccentric Shafts

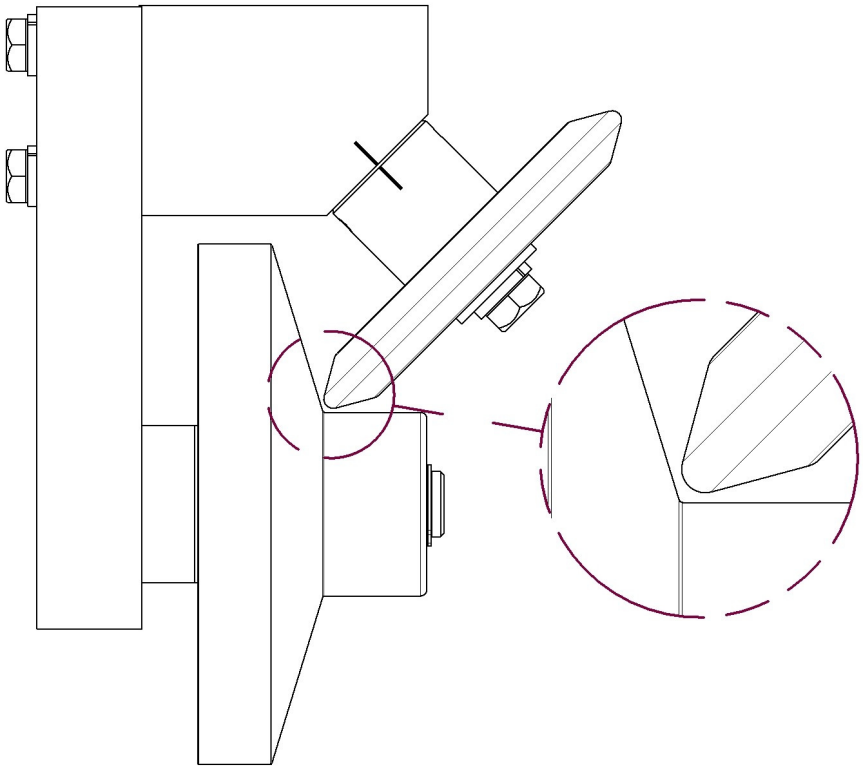


Figure 69: Eccentric Shaft Proper Adjustment

CHAPTER 17

PROFILE ADJUSTMENTS

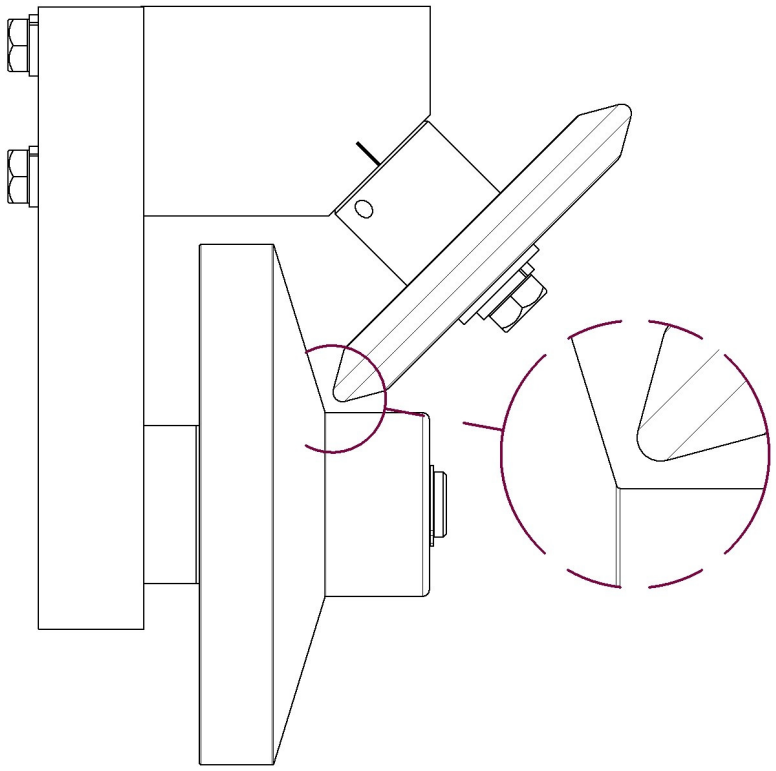


Figure 70: Eccentric Shaft Too Loose

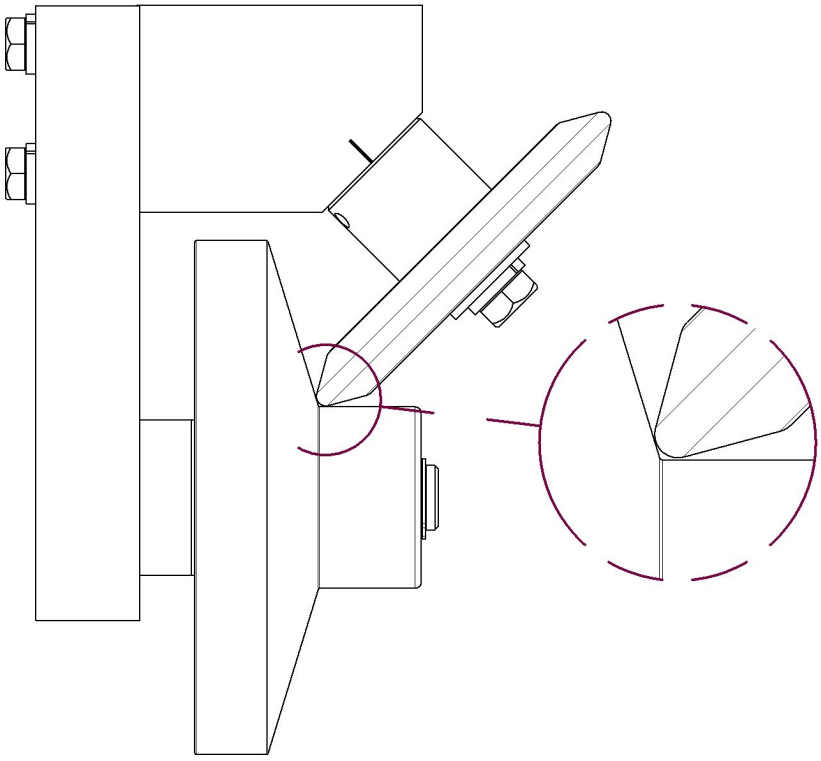


Figure 71: Eccentric Shaft Too Tight

CHAPTER 17

PROFILE ADJUSTMENTS

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.

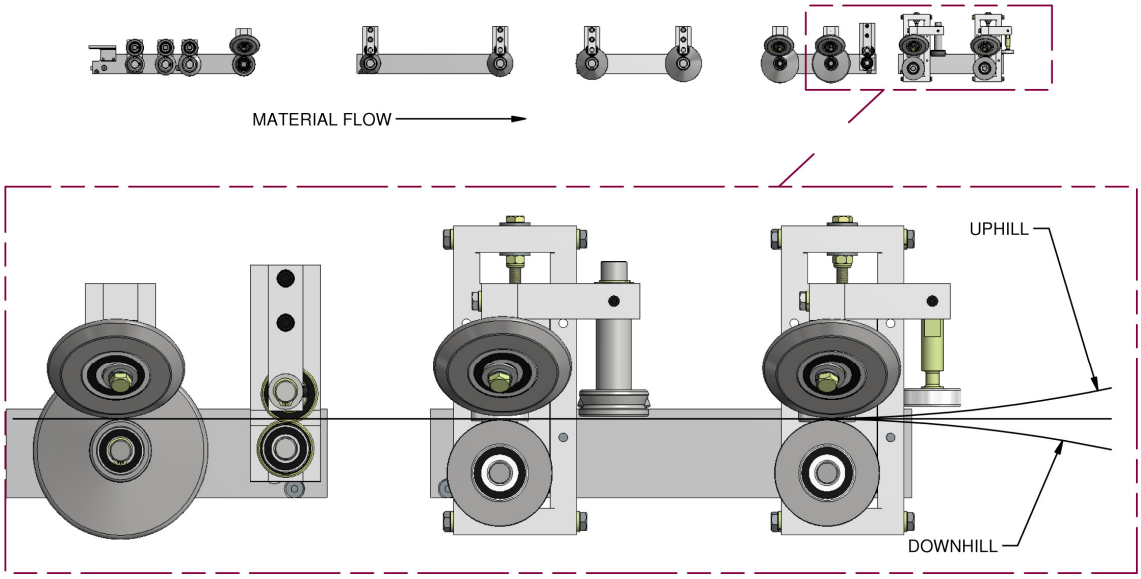


Figure 72: Camber Adjustment - Uphill/Downhill

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 73)

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 2nd to last station down by turning the top bolt counter-clockwise. If the panel is running uphill, adjust the 2nd 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 17

PROFILE ADJUSTMENTS

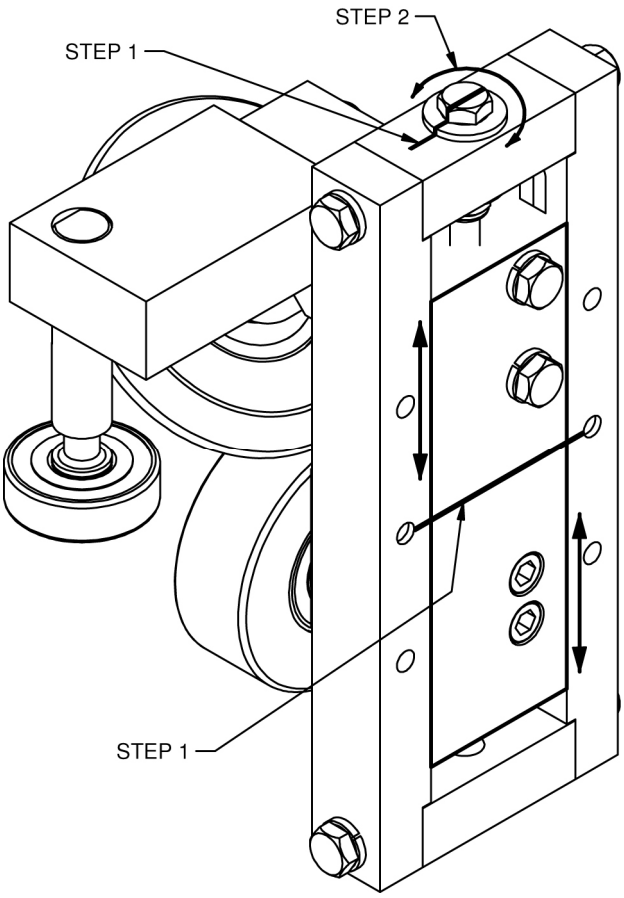


Figure 73: Camber Adjustment

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

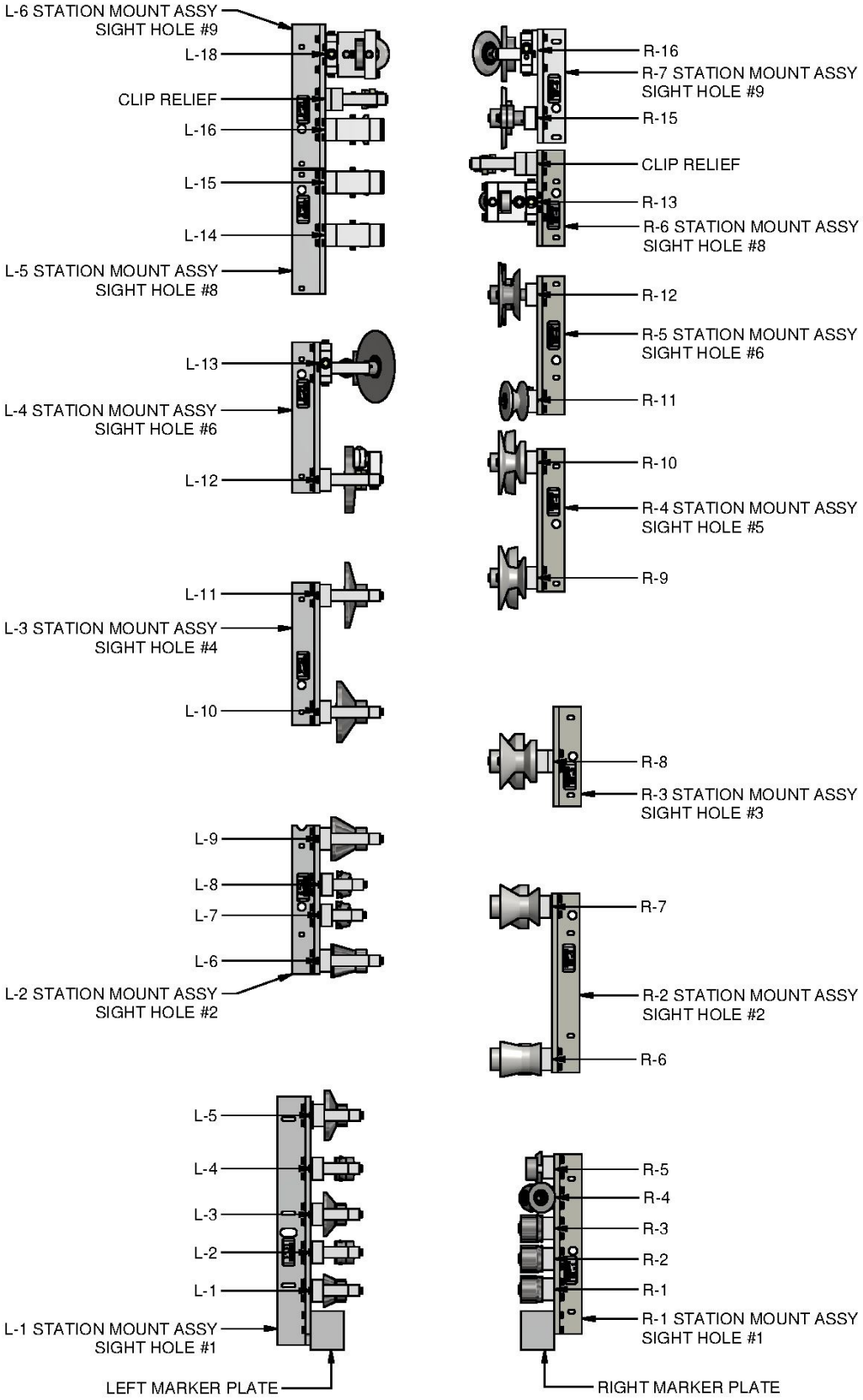


Figure 74: 275 Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

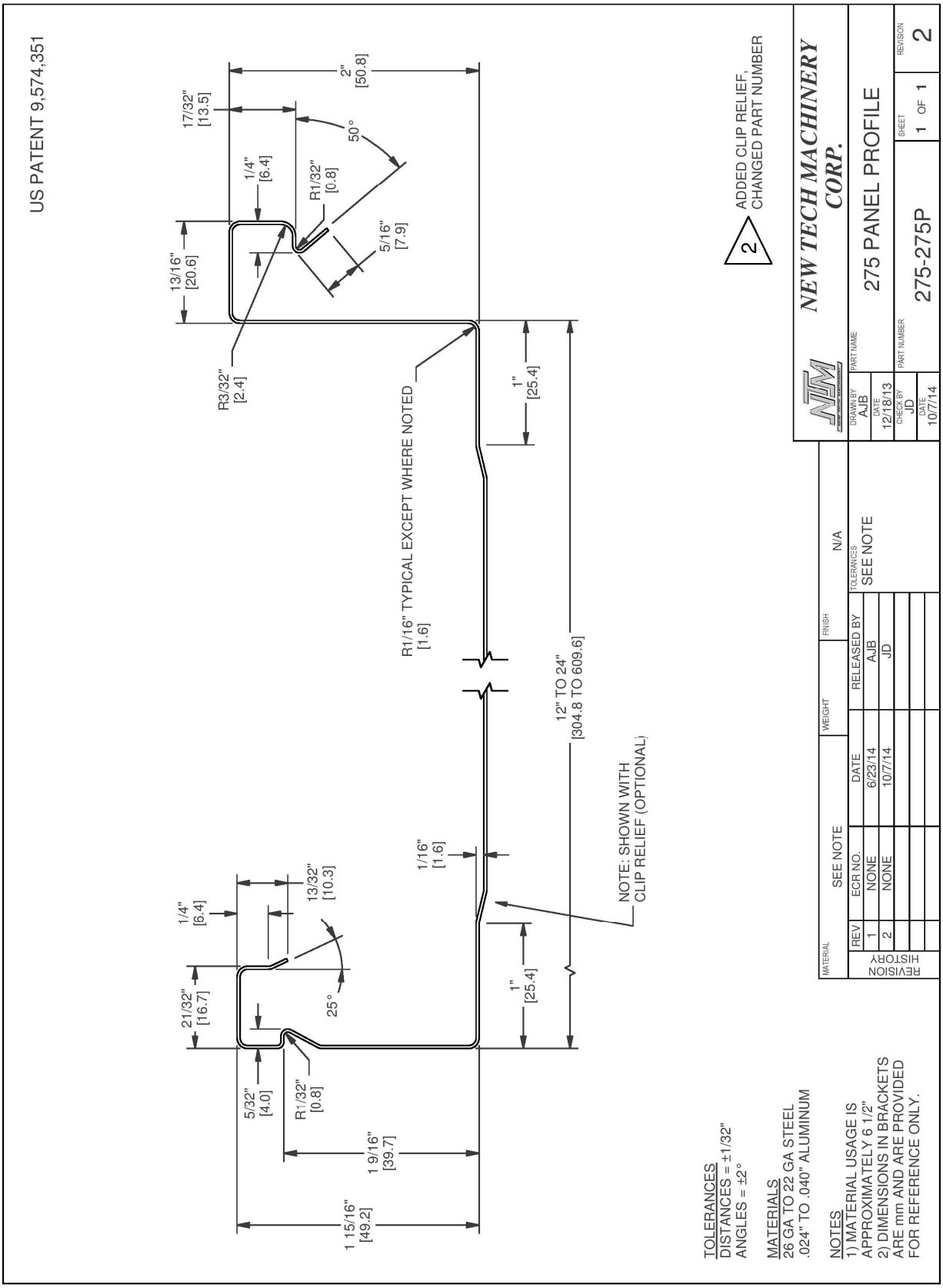

Figure 75: 275 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

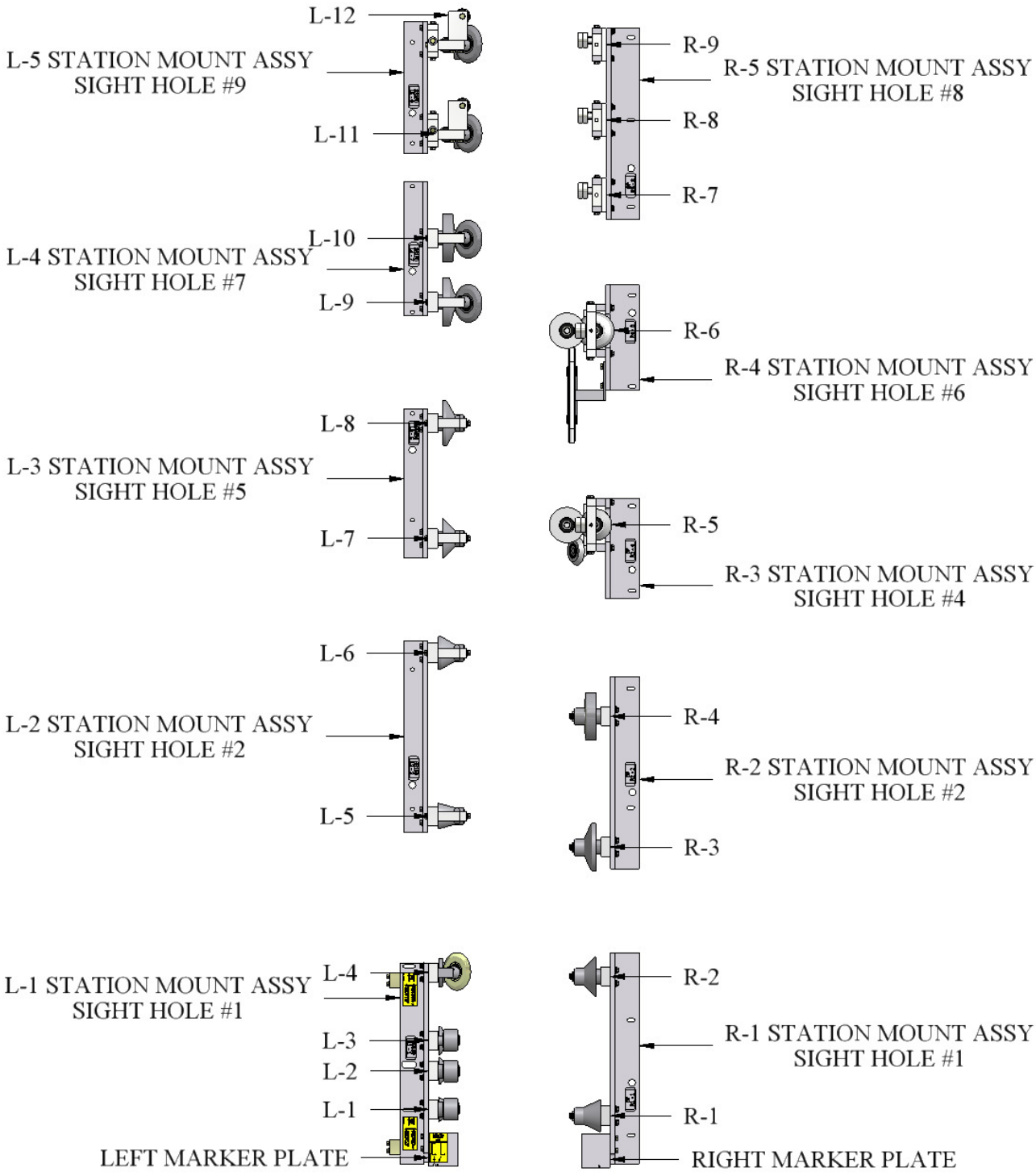

Figure 76: SSQBP Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

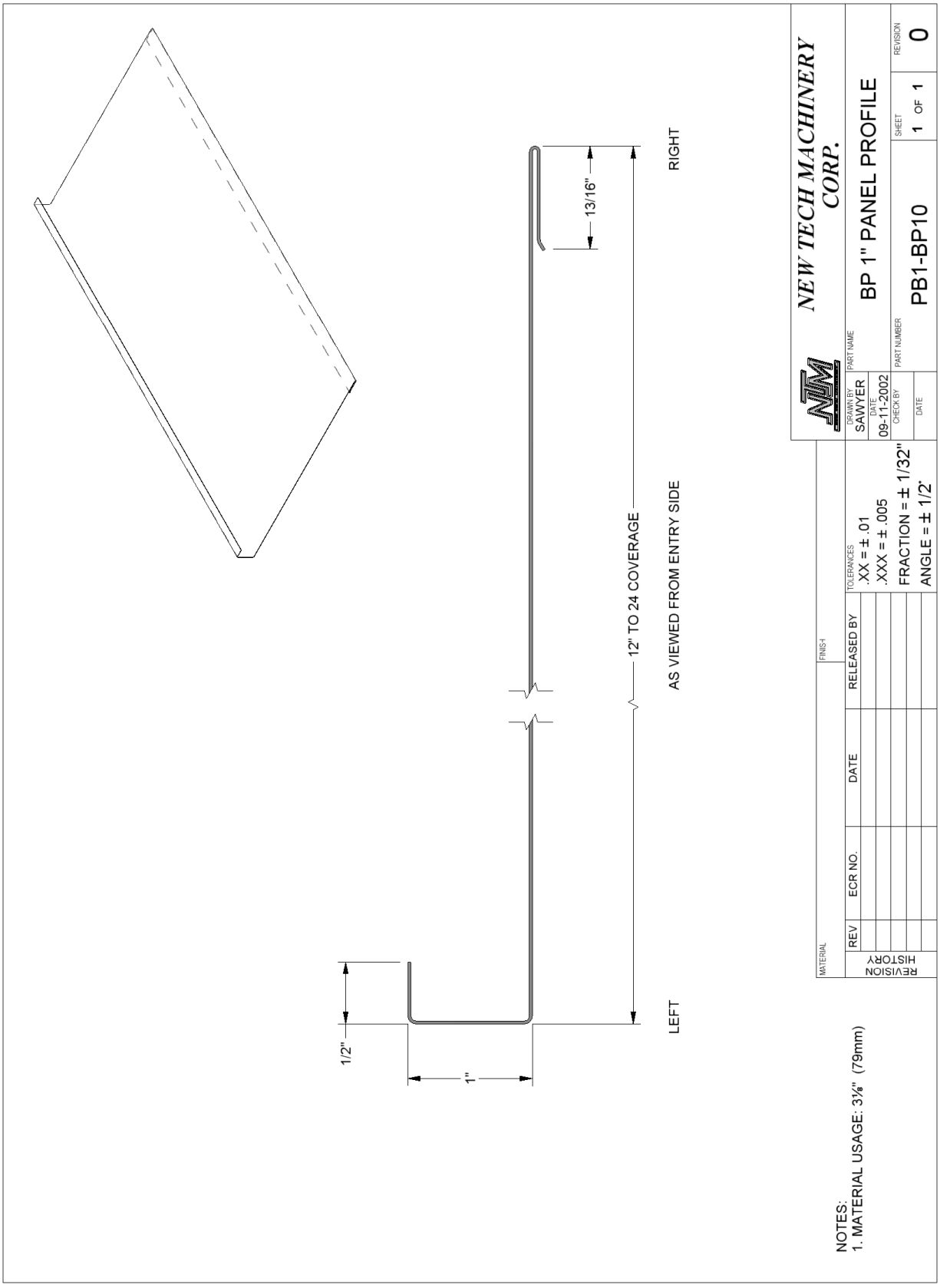

Figure 77: BP 1" Panel

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

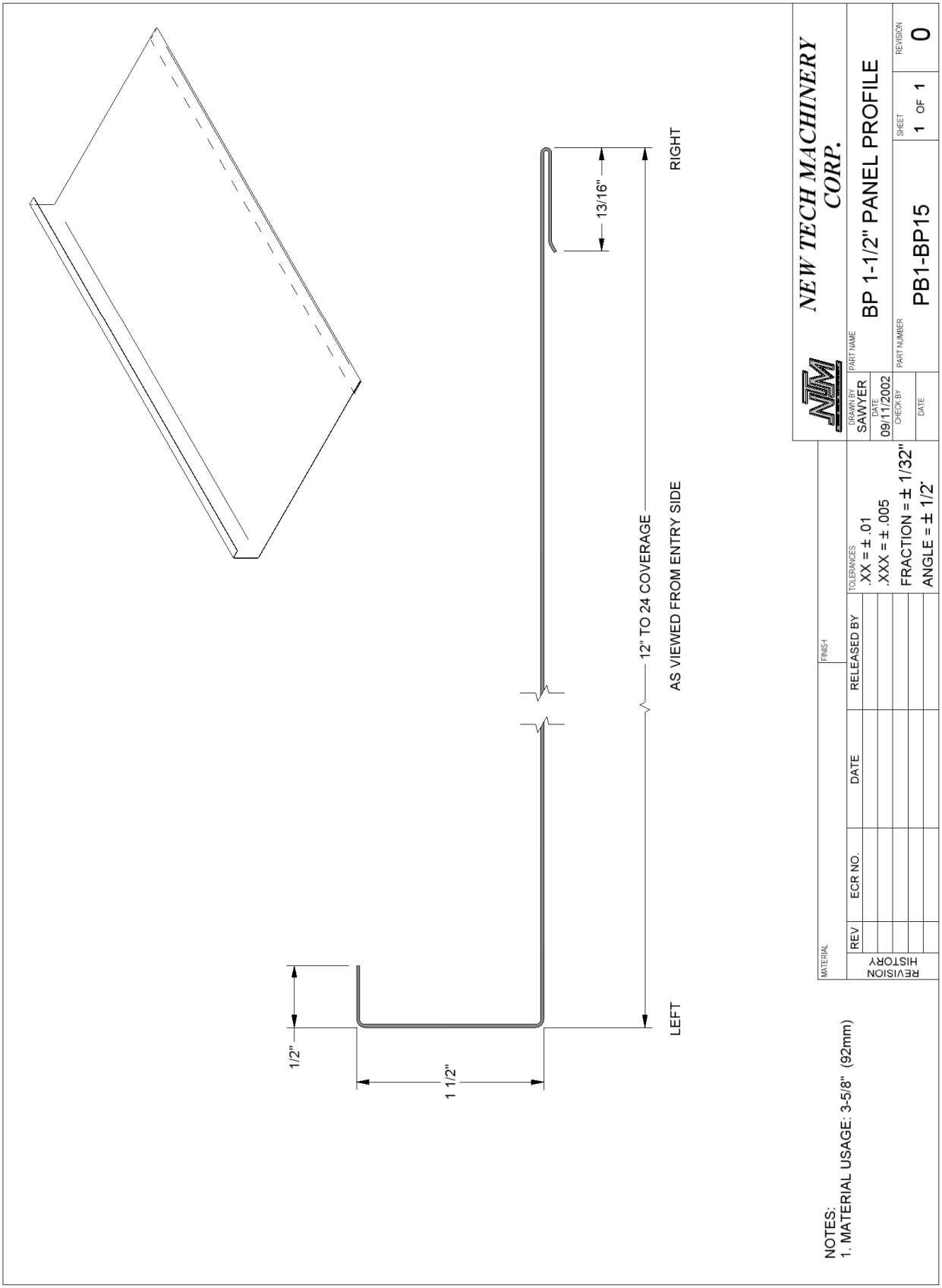

Figure 78: BP 1 1/2" Panel

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

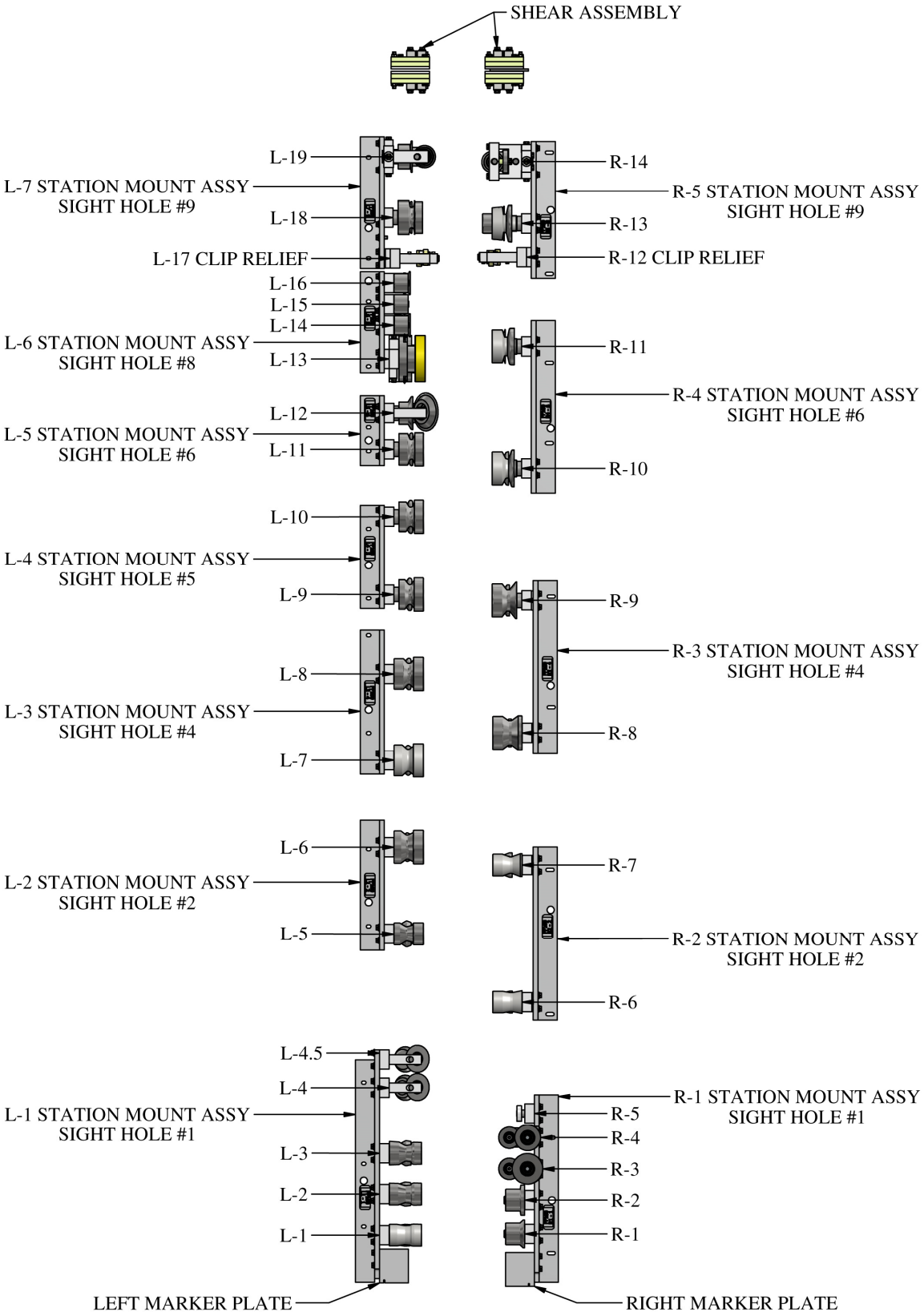

Figure 79: FFQ100 Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

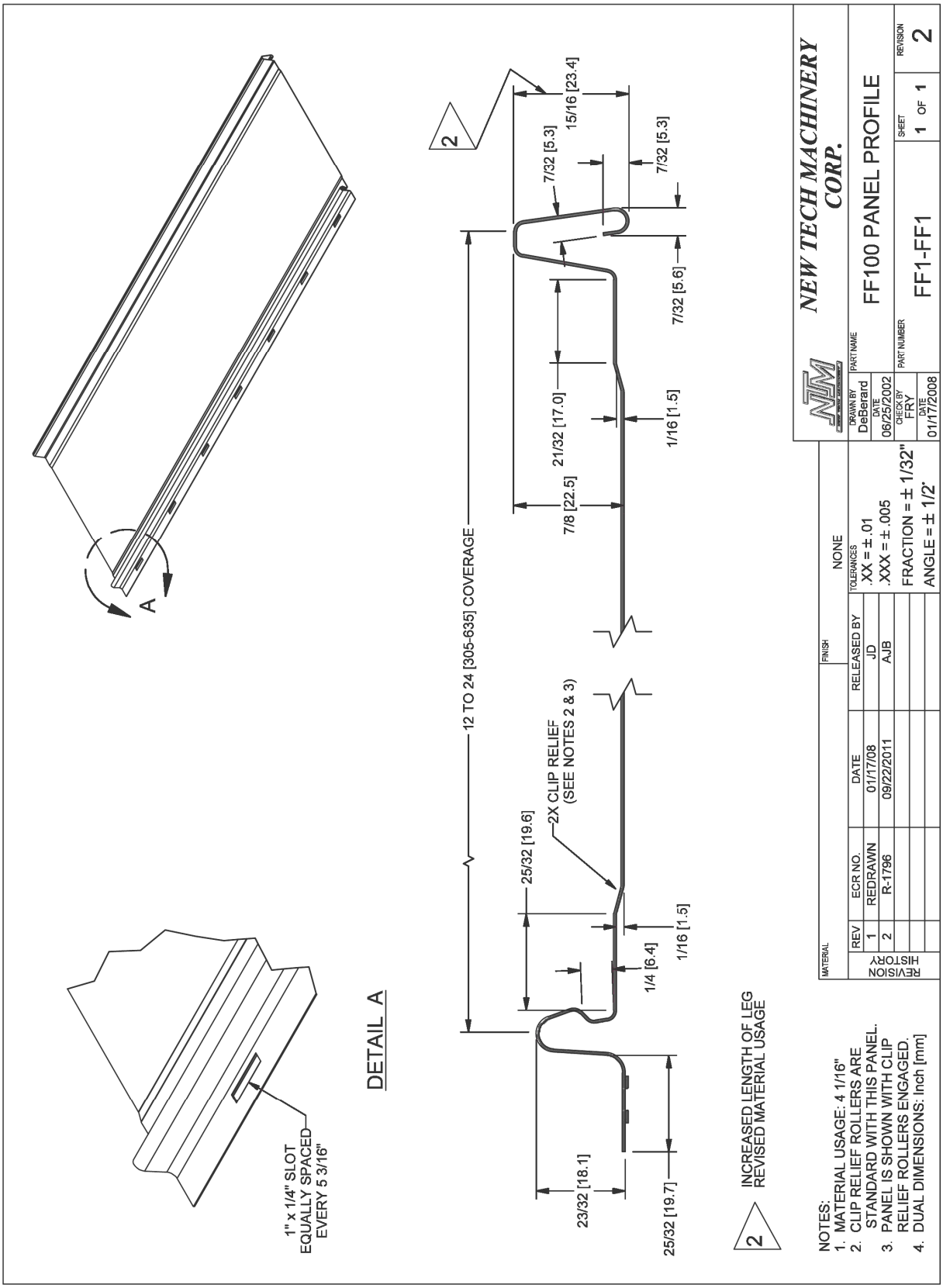

Figure 80: FF100 Panel

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

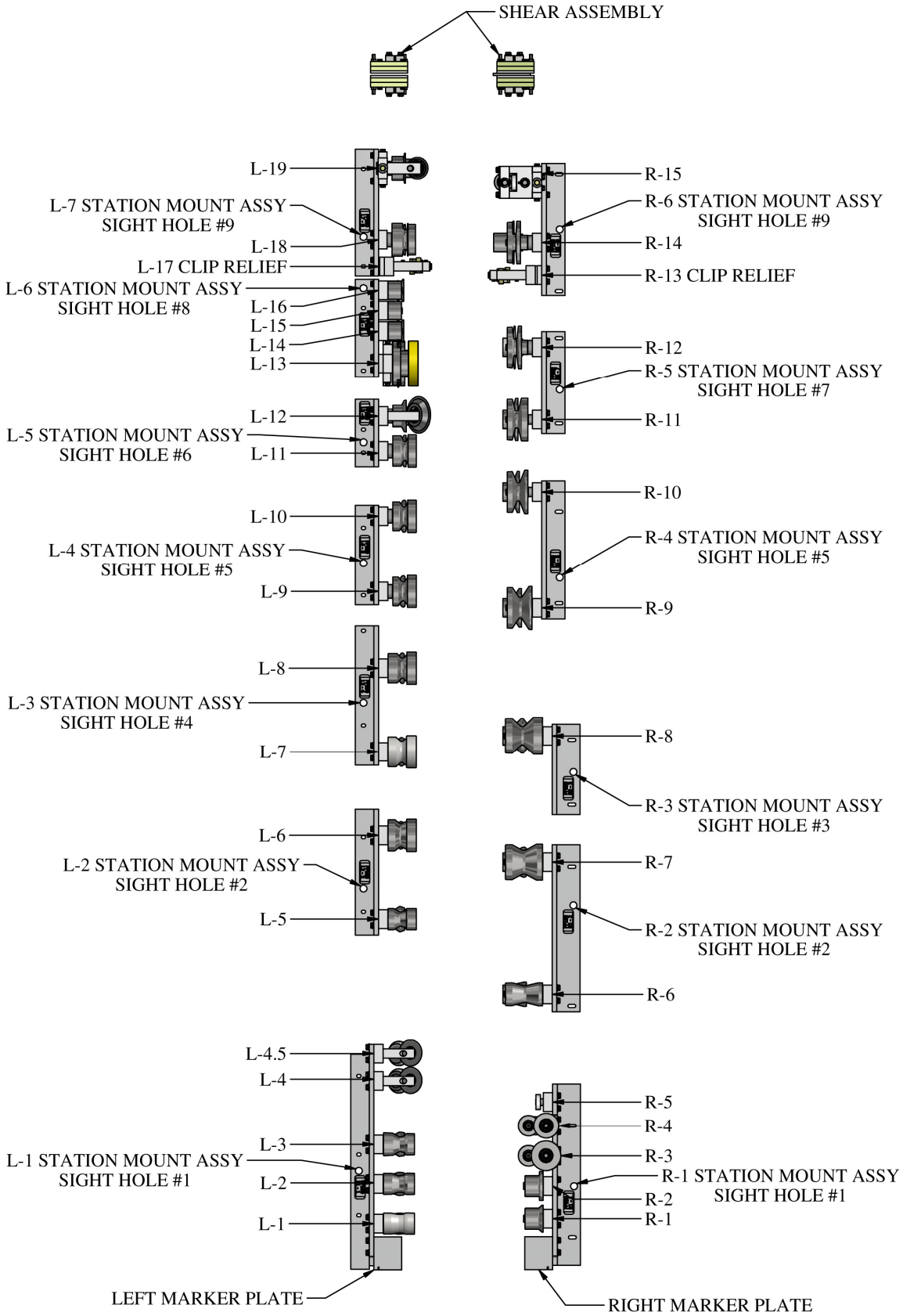

Figure 81: FFQ150 Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

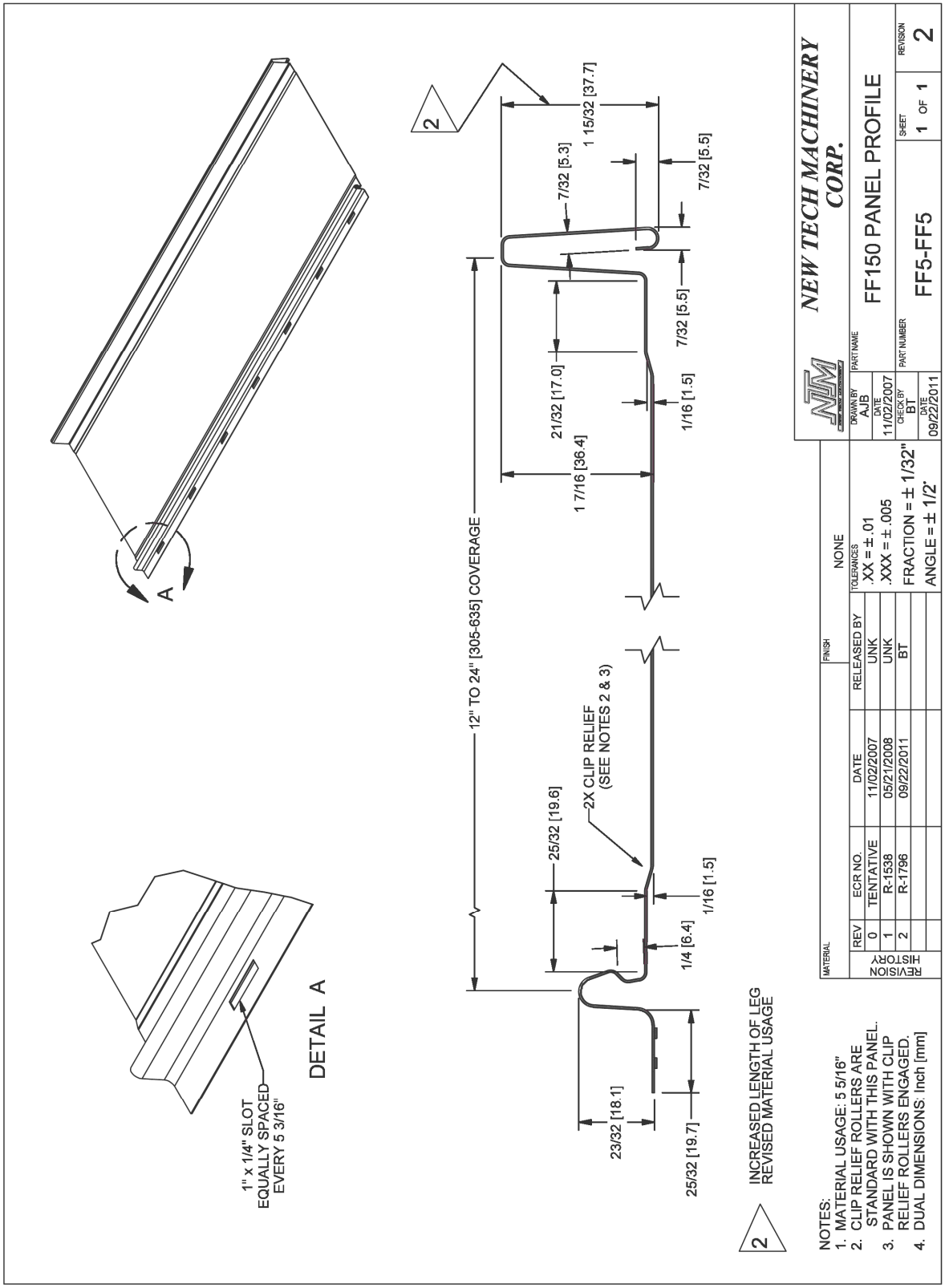

Figure 82: FF150 Panel Profile

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

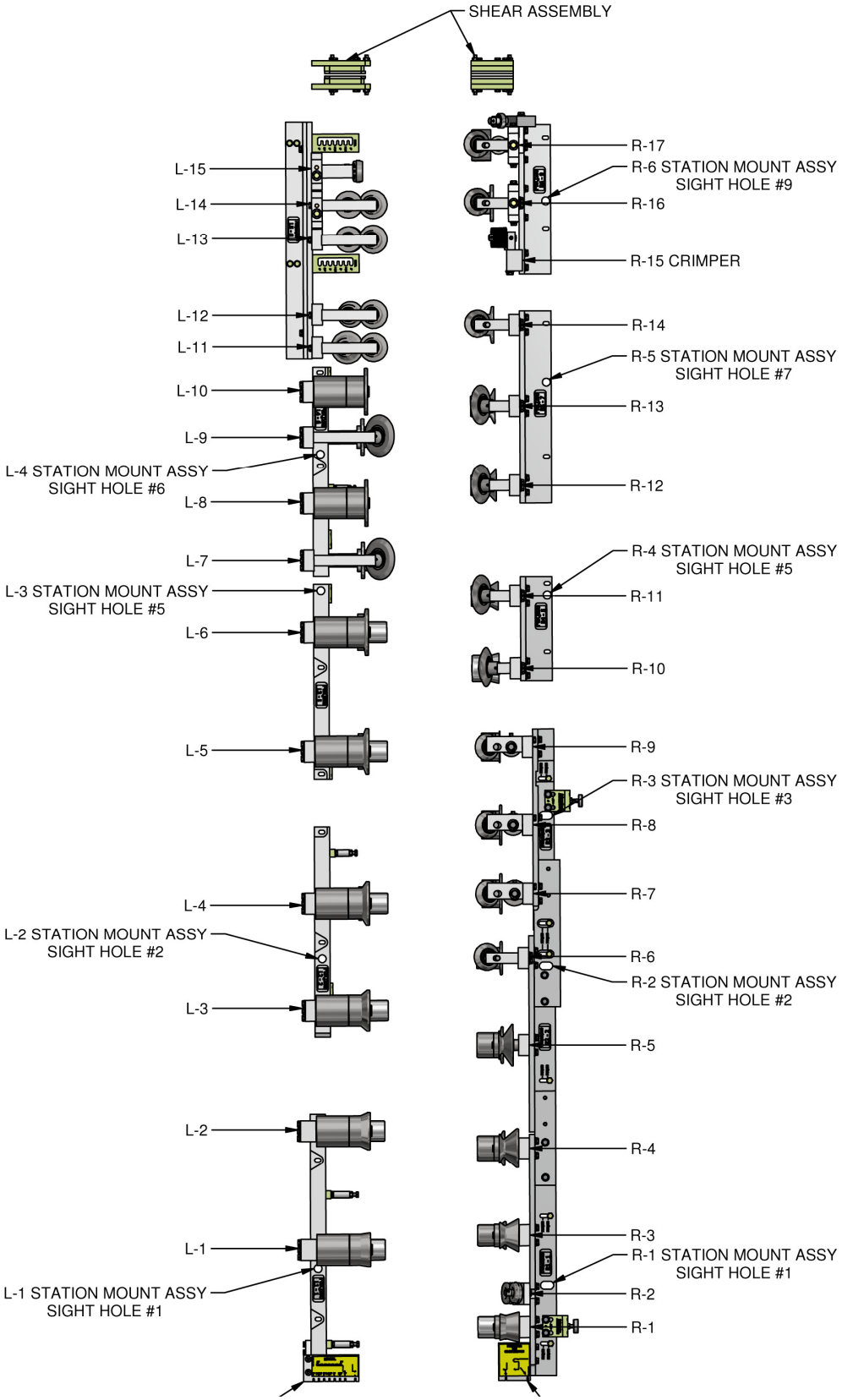

Figure 83: FWQ100 Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

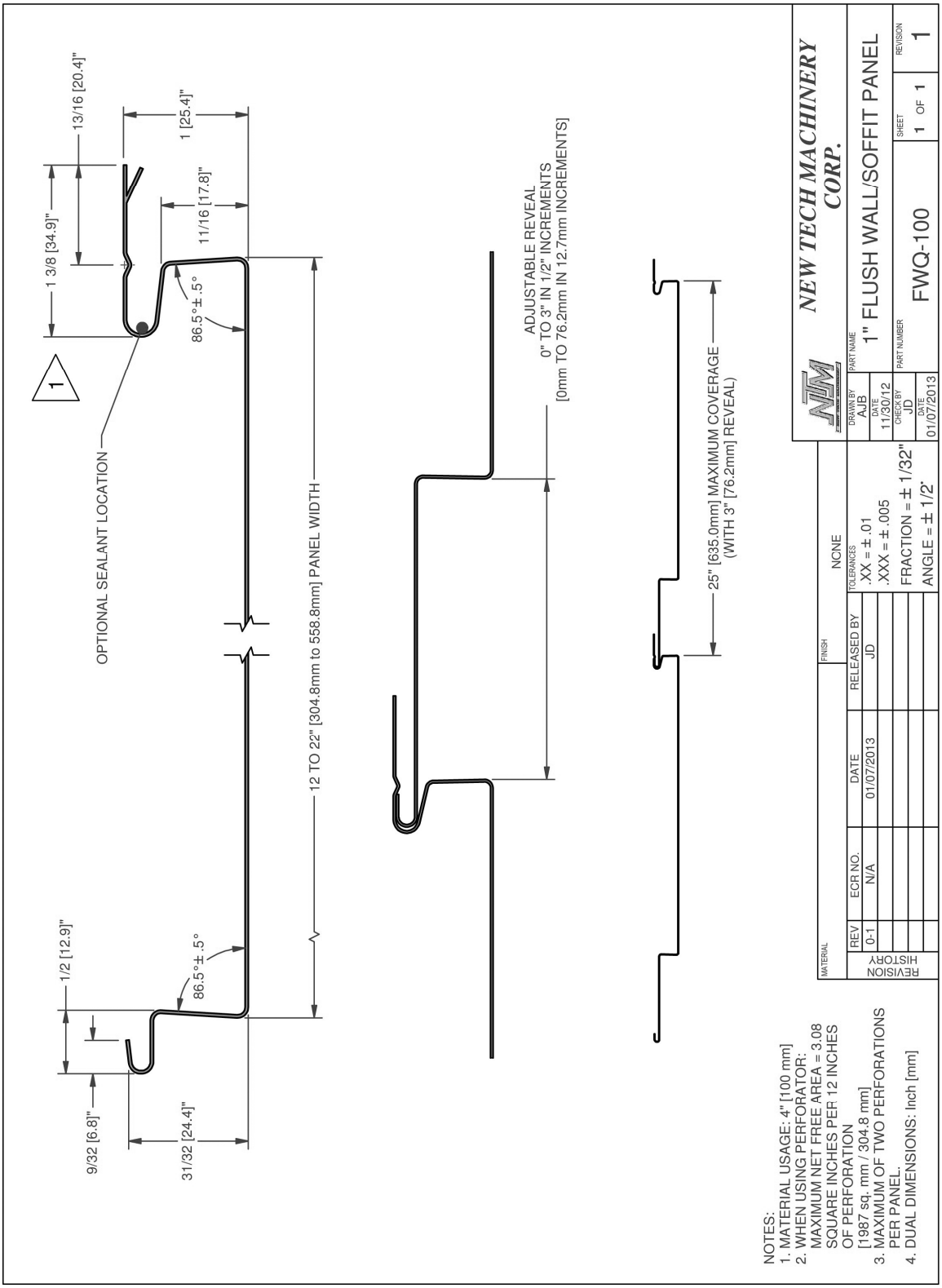

Figure 84: FWQ100 Panel Profile

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

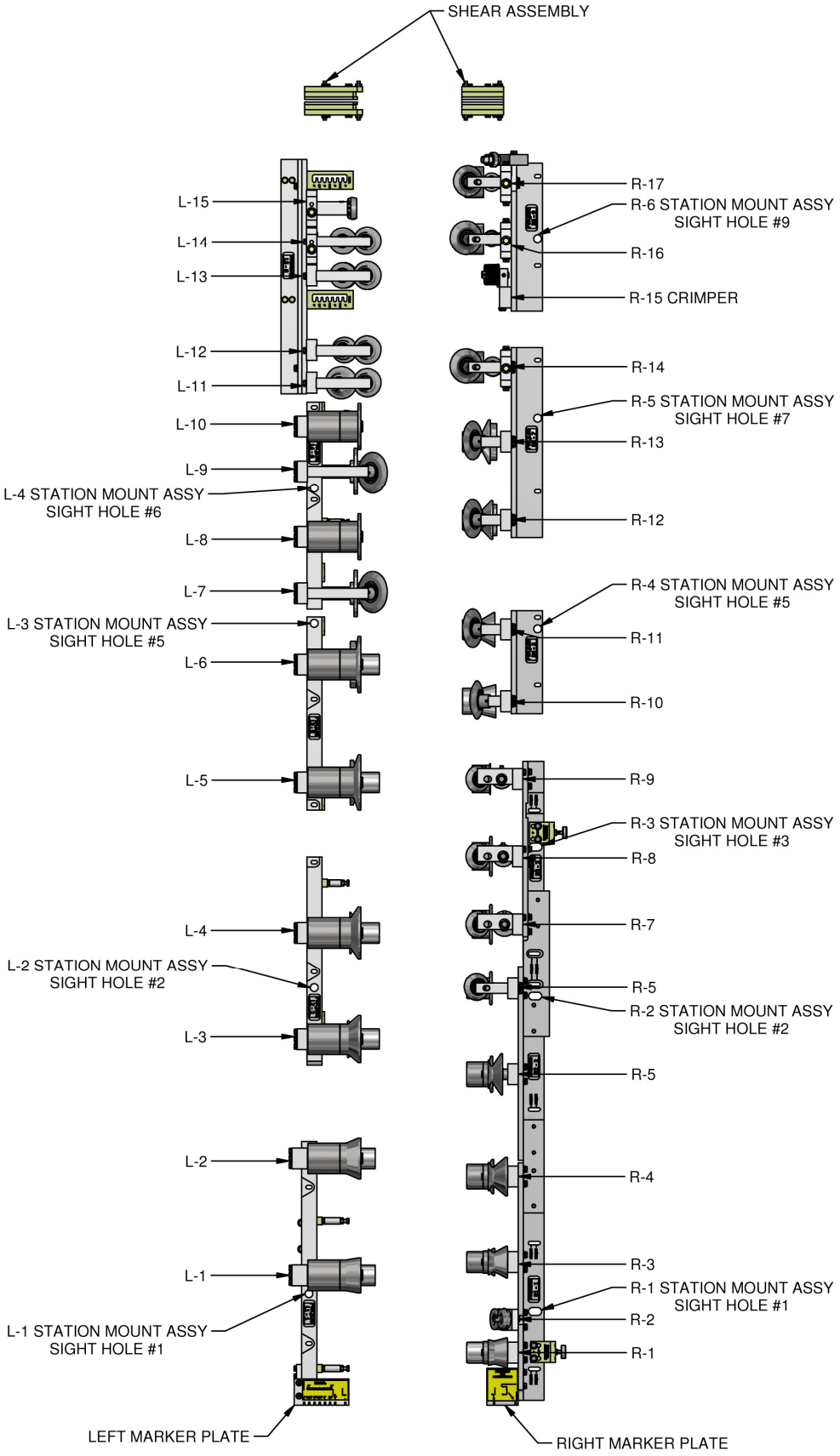

Figure 85: FWQ150 Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

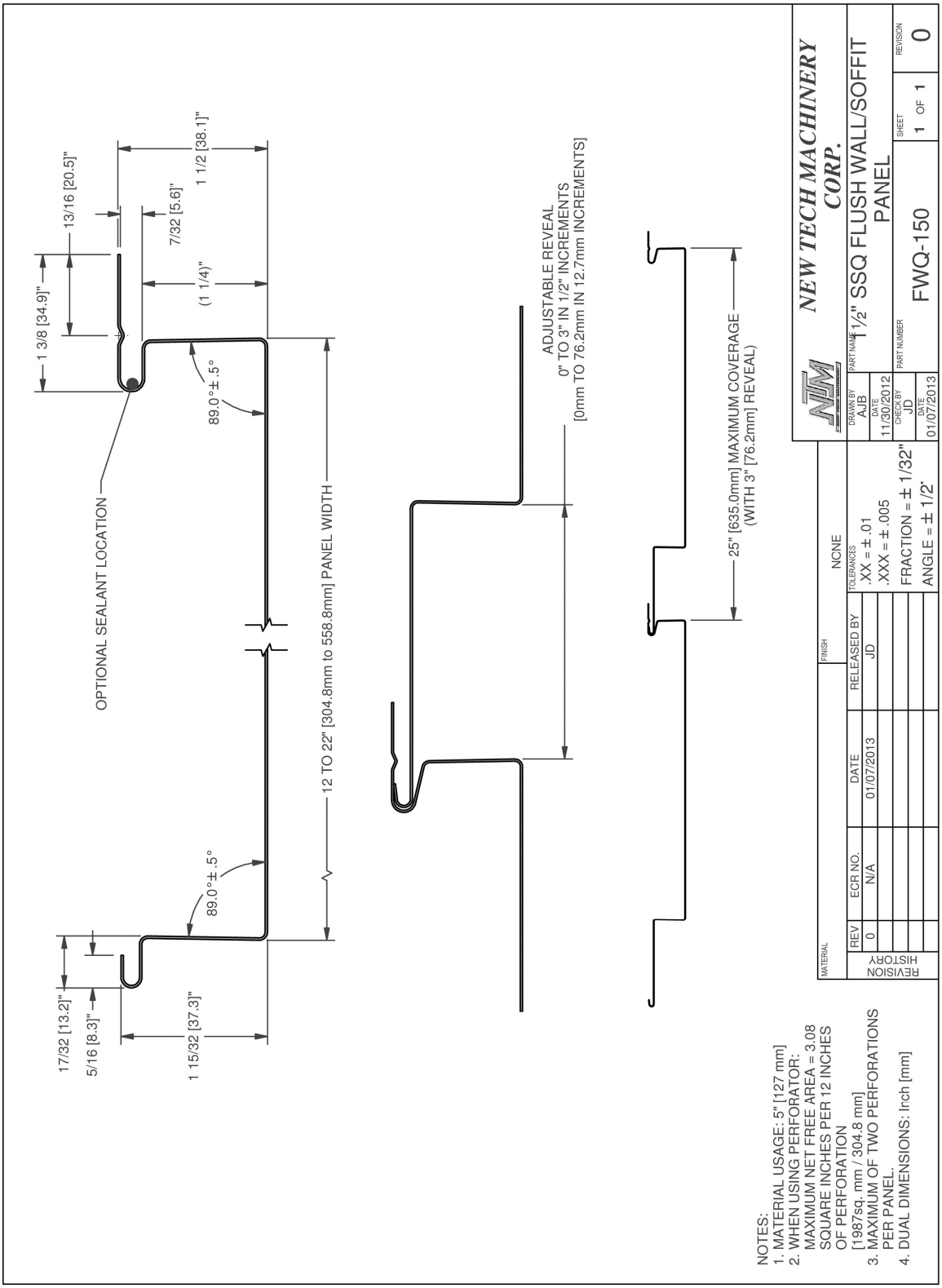

Figure 86: FWQ150 Panel Profile

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

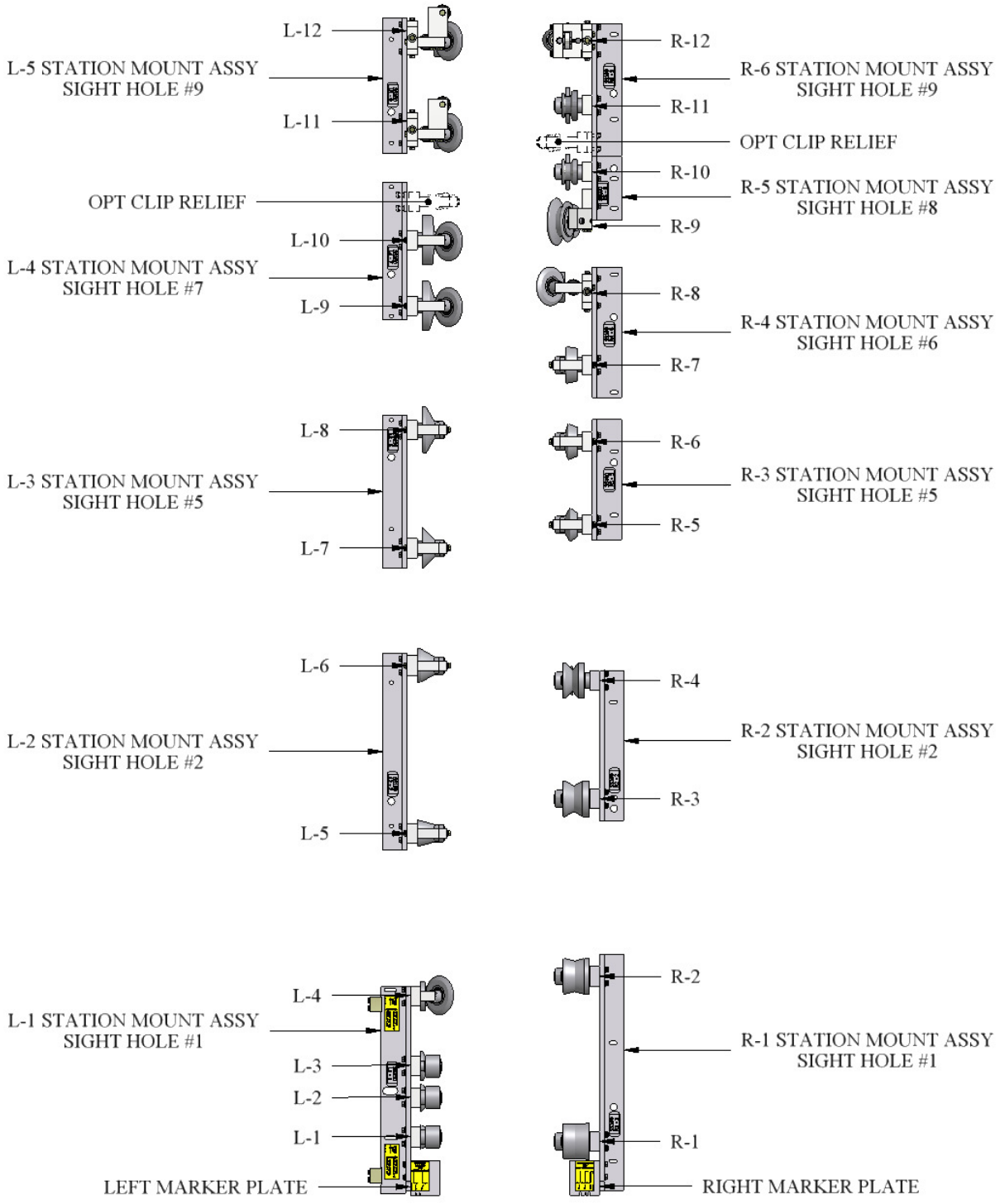

Figure 87: SSQ100 Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

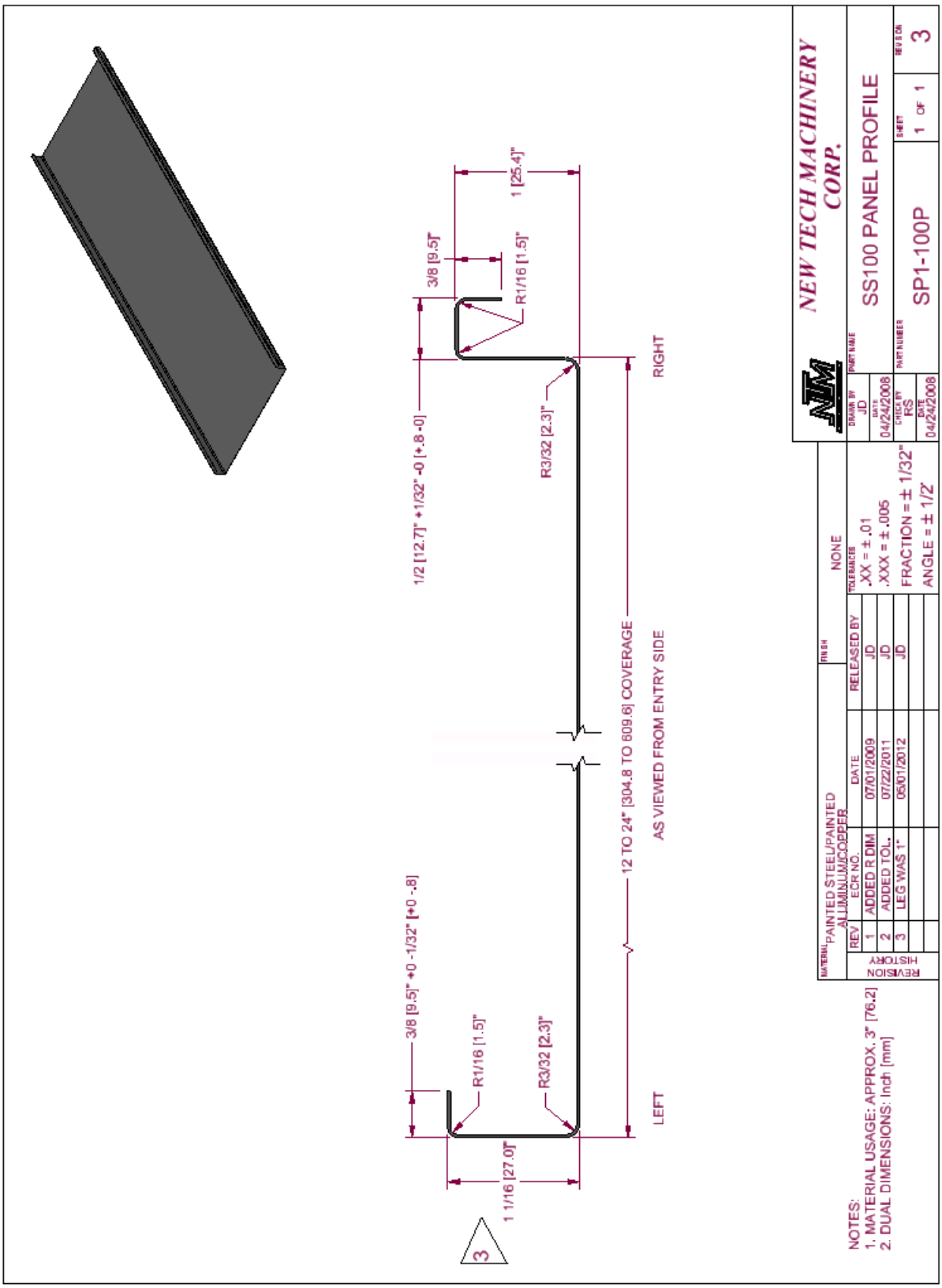

Figure 88: SS100 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

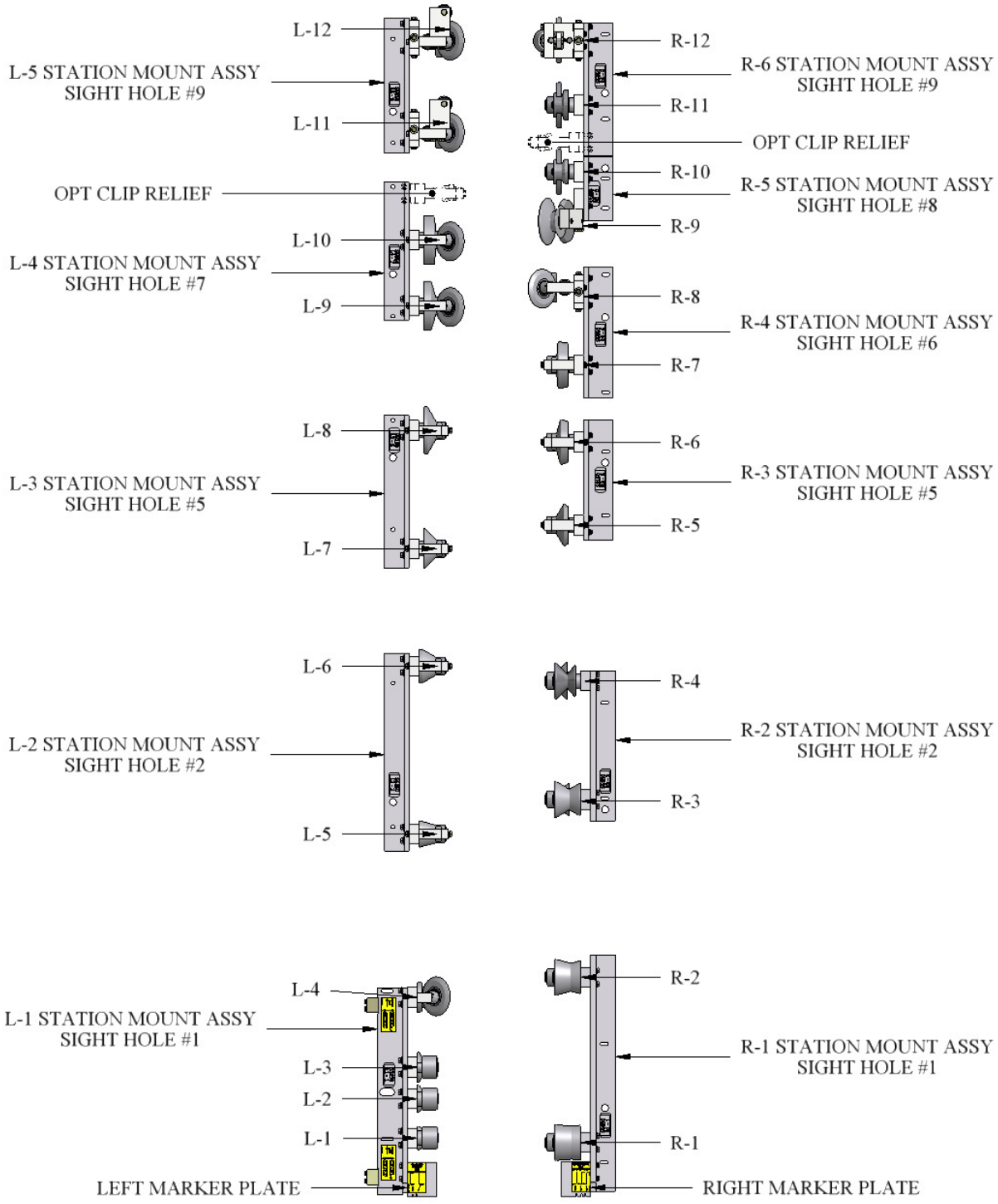

Figure 89: SSQ150 Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

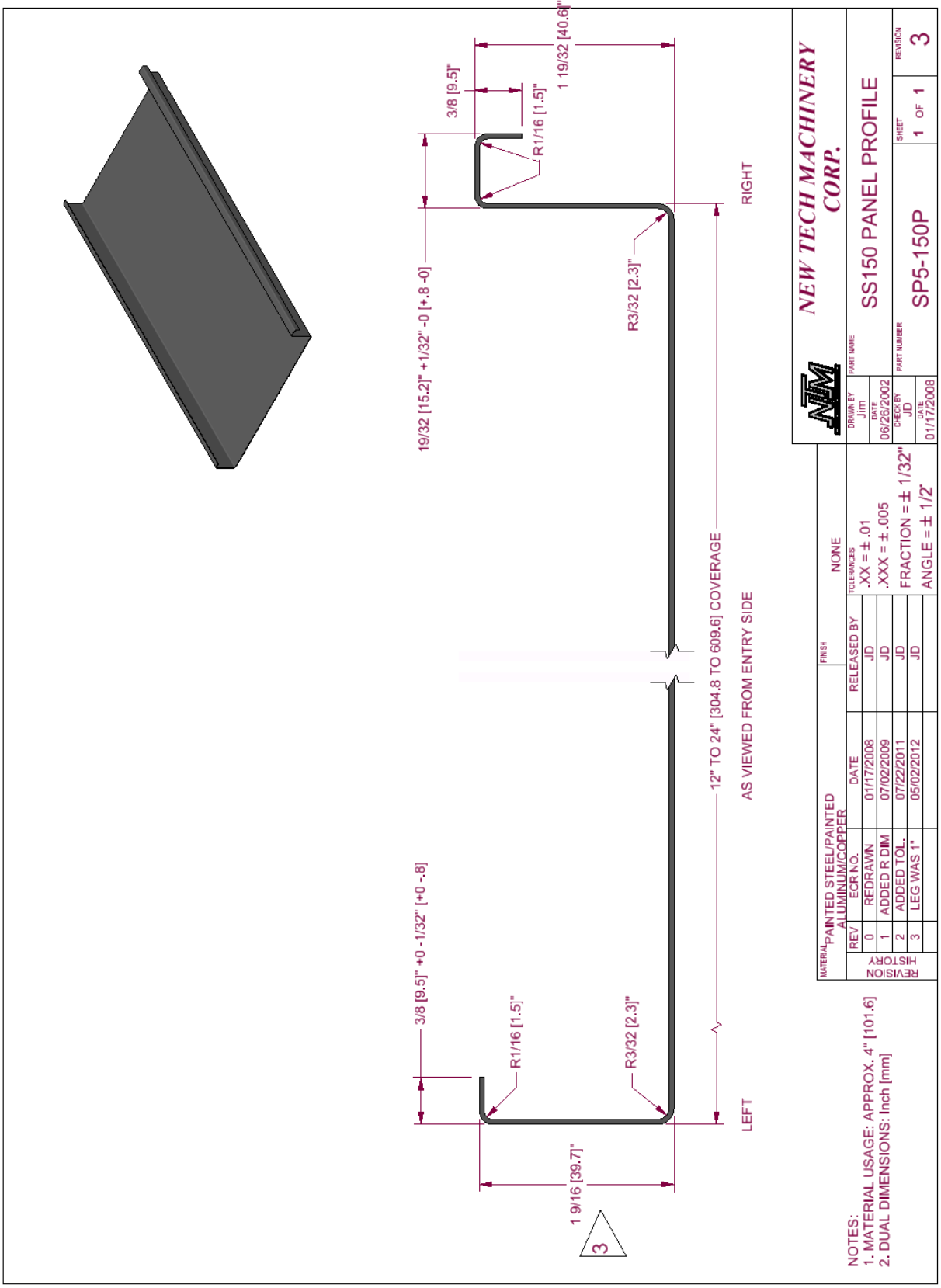

Figure 90: SS150 Panel Profile

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

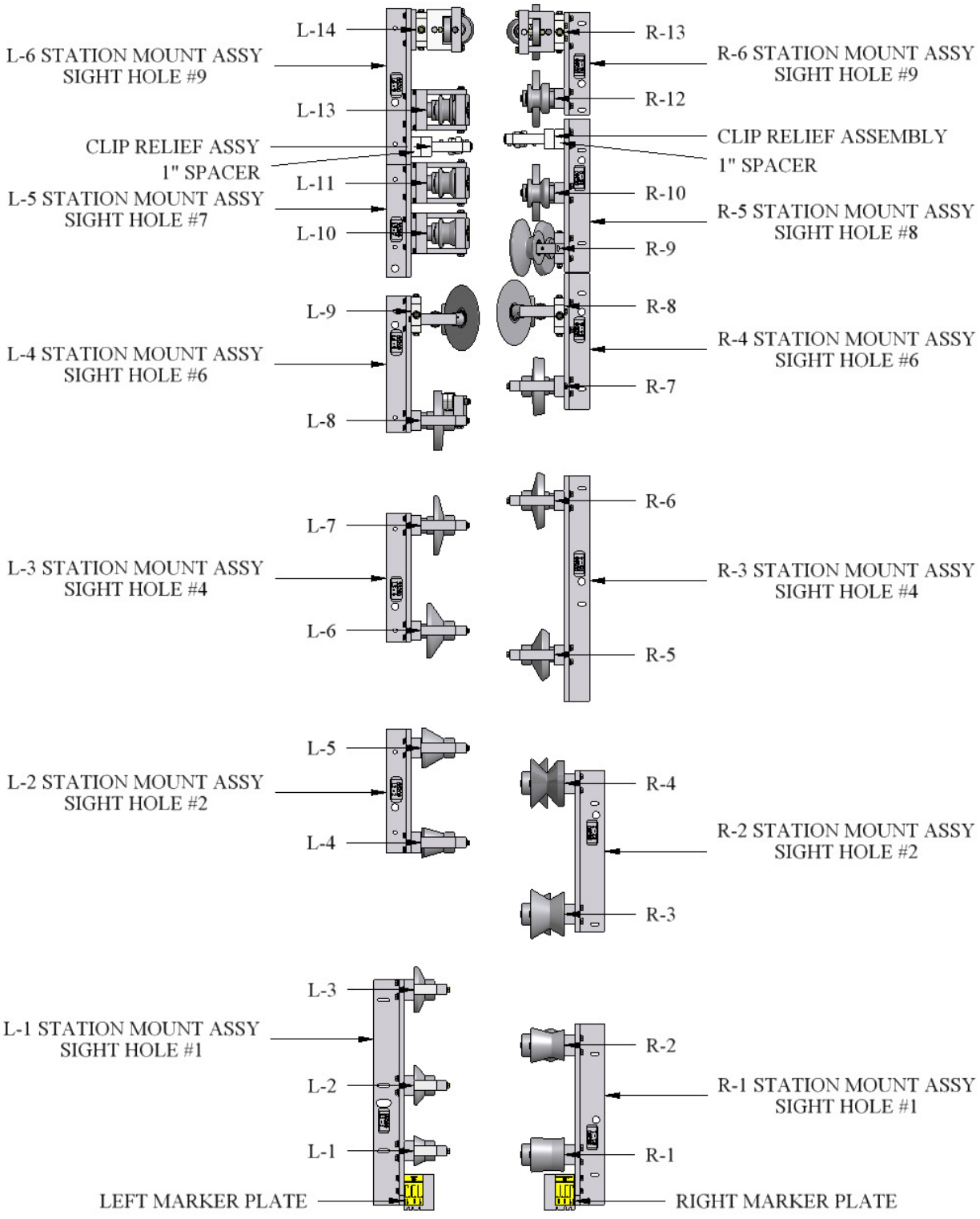


Figure 91: SSQ200/210A Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

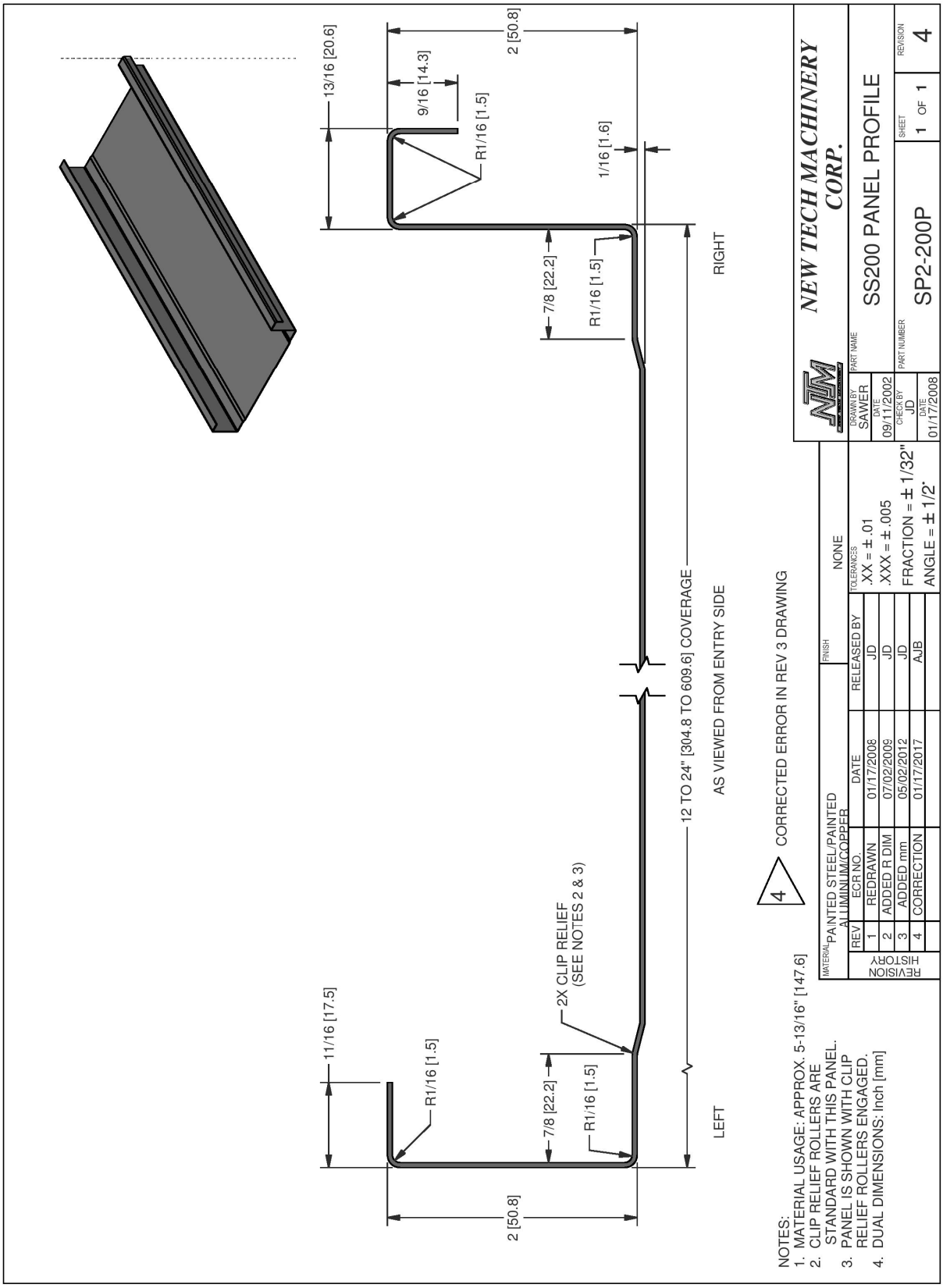


Figure 92: SS200 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

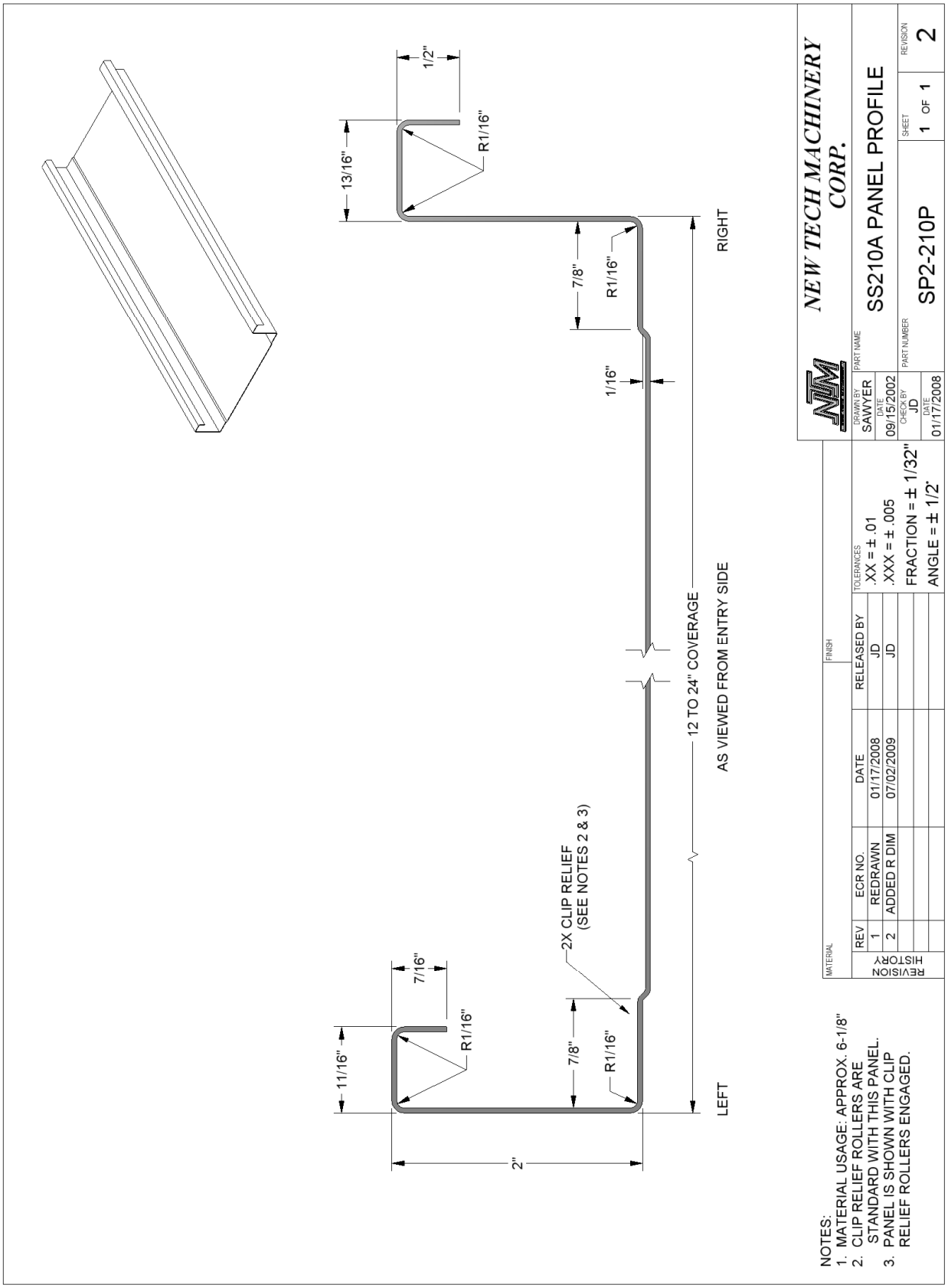


Figure 93: SS210 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

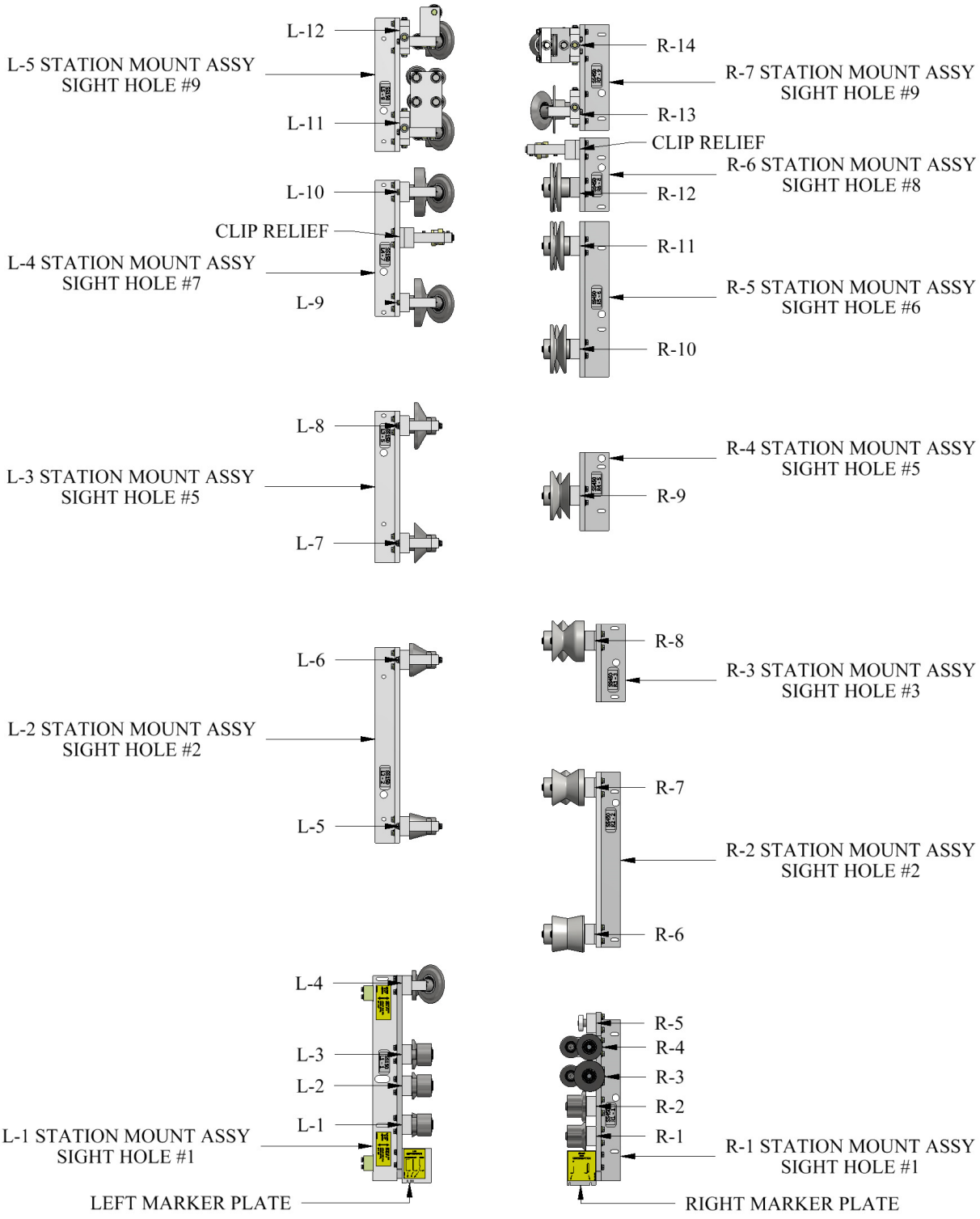


Figure 94: SSQ450/450SL Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

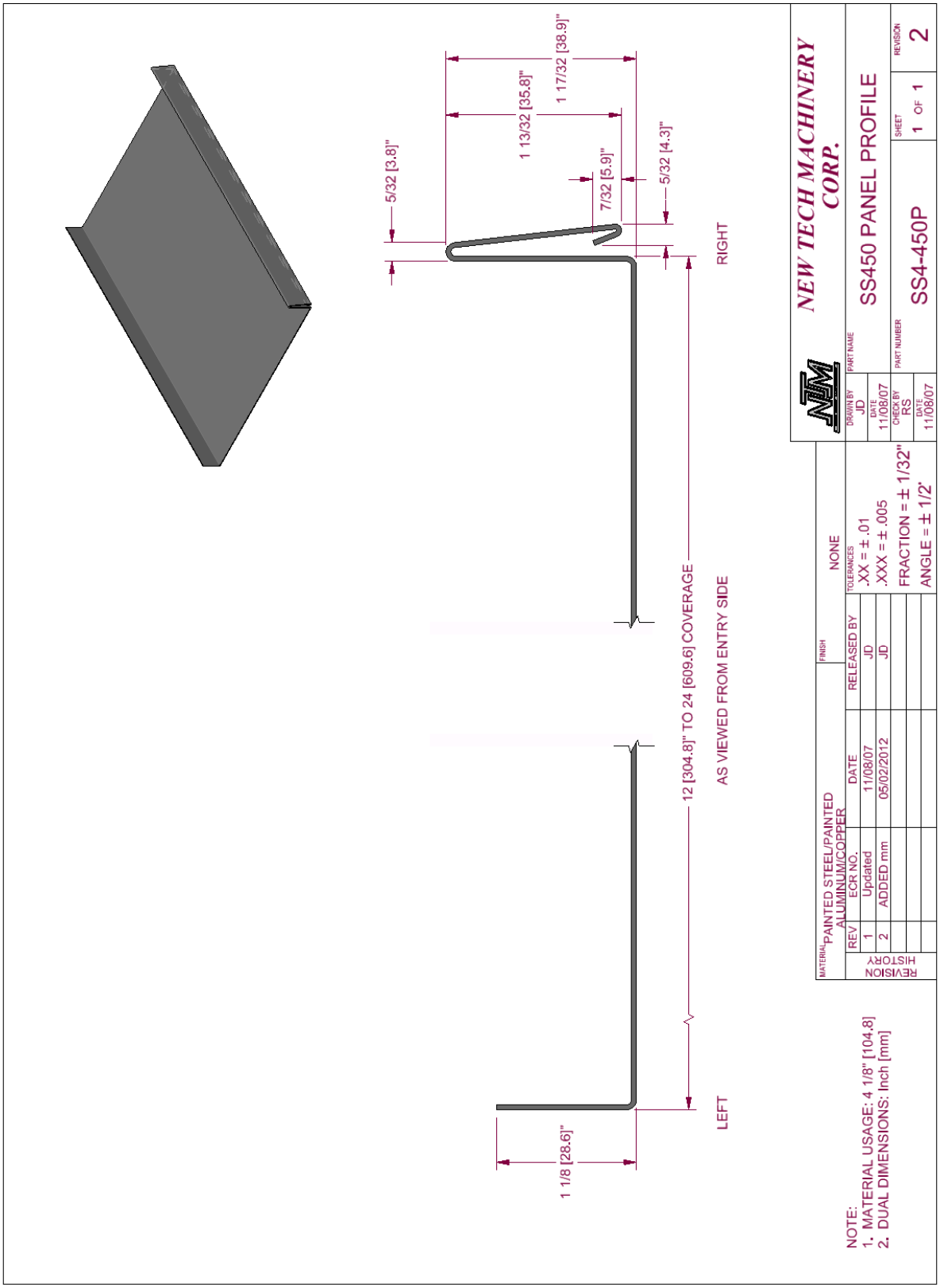


Figure 95: SS450 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

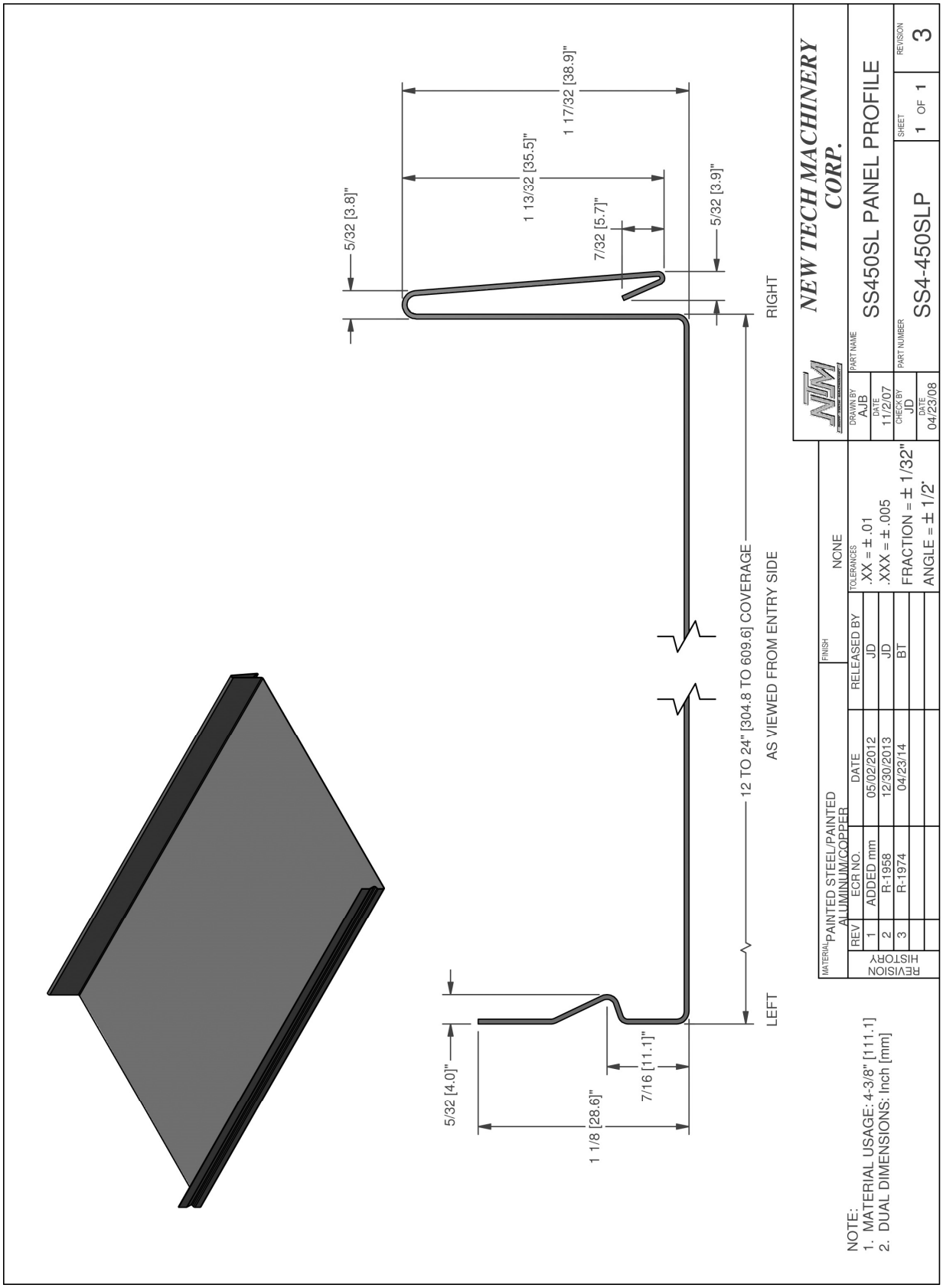


Figure 96: SS450SL Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

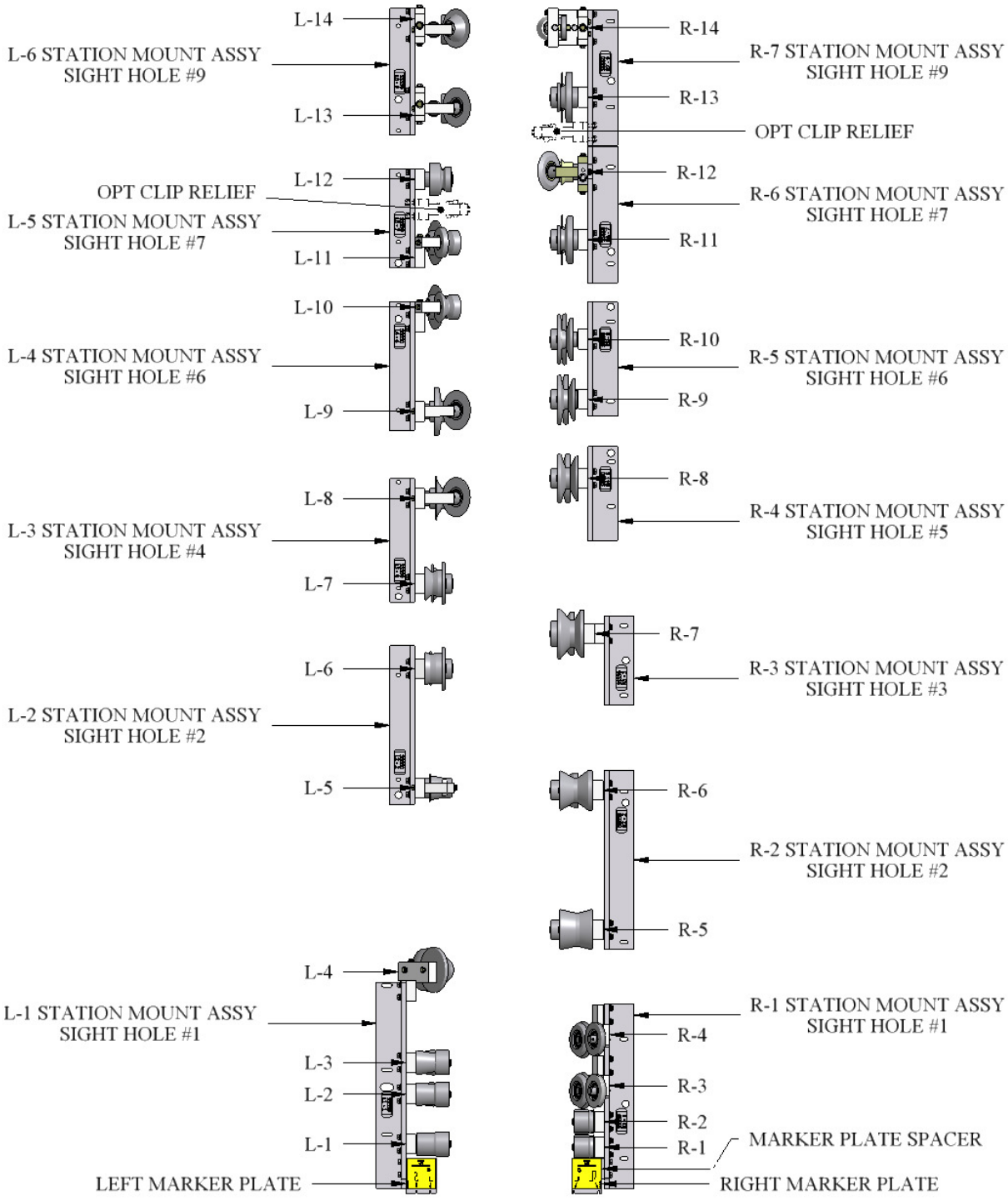


Figure 97: SSQ550 Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

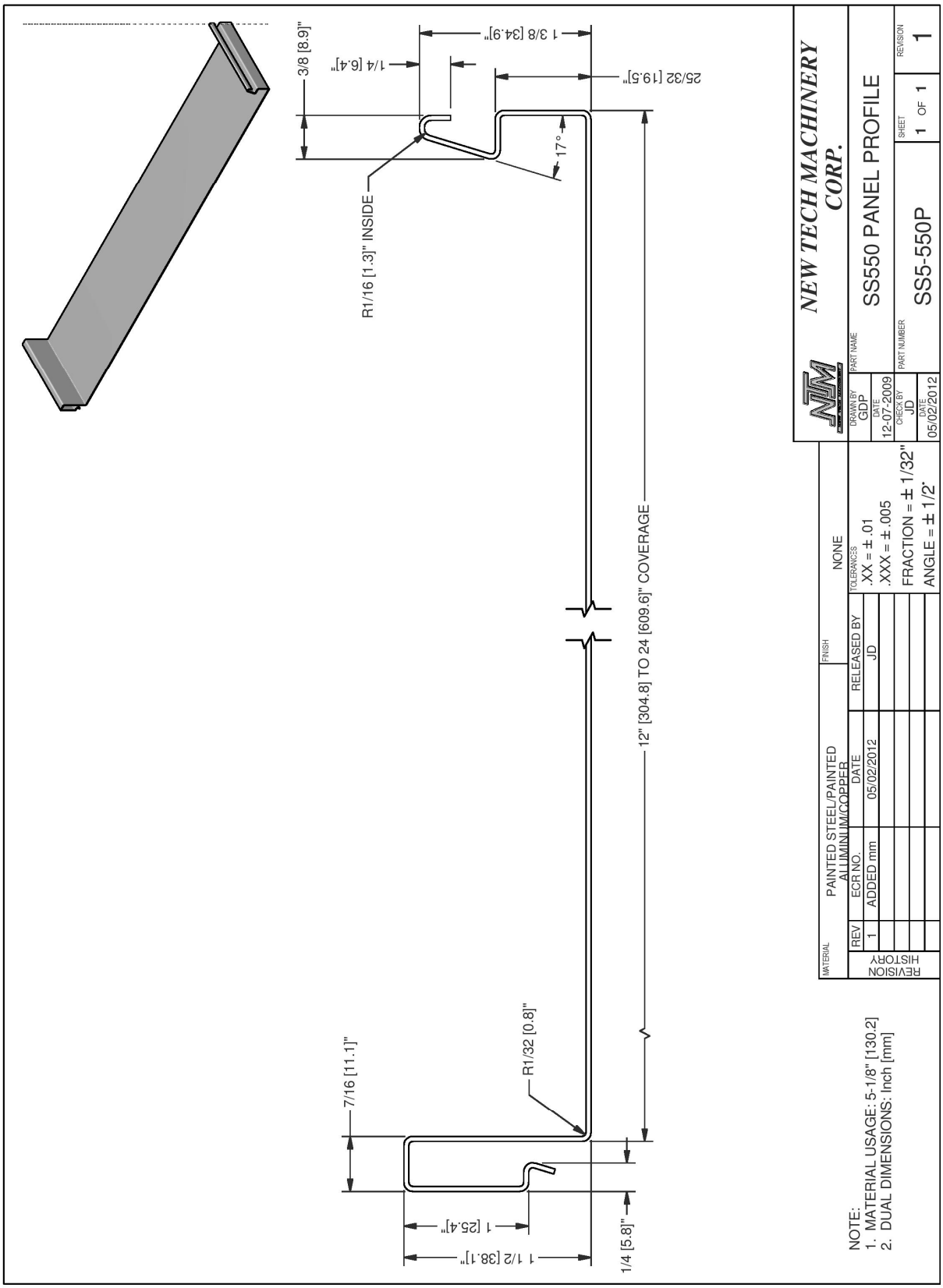


Figure 98: SS550 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

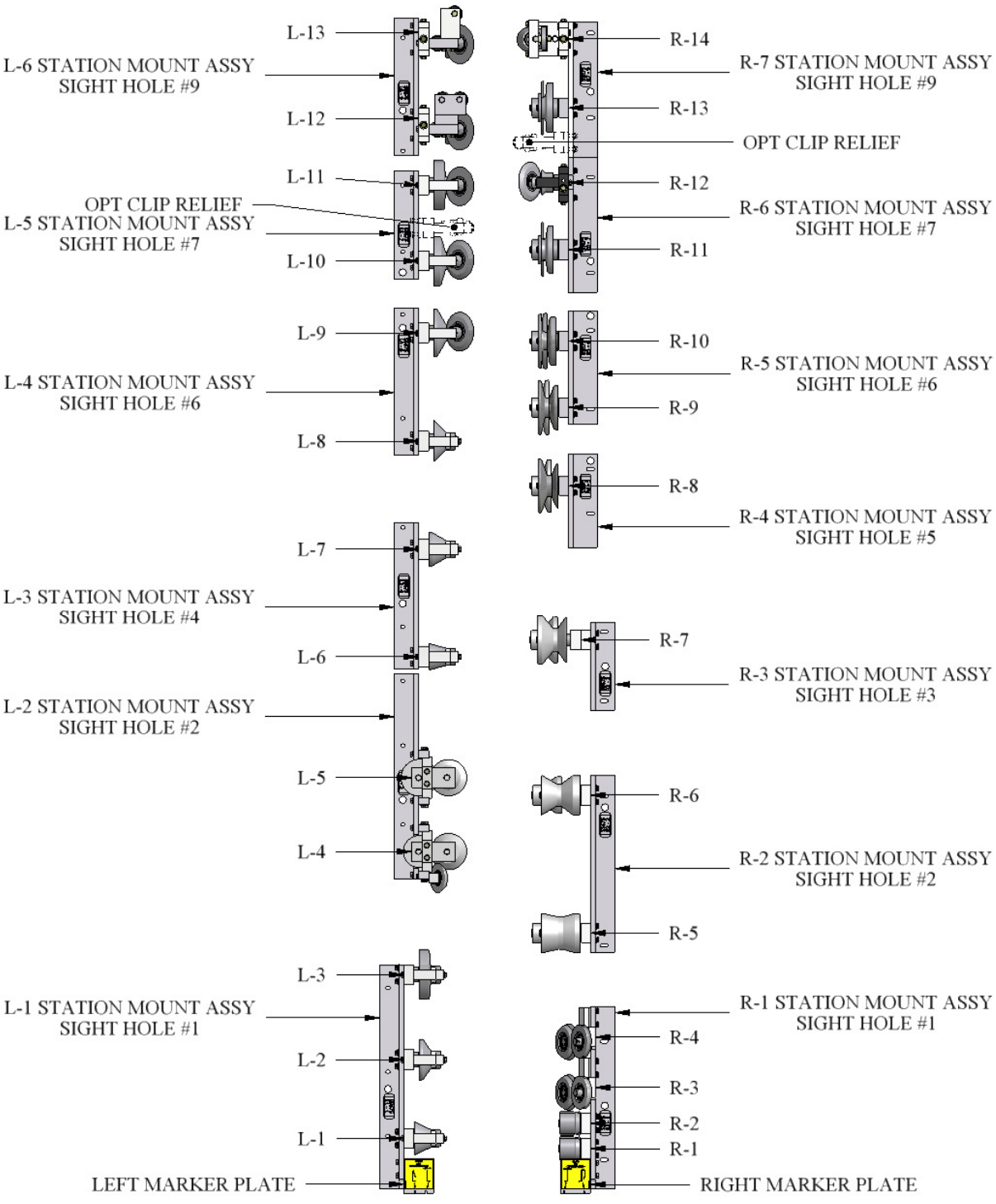


Figure 99: SSQ675 Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

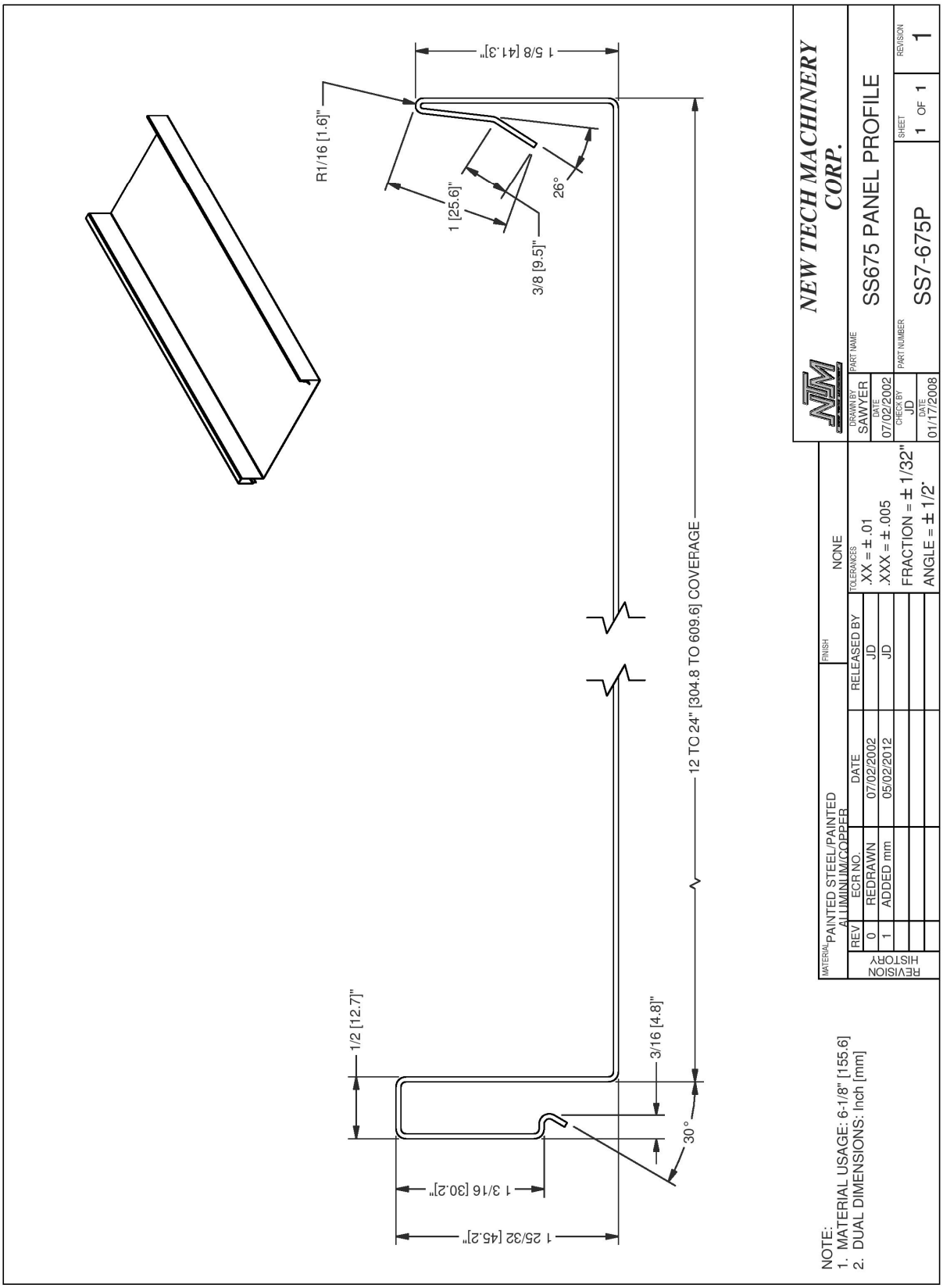


Figure 100: SS675 Panel Profile

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

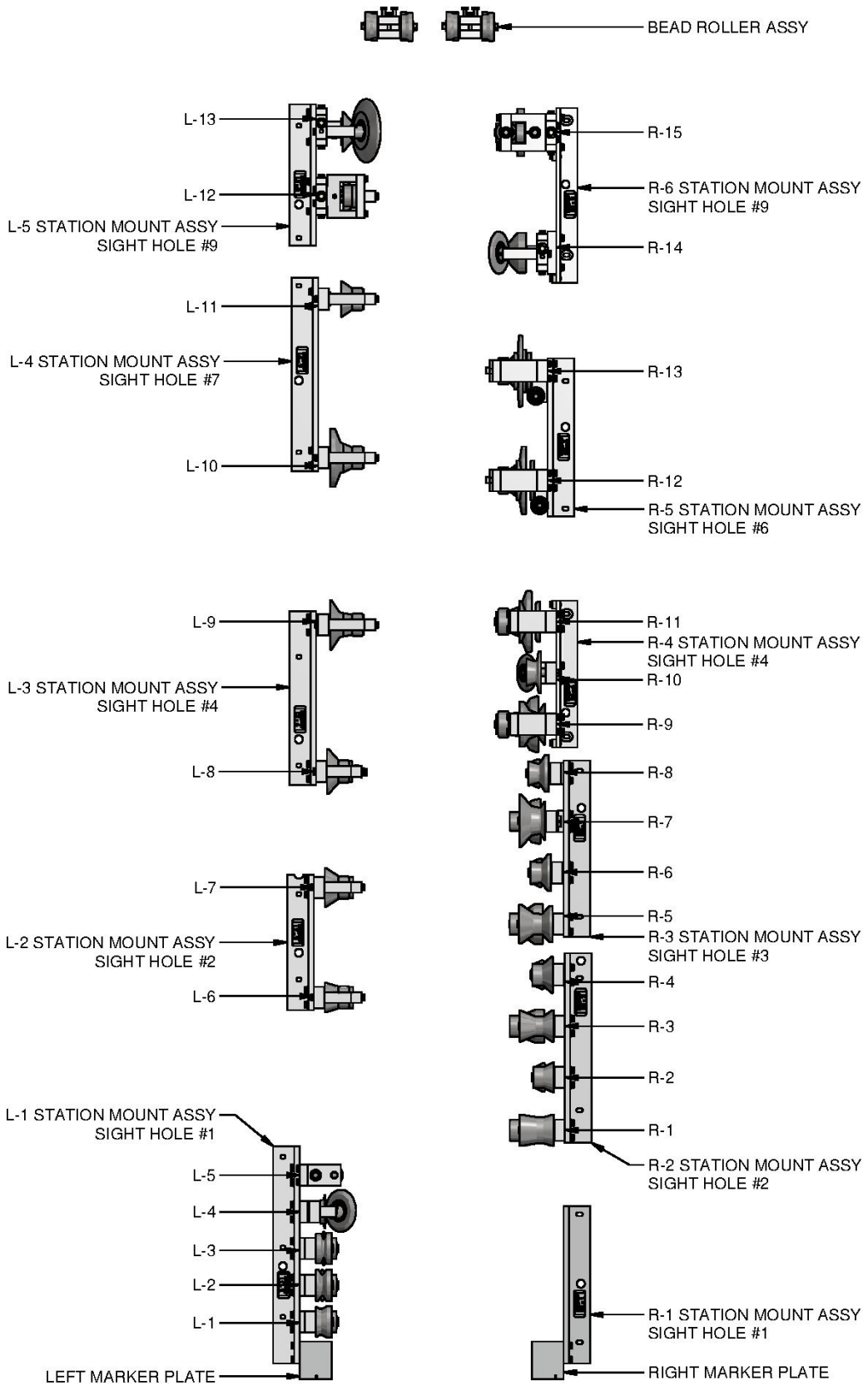


Figure 101: TRQ250 Roller System

CHAPTER 18

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

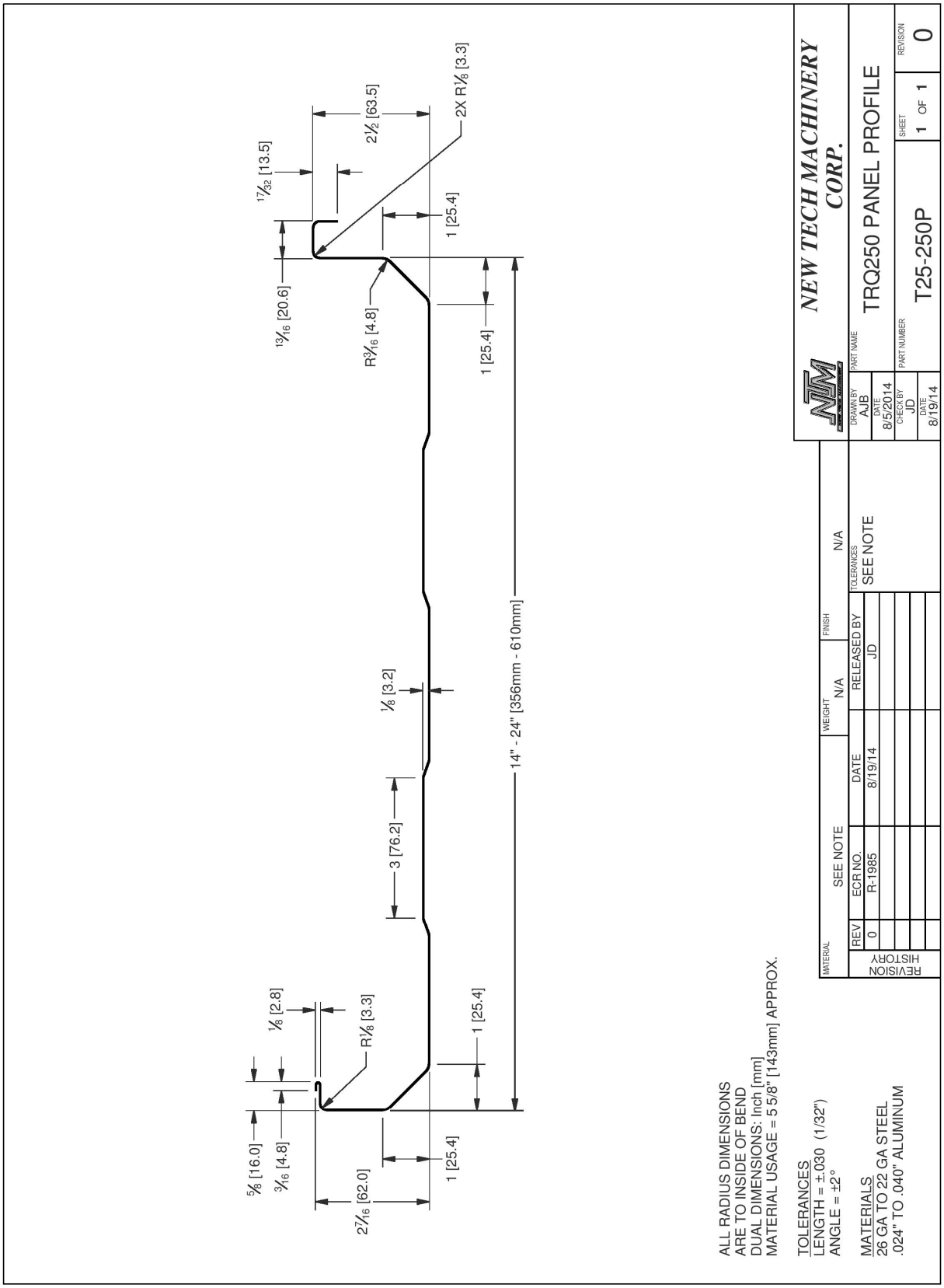


Figure 102: TRQ250 Panel Profile

RUN OUT TABLES AND REMOTE LIMIT SWITCH

(Figure 103 & Figure 104)

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 108 on page 118) 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 104 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 19

RUN OUT TABLES AND REMOTE LIMIT SWITCH

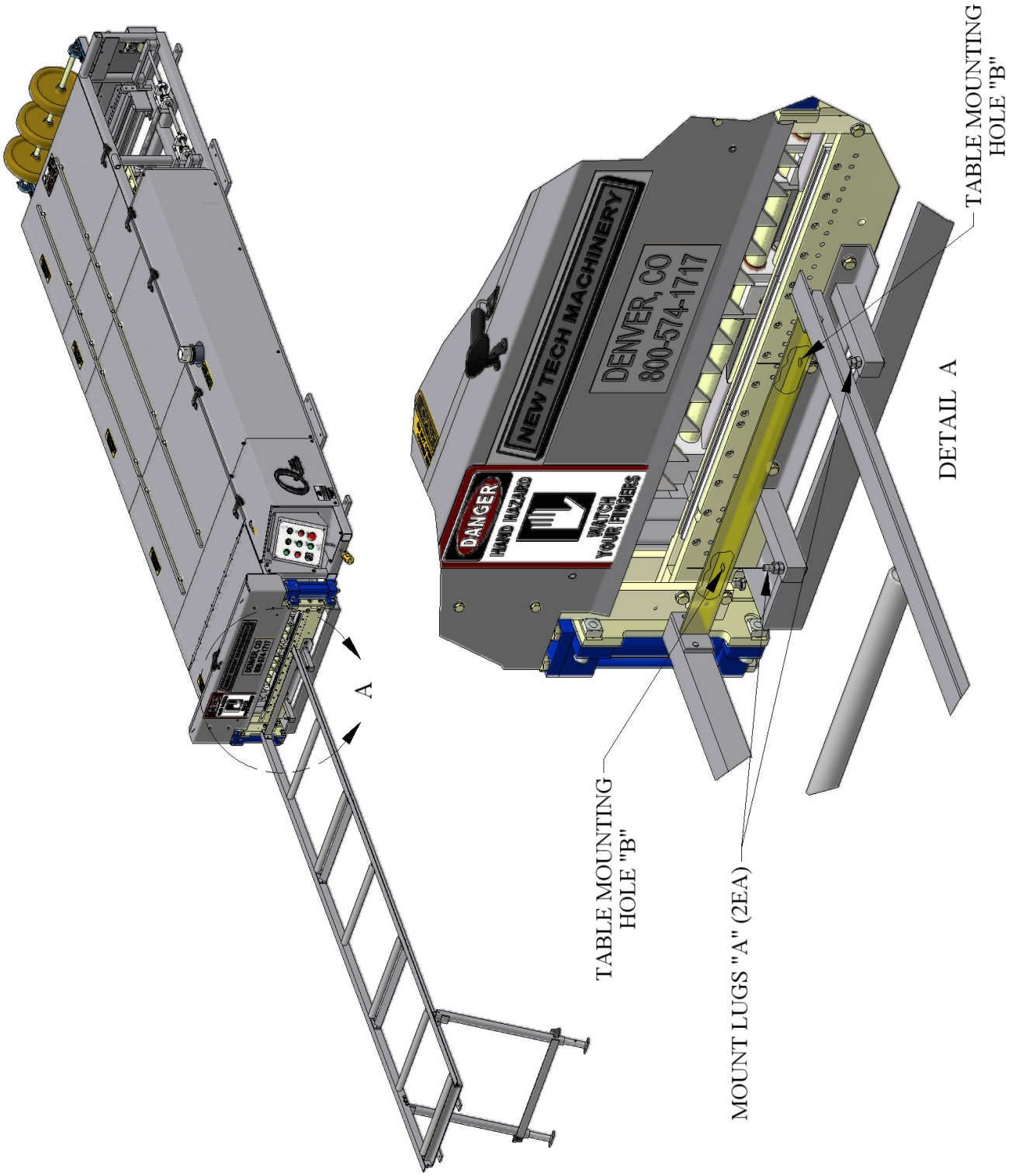


Figure 103: Run Out Table

CHAPTER 19

RUN OUT TABLES AND REMOTE LIMIT SWITCH

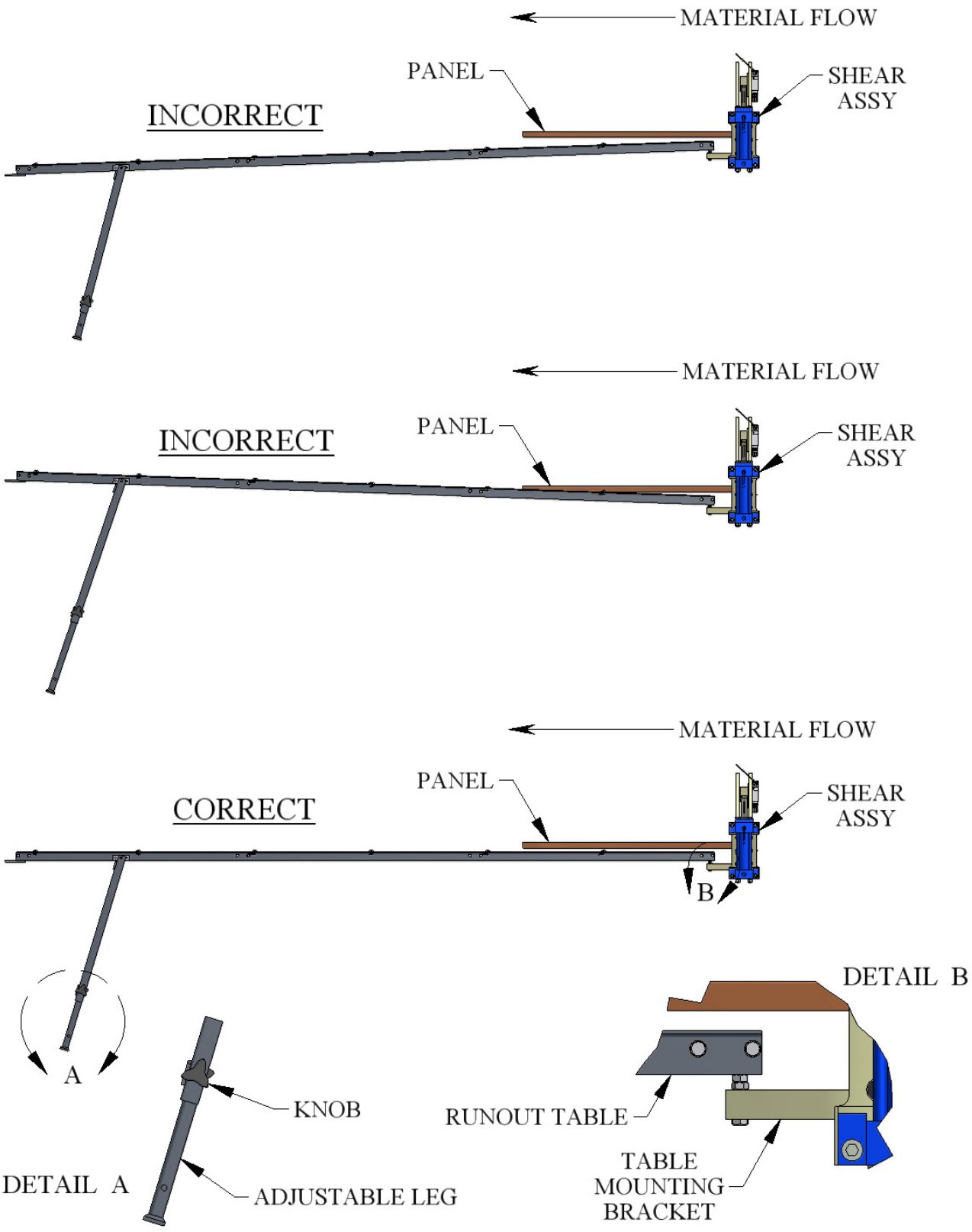


Figure 104: Run Out Table Setup

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 105

POWER PAC REMOVAL

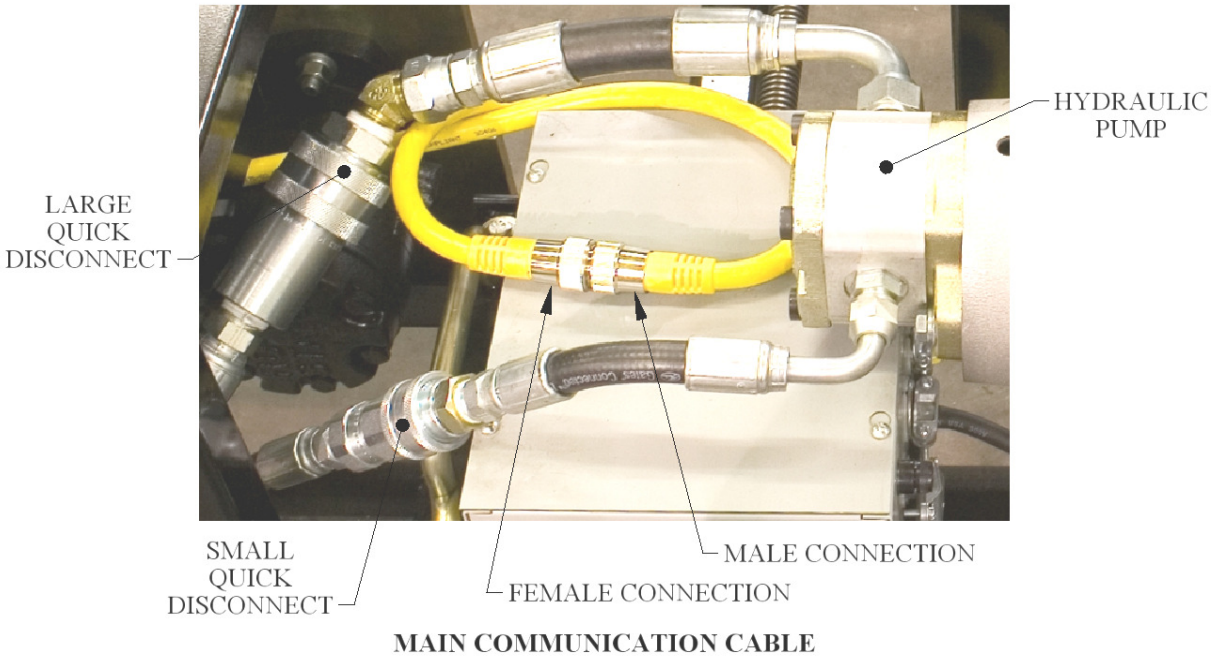
1. Remove the screws holding the #1 Left Cover on the machine. Set cover aside.
2. Using a 9/16" wrench, remove the two "A" bolts and set aside for later use.
3. Separate the Male /Female Connectors of the Main Communication Cable by unscrewing them from each other.
4. Un-couple the Large and Small Quick 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 20

QUICK CHANGE POWER PAC



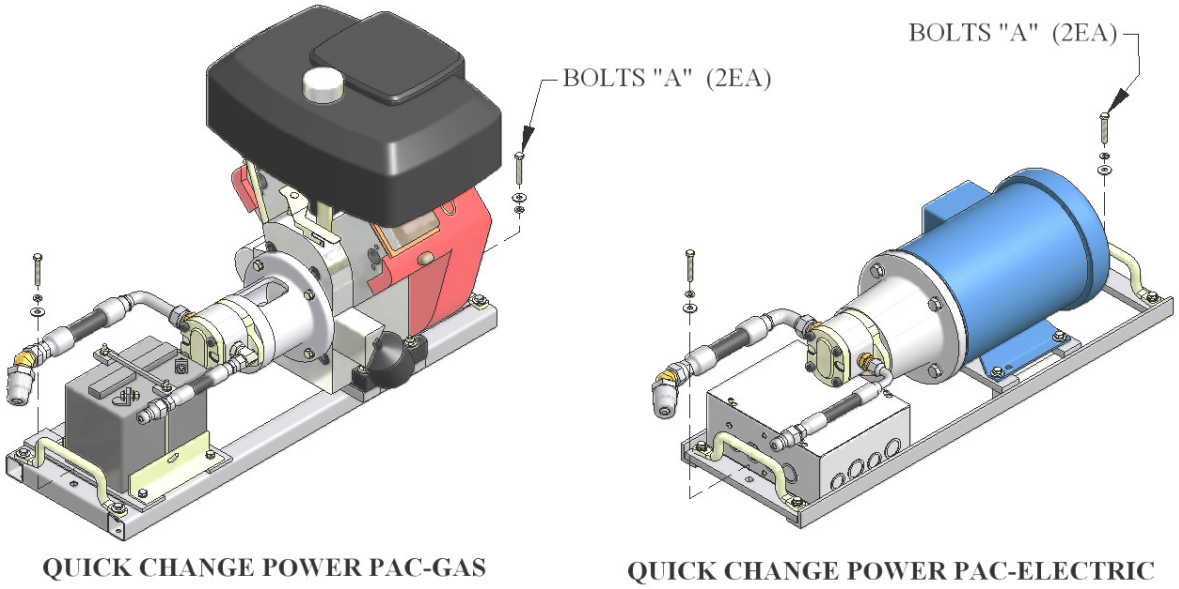


Figure 105: Cable Connections and Fasteners

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 106) 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.

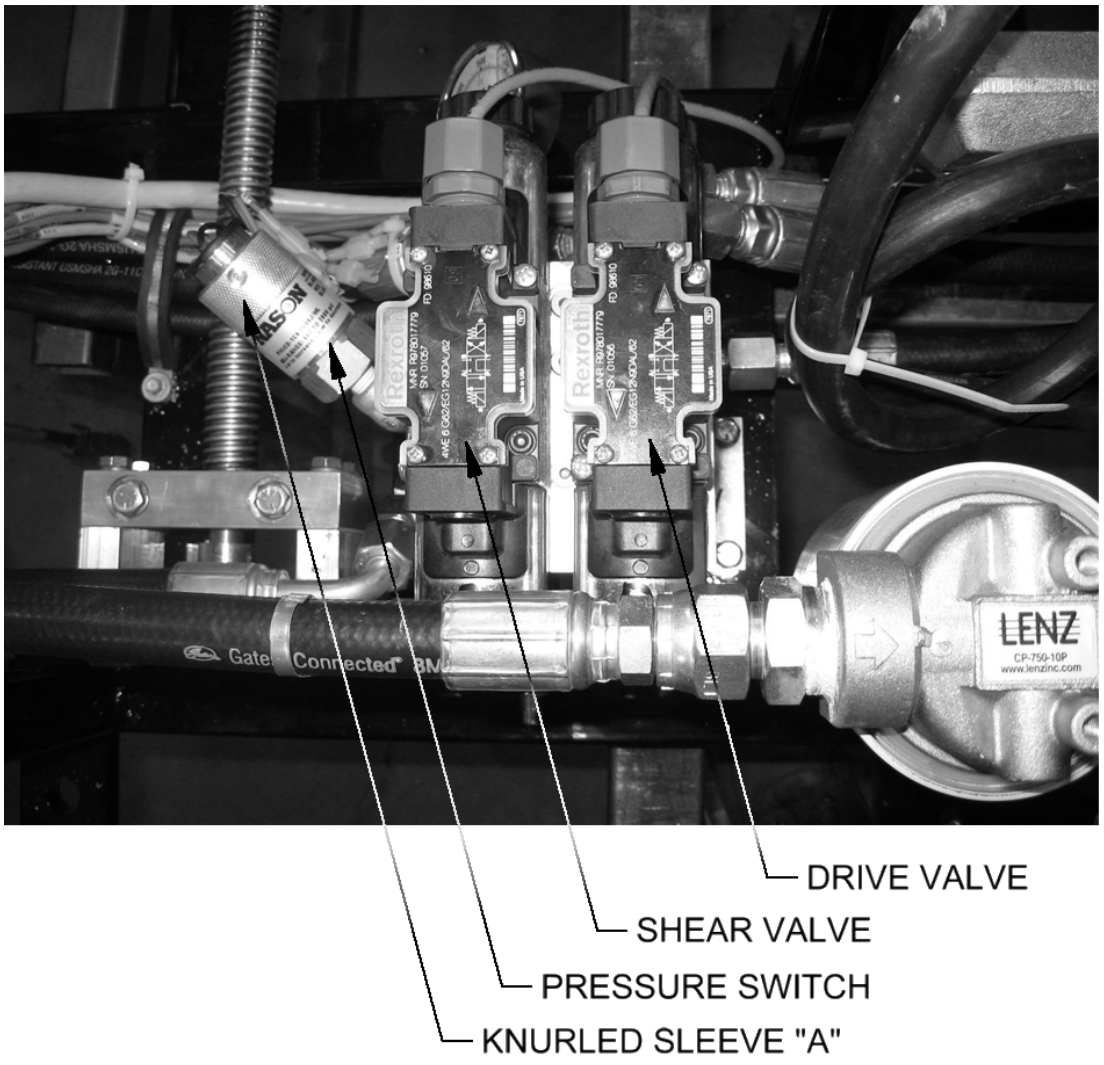


Figure 106: Pressure Switch Adjustment

SOLUTION for serial numbers higher than SSQ293xxx with an adjustable limit switch: Loosen Screws "A" (Figure 107). 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.

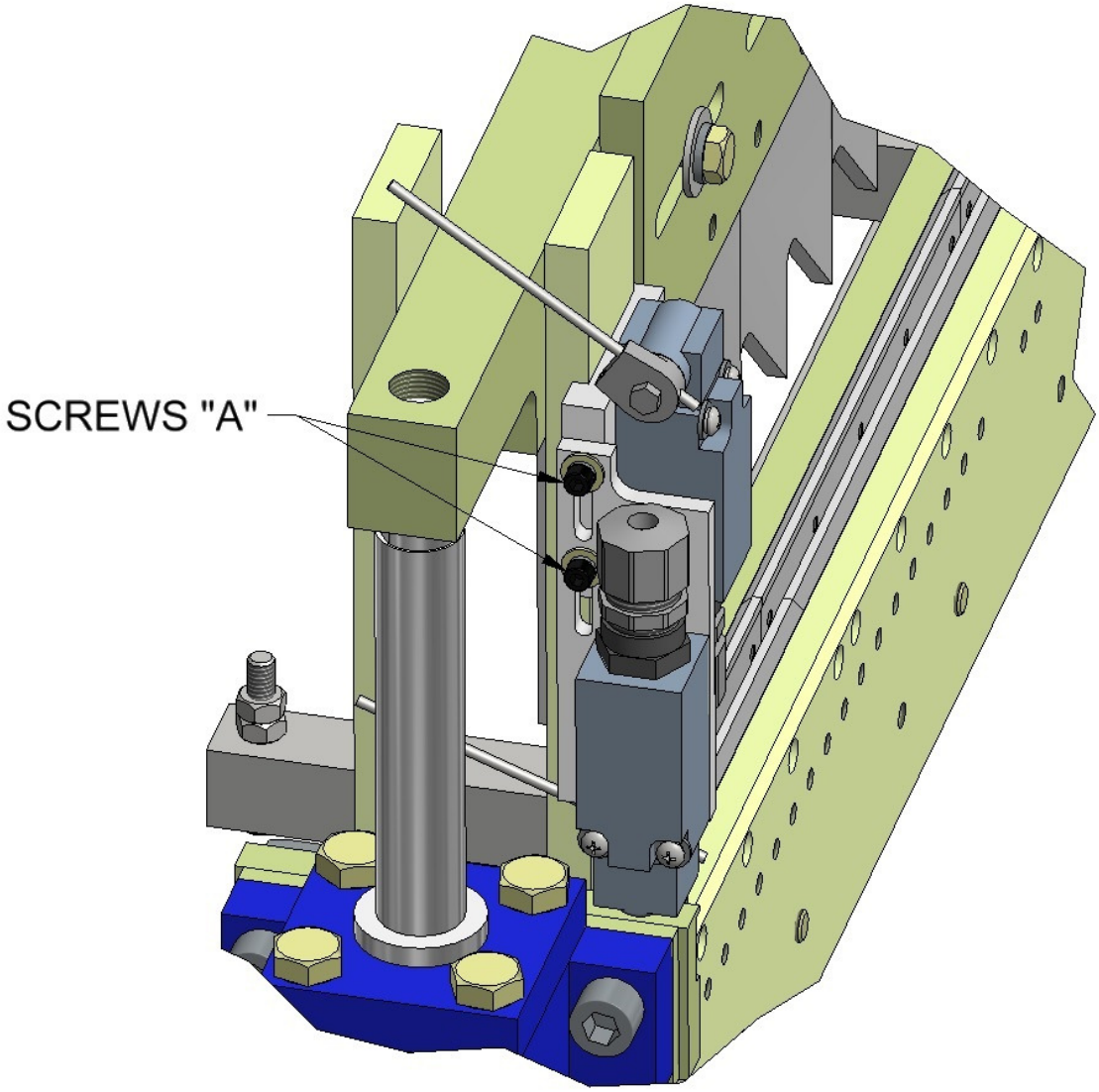


Figure 107: Bottom of Stroke Limit Switch

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 106) 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

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 107). 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 108) 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 108) 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.

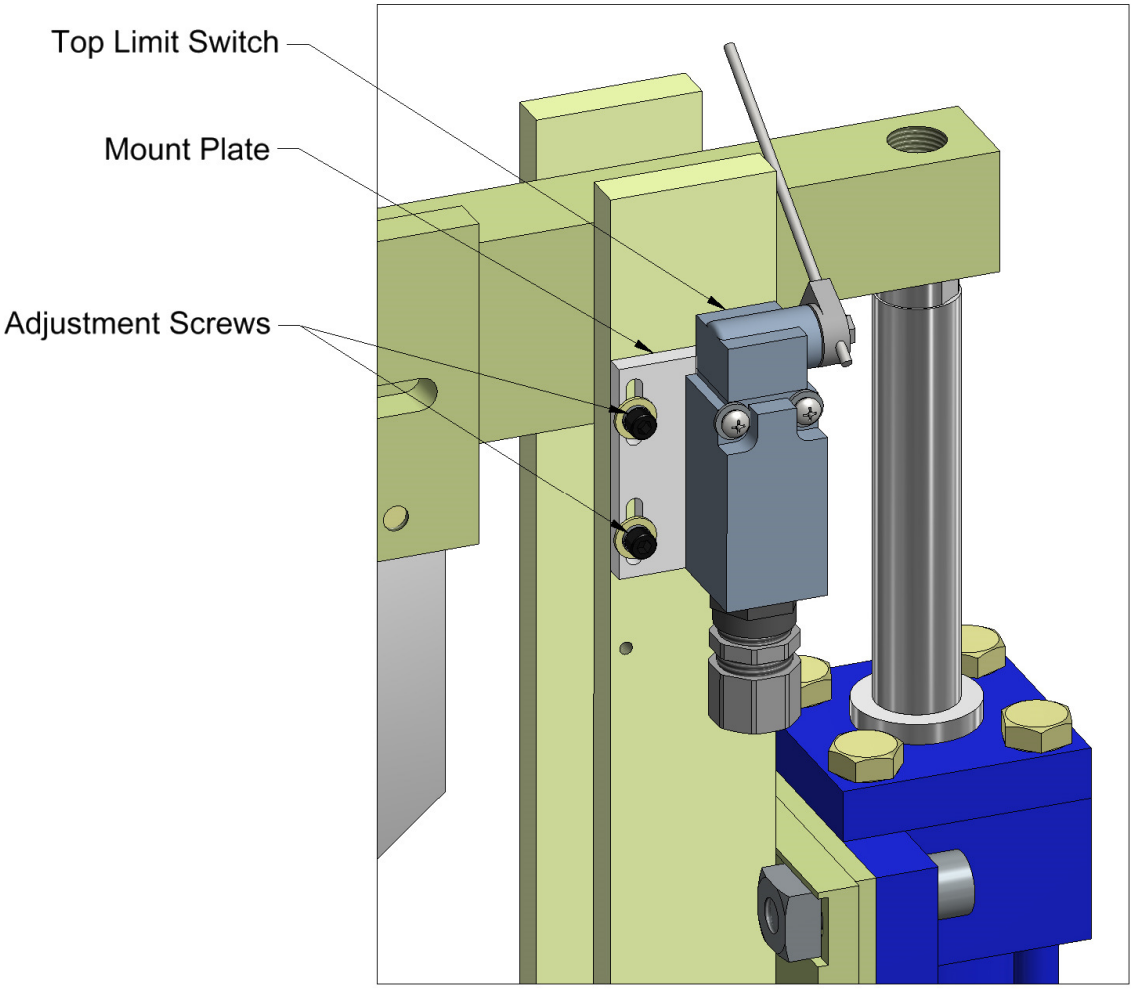


Figure 108: Limit Switch Adjustment

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 getting caught (Figure 20-Figure 30 on pages 34-39).

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 19 & Figure 20 on page 33).

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.

COMPUTER CONTROLLER

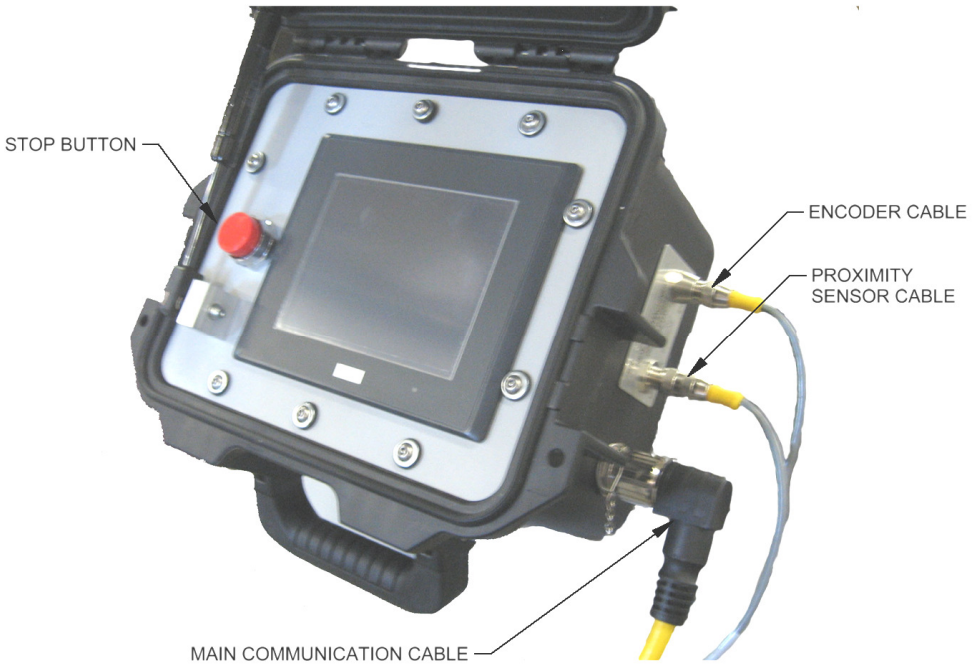


Figure 109: Computer Controller Assembly

Figure 110: Serial Number Plate

APPENDIX A

COMPUTER CONTROLLER

Home

When the controller is turned on, it will automatically go to the home screen.

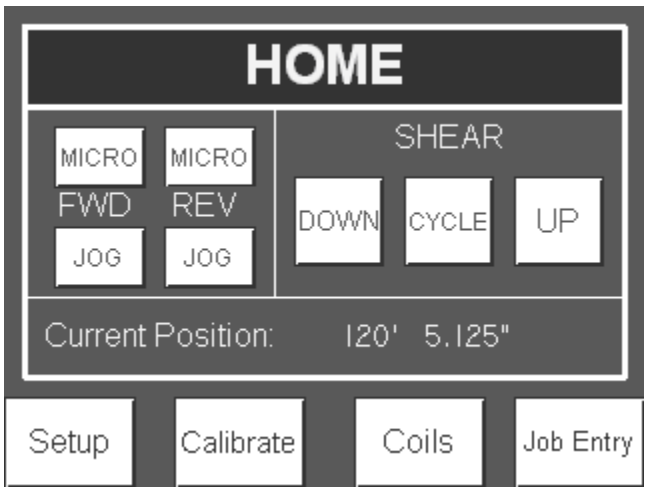


Figure 111: Home Screen

Manual Operation

The machine can be manually operated from the home screen by pressing the Jog and Shear buttons.

JOG:

FWD and REV JOG buttons will jog the machine forward and reverse as long as the button is depressed. When the JOG buttons are released, the action will stop. The FWD and REV MICRO buttons will jog the material approximately ¼" each time the button is pressed.

SHEAR:

The shear UP and DOWN buttons are momentary and will act in a similar manner as 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. At any time during the shearing cycle, the UP button on the display or red stop button next to the screen can be pressed to return the shear to the top. CAUTION: The shear will stop **without** returning to the top if the E-Stop pushbutton on the manual control box below the Computer Controller is pressed. This button shuts off all power to the machine and machine controls. Upon start-up, the shear will return to the top.

Automatic Operation

The pre-run sequence must be completed in the correct order before automatic operation can be utilized.

APPENDIX A

COMPUTER CONTROLLER

Pre-Run Sequence:

1. Jog the material forward using the manual FWD JOG or MICRO buttons on the Home screen or the JOG switch at the entry end of the machine. The material must exit the shear and be detected by the panel detection sensor.
2. Shear the material using the Shear Cycle button. At that point, the machine will be fully loaded with material, the length counter will be reset and the controller will be ready to run in automatic mode.

If the machine goes forward or reverse and the encoder does not detect movement, the pre-run sequence will be reset and the controller will not run in automatic mode. This would happen if the material was cut at the entry end of the machine at the end of a job or at the end of a coil. This could also happen if the encoder did not have proper tension on the material.

Job Entry

Jobs can be programmed to run automatically. From the Home screen, press the Job Entry button to enter the Job Entry Screen.

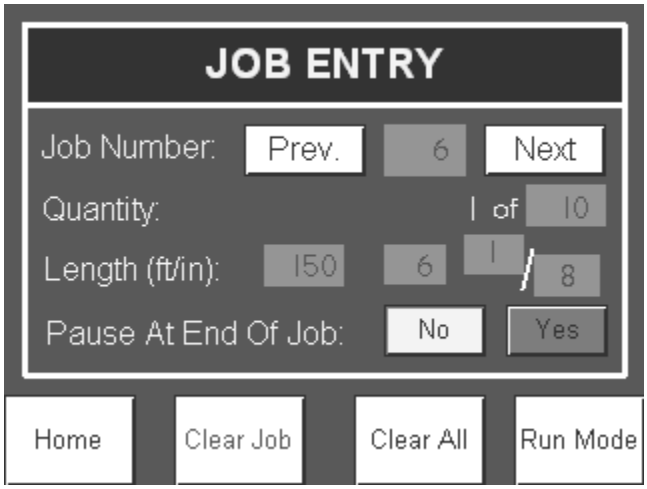


Figure 112: Job Entry Screen

Programming Jobs

The controller can store up to ninety nine jobs or lengths, called: Job Numbers. Press the Previous and the Next buttons to change the Job Number. The Job Number display is also an input in order to skip many jobs at a time. Press the Job Number display and enter the desired job number to program or run.
Enter in the quantity of parts to run and the length of the part.
Specify if the machine will pause at the end of job. If Yes is selected, the machine will stop after the job is done running. The user can then press Start to run the next job or return to the Job Entry. If No is selected, the machine will run the current job and automatically start running the next job. If yes is selected and there is no job

programmed after the current job, the controller will stop and return to the Job Entry screen.

Clear Jobs

To clear the current job on the screen press Clear Job. To clear all the jobs in the controller, press Clear All. The next screen will confirm the Clear All command, press Yes to clear all jobs.

Auto Run

Press the Run Mode button to run the jobs that are programmed. Type in the job number to run first (if different than the job that was just programmed).

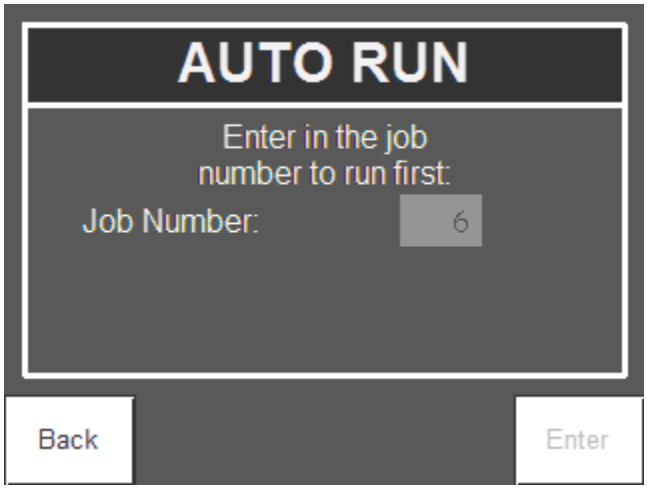


Figure 113: Specify Job to Run First

Then hit Enter to continue to the Auto-Run mode.

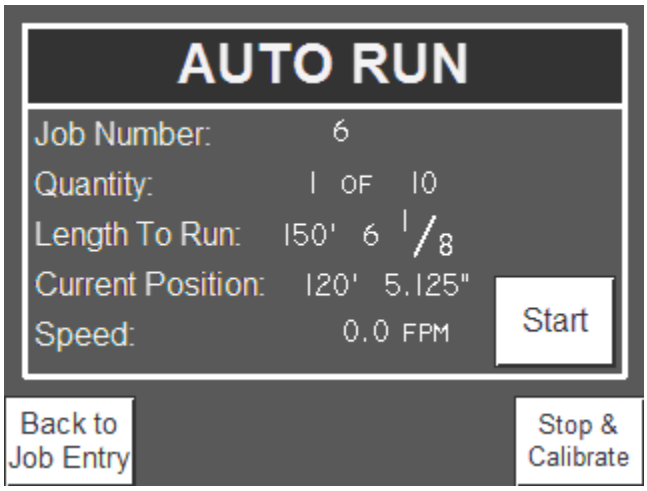


Figure 114: Auto-Run Screen

COMPUTER CONTROLLER

Pre-run Sequence:

In order to prevent the material from crashing in the machine, it is recommended that the leading edge of the material be jogged carefully all the way through the machine and past the shear. This operation is required when using the Computer Controller. The Controller will sense that the material is jogging forward through the encoder. The controller will then look for the signal from the Proximity Sensor indicating that the material is out past the shear. Press the Cycle Shear button on the home screen to cut the end of the material. Then the Controller will be ready to run in Automatic Operation.

Automatic Operation:

In the Auto Run screen, the current job and progress are displayed. Press the Start button to begin running the job. When the current job is complete the next job will start if the No button for pause was pressed for the current job. If the Yes button was pressed for pause or if there is no next job programmed, the controller will return to the Job Entry screen after the current job is completed.

On the Fly Calibration

The controller can be calibrated at any time while the machine is running to improve accuracy of the parts being run. If the machine is consistently making parts too short or too long, press Stop & Calibrate to bring up the Calibration screen.

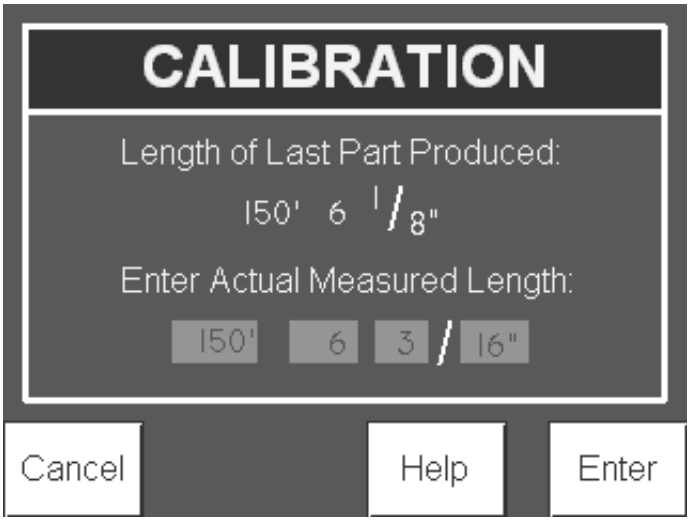


Figure 115: Calibration Screen

The length of the last part will automatically populate to the length that the controller 'thought' was run. Measure the length of the part, enter in the actual measured length and press Enter to re-calibrate the controller. Or press cancel to return to the Auto-Run screen. Press Start on the Auto-Run screen to continue operation.

Calibration

The controller can also be calibrated from the Home screen by pressing the Calibrate button. On the calibration screen, enter in the desired part length to use to calibrate the controller. A length of over 12" is required and a length of 36" or more is recommended. Press the Start button to run the specified part.

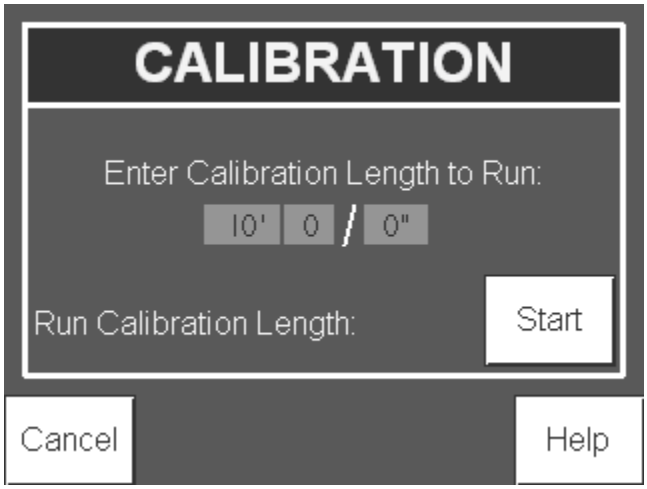


Figure 116: Calibration Screen

The controller will display the theoretical length of the part after it is produced. The theoretical length may be slightly different than the intended calibration length due. Measure the length of the part and input the length in the Actual Measured Length fields. Press Enter to re-calibrate the controller or Cancel to return to the Home screen without making any changes to the controller.

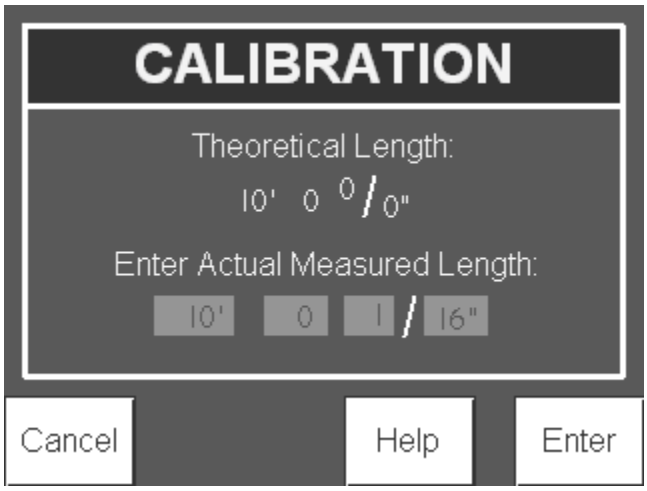


Figure 117: Calibration Screen

Setup:

From the Home screen, press the Setup button to make setting changes to the controller.

COMPUTER CONTROLLER

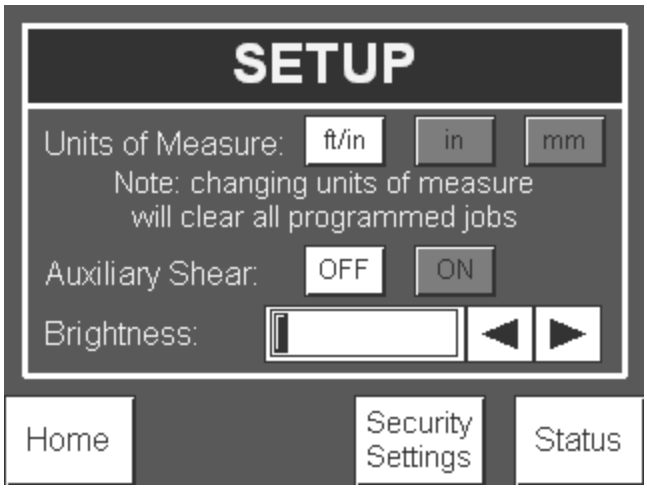


Figure 118: Setup Screen

In the Setup screen, the Units of Measure can be changed to Imperial units in either feet and inches (ft/in) or only inches (in) or Metric units (mm).

Example:

ft/in:	10’ 4 1/16”
in:	124 1/16”
mm:	3,151mm

The shear operation can be turned on and off if an auxiliary shear such as the Swenson Snap Table will be utilized.

The brightness of the display can also be adjusted up or down by pressing the right and left arrow buttons.

Status/Diagnostics:

In order to help troubleshoot the machine, press the Status button found in on the setup screen to bring up the status of the machine as seen from the controller.

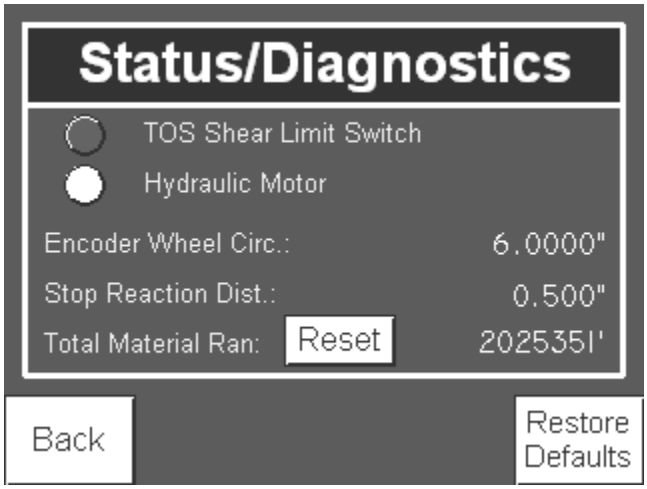


Figure 119: Status Screen

The Status 1 screen shows the condition of the Hydraulic Pressure Switch and the Top of Stroke Limit Switch. If one or both of the TOS Shear Limit Switches are not activated the TOS Shear Limit Switch light will be on. Refer to the Shear section in the machine manual for limit switch adjustment.
If the motor is not on or if the pressure switch is not activated then the Hydraulic Motor light will be on.
The Status screen lists the Encoder Wheel Circumference. This value is changed automatically when the controller is calibrated. The Stop Reaction Distance is also automatically changed by the controller as the machine runs. In order to reset these values, press the Restore Defaults button. NOTE: Calibration should be initiated following the defaults restore. The Total Material Ran through the machine with the controller on is shown on this screen. The Total Material Ran can be reset by pressing the Reset button. If the security is turned on, the password will be required to reset the Total Material Ran.
Press Back to return to the Setup Screen.

Security:

From the Setup screen press the Security Settings button to enter the security screen. The default password is: 1234.

Figure 120: Security Screen

If the security is turned on, the password will be required to change the stored coil lengths and colors or to reset the Total Material Ran value (totalizer). If security is turned off, no password is needed to make changes to these values. With security turned off the Security screen displays the current password which can be changed by entering a new password and pressing the enter button. Once this is done, the new password will be needed to make any changes to the coil lengths and colors or to reset the Total Material Ran.

Coil Tracking:

From the Home screen, press the Coils button to change the coil of material to track. If the security is turned on, a password must be entered if changes to the stored coils are necessary. If security is turned off, the controller will display the current coil screen and changes can be made without the password.

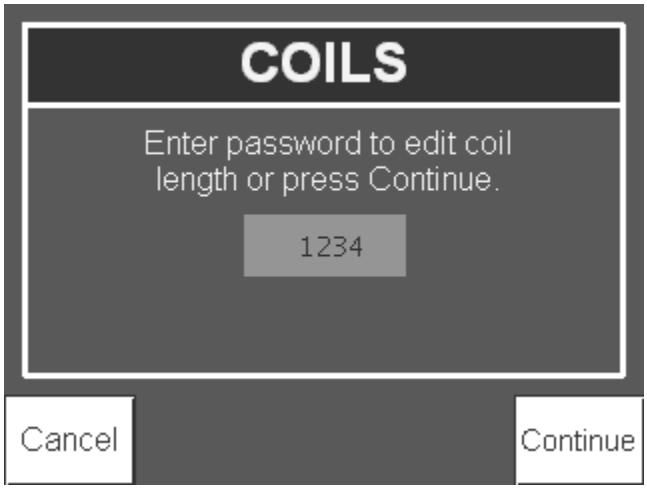


Figure 121: Coils Password Access Screen

Without the password, press Continue to view the Coils screen.

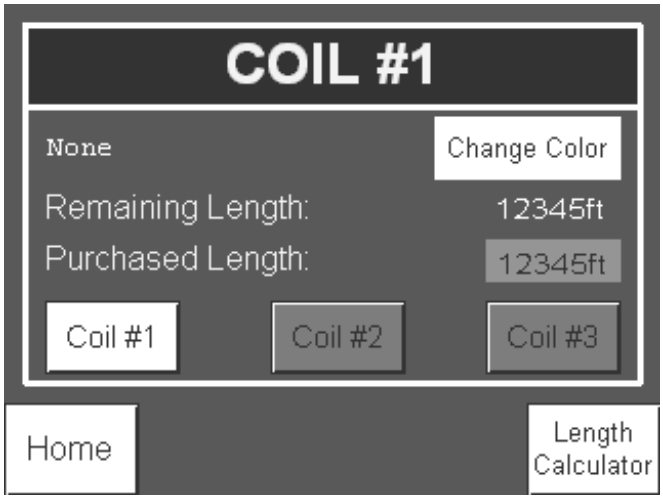


Figure 122: Coils Screen

The controller has the ability to track the length of three different coils of material. Press Coil #1, 2 or 3 to change the coil to be run through the machine. When a new coil is purchased, press the Purchased Length numerical display to input the length of the coil into the controller. The Remaining Length will reset to the new purchased length. As material is run through the machine, the controller will subtract material from the remaining length. The coil (#1, 2 or 3) that is displayed when the Home button is pressed will be the coil that the controller subtracts material from as the machine is run.

Example:

The controller is set to run a black coil designated as Coil #2 and the user changes to a white coil designated by Coil #1. From the Home screen, press the Coils button which will bring up the Coil #2 information. Press the Coil #1 button and then the Home button.

If the remaining length reads negative then the machine has tracked more material than the purchased length.

Example:

If a purchased length of 100' is input into the controller then 115' of material is ran through the machine before the coil is gone, the controller will read a remaining length of -15'.

There is an indicator on the top right of the Home screen that indicates which coil is being tracked.

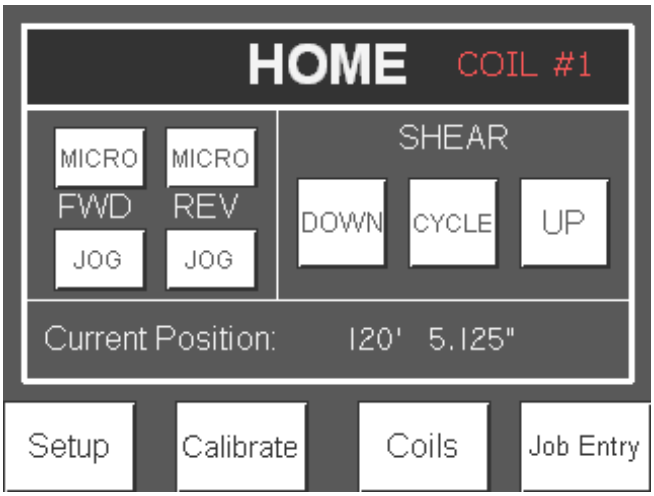


Figure 123: Coil Indicator

Colors

Press the Change Color button to select the color of the coil. Press the Cancel button to avoid changing the color of the coil.

Figure 124: Coils Color Screen

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 the Coils screen, press Length Calculator button.

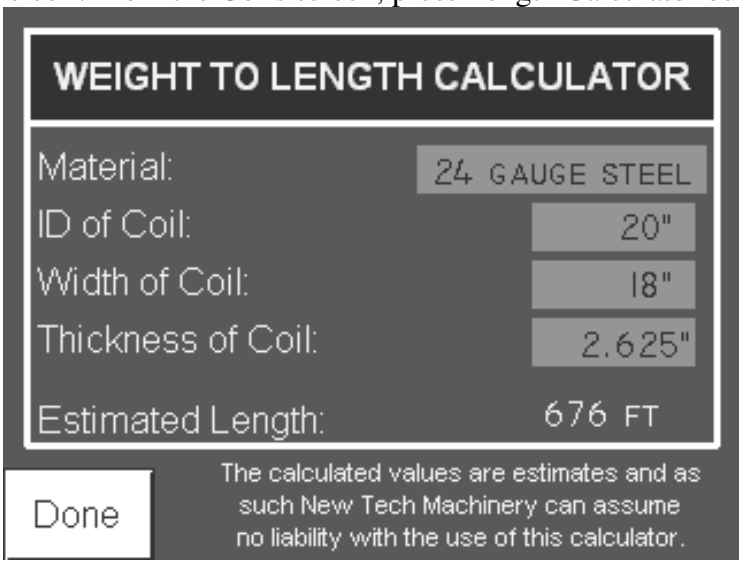


Figure 125: Length Calculator Screen

Press the Select Material button to select the thickness and type of material.

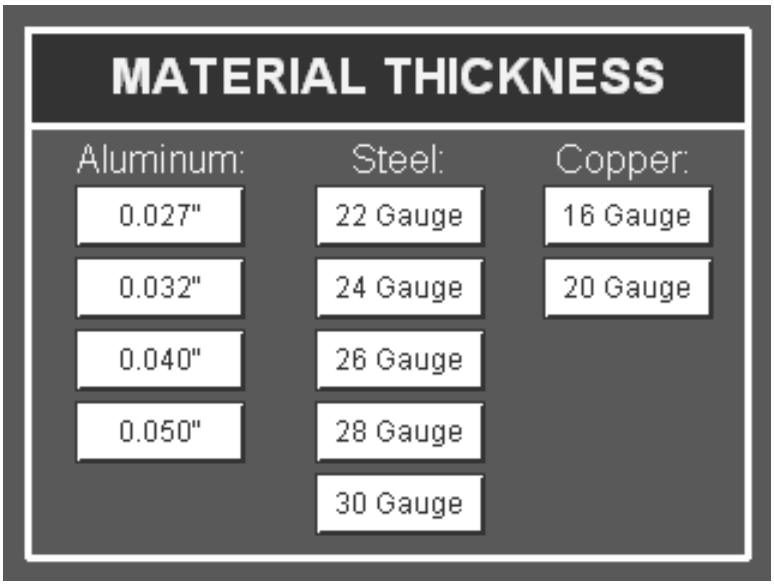


Figure 126: Material and Thickness Screen

Then enter in the Inside Diameter of the Coil, Width 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 Done button to return to the Coils screen.

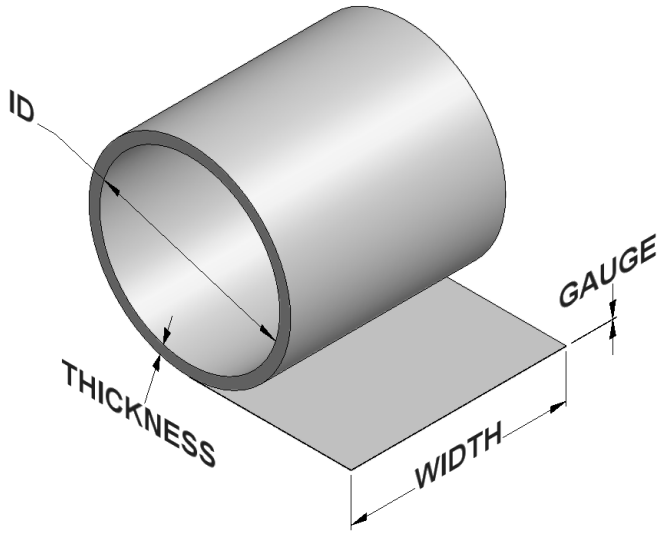


Figure 127: Coil Dimensions

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.

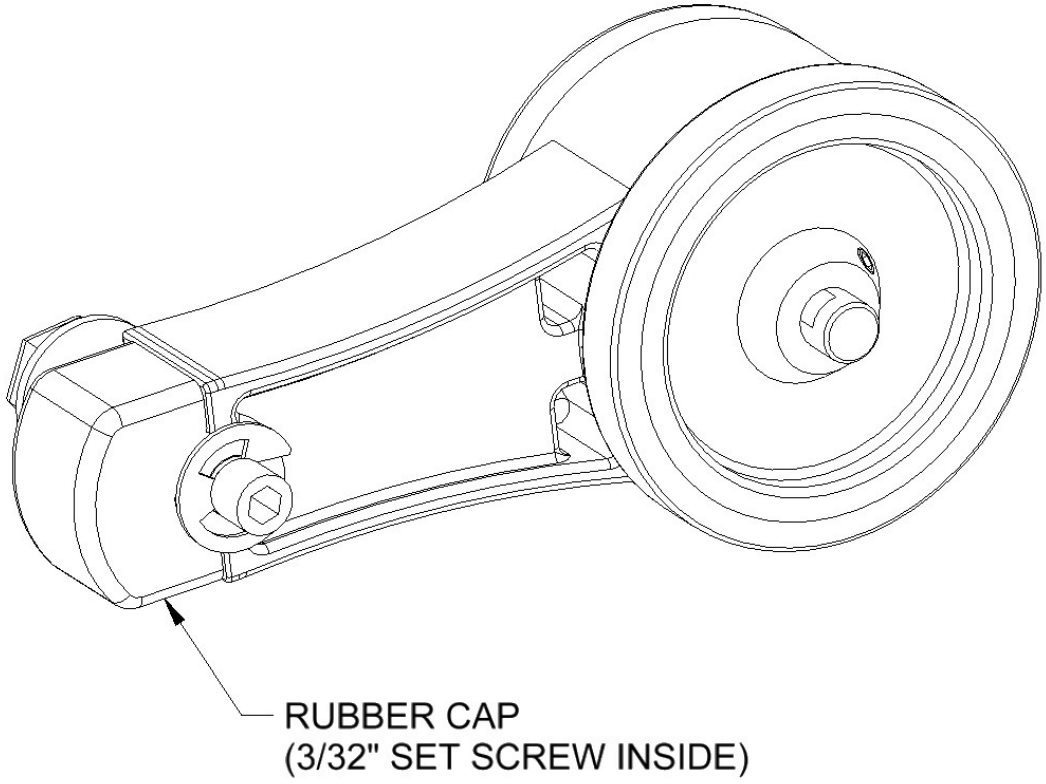


Figure 128: Encoder Rubber Cap

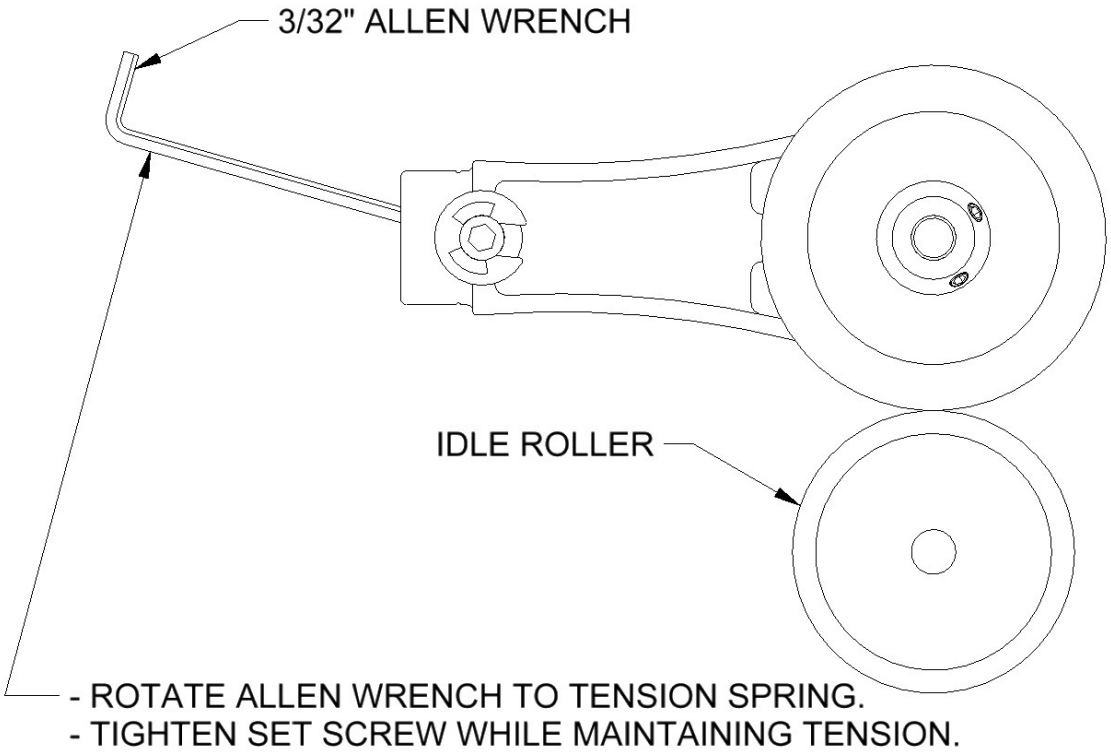
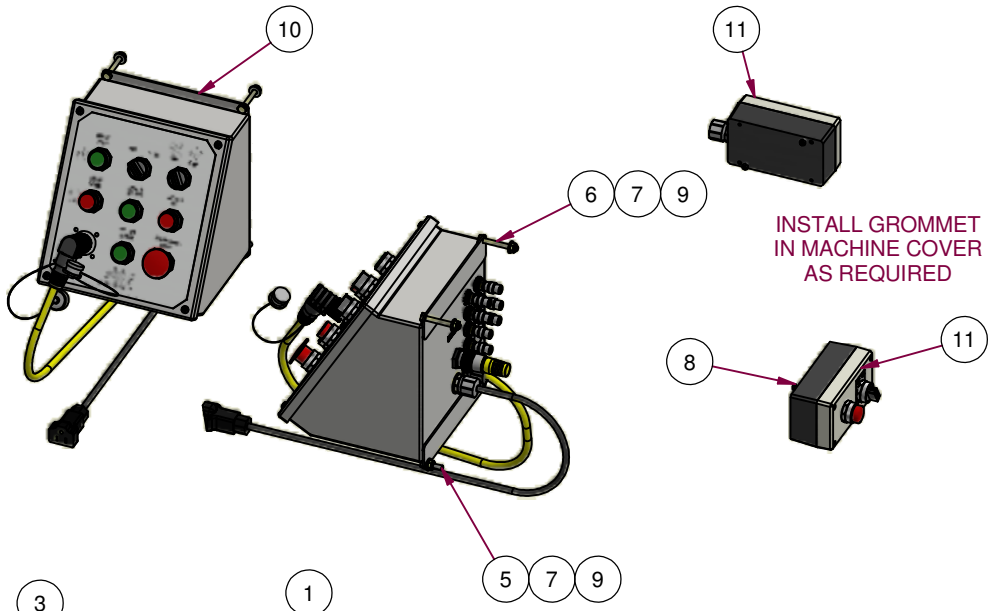


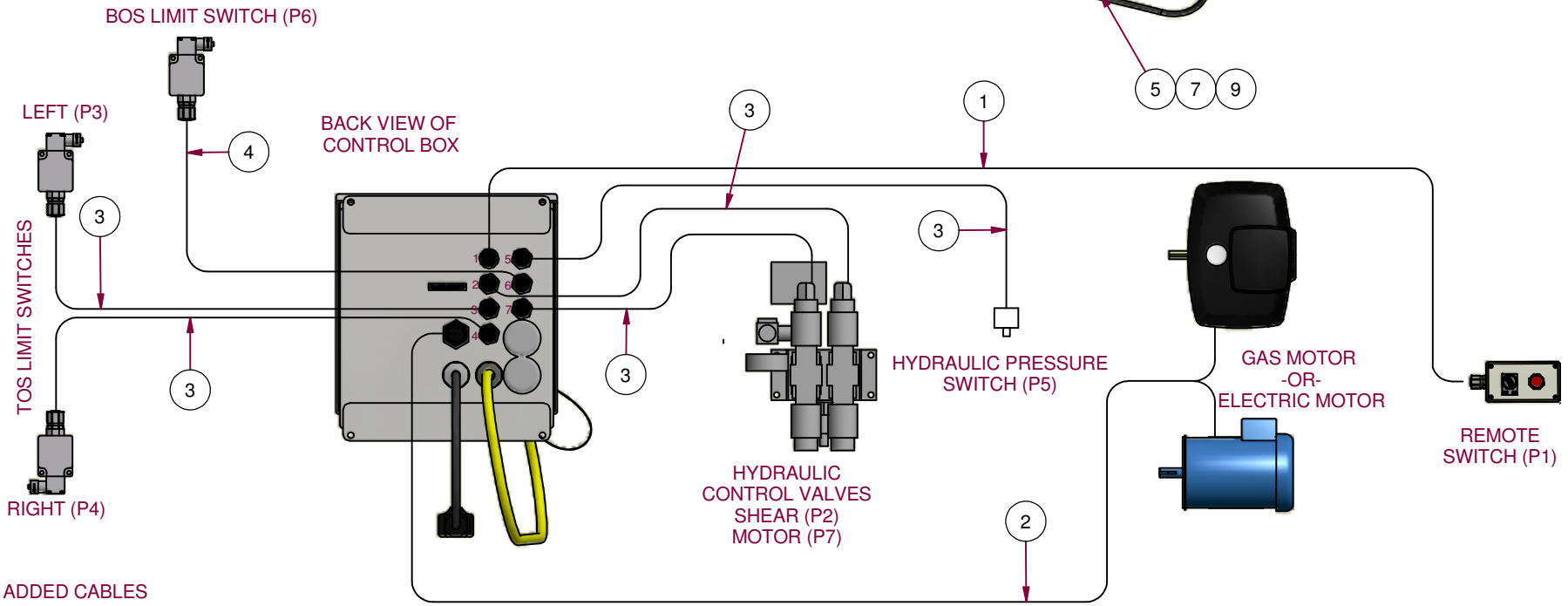
Figure 129: Encoder Adjustment

ELECTRICAL SCHEMATICS

Drawing Number	Sheet Number	Description
PLC-380-000	1	Electrical Assembly – Parts List
PLC-380-000	2	Electrical Assembly – Wiring Details
PLC-381-000	1	Control Box Assembly – Parts List
PLC-381-000	2	Control Box Assembly – Outside & Inside Views
PLC-381-000	3	Control Box Assembly – Wiring Schematic
PLC-381-000	4	Control Box Assembly – Ladder Logic 1
PLC-381-000	5	Control Box Assembly – Ladder Logic 2

Parts List			
ITEM	QTY	PART NUMBER	TITLE
1	1	ELC-100-015	CABLE, 5 PIN, MALE X 6M
2	1	ELC-400-101	CABLE, 6 PIN, MALE/FEMALE X 4M
3	5	ELC-400-105	CABLE, 4 PIN, MALE X 2M
4	1	ELC-400-106	CABLE, 3 PIN, MALE X 2M
5	1	FAS-HC5-118	HEX HEAD CAP SCREW, 1/4-20 x 1" LG.
6	2	FAS-HC5-278	HEX HEAD CAP SCREW, 1/4-20 x 2" LG.
7	3	FAS-NUY-188	NYLOC HEX NUT, #1/4-20
8	2	FAS-SRM-207	SCREW, PAN HEAD, 8 x 1/2", PHIL, SELF-TAPPING
9	3	FAS-WSF-260	WASHER, FLAT, 1/4" SAE
10	1	PLC-381-000	CONTROL BOX ASSEMBLY
11	1	PLC-382-000	REMOTE PUSH BUTTON BOX





NOTE: UNLESS OTHERWISE SPECIFIED.
1. R=.015

MATERIAL	LENGTH	FINISH
SEE BOM	-	NONE

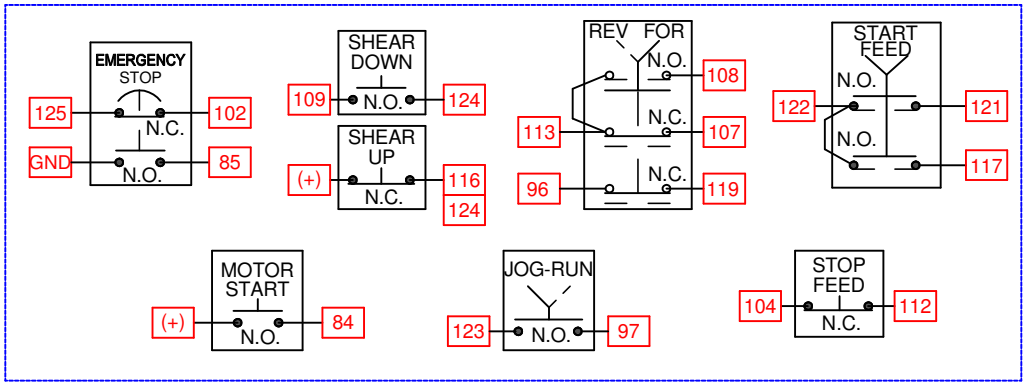
REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY
	0	R-1757	10/25/2011	AJB
	1	R-2114	01/22/2015	BT

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

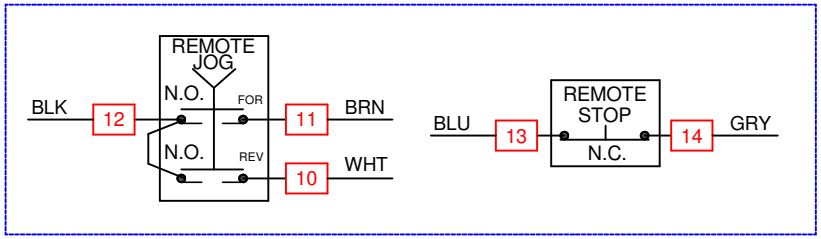
NEW TECH MACHINERY CORP.

DRAWN BY	PART NAME	
BT	ELECTRICAL ASSEMBLY	
DATE 01-27-2011		
CHECK BY AJB	PART NUMBER	SHEET / REVISION
DATE 10/25/2011	PLC-380-000	1 OF 2 / 1

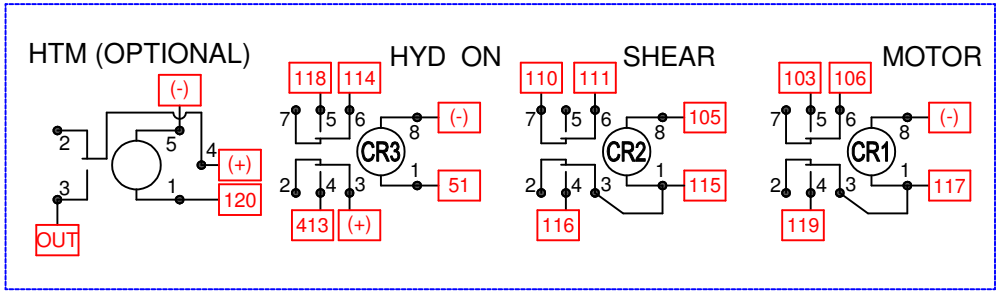
MAIN CONTROL BOX



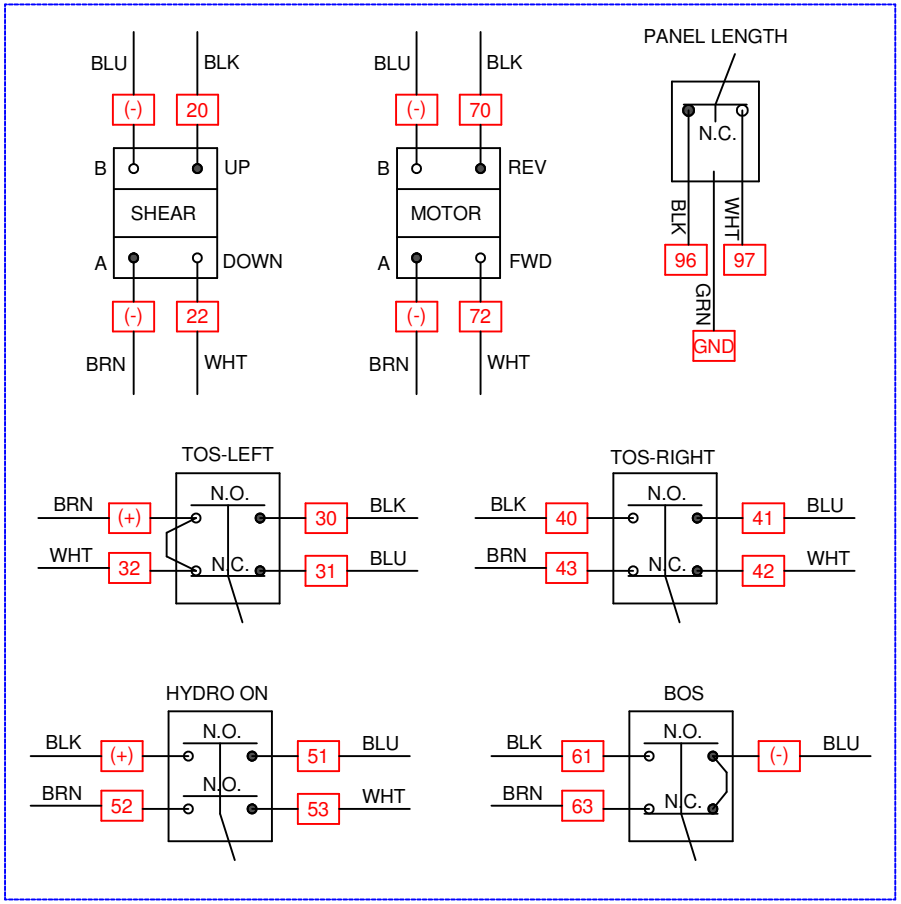
ENTRY END/REMOTE CONTROL



CONTROL RELAYS



COMPONENTS



NOTE: UNLESS OTHERWISE SPECIFIED.
1. R=.015

MATERIAL	LENGTH	FINISH
SEE BOM		

REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY

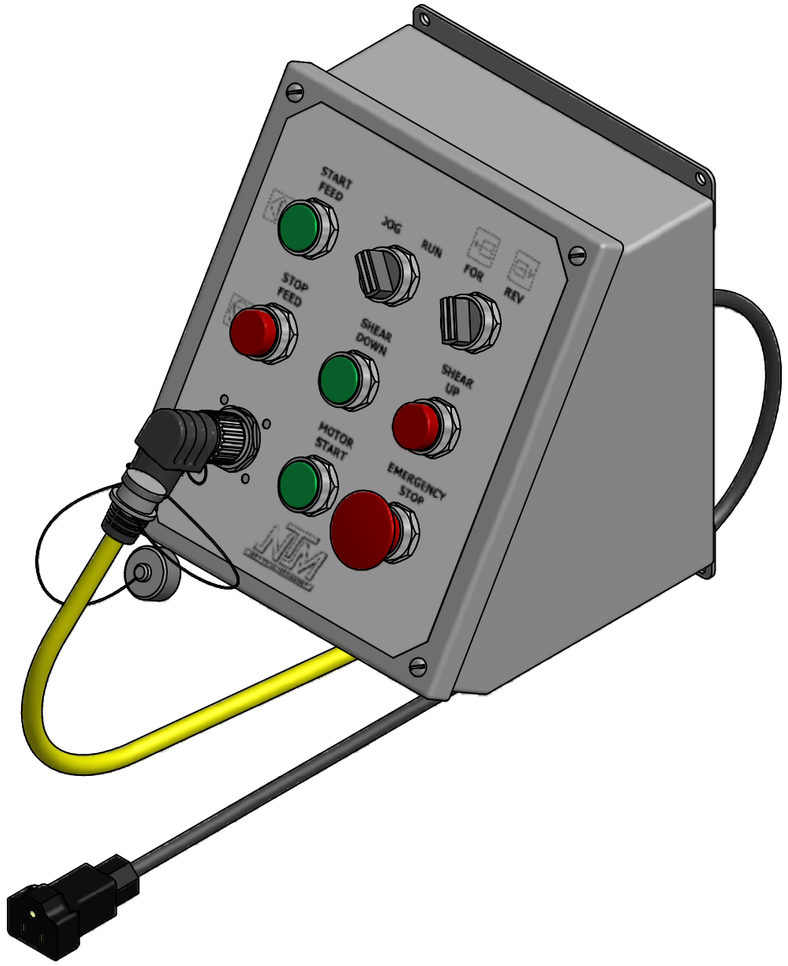
TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2°

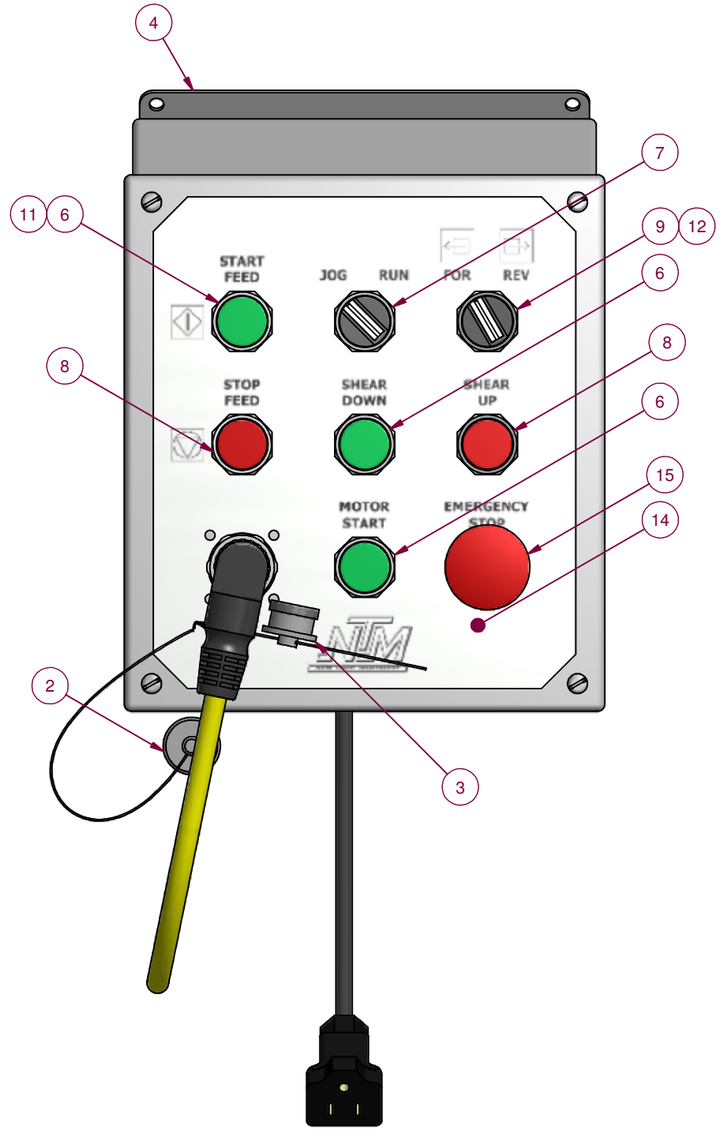
NEW TECH MACHINERY CORP.

DRAWN BY	DATE	PART NAME		
		ELECTRICAL ASSEMBLY		
CHECK BY	DATE	PART NUMBER	SHEET	REVISION
		PLC-380-000	2 OF 2	1

PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	DCL-100-017	DECAL, ASSEMBLED IN MEXICO
2	1	ELC-100-017	FEMALE CLOSURE CAP
3	1	ELC-100-018	MALE CLOSURE CAP
4	1	ELC-100-021	ENCLOSURE
5	1	ELC-110-000	TERMINAL BLOCK/RELAY ASSEMBLY
6	3	ELC-300-103	PUSH BUTTON, GREEN
7	1	ELC-300-104	SELECTOR SWITCH, W/1 N.O.
8	2	ELC-300-107	PUSH BUTTON, RAISED RED
9	1	ELC-300-109	SELECTOR SWITCH, 2 POS,1 N.O. 1 N.C.
10	2	ELC-300-114	1" MOUNTING BASE (NOT SHOWN)
11	1	ELC-400-017	IDEC #HW-C10 N/O CONTACT BLOCK
12	1	ELC-400-018	IDEC #HW-C01 N/C CONTACT BLOCK
13	2	ELC-400-045	HOLE SEAL, 1/2" KO
14	1	ELC-400-046	LEXAN OVERLAY, PANEL
15	1	ELC-400-061	BUTTON, MUSHROOM, PUSH/PULL
16	1	ELC-425-020	STRAIN RELIEF, 1/2" NPT
17	1	ELC-450-006	STRAIN RELIEF, 1/2" NPT .10-.30"
18	4	FAS-NUY-186	NYLOC HEX NUT, #10-32
19	1	FAS-SRM-201	PHILLIPS PAN HEAD SCREW, 10-32 x 3/8"
20	4	FAS-WSF-344	WASHER, FLAT, #10 SAE
21	1	PLC-390-000	PUSH BUTTON BOX WIRE KIT (NOT SHOWN)

5 REPLACED
(1) ELC-425-020 WITH (1) ELC-450-006





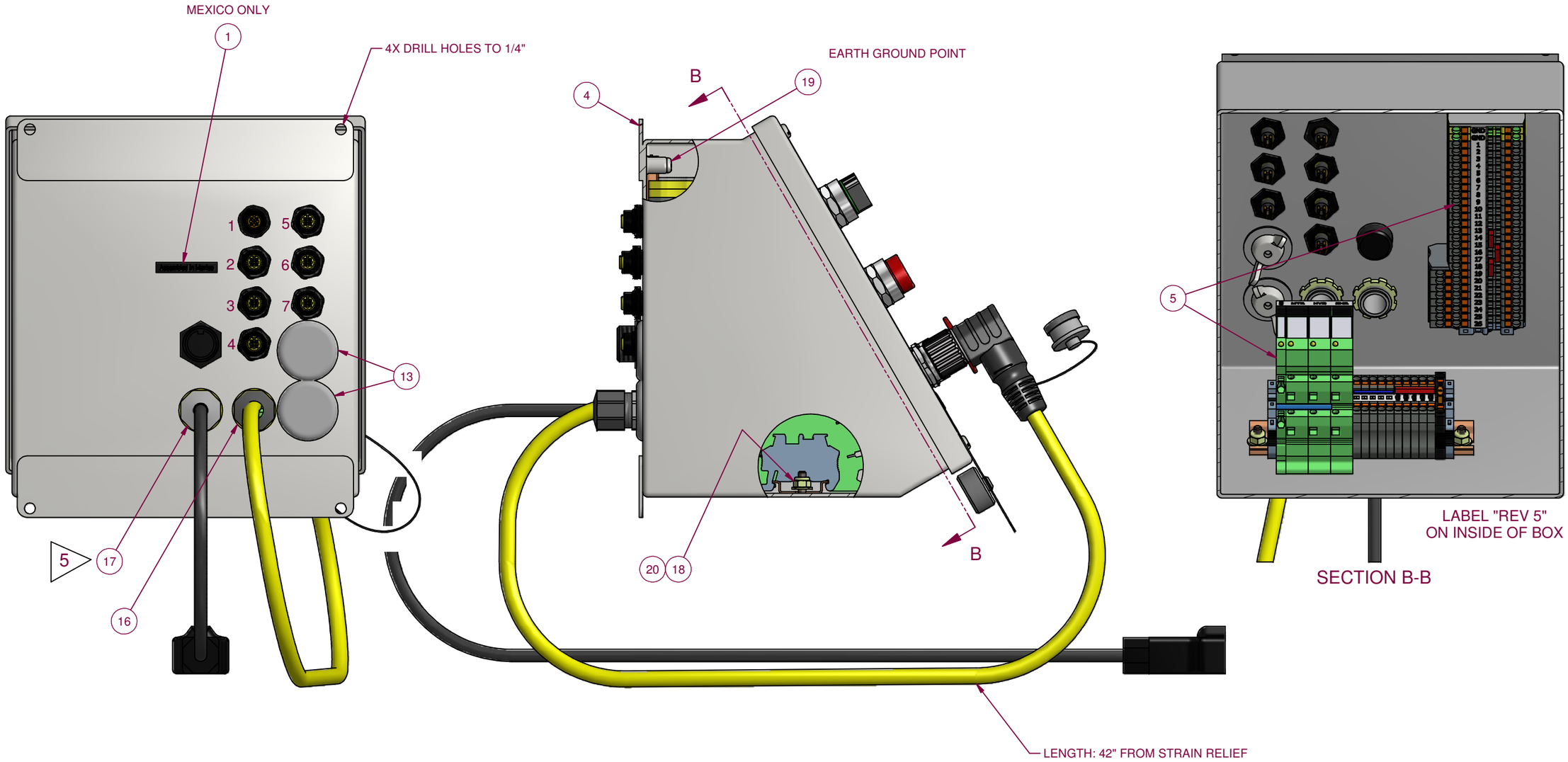
MATERIAL	LENGTH	FINISH
SEE BOM	N/A	NONE

REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY
	0	R-1757	UNK	UNK
	1	R-1800	10/20/2011	AJB
	2-3	R-1781	3/28/2013	BT
	4	R-1915	08/22/2013	BT
	5	R-1909	09/26/2014	BT

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

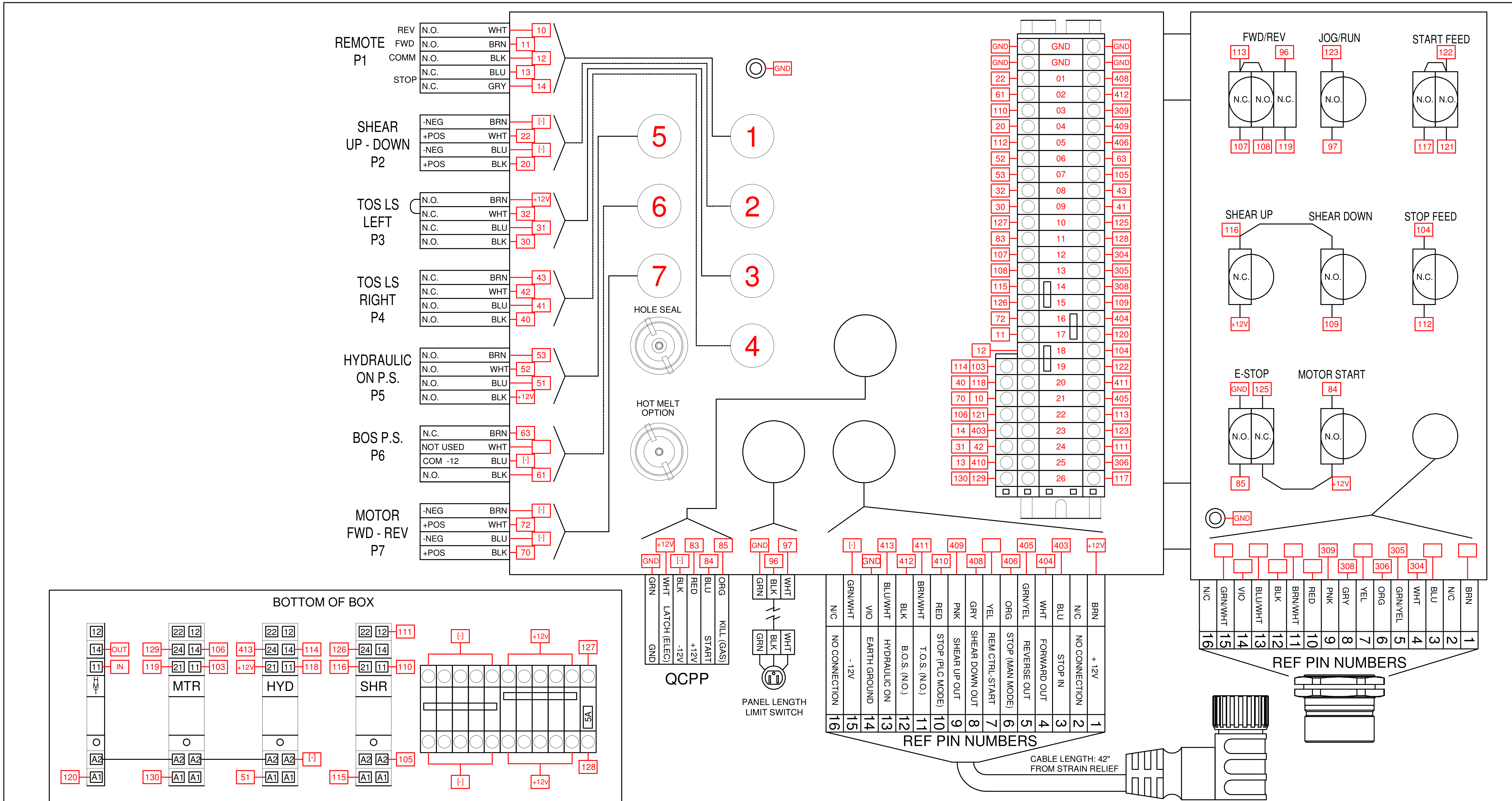
NEW TECH MACHINERY CORP.

DRAWN BY	PART NAME
BT	CONTROL BOX ASSEMBLY
DATE 01-26-2011	
CHECK BY AJB	PART NUMBER PLC-381-000
DATE 10/20/2011	SHEET 1 OF 6
	REVISION 5



MATERIAL: SEE BOM	LENGTH:	FINISH:			NEW TECH MACHINERY CORP.	
REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY	DRAWN BY / DATE	PART NAME: CONTROL BOX ASSEMBLY
					CHECK BY / DATE	PART NUMBER: PLC-381-000
					SHEET: 2 OF 6	REVISION: 5

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



MATERIAL	LENGTH	FINISH
SEE BOM		

REV	ECR NO.	DATE	RELEASED BY

REVISION HISTORY

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

NEW TECH MACHINERY CORP.

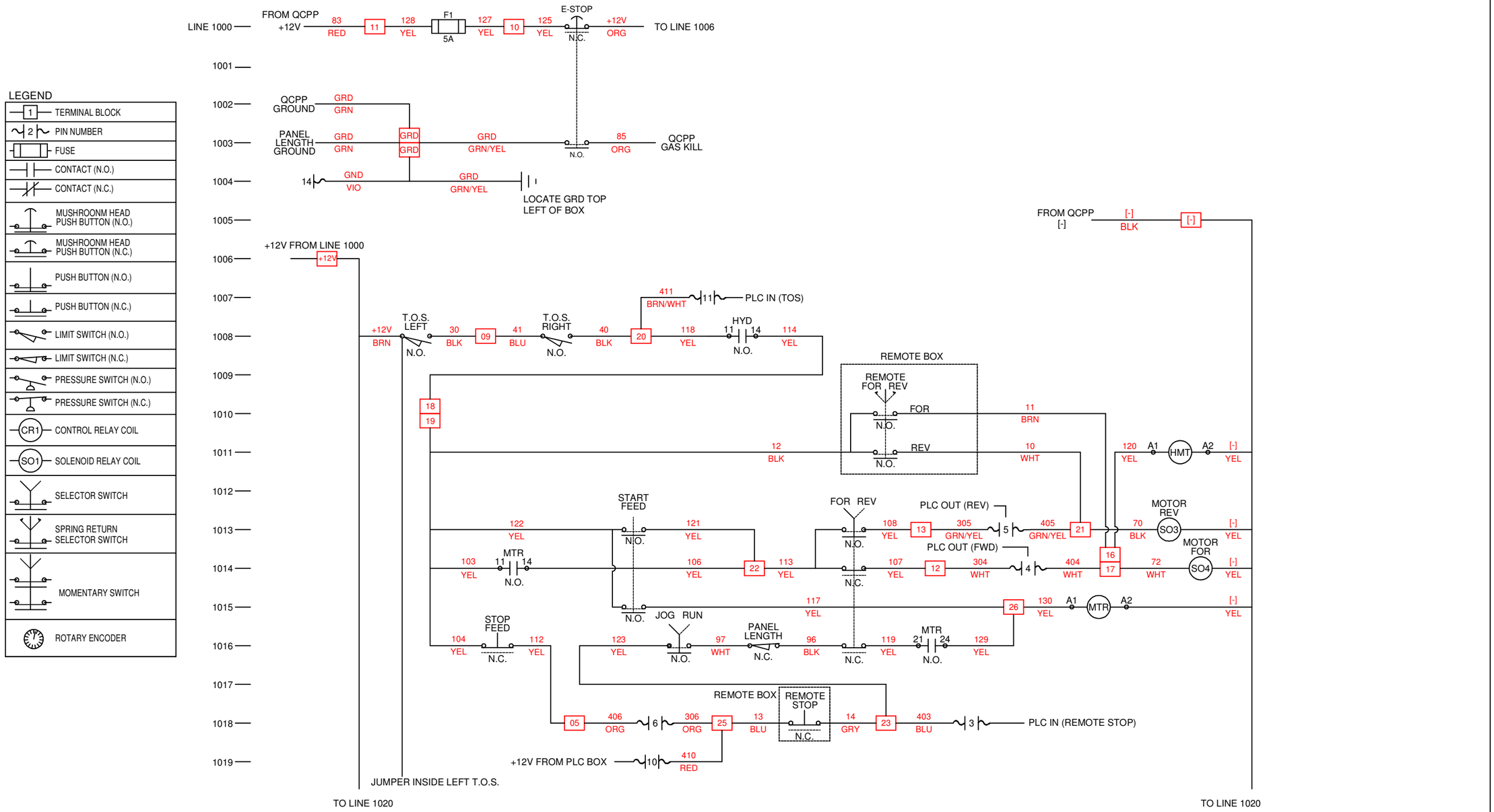
DRAWN BY
DATE
CHECK BY
DATE

PART NAME: CONTROL BOX ASSEMBLY

PART NUMBER: PLC-381-000

SHEET 3 OF 6

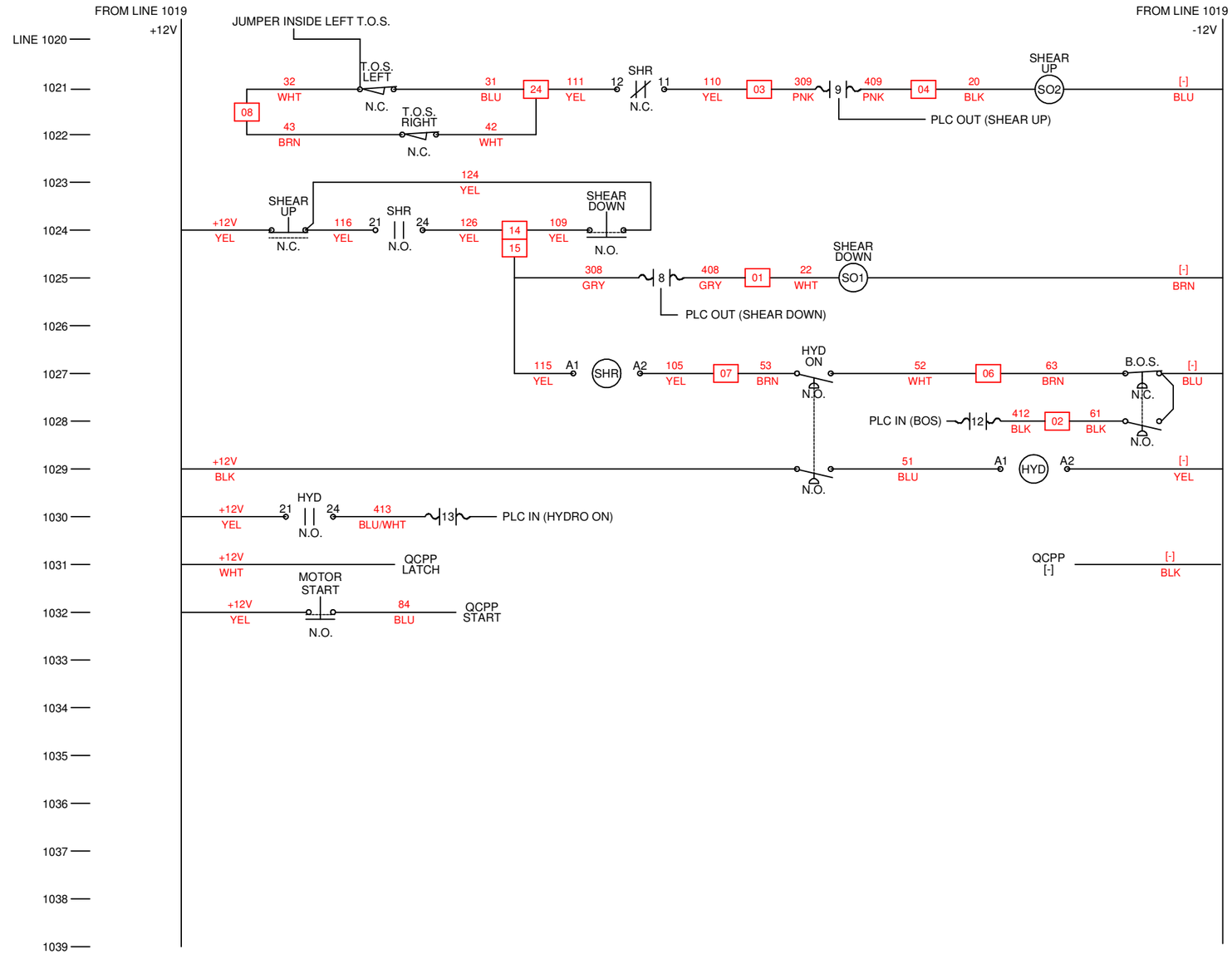
REVISION 5



MATERIAL: SEE BOM	LENGTH	FINISH			NEW TECH MACHINERY CORP.	
REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY	DRAWN BY / DATE	PART NAME: CONTROL BOX ASSEMBLY
					CHECK BY / DATE	PART NUMBER: PLC-381-000
TOLERANCES: .XX = ± .01; .XXX = ± .005; FRACTION = ± 1/32"; ANGLE = ± 1/2°						SHEET: 4 OF 6
						REVISION: 5

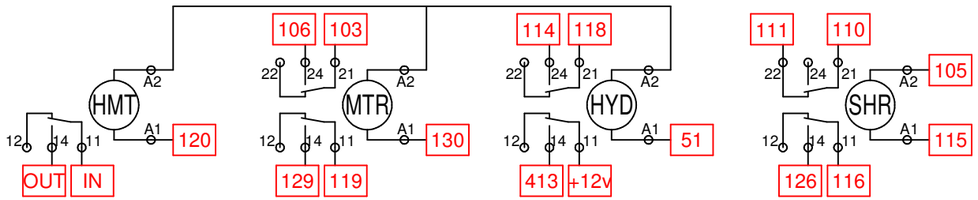
LEGEND

- TERMINAL BLOCK
- PIN NUMBER
- FUSE
- CONTACT (N.O.)
- CONTACT (N.C.)
- MUSHROONM HEAD PUSH BUTTON (N.O.)
- MUSHROONM 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.)
- CR1 — CONTROL RELAY COIL
- SO1 — SOLENOID RELAY COIL
- SELECTOR SWITCH
- SPRING RETURN SELECTOR SWITCH
- MOMENTARY SWITCH
- ROTARY ENCODER

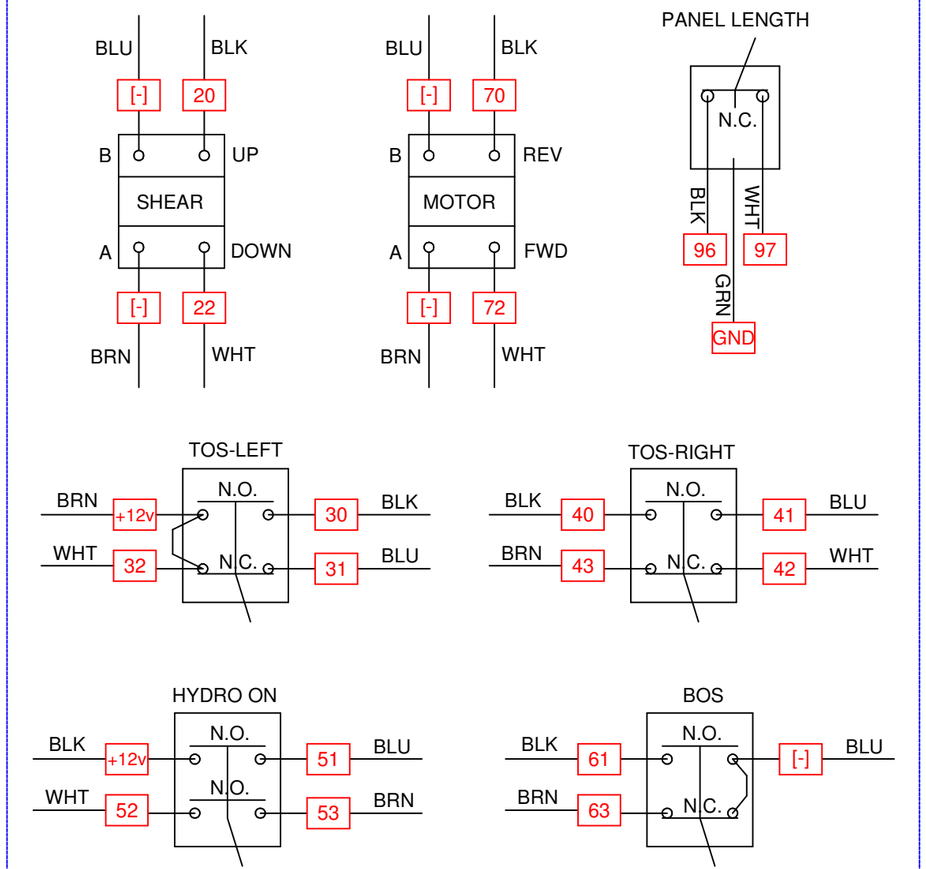


MATERIAL: SEE BOM	LENGTH	FINISH	NEW TECH MACHINERY CORP.				
REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY	TOLERANCES: .XX = ± .01; .XXX = ± .005; FRACTION = ± 1/32"; ANGLE = ± 1/2°	DRAWN BY / DATE	PART NAME: CONTROL BOX ASSEMBLY
						CHECK BY / DATE	PART NUMBER: PLC-381-000
							SHEET: 5 OF 6
							REVISION: 5

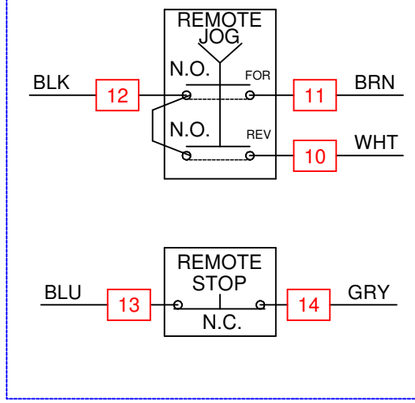
CONTROL RELAYS

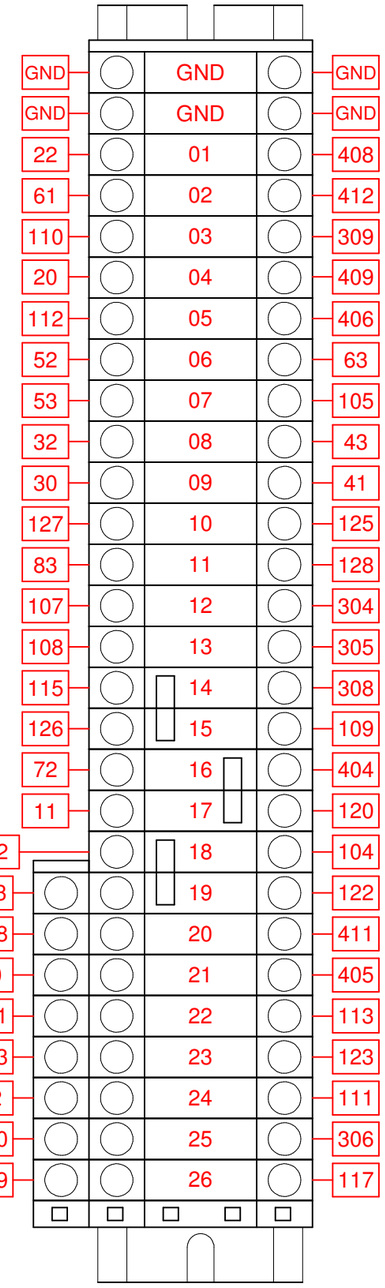


COMPONENTS



ENTRY END/REMOTE CONTROL





MATERIAL: SEE BOM	LENGTH	FINISH				
REVISION HISTORY	REV	ECR NO.	DATE	RELEASED BY	TOLERANCES: .XX = ± .01; .XXX = ± .005; FRACTION = ± 1/32"; ANGLE = ± 1/2°	DRAWN BY / DATE
						CHECK BY / DATE

NEW TECH MACHINERY CORP.

PART NAME: CONTROL BOX ASSEMBLY

PART NUMBER: PLC-381-000 | SHEET: 6 OF 6 | REVISION: 5

New Tech Machinery

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