



OPERATION and MAINTENANCE MANUAL



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SSQ MultiPro™

AMS Controller

Quick Change – Commercial/Residential Roof Panel Machine

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CHAPTER 1
SSQ SPECIFICATIONS

SPECIFICATIONS

SSQ Dimensions:	Length-13' 7"	(4.1m)
	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:	18 Gallons - 32AW	
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

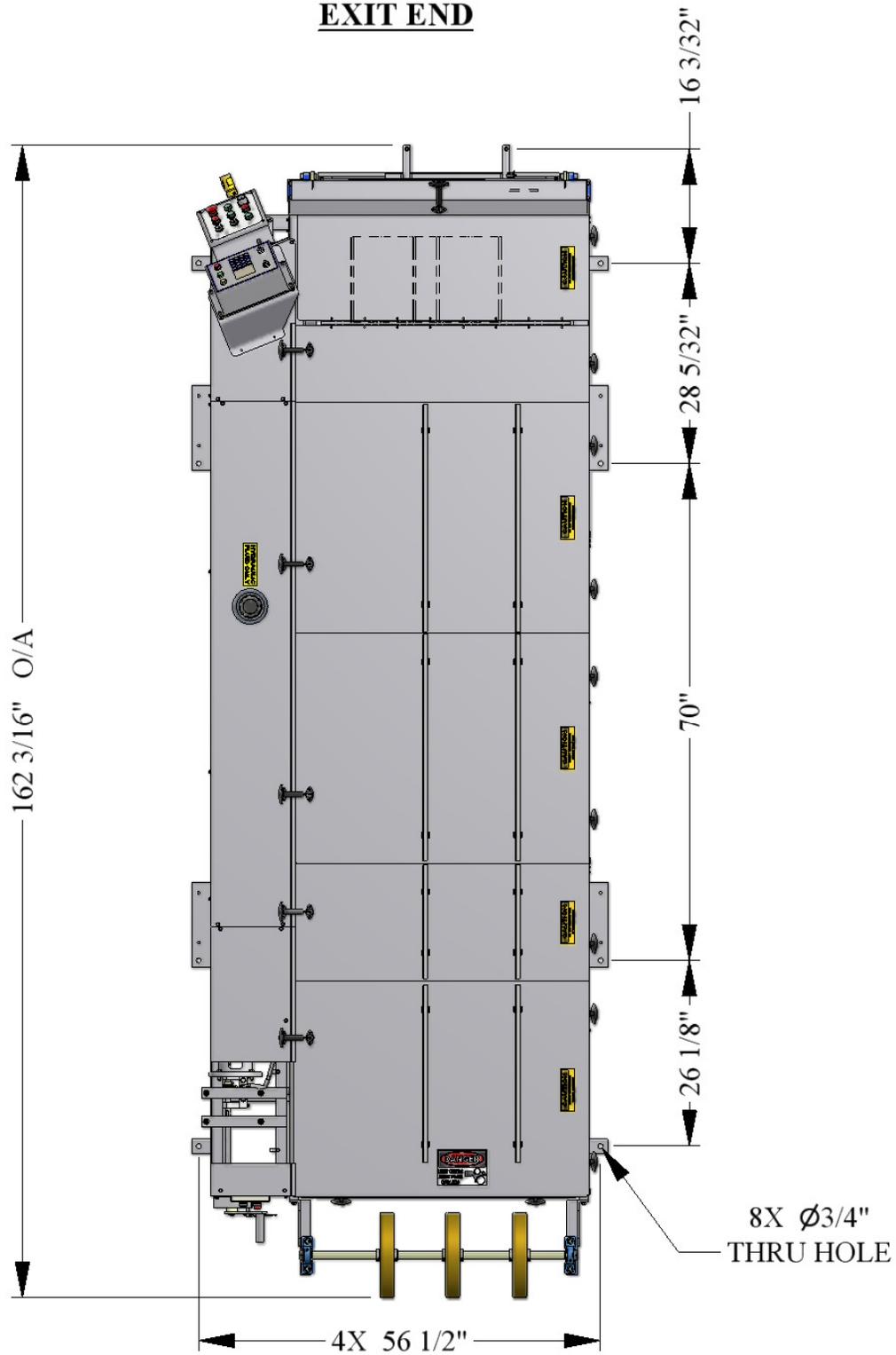
CHAPTER 2
PRECAUTIONS

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.**

CHAPTER 3
MACHINE ORIENTATION

EXIT END



ENTRY END

Figure 2: Mounting Foot Detail

CHAPTER 4
GENERAL MAINTENANCE

GENERAL MAINTENANCE

1. Always keep covers on during operation and storage. The covers are for operator safety, but also protect the internal components of the machine from the environment.
2. Avoid storage of the machine outdoors for long periods of time. Cover the machine with a tarp to protect it but provide good ventilation to prevent condensation and rust.
3. Keep the machine clean. This will increase the life of the machine and make maintenance easier. A clean machine will provide a clean product.
4. Before operating the machine, visually inspect for foreign objects debris or anything unusual. If something doesn't seem correct, inspect and remedy prior to operation.
5. Keep chains properly tensioned. This will add to the life of the chains and sprockets. The chains should be just snug. An over-tightened chain is just as bad for the machine as a loose chain. Idler sprockets are provided on each chain for this purpose.
6. Lubricate the chains a minimum of every 40 hours of operation. It is preferable to use a dry motorcycle chain lube or equivalent.
7. Lubricate the 3 main drive gears a minimum of every 30 hours of operation. Use of an Open Gear Spray Lubricant is recommended. (Figure 17 & Figure 18 on page 28).
8. Keep Entry Guide Carriage (Figure 3 on page 7) clean and lubricate as needed Spray Lube.
9. Keep Bead Roller Carriage Shafts (Figure 21 on page 35) 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 19) lubricated with Clear Grease.
13. Lubricate Arbor Nut (Figure 34 on page 47) using a grease gun with EP Grease when threads begin to look dry.
14. Clean Forming Rollers as needed with a Scotch Brite Pad and a small amount of solvent.
15. Clean Drive Rollers with soap and water or mild solvent free spray cleaner. **CAUTION: Do not use harsh chemicals or solvents or damage will occur.**
16. Lubricate both faces of the Shear Blades and Dies (Figure 19 on page 31) 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

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 Synolon (PTFE)

Catalog No. 31110

11 oz. Aerosol Can

Available from:

MSC Supply at 1-800-645-7270

Clear Grease for:

Arbor Cradles

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

Catalog No. 71160

400 gram container

Available from:

MSC Supply at 1-800-645-7270

EP Grease for:

Arbor Nuts and Pillow Blocks

Grease - Lubricants Type: Moly Ep Grease

Catalog No. 11335

14 Ounce Container

Available from:

MSC Supply at 1-800-645-7270

Open Gear Spray Lubricant for:

Main Drive Gears

Open Gear and Wire Rope Lubricant

Catalog No. 00257659

11 oz. Aerosol Can

Available from:

MSC Supply at 1-800-645-7270

Hydraulic Fluid (32AW) for:

Hydraulic Tank

Various Manufacturers

CHAPTER 4
GENERAL MAINTENANCE

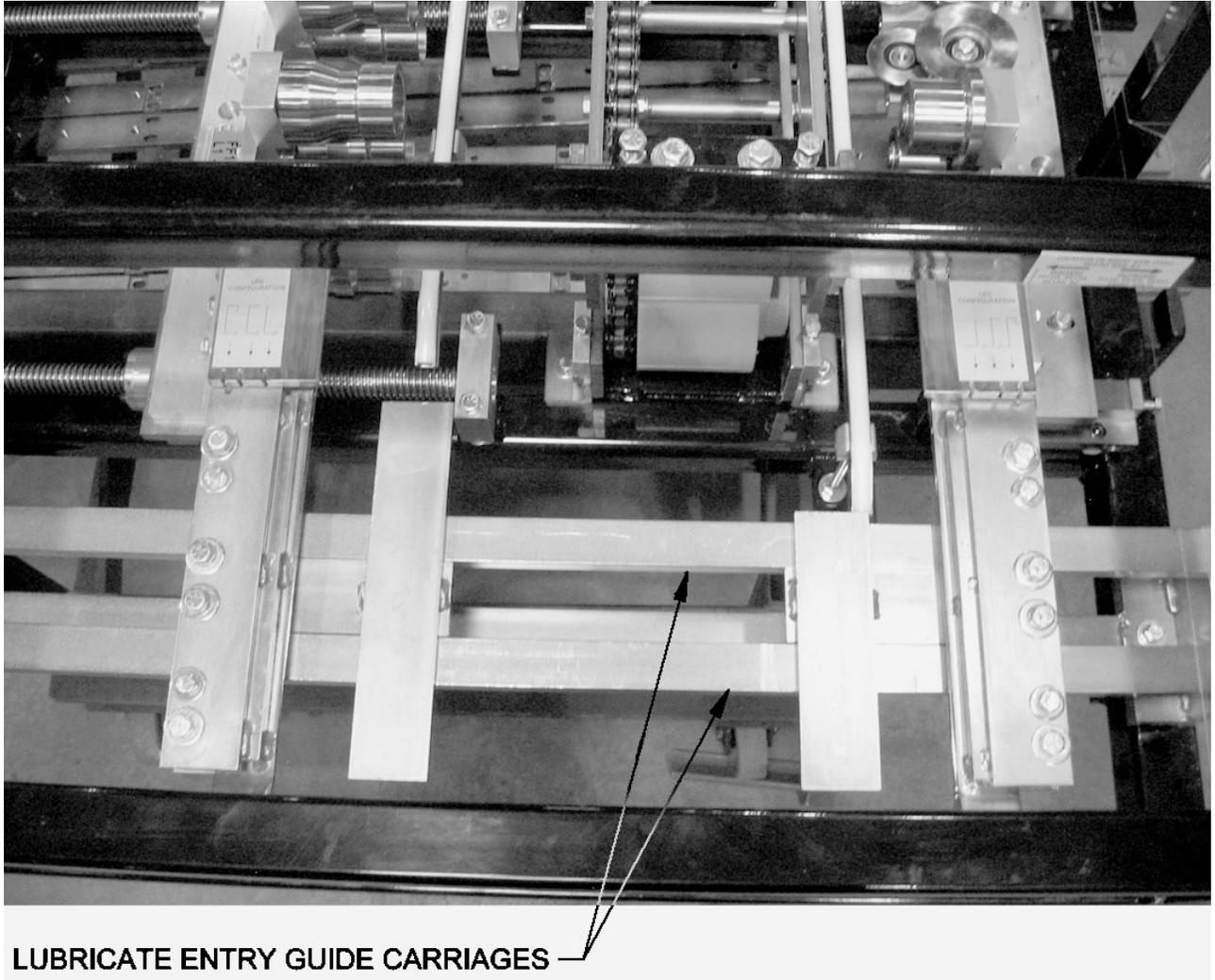


Figure 3: Entry Guide

CHAPTER 4
GENERAL MAINTENANCE

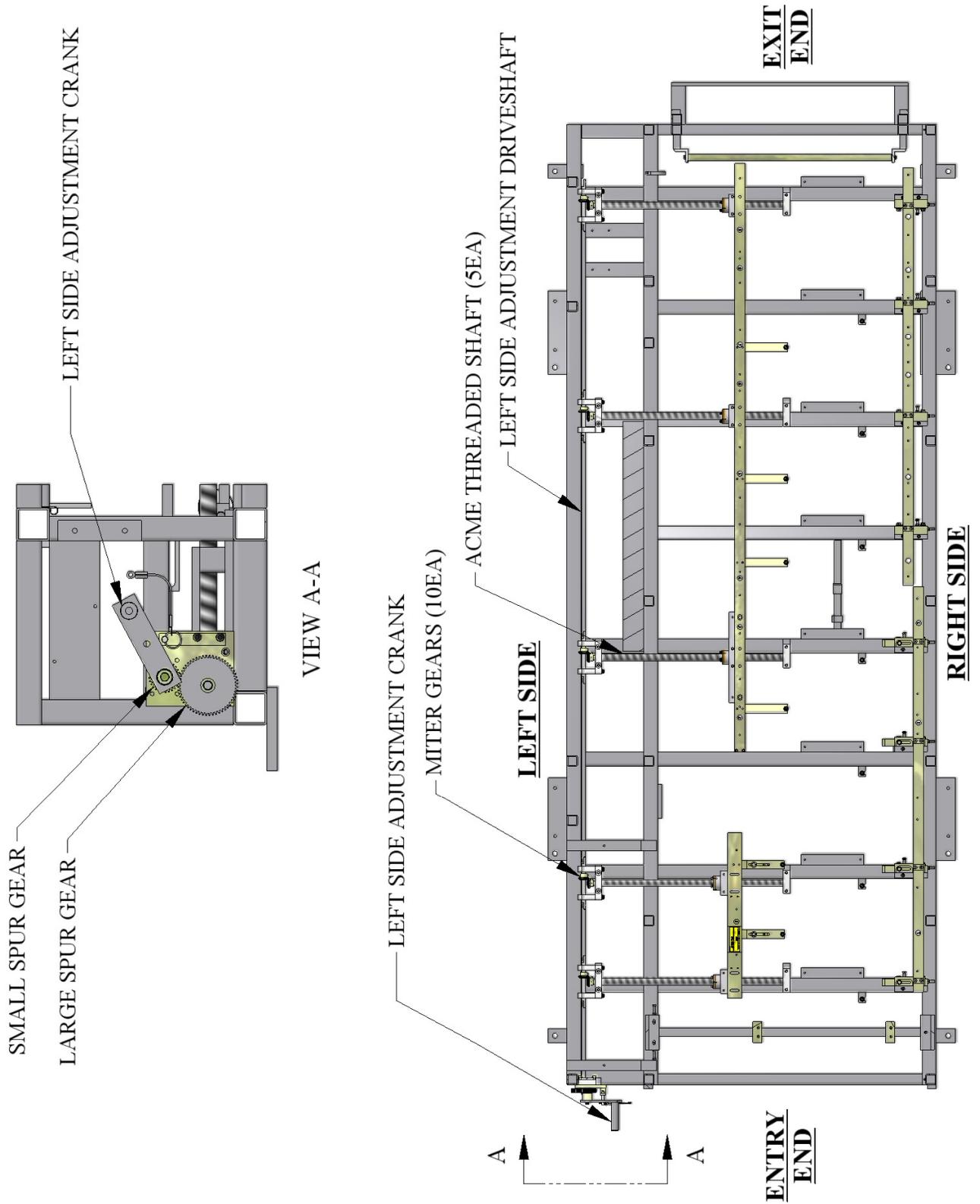


Figure 4: Acme Shafts and Left Side Adjustment

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

ELECTRICAL CONTROLS AND OPERATION

POWER CORD REQUIREMENTS

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

GENERATOR USE FOR ELECTRIC MOTOR MACHINES

If a generator will be used to power the machine it must be large enough to handle the amp draw requirements of the motor. Contact a 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)

- 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 until it clears the shear dies. Select run after material has cleared the shear, and the machine is 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 it 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 it 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 it will freeze it in 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-Power On 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.

MAIN CONTROL CABLE

(See Figure 6)

- A. The main control cable is the communication cable for the Manual Control Panel described above and the AMS Computer Batch and Length Control Computer covered in Appendix B. This cable must be connected to one or the other in order for the machine to operate.
- B. The Main Control Cable exits thru the panel below and under the left corner of the Manual Control Panel. There are two cables there and it is the larger diameter plug of the two. It 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. **Caution: Do Not rotate the cable clamp on the back of the plug to tighten this connection. Only turn the threaded ring of the plug or damage will occur.**

Batch and Length Control Computer Connection (See Figure 101)

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. **Caution: Do Not rotate the cable clamp on the back of the plug to tighten or loosen this connection. Only turn the threaded ring of the plug or damage will occur.**

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

REMOTE LIMIT SWITCH

(See Figure 7)

Note: The machine will not run continuously in the forward direction unless the REMOTE LIMIT SWITCH is plugged into the machine. The Remote Limit Switch is used for panel length control. It is designed to attach to the right side of the optional RUN OUT TABLES available 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 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 it stopped in the correct position and make the necessary adjustment to the limit switch to obtain the desired length. Repeat as necessary.

FUSES

(Figure 8)

All machines, gas or electric powered, have a 10-amp time delay fuse inside the Electrical Control Panel Assembly. This fuse protects the electrical components. If the fuse is blown, all functions of the machine will be lost except Motor Start. **To replace this fuse:** Loosen all 4 cover screws and open the front panel of the Control Box. Locate the automotive style in-line fuse near the bottom right hand corner. It is a spring loaded twist lock holder. Push together and turn to open. Check the fuse with a continuity tester. If it is bad, replace with a new fuse and re-connect spring loaded holder.

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 approximately mid machine on the right side. Access can be gained by removing the center left side cover. 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

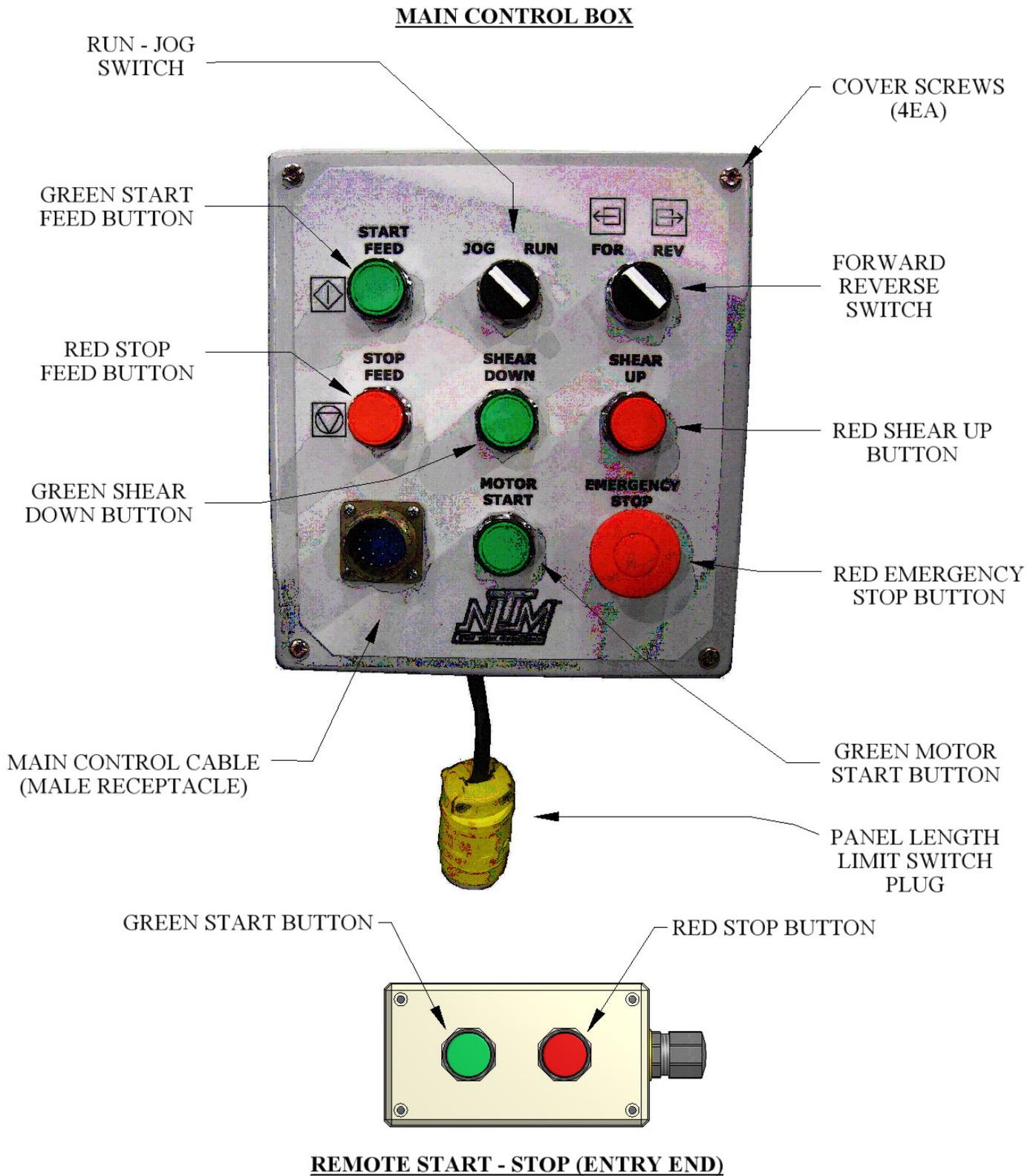


Figure 5: Controls

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION



— MAIN CONTROL CABLE
(FEMALE)

— ENCODER CABLE
(MALE)

Figure 6: Control Cables

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

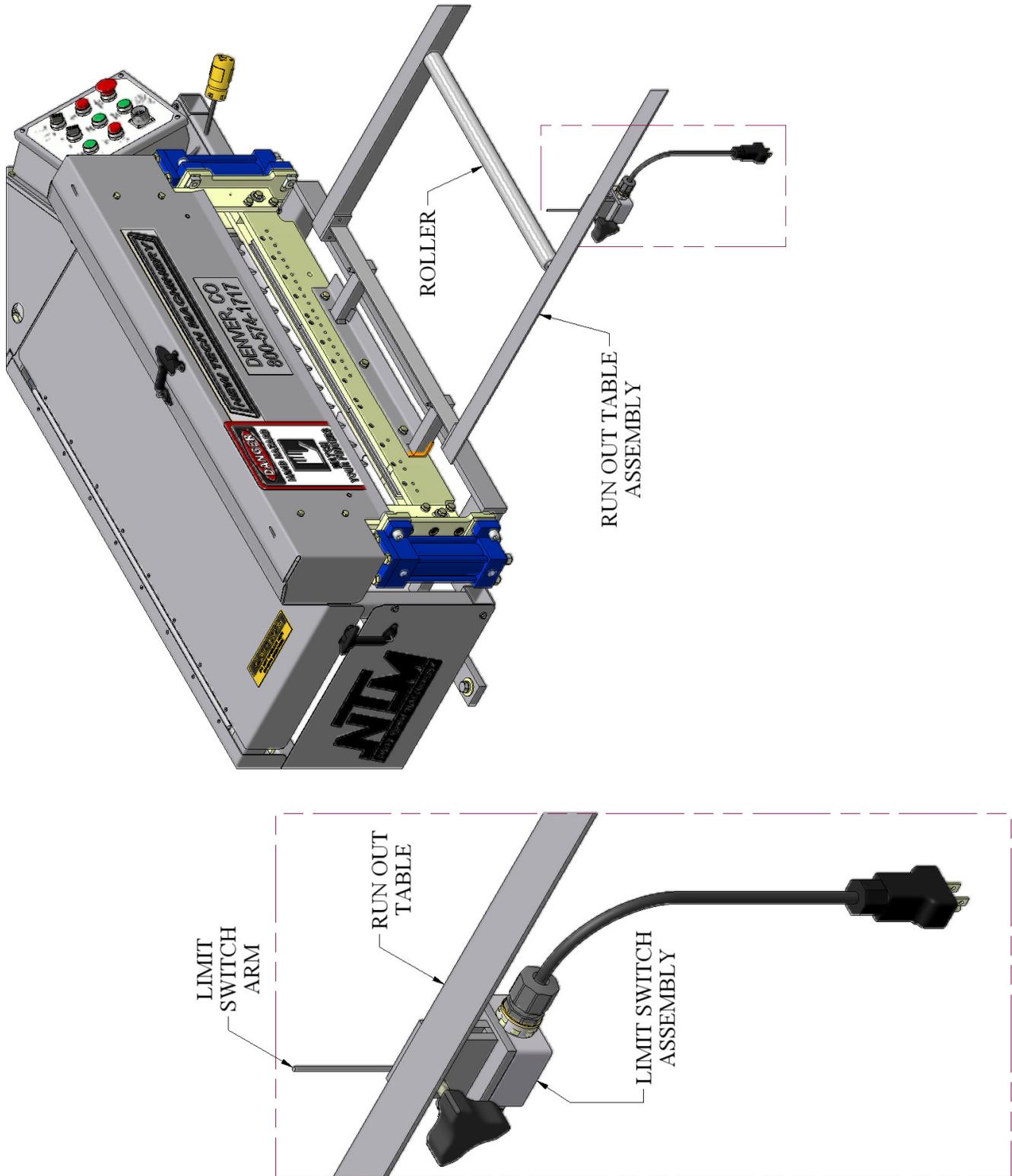


Figure 7: Run Out Table and Remote Limit Switch

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

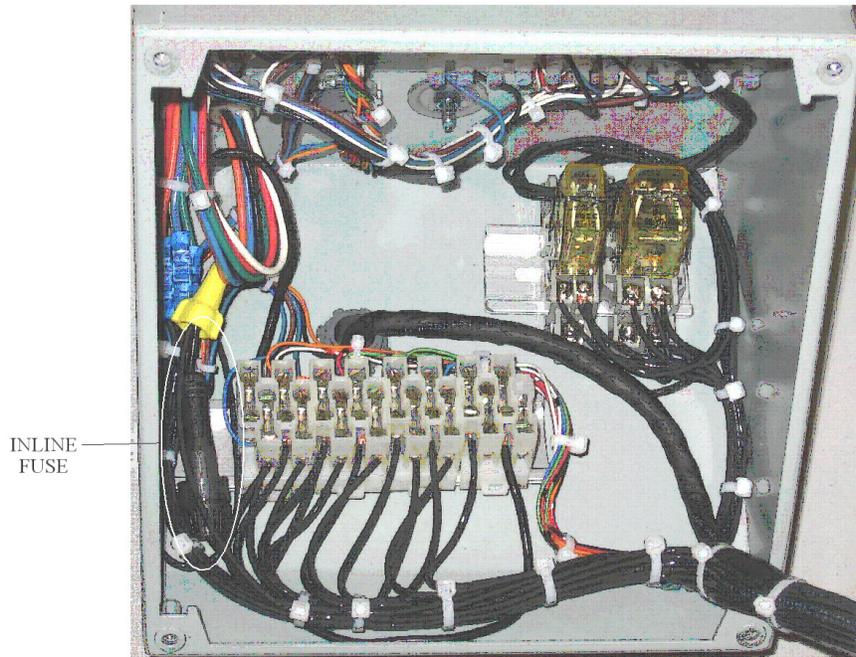


Figure 8: Main Control Box Fuse

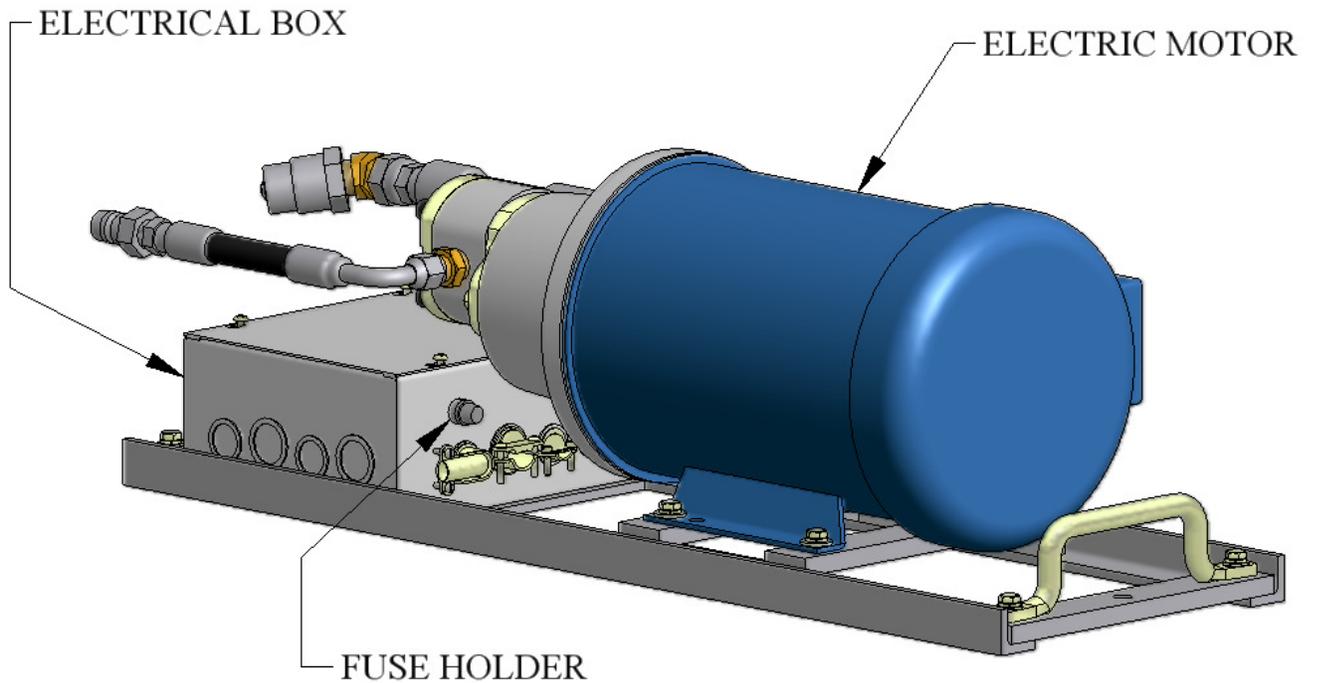


Figure 9: QCPP E 1-6 Fuse Location

CHAPTER 6
REEL STANDS, REELS, AND EXPANDABLE ARBORS

REEL STANDS, REELS AND EXPANDABLE ARBORS

EXPANDABLE ARBOR

(Figure 10)

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

THREADED NUT

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

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

END COLLAR

The End Collar has two positions.

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

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

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

LOADING EXPANDABLE ARBORS WITH COIL

1. Using the Threaded Nut, collapse the arbor small enough to fit into the inside diameter of the coil.
2. Slide the Expandable Arbor into the center of the coil making sure the threaded nut is on the right and the tail of the coil is over the top and pointed toward the exit end of the machine.
3. Turn the Threaded Nut clockwise until the Support Bars on the arbor are just snug against the inside of the coil.
4. 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 20)

CHAPTER 6
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"
SS450/450SL	-1/4"
SS550	-1/8"
SS675	-3/4"

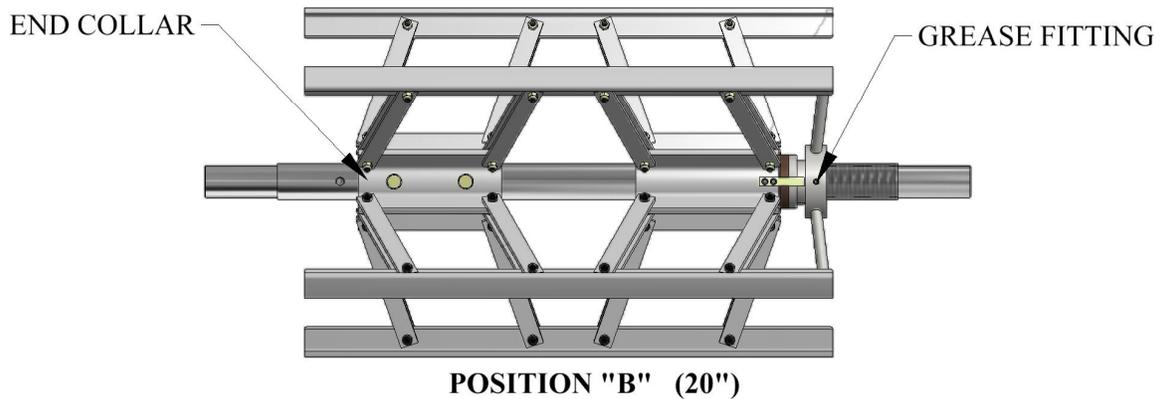
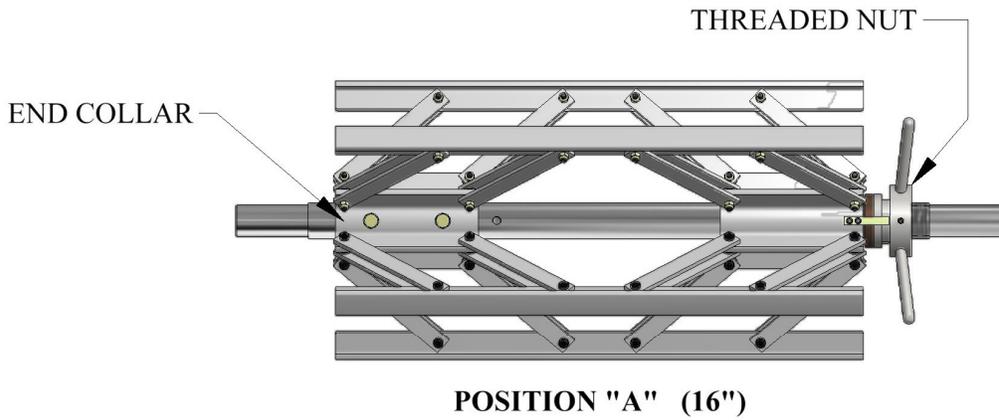
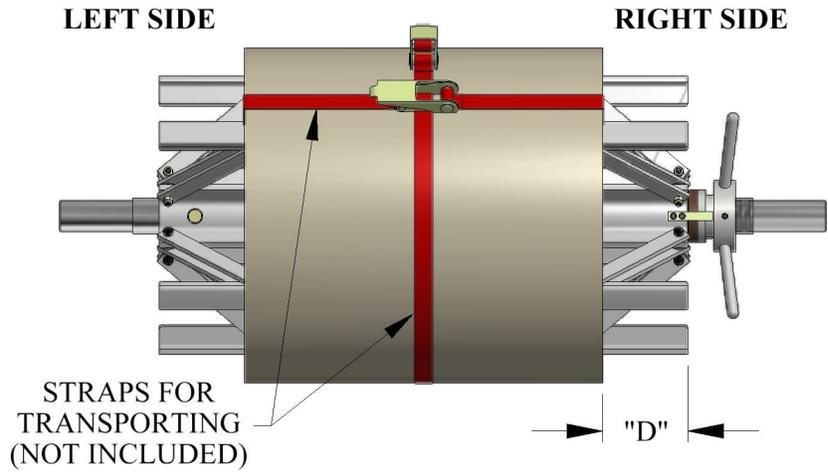


Figure 10: Expandable Arbor Set-Up

REEL STANDS, REELS, AND EXPANDABLE ARBORS

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

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

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

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

CHAPTER 6
REEL STANDS, REELS, AND EXPANDABLE ARBORS

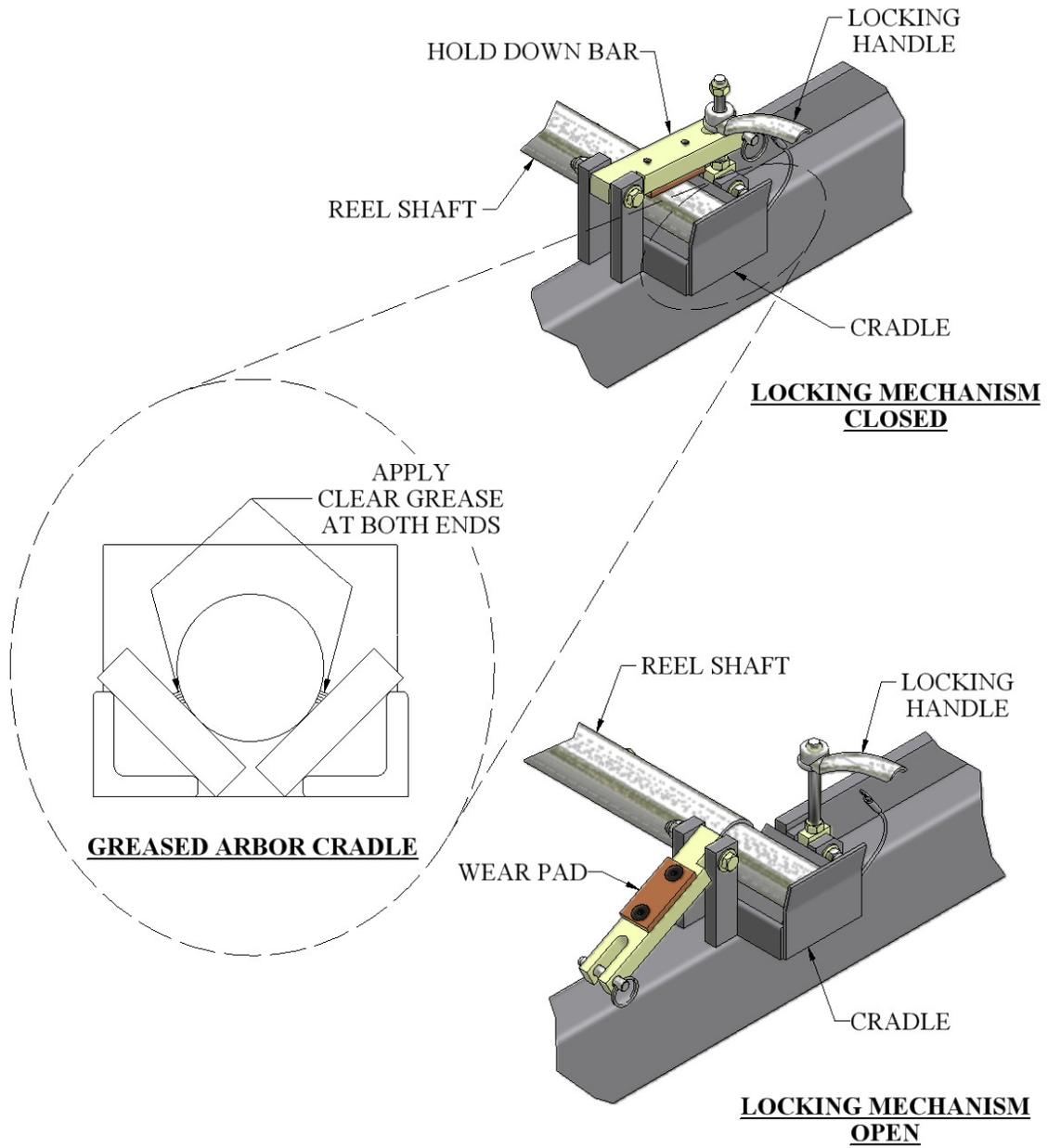


Figure 11: Expandable Reel Assembly

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 will be run 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, secure the coil 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

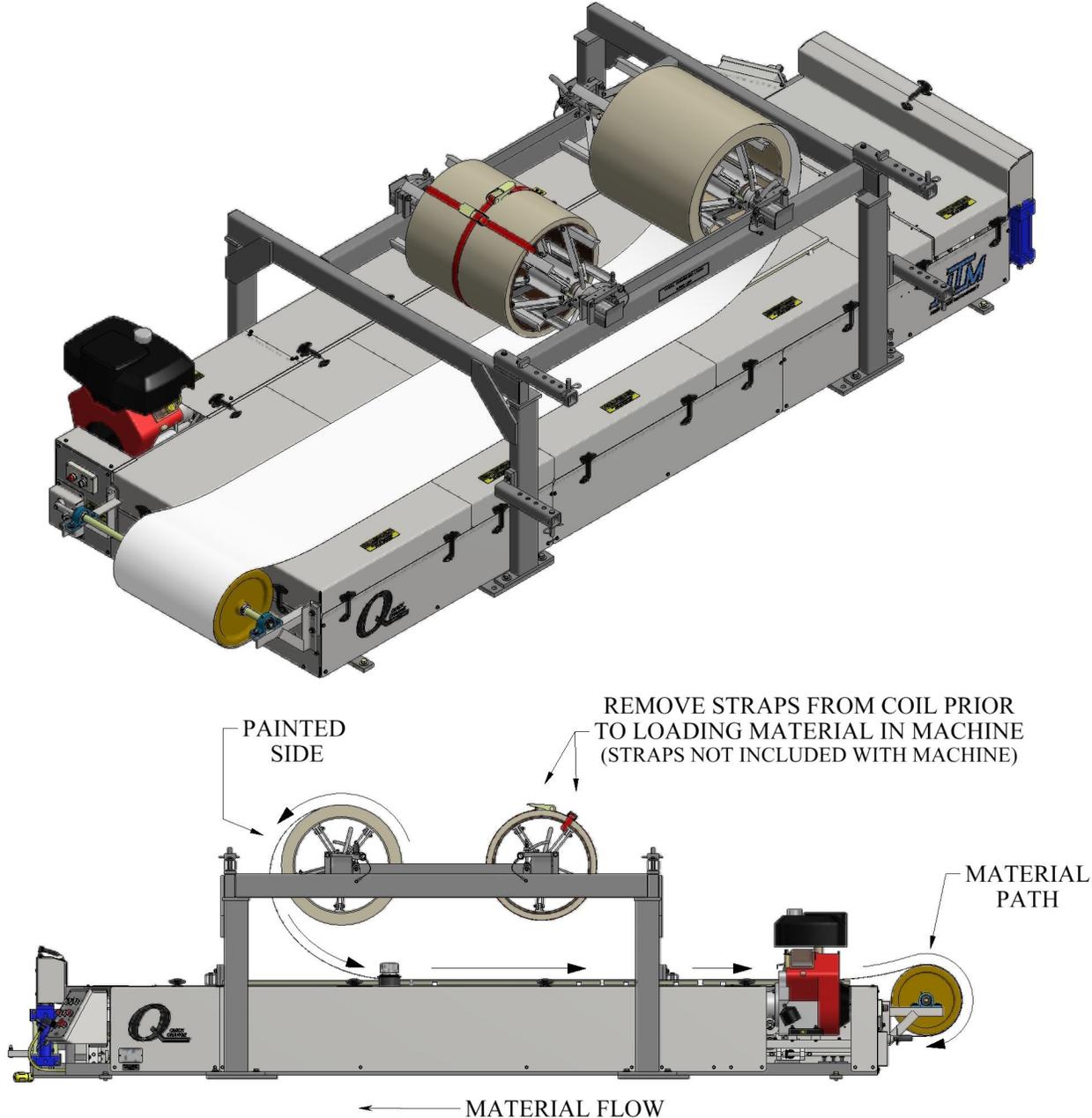


Figure 12: Material Routing

CHAPTER 7
HYDRAULIC SYSTEMS

HYDRAULIC SYSTEMS

Maintenance

(Figure 13)

The hydraulic system for the machine is a very durable and reliable system. It must be properly maintained to ensure trouble free operation and longevity. The factory has installed a 32 weight AW hydraulic fluid. Because this equipment is used primarily outdoors and exposed to the elements, it is recommended that the oil be changed annually. Hydraulic oil will degrade if it remains stagnate in the system for long periods of time. Check the fluid level weekly. It should be approximately 5” below the top of the filler neck. When checking the fluid level, also note the color and condition of the fluid. It should be clear in color.

Hydraulic Fluid Troubleshooting

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

Changing Hydraulic Fluid and Filter

(Figure 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 it is 5” **below the top of the Filler Neck “F”** (approximately 18 gal).

CHAPTER 7
HYDRAULIC SYSTEMS

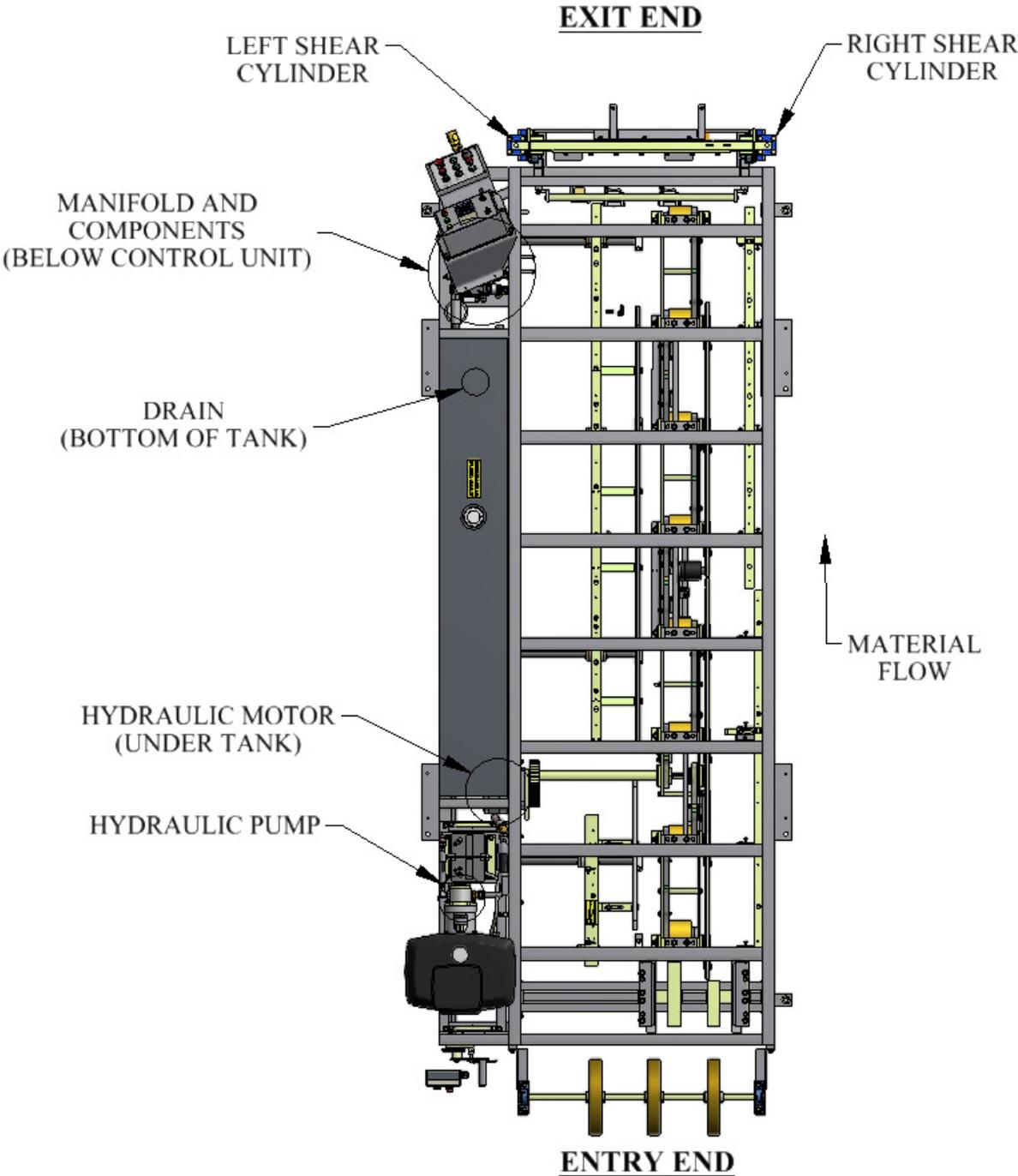


Figure 13: Hydraulic System – Overview

CHAPTER 7
HYDRAULIC SYSTEMS

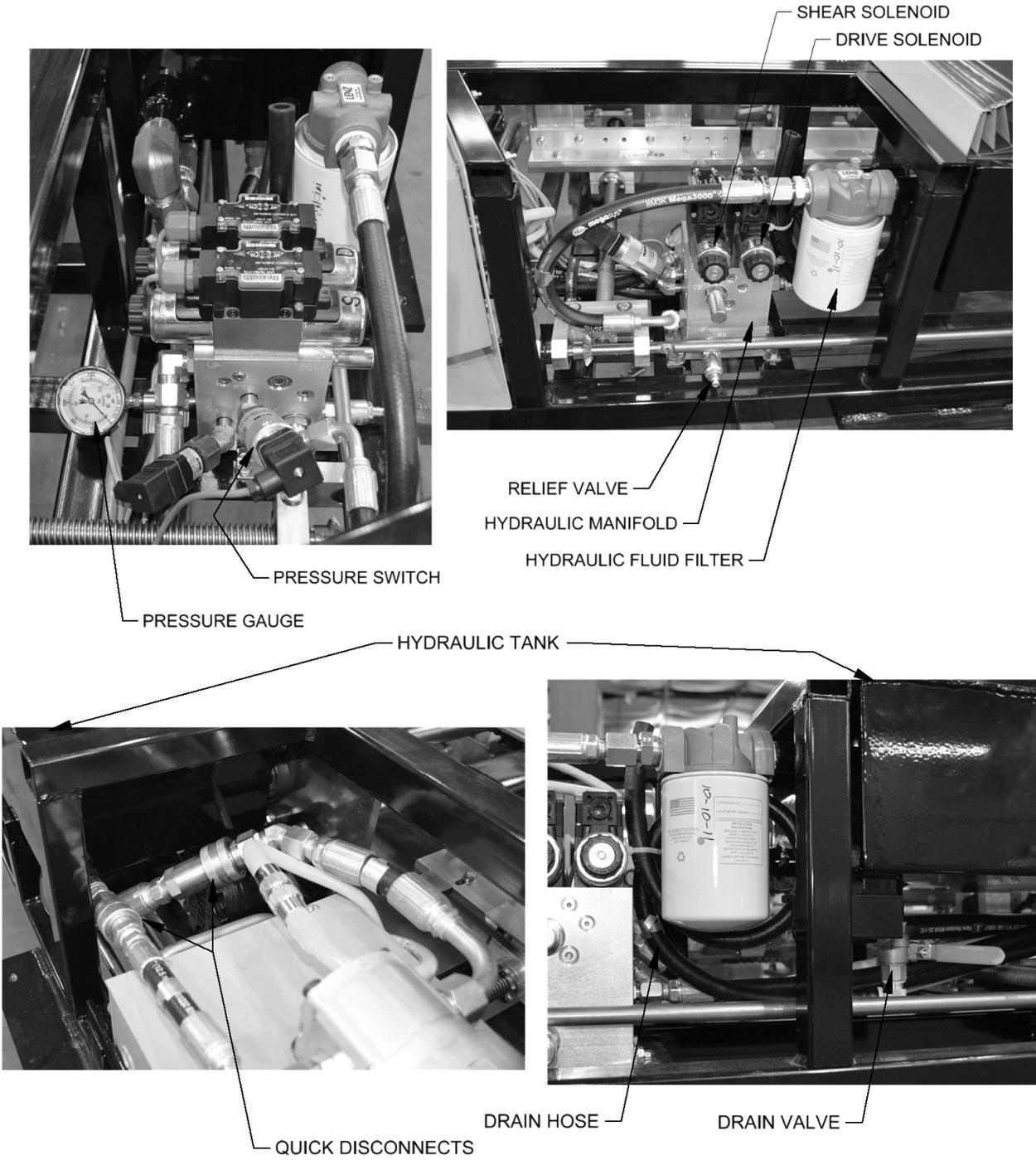


Figure 14: Hydraulic System – Details

CHAPTER 7
HYDRAULIC SYSTEMS

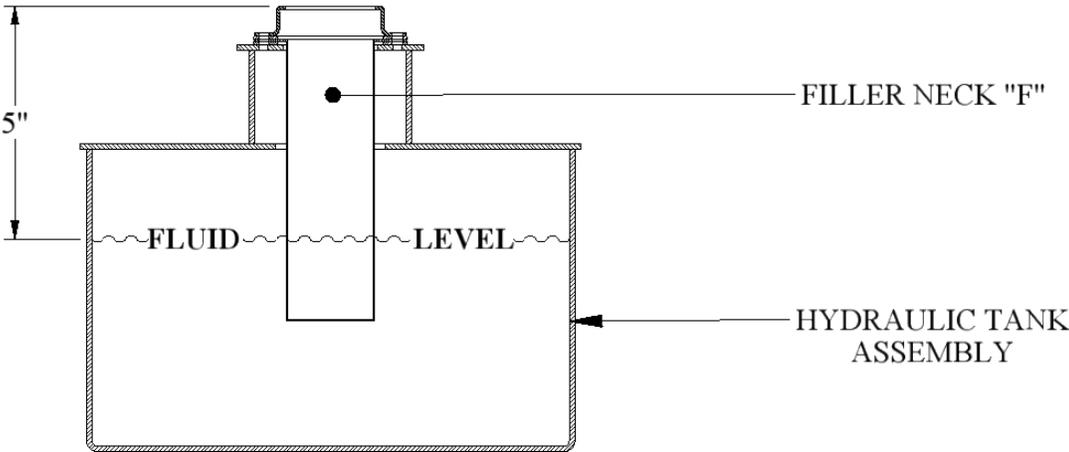


Figure 15: Hydraulic Fluid Level

CHAPTER 8
DRIVE SYSTEM

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 $\frac{3}{4}$ of a turn of pressure past the point of contact. This will drive material up to 22ga. though the machine without the need for adjustment. If adjustment becomes necessary due to slippage, pressure to the drive rolls can be increased. **Do not add more than $\frac{1}{4}$ turn beyond the factory setting.** It is important to adjust only one end of each assembly at a time to maintain side to side alignments.
To add pressure: Loosen two Lock-Down Bolts "B" $\frac{1}{8}$ of a turn. Loosen lock nuts on two corresponding Jack Bolts "A". Tighten Bolts "A" $\frac{1}{8}$ of a turn. Re-tighten 2 lock nuts on Jack Bolts "A" to lock in adjustment. Repeat this procedure on the other end of the Drive Assembly and repeat for the other 3 drive assemblies. Test for result and repeat one more time if necessary.
To remove pressure: Loosen two lock nuts on Jack Bolts "A". Loosen two Jack Bolts "A" $\frac{1}{8}$ of a turn. Tighten two corresponding Lock-Down Bolts "B" $\frac{1}{8}$ of a turn. Tighten two lock nuts on Jack Bolts "A" to lock in adjustment. Repeat this procedure on the other end of the Drive assembly.
2. There are three different chain tensioners on the machine.
 - A. The first are located in slots on the side plates of the Drive Roll Assemblies. They follow the chain locations alternating from one side to the other. To adjust, slightly loosen the nut on the bolt holding the tensioner sprocket in place. Using a dead blow hammer tap the tensioner assembly toward the drive roller until the chain is snug. Lock into position by tightening the bolt on the assembly.
 - B. The second type is similar. These are located on the top and bottom spreader bars located between the Drive Roll Assemblies. These are used in the same way except there is a bolt located in the edge of the slot on the assembly used to push the tensioner assembly toward the Drive Roller to tension the chain.
 - C. The third is located on the Top #1 Spreader Bar between the sprocket and drive roller. (see detail 'A' Figure 18) Loosen two "D" bolts enough so that the tensioner assembly can move 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 after material is ran through the machine with an oily film on it. Avoid cleaning the drive rollers with harsh chemicals or solvent. These products will attack the polyurethane and cause irreversible damage. **Use of these products will void the warranty on the drive rollers.**

CHAPTER 8
DRIVE SYSTEM

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

5. Covers should be kept on the machine during operation and storage. Ultraviolet light will attack the polyurethane drive rollers and cause deterioration. Again, this type of damage is not covered under the warranty.

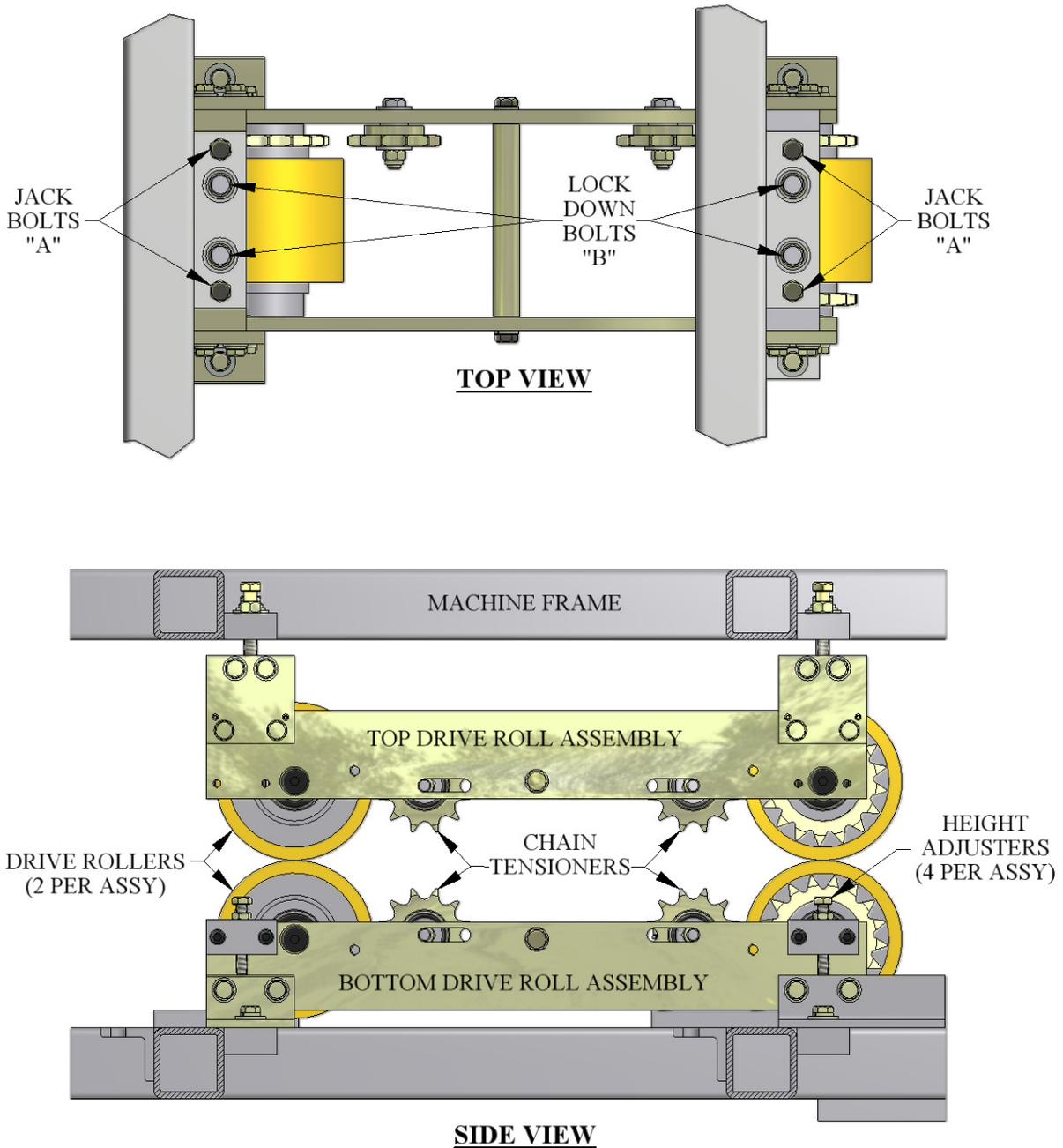


Figure 16: Drive Roll Assembly View

CHAPTER 8 DRIVE SYSTEM

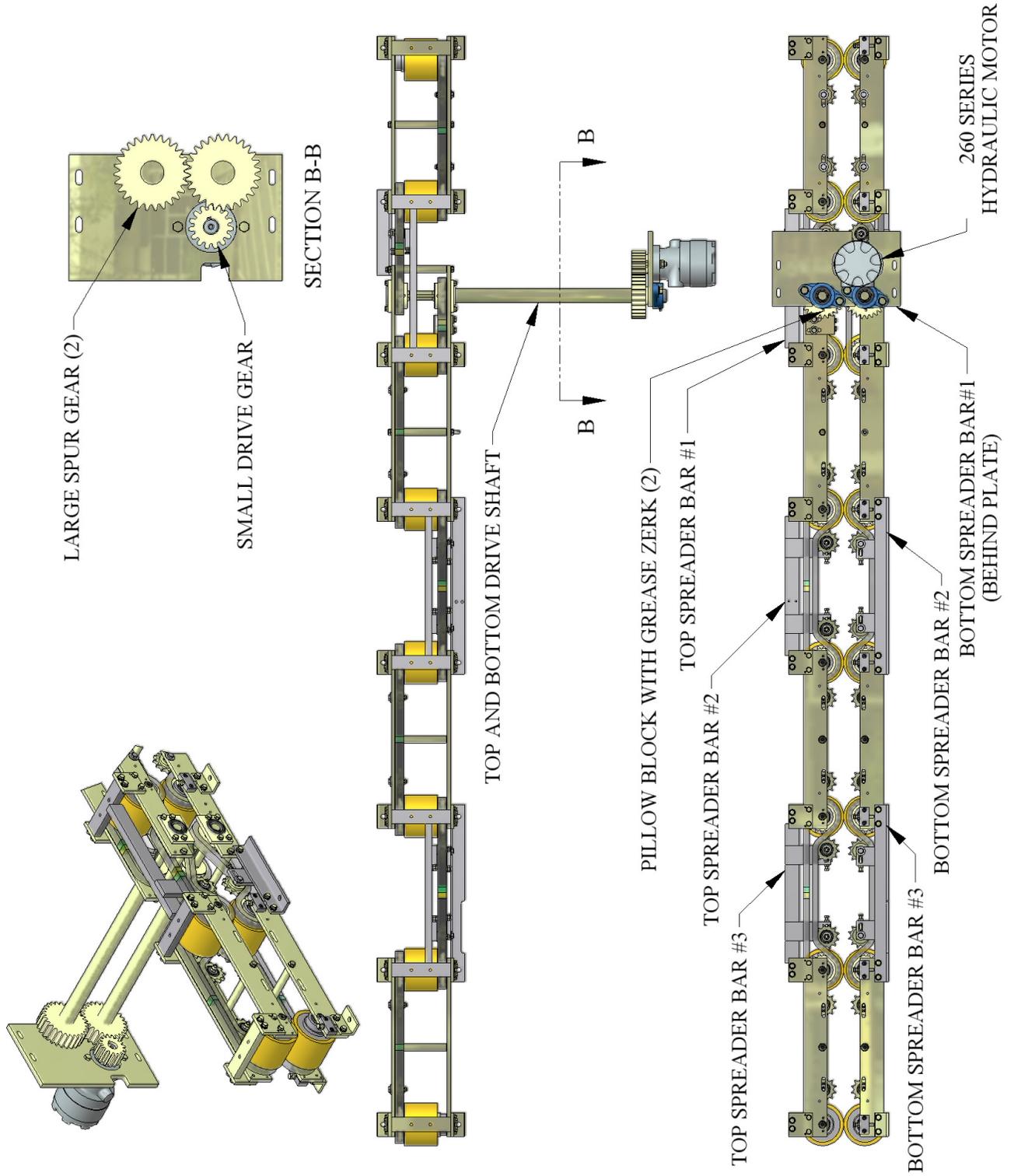


Figure 17: Gears and Shafts

CHAPTER 8
DRIVE SYSTEM

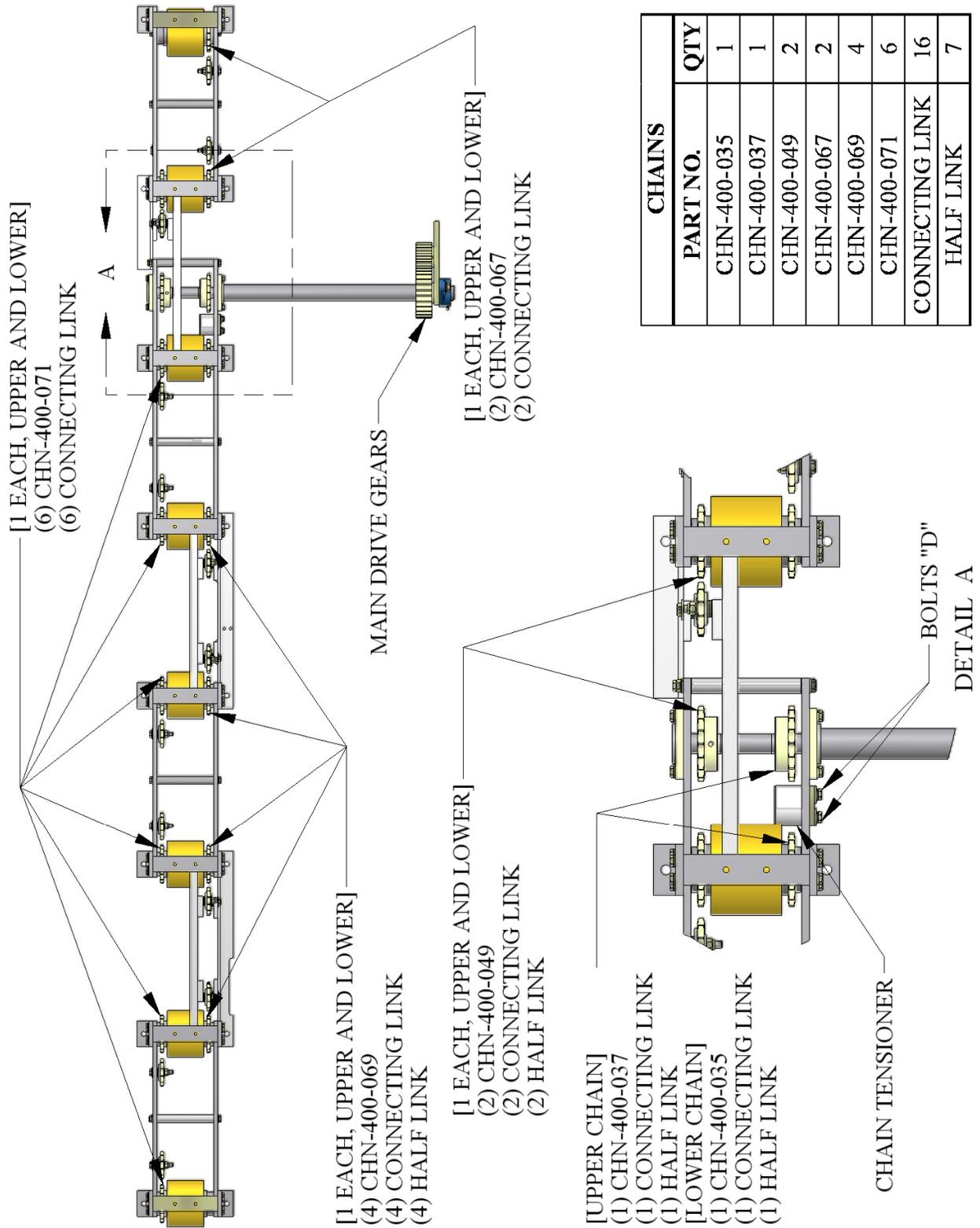


Figure 18: Chains Upper and Lower

CHAPTER 9
SHEAR ASSEMBLY

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 it. Adjust each side as needed to properly set the bottom dies to the correct spacing from the bottom corners of the panel.
3. After adjustments have been made, tighten (2) "A" bolts and (2) Lock Nuts on Height Adjustment Bolts "B".

CHANGING ENTRY AND EXIT SHEAR DIES

(Figure 19 & Figure 20)

The Entry and Exit Shear Dies are specific to each roller set and must be changed when changing profiles. Refer to the PROFILE CHANGEOVER PROCEDURE for instruction on changing dies.

ADJUSTING THE ENTRY AND EXIT SHEAR DIES

(Figure 19 & Figure 20)

1. The Male and Female entry and Exit Shear 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.
2. Each Shear Die Holder is held in position by (2) "C" bolts passing through slotted holes at the bottom edge of the holder, and threaded into the Entry and Exit Shear Plates.
3. Visually sight thru the male and female entry dies. Rough align them to the forming tool "line of fire" by moving them side-to-side. If necessary, remove bolts "C" and slide the Die Holders left or right until two mounting holes are found that will work for proper alignment, then re-install bolts "C". **Tighten them just enough to hold the dies in position.**
4. Jog the material through the machine and stop about 2 inches from the Entry Shear Dies. Now re-sight the alignment of the Male and Female Dies to the actual legs of the panel and move them accordingly to assure the panel will pass through without hanging up. Carefully jog material through the shear dies. Final adjust Entry and Exit Dies as follows: The **Male** the

CHAPTER 9
SHEAR ASSEMBLY

panel. The **Male and Female Exit Dies** should be adjusted slightly to the outside of the entry dies so that the cut edge of the panel clears the dies without interference when passing through after a cut. Once alignment of the dies is achieved, tighten all "C" bolts. Jog the material out approximately 2". Engage the shear to cut to 2" piece off. Inspect the cut made on this piece and the piece still in the machine by joggng it out another 2" so it can be viewed. If the cut is not satisfactory, re-adjust as necessary.

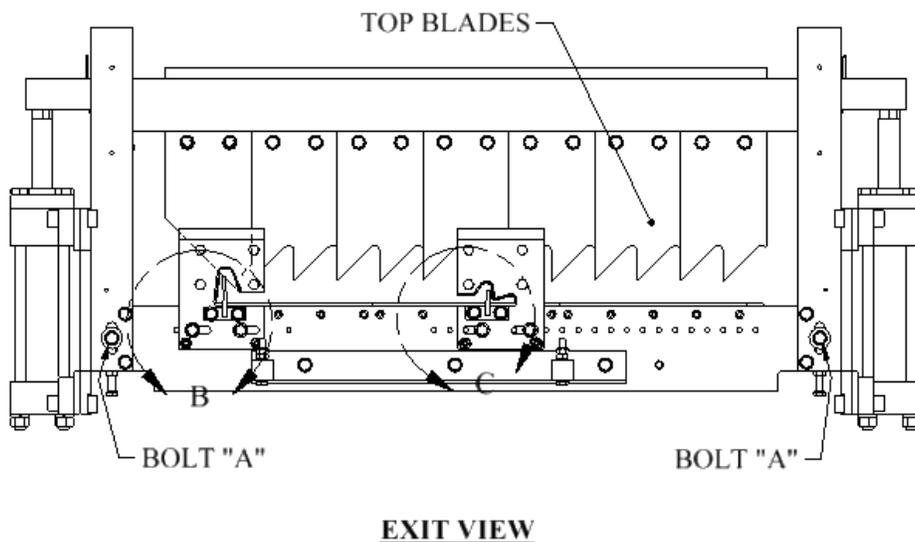
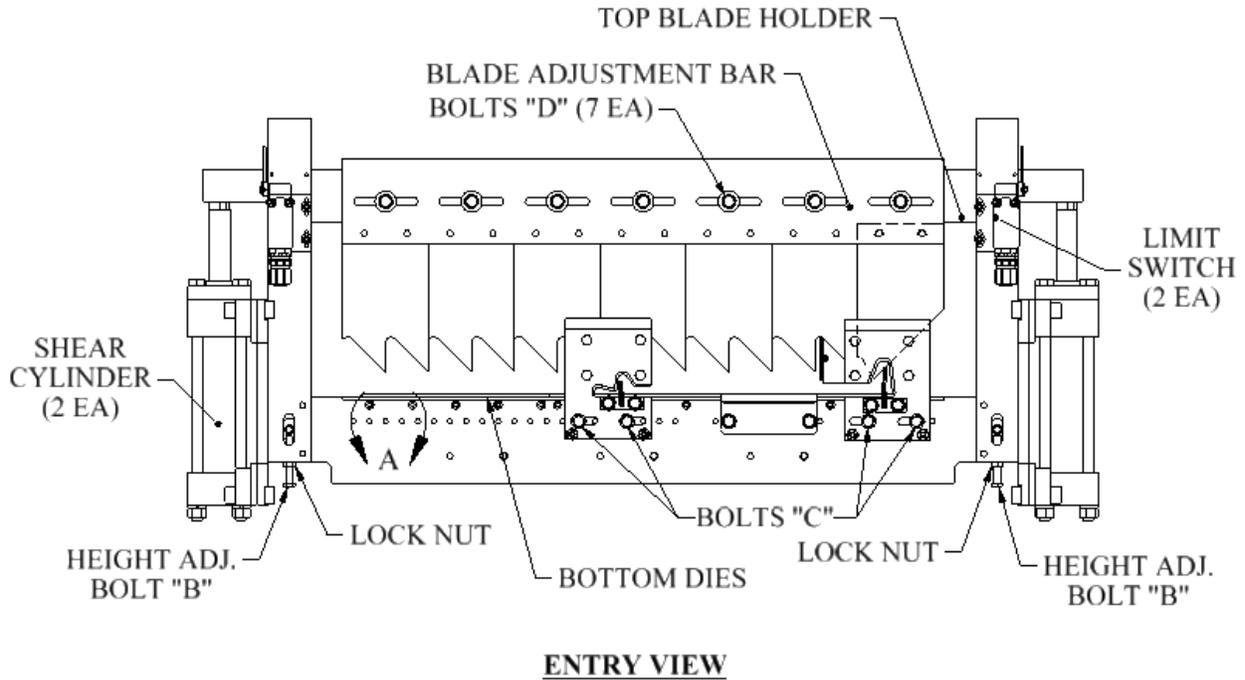
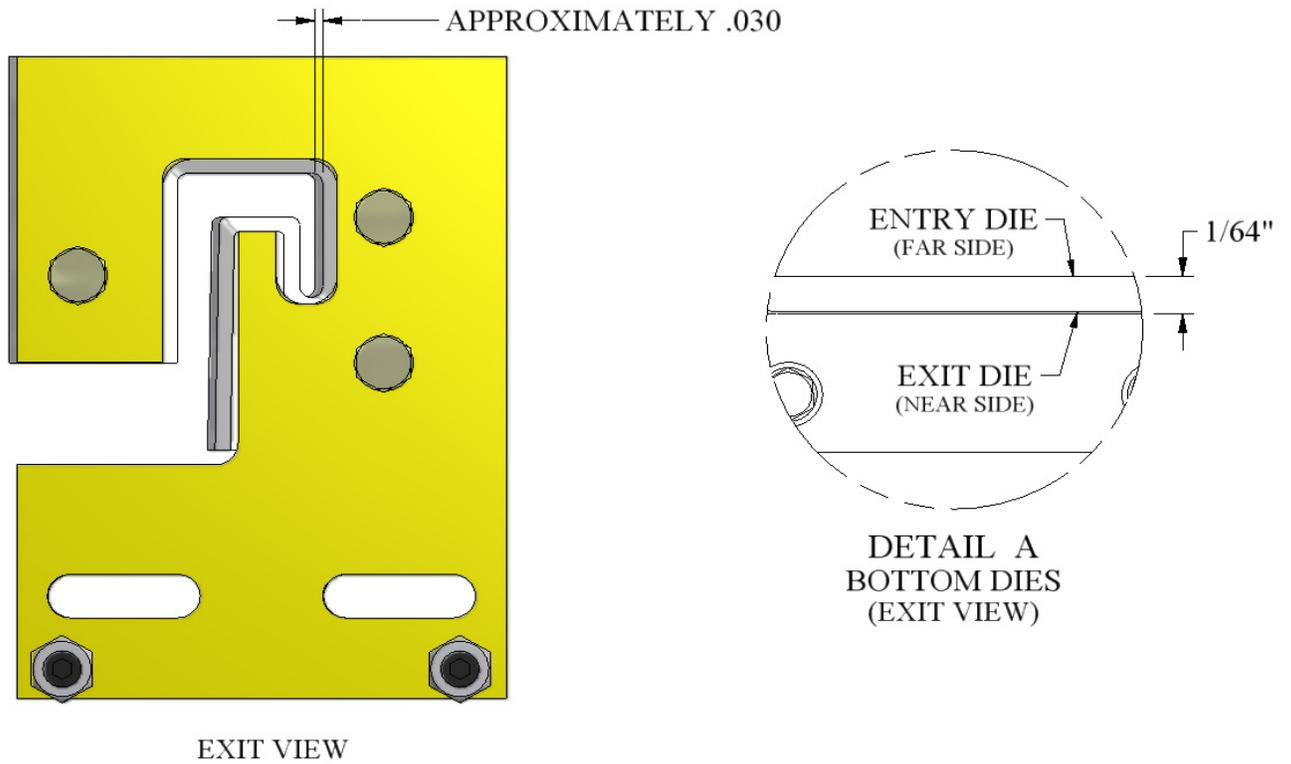


Figure 19: Entry/Exit Views

CHAPTER 9
SHEAR ASSEMBLY



BLADE ADJUSTMENT

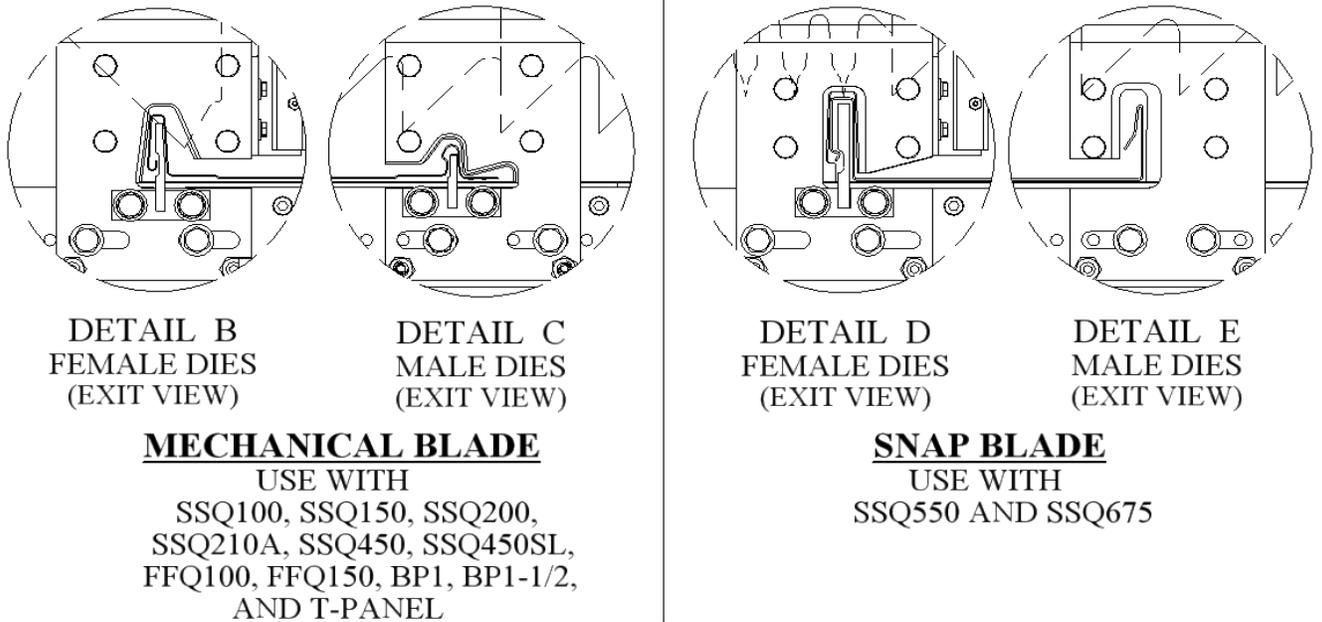


Figure 20: Shear Die Detail Views

CHAPTER 9
SHEAR ASSEMBLY

TOP SHEAR BLADE ADJUSTMENT

(Figure 19 & Figure 20 – Details B & C)

The Top Shear Blades are bolted to the Blade Adjustment Bar. This bar is bolted to the Top Blade Holder, and can be moved from left to right to align the blades to the Die Holders.

1. Loosen the 7 “D” bolts in the slots at the top entry side of the shear so that the Blade Adjustment Bar will move from side to side.
2. The point of the Top #1 Blade should always be inboard of the Female vertical leg of the panel, and should not pierce the top horizontal leg of the profile. The rake or angle of the blade should cut in a scissor action outward against the leg. The #2 Top Blade must be adjusted simultaneously in the same manner for the Male leg. A position that works for both Male and Female legs should be available. Once the Blade Adjustment Bar is in the correct location, tighten all “D” bolts.
3. Jog the panel out approximately 12” and make the first cut. Check the piece to make sure the cut is acceptable. Carefully jog the material through the shear dies making sure the panel does not get caught on the Male or Female exit dies. If the panel gets caught on the exit dies, fine tune the adjustment of the dies to correct the problem following the procedures above.

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 Synolon (PTFE)

Catalog No. 11016

11 oz. Aerosol Can

Available from:

MSC Supply at 1-800-645-7270

CHAPTER 10
BEAD AND STRIATION ROLLER ASSEMBLY

BEAD AND STRIATION ROLLER ASSEMBLY

1. The Bead / Striation Roller assembly (Figure 21) 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 or striation 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.** 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, **AGAIN SHUT OFF THE MACHINE AND DISCONNECT THE POWER.** 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".
4. Keep slide bars lightly greased to allow bead or striation assemblies to slide smoothly.

CHAPTER 10
BEAD AND STRIATION ROLLER ASSEMBLY

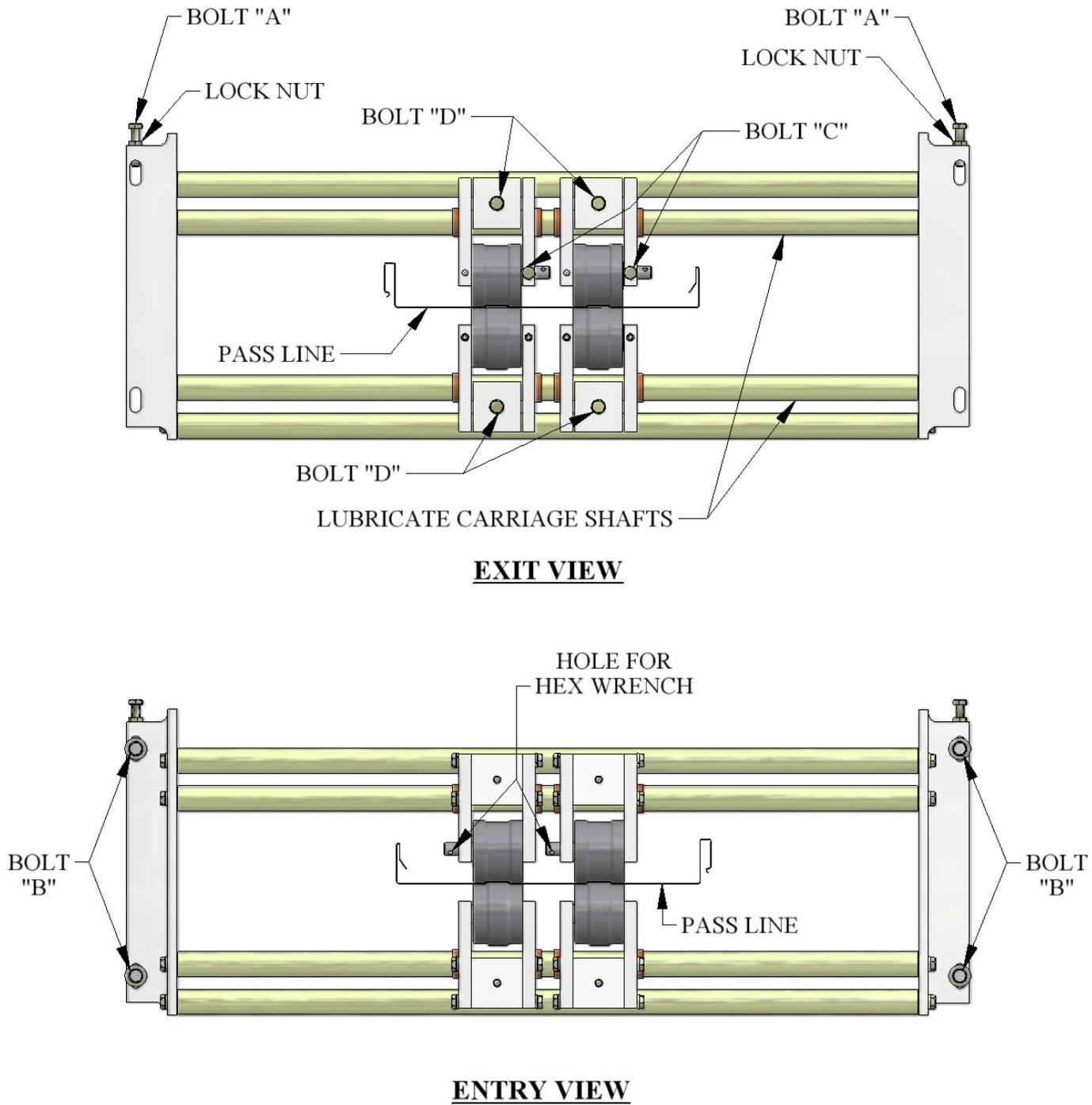


Figure 21: Bead Roller Assembly

CHAPTER 11
ENTRY GUIDE ASSEMBLY

ENTRY GUIDE ADJUSTMENT

(Figure 22 & Figure 23)

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 two “A” Bolts on the Right Entry Guide. Slide the entry guide to the left or right until the alignment pin which is located at the end of the top shoe of the entry guide, is directly under one of the notches on the Tooling Rail Marker Plate. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the top of the marker plate.
3. Tighten the two “A” bolts.

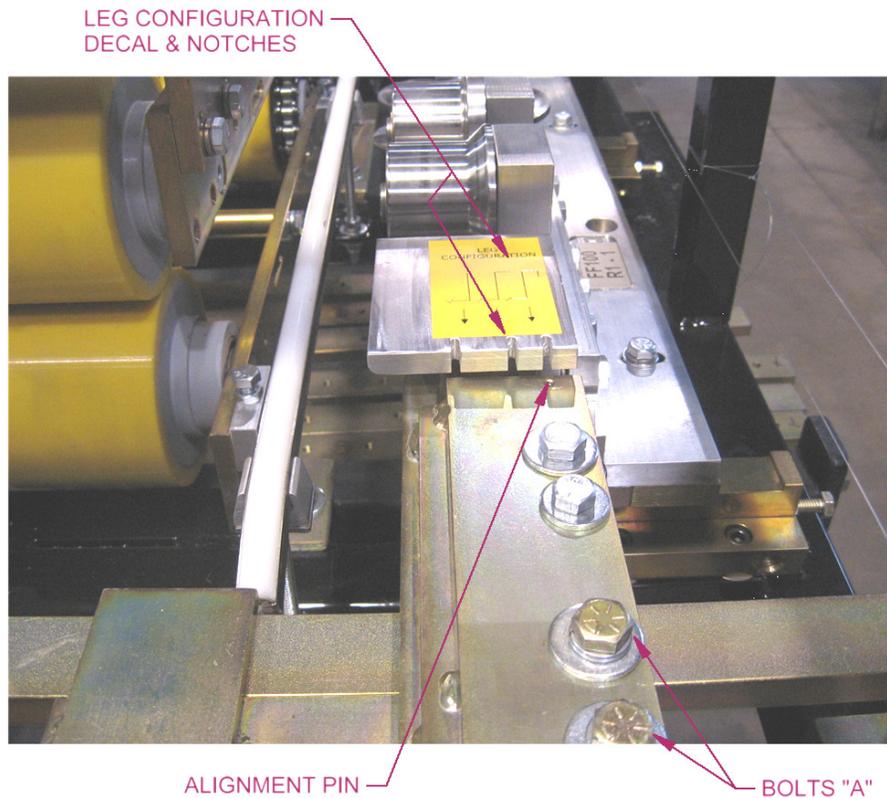


Figure 22: Right Entry Guide

4. Loosen bolt “A” on the left entry guide.
5. Cut a 12” long piece of gage material from the coil being used to set the left entry guide.
6. Slide gage material between the left and right entry guides.

CHAPTER 11
ENTRY GUIDE ASSEMBLY

7. Slide the Left Entry Guide to the left or right to accept the new coil width. Make sure that the coil is captured snugly between the entry guides and re-tighten the two "A" bolts.

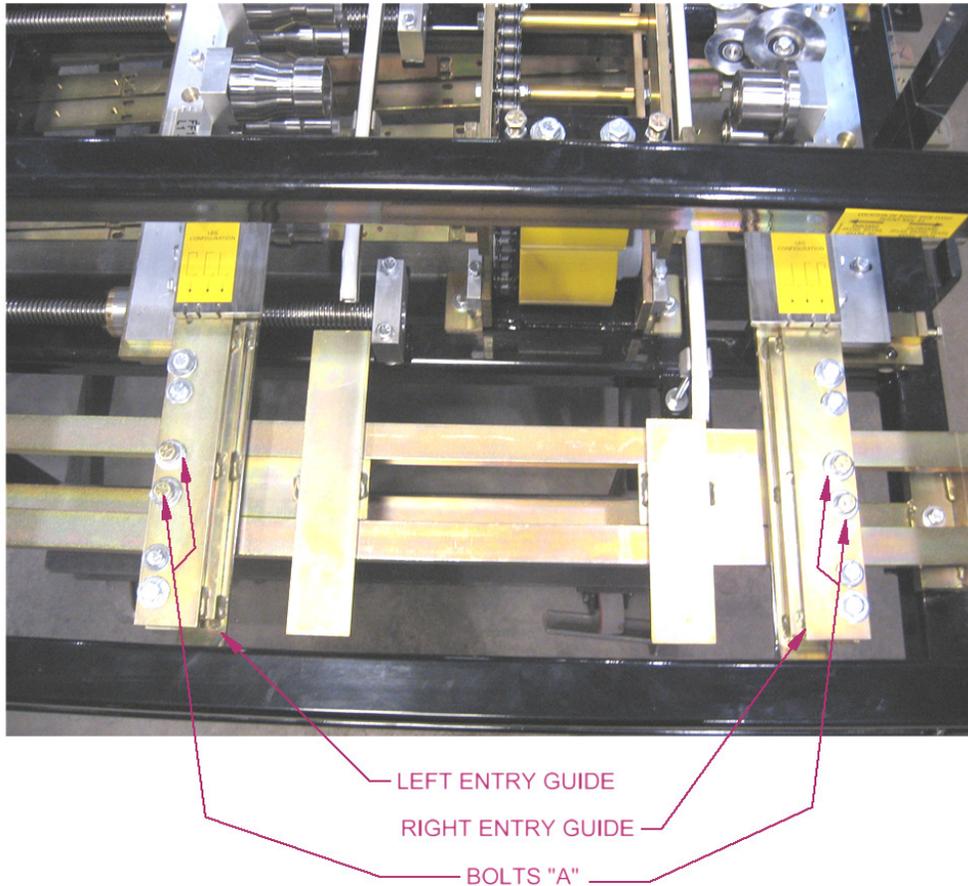


Figure 23: Entry Guide Assembly

LEFT TOOLING RAIL TO ENTRY GUIDE ALIGNMENT

(Figure 24 to Figure 27)

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 24) align the notch on the tooling rail marker plate to the alignment pin 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 (Figure 25). The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 26). Press the handle inward (Figure 27) to engage the width adjustment gear and turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

CHAPTER 11
ENTRY GUIDE ASSEMBLY



Figure 24: Tooling Rail Adjustment Handle

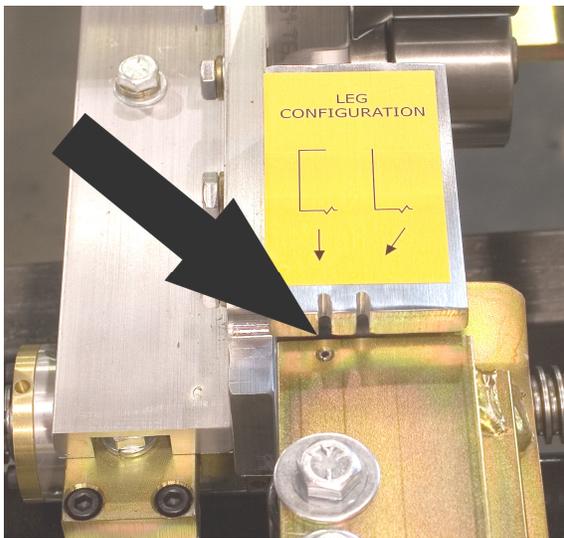


Figure 25: Marker Plate & Alignment Pin

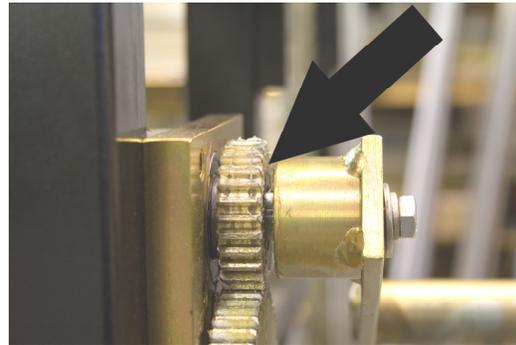


Figure 26: Disengaged

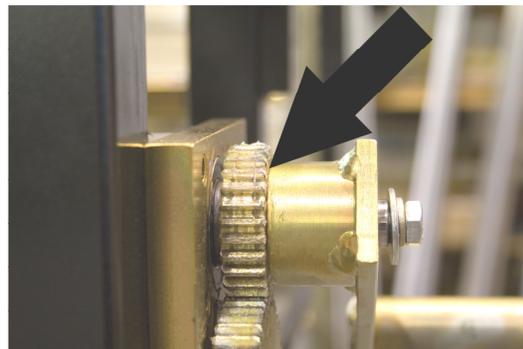


Figure 27: Engaged

CHAPTER 12
CLIP RELIEF ROLLER ASSEMBLY

CLIP RELIEF ROLLER ASSEMBLY

1. Clip Relief Rollers (Figure 28) 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.
2. Find the Tooling Rail Sheet corresponding to the profile installed in the machine (Figure 70 - Figure 94).
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.

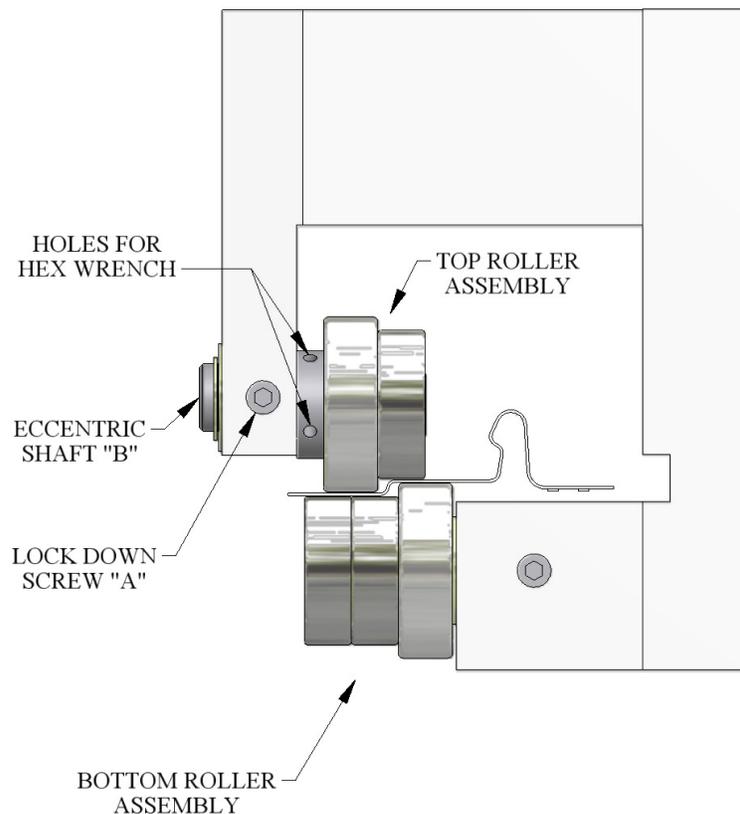


Figure 28: Clip Relief Roller Assembly

CHAPTER 13
PERFORATOR

PERFORATOR

Note: The perforator is supplied with the FWQ100 or FWQ150 Roller System and is not standard equipment on the SSQ.

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 29 & Figure 30)

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" 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

1. Loosen Crank Handles.
2. Unclamp the perforator assembly.
3. 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.
4. 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.
5. 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.
6. Tighten the Perforator Cutter Set Screws "C".
7. Re-tighten the Crank Handles.
8. Run material and check for desired perforation depth.
9. 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.
10. Tighten the Crank Handles.
11. Reposition the two Shaft Supports (will move side-to-side by hand without material in the perforator). The preferred final position is closest to the center of the shafts as possible.

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

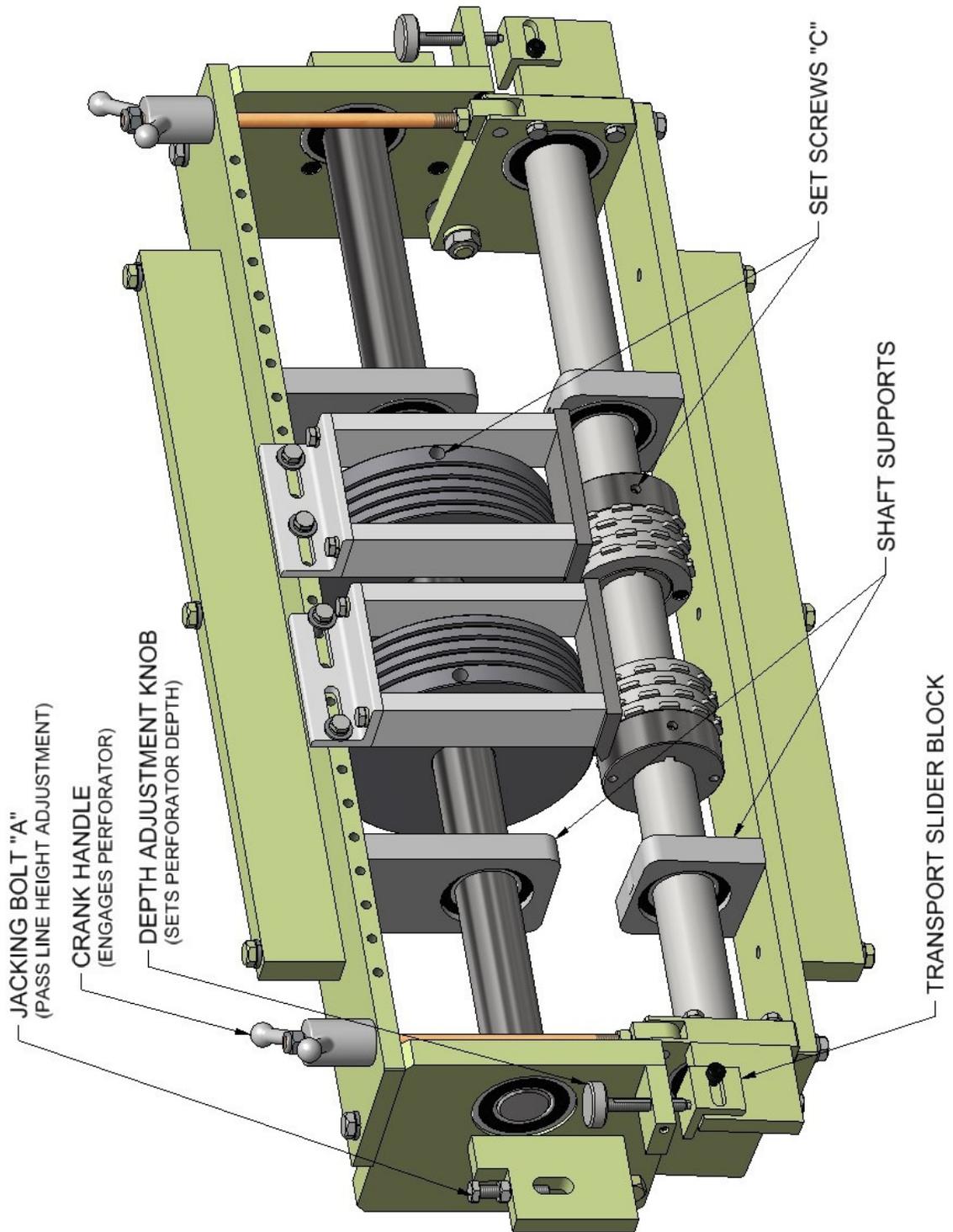


Figure 29: Perforator Assembly

CHAPTER 13
PERFORATOR

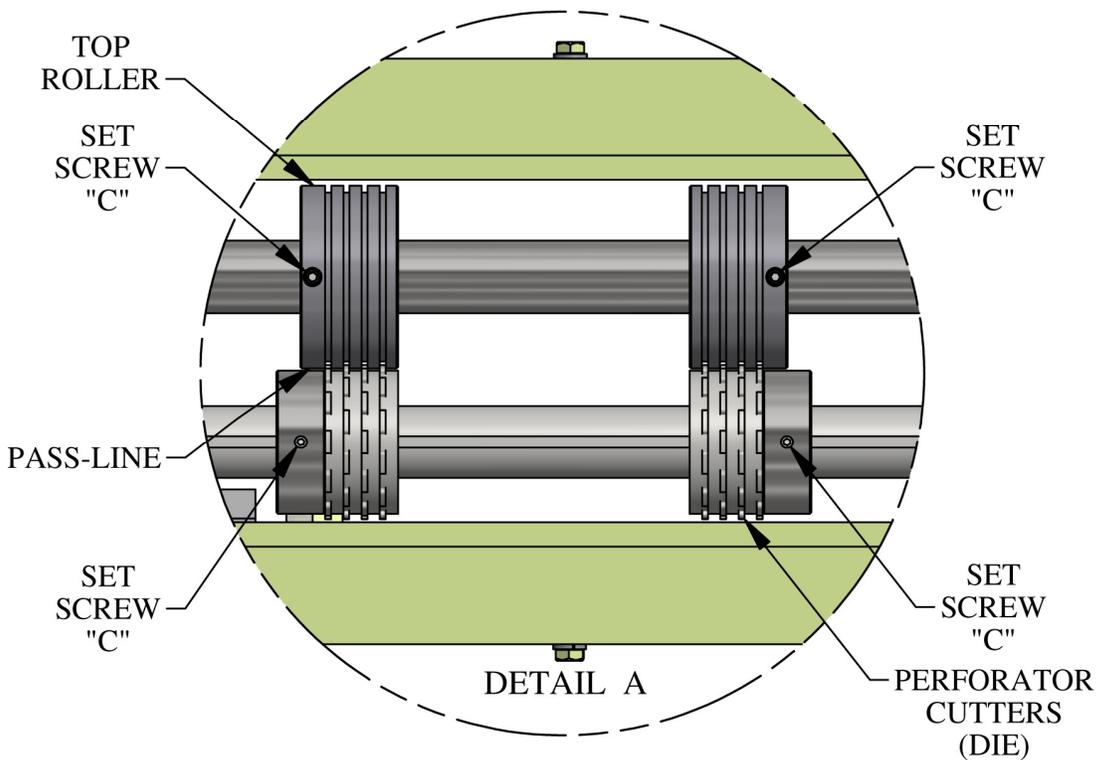
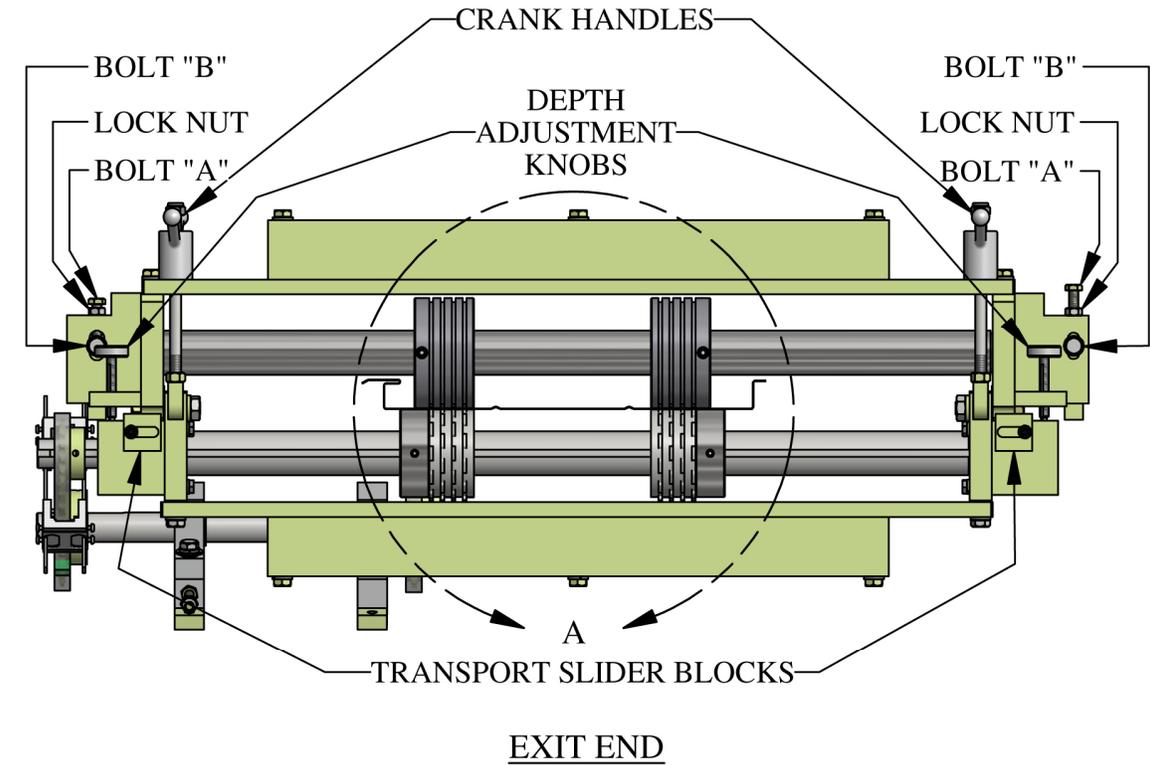


Figure 30: Perforator Adjustment

CHAPTER 13
PERFORATOR

LOCKING THE PERFORATOR FOR TRANSPORTATION

(Figure 31)

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.

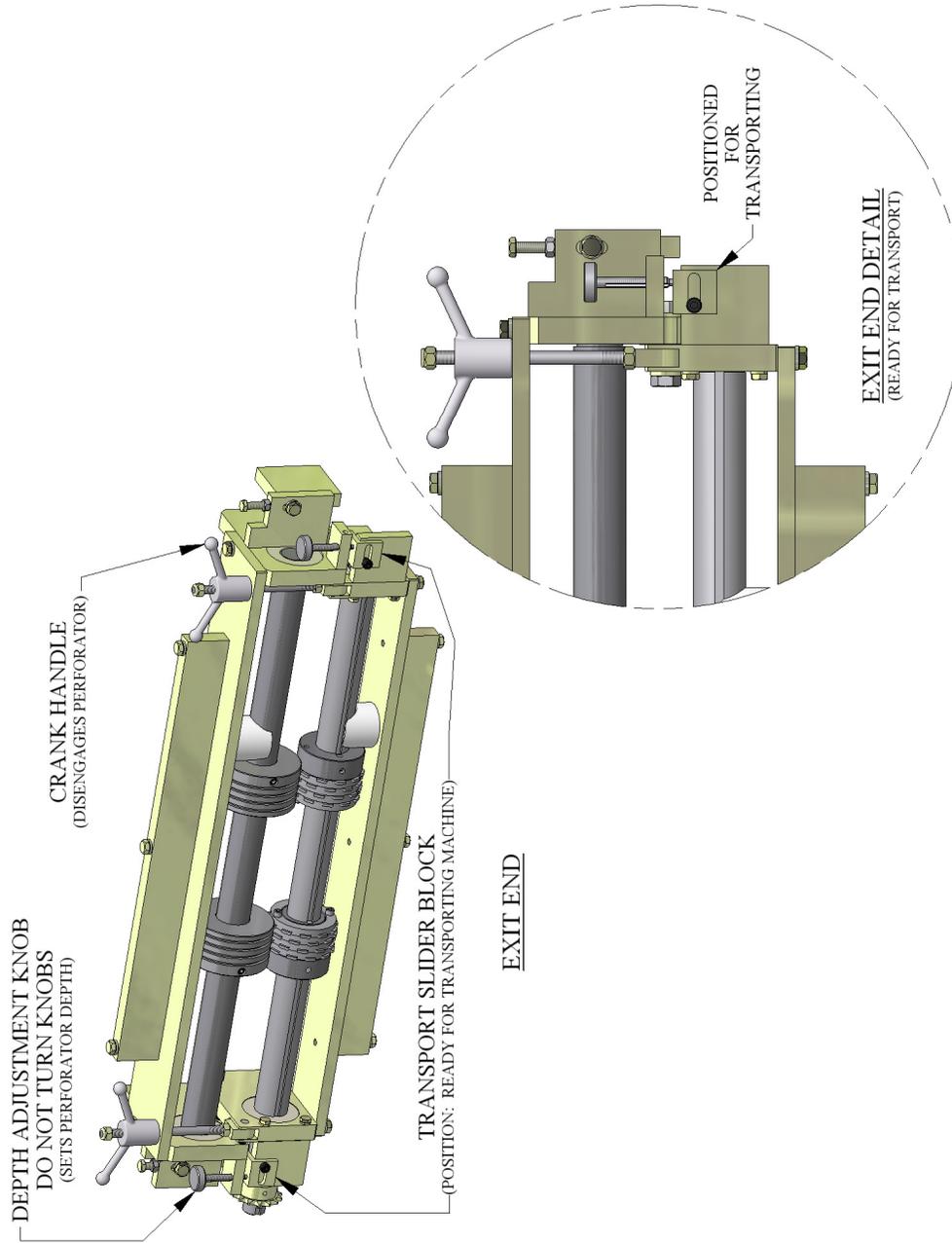


Figure 31: Perforator Locked for Transport

CHAPTER 14
ENTRY DRUM ASSEMBLY

ENTRY DRUM ASSEMBLY

The Entry Drum Assembly is necessary when feeding coil off of the optional DR1/ Dual Overhead Reel Stand. Without this assembly, only feed coil from a remote arbor and stand lined up behind the machine. The Entry Drums need to be adjusted whenever a width change is made.

To adjust the entry drums:

1. Using a 3/16" allen wrench, loosen the four Shaft Collars "E", on either side of Left Entry Drum and Center Entry Drum. (Figure 32)
2. Slide the Left Entry Drum over until it is lined up with left edge of the new coil and align the Center Entry Drum equally spaced from the Left and Right Entry Drums.
3. Slide the four Shaft Collars "E" against the sides of the drums and lock them into place.
4. If a roller system is being changed, it may be necessary to move all three drums using the same procedure described above.

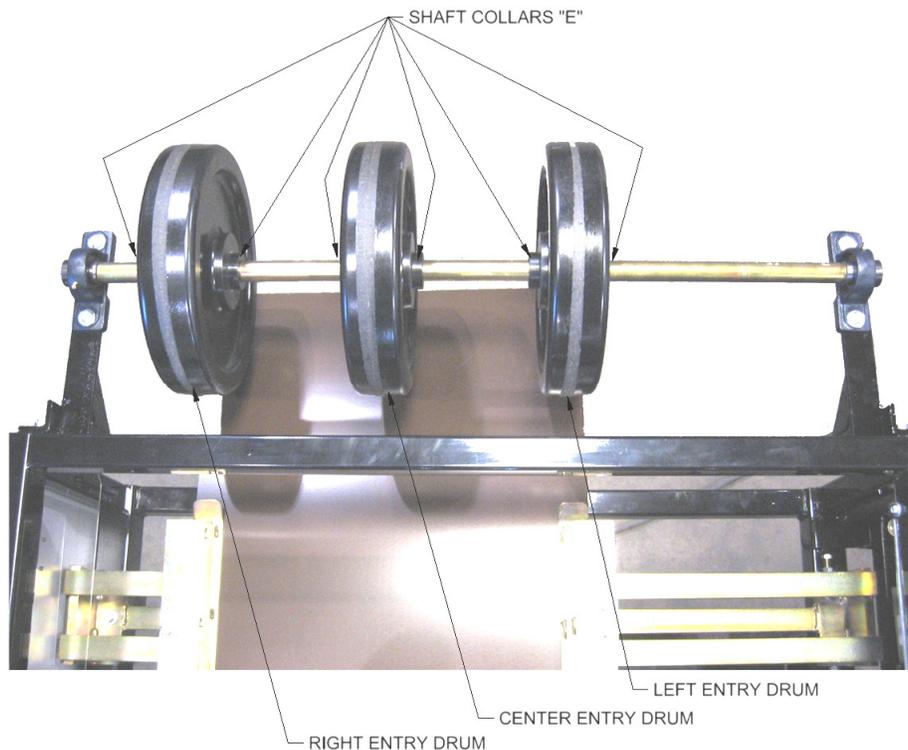


Figure 32: Entry Drum

CHAPTER 15
WIDTH CHANGE PROCEDURE

WIDTH CHANGE PROCEDURE

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

1. Loosen the two “A” bolts on the Left Entry Guide (Figure 33). Slide the entry guide to the left or right to accept the new coil width.

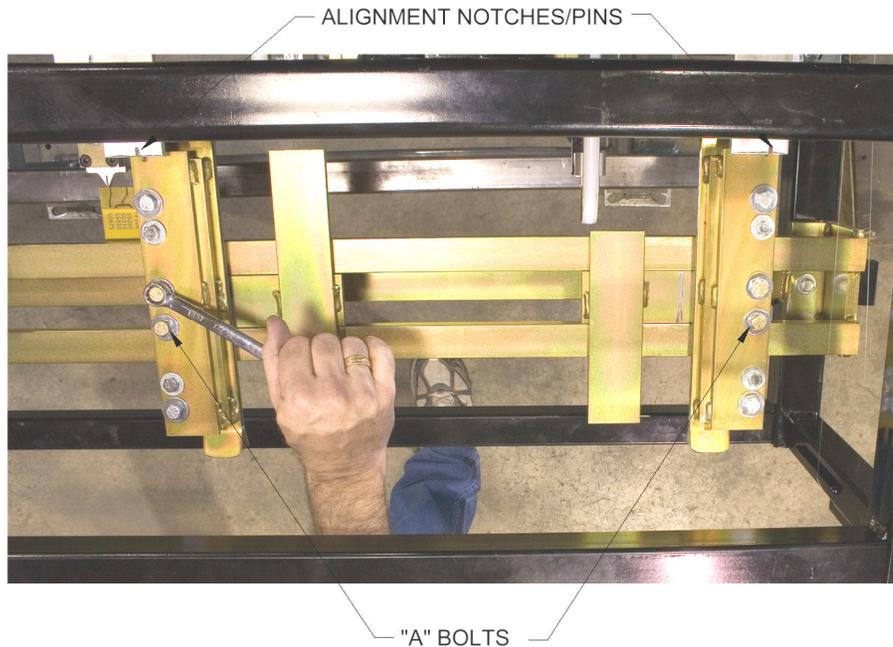


Figure 33: Entry Guide Bolts "A"

2. Make sure that the coil is captured snugly between the entry guides and re-tighten the two “A” bolts.
3. Using the Tooling Rail Adjustment Handle “B” (Figure 24) align the notch on the tooling rail marker plate to the alignment pin 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 (Figure 25). The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 26). Press inward on the center of the handle and turn (Figure 27) to engage the width adjustment gear. Turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

CHAPTER 15
WIDTH CHANGE PROCEDURE

4. Load material onto the Expandable Arbor and align it to the correct position using the chart on (Figure 34).
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"
FW Q 100	1/2"
FW Q 150	0"
SS100	1-1/8"
SS150	5/8"
SS200/210A	-1/4"
SS450/450SL	-1/4"
SS550	-1/8"
SS675	-3/4"

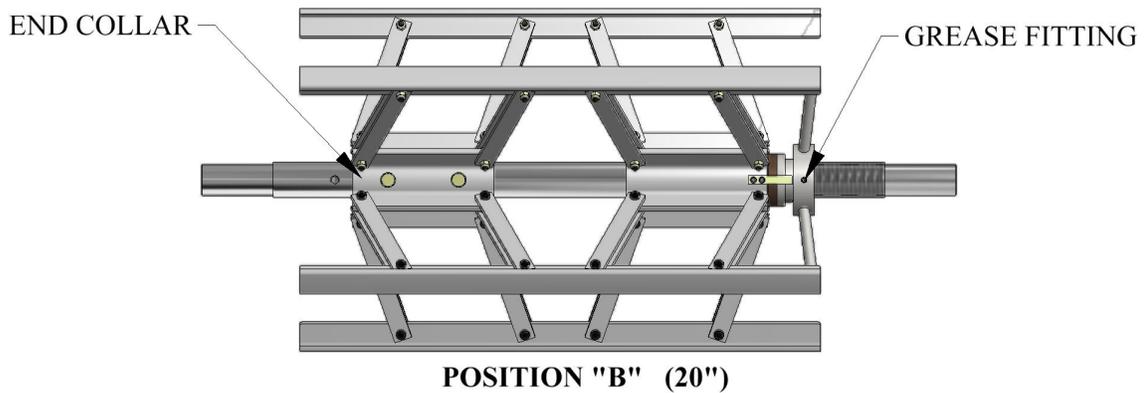
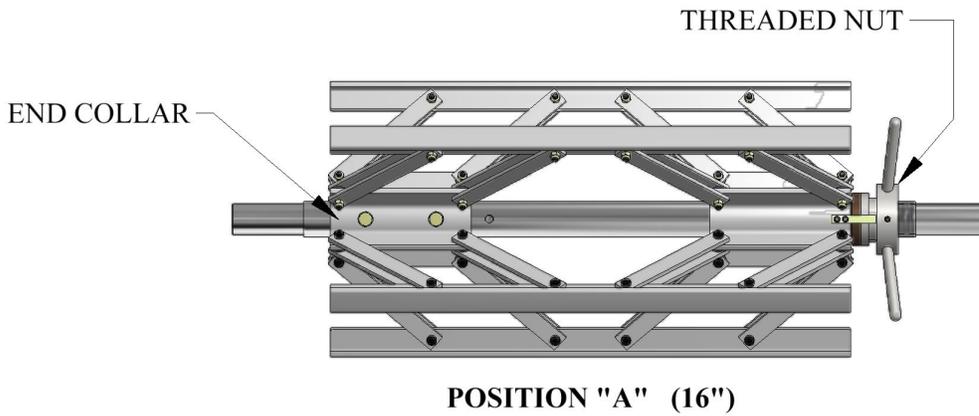
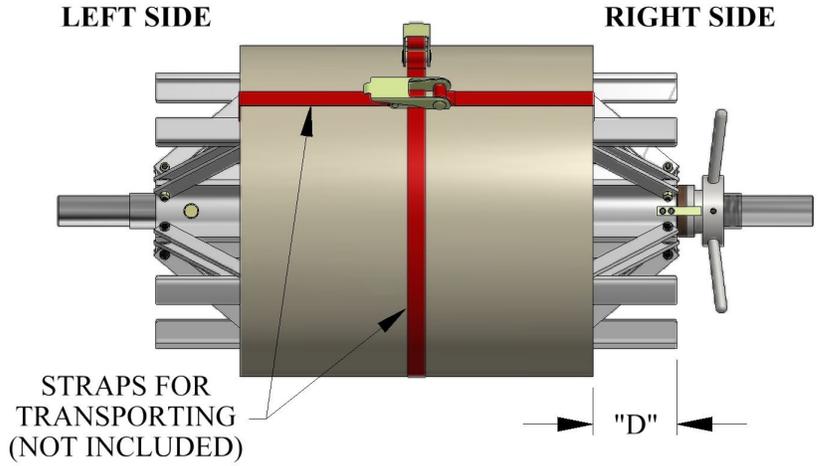


Figure 34: Expandable Arbor Setup

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WIDTH CHANGE PROCEDURE

5. 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).
6. Cut a 1" triangle off of the 2 leading corners of the coil and feed it into the entry guides. (Figure 35)



Figure 35: Loading Material

7. 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, and is about 1" from the Bead Roller Assembly. (Figure 21).

SHUT THE MACHINE DOWN BEFORE PROCEEDING.

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WIDTH CHANGE PROCEDURE

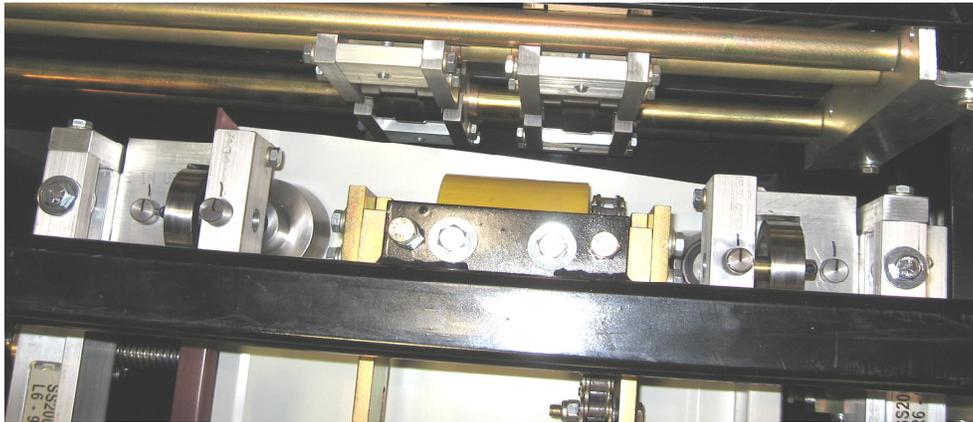


Figure 36: Bead Roller Alignment

8. 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.
9. Loosen the slide lock bolts on the top and bottom bead assemblies (Figure 37) and slide each bottom and top roll assembly left or right to center them on the 4” and 8” marks on the panel.
10. 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.

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WIDTH CHANGE PROCEDURE

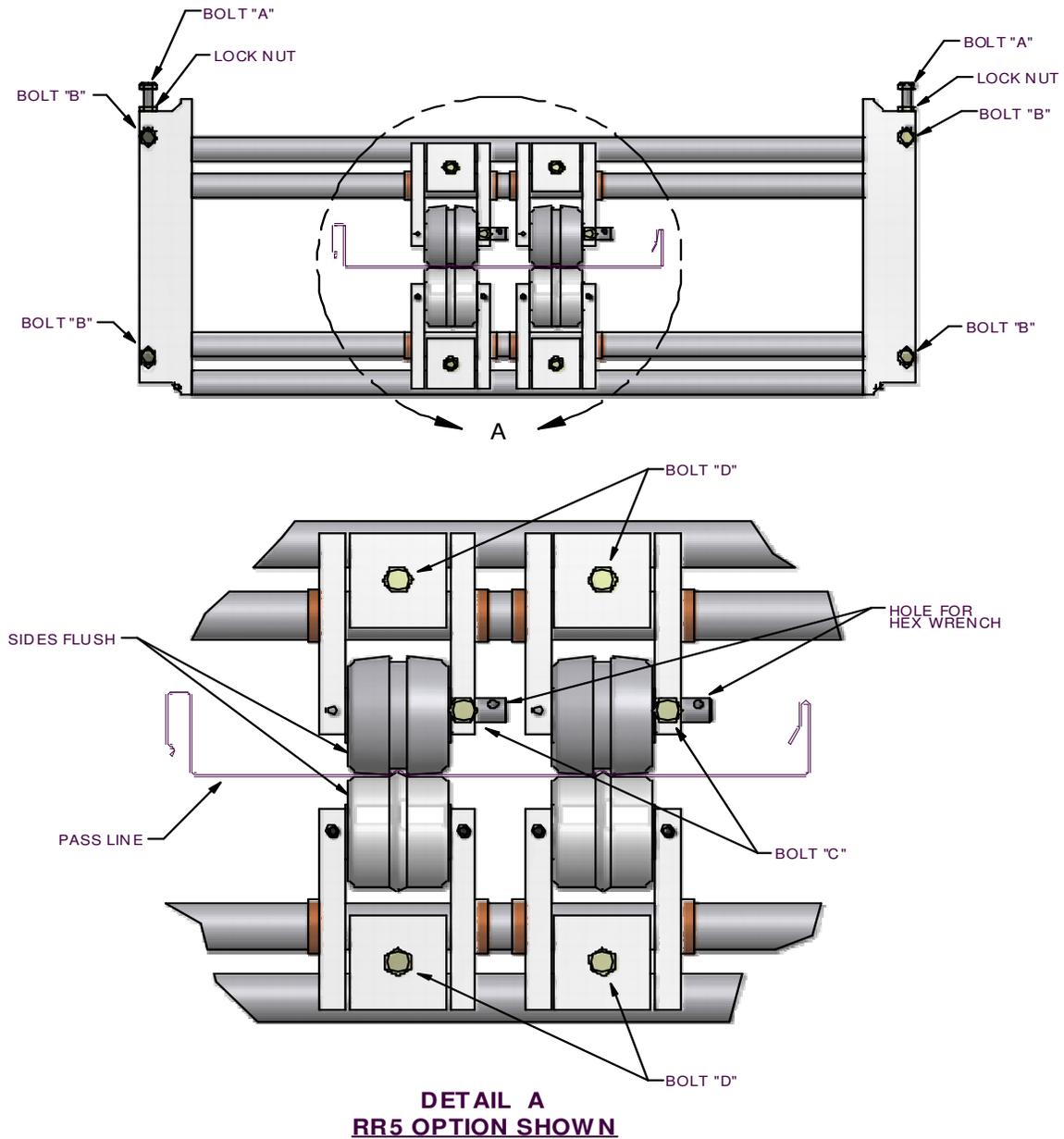


Figure 37: Bead Roller Width Change

11. Check the gap between the top and bottom bead rollers using a feeler gauge. An approximate setting of $1\frac{1}{2}$ times the material thickness is recommended. This setting can be adjusted slightly in either direction according to preference.
12. To set or change the gap between top and bottom beads, loosen the "C" bolt on both top rollers (Figure 37).
13. 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.

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14. 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.
15. Tighten the “C” bolt to lock the position of the shaft.
16. Repeat steps 11 through 15 for the remainder of the bead rollers.
17. Start the machine, jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies.
18. Inspect the beads for depth and re-adjust as necessary.

CAUTION: SHUT THE MACHINE OFF BEFORE PROCEEDING.

19. Start the machine and jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies

SHUT THE MACHINE OFF AGAIN BEFORE PROCEEDING.

20. 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 38)

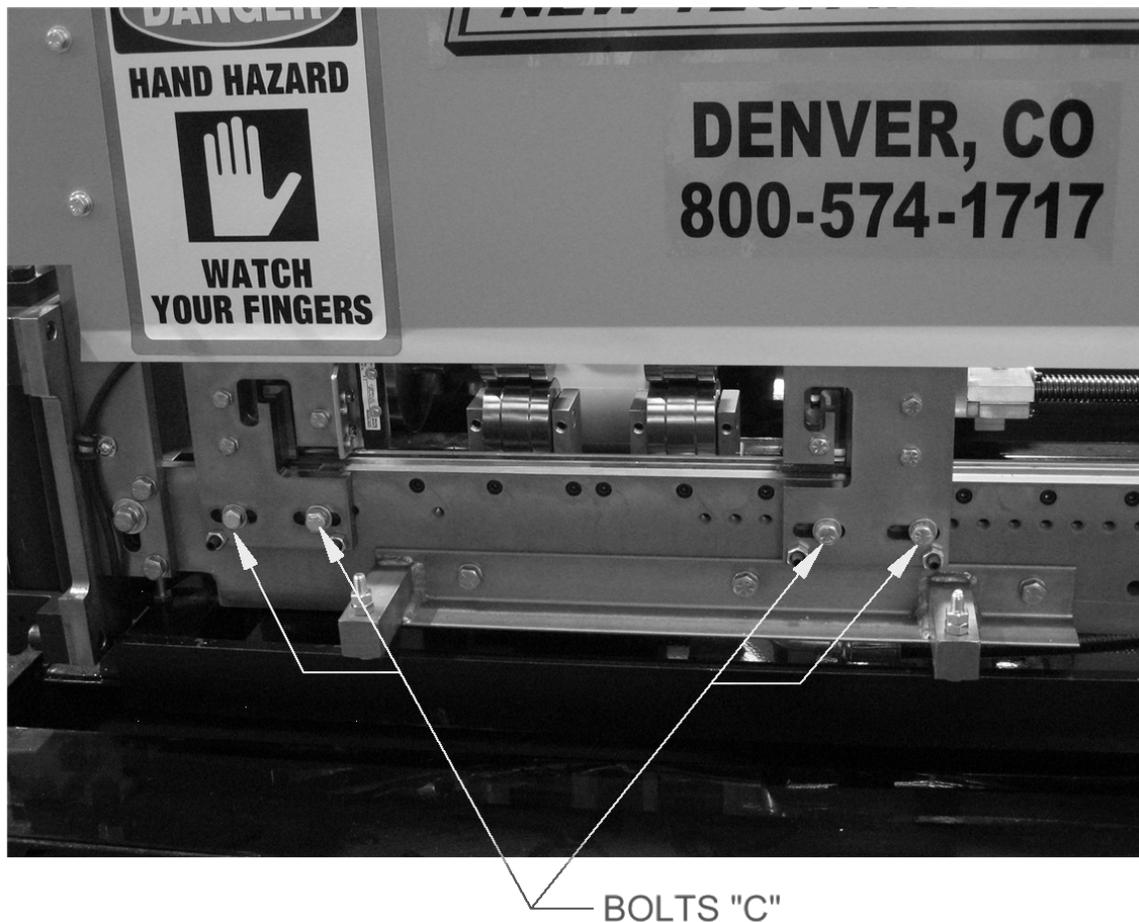


Figure 38: Shear Bolts

21. Remove the two “C” bolts in the slotted holes on the entry male shear die assembly.

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WIDTH CHANGE PROCEDURE

22. 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.
23. Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.
24. 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.

25. Check the exit shear die to ensure that the material will pass through it. If not adjust as necessary.
26. 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**.
27. 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 39) *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 39: Exit Die Adjustment

28. 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.

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29. 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.
30. Start the machine and press the shear down button to cut off the panel, then jog the material through the shear again and stop.
31. 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.**
32. Once a satisfactory cut has been made, the machine is ready to run panel.

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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 40) and set aside.

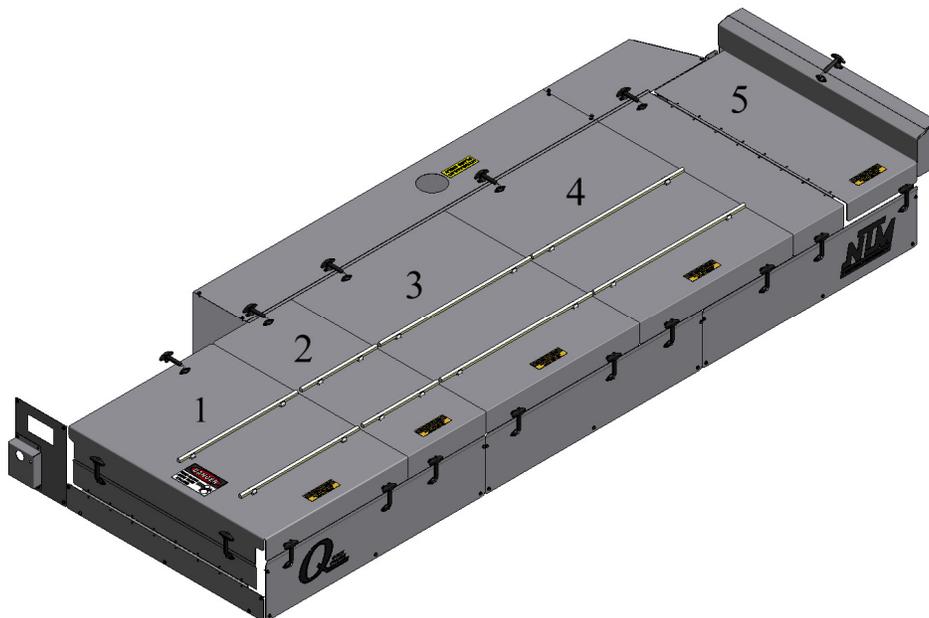


Figure 40: Remove Top Covers

2. Using a ½” wrench, remove the bolts holding the right and left Tooling Rails to the Fixed Rail Mounts (Figure 41). 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; if the tooling is being changed from one of these profiles to another, only the right-side Tooling Rails need to be changed. Likewise, the **FF100** and **FF150** profiles also share the same left-side rollers, if the tooling is being changed from one of these profiles to another, only the right-side Tooling Rails need to be changed.

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PROFILE CHANGEOVER PROCEDURE



Figure 41: Removing Tooling Rails

3. Refer to the SSQ Slide Block chart (Figure 42) and find the profile that will be installed into the machine. The chart indicates if the Right Side Fixed Mount Rail #1 needs to be in the Inboard position or Outboard position (Figure 43).

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	INBOARD
FF150, SS200, SS450, SS550, SS675	OUTBOARD

Figure 42: Block Chart

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PROFILE CHANGEOVER PROCEDURE

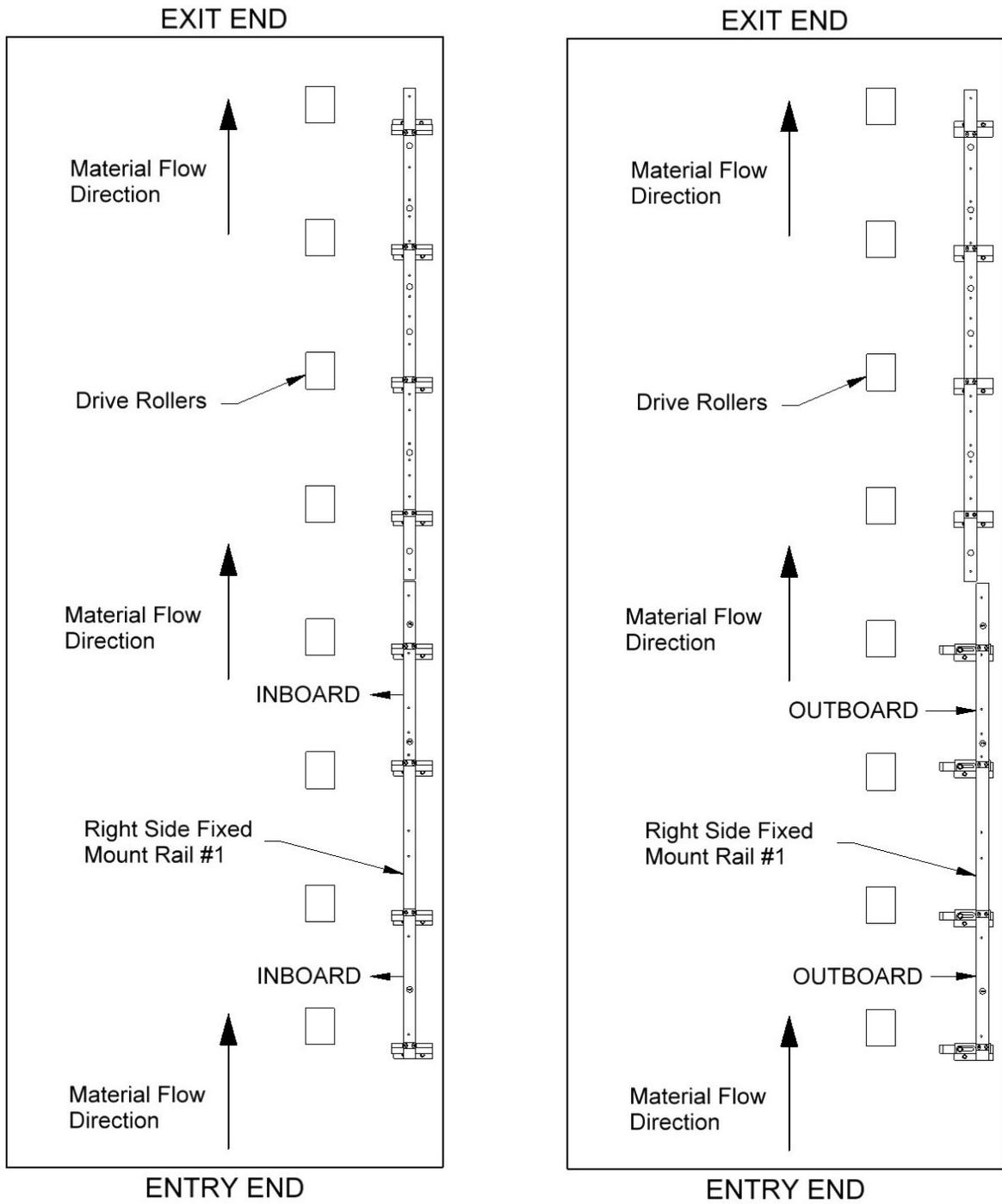


Figure 43: Inboard/Outboard Positions

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PROFILE CHANGEOVER PROCEDURE

4. Loosen bolt "C" on the first 4 Slide Block assemblies (Figure 44 or Figure 45).

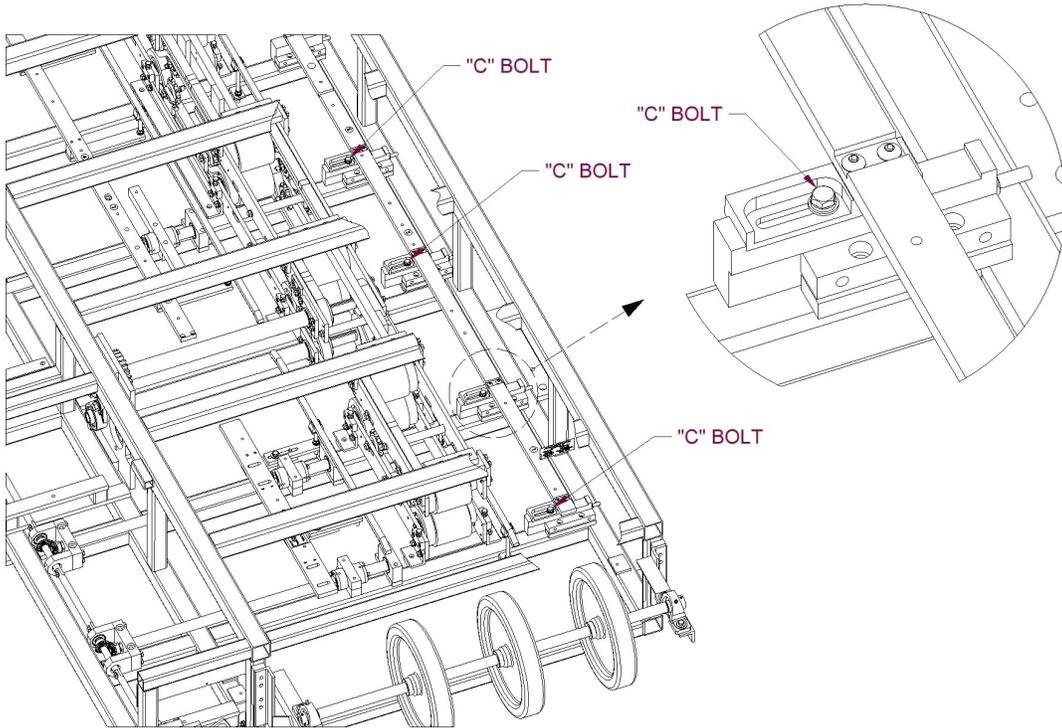


Figure 44: April 2009 and later

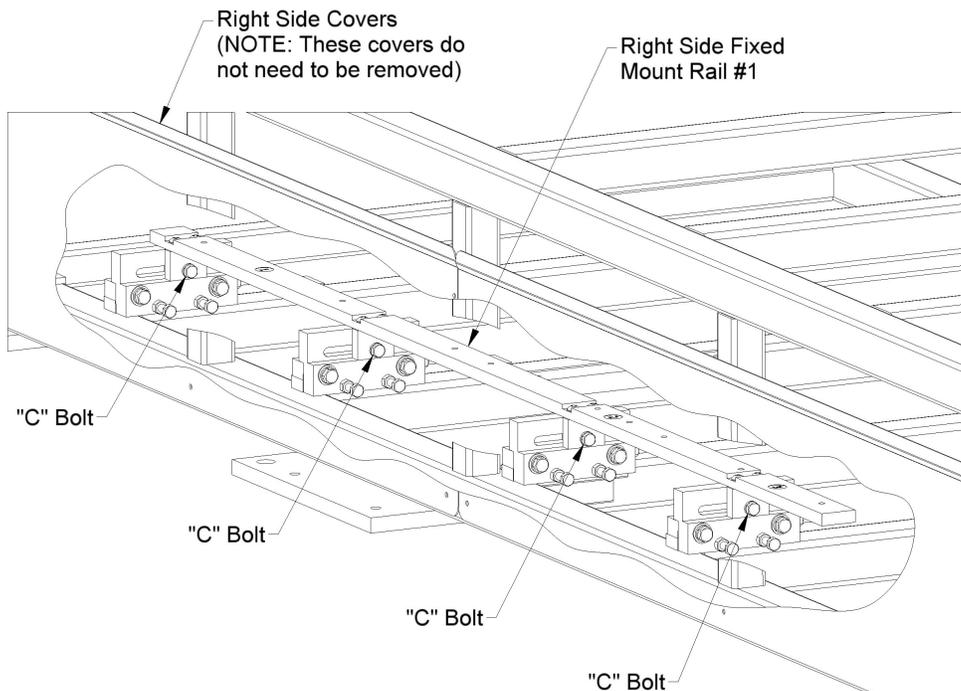


Figure 45: Machines made before April 2009

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PROFILE CHANGEOVER PROCEDURE

5. Once all 4 bolts are loose, slide the Right Side Fixed Mount Rail #1 to the correct position (Figure 46), either “inboard” or “outboard”. Make sure that it is fully in position and then tighten the “C” bolts (Figure 44 or Figure 45).



Figure 46: 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, SS550, SS675	POSITION "A", OUTBOARD
SS100, SS150, SS450, FF100, FF150, BP	POSITION "B", INBOARD

Figure 47: 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 49). 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.

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PROFILE CHANGEOVER PROCEDURE

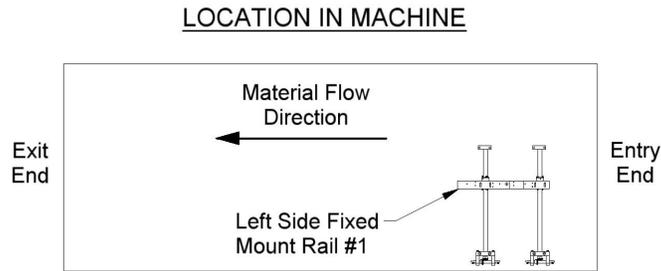


Figure 48: Left Side Fixed Mount Rail

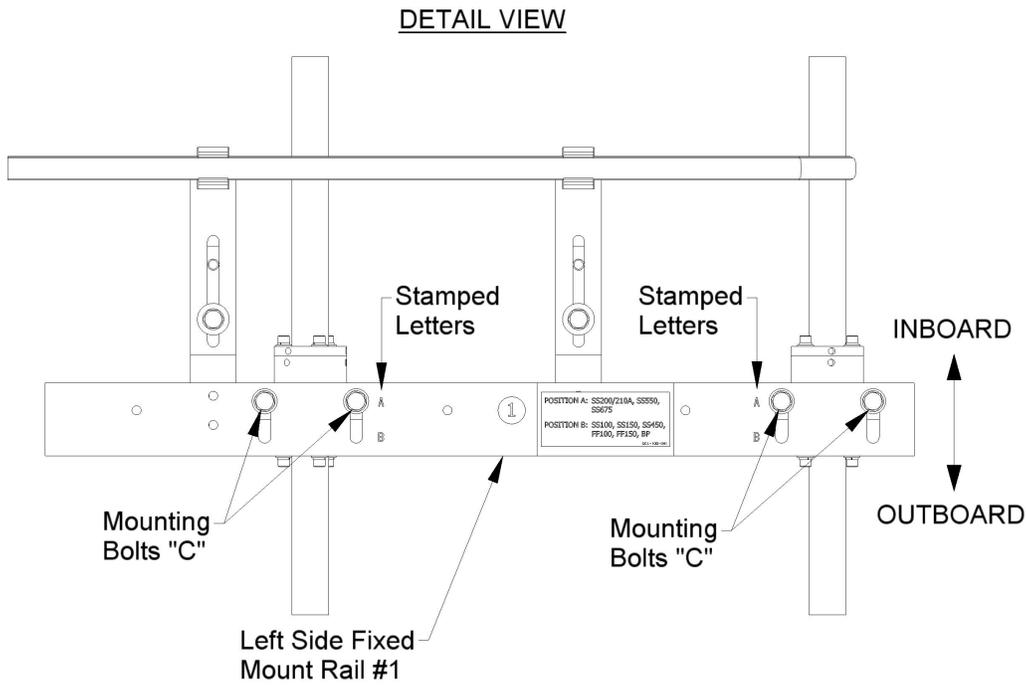


Figure 49: Shown in the "A" position

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 50). 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" contact the face of the Fixed Mount Rail. Hold it in place while tightening the mounting bolts with a ½" wrench.

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PROFILE CHANGEOVER PROCEDURE

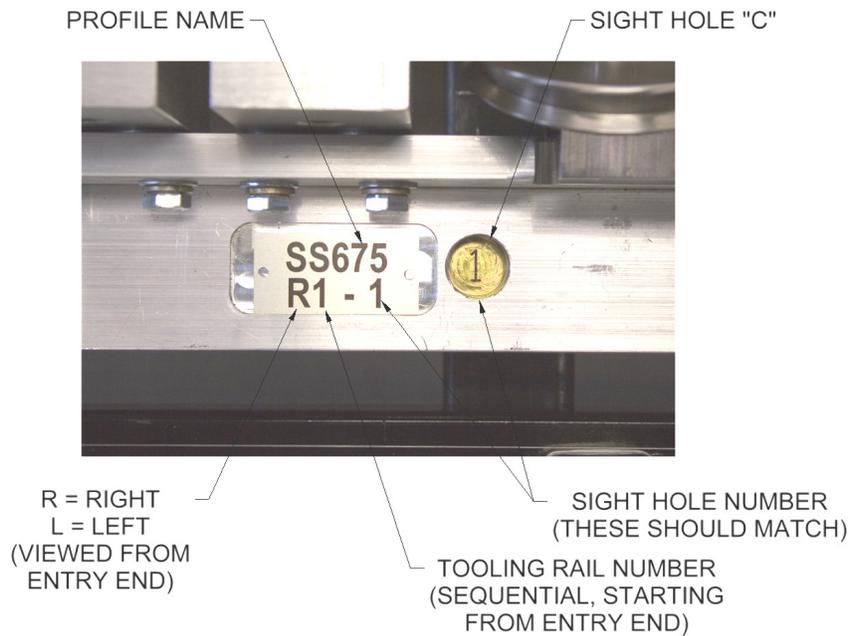


Figure 50: Tooling Rail Identification

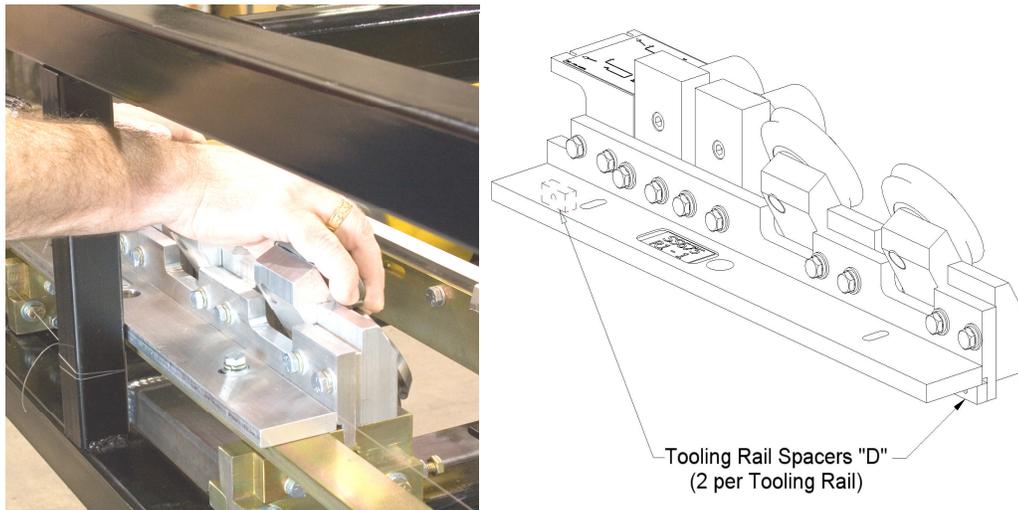


Figure 51: R1 Tooling Rail Spacers

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** 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

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(Figure 52). When mounting the Tooling Rail Assembly for use with the **SS100**, **SS450**, or **BP 1"** profiles push it toward the center of the machine until the Tooling Rail Backstops "E" contact the Left Side Fixed Mount Rail #1 (Figure 52). Once it is positioned properly, tighten the two Mounting Bolts "F" using a 1/2" wrench.

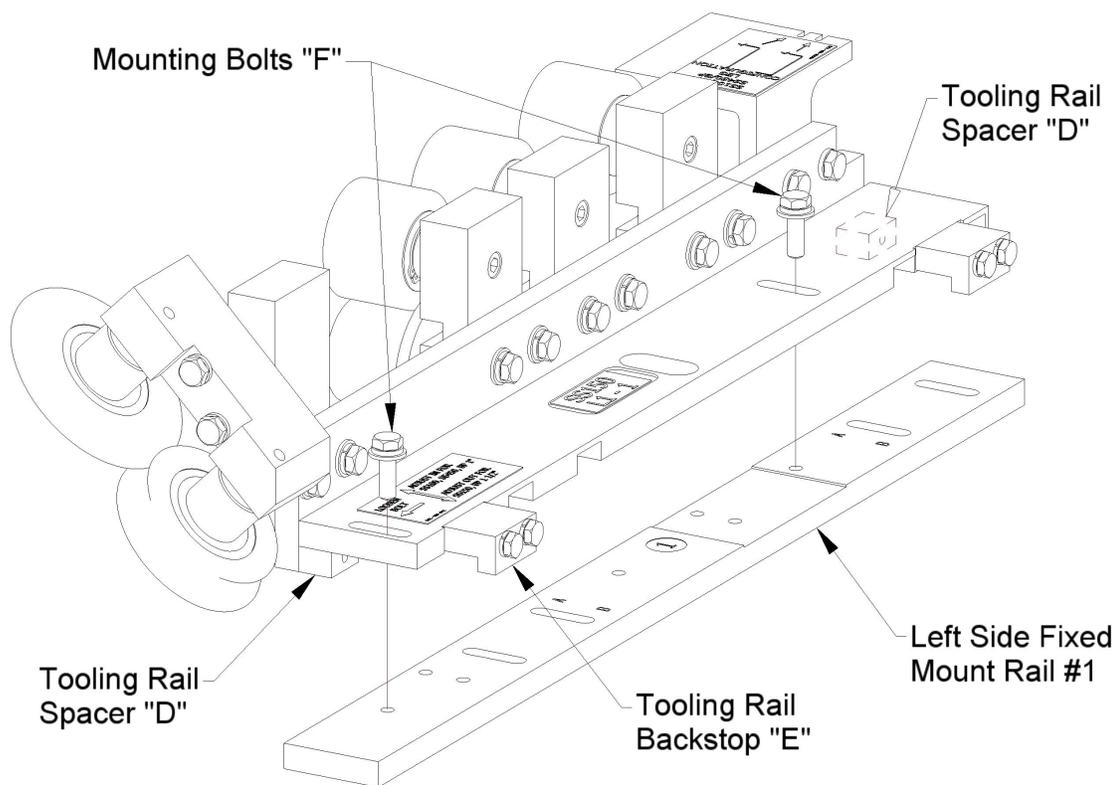


Figure 52: L1-1 Special Instructions

9. Loosen the two "A" Bolts on the Right Entry Guide (Figure 53). Slide the entry guide to the left or right until the alignment pin, located on the end of the top shoe of the entry guide, is directly under one of the notches on the Tooling Rail Marker Plate. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the top of the marker plate.
10. Once the Right Entry Guide is in the correct position, tighten the two "A" bolts.
11. Loosen the two "A" bolts on the Left Entry Guide (Figure 53).
12. Slide the entry guide to the left or right to accept the new coil width. Make sure that the coil is captured snugly between the entry guides and re-tighten the two "A" bolts.

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PROFILE CHANGEOVER PROCEDURE

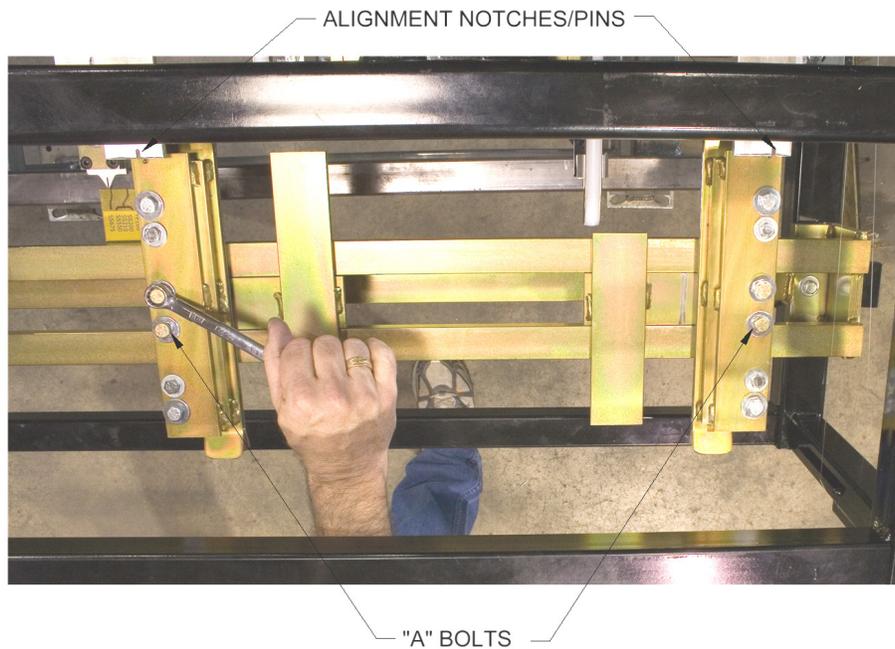


Figure 53: Entry Guide Alignment Notches and Pins

13.

Figure 54), align the notch on the tooling rail marker plate to the alignment pin (Figure 25 on page 38) 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.



Figure 54: Tooling Rail Adjustment Handle

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

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PROFILE CHANGEOVER PROCEDURE

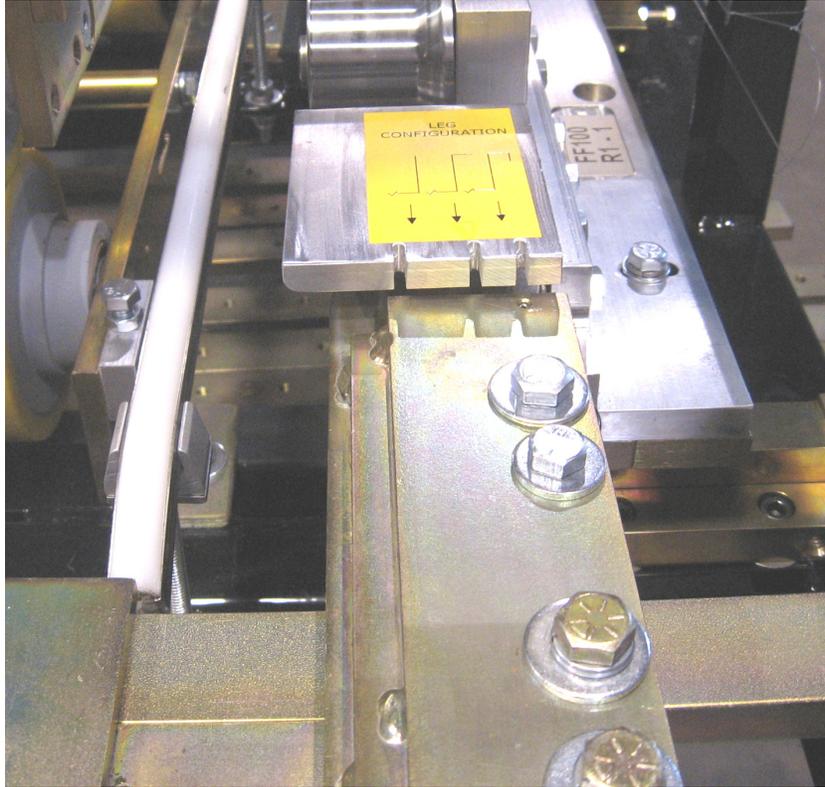


Figure 55: Marker Plate Notch and Pin

15. Load the reeled coil onto the machine using a fork lift or other rated lifting device.
16. Cut a 1” triangle of material off the 2 leading corners of the coil and feed it into the entry guides.



Figure 56: Preparing Coil for Loading

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17. 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, and is about 1" from the Bead Roller Assembly (Figure 57).

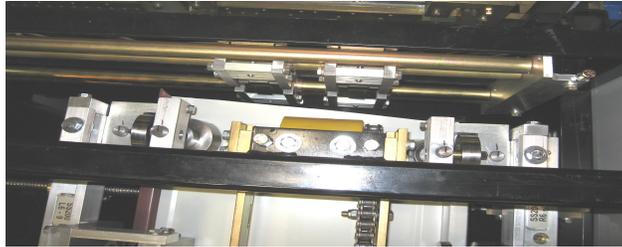


Figure 57: Jogging Material thru Machine

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.

IF THE PANEL REQUIRES BEADS, GO TO STEP 18

IF THE PANEL DOES NOT REQUIRE BEADS, GO TO STEP 21.

18. 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.. (Figure 58)

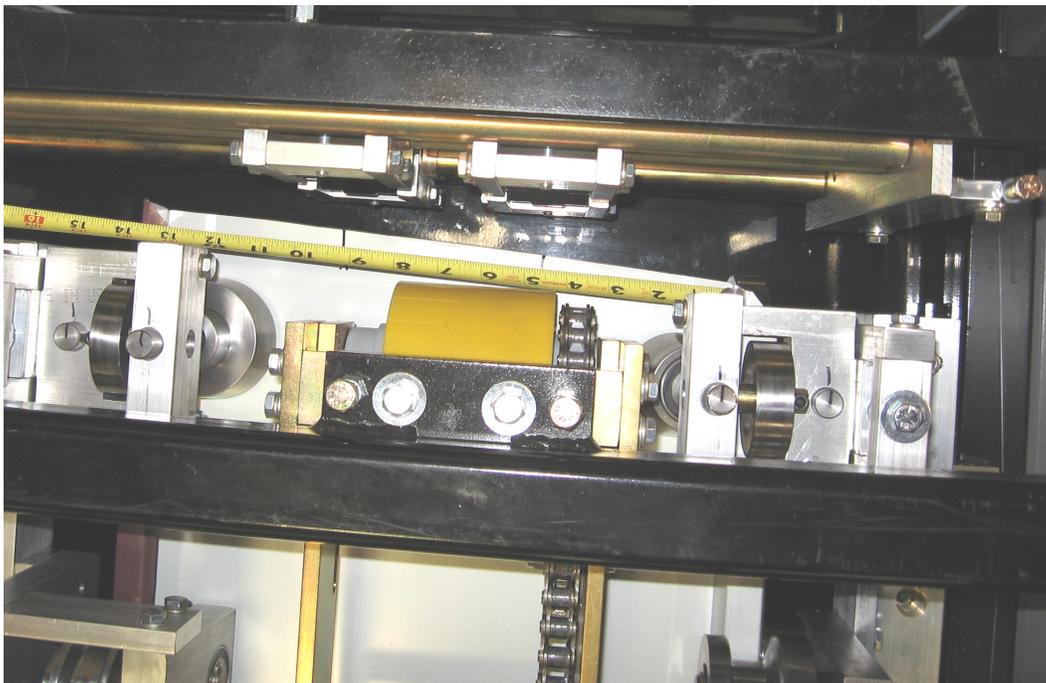


Figure 58: Spacing Bead Rollers

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19. Loosen the Slide Lock Bolts “D” on the top and bottom bead assemblies (Figure 21) and slide each bottom and top roll assembly left or right to center them on the 4” and 8” marks on the panel.
20. Lock the two top bead assemblies in the correct position by tightening the “D” bolt on each assembly (Figure 21). 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.
21. Using a 7/16” wrench, remove the Shear Cover and set aside.



Figure 59: Removing Shear Cover

22. If the machine was manufactured before 10/2011 then there will be a photo eye attached to the shear die shown in Figure 60. Using a 5/16” open end wrench, loosen, **do not remove**, the two bolts on the Photo Eye Bracket. It is located on the side of the Female Exit Die Holder. Remove the Photo Eye & Bracket by sliding it off of the two bolt heads, and move out of the way.

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Figure 60: Removing Photo Eye and Bracket (If Equipped)

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

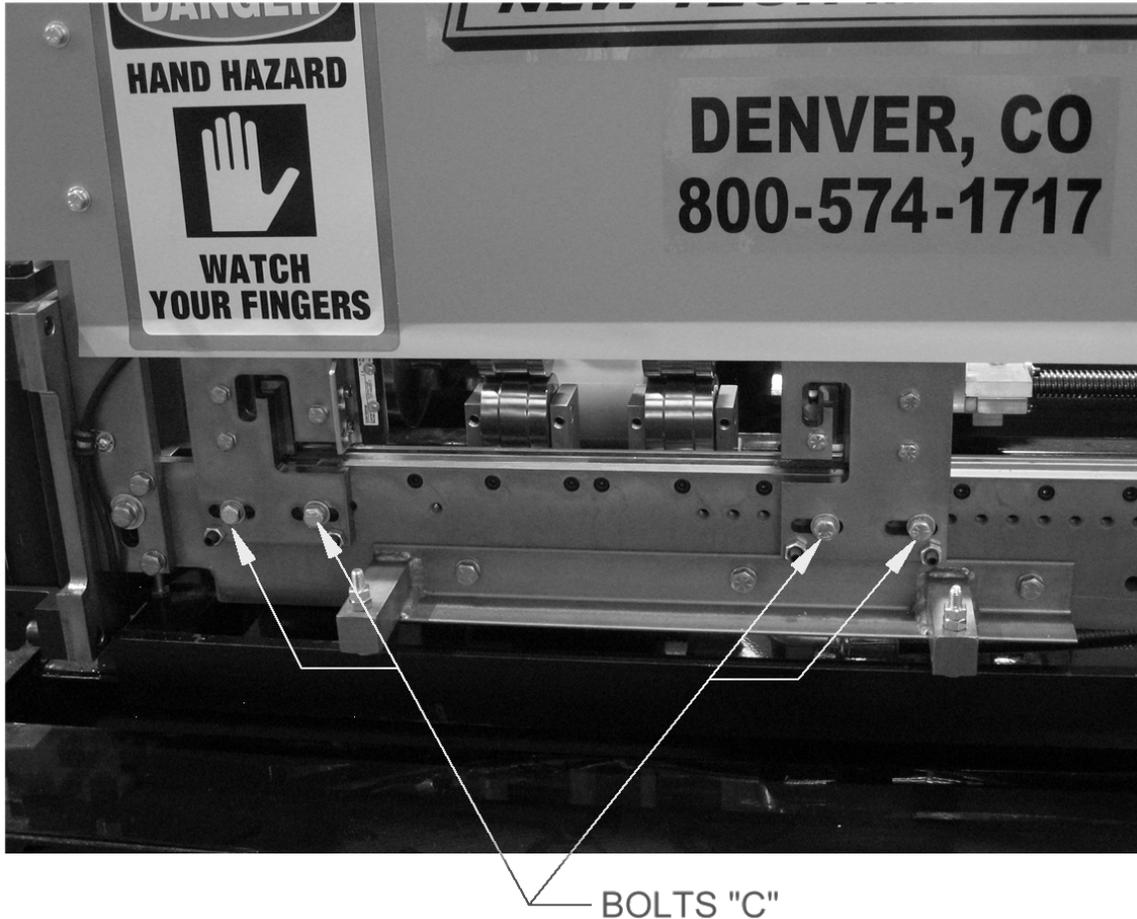


Figure 61: Remove Shear Bolts

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24. Remove the two “C” bolts from the slotted holes on the entry male and female shear die assemblies as described previously.
25. Locate the shear dies that correspond to the profile just installed. Separate the male and female entry and exit shear dies.
26. Set the Male Entry Die on top of the Bottom Die (Figure 20 - Detail A on page 32). 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.
27. Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.
28. Repeat steps 24 through 27 for the Female Dies.
29. 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 them.
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.
30. Check the exit male and female shear dies to ensure that the material will pass through them. If not, adjust as necessary.
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 62) 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.*

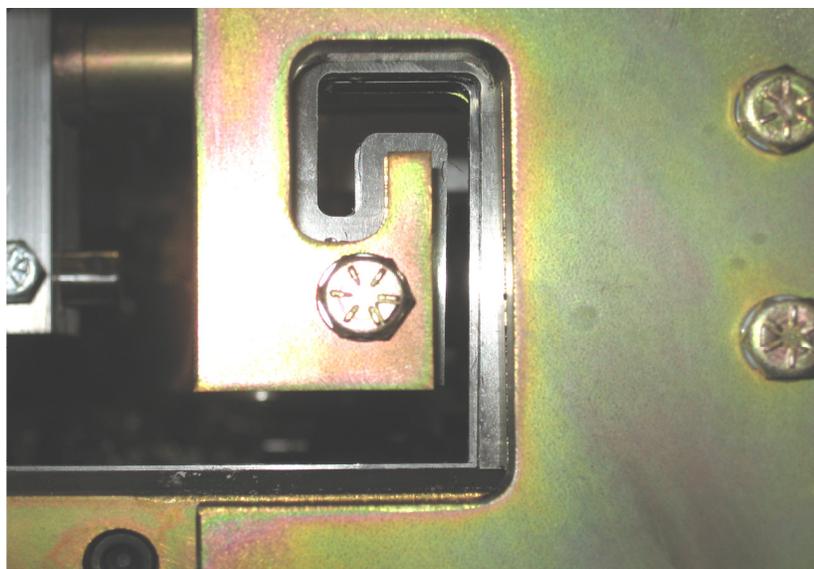


Figure 62: Exit Die Adjustment

33. Look down the leg of the panel and make sure that the entry and exit dies are not touching the panel as it passes through them.

PROFILE CHANGEOVER PROCEDURE

34. Start the machine and press the shear down button to cut off the panel, then jog the material through the shear approximately 2" and stop.
35. 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!**
36. Once the cut is acceptable, the machine is ready to start panel production.

CHAPTER 17
PROFILE ADJUSTMENTS

PROFILE ADJUSTMENTS

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

ECCENTRIC SHAFTS

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

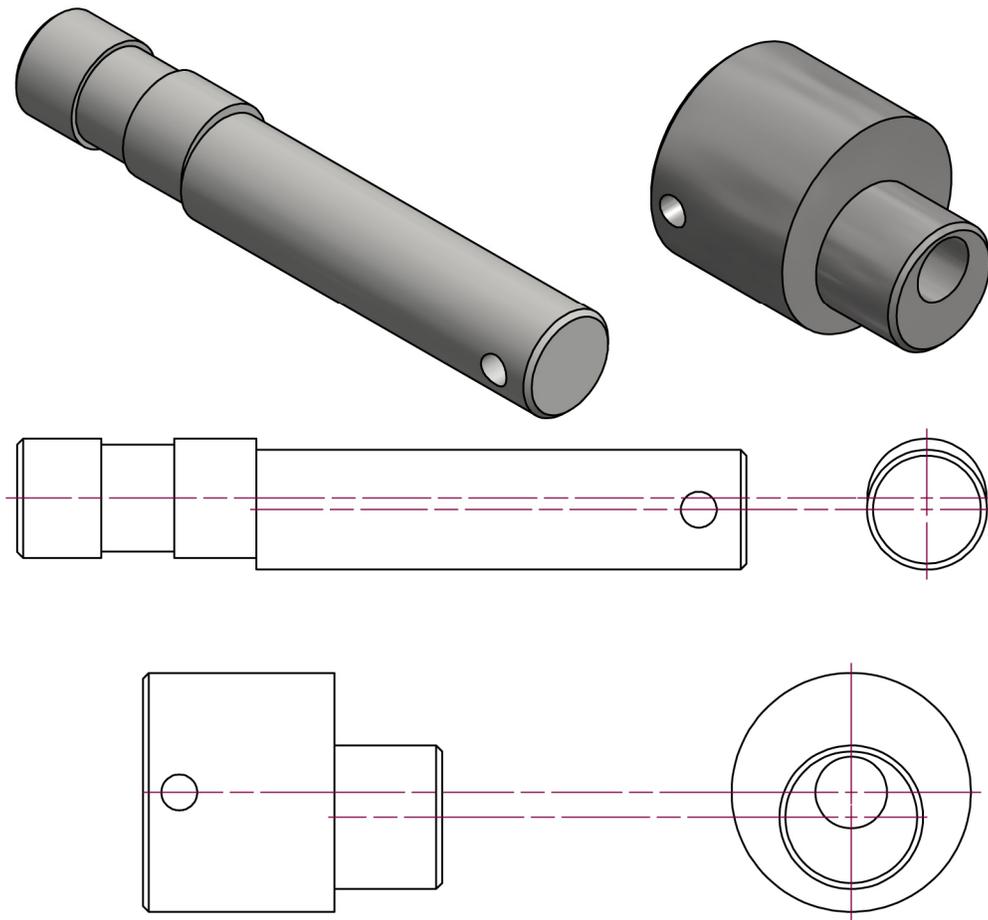


Figure 63: Eccentric Shafts

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 65 - Figure 67).
4. Re-tighten the set screw and/or bolt.

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PROFILE ADJUSTMENTS

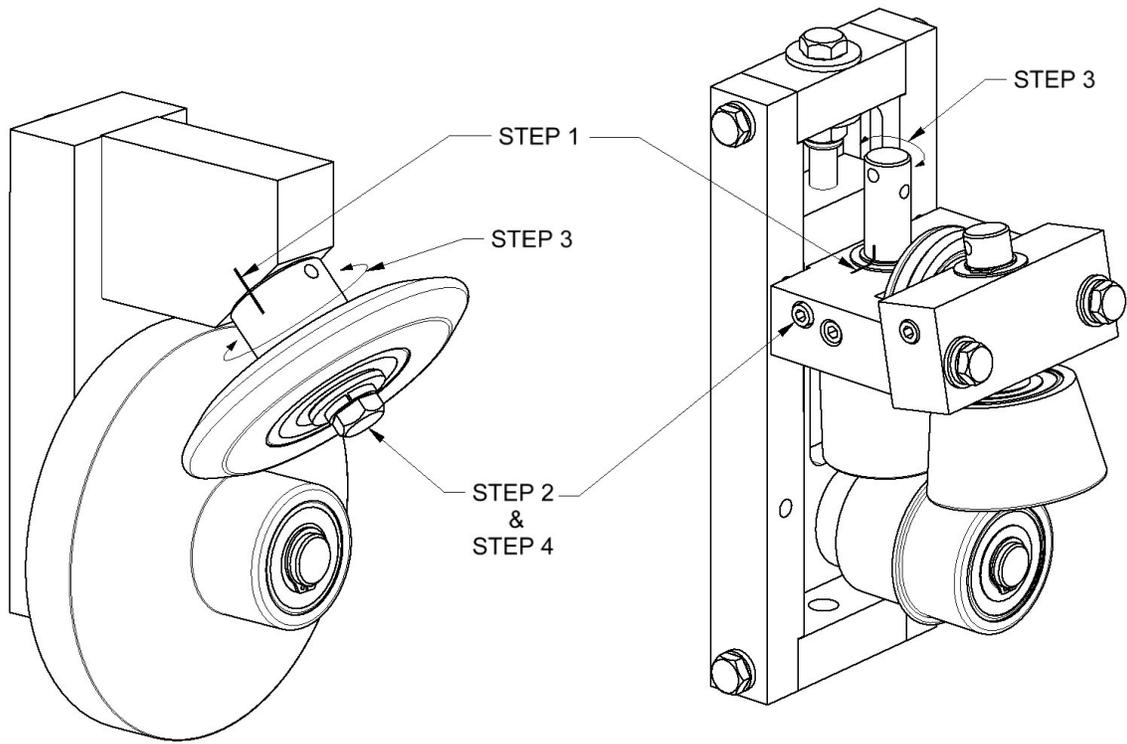


Figure 64: Adjusting Eccentric Shafts

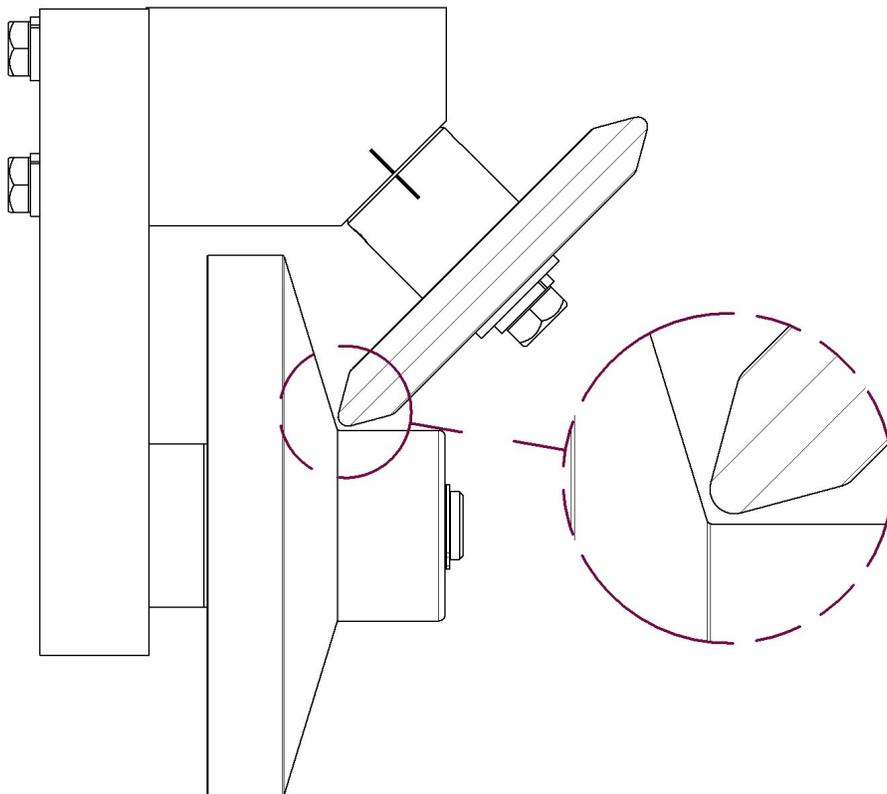


Figure 65: Eccentric Shaft Proper Adjustment

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PROFILE ADJUSTMENTS

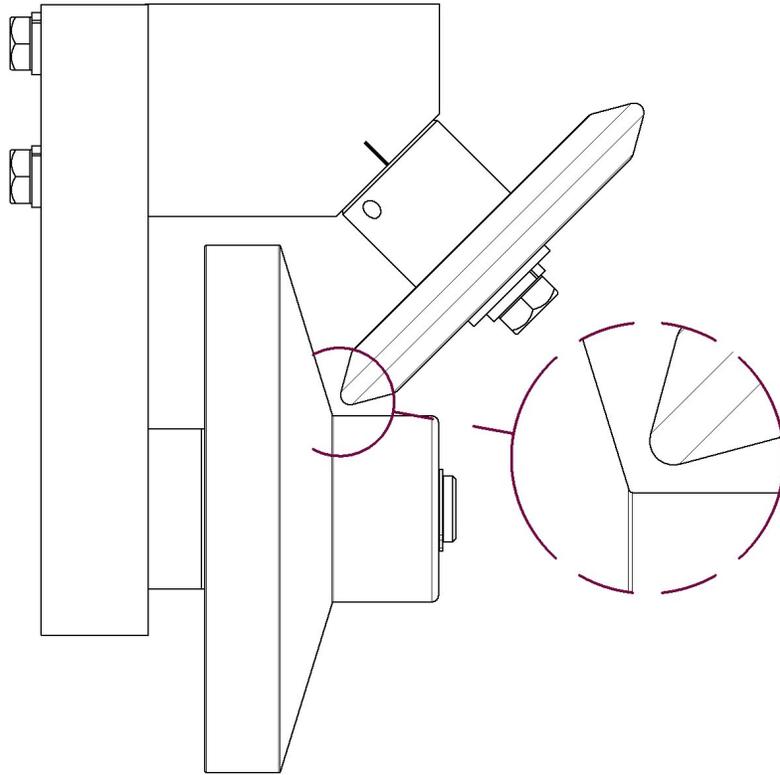


Figure 66: Eccentric Shaft Too Loose

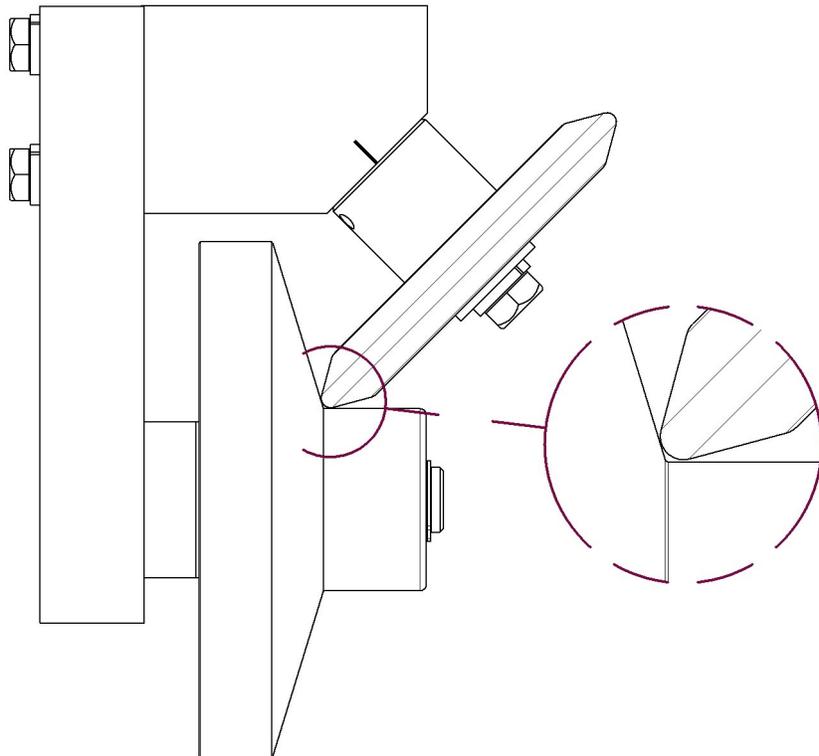


Figure 67: Eccentric Shaft Too Tight

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.

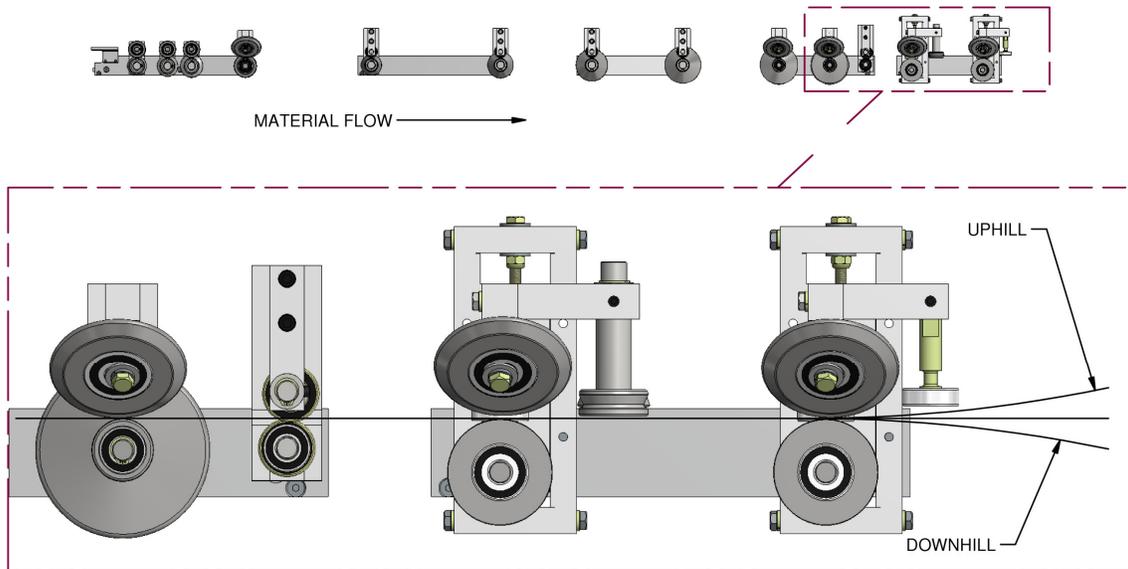


Figure 68: Camber Adjustment - Uphill/Downhill

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 69)

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.

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PROFILE ADJUSTMENTS

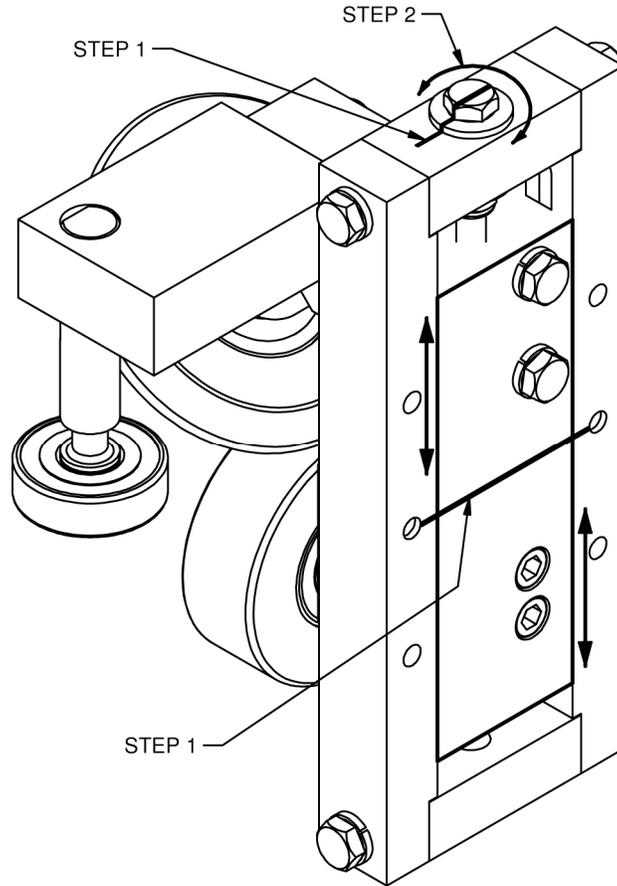


Figure 69: Camber Adjustment

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

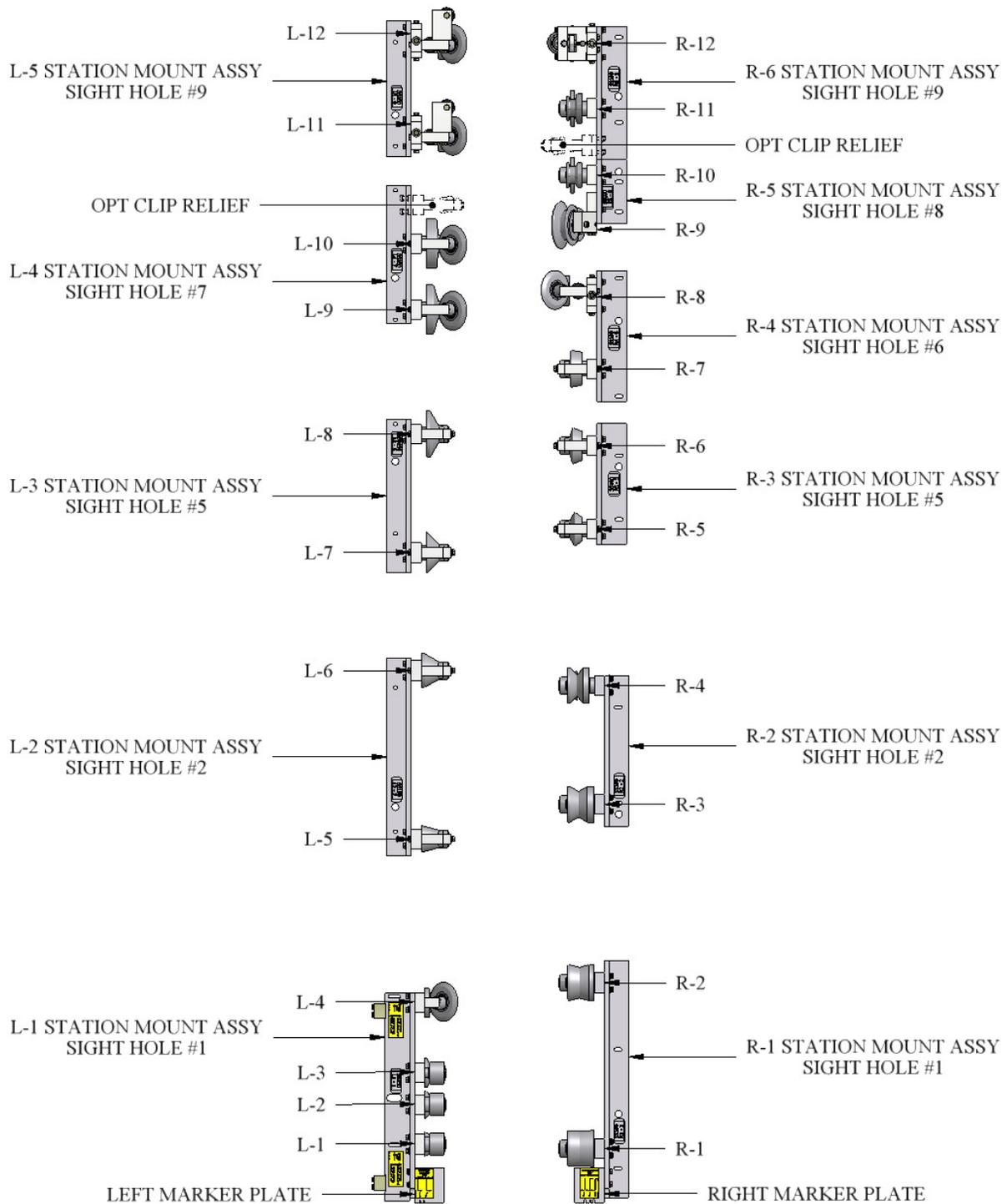


Figure 70: SSQ100 Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

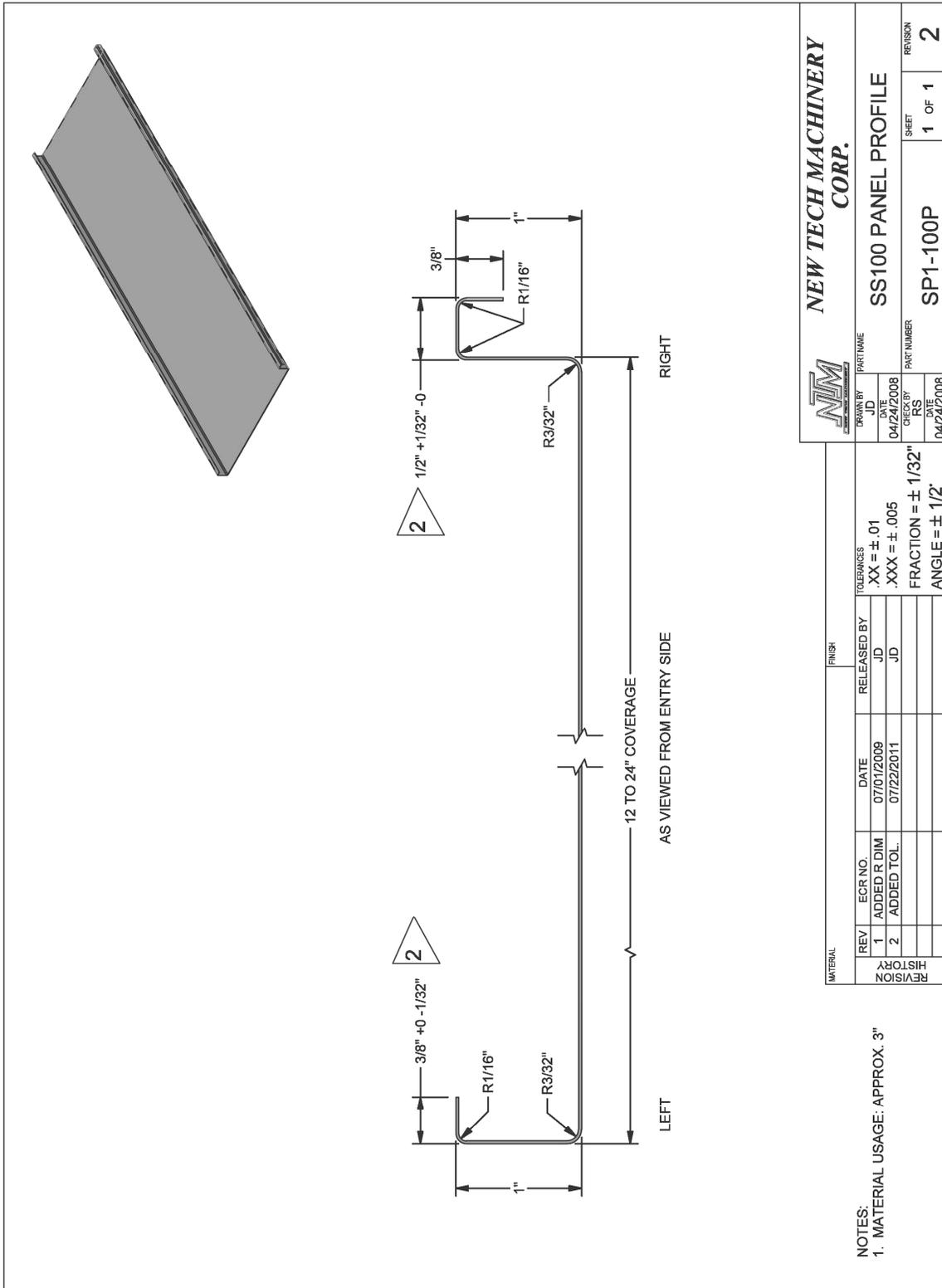


Figure 71: SS100 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

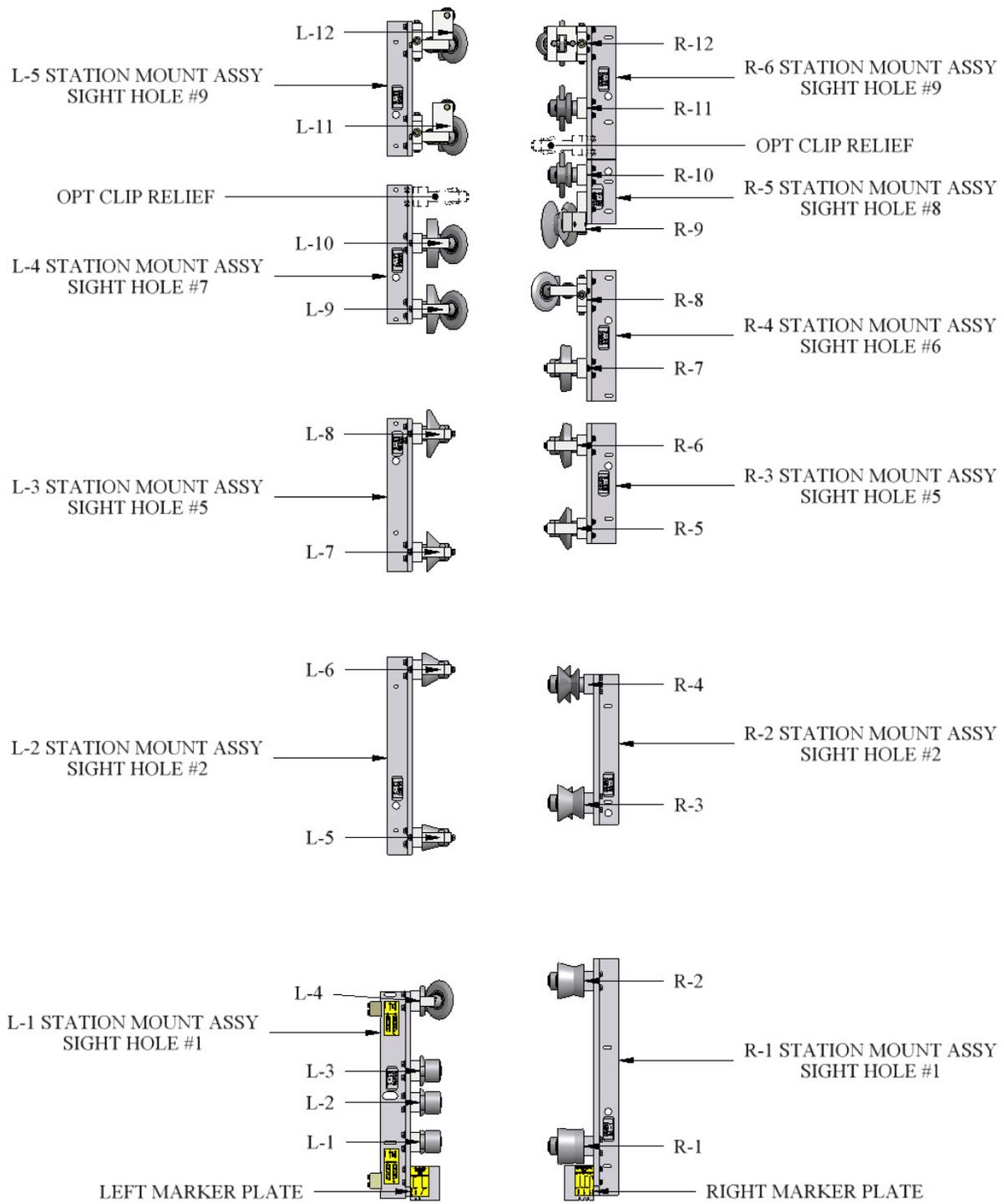


Figure 72: SSQ150 Roller System

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

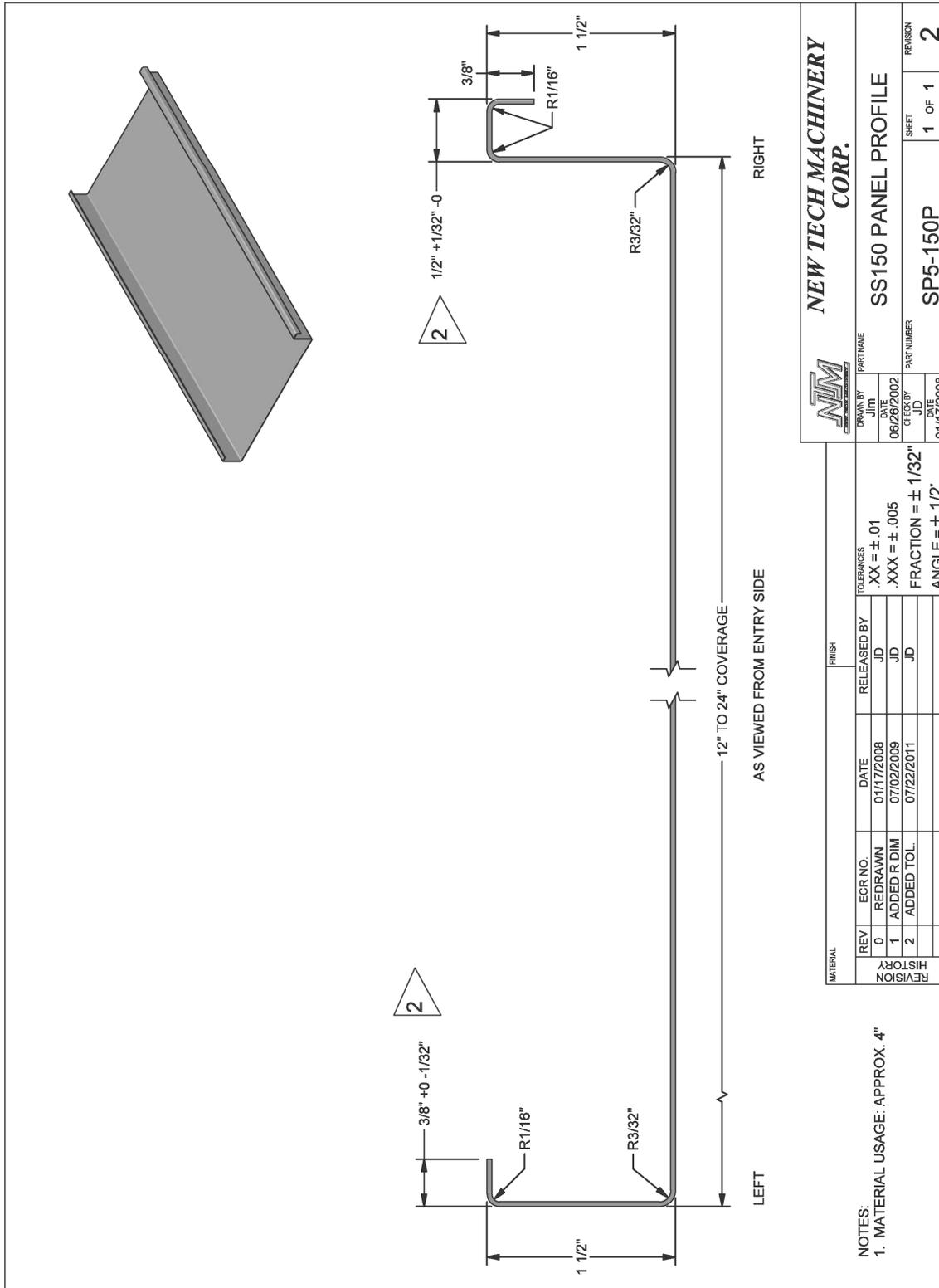


Figure 73: SS150 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

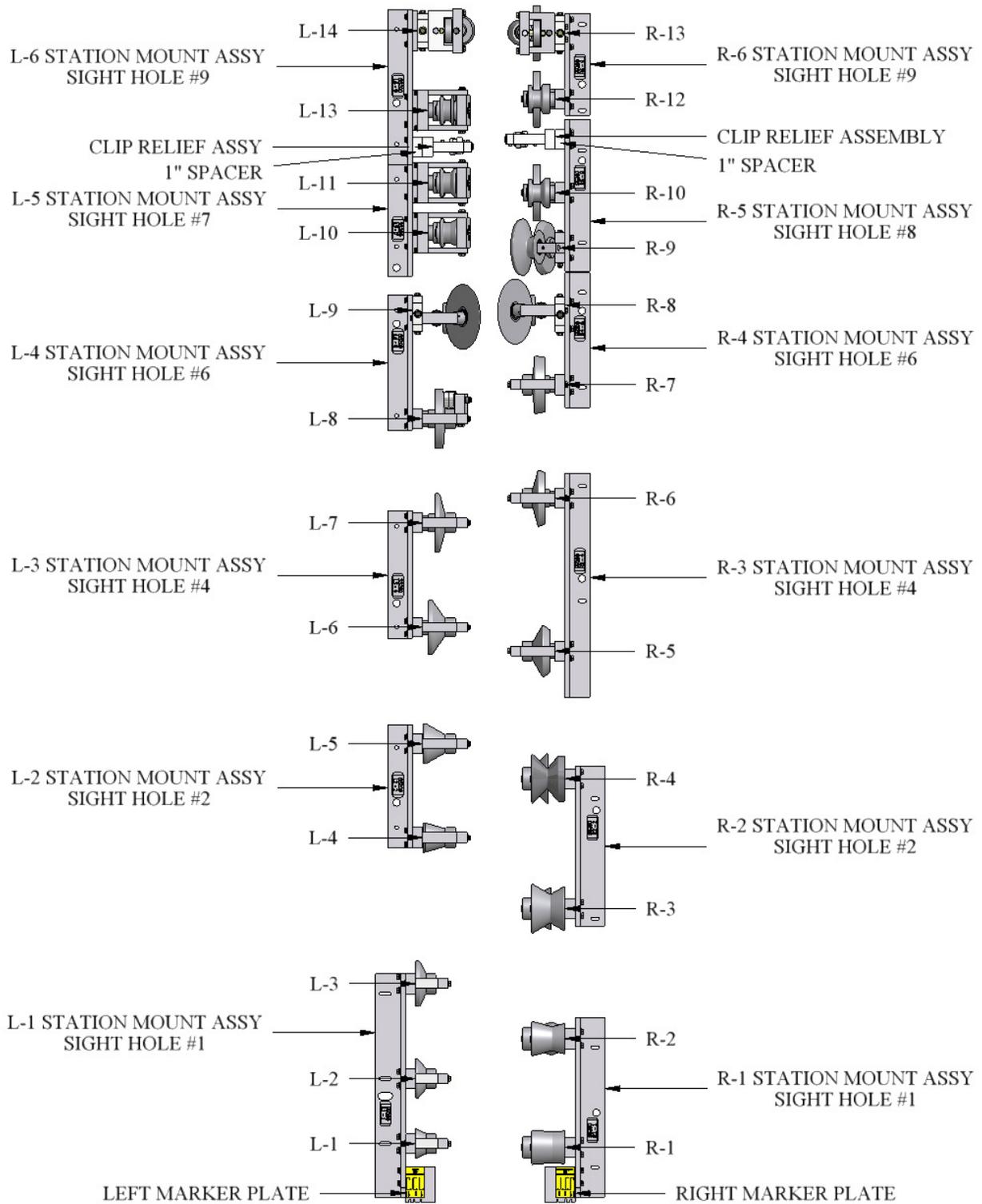


Figure 74: SSQ200/210A Roller System

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ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

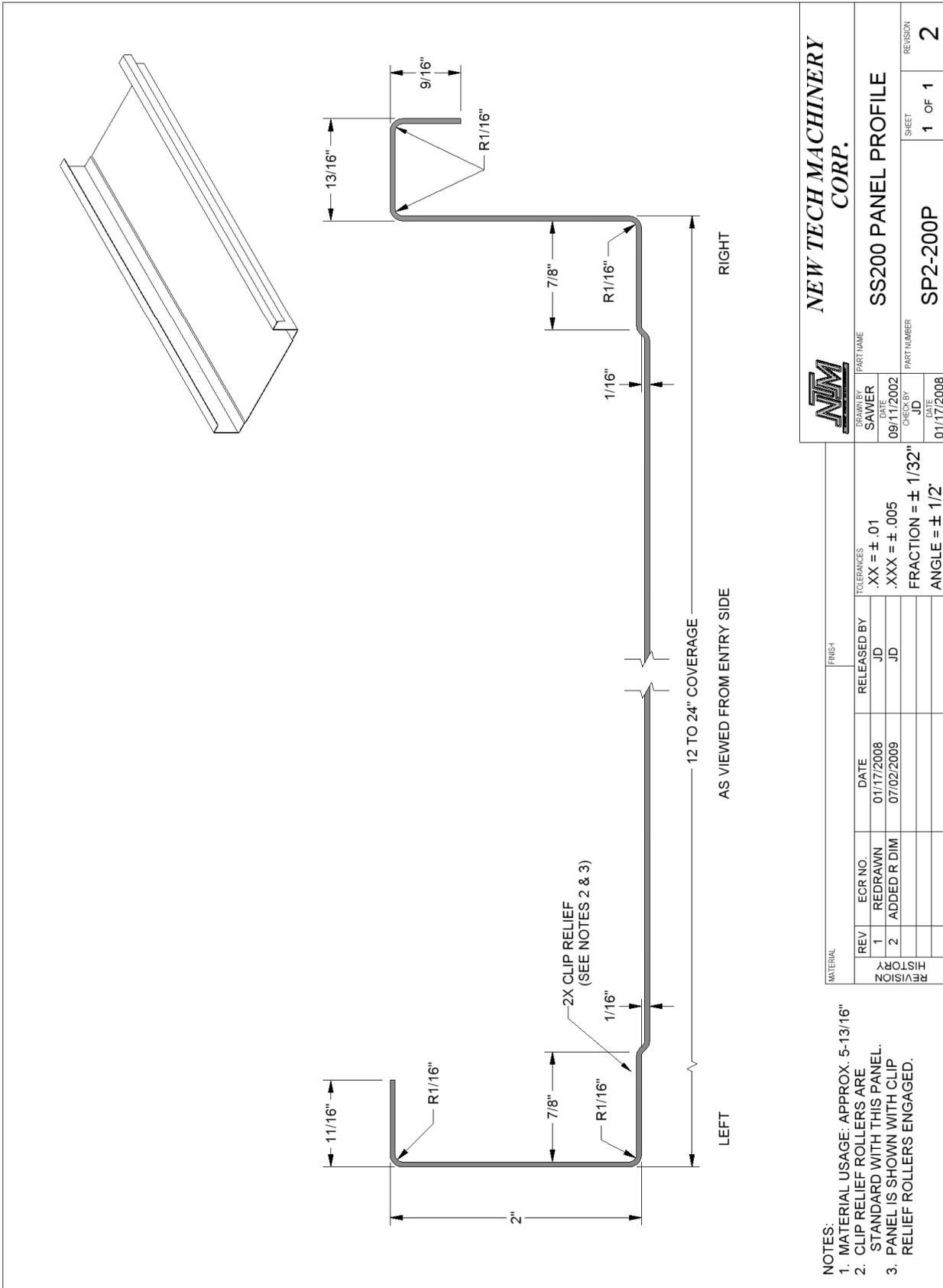


Figure 75: SS200 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

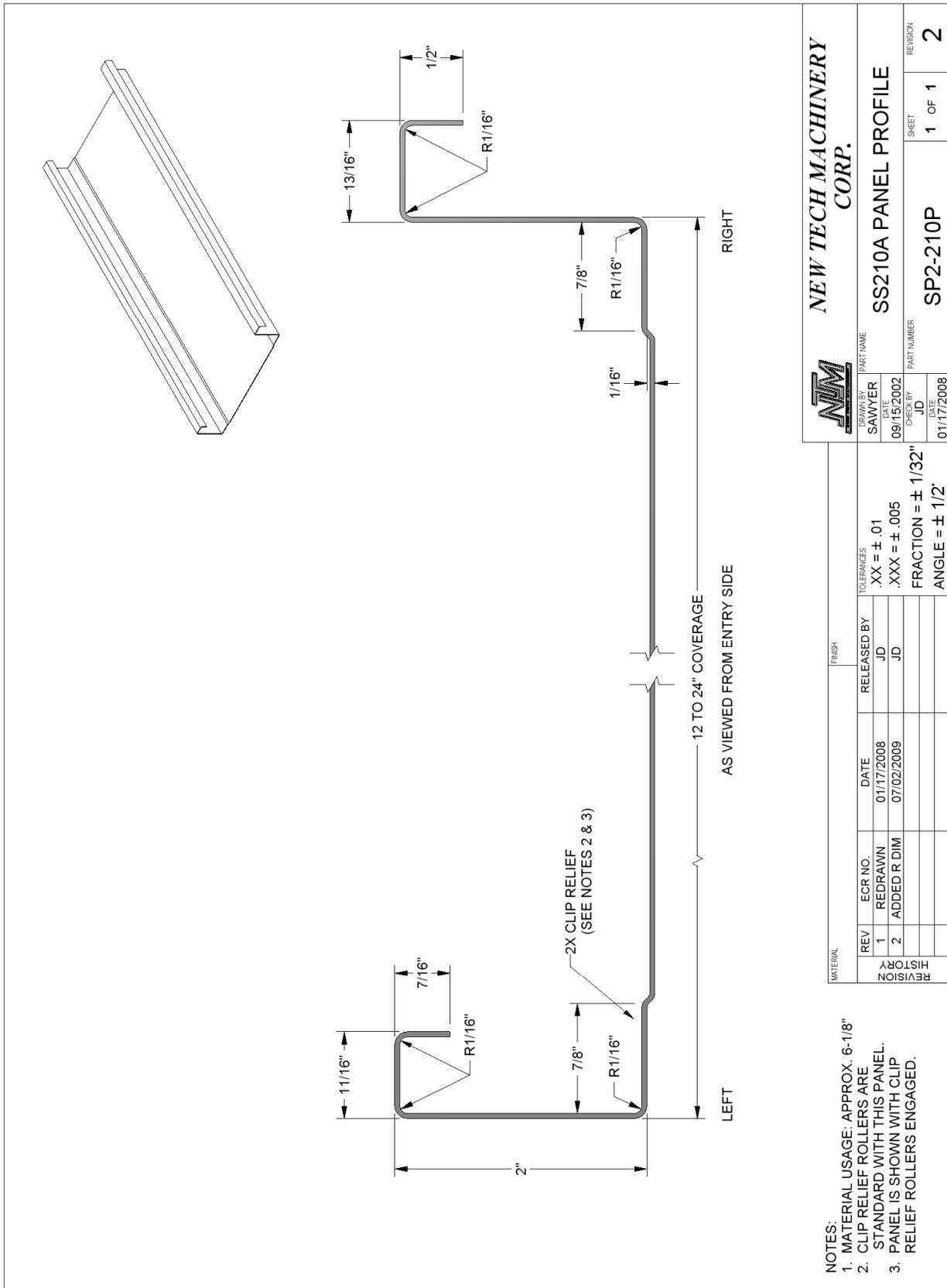


Figure 76: SS210 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

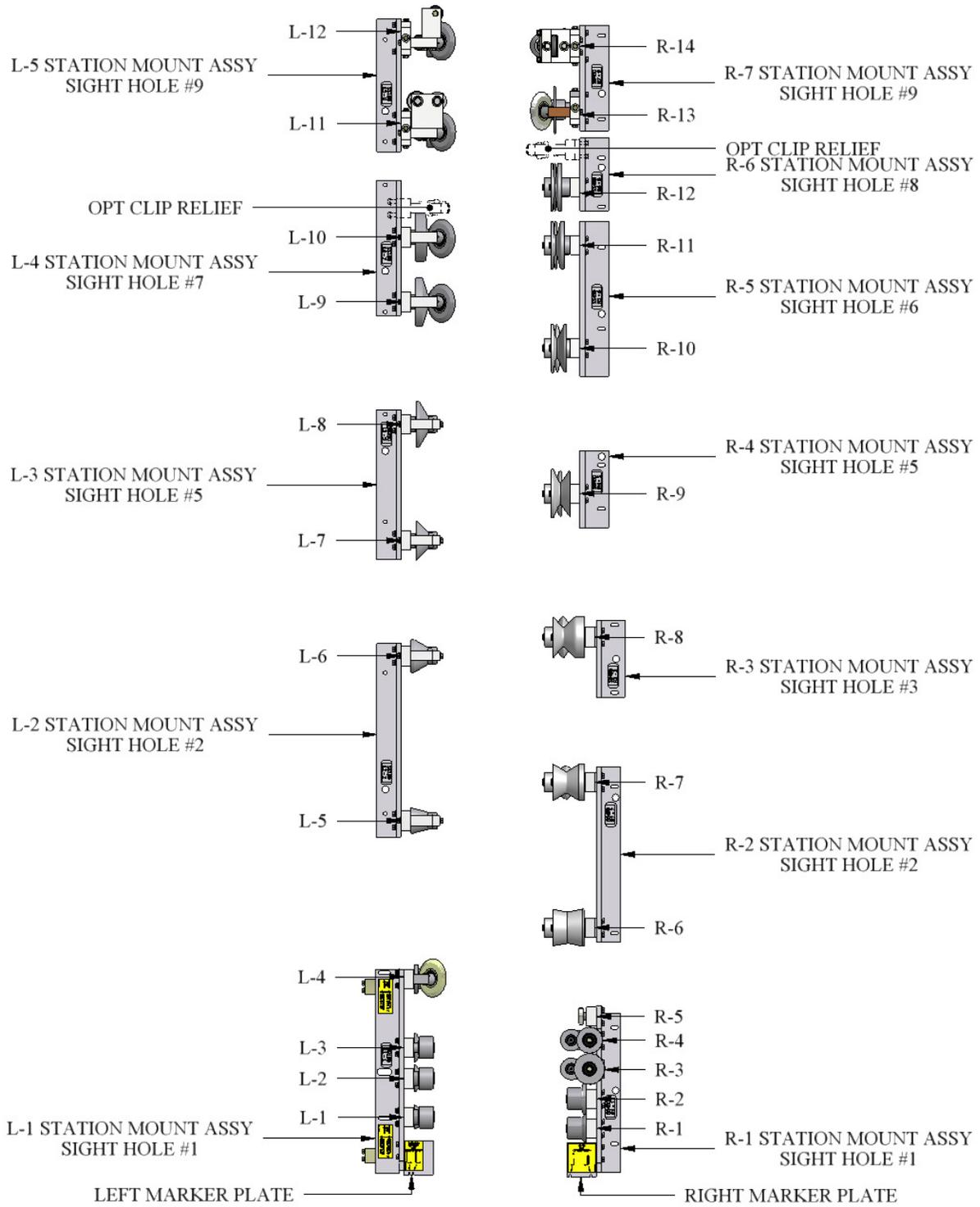


Figure 77: SSQ450/450SL Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

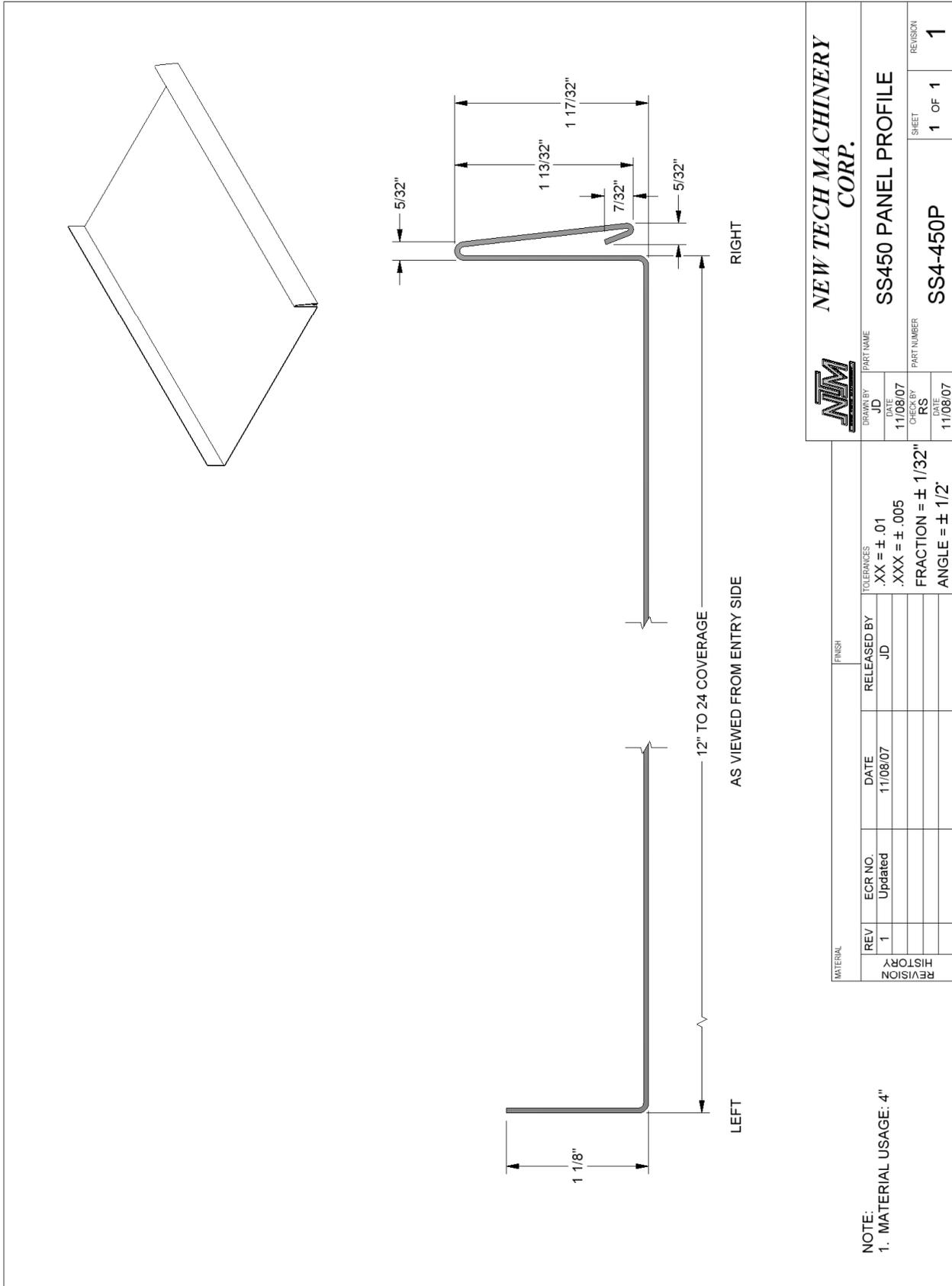


Figure 78: SS450 Panel Profile

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

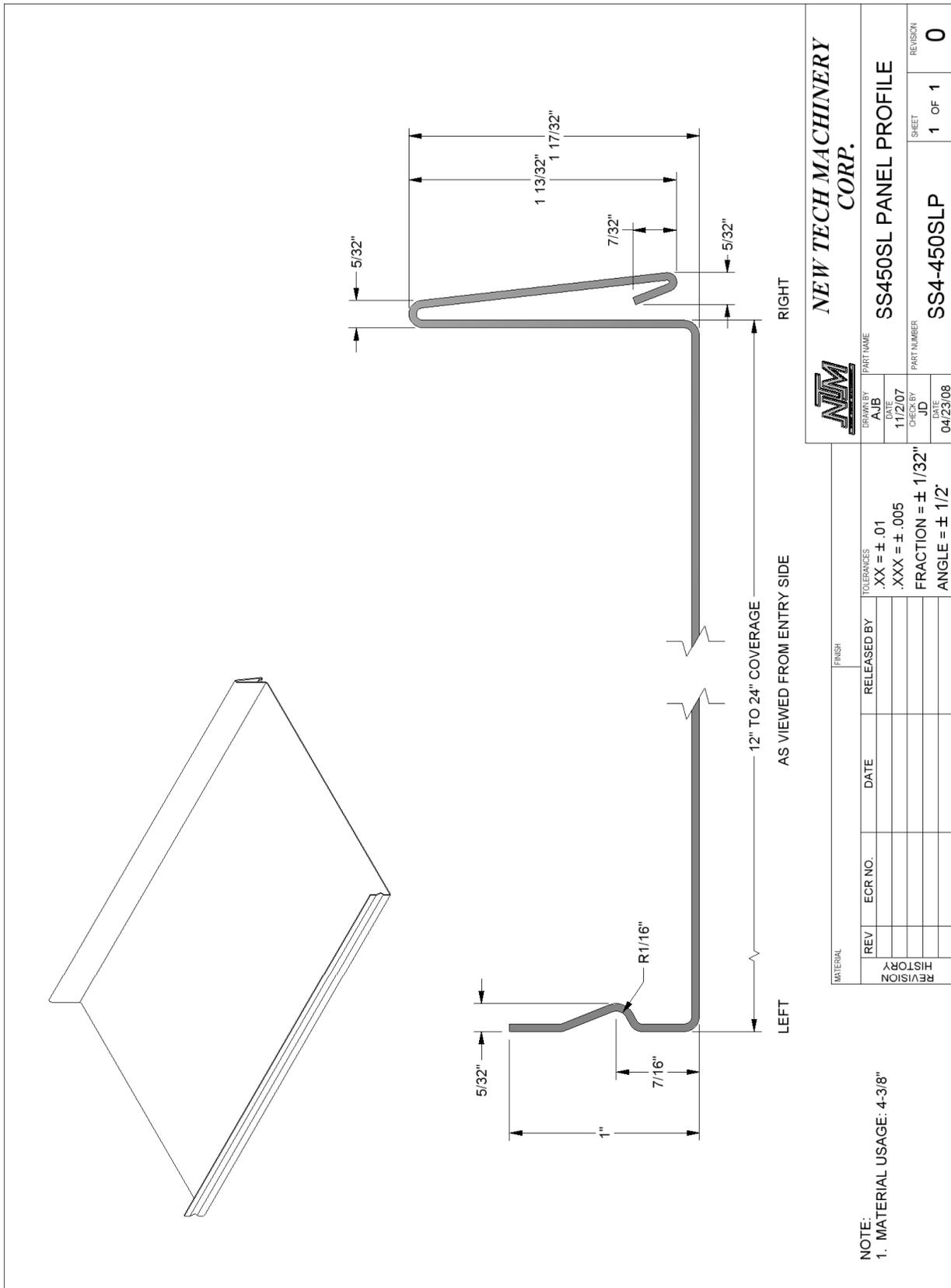


Figure 79: SS450SL Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

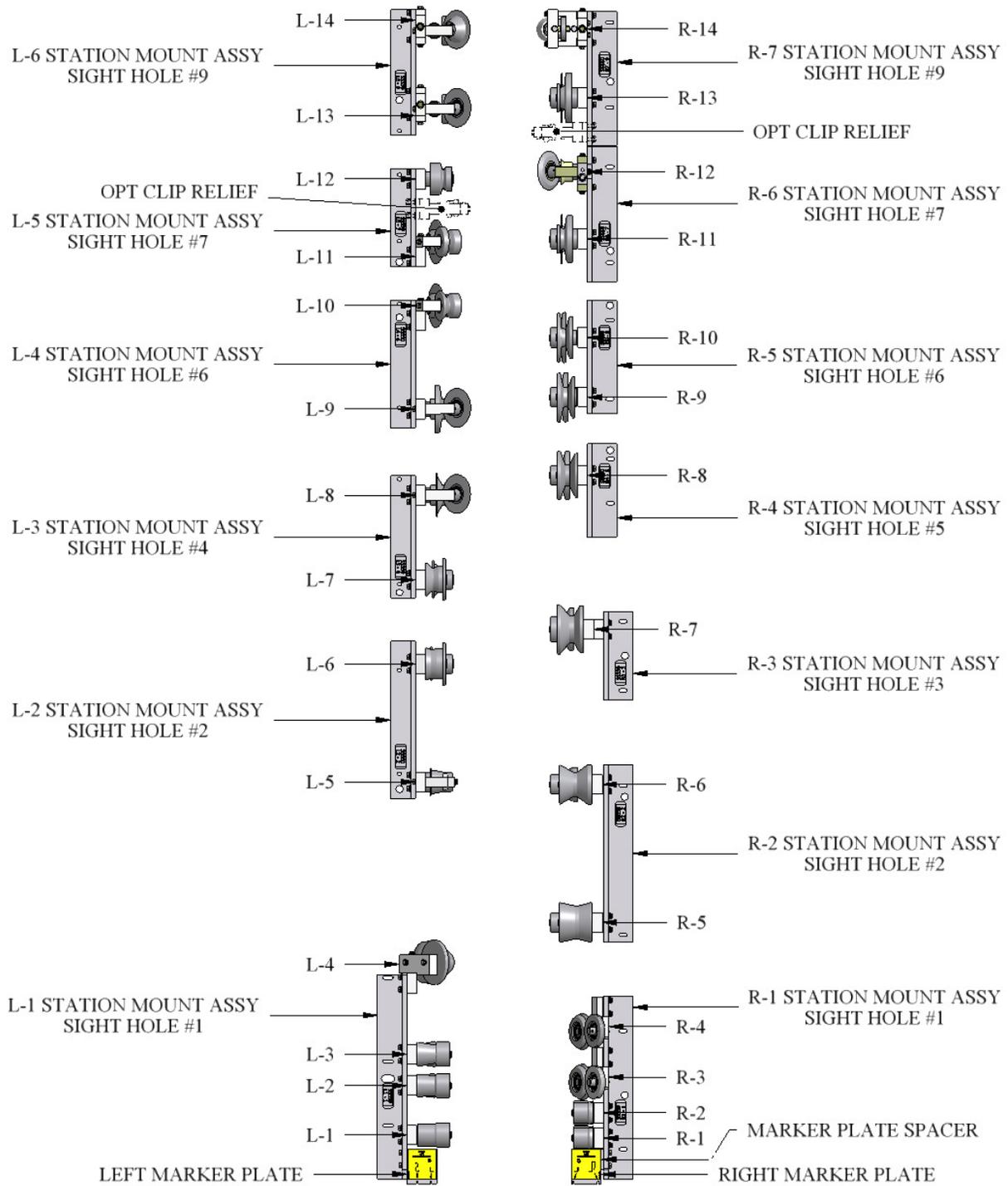


Figure 80: SSQ550 Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

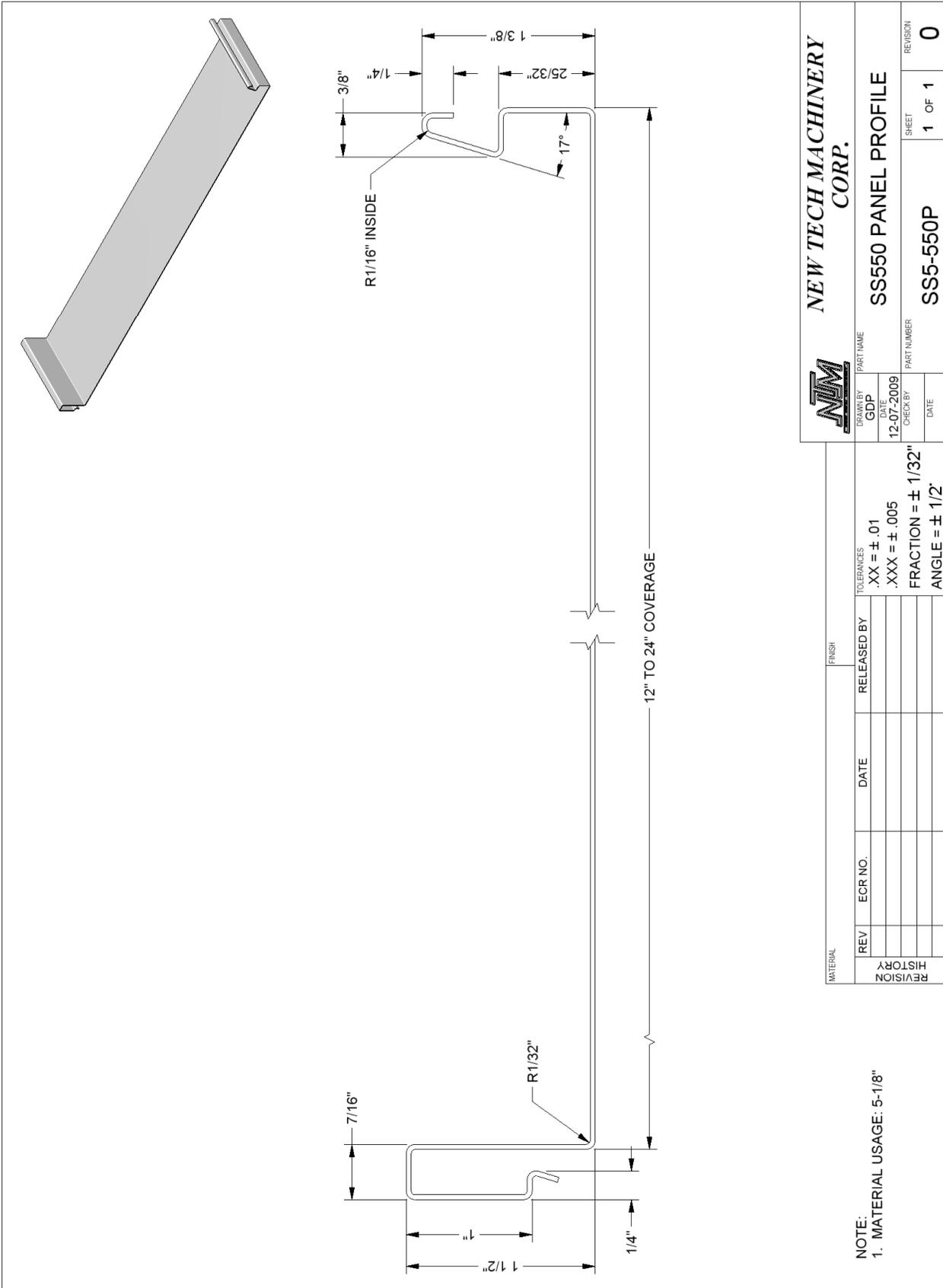


Figure 81: SS550 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

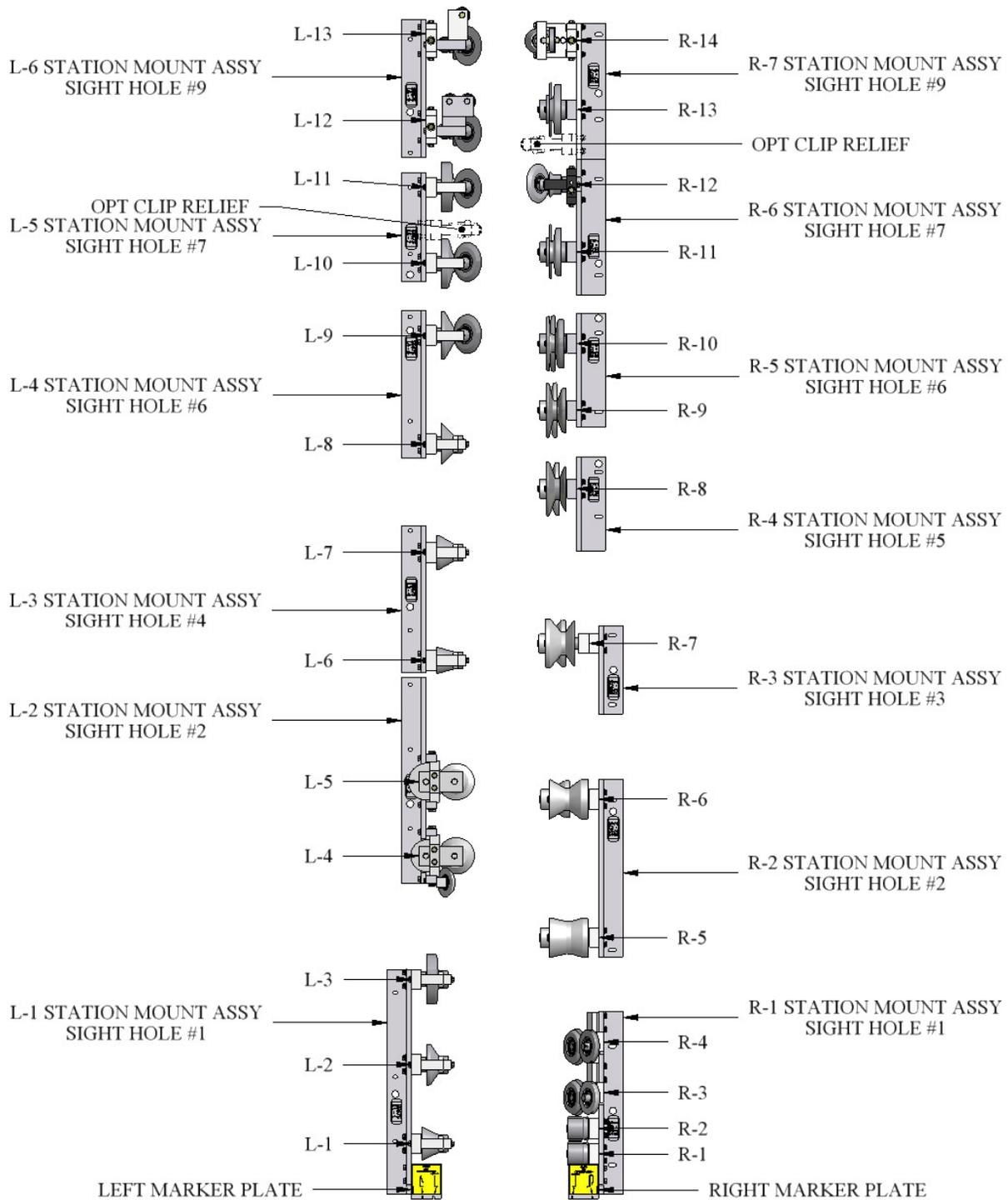


Figure 82: SSQ675 Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

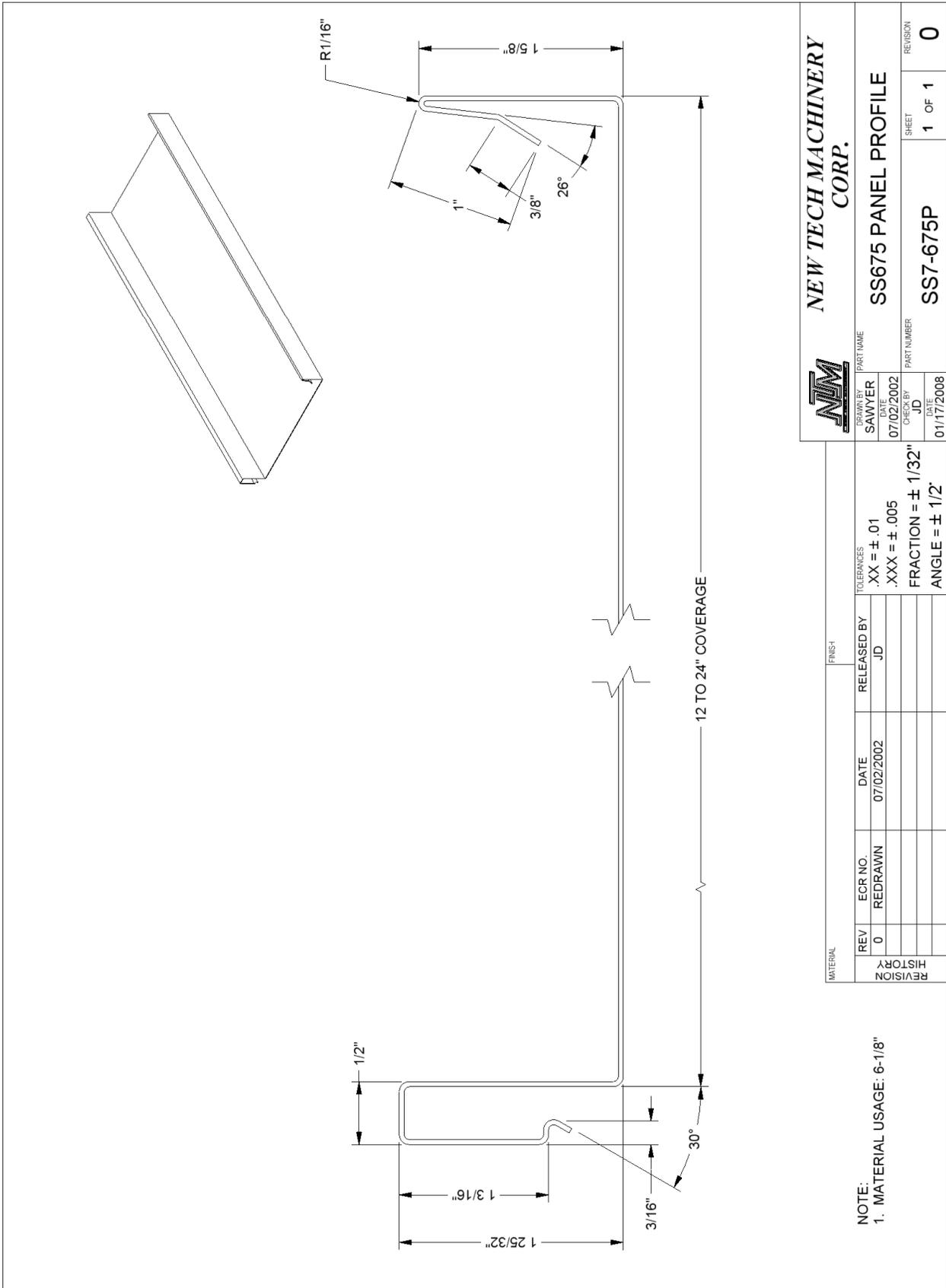


Figure 83: SS675 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

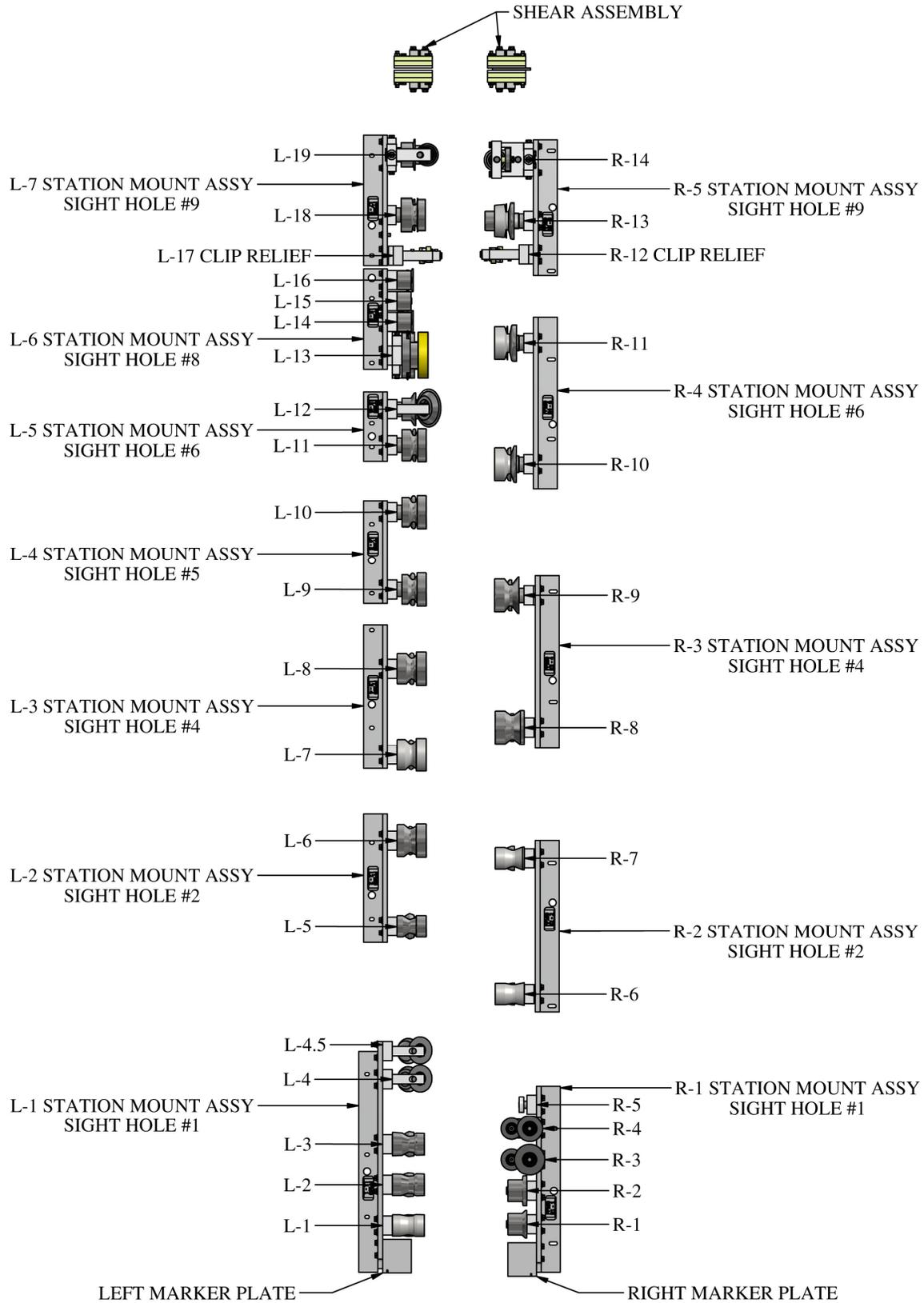


Figure 84: FFQ100 Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

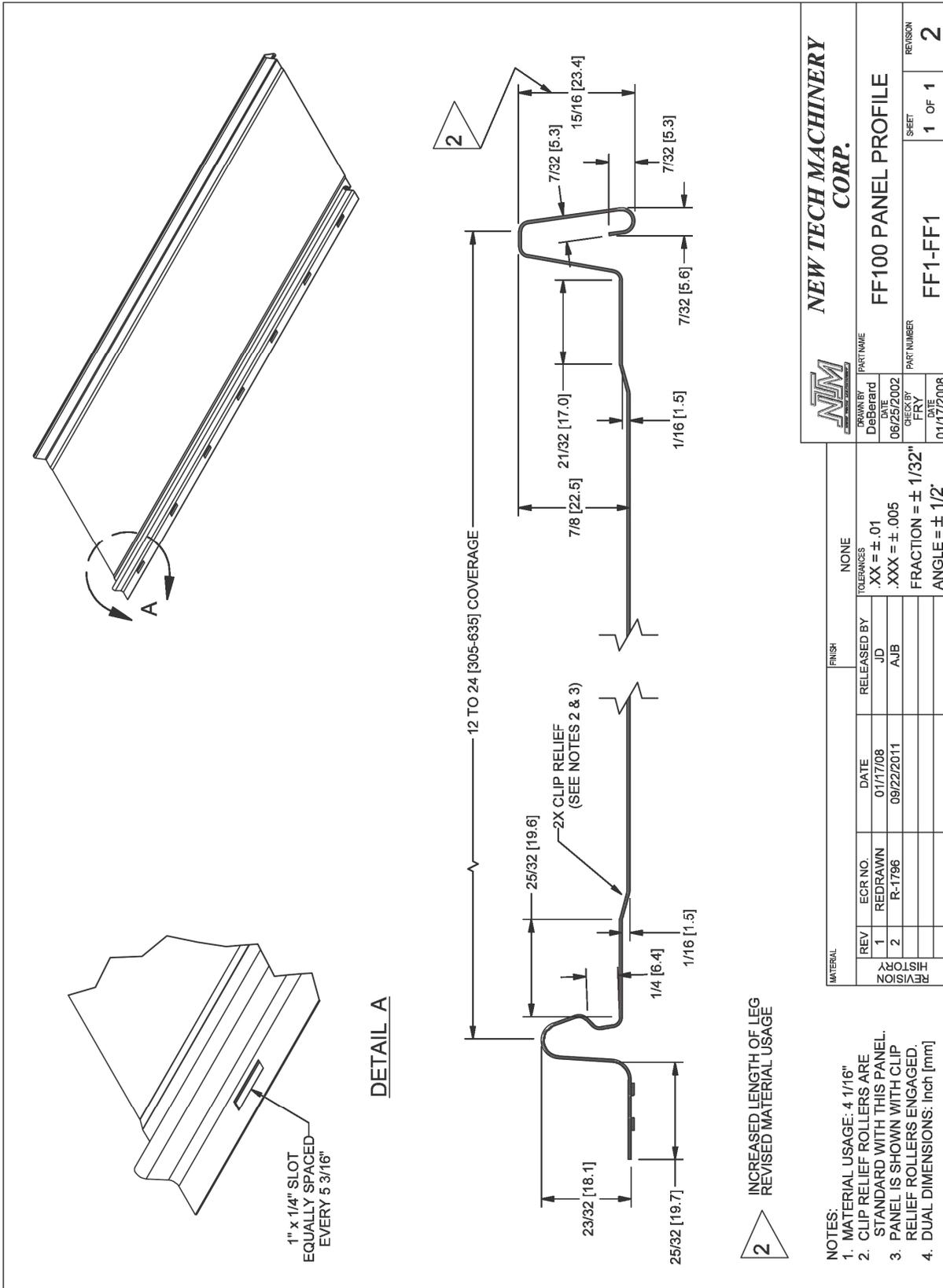


Figure 85: FF100 Panel

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

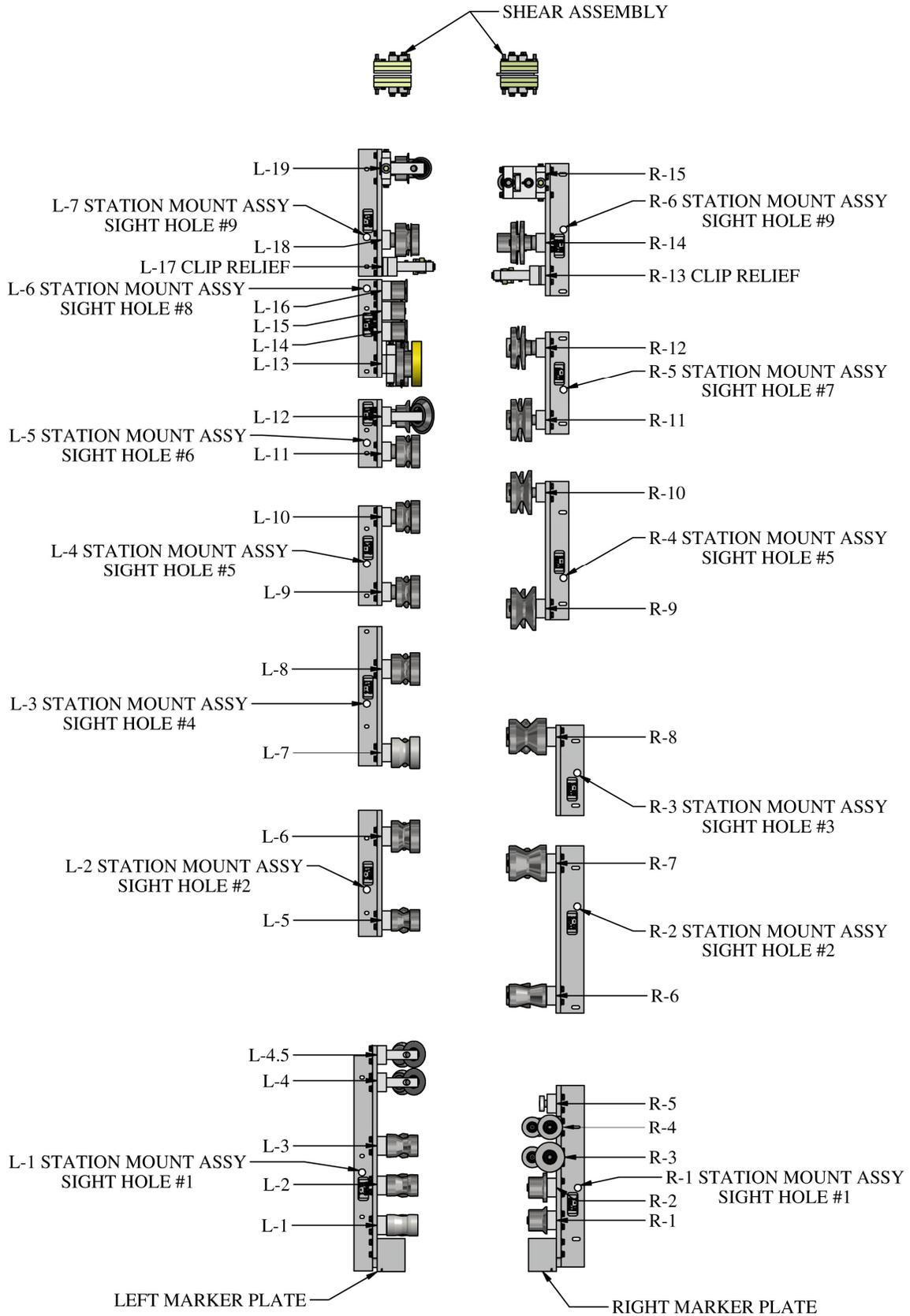


Figure 86: FFQ150 Roller System

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

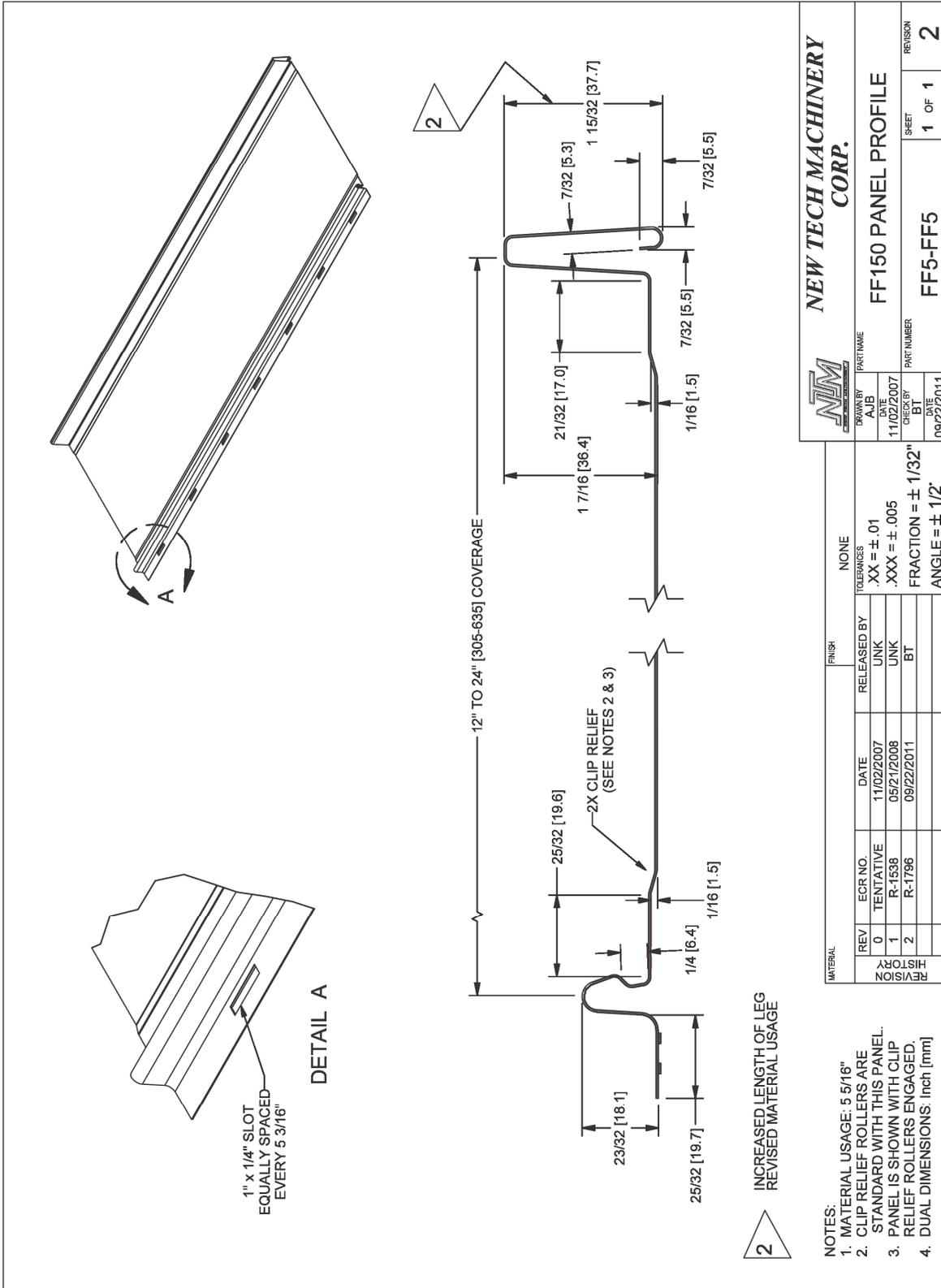


Figure 87: FF150 Panel Profile

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

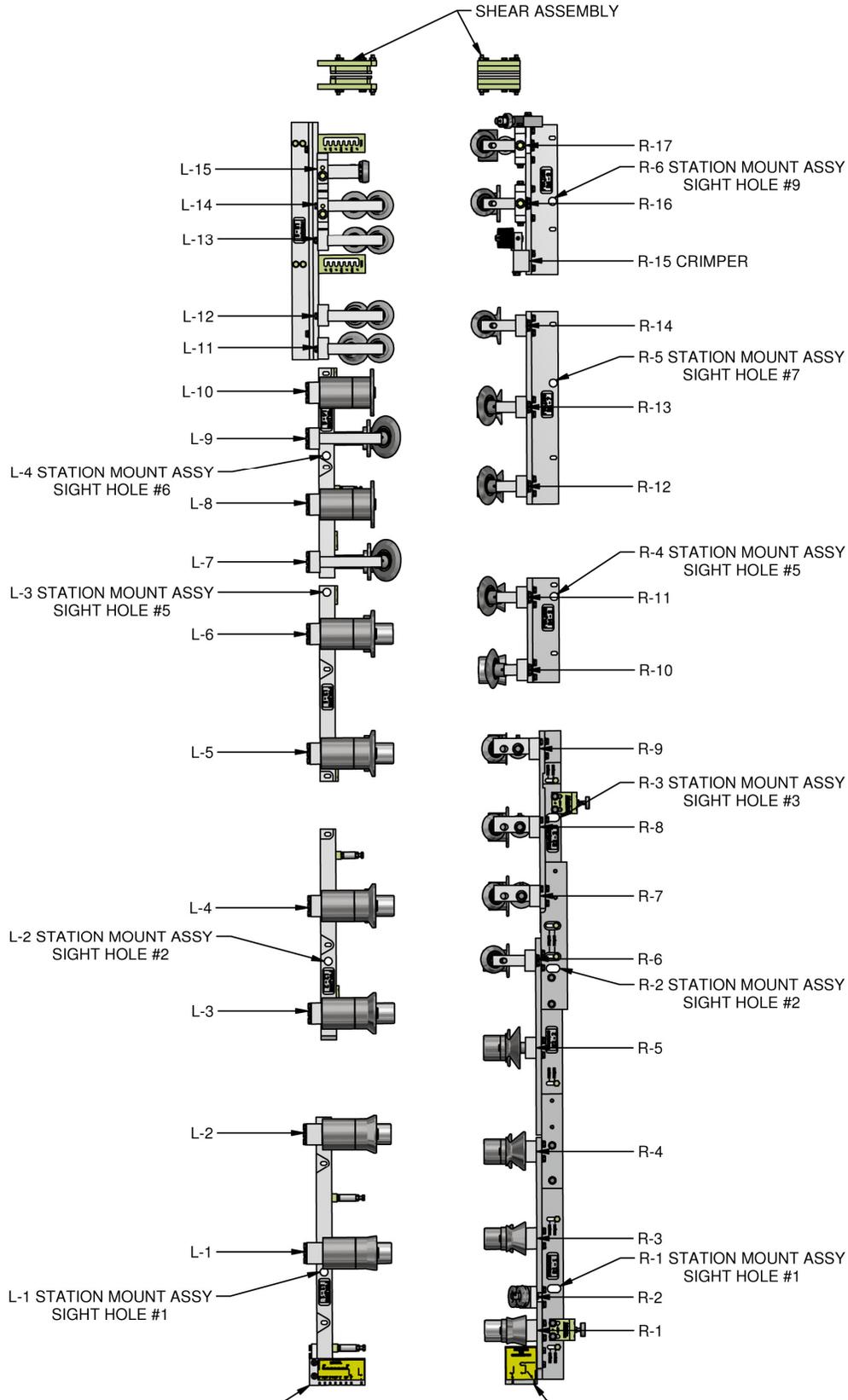


Figure 88: FWQ100 Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

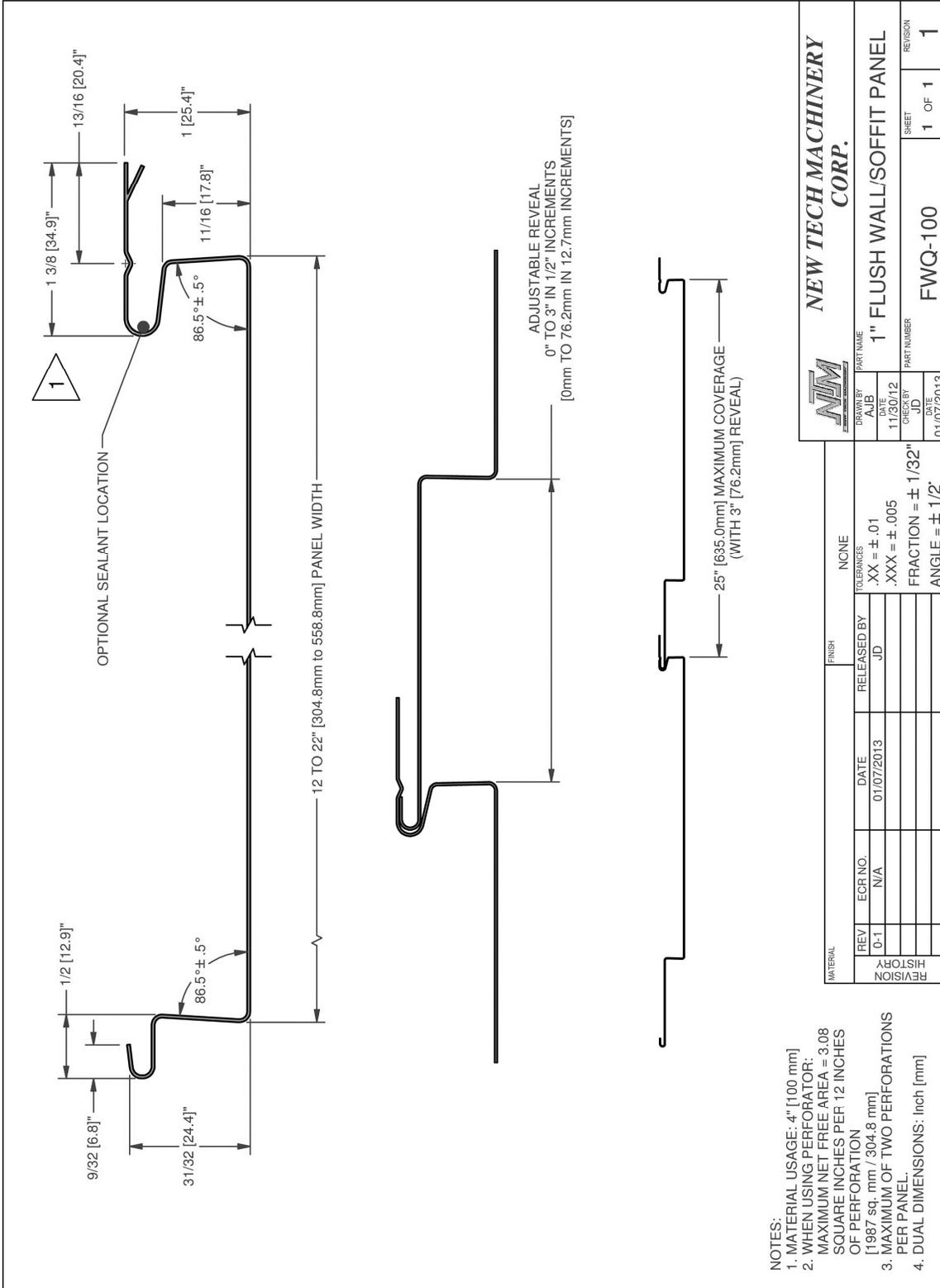


Figure 89: FWQ100 Panel Profile

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

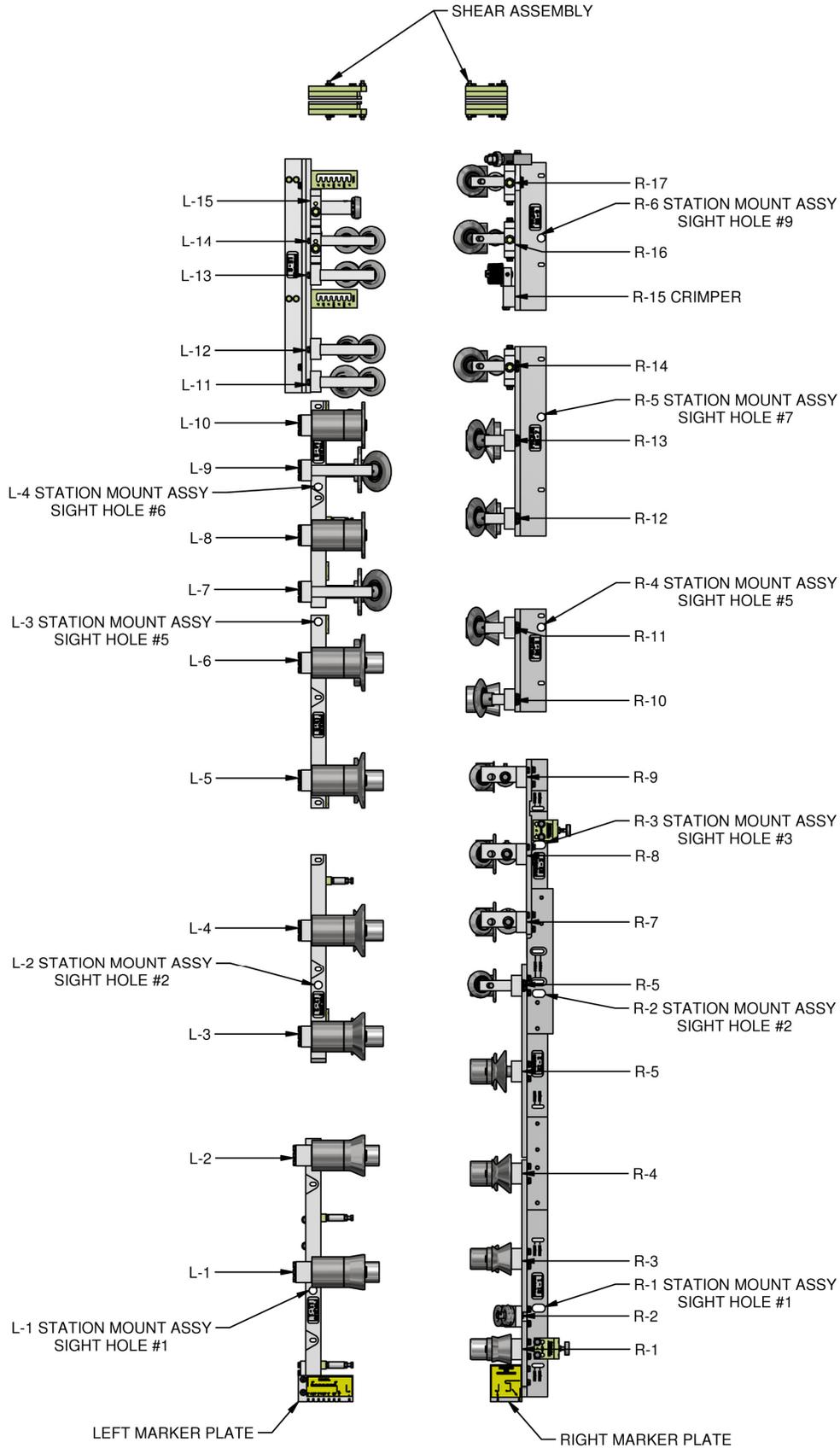


Figure 90: FWQ150 Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

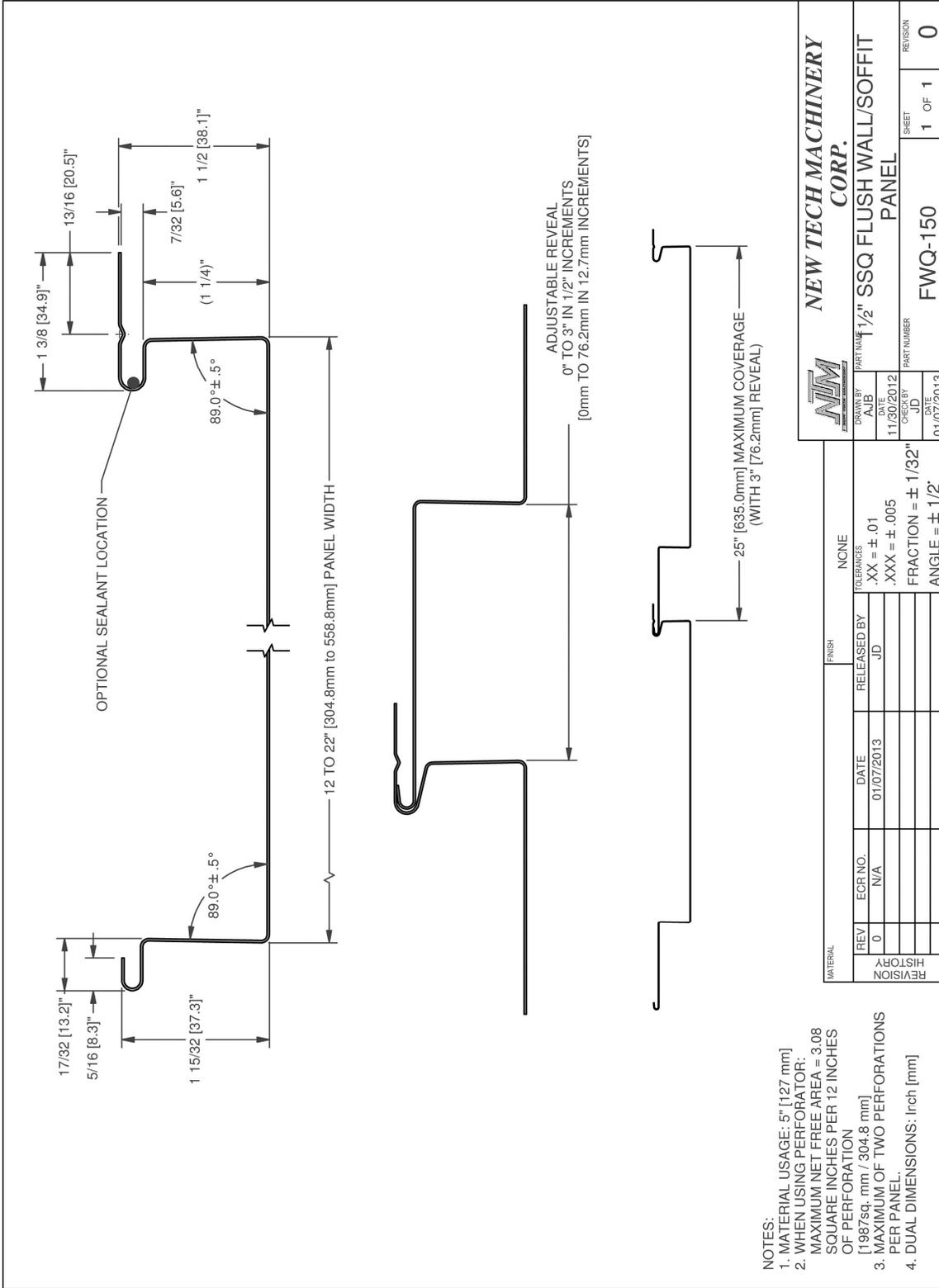


Figure 91: FWQ150 Panel Profile

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

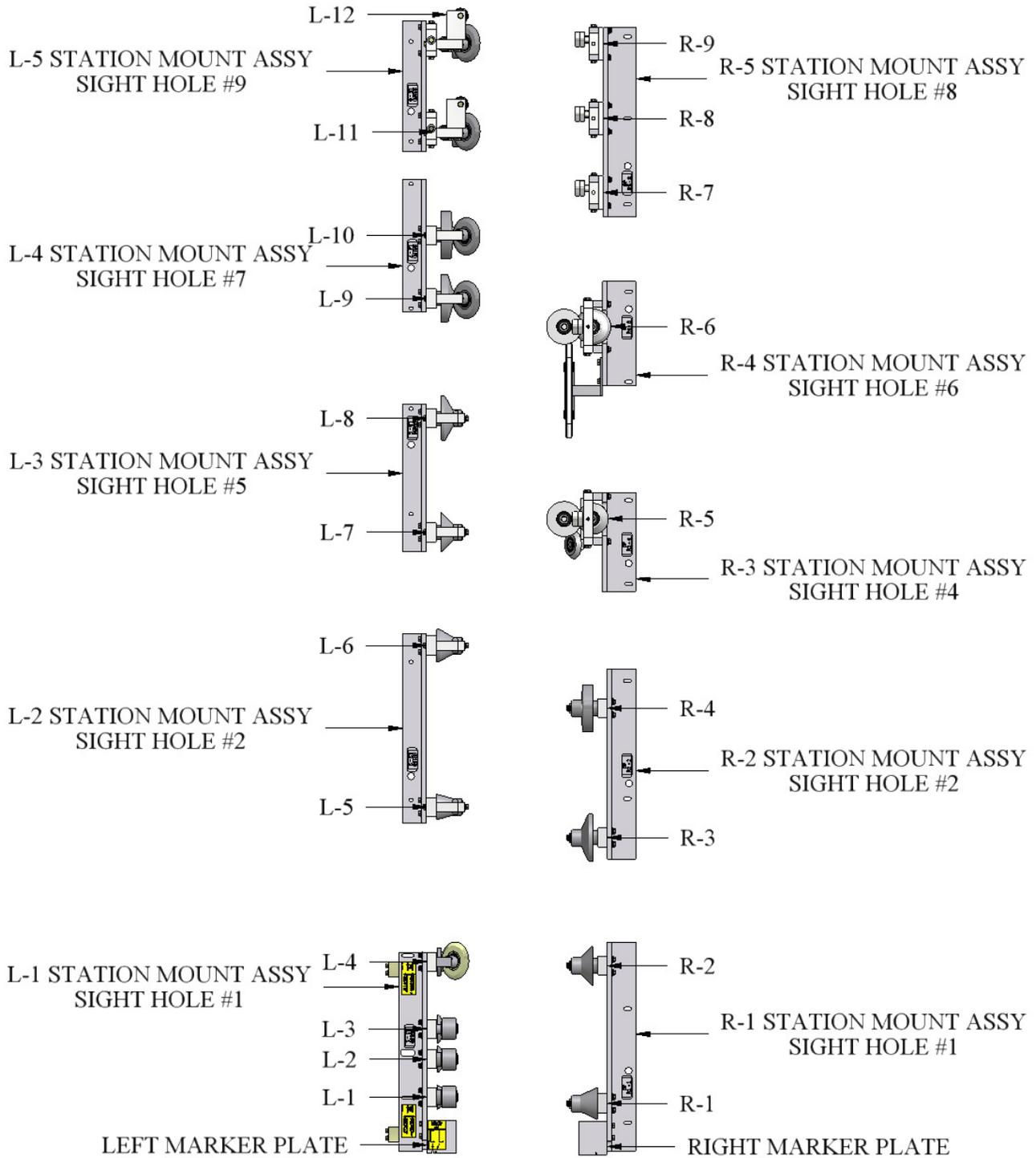


Figure 92: SSQBP Roller System

CHAPTER 18
ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

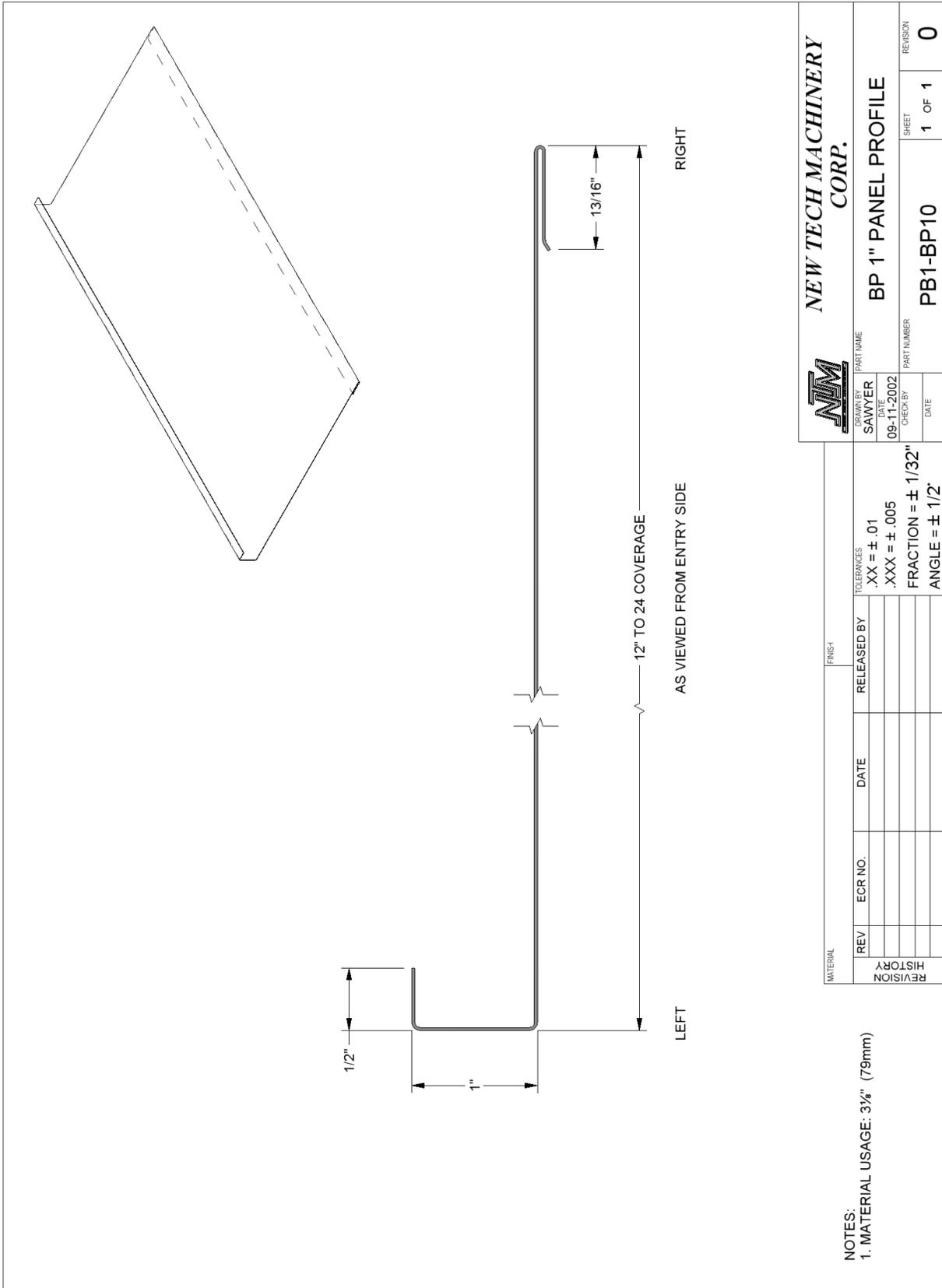


Figure 93: BP 1" Panel

ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

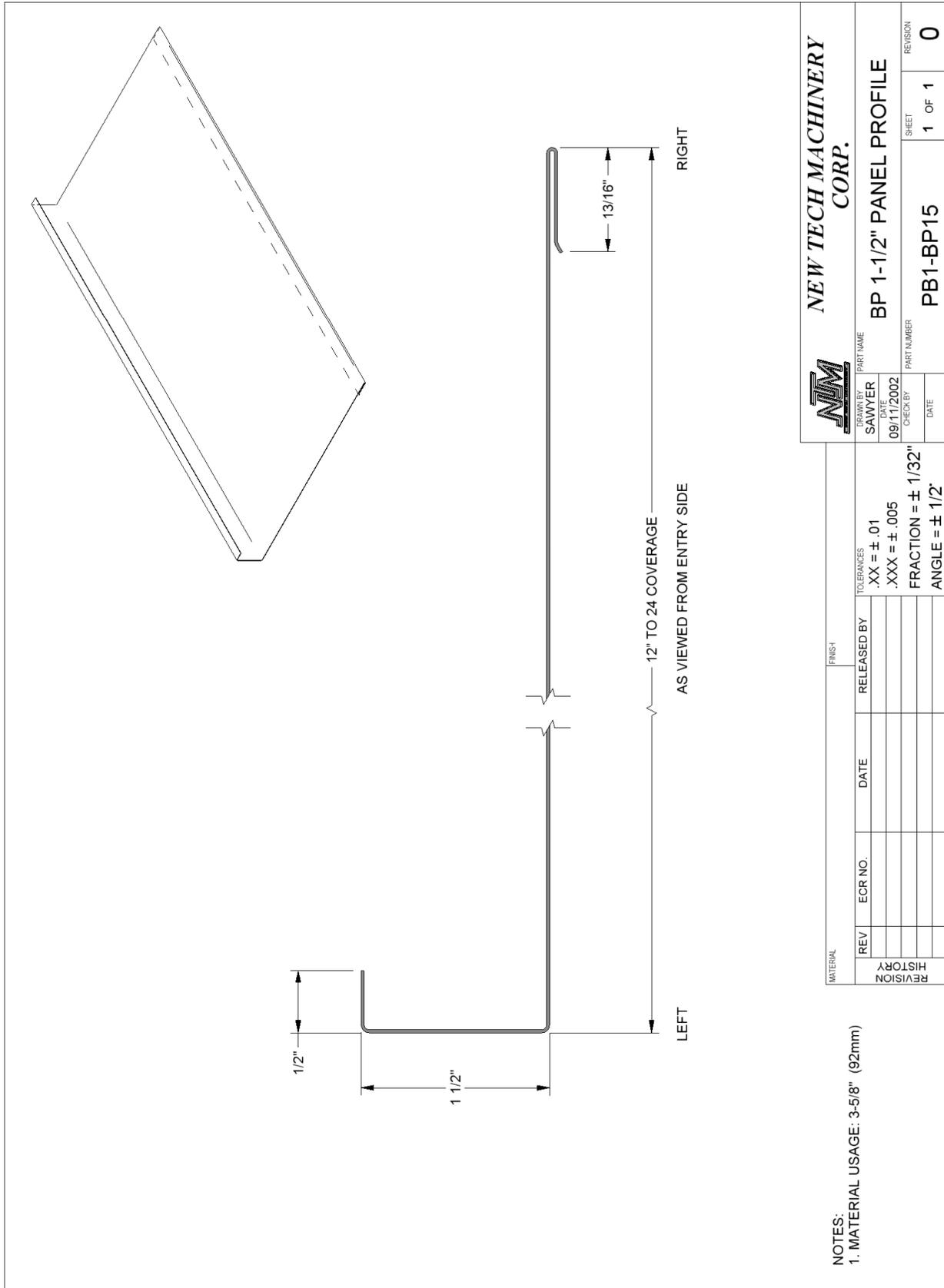


Figure 94: BP 1 1/2" Panel

RUN OUT TABLES AND REMOTE LIMIT SWITCH

RUN OUT TABLES AND REMOTE LIMIT SWITCH

The Run-Out Table (Figure 95 & Figure 96) attaches to the Exit End of the Shear assembly, and is used to support the panel as it exits the machine. It is 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 7 on page 14) 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 96 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

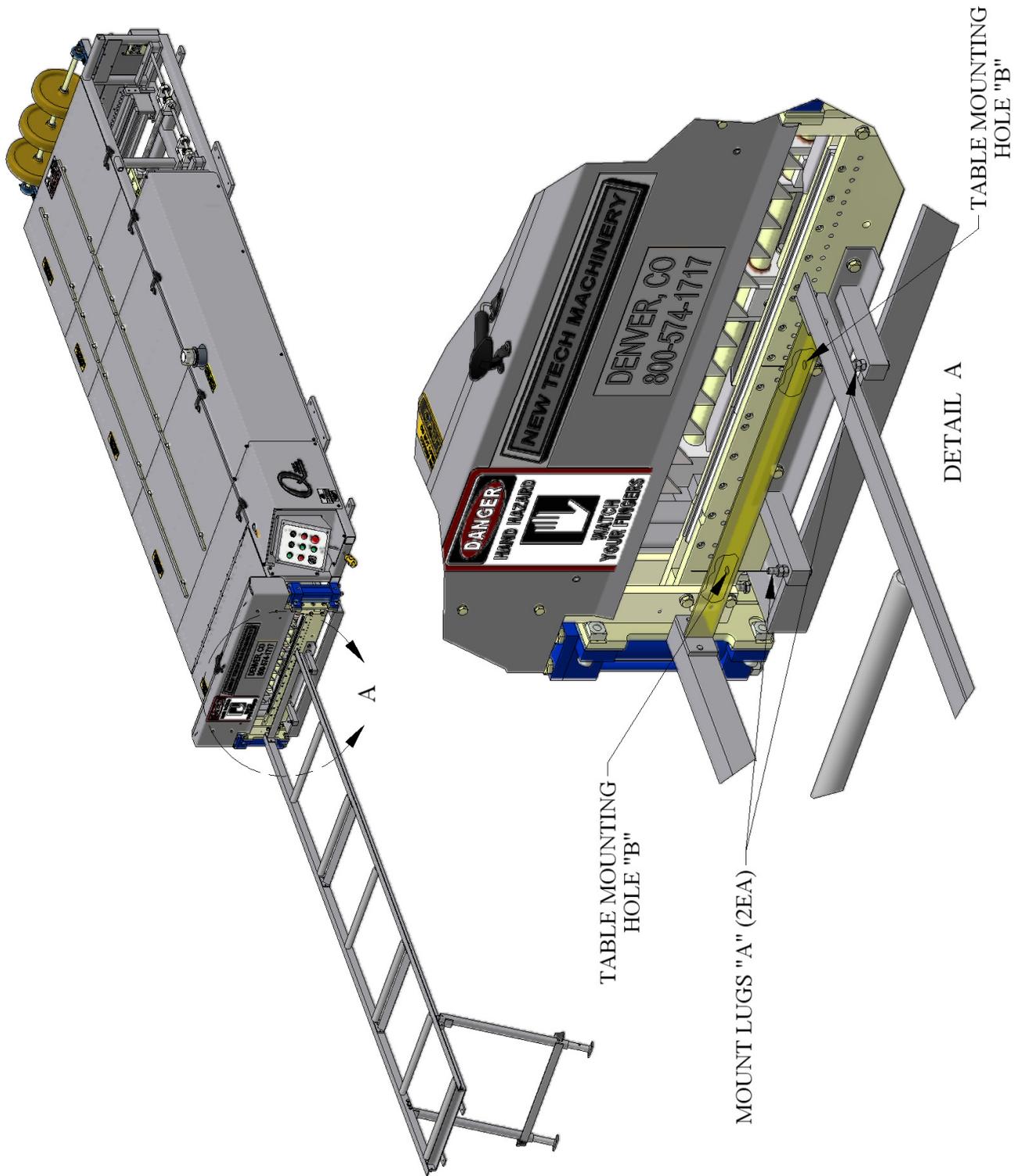


Figure 95: Run Out Table

CHAPTER 19
RUN OUT TABLES AND REMOTE LIMIT SWITCH

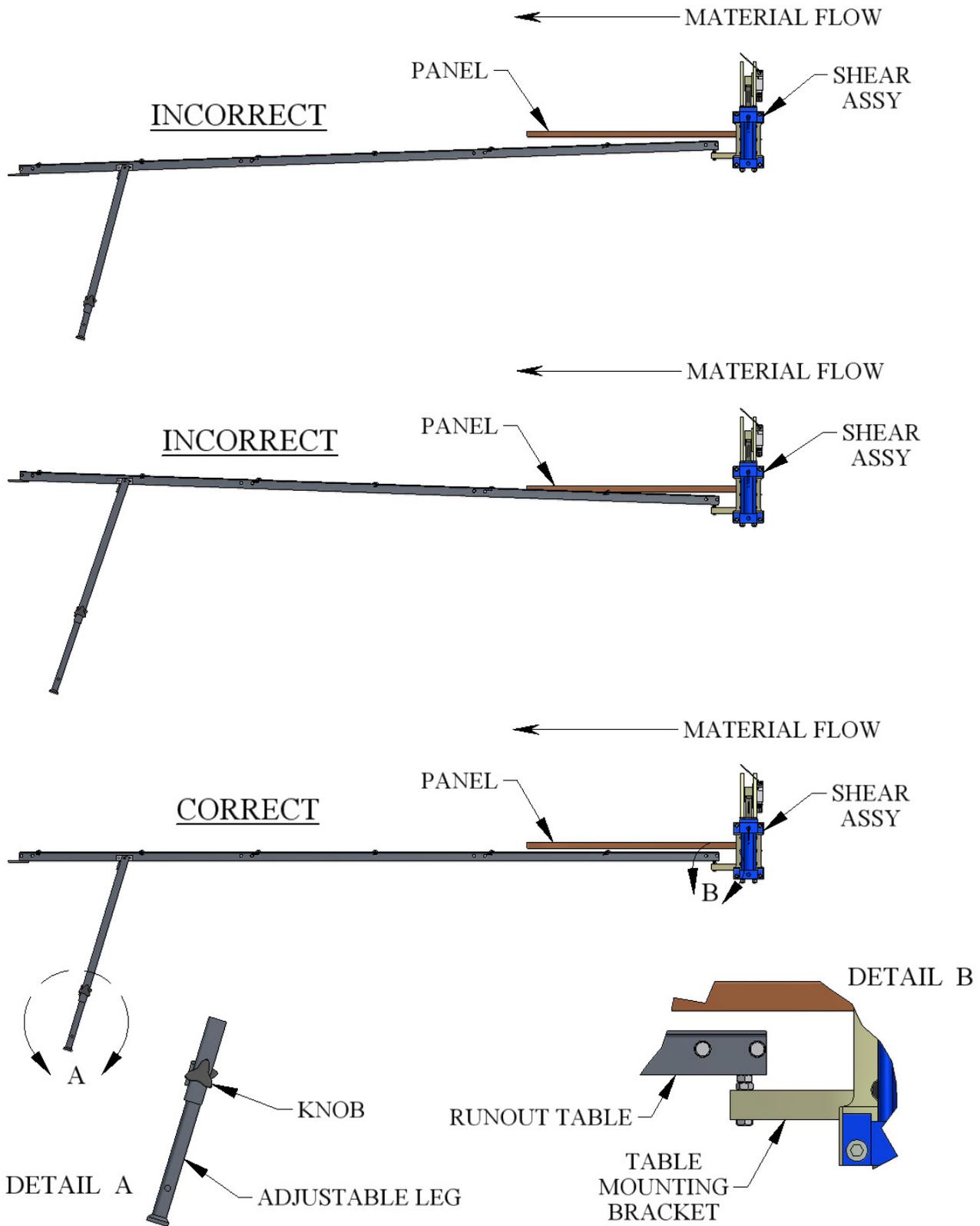


Figure 96: Run Out Table Setup

CHAPTER 20
QUICK CHANGE POWER PAC

QUICK CHANGE POWER PAC

The Quick Change Power Pac for the machine allows to change from one power source to another very quickly. For example, it is useful for people who need to run their 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 97

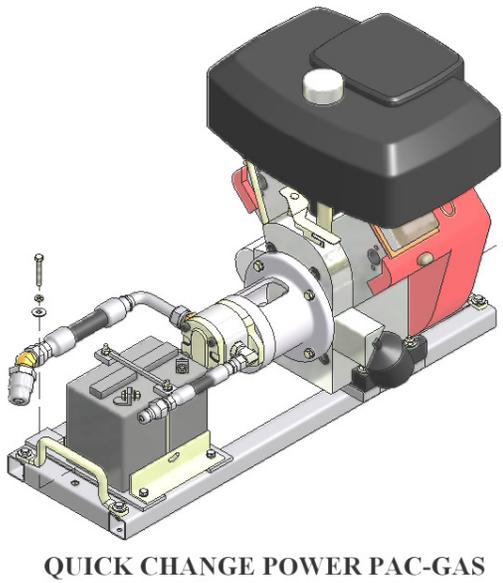
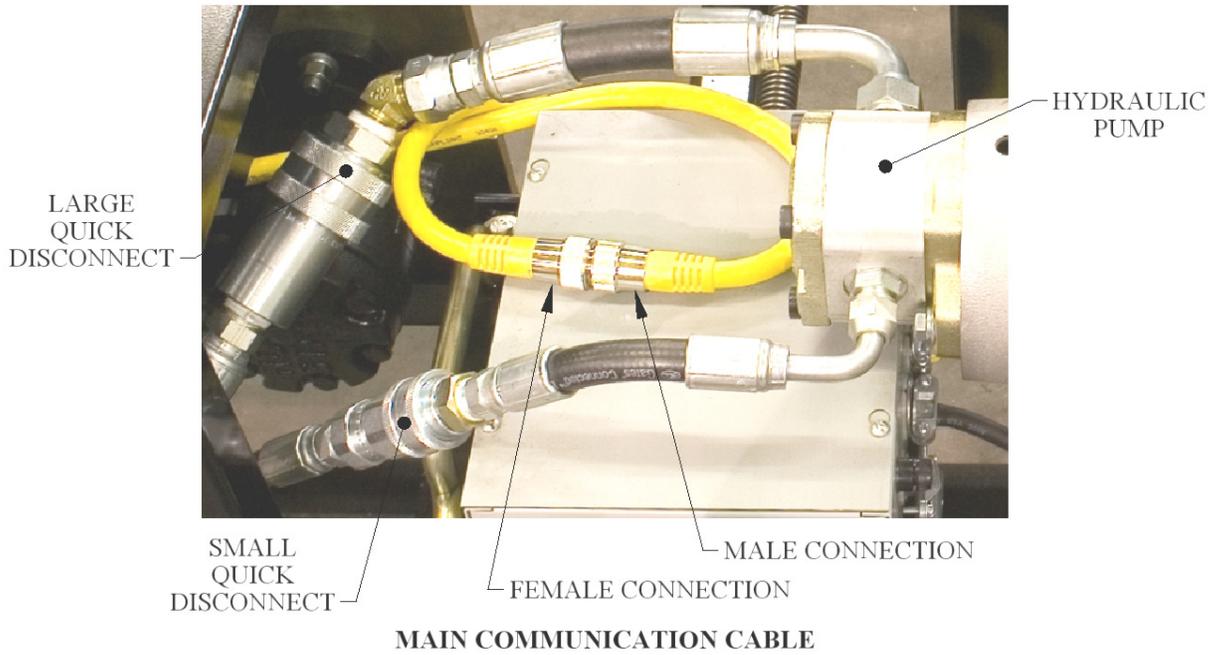
POWER PAC REMOVAL

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, have someone help lift the Quick Change Power Pac out of the machine and set it aside.

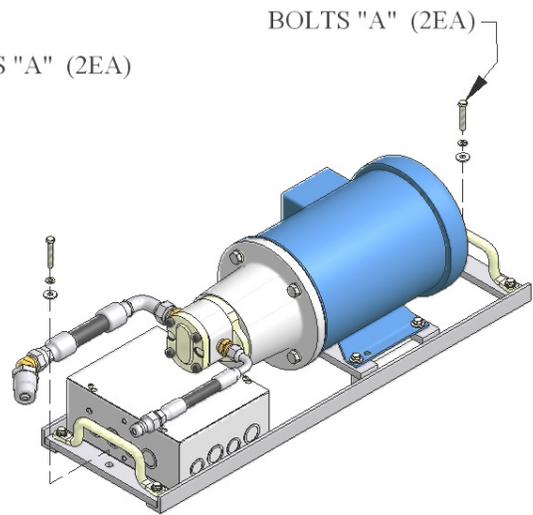
POWER PAC INSTALLATION

1. Using the two handles provided, have someone help 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



QUICK CHANGE POWER PAC-GAS



QUICK CHANGE POWER PAC-ELECTRIC

Figure 97: Cable Connections and Fasteners

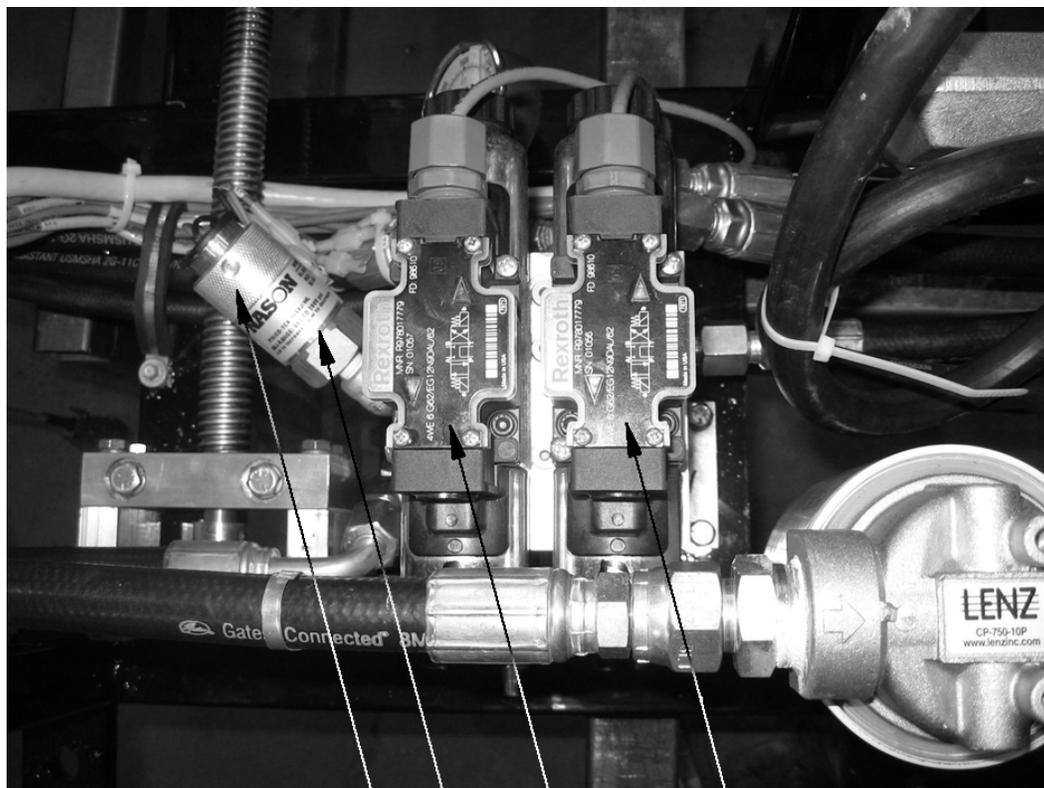
CHAPTER 21
TROUBLESHOOTING

TROUBLESHOOTING

The hydraulic system operates the Shear and Drive assemblies. They are interfaced together and electronically activated. The hydraulic system pressure is factory set at 2000 psi and should not be changed. Some of the common problems that occur and their solutions follow below.

1. **Shear travels to the bottom of the stroke and does not return to the top of the stroke. The hydraulic system can be heard 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 98) 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.



- DRIVE VALVE
- SHEAR VALVE
- PRESSURE SWITCH
- KNURLED SLEEVE "A"

Figure 98: Pressure Switch Adjustment

CHAPTER 21
TROUBLESHOOTING

SOLUTION for serial numbers higher than SSQ293xxx with an adjustable limit switch: Loosen Screws "A" (Figure 99). 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.

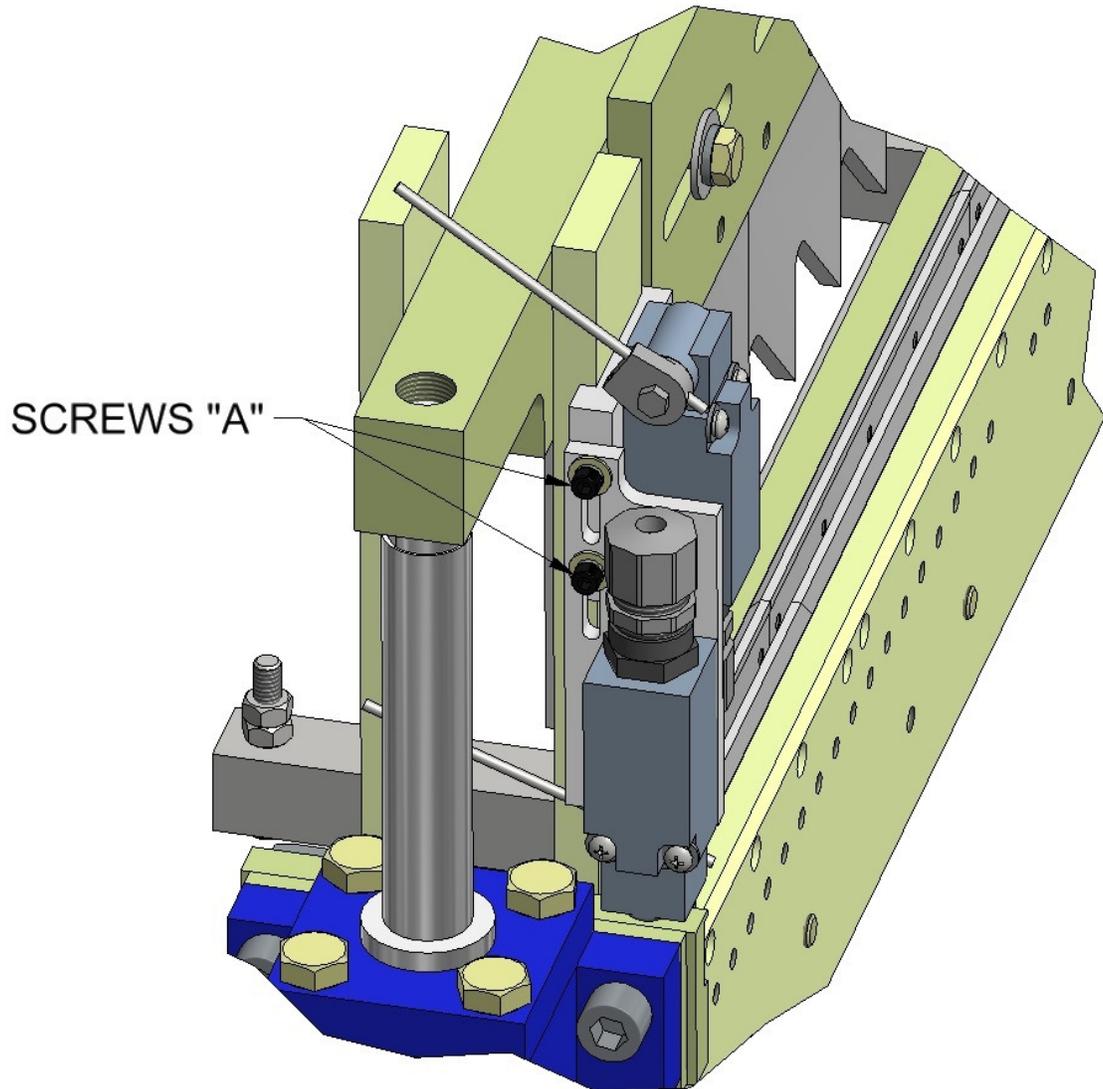


Figure 99: Bottom of Stroke Limit Switch

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 98) 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

CHAPTER 21
TROUBLESHOOTING

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 99). 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 sound of the hydraulic system laboring can be heard and the machine will not run the next panel.**

SOLUTION: Remove the Shear Cover. Note the 2 Limit Switch Arms “A” (Figure 100). Lift the arms 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: Tape one or both Limit Switch Arms “A” to the Top Shear Bar “B”. Loosen Hex Nut “C” until spring tension is released. Using a small flat tipped screwdriver, turn Slotted Stud “D” toward the entry end of the machine until a click is heard and stop. Repeat this a few times and stop right when the click occurs. While holding this position, tighten Hex Nut “C” to lock in adjustment. Adjust one or both sides as required from test above. Start the engine. If the adjustment/adjustments were done correctly, the hydraulic system should no longer be laboring and the machine should be able to run the next panel.

CHAPTER 21
TROUBLESHOOTING

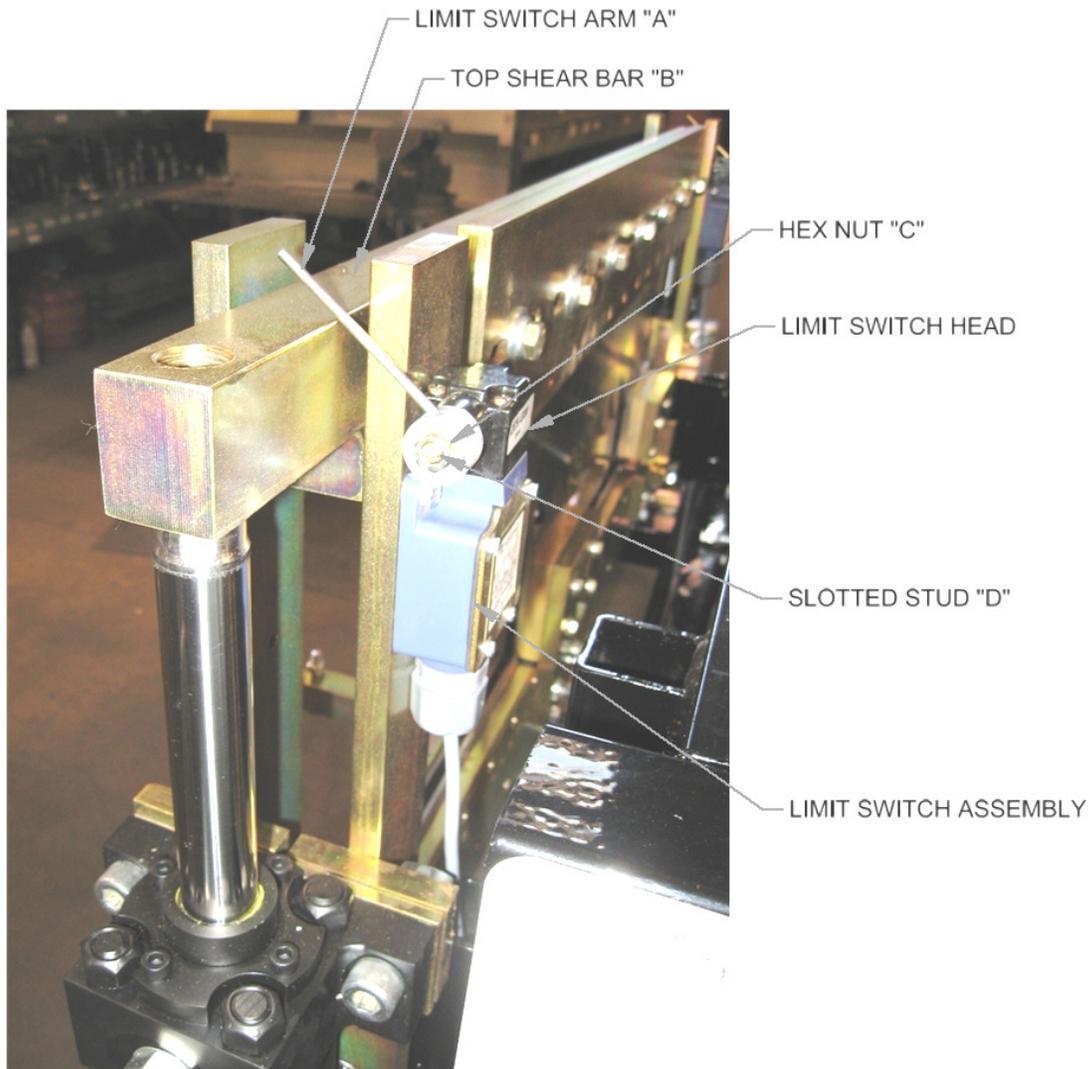


Figure 100: Limit Switch Adjustment

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

SOLUTION: This problem normally shows up after making a roller system/shear die change. The entry dies both male and female should be as close to the vertical leg of the panel as possible without touching. Once this is achieved, the exit die should be set just outside the vertical leg of the entry die so that as the fresh cut edge of the panel passes by the exit die it doesn't get caught (Figure 62 on page 67).

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 31).

CHAPTER 21
TROUBLESHOOTING

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

6. Manual Control Panel buttons do not work.

SOLUTION #1: Check fuse inside of Manual Control Box. Replace if blown with a 10-amp time delay fuse (Figure 8 on page 15).

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

APPENDIX A
COMPUTER BATCH AND LENGTH CONTROLLER

COMPUTER BATCH AND LENGTH CONTROLLER

The optional Batch and Length Control Computer is used to control number and length of panels that the machine produces. It uses an Encoder and Wheel assembly that runs on the bottom of the panel for measurement. The Encoder assembly is located between the 4th and 5th bottom Drive Rollers of the machine and the Encoder Cable exits thru the end cover under the Manual Control Panel assembly.

Batch and Length Controller Connection (Figure 101 & Figure 102)

1. Connect the Main Control Cable (larger connector) to the panel mounted male connector "A" 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. Turn clockwise until snug. Caution: **DO NOT rotate the cable clamp on the back of the plug to tighten this connection. Only turn the threaded ring of the plug or damage will occur.**
2. Connect the Encoder Cable (smaller cable) to the panel mounted Female connector "B" located in the bottom of the computer on the left side. Again, make sure that the key and slot are aligned and carefully start the threads on the connection. Turn clockwise until snug and **DO NOT rotate the cable clamp on the back of the plug to tighten this connection. Only turn the threaded ring of the plug or damage will occur.**
3. Refer to instructions that follow for computer operation.



Figure 101: AMS Box Without Cables

APPENDIX A
COMPUTER BATCH AND LENGTH CONTROLLER



Figure 102: AMS Box With Cables

Introduction

Overview

The AMS Controls MP465 is an industrial controller used to control cut-to-length machinery. Figure 103 shows the front panel of MP465.

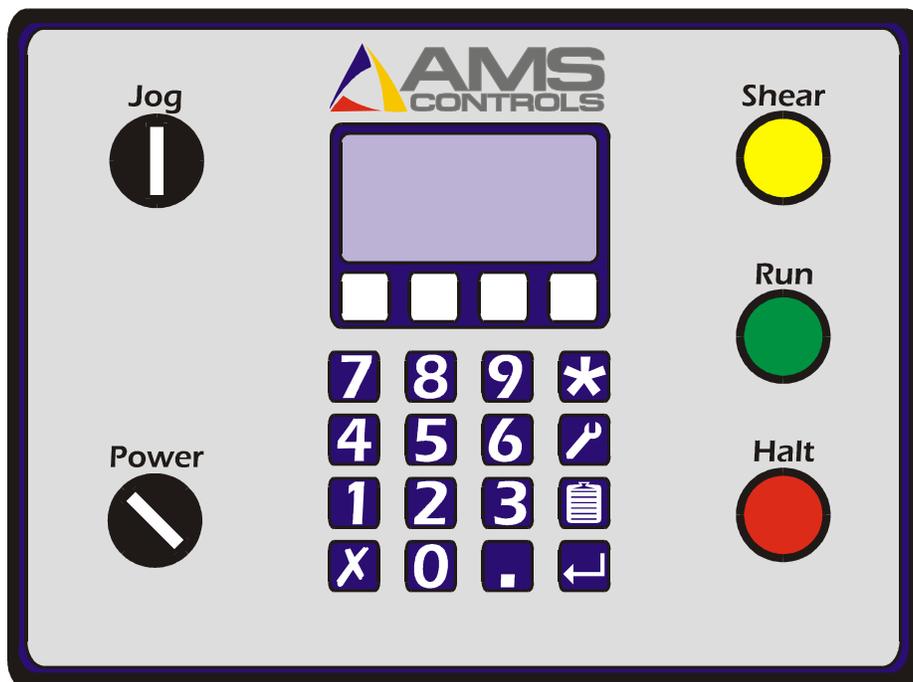


Figure 103: AMS Controls MP465 Controller

APPENDIX A

COMPUTER BATCH AND LENGTH CONTROLLER

Features

The MP465 controller's features include:

- Accurate length control
- Simple programming
- Easy calibration

Manual Operations

Jogging Material

- To jog material forward using the MP465, turn the jog switch  on the controller to the right (clockwise).
- To jog material in reverse using the MP465, turn the jog switch  on the controller to the left (counter-clockwise).

Manual Shear

To fire the shear manually, press the shear button .

 **Note:** The controller must be in Manual mode.

Production Procedures

Screen Navigation

Keypad

The keypad uses hot keys to enable quick entry into certain screens.

	Program	Press [Program] to program a Job Number, Quantity, and Length; press it again to specify the next job to run.
	Status	Press [Status] to exit the current screen and return to the Status screen.
	Calibration	Press [Calibration] to calibrate the length management system; by pressing it again can display other screens like the Production Totalizer and Stopping Reaction.
	Enter	Press [Enter] to enter or store the current value. [Enter] can also be used to move to the next value.
	Clear	Press [Clear] (<i>clear entry</i>) to clear or set an entry back to its original value.

APPENDIX A
COMPUTER BATCH AND LENGTH CONTROLLER

Push Button and Front Panel Selector Switches

Shear 	Shear	Press [Shear] to manually activate the shear.  Note: The MP465 controller allows this switch to operate when the machine is stopped.
Halt 	Halt	Select [Halt] to load a coil and to stop the machine
Run 	Run	Select [Run] to start the machine after a job has been programmed
Jog 	Jog (Forward and Reverse)	When the machine is in manual mode (i.e., the Run button is not lit), turn and hold the Jog switch clockwise to jog the material forward, turn and hold the Jog switch counter-clockwise to jog the material in reverse. This switch is inactive when the Run switch is lit.
Power 	Power	This switch turns the controller on and off. <ul style="list-style-type: none">• Turn the switch to the right to apply power to the controller unit• Turn the switch to the left to remove power

 **Note:** If the controller unit has been wired to by-pass this switch, the position of the switch will have no effect on the controller.

Program a Job

Jobs are composed of a quantity of a specified length. Up to 50 different quantities and lengths can be programmed into the controller. To program a job,

1. Select [**Program**] . The current data entry field highlights; once new data has been entered, the data field starts blinking.

 **Note:** Pressing [**Clear**] while the data field is blinking re-loads the original value into the data field. Pressing [**Enter**] saves new data and highlights the next field.

2. In the **Job Number** field, enter a number to assign to this job (a value between 1 and 50).
3. In the **Quantity** field, enter the number of parts to make (up to 999).
4. In the **Length** field, up to 999 feet and 11.999 inches.

APPENDIX A
COMPUTER BATCH AND LENGTH CONTROLLER

5. The controller displays the message “*Pause After Job xx?*” (Where xx is the job number assigned in step 1). Select:
- **Yes** to have the machine halt automatically after the selected job number is finished.
 - **No** to have the machine change lengths “on-the-fly” and run the job following the selected job without first stopping.

 **Note:** To restart the machine after an automatic halt, press **[Run]**.

 **Note:** To increase productivity, additional jobs can be programmed while the machine is running previously programmed jobs.

Automatic Operation

The MP465 runs all programmed jobs automatically.

- To start the machine after all desired jobs have been programmed, press **[Run]** .
- To stop the machine at any time, press **[Halt]** .

The machine halts automatically when all programmed jobs are completed.

 **Note:** If the encoder is counting in the negative direction, change the encoder direction in the Setup Screen as described previously.

Length Calibration

 **Note:** Calibration is typically required only during machine commissioning or after changing coil stock.

Length calibration adjusts for errors in the size and tracking of the measuring wheel and is expressed as a percentage, with 100% being no correction. Increasing the correction factor causes the parts to become longer and decreasing the value shrinks the parts. The MP465 controller’s length calibration feature automatically computes a new correction factor by comparing the desired (Programmed) length to the actual (Measured) length. Length Calibration should be used any time part lengths are incorrect in a consistent manner (e.g., all parts 1mm too long, etc.). Length calibration will not fix a situation where parts are inconsistent (e.g., parts vary +10 to -10mm).

 **Note:** When calculating the correction factor, make several parts and use the average of these parts for the part length. The first part produced should not be used in this calculation since it may be inaccurate due to shear reaction or other variances.

To calibrate the MP465 controller,

6. The controller can be calibrated anytime the measured part length is not matching programmed part length.

APPENDIX A

COMPUTER BATCH AND LENGTH CONTROLLER

7. With the controller powered on, press [Calibration]  until the screen title says “CALIBRATE-1”. The display shows the current correction factor. Press [Clear]  to begin the calibration process.
8. When the prompt “ENTER PROGRAM LENGTH” displays, enter the length of the part to produce.

 **Note:** The longer the part is that attempt to calibrate on, the more accurate the calibration will be.

9. When the prompt “ENTER MEASURED LENGTH” displays, enter the length of the part actually measured. Using an average of several measured parts will provide the most accurate result.
10. The screen title will change to “CALIBRATE-4 and show the OLD and NEW correction factors. The controller is now calibrated.

 **Note:** If the computed correction factor is greater than 110% or less than 90%, the “Calibration Out of Range” error message displays and the calibrate cycle is ignored.

Clear Controller Memory

A quick way to clear out all of the Jobs from the controller is to clear its memory. All of the controllers other internal settings like correction factor and stopping reaction time will be preserved.

To reset the memory on the controller,

11. Turn the device off, and then back on.
12. Press [5] while the startup screen is showing.

 **Caution:** Clearing the controller memory clears out *all* jobs that are programmed into the controller!

Administrative Screens and Functions

Calibration

Length calibration is accomplished using an internal parameter called correction factor. The correction factor is used compensate for wear and manufacturing tolerances in the encoder wheel and variations in material surfaces.

The calibration can be viewed in two screens. Press and release the [Calibration]  key until the screen title displays “CALIBRATE-1” or “CALIBRATE-7”.

 **Note:** To reset the correction factor to 100% press [Clear] . When the prompt “ENTER CODE TO CLEAR TOTAL” displays; enter 1984 and press [Enter] .

APPENDIX A
COMPUTER BATCH AND LENGTH CONTROLLER

Production Totalizer

Total production of the machine is counted by the controller. Press and release the [Calibration]  key until the screen title displays “PRODUCTION-1”.

 **Note:** To reset the totalizer to zero press [Clear] . When the prompt “ENTER CODE TO CLEAR TOTAL” displays; enter 1984 and press [Enter] .

Reaction Time

Stopping Reaction is an internal parameter that the controller calculates over the span of several parts. It is used to compensate for the time it actually takes for the machine to stop after the controller tells it to.

The stopping reaction can be viewed by pressing and releasing the [Calibration]  key until the screen title displays “REACTION-1” will allow display the controllers stopping reaction time value.

Note: To reset the reaction time to zero press [Clear] . When the prompt “ENTER CODE TO CLEAR REACTION” displays;

Troubleshooting

- 1. When running machine with the Batch and Length Control Computer: The drive will not start the next panel programmed after cutting the first panel of a job. (If machine is equipped with a Photo Eye, see Figure 60)**

SOLUTION #1: The Photo Eye lens is dirty. Clean debris from lens.

SOLUTION #2: The Photo Eye is aimed toward the shear. Loosen mounting bolts and aim lens away from shear.

- 2. Batch and Length Control Computer shows erratic behavior.**

SOLUTION #1: Check battery condition. System requires 12 volts to operate correctly. Charge or replace battery as required.

SOLUTION #2: Check condition of Main Communication Cable. Tighten cable connection or replace cable as required.

SOLUTION #3: Clear memory on computer. Turn power off at computer. Turn power back on and push the #5 button while the boot screen is on.

CAUTION: CLEARING THE MEMORY WILL CLEAR ANY JOBS PREVIOUSLY PROGRAMMED.

- 3. Computer runs by programmed length and does not stop.**

COMPUTER BATCH AND LENGTH CONTROLLER

SOLUTION #1: Check Encoder direction on set up screen. It should read counterclockwise. Turn power off on computer. Turn power back on and press the #9 button while the boot screen is on. If direction is set to CCW press the enter button. To change from CW, use arrow button to scroll down until direction is highlighted. Press any numbered key to toggle between CW and CCW. Set to CCW and press the enter button. Press program button (clipboard) and continue.

SOLUTION #2: Check encoder cable connection. If loose, tighten. If damaged replace.

SOLUTION #3: Check Encoder Wheel for tightness to shaft. If loose, use Allen-Wrench to tighten.

4. Panel lengths are consistently long or short when using Batch and Length Control Computer. I.e. all panels are 1/2" long or 1/2" short.

SOLUTION: Run calibration sequence

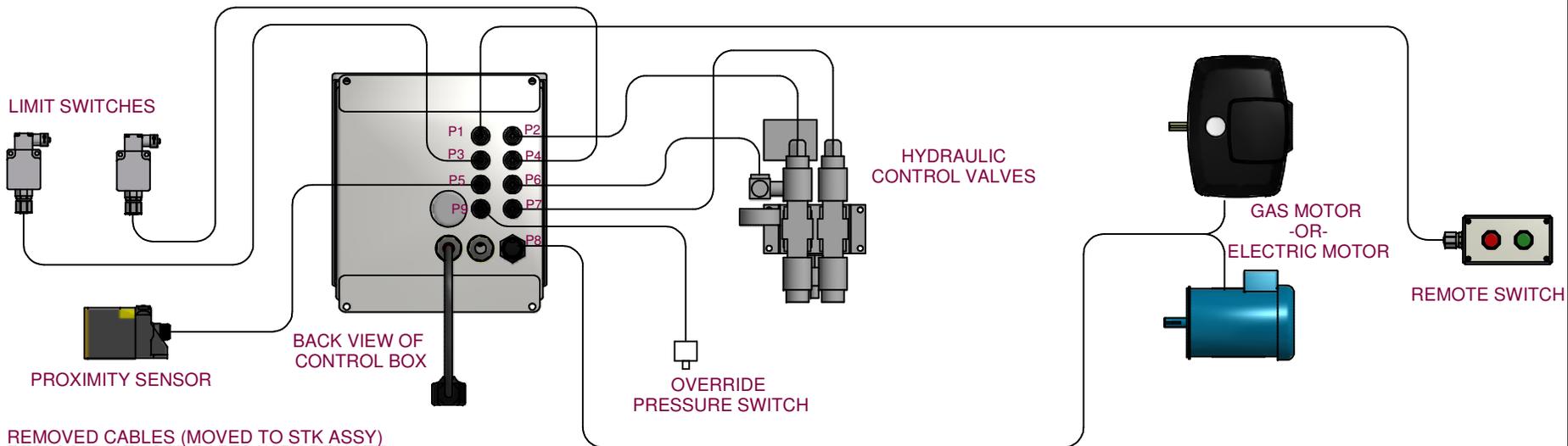
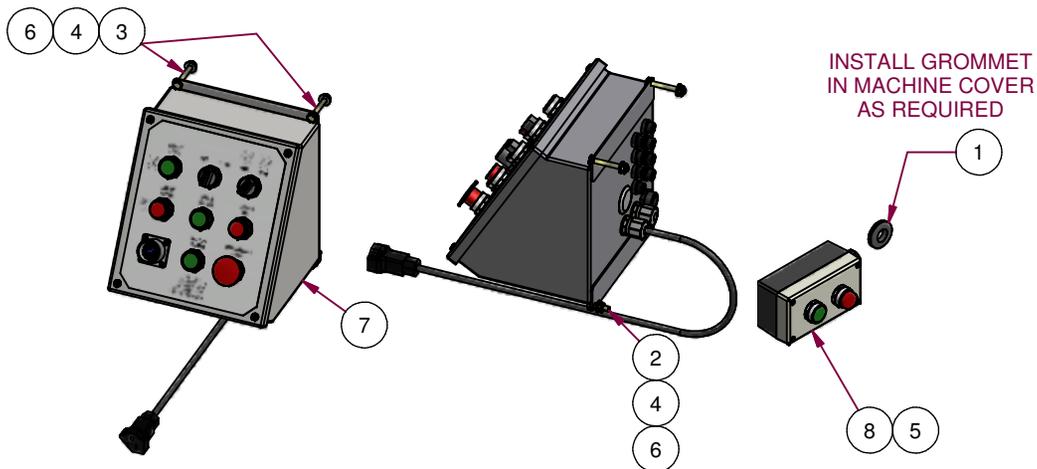
APPENDIX A
COMPUTER BATCH AND LENGTH CONTROLLER

APPENDIX B
ELECTRICAL SCHEMATICS

ELECTRICAL SCHEMATICS

<u>Drawing Number</u>	<u>Sheet Number</u>	<u>Description</u>
FWM-380-000	1	Electrical Assembly – Parts List
FWM-380-000	2	Electrical Assembly – Component Details
FWM-381-000	1	Control Box Assembly – Parts List
FWM-381-000	2	Control Box Assembly – Outside & Inside Views
FWM-381-000	3	Control Box Assembly – Wiring Schematic
FWM-381-000	4	Control Box Assembly – Ladder Logic

Parts List			
ITEM	QTY	PART NUMBER	TITLE
1	1	ELC-300-138	GROMMET, 3/4" ID, 1-1/2" OD
2	1	FAS-HC5-118	HEX HEAD CAP SCREW, 1/4-20 x 1" LG.
3	2	FAS-HC5-278	HEX HEAD CAP SCREW, 1/4-20 x 2" LG.
4	3	FAS-NUY-188	NYLOC HEX NUT, #1/4-20
5	2	FAS-SRM-207	SCREW, PAN HEAD, 8 x 1/2", PHIL, SELF-TAPPING
6	4	FAS-WSF-260	WASHER, FLAT, 1/4" SAE
7	1	FWM-381-000	CONTROL BOX ASSEMBLY
8	1	FWM-382-000	REMOTE PUSH BUTTON BOX



4 REMOVED CABLES (MOVED TO STK ASSY)
REPLACED REMOTE PARTS WITH REMOTE
ASSEMBLY FWM-382-000 TO MATCH DBA

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

MATERIAL	SEE BOM	LENGTH	-	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES	
1	R-1394	12/18/06	JK	.XX = ± .01	
2	R-1714	02/15/10	AJB	.XXX = ± .005	
3	R-1685	05/04/2011	JD	FRACTION = ± 1/32"	
4	R-1771	06/10/2011	JD	ANGLE = ± 1/2'	



**NEW TECH MACHINERY
CORP.**

DRAWN BY JD	DATE 01/05/05	PART NAME ELECTRICAL ASSEMBLY
CHECK BY JD	DATE 06/10/2011	PART NUMBER FWM-380-000
SHEET 1 OF 2		REVISION 4

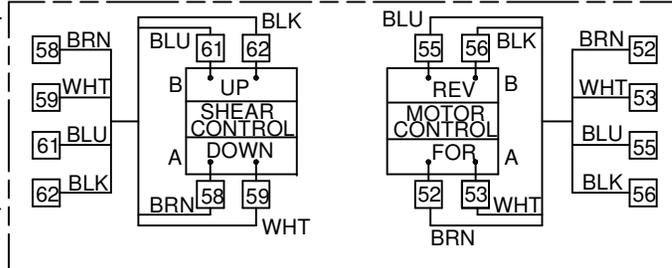
ELC-400-105

FWM-440-000, SSH-440-000, BG7-440-000, 5VC-440-000

P2

CONTROL VALVES
(HYDRAULIC COMPONENTS)

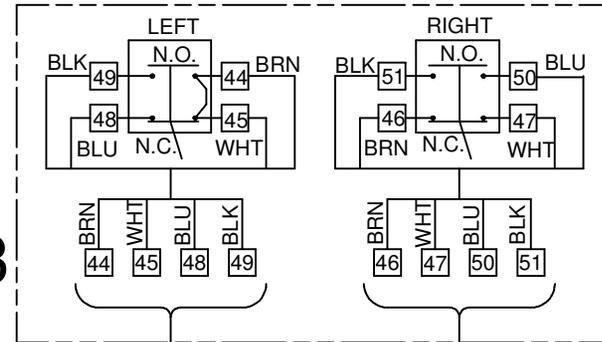
P7



SSP-340-000
SHEAR TOP OF STROKE
LIMIT SWITCH ASSEMBLY

P3

P4



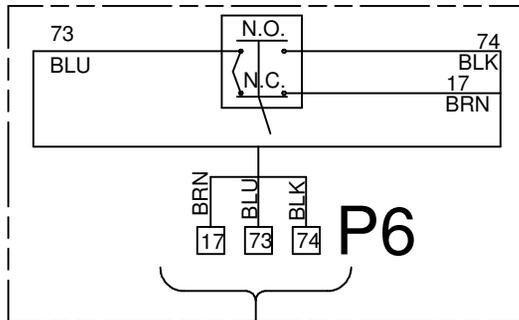
ELC-400-105

ELC-400-105

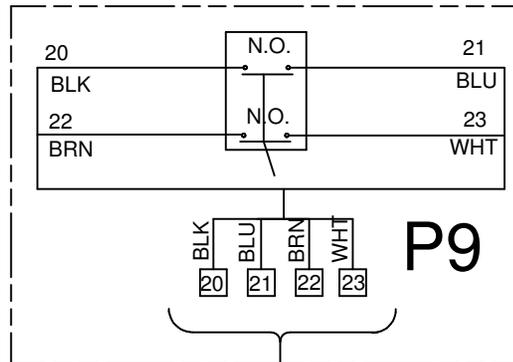
ELC-400-105

BOTTOM OF STROKE
LIMIT SWITCH

PRESSURE LINE
OVERRIDE SWITCH
(HYDRAULIC COMPONENT)



P6



P9

ELC-400-106

ELC-400-105

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

MATERIAL	LENGTH	FINISH		
SEE BOM				
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES
				.XX = ± .01
				.XXX = ± .005
				FRACTION = ± 1/32"
				ANGLE = ± 1/2'



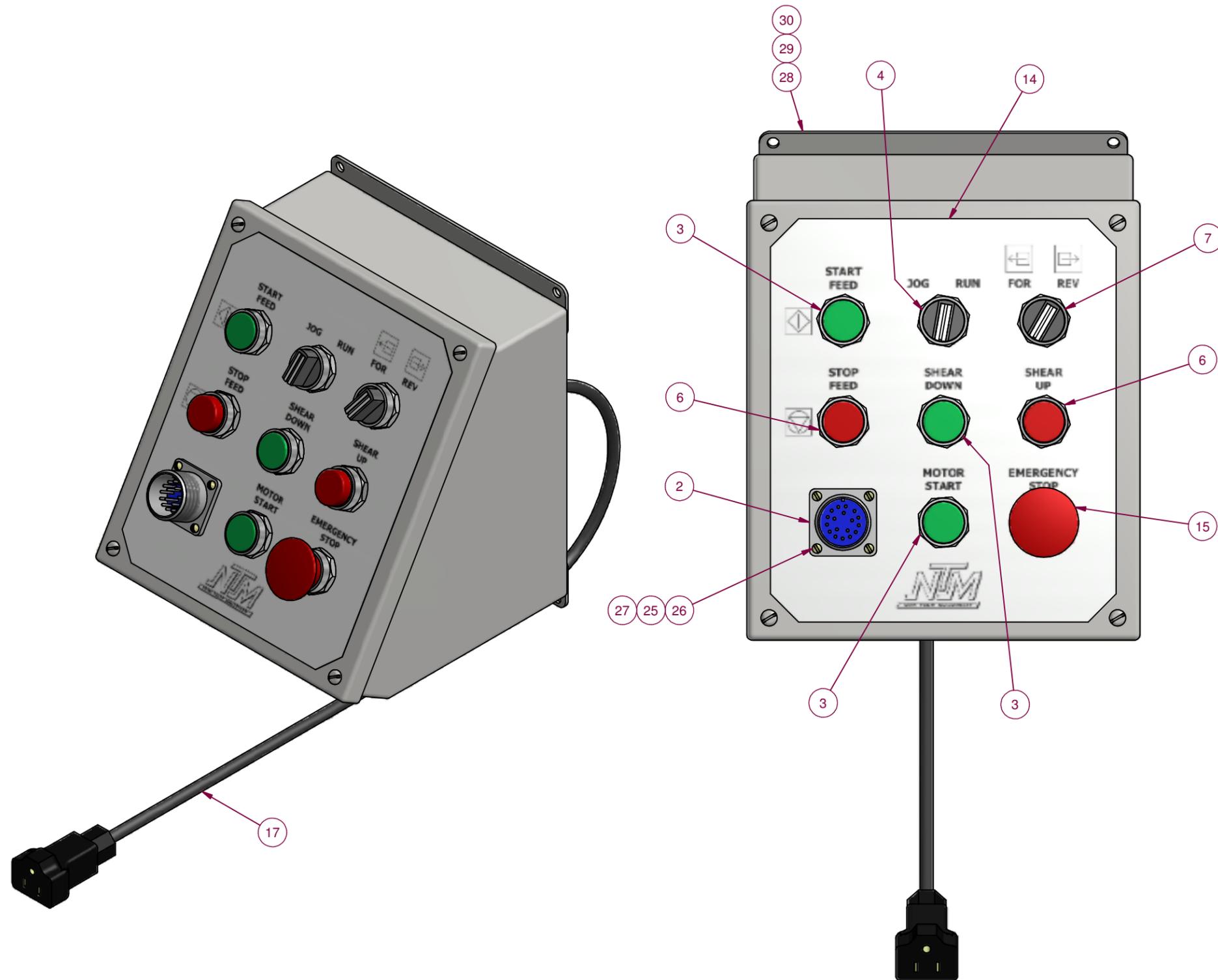
**NEW TECH MACHINERY
CORP.**

DRAWN BY JD	PART NAME ELECTRICAL ASSEMBLY	SHEET 2 OF 2	REVISION 4
DATE 11/28/06	PART NUMBER FWM-380-000		
CHECK BY			
DATE			

PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	AMS-450-005	3812Y-4 CABLE
2	1	AMS-450-006	3812BHNT-4 CABLE
3	3	ELC-300-103	PUSH BUTTON, GREEN
4	1	ELC-300-104	SELECTOR SWITCH, W/1 N.O.
5	1	ELC-300-105	FUSE, 10A, 250V, TIME DELAY
6	2	ELC-300-107	PUSH BUTTON, RAISED RED
7	1	ELC-300-109	SELECTOR SWITCH, 2 POS,1 N.O. 1 N.C.
8	1	ELC-400-018	IDEC #HW-C01 N/C CONTACT BLOCK
9	4	ELC-400-019	NDNV4 4 POLE TERM BLOCK
10	2	ELC-400-036	EURO STRIPS
11	40 FT	ELC-400-040	WIRE, 18 Ga., AWG 600v, TFFN BLK
12	18 IN	ELC-400-044	TAPE, DOUBLE COATED FOAM x 1"
13	1	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-400-085	FUSEHOLDER BUS HRK
17	1	ELC-400-090	CORDSET, 22", 12/3, MALE PLUG
18	1	ELC-400-100	RECEPTACLE, 6 PIN, MALE X 1M
19	8	ELC-400-104	RECEPTACLE, 4 PIN FEMALE X 2M
20	1	ELC-400-122	1 POLE RELAY BASE
21	1	ELC-400-123	2 POLE RELAY BASE
22	1	ELC-400-124	1 POLE RELAY, 12VDC
23	1	ELC-400-125	2 POLE RELAY, 12VDC
24	2	ELC-425-020	STRAIN RELIEF, 1/2" NPT
25	4	FAS-NUM-394	HEX NUT, #4-40
26	4	FAS-SPN-396	SCREW, SLOTTED PAN HEAD, #4-40 x 3/4"
27	4	FAS-WSL-398	#4 SPLIT LOCK WASHER
28	1	FWM-381-001	ENCLOSURE
29	1	FWM-381-003	DIN RAIL, 3" LONG
30	1	SSR-381-072	DIN RAIL, 5.50 LONG

NOTE: NOT ALL ITEMS SHOWN.

8 REPLACED PART NUMBERS:
ELC-400-021, ELC-400-041
WITH:
ELC-400-090

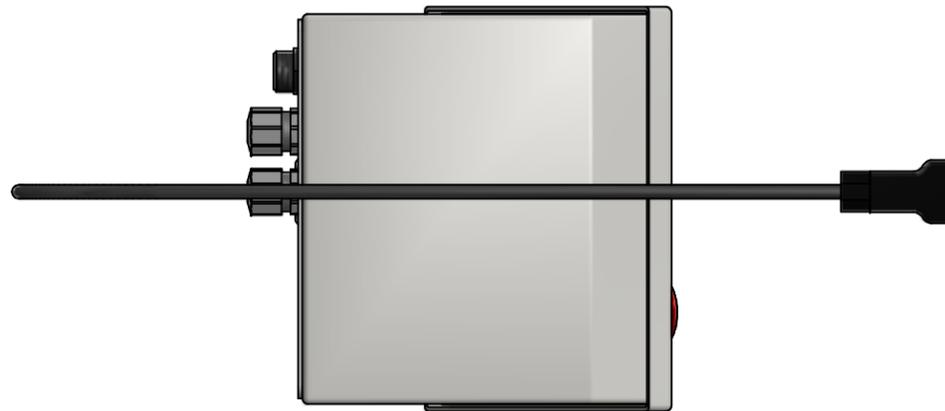
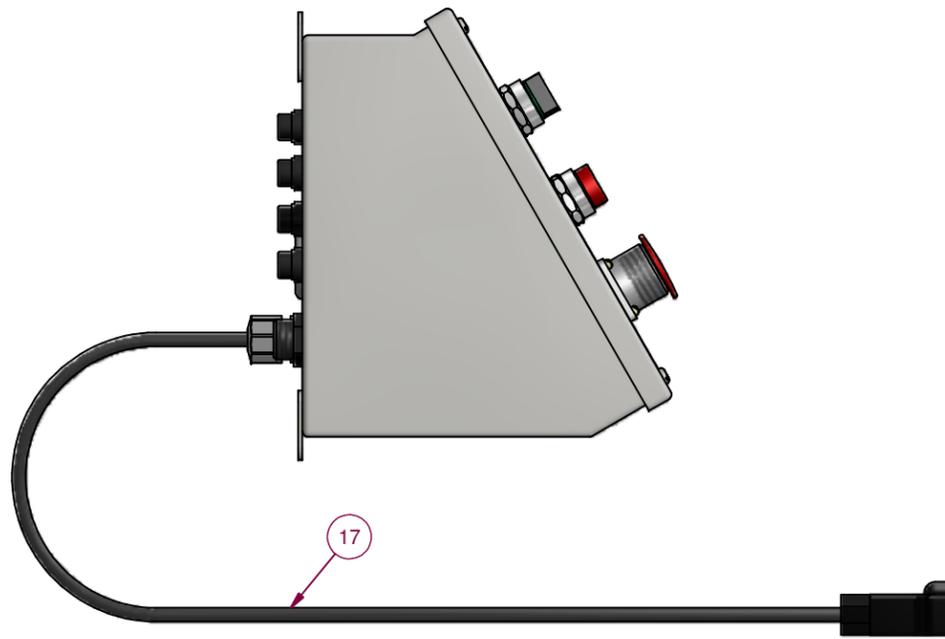
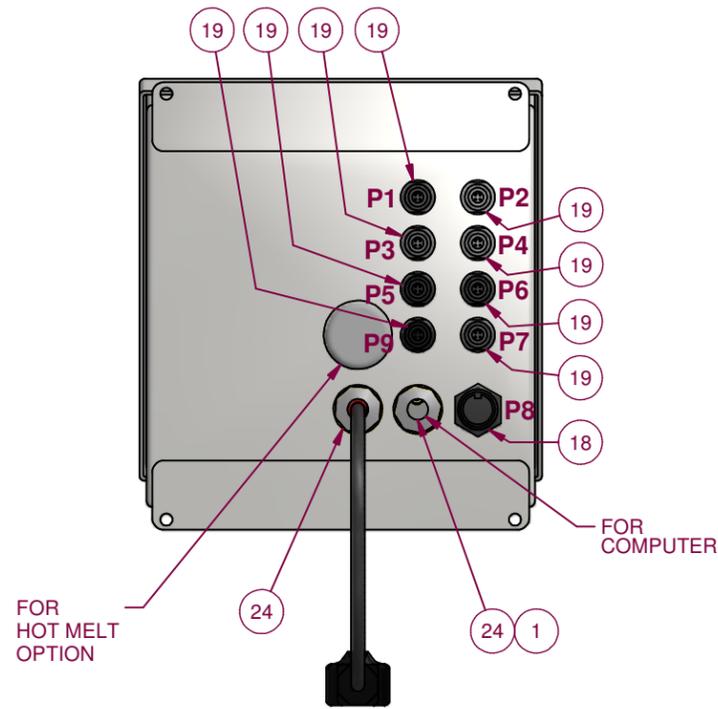


MATERIAL	SEE BOM	LENGTH	N/A	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES	
4	R-1394	12/18/06	JK	.XX = ± .01	
5	UNK	-	-	.XXX = ± .005	
6	R-1416	05/09/07	S.B.	FRACTION = ± 1/32"	
7	R-1509	05/22/08	JD	ANGLE = ± 1/2'	
8	R-1638	05-21-2009	JD		

NTM
NEW TECH MACHINERY CORP.

CONTROL BOX ASSEMBLY

DRAWN BY Fry	PART NAME CONTROL BOX ASSEMBLY	CHECKED BY J.D.	PART NUMBER FWM-381-000	SHEET 1 OF 4	REVISION 9
DATE 10/11/04		DATE 08/30/04			



MATERIAL	SEE BOM	LENGTH	N/A	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES	
				.XX = ± .01	
				.XXX = ± .005	
				FRACTION = ± 1/32"	
				ANGLE = ± 1/2'	

NTM **NEW TECH MACHINERY CORP.**

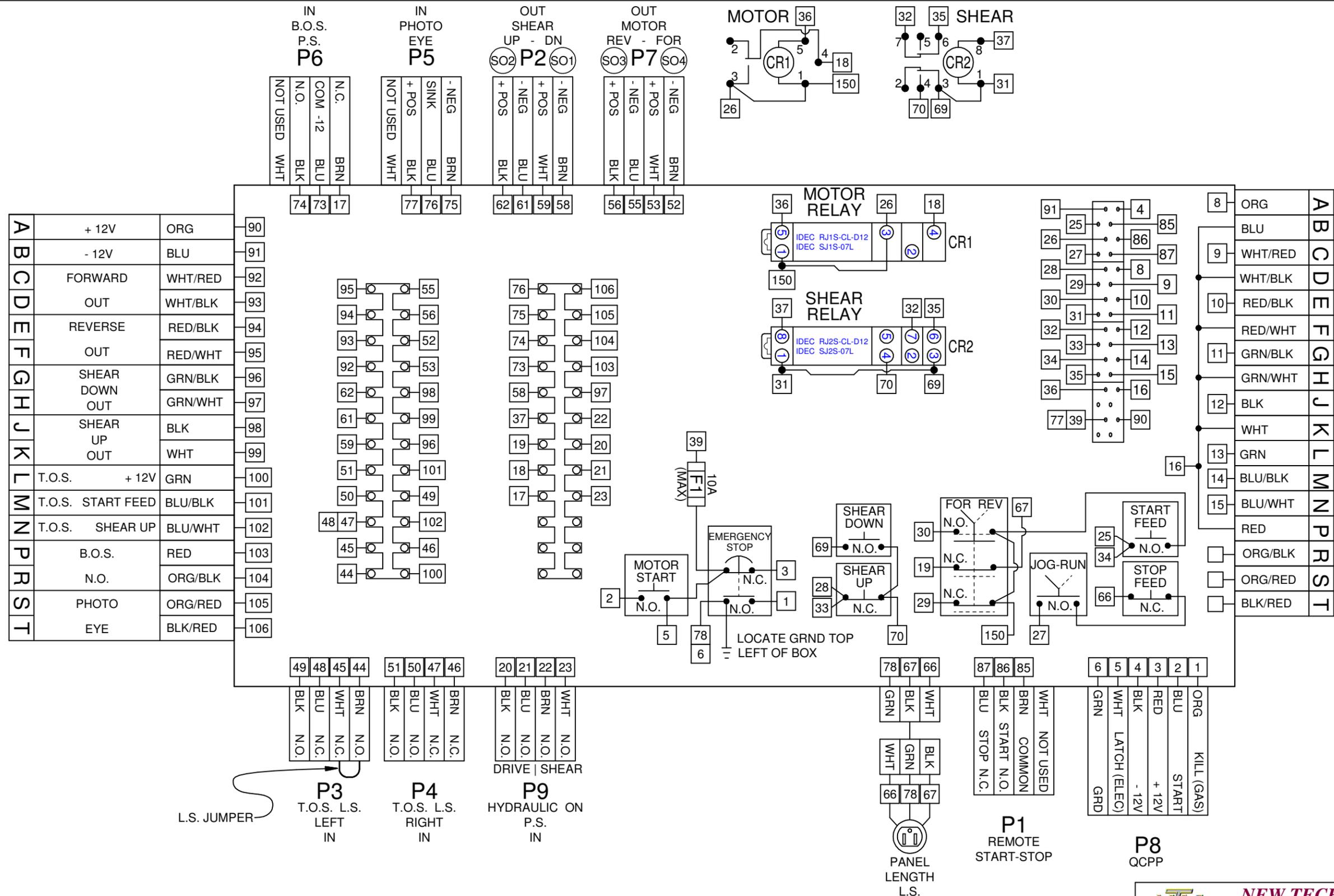
DRAWN BY Fry
DATE 06/24/04
CHECK BY
DATE

PART NAME
CONTROL BOX ASSEMBLY

PART NUMBER
FWM-381-000

SHEET
2 OF 4

REVISION
9



MATERIAL	SEE BOM	LENGTH	-	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES .XX = ± .01 .XXX = ± .005 FRACTION = ± 1/32" ANGLE = ± 1/2"	
REVISION HISTORY					

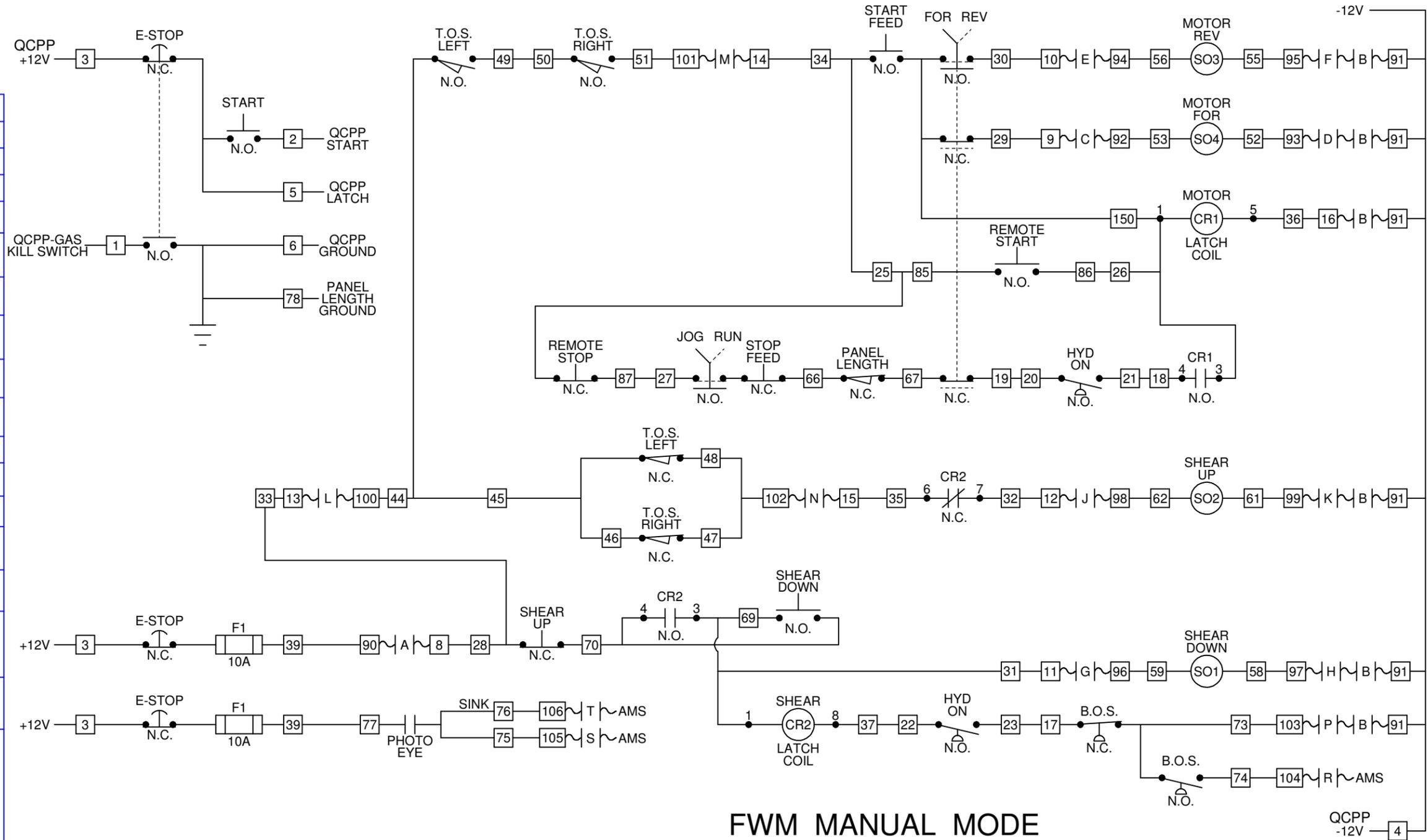
NEW TECH MACHINERY CORP.

CONTROL BOX ASSEMBLY

DRAWN BY GDP	PART NAME	SHEET 3 OF 4	REVISION 9
DATE 04/01/2009	CONTROL BOX ASSEMBLY		
CHECK BY	PART NUMBER	FWM-381-000	
DATE			

LEGEND

	WIRE NUMBER
	PIN NUMBER
	FUSE
	CONTACT (N.O.)
	CONTACT (N.C.)
	MUSHROOM HEAD PUSH BUTTON (N.O.)
	MUSHROOM HEAD PUSH BUTTON (N.C.)
	PUSH BUTTON (N.O.)
	PUSH BUTTON (N.C.)
	LIMIT SWITCH (N.O.)
	LIMIT SWITCH (N.C.)
	PRESSURE SWITCH (N.O.)
	PRESSURE SWITCH (N.C.)
	CONTROL RELAY COIL
	SOLENOID RELAY COIL
	PUSH BUTTON 2-POSITION
	SELECTOR SWITCH 2-POSITION
	SELECTOR SWITCH 3-POSITION



FWM MANUAL MODE

MATERIAL	SEE BOM	LENGTH	N/A	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES .XX = ± .01 .XXX = ± .005 FRACTION = ± 1/32" ANGLE = ± 1/2"	

NTM
NEW TECH MACHINERY CORP.

DRAWN BY GDP	PART NAME CONTROL BOX ASSEMBLY
DATE 04/01/2009	
CHECK BY	PART NUMBER FWM-381-000
DATE	SHEET 4 OF 4
	REVISION 9



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