



New Tech Machinery

# OPERATION and MAINTENANCE MANUAL



U.S. PATENT NO. 6,772,616

## SSH MultiPro™

Light Commercial/Residential Roof Panel Machine

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

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CHAPTER 1  
**SSH SPECIFICATIONS**

## **SPECIFICATIONS**

<b>SSH Dimensions:</b>	Length-12' 10"	(3.9m)
	Width -3' 10"	(1.2m)
	Height-4' 3"	(1.3m) w/Over Head Rack
	2' 0"	(.6m) w/o Over Head Rack
	Weight-2500 lbs.	(1140kg)
<b>SSH on Trailer:</b>	Length-17' 6"	(5.3m)
	Width-7'	(2.1m)
	Height-6' 3"	(1.9m) with reel
	Weight-4500 lbs.	(2050kg)
<b>Speed:</b>	60 ft./min. Approx.	(18m/min.) Approx.
<b>Drive:</b>	Hydraulic via chain, sprocket and gear using 8 polyurethane drive rollers.	
<b>Shear:</b>	Hydraulically powered, infinitely adjustable, hardened tool steel dies and blades w/panel recognition proximity sensor.	
<b>Hydraulic Fluid:</b>	15 Gallons - 32AW	
<b>Coil Width</b>	14" to 24" (356mm to 610mm) Note: 24" coil width requires Expandable Arbor or Remote De-coiler Stand.	
<b>Materials Formed</b>	Painted Steel	26ga. to 24ga. (.5mm to .6mm) Painted, Galvanized, Aluminized
	Painted Aluminum	.027" to .040" (.7mm to 1.0mm)
	Copper	16 oz. to 20 oz. ¾ Hard (.5mm to .7mm)
	Terne-Coat Stainless Steel	26ga. (.5mm)
<b>Controls</b>	Standard:	12VDC Manual Control Box w/Length Control Limit Switch
	Optional:	PLC or AMS Computer Batch and Length Control

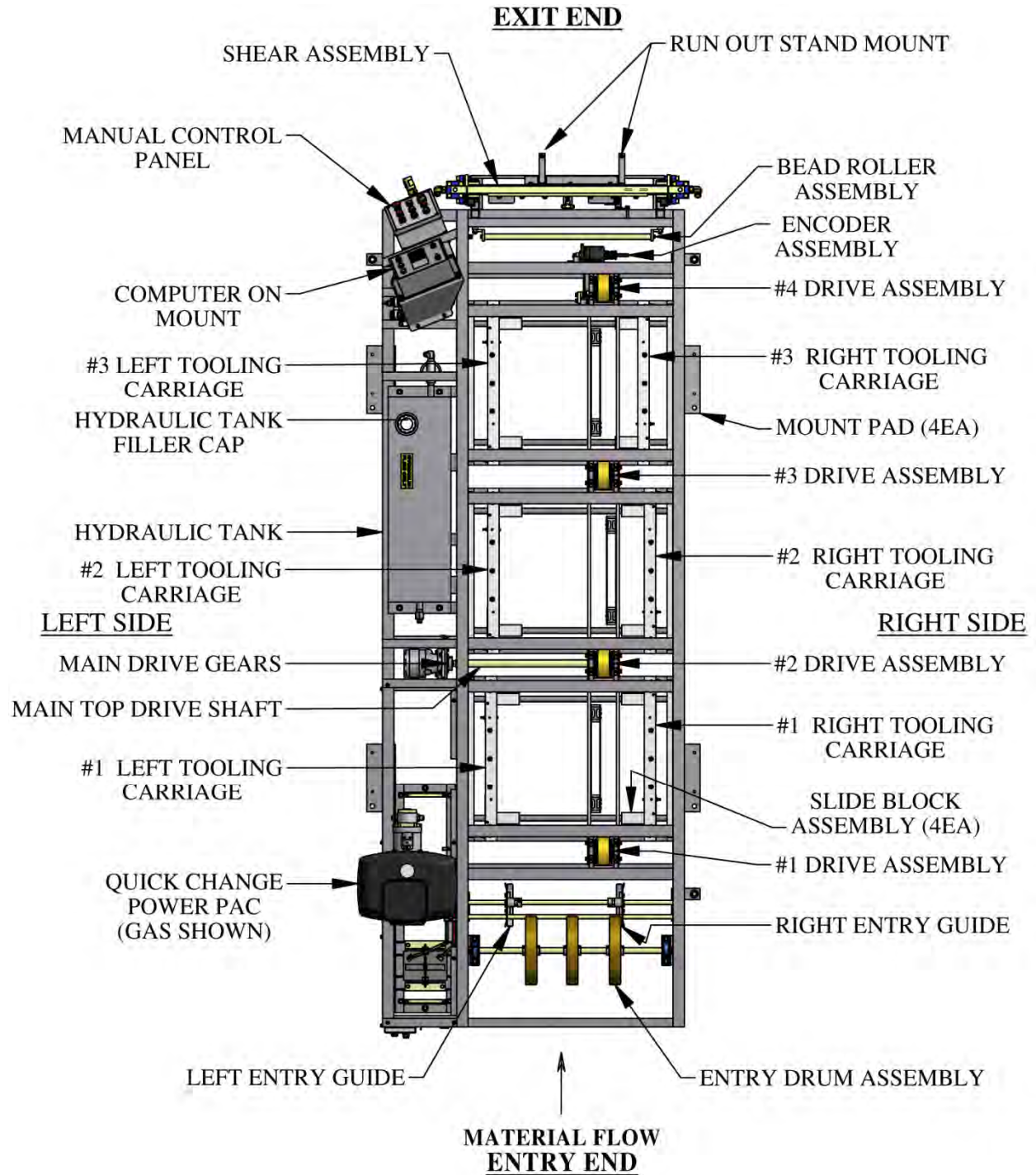
CHAPTER 2  
**PRECAUTIONS**

## **PRECAUTIONS**

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

CHAPTER 3  
**MACHINE ORIENTATION**

**MACHINE ORIENTATION**

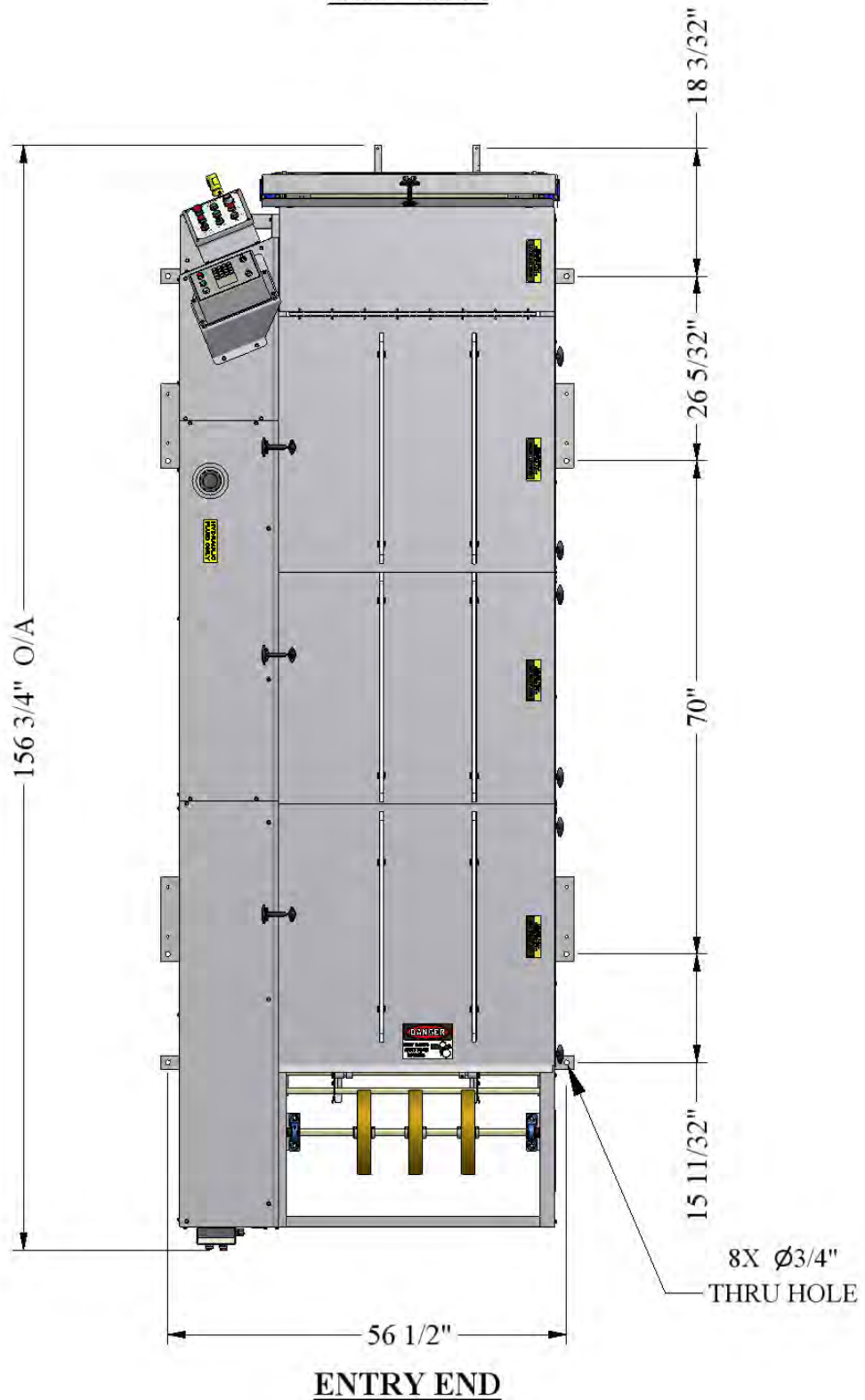


**Figure 1: Machine Orientation**



CHAPTER 3  
**MACHINE ORIENTATION**

**EXIT END**



**Figure 2: Mounting Foot Detail**

CHAPTER 4  
**GENERAL MAINTENANCE**

## **GENERAL MAINTENANCE**

1. Always keep covers on during operation and storage. The covers are for operator safety, but also protect the internal components of the machine from the environment.
2. Avoid storage of the machine outdoors for long periods of time. Cover the machine with a tarp to protect it but provide good ventilation to prevent condensation and rust.
3. Keep the machine clean. This will increase the life of the machine and make maintenance easier. A clean machine will provide a clean product.
4. Before operating the machine, visually inspect for foreign objects debris or anything unusual. If something doesn't seem correct, inspect and remedy prior to operation.
5. Keep chains properly tensioned. This will add to the life of the chains and sprockets. The chains should be just snug. An over-tightened chain is just as bad for the machine as a loose chain. Idler sprockets are provided on each chain for this purpose.
6. Lubricate the chains a minimum of every 40 hours of operation. It is preferable to use a dry motorcycle chain lube or equivalent.
7. Keep Entry Guide Carriage clean and lubricate as needed with Spray Lube.
8. Keep Bead Roller Carriage Shafts (Figure 19 on page 34) clean and lubricate with Spray Lube.
9. Keep Arbor Cradles (Figure 9 on page 19) lubricated with Clear Grease.
10. Lubricate Arbor Nut (Figure 8 on page 17) using a grease gun with EP Grease when threads begin to look dry.
11. Clean Forming Rollers as needed with a Scotch Brite Pad and a small amount of solvent.
12. 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.**
13. Lubricate both faces of the Shear Blades and Dies (Figure 17 on page 30) 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, Dies, Entry Guide, Bead Roller Carriage Shafts and chains

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

Catalog No. 11016

**11 oz. Aerosol Can**

**Available from:**

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

**Clear Grease for:**

Arbor Cradles

Synthetic Extreme Pressure, High Temperature Grease with Syncolon (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:**

**Various Manufacturers**

**Hydraulic Fluid (32AW) for:**

Hydraulic Tank

**Available from:**

**Various Manufacturers**

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:**

(Figure 3 on page 12)

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.

**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)

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)

This button acts as a cycle interrupt for the drive system. **Pressing the Stop Feed Button on either the entry or exit end of the machine will stop the machine drive system.**

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 the shear back to the top or home position.

CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

G. EMERGENCY STOP-POWER ON (Raised Red Mushroom button)

**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 return back to the top of stroke 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.

## ENTRY END CONTROL STATION

A. JOG SWITCH

This switch is used to load coil into the machine. Turn the switch to the right to jog the material forward or turn the switch to the left to jog the material in reverse.

B. STOP FEED (Red button)

This button acts as a cycle interrupt for the drive system. **Pressing the Stop Feed Button on either the entry or exit end of the machine will stop the machine drive system.**

## MAIN CONTROL CABLE

(Figure 4 on page 13)

- A. The main control cable is the communication cable for the Manual Control Panel described above and the Computer Batch and Length Control Computer covered in Appendix 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 three cables there and it is the larger diameter plug of the three. 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.

### Batch and Length Control Computer Connection

## CHAPTER 5

# ELECTRICAL CONTROLS AND OPERATION

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.

### REMOTE LIMIT SWITCH

(Figure 5 on page 14)

**Note:** The machine will NOT run continuously in the forward direction unless the REMOTE LIMIT SWITCH is plugged into the machine. The Remote Limit Switch is used for manual panel length control. The remote limit switch is designed to attach to the right side of the optional run-out tables. 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 intended to run 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 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. See section **RUN OUT TABLES AND REMOTE LIMIT SWITCH** on page 46.

### FUSES

(Figure 6 on page 15)

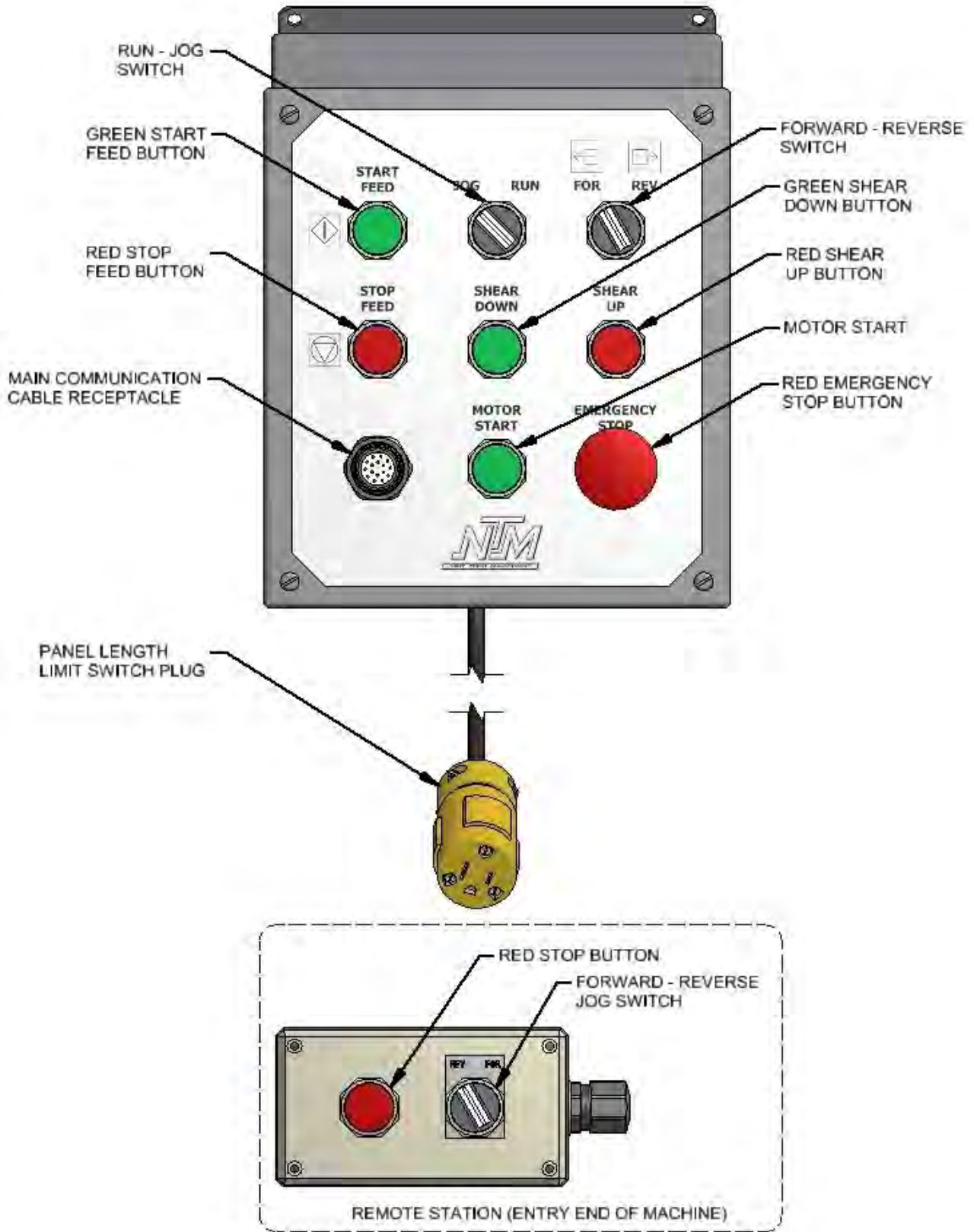
All machines, gas or electric powered, have a 10-amp time delay fuse on the back of the Electrical Control Panel Assembly. This fuse protects the electrical components. If the fuse is blown, the machine will lose all functions except Motor Start. Access can be gained by removing the entry end right side 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

### ELECTRIC MOTOR MACHINES

(Figure 7 on page 15)

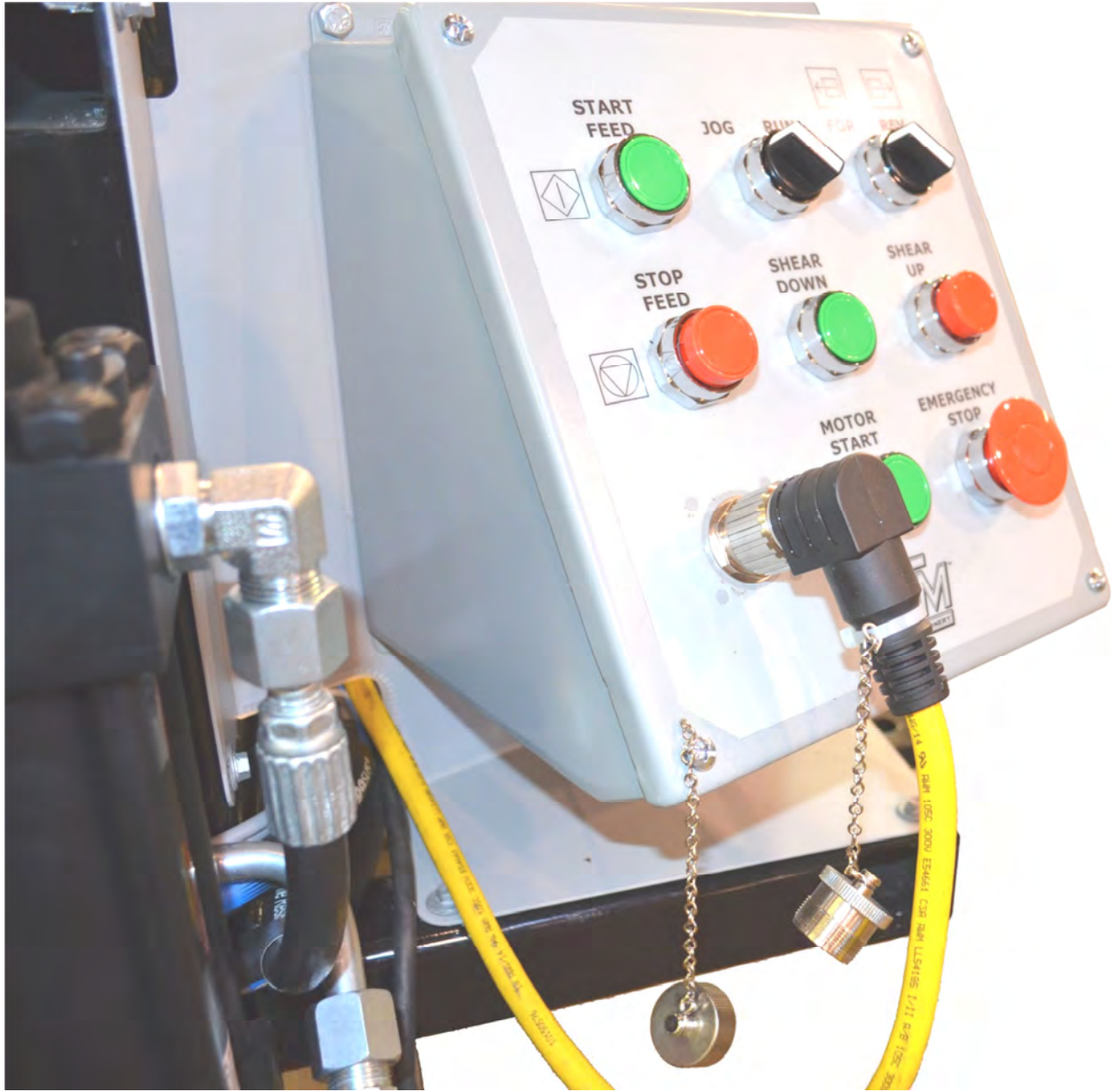
Electric motor machines have an additional 10-amp time delay fuse protecting the logic circuit of the Contactor Box. This fuse holder is mounted in the top cover of the contactor box located toward the entry end on the left side. Access can be gained by removing the entry end left side cover. This is 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 3: Controls**

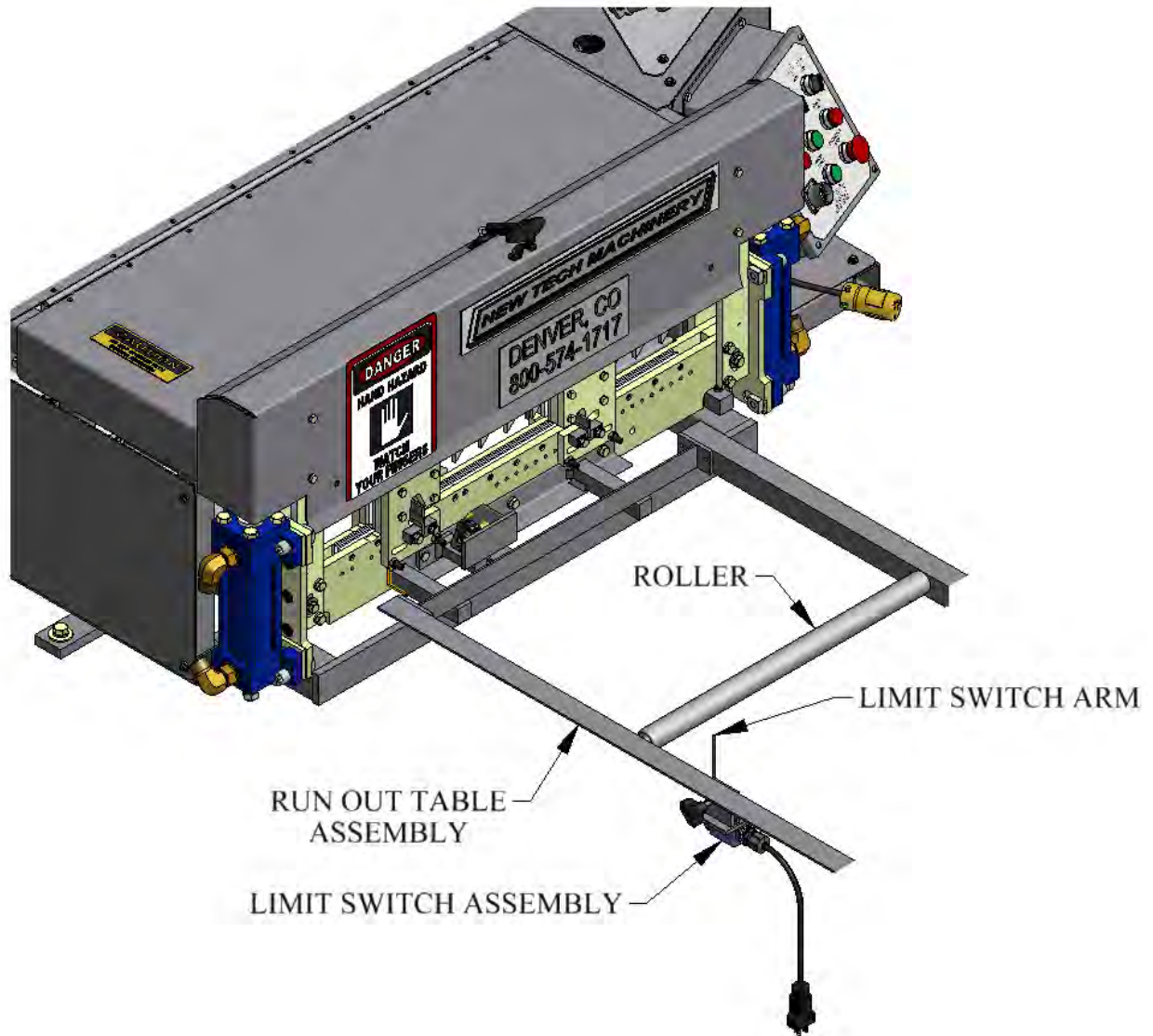
CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**



**Figure 4: Main Control Cable**

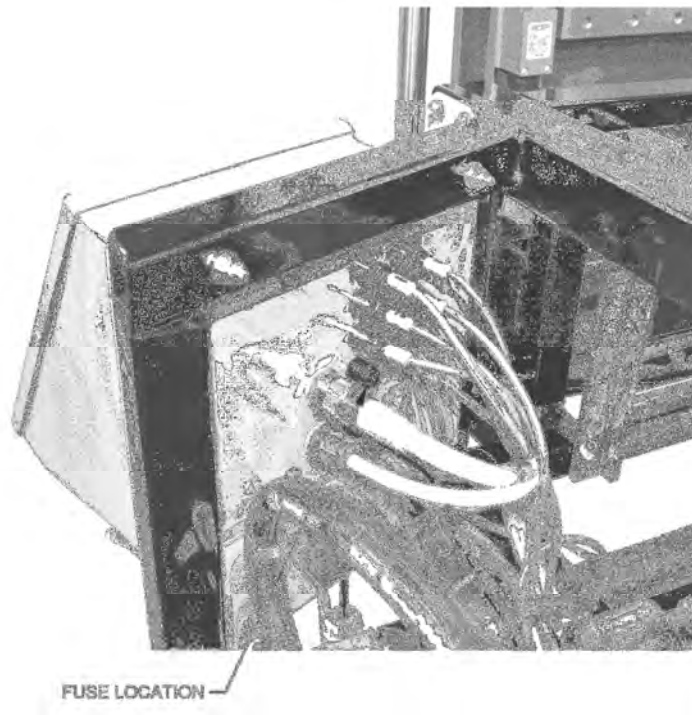


CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**

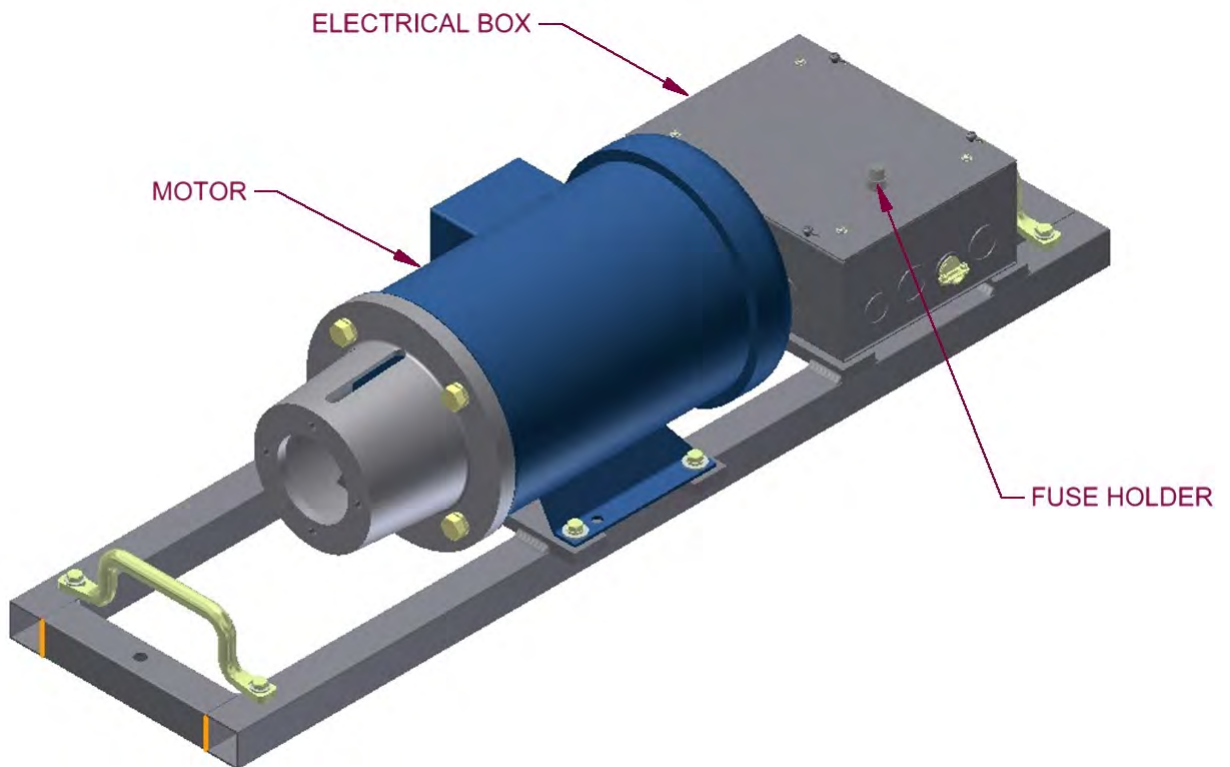


*Figure 5: Run Out Table and Remote Limit Switch*

CHAPTER 5  
**ELECTRICAL CONTROLS AND OPERATION**



**Figure 6: Main Control Box Fuse**



**Figure 7: QCPP E 1-6 Fuse Location**

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

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

### **EXPANDABLE ARBOR**

(Figure 8 on page 17)

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 entry 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”.

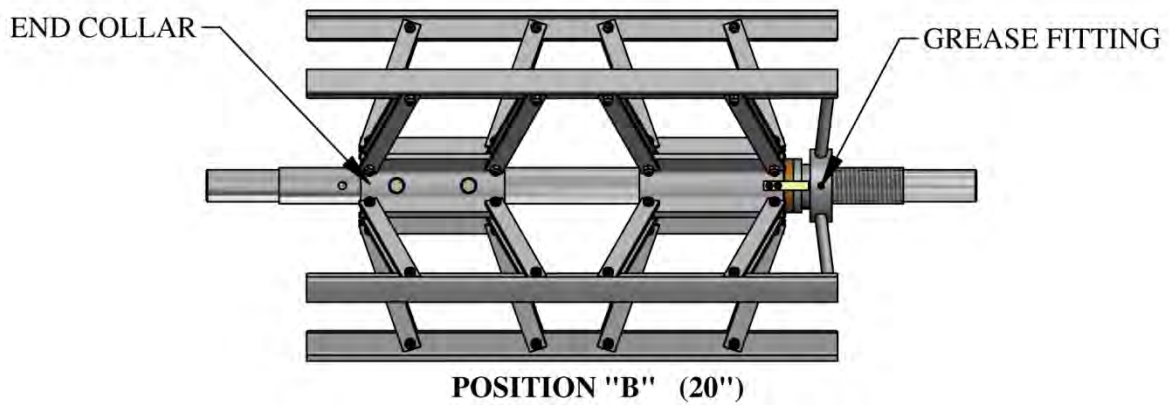
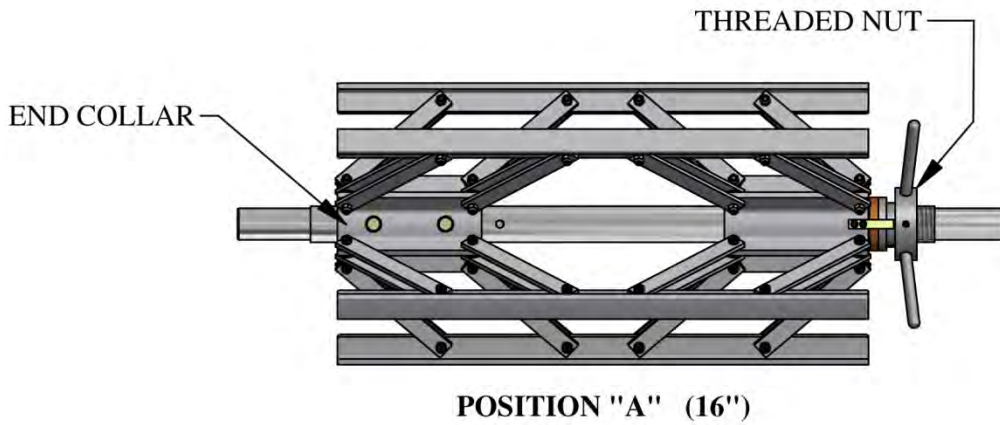
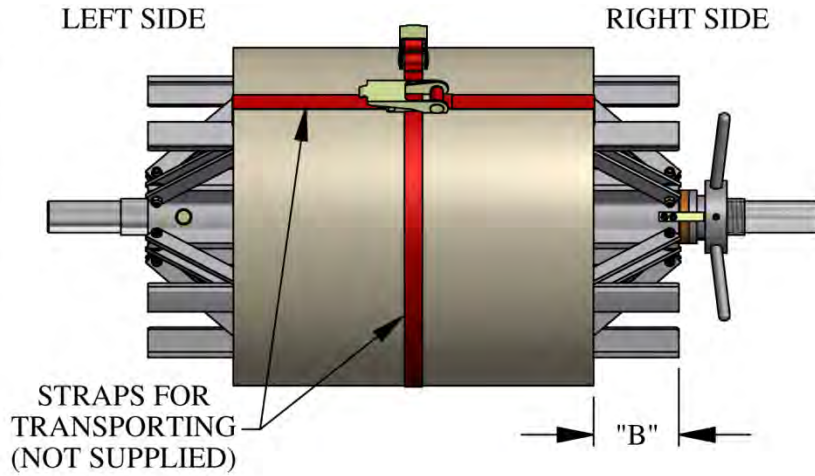
To adjust from one position to the other, remove 2 cap screws “C” until end collar is free to slide. Slide it to the inside position for 20” ID or outside position for 16” ID coil. Align it to the respective threaded holes in the reel shaft. Re-insert and tighten "C" cap screws to lock the end collar 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 entry 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 8 on page 17), 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)

**REEL STANDS, REELS AND EXPANDABLE ARBORS**

PROFILE	"B"
FFH100	1-7/16"
FFH150	1"
SSH100	2-1/16"
SSH150	1-3/4"
SSH450/450SL	-1/4"
SSHBP1/15	2-5/16"



**Figure 8: 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.**

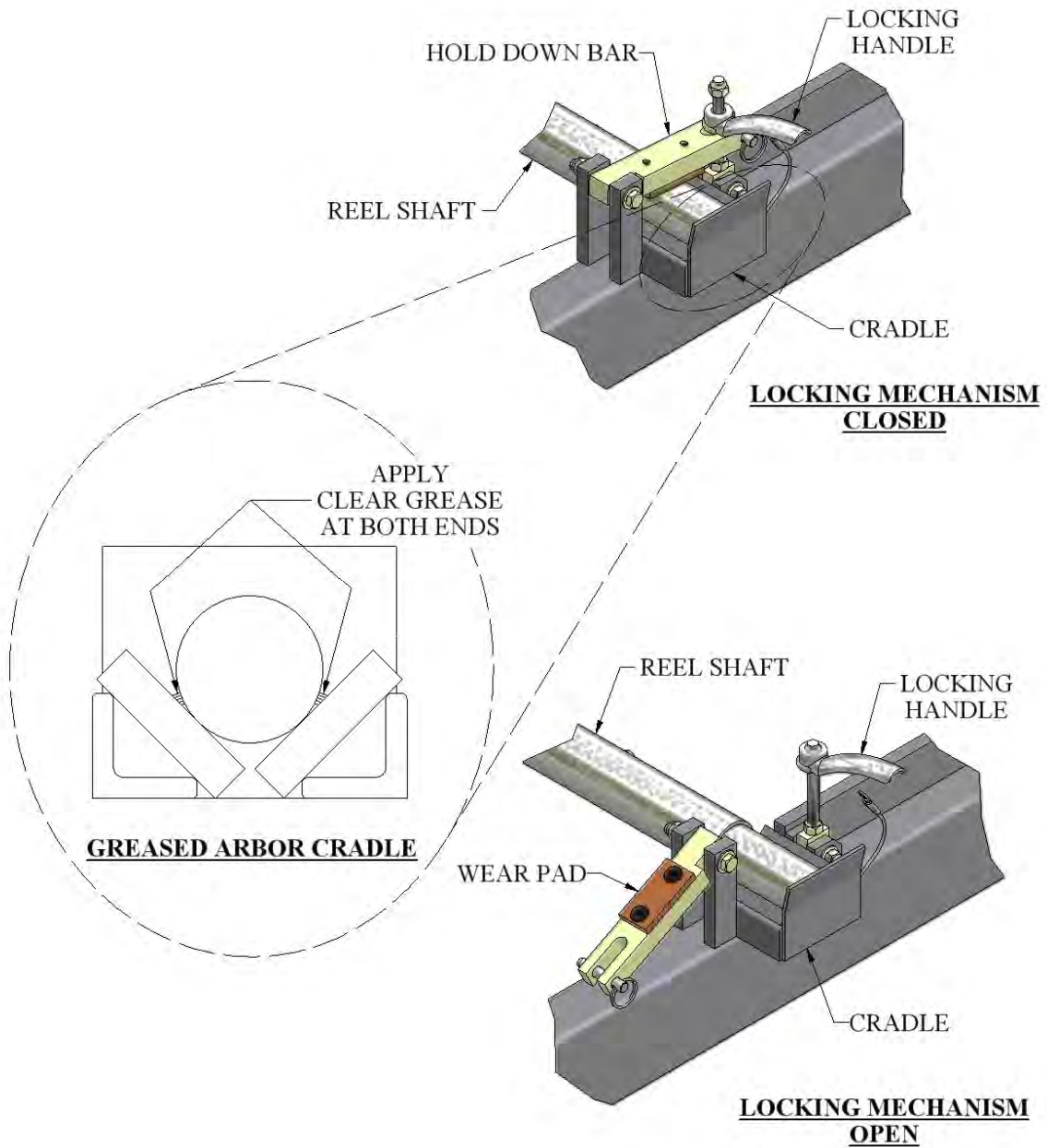
1. The reel shafts must rest in the arbor cradles on the reel rack. Keep the arbor cradles lubricated with clear grease to minimize wear. (Figure 9 on page 19)
2. Use the Hold Down Bars on each cradle to secure the coil and reel to the reel stand during both operation and transit of the machine. The Hold Down Bar should be used to keep the coil from uncoiling too fast during the fabrication of panels. Apply just enough drag to keep coil tensioned.

**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 9: Expandable Reel Assembly*

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

### **LOADING REELED COIL**

**Caution:**

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

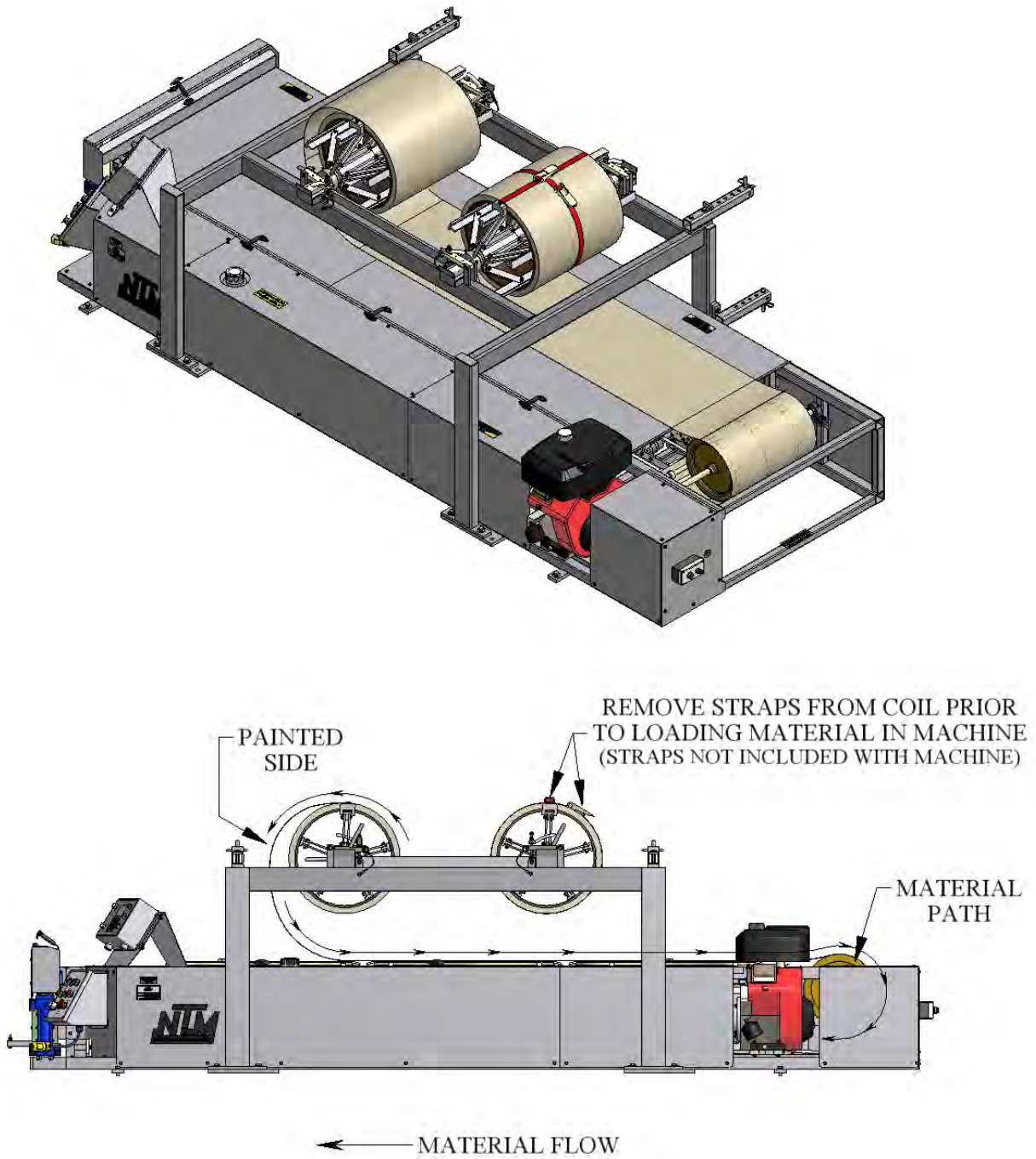
**The Lifting Holes in the Fixed Reel sides are provided to make loading safer and easier.**

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

1. Prepare the reel stand by making sure the Hold Down Bars are in the unlocked and open position (Figure 9 on page 19).
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 to route the material show in Figure 10 then remove the lifting device.
3. Rotate the Hold Down Bars to the closed position and thread the handle onto the hold down bolt. If material is going to run panel 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 material is loaded onto the Expandable Arbor, 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, using a strap or rope, secure the coil around the outside edges through the inside diameter to prevent the coil from telescoping (Figure 8 on page 17).

**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 10: Material Routing**



CHAPTER 7  
**HYDRAULIC SYSTEM AND SCHEMATIC**

## **HYDRAULIC SYSTEMS**

### ***Maintenance***

(Figure 11 on page 23)

The hydraulic system in the machine is a very durable and reliable system, however, 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 and fluid.
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.

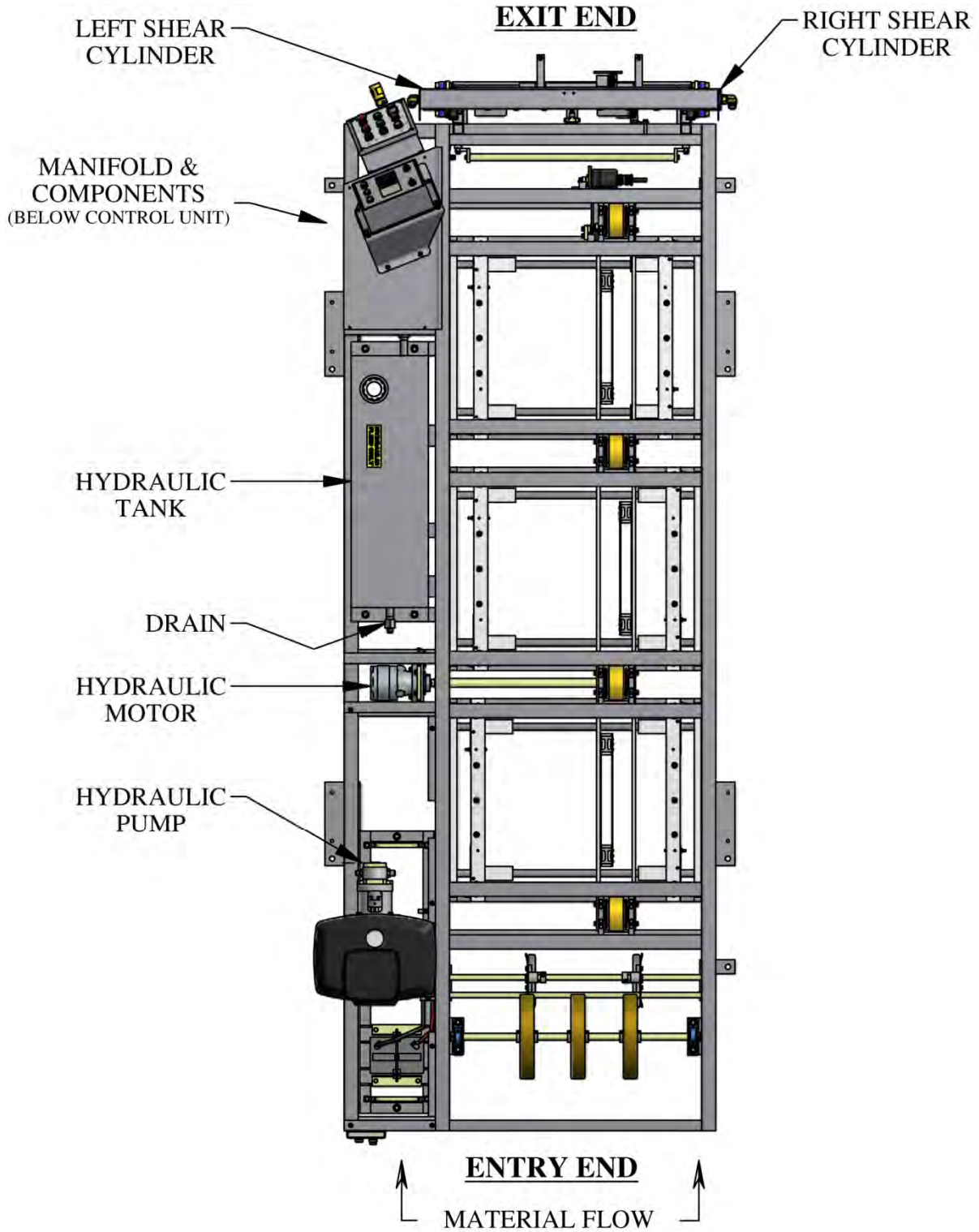
### ***Changing Hydraulic Fluid and Filter***

(Figure 12 on page 24 and Figure 13 on page 24)

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:

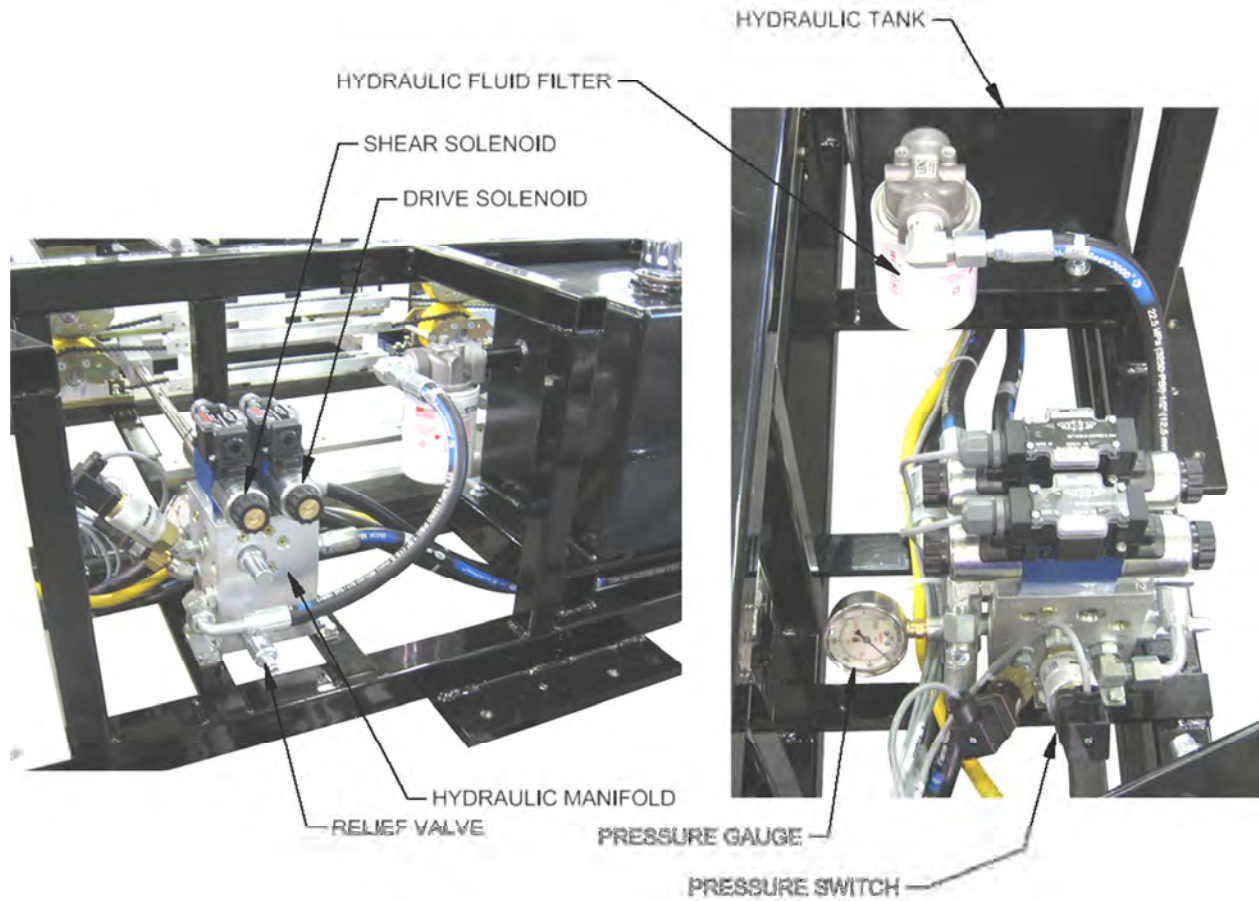
1. Remove the Hydraulic Tank Filler Cap and Filler Neck from the Hydraulic Tank.
2. Using a hand pump, remove the hydraulic oil from the Hydraulic Tank. Tip the entry end of the machine up so that the remaining oil runs to the filler end of the tank and hand pump the remaining oil from the tank.
3. Remove the existing Hydraulic Filter and replace with a new Hydraulic Filter.
4. Fill the tank with fresh 32 weight fluid until it is 5” below the top of the Filler Neck (approximately 15 gal).
5. Replace the Filler Neck and Filler Cap.
6. Cycle the drive and shear circuits to ensure that there is no air in the hydraulic system.

CHAPTER 7  
**HYDRAULIC SYSTEM AND SCHEMATIC**

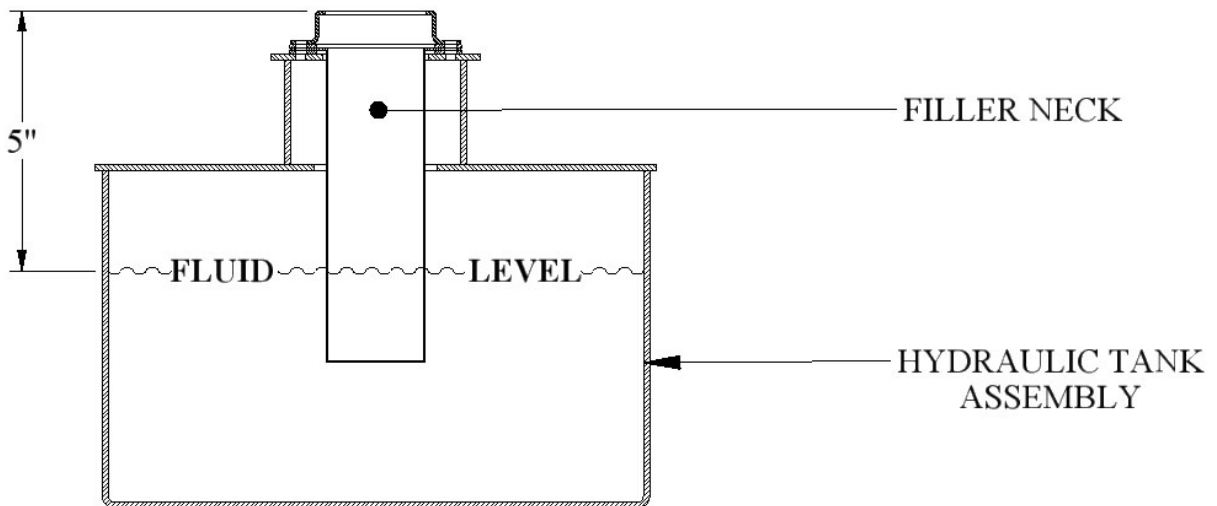


*Figure 11: Hydraulic System Overview*

CHAPTER 7  
**HYDRAULIC SYSTEM AND SCHEMATIC**



**Figure 12: Hydraulic System – Details**



**Figure 13: Hydraulic Fluid Level**

CHAPTER 8  
**DRIVE SYSTEM**

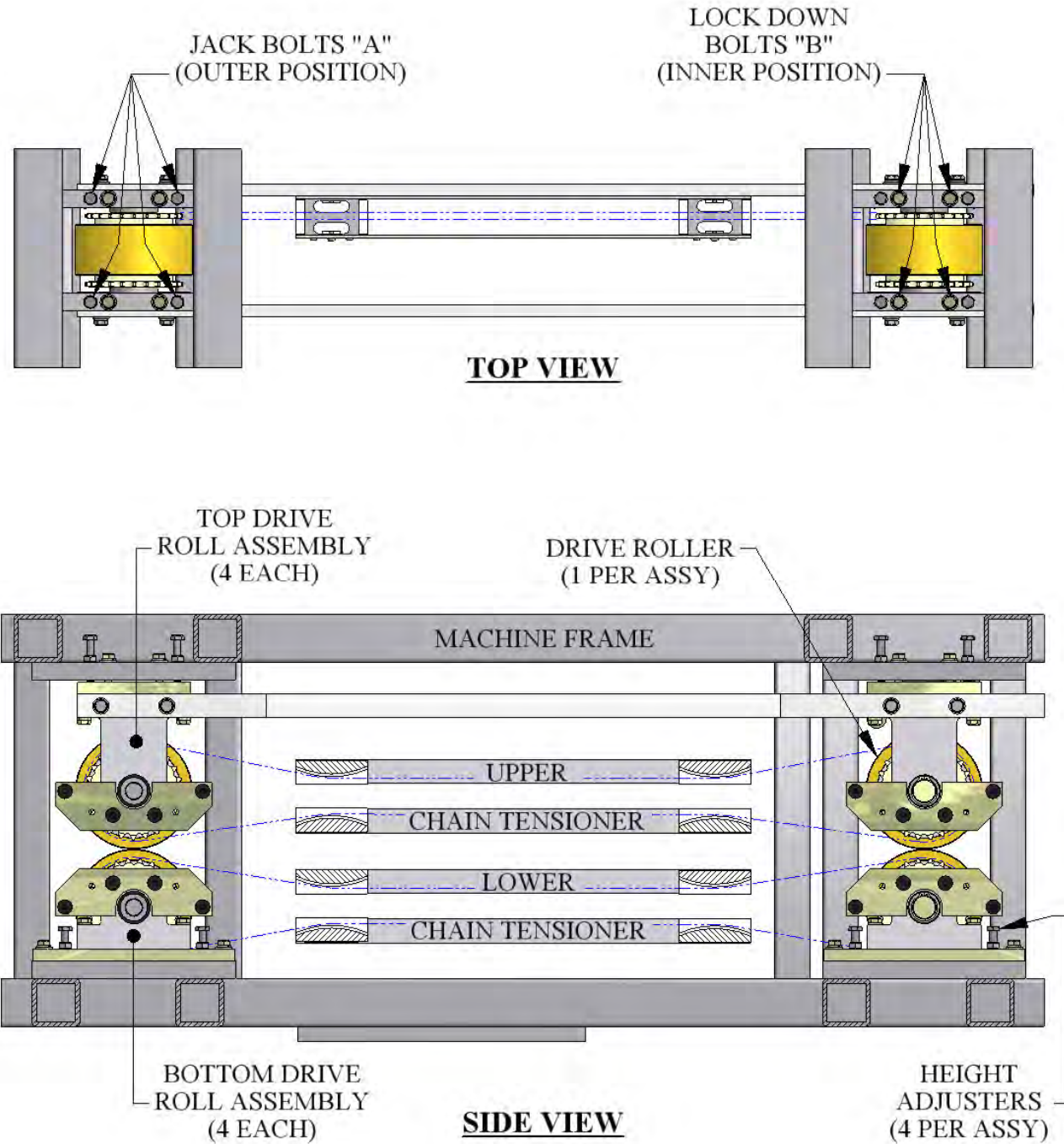
## **DRIVE SYSTEM**

(Figure 14, Figure 15, and Figure 16 on pages 26, 27 and 28)

The drive system in the machine consists of four top and four bottom polyurethane drive rollers. They are connected together via chain and sprocket. 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 a drive sprocket connected to the top and bottom drive shafts.

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 24ga. though the machine without the need for adjustment. If adjustment becomes necessary due to slippage, add pressure. **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. The chain tensioner used on this machine are squeeze type that can be manually pressed together when additional chain tension is required. When tensioning any chains be sure and squeeze the tensioners at both ends of the chain in order to maintain an even gap along the tensioner bars.
3. The chains used in this system are #50 Roller Chain at the drive sprocket and #41 Roller Chain between drive rolls. See Figure 16 on page 28 for chain locations and lengths if chain replacement is necessary.
4. The polyurethane drive rollers require occasional cleaning. The need for cleaning will become evident when the drive rolls start leaving a stripe the width of the drive roller on the formed panels that is not easily removed. Avoid cleaning the drive rollers with harsh chemicals or solvent. These products will attack the polyurethane and cause irreversible damage. **Use of these products will void the warranty on the drive rollers.**  
Clean the rollers with mild soap and water and a rag. **Caution must be taken around the moving parts of the machine during the cleaning process.**
5. Covers should be kept on the machine during operation and storage. Ultraviolet light will attack the polyurethane drive rollers and cause deterioration. Again, this type of damage is not covered under the warranty.

CHAPTER 8  
**DRIVE SYSTEM**



**Figure 14: Drive Roll Assembly**

CHAPTER 8  
**DRIVE SYSTEM**

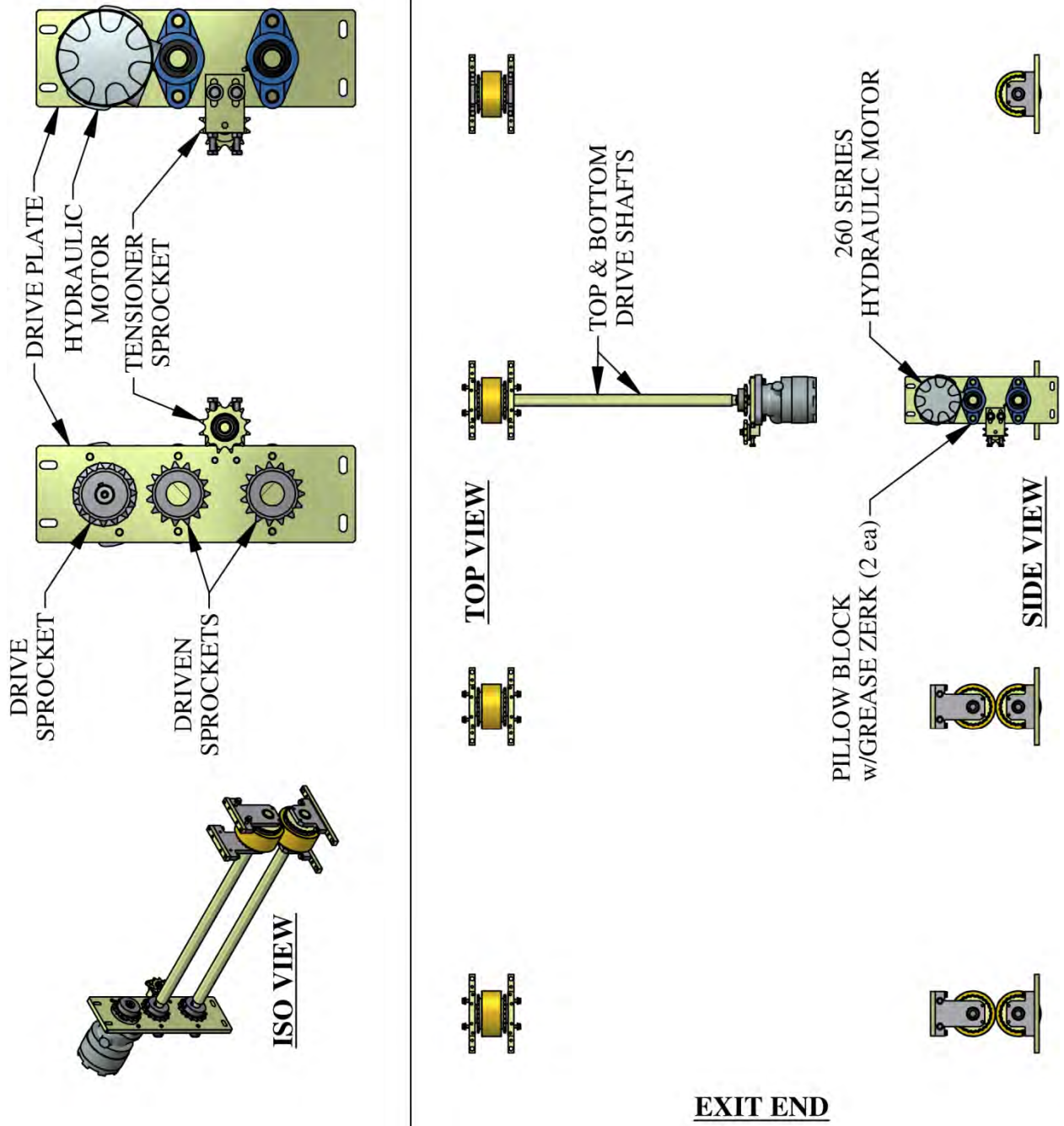
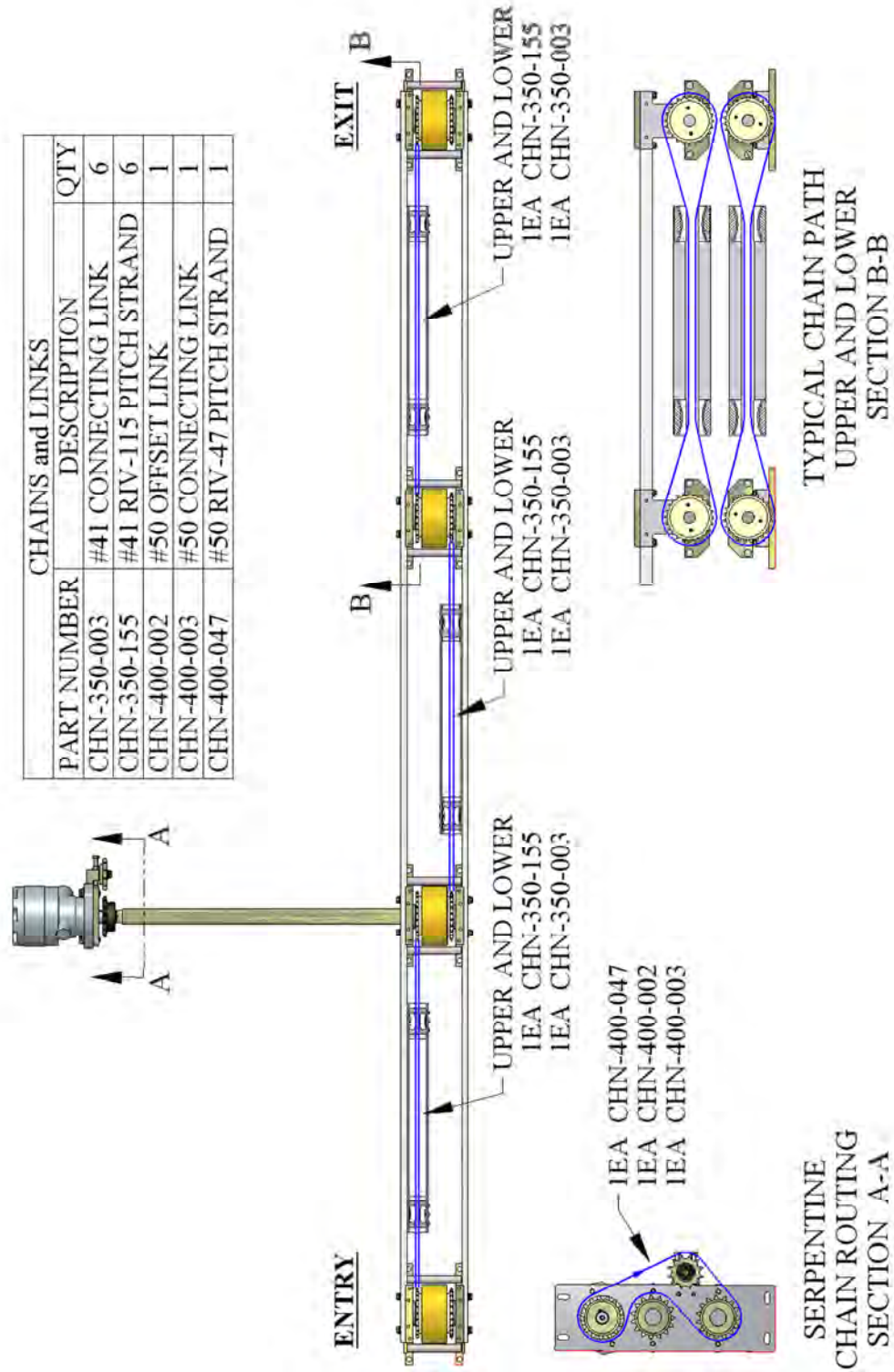


Figure 15: Sprockets and Shafts

CHAPTER 8  
**DRIVE SYSTEM**



**Figure 16: Upper and Lower Chains**

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 18 on page 31)

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 AND ADJUSTING ENTRY AND EXIT SHEAR DIES**

(Figure 17 and Figure 18 on pages 30 and 31)

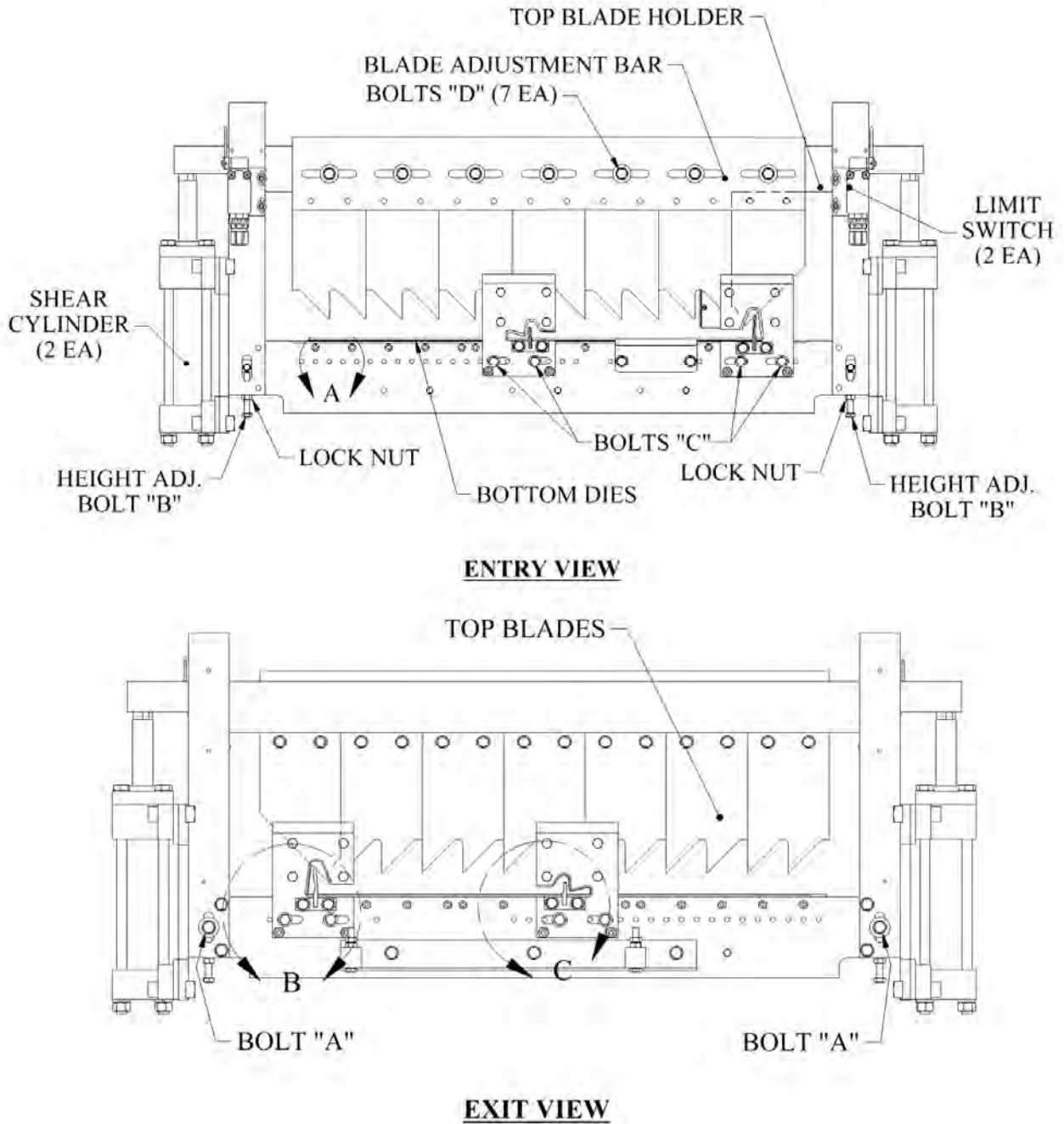
The Entry and Exit Shear Dies are specific to each roller set and they may need to be changed when changing profiles.

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 and Female Entry Dies** should be 1/32" or less away from the back side of the vertical leg of the 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



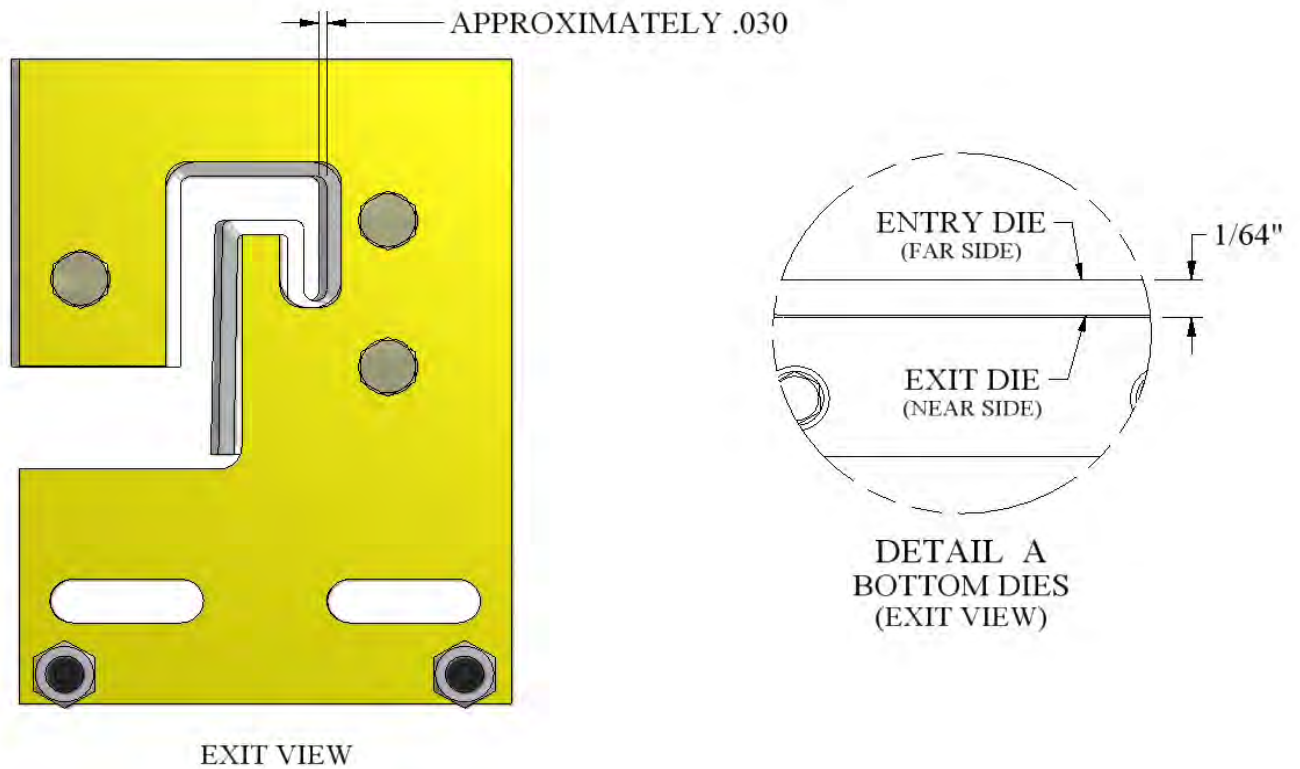
CHAPTER 9  
**SHEAR ASSEMBLY**

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 jogging it out another 2" so it can be viewed. If the cut is not satisfactory, re-adjust as necessary.

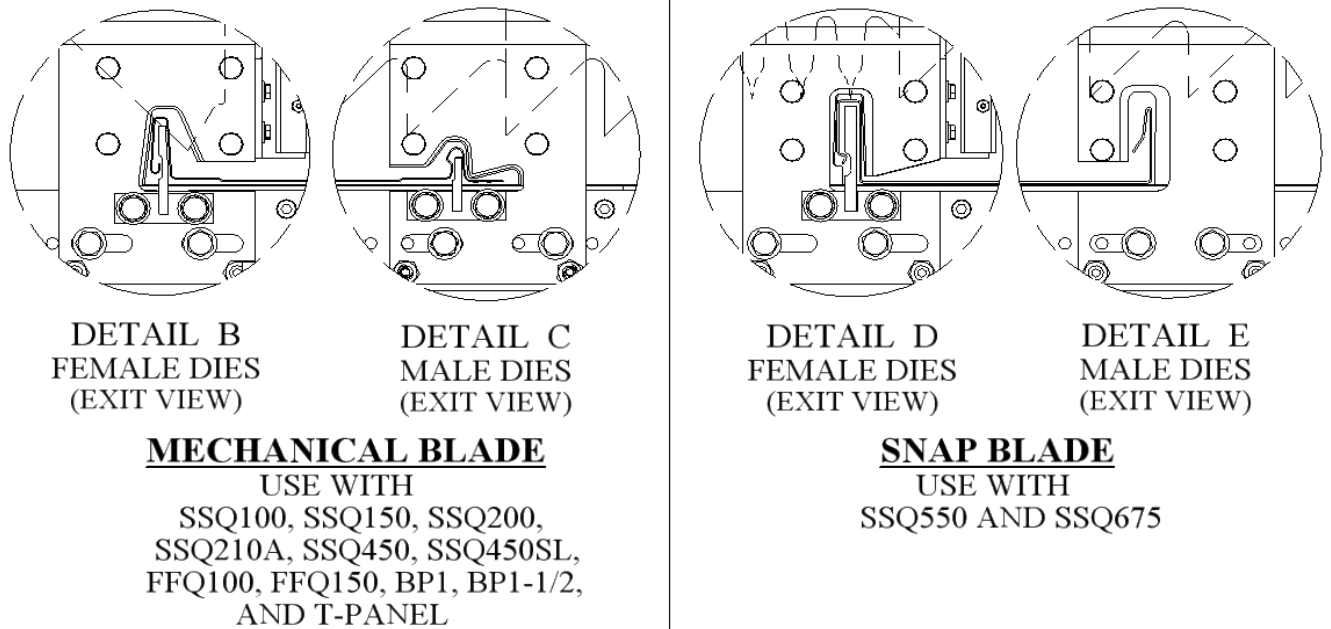


**Figure 17: Entry/Exit Views**

CHAPTER 9  
**SHEAR ASSEMBLY**



**BLADE ADJUSTMENT**



*Figure 18: Shear Die Detail Views*

CHAPTER 9  
**SHEAR ASSEMBLY**

**TOP SHEAR BLADE ADJUSTMENT**

(Figure 17 and Figure 18 – Details B and C on pages 30 and 31)

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. There should be a position that works for both Male and Female legs. 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 Syncolon (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**

(Figure 19 on page 34)

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

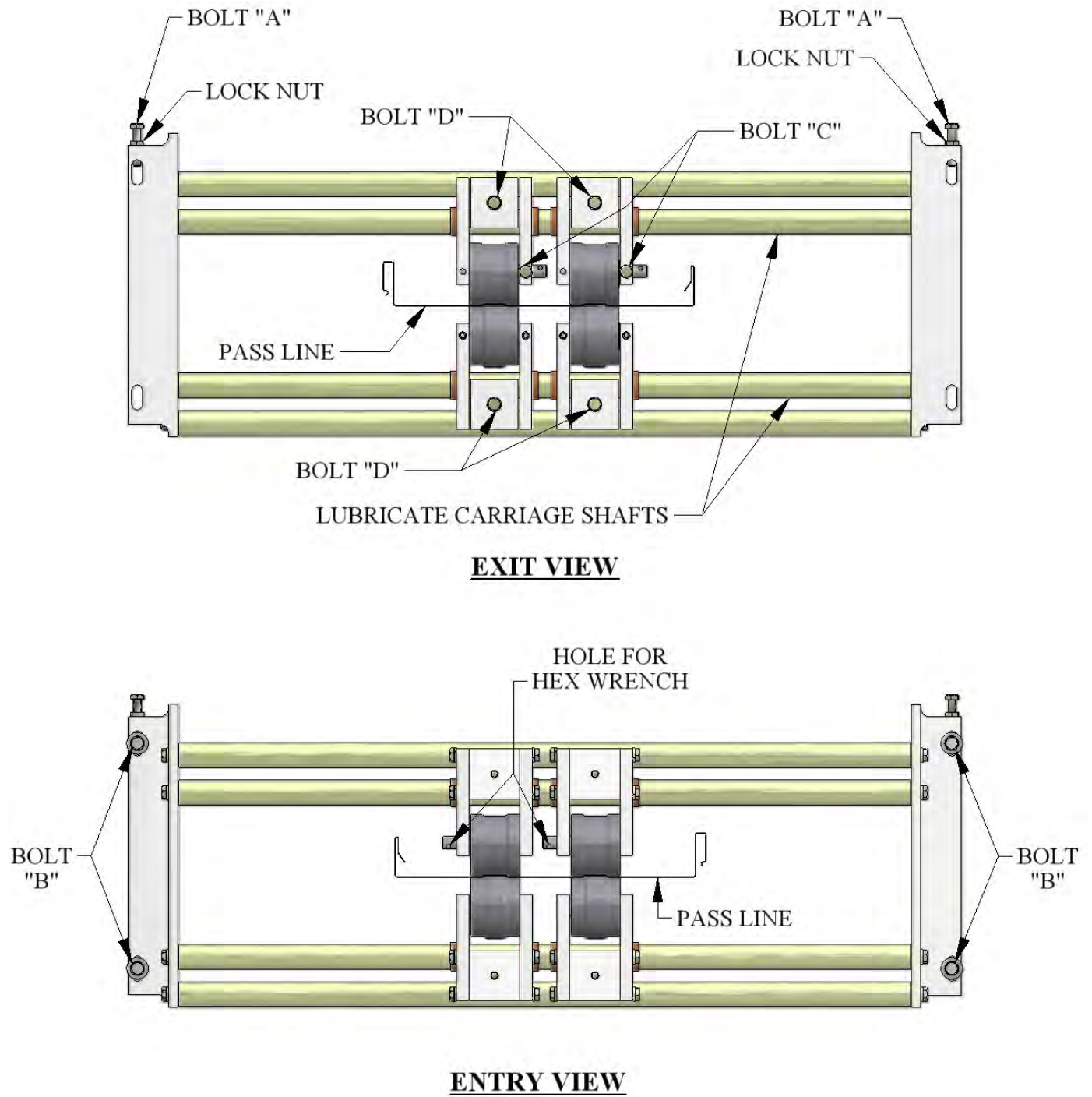
**SHUT OFF THE MACHINE AND DISCONNECT THE POWER BEFORE CONTINUING.**

4. Locate the bottom rollers to the desired position by sliding the assembly on the bottom slide bars. Tighten the bottom slide lock-down screws "D". Restart the machine and back up the panel until access is gained to the top slide lock-down screws,

**SHUT OFF THE MACHINE AND DISCONNECT THE POWER BEFORE CONTINUING.**

5. Loosen the top slide lock-down screws, and slide them into position so the top roller is directly over the bottom roller. Tighten the top slide lock-down screws "D". Next rotate the eccentric shaft down to the desired bead depth. **DO NOT** go below .045" minimum clearance; excessive bead depth will distort the panel. Re-tighten screws "C".
6. Keep slide bars lightly greased to allow bead or striation assemblies to slide smoothly.

CHAPTER 10  
**BEAD AND STRIATION ROLLER ASSEMBLY**



**Figure 19: Bead Roller Assembly**

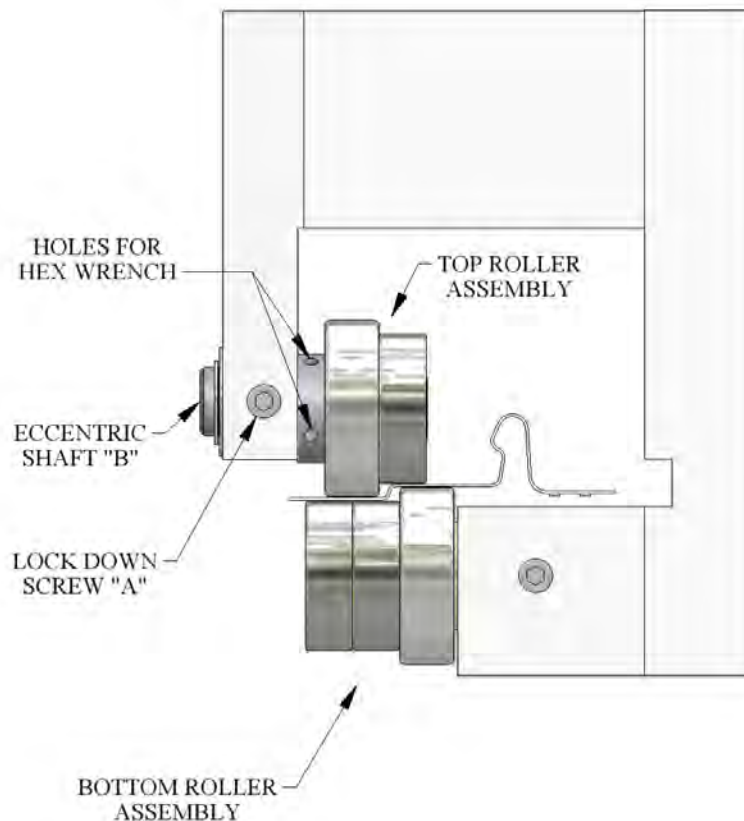
CHAPTER 11  
**CLIP RELIEF ROLLER ASSEMBLY**

## CLIP RELIEF ROLLER ASSEMBLY

(Figure 20 on page 35)

1. Clip Relief Rollers 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 34 to Figure 48 on pages 54 to 68).  
**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 20: Clip Relief Roller Assembly**

CHAPTER 12  
**ENTRY DRUM ASSEMBLY**

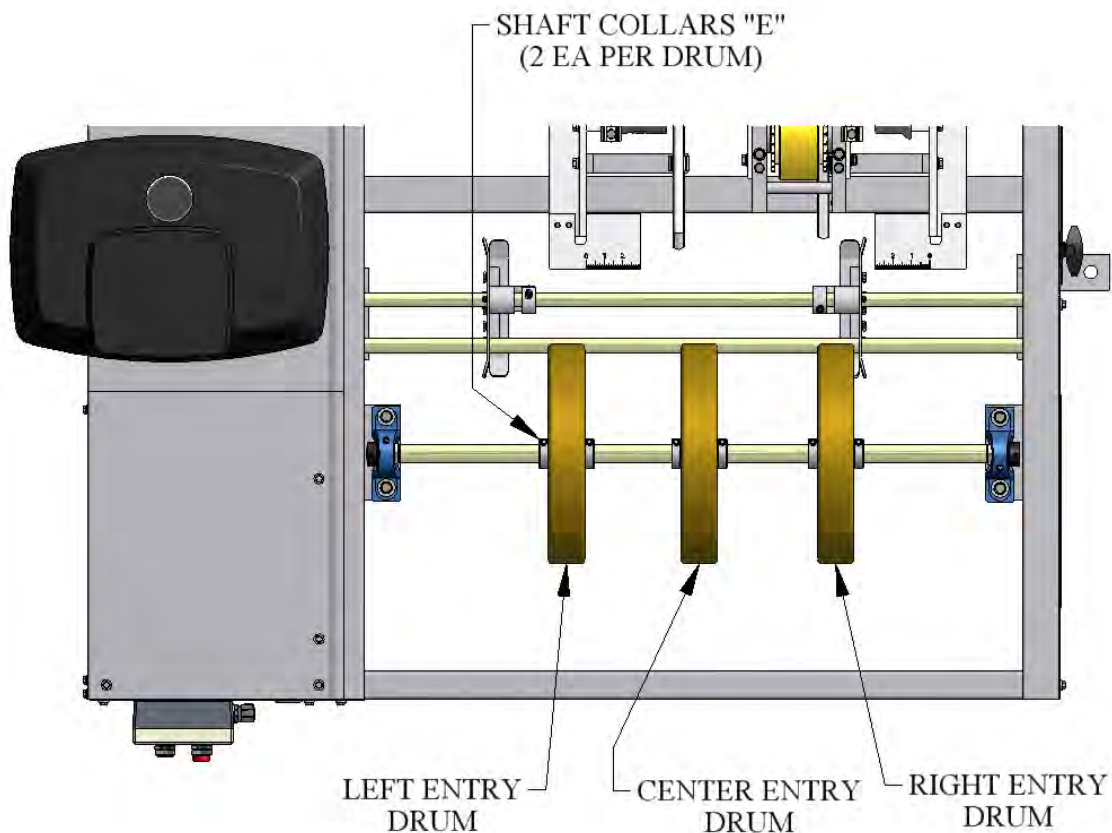
## ENTRY DRUM ASSEMBLY

(Figure 21 on page 36)

The Entry Drum Assembly is necessary when feeding coil off of the optional DR1/ Dual Overhead Reel Stand. It allows the material to be routed around the drums to get the painted side of the coil on the top as it enters 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.
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 changing profiles, it may be necessary to move all three drums using the same procedure described above.



**Figure 21: Entry Drum**

CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**

## **WIDTH AND PROFILE CHANGE PROCEDURE**

The profile changeover procedure consists of removing the tooling assemblies and shear dies from the machine, replacing them with another set and realigning the rails and shear dies. A change in coil width can also be done at this time. The following procedure will be a guide through this process.

**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.**

### ***Tooling Changeover***

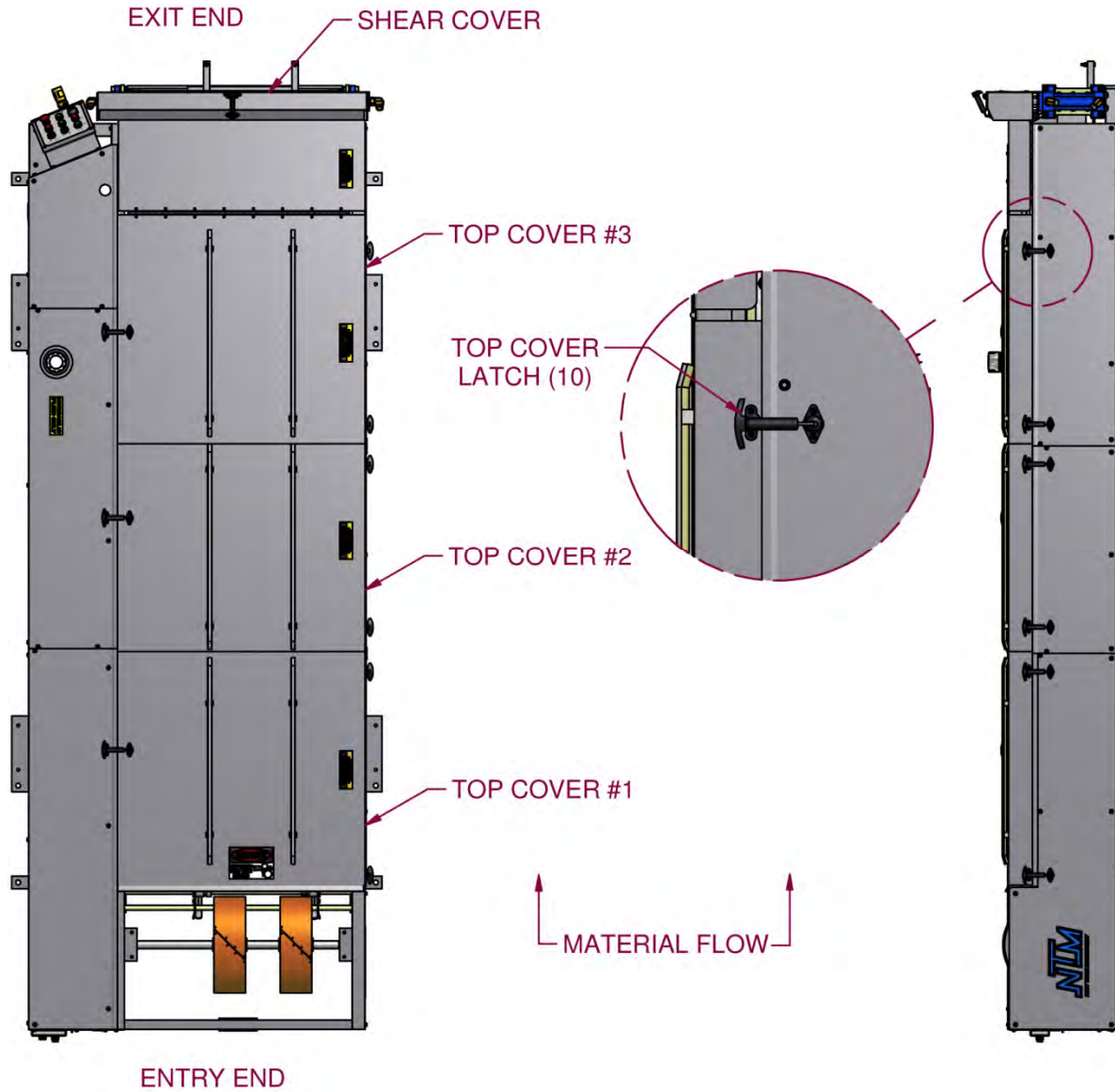
(Figure 22 and Figure 23 on pages 38 and 39)

Tooling rails are stamped with an "L" or "R" for installation on the left or right side, and with a profile number and sequence number. For example a rail stamped SS4-#1 R would be the number one right tooling rail for the SS450 profile.

1. Disengage top cover latches on #1, #2, and #3 top covers. Remove and set aside.
2. Remove Shear Cover and set aside.
3. Locate and remove the "A" bolts on the left tooling rail #1. Remove rail and set it aside.
4. Using the same procedure as above remove the remaining left and right tooling rails and set them aside for storage.
5. Locate #1 right tooling rail of the profile to be installed.
6. Carefully lower it into the machine and set it on the right carriage slide #1.
7. Align the tooling mounting holes "A" and start one "A" bolt into threaded hole beneath. Snug this bolt enough to hold tooling in place but **DO NOT TIGHTEN**. Align second hole and start bolt into threaded hole beneath.
8. Tighten "A" bolts.
9. Locate remaining right tooling rails #2, #3 etc. and install in the same manner as above.
10. Repeat the above procedures on the left side of the machine until all tooling rails are installed.

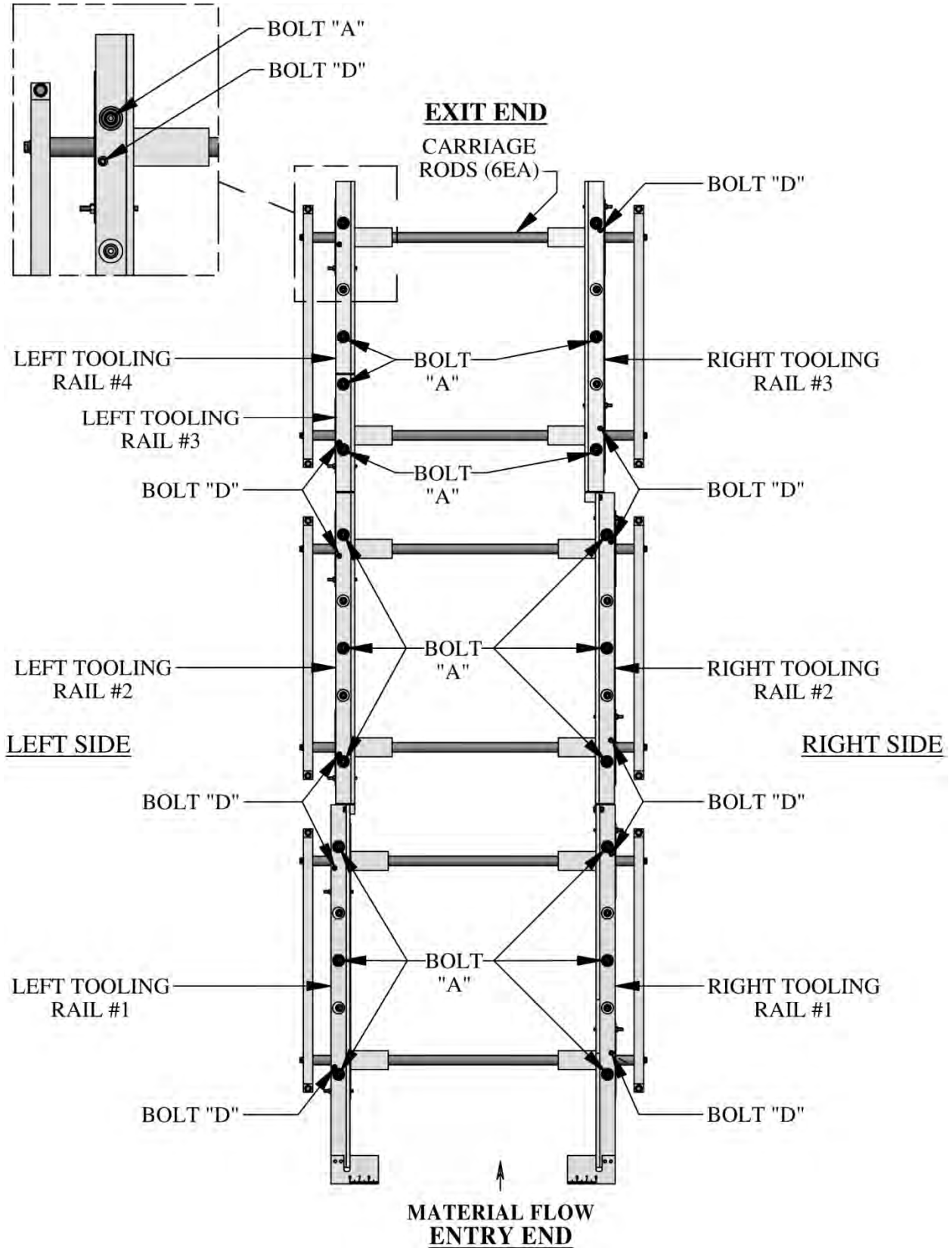


CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**



*Figure 22: Remove Covers*

CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**



*Figure 23: Tooling Rail Detail*

CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**

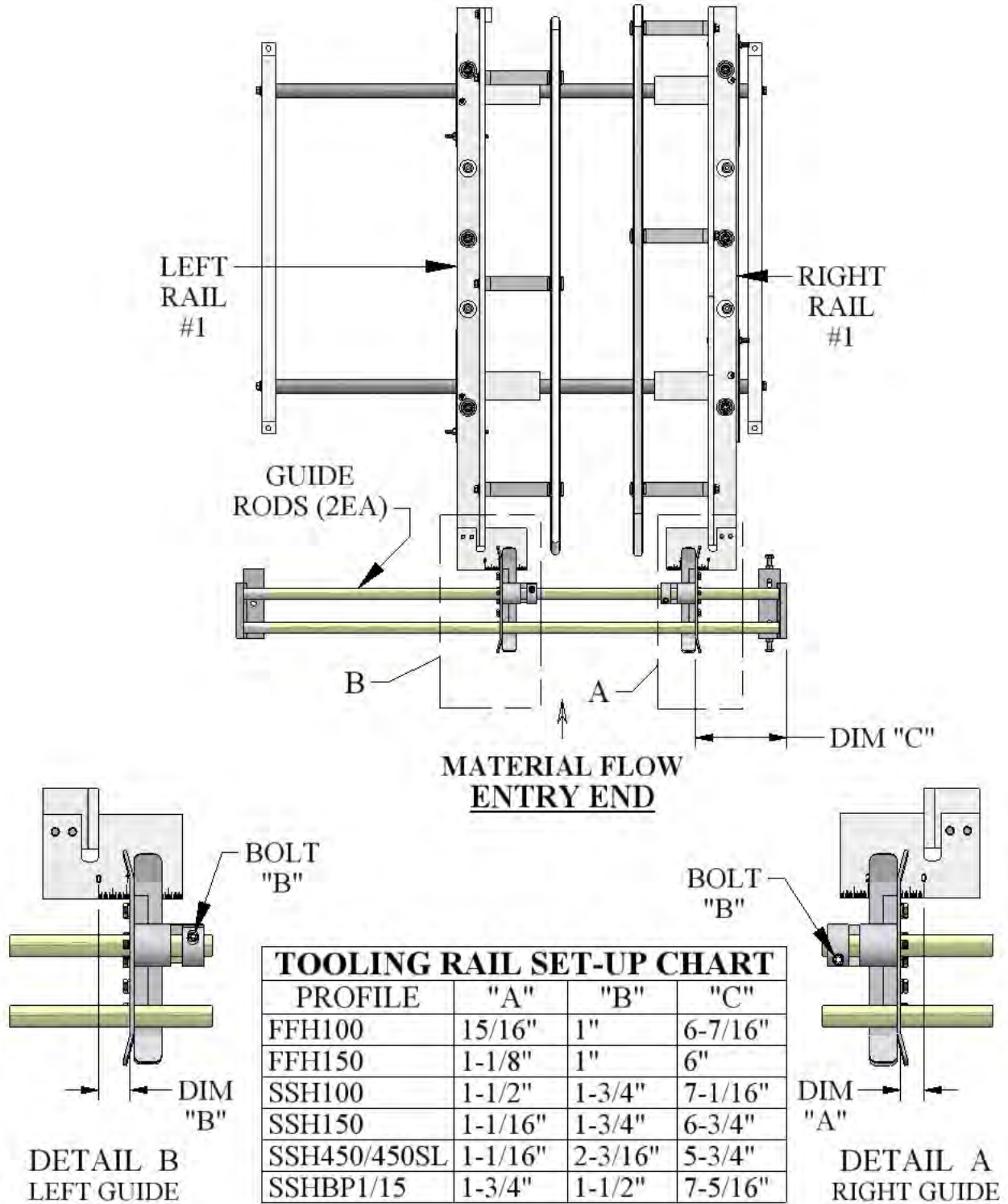
***Entry Guide Adjustment***

(Figure 24 on page 41)

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. To align, loosen the “B” Bolt on the Right Entry Guide. Slide the entry guide to the left or right until DIM “C” is in the correct position that corresponds to the desired leg configuration as noted on Figure 24
2. Retighten the “B” bolt.
3. Loosen bolt “B” on the Left Entry Guide.
4. Cut a 12” long piece of gage material from the coil that will be used.
5. Slide gage material between the left and right entry guides.
6. 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 “B” bolt.

CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**



CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**

***Tooling Rail to Entry Guide Alignment***

(Figure 23 and Figure 24 on pages 39 and 41)

The #1 tooling rails are adjusted in and out on the slide carriages to line up to the entry guides. The #2 tooling rails are adjusted in and out to line up with the #1 tooling rails. Finally, the #3 tooling rails are adjusted in and out to line up with the #2 tooling rails. If the tooling is not adjusted correctly the material will not be fed into the forming rollers properly.

1. Loosen the two slide lock bolts “D” on right carriage slide # 1.
2. Move Right Carriage Slide # 1 into position using the side of the right entry guide and the scale on the marker plate to set the correct “A dimension as shown on corresponding tooling rail set up chart.
3. Repeat the above procedure for the left carriage slide # 1 using the correct “B” dimension on tooling rail set up chart.
4. Align the # 2 and #3 Left and Right Carriage Slides by loosening the two “D” slide lock bolts on each rail. If there is a spacer bolted to the side of the previous rail, align the carriage rail flush to the spacer. If not, align the rails flush with each other.
5. Proceed with each rail in succession from #1 to # 2 to #3, right and left as stated above

***Shear Changeover***

(Figure 17 on page 30)

There are four shear die holders (female entry and exit and male entry and exit). The dies must be removed, replaced and re-aligned utilizing the shear dies for the new profile.

1. Locate and remove two “C” bolts on exit female die holder. Set die holder aside.
2. Repeat the above procedure for entry female die holder and male exit/ entry die holders. Set all four-die holders aside to storage.
3. Locate the four die holders corresponding to the profile that was just installed into the machine. Install the new die holders with the “C” bolts but do not tighten as the shear should be adjusted with material fed into the machine.

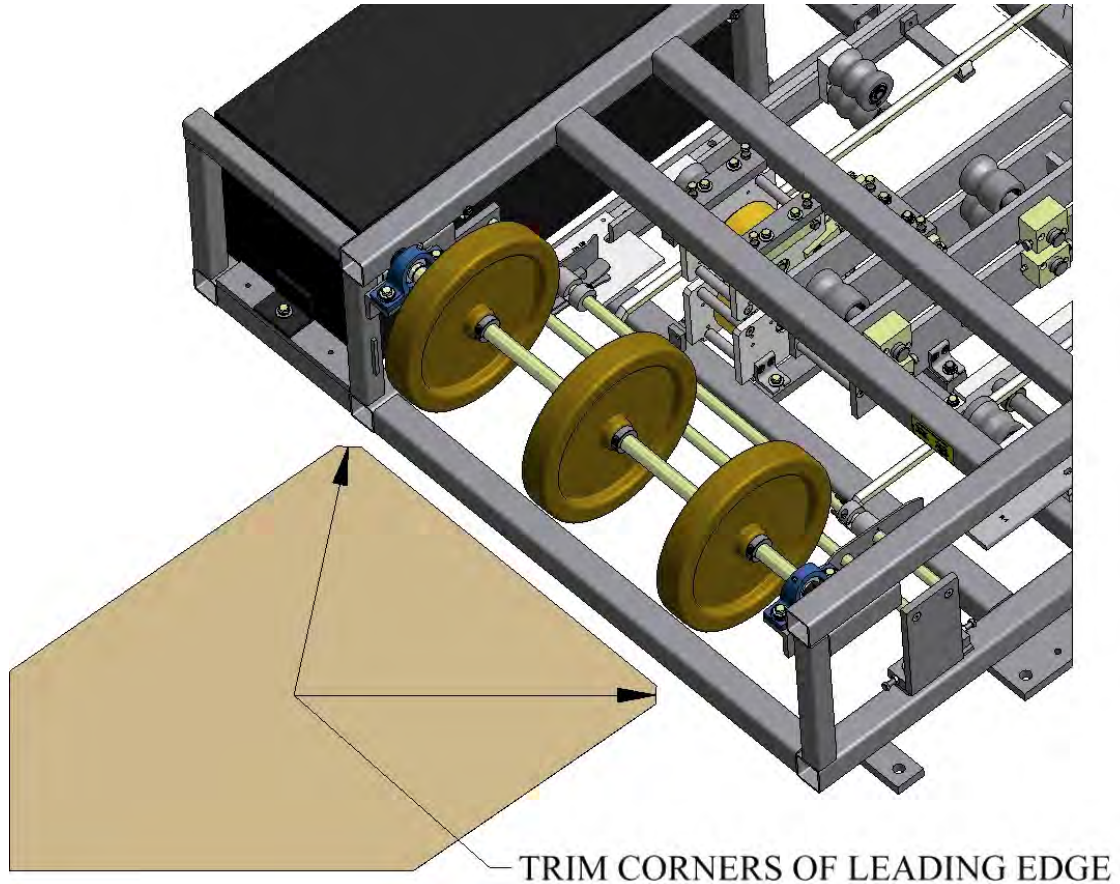
***Loading Machine with Material***

1. Load material onto the Expandable Arbor and align it to the correct position using the chart on Figure 8 on page 17.

Note: Also see REEL STANDS, REELS AND EXPANDABLE ARBORS on page 16 for more information.

2. 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 on Figure 10 on page 21.
3. Cut a 1” triangle off of the 2 leading corners of the coil and feed it into the entry guides as shown in Figure 25 on page 43.

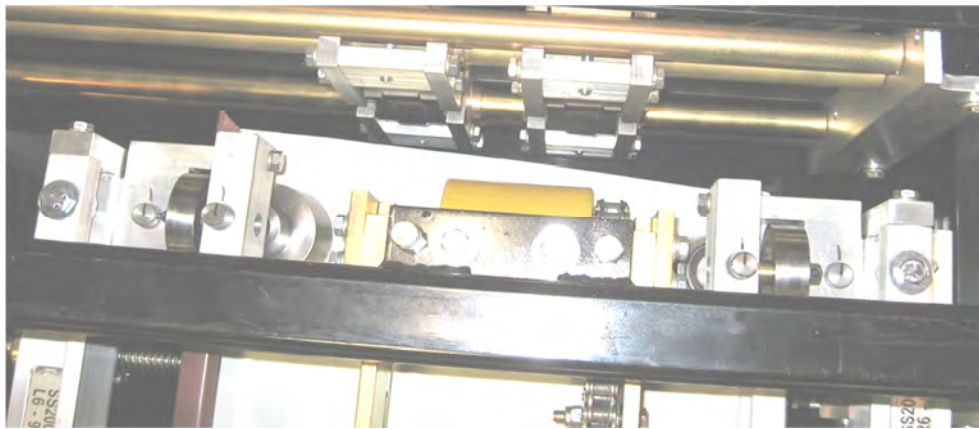
CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**



**Figure 25: Feeding Material into Entry Guides**

4. Start the machine and use the Jog button on the manual control box or computer controller to jog the material through the machine 6 to 8 inches at a time until it exits the last forming stations and the leading edge is about 1" from the Bead Roller Assembly (if equipped).

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



**Figure 26: Material Entering Bead Rollers**

CHAPTER 13  
**PROFILE CHANGEOVER PROCEDURE**

***Bead Rollers (if equipped)***

(Figure 19 on page 34)

If the machine is equipped with a bead roller option and the panel requires beads to be on the panel, use the following procedure to adjust the bead rollers.

1. Determine the spacing needed. For Example: a 12” wide panel with 2 beads centered on the panel would need 3 equal spaces or 12” divided by 3 equals 4” from center to center of each bead. Hook the end of the tape measure on the outside bottom corner of the female leg. Use a magic marker or grease pencil to mark the 4” and 8” locations on the panel. There are now 3 equal spaces.
2. Loosen Bolts “D” on the top and bottom bead assemblies and slide each bottom and top roll assembly left or right to center them on the marks on the panel made in the previous step.
3. Lock the 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.
4. Check the gap between the top and bottom bead rollers using a feeler gauge. An approximate setting of 1½ times the material thickness is recommended. This setting can be adjusted slightly in either direction according to preference.
5. To set or change the gap between top and bottom beads, loosen the "C" bolt on both top rollers.
6. 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.
7. 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.
8. Tighten the “C” bolt to lock the position of the shaft.
9. Start the machine, jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies.
10. Inspect the beads for depth and re-adjust as necessary.
11. 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.***

***Shear Alignment***

(Figure 17 and Figure 18 on pages 30 and 31)

With material loaded in the machine and stopped before it gets to the shears, use the following procedure to adjust the shear dies in order to cut the material.

1. 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.
2. Check the exit shear die to ensure that the material will pass through it. If not adjust as necessary.

## **PROFILE CHANGEOVER PROCEDURE**

3. 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.**
4. 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 27 on page 45) *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 27: Exit Die Adjustment**

5. 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.
6. 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.
7. Start the machine and press the shear down button to cut off the panel, then jog the material through the shear again and stop.
8. Inspect the two cuts and adjust the dies as necessary until an acceptable cut is made. See SHEAR ASSEMBLY section on page 29 for more information.  
**TURN THE MACHINE OFF BEFORE MAKING ANY ADJUSTMENTS.**
9. Once a satisfactory cut has been made then the machine is ready to run panels.



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

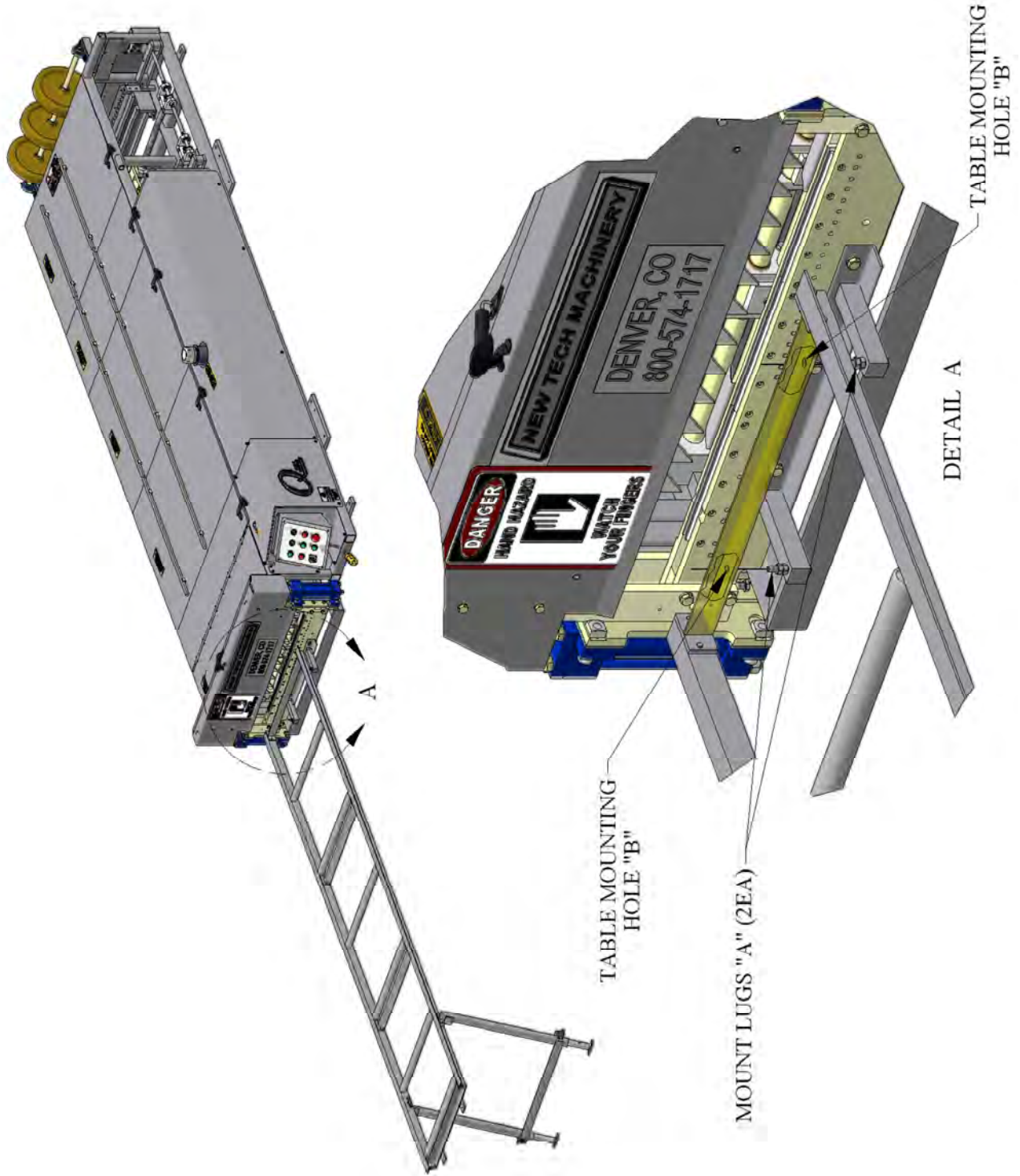
### **RUN OUT TABLES AND REMOTE LIMIT SWITCH**

(Figure 28 and Figure 29 on pages 47 and 48)

The Run-Out Table attaches to the Exit End of the Shear assembly, and is used to support the panel as it exits the machine. 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 5 on page 14) is designed to be used with the run out tables for controlling panel length.

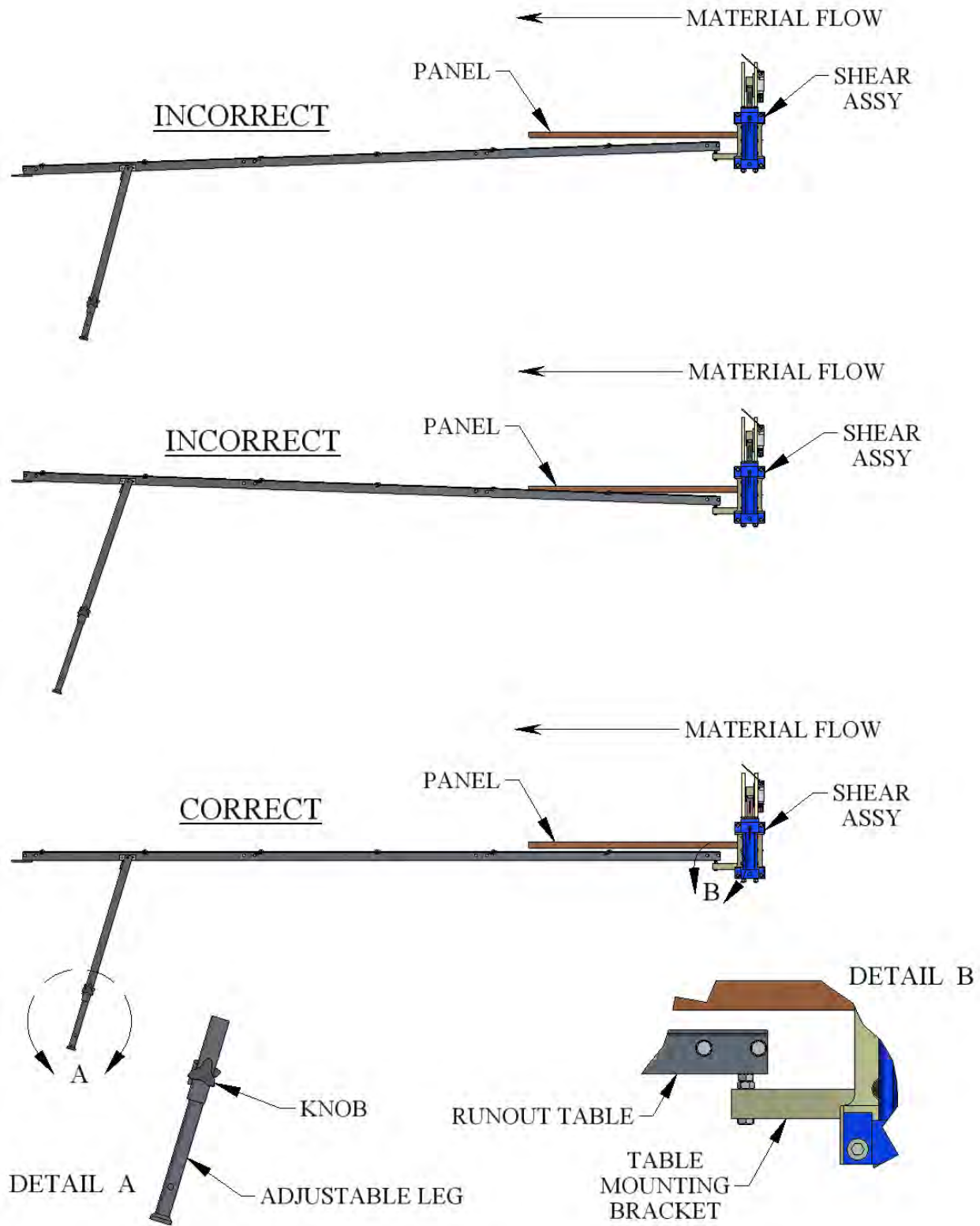
1. Set the first Run-Out Table on its side and in front of the machine with the leg assembly away from the shear.
2. Open the leg assembly and set it upright on the ground.
3. Lift the attachment end of the table and drop it over the 2 threaded bolts on the Shear Run-Out Table Bracket.
4. Loosen the 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 29 on page 48 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.

**RUN OUT TABLES AND REMOTE LIMIT SWITCH**



**Figure 28: Run Out Table**

CHAPTER 14  
**RUN OUT TABLES AND REMOTE LIMIT SWITCH**



*Figure 29: Run Out Table Setup*

CHAPTER 15  
**QUICK CHANGE POWER PAC**

## **QUICK CHANGE POWER PAC (QCPP)**

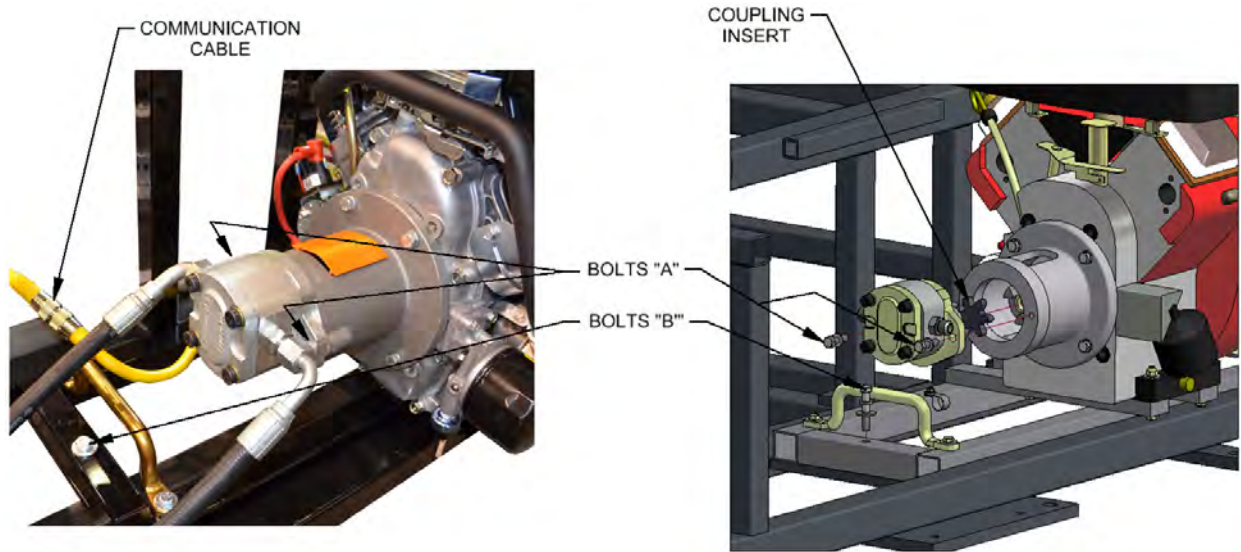
(Figure 30 and Figure 31 on pages 49 and 50)

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

### **POWER PAC REMOVAL**

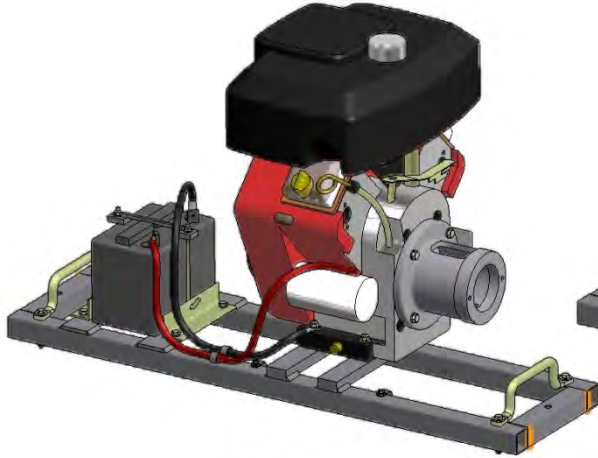
1. Remove the screws holding the Left Cover on the machine. Set cover aside.
2. Separate the Male /Female Connectors of the Main Communication Cable by unscrewing them from each other.
3. Using a 9/16" wrench, remove the two 3/8" bolts connecting the hydraulic pump to the motor-pump adapter and set aside for later use.
4. Un-couple the pump from the adapter as well as the coupling insert found in the pump adapter.
5. Using a 9/16" wrench, remove the two 3/8" bolts connecting the Power Pac to the machine frame.
6. Using the two handles, lift the Quick Change Power Pac out of the machine and set it aside.

Install new Power Pac in reverse order.

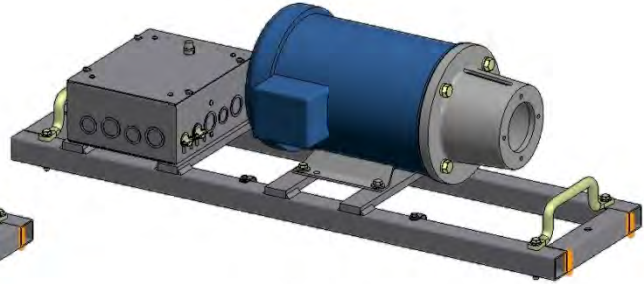


**Figure 30: Quick Change Power Pac Fasteners**

CHAPTER 15  
**QUICK CHANGE POWER PAC**



**QCPP-GAS**



**QCPP-ELECTRIC**

*Figure 31: Quick Change Power Pac Types*

CHAPTER 16  
**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: Adjust the pressure switch (Figure 12 on page 24) 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 shown on the next cut made.

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

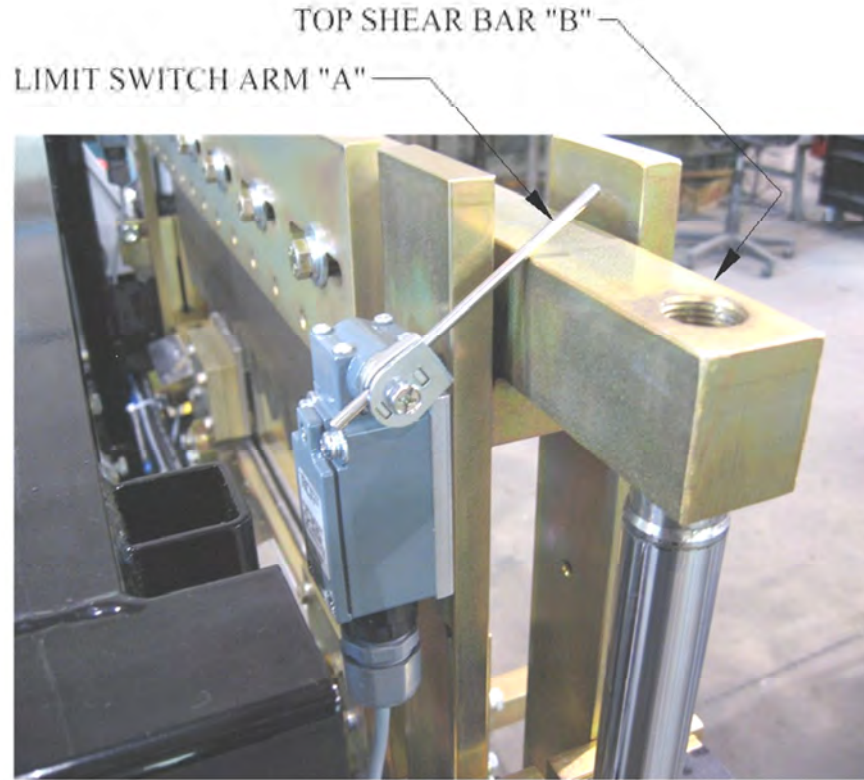
SOLUTION: Press and hold the Green Shear Down Button until the panel is cut off. Remove the cut panel and jog material out 2 or 3 inches past the shear. Adjust the pressure switch (**Error! Reference source not found.** on page ) by turning the silver knurled sleeve “A” clockwise 1/8 of a turn. Press the Shear Down Button again. Check to see if the panel is cut off completely. If not, repeat this procedure until the cut is made with one stroke of the shear. **Note:** If the sleeve is turned too far CW, problem #1 above will be shown on the next cut made.

- 3. Shear is at the top of the stroke, the hydraulic system can be heard laboring and the next panel cannot be run.**

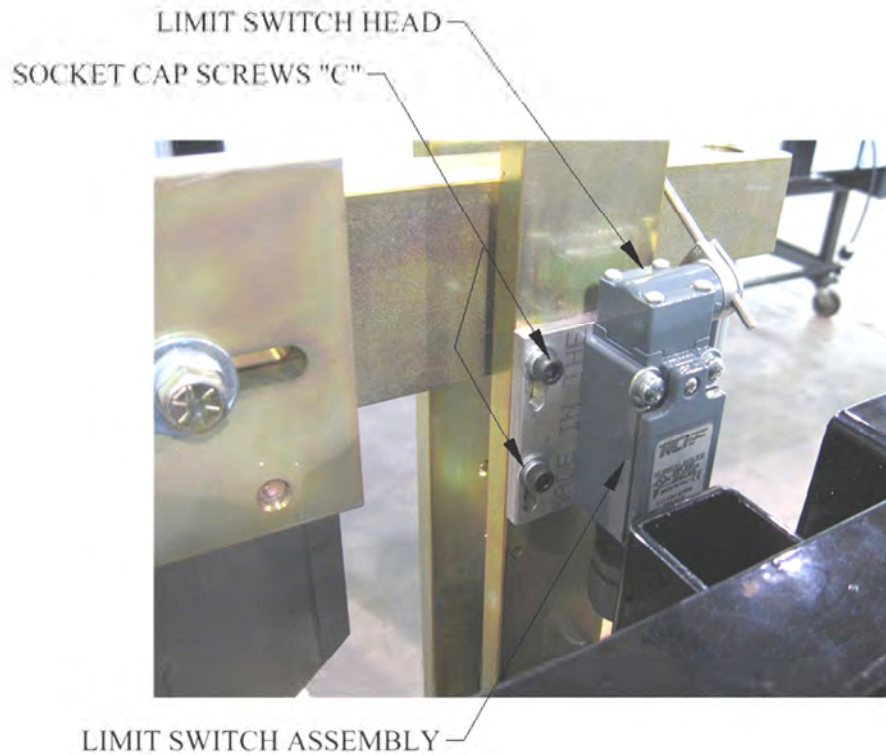
SOLUTION: Remove the Shear Cover. Note the 2 Limit Switch Arms “A” (Figure 32 on page 52). Lift the arms one at a time. If one of them stops the hydraulic system laboring then that Limit Switch arm needs to be adjusted. If neither of them stops it, lift both arms at the same time to see if it stops. If it does then both arms need adjusting.

ADJUSTMENT: Loosen socket cap screws “C” (Figure 33 on page 52). Move limit switch down until a click is heard. Tighten socket cap screws “C”. 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 next panel should be able to run.

CHAPTER 16  
**TROUBLESHOOTING**



**Figure 32: Top of Stroke Limit Switch**



**Figure 33: Limit Switch Adjustment Screws**

CHAPTER 16  
**TROUBLESHOOTING**

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 18 on page 31).

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 17 and Figure 18 on pages 30 and 31).

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 7).

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

SOLUTION #1: Check fuse inside of Manual Control Box. Replace if blown with a 10-amp fuse (Figure 6 on page 15).

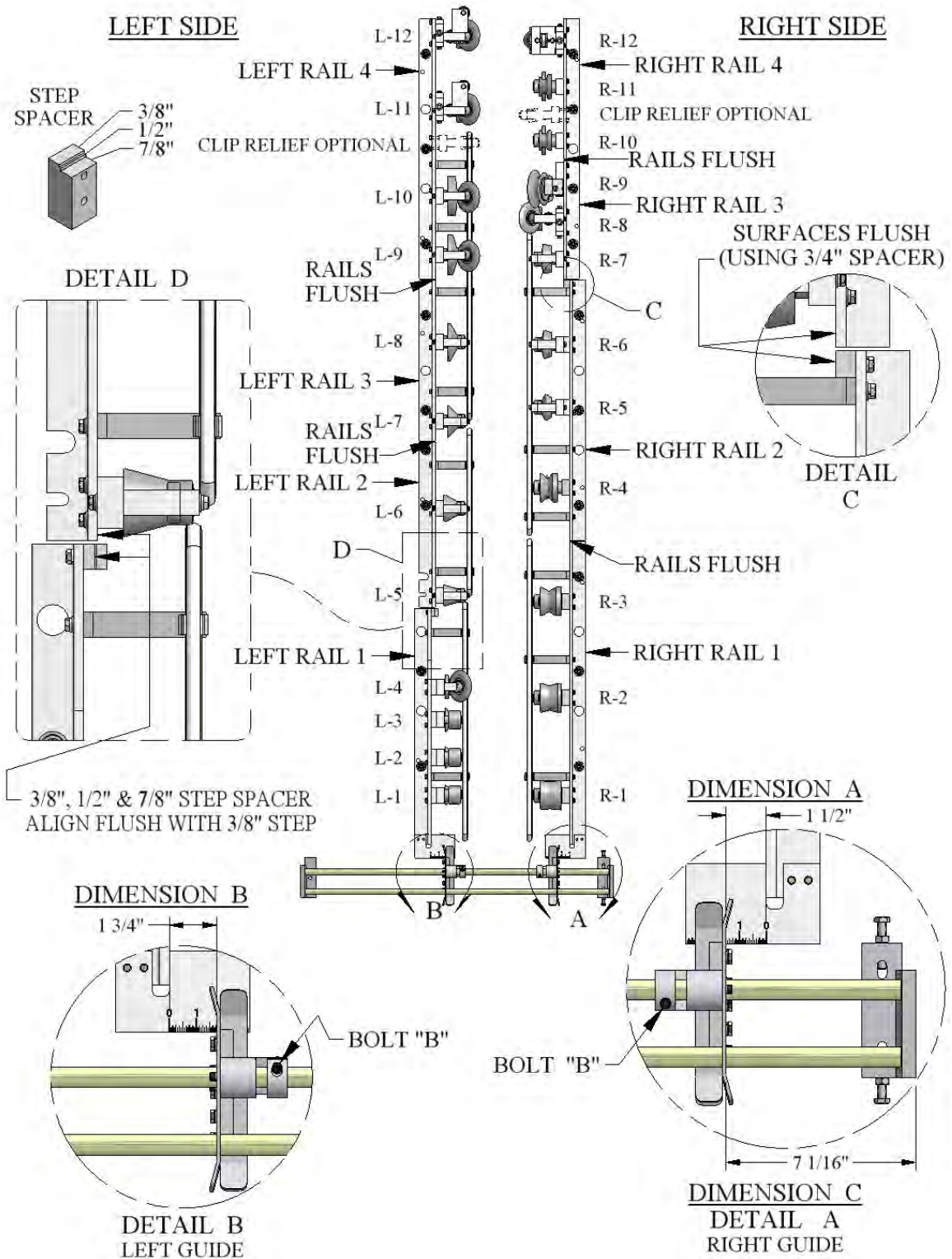
SOLUTION #2: If the machine is utilizing a gasoline engine, check the condition of the battery. The control system requires 12 volts to operate properly. Replace or charge battery as required.

SOLUTION #3: Make sure that the Main Control Cable (Figure 4 on page 13) is properly connected to the connector on the front of the Control Panel.



CHAPTER 17  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 34: SSH100 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

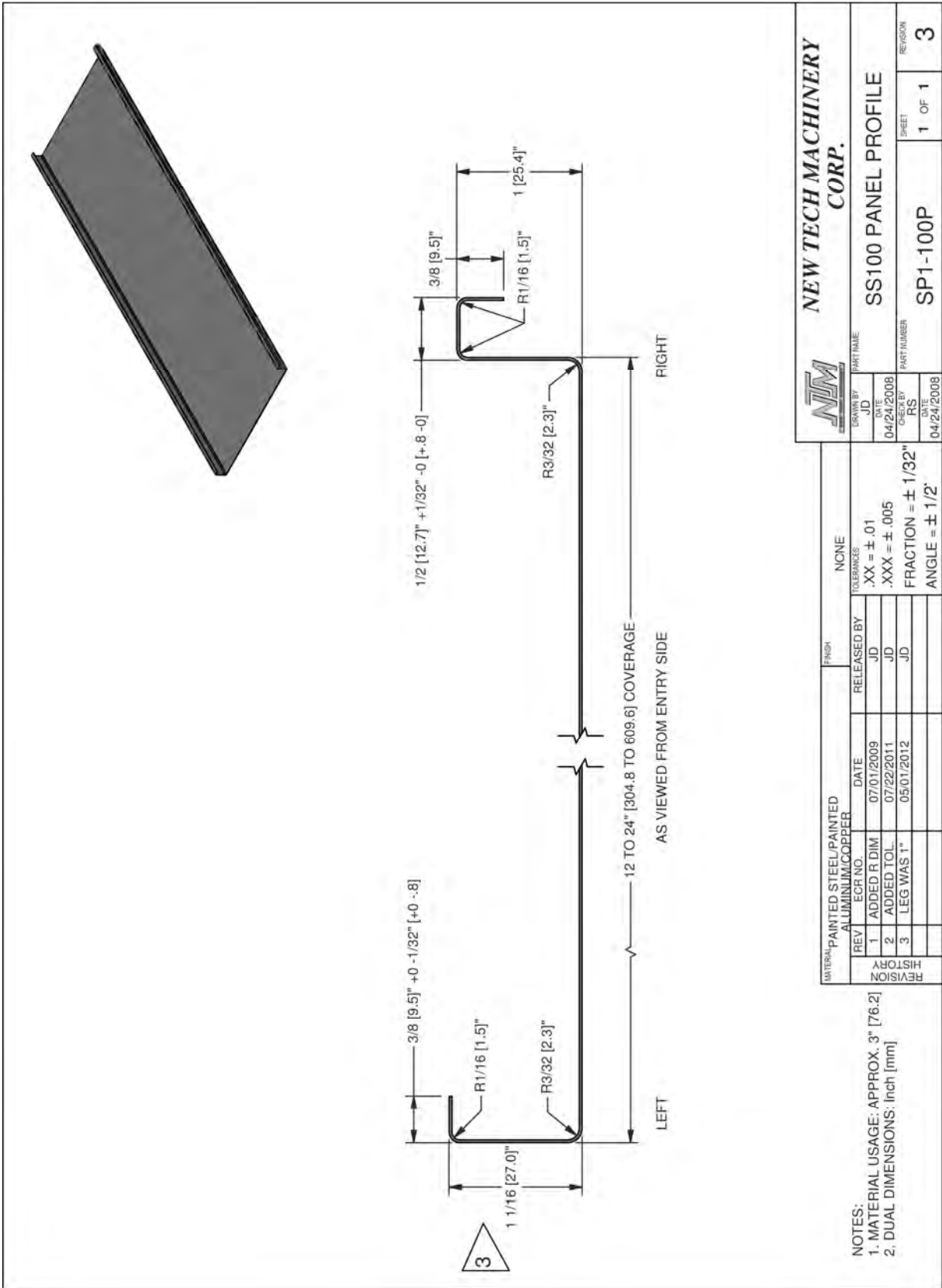
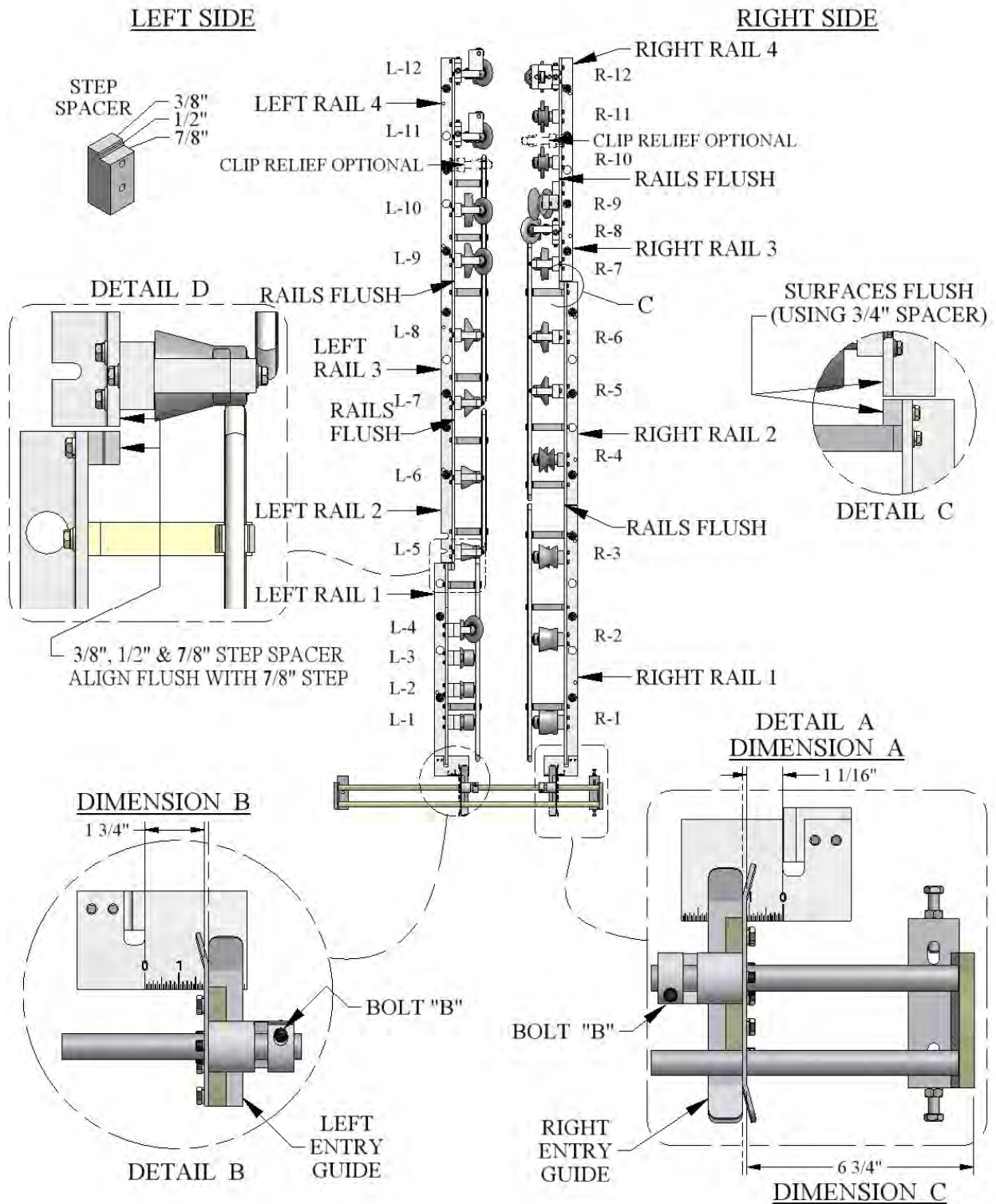


Figure 35: SS100 Panel Profile

CHAPTER 17  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 36: SSH150 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

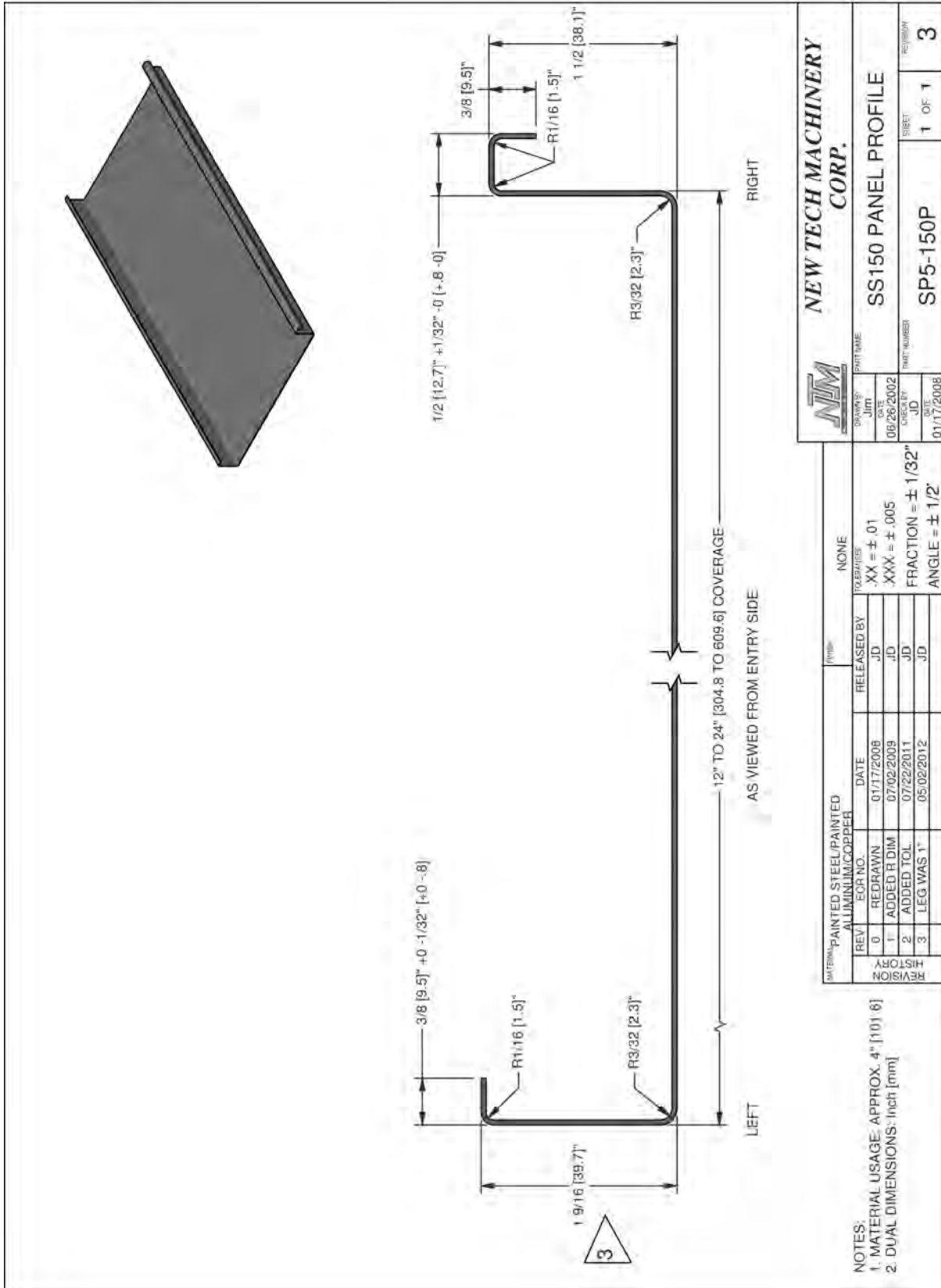
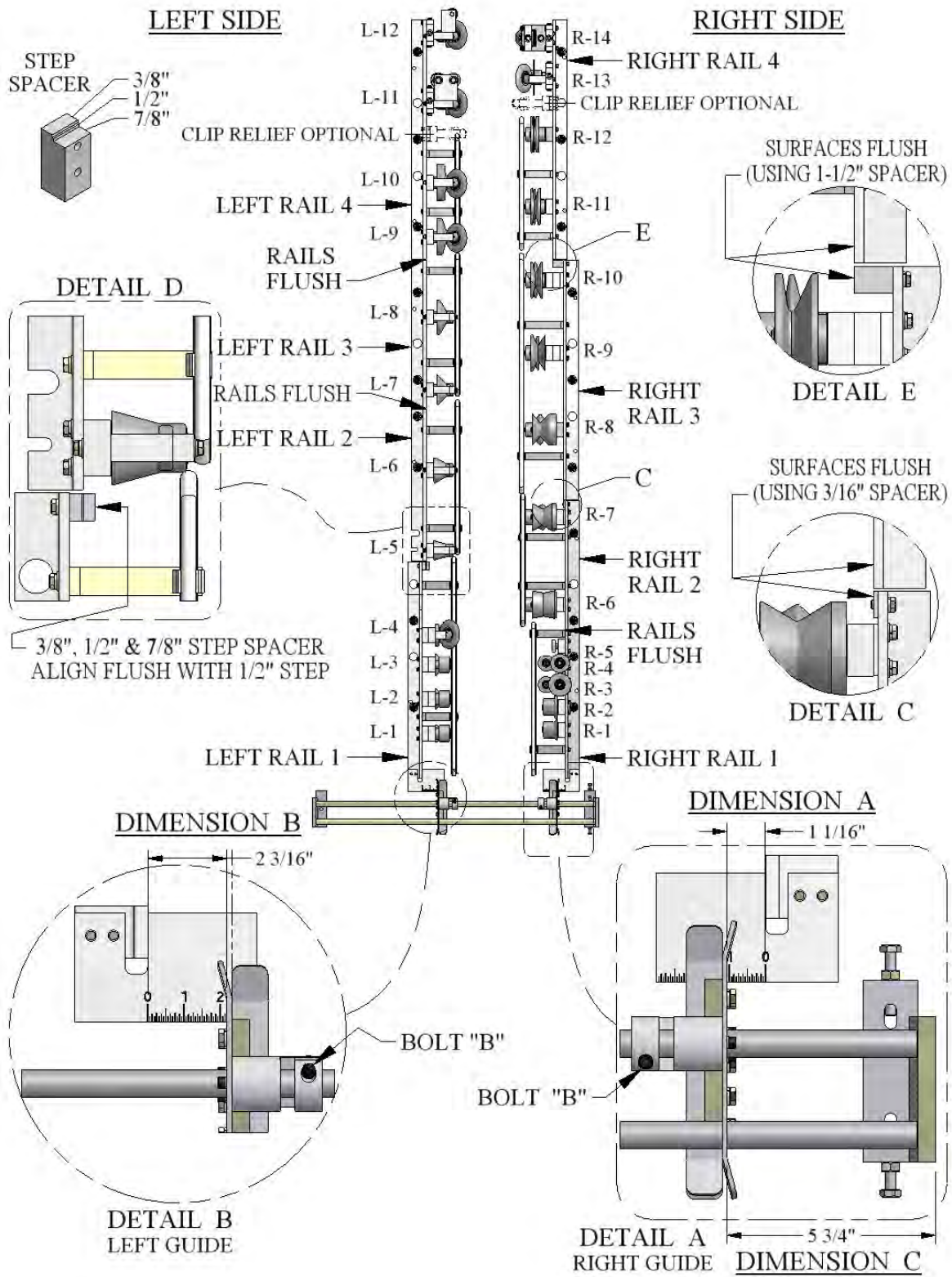


Figure 37: SS150 Panel Profile

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**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 38: SSH450/450SL Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

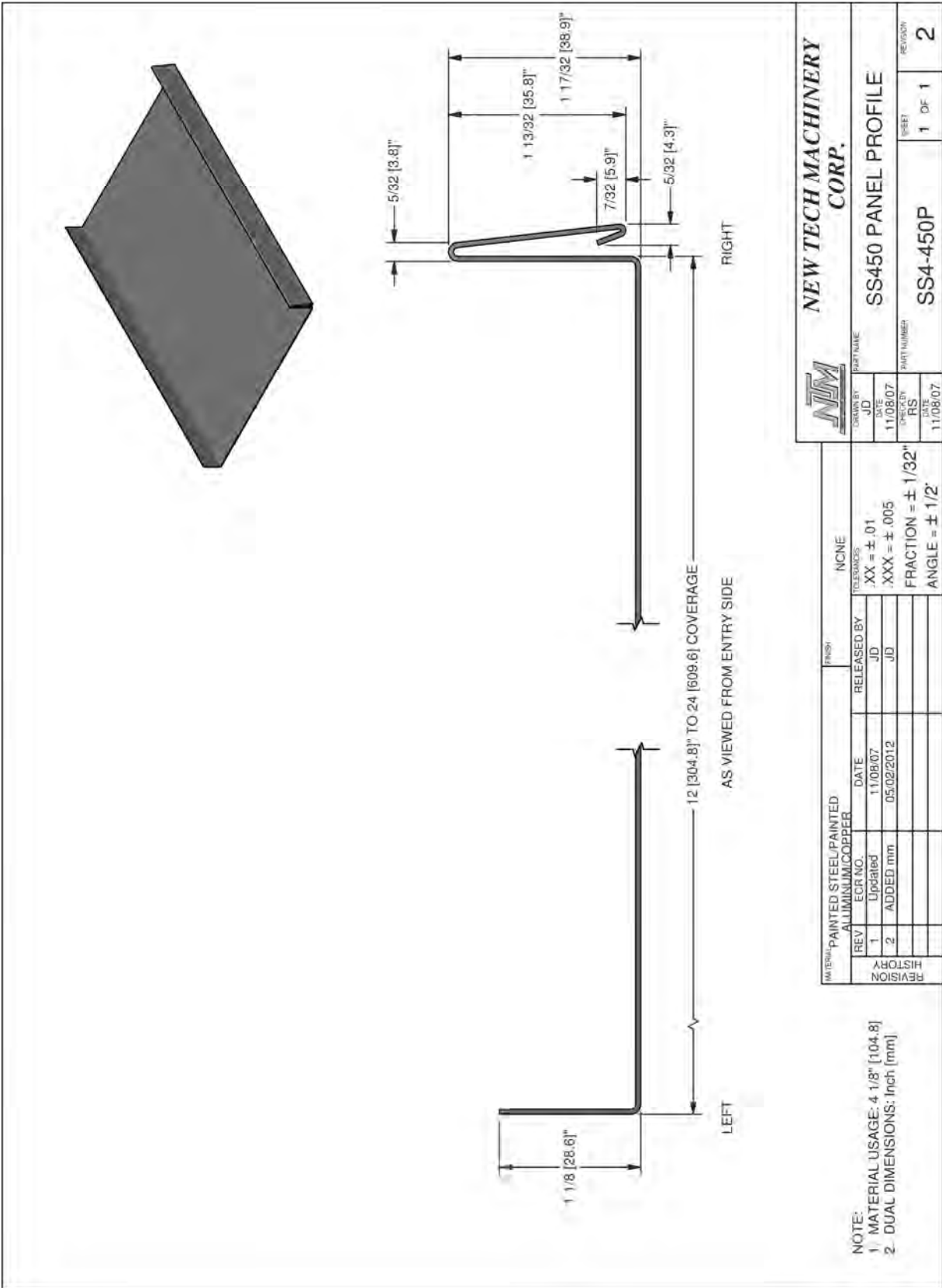
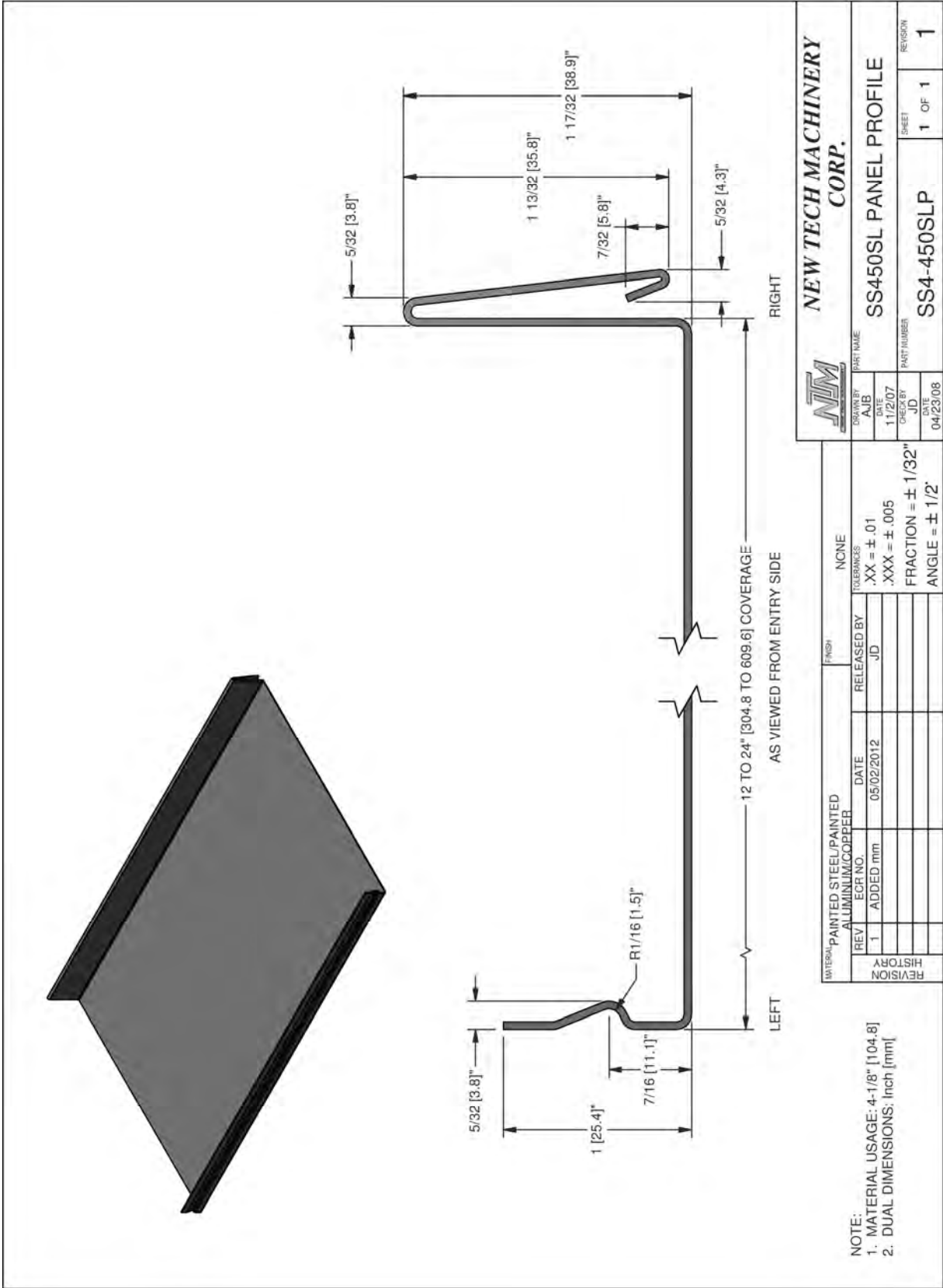


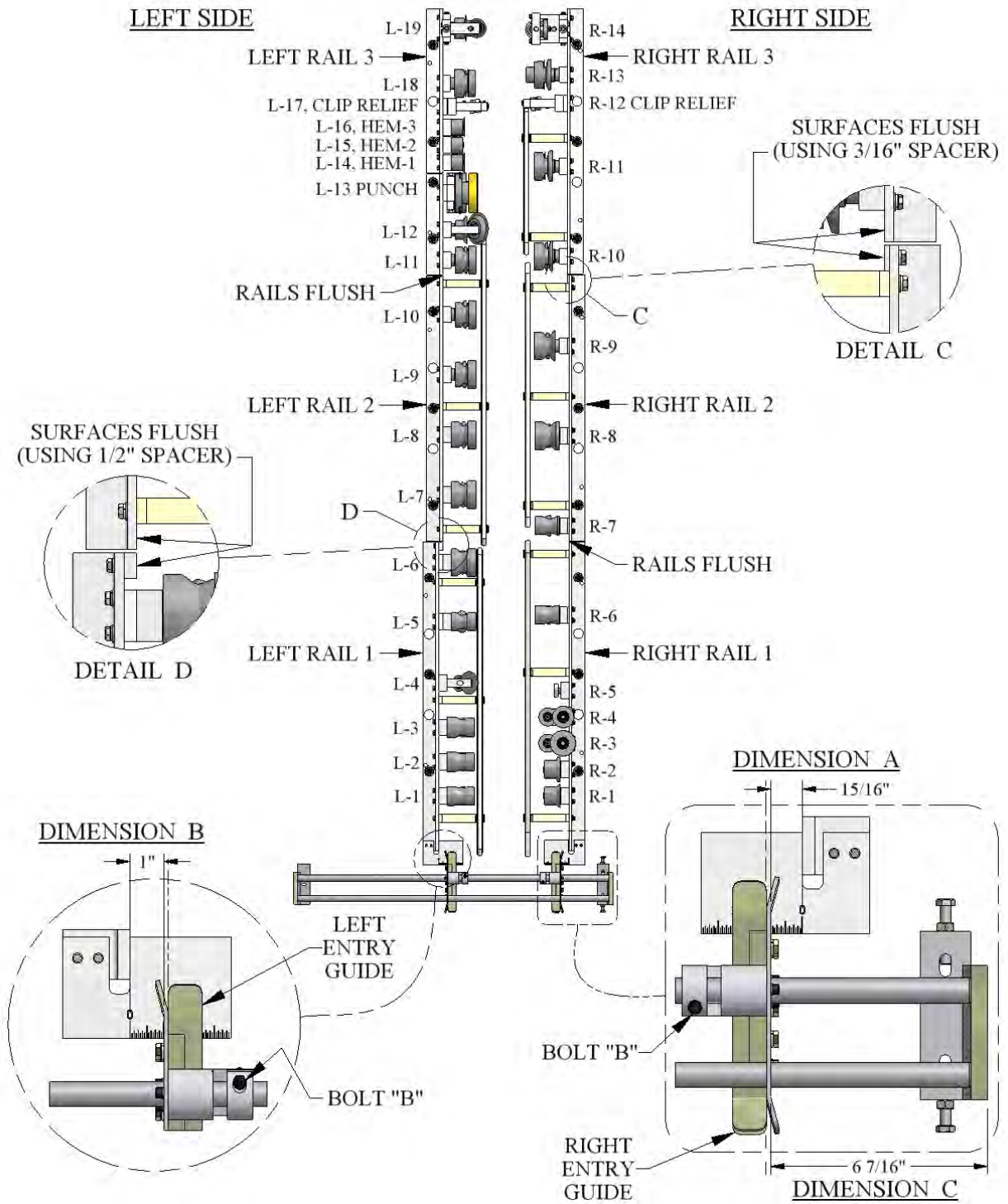
Figure 39: SS450 Panel Profile

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**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 40: SS450SL Panel Profile**

CHAPTER 17  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 41: FFH100 Roller System**



**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

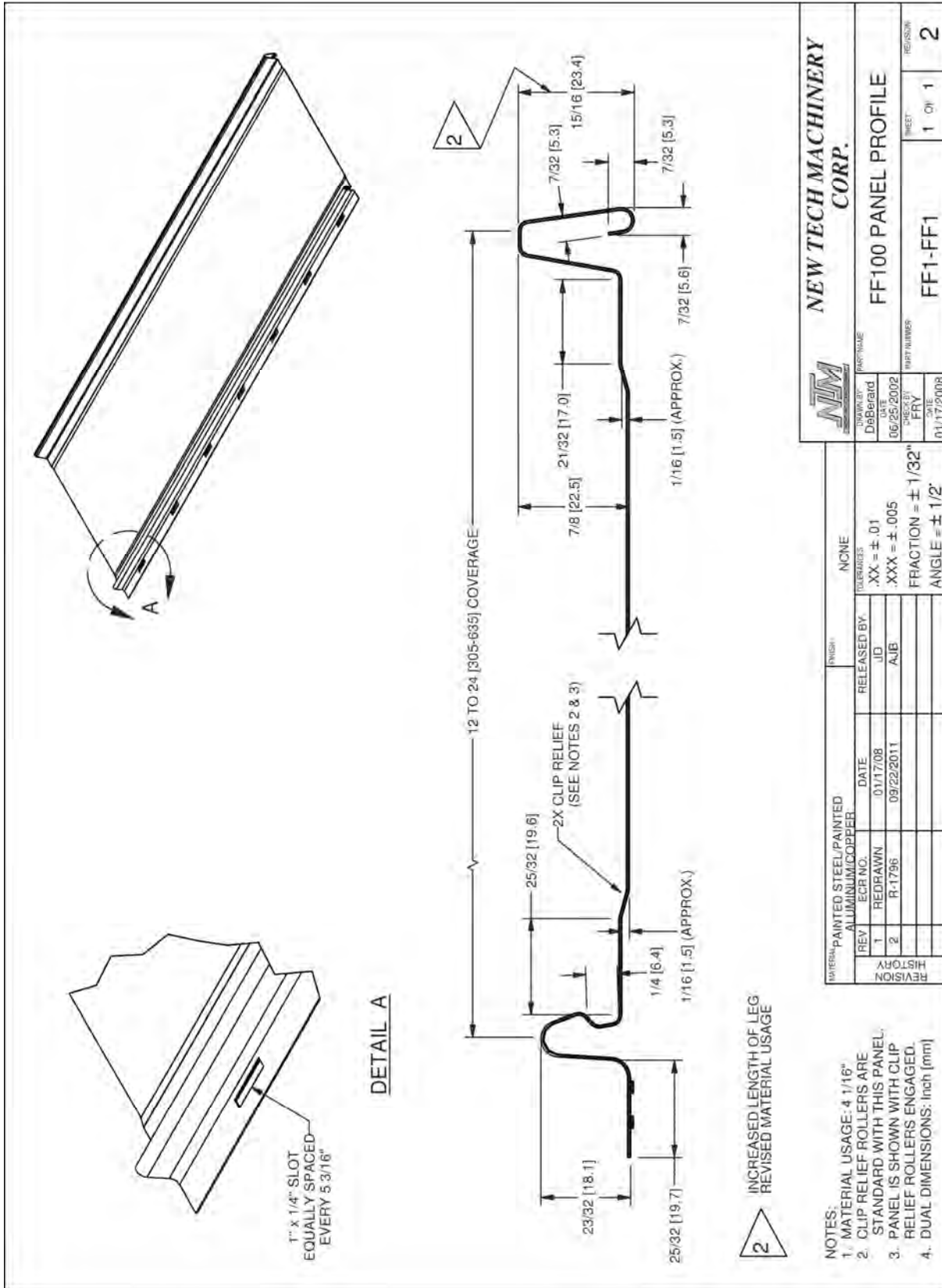
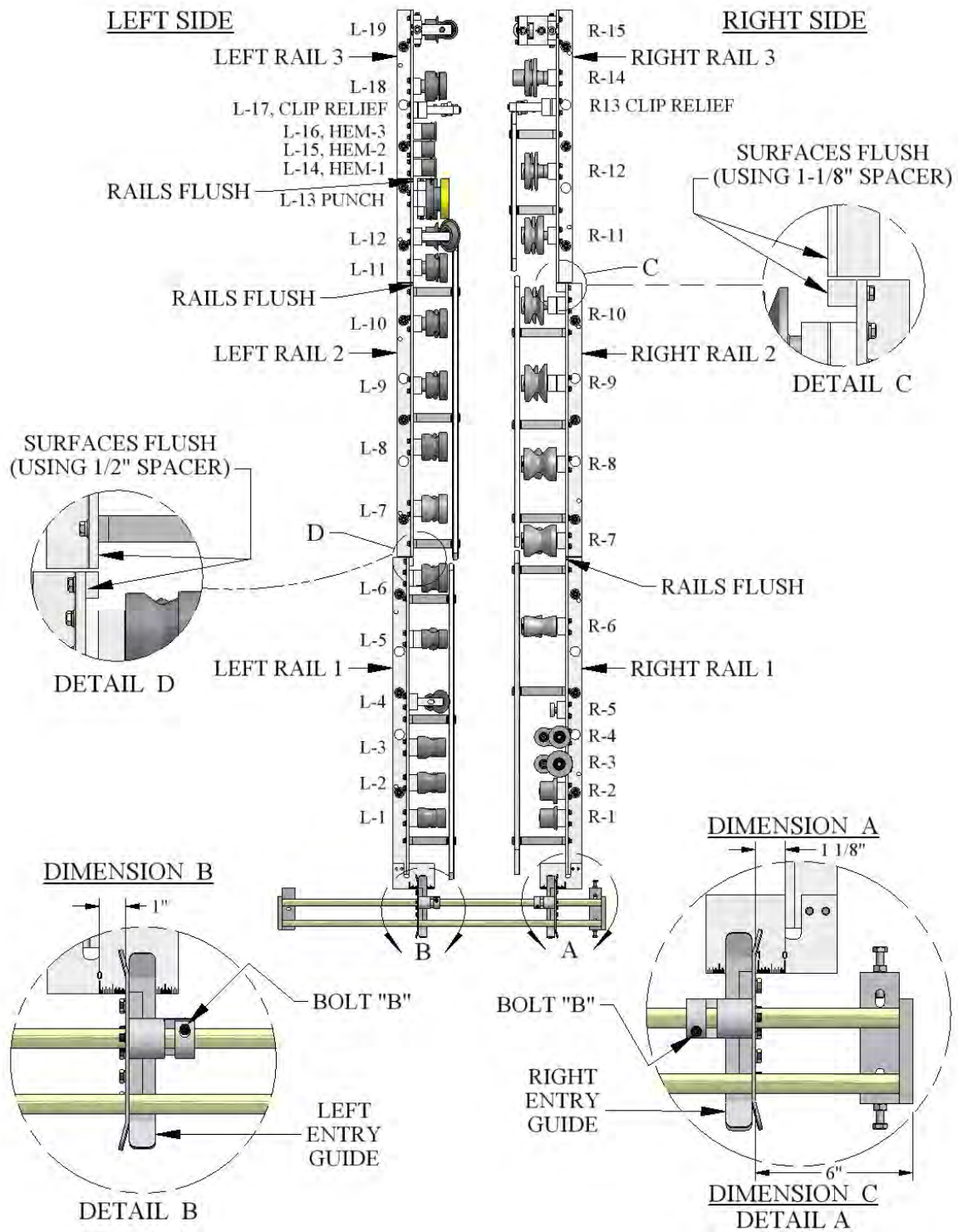


Figure 42: FF100 Panel Profile

CHAPTER 17  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 43: FFH150 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

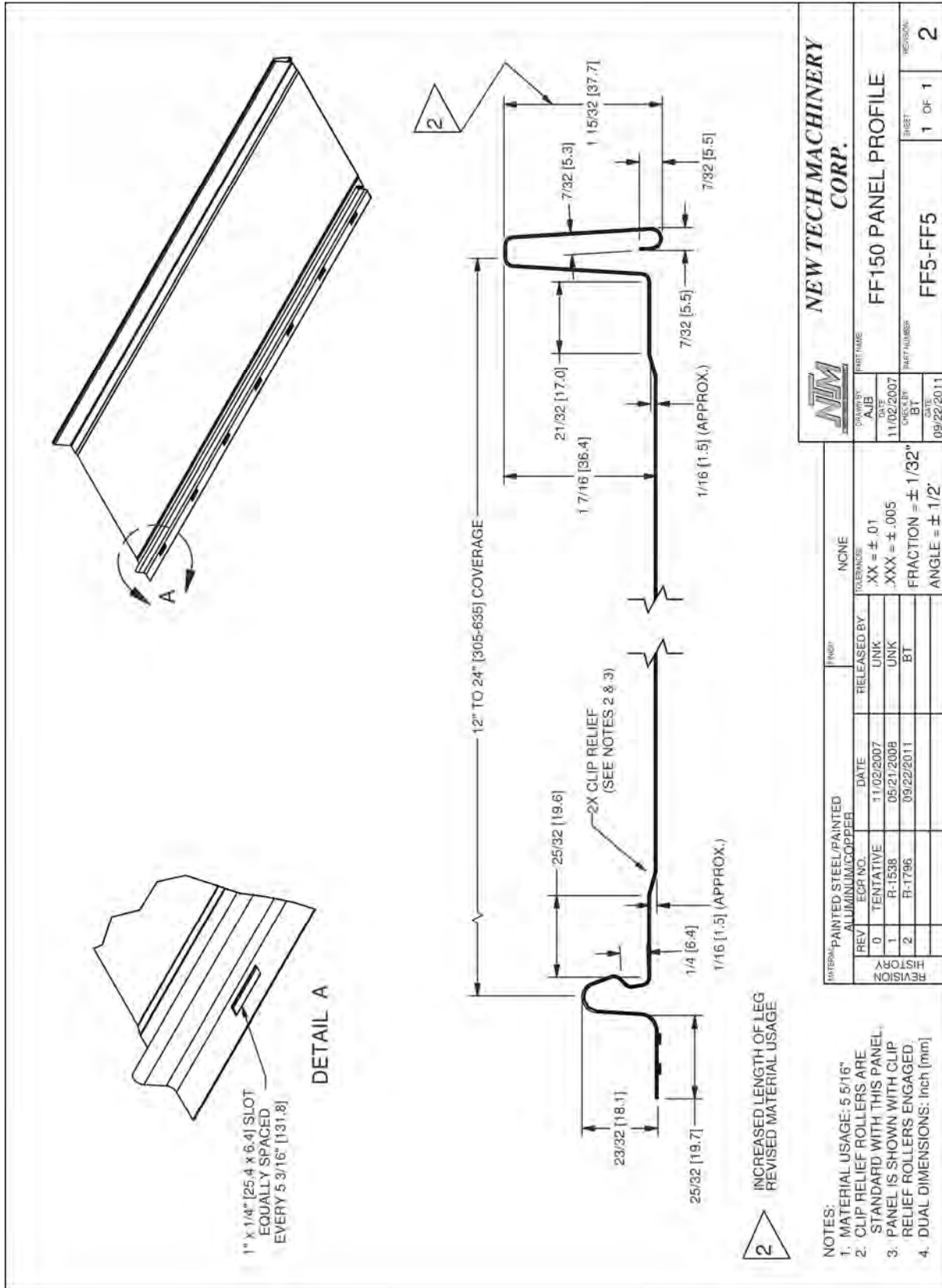
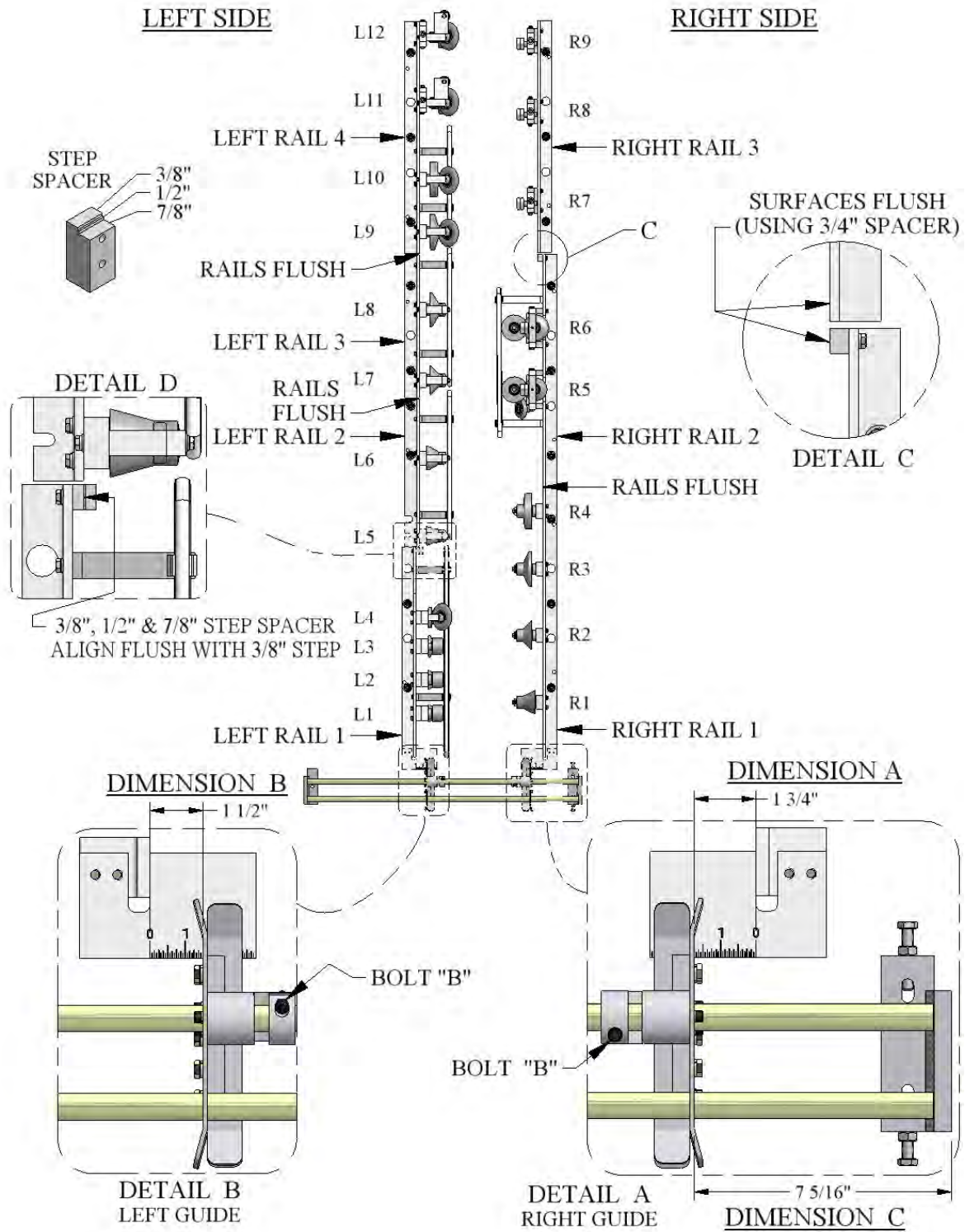


Figure 44: FF150 Panel Profile

CHAPTER 17  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 45: BP1 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

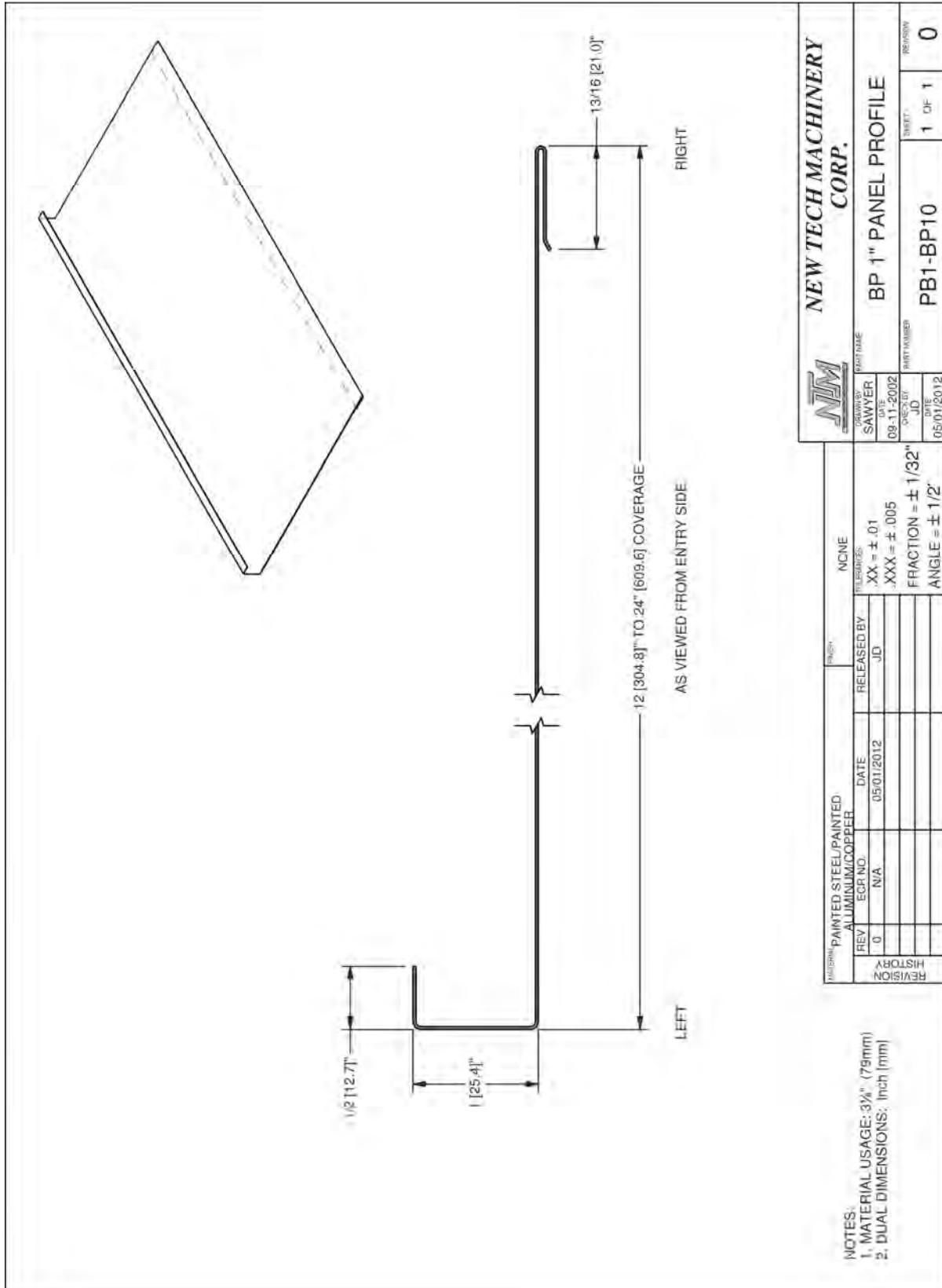
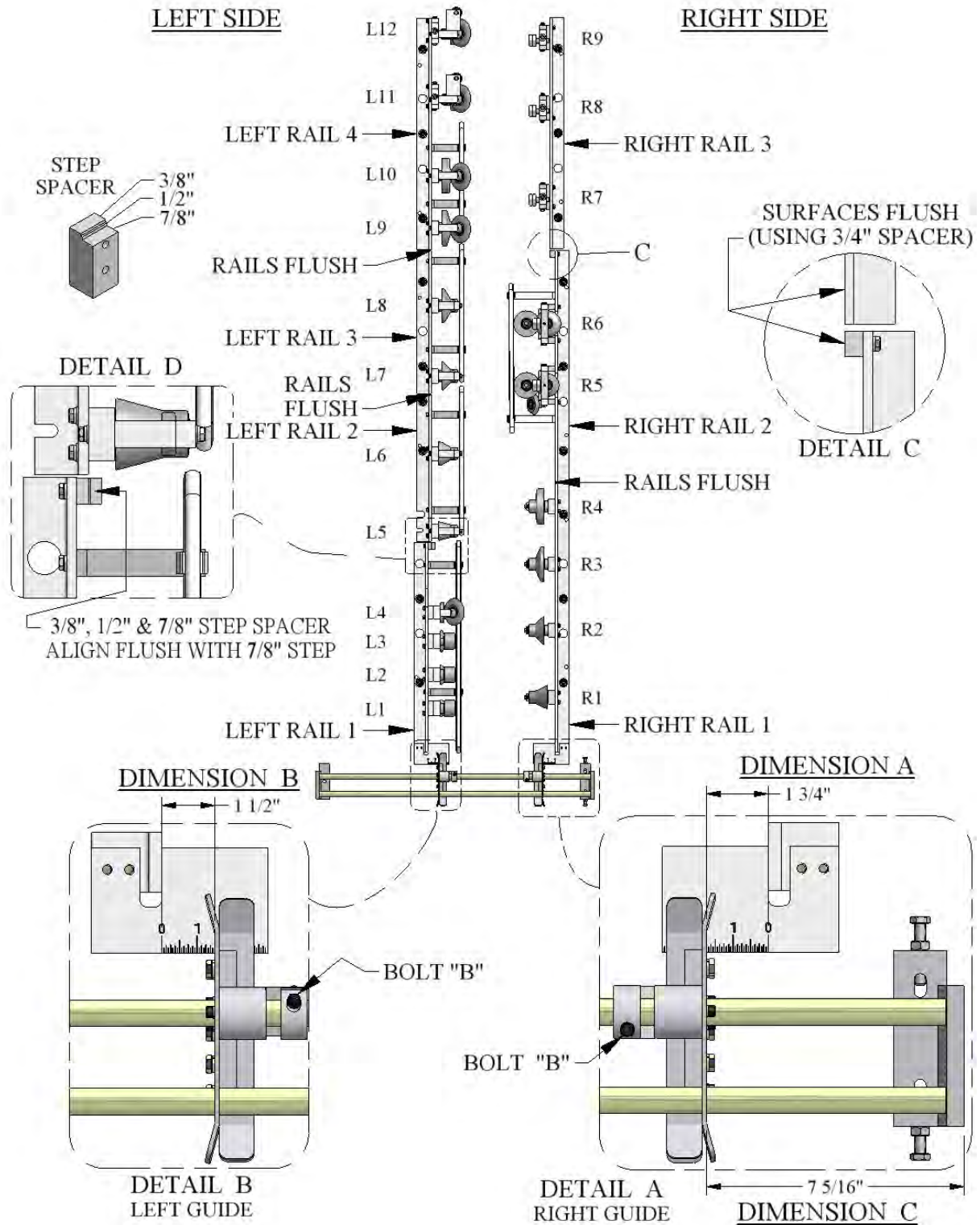


Figure 46: BP1 Panel Profile

CHAPTER 17  
**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**



**Figure 47: BP15 Roller System**

**ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS**

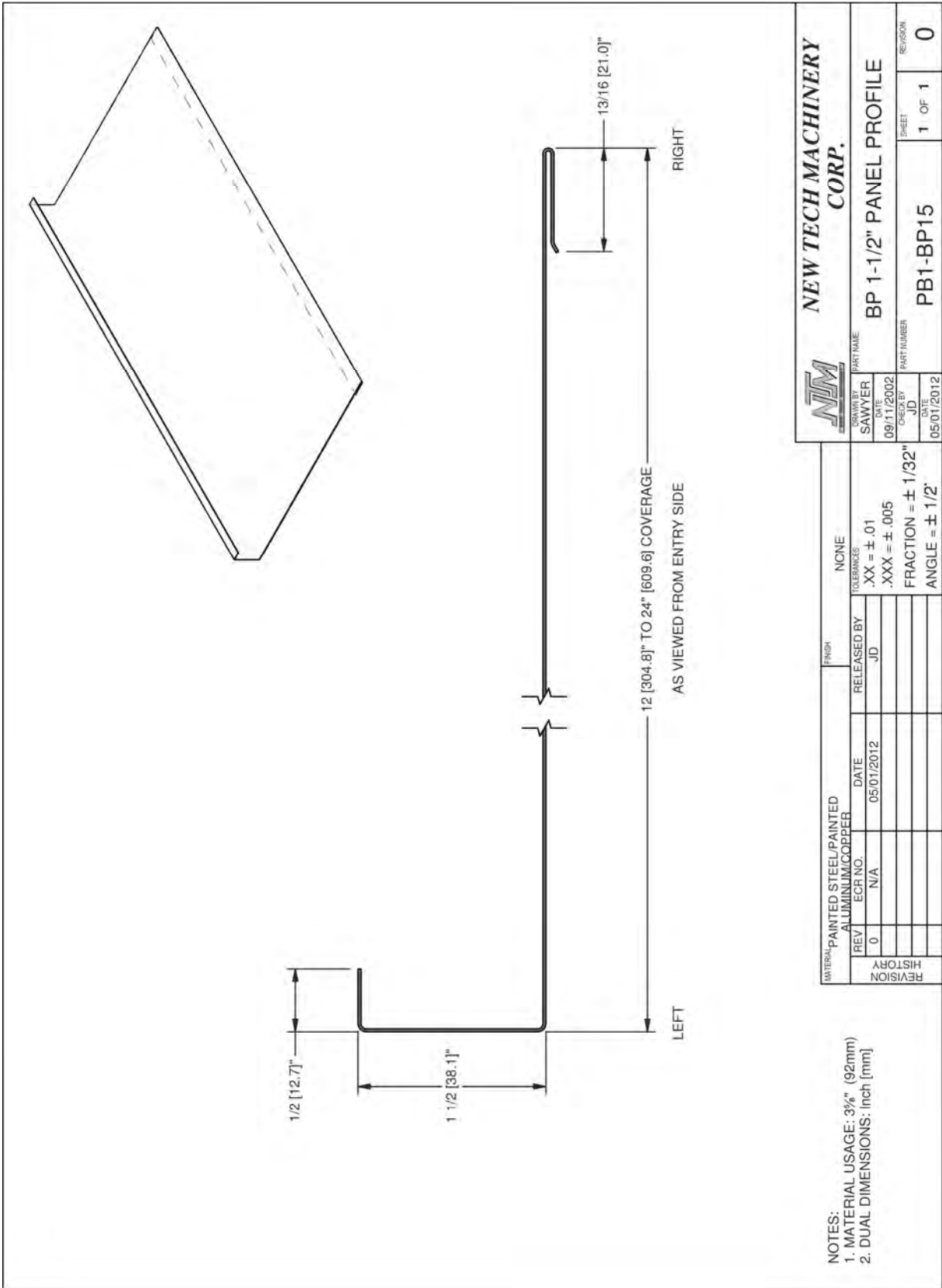
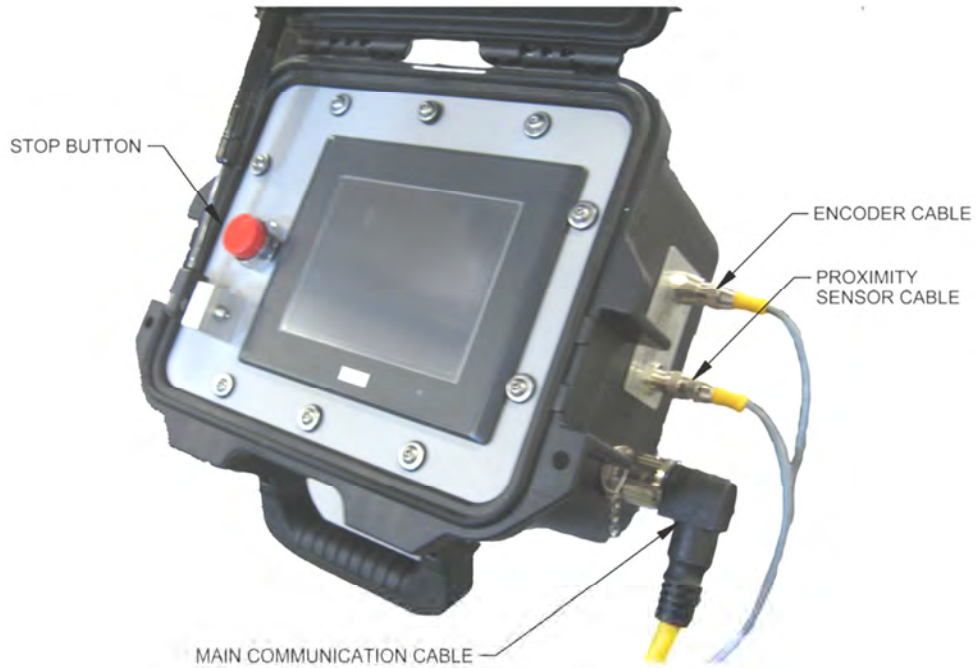


Figure 48: BP15 Panel Profile

APPENDIX A  
**PLC CONTROLLER**

**PLC CONTROLLER**



*Figure 49: PLC Assembly*



*Figure 50: Serial Number Plate*



APPENDIX A  
**PLC CONTROLLER**

***Home***

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



**Figure 51: Home Screen**

***Manual Operation***

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

**JOG:**

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

**SHEAR:**

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

***Automatic Operation***

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

APPENDIX A  
**PLC CONTROLLER**

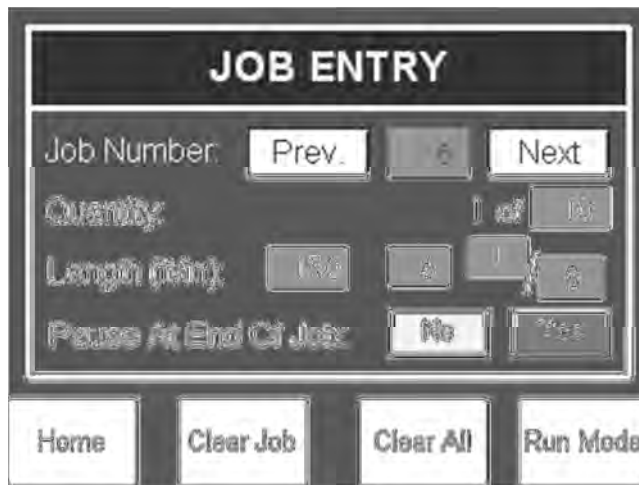
**Pre-Run Sequence:**

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

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

***Job Entry***

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



**Figure 52: Job Entry Screen**

***Programming Jobs***

The controller can store up to ninety nine jobs or lengths, called: Job Numbers. Press the Previous and the Next buttons to change the Job Number. The Job Number display is also an input in order to skip many jobs at a time. Press the Job Number display and enter the desired job number to program or run.

Enter in the quantity of parts to run and the length of the part.

Specify if the machine will pause at the end of job. If Yes is selected, the machine will stop after the job is done running. The user can then press Start to run the next job or return to the Job Entry. If No is selected, the machine will run the current job and automatically start running the next job. If yes is selected and there is no job

APPENDIX A  
**PLC CONTROLLER**

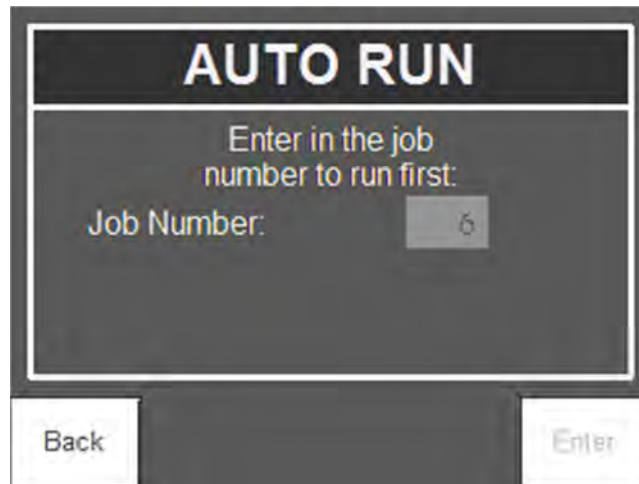
programmed after the current job, the controller will stop and return to the Job Entry screen.

***Clear Jobs***

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

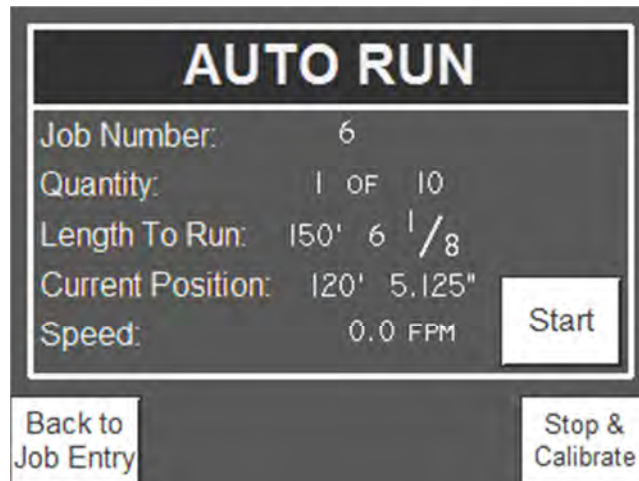
***Auto Run***

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



***Figure 53: Specify Job to Run First***

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



***Figure 54: Auto-Run Screen***

APPENDIX A  
**PLC CONTROLLER**

***Automatic Operation***

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

***On the Fly Calibration***

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



***Figure 55: Calibration Screen***

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

***Calibration***

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

APPENDIX A  
**PLC CONTROLLER**



**Figure 56: Calibration Screen**

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



**Figure 57: Calibration Screen**

**Setup:**

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

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**PLC CONTROLLER**



**Figure 58: Setup Screen**

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

Example:

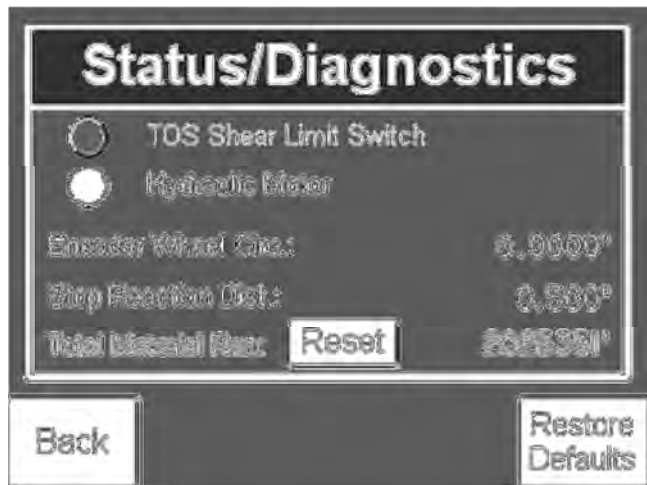
ft/in: 10' 4 1/16"  
in: 124 1/16"  
mm: 3,151mm

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

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

***Status/Diagnostics:***

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



**Figure 59: Status Screen**

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**PLC CONTROLLER**

The Status 1 screen shows the condition of the Hydraulic Pressure Switch and the Top of Stroke Limit Switch. If one or both of the TOS Shear Limit Switches are not activated the TOS Shear Limit Switch light will be on. Refer to the Shear section in the machine manual for limit switch adjustment.

If the motor is not on or if the pressure switch is not activated then the Hydraulic Motor light will be on.

The Status screen lists the Encoder Wheel Circumference. This value is changed automatically when the controller is calibrated. The Stop Reaction Distance is also automatically changed by the controller as the machine runs. In order to reset these values, press the Restore Defaults button. NOTE: Calibration should be initiated following the defaults restore. The Total Material Ran through the machine with the controller on is shown on this screen. The Total Material Ran can be reset by pressing the Reset button. If the security is turned on, the password will be required to reset the Total Material Ran.

Press Back to return to the Setup Screen.

***Security:***

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



**Figure 60: Security Screen**

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

APPENDIX A  
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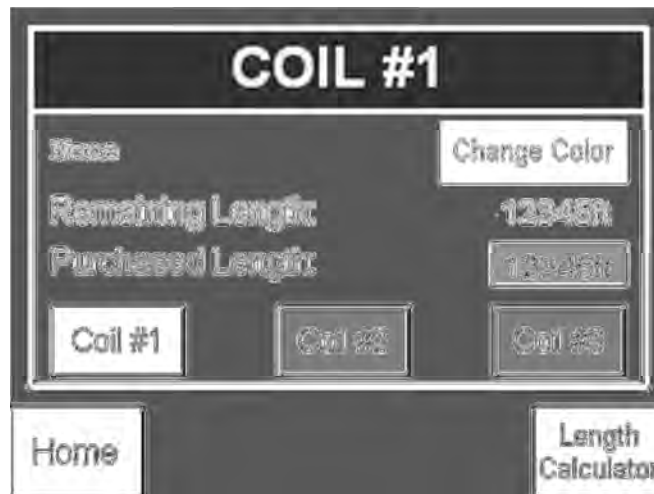
***Coil Tracking:***

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



***Figure 61: Coils Password Access Screen***

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



***Figure 62: Coils Screen***

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



APPENDIX A  
**PLC CONTROLLER**

**Example:**

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

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

**Example:**

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

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

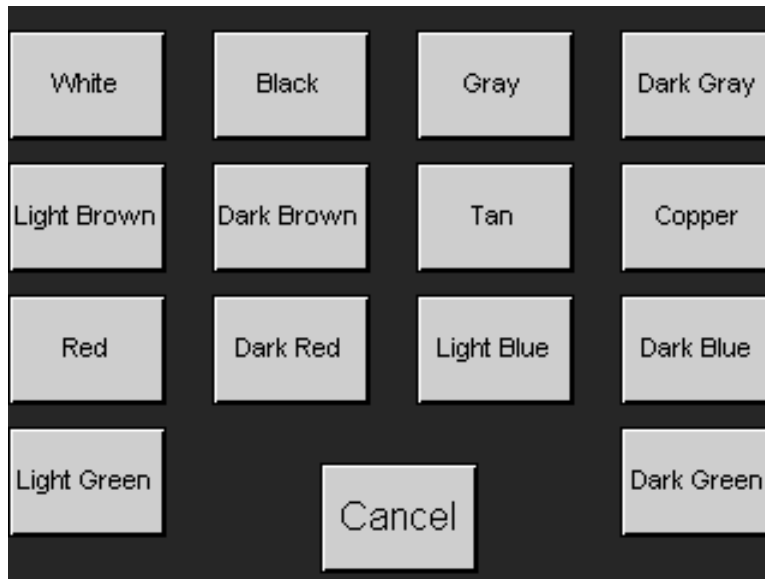


**Figure 63: Coil Indicator**

**Colors**

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

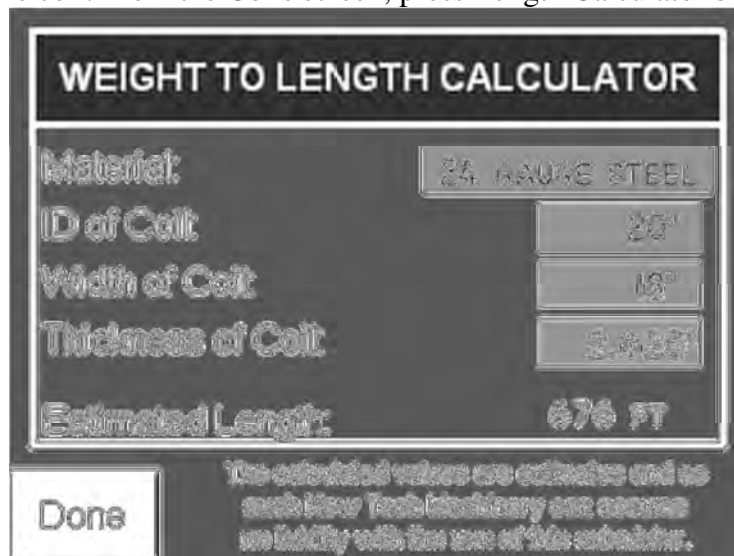
APPENDIX A  
**PLC CONTROLLER**



**Figure 64: Coils Color Screen**

***Coil Length Calculator***

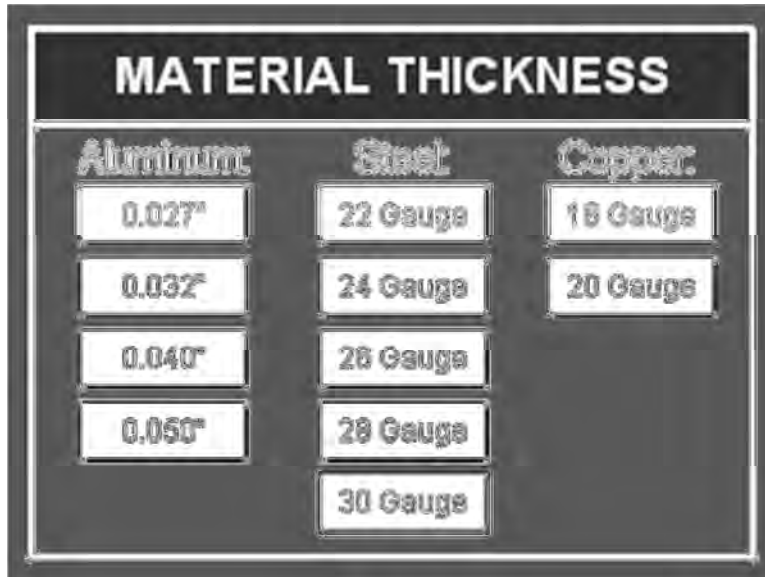
The controller has a built in calculator to estimate the length of a coil based on the dimensions of the coil. From the Coils screen, press Length Calculator button.



**Figure 65: Length Calculator Screen**

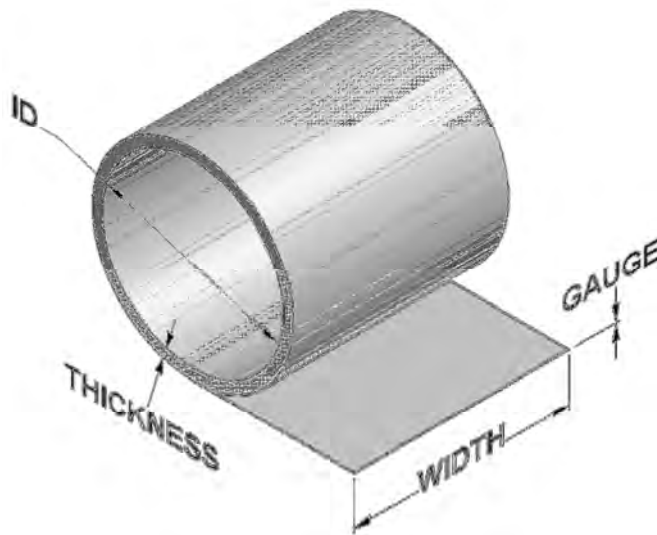
Press the Select Material button to select the thickness and type of material.

APPENDIX A  
**PLC CONTROLLER**



**Figure 66: Material and Thickness Screen**

Then enter in the Inside Diameter of the Coil, Width of the coil and thickness of the coil. The thickness of the coil is the difference between the Inside Diameter (ID) and the Outside Diameter (OD). When all the fields are populated, the calculator estimates the length of the coil. Press the Done button to return to the Coils screen.



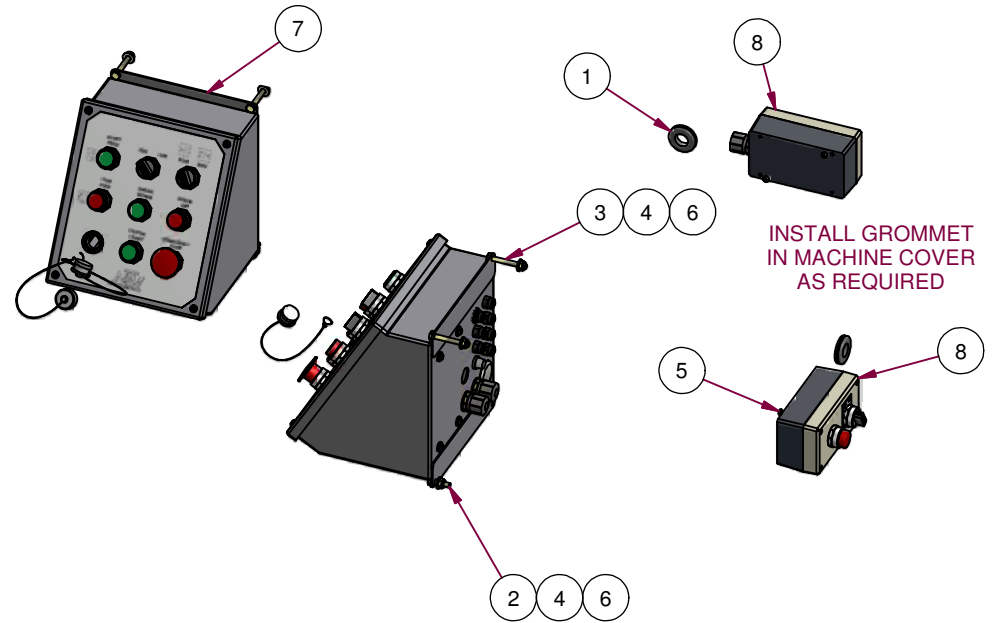
**Figure 67: Coil Dimensions**

APPENDIX B  
**ELECTRICAL SCHEMATICS**

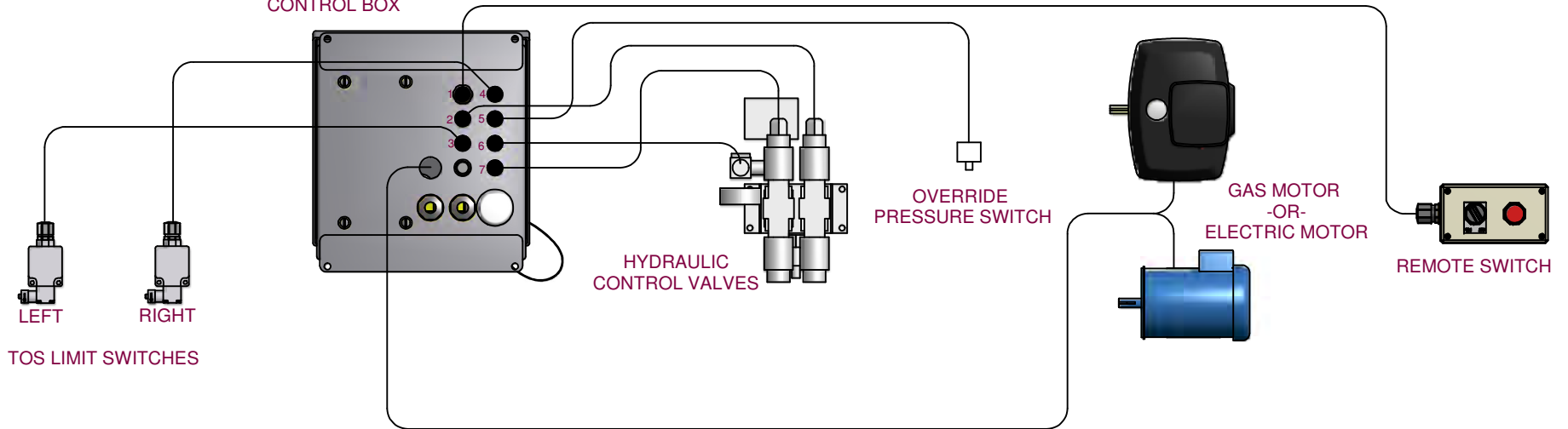
## **ELECTRICAL SCHEMATICS**

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

Parts List			
ITEM	QTY	PART NUMBER	TITLE
1	1	ELC-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	PLC-381-000	CONTROL BOX ASSEMBLY
8	1	PLC-382-000	REMOTE PUSH BUTTON BOX



BACK VIEW OF CONTROL BOX

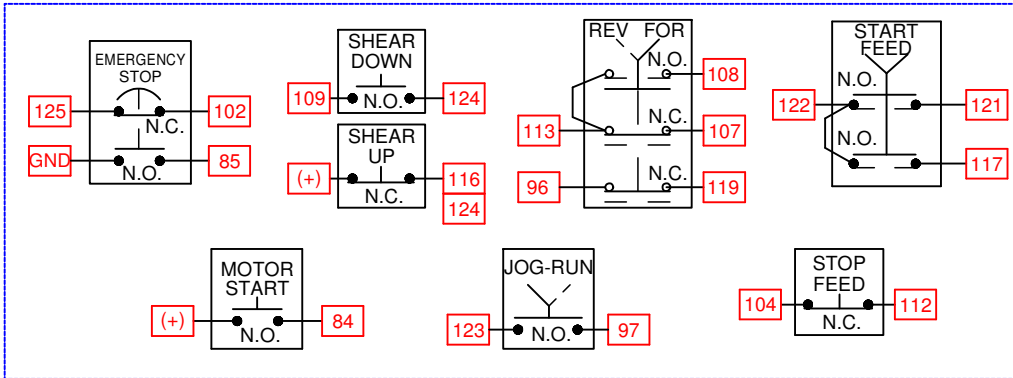


NOTE: UNLESS OTHERWISE SPECIFIED.  
1. R=.015

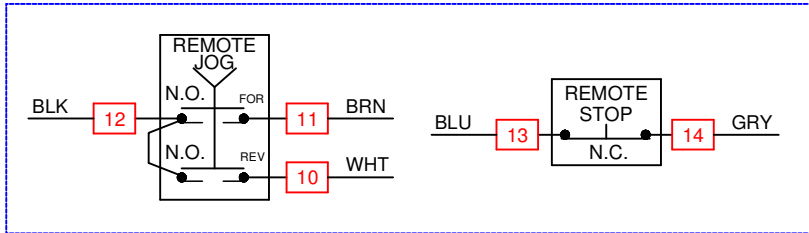
MATERIAL	SEE BOM	LENGTH	-	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES	
0	R-1757	10/25/2011	AJB	.XX = ± .01 .XXX = ± .005	
				FRACTION = ± 1/32"	
				ANGLE = ± 1/2'	

<b>NEW TECH MACHINERY CORP.</b>			
DRAWN BY BT	PART NAME <b>ELECTRICAL ASSEMBLY</b>		
DATE 01-27-2011	CHECK BY AJB	PART NUMBER <b>PLC-380-000</b>	SHEET 1 OF 2
DATE 10/25/2011			REVISION <b>0</b>

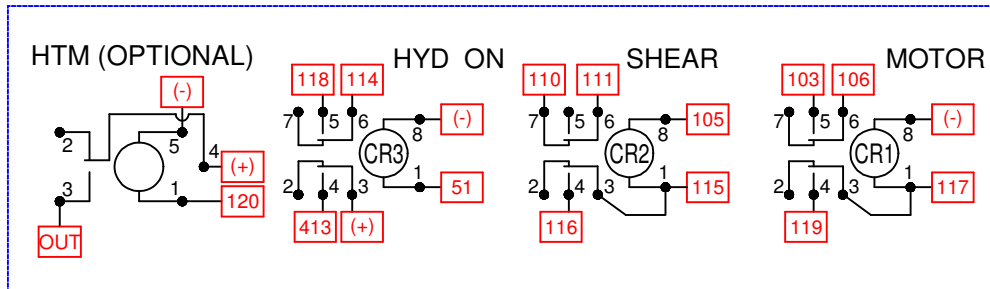
### MAIN CONTROL BOX



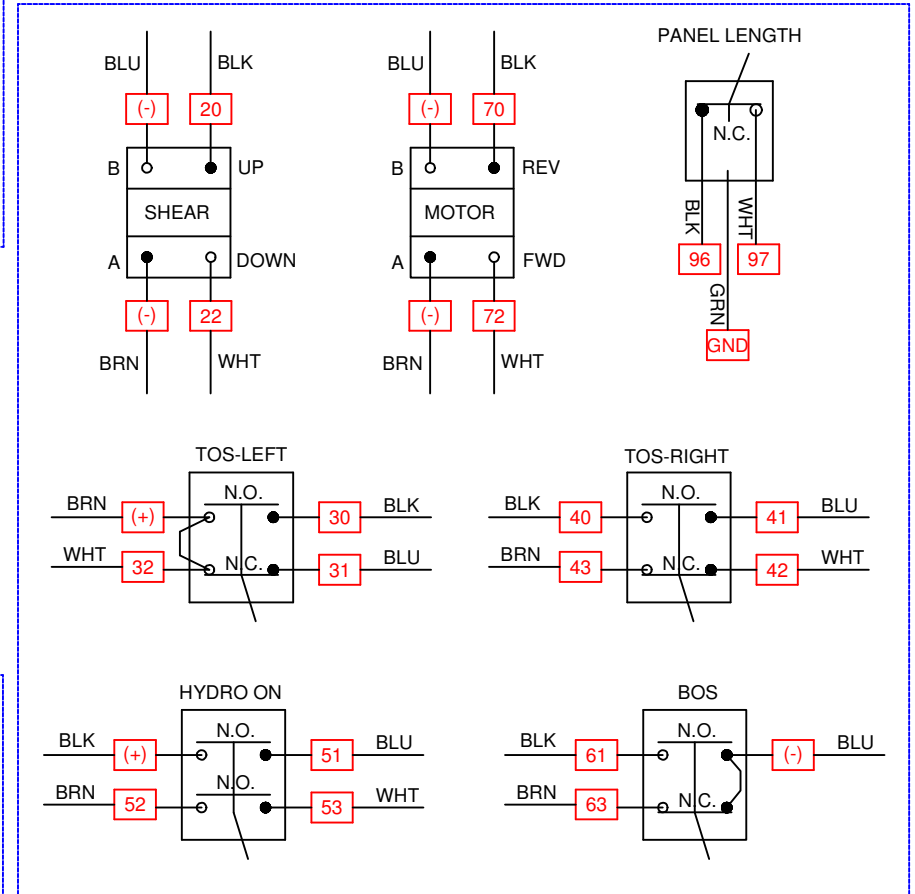
### ENTRY END/REMOTE CONTROL



### CONTROL RELAYS



### COMPONENTS



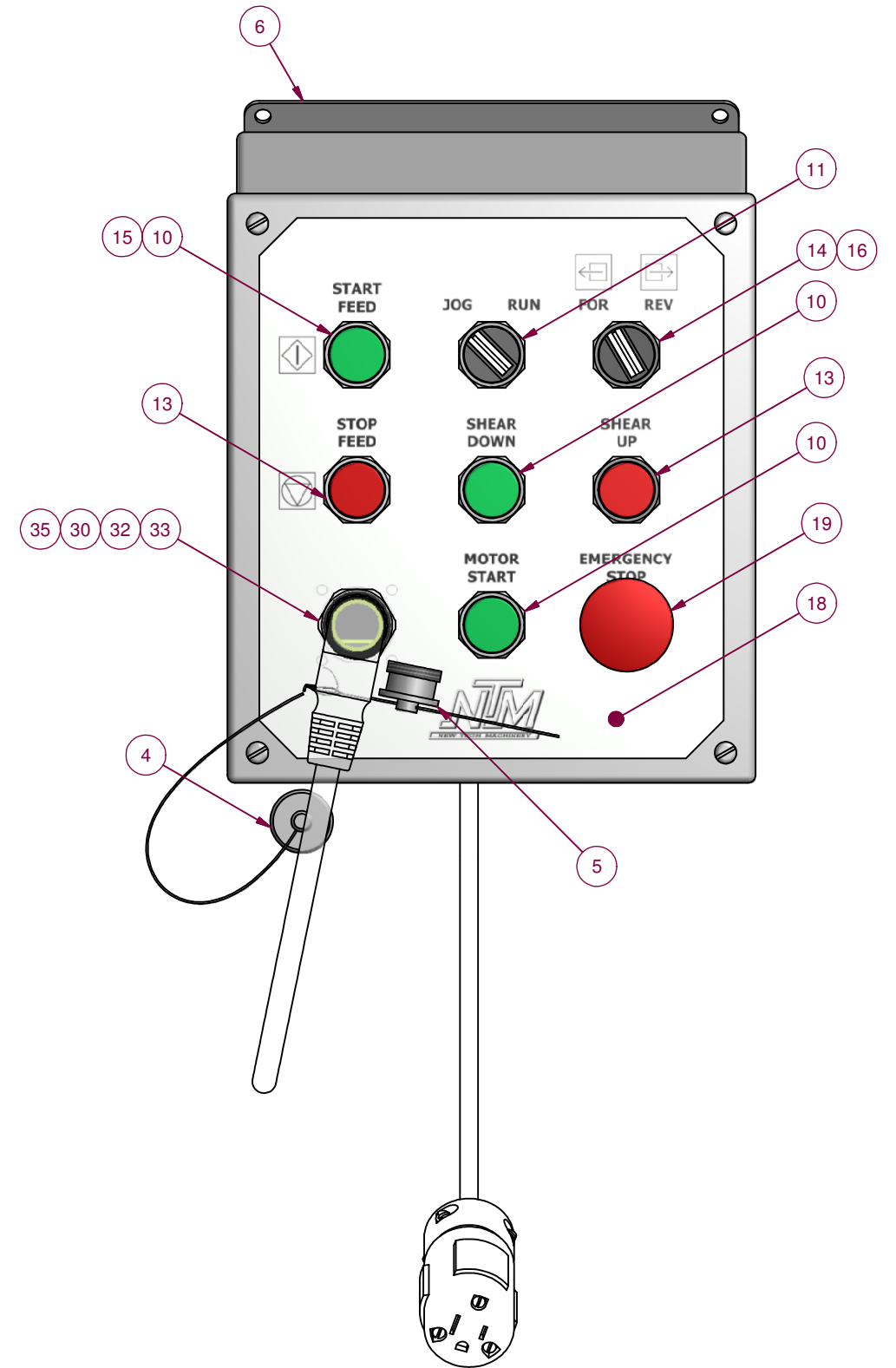
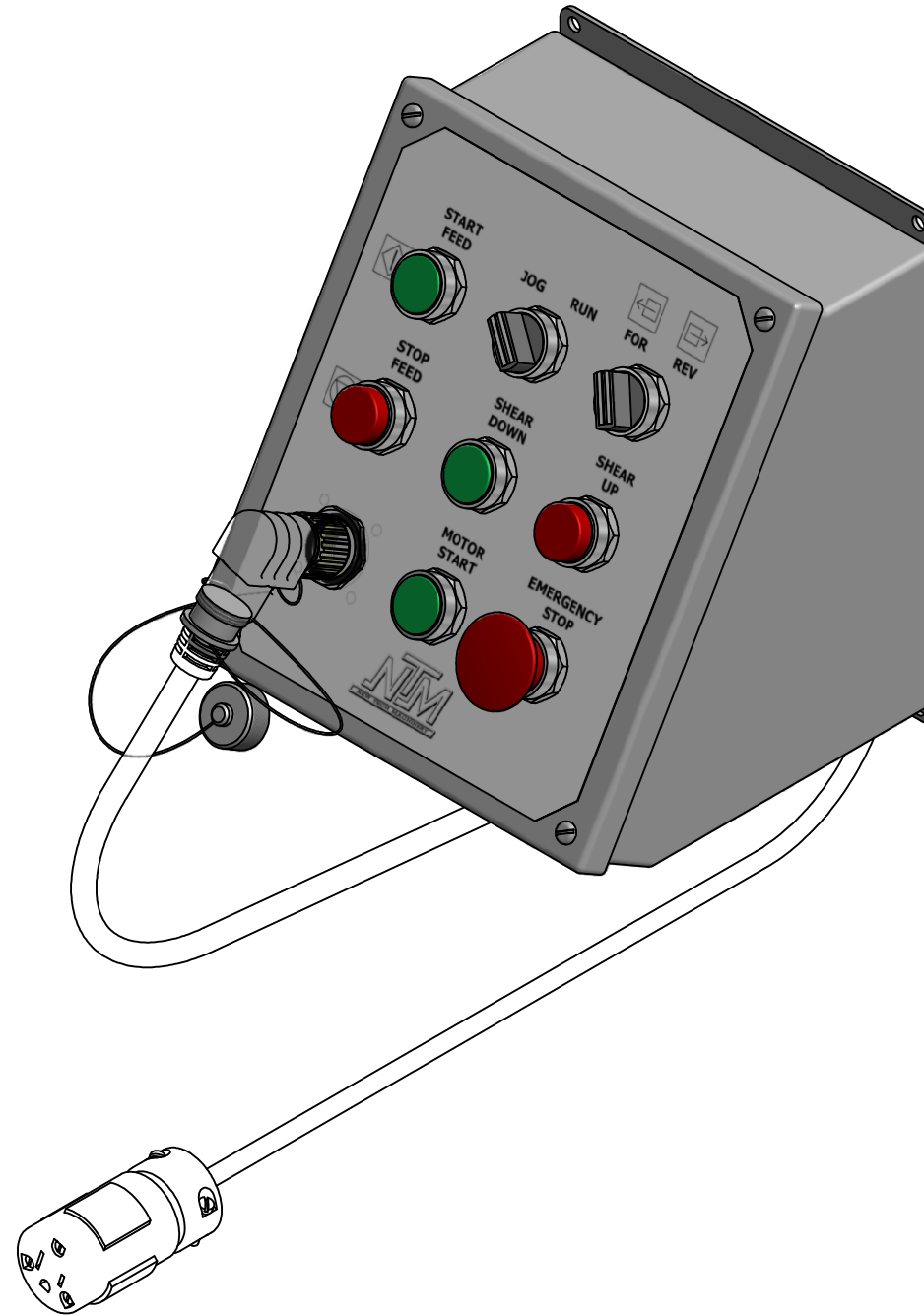
NOTE: UNLESS OTHERWISE SPECIFIED.  
1. R=.015

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		PART NAME	
DATE		ELECTRICAL ASSEMBLY	
CHECK BY		PART NUMBER	SHEET
DATE		PLC-380-000	2 OF 2
			REVISION
			0

PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	34	ELC-100-006	TERMINAL BLOCK, 10A
2	3	ELC-100-007	DIN RAIL STOP (NOT SHOWN)
3	12	ELC-100-008	TERMINAL BLOCK JUMPER (NOT SHOWN)
4	1	ELC-100-017	FEMALE CLOSURE CAP
5	1	ELC-100-018	MALE CLOSURE CAP
6	1	ELC-100-021	ENCLOSURE
7	6	ELC-100-025	RECEPTACLE, 4 PIN MALE x.5M
8	1	ELC-100-026	RECEPTACLE, 5 PIN MALE x.5M
9	1	ELC-300-101	FUSEHOLDER BUS HKP
10	3	ELC-300-103	PUSH BUTTON, GREEN
11	1	ELC-300-104	SELECTOR SWITCH, W/1 N.O.
12	1	ELC-300-105	FUSE, 10A, 250V, TIME DELAY
13	2	ELC-300-107	PUSH BUTTON, RAISED RED
14	1	ELC-300-109	SELECTOR SWITCH, 2 POS,1 N.O. 1 N.C.
15	1	ELC-400-017	IDEC #HW-C10 N/O CONTACT BLOCK
16	1	ELC-400-018	IDEC #HW-C01 N/C CONTACT BLOCK
17	1	ELC-400-045	HOLE SEAL, 1/2" KO
18	1	ELC-400-046	LEXAN OVERLAY, PANEL
19	1	ELC-400-061	BUTTON, MUSHROOM, PUSH/PULL
20	5	ELC-400-079	RING TERMINAL, 3/16" EYE, 14-16GA (NOT SHOWN)
21	3	ELC-400-123	2 POLE RELAY BASE
22	3	ELC-400-125	2 POLE RELAY, 12VDC
23	2	ELC-425-020	STRAIN RELIEF, 1/2" NPT
24	16	FAS-NUF-170	JAM NUT, #10-32
25	8	FAS-SPN-340	SCREW, PAN HEAD, 10-32 x 3/4" , SLOTTED
26	4	FAS-SRM-201	PHILLIPS PAN HEAD SCREW, 10-32 x 3/8"
27	8	FAS-WRF-244	10 RUBBER WASHER
28	12	FAS-WSF-344	WASHER, FLAT, #10 SAE
29	20	FAS-WSL-404	WASHER, LOCK, SPLIT, #10
30	1	MHW-100-012	7/8 ID X 1 1/8 OD X 1/8 T GASKET
31	1	PLC-100-006	DIN RAIL, 8" LONG
32	1	PLC-100-010	TURCK RECEPTACLE EXTENSION
33	2	PLC-381-002	TERMINAL BLOCK MOUNTING PLATE
34	1	PLC-390-000	PUSH BUTTON BOX WIRE KIT (NOT SHOWN)
35	1	SHM-400-132	SHIM, 1" ID x 1 1/2" OD x .031
36	1	SSR-381-072	DIN RAIL, 5.50 LONG

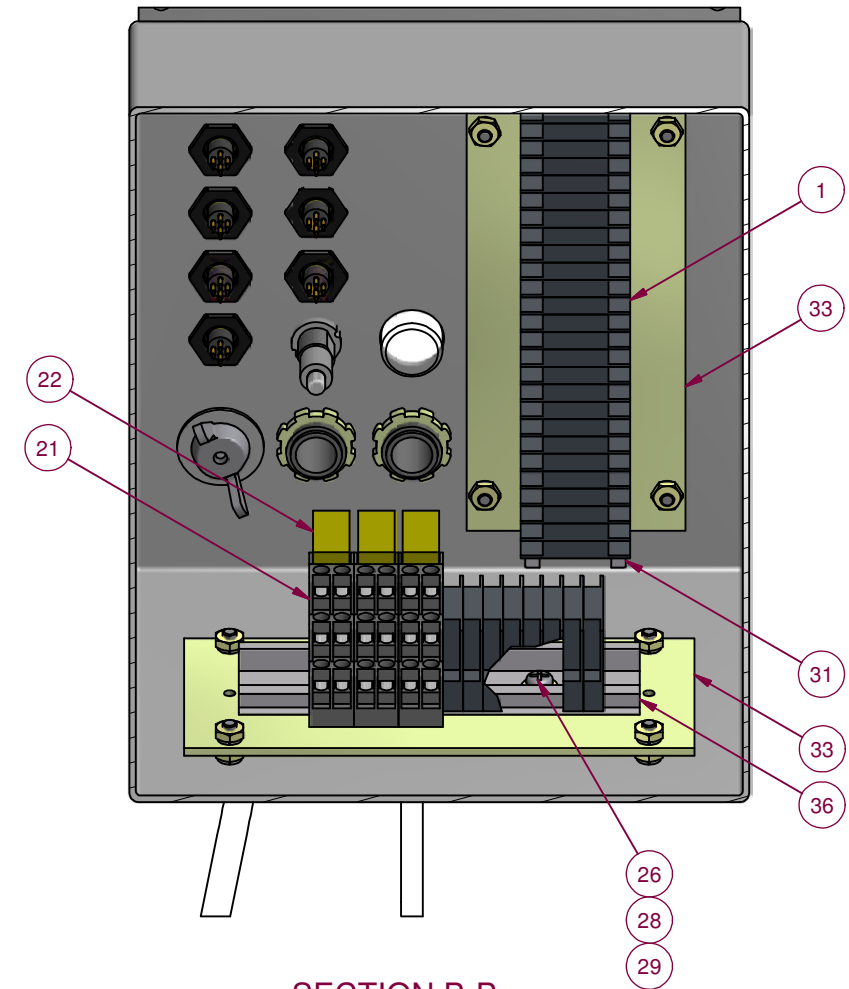
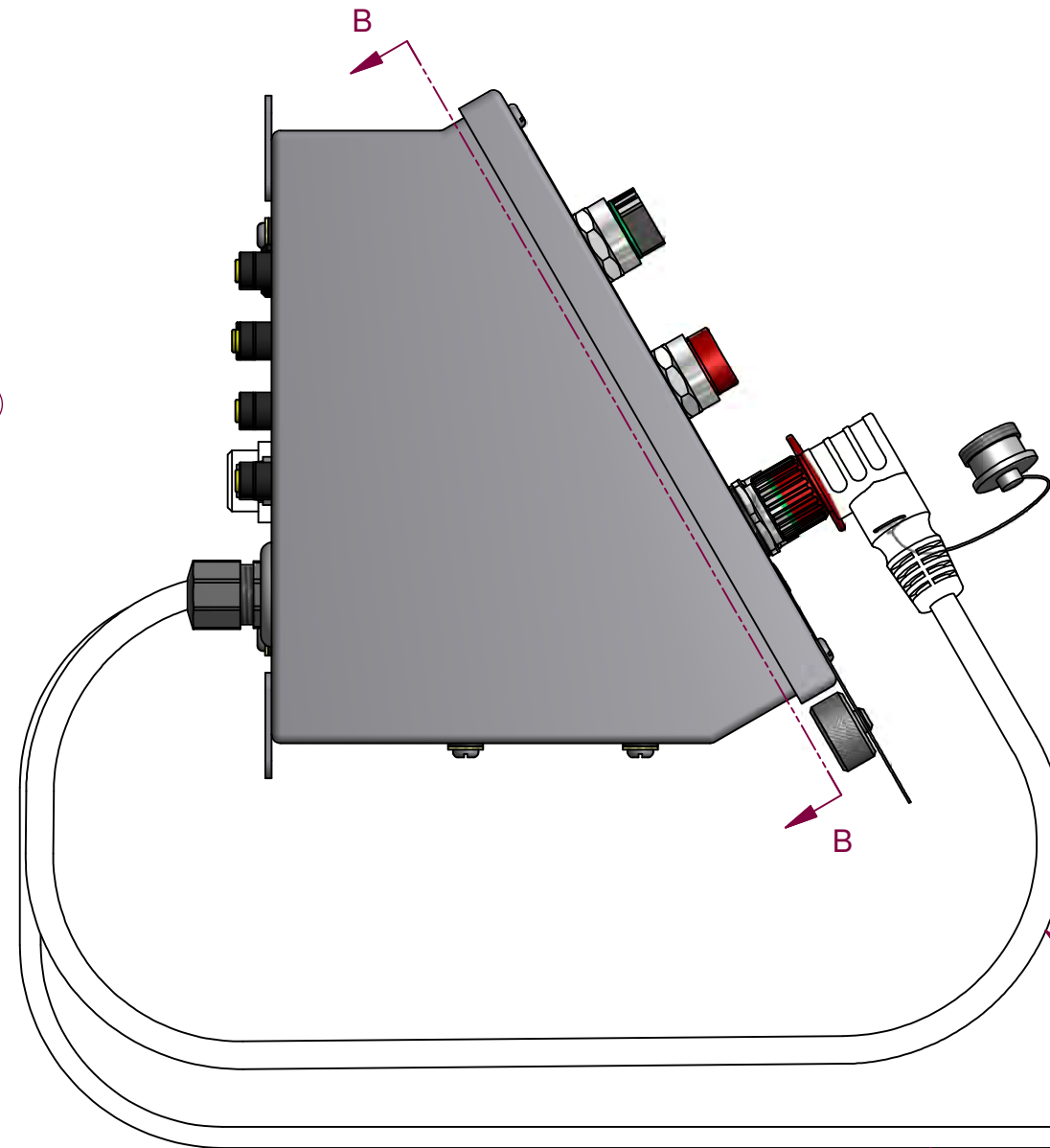
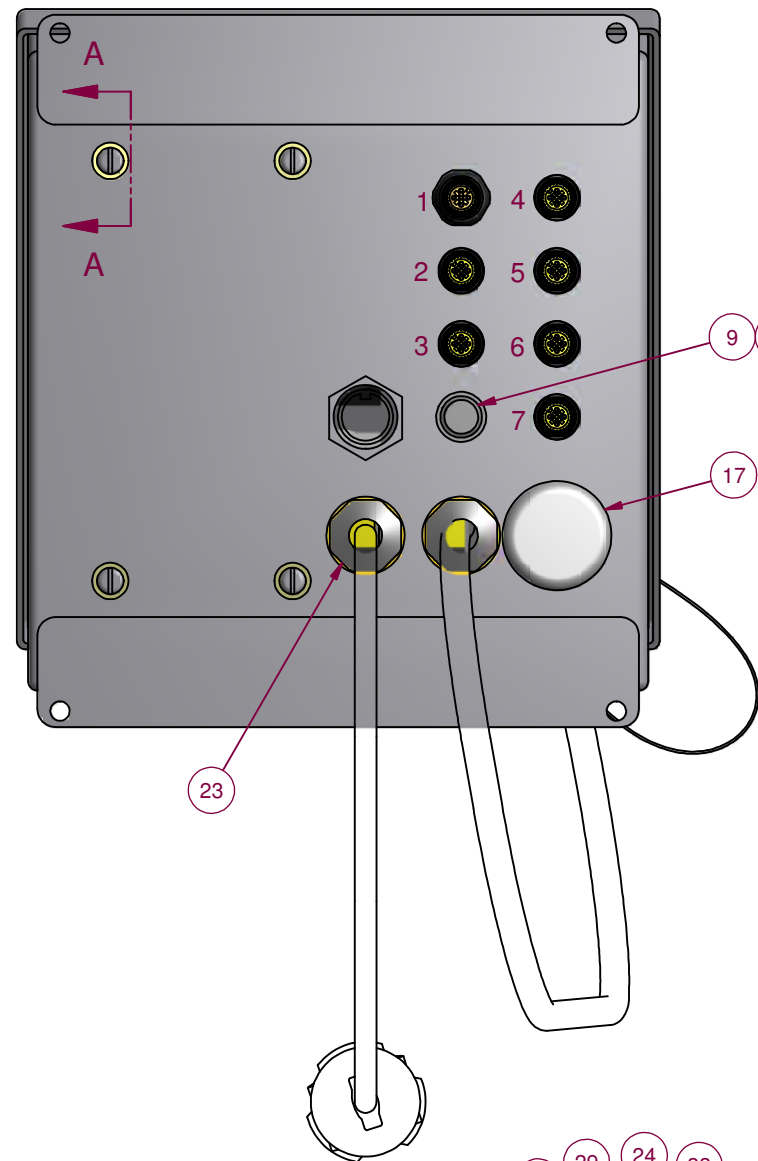


1 ADDED SHM-400-132 TO INSIDE OF 16-PIN RECEPTACLE ON FRONT

REV	ECR NO.	DATE	RELEASED BY	TOLERANCES
0	R-1757	UNK	UNK	.XX = ± .01 .XXX = ± .005
1	R-1800	10/20/2011	AJB	FRACTION = ± 1/32" ANGLE = ± 1/2'

**NEW TECH MACHINERY CORP.**

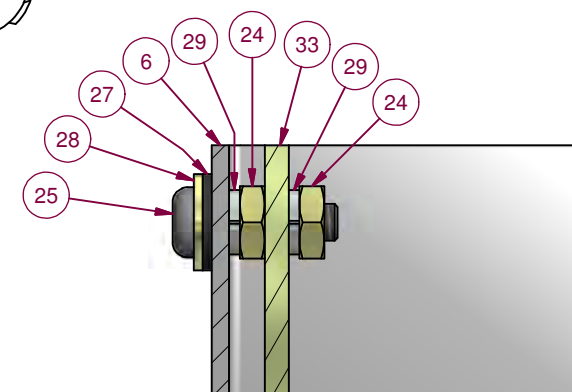
DRAWN BY BT DATE 01-26-2011 CHECK BY AJB DATE 10/20/2011	PART NAME <b>CONTROL BOX ASSEMBLY</b> PART NUMBER <b>PLC-381-000</b>	SHEET <b>1 OF 5</b> REVISION <b>1</b>
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SECTION B-B

LENGTH: 42" FROM STRAIN RELIEF

LENGTH: 24" FROM STRAIN RELIEF



SECTION A-A  
TO ATTACH TERMINAL BLOCK  
MOUNTING PLATE TO ENCLOSURE

MATERIAL	SEE BOM	LENGTH	FINISH
REV	ECR NO.	DATE	RELEASED BY

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

**NIM** **NEW TECH MACHINERY CORP.**

DRAWN BY: \_\_\_\_\_ PART NAME: **CONTROL BOX ASSEMBLY**

CHECK BY: \_\_\_\_\_ PART NUMBER: **PLC-381-000**

DATE: \_\_\_\_\_ SHEET: **2 OF 5**

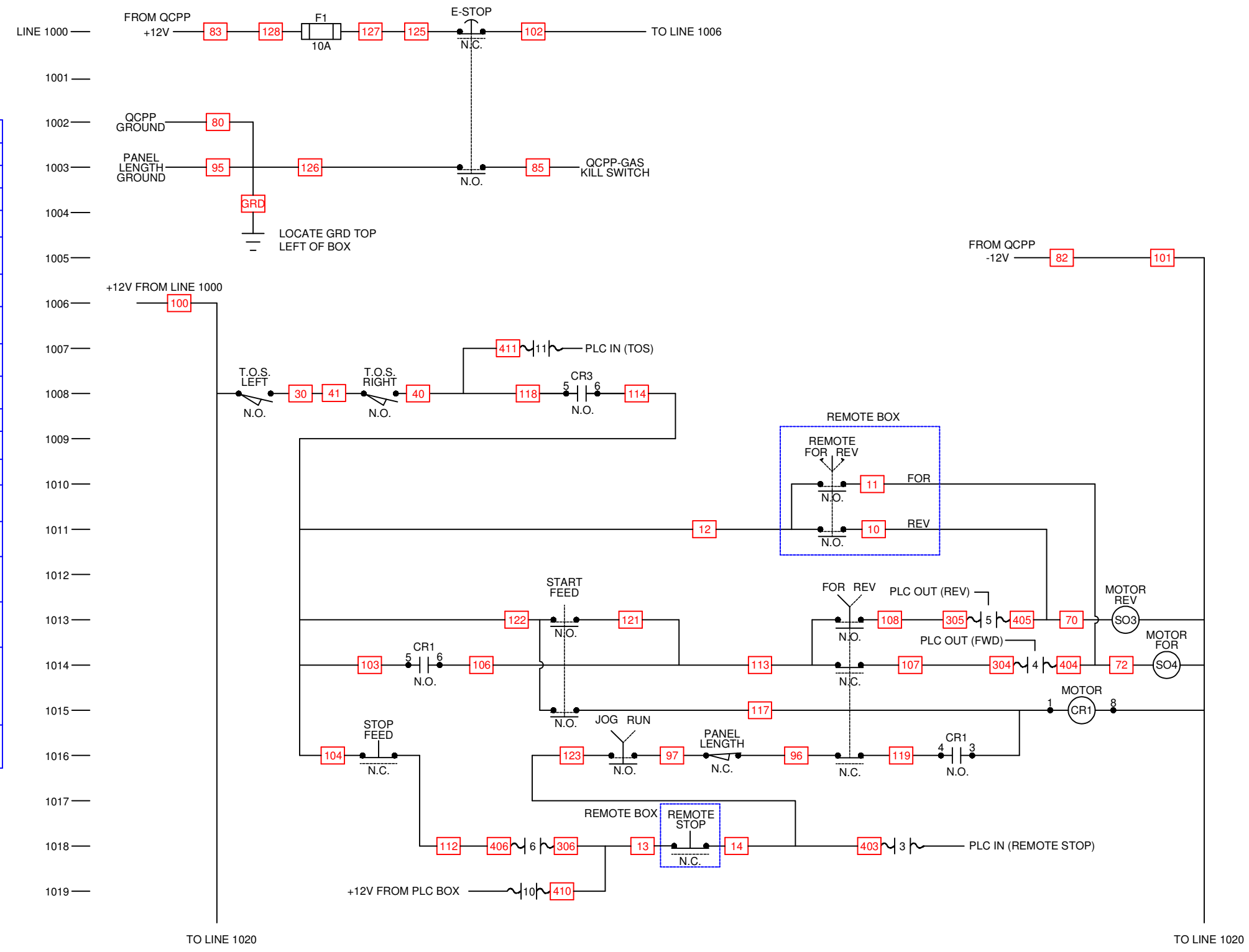
DATE: \_\_\_\_\_ REVISION: **1**





**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
	SELECTOR SWITCH
	SPRING RETURN SELECTOR SWITCH
	MOMENTARY SWITCH
	ROTARY ENCODER



REV	ECR NO.	DATE	RELEASED BY

**NEW TECH MACHINERY CORP.**

**CONTROL BOX ASSEMBLY**

PLC-381-000

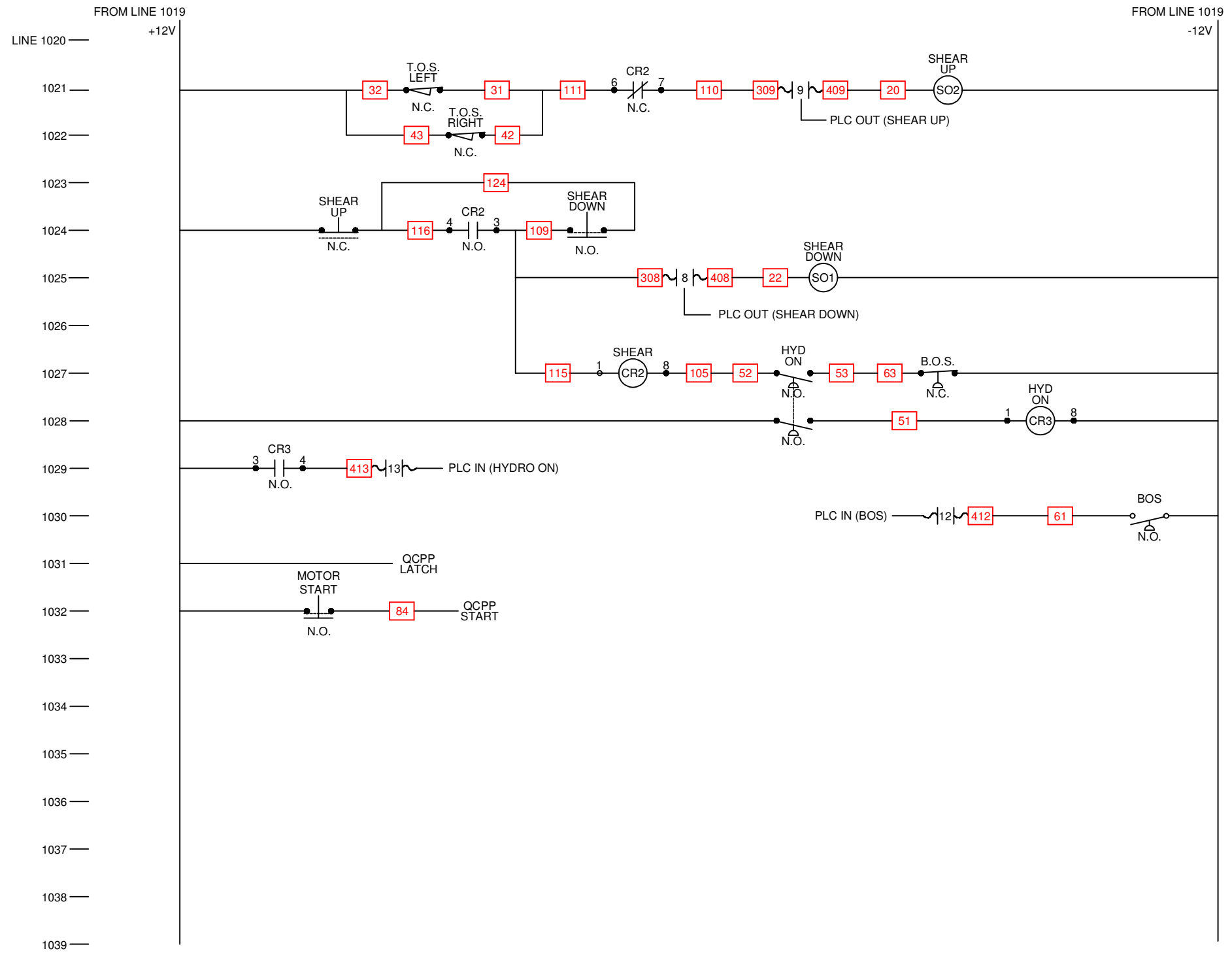
4 OF 5

1

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

**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
	SELECTOR SWITCH
	SPRING RETURN SELECTOR SWITCH
	MOMENTARY SWITCH
	ROTARY ENCODER



REV	ECR NO.	DATE	RELEASED BY

**NEW TECH MACHINERY CORP.**

**CONTROL BOX ASSEMBLY**

PLC-381-000

5 OF 5 SHEETS

REVISION 1

TOLERANCES  
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 .XXX = ± .005  
 FRACTION = ± 1/32"  
 ANGLE = ± 1/2'



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**SSH-MAN-PLC | REVISION 2 | 6-8-2012**