



FWM™ Flush Wall

One Inch Wall – Soffit – Underdeck Panel Machine OPERATION and MAINTENANCE MANUAL



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CHAPTER 1
FWM SPECIFICATIONS

SPECIFICATIONS

FWM Dimensions:	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)
FWM on Trailer:	Length-17' 6"	(5.3m)
	Width-7'	(2.1m)
	Height-6' 3"	(1.9m) with reel
	Weight-4500 lbs.	(2050kg)
Speed:	60 ft./min. Approx.	(18m/min.) Approx.
Drive:	Hydraulic via chain and sprocket. Eight polyurethane drive rollers.	
Shear:	Hydraulically Powered, Infinitely adjustable, hardened tool steel dies and blades.	
Hydraulic Fluid:	15 Gallons - 32AW	
Coil Width:	14" to 24" (350mm to 600mm)	
Materials Formed:	Painted Steel	28ga. to 24ga. (.3mm to .6mm) Painted, Galvanized, Aluminized
	Painted Aluminum	.019" to .040" (.5mm to 1.0mm)
	Copper	16 oz. to 20 oz. $\frac{3}{4}$ Hard (.5mm to .7mm)
Controls:	Standard:	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

MACHINE ORIENTATION

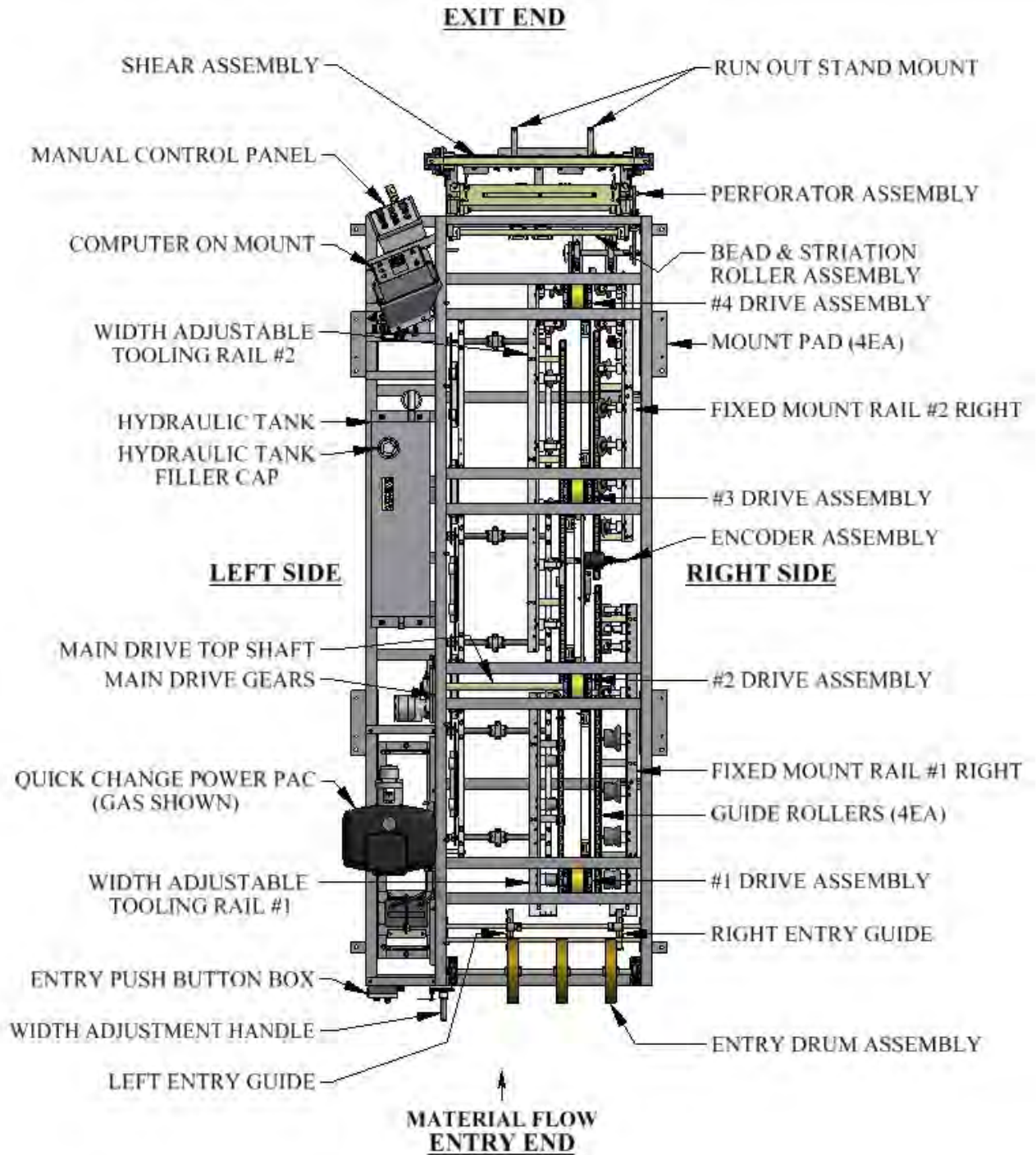


Figure 1: Machine Orientation

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 (Figure 3 on page 7) clean and lubricate as needed with Spray Lube.
8. Keep Bead Roller Carriage Shafts (Figure 21 on page 34) clean and lubricate with Spray Lube.
9. Lubricate 5 Acme Shafts (Figure 4 on page 8) with Spray Lube as needed.
10. Lubricate Miter-Gears (Figure 4 on page 8) on ends of Acme Shafts with Spray Lube as needed.
11. Keep Arbor Cradles (Figure 11 on page 19) lubricated with Clear Grease.
12. Lubricate Arbor Nut (Figure 10) using a grease gun with EP Grease when threads begin to look dry.
13. Clean Forming Rollers as needed with a Scotch Brite Pad and a small amount of solvent.
14. 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.
15. Lubricate both faces of the Shear Blades and Dies (Figure 19) 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, Acme Shafts and Miter Gears

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:

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

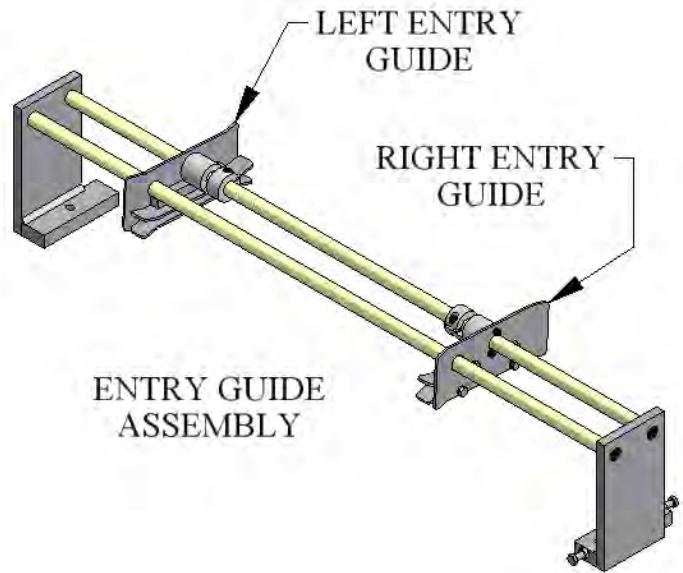
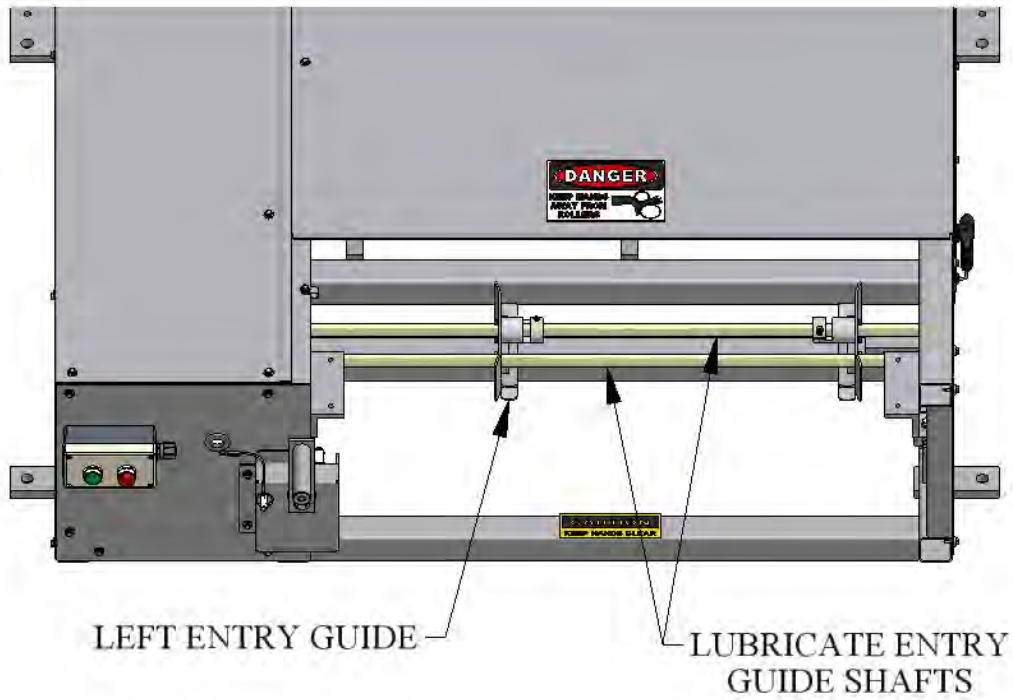


Figure 3: Entry Guide

CHAPTER 4
GENERAL MAINTENANCE

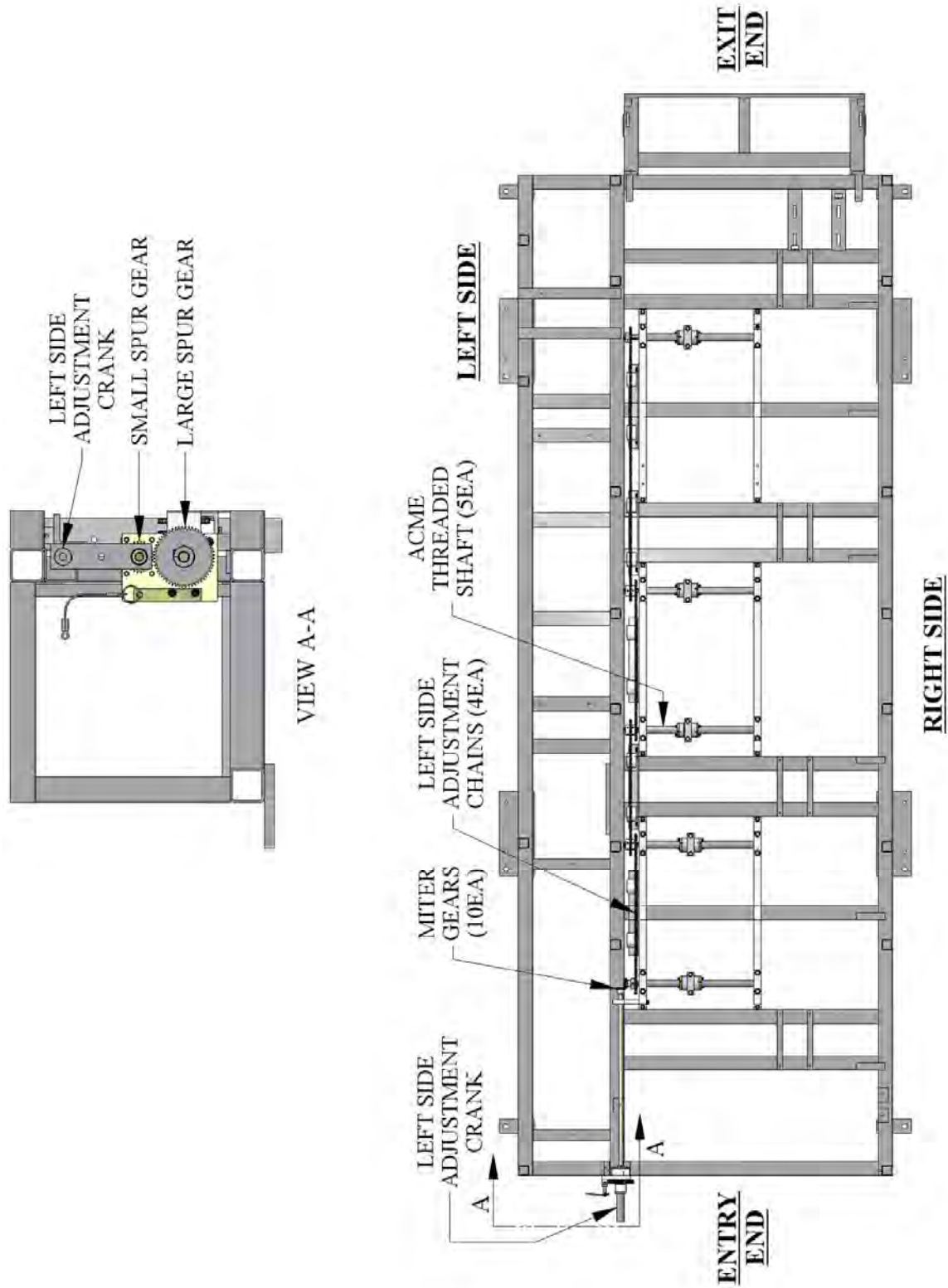


Figure 4: Acme Shafts and Left Side Adjustment

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:

(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.

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 6)

- A. The main control cable is the communication cable for the Manual Control Panel described above and the Computer Batch and Length Control Computer covered in Appendix 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 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 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 8)

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 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 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

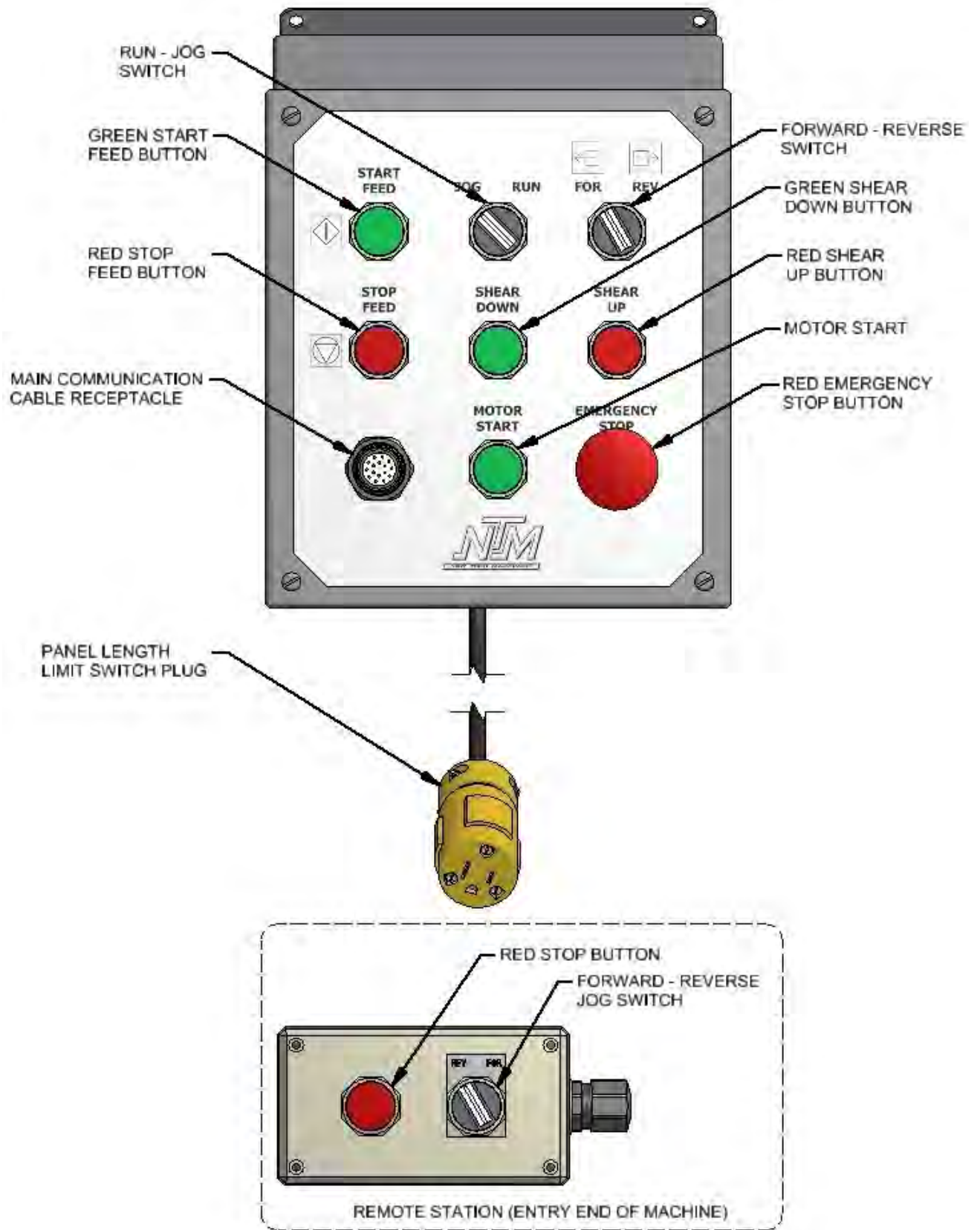


Figure 5: Controls

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

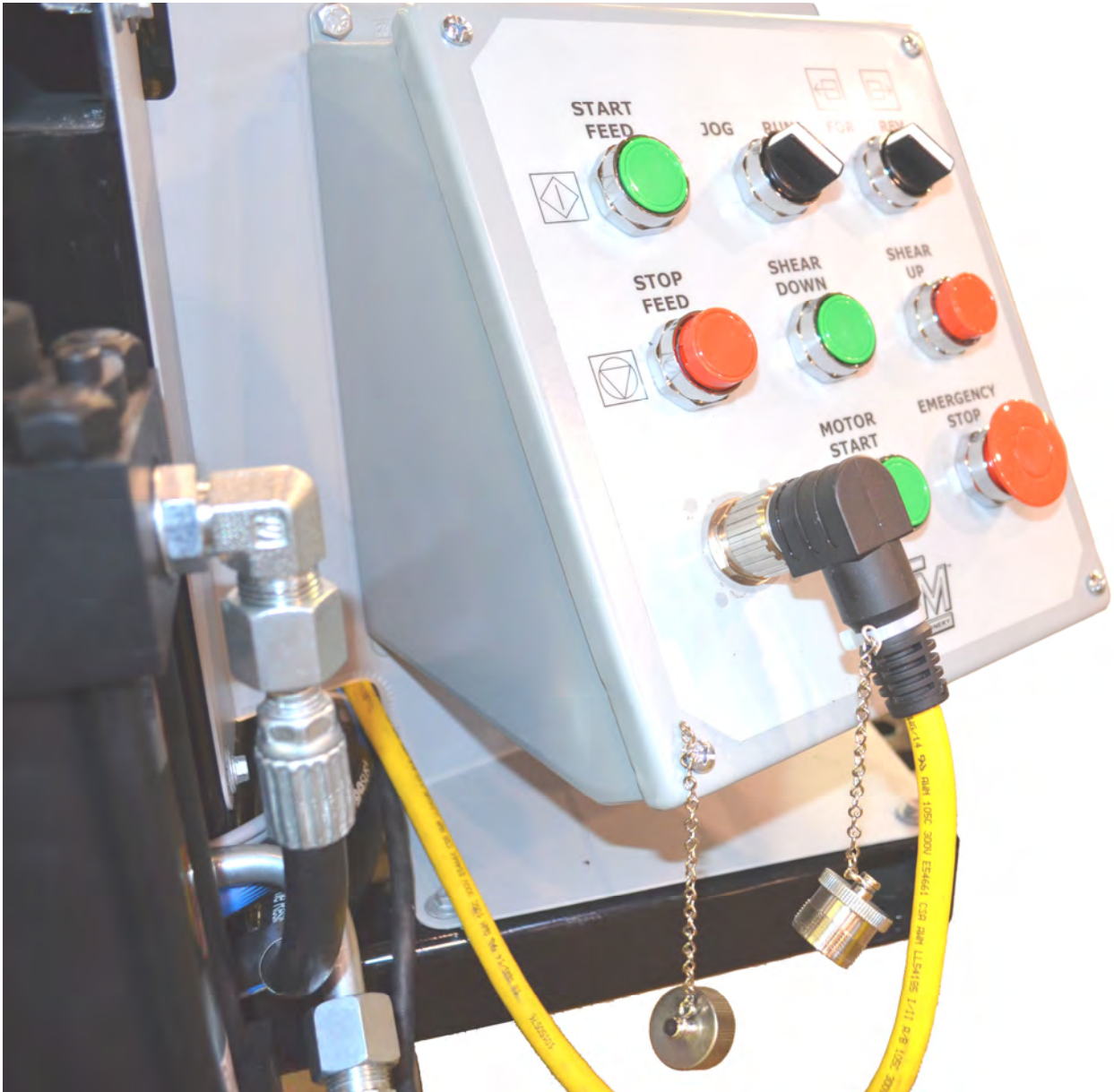


Figure 6: Main Control Cable

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

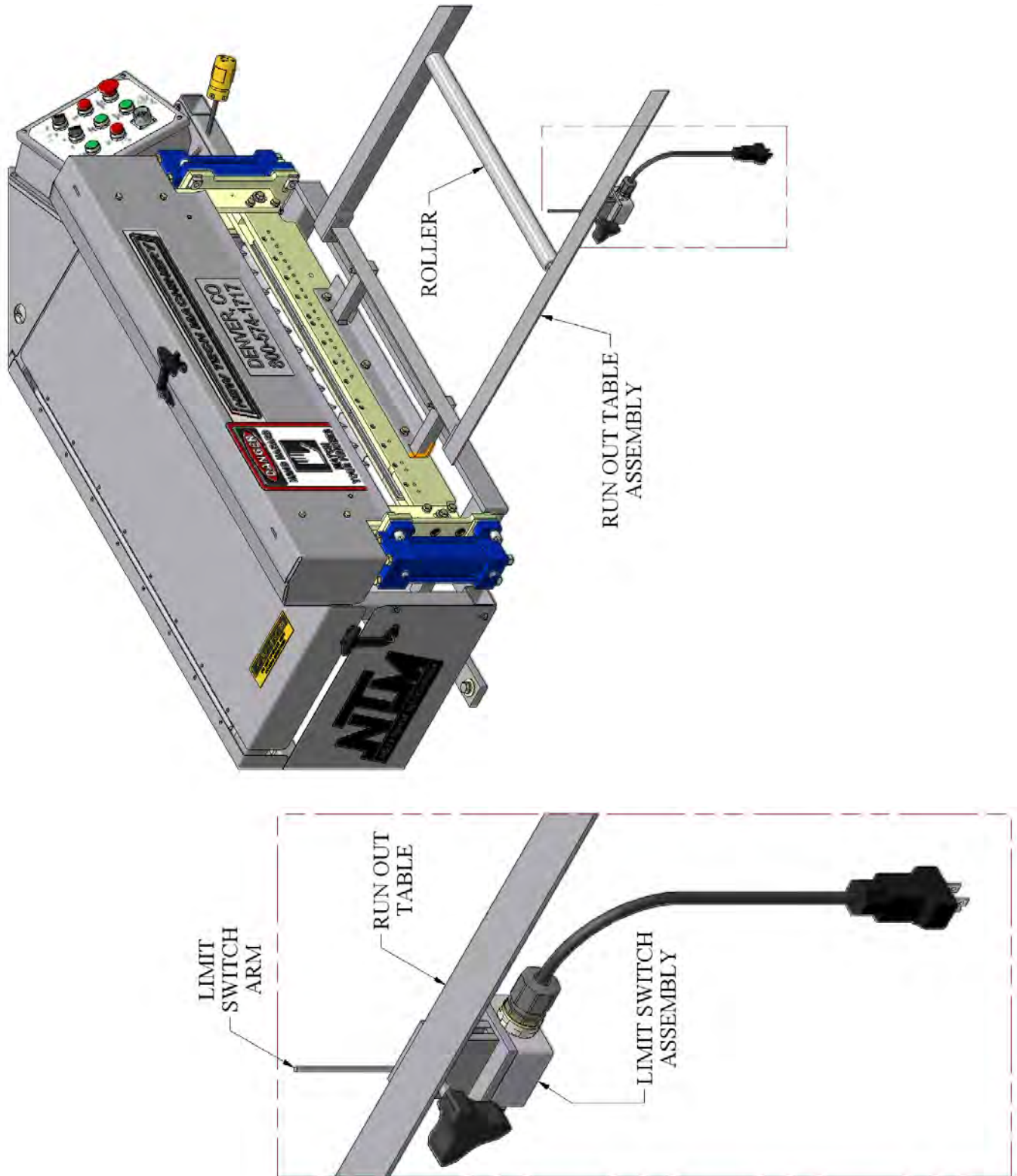


Figure 7: Run Out Table and Remote Limit Switch

CHAPTER 5
ELECTRICAL CONTROLS AND OPERATION

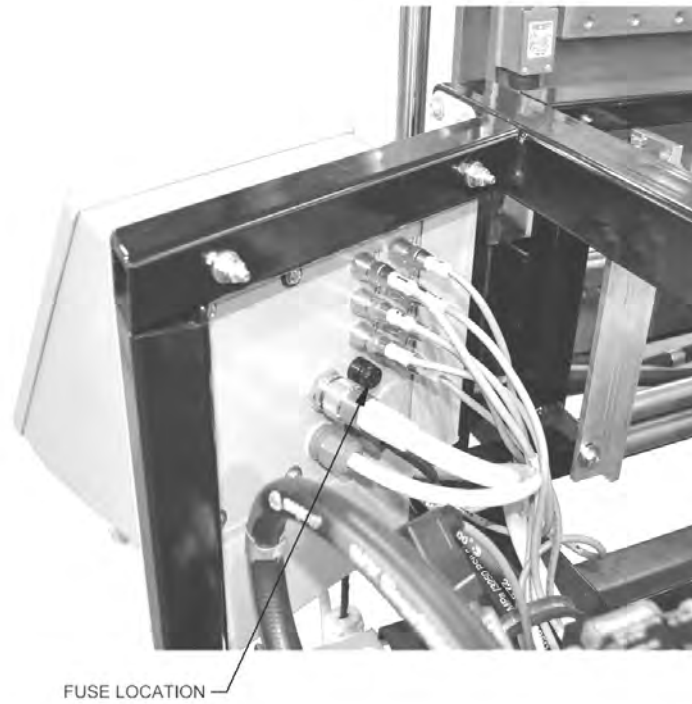


Figure 8: Main Control Box Fuse

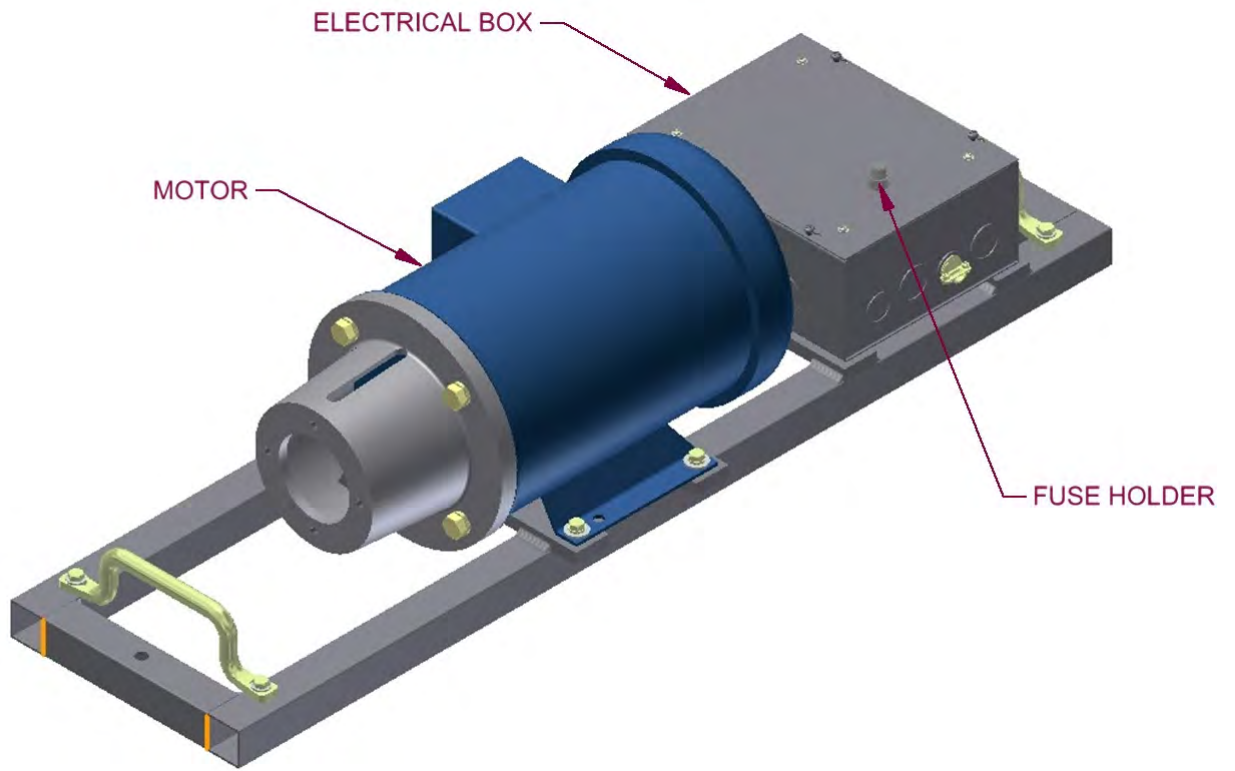


Figure 9: QCPP E 1-6 Fuse Location

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 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 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

REEL STANDS, REELS, AND EXPANABLE ARBORS

LOADING REELED COIL on page 20)

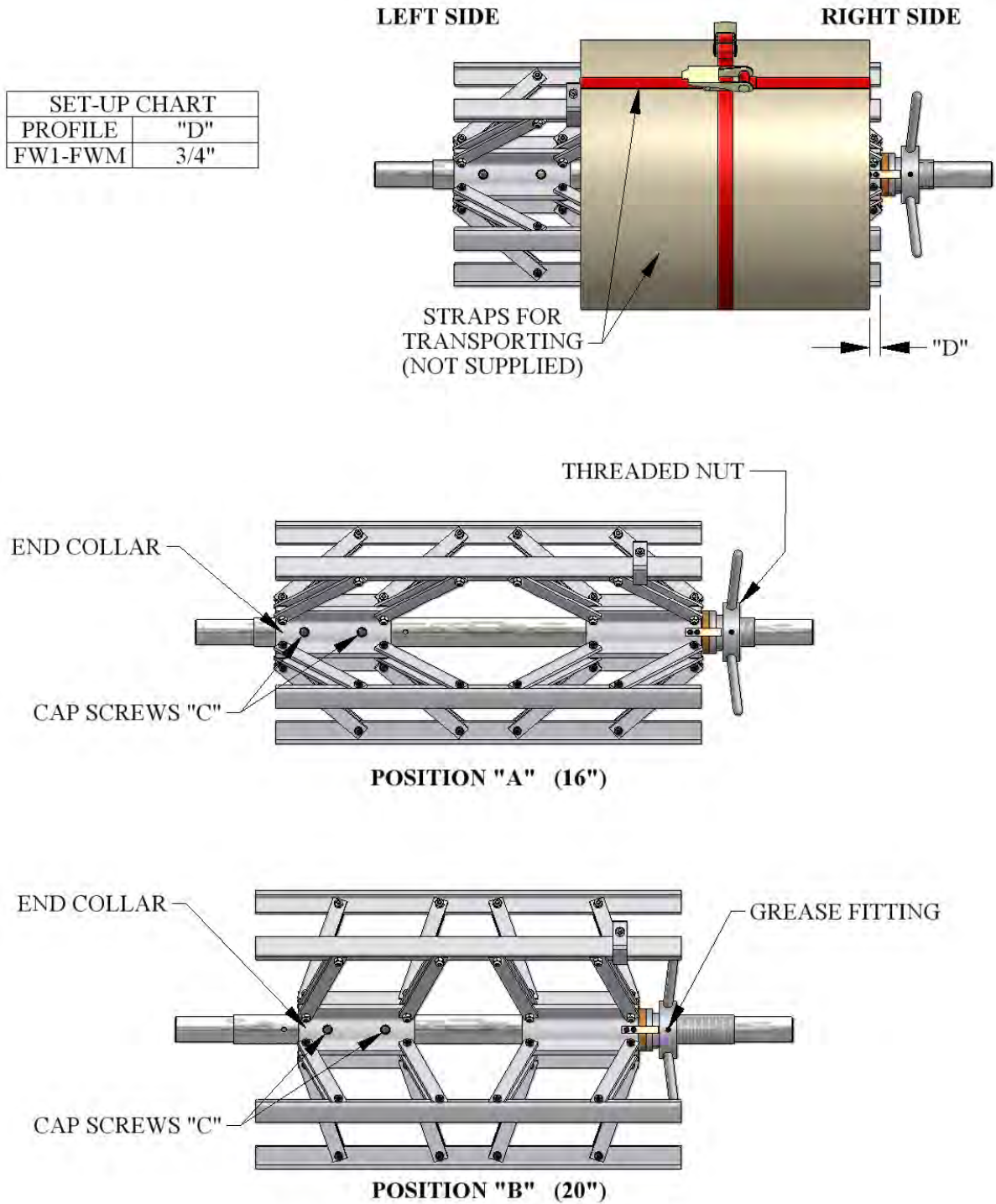


Figure 10: Expandable Arbor Set-Up

REEL STANDS, REELS, AND EXPANABLE 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 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 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. (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 EXPANABLE ARBORS

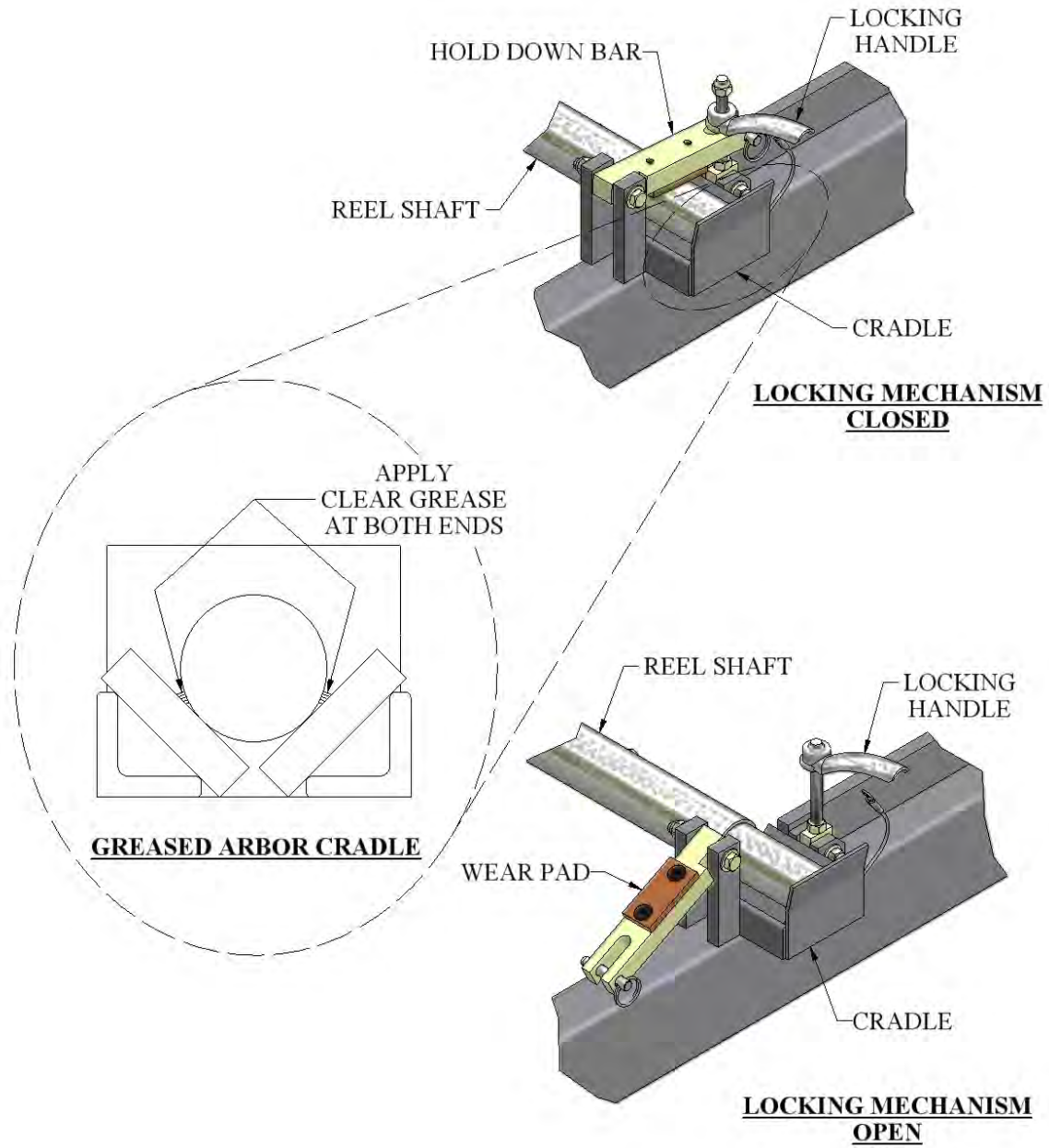


Figure 11: Expandable Reel Assembly

REEL STANDS, REELS, AND EXPANABLE ARBORS

LOADING REELED COIL

Caution:

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

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

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

1. Prepare the reel stand by making sure the Hold Down Bars are in the unlocked and open position (Figure 11).
2. Using an approved lifting device, lift the reeled coil into the cradles on the reel stand making sure that the tail of the coil is in the correct position (Figure 12) then remove the lifting device.
3. Rotate the Hold Down Bars (Figure 11) to the closed position and thread the handle onto the hold down bolt. If material is going to 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 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 EXPANABLE ARBORS

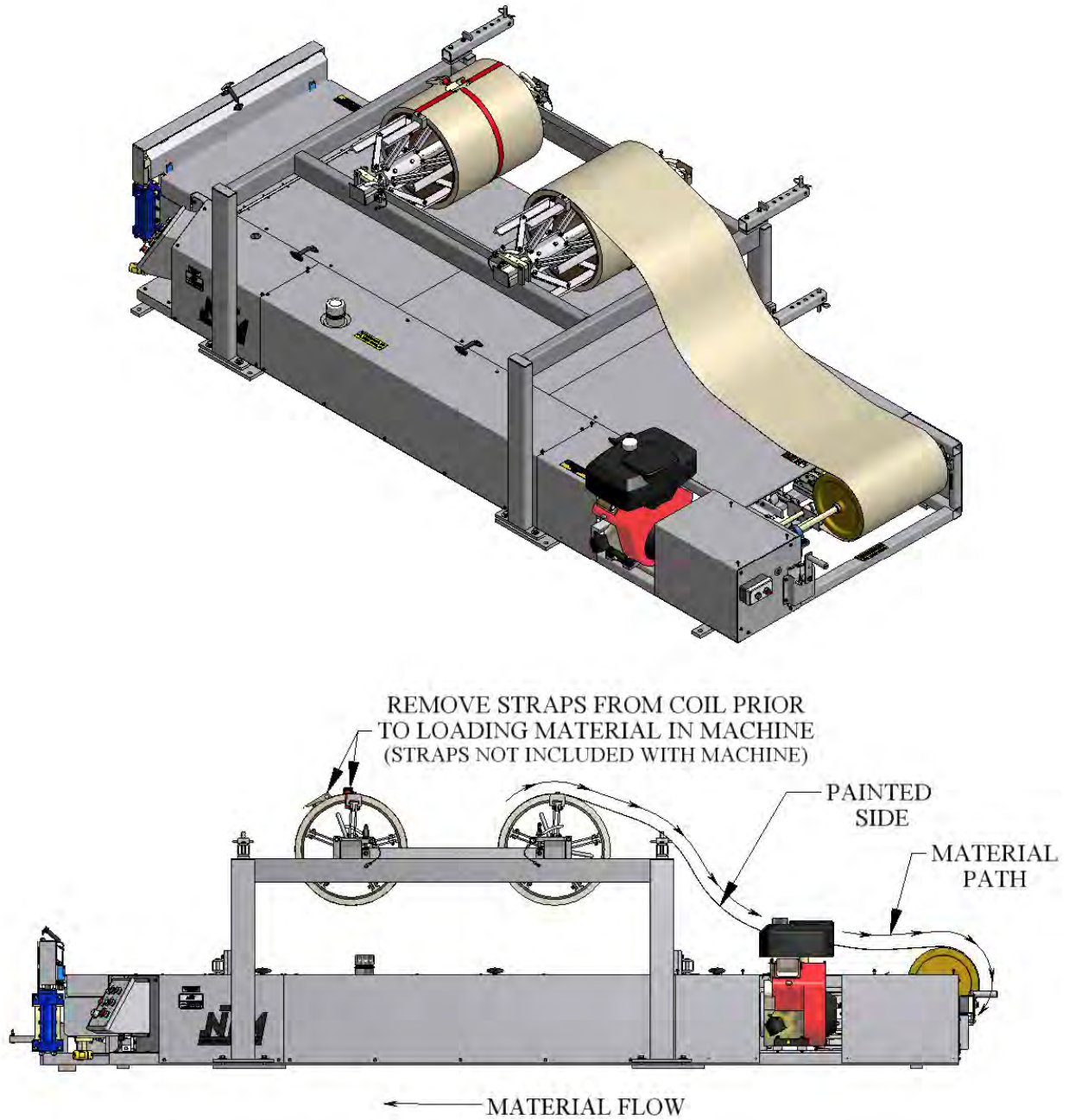


Figure 12: Material Routing

CHAPTER 7
HYDRAULIC SYSTEMS

HYDRAULIC SYSTEMS

Maintenance

(Figure 13)

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 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 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 SYSTEMS

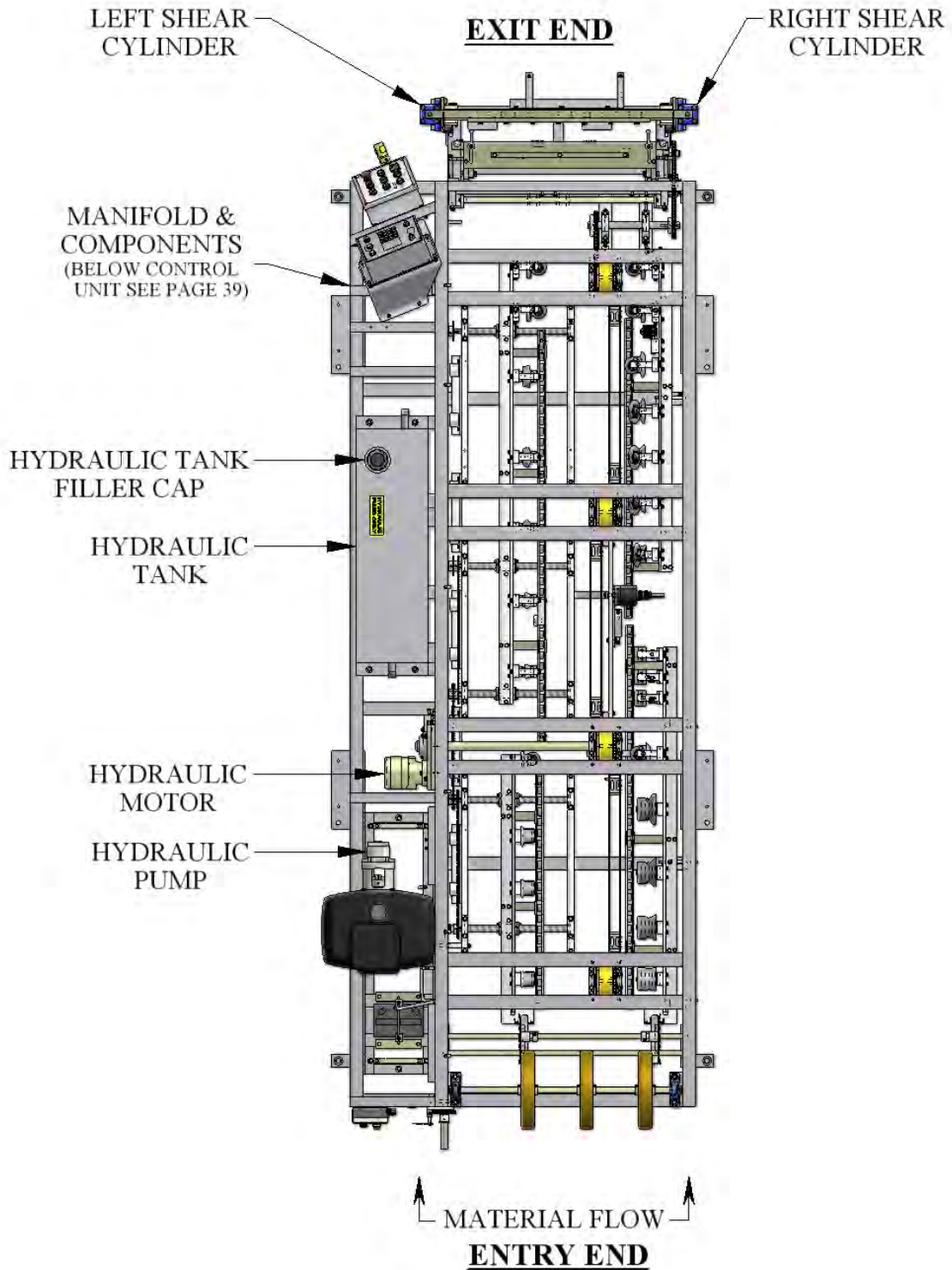


Figure 13: Hydraulic System – Overview

CHAPTER 7
HYDRAULIC SYSTEMS

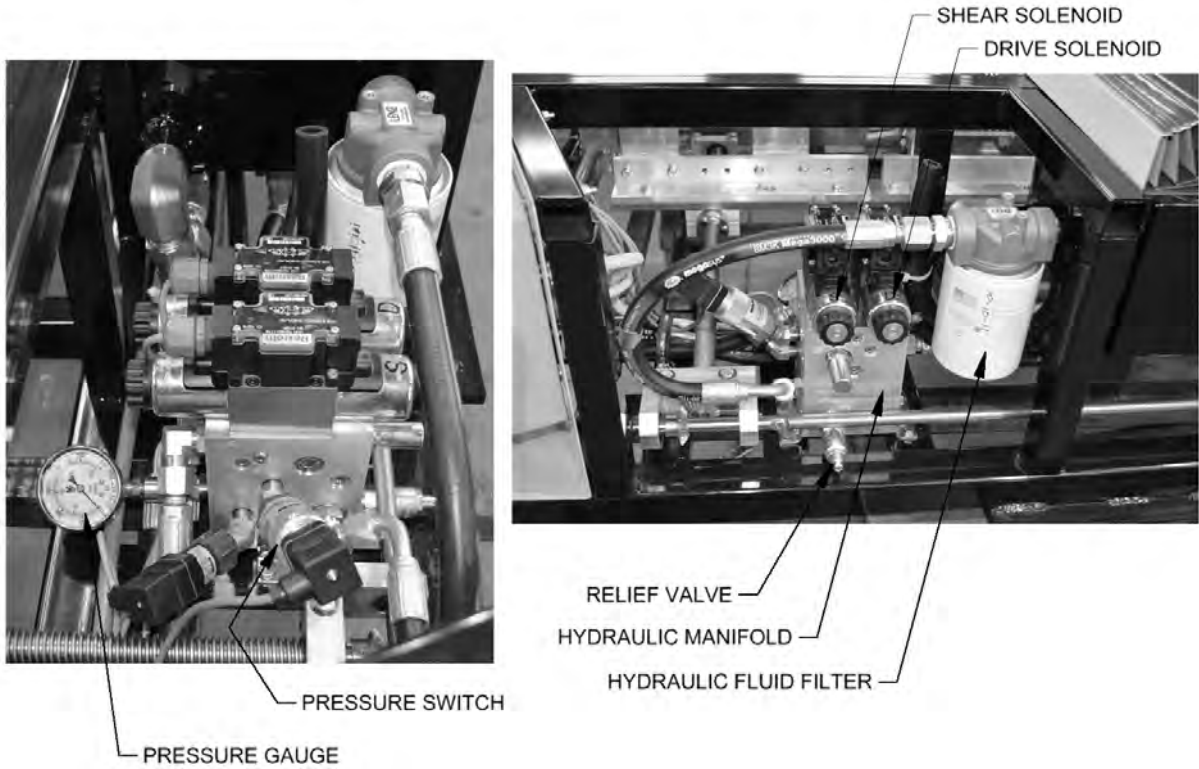


Figure 14: Hydraulic System – Details

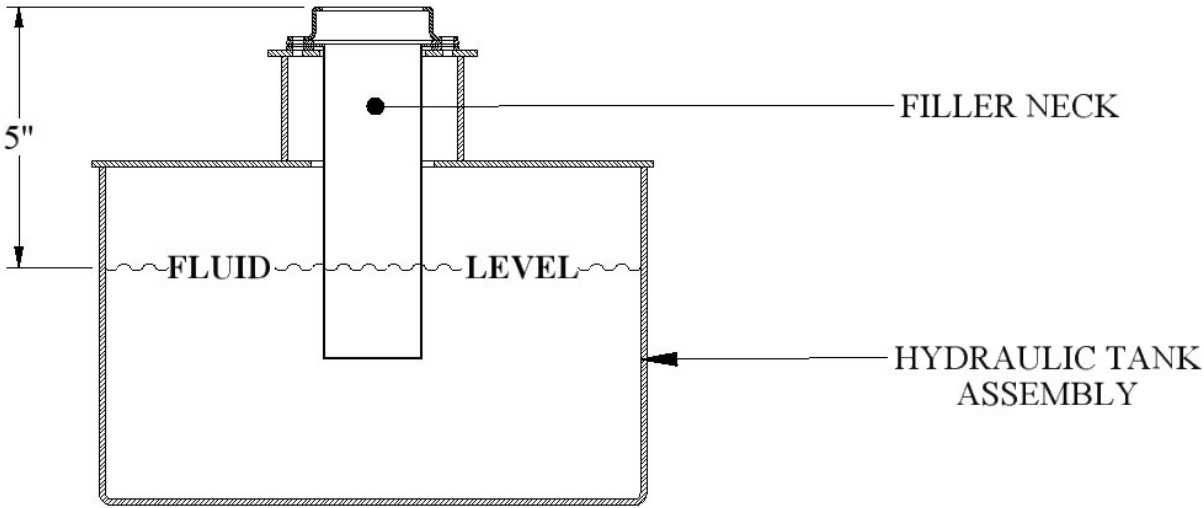


Figure 15: Hydraulic Fluid Level

CHAPTER 8
DRIVE SYSTEM

DRIVE SYSTEM

(Figure 16, Figure 17 & Figure 18)

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. through 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 the FWM 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 18 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

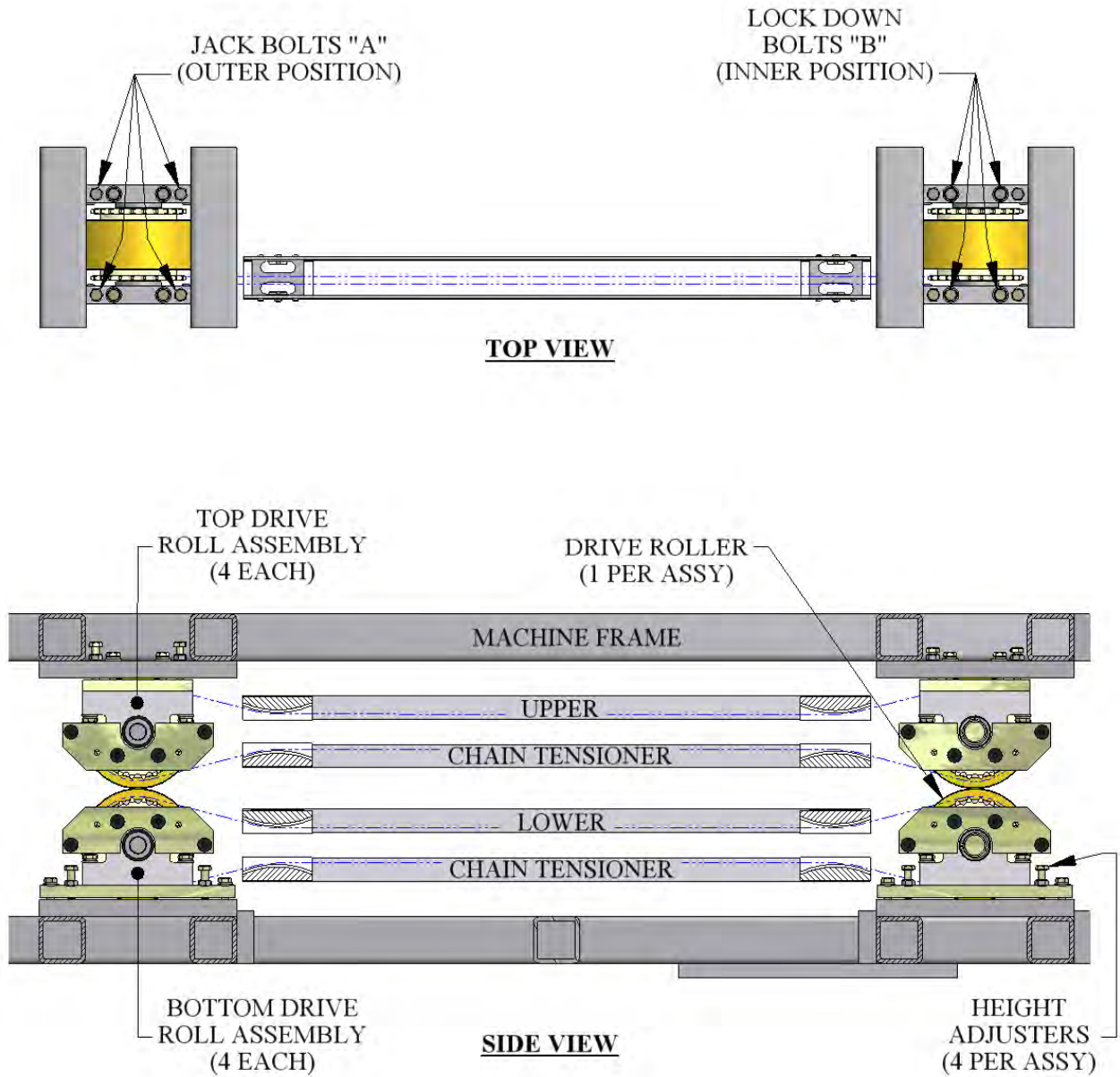


Figure 16: Drive Roll Assembly View

CHAPTER 8
DRIVE SYSTEM

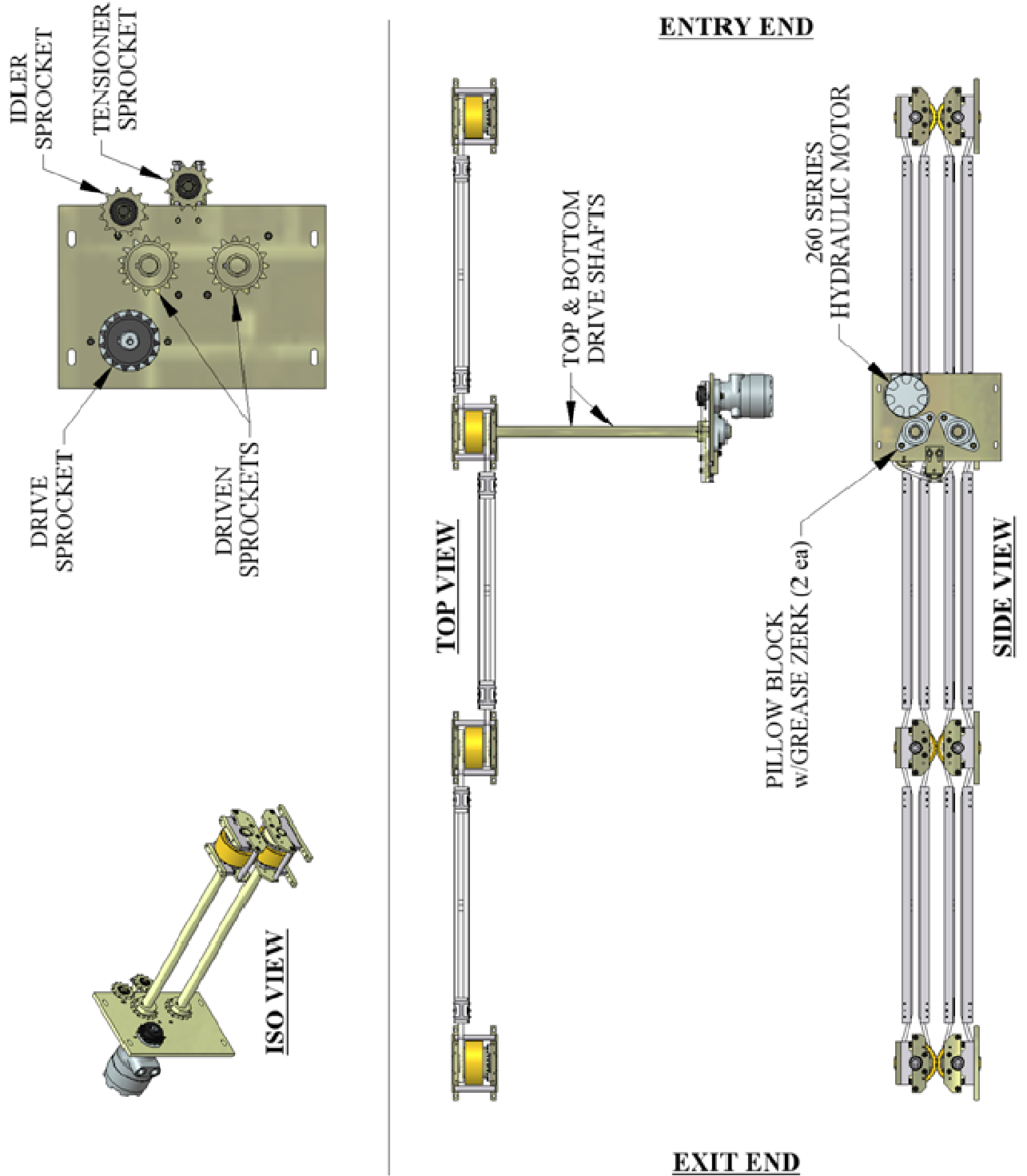


Figure 17: Gears and Shafts

CHAPTER 8
DRIVE SYSTEM

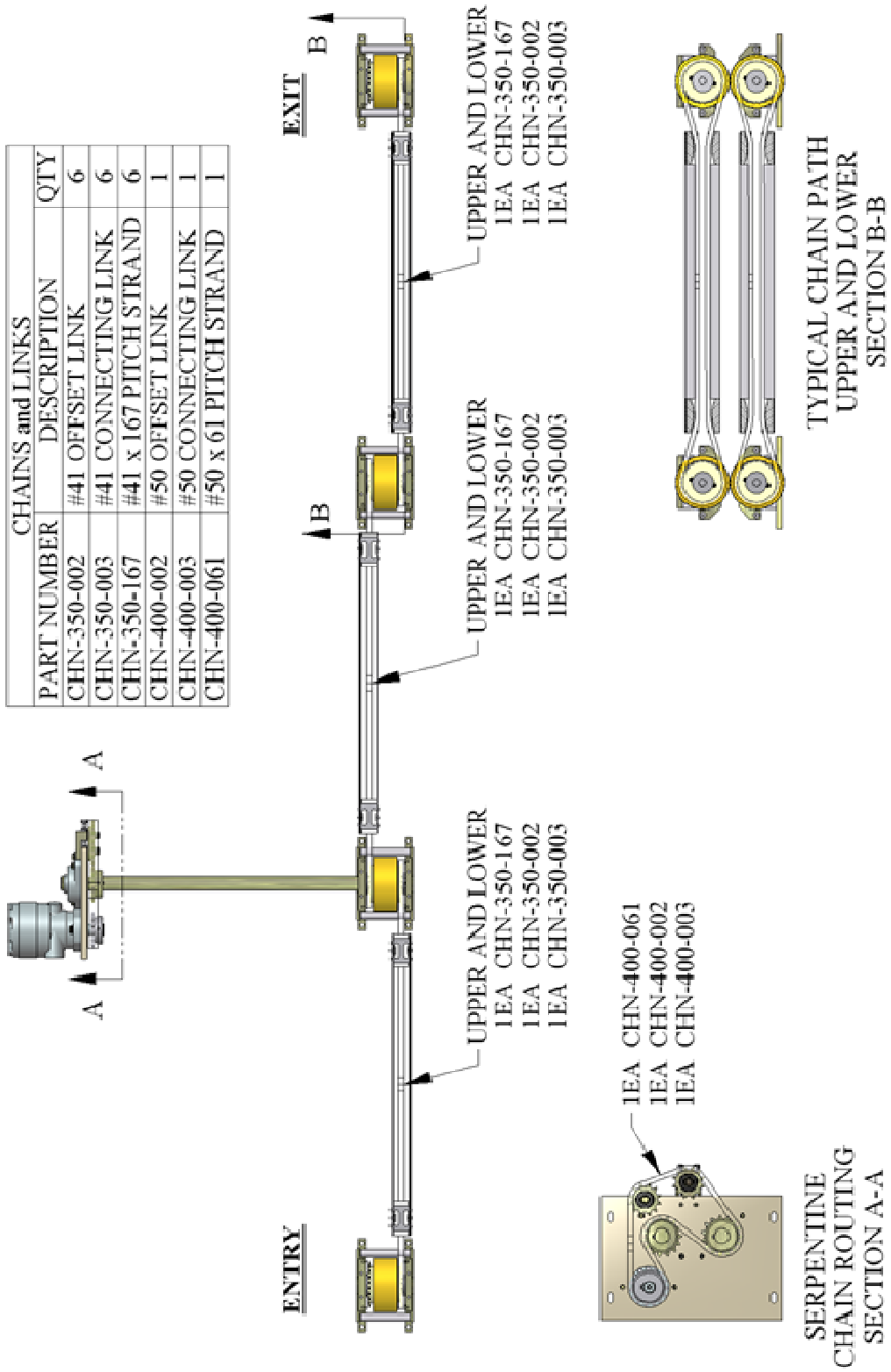


Figure 18: Chains Upper and Lower

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.

Caution: Pressing the Emergency Stop button will stop the shear **WITHOUT sending the shear up.**

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".

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

CHAPTER 9
SHEAR ASSEMBLY

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 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.

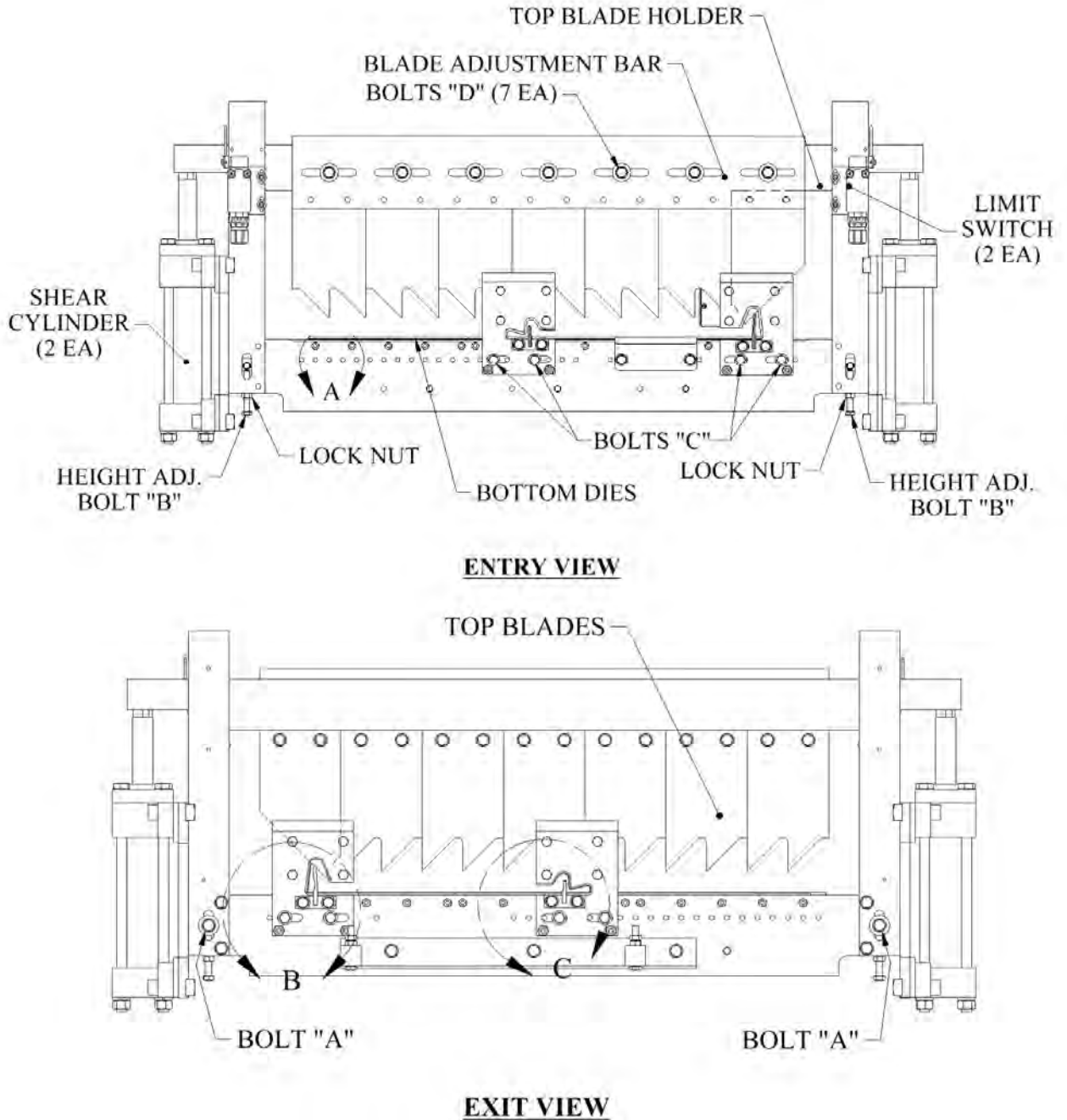
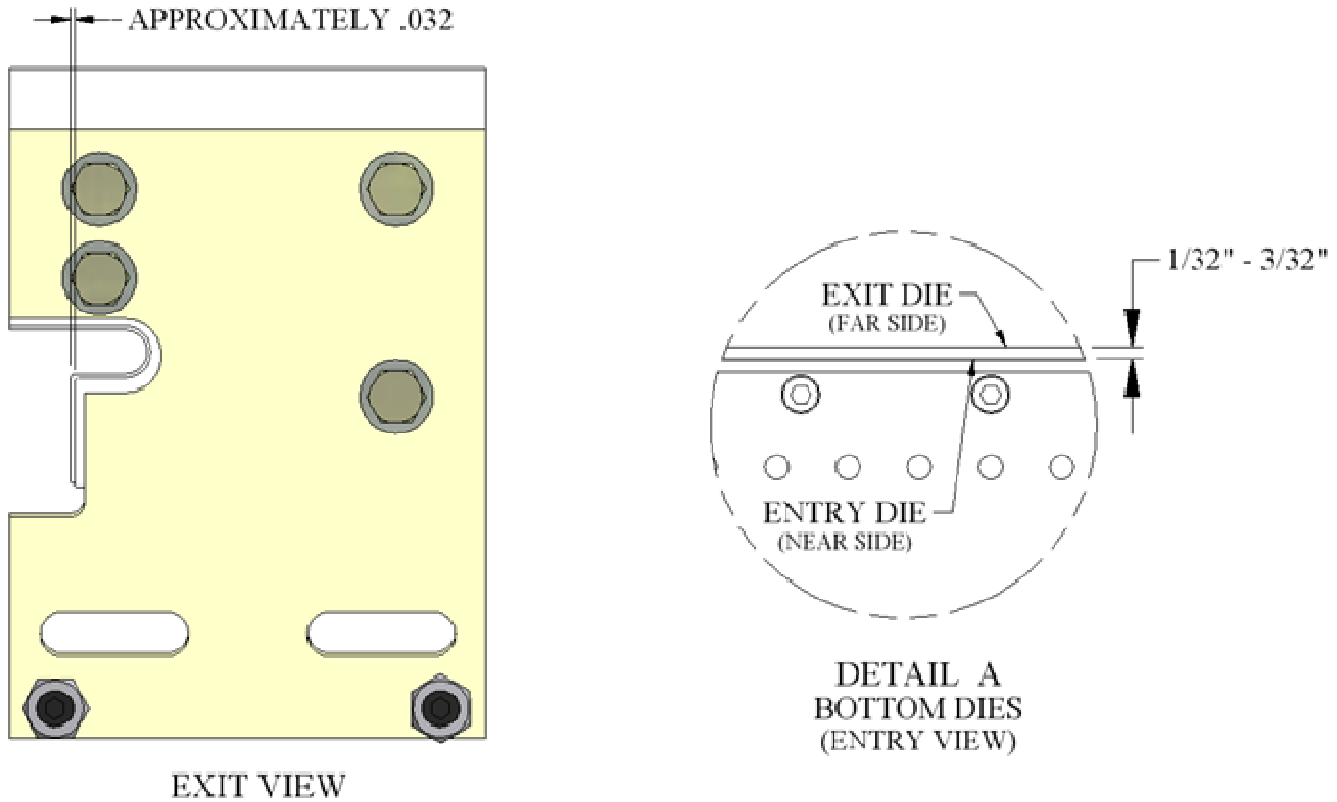


Figure 19: Entry/Exit Views

CHAPTER 9
SHEAR ASSEMBLY



BLADE ADJUSTMENT

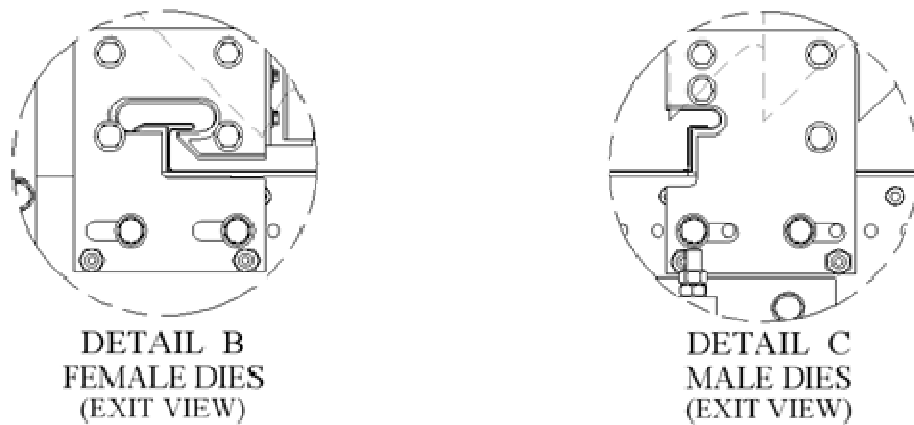


Figure 20: Shear Die Detail Views

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.

CHAPTER 9
SHEAR ASSEMBLY

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 shear 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 top shear blade must be adjusted simultaneously in the same manner for the Male leg. You should be able to find 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 utilizing 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

1. The Bead Roller assembly (Figure 21) is located behind the shear and is accessed by removing the top cover. These rollers can be engaged or disengaged as needed and can also be moved left or right to accommodate different panel widths.
2. The bottom bead forming roller should be set 1 /32” above the drive roller to ensure proper entry into the shear. If adjustment is necessary, loosen the four frame mount bolts “B”, and lock nuts on the two vertical adjustment bolts “A”. Raise or lower the roller assembly by using the vertical adjustment bolts “A” to obtain the proper height. Then re-tighten the mount bolts and lock nuts on the two adjustment screws “A”.
3. Next loosen the eccentric shaft lock down screw “C”. Place a 5/32” Allen Wrench in the small hole at the end of the eccentric shaft, and rotate the top roller up until it clears the bottom roller. Loosen the two top and two bottom slide lock down screws “D”. Bring the panel material up to the rollers but not past them. **SHUT OFF THE MACHINE AND DISCONNECT THE POWER BEFORE CONTINUING.** 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 lubricated to allow bead or striation assemblies to slide smoothly.

CHAPTER 10
BEAD AND STRIATION ROLLER ASSEMBLY

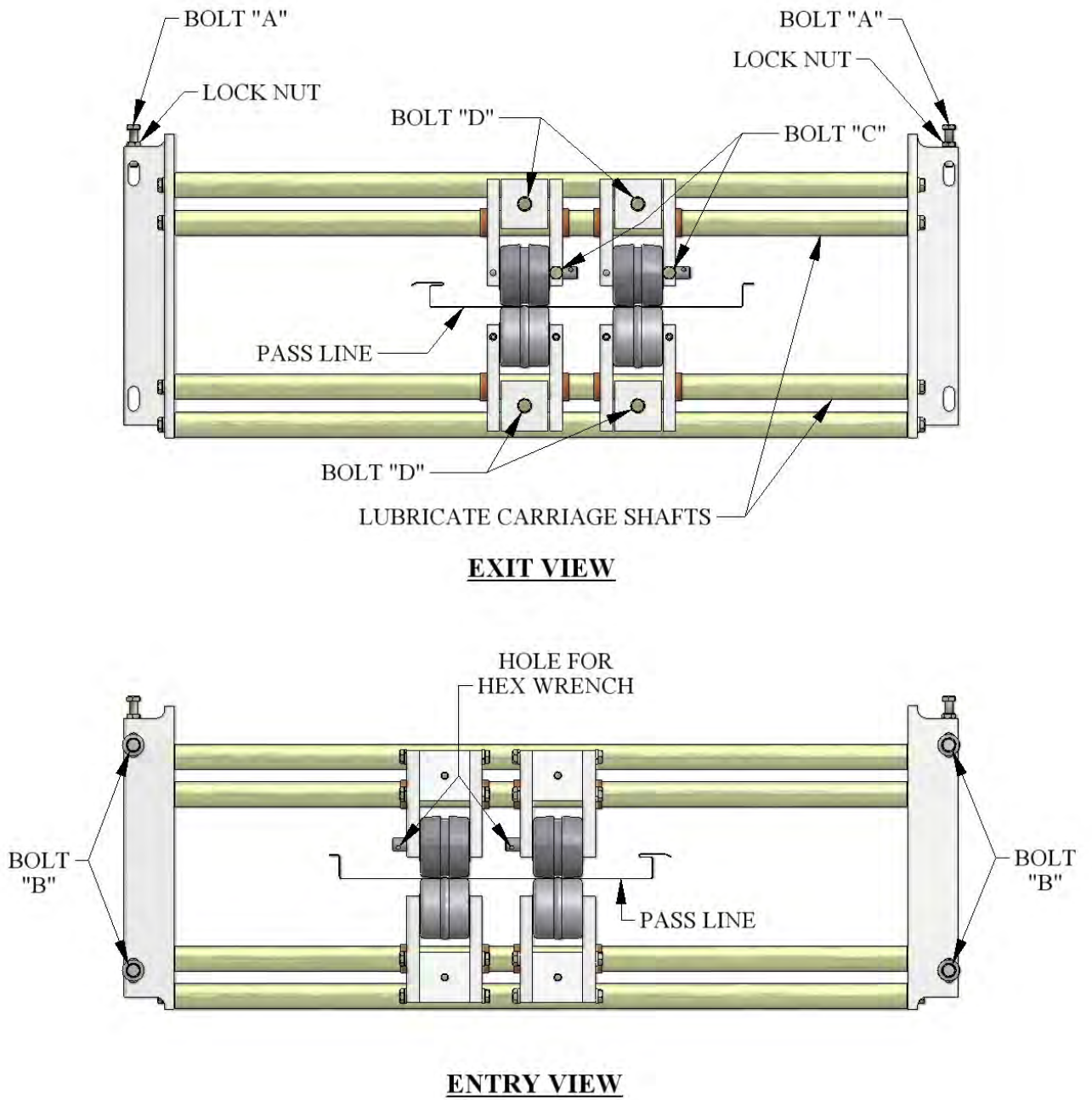


Figure 21: Bead Roller Assembly

CHAPTER 11
ENTRY GUIDE & WIDTH ADJUSTMENT

ENTRY GUIDE & WIDTH ADJUSTMENT

(Figure 22)

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. The right entry guide is set to the correct position from the factory and should not need any adjustment.

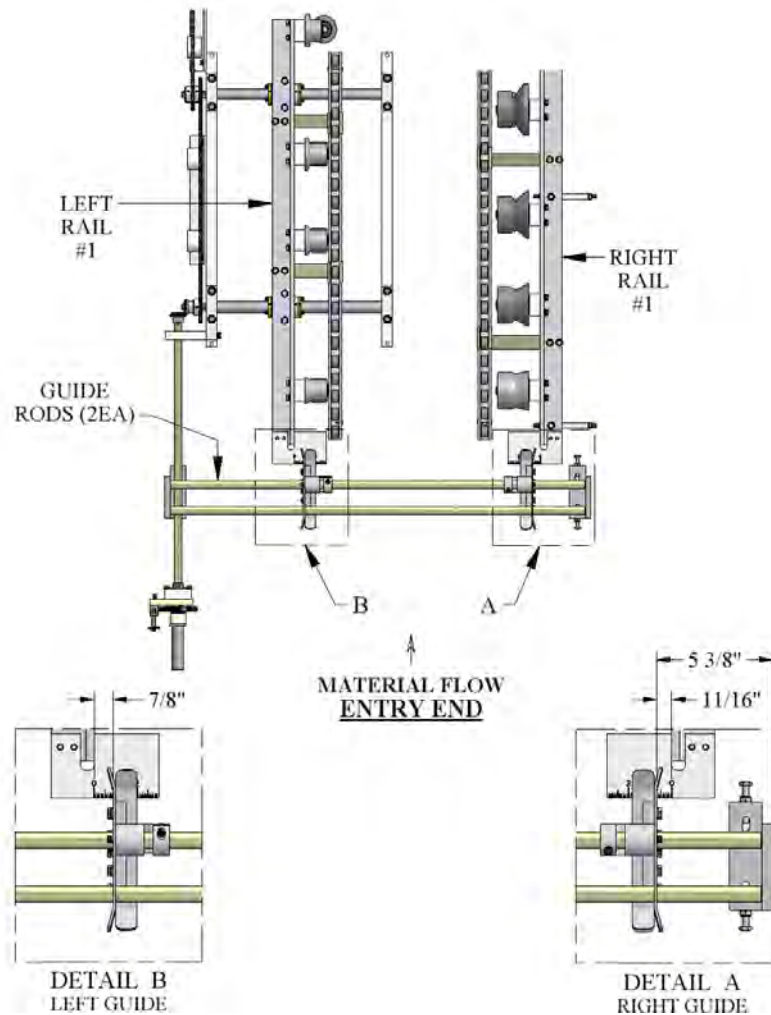


Figure 22: Right Entry Guide

1. Loosen the clamp bolt on the left entry guide.
2. Cut a 12" long piece of gage material from the coil being used to set the left entry guide.
3. Slide gage material between the left and right entry guides.
4. Slide the Left Entry Guide to the left or right to accept the new coil width. Make sure that the coil is captured snugly between the entry guides and re-tighten the clamp bolt.

CHAPTER 11
ENTRY GUIDE & WIDTH ADJUSTMENT

LEFT TOOLING RAIL TO ENTRY GUIDE ALIGNMENT

(Figure 24 to Figure 26)

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 Entry Guide whenever a width change has been made.

1. Using the Tooling Rail Adjustment Handle (Figure 23) align the edge of the entry guide plate with the 7/8" notch on the tooling rail marker plate (Figure 27). The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 25 & Figure 26). Press the handle inward (Figure 26) to engage the width adjustment gear and turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

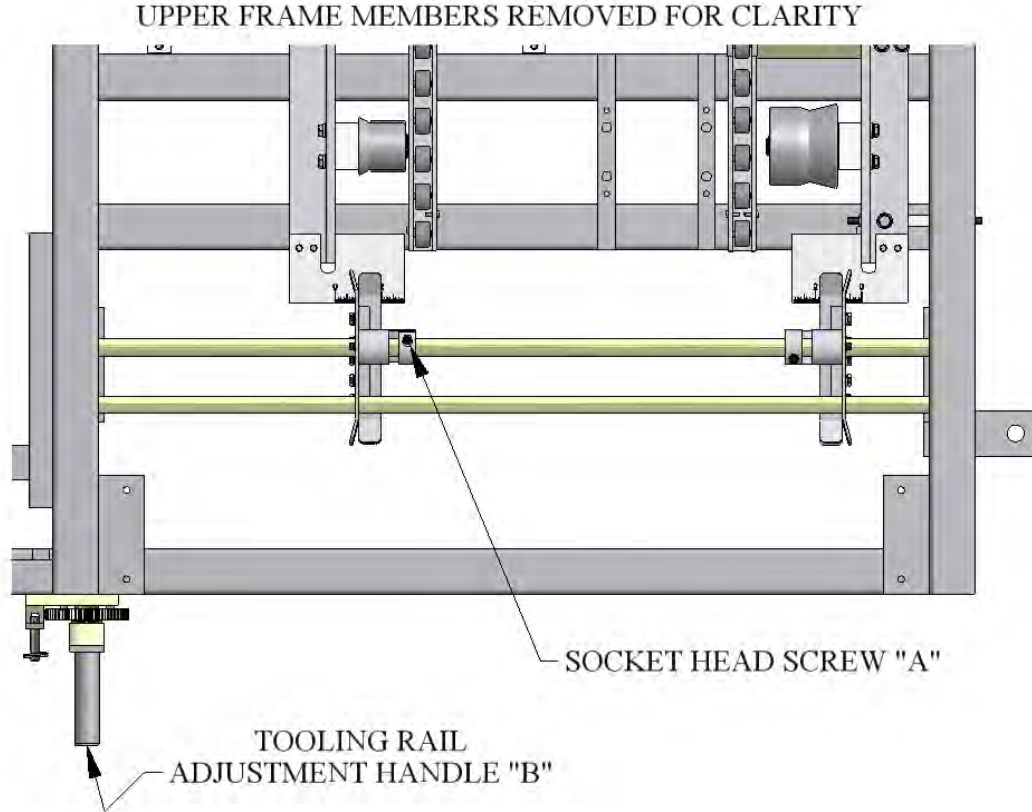


Figure 23: Align Left Tooling to Entry Guide

CHAPTER 11
ENTRY GUIDE & WIDTH ADJUSTMENT

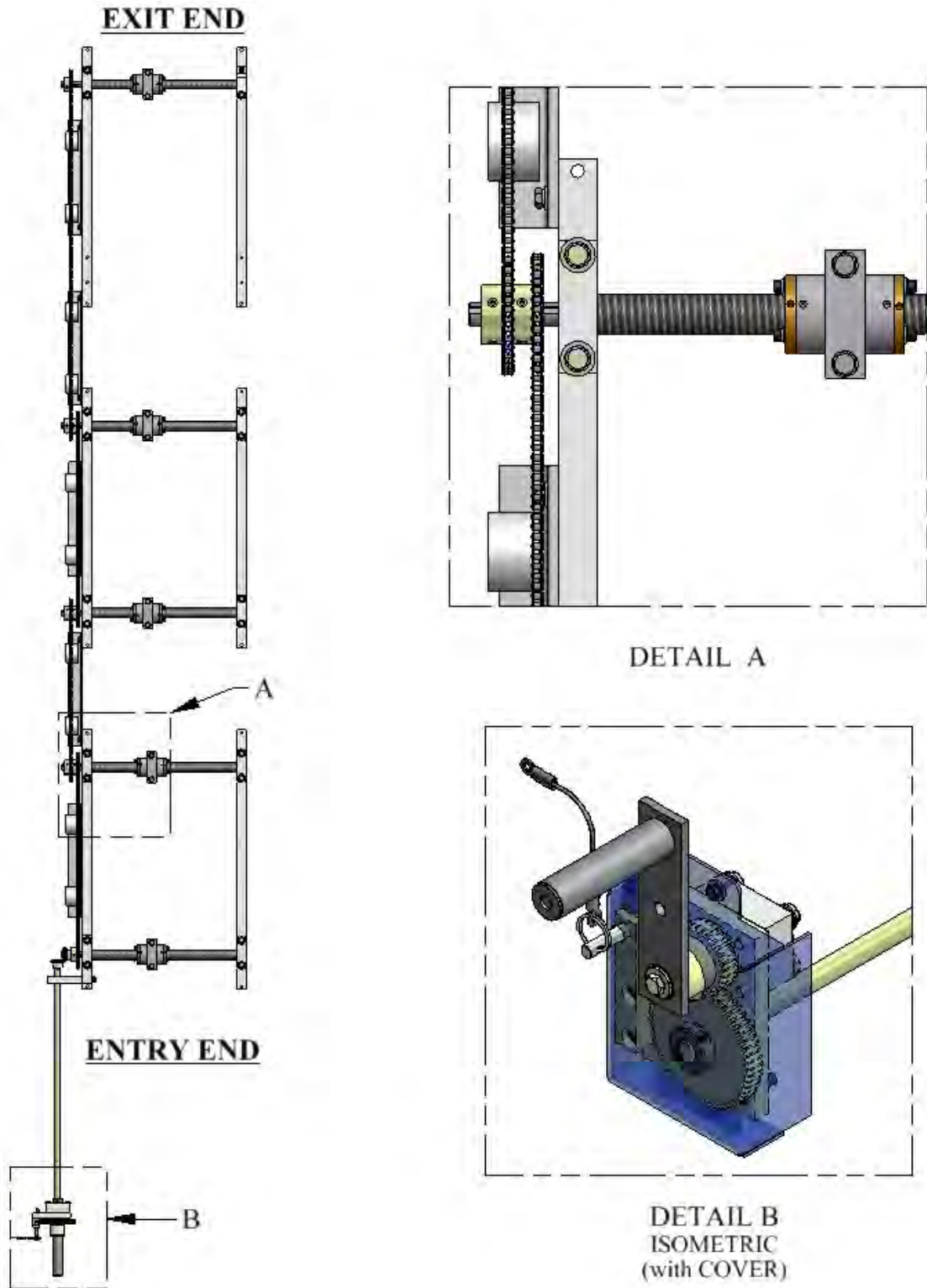


Figure 24: Tooling Rail Adjustment

CHAPTER 11
ENTRY GUIDE & WIDTH ADJUSTMENT

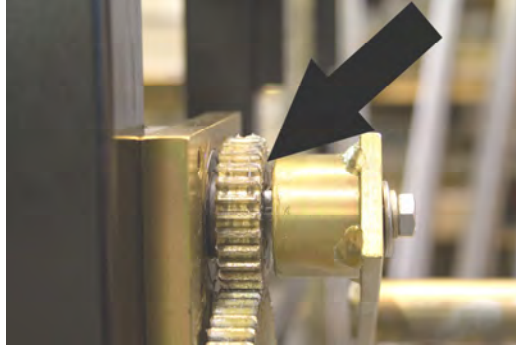


Figure 25: Disengaged

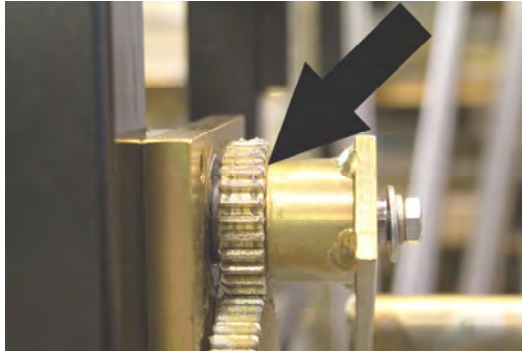


Figure 26: Engaged

CHAPTER 11
ENTRY GUIDE & WIDTH ADJUSTMENT

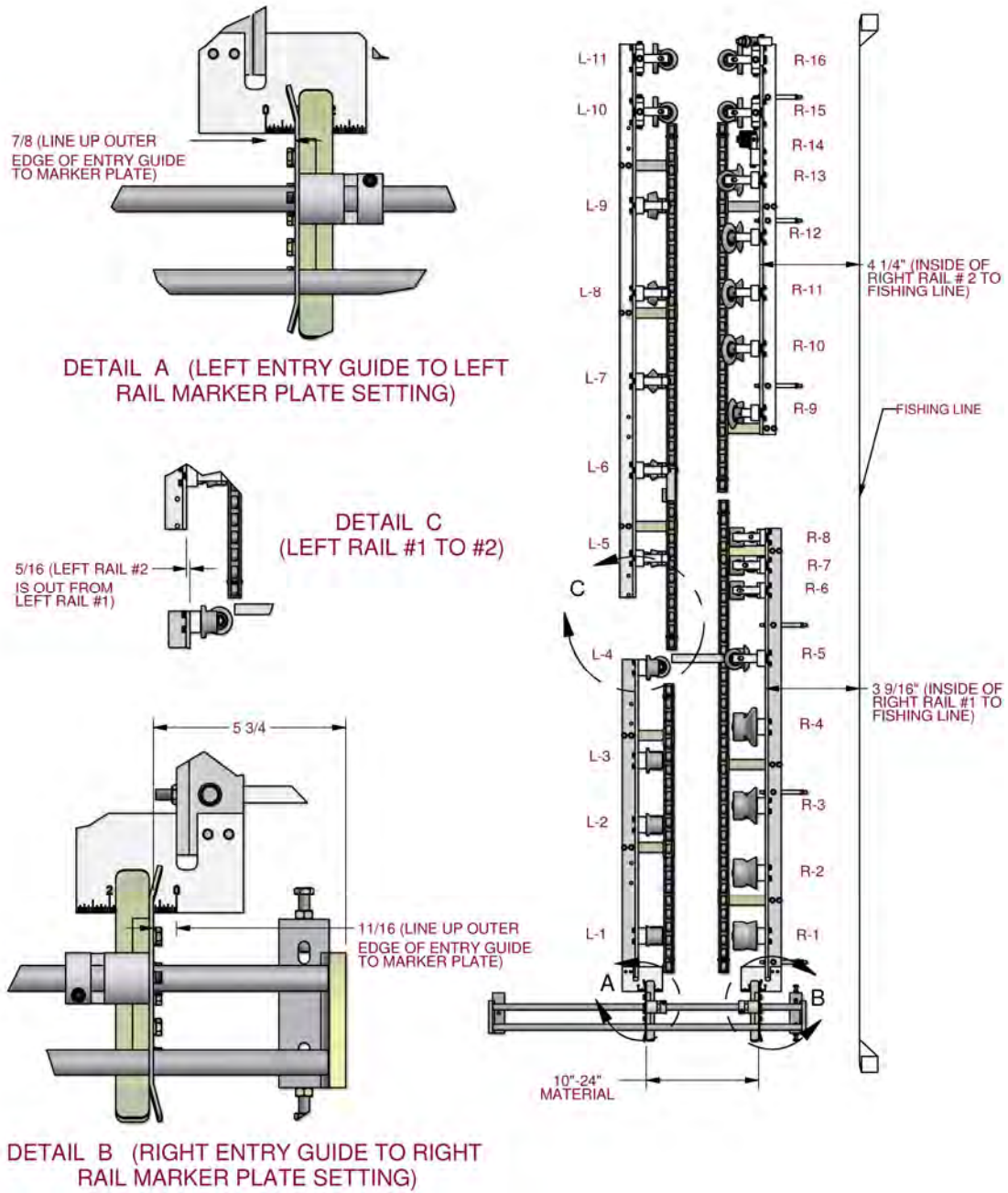


Figure 27: FWM Tooling Setup

CHAPTER 12
ENTRY DRUM ASSEMBLY

ENTRY DRUM ASSEMBLY

The Entry Drum Assembly is necessary when feeding coil off of the optional DR1/ Dual Overhead Reel Stand. It allows the material to route around the drums to get the painted side of the coil on the top as it enters the machine. Without this assembly, coil could only be fed 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, on either side of Left Entry Drum and Center Entry Drum. (Figure 28)
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 against the sides of the drums and lock them into place.

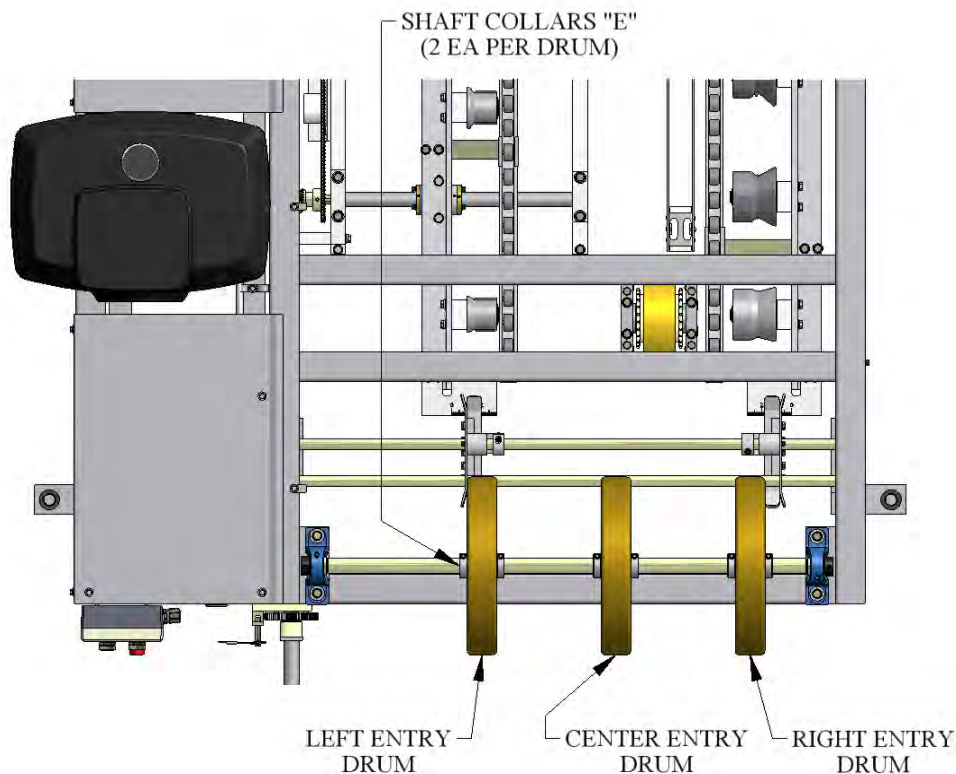


Figure 28: Entry Drum

CHAPTER 13
PERFORATOR

PERFORATOR

(Figure 29 & Figure 30)

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 24 ga 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 (backoff 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".
7. Tighten Crank Handles.

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 Round White Shaft Spacers (will move side-to-side by hand). 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

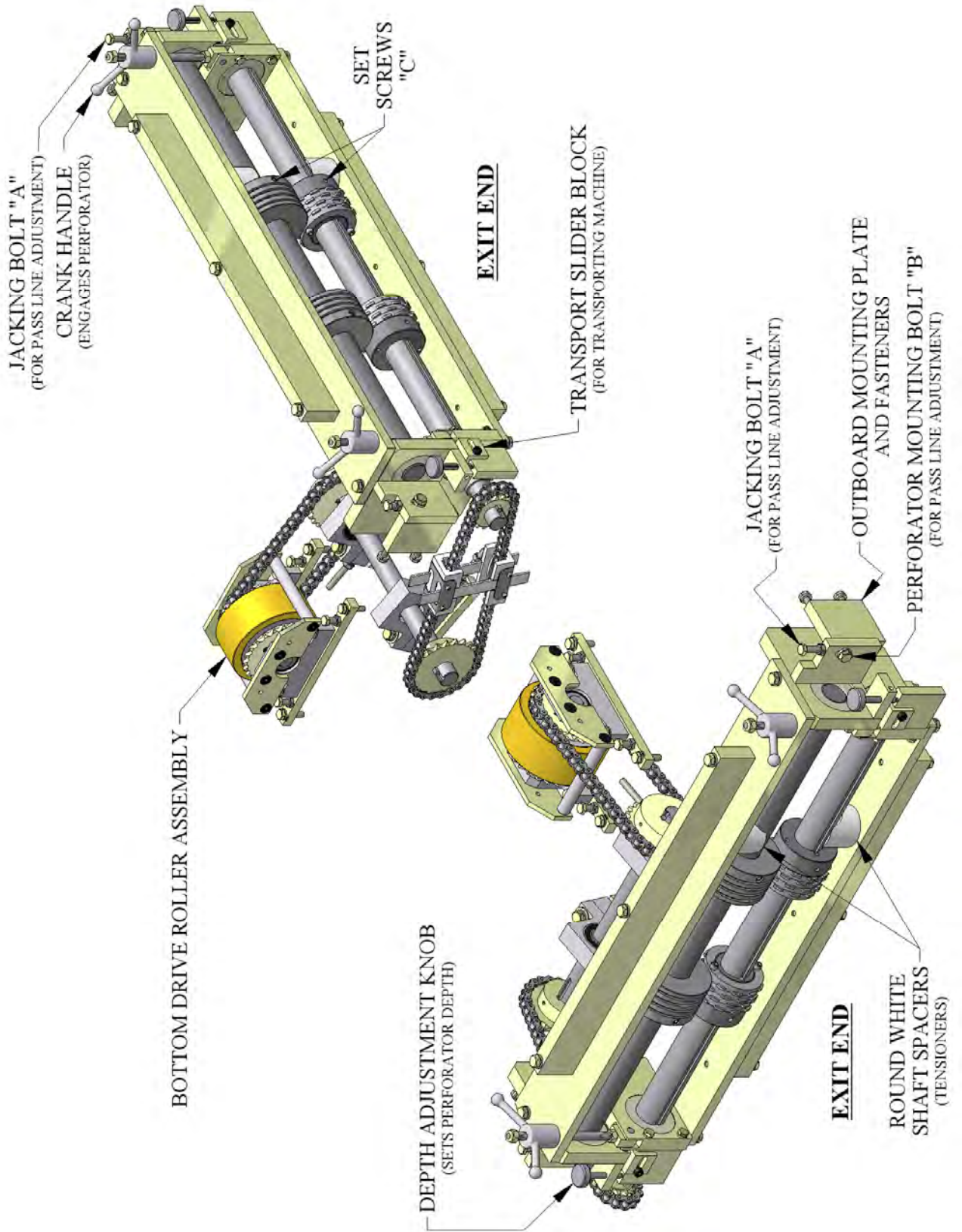


Figure 29: Powered Perforator Optional Assembly

CHAPTER 13
PERFORATOR

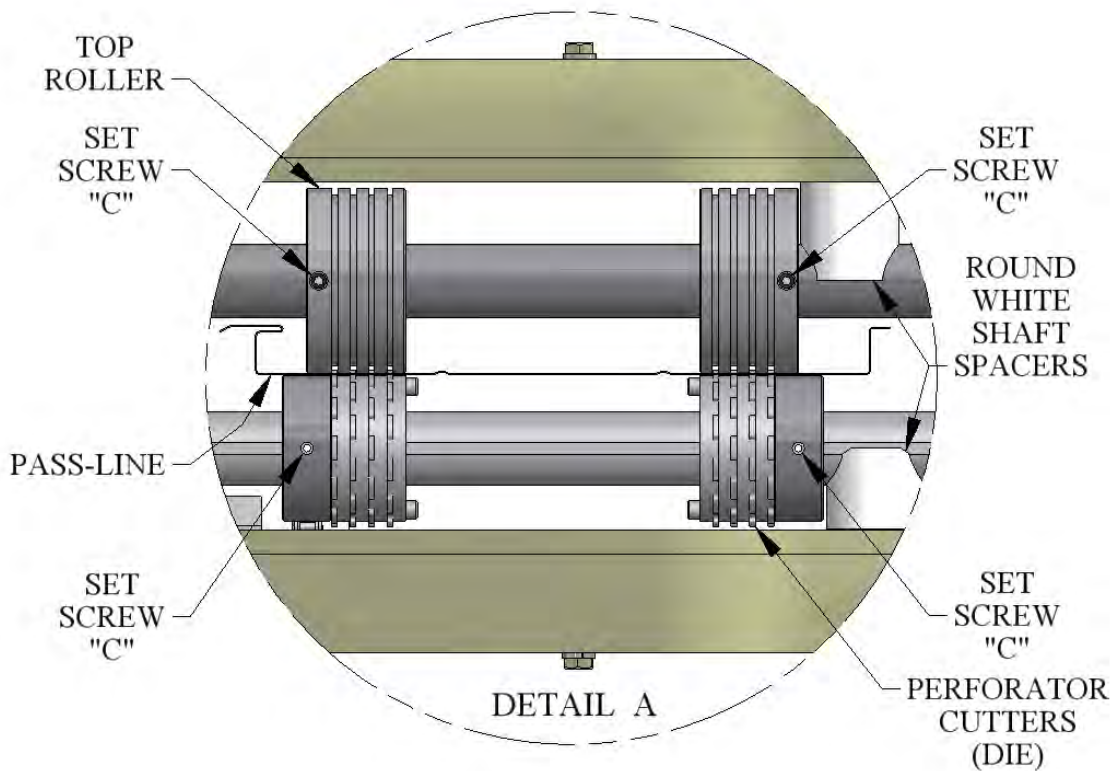
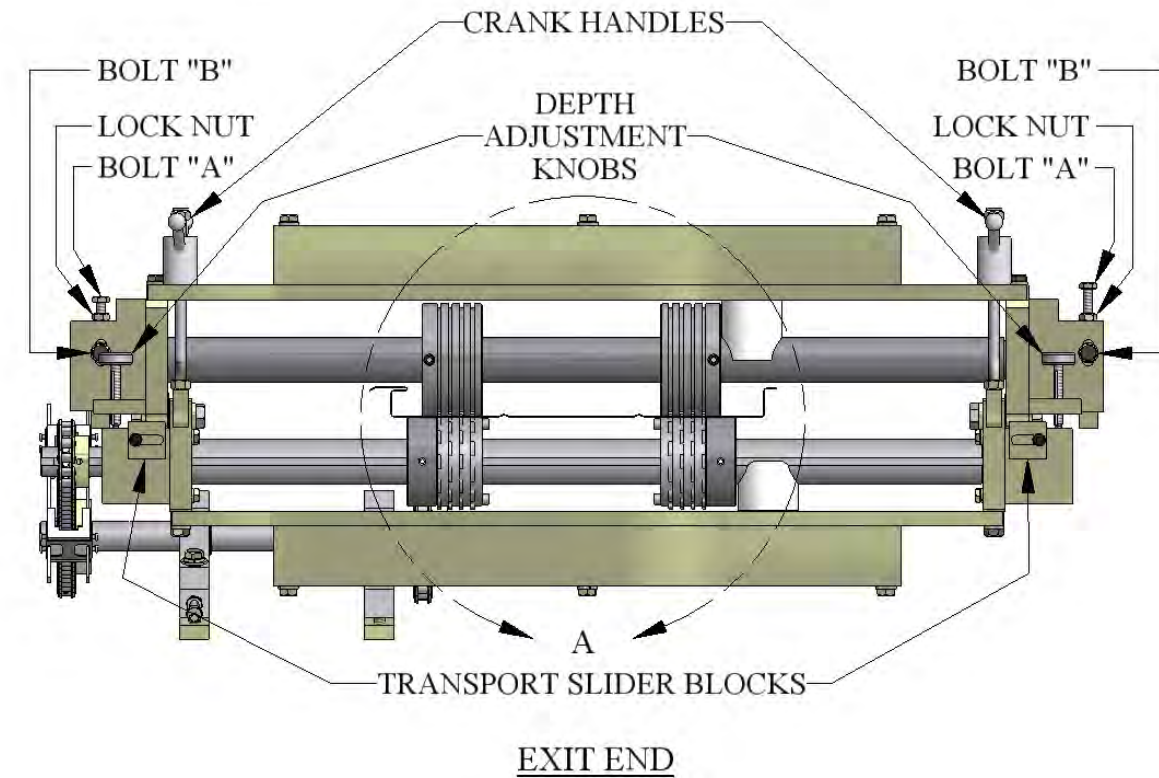


Figure 30: Powered Perforator Adjustment

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 Knobs to provide this clearance.
2. Slide the Blocks under the Knobs.
3. Re-tighten the Crank Handles
4. Empty machine of material before transport/storage..

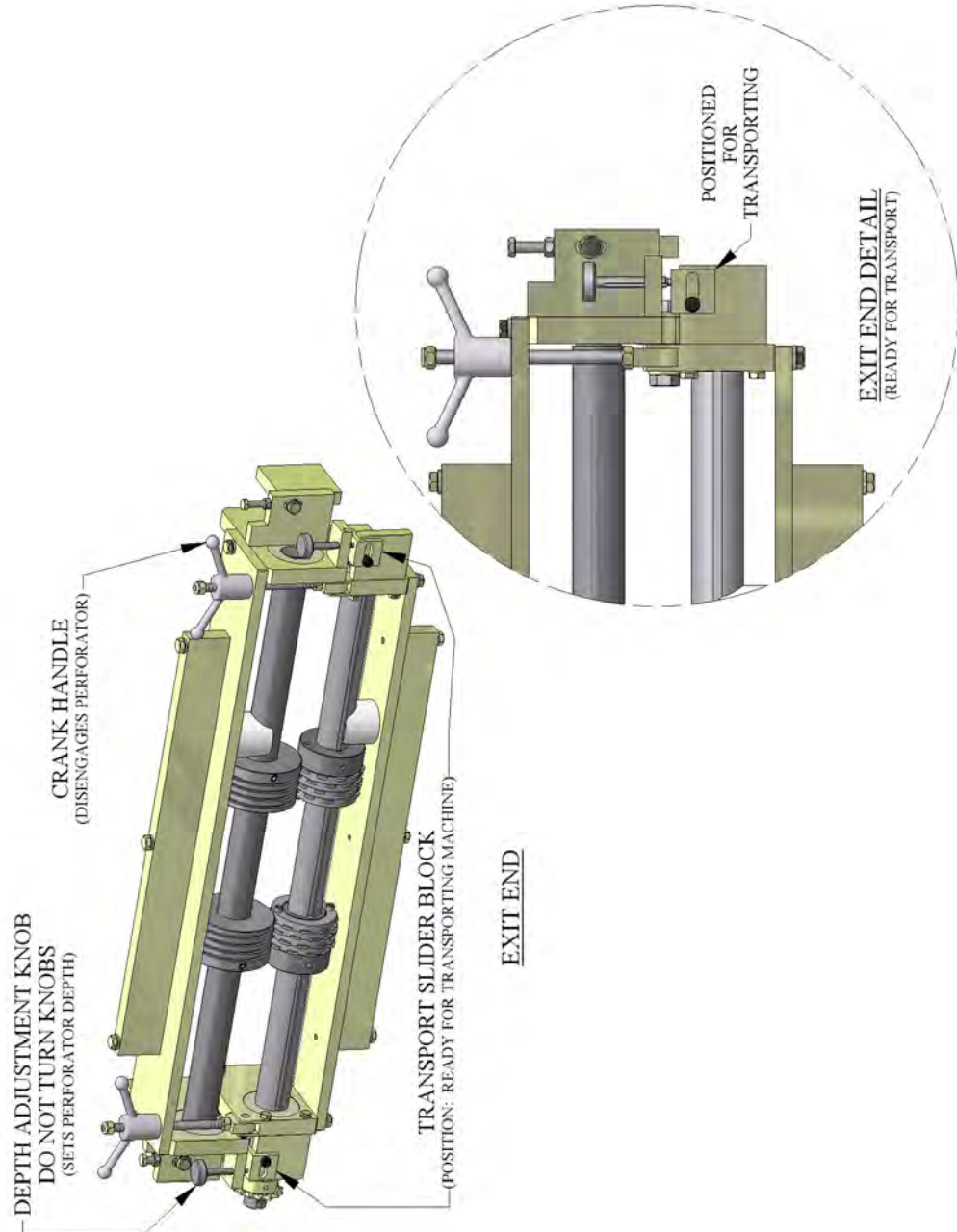


Figure 31: Powered Perforator Locked for Transport

RUN OUT TABLES AND REMOTE LIMIT SWITCH

RUN OUT TABLES AND REMOTE LIMIT SWITCH

(Figure 32 & Figure 33)

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 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 33 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 14
RUN OUT TABLES AND REMOTE LIMIT SWITCH

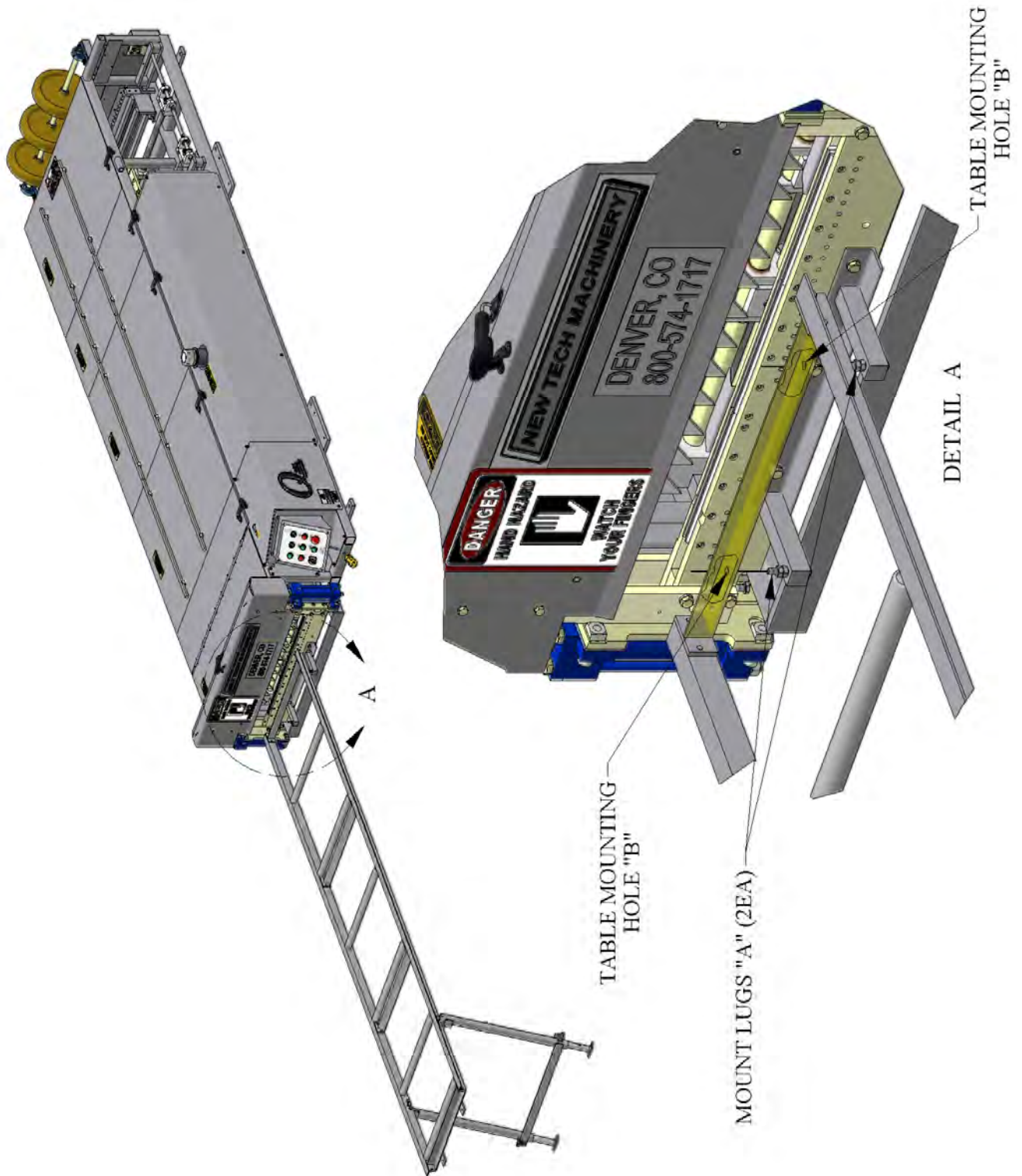


Figure 32: Run Out Table

CHAPTER 14
RUN OUT TABLES AND REMOTE LIMIT SWITCH

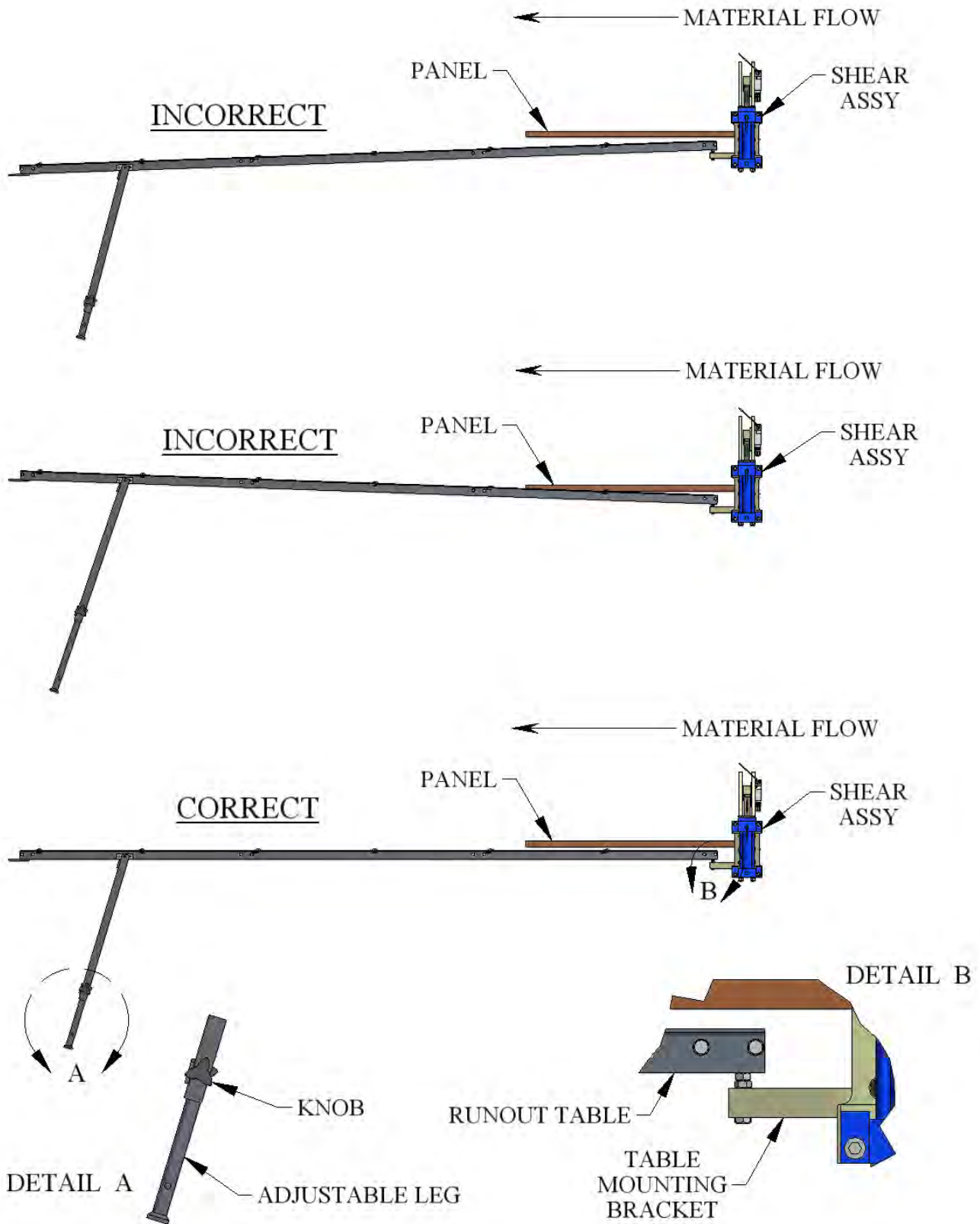


Figure 33: Run Out Table Setup

CHAPTER 15
QUICK CHANGE POWER PAC

QUICK CHANGE POWER PAC

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.

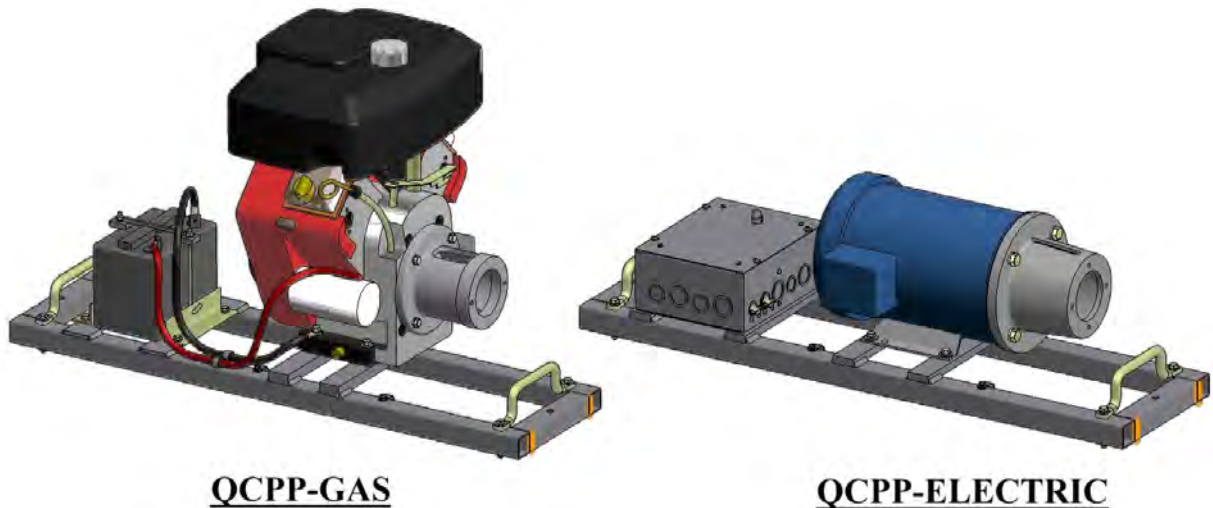


Figure 34: Quick Change Power Pac

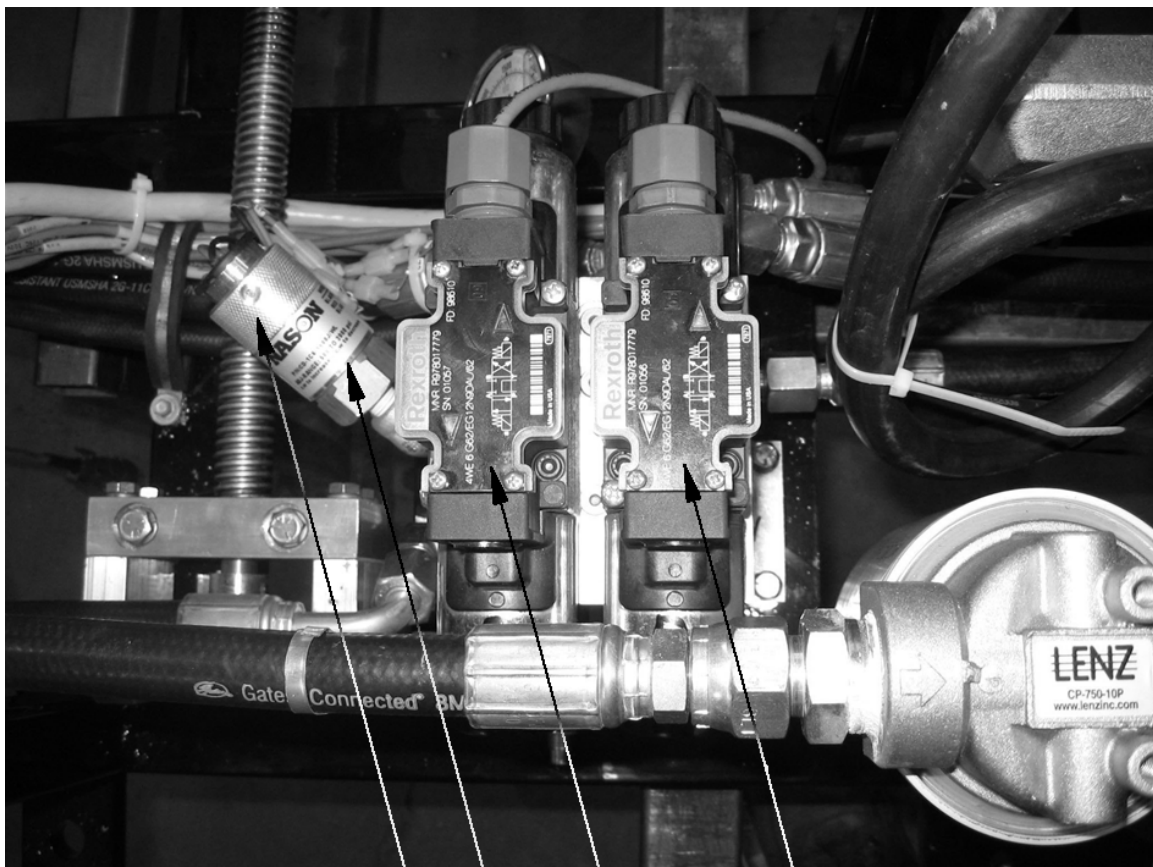
CHAPTER 16
TROUBLESHOOTING

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 35) 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.



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

Figure 35: Pressure Switch Adjustment

CHAPTER 16
TROUBLESHOOTING

- 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 (Figure 35) 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 36). 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 37). 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

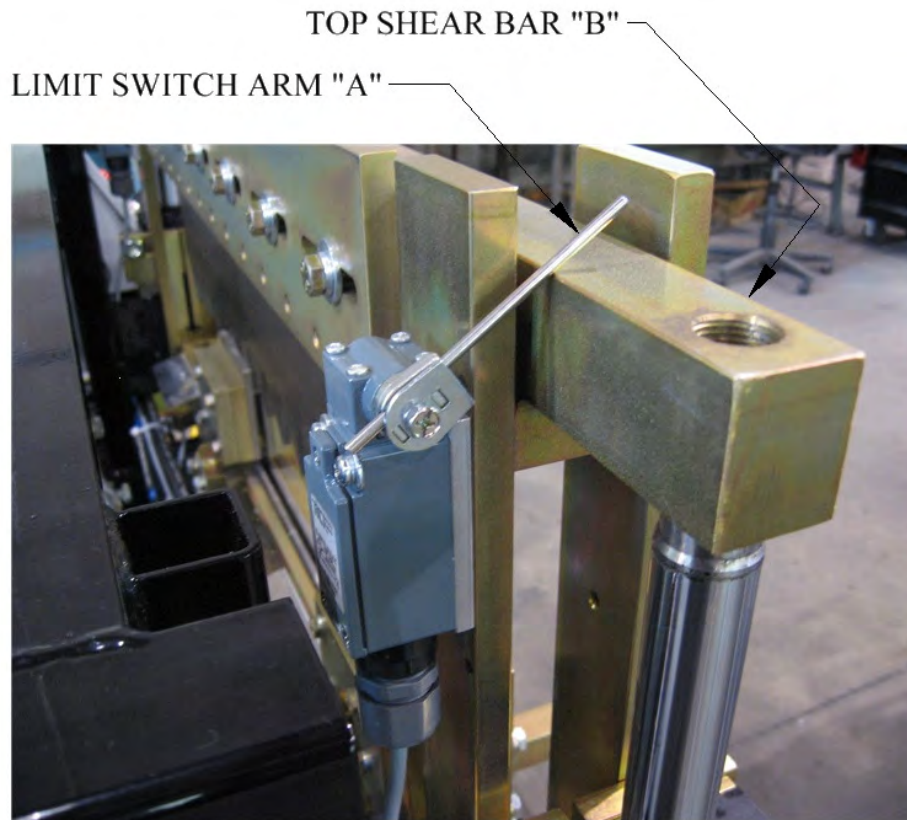


Figure 36: Top of Stroke Limit Switch

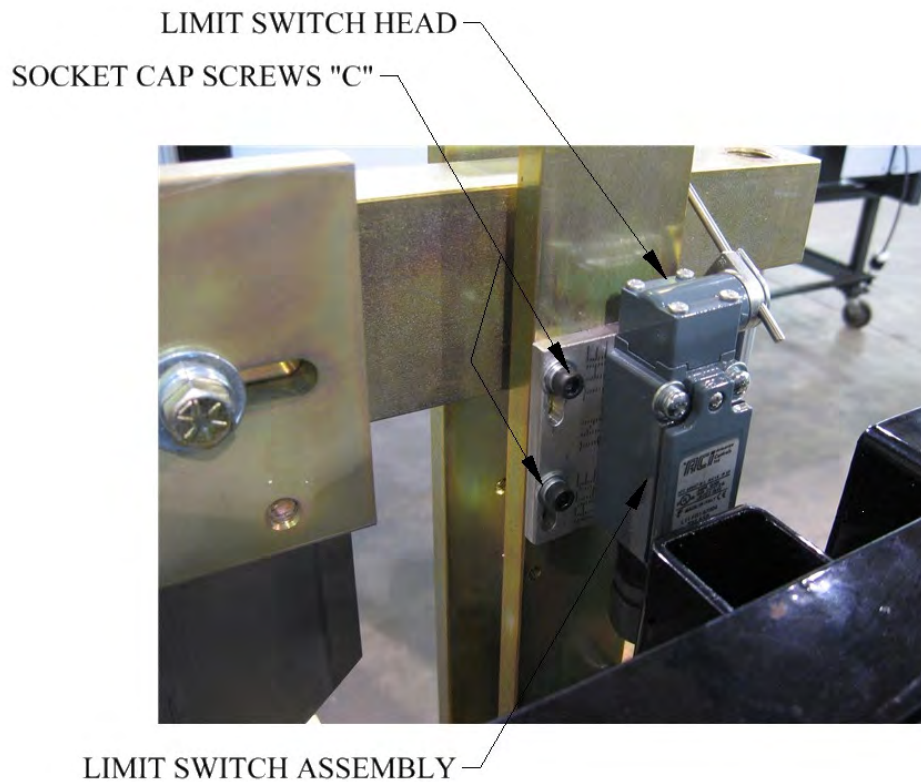


Figure 37: Limit Switch Adjustment Screws

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 20).

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).

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

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).

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 6) is properly connected to the connector on the front of the Control Panel.

CHAPTER 17
ROLLER SYSTEM AND PANEL PROFILE

ROLLER SYSTEM AND PANEL PROFILE

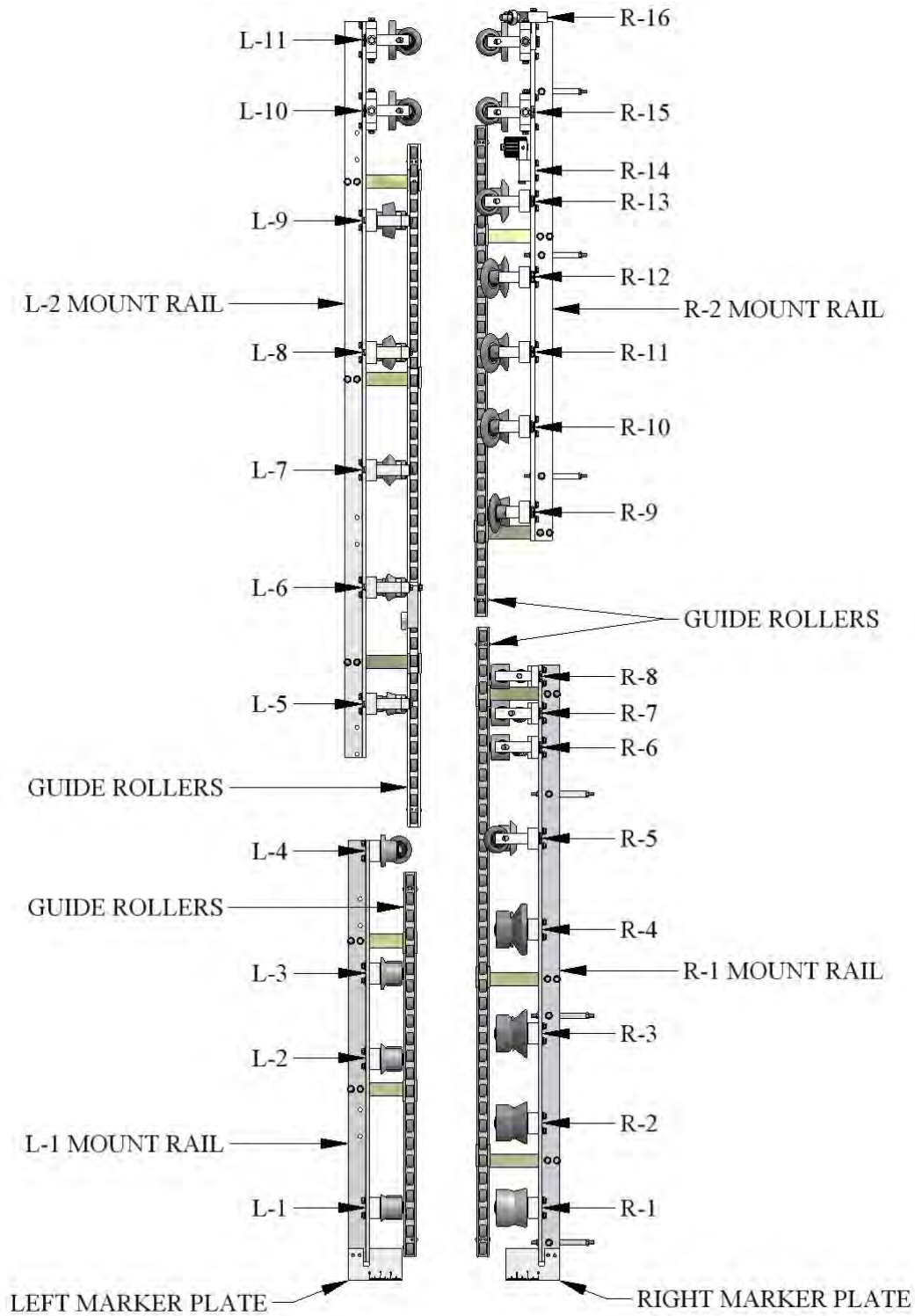


Figure 38: FW1 1" Flush Wall Panel Roller System

CHAPTER 17
ROLLER SYSTEM AND PANEL PROFILE

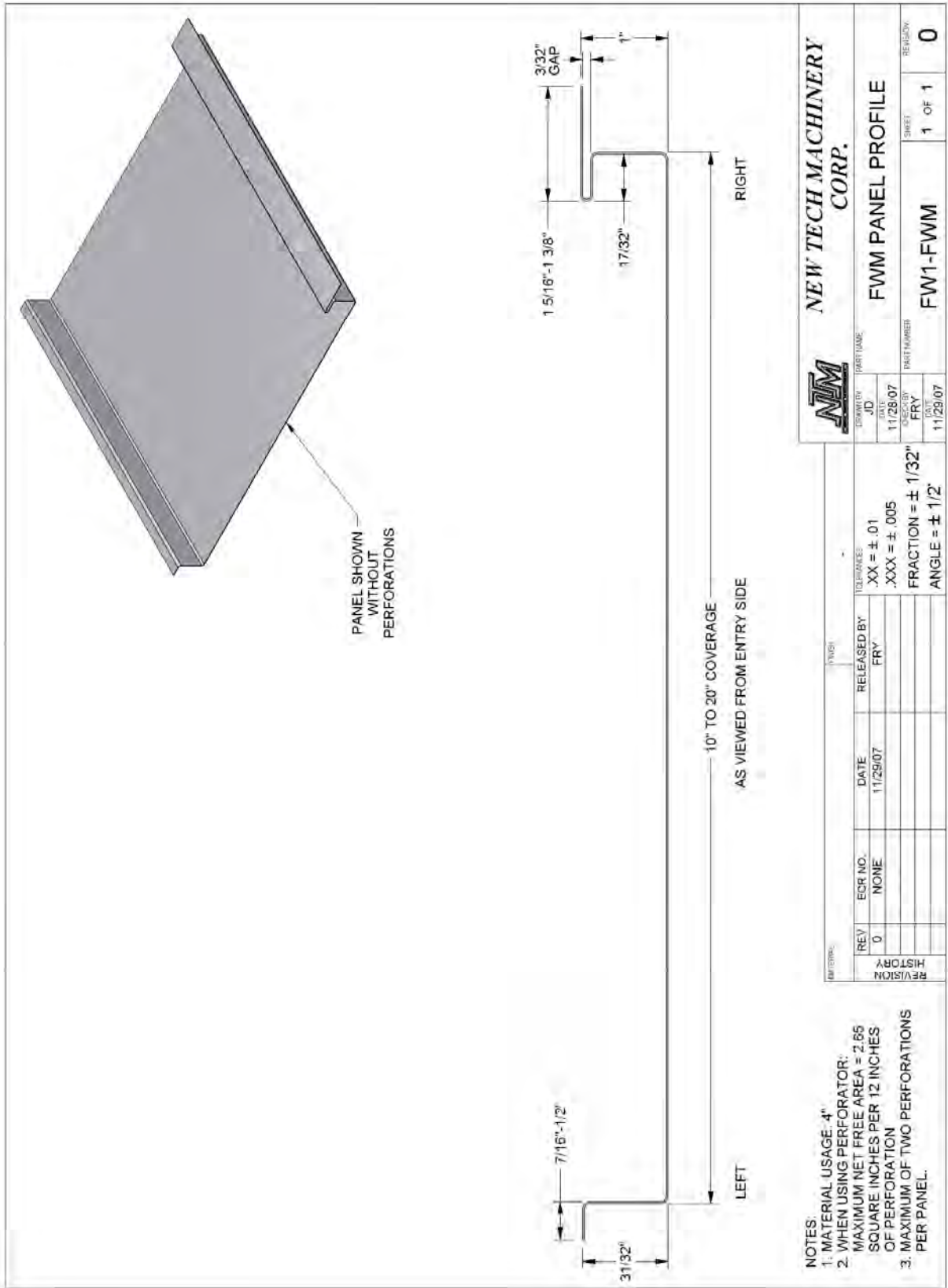


Figure 39: FW1 1" FWM Profile

CHAPTER 17
ROLLER SYSTEM AND PANEL PROFILE

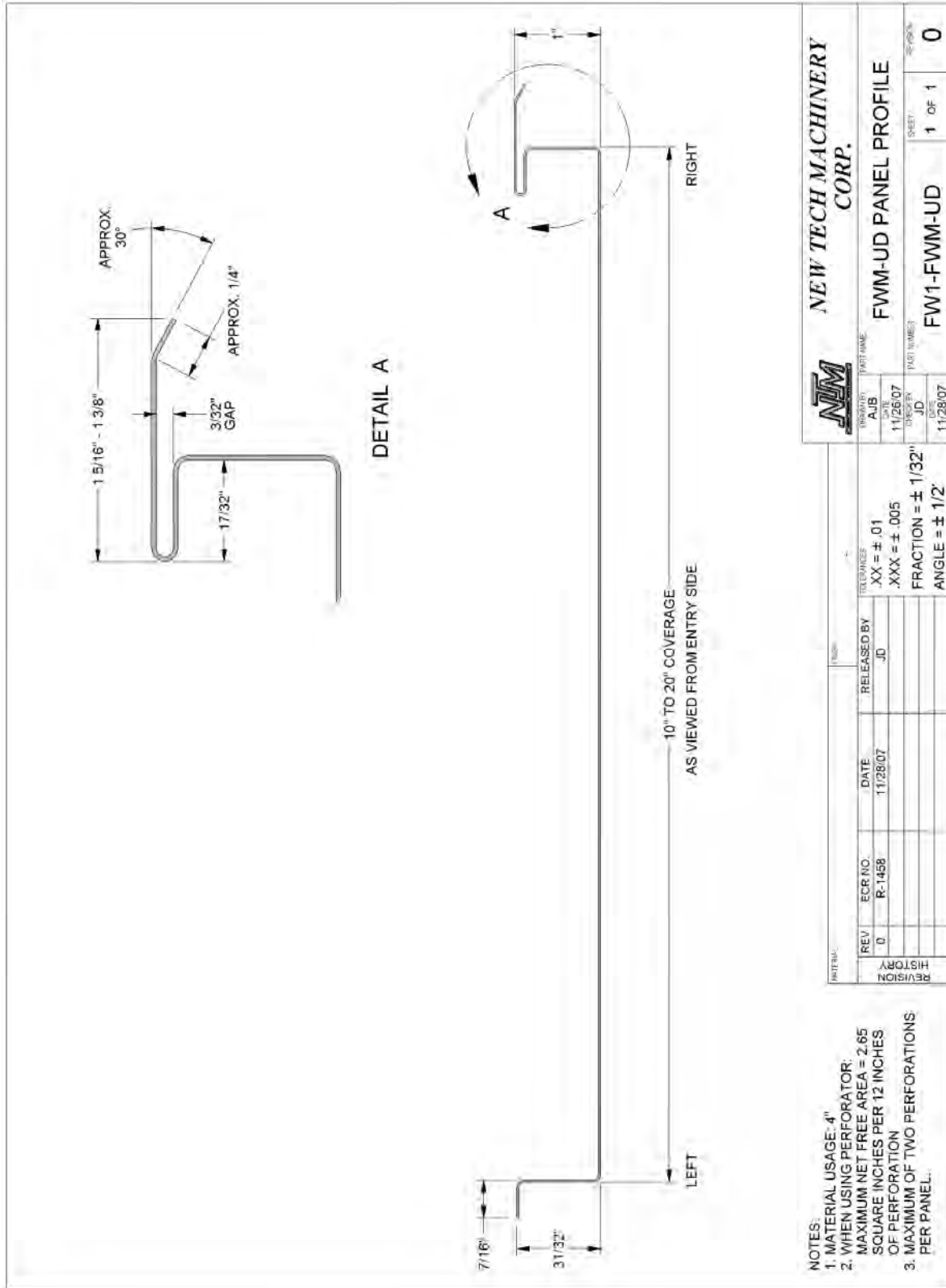


Figure 40: FW1-FWM UD Panel Profile

CHAPTER 17
ROLLER SYSTEM AND PANEL PROFILE

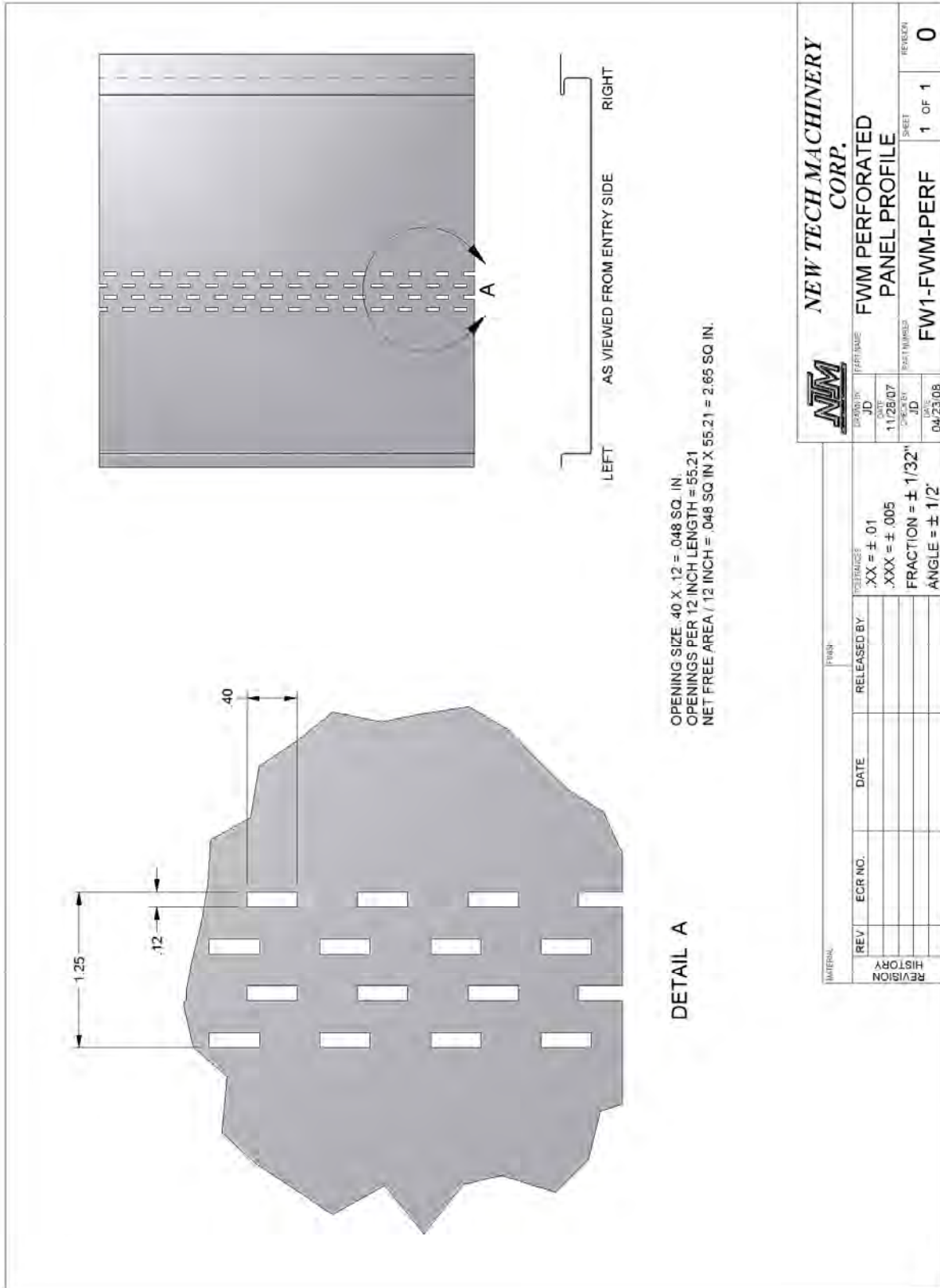


Figure 41: FW1-FWM Perforated Panel

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PLC CONTROLLER



Figure 42: PLC Assembly



Figure 43: Serial Number Plate

APPENDIX A

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Home

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

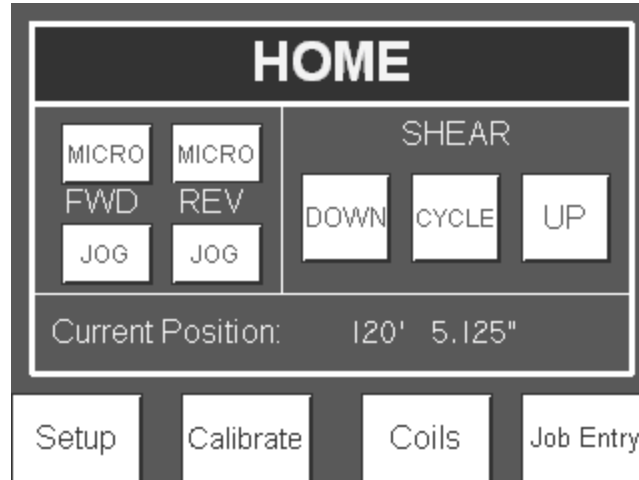


Figure 44: Home Screen

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 1/4" 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.

Pre-Run Sequence:

APPENDIX A

PLC CONTROLLER

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.

The screenshot shows a 'JOB ENTRY' screen with the following elements:

- Job Number:** A display showing '6' with 'Prev.' and 'Next' buttons on either side.
- Quantity:** A display showing '1 of 10'.
- Length (ft/in):** A display showing '150' with a '6' button, a slash '/' button, and an '8' button.
- Pause At End Of Job:** Two buttons labeled 'No' and 'Yes'.
- Bottom Navigation:** Four buttons labeled 'Home', 'Clear Job', 'Clear All', and 'Run Mode'.

Figure 45: Job Entry Screen

Programming Jobs

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

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

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

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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).

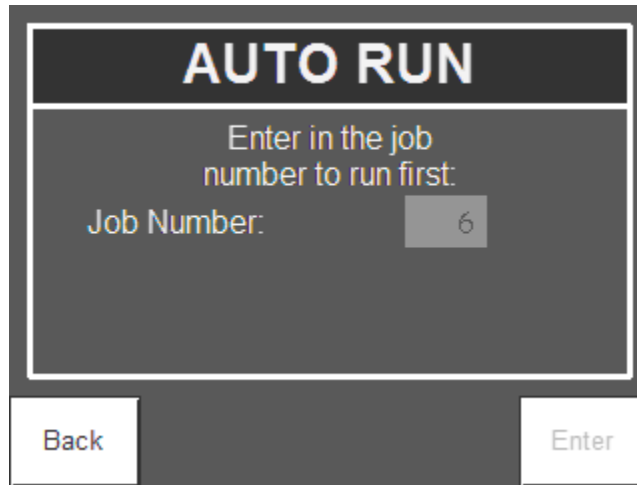


Figure 46: Specify Job to Run First

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

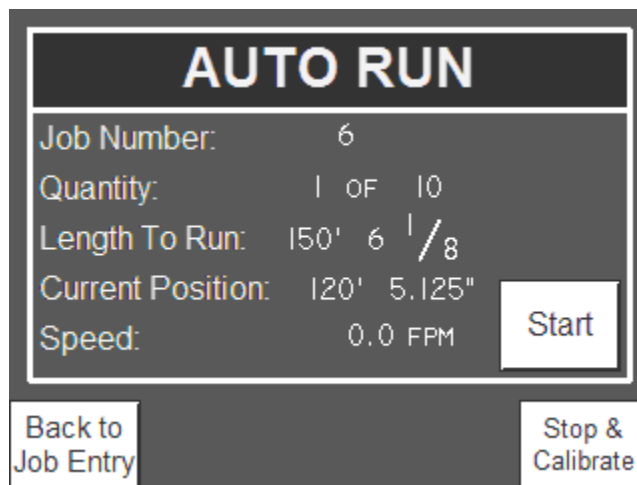


Figure 47: Auto-Run Screen

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

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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.

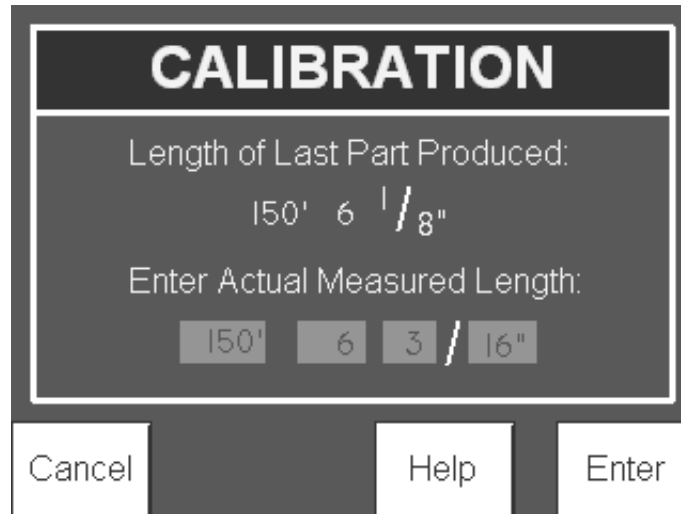


Figure 48: Calibration Screen

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.

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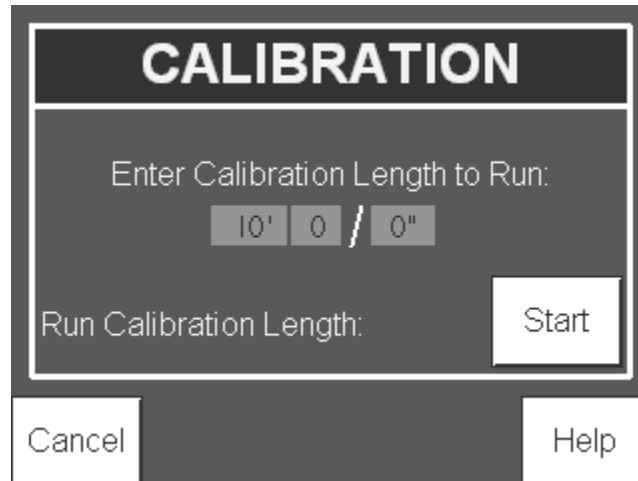


Figure 49: Calibration Screen

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.

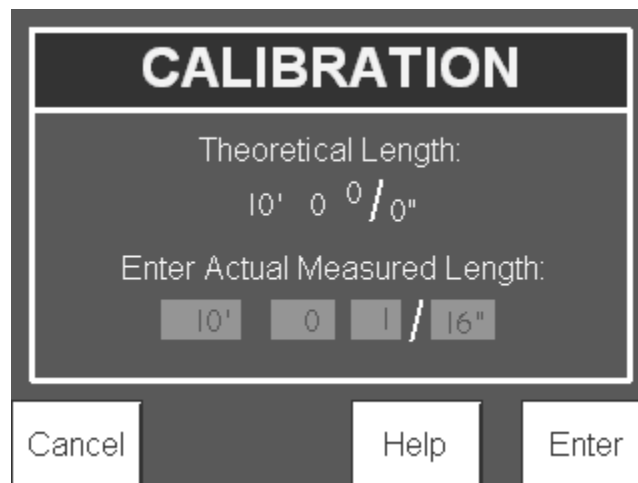


Figure 50: Calibration Screen

Setup:

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

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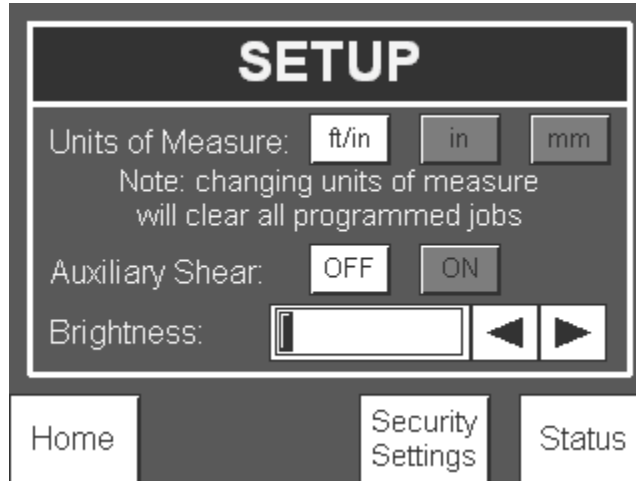


Figure 51: Setup Screen

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.

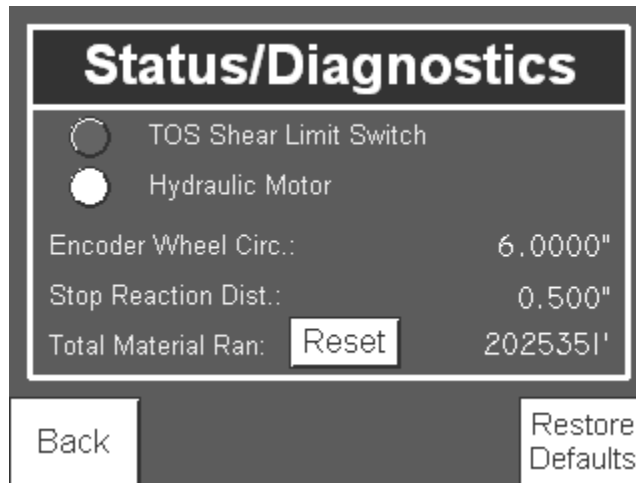


Figure 52: Status Screen

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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 53: 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.

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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.

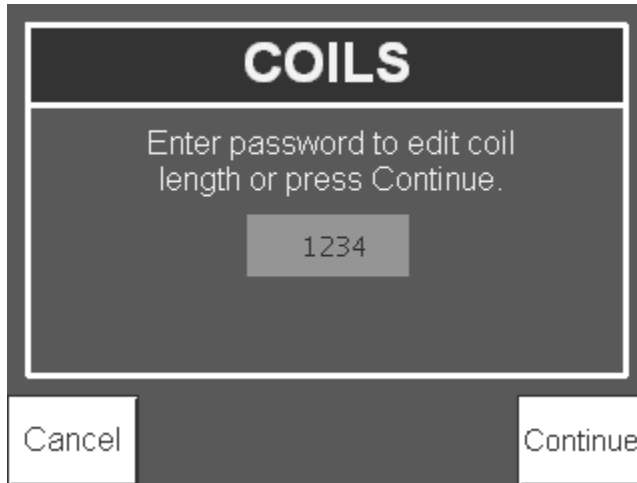


Figure 54: Coils Password Access Screen

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

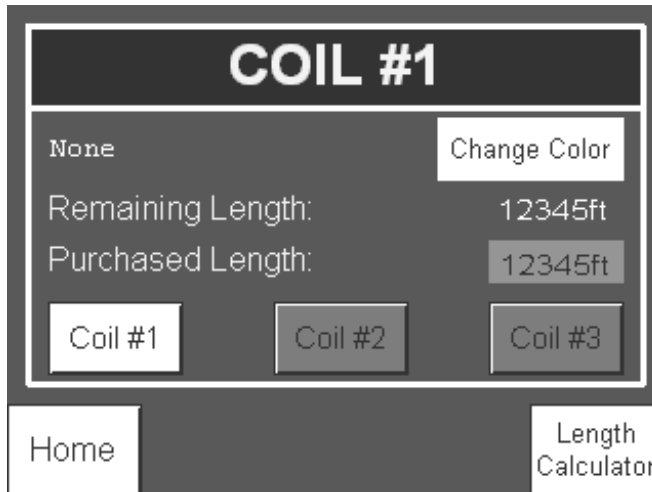


Figure 55: Coils Screen

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

Example:

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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.

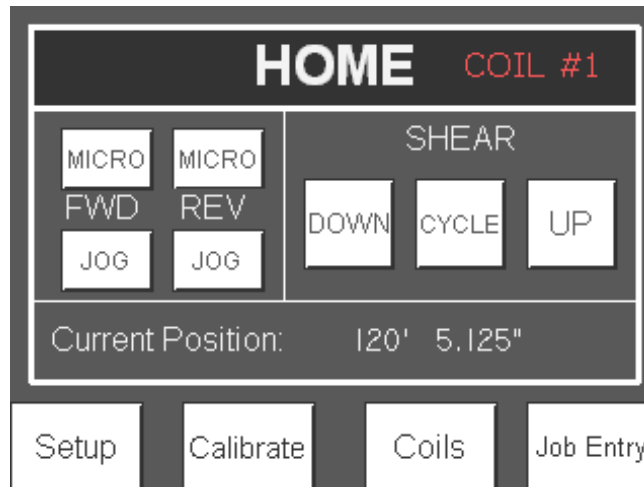


Figure 56: Coil Indicator

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.

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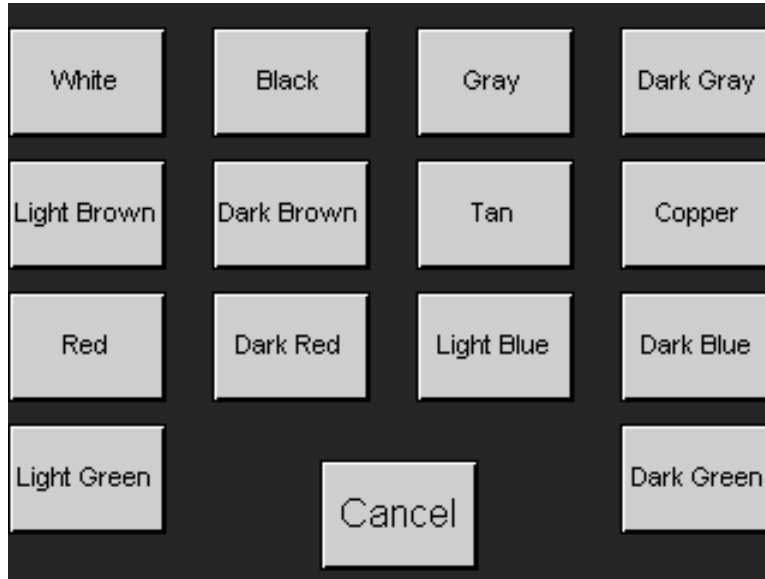


Figure 57: Coils Color Screen

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.

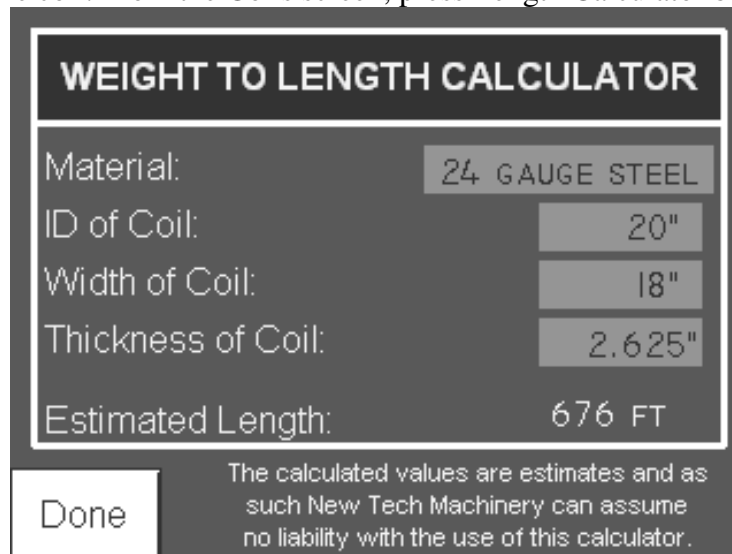


Figure 58: Length Calculator Screen

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

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MATERIAL THICKNESS		
Aluminum:	Steel:	Copper:
0.027"	22 Gauge	16 Gauge
0.032"	24 Gauge	20 Gauge
0.040"	26 Gauge	
0.050"	28 Gauge	
	30 Gauge	

Figure 59: 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.

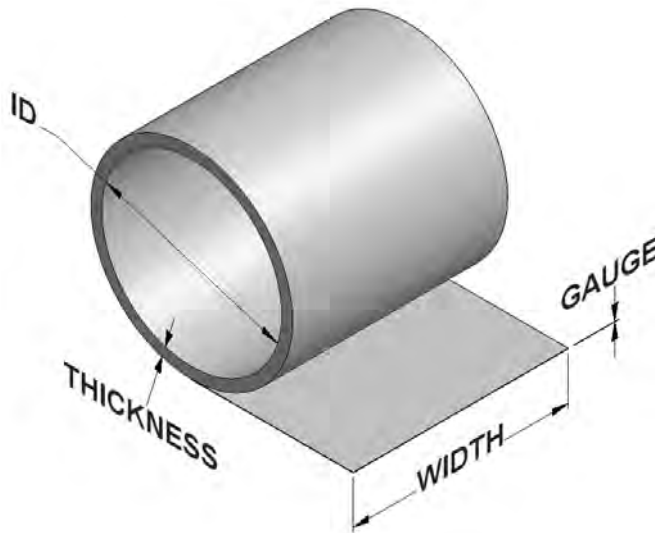


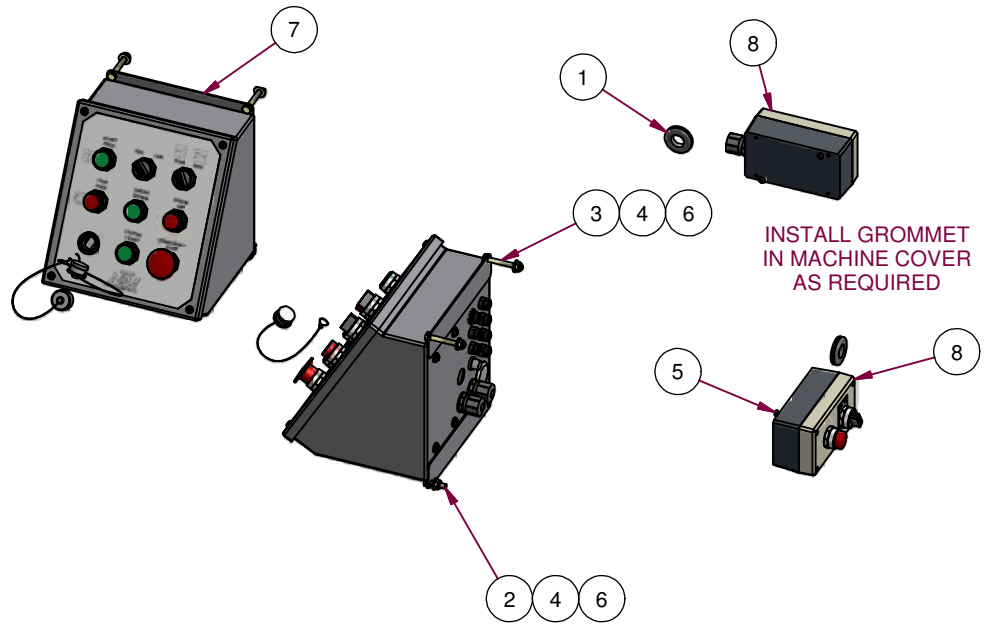
Figure 60: Coil Dimensions

APPENDIX B
ELECTRICAL SCHEMATICS

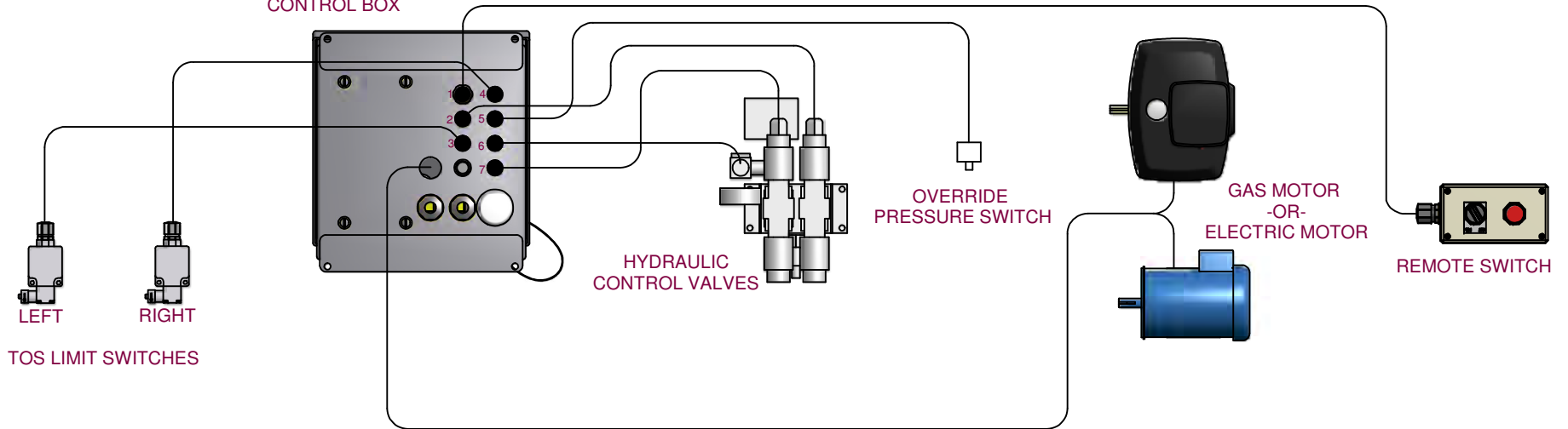
ELECTRICAL SCHEMATICS

<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

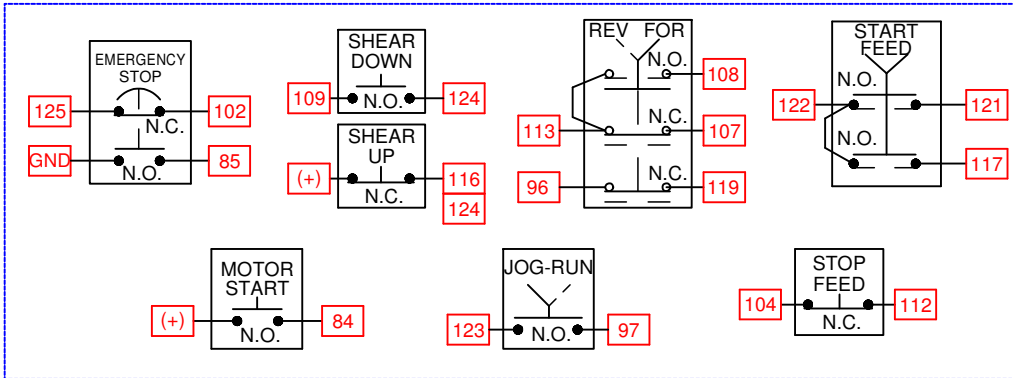


NOTE: UNLESS OTHERWISE SPECIFIED.
1. R=.015

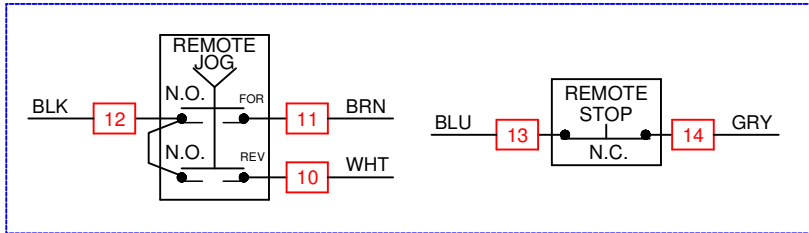
MATERIAL	SEE BOM	LENGTH	-	FINISH	NONE
REV	ECR NO.	DATE	RELEASED BY	TOLERANCES	
0	R-1757	10/25/2011	AJB	.XX = ± .01	
				.XXX = ± .005	
				FRACTION = ± 1/32"	
				ANGLE = ± 1/2'	

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

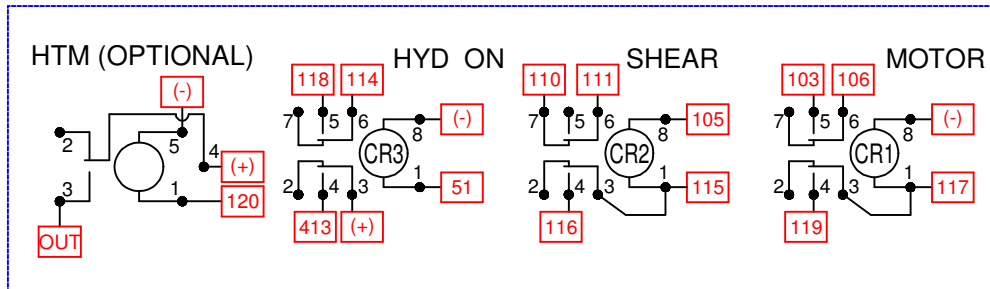
MAIN CONTROL BOX



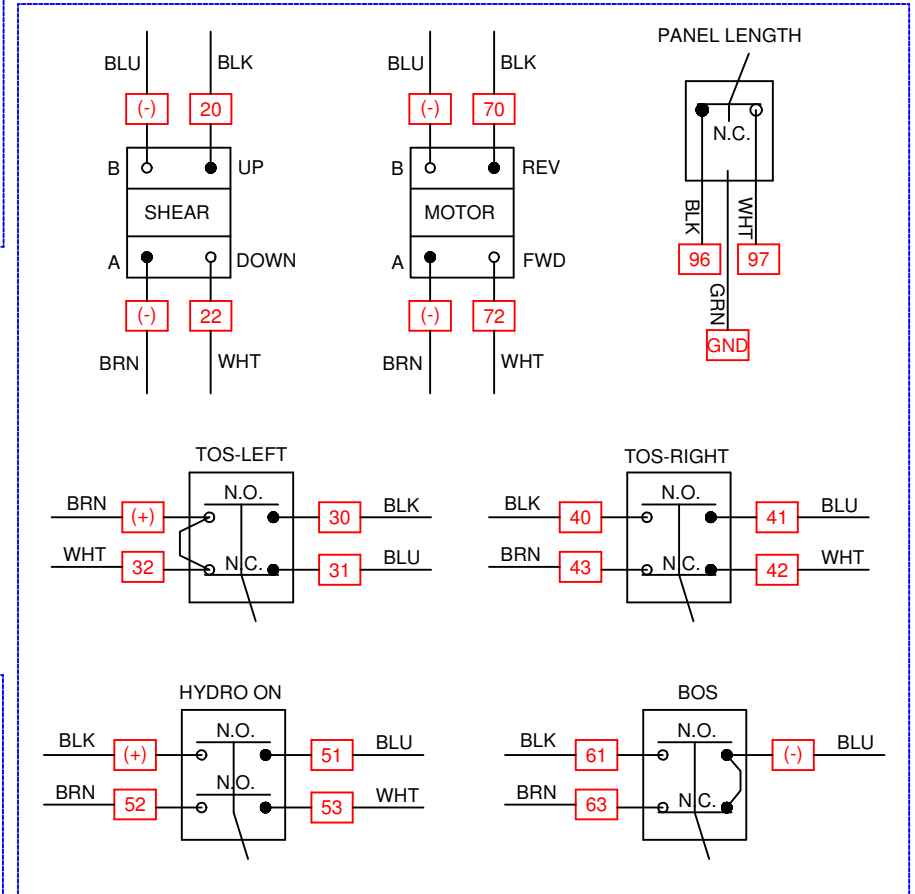
ENTRY END/REMOTE CONTROL



CONTROL RELAYS



COMPONENTS



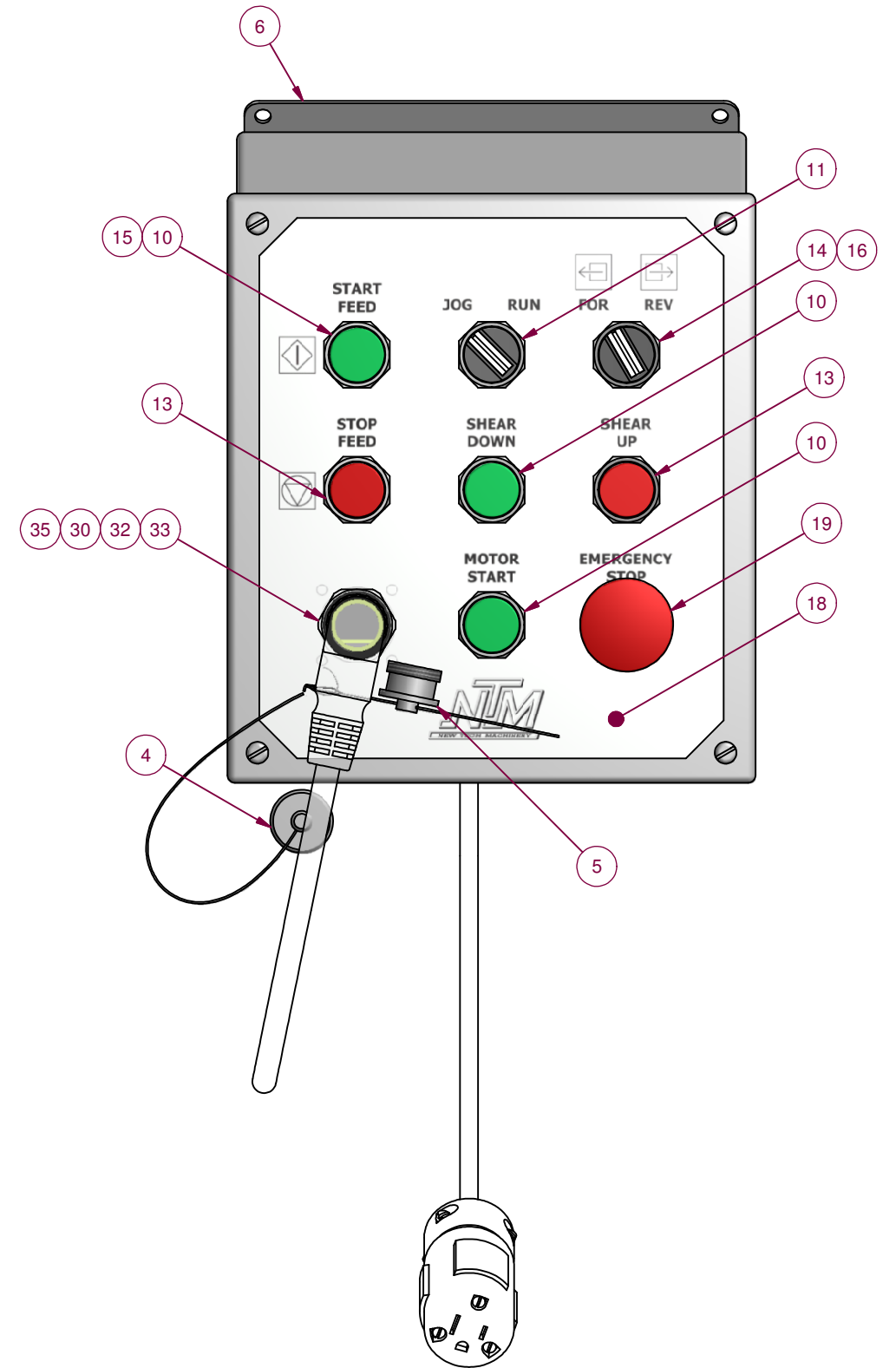
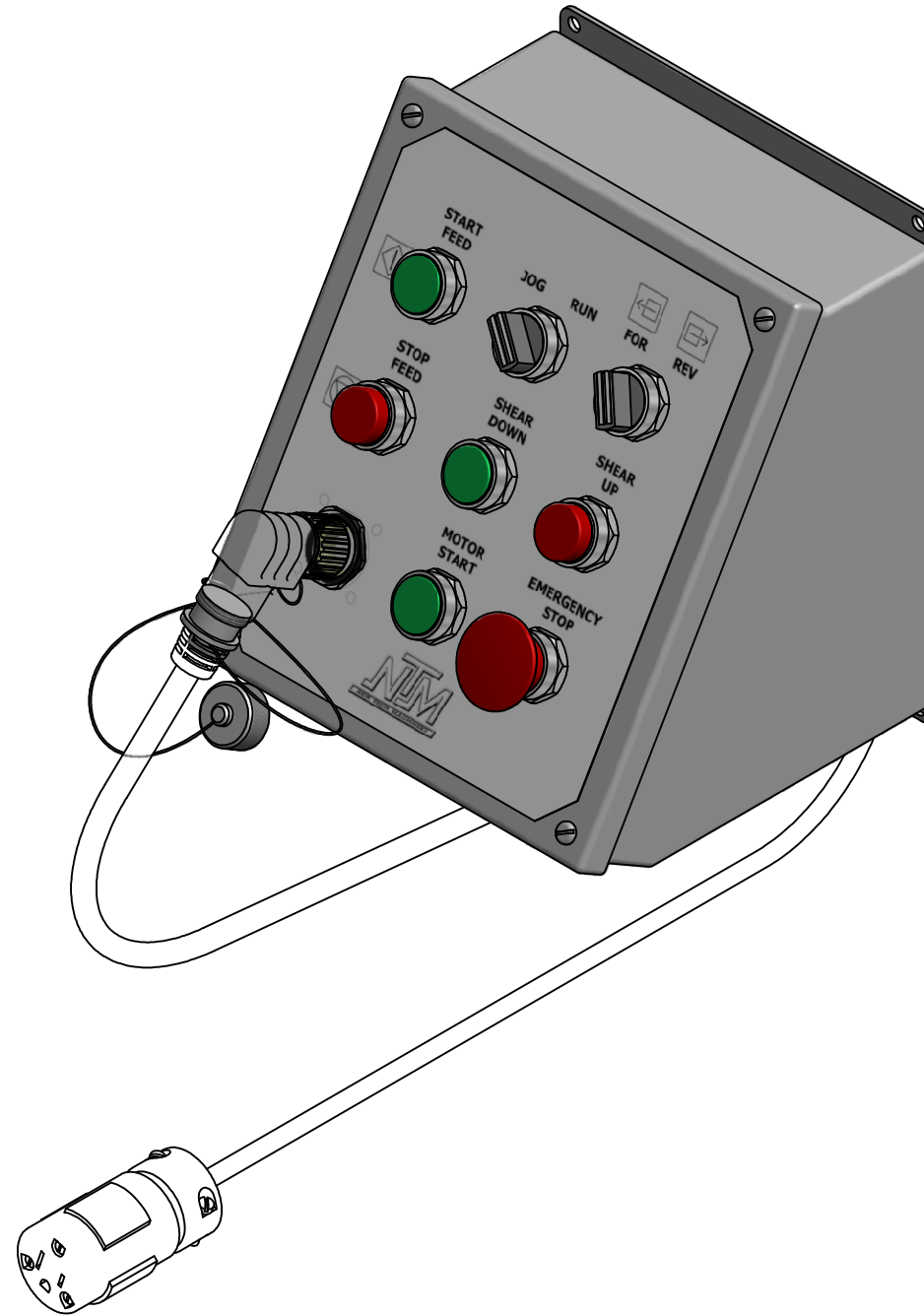
NOTE: UNLESS OTHERWISE SPECIFIED.
1. R=.015

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

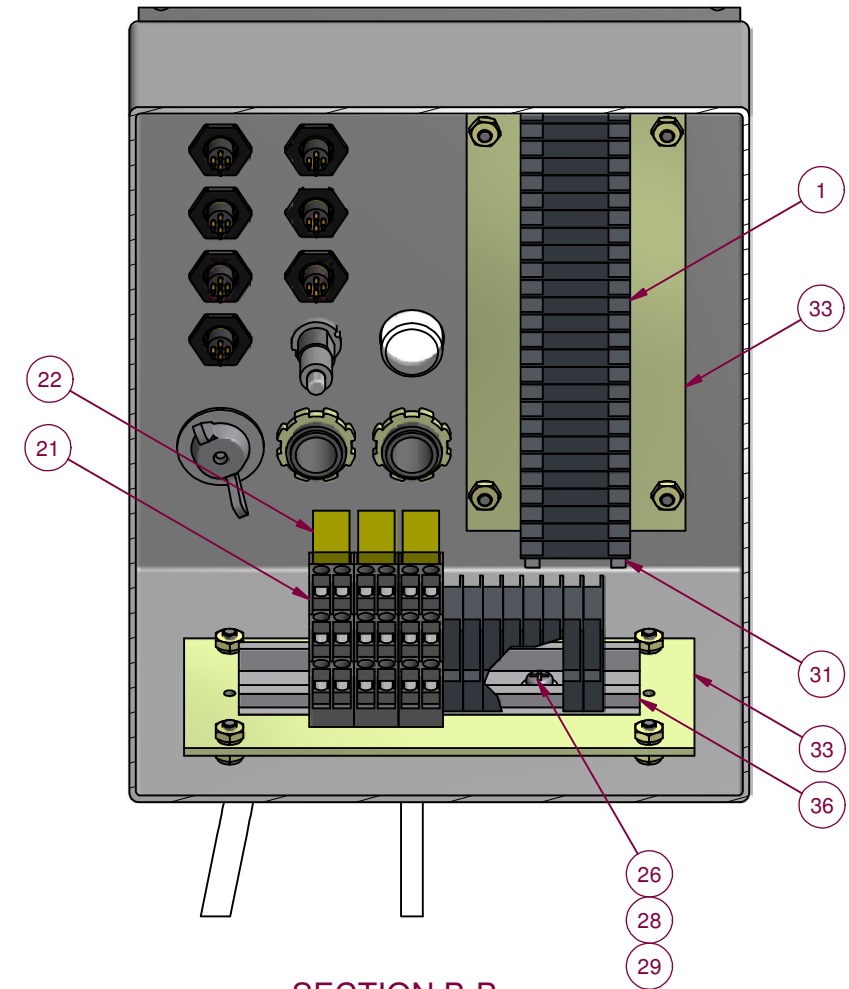
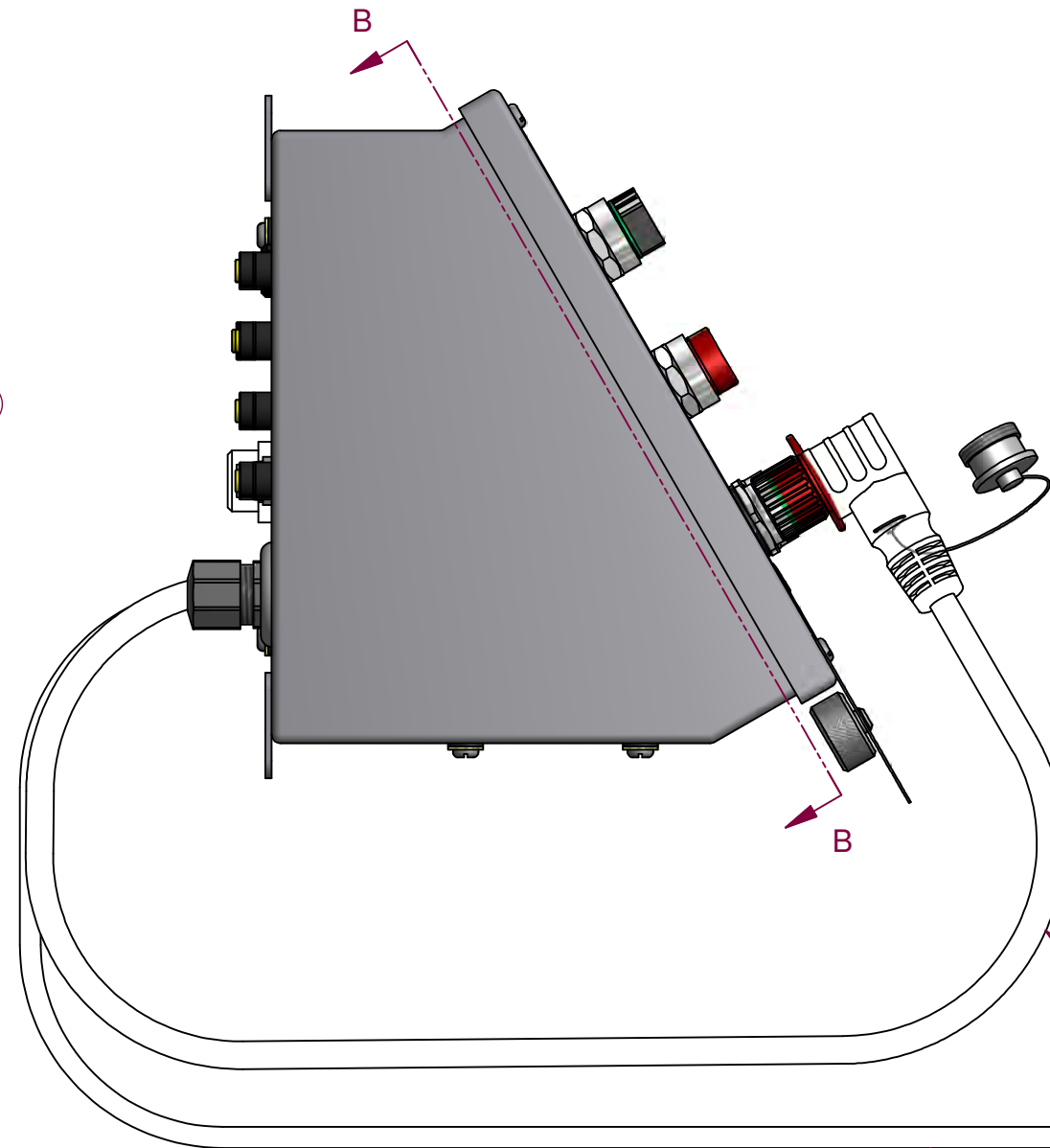
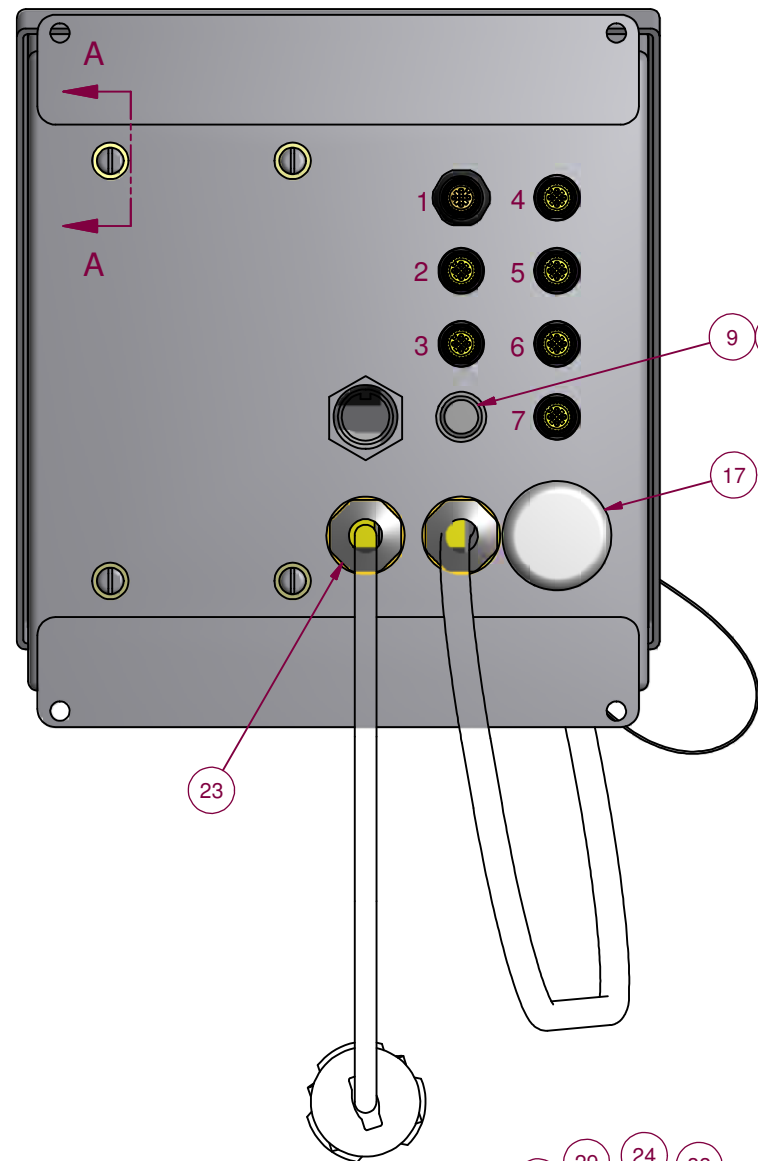


1 ADDED SHM-400-132 TO INSIDE OF 16-PIN RECEPTACLE ON FRONT

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

NEW TECH MACHINERY CORP.

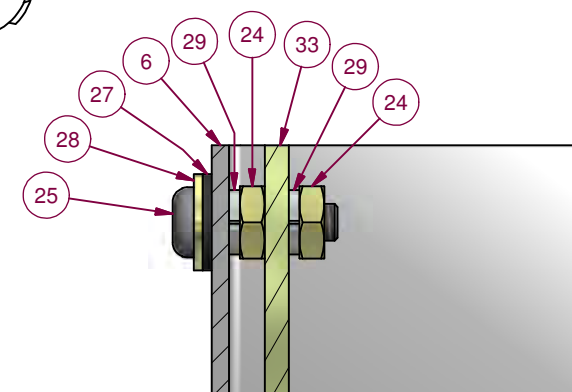
DRAWN BY BT DATE 01-26-2011 CHECK BY AJB DATE 10/20/2011	PART NAME CONTROL BOX ASSEMBLY PART NUMBER PLC-381-000 SHEET 1 OF 5 REVISION 1
---	---



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"

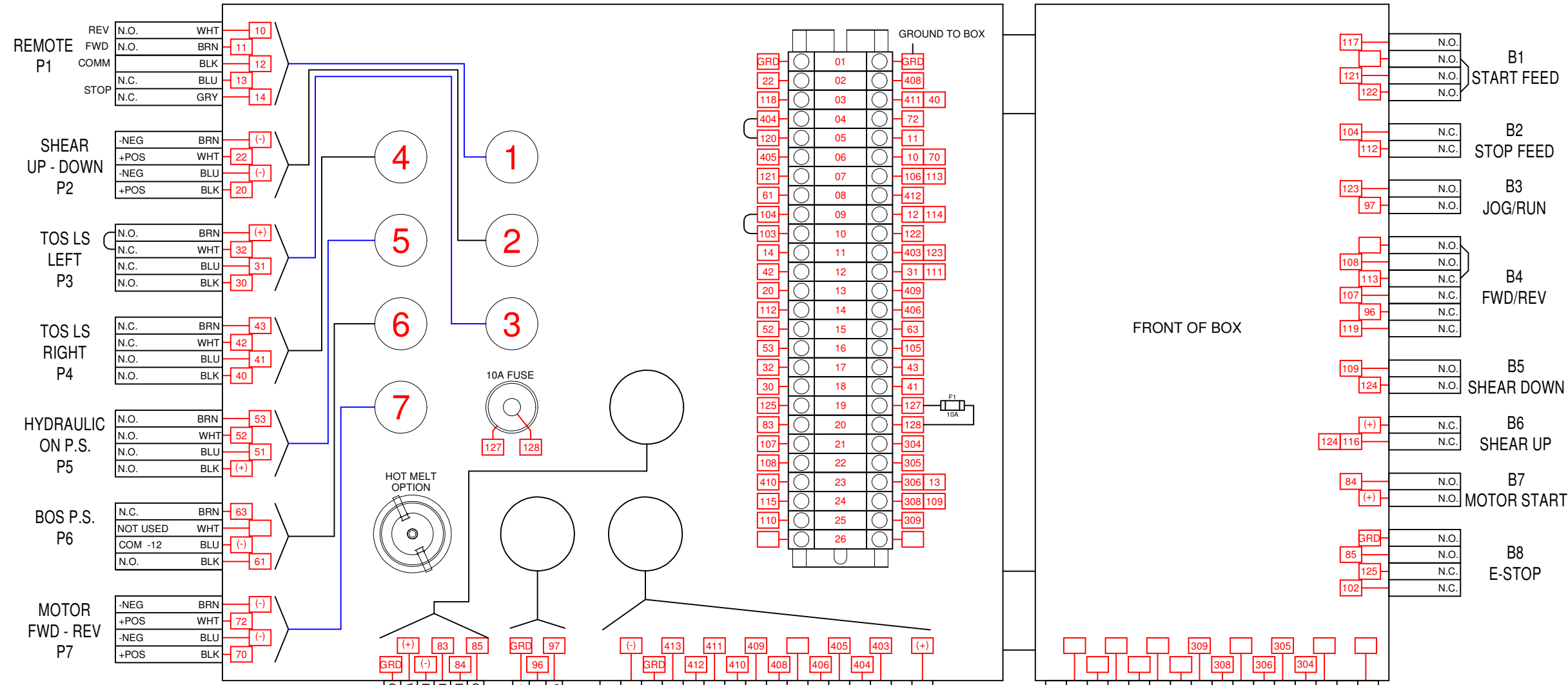
NIM **NEW TECH MACHINERY CORP.**

DRAWN BY: _____ PART NAME: **CONTROL BOX ASSEMBLY**

DATE: _____

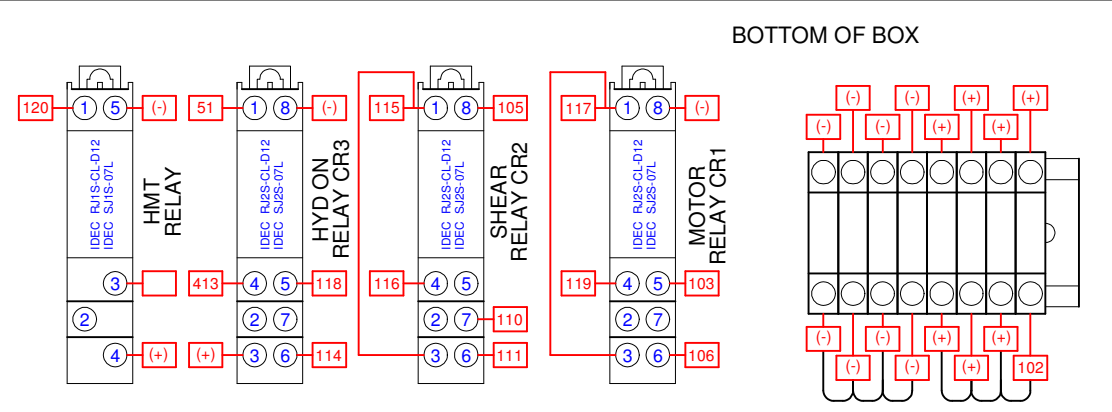
CHECK BY: _____ PART NUMBER: **PLC-381-000**

DATE: _____ SHEET: **2 OF 5** REVISION: **1**



FRONT OF BOX

BOTTOM OF BOX



REF PIN NUMBERS	WIRE COLOR	FUNCTION
1	BRN	+12V
2	N/C	NO CONNECTION
3	BLU	STOP IN
4	WHT	FORWARD OUT
5	GRN/YEL	REVERSE OUT
6	ORG	STOP (MAN MODE)
7	YEL	STOP (PLC MODE)
8	GRY	SHEAR DOWN OUT
9	PNK	SHEAR UP OUT
10	RED	STOP (PLC MODE)
11	BRN/WHT	T.O.S. (N.O.)
12	BLK	B.O.S. (N.O.)
13	BLU/WHT	HYDRAULIC ON
14	VIO	EARTH GROUND
15	GRN/WHT	-12V
16	N/C	NO CONNECTION

REF PIN NUMBERS	WIRE COLOR	FUNCTION
1	BRN	N.O.
2	N/C	N.O.
3	BLU	N.O.
4	WHT	N.C.
5	GRN/YEL	N.C.
6	ORG	N.O.
7	YEL	N.O.
8	GRY	N.O.
9	PNK	N.C.
10	RED	N.C.
11	BRN/WHT	N.O.
12	BLK	N.O.
13	BLU/WHT	N.O.
14	VIO	N.O.
15	GRN/WHT	N.O.
16	N/C	N.O.

CABLE LENGTH: 42" FROM STRAIN RELIEF

PANEL LENGTH LIMIT SWITCH: 24" FROM STRAIN RELIEF

QCPP

NEW TECH MACHINERY CORP.

CONTROL BOX ASSEMBLY

PLC-381-000

3 OF 5

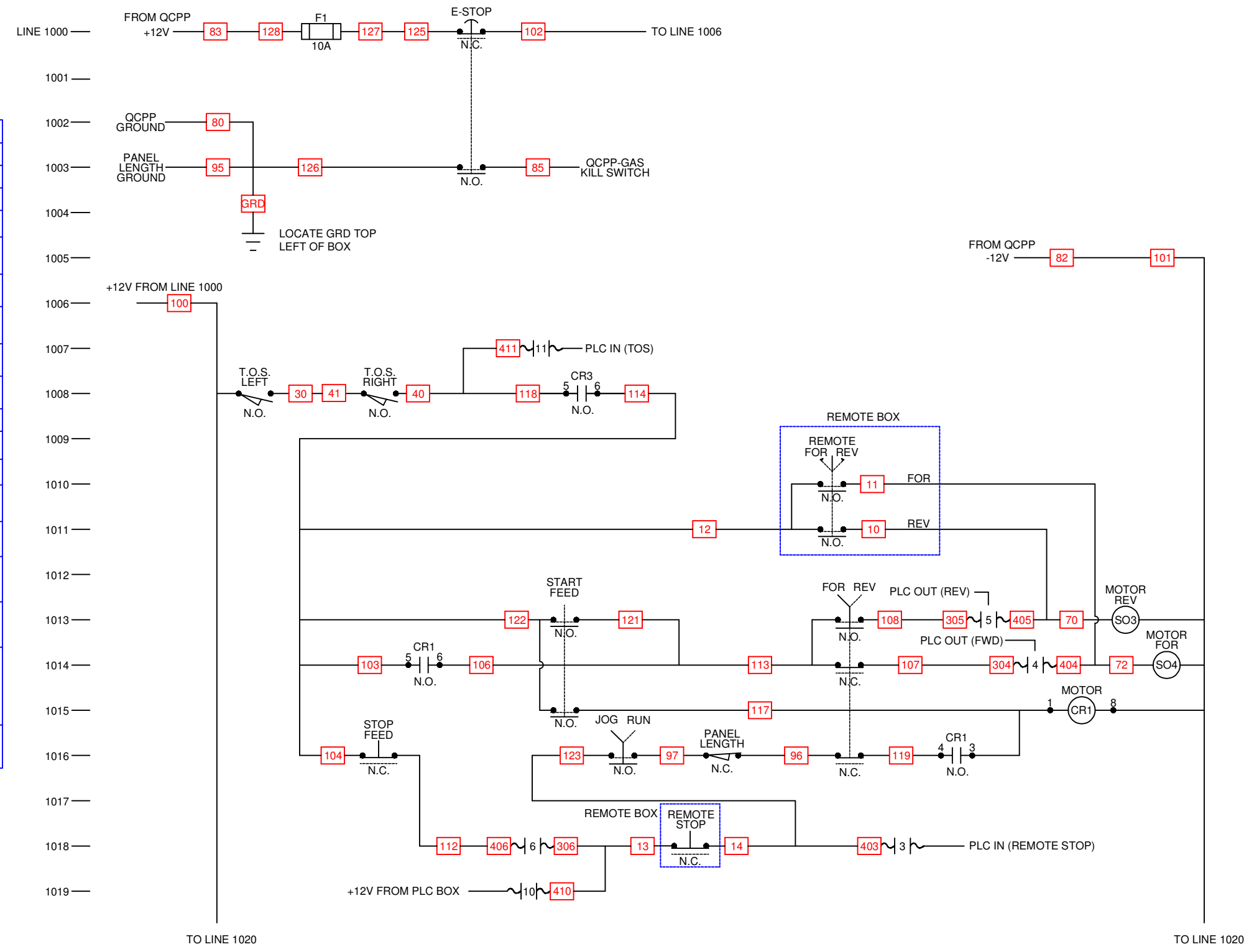
1

REV	ECR NO.	DATE	RELEASED BY

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

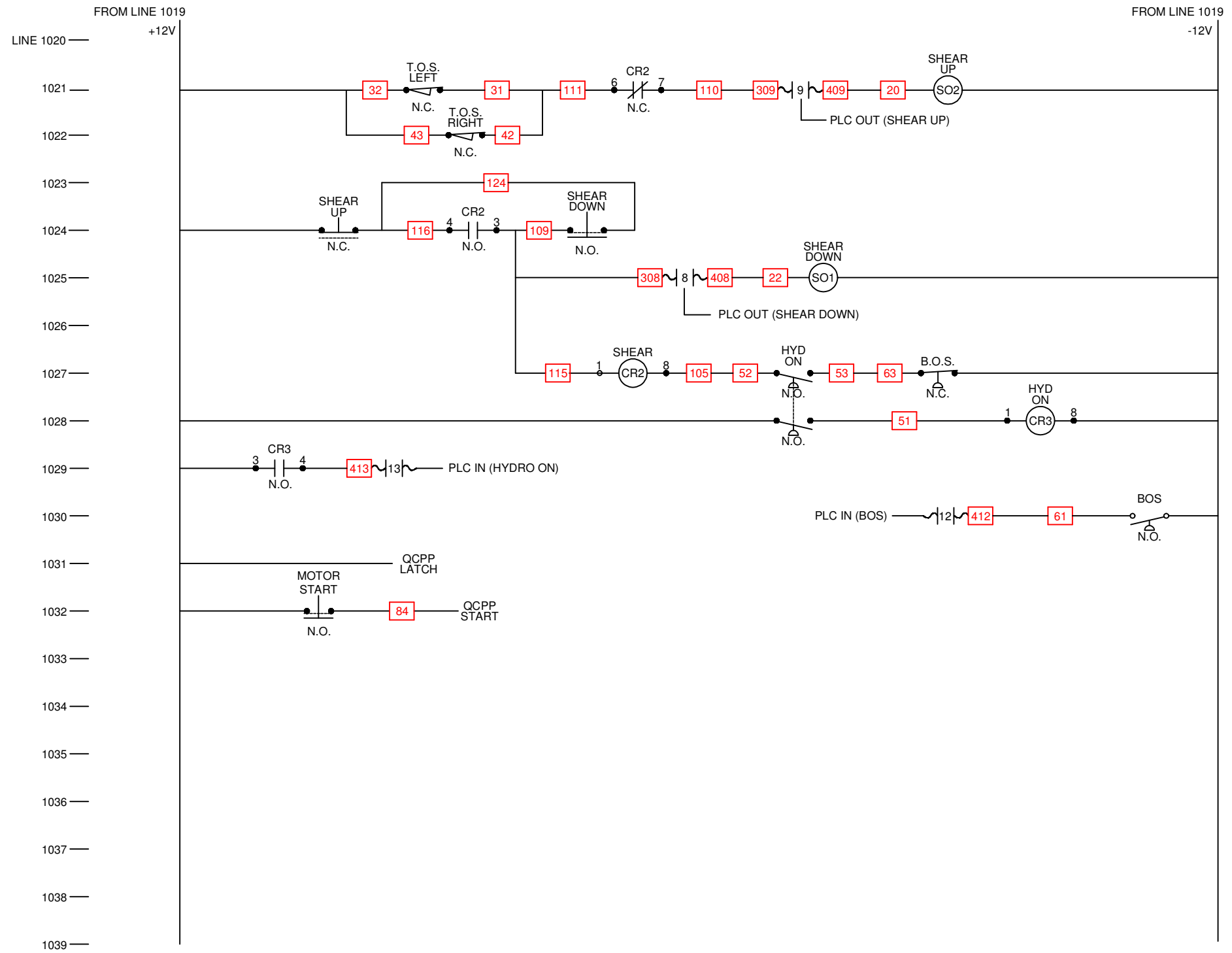
4 OF 5 SHEETS

REVISION 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



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



NEW TECH MACHINERY CORP.

DRAWN BY	PART NAME	SHEET	REVISION
	CONTROL BOX ASSEMBLY	5 OF 5	1
CHECK BY	PART NUMBER		
	PLC-381-000		

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

