Liberty Downspout Machine Manual

RED RIVER MACHINERY
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1. Machine Specifications

DIMENSIONS:	Length- 144” (3657mm) Width - 26” (660mm) Height - 47” (1194mm)
WEIGHT:	approx. 800 lbs. (364kg)
POWER:	1 1/2 hp, 220v., 60 hz, single phase electric motor (Optional) 220v/50hz
DRIVE:	Polyurethane rollers driven via chain and sprocket
FORMING ROLLERS:	Free floating, Harden Nickel Plated Steel
CUT OFF:	manual Quadra-shear
SPEED:	Approximately 35 ft. per minute
CONTROLS:	Push button entry jog and stop Forward and reverse switch Exit end on and off switch
MATERIALS FORMED:	Aluminum: .015 - .024” (.4 - .6 mm) Steel: up to 24 gauge (.6 mm) only steel with Copper: 16 oz.. 1/2 hard rollers
COIL WIDTH:	**2” x 3” -** 10.5” (266.7mm) **3” x 4”** - 13.75” (349.25mm)

Available Options:

•220 volt/ 50 hz.
• Length control with limit switch
•Warehouse stand

2. Terminology

Congratulations on your purchase of the latest in downspout technology. Liberty has developed what other manufacturers had said was impossible to do-- form downspout in less than 12 feet. Your machine has gone through a long process of development and trial to bring you the very best. We have adjusted your new machine at the factory and it is ready for use upon mounting and securing at your location.

One of the first things that we had to decide when developing our manual for this machine was which was the front and which was the back of the downspout machine. This has been very confusing for many gutter machine owners deciding which was the front and back. In order to eliminate confusion, we have stayed away from front and back terms and will use the terms of input or feed end to signify the end that the material goes in the machine and the output or finish side, where the downspout comes out of the machine.

Since it is impossible to determine right or left hand sides without referring to the front and back, we will refer to the one side geared drive side. Standing at the output side of the machine, the geared side is on the right.

Material

Your portable downspout machine is factory adjusted to your sample coil that you sent to . It comes standard with a 15” spool. The 15” spool is designed for up to 450 pound coils for portable machines and 1000 pounds for warehouse model.

Our machine that is setup for .019 coil can also run 16 oz. copper since 16 oz. copper coil or 26 gauge steel which is also approximately .019” thick. We tune your machine to the coil that you have sent.

The Liberty portable downspout machine can also run 10.5” x .024 aluminum and even up to .027 with factory adjustments. 500’ of coil must be shipped to to factory for adjustment and tuning for any machine that is not .019.

3. Mounting Machine

3.1 General Instructions

1. Before mounting the machine inspect the platform on which the machine is to be mounted. Take into account the total weight of the machine with a full load of coil on top. The platform should be solid and not corroded. Any repair to the platform should be made before mounting the machine.

2. There are four (4) mounting holes to secure the downspout machine to your platform. **DO NOT** add additional brackets to tie the machine down. Additional mounting brackets could result in twisting of the machine.

3. Care must be taken when moving the machine from the shipping skid and installing the machine onto its final platform.

4. To secure the machine to the platform use 3/8" grade (5) bolts. Use a backing plate under the platform at each bolt to distribute the pressure over a larger area to prevent the bolt from pulling out of the platform. It is recommended that a minimum of 2" x 2" x 1/8" thick. Galvanized steel should be used as a backing plate.

3.2 Portable Mounting

Liberty Downspout machine comes with a solid aluminum rail frame mounted on aluminum channel to eliminate bending or flexing in order to keep your machine in perfect alignment. Many new owners desire to mount their new machine in the back of a truck alongside a gutter machine or on the back of a trailer. Our recommended mounting procedure is to firmly bolt the downspout machine to the bed of the truck with the two mounting brackets directly under the 15" spool. These two bolts should be firmly tightened with lock washers and flat washers. The two mounting angles towards the finish end of the machine should be fastened in such a way that when the truck or trailer flexes, the foot of the downspout machine can lift off the bed of the truck or trailer.

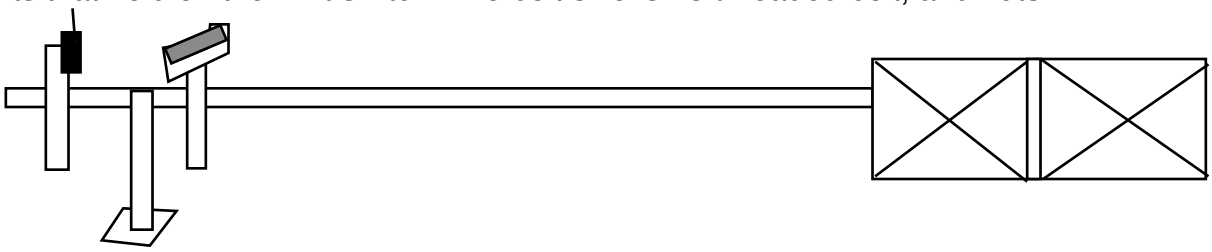
This is done by having a heavy duty spring placed on the top of the mounting bracket to allow the bed to flex while keeping the machine from moving from its place. With the spring arrangement, one leg of the downspout machine will be able to lift a bit in order to allow the truck bed to flex and not the downspout machine. It is recommended that the spring have 1" of give to allow the proper flexing of the truck bed and to protect the downspout machine and eliminate potential danger to the trussed base.

The other mounting option that is sometimes employed is to place the machine upon 1/2” rubber pads underneath each mounting hole. This will also allow the legs of the machine to flex if the truck or trailer flexes as well.

WARNING: Do not firmly bolt all four brackets to the truck or trailer bed. This will cause excessive stress to the truss structure of the downspout machine.

3.3 Warehouse Run out Table Mounting

Many have been purchasing our warehouse stand with run out table and stand. The trussed base of the warehouse stand needs to be firmly bolted to the floor at the four holes in the base and the downspout machine bolted firmly to the stand. There is one floor base for the run out stand that should be bolted about 8’ from the exit end of the machine. It holds the run out bar that holds the rollers and limit switch rods.
There are 4 bolts that hold on the limit switch. The bolt size is #8 threaded bolt, and nuts.



Bolt on legs

The machine stands bolt on with 2 bolts per stand as seen in the picture below. The bolt size for the machine stands are 10mm x 25mm

4. General Safety Precautions

1. **READ** the entire manual before attempting to operate this equipment.

2. **ALWAYS** keep covers, guards, and lids on during operation and storage. Not only does this protect the operator against injury, but also keeps the outside elements from getting into the internal components of the machine.

3. **ALWAYS** check the inside of the machine for foreign objects before starting the machine.

4. **OBSERVE** and obey all safety signs and warnings.

5. **STOP** the machine and **DISCONNECT** it from the power supply before making any adjustments, or performing any maintenance to the machine.

6. **ALWAYS** have a trained and knowledgeable person operating the machine.

7. **DO NOT** wear loose clothing, jewelry, etc. that could become entangled in the moving parts of the machine while it is in operation.

8. **ALWAYS** adhere to and follow all local and national safety codes concerning the operation and loading and unloading of reeled coils. Always use a properly rated device for lifting reeled coils into the reel rack.

5. General Maintenance

1. **ALWAYS** keep lids on during operation and storage. The covers are for operator safety, but are also to protect the internal parts of the machine from the environment.

2. Avoid storage of the machine outdoors for long periods of time. If mounted on a trailer, it should be an enclosed trailer. If inside, it is best to cover machine with a tarp to protect it, but provide good ventilation to prevent condensation and rust.

3. Keep your 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 your machine each day, visually inspect the machine for debris,or loose nuts or bolts.

5. Keep proper tension on chains at all times. This will add to the life of the chains and sprockets. Tension the chains until they just become snug. Do **NOT** over tighten chains.

6. Keep the shear lubricated. Grease the shear dies every 20 hours with use of a waterproof grease. It should be non-toxic, clean and clear. Will not stain. Will work from -45 degrees F to +450 deg. F. Will not melt, freeze or separate. Prevents ice build up. Impervious to salt water or road salt, totally compatible with other lubricants, 100% synthetic, heavy-duty grease. Recommended grease:

7. To prevent grime build up on the chains and sprockets use a dry type chain lube.

8. Check your gear box periodically to be sure the oil level is at the correct level and the air vent clear. Gear oil should be even with the bottom of the inspection hole. Use Mobil SHC634 synthetic worm gear lube for the gear box. On new machines change the gear box oil 200 operating hours after starting. After the first changed, change oil every 2000 operating hours, or every 6 months, whichever occurs first. **CAUTION:** DO NOT OVER FILL.

9. **DO NOT** store or transport the machine with coil in the main body of the roll former. The forming tools are spaced apart from each other to prevent them from rubbing each other. The coil will only act as a dirt and water collector.

6. Electrical Controls and Operation

6.1 Power Cord Requirements

It is important that the minimum extension cord wire size requirements, prescribed by the motor manufacturer be adhered to in order to maintain the motor warranty.The minimum extension cord wire size for the 3/4 or 1 HP motor on the portable models is as follows:

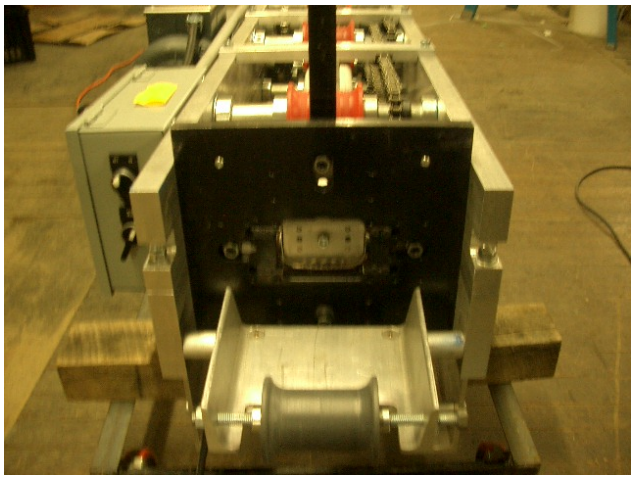
up to 25 feet.....12 gauge

25 to 50 feet.....10 gauge

50 to 100 feet.....7 gauge.

The warehouse models need to follow existing building code and electrical specifications in their wiring of their particular electrical setup.

6.2 Electric Controls



All portable models and warehouse models with the limit switch and run out table come with electric controls for ON/OFF, FORWARD, and REVERSE.

Barrel Switch is Manual switching:
Your roll forming machine has a single lever that turn the machine to forward operation, off, or reverse. **WARNING: Backing the machine up excessively may cause the seam to be malformed.** If this takes place, the material will need to be cut and reloaded into the machine.

6.3 Run out Limit Switch (Option)

Hooking up the Run out Limit Switch

1. To hook up the run out limit switch, plug your downspout machine into the outlet provided in the electrical junction box.
2. Attach the limit switch to the 1” x 1” x 18” tube and fasten it to the 1” x 1’ x 10’ run out tube with the 1 1/8” slide couplers. Use the bolts on the slide coupler to tighten the limit switch in such a way that that when the pipe coming out of the downspout machine hits the limit switch lever, it opens the circuit, thus causing the downspout machine to stop.
3. Plug the junction box into your power source.

4. Turn on your machine with the barrel switch and watch to make sure your limit switch is at the proper height to turn machine off when it is struck by the downspout.
5. Adjust limit switch forward or backward to the proper length you desire to achieve.

6.4 Shear Centering Switch

Your downspout machine with the manual quadra-shear has a built-in limit switch that acts as a centering switch for the shear. If the handle of the shear is not exactly in the home position, the machine will not run, since this shear centering switch loop is still open.

This is a safety device to make sure that you do not run the machine while the manual shear is still closed, thus possibly jamming and causing damage to the machine.

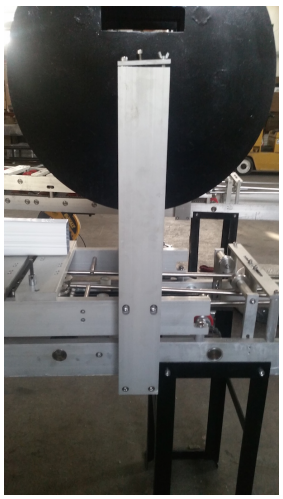
6.5 Three Phase

If your machine is wired for 3-phase electric, it will come with a contact electrical box mounted next to the barrel switch. On the front of the contact electrical box will be a twist plug outlet. This is what the limit switch will be plugged in to. In case the limit switch is not required at some time, a bypass plug will be included in your limit switch package. This must be plugged in for the circuit to be closed and power to go to the machine.

7. Reel Rack

Installing the reel stands: The reel stands are bolted to the farm of the downspout machine using 10mm x 45mm bolts along with spacers to keep the reel stands perpendicular.

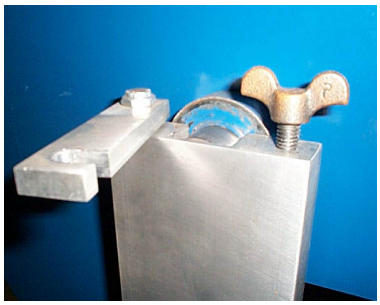
7.1 Reel Lock/Brake



The reel stands on your machine have a REEL LOCK/BRAKE mechanism on both sides of the reel upright. This mechanism serves three basic functions. First, they are used to secure the reel assembly and coil up on the rack. Second, they serve to act as a brake to keep the coil from turning during transporting of the machine. The third function is to control the amount of drag on the reel and coil while the machine is in operation.

Securing the Reel and Coil
To secure the reel and coil on the rack the T-handle must be threaded into the base. Turn and engage the threads on the T-handles until the reel lock/bar secures the shaft down into the cradle base.

To remove the reels from your machine, you must first turn the T-handles counter clockwise until they are disengaged from the base. Rotate the **REEL LOCK/BRAKE** bars out of the way so that the reels can e removed form the reel stands.



Using the Brake For Transporting
To use the **REEL LOCK/BRAKE** assembly as a lock to stop the coil from unwinding during transportation, tighten the **REEL LOCK/BRAKE** bars tightly over the reel shafts to prevent the reel and coil from turning

CAUTION: Do NOT transport the machine without having the reel locking device on the reel rack properly secured.

CAUTION: DO NOT forget to loosen the **REEL LOCK/BRAKE** bars when beginning operation of the machine.

Using the Brake During Machine Operation
Before operating the machine it is very important that the **REEL LOCK/BRAKE** assembly be loose enough so that the loaded reel can be turned by hand with just enough resistance to keep the coil from unwinding off the reel. For models that have a faster throughput, a bit more resistance may be required on a larger coil due to the inertia created while the machine is turning the reel and coil.

CAUTION: Undo strain will be put on the electric motor and drive system if this procedure is not followed.

ATTENTION: Keep shaft of the reel lubricated with grease.

8. Loading Machine

8.1 Loading and Off Loading Reels From The Rack

Before attempting to load the reel be sure you understand the procedure of loading and unloading coil properly. Be sure to keep the area clear around the machine while loading or unloading the coil. Improper loading can result in machine damage and/or bodily injury.

1. Before lifting the reel onto or off the reel rack, check to insure that the **REEL LOCK/ BRAKE** bars are in the OPEN position to clear the reel shaft.

2. Rotate the reel so that the lifting hole in the reel is at the top of the reel. Use the lifting holes to secure an approved lifting device to the reel.

3. Lift the reel, slowly and safely as you move the reel to its new location. Set the reel down and block the reel before removing the lifting device.

8.2 Loading Coil Onto The Reel

The reel assembly is made up of two (2) reel halves. Each half is removable and is fixed in position on the shaft by seating a socket set screw down into a divot located on the shaft.

1. To load the reel assembly, remove a reel half and load the coil onto the remaining reel half with the shaft attached. Remember, only remove one reel half from the reel assembly.

2. Slide the other reel half back onto the shaft, so that it captures the coil between the two sides, and lock it into position with the socket head cap screw.

3. Once the coil is on the spool, tighten up the Allen set screw and place on reel rack (according to 8.1) with the painted surface towards the top as it goes towards the **Power Feed Rollers**.

MAXIMUM LOAD CAPACITY: 1000 pounds for the reel.

8.3 Threading Coil Into machine

1. Before putting coil in the machine, cut each corner of the coil at a 45 degree angle about 2 inches off each corner to enable it to start through the forming rollers with ease (see example to right).

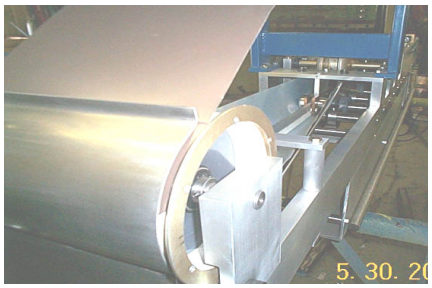
2. Once the coil is loaded on the spool or placed in the cradle it needs to be extended towards the **Power Feed Roller**. This is the roller that is about 6” in diameter with a smaller urethane covered power drive roller on the underside of the larger roller. (See Figure)

9. Entry Guide and Power Feed

9.1 Hand Feed Roller

The **Hand Feed Roller** has several very important functions.

1. First, it grabs the coil as it is inserted into the slot between the black PVC rollers and the urethane roller and drives it towards the main section of the machine along the guide rails..
2. It guides the material into the machine to keep it running straight.
3. It positions the material laterally so that the correct amount of material is fed to either side of the seam.



The roller keeps the material tightly wrapped around the 6” guide roller.

The sides of the 6” roller are very important, as this aligns the material to the rest of the roll forming machine. As the material wraps around the roller, it is aligned to the machine so that the material enters the machine correctly and the lock forming rollers have the right amount of material on each side of the pipe. **NOTE:** This has been factory set, however it can be adjusted with the side **tuning handle.** Be cautious before adjusting this. The slightest adjustment can make your pipe enter at a slight angle angle and make you lose your seam in your pipe.
If it does not enter the machine straight, the back side of the locking seam will not properly form.

IT IS IMPORTANT TO MAKE SURE THAT YOUR TRUCK OR TRAILER IS ON A LEVEL SURFACE OR THE COIL MAY NOT FEED CONSISTENTLY STRAIGHT THROUGH THE MACHINE.

9.2 Separate Decoiler Feed (Optional)

SPECIAL NOTE: THIS SECTION ONLY APPLIES if you have a separate decoiler with our downspout machine in shop and you are decoiling 1000 pound coils with a separate decoiler.

You need to make sure that your are lined up exactly in line with the entrance of the power feed roller. You will probably need to take off the shield around the 6” roller and enter the material straight through the machine’s two rollers of the entrance roller. Normally when decoiling from our spool or cradle the material wraps around the 6’ roller which has the function of perfectly aligning it to the rest of the machine. We recommend that you have fabricated a guide table between your large decoiler and our entrance power feed rollers to insure that you are keeping your material perfectly in line.

9.3 Feeding Material Into Machine

Once the material is placed between the roller guide and the power feed roller, take the hand crank and crank the material into the machine. The hand urethane feed system will grab the material and push it forward to the main section of the machine forming a slight trough as the material goes forward to the center bar section. This entrance section will properly align the material from the power feed roller

When the material reaches the first power drive roller, to feed through the machine it is a good idea to jog it through with the job switch. You may want to remove the top cover towards the exit end of the machine to make sure that the material properly feeds through the machine. Although extremely rare, it is possible that due to possible damage to the outside of the coil, etc., you may have to make sure it follows the correct path through the machine. Once the material is properly through the the exit end, stop the roll former when the pipe comes out of the exit or output side. Cut off end and begin operation. You are now ready to begin operation.

If Manual switching:
Your roll forming machine has a Forward/ Reverse switch and an ON/OFF switch to turn the machine to forward operation, off, or reverse. **WARNING: Backing the machine up excessively may cause the seam to be malformed.** If this takes place, the material will need to be cut and reloaded into the machine.

10. Field Adjustments

Your machine has been factory adjusted according to the coil that you have sent to Liberty. If for some reason you did not send Liberty coil to tune up your machine, Liberty adjusted the machine with the coil Liberty uses and supplies for their downspout machines. Coil that you may purchase may not be according to the exact specifications of Liberty's coils. If you have sent Liberty test coil that you will be using, your adjustments will be factory set and you will eliminate fine tuning that often occurs. Inconsistencies temperature, humidity, or in coil specifications may cause the downspout pipe to curve up or down or curve to the right or the left.

There are only two field adjustments that should be made to this machine.

10.1 Entry Guide

The Entry Guide has two main purposes:

1. To guide the material into the machine and keep it running straight.

2. To position the material laterally so that the correct amount of material is fed to each side of the downspout seam.

Entry Guide Adjustment
On the entrance power feed roller is a HEX head shaft. (Upon this will fit the hex head ratchet wrench included with the machine for the hand entrance feed**).** This adjusts the alignment of the material to

the rest of the roll forming machine. If your one side of your coil is gaining or losing proper amount of material to form the seam, your adjustment is on this hex head.

To adjust the Entry Guide:

1. Take note of the position of the entrance roller side guides and write down it's original position. You may need to go back to this.

3. Turn tuning handle about 1/16 to1/8 of a turn in the direction you wish to go. It does not take much to move the material.

4. Tighten

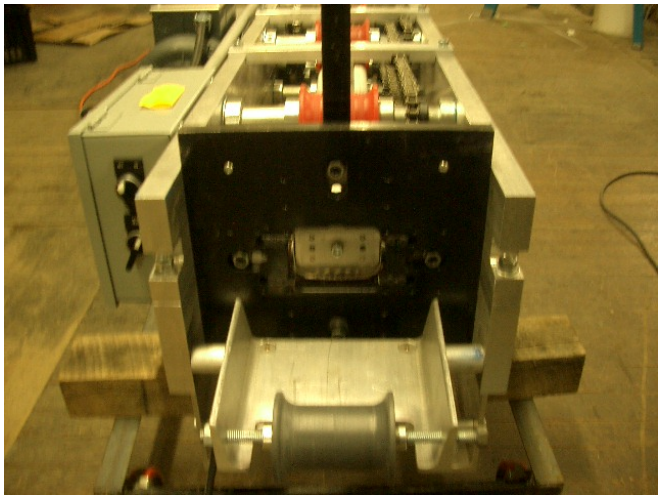
CAUTION: THIS IS FACTORY SET and only should be adjusted if you are losing seam because of too much material on one side of the seam and too little on the opposite side.

NOTE: At times, due to improper feeding by the operator, when the coil first feeds through the machine it might not have perfect alignment on the seam. Let the machine run for 5 - 10 feet to allow it to straighten the coil out through it's own set of pressures and tolerances. In almost all cases, it will straighten out any misfeeding in ten (10) feet or less.

10.2 Exit Roller Adjustment

The Exit roller can be moved to the right or left, as well as up and down. This causes the pipe to bow to the right or left, or up and down Move in the direction that you want the pipe to bow.

WARNING: Be careful about making any other machine adjustments for straightness as you may change other adjustments that do not need to be changed.



11. Entrance Guide Rails

When your material turns around the PVC transition roller and passes between the transition roller and the Urethane Drive Roller, the material is captured in the center by upper and lower PVC covered guide rails and the edges of the material slide along highly polished rods. Upon entrance of the guide rail, the Urethane Drive Roller pushes the material along the guide rods and between the upper and lower guide rails.

11.1 Entrance Center Guide Rail

The Entrance Center Guide Rails are slightly curved rails that guide the material as it prepares to enter the main section of the machine. These are made from polished, hardened **Thompson 60** rod material.

WARNING! These are factory set. There should be NO NEED OF ADJUSTMENT, as your machine is tuned to the material that you sent to Liberty.

11.2 Entrance Guide Rods

The Entrance Guide Rods move the material from a flat position to a U-shaped position as shown in the photo on the right. On this photo the arrows show the set screws on the horizontal aluminum bar just above the horizontal aluminum bar.

These are made from polished, hardened **Thompson 60** rod material. The side guide rails can be raised and lowered using the collars or set screws at the end of the Entrance Guide Rod, where they are held in place.

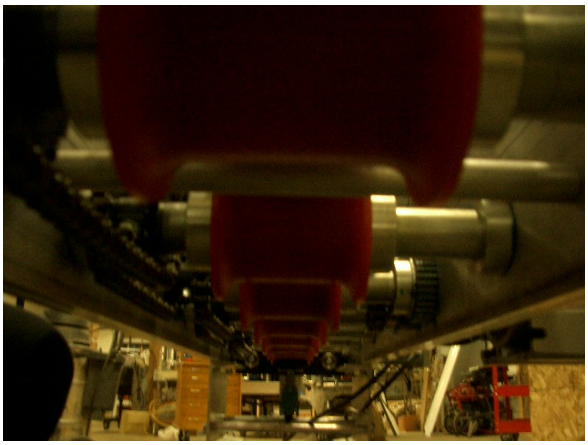
WARNING: This position is factory set and should not need adjustment.

However, should there ever be excessive wear on the polished, hardened Thompson 60 surface of the Entrance Guide Rod such that it scratches the surface, the right and left guide rods can be removed and switched in position. This will cause the material to now ride on the opposite side of the Entrance Guide Rod, thus doubling the life expectancy and wearability of these Entrance Guide Rods.

These Entrance Guide Rods do have some flex to them. A slight bow will take place in them as the material feeds into the machine. This helps form the material along the natural pathy of the material, thus relieving undue stress on the coil material, reducing any canning effect.

On 3x4 models for steel, these Entrance Guide Rods have a center support to keep the rods from bending too much as the material enters the machine.

12. Lower Drive Wheels



The Lower Bed is made up of urethane drive wheels that are powered directly from the transmission through a series of gears. Each of the shafts is a lower drive shaft and serves to contain the material as well as drive it along the path. Each drive shaft is has above it a set of rollers. These are either the drive Carriage or the Core Bar. The coil material moves between these shafts and rollers. The actual clearance between these Lower Bed Drive Shafts and the Core Bar or Drive Carriage is factory set according to the material that you sent for tuning up your machine.

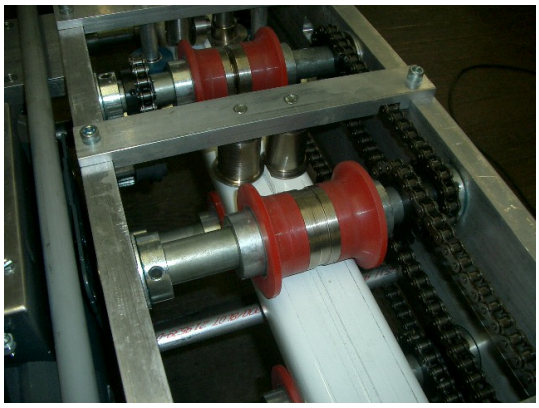
The last Lower Bed Drive Shaft is fluted on the standard corregated downspout machine.

The Shaft turns on bearings and has radius edges to form the edge of the downspout.

To Remove the drive shaft, the locking collars need to be loosened, the locking set screw on the gear loosened. Any Containment Roller is loosened by its locking set screw. Make sure that anything held on the shaft is loose and then with a wood peg and mallet, the shaft can be gently slid out the side of the machine. Be careful to make sure it slides away from the geared side so the gear can slide off as the shaft is moved.

WARNING! Do not drive shaft forcefully or you may break something and VOID your Warranty. Everything must be properly untightened to slide it out, gradually removing all collars, gear, containment rollers as you slide the shaft.

12.1 Chain Drive

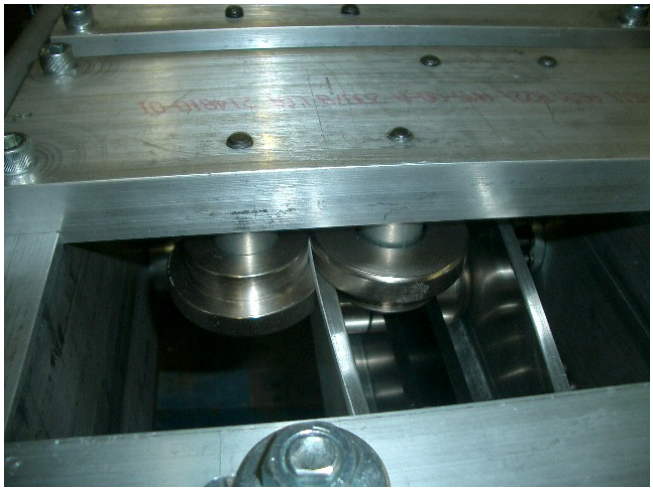


The Drive shafts are powered by chain drive coming from the transmission located directly beside the machine. Periodically these chains should be lubricated as noted on in Section Five (5), General Maintenance. Be sure to use the proper chain lubrication, so as to keep machine clean.

Each Shaft gear is mounted with a slot and key.

13. Lockformer

13.1 Lock Forming Station

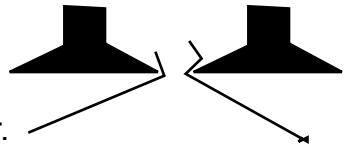


The first station is the lock forming station. The metal enters the lock forming station shaped in a big U shape and leaves with the initial bends that are formed together to make the locking seam on the back of the pipe. This is accomplished by a series of rollers that the metal passes through to make the bends. Each ball bearing has an elliptical center hole so that it can be adjusted for the correct clearances. Once again common sense should rule the day. The lip with the single bend should be 1/4 inch high. The side of the pipe that has two bends in in should have the first bend be 5/16 inch and the second bend 1/4 inch. If you have one side be longer than it should be and the other side shorter than it should be, your metal is coming into the machine crooked and needs to be adjusted. If you are starting a roll it is possible that you did not get the metal properly centered when you slid it under your first center bar rollers, also you can check to see if your metal somehow is not between the two guide rollers where the metal enters the machine at the Input guide rollers.

To adjust the rollers loosen and remove the four bolts that hold the Lock Forming Station on the machine. It can then be shimmed if if needed.

WARNING! DO NOT ATTEMPT TO ADJUST THE LOCK FORMER WITHOUT SPECIFIC INSTRUCTIONS FROM THE FACTORY. THIS HAS BEEN FACTORY SET TO YOUR COIL.

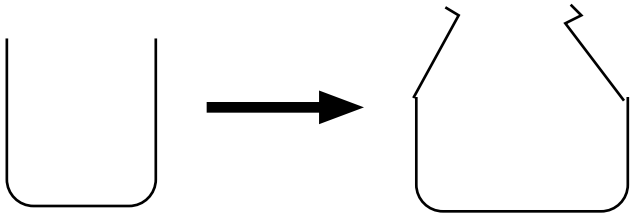
14. **Pipe Closing Stations**



The next five stations are all similar in function and will be grouped together. These five stations take the pipe coming out of the lock forming station and form it down into a rectangle shape and get it ready to go into the various seaming stations.

Each station consists of an **non-adjustable span bar.** Each span bar has two rollers on ball bearings that need to touch the metal where it the lock forming bend has been made as shown in the accompanying diagram. The metal needs to make a nice even flow from nearly straight up to its final position as it enters the seam locking stations. . The metal needs to flow smoothly, it can not weave in and out but take a gradual natural flow as it is formed into the pipe.

THIS HAS BEEN FACTORY SET FOR YOUR PARTICULAR METAL. If you desire a different metal for your machine, this may have to be changed.



15. Seam Stations

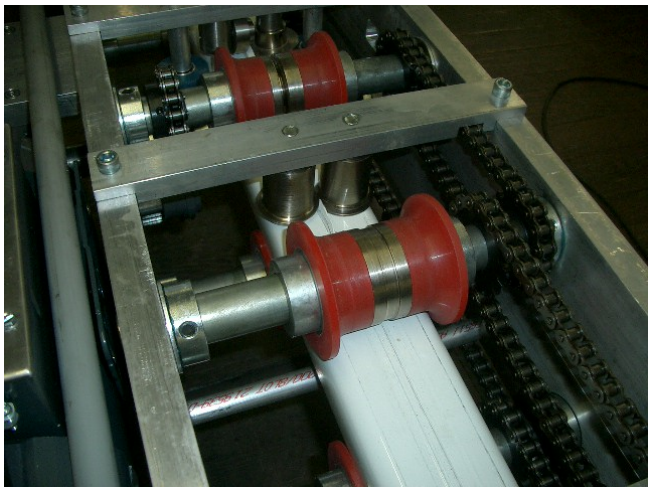
The last stations are the **Seam Stations**. The first is the **Seam Closer** the the **Stand Up Roll** followed by the other seaming, dimpling and pressing rollers. They fold the lip of the seam over, lay it down and place the locking impression on the top of the seam. The rollers that determine the distance above the center bar rollers is adjust with shims underneath the mounting bars on the sides of the machine. Normally there is no need for adjustment on these.

15.1 Seam Closer

The first station at the **Seam Stations** is the Seam Closer. On the picture to the right you can see the function. Two Non-marring PVC **Side Containment Rollers** keep the material captured at the sides so that the two stainless rollers can push the material tightly together to prepare it for the next operation. There is no adjustment for these rollers, as they are factory set.

15.2 Standup Roller

The stand up roller causes the horizontal lip that began to be folded over at the Fold Down Rollers to now be completely folded down to a vertical position.
The seam is now ready to begin to be folded over.
There is no adjustment on this roller. The center of the grouve in this roller is 1/8” off center away from the gear side of the machine.



15.3 Fold-down Rollers

Immediately after the material is gathered together the seam passes through two Fold-down rollers mounted on an aluminum bar. This takes the seam and begins to fold down the horizontal flange of the seam as it comes out of the seam closer. This prepares it to go through the next part, the Flatten Roller. This roller is centered between side plates.

15.4 Flattening Roller

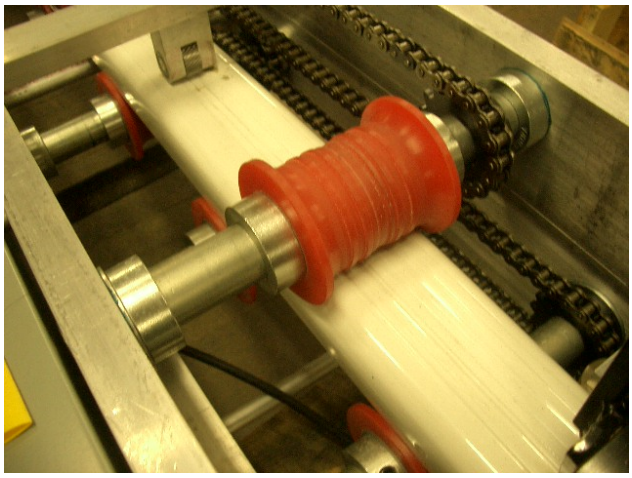
The flattening roller causes the seam to now be completely flat. It rolls the seam that has been laid over by the Fold-down Rollers to now be pressed together.This roller is centered between side plates

15.5 Dimpler

The dimpler causes a dimple to be placed in the seam causing the four thicknesses of metal to be locked together.

16. Fluting Rollers

The fluting rollers consist of a **Top Fluting Roller**, a **Bottom Shaft Fluting Roller**, and two **Side Fluting Assemblies**. The previous picture shows the top and side rollers.



16.1 Top Fluting Roller

The Top Fluting Roller has two different purposes. It places a flute in the seam side of the pipe by rolling it across the matching fluted roller on the inside of the pipe in the Core Bar. It also presses the seam once again after it has gone through the dimpler to insure a positive lock. This is non-adjustable.

16.2 Side Fluting Assembly

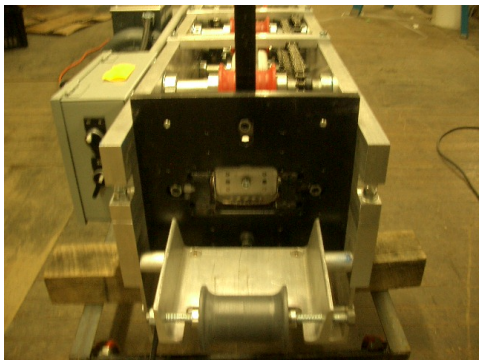
There is a Side Fluting Assembly on either side of the Core Bar that matches the Fluting Roller on each side. These Assemblies not only put the corrugated flutes on the sides of the pipe, but also act as a centering mechanism to keep the pipe straight. Thus, there are no adjustments to be made to these. These can be removed by two bolts into the sides from the outside of the machine.

16.3 Bottom Fluting Drive Shaft

The bottom fluting shaft is also a drive roller. It also has a corresponding roller on the inside of the Core Bar to make the flute in the pipe. It's two-fold purpose is to (1) flute the material and (2) continue to drive the pipe through the machine.

17. Quadra-Shear

The patent-pending quadra shear is designed for quick and easy shearing and crimping of the downspout. As you stand on the gear side of the machine to operate the machine, to shear and crimp with the manual lever, you quickly pull towards you which shears the sides of the pipe as well as crimp, then push it away from you to finish shearing the top and bottom of the pipe.



The side blades are activated through a lever and cam operation.

ATTENTION: Be sure to quickly bring the lever towards you first and then secondly, push it to the far side. This insures a positive lock on the seam of the pipe.

17.1 Pipe Crimper

The Quadra-Shear comes standard with a built-in pipe crimper that is activated as you pull the lever towards you. This is done through four crimping blocks that are activated as the side shear blades pass through the sides of the material.

17.2 Shear Blades

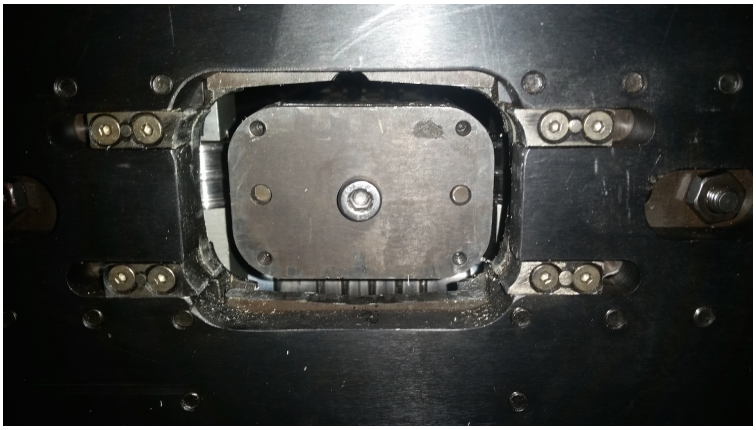
The four shear blades are hardened for long life, but also have four sharpened surfaces that can be used before they are re-ground for sharpening. Each blade can be used front and back but just turning, as well as turning end for end. Thus all four sides can be used giving extra long blade life.

17.3 Centering Switch

The quadra-shear has a centering switch that will not allow the machine to turn on if the lever is not straight up. This is to make sure that there are no problems with someone trying to operate the machine with the shear closed, jamming material into the shear. It is located on the bottom of the machine and activated by the cam.

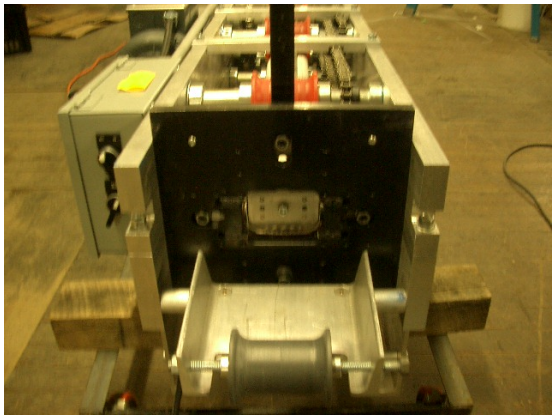
17.4 Shear Adjustment

The shear blade can be adjusted when necessary. The shear blade is factory set and should be checked for proper clearance before operation of the machine shear. There is a center bolt and 4 set screws on the center blade. With the shear handle deployed, make certain that the shear blades bypass the center shear blade. Use the center bolt and the 4 set screws to properly set the blade clearance. Clearance tolerance (.002 to .003).



18. Exit Roller

As the pipe leaves the machine there is a support exit roller. that determine the straightness of the pipe. The roller is in a slight U shape to fit the pipe. The **Exit Roller** is adjusted by turning the nuts on the adjustment bar below the exit roller. By adjusting the roller up you can actually bow the pipe up. By adjusting the bottom exit roller down, you can make the pipe bow down. The exit roller can also be adjusted from side to side by loosening the side nuts and turning the the center rod slightly to the right or left. This can adjust any side bow to make sure the pipe is straight. It can also just be used as a support roller for the pipe coming out of the machine.



20. Automatic Cutoff

If your model comes equipped with our auto-quadra shear, the operation of the shear is automatic once the pipe hits the limit switch. The limit switch will activate the motor on the shear which will cycle the shear one full revolution to automatically cutoff the downspout. The advantage of this is that you do not need to wait near the shear in order to have it operate.

The limit switch on the bottom of the shear mechanism is a safety limit switch that will not allow the machine to operate with the shear blades blocking the exit hold. This prevents a pile up of material.

Adjustments: There is a brake shoe that is adjustable that will brake the shear handle when it reaches the center upright position. When the power to the motor is cut by the limit switch it will stop the handle at top center. If your handle coasts too far so that the bottom limit switch of the shear mechanism keeps the main drive from operating, then you need to tighten the brake so it cannot coast. There is some wear that takes place on the replaceable brake shoe, that will cause it to be adjusted from time to time. Adjustment is made very simply by loosening the nuts on the studs coming from the brake shoe and turning them slightly to apply more pressure on the shoe to handle contact area.

Understanding the Process

In making using your new downspout machine, it is important to keep in mind that common sense is the most important thing to keep in mind. If any station comes loose and out of adjustment, common sense will often easily show you where you need to position the station.

If there is too much distance between the rollers, the metal will slip between the top and bottom rollers and the rollers will spin against the metal. If this happens, the rollers need to be lowered.

If there is not enough clearance between the rollers, the downspout will experience a rippling effect on the front side of the pipe because of too much pressure. Raise the center bar if there is a rippling on the front side of the pipe (the side opposite of the seam). This should not be done without specific instructions from our factory, and we will not warranty any problems that arise from this kind of activity.

Safety Shields

For maximum safety your Liberty Downspout machine is equipped with guards to prevent accidents. The geared drive side has one long shield that covers the geared drive units. The opposite side has two rounded shields to cover the larger geared units. These shields need to be in place during operation at all times. These keep dust and flying chips from a cut-off saw from entering the gears and wearing the down prematurely.

To protect the machine and the operator there is an **exit shield** and a **top cover**. These are in place not only to protect the operator, but they help keep your rollers clean and dry. It is recommended that this shield and cover be in place to keep saw chips from being thrown back into the machine. Failure to keep these shields in place can cause damage to the finish of the pipe coming out of the machine if these chips get stuck on any of the rollers in the machine.

Trouble Shooting

Symptom: Seam locks correctly when coil is started, but gradually begins to function incorrectly.

Problem: Coil is not entering the machine straight.
Solution: 1) Make sure the downspout machine is sitting level so that the spools are not leaning to one side. Move machine so there is no side to side slant to the truck or trailer or
2) Adjust tuning handle to properly align material to the rest of the roll former.

NOTE: As the material leaves the guide rails, there are locking collars on each side that the material is to slide underneath. This is set at the factory. This helps keep the material straight into the machine. Should one of these come loose, you can make sure the material is exactly level going into the machine by measuring underneath the cross plate. Set the collars equally down from the plate and tighten. As the material goes under these collars is should just clear these collars and not rub excessively on either one. If it rubs excessively, adjust the Entrance guide roller until it does not rub excessively.

Symptom: Material slips and does not feed into the material with drive rollers spinning.

Problem: 1) Not enough pressure is on the material or
2) spools are not loosened to allow them to turn to decoil
Solution: 1) Loosen turn nuts on spools to allow them to decoil.
2) Check to see that your material is the thickness your machine is designed to roll form.
NOTE: You may have to shim the drive rollers down from the bridge plate that the drive rollers are mounted to in order to get more drive force.

Symptom: Pipe bows to the right, left, up, or down.

Problem: Incorrect positioning of the final end roller.
Solution: Follow instructions to adjust final end roller

Symptom: Pipe has tiny bumps or flecks that seem to be formed right into the painted finish.

Problem: Debris has stuck on the rollers.
Solution: Clean center, bottom, and side rollers of any metal flecks and make sure the the exit cover and top cover are in place.

Symptom: Pipe pops and snaps as it slides on entrance guides

Problem: Incorrect adjustment of center guide rails causes too much containment of the metal causing more pressure on the metal one place than another.

Solution: The problem is usually that of too much containment of your material. Each material with its particular hardness and bending characteristics will have a bit of a different bending and rolling characteristics. To adjust to your particular metal you need to make sure your material is entering your machine straight. Then raise up the center guide rail and lower the bottom center guide rail to allow the material to to from the Entrance Guide Roller to the first drive roller without any pressure down from the center guide rail. Run several pieces through the machine and then check to see where the material has naturally decided it flows from the Entrance Guide Roller to the first drive roller. Now adjust the center guide rails to that natural bend that your metal naturally finds.