OPERATION and MAINTENANCE MANUAL

M78
7/8” K-STYLE COMBO GUTTER MACHINE

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# CHAPTER 1

## SPECIFICATIONS

### CHAPTER 1 - SPECIFICATIONS

**DIMENSIONS:**
- Length: 14’ 5-1/4” (4401 mm)
- Width: 3’ 3” (991 mm)
- Height: 3’ 10” (1168 mm)

**WEIGHT:**
- 2100 lbs. (950 kg)

**POWER:**
- 1.5 HP; 120VAC/60Hz Single phase TEFC. ; 18A
- 1.5 HP; 220 VAC/60 Hz Single phase TEFC. ; 9A
- 1.5 HP; 220 VAC/50 Hz Single phase TEFC. ; 8A

**DRIVE:**
- Polyurethane rollers driven via chain and sprocket

**FORMING ROLLERS:**
- Free Floating, Stainless Steel

**SHEAR:**
- Forward Pulling Manual Rack and Gear w/ Hardened tool Steel Dies

**SPEED:**
- Approximately 50 ft/min (15m/min)

**CONTROLS:**
- Push button entry and exit end manual controls

**MATERIALS FORMED:**

- **Coil Width:**
  - MG7: 18” (457 mm)
  - MG8: 20” (508 mm)

- **Thickness:**
  - Aluminum: .032” to .040” (0.8mm to 1.0mm)
  - Steel: 24 gauge (0.6mm)
  - Copper: 16 to 20 oz. 3/4 hard (0.5 to 0.7mm)
CHAPTER 2
PRECAUTIONS

CHAPTER 2 - 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. If the temperature of the machine is at 32°F (0°C) or below, set the JOG/RUN switch to “RUN” and run the machine empty for at least 10 minutes before attempting to run any material through the machine.

10. DO NOT USE SOLVENTS TO CLEAN DRIVE ROLLERS!

11. ALWAYS EMPTY MACHINE OF MATERIAL BEFORE TRANSPORT AND STORAGE.
CHAPTER 3 - MACHINE ORIENTATION

Figure 1: Machine Overview
CHAPTER 3
MACHINE ORIENTATION

Figure 2: M78 Machine Layout
CHAPTER 4 - 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 or machine cover (optional) for protection. 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.

6. Lubricate the chains a minimum of every 40 hours of operation. It is preferable to use a dry motorcycle chain lube or equivalent.


8. Keep cradles lubricated with Clear Grease.

9. Clean Forming Rollers as needed with a Scotch Brite Pad and a small amount of solvent.

10. 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.**

11. Lubricate both faces of the Shear Blades and Dies 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

Spray Lube for:
Shear Blades, Dies, Entry Guide, Bead Roller Carriage Shafts.
Super Lube - Multi-Purpose Synthetic Aerosol Lubricant with Syncolon (PTFE)
Catalog No. 31110
11 oz. Aerosol Can
Available from:
MSC Supply at 1-800-645-7270

Clear Grease for:
Arbor Cradles
Synthetic Extreme Pressure, High Temperature Grease with Syncolon (PTFE)
Catalog No. 71160
400 gram container
Available from:
MSC Supply at 1-800-645-7270

Spray Lube for:
Chains
Super Lube - Multi-Purpose Synthetic Dri Film Aerosol Lubricant with Syncolon (PTFE)
Catalog No. 11016
11 oz. Aerosol Can
Available from:
MSC Supply at 1-800-645-7270
CHAPTER 5 - MACHINE OPERATION SUMMARY

This is a brief summary in the operation of the machine. However, this chapter is not a substitute for the rest of the manual. Read the entire machine operating manual before attempting to operate the machine.

Order of Procedure to Operate the Machine

- On the control panel near the exit end of the machine, turn the JOG/RUN switch to “JOG” and the FORWARD/REVERSE switch to “FORWARD”. Plug in the machine. Select the reel that has the material to be formed into a gutter profile. Loosen the brakes on the reel to be used. Leave some drag on the brake so that the coil will not unravel.
- Cut a 1” triangle off the 2 leading corners of the coil and feed it into the entry guides so that the mark on the leading edge of the coil lines up with the first Skate Bearing.
- Continue to push the material until it makes contact with the first Drive Roller.
- Press and Release the JOG button on the entry end of the machine to jog the material through the machine until the material is half way through the machine,
- Move to the exit end of the machine and use the JOG button on the main panel to finish jogging material through the machine. Pay close attention as the material enters the shear to prevent the material from crashing into the shear.
- Advance the gutter a few inches and cut off the end of gutter. Check the profile and especially the lip to be sure that the material was fed in straight, when it was guided into the machine. The machine is now ready to operate.
- Turn the JOG/RUN switch to “RUN”. Using the start and stop buttons at the exit end of the machine, run out about 2ft of gutter. Attach the end of a measuring tape to the end of the gutter and proceed to run out the first length of gutter. Set up run-out stands at approximately every 15ft as required until the acquired length is achieved.
- Stop the machine and cut the gutter with the shear.

NOTE: Always keep the shear blade well lubricated during use and when storing machine. Remove coil material from machine when storing or transporting machine. The drive rollers will perform better if the machine is not stored with material.

In order to minimize material waste when completing a job or when switching colors of coil, precut the last piece of material to be run before it enters the machine.

Example:
If the last piece of the day to be run is 25’-0”, run approximately 10’-0” through the machine, leaving 15’-0” to be run. Then cut the material near the entry drums and run the remaining material through the machine. Shear the material at 25’-0” and there will be a minimal length of scrap left in the machine to be removed.
CHAPTER 6 - ELECTRICAL CONTROLS AND OPERATION

1. POWER CORD REQUIREMENTS
   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. A minimum 12 kW generator is recommended. Use of an improperly sized generator will cause a low voltage situation of the electric motor and controls which will void the warranty.

The minimum extension cord wire size is as follows:
   Up to 25 ft.    12AWG (3.3 mm$^2$)
   25 ft. to 50 ft. 10AWG (5.3 mm$^2$)
   50 ft. to 100 ft. 8AWG (8.4 mm$^2$)

2. CONTROL PANEL OPERATION
   (Figure 3)
   The Main Control Panel is located at the exit end of the machine, on the right side. The Entry Control Panel is located at the entry end of the machine, on the right side.
   
   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 gutter 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. Select run after material has cleared the shear and the machine is ready to run gutter.
   
   C. START FEED (Green button)
      This button is used to activate the drive system of the machine.
   
   D. STOP FEED (Red button)
      Pressing either the entry or exit button will stop the drive system of the machine.
3. POWER INTERRUPTION SAFETY WIRING

When electrical power is interrupted to the machine, such as an unplugged extension cord, or tripped circuit breaker, it will not restart by simply restoring power to it. For safety, the operator must push the Start Feed pushbutton at either end of the machine to restart the forming process.
4. FUSE

(Figure 4)
The electrical logic circuit of this machine is protected by a 10A time delay fuse (Bussman type MDA or equivalent). The fuse holder is located in the entry end of the contactor box.

Figure 4: Fuse Holder
CHAPTER 7 - MOUNTING MACHINE

(Figure 5)
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(s) on top. The platform should be solid and not corroded. Any repair to the platform should be made before mounting the machine. There are four (4) mounting brackets to secure the gutter machine to the platform. Do NOT add additional brackets to tie the machine down. Additional mounting bracket could result in a twisted frame.
Care must be taken when moving the machine from the shipping skid and installing the machine onto its final platform.
To secure the machine to the platform use 3/8” grade (8) bolts with lock and flat washers and nuts. 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 4” x 4” x 1/8” thick galvanized steel plate can be used as a backing plate.
When lifting and moving the machine use proper equipment and safe techniques.
Figure 5: Mounting Hole Layout
EXPANDABLE ARBOR
(Figure 6 on page 14)
The Expandable Arbor adjusts to accommodate coils with 16” (406 mm) or 20” (508 mm) 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. The threaded nut is used to increase or decrease the outside diameter of the arbor. Turning the nut clockwise will increase the outside diameter of the arbor, and counter-clockwise rotation will decrease the arbor size. There is a grease zerk in the collar of the threaded nut that should be lubricated at least twice a year, or whenever grease in not visible on the threads of the shaft.

END COLLAR
The End Collar has two positions.
Position “A” is used for coils with inside diameters of 16” (406 mm).
Position “B” is used for coils with inside diameters of 20” (508 mm).

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 6 on page 14), find the “B” dimension that corresponds to the profile being used.
5. Slide the arbor left or right to get the correct “B” 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 B” is correct and re-adjust if necessary. The Coil and Arbor are now ready for loading. (see Figure 6 on page 14)
CHAPTER 8
REEL RACK AND EXPANDABLE ARBORS

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<td>7&quot; GUTTER</td>
<td>3/8&quot; [10mm]</td>
</tr>
<tr>
<td>8&quot; GUTTER</td>
<td>7/8&quot; [22mm]</td>
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Figure 6: Expandable Arbor Set-Up

strand for transporting (not supplied)

END COLLAR AT OUTSIDE POSITION

CAP SCREWS "C"

THREADED NUT

REEL SHAFT

POSITION "A" - 16" ID [406]

END COLLAR AT INSIDE POSITION

CAP SCREWS "C"

GREASE FITTING

REEL SHAFT

POSITION "B" - 20"ID [508]
CHAPTER 8
REEL RACK AND EXPANDABLE ARBORS

CAUTION: Always use properly rated lifting devices to load and unload coils.
Maximum Capacity / Reel: 3,000 lbs. (1360 kg)
Total Capacity for Reel Stand: 6,000 lbs. (2720 kg)

1. The reel shafts must rest in the arbor cradles on the reel stand. Keep the arbor cradles lubricated with clear grease to minimize wear. (Figure 7 on page 16)

2. Use the Hold Down Bars on each cradle to secure the coil and reel to the reel stand during both operation and transport of the machine. The Hold Down Bar should be used to keep the coil from uncoiling too fast during the fabrication of panels. Apply just enough drag to keep coil tensioned.

   Caution: Do not over tighten Hold Down Bars during machine operation. This will cause excessive load on the drive and electrical systems and premature failure will result.

   DO tighten Hold Down Bars tightly prior to transport of the machine.

3. If a Remote Decoiler is used it should be placed 8 to 10 feet behind the machine. Align it as close as possible to the Right-Side Entry Guide line of fire, making the side of the coil and reel parallel to the machine. NOTE: The closer the Decoiler and reel are set to the machine, the more critical this alignment becomes.
Figure 7: Expandable Reel Support and Locking
CHAPTER 9 - ENTRY GUIDE ASSEMBLY

Entry Guide Adjustment
(Figure 8 - Figure 11)
The Face/Right Entry Guide controls the amount of material that is fed into the face roller, and box assembly. It should be moved only to increase or decrease the amount of lip turned under. If an adjustment is made on the Face/Right Entry Guide, an adjustment must be made on the auxiliary guide posts on the 1st skate assembly as well as the Back/Left Entry Guide, using coil as a guide. There should be no visible play between the entry guides and the coil. The guide should also not be so tight as to cause the gutter material to bind in the entry guide assembly.

ADJUSTING THE ENTRY GUIDE FROM 7” TO 8” OR VICE VERSA
The entry guide includes factory set stops which allow the entry guide to be quickly repositioned between the 7” mode and the 8” mode. There are also factory set stops for the auxiliary guide posts. Changing the entry guides from 7” to 8” position or 8” to 7” position:
2. Slide the Face/Right Entry Guide and the Back/Left Entry Guide either inboard for the 7” position or outboard for the 8” position until both entry guides are in contact with the stops.
4. Loosen Screws “D” and “E” on the right and left auxiliary guide posts.
5. Slide the guide posts inboard for the 7” position or outboard for the 8” position until both guide posts are in contact with the stops in the slot.
6. Tighten Screws “D” and “E” on the right and left auxiliary guide posts.

ADJUSTING THE STOP POSITIONS ON THE ENTRY GUIDE
The stop collars should not be moved unless the lip needs to be increased or decreased. Before moving the stop collars, measure the distance between the face/right entry guide and the entry guide support as shown as 2 15/32” for the 7” position in Figure 8, as well as, 1 31/32” for the 8” position in Figure 9. This will give a reference point from which to start and a point to return to if the guide is moved in the wrong direction.

Increase the Amount of Lip Turned Under (7” Position)
1. Loosen Stop #2 & #3 and Lock Handle “A” on the Face/Right Entry Guide and Lock Handle “B” on the Back/Left Entry Guide.
2. Move the Face/Right Entry Guide toward the right side (face side) of the machine.
3. Tighten Lock Handle “A” on the Face/Right Entry Guide.
4. Slide Stop #3 against the Face/Right Entry Guide and tighten Stop #3.
5. Using the coil as a gauge, engage the coil between the entry guide flanges and adjust the Back/Left Entry Guide. There should be no visible play between the entry guides and coil. The guide should also not be so tight to cause the gutter material to bind in the entry guide assembly.
6. Tighten Lock Handle “B” on the Back/Left Entry Guide.
7. Slide Stop #2 against the Back/Left Entry Guide and tighten Stop #2.
8. Loosen the bolts on the 7” Post Stops and move them inboard as far as they will go.
9. Feed a short test piece of coil or the end of the coil that will be used into the entry guides. Make a mark on the leading edge of the material next to the first skate bearing as shown in Figure 10. Continue to feed the material past the Auxiliary Guide Posts. If necessary, loosen Screws “D” and/or “E” and move the guide posts towards the outside of the machine in order to make space for the material.

10. Align the mark on the leading edge of the material to the third skate bearing as shown in Figure 11.

11. Adjust the Auxiliary Guide Posts so that they slightly touch the edge of the material and tighten Screws “D” and/or “E”.

12. Reposition the 7” Post Stops so they are touching the guide posts and tighten the bolts.

**Increase the Amount of Lip Turned Under (8” Position)**

1. Loosen Stops #1 & 4 and Lock Handle “A” on the Face/Right Entry Guide and Lock Handle “B” on the Back/Left Entry Guide.

2. Move the Face/Right Entry Guide toward the right side (face side) of the machine.

3. Tighten Lock Handle “A” on the Face/Right Entry Guide.

4. Slide Stop #4 against the Face/Right Entry Guide and tighten Stop #4.

5. Using the coil as a gauge, engage the coil between the entry guide flanges and adjust the Back/Left Entry Guide. There should be no visible play between the entry guides and coil. The guide should also not be so tight to cause the gutter material to bind in the entry guide assembly.

6. Tighten Lock Handle “B” on the Back/Left Entry Guide.

7. Slide Stop #1 against the Back/Left Entry Guide and tighten Stop #1.

8. Loosen the bolts on the 8” Post Stops and move them outboard as far as they will go.

9. See steps 9-11 on page 18 to adjust the auxiliary guide posts.

10. Reposition the 8” Post Stops so they are touching the guide posts and tighten the bolts.

**Decrease the Amount of Lip Turned Under (7” Position)**

1. Loosen Stops #2 & 3 and Lock Handle “A” on the Face/Right Entry Guide and Lock Handle “B” on the Back/Left Entry Guide.

2. Move the Face/Right Entry Guide toward the left side (back side) of the machine.

3. Tighten Lock Handle “A” on the Face/Right Entry Guide.

4. Slide Stop #3 against the Face/Right Entry Guide and tighten Stop #3.

5. Using the coil as a gauge, engage the coil between the entry guide flanges and adjust the Back/Left Entry Guide. There should be no visible play between the entry guides and coil. The guide should also not be so tight to cause the gutter material to bind in the entry guide assembly.

6. Tighten Lock Handle “B” on the Back/Left Entry Guide.

7. Slide Stop #2 against the Back/Left Entry Guide and tighten Stop #2.

8. Loosen the bolts on the 7” Post Stops and move them inboard as far as they will go.

9. See steps 9-11 on page 18 to adjust the auxiliary guide posts.

10. Reposition the 7” Post Stops so they are touching the guide posts and tighten the bolts.
CHAPTER 9  
ENTRY GUIDE ASSEMBLY

Decrease the Amount of Lip Turned Under (8” Position)
1. Loosen Stops #1 & 4 and Screw “A” on the Face/Right Entry Guide and Lock Handle “B” on the Back/Left Entry Guide.
2. Move the Face/Right Entry Guide toward the left side (back side) of the machine.
3. Tighten Lock Handle “A” on the Face/Right Entry Guide.
4. Slide Stop #4 against the Face/Right Entry Guide and tighten Stop #4.
5. Using the coil as a gauge, engage the coil between the entry guide flanges and adjust the Back/Left Entry Guide. There should be no visible play between the entry guides and coil. The guide should also not be so tight to cause the gutter material to bind in the entry guide assembly.
6. Tighten Lock Handle “B” on the Back/Left Entry Guide.
7. Slide Stop #1 against the Back/Left Entry Guide and tighten Stop #1.
8. Loosen the bolts on the 8” Post Stops and move them outboard as far as they will go.
9. See steps 9-11 on page 18 to adjust the auxiliary guide posts.
10. Reposition the 8” Post Stops so they are touching the guide posts and tighten the bolts.
Figure 8: Entry Guide Setup for 7"
CHAPTER 9
ENTRY GUIDE ASSEMBLY

Figure 9: Entry Guide Setup for 8”
Feeding Material

CAUTION: Be sure machine is in the “JOG” mode before feeding.

1. Cut a 1” triangle off of the 2 leading corners of the coil and feed it into the entry guides up to the Guide Posts.
2. If it looks like the coil will hit one Guide Post more than the other, push the coil left or right as needed to center it between the posts.
3. Continue to push the material until it makes contact with the first Drive Roller.
4. Press and Release the JOG button on the entry end of the machine to jog the material through the machine until it is about halfway through.
5. Move to the exit end of the machine and use the JOG button on the main panel to finish jogging material through the machine. Pay close attention as the material enters the Shear to prevent the material from crashing into the Shear.
6. Once the material has exited the machine, stop jogging the material and use the Shear to cut the leading end square.

Figure 10: Feeding Material – 1st Skate Bearing
Figure 11: Feeding Material – 4th Skate Bearing
CHAPTER 10 - DRIVE ASSEMBLY

The drive system is mostly maintenance free. The roller pressures are factory set. To clean the drive rollers do NOT use any harsh chemicals. Use soap and water to remove any dirt or film from the surfaces of the drive roller.

If adjustment is necessary, because a roller was replaced or some slippage of the gutter material through the machine is being experienced, the top roller can be adjusted down.

DRIVE ROLLER ADJUSTMENT AND CLEANING

(Figure 12)

1. Adjust the drive system by starting with the #1 top drive roller. Loosen the lock nuts on jack screws “A”.
2. Loosen bolts “B” just enough to break them loose.
3. Turn all four (4) Jack Screws “A”, 1/8 of a turn clockwise. Re-tighten all bolts “B” and run the machine forward to see if traction has been gained.
4. If more traction is required, repeat the same steps with the #2 top drive roller.
5. Repeat the process until the proper traction is obtained by alternating between the #1, #2 and #3 top drive roller.
6. Retighten lock nuts on jack screws “A”.

NOTE: Do NOT over tighten drive rollers. Maximum pressure recommended is ¼ turn past factory setting.

Figure 12: Top Drive Pressure Adjustment Screws
CHAPTER 10

DRIVE ASSEMBLY

The factory setting is ½ to ¾ turn clockwise past the point of contact between the top and bottom drive roller.
Do NOT use solvents such as paint thinners, acetone, etc. to clean drive rollers. Use of a cleaner such as 409 or mild soap and water is recommended.

CHAIN TENSION AND LUBRICATION

(Figure 13)
Check chain tension and adjust as necessary at least twice a year. Chains should have a minimum of 1/16” (1.6 mm) of play. Tighten loose chains using the chain tensioners.

CAUTION: Do not over tighten chains
Lubricate chains at least twice a year or whenever they appear dry. It is recommended that a dry lubricant be used to avoid sand, dirt, and foreign matter build up. See Recommended Lubricants section on page 6.

Figure 13: Chains and Tensioners
CHAPTER 11 - GUTTER BOX ADJUSTMENTS

(Figure 14)
The gutter box is state of the art and designed for ease of adjustment. The box consists of seven stations. There are three basic adjustment areas on the box. They are as follows:

- Entry mount adjustment
- Exit mount adjustment
- Swing shaft adjustment

CAUTION: The adjustments listed below are sensitive and care should be taken when making these adjustments. Never attempt to adjust with more than 1/8 turn at a time.

Entry Mount Adjustment Assembly
This adjustment is set at the factory and should not be changed.

Exit Mount Adjustment Assembly
NOTE: Refer to the CHAPTER 17 - TROUBLESHOOTING section on page 57 before making any adjustments.
The Exit Mount Adjustment Assembly which is color coded Blue is used to control the “Uphill” and “Downhill” effect. The “Width of the Gutter” is also affected with this adjustment.

Uphill/Downhill
To adjust the vertical axis which is color coded Blue:
1. Loosen the bolts “F”.
2. Turn bolt “E” to raise or lower.
   - To raise the box, turn bolt “E” clockwise.
   - To lower the box, turn bolt “E” counterclockwise.
   - For each revolution of the bolt “E,” the box will move .056 (approx. 1/16”) up or down.
3. Retighten bolts “F”

Width of the Gutter
To adjust the horizontal axis which is color coded Orange:
1. Loosen the lock nut on bolt “G” and bolts “H”.
2. Using the adjustment bolt “G”, adjust the box from side to side.
   - To adjust the box IN and reduce the width of the gutter, turn bolt “G” clockwise.
   - To adjust the box OUT and increase the width of the gutter, turn bolt “G” counterclockwise.
   - For each revolution of the bolt “G,” the box will move .056 (approx. 1/16”) in or out.
3. While holding the box against bolt “G,” re-tighten the bolts “H” and the lock nut on bolt “G”.

Swing Shaft Adjustment Assembly
NOTE: Refer to the CHAPTER 17 - TROUBLESHOOTING section on page 57 before making any adjustments. The swing shaft adjustment assembly which is color coded Green is used to apply pressure to the head of the gutter. This will tend to cause the forming of the head of the gutter...
CHAPTER 11
GUTTER BOX ADJUSTMENTS

to go “Into the House” or “Away From the House”. This is the most common adjustment used to straighten the gutter.

To adjust the swing shaft:
1. Loosen the bolts “J” just enough to allow the swing shaft assembly to slide.
2. Turn adjustment bolt “K” to move the swing shaft assembly.
   To cause the gutter to form into the house, turn the bolt “K” clockwise.
   To cause the gutter to form away from the house, turn bolt “K” counterclockwise.
   For each revolution of the bolt “K” the swing shaft assembly will move .056 (approx. 1/16”) in or out.
3. While holding the swing shaft adjustment assembly so that the bolt “K” is against the box assembly, re-tighten bolts “J”.

NOTE: Adjusting the swing shaft DOES have an effect on the size of the lip. Always check the gutter lip before completing adjustments.

Figure 14: Gutter Box Assembly
CHAPTER 12
EXIT DRIVE AND FORMING STATION

CHAPTER 12 - EXIT DRIVE AND FORMING STATION
(Figure 15)
The adjustment screws on this assembly are color coded: Yellow. This assembly drives and forms at the same time. This station employs the polyurethane drive rollers for traction but works in harmony with the forming tools to provide maximum control over the gutter as it exits the machine.

The exit drive assembly is bolted to the last skate with bolts “A”. These bolts keep the exit drive assembly square with the last skate assembly. Before making any adjustments to this assembly be sure to loosen bolts “A” just enough to allow the Exit Drive Assembly to move without affecting the last skate assembly. Failure to do this will result in distortion of the last skate assembly and may affect how the gutter is formed. Be sure to re-tighten bolts “A” after making any adjustments to the Exit Drive Assembly.

NOTE: Refer to the CHAPTER 17 - TROUBLESHOOTING section on page 57 before making any adjustments.

NOTE: The following adjustments are very responsive and should be done in small increments

Adjusting the Exit Top Roller – Face Side
The adjustment at the exit top roller face side is used to affect “Uphill”, “Downhill”, “Into the House”, and “Away From the House” on the face.

To adjust the top face side of the roller:
1. Loosen bolts “A”, the lock-nuts on jackscrews “B”, bolts “C”, lock-nut on jackscrew “F” and jackscrew “F”.
2. Turn jackscrews “B” 1/8 of a turn in or out.
   To cause the face of the gutter to form into the house, turn the screw “B” clockwise.
   To cause the face of the gutter to form away from the house, turn screw “B” counterclockwise.
   Each revolution of screw “B” is equal to .056” (approx. 1/16”) of movement.
3. Re-tighten all bolts and lock nuts.

Adjusting the Exit Top Roller – Back Side
The adjustment at the exit top roller back side is used to affect “Uphill”, “Downhill”, “Into the House”, and “Away From the House” on the back.

To adjust the top back side of the roller:
1. Loosen bolts “A”, the lock-nuts on jackscrews “D”, bolts “E”, lock-nut on jackscrew “G” and jackscrew “G”.
2. Turn jackscrews “D” 1/8 of a turn in or out.
   To cause the back of the gutter to form away the house, turn the screw “D” clockwise.
   To cause the back of the gutter to form into from the house, turn screw “D” counterclockwise.
   Each revolution of screw “B” is equal to .056” (approx. 1/16”) of movement.
3. Re-tighten all bolts and lock nuts.
ADJUSTING THE EXIT FACE AND BACK BELL ROLLERS

The adjustment at the exit face and back bell rollers are used to affect “Into the House”, “Away From the House”, and squaring the front and back of the bottom corners.

To adjust the bell rollers:
1. Empty the material from the machine
2. Loosen bolt “H” slightly and loosen bolt “J”.
3. Turn jackscrew “K” to move the bell roller toward or away from the top face roller.
   - To move the bell roller toward the top face roller, turn jackscrew “K” counterclockwise.
   - To move the bell roller away from the top face roller, turn jackscrew “K” clockwise.
   - For each revolution of the jackscrew “K,” the bell roller will move .056 (approx. 1/16”) in or out.
4. Apply pressure on the bell roller mount towards the top face roller and retighten bolts “J” & “H” and retighten the lock-nut on jackscrew “K”.

ADJUSTING PRESSURE FOR THE EXIT DRIVE ROLLER

If adjustment is necessary, because a roller was replaced or some slippage of the gutter material through the machine is being experienced, the top roller can be adjusted down to add drive pressure.

To add pressure:
1. Loosen the lock nuts on jack screws “B” & “D” then loosen bolts “C” & “E”.
2. Turn jackscrews “B” & “D” clockwise 1/16 of a turn.
3. Retighten bolts “C” & “E”.
4. Test the machine for sufficient drive.
5. Repeat the process until the proper traction is obtained.
6. Retighten lock nuts on jack screws “B” & “D”.

NOTE: Do NOT over tighten drive rollers. Maximum pressure recommended is 1/8 turn past factory setting.
CHAPTER 12
EXIT DRIVE AND FORMING STATION

Figure 15: Exit Drive and Forming Station
CHAPTER 13 - BEAD ROLLER ASSEMBLY

The bead roller assembly has three primary functions as follows:

- To stiffen the back or give the back structure.
- Controlling the back of the gutter during the forming process.
- Guiding the back of the gutter into the shear.

2. ADJUSTING BEAD ROLLER ASSEMBLY

(Figure 16 & Figure 17)

1. Feed material through the machine and up to the bead roller assembly. The bead should engage the gutter 3/8” down from the top of the gutter. The gutter should be pulled away from the back face of the exit top roller located just prior to the bead roller assembly. There should be a gap of 1/32” between the gutter and the back face of the exit top roller.
2. Loosen bolts “A” and align the bead roller assembly. Re-tighten bolts “A” before proceeding.
3. Run the gutter through the bead roller and stop the machine.
4. Loosen set screw “B” and using the adjustment hole and a 3/16” Allen wrench, turn the electric shaft to engage or disengage the bead roller.
5. Engaging or closing the gap between the two bead rollers, will have an uphill effect on the back of the gutter. Opening or disengaging the gap between the two bead rollers, will have a downhill effect on the back of the gutter.
6. Re-tighten set screw “B”.

Figure 16: Bead Roller
Figure 17: Bead Roller
CHAPTER 14 - SHEAR ASSEMBLY

(Figure 18)
The shear is a unique rack and pinion design. This design requires less force than the pulling action associated with the guillotine dies. The shear is designed to cut 24-gauge steel easily. The shear is adjustable up and down or side to side.

UP OR DOWN ADJUSTMENT
1. Loosen lock-nuts on jackscrews “A” then loosen bolts “B”.
2. Adjust the shear up or down using jackscrews “A”. The best way to adjust is with the gutter material advanced through the shear.
3. Check all around the gutter for height clearance.
4. Retighten lock-nuts on jackscrews “A” and retighten the bolts “B”.

SIDE TO SIDE ADJUSTMENT
1. Loosen bolts “C”.
2. Slide the shear from side to side to obtain proper clearance.
3. Retighten the bolts “C”.

NOTE: The shear has a safety pin to prevent the shear handle from rotating when transporting the machine or removing the shear from the machine.

DANGER:
THE SHEAR IS A VERY DANGEROUS APPARATUS. THE SAFETY PINS MUST BE IN PLACE WHEN REMOVING THE SHEAR FROM THE MACHINE. FAILURE TO DO SO WILL ALLOW THE BLADE TO PROTRUDE THROUGH THE BOTTOM OF THE SHEAR AND CAN CAUSE SEVERE INJURY.

MAINTENANCE
Keep the Blade and Dies well lubricated. Lubricate the blade and dies at least once a day during normal use, or whenever cutting surfaces look dry. Clean the blade and dies at least once a week during normal use. Failure to do so will cause premature failure of the blade and dies. With proper care the shear will perform trouble free and prevent rust formation for years. See Recommended Lubricants section on page 6.
Figure 18: Shear Alignment
CHAPTER 15 - CHANGEOVER PROCEDURE FROM 7” TO 8”

CAUTION: Disconnect machine from power source before proceeding with changeover. The procedure to change from a 7” gutter configuration to an 8” configuration and back again is greatly simplified using locator pins with two fixed positions which provide a quick change to either gutter size. There is a tool kit included with every combo machine. It is located inside the left side cover at the exit end of the machine. It is important that while changing the machine from one gutter size to another that the proper sequence be followed. Failure to do so may result in wasted time. The sequence to change from 7” to 8” or 8” to 7” is similar but not the same. See page 46 for 8” to 7” procedure.

1. REMOVE 8” SHEAR FROM SIDE OF MACHINE AND SET ASIDE
   \( CAUTION: \) BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE. \( CAUTION: \) THE SHEAR WEIGHS APPROXIMATELY 80 LBS AND MAY REQUIRE TWO PEOPLE TO SAFELY HANDLE.

2. REMOVE COVERS

3. REMOVE 7” SHEAR AND SET ASIDE
   \( CAUTION: \) BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE. \( CAUTION: \) THE SHEAR WEIGHS APPROXIMATELY 80 LBS AND MAY REQUIRE TWO PEOPLE TO SAFELY HANDLE.

4. MOVE BEAD ASSEMBLY
5. REMOVE BACK BELL ROLLER
6. MOVE BACK GUIDE ROD
7. MOVE SKATE ROLLERS
8. REMOVE AND REINSTALL EXIT TOP BACK SIDE ROLLER
9. RE-INSTALL BACK BELL ROLLER
10. MOVE ENTRY GUIDES AND AUXILIARY GUIDE POSTS
11. MOVE FACE ASSEMBLY STATIONS
12. MOVE BOX ASSEMBLY
13. REPLACE COVERS
14. POSITION COIL
15. STORE 7” SHEAR
16. INSTALL 8” SHEAR
   \( CAUTION: \) BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE INSTALLING THE SHEAR ONTO THE MACHINE
CHAPTER 15
CHANGEOVER PROCEDURE FROM 7” TO 8”

1. REMOVE 8” SHEAR FROM SIDE OF MACHINE

   Figure 19: Remove 8” Shear

2. REMOVE COVERS
The covers that are removed to change the gutter profile are fastened to the machine with quarter turn screws. To unfasten, turn the screw counterclockwise one quarter turn with a flat blade screw driver. Remove the lids “A”, ”B”, “C”, and “D” on the top of the machine.
CHAPTER 15
CHANGEOVER PROCEDURE FROM 7” TO 8”

Figure 20: Remove Covers
3. **REMOVE 7” SHEAR**

CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE.

Remove the shear with the four (4) bolts “C” that secure the shear to the frame and set the shear aside (Figure 18).

4. **MOVE BEAD ASSEMBLY**

(Figure 17)

Loosen the two (2) “A” screws and slide the assembly up for the 8” position. The 7” and 8” positions are scribed on the mounting block for ease of placement. Re-tighten screws “A”. **NOTE:** Do not over tighten “A” screws.
5. REMOVE BACK BELL ROLLER
(Figure 22)
Remove the back-bell roller with the bolt “M” that holds the center shaft in place. Set this assembly aside.

Figure 22: Back Bell Roller

6. MOVE BACK GUIDE ROD
(Figure 23)
Loosen the five (5) bolts on the back-guide rod, move the guide rod away from the skate into the 8” position. Re-tighten the five (5) bolts.
CHAPTER 15
CHANGEOVER PROCEDURE FROM 7” TO 8”

7. MOVE SKATE ROLLERS
(Figure 24)
There are four (4) center skates in the combo machine. Each of these skates have retractable rear skate forming rollers that adjust in and out for 7” and 8” gutter. To change the skate roller positions, pull the spring-loaded pin up at the skate bearing until the pin disengages. Move the skate roller slightly away from the skate for the 8” position. Release the spring pin and continue moving the roller until the pin snaps back into place. Repeat this for all thirteen (19) rear skate forming rollers.

8. REMOVE AND REINSTALL EXIT TOP BACK SIDE ROLLER
(Figure 25)
Remove the exit top back roller by removing the red flat head socket screw “N” and beveled washer located at the center of the roller. Turn the roller end for end and re-install it back onto the shaft by
aligning the locating pin attached to the shaft with the locator hole on the exit top roller backside, before tightening the center screw “N”. Failure to align the roller properly will cause damage. **NOTE:** Do not over tighten “N” screw.

![Figure 25: Exit Top Roller](image-url)
CHAPTER 15
CHANGEOVER PROCEDURE FROM 7” TO 8”

9. RE-INSTALL BACK BELL ROLLER
(Figure 22)
Re-install the back-bell roller with the bolt “M”. Push outward on bell roller while tightening bolt “M”. Check the clearance between the Back-Bell Roller and the Top Back Roller to be sure they are properly gaped.

10. MOVE ENTRY GUIDES AND AUXILIARY GUIDE POSTS
(Figure 9)
The entry guide includes factory stops which allow the entry guide to be quickly repositioned between the 7” and the 8” positions. To change the entry guides to the 8” position:

2. Slide the Face/Right Entry Guide and the Back/Left Entry Guide outboard for the 8” position until both entry guides are in contact with the stops.
3. While holding the entry guides in position, tighten Lock Handle “A” on the Face/Right Entry Guide and Lock Handle “B” on the Back/Left Entry Guide.
4. Loosen Screws “D” and “E” on the right and left auxiliary guide posts.
5. Slide the guide posts outboard to the 8” position until both guide posts are in contact with the stops in the slot.
6. Tighten Screws “D” and “E” on the right and left auxiliary guide posts.
Refer to the ADJUSTING THE STOP POSITIONS ON THE ENTRY GUIDE section on page 17 if stop collar adjustment is necessary.
CHAPTER 15
CHANGEOVER PROCEDURE FROM 7” TO 8”

11. MOVE FACE ASSEMBLY STATIONS
(Figure 26)
To move the three (3) face roller assemblies, pull the Spring-Loaded Pin, located at the top of each assembly. Pull the roller assembly up for the 8” position and release the pin back into the groove in the shaft. Repeat this for all three (3) face roller assemblies.

12. MOVE BOX ASSEMBLY
(Figure 27 & Figure 28)
Loosen the two (2) bolts “C” and the two (2) bolts “D” (White station). Move box up and away from the skate for the 8” position. Retighten “C” & “D” bolts.
Figure 27: Combo Box Assembly
13. REPLACE COVERS
(Figure 20)
Replace the covers “A”, “B”, “C”, and “D” on the top of the machine. To refasten, turn the cover screws one quarter turn clockwise.

14. POSITION COIL
(Figure 6)
When loading the new coil make sure to position correctly for the 8” profile. See Figure 6 on Page 14 for more information.

15. STORE 7” SHEAR
CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE MOVING THE SHEAR. (Figure 21)
Store the unused shear on the side of the machine.

16. INSTALL 8” SHEAR
CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE MOVING THE SHEAR. (Figure 21)
Install the shear on the frame with the four (4) bolts “B” (Figure 18). The shear is preset from the factory and should not need any adjustment.
CHAPTER 16 - COMBO CHANGEOVER PROCEDURE
FROM 8” TO 7”

CAUTION: Disconnect machine from power source before proceeding with changeover. The procedure to change from a 7” gutter configuration to an 8” configuration and back again is greatly simplified by the use of locator pins with two fixed positions which provide a quick change to either gutter size. There is a tool kit included with every combo machine. It is located inside the left side cover at the exit end of the machine.
It is important that while changing the machine from one gutter size to another that the proper sequence be followed. Failure to do so may result in wasted time. The sequence to change from 7” to 8” or 8” to 7” is similar but not the same. See page 35 for 7” to 8” procedure.

CAUTION: Unplug machine before proceeding
1. REMOVE 7” SHEAR FROM SIDE OF MACHINE AND SET ASIDE
   CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE
2. REMOVE COVERS
3. REMOVE 8” SHEAR AND SET ASIDE
   CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE
4. REMOVE BACK BELL ROLLER
5. REMOVE AND REINSTALL EXIT TOP ROLLER BACK SIDE
6. RE-INSTALL BACK BELL ROLLER
7. MOVE BEAD ASSEMBLY
8. MOVE SKATE ROLLERS
9. MOVE BACK GUIDE ROD
10. MOVE ENTRY GUIDES AND AUXILIARY GUIDE POSTS
11. MOVE FACE ASSEMBLY STATIONS
12. MOVE BOX ASSEMBLY
13. REPLACE COVERS
14. POSITION COIL
15. STORE 8” SHEAR
16. INSTALL 7” SHEAR
   CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE INSTALLING THE SHEAR ONTO THE MACHINE
1. REMOVE 7” SHEAR FROM SIDE OF MACHINE

2. REMOVE COVERS

The covers that are removed to change the combo are fastened to the machine with quarter turn screws. To unfasten, turn the screw counterclockwise one quarter turn with a flat blade screwdriver. Remove the lids “A”, “B”, “C”, and “D” on the top of the machine.

Figure 29: Remove 7” Shear
CHAPTER 16
COMBO 8” TO 7” CHANGEOVER PROCEDURE

Figure 30: Remove Covers
3. REMOVE 8” SHEAR
CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE.

Remove the shear with the four (4) bolts “C” that secure the shear to the frame and set the shear aside (Figure 18).

4. REMOVE BACK BELL ROLLER
(Figure 32)
Remove the back-bell roller with the bolt “M” that holds the center shaft in place. Set this assembly aside.
CHAPTER 16
COMBO 8” TO 7” CHANGEOVER PROCEDURE

5. REMOVE AND REINSTALL EXIT TOP BACK SIDE ROLLER
(Figure 33)
Remove the exit top back roller by removing the red flat head socket screw “N” and beveled washer located at the center of the roller. Turn the roller end for end and re-install it back onto the shaft by aligning the locating pin attached to the shaft with the locator hole on the exit top roller backside, before tightening the center screw “N”. Failure to align the roller properly will cause damage.
NOTE: Do not over tighten “N” screws.
7" POSITION

ALIGNMENT PIN
RED SCREW "N"

8" POSITION

Figure 33: Exit Top Roller
CHAPTER 16
COMBO 8” TO 7” CHANGEOVER PROCEDURE

6. RE-INSTALL BACK BELL ROLLER
(Figure 32)
Re-install the back-bell roller with the bolt “M”. Push outward on bell roller while tightening bolt “M”. Check the clearance between the Back-Bell Roller and the Top Back Roller to be sure they are properly gaped.

7. MOVE BEAD ASSEMBLY
(Figure 17)
Loosen the two (2) “A” screws and slide the assembly up for the 8” position. The 7” and 8” positions are scribed on the mounting block for ease of placement. Re-tighten screws “A”. 
NOTE: Do not over tighten “A” screws.

8. MOVE SKATE ROLLERS
(Figure 34)
There are four (4) center skates in the combo machine. Each of these skates have retractable rear skate forming rollers that expand between 7” and 8” gutter. To change, pull the spring-loaded pin up at each skate bearing until the pin disengages. Move the forming roller slightly towards the skate for the 7” position. Release the spring pin and continue moving the roller until the pin snaps back into place. Repeat this for all thirteen (19) rear skate forming rollers.

9. MOVE BACK GUIDE ROD
(Figure 35)
Loosen the five (5) bolts on the back-guide rod, move the guide rod closer to the skate for the 7” position. Re-tighten the five (5) bolts.
10. MOVE ENTRY GUIDES
(Figure 8)
The entry guide for the M78 COMBO includes factory set stop collars which allow the entry guide to be quickly repositioned between the 7” and the 8” positions. Change the entry guides to the 7” position:
2. Slide the Face/Right Entry Guide and the Back/Left Entry Guide inboard for the 7” position until both entry guides are in contact with the stops.
3. While holding the entry guides in place, tighten Lock Handle “A” on the Face/Right Entry Guide and Lock Handle “B” on the Back/Left Entry Guide.
4. Loosen Screws “D” and “E” on the right and left auxiliary guide posts.
5. Slide the guide posts inboard to the 7” position until both guide posts are in contact with the stops in the slot.
6. Tighten Screws “D” and “E” on the right and left auxiliary guide posts.
Refer to the ADJUSTING THE STOP POSITIONS ON THE ENTRY GUIDE section on page 17 if stop collar adjustment is necessary.

11. MOVE FACE ASSEMBLY STATIONS
(Figure 36)
To move the three (3) face roller assemblies, pull the Spring-Loaded Pin, located at the top of each assembly. Allow the roller assembly to slide down into the 7” position and release the pin back into the groove in the shaft. Repeat this for all three (3) face roller assemblies.
12. MOVE BOX ASSEMBLY
(Figure 37 and Figure 38)
Loosen the two (2) bolts “C” and the two (2) bolts “D” (White station). Move box down and towards the skate for the 7” position. Retighten “C” & “D” bolts.
CHAPTER 16
COMBO 8” TO 7” CHANGEOVER PROCEDURE

Figure 37: Combo Box Assembly
13. REPLACE COVERS
(Figure 30)
Replace the covers “A”, “B”, “C”, and “D” on the top of the machine. To refasten, turn the cover screws one quarter turn clockwise.

14. POSITION COIL
(Figure 6)
When loading the new coil make sure to position correctly for the 8” profile. See Figure 6 on Page 14 for more information.

15. STORE 8” SHEAR
CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE. (Figure 31)
Store the unused shear on the side of the machine.

16. INSTALL 7” SHEAR
CAUTION: BE SURE THE SAFETY PINS ARE PROPERLY INSERTED INTO THE SHEAR BEFORE REMOVING THE SHEAR FROM THE MACHINE. (Figure 31)
Install the shear on the frame with the four (4) bolts “B” (Figure 18). The shear is preset and should not need any adjustment.
CHAPTER 17 - TROUBLESHOOTING

This machine will run most materials without adjustments, however, minor adjustments may be necessary. The following are the most commonly encountered conditions that will be experienced with the machine. To address the various conditions, some common terms are used as follows:

Common Terms

Into the House
The term “Into the House” means that with the gutter placed against the house, both ends will come in contact with the house first. This means that the gutter is bowing in toward the house.

Away From the House
The term “Away From the House” means that, with the gutter placed against the house, neither end will come in contact with the house. This means that the gutter is bowing out and away from the house.

Uphill
The term “Uphill” means that the ends of the gutter are bowing toward the sky.

Downhill
The term “Downhill” means that the ends of the gutter are bowing towards the ground.

Head of Gutter Up and Into the House
This term means that when viewing down what would otherwise be considered a straight piece of gutter, the head of the gutter (Points A, B, C, D) goes up and into the house.

Head of Gutter Down and Away From the House
This term means that when viewing down what would otherwise be considered a straight piece of gutter, the head of the gutter (Points A, B, C, D) goes down and away from the house.
Figure 39: 7” Gutter Profile
Figure 40: 8” Gutter Profile
CHAPTER 17
TROUBLESHOOTING

Figure 41: Gutter Profile Between Face and Box Roller Assemblies

Figure 42: Points on Gutter Profile
Analyzing the Gutter
Before analyzing the gutter run a piece of material at least as long as the machine so that it engages all the rollers in the machine.

**STEP #1**
- With the coil fully engaged in the machine, back up the material approximately 2 inches.
- Check the inside of the gutter at points “H”, “I” & “D” (Figure 42) for any double track cause by the skate forming rollers and face assembly.
- While viewing the gutter between the face rollers and the box, the dimension between point “A” & “D” is 1 13/16” for either the 7” gutter or 8” gutter as shown in Figure 41

**STEP #2**
- Run an eight (8) ft. length of gutter out of the machine. This piece will be used to determine what steps must be taken to correct the gutter’s appearance.
- Inspect the width of the gutter. This dimension should be 7” +/- 1/16” for the 7” gutter (Figure 39) and 8” +/- 1/16” for the 8” gutter (Figure 40).
- Check the back of the gutter at point “I” to be sure it is at approximately 90 degrees to the bottom of the gutter.
- Check the bottom face of the gutter at point “H” to be sure it is at approximately 90 degrees to the bottom of the gutter.
- Check gutter lip. This should be between ¼” and 5/16” wide for both 7” and 8” gutter.
- Sight down gutter at point “D” and “H” and determine if they are parallel to each other and straight.

**Head Goes Up and Into the House OR Down and Away From the House**
All conditions checked above are satisfied except “D” & “H” are not parallel and “H” appears to be straighter than point “D”. The swing shaft will be used to correct this problem. This is a common condition an operator will experience. While the bottom corner “H” will appear correct the top point “D” will appear to go Up and Into the House or Down and Away From the House. Either condition will require adjusting the swing shaft assembly and is color coded Green.

Refer to the Swing Shaft Adjustment Assembly section on page 26 for swing shaft adjustment procedure.

**Face Goes Up and Into the House OR Down and Away From the House**
All conditions checked above are satisfied but the bottom corner “H” will appear parallel to point “D” and the whole gutter will appear to go either, Up and Into the House or Down and Away From the House. The Gutter Box Exit Mount Adjustment can fix this problem. Either condition will require adjusting the exit end of the box assembly and is color coded Blue.
CHAPTER 17
TROUBLESHOOTING

Refer to the Exit Mount Adjustment Assembly section on page 26 for adjustment procedure. Refer to the CHAPTER 12 - EXIT DRIVE AND FORMING STATION section on page 28 combined with the Exit Mount Adjustment as an alternative method.

Drive Rollers Slip
If the gutter is slipping the following items should be checked first.

- Check the brakes on the reel stand to be sure they are not too tight. Adjust as necessary.
- Check to see if the material is just slipping as the end of the material is exiting the machine.

If the two (2) previous conditions do not exist, then proceed to add pressure to the main top drive rollers. **DO NOT** adjust the exit top drive roller unless the material is slipping as the material exits the machine.

Refer to the DRIVE ROLLER ADJUSTMENT AND CLEANING section on page 24 for adjustment procedure.

**NOTE:** Do NOT over tighten the top drive roller assemblies. Do not go beyond ¼ turn past the factory setting. Call a distributor or factory representative for further diagnostics on this matter.

Too Much or Too Little Lip
The entry guide assembly will be adjusted to increase or decrease the lip. The lip can be very critical for the following reasons:

- A lip that is too long or short can cause **Up and Into the House** or **Down and Away From the House**.
- The amount of lip can affect how fasteners fit into the gutter.

Refer to the Entry Guide Adjustment section on page 17 for adjustment procedure.

**NOTE:** This adjustment can affect the swing shaft adjustments or condition #1. Always check the straightness of the gutter after making an entry guide adjustment.

Rippling or Indentation
Ripple on the bottom of the gutter is not an inherent condition on the New Tech Machinery gutter machines. Always check gutter coil to be sure it is not damaged.

An indentation in the gutter on the face or bottom of the gutter that repeats itself can easily be found. It is either foreign material, such as tape, caulking, etc., stuck to a top or bottom roller, or an object has been run through the machine such as a zip screw, spike, ferrule, etc. gouging a roller.

Determine if the indentation is from the inside out, or the outside in. If the dent is from the inside then there is something stuck or damaged on a top drive roller, face inside roller, or skate bearing. An indentation from the outside means there is something stuck or damaged on a bottom drive roller, bottom keel roller, or outside face roller.

To correct this problem, locate the foreign material, or burr, and clean, file or remove with emery cloth as required to smooth out the roller.

Scratches or Other Outside Marks
Inspect the gutter for any continuous scratches on the profile out of the entire gutter where paint is either marked or removed. There are generally two (2) places to look when trying to find where the scratch is occurring on the machine.
• The guide rod can scratch the gutter if the guide rod itself had been marked.
• If the gutter touches anywhere on the shear dies while moving through the shear.
Refer to the CHAPTER 14 - SHEAR ASSEMBLY section on page 33 for adjustment procedure.
## CHAPTER 18 - WIRING DIAGRAMS

<table>
<thead>
<tr>
<th>Electrical Configuration</th>
<th>Wiring Diagram</th>
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<tbody>
<tr>
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## Parts List

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**NEW TECH MACHINERY CORP.**

**ELECTRIC ASSEMBLY, 110V 60Hz**

**M78-380-000A**

**02-22-2007**