

GUTTER MACHINE CONTROLS – STANDARD

- Note: determine what type of control package is installed on the machine. --more-- All operators should familiarize themselves with the appropriate controls prior to any operation.

The Standard Control package includes a red drum switch (motor control) located on the exit end plate on the right side, and an E-Stop switch located on the right side near the entry end.

The Motor Control drum switch has three positions for electric motor control:

Switch Position Action

Up Forward

Middle Off

Down Reverse

The switch will remain in whatever position it is placed (maintained switch), and will therefore support continuous operation in both the forward and reverse directions.

Pushing the E-Stop switch will disconnect input power.

GUTTER MACHINE CONTROLS – CE WIRING PACKAGE

The CE Certified control package includes a control box mounted on the right side near the exit end, and an E-Stop switch located on the right side near the entry end.

The control box features four switches with the following functions:

E-Stop Switch (Red Mushroom Push Button):

Switch Position Action

Pulled/Out On (power)

Pushed/In Off (power)

Once pushed in, the E-Stop Switch key must be turned to pull the switch out and restore power. Because

the Advance button must be pushed to initiate and action, pulling the E-Stop out and restoring power alone will not initiate any gutter machine action.

Direction Selector Switch (Black Two-Position Switch):

Switch Position Direction

AV Forward

ARR Reverse

This switch determines which direction the gutter machine will run when the Advance Button is pushed. It will initiate no action by itself.

Mode Switch (Black Three-Position Switch):

Switch Position Mode

CPC Jog

O Off

NORMAL Continuous Operation

The mode switch will determine what will happen when the Advance Button is pushed. In the Jog Mode, the gutter machine will only advance (forward or reverse) if the Advance Button is held down. In the Off Mode, the gutter machine will not run. In the Continuous Operation Mode, the

gutter machine will start when the AdvanceButton is pushed, and will continue to run after the Advance Button is released.

Switch the Mode Switch to OFF to Stop the gutter machine or discontinue continuous operation

Advance (ENCLENCH) Button (Black Spring-Return Push Button):

Switch Position Action

Pushed On

Released Off (JM) On (COM)

Push the Advance Button to Jog the gutter machine (forward or reverse) or initiate continuous operation (forward or reverse). The resulting action will depend on the position of both the Mode Switch and the Direction

Selector Switch

Switch the Mode Switch to OFF to Stop the gutter machine or discontinue continuous operation!

ELECTRICAL VERIFICATION – STANDARD WIRING PACKAGE

Initial Power-Up

***** CAUTION - IF THE MOTOR CONTROL DRUM SWITCH IS SET TO FORWARD OR**

REVERSE AND THE E-STOP IS PULLED OUT, THE MOTOR WILL START TURNING***

Pull the E-Stop out to restore power to the motor and resume normal operation.

***** OBSERVE ALL SAFETY RULES WHEN WORKING WITH ELECTRICITY *****

Inspect all wiring, connections, and electrical components prior to plugging in the gutter machine.

Ensure the Mode Switch is in the Off (O) position. Plug the gutter machine in, then re-inspect. Look for any unusual conditions (broken or burnt wires, smoke, or unusual noise). Immediately unplug the gutter machine if any unusual conditions exist.

Gutter Machine Correct Motor Rotation First, ensure both E-Stop switches are pulled out, and ensure the Direction Selector switch is in the Forward position. Place the Mode switch in the Jog position (CPC). Briefly press the Advance Button, and observe the direction the forming rollers rotate. Verify the rollers will drive material from the entry end to the exit end when the Advance Button is pushed in.

Gutter Machine Emergency Stop Switch (E-Stop) Verify the E-Stop Switches function correctly by first pushing in one of the E-Stop Switches. Attempt to jog the gutter machine forward with the Advance button. With the E-Stop switch pushed in, the motor should have no power supply and should not work. Pull the E-Stop switch out. Again, attempt to jog the gutter machine forward. The gutter machine should now operate normally. Test both E-Stop switches in this manner.

Gutter Machine Electrical Receptacle

Verify operation of the receptacle using a multi-meter, a light, or a piece of portable electrical equipment like a power tool. If power tools are used to test the receptacle, ensure the tool is rated for the same voltage as the gutter machines power source.

Gutter Machine Wiring Diagrams

If the motor, receptacle, or E-Stop switches do not function correctly, the diagrams may be used to troubleshoot the circuitry. Do not attempt to troubleshoot electrical problems if you are not familiar and comfortable with basic wiring practices and procedures.

CLEARING THE GUTTER MACHINE

Once correct motor rotation has been established and the electrical verification procedures have been performed, run the material in the gutter machine out the exit end. If incorrect motor rotation or the electrical verification procedure backed the gutter profile out of the shear, follow the procedures for re-threading the shear.

DRIVE TRAIN VERIFICATION ON A GUTTER MACHINE

After the gutter machine has been cleared, place the Run/Sop switch in the Run position for continuous operation. Inspect the gears, sprockets, and roller chain for smooth, quiet, unobstructed operation. The drive train should be adequately lubricated from factory testing. Inspect for proper lubrication and lubricate as necessary.

GUTTER MACHINE INITIAL SETUP

The gutter machine has been completely set-up, tested, and adjusted at the factory for the coil stock specified upon ordering. The gutter machine should produce acceptable gutter using the specified coil stock with only minor or no adjustments.

Initial Setup Inspection of a Gutter Machine

A rapid visual inspection may be performed prior to threading the gutter machine. Check the following items:

- Top/bottom alignment of Station #1, #2, and #3 forming rollers
- Metal clearance between forming rollers throughout the gutter machine
- All rollers in the box assembly are aligned and turn freely
- Clearance between box rollers is set at .047-in (1.19mm)
- Skate Bar/Station #3 top roller alignment

LOADING COIL ON A GUTTER MACHINE

Coil Requirements for a Gutter Machine

Use 16-in (406-mm) or 20-in (508-mm) ID coil stock for easy placement on the appropriate spool.

Loading Coil Stock onto the Spool of a Gutter Machine

Loosen the ½-13 hex head bolts in the spool flange and slip it off the center pipe. With the coil standing upright, slip the spool through the coil, attach the flange snug against the coil stock and tighten the ½-13

hex head bolts.

Loading the Spooled Coil onto the Gutter Machine

Insert the 1" x 24" long solid bar shaft into the spool center pipe. Lifting from the solid bar shaft exposed on both ends of the spool center pipe, use a chain hoist, lift truck, or a ramp to lift the spooled coil into place on the uprights or cradles. Once the spooled coil is resting in place on the uprights or cradles, the spool/coil should be secured in place with upright spool locks or with a cradle center bar.

THREADING THE GUTTER MACHINE WITH COIL STOCK

*** REMEMBER ***

Keep all tools, fittings, hardware, debris or other material away from the feed end of the gutter machine. The coil stock feeding into the roller sections will act as a conveyor for such foreign items. Extremely serious damage to the rollers will occur should any foreign objects be carried through the machine in such a fashion. Gutter spikes, nails, wrenches, and rivets are typical violators of this rule. Your warranty does not cover such accidents. Irreparable damage can occur to both sets of rollers. Be extremely careful in this matter.

The coil stock should top feed off the spool to avoid forming rippled gutter. Spool stops in the spool mounts should be used to lock the coil during transportation. Loosen these stops before trying to use the gutter machine.

Cutting a Leading Edge on the Coil Stock

For easy threading, clip the corners of the leading edge of the coil.

Entry Guides of a Gutter Machine

Feed the leading edge around the front feed roller and between the entry guide plates. Be sure the metal is directed between the first set of top and bottom rollers and is centered between the vertical bars of the entry guide plates. Allow slack for the rollers to grab the leading edge of the metal. A strong push is usually required to start the coil into the first pair of rollers after the guides.

The entry guides may require a width adjustment prior to attempting to thread the gutter machine. Standing at the front of the gutter machine and facing the feed rollers, the left side of the gutter machine is to your left. If necessary, adjust the width between entry guides by moving the Left Entry guide. Use the left-hand inside 3/8-in setscrews (5/16-in hex wrench) to set the width. Leave about 1/32-in clearance between the coil stock and each guide, but no more than 1/32-in (.79mm).

Threading the Gutter Machine

Place the motor control switch in the forward position and verify the rollers are turning in the proper direction. Push the leading edge of the metal into the forming rollers. From the front end of the gutter machine, watch the first 2 to 3-ft (1/2 to 1-m) feed in, then stop the gutter machine. Verify the leading edge feeds smoothly, free from any obstructions. The power may be disconnected and the top safety covers removed to inspect the feed process. Feed the leading edge up to the shear, then stop the gutter machine. Again, be sure the leading edge feeds smoothly, free from any obstructions.

THREADING THE CUT-OFF ASSEMBLY (SHEAR) OF A GUTTER MACHINE

Threading the Cut-off Assembly (Shear)

If you are threading the gutter machine with the cut-off assembly attached, stop the gutter machine with the profile just short of the cut-off dies. Jog the leading edge up to the dies. Ensure the blade is clear of the die openings, and that no obstructions exist. Carefully advance the metal through the cut-off die openings until approximately 1-in (25mm) extends beyond the cut-off dies.

When to Perform the Threading Procedure

This procedure need be done only on each new coil or after removing the cut-off assembly from the gutter machine for any reason. With metal in the gutter machine and adjustments correctly set, the gutter will feed automatically through the cut-off assembly when the motor control switch is operated.

CUT-OFF ASSEMBLY (SHEAR) OPERATION OF A GUTTER MACHINE

Operating the Rack Shear

To operate the Rack and Pinion Shear, slip the cheater bar over the adapter bar on the shear assembly drive shaft. The adapter bar may be bolted to either end of the drive shaft. Rotate the

shear handle toward the exit end of the gutter machine 190 degrees. Return the bar to its original position to complete the shear cycle.

Operating the Optional Circular Cam Shear

To operate the optional Circular Cam Shear, first press in the mechanical release bolt located at the top center of the assembly. Rotate the shear handle clockwise (facing the exit end) three revolutions to complete a shear cycle. At completion, the mechanical stop will re-engage.

RUN-OUT STANDS

Setting Up Run-out Stands

Gutter run-out stands must be used when forming gutter in lengths over ten (10) feet (3 meters). The stands (or table) must be level and in line with the gutter machine rollers. Knudson Mfg., Inc. adjustable gutter stands are recommended and are available from the factory. Run-out tables are good for shop use if they have an adequate number of rollers or a non-scratching surface.

Effect on Gutter Profile

If the gutter curves upward, the run-out stands may be set too high. If downward, the stands may be set too low. If the gutter curves to either side, the gutter machine may be tilted in that direction and should be leveled.

LENGTH MEASUREMENTS

Measuring Gutter Lengths when using a Gutter Machine

A tape holder attached to the end plate (exit-end) of the gutter machine is built for a 100-ft (30-m) standard steel tape measure. Place a tape in the holder and hook the tape end on the leading edge of the gutter. The tape pays out as gutter rolls out of the gutter machine. Watch the reading on the tape as you run the gutter machine. Use the inside edge of the outside cutter blade as a mark to determine the exact gutter length prior to operating the cutter.

The optional Footage Counter may also be used as a reference to determine part length. Both Imperial and Metric counters are available. The counter functions as a totalizer, measuring the accumulated length of material run through the gutter machine. Part length may be determined by comparing the difference between start and finish values on the counter.

Keep both the gutter machine and the surrounding work area clean and free of dust, dirt and debris. Routine cleaning of the entire gutter machine will help extend the life of all mechanical and electrical components of the gutter machine. In particular, a clean gutter machine and work area will help prevent the presence of foreign objects into the gutter machine, which can most likely damage mechanical components.