

HARPER METAL PRODUCTS, INC.

1095 SAN MATEO AVENUE, MAILING ADDRESS P.O. BOX 276, SAN BRUNO, CA. 94066-0276

4 INCH VANEMAKER MODEL E-400 INSTRUCTIONS

SAFETY PROCEDURES:

It is the owner's responsibility to make sure that the operator of this equipment has completely studied these instructions before attempting to operate this machine.

- 1) Turn off the safety disconnect switch before removing any covers or guards.
- 2) Never operate this equipment with any of the covers or guards removed.
- 3) Turn off the safety disconnect switch when clearing material jams or doing maintenance.
- 4) Keep hands off the machine when in production.
- 5) Maintain all guards and safety switches in working order.
- 6) Do not run material heavier than 24 ga. galvanized through the machine.
- 7) Supply the electrical line wires in accordance to the N.E.C. and all local codes.
- 8) Keep visitors and inexperienced personnel away from this equipment.
- 9) Do not attempt to reach around or inside a cover or guard on this machine.
- 10) Keep the area around the machine free of debris and clutter.
- 11) Keep a clean and ample free working area around the machine. Do not crowd this equipment into a dangerously tight working area.
- 12) Never reach in to the vane shear area with the shear hydraulic power unit on. Turning off this power unit will prevent the shear from accidentally coming up.
- 13) Do not wear sloppy or loose clothing while operating this equipment.
- 14) Operator should not leave machine vicinity when operating this equipment.
- 15) Stay alert when using this equipment.

MACHINE SET UP:

- 1) Set the machine in the desired location. (See the enclosed floor plan). The Vanemaker should be bolted to the floor.
- 2) Bolt the enclosed length gauge on to the Vanemaker shear upright using the bolts provided. Install the 2 enclosed vertical supports to hold the length gauge up. Level the length gauge by using the vertical supports.
- 3) Slide the length gauge limit switch over the length gauge and clamp the limit switch in place. Install the "S" hooks on the support wire to support the length gauge limit switch cord.

- 4) Set the Non-powered Double Reel in place directly behind the Vanemaker. (The reel should load from the operator's side of the Vanemaker). Allow at least 6 feet of space between the Non-Powered Double Reel and the Vanemaker. The Reel should be in alignment with the Vanemaker so that the strips will feed straight. Bolt the Non-Powered Double Reel to the floor after placing the reel into the proper position.
- 5) Load the coiled material on to the non-powered double reel. Load these coils from the Vanemaker operator's side. Both coils should be loaded to roll over the top. Place the weighted dancer arm (which is fastened to the coil holder) over both strips of material. This dancer arm will act to stop the jerking associated with starting the coils.
- 6) Connect your 230V/3ph./60Hz. line wires to the fused safety disconnect switch located on the Vanemaker shear upright. The 4" Vanemaker will draw from a 20 amp circuit. Wire the line wires in accordance with the N.E.C. and all local codes making sure that the machine is properly grounded.
- 7) Turn on the fused safety disconnect switch and press the Vane start button. Check for the correct motor rotational direction as the Vanemaker rolls should advance the material. If necessary, correct the motor rotation by interchanging any 2 line wires at the safety disconnect switch.

MATERIAL:

The 4" Vanemaker is designed to form 24 ga. prime lockforming galvanized strip only. The strip width is 7 (plus or minus 1/64) inches. Coil weights are not to exceed 750 lbs. each. The coil internal diameter can vary from 14 to 20 inches.

CYCLE:

Material fed into the Vanemaker will form the vane, pass through the shear unit, trip the length gauge limit switch and stop. When the Vane stops, the shear will immediately come up, cut the vane, and return back down. After the cut vane has fallen away from the length switch, a new vane will come out. This cycle will repeat itself until the piece counter counts down to zero. When the counter reads zero, the Vane motor will stop.

INITIAL STRIP FEEDING

- 1) With a pair of hand snips, trim the starting edges of the strip by cutting off the corners. (Cut the strip into a squared off "V" shape). This will aid in the initial strip feeding process.
- 2) Feed the two strips of material into the Vanemaker. One piece locates just above the center mandrel and one piece locates just beneath the center mandrel. The bottom strip should start about 3 inches ahead of the upper strip.

- 3) With the Vane motor running, push both strips into the machine at once. Carefully jog the strips forward through the rollformer using the Vane start and stop pushbuttons.

Note: When hand feeding, it is sometimes necessary to tighten the feed rolls on the rollformer until the metal "bites". This is accomplished by backing off each of the jacking screws located on each side of the knurled feed rolls about 1/4 turn. The top section of the rollforming head will lower slightly and the metal will advance. After the strips are jogged through the machine, return these jacking screws to the initial setting or until very faint but equal knurl marks appear on the strip. (See adjustment diagram).

OPERATION

- 1) Clamp the length gauge limit switch tightly to the length gauge at the desired vane length. Use the outer edge of the vice grip clamp for the gauge marker. Note that the vanes should be cut 3/16 inch short of nominal to allow the proper clearance in the duct.
- 2) Set the piece counter to the desired amount of Vanes to be run.
- 3) Start the shear motor and start the vane motor and the cycle will begin. The Vanemaker will continue to form and shear the vanes until the piece counter counts down to zero.

CONTROLLING COMPONENTS

- 1) The length limit switch, when tripped, will stop an advancing vane. This switch will also initiate the shear blade to raise and cut the vane.
- 2) The shear reversing switch is located near the shear blade just inside the machine. This is a 2 position maintained switch. It is designed to allow the blade to travel the full distance necessary to shear the vane. This switch will then trip and send the blade back down to rest.
- 3) The limit switch located just below the shear reversing switch is the shear return safety switch. This switch will not allow the vane motor to engage until the vane shear blade is down and out of the way.

MACHINE ADJUSTMENTS:

- 1) If the vanes are not forming straight, make the following adjustments: The vanes can be steered straight by properly aiming the shear uprights. If the vane curves to the left, adjust the shear uprights to the right and vice-versa to compensate. If the vanes are bowing down, adjust the shear upright upward and vice versa to compensate. The proper positioning of the shear upright is achieved by adjusting the fasteners at the base of the uprights. Note that there are lifting screws which can jack up these uprights. The hold down bolts act to secure the uprights.

- 2) Rollforming head adjustments consist of the proper positioning of each of the four rollforming head jacking screws. There are a pair of jacking screws where the strips enter the rollformer and a pair of jacking screws where the vane exits the rollformer. The entrance jacking screws should be adjusted so that a faint but equal knurl mark is formed on each side of the vane. The exit jacking screws should be adjusted so that most of the ripple is flattened out of the seam.
- 3) All top hold down springs should be adjusted to 1 1/4 inches in height. This is to remain constant.
- 4) See adjustment diagram for further information.

VANE SHEAR

The Vanemaker uses a vane shear to cut the vane to length. Any time that the length switch is tripped for any reason, the vane shear will activate. The vane shear blade comes up to shear the vane off. If the vane properly falls away from the length gauge limit switch, the vane shear blade will simply come to rest in the lower position, allowing a new vane to form.

If, however, a vane gets hung up, the vane shear blade will continue to cycle up and down, attempting to clear the vane. If this continues, the operator should turn off the Vanemaker and manually clear the vane. The Vanemaker will not form another vane until the shear blade comes to rest in its downward position.

CLEARING THE VANEMAKER:

It will sometimes be necessary to clear the Vanemaker of material. This will occur if the metal jams or if the material from the coil simply runs out. Turn off the fused safety disconnect switch before clearing the machine. This will insure that both the Vane and Shear motors are off.

- 1) Move the length limit switch well out of the way before removing a remnant vane. Remember that the vane shear blade will activate if this switch is tripped for any reason.
- 2) Raise the top dimple seam rolls using the lifting bolts to relieve the pressure on the vane. This will allow the vane to be pulled out the exit end of the machine.
- 1) Use a vice grip pliers to pull the residual vane out of the exit end of the machine. If necessary, open the access door to the shear to grip a short residual vane.

Note: When the shear access door is open, a safety switch will stop the vane shear hydraulic motor. Close the shear access door when continuing production.

Note: AVOID SERIOUS INJURY. Never reach into the shear area with the shear hydraulic motor on. TURN OFF THE SHEAR HYDRAULIC MOTOR. Use vice

grip pliers to extract any residual vane. Also, make sure that the length limit switch is well out of the way. The vane shear will come up when this switch is tripped.

MAINTENANCE:

- 1) Use SAE 30 motor oil for all oil ports and chain. Oil every 3 months.
- 2) Use SAE 90 wt. Gear oil for the vane motor speed reducer. This reducer should be checked every year for proper fluid level.
- 3) Use ISO VG Turbine oil for the shear hydraulic power unit. Check the fluid level yearly. Fill only when the fluid level is low.
- 4) Keep vane shear cutter and die sharp to avoid a burred cut. These cutting surfaces can be sharpened. Dress the male cutter on the profile with a die grinding stone. The female die set can also be dressed and kept sharp. Do not surface grind these parts as this will change the die clearance. These parts will need replacing after sharpening several times.
- 5) Keep all forming rolls free of galvanize build up. Spray rolls when needed with a suitable galvanizing remover.

Harper Machine Manuals