INSTALLATION & OPERATION INSTRUCTIONS

LOCKFORMER

DRIVE TURN HEMMING MACHINE

HEM TAB ROLLS MOUNTED

RIGHT AUXILIARY SHAFTS

The Lockformer Drive Turn Hemming Machine is designed specifically for use with the Hem Tab Rolls.

This machine has been thoroughly tested at the factory on the complete range of 20 gauge thru 30 gauge galvanized steel and should not require any adjustments.

However, if the machine does not function properly, read the instructions completely before attempting to make any adjustments.

INSTALLATION:

After removing machine from shipping skids, level machine to the floor area where it is to be operated. Check for crating debris in rolls, gears and motor areas.

Machine is wired for 115 Volt (or 230 Volt), Single Phase, 60 Hz. Current.

LUBRICATION:

Lubrication fittings for the high speed shafts are located under the stand auxiliary side panel. The high speed bearings should be lubricated after every eight hours of operation (recommended lubricant - Standard Polarine Viscous Lubricant #3, or equivalent).

NOTE: If machine is to be used or stored out-of-doors, an oil or grease film will prevent rusting of surfaces.

PRE-OPERATION:

The Hem Tab Rolls produce 1/2" Hems DOWNWARD on alternate tabs of a pre-notched piece part.

In order to operate machine satisfactorily, notches must be made according to specifications in SKETCH #2.
LOCKFORMER DRIVE TURN HEMMING MACHINE HEM TAB ROLLS MTD. RIGHT AUX. SHAFTS (CONT.)

PRE-OPERATION: (CONT.)

The longitudinal locks must be formed on the duct prior to forming the hem tabs. SKETCH #2 shows allowances for various locks used in the trade. The longitudinal locks should be UP when running the hem.

NOTE: The roll set has not been designed for running long continuous hems, however, in the process of manufacturing large duct the hem portion can approach 5 to 6 feet.
OPERATION: INDEX BENDER:

The device located on the T-1 Roll Shaft is the Index Bender.

Check that the Bender Assembly is set up correctly as shown in Dwg.#59468.

Adjustment may be made by loosening two (2) B. H. S. C. S. Screws which holds the locking bracket stops in position. (SEE DWG. #59468 for location adjust stops accordingly. Minor variations to reference dimension may be required to insure positive index.

When running piece parts with an even number of tabs per side (2, 4, 6...), the handle should be placed in position #1 to bend down the first and third tabs. When the handle is moved to position #2, the second and fourth tabs will be bent.

NOTE: If an odd number of tabs to be formed (SEE SKETCH #6) the index mechanism will be out of phase for proper forming on the next part. Keep your eye on the ball location.

When the ball is forward the first section into the rolls will be formed and when the ball is not visible then the second segment will be formed.

The handle may be indexed forward or back to accommodate your requirements, or the index roll could be manually indexed by hand or rotated by pressure of a screw driver.

CAUTION: MACHINE NOT RUNNING

IMPORTANT —— know your requirements and look for the position of the ball. SEE SKETCHES 1, 5 & 6 and Assembly Dwg. #59468
OPERATION: HEM TAB ROLLS MOUNTED ON RIGHT AUXILIARY SHAFTS

ROLL CAPACITY: 28 - 20 GAUGE GALVANIZED STEEL

ENTRANCE GAUGE SETTINGS:

Place a straight edge along outside face of rolls and extending over the entrance table. At a point closest to the forming rolls, measure 1" from the straight edge to the gauge bar. At a point furthest to the rolls, measure 1-1/8 - 1-3/16" from the straight edge to the gauge bar, thus creating a taper on the material entry into rolls. SEE SKETCH #3.

ADDITIONAL INFORMATION:

The Idler Rolls located between Stations 2 & 3, 3 & 4 and 4 & 5 are adjustable.

To adjust Idler Rolls, loosen the socket head cap screws on the Idler Roll Support Brackets and adjust with the adjusting screws shown on SKETCH SECTION A-A Assembly Drawing #59410.

The Idler Rolls located between Stations 5 and 6 and 6 & 7 are adjustable.

To adjust Idler Rolls, loosen the Socket Head Cap Screws on top of the Idler Roll Support Brackets and adjust with the adjusting screws shown on SKETCH or SECTION B-B Assembly Drawing #59410.

STUD NUT ADJUSTMENTS:

The four (4) 3/8" diameter studs that pass through the machine plates have nuts on the top of them. These nuts should be set as required to produce the most satisfactory shape. IMPORTANT: Spring Washer sequence must be as shown in Drawing #59410.

SUGGESTED SETTING:

Set all four (4) stud nuts snug; loosen stud nuts as shown in SKETCH #4.

If piece part is tightly formed, loosen stud nuts at exit end.

If piece part is loosely formed, tighten stud nuts at exit end.

SLIDE ADJUSTMENT:

Check to be sure that projection of slide located at Station 7 - 8 rides in groove in B-8 Roll. If lateral correction is necessary loosen (2) 1/4" socket head cap screws just outboard of sheet-metal slide, adjust slide to correct position, and tighten screws.

Refer to General Assy. Drawing #59410 SECTION C-C. Lock the entrance bar, exit straightener, etc. firmly in location for Production Operation AFTER a satisfactory setting is obtained in all areas.
TROUBLE SHOOTING

DRIVE TURN FORMING MACHINE

1. IMPROPER INDEX OF INDEX ROLL:

   A. Duct Tab must be flat throughout its length. Do not cross brake, bead, or have formed offset from Pittsburgh Lock across Duct Tab. Pittsburgh offset must be flattened prior to forming or notched per SKETCH #2.

      5/16 Pittsburgh Lock — — — — — 1-3/8
      3/8 Pittsburgh Lock — — — — — 1-1/2
      1/2 Pittsburgh Lock — — — — — 1-3/4

   B. When feeding material into the hemming roll set first station, stock must be firmly fed into the index rolls. Hesitation can cause the index roll pin position to index 90° out of position.

   C. If the hem is not formed in the proper sequence in either the 1 and 3 pattern or 3 and 4 pattern, check the index roll ball position. SEE SKETCH BELOW. It is important that the pin lengths be the same at all 4 positions and the pin length be 1/2" extension from the tangency of the index roll. The ball projection should be as indicated on the sketch. A lesser projection may not create enough forming pressure on some types of material to allow the proper Skip Hem Forming Sequence.

   IMPORTANT: ALL FOUR INDEX PINS MUST BE 1/2" LENGTH

   DIRECTION OF FEED

   Place a scale across the flats on the pins. The ball (1/4 - 20 mushroom flat socket head cap screw) should be flush to OR project beyond the straight line a slight amount.
1. **Improper Index of Index Roll (Cont.):**

The amount of gap at the pin closest to the ball should not be greater than .015/.025. To reposition the ball, remove the ball and place a .010/.020 spacer under the screw head or wind a piece of .010/.020 wire around screw and tighten. When resetting the roll onto the machine allow approximately .015/.020 side play between the index roll.

D. Check the rotation of the index mechanism. Place a scale or material approximately .040/.050 thick onto the entrance gauge riser plate. Place the index handle into the forward position, slide the material into the roll and hand index the pin onto the scale. Check the spring ball position at the top Vee-Groove. The ball should be so positioned that as the scale is removed the index roll will pivot forward. Repeat this for all four pin positions. The roll should index for all four positions. Repeat the above with the Index Handle in the back position. The spring ball position can be seen at the front end of the roll. All positions should index in both the forward or back position. The index bracket should be positioned to accommodate the above by moving the front or back adjustment block as required.

**NOTE:** The rod should be held firmly into position. SEE DWG. #59468 for illustration on Set-Up.

E. Check for free rotating of index roll onto its mating part. The Top Roll could be removed from the machine and loosen the assembly. Rotate the index roll onto main roll body. Part should rotate free without any resistance or pulling. If tightness is noted hone the bore of oilite bearing in the roll with fine grit emery cloth to open the bore slightly.

F. Check to see if the index pins are scraping galvanize from the material as it passes across the roll. If material is being remove from the material stone a small radius on the front and trail portion of the flats on the index pins.
TROUBLE SHOOTING DRIVE TURN
FORMING MACHINE (CONT.)

1. IMPROPER INDEX OF INDEX ROLL (CONT.):

G. Check notch depth and width notch angulation. Should be 40°
   included angle at minimum 3/4 depth or 30° included angle at
   7/8 minimum depth to allow proper notch for index pin to enter.

2. HEM RUN OUT:

   The Roll Set has not been designed for running long continuous hems,
   however, in the process of manufacturing large duct the hem portion
   can approach 5 to 6 feet. This can be accomplished by the following:

   A. Tighten the front hold down studs tight. Leave tight to 1/8
      turn loose.

   B. Entrance gauge setting should be set to 1" at the end of the
      gauge closest to the rolls and 1-1/8" - 1-3/16 at the end of the
      gauge furthest from the rolls. Gauge settings are taken from a
      straight edge placed against the outer edge of the top forming
      rolls.

   C. Hold the material against the entrance gauge bar as the material
      is being fed into the rolls.

3. MATERIAL JAM UPS AT IDLER ROLL STATIONS 5-6 AND 6-7:

   A. Check the table height, it should be parallel to or slightly above
      the idler rolls. Raise or straighten table to comply.

   B. Check idler roll location and block tightness. Rolls should be
      vertical and top edge parallel to roll plane. Resquare and tight-
      ten block if necessary.

   C. Check idler roll height to top of tangency to bottom idler rolls.
      Idler rolls should be .035/.045 lower than the top tangency of
      bottom roll. Idler roll diameter should be 1.750/1.740 and height
      to be .835.

      Roll can be lowered by removing one of the 1/32 thrust washers
      between the roll and thrust bearing. Do not remove the thrust
      washer between the block and the bearing.

IF USING PITTSBURGH LOCK DUCT:

D. Check the condition of the Pittsburgh Lock. If the hammer over
   edge is flanged down below the plane of the sheet, as per the
   Engle Pittsburgh Former, the hammer over edge must be brought
   parallel to the base of the sheet.
TROUBLE SHOOTING DRIVE TURN FORMING MACHINE (CONT.)

3. MATERIAL JAM UPS AT IDLER ROLL STATIONS 5-6 AND 6-7 (CONT.):

   IF USING PITTSBURGH LOCK DUCT: (CONT.)

   The edge may be flat by adding a deflector plate at the exit end of the machine to make contact with the hammer over edge at it emerges from the machine.

   CAUTION when hand notching sheets. Flatten the notched section so that the distortion caused by shear cutting will not cause jam ups at the idler rolls, miss or pick up as a miss index on entry deflector roll.

4. ROLLS FLATTENING LOCK:

   A. The edge that enters into the Drive Turn Hemmer that has the locks formed on them must have a full 1" flat portion.
5/16 PITTSBURGH 1-3/8" 5/16 PITTSBURGH 1/4" 90° - 1/4"
24 BUTTON LOCK, FEMALE 1-1/8" 90° BUTTON LOCK - 1/2"
3/8 POCKET PITTSBURGH 1-1/2"
1/2 POCKET PITTSBURGH 1-3/4"
20 BUTTON LOCK, FEMALE 1-1/4"

DEPTH OF NOTCH TO BE FOR LOCK REQUIREMENTS

FORMED LOCK DIMENSIONS
NOTCH SPECIFICATIONS
28 - 20 GAUGE C.R.S.

NOTE: 1" DIMENSION IMPORTANT FOR FORMED LOCK.
ONLY "V" NOTCH DEPTH CAN BE VARIED.

LOCKFORMER HEM TAB ROLLS

SKETCH #2
ENTRANCE SETTING

LOCKFORMER 30

SKETCH NO. 3
TURN ALL STUD NUTS DOWN
SNUG THEN LOOSEN AS ABOVE

SKETCH # 4

LOCKFORMER Co.
HANDLE IN POSITION 1 PRODUCES PART AT RIGHT

BALL WILL BE VISIBLE

HANDLE IN POSITION 2 PRODUCES PART AT RIGHT

BALL SHOULD NOT BE VISIBLE

BEND POSITION CONTROLLED BY

HANDLE POSITION

NOTE: BEND ARE FORMED DOWN, NOT UP AS SHOWN ABOVE

LOCKFORMER HEM TAB ROLL

SKETCH #5
NOTE:
LEAD & TRAIL END COULD BE EITHER HEIMED OR NOT HEIMED DEPENDING ON DUCT SIZE.

"L" SHAPE

NOTE "A"
PREFORMED:
LOCKS IF REQ'D.

ONE PIECE WRAP - A ROUND

NOTE "A"

"U" SHAPED DUCT

CAP FOR "U" SHAPE

SINGLE EDGE FORM

KEEP YOUR EYE ON THE BALL
BALL FORWARD FORMS FIRST SEGMENT
BALL BACK FORMS SECOND SEGMENT

40" MIN.
"V" NOTCH REQUIREMENT

7/8" MIN.
1" MAX.

CAUTION:
CUT OF PHASE INDEXING MAY BE CORRECTED BY POWER OFF HAND INDEXING

LOCKFORMER HEX TAB ROLLS
SKETCH #6