

FORM ROLL LOCATION

ROLL STATION	TOP ROLL	BOTTOM ROLL
1	16064	16065
2	16064	16065
3	16064	16065
4	16064	16065
5	16064	16065
6	16064	16065
7	16064	16065
8	16064	16065

THE LOCKFORMER CO. GENERAL ASSEMBLY

REV.	DATE	BY	CHKD.	REVISIONS
1	10/15/64	J.M.	J.M.	INITIAL DESIGN
2	11/10/64	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417
3	12/15/64	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417
4	1/10/65	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417
5	1/10/65	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417
6	1/10/65	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417
7	1/10/65	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417
8	1/10/65	J.M.	J.M.	REVISED TO MATCH REVISED DRAWING # 59417

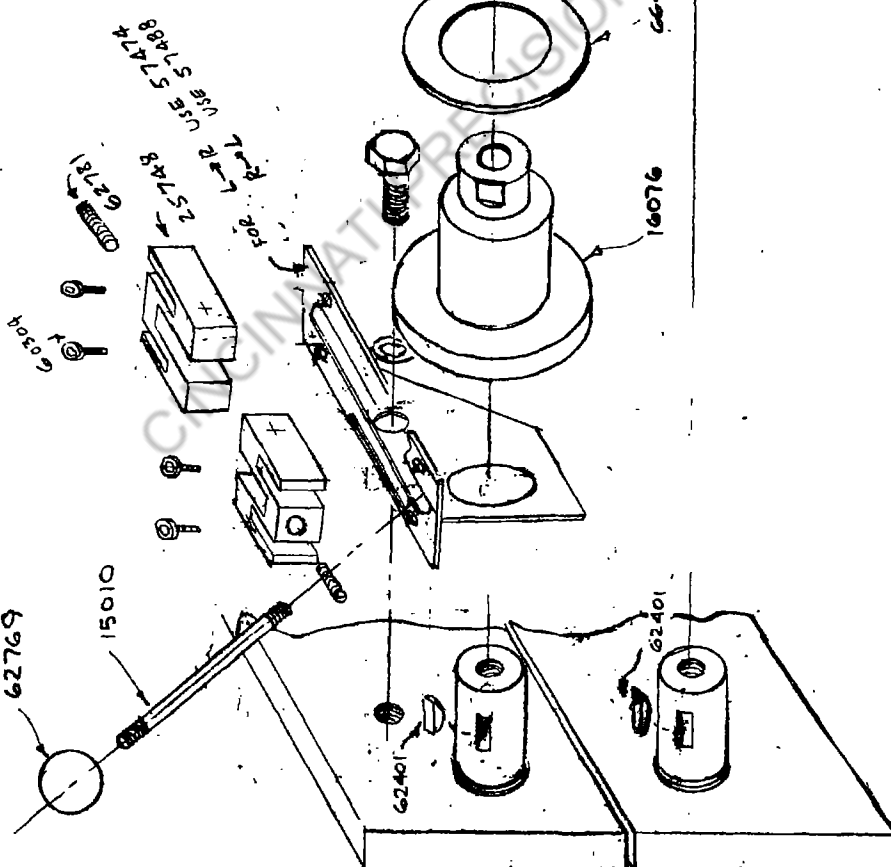
3/30/7
Jjm

PARTS LIST - HEADER

FORM 172

PART #	DESCRIPTION	QTY	PART #	DESCRIPTION	QTY	PART #	DESCRIPTION	QTY
13436	ROLL SHAFT	16	33079	ENT GAUGE LEAF	1	62340	3/8 BLVL WSHR	48
13437	DRIVE SHAFT #1	1	33413	ENT GA LEAF	1	62362	5/16 LCK WSHR	4
13438	DRIVE SHAFT #2	1	34291	HANDLE LOCK BRKT L-R	1	62364	1/2 LCK WSHR	16
13439	DRIVE SHAFT #3	1	34293	INDEX BENDER GAUGE	1	62401	9 WDRF KEY	18
13751	IDLER ROLL SPACER	3	34365	ADJ. STOP TOP	1	62402	15 WDRF KEY	3
13752	IDLER GEAR SPACER	7	35677	COVER L-R	1	62528	RETAINING RING	32
13753	PLATE SPACER	9	36018	SLIDE	1	62550	3/8-16 X 5 1/2 STUD	4
14073	DRIVEN GEAR	16	36025	SAFETY SHOE	2	62614	1/4 X 1 1/4 DWL	3
14161	GEAR IDLER	7	51900	FIBR GR ASSY	1	62633	3/8 X 1 DWL	4
14301	GEAR DRIVE	1	57430	HANDLE BRKT L-R	1	62769	INDEX HANDLE KNOB	1
14506	IDLER PIN	2	57414	INDEX ROLL ASSM	1	62775	10-32 X 1/4 BHSCS	4
14536	IDLER PIN 2A3A4A	3	57413	TOP FORM ROLL "B" ASSM	1	66040	B812 TORR BRG	11
14562	DETAIL 7	3	58603	STAND WELDMENT	1	66080	B1412 TORR BRG	32
14566	IDLR ROLL PIN	3	59410	GENERAL ASSY DWG	1	66090	B1416 TORR BRG	7
15010	INDEX HANDLE	1	59412	BENDER ASSY DWG	-	66101	B16120H TORR BRG	6
16064	FORM ROLL T2-T9	7	59423	DRIVE ASSY DWG	-	66300	NTA815 TORR BRG	14
16065	FORM ROLL B1-B5	4	60091	3/8-16 X 1 HHCS	2	66301	TRA815 TORR RACE	28
16066	FORM ROLL B6	1	60097	3/8-16 X 1 3/4 HHCS	14	66353	TW1423-4 THRS WSHR	32
16067	FORM ROLL B7	1	60098	3/8 - 16 X 2 HHCS	2	66422	TT1503-2 THRUST BRG	32
16068	FORM ROLL B8	1	60161	1/2-13 X 3 1/4 HHCS	13	66430	TT1502-2 THRUST BRG	7
16069	FORM ROLL B9	1	60163	1/2-13 X 4 HHCS	3	66456	DV 18 GAR BRG	2
16070	IDLER ROLL KNURL	3	60303	1/4-20 X 3/4 SHCS	6	66600	886L FEM COUPLG	6
16071	IDLER ROLL 2A	1	60352	5/16-18 X 1 SHCS	6	66601	MALE CONN	6
16072	IDLER ROLL 3A	1	60366	1/2-13 X 4 SHCS	3	66700	NYLA TUBING	100"
16073	IDLER ROLL 4A	1	60551	1/4-20 X 1/2 RHNS	1	70065	5L490 V BELT	1
16074	IDLER 6-7, 7-8	2	60575	10-24 X 3/8 RHNS	3	70340	BC30X 7/8 SHV	1
16076	ROLL SUPPORT SLEEVE	1	60650	5/16-18 X 5/16 SSS	11	70351	BK47 1 BORE SHEAVE	1
16077	TOP FORMING ROLL A	1	60876	3/8-16 X 1-1/4 C B	4	71154	1 CLR	1
16080	IDLER ROLL, UPPER	1	60954	1/2-13 X 1 FHSCS	4	80050	1-1/2 HP-1-60-145 T	1
20488	PULLEY BOTTOM PLT	1	61040	10-24 HN	3	80204	TOGGLE SWCH 5011-110 V	1
20489	AUX BOTTOM PLATE	1	61101	5/16-18 HN HVY SF	4	80410	BX CABLE 12-2	1
20490	AUX TOP PLATE	1	61120	3/8-16 HN HVY SF	10	80461	BX CONN 1/2	2
20491	PULLEY TOP PLATE	1	61160	1/2-13 HN HVY SF	16	80490	1/2 KO CONN	2
24504	ENT GA BAR	1	61300	3/8-16 JAM NUT SF	4	80510	COR SET 12-3 10	1
25508	BRACKET RISER	3	62000	1/4 X 062 WSHR	6	80602	RG TNG TERMINAL	4
25542	IDLER MTG BRACKET	3	62002	3/16 X 049 WSHR	2	80603	SPADE TERMINAL	1
25543	IDLER MTG BAR	2	62010	5/16 X 1/16 WSHR	8	80608	WTRB JOINT	1
25544	SLIDE MTG BRK	1	62026	3/8 X 052 WSHR	4	80650	HANDY BOX ASSL	1
25669	CONN. STRIP	1	62029	3/8 X 1/16 WSHR	8	80675	HANDY BOX CYR	1
29601	EXIT GA	1	62301	3/8 C WSHR	16	37000	GREASE FTG SHIM	1
						85311	PATENT LABEL	1
						66106	BRG	1
						66147	BRG	1

59412



THE LOCKFORMER CO. LIBL, ILLINOIS 60038		6.	
741 CORDEN AVE.	MACHINE	B. CHRYSLER 8-10-41 157	REVISIONS
REMNING, MACH	PART NUMBER	9/20/42	
BENDER, ASSY'DREW	59412	A. CHRYSLER 10/11/42	
	SCALE	NONE	
	CHECKED BY	D. PALMER	
	DATE	12-3-42	

FRAC TO 1/4 DEC TO 1/4

INSTALLATION & OPERATION INSTRUCTIONSLOCKFORMERDRIVE TURN HEMMING MACHINEHEM TAB ROLLS MOUNTEDRIGHT 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.

CINCINNATI PRECISION MACHINERY 513-650-1733

LOCKFORMER DRIVE TURN HEMMING MACHINE HEM
TAB ROLLS MTD. RIGHT AUX. SHAFTS (CONT.)

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

LOCKFORMER DRIVE TURN HEMMING MACHINE HEM
TAB ROLLS MTD. RIGHT AUX. SHAFTS (CONT.)

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 through out 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

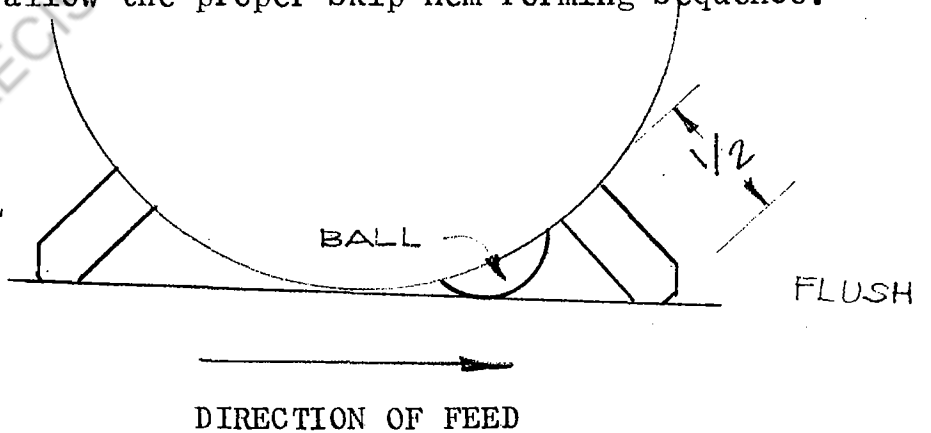
3/8 Pittsburgh Lock - - - - - 1-1/2

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" extention 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.

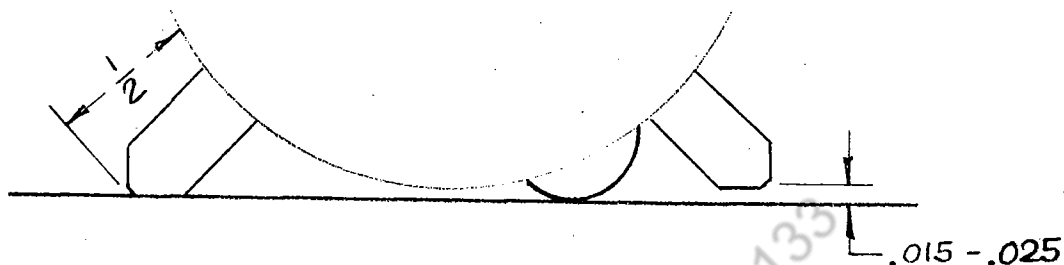
IMPORTANT: ALL
FOUR INDEX PINS
MUST BE 1/2"
LENGTH



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.

TROUBLE SHOOTING DRIVE TURN
FORMING MACHINE (CONT.)

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 re-setting 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 removed 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 tighten 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.

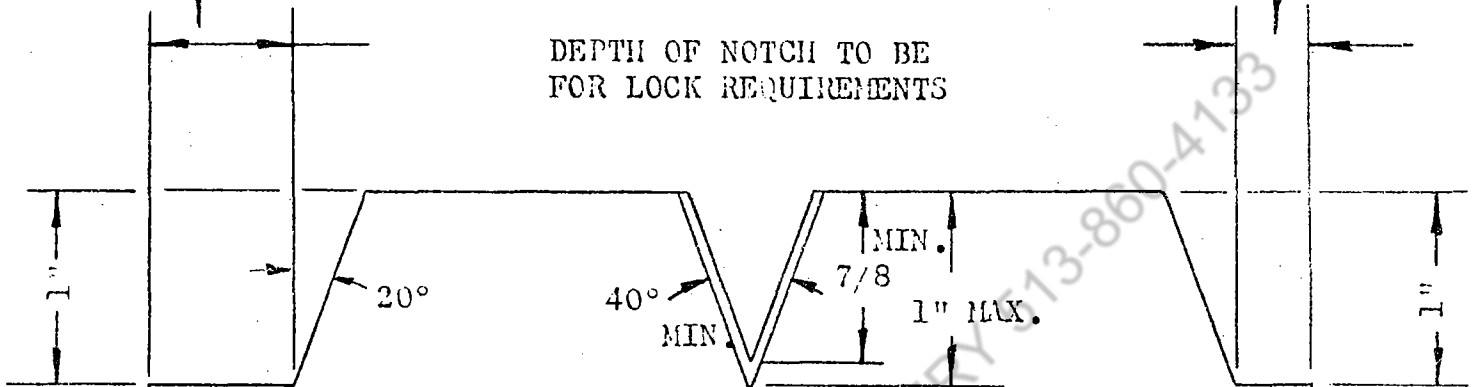
CAUTION when hand notching sheets. Flatten the notched section so that the distortion caused by shear cutting will not cause jam ups at the idler rolls, miss or pick up as a miss index on entry deflector roll.

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

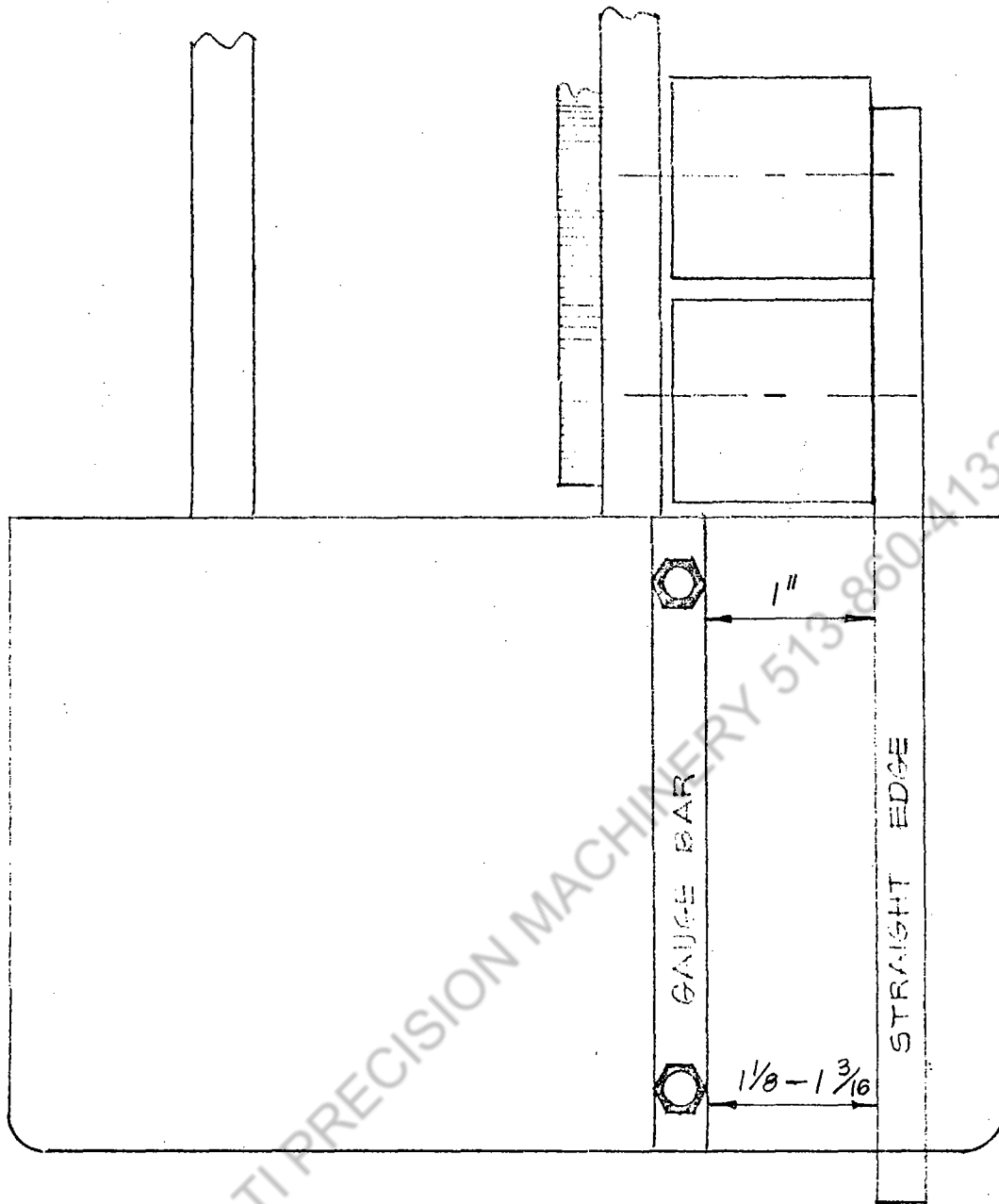
28 - 20 GAUGE C.R.S.

NOTE: 1" DIMENSION IMPORTANT FOR FORMED LOCK.

ONLY "V" NOTCH DEPTH CAN BE VARIED.

LOCKFORMER HEM TAB ROLLS

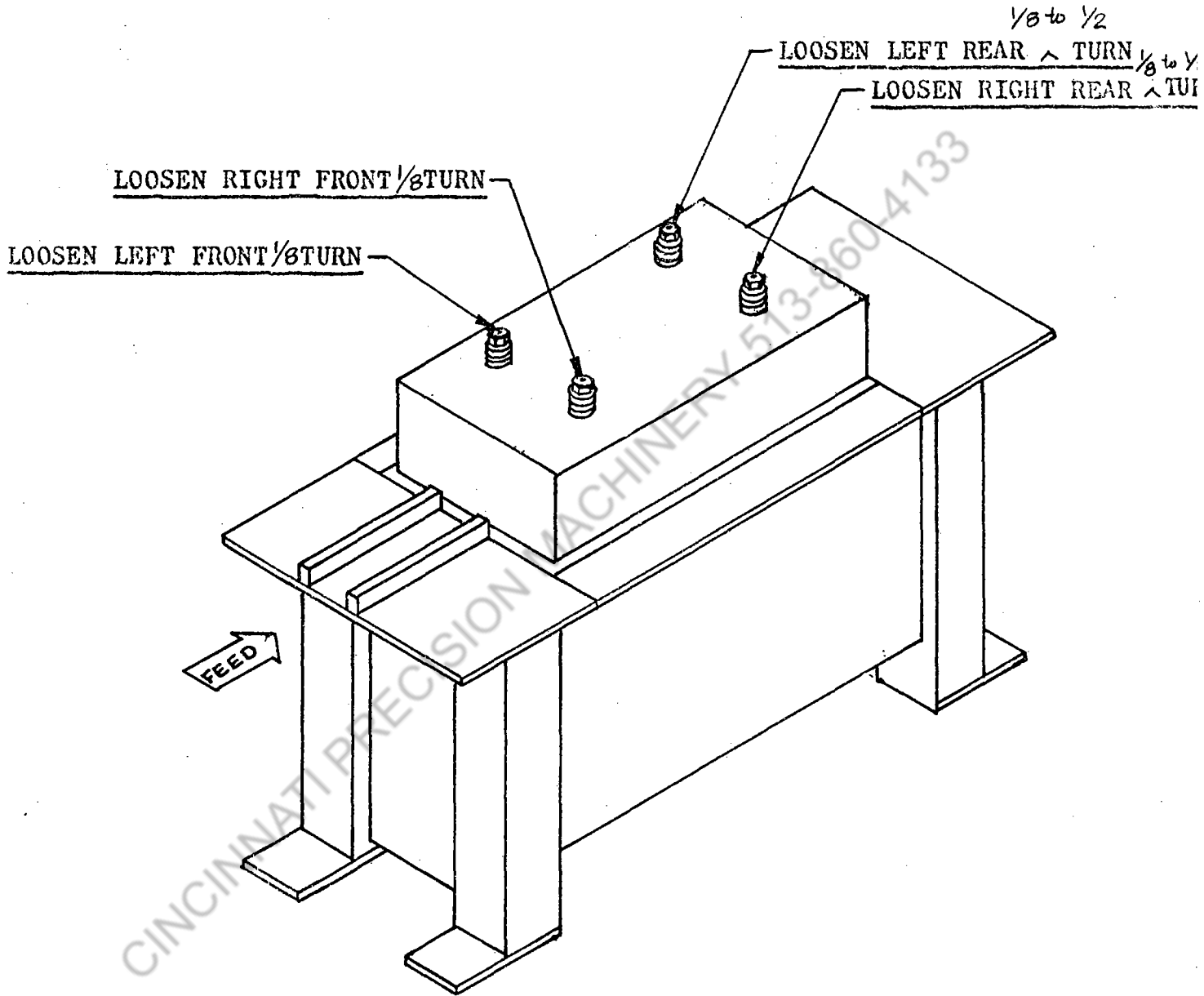
SKETCH #2



ENTRANCE SETTING

LOCKFORMER

SKETCH NO. 3



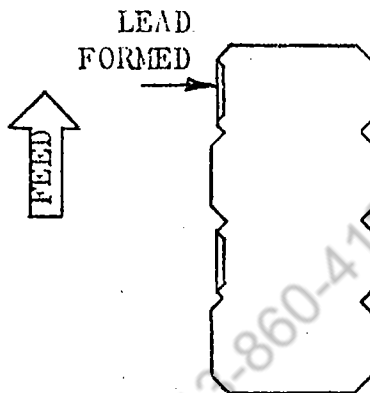
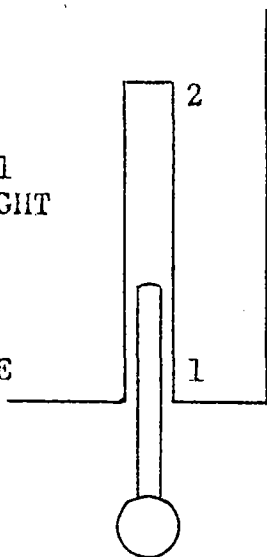
TURN ALL STUD NUTS DOWN
SNUG THEN LOOSEN AS ABOVE

SKETCH # 4

LOCKFORMER Co.

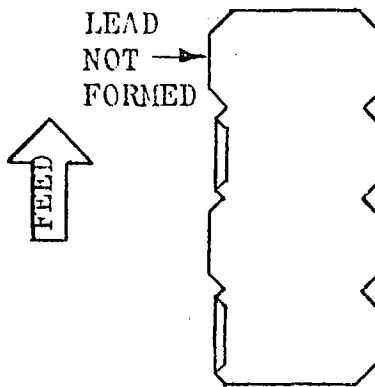
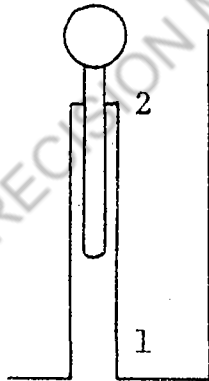
HANDLE IN POSITION 1
PRODUCES PART AT RIGHT

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

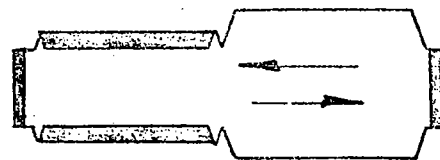
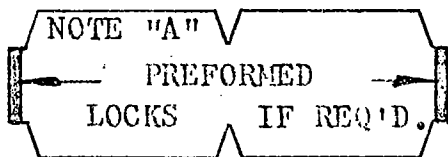
LOCKFORMER HEM TAB ROLL

SKETCH #5

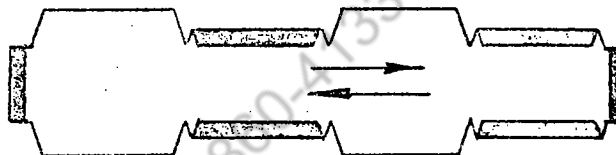
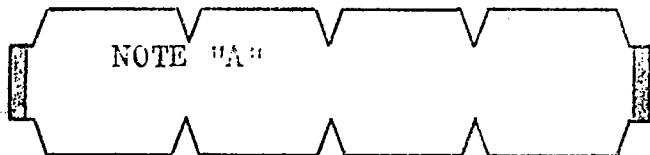
NOTE:

LEAD & TRAIL END COULD BE EITHER HEEMED OR NOT HEEMED DEPENDING ON DUCT SIZE.

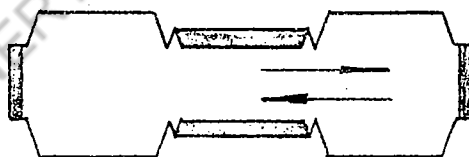
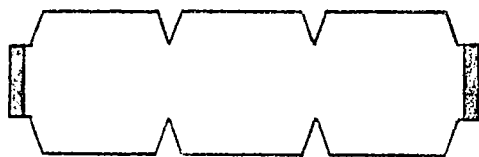
"L" SHAPE



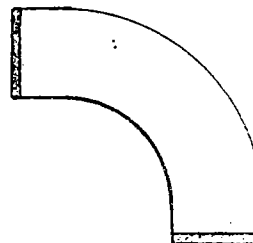
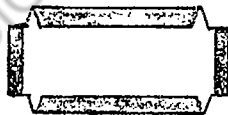
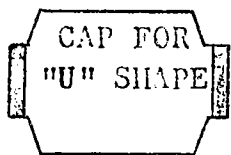
ONE
PIECE
WRAP-A
ROUND



"U"
SHAPE
DUCT

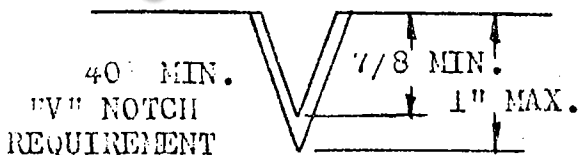


SINGLE
EDGE
FORM



1 KEEP YOUR EYE ON THE BALL 2

BALL FORWARD FORMS FIRST SEGMENT
BALL BACK FORMS SECOND SEGMENT



"V" NOTCH
REQUIREMENT

CAUTION:

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

LOCKFORMER HEM TAB ROLLS
SKETCH #6