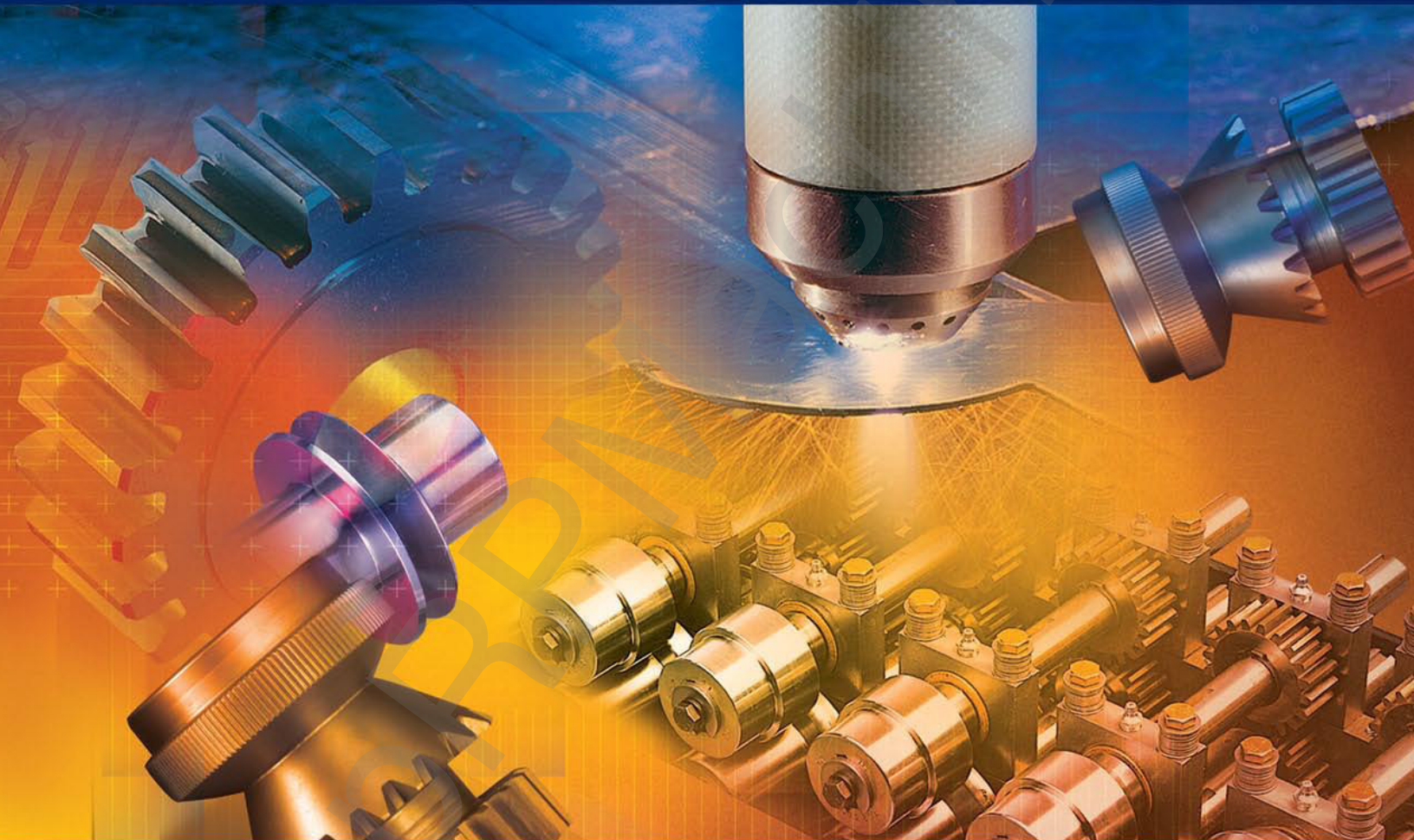


**LOCKFORMER**



INSTRUCTIONS &  
PARTS DIAGRAM  
**Pittsburgh 20 or 22 Gauge**  
with Auto-Guide Mounted

# LOCKFORMER

## Pittsburgh 20 or 22 Gauge Instructions and Parts Diagram with Auto-Guide Flanger Mounted





### **WARNING**

**THIS EQUIPMENT IS DESIGNED TO BE OPERATED WITH ALL COVERS SECURED IN PLACE. OPERATION WITHOUT THESE SAFEGUARDS MAY RESULT IN CONDITIONS WHICH ARE HAZARDOUS TO THE OPERATOR AND OBSERVERS.**

## **SAFETY GUIDELINES**

Before operating the machine, study and follow the safety precautions in this section. These precautions are intended to prevent injury to you and your fellow workers. They cannot, however, cover all possible situations. Therefore, **EXERCISE EXTREME CAUTION** and use **COMMON SENSE** before performing any procedure or operation.

### **Safety Precautions BEFORE starting the machine(s)**

- Only one person should control the machine(s). Never allow anyone to operate the controls while you are operating or working on this equipment. In addition to disconnecting power **always use lock outs and tagouts** to prevent accidental start-up when performing maintenance procedures.
- Keep your hands away from internal workings of the machinery when starting, running or stopping.
- Keep your work area clean. Remove all scrap, oil spills, rags, tools and other loose items that could cause you to slip, trip and fall.
- When cleaning the machine or any of its components, do not use toxic or flammable substances. Do not perform any cleaning while the equipment is running.
- Never override or disable any safety switch or safety interlock.
- If so equipped, make sure that hydraulic and pneumatic pressures are at specified levels before operating this equipment.
- **Do not operate the rollformer unless all covers and guards are in place.**
- Be sure that this Instruction Manual is kept near the machine so the operator can refer to it when necessary.
- Keep this equipment properly maintained.
- Always turn off power to the machine(s) at the main disconnect before performing any maintenance or adjustments so accidental start-up or electrocution cannot occur.

## Safety precautions WHILE operating the machine(s)

- Never leave the work area while the equipment is in operation.
- Never leave the machine unattended while it is under power or in operation.
- Always be alert while operating machinery.
- Be alert for loose, worn or broken parts. Do not attempt to operate any machinery with such parts present or if the machinery is making unusual noises or actions.
- Avoid skin contact, prolonged breathing, or eye exposure to any stock lubrication fluid being used.
- Be aware of the locations of the **Power Off** or **Emergency Stop** button in case of an emergency.
- **Be sure all guards and covers are in place.**
- Continually observe the rollforming process and related equipment. If any unusual condition develops, immediately stop and inspect the machine.
- Protect yourself! Wear safety glasses. Do not wear loose clothing, neckties, or jewelry. If long sleeves must be worn, avoid loose cuffs and buttons. Tie back and contain long hair.
- Never adjust any roll feature or perform work near the rolls, gears or power take off while they are running.

### General

If any pneumatic or hydraulic feature is used, disconnect the main supply and exhaust pressure and bleed the lines to prevent cycling on retained pressure.

Always shut off the power at the main disconnect switch before entering the electrical control box.

Do not use compressed air to clean the machines. Air pressure may drive dirt and small chip into the machine(s) bearing surfaces or cause bodily injury.

#### IMPORTANT

The information contained herein is to be use as a general guide only. For further safety information obtain and read the ANSI bulletin entitled:

ANSI B11.12-1996 Rollforming and Roll-Bending Machines safety. Requirements for Construction, Care and Use.

CONTACT: American National Standards Institute

11 West 42nd Street. New York, New York 10036



### CAUTION

To provide clarity to points in question the illustrations and photos appearing in this manual are shown with covers and guards removed. NEVER OPERATE THIS EQUIPMENT UNLESS ALL COVERS AND GUARDS ARE IN PLACE.



## SAFETY GUIDELINES

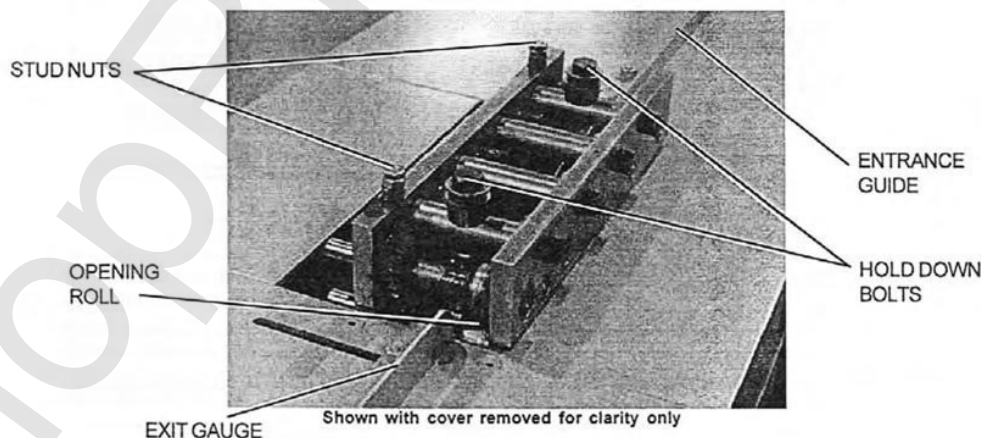
You are **NOT** ready to operate this equipment if you have not read and understood all of the safety information in this manual.



### WARNING

- Do not wear loose clothing, neckties, improper gloves, or jewelry while operating this machine. If long sleeves must be worn, avoid loose cuffs or buttons, Tie back or contain long hair.
- Wear proper gloves to prevent lacerations caused by sharp edges of stock as it travels through the forming operation.
- Never operate this equipment unless all covers and guards are properly installed.
- Be alert for loose, worn, or broken parts. Never operate this equipment unless it is in good working condition.
- As the stock enters the guides and feeds into the rolls, a pinch point is created as the stock advances. Keep hands clear of area and all pinch points.
- Always disconnect the main power supply power and install lock outs using a lockout / tagout procedure when making adjustments or repairs.
- When transporting, take into consideration that the machine is top heavy and may suddenly tip over.
- The machine is designed for fixed installations and is not intended for portability.

**Remember that the information contained in this manual is only a portion of an adequate training program. It must be coupled with specific instructions for your application along with full information of national and local safety regulations that may apply.**



## Installation

Provide a clean, flat, wet lighted installation site. Level the machine and anchor it to the floor, inspect the gears and drive assembly, and remove any debris that may have accumulated during shipping.

Standard electrical installation requires a 115 volt grounded power supply. Provide a 115 volt receptacle at the point of operation. If a 230 volt motor is ordered, install the power supply in compliance with local and national electrical codes. For further information, contact a certified electrician or the Lockformer Service Department at (630) 964-8000.

## Operating Instructions

### Basic Operation

Hold the stock against the entrance gauge and slide it into the forming head. Be sure that the stock remains against the gauge until the trail edge of stock is engaged in the rolls,

**Note: Minimum part length is 7 inches, if a shorter piece is needed, run along piece, then notch and cut it to size.**

Make hold down adjustments, as outlined below, to accommodate slight variations in metal thickness and hardness.

### Hold Down adjustment procedure

1. DISCONNECT POWER!
2. Install lock outs to prevent accidental start up.
3. Remove top cover.
4. Tighten the hold down baits until snug, then loosen them 3/4 turn. This setting should give good results for all stock thicknesses.
5. INSTALL THE COVER, remove lock Outs, restore power.
6. Run a test piece.

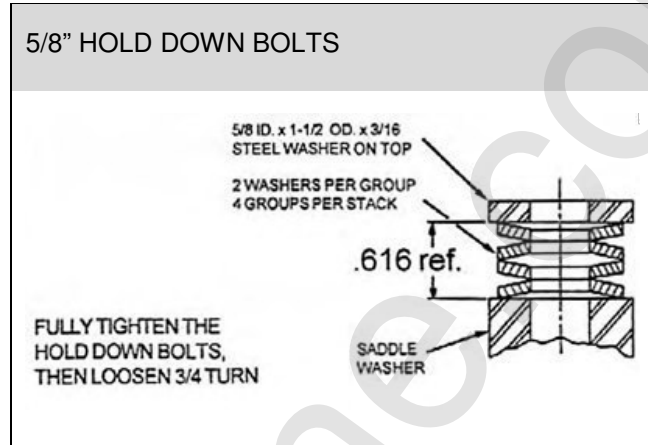
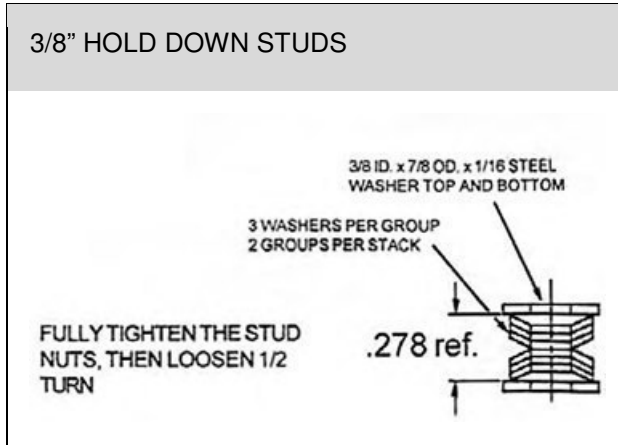
If the stock slips in the rolls, tighten the hold down bolts equally in small increments until the desired results are obtained.

If the stock curls up after forming or shows extremely heavy pressure marks, loosen the hold down bolts slightly.

7. Machine is now ready for production.

**Do not adjust hold downs unless the stock slips in the rolls, pulls away from the entrance gauge, or curls when exiting the rolls.**

## Belleville Spring Washers



## Pittsburgh Lock Hammer-Over leg adjustment

The width of the Pittsburgh lock hammer over leg is adjustable. Move only the right hand entrance gauge in to produce a wider leg and out for a narrower leg. ALWAYS move both ends of the entrance gauge equally, keeping it parallel to the top machine plates.

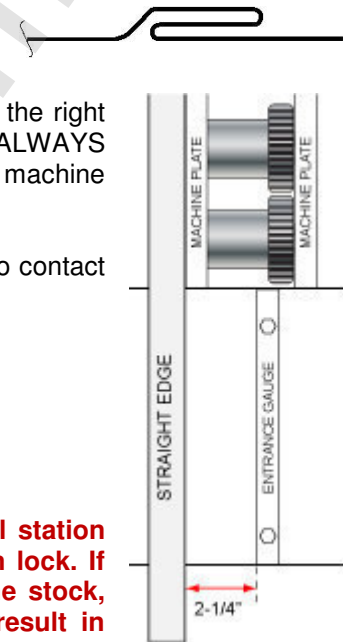
Never move the exit gauge bar for this roll set. This gauge is not intended to contact the material under normal circumstances,

## Opening Roll



### CAUTION

The flat roll mounted horizontally after the last roll station maintains the opening of the gap in the Pittsburgh lock. If burrs or twists caused by snips are present on the stock, they should be flattened. Failure to do this can result in breakage of the opening roll.

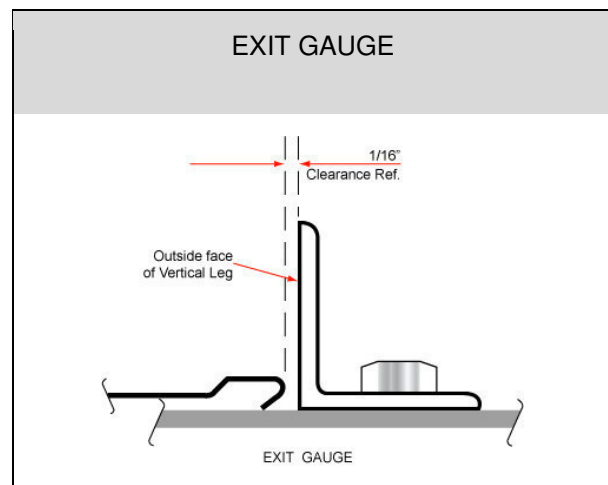
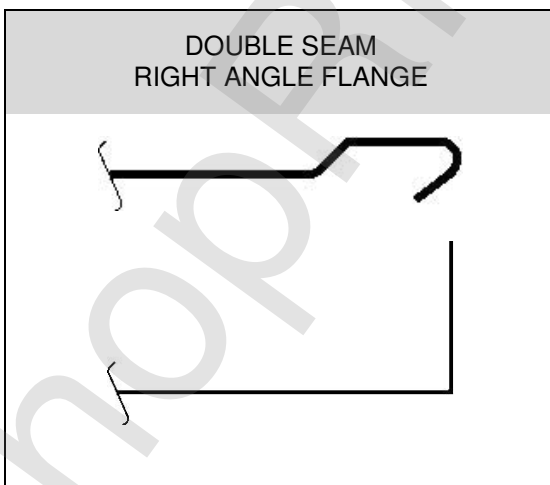
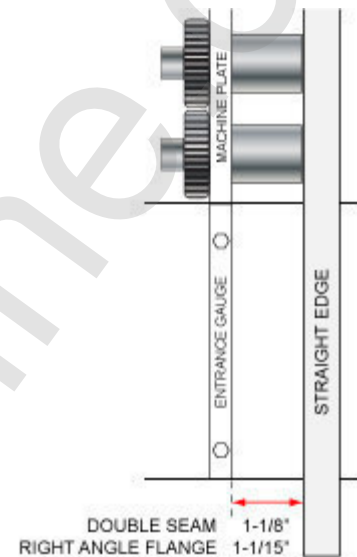


## Installation and Operation of Auxiliary Rolls

Standard auxiliary rolls are interchangeable between the standard Lockformer 20 and the Super-Speed models. Since different entrance gauges are required, the model for which the rolls are intended should be specified.

### Double Seam or Straight Right Angle Flange Rolls

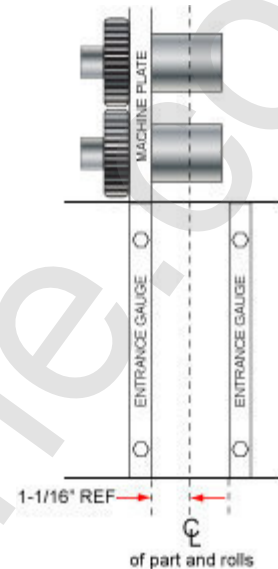
1. DISCONNECT POWER.
2. Install lock outs to prevent accidental start up.
3. Remove the cover.
4. Unscrew and remove the right hand side table top section. This will expose the auxiliary shafts on which the rolls will be mounted.
5. Select the first pair of rolls which are marked T1 (Top roll first station) and B1 (Bottom roll first station). Slide them as a mated pair onto the shafts. All information stamped on the rolls must face outward. Slide a key into each keyseat. Follow this procedure in sequence with each remaining pair of rolls.
6. Fasten the rolls onto the shafts with the screws and washers provided.
7. Mount the entrance gauge and set it to the dimensions shown in the illustration.
8. Mount the exit gauge so the outside face of the vertical leg is parallel to the part as it passes over the exit table. Set to allow approximately  $1/16$ " clearance between the part and the exit gauge.
9. Replace the table top.
10. INSTALL THE COVER.
11. Remove the lock outs.
12. Restore power to the machine.



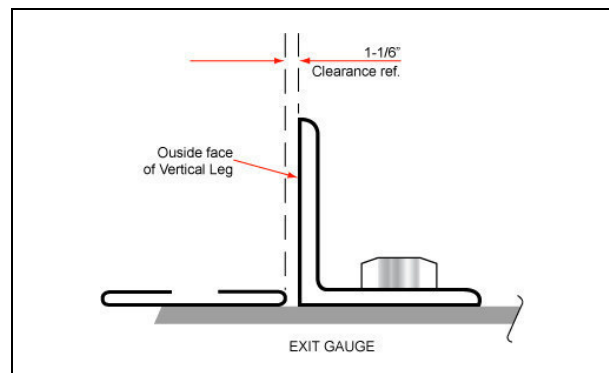


## Drive Cleat Rolls

1. DISCONNECT POWER.
2. Install lock outs to prevent accidental start up.
3. Remove the cover.
4. Unscrew and remove the right hand side table top section. This will expose the auxiliary shafts on which the rolls will be mounted,
5. Select the first pair of rolls which are marked T1 (Top roll first station) and B1 (Bottom roll first station). Slide them as a mated pair onto the shafts. All information stamped on the rolls must face outward. Slide a key into each keyseat. Follow this procedure in sequence with each remaining pair of rolls.
6. Fasten all rolls except the top number 2 onto the shafts with the screws and washers provided. Do not insert a mounting screw into the top 2 rollshaft; this allows the roll to "float" laterally, and center itself to the bottom roll as the stock passes through.
7. Mount the entrance gauges so that the centerline of the stock aligns with the centerline of the rolls.
8. Tighten the stud nuts so that the **T5** and **B5** rolls do not separate as the drive cleat passes through.
9. Mount the exit gauge so the outside face of the vertical leg is parallel to the part as it passes over the exit table. Set to allow approximately  $1/16$ " clearance between the part and the exit gauge.
10. Replace the table tap.
11. INSTALL THE COVER.
12. Remove the lock outs.
13. Restore power to the machine



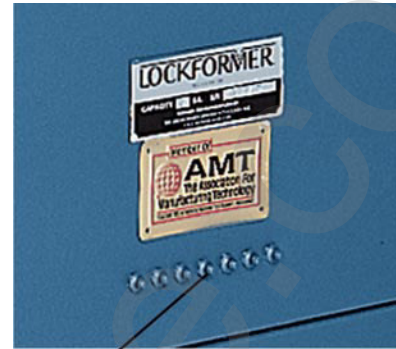
**IMPORTANT:** be sure to cut stock exactly 2-1/8 inches wide to insure an accurately formed cleat.



## Maintenance

### Lubrication

Six grease fittings are located on the side panel of the stand. Lubricate these fittings after every eight hours of operation. The recommended lubricant is Molub-Alloy 777-1 or equivalent. Apply grease to all drive gears after every 40 hours of operation. If the machine is to be used in a damp environment, apply a film of oil or grease to all unpainted metal surfaces to prevent rust.



Grease Fittings

### Cleaning Rolls

Keeping the roller dies clean is an important step toward efficient operation of your machine. Lockformer's GALV OFF aerosol spray cleaner will soften galvanized build up so that it flakes off by itself. Daily use is recommended to prevent harmful deposits from building up. GALV OFF cleans and lubricates as well as protects the forming rolls.



## Lockformer Pittsburgh 20 Gauge Parts List

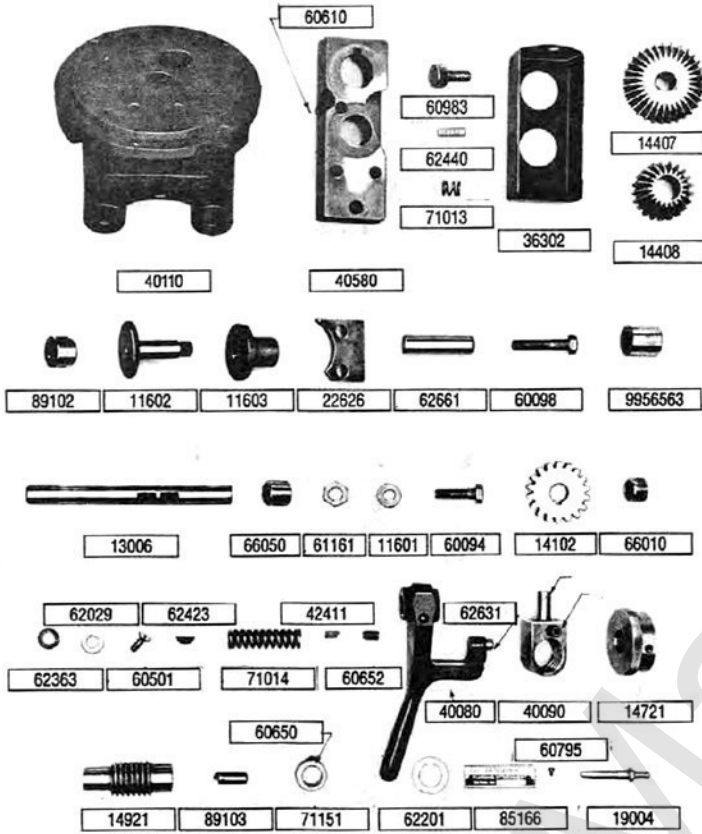
Please use New Number when ordering parts.

New Part No.	Old Part No.	Description	Qty.
20043	2001-A	Lower Plate (Left)	1
20044	2001-B	Lower Plate (Right)	1
20041	2002-A	Upper Plate (Left)	1
20042	2002-B	Upper Plate (Right)	1
11045	2003	Bottom 1 Forming Roll	1
11046	2004	Bottom 2 Forming Roll	1
11997,11998	2005	Bottom 3 Forming Roll	1
11048	2006	Bottom 4 Forming Roll	1
11049	2007	Bottom 5 Forming Roll	1
11041	2008	Top 1 Forming Roll	1
11042	2009	Top 2 Forming Roll	1
11043	2010	Top 3 Forming Roll	1
11044	2011	Top 4 Forming Roll	1
11044	2012	Top 5 Forming Roll	1
11050	2013	Lower Idler Roll	1
11051	2014	Upper Idler Roll	1
13554	2015	Plain Spacer Drilled	2
13654	2016	Step Spacer Tapped	1
13601	2017	Step Spacer	1
62501	2017	Retaining Ring	2
13506	2018	Plain Spacer	4
14210	2019	3 inch Gear with Hub 28 teeth	2
51627	2020	Opening Roll	1
14505	2021	Idler Roll Pins	1
9952500	2022	Opening Roll Holder	2
68080	2023	Bearing 7/8" ID x 3/4" Long	1
66061	2024	Bearing 3/4" ID x 1-3/4" Long	23
13305	2025	Third Drive Shaft	6
13306	2026	Second Drive Shaft	1
13307	2027	First Drive Shaft	1
66050	2028	Bearing 5/8" ID x 3/4" Long	2
70056	2030	V-Belt (B size Browing No. 5L540)	2
29802	2031	Exit Angle Gauge + Ent. Ga	2
70609	2032	Machine Pulley (Double Groove)	1
62401	2035	Woodruff Key No.9	3
60650	2036	Hex Head Set Screw 5/16 x 5/16	2
14623	2037	Locking Collar	2
62081	2039	Steel Washer for Part No. 2144	4
62364	2040	Washer	19
60875	2041	Carriage Bolt 3/8 x 1 for Ent. Gauge	2
37000		Lube Bracket	2
71152	2042	3/4" Collar	2
60450	2043	1/2- 13 x 1" S.H.C. Screw	1
60252	2044	Hold Down Stud 5/8 x 6	2
66600	2045	Connector (Lubrication)	6
66610	2046	Half Union (Lubrication)	6
62552	2047	Hold Down Stud 3/8 x 4-3/4	2
14120	2049	Idler Gear (66080 Bearing)	3
62341	2050	Spring Washer 1-1/2" O.D.	8
62340	2051	Spring Washer 3/4" O.D.	12

58513	2052	Stand Assembly	1
37000	2053	Forming Head Cover	1
60777	2054	Set Screw 3/8 x 3/4"	1
62026	2055	Spacer Washer 3/8"	2
66700	2057	Plastic Tubing 11" Lg.	3
66700	2058	Plastic Tubing 16" Lg.	3
80030	2061	Motor 3/4 H.P.	1
62633	2062	Dowel Pin	2
62029	2063	Steel Washer 3/8"	14
61120	2064	Hex Nut 3/8"	4
60750	2066	Square Head Set Screw 1/4 x 1/2	6
66640	2067	Grease Fitting (Alemite)	2
60877	2068	Carriage Bolt 3/8 x 1-3/4	2
80201		Starter 600TAX5	1
21811	2022-A	Opening Roll Holder	1
62632	2022-B	Dowel Pin	1
71013	2022-C	Spring	1
13653		Spacer Main Idler	1
14121		Main Idler Gear (66090 Bearing)	1
60228	2040-A	Hex Head Screw 1/2- 13 x 1-3/4	19
62421		Straight Key 3/16, 3/16, 7/8	1
66090		Main idler Bearing	1
66610		Half Union	6
29469		Motor Base	2
70301		Sheave 2BC30, BK 28 5/8"	1
80392		Heater P-36	1
60551		Round Head Screw 1/4-20 x 1/2	1
62202		Oilite Thrust Bearing	7

## Lockformer Auto-Guide 20 or 22 Gauge Flanging Attachment Parts List

Please use New Number when ordering parts.

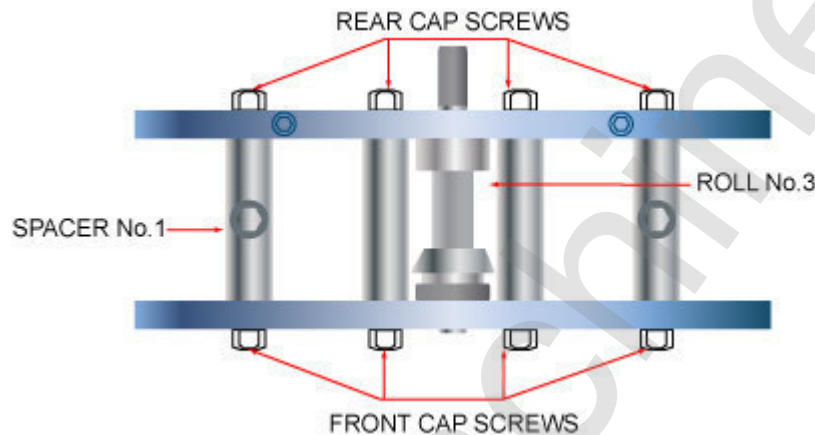


Part No.	Description	Pieces p/Unit
40110	Base Coating	1
40580	Steel Forming Head	1
60983	Thumb Head Screw	1
62440	Special Machine Key	1
71013	Compressions Spring	1
36302	Cover	1
14407	Bevel Gear	1
14408	Gear (Comb. Spur & (Bevel)	1
89102	Lifter Plug	1
11602	Knurled Forming Roll	1
11603	Plain Forming Roll	1
22620	Spacer Plate	1
62661	5/8 x 2-1/4 Dowel Pin	1
60098	3/8-16 x 2 HHCS	2
9956563	Inner Race Assembly (66010 & 66164)	1
13006	Roll Shaft	1
66050	Bearing B1020	2
61161	1/2-20 Hex Lock Nut	1
11601	Adjustable Guide Roll	1
60094	3/8-16 x 1-1/4 HHCS	4
14102	Steel Gear	2
62363	Lock Washer 3/8	4
62029	Washer 3/8 x 1/16	2
60501	1/4-20 x 1/2 FHMS	4
62423	3/16 x 1-1/2 Key	1
60655	5/16-18 x 3/4 SSS	1
62631	3/8 x 3/4 Dowel Pin	1
60610	1/4-20 x 1/4 SSS	3
66010	Bearing B108 Torr.	4
42411	Modified Woodruff Key 6	1
40080	Compensator Arm	1
40090	Tension Screw Nut	1
14721	Gauge Dial	1
14921	Tension Screw	1
19004	Tension Spring Push Rod	1
62641	Dowel Pin 7/16 x 1-1/2	1
71014	Spring	1
89103	Sensory Casting	1
60303	1/4-20 x 3/4 SHCS	1
71151	Collar 5/8	1
85166	Name Plate	1
50258	Stand (Forming Table)	1
62201	5/8 x 1/16 Washer	2
36001	Cover Clamp	2
39501	Cover Guard	1
60309	1/4-20 x 1/2 SH Screw	1
60650	1/4-20 x 3/8 Set Screws	2
66164	Bearing B 107	1

## Flanging Attachment Lockformer 20 or 22 Gauge To Install Auto-Guide Power Flanging Attachment

1. Remove top cover from Lockformer.
2. Loosen front cap screws on spacer No. 1 and 4.
3. Remove spacer No. 2 and 3 by taking out front and back caps screws.
4. Set flanging attachment over the forming head so that the combination bevel and spur gear meshes with the gear on Pittsburgh lock roll No. 3.
5. Fasten flanging attachment with the cap screws which held spacers No. 2 and 3 in place.

**CAUTION:** Be sure to tighten all cap screws!



## To Operate Auto-Guide Power Flanging Attachment

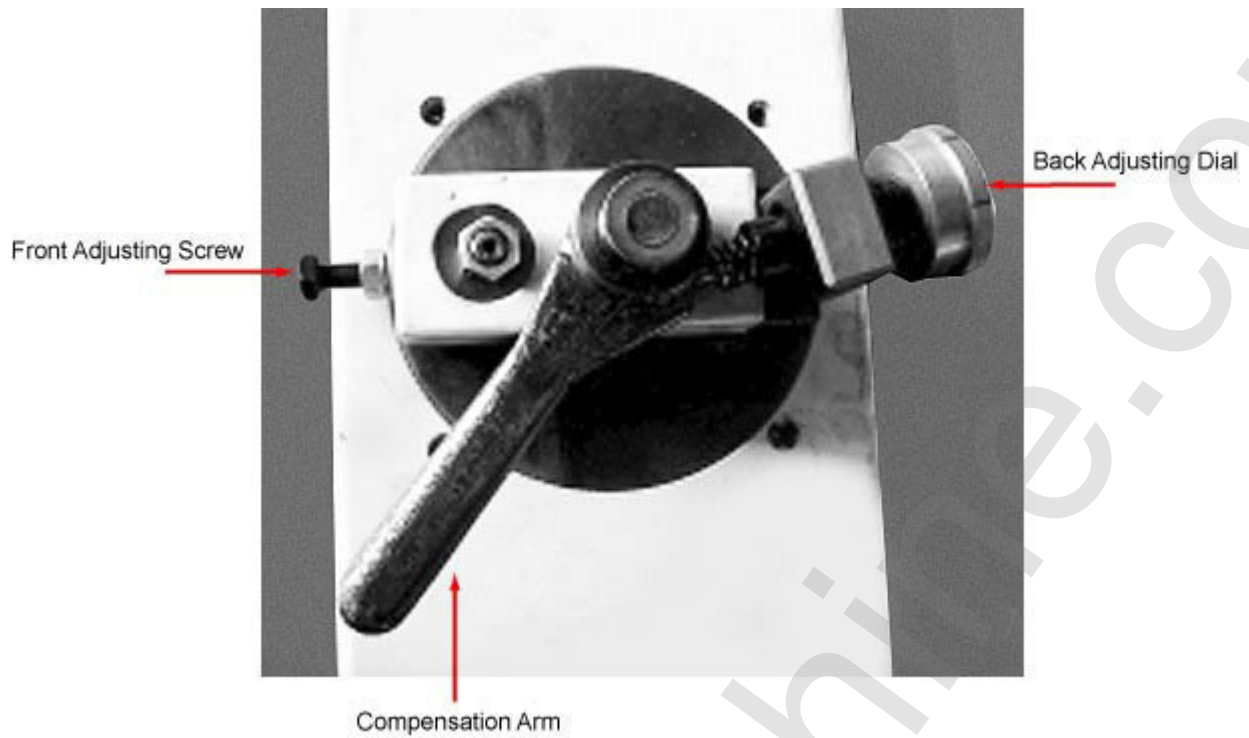
### Adjust unit for gauge material to be used

To adjust clearance between flanging rolls, tighten the adjusting screw on the front of the block of the machine all the way, then loosen the screw approximately one eighth of a turn. (This setting is usually correct for 26 gauge material). Do not set front gauge adjusting screw too tight. It should be set just tight enough to draw the metal through the rolls. Too tight a setting will stretch and wrinkle the material.

To adjust the spring tension on the compensator arm, tighten the adjusting dial on the back side of the flanger to the stop and then turn back to the proper gauge setting shown on the adjusting dial.

### Turn up a “Starting Flange”

on the material before inserting it into the rolls. This is done by inserting the leading edge of the work to be flanged in the slot cut into the table and bending the piece away from the operator approximately 45°. Start the leading edge of the material into the rolls. As the material passes through the rolls, the compensator arm will make contact with the material and guide it through the rolls. If the material pulls out of the rolls, it is an indication that either the front adjusting screw is too loose or the back adjusting dial is not tight enough.

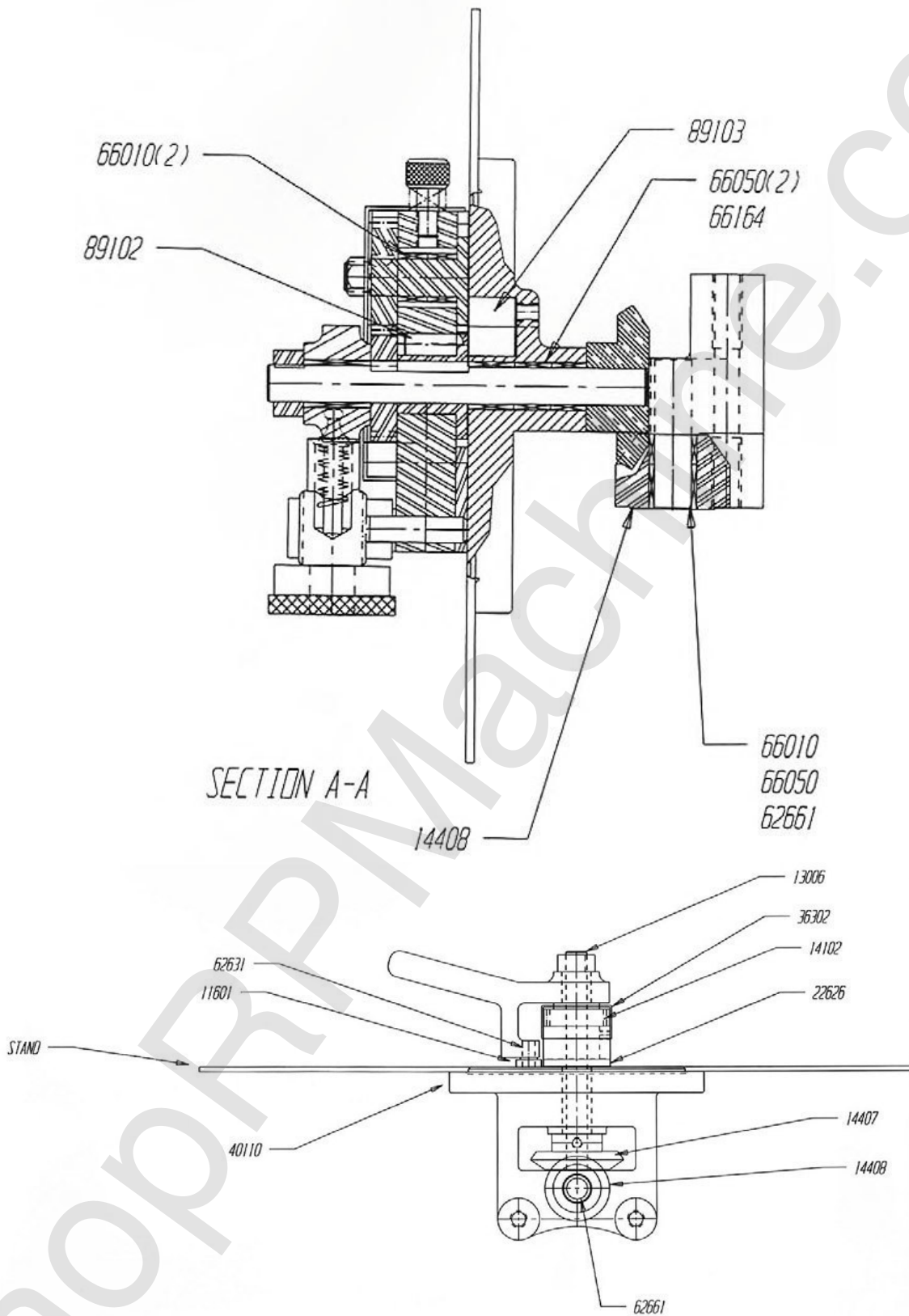


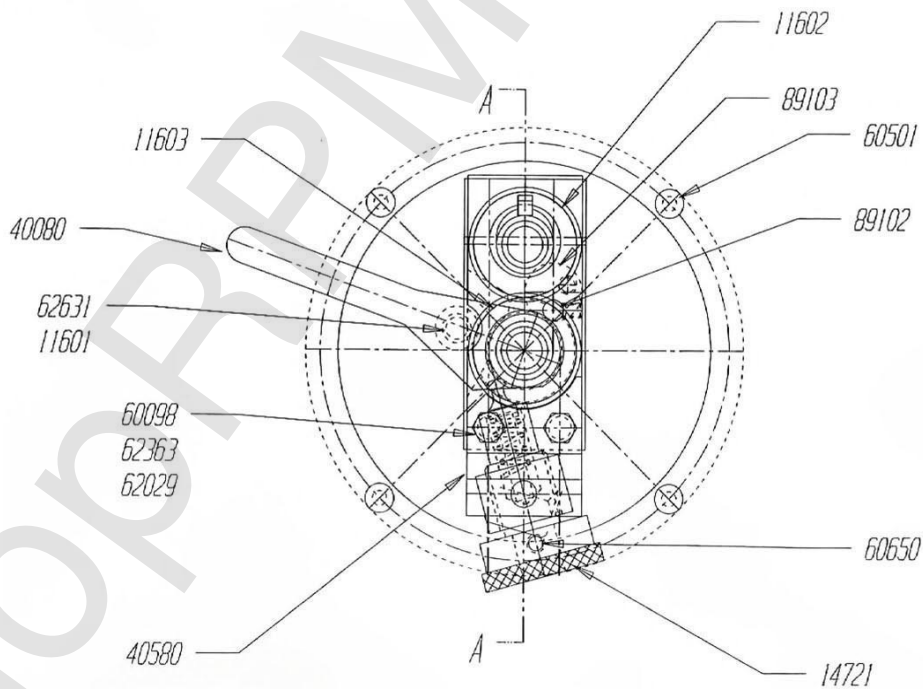
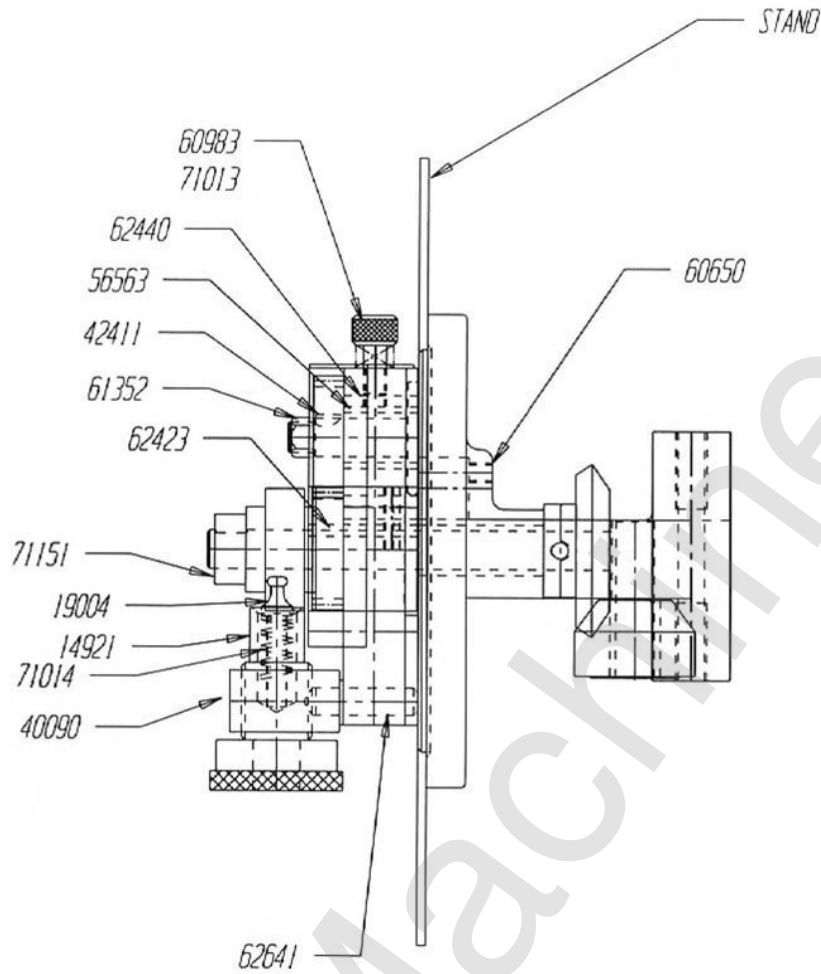
**Important**

When starting a partially formed section that contains an inside curve, push the compensator arm back until it locks out of position. Feed partially formed section into the rolls and the machine will pull the material through. As the rolls approach the section that is not formed, bring the compensator arm to the material holding the spring tension off the piece until the unformed section comes to the rolls; then bear pressure to the piece until the flange picks up, then release compensator arm so that "automatic" guiding is resumed.



# Forming Head





# LOCKFORMER

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