

WHITNEY

FAX # 815 962 2227

RW

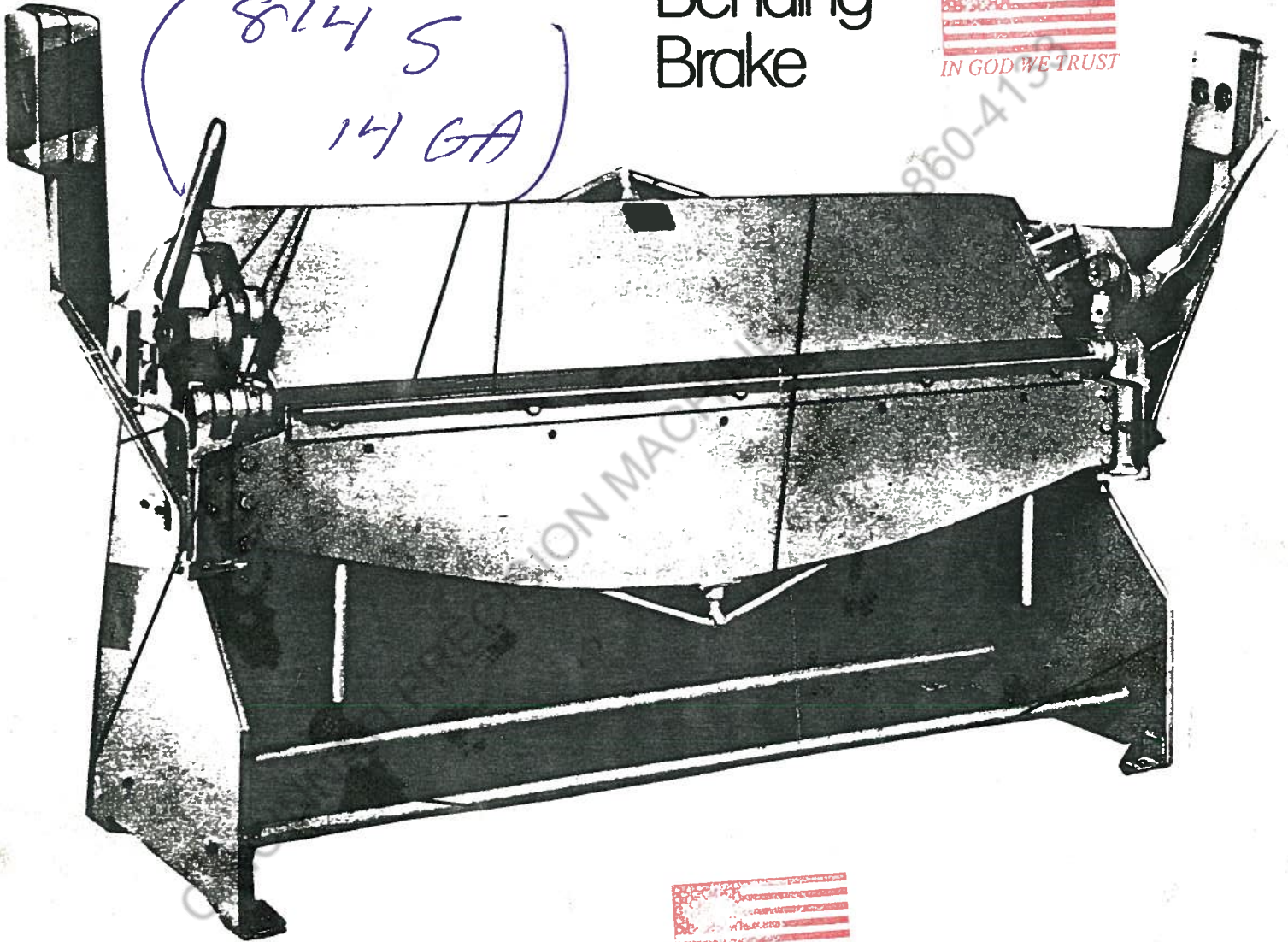
Type S

OPERATIONS MANUAL

MODEL

(8145
14 GA)

Straight Bending Brake



ROPER WHITNEY, INC.

2833 Huffman Blvd., Rockford, Illinois 61101

Area Code 815/962-3011

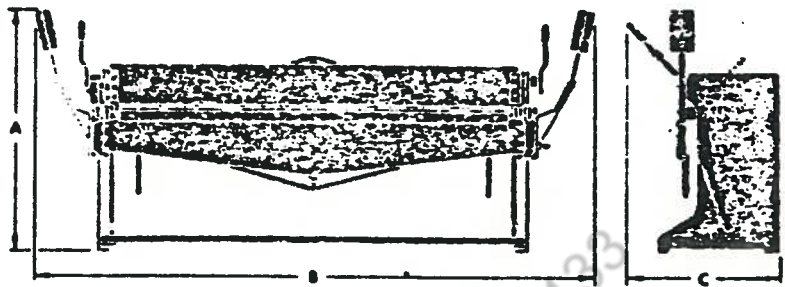
**NO. 5412, NO. 5614,
NO. 5814, NO. 51014**

Heavy duty bending brakes will bend up to 12 gauge mild steel. When used within their rated capacity, they will form a minimum 1" flange over their entire length.

Straight Bending Brakes (Type S)

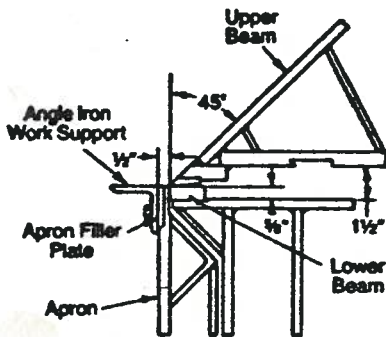
- Up to 12 Gauge Maximum Capacity
- Up to 120" Maximum Work Length
- Straight Bending Only

Type S Straight Bending Brakes are a cost-effective, helpful addition to any sheet metal fabricating operation that requires straight bending of 12 gauge material or less. Four models are available: Model S412, 4-foot, 12 gauge maximum capacity; Model S614, 6-foot, 14 gauge maximum capacity; Model S814, 8-foot, 14 gauge maximum capacity; Model S1014, 10-foot, 14 gauge maximum capacity. Minimum ¼" reverse bends are possible with each of these brakes by removing the apron angle iron work support and apron filler plate.



Dimensions

Reference	No. S412		No. S614		No. S814		No. S1014	
	IN.	CM	IN.	CM	IN.	CM	IN.	CM
A	54	137	54	137	54	137	54	137
B	85	216	109	277	135	343	157	399
C	32	81	32	81	32	81	32	81



Specifications

Characteristic	No. S412		No. S614		No. S814		No. S1014	
	IN.	CM	IN.	CM	IN.	CM	IN.	CM
Capacity, Mild Steel	12 ga.	—	14 ga.	—	14 ga.	—	14 ga.	—
Max. Bending Length	48	122	72	183	96	244	120	305
Max. Jaw Opening	2	5.1	2	5.1	2	5.1	2	5.1
Min. Reverse Bend	¼	.63	¼	.63	¼	.63	¼	.63
Min. Flange Depth	1	2.5	1	2.5	1	2.5	1	2.5
Max. Bend Angle	45°	—	45°	—	45°	—	45°	—

Ordering Guide

Description	Catalog No.	Weight (Lbs.)
No. S412 Brake	157000412	1640
No. S614 Brake	157000614	2080
No. S814 Brake	157000814	2680
No. S1014 Brake	157001014	3600

- (A) Heavy-duty truss rods
- (B) Solid ¾"-thick end plates
- (C) High quality roller bearings
- (D) Clamping pressure adjustments
- (E) Removable upper & lower jaws
- (F) Adjustable apron angle gauge for repeat bending
- (G) Spring-loaded counter-balance mechanism
- (H) Precise counterweight design



BENDING BRAKES, HEAVY DUTY

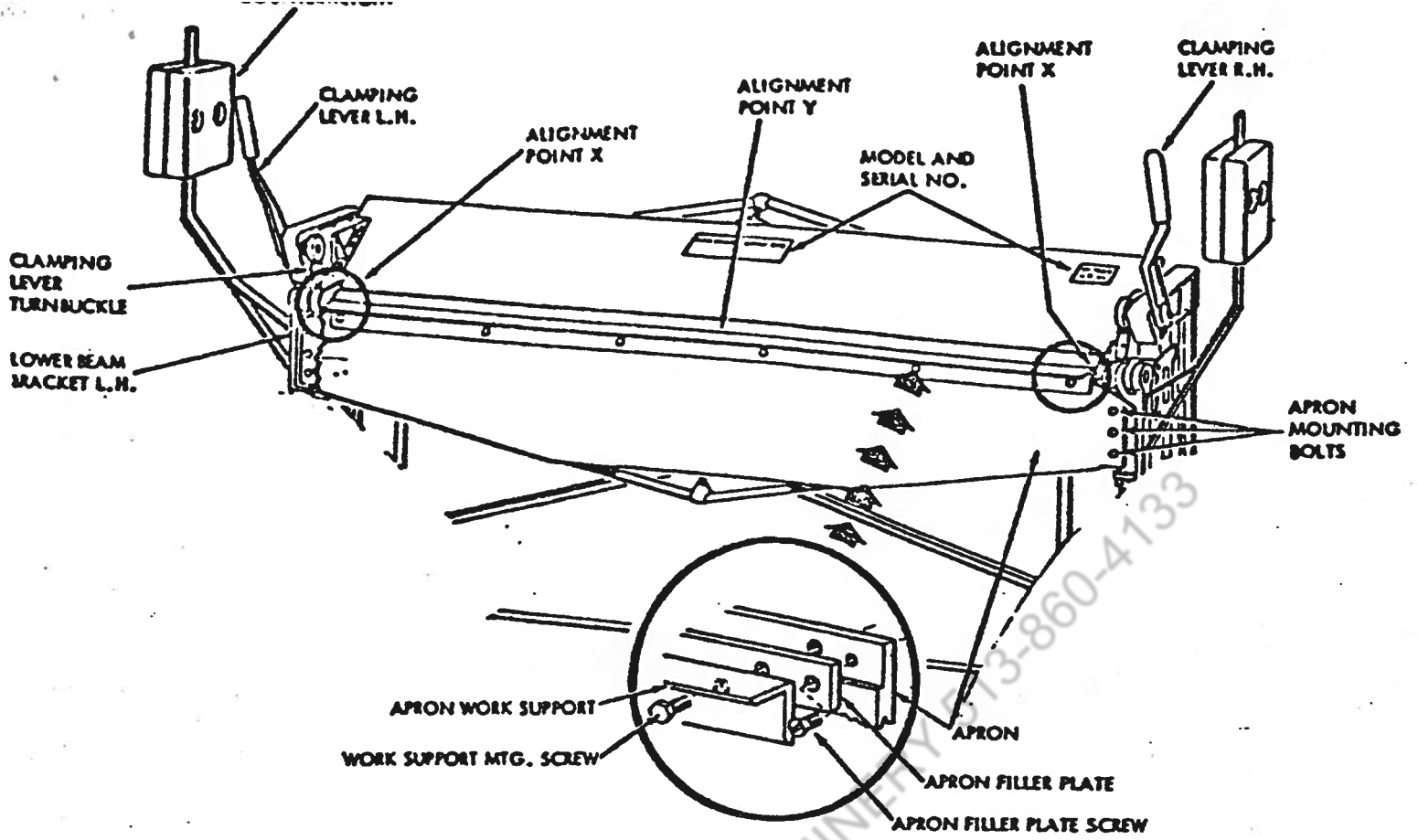


Figure 2. Front View of Brake

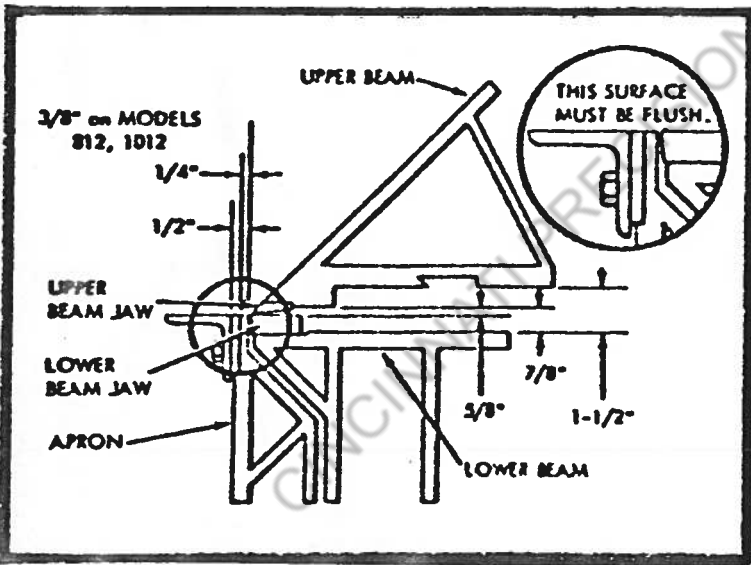


Figure 3. Reference Dimensions

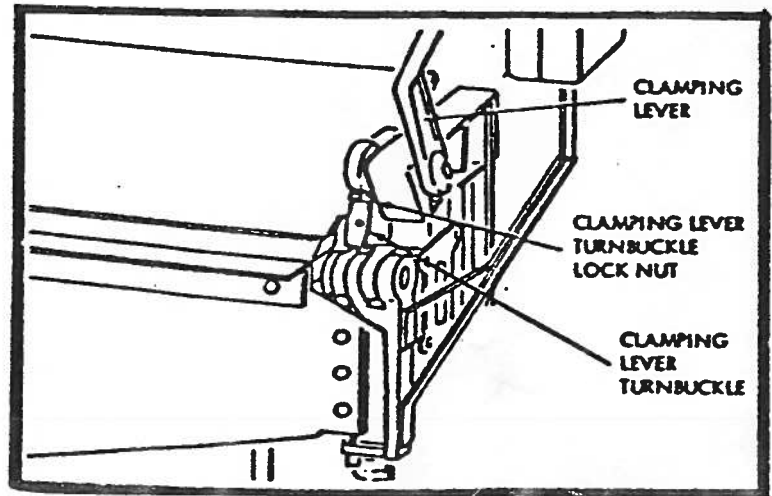


Figure 4. Regulating Clamping Pressure

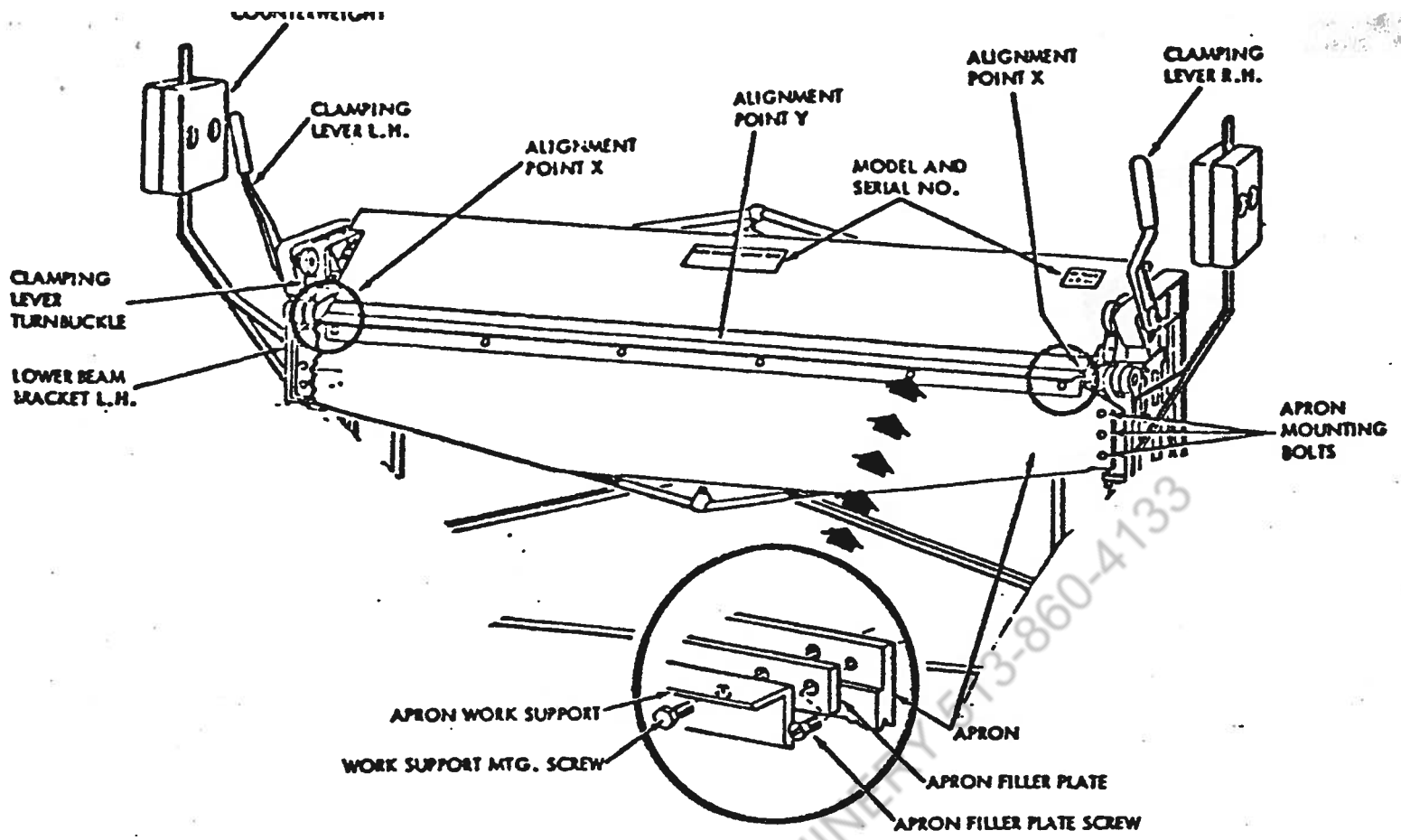


Figure 2. Front View of Brakes

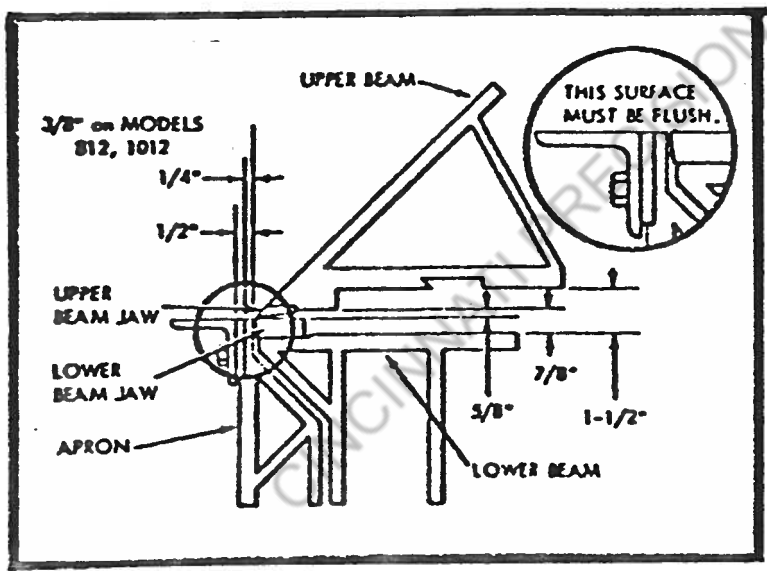


Figure 3. Reference Dimensions

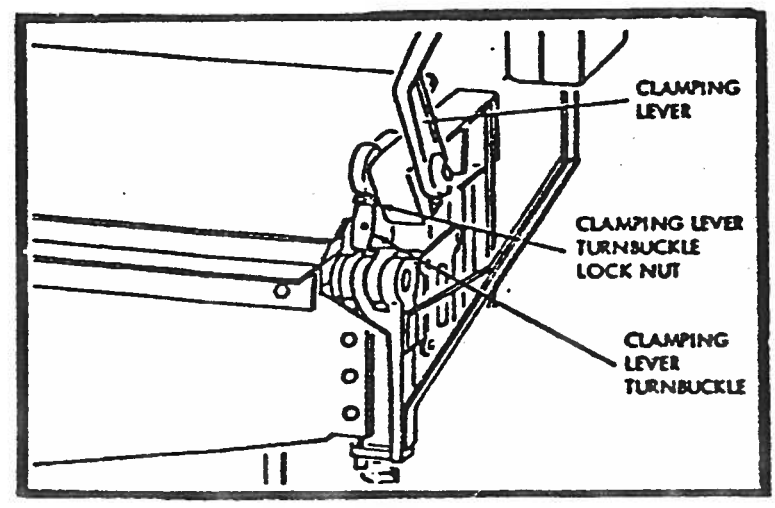


Figure 4. Regulating Clamping Pressure

STRAIGHT BENDING BRAKE

CARE: Occasional oiling of moving parts with machine oil will ease operation and extend the life of the brake. These points include the Apron Bearing and the Upper Beam clamping bearings and Adjusting Screws.

CAUTION: Do not form wire, nails, rods or pipe in these brakes. These brakes will form a 1" flange over the entire length in their rated capacity.

Brakes are reduced in capacity by 2 gauges when:

Apron angle iron work support (see figure 2) is removed.

Brakes are reduced in capacity by 4 gauges when:

1. Apron angle iron work support and apron filler plate are removed.
2. Brake is used on stainless steel.

ADJUSTMENTS-BEFORE OPERATION (SEE FIG. 2)

1. Apron must be flush with lower beam jaw before beginning operation.

To adjust loosen apron mounting bolts slightly and turn apron adjusting screws as necessary. After adjustment, retighten apron mounting bolts. If alignment cannot be achieved, follow major brake alignment procedure following.

CLAMPING PRESSURE ADJUSTMENT (SEE FIG. 3)

2. Check gauge of material to be formed to be sure it is within rated capacity of your brake. Place small sample of work piece on Lower Beam Jaw and clamp in position by moving the Clamping Lever forward. Sample should now be held firmly in position. To adjust for more or less clamping pressure, move Clamping Lever to unlocked (up) position, and adjust the Clamping Lever Turnbuckles as necessary to achieve firm clamping pressure.

THICKNESS OF MATERIAL ADJUSTMENT: (SEE FIG. 4)

3. With the Upper Beam lowered to the normal operating position (but not clamped tight against the Lower Beam) set the Upper Beam Jaw back from the Lower Beam Jaw the thickness of the material to be bent by turning the (2) Hand Knobs (#9) as

MAJOR BRAKE ALIGNMENT:

Follow the procedure listed below if brake is badly out of alignment. (If your brake does not have all the Truss Nuts referred to in these instructions, disregard those steps.)

(1.) Loosen all Truss Nuts (A,B,C,D,E, figure 7) and Truss Rod Turnbuckle until all tension is released.

(2.) Tighten the Truss Rod Turnbuckle until the rods are snug at tension point (R) Tighten an additional 1/4 turn.

(3.) Tighten Truss Nut (B) until snug. Tighten an additional three complete turn

(4.) Check Apron at the alignment points (X, figure 2) to see if it is flush with top of Lower Beam Jaw (see inset, figure 2). Up and down movement of the Apron is controlled by turning the Apron Adjusting Screw (figure 2) at each end of the Apron.

(5.) Tighten Truss Nut (C, figure 7) until Apron is flush with Lower Beam Jaw alignment point (Y, figure 2).

(6.) Tighten Truss nut (E, figure 7) as tight as possible.

(7.) Tighten Truss Nut (A) until the Upper Beam Jaw is straight and parallel in relation to the Lower Beam Jaw.

(8.) Tighten Truss Nut (D) until the center of the Upper Beam Jaw bows forward slightly.

STRAIGHT BENDING:

Set Upper Beam Jaw back to thickness of metal to be bent. Bends up to 135° may be achieved by raising the Apron until the desired angle of bend is obtained.

FLATTENED SEAM BENDING: (SEE FIG. 8)

Bend metal to full 135° angle as explained above (figure 8). Remove metal from between the jaws and reposition it against the Upper Beam as shown in (figure 9). Lift Apron to flatten seam.

JOINTING: (SEE FIG. 9)

Bend metal piece to full 135° angle. Remove metal from between the jaws and reposition it against the Upper Beam in same manner as explained above. Lift Apron

required. Sometimes, it may be necessary to tighten the Collar Stop Nuts (#16) to prevent creeping of the Upper Beam.

ADJUSTMENTS-FINE ALIGNMENT: (SEE FIG. 5)

(1.) A sample work piece, the entire length of the brake, should be clamped in place. Make a test bend by lifting the Apron a full 90°. Release metal from brake jaws and check for straightness.

(2.) **ADJUSTMENTS FOR BOWING:** (Refer to figure 7 for location of Truss Nuts).

PROBLEM: Bows up.

SOLUTION: Release tension on Truss Nut (B).



PROBLEM: Bows down.

SOLUTION: Tighten Truss Nut (B). Level the Apron with the Lower Beam Jaw (see figure 3).



PROBLEM: Bows toward operator.

SOLUTION: Release some tension on Truss Nut (D) (depending on your brake).



PROBLEM: Bows away from operator.

SOLUTION: Tighten Truss nut (D) (depending on your brake).



(3.) **ADJUSTMENT FOR UNEVEN ANGLE OF BEND:** If 90° sample bend is true at both ends but less than 90° at center of piece, loosen Apron Mounting Bolts (figure 2) and lower the Apron approximately 1/32" by unscrewing the Apron Adjusting Screws. Retighten the Apron Mounting Bolts and tighten Truss Nut (C, figure 7) until both jaws of brake are flush at brake center (see figure 3).

INCREASING JAW OPENING:

4. The jaw opening has been set at the factory for approximately 2". If Item #21 Counterbalance Springs take a slight set, this opening can be re-adjusted by turning Item #87 Adjusting Screws as required.

to complete bend. Do not flatten seam; but, allow for thickness of metal piece to be jointed.

MINIMUM REVERSE BENDING: (SEE FIG. 10)

Remove Apron Angle Iron Work Support and Apron Filler Plate (inset, figure 2). this permits 1/4" reverse bends to be made on all brakes.

NOTE: When the Apron Angle Iron Work Support and Apron Filler Plate is removed, the brake capacity is reduced by 4 gauges.

To accomplish a minimum reverse bend, a metal lip is first bent to a 90 angle. Metal piece is removed and repositioned between the jaws as shown in Step 1 (figure 11) Raise Apron 90 to complete bend, Step 2 (figure 10).

REPEAT BENDS: (SEE FIG.11)

Repeat bends can be made easily by using the apron gauge illustrated below. Make the first bend to the desired degree and clamp apron gauge bar stop collar using set screw in position. Apron will contact stop and insure accurate repeatability of bend.

TINNER'S MOULDING FORMS: (SEE FIG. 12)

One set of five standard sizes of Tinner's Mould; 5/8, 1", 1-5/8", and 3" is available for all sizes of Straight bending Brakes. Remove the Apron Angle Iron Work Support and position the forming mold on the lip of the Apron (See figure 13). Use a hammer to tap the moulding form clamps through the holes in the Apron to the brake. Metal piece part is wiped over the moulding form manually to obtain desired radius.



PT, 2406

PARTS LIST

<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1		END FRAME R.H.
2	1		END FRAME L.H.
3	1		UPPER BEAM SUPPORT R.H.
4	1		UPPER BEAM SUPPORT L.H.
5	1		UPPER BEAM ADJ. BRKT. R.H.
6	1		UPPER BEAM ADJ. BRKT. L.H.
7	2		ADJUSTING SCREW
8	2		HOLD DOWN STRAP
9	2		HAND KNOB
10	2		PIVOT PIN
11	1		APRON STOP BRKT.
12	2		TIE ROD TUBE ASSEMBLY
13	2		TURNBUCKLE
14	2		UPPER EYEBOLT
15	2		LOWER EYEBOLT
16	2		COLLAR STOP NUT
17	9		JAW MT. SCREWS-5/16-18 X 5/8
18	2		SPRING HOLDER
19	2		SPRING GUIDE
20	1		UPPER BEAM ASSEMBLY
21	2		SPRING
22	1		UPPER BEAM JAW
23	1		LOWER BEAM ASSEMBLY
24	1		APRON ASSEMBLY
25	1		APRON JAW

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PARTS LIST

<u>ITEM</u>	<u>QT'Y</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
26	9		APRON JAW SCREWS-5/16-18 X 3/8
27	6		1/4 DIA X 7/16 DOWEL PINS
28	1		WORK SUPPORT
29	4		WORK SUPPORT SCREWS- 5/8-11 X 3/4
30	1		APRON HINGE R.H.
31	1		APRON HINGE L.H.
32	4		HINGE BRG (TORRINGTON BH-2216)
33	2		APRON HINGE PIN
34	4		RETAINING RINGS
35	4		APRON ADJ. SCREWS- 1/2-13 X 1-3/4 SQ. HD.
36	2		SPECIAL HEX HD. CAP SCREW
37	6		5/8 STD. LOCK WASHER
38	8		LOCATING PINS (DOWELS)
39	4		5/8-11 X 2-1/2 HEX HD.
40	6		5/8-11 FULL NUT
41	1		APRON STOP SWIVEL PIN
42	2		COTTER PIN-3/32 DIA. 1-1/4
43	1		APRON GAGE BAR ASSEMBLY
44	1		APRON GAGE BAR STOP COLLAR
45	1		3/8-16 X 3/4 SQ. HD. SET SCREW
46	50		ROLLER BRGS (TORRINGTON #C-4350)
47	2		BRAKE CRANK
48	2		2-3/4 DIA. WASHER
49	4		HEX HD. CAP SCREW-3/8-16 X 3/4

PARTS LIST

<u>ITEM</u>	<u>QT'Y</u>	<u>DESCRIPTION</u>
50	4	3/8 STD. LOCK WASHER
51	4	BEARING (TORRINGTON #BH-2824)
52	2	CLAMP LEVER WASHER
53	1	CLAMP LEVER (R.H.)
54	1	CLAMP LEVER (L.H.)
55	2	WOODRUFF KEY #E
56	1	LOWER BEAM JAW
57	9	5/16-18 X 7/8 HEX HD. CAP SCREW
58	9	5/16 STD. LOCK WASHER
59	4	LOWER BEAM DOWEL PIN-1/4 DIA. X 1/8
60	as req.	APRON HINGE SHIM
61	6	APRON HINGE SCREWS- 5/8-11 X 2" HEX HD.
62		
63	2	APRON BUMPER SCREW- 3/8-16 X 2" HEX HD.
64	2	APRON BUMPER SPRING
65	4	3/8-16 JAM NUT
66	1	COUNTER WEIGHT ARM (L.H.)
67	2	COUNTER WEIGHT
68	4	COUNTER WEIGHT BOLT- 1/2-13 X 4-1/2 CARR. BOLT
69	4	1/2 STD FLAT WASHER
70	8	1/2 STD. LOCK WASHER
71	4	1/2-13 SQ. NUT
72	4	COUNTER WEIGHT ARM MFG. SCREW- 1/2 -13 X 1-1/4

PARTS LIST

<u>ITEM</u>	<u>QT'Y</u>	<u>DESCRIPTION</u>
73	2	COUNTER WEIGHT
74	1	COUNTER WEIGHT ARM
75	1	APRON STOP SWIVEL PIN
76	1	SWIVEL PIN SET SCREW-3/8-16 X 5/8
77	6	UPPER BEAM SUPPORT MTG. SCREW 5/8-11 X 2-1/4 HEX HD.
78	2	1/2-13 X 1-1/2 SOC. SET SCREW
79	8	UPPER BEAM ADJ. BRKT. SCREW- 1/2-13 X 1-1/2 HEX HD.
80	4	1/2-13 X 1-3/4 HEX HD.
81	6	1/2-13 X 1-3/4 SOC. SET SCREW
82	2	1/4 DIA. X 1-1/4 ROLL PIN
83	4	TIE ROD TUBE SCREW- 1/2-13 X 1-1/1 HEX HD.
84	4	SPRING GUIDE SCREW- 3/8-16 X 1-1/2 HEX HD.
85	2	APRON STOP BRKT. SCREW- 3/8-16 X 1-1/2 HEX HD.
86	4	3/8-16 X 2" HEX HD.
87	2	5/8-11 X 3-1/2 SQ. HD. SET SCR.
88	2	1/4-20 X 5/8 SOC. HD. CAP SCREW



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