



Operating Instructions and Parts Manual Box and Pan Brake

Model BB-2416E



Baileigh Industrial
P.O. Box 531
Manitowoc, WI 54221-0531
Ph.: 920-684-4990
Fax: 920-684-3944
Baileigh-Sales@jpwindustries.com

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2.0 Safety Instructions

⚠ WARNING

Failure to follow these rules may result in serious personal injury

1. FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE. Learn the machine's application and limitations as well as the specific hazards.
2. Only trained and qualified personnel can operate this machine.
3. Make sure guards are in place and in proper working order before operating machinery.
4. Remove any adjusting tools. Before operating the machine, make sure any adjusting tools have been removed.
5. Keep work area clean. Cluttered areas invite injuries.
6. Overloading machine. By overloading the machine you may cause injury from flying parts. DO NOT exceed the specified machine capacities.
7. Machine usage. DO NOT use the brake as a press or crushing tool.
8. Dressing material edges. Always chamfer and deburr all sharp edges.
9. Do not force tool. Your machine will do a better and safer job if used as intended. DO NOT use inappropriate attachments in an attempt to exceed the machines rated capacity.
10. Use the right tool for the job. DO NOT attempt to force a small tool or attachment to do the work of a large industrial tool. DO NOT use a tool for a purpose for which it was not intended.
11. Dress appropriate. DO NOT wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
12. Use eye protection. Always wear ISO approved protective eye wear when operating machinery. Wear a full-face shield if you are producing metal filings. Eye wear shall be impact resistant, protective safety glasses with side shields which comply with ANSI Z87.1 specification. Use of eye wear which does not comply with ANSI Z87.1 specification could result in severe injury from breakage of eye protection.
13. Do not overreach. Maintain proper footing and balance at all times. DO NOT reach over or across a running machine.
14. Stay alert. Watch what you are doing and use common sense. DO NOT operate any tool or machine when you are tired.
15. Check for damaged parts. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
16. Observe work area conditions. DO NOT use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted.
17. Keep children away. Children must never be allowed in the work area. DO NOT let them handle machines, tools, or extension cords.
18. Store idle equipment. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
19. DO NOT operate machine if under the influence of alcohol or drugs. Read warning labels on prescriptions. If there is any doubt, DO NOT operate the machine.
20. Keep visitors a safe distance from the work area.

Familiarize yourself with the following safety notices used in this manual:

⚠ CAUTION

This means that if precautions are not heeded, it may result in minor injury and/or machine damage.

⚠ WARNING

This means that if precautions are not heeded, it may result in serious injury or death.

⚠ DANGER

This means that if precautions are not heeded, it will result in serious or fatal, injury.

Save the Instructions

3.0 About This Manual

This manual is provided by Baileigh Industrial, covering the safe operation and maintenance procedures for a Baileigh Model BB-2416E Box and Pan Brake. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

Technical Support handles questions on setup, operation, schematics, warranty issues, and individual parts needed. Our Technical Support department can be reached at 920-684-4990.

If there are questions or comments, please contact your local supplier or Baileigh Industrial. We can also be reached at our web site: www.baileigh.com.

Retain this manual for future reference. If the machine transfers ownership, the manual should accompany it.

WARNING

Read and understand the entire contents of this manual before attempting assembly or operation! Failure to comply may cause serious injury!

Register your product online -

<https://baileigh.com/product-registration>



4.0 Product Identification

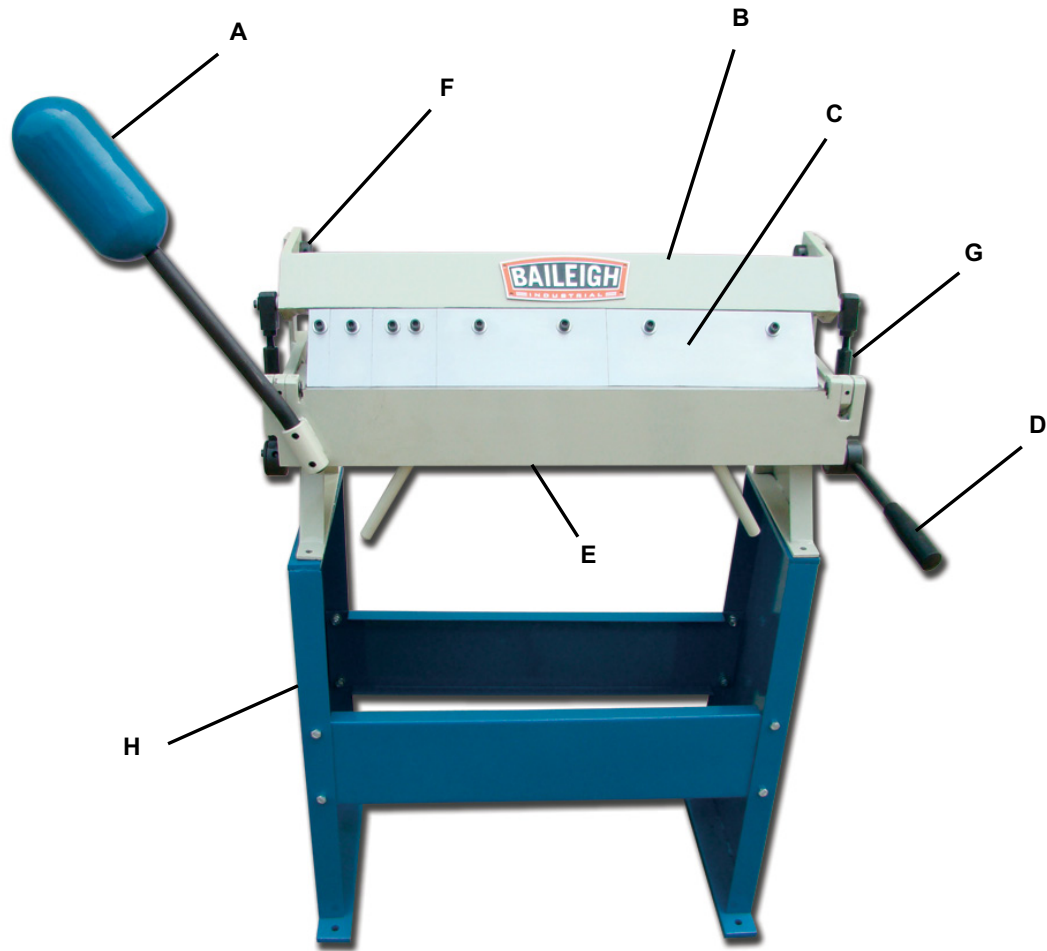


Figure 4-1

Table 4-1

Item	Description	Function
A	Counterweight	Used to assist in raising the bending leaf.
B	Clamping Leaf	Holds the fingers and secures the material in position.
C	Finger Blocks	Movable dies that the material is bent against.
D	Clamping Handle	Used to raise, lower, and lock the clamp assembly.
E	Bending Leaf w/Handles	Raised by the operator to make the bend.
F	Finger Offset Adjustment	Rotate eccentric shaft to change finger setback adjustment.
G	Clamp Pressure Turnbuckle	Used to change clamping pressure for thickness variance.
H	Mounting Stand	Heavy duty stand to support the brake.

4.1 Overall Dimensions

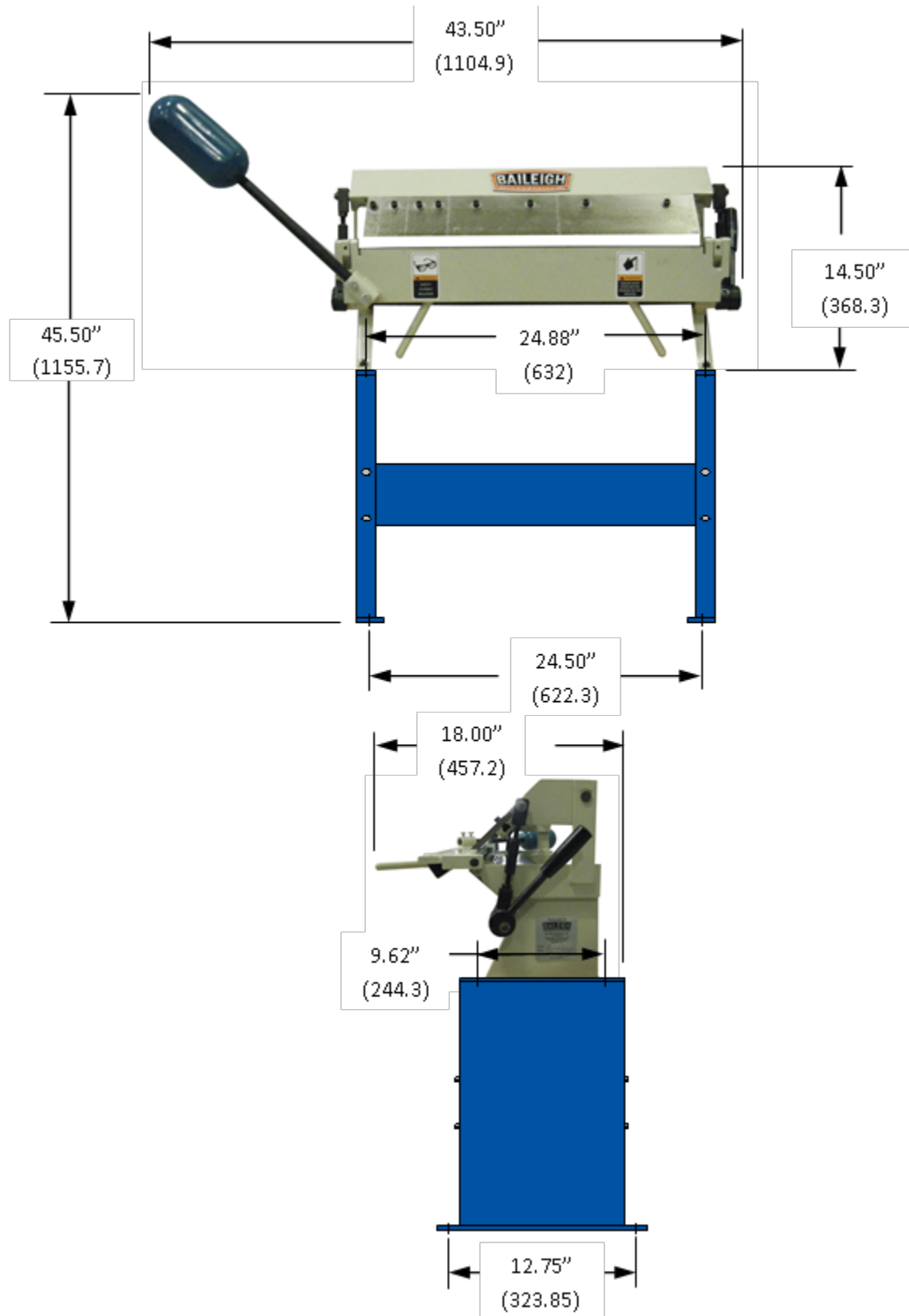


Figure 4-2

5.0 Specifications

Table 5-1

Model Number	BB-2416E
Stock Number	BA9-1000383
General Specifications	
Bend Length	24" (610mm)
Bend Material Thickness	16ga. (1.52mm) mild steel*
Bend Angle	0 – 135 degrees
Box Depth	1.18" (30mm)
Minimum Reverse Bend	.625" (16mm)
Floor Stand	Yes
Weights and Dimensions	
Shipping Dimensions (L x W x H)	34" x 14" x 18" (864 x 356 x 457mm)
Shipping Weight	185 lbs. (85 kg)
Based on a material tensile strength of *64000 PSI – mild steel	

5.1 Description

The Baileigh Model BB-2416E Box and Pan Brake is hand operated and capable of bending up to 16ga. (1.52mm) mild steel and 20ga. (.912mm) stainless x 24" (610mm) long. The machine has 5 removable fingers and a 1.18" (30mm) box depth allowing it to fabricate pans, boxes, channels, angles, and other shapes. Adjustable counterweights allow the operator to balance the bending leaf to correspond to material thickness.

⚠ WARNING

Read and understand the entire contents of this manual before attempting assembly or operation. Failure to comply may cause serious injury.

6.0 Setup and Assembly

6.1 Unpacking and Checking Contents

Your Baileigh machine is shipped complete. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.

⚠ WARNING

SUFFOCATION HAZARD! Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.

⚠ WARNING

If any parts are missing, **DO NOT** place the machine into service until the missing parts are obtained and installed correctly.

6.2 Cleaning

⚠ WARNING

DO NOT USE gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.

⚠ CAUTION

When using cleaning solvents work in a well-ventilated area. Many cleaning solvents are toxic if inhaled.

Your machine may be shipped with a rustproof waxy coating and/or grease on the exposed unpainted metal surfaces. Fully and completely remove this protective coating using a degreaser or solvent cleaner. Moving items will need to be moved along their travel path to allow for cleaning the entire surface. For a more thorough cleaning, some parts will occasionally have to be removed. **DO NOT USE** acetone or brake cleaner as they may damage painted surfaces.

Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.

IMPORTANT: This waxy coating is NOT a lubricant and will cause the machine to stick and lose performance as the coating continues to dry.

6.3 Transporting and Lifting

NOTICE

Lifting and carrying operations should be carried out by skilled workers, such as a truck operator, crane operator, etc. If a crane is used to lift the machine, attach the lifting chain carefully, making sure the machine is well balanced.

Follow these guidelines when lifting with truck or trolley:

- The lift truck must be able to lift at least 1.5 – 2 times the machines gross weight.



Figure 6-1

- Make sure the machine is balanced. While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.
- Use a fork lift with sufficient lifting capacity and forks that are long enough to reach the complete width of the machine.
- Remove the securing bolts that attach the machine to the pallet.
- Approaching the machine from the side, lift the machine on the frame taking care that there are no cables or pipes in the area of the forks.
- Move the machine to the required position and lower gently to the floor.
- Level the machine so that all the supporting feet are taking the weight of the machine and no rocking is taking place.

6.4 Installation

IMPORTANT:

Consider the following when looking for a suitable location to place the machine:

- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.

- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- **LEVELING:** The machine should be sited on a level, concrete floor. Provisions for securing it should be in position prior to placing the machine. The accuracy of any machine depends on the precise placement of it to the mounting surface.
- **FLOOR:** This machine distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.
- **WORKING CLEARANCES:** Take into consideration the size of the material to be

6.5 Assembly

6.5.1 Contents

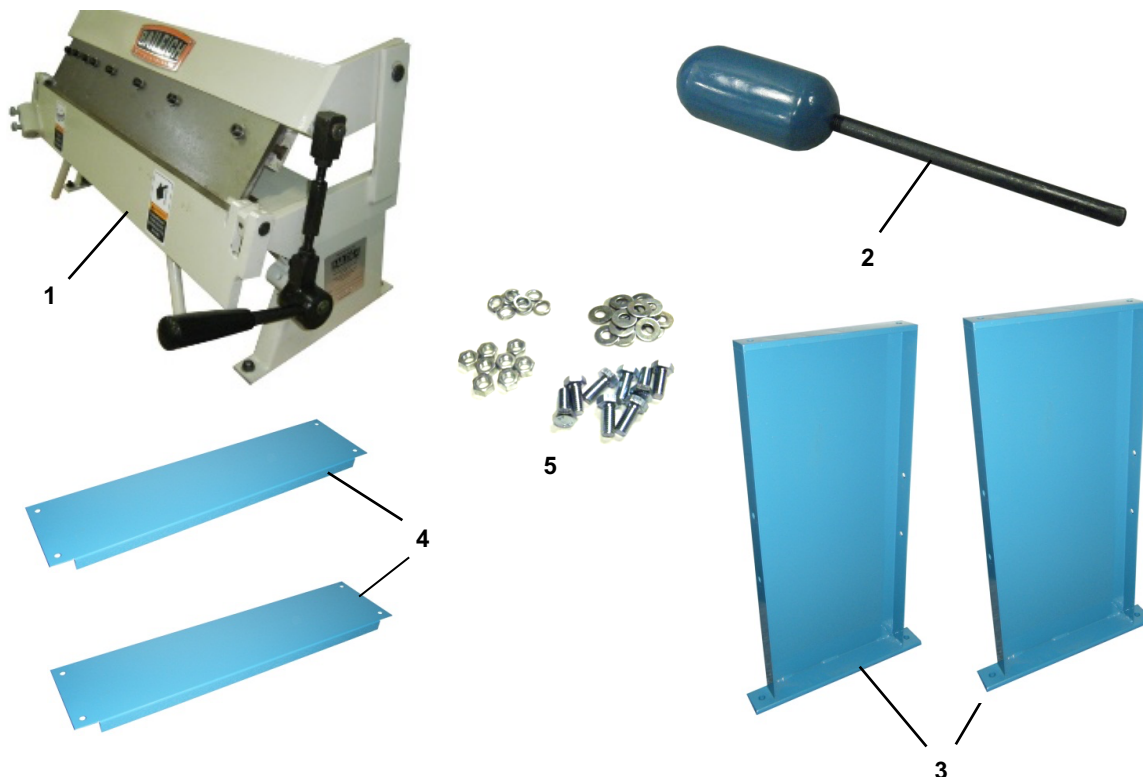


Figure 6-3

processed. Make sure that you allow enough space for you to operate the machine freely.

6.4.1 Anchoring the Machine

- Once positioned, anchor the machine to the floor, as shown in the diagram. Use bolts and expansion plugs or sunken tie rods that connect through and are sized for the holes in the base of the stand.
- This machine requires a solid floor such as concrete at a minimum of 4" (102mm) thick. 6" (153mm) minimum is preferred.

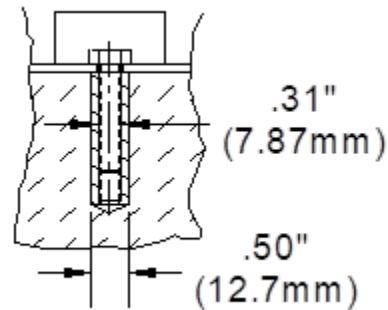


Figure 6-2

Table 6-1

Item	Description	Qty.
1	Brake Main Body	1
2	Counterweight	1
3	Support Stand Ends	2
4	Support Stand Braces	2
5	Hardware Bag Hex Bolt M8 x 18mm 8 Hex Nut M8 8 Flatwasher M8 16 Lockwasher M8 8	1

1. Assemble stand as shown using supplied bag of hardware.
2. Lightly tighten the bolts.

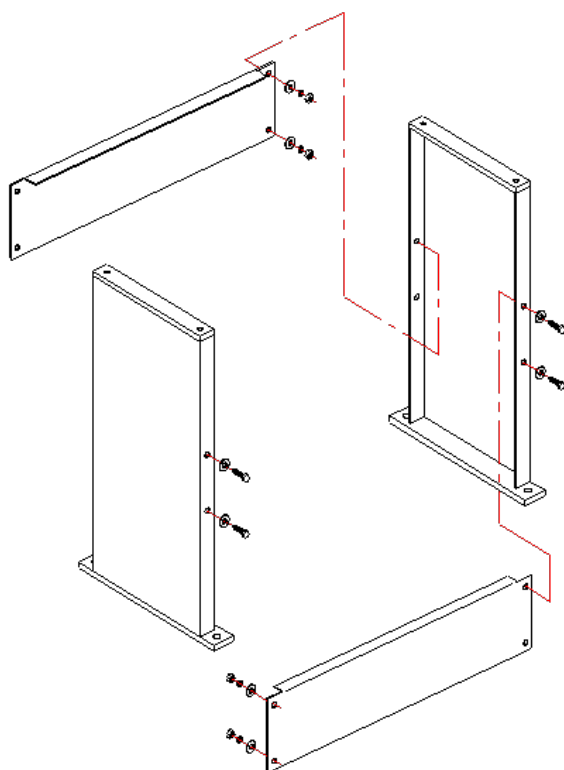


Figure 6-4

3. Install the brake onto the stand using the hardware used to secure the brake to the shipping pallet.
4. Take time to square the brake to the stand.
5. Fully tighten all the bolts for the stand and the brake to the stand.
6. Place the brake and stand in the desired location following the installation guidelines.

6.5.2 Attaching the counterweight

1. Have a helper hold the counterweight.
2. Back off the two hex bolts and slide the counterweight rod into the receiver pipe.

3. When the rod is flush with the bottom of the receiver, tighten the hex bolts.

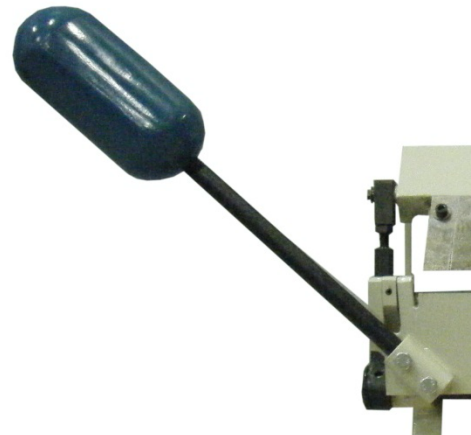


Figure 6-5

Note: DO NOT use the counterweight handle to raise the bending leaf. You may damage the hinges or the bending leaf.

6.5.3 Aligning the Fingers

CAUTION

Always wear proper safety equipment. The fingers are heavy with sharp edges. Wear safety footwear, and leather gloves to protect from burrs and sharp edges.

1. Make sure there is no pressure on the fingers by first releasing the clamp handle (D).
2. Loosen the socket capscrews on the fingers. Push the fingers tight against the back of the clamping leaf and tighten the capscrews.



Figure 6-6

6.5.4 Adjusting the Setback

Setback is the distance from the front edge of the finger to the front edge of the clamp block. This distance is determined by the gauge (thickness) of the piece part and inside radius of the bend. The setback is typically 1-1/2 - 2 times the material thickness.

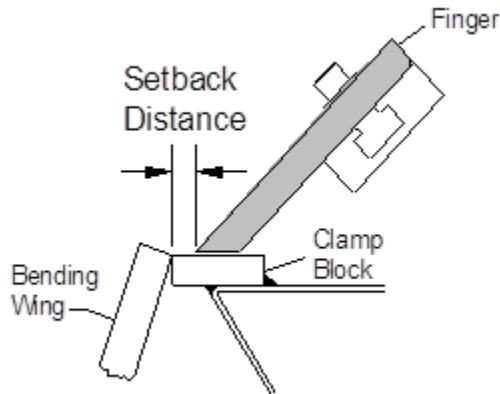


Figure 6-7

1. To adjust, make sure all the fingers are properly aligned to each other and the hold down assembly is not locked in the down position.
2. Loosen the setscrews at the back of the hold down assembly as indicated by the "*" (asterisk). Insert a tool, such as an allen wrench, into one of the spoked holes of the eccentric hub and rotate it, which moves the hold down assembly either forward or back. When the fingers are at the correct setback distance and parallel to the clamp block edge, tighten the setscrews "*" .

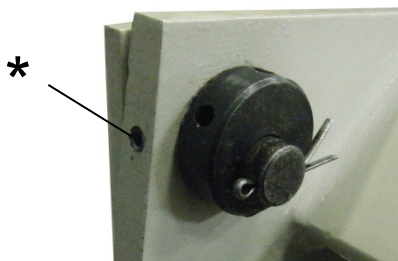


Figure 6-8

6.5.5 Adjusting the Clamping Pressure

The clamping pressure may have to be adjusted as the thickness of the piece part changes. A suitable pressure should have a medium resistance when pulling back on the hold down handle. At the end of the stroke there should be a definite locking of the piece part under the hold down assembly.

1. Loosen the turnbuckle jam nuts on both sides of the hold down assembly. Rotate the two turnbuckles until the desired tension is reached.
2. Retighten all four jam nuts.

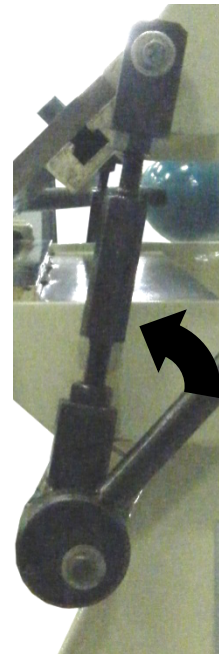


Figure 6-9

7.0 Operation

When performing basic bending operations, it is important that the fingers of the brake are parallel with the edge of the clamping block. Also make sure you have the proper setback and clamping pressure set for the thickness material being bent.

⚠ CAUTION

Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

⚠ CAUTION

Keep hands and fingers clear of the clamping beam. Stand off to the side of the machine to avoid getting hit with the bending apron as it comes up to bend.

⚠ CAUTION

When handling large heavy sheets make sure they are properly supported.

7.1 Bending Sheet Metal

1. Lift and rotate the clamping handle (cw) clockwise to raise the clamping assembly.
2. Insert the piece part between the clamp block and the brake fingers.
3. Align the fingers of the hold down assembly to the scribed bend line of the piece part and clamp in place by pulling the clamp handle back.

Note: DO NOT force the clamping handle. The holding pressure only needs to be tight enough to hold the sheet metal from moving when bending.

4. Pull up on the bending leaf handles until the piece part has reached the desired bend angle.
5. Lower the bending leaf, raise the hold down assembly, and remove the bent piece part.
6. If you are doing box and pan bending, choose fingers that closely match the dimensions of the finished piece.

8.0 Bending Allowance

In order to bend sheet metal accurately, you will need to consider the total length of each bend. This is referred to as bend allowance. Subtract the bend allowance from the sum of the outside dimensions of the piece part to obtain the actual overall length or width of the piece. Because of differences in sheet metal hardness, and whether the bend is made with the grain or against it, exact allowances must sometimes be made by trial and error. However, bend allowances for general use can be obtained from metal working books or from the Internet.

9.0 Understanding Springback

Springback, also known as elastic recovery, is the result of the metal wanting to return to its original shape after undergoing compression and stretch. After the bending leaf is removed from the metal and the load is released, the piece part relaxes, forcing the bent portion of the metal to return slightly to its original shape. The key to obtaining the correct bend angle is to over bend the metal a little and allow it to spring back to the desired angle. All metals exhibit a certain amount of spring back.

10.0 Material Selection

⚠ CAUTION

It must be determined by the customer that materials being processed through the machine are NOT potentially hazardous to operator or personnel working nearby.

When selecting materials keep these instructions in mind:

- Material must be clean and dry. (without oil)
- Material should have a smooth surface, so it processes easily.
- Dimensional properties of material must be consistent and not exceed the machine capacity values.
- Chemical structure of material must be consistent.

- Buy certificated steel from the same vendor when possible.

11.0 Maintenance

⚠ WARNING

Maintenance should be performed on a regular basis by qualified personnel.

⚠ WARNING

Always follow proper safety precautions when working on or around any machinery.

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.

11.1 Oil Ports

Using an oil can with good quality #30W oil, apply 5-6 drops into each of the ports on both ends of the machine. Repeat weekly or more often, depending on usage. Wipe off any excess oil.

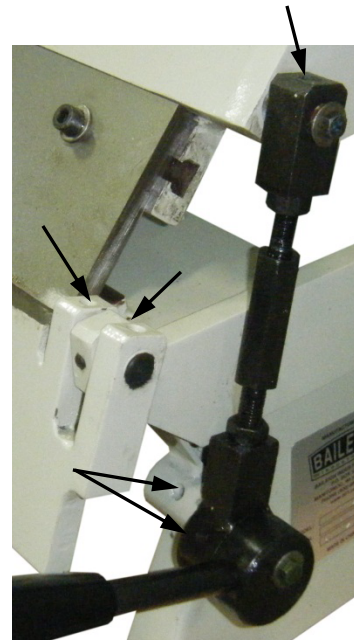


Figure 11-1

Note: Proper maintenance can increase the life expectancy of your machine.

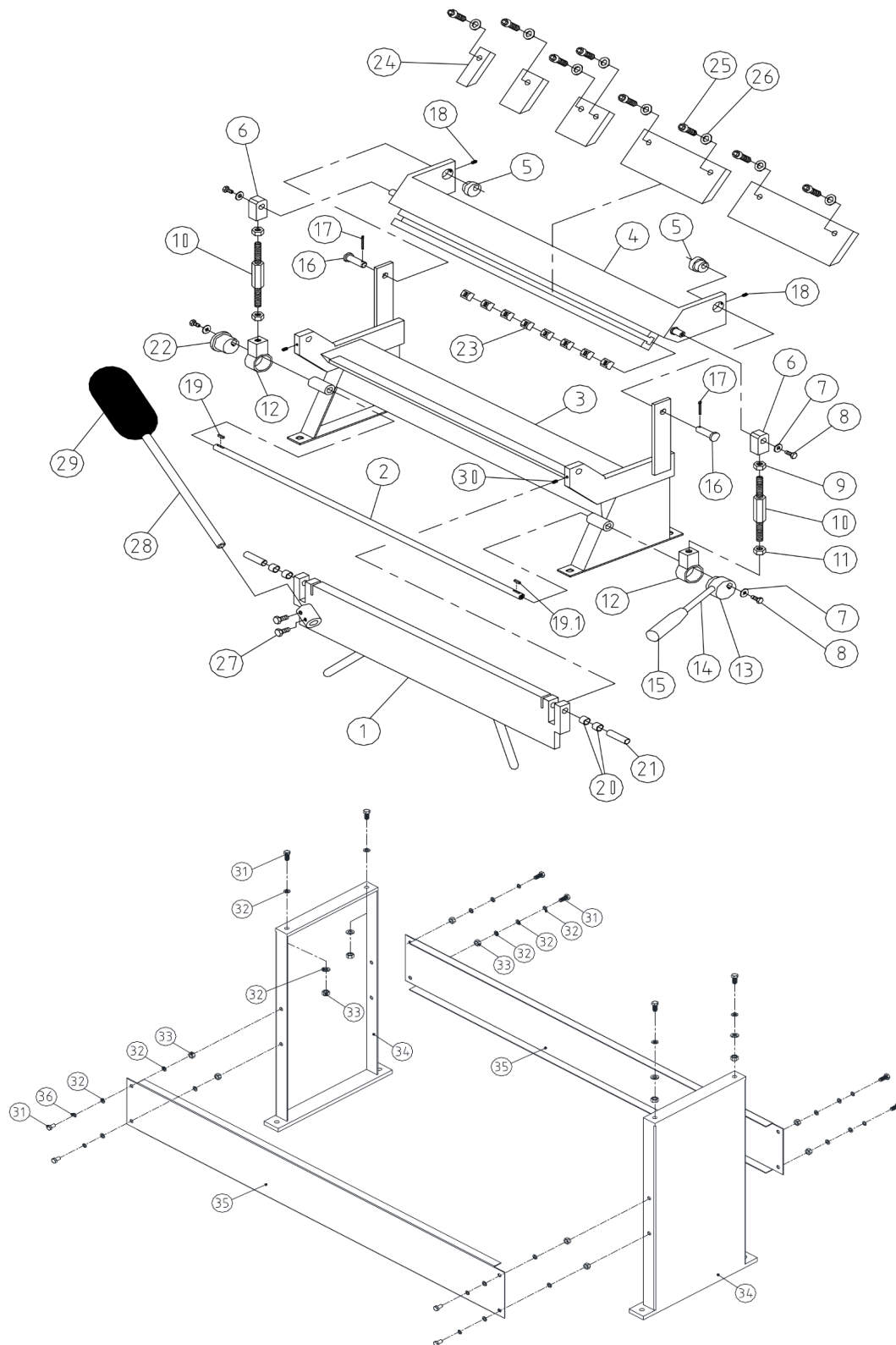
12.0 Troubleshooting

Table 12-1

Fault	Probable Cause	Remedy
INACCURATE BENDS	Fingers are not aligned.	Follow proper finger alignment procedure.
	Setback distance is not equal from one side to the other.	Accurately measure distance and set accordingly.
	Clamping assembly is not holding piece part securely.	Re-adjust the clamping pressure.
BENDING LEAF HARD TO LIFT AND BEND.	Exceeding the bending limits of the brake.	Do not bend material thicker than the machine was designed for.
	Counterweight is not on leaf.	Attach the counterweight to lessen force needed to lift bending leaf.

13.0 Replacement Parts

13.1.1 Box and Pan Brake Assembly – Exploded View



13.1.2 Box and Pan Brake Assembly – Exploded View

Index No	Part No	Description	Size	Qty
1	BA9-1226003	Leaf Weldment		1
2	**	Shaft		1
3	**	Body		1
4	BA9-1226004	Hold Down Assembly		1
5	**	Eccentric Shaft		2
6	BA9-1020470	Connecting Block		2
7	BA9-1020471	Fender Washer	M6	4
8	BA9-1020472	Hex Cap Screw	M6X12	4
9	BA9-1020473	Hex Nut	M10P1.5	2
10	BA9-1020474	Threaded Stud		2
11	BA9-1020475	Hex Nut	M10P1.5	2
12	BA9-1228548	Bushing		2
13	BA9-1010896	Right Eccentric Shaft		1
14	BA9-1010897	Handle Rod		1
15	BA9-1010898	Handle	M12X100	1
16	**	Pin Shaft		2
17	**	Cotter Pin	3X25	2
18	**	Socket Set Screw, Flat Point	M6X8	2
19	**	Flat Key	4X15	1
19.1	**	Flat Key	4X20	1
20	**	Bushing		4
21	**	Small Shaft		2
22	BA9-1228549	Left Eccentric Shaft		1
23	BA9-1000384	T-Nut		8
24	BA9-1015402	Bending Die (Set) (1 Each 1", 2", 3", 8", 10")		1
	BA9-1015403	1 Inch Bend Finger		
	BA9-1015404	2 Inch Bend Finger		
	BA9-1015405	3 Inch Bend Finger		
	BA9-1015089	8 Inch Bend Finger		
	BA9-1015406	10 Inch Bend Finger		
25	**	Socket Head Cap Screw	M8X22	8
26	**	Flat Washer	M8	8
27	**	Hex Cap Screw	M10X16	2
28	BA9-1011022	Counterweight handle		1
29	**	Counterweight		1
30	**	Socket Set Screw, Cone Point	M6X8	2
31	**	Hex Cap Screw	M8X16	12
32	**	Flat Washer	M8	24
33	**	Hex Nut	M8P1.25	12
34	**	Stand		2
35	**	Connecting plate		2
36	**	Lock Washer	M8	8

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.