



**OPERATOR'S MANUAL**

**BOX AND PAN FOLDER - 40"**



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## **WARNING**

**CRUSHING & AMPUTATION INJURIES.** The brake can quickly crush or amputate fingers, hands, or body parts. Never place fingers, hands, or body parts between or near the clamping fingers and bending blocks during operation.

**SECURING BRAKE.** Before using, secure the brake to the floor so it can support the weight and dynamic forces involved in bending sheet metal. Otherwise, the brake may unexpectedly move or tip during operation, causing serious injury or property damage.

**TOOLS IN POOR CONDITION.** Using this tool with loose hardware or damaged components could result in sudden, unexpected movements during use. Inspect the brake for cracked components, damaged linkage, levers, or loose fasteners. Correct any problems before use.

**LEAVING UNATTENDED.** To reduce the risk of crushing or amputation injuries with children or visitors, lower the clamping leaf and lock the foot pedal down when not in use.

**METAL EDGES.** Sharp edges on sheet metal can result in severe cuts. Always wear leather gloves and chamfer/de-burr sharp sheet metal edges.

**COMFORTABLE BODY POSITION.** The required body motion to operate the brake can result in operator injury over time if proper ergonomics are not used during operation. Always keep your body centered with the machine and your back straight when using the foot pedal.

**HEATING METAL.** Heating the workpiece with a torch or welding it while clamped in the brake may weaken the fingers, blocks, and frame. Do not use a torch, welder, or other similar heating tool near the brake.

**CAPACITY.** Exceeding the capacity of the brake may result in sudden breakage that ejects dangerous metal debris at the operator or bystanders, or causes machine damage. Only use sheet metal that is within the rated capacity of this brake.

**FOOTING.** This brake requires you to apply moderate force to the foot pedal while bending. If your foot slips, you could fall down and be injured. Always stand with one foot comfortably on the floor during operation. Never use both feet on the foot pedal or jump on it. Never have one foot under the foot pedal during operation.

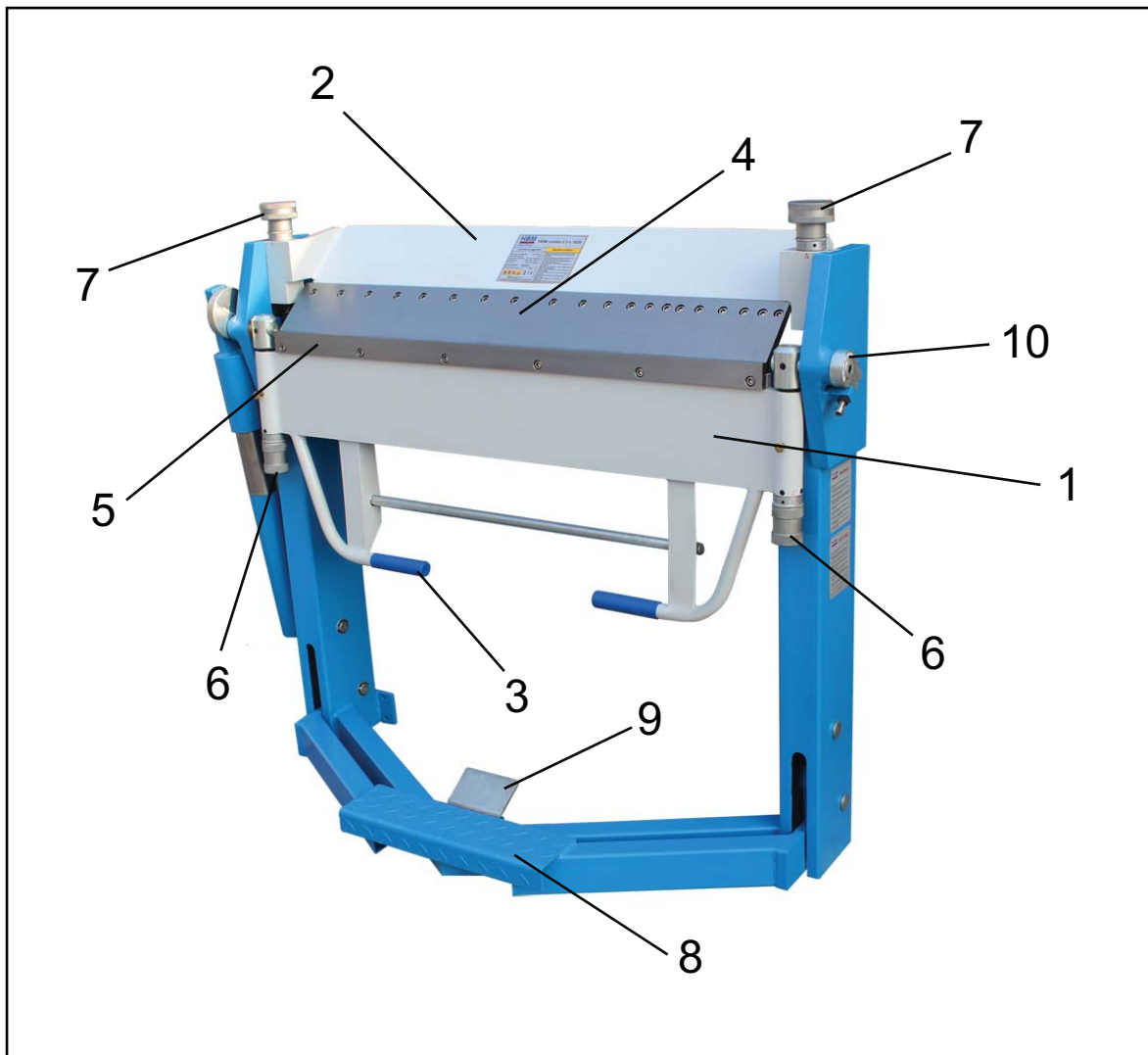
## **WARNING**

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to decrease the risk of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

## **CAUTION**

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

# Identification



1. Bending Leaf – Swivel up to bend the workpiece.
2. Clamping Leaf – Holds the fingers. Squeezes the workpiece against the clamping block.
3. Operating Handle – Used to raise and lower the bending leaf.
4. Finger Blocks – Adjustable dies that the workpiece is bent against.
5. Clamping Block – Fixed block (or lower jaw) that the clamping leaf presses against.
6. Setback Knobs – Adjusts to the gauge of the workpiece and desired bend radius
7. Clamping Pressure Adjusting Nuts – Adjusts pressure on the workpiece, allowing for different gauges.
8. Foot Pedal – Raises and lowers fingers onto clamping block.
9. Foot Pedal Lock – Locks foot pedal.
10. Stop Collar – Used to lock bending angle

# General Operation

The model pan and box brake is a floor-mounted unit that bends sheet metal up to 2.0/1.5-mm thick and 1020/1270 mm wide.

A crease is formed in a sheet metal workpiece by clamping the workpiece securely between two flat plates. A third plate is hinged and bends the workpiece along a straight edge when the plate is swung upward. Removable fingers allow four sides of a box to be bent upward to form a box.

To create a bend, the user positions the clamping leaf to the workpiece thickness with clamping pressure adjusting nuts located at each end of the machine. The setback knobs are positioned to adjust for varying bend radius requirements. The fingers are added or removed depending on the width of the box side required. The user clamps the workpiece by pushing on the foot pedal, clamps the fingers down on the workpiece. Then the user lifts the bending leaf until the desired crease angle is created. For repeated bends at a particular angle, this machine is equipped with an adjustable stop.

To remove the workpiece, the user lowers the clamping leaf handle, removes his foot from the foot brake pedal, and slides the workpiece out from the front of the machine.

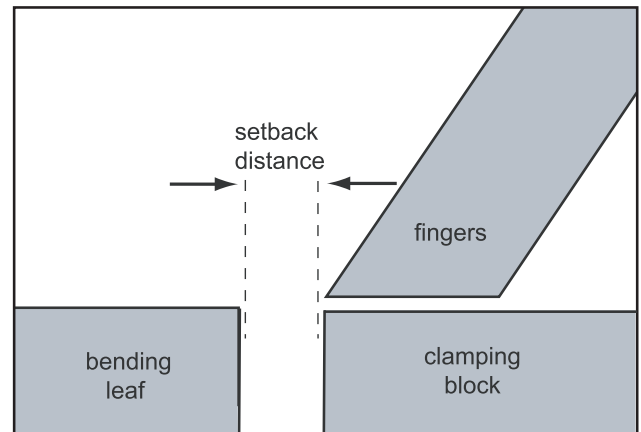
## Adjusting Setback

### NOTICE

You must include the thickness of folded edges or joints when determining the proper setback, or the brake may be damaged.

Before you begin any bending operation, please consider the differences of sheet metal gauges when trying to achieve either sharp or rounded edges, and allow for the differences by adjusting the setback.

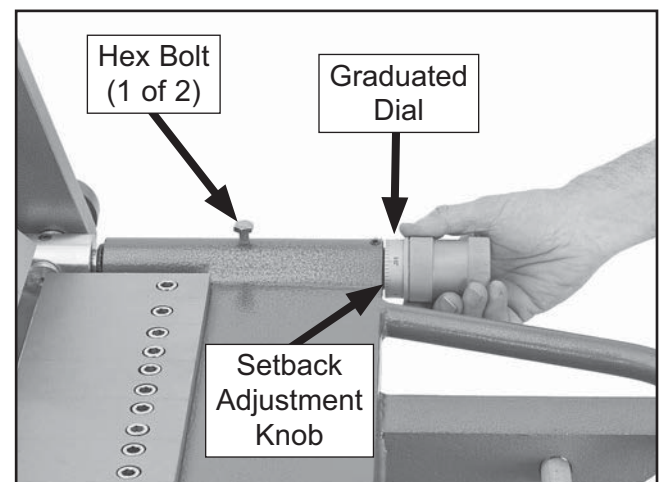
The setback is the distance from the forward edge of the fingers to the edge of the bending leaf, as shown in Figure 3. The setback distance is determined by the gauge of the workpiece and the desired radius of the bend.



Normally, setback is adjusted at least 1.5-2 times the thickness of the workpiece. (Thicker or tempered workpieces will need a larger setback).

To adjust the setback:

Evenly rotate both setback knobs clockwise, as shown in Figure to move the front edge of the bending leaf toward the clamping block and the fingers.



1. Loosen the hex bolts (see the figure) on each side of the bending leaf.

2. Rotate one setback adjustment knob a small amount, then rotate the other knob the same amount and direction. This prevents the bending leaf from binding on the setback shafts and keeps it parallel with the clamping leaf.

Note: The graduated dials are marked in 0.05mm increments with one full revolution moving the bending leaf 2.5mm.

3. Repeat Step 2 until you have the correct setback, then re-tighten the hex bolts.

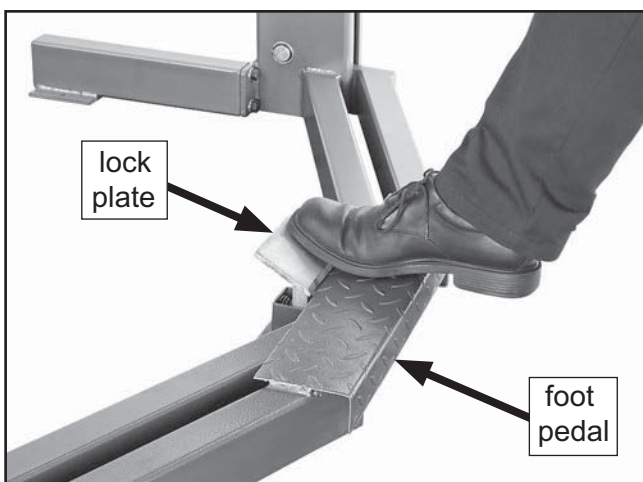
Tip: Use calipers for a precise method of checking the setback.

## Using Foot Pedel

The foot pedal is used to lower the clamping leaf fingers over the clamping block and place pressure on the workpiece. The pedal can be locked and unlocked. The foot pedal is locked during shipping.

### To engage the foot pedal:

Apply steady downward pressure on the foot pedal; as you do, the fingers lower correspondingly. The foot pedal lock should engage when the pedal is fully depressed.



If the clamping pressure has been adjusted We recommend using the foot pedal lock for better control when bending workpieces.

You can lower the fingers onto the workpiece without locking the foot pedal. However, you will have to keep the foot pedal depressed while moving the bending wing during bending operations.

### To release the foot pedal lock:

Press the foot pedal lock down to release the foot pedal. The pedal will raise back to its original position.



### CAUTION

Make sure the clamping pressure is correctly adjusted for the workpiece thickness to prevent workpiece or machine damage when the foot pedal is fully depressed.



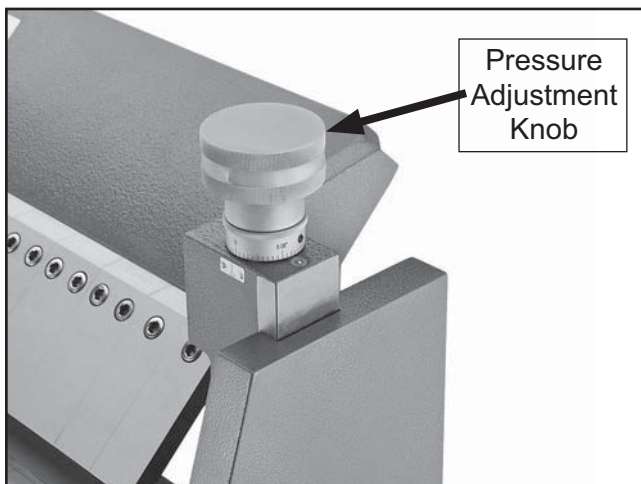
## Adjusting Clamping Pressure

When securing the workpiece with the foot pedal, the correct clamping pressure depends on the workpiece thickness. The ideal pressure locks the workpiece firmly in position between the clamping fingers and base without excessive compression that could damage the workpiece or brake.

Rotate one pressure adjustment knob a small amount, then rotate the other knob the same amount direction.

This prevents the clamping leaf from binding on the shafts and keeps it parallel with the clamping base.

Note: The graduated dials are marked in 0.05mm increments with one full revolution moving the bending leaf 2.5mm.



### To adjust the clamping pressure:

1. Lower the bending leaf.
2. Place the workpiece between the fingers and the clamping block.
3. Push the foot pedal down and lock it in place.
  - If the foot pedal will not lock in place, loosen the clamping pressure evenly until it will lock.
  - If the foot pedal locks in place but the workpiece is not clamped snug, tighten the clamping pressure.

## Aligning Fingers

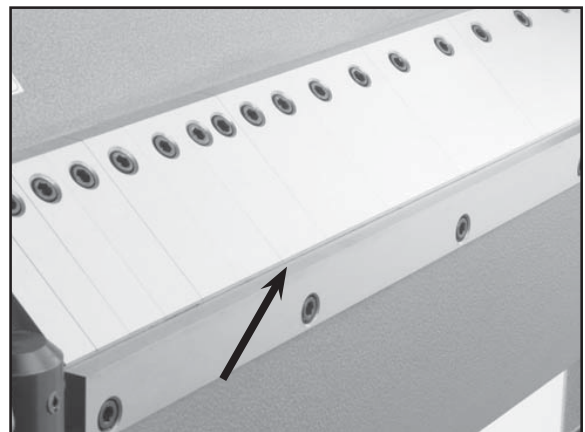
Finger alignment is critical for accurate results.

### To align a finger:

1. Disengage the foot pedal.
2. Lower the bending leaf.
3. Loosen the cap screw(s) on a finger enough to move it up or down without resistance.
4. Push the finger firmly up against the lower edge of the clamping leaf and tighten the cap screw(s), as shown in **Figure**.



5. Check the front edge of the fingers to see if they are aligned, as shown in below figure



6. If an individual finger sticks out beyond the other fingers, loosen the cap screw(s), wiggle the finger up or down, retighten and check finger alignment.

Repeat **Steps 3-6** to align additional fingers.

## Spacing Fingers

The fingers can be spaced apart for clearance when making pans or boxes. This requires removing one or more of the fingers so that you can space the others to match the width of your pan or box.

### To space the fingers apart:

1. Remove the cap screws from each of the fingers you decide to remove.
2. Pull the fingers off the front guide, as shown in **Figure**, and set them aside.



3. Align the remaining fingers and tighten the cap screws.

## Basic Bending

### **!WARNING**

Do not operate the folder unless it has been securely clamped in place or mounted to the floor, or it could tip over on you, causing a severe injury!

Bending operations require the fingers to be parallel with the edge of the clamping block and require the setback and clamping pressure to be correctly adjusted for the thickness of the workpiece.

To perform a basic bending operation:

1. Open the clamping leaf.
2. Insert the workpiece between the fingers and the clamping block.
3. Align the fingers to the bend mark on the workpiece, and clamp it in place.

Note—If the foot pedal does not lock when you lower the fingers over the workpiece, the clamping pressure may need to be loosened.” (See Adjusting Clamping Pressure, Page 6).

4. Lift the bending leaf until the workpiece has reached the desired bend angle.
5. Raise the clamping leaf and remove the bent workpiece.

Note—If a pan or box bend is desired, choose a finger or a selection of fingers that are as close as possible to the length of the pan or box side lengths.

### **!CAUTION**

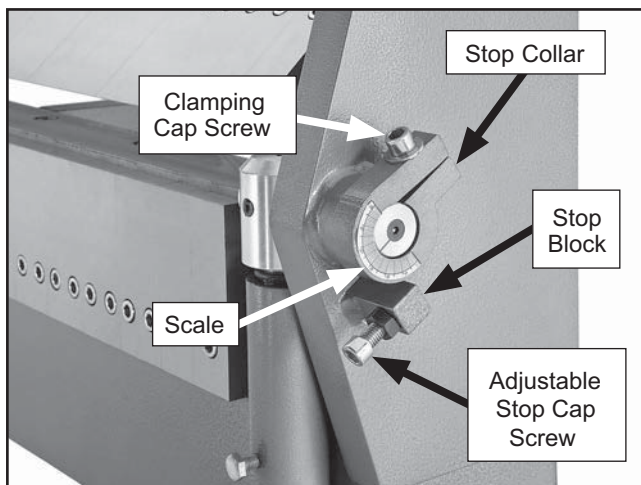
Hold onto the workpiece so it does not drop and hit you when it is released!

## Adjusting Work Stop

The work stop mechanism allows the operator to produce repetitive bends at the same angle.

To adjust the work stop:

1. Loosen the clamping cap screw on the work stop collar so the stop collar is loose on the shaft.



2. Raise the bending leaf to the correct angle.

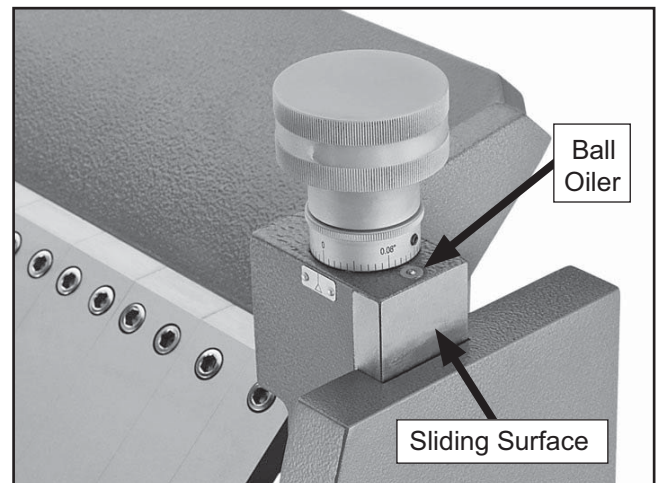
Note: The scale on the stop collar displays the relative angle of the bending leaf.

3. Rotate the stop collar clockwise until it rests on the stop block, then re-tighten the clamping cap screw to secure the setting.

Note: If needed, loosen the hex nut on the adjustable stop cap screw, then use the cap screw for additional adjustment.

## Lubrication

The slide shaft ball oilers provide lubrication to the sliding surfaces between the shafts and the frame.



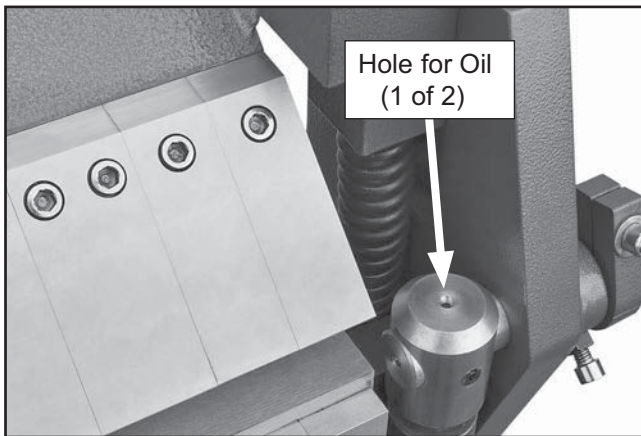
Only lubricate these ball oilers with a pump-type oil can that has a plastic or rubberized cone tip. Do not use oil cans with a metal needle or lance tip, as they can push the ball too far into the oiler, break the spring seat, and lodge the ball in the oil galley.

When lubricating the ball oilers, first clean the outside surface to remove any dust or grime. Push the tip of the oil can nozzle against the ball oiler to create a hydraulic seal, then pump the oil can once or twice to add oil.



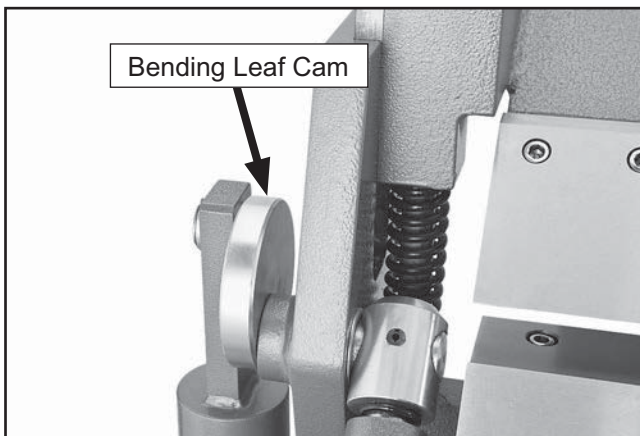
## Bending Leaf Pivot Bushings

The bending leaf rotates around the pivot shaft on bushings that require lubrication. Use an oil can to add lubricant to the hole shown in Figure 26 (one on each side of the bending leaf), then raise and lower the bending leaf several times to distribute the lubricant.



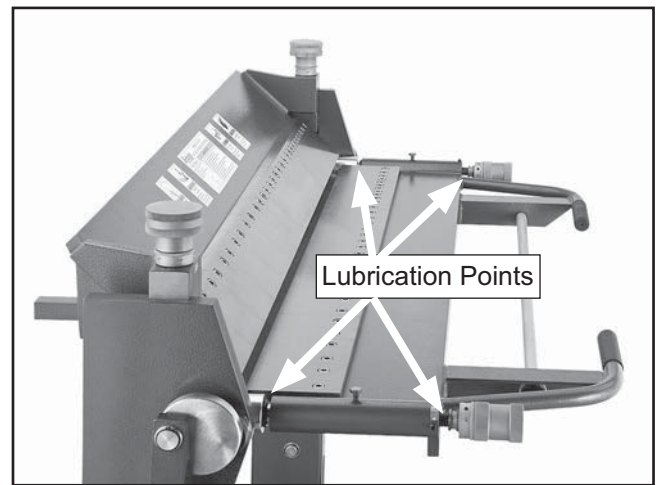
## Bending Leaf Cam

Use mineral spirits and a shop rag to clean each side of the cam (see Figure 27), then apply a thin coat of grease to each side. Raise and lower the bending leaf several times to distribute the lubricant.

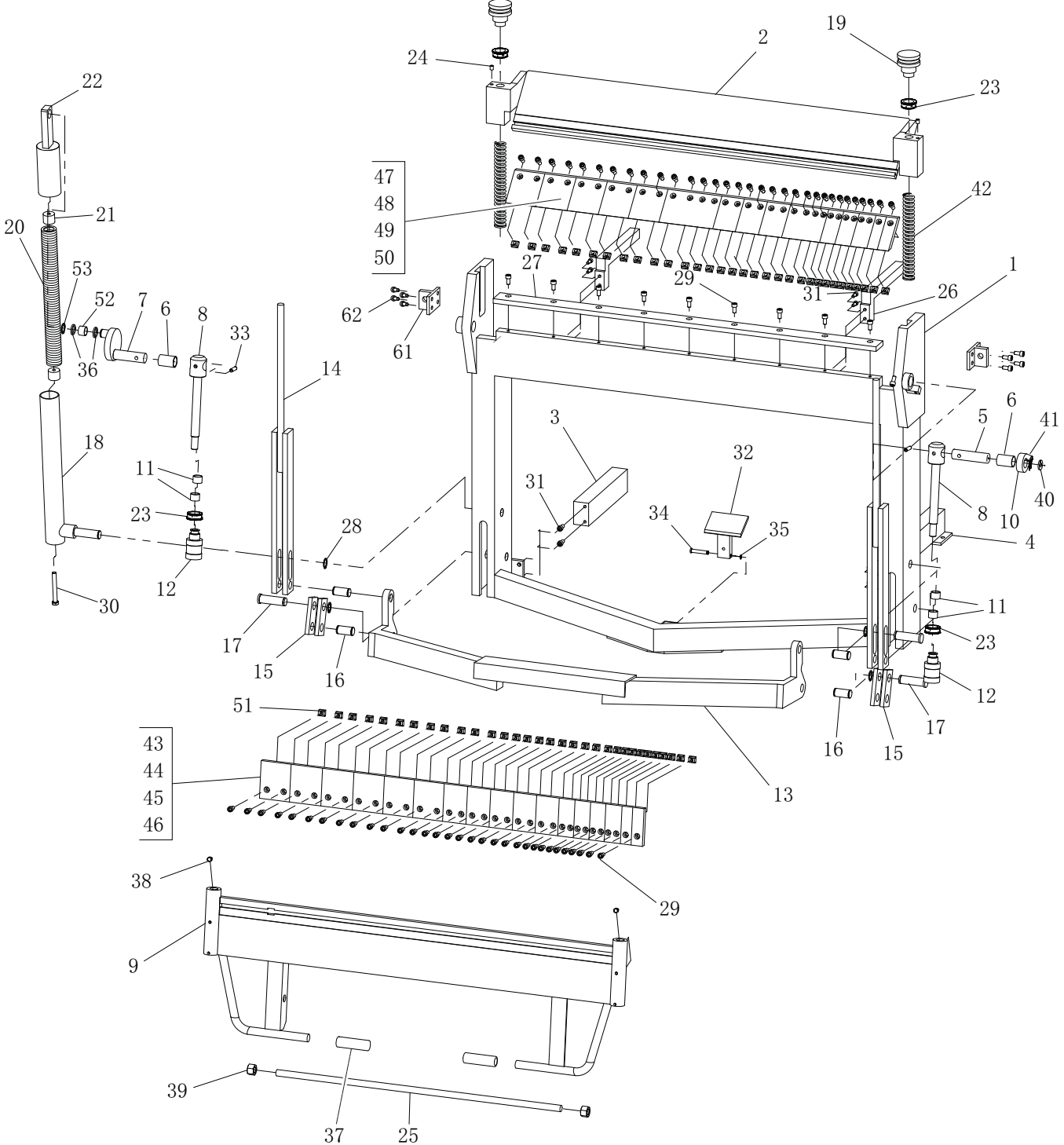


## Setback Shafts

Raise the bending leaf until it is parallel with the floor, then add one drop of oil to the setback shaft locations shown in the figure. Use the setback adjustment knobs to move the bending leaf back and forth along the shafts to distribute the lubricant.



# Parts Drawing



# Part List

1	FRAME
2	CLAMPING LEAF
3	LEFT EXTENSION LEG
4	RIGHT EXTENSION LEG
5	BENDING LEAF PIN
6	BUSHING
7	BENDING LEAF CAM
8	SETBACK SHAFT
9	BENDING LEAF
10	BENDING STOP COLLAR
11	BUSHING
12	SETBACK ADJUSTMENT KNURLED KNOB
13	FOOT PEDAL
14	CLAMPING LEAF CONNECTOR
15	FOOT PEDAL PIVOT PLATE
16	FOOT PEDAL PIVOT PIN
17	FOOT PEDAL LEG PIN
18	CLAMPING LEAF LOWER STRUT
19	PRESSURE ADJUSTMENT KNURLED KNOB
20	CLAMPING COMPRESSION SPRING
21	SPRING RETAINING NUT
22	CLAMPING LEAF UPPER STRUT
23	GRADUATED DIAL
24	TAP-IN BALL OILER 10MM
25	CONNECTOR ROD
26	WORKPIECE SUPPORT
27	CLAMPING BASE
28	EXT RETAINING RING 25MM

29	CAP SCREW M10-1.5 X 20
30	HEX BOLT M12-1.75 X 150
31	CAP SCREW M8-1.25 X 20
32	FOOT PEDAL LOCK PLATE
33	ROLL PIN 10 X 40
34	GROOVED CLEVIS PIN
35	EXT RETAINING RING 10MM
36	SHIM RING
37	RUBBER HANDLE
38	HEX BOLT M8-1.25 X 15
39	HEX NUT M20-2.5
40	LEAF PIN RETAINER
41	ANGLE SCALE
42	LEAF COMPRESSION SPRING
43	BENDING BLOCK
44	BENDING BLOCK
45	BENDING BLOCK
46	BENDING BLOCK
47	CLAMPING FINGER
48	CLAMPING FINGER
49	CLAMPING FINGER
50	CLAMPING FINGER
51	T-NUT M10-1.5
52	BUSHING
53	EXT RETAINING RING 24MM
61	LIFTING BRACKET
62	CAP SCREW M8-1.25 X 20