

# KAKA Industrial®

## Unpacking

The Pan & Box Brake is shipped from the manufacturer in a carefully packed ply-wood case. Thoroughly inspect the product upon opening the package.

After unpacking the unit, carefully inspect for any damage that may have occurred during transit. Check for loose, missing, or damaged parts. Immediately report missing parts to dealer.

If damage has occurred, shipping damage claims must be filed with the carrier and are the responsibility of the user.

## Specifications

The Model W-4816Z Pan & Box Brake is hand operated and capable of bending up to 16 ga. (1.52mm) mild steel and 20 ga. (.912mm) stainless x 48" (1219mm) long allowing it to fabricate pans, channels, angles, and other shapes. Adjustable counterweights allow the operator to balance the bending leaf to correspond to material thickness. An adjustable stop gauge is included to allow the operator to perform repeat bends.

Item No. ....	173123
Model.....	W-4816Z
Bending Length.....	48" (1220 mm)
Bending Thickness.....	16Ga (1.5 mm)
Bending Angle.....	0-135°
Packing size.....	62"x18"x26" (158x45x65 cm)
N.W/G.W. ....	365/405 lbs (166/184 kg)

## SAVE THESE INSTRUCTIONS

Thank you for purchasing our W-4816Z Pan and Box Brake. Before attempting to operate your new tool please read these instructions thoroughly. You will need these instructions for the safety warnings, precautions, assembly, operation, maintenance procedures, parts list and diagrams. Keep your invoice number with these instructions. Write the invoice number on the inside of front cover. Keep the instructions and invoice in a safe, dry place for future reference.

## General Safety Information

### **▲ CAUTION**

*For your own safety, read all of the instructions and precautions before operating tool.*



## SAFETY RULES

1. Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts of machine.

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2. Wear protective hair covering to contain long hair.
3. Wear safety shoes with non-slip soles.
4. Wear safety glasses. Everyday glasses have only impact resistant lenses. They are NOT safety glasses.
5. Be alert and think clearly. Never operate tools when tired, intoxicated or when taking medications that cause drowsiness.
6. Keep work area clean. Cluttered work areas invite accidents.
7. Work area should be properly lit.
8. Keep visitors at a safe distance from work area.
9. Keep children out of workplace. Make workshop childproof. Use padlocks to prevent any unintentional use of tools.
10. Assemble only according to these instructions. Improper assembly can create hazards.
11. When tools are not in use, store them in a dry, secure place out of the reach of children. Inspect the tools prior to storage and before reuse.
12. Maintain product labels and nameplates. These carry important safety information.

## KNOW HOW TO USE TOOL

1. 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.
2. 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.

3. Overloading machine. By overloading the machine you may cause injury from flying parts. DO NOT exceed the specified machine capacities.

4. Machine usage. DO NOT use the brake as a press or crushing tool.

5. Dressing material edges. Before bending sheet metal, always chamfer and deburr all sharp edges.

6. Blade adjustments and maintenance. Always keep blades sharp and properly adjusted for optimum performance.

7. 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.

### **▲ WARNING**

*The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.*

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## Important:

Your machine may be shipped with a rustproof waxy oil coating and grease on the exposed unpainted metal surfaces. To remove this protective coating, use a degreaser or solvent cleaner. 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.

### ▲ **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.*

## Assembly

### IMPORTANT:

Consider the following when looking

for a suitable location to place the machine:

1. Overall weight of the machine.
2. Weight of material being processed.
3. Sizes of material to be processed through the machine.
4. Space needed for auxiliary stands, work tables, or other machinery.
5. Clearance from walls and other obstacles.
6. Maintain an adequate working area around the machine for safety.
7. Have the work area well illuminated with proper lighting.
8. Keep the floor free of oil and make sure it is not slippery.
9. Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
10. If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.

### **Before beginning assembly, take note of the following precautions and suggestions.**

1. Is the machine is bolted to the pallet? Before attempting any of the assembly procedures remove all of the loose parts and hardware and unbolt the machine from the pallet.
2. **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.

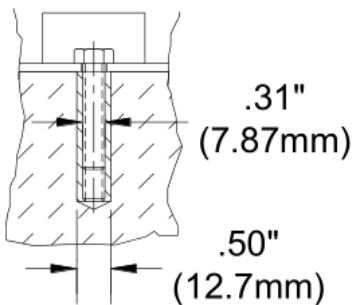
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3. FLOOR: This tool distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.

4. WORKING CLEARANCES: Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.

## Anchoring the Machine

1. Position the machine on a firm and level concrete floor.
2. Maintain a safe operating distance around the machine.
3. Anchor the machine to the floor, as shown in the diagram, using bolts and expansion plugs or sunken tie rods that connect through holes in the base of the stand.(Pic.1)



## 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.(Pic.2)

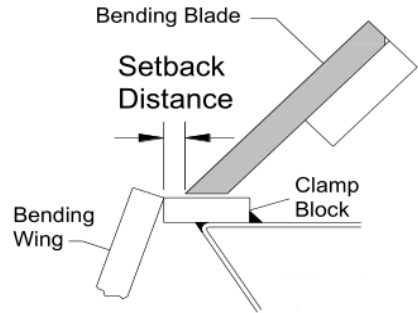
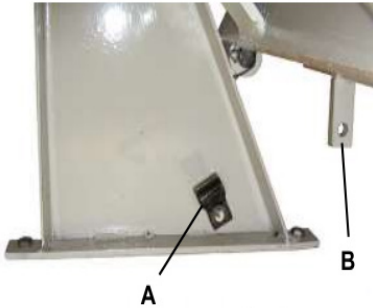


**NOTE**  
*DO NOT use the counterweight handle to raise the bending leaf. You may damage the hinges or the bending leaf.*

## Attaching the Stop Rod

1. Remove the nut and washer and slide the stop rod into the stop block (A) the install the washer and nut back onto the rod.
2. Remove the cotter pin and push the short end of the stop rod into the tab (B) on the bending leaf and secure with the cotter pin. (Pic.3)

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## Adjusting the Stop Rod

The stop rod is used for repeat bending when you want the bending leaf to stop at the same position each time.

1. Loosen the stop nut and washer and make your bend, stopping at the top of the bend.
2. Tighten the nut and washer up to the stop block.
3. The bending angle can now be repeated until reset by the operator.

## Adjusting the Setback

Setback is the distance from the front edge of the finger to the front edge of the clamp block as shown in picture. 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. (Pic.4)

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 (C) at the back of the hold down assembly (Pic. 5).
3. Insert a tool, such as an allen wrench, into one of the spoke holes of the eccentric hub and rotate it, which moves the hold down assembly either forward or back.
4. When the fingers are at the correct setback distance and parallel to the clamp block edge, tighten the setscrews (C).



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## Adjusting the Clamping Pressure

### ▲ CAUTION

1. Excessive clamping pressure can "pre load" and permanently distort the brake.
2. DO NOT bend material heavier than the rated capacity, even in shorter lengths.
3. Use material with square-sheared edges. (a rolled edge will cause bowing).
4. Bending a round object will warp or nick the clamp edge.
5. Adjust the clamp pressure accordingly for different metal gauges.
6. Do not use a pipe extension on the clamp bars to get more leverage.

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(s). At the end of the stroke there should be a definite locking of the piece part under the clamping leaf.

To adjust the pressure, move the nuts on the threaded link shaft either up or down.

1. To adjust the clamping pressure, tighten both sides of the clamping leaf with a piece part in the brake.
  - a. If the clamping pressure seems

light and the piece part is loose in the clamp, move the adjusting nuts UP.

b. If the clamping pressure seems hard and you can't lock the handles, move the adjusting nuts DOWN.

c. Once the pressure feels right, no further adjustments are necessary for this thickness piece part. (When changing thickness it may become necessary to adjust again.)

2. Remove the piece part from under the clamping leaf, lock down the leaf with the handles, and loosen pressure on the top nut.

3. Unlock the clamping leaf and turn the bottom nut ½ turn in the desired direction.

4. Lock the clamping leaf, re-tighten the top nut, and repeat Step 1 above until the desired pressure is reached.



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## Clamp Alignment (end to end)

Make a 90° test bend about 2" (50.8mm) in from each end of the machine. Stack the bent strips on top of each other and check that they are bent to the same degree.

If a strip is over bent, increase the setback distance on that side. If a strip is under bent, decrease the setback distance on that side. Again, move the setback adjustment past the desired set back point, and then forward to remove the slack.

## Bending Wing Alignment

Bending accuracy is dependent on the top surface of the bending leaf and the attached bending wing being flush with the top face of the clamping block when the bending leaf is in the lowered position. If it appears that an adjustment is necessary, contact service team local, or manufacture.

## 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.*

## 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



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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.

## 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.

## 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.

## 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:

1. Material must be clean and dry. (without oil)
2. Material should have a smooth surface so it processes easily.
3. Dimensional properties of material must be consistent and not exceed the machine capacity values.
4. Chemical structure of material must be consistent.
5. Buy certificated steel from the same vendor when possible.

## LUBRICATION AND MAINTENANCE



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## ▲ WARNING

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

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

## NOTE

Proper maintenance can increase the life expectancy of your machine.

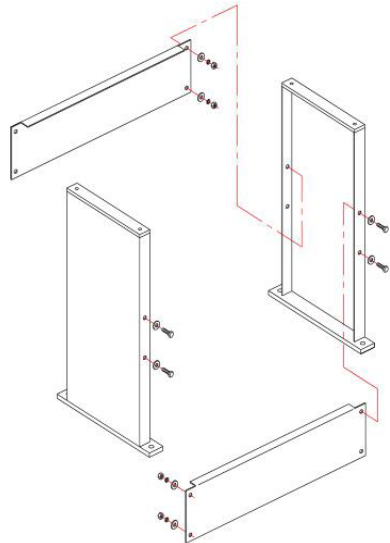
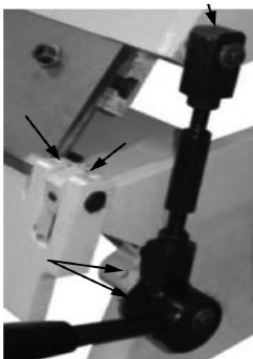
## ASSEMBLY AND SETUP STAND (Optional)

Assemble stand as picture shown below using supplied bag of hardware.

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

## Oil Ports

Using an oil can with a 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.

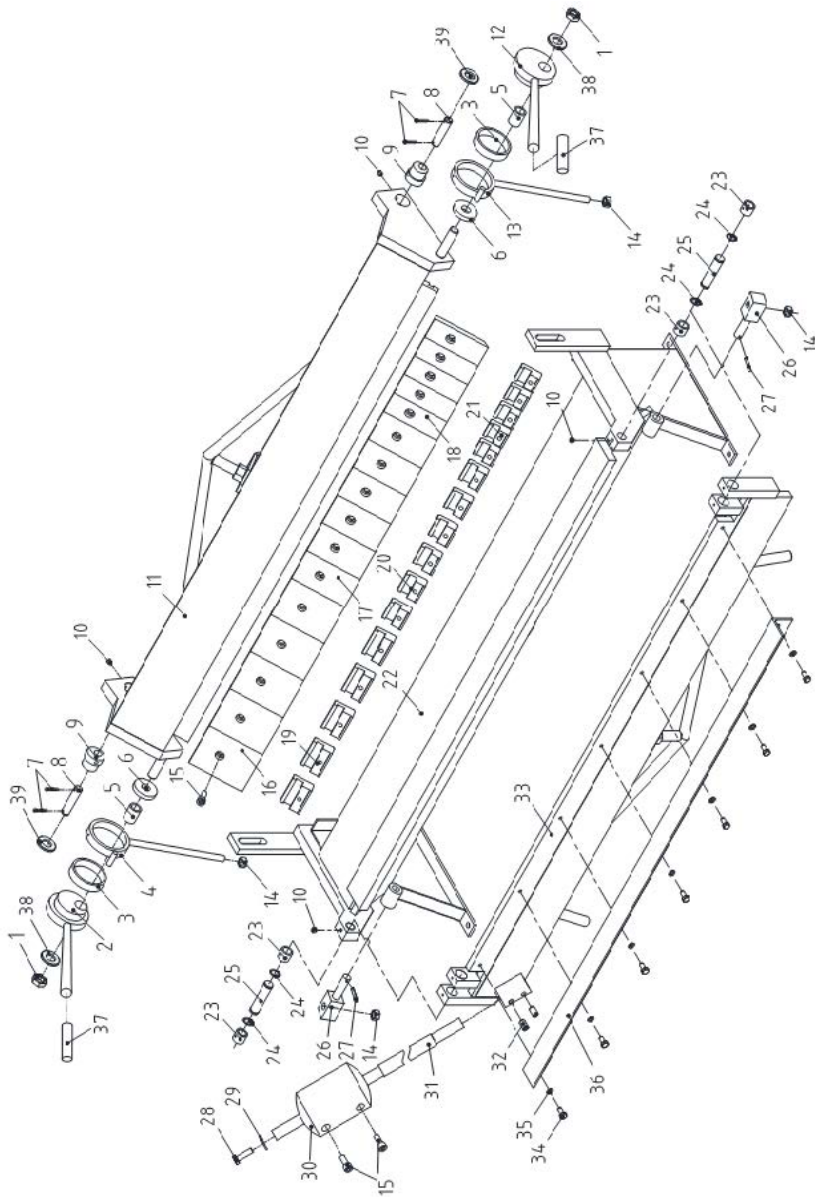


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## TROUBLESHOOTING

<b>FAULT</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
INACCURATE BENDS	<ol style="list-style-type: none"> <li>1. Fingers are not aligned</li> <li>2. Setback distance is not equal from one side to the other</li> <li>3. Clamping assembly is not holding piece part securely.</li> </ol>	<p>Follow proper finger alignment procedure.</p> <p>Accurately measure distance and set accordingly.</p> <p>Re-adjust the clamping pressure.</p>
BENDING LEAF HARD TO LIFT AND BEND.	<ol style="list-style-type: none"> <li>1. Exceeding the bending limits of the brake.</li> <li>2. Counterweight is not on leaf.</li> </ol>	<p>Do not bend material thicker than the machine was designed for.</p> <p>Attach the counterweight to lessen force needed to lift bending leaf.</p>

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## Parts List

Ref.	Description	QTY.
1	Nut M18	2
2	Left Eccentric Handle	1
3	Big Washer	2
4	Left Connecting Rod	1
5	Washer	2
6	Spacer Bush	2
7	Cotter Pin $\phi 4 \times 25$	4
8	Pin $\phi 16 \times 70$	2
9	Eccentric Shaft	2
10	Set Screw M8X8	4
11	Upper Die Framework	1
12	Right Eccentric Handle	1
13	Right Connecting Rod	1
14	M12	4
15	M10X25	18
16	Brake Dies 4"	5
17	Brake Dies 3"	6
18	Brake Dies 2"	5
19	Clamp Plate 63mm	5
20	Clamp Plate 45mm	6

Ref.No.	Description	QTY.
21	Clamp Plate 34mm	5
22	Frame	1
23	Case	4
24	Shaft Ring $\phi 18$	4
25	Shaft	2
26	Shaft	2
27	Cotter Pin $\phi 5 \times 25$	2
28	Hex. Bolt M10X35	1
29	Flat Gasket $\phi 10$	1
30	Counterweight	1
31	Counterweight Rod	1
32	Set Screw M12X20	2
33	Bending Leaf	1
34	Hex. Bolt M8X16	7
35	$\phi 8$	7
36	Limit Angle plate	1
37	Handle Grip	2
38	$\phi 18$	2
39	$\phi 16$	2









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Edition 1 12/2020

**Note:** This manual is only for your reference. Owing to the continuous improvement of the machine, changes may be made at any time without obligation on notice.