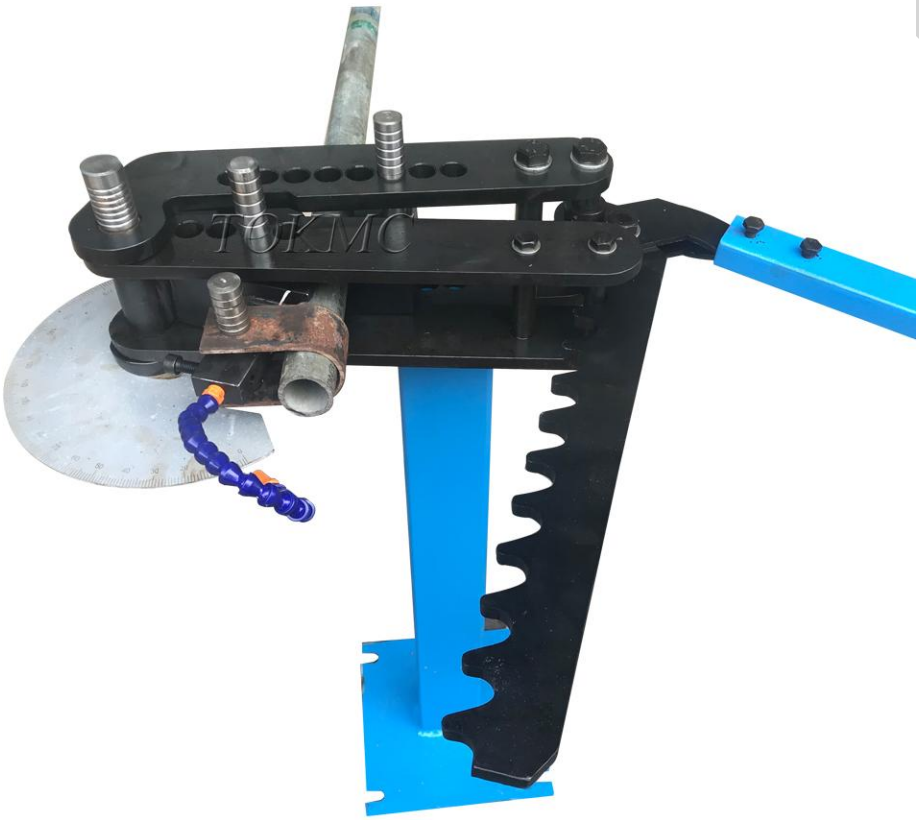
MANUAL PIPE BENDER

OPERATION MANUAL



WARNING

Read and understand all instructions before using this tool. The operator must follow basic precautions to reduce the risk of personal injury and/or damage to the equipment.

HAZARD DEFINITIONS

Please familiarize yourself with the hazard notices found in this manual. A notice is an alert that there is a possibility of property damage, injury or loss of life if certain instructions are not followed.

DANGER! This notice indicates an immediate and specific hazard that will result in severe personal injury or loss of life if the proper precautions are not taken.

WARNING! This notice indicates a specific hazard or unsafe practice that could result in severe personal injury or loss of life if the proper precautions are not taken.

CAUTION! This notice indicates a potentially hazardous situation that may result in minor or moderate injury if proper practices are not taken.

NOTICE! This notice indicates that a specific hazard or unsafe practice will result in equipment or property damage, but not personal injury.

WORK AREA

1. Operate in a safe work environment, Keep your work area clean, well - lit and free of distractions. Place lights so you are not working in a shadow.
2. Keep anyone not wearing the appropriate safety equipment away from the work area.
3. Store unused tools properly in a safe and dry location to prevent rust or damage. Lock tools away and keep out of the reach of children.

Usage

1. Uses

   This tube and pipe bender has a laser etched degree scale and three dies to bend tubes up to 2 inches in diameter. This is suitable for bending the pipe and tube.

2. Main technical specification

Model	TB - 3
Max. Bends Tubing Diameter	2”
	50 mm
Bends Schedule Pipe	1 - 9/16”
	40 mm
Standard Dies Included	1” x 3”, 1 - 1/2” x 5”, 1 - 3/4” x 6”
	25mm x 75mm, 38mm x127mm, 44.5mm x 152mm
Bending Degree	Up to 120°
Packing Size (L x W x H)	16 - 9/64” x 16 - 47/64” x 42 - 1/8”
	410mm x 425mm x 1070mm
Shipping Weight	176.4 lbs
	80 kg

3. Installation and caution

3.1 Installation

3.1.1 Please check whether the part of this machine are fully equipped and not damaged according to the parts list or part figure.

3.1.2 Place the tube bender on a solid, level surface capable of supporting the weight of the tube bender and workpiece. Secure the tube bender with bolts. (The tool will have force applied to it. The object that the tool is bolted to must have enough weight to avoid moving when pressure is applied.)

3.1.3 Mount tool on a pedestal

The hardware to mount tool is not included. The pedestal must be secured to the floor to prevent it from tipping over.

1. Align the tool's mounting holes with the corresponding pedestal holes.
2. Slide a flat washer over an l/4 - 20 x l in. hex head bolt and insert through the grinder base and pedestal holes.
3. Slide an l/4 in. washer over the end of the bolt and screw an l/4 - 20 in. hex nut onto the bolt end. Tighten until the space between the tool's base and pedestal is l/8 in.
4. Screw a second nut onto the bolt and secure against the first. This will prevent them from loosening due to the tool's vibration.
5. Repeat steps l to 4 for the other three bolt holes.

3.1.4 ASSEMBLE THE MANUAL TUBE BENDER

A. FRAME ASSEMBLY

1. Attach the post (D) to a workbench or pedestal.
2. Slide the ratchet arm (L) over a spacer sleeve (K) so the ratchet teeth are on your left and pointing away from you. Center the handle on the spacer, and tighten the collar until secure.
3. Hold the top frame plate so the offset bolt hole is at the top left.
4. Drop both bolts (H) through the bolt holes at the bottom.
5. Flip the assembled components upside down and lay on a workbench.

6. Slide a spacer sleeve over the farthest bolt.

7. Slide the spacer sleeve with the ratchet arm over the nearest bolt. Ensure the ratchet arm is on the right with the teeth pointing towards the offset bolt hole.

8. Slide the bottom frame plate (G) onto the bolts until they are resting against the sleeves. Ensure the offset bolt hole is to the right.

9. Slide the degree scale (B) onto the bolts. The degree dial must face down at this point.

10. Hold the assemble components together and flip right - side - up.

11. Insert the bolts into the bolt holes in the post's flange. The degree scale will be on the opposite side of the flange. Secure hand - tight with the nuts (H).

12. Insert the large pin (A) into the offset bolt holes of both frames. Adjust the upper and lower frames to allow the pin to be inserted and removed freely. A small amount of grease on the pin may be necessary.

B. SWING ARM ASSEMBLY

IMPORTANT! Do not add washers to the arm assembly. The arm is designed to function without them.

13. Hold the arm plate (J) with the large bolt hole at the top the small pin bolt holes to the right side.

14. Drop two bolts (l) through the bolt holes nearest you.

15. Slide a spacer sleeve (K) over each bolt.

16. Slide the other arm plate over the bolts until they rest against the spacers. Ensure the small pin bolt holes are also on the right side.

17. Secure the bolts with nuts (l) until hand tight.

18. Drop the large pin though the bolt hole at the end and the small pin through a bolt hole on the right.

19. Adjust the upper and lower arm plate until both pins can be inserted and removed freely.

20. Tighten with a wrench to prevent the arms from shifting during operation. Test the alignment again and adjust as needed.

C. ASSEMBLE FRAME AND SWING ARM

21. Remove the large and small pins.

22. Insert the swing arm assembly between the upper and lower frame plates (G). The bolt holes in all four plates should align. The small bolt holes in the swing arm plates are on the right - hand side.

23. Reinsert the large and small pins, then close the swing arm so it is parallel to the frame.

24. Tighten the nuts (H) with a wrench. Check that the large pin can still be removed and swing arm moves freely. Adjust as necessary until the frame is secured.

NOTICE! Grease all metal to - metal pivot or contact points before first use to prevent damage to the tool or workpiece.

NOTICE! Do not grease the die's inner radius. The tube may slip or twist, damaging the workpiece or causing an unwanted angle.

Only bend steel tubes with the tube bender. The tube will scrape against the bender block (O) during the bending process. Finished or polished surfaces on stainless steel or aluminum may be marred.

3.2 Caution

3.2.1 Please read the manual before operation and make yourself understand its structure and principle completely.

3.2.2Safety goggles and the other safely devices should be worn when working on this machine. Safety goggles equipment should comply with GSA Z94.3 - 07 or ANSI Z87.1 standards based on the type of work performed.

3.2.3 Wear protective clothing designed for the work environment and tool.

3.2.4 Wear steel toe footwear or steel toe caps to prevent a foot injury from falling objects.

3.2.5 Do not overreach when operating a tool. Proper footing and balance enables better control in unexpected situations.

3.2.6 Focus your complete attention on the machine and do not operate when other people are near by the machine.

4. Operation

4.1 Use the correct tool for the job. This tool was designed for a specific function. Do not modify or alter this tool or use it for an unintended purpose.

4.2 Check to ensure that all applicable bolts and nuts are firmly tightened.

4.3 TUBE BENDER SET - UP

4.3.1 Choose the die (N) to match the tube's outer diameter.

4.3.2 Remove the large pin from the tube bender.

4.3.3 Place the die to align the tube bender's bolt holes with the die's sleeve. The tab must be on the left - hand side. The die's edge should be parallel with the swing arm plates.

4.3.4 Insert the large pin through the tube bender and the die. Apply grease to the pin if there is difficulty inserting it.

4.3.5 Align the leftmost hole in the die with the appropriate bolt hole in the arm plate.

4.3.6 Insert the small pin through the arm plates and the die.

4.3.7 Insert the tube to the point where the first bend will start. Line the mark on the workpiece with the edge of the die.

4.3.8 Insert the bending block (O) between the arm plates. The block has the world 'TOP' engraved next to the bolt hole. This side faces up when inserted.

4.3.9 Grease the inner radius of the block, then push the block up against the tube as tight as possible. Align the nearest bolt hole in the frame arm with the block's bolt hole and insert the second small pin.

4.3.10 Push the end of the tube extending from the left of the die against the die. Place the clip (C) over the tube and align the clip's bolt holes with the tab's bolt hole. Insert the clip pin (C) to hold the clip in place. .

4.3.11 Check that the workpiece's mark still aligns with the die's edge. Tighten the tab's bolt enough to hold the tube in place, Avoid over tightening the bolt, as that can damage the tube.

4.3.12 Swing the ratchet arm (L) so the end bolt of the swing arm fits between the teeth.

4.4 BENDING THE TUBE

4.4.1 Pull the handle towards the ratchet side of the tube bender.

4.4.2 The tube will begin to bend. Stop pulling when the bolt slides into the next gap between the teeth.

4.4.3 Push the handle back to the right side and pull again to continue bending. Continue until the correct angle is reached or you've reached the last tooth gap the ratchet arm.

4.4.4 Continue bending the tube by follow these steps. Ensure that the tube does not move or shift during these steps.

a. Gently remove the small pin from the swing arm.

b. Move the ratchet arm out of the way.

c. Push the swing arm towards the frame as far as possible and align the bolt holes in the arm with a bolt hole in the die.

d. Gently reinsert the small pin.

e. Swing the ratchet arm back into place so the swing arm's end bolt is between two teeth. If the teeth do not align with the bolt, choose a different die bolt hole that will allow the proper alignment.

f. Continue steps l to 5 until the correct angle is reached.

4.5 RELEASING THE TUBE

4.5.1 Unscrew the tab's bolt and remove the clip.

4.5.2 Remove the small bolt to free the bending block.

4.5.3 Remove the tube.

4.5.4 The tube may stick to the die. You can release the tube with the following steps:

a. Put the block and clip back into place and swing the ratchet arm out of the way.

b. Insert the rectangular tube used for the handle between the end bolts of the swing arm. The tube is inserted from the left to the right.

c. Pull on the handle towards the right, until the tube is held in place by pressure.

d. Yank the handle to the right and the tube and die will separate.

e. Remove the clip, block and then the tube.

NOTICE! Only use accessories rated to handle the forces exerted by this tool during operation. Other accessories may break and forcefully launch debris into the work area.

NOTICE! Sharp edges or burrs may develop during the bending process. Wear heavy gloves to protect the hands.

NOTICE! Keep hands and fingers away from the active parts of the tool while bending to avoid a pinch or crush injury.

WAFINING! Do not operate the tool if any part is missing. Replace the missing part before operating. Failure to do so could result in a malfunction and personal injury.

5. Maintenance

5.1 Maintain the tool with care. A tool in good condition is efficient, easier to control and will have fewer problems.

5.2 Inspect the tool components periodically. Repair or replace damaged or worn components. Only use identical replacement parts when servicing.

5.3 Follow instructions for lubricating and changing accessories.

5.4 Only use accessories intended for use with this tool.

5.5 Keep the tool handles clean, dry and free from oil/grease at all times.

5.6 Maintain the tool's labels and name plates. These carry important information.

5.7 Inspect and lubricate the tool when required. Apply grease to:

5.7.1 The large pin

5.7.2 Between the arm and frame plates where the large pin is inserted

5.7.3 Pivot points on the rear bolt

5.7.4 The ratchet arm bolt

5.7.5 Any point where metal scrapes against metal

NOTICE! Do not grease the die's inner radius. The tube may slip or twist, damaging the workpiece or causing an unwanted angle.

6. Parts list

Part#	Description
1	Large Pin 1 in.
2	Degree scale
3	Clip and pin
4	Post
5	Small Pin 7/8 in.
6	Small Pin 7/8 in.
7	2 Frame plates
8	2 Bolts and Nuts 5/8 in.
9	2 Bolts and Nuts 3/8 in.
10	Handle
11	3 Bending Radius Dies
12	Bending Block

7. Assembly diagram