

IMPORTANT RECEIVING INSTRUCTIONS: Visually inspect all components for shipping damage. If any shipping damage is found, notify carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair or replacement costs resulting from damage in shipment.

SAFETY FIRST

IMPORTANT USER SAFETY AND PROTECTION: In setting up systems to fit your operations, care must be taken to select the proper components and design to insure appropriate integration with your operations and existing equipment and that all safety measures have been taken to avoid the risk of personal injury and property damage from your application or system.

GB ELECTRICAL CANNOT BE RESPONSIBLE FOR DAMAGE OR INJURY CAUSED BY UNSAFE USE, MAINTENANCE OR APPLICATION OF ITS PRODUCTS. Please contact GB Electrical for guidance when you are in doubt as to the proper safety precautions to be taken in designing and setting up your particular application.

CAUTION

The Mini-Eegor™ bender was designed with personal safety in mind. Nevertheless, when a machine is powered with ten tons of force, certain precautions must be exercised to keep that force under control at all times.

Fully Assemble All Load-bearing Pins:

Unless all pins are fully engaged in their respective sockets, the resulting misapplied loads can deform and destroy the bender, with associated danger to attending personnel.

1. All four axles of the compression roller plate assembly must project through, or be flush with, both plates.
2. The top aluminum load arm must be fully seated so that three pins project through it with the chamfered roller engaging the slot.
3. The U-strap pin must seat on its handle.

CAUTION

Do Not Attempt to Use Damaged Components:

Should any part of the Mini-Eegor™ bender become damaged for any reason, replace it before resuming bending operations. Failure to do so may jeopardize other components and personal safety as well.

CAUTION

Keep Clear of Possible Pinch Points:

Relative motion between bender components could severely pinch fingers or cut any objects wedged in between.

Use Standard Precautions with Hydraulic Hoses:

Couplings must be fully engaged to permit free flow of oil. Be alert to avoid developing sharp bends or pinching of hose.

Bend Only Conduit that Fits Freely into Shoe Grooves:

Oversize pipe that hangs up on the groove edges can sometimes split a shoe.

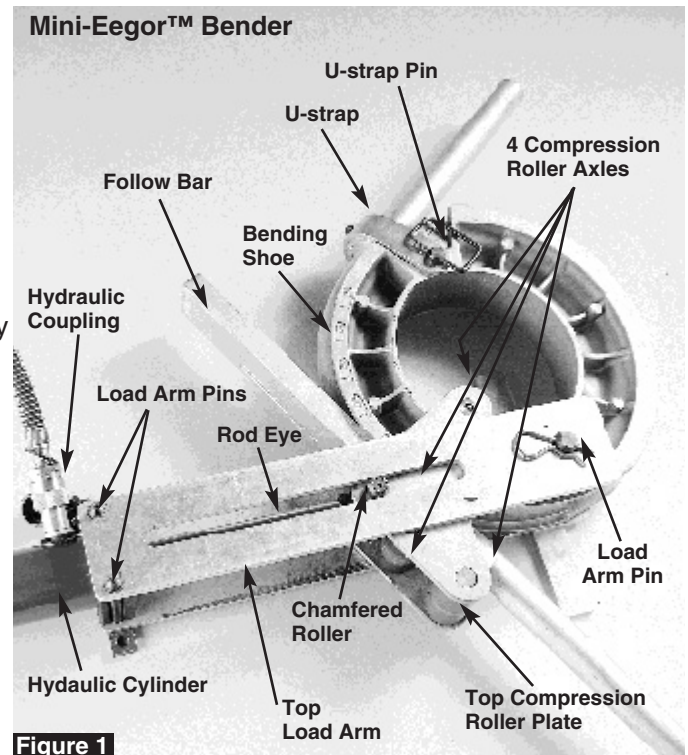
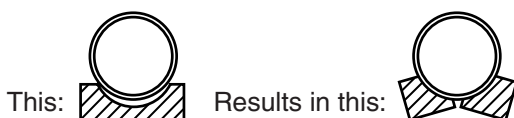


Figure 1

To Protect Your Warranty, Use Only Enerpac Hydraulic Oil

Instructions

Description

The Mini-Egor™ conduit bender hydraulically bends Electrical Metallic Tubing (i.e., Thinwall or EMT), Intermediate Metal Conduit (IMC), Rigid Aluminum and Rigid Steel Conduit, all with the same shoe, in sizes 1", 1 1/4", 1 1/2", and 2". Any angle up to and including 90° can be quickly bent in one set-up. Upon completion of the operation, the bent pipe is hydraulically stripped from the bending shoe. The Mini-Egor™ is available with a variety of hydraulic pumps, and can be purchased without the 1" bending capability at a reduced cost.

Operation

1. Select a work location with a reasonably flat surface and, preferably, free of sand, gravel, or other debris that might interfere with the bending operation. (See Figure 2.)

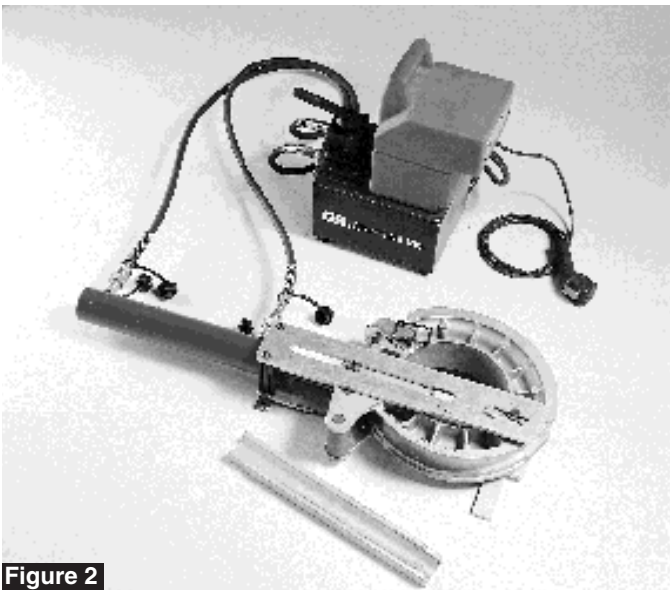


Figure 2

2. Select a bending shoe and follower shoe (or follow bar), if required, for the size pipe to be bent. Follow bars are required for 2" IMC and rigid conduit and for 2", 1 1/2" and 1 1/4" EMT. All shoes are identified with the nominal conduit size marked on the shoe. It is recommended, particularly when preparing to bend unfamiliar brands of conduit, to first lay the pipe in the groove of the shoe and follow bar to ensure that the pipe fits without hanging up on the edges.

Note that each Mini-Egor™ bending shoe has two grooves, one for EMT and the other for IMC and rigid conduit. The conduit type is engraved in its corresponding shoe side to indicate the side you will use when bending EMT, or IMC and rigid conduit. The appropriate shoe side will make contact with the conduit during bending. For bending the other type of conduit, just flip the shoe over.

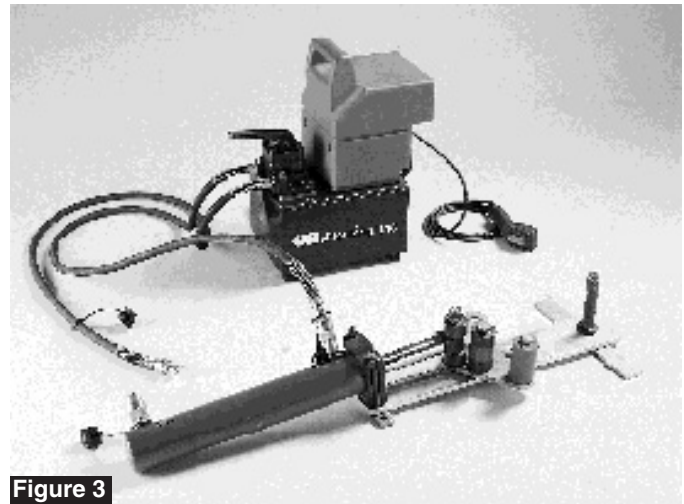


Figure 3

3. Connect the hydraulic hoses between the pump and cylinder ports (see Figure 3).

CAUTION

Fully engage the couplers, and then be sure that the threaded coupler sleeves bottom against their seats. Failure to fully engage the couplers could result in oil entrapment in one end of the cylinder which could seriously over-pressurize the cylinder, resulting in reduced product life and safety.

4. Lift off the top aluminum load arm and the top plate of the roller assembly. The bending shoe must swivel on the pivot pin and rest on the lower roller plate close to the steel rollers.
5. Extend the cylinder plunger hydraulically until the lower roller plate approaches the pivot pin closely enough to support one end of the bending shoe.
6. Engage the bending shoe over the pivot pin (see Figure 4).

Note: The 1" bending shoe (BZ259) has two pivot holes. Be sure the pivot pin engages the hole marked for the type conduit to be bent. Otherwise, the shoe will not bend a full 90° bend.

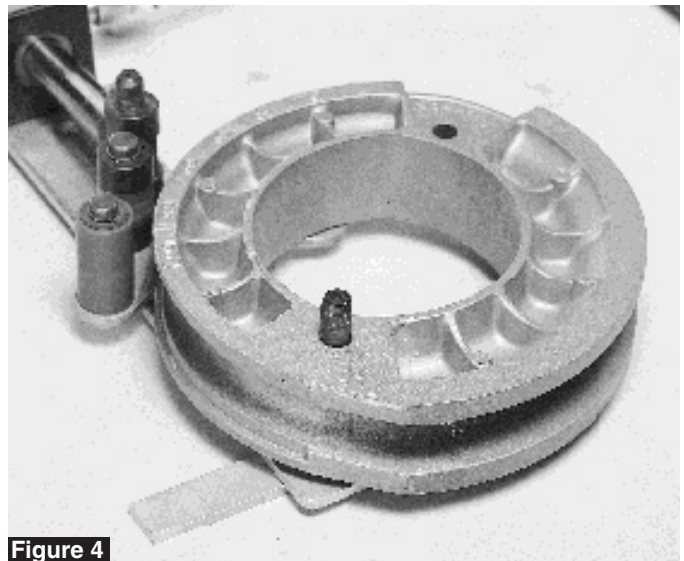


Figure 4

- The bending shoe must swivel in a clockwise direction about the pivot pin when bending pipe. Therefore, when assembling the bender, swivel the shoe counter clockwise to bring it into contact with the steel rollers so that the top roller plate can be assembled (see Figure 5).



Figure 5

- Assemble the top roller plate sub-assembly (see Figure 6). For easy assembly of the top roller plate sub-assembly, first loosely engage the chamfered roller atop the cylinder rod eye pin in its socket; then engage the axle of the large steel roller into its socket in the lower roller plate. The remaining axles will then readily engage their respective sockets to seat flush with the top plate surface.

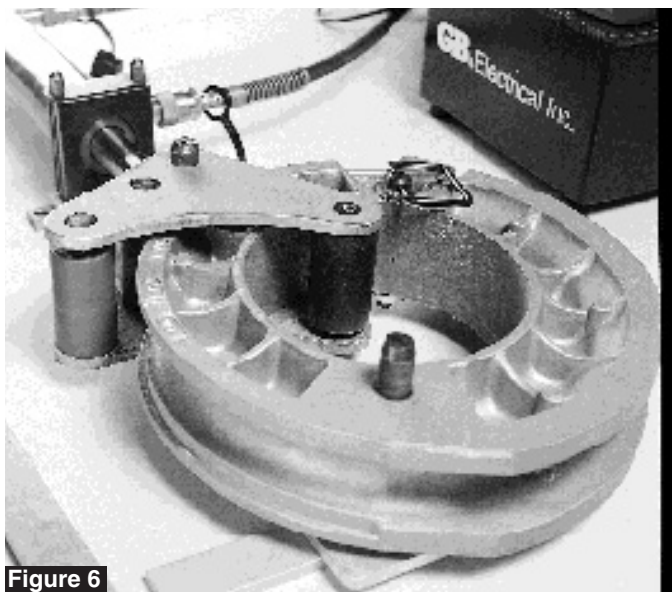


Figure 6

CAUTION

Figure 7 illustrates the **wrong** way to assemble the roller plates. The axle of the large steel roller inside of the bending shoe (at right) is **not** seated in the lower roller plate, as the gap under the roller indicates. Any attempt to bend pipe with the roller plates in this position will destroy the bender.

CAUTION

The gap here indicates that the axle is not seated in the lower roller plate. Do not proceed with bending until all axles are properly engaged.

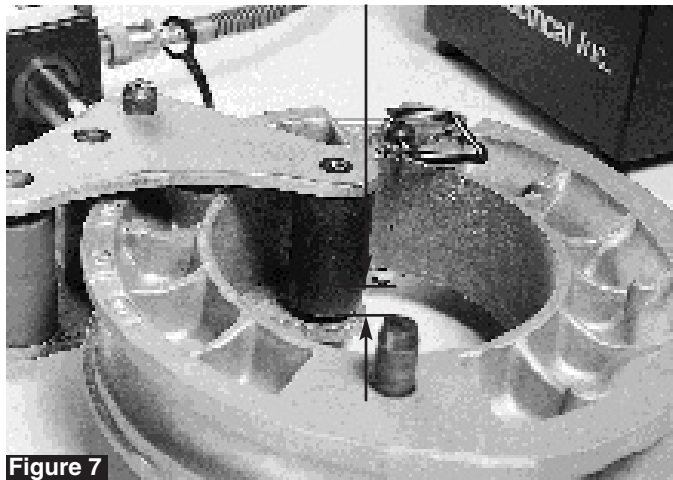


Figure 7

- The top aluminum load arm can then be assembled over the three projecting support pins and the chamfered roller. Engage the pivot pin and chamfered roller first, then lift lightly under the end of the cylinder and the load arm will slip down over the remaining pins in the cylinder support block (see Figure 8).



Figure 8

CAUTION

Do not attempt to bend pipe until all load bearing pins are fully engaged in their respective sockets, or serious damage may result.

- Insert the pipe to be bent into the groove between the rollers and the bending shoe (see Figure 9).

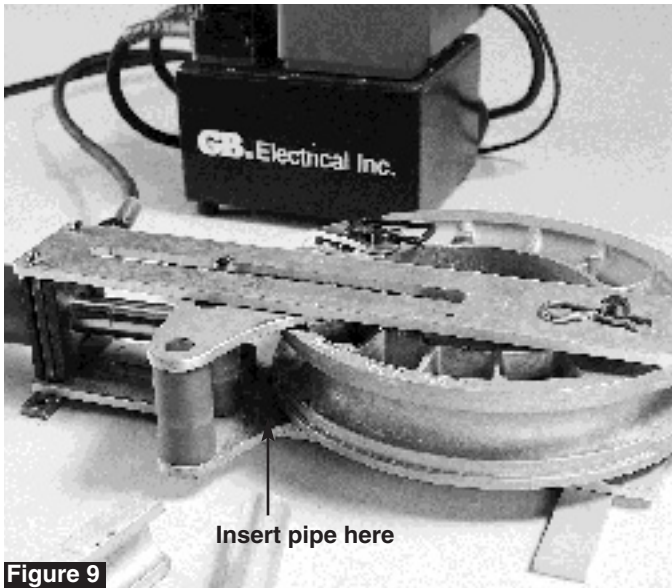


Figure 9

11. The U-strap must now be assembled to clamp the pipe to the bending shoe. Hydraulically retract the cylinder plunger until the U-strap hole in the shoe approaches the edge of the aluminum load arm (bender frame). The greatest clearance for easiest assembly exists when the U-strap hole is right next to the load arm edge. Assemble the correct size insert into the U-strap for the size pipe to be bent. (No insert is required for the 2" size.) Assemble the U-strap assembly over the conduit onto the shoe, and insert the U-strap into the aligned holes until it bottoms on the handle. Lay the handle flat against the U-strap and oriented away from the bender frame so that it will not contact the frame while bending (see Figure 10).

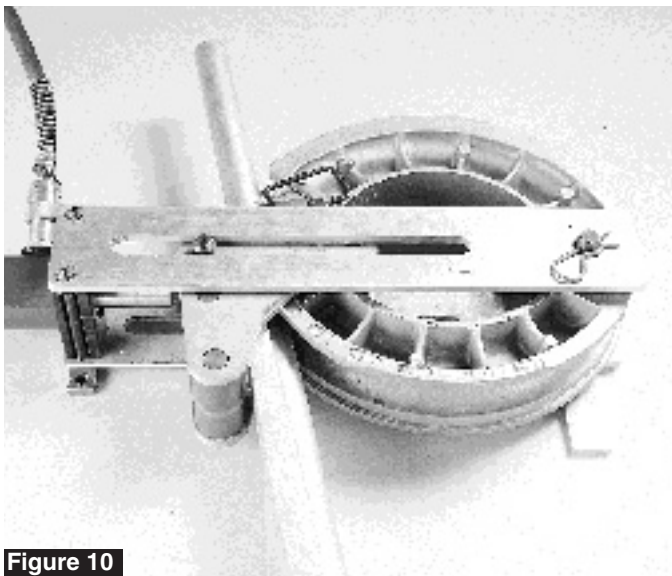


Figure 10

12. The follow bar is next inserted between the pipe and the rollers. The cylinder plunger should be fully retracted, but not to the extent of locking up the assembly. If a little slack is allowed so that the bending shoe and frame components are loose, the "start" end of the follow bar (with the ramp) can be readily inserted until it contacts the U-strap.

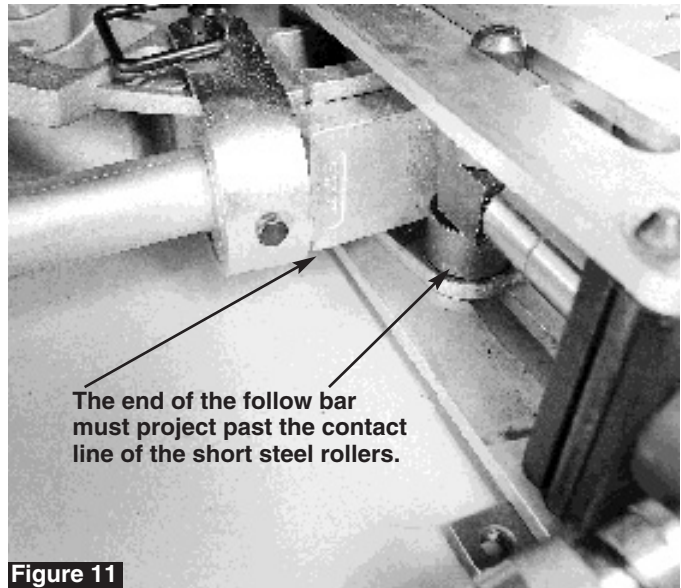


Figure 11

13. The end of the follow bar must be inserted at least as far as the rollers at the cylinder rod eye so that all of the short steel rollers can ride on the follow bar pressure surface (see Figure 11).



Figure 12

14. You are now ready to bend pipe. Actuate the cylinder, and observe that the follow bar moves together with the pipe as it passes through the roller assembly (see Figure 12). If the follow bar does not move, it has not been inserted far enough. Immediately retract the cylinder plunger and re-seat the follow bar so that it will move with the pipe.

15. Actuate the cylinder until the desired angle of bend is achieved, as indicated by the bend angle scale on the bending shoe as it emerges from under the edge of the upper roller plate. A maximum 90° bend is obtainable on all sizes and types of conduit in one set-up with the Mini-Eegor™ (see Figure 13).

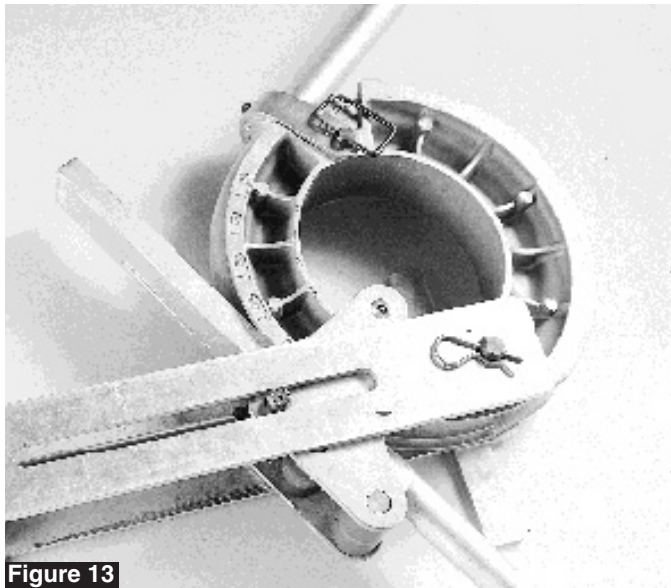


Figure 13

Note: Because electrical conduit varies somewhat from lot to lot in size, material composition, hardness, wall thickness, etc..., a general-purpose bend angle scale cannot be established with any great precision. Preparatory to doing any precision bending, it is recommended that a trial bend be made on each lot of conduit to establish a correction value to be made to the bend angle scale. The precise angle can then be marked on the bending shoe at the leading edge of the roller plate.

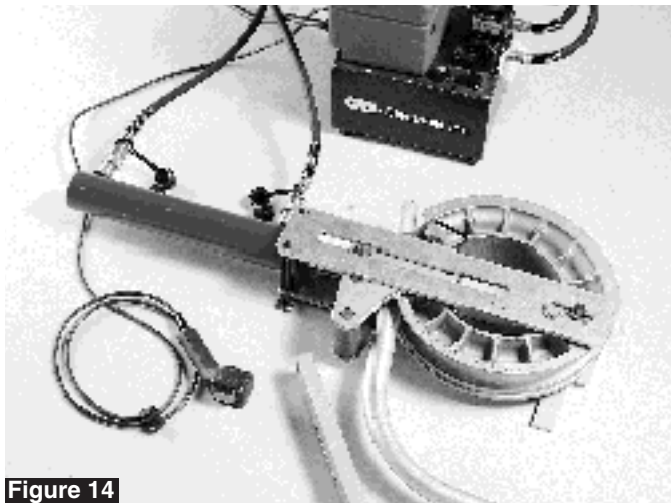


Figure 14

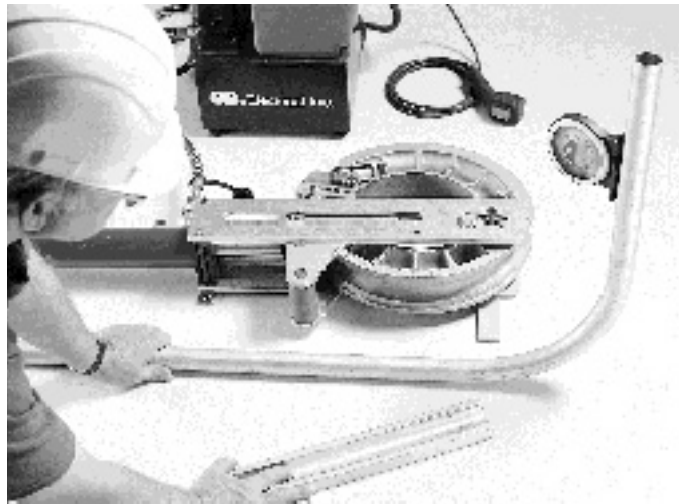
16. To remove bent conduit from the Mini-Eegor™ upon completion of the bend, retract the cylinder plunger, pull out the follow bar, and lift out the pipe (see Figure 14).

CAUTION

Make sure follow bar doesn't slide forward during retraction.

Note: Removal of bent pipe may be easier if the U-strap is first removed. Just pull the pin.

17. Offsets or other more complicated bends may justify lifting off the top aluminum load arm and the top roller plate before removing the pipe. Then, just swivel the shoe away from the pipe for easiest removal.



Picture of a Finished Bend

Maintenance of the Mini-Eegor™ Bender

Aside from conventional care of the hydraulic components, very little maintenance of the Mini-Eegor™ bender is required. Removing sand and dirt from grooves and moving parts will extend the bender life and facilitate ease of operation. Lubricate rollers, when needed, with molybdenum disulfide paste only (such as Dow Corning's Molykote No. G-n paste, or equivalent).

Note: Graphite formulations are not equivalent lubrication.

90° Stub-up and Kick Bend Instructions

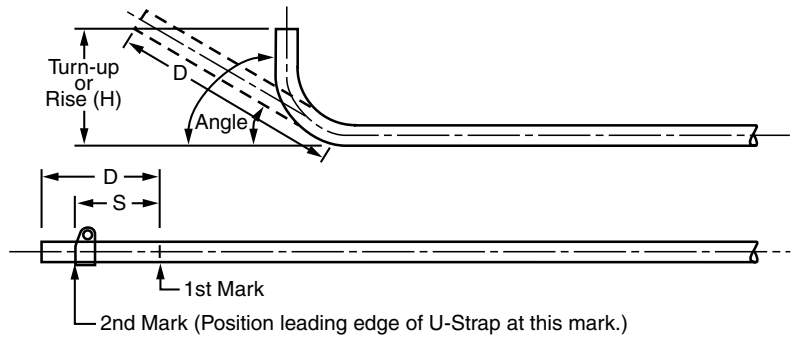
Rise (H)	Diagonal Distance (D) Chart				
	Bend Angle				
	15°	30°	45°	60°	90°
2	7 ³ / ₄	4	2 ¹³ / ₁₆	2 ⁵ / ₁₆	2
4	15 ⁷ / ₁₆	8	5 ¹ / ₁₆	4 ⁵ / ₈	4
6	23 ⁹ / ₁₆	12	8 ¹ / ₂	6 ¹⁵ / ₁₆	6
8	30 ¹⁵ / ₁₆	16	11 ⁵ / ₁₆	9 ¹ / ₄	8
10	38 ⁹ / ₈	20	14 ¹ / ₈	11 ⁹ / ₁₆	10
12	46 ³ / ₈	24	17	13 ⁷ / ₈	12
14	54 ¹ / ₁₆	28	19 ¹³ / ₁₆	16 ³ / ₁₆	14
16	61 ¹³ / ₁₆	32	22 ⁵ / ₈	18 ¹ / ₂	16
18	69 ⁹ / ₁₆	36	25 ⁷ / ₁₆	20 ¹³ / ₁₆	18
20	77 ¹ / ₄	40	28 ⁵ / ₁₆	23 ³ / ₈	20
22	85	44	31 ¹ / ₈	25 ³ / ₈	22
24	92 ³ / ₄	48	33 ¹⁵ / ₁₆	27 ¹ / ₁₆	24
26	100 ⁷ / ₁₆	52	36 ³ / ₄	30	26
28	108 ³ / ₁₆	56	39 ⁵ / ₈	32 ⁵ / ₁₆	28
30	115 ¹⁵ / ₁₆	60	42 ⁷ / ₁₆	34 ⁵ / ₈	30

Mini-Eegor™ Set-back Chart

Type	Conduit Nominal Size	"S" Set-back Dimension (inches)					
		Stub-ups 90°	Kick Bends				
			75°	60°	45°	30°	15°
Rigid & IMC	1"	9 ⁵ / ₁₆	7 ¹³ / ₁₆	6 ⁹ / ₁₆	5 ¹ / ₂	4 ¹ / ₂	3 ⁵ / ₈
	1 ¹ / ₄ "	11 ¹ / ₁₆	9 ¹ / ₈	7 ¹ / ₂	6 ³ / ₁₆	4 ¹⁵ / ₁₆	3 ¹³ / ₁₆
	1 ¹ / ₂ "	12 ⁵ / ₈	10 ⁷ / ₁₆	8 ⁵ / ₈	7 ¹ / ₈	5 ³ / ₄	4 ¹ / ₂
	2"	14 ¹ / ₄	11 ³ / ₄	9 ³ / ₄	8	6 ¹ / ₂	5 ¹ / ₁₆
EMT (Thinwall)	1"	9 ⁵ / ₁₆	7 ¹³ / ₁₆	6 ⁹ / ₁₆	5 ¹ / ₂	4 ⁹ / ₁₆	3 ⁵ / ₈
	1 ¹ / ₄ "	11 ¹ / ₄	9 ⁵ / ₁₆	7 ³ / ₄	6 ⁷ / ₁₆	5 ³ / ₁₆	4 ¹ / ₁₆
	1 ¹ / ₂ "	12 ⁵ / ₁₆	10 ³ / ₁₆	8 ³ / ₈	6 ⁷ / ₈	5 ¹ / ₂	4 ¹ / ₄
	2"	13 ¹⁵ / ₁₆	11 ¹ / ₂	9 ¹ / ₂	7 ⁷ / ₈	6 ¹ / ₄	4 ⁷ / ₈

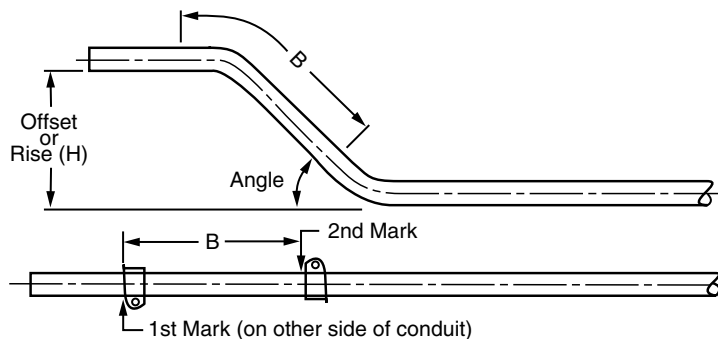
To Make a Stub-up or Kick Bend

1. Determine "H" dimension by measuring rise or height needed. From "Diagonal Distance Chart" on page 5, determine straight length of pipe (D) needed to reach to desired turn-up height (H) at desired bend angle.
2. Lay off this distance (D) from end of conduit and make first mark.
3. From "Set-back Chart", select proper set-back dimension (S) corresponding to conduit size and bend angle desired.
4. Measure distance (S) back from the first mark and make second mark (see figure above).
5. Place conduit in bender with second mark aligned with leading edge of U-strap (see figure above) and bend conduit to desired angle.



To Make an Offset Bend:

1. Make first mark at location determined either by edge of obstacle or by following "Kick Bend Instructions for Mini-Eegor™ Benders" (page 5).
2. From the "Offset Chart" for the size of conduit to be bent, obtain measurement (B) for offset height (H) and bend angle desired.
3. Make second mark at distance (B) beyond first mark and on opposite side of conduit as illustrated below.
4. Place conduit in Mini-Eegor™ bender with first mark aligned with leading edge of U-strap (see figure below) and make first bend to the desired angle.
5. Advance the **bent** conduit through the frame assembly of the Mini-Eegor™ bender and rotate the conduit 180°, so the second mark aligns with the leading edge of the U-strap.
6. Complete offset by making second bend to the exact same angle as the first bend.



Desired Offset (H) (Inches)	Measurement (B) (Inches)						
	Offset Angle > 15°	30°	45°	60°			
		Conduit Size > 1", 1 1/4", 1 1/2", & 2"			1"	1 1/4"	1 1/2"
2	7 1/16	-	-	-	-	-	-
4	15 3/8	7 13/16	-	-	-	-	-
6	23 3/8	11 13/16	8 5/16	-	-	-	-
8	30 13/16	15 13/16	11 1/8	8 7/16	-	-	-
10	38 9/16	19 13/16	13 15/16	10 3/4	10 9/16	10 7/16	-
12	46 5/16	23 13/16	16 3/4	13 1/16	12 7/8	12 3/4	12 9/16
14	54	27 13/16	19 9/16	15 3/8	15 3/16	15 1/16	14 7/8
16	61 3/4	31 13/16	22 7/16	17 1/16	17 1/2	17 3/8	17 3/16
18	69 1/2	35 13/16	25 1/4	20	19 13/16	19 11/16	19 1/2
20	77 3/16	39 13/16	28 1/16	22 5/16	22 1/16	22	21 13/16
22	84 5/16	43 13/16	30 7/8	24 5/8	24 3/8	24 1/4	24 1/8
24	92 1/16	47 13/16	33 3/4	26 15/16	26 1/16	26 9/16	26 7/16
26	100 3/8	51 13/16	36 9/16	29 1/4	29	28 7/8	28 3/4
28	108 1/8	55 13/16	39 3/8	31 9/16	31 5/16	31 3/16	31 1/16
30	115 13/16	59 13/16	42 3/16	33 7/8	33 5/8	33 1/2	33 3/8

REPAIR AND SERVICE INSTRUCTIONS: For repair service and parts contact your nearest GB ELECTRICAL Service Center. The Service Center will provide complete and prompt service on all GB ELECTRICAL products.

<p>PARTS AND SERVICE: For quality workmanship and genuine GB ELECTRICAL parts, select an Authorized GB Service Center for your repair needs. Only repairs performed by an Authorized Service Center displaying the official GB Authorized sign are backed with full factory warranty. Contact GB Electrical (414) 352-4160 for the name of the nearest GB Authorized Service Center.</p>	<p>WARRANTY: GB ELECTRICAL, INC. warrants its products against defects in workmanship and materials for 1 year from date of delivery to user. Chain is not warranted. Warranty does not cover ordinary wear and tear, abuse, misuse, overloading, altered products or use of improper fluid.</p>	<p>WARRANTY RETURN PROCEDURE: When question of warranty claim arises, send the unit to the nearest GB Authorized Service Center for inspection, transportation prepaid. Furnish evidence of purchase date. If the claim comes under the terms of our warranty the Authorized Service Center will REPAIR OR REPLACE PARTS AFFECTED and return the unit prepaid.</p>
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