

# Service Warehouse

## Hand Benders How To Guide



**Aluminum BigBen™  
Hand Bender**

Catalog	Size Thinwall	Size IMC, Rigid	Radius	Fits Bender Handle
	1/2" (12.7 mm)	—	5" (12.7 cm)	
	3/4" (19.1 mm)	1/2" (12.7 mm)	6" (15.3 cm)	
	1" (25.4 mm)	3/4" (19.1 mm)	8" (20.3 cm)	RHB12H



**Aluminum Gardner®  
Hand Bender**

Catalog	Size Thinwall	Size IMC, Rigid	Radius	Fits Bender Handle
	1/2" (12.7 mm)	—	5" (12.7 cm)	
	3/4" (19.1 mm)	1/2" (12.7 mm)	6" (15.3 cm)	
	1" (25.4 mm)	3/4" (19.1 mm)	8" (20.3 cm)	RHB12H
	1 1/4" (31.8)	1" (25.4 mm)	12" (30.5 cm)	



**Iron Hand Bender**

Catalog	Size Rigid	Size IMC	Radius	Fits Bender Handle
	1/2" (12.7 mm)	1/2" (12.7 mm)	3-3/4" (12.7 cm)	
	3/4" (19.1 mm)	3/4" (19.1 mm)	7" (15.3 cm)	
	1" (25.4 mm)	1" (25.4 mm)	8-1/2" (21.6 cm)	RHB12H
	1-1/4" (31.8)	—	13" (33.0 cm)	

### Hand Bender Handles

Catalog Number	Handle Size
BH-100	1" NPT x 44" long (111.7 cm)



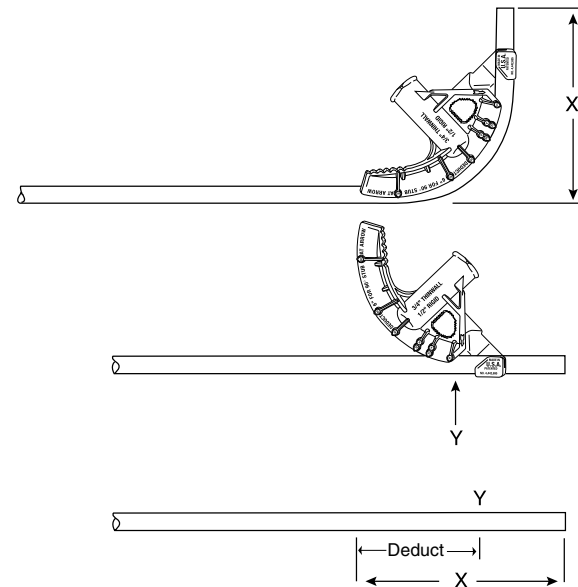
## 90° Bends



Measure length of bend (X). Subtract bender deduct (see Table 1) from length (X) and mark this length from the end of the conduit (Y). Line up (Y) with arrow on bender. Bend until 90° bend is formed.

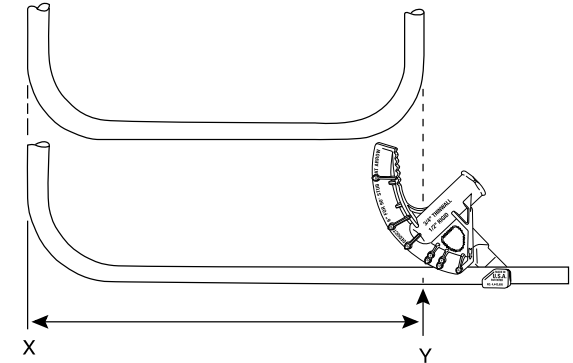
**Table 1**

Conduit Size	EMT Deduct	Rigid or IMC Deduct
1/2" (12.7 mm)	5" (12.7 cm)	6" (15.2 cm)
3/4" (19.1 mm)	6" (15.2 cm)	8" (20.3 cm)
1" (25.4 mm)	8" (20.3 cm)	12" (30.5 cm)
1 1/4" (31.8 mm)	12" (30.5 cm)	—



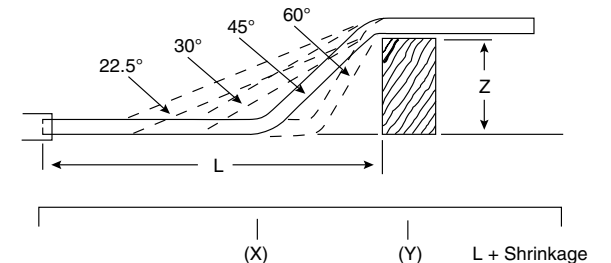
## Back-to-Back Bends

Measure and mark distance on the conduit from a fixed point (X), to the back of the 90° bend, point (Y). Align (Y) with (B or ★) on bender and make a 90° bend.



## Offset Bends

Measure height of offset (Z) and multiply by a constant multiplier per angle of bend (see Table 2 on next page) to determine distance between bends. Measure length (L) from end of conduit to offset and add shrinkage (see Table 2 on next page). Mark this length on conduit (Y). Subtract distance between bends and mark point (X). Using arrow on bender, make desired bend at point (X). Reverse bender and repeat at point (Y).



# Offset Bend Calculations

# 3-Point Saddle Bends

# Correcting Overbends

# Definition of Terms Used

**Table 2**

Angle of Bend	Constant Multiplier	Shrinkage / Inch (25.4 mm) of Offset Depth
10°	6.0	1/16" (1.6 mm)
22-1/2°	2.6	3/16" (4.8 mm)
30°	2.0	1/4" (6.4 mm)
45°	1.4	3/8" (9.5 mm)
60°	1.2	1/2" (12.7 mm)

(For pre-determined values use Table 3)

This chart is a guide for computing shrinkage. Remember, shrinkage values are only used when working into objects, not away.

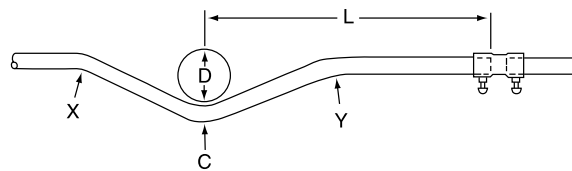
## Recommended Angle Bends per Offset Depths

**Table 3**

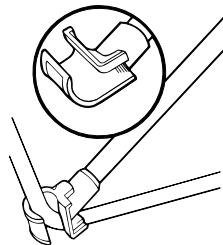
Offset Depth	Angle of Bend	Distance Between Bends	Conduit Shortens
1" (2.5 cm)	10°	6" (15.2 cm)	1/16" (1.6 mm)
2" (5.1 cm)	22-1/2°	5-1/4" (13.3 cm)	3/8" (9.5 mm)
3" (7.6 cm)	30°	6" (15.2 cm)	3/4" (19.1 mm)
4" (10.2 cm)	30°	8" (20.3 cm)	1" (25.4 mm)
5" (12.7 cm)	45°	7" (17.8 cm)	1-7/8" (47.6 mm)
6" (15.2 cm)	45°	8-1/2" (21.6 cm)	2-1/4" (57.2 mm)
7" (17.8 cm)	45°	9-3/4" (24.8 cm)	2-5/8" (66.7 mm)
8" (20.3 cm)	45°	11-1/4" (28.6 cm)	3" (76.2 mm)
9" (22.9 cm)	45°	12-1/2" (31.8 cm)	3-3/8" (85.7 mm)
10" (25.4 cm)	45°	14" (35.6 cm)	3-3/4" (95.3 mm)



Measure height of offset (D) and multiply by a constant multiplier per angle of bend (see Table 2) to determine distance between bends. Measure length (L) from end of conduit to offset and add shrinkage (see Table 3). Mark this length on conduit (C). Subtract distance between bends and mark point (X). Using arrow on bender, make desired bend at point (X). Reverse bender and repeat at point (Y).

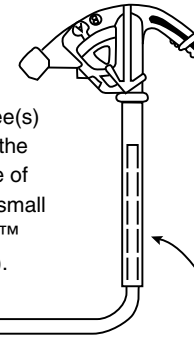


## Hickey Bends



Hickey bends are a series of segment bends (not to exceed 10° per bend) for sharper than standard code radius bends. Bending success with a hickey is directly proportionate to the operator's bending skill.

Because it is flexible, EMT is easy to straighten and will not break if handled as follows. Slip the bender handle over the stub and pull back the desired degree(s) from the bend. For larger conduit sizes, the bender handle can be replaced by a pipe of correspondingly larger diameter or one small enough to fit inside the conduit. Big Ben™ features bend-back channel (see below).



## Big Ben™ Features



**Industry Standard Style**  
30° bend when handle is straight up



**Bigger Hook**  
With a 5x durability factor



**Bigger Foot Pedal**  
40% larger



**More Foot Room**  
Allows for a booted foot



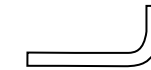
**Bend-Back Channel**  
Easily corrects conduit over-bends



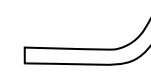
**Vise-Mate™**  
Holds conduit while cutting or reaming



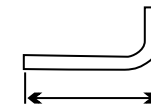
Back-to-Back Bend



90° Bend



"Dog Leg" Bend or "Kick"



Leg Length



Offsets



Rise or "Stub-ups"



Segment Bend



Concentric Bends