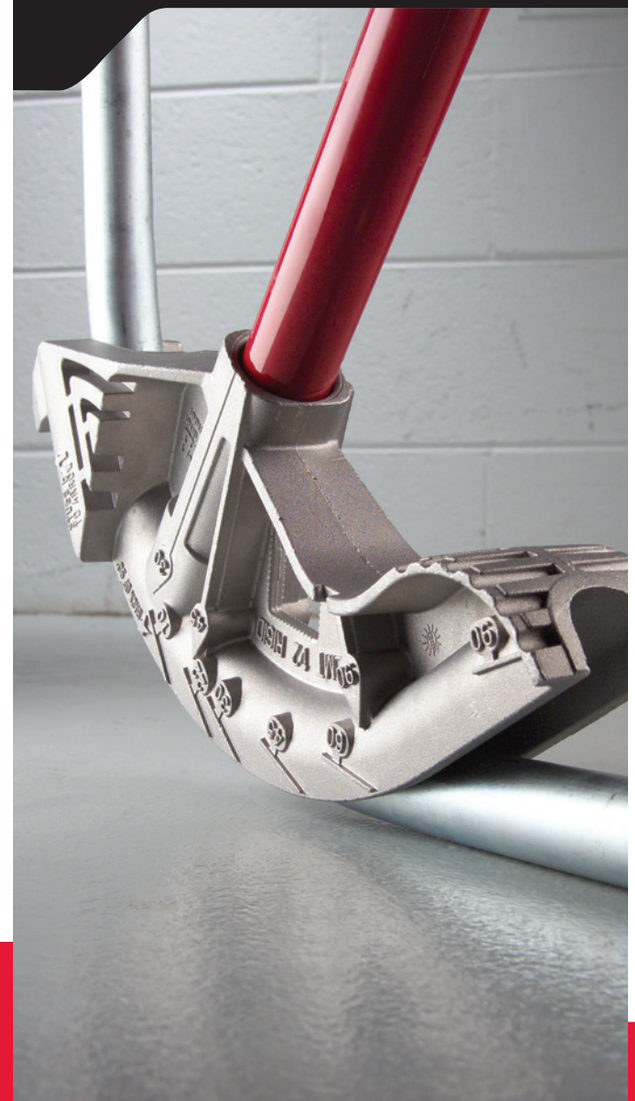
Hand Benders
How To Guide



Aluminum BigBen™ Hand Bender

Catalog Number	Size Thinwall	Size IMC, Rigid	Radius	Fits Bender Handle
960	1/2" (12.7 mm)	—	5" (12.7 cm)	BH-75
961	3/4" (19.1 mm)	1/2" (12.7 mm)	6" (15.3 cm)	BH-75
962	1" (25.4 mm)	3/4" (19.1 mm)	8" (20.3 cm)	BH-100

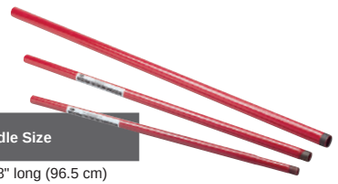
Aluminum Gardner® Hand Bender

Catalog Number	Size Thinwall	Size IMC, Rigid	Radius	Fits Bender Handle
930B	1/2" (12.7 mm)	—	5" (12.7 cm)	BH-75
931B	3/4" (19.1 mm)	1/2" (12.7 mm)	6" (15.3 cm)	BH-75
932	1" (25.4 mm)	3/4" (19.1 mm)	8" (20.3 cm)	BH-100
933	1 1/4" (31.8)	1" (25.4 mm)	12" (30.5 cm)	BH-125

Iron Hand Bender

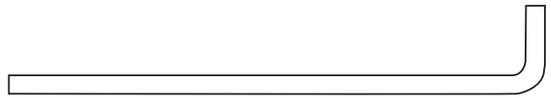
Catalog Number	Size Rigid	Size IMC	Radius	Fits Bender Handle
920	1/2" (12.7 mm)	1/2" (12.7 mm)	3-3/4" (12.7 cm)	BH-75
921	3/4" (19.1 mm)	3/4" (19.1 mm)	7" (15.3 cm)	BH-75
922	1" (25.4 mm)	1" (25.4 mm)	8-1/2" (21.6 cm)	BH-100
923	1-1/4" (31.8)	—	13" (33.0 cm)	BH-125

Hand Bender Handles



Catalog Number	Handle Size
BH-75	3/4" NPT x 38" long (96.5 cm)
BH-100	1" NPT x 44" long (111.7 cm)
BH-125	1-1/4" NPT x 54" long (137.2 cm)

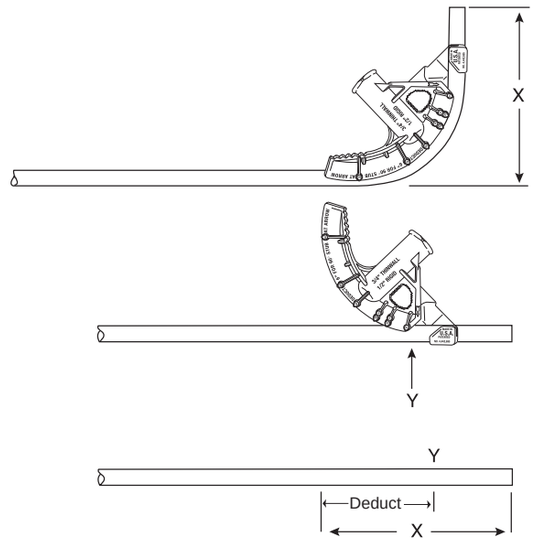
90° Bends



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.

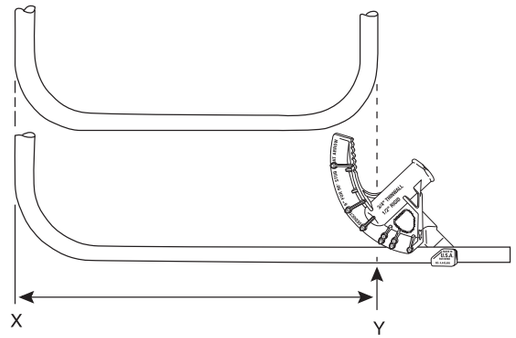
Table 1

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)	—

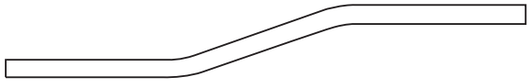


Back-to Back Bends

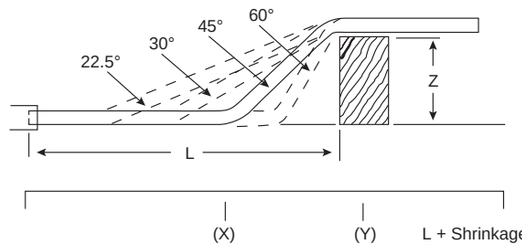
Measure and mark distance on the conduit from a fixed point (X), to the back of the 90° bend, point (Y). Align (Y) with (B or ★) on bender and make a 90° bend.



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

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.

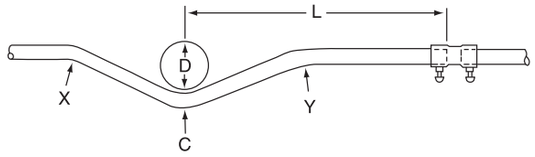
Recommended Angle Bends per Offset Depths

Table 3

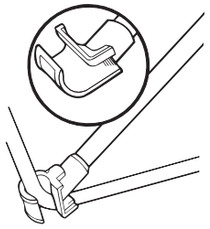
Offset Depth	Angle of Bend	Distance Between Bends	Conduit Shortens
1" (2.5 cm)	10°	6" (15.2 cm)	1/16" (1.6 mm)
2" (5.1 cm)	22-1/2°	5-1/4" (13.3 cm)	3/8" (9.5 mm)
3" (7.6 cm)	30°	6" (15.2 cm)	3/4" (19.1 mm)
4" (10.2 cm)	30°	8" (20.3 cm)	1" (25.4 mm)
5" (12.7 cm)	45°	7" (17.8 cm)	1-7/8" (47.6 mm)
6" (15.2 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)

3-Point Saddle Bends

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). The first bend should be made at (C), put (STAR) or B at (C). Then make your bends at (X) & (Y). Using arrow on bender, make desired bend at point (X). Reverse bender and repeat at point (Y).

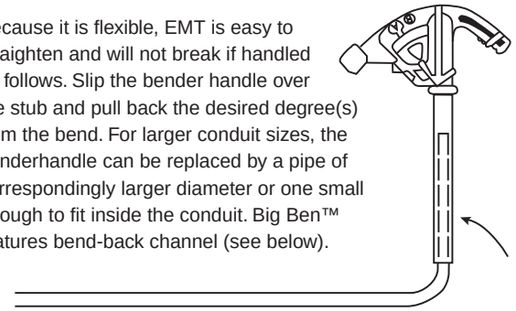


Hickey Bends



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.

Correcting Overbends

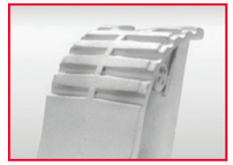


Because it is flexible, EMT is easy to straighten and will not break if handled as follows. Slip the bender handle over the stub and pull back the desired degree(s) from the bend. For larger conduit sizes, the benderhandle can be replaced by a pipe of correspondingly larger diameter or one small enough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

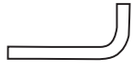
More Foot Room
Allows for a booted foot

Bend-Back Channel
Easily corrects conduit over-bends

Vise-Mate™
Holds conduit while cutting or reaming

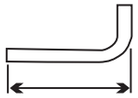
Definition of Terms Used

Back-to-Back Bend



90° Bend

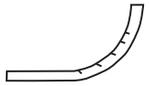
"Dog Leg" Bend or "Kick"



Leg Length

Offsets

Rise or "Stub-ups"



Segment Bend

Concentric Bends