

STANDARD FORMING TOOLS FOR SOLIDS

The tools illustrated and listed below are used for bending round, flat, square, hexagon and all other solid materials. These parts are properly hardened to withstand forming pressure and are precision ground for extreme accuracy.

When ordering tooling for Benders, state model of Bender and the desired radius size.



Quill Radius Pin

Used with standard Locking Pin; for forming lighter material to a tight radius.

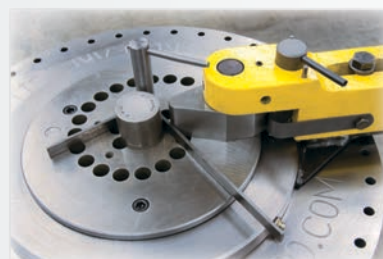
(Called Quill Style when the base diameter is larger than the pin size.)



Shoulder Radius Pin

Used with standard Locking Pin; for forming solid material to a larger radius.

(Called Shoulder Style when the base diameter is smaller than the pin size.)



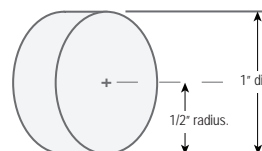
Radius Collar - Style B

Used with standard Locking Pin; for forming solid material.



DIAMETER vs. RADIUS – Radius equals 1/2 of the Diameter

Note: Order by RADIUS SIZE and BENDER MODEL NUMBER.



Springback & Radius Size – when determining the size of the Radius Pin or Collar, springback due to elasticity in the material to be formed, should be compensated for.

One way is by overbending slightly beyond the required angle. After the amount of springback has been determined, the Angle Gauge can be set so that all bends will be duplicated. In addition to overbending, it may be necessary in some cases to form the material around a Radius Pin or Radius Collar which is smaller radius than the desired radius. The actual size of the Radius Pin or Collar can be best determined through experimentation as results will vary depending on the type of material, size and hardness.



Standard Forming Roller

Replaces Forming Nose to eliminate part marking or back up for Follow Block to reduce drag.



Zero Radius Block

Used with standard Locking Pin; for forming solid material to a tight radius.

*Also available with various radius sizes on the forming edge.



Built Up Forming Nose

Used to increase the material width range of Di-Acro Benders. Must be used with taller or stacked radius collars.



WHAT IS SPRINGBACK?

The capacity or tendency of a bent or shaped elastic material (such as a metal) to revert back to its original form. See bottom of this page for more helpful information about springback and how it may affect your finished radius size.

MATERIAL CAPACITIES by BENDER MODEL

Model	1	1A	2	3	4
Round mild steel bar	.1875" (4.7625mm)	.3125" (7.9mm)	.5" (12.7mm)	.625" (15.9mm)	1" (25.4mm)
Square mild steel bar	.125" (3.175mm)	.25" (6.4mm)	.375" (9.5mm)	.5" (12.7mm)	.75" (19.1mm)
Steel tubing – 16 ga.	.3125" (7.9375mm)	.5" (12.7mm)	.75" (19.1mm)	1" (25.4mm)	1.25" (31.8mm)
Standard iron pipe	–	–	.3 IPS (9.5mm)	.5 IPS (12.7mm)	1 IPS (25.4mm)
Flat steel bar easy way	.125 x .75 (3.17x19.05)	.1875x1 (4.8x25.4)	.25x1.5 (6.4x38.1)	.25x2 (6.4x50.8)	.375x4 (9.5x101.6)
Flat steel bar hard way	.0625x.50 (1.5875x12.7)	.125x.50 (3.2x12.7)	.125x75 (3.2x19.1)	.125x1 (3.2x25.4)	.25x1 (6.4x25.4)
Machine shipping weight	22 lbs (10 kg)	60 lbs (27 kg)	90 lbs (41 kg)	220 lbs (27 kg)	270 lbs (27 kg)
Stand shipping weight	–	75 lbs (34 kg)	75 lbs (34 kg)	75 lbs (34 kg)	75 lbs (34 kg)

QUIK-LOK ASSEMBLY

Di-Acro offers a Quik-Lok Clamp Assembly for each of our Benders. This accessory is an essential component when bending tubing, angle, channel and extrusions as it locks the material securely and can be instantly released for removal of the formed part.

The Quik-Lok is easily adjusted to achieve the desired radius size. All Style A Radius Collars for tube forming have been designed for use with the Quik-Lok Assembly.



Grooved Radius Collar - Style A

Used with Quik-Lok Clamp, Clamp Block and Follow Block, or Grooved Forming Roller for tube bending.



Follow Block

Used with Grooved Radius Collar for tube bending. The length will vary depending on the centerline radius size and the degree of bend required.

(The picture on the right shows the Follow Block with optional Standard Forming Roller in lieu of standard nose.)



Clamp Block

Used with Quik-Lok Clamp and A Style Radius Collar for tube bending. Attaches to face of Quik-Lok.

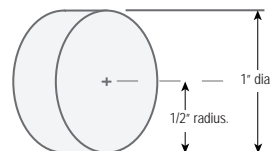


Standard Forming Roller

Replaces Forming Nose to eliminate part marking or back up for Follow Block to reduce drag.

DIAMETER vs. RADIUS – Radius equals 1/2 of the Diameter

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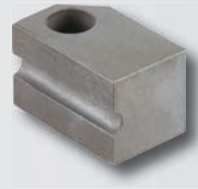
Grooved Forming Roller

Used with Quik-Lok Clamp in lieu of standard nose. For forming larger radius in tubular stock. (Recommended minimum 5X material O.D.)



Grooved Radius Collar - Style B

Used with Clevis Clamp or Swivel Clamp for tube bending. (Does not require Quik-Lok Clamp Assembly.)



Swivel Clamp may be used with Style B Grooved Collar

Minimum Bend Radius For Typical Applications On All Di-Acro Benders

- **SOLID BAR**– Smallest radius is equal to the diameter of the bar being bent. (1:1 Ratio) Based on mild steel material properties.
- **TUBING**– Smallest centerline radius is equal to 2-1/2 times the tube diameter. Based on 16 ga. wall thickness and mild steel material properties.



When bending materials of open cross section such as tubing, channel, angle and extrusions the bending form should exactly fit the contour of the material to provide support during the forming operation. This is also true of the clamp block and follow block, or grooved forming roller, as only by completely confining the material can a good bend be obtained.

If the desired bend radius is critical and must be held to a tight tolerance, it is necessary to bend the material around a bending form having a smaller radius than the required bend. All metal has springback. The amount of springback is dependent on the type of material, size and hardness. To determine the exact radius of the bending form, it is usually necessary to make a few experimental bends.

Email techsupport@diacro.com for more information about custom tooling and one-of-a-kind set-ups.