



Mandrels (Plug Type)

For use with Exactol Models 412, 424 and the HB632 benders. Mandrels ensure smooth bends without kinking, or wrinkling when bending thin-walled tube, or when making short-radius bends. Mandrels support the tube wall from the inside to keep it fully open for a smooth bend.

A rule that is generally followed to determine whether or not a mandrel is necessary is as follows: When the wall thickness of the tube to be bent is 7 percent or more of the tube O.D., a mandrel is usually not necessary. On wall thicknesses that range between 4-6 percent of the tube O.D., it is necessary to use a mandrel to avoid wrinkling and flattening in the bend area. This rule is based on a bend radii of between three and four times the tube O.D.

* See Fig. S33 for mandrel usage.

To order mandrel, specify tube O.D. and wall thickness.



Fig. S34 — Mandrel

Part Number Example: 924417-Size X Wall Thickness = 924417-12X058

Size	END SIZE (in.)	Wall Thickness				
		(in.)	(in.)	(in.)	(in.)	(in.)
6	3/8	—	0.035	0.042	—	—
8	1/2	—	0.035	0.042	0.049	—
10	5/8	0.035	0.042	0.049	—	—
12	3/4	0.035	0.042	0.049	0.058	0.065
14	7/8	0.035	—	0.049	0.058	0.065
16	1	0.035	0.042	0.049	0.058	0.065
18	1 1/8	—	0.042	0.049	—	0.065
20	1 1/4	—	0.049	—	0.065	0.095
24	1 1/2	0.049	0.058	0.065	0.083	—

Table S4 — Mandrel Sizes

Mandrel Rods

For use with the HB632 Model Bender and Exactol Models 412/424 benders. Mandrel rods (as well as a mandrel rod stop assembly) are required when using mandrels. Mandrel rod diameters are determined by tube I.D.



Fig. S35 — Mandrel Rods

Mandrel Rod Sizes

Mandrel Rod Dia. (in.)	Tube I.D. (in.)	Part No.
1/4	.283 to .362	520506
5/16	.363 to .484	520507
13/32	.485 to 1.489	520508
5/8	1.49 to 1.87	520509

Dimensions and pressures for reference only, subject to change.