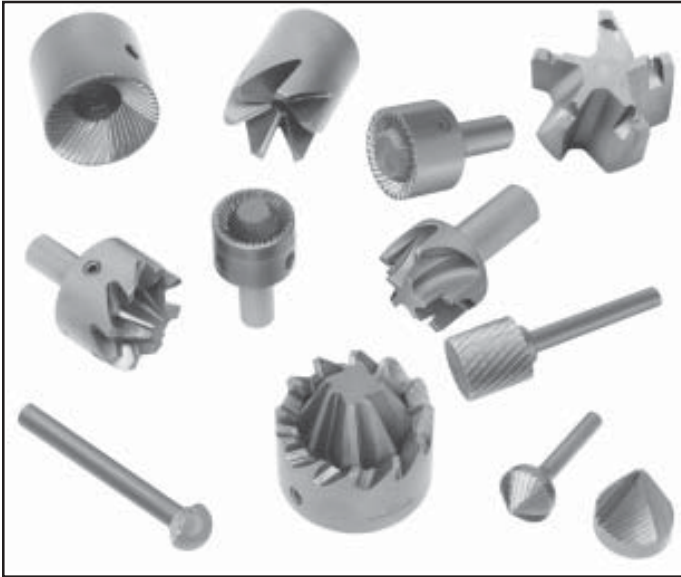


Tube Specialty Tools



Just as there are different reasons for finishing the cut ends of pipe or tubing, there are different tools and methods for doing the job.

1. Often, the only reason for finishing the cut end is to get rid of burrs caused by the cutting process. In that case, Tube End Deburring Cutters may make quick work of the task.
2. To facilitate assembly with other components, tube ends may be chamfered, using Severance Tube End Chamfering Mills.
3. The third method, forming, is used when appearance is important, as in an exposed tube end. Forming may also be recommended when the cut end must be square with the tube axis. Forming is the only method that finishes the end as well as the corners.

Tube End Deburring Cutters

Deburring cutters are identified as having smaller, more numerous cutting teeth than chamfering or forming tools. They can be operated over a wide speed range (slower is better in nonrigid setups) and take light cuts very quickly. Tube End Deburring Cutters are available from stock in sizes ranging from 1/8" to 2-1/4" OD. Each is adjustable for wall thickness. Standard cutters feature 30° and 45° centerline angles.

Inside, outside and tube end deburring cutters are available in carbide as well as HSS.

We also catalog the HR-Series radius deburring tools, which is usually sold with a handle for manual operation.

Tube End Chamfering Mills

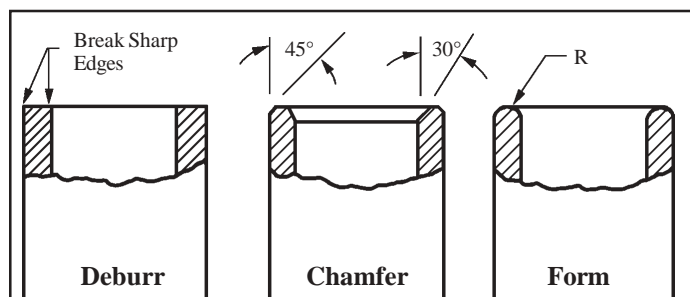
Severance Tube End Chamfering Mills have cutting edges designed to provide a shearing action, yielding a smoothly machined surface. The standard tool produces a 30° angle on the tube ID and 45° on the OD. Other angles may be ordered as specials. This series of tools is offered in a range of sizes to accommodate pipe and tubing from 3/16" to 2-1/2" outside diameters. All models are adjustable for different wall thicknesses.

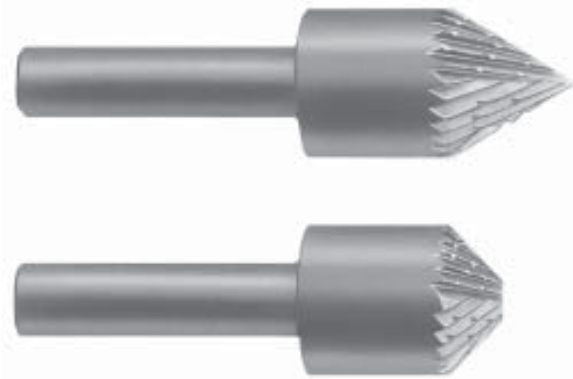
Severance also manufactures separate chamfering mills for inside and outside cutting. Inside Chamfering Mills are stocked in 1/2" to 1-1/2" sizes, with 30° or 45° centerline angles. Outside Chamfering Mills, for working diameters from 1/8" to 3" are also stocked in 30° or 45° models.

Tube End Forming Cutters

As the name implies, Severance Tube End Forming Cutters completely machine the cut ends of tubular products. They produce a smoothly rounded surface, which is both attractive and functional.

Because they are of solid construction, a specific tool is required for each different workpiece diameter and wall thickness. We also make many custom tube end forming cutters ... for nonstandard sizes and for machining profiles other than blended radii. Carbide is available on sizes of 3/8" OD and larger.





High Speed Steel Inside Deburring Cutters

Teeth as regularly furnished on these cutters are for quick light chamfering only. Stocked in 30° C/L and 45° C/L. The Inside Deburring Cutter is designed so that one tool can deburr many different hole diameters. The multi-flute design is self-piloting. For heavier countersinking, special arbors, or special angles, submit details to our Engineering Department. Holding of parts by hand is not recommended.

High Speed Steel

30° C/L (60° Included) Solid

Head Dia.	Nose Point or Flat Dia.	Overall Length	Severance Tool Name	EDP Order Number
1/4"	P	2-1/4"	ID-1/4-30	20770
5/16"	1/32"	2-1/4"	ID-5/16-30	20771
3/8"	P	2-1/4"	ID-3/8-30	20772
1/2"	9/64"	2-1/4"	IDS-1/2-30	20773
1/2"	P	2-1/4"	IDL-1/2-30	20774
5/8"	13/64"	2-1/4"	IDS-5/8-30	20775

Tools above come with 1/4" shanks



High Speed Steel

45° C/L (90° Included) Solid

Head Dia.	Nose Point or Flat Dia.	Overall Length	Severance Tool Name	EDP Order Number
1/4"	P	2-1/4"	ID-1/4-45	20805
5/16"	1/16"	2-1/4"	ID-5/16-45	20806
3/8"	P	2-1/4"	ID-3/8-45	20807
1/2"	1/8"	2-1/4"	IDS-1/2-45	20808
1/2"	P	2-1/4"	IDL-1/2-45	20809
5/8"	1/8"	2-1/4"	IDS-5/8-45	20810

Tools are furnished without shanks.
See pages 78-80 for available shank styles and sizes.

High Speed Steel

30° C/L (60° Included) Threaded

Head Dia.	Nose Point or Flat Dia.	Overall Length	Thread Size	Severance Tool Name	EDP Order Number
5/8"	3/64"	7/8"	1/4"-28	ID-5/8-30	20776
3/4"	1/32"	1"	5/16"-24	ID-3/4-30	20777
7/8"	5/32"	1"	3/8"-24	ID-7/8-30	20778
1"	9/32"	1-1/8"	3/8"-24	IDS-1-30	20779
1"	1/8"	1-1/8"	3/8"-24	IDL-1-30	20780
1-1/8"	1/8"	1-1/8"	3/8"-24	ID-1-1/8-30	20781
1-1/4"	17/32"	1"	3/8"-24	IDS-1-1/4-30	20782
1-1/4"	3/32"	1-1/4"	3/8"-24	IDL-1-1/4-30	20783
1-1/2"	31/64"	1-1/8"	1/2"-20	IDS-1-1/2-30	20784
1-1/2"	13/64"	1-1/2"	1/2"-20	IDL-1-1/2-30	20785
1-3/4"	3/4"	1-1/4"	1/2"-20	IDS-1-3/4-30	20786
1-3/4"	5/16"	1-1/2"	1/2"-20	IDL-1-3/4-30	20787
2"	63/64"	1-1/4"	5/8"-18	IDS-2-30	20788
2"	27/32"	1-1/4"	5/8"-18	IDL-2-30	20789
2-1/4"	1-3/32"	1-3/8"	3/4"-16	IDS-2-1/4-30	20790
2-1/4"	33/64"	1-7/8"	3/4"-16	IDL-2-1/4-30	20791
2-1/2"	1-31/64"	1-1/4"	3/4"-16	IDS-2-1/2-30	20792
2-1/2"	29/32"	1-3/4"	3/4"-16	IDL-2-1/2-30	20793
3"	1-63/64"	1-1/4"	1"-14	ID-3-30	20794

High Speed Steel

45° C/L (90° Included) Threaded

Head Dia.	Nose Point or Flat Dia.	Overall Length	Thread Size	Severance Tool Name	EDP Order Number
5/8"	1/8"	11/16"	1/4"-28	ID-5/8-45	20811
3/4"	P	13/16"	5/16"-24	ID-3/4-45	20812
7/8"	5/32"	1"	3/8"-24	ID-7/8-45	20813
1"	1/4"	7/8"	3/8"-24	IDS-1-45	20814
1"	P	7/8"	3/8"-24	IDL-1-45	20815
1-1/4"	3/8"	3/4"	3/8"-24	IDS-1-1/4-45	20816
1-1/4"	P	1"	3/8"-24	IDL-1-1/4-45	20817
1-1/2"	1/2"	7/8"	1/2"-20	IDS-1-1/2-45	20818
1-1/2"	1/4"	1-1/16"	1/2"-20	IDL-1-1/2-45	20819
1-3/4"	5/8"	7/8"	1/2"-20	ID-1-3/4-45	20820
2"	1"	1"	5/8"-18	IDS-2-45	20821
2"	1/4"	1-1/2"	5/8"-18	IDL-2-45	20822
2-1/4"	1"	1"	5/8"-18	IDS-2-1/4-45	20823
2-1/4"	1/4"	1-3/8"	5/8"-18	IDL-2-1/4-45	20824
2-1/2"	3/4"	1-3/8"	3/4"-16	IDS-2-1/2-45	20825
2-1/2"	1/4"	1-5/8"	3/4"-16	IDL-2-1/2-45	20826
3"	3/4"	1-3/4"	1"-14	IDS-3-45	20827
3"	1/4"	1-7/8"	1"-14	IDL-3-45	20828

Carbide

Inside Deburring Cutters

All carbide Inside Deburring Cutters are designed with a pointed nose. Tools with a head diameter measuring 3/32" thru. 1/4" are made of solid carbide and are double ended. Inside Deburring Cutters with a head diameter measuring 5/16" thru. 2" have solid carbide heads brazed to hardened alloy precision ground shanks. Holding of parts by hand is not recommended.



Carbide

30° C/L (60° Included)

Head Dia.	Shank Dia.	Overall Length
3/32"	3/32"	1-1/2"
1/8"	1/8"	1-1/2"
3/16"	3/16"	2"
1/4"	1/4"	2"
5/16"	1/4"	2-1/4"
3/8"	1/4"	2-1/4"
1/2"	1/4"	2-1/4"
1/2"	3/8"	2-1/8"
5/8"	1/4"	2-3/8"
5/8"	3/8"	2-3/8"
3/4"	1/2"	2-11/16"
7/8"	1/2"	2-13/16"
1"	1/2"	2-13/16"

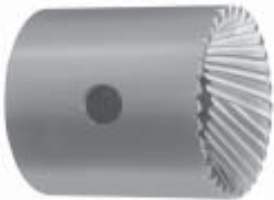
ANSI Number	Severance Tool Name	EDP Order Number
SJ-61	3Z-W-DE	20620
SJ-42	4Z-W-DE	22250
SJ-81	6Z-W-DE	20622
SJ-1	8Z-W-DE	22411
SJ-2	ID-5/16-30-W	20628
SJ-3	ID-3/8-30-W	20629
SJ-5	ID-1/2-30-W	20633
-	ID-1/2-30-W-3/8	20634
SJ-6	ID-5/8-30-W	20639
-	ID-5/8-30-W-3/8	20640
SJ-7	ID-3/4-30-W	20644
SJ-8	ID-7/8-30-W	20649
SJ-9	ID-1-30-W	20650

Carbide

45° C/L (90° Included)

ANSI Number	Severance Tool Name	EDP Order Number
SK-61	3Y-W-DE	20680
SK-42	4Y-W-DE	22249
SK-81	6Y-W-DE	20682
SK-1	8Y-W-DE	22412
SK-2	ID-5/16-45-W	20688
SK-3	ID-3/8-45-W	20689
SK-5	ID-1/2-45-W	20693
-	ID-1/2-45-W-3/8	20694
SK-6	ID-5/8-45-W	20699
-	ID-5/8-45-W-3/8	20700
SK-7	ID-3/4-45-W	20704
SK-8	ID-7/8-45-W	20709
SJK-9	ID-1-45-W	20710

Tools are furnished without shanks.
See pages 78-80 for available shank styles and sizes.



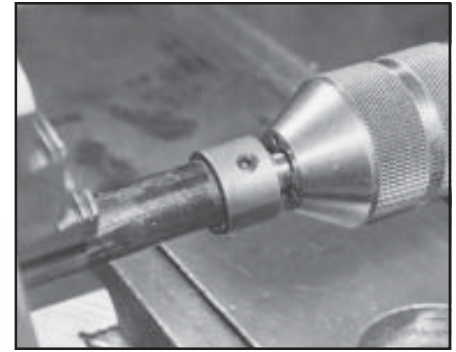
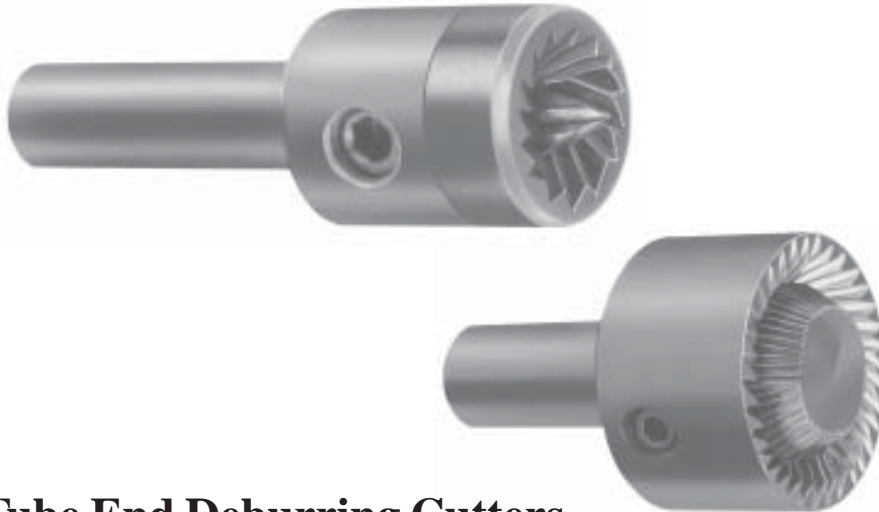
High Speed Steel Outside Deburring Cutters

Outside Deburring Cutters are designed with shear-type cutting teeth to eliminate burrs on diameters of tubes and rods. One tool can handle various parts, may be reground, and can be provided in carbide.



NOTE: Tools O-0, O-1, O-2, O-3, O-20, O-21, and O-22 have the tooth pattern illustrated above.

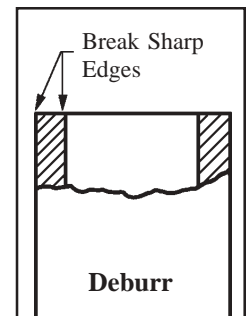
Max. Head Dia.	"H" Recess Hole Dia.	"D" Mouth Dia.	"B" Body Dia.	"L" Body Length	"C" Coolant Hole	"T" I.D. Thread Size	Incl. Inside Angle	Severance Tool Name	EDP Order Number
1/8"	1/16"	5/32"	1/2"	7/8"	-	1/4"-28	30°	O-0	25430
3/16"	5/32"	7/32"	1/2"	7/8"	-	1/4"-28	30°	O-1	25431
1/4"	13/64"	19/64"	1/2"	7/8"	-	1/4"-28	30°	O-2	25432
5/16"	.242"	23/64"	1/2"	7/8"	-	1/4"-28	30°	O-3	25433
3/8"	9/32"	7/16"	5/8"	7/8"	1/8"	1/4"-28	30°	O-4	25434
1/2"	.332"	9/16"	3/4"	1"	3/16"	3/8"-24	30°	O-5	25435
5/8"	7/16"	11/16"	7/8"	1"	3/16"	3/8"-24	30°	O-6	25436
3/4"	17/32"	53/64"	1"	1"	3/16"	3/8"-24	30°	O-7	25437
1"	45/64"	1-5/64"	1-1/4"	1-3/8"	1/4"	1/2"-20	30°	O-8	25438
1-1/4"	7/8"	1-21/64"	1-1/2"	1-3/8"	1/4"	1/2"-20	30°	O-9	25439
1-1/2"	1-3/64"	1-19/32"	1-3/4"	1-5/8"	1/4"	5/8"-18	30°	O-10	25440
2"	1-13/32"	2-7/64"	2-3/8"	1-7/8"	5/16"	3/4"-16	30°	O-11	25441
2-1/2"	1-3/4"	2-39/64"	2-7/8"	2-1/8"	5/16"	3/4"-16	30°	O-12	25442
3"	2-3/32"	3-1/8"	3-3/8"	2-1/2"	7/16"	3/4"-16	30°	O-13	25443
4"	2-13/16"	4-1/8"	4-3/8"	3"	7/16"	1"-14	30°	O-14	25444
1/8"	5/64"	3/16"	1/2"	7/8"	-	1/4"-28	45°	O-20	25460
3/16"	7/64"	7/32"	1/2"	7/8"	-	1/4"-28	45°	O-21	25461
1/4"	9/64"	23/64"	1/2"	7/8"	-	1/4"-28	45°	O-22	25462
3/8"	3/16"	7/16"	5/8"	7/8"	1/8"	1/4"-28	45°	O-23	25463
1/2"	1/4"	9/16"	3/4"	1"	3/16"	3/8"-24	45°	O-24	25464
3/4"	3/8"	13/16"	1"	1"	3/16"	3/8"-24	45°	O-25	25465
1"	1/2"	1-5/64"	1-1/4"	1-3/8"	1/4"	1/2"-20	45°	O-26	25466
1-1/2"	3/4"	1-19/32"	1-3/4"	1-1/2"	1/4"	5/8"-18	45°	O-27	25467
2"	15/16"	2-7/64"	2-3/8"	1-3/4"	5/16"	3/4"-16	45°	O-28	25468
3"	1-7/16"	3-1/8"	3-1/2"	2-1/4"	7/16"	3/4"-16	45°	O-29	25469
4"	1-15/16"	4-1/8"	4-3/8"	2-5/8"	7/16"	1"-14	45°	O-30	25470



Caution: holding of tubing by hand is not recommended.

Tube End Deburring Cutters

The cutting teeth are designed to give a shearing cut. They'll curl the fine chips away from the cutter to avoid loading. The inside member produces a chamfer of 30° angle with C/L and the outside member 45°. The tube end deburring cutters, are intended for light deburring only, and will quickly deburr tubes of most any machinable material. They are available in high speed steel and carbide for the tougher and harder materials. The tooth arrangement on these cutters has been adopted to cover the widest possible range of most commonly encountered materials. Any special material found not to be responsive to our Tube End Deburring Cutters should be given special consideration by our engineers. Simple guides such as V-blocks correctly positioned are recommended. The Ring or outside member is adjustable for more or less relative chamfer on the outside edge, and is secured after adjustment by socket screws. Operating speeds range from 50 to 200 R.P.M. depending on the size of the cutter, material and work condition. For heavier deburring, see the Severance Tube End Chamfering Mills listed on pages 37-38. Holding of parts by hand is not recommended.



High Speed Steel

Tubing O.D. Size	Tubing I.D. Size	Hole Dia. OF Ring	Shank Dia.
1/8"	1/16"	.093"	1/4"
3/16"	1/8"	.156"	1/4"
1/4"	3/16"	.218"	1/4"
5/16"	1/4"	.281"	5/16"
3/8"	5/16"	.343"	3/8"
7/16"	3/8"	.406"	7/16"
1/2"	7/16"	.468"	1/2"
9/16"	1/2"	.531"	1/2"
5/8"	9/16"	.595"	1/2"
3/4"	5/8"	.685"	1/2"
7/8"	3/4"	.805"	1/2"
1"	7/8"	.930"	1/2"
1-1/8"	1"	1.063"	1/2"-20
1-1/4"	1-1/8"	1.180"	1/2"-20
1-3/8"	1-1/4"	1.313"	1/2"-20
1-1/2"	1-3/8"	1.430"	5/8"-18
1-3/4"	1-5/8"	1.680"	5/8"-18
2"	1-3/4"	1.930"	3/4"-16
2-1/4"	2"	2.180"	3/4"-16

Severance Tool Name	EDP Order Number
A-Tube	35060
BA-Tube	35061
CB-Tube	35062
DC-Tube	35063
ED-Tube	35064
FE-Tube	35065
GF-Tube	35066
HG-Tube	35067
IH-Tube	35068
JI-Tube	35069
KJ-Tube	35070
LK-Tube	35071
ML-Tube	35072
NM-Tube	35073
ON-Tube	35074
PO-Tube	35075
RQ-Tube	35076
SR-Tube	35077
TS-Tube	35078

Carbide

Severance Tool Name	EDP Order Number
A-Tube-W	35160
BA-Tube-W	35161
CB-Tube-W	35162
DC-Tube-W	35163
ED-Tube-W	35164
FE-Tube-W	35165
GF-Tube-W	35166
HG-Tube-W	35167
IH-Tube-W	35168
JI-Tube-W	35169
KJ-Tube-W	35170
LK-Tube-W	35171
-	-
-	-
-	-
-	-
-	-
-	-
-	-

High Speed Steel Tube End Deburring tools ML-Tube through TS-Tube require threaded shanks, priced separately.

Tools furnished without shanks.
See pages 78-80 for available shank styles and sizes.



Inside Chamfer Mills

Severance Inside Chamfering Mills can be depended upon to produce smooth, burrless, chamfers on most machinable materials and are suitable for fairly heavy chamfering. For still heavier chamfering, consider Severance's Chatterless™ countersinks, on pages 50-67. Holding of parts by hand is not recommended.

High Speed Steel

30° C/L (60° Included) Solid

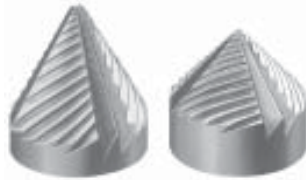
Head Dia.	Nose Point or Flat Dia.	Overall Length	Severance Tool Name	EDP Order Number
1/4"	P	2-1/4"	IC-1/4-30	20470
5/16"	1/32"	2-1/4"	IC-5/16-30	20471
3/8"	P	2-1/4"	IC-3/8-30	20472
1/2"	9/64"	2-1/4"	ICS-1/2-30	20473
1/2"	P	2-1/4"	ICL-1/2-30	20474
5/8"	13/64"	2-1/4"	ICS-5/8-30	20475

High Speed Steel

45° C/L (90° Included) Solid

Head Dia.	Nose Point or Flat Dia.	Overall Length	Severance Tool Name	EDP Order Number
1/4"	P	2-1/4"	IC-1/4-45	20505
5/16"	1/16"	2-1/4"	IC-5/16-45	20506
3/8"	P	2-1/4"	IC-3/8-45	20507
1/2"	1/8"	2-1/4"	ICS-1/2-45	20508
1/2"	P	2-1/4"	ICL-1/2-45	20509
5/8"	1/8"	2-1/4"	ICS-5/8-45	20510

NOTE: All solid Inside Chamfering Mills have a 1/4" shank diameter.



High Speed Steel

30° C/L (60° Included) Threaded

Head Dia.	Nose Point or Flat Dia.	Overall Length	Thread Size	Severance Tool Name	EDP Order Number
5/8"	3/64"	7/8"	1/4"-28	IC-5/8-30	20476
3/4"	1/32"	1"	5/16"-24	IC-3/4-30	20477
7/8"	5/32"	1"	3/8"-24	IC-7/8-30	20478
1"	9/32"	1-1/8"	3/8"-24	ICS-1-30	20479
1"	1/8"	1-1/8"	3/8"-24	ICL-1-30	20480
1-1/8"	1/8"	1-1/8"	3/8"-24	IC-1-1/8-30	20481
1-1/4"	17/32"	1"	3/8"-24	ICS-1-1/4-30	20482
1-1/4"	3/32"	1-1/4"	3/8"-24	ICL-1-1/4-30	20483
1-1/2"	31/64"	1-1/8"	1/2"-20	ICS-1-1/2-30	20484
1-1/2"	13/64"	1-1/2"	1/2"-20	ICL-1-1/2-30	20485
1-3/4"	3/4"	1-1/4"	1/2"-20	ICS-1-3/4-30	20486
1-3/4"	5/16"	1-1/2"	1/2"-20	ICL-1-3/4-30	20487
2"	63/64"	1-1/4"	5/8"-18	ICS-2-30	20488
2"	27/32"	1-1/4"	5/8"-18	ICL-2-30	20489
2-1/4"	1-3/32"	1-3/8"	3/4"-16	ICS-2-1/4-30	20490
2-1/4"	33/64"	1-7/8"	3/4"-16	ICL-2-1/4-30	20491
2-1/2"	1-31/64"	1-1/4"	3/4"-16	ICS-2-1/2-30	20492
2-1/2"	29/32"	1-3/4"	3/4"-16	ICL-2-1/2-30	20493
3"	1-63/64"	1-1/4"	1"-14	IC-3-30	20494

High Speed Steel

45° C/L (90° Included) Threaded

Head Dia.	Nose Point or Flat Dia.	Overall Length	Thread Size	Severance Tool Name	EDP Order Number
5/8"	1/8"	11/16"	1/4"-28	IC-5/8-45	20511
3/4"	P	13/16"	5/16"-24	IC-3/4-45	20512
7/8"	5/32"	1"	3/8"-24	IC-7/8-45	20513
1"	1/4"	7/8"	3/8"-24	ICS-1-45	20514
1"	P	7/8"	3/8"-24	ICL-1-45	20515
1-1/4"	3/8"	3/4"	3/8"-24	ICS-1-1/4-45	20516
1-1/4"	P	1"	3/8"-24	ICL-1-1/4-45	20517
1-1/2"	1/2"	7/8"	1/2"-20	ICS-1-1/2-45	20518
1-1/2"	1/4"	1-1/16"	1/2"-20	ICL-1-1/2-45	20519
1-3/4"	5/8"	7/8"	1/2"-20	IC-1-3/4-45	20520
2"	1"	1"	5/8"-18	ICS-2-45	20521
2"	1/4"	1-1/2"	5/8"-18	ICL-2-45	20522
2-1/4"	1"	1"	5/8"-18	ICS-2-1/4-45	20523
2-1/4"	1/4"	1-3/8"	5/8"-18	ICL-2-1/4-45	20524
2-1/2"	3/4"	1-3/8"	3/4"-16	ICS-2-1/2-45	20525
2-1/2"	1/4"	1-5/8"	3/4"-16	ICL-2-1/2-45	20526
3"	3/4"	1-3/4"	1"-14	ICS-3-45	20527
3"	1/4"	1-7/8"	1"-14	ICL-3-45	20528

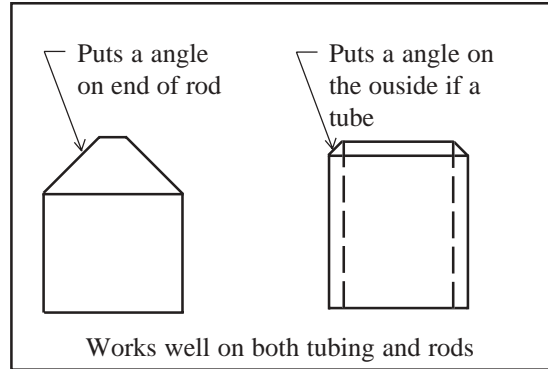
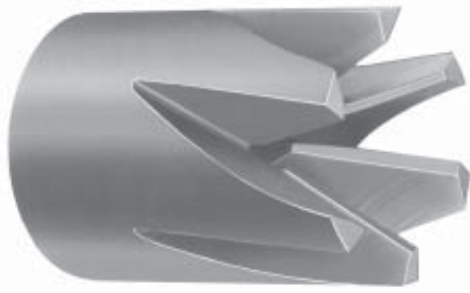
Tools are furnished without shanks.
See pages 78-80 for available shank styles and sizes.

Special Inside Chamfer Mills

Special diameters, angles, and configurations can be quoted on this style



REF. # 54443



Outside Chamfering Mills

Outside Chamfering Mills are designed to economically chamfer a large variety of diameters on tubing, pipes, and rods. The Chatterless™ teeth produce a heavy chamfer, while one size will accommodate many size parts. The Outside Chamfering Mill is available in 60° and 90° included angles, and may be reground many times.

These Outside Chamfering Mills are most efficient when used in screw machines, lathes, drill presses, or other chucking machines, or with work holding devices, although where requirements are not too exacting, may be used in a portable power tool on some materials. Chatterless™ teeth provide amazing ease and speed of operation. It is recommended that guides such as V-blocks be positioned to facilitate quick positioning of the work.

High Speed Steel

30° C/L (60° Included)

Max. Head Dia.	ID. Thread Size	Recess Hole Dia.	Mouth Dia.	Body Dia.	Body Length	Severance Tool Name	EDP Order Number
1/8"	5/16"-24	1/32"	3/16"	1/2"	1"	OC-1/8-30°	25230
1/4"	5/16"-24	3/64"	5/16"	1/2"	1"	OC-1/4-30°	25231
1/2"	3/8"-24	1/8"	5/8"	7/8"	1-5/16"	OC-1/2-30°	25232
3/4"	1/2"-20	1/4"	7/8"	1-1/8"	1-3/4"	OC-3/4-30°	25233
1"	3/4"-16	1/4"	1-1/8"	1-1/2"	2"	OC-1-30°	25234
1-3/4"	1"-14	1/2"	1-7/8"	2-1/4"	2-15/16"	OC-1-3/4-30°	25235
2"	1"-14	7/8"	2-1/8"	2-1/2"	3"	OC-2-30°	25236
3"	1-1/4"-12	1"	3-1/4"	3-3/4"	3-3/4"	OC-3-30°	25237

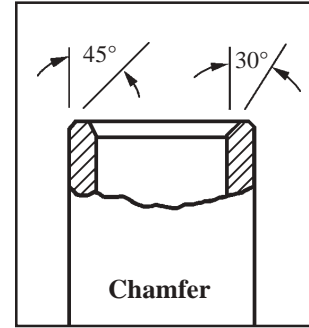
High Speed Steel

45° C/L (90° Included)

Max. Head Dia.	ID. Thread Size	Recess Hole Dia.	Mouth Dia.	Body Dia.	Body Length	Severance Tool Name	EDP Order Number
1/8"	5/16"-24	1/32"	3/16"	1/2"	1"	OC-1/8-45°	25250
1/4"	5/16"-24	3/64"	5/16"	1/2"	1"	OC-1/4-45°	25251
1/2"	3/8"-24	1/8"	5/8"	7/8"	1-5/16"	OC-1/2-45°	25252
3/4"	1/2"-20	3/16"	7/8"	1-1/8"	1-5/16"	OC-3/4-45°	25253
1"	3/4"-16	1/4"	1-1/8"	1-1/2"	1-3/4"	OC-1-45°	25254
1-1/2"	3/4"-16	3/8"	1-5/8"	2"	1-7/8"	OC-1-1/2-45°	25255
2"	1"-14	7/8"	2-1/8"	2-1/2"	2-1/2"	OC-2-45°	25256
3"	1-1/4"-12	1"	3-1/4"	3-3/4"	2-7/8"	OC-3-45°	25257

See Page 45 for Rod End Forming Cutters to put a radius on the end of a rod

Tools are furnished without shanks. See pages 78-80 for available shank styles and sizes.



Caution: holding of tubing by hand is not recommended.

Tube End Chamfering Mills

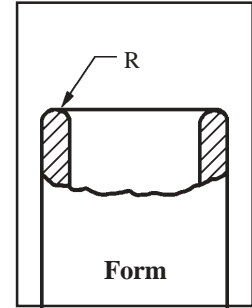
The Chatterless™ design of the Tube End Chamfering Mills have cutting edges designed to provide a shearing action, yielding a smoothly machined surface. The standard tool produces a 30° angle on the tube inside diameter and 45° on the outside diameter. Other angles may be ordered as specials. This series of tools is offered in a range of sizes to accommodate pipe and tubing from 3/16" to 2-1/2" outside diameters. All models are adjustable for different wall thicknesses. The cutting teeth are developed as to preclude chatter and provide ample chip room for every operating condition. Moderate speeds of about 100 R.P.M. for 1-inch steel tubing to about 200 R.P.M. for 1/2-inch tubing are recommended for these cutters. It is advisable to start at a slower speed on any given material or size and increase until best results are obtained.

High Speed Steel

30° C/L inside diameter & 45° C/L outside diameter.

Std Pipe Size	Std. Tubing O.D. Size	Wall Thickness		Plug Dia.	Shank Dia.	Shank Length	Severance Tool Name	EDP Order Number
		Min.	Max.					
1/8"	3/16"	.022"	.045"	.152"	1/4"	7/8"	T-6	34960
	1/4"	.022"	.065"	.228"	1/4"	1"	T-8	34961
	5/16"	.022"	.095"	.290"	1/4"	1"	T-10	34962
	3/8"	.022"	.095"	.353"	3/8"	1"	T-12	34963
	7/16"	.028"	.095"	.409"	3/8"	1"	T-14	34964
1/4"	1/2"	.028"	.095"	.472"	3/8"	1"	T-16	34965
	9/16"	.028"	.120"	.534"	1/2"	1"	T-18	34966
3/8"	5/8"	.028"	.120"	.597"	1/2"	1"	T-20	34967
1/2"	3/4"	.028"	.120"	.722"	1/2"	1"	T-24	34968
	7/8"	.022"	.156"	.847"	1/2"	1"	T-28	34969
3/4"	1"	.035"	.156"	.965"	1/2"	1-5/16"	T-32	34970
	1-1/8"	.035"	.187"	1.090"	1/2"-20	-	T-36	34971
	1-1/4"	.035"	.187"	1.215"	5/8"-18	-	T-40	34972
	1-5/16"	.035"	.187"	1.280"	5/8"-18	-	T-42	34973
	1-3/8"	.035"	.187"	1.340"	5/8"-18	-	T-44	34974
1"	1-1/2"	.035"	.250"	1.465"	3/4"-16	-	T-48	34975
	1-5/8"	.035"	.250"	1.590"	3/4"-16	-	T-52	34976
	1-3/4"	.035"	.250"	1.715"	3/4"-16	-	T-56	34977
	1-7/8"	.035"	.250"	1.840"	3/4"-16	-	T-60	34978
	2"	.035"	.312"	1.965"	1"-14	-	T-64	34979
2"	2-1/4"	.058"	.312"	2.195"	1"-14	-	T-72	34980
	2-3/8"	.065"	.375"	2.310"	1"-14	-	T-76	34981
	2-1/2"	.065"	.375"	2.435"	1"-14	-	T-80	34982

Tool numbers T-36 thru T-80 require threaded shanks, priced separately. See pages 78-80 for available shank styles and sizes.



Caution: holding of tubing by hand is not recommended.

Tube End Forming Cutters

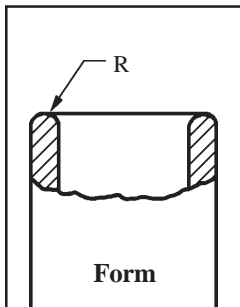
These cutters are used to produce a smooth, round lip on all types of tubing, including steel, copper, aluminum, plastic and other materials. They are not recommended for tubing with irregular wall thickness or for interrupted cutting. Larger sizes (A-6 x .025 and up) can be supplied in carbide. Special cutting shapes can also be provided. Speeds of about 50 to 350 RPM are suggested for these cutters. It is advisable to start at a slower speed on any given material or size, and increase until best results are obtained. Order by tool number plus wall thickness of tubing: A-6-.035, A-16-.065, etc. If possible, provide a sample of your tubing when ordering, or, at least, give material specification.

High Speed Steel

Tubing Size	Wall Thickness		Shank Dia.	Head Dia.	Overall Length	Shank Length	Severance Tool Name	EDP Order Number
	Gauge	Inch						
1/8"	31	.010"	1/4"	1/4"	2-1/4"	2"	A-2-010	35460
1/8"	27	.016"	1/4"	1/4"	2-1/4"	2"	A-2-016	35461
1/8"	25	.020"	1/4"	1/4"	2-1/4"	2"	A-2-020	35462
1/8"	22	.028"	1/4"	1/4"	2-1/4"	2"	A-2-028	35463
1/8"	21	.032"	1/4"	1/4"	2-1/4"	2"	A-2-032	35464
1/8"	21	.035"	1/4"	1/4"	2-1/4"	2"	A-2-035	35465
3/16"	25	.020"	3/8"	1/2"	1-9/16"	1"	A-3-020	35466
3/16"	22	.028"	3/8"	1/2"	1-9/16"	1"	A-3-028	35467
3/16"	21	.032"	3/8"	1/2"	1-9/16"	1"	A-3-032	35468
3/16"	20	.035"	3/8"	1/2"	1-9/16"	1"	A-3-035	35469
1/4"	25	.020"	3/8"	1/2"	1-9/16"	1"	A-4-020	35470
1/4"	22	.028"	3/8"	1/2"	1-9/16"	1"	A-4-028	35471
1/4"	21	.032"	3/8"	1/2"	1-9/16"	1"	A-4-032	35472
1/4"	20	.035"	3/8"	1/2"	1-9/16"	1"	A-4-035	35473
1/4"	18	.049"	3/8"	1/2"	1-9/16"	1"	A-4-049	35474
1/4"	16	.065"	3/8"	1/2"	1-9/16"	1"	A-4-065	35475
5/16"	25	.020"	3/8"	9/16"	1-9/16"	1"	A-5-020	35476
5/16"	22	.028"	3/8"	9/16"	1-9/16"	1"	A-5-028	35477
5/16"	21	.032"	3/8"	9/16"	1-9/16"	1"	A-5-032	35478
5/16"	20	.035"	3/8"	9/16"	1-9/16"	1"	A-5-035	35479
5/16"	18	.049"	3/8"	9/16"	1-9/16"	1"	A-5-049	35480
5/16"	17	.058"	3/8"	9/16"	1-9/16"	1"	A-5-058	35481
5/16"	16	.065"	3/8"	9/16"	1-9/16"	1"	A-5-065	35482
3/8"	25	.020"	1/2"	3/4"	1-9/16"	1"	A-6-020	35483
3/8"	22	.028"	1/2"	3/4"	1-9/16"	1"	A-6-028	35484
3/8"	21	.032"	1/2"	3/4"	1-9/16"	1"	A-6-032	35485
3/8"	20	.035"	1/2"	3/4"	1-9/16"	1"	A-6-035	35486
3/8"	18	.049"	1/2"	3/4"	1-9/16"	1"	A-6-049	35487
3/8"	17	.058"	1/2"	3/4"	1-9/16"	1"	A-6-058	35488
3/8"	16	.065"	1/2"	3/4"	1-9/16"	1"	A-6-065	35489
7/16"	25	.020"	1/2"	3/4"	1-9/16"	1"	A-7-020	35490
7/16"	22	.028"	1/2"	3/4"	1-9/16"	1"	A-7-028	35491

Tube end forming cutters continued...

High Speed Steel



Holding of tubing by hand is not recommended.



Other Sizes, Shapes, and Form available as a special. Metric sizes also available as a special.

Tube End Forming Cutters for tubing 7/8" and larger, require threaded shanks. See pages 78-80 for available shank styles and sizes.

Tubing Size	Wall Thickness		Shank Dia.	Head Dia.	Overall Length	Shank Length	Severance Tool Name	EDP Order Number
	Gauge	Inch						
7/16"	21	.032"	1/2"	3/4"	1-9/16"	1"	A-7-032	35492
7/16"	20	.035"	1/2"	3/4"	1-9/16"	1"	A-7-035	35493
7/16"	18	.049"	1/2"	3/4"	1-9/16"	1"	A-7-049	35494
7/16"	16	.065"	1/2"	3/4"	1-9/16"	1"	A-7-065	35495
1/2"	25	.020"	1/2"	3/4"	1-9/16"	1"	A-8-020	35496
1/2"	22	.028"	1/2"	3/4"	1-9/16"	1"	A-8-028	35497
1/2"	21	.032"	1/2"	3/4"	1-9/16"	1"	A-8-032	35498
1/2"	20	.035"	1/2"	3/4"	1-9/16"	1"	A-8-035	35499
1/2"	18	.049"	1/2"	3/4"	1-9/16"	1"	A-8-049	35500
1/2"	17	.058"	1/2"	3/4"	1-9/16"	1"	A-8-058	35501
1/2"	16	.065"	1/2"	3/4"	1-9/16"	1"	A-8-065	35502
1/2"	14	.083"	1/2"	3/4"	1-9/16"	1"	A-8-083	35503
9/16"	22	.028"	1/2"	7/8"	1-5/8"	1"	A-9-028	35504
9/16"	20	.035"	1/2"	7/8"	1-5/8"	1"	A-9-035	35505
9/16"	18	.049"	1/2"	7/8"	1-5/8"	1"	A-9-049	35506
9/16"	16	.065"	1/2"	7/8"	1-5/8"	1"	A-9-065	35507
9/16"	13	.095"	1/2"	7/8"	1-5/8"	1"	A-9-095	35508
5/8"	22	.028"	1/2"	7/8"	1-5/8"	1"	A-10-028	35509
5/8"	21	.032"	1/2"	7/8"	1-5/8"	1"	A-10-032	35510
5/8"	20	.035"	1/2"	7/8"	1-5/8"	1"	A-10-035	35511
5/8"	18	.049"	1/2"	7/8"	1-5/8"	1"	A-10-049	35512
5/8"	17	.058"	1/2"	7/8"	1-5/8"	1"	A-10-058	35513
5/8"	16	.065"	1/2"	7/8"	1-5/8"	1"	A-10-065	35514
5/8"	14	.083"	1/2"	7/8"	1-5/8"	1"	A-10-083	35515
5/8"	13	.095"	1/2"	7/8"	1-5/8"	1"	A-10-095	35516
3/4"	22	.028"	1/2"	1"	1-5/8"	1"	A-12-028	35517
3/4"	21	.032"	1/2"	1"	1-5/8"	1"	A-12-032	35518
3/4"	20	.035"	1/2"	1"	1-5/8"	1"	A-12-035	35519
3/4"	18	.049"	1/2"	1"	1-5/8"	1"	A-12-049	35520
3/4"	17	.058"	1/2"	1"	1-5/8"	1"	A-12-058	35521
3/4"	16	.065"	1/2"	1"	1-5/8"	1"	A-12-065	35522
3/4"	14	.083"	1/2"	1"	1-5/8"	1"	A-12-083	35523
3/4"	13	.095"	1/2"	1"	1-5/8"	1"	A-12-095	35524
3/4"	11	.120"	1/2"	1"	1-5/8"	1"	A-12-120	35525
7/8"	22	.028	1/2"-20	1-1/4"	1-1/8"	-	A-14-028	35526
7/8"	21	.032	1/2"-20	1-1/4"	1-1/8"	-	A-14-032	35527
7/8"	20	.035	1/2"-20	1-1/4"	1-1/8"	-	A-14-035	35528
7/8"	18	.049	1/2"-20	1-1/4"	1-1/8"	-	A-14-049	35529
7/8"	17	.058	1/2"-20	1-1/4"	1-1/8"	-	A-14-058	35530
7/8"	16	.065	1/2"-20	1-1/4"	1-1/8"	-	A-14-065	35531
7/8"	14	.083	1/2"-20	1-1/4"	1-1/8"	-	A-14-083	35532
7/8"	13	.095	1/2"-20	1-1/4"	1-1/8"	-	A-14-095	35533
1"	22	.028	1/2"-20	1-3/8"	1-1/8"	-	A-16-028	35534
1"	20	.035	1/2"-20	1-3/8"	1-1/8"	-	A-16-035	35535
1"	18	.049	1/2"-20	1-3/8"	1-1/8"	-	A-16-049	35536
1"	17	.058	1/2"-20	1-3/8"	1-1/8"	-	A-16-058	35537
1"	16	.065	1/2"-20	1-3/8"	1-1/8"	-	A-16-065	35538
1"	14	.083	1/2"-20	1-3/8"	1-1/8"	-	A-16-083	35539
1"	13	.095	1/2"-20	1-3/8"	1-1/8"	-	A-16-095	35540
1"	11	.120	1/2"-20	1-3/8"	1-1/8"	-	A-16-120	35541
1-1/8"	22	.028	1/2"-20	1-1/2"	1-1/8"	-	A-18-028	35542
1-1/8"	20	.035	1/2"-20	1-1/2"	1-1/8"	-	A-18-035	35543
1-1/8"	18	.049	1/2"-20	1-1/2"	1-1/8"	-	A-18-049	35544
1-1/8"	17	.058	1/2"-20	1-1/2"	1-1/8"	-	A-18-058	35545
1-1/8"	16	.065	1/2"-20	1-1/2"	1-1/8"	-	A-18-065	35546
1-1/4"	20	.035	1/2"-20	1-1/2"	1-1/8"	-	A-20-035	35547
1-1/4"	18	.049	1/2"-20	1-1/2"	1-1/8"	-	A-20-049	35548
1-1/4"	16	.065	1/2"-20	1-1/2"	1-1/8"	-	A-20-065	35549
1-1/4"	14	.083	1/2"-20	1-1/2"	1-1/8"	-	A-20-083	35550

High Speed Steel Tube End Forming Cutters (continued)

Tubing Size	Wall Thickness		Shank Dia.	Head Dia.	Overall Length	Shank Length	Severance Tool Name	EDP Order Number
	GAUGE	INCH						
1-1/4"	11	.120	1/2"-20	1-1/2"	1-1/8"	-	A-20-120	35551
1-3/8"	20	.035	1/2"-20	1-5/8"	1-1/8"	-	A-22-035	35552
1-3/8"	18	.049	1/2"-20	1-5/8"	1-1/8"	-	A-22-049	35553
1-1/2"	18	.049	5/8"-18	2"	1-1/4"	-	A-24-049	35554
1-1/2"	17	.058	5/8"-18	2"	1-1/4"	-	A-24-058	35555
1-1/2"	16	.065	5/8"-18	2"	1-1/4"	-	A-24-065	35556
1-1/2"	14	.083	5/8"-18	2"	1-1/4"	-	A-24-083	35557
1-1/2"	13	.095	5/8"-18	2"	1-1/4"	-	A-24-095	35558
1-5/8"	16	.065	5/8"-18	2"	1-1/4"	-	A-26-065	35559

The above Tube End Forming Cutters require threaded shanks. See pages 78-80 for available shank styles and sizes.

EMT Tube End Forming Cutters

EMT for electrical conduit, standard thin wall type

Holding of tubing by hand is not recommended.

High Speed Steel

Tube O.D. Size	O.D.	I.D.	Wall Thickness	Shank Dia.	Shank Dia.	Severance Tool Name	EDP Order Number
3/8"	0.577	0.493	0.042	7/16"	1"	A-3/8-EMT	35579
1/2"	0.706	0.622	0.042	1/2"	1"	A-1/2-EMT	35580
3/4"	0.922	0.824	0.049	1/2"-20	-	A-3/4-EMT	35581
1"	1.163	1.049	0.057	1/2"-20	-	A-1-EMT	35582
1-1/4"	1.51	1.38	0.065	1/2"-20	-	A-1-1/4-EMT	35583
1-1/2"	1.74	1.61	0.065	5/8"-18	-	A-1-1/2-EMT	35584
2"	2.197	2.067	0.065	3/4"-16	-	A-2-EMT	35585

Tube End Forming Cutters for electrical conduit sizes 3/4" and larger require threaded shanks. See pages 78-80 for available shank styles and sizes.

Tube Hole Deburring Cutters

Inside Tube - Place cutter head inside hole, bring back against inner wall edge; follow around inner contour of hole letting the shank act as a guide.

Outside Tube - Place cutter in hole at right angle to tubing length. Geometrically (for any size hole) the diameter of the tool and the outside diameter of the tubing should equal.

High Speed Steel Inside Style

Cutting Dia.	Neck Dia.	Shank Dia.	Severance Tool Name	EDP Order Number
7/32"	.109"	1/4"	7/32-IAD	35660
1/4"	.125"	1/4"	1/4-IAD	35661
5/16"	.187"	1/4"	5/16-IAD	35662
3/8"	.187"	1/4"	3/8-IAD	35663
7/16"	.250"	1/4"	7/16-IAD	35664
1/2"	.250"	1/4"	1/2-IAD	35665

High Speed Steel Outside Style

Cutting Dia.	Cutting Length	Shank Dia.	Severance Tool Name	EDP Order Number
5/16"	1"	1/4"	DLA-LHS	35666
3/8"	1"	1/4"	ELA-LHS	35667
1/2"	1/2"	1/4"	GGA-LHS	35668
5/8"	1"	1/4"	ILA-LHS	35669
3/4"	3/4"	1/4"	JJA-LHS	35670
1"	1"	1/4"	LLA-LHS	35671