TUBE SEVERING AND SQUARING EQUIPMENT

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300 and 500 Series Tube Cutting Equipment

TRI TOOL INC.

For more information visit www.tritool.com











PRODUCING TUBING SYSTEM PRECISION CRITICAL FOR TECHNOLOGY



Pharmaceutical Semiconductor Cleanroom Biomedical Petrochemical Aerospace - Defense Food Processing Beverages

PORTABLE TUBE EQUIPMENT SOLUTIONS

Featuring compact size, ultra-precision, and the flexibility to be customized, Tri Tool's portable tube cutting, severing and squaring machinery has become the industry standard.

Tri Tool® equipment is the perfect companion for autogenous orbital welding systems, delivering the high level of repeatable precision required by those systems for optimal weld results.

Today's high-tech welded tubing systems demand precision weld preparation.

Tri Tool's advanced engineering and machine design meets that demand by producing the finest portable equipment available for tube severing, squaring, and end preparation. All equipment is designed to deliver rapid, accurate, and repeatable results while being easy to set up and operate. Tri Tool's customers are backed by comprehensive technical assistance, on-site services, and dedicated customer support – the best in the business.



Tri Tool[®] tube severing and squaring machines are the perfect companions to automatic orbital welding systems.

Welded tubing system specifications are more critical and extensive than ever before. Tri Tool[®] tubing equipment has met the challenge of greater precision head-on with practical, easyto-use equipment designed to produce the finest welding results possible.

Call Tri Tool Inc. for solutions for your most demanding tubing system fabrication, maintenance and production requirements.

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Equipment Features

ADVANCED MACHINING SOLUTIONS

Tri Tool's wide range of tubing equipment is designed and built with features that ensure precision, ease of use, and maximum productivity.

Tri Tool's equipment for working with tubing and small pipe is grouped into two primary families, the 300 Series squaring machines and the 500 Series severing machines, along with the versatile SBCM split-frame lathes and the 550 CTC Chipless Tube Cutting system. 300 Series machines are designed to provide precise square ends on cut lengths of tube and fittings. The 500 Series SEVERMASTER[®] machines sever quickly and accurately and offer squaring capabilities on some models with the SQM Squaring Module accessory. All of the TRI TOOL[®] machines deliver the optimal combination of precision, reliability and portability.

TRI TOOL[®] machinery can be modified for maximum productivity for specific applications. Examples include control panels and other specialized controls designed to provide remote operation in hazardous or confined environments, alternate drive sources such as pneumatic and AC or DC electric drive motors, specially engineered



Solution Profile: A new Chip-Guard/ Debris Catcher is now available for use with the Model 301SP that features rugged construction and is the perfect solution for applications where the collection of cutting chips is of critical concern. The anodized aluminum Chip Guard provides clear acrylic windows that permit the operator to safely view the cutting process, while the chips fall into a stainless steel hopper.

collet and saddle systems to grip unique components, and automated feed and clamping systems. This machinery is often used where high purity fabrication procedures are being performed. Used in cleanrooms of varying classes, these machines offer the advantage of cold cutting which generates a continuous chip, rather than the particulate matter produced by saws and abrasive cutters. This provides more control over cleanroom contamination.



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MICRO MACHINING SOLUTIONS

Model 300 MICROFACER



TRI TOOL INC.

- Cleanroom ready
- Long lasting variable speed cordless DC motor
- Unique cam feed with auto-retract reduces cycle time
- Comes with carrying case, facing bit, quick change saddle set, charger and spare battery

The Model 300 MICROFACER[®] has been designed specifically to prepare tubes for autogenous welding, squaring .125" (3.2 mm) to .75" (19.1 mm) OD tubing with a wall thickness up to .125" (3.2 mm). This compact, lightweight, precision squaring tool features self-contained OD saddle sets for holding and rounding the tube, rechargeable DC power, and a optional 18" flex extension making it perfectly suited for operation in tubing racks. The powerful DC motor is fitted with a three position mounting system for maximum flexibility. The system comes with an AC charger and extra battery. The standard saddle clamping system requires a straight length of tube .22" (5.6 mm) long. The unit is assembled with Krytox[®] grease for cleanroom use.



Solution Profile: When working in limited or tight access areas the 18" Flex-Drive is a handy extension that works with the Model 300 Microfacer, 550 Chipless Tube Cutter, and the OD cutting SBCM Models that permits flexible operation up to 90° off-centerline in all directions. .125" to .75" Micro Squaring System

Also available as the 1" to 2" MODEL 320 (Special Order)

Model 550 CTC



The Model 550 Chipless Tube Cutting System provides reliable chipless severing of tubes in limited access situations with units sized specifically from .188" (4.76 mm) to 2" (50.8 mm). It is flight required hardware for many tactical US military aircraft and is used for the maintenance of civilian aircraft as well.

PRECISION TUBE SQUARING

.125" to 1"

Model 301

- Square, burr free ends
- Ideal for in-place work
- Full contact collet eliminates tube deflection
- Patented Auto Retract cam feed
- Low cycle times

Over the years, the proven Model 301 tube squarer has set the industry standard for precision and portability. The compact Model 301 provides full support, ODmounting, self-centering collets and will square .125" (3.2 mm) to 1" (25.4 mm) OD tubing with up to a .125" (3.2mm) wall thickness. Precise end preps are easy to accomplish on a wide variety of materials including steel, stainless steel, titanium, Inconel, copper, aluminum, and plastic with the patented Auto Retract feed system which automatically retracts the bit when the feed handle is released, readying it for the next cut. The cutting head accepts a squaring bit or a combination squaring and beveling bit. Variable speed electric drives and the ability to work without damaging the inside of electropolished tubes makes the Model 301 a perfect companion to orbital tube welding.

For more information about this or any other machine call Toll Free (888) TRI TOOL

Model 301DC



An optional cordless 14VDC variable speed drive is offered for the Model 301 for remote cutting where AC power is not available or practical.

The tool pictured above also features the optional Quick Lock single-throw clamping system that allows for faster cycle times and easy collet size change-over. The Quick Lock system can be retrofitted to all Model 301 machines that use a collet nut.

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Model 301SP

TUBE AND MICROFITTING SQUARING

- Work with straight tube or microfittings with one machine
- 2-Piece stainless steel saddles for use on all materials
- No tools required for operation
- Lightweight and portable
- Optional bench stand

.125" to 1"

The Model 301SP was designed specifically for applications where short gripping length is required, such as when working with microfittings, and provides positive grip with as little as .188" (5mm) straight length. This machine's variable speed, high torque motor delivers excellent finishes on all types of materials without damaging electropolished surfaces. The unit also features excellent visibility and a micrometer-type feed indicator to insure precise lengths. The 301SP features easy set-up and operation for .125" (3.2mm) to 1" (25.4mm) OD tubing up to .125" (3.2mm) wall, for pipe sizes .250" to 750". The Model 301SP also features the patented Auto Retract feed system which automatically retracts the bit when the feed handle is released, making it ready for the next cut. The cam feed moves the bit forward quickly at the beginning of the feed action and then slower as the tube is engaged, producing excellent tactile feedback allowing higher precision and more intuitive operation.

TECH TIP: Working With Microfittings

Most welded high purity tubing systems utilize electropolished microfittings. Our equipment properly prepares microfittings for orbital welding by producing perfectly flat, square ends. This is essential for both new and reclaimed components and tube sections. Tri Tool can provide short perch length clamping saddles for use with any specific microfittings as required.



Short Perch Saddle



The 301SP has special saddles with cutouts that provide required gland clearance.

Model 302

.188" to 2"

ULTIMATE DEPENDABILITY

- Full-support OD mounting
- Burr free cutting
- Won't damage electropolished surfaces
- Electric drive for cleanroom applications
- Easy to change saddles provide positive clamping
- Graduated feed indicator

The Model 302's size, configuration and capabilities have been optimized for reliability and ease of use. Feature packed, and ruggedly built, the Model 302 provides the precision and time savings our customers have learned to expect. Most importantly, it delivers accurate, repeatable weld prep results every time.

Whether bench mounted or portable, no tools are required for operation. Straight tube or microfittings with ODs of .188" (4.8mm) to 2.375" (60.3mm) and wall thicknesses up to .200" (5.1mm) can be squared with ease. The versatile Model 302 has proven to be a perfect platform for special configurations. Due to its heavy duty construction, the Model 302 can be fitted with an air clamping system. The rugged cast body can be set up for left-hand or right-hand operation. Durable stainless steel clamping saddles are standard and prevent carbon contamination when working with high purity tubing.



TECH TIP: Micrometer Feed



For squaring and severing operations where control of the depth of cut is an important factor, an optional micrometer feed assembly is available for some models. Contact your sales representative for more information.

Model 304

STATE-OF-THE-ART DESIGN

- Quick change "snap-in" collet system
- Unequalled portability (only 18.25 lbs.)
- Broad size range
- Flexible power and micrometer feed for optimum results
- Maximum tool bit visibility
- Low profile design

RB. The new Model 304 tube squaring machine will face .250" (6.35mm) to 4.5" (114.3mm) OD tubing up to .250" (6.35mm) wall thickness. It features quick change saddle sets (no tools required), graduated feed and a high visibility cutting head to enhance productivity. The machine offers easy set-up and operation with the accuracy required to consistently achieve flat, square and burr free ends. The cutting head allows installation of up to 3 tool bits for squaring, beveling or special preps, and the bench stand is easily removable for in-place use. The machine comes with a variable speed, dual range drive motor for optimal cutting speed selection and control. Options include air clamping with hand or foot actuation, custom saddle sets for fittings, pneumatic motor, and a sealed DC drive motor.



Solution Profile: Stainless thin wall tubing being cut in a cleanroom for a high purity tubing system. The Model 304 produces a perfectly square, burr free end ideal for orbital welding procedures. .250" to 4.5"

Model 306 and 308

SPECIAL ORDER ONLY 1" to 6.625"

Nothing compares to the Model 306 for squaring 1" (25.4 mm) to 6.625" (168.3 mm) OD tubing with a wall thickness of up to .250" (6.35 mm) or the Model 308 for 1.00" (25.4 mm) to 8.625" (219.1 mm) OD tubing (pipe sizes .750" through 8") with wall thickness up to .250" (6.35 mm). These machines offer collet or saddle clamping, and have the capability to square fittings or straight lengths of tube without deformation or damage to the inside surface.

Model 572AC

REVOLUTIONARY ADVANCEMENTS

SEVER<u>MASTER</u>®

- Perfect alternative to pipe saws that generate particulate contamination
- Full contact OD collets clamp without damage or distortion
- Auto Cycle tool bit control
- Produces easily collectable ribbon-like chips
- Won't contaminate ID
- Gear driven powerhead rotates on precision
- cross roller bearing
- Single lever collet actuation
- Fully enclosed gears for operator safety
- Lightweight and compact

The reliable Model 572AC SEVERMASTER[®]

severs .250" (6.35mm) to 2" (50.8mm) diameter tube and thin wall pipe. This advanced design offers unprecedented levels of productivity through the incorporation of unique features such as our Auto-Cycling, cam-operated tool bit feed mechanism which automatically returns the tool bit to the home position, ready to start the next cut. Tool bit feed is adjustable to match the material being cut. A variable speed motor provides precise cutting speed control for maximum bit life and ID burr reduction. The Quick Lock mechanism actuates the clamping collet with a single lever stroke, and allows for faster collet changes.

TECH TIP: The AUTO CYCLING System

The innovative Auto Cycling system is one of the outstanding features of the Tri Tool[®] 500 Series Tube Severing Machines. When performing multiple cuts or when used in a production role, this unique system significantly reduces the time period "cut to cut" by automatically resetting the cutting operation with the bit positioned to start the next cut. The system reliably limits bit travel by determining precise bit depth to sever as well as pre-cut clearance when repositioned. The cam actuated feed lever can be adjusted to a feed rate from 0 to .005" per revolution for total control of the cutting operation.



Model 576AC

UNPRECEDENTED EASE-OF-USE

SEVER<u>MASTER</u>®

- Auto Cycle tool bit control
- Perfect alternative to pipe saws that generate particulate contamination
- Full contact OD collets
- Produces easily collectable ribbon-like chips
- Optional squaring module
- Compact and portable

The Model 576AC SEVERMASTER[®] severs 2" (50.8mm) to 6.63" (168.3mm) diameter tubes and thin wall pipe. The severing range can be extended down to .750" tube by using a special extended tool holder. The Model 576AC features our Auto-Cycling, cam-operated tool bit feed mechanism which automatically returns the tool bit to the home position (ready to start the next cut). The bit feed increment is adjustable to match the material being cut. A variable speed motor provides cutting speed control for maximum bit life and ID burr reduction. The Quick Lock mechanism actuates the clamping collet with a single lever stroke and allows rapid collet changes. The Model 576AC comes complete with one tool block module, baseplate, tool kit, operator's manual and a tool bit.

Squaring Module

Get the maximum value from your severing machine with our optional squaring module.

After a sever is complete, the squaring module can be quickly positioned to square the tube end precisely. A manual feed allows the operator to precisely control the depth of cut.

Module	Used on:	Basic tube or pipe size:
SQM-1AC	572AC	.25" (6.35mm) to 2" (50.8mm) OD .065" (1.65mm) wall maximum
SQM-2AC	576AC	2" (50.8mm) to 6.63" (168.3mm) OD .156" (4.0mm) wall maximum



Solution Profile: The squaring module's design allows it to be pivoted inward and locked over the tube end when squaring. (The picture shows the module in the squaring position.)

PRECISION IN-LINE CUTTING

SBCM Series Cutters

The precision SBCM Series of low profile clamshells are split-frame lathes that produce rapid, reliable severing and beveling of in-line tube and pipe.

These unique "clamshell" lathes have the ability to split in two for mounting on either side of in-line .125" to 4" in-line tube and pipe in order to perform precision severing and/or beveling. The SBCM Series offers secure collet type clamping that provides not only self-centering, but also protects the work from distortion or damage from clamping forces. SBCMs are protected by a tough Nickel plating that makes them easy to clean and decontaminate. SBCMs can operate with short perch lengths and are sized to cover a wide range of cutting applications. Bits can be specified to provide optimal cutting results on specific materials. Call Tri Tool Inc. for more information and application assistance.

- Collet mounting prevents deforming thin wall pipe & tube
- Simple, precise in-line cutting
- Sever and prep in one step
- Compact design perfect for low radial profile operation
- Flexible drive shaft option with quick detach bayonet mount
- The perfect machining solution for field tie-ins

601 SBCM (1/8" to 1" Pipe) 602 SBCM (1" to 2" Pipe) 603 SBCM (1.25" Pipe to 3" Tube) 603.5 SBCM (2.5" Pipe to 4" Tube)



TECH TIP: Working With The Optional Flex Drive Shaft System



The precision SBCM Series of in-line cutters have been designed to operate with the versatile Flex Drive shaft system that enables the machine to operate with maximum flexibility. Perfect for tight, confined spaces, the Flex Drive attaches by means of a quickdetachable bayonet lug connector for rapid and secure set up and ease of use.

Special Applications

When your work requirements are beyond the scope of our standard machinery, Tri Tool[®] engineering can provide solutions for your difficult machining application.

Tri Tool Inc. is proud of our record of consistently providing the industry's finest design, engineering, and manufacturing support. Over the years, we have produced countless variations of our standard equipment. Machinery can be modified, special accessories



Solution Profile: Full Support Pad sets have been developed for some machines. These pads provide positive mounting grip while effectively spreading clamping forces over a maximum area to reduce the possibility of damage and distortion to thin wall pipe.

developed, or completely new machinery built.

Special engineering can extend the cutting range of standard tools, automate operations, enable difficult tolerances to be met or enable the machines to perform unusual cuts. Special clamping fixtures can be produced that allow machinery to

securely hold specific fittings or tubing assemblies, and specialized tool bits can be designed to produce complex final end preparation results.

Machines can be built from special materials or modified to operate via remote control in order to perform work in hazardous or otherwise inaccessible situations.

ENGINEERING SUPPORT



Solution Profile: This 576 AC SeverMaster® was designed for use in a glove box. Configured with roller cutters, it performs remote chipless cannister opening. Other unique features include a pivoting base stand, laser pointer for cut location reference and a burnishing module to push the burr out of the way to allow removal of the inner can.

Machinery can be designed for special applications to cut by means of conventional cutting bits or by alternative methods such as roller wheels. Roller wheel cutters are important for use where no chips or cutting debris can be produced (as with radioactive materials) or where space is extremely limited.

Trust Tri Tool[®] special engineering for your toughest work requirements.



TECH Tip: Premium DURABIT® Tool Bits

Through state-of-the-art design, unique manufacturing processes, and proprietary coating technology, Tri Tool[®] DURABITs are "free cutting" (the edge stays under the chip) and extremely durable. Research and field performance evaluation ensure that our tool bits are the finest and most reliable cutting bits available today. Performance, reliability, durability, economy – the best bit for your job is DURABIT[®].





On Model 301, tubing sizes under .25" require "Reverse Dogleg Bits." Call for more information.



TECHNICAL REFERENCE

Specifications

Model 300 MICROFACER®



Model 301DC



	OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
MICROFACER®	.125" (3.2mm)75" (19.1mm)	.125" (3.2mm)	N/A	.40" (10.2mm)	.187" (4.75mm)	.200" (5.1mm)	5.35 lbs. (2.4 Kg)	9.6VDC
Model 301 QLDC	.125" (3.2mm) - 1.102" (28mm)	.125" (3.2mm)	.120" (30.5mm)	N/A	N/A	.200" (5.1mm)	11 lbs. (5.0 Kg)	14.4VDC

Model 301



Model 301SP



		OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
M	Nodel 301	.125" (3.2mm) - 1.102" (28mm)	.125" (3.2mm)	.120" (30.5mm)	N/A	N/A	.200" (5.1mm)	8.5 lbs. (3.86 Kg)	120VAC, 220VAC, Pneu.
M	Nodel 301SP	.125" (3.2mm) - 1.125" (28.6mm)	.125" (3.2mm)	N/A	.600" (15.2mm)	.190" (4.8mm)	.200" (5.1mm)	8.5 lbs. (3.86 Kg)	120VAC, 220VAC, Pneu.

Model 302



Model 304



	OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
Model 302	.188" (4.8mm) - 2.375" (60.3mm)	.200" (5.1mm)	N/A	.875" (22.2mm)	.187" (4.75mm)	.560" (14.2mm)	17.1 lbs. (7.76 Kg)	120VAC, 220VAC, Pneu.
Model 304	.250" (6.35mm) - 4.50" (114.3mm)	.250" (6.35mm)	2.06" (52.3mm)	.875" (22.2mm)	.250" (6.35mm)	.560" (14.2mm)	18.25 lbs. (8.28 Kg)	120VAC, 220VAC, Pneu.

Model 306

Model 308



	OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
Model 306	1.000" (25.4mm) - 6.625" (168.3mm)	.250" (6.35mm)	3.00" (76.2mm)	1.00" (25.4mm)	.250" (6.35mm)	1.00" (25.4mm)	60 lbs. (27.22 Kg)	120VAC, 220VAC, Pneu.
Model 308	1.000" (25.4mm) - 8.625" (219.1mm)	.250" (6.35mm)	3.38" (85.8mm)	2.50" (63.5mm)	.500" (12.7mm)	2.00" (50.8mm)	85 lbs. (39.0 Kg)	120VAC, 220VAC, Pneu.

Model 572AC

Model 576AC



	OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
Model 572AC	.250" (6.35mm) - 2.00" (50.8mm)	.065" (1.65mm)	1.38" (35.0mm)	N/A	N/A	.001005" (.0213mm)*	29 lbs. (13.0 Kg)	120VAC, 220VAC, Pneu.
Model 576AC	2.00"(50.8mm) - 6.63"(168.3mm)	.156" (4.0mm)	3.00" (76.2mm)	N/A	N/A	.001–.005" (.02–.13mm)*	93 lbs. (42.2 Kg)	120VAC, 220VAC, Pneu.
	_					*Adjustable - Per revolution		

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A WIDE RANGE OF SOLUTIONS

ID Mount End Prep



Powerful and easy to setup and operate, the 200 Series BEVELMASTER® and the BOILERMASTER® machines deliver excellent ID mounted pipe beveling performance for portable weld end preparation on 1.25" to 36" pipe. With a wide range of optional attachments, you can perform superior in-place flange facing, counterboring, mount in elbows, or prep thin wall tubing.

OD Clamshells



The "Clamshell" lathe can be separated and reassembled to mount to the OD on in-line or open ended pipe to produce dependable severing and beveling. These versatile and reliable lathes can be fitted with optional single-point machining equipment to provide complex compound bevels, "J" preps, and counterbores. Clamshell lathes are available from 1" to 60" and can be configured or modified for specific cutting operations.

Squaring & Severing



The 300 Series squaring and 500 Series SEVERMASTER® machines rapidly and easily produce extremely accurate severing and weld end preparation on .125" to 8" tube and pipe. These precision portable machines are the perfect companions to automatic orbital welding equipment for tube production, or for the construction and maintenance of high purity welded tubing systems.

Services



Tri Tool Services[™] offers a wide range of machining and code welding services. A network of experienced personnel is ready to reliably respond to your machining and welding requirements. Convenient equipment rental programs guarantee that you get reliable Tri Tool® machinery when you need it, whether for scheduled maintenance, emergency repairs, or a specific machining operation.

Save time and money with dependable TRI TOOL® tube and pipe equipment?



RI TOOL INC.

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