Tube Severing and Squaring Equipment

300 and 500 Series Machining Equipment



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Pharmaceutical

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Semiconductor

Cleanroom

Bio-Medical

Chemical

Aerospace

Food and Beverage

ANSWERING THE NEEDS OF TECHNOLOGY

Compact size, high precision, and the flexibility to be customized, have made the versatile Tri Tool[®] Model 300 and 500 series machines industry standards. They have become favorites in fabrication and maintenance roles in the semiconductor, bio-medical, pharmaceutical, petro-chemical, aerospace and defense, and the food and beverage processing industries.

High technology welded tubing systems demand perfect weld preparation.

Perfectly finished ends produce higher quality welds which are required by today's high tech industries. Tri Tool Inc. meets that demand by producing the finest portable machining 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 engineering support and dedicated customer service – the best in the business.



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

Today's welded piping system specifications are more critical and extensive than ever before. Tri Tool[®] machines have met the challenge of greater welding precision head-on with practical designs built to work hand-in-hand with orbital welding equipment being used by companies throughout the world to produce the finest welding results possible.

Let Tri Tool Inc. solve your most demanding production requirements with these dependable tube severing and squaring solutions.



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Equipment Features

ADVANCED MACHINING SOLUTIONS

Tri Tool[®] equipment is designed and built with features that ensure precision, ease of use, and maximum productivity.

Tri Tool's tube severing and squaring machines are grouped into two families, the 300 Series squaring machines and the 500 Series severing machines. Our 300 Series machines are designed to provide precise square ends on cut lengths of tube and fittings. Our 500 Series machines sever quickly and accurately and offer additional squaring capabilities on some models. Bench stands are standard on some models. All of the 300 and 500 Series machines deliver an optimal combination of precision and portability.

Tri Tool[®] machinery can be modified for maximum productivity and 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 collet and saddle systems to grip unique components, and automated feed and clamping systems.



Solution Profile: The portable Model 303, performing tube squaring in a low clearance situation. This Model 303 was specially configured to operate within a customer's custom size range.

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.

	Quick Reference Chart																	
Standard		/		Opera	tion	Matl. Type Drive Features												
O Special / Opt		/ /	/		/ /	/		/ /.					59					
		s Square Sev	$\boldsymbol{\Sigma}_{i}$			terbore Stre	Nict Mich	ontings Fitting	5	stic IAC	atic	JESS DC	ch Stand	oing Mot	still Stat	iless coll	et Case Raise Notice Faith	
Model	430	st set	2 ⁵ 45 ²⁵	el Det	NHI CON	SHP	Nic Mic	Official	IS He	ti pne	umatic Corr	le Bel	cli soli	all Quit	st'stat	ill stor	Notkin	
300MF										0	0						.125" (3.2mm) to .750" (19.1mm)	
301										0		0		0			.125" (3.2mm) to 1.0" (25.4mm)	
301DC																	.125" (3.2mm) to 1.0" (25.4mm)	
301SP										0	0	0		0			.125" (3.2mm) to 1.0" (25.4mm)	
302										0	0						.1875" (4.76mm) to 2.0" (50.8mm)	
304								0		0	0						.250" (6.35mm) to 4.5" (114mm)	
306										0				0	•	0	*2.0" (50.8mm) to 6.0" (152.4mm)	
308										0						0	*4.0" (101mm) to 8.0" (203mm)	
572AC	0		0	0	0					0	0		0				.250" (6.35mm) to 2.0" (50.8mm)	
576AC	0		0	0	0					0			0			0	2.0" (50.8mm) to 6.63" (168.3mm)	

* Working range can be extended down to accommodate smaller diameter tubes.

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Model 300 MICROFACER

.125" to .75" Micro Squaring System



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

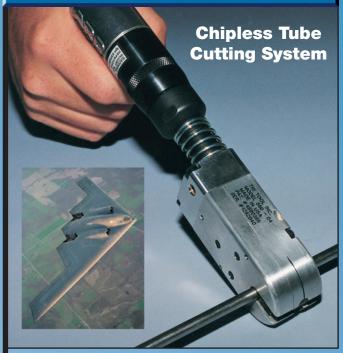
The Model 300 MICROFACER[™] is designed specifically to prepare tubes for autogenous welding, squaring .125" (3.2 mm) to .75" (19.1 mm) OD tubing with a wall thickness up to .125" (3.2 mm). This small, lightweight, precision squaring tool features self-contained OD saddle sets for holding and rounding the tube, rechargeable DC power, and a optional 18" flex extension making it perfectly suited for operation in tubing racks. The motor has a three position mounting system for maximum flexibility. The standard saddle clamping system requires a straight length of tube .22" (x 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 an interchangeable option for both the Model 300 Microfacer and 550 Chipless Tube Cutter.

AVAILABLE ALSO AS A SPECIAL ORDER MODEL 320 (1" to 2")

Model 550



The Model 550 Chipless Tube Cutting System provides reliable chipless severing of tubes in limited access situations with units sized specifically from 3/16" (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

1/8" 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 and Model 301 tube squarer has set the industry standard for precision and portability. The compact Model 301 provides full support, OD-mounting, self-centering collets and will square 1/8" (3.2 mm) to 1" (25.4 mm) OD tubing with up to a 1/8" (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 electro-polished 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.

TUBE AND MICROFITTING SQUARING

Model 301SP

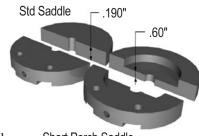
- Work with straight tube or microfittings with one machine
- 2-Piece stainless steel saddles for use on all materials
- No tools required for operation
- Lightweight and portable
- Optional bench stand

1/8" to 1"

The new Model 301 SP 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 3/16" (5mm) straight length. This machine's variable speed, high torque motor delivers excellent finishes on all types of materials without damaging electro-polished surfaces. The unit also features excellent visibility and a micrometer-type feed indicator to insure precise lengths. The Model 301SP features easy set-up and operation for 1/8" (3.2mm) to 1" (25.4mm) OD tubing up to .125" (3.2mm) wall, (for pipe sizes 1/4" to 3/4"). 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 electro-polished 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



Model 302

3/16" 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 OD's 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, as well. 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 righthand 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

- Quick change "snap-in" collet system
- Unequalled portability (only 18.5 lbs.)
- Broad size range

Flexible power and micrometer feed for optimum results

- Maximum tool bit visibility
- Low profile design

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.



1/4" to 4.5"



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 3/4" 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

SEVE<u>RMASTER</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 Model 572AC SEVERMASTER[™] severs

1/4" (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

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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.

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 o	n: Basic tube or pipe size:
SQM-1AC		.25" (6.35mm) to 2" (50.8mm) OD
SQM-2AC	576AC	Д6550(\$манты)6%@\$h*maximum (168.4mm) ОD
		.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.)

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Model 576AC

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



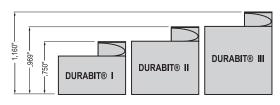


The Model 576AC SEVERMASTER[™] severs 2" (50.8mm) to 6.63" (168.3mm) diameter tubes and thin wall pipe. The severing range can be extended down to 3/4" tube by using a special extended tool holder. The Model 576AC features our Auto-Cycling, cam-operated tool bit feed mechanism which automatically returns 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.

TECH NOTES: Premium DURABIT® Tool Bits

Through state-of-the-art design, unique manufacturing processes, and proprietary coating technology, Tri Tool's DURABIT[™] tool bits are "free cutting" (the edge stays under the chip) and extremely durable. Decades of research and performance evaluation insure 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[™].

NOTE: DURABIT[™] tool bits designed for use with the 300 Series squaring equipment are made in three different lengths so that their entire cutting range is possible when using different saddle sets. Tri Tool will assist with determining the exact bits and saddles you need.



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



PRECISION IN-LINE MACHINING

600 Series Clamshells

When you need to sever and/or bevel in-line tube and pipe, no machine offers a better solution than Tri Tool's 600 Series splitframe "Clamshell" lathe.

Maintenance and construction projects often require the cutting of in-line pipe. The dependable clamshell lathe has the unique ability to split in two for mounting on either side of in-line components. After mounting, the lathe can be fitted with a wide variety of cutting bits in order to perform precision severing or simultaneous severing and beveling. The 600 Series offers numerous mounting and

For more information ask for a copy of our Model 600 Series Clamshell brochure.

clamping options (such as the full support pads shown) which not only self center and clamp the machinery positively to the work, but

provide protection from distortion or damage from clamping forces. The 600 series clamshells come in a full range of sizes for 1/4" to 60" applications. Equipment and cutting bits can be perfectly matched to provide optimal cutting results on a wide variety of materials and in diverse cutting situations. Clamshell lathes can perform in tight areas and can be operated remotely for hazardous cutting situations. platform for all of your portable machining requirements.



Solution Profile: Piping system contractors performing outage maintenance on thinwall stainless pipe using an electrically powered SB clamshell fitted with full support pads. The piping system was part of an auxiliary high purity nitrogen supply line at a semiconductor manufacturing facility. A prefabricated pipe assembly was then orbitally welded in place without further weld preparation being required.

- Simple, precise in-line cutting
- Sever and prep in one step
- Low clearance requirements
- Specialized mounting for thin wall pipe and tube
- Electric, pneumatic or hydraulic power options

TECH NOTE: High Purity Orbital Welding

Increasingly, modern industry is depending on orbital welding for higher productivity and accuracy. The orbital welding process relies heavily on precision end preparation to ensure that the tube and pipe ends being welded correspond with preprogrammed weld configurations. A high precision end prep means fewer rejected welds and lowered costs. Especially in autogenous welding, where no filler material is used, tube ends must be perfectly square and flat to be fused together reliably and without damage to the inside electropolished surface of the tubing.

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 providing the industry's finest design, engineering, and manufacturing support for over a quarter century. Over the years we have produced countless variations of our



Solution Profile: The Model 302 tube squaring machine above has been enhanced to fit a customer's requirement for a pneumatic quickclamp system. A powerful air

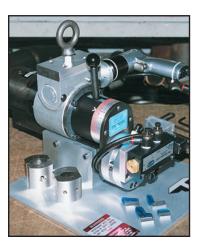
standard equipment. Machinery can be modified, special accessories developed, or completely new machinery built.

Special engineering can extend the cutting range of standard tools, automate operations, enable difficult tolerances to be met or enable the ma-

chines 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.

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



Solution Profile: This automatic tube squaring system was built to customer's specifications to provide high cyclic rate capabilities. It features auto clamping, extended feed range,

for use where no chips or cutting debris can be produced (as with radioactive materials) or where space is extremely limited.

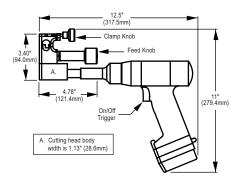
Trust Tri Tool[®] special engineering for your toughest work requirements.



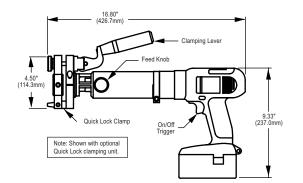


Specifications

Model 300 MICROFACER™

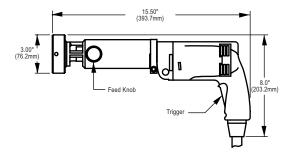


Model 301DC

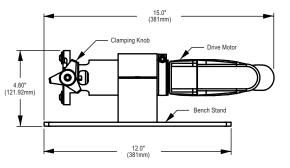


	OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
MICROFACER™	.125" (3.2mm)75" (19.1mm)	.125" (3.2mm)	N/A	.40" (10.2mm)	.187" (4.75mm)	.200" (5.1mm)	5.35 lbs. (2.4 Kg)	9.6VDC
Model 301 QLDC	.125" (3.2mm) - 1.102"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

Model 301

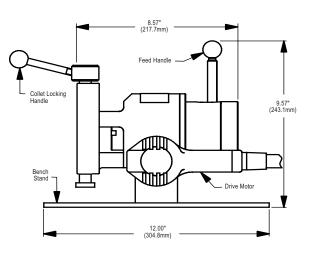


Model 301SP

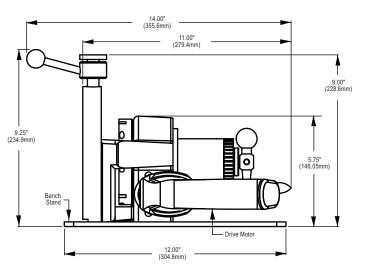


	OD Mounting Range	Max Wall	Collet Clamping Length	Saddle Clamping Length	Short Perch Clamping Length	Tool Bit Travel	Weight	Power Required
Model 301	.125" (3.2mm) - 1.102" (28mm)	.125" (3.2mm)	.120" (30.5mm)	N/A	N/A	.200" (5.1mm)	8.5 lbs. (3.86 Kg)	120VAC, 220VAC, Pneu.
Model 301SP	.125" (3.2mm) - 1.125"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



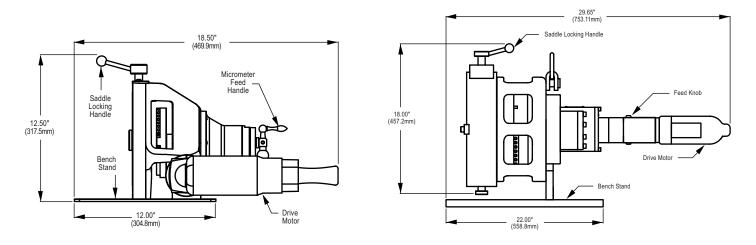
Model 304



	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

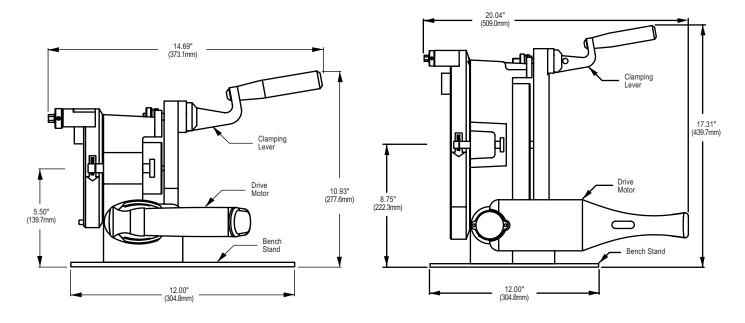
Model 308



	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 57	2AC .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 57	6AC 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 set-up and operate, the 200 Series BEVELMASTER[™], 900 Series POWERHEAD[™] and BOILERMASTER[™] machines deliver excellent ID mounted pipe beveling performance for weld end preparation on 1.25" to 60" pipe. With a wide range of optional attachments, they can perform in-place flange facing, counterboring, mount in elbows, or perform weld preparation on thin wall tubing.

OD Clamshells



The "Clamshell" lathe can be separated and reassembled to mount to the OD of in-line or open-ended pipe for severing and beveling. These versatile machines can be fitted with optional single-point machining equipment to provide complex compound bevels, "J" preps, and counterbores. Clamshell lathes are available from 1/4" to 60" OD and can be configured or modified for many different operations.

Squaring & Severing



The 300 Series tube squaring and 500 Series tube severing machines accurately sever and square .125" to 8" tube and pipe. These precision portable machines are the perfect companions to automatic orbital welding equipment and for the construction and maintenance of high purity welded tubing systems. Services



Tri Tool's Services Division offers on-site machining technicians with the experience and equipment to provide reliable, economical, on-site machining solutions. Convenient equipment rental programs ensure 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?



FRI TOOL INC.

3041 Sunrise Blvd. • Rancho Cordova, CA 95742 (800)-345-5015 • (916) 288-6100 • Fax (916) 288-6160 www.tritool.com Tri Tool[®] machines are offered for sale or rental.

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