MAXIMATOR® US
MAXPRO Technologies

Operating Instructions Coning and Threading Tools

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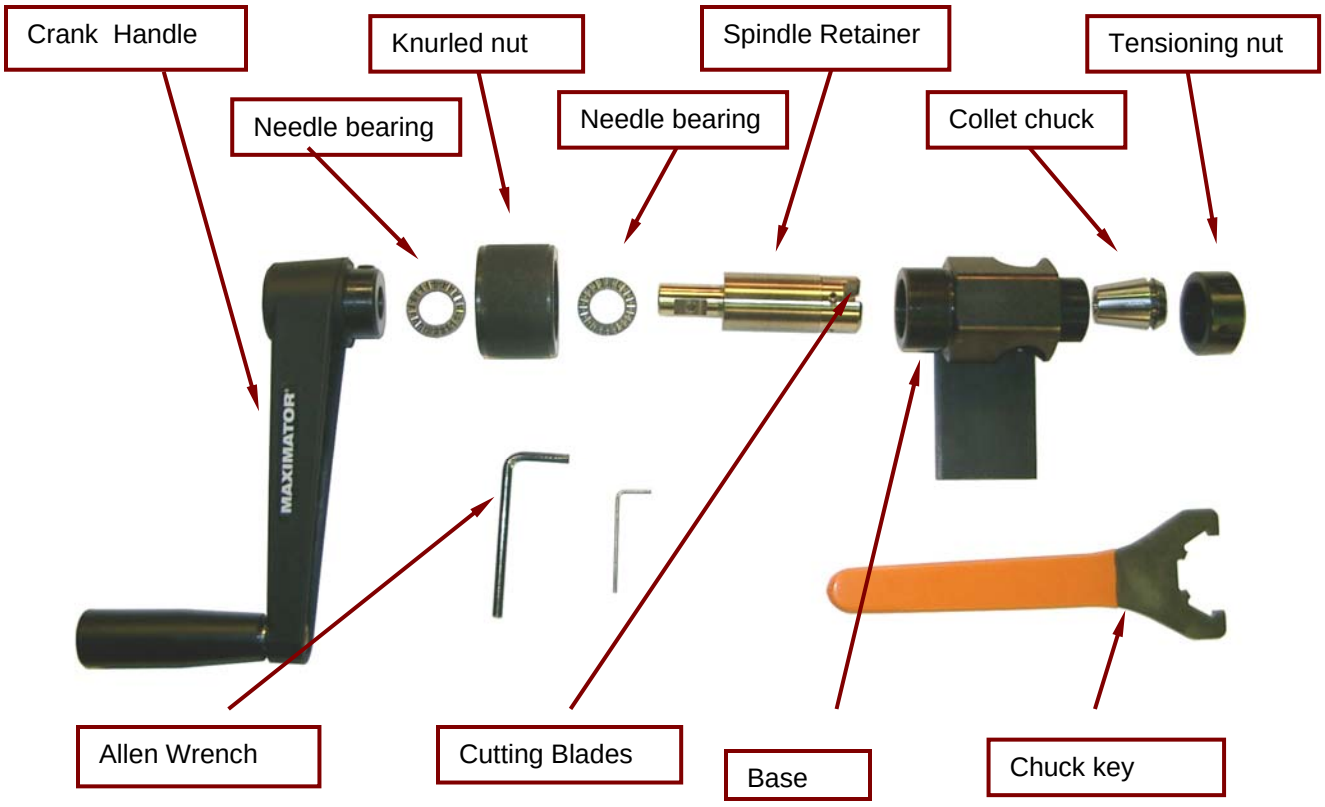
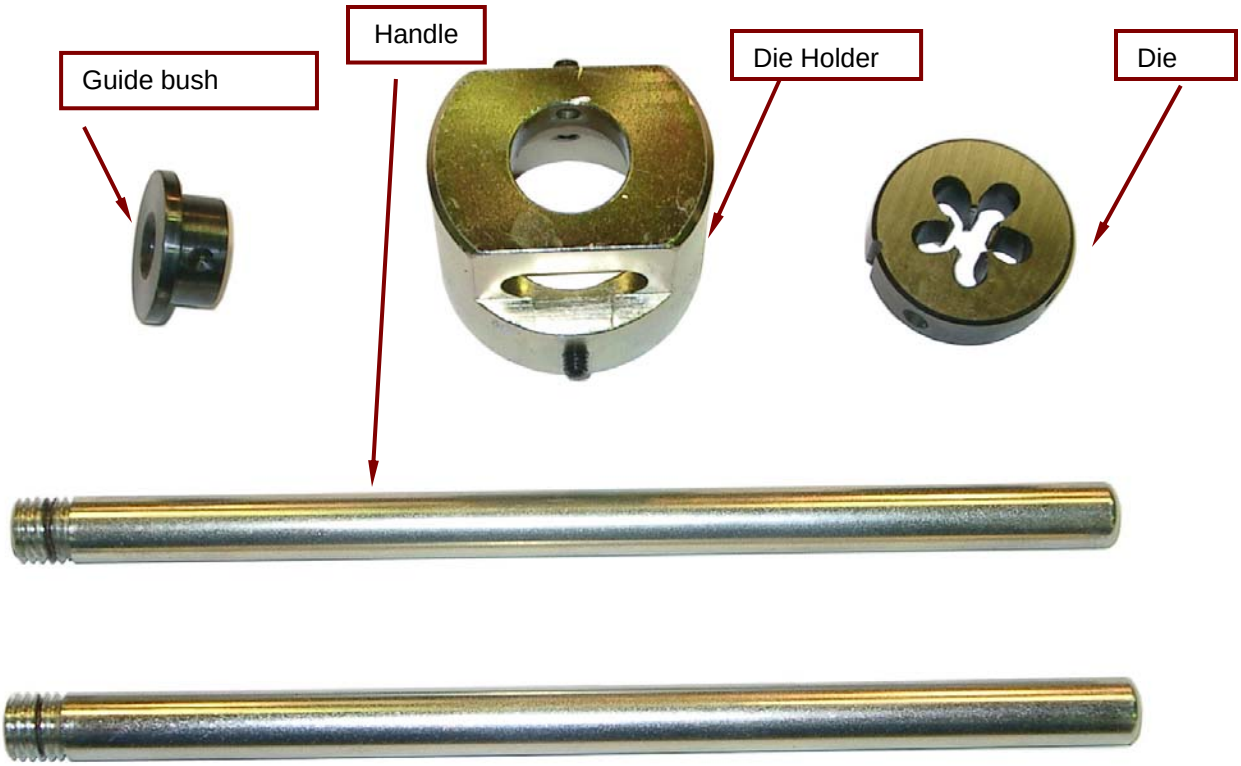
1 Component parts and configuration of the coning tool



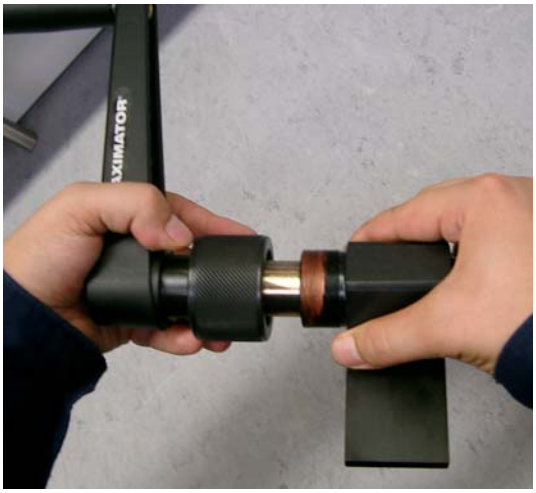
2 Component parts and configuration of the threading tool



PREPARATION OF THE CONING TOOL

Disassembly:

Remove the crank handle from the base.

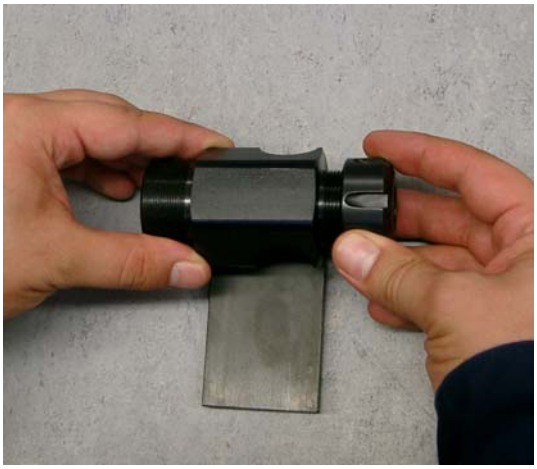


Use the supplied Allen Wrench to loosen the set screw that keeps the crank handle in position.

Remove crank handle, knurled nut and needle bearings from the spindle retainer.

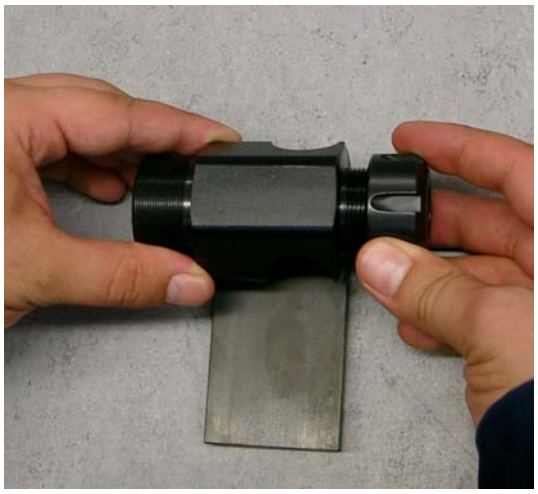
Loosen the 4 set screws in the spindle retainer to disassemble the cutting blades, then remove the cutting blades from the spindle retainer.

Unscrew the tensioning nut from the base, then push the collet chuck out of the tensioning nut.



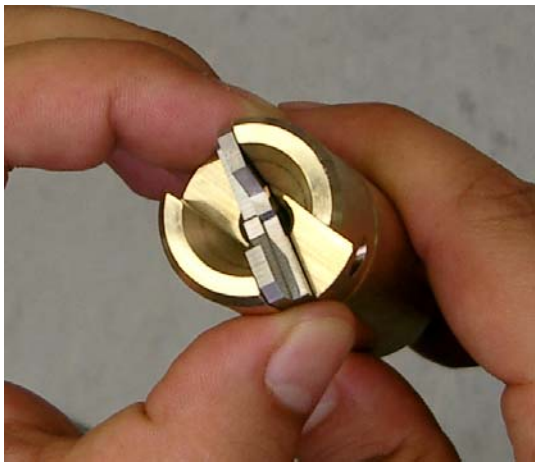
Assembly:

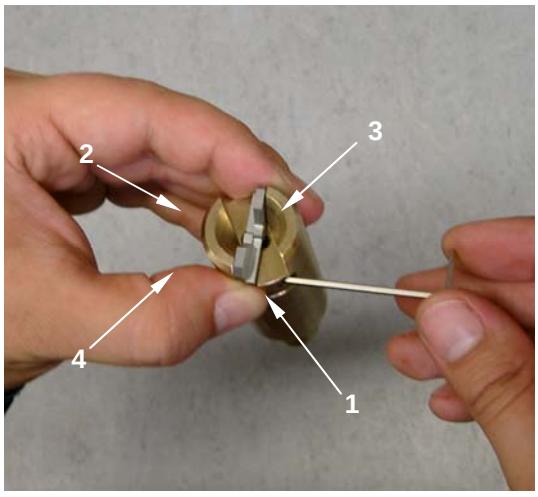
Push the correct tubing collet chuck into the tensioning nut.



Grease tensioning nut and collet chuck and screw them onto the base.

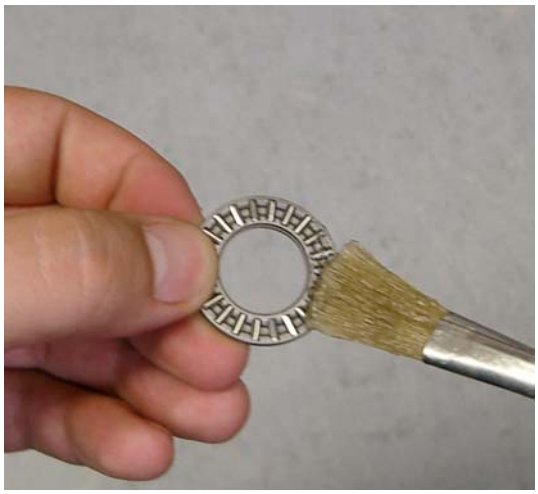
Insert the cutting blades into the spindle retainer as shown in the illustration. Make sure that the labelled part number on the cutting blades is always facing outward.





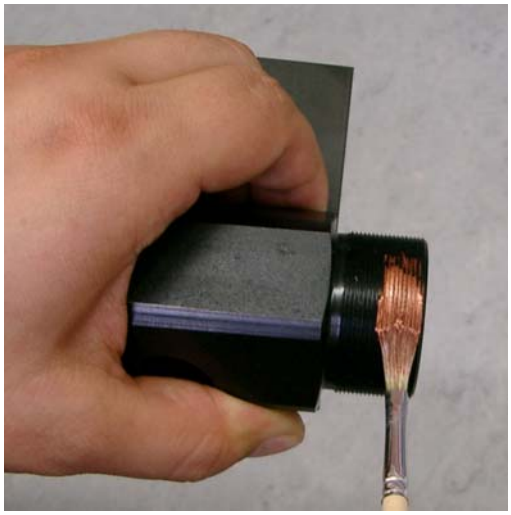
Use the Allen Wrench to tighten the set screws to align the cutting blades. Make sure to first tighten the set screws located opposite the cutting edges (see sequence in illustration). This will hold the cutting blade against the raised portion of the spindle retainer. Otherwise the cutting taper surface may be uneven.

Lubricate the needle bearings with roller bearing grease.



Insert the components onto the spindle retainer in the following sequence: Needle bearing → Knurled nut → Needle bearing → Crank handle.

Align the spindle retainer into the crank handle, making sure that the set screw aligns with the set screw flat. Press the components together by hand and tighten the set screw. Avoid any longitudinal play between crank handle, needle bearings, knurled nut and spindle retainer. A clearance between the components may result in an uneven tapered surface.



Lubricate the threads of the knurled nut and base. We recommend using Jet Lube SS-30 copper based anti-seize lubricant.

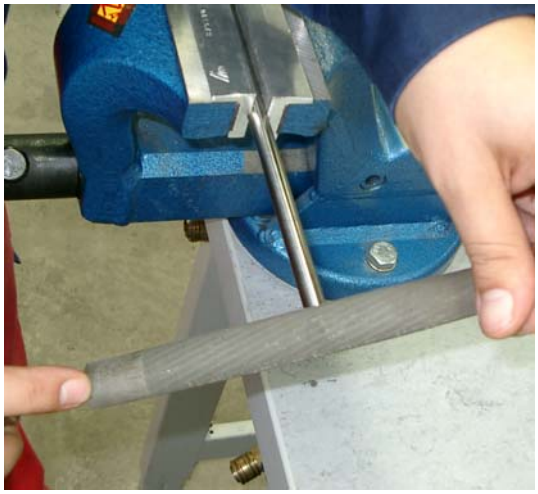
Lubricate the running surface of the spindle retainer with grease.

Insert the spindle retainer into the base by rotating the knurled nut a couple of rotations. Now the coning tool is ready for use.

Cutting tubing to length

The tube length is the result of the distance between the components to be connected plus the engagement for each connection as shown in Table 2. Allow an extra 1/32” per tubing end for facing cleanup

Tubing length = Component Distance + 2 x tubing engagement + 2 x 1/32”



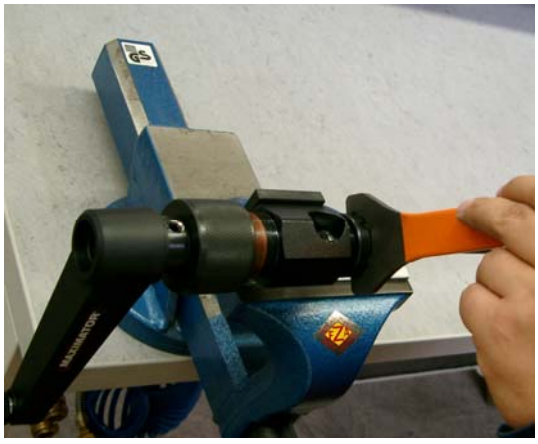
Cut the tube to the desired length and deburr on the outside so that it can be inserted into the collet chuck.

The Coning Process:

Clamp the coning tool at the mounting plate into a vice.

Unscrew the knurled nut until only 2 – 3 threads are engaged.

Insert the tube into the collet chuck. Push forward until the tube is near the top of the viewing window.

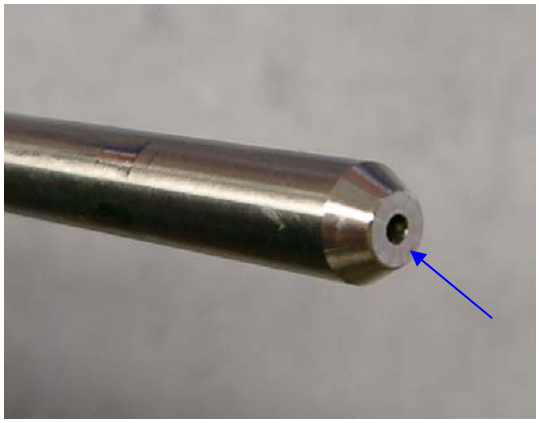


Tighten the tensioning nut with the chuck key. Make sure that all 4 teeth of the chuck keys are gripping the tensioning nut slots.

Apply cutting oil onto the cutting blades.

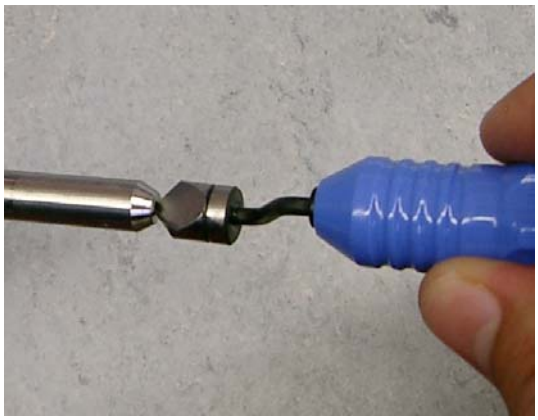
Turn the crank handle in a clockwise direction while simultaneously providing a slow advance with the knurled nut. Continue this process until the end of the tube is faced. It is important to end the coning process by stopping the advance of the knurled nut while continuing to rotate the crank handle 3 to 4 rotations.

Use the chuck key to loosen the tensioning nut, then the tube can be withdrawn from the coning tool.



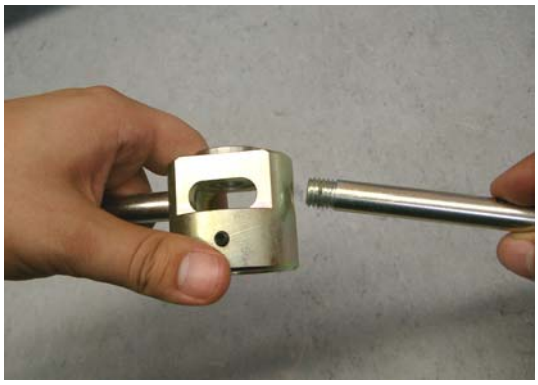
The finished tube will have both the tapered and vertical surfaces machined. The taper surfaces must be free from indentations or scratches. If this is not observed, simply repeat the coning process.

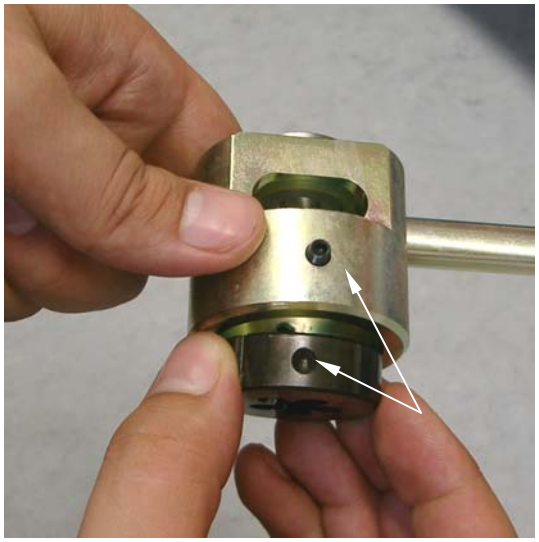
Complete the coning process by deburring the inside diameter of the finished coned tube.



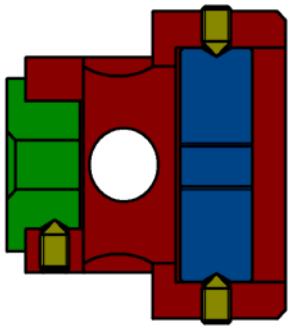
Preparation of the threading tool

Screw the handles into the die holder.





Insert the die and guide bushing into the die holder. Align and secure the components by tightening the set screws in the appropriate cone point recesses.

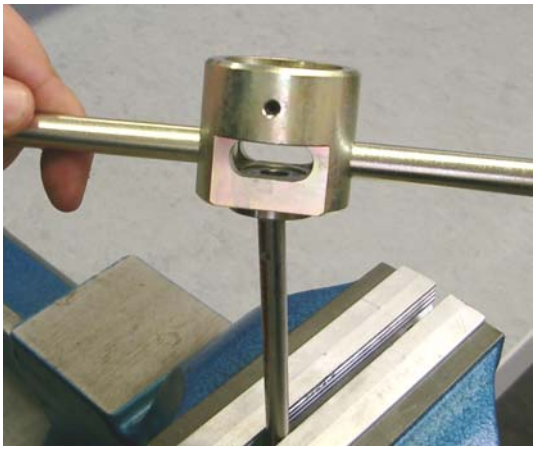


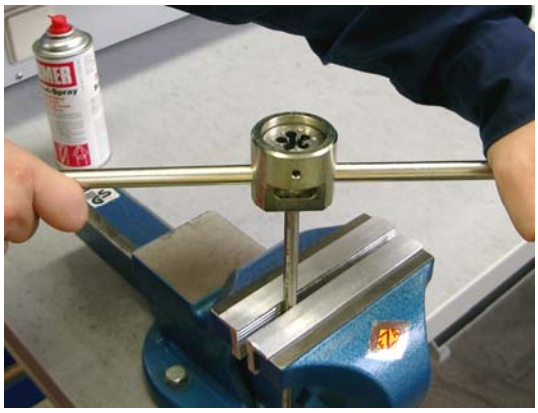
Threading Process:

Clamp the finished coned tubing in a soft jaw vise. The coning base can also be used to hold the tube during the threading process.

Lubricate both the tube and cutting die with a suitable cutting oil. (We recommend using Suflo cutting oil.)

Place the threading tool with guide bush on top of the tube.





Start the threading process by applying pressure to the top of the cutting dye while turning it in a counter-clockwise direction. Periodically reverse the rotation to break the chips and apply more cutting oil.

For thread lengths see Dimension “D” in Table 1. Carefully remove chips generated in the threading operation (inside and outside).

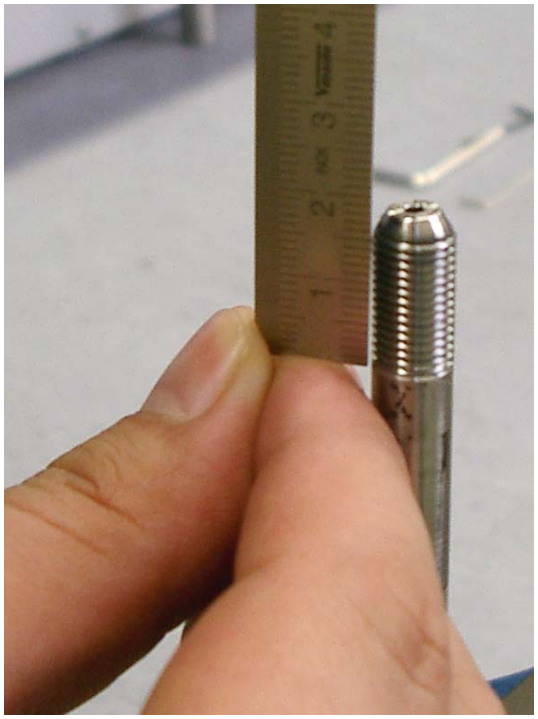


Table 1

Male Connection

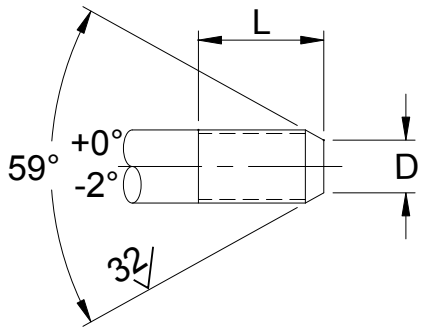
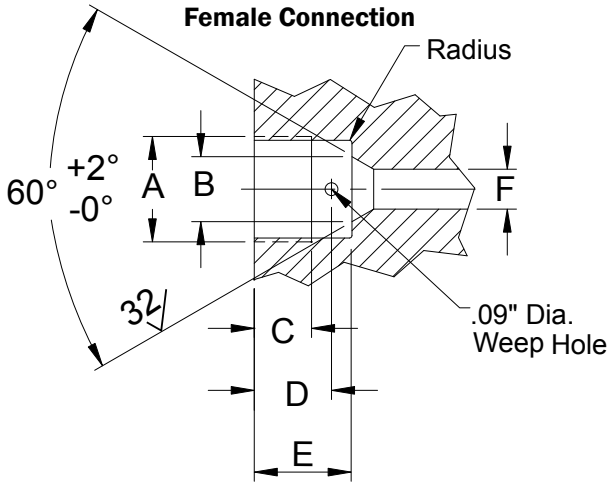


Table 2

Female Connection



Tubing Size O.D. x I.D (in.)	Tubing Pressure (psi @ R.T)	Dimension (in.)			Male Conn. Type	Female Conn. Type	Dimension (in.)						
		D	L	Left Hand Thread **			A**	B	C	D	E	F*	Tubing Engagement Allowance
Medium Pressure													
1/4 x .109	21,000	0.141	0.344	1/4-28	4MM	4MF	7/16-20	0.19	0.28	0.37	0.50	0.109	0.55
3/8 x .203	21,000	0.250	0.438	3/8-24	6MM	6MF	9/16-18	0.31	0.38	0.50	0.62	0.203	0.69
9/16 x .312	21,000	0.406	.500	9/16-18	9MM	9MF	13/16-16	0.50	0.44	0.59	0.75	0.312	0.84
9/16 x .359	15,200	0.438	.500	9/16-18								0.359	0.83
3/4 x .438	21,000	0.562	0.625	3/4-16	12MM	12MF	3/4-14 NPS	0.62	0.50	0.72	0.94	0.438	1.00
3/4 x .516	15,200	0.578	0.625	3/4-16								0.516	0.99
1 x .562	21,000	0.719	0.781	1-14	16MM	16MF	1-3/8-12	0.88	0.81	1.06	1.31	0.562	1.44
1 x .688	15,200	0.812	0.781	1-14								0.688	1.38
High Pressure													
1/4 x .083	65,000	0.125	0.562	1/4-28	4HM	4HF	9/16-18	0.17	0.38	0.39	0.44	0.094	0.50
3/8 x .125	65,000	0.219	0.750	3/8-24	6HM	6HF	3/4-16	0.26	0.53	0.53	0.62	0.125	0.69
9/16 x .188	65,000	0.281	0.938	9/16-18	9HM	9HF	1-1/8-12	0.38	0.62	0.62	0.75	0.188	0.84
Ultra High Pressure													
5/16 x 0.62	152,000	0.125	0.687	5/16-24	5UM	5UF	5/8-18	0.25	0.62	0.93	1.06	0.094	1.25

* *Port diameters may vary depending on specific valve or fitting component type. See actual component catalog page for orifice sizes and pressure ratings.*

** *Unified National Fine thread, Class 2.*

All dimensions are for references only and are subject to change.

Tools & Installation
Coning and Threading Tools

MAXIMATOR offers tools for coning and threading tubing up to 9/16" O.D. These are precise tools that allow manual coning and threading of medium, high, and ultra high pressure tubing. Please refer to the Maxpro Technologies website, www.maxprotech.com, and click on the VFT button to find detailed instructions for the coning and threading process.

Coning Tools

The coning tool comes complete with blades, collet and tools. The blades and tool feed nut allow the user to control the cutting feed rate and face the end of the tube when complete. The blades and collet can be changed for other sizes, while using the same base tool.

Tubing Size O.D. x I.D. (in.)	Tubing Pressure (psi @ R.T.)	Connection Type	Coning Tool Complete Catalog Number	Replacement Part Information		
				Collet Part Number	Coning Blades Part Number	Single Blade Part Number
1/4 x .109	21,000	4MM	**CT4M**	3781.1009	3781.1014	3781.0963
3/8 x .203	21,000	6MM	**CT6M**	3781.1010	3781.1013	3781.0964
9/16 x .312	21,000	9MM	**CT9M**	3781.1011	3781.1012	3781.0965
9/16 x .359	15,200	9MM	**CT9M.359**	3781.1011	3781.1179	3781.1178
1/4 x .083	65,000	4HM	**CT4H**	3781.1009	3781.0843	3781.0530
3/8 x .125	65,000	6HM	**CT6H**	3781.1010	3781.1017	3781.0961
9/16 x .188	65,000	9HM	**CT9H**	3781.1011	3781.1016	3781.0962
5/16 x .062	152,000	5UM	**CT5U**	3781.0846	3781.0843	3781.0530

Threading Tools

The threading tool comes complete with the threading die and bushing. The thread is a left hand type. The thread die and bushing can be changed for other sizes, while using the same base tool.

Tubing Size O.D. x I.D. (in.)	Tubing Pressure (psi @ R.T.)	Connection Type	Left Hand Thread Size (UNF class 2)	Threading Tool Complete Catalog Number	Replacement Part Information	
					Die Part Number	Bushing Part Number
1/4 x .109	21,000	4MM	1/4-28	**TT4**	3781.1061	3781.1055
3/8 x .203	21,000	6MM	3/8-24	**TT6**	3781.1059	3781.1053
9/16 x .312	21,000	9MM	9/16-18	**TT9**	3781.1060	3781.1054
9/16 x .359	15,200	9MM	9/16-18	**TT9**	3781.1060	3781.1054
1/4 x .083	65,000	4HM	1/4-28	**TT4**	3781.1061	3781.1055
3/8 x .125	65,000	6HM	3/8-24	**TT6**	3781.1059	3781.1053
9/16 x .188	65,000	9HM	9/16-18	**TT9**	3781.1060	3781.1054
5/16 x .062	152,000	5UM	5/16-24	**TT5**	3781.1058	3781.0152