



Manual Coning Tool

Instruction Sheet
Hand Tools for High Pressure

Catalog: 02-0035CE

November 2014

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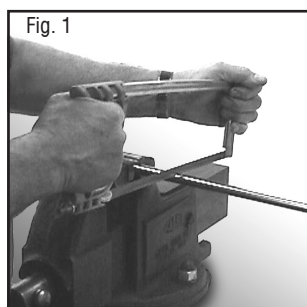
ENGINEERING YOUR SUCCESS.

Operation Instructions for Manual Coning and Threading

Medium and High Pressure Tubing

Manual Kit:

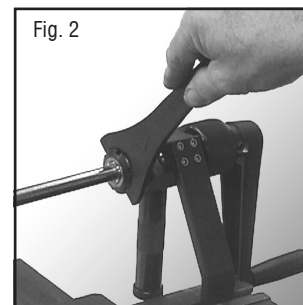
1. **Fig. 1** Cut tubing to length and square off the end as close to the required length as possible. Allow extra length for proper engagement into the connection as listed in Table 1. A small amount of extra length should be allowed to finish the end of the tube, but excessive amounts require additional cutting time and premature blade wear. **Note:** When cutting tubing with abrasive cut off wheel, tubing should not be over heated affecting material properties.



2. Install the collet and collet nut into the bottom of the coning tool housing. Remove the cutter support feed nut from the coning tool housing and install the cutters. This can be done by backing out the four set screws in the cutter support. **Note:** When installing new blades, be sure the blades are flat against the holder. There should be no space between the blades and the holder.

3. **Fig. 2** Place the coning tool housing (or optional support arm), without the feed nut/cutter support assembly, in a vise. The vise should be equipped with soft jaws, and the housing should be placed in the vise to allow lubricant to flow to the cutters and cone.

4. **Fig. 2** Slide the tubing through the collet until the end of the tube appears in the coning tool housing window. Line the end of the tube with the edge of the window and tighten the collet nut firmly in place using the collet nut wrench (see Table 2).

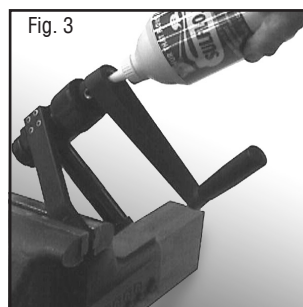


5. **Fig. 3** Install the feed nut/cutter support assembly into the coning tool housing. Rotate the feed nut clockwise until the top of the cutters just contact the top of the tube. **Do not** rotate the feed nut any further at this point.

6. **Fig. 3** Apply cutting oil* through the lubricant opening in the end of the cutter holder or directly through the housing window. A medium weight high sulphur content cutting fluid is recommended. Use the cutting oil freely during the coning operation.

*Cutting Oil P-8784

7. a. The distance the feed nut travels from its start position can be used to gauge the amount of travel to properly cone the tube. The amount of travel is shown in Table 2 and is labeled "Cone Length".



b. Another method to determine proper cone length is to count the number of turns of the feed nut. The number of turns is listed in Table 2 under the heading "Number of Turns". This includes enough advancement of the feed nut to face off the tube. This assumes the tube is cut to length in accordance with these instructions. The feed nut is supplied with a position indicator (drilled hole) to help determine the number of turns.

8. Rotate the handle in a clockwise direction while simultaneously **slowly** turning the feed nut in a clockwise direction. Rotate the feed nut slowly and evenly to smoothly cone the tube. Loosen collet nut, remove tubing and visually inspect the cone. Use deburring tool to remove any burr on inside edge of tube after coning.

TABLE 1

	Tube Size	Connection Type	Extra Allowance** for Engagement inches (mm)
Medium Pressure	1/4"	SF250CX	0.55 (13.97)
	3/8"	SF375CX	0.69 (17.53)
	9/16"	SF562CX	0.84 (21.34)
High Pressure	1/4"	F250C	0.50 (12.70)
	1/4"	100F250C	1.18 (29.97)
	5/16"	F312C150	1.25 (31.75)
	3/8"	F375C	0.69 (17.53)
	3/8"	100F375C	1.10 (28.0)
	9/16"	F562C	0.84 (21.34)
	9/16"	F562C40	0.81 (20.57)
	9/16"	40F562C-312	0.80 (20.32)

** Distance tubing protrudes into connection from face of fitting.

TABLE 2

Medium Pressure Tubing				High Pressure Tubing			
Tube O.D. (inches)	Cone Length inches (mm)	No. of Turns		Tube O.D. (inches)	Cone Length inches (mm)	No. of Turns	
1/4"	0.11 (2.79)	2		1/4"	0.13 (3.30)	3	
3/8"	0.13 (3.30)	3-1/2		5/16"	0.19 (4.83)	3-1/2	
9/16"(CX-20)	0.16 (4.06)	3		3/8"	0.16 (4.06)	3	
9/16"(CX-10)	0.13 (3.30)	2-1/2		9/16"	0.28 (7.11)	5-1/2	
				9/16"(C40)	0.21 (5.33)	4-1/2	

Manual coning and threading tools are not available for 3/4" and 1" tubing, see Tool Section of catalog for Coning and Threading Machine.

All dimensions for reference only and subject to change.

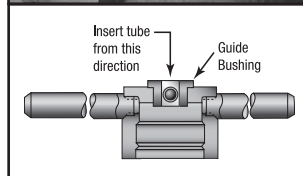
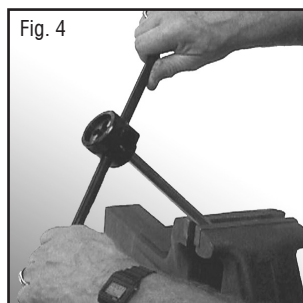
Manual Threading:

9. **Fig. 4** Clamp the tubing in a soft jaw vise. Do not over tighten. Slide the threading tool over the tube through the guide bushing.

10. Apply a medium weight, high sulphur cutting oil to threading area.

11. Apply pressure to the top of the threading tool to start the cutting action. The threads are left handed, so turn the threader **counterclockwise** to thread the tube. The threading tool may need to be periodically rotated clockwise to break and discharge metal chips. Apply lubricant freely during the threading process.

Note: The lead in chamfer (larger chamfer) on the die flutes toward guide bushing.



12. Continue to rotate die holder counterclockwise while applying cutting oil generously throughout the process until threads of the following lengths have been cut.

13. After tube is coned, threaded and deburred, check for proper thread fit and length with a new collar of the proper size. **Note:** Remember to flush all tubing prior to installation with a fluid that is compatible with the process fluid being used.

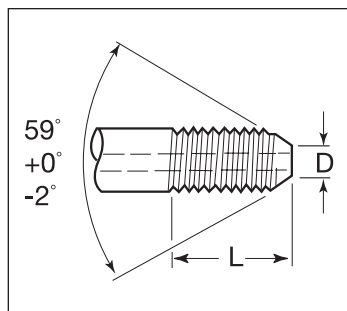


TABLE 3

Male Connection Type	Tube Size Outside Diameter X Inside Diameter inches (mm)	Dimensions inches (mm)		Thread size* and type (inches)
		D	L (max)	
SM250CX20	1/4" x 0.109 (6.35 x 2.77)	0.141 (3.58)	0.344 (8.74)	1/4" - 28
SM375CX20	3/8" x 0.203 (9.53 x 5.16)	0.25 (6.35)	0.438 (11.13)	3/8" - 24
SM562CX20 M562C40-312	9/16" x 0.312 (14.29 x 7.92)	0.406 (10.31)	0.500 (12.70)	9/16" - 18
SM562CX10	9/16" x 0.359 (14.29 x 9.12)	0.438 (11.13)	0.500 (12.70)	9/16" - 18
SM750CX20	3/4" x 0.438 (19.05 x 11.13)	0.562 (14.27)	0.625 (15.88)	3/4" - 16
SM750CX10	3/4" x 0.516 (19.05 x 13.11)	0.578 (14.68)	0.625 (15.88)	3/4" - 16
SM1000CX20	1" x 0.562 (25.4 x 14.27)	0.719 (18.26)	0.781 (19.84)	1" - 14
SM1000CX10	1" x 0.688 (25.4 x 17.48)	0.812 (20.62)	0.781 (19.84)	1" - 14
SM1500CX	1-1/2" x 0.937 (38.10 x 23.78)	1.062 (26.97)	1.000 (25.40)	1-1/2" - 12
M250C	1/4" x 0.083 (6.35 x 2.10)	0.125 (3.18)	0.562 (14.27)	1/4" - 28
M250C100 (see note)	1/4" x 0.083 (6.35 x 2.10)	0.125 (3.18)	0.625 (15.88)	1/4" - 28
M312C150	5/16" x 0.062 (7.94 x 1.57)	0.125 (3.18)	0.687 (17.45)	5/16" - 24
M375C100 (see note)	3/8" x 0.125 (9.53 x 3.18)	0.219 (5.56)	0.562 (14.27)	3/8" - 24
M375C	3/8" x 0.125 (9.53 x 3.18)	0.219 (5.56)	0.75 (19.05)	3/8" - 24
M562C	9/16" x 0.187 (14.29 x 4.78)	0.281 (7.14)	0.938 (23.83)	9/16" - 18
M562C40	9/16" x 0.250 (14.29 x 6.35)	0.312 (7.92)	0.938 (23.83)	9/16" - 18
M1000C43	1" x 0.438 (25.4 x 11.13)	0.562 (14.27)	0.91 (23.11)	1" - 14

*Thread is left-hand national fine (Class 2).

All dimensions for reference only and subject to change.

NOTE: M250C100 and M372C100 used in F312C150 connection at 100,000 psi (6895 bar).

Approximate Number of Turns to Thread Tubing

Male Connection	Number of Turns
SM250CX20	6.5
SM375CX20	7.5
SM562CX10/20 / M562C40-312	7.0
M250C	12
M250C100	12.5
M312C150	12
M375C100	10
M375C	14
M562C	12
M562C40	12

Assembly and Makeup of Connection

1. Lubricate male threads of gland with a metal based thread lubricant.* Slip gland on tubing as shown and thread collar on tubing until one to two threads are exposed between collar and cone.

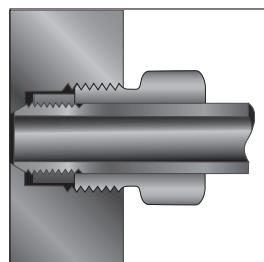
2. A small amount of process tolerable lubricant, such as silicone grease, on the cone tip will help with the sealing process. Insert tubing in connection, engage gland and tighten "fingertight".

3. Tighten gland with torque wrench to specified torque values in the tools section of the catalog. When tightening, the use of an additional wrench is recommended to hold the fitting.

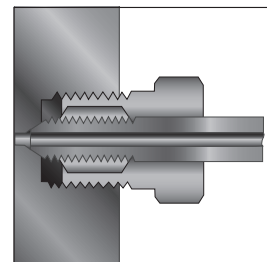
*Anti-Seize Lubricant: P-3580



Step 1, 2



Completed Parker Autoclave Engineers Medium Pressure Connection.



Completed Parker Autoclave Engineers High Pressure Connection.

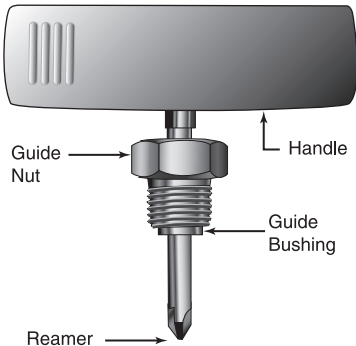
	TUBE SIZE		CONING		THREADING		
	Outside Diameter inches (mm)	Inside Diameter inches (mm)	Collet	Coning Blades (set of 2)	Threading Die		Guide Bushing
					Order Number	Size-type*	
Parker Autoclave Engineers Medium Pressure	1/4 (6.35)	0.109 (2.77)	90248	101F-1577	P-0214	1/4-28	1010-0343
	3/8 (9.53)	0.203 (5.16)	90250	101F-1601	P-0215	3/8-24	1010-0344
	9/16 (14.3)	0.312 (7.92)	90251	1010-5218	P-0216	9/16-18	1010-0345
	9/16 (14.3)	0.359 (9.12)	90251	101A-1897	P-0216	9/16-18	1010-0345
Parker Autoclave Engineers High Pressure	1/4 (6.35)	0.083 (2.11)	90248	101F-3939	P-0214	1/4-28	1010-0343
	5/16 (7.92)	0.062 (1.57)	90249	101F-3939	P-0205	5/16-24	1030-0343
	3/8 (9.53)	0.125 (3.18)	90250	101F-1578	P-0215	3/8-24	1010-0344
	9/16 (14.3)	0.188 (4.78)	90251	1010-0883	P-0216	9/16-18	1010-0345
	9/16 (14.3)	0.250 (6.35)	90251	101C-7214	P-0216	9/16-18	1010-0345

* All threads for Parker Autoclave Engineers medium pressure and high pressure tubing are LH national fine (class 2). 9/16 (14.3) x .312 (7.92) ID 40,000 psi (2758 bar), use MCTM920.

Note: Manual coning and threading tools for 3/4" (19.1 mm) and 1" (25.4 mm) outside diameter medium pressure tubing are not available. Model AEGCTM-2 Power Coning-and-Threading Machine is recommended for this tubing. A minimum of 3" (76 mm) straight length is required to perform coning and threading operation with manual coning tool.

Reseating Female Cone Seats

1. Clamp fitting in soft-jawed vise.
2. Thread gland nut into connection and tighten to 10 ft. lbs.
3. Apply cutting oil generously through opening in nut.
4. Insert reamer through guide bushing and press down firmly while rotating clockwise approximately two full turns, relieving pressure gradually toward end of second turn.
5. Remove reamer guide nut and bushing and inspect cone seat.
6. Repeat steps 2,3,4 and 5, if necessary, until cone surface has been restored and finish is smooth.
7. Clean fitting thoroughly to remove all chips and residue.

	Connection Type	Reamer Complete	Guide Nut Assembly	Reamer	Handle
	SF250CX	P-0270CX	A101A-2005	P-0270	102B-7568
	SF375CX	P-0271CX	A2020-7310	P-0271	102B-7568
	SF562CX	P-0272CX	A2030-7310	P-0896	102B-7568
	SF750CX	P-1726CX	A102A-3376	P-1726	103B-7568
	SF1000CX/43F1000C	P-1727CX	A102A-3375	P-1727	103B-7568
	F250C	P-0270C	A1010-0453	P-0270	102B-7568
	F312C150	P-0271C150	A2040-7310	P-0271	102B-7568
	F375C	P-0271C	A1020-0453	P-0271	102B-7568
	F562C/C40	P-0272C	A1030-0453	P-0272	102B-7568

WARNING

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