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Tube rolling set-up guide

The following directions are for a satisfactory joining of tube to tube sheet.

1. Pick 3 to 5 tubes to be rolled and complete the worksheet on page 2. It is important that actual measurements be used, never approximations or averages.
2. After the worksheet is finished, set the torque on the rolling motor by test rolling the first tube. Start with low torque, to avoid over rolling.
3. Measure the tube ID after rolling. If more expansion is needed, increase the torque setting slightly, and roll the second tube. Check the ID and repeat the procedure on the third tube if necessary.
4. Roll tubes 4 & 5 to double check the set-up. These tubes should measure within the allowable tolerance:

Condenser tubes	10 to 17 gauge	+/- .001"
Condenser tubes	18 to 24 gauge	+/- .0005"
Boiler tubes	4 to 10 gauge	+/- .002"
Boiler tubes	12 to 16 gauge	+/- .001"

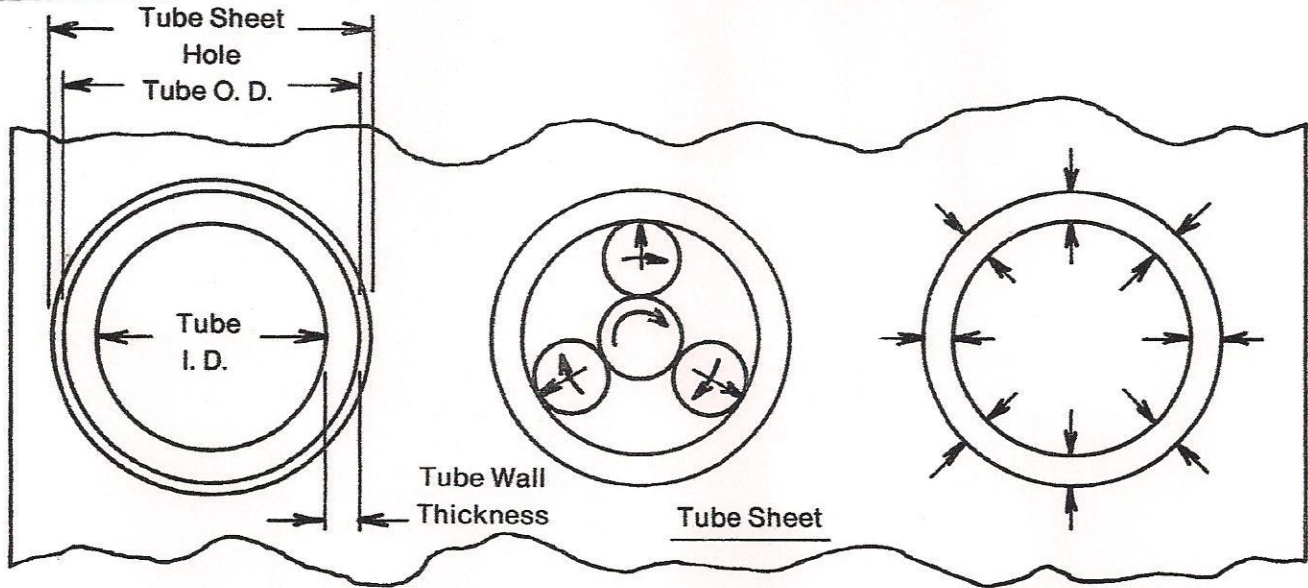
Note: reroll the tubes that were undersize

5. You are now set to roll the rest of the tubes in the unit.
6. To ensure the best tool life and high quality of tube to sheet contact, periodic cleaning of the expander is necessary. Proper lubrication of the rolls, mandrel, and thrust bearing is a must!



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CONDENSER TUBES
BOILER TUBES

5% REDUCTION
10% REDUCTION

TESTS PROVE THAT SATISFACTORY JOINTS ARE PRODUCED USING THE ABOVE LISTED PERCENTAGE OF TUBE WALL REDUCTION

- STEP A - Measure tube sheet hole
- STEP B - Measure tube O. D.
- STEP C - Subtract "B" from "A"
- STEP D - Measure tube I. D.
- STEP E - Subtract tube I. D. from tube O. D. Multiply by 5% or 10%
- STEP F - Add "C", "D" and "E" for finished rolled I. D.

STEP	TUBE #	Example	1	2	3	4	5
A	Tube Sheet Hole	.760"					
B	- Tube O. D.	.750"					
C	= Clearance	.010"					
D	+ Tube I. D.	.620"					
E	+ 5% Reduction	.006"					