



Rolling Controls

Introduction

Tools that set the standard

Outstanding performance, incredible durability, plus the ease of maintenance have made Airetool tube rolling controls the standard which all other manufacturers are measured against.

Why use torque control when expanding tubes?

Torque controlled tube rolling increases productivity by achieving the desired tube wall reduction each and every time a tube is expanded. Torque-controlled tube rolling compensates for variations in the tube wall thickness and the tube sheet hole dimensions.

What is tube wall reduction?

Tube wall reduction is the percent the tube wall is reduced after the tube OD has contacted the tube sheet ID. The amount of tube wall reduction varies with the tube material, the tube sheet material and the design requirements of the unit. Several factors including pullout strength, tube and tube wall thickness, tube sheet material and thickness, and operating pressure are considered in determining the optimum wall reduction.

Tube Rolling Set - Up Guide

Pick five tubes in the vessel to be rolled and complete the work sheet below. It is important that

the measurements used in the set up are actual. Never use averaged dimensions.

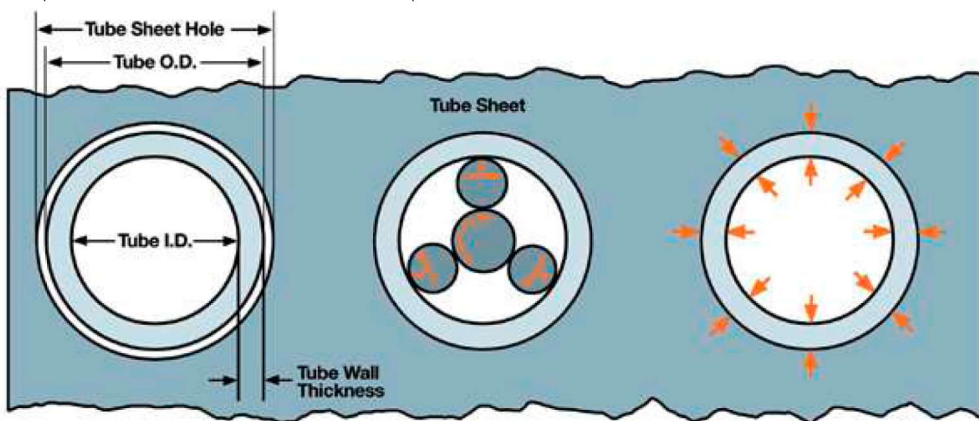
Always Use Engineering Design Specifications for Tube Wall Reduction Percentage

Satisfactory joints are produced using the above listed percentage of tube wall reduction.

- **Step A – Measure tube sheet hole**
- **Step B – Measure tube OD**
- **Step C – Calculate clearance (A-B)**
- **Step D – Measure tube ID**
- **Step E – Calculate 2x wall thickness (B-D)**
- **Step F – Calculate 5% wall reduction* (.05 x E)**
- **Step G – Calculate finished rolled ID (C+D+F)**

After the work sheet is finished, start setting up the torque control motor by test rolling the first of the five tubes. The first test roll must be done with the Airetool or Electric tube rolling motor set for low torque to avoid over rolling.

Measure the tube ID after rolling the first tube. If more expansion is needed, increase the torque setting on the control and roll the second tube. Check the finished ID. This step may require repeating on tube three, but by the fifth tube you should have achieved your desired finished rolled ID of step G below. The tubes rolled to calibrate the tube wall reduction can now be re-rolled at the correct setting.



		Joint Number				
STEP	EXAMPLE	1	2	3	4	5
A Tube Sheet Hole	.760"					
B - Tube OD	.750"					
C = Clearance	.010"					
D Tube ID	.620"					
E 2 x Wall Thickness	.130"					
F +5% Wall Reduction*	.006"					
G = Finish Rolled ID	.636"					

*Example only