

# Parallel Pin Tube Expansion

From a Manufacturing  
Point of View



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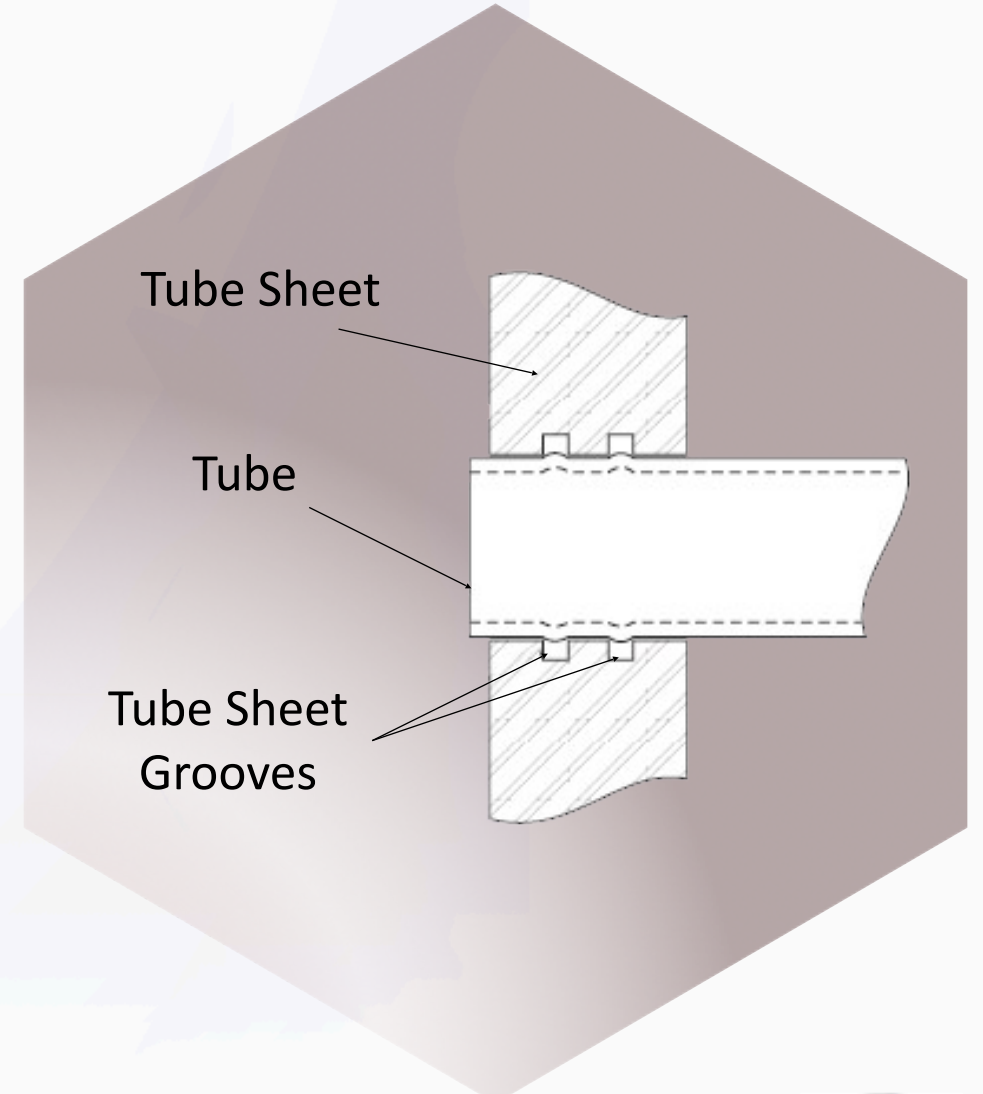
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# What is Tube Rolling?

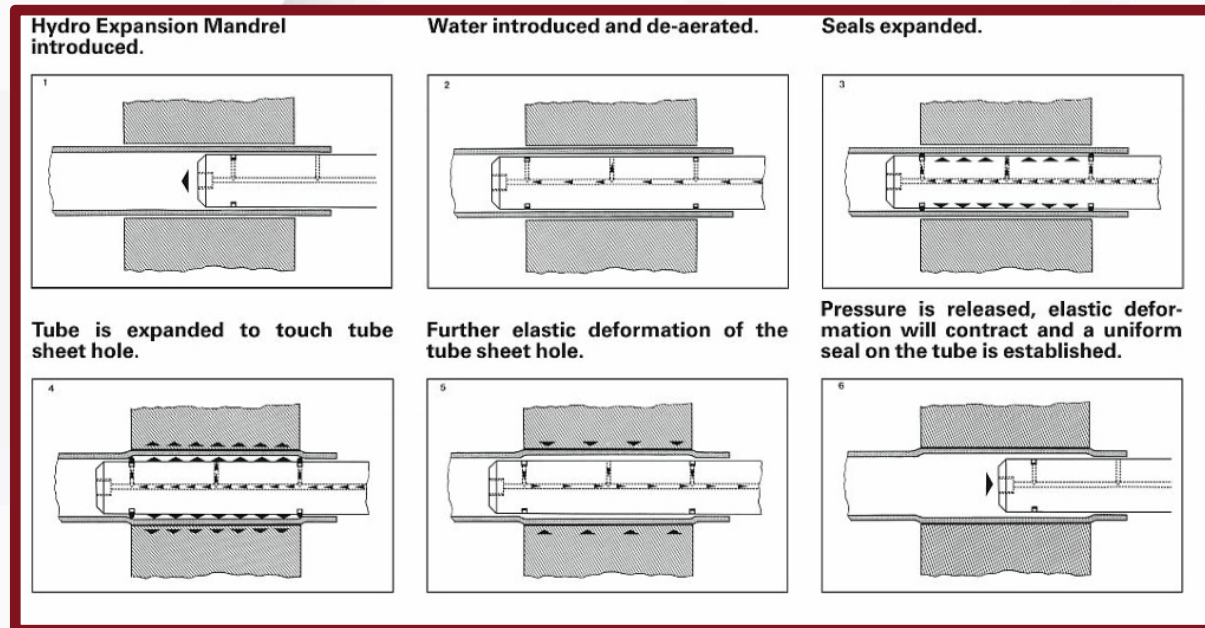
Tube Expanding (Rolling) is a method of creating a leak-proof tube-to-tube sheet joint in a Shell & Tube Heat Exchanger

For most designs, expanding tubes is the primary joint design



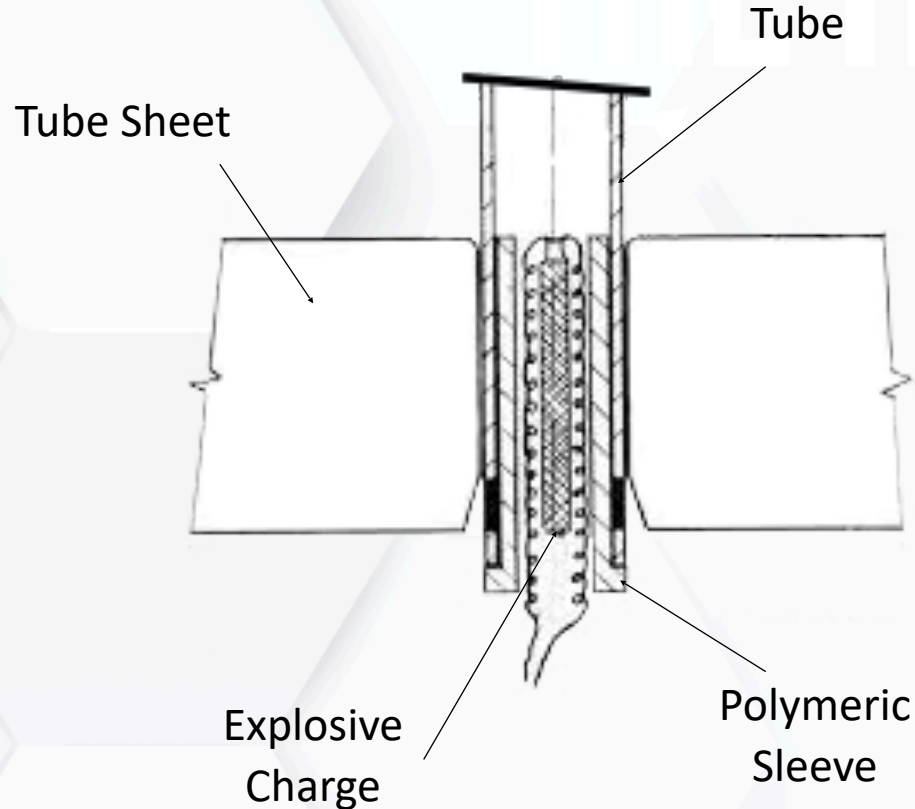


## Hydraulic Expansion



# Methods of Expanding

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## Explosive Expansion

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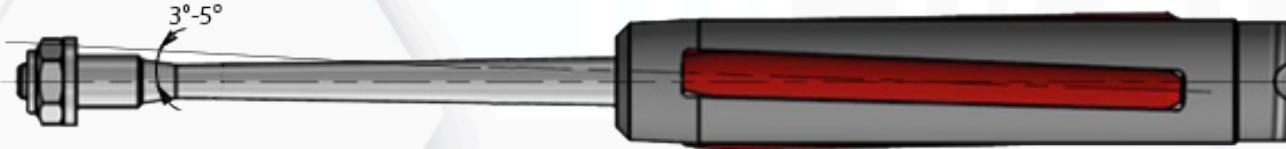


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# Methods of Expanding

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- Standard Roll Expansion works by way of self-feeding the mandrel into the roll pins
- This self feeds due to the mandrel and the roll pins being at a 3°-5° angle to each other
- This is generally considered the industry standard in heat exchanger, chiller, condenser and boiler manufacturing

## Traditional/Standard Roll Expander

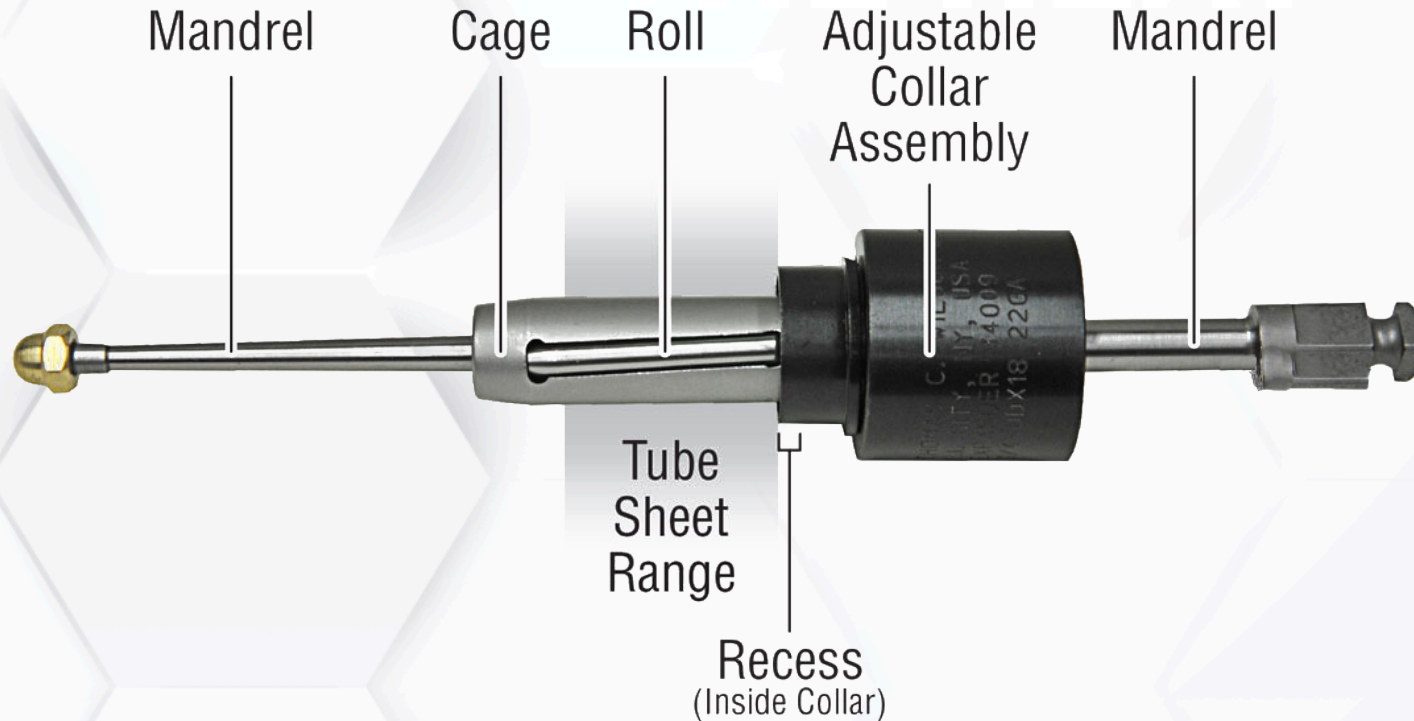
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# Methods of Expanding

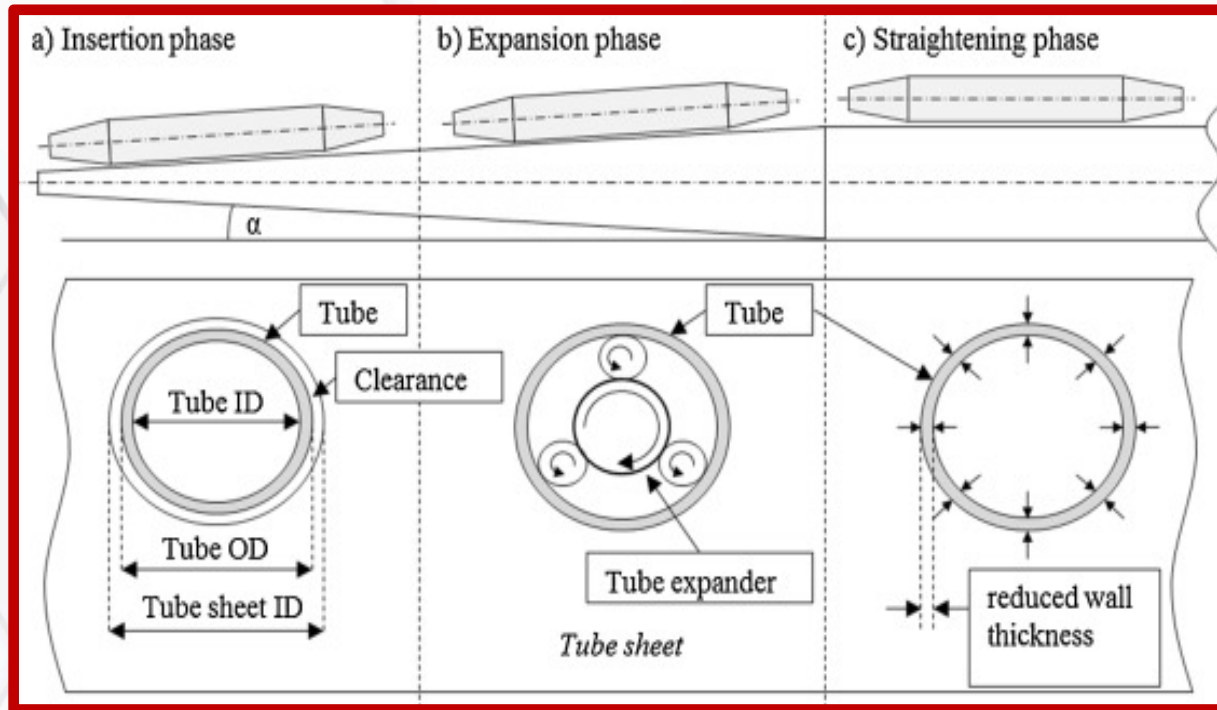
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## Traditional/Standard Roll Expander

# Methods of Expanding

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**Traditional/Standard  
Roll Expander**



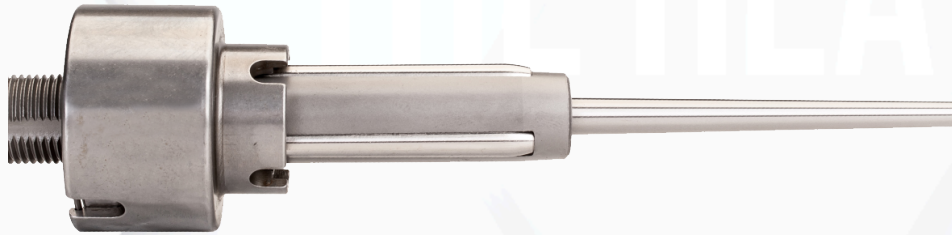
- Parallel Pin Roll Expansion works by way of a hydraulic cylinder that moves the mandrel
- No axial forces are introduced into the expander and therefore no axial forces are introduced into the tube-to-tube sheet joint

## Parallel Pin Roll Expander



# Benefits of Parallel Pin

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## BENEFITS

- Lack of axial forces minimize the chance of a cracked weld on exchangers with seal- or strength-welded tubes
- Cycle time is faster, given the hydraulic cylinder only moves back and forth and does not rely on having to screw itself back, so expanding can proceed at a quicker rate

## Parallel Pin Roll Expander

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Manufacturers and Repair Companies have used all tube expanding methods throughout the history of Shell & Tube Heat Exchangers

Parallel Pin Rolling is technology with certain benefits over other methods of Tube Expansion and is another tool in the box to achieve tube to tube sheet joint sealing

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