

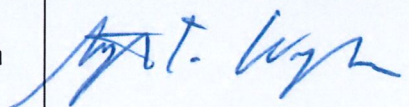
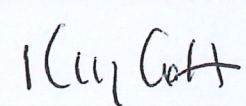
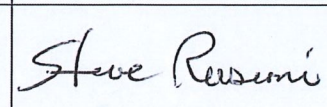
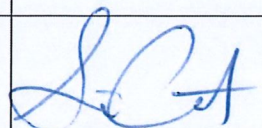



Standard Operating Procedure
Press Fitting Installation

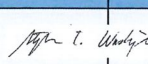
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Approval

Approving Authority	Name	Signature	Date
Quality Assurance Manager	Steve Washington		07 APR 2022
Process Systems & Controls Manager	Kerry Coltun		07 APR 2022
V.P. Engineering	Steve Rusconi		07 APR 2022
Exec. VP Operations	Scott Carstairs		08 APR 2022
President	Mike Fisher		08 APR 2022

Revision History

Revision #	Description of Change	Effective Date	DCR#
0	Initial Release 	2022.04.11 06:36:18-07'00'	22009



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- 1 Purpose
 - 1.1 To establish guidelines for the preparation and assembly of Press or similar fittings/joints for copper tube fluid systems.
- 2 Scope
 - 2.1 Installation of 'press' fittings for copper tube systems using electro-hydraulic press tools.
 - 2.2 For Copper Tube Sizes including: ½" – 4"
- 3 Safety
 - 3.1 Follow all press fitting and press tool manufacturer's instructions.
 - 3.2 Verify tube and fittings, press tool, jaws and collars are all appropriate for the application.
 - 3.3 Only use press tool, jaws, collars, etc. that are designed for use with the press fittings (brands, types, sizes, etc.) to be joined.
 - 3.4 Grip ring inside press fittings may be extremely sharp. Use PPE or extreme caution when reaching into the fitting.
 - 3.5 Failure to follow fitting & tool manufacturer's instructions may result in extensive property damage, serious injury or death.
 - 3.6 Keep extremities and foreign objects away from press tool during pressing operation to prevent injury or incomplete pressing.
- 4 Responsibilities
 - 4.1 The Quality Assurance Manager shall be responsible for:
 - 4.1.1 Establish training, qualification and renewal program for installers of press fittings.
 - 4.1.2 Perform semi-annual audit of qualification/renewal status for installers of press fittings.
 - 4.2 Project Manager (PM) shall be responsible for:



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- 4.2.1 Providing project documentation and materials as required per project specifications.
 - 4.2.2 Furnish tooling required for installation
 - 4.3 Foreman/Foreperson shall be responsible for:
 - 4.3.1 Verifying current qualification status for all installers.
 - 4.3.2 Coordination of installer qualification training and testing.
 - 4.3.3 Implementation of this procedure for proper installation
 - 4.3.4 Monitoring the status of press tool kits for wear, damage, etc.
 - 4.4 Installer shall be responsible for:
 - 4.4.1 Maintaining current training and qualifications
 - 4.4.2 Installing per this procedure.
- 5 Procedures
 - 5.1 Gather the materials for installation.
 - 5.1.1 If drinking water system, ensure all materials are lead free and EPDM seals.
 - 5.1.2 Ensure the copper tubing meets project specs and press fitting manufacturer's instructions
 - 5.1.3 Store materials in clean and dry place and keep tubing on proper racks to prevent damage and corrosion.
 - 5.1.4 Do not remove plastic caps or bags until immediately before installation.
 - 5.2 Gather tools for installation
 - 5.2.1 Tube cutter or saw and Deburring tool
 - 5.2.2 Cleaning abrasives, wire brush
 - 5.2.3 Marking pen, pipe vise & basic hand tools



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- 5.2.4 Press machine with constant pressing force
- 5.2.5 Press jaw or ring with corresponding actuator suitable for the tube diameter and the proper profile.
- 5.3 Examine all materials and tooling for damage, excessive wear, etc.
- 5.4 Replace sealing element if damaged or alternate material specific to the application is required.
- 5.5 Clamp tube to secure, minimum 4" from end to prevent possible damage to the tube ends
- 5.6 Cut copper tubing to desired length at right angles to axis with a tubing cutter or fine-toothed saw.
- 5.7 Refer to manufacturer's instructions for insertion depth chart for each size of tube. Measure and mark proper insertion depth on tube from end as indicated by manufacturer's installation manual.
- 5.8 De-burr the interior and exterior edge of the cut tube end to the insertion depth. This helps to prevent damage or reduced service life of the sealing element system.
 - 5.8.1 Pay special attention to any axial scratches on the outer surface of the tubing, even if barely visible. Reject and replace tubing if scratches found.
- 5.9 Use wire brush, abrasive pad, sand cloth or paper to remove loose dirt and contamination from the pressing area.
- 5.10 Check sealing element and grip ring for correct fit. Ensure sealing element is free from cuts, debris or damage. Do not use oils and lubricants.
- 5.11 Prior to insertion of tube into fitting, verify the following:
 - 5.11.1 The tube end is not bent or damaged
 - 5.11.2 The tube end is deburred, clean and smooth
 - 5.11.3 The sealing element is undamaged
 - 5.11.4 The correct sealing element is properly installed/seated.



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- 5.12 While turning slowly, insert tube end into press fitting until stop and reaches insertion mark. Mark 'insertion' line all around tube.
- 5.13 Assemble proper 'jaws, collars, rings, etc.' per the pressing tool manufacturer's instructions according to size and materials.
- 5.14 Open the jaws and place at right angle to the tube/fitting axis
- 5.15 Perform final pre-press visual check to verify tube is properly inserted into fitting.
- 5.16 Initiate pressing operation by activating tool trigger. Continue pressing until jaws have fully engaged the fitting. The Jaws will automatically release upon completion of pressing operation.
- 5.17 Open the jaws, remove the tool from the joint.
- 5.18 Remove product instruction label from the fitting to indicate the press joint has been completed.
- 5.19 Mark joint using permanent marker with installers initials & date.
- 5.20 Perform leak testing to verify joint is leak-free per applicable procedure.
- 6 Training, Qualification and Renewal of Qualification
 - 6.1 Installers of press joint connections shall be qualified by Therma and renewed annually.
 - 6.2 Qualification shall include:
 - 6.2.1 Minimum 30 minutes of training
 - 6.2.2 Demonstration of proper press joint installation.
 - 6.3 Therma QC Manager shall create record of qualification and share with Therma Project Managers as required.
 - 6.4 Therma QC Examiner shall perform annual audit of press joint installer qualifications for shop and field crews and report findings to QCM.
 - 6.5 QC Manager shall advise superintendent of lapse of qualification or if renewal of qualifications required.



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- 6.6 Therma QCM or QC Examiner may disqualify any installer any time judged to be incapable to make a sound press joint.