

Common Covered Task 214

Joining of Metal Pipe - Threaded Connections

Directions

This training guide is to be used by a Veriforce Authorized Evaluator/Trainer and Trainee during on-the-job training (OJT) or prior to an evaluation as a resource. (S) Indicates a demonstration or skill task; (K) indicates a knowledge task.

OJT Reminder

OJT is an active hands-on process. Practice should be as similar to the actual job task as possible. However, if the training is being provided on an actual job site while a covered task is actually being performed, the Evaluator either needs to be qualified on that covered task or be assisted by someone who is qualified on the covered task. The Evaluator should closely monitor the Trainee's practices to ensure safe and correct task performance. At no time should a non-qualified individual perform, or train for, a covered task unless directed and observed by a qualified individual. However, if the *"span of control"* for that particular covered task is "1:0" (requiring only qualified individuals to perform the covered task), the training must be simulated. Training is simulated by "walking through" the task and simulating all actual manipulations (valves, switches, tools, etc.) an individual would use during the performance of a covered task. Simulating includes the use of safety and administrative requirements as if the task were being performed live. Refer to the Veriforce Evaluator Training Program for more on how to conduct formal OJT.

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Joining of Metal Pipe - Threaded Connections

Recommended Student Training or Resources:

- DOT 49 CFR 192.271
- DOT 49 CFR 192.273

Knowledge: Explain what is required prior to performing task.

When joining metal pipe with a threaded connection, verification of all equipment, materials, and guidelines should be done prior to any installation.

Equipment includes the tools needed to perform the task. Examples may include, but are not limited to, a pipe wrench and pipe dope.

Materials include the fittings themselves. After verifying that you have the correct pieces, you must also ensure you have all the components needed for installation, such as caps.

Guidelines include operator approved schematics and exposed thread count. These guidelines specify how to install the components properly.

Skill: Demonstrate mechanical joining of metal pipe with threaded connection.

When joining metal pipe with a threaded connection, verification of all materials is an essential process and should be done prior to any installation.

Make sure the fitting is stamped with the **proper size, pressure rating, and/or other pertinent information** needed for the task.

Some fittings may **NOT** be stamped. Do not use components that should be stamped or are missing visible markings of a stamp.

Ensure that all necessary personal protective equipment (PPE) is available and used. PPE requirements may differ for each location; therefore, follow operator guidelines. Be prepared!

Failure to perform the next two steps could prevent the joint from **properly sealing**.

1. Ensure that the fitting is properly cleaned and free from debris. The preferred tool to clean a fitting is a wire brush. It may be necessary to wipe the wire-brushed threads with a clean rag.
2. Inspect all components for nicks or damage in the threaded area.

Once the fitting has been properly verified, cleaned, and inspected you are ready to apply the sealant material. Sealing products are generally found in tape or paste form (also known as pipe-dope). Ensure sealing material is compatible with the intended application (i.e. temperature range, pipe materials, contents of carrier pipe) and approved by the pipeline operator.

When applying tape sealant to a threaded fitting:

- Hold the end of the tape flat against the male threads
- Turn the pipe as though you were tightening it
- Overlap the tape enough to hold in place then travel down to end of threads
- As you continue to apply the sealant, cover the previous wrap until sufficient thread sealant is applied to ensure a leak free connection

- Keep the tape flat and tight against the pipe as you turn
- Ensure that the threads are fully covered
- The reason for doing it this way is so the loose end gets pinned down by the action of screwing the pipe in, rather than getting flipped up

When applying paste sealant to a threaded fitting, you should apply the paste evenly and liberally. Bare spots are not acceptable.

When applying sealing material **DO NOT ALLOW** the sealant to pass over the end of the fitting. Doing so could potentially introduce the sealant into the product which could compromise the equipment.

Once the tape has been applied immediately thread the pipe into the fitting. This can be done by hand or with the aid of a vise. Next, tighten the fitting with a pipe wrench and vise.

Caution: It is possible to over tighten fittings which may lead to a failure. The **number of times** the threaded fitting is to be tighten and what constitutes **tight enough** is at the discretion of the pipefitter. Generally it will only require one or two turns.

Once all components have been assembled and proper pressure has been applied to the system, apply a soap solution or similar product to check for leaks. If bubbles appear, there is a leak. Corrective actions should be taken to eliminate the leak.

Following the actions listed within this training module and operator specific guidelines will help ensure that the joining of metal pipe with a threaded connection will obtain the proper seal. Lastly, there is no substitute for hands-on training and direct trainer involvement, with that being said this training is not intended to substitute any hands-on training.

Abnormal Operating Conditions (AOCs)

Candidates are required to possess the ability to **RECOGNIZE** and **REACT** to the listed AOCs for each task. Be prepared to answer questions concerning additional AOCs that may be relevant. Evaluators may ask questions about AOCs throughout the evaluation.

An AOC is defined in **49 CFR §§ 192.803** and **195.503** as:

A condition identified by the pipeline operator that may indicate a malfunction of a component or deviation from normal operations that may:

- Indicate a condition exceeding design limits; or
- Result in a hazard(s) to persons, property, or the environment.

Recognize: Unintentional releases, vapors, or hazardous atmosphere could be signs that an abnormal operating condition has occurred. Examples could include, but are not limited to:

- Blowing gas
- Puddles
- Dead vegetation
- Vapors from casing vents

React/Respond: Proper reactions/responses to take in the event of an unintentional release, vapors, or hazardous atmosphere include the following:

- Eliminate potential ignition sources.
- Move to a safe location.
- Notify emergency response personnel, as appropriate.
- Notify designated operator representative.

Recognize: Material defects, anomalies, or physical damage of pipe or a component that has impaired or is likely to impair the serviceability of the pipeline are abnormal operating conditions. Examples could include, but are not limited to:

- Misalignment
- Stripped threads

React/Respond: Proper reactions/responses to take in the event material defects, anomalies, or physical damage of pipe or a component that has impaired or is likely to impair the serviceability of the pipeline include the following:

- Stop activity and notify designated operator representative.
- Mark the location so it may be easily located.

Recognize: An unintended fire and/or explosion on or near the pipeline is an abnormal operating condition.

React/Respond: Proper reactions/responses to take in the event of an unintended fire and/or explosion on or near the pipeline include the following:

- Move to a safe location.
- Notify emergency response personnel, as appropriate.
- Notify designated operator representative.

Glossary

AOC

abnormal operating condition

CCT

common covered task

CFR

Code of Federal Regulations