

052-12K-1059
Install A Cross-Linked Polyethylene (PEX) Tubing System
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD1 - This training product has been reviewed by the training developers in coordination with the Fort Leonard Wood, MO / MSCOE foreign disclosure officer. This training product can be used to instruct international military students from all approved countries without restrictions.

Conditions: Given a mission to install a PEX system, a structure with a service entrance water pipe, construction prints or field prints, specifications, materials takeoff list, materials estimates, all required materials, pipe-fitters tool kit 1/8 to 2 inch, carpenters tool kit squad level, special tools, goggles/safety glasses, gloves and appropriate doctrine. This task should not be trained in MOPP 4.

Standards: Install a PEX system IAW the construction or field prints, without leaks when pressure tested IAW appropriate doctrine and without causing damage to the environment or equipment and without causing injury to personnel.

Special Conditions: None

Safety Risk: Low

MOPP 4: Never

Task Statements

Cue: Soldier has been given a mission to install a PEX system.

DANGER

None

WARNING

None

CAUTION

None

Remarks: None

Notes: None

Performance Steps

1. Review construction or field prints.

- a. Identify the locations of water supply connections.
- b. Identify the type and location of routing, fixtures and PEX manifold.

2. Verify MTO.

- a. Verify the proper types of PEX required by size and rating are available.
- b. Verify the proper PEX connectors are available.
- c. Verify all PEX guards and sleeves that are required are available.

3. Install the PEX system.

- a. Mount the manifold to the wall with screws in the location depicted in the plans.

Note: Its ideal to label each manifold port referencing its destination, to mount manifolds in close proximity to water heaters to avoid long runs, between wall studs to help stabilize branch lines and with adequate space to control valve handles.

- b. Install the PEX tubing.

- (1) Ensure the main water supply is in the off position or disconnected.
- (2) Drill holes for routing if applicable.
- (3) "Pull" the tubing through the determined route.

Note: Care must be taken to avoid kinking or over stressing the tubing.

Note: Ensure the tubing does not exceed the maximum bend radius of 6 time the "outer" diameter of the tube. For example maximum bend for a 3/8" tube is 3", Maximum bend for a 1/2" tube is 4".

Note: Ensure tubing is routed a minimum of 12" away from recessed lighting and 6" from gas fired appliance vent tubes.

- (a) Install a protective sleeve on any tubing that will remain exposed to UV rays.
- (b) Install a protective sleeve or bushing in any place that the tubing penetrates a metal stud.
- (4) Fasten tubing to the structure.
 - (a) Install fastening straps at the beginning and end of each bend to reduce stress on the fittings.
 - (b) Install fastening straps at every floor level on vertical runs.
 - (c) Install horizontal run straps.

Note: Unsupported horizontal (sub-floor, ect.) run straps will not exceed 32" apart.

Note: Supported horizontal (on top of a surface) run straps will not exceed 6' apart.

- (5) Install protective steel plates if tubing is within 2" of a stud, plate, or joist nailing surface.
- (6) Fasten tubing to connectors at end of run(s).

Note: - Ensure the ends of the PEX tubing is cut at a 90 degree angle using the PEX cutting tool.

 - (a) Cut the end of the PEX tubing on a 90° angle.
 - (b) Slide a crimp ring down at least 2 inches onto the clean cut end of the PEX tubing.
 - (c) Slide the tubing onto the fitting.
 - (d) Slide the crimp ring over the end of the tube and fitting until it is aligned over both the PEX tubing and fitting.

(e) Clamp the crimp ring or pinch clamp using the crimp or clamp tool.

4. Test the system after all required connections have been made.

Note: Inspecting for leaks is important. A leaky joint wastes water and causes costly damage to the building. In new construction, test the entire system for leaks before the floor and partitions are closed up. When performing this test, use the water pressure from the main that feeds the system. While the system is under pressure, inspect each joint for moisture. If a leak is detected in a joint, tighten the joint or replace it by cutting the pipe and connecting a new section with a union. When working with copper soldered joints or plastic solvent-cement joints, drain the pipe and then connect the joint. Copper compression joints can be tightened or replaced.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: Score the soldier GO if all steps are passed (P). Score the soldier NO-GO if any step is failed (F). If the soldier fails any step, show him how to do it correctly.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions. Brief soldier: Tell the soldier that he will be required to complete the performance measures according to the standards set forth in the task.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Reviewed construction or field prints.			
2. Verified MTO.			
3. Installed PEX system.			
4. Tested the system after all required connections were made.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 3-34.70	Plumbing, Pipe Fitting, and Sewerage	No	No

TADSS : None

Equipment Items (LIN):

LIN	Name
W48622	Tool Kit Pipefitters: 1/8 to 2 Inch Pipe
W34648	Tool Kit, Carpenters, Engineer Squad with Chest

Materiel Items (NSN) :

Step ID	NSN	LIN	Title	Qty
No materiel items specified				

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to the current Environmental Considerations manual and the current GTA Environmental-related Risk Assessment card.

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
052-12K-1000	Test Water System	052 - Engineer (Individual)	Approved
052-210-1010	Read/Interpret Construction Prints	052 - Engineer (Individual)	Approved

Supported Individual Tasks : None

Supported Collective Tasks :

Task Number	Title	Proponent	Status
05-PLT-5211	Construct a Water Distribution System	05 - Engineers (Collective)	Approved

Knowledges :

Knowledge ID	Knowledge Name
052-K-00443	Know How to Interpret Construction Project Plans and Specifications
052-K-00620	Know Method of Measuring on Construction Plans

Skills : None

ICTL Data :

ICTL Title	Personnel Type	MOS Data
Created Ictl from: 12K10, Plumber, Skill Level 1	Enlisted	MOS: 12K, Skill Level: SL1, Duty Pos: KFW
Created Ictl from: 12K10, Plumber, Skill Level 1	Enlisted	MOS: 12K, Skill Level: SL1, Duty Pos: KFW
12K10, Plumber, Skill Level 1	Enlisted	MOS: 12K, Skill Level: SL1, Duty Pos: KFW