



Uponor

RADIANT HEATING AND
PLUMBING SYSTEMS

**PROPEX® 200 BATTERY
EXPANDER TOOL**

OPERATION MANUAL

For connections to
Wirsbo AQUAPEX® tubing

ProPEX® 200 Battery Expander Tool Operation Manual

is published by

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This Operation Manual is published for building officials and plumbing professionals interested in Uponor plumbing systems. This manual describes general installation recommendations that use Wirsbo AQUAPEX® tubing products. Be sure to follow local code requirements.

Uponor has used reasonable efforts in collecting, preparing and providing quality information and material in this manual. However, system enhancements may result in modification of features or specifications without notice. For the most current technical information, go to the Uponor website at www.uponor-usa.com.

Uponor is not liable for installation practices that deviate from this manual or are not acceptable practices within the mechanical trades. Refer to the Wirsbo AQUAPEX Professional Plumbing Installation Guide to install Wirsbo AQUAPEX tubing in plumbing systems.

Please direct any questions regarding the suitability of an application or a specific design to your local Uponor representative. For the name of your local representative, please call toll free (800) 321-4739.

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Section 1 – Overview

The ProPEX® 200 Battery Expander Tool (Q6262000) is an electro-hydraulic tool with microprocessor-based intelligence that makes fast, easy connections to 3/8" through 2" Wirsbo AQUAPEX® tubing.

The tool includes a 1½" pistol for making connections to 3/8" through 1½" tubing and a 2" pistol with a 2" H-series expander head for making connections to 2" tubing.

Note: Expander heads for 3/8" through 1½" tubing are sold separately.



Tool Kit Components

The ProPEX 200 Battery Expander Tool Kit features the following components.

- ProPEX 200 Battery Expander Tool
 - 2" Pistol (replacement part Q6262020)
 - 1½" Pistol (replacement part Q6262015)
 - 2" H-series Expander Head (replacement part Q6282000)
 - 10-foot Hydraulic Hose (replacement part Q6262010)
 - Hydraulic Pump
- Two Batteries (replacement part Q6260200)
- Battery Charger (replacement part Q6260700)
- Expander Head Lubricant (Molykote G-n plus)
- Operation Manual
- Carrying Case

Note: If any contents listed are missing or damaged, please contact your Uponor sales representative or distributor for assistance.

Keep all tool components in the carrying case, which can also store several optional expander heads. To protect the internal driver, store the tool with an expansion head in place.

Important Information

- ⚠ • For safety reasons, always start the tool with an expander head on it.
- Remove the battery from the tool when storing for more than one hour. A fully charged battery will drain in 20 days if left attached to the tool and unused.
- Do not keep the battery attached to the tool for longer than 20 days. This could hinder the battery's ability to recharge in the future.

Section 2 – Technical Data

ProPEX 200 Battery Expander Tool

Dimensions	13½" x 7" x 13" (340mm x 180mm x 330mm)
Weight	19.3 lbs. (8.8 kg) with full oil tank and battery
Maximum Tubing Size	2"
Rated Pressure	8,000 psi (550 bar)
Motor	400-watt, DC motor, equipped with thermal protection
Recommended Oil	Texaco AW 32 Hydraulic Oil or equivalent
Operating Range	32 to 100°F (0 to 38°C)
Storage Range*	32 to 100°F (0 to 38°C)
Sound Level	< 80 decibels (dB)
Protection Level	IP43 according to NF EN60529, DIN40050, IEC529 and B55490

Note: Storing the battery in temperatures below 50°F (10°C) greatly reduces battery capacity.

Rapid Charger

Power Supply	110VAC
Output Voltage	24VDC
Recharging Time	70 minutes
Weight	4 lbs.
Operating Range	50 to 104°F (10 to 40°C)

Battery

Output	24VDC, 3.3Ah
Type	Nickel Metal Hydride (NiMH)
Weight	3.3 lbs.
Operating Range	50 to 104°F (10 to 40°C)

Expander Head

Weight	0.3 lb. (average)
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Working Range

2" tubing	~16 to 18 fittings per charge
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Optional Expander Heads

⅜" tubing	~80 to 90 fittings per charge
½" tubing	~80 to 90 fittings per charge
⅝" tubing	~80 to 90 fittings per charge
¾" tubing	~80 to 90 fittings per charge
1" tubing	~80 to 90 fittings per charge
1¼" tubing	~60 to 65 fittings per charge
1½" tubing	~45 to 50 fittings per charge

Section 3 – Battery Operation

Charging the Battery

Only use the charger provided in the tool kit to charge the battery for the ProPEX 200 Battery Expander Tool. Charge the battery before initial operation.

1. Remove the charger from the case.
2. Plug the charger into a standard outlet.
3. Ensure the vent slots in the top and bottom of the charger are not obstructed.
4. Insert the battery into the charger (+ pole to + pole) with minimum force.
5. A flashing red light on the battery charger indicates the battery is charging.
6. Recharge time takes about one hour (the red indicator light on the charger stops flashing and remains on when the charge is complete).

Note: Battery temperature increases during and shortly after use. Batteries may not accept a full charge if they are charged immediately after use. Allow the battery pack to cool to room temperature before charging.



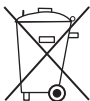
Caution: Do not use the charger at ambient temperatures of less than 50°F (10°C) or greater than 104°F (40°C).

Battery Handling

The ProPEX 200 Battery Expander Tool uses rechargeable batteries containing nickel metal hydride (NiMH) cells. To effectively and properly use the batteries, keep the following in mind.

- Recharge cool batteries only.
- The battery can recharge 1,000 times, and reaches full capacity after several charges.
- Store batteries at temperatures greater than 50°F (10°C), but less than 104°F (40°C), to optimize battery life.
- Only recharge the battery after it is completely drained of power.
- Do not use the charger if dropped or damaged.
- Do not connect two chargers together.
- Keep the battery in a frost-free, dry place.
- Do not allow metal objects (e.g., screws, cutlery, nails) to come in contact with the battery contacts.
- Use only the provided charger to charge the batteries. Using any other charger will void the warranty.
- Use only the batteries provided. Using any other battery will void the warranty.

- Use Uponor-recommended charging procedures. Incorrect use leads to short circuits, overheating or battery fluid leakage.
- To prolong the battery's life, avoid overcharging. Do not charge for more than two days.
- Remove the battery from the tool when storing for more than one hour. A fully charged battery will drain in 20 days if left attached to the tool and unused.
- Do not keep the battery attached to the tool for longer than 20 days. This could hinder the battery's ability to recharge in the future.
- Replace the battery if there is a substantially reduced operating time after proper charging.




- This symbol, located on the underside of the battery pack, signifies the battery needs to be disposed of properly in accordance with local environmental regulations. Do not incinerate the battery or dispose the battery in common waste-removal containers.

Section 4 – Expander Tool Operation and Guidelines

Operating Instructions

1. Slide the battery into its housing until you hear a click.
2. Remove the protection cap from the hydraulic hose and connect the hydraulic hose to the hydraulic pump.
Note: Always ensure connecting surfaces are clean.
3. Insert and fasten the electrical plug on the hydraulic pump.
4. Connect the pistol to the hydraulic hose, then connect and lock the electrical connection.
5. Check the cone for dirt. Clean and lube the cone as described in the Proper Tool Maintenance section.
6. Attach the appropriate ProPEX 200 Expander Head onto the expander tool. Be sure to screw on the expander head snugly.
7. Use the tool for expanding Wirsbo AQUAPEX tubing only.
8. Refer to **Section 5** for detailed instructions on making proper ProPEX connections.
9. When finished working with the tool, unscrew and remove the electrical plug.
10. Disconnect the hydraulic hose from the pistol and the hydraulic pump.
11. Wipe the hose couplings and replace the cap on the hose. Be sure not to let any dirt or debris enter the couplings as this can damage the pump or pistol.
Note: Disconnect the pistol from the hose before disconnecting the hose from the hydraulic pump to avoid damage to the pistol.
12. Remove the battery by pulling the lock off the battery and removing the battery from its support.

Note: The ProPEX 200 Battery Expander Tool includes thermal protection, which shuts down the tool when the tool starts to overheat. If this happens, let the tool cool down for one hour before resuming operation.

 **Warning:** Never use the pistol without an expander head attached to avoid a rise in pressure on the pistol. Also, never use the tool without a pistol attached.

Indicators

A panel located near the hydraulic pump handle features three light-emitting diodes (LEDs) which flash or illuminate to show the status of the tool and battery.

Note: The LEDs will continually illuminate to signal the battery status unless the pistol is expanding tubing. When the pistol is expanding tubing, the LEDs will change to show the status of the expansion. After the expansion is complete, the LEDs will return to showing the battery status.

Refer to the following tables for information about each LED.

Battery Power Load Indicators

Refer to the following table for information about the battery power load indicators.

LED	Definition
Green	If the green LED is on, 50 to 100% of the battery capacity remains.
Yellow	If the yellow LED is on, 5 to 25% of the battery capacity remains.
Red	If the red LED is on, less than 5% of the battery capacity remains.
Red (Flashing)	Once the red LED begins flashing, the battery is empty and must be recharged.

Table 1: Battery Power Load Indicators

Expansion State Indicators

Refer to the following table for information about the expansion state indicators.

LED	Definition
Green	A flashing green LED signals the expansion is completed correctly.
Red	A flashing red LED signals the expansion is not complete.

Table 2: Expansion State Indicators

Service Indicators

All three LEDs flashing together signals the tool has reached 20,000 cycles and needs service. The flashing LEDs display appears for 20 seconds (after displaying the expansion status).

When it is time for service, send the tool to Uponor's Tool Depot. The Tool Depot is a convenient way to repair or replace tools quickly and easily. For more information, contact Uponor Technical Services toll-free at (888) 594-7726 or go to www.uponor-usa.com, and click on Online Services.

For access to the Tool Depot, use the following login names.

Username — tool

Password — depot

First-time users must complete a registration form. Please note that contractors with existing accounts do not need to re-register.

ProPEX 200 Battery Expander Tool and Head Maintenance

The ProPEX 200 Battery Expander Tool comes with a 2" H-series Expander Head. Optional expander heads come in sizes ranging from $\frac{3}{8}$ " to $1\frac{1}{2}$ ". All heads contain six segment fingers, one attachment ring and one spring. It is very important to keep the head on the tool or in the tool case at all times as dirt and other debris can affect the connection process.

1. Remove and clean the segment fingers as needed. Remove the segments from the attachment ring by pushing the segment finger down toward the opening in the ring. Once the first segment is removed, the rest follow easily.
2. Place the segments on a flat surface with the ridges facing up. The fingers should lay flat without any curve in the middle. If the segments are bent, replace the head immediately.
3. To reassemble, replace the segment fingers one at a time to the attachment ring by sliding the grooved portion of the segment fingers over the spring in the attachment ring. The narrow end of the segment fingers points away from the solid side of the attachment ring. Hold these segment fingers in place with your thumb as the remaining segment fingers are inserted.
4. Once the expander head is cleaned and reassembled, use a clean, lint-free cloth to apply a light coat of Molykote g-n plus lubricant to the expander cone prior to making any ProPEX connections.
5. Apply the lubricant daily if used regularly.
6. Keep all other parts of the tool free from lubricant.

Note: Failure to properly lubricate the tool may result in improper connections.



Caution: Excessive lubrication may result in improper connections. Only use a small amount of lubricant to keep the tool working properly.

7. Monthly, soak the heads in a degreasing agent to remove any grease from between the segments. Clean the cone using a clean, dry cloth.
8. Store the tool and expander heads in the case. Store the tool with an expansion head in place to protect the cone.
9. Store the tool in a dry location to prevent rust.

Refilling Hydraulic Oil Reservoir

Check the level of hydraulic oil in the reservoir daily. The oil level should reach the top threads of the filling hole. If the oil level is low, refer to the following instructions to refill the reservoir.

1. Ensure the tool is on a flat, stable surface.
2. Unscrew the cap from the filling hole on the reservoir.
3. Fill the tank with Texaco AW 32 Hydraulic Oil or equivalent to the top threads of the filling hole.
4. Replace the cap.

Note: Due to oil expansion from temperature changes, oil may overflow when opening the reservoir cap. This is normal.

Troubleshooting

Difficulty Making Connections

If you experience difficulty making connections, follow the steps below.

1. Ensure the battery is fully charged.
2. Do not overload the tool's capacity. (Do not expand tubing larger than 2".)
3. Check if the expander head needs lubrication. Lubricate the head with Uponor-recommended Molykote G-n plus lubricant only.

Troubleshooting Table

Refer to the following troubleshooting table for instructions about troubleshooting the ProPEX 200 Battery Expander Tool.

Problem	Cause	Remedy
Tool does not start	Thermal stop due to motor overheating	Wait one hour for the motor to cool, then resume operation.
	Electrical component problem	Return the tool to the Tool Depot.
Tool does not advance, advances slowly or only intermittently	Air in the system	Drain the air from the system by holding the hydraulic pump higher than the pistol and cycling the tool several times.
	Insufficient level of hydraulic oil	Fill the hydraulic oil tank with Texaco AW 32 Hydraulic Oil or equivalent.
	Tool piston seized up	Return the tool to the Tool Depot.
	External or internal leak	Return the tool to the Tool Depot.
Tool advances but does not maintain pressure	External or internal leak	Return the tool to the Tool Depot.

Table 3: Troubleshooting Table

Safety Guidelines

To reduce the risk of electric shock, personal injury and fire, always follow basic safety precautions. Read and comply with all these guidelines before operating the ProPEX 200 Battery Expander Tool.

Failure to follow the instructions and installation guidelines as defined in this manual can result in the failure of the ProPEX 200 Battery Expander Tool.

- Always start the tool with an expander head in place.
- Keep fingers and hands away from the moving head area.
- Remove the battery when the tool is not in use, before servicing and when changing expander heads.
- Lay the tool on its side when not in use. The tool is not designed to sit upright.
- Do not operate or expose the tool and the charger to moisture, combustible fluids or gases (danger of explosion).
- Do not use the tool for any function other than expanding PEX tubing.
- Do not obstruct or place anything in the vent holes of the tool housing.
- Always wear protective eyewear and clothing when operating the tool.
- Use original replacement parts only.
- Only professional contractors should operate the ProPEX 200 Battery Expander Tool. Keep this tool away from children.
- Keep the ProPEX 200 Battery Expander Tool clean. Dirt and rust may hinder proper and safe tool operation.



Important: The ProPEX 200 Battery Expander Tool complies with relevant safety regulations. To avoid injuries, all maintenance and repair work, particularly when involving electrical systems, should only be performed by an authorized expert or trained personnel using genuine spare parts. All unauthorized modifications to the equipment are prohibited for safety reasons and will void the warranty.

Repairs

Send all warranty repairs to the Tool Depot. The Tool Depot is a convenient way to repair or replace tools quickly and easily. For more information, contact Uponor Technical Services toll-free at (888) 594-7726 or go to www.uponor-usa.com, and click on Online Services.

For access to the Tool Depot, use the following login names.

Username — tool

Password — depot

First-time users must complete a registration form. Please note that contractors with existing accounts do not need to re-register.

Warranty

The ProPEX 200 Battery Expander Tool has a two-year or 20,000-cycle warranty from the date of delivery (verified by invoice or delivery note). Damage caused by normal wear and tear, overloading or improper handling are excluded from the warranty.

For further warranty information, go to www.uponor-usa.com, and click on Online Services. Login using your username and password and click on User Tools. Go to Documents and Files, click on Warranties and select Uponor Plumbing Systems Limited Warranty to view the plumbing systems warranty.

Send all warranty repairs to the Tool Depot (refer to Repairs section). Note that warranty claims are only accepted if the complete ProPEX 200 Battery Expander Tool with all hardware, parts and accessories are returned to the Tool Depot.

Note: Failure to read and comply with operation and maintenance instructions in this manual voids the warranty.

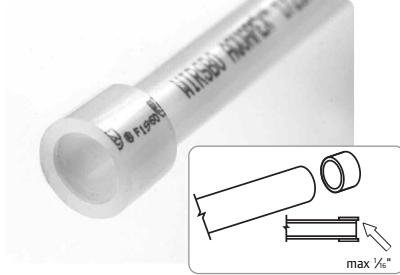
Section 5 – Making ProPEX Connections

Tools Needed

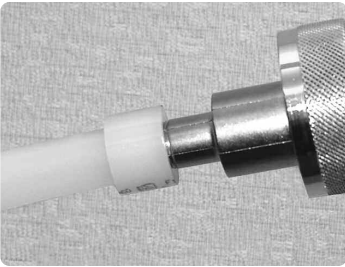
- ProPEX 200 Battery Expander Tool
- Properly sized expander head, hand-tightened onto the tool
- Tubing cutter designed for PEX tubing



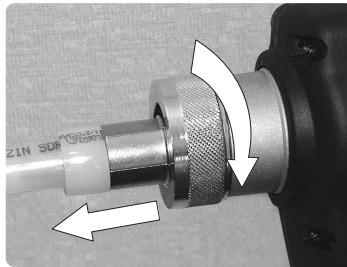
1. Square-cut the PEX tubing perpendicular to the length of the tubing. Remove all excess material or burrs that might affect the fitting connection.



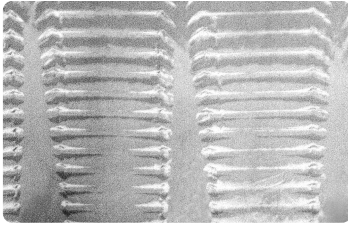
2. Slide the ProPEX Ring over the end of the tubing. Extend the end of the ring over the end of the tubing no more than $\frac{1}{16}$ " (1 mm).



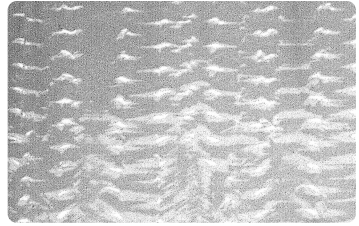
3. Slide the expander head into the tubing until it stops. Full expansions are necessary to make a proper connection. Press the trigger to expand. Release the trigger, remove the head from the tubing and rotate it $\frac{1}{4}$ turn. Slide the tool head into the tubing in the newly rotated position and expand again.



Important: Rotating the tool $\frac{1}{4}$ turn expands the tubing smoothly and evenly. If the head is not repositioned after each expansion, the segments on the tool head may cause deep grooves in the tubing, resulting in potential leak paths.



Expansion without proper rotation



Expansion with proper rotation

Note: It is not necessary to rotate the tool in only one direction. Alternating the turning direction will ease expansion in confined spaces. The photos above show enlarged views inside expanded tubing.

- Repeat the expansion process until the tubing and ring are snug against the shoulder on the expander head. See **Table 4** for the recommended number of expansions for each tubing size.



Tubing Size	Ring Marking	Head Marking			Number of Expansions		
		Manual	Air Exp	Battery Exp	Manual	Air Exp	Battery Exp
3/8"	3/8"	3/8"	3/8"	3/8"	4-5	4-5	6-7
1/2"	1/2"	1/2"	1/2"	1/2"	3-4	3-4	3-4
3/4"	3/4"	3/4"	3/4"	3/4"H	7-9	7-9	8-9H
1"	1"	1"	1"	1"H	12-14	12-14	6-7H
1 1/4"	1 1/4"	—	—	1 1/4" H	—	—	6-7H
1 1/2"	1 1/2"	—	—	1 1/2" H	—	—	7-8H
2"	2"	—	—	2" H	—	—	4-5H

Table 4: Recommended Expansions

Note: The "H" in the table refers to the H-series expander heads, which are only used with the ProPEX Battery Expander Tools. Only use the 2" H-series Expander Head on the ProPEX 200 Battery Expander Tool.

- Immediately remove the ProPEX 200 Battery Expander Tool. As you slide the tubing over the fitting, you should feel some resistance. If the tubing reaches the shoulder of the fitting without any resistance, the tubing may be over-expanded and may require additional time to fully shrink over the fitting. The tubing and ProPEX Ring should seat against the shoulder of the fitting for a proper connection.



Important Tips for a Proper ProPEX Connection

- If the fitting does not slide into the tubing all the way to the stop, immediately remove it from the tubing and expand the tubing one final time.

Note: To avoid over-expanding the tubing, do not hold the tubing in the expanded position.

- **Table 4** lists the recommended number of expansions for the various sizes of PEX tubing. Experience, technique and weather conditions influence the actual number of expansions. Fewer expansions may be necessary under certain conditions. The correct number of expansions is the amount necessary for the tubing and the shoulder of the fitting to fit snugly together.
- A good connection is when the ProPEX Ring rests snugly against the stop of the ProPEX fitting shoulder. If there is more than $\frac{1}{16}$ " between the ring and the shoulder of the fitting, square-cut the tubing 2" away from the fitting, and make another connection using a new ProPEX Ring.

Making $\frac{3}{8}$ " ProPEX Connections

The $\frac{3}{8}$ " ProPEX Ring is smaller and thicker than the ProPEX rings used for other tubing sizes. The $\frac{3}{8}$ " ProPEX Ring must be expanded once on each side to properly fit over the tubing. Expansion of the ProPEX Ring is only necessary for $\frac{3}{8}$ " Wirsbo AQUAPEX.

1. Square-cut the $\frac{3}{8}$ " Wirsbo AQUAPEX tubing perpendicular to the length of the tubing.
2. Expand each side of the $\frac{3}{8}$ " ProPEX Ring with the ProPEX 200 Battery Expander Tool once.
3. Slide the expanded $\frac{3}{8}$ " ProPEX Ring over the end of the tubing. Extend the end of the ring over the end of the tubing no more than $\frac{1}{16}$ " (1mm).

Once the $\frac{3}{8}$ " ProPEX Ring is properly expanded and on the tubing, refer to Steps 3-5 on **pages 11 and 12** for further instruction.

Important Tips for a Proper $\frac{3}{8}$ " ProPEX Connection

- When the temperature is above 40°F (5°C), ProPEX connections to $\frac{3}{8}$ " Wirsbo AQUAPEX tubing require four to five expansions. When the temperature is below 40°F (5°C), only four expansions are necessary.
- The thicker ProPEX Ring used for $\frac{3}{8}$ " ProPEX connections shrinks over the fitting faster than other size rings.

Disconnecting a ProPEX Brass Fitting

ProPEX brass fittings are manufactured connections and can be concealed in walls, ceilings and floors. However, when necessary, ProPEX Brass Fittings can be disconnected. To disconnect a brass fitting:

1. Make sure the system is not pressurized.
2. Use a heat gun to heat one side of the ProPEX Ring. When the ring

is clear, use a utility knife to carefully cut through the ring. Care should be taken to cut only the ring and not the tubing. This will protect the fitting from becoming gouged by the knife. Remove the ProPEX Ring from the tubing with pliers or another tool to avoid touching the hot ring.

Note: Do not gouge the fitting when cutting the ProPEX Ring. Nicks and gouges in the fitting may result in leaks. If nicked, discard the fitting.

3. When the ProPEX Ring is removed, apply heat directly around the fitting and tubing connection. Gently work the tubing back and forth while pulling slightly away from the fitting until the tubing separates from the fitting.
4. When the tubing is removed from the fitting, square cut the tubing 2" (minimum) from the end of the tubing.
5. Use a new ProPEX Ring and follow the steps to make a new ProPEX connection. Allow the fitting to cool before attempting to make another connection.

ProPEX Connection Troubleshooting Guide

Trouble-free ProPEX installations begin with a ProPEX 200 Battery Expander Tool that is maintained in proper working condition. If the tool or segment fingers are damaged, it is very difficult to make a proper connection. The following troubleshooting guide is designed to assist with problems in the field.

Fittings Do Not Seal

For fittings that do not seal, follow the steps below.

1. Ensure the expander head is securely hand-tightened onto the tool.
2. Make sure the segment fingers are not bent. If the head does not completely close when the electro-hydraulic drive unit is fully retracted, replace the head.
3. Remove any excess grease on the segment fingers.
4. Examine the fitting for damage. Nicks and gouges on the fitting will cause the fitting to leak.
5. Ensure the internal driver is not damaged or bent.
6. Make sure the last expansion is not held in the expanded position for more than three seconds before the fitting is inserted. The longer the tubing and ring are held in the expanded position, the greater chance for a leak.
7. Be sure to rotate the tool $\frac{1}{8}$ turn after each expansion.

Expansion is Difficult

If it is difficult to make an expansion, check to ensure the internal cone is properly greased with Uponor-recommended Molykote G-n plus.

Expansion Head Slips Out of Tubing

If the expansion head slips out of the tubing while making expansions, follow the steps below.

1. Ensure the tubing and ring are dry.
2. Check that grease is not getting into the tubing.
3. Ensure none of the segment fingers are bent.

ProPEX Ring Slides Down the Tubing During Expansion

If the ProPEX Ring slides down the tubing during expansion, follow the steps below.

1. Ensure hands are clean when handling the tubing. Any sweat or oils on hands can act as a lubricant. Due to the smoothness of PEX, any form of lubricant can cause the ProPEX Ring to slide down the tubing during expansion.
2. If the ring could possibly slide down, position the ProPEX Ring slightly farther over the end of the tubing and make the first couple of expansions slowly. Once the ring and the tubing begin to expand together, continue with the normal number and type of expansions.
3. Place thumb against the ProPEX Ring to help support it and feel for any movement. If caught early, slide the ring up the tubing and expand as described in Step 2.

Too Many Expansions Needed to Make a Connection

If making several more expansions on the tubing than is recommended, follow the steps below.

1. Ensure the head is hand-tightened to the expander tool.
2. Check that the segment fingers are not bent.
3. Be sure to completely cycle the tool on each expansion (i.e., release the Battery Expander Tool trigger).

Cold-weather Expansions

Temperature affects the time required for the tubing and ring to shrink onto the fitting — the colder the temperature, the slower the contraction time.

Operating the tool in temperatures below 40°F (5°C) reduces the number of connections that can be made per charge. Follow the steps below to increase tool capability and battery life when working in cold temperatures.

1. When using the tool in temperatures below 40°F (5°C), keep the batteries warm to optimize battery life.
2. Put ProPEX fittings and rings in pockets prior to installation to keep them warm. Warming the fittings and rings reduces contraction time.
3. Do not hold the tubing in the expanded position after the final expansion in temperatures below 40°F (5°C).
4. Fewer expansions are necessary in temperatures below 40°F (5°C).
5. ProPEX connections must be made at temperatures above 5°F (-15°C).

Notes

Notes

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