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ProPEX® Battery Expander Tool Operation Manual

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This Operation Manual is published for building officials, plumbing professionals and contractors interested in installing Uponor Wirsbo AQUAPEX®, AQUAPEX plus and hePEX™ plus tubing. This manual describes general installation recommendations that use Uponor Wirsbo PEX tubing products. Local code requirements should be followed.

Uponor Wirsbo 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 Wirsbo website at www.wirsbo.com.

Uponor Wirsbo is not liable for installation practices that deviate from this manual or are not acceptable practices within the mechanical trades. Refer to the Uponor Wirsbo AQUAPEX Professional Plumbing Installation Guide to install AQUAPEX tubing for plumbing systems. Refer to the Uponor Wirsbo AQUASAFE® Installation Guide to install AQUAPEX tubing in our fire sprinkler system. Refer to the Uponor Wirsbo Radiant Heating Installation Handbook to install hePEX plus tubing for radiant heating systems.

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

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Overview

Uponor Wirsbo's ProPEX® Battery Expander Tool (Q6251500) is an electro-hydraulic tool that makes fast, easy connections to AQUAPEX®, AQUAPEX plus and hePEX™ plus tubing ranging in sizes from 3/8" to 1 1/2". This tool eliminates the need for air compressors, air hoses and generators — making ProPEX connections easier than ever. The tool also has the capacity to use both standard and H heads.



Tool Components

The ProPEX Battery Expander Tool comes with the following components.

- ProPEX Battery Expander Tool
- Battery Charger
- Two Batteries
- Tool Lubricant
- Operation Manual
- Carrying Case

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

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



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 six days if left attached to the tool and unused.

Technical Data

ProPEX Battery Expander

Dimensions	11.8" x 12.6" x 3.3"
Weight	8.7 lbs. with battery
Max. tubing size	1½"
Power supply	12V, 2.0 Ah, 20 A
Noise emission	73 decibels
Vibration	<2,5 m/s ²

Rapid Charger

Power supply	120V, 60 Hz, 2.0 A
Output voltage	9.6 to 18VDC
Recharging time	1 hour
Weight	0.8 lbs.

Battery

Output	12VDC, 2.0 Ah
Number of cells	10
Type	Nickel Cadmium (NiCd) with thermal overcharge protection
Weight	1.5 lbs.

Expander Head

Weight	0.3 lb. (average)
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Working Range

⅜" tubing	~125-150 fittings/charge
½" tubing	~125-150 fittings/charge
⅝" tubing	~80-100 fittings/charge
¾" tubing	~45-60 fittings/charge
1" tubing	~20-30 fittings/charge
1¼" tubing	~20-30 fittings/charge
1½" tubing	~20-30 fittings/charge

Battery Operation

Charging the Battery

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 40°F (5°C) or greater than 104°F (40°C).

Only use the rapid charger to charge the ProPEX 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).

Battery Handling

The ProPEX Battery Expander Tool uses rechargeable batteries containing nickel cadmium (NiCd) 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 40°F (5°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 Wirsbo-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.
- 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.

Expander Tool Operation and Guidelines

Operating Instructions

1. Check the cone for dirt and clean as described in the Proper Tool and Head Maintenance section below.
2. Attach the appropriate ProPEX expander head onto the expander tool. Screw on the expander head snugly.
3. Connect the battery onto the tool.
4. Use the tool for expanding Uponor Wirsbo PEX tubing only.
5. Refer to **Section 5** for detailed instructions on making proper ProPEX connections.

Proper Tool and Head Maintenance

The ProPEX Battery Expander Tool head comes in different sizes ranging from $\frac{3}{8}$ inch to $1\frac{1}{2}$ inches. All heads contain six segment fingers, one attachment ring and one spring. It is very important to keep the heads 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 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. Soak the heads in degreasing agent to remove any grease from between the segments monthly. 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.

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 1½ inches.)
3. Check if the expander head needs lubrication. Lubricate the head with Uponor Wirsbo-recommended lubricant only.

Red Light on Tool Handle

The red light on the tool's handle illuminates to signal several possibilities listed below.

- The battery needs charging.
- The expander is overloaded.
- The cone is not back in position.
- The tool is too hot and needs time to cool off.
- The tool needs servicing (after 80,000 expansions).

Note: A continuous red light on the tool indicates a problem. Send the tool to the Tool Depot. See **page 10** for additional information.

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 Battery Expander Tool.

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

- Always start the tool with a head on it.
- 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 Battery Expander Tool. Keep this tool away from children.
- Keep the ProPEX Battery Expander Tool clean. Dirt and rust may hinder proper and safe tool operation.



Important: The ProPEX 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. Uponor Wirsbo offers the Tool Depot as a convenient way to repair or replace tools quickly and easily. For more information, contact Uponor Wirsbo Technical Services toll free at (888) 594-7726 or go to www.wirsbo.com, and click on Online Services.

For access to the Tool Depot — 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.

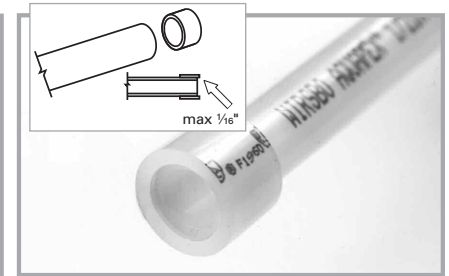
Warranty

For warranty information, go to www.wirsbo.com, and click on Online Services. Log in using your username and password and click on User Tools. Go to Documents and Files and click on Warranties. Click on the AQUAPEX Warranty file to view the warranty.

Making ProPEX Connections

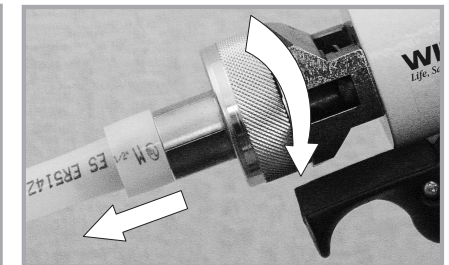
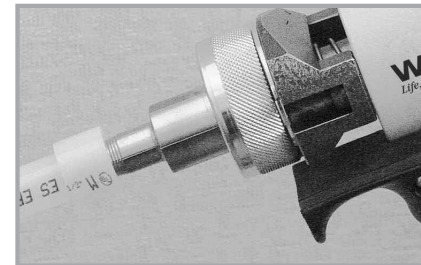
Tools Needed

- ProPEX Battery Expander Tool
- Properly sized expander head, hand-tightened onto the tool
- Tubing cutter designed for plastic 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.

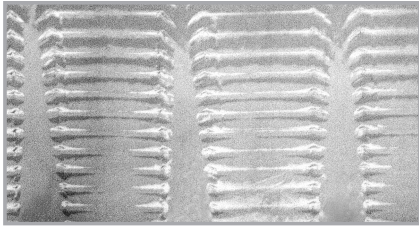
2. Slide the ProPEX Ring over the end of the tubing. Extend the end of the ring over the end of the tubing no more than $\frac{1}{16}$ inch (1mm).



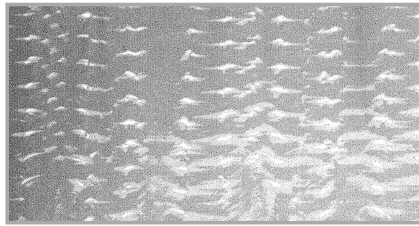
3. Slide the expander head into the tubing until it stops. Full expansions are necessary to make a proper connection. Press the trigger to expand. Release the trigger, remove the head from the tubing and rotate it $\frac{1}{8}$ turn. Slide the tool head into the tubing in the newly rotated position and expand again.

Important: Rotating the tool $\frac{1}{8}$ 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.

Note: You will hear a click after each expansion.

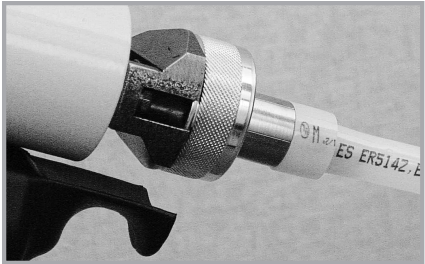


Expansion without proper rotation



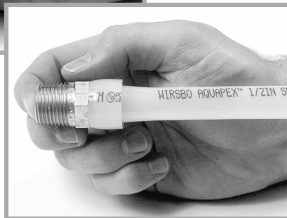
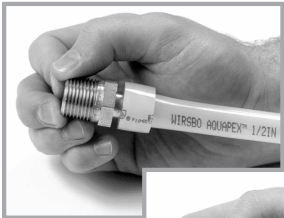
Expansion with proper rotation

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 show enlarged views inside expanded tubing.



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

5. Immediately remove the ProPEX 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.



Note: The "H" in the chart refers to the H-series expander heads, which are only used with the Battery Expander Tools. Uponor Wirsbo recommends using H heads whenever possible over standard heads.

Note: The ProPEX 100 Battery Expander Tool only expands up to 1" tubing.

Tubing Size	Ring Marking	Head Marking			# of Expansions		
		Manual	Air Exp	Battery Exp	Manual	Air Exp	Battery Exp
3/8"	3/8"	3/8"	3/8"	—	4-5	4-5	6-7
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	6-7H
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	—	—	6-7H

Chart A

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.

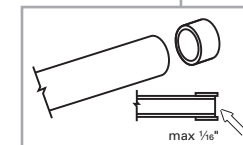
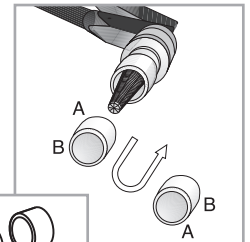
Note: To avoid over-expanding the tubing, do not hold the tubing in the expanded position.

- **Chart A** 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 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 3/8" ProPEX Connections

The 3/8" ProPEX Ring is smaller and thicker than the ProPEX Rings used for other tubing sizes. The 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 3/8" AQUAPEX.

1. Square cut the 3/8" AQUAPEX tubing perpendicular to the length of the tubing.
2. Expand each side of the 3/8" ProPEX Ring with the ProPEX Battery Expander Tool once.
3. Slide the expanded 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 1/16" (1mm).



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

Important Tips for a Proper 3/8" ProPEX Connection

- When the temperature is above 40°F (5°C), ProPEX connections to 3/8" 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 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 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 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 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 Wirsbo-recommended lubricant.

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 your hands are clean when handling the tubing. Any sweat or oils on your 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 you anticipate the ring may 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, you can continue with the normal number and type of expansions.
3. Place your thumb against the ProPEX Ring to help support it and feel for any movement. If caught early, you can slide the ring up the tubing and expand as described in **Step 2**.

Too Many Expansions Needed to Make a Connection

If you are 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 your 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).