aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

ZoomLock® MAX

PRESS-TO-CONNECT
REFRIGERANT FITTINGS

ZoomLock® MAX

Press-to-Connect Refrigerant Fittings

Catalog K-3, Engineering Submittal, August 2020

Parker

ENGINEERING YOUR SUCCESS.

PARKER SAFETY GUIDE FOR SELECTING AND USING ZOOMLOCK FITTINGS AND RELATED ACCESSORIES

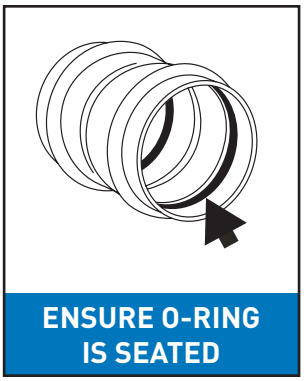
⚠ WARNING

FAILURE TO FOLLOW INSTALLATION INSTRUCTIONS, IMPROPER SELECTION OR IMPROPER USE OF ZOOMLOCK FITTINGS AND RELATED ACCESSORIES ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

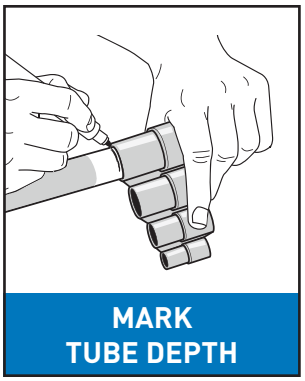
- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocution from high voltage electric power lines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- Injections by high-pressure fluid discharge.
- Dangerously whipping copper line.
- Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion from flammable liquids.

BEFORE SELECTING OR USING ANY OF THESE PRODUCTS, IT IS IMPORTANT THAT YOU READ AND FOLLOW THE INSTALLATION INSTRUCTIONS.

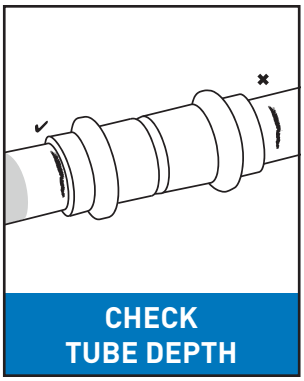
KEY STEPS FOR SAFETY



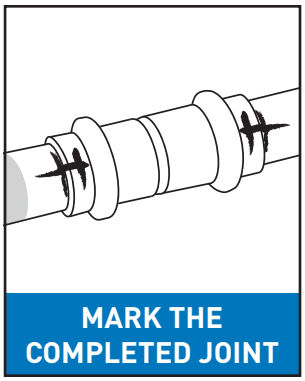
ENSURE O-RING IS SEATED



MARK TUBE DEPTH



CHECK TUBE DEPTH



MARK THE COMPLETED JOINT

⚠WARNING – USER RESPONSIBILITY

Failure or improper selection or improper use of the products described herein or related items can cause death, personal injury and property damage.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

For safety information see the Safety Guide at www.parker.com/safety or call 1-800-CParker.

OFFER OF SALE

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the detailed "Offer of Sale" elsewhere in this document or available at www.parker.com.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

TABLE OF CONTENTS

Fittings page 21

Press Tools page 18

Jaws page 19

Compatible Components

To make a system convenient to install, ODM x ODM ZoomLock compatible components are available including:

- **Ball Valves**
- **Moisture and Liquid Indicators**
- **Solenoid Valves**
- **Filter-Driers**

ATTENTION!

WARRANTY COULD BE VOID IF ZOOMLOCK MAX IS NOT APPLIED PER INSTRUCTIONS! CAREFULLY READ ALL INSTALLATION INSTRUCTIONS (SEE PAGES 11-14) AND WATCH VIDEOS.

ZoomLockMAX.com

Connect Copper in Seconds,
Improves Profitability for HVACR Companies

Rated up to
700 psi
48 bar

ZoomLock® MAX

PRESS-TO-CONNECT REFRIGERANT FITTINGS

ZoomLock® MAX, designed for the air conditioning and refrigeration markets, allows contractors to make secure leak-free connections in seconds. It means less time on the job and more money in the contractor's pocket.

ZoomLock MAX provides a clean, leak-proof connection for refrigerant lines up to 700 psi. By eliminating concerns about gas and flames, ZoomLock MAX gives you more flexibility in where and when you can work, plus there's no need to nitrogen-purge the lines.

The ZoomLock MAX Advantage

- Hermetically sealed packaging for debris-free fittings
- Hard, robust copper fittings made from refrigerant grade copper
- Proven three point press technology providing a leak free and secure joint
- No more crimp gauge needed—connect the fitting with one complete cycle
- Jaws available for most professional crimping tool brands, both large and compact

Parker

HELPING YOUR BUSINESS WIN **MORE** BUSINESS™

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

FEATURES AND BENEFITS

- **Flame-free:**
  Flame-free installation avoids the need for a fire permit and the risk of fire on site.
- **No Nitrogen Purge:**
  ZoomLock MAX is a mechanical joint, thus eliminating the need for nitrogen purge during the jointing process.
- **Lower Installed Cost:**
  A professional fitting which is quick and simple to install, saving time and money.
- **Higher Productivity, Improved Flexibility:**
  Work may be completed during working hours / public access, by a single employee.
- **Site Access:**
  Easy access to work sites, no gas bottles required.
- **Quality Designed In:**
  Reliable, repeatable, permanent, tamper-proof connections every time.
- **3-Point Press:**
  Three press points, one each side of the bead, and one press compressing the O-ring. This provides a secure joint.
- **High Quality O-ring:**
  High quality HNBR O-ring forms a secure leak-free joint when pressed.
- **Protected O-ring:**
  Lead-in edge design aids tube insertion and helps protect the O-ring from damage or displacement.
- **Electrical Continuity:**
  Maintains ground continuity without the need for additional ground continuity straps.
- **Field Proven:**
  Press fit technology, field proven over two decades and millions of installed fittings worldwide.
- **Compact Tooling:**
  Light compact tooling provides easy access to tightly spaced tube runs.
- **Tooling Concept:**
  Only specially designed ROTHENBERGER jaws are approved for use with ZoomLock MAX fittings.
- **Certification:**
  ZoomLock MAX is UL listed, refrigerant fitting SA7511.
  ZoomLock MAX is UL listed, approved use for field and factory installations.
- **Support:**
  Backed by ZoomLock's experienced technical support and customer service teams.

Applications

ZoomLock MAX fittings are designed for the following applications:

- **Refrigeration**
- **Air Conditioning**
- **Heat Pump (Refrigeration side)**

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

TECHNICAL DATA

Product Parameters

- **Continuous Operating Temperature:** -40°F to 284°F / -40°C to 140°C
- **O-ring Temperature Range:** -40°F to 284°F / -40°C to 140°C
- **Maximum Rated Operating and Abnormal Pressure:** 700 psi / 48 bar / 4800 kPa
- **Burst Pressure:** > 3X Maximum operating and abnormal pressure > 2,100 psig / >14400 kPa / >144 bar
- **Vacuum Pressure Capability:** 200 Microns
- **Leak Tightness:** Helium ≤ 7.5 × 10^{-7} Pa.m^3/s at +20°C, 10 bar
- **Size Availability (Inches):** 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8

Fitting Materials

- **Fitting Body:** Refrigerant Grade Copper (UNS C12200 min 99.9% pure)
- **O-Ring:** HNBR

Fitting Warranty

- Read page 29 for more details.

Compatibility

- **Approved Oils:** POE, PAO, PVE, AB and MO
- **Approved Connections:** Copper to Copper
- **Approved Tube:** Copper tube conforming to* ASTM B280 or ASTM-B88
- **Approved Copper Tubing:** Type K or L

Approved Refrigerants

32**	422D	454A**
125	427A	454B**
134a	438A	454C**
290**	444A**	457A**
404A	447A**	459A**
407A	447B**	507A
407C	448A	513A
407F	449A	513B
407H	450A	600A**
410A	452A	718
417A	452B**	1234yf**
421A	452C	1234ze**
422B	HYCOOL 20	

Agency Approvals and Certifications

- UL Listed Refrigerant fitting SA7511
- UL Listed: Approved use for field and factory installations
- UL 109 - 7 Pull test, compliant.
- UL 109 - 8 Vibration test, compliant.
- UL 1963 - 79 Tests of gaskets and seals used in refrigerant systems, compliant.
- ISO 5149-2:2014, Refrigerating systems and heat pumps - Safety and environmental requirements - Part 2: Design, construction, testing, marking and documentation compliant.
- ISO 5149-2, 5.3.2.2.3 Strength pressure test, compliant.
- ISO 14903 - 7.4 Tightness test, compliant.
- ISO 14903 - 7.6 Pressure temperature vibration tests (PTV), compliant.
- ISO 14903 - 7.8 Freezing test, compliant.
- ASTM G85 salt spray (fog) compliant.
- ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems, compliant.
- ASME B31.5 - 2016 Refrigeration Piping and Heat Transfer Components, compliant.
- 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC), certified, ICC-ES, PMG-1440.
- 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC), certified, ICC-ES, PMG-1440.
- 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC), certified, ICC-ES, PMG-1440.

Mechanical joints shall not be used on annealed temper copper tube in sizes larger than 7/8 inch (22.2 mm) OD size per International Mechanical Code (IMC) and 3/4 inch nominal size per Uniform Mechanical Code (UMC).

Quality Assurance

ZoomLock MAX is manufactured in a ISO 9001 certified facility committed to providing quality products and support.

* Please refer to ZoomLock MAX Tube Compatibility Table, page 10.

** When using refrigerants classified A2L (lower flammability), A2 (flammable) and A3 (higher flammability) additional/specific standards, local rules and regulations, codes of practice and by-laws may be applicable.

ZoomLock MAX fittings are NOT suitable for R-717, R-723, R-764, R-744 refrigerants.

Refer to ZoomLockMAX.com for the latest approved refrigerants list.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

FITTING STORAGE

ZoomLock MAX fittings do not require special storage conditions. However to protect the HNBR O-ring a few simple precautions should be taken.

The O-rings should be protected from light sources, in particular direct sunlight or intense artificial light having a high ultra-violet content.

As the ozone is particularly harmful to rubber, storage rooms should not contain any equipment that is capable of generating ozone, such as mercury vapor lamps or high-voltage electrical equipment giving rise to electric sparks or silent electrical discharges.

Combustion gases and organic vapors should be excluded from storage rooms, as they may give rise to ozone via photochemical processes. Precautions should also be taken to protect stored products from all sources of ionizing radiation.

ZoomLock MAX fittings should be kept in their sealed bags to protect them from contamination.

MARKINGS and CLEANLINESS

Each fitting is marked ZoomLock MAX, size and 48 bar (on a pink background) and are cleaned, bagged and labeled to fully comply with the cleanliness requirements of ASTM-B280 and ASTM-B88 type K or L. Keep the ziplock bag sealed to protect fittings from contamination.

DESIGN CONSIDERATIONS

All refrigeration pipelines must be designed so that the number of joints is kept to a practical minimum. Refrigeration pipelines should be designed in compliance with the following key standards and in line with federal, state and local regulations, codes of practice and by-laws governing the installation. All applicable health and safety practices must be adhered to.

- ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems.
- ASME B31.5 - 2016 Refrigeration Piping and Heat Transfer Components.
- 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC).
- 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC).
- 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC).

Pipework Support

All pipework should be supported by the use of appropriate clips, brackets or supports. Please refer to:

- ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems.
- ASME B31.5 - 2016 Refrigeration Piping and Heat Transfer Components.
- 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC).
- 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC).
- 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC).

Federal, state and local regulations, codes of practice and by-laws governing the installation must also be adhered to. Supports should be placed near to fittings when possible and additional supports may be required when using soft copper tubes or where vibration occurs.

Pipework Protection

Tubing and fittings shall be protected as far as possible against adverse environmental or other external effects. Refer to:

- ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems.
- ASME B31.5 - 2016 Refrigeration Piping and Heat Transfer Components.
- 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC).
- 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC).
- 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC).

Federal, state and local regulations, codes of practice and by-laws governing the installation must also be adhered to.

Pipework Identification and Insulation

All pipework must be installed in accordance with:

- ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems.

Electrical Continuity

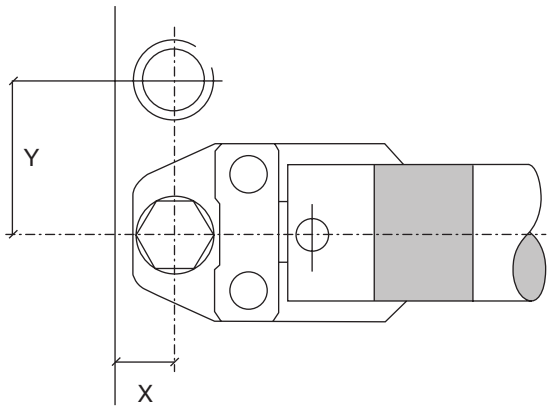
ZoomLock MAX fittings maintain ground continuity without the need for additional ground continuity straps.

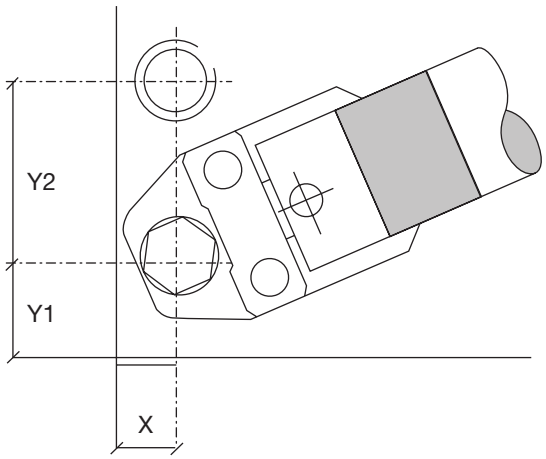
ZoomLock MAX

Press-to-Connect Refrigerant Fittings

DESIGN CONSIDERATIONS (Continued)

Space Required for the Pressing Process





Space Required to Complete a Pressing Between Tubes and Wall ROTHENBERGER ROMAX 400				
Tube Size - OD (Inches)	X		Y	
	Inches	mm	Inches	mm
1/4	1-1/4	30	2-3/8	60
3/8	1-1/4	30	2-3/8	60
1/2	1-1/4	30	2-3/8	60
5/8	1-1/4	30	2-3/8	60
3/4	1-1/4	30	2-3/8	60
7/8	1-3/8	35	2-3/8	60
1	1-3/8	35	2-3/8	60
1-1/8	1-3/8	35	2-3/8	60

Space Required to Complete a Pressing Between Tubes and Wall Corner ROTHENBERGER ROMAX 400						
Tube Size - OD (Inches)	X		Y1		Y2	
	Inches	mm	Inches	mm	Inches	mm
1/4	2	50	2	50	4	100
3/8	2	50	2	50	4	100
1/2	2	50	2	50	4-3/8	110
5/8	2	50	2	50	4-3/8	110
3/4	2	50	2	50	4-3/8	110
7/8	2-3/8	60	2-3/8	60	4-3/4	120
1	2-3/8	60	2-3/8	60	4-3/4	120
1-1/8	2-3/8	60	2-3/8	60	4-3/4	120

Space Required to Complete a Pressing Between Tubes and Wall ROTHENBERGER ROMAX TT US				
Tube Size - OD (Inches)	X		Y	
	Inches	mm	Inches	mm
1/4	1-1/4	30	2-3/16	55
3/8	1-1/4	30	2-3/16	55
1/2	1	25	2-3/16	55
5/8	1	25	2-3/16	55
3/4	1	25	2-3/16	55
7/8	1-1/4	30	2-3/16	55
1	1-1/4	30	2-3/16	55
1-1/8	1-3/8	35	2-3/16	55

Space Required to Complete a Pressing Between Tubes and Wall Corner ROTHENBERGER ROMAX TT US						
Tube Size - OD (Inches)	X		Y1		Y2	
	Inches	mm	Inches	mm	Inches	mm
1/4	1-5/8	40	1-5/8	40	4	100
3/8	1-5/8	40	1-5/8	40	4-1/4	105
1/2	1-5/8	40	1-5/8	40	4-1/4	105
5/8	1-5/8	40	1-5/8	40	4-1/4	105
3/4	1-5/8	40	1-5/8	40	4-1/4	105
7/8	2-3/16	55	2-3/16	55	4-3/8	110
1	2-3/8	60	2-3/8	60	4-9/16	115
1-1/8	2-3/8	60	2-3/8	60	4-9/16	115

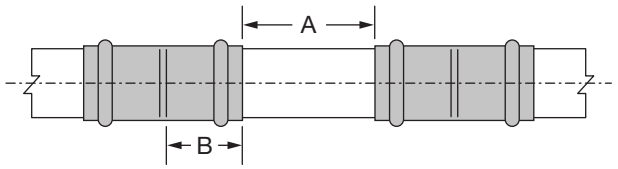
ZoomLock MAX

Press-to-Connect Refrigerant Fittings

DESIGN CONSIDERATIONS (Continued)

Insertion Depth and Minimum Distances Between Pressings

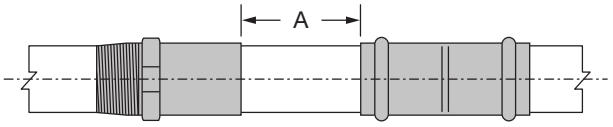
Due to the reforming of the tube profile when pressed, it is advised that a minimum distance is allowed between each fitting.



Nominal Size	Minimum Distance A		Insertions Depth B	
Inches	Inches	mm	Inches	mm
1/4	1/2	10	0.71	18.0
3/8	1/2	10	0.71	18.0
1/2	5/8	15	0.75	19.0
5/8	5/8	15	0.87	22.0
3/4	7/8	20	0.91	23.0
7/8	7/8	20	0.98	25.0
1	1	25	0.94	24.0
1-1/8	1	25	1.04	26.5

Minimum Distance for Press Fittings from an Existing Brazed Joint

To ensure proper sealing of both the brazed and ZoomLock MAX fitting the following minimum distances must be maintained between the two fittings.



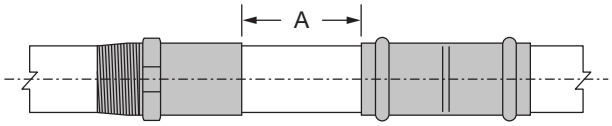
Minimum Distance from a Brazed Joint		
Nominal Size Tube - OD	Minimum Distance A	
Inches	Inches	mm
1/4	1/2	10
3/8	1/2	10
1/2	5/8	15
5/8	5/8	15
3/4	7/8	20
7/8	7/8	20
1	1	25
1-1/8	1	25

Note: A - clearance between fitting ends.

It is important that there is no residual brazing or other foreign debris on the tubing to be inserted into the ZoomLock MAX fitting. The surface condition on the area of press joint should be clean and free from debris and comply with ASTM-B280 or ASTM-B88 type K or L.

Minimum Brazing Distance to an Existing Pressed Fitting

Caution – Brazing near to ZoomLock MAX joints should be avoided as this may cause the seal to degrade due to heat transfer. The table below states the minimum distance away from the press joint which is acceptable to braze. If this distance cannot be maintained then adequate precautions must be taken such as fabricating the brazed section prior to assembly with the press fittings, wrapping in a wet rag or applying a heat barrier spray, gel or putty, to prevent heat transfer to the press fitting during brazing.



Minimum Distance Brazing		
Nominal Size Tube - OD	Minimum Distance A	
Inches	Inches	mm
1/4	10	250
3/8	12	300
1/2	13-3/4	350
5/8	17-3/4	450
3/4	19-3/4	500
7/8	23-3/4	600
1	24-1/2	650
1-1/8	27-1/2	700

Note: A - clearance between fitting ends.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

DESIGN CONSIDERATIONS (Continued)

Testing and Commissioning of Air Conditioning and Refrigeration Systems

Testing and commissioning of air conditioning and refrigeration systems should be in accordance with the requirements specified in:

- ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems.
- ASME B31.5 - 2016 Refrigeration Piping and Heat Transfer Components.
- 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC).
- 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC).

Federal state and local regulations, codes of practice and by-laws governing the installation must also be adhered to.

General

- Dry oxygen free nitrogen (OFN) should be used for tightness and strength testing as it is inert. Do not use oxygen for pressure testing, under pressure it can react violently with hydrocarbons (oil and grease) resulting in explosions and fire.
- The maximum test pressure to be identified by the installer. This will be calculated from the system pressure and the test parameters.
- To ensure ZoomLock MAX fittings are tested safely, during the strength pressure and / or tightness test, the pressure should be raised gradually up to the desired test pressure of the system as established by the installer.
- If you are going to leave the pipework pressurized for 24 hours or longer to check for leaks, measure the system pressure and the ambient temperature at the start and finish of the tightness test. A rise in ambient temperature can mask a leak if this is not taken into account. There will be a pressure change of approximately 10 psi with a temperature change of 9 °F.
- Care must be taken to ensure a ZoomLock MAX joint will not be close enough to the liquid charging point that the temperature of the joint drops below -40 °F when breaking a vacuum by liquid charging the system.

Problem Solving Vacuum Evacuation

Vacuum evacuation removes air, moisture, and non-condensable gases prior to system charging.

Failure to achieve a vacuum:

- A leak or moisture in the system (see below).
- Vacuum pump not working correctly.
- Vacuum pump does not have sufficient capacity.

Failure to hold a vacuum:

- A leak in the system or the connections to the system – find all leaks and repair them.
  - An ultrasonic leak detector can help pinpoint leaks on a system under vacuum.
- Moisture or refrigerant still in the system – continue evacuation.

No remedial action e.g. cutting out fittings from the system should be taken until a proper fault finding exercise has been completed.

ZoomLock MAX Tube Compatibility Table

ZoomLock MAX Fitting Size Inches	Tube Size Nominal OD		ASTM B280 - ASTM B88 Wall Thickness - Inches (mm)									
	Inches	mm	0.025" (0.64)	0.030" (0.76)	0.031" (0.81)	0.035" (0.89)	0.040" (1.02)	0.042" (1.07)	0.045" (1.14)	0.049" (1.24)	0.050" (1.27)	0.065" (1.65)
1/4	0.250	6.35	●■	●■								
3/8	0.375	9.53		●■	●■	●■						
1/2	0.500	12.70			●■	●■				●■		
5/8	0.625	15.88				●■	●■		■	●■		
3/4	0.750	19.05				●■		●■		●■		
7/8	0.875	22.23				●			●■			●■
1-1/8	1.125	28.58				●	●				●■	■

● **Annealed coil**
■ **Straight tube Half Hard / Hard**
Notes:
Hardness tolerance as per approved standards in the table above.
Ensure coil tubes are in round condition. Oval tubes should be re-rounded.
It is the engineer's responsibility to ensure that the tube selected is compatible with ZoomLock MAX and meets the operating pressure requirements of the system.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

INSTALLATION INSTRUCTIONS

General

ZoomLock MAX fittings must be installed by an installer who is appropriately trained and qualified to work on air conditioning and refrigeration installations and certified via the ZoomLock MAX training course. All installations must be completed in line with local regulations and by-laws governing the installation, and all applicable health and safety practices must be adhered to. When using the press tools, care must be taken to ensure hands are kept away from the jaw during the pressing process. Always wear ear and eye protection.

Important: Select the correct size of tube, fitting and jaw for the job. Ensure the fitting and tube are kept free of any dust or dirt and that the O-ring is undamaged. Check the inner pressing contour of the jaw is free of dirt and debris. Do not force tube ends together prior to making joints. Joints should only be made on an unstressed pipework assembly.

Remarks

- A joint is finished after one complete compression cycle of the tool.
- Do not press any ZoomLock MAX fitting more than once.
- Pipework alignment must be completed prior to pressing.
- Do not rotate joints after they have been pressed.

Technical Data

Copper Tube Compatibility: Please refer to tube compatibility table, page 10.

Maximum Operating Pressure: 700psi, 48 bar, 4,800 kPa.

Operating Temperature Range: -40°F to 250°F, -40°C to 121°C.

Compatible refrigerants: R-1234yf**, R-1234ze**, R-125, R-134a, R-290**, R-32**, R-404A, R-407A, R-407C, R-407F, R-407H, R-410A, R-417A, R-421A, R-422B, R-422D, R-427A, R-438A, R-444A**, R-447A**, R-447B**, R-448A, R-449A, R-450A, R-452A, R-452B**, R-452C, R-454A**, R-454B**, R-454C**, R-457A**, R-459A**, R-507A, R-513A, R-513B, R-600A**, R-718 and HYCOOL 20.

** When using refrigerants classified A2L (lower flammability), A2 (flammable) and A3 (higher flammability) additional/specific standards, local rules and regulations, codes of practice and by-laws may be applicable.

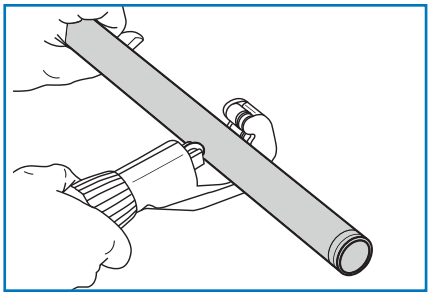
Note: ZoomLock MAX fittings are NOT suitable for R-717, R-723, R-764, R-744 refrigerants.

Compatible Oils: POE, PAO, PVE, AB and MO.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

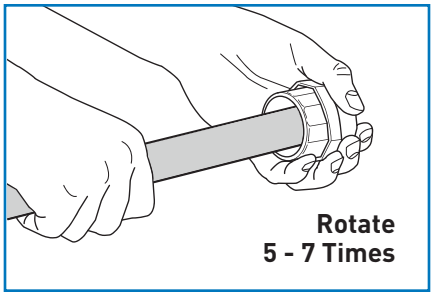
INSTALLATION INSTRUCTIONS (Continued)



STEP 1

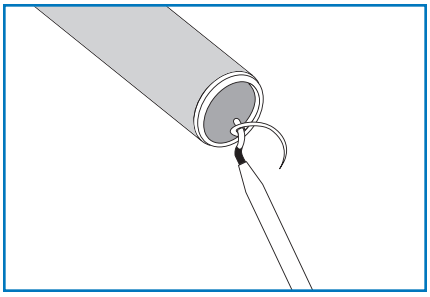
Cut the tube to length

- Use a rotary tube cutter.
- Ensure that the tube is cut square.
- Check the tube has retained its shape and is damage free.



STEP 2

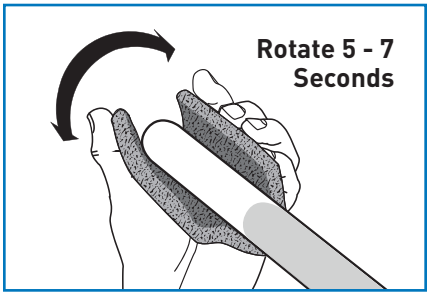
Deburr and remove all external sharp edges



STEP 3

Use a pencil type deburrer on internal edges

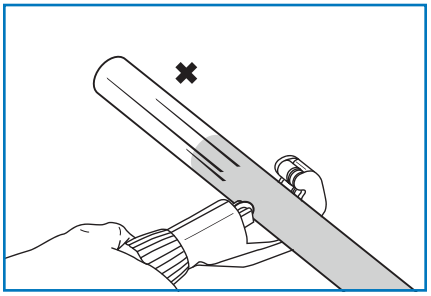
- Deburr the tube both internally and externally.
- Where possible angle the tube downwards to prevent filings entering the tube.
- Use a pencil type deburrer on internal tube edges.
- Make sure the internal and external surfaces of the tube ends are smooth and free from burrs or sharp edges.



STEP 4

Clean the tube end

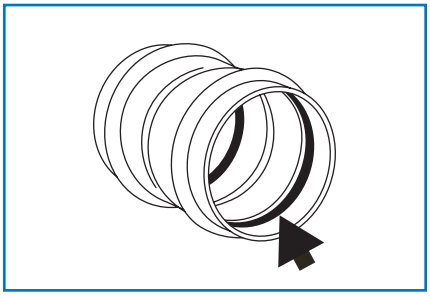
- Thoroughly clean the tube end using a general purpose hand pad or sand cloth in a rotating motion.
- Tube ends must be free from scratches, oxidation, dirt and debris.



STEP 5

Check for defects

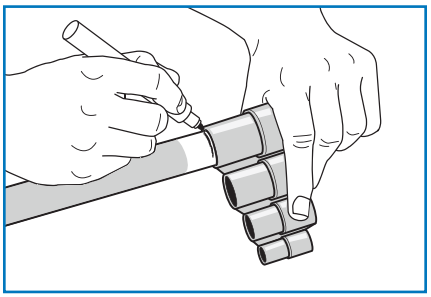
- If deep scratches are still visible, cut the tube back to a clean section and repeat steps 2 - 4.



STEP 6

Ensure the O-ring is seated

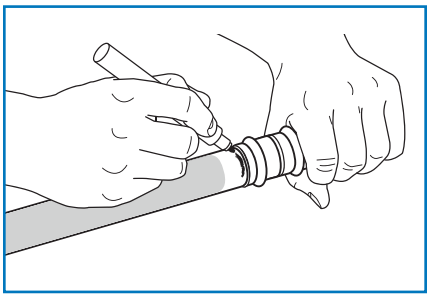
- Check the fitting is the correct size for the tube.
- Check the O-rings are present and correctly seated.
- A small additional amount of lubricant may be used to aid tube insertion.



STEP 7A

Mark insertion depth on tube using depth gauge

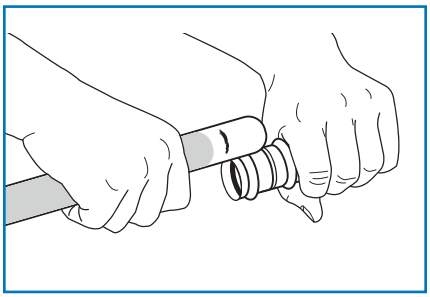
- Insert tube into correct socket in depth gauge.
- Check window to see the tube is fully inserted.
- Mark the insertion depth on the tube.



STEP 7B

Alternatively insert tube to tube stop and mark

- The tube must be fully inserted into the fitting until it reaches the tube stop.
- To reduce the risk of dislodging the O-ring rotate the tube (if possible) while slipping it into the fitting.
- Mark the insertion depth on the tube.



STEP 7B

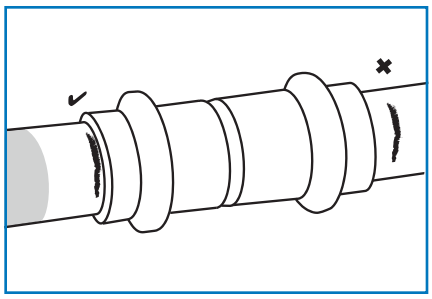
Check the depth mark

- Remove the tube and align with fitting socket, check that the depth mark is correctly positioned.
- The insertion depth mark is used as a reference prior to pressing the joint.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

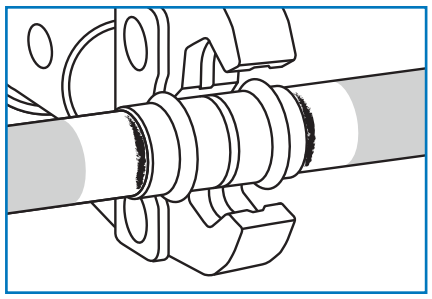
INSTALLATION INSTRUCTIONS (Continued)



STEP 8

Insert the tube fully into the fitting. Ensure tube is fully inserted prior to pressing

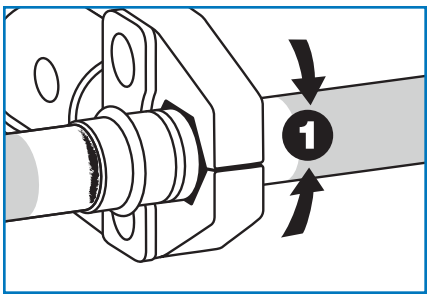
- Insert the tube fully into the fitting up to the tube stop.
- To reduce the risk of dislodging the O-ring rotate the tube (if possible) while slipping it into the fitting.
- Prior to pressing, ensure the tube has not moved out from the fitting socket.
- Use the insertion depth mark as a guide.



STEP 9

Align jaws squarely on the fitting

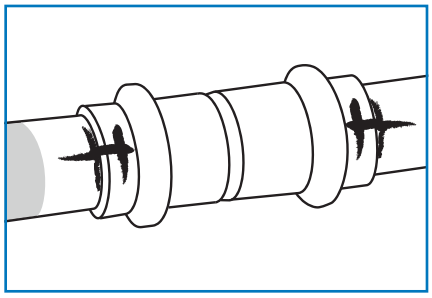
- Ensure pipework is correctly aligned prior to pressing.
- Ensure the correct size jaw is inserted into the tool.
- The jaws must be placed squarely on the fitting locating the groove on the bead.
- The bead on the fitting should fit centrally in the groove of the jaw.



STEP 10

Complete the joint with the approved tool. Press once only

- Depress and hold the button to complete the pressing cycle.
- Pressing is complete when the jaws are fully closed and the piston retracts.
- Complete the press cycle once only – do not repress.
- Release the jaws from the pressing.



STEP 11

Mark the completed joint

- Mark the completed joint after pressing.
- This enables joints to be inspected easily before testing and insulating the pipe-work.

Note: ZoomLock MAX fittings are only compatible with ROTHENBERGER press jaws as shown on page 19.

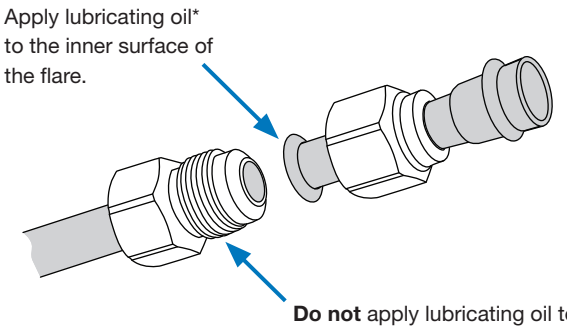
ZoomLock MAX

Press-to-Connect Refrigerant Fittings

INSTALLATION INSTRUCTIONS (Continued)

Installing a ZoomLock MAX Female Flare Connector to a Male Flare Connector

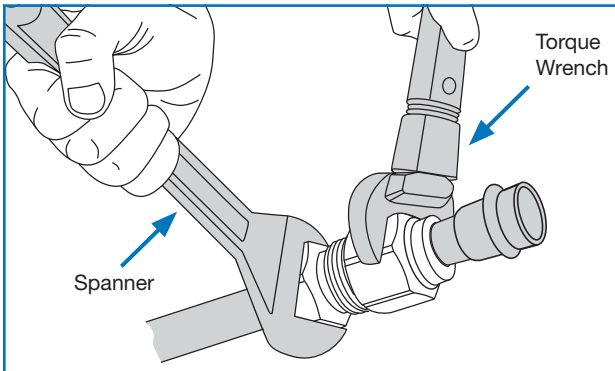
Make the flare connection prior to pressing the ZoomLock MAX joint. If this is not possible care must be taken to prevent rotational forces being applied to the pressed joint.



Copper Flare

Align the centers of both flares and tighten the flares by hand.

***Note:** A compatible refrigerant lubricant should be used and care should be taken to avoid application onto flare threads.



Tighten Joint using Torque Wrench

Fully tighten using spanner and torque wrench to the torque values set out in the table. **Do not over tighten.**

Flares Tightening Torque**		
Size	**N m**	**ft lbf**
1/4”	14-18	11-13
3/8”	33-42	25-31
1/2”	50-62	37-45
5/8”	63-77	47-56
3/4”	90-110	67-81

****Do NOT over tighten.**

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

FREQUENTLY ASKED QUESTIONS

1. **My jaws sometimes get stuck on the fitting after crimping. What can I do to make it easier to remove the jaws?**
   Applying a thin coating of WD-40 or similar lubricant to the jaw before starting a job should help.
2. **Why is it significant that ZoomLock MAX is "UL Listed"?**
   UL Listed provides approval by UL for field and factory installation. UL Recognized products limit products to being factory installed only.
3. **What is the #1 suggestion to ensure safety?**
   Follow all of our steps on prep and installation.
4. **What is the #1 cause of leaky fittings?**
   Possibly, skipping the prep and installation steps causes the tube to leak.
5. **What is a "deep" scratch, and how do you clean this?**
   Your fingernail can feel a deep scratch. Try using a new piece of Scotch-Brite abrasive pad. Alternatively, use a 340 grit sandpaper/cloth.
6. **Can you show an example of a "good" copper tube surface after sanding?**

Figure 1 - Copper tube with "good" surface.

Figure 2 - Copper tube with "bad" surface scratch.

7. **How do I know the correct insertion depth when pushing the ZoomLock MAX fitting onto the copper tube?**
   Use the depth gauge provided or the minimum insertion depth chart to determine the correct insertion depth. Mark the tubing with a permanent marker to indicate proper insertion depth on every tube.
8. **Do you have a solution for crimping onto swaged tubing like that coming out of the condenser and evaporator on residential units?**
   No, we do not have a specific product designed to crimp over the swaged tubing. However, if there are at least 2 inches of straight copper tubing after the flared end and is accessible with the jaws, you may cut the flared end off and crimp directly to the tube.

Table 1

MINIMUM INSERTION DEPTH		
Fitting Size	**Inches**	**Millimeters**
1/4	0.71	18
3/8	0.71	18
1/2	0.75	19
5/8	0.90	23
3/4	0.91	23
7/8	1.00	25
1	0.95	24
1-1/8	1.10	28

9. **What is the minimum braze distance from the ZoomLock MAX fitting?**

Table 2

MINIMUM DISTANCE FROM ZOOMLOCK MAX FITTING TO BRAZE		
Fitting Size	**Inches**	**Millimeters**
1/4	10	254
3/8	12	305
1/2	14	356
5/8	18	457
3/4	20	508
7/8	24	610
1	26	660
1-1/8	28	711

10. **What is the minimum distance between ZoomLock MAX fittings?**

Table 3

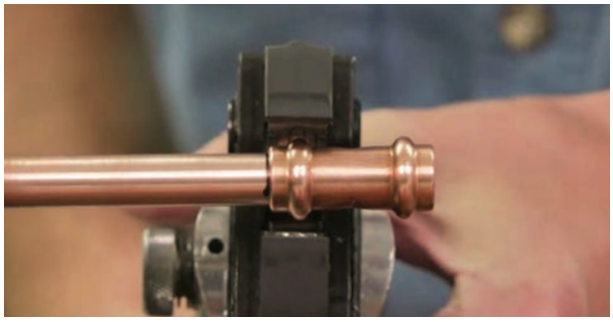
MINIMUM DISTANCE BETWEEN ZOOMLOCK MAX FITTINGS		
Fitting Size	**Inches**	**Millimeters**
1/4	0.40	10
3/8	0.40	10
1/2	0.60	15
5/8	0.60	15
3/4	0.80	20
7/8	0.80	20
1	1.00	25
1-1/8	1.00	25

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

FREQUENTLY ASKED QUESTIONS (Continued)

11. **Where do I crimp ZoomLock MAX fittings?**
Crimp with the jaw straddling directly over the O-ring section of the fitting.



12. **How many crimps can you complete on a complete battery charge?**
Tool dependent; consult the tool manufacturers owner's manual.

13. **How do you know when to service the tool?**
Tool dependent; consult the tool manufactures owner's manual.

14. **What is the expected life of the jaws?**
ZoomLock MAX jaws are laser hardened and have a finite life expectancy. We encourage each customer to have the jaws and tools serviced and checked annually or every 10,000 crimps depending on which comes first.

15. **What tool manufacturers and models are ZoomLock MAX jaws compatible?**
Please refer to page 18 for the press tool compatibility table.

16. **What is the expected lifetime of the jaws - how do you know when you need to replace the jaws?**
Check jaws at the latest 1 year after the purchase or after 10,000 pressings (according to which occurs first) by an authorized Rothenberger testing center and repeat these checks at the latest 1 year or another 10,000 pressings after the previous inspection. During jaw inspection, check the jaws for operating and functional safety and wear parts (e.g., springs). Functionally and operationally safe jaws are returned.

17. **Where can replacement batteries and chargers be purchased?**
Tool dependent; check the tool manufacturer owner's manual.

18. **Can you use ZoomLock MAX to crimp to aluminum, steel, or stainless steel?**
No, ZoomLock MAX is designed explicitly for copper to copper connections.

19. **What standards and codes is ZoomLock MAX compliant with, and what approvals does it hold?**
    - UL Listed: Refrigerant fitting SA7511.
    - UL Listed: Approved use for Field and Factory installations
    - UL 109 - 7 Pull test compliant
    - UL 109 - 8 Vibration test compliant
    - UL 1963 - 79 Tests of Gaskets and Seals Used in Refrigerant Systems compliant
    - ISO 5149-2:2014, Refrigerating systems and heat pumps - Safety and environmental requirements - Part 2: Design, construction, testing, marking and documentation, compliant
    - ISO 5149-2 - 5.3.2.2.3 Strength pressure test compliant
    - ISO 14903 - 7.4 Tightness test compliant
    - ISO 14903 - 7.6 Pressure temperature vibration tests (PTV) compliant
    - ISO 14903 - 7.8 Freezing test compliant
    - ASTM G85 -11 Standard Practice for Modified Salt Spray (Fog) Testing compliant
    - ASHRAE 15 - 2016 Safety Standard for Refrigeration Systems compliant
    - ASME B31.5 - 2016 Refrigeration Piping and Heat Transfer Components compliant
    - 2018, 2015 - 2012, 2009 and 2006 International Mechanical Code (IMC), certified ICC-ES, PMG-1440
    - 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC), certified ICC-ES, PMG-1440
    - 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC), certified, ICC-ES, PMG-1440

20. **Does ZoomLock MAX work on both hard and soft copper?**
Yes, ZoomLock MAX is a press fitting system for use with hard, half-hard, or annealed copper tube conforming to EN12735-1 or ASTM-B280.

21. **What is the guarantee on ZoomLock MAX fittings?**
The product has a 10-year guarantee from the first date of purchase. Please refer to full terms and conditions.

22. **What is the material used to make the O-ring?**
Hydrogenated Nitrile Butadiene Rubber (HNBR).

23. **What is the expected life of the O-ring in the system?**
The expected life of the O-ring, if used within the product specifications for temperature and pressure, is at least 25 years. The product has a 10-year guarantee from the first date of purchase.

24. **Are there any storage issues, including where the fittings are stored in vehicles and exposed to extremes of high or low temperature?**
No, the product is not subject to degradation under normal storage conditions, provided it's kept in original packaging and not exposed to direct sunlight for long periods.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

FREQUENTLY ASKED QUESTIONS (Continued)

25. **What approved refrigerants are for use with ZoomLock MAX?**
    ZoomLock MAX is approved for use with R-32, R-134a, R-404A, R-407C, R-407F, R-410A, R-507, R1234ze, R1234yf, R-718, R-450A, R-513A, R-448A, R-449A, R-407A, R-427A, R-438A, R-417A and R-422D. Please check our website www. ZoomLock-MAX.com for updates on the ZoomLock MAX range.

26. **What approved oils are for use with ZoomLock MAX?**
    Use ZoomLock MAX for approved POE, PAO, PVE, AB, and mineral oils. The O-ring has been tested successfully with PAG oil; however, do not use PAG oil with copper systems due to the potential for corrosion of the copper material.

27. **If ZoomLock MAX leaks on installation, can you braze the fitting rather than cutting out the joint and having to replace the missing tube?**
    No, if a pressed fitting is leaking, the fitting must be cut out and replaced. You should not attempt to braze the fitting as you may melt the O-ring material and thus introduce contaminants into the system that could cause other system issues.

28. **Is there a concern about ice building up and then thawing under the fitting in a horizontal or vertical configuration?**
    No, ZoomLock MAX has been thoroughly freeze/thaw tested.

29. **Are there any concerns with corrosion where installations are made in coastal areas or with cleaning agents?**
    No, ZoomLock MAX has been Acid Salt Spray tested to ASTM G85. As with all copper installations, avoid exposure to ammonia.

30. **Does the O-ring compensate for imperfections in the tube to make a tight seal?**
    Yes, the O-ring does compensate for small/minor scratches on the surface of the tube. However, avoid imperfections adjacent to the crimp area such as scratches, incise marks, and tubing that is not round. Reference copper piping standard for roundness.

31. **Product specifications state that the application temperature limits are -40 F to 300 F, what happens if we go beyond that limit?**
    If you use ZoomLock MAX in an application that the fitting goes beyond the specified limits of the O-ring, then there is an increased likelihood that a leak can occur due to the compromised O-ring.

32. **How clean are ZoomLock MAX fittings?**
    ZoomLock MAX fittings comply with the cleanliness standards as required in the following Copper Tube Standards EN 12735-1 and ASTM-B280. Keep the zip closure bag sealed to protect fittings from contamination.

33. **How do the fittings cope with vibration from the system?**
    Vibration is a recognized cause of leaks, design the system, and install to comply with all local standards and codes of practice, which aim to minimize vibration. Extensively tested ZoomLock MAX fittings ensure the joint doesn't leak as a result of system vibration and complies with the following standards: ISO 14903, Temperature Pressure Cycling and Vibration Test; UL 109 - 8, Vibration Test; UL 207, Fatigue Shock Test.

34. **Will the O-ring be damaged if acid develops in the refrigeration system?**
    Good installation practice, a nitrogen purge during any brazing (not required with ZoomLock MAX mechanical fittings), a deep evacuation, and the proper installation and use of filter-driers containing new and effective molecular sieve desiccants prevent many system failures including the buildup of acid within the system. When selecting which desiccant material is best for an application, consider water capacity, refrigerant and lubricant compatibility, acid capacity, and physical strength, which are essential characteristics of desiccants.

35. **When pressed, small size fittings, mainly elbows, may allow a small amount of rotational movement at the joint. Will this affect the security of the joint?**
    No, some rotational movement is quite acceptable, the joint won't leak, nor will it come apart under the pressure loading and during system operation. Some joint movement is good and allows for expansion and contraction in the system pipework.

36. **Is ZoomLock MAX suitable for medical gas applications?**
    No, ZoomLock MAX is not suitable for medical gas applications.

37. **Can you press a fitting more than once?**
    No, only press ZoomLock MAX fittings once.

38. **Is ZoomLock MAX approved for drinking water systems?**
    No, do not use ZoomLock MAX for drinking water systems.

39. **Can ZoomLock MAX be used on heating and hot water systems?**
    No, use ZoomLock MAX for air conditioning and refrigeration applications only.

40. **I need to pull a vacuum, how deep of a vacuum can I pull?**
    Pull 200 microns for a deep vacuum.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

PRESS TOOLS AND JAWS

Parker Hannifin recommends the use of ROTHENBERGER press tools in combination with ZoomLock MAX ROTHENBERGER jaws. However other press tools may be used in combination with ROTHENBERGER ZoomLock MAX jaws. See table below for tool compatibility.

		32 kN	24 kN	19 kN
COMPATIBLE PRESS TOOLS				
ROTHENBERGER	ROMAX® 3000	✓	–	–
	ROMAX® 3000 AC	✓	–	–
	ROMAX® 4000	✓	–	–
	ROMAX® AC ECO	✓	–	–
	Twin Turbo US (TT US)	–	✓	–
	ROMAX® Compact TT	–	–	✓
	ROMAX® Compact	–	–	✓
DEWAULT	DCE200	✓	–	–
KLAUKE	UAP2/UNP2	✓	–	–
	UAP3L/UAP4L	✓	–	–
	UP2EL14	✓	–	–
	MAP2L19	–	–	✓
	MAP219	–	–	✓
MILWAUKEE	M12 Force Logic	–	✓	–
	M18 Force Logic	✓	–	–
HILTI	NPR 019	–	–	✓
NIBCO	PC-100	✓	–	–
	PC-280	✓	–	–
REMS	Power-Press	✓	–	–
	Akku-Press	✓	–	–
RIDGID	320-E	✓	–	–
	CT400	✓	–	–
	RP 241	–	✓	–
	RP 240	–	✓	–
	RP 210-B	–	✓	–
	RP 200-B	–	✓	–
	RP 330-B	✓	–	–
	RP 330-C	✓	–	–
	RP 340	✓	–	–
VIRAX	Viper® P25+	✓	–	–
	Viper® P25+	✓	–	–

Note: When using a press tool, wear ear and eye protection.

ZoomLock MAX fittings are only compatible with ROTHENBERGER press jaws as shown on page 19.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

PRESS TOOLS AND JAWS (Continued)

ZoomLock MAX fittings are only compatible with ROTHENBERGER press jaws as shown in the table below.

	 **32 kN ROTHENBERGER Jaw Set**	 **24 kN ROTHENBERGER Jaw Set**	 **19 kN ROTHENBERGER Jaw Set**
JAW SETS / PART NUMBERS			
Jaw Sets *7 Piece* 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8	MZK-32KN JAW KIT (7 PIECE) 871408	MZK-24KN JAW KIT (7 PIECE) 871409	MZK-19KN JAW KIT (7 PIECE) 871410
INDIVIDUAL JAWS / PART NUMBERS			
1/4”	MZK-32KN JAW-1/4” 871428	MZK-24KN JAW-1/4” 871419	MZK-19KN JAW-1/4” 871411
3/8”	MZK-32KN JAW-3/8” 871429	MZK-24KN JAW-3/8” 871420	MZK-19KN JAW-3/8” 871412
1/2”	MZK-32KN JAW-1/2” 871430	MZK-24KN JAW-1/2” 871421	MZK-19KN JAW-1/2” 871413
5/8”	MZK-32KN JAW-5/8” 871431	MZK-24KN JAW-5/8” 871422	MZK-19KN JAW-5/8” 871414
3/4”	MZK-32KN JAW-3/4” 871432	MZK-24KN JAW-3/4” 871423	MZK-19KN JAW-3/4” 871415
7/8”	MZK-32KN JAW-7/8” 871433	MZK-24KN JAW-7/8” 871424	MZK-19KN JAW-7/8” 871416
1”	MZK-32KN JAW-1” 871434	MZK-24KN JAW-1” 871425	MZK-19KN JAW-1” 871417
1-1/8”	MZK-32KN JAW-1 1/8” 871435	MZK-24KN JAW-1 1/8” 871426	MZK-19KN JAW-1 1/8 871418

Note: When using a press tool, wear ear and eye protection.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

ABBREVIATIONS

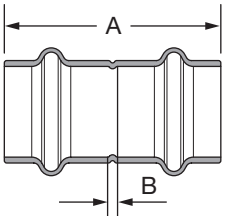
AB Oil	Alkyl Benzene oil.
ASHRAE 15 - 2016	Safety Standard for Refrigeration Systems.
ASTM-B280-13	American Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
ASTM-B88 Type K or L	Seamless Copper Water Tube.
ASME B31.5 - 2016 - 2016	Refrigeration Piping and Heat Transfer Components.
CFT	Constant Force Technology.
HNBR	Hydrogenated Nitrile Butadiene Rubber.
IMC 2018	International Mechanical Code 2018.
IRC 2018	International Residential Code 2018.
ISO 5149-2:2014	International Standard for Refrigerating systems and heat pumps - Safety and environmental requirements -- Part 2: Design, construction, testing, marking and documentation.
ISO 9001	Certified quality management system.
ISO 14903:2012	International Standard for Refrigerating systems and heat pumps – Qualification of tightness of components and joints.
LED	Light Emitting Diode.
PAO Oil	Poly-alpha-olefin oil.
POE Oil	Polyolester oil.
PVE Oil	Polyvinylether oil.
SMS	Short Message Service.
UL 207	Standard for Refrigerant-Containing Components and Accessories, Nonelectrical.
UL 1963 – 79	Standard for Refrigerant Recovery / Recycling Equipment. Section 79 Tests of Gaskets and Seals Used in Refrigerant Systems.
UL 109 - 7	Standard for Tube Fittings for Flammable and Combustible Fluids, Refrigeration Service, and Marine Use. Section 7 Pull test.
UL 109 - 8	Standard for Tube Fittings for Flammable and Combustible Fluids, Refrigeration Service, and Marine Use. Section 8 Vibration test.
UMC 2015	Universal Mechanical Code 2015.
UNS	Unified Numbering System.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

COUPLINGS

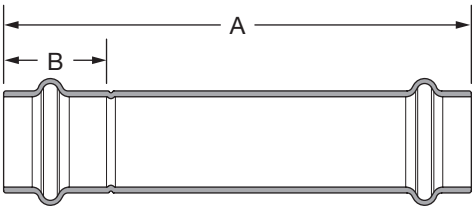
Dimensions



Size	Part Number	Description	Dimensions			
			A		B	
			Inch	mm	Inch	mm
1/4	870508	MZK-C4-HNBR	1.54	39.0	0.12	3.0
3/8	870509	MZK-C6-HNBR	1.50	38.0	0.12	3.0
1/2	870503	MZK-C8-HNBR	1.57	40.0	0.20	5.0
5/8	870510	MZK-C10-HNBR	1.77	45.0	0.12	3.0
3/4	870505	MZK-C12-HNBR	1.79	45.5	0.06	1.5
7/8	870506	MZK-C14-HNBR	2.22	56.5	0.33	8.5
1	870513	MZK-C16-HNBR	1.93	49.0	0.08	2.0
1-1/8	870507	MZK-C18-HNBR	2.24	57.0	0.24	6.0

SLIP COUPLINGS

Dimensions



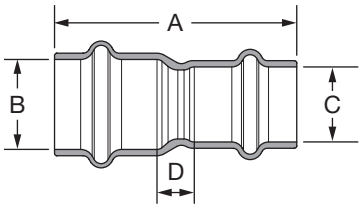
Size	Part Number	Description	Dimensions			
			A		B	
			Inch	mm	Inch	mm
1/4	870550	MZK-RC4-HNBR	3.54	90.0	0.71	18.0
3/8	870552	MZK-RC6-HNBR	3.54	90.0	0.71	18.0
1/2	870553	MZK-RC8-HNBR	3.58	91.0	0.69	17.5
5/8	870554	MZK-RC10-HNBR	3.98	101.0	0.83	21.0
3/4	870555	MZK-RC12-HNBR	3.98	101.0	0.86	22.0
7/8	870556	MZK-RC14-HNBR	4.17	106.0	0.95	24.0
1-1/8	870557	MZK-RC18-HNBR	4.17	106.0	1.00	25.5

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

REDUCERS

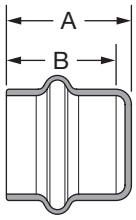
Dimensions



Size	Part Number	Description	Dimensions							
			A		B		C		D	
			Inch	mm	Inch	mm	Inch	mm	Inch	mm
3/8 x 1/4	870800	MZK-R64-HNBR	1.65	42.0	3/8	9.53	1/4	6.35	0.24	6.0
1/2 x 1/4	870808	MZK-R84-HNBR	1.73	44.0	1/2	12.7	1/4	6.35	0.33	8.5
1/2 x 3/8	870801	MZK-R86-HNBR	1.67	42.5	1/2	12.7	3/8	9.53	0.28	7.0
5/8 x 1/4	870809	MZK-R104-HNBR	2.05	52.0	5/8	15.9	1/4	6.35	0.51	13.0
5/8 x 3/8	870810	MZK-R106-HNBR	1.87	47.5	5/8	15.9	3/8	9.53	0.33	8.5
5/8 x 1/2	870802	MZK-R108-HNBR	1.79	45.5	5/8	15.9	1/2	12.7	0.28	7.0
3/4 x 1/2	870811	MZK-R128-HNBR	1.81	46.0	3/4	19.1	1/2	12.7	0.26	6.5
3/4 x 5/8	870803	MZK-R1210-HNBR	2.07	52.5	3/4	19.1	5/8	15.9	0.37	9.5
7/8 x 1/2	870812	MZK-R148-HNBR	2.07	52.5	7/8	22.2	1/2	12.7	0.43	11.0
7/8 x 5/8	870804	MZK-R1410-HNBR	2.07	52.5	7/8	22.2	5/8	15.9	0.30	7.5
7/8 x 3/4	870805	MZK-R1412-HNBR	2.07	52.5	7/8	22.2	3/4	19.1	0.26	6.5
1-1/8 x 5/8	870814	MZK-R1810-HNBR	2.17	55.0	1-1/8	28.6	5/8	15.9	0.33	8.5
1-1/8 x 3/4	870806	MZK-R1812-HNBR	2.26	57.5	1-1/8	28.6	3/4	19.1	0.39	10.0
1-1/8 x 7/8	870807	MZK-R1814-HNBR	2.28	58.0	1-1/8	28.6	7/8	22.2	0.33	8.5

CAPS

Dimensions



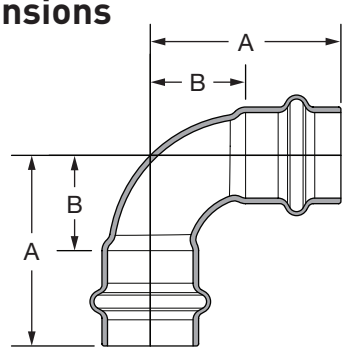
Size	Part Number	Description	Dimensions			
			A		B	
			Inch	mm	Inch	mm
1/4	870900	MZK-CP4-HNBR	0.77	19.5	0.71	18.0
3/8	870902	MZK-CP6-HNBR	0.77	19.5	0.71	18.0
1/2	870903	MZK-CP8-HNBR	0.75	19.0	0.69	17.5
5/8	870904	MZK-CP10-HNBR	0.89	22.5	0.83	21.0
3/4	870905	MZK-CP12-HNBR	0.93	23.5	0.87	22.0
7/8	870906	MZK-CP14-HNBR	1.02	26.0	0.94	24.0
1	870909	MZK-CP16-HNBR	1.00	25.5	0.93	23.5
1-1/8	870907	MZK-CP18-HNBR	1.08	27.5	1.00	25.5

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

90° ELBOWS

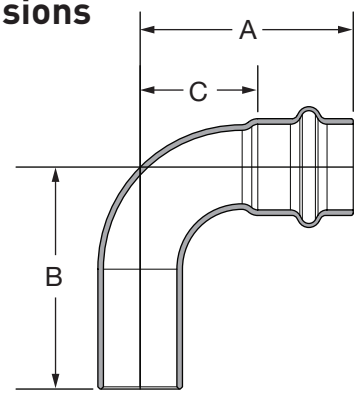
Dimensions



Size	Part Number	Description	Dimensions			
			A		B	
			Inch	mm	Inch	mm
1/4	870600	MZK-90E4-HNBR	1.28	32.5	0.57	14.5
3/8	870602	MZK-90E6-HNBR	1.30	33.0	0.59	15.0
1/2	870603	MZK-90E8-HNBR	1.24	31.5	0.55	14.0
5/8	870604	MZK-90E10-HNBR	1.54	39.0	0.71	18.0
3/4	870605	MZK-90E12-HNBR	1.67	42.5	0.81	20.5
7/8	870606	MZK-90E14-HNBR	1.97	50.0	1.02	26.0
1	870609	MZK-90E16-HNBR	2.09	53.0	1.16	29.5
1-1/8	870607	MZK-90E18-HNBR	2.24	57.0	1.24	31.5

90° STREET ELBOWS

Dimensions



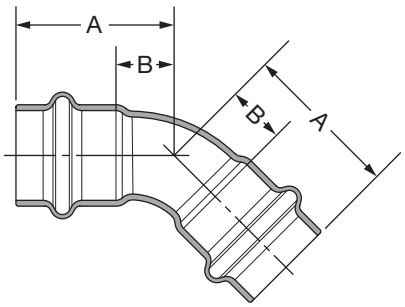
Size	Part Number	Description	Dimensions					
			A		B		C	
			Inch	mm	Inch	mm	Inch	mm
3/8	871302	MZK-90SE6-HNBR	1.30	33.0	1.36	34.5	0.59	15.0
1/2	871303	MZK-90SE8-HNBR	1.24	31.5	1.36	34.5	0.55	14.0
5/8	871304	MZK-90SE10-HNBR	1.54	39.0	1.77	45.0	0.71	18.0
3/4	871305	MZK-90SE12-HNBR	1.67	42.5	1.89	48.0	0.81	20.5
7/8	871306	MZK-90SE14-HNBR	1.97	50.0	2.09	53.0	1.02	26.0
1	871309	MZK-90SE16-HNBR	2.13	54.0	2.20	56.0	1.22	33.0
1-1/8	871307	MZK-90SE18-HNBR	2.24	57.0	2.42	61.5	1.24	31.5

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

45° ELBOWS

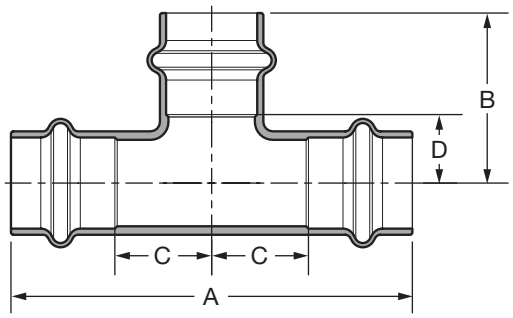
Dimensions



Size	Part Number	Description	Dimensions			
			A		B	
			Inch	mm	Inch	mm
1/4	871401	MZK-45E4-HNBR	0.93	23.5	0.22	5.5
3/8	871402	MZK-45E6-HNBR	1.02	26.0	0.31	8.0
1/2	871403	MZK-45E8-HNBR	0.94	24.0	0.26	6.5
5/8	871404	MZK-45E10-HNBR	1.10	28.0	0.28	7.0
3/4	871405	MZK-45E12-HNBR	1.24	31.5	0.37	9.5
7/8	871406	MZK-45E14-HNBR	1.34	34.0	0.39	10.0
1	871310	MZK-45E16-HNBR	1.40	35.5	0.47	12.0
1-1/8	871407	MZK-45E18-HNBR	1.56	39.5	0.55	14.0

TEES

Dimensions



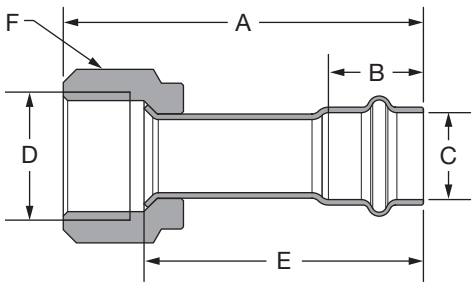
Size	Part Number	Description	Dimensions							
			A		B		C		D	
			Inch	mm	Inch	mm	Inch	mm	Inch	mm
1/4	870701	MZK-T4-HNBR	2.13	54.0	1.06	27.0	0.35	9.0	0.35	9.0
3/8	870702	MZK-T6-HNBR	2.48	63.0	1.22	31.0	0.53	13.5	0.51	13.0
1/2	870703	MZK-T8-HNBR	2.60	66.0	1.10	28.0	0.61	15.5	0.41	10.5
5/8	870704	MZK-T10-HNBR	2.99	76.0	1.26	32.0	0.67	17.0	0.43	11.0
3/4	870705	MZK-T12-HNBR	3.31	84.0	1.42	36.0	0.79	20.0	0.55	14.0
7/8	870706	MZK-T14-HNBR	3.50	89.0	1.52	38.5	0.81	20.5	0.57	14.5
1	870709	MZK-T16-HNBR	3.62	92.0	1.57	40.0	0.89	22.5	0.65	16.5
1-1/8	870707	MZK-T18-HNBR	3.74	95.0	1.69	43.0	0.87	22.0	0.69	17.5

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

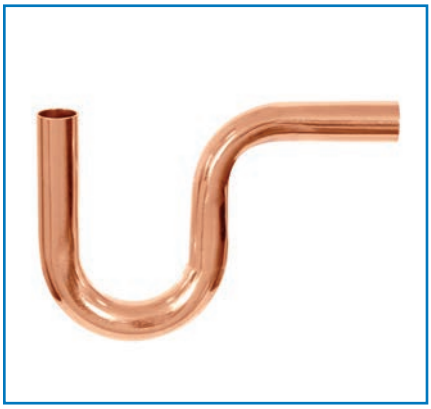
SAE FLARES

Dimensions

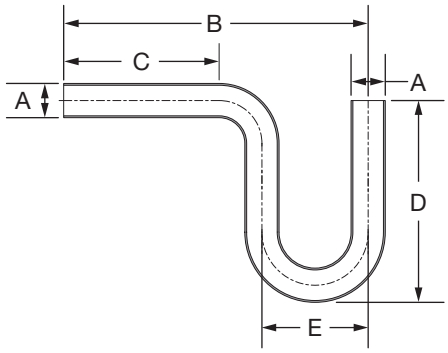


Size	Part Number	Description	Dimensions									
			A		B		C	D	E		F	
			Inch	mm	Inch	mm	Inch	Inch	Inch	mm	Inch	mm
1/4	871000	MZK-F4-HNBR	2.13	54.0	0.71	18.0	1/4”	1/4”	1.81	46.0	0.67	17.0
3/8	871002	MZK-F6-HNBR	2.40	61.0	0.71	18.0	3/8”	3/8”	1.97	50.0	0.86	22.0
1/2	871003	MZK-F8-HNBR	2.50	63.5	0.69	17.5	1/2”	1/2”	2.03	51.5	0.95	24.0
5/8	871004	MZK-F10-HNBR	2.91	74.0	0.83	21.0	5/8”	5/8”	2.28	58.0	1.06	27.0
3/4	871005	MZK-F12-HNBR	3.21	81.5	0.86	22.0	3/4”	3/4”	2.50	63.5	1.34	34.0

P-TRAPS



Dimensions



Size	Part Number	Description	Dimensions								
			A	B		C		D		E	
			Inch	Inch	mm	Inch	mm	Inch	mm	Inch	mm
5/8	871204	MZK-PT10-NA	5/8”	6.73	171.0	4.07	103.5	5.96	151.5	1.77	45.0
3/4	871205	MZK-PT12-NA	3/4”	6.77	172.0	3.58	91.0	6.24	158.5	2.12	54.0
7/8	871206	MZK-PT14-NA	7/8”	6.73	171.0	2.83	72.0	6.69	170.0	2.60	66.0
1-1/8	871207	MZK-PT18-NA	1-1/8”	6.69	170.0	1.73	44.0	6.83	173.5	3.31	84.0

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

INSTALLATION KIT

3 piece ZoomLock MAX installation kit includes depth gauge, permanent marker, and general purpose hand pad.

- **Description:** MZK-IK
- **Part Number:** 870516

REFERENCE

Technical Data

Parameters	Capability
Applications	Air conditioning, refrigeration, heat pump (refrigerant side)
Connections	Copper to copper
Approved Tube: Copper Tube Conforming to*	ASTM-B280 or ASTM-B88 type K or L
Fitting / Tube Range	1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/8"
Fitting Material	Refrigerant grade copper (UNS C12200 min 99.9% pure)
O-Ring	HNBR
Approved Oils	POE, PAO, PVE, AB and MO
Maximum Operating and Abnormal Pressure	700 psi at 250°F / 48 bar, 4800 kPa at 121°C
Burst Pressure >3 x Maximum Operating and Abnormal Pressure	>2100 psig / >14400kPa / >144 bar
Leak Tightness	Helium ≤ 7.5×10^{-7} Pa.m³/s at +20°C, 10 bar
Vacuum	200 microns
O-ring temperature range	-40°F to 284°F / -40°C to 140°C
UL Listing Continuous Operating Temperature	-40°F to 250°F / -40°C to 121°C
Compatible Refrigerants	R-1234yf**, R-1234ze**, R-125, R-134a, R-290**, R-32**, R-404A, R-407A, R-407C, R-407F, R-407H, R-410A, R-417A, R-421A, R-422B, R-422D, R-427A, R-438A, R-444A**, R-447A**, R-447B**, R-448A, R-449A, R-450A, R-452A, R-452B**, R-452C, R-454A**, R-454B**, R-454C**, R-457A**, R-459A**, R-507A, R-513A, R-513B, R-600A**, R-718 and HYCOOL 20

* Please refer to ZoomLock MAX Tube Compatibility Table, see page 27.

** When using refrigerants classified A2L (lower flammability), A2 (flammable) and A3 (higher flammability) additional/specific standards, local rules and regulations, codes of practice and by-laws may be applicable.

Note: ZoomLock MAX fittings are NOT suitable for R-717, R-723, R-764, R-744 refrigerants.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

REFERENCE (Continued)

Tube Compatibility

ZoomLock MAX Fitting Size Inches	Tube size Nominal OD		ASTM B280 - ASTM B88									
			Wall Thickness - Inches (mm)									
	Inches	mm	0.025" (0.64)	0.030" (0.76)	0.031" (0.81)	0.035" (0.89)	0.040" (1.02)	0.042" (1.07)	0.045" (1.14)	0.049" (1.24)	0.050" (1.27)	0.065" (1.65)
1/4	0.250	6.35	●■	●■								
3/8	0.375	9.53		●■	●■	●■						
1/2	0.500	12.70			●■	●■				●■		
5/8	0.625	15.88				●■	●■		■	●■		
3/4	0.750	19.05				●■		●■		●■		
7/8	0.875	22.23				●			●■			●■
1-1/8	1.125	28.58				●	●				●■	■

● **Annealed coil**
■ **Straight tube Half hard / Hard**

Notes:
Hardness tolerance as per approved standards in the table above.
Ensure coil tubes are in round condition. Oval tubes should be re-rounded.
It is the engineer's responsibility to ensure that the tube selected is compatible with ZoomLock MAX and meets the operating pressure requirements of the system.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

REFERENCE (Continued)

Refrigerant Compatibility

Refrigerant	GWP*	Safety Group	Compatible
R-125	3500	A1	✓
R-134a	1430	A1	✓
R-404A	3922	A1	✓
R-407A	2107	A1	✓
R-407C	1774	A1	✓
R-407F	1825	A1	✓
R-407H	1495	A1	✓
R-410A	2088	A1	✓
R-417A	2346	A1	✓
R-421A	2631	A1	✓
R-422B	2526	A1	✓
R-422D	2729	A1	✓
R-427A	2138	A1	✓
R-438A	2264	A1	✓
R-448A	1386	A1	✓
R-449A	1397	A1	✓
R-450A	601	A1	✓
R-452A	2140	A1	✓
R-452C	2220	A1	✓
R-507A	3985	A1	✓
R-513A	631	A1	✓
R-513B	596	A1	✓
R-718	0	A1	✓

Refrigerant	GWP*	Safety Group	Compatible
R1234yf	4	A2L**	✓
R1234ze	7	A2L**	✓
R-32	675	A2L**	✓
R-444A	92	A2L**	✓
R-447A	582	A2L**	✓
R-447B	740	A2L**	✓
R-452B	698	A2L**	✓
R-454A	239	A2L**	✓
R-454B	466	A2L**	✓
R-454C	148	A2L**	✓
R-457A	139	A2L**	✓
R-459A	460	A2L**	✓
R-290	3	A2L**	✓
R-600A	3	A2L**	✓
Medium			**Compatible**
HYCOOL 20			✓

Note: ZoomLock MAX is not approved for use with Ammonia (R717).

* GWP: Global warming potential [C02 = 1,0]

** When using refrigerants classified A2L (lower flammability), A2 (flammable) and A3 (higher flammability) additional/specific standards, local rules and regulations, codes of practice and by-laws may be applicable.

Visit ZoomLockMAX.com for updates on the ZoomLock MAX refrigerant range.

ZoomLock MAX

Press-to-Connect Refrigerant Fittings

1. **Terms and Conditions.** Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is expressly conditioned on Buyer's assent to these Terms and Conditions and to the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional term or condition of Buyer's order or any other document issued by Buyer.
2. **Price Adjustments; Payments.** Prices stated on the reverse side or preceding pages of this document are valid for 30 days. After 30 days, Seller may change prices to reflect any increase in its costs resulting from state, federal or local legislation, price increases from its suppliers, or any change in the rate, charge, or classification of any carrier. The prices stated on the reverse or preceding pages of this document do not include any sales, use, or other taxes unless so stated specifically. Unless otherwise specified by Seller, all prices are F.O.B. Seller's facility, and payment is due 30 days from the date of invoice. After 30 days, Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.
3. **Delivery Dates; Title and Risk; Shipment.** All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon tender to the carrier at Seller's facility (i.e., when it's on the truck, it's yours). Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's changes in shipping, product specifications or in accordance with Section 13, herein.
4. **Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of ten years from the date of delivery to Buyer. This warranty is made only to Buyer and does not extend to anyone to whom Products are sold after purchased from Seller. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**
5. **Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 60 days after delivery or, in the case of an alleged breach of warranty, within 30 days after the date within the warranty period on which the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for any amount due to Seller from Buyer) must be commenced within thirteen months from the date of tender of delivery by Seller or, for a cause of action based upon an alleged breach of warranty, within thirteen months from the date within the warranty period on which the defect is or should have been discovered by Buyer.
6. **LIMITATION OF LIABILITY.** UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**
7. **Contingencies.** Seller shall not be liable for any default or delay in performance if caused by circumstances beyond the reasonable control of Seller.
8. **User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.
9. **Loss to Buyer's Property.** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.
10. **Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.
11. **Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest. Seller shall have a security interest in, and lien upon, any property of Buyer in Seller's possession as security for the payment of any amounts owed to Seller by Buyer.
12. **Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.
13. **Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.
14. **Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.
15. **Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of the agreement. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.
16. **Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.
17. **Termination.** This agreement may be terminated by Seller for any reason and at any time by giving Buyer thirty (30) days written notice of termination. In addition, Seller may by written notice immediately terminate this agreement for the following: (a) Buyer commits a breach of any provision of this agreement (b) the appointment of a trustee, receiver or custodian for all or any part of Buyer's property (c) the filing of a petition for relief in bankruptcy of the other Party on its own behalf, or by a third party (d) an assignment for the benefit of creditors, or (e) the dissolution or liquidation of the Buyer.
18. **Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement. Disputes between the parties shall not be settled by arbitration unless, after a dispute has arisen, both parties expressly agree in writing to arbitrate the dispute.
19. **Indemnity for Infringement of Intellectual Property Rights.** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.
20. **Taxes.** Unless otherwise indicated, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of Products.
21. **Equal Opportunity Clause.** For the performance of government contracts and where dollar value of the Products exceed $10,000, the equal employment opportunity clauses in Executive Order 11246, VEVRAA, and 41 C.F.R. §§ 60-1.4(a), 60-741.5(a), and 60-250.4, are hereby incorporated.

Parker Hannifin Corporation
Sporlan Division
206 Lange Drive • Washington, MO 63090 USA
phone 636 239 1111 • fax 636 239 9130
www.zoomlockmax.com