

>B< MaxiPro

An innovative press system
suitable for air conditioning and
refrigeration applications.



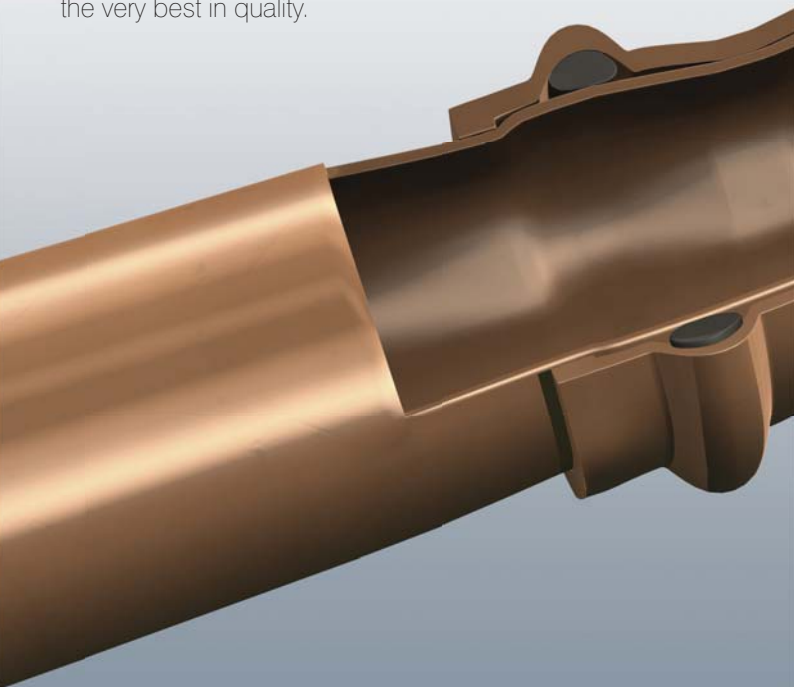
Conex | Bänninger

EXCELLENCE SINCE 1909

Join the Press Revolution

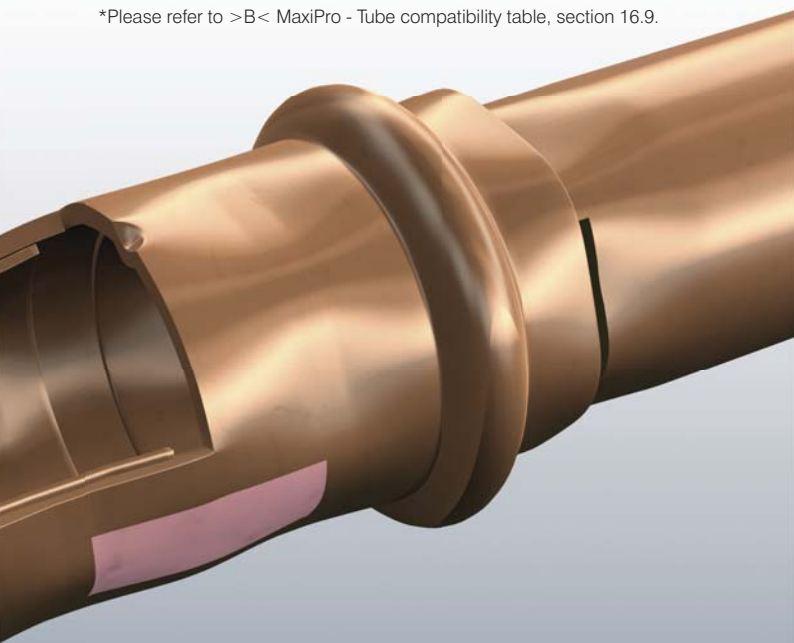
100 years of innovation

Conex Bänninger specialises in providing the best fittings, accessories and valves across the globe by offering innovative and versatile solutions. Since 1909, Conex Bänninger has produced over 20 billion fittings and valves and has built its reputation for quality European manufacturing, backed by first-class customer service and unrivalled expertise. Passionate about excellence, Conex Bänninger is a byword for quality in the domestic, commercial, industrial, shipbuilding, air conditioning and refrigeration markets worldwide. Conex Bänninger is an ISO 9001 quality assured company, which assures you the very best in quality.



>B< MaxiPro is a press fitting system for use with hard, half hard or annealed copper tube conforming to AS/NZS 1571* providing a secure, permanent leak-proof joint, suitable for air conditioning and refrigeration applications.

*Please refer to >B< MaxiPro - Tube compatibility table, section 16.9.



Fast Facts

Over 20 billion fittings sold worldwide since 1909

Conex Bänninger >B< mark introduced in 1920

Over 900 staff working in Europe

Produce over 300 million pieces a year

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1. Applications

>B< MaxiPro fittings are ideally suited to the following applications:

REFRIGERATION



AIR CONDITIONING



2. Features and benefits



Flame free

Flame free installation takes away risk of fire on site.



No nitrogen purge

>B< MaxiPro is a mechanical joint, thus eliminating the need for nitrogen purge during the fitting jointing process.



Lower installed cost

A professional fitting which is quick and simple to install, saving time and money.



Higher productivity

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.



High quality O-ring

>B< MaxiPro refrigeration and air conditioning range uses a high quality HNBR O-ring that forms a secure leak-free joint when pressed.



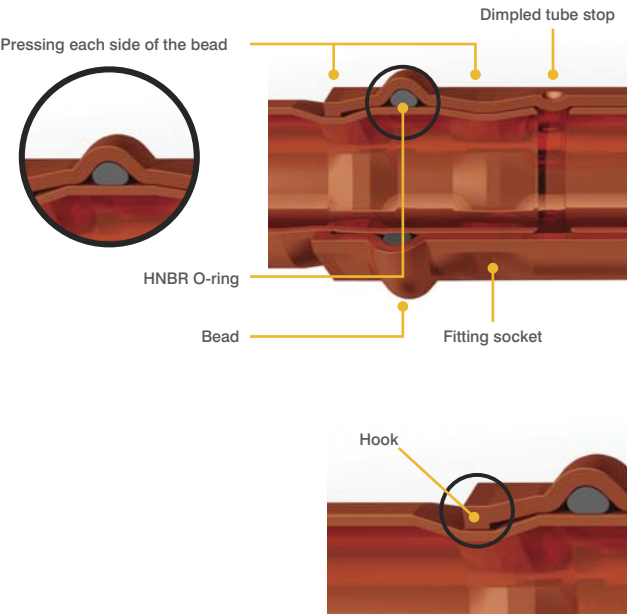
Protected O-ring

Lead-in edge design aids installation and helps protect the O-ring from damage or displacement.

IBP Group	Over 100 years' experience in fittings manufacture and over three decades of experience in 3 point press system design.
3 point press	>B< MaxiPro benefits from the 3 point pressing technique - two presses, one each side of the bead, and one press compressing the O-ring. This provides a permanent and secure joint.
Fitting identification	>B< MaxiPro fittings for air-conditioning and refrigeration applications are identified with a pink mark on the fitting.
Electrical continuity	Maintains earth continuity without the need for additional earth continuity straps.
Warranty	>B< MaxiPro is covered by a 15 year product warranty.
Compact tooling	Light compact tooling provides easy access to tightly spaced pipe runs.
Tooling concept	Proven press fit technology, using tried and tested Rothenberger tooling.
Tooling service	Expertly managed by your local Rothenberger service organisation.

3. Technology - Three point press

>B< MaxiPro benefits from a 3 point press - two presses, one on each side of the bead, and one press compressing the O-ring. This provides a permanent and secure joint.



On fittings 1/2" and upwards, a hook ensures that the high pressure performance achieved by >B< MaxiPro fittings is maintained.



4. Technical data

Technical Data	
Parameters	Capability
Applications	Air conditioning and refrigeration
Connections	Copper to Copper
Approved tube	Copper tube conforming to AS/NZS 1571*
Fitting / Pipe 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, AB and mineral oil
Maximum operating and abnormal pressure	48 bar / 4800 kPa / 700 psi
Leak rate	ISO 5149-2 compliant
O-ring temperature range	-40°C to 140°C
UL listing continuous operating temperature	-40°C to 121°C
Compatible refrigerants	R1234yf, R1234ze, R32, R134a, R404A, R407C, R407F, R410A and R507
Fitting compliance	UL 207 certified, certificate no. SA44668 UL 109-7 Pull Test, compliant UL 1963-79 Tests of Gaskets and Seals Used in Refrigerant Systems, compliant ISO 5149-2, compliant ASTM G85, compliant AS/NZS 5149.2, compliant

*Please refer to >B< MaxiPro - Tube compatibility table, section 16.9.

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

5. Quality assurance

Conex Bänninger is an ISO 9001 quality assured company. We are committed to providing quality products and support to our customers.

6. Standards and approvals

>B< MaxiPro fittings are:

- UL 207 certified, certificate no. SA44668
- UL 109-7 Pull Test, compliant
- UL 1963-79 Tests of Gaskets and Seals used in Refrigerant Systems, compliant
- ISO 5149-2, compliant
- ASTM G85, compliant
- AS/NZS 5149.2, compliant

CERTIFICATE OF COMPLIANCE	
Certificate Number	20160817-SA44668
Report Reference	SA44668-20160808
Issue Date	2016-AUGUST-17
Issued to:	Conex Universal Limited Global House 95 Vantage Point, The Pennett Estate Kingswinford DY6 7FT UNITED KINGDOM
This is to certify that representative samples of	COMPONENT - REFRIGERATION, FITTINGS >B< MaxiPro, MPA Series
Standard(s) for Safety:	See Addendum
Additional Information:	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate. See the UL Online Certifications Directory at www.ul.com/database for additional information
Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.	
The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark RA may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions.	
Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.	
Look for the UL Certification Mark on the product.	
Certificate Number	20160817-SA44668
Report Reference	SA44668-20160808
Issue Date	2016-AUGUST-17
This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.	
Standard(s) for Safety: UL 207, Refrigerant-Containing Components and Accessories, Non-electrical UL 109, Tube Fittings for Flammable and Combustible Fluids, Refrigeration Service, and Marine Use CSA C22.2 No. 140.3-15, Refrigerant-containing Components for use in Electrical Equipment	
 Bruce Mahanah, Director North American Certification Program	
	
Any information and documentation including UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at (800) 451-6822 or (606) 205-2000.	

7. Trademarks

>B< MaxiPro is a registered trademark in Australia and in numerous territories worldwide.

8. Warranty

When installed, used and serviced in accordance with >B< MaxiPro installation guidelines a 15 year warranty covers against faults caused by defective manufacture of the fittings. It does not cover faults arising from incorrect installation, use or servicing.

The >B< MaxiPro warranty only covers systems assembled from copper tube complying with the standards and dimensions set out in the >B< MaxiPro Tube compatibility table, see 16.9.

All >B< MaxiPro fittings must be installed by a tradesperson licensed to work on systems containing refrigerant.

9. Size availability

>B< MaxiPro is available in the following sizes 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1 1/8" for more information see range details.

10. Fitting materials and finish

>B< MaxiPro is manufactured from Copper (UNS C12200 min 99.9% pure).

11. Fitting storage

>B< MaxiPro 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 ozone is particularly deleterious to rubber, storage rooms should not contain any equipment that is capable of generating ozone, such as mercury vapour lamps or high-voltage electrical equipment giving rise to electric sparks or silent electrical discharges.

Combustion gases and organic vapours 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.

>B< MaxiPro fittings should be kept in their sealed bags to protect them from contamination.

12. Marking and cleanliness

Each fittings is marked >B<, MaxiPro, size and 48 BAR (on a pink background) and are cleaned, bagged and labelled to fully comply with the cleanliness requirements of AS/NZS 5149.2.





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The Range





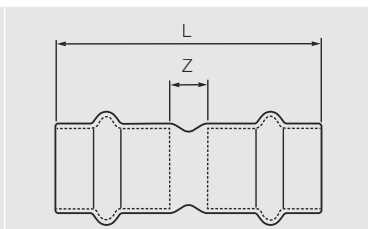
13. >B< MaxiPro product range

Union

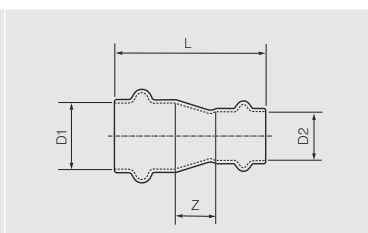
Code	Size
406027	1/4"
406028	3/8"
406029	1/2"
406030	5/8"
406031	3/4"
406032	7/8"
406033	1"
406034	1 1/8"

Reducer

Code	Size	L
405995	1/2" x 3/8"	42.5
405996	5/8" x 3/8"	47.5
405997	5/8" x 1/2"	45.5
405998	3/4" x 3/8"	51.0
405999	3/4"x 1/2"	46.0
406000	3/4"x 5/8"	52.5
406001	7/8" x 1/2"	52.5
406002	7/8" x 5/8"	52.5
406003	7/8" x 3/4"	52.5
406004	1 1/8" x 5/8"	55.0
406005	1 1/8" x 3/4"	57.5
406006	1 1/8" x 7/8"	58.0



L	Z
39.0	3.0
39.0	3.0
40.0	5.0
45.0	3.0
45.5	1.5
56.5	8.5
49.0	2.0
57.0	6.0



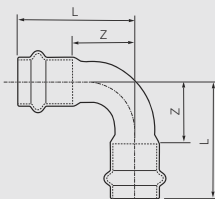
Z	D1	D2
7.0	1/2"	3/8"
8.5	5/8"	3/8"
7.0	5/8"	1/2"
11.0	3/4"	3/8"
6.5	3/4"	1/2"
9.5	3/4"	5/8"
11.0	7/8"	1/2"
7.5	7/8"	5/8"
6.5	7/8"	3/4"
8.5	1 1/8"	5/8"
10.0	1 1/8"	3/4"
8.5	1 1/8"	7/8"

Elbow 90°

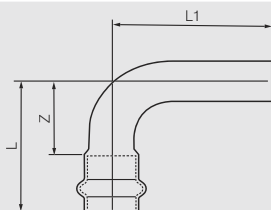
Code	Size
405955	1/4"
405956	3/8"
405957	1/2"
405958	5/8"
405959	3/4"
405960	7/8"
405961	1"
405962	1 1/8"

Elbow 90° ID x OD

Code	Size	L
405976	3/8"	33.0
405977	1/2"	31.5
405978	5/8"	39.0
405979	3/4"	42.5
405980	7/8"	50.0
405981	1 1/8"	57.0



L	Z
32.5	14.5
33.0	15.0
31.5	14.0
39.0	18.0
42.5	20.5
50.0	26.0
53.0	29.5
57.0	31.5



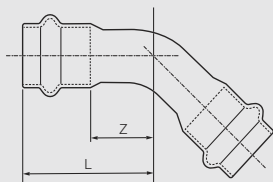
L1	Z
34.5	15.0
34.5	14.0
45.0	18.0
48.0	20.5
53.0	26.0
61.5	31.5

Elbow 45°

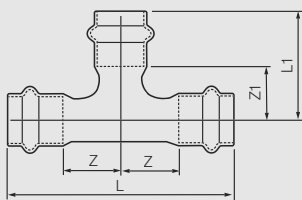
Code	Size
406038	1/4"
405966	3/8"
405967	1/2"
405968	5/8"
405969	3/4"
405970	7/8"
405971	1"
405972	1 1/8"

Tee

Code	Size	L
405984	1/4"	54.0
405985	3/8"	63.0
405986	1/2"	66.0
405987	5/8"	76.0
405988	3/4"	84.0
405989	7/8"	89.0
405990	1"	92.0
405991	1 1/8"	95.0



L	Z
23.5	5.5
26.0	8.0
24.0	6.5
28.0	7.0
31.5	9.5
34.0	10.0
35.5	12.0
39.5	14.0



Z	L1	Z1
9.0	27.0	9.0
13.5	31.0	13.0
15.5	28.0	10.5
17.0	32.0	11.0
20.0	36.0	14.0
20.5	38.5	14.5
22.5	40.0	16.5
22.0	43.0	17.5

14. Installation process

Conex Bänninger >B< MaxiPro fittings must be installed by an appropriately trained and qualified person to work on the installation. 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.

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 prior to use.

Joints should only be made on unstressed pipework, (pipework free from pressure or tension).

Copper tube compatibility: Please refer to tube compatibility table, section 16.9.

Maximum operating pressure: 48 bar, 4800 kPa, 700 psig.

Operating temperature range: -40°C to 121°C, -40°F to 250°F.

Compatible refrigerants: R1234yf, R1234ze, R32, R134a, R404A, R407C, R407F, R410A, and R507.

Not for use with Ammonia (R-717).

Compatible oils: POE, PAO, AB and mineral oils.

Installation Instructions

1. Tube Preparation



Step 1 – Cut the tube to length

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



Step 2 – Deburr and remove all sharp edges externally

- Angle the tube downwards to prevent filings entering the tube.
- Make sure the external surface of the tube end is smooth and free from burrs or sharp edges.



Step 3 – Use a pencil type deburrer on internal edges

- Make sure the internal surface of the tube end is smooth and free from burrs or sharp edges.



Step 4 – Thoroughly clean the tube ends and remove scratches

- Remove light scratches using Rothenberger Rovlies or similar cleaning pad to polish the tubing. Cleaning should be done radially to avoid creating scratches along the tube.
- Tube ends must be free from scratches, oxidation, dirt and debris not less than socket length.



- If deep scratches are still visible cut the tube back to a clean section.

2. Marking and Inserting Tube



Step 1 – 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.
- Check the O-rings are clean and free from debris.
- Additional >B< MaxiPro lubrication may be used to aid tube insertion.



Step 2 – Mark insertion depth

- 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 or fitting (if possible) while slipping it into the fitting.
- Mark the insertion depth on the tube.



Step 3 – 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.



Alternatively to Step 2 & 3 use 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 4 – Insert the tube fully into the fitting up to the tube stop

- To reduce the risk of dislodging the O-ring rotate the tube or fitting (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.

3. Pressing the Fitting



Step 1 – 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 bead on the fitting should fit centrally in the groove of the jaw.
- The jaws must be placed squarely on the fitting locating the groove on the bead.



Step 2 – Complete the joint with approved tool – press once only

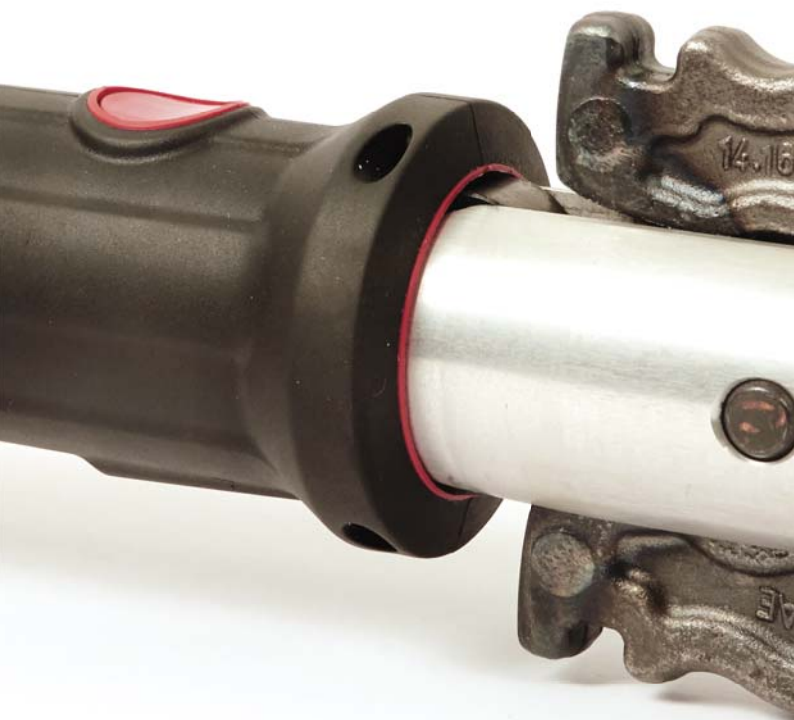
- Depress and hold the button to complete the pressing cycle.
- Pressing is complete when the jaws are fully closed and the piston retracts.
- Complete the press cycle once only – do not repress.

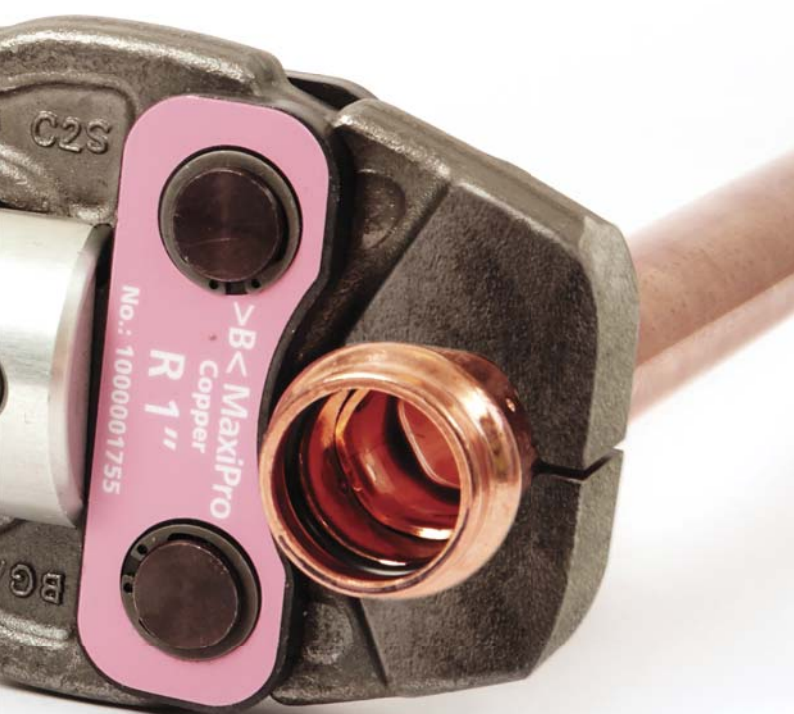


Step 3 – Mark Completed Joint

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

The Tool





15. Press tools and jaws

Romax compact model:



Application sizes: 1/4" to 1-1/8" >B< MaxiPro fittings

- Compact light weight design – one hand operation.
- CFT® - Technology for constant axial 19kN shearing force.
- Safety latch to ensure jaw cannot come out during operation.
- Easy to use LED status indication – flashing red when battery charge is low and will lock the machine, remains ON when tool has reached 10,000 cycles of use and requires servicing.
- Simple & safe operation design – hold start button – tool automatically stops once press cycle is complete.
- Safety yellow button – press to release pressure and stop press cycle.
- Convenient 10,000 cycle interval between service requirements.
- Head positioning up to 270° rotation – easy fitting in difficult locations.
- Li-Ion battery technology – long lasting operation between charges.

Specifications Romax compact

Battery voltage – 14.4 v

Battery capacity – 2.6Ah

Rated power consumption – 280Watts

Max piston force – 19kN

Pressing time – 5 secs (nominal)

Dimensions (L x W x H) – 380x70x90mm

Weight (less jaws) – 2.45 kg

Working range: Copper system 1/4" – 1 1/8"

Typical A-rate noise level – 71dB(A)

Battery re-charge time periods – 87 minutes

Approximate pressings per full charge – 140

15.1. Critical operating instructions - tool and jaw

Only operate the Rothenberger press tool and jaws as per instructions in your 'User Operating Manual, Instructions for Use'. Proper usage includes compliance with the operating manual, inspection and servicing conditions and adherence to all relevant safety regulations. The equipment must only be used by qualified trades persons that have a trained understanding on how to use the press tool and jaw system properly. Failure to do so will lead to safety risk, poor workmanship, and incorrect use of the press and jaw that is not covered under warranty. Only use Rothenberger press tools and jaws with compatible press fittings that have been tested and approved by Rothenberger and associated fitting and pipe manufacturers (>B< MaxiPro).

- Always start with a safety check, reminding yourself of the yellow emergency stop button to deactivate a press cycle.
- Charge battery fully before first use for optimal number of 'presses per charge'.

Continued on next page

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- LED flashes red to indicate when you have a flat battery.
- Insert battery correctly until it clicks into place and LED light flashes briefly to indicate contact made.
- Insert press jaw and close bolt down correctly.
Only use the correct jaw to tool to fitting combination.
- Open the jaw by squeezing from the base of the jaw NOT the front tip (it can crush your fingers!).
- Place jaw squarely on fitting. Align with bead.
- Engage the start button for a full press cycle.
Activate the press tool and jaw only on a fitting.
- Take the time to ensure the correct pipe preparation – cut pipe square, deburr, remove sharp edges and mark insertion depth. These pipe prep steps are critical for a correct press and quality workmanship.
- Follow all installation instructions supplied by the fitting and pipe manufacturers. Imperfect pipe joints must only be pressed again using a new fitting, DO NOT re-press the same fitting.
- During the press cycle, visually check that the press jaw fully closes at the end of the press cycle.
- After pressing, check the installation with appropriate testing equipment and ensure it is leak proof.

15.2. Regular maintenance instructions - tool & jaw

Tool – always clean and grease and store in its case

Your Rothenberger tool is one of the lightest and most ergonomically designed tools delivering the most consistent press force (CFT® - Constant Force Technology). With regular maintenance and service it generates up to 1.9 tonnes of force in your hand. The tool and jaw require regular care and maintenance.

- Clean and grease the piston ram and drive rolls ALWAYS after every use to maintain performance especially the internal guide rail OR all the 'moving metallic parts.'



- Do not expose power tools to rain or wet conditions. Always store in its case.
- Ensure the jaw locking bolt is closed correctly by fully inserting the bolt through the jaw and rotating the bolt arm down 180 degrees.



- Please note, the bolt is only secured when fully inserted and rotated into the downward position.

Continued on next page

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- Clean contact points on battery and only store battery in a charged state, so it's always ready for use.



- Do not attempt to force the press tool – it will do a better and safer job at the rate for which it was designed.
- Accidents are caused by poorly maintained press tools and jaws. Take the time to maintain the tool and jaws properly.
- Jaws must ALWAYS be cleaned after every use. Keep the inside jaw profile free of any grease and grit.



- Jaws must be maintained with liquid lubricant spray. Always store in case.

15.3. Servicing and warranty - tool and jaw

Rothenberger prides itself on leading edge design, the highest quality, and leading after-sale service support. With ownership of your Rothenberger tool comes our commitment to support you. We want to help you 'look after your tool', so you don't compromise your reputation. Only have your press and jaws inspected and serviced by a qualified Rothenberger Service Centre for high performance and safety.

- Quick Fix™ is the Rothenberger 'After Sales and Service' repair process across Australia and New Zealand.
- Comprehensive Spare parts are readily available locally to support your Rothenberger tool and jaws.
- Jaws will also be checked at the annual service interval for any damage, defects and general wear and tear that could affect the press performance or safety.

15.3.1. Warranty coverage

- After 1 year or 10,000 presses the LED lights up red after each press.
- A press cycle count will be made as part of your annual tool and jaw servicing and report.
- If a serial number sticker is damaged the warranty will be null and void.
- The warranty does not cover damage caused by incorrect use of the equipment.
- Tool 3 years, only with regular 1 year or cycle count servicing (like servicing your car!).
- Battery 12 months, Jaws 12 months.

15.3.2. Service and warranty process – Quick Fix™

- Return your Rothenberger press tool and jaw set to your local branch or call Rothenberger Customer Service (Toll Free) on 1800 186 657.
- Your details and serial number of your tool will be logged for a service and pick up will be quickly arranged.
- Expect 3-5 days (parts dependant) for your service. Your tools will be returned to you, or your local branch.
- Live status updates will be emailed and SMS to you and your local branch.
- Any additional repair work beyond the normal annual service will be quoted prior to commencement.

Design Considerations





16. 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 codes of practice:

- AS/NZS 5149.2:2016 Australian/New Zealand Standard™ Refrigerating systems
Part 2: Safety requirements for fixed applications.
- AS 4426:1997 Thermal insulation of pipe work, ductwork and equipment – Selection, insulation and finish.
- AS 1345-1995 Identification of the contents of pipes, conduits and ducts.
- The National Construction Code of Australia.
- Australia and New Zealand Refrigerant handling code of practice 2007
Part 1 – Self-contained low charge systems.
- Australia and New Zealand Refrigerant handling code of practice 2007
Part 2 – Systems other than self-contained low charge systems.
- The Australian Refrigeration and Air-conditioning Code of Good Practice Part 1 - Reduction of Emissions of Fluorocarbon Refrigerants in Commercial and Industrial Refrigeration and Air-conditioning Applications.

Nominal size	Nominal external pipe	Nominal external bead unpressed D
inches	mm	mm
1/4"	6.35	11.70
3/8"	9.52	15.80
1/2"	12.70	20.15
5/8"	15.90	23.85
3/4"	19.10	27.40
7/8"	22.30	31.45
1 "	25.40	34.70
1 1/8"	28.60	37.80

- The Australian Refrigeration and Air-conditioning Code of Good Practice Part 2 - Reduction of Emissions of Fluorocarbon in Residential Air-conditioning Applications.
- The Australian Refrigeration and Air-conditioning Code of Good Practice Part 3 - Reduction of Emissions of Fluorocarbon in Domestic Refrigeration Applications.

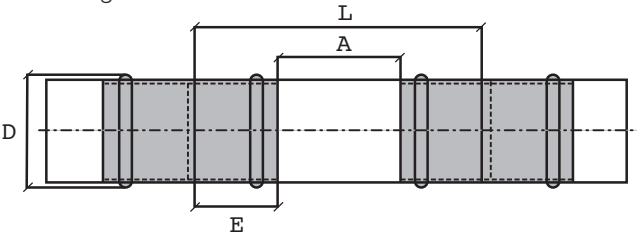
16.1. Pipework support:

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

- The National Construction Code of Australia.
- AS/NZS 5149.2:2016 Australian/New Zealand Standard™ Refrigerating systems.
Part 2: Safety requirements for fixed applications.

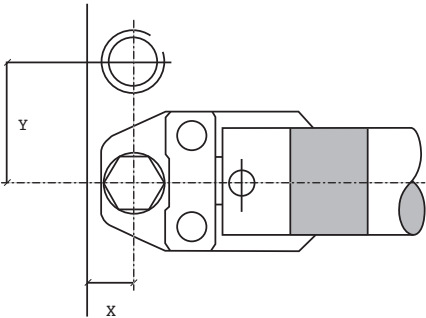
16.2. Insertion depth and minimum distances between pressings:

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

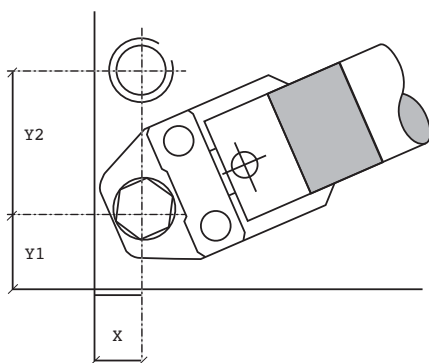


Minimum distance A	Minimum pipe length L	Insertion depth E
mm	mm	mm
10	46.0	18.0
10	47.0	18.5
15	53.0	19.0
15	59.0	22.0
20	66.0	23.0
20	70.0	25.0
25	73.0	24.0
25	78.0	26.5

16.3. Space required for the pressing process:



Space required for pressing, wall and pipe clearances		
External pipe	X	Y
Inches	mm	mm
1/4"	30	55
3/8"	30	55
1/2"	25	55
5/8"	25	55
3/4"	25	55
7/8"	30	55
1"	30	55
1 1/8"	35	55



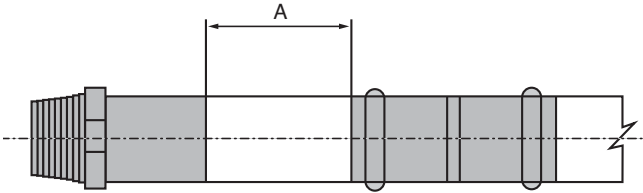
Space required for pressing, wall corner and pipe			
External pipe	X	Y1	Y2
Size mm	mm	mm	mm
1/4"	40	40	100
3/8"	40	40	105
1/2"	40	40	105
5/8"	40	40	105
3/4"	40	40	105
7/8"	55	55	110
1"	60	60	115
1 1/8"	60	60	115

16.4. Pipework protection:

Copper has a high resistance against corrosion. However, in some cases external protection may be necessary against corrosive conditions. Refer to:

- The National Construction Code of Australia.
- AS/NZS 5149.2:2016 Australian/New Zealand Standard™ Refrigerating systems Part 2: Safety requirements for fixed applications.
- AS 4426:1997 Thermal insulation of pipework, ductwork and equipment – selection, insulation and finish.

16.5. Minimum distance between fittings:



Localised annealing

To ensure proper sealing of both the brazed and >B< MaxiPro fitting the following minimum distances must be maintained between the two fittings.

Tube size	Minimum clearance (A)
Inches	mm
1/4"	10
3/8"	10
1/2"	15
5/8"	15
3/4"	20
7/8"	20
1"	25
1 1/8"	25

Note: A - clearance between fitting ends

Brazing near >B< MaxiPro joint

Caution – Brazing near to >B< MaxiPro 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 (such as Hot Block), to prevent heat transfer to the press fitting during brazing.

Tube size	Minimum clearance (A)
Inches	mm
1/4"	250
3/8"	300
1/2"	350
5/8"	450
3/4"	500
7/8"	600
1"	650
1 1/8"	700

Note: A - clearance between fitting ends

Note: It is important that there is no residual solder or other foreign debris on the tubing to be inserted into the >B< MaxiPro fitting. The surface condition on the area of press joint should be clean and free from debris.

16.6. Earth continuity:

>B< MaxiPro fittings maintain earth continuity without the need for additional continuity straps.

16.7. Pipework identification and insulation:

All pipework must be installed in accordance with:

- AS 4426–1997 Thermal insulation of pipework, ductwork and equipment– selection, installation and finish.
- AS 1345-1995 Identification of the contents of pipes, conduits and ducts.

16.8. 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:

- AS/NZS 5149 Refrigerating systems and heat pumps – Safety and environmental requirements: Parts 1 to 4,
- Australia and New Zealand Refrigerant handling code of practice 2007 Part 1 – Self-contained low charge systems.
- Australia and New Zealand Refrigerant handling code of practice 2007 Part 2 – Systems other than self-contained low charge systems.
- The Australian Refrigeration and Air-conditioning Code of Good Practice Part 1 - Reduction of Emissions of Fluorocarbon Refrigerants in Commercial and Industrial Refrigeration and Air-conditioning Applications.
- The Australian Refrigeration and Air-conditioning Code of Good Practice Part 2 - Reduction of Emissions of Fluorocarbon in Residential Air-conditioning Applications.
- The Australian Refrigeration and Air-conditioning Code of Good Practice Part 3 - Reduction of Emissions of Fluorocarbon in Domestic Refrigeration Applications.

Tightness testing should be completed in line with the above standards and codes of practice. Vacuum evacuation should follow to remove air, moisture, and non-condensable gases.

- Important factors for the vacuum process;
 - Test equipment must be well maintained, calibrated and periodically replaced.
 - Replace the oil in the vacuum pump at regular intervals.
 - Nylog should be used on the test connections to minimise joint leaks.
 - Small systems that contain low volumes will experience faster changes in pressure, this does not mean the system is leaking.
- If your system fails to achieve or hold a vacuum.

Failure to achieve a vacuum: If you can't achieve the required vacuum, you either have a leak, moisture in the system or a problem with the vacuum pump. The pump may not be in good condition, the oil may need to be changed, the gas ballast valve is open or the pump does not have sufficient flow rate for the system.

Failure to hold a vacuum: If you can't hold a vacuum it may be for one of the following reasons;

There is a leak; in this case, the pressure will rise continuously when the pump is isolated.

The leak could be at the connections to the pump or test equipment. Isolate from the pipework and apply Nylog to all test equipment connections to improve the seal.

Alternatively, the leak could be in the system. Leaks should have been identified and fixed during the pressure leak test procedure. An ultrasonic leak detector can help to identify leaks in the system under vacuum.

There is moisture in the system. Extend the evacuation period.

There is still refrigerant dissolved in the compressor oil.

When the pump is isolated the pressure will rise and plateau.

Extend the evacuation period.

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

Care must be taken to ensure a >B< MaxiPro joint will not be close enough to the liquid charging point that the temperature of the joint drops below -40°C when charging the system.

16.9. Tube compatibility table:

		Wall	
Tube O/D		AS/NZS	
Inches	mm	Annealed copper coil	
1/4	6.35	0.81	0.91
3/8	9.52	0.81	0.91
1/2	12.70	0.81	0.91
5/8	15.88	0.91	1.02
3/4	19.05	0.91	1.14
7/8	22.22	-	
1	25.40	-	
1 1/8	28.58	-	
R410A high pressure compatible			

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

thickness nominal (mm)				
1571				
Half hard copper straight		Hard copper straight		
-	-	0.81	0.91	-
-	-	0.81	0.91	-
0.81	0.91	-		
0.91	1.02	-		
0.91	1.02	-	1.14	-
-		1.22	1.40	1.63
-		1.22	1.63	-
-		1.22	1.63	1.83

FAQs

17. Frequently asked questions

1. How long has Conex Bänninger been around?

Since 1909.

2. Where are the products manufactured?

The products are manufactured in Europe.

3. Does >B< MaxiPro work on both hard and soft copper?

Yes, >B< MaxiPro is a press fitting system for use with hard, half hard or annealed copper tube conforming to AS/NZS 1571*. Mechanical joints shall not be used on annealed temper copper tube in sizes larger than 7/8 inch OD size per International Mechanical Code IMC and 3/4 inch nominal size per Uniform Mechanical Code (UMC).

*Please refer to >B< MaxiPro - Tube compatibility table, section 16.9.

4. Can you use >B< MaxiPro to crimp to aluminium, steel, or stainless steel?

No, >B< MaxiPro is specifically designed for copper to copper connections. Connecting to dissimilar metals can cause formicary corrosion issues that could cause a failure.

5. What is the guarantee on >B< MaxiPro fittings?

The product has a 15 year guarantee from the date of purchase. Please refer to full terms and conditions.

6. What material is the O-ring made of?

The O-ring is manufactured from Hydrogenated Nitrile Butadiene Rubber (HNBR).

7. What is the expected life of the O-ring in the system?

The O-ring is manufactured by Germany's leading producer of O-rings. 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 15 year guarantee from the date of first purchase.

8. Are there any storage issues, including where the fittings are stored in the vehicles exposed to extremes of high or low temperature?

No, the product is not subject to degradation under normal storage conditions. Provided it is kept in original packaging and not exposed to direct sunlight for long periods. Please see section 11.0 for details regarding fitting storage.

9. What refrigerants are approved for use with >B< MaxiPro?

>B< MaxiPro is approved for use with R1234yf, R1234ze, R32, R134a, R404A, R407C, R407F, R410A, and R507.

10. What oils are approved for use with >B< MaxiPro?

>B< MaxiPro is approved for use with POE, PAO, AB and mineral oil. The O-ring has been tested successfully with PAG oil however PAG oil should not be used with copper systems due to potential for corrosion of the copper material.

11. If a fitting leaks on installation, can you braze the fitting in rather than cutting out the joint and having to replace missing pipe?

No, if a fitting that has been pressed is leaking, the fitting must be cut out and replaced. You should not attempt to braze the fitting you may melt the O-ring material and thus introduce contaminants into the system that could cause other system issues.

12. Is there a concern about ice building up and then thawing under the fitting in a horizontal or vertical configuration?

No, >B< MaxiPro has been thoroughly freeze / thaw tested.

13. Are there any concerns with corrosion where installations are made in coastal areas or with respect to cleaning agents?

No, >B< MaxiPro has been Acid Salt Spray tested to ASTM G85. As with all copper installations exposure to ammonia should be avoided.

14. How do you know when the tool needs to be serviced?

The tool has a red LED which will be permanently on when the Romax Compact has completed 10,000 cycles.

15. What is the expected life time of the jaws - how do you know when the jaw needs to be replaced?

Have your jaw checked at the latest 1 year after the purchase or after 10,000 pressings (according to which occurs first) by an authorised Rothenberger testing centre, and repeat these checks at the latest 1 year or another 10,000 pressings after the previous inspection. During jaw inspection the jaws are checked for operating and functional safety and wear parts (e.g. springs) are exchanged. Jaws which are functionally and operationally safe are returned to you.

16. Are the >B< MaxiPro jaws compatible with any other commercially available crimping tool?

Only Rothenberger tools are approved for use with >B< MaxiPro.

17. Do you have a solution for crimping onto flared tubing for example tubing coming out of the condenser and evaporator on residential units?

No, we do not have a specific product designed for crimping over flared tubing. However, where there is at least 50mm of straight copper tubing after the flared end and it is accessible with the jaws, we suggest that you cut the flared end off and crimp directly to the tube.

18. What standards does >B< MaxiPro comply with?

- >B< MaxiPro fittings are:
- UL 207 certified, certificate no. SA44668
- UL 109-7 Pull Test, compliant
- UL 1963-79 Tests of Gaskets and Seals used in Refrigerant Systems, compliant
- ISO 5149-2, compliant
- ASTM G85, compliant
- AS/NZS 5149.2 compliant

19. What pipe diameter is acceptable if a crimp joint is going to be made with >B< MaxiPro?

>B< MaxiPro is a press fitting system for use with hard, half hard or annealed copper tube conforming to AS/NZS 1571*. Mechanical joints shall not be used on annealed temper copper tube in sizes larger than 7/8 inch OD size per International Mechanical Code IMC and 3/4 inch nominal size per Uniform Mechanical Code (UMC).

*Please refer to >B< MaxiPro - Tube Pressure Compatibility Table, section 16.9.

20. 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 imperfections adjacent to the crimp area such as scratches, incise marks, and tubing that is not round must be avoided.

21. The product specifications state that the application temperature limits are -40°C to 121°C. What happens if we go beyond that limit?

>B< MaxiPro is suitable for continuous operating at temperatures between -40 and +121°C. It will also cope with short term excursions up to 140°C. Operating at temperatures outside this range is not acceptable and may lead to failure.

22. How clean are >B< MaxiPro fittings?

>B< MaxiPro fittings comply with the cleanliness standards as required in the following Copper Tube Standards AS/NZS 1571.

23. How do the fittings cope with vibration from the system?

Vibration is a recognised cause of leaks and the system must be designed and installed to comply with all local standards and codes of practice which aim to minimise vibration.

>B< MaxiPro fittings have been extensively tested to ensure the joint will not leak as a result of system vibration and complies with the following standards:

- ISO 14903 temperature, pressure cycling and vibration test
- UL 109, vibration
- UL 207 fatigue shock test

24. Will the O-ring be damaged if acid develops in the refrigeration system?

If the system is installed, used and serviced in line with; Australia and New Zealand Refrigerant handling code of practice 2007 Part 1 – Self-contained low charge systems and Australia and New Zealand Refrigerant handling code of practice 2007 Part 2 – Systems other than self-contained low charge system, acid should not form in the system.

25. When pressed on small size fittings, particularly elbows a small amount of rotational movement can be induced to the joint. Will this affect the security of the joint?

No, some rotational movement is quite acceptable, the joint will not leak nor will it come apart under the pressure loading and during system operation. Some joint movement is good as it will allow for expansion and contraction in the pipe-work system.

26. If my system fails to achieve or hold a vacuum what should I do?

Failure to achieve a vacuum: If you can't achieve the required vacuum, you either have a leak, moisture in the system or a problem with the vacuum pump. The pump may not be in good condition, the oil may need to be changed, the gas ballast valve is open or the pump does not have sufficient flow rate for the system.

Failure to hold a vacuum: If you can't hold a vacuum it may be for one of the following reasons;

There is a leak; in this case, the pressure will rise continuously when the pump is isolated.

The leak could be at the connections to the pump or test equipment. Isolate from the pipework and apply Nylog to all test equipment connections to improve the seal.

Alternatively, the leak could be in the system. Leaks should have been identified and fixed during the pressure leak test procedure. An ultrasonic leak detector can help to identify leaks in the system under vacuum.

There is moisture in the system. Extend the evacuation period.

There is still refrigerant dissolved in the compressor oil. When the pump is isolated the pressure will rise and plateau. Extend the evacuation period.

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

18. Abbreviations

ISO 9001	Certified Quality Management System
AS/NZS 1571:1995	Australian and New Zealand Standard for Copper – Seamless tubes for air conditioning and refrigeration
AS/NZS 5149.1:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Definitions, classification and selection criteria
AS/NZS 5149.2:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Part 2: Design, construction, testing, marking and documentation
AS/NZS 5149.3:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Part 3: Installation site
AS/NZS 5149.4:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Part 4: Operation, maintenance, repair and recovery
HNBR	Hydrogenated Nitrile Butadiene Rubber
UNS	Unified Numbering System
POE oil	Polyol Ester Oil
POA oil	Poly-alpha-olefin Oil
AB oil	Alkyl Benzene Oil
UL 207	Standard for Refrigerant-Containing Components and Accessories, Nonelectrical
UL 109 -7	Standard for Tube Fittings for Flammable and Combustible Fluids, Refrigeration Service, and Marine Use. Section 7 Pull Test
UL 1963 – 79	Standard for Refrigerant Recovery/Recycling Equipment. Section 79 Tests of Gaskets and Seals Used in Refrigerant Systems

ISO 5149-2	Refrigerating systems and heat pumps - Safety and environmental requirements - Part 2: Design, construction, testing, marking and documentation.
IMC	International Mechanical Code
UMC	Universal Mechanical Code
ASTM G85 - 11	Standard Practice for Modified Salt Spray (Fog) Testing
LED	Light Emitting Diode
CFT	Constant Force Technology
SMS	Short Message Service

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