

Conex | Bänninger

>B< MaxiPro

<https://conexbanninger.com/en-us/>

MAXI
S

QUICK
STRONG
DURABLE

An innovative press system
suitable for **AIR CONDITIONING**
& **REFRIGERATION** applications.

Engineering Specification February 2022

PROJECT NAME:	
PROJECT REF:	
ENGINEER:	
DATE:	
CONTRACTOR:	
RFI/RPA NUMBER:	

Engineering Specification

1.0 System description

>B< MaxiPro is a press fitting system that eliminates the need for hot works on site. It can be used on standard hard, half hard or annealed copper tube conforming to ASTM-B280, ASTM-B88 type's K or L. For full details please see Tube Compatibility table section 8.0.

>B< MaxiPro provides a secure, permanent leak proof joint for air conditioning and refrigeration applications.

2.0 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: >B< MaxiPro is a mechanical joint, thus eliminating the need for nitrogen purge during the joining 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 permanent and secure joint.

High quality O-ring: A 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.

Fitting identification: Fittings are marked >B< MaxiPro and identified with a pink mark indicating their suitability for high pressure (up to 700 psi) air conditioning and refrigeration applications.

Electrical continuity: Maintains ground continuity without the need for additional ground continuity straps.

Certification: >B< MaxiPro fittings are UL 207 recognized and listed, refrigerant fitting report reference SA44668, approved use for field and factory installations.

Field proven: Press fit technology, field proven over two decades and millions of installed fittings worldwide.

Warranty: >B< MaxiPro is covered by a fifteen (15) year limited warranty. This warranty will be void if not professionally installed by a trained and certified >B< MaxiPro installer*.

Please refer to <https://conexbanninger.com/en-us/> for full terms and conditions.

Support: Backed by Conex Bänninger's experienced technical support and customer service team.

Compact tooling: Light compact tooling provides easy access to tightly spaced tube runs.

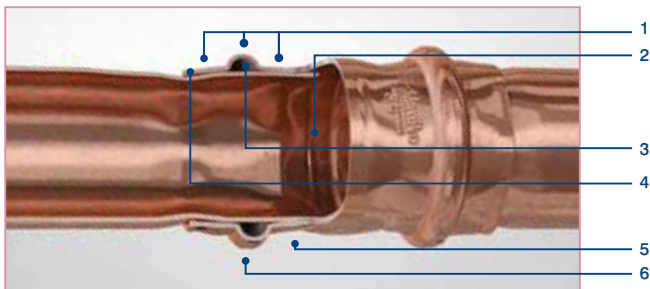
Tooling concept: Only specially designed jaws as manufactured by ROTHENBERGER are approved for use with >B< MaxiPro.

For full list of recommended and other compatible tools see sections 14.0 and 15.0.

*All certified >B< MaxiPro installers must have participated in and passed the requisite Conex Universal Ltd., >B< MaxiPro product course, or have otherwise been approved by Conex Universal Ltd. to use and install the >B< MaxiPro product. In either case, all certified >B< MaxiPro installers must have valid training certificates, which can be made available for proof of certification upon request.

3.0 Technology 3-Point Press

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



1. Three press points, one each side of the bead and one press point compressing the O-ring.
2. Tube stop.
3. HNBR O-ring.
4. Hook.
5. Fitting socket.
6. Bead.

4.0 Product range

MPA5001 90° Street Bend	MPA5002 90° Bend	MPA5002L Long 90° Bend	MPA5041 45° Obtuse Elbow
From: 3/8" To: 1 3/8"	From: 1/4" To: 1 3/8"	From: 1/2" To: 1 3/8"	From: 1/4" To: 1 3/8"
MPA5240 Reducing Coupler	MPA5240L Long Reducing Coupler	MPA5243 Fitting Reducer	MPA5270 Straight Coupler
From: 3/8" x 1/4" To: 1 3/8" x 1 1/8"	From: 3/8" x 1/4" To: 1" x 5/8"	From: 3/8" x 1/4" To: 1 3/8" x 1 1/8"	From: 1/4" To: 1 3/8"
MPA5270L Long Coupler	MPA5275L Long Repair Coupler	MPA5285G SAE45 Copper Flare - Brass Nut	MPA5286G SAE45 Stainless Flare - Brass Nut - Copper Washer
From: 1/4" To: 1 1/8"	From: 1/4" To: 1 3/8"	From: 1/4" x 1/4" To: 3/4" x 3/4"	From: 1/4" x 1/4" To: 3/4" x 3/4"
MPA5287 Copper Flare Washer	MPA5289G SAE45 Stainless Flare - Stainless Nut - Copper Washer	MPA5301 Stop End	MPA5T Equal Tee
From: 1/4" To: 3/4"	From: 1/4" x 1/4" To: 3/4" x 3/4"	From: 1/4" To: 1 3/8"	From: 1/4" To: 1 3/8"
MPA5698 P-Trap*	MPA Depth Gauge Depth Gauge & Pen	MPABPSOIL Press Fitting Lubricant	
From: 5/8" To: 1 1/8"	From: 1/4" To: 1 3/8"	100 ml	

*Note: Item with an * is not UL approved.

5.0 Technical Data

Table 1

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", 1 3/8"
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 / 48 bar / 4800 kPa
Burst pressure >3 x maximum operating and abnormal pressure	>2100 psi / >144 bar / >14400 kPa
Leak tightness	Helium $\leq 7.5 \times 10^{-7}$ Pa.m ³ /s at +20 °C, 10 bar
Vacuum	200 microns
O-ring temperature range	-40 °F to 284 °F / -40 °C to 140 °C
UL 207 recognized and listed continuous operating temperature	-40 °F to 250 °F / -40 °C to 121 °C

6.0 Approvals, standards, test and code compliance

>B< MaxiPro fittings are UL 207 recognized and listed, refrigerant fitting report reference SA44668, 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.
- 2021, 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC), certified, ICC-ES, PMG-1440.
- 2021, 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC), certified, ICC-ES, PMG-1440.
- 2021, 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC), certified, ICC-ES, PMG-1440.
- 2019, 2016, 2013, and 2010 California Mechanical Code (CMC), 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).

7.0 Compatible refrigerants

Table 2

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	✓

Table 2 cont.

Refrigerant	GWP*	Safety Group	Compatible
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-515B	299	A1	✓
R-718	0	A1	✓
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	A3**	✓
R-600A	3	A3**	✓
Medium			Compatible
HYCOOL 20			✓

Note: >B< MaxiPro fittings are NOT suitable for R-717, R-723, R-764, R-744, R-22 refrigerants.

* 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 bylaws may be applicable.

Please check our website
<https://conexbanninger.com/en-us/> for updates.

8.0 Tube compatibility

Table 3

>B< MaxiPro fitting size	Tube size Nominal OD		ASTM B280 - ASTM B88 - ASTM B743										
			Nominal wall thickness										
	Inch	mm	0.025"	0.030"	0.031"	0.035"	0.040"	0.042"	0.045"	0.049"	0.050"	0.055"	0.065"
			0.64	0.76	0.81	0.89	1.02	1.07	1.14	1.24	1.27	1.40	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									■		■
1 3/8	1.375"	34.93										■	■

● Coil lengths in annealed condition. ■ Straight lengths in hard/half hard condition.

Notes

- Ensure coil tubes are in round condition. Oval tubes should be rerounded.
 - Hardness tolerance as per approved standards in the table above.
 - It is the engineer's responsibility to ensure that the tube selected is compatible with >B< MaxiPro and meets the operating pressure requirements of the system.
- Please check our website: <https://conexbanninger.com/en-us//> for updates.

9.0 Fittings storage

>B< MaxiPro fittings do not require special storage conditions. However to protect the HNBR O-ring a few simple precautions should be taken.

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

As ozone is particularly harmful to rubber, storage rooms should not contain any equipment that is capable of generating ozone. 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.

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

10.0 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 bylaws 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.
- 2021, 2018, 2015, 2012, 2009 and 2006 International Mechanical Code (IMC).
- 2021, 2018, 2015, 2012, 2009 and 2006 International Residential Code (IRC).
- 2021, 2018, 2015, 2012, 2009 and 2006 Uniform Mechanical Code (UMC).
- 2019, 2016, 2013, and 2010 California Mechanical Code (CMC), Certified, ICC-ES, PMG-1440.

11.0 Marking and cleanliness

Each fitting is marked >B< MaxiPro, 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.

12.0 Environmental statement

IBP Group LLC is committed to protecting the local and global environment and to minimize environmental impacts concerning its activities, products, and services. To achieve this Conex Universal Limited operates an Environmental Management System (EMS) in accordance with the requirements of ISO 14001:2015.

13.0 Installation process



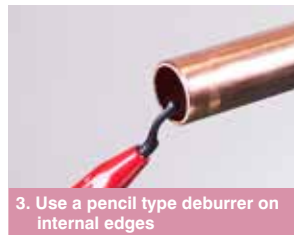
1. Cut the tube to length

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

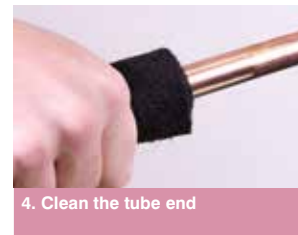


2. Deburr and remove all external sharp edges

- 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.



3. Use a pencil type deburrer on internal edges



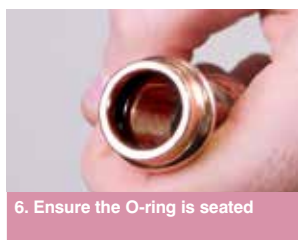
4. Clean the tube end

- Thoroughly clean the tube end using ROTHENBERGER ROVLIES or similar cleaning pad in a rotating action.
- Tube ends must be free from scratches, oxidation, dirt and debris.



5. Check for defects

- If deep scratches are still visible, cut the tube back to a clean section and prepare the tube end again.



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.
- It is good practice to add a small amount of Conex Bänninger press fitting lubricant to the O-rings to aid tube insertion.



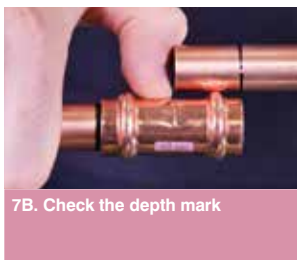
7A. Mark insertion depth on tube using depth gauge

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



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.



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.



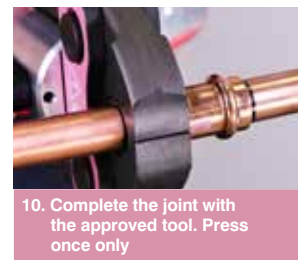
8. Insert the tube fully into the fitting. Ensure tube is fully inserted prior to pressing

- 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.



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.



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.



11. Mark the completed joint

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

Table 4

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		

14.0 Press tool and jaw compatibility - 24 kN

Conex Bänninger recommends the use of ROTHENBERGER 24 kN press tools in combination with >B< MaxiPro jaws. Only ROTHENBERGER 24 kN >B< MaxiPro press jaws are approved for use with >B< MaxiPro fittings as shown in tables 5 and 6.

Other 24 kN press tools with compatible press jaw interface may be used in combination with ROTHENBERGER >B< MaxiPro jaws. See tables 7 and 8 for recommended and other compatible press tools.

All tools and jaws used must be maintained and serviced in line with manufacturers recommendations.

Table 5

Approved >B< MaxiPro 24 kN press jaws		
Size	Manufacturer	Serial No.
1/4"	ROTHENBERGER	No. 1000002484
3/8"	ROTHENBERGER	No. 1000002485
1/2"	ROTHENBERGER	No. 1000002486
5/8"	ROTHENBERGER	No. 1000002487
3/4"	ROTHENBERGER	No. 1000002488
7/8"	ROTHENBERGER	No. 1000002489
1"	ROTHENBERGER	No. 1000002490
1 1/8"	ROTHENBERGER	No. 1000002491

Table 6

Approved >B< MaxiPro 24 kN press jaw set		
Size	Manufacturer	Serial No.
1/4" – 7/8"	ROTHENBERGER 6 jaw set	No. 1000002602

Table 7

Recommended 24 kN press tools		
Manufacturer	Model	Compatible
ROTHENBERGER	ROMAX® TT US	✓

Table 8

Other compatible 24 kN press tools		
Manufacturer	Model	Compatible
MILWAUKEE	M12	✓
RIDGID	RP 241	✓
RIDGID	RP 240	✓
RIDGID	RP 210-B	✓
RIDGID	RP 200-B	✓

Note: For latest information on press tool and jaw compatability information for >B< MaxiPro please visit:
<https://conexbanninger.com/en-us/>.

15.0 Press tool and jaw compatibility - 32 kN

Conex Bänninger recommends the use of ROTHENBERGER 32 kN press tools in combination with >B< MaxiPro jaws. Only ROTHENBERGER 32 kN >B< MaxiPro jaws are approved for use with >B< MaxiPro fittings as shown in tables 9 and 10.

Other 32 kN press tools with compatible press jaw interface may be used in combination with ROTHENBERGER >B< MaxiPro jaws. See tables 11 and 12 for recommended and other compatible press tools.

All tools and jaws used must be maintained and serviced in line with manufacturers recommendations.

Table 9

Approved >B< MaxiPro 32 kN press jaws		
Size	Manufacturer	Serial No.
1/4"	ROTHENBERGER	No. 1000001889
3/8"	ROTHENBERGER	No. 1000001890
1/2"	ROTHENBERGER	No. 1000001891
5/8"	ROTHENBERGER	No. 1000001892
3/4"	ROTHENBERGER	No. 1000001893
7/8"	ROTHENBERGER	No. 1000001894
1"	ROTHENBERGER	No. 1000001895
1 1/8"	ROTHENBERGER	No. 1000001896
1 3/8"	ROTHENBERGER	No. 1000002943

Table 10

Approved >B< MaxiPro 32 kN press jaw set		
Size	Manufacturer	Serial No.
1/4" – 1 1/8"	ROTHENBERGE 8 jaw set	No. 1000002207
1/4" – 7/8" & 1 1/8"	ROTHENBERGER 7 jaw set (excluding 1")	No. 1000002206

Table 11

Recommended 32 kN press tools		
Manufacturer	Model	Compatible
ROTHENBERGER	ROMAX® 3000	✓
ROTHENBERGER	ROMAX® 3000 AC	✓
ROTHENBERGER	ROMAX® 4000	✓
ROTHENBERGER	ROMAX® AC ECO	✓

Table 12

Other compatible 32 kN press tools		
Manufacturer	Model	Compatible
Conel	PM2	✓
Dewault	DCE200	✓
Hilti	NPR 032 IE-A22	✓
Klauke	UAP2, UAP3L, UAP4L, UAP332, UNP2, UP2EL14	✓
Milwaukee	M18 Force Logic	✓
Nibco	PC-100, PC-280	✓
Novopress	ECO202, ACO202, ECO203, ACO203	✓
Rems	Akku-Press, Power-Press	✓
Ridgid	RP 320, RP 330, RP 330-B, RP 330-C, RP 340, RP 350, 320-E, CT400	✓
Uponor	UP110	✓
Virax	Viper P25+, Viper P30+	✓

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>B< Press Solar

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>B< Press XL

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>B< Press Carbon

Conex | Bänninger
>B< Press Inox

Conex | Bänninger
>B< MaxiPro

Conex | Bänninger
>B< ACR

K65

Conex | Bänninger
<A> Press Inox

Conex | Bänninger
>B< Push

Conex | Bänninger
>B< Sonic

Conex | Bänninger
>B< Oyster

Conex | Bänninger
>B< Flex

Conex | Bänninger
Triflow Solder Ring

Conex | Bänninger
Delcop End Feed

Conex | Bänninger
Delbraz

Conex | Bänninger
Medical Gas

Conex | Bänninger
Valves

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Conex | Bänninger
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OEM Solutions



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