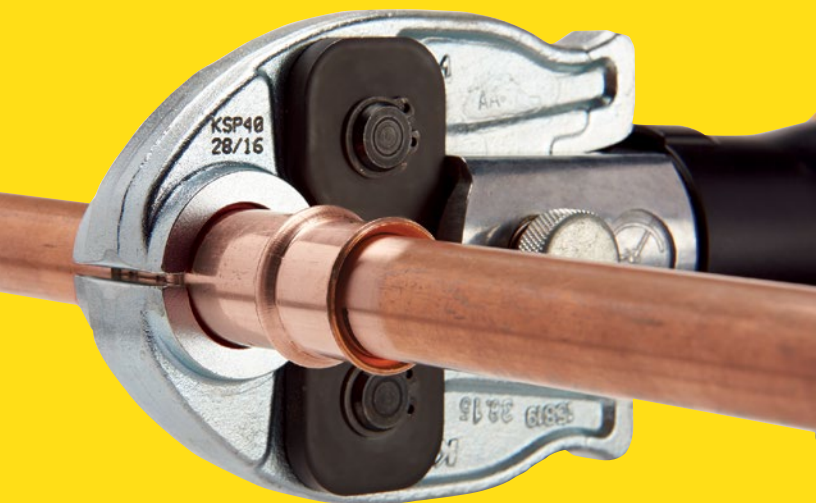


POCKET GUIDE



Original. Patented. Proven.

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Introduction.....	3
Instructions.....	4-10
Approved Refrigerants.....	11
Couplings.....	12
Slip Couplings.....	13
90° Elbows.....	14
90° Street Elbows.....	15
45° Elbows.....	16
Tees.....	17
Reducers.....	18
Reducing Bushings.....	19
SAE/Euro Flares.....	20
Caps.....	21
Ancillary Products.....	22-24
Tools & Jaws.....	25-27
Technical Data.....	28-29
FAQs.....	30-35

SAFETY INSTRUCTIONS

RLS fittings are only to be installed with RLS approved press tools and jaws. These are commercial and industrial tool and jaw sets — read the tool manuals in complete detail. Proper training is required to operate.

▲ WARNING



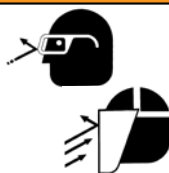
- Follow all instructions.
- Failure to follow all instructions may result in property damage, serious injury or death.
- Installation should only be done by a certified/qualified person.
- Do not perform any work on a pressurized system.

▲ WARNING



- Only use RLS fittings with compatible refrigerants.
- Using incompatible refrigerants may damage the system, and/or result in serious injury or death.

▲ WARNING



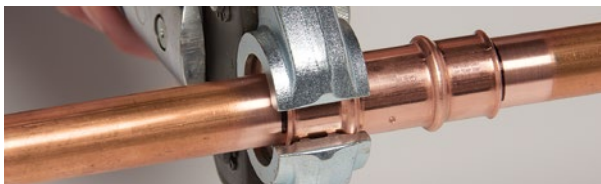
- Users must use personal protection during the installation of RLS fittings.
- Wear safety glasses or face shield when installing RLS fittings.
- Failing to use safety glasses or face shield may result in serious personal injury or death.

As easy as 1-2-3!

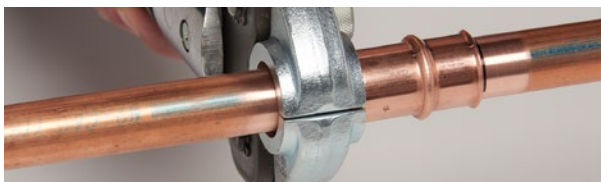
RLS Press Fittings offer a simple, effective and economical method to create leak-free copper tube connections. The RLS pressing process is very straightforward, and can be completed with minimal training. Copper tube ends are first prepped the same way as with brazing. Then, in just 10 seconds, the press tool creates a permanent and reliable mechanical joint without the dangers of heat or flammable gas.



1. Insert the tube in the fitting



2. Align the jaws



3. Activate the battery-powered tool

THE RLS ADVANTAGE

- Connects in 10 seconds
- UL listed to 700 psi
- Huge labor and time savings
- Less equipment required
- Safer conditions, no fire hazards
- No hot-work permits
- No fire spotter
- No need to nitrogen purge
- More flexible access to job sites
- 10-year limited warranty*

*See rapidlockingsystem.com for complete details.

Prepare Tool and Installation Aids

1. Make sure that all the tools and installation aids are available prior to beginning installation.

The following list is to be used as a reference:

- RLS fitting (Figure 1)
- RLS approved press tool and jaws – sized appropriately (Figure 2)
- RLS installation aids (Figure 3)
 - Deburring tool
 - Permanent marker
 - Tube cutter
 - RLS crimp gauge
 - RLS depth gauge
 - Abrasive pad
 - Brush



Figure 1



Figure 2

Inspect Fitting and Tube

2. To ensure the integrity of the joint, visually determine if the O-rings are present. Inspect the O-rings for obvious damage such as nicks or tears. Caution: If an O-ring appears to be damaged, is out of position, or is missing, **DISCARD OLD FITTING AND USE A NEW ONE.**
3. Perform a visual and tactile inspection of the tubing for surface imperfections referenced in ASTM B280, B88 or B1003 and the *Copper Tube Handbook* published by the Copper Development Association (CDA). Imperfections in and adjacent to the crimp or seal area could inhibit the joint integrity. These imperfections may include, but are not limited to:
 - Surface scratches
 - Incise marks (a required permanent mark of the tube manufacturer's name or logo)
 - Out of round (oval) on the cut ends
 - Dirt or debris
 - Items that may interfere with the O-ring

Should any of the above situations be identified, select a different area of the tubing. If necessary, cut off the portion with the imperfections.

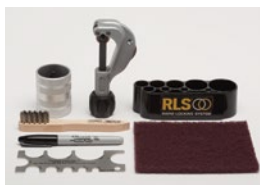
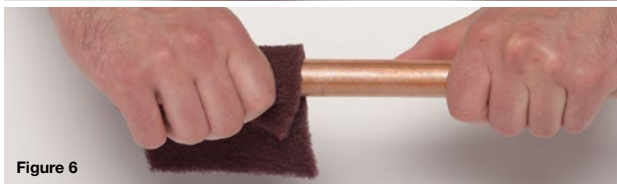
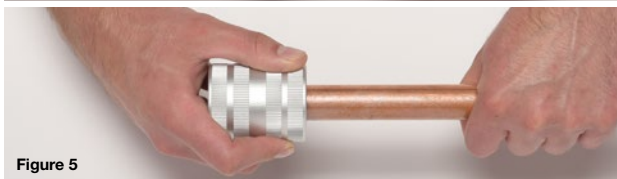
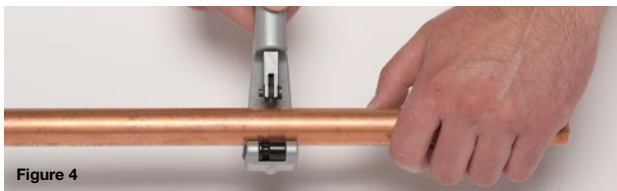


Figure 3



Cut Tube

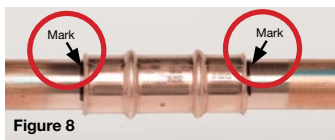
4. Cut the copper tube using the supplied or similar tube cutter (Figure 4). Ensure tube section to be crimped is straight. Caution: Do not proceed if the tube is cut at any visible angle other than 90 degrees or if the tube is not straight. Do not use a worn or damaged tube cutter, which can damage the tube and compromise the installation. This may lead to injury, equipment damage or failure of the system.

Prepare Tube

5. Use the deburring tool to remove any residual burrs from the outside and inside of the tube (Figure 5). Visual and tactile inspection should indicate no sharp edges or burrs remain. This is critical to avoid damaging the O-ring.
6. Use the included abrasive pad or adequate substitute (e.g. sand paper or sand cloth) to clean the end of the tubes to be joined (Figure 6). Tube ends should be free and clear of oxidation, dirt and debris. The surface should appear bright and shiny. Do not drop the tube, as this may cause damage and lead to improper installation. If the tube has been dropped, inspect it carefully and discard the tube if any damage is found.

Connect Tube

- Use the supplied depth gauge (Figure 7) or table below to mark inserted tube for insertion depth. Each tube must be marked to the correct insertion depth every time.
- Push fitting onto tube and continue until a hard stop is felt or the insertion marks are aligned with the end of the fitting. Make sure the tube is completely inserted into the fitting using the marks made in Step 7 (Figures 8 & 9).



Minimum Insertion Depth

Fitting Size	1/4" – 3/8"	1/2" – 1-1/8"	1-1/4" – 1-3/8"
Depth (in)	1	1-1/4	1-1/2
Depth (mm)	25.4	31.8	38.1

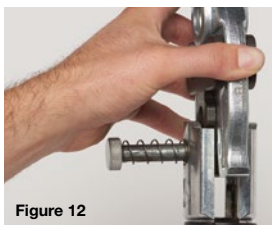
Note: It is possible that tube may be fully inserted and the marks may still be slightly visible, as a result of the dimple and the accuracy of marks. If required to ease insertion, add a small amount of refrigerant compatible POE lubricant to the end of the tube being inserted.

Note: Fitting installation should be relatively easy with little resistance felt. If it seems overly difficult to install the fitting, remove from tube and check to make sure the O-ring hasn't been unseated. If this is the case, discard the fitting and use a new, replacement fitting.

⚠ WARNING

- Only RLS approved tools and jaws should be used to install RLS fittings.
- Failing to use the RLS approved jaws may result in property damage, serious injury or death.

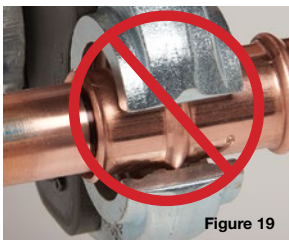
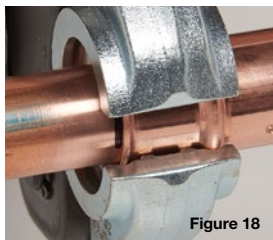
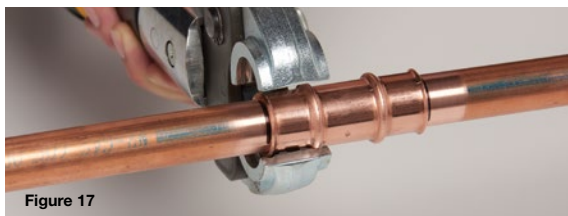
9. Press the crimping tool locking pin (Figure 10), then rotate 45° to release (Figure 11).
10. Slide the appropriate size jaw over the crimping tool head (Figure 12), then depress the locking pin until it clicks (Figure 13).
11. Slide the charged battery onto the base of the tool (Figure 14). Press and hold the trigger on the tool until the cycle is completed to calibrate (Figure 15). Calibration is recommended every time a jaw is changed prior to use.

**▲ WARNING**

COPPER TUBE ENDS SHOULD BE INSPECTED AND ANY SHARP EDGES SHOULD BE REMOVED. SHARP EDGES MAY CAUSE DAMAGE TO THE O-RING.

Note: Refer to the manufacturer's instructions for specific tool and jaw operation.

12. Press at the base of the jaws to open (Figure 16) and place the jaws onto the fitting as shown (Figure 17). Grooves in the jaw should line up and seat onto a groove located on the fitting. Ensure the tool is positioned between the flare and groove (Figure 18), NOT over the groove (Figure 19). Align the bottom portion of the jaw and the top portion will follow. **SPECIAL ATTENTION SHOULD BE GIVEN TO THE CORRECT SEATING OF THE JAW.**
13. Visually verify the inserted tube has remained in place and is still at the correct insertion depth as indicated by the mark (Figure 18).

**⚠ WARNING**

- Keep hands and fingers away from jaws during use.
- Failing to keep hands and fingers away from jaws may lead to serious personal injury.

Note: Refer to the manufacturer's instructions for specific tool and jaw operation.

14. Press and hold the trigger on the press tool to begin the crimping process. Continue to hold the trigger until the tool completes its cycle (Figure 20). The jaws will not open until the cycle is completed without manual override. Repeat the process for the remaining fitting ends where appropriate.

For 1-3/8" fittings only: After the 1st crimp, a 2nd crimp must be made with the 2nd crimp rotated at least 60° (approximate) from the 1st (Figure 21).

15. Open the jaws and remove from the fitting. If the jaws do not open, the crimping cycle was not completed. For manual override, slide the manual release button down to open the jaw.

Verify Connection

16. To verify the crimp cycle was completed properly, a witness mark (RLS) will appear within the crimp bands (Figure 22). The mark will be more pronounced when crimped on hard tube vs. ACR tube but will be visible. Failure to create the witness mark means either an unauthorized crimp jaw or the wrong sized jaw was used. If a fitting is incorrectly crimped, then it must be removed and the procedure restarted with a new fitting.

USE THE CRIMP GAUGE TO CONFIRM THE CONNECTION.
(See next page.)

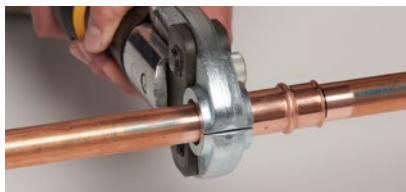


Figure 20

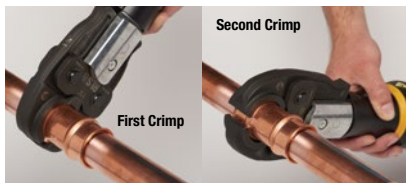


Figure 21



Figure 22

17. The RLS crimp gauge will confirm the finished crimp band diameter. The gauge is marked to align with the proper size fitting and crimp required. When properly crimped, the RLS crimp gauge allows the marked slot to fit snug on the crimp band (Figure 23). If the crimp band is unable to fit within the marked slot on the gauge, it is under-crimped and will need to be re-crimped starting with Step 12.

Note: Flashing may be left over from the crimping process on hard tube. If so, rotate the gauge so that the flashing is in line with the size marking when placed over the crimp bands. This will allow the diameter to be checked without interference from the flashing.

Use caution – flashing may be sharp.

Minimum Distance From Braze to Nearest Fitting End

Tube Diameter	1/4" – 1/2"	5/8"	3/4"	7/8" – 1"	1-1/8"	1-1/4" – 1-3/8"
Distance (in)	5	7	8	9	12	14
Distance (mm)	127	177.8	203.2	228.6	304.8	355.6

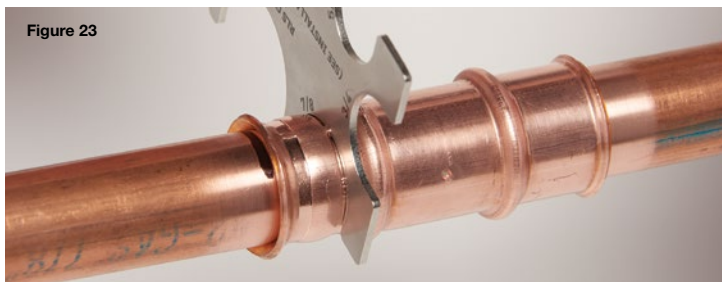


Figure 23

SAFETY INSTRUCTIONS

- Do not rest the weight of the tool on the tube or fitting.
- Periodically check to ensure the jaws are meeting and aligned.
- Do not leave battery on charger unattended or overnight.
- Use brush to ensure jaws are debris free.
- Do not braze or solder within distance indicated in the chart to the left.

Note: For specific tool and jaw care and maintenance, refer to the manufacturer's instructions.



All RLS products are approved for use with the following refrigerants:

R-32	R-125	R-134a	R-143a	R-152a	R-227ea	R-290	R-404A	R-407A
R-407B	R-407C	R-407F	R-407G	R-407H	R-410A	R-417A	R-421A	R-422A
R-422B	R-422C	R-422D	R-424A	R-427A	R-434A	R-437A	R-438A	R-442A
R-444A	R-444B	R-445A	R-446A	R-447A	R-448A	R-449A	R-449B	R-449C
R-450A	R-451A	R-451B	R-452A	R-452B	R-452C	R-453A	R-454A	R-454B
R-454C	R-455A	R-456A	R-457A	R-458A	R-507A	R-513A	R-513B	R-515A
R-515B	R-600	R-600a	R-718	R-1234yf	R-1234ze	Ethylene Glycol		

Contact us about special blends or other refrigerants not listed here.

Check your local codes to ensure that RLS fittings are suitable for use with your particular refrigerant.

FLAME-FREE FITTINGS FOR A SAFER, EASIER FUTURE

With the industry transitioning to flammable refrigerants, contractors using RLS Press Fittings will benefit from offering flame-free services and a safer work environment. Additional advantages include:

- Hot work permits no longer needed
- No fire spotters
- No need to nitrogen purge
- No dragging heavy equipment to the job site

Add up all of the benefits – safer conditions, no fire hazards, and increased efficiencies – and RLS Press Fittings can offer huge cost and time savings with far fewer headaches.

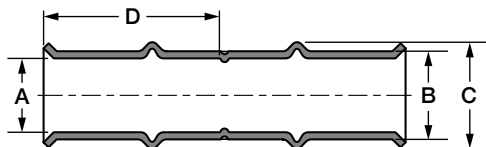
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Couplings



Size (Inch)	Part Number	Dimensions (Inches)				Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D			
1/4	3011040400111	0.26	0.34	0.45	0.95	10	100	2.3 lbs.
5/16	3011050500111	0.32	0.40	0.52	0.93	10	100	2.9 lbs.
3/8	3011060600111	0.39	0.47	0.59	0.98	10	100	3.5 lbs.
1/2	3011080800111	0.51	0.59	0.73	1.25	10	100	6.1 lbs.
5/8	3011101000111	0.64	0.74	0.89	1.24	10	100	9.5 lbs.
3/4	3011121200111	0.76	0.88	1.07	1.29	10	40	5.5 lbs.
7/8	3011141400111	0.89	1.02	1.19	1.31	10	40	7.0 lbs.
1	3011161600111	1.01	1.16	1.36	1.31	10	40	9.5 lbs.
1-1/8	3011181800111	1.14	1.29	1.45	1.29	10	40	10.3 lbs.
1-1/4	3011202000111	1.26	1.41	1.62	1.30	12	24	7.4 lbs.
1-3/8	3011222200111	1.39	1.54	1.75	1.57	12	24	9.0 lbs.

DIMENSIONS

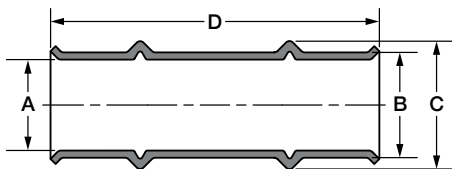


Slip Couplings



Size (Inch)	Part Number	Dimensions (Inches)				Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D			
1/4	3021040400111	0.26	0.34	0.45	2.00	10	100	2.3 lbs.
5/16	3021050500111	0.32	0.40	0.52	2.01	10	100	2.9 lbs.
3/8	3021060600111	0.39	0.47	0.59	2.05	10	100	3.5 lbs.
1/2	3021080800111	0.51	0.59	0.73	2.74	10	100	6.1 lbs.
5/8	3021101000111	0.64	0.74	0.89	2.75	10	100	9.5 lbs.
3/4	3021121200111	0.76	0.88	1.07	2.75	10	40	5.5 lbs.
7/8	3021141400111	0.89	1.02	1.19	2.74	10	40	7.0 lbs.
1-1/8	3021181800111	1.14	1.29	1.45	2.77	10	40	10.3 lbs.
1-3/8	3021222200111	1.39	1.54	1.75	3.15	12	24	9.0 lbs.

DIMENSIONS

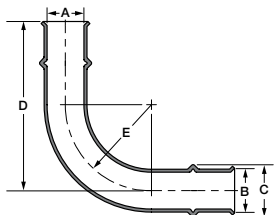


90° Elbows



Size (Inch)	Part Number	Dimensions (Inches)					Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D	E			
1/4	3031040400111	0.26	0.34	0.45	2.01	0.68	10	100	4.4 lbs.
5/16	3031050500111	0.32	0.40	0.52	2.13	0.81	10	100	5.8 lbs.
3/8	3031060600111	0.39	0.47	0.59	2.27	0.93	10	100	7.4 lbs.
1/2	3031080800111	0.51	0.59	0.73	2.88	1.18	10	100	11.6 lbs.
5/8	3031101000111	0.64	0.74	0.89	3.21	1.47	10	100	20.0 lbs.
3/4	3031121200111	0.76	0.88	1.07	3.47	1.76	10	40	12.3 lbs.
7/8	3031141400111	0.89	1.02	1.19	3.75	2.03	10	40	16.6 lbs.
1	3031161600111	1.01	1.16	1.36	4.04	2.33	10	40	22.2 lbs.
1-1/8	3031181800111	1.14	1.29	1.45	4.29	2.54	10	40	27.8 lbs.
1-1/4	3031202000111	1.26	1.41	1.62	4.30	2.53	5	5	3.7 lbs.
1-3/8	3031222200111	1.39	1.54	1.75	4.54	2.75	5	5	4.9 lbs.

DIMENSIONS



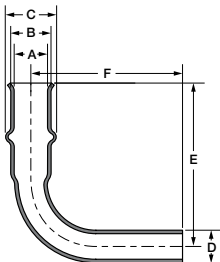
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90° Street Elbows



Size (Inch)	Part Number	Dimensions (Inches)						Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D	E	F			
3/8	3501060600111	0.39	0.47	0.59	0.38	1.75	1.89	10	100	4.8 lbs.
1/2	3501080800111	0.51	0.59	0.73	0.50	2.56	2.65	10	100	9.2 lbs.
5/8	3501101000111	0.64	0.74	0.89	0.63	2.64	2.81	10	100	15.1 lbs.
3/4	3501121200111	0.76	0.88	1.07	0.75	3.00	3.15	10	40	9.2 lbs.
7/8	3501141400111	0.89	1.02	1.19	0.88	3.25	3.40	10	40	12.7 lbs.
1-1/8	3501181800111	1.14	1.29	1.45	1.13	3.80	3.93	10	40	22.1 lbs.
1-3/8	3501222200111	1.39	1.54	1.75	1.38	4.38	4.51	5	5	3.8 lbs.

DIMENSIONS

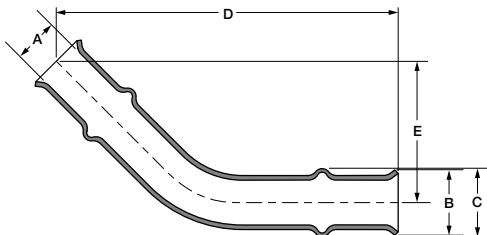


45° Elbows



Size (Inch)	Part Number	Dimensions (Inches)					Box Quantity	Carton Quantity	Carton Weight
		A	B	C)	D	E			
3/8	3081060600111	0.39	0.56	0.59	2.94	1.21	10	100	5.8 lbs.
1/2	3081080800111	0.51	0.71	0.73	3.72	1.54	10	100	9.6 lbs.
5/8	3081101000111	0.64	0.86	0.88	3.97	1.64	10	100	15.9 lbs.
3/4	3081121200111	0.76	1.02	1.07	4.12	1.70	10	40	9.4 lbs.
7/8	3081141400111	0.89	1.13	1.19	4.49	1.86	10	40	12.7 lbs.
1-1/8	3081181800111	1.14	1.41	1.45	4.84	2.00	10	40	20.2 lbs.
1-3/8	3081222200111	1.39	1.68	1.75	5.11	2.11	5	5	3.8 lbs.

DIMENSIONS

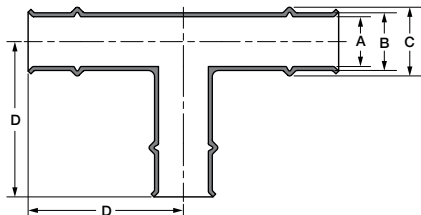


Tees



Size (Inch)	Part Number	Dimensions (Inches)				Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D			
3/8	3091060606111	0.39	0.47	0.59	1.63	10	100	8.4 lbs.
1/2	3091080808111	0.51	0.59	0.72	2.23	10	100	26.4 lbs.
5/8	3091101010111	0.64	0.74	0.87	2.30	10	100	26.8 lbs.
3/4	3091121212111	0.76	0.88	1.05	2.38	10	40	15.0 lbs.
7/8	3091141414111	0.89	1.02	1.19	2.43	10	40	20.3 lbs.
1	3091161616111	1.01	1.16	1.36	2.59	10	40	23.7 lbs.
1-1/8	3091181818111	1.14	1.29	1.45	2.56	10	40	30.4 lbs.
1-1/4	3091202020111	1.26	1.41	1.62	3.36	5	5	4.7 lbs.
1-3/8	3091222222111	1.39	1.54	1.75	3.36	5	5	5.3 lbs.

DIMENSIONS



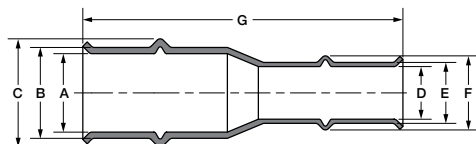
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Reducers



Size (Inch)	Part Number	Dimensions (Inches)							Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D	E	F	G			
3/8 to 1/4	3051060400111	0.39	0.47	0.59	0.26	0.34	0.45	2.24	10	100	3.8 lbs.
1/2 to 1/4	3051080400111	0.51	0.59	0.73	0.26	0.34	0.45	2.71	10	100	5.0 lbs.
1/2 to 3/8	3051080600111	0.51	0.59	0.73	0.39	0.47	0.58	2.58	10	100	5.5 lbs.
5/8 to 1/4	3051100400111	0.64	0.74	0.89	0.26	0.34	0.45	2.70	10	100	7.9 lbs.
5/8 to 3/8	3051100600111	0.64	0.74	0.89	0.39	0.47	0.58	2.70	10	100	8.1 lbs.
5/8 to 1/2	3051100800111	0.64	0.74	0.87	0.51	0.59	0.72	3.10	10	100	8.7 lbs.
3/4 to 1/2	3051120800111	0.76	0.88	1.05	0.51	0.59	0.72	3.10	10	40	4.7 lbs.
3/4 to 5/8	3051121000111	0.76	0.88	1.05	0.64	0.74	0.87	3.00	10	40	5.2 lbs.
7/8 to 1/2	3051140800111	0.89	1.02	1.19	0.51	0.59	0.72	3.05	10	40	5.6 lbs.
7/8 to 5/8	3051141000111	0.89	1.02	1.19	0.64	0.74	0.87	3.05	10	40	6.6 lbs.
7/8 to 3/4	3051141200111	0.89	1.02	1.19	0.76	0.88	1.05	3.11	10	40	7.3 lbs.
1 to 7/8	3051161400111	1.01	1.16	1.37	0.89	1.02	1.19	3.09	10	40	9.1 lbs.
1-1/8 to 1/2	3051180800111	1.14	1.29	1.45	0.51	0.59	0.72	3.25	10	40	8.1 lbs.
1-1/8 to 5/8	3051181000111	1.14	1.29	1.45	0.64	0.74	0.87	3.25	10	40	9.0 lbs.
1-1/8 to 3/4	3051181200111	1.14	1.29	1.45	0.76	0.88	1.05	3.18	10	40	9.6 lbs.
1-1/8 to 7/8	3051181400111	1.14	1.29	1.45	0.89	1.02	1.19	3.10	10	40	9.9 lbs.
1-3/8 to 7/8	3051221400111	1.39	1.54	1.75	0.89	1.02	1.19	3.66	12	24	7.9 lbs.
1-3/8 to 1 1/8	3051221800111	1.39	1.54	1.75	1.14	1.29	1.45	3.34	12	24	8.2 lbs.

DIMENSIONS

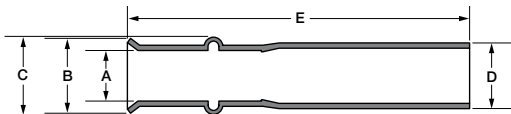


Reducing Bushings



Size (Inch)	Part Number	Dimensions (Inches)					Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D	E			
1/2 to 3/8	3521080600111	0.39	0.56	0.59	0.50	2.50	10	100	4.6 lbs.
5/8 to 1/2	3521100800111	0.51	0.68	0.72	0.63	2.95	10	100	7.3 lbs.
3/4 to 5/8	3521121000111	0.64	0.84	0.87	0.75	2.98	10	40	4.4 lbs.
7/8 to 3/4	3521141200111	0.76	1.02	1.05	0.88	3.04	10	40	5.9 lbs.
1-1/8 to 7/8	3521181400111	0.89	1.10	1.19	1.13	3.06	10	40	8.5 lbs.
1-3/8 to 1-1/8	3521221800111	1.14	1.40	1.45	1.38	3.12	12	24	7.0 lbs.

DIMENSIONS



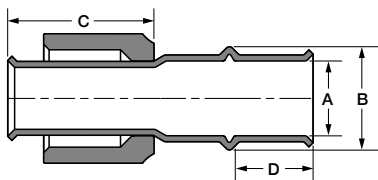
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SAE Euro Flares



Size (Inch)	Part Number	Dimensions (Inches)				Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D			
1/4	3291040000111	0.26	0.45	1.38	0.56	10	100	2.5 lbs.
3/8	3291060000111	0.39	0.59	1.38	0.58	10	100	3.7 lbs.
1/2	3291080000111	0.51	0.72	1.13	0.75	10	100	5.9 lbs.
5/8	3291100000111	0.64	0.87	1.48	0.75	10	40	3.6 lbs.
3/4	3291120000111	0.76	1.05	1.48	0.80	10	40	5.2 lbs.

DIMENSIONS

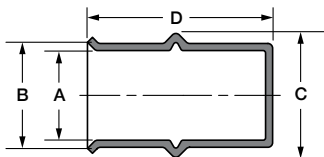


Caps



Size (Inch)	Part Number	Dimensions (Inches)				Box Quantity	Carton Quantity	Carton Weight
		A	B	C	D			
1/4	3071040000111	0.26	0.34	0.45	1.45	10	100	1.8 lbs.
5/16	3071050000111	0.32	0.40	0.52	1.45	10	100	2.3 lbs.
3/8	3071060000111	0.39	0.47	0.59	1.45	10	100	2.6 lbs.
1/2	3071080000111	0.51	0.59	0.72	1.97	10	100	5.1 lbs.
5/8	3071100000111	0.64	0.74	0.87	1.98	10	100	6.9 lbs.
3/4	3071120000111	0.76	0.88	1.05	1.97	10	40	3.8 lbs.
7/8	3071140000111	0.89	1.02	1.19	1.90	10	40	4.9 lbs.
1	3071160000111	1.01	1.16	1.36	2.00	10	40	7.2 lbs.
1-1/8	3071180000111	1.14	1.29	1.45	1.99	10	40	7.8 lbs.
1-1/4	3071200000111	1.26	1.41	1.62	2.50	12	24	6.5 lbs.
1-3/8	3071220000111	1.39	1.54	1.75	2.49	12	24	7.2 lbs.

DIMENSIONS



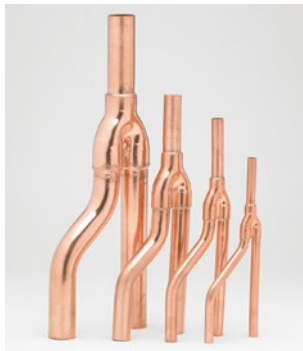


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ANCILLARY PRODUCTS

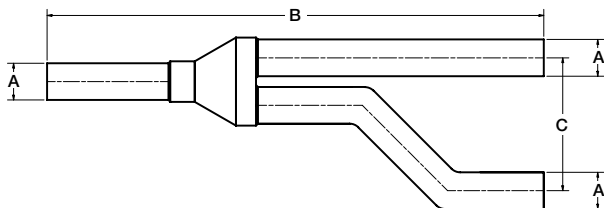
ODM products are compatible with RLS fittings.

ODM Y-Joints



Size (Inch)	Part Number	Dimensions (Inches)			Box Quantity	Carton Quantity
		A	B	C		
3/8	3771060606111	0.38	7.56	2.36	2	44
1/2	3771080808111	0.50	8.94	2.48	2	44
5/8	3771101010111	0.63	9.45	2.60	2	42
3/4	3771121212111	0.75	10.16	2.72	2	24
7/8	3771141414111	0.88	12.09	2.87	2	24
1-1/8	3771181818111	1.13	13.11	3.54	1	10
1-3/8	3771222222111	1.38	14.92	4.06	1	10

DIMENSIONS





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ANCILLARY PRODUCTS

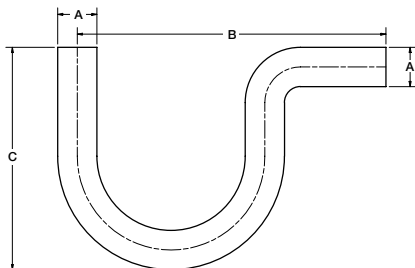
ODM products are compatible with RLS fittings.

ODM P-Traps



Size (Inch)	Part Number	Dimensions (Inches)			Box Quantity	Carton Quantity
		A	B	C		
1/2	3761080800111	0.50	5.12	3.54	2	80
5/8	3761101000111	0.63	5.12	3.62	2	80
3/4	3761121200111	0.75	5.91	4.25	2	38
7/8	3761141400111	0.88	6.69	4.65	2	38
1-1/8	3761181800111	1.13	8.27	5.98	2	10
1-3/8	3761222200111	1.38	10.24	7.48	2	10

DIMENSIONS



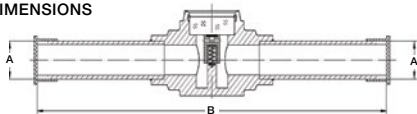
ANCILLARY PRODUCTS

ODM products are compatible with RLS fittings.

ODM Sight Glasses



DIMENSIONS

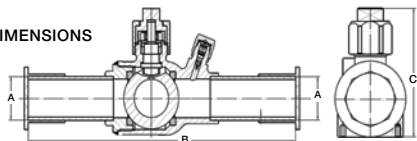


Size (Inch)	Part Number	Dimensions (Inches)		Box Quantity	Carton Quantity
		A	B		
1/4	3781040400111	0.25	4.02	1	100
3/8	3781060600111	0.37	4.69	1	100
1/2	3781080800111	0.50	6.10	1	100
5/8	3781101000111	0.63	6.14	1	50
3/4	3781121200111	0.75	6.34	1	50
7/8	3781141400111	0.88	6.57	1	50
1-1/8	3781181800111	1.13	7.56	1	30

ODM Ball Valves (Bi-Directional with Schrader valves)



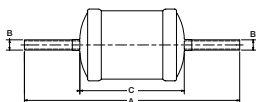
DIMENSIONS



Size (Inch)	Part Number	Dimensions (Inches)			Box Quantity	Carton Quantity
		A	B	C		
1/4	3791040400111	0.25	6.75	2.02	1	40
3/8	3791060600111	0.37	6.34	2.02	1	40
1/2	3791080800111	0.50	6.56	2.02	1	40
5/8	3791101000111	0.63	6.77	2.30	1	40
3/4	3791121200111	0.75	6.99	2.60	1	30
7/8	3791141400111	0.88	7.24	2.60	1	30
1-1/8	3791181800111	1.13	8.16	3.27	1	30
1-3/8	3791222200111	1.37	9.00	3.88	1	24

ODM Filter Dryers

DIMENSIONS



Size (Inch)	Part Number	Desiccant (Cubic Inches)	Dimensions (Inches)			Box Quantity	Carton Quantity
			A	B	C		
3/8 Liquid Line	3821060600111	8	7.95	0.38	3.90	1	30
3/8 Liquid Line	3831060600111	16	8.86	0.38	4.80	1	30
1/2 Liquid Line	3831080800111	16	8.94	0.50	4.80	1	30
3/8 Liquid Line Bi-Directional	3921060600111	8	7.87	0.38	3.82	1	30
3/8 Liquid Line Bi-Directional	3931060600111	16	8.66	0.38	4.61	1	30

Part Number	Connections Inlet/outlet	Flow capacity Ton @ 1psi ΔP (for kw multiply Ton by 3.5)					Water capacity drops of water									
		R134a	R22 & R410A	R407C	R404A & R507		R134a		R22		R407c		R410A		R404A & R507	
							75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
3821060600111	3/8" ODM	5.42	6.0	6.0	4.0	265	245	250	225	205	165	170	130	275	260	
3831060600111	3/8" ODM	6.2	6.8	6.8	4.57	396	366	271	336	306	246	256	196	406	286	
3831080800111	1/2" ODM	8.5	9.4	9.4	6.2	396	366	271	336	306	246	256	196	406	286	
3921060600111	3/8" ODM	4.8	5.1	5.0	3.33	265	245	250	225	205	165	170	130	275	260	
3931060600111	3/8" ODM	4.9	5.2	5.2	3.49	359	341	360	307	361	333	327	302	392	365	

All ratings are in accordance with ANSI/AHRI standard 710-2009.

Klauke[®] 19 kN Crimping Tool

Benefits:

- Lightweight design increases productivity
- Short pressing cycle, 10 seconds or less
- Compact design and 350° jaw rotation allows technician to install in tight spaces
- Automatic piston return
- Safety feature that lets the crimp cycle be interrupted allowing for manual release of the piston, if needed
- High-quality, powerful Makita Li-Ion technology provides 100-150 crimps per charge, with charging time of just 15 minutes (2.0 Ah)
- Tool service indicated via imbedded LEDs, illuminates at 10,000 cycles

Features:

Crimping Force: 19 kN

Minimum Crimp Pressure: 525 bar/7,613 psi

Number of Crimps: 2.0 Ah approx. 150 (for NS20)

Battery Capacity: 18V / 2.0 Ah Li-Ion Makita (BL1820B)

Charging Time: 15 minutes

Operating Temp. Range: 10°C to 40°C (14°F -104°F)

Jaw Holder: Swivels through 350°

Weight with Battery:

Without Jaw: 1.8 kg (4.0 lb)

Including Jaw: 3.1 kg (6.8 lb)

Dimensions: 395 x 80 x 118 mm

Diagnostics:

PGA 1 Compatible - Yes

i-press Software Compatible - Yes



The compact, yet high-powered, Klauke 19 kN crimping tool crimps fittings in less than 10 seconds.



KJ Series Jaws

KJ Series Jaws are available in 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4" and 1-3/8" sizes.

Klauke® Tools and Jaws



Tool Kit (No Jaws)

Includes the Klauke 19kN Crimping Tool, 2 Lithium-ion Batteries, a Battery Charger, and the Accessory Kit (contents listed below) in a hard plastic carrying case.
Part number: 3610000000000

Tool Kit with 3-Jaw Set

Includes the Klauke 19kN Crimping Tool, 2 Lithium-ion Batteries, a Battery Charger, 3 Jaws (3/8", 1/2", 7/8"), and the Accessory Kit (contents listed below) in a hard plastic carrying case.

Part number: 3620000000000



Tool Kit with 5-Jaw Set

Includes the Klauke 19kN Crimping Tool, 2 Lithium-ion Batteries, a Battery Charger, 5 Jaws (3/8", 1/2", 5/8", 7/8", 1-1/8"), and the Accessory Kit (contents listed below) in a hard plastic carrying case.

Part number: 3630000000000

Jaw Set

Includes 8 Jaws (1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1-1/8", 1-3/8") in a hard plastic carrying case.

Part number: 3471000000100



Individual jaws are also available in all fitting sizes, 1/4" through 1-3/8".



Accessory Kit:

- Tubing Cutter
- Deburring Tool
- RLS Crimp Gauge
- Brush
- RLS Depth Gauge
- Abrasive Pad
- Permanent Maker



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TOOLS AND JAWS

RIDGID introduced plumbers to pressing nearly 20 years ago, and they take their industry leadership position seriously. The same is true of RLS. That's why we're proud to also partner with RIDGID to offer jaws for use with various RIDGID press tools that are compatible with RLS Press Fittings.



RIDGID 8-Jaw Set

The RIDGID 8-Jaw Set comes in a hard plastic carrying case and includes a tube cutter, deburring tools, crimp gauge, depth gauge, stainless steel brush, abrasive pad and permanent marker. Jaw sizes include 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1-1/8" and 1-3/8". The 5/16" jaw is sold separately. Part number: 339100000100



RLS-Compatible RIDGID Tools

RIDGID press tools are sold through RIDGID distributors, available in lightweight pistol-grip and inline models. RLS jaws are compatible with the following RIDGID press tools: RP 240, RP 241, RP 200, RP 210, and RP 100 models.



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Applications

- High Pressure HVAC/R
- Ethylene Glycol
- Non-Potable Water

Product Parameters

- Continuous Operating Temperature: 250°F / 121°C
- O-Ring Temperature Rating: -40°F to +300°F -40°C to +149°C
- Maximum Rated Pressure (MRP): 700 psi / 48 bar
- Minimum Burst Pressure (UL 207): 2,100 psi / 145 bar
- Vacuum Pressure Capability: <200 Microns
- External Helium Leak Rate: $<7.5 \times 10^{-7} \text{ Pa} \cdot \text{m}^3/\text{s}$ at 20°C & 10 bar
- Vibration Resistance: Conforms to UL109
- Size Availability (Inches): 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-3/8

Fitting Materials

- Fitting Body: Refrigerant Grade Copper, per ASTM-B75 or ASTM-B743
- O-Ring: HNBR

Compatibility

- Approved Oils: Mineral Oil, POE, PVE, PAG
- Approved Tubing Materials: Copper-to-Copper Connections
- Approved Tubing Tolerance: ASTM B88/B280, EN 12735 & AS/NZS 1571
- Approved Copper Tubing Types for Use with Klauke® 19 kN and RIDGID® Compatible Jaws:
Hard Copper (Drawn)
 - 1/4" – 1-3/8" Type ACR, M, L, K Soft Copper (Annealed)
 - 1/4" – 1-3/8" Type ACR, L, K
- Approved Copper Tubing Types for Use with Klauke® 15 kN Compatible Jaws:
Hard Copper (Drawn)
 - 1/4" – 1-1/8" Type ACR, M, L
 - Type K Only Up to 7/8"Soft Copper (Annealed)
 - 1/4" – 1-1/8" Type ACR, L
 - Type K Only Up to 7/8"



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Agency Approvals and Certifications

- UL Listed: 207, SA#33958, SDTW (7) (Except where noted)
- UL Listed: Approved Use For Field & Factory Installations
- ISO 5149-2: Part 2 Compliant
- ASHRAE-15, ANSI 15, ASME B31.5 (504.7 Part C)
- ICC-ES, PMG-1296
- International Mechanical Code (IMC)
2018, 2015, 2012, 2009, 2006
- International Residential Code (IRC)
2018, 2015, 2012, 2009, 2006
- Uniform Mechanical Code (UMC)
2018, 2015, 2012, 2009, 2006
- CRN Approved (#0A18303).5C

RLS Press Fitting Patents

- U.S. Patent No. 9,145,992
- U.S. Patent No. 9,638,361
- U.S. Patent No. D730,494
- Australian Patent No. 2012362443
- Canadian Design Registration No. 149228
- EUIPO Registered Community Design No. 002218636-0001
- Japanese Patent No. 6051468
- Other Pending Patent Applications

RLS Press Tools and Jaws Patents

- Australian Design Registration No. 361533
- Canadian Design Registration No. 161804
- EUIPO Registered Community Design No. 002672667-0001
- Japanese Design Registration No. 1537545
- Other Pending Patent Applications

WARNING

Some of our ancillary products can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



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Troubleshooting

1. What should I do to ensure that a fitting doesn't leak after pressing?

- Inspect tubing for scratches, incise marks, and dents prior to tube cutting. Be careful when using a knife to cut off plastic shipping caps or insulation off copper tubes.
- Take time to cut the tubing properly by using a tubing cutter. Rushing through the cutting process may cause dents or oval tubing, which can create leaks.
- Verify proper deburring and sanding/cleaning of tube surface per instructions.
- Verify proper tube insertion depth using provided insertion gauge. One gauge is provided with the tool kit and can also be ordered separately. Refer to the "Minimum Insertion Depth" table on page 32 if you do not have a gauge.
- Verify the proper crimp diameter using the provided crimp gauge.
- Verify the correct jaw has been selected for the fitting you are trying to press.
- If jaw is sticking during the press, try applying a light coating of spray lubricant such as WD-40 directly to the jaws.
- Let jaw and tool do the work. If the fitting is in a hard to reach place, it is important to let the tool body move freely.
- Avoid applying any sort of pulling or twisting of the tool during the pressing process.

2. What should I do if a fitting leaks after pressing?

If the fitting was recently pressed (15-20 minutes) prior to pressurization, it is possible the bubbles are a result of trapped air in the double crimp area that can leak out over time, and IS NOT a fitting leak. This is more likely to occur on smaller fittings.

Since the joint is a permanent one, if a fitting is leaking after this period, it is best to remove the affected fitting and replace it with a new one.

If the fitting is to be returned for analysis, please ensure that there is AT LEAST 3 inches of tube on each end of the fitting so it can be analyzed and the leak cause determined. Without sufficient tubing, the fitting can't be tested and leak confirmed.

3. If a fitting leaks, can you just braze it in instead of cutting it out and having to add more pipe?

No, trying to braze the fitting will very likely melt the O-ring material and thus introduce contaminants into the system that could cause other system issues.

THE FITTINGS SHOULD NEVER BE BRAZED.

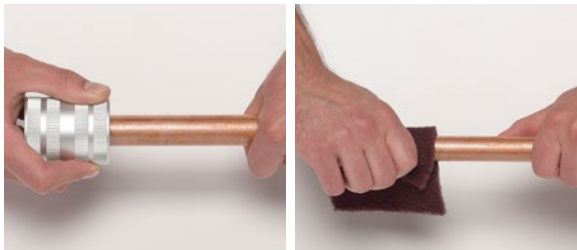
Installation

4. What is the most common cause of leaky fittings?

Skipping installation instructions 4 through 8 will cause the tube to leak. It is very important to use the scouring pad and deburring tool. Refrigerant gas running at high pressure is more likely to leak than water at a much lower pressure, therefore, following the tube preparation instructions is critical.

5. What is a “deep” scratch and how can I remove it?

A deep scratch is defined as one that can be felt with your fingernail. To remove minor scratches try using a new piece of abrasive pad (maroon color) or 400 grit sandpaper. Alternatively, 180 grit sandpaper/cloth can be used for 15-20 seconds to remove a deep scratch.



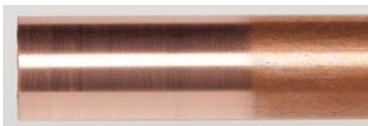
Following tube preparation steps 4 to 8 in the RLS installation instructions is important for preventing leaks.

6. How do you slide insulation over RLS fittings if the flare grabs the insulation?

If the flare of the fitting tends to be a problem, you can smooth the transition over the fitting by adding duct or electrical tape around the flared edge of the fitting to the tube.

7. Can you show an example of a “good” copper tube surface after sanding?

The left photo below shows a properly prepped tube end. The two photos at right show a tube with bad scratches and a tube with an incise mark. Both would need to be cut off, and the remaining tube deburred and sanded per the installation instructions.



Scratches



Incise mark



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8. How do I know the correct insertion depth when pushing the RLS fitting onto the copper tube?

Use the depth gauge provided or the “Minimum Insertion Depth” chart below to determine the correct insertion depth. Mark the tubing with a permanent marker to indicate proper insertion depth on every tube.

MINIMUM INSERTION DEPTH

Fitting Size	Inches	Millimeters
1/4	1	25.4
5/16	1	25.4
3/8	1	25.4
1/2	1-1/4	31.8
5/8	1-1/4	31.8
3/4	1-1/4	31.8
7/8	1-1/4	31.8
1	1-1/4	31.8
1-1/8	1-1/4	31.8
1-1/4	1-1/2	38.1
1-3/8	1-1/2	38.1

9. How do I press onto the flared tubing that comes out of the condenser and evaporator on residential units?

We do not have a specific product designed to press over this type of flared tubing. However, if there is at least 3 inches of straight copper tubing after the flared end is removed and it is accessible with the jaws, we suggest that you cut the flared end off and press directly to the tube. It is important to measure the straight section of tube prior to cutting to ensure the diameter is within tolerance and will work with the fitting. Reference the standards in item #10 for size ranges.

10. How much tolerance can the RLS fitting handle on the pipe being pressed?

We know that not all copper tubing is the same, but we have tested RLS with most copper tube manufacturers with no issues. The tolerance for each tube to ensure a leak-free joint is defined by ASTM B280, B88 or B1003.

11. What is the minimum brazing distance?

Brazing tubing after a fitting has been installed should be avoided at all costs. Minimum brazing distances below apply to pre-brazed tube sections as well. If field brazing, conventional precautions should be taken to ensure fitting remains cool.

MINIMUM DISTANCE FROM RLS FITTING TO BRAZE

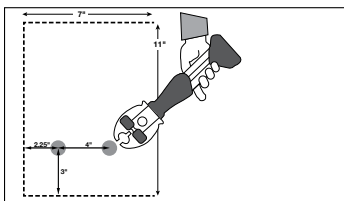
Tube Diameter	Inches	Millimeters
1/4 to 1/2	5	127
5/8	7	178
3/4	8	203
7/8 to 1	9	229
1-1/8	12	305
1-1/4 to 1-3/8	14	356

12. What is the minimum distance between RLS fittings?

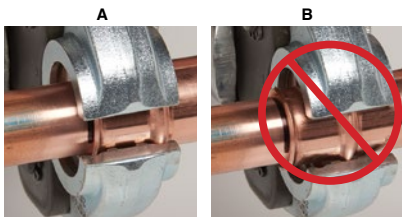
The ends of the fittings should be no closer than 1/2 inch apart.

13. What is the recommended minimum space (envelope) needed around the Klauke[®] tool and jaws to crimp?

An envelope of 11" x 7" is recommended. The illustration below shows closed space around the fitting with one end open. It assumes a 4" centerline between fittings and a max 1-3/8" couplings. A minimum of 2-1/4" from the back wall surface is required. You need 2-1/2" between couplings for jaws if the tool is coming up from below the fittings to press. Contact RLS with questions.

**Press Tool****14. Can RLS fittings be pressed in the same location as Viega ProPress fittings?**

No. The fittings will leak if you do not press per the RLS installation instructions. Proper pressing is illustrated in Photo A below.

**15. How many press cycles can you complete on a complete battery charge?**

On average you can achieve 100-150 presses per charge, depending on the size fittings being crimped. Each Klauke Tool kit comes with 2 Makita Lithium-ion 2.0 Ah 18V batteries (BL1820B) and a rapid charge charging system. To prevent any downtime, it is recommended that you have both batteries charged before going to the job site, and to have one charging (or charged) while the other is in use.

16. How can I increase battery life?

You can purchase a Makita 3.0 Ah 18 V Li-Ion battery (BL1930) at your local or online retailers where batteries are sold.



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

The 15 kN (MAP2L) and 19 kN (MAP2L19) Klauke tools have red LED lights on the back of the tool that will blink for 20 seconds after a crimp. The 19 kN tool has a screen on the tool which indicates the number of remaining crimps. Take the tool back to an authorized dealer to have the tool serviced.

18. What is the expected life of the jaws?

Each jaw has an expected life of 10,000 to 12,000 crimps.

19. How do you know when the jaw needs to be replaced?

The contact point between the upper and lower jaw will start to open up/widen. A good indication of failure is when the crimp gauge no longer engages. Use the supplied wire brush in tool kit to periodically clean pressing jaws.

20. Where can replacement batteries and chargers be purchased?

The 2.0 Ah 18 V Makita Li-Ion battery (BL1820B) along with the 110V AC charger (DC18RC) can be purchased at your local or online retailers where batteries are sold.

Technical

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

The O-ring is a highly engineered HNBR O-ring that has been used in HVAC applications by OEMs and suppliers for many years with no issues.

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

The O-ring material used is the same as what is used in other refrigeration components, such as valves. Due to the nature of the static press sealing the O-ring from outside air, in a properly working system the O-ring should last as long as the system.

23. Does the O-ring compensate for imperfections in the piping to make a tight seal?

Yes, the O-ring does compensate for small/minor scratches on the surface of the tube; however, the tubing needs to be inspected prior to use per ASTM B280, B88, or B1003 and the *Copper Tube Handbook* published by the Copper Development Association (CDA) specifications. Imperfections in and adjacent to the crimp area could inhibit the joint integrity. These imperfections may include surface scratches, incise marks, tube zippers and out-of-round tubing.

24. Are there any shelf life concerns?

No, the shelf life of the HNBR O-ring is estimated at or above 15 years.



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25. Is there a concern about ice building up and then thawing under fittings in a horizontal or vertical configuration?

No, RLS fittings have been thoroughly tested in freeze/thaw applications with over 10,000 cycles completed in both vertical and horizontal configurations with no leakage concerns.

26. Are there any concerns about corrosion due to harsh environments, cleaners or off-gassing of produce/vegetables?

RLS fittings have gone through extensive SWATT testing, completing over 2,000 hours of salt spray testing without failure, which proves the resilience of the product. Care should be given to avoid areas that could be exposed to ammonia or ammonia-like substances as ammonia is very corrosive to copper fittings and tubing.

27. The product specifications state that the application temperature limits are -40°F to +300°F / -40°C to 150°C. What happens if we go beyond that limit?

If the application that the fitting is being used in goes beyond the specified limits of the O-ring (-40°F to +300°F / -40°C to 150°C), then there will be an increased likelihood that a leak can occur.

28. Can I use RLS fittings in a transportation application where vibration is high?

Yes. RLS fittings have gone through extensive vibration testing and results are as good as, if not better than, a brazed joint. For further testing information, please refer to the *Third Party Testing* document located on our website at rapidlockingsystem.com.

29. Can you use RLS refrigerant fittings to crimp to aluminum, steel or stainless steel?

No. RLS copper refrigerant fittings are specifically designed for copper-to-copper connections. Connecting to dissimilar metals can cause galvanic corrosion issues that could cause a failure.

Other

30. Are RLS fittings approved by state and city building codes?

RLS fittings have been approved by UL-207, ASHRAE 15, International Code Council – Evaluation Service (ICC-ES), International Mechanical Code (IMC), Universal Mechanical Code (UMC) and International Residential Code (IRC). Please contact your local building inspector with questions prior to install. Installers should check local codes to ensure fitting compliance prior to install.

31. Do RLS refrigerant fittings come with a warranty?

Yes. Our 10-year manufacturer's warranty states that RLS fittings shall be free from defects in material and workmanship. The warranty shall only be applicable to the RLS fittings installed in accordance with the installation instructions.

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