**RLS LLC**
6212 Pershall Rd.
Hazelwood, MO 63042

*Instruction Manual*

# i-press® mini
# MAP2LCER

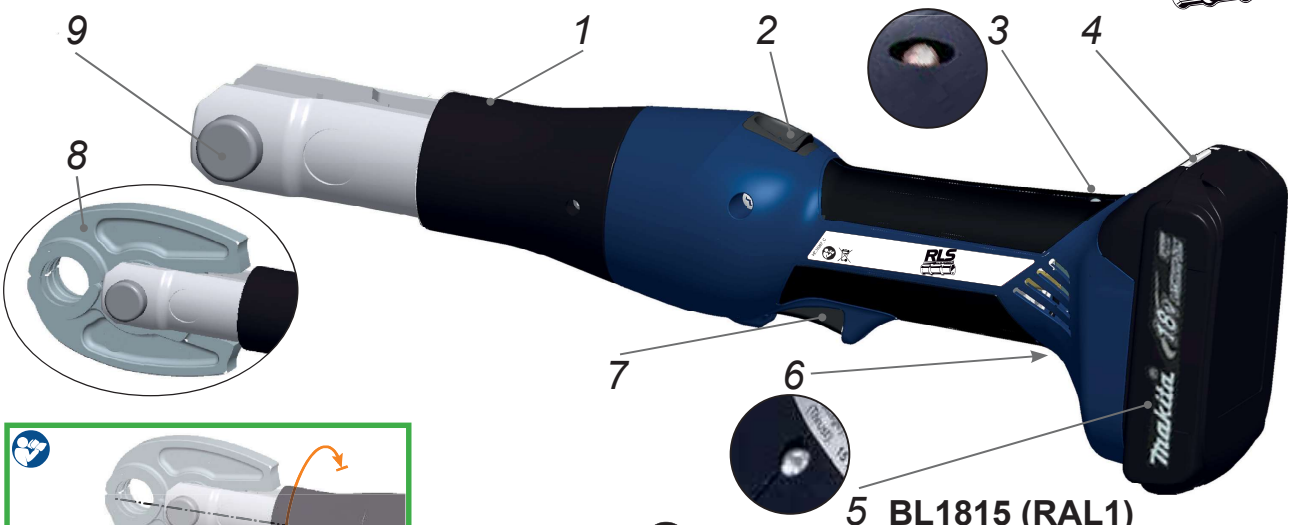


*pic. similar*

Serialnummer

**Hydraulic Pressure Check**

HE.16012_G © 11/2014 R&D-2







HE.15333



*optional:*

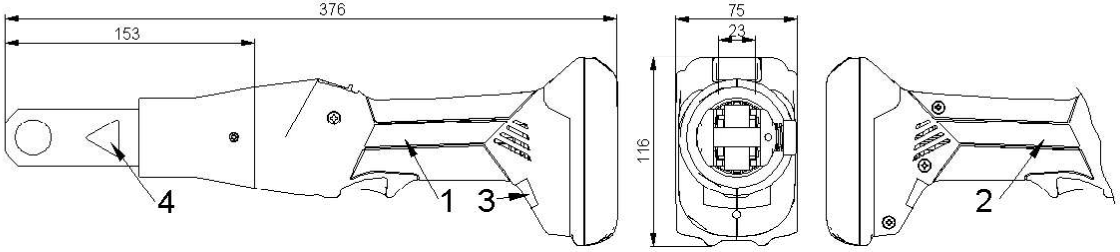
**NG2**

**BL1830 (RAL2)**






*pic. 1*




*pic. 2*






1



2



3




4



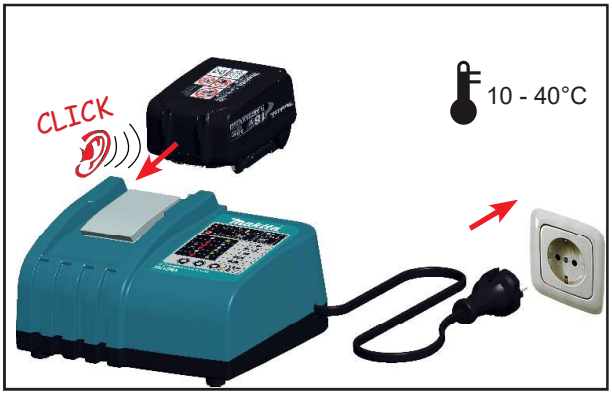
5

| | |
|---|---|
| 304711 | ⇨ batch# e.g. 304711 |
| ZN | ⇨ datecode e.g. Z = 2029; N = Jan. |
| 142 | ⇨ consecutive# e.g. „142“ = tool # 142 |

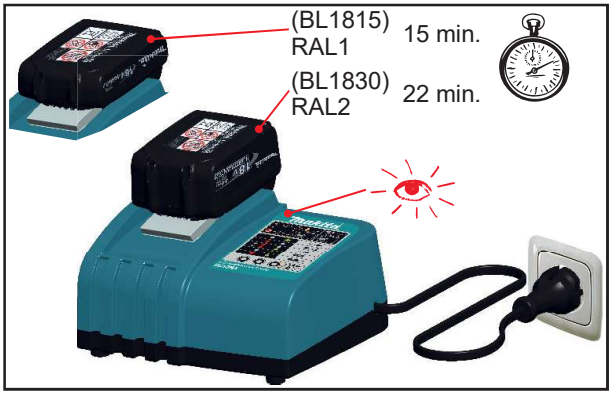
*pic. 3*

**datecode**

| Year | Code | Month | Code | Month | Code |
|---|---|---|---|---|---|
| 2024 | T | Jan. | N | July | V |
| 2025 | V | Feb. | P | Aug. | W |
| 2026 | W | Mar. | Q | Sept. | X |
| 2027 | X | Apr. | R | Oct. | Y |
| 2028 | Y | May | S | Nov. | Z |
| 2029 | Z | June | T | Dec. | 1 |




pic. 4




pic. 5



pic. 6



pic. 7



pic. 8



pic. 9



pic. 10




pic. 11



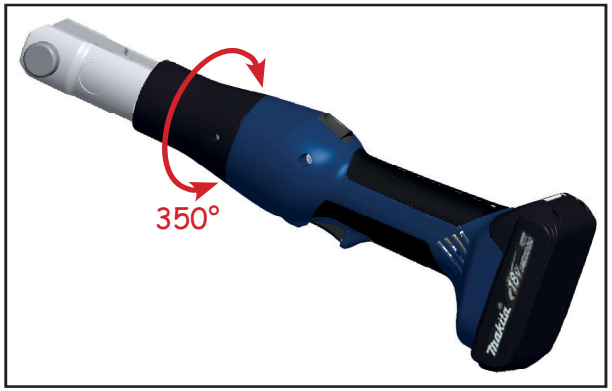

pic. 12



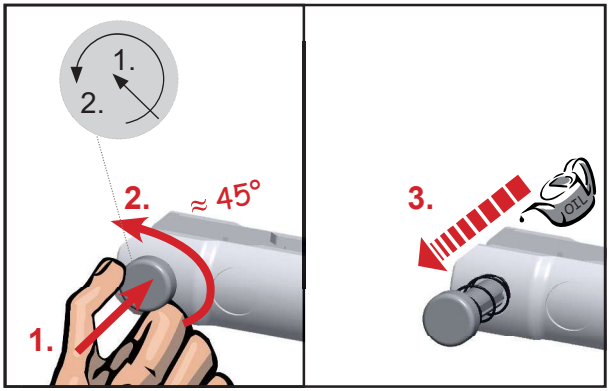

pic. 13



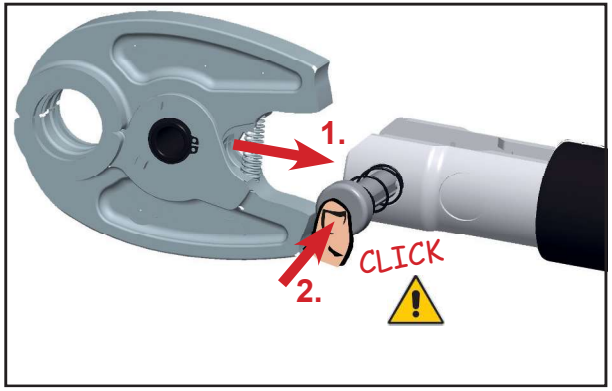
pic. 14



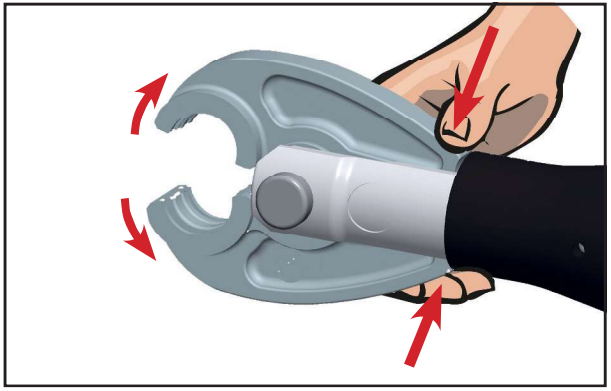

*pic. 15*




*pic. 16*




*pic. 17*

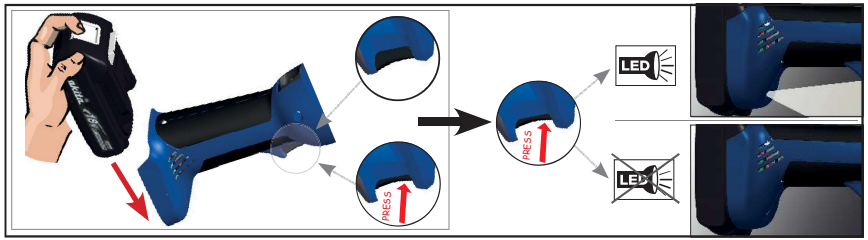


*pic. 18*




*pic. 19*

LED ***on / off***




Tab. 1

| | | | When | Why |
|---|---|---|---|---|
| 20 sec | | | after working cycle | |
| 2 x | | | after inserting the battery | Self check |
| 20 sec/2Hz | | | after working cycle | SERVICE Klauke ASC® Authorised Service Center |
| 20 sec/5Hz | | | while exceeding the temp. limit | Unit too hot |
| 20 sec<br>20 sec/2Hz | | | after working cycle | SERVICE Klauke ASC® Authorised Service Center |
| 1 x | 1 x | | after working cycle | Error: the required pressure has not been reached. The operator has interrupted the pressing cycle manually while the motor was not running. |
| 3 x | 3 x | | after working cycle | Serious Error: The pressure has not been reached while the motor was running. |

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2. Warranty
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4.1 Operation of the tool
4.2 Explanation of the application range
4.3 Mounting instructions
4.4 Service and maintenance instructions
5. Troubleshooting
6. Technical data

## Symbols

***Safety Warnings***

***Please do not disregard to avoid injuries and environmental damage***

***Application Warnings***

***Please do not disregard to avoid damaging the tool.***

## 1. Introduction

***Before starting to use the tool please read the instruction manual carefully.***

Use this tool exclusively for its determined use and follow all applicable safety instructions. This instruction manual has to be carried along during the entire life span of that tool.

The operator has
- to guarantee the availability of the instruction manual for the user and
- to make sure, that the user has read and understood the instruction manual.

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## 2. Warranty




If the tool is operated according to its intended use and the regular maintenance services are observed our warranty is 24 months from the time of delivery. Worn-out parts resulting from their intended use are excluded. We reserve the right to rework the tool in case of a justified warranty claim.

## 3. Description of the battery operated electro-hydraulic pressing tool

### 3.1 Description of the components

The hydraulic tool is a hand guided tool and consists of the following components:

Table 2 (see page I, pic.1)

| *Pos.* | *Description* | *Function* |
|---|---|---|
| 1 | Pressing head | Working unit to accommodate the pressing jaws |
| 2 | Retract slide | Slide to open the pressing jaws in case of an error or emergency |
| 3 | LED (red) | Indicator for battery charge, service Intervals and faults |
| 4 | Battery lock | Slide to unlock the battery |
| 5 | Battery | Rechargeable Li-Ion battery 18V |
| 6 | LED (white) | to illuminate the working area |
| 7 | Trigger | Actuator to start the pressing cycle |
| 8 | Jaws | Displayed are jaws with interchangeable pressing dies with multiple pressing geometries |
| 9 | Locking pin | Pin with special lock to open/close the pressing head |

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## 3.2 Brief description of the important features of the unit

**Safety features:**



The unit is equipped with a special brake which instantly stops the forward motion of the piston/dies when the trigger is released.


A white LED illuminates the working space after activating the trigger. It automatically switches off 10 sec. after releasing the trigger. This feature can be deactivated (see page V)



Hydraulic Pressure Check, HPC for short, monitors the oil pressure in the tool's oil circuit, hence ensuring a continuous, consistent press quality.


During each pressing cycle, the achieved pressing pressure is determined by a pressure sensor and compared to the required minimum value. An audible warning signal sounds if the achieved pressure differs from the specified working pressure. The user will know immediately that the fitting must be checked and repressed or replaced as required.

**Functional features:**



The hydraulic unit incorporates an automatic retraction which returns the piston into its starting position when the maximum operating pressure is reached.



A manual retraction allows the user to return the piston into the starting position in case of an incorrect crimp.


The pressing head can be smoothly turned by 350° around the longitudinal axis in order to gain better access to tight corners and other difficult working areas.



The unit is equipped with a microprocessor (page I, pic. 1.3) which shuts off the motor automatically after the compression is completed, indicates service intervals, checks battery capacity and does a trouble check e.g. informing the user through acoustical and optical warning signals about the kind of error.






Power saving function through motor switch-off.



The ergonomically formed compact housing is made of 2 components. The grip area is rubber coated and is therefore non-slip. Together with the improved center of gravity the tool allows fatigue-free working.



All tool functions can be controlled by **one** trigger. This results in an easy handling and a better grip compared to a two button operation.



Li-Ion batteries do neither have a memory effect nor self discharge. Even after long periods of non operation the tool is always ready to operate. In addition we see a lower power weight ratio with 50% more capacity and shorter charging cycles compared to NiMH batteries.



The oil used in our tool is highly biologically degradeable and not hazardous to water and has been rewarded „**The Blue Angel**". The oil is suitable for low temperatures and has excellent lubrication characteristics.



At the end of a job a print-out via a USB adapter can be generated documenting the proper function of the tool.

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## 3.3 Description of the tool indication

See page V, tab. 1

# 4. Remarks in respect of the determined use

## 4.1 Operation of the tool

The pressing cycle is started by actuating the trigger (page 1, pic. 1.7). The pressing cycle is characterized by the closing motion of the jaws. Due to the linear movement of the rollers on the piston the jaws close scissors like.

***Attention***

***A necessary condition for a permanently leaking free connection is that the pressing cycle has to be completed and the jaws are closed.***

***Attention***

***The pressing process can be interrupted at any moment by releasing the trigger.***

***Attention***

***For information concerning the suitability of the tool with regard to dimension and field of application (gas/ water/heating etc.), please refer to the documentation of your system manufacturer.***

***Attention***

***The user has to check by optical means whether the pressing jaws are completely closed.***

***Attention***

***If a pressing cycle has been interrupted the fitting has to be either dismantled or pressed a second time.***

***Attention***



***Do not operate the tool without jaws.***

***Achtung***

***For your own safety please observe all national and European safety regulations.***

The user needs to make sure that the pressing jaws are completely closed and that there are no foreign objects (e.g. plaster or stone fractions) between the pressing jaws.

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## 4.2 Explanation of the application range

The hand guided pressing tool is to mount fittings on multi Layer, copper and stainless steel type plumbing pipes with Ø 12 to 28 mm, respectively 32 mm (multi layer pipes). The unit is not supposed to be restrained in a vise. It is not allowed to use the tool in a stationary application.

The tool is not designed for continued pressing operations. After a sequence of approximately 50 completed compressions you have to make a break of 15 min. to give the tool time to cool down.

***Attention***

***Too intensive use can cause heat damages for the tool***

***Attention***

***During the operation of built-in electric motors sparks can occur which might ignite highly inflammable or explosive liquids and materials***

***Attention***

***Electric tools must not be operated in pouring rain or under water.***

## 4.3 Mounting instructions

Please reference the assembly manual of the systems supplier before mounting the fittings on the pipes. In order to safeguard a proper pressing and to guaranty a safe and reliable handling the machine must only be operated with pressing jaws/dies recommended by the provider of the pipe system and/or the tool manufacturer. If the markings on the tool and pressing jaw do not match respectively if there are no assembly instructions the user has to contact the provider of the system to request a compatibility statement.

***Attention***

***Do not use bent or damaged pressing jaws.***

***Remark***

***As a system supplier/tool manufacturer we offer perfectly designed pressing jaws for all pipe dimensions. Special designs and customer solutions upon request.***

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## 4.4 Service and maintenance instruction

The reliable performance of the tool is dependent on careful treatment and service. This represents an important condition to safeguard a lasting connection. To safeguard this the tool have to be maintained and serviced regularly.

We would like to draw your attention to the following points:

1. The electric-hydraulic pressing unit have to be cleaned and dried after each use before being put into the transportation case.
2. In order to guaranty a proper function of the machine the pressing tool should be returned to the manufacturer or one of our Authorized Service Centers (ASCs) after the red LED indicates Service (after 10.000 pressing cycles) or once every year whatever occures first.
3. The bolt joins, the rollers and their guides as well as the moveable parts of the pressing jaw must be oiled regularly in small amounts.
4. Check through test compressions or have the tool manufacturer check the tool and pressing jaws regularly for proper function.
5. Keep pressing jaws clean. Remove dirt with a brush.

In order to avoid possible malfunctions we offer you a manufacturer service consisting (see ASC) of disassembly, cleaning, exchange of possibly worn out parts assembly and final control. Only a clean and properly functioning press system can over the time safeguard a leaking free connection.

Within the determined use of the tool only the pressing jaws (page I, pic. 1.8; page IV, pic. 17+18) are permitted to be changed by the customers.

***Attention***

***Do not damage the seals of the tool. If the seals are damaged the warranty is invalidated.***

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## 5. Troubleshooting

a.) Constant flashing/indicating of the light diode display (page I, pic 1.3) or the occurence of an acoustical warning signal. ⇨ see table 1. If the failure can not be solved return the tool to the nearest service center.

b.) The tool loses oil. ⇨ Return the unit to the manufacturer. Do not open it and damage the seal of the tool.

c.) The red LED flashes 3x and simultaneously 3 acoustic warning signals occure (see table 1).

⇨ Serious fault! If this fault occures repeatedly return the unit to an Autorized Service Center (ASC). Do not open it and damage the seal of the tool.

In case of a one time occurence the fitting has to be dismantled or pressed a second time.

## 6. Technical Data

| **Type** | **MAP2LCER** |
|---|---|
| Weight incl. battery: | 1,7 kg |
| Pressing time: | 3-4 s |
| Ambient temperature: | -10°C to +40°C |
| Hydraulic oil: | Rivolta S.B.H. 11 |
| Thrust force (linear): | 15 kN min. |
| Battery voltage: | 18 V |
| Sound level: | < 70 dB (A) in a distance of 1m |
| Vibrations: | < 2,5 m/s² |
| Battery capacity: | 1,3 Ah Li-Ion (RAL1/BL1815) or 3,0 Ah Li-Ion (RAL2/BL1830) |
| Battery charging time: | 15 min. (RAL1/BL1815) or 22 min. (RAL2/BL1830) |
| Cycles/charge: | approx. 150 cycles at NW 20 (RAL1/BL1815)<br>approx. 300 cycles at NW 20 (RAL2/BL1830) |

***Remark*** ***This instruction manual can be ordered free of charge. The Part No. is HE.16012.***

# Handgeführtes batteriebetriebenes Elektrowerkzeug Typ MAP2LCER

**(D)** CE-´14 - Konformitätserklärung. Wir erklären in alleiniger Verantwortlichkeit, daß dieses Produkt mit den folgenden Normen oder normativen Dokumenten übereinstimmt:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 gemäß den Bestimmungen der Richtlinien 2006/42/EG, 2014/30/EU, 2011/65/EU

**(GB)** CE-´14 - Declaration of conformity. We declare under our sole responsibility that this product is in conformity with the following standards or normative documents:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 in accordance with the regulations of directives 2006/42/EG, 2014/30/EU, 2011/65/EU

**(F)** CE-´14 - Déclaration de conformité. Nous déclarons sous notre seule reponsabilité que ce produit est en conformité avec les normes ou documents normatifs suivants:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 conformément aux réglementations des directives 2006/42/EG, 2014/30/EU, 2011/65/EU

**(NL)** CE-´14 - Konformiteitsverklaring. Wij verklaren en wij stellen ons er alleen voor verantwoordelijk dat dit produkt voldoet aan de volgende normen of normatieve documenten:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 overeenkomstig de bepalingen van de richtlijnen 2006/42/EG, 2014/30/EU, 2011/65/EU

**(P)** CE-´14 - Declaração de conformidade. Declaramos sob nossa exclusiva responsabilidade que este producto cumpre as seguintes normas ou documentos normativos:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 conforme as disposiçoes das directivas 2006/42/EG, 2014/30/EU, 2011/65/EU

**(N)** CE-´14 - Konformitetserklæring. Vi erklærer på eget ansvarlighet at dette produkt er  i overensstemmelse med følgende standarder eller standard-dokumenter:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 i henhold til bestemmelsene i direktive ne 2006/42/EØF, 2014/30/EØF, 2011/65/EU

**(E)** CE-´14 - Declaración de conformidad. Declaramos bajo nuestra sola responsabilidad que este producto està en conformidad con las normas o documentos normativos siguientes:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 de acuerdo con las regulaciones de las directivas 2006/42/EG, 2014/30/EU, 2011/65/EU

**(I)** CE-´14 - Dichiarazione di conformità. Dichiariamo sotto la nostra esclusiva responsabilità che questo prodotto è conforme alle seguenti norme e documenti normativi:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 conformemente alle disposizioni delle direttive 2006/42/EG, 2014/30/EU, 2011/65/EU

**(DK)** CE-´14 - Konformitetserklæring. Vi erklærer under almindeligt ansvardt at dette produkt er i overensstemmelse med folgende normer eller normative dokumenter:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 i henhold til bestemmelseme i direktiverne 2006/42/EØF, 2014/30/EØF, 2011/65/EU

**(FIN)** CE-´14 - Todistus slandardinmukaisuudesta. Asiasta vastaavana todistamme täten, että tämä tuote on seuraavien standardien ja standardoimisasiakirjojen vaatimusten mukainen:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 ja vastaa säädoksiä 2006/42/EG, 2014/30/EU, 2011/65/EU

# Handgeführtes batteriebetriebenes Elektrowerkzeug Typ MAP2LCER

**(PL)** CE-´14 - Zgodnosc z dyrektywami CE. Swiadomi odpowiedzialnosci oswiadczamy, ze niniejszy produkt jest zgodny z nastepujacymi normami lub dokumentacja normatywna:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 zgodnie z postanowieniami wytycznych 2006/42/EG, 2014/30/EU, 2011/65/EU

**(GR)** CE-´14 - ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ Με αναληψη συνολικης δηλωνομε ότι το προιον συμφωνει με τα παρακατω τοοτυπα και με τα προτυπα που αναφερονται στα σχεπκο εγγραφα
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 συμφωνα με τοχς κονονισμους 2006/42/EG, 2014/30/EU, 2011/65/EU

**(H)** CE-´14 – Megfelelőségi nyilatkozat. Kéziműködtetésű elektromos kéziszerszámok:
Teljes felelősséggel kijelentjük, hogy ezek a termékek a következő szabványokkal és irányelvekkel összhangban vannak: EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037; és megfelelnek a rendeltetés szerinti 2006/42/EG, 2014/30/EU, 2011/65/EU irányelveknek.

**(CZ)** CE-´14 – Prohlášeni o shode. Prohlašujeme na vlastni zodpovednost, ze tyto produkty splnuji následujici normy nebo normativni listiny:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037;
Ve shode se smernicemi 2006/42/EG, 2014/30/EU, 2011/65/EU

**(S)** CE-´14 - Konformitetsdeklaration. Vi förklarar pá eget ansvar att denna produkt överenstämmer med följande normer eller normativa dokument:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037 enligt bestämmelserna i direktiverna 2006/42/EG, 2014/30/EU, 2011/65/EU

**(RO)** CE-´14 - Declaraţie de conformitate. Noi declarăm pe propria răspundere că acest produs este în conformitate cu următoarele norme şi documente normative:
EN 60745-1, EN ISO 12100, EN ISO 13857, EN 349, EN 60204-1, EN 28662-1, EN 61000-6-3, EN 61000-6-2, EN 60529, EN 1037; potrivit dispoziţiilor directivelor 2006/42/EG, 2014/30/EU, 2011/65/EU

Remscheid, den 21.03.2014

CE

Joh.-Christoph Schütz

Dipl.-Ing. Joh.-Christoph Schütz, CE-Beauftragter

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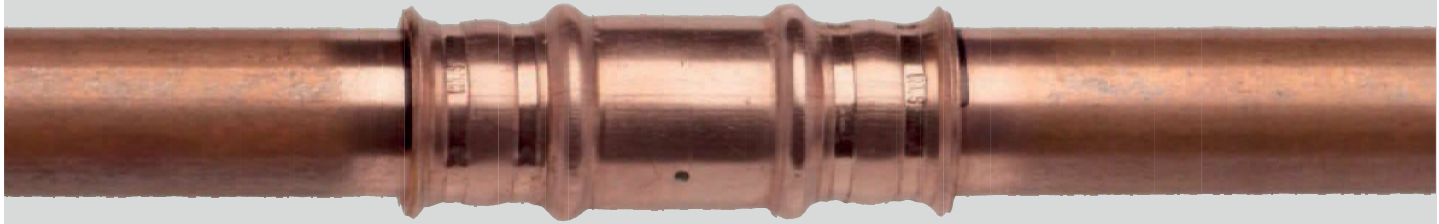


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RLS®
RAPID LOCKING SYSTEM
ORIGINAL. PATENTED. PROVEN.

The Original Flame-Free
Refrigerant Press Fittings



**⚠WARNING**

Failing to follow the instructions, guidelines and warnings contained in this booklet can lead to property damage, serious injury or death.

**SAFETY INSTRUCTIONS**

The installer/user must make every effort to read and understand this booklet in its entirety before beginning installation.

# Installation Instructions

## For 1/4" – 1-3/8" Fittings

## SAFETY INSTRUCTIONS

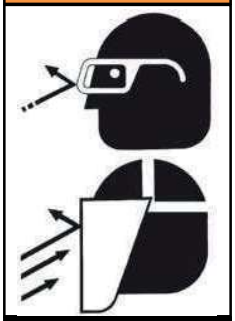
RLS fittings are only to be installed with RLS approved press tools and jaws. These are commercial and industrial tool and jaw sets — read the tool manuals in complete detail. Proper training is required to operate.

### ⚠WARNING

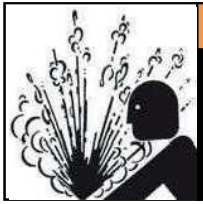


- Follow all instructions.
- Failure to follow all instructions may result in property damage, serious injury or death.
- Installation should only be done by a certified/qualified person.
- Do not perform any work on a pressurized system.

### ⚠WARNING



- 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.



### ⚠WARNING

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



Figure 1




Figure 2

## Prepare Tool and Installation Aids

1. Assure 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
     - – Tube cutter
     - – RLS depth gauge
     - – Brush
     - – Permanent marker
     - – RLS press gauge
     - – Abrasive pad




Figure 3

## Inspect Fitting and Tube

2. To ensure the integrity of the joint, visually determine if the O-rings are present and visually 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 press 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.

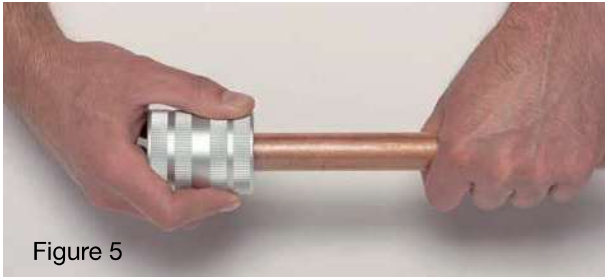
## Cut Tube

4. Cut the copper tube using the supplied or similar tube cutter (Figure 4). Ensure tube section to be pressed is straight. Caution: Do not proceed if the tube is cut at any visible angle other than 90 degrees or if the tube lis 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.


Figure 4

## 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.


Figure 5

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.


Figure 6

## Connect Tube

7. 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.

8. 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 the tube may be fully inserted and the marks may still be slightly visible as a result of the dimple or accuracy of marks.

**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.**



Figure 7

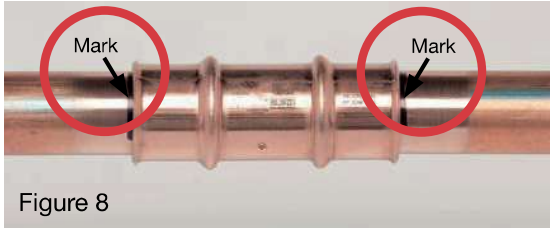


Figure 8


Figure 9

9. Press the tool locking pin (Figure 10), then rotate 45° to release (Figure 11).
10. Slide the appropriate size jaw into the press 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 THEO-RING.**

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

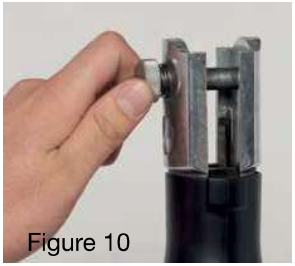

Figure 10


Figure 11

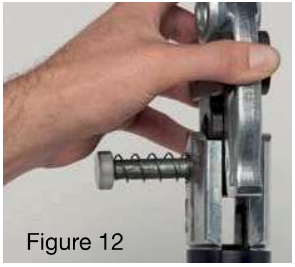

Figure 12


Figure 13


Figure 14


Figure 15

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.*



Figure 16





Figure 17

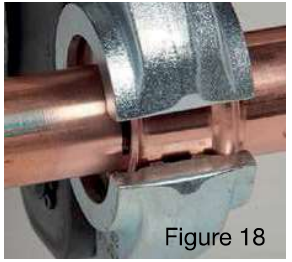


Figure 18

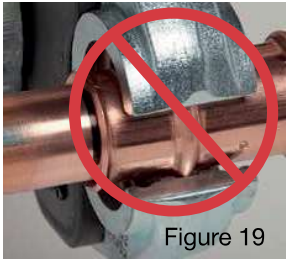


Figure 19

14. Press and hold the trigger on the tool to begin the pressing 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.

    Note: For 1-3/8" fittings only (when using 19 kN or 24 kN jaws), after the 1st press, a 2nd press must be made with the 2nd press rotated at least 60° (approximate) from the 1st (Figure 21). When using 32 kN jaws, only one press is required.

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



Figure 20

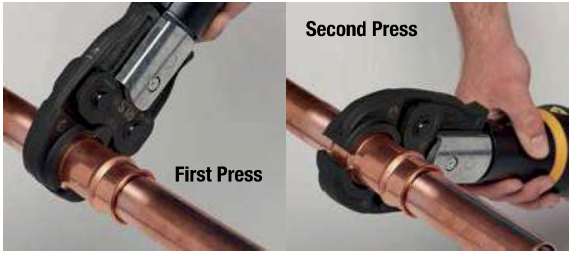



Figure 21

## Verify Connection

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

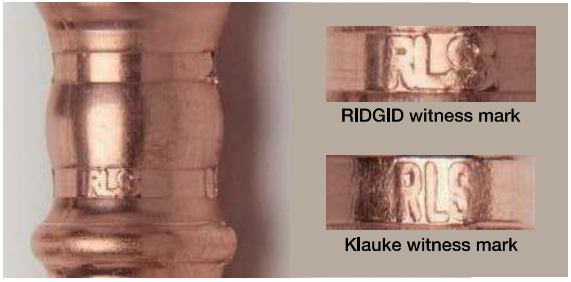



Figure 22

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

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

Use caution – flashing may be sharp.

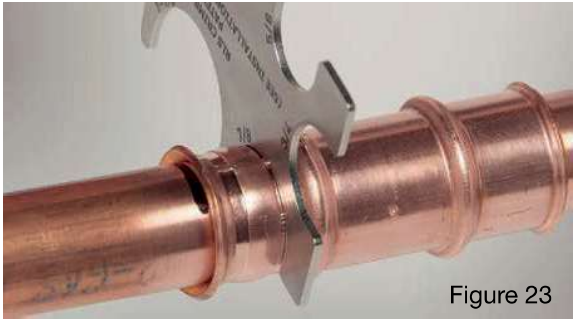


Figure 23

**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 |

## 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.*

## SAE/Euro Flare Torque Requirements (Per ARI Guideline M-97 45° Refrigeration Flare Fittings and Copper Tubing)

| Size | Torque, ft-lbs [N*m] | |
|---|---|---|
| | Minimum | Maximum |
| 1/4" | 8 [11] | 10 [14] |
| 3/8" | 15 [20] | 25 [34] |
| 1/2" | 25 [34] | 35 [47] |
| 5/8" | 40 [54] | 55 [75] |
| 3/4" | 50 [68] | 60 [81] |

**Note: Per Section 9.5 of the M-97 Guideline, when applying torque to the flare connection the use of lubricants/lubrication is not recommended.**

**Note: Applying a torque above the maximum limit may distort or damage the sealing surface of the flare.**

## RLS Product Specifications

**Applications**

High-pressure HVAC/R, glycol, non-potable water

**Approved Copper Tubing Types**

- Approved Copper Tubing Types for 32 kN Tool/Jaws
  - Hard/Drawn: 1/4" - 2-1/8" Type ACR, L, K
  - Soft/Annealed: 1/4" - 1-3/8" Type ACR, L, K
- Approved Copper Tubing Types for 19 kN and 24 kN Tool/Jaws
  - Hard/Drawn: 1/4" - 1-3/8" Type ACR, L, K
  - Soft/Annealed: 1/4" - 1-3/8" Type ACR, L, K
- Approved Copper Tubing Types for 15 kN Tool/Jaws
  - Hard/Drawn: 1/4" - 1-1/8" Type ACR, L; 1/4" - 7/8" Type K
  - Soft/Annealed: 1/4" - 1-1/8" Type ACR, L; 1/4" - 7/8" Type K

**Application Parameters**

Temperature Range: -40°F to +300°F (-40°C to +149°C)
Continuous Operating Temperature: 250°F (121°C)
Maximum Rated Pressure: 700 psi (48 bar)

**Agency Certifications and Approvals**

- 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)
- ICC-ES, PMG-1296
- 2021, 2018, 2015, 2012, 2009, 2006 International Mechanical Code (IMC)
- 2021, 2018, 2015, 2012, 2009, 2006 International Residential Code (IRC)
- 2021, 2018, 2015, 2012, 2009, 2006 Uniform Mechanical Code (UMC)
- CRN Approved (0A22551 and 0A18303)

**Approved Refrigerants**

For a list of approved refrigerants, visit rapidlockingsystem.com.

## Warnings

- Use only with approved refrigerants. Review product specifications for more details.
- Periodically check to ensure the jaws are meeting and aligned.
- Wear proper eye protection during installation.
- Keep hands and fingers away from the jaws during use.
- Use supplied brush to ensure jaws are debris free.
- If brazing or soldering nearby, ensure proper sealing of the fitting by maintaining a minimum braze distance from connections. Refer to the table on page 9 for minimum distance from a fitting to a braze joint per tube size. The installer should take the conventional precautions to keep the fitting cool by providing a heat sink (wet ragging, heat block, etc). This will ensure that the O-ring is not damaged during the brazing process.

## Troubleshooting

**Recommended steps if a coupling leaks after it is pressed.**

- Inspect tubing for scratches, incise marks and dents prior to tube cutting. Be careful when using a knife to cut off plastic shipping caps on tubes.
- Take time to cut the tubing properly 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 steps 5 and 6.
- Verify proper tube insertion depth using the 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 5 if you do not have a gauge.
- Verify the proper press diameter using the provided press gauge.
- Verify correct jaw is installed for the fitting you are trying to press.
- If jaw is sticking during 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 press process.
- 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 press area that can leak out over time, and IS NOT a fitting leak. This is more likely to occur on smaller fittings.

**If a fitting does leak, do not braze it.**

- 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.**

## Patents

RLS designs, develops and manufactures the original, patented press-to-connect fittings engineered for high-pressure refrigeration lines used in the air conditioning and refrigeration industries. This page is intended to serve as notice, including notice under 35 U.S.C. § 287(a).

**RLS 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
- Brazilian Patent No. BR112014016012-0
- Canadian Patent No. 2,800,360
- Canadian Design Registration No. 149228
- EUIPO Registered Community Design No. 002218636-0001
- Japanese Patent No. 6051468
- Other pending patent applications

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For technical questions or replacement information for any of the RLS installation aids, send an email to **info@rapidlockingsystem.com**.