

Rivet tools / tools for blind rivets

RL100-2 Riveting tool

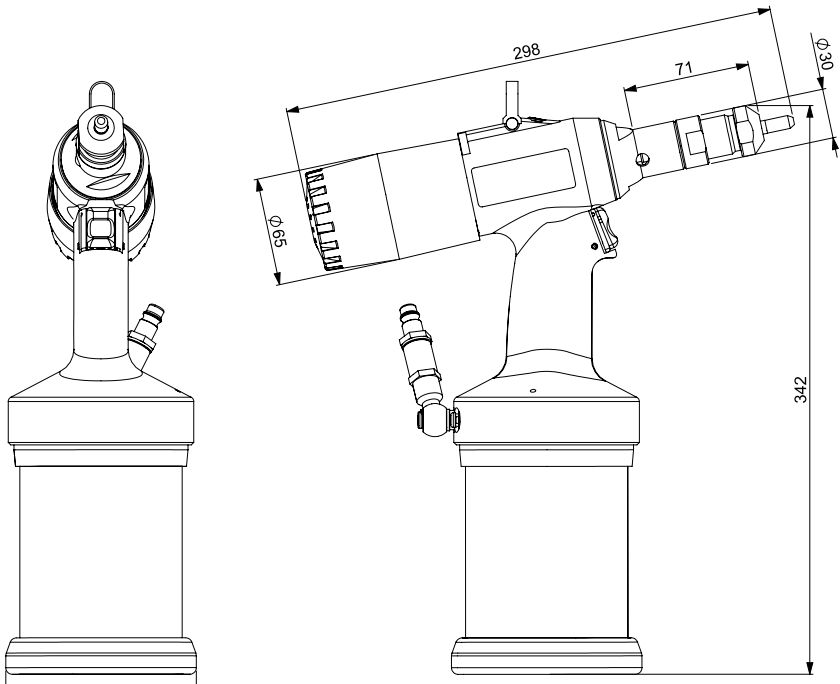
Operating manual



Content

1.	Operating instructions	5
2.	General description	5
3.	Scope of use	5
4.	Occupational health and safety	6
5.	Safety measures	6
6.	Specific safety instructions	6
7.	Basic tool set-up	7
8.	Commissioning	8
9.	Use of tools	8
10.	Intended use	12
11.	Compressed air requirements	13
12.	Storing the tool	13
13.	Transportation instructions	14

14.	Operator requirements	14
15.	Tool modifications	14
16.	Inspection schedule	15
17.	Inspection and maintenance	16
18.	Troubleshooting	17
19.	Technical specifications	18
20.	Disposal of the riveting tool	18
21.	Warranty	18
22.	Package contents	19
23.	Safety pictograms	20
24.	Declaration of Conformity	21



1. Operating instructions

Please read these operating instructions carefully prior to using the tool. Improper use may cause the tool to work incorrectly. All information and instructions contained in this document apply to the specified tool and may only be used for the purpose of operating this particular tool.

Prior to adjusting, operating or servicing this tool, the individuals concerned must read and observe these operating instructions. In certain cases, the seller may offer and carry out training courses as applicable.

To ensure that the tool can be operated as intended, it is vital that all technical and safety measures are followed..

2. General description

The RL100-2 is a high-speed, hydro-pneumatic riveting tool designed to precisely install blind rivet nuts and blind rivet studs. The spin action delivered by the tool's hydro-pneumatic system enables rivets to be pre-assembled on the mandrel and then detached.

The pull-to-force and pull-to-stroke settings can be adjusted individually or in combination to deliver the best-possible installation results regardless of the field of application.

This hydro-pneumatic tool is designed for the installation of M6 to M16 blind rivet nuts and M6 to M10 blind rivet studs.

3. Scope of use

Material	Size of blind rivet nut					
	M6	M8	M10	M12	M14	M16
Aluminium, brass	X ¹	X ¹	X ¹	X ²	X ²	X ^{2,3}
Steel	X ¹	X ¹	X ²	X ²	X ²	X ^{2,3}
Stainless steel	X ¹	X ¹	X ²	X ²	X ²	X ^{2,3}

Material	Size of blind rivet stud					
	M6	M8	M10	M12	M14	M16
Aluminium, Brass	X ¹	X ¹	X ¹			
Steel	X ¹	X ¹	X ²			
Stainless steel	X ¹	X ¹	X ²			

¹ Use pull-to-stroke to adjust

² Use pull-to-stroke, pull-to-force or combination of both to adjust

³ Always check first to see if the installation of M16 blind rivet nuts is possible

Always read these operating instructions prior to using this tool and observe the applicable safety regulations.

4. Occupational health and safety

The following directions and principles apply to the riveting tool described in these operating instructions and to all user groups.

Aside from the general directions outlined in this segment concerning both the tool and its use, additional safety instructions may be provided throughout this document in respect of individual items or components.

5. Safety measures

Fundamental safety measures for preventing damage and injuries. Improper use of the tool may result in personal injury or property damage. To avoid damage or injury, always follow the corresponding safety instructions and take the necessary safety precautions. Any maintenance, service or repair work performed on the tool must only be carried out by suitably qualified personnel.

6. Specific safety instructions

This riveting tool has been designed exclusively for installing blind rivet nuts and blind rivet studs. The customer shall be solely responsible for any modifications that are made to the riveting tool!

IMPORTANT!

- Do not use this tool before reading and understanding these operating instructions.
- Do not operate this tool if you are unwell, if you have taken any form of medication, or are under the influence of alcohol.
- Do not use the tool if parts are missing or there is discernible mechanical damage.
- Never aim the riveting tool at any individuals and only operate it when in contact with a work piece.
- Only use the riveting tool within a working temperature range of 5 °C to no more than 45 °C.
- A maximum operating pressure of 7 bar must not be exceeded.
- Should the air pressure exceed the max. 7-bar limit, use the appropriate equipment to reduce it.
- Only use fittings and hoses with an operating pressure rating of 10 bar (compressed air).
- Prior to adjusting the tool settings or replacing any components, always disconnect the riveting tool from the compressed air line.

- The recommended threaded mandrels/internal threaded mandrels and nosepieces must be chosen depending on the blind rivet nut/blind rivet stud diameters concerned.
- The prescribed personal protective equipment should be used/worn at all times.
- If not in use, the tool must always be disconnected from the compressed air supply.
- The tool must only be used to install rivets.
- Do not use the tool without a nose-piece and fitted threaded mandrel/ internal threaded mandrel (5).
- Never lift the riveting tool by the air hose.
- Do not use the tool without a fitted end cap (10).
- The compressed air supply must be lubricated or oil filled manually to prevent any issues arising with the motor.

NOTE

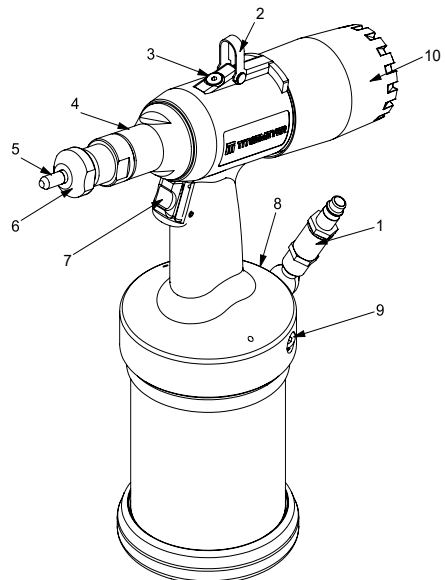
The manufacturer shall not be liable for any damage incurred due to improper repair work or the use of non-original spare parts.

The warranty shall be rendered invalid if any repair work results in the riveting tool or the seals becoming damaged.

7. Basic tool set-up

Basic set-up - RL100-2:

1. Compressed air supply
2. Lifting attachment
3. Oil refill screw
4. Nose cap
5. Threaded mandrel/internal threaded mandrel
6. Nosepiece
7. Trigger (rivet installation)
8. Trigger (to spin off threaded mandrel)
9. Force adjustment screw
10. Stroke adjuster (under housing)



Basic tool equipment
overview

8. Commissioning

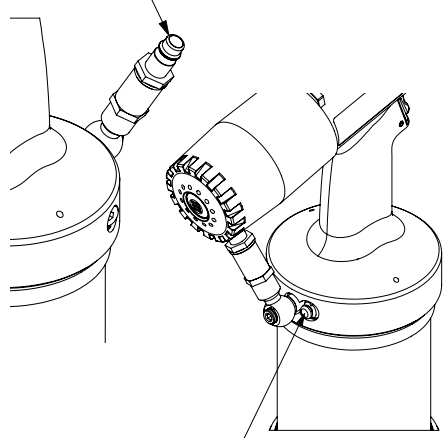
- Visual inspection: Check for any external damage, and the presence of a reducing valve
- Check for installation of the correct threaded mandrel and nose piece (see chapter maintenance - disassembly and assembly of threaded mandrel and nose piece)
- Check the maximum stroke and minimum force settings through visual inspection of the adjusters. Note: to check the stroke setting, it is necessary to remove the back cover.
- Connect the tool to the air supply. **ATTENTION.** When connected to air, the valve system will be activated. This is indicated by a small movement of the main hydraulic piston, and a small amount of compressed air being exhausted into the atmosphere.

9. Use of tools

Attention

- We recommend always using the tool in a combined stroke and force setting operating mode. This helps to prevent riveting errors, damage to the riveting tool or to the blind rivet nut. In addition, the process will be faster, and air consumption will be lower.
- If one type of blind rivet nut is to be used in application materials of different thicknesses, then it is necessary

Connecting the tool to the air supply



Trigger (8) (to spin off the threaded mandrel)

to set the riveting force as a priority. Adjust the force first on the thickest application material. Then, adjust the working stroke for the thinnest application material.

- When using blind rivet nuts M5 and smaller, or with blind rivet nuts made of soft materials (aluminum, brass), it is necessary to set the working stroke as a priority.
- Adjusting the stroke setting to the minimum required helps in speeding up the installation cycle, reducing air consumption, and preventing unwanted errors.

9.1 Riveting settings with priority of force

Before starting the force setting procedure

- The stroke adjuster must be set to maximum stroke. To achieve this, the stroke adjuster nut must be turned all the way to the maximum position (counterclockwise rotation).
- The force adjuster must be set to minimum force. To achieve this, the screw must be turned to the stop, to the maximum position (rotation counterclockwise).

1. Force adjustment

- Place the wrench on the force adjuster bolt. Turn the force adjuster screw $\frac{1}{4}$ turn to the right (clockwise).
- Perform a Riveting TEST (see riveting test).
- Check the riveted joint: The size of the blind side bulb, the length of the blind rivet nut after installation, and the strength of the riveted joint. If the riveted joint meets the requirements, then force setting is finished. If the riveted joint does not meet the requirements, repeat the procedure, increasing the force step by step.
- Achieve the desired force setting by increasing or decreasing the riveting force until the blind rivet nut deforms as required and the ideal setting for the riveted joint is achieved.
- Once the correct force has been set, then move on to stroke adjustment.

2. Stroke adjustment

- Screw the stroke adjuster nut to the smallest possible stroke by turning to the right (clockwise).
- Turn the stroke adjustment nut to the left (counterclockwise) $\frac{1}{4}$ turn (0.25mm stroke)
- Perform a Riveting TEST.
- Check the riveted joint: The size of the blind side bulb, the length of the blind rivet nut after installation, and the strength of the riveted joint. If the riveted joint meets the requirements, then the setting of force and stroke is finished. If the joint does not meet the requirements, repeat the procedure, increasing the stroke step by step.

9.2 Riveting settings with stroke priority

Before starting the stroke adjustment procedure

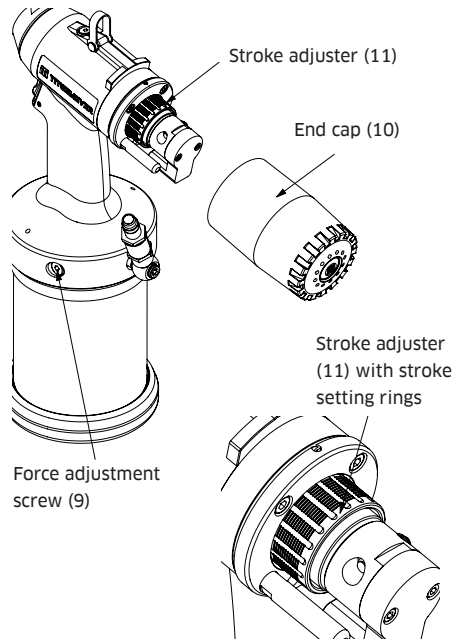
- The force adjuster must be set to approximately 50% of maximum force. This is achieved by turning the force adjustment screw as far as it will go to the maximum position (clockwise rotation) and then turning the screw 3 turns to the left (counterclockwise).
- The stroke adjuster must be set to minimum stroke. To achieve this, the stroke adjuster nut must be turned all the way to the maximum position (clockwise).

1. Stroke adjustment

- Turn the stroke adjustment nut to the left (counterclockwise) ¼ turn (0.25mm stroke)
- Perform a Riveting TEST.
- Check the riveted joint: The size of the blind side bulb, the length of the blind rivet nut after installation, and the strength of the riveted joint. If the riveted joint meets the requirements, then the setting of stroke is finished. If the joint does not meet the requirements, repeat the procedure, increasing the stroke step by step.
- Once the correct stroke has been set, then move on to force adjustment.

2. Force adjustment

- Place the wrench on the force adjuster bolt. Set the force adjuster to minimum force. To achieve this, the screw must be turned to the stop, to the maximum position (rotation counterclockwise).
- Turn the force adjuster screw ¼ turn to the right (clockwise).
- Perform a Riveting TEST.
- Check the riveted joint: The size of the blind side bulb, the length of the blind rivet nut after installation, and the strength of the riveted joint. If the riveted joint meets the requirements, then the setting of stroke and force is finished. If the joint does not meet the requirements, repeat the procedure, increasing the force step by step.

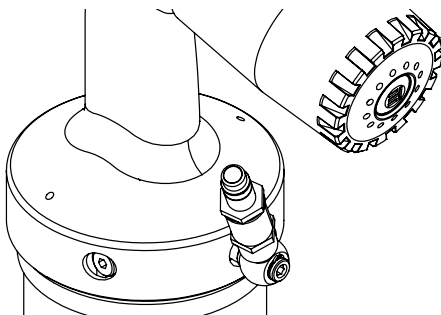


9.3 Riveting TEST

- Screw the rivet nut onto the threaded mandrel by hand, BE CAREFUL not to tighten.
- Insert the rivet into the hole of the test material. The thickness of the material and the diameter of the hole should correspond to the requirements of the rivet joint being set.
- Squeeze the trigger and hold, until the blind rivet nut has been installed, and the mandrel has unscrewed itself completely out of the blind rivet nut.
- Release the trigger.

9.4 Tool operation

- Connect the tool to the air supply.
ATTENTION. When connected to air, the valve system will be activated. This is indicated by a small movement of the main hydraulic piston, and a small amount of compressed air being exhausted into the atmosphere.
- Place the thread of the nut rivet against the threaded mandrel and press down on the mandrel. The threaded mandrel is automatically rotated to the right (clockwise) and the blind rivet nut is threaded onto it.
- Insert the nut rivet into the hole in the application material. ATTENTION: Hold the tool so that the axis of the threaded mandrel is perpendicular to the surface of the material.
- Press and hold the riveting trigger until the entire riveting cycle has taken place (installation of the blind rivet nut, followed by the unscrewing of the mandrel completely out of the blind rivet nut).



10. Intended use

To ensure compliance with all of the relevant safety measures and that the riveting tool will work correctly, the following requirements must be fulfilled:

- The tool must only be used in compliance with the defined technical specifications and all specifications concerning the use, assembly, connection of the tool as well as the permissible environmental and working conditions observed. These specifications and conditions, along with all information concerning use of the tool, are stipulated in the documents as well as the operating and maintenance instructions contained in the operating manual supplied with the tool.
- The tool may only be operated in compliance with the relevant local regulations and tool-specific conditions, in particular the specifications and potential hazards that need to be observed when using the tool.
- All measures related to the proper upkeep of the tool, e.g. transportation and storage, maintenance and regular inspection, must be observed.
- Only use quick-release safety couplings if the compressed air hose is to be permanently connected to the compressed air source.
- Always apply the riveting tool at right angles (90°) to the rivet installation assembly surface.

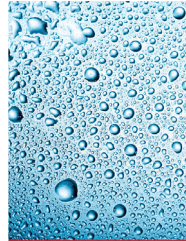
Compressed air supply

- The pressure regulator must be equipped with a filter unit to collect any dirt particles or condensate. If the pressure regulator fitted does not incorporate a filter unit, precautions must be taken to ensure that the compressed air is free from any dirt particles and/or condensation.
- We recommend using an automatic lubrication unit in the compressed air system. If an automatic air lubrication unit cannot be used, 3 drops of oil must be added to the device manually each hour that the tool is in operation. The pneumatic motor may seize up otherwise. A seized-up motor shall not constitute grounds for complaint.
- The distance between the air supply pressure regulator and the riveting tool must not exceed 3m.
- The supply line must be resistant to oil and other liquids and be of a suitable quality for the conditions under which it is required to operate.
- The internal diameter of the air hose must be no less than 6 mm.
- The maximum achievable pull-to-force will depend on the permissible input pressure being maintained.

11. Compressed air requirements

ISO 8573-1

Compressed air quality classes ISO 8573-1	Solids		Water	Oil
	Maximum size μm	Maximum concentration mg/m^3	Maximum pressure dew point $^{\circ}\text{C}$	Maximum concentration mg/m^3
2	1	1	-40	0.1



Note: The stated maximum concentrations relate to 1 bar abs., +20 °C and 60 % relative humidity. The more the pressure exceeds the atmospheric pressure, the greater the individual concentrations.

12. Storing the tool

After first use

If you are not going to use the riveting tool any further, store it away in its original packaging in a clean and dust-free place.

After long-term storage

After long-term storage (about 3 years), replace the hydraulic oil before use. The hydraulic oil may only be replaced by a trained specialist and in compliance with the operating instructions. Where needed, please contact a Titgemeyer service centre for professional advice and assistance.

13. Transportation instructions

The riveting tool is delivered fully assembled. It needs to be handled with care. This product contains hydraulic oil.

14. Operator requirements

All planning, assembly, installation, commissioning, maintenance and repair work must only be performed by skilled personnel and subsequently inspected by a suitably qualified expert. Training can be provided by the manufacturer by arrangement.

The occupational health and safety specialists must ensure the following:

- All safety-related work tasks must only be performed by suitably qualified personnel.
- Personnel must be suitably qualified for the respective specialist tasks to be conducted (training, education, experience) or be familiar with the relevant standards, specifications, accident prevention regulations and system properties. It is essential that these specialists are capable of identifying and preventing any potential risks in a timely manner.

15. Tool modifications

No structural modifications that could negatively affect the safety of the tool may be performed on the tool without the manufacturer's consent. Any improper repairs or the use of non-original spare parts are deemed to constitute an improper structural modification of the tool. In such instances, the manufacturer can no longer guarantee the proper operation of the tool and the product warranty will be voided. The warranty shall equally not apply to the tool in the event that any seals are damaged.

Risk of injury due to improper handling!

This tool can be operated safely if the regulations and requirements contained in this manual have been read, understood and followed. The operator must observe the procedures described in this manual. Any maintenance and repair work not described in this operating manual may only be performed by personnel who have received the required training from Titgemeyer's training specialists.

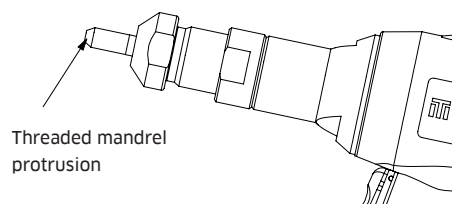
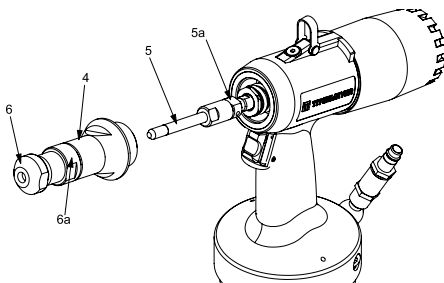
16. Inspection schedule

Inspection intervals

- Daily inspection / check after 50 rivets
 - Check for oil leaks
 - Check for unexpected air leakage
 - Check that the tool is working properly and correctly installing the rivets
 - Check that the settings are correct and the riveting mechanism is properly secured
 - Check the nosepiece (6) and threaded mandrel/internal threaded mandrel (5) for any wear and tear or dirt and replace any contaminated, damaged or worn parts as needed.
 - Stop using the tool immediately if you notice any signs of apparent defects or damage.
- Weekly inspection/ after 5.000 cycles
 - Check the nosepiece (6) and threaded mandrel/internal threaded mandrel (5) for any wear and tear or dirt and replace any contaminated, damaged or worn parts as needed.
 - Refill with oil as needed.
- Full inspection to be performed by authorised personnel (or the manufacturer) once a year or after 500,000 cycles
 - Comprehensive inspection and servicing of the riveting tool mechanism
 - Inspection of all parts for wear and tear and replacement as needed
 - Oil change

Do not use any highly active cleaning agents or flammable liquids when cleaning the tool!

The riveting tool must be cleaned and checked for mechanical defects prior to each use. If storing the tool for an extended period, first clean the tool and then apply a thin layer of corrosion-inhibiting grease to all external metal parts.



17. Inspection and maintenance

Nosepiece assembly and disassembly

- Disconnect the tool from the compressed air supply.
- Replace both the nosepiece (6) and nose cap (4) using a size 20 mm hex wrench.
- If fitting a different-sized nosepiece (6), the appropriate threaded mandrel/internal threaded mandrel (5) will also need to be fitted. Two size 13 mm hex wrenches will be needed to perform this task.

Changing the mandrel

- Disconnect the tool from the compressed air supply.
- Disassemble the nosepiece (6) and counter nut (6a) from the nose cap (4) using two size 27 mm hex wrenches
- Remove the nose cap (4) using a size 30 mm hex wrench size.
- Replace the threaded mandrel (5) using two size 13 mm hex wrenches and tighten with the safety nut (5a).

- Reassemble the tool by following the above steps in reverse.
- Make sure that all of the components are secured in place by the tightened counter nuts.
- The nosepiece (6) then needs to be adjusted to its correct position (See “Adjusting the nosepiece”).
- Re-connect the tool to the compressed air supply.

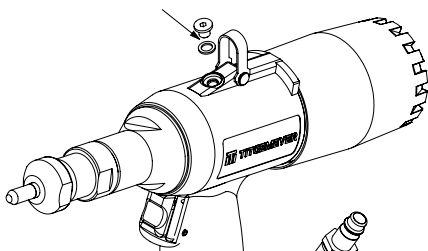
Adjusting the nosepiece

- To ensure that the tool delivers the right results, the nosepiece (6) must be adjusted to the length of the blind rivet nut.
- Correct setting: At least 1 thread of the mandrel (5) protrudes from the blind rivet nut.
- Adjust the position of the nosepiece (6) by turning it in the desired direction.
- Secure the nosepiece (6) to the nose cap (4) using the counter nut (6a) and two size 27 mm or 30 mm hex wrenches.

Oil refill

- Refill with oil if you notice a loss of stroke during the rivet installation process.
- When refilling with oil, make sure that no dirt is able to enter the hydraulic system.
- Disconnect the tool from the compressed air supply.
- Remove the nose cap (4), including

Oil refill screw with USIT ring



the nosepiece (6 and 6a).

- Use a size 4 Allen key to remove the screw at the top of the tool.
- Fill the oil transfer syringe with the recommended hydraulic oil (See “Technical specifications”) and place it over the brass fill screw. Then screw the adapter onto the fill screw outlet.
- Squeeze the hydraulic oil into the tool by pump the syringe piston multiple times. While pumping, the hydraulic piston will move forwards and backwards.
- Remove the fill screw and re-attach the cylinder screw and USIT ring. Then fit the nose cap.
- Wipe off any oil that may have spilled onto the tool.
- Perform a functional test (20 dummy installations without rivets) before using the tool.

18. Troubleshooting

The operator must ensure the following:

- Maintenance personnel must be readily available at all times.
- Maintenance personnel are qualified to properly respond to and remedy riveting tool malfunctions as well as malfunctions in related systems.
- All malfunctions/failures are analysed by suitably qualified personnel, any defects are repaired and the operation is optimised in such a way that a repetition of such malfunctions/failures is avoided in the future.

19. Technical specifications

Total weight (model-dependent)	2.64 kg
Dimensions (H x L)	298 x 342 mm
Blind rivet nut diameter	M6 - M16
Pull-to-force	15 - 36 kN / 6 bar
Stroke	12 mm
Speed of riveting cycle	0.9 s
Air consumption per rivet	5.8 l [ANR]
Noise level	89 dB at 6 bar
Operating pressure	6 bar, max. 7 bar
Compressed air connection	6 mm (G 1/4")
Hydraulic oil standard	Mineral hydraulic oil class VG 32 according to ISO TC 28/SC4 with a viscosity of 32 mm ² /s at 40 °C
Sample hydraulic oil product:	OH-HM 32
Lubricant standard	Plastic grease ISO 6743-9
Sample lubricant product:	LV2EP
Air motor lubricating oil	Interfon Lube PN32

20. Disposal of the riveting tool

Dispose of the tool in compliance with the EU directives. Check for hydraulic oil inside the riveting tool. Remove any oil and dispose of it in compliance with the environmental regulations.

21. Warranty

Titgemeyer GmbH & Co. KG provides a 12-month warranty from the date of purchase. The warranty does not cover consumables (jaws, nosepieces, mandrels, etc.).

Titgemeyer GmbH & Co. KG warrants that all power tools have been carefully manufactured and that no defects in material or workmanship will arise under normal use of the tool for a period of one (1) year. This warranty only applies to the initial purchaser of the tool and is subject to the tool only being used for its original intended purpose.

Warranty exclusions: normal wear and tear. Periodic maintenance and repair work as well as replacement parts needed due to the normal wear and tear of parts/components are excluded from the warranty coverage. Improper use. Defects or damage resulting from the improper use/operation, storage, misuse, accidents or neglect, such as physical damage to the tool, are excluded from

coverage. Unauthorised maintenance/ service work or modifications. Defects or damage resulting from maintenance/ service work, testing adjustments, assembly, repair work, alterations or modifications of any kind performed by anyone other than Titgemeyer GmbH & Co. KG or its authorised service centres are hereby excluded from the warranty coverage.

Should this tool fail to be up to the warranty's valid standards, promptly return the tool to our Titgemeyer GmbH & Co. KG service centre or the factory authorised service centre location nearest you.

Titgemeyer GmbH & Co. KG will then replace, free of charge, any part or parts found by us to be defective due to faulty materials or workmanship and return the repaired tool to you. This represents our sole obligation under this warranty. Under no circumstances shall Titgemeyer GmbH & Co. KG be liable for any consequential or special damages arising from the purchase or use of this tool.

22. Package contents

- 1 x RL100-2 riveting tool
- 1 x M8 mandrel
- 1 x M10 mandrel
- 1 x M12 mandrel
- 1 x M8 nosepiece
- 1 x M10 nosepiece
- 1 x M12 nosepiece
- 1 x No. 3 Allen key
- 1 x No. 4 Allen key
- 1 x oil transfer syringe
- 1 x fill screw

23. Safety pictograms



Wear protective goggles



Wear protective gloves



Wear ear protection



Tools & Automation

DECLARATION OF CONFORMITY

Product Name: Riveting tool RL100-2

Catalogue Number: 99-0306:TTA

Type number: 99030602012021

The riveting tool RL100-2 works with the high-speed hydro-pneumatic principle. The tool is designed for precise setting of blind rivet nuts and blind rivet screws. The tool is equipped with a pneumatic system for Spinning on the rivet in the nosepiece and Spinning off at various intervals, with the possibility of adjusting the pulling force and limiting the stroke of the tool.

Manufacturer:

Titgemeyer Tools & Automation spol. s r.o.

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We hereby declare that the products conform to the following standards and guidelines:

2006/42/ES, the Machinery Directive

Name	Date and place	Signature
Approved by Director Antonín Solfronk	In Písek 31.03.2021	

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