

Rivet tools / tools for blind rivets

RL100-2 Riveting tool

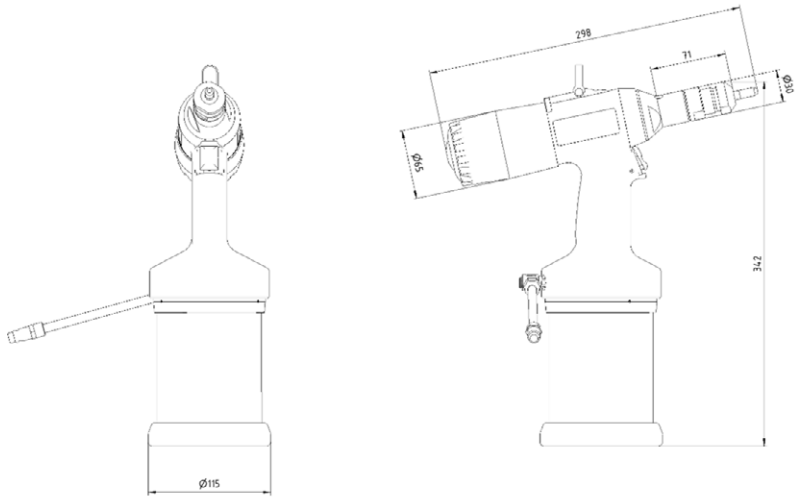
Operating manual



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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

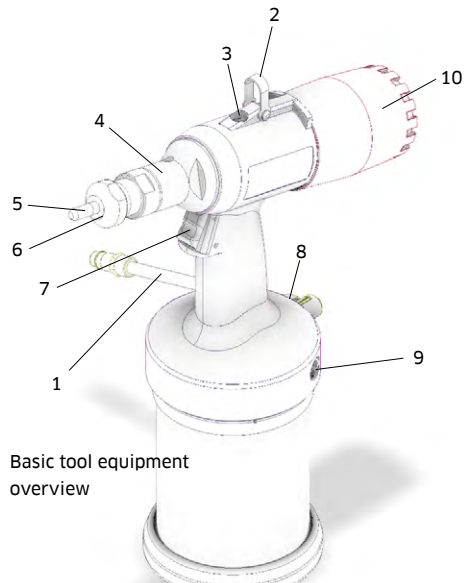
The manufacturer shall not be liable for any damage incurred due to improper repair work or the use of non-original spare parts.

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

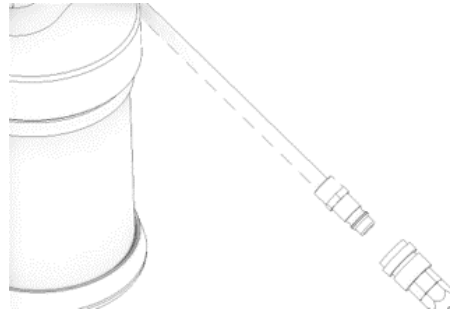
Check the riveting tool visually before commencing any work

- For visible damages
- For oil leaks

Test of the tool function without rivets nuts prior processing -20 times (Tool operation)

9. Tool operation

- Perform a functional test after inspecting the tool or prior to using it for the first time (commissioning)
- Connect the tool to the air supply (6 to 7 bar)
- To prevent the tool from being damaged due to an overly high supply of air pressure, the integrated safety valve will trigger and release air. If this occurs, adjust the air pressure to the correct value.
- Check that the quick connectors have been correctly fitted - no hissing (air discharge) should be audible.
- Push the blind rivet nut onto the threaded mandrel. This will start to rotate automatically until the rivet is fully situated on the mandrel.
- Be sure to hold the tool perfectly perpendicular (90°) to the surface of the work piece.
- Press and hold the trigger (7): the riveting tool will perform a pulling motion. After finishing the riveting process, the mechanism will automatically return to its initial position and the mandrel will spin off the blind rivet nut.
- If the blind rivet nut needs to be removed from the mandrel for whatever reason, press the trigger (8) to activate the spin off action: the threaded mandrel will then spin off the blind rivet nut.



Connecting the tool to the air supply

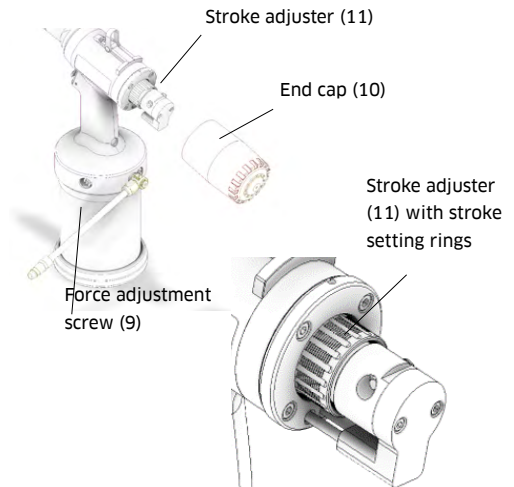


Trigger (8) (to spin off the threaded mandrel)

9.1 Set-up options: setting the pull-to-stroke/pull-to-force

- The tool's pull-to-stroke and pull-to-force can be set individually or in combination.
- If you want to use the riveting tool for different clamping thicknesses without having to adjust the tool settings, the recommended approach would be to use the "Setting the pull-to-force" option.
- The "Setting the pull-to-stroke" option is ideal for use on smaller blind rivet nut dimensions (M6 or M8) or if the rivets to be used are made of soft materials.
- The pull-to-stroke setting is also recommended if working with a single clamping thickness only.
- To set the pull-to-stroke and pull-to-force in combination, please follow the steps outlined below.

- Each snap index on the stroke adjuster (11) equates to a change of stroke of roughly 0.08 mm.
- Each marking on the stroke adjuster is equivalent to roughly 1 mm.

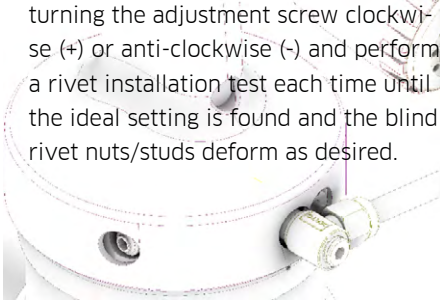


9.3 Setting the pull-to-force

9.2 Setting the pull-to-stroke

- To activate the pull-to-stroke mechanism, the force adjustment screw (9) must first be set to its maximum value. To do this, rotate the force adjustment screw (9) clockwise as far as it will go (max. pulling force).
 - Remove the end cap (10).
 - Adjust the stroke by turning the stroke adjuster (11): to reduce the stroke, rotate clockwise; to increase the stroke, rotate anti-clockwise.
- To adjust the pull-to-force, the stroke adjuster (11) must be set to its maximum position (rotate anti-clockwise)
 - First, set the pull-to-force to its lowest value by turning the force adjustment screw (9) anti-clockwise until it reaches its end position
 - Then screw on the blind rivet nut/blind rivet stud by hand
 - Perform a rivet installation test. If correctly installed, the nut should not deform. The blind rivet nut/blind rivet stud should spin off from the mandrel/internal mandrel automatically.

- Turn the force adjustment screw (9) clockwise to increase the pull-to-force.
- After adjusting the pull-to-force, press the trigger at least 5 times before installing the next rivet.
- Check the outcome of the rivet installation that results from the new setting and repeat the entire process if necessary while gradually increasing the pull-to-force.
- Adjust to the required pull-to-force by turning the adjustment screw clockwise (+) or anti-clockwise (-) and perform a rivet installation test each time until the ideal setting is found and the blind rivet nuts/studs deform as desired.



Pull-to-stroke and pull-to-force settings in combination

A combination of both functions is especially advantageous whenever a high pull-to-force should be achieved whilst also protecting the threaded mandrel as well as the internal thread of the rivet nut.

It is also the recommended choice in the case of small-diameter blind rivet nuts/ blind rivet studs or blind rivet nuts/ blind rivet studs made from soft materials.

- First, adjust the pull-to-stroke setting as desired by following the steps outlined under “Setting the pull-to-stroke”.
- Then adjust the pull-to-force by turning the force adjustment screw (9) as needed (clockwise to increase the pull-to-force; anti-clockwise for less pull-to-force) until you achieve the ideal pull-to-force setting for the rivet installations you wish to perform.

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.
 - 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.

Compressed air supply

- To ensure the proper operation of the tool, the minimum/maximum permissible input pressure rating of 6-7 bar must always be maintained. A suitable pressure reducing valve must be used where appropriate. Failure to maintain the specified pressure may result in personal injury or property damage.

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 $^{\circ}\text{C}$
2	1	1	-40
		Maximum concentration mg/m^3	Maximum concentration mg/m^3
			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 TTA's training specialists.

16. Inspection schedule

Inspection intervals

- Daily inspection
 - 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

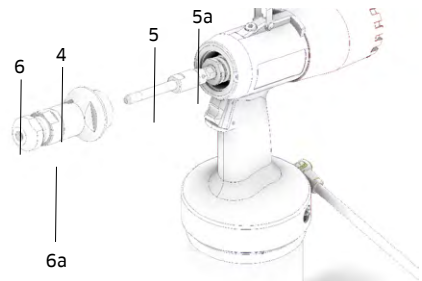
Do not use any highly active cleaning agents or flammable liquids when cleaning the tool!

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.

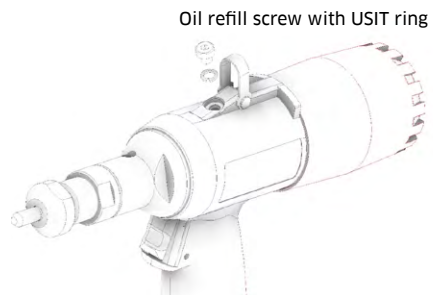
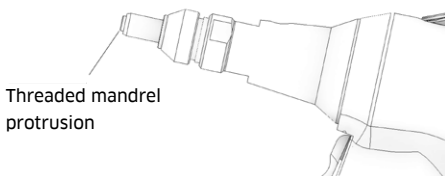
- Make sure that all of the components are secured in place by the tightened counter nuts.
- The nosepiece (6) then needs to be adjusted to its correct position (See “Adjusting the nosepiece”).
- Re-connect the tool to the compressed air supply.
- When refilling with oil, make sure that no dirt is able to enter the hydraulic system.
- Disconnect the tool from the compressed air supply.
- Remove the nose cap (4), including the nosepiece (6 and 6a).
- Use a size 4 Allen key to remove the screw at the top of the tool.

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.
- 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.

Oil refill

- Refill with oil if you notice a loss of stroke during the rivet installation process.



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	ISO HN 32
Sample hydraulic oil product:	OH-HM 32
Lubricant standard	ISO XCCHB-2
Sample lubricant product:	LV2EP

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. 4 Allen key
- 1 x oil transfer syringe
- 1 x fill screw

23. Safety pictograms



Wear protective goggles



Wear protective gloves



Wear ear protection

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 the precise setting of blind rivet nuts and blind rivet screws. The riveting tool is equipped with a pneumatic-hydraulic system for performing the screwing process for pre- and disassembling the rivet with or from the mandrel: screwing Adjustment of the pulling force, the stroke and a combination of both is possible with this tool to set up the best conditions for the riveting situation.

The high-speed pneumatic-hydraulic tool is designed for setting blind rivets nuts from M6 to M16 and blind rivet screws from M6 to M10.

Manufacturer:

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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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