



Bossard SmartTool-Manager
Battery-Blind-Riveting- & Battery-Blind-Rivet-Nut-Tool

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HELP AND SUPPORT



Our support for the SmartTool-Manager can be reached as follows:
smartfactoryassembly@bossard.com

Please note that our support can only answer questions of understanding with respect to programming and settings, but not questions regarding customer programs.

The warnings are structured as follows:



DANGER

Indicates an immediate dangerous situation that can lead to serious or even deadly injuries and/or that could seriously damage or even destroy the tool.



WARNING

Indicates a potentially dangerous situation that can lead to serious injuries and/or damage to the tool.



NOTE

Important and useful information on using this tool.

OPERATING INSTRUCTIONS

The functionality of the tools are explained in the two sets of operating instructions. One set of instructions includes settings using the SmartTool-Manager (software) and the second includes the hardware (tool).

Several topics, for instance, the displays, are overarching so both sets of instructions have to be followed.

1 Installing the drivers



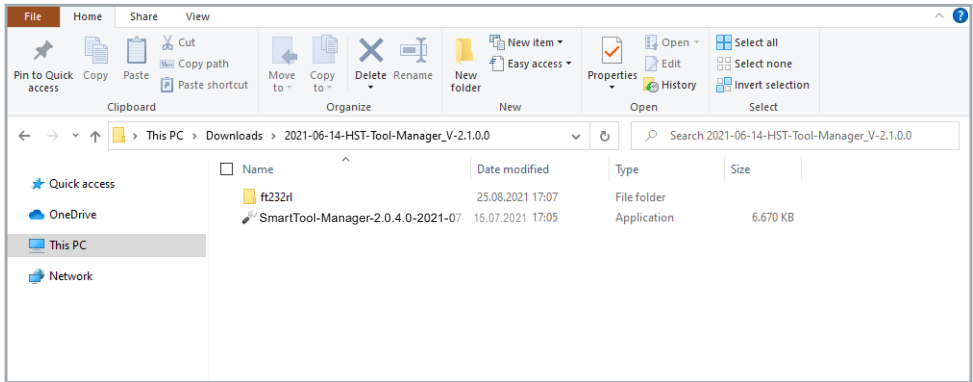
Open the data storage device.



NOTICE

The current software and the driver are also available on our website as a download: <https://www.bossard.com/smarttool-downloads/>

The folder will open automatically. If it doesn't, click on „Start“ - „This PC“ and open it manually.



1 Installation

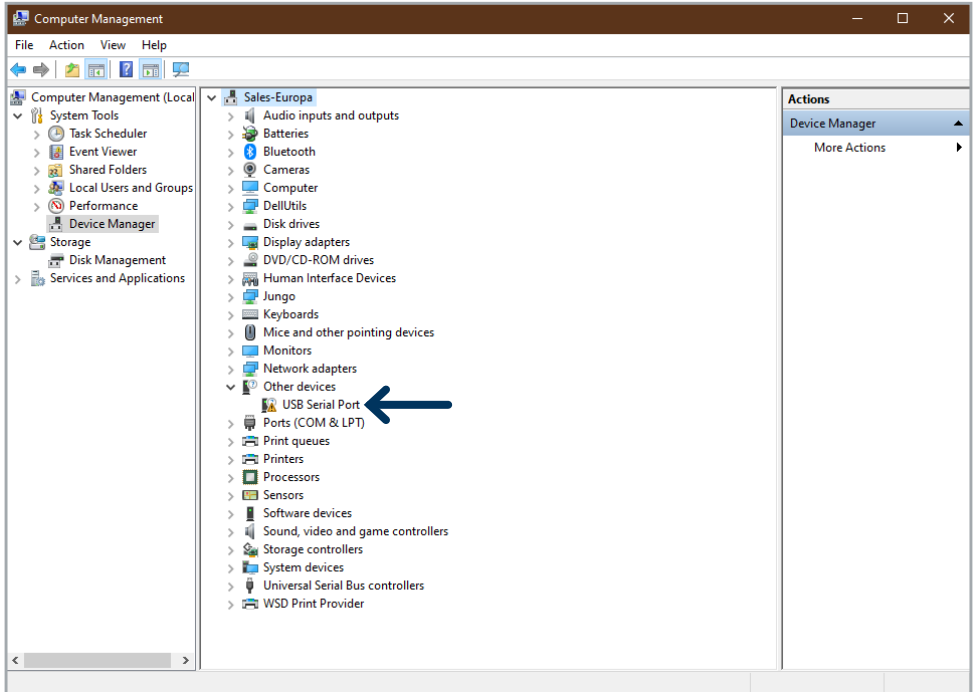
Save the files in a folder on the desktop in another folder on your computer. Call the folder for instance, Date-SmartTool-Manager-Version. If you save them in another folder, creating a link on the desktop is recommended. Then you can start SmartTool-Manager.exe.



NOTICE

Installing drivers on a computer requires administrative rights. If you do not have these, contact your IT department.

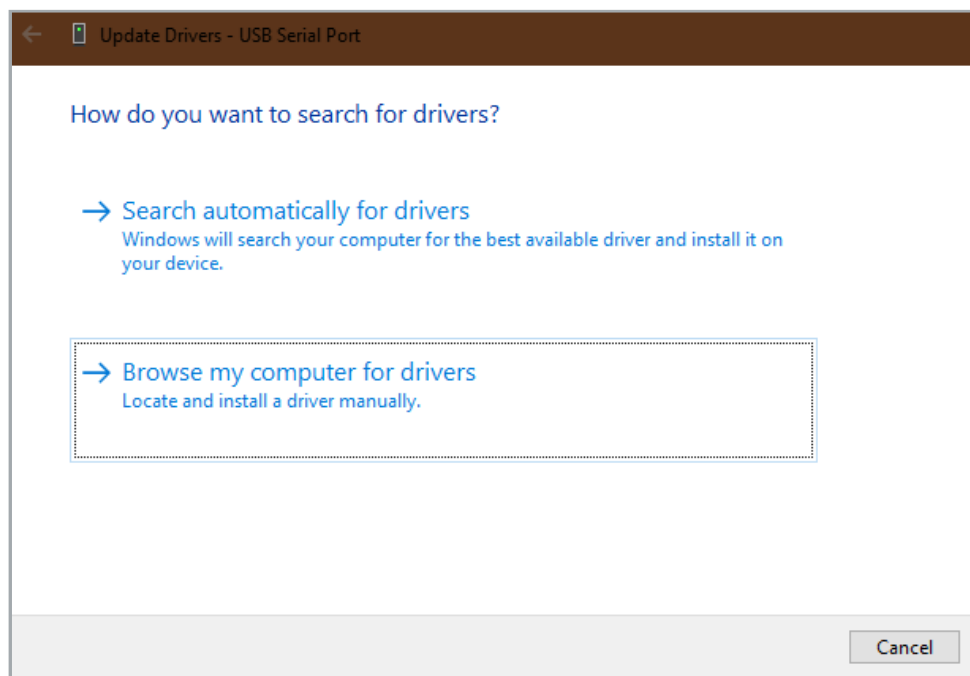
If the software does not open or doesn't recognize the tool, check to ensure you have installed the USB driver (ft232rl). To do this, connect the tool to the computer via USB and open the device manager.



2 Adapter not recognized

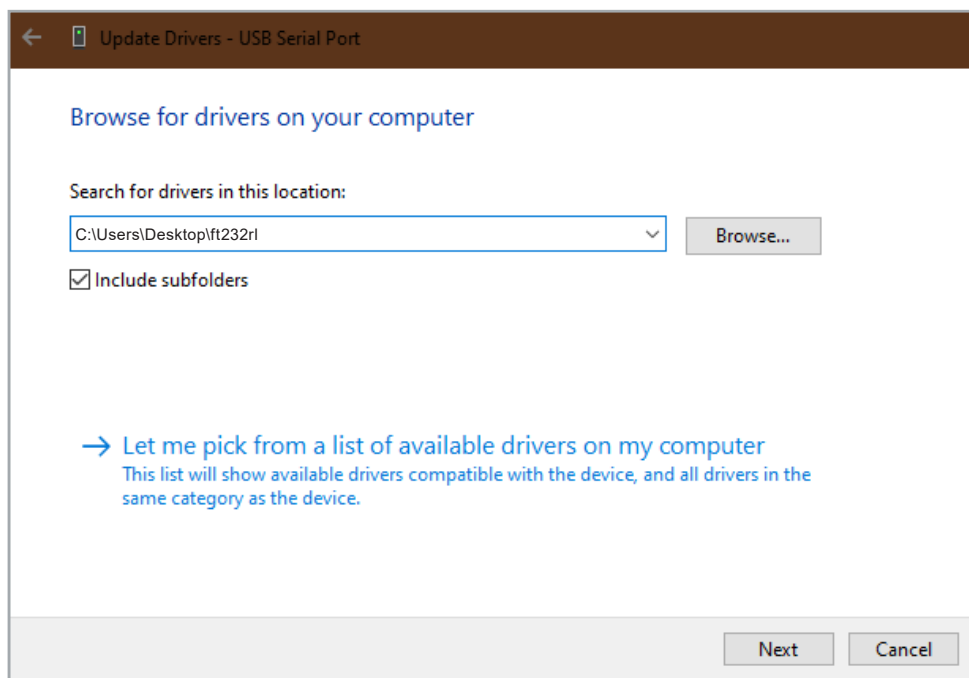
The ft232rl is not installed yet and does not correctly recognize the COM Port.

After you can connected the tool to the computer via USB, click on the „New hardware found“ symbol on the lower right of the screen. The window for updating the driver software will open.



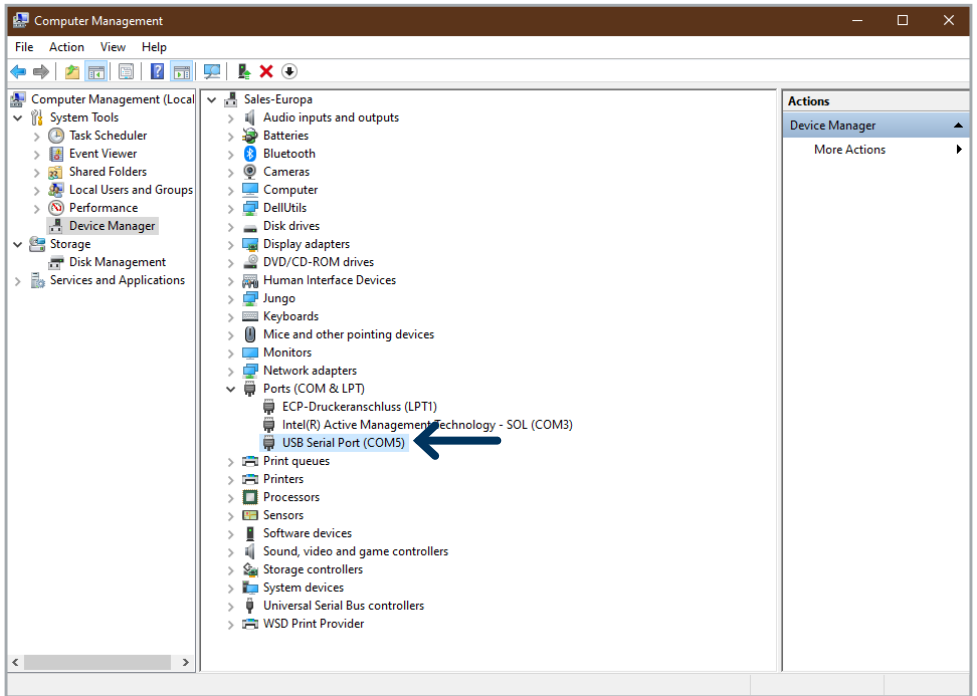
3 Search for driver manually

Click on: „Search for driver software on the computer“ and select the ft232rl folder on the data storage device or the folder in the files you copied.



4 Open driver location

The device manager no longer displays an error and the USB serial port is displayed when the tool is connected to the computer. The software is now fully functional.



5 Device manager with USB serial port

2 General

2.1 Overview

The SmartTool-Manager is a programming interface that allows the different parameters of the product features and functions for all compatible tools to be modified.

All tool settings are set via USB using the SmartTool-Manager. The software does not have to be installed (only the driver has to be installed).

Changes can only be made to a tool when a connection is established.

Settings for a tool can be loaded into the SmartTool-Manager software for editing. After editing, the file can be transmitted back to the tool via USB.

2.2 Introduction

The SmartTool-Manager does not have to be installed and is available for download as an .exe file at <https://www.bossard.com/smarttool-downloads/>.

The SmartTool-Manager can be copied to any directory and executed directly. All users require write rights for this directory.

2.3 Guarantee and liability

Guarantee and liability claims for personal and material damages are excluded if they can be traced back to one or more of the following causes:

- improper use
- improper assembly, commissioning, operation and maintenance
- operating the tool with defective safety equipment or improperly installed or non-functioning safety and protective equipment
- non-compliance with the instruction in the operating instructions pertaining to transport, storage, assembly, commissioning, operation and maintenance of the tool
- unauthorized structural modifications to the tool
- improper repair
- catastrophes caused by foreign bodies and force majeure

2.4 Copyright

These operating instructions are only for the operator and its personnel. They contain the regulations and instructions, which may neither be completely nor partially

- reproduced
- edited or
- otherwise published.

The copyrights to these operating instructions remain with HS-Technik GmbH / Bossard AG.

Manufacturer address:

HS-Technik GmbH
High - System - Technik

HS-Technik GmbH
Im Martelacker 12
D-79588 Efringen-Kirchen

Telephone: 07628 - 91 11-0
Fax: 07628 - 91 11-90
Email: info@hs-technik.com
Website: www.hs-technik.com

Distributor address:

BOSSARD
Proven Productivity

Bossard AG
Steinhauserstrasse 70
CH-6301 Zug

Telephone: +41 41 749 6611
Fax: +41 41 749 6622
E-Mail: bossard@bossard.com
Website: www.bossard.com

2.5 System requirements

The minimum requirements for the SmartTool-Manager:

- Windows XP, Vista, Windows 7, Window 8 or Windows 10 operating system
- To execute the program on XP operating systems, Microsoft .NET-Framework Version 4.0 or higher is required.
- USB 2.0
- Pentium III processor (recommended: Dual Core)

2.6 Installing the SmartTool-Manager

The software can be saved in any directory. It is important for all users to have write rights for the directory on the computer. A separate installation is not required.

2.7 Settings by user groups

Setting / function	Evaluation	Programmer	Administrator	Network administrator	Calibration technician	Service technician
Open file	●	●	●	●	●	●
Save file		●	●	●	●	●
Print screen	●	●	●	●	●	●
Settings		●	●	●	●	●
Display		●	●	●	●	●
Data		●	●	●	●	●
Rolls		●	●	●	●	●
Change user	●	●	●	●	●	●
Connect without read out			●	●	●	●
Send configuration to the tool (write)		●	●	●	●	●
Display statistics	●	●	●			
Display graphic	●	●	●			
Programing	●	●	●			
Program	●	●	●			
Program 1-100	●	●	●			
Program	●	●	●			
Counting function	●	●	●			
Measuring window	●	●	●			
Options	●	●	●			
Stage 1-5	●	●	●			
Drive	●	●	●			
Switching conditions	●	●	●			

	Evaluation	Programmer	Administrator	Network administrator	Calibration technician	Service technician
Job 1	●	●	●			
Barcode	●	●	●			
Barcode 1-10	●	●	●			
Settings		●	●	●	●	●
General information		●	●			
Display		●	●			
OLED display		●	●			
Acoustic signal		●	●			
Communication			●	●		
Telegrams			●			
Wi-Fi				●		
IPv4				●		
IEEE 802.1x				●		
EAP				●		
EAP-TLS X.509				●		
Roaming				●		
Image		●	●			
Default setting		●	●			
Update			●			
Calibration					●	
Service						●
Log file	●	●	●	●	●	●
Selecting the language	●	●	●	●	●	●

2.8 Settings by tool type

Setting / function	RNB-25(-S)	RTB-20(-S)
Program 1	●	●
Programs 2 -100	●	●
Job	●	●
Counting function	●	●
Program options	●	●
Image	●	●
Statistics	●	●
Release via manual mode	●	●
Release via start button and time	●	●
Release via barcode and wireless	●	●
Send configuration to the tool (write)	●	●
Display	●	●
Service counter	●	●
Standby time can be set	●	●
General settings	●	●
Barcode settings	●	●
Wireless settings	●	●

3 Configuring a tool

To set a tool, connect it to the computer via USB cable.



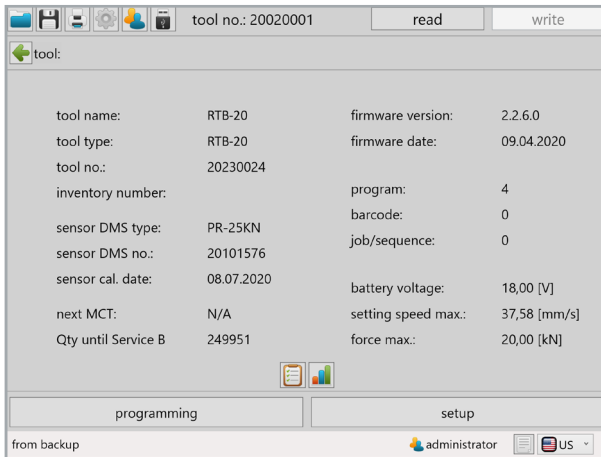
Start the SmartTool-Manager, log in and read out the available tool by clicking on „read“. Then you can edit the tool settings as described in the following steps. So the files aren't lost, we recommend securing them under a different name.



DANGER

For any use of the SmartTool-Manager, the corresponding operating instructions for operating the tool must be read and understood!

3.1 Basic tool data



The basic tool information is displayed.

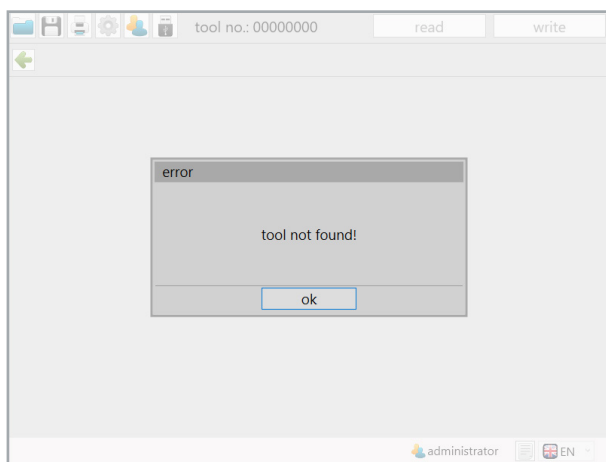
„tool name“	Manufacturer designation
„tool type“	Base article no. of the manufacturer
„tool no.“	Serial number of the electronic system
„spindel no.“	Drive unit serial number
„sensor type“	Installed sensor type
„sensor no.“	Sensor serial number
„rivets until cleaning“	Number of how many riveting processes the tool can perform before requiring cleaning (current status)
„rivets until maintenance“	Number of how many riveting processes the tool can perform before requiring service and maintenance (current status)
„rivets until service“	Number of how many riveting processes the tool can perform before having to be sent to the manufacturer for general maintenance (current status) This is also safety maintenance to inspect the entire tool
„firmware version“	Firmware version on the tool
„firmware date“	Firmware creation date
„program“	Number of programs stored on the tool

„barcode“	Number of barcodes stored on the tool
„job / sequence“	Number of jobs stored on the tool
„battery voltage“	Target battery voltage: The tool can only be operated with batteries with this target voltage
„setting speed max.“	Maximum riveting speed at which the tool can be operated
„force max.“	Maximum riveting force at which the tool can be operated



NOTICE

In rare cases, the data may not load immediately. Click on „Read“ again; if that doesn't work, check the cable connection and the USB drivers and repeat the process.

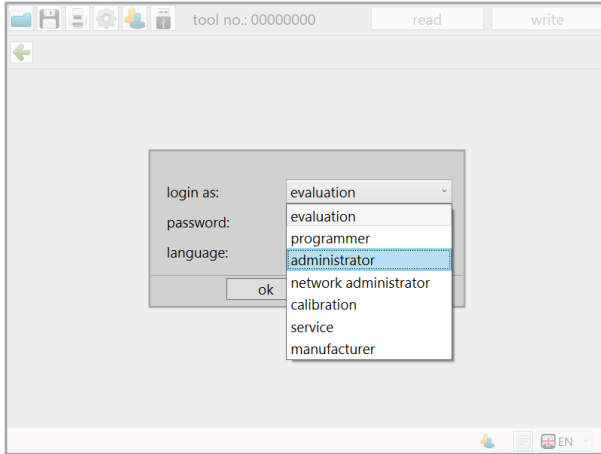


7 Nicht gefunden

4 First steps

4.1 SmartTool-Manager registration

To start the SmartTool-Manager, you require log in data for „evaluation“, „programmer“, „administrator“, „network administrator“, „calibration“ or „service“.



8 Login

WHERE CAN I FIND THE PASSWORDS?

The passwords for the tools are delivered to the primary responsible party or the purchaser in a printed format upon delivery.

4.2 Create storage location



DANGER

Only work with a properly configured tool and only with a tool for which the settings and programming are known.

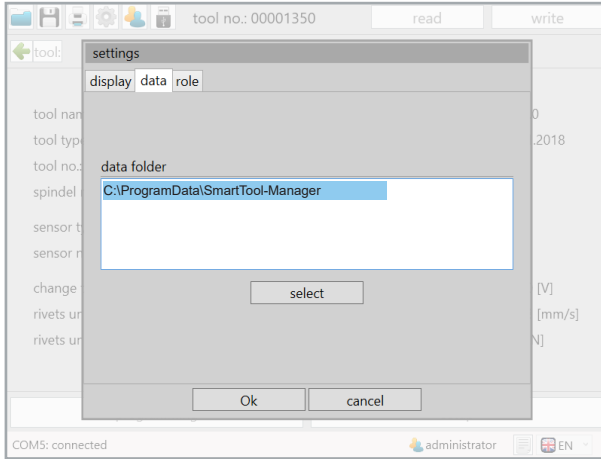
After logging on as administrator, click on „settings“ on the upper left in the toolbox.

The screenshot shows a software interface for tool management. At the top, there is a toolbar with icons for home, save, print, settings, user, and power. The settings icon is highlighted with a blue arrow. Below the toolbar, the text 'tool no.: 20020001' is displayed, along with 'read' and 'write' buttons. The main area shows a list of tool parameters:

tool name:	RTB-20	firmware version:	2.2.6.0
tool type:	RTB-20	firmware date:	09.04.2020
tool no.:	20230024		
inventory number:		program:	4
sensor DMS type:	PR-25KN	barcode:	0
sensor DMS no.:	20101576	job/sequence:	0
sensor cal. date:	08.07.2020	battery voltage:	18,00 [V]
next MCT:	N/A	setting speed max.:	37,58 [mm/s]
Qty until Service B	249951	force max.:	20,00 [kN]

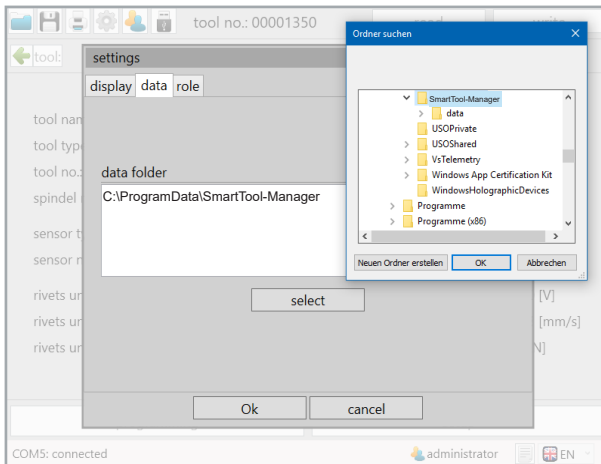
At the bottom, there are buttons for 'programming' and 'setup'. The status bar at the very bottom shows 'from backup', 'administrator', and a language dropdown set to 'US'.

9 Settings



10 File path

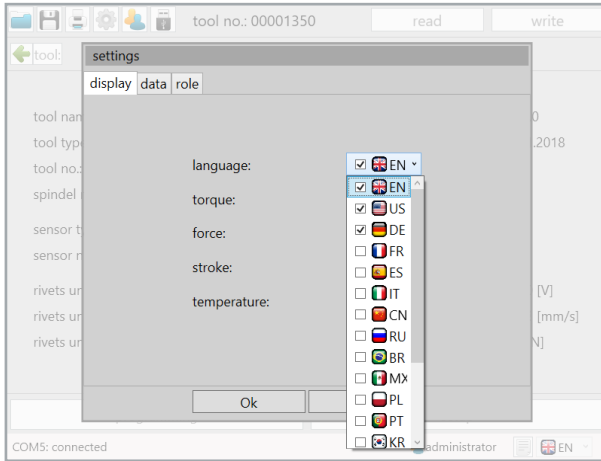
Go to the opened pop-up window and click on the „Select“ button on the Data tab to define a new storage location.



11 Settings data storage location

Select the new storage location. In our case, a folder on the desktop. The „data“ folder is automatically created in the selected folder. A backup copy is automatically created in this when the SmartTool is connected using a USB cable and the „Read“ command has been successfully completed. Click „OK“ to close the operation. The file folder will be displayed again in the pop-up window. Click on „OK“ to confirm the storage location.

To activate additional languages for other users, go to

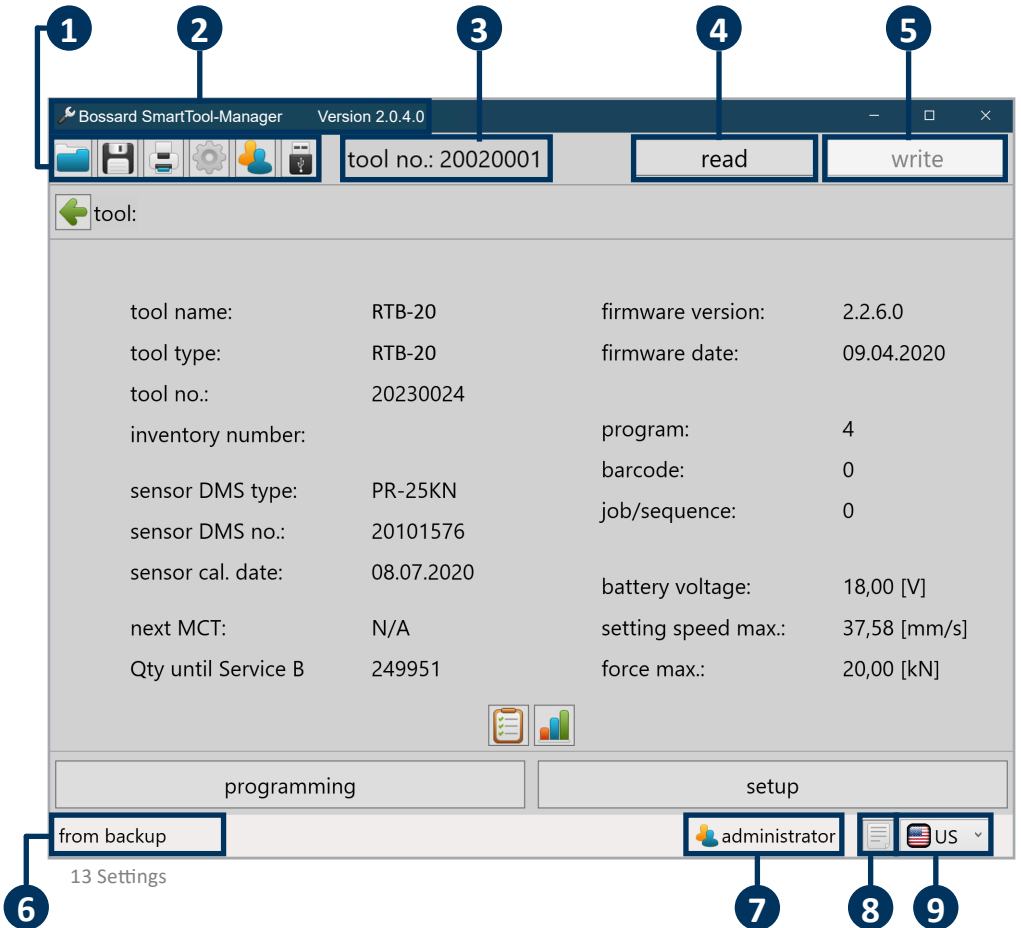


12 languages

Open the „language“ drop-down menu and activate the desired languages for the users by selecting the check mark next to the language. The software will start in the language marked in blue. The „language“, „torque“, „force“, „stroke“, „temperature“ display settings can only be set by the administrator. All selected languages will then be permanently available to the users.

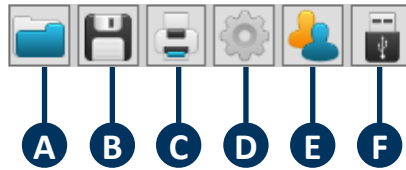
4.3 General software interface

The start window



The start window displayed after logging on contains different notifications and buttons important for working with the SmartTool-Manager.

1 Toolbox



- A Load saved configuration
- B Save current configuration
- C Print menu (several options to choose from)
- D Display settings (language, torque, force, stroke, temperature)
- E Change user
- F Connect to the tool without read out (in order to perform the update or restore the tool in case of emergency)

2 Software version

Displays the open software version.

3 Tool number

tool no.: 00001350

After connecting and reading in, the serial number of the connected tool will be displayed.

4 Read

read

After connecting to the tool, all internal tool data will be read out of the tool by pressing the „read“ button. Do not double click as it may cause errors in the software.

5 Write

write

After configuring the tool, by pressing the „write“ button, all of the modified files will be sent to the tool. The button does not become active until changes have been made to the configuration or parameters.

6 COM-Port

COM5: connected

Notification field for the status of the connection with the tool

7 User display

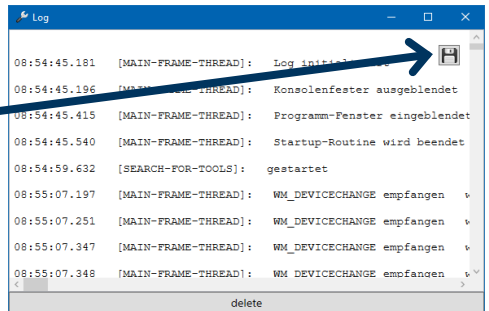
administrator

The user display shows you which user is active (evaluation, administrator, etc.).

8 Log window

Show / hide the log window or save it as a text file on the data storage device. The communication between the tool and the software is recorded in the log.

It is a good tool, especially if the tool cannot be fully read out or cannot be read out at all. The log file provides detailed information about where the problem is and is used for technical support. The log contains primarily specific notifications. I.e., in case of a problem, fade in the log window, save it as a .txt file and send it to the technical support team.

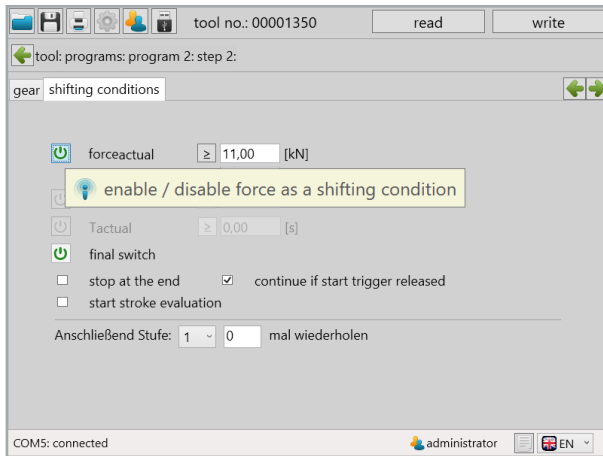


9 Language

EN

In the language selection list (lower right), the language can be temporarily switched.

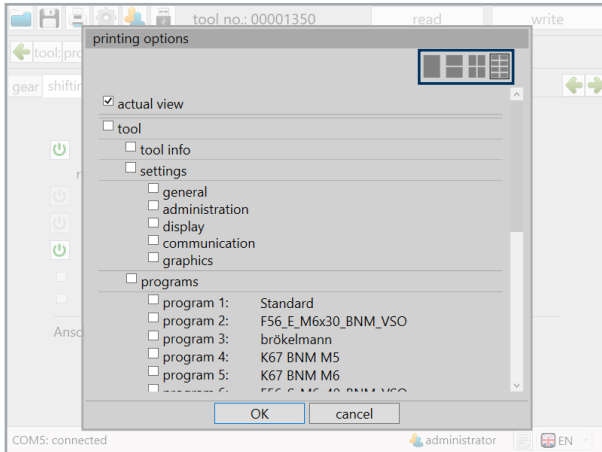
4.3.1 Direct help option



14 Help

If you hover over an entry field or ON / OFF button with the mouse, a help text automatically appears for the function.

4.3.2 Print option



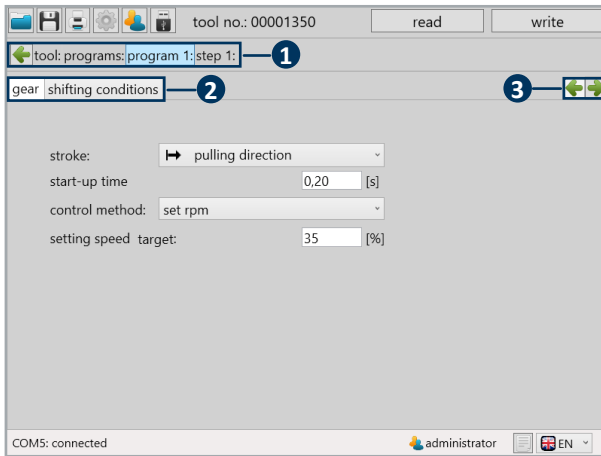
15 Print options

To print out data, programs and settings in a very organized format, a special print function was integrated which allows different screens to be printed from every software screen. Furthermore, whether 1, 2, 4 or 8 of the selected screens should be printed on a DIN A4 page can be defined on the top right. By adding and removing, the selected pages can be printed. Every selected element will be printed. In this example, the current screen will be printed.

4.3.3 Program structure admin

Open file				
Save file				
Print screen				
Settings	Display			
	Data			
	Rolls			
Change user				
Connect without read out				
Send configuration to the tool (write)				
Display statistics				
Display graphics				
Programming	Program			
	Program 1-100:	Program		
		Counter		
		Measuring window		
		Options		
	Stage 1-5		Drive	
	Switching conditions			
	Job 1			
	Barcode:	Barcode 1-10		
	Settings:	General information		
Display:		OLED-display		
		Acoustic signal		
Communication:		Telegrams		
		Wi-Fi		
		IPv4		
IEEE 802.1x:		EAP		
EAP-TLS X.509				
Roaming				
Image				
Default setting				
Update				
Calibration				
Service				
Log-file				
Selecting the language				

4.4 General operation



16 User interface

-
- 1 Navigation bar**

Here you can return to the desired sub-point by clicking on the individual fields. Click , e.g. on programming to access the program overview.
 - 2 Register**

In this menu, you can switch between the individual tabs. The navigation buttons are linked to the register.
 - 3 Navigation buttons**

These elements are only available on levels. They can be used to quickly switch between the current view and the next level for comparison. Currently, the arrow is used to get to level 2 and the left arrow would not function, because we are on level 1.

Modifying reference values from
„is equal to or greater than“ to
„is equal to or less than“
the entered value.



Check all entries and send them to the tool using „write“.

write

Many entry fields have a limit. If a red box appears around the number you want to enter, it is too high, too low or contains invalid characters.

5000 [s]

5 Tool settings

5.1 Setup

In each SmartTool, different settings can be set that are important for working at the work station or which make this easier. To make the settings more understandable, they are divided into individual tabs. To do this, go to the start screen and click on the „setup“ button.



NOTICE

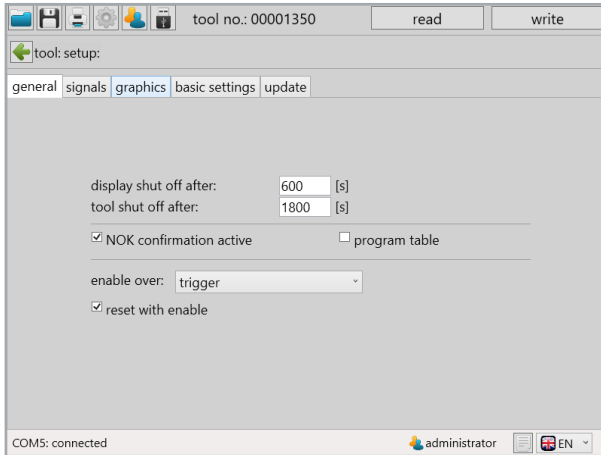
Changes can only be made to a connected tool and when logged in as administrator.

The screenshot shows the SmartTool software interface. At the top, there is a toolbar with icons for file operations and a gear icon. The main area displays tool information for tool no. 20020001. Below the information, there are two tabs: 'programming' and 'setup'. A blue arrow points to the 'setup' tab. The bottom status bar shows the user is logged in as 'administrator' and the language is set to 'US'.

tool name:	RTB-20	firmware version:	2.2.6.0
tool type:	RTB-20	firmware date:	09.04.2020
tool no.:	20230024		
inventory number:		program:	4
sensor DMS type:	PR-25KN	barcode:	0
sensor DMS no.:	20101576	job/sequence:	0
sensor cal. date:	08.07.2020	battery voltage:	18,00 [V]
next MCT:	N/A	setting speed max.:	37,58 [mm/s]
Qty until Service B	249951	force max.:	20,00 [kN]

17 Settings

5.1.1 General



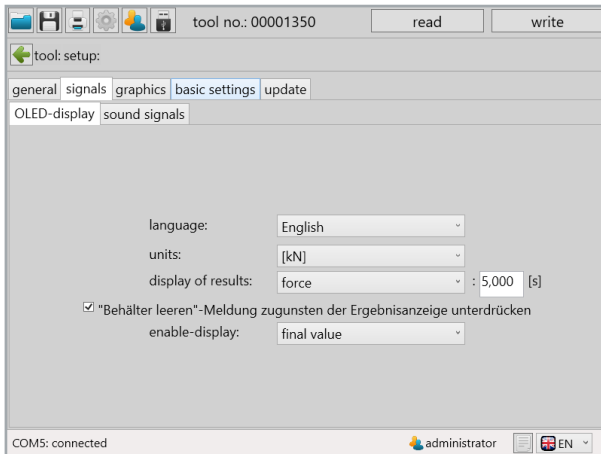
18 General tab

„display shut off after“	Display switches to standby after the entered time in seconds if the tool is not used. The tool can be reactivated by pressing the start trigger.
„tool shut off after“	Tool switches off after the entered time in seconds if it is not used. The tool can be reactivated by pressing the start trigger.
„NOK confirmation active“	Confirm NIO riveting by pressing the yellow button on the display.
„program table“	If this function is selected, the tool can work with the stored program table.
„enable over“	With the „enable over“ function, it is possible to choose how the riveting tool should operate or rather how it receives an enable for a riveting job. The following options are available: <ul style="list-style-type: none">- <i>Start button</i>: Press the trigger 3x in rapid succession to enable the tool. (default program / job)- <i>Time</i>: Tool enables after entered time in seconds (default program / job)- <i>Trigger & time</i>: Combination of start button & time function (default program / job)- <i>Barcode</i>: Enabling by scanning a proper barcode.- <i>External control unit</i>: External controller issues the enable of the tool, e.g. MCU- <i>Barcode & external control unit</i>: After scanning a barcode, the external controller issues the enable

„reset with enable“

If the tool receives an additional enabling during a current job, the current task will be canceled and the tool will start the new job.

5.1.2 Signals → OLED-display



19 Display tab

„language“

Display language
German and English

„units“

Unit in which force is displayed
kN, lbf

„display of results“

Presentation of the results on the OLED display (example). If the tool is operated without Wi-Fi, the antenna symbol above the battery symbol is not displayed.
The time indicated behind the selection field specifies how long the results are displayed.

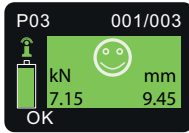
„enable display“

Selection of the display on the OLED display upon enabling.
Target value shows the tool's target value, e.g. 10 kN.
Barcode shows the scanned barcode, max. 9 characters.
Program table value displays the selected table value.
Default: Target value

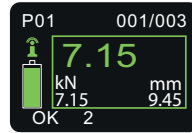
„rotate display 180°“

Selecting the check-box turns the display on the OLED display by 180°.

Smiley



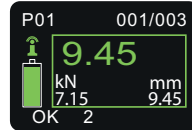
force



counter



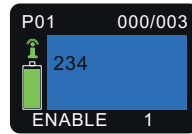
stroke



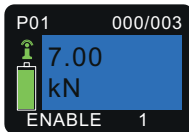
default



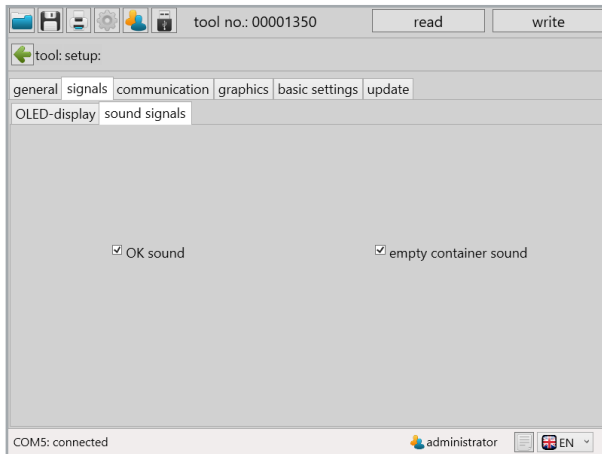
barcode



setpoint



5.1.3 Signals → Sound signals



20 Acoustics tab

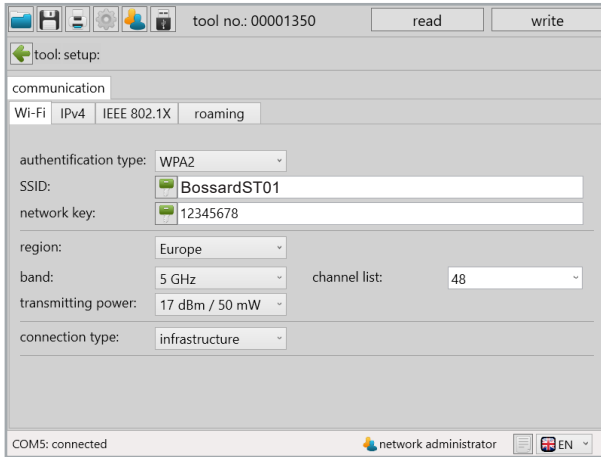
„OK sound“

Issues acoustic signal when riveting was OK

„empty container sound“

Issues acoustic signal when tank has to be emptied.
(Only for devices with collection tank)

5.1.4 Communication → Wi-Fi (network administrator only)




21 Wi-Fi

The network settings for the tool are saved under Communication Wi-Fi; these are for the communication between the tool and an external controller.



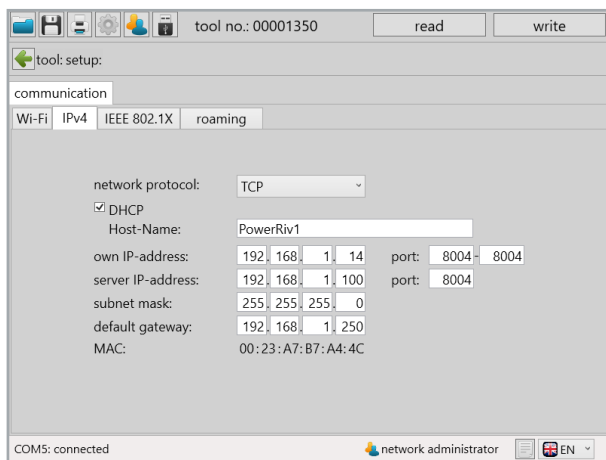
NOTICE

These settings should be made in cooperation with the responsible network administrator.

„authentication type“	Wi-Fi selection Encryption method
„SSID“	Service Set Identifier Network name
„network key“ 	Network password. The entry in the „SSID“ or „Network key“ window can be encrypted via the button.
„region“	Enabling of specific channels for the chosen region. The selection has to match the settings of the used accesspoint. (US/Europe/Japan)
„band“	Selection of the frequency for data transmission Frequency band: 2.4 GHz / 5 GHz

„transmitting power“	Must be selected based on the distance between the tool and the controller or access point.
„channel list“	Activating / deactivating various wireless channels
„connection type“	The „infrastructure“ connection type is used to control the tool via a controller. „Ad hoc“ is used when the tool is controlled directly by a computer.

5.1.5 Communication → IPv4 (network administrator only)



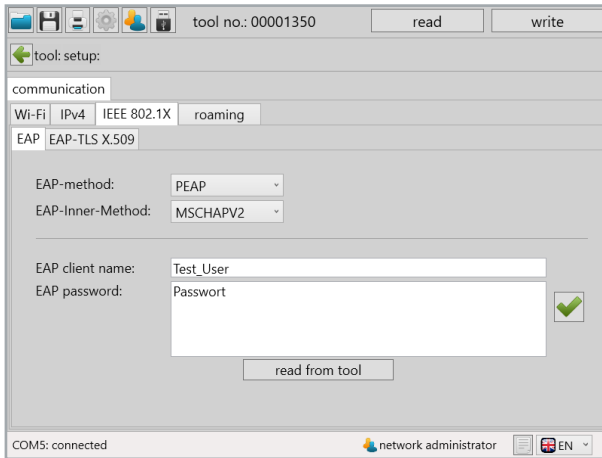
22 Wi-Fi

„network protocol“	The TCP protocol type and the older version, UDP, can be selected. We recommend using the TCP protocol.
„own IP address / port“	Tool IP address and corresponding port. A range can be entered for this. The port number will increase by one each time a connection is established.
„server IP address / port“	Controller IP address (controller e.g. MCU) and corresponding port.
„subnet mask“	Subnet mask, appropriate for the IP network
„default gateway“	The IP address of the router. Relevant in the event the controller and tool are on different IP networks.

„MAC“	Tool MAC address
„DHCP“	Dynamic assignment of the IP address
„host name (only if DHCP is activated)“	Name of the tool on the network

5.1.6 Communication → IEEE 802.1x (network administrator only)

When using the WPA-2 Enterprise authentication method, the following settings can be set.

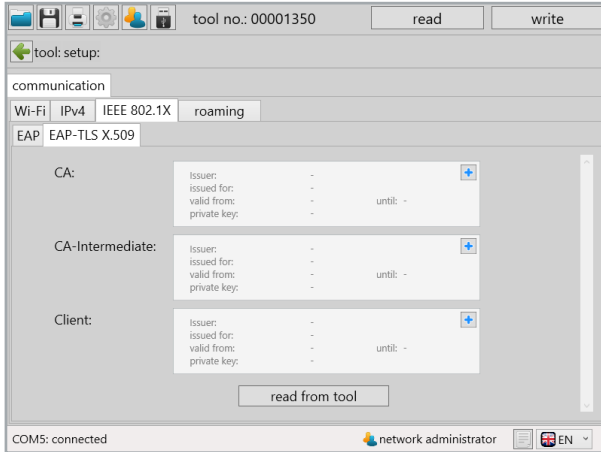


23 Wi-Fi

„EAP method“	TLS, TTLS, FAST, PEAP
„EAP-Inner-Method“	MSCHAP, MSCHAPV2
„EAP client name“	Client name for authentication
„EAP password“	Password for authentication
„read from tool“	Read out the authentication data from the tool.

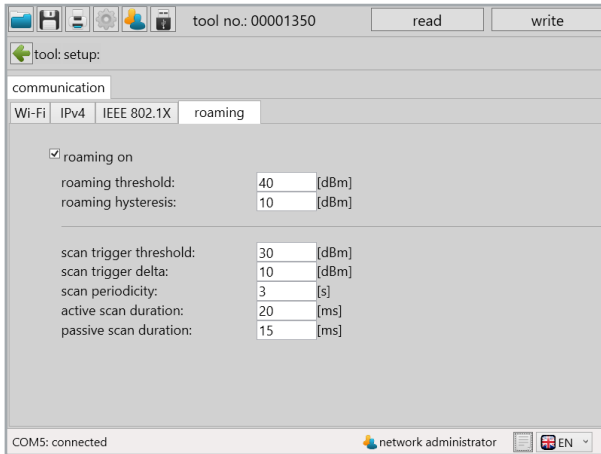


Save data in the memory, then transfer it to the tool by pressing „write“.



24 Wi-Fi

EAP-TLS certificates can be loaded into the tool.

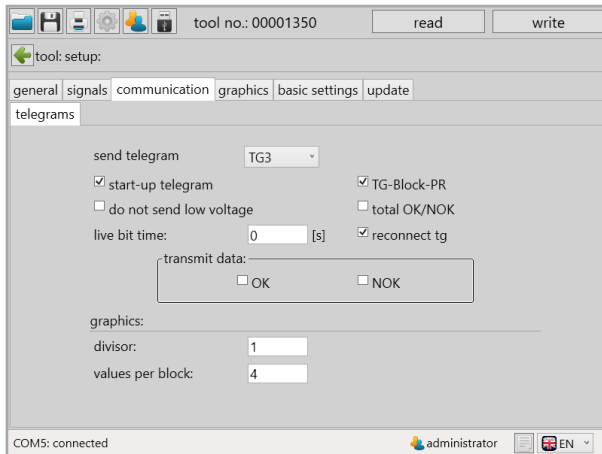


25 Wi-Fi

Roaming can be activated.

5.1.7 Communication → Telegrams (administrator only)

Under Communication → Telegrams, you can define which data the tool should send to the external controller. It is possible to transmit OK and NOK graphic data. Here, you can define whether each individual measurement value for the entire measurement should be included in the graphical evaluation or, e.g. only every 3rd or 4th value (division factor) should be transmitted. You can also define what happens when the tool cannot transfer the data. The tool can wait for a response from the controller so the data will be transmitted when a connection is established.



26 Telegrams

„send telegram“

The different TGs are also for different connections. Thus, TG3 is for the current version of the ETC.

You can obtain the required information and connection options directly from our service department.

„start-up telegram“

The tool sends a registration / start-up telegram to the controller to register.

„do not send low voltage“

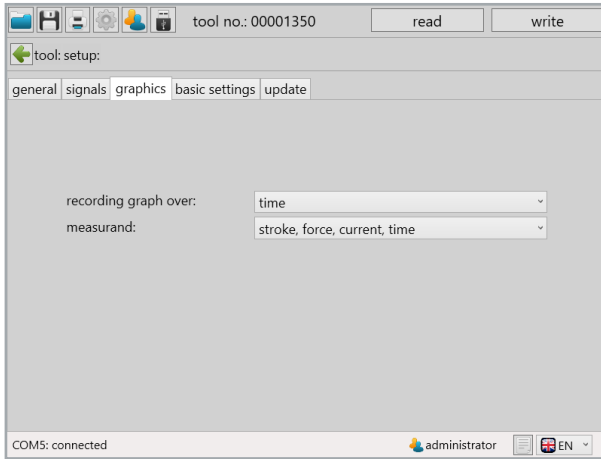
The tool sends the battery low voltage information (low battery) automatically to the superordinate controller. If this information is not required, it can be deactivated by selecting the window.

„live bit time“

The tool sends a „LIVE“ telegram to the superordinate controller at a set time interval to check the connection at regular intervals. The time is entered in seconds. „0“ deactivates the function.

„transmit data“	<p>„OK“: Transmits the results of all successfully processed rivets.</p> <p>„NOK“: Transmits the results of all unsuccessfully processed rivets.</p>
„divisor“	<p>Here, you can define whether each individual measurement value for the entire measurement should be included in the graphical evaluation or only the 3rd or 5th</p>
„values per block“	<p>The values per block indicate which information is included in the graphic data:</p> <p>1: Force 2: Force / stroke 3: Force / stroke / current 4: Force / stroke / current / time</p>
„TG-Block-PR“	<p>During a riveting job, the tool does not process incoming telegrams.</p>
„overall OK / NOK“	<p>An overall OK / NOK telegram will be sent.</p>
„reconnect-TG“	<p>After a connection is terminated, a telegram will be sent.</p>

5.1.8 Graphics



27 Graphics tab

„recording graph over“

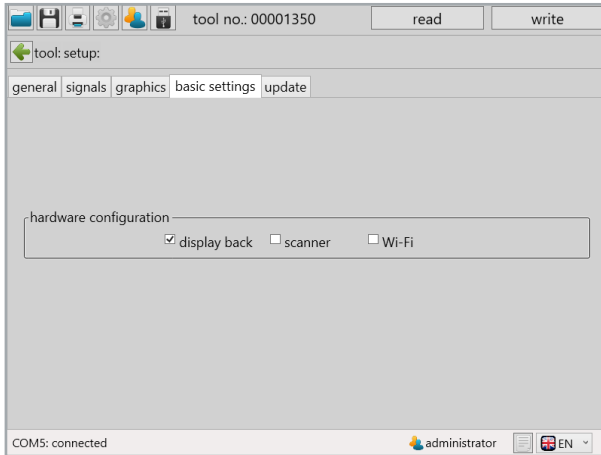
Scanning is performed automatically, always based on time, and the setting cannot be changed.

„measurand“

The variable defines in which combination the results for the graphic display are transmitted to the SmartTool-Manager.

stroke, force, voltage, time
stroke, current, voltage, time
Force, stroke, current, time (recommended setting)

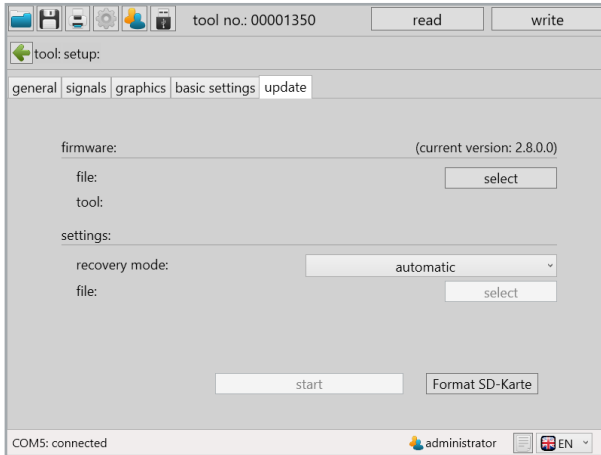
5.1.9 Basic settings



28 Basic settings tab

„display back“	Activates / deactivates the display on the back of the tool.
„scanner“	Activates / deactivates the tool scanner
„Wi-Fi“	Activates / deactivates the tool’s Wi-Fi function. Network / communications data should already be saved when activating this function.

5.1.10 Update



29 Update tab

The tool firmware can be updated as needed using the „update“ function. Before a firmware update, make sure to save / backup the tool data as described in chapter 11.1 „save / load“ from page 112.

Click on „select“

The tool will appear (the tool type from the .upd file must be identical to the current tool type, otherwise it cannot be updated).

Set restore mode to automatic or select from backup file

Leaving the restore mode set to „automatic“ is recommended. All previously processed programs and settings will be re-written onto the tool after the update.

Start

Tool performs update

**DANGER**

The connection must not be interrupted during the update process! Wait until the „Update executed successfully“ notice appears.

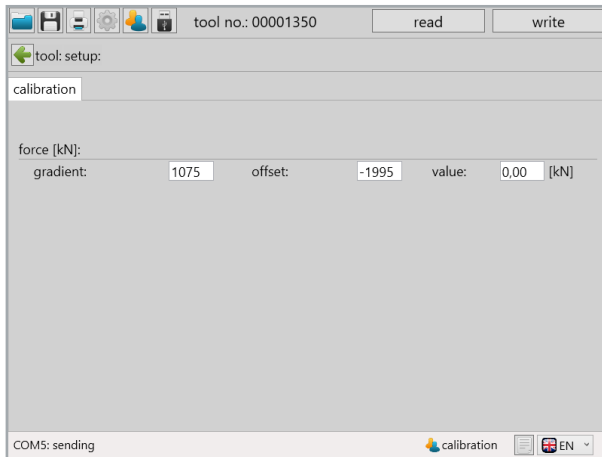
„Format SD card“

Formats the internal memory.

**WARNING**

When executing the „Format SD card“ function, the saved programs and graphic data will be lost!

5.1.11 Calibration (calibration technicians only)



30 Calibration technician

„gradient“

Gradient of the characteristic curve of the force sensor.

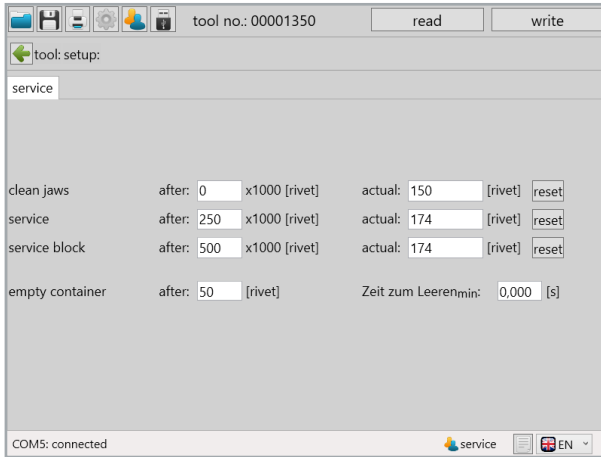
„offset“

Offset of the characteristic curve of the force sensor.

„value“

Current measurement value of the force sensor.

5.1.12 Service (service technicians only)



31 Service

„clean jaws / replace threaded mandrel*“	Number of riveting processes until the jaws have to be cleaned. *With the Battery-Blind-Rivet-Nut-Tool, the threaded mandrel must be replaced after the counter reaches this number
„service“	Number of riveting processes until maintenance has to be performed.
„service block“	Number of riveting processes until the manufacturer has to service the tool.
„actual“	Indicates the current status of the respective counter
„empty container“	Number of riveting processes until the riveting mandrel collection tank has to be emptied.
„Time until emptying _{min} “	Time at which the rivet mandrel collection tank has to at least be disconnected from the tool.



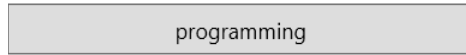
NOTICE

The „Clean jaws“ / „Replace threaded mandrel“ and „Service“ service notifications can be acknowledged on the device. When the „Service block“ is reached, the tool will be locked.

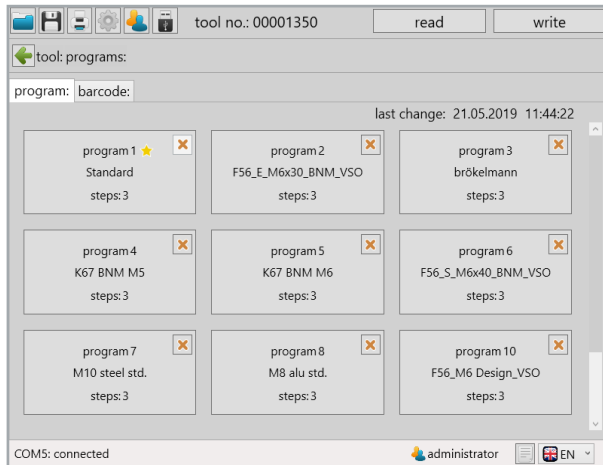
6 The programs

6.1 Working in the „programs“ interface

The programs saved in the tool can be accessed by pressing the „programming“ button on the home screen.



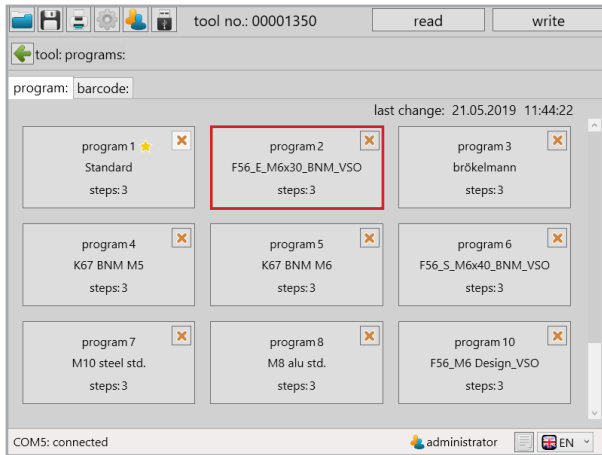
The „program“ screen contains a list of the existing programs in the tool.



32 Programs


„program“	100 programs with 5 steps each are possible. Can be freely programmed for each level with drive and switching conditions.
„job“	Linking several programs to a job.
„barcode“	Activating a program or a job via a barcode scanned in using the barcode scanner.

In the program overview, the active program or active job are marked with a yellow star (Default program).

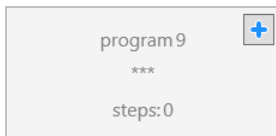



33 Programs

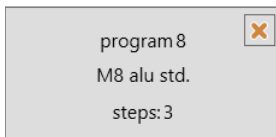
6.1.1 Creating, deleting, editing programs

A new program can be created by clicking on the „“ button. This button is displayed at the top right in the last program.

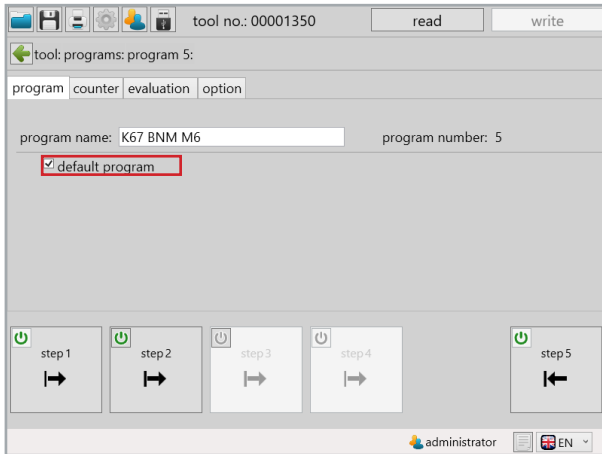
A program can be edited by clicking on the program button.



A program can be deleted by clicking on the „“ button.



A program or job can be marked as a „default program“ or „default job“. This will always be executed if no other program or job is expressly activated via a barcode or an external controller. This is set in the desired program with the „default program“ or „default job“.

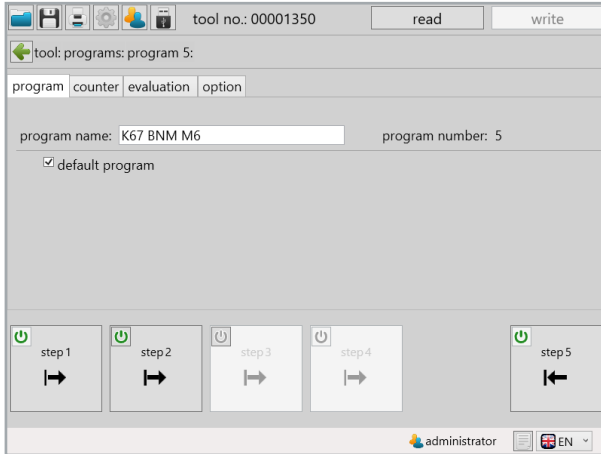


34 Default program

6.2 Edit program

6.2.1 Program

The settings apply to all program steps.

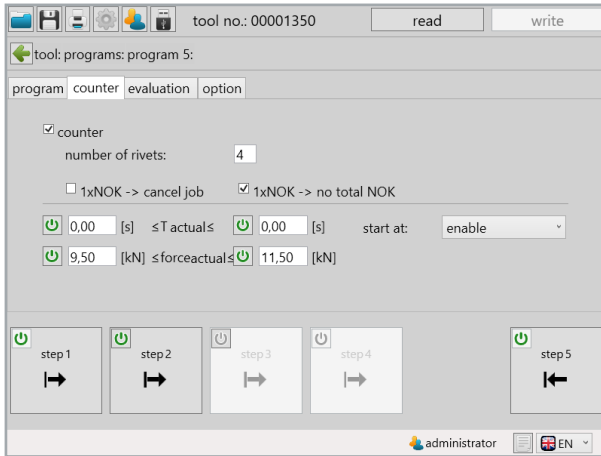


35 Program tab

„program name“	Option to enter the name of a workpiece for which this program was created.
„program number“	Program number display field.
„default program“	Define this program as the default program.

6.2.2 Counter

The settings apply to all program steps.



36 Count function tab

Checkbox „counter“	Activates / deactivates the count function.
„number of rivets“	The number of rivets / rivet nuts / rivet screws to be counted for the riveting process is entered in this field.
„Tactual“	Activates the minimum and maximum time for the entire process. Entered values in seconds. If a time parameter is not reached (minimum time) or is exceeded (maximum time), the job will be evaluated as NOK.
„start at“	From when the tool should begin with the measurement can be set: - <i>from trigger</i> : The time measurement begins when the start button is pressed for the first time. - <i>from enable</i> : The time measurement starts when the tool receives the enable signal.
„Forceactual“	Activates the minimum and maximum force for a valid riveting process. If a riveting process is invalid, it will not be counted. Entered values in kN. If the minimum force is not reached, the process will not be counted (empty stroke). The maximum value of the tool should be set as the maximum force. It can be found on the type plate. If this value is exceeded, an NOK evaluation will follow and the counter status will increase by one.

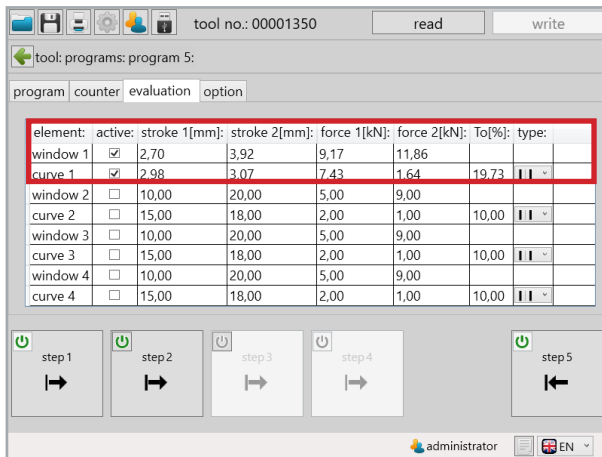
„1x NOK ⇒ cancel job“ Program will be canceled as soon as a rivet is evaluated as NOK.

„1x NOK ⇒ no total NOK“ If a rivet is NOK, the entire job is not directly evaluated as NOK. Only after the second NOK evaluation will there be an overall NOK.
If neither of the two options is selected, as a default, the entire process will be evaluated as NOK if the results are NOK.

„steps“ Setting the steps. See page 56.

6.2.3 Evaluation

The settings apply to all program steps.



37 Measuring window tab



The additional evaluation criteria can be set here.

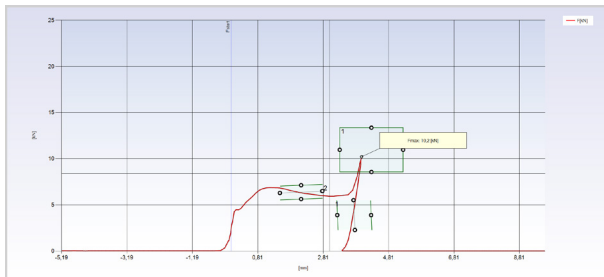
Window element:

A window is defined via the force and stroke variables and is used to evaluate the force progression across the traveled stroke. A minimum and maximum value must be entered for the force and stroke. The evaluation results will only be OK if the window is accessed via the minimum values and the maximum value is not exceeded.

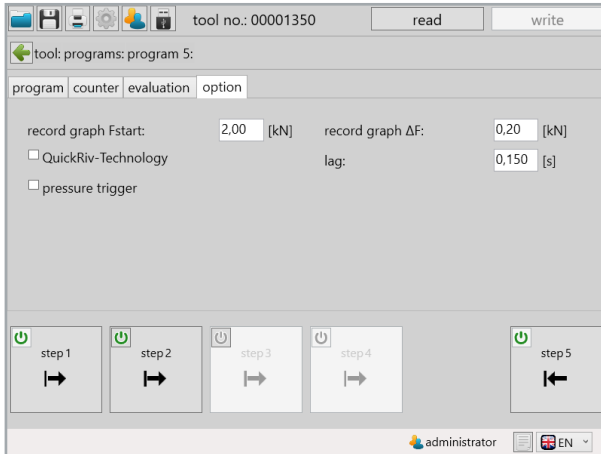
Curve element:

A curve consists only of a base line which is defined by two points (force and stroke). The permissible deviation from the base line is specified via the tolerance. Evaluation results will only be OK if the force progression is within the defined limits. Make sure curves have a defined direction marked by an arrow.

„active“	Checkboxes to activate / deactivate the windows and curves.
„stroke1[mm]“	Defines the first point of the element on the stroke axis.
„stroke2[mm]“	Defines the second point of the element on the stroke axis.
„Force1[kN]“	Defines the first point of the element on the force axis.
„Force2[kN]“	Defines the second point of the element on the force axis.
„Tolerance[%]“	The tolerance defines the permissible deviation from the curve base line.
„type“	Specifies whether the evaluation should be horizontal or vertical. The alignment is based on the force progression. (Steep progression ⇒ vertical alignment  , shallow progression ⇒ horizontal alignment )



6.2.4 Option



38 Options tab

„record graph F_{start} “

F_{start} describes the point on the setting curve at which the stroke measurement for the riveting process is started, i.e. the stroke axis equals 0 mm at this point. This point is comparable with the rotation angle starting torque in nutrunning technology.

For a defined stroke measurement, F_{start} must be programmed based on the application. A value between 25 - 50 % of the expected maximum force is recommended.

„record graph ΔF “

The sampling rate of the graphic recording is increased, by the entered ΔF value, e.g. 0.5 kN, by the point F_{start} , e.g. $F_{start} = 4$ kN, $\Delta F = 0.5$ kN, i.e. so the measurement curve in the range from 3.5 - 4.5 kN is recorded with an increased sampling rate. This function is only required for the machine capability test with the RivTest test bench.

„lag“

The time entered here indicates how long the recording continues after reaching the target value.

„Breakage detection - QuickRiv Technology“


The tool detects when a blind rivet breaks and immediately moves to the home position. The process time is thus reduced.

„pressure trigger“

In accordance with EU Directive 2006/42/EC

The contact pressure check ensures that the blind rivet can only be processed if the pressing device is activated which prevents unintentional triggering and ensures that the components to be processed are on top of each other.

6.3 The program steps

A program usually consists of several steps. Up to 5 steps are possible in the SmartTool-Manager. After creating a new program, the steps 1 and 5 (return) are active as a default. Additional steps can be activated using the  (ON/OFF) symbol. A step can be edited by selecting it.



NOTICE

The steps 1 and 5 cannot be deactivated.

tool no.: 00001350 read write

tool: programs: program 5:

program counter evaluation option

program name: K67 BNM M6 program number: 5

default program

step 1 step 2 step 3 step 4 step 5

administrator EN

39 Program tab

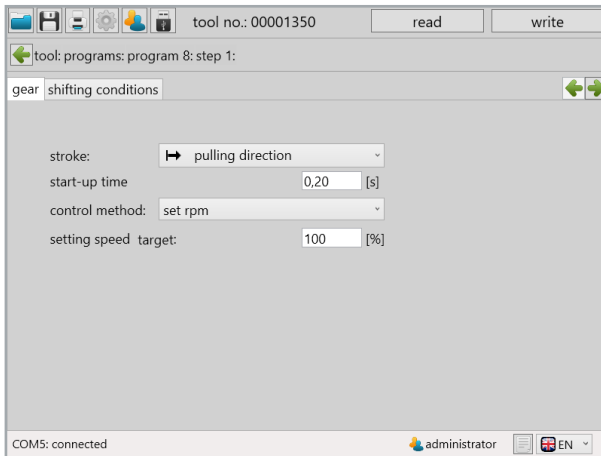
Step in pulling direction:

Tool processes all active steps from left to right.

Step in reverse direction:

Tool moves back to the home position.

6.3.1 Gear



40 Drive tab

„stroke“

Pulling direction or reverse

In general, step 1 - 4 pulling direction step 5 home position (return)

„start-up time“

Start-up ramp for the motor RPMs recommended value for step 1 = 0.10 - 0.30 seconds

„control method“

- *Set rpm*: The tool starts with the riveting speed set as the nominal speed. If the load / force is increased, the speed is not retroactively controlled, i.e. the speed decreases under high loads. This type of regulation is recommended for the screw-on level for blind rivet nuts and all levels for blind rivets.

- *Regulate rpm*: The tool regulates the speed actively and keeps the speed at the set value, even if the forces are high. This type of regulation is subject to physical limits which the tool displays, if applicable, via a fault notification, e.g. excess current. Using this type of regulation is only recommended after consulting with our product support department.



NOTICE

Regulate via speed + force is only available if force is active as a switching condition.

- *Regulate speed+force*: This type of regulation is a dynamic regulation of the speed based on the applied force, i.e. the higher the applied force, the slower the tool speed. This function is used when a specific, precise force should be reached, e.g. when placing blind rivets. The „setting speed target“ sets the maximum speed for this step; a value of 50 - 75 % is recommended. The speed for ending the riveting process is set in the „setting speed min“ field; A value of 5 - 20 % is recommended. **Note**: The specifications for the riveting speed are reference values which have to be empirically determined or confirmed for the individual riveting job. Values outside the specifications are possible.



NOTICE

Regulate via speed+stroke is only available if stroke is active as a switching condition.

- *Regulate speed+stroke*: Is analog to speed+force regulation. However, the „force“ parameter is replaced with „stroke“ here. This means, the closer one gets to the target value, the slower the tool becomes.

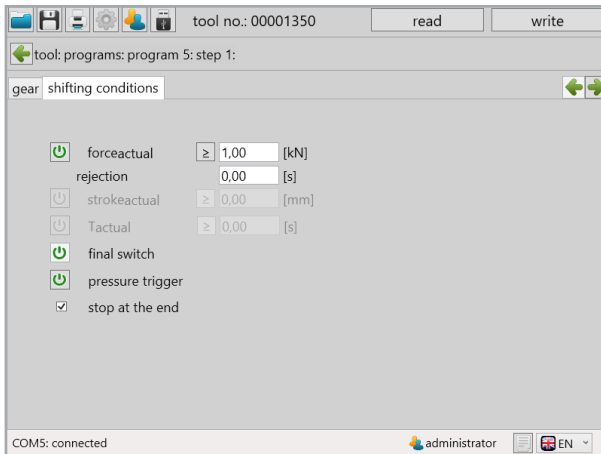
The screenshot shows a software interface for configuring a drive tab. At the top, there is a toolbar with icons for file operations and a status bar showing 'tool no.: 00001350' and buttons for 'read' and 'write'. Below the toolbar, the current step is identified as 'tool: programs; program 8; step 1:'. The main configuration area is titled 'gear shifting conditions' and includes the following parameters:

- stroke: pulling direction (selected from a dropdown menu)
- start-up time: 0,20 [s]
- control method: regulate rpm+force (selected from a dropdown menu)
- setting speed target: 25 [%]
- setting speed min: 10 [%]

At the bottom of the interface, it shows 'COM5: connected', the user 'administrator', and a language dropdown set to 'EN'.

41 Drive tab

6.3.2 Shifting conditions



42 Switching conditions tab



Changes the reference value from „is equal or greater than“ to „is equal to or less than“ the entered value.

This setting can specify whether the tool should try to achieve a value „equal to or greater than“ or „equal to or less than“; „equal to or greater than“ setting is recommended.

WARNING



The values for Strokeactual and Tactual must be selected very carefully since they can potentially result in the failure of the tool. If the tool fails due to incorrect entries, HS-Technik GmbH/Bossard AG is not subject to the warranty. Only using these functions when you have sufficient experience using the tool and the riveting process is clearly known is recommended. Most riveting processes can be executed without these functions.

„force _{actual} “	Tool switches to the next step as soon as a force of 1.00 kN has been reached.
„rejection“	The value entered in this box is the time in seconds during which the force gets rejected. If the force gets measured for longer than this time, the shifting condition force _{actual} is reached.
„stroke _{actual} “	Tool switches to the next step as soon as a specified stroke has been reached.
„T _{actual} “	Tool switches to the next step as soon as a specified time has been reached.



WARNING

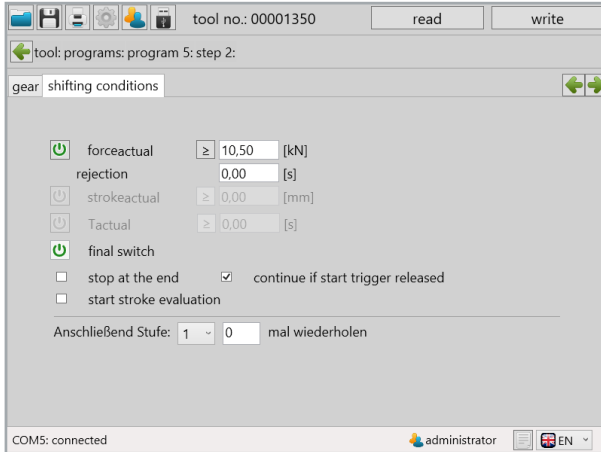
No force has to be entered on the last step in the pulling direction for the Battery-Blind-Riveting-Tool! The function remains deactivated; the tool either detects the tear with QuickRiv or the limiting switch.



NOTICE

The tool takes all activated switching conditions into account and switches to the next step as soon as one of the conditions has been fulfilled.

„final switch“	Activates / deactivates the rear light barrier of the tool as a safety function. Keeping this function active at all times is recommended.
„pressure trigger“	Activates / deactivates the contact pressure switch as a stop signal for tightening on blind rivet nuts. Activating this function on the screw-on step when using the Battery-Blind-Rivet-Nut-Tool is recommended.
„stop at the end“	Activates / deactivates a stop when the shifting condition for this step is reached, i.e. the tool stops at the end of the step. In order to continue the setting job with the next step, the trigger has to be pressed again. For Battery-Blind-Rivet-Nut-Tool, activating this function on the screw-on level is recommended.
„Continue if start trigger released“	If this function is activated, the tool will work from approx. 10 % of the maximum setting stroke, even if the trigger is released. This prevents the riveting process from unintentionally being interrupted.



43 Shifting conditions tab level 2

„start stroke evaluation“

Stroke count for the switching condition restarts from this step.

Then level „X“ repeat „n“ times

After meeting the shifting condition, the program switches to step "X" and repeats the cycle for "n" times. If 0 is entered for the „n“ value, this function will be deactivated.



NOTICE

Not all settings are available in the steps 1 and 5.

7 Sample programs



NOTICE



The following program examples should only be used as reference points and serve as an aid for the first settings. We create these for a better understanding of the software. The programs are not created based on standards or guidelines.

7.1 Sample program blind rivet nut / blind rivet nutrunner

Aluminum is an easily malleable material which requires only minimum forces.



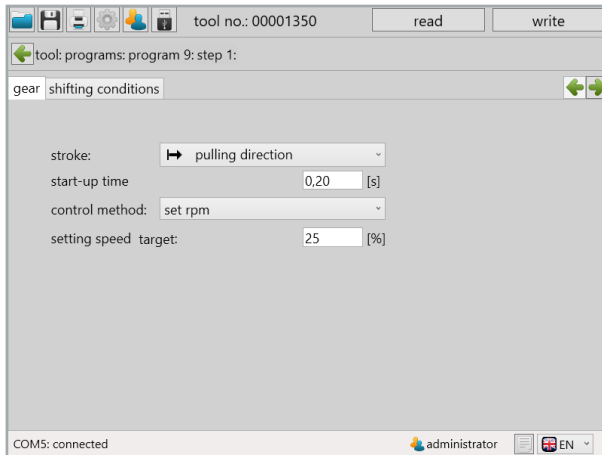
NOTICE

For very small rivet nuts and easily malleable materials, the forces may be increased at default settings. If the result is often / always above the set nominal value, the type of regulation or speed in the drive range should be very low in order to prevent the spindle from braking too late.

7.1.1 Sample program M3 aluminum blind rivet nut

Additional properties of the rivet nut:

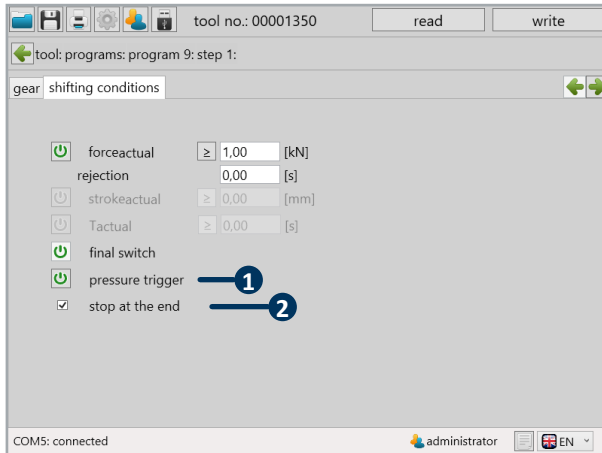
Flat head, round shaft, open



44 Sample program

In step 1, on the „gear“ tab, we work with a stroke in pulling direction, a short start-up time of 0.2 seconds, set the control method to „set rpm“ and a low speed of 25 % for onscrewing the nut.

The low onscrewing speed prevents the threading from being damaged and makes it easier to put on the rivet nut for onscrewing. Additional information about the individual functions can be found in chapter 6.3.1 „gear“ tab from page 57.

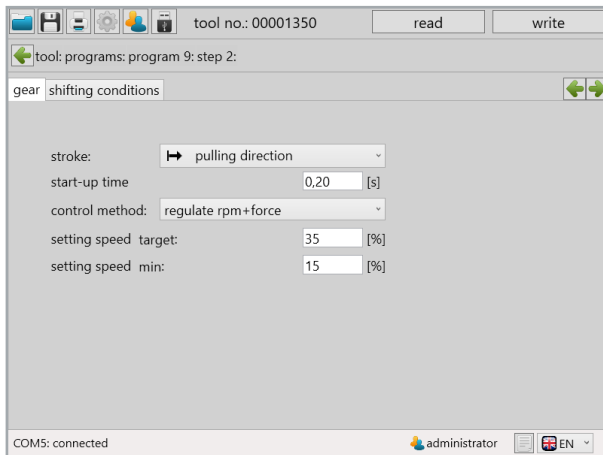


45 Sample program

The screw-on process is finished when one of the shifting conditions is met. The contact pressure switch (1) and the value under Force_{actual} are entered here. The event that occurs first terminates the screw-on process. The contact pressure switch detects that the rivet nut is touching the mouth piece. This option can only be selected if the „Stop at end“ function (2) is activated so the tool stops.

Additional information about the settings can be found in chapter 6.3.2 „shifting conditions“ tab from page 59.

In step 2 „gear“, we also run in pulling direction and activate a start-up time in order to let the device start-up a bit slower. Furthermore, we use the control method „regulate rpm + force“ in order to regulate the speed in accordance with the applied force. The „setting speed target“ is set to 35 % and the „setting speed min“ is set to 15 %. This prevents the tool from generating too much force for the blind rivet nut by moving to fast and damaging the blind rivet nut threading.

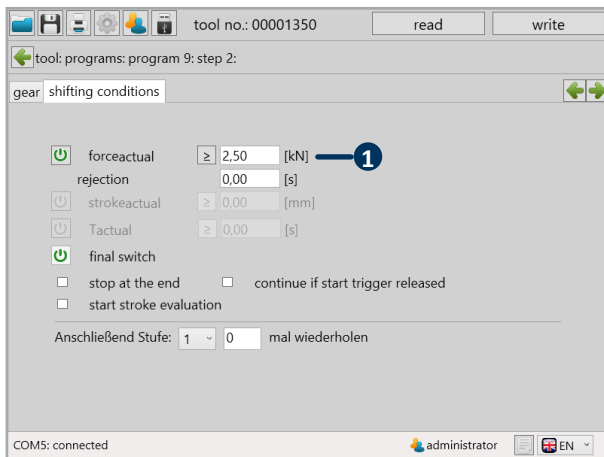


46 Sample program

The data sheet from the manufacturer should specify a recommendation for the maximum riveting force for the blind rivet nut. If this value is not available, a suitable maximum setting force must be determined empirically. In our example, the maximum setting force is 2.5 kN.

The value for the maximum riveting force is entered in the Force_{actual} (1) field. As soon as the tool has reached this value, the riveting process is stopped and the tool switches into the next step.

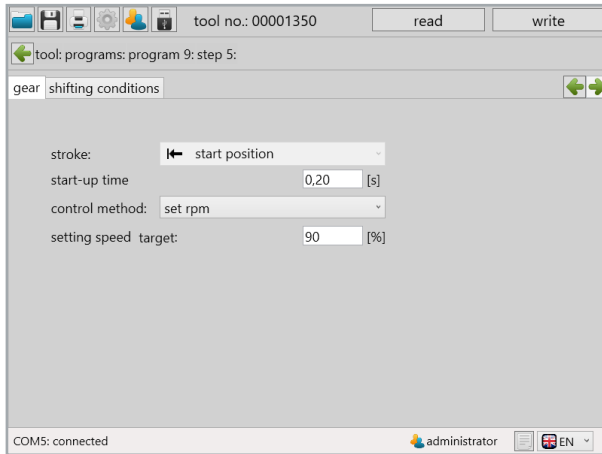
Information about all functions can be found in chapter 6.3.2 „shifting conditions“ tab from page 59.



47 Sample program

As a default, the last step (step 5) is used as a reverse step. This moves the tool back to the home position.

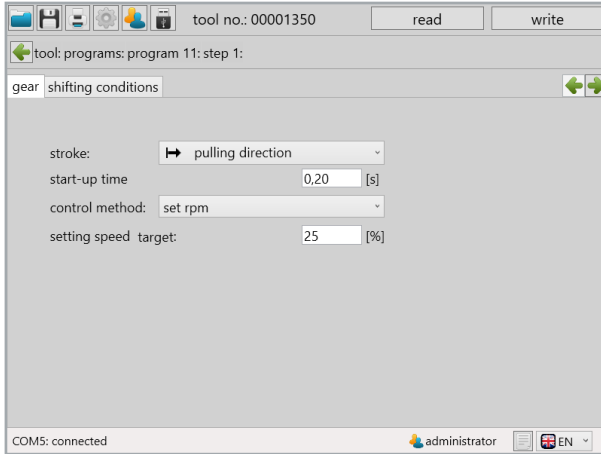
The start-up time should also be set here. The default setting of 0.2 seconds is recommended. Since only minor loads are expected, „set rpm“ is chosen as control method. The setting speed `target` can thus be set to 90 %.



48 Sample program

7.1.2 Sample program M8 aluminum rivet nut

Additional properties of the blind rivet nut:
Flat head, round shaft, open

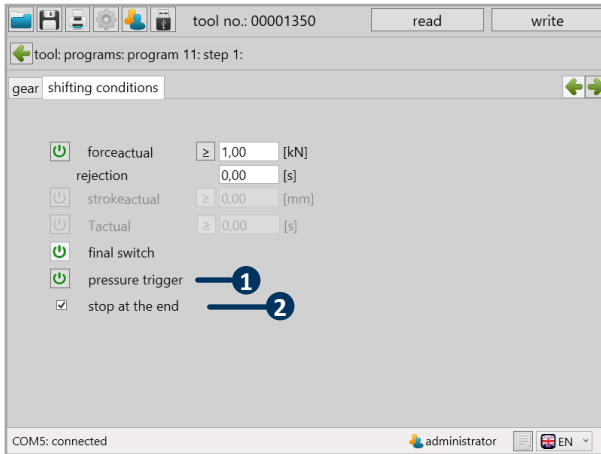


49 Sample program

In step 1, on the „gear“ tab, we work with a stroke in pulling direction, a short start-up time of 0.2 seconds, set the control method to „set rpm“ and a low speed of 25 % for onscrewing the nut.

The low onscrewing speed prevents the threading from being damaged and makes it easier to put on the rivet nut for onscrewing.

Additional information about the individual functions can be found in chapter 6.3.1 „gear“ tab from page 57.



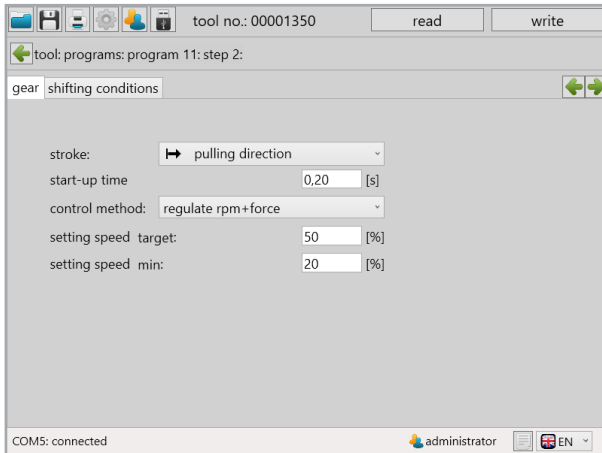
50 Sample program

The screw-on process is finished when one of the shifting conditions is met. The contact pressure switch (1) and the value under Force_{actual} are entered here. The event that occurs first terminates the screw-on process. The contact pressure switch detects that the rivet nut is touching the mouth piece. This option can only be selected if the „stop at the end“ function (2) is activated so the tool stops.

Additional information about the settings can be found in chapter 6.3.2 „shifting conditions“ tab from page 59.

In step 2 „gear“, we also run in pulling direction and activate a „start-up time“ in order to let the device start-up a bit slower. Furthermore, we use the control method „regulate rpm + force“ in order to regulate the speed in accordance with the applied force. The „setting speed target“ is set to 50 % and the „setting speed min“ to 20 %.

This prevents the tool from generating too much force for the blind rivet nut by moving to fast and damaging the blind rivet nut threading.

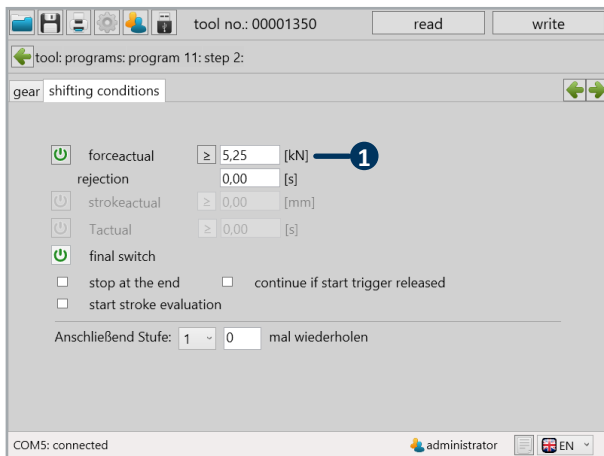


51 Sample program

The data sheet from the manufacturer should specify a recommendation for the maximum riveting force for the blind rivet nut. If this value is not available, a suitable maximum setting force must be determined empirically. In our example, the maximum setting force is 5.25 kN.

The value for the maximum setting force is entered in the Force_{actual} (1) field. As soon as the tool has reached this value, the riveting process is stopped and the tool switches to the next level.

Information about all functions can be found in chapter 6.3.2 „shifting conditions“ tab from page 59.



52 Sample program

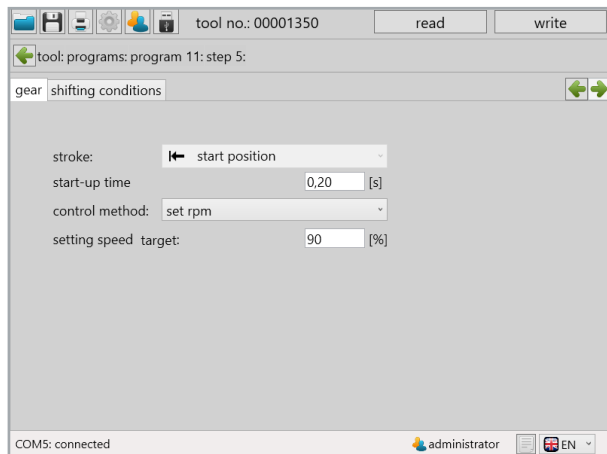
The last step (step 5) is generally used as a reverse step. To this end, the following settings must be set on the „gear“ tab:

„Start position“ must be selected for the stroke. This moves the tool back to the home position.

The „start-up time“ should also be activated here; 0.2 seconds is recommended.

The „set rpm“ control method is selected, since low loads are expected.

The „setting speed target“ can be set to 90 % in this case.



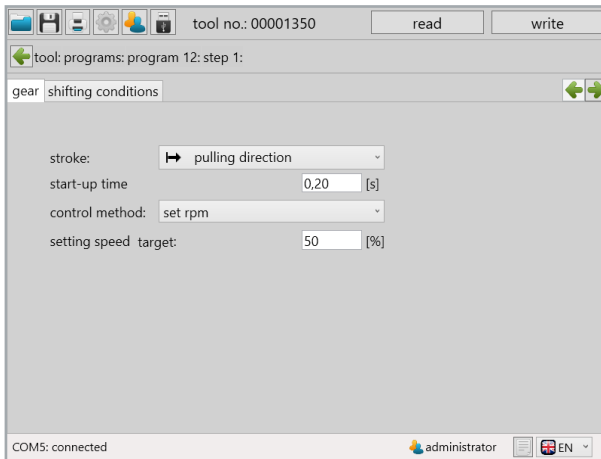
53 Sample program

The last step does not require editing for most applications.

Aluminum is an easily malleable material which requires only minimum forces.

7.2 Sample program blind rivet / locking collar bolt

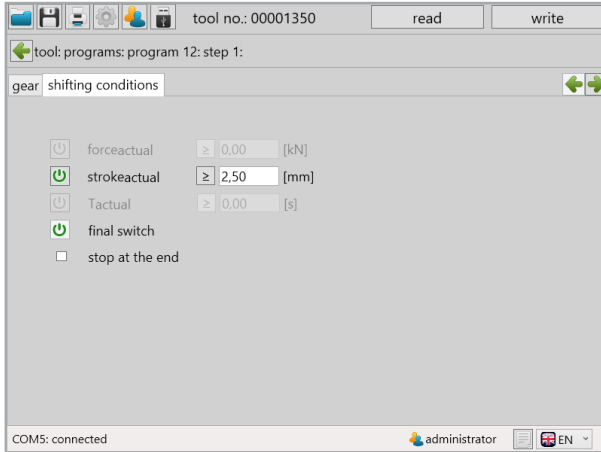
7.2.1 Sample program 6x16 steel rivet



54 Sample program

In step 1, on the „gear“ tab, we work with a stroke in pulling direction, a short „start up time“ of 0,2 seconds and set the control method to „set rpm“ with a „setting speed target“ of 50 %.

Additional information about the individual functions can be found in chapter 6.3.1 „gear“ tab from page 57.

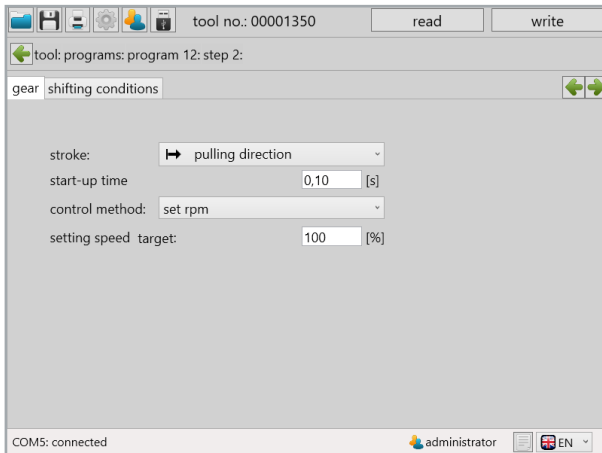


55 Sample program

A stroke of 2.5 mm is run as a shifting condition. Slowly running for 2.5 mm ensures the clamping jaws close slowly which prevents the jaws from slipping.

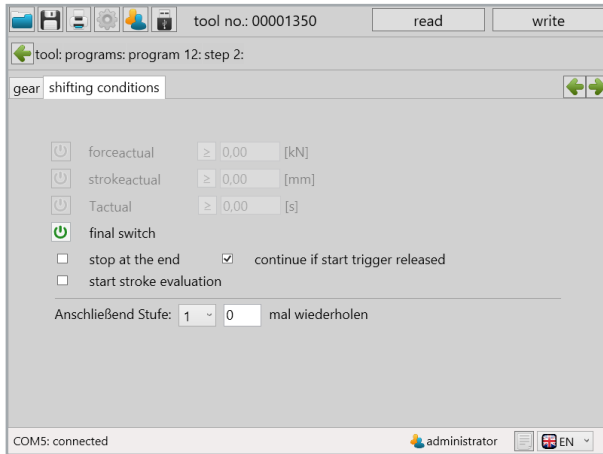
The machine is running at 100 % „setting speed target“ in the control method „set rpm“ in step 2 until the rivet breaks.

The „start-up time“ of 0.1 seconds ensures a dynamic speed transition between the steps.



56 Sample program

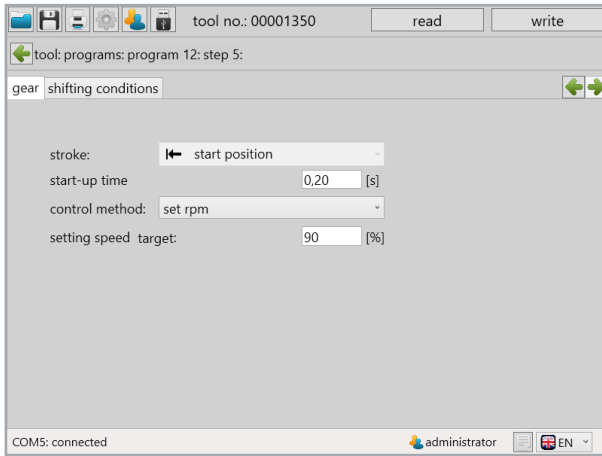
With the „continue if start trigger released“ option, the time for the activation of the trigger can be reduced. Additional information can be found in chapter 6.3.2 „shifting conditions“ tab from page 59.



57 Sample program

As a default, the last step (step 5) is used as a reverse step. This moves the tool back to the start position.

As control method „set rpm“ is chosen, since low loads are expected. The „setting speed target“ can be set to 90 % in this case.



58 Sample program

8 The barcode

For all tools which are equipped with a scanner, the program or a program sequence can be selected and started directly using the barcode scanner. Up to 10 barcodes can be created.

8.1 Basic settings

Make sure that your tool is equipped with a scanner. This is activated as the hardware default on all tools with scanners.

In administrator mode, the scanner can be activated or deactivated under „setup“ - „basic settings“, see chapter 5.1.9. „basic settings“ from page 43.

If „barcode“ or „barcode & external control unit“ is selected for „enable over“, see page 32, the scanner will be activated. The count function must be active in the default program.



NOTICE

To work with the scanner, the count function must be active in the default program.

8.2 Barcode interface

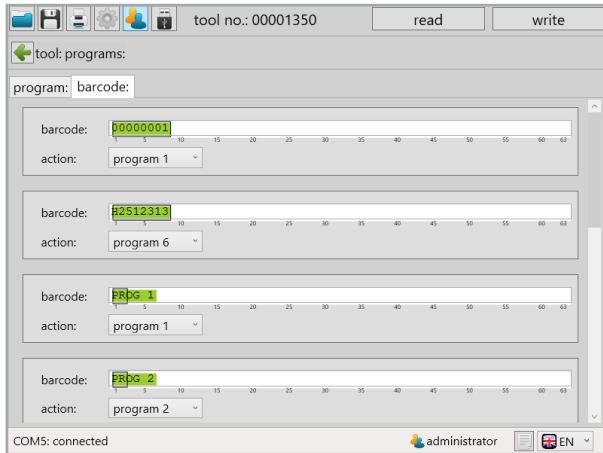
You can find the interface for creating and defining the function of a barcode under programming / barcode.



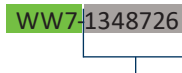
NOTICE

A barcode can have a maximum of 64 characters.

The green field between the sliders defines the part of the barcode used for the evaluation. The gray field between the sliders defines the part of the barcode for the indicator on the tool display. Maximum 8 characters.



59 Barcode



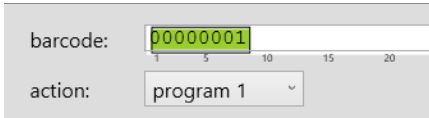
Will not be evaluated and can be variably modified (e.g. continuous serial number). For example: Indicator on the display.

The entire barcode will be saved. The green field delineates the area to be evaluated, i.e. that is the part the scanned barcode must contain at the corresponding point, so the assigned program is started. The number of characters of the scanned barcode and the barcode entered in the programming must be identical, e.g. both have to have 8 characters, even if only 4 characters are used for the evaluation.

The variable part, defined using the gray sliders, can be at the beginning, middle or end of the barcode and is not evaluated. This part is also shown on the display for controlling purposes. Furthermore, it can later be found in the evaluation in the functions for the graphic and statistics. The green and gray sliders can be moved while holding down the left mouse button.

8.3 Mask with a barcode

To activate a program directly using a barcode, usually only a part of the barcode is necessary. For this selection and to determine the display on the tool, the mask is separated into different selection fields.



The screenshot shows a software interface with two input fields. The first field is labeled 'barcode:' and contains the text '00000001'. Below this field are numerical markers at 1, 5, 10, 15, and 20. The second field is labeled 'action:' and contains a dropdown menu with the text 'program 1'.

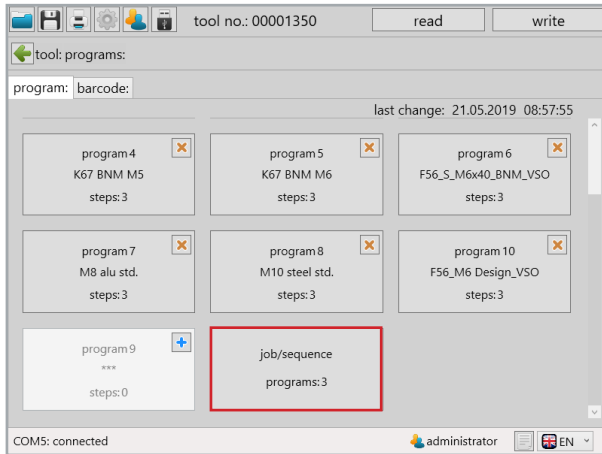


Example WW7-1348726

„barcode“	Barcode number / name
„action“	The program or job number of the program or the job to be enabled by the barcode.

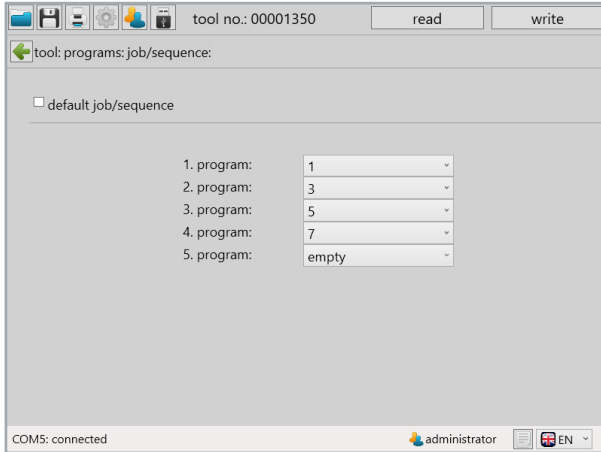
9 Job

With the SmartTool-Manager it is possible to create job programs. The program sequence of the individual programs to be processed sequentially are defined here. This function allows a job with several sequential programs by scanning a barcode.



60 cycle

After selecting the „Job“ field, the existing programs can be added to the job via the drop-down list. The functions and settings are adopted from the individual programs as is the number of riveting processes.



61 Job screen

„default
job / sequence“
see chapter 6.1.1

See Default program.
Creating, deleting, editing programs, from page 49. The active job is marked with a yellow star in the same manner as the programs.

job/sequence
programs:3

A maximum of 10 programs can be added to the job. The last program is always called „empty“. As soon as the drop-down menu is opened, another program can be added. In order to remove a program, it must be set to „empty“. This also hides the program(s) afterward and removes them from the job.

10 Statistics and graphics

10.1 Statistics

The Tool stores at least 150,000 results on the internal data storage device which can be read out with the SmartTool-Manager.



NOTICE

To read out the tool, it must be connected to the computer via USB.



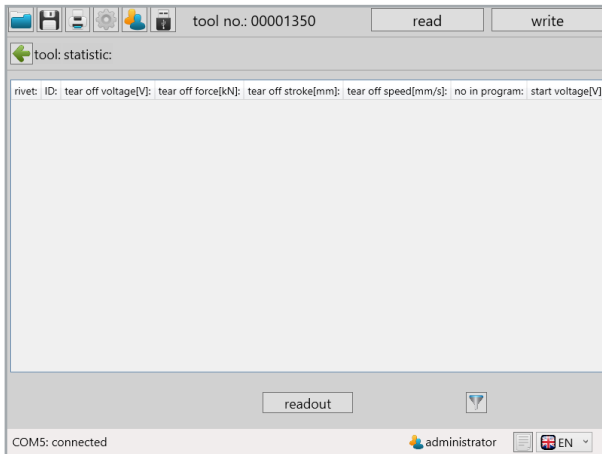
Click on the button  on the home screen.

The screenshot shows the SmartTool-Manager interface. At the top, there is a toolbar with icons for file operations, settings, and user management. The main area displays tool information for tool no. 20020001, with 'read' and 'write' buttons. Below the tool details, there are 'programming' and 'setup' buttons. The bottom status bar shows 'from backup', the user 'administrator', and a USB connection indicator.

tool name:	RTB-20	firmware version:	2.2.6.0
tool type:	RTB-20	firmware date:	09.04.2020
tool no.:	20230024	program:	4
inventory number:		barcode:	0
sensor DMS type:	PR-25KN	job/sequence:	0
sensor DMS no.:	20101576	battery voltage:	18,00 [V]
sensor cal. date:	08.07.2020	setting speed max.:	37,58 [mm/s]
next MCT:	N/A	force max.:	20,00 [kN]
Qty until Service B	249951		

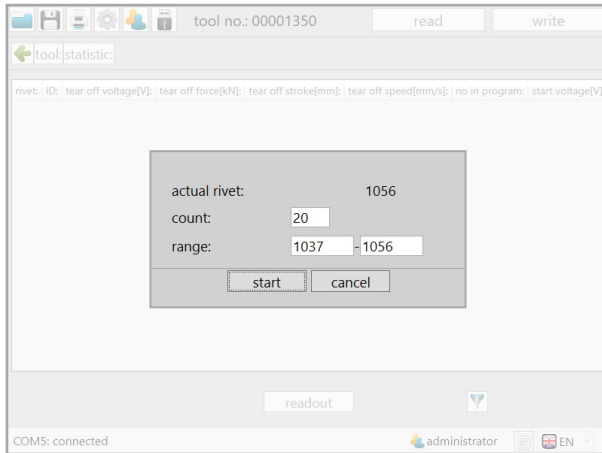
62 Evaluation

The „Statistic“ screen will open.



63 Statistics

To read out statistics from the tool, click on the „readout“ tool. A pop-up window will open in which the desired quantity or range of data to be read out can be entered.



64 Read out statistics

Under „count“, enter either how many values you want to read out or the exact number of rivets under „range“.

Then click on „start“.

The amount of riveting processes the internal tool counter has reached is displayed under „actual rivet“.



NOTICE

The more riveting processes that are read out, the longer the computer requires to display the data.

The SmartTool-Manager loads and displays the data.

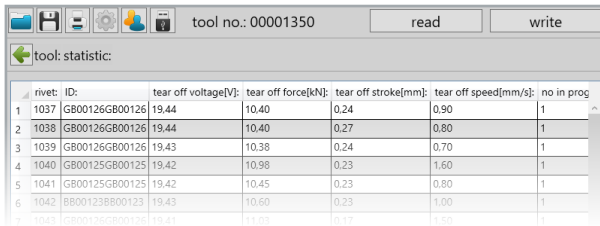
	rivet	ID:	tear off voltage[V]:	tear off force[kN]:	tear off stroke[mm]:	tear off speed[mm/s]:	no in prog
1	1037	GB00126GB00126	19.44	10.40	0.24	0.90	1
2	1038	GB00126GB00126	19.44	10.40	0.27	0.80	1
3	1039	GB00126GB00126	19.43	10.38	0.24	0.70	1
4	1040	GB00125GB00125	19.42	10.98	0.23	1.60	1
5	1041	GB00125GB00125	19.42	10.45	0.23	0.80	1
6	1042	BB00123BB00123	19.43	10.60	0.23	1.00	1
7	1043	GB00126GB00126	19.41	11.03	0.17	1.50	1
8	1044	GB00126GB00126	19.42	10.61	0.26	1.10	1
9	1045	GB00126GB00126	19.43	10.92	0.20	1.30	1
10	1046	GB00126GB00126	19.39	10.43	0.23	0.80	1
11	1047	GB00126GB00126	19.39	10.41	0.24	0.70	1
12	1048	GB00126GB00126	19.39	11.01	0.20	1.50	1
13	1049	BB00123BB00123	19.39	10.57	0.22	0.90	1
14	1050	BB00123BB00123	19.39	11.79	0.20	1.90	1

65 Statistical values

„rivet“	Upcounting number of the riveting process (internal tool counter)
„ID“	Scanned barcode
„tear off voltage[V]“	Voltage at the end of the riveting process
„tear off force[kN]“	Force at the end of the riveting process
„tear off stroke[mm]“	Required stroke for the riveting process
„tear off speed[mm/s]“	Speed at the end of the riveting process
„no. in the program“	No. of program used
„starting voltage[V]“	Voltage when the riveting process starts
„stroke max[mm]“	Total stroke the spindle required for the process (when breakage detection is activated $\hat{=}$ A.-Stroke)
„controller temperature [°C]“	Temperature of the controller at the end of the riveting process
„results“	OK / NOK results output
„NOK reason“	Cause of the NOK evaluation (empty if OK)

10.1.1 Drag & drop

All column widths can be adjusted as needed to obtain a better overview (similar functionality as Microsoft Excel). Furthermore, each column can be sorted downward or upward. To do this, click on the column head or increase / reduce the column width by pulling on the edge of the column. In addition, entire columns can be moved using drag & drop. To do this, pull upward on the column head with the left mouse button pressed. These can thus be arranged further forward or toward the back.



	rivet ID:	tear off voltage[V]:	tear off force[kN]:	tear off stroke[mm]:	tear off speed[mm/s]:	no in prog
1	1037 GB00126GB00126	19.44	10.40	0.24	0.90	1
2	1038 GB00126GB00126	19.44	10.40	0.27	0.80	1
3	1039 GB00126GB00126	19.43	10.38	0.24	0.70	1
4	1040 GB00125GB00125	19.42	10.98	0.23	1.60	1
5	1041 GB00125GB00125	19.42	10.45	0.23	0.80	1
6	1042 BB00123BB00123	19.43	10.60	0.23	1.00	1
7	1043 CB00126CB00126	19.41	11.03	0.17	1.50	1

66 Statistical values

10.1.2 Copy elements

To copy elements, they can be marked individually by holding down the mouse button, several lines can be marked. By right clicking, all of the elements can be marked. Furthermore, you can select whether the header should be copied or not. This data can be directly entered into Excel and other programs.

tool no.: 00001350 read write

tool: statistic:

	rivet	ID	tear off voltage[V]	tear off force[kN]	tear off stroke[mm]	tear off speed[mm/s]	no in program
1	1047	GB00126GB00126	19.39	10.41	0.24	0.70	1
2	1048	GB00126GB00126	19.39	11.01	0.20	1.50	1
3	1049	BB00123BB00123	19.39	10.57	0.22	0.90	1
4	1050	BB00123BB00123	19.39	11.79	0.20	1.90	1
5	1051	BB00				1.00	1
6	1052	BB00				1.30	1
7	1053	BB00				1.00	1
8	1054	BB00				0.70	1
9	1055	H251				1.40	1
10	1056	H2512313	19.62	10.12	4.97	1.30	2

readout

COM5: connected administrator EN

67 Move evaluation



NOTICE

By holding down the CTRL key, several, non-consecutive rows can be selected.

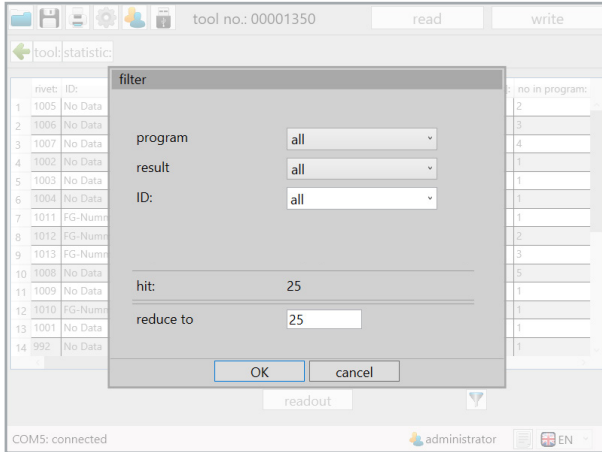
10.1.3 Filter

To use the filter function, click on the filter symbol on the lower right of the software interface.

The screenshot shows a software interface with a toolbar at the top containing icons for home, list, settings, user, and a power button. The text 'tool no.: 00001350' is displayed next to 'read' and 'write' buttons. Below this is a section titled 'tool: statistic:' with a left-pointing arrow. The main area contains a table with 7 columns: 'rivet ID', 'tear off voltage[V]', 'tear off force[kN]', 'tear off stroke[mm]', 'tear off speed[mm/s]', and 'no in prog'. The table lists 14 rows of data. Below the table is a 'readout' button and a filter icon. At the bottom, it shows 'COM5: connected', a user icon for 'administrator', and a language dropdown set to 'EN'.

	rivet ID	tear off voltage[V]	tear off force[kN]	tear off stroke[mm]	tear off speed[mm/s]	no in prog
1	1037 GB00126GB00126	19.44	10.40	0.24	0.90	1
2	1038 GB00126GB00126	19.44	10.40	0.27	0.80	1
3	1039 GB00126GB00126	19.43	10.38	0.24	0.70	1
4	1040 GB00125GB00125	19.42	10.98	0.23	1.60	1
5	1041 GB00125GB00125	19.42	10.45	0.23	0.80	1
6	1042 BB00123BB00123	19.43	10.60	0.23	1.00	1
7	1043 GB00126GB00126	19.41	11.03	0.17	1.50	1
8	1044 GB00126GB00126	19.42	10.61	0.26	1.10	1
9	1045 GB00126GB00126	19.43	10.92	0.20	1.30	1
10	1046 GB00126GB00126	19.39	10.43	0.23	0.80	1
11	1047 GB00126GB00126	19.39	10.41	0.24	0.70	1
12	1048 GB00126GB00126	19.39	11.01	0.20	1.50	1
13	1049 BB00123BB00123	19.39	10.57	0.22	0.90	1
14	1050 BB00123BB00123	19.39	11.79	0.20	1.90	1

68 Read out statistics



69 Reference filter

The filter window will open. You can then filter the results based on program, result or ID (barcode). After entering the filter parameters, the existing hits that match your selection will be shown directly. The number of hits to be displayed can also be reduced. If the number is reduced, the most recent results will be displayed automatically.


10.2 Graphics

The tool stores at least 150,000 results on the internal data storage device which can be read out with the SmartTool-Manager.

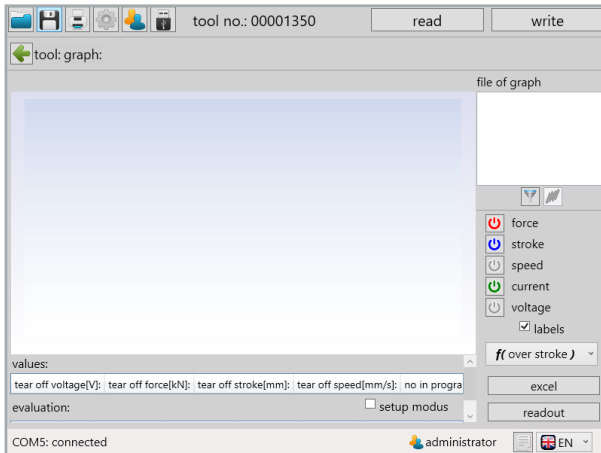


NOTICE

The more data sets are read out, the longer the computer requires to display the data.

Click on the  button on the home screen.

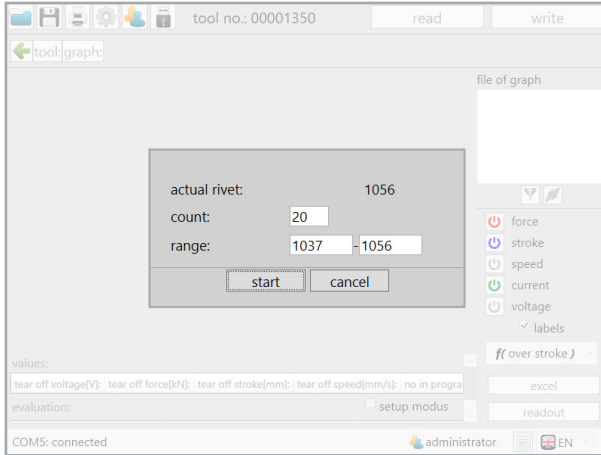
The „graphics“ interface will open.



70 Graphics start window

10.2.1 Read out graphics

To read out graphics data from the tool, click on the „readout“ button. A pop-up window will open in which the data to be read out can be entered.



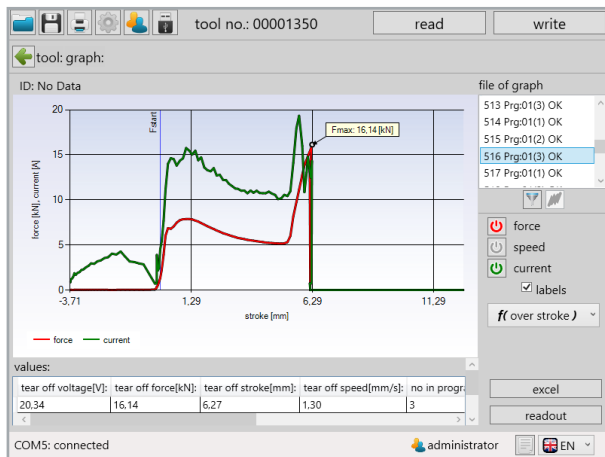
71 Read out graphics popup

Under „count“, enter either how many values you want to read out or the exact number of rivets under „range“.

Then click on „start“.

The amount of riveting processes the internal tool counter has reached is displayed under „actual rivet“.

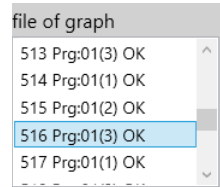
The SmartTool-Manager loads and displays the data.



72 Readout graphics

10.2.2 Graphics interface

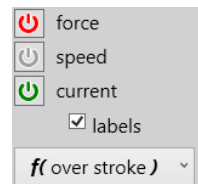
When selecting the graphics file, you can always look at one of the rivets. Click on the corresponding rivet. This will be highlighted in gray. In addition, you directly see the rivet number (516), the program (Prg:01) the counter number of the rivet (3) and the result of the riveting process (OK).



Only the variables that were defined under „setup - graphics - measurand“ before the riveting processes will be recorded in the diagram. See chapter 5.1.8 „graphics“ from page 42.

The following parameters are available:

- Force
- Speed
- Current



By clicking on the respective button, these can be added and removed by selection for the display in the graphics diagram.

If you remove the „labels“ checkmark, the label information about the significant points in the graphic will disappear.

With the drop-down menu below that, you can either set the graphic display mode to „over time“ or „over stroke“.



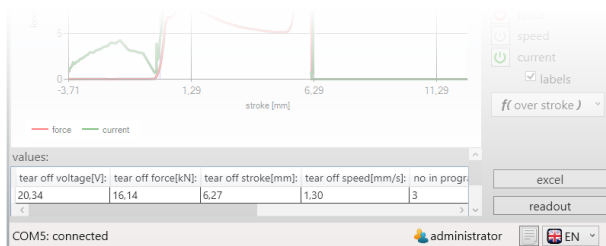
NOTICE

Please observe the settings under „setup - graphics - measurand“ see chapter 5.1.8 „Graphics“ from page 42. Measured values that are not set are not presented in the graphic and cannot be selected.

In the lower section of the graphics window, you will be shown a table with all of the values in the data set. Settings for the evaluation can also be set further below.



Values:

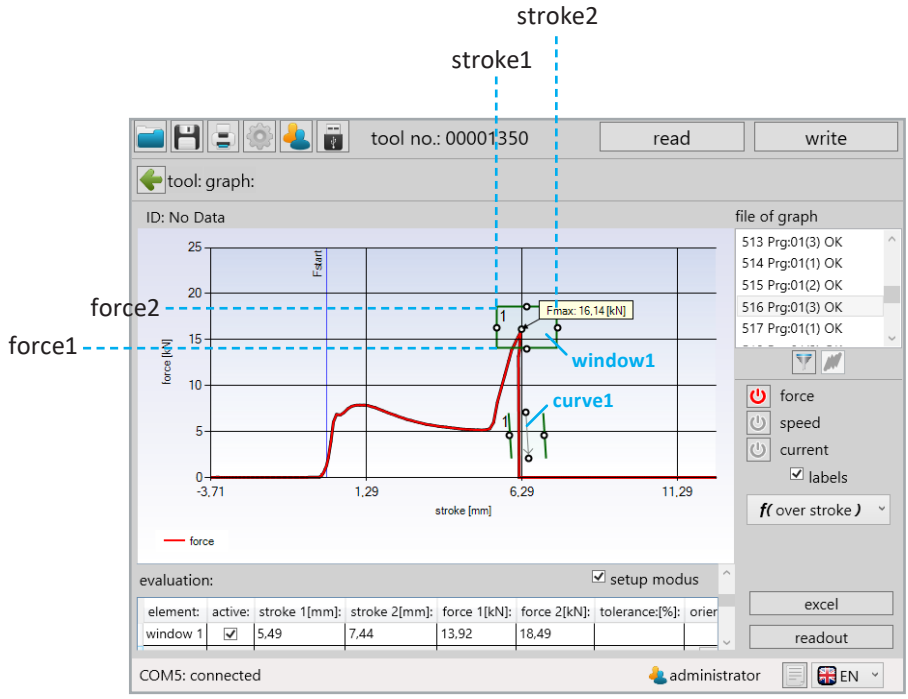
„tear off voltage[V]“	Voltage at the end of the riveting process A.-Force [kN] Force at the end of the riveting process
„tear off stroke[mm]“	Required stroke for the riveting process
„tear off speed[mm/s]“	Speed at the end of the riveting process
„no. in the program“	No. of program used
„starting voltage[V]“	Voltage when the riveting process starts
„stroke max[mm]“	Total stroke the spindle required for the process
„controller temperature [°C]“	Temperature of the controller at the end of the riveting process
„results“	OK / NOK results output
„NOK reason“	Cause of the NOK evaluation (empty if OK)



73 Graphics values below

Evaluation:

„active“	Checkboxes to activate / deactivate the windows and curves
„stroke1[mm]“	Defines the first point of the element on the stroke axis.
„stroke2[mm]“	Defines the second point on the element on the stroke axis.
„force1[mm]“	Defines the first point of the element on the force axis.
„force2[mm]“	Defines the second point on the element on the force axis.
„tolerance[%]“	The tolerance defines the permissible deviation from the curve base line.
„orientation“	Specifies whether the evaluation should be horizontal or vertical. The alignment is based on the force progression. (Steep progression ⇨ vertical alignment  , shallow progression ⇨ horizontal alignment )



74 Graphics evaluation below



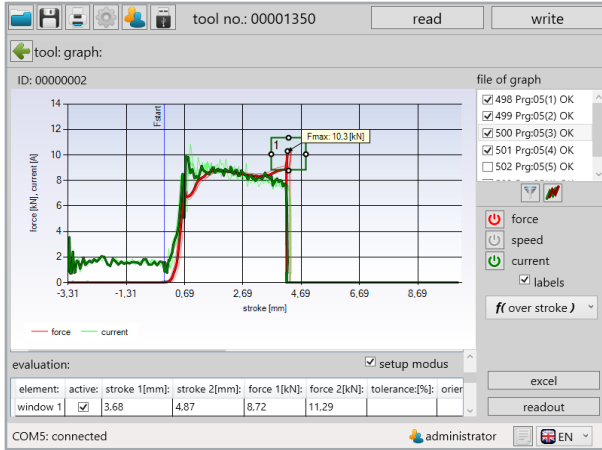
75 Graphics evaluation below incorrect



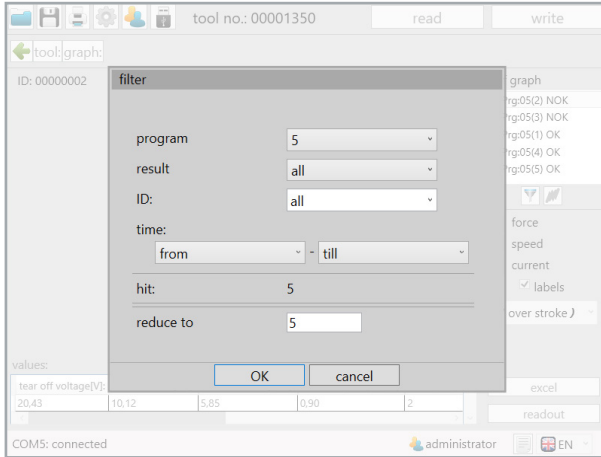
If an entry is incorrect or invalid, a red exclamation mark will appear in the 1st column. The corresponding field will also be bordered in red.

10.3 Filter

There is a filter function to display selected values.



76 Torque curve active



77 Graphics filter popup

The filter window will open. You can then filter the results based on program, result or ID (barcode). After entering the filter parameters, the existing hits that match your selection) will be shown directly. The number of hits to be displayed can also be reduced. If the number is reduced, the most recent results will be displayed automatically.

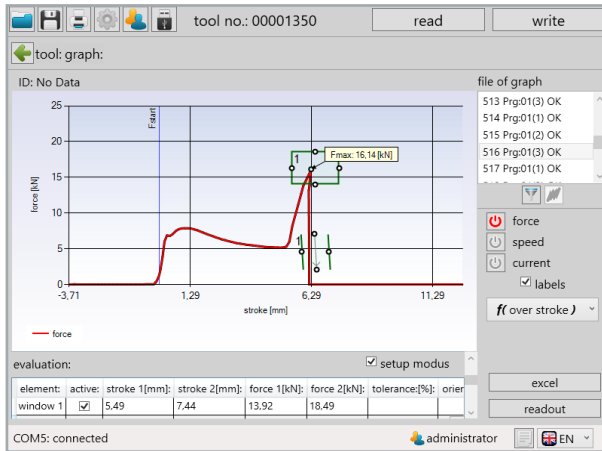
10.4 Excel export

By pressing the „excel“ button, the selected graphics file, including all recorded data points, will be exported into Excel.



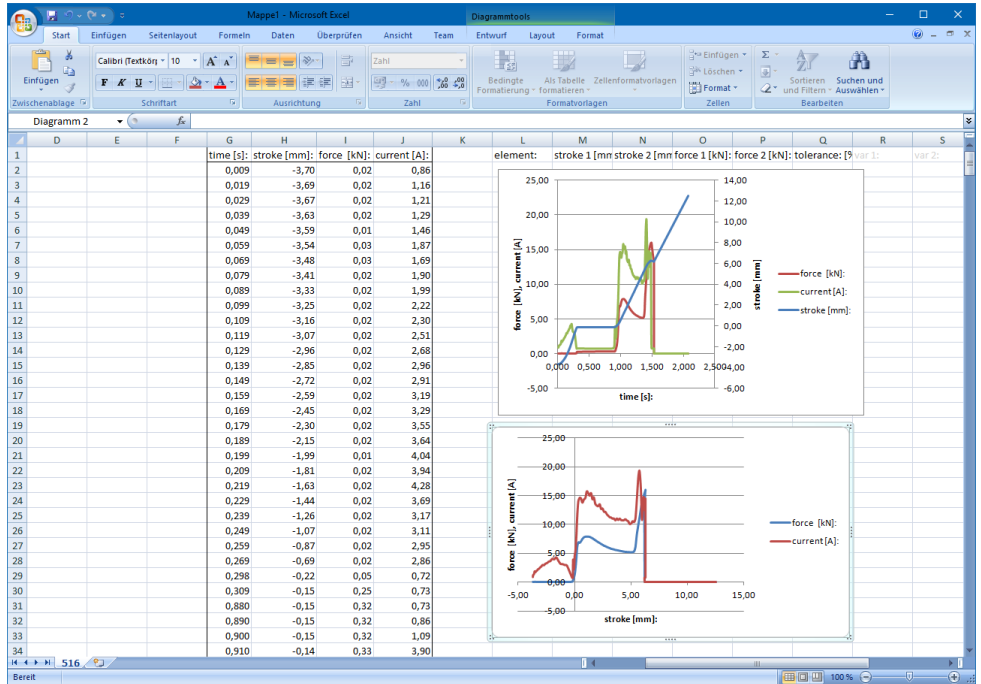
NOTICE

Microsoft Excel must be installed on the computer for this option.



78 Graphics evaluation below

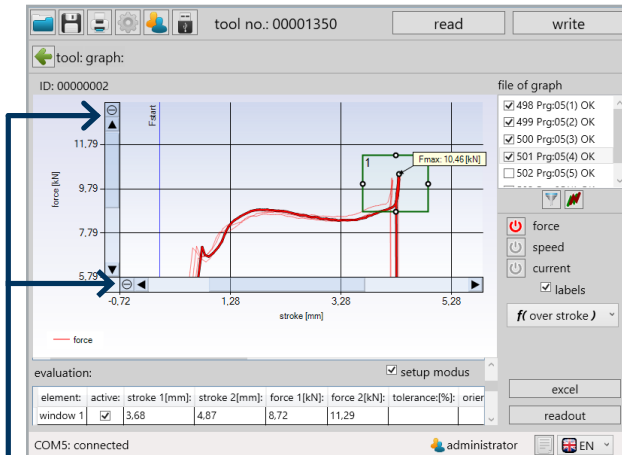
After clicking on the „excel“ button, Excel will open and load the corresponding data. Then, a „save as“ window in which you can define the save location for the file will open automatically. The file name, as a default, corresponds to the rivet number of the selected graphics file. These can, however, be renamed or supplemented.



79 Excel export

10.5 Zoom function in the graphics

Individual sections of the graphic can be enlarged for a more detailed view using the zoom function. To do this, hold down the left mouse button and draw a frame around the relevant section. The selected section will be highlighted in a light color. As soon as the mouse button is released, the enlarged view will appear. To return to default view, a minus symbol will appear on the stroke / time and force axis scroll bar.



80 Torque curve active force 4 with zoom

Reset zoom

For information on how graphics are superimposed, see chapter 10.6 „adjust evaluation to reference rivets“ from page 104.

10.6 Adjust evaluation to reference rivets

The Bossard SmartTool Battery-Blind-Riveting- & Battery-Blind-Rivet-Nut-Tool are able to perform an OK / NOK evaluation of the riveting process. The parameters to be defined for this can be determined via the recorded process data of reference rivets / rivet nuts. Approx. 10 reference rivets / rivet nuts should be pulled. The mounting must be performed in the corresponding material with the same clamping thickness. In addition, simulating potential NOK cases is recommended in order to have an OK to NOK comparison. Then, the tool is connected to the computer via USB and read out. To better understand the functionality of the graphic menu, read chapter 10.2.0 „graphics“ from page 91.



NOTICE

F_{start} must be set for an expressive evaluation, see page 55.

The screenshot shows the 'tool:' screen in the software. At the top, there are icons for file operations and a toolbar with 'read' and 'write' buttons. The tool number is '20020001'. The main area displays the following parameters:

tool name:	RTB-20	firmware version:	2.2.6.0
tool type:	RTB-20	firmware date:	09.04.2020
tool no.:	20230024		
inventory number:		program:	4
sensor DMS type:	PR-25KN	barcode:	0
sensor DMS no.:	20101576	job/sequence:	0
sensor cal. date:	08.07.2020	battery voltage:	18,00 [V]
next MCT:	N/A	setting speed max.:	37,58 [mm/s]
Qty until Service B	249951	force max.:	20,00 [kN]

At the bottom of the parameter list, there are two icons: a document icon and a bar chart icon. A blue arrow points from the text 'Open graphic menu' to the bar chart icon. Below the icons are 'programming' and 'setup' buttons. The bottom status bar shows 'from backup', 'administrator', and a 'US' dropdown menu.

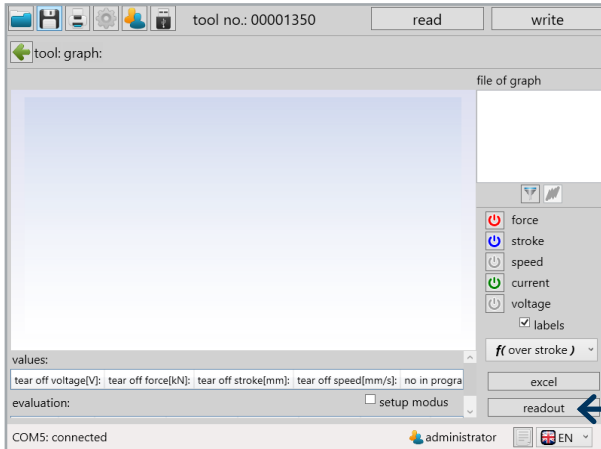
Open graphic menu

81 Home screen tool connected

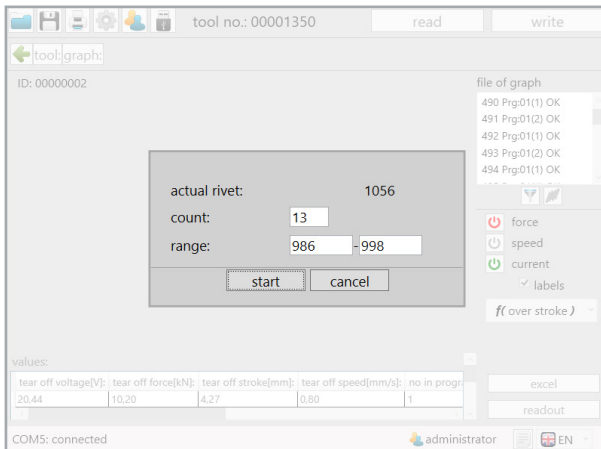


NOTICE

The selection of suitable reference rivets / rivet nuts is the user's responsibility and not the tool manufacturer's.

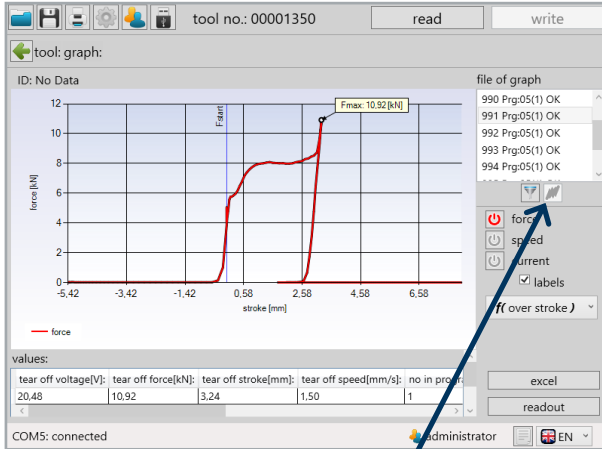


82 Graphics start window



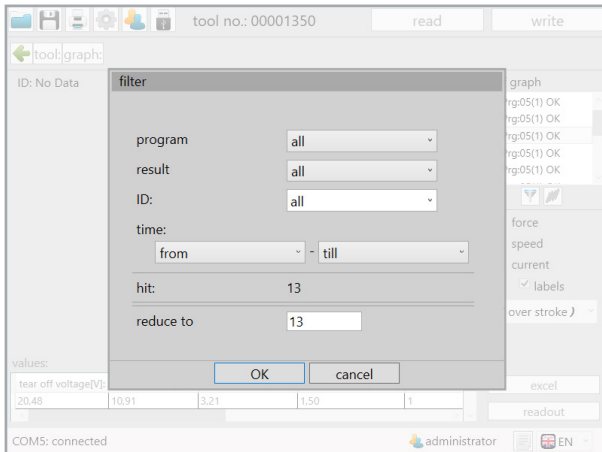
83 Read out 10 reference rivets

Enter corresponding number of reference rivets. In our example, 13, of those 10 OK and 3 NOK reference rivets.

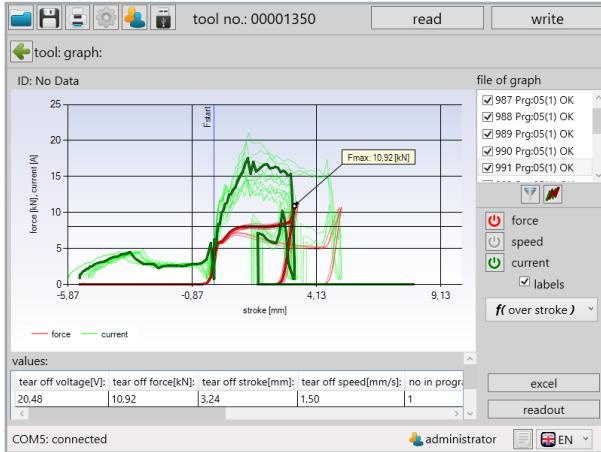


84 Graphics

First, the filter function must be executed so the „superimpose read-out curves“ symbol is activated. Which filter parameters are activated does not play a role, however, all reference determination data should be available as filter results. To display all curves on the coordinate system, click on the „superimpose readout curves“ button. The selected data set will be displayed in bold in the graphic.



85 Reference filter

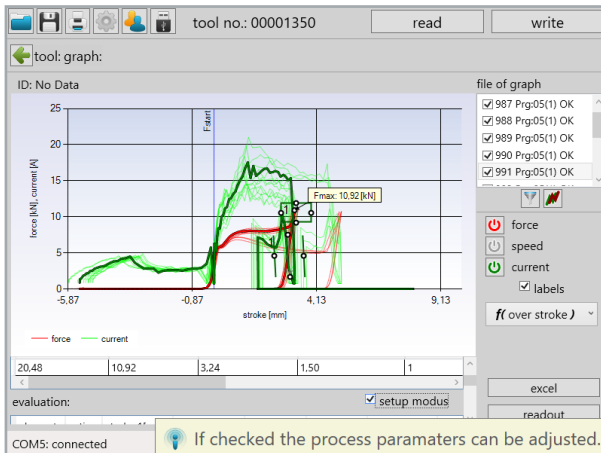


86 Reference all curves



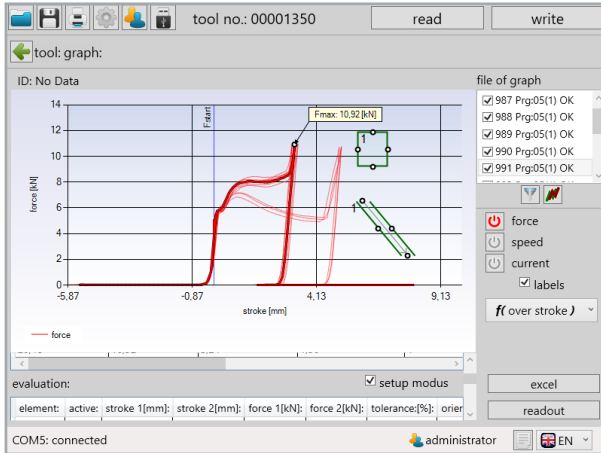
NOTICE

For a better overview, individual parameters like current can be deactivated.



87 Reference setup mode

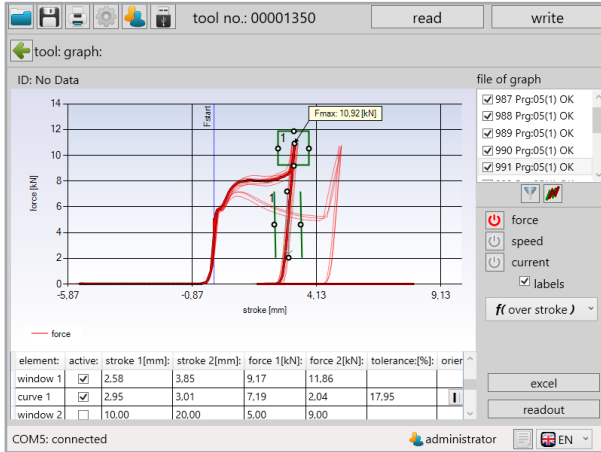
To change the thresholds of the window and curve to evaluate the riveting process, first „setup modus“ must be activated. This is located below the „values“ table. Setting the checkmark in the „active“ box, activates a new window and a new curve for the evaluation.



88 Reference window curve created

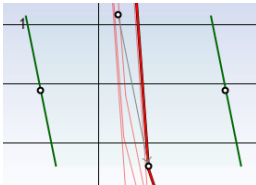
To position the window and curve, it can be moved by dragging the mouse in the graphic. Alternatively, the values can be entered directly in the respective row for the window or curve.

More information about „window“ and „curve“ in chapter 10.2.0 „graphics“ from page 91.



89 Reference window curve positioned

Only the maximum force values of the OK riveting processes should be in the window and only their force progressions in the „curve“. This is particularly important: because this allows the clamping area to be monitored. This ensures that only riveting processes in which all components are linked together result in an OK evaluation, because the force progression would otherwise be outside the curve. When setting the curve, make sure the displayed arrow direction corresponds with the course of the measurement curve.





NOTICE

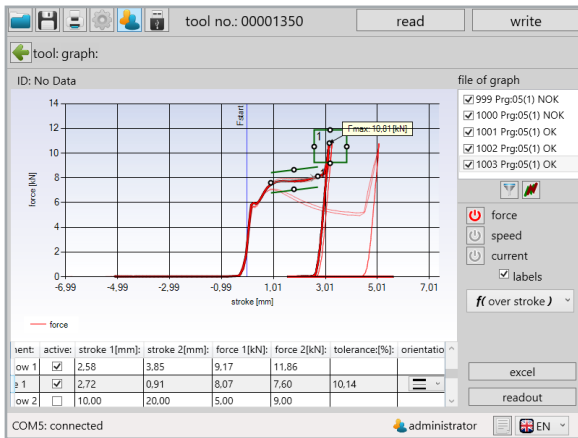
In principle, the following applies: The thresholds should be kept as low as possible, and set as high as necessary.



NOTICE

When setting the window, it is not always avoidable that NOK rivets are below the threshold. It is not possible in all cases to program a clear differentiation between OK and NOK.

It is also possible to monitor the force progression during the riveting process with the help of a curve. For this, the orientation must be set from vertical (default) to horizontal. Then, the curve can be pulled to the desired point using the mouse or positioned directly via the table.

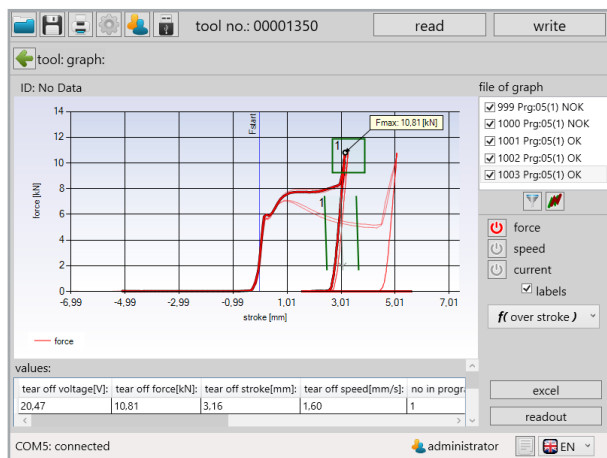


90 Horizontal curve

After the window and the curve have been set, the data must be written to the tool by pressing the „write“ button. From this point on, when using this program, the tool evaluates the riveting process as defined by the window and curve.

To check the setting, 3 additional riveting processes are performed which should be evaluated as OK, otherwise, the window and curve settings must be checked. Simulating NOK riveting processes too is recommended.

The data is read out via the graphics window again and, as already described, all force progressions are displayed on the same coordinate system. It is clear that the riveting processes were each correctly evaluated as OK or NOK.



91 Reference OK NOK evaluation


The settings were successful for this example and the tool can thus be used for a monitored riveting process with evaluation.

11 Saving and loading parameters

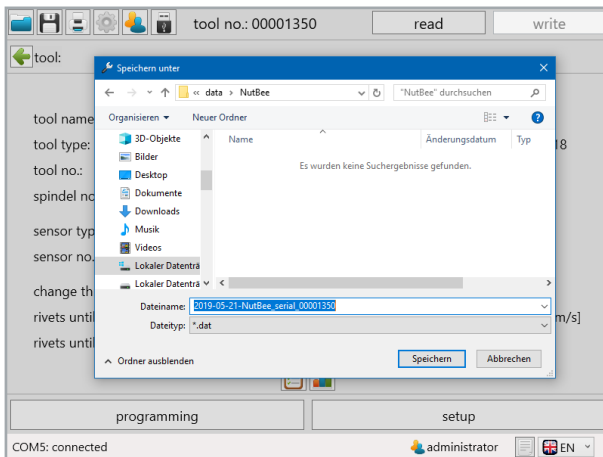
11.1 Save / load

In the SmartTool-Manager, it is possible to save all settings data for the tool externally. „dat“ and „xml“ file formats can be used.

To also save statistics and graphics data in the file, they must be read out first.

To save a file, click on the  button.

A „Save as...“ window will open in which the desired storage location, the name and the file format can be defined.



92 Save file

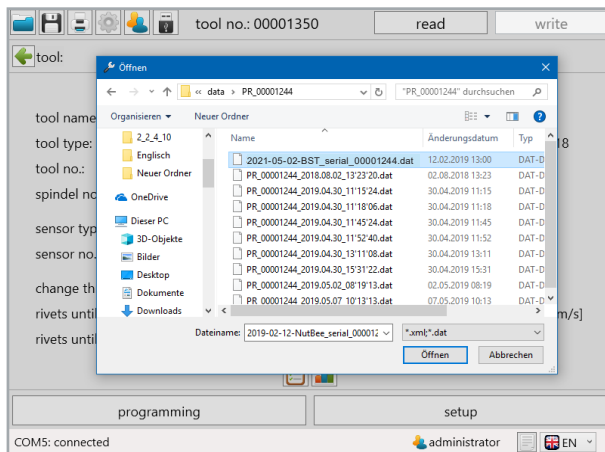
Then click on Save.

11.2 Load / restore

The SmartTool-Manager offers you the option of loading complete or individual settings and programs into the tool. You must be logged on as administrator to do this. First, read out the tool on which modifications or a file import or restore are to be performed. Then, open the file from which the data is to be loaded.

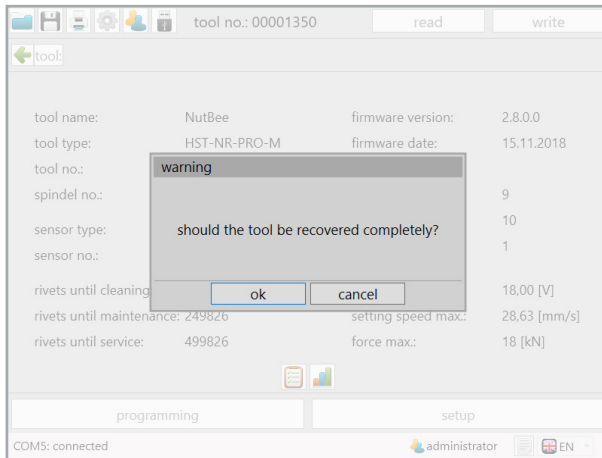
Open a file by pressing the  button.

Then, a pop-up window will open in which the file to be read out can be entered.



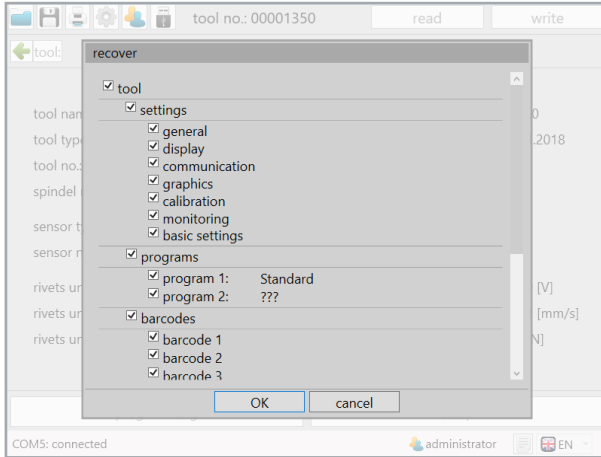
93 Open file

Select the file and press „Open“.
The restore window will open.



94 Restore tool

If an older tool file is to be loaded, the software will recognize this based on the serial number and will ask if the tool should be completely recovered. Via the restore pop-up window, you can select whether you want to completely or only partially restore or import the tool. If you click on „ok“, the tool file will be overwritten. If you click on „cancel“, the import window will open in order to import individual parts, e.g.: settings, programs, barcodes or jobs.



95 Restore individual tool

If you load a tool file from another tool, the import query window will open directly. By adding and removing, individual or all information can be loaded. Pressing the „OK“ button first loads the data into the SmartTool-Manager. Only after clicking on the „write“ button will the data also be transferred to the tool. If unwanted data is loaded into the SmartTool-Manager during the import, the actual status of the tool can be reloaded into the SmartTool-Manager by reading it out again.



NOTICE

If the imported data has been transferred to the tool using the „write“ button, this cannot be undone.

12 Attachment and data

12.1 Troubleshooting Battery-Blind-Rivet-Nut-Tool BST RNB-25(-S)

Fault	Cause	Action
No connection to the tool	<ol style="list-style-type: none">1. No USB cable connected2. USB cable not properly plugged in3. No drivers installed.4. Firewall blocking the connection5. Wi-Fi connection lost.	<ol style="list-style-type: none">1. Connect the Cable to the tool and to the PC2. Check the connection3. Install drivers4. Deactivate firewall Issue a release in the firewall5. Restore the Wi-Fi connection or wait until the tool automatically connects
Tool does not start	<ol style="list-style-type: none">1. No program created2. Incorrect program defined as default.3. Incorrectly „enable over“ function	<ol style="list-style-type: none">1. Setting in the program overview2. Setting on the main program screen3. Check how the tool is enabled in the settings.
Tool switches off too high	<ol style="list-style-type: none">1. Speed too high for small or easily malleable rivet nuts2. Incorrect program activated3. Tool runs on force switch	<ul style="list-style-type: none">- View sample programs Control spindle brake via drive- Setting under „The active program“- Check settings Set display program to „00“
Motor gets too hot	<ol style="list-style-type: none">1. Speed too low2. Work ratio not maintained	<ol style="list-style-type: none">1. If the speed is too low or too high and the forces too high, this may lead to the motor overheating. Check tool programming.2. Display and comply with the table in the operating instructions BST-RNB-25
Screw-on step	<ol style="list-style-type: none">1. incorrect programming2. Contact pressure switch blocked and is thus always pressed	<ol style="list-style-type: none">1. „Stop at the end“ checkmark not marked in step 12. Tool has to be repaired



NOTICE

Troubleshooting includes tips which are generally checked first. The list is not complete and should merely serve as inspiration for troubleshooting as faults are often the result of programmer / calibration technician errors. If you cannot solve a problem yourself, you are welcome to contact us.

12.2 Troubleshooting Battery-Blind-Riveting-Tool BST-RTB-20(-S)

Fault	Cause	Action
No connection to the tool	<ol style="list-style-type: none">1. No USB cable connected2. USB cable not properly plugged in3. No drivers installed.4. Firewall blocking the connection5. Wi-Fi connection lost.	<ol style="list-style-type: none">1. Connect the Cable to the tool and to the PC2. Check the connection3. Install drivers4. Deactivate firewall Issue a release in the firewall5. Restore the Wi-Fi connection or wait until the tool automatically connects
Tool does not start	<ol style="list-style-type: none">1. No program created2. Incorrect program defined as default.3. Incorrectly „enable over“ function	<ol style="list-style-type: none">1. Setting in the program overview2. Setting on the main program screen3. Check how the tool is enabled in the settings.
Tool shuts-off too high	<ol style="list-style-type: none">1. Speed too high for small or easily malleable rivet nuts2. Incorrect program activated	<ul style="list-style-type: none">- View sample programsControl spindle brake via drive- Setting under „The active program“
Motor gets too hot	Speed too low	If the speed is too low or too high and the forces too high, this may lead to the motor overheating. Check tool programming.



NOTICE

Troubleshooting includes tips which are generally checked first. The list is not complete and should merely serve as inspiration for troubleshooting as faults are often the result of programmer / calibration technician errors.
If you cannot solve a problem yourself, you are welcome to contact us.



HELP AND SUPPORT

When submitting questions to our product support department, please always send the file with the most recent curves.

In order to add the most recent curve, you must first read it out via the „graphics“ window. See chapter 10.2 „graphics“ from page 91.
Then save the file as described.

Our support for the SmartTool-Manager can be reached as follows:
smartfactoryassembly@bossard.com

