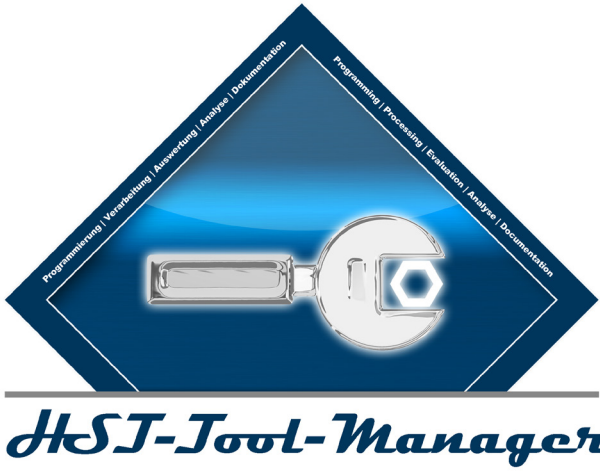
OPERATING INSTRUCTIONS



Publication date: August 2019

NutBee®-PRO-M
PowerRiv®-PRO-M

PC software 2.0.3.x
Firmware: 2.7.7.0

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HELP AND SUPPORT

Our support for the HST-Tool-Manager can be reached as follows:
service@hs-technik.com | Telephone: +49 7628 9111-57

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

NOTICE
This symbol indicates additional information that will make your work easier.

WARNING
General warning to prevent operating errors and failures.

DANGER
This indicates a direct hazard for the worker or the tool. This warning symbol is especially important and must be observed.

OPERATING INSTRUCTIONS

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

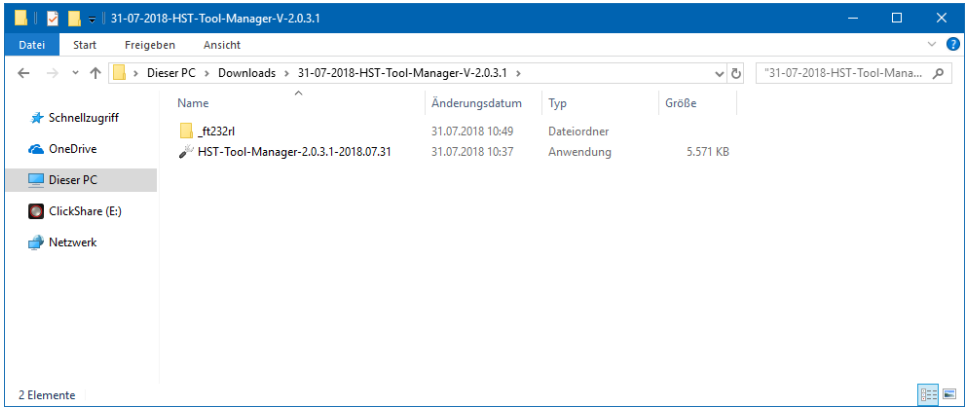
Several topics, for instance, the displays, are overarching so both sets of instructions have to be followed.

1 INSTALLING THE DRIVERS

Open the data storage device.

NOTICE
The current software and the driver are also available on our website in the software area as a download.

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

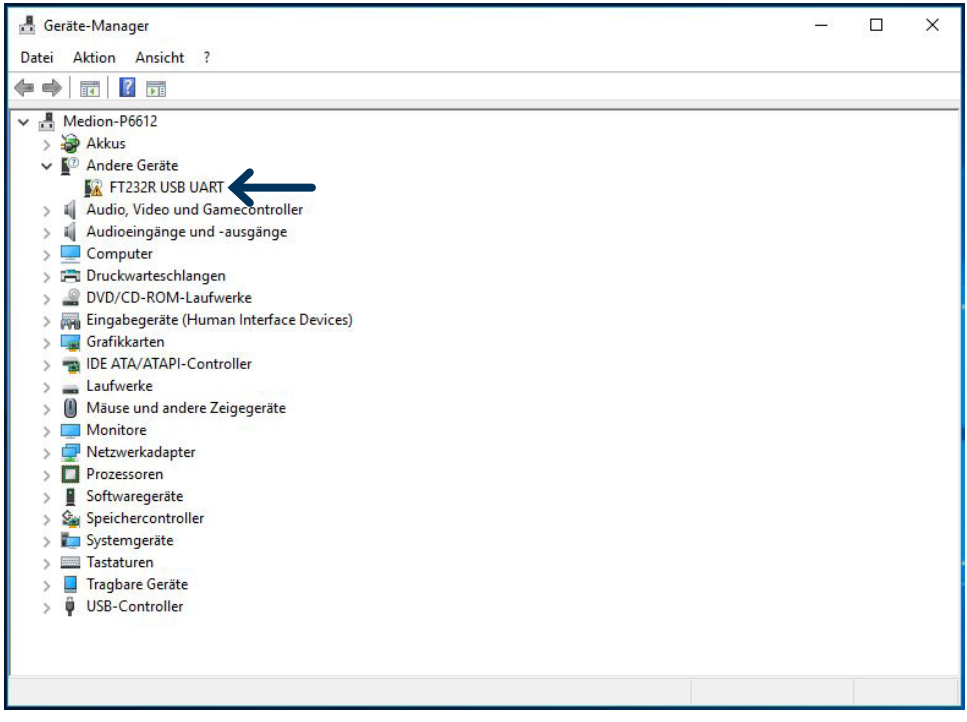


1 Installation

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

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

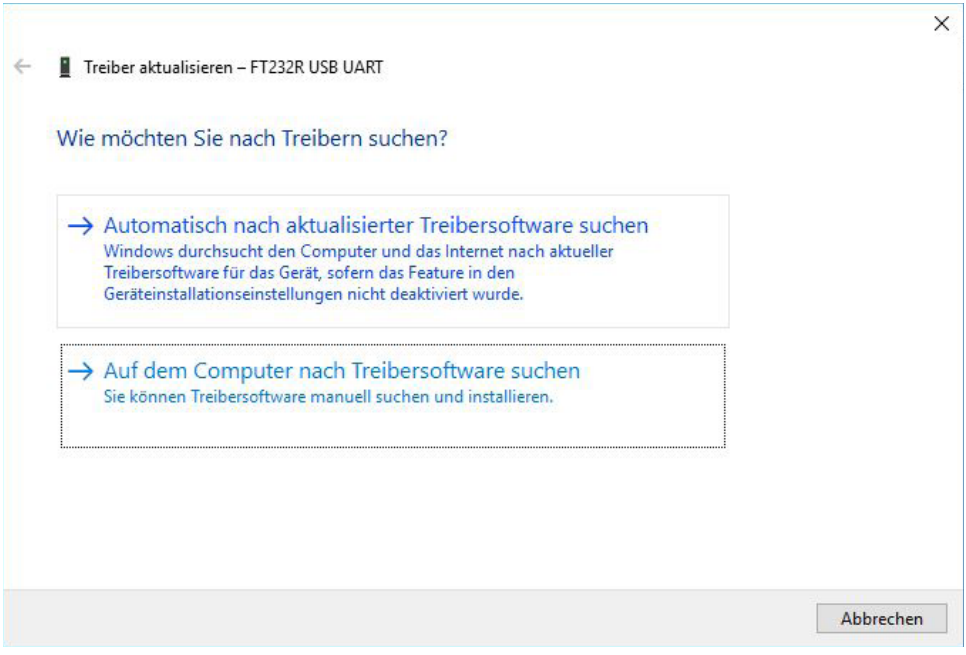
If the software does not open or doesn't recognize the tool, check to ensure you have installed the USB driver (ft232rl). To do this, connect the tool to the computer via USB and open the device manager.



2 Adapter not recognized

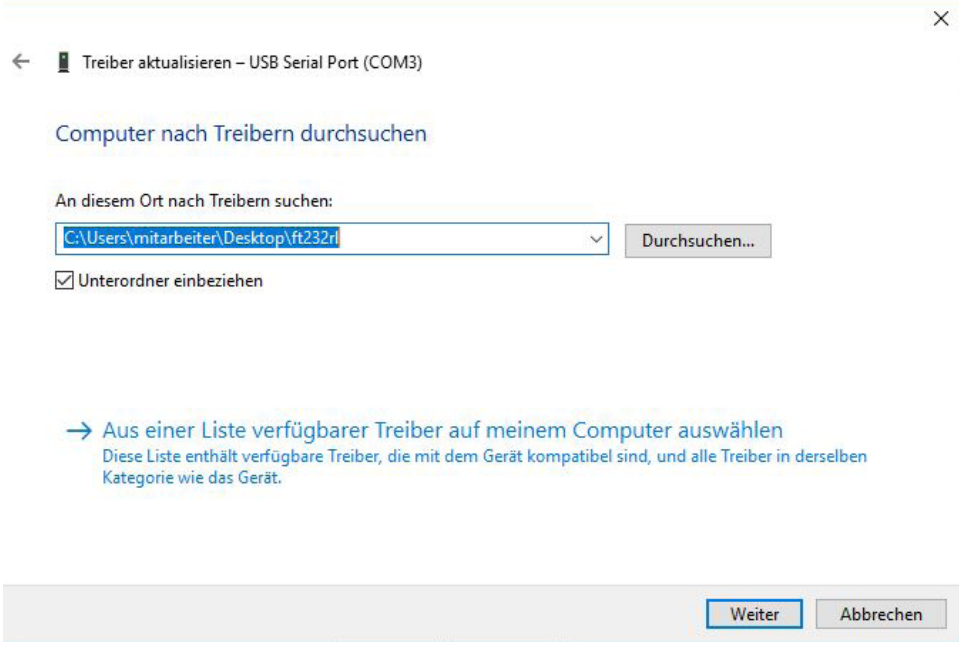
The ft232rl is not installed yet and does not correctly recognize the COM Port.

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.



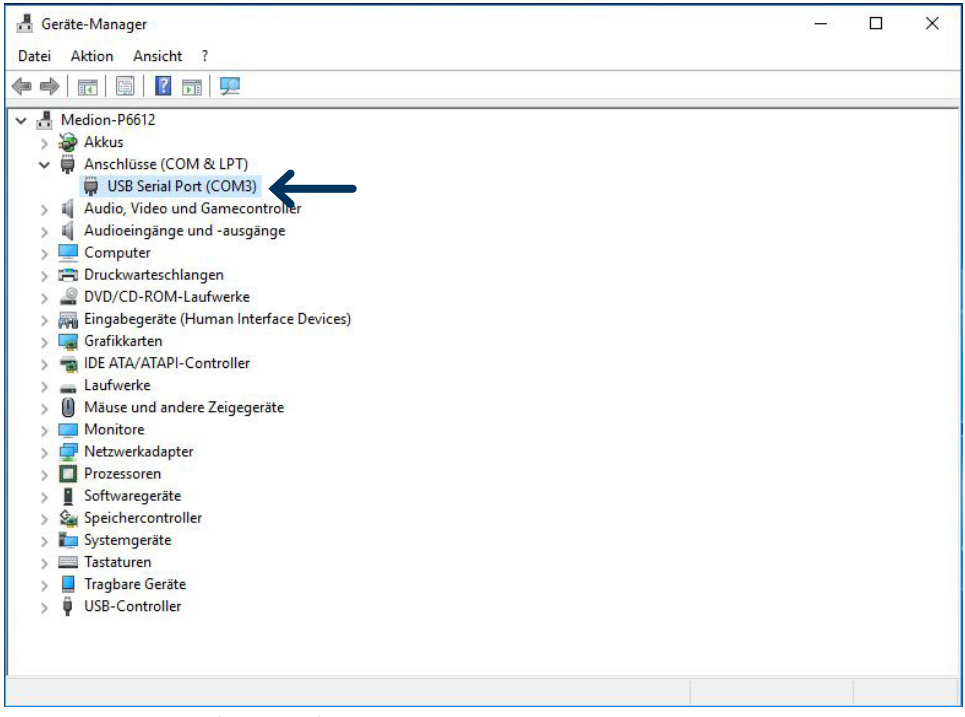
3 Search for driver manually

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 HST-Tool-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 HST-Tool-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 HST-Tool-Manager software for editing. After editing, the file can be transmitted back to the tool via USB.

2.2 INTRODUCTION

The HST-Tool-Manager does not have to be installed and is available for download as an .exe file at https://www.hs-technik.eu/produkte/software:

The HST-Tool-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.
Manufacturer address:

HS-Technik GmbH
High - System - Technik
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

2.5 SYSTEM REQUIREMENTS

The minimum requirements for the HST-Tool-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 HST-TOOL-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	HST-NR-LIGHT	HST-NR	HST-NR-PRO-M	HST-PR	HST-PR-PRO-M
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

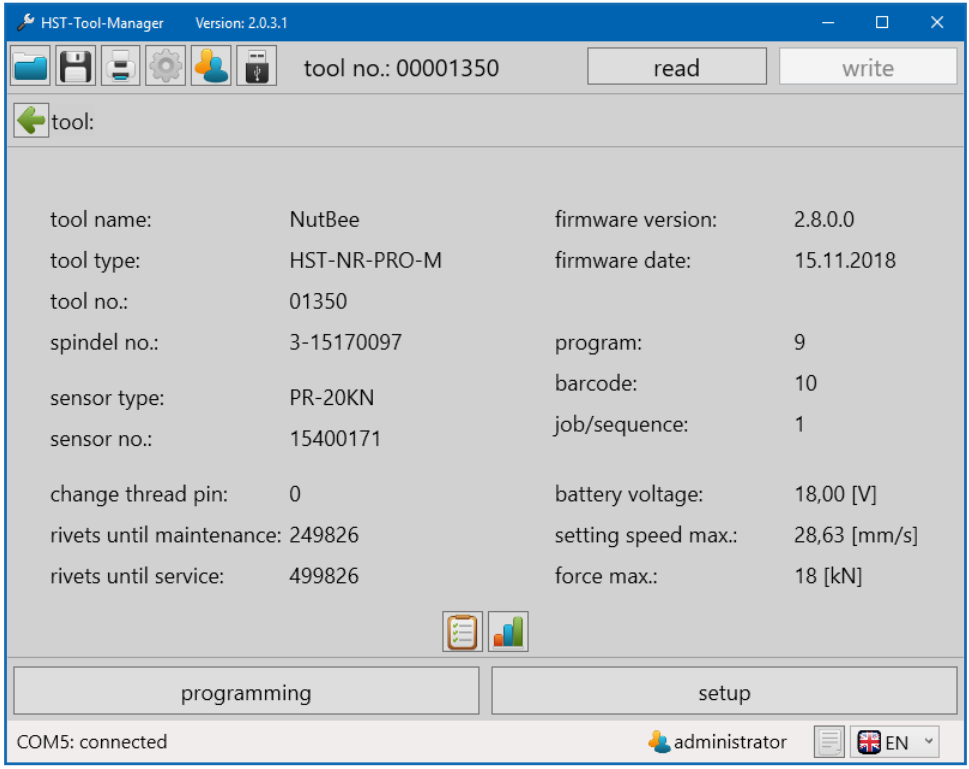
To program a tool, connect it to the computer via USB.

Start the HST-Tool-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 HST-Tool-Manager, the corresponding operating instructions for operating the tool must be read and understood!

3.1 BASIC TOOL DATA



6 Basic information

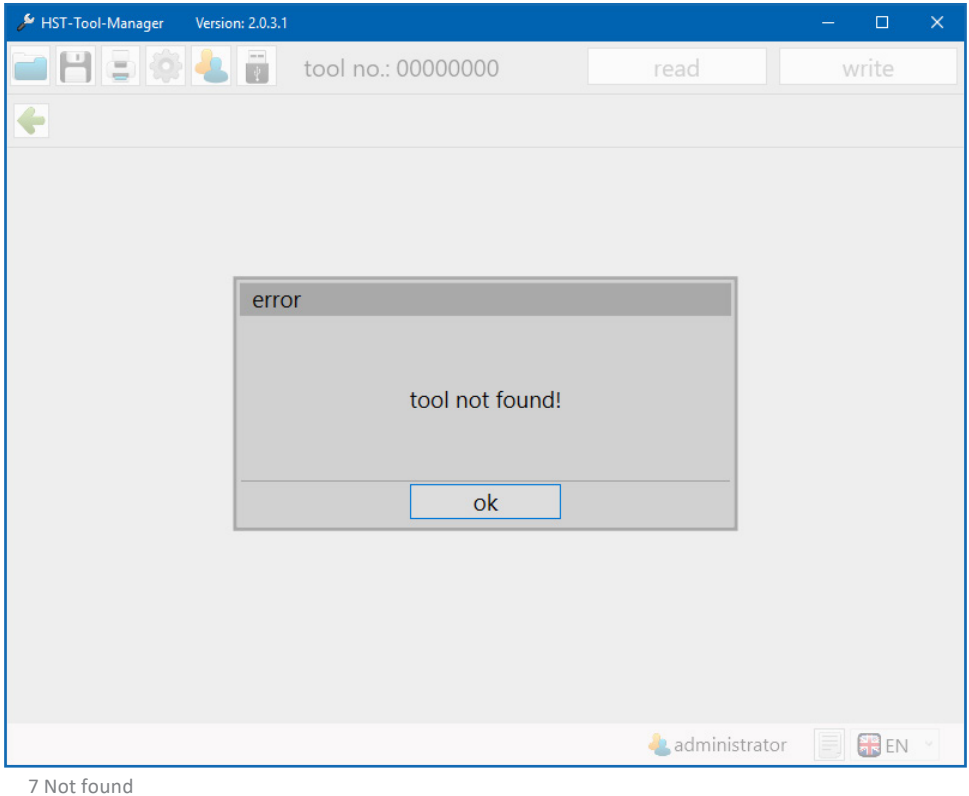
The basic tool information is displayed.

“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.

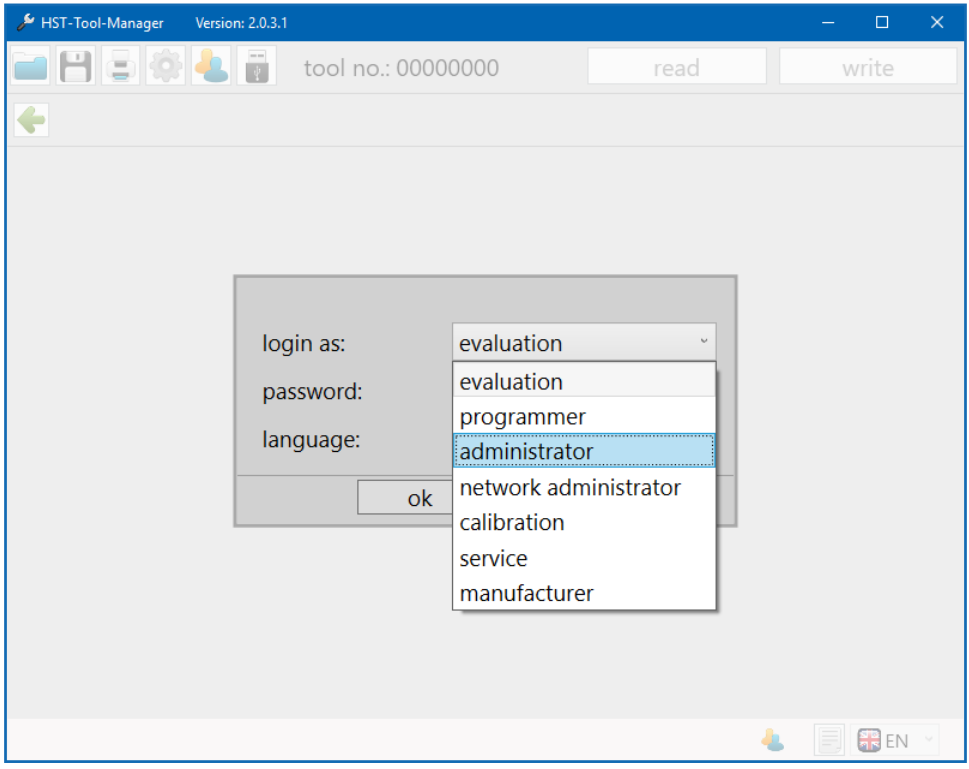


7 Not found

4 FIRST STEPS

4.1 HST-TOOL-MANAGER REGISTRATION

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



8 Login

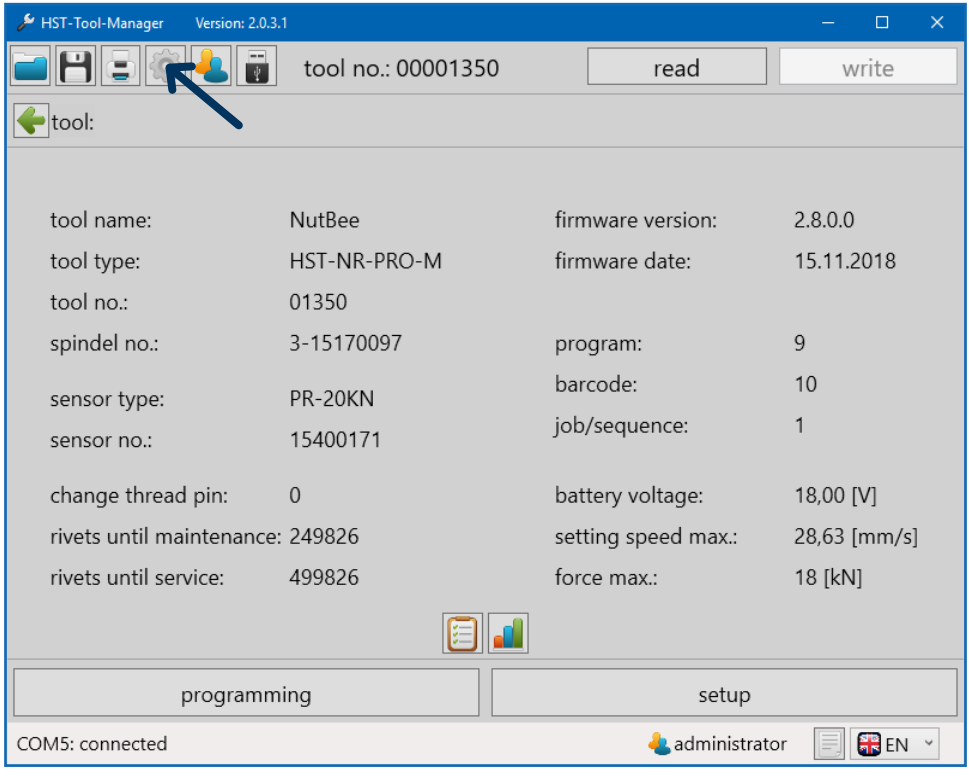
WHERE CAN I FIND THE PASSWORDS?

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

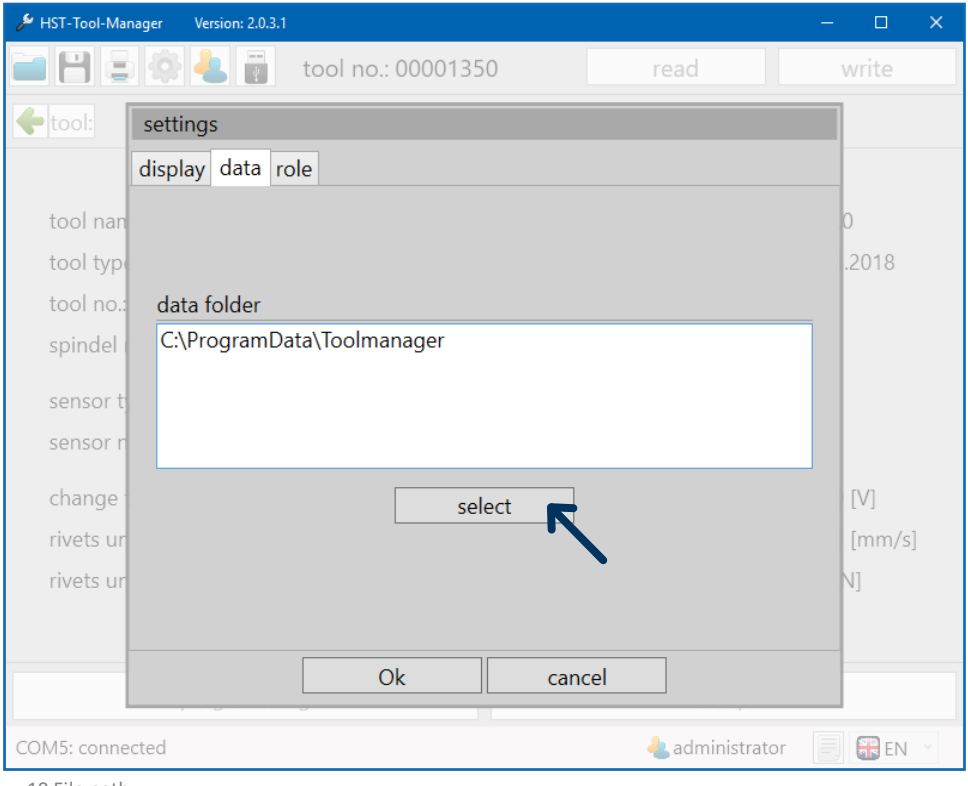
4.2 CREATE STORAGE LOCATION

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.

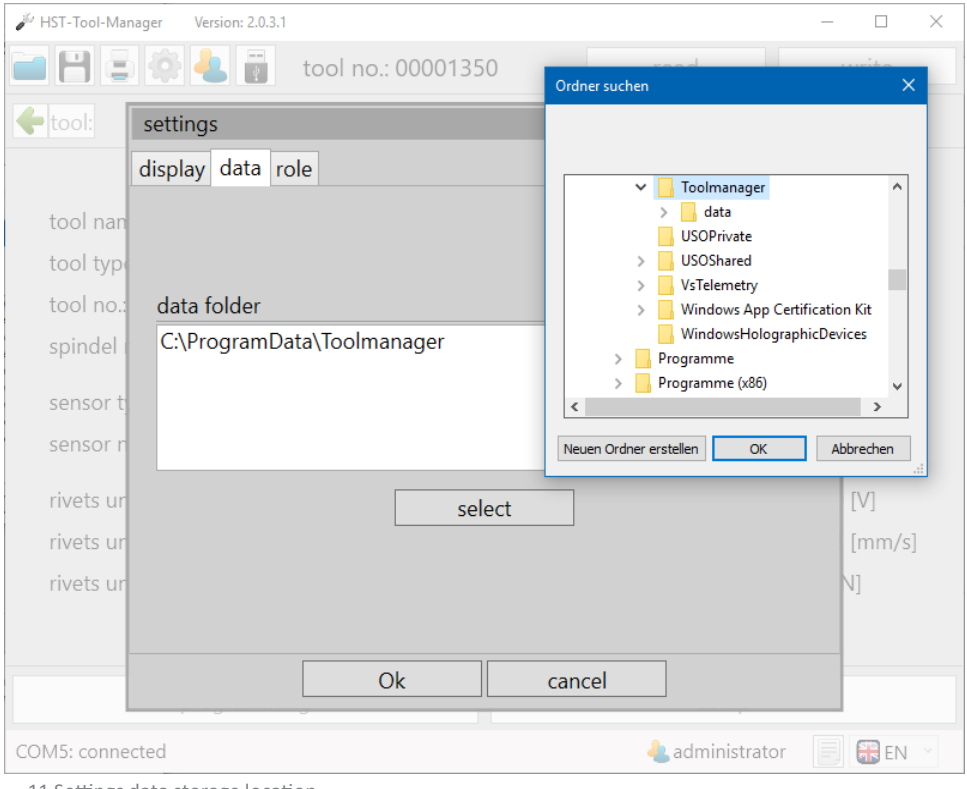


9 Settings



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

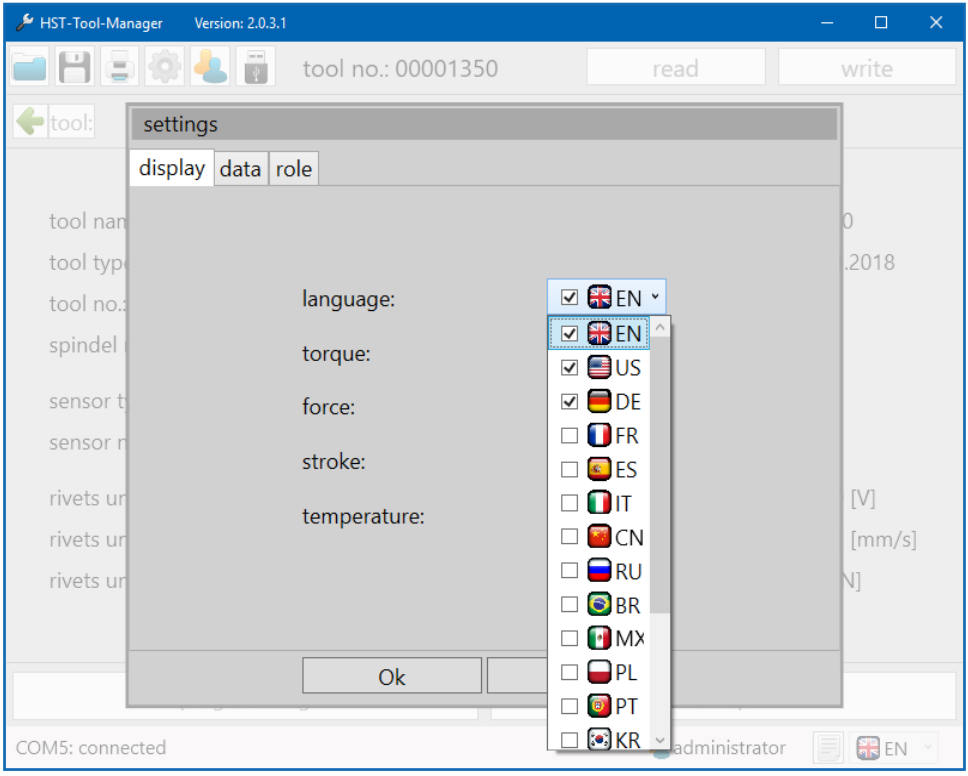
Select the new storage location. In our case, a software folder on the desktop.

The “data” folder is automatically created in the selected folder. Back-up copies and log files for the tool are saved in this folder.

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

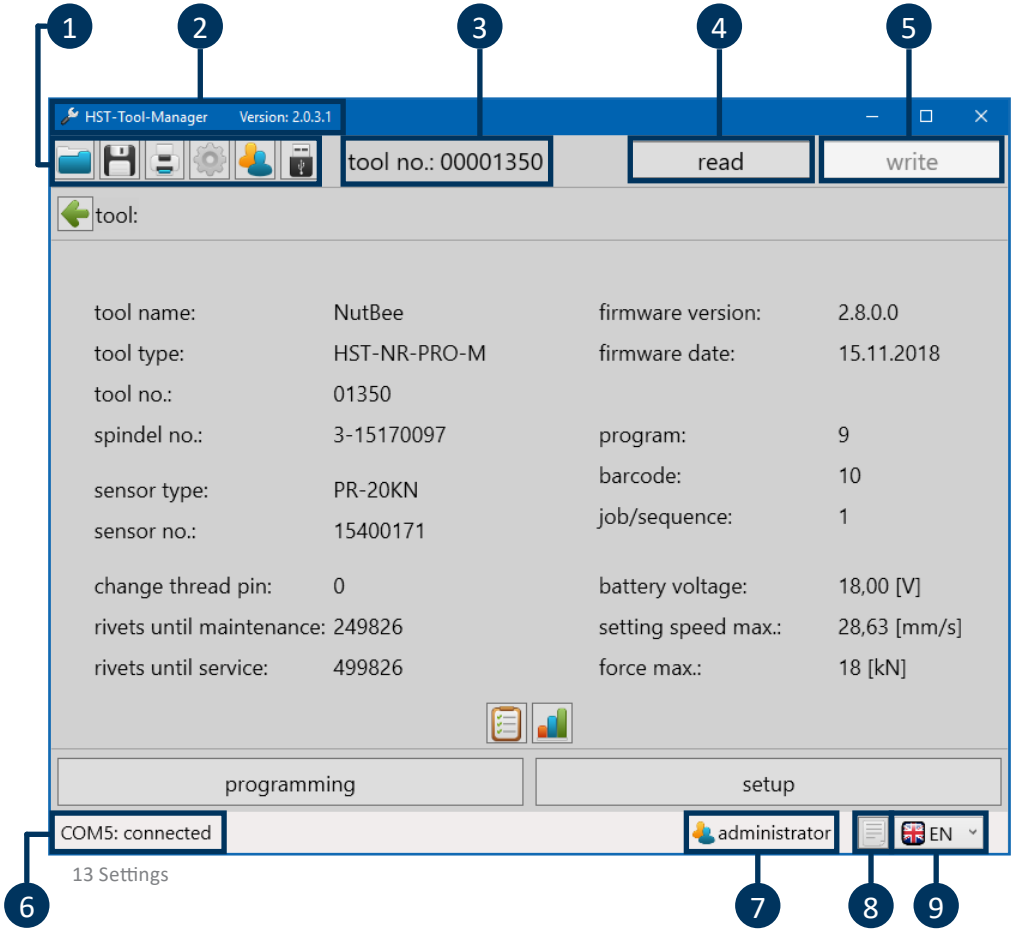


12 languages

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.

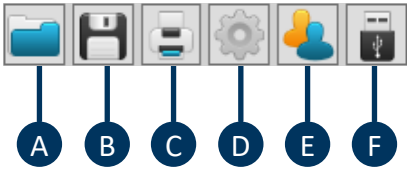
4.3 GENERAL SOFTWARE INTERFACE

The start window



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

1 Toolbox

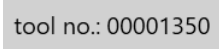


A Load saved configuration
B Save current configuration
C Print menu (several options to choose from)
D Display settings (language, torque, force, stroke, temperature)
E Change user
F Connect to the tool without read out (in order to perform the update or restore the tool in case of emergency)

2 Software version

Displays the open software version.

3 Tool number

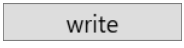


After connecting and reading in, the serial number of the connected tool will be displayed.

4 Read

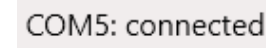
After connecting to the tool, all internal tool data will be read out of the tool by pressing the “read” button. Do not double click as it may cause errors in the software.

5 Write



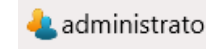
After configuring the tool, by pressing the “write” button, all of the modified files will be sent to the tool. The button does not become active until changes have been made to the configuration or parameters.

6 COM-Port



Notification field for the status of the connection with the tool

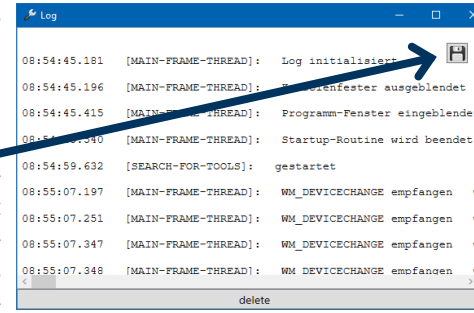
7 User display



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.

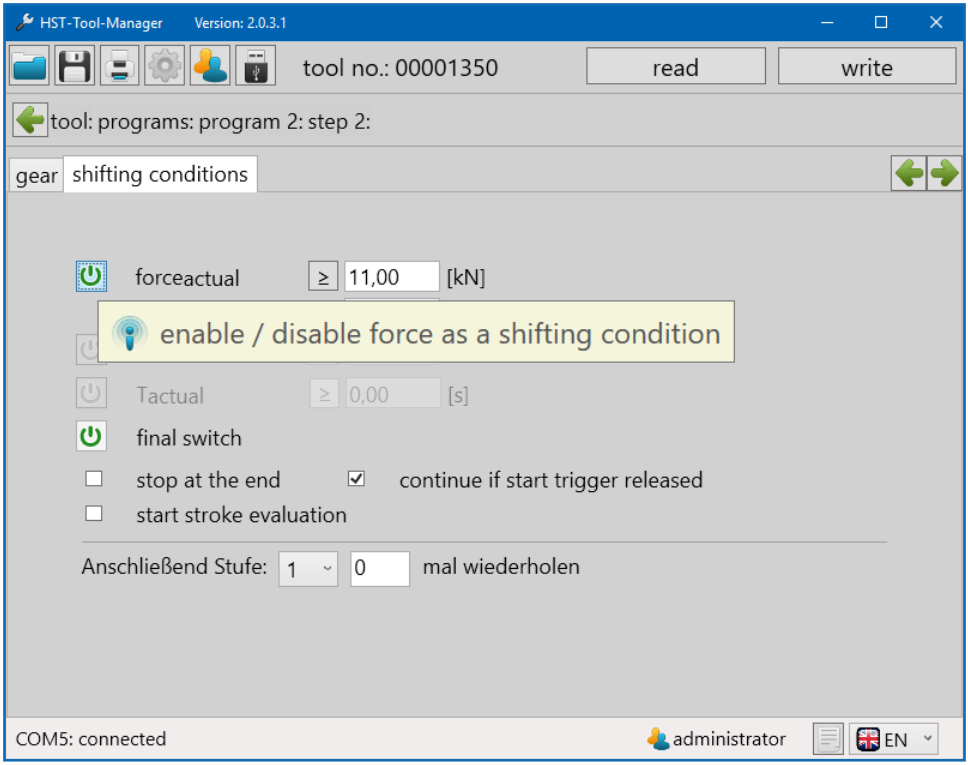


It is a good tool, especially if the tool cannot be fully read out or cannot be read out at all. The log file provides detailed information about where the problem is and is used for technical support. The log contains primarily specific notifications. I.e., in case of a problem, fade in the log window,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

9 Language

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

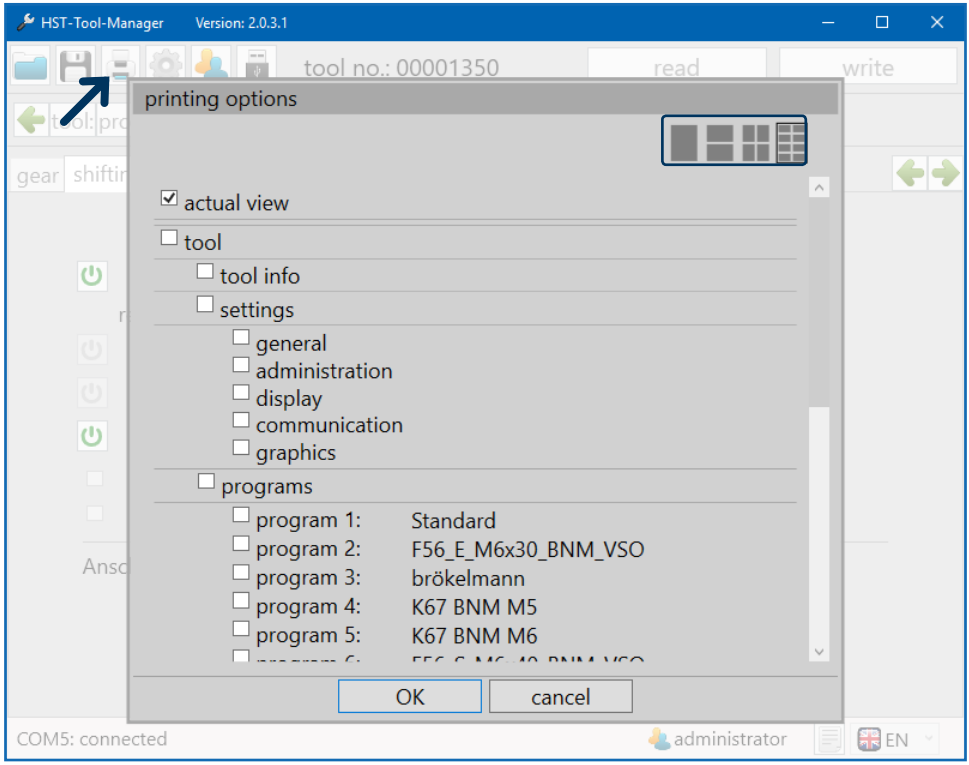
4.3.1 DIRECT HELP OPTION



14 Help

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

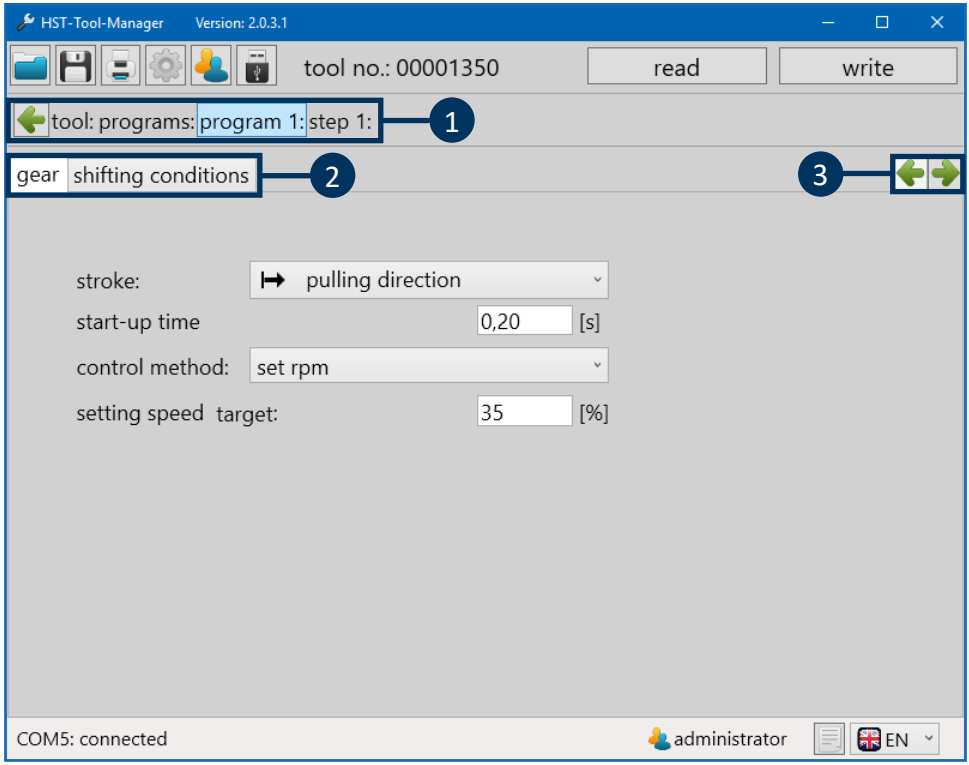
4.3.2 PRINT OPTION



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.

4.4 GENERAL OPERATION



16 User interface

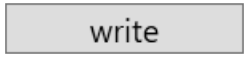
1 **Navigation bar**
Here you can return to the desired sub-point by clicking on the individual fields. Click , e.g. on programming to access the program overview.

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 w 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”.



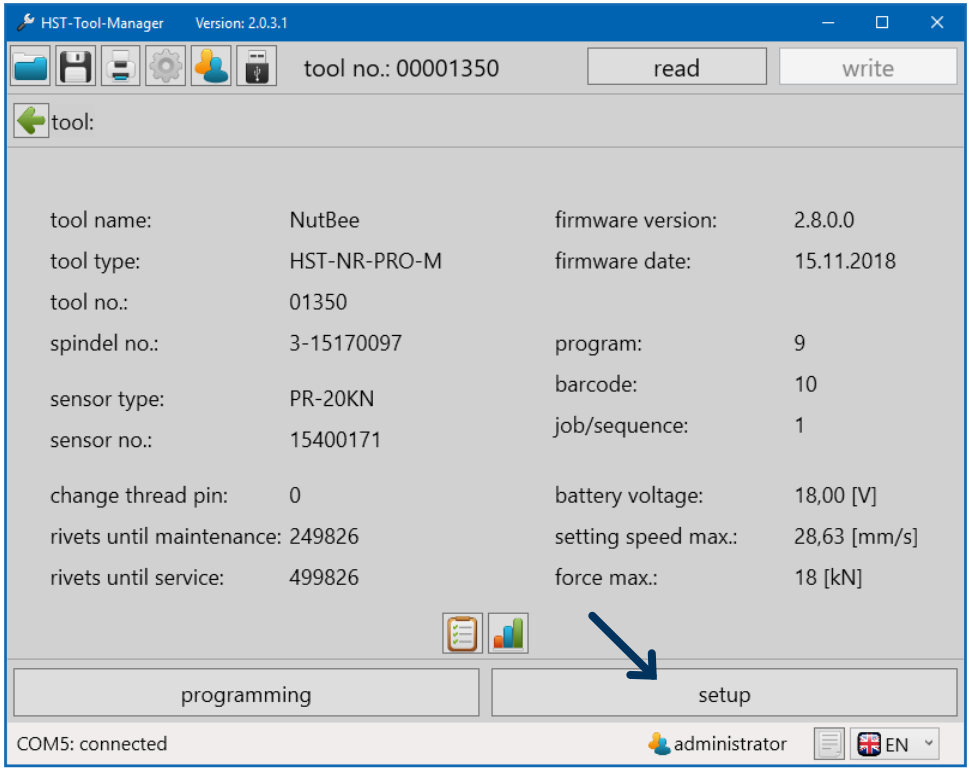
Many entry fields have a limit. If a red box appears around the number you want to enter, it is too high, too low or contains invalid characters.

5 TOOL SETTINGS

5.1 SETUP

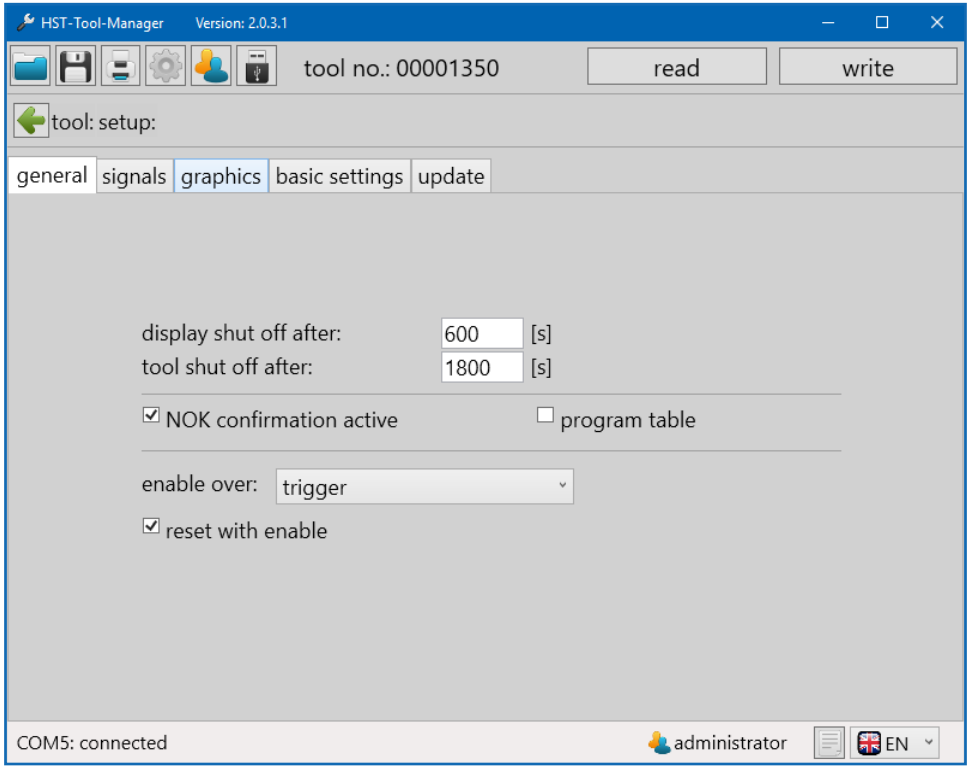
In each tool, different settings can be set that are important for working at the work station or which make this easier. To make the settings more understandable, they are divided into individual tabs. To do this, go to the start screen and click on the “setup” button.

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



17 Settings

5.1.1 “GENERAL” TAB

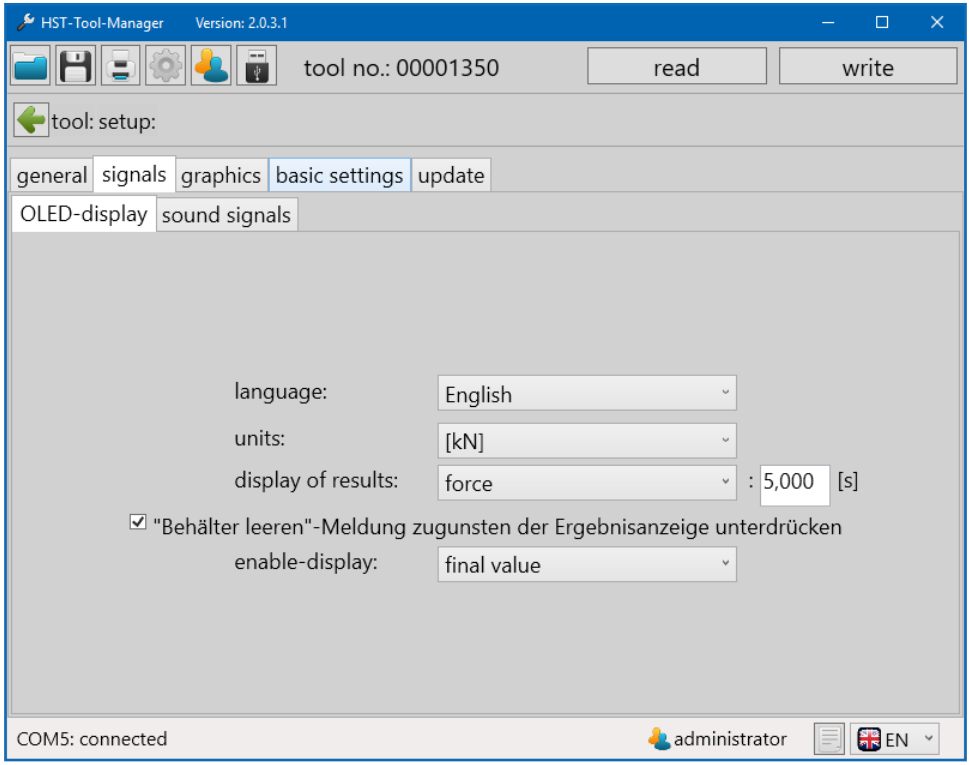


18 General tab

“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: - *Start button:* Press the trigger 3x in rapid succession to enable the tool. (default program / job) - *Time:* Tool enables after entered time in seconds (default program / job) - *Trigger & time:* Combination of start button & time function (default program / job) - *Barcode:* Enableing by scanning a proper barcode. - *External control unit:* External controller issues the enable of the tool, e.g. HST-MCU - *Barcode & external control unit:* After scanning a barcode, the external controller issues the enable
“reset with enable”	If the tool receives an additional enableing during a current job, the current task will be canceled and the tool will start the new job.

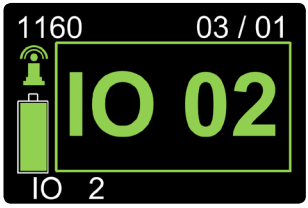
5.1.2 “SIGNALS - OLED DISPLAY” TAB



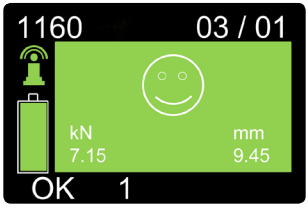
19 Display tab

“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.

default

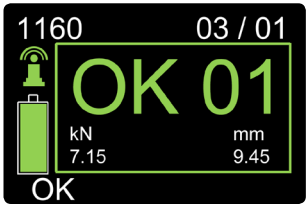


smiley

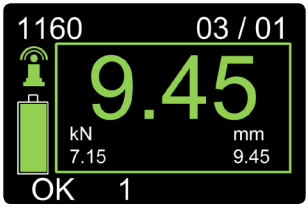


force

counter



stroke

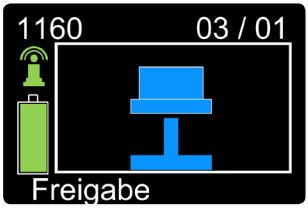


“enable-display”	Enable display is the illustration that is displayed when the tool gets enabled.

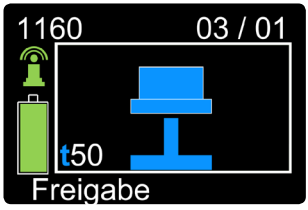
default

table value*

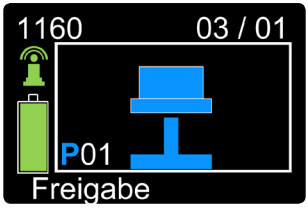
animation



animation & table value*



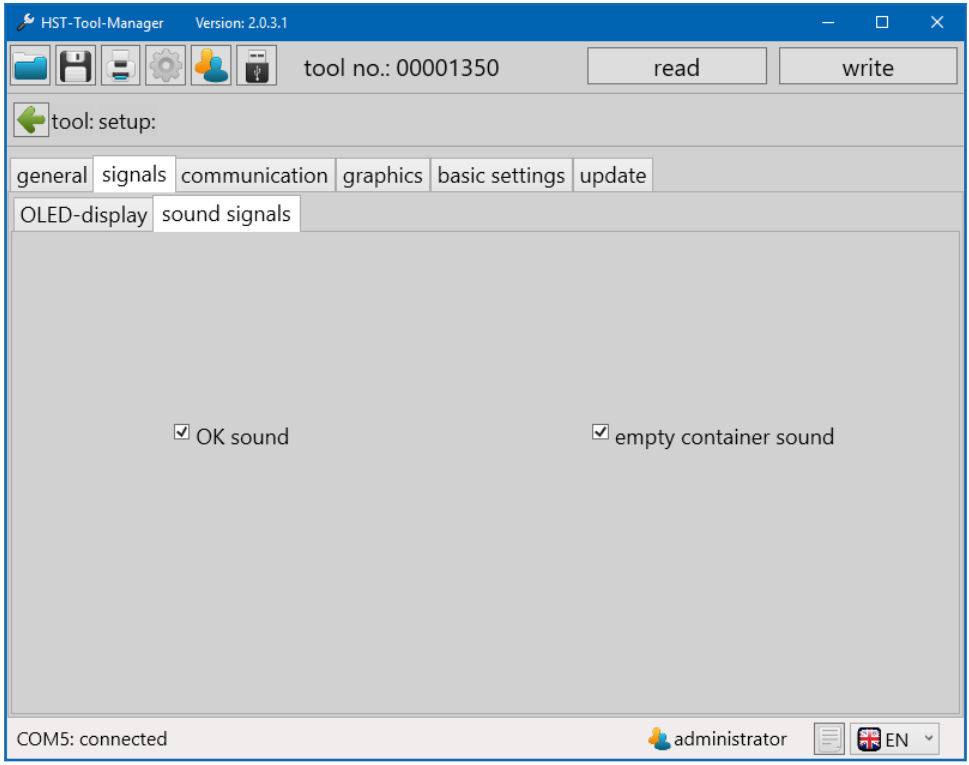
animation & program



end value

* All displays with table values are only available when the tool is operated with a program table.

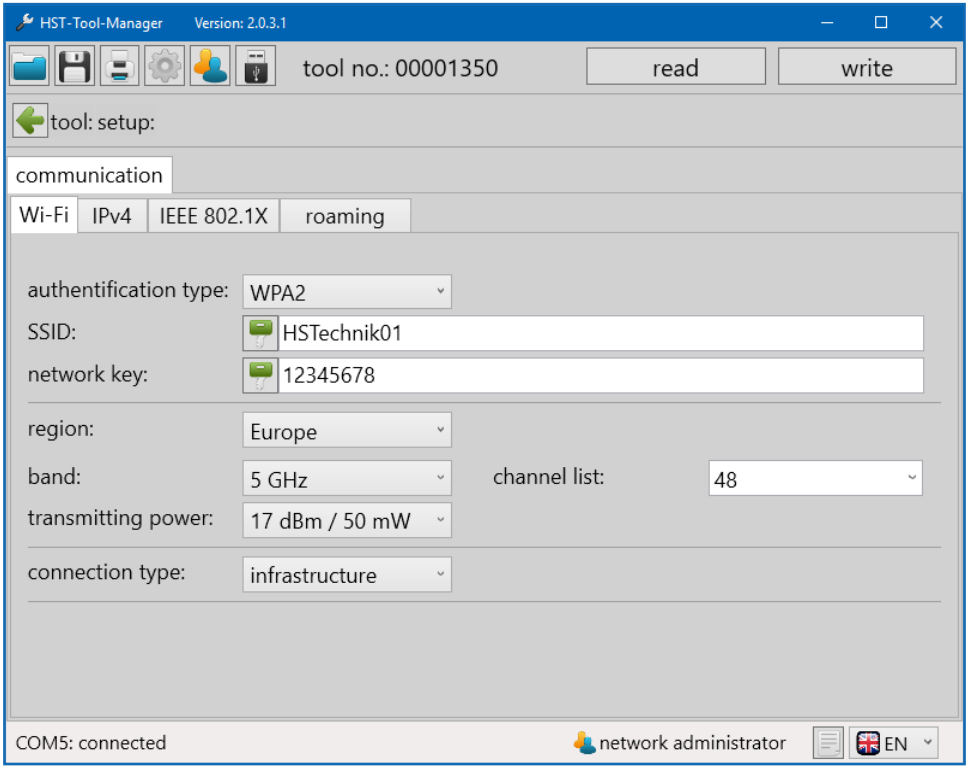
5.1.3 “SIGNALS - SOUND SIGNALS” TAB



20 Acoustics tab

“OK sound”	Issues acoustic signal when riveting was OK
“empty container sound”	Issues acustic signal when tank has to be emptied. (Only for devices with collection tank)

5.1.4 “COMMUNICATION - WI-FI” TAB (network administrator only)



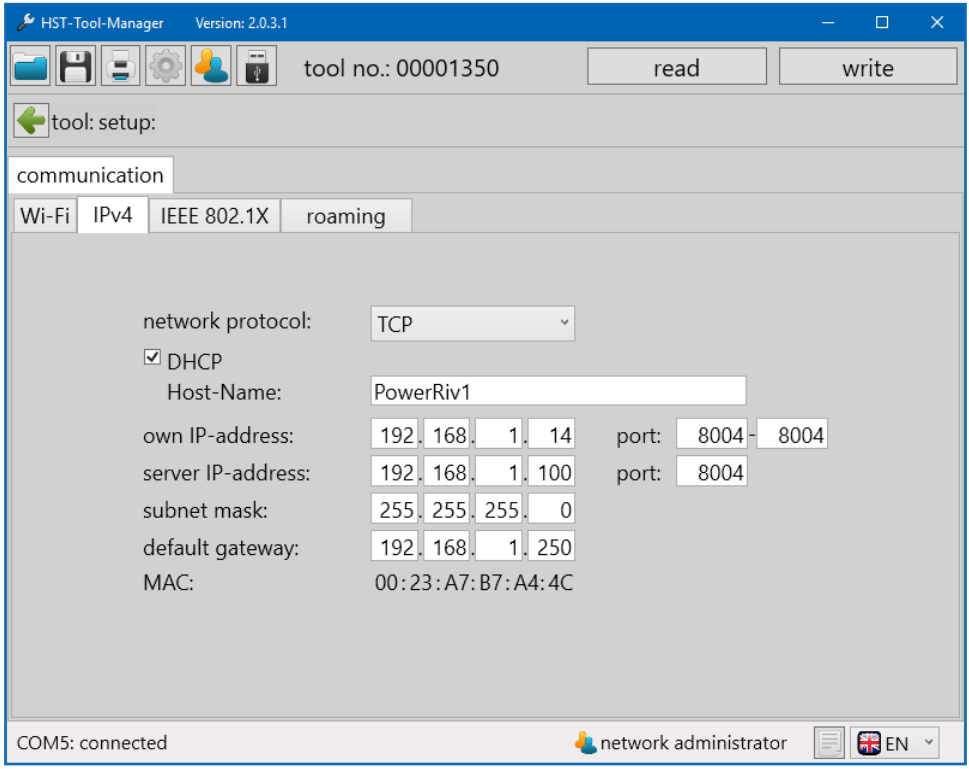
21 Wi-Fi

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”	Enabeling 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 TAB - IPV4 (network administrator only)



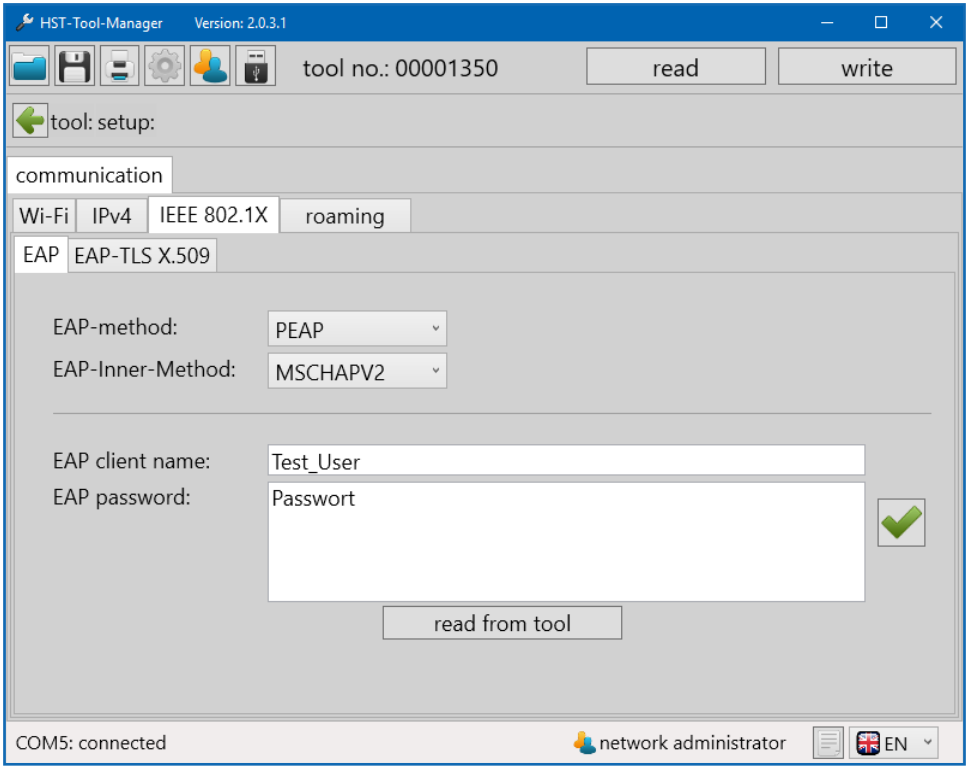
22 Wi-Fi

“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. HST-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

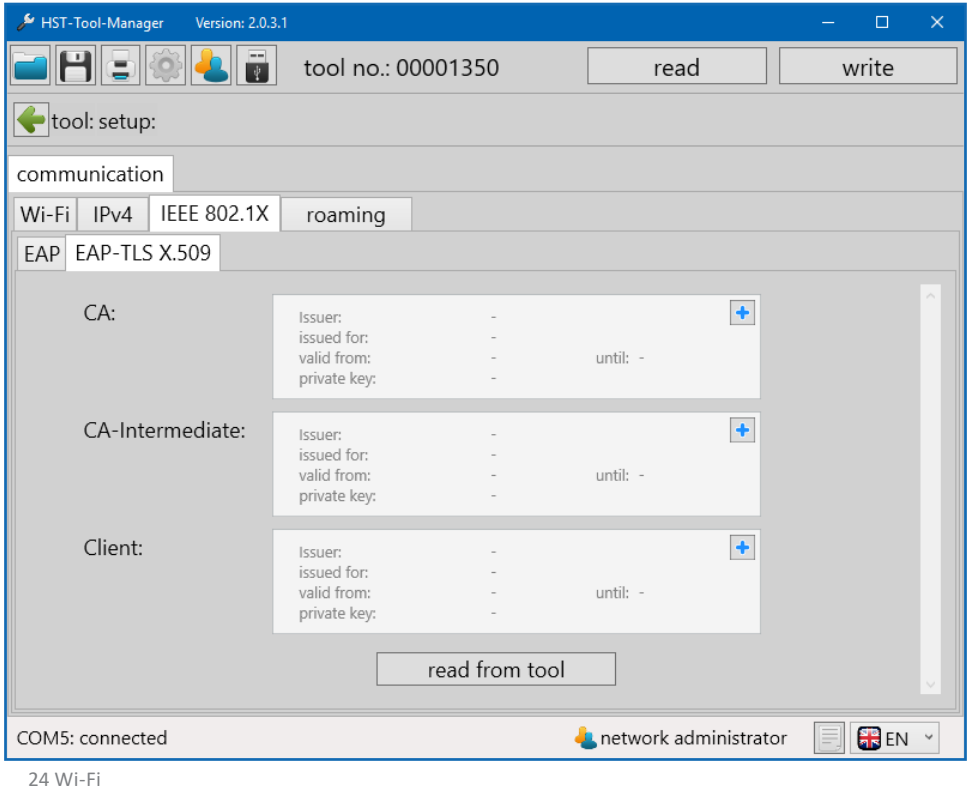
5.1.6 “COMMUNICATION IEEE 802.1X” TAB (network administrator only)

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



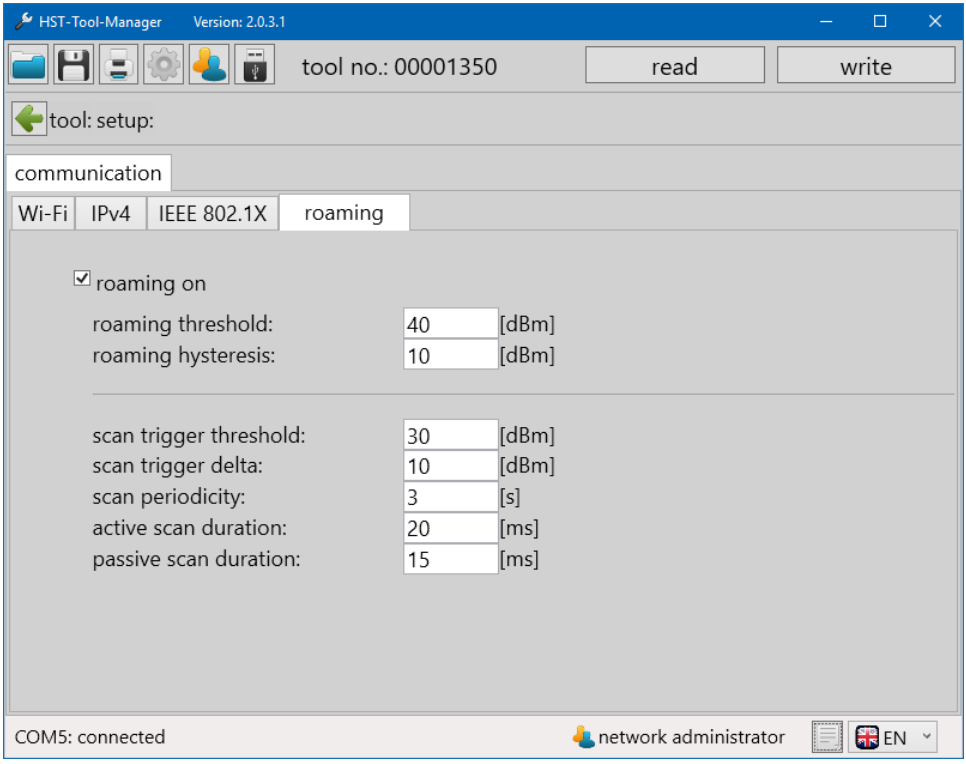
23 Wi-Fi

“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.

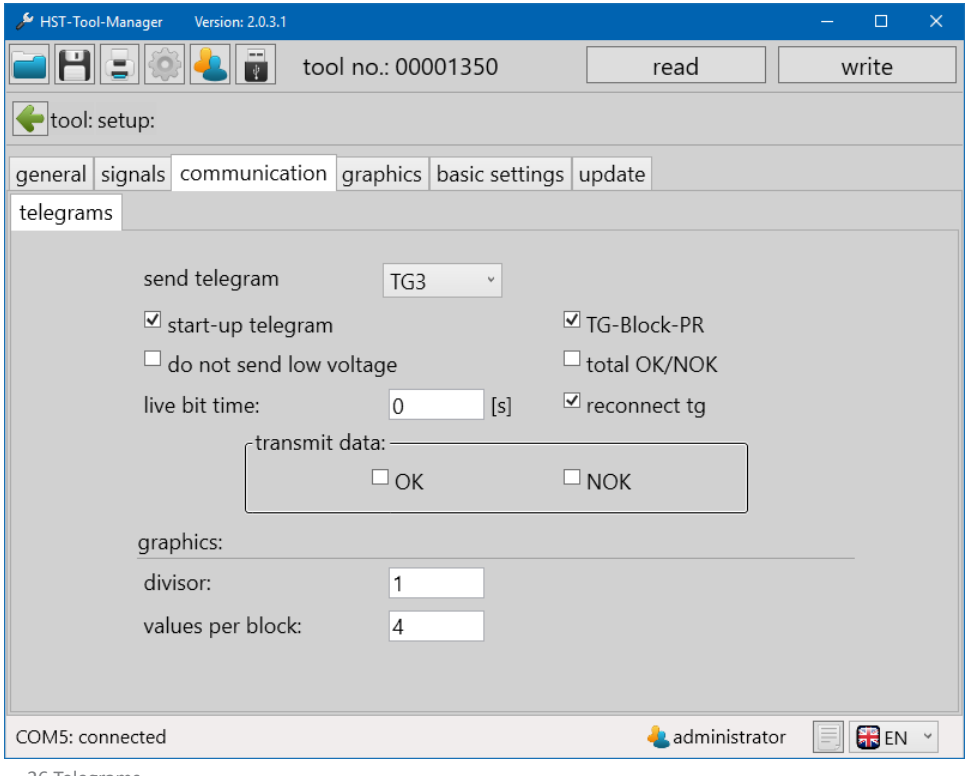


25 Wi-Fi

Roaming can be activated.

5.1.7 “COMMUNICATION - TELEGRAMS” TAB (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.

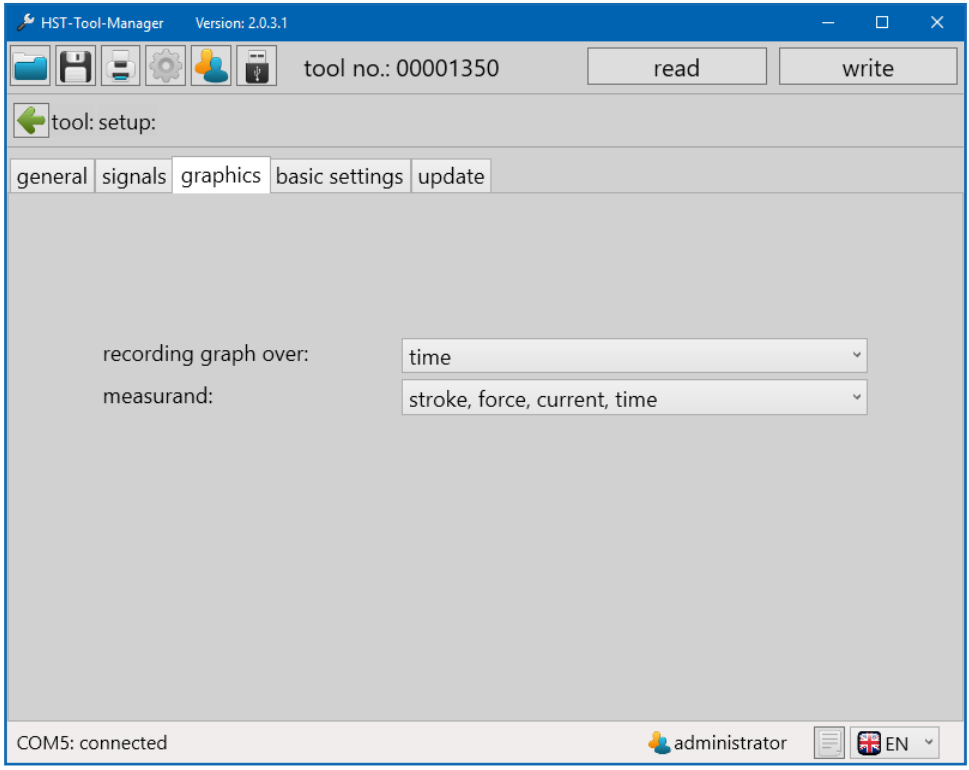


26 Telegrams

“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”	**“OK”:** Transmits the results of all successfully processed rivets. **“NOK”:** Transmits the results of all unsuccessfully processed rivets.
“divisor”	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
“values per block”	The values per block indicate which information is included in the graphic data: 1: Force 2: Force / stroke 3: Force / stroke / current 4: Force / stroke / current / time
“TG-Block-PR”	During a riveting job, the tool does not process incoming telegrams.
“overall OK / NOK”	An overall OK / NOK telegram will be sent.
“reconnect-TG”	After a connection is terminated, a telegram will be sent.

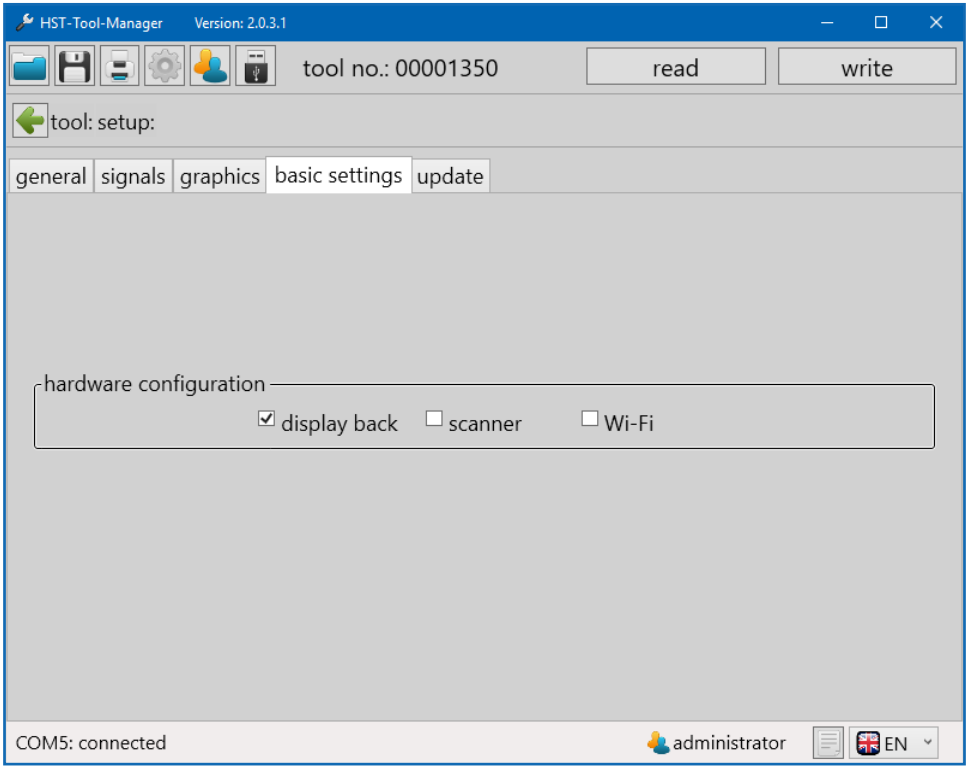
5.1.8 “GRAPHICS” TAB



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 HST-Tool-Manager. stroke, force, voltage, time stroke, current, voltage, time Force, stroke, current, time (recommended setting)

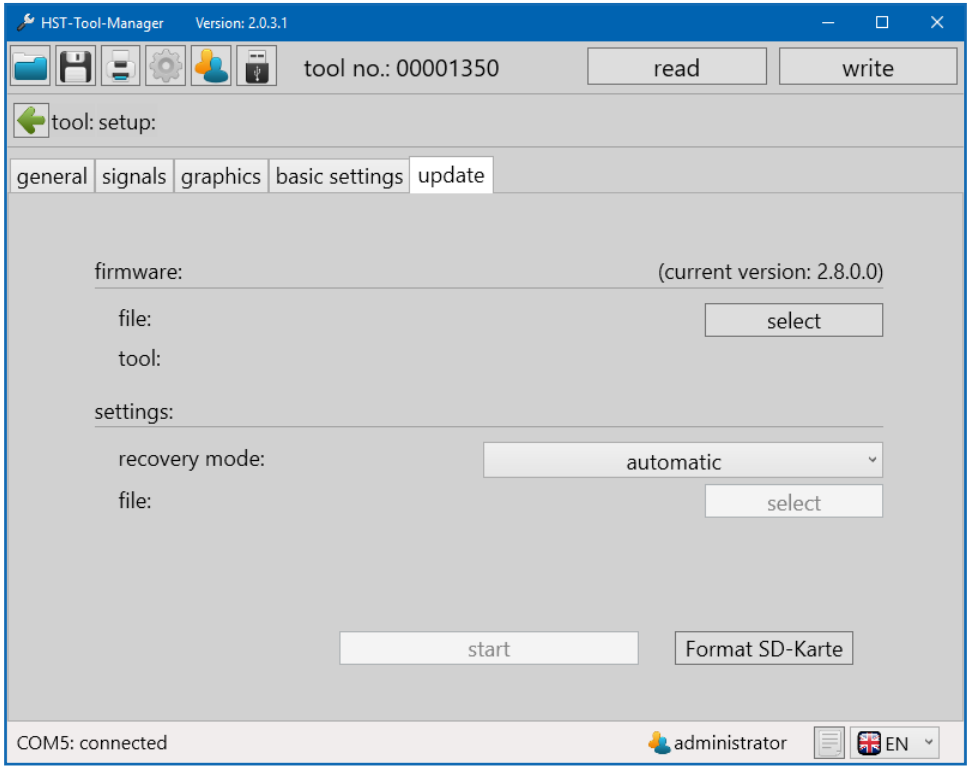
5.1.9 “BASIC SETTINGS” TAB



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” TAB



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 127.

1. Click on “select”

2. 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.

3. Start

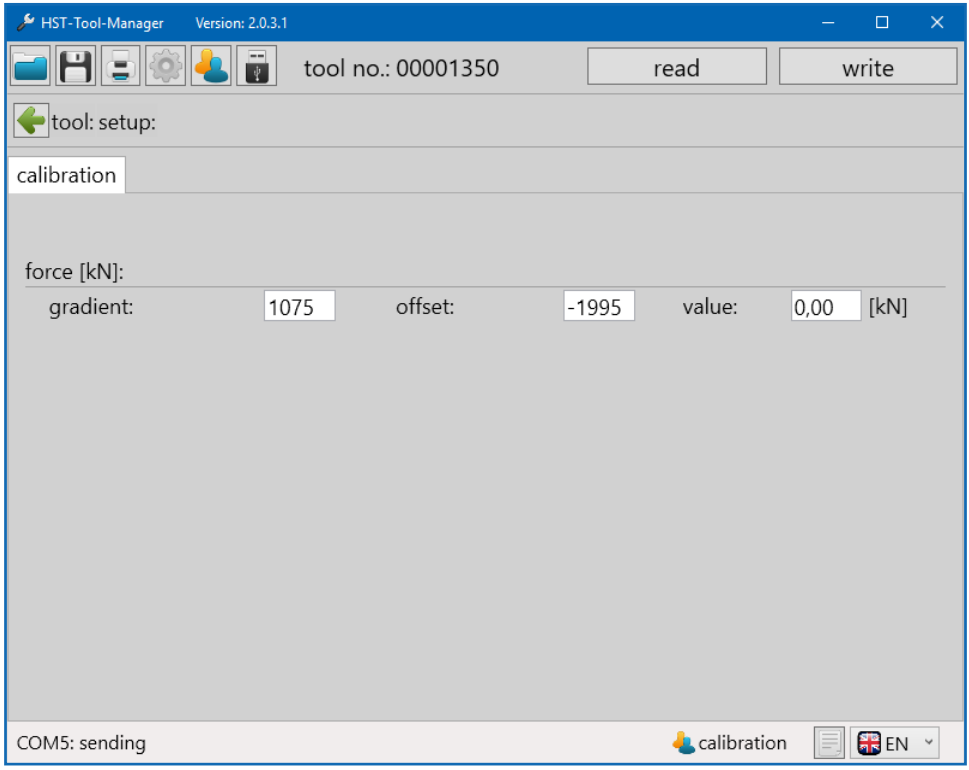
4. Tool performs update

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!

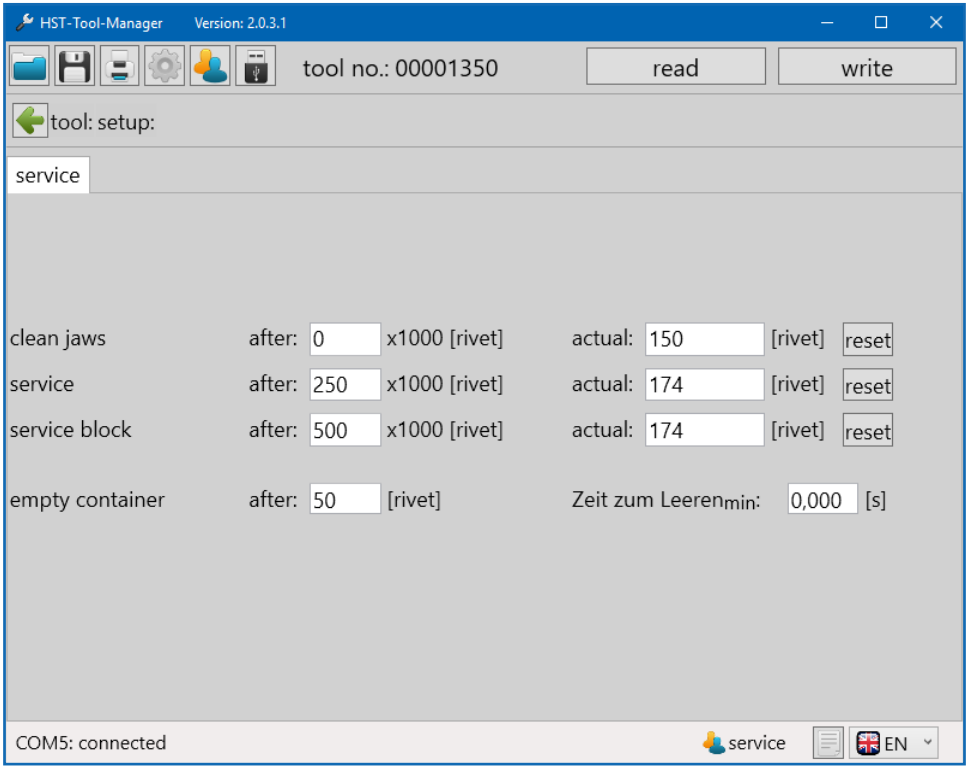
5.1.11 “CALIBRATION” TAB (calibration technicians only)



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 TAB (service technicians only)



31 Service

“clean jaws / replace threaded mandrel*”	Number of riveting processes until the jaws have to be cleaned. *With the NutBee®, 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

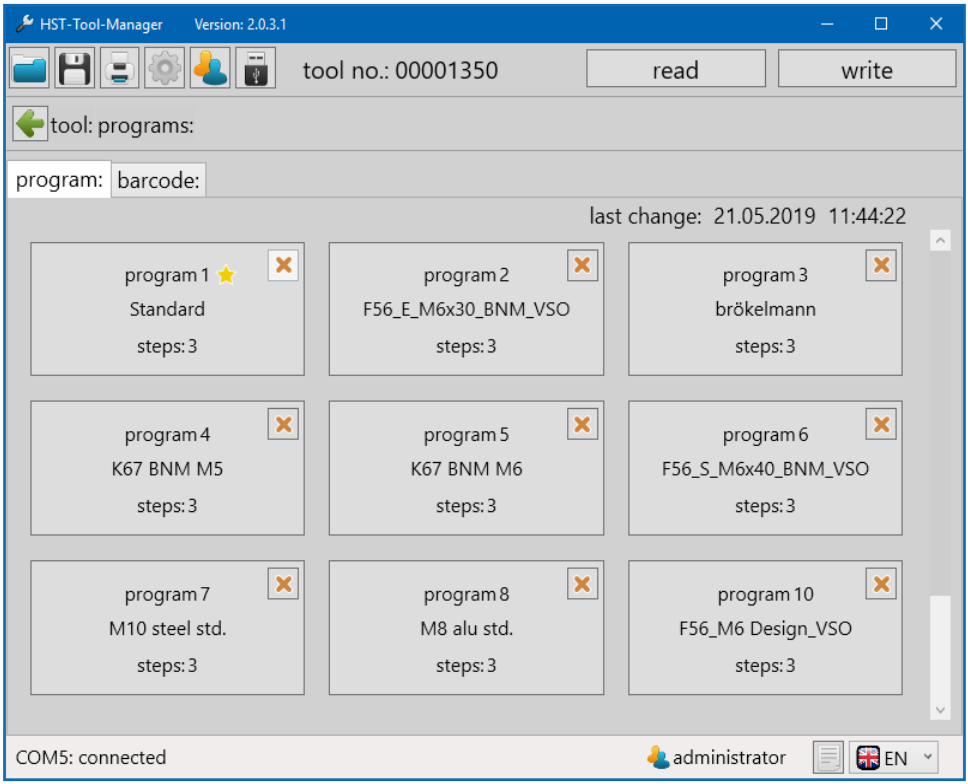
The “Clean jaws” / “Replace threaded mandrel” and “Service” service notifications can be acknowledged on the device. When the “Service block” is reached, the tool will be locked.

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.

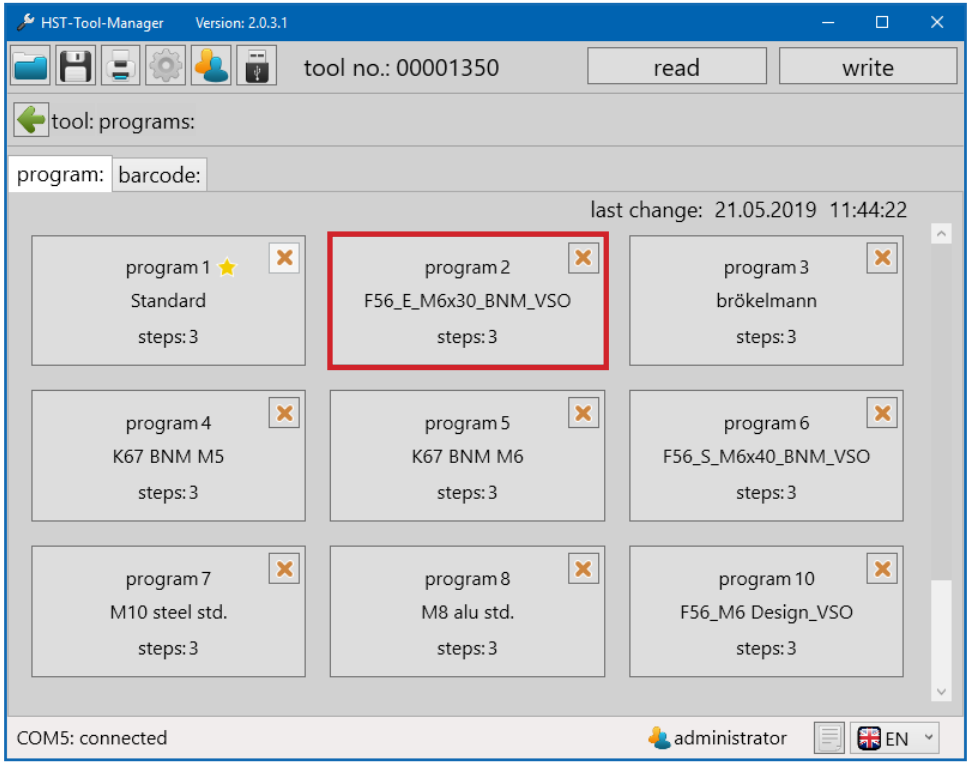
The “program” screen contains a list of the existing programs in the tool.



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).

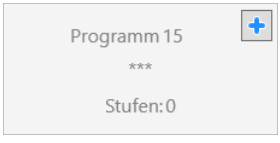


33 Programs

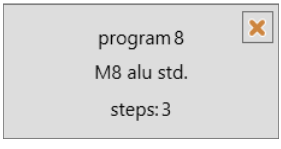
6.1.1 CREATING, DELETING, EDITING PROGRAMS

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

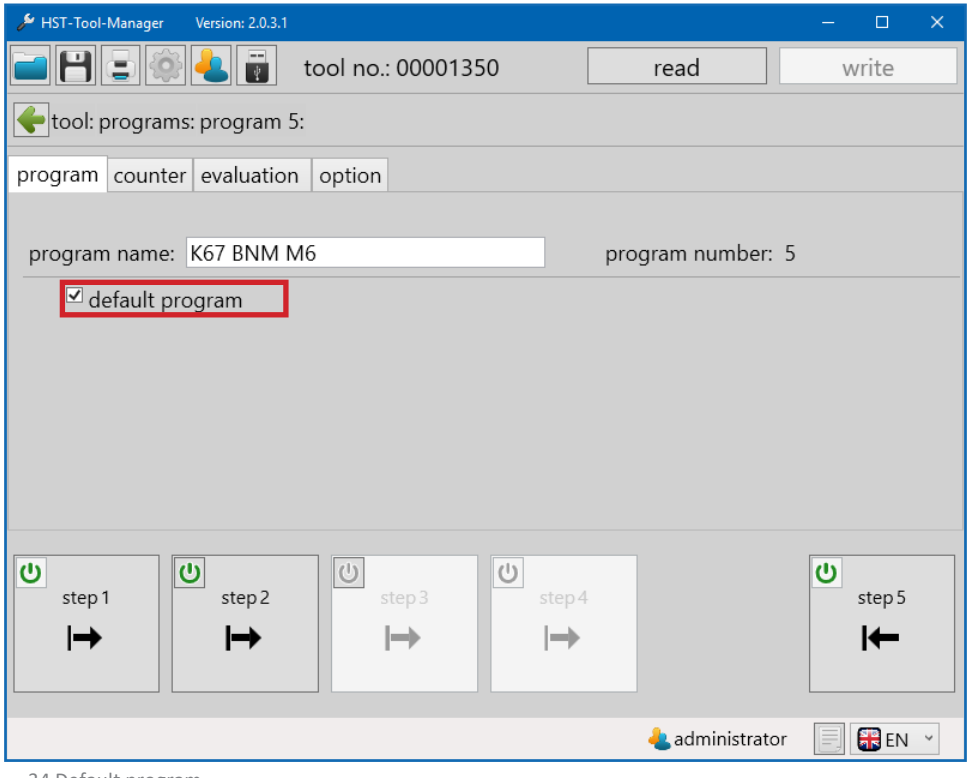
A program can be edited by clicking on the program button.



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”.

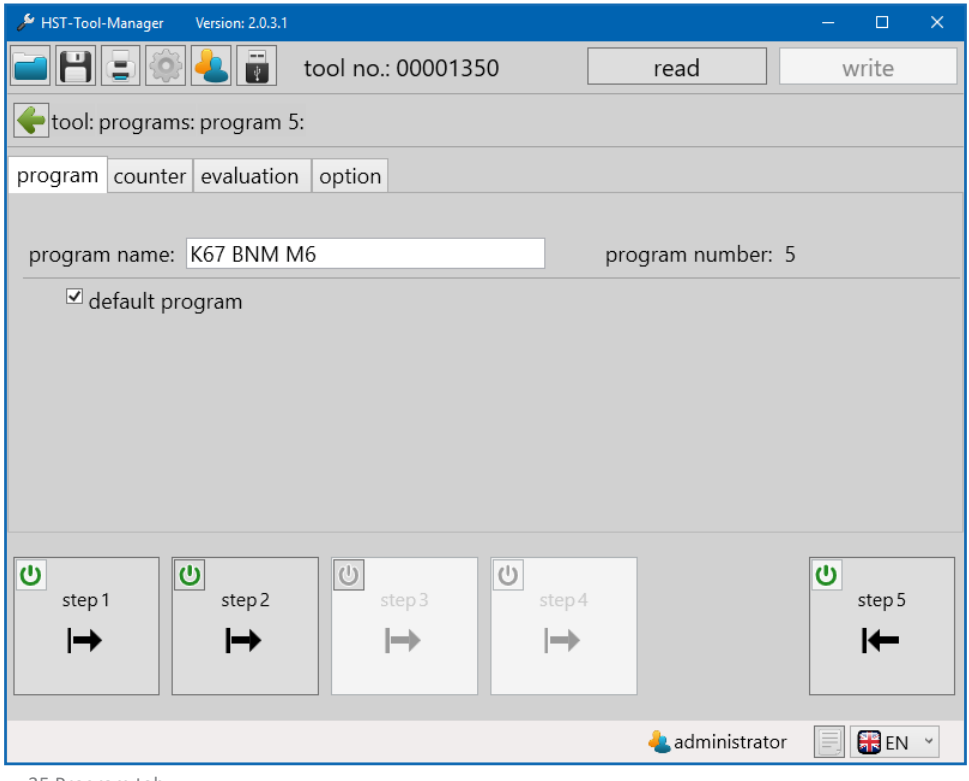


34 Default program

6.2 EDIT PROGRAM

6.2.1 “PROGRAM” TAB

The settings apply to all program steps.

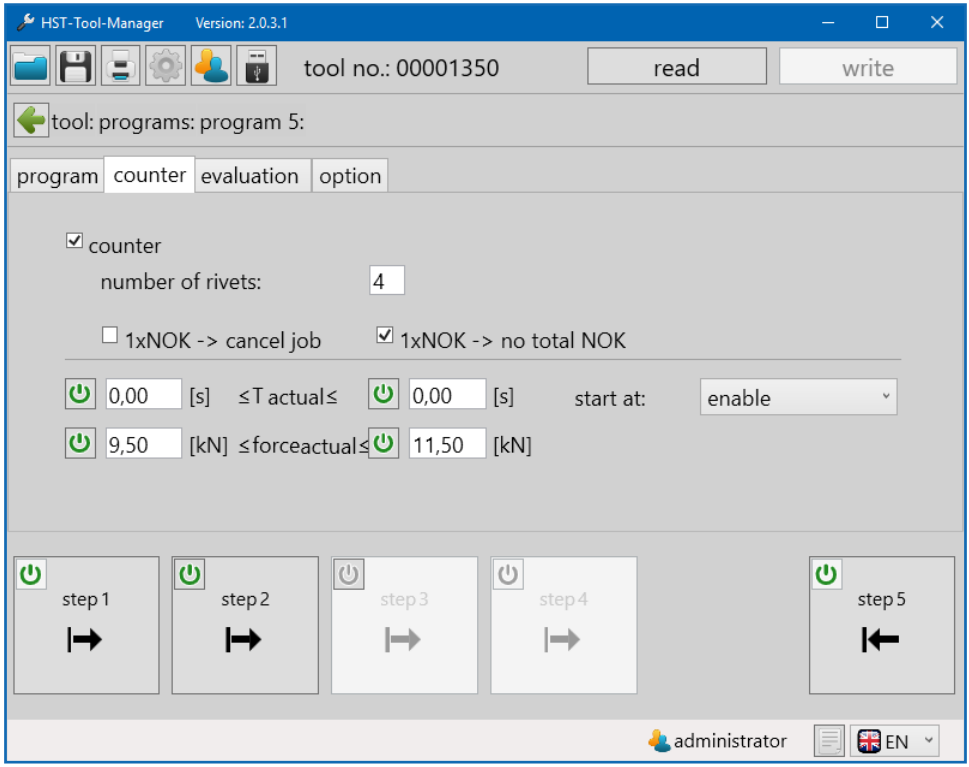


35 Program tab

“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” TAB

The settings apply to all program steps.



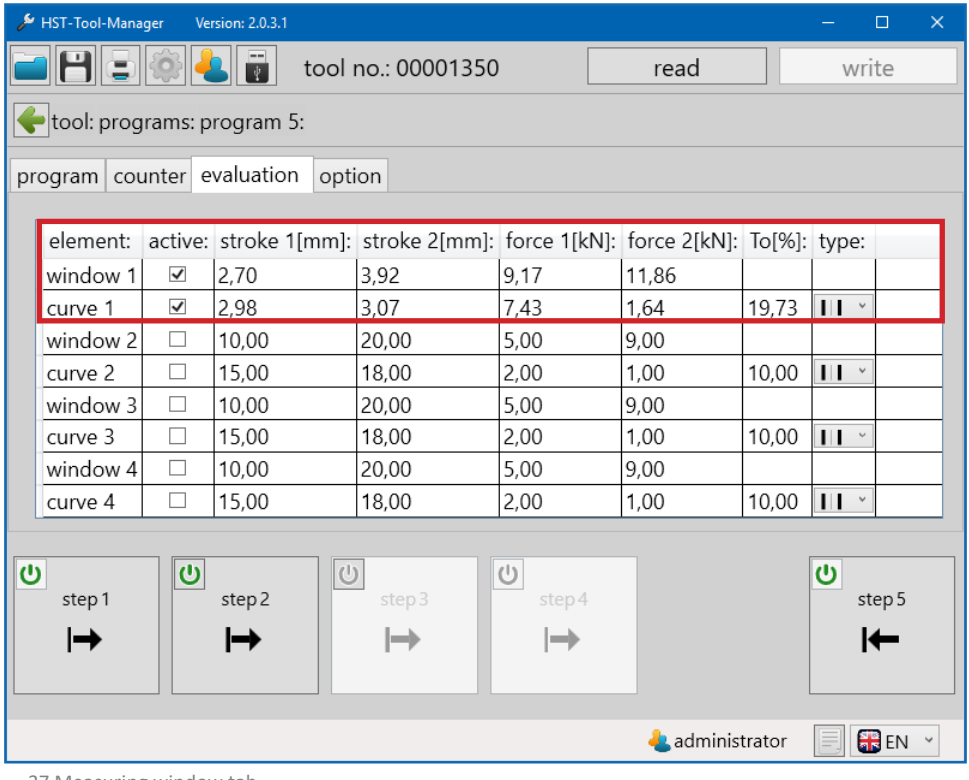
36 Count function tab

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.
“T_{actual}”	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: - *from trigger:* The time measurement begins when the start button is pressed for the first time. - *from enable:* The time measurement starts when the tool receives the enableing.
“$Force_{actual}$”	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 66.

6.2.3 “EVALUATION” TAB

The settings apply to all program steps.



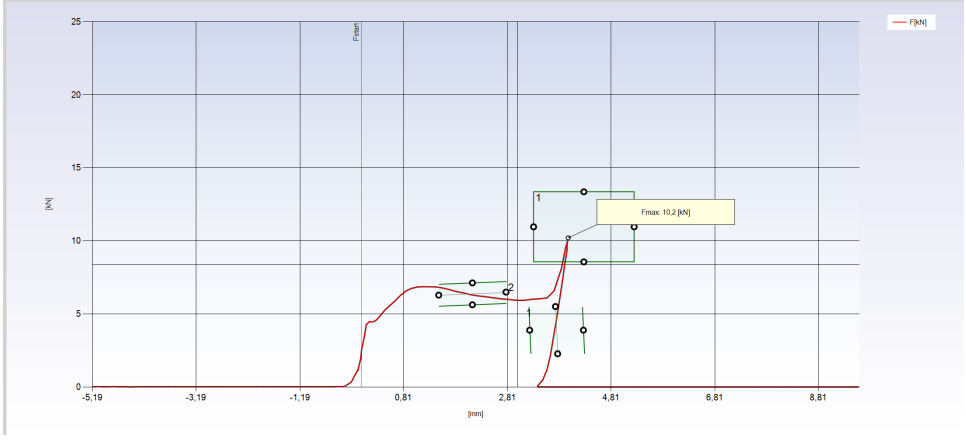
37 Measuring window tab

The additional evaluation criteria can be set here.

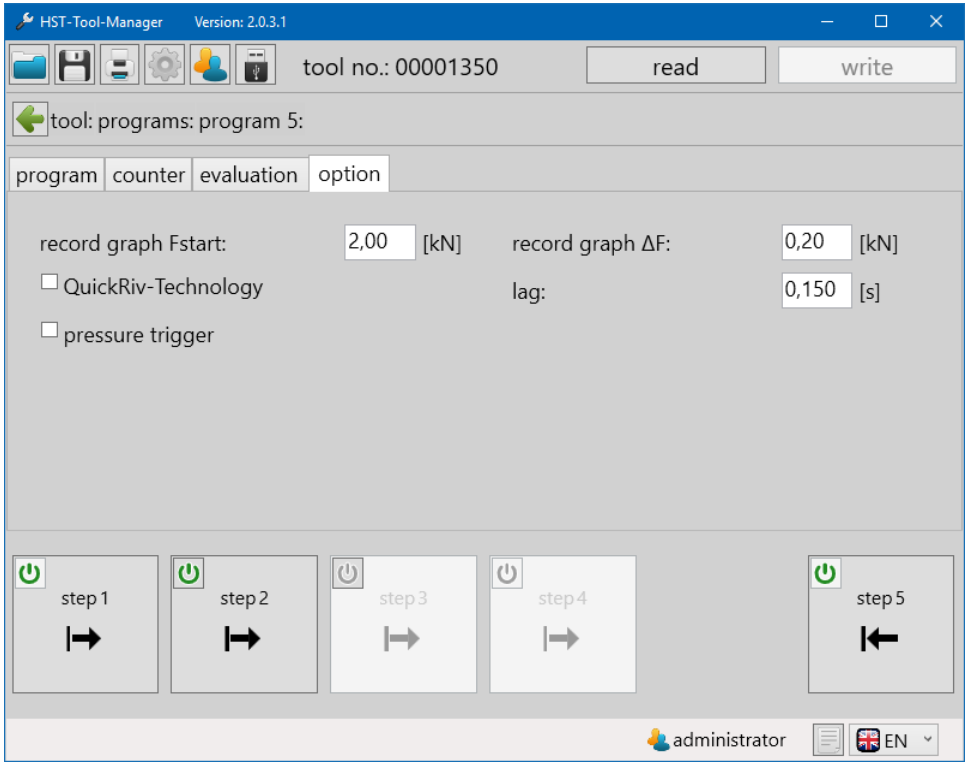
Window element:
A window is defined via the force and stroke variables and is used to evaluate the force progression across the traveled stroke. A minimum and maximum value must be entered for the force and stroke. The evaluation results will only be OK if the window is accessed via the minimum values 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” TAB



38 Options tab

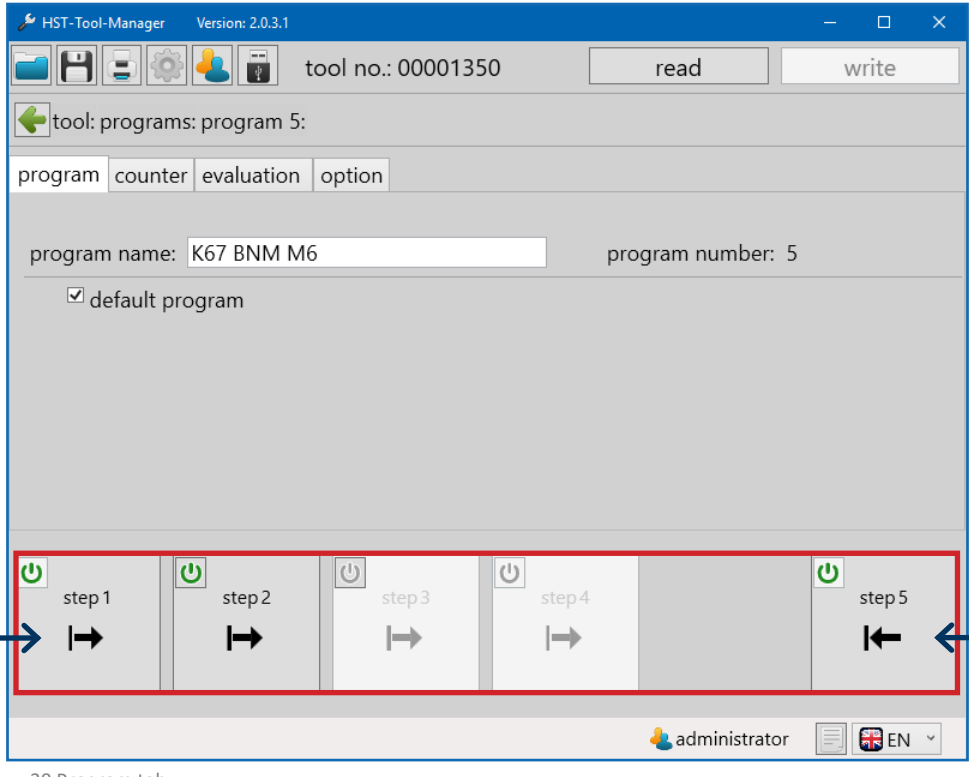
“record graph F_{start}”	F_{start} describes the point on the setting curve at which the stroke measurement for the riveting process is started, i.e. the stroke axis equals 0 mm at this point. This point is comparable with the rotation angle starting torque in nutrunning technology. For a defined stroke 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 Fstart, e.g. Fstart = 4 kN, ΔF = 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” (PowerRiv® tools only)	The tool detects when a blind rivet breaks and immediately moves to the home position. The process time is thus reduced.
“pressure trigger” (PowerRiv® tools only)	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 HST-Tool-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.

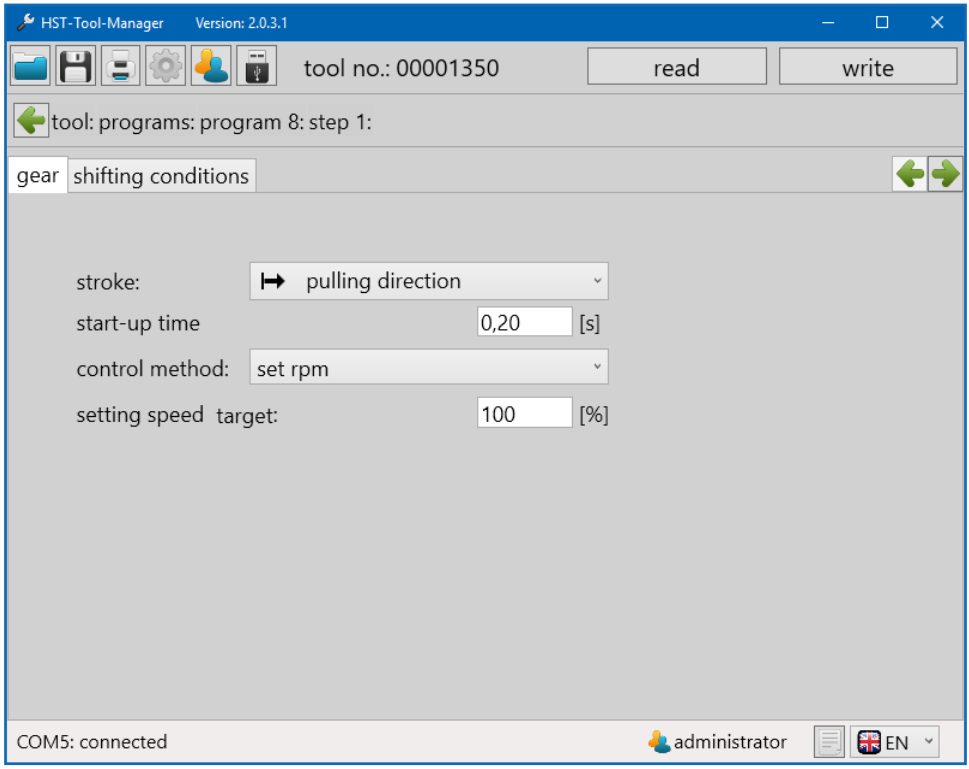


39 Program tab

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” TAB



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

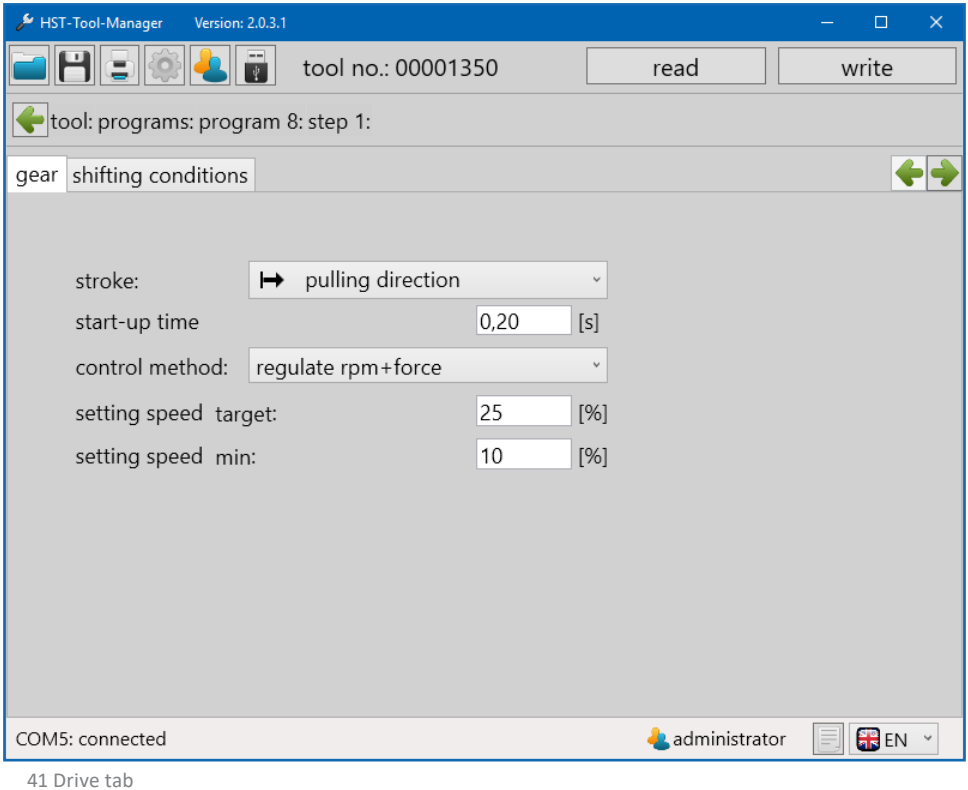
"control method"	- *Set rpm:* The tool starts with the riveting speed set $_{as}$ the nominal speed. If the load / force is increased, the speed is not retroactively controlled, i.e.the speed decreases under high loads. This type of regulation is recommended for the screw-on level for blind rivet nuts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

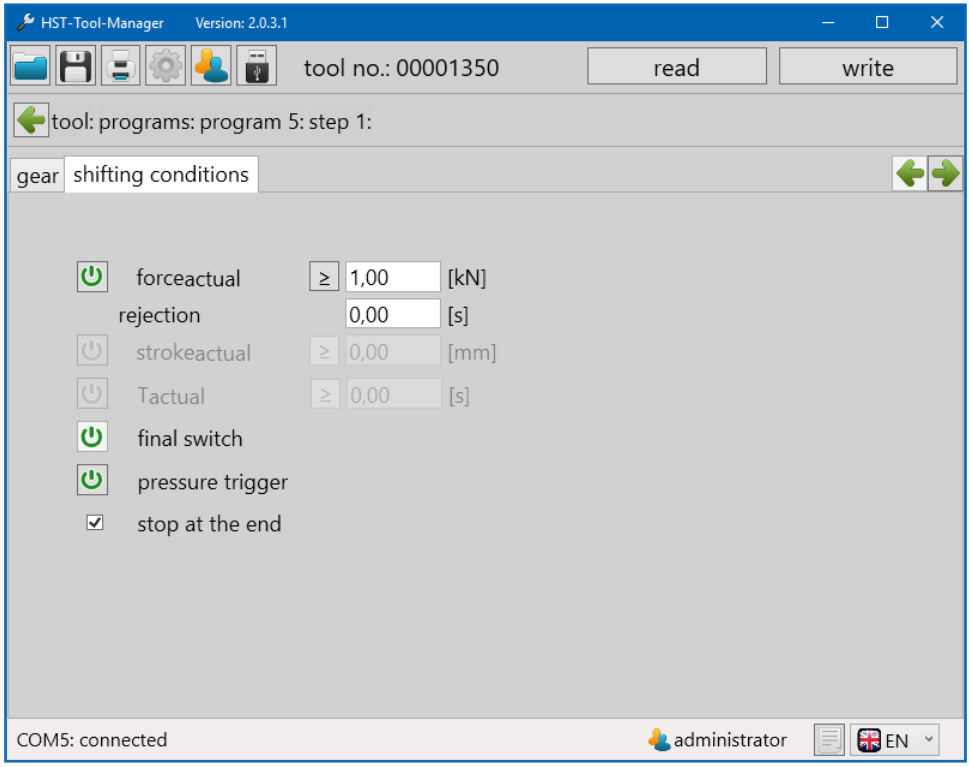
NOTICE
Regulate via speed+stroke is only available if stroke is active as a switching condition.

- *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.



41 Drive tab

6.3.2 “SHIFTING CONDITIONS” TAB



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 $Stroke_{actual}$ and T_{actual} 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 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 soon as a specified time has been reached.

WARNING

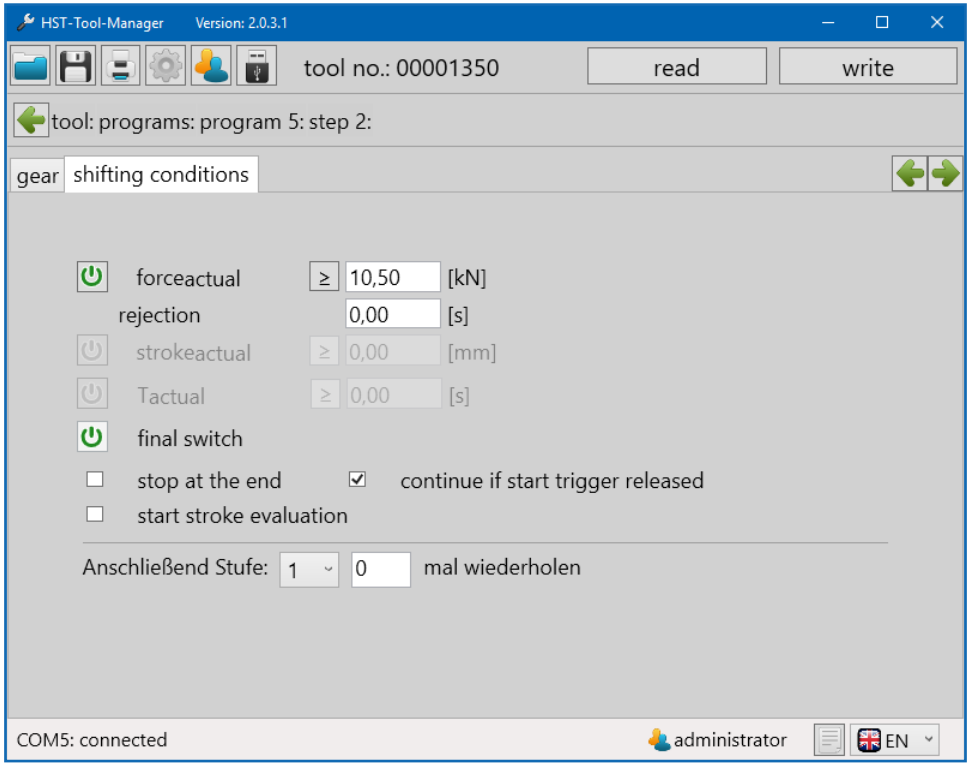
No force has to be entered on the last step in the pulling direction for PowerRiv®! The function remains deactivated; the tool either detects the tear with QuickRiv or the limiting switch.

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 NutBee® tools (blind rivet nuts) 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 NutBee® tools (blind rivet nuts), 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 Switching 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

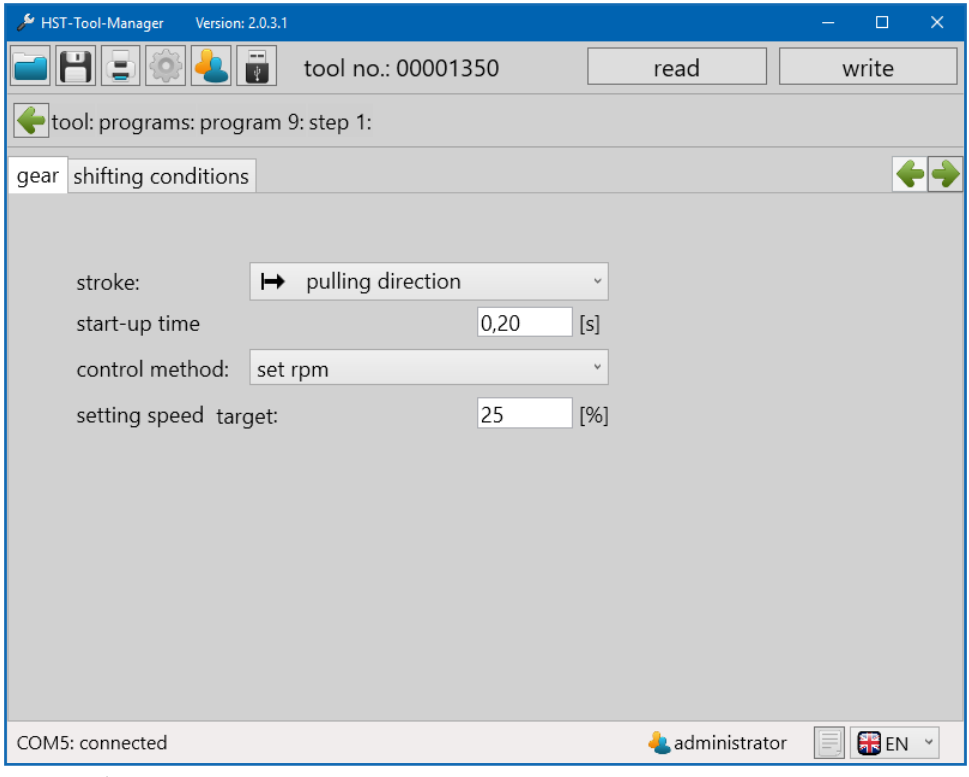
Aluminum is an easily malleable material which requires only minimum forces.

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.

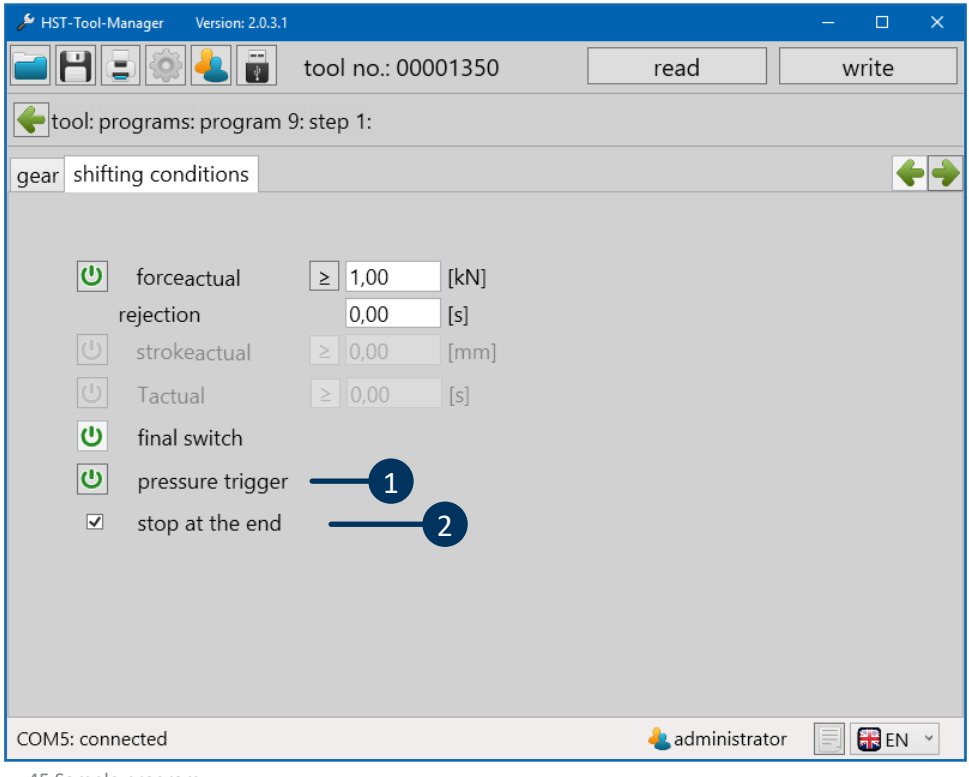
7.1.1 SAMPLE PROGRAM M3 ALUMINUM RIVET NUT

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



44 Sample program

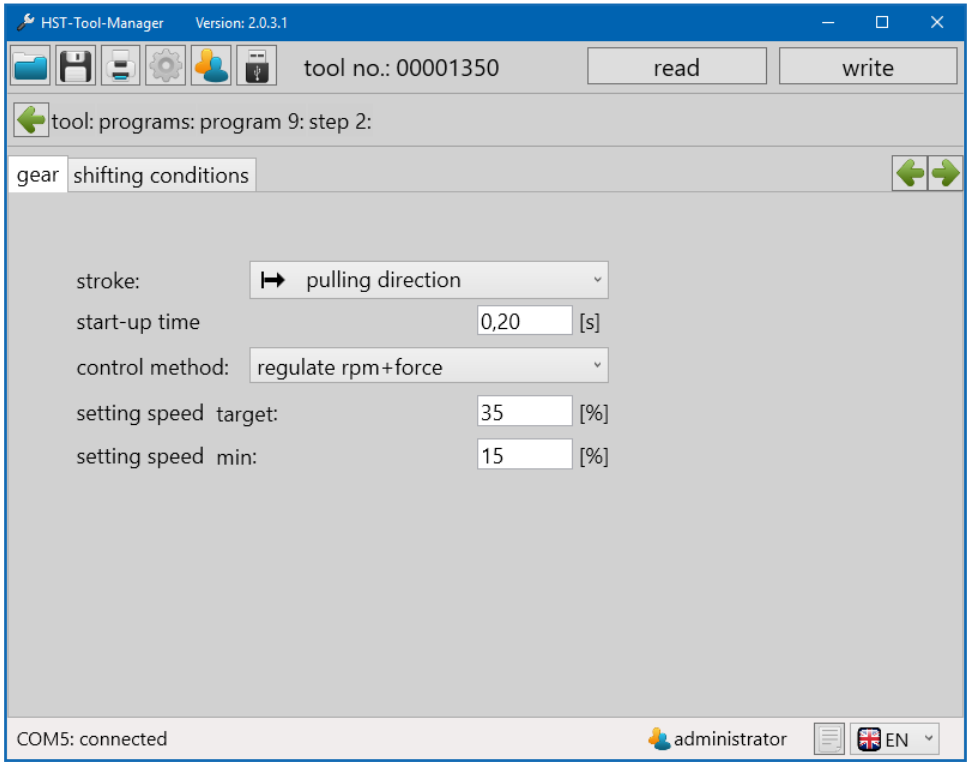
In step 1, on the “gear” tab, we work with a stroke in pulling direction, a short start-up time of 0.2 seconds, set the control method to “set rpm” and a low speed of 25 % for onscrewing the nut.
The low onscrewing speed prevents the threading from being damaged and makes it easier to put on the rivet nut for onscrewing.
Additional information about the individual functions can be found in chapter 6.3.1 “gear” tab from page 67.



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 70.

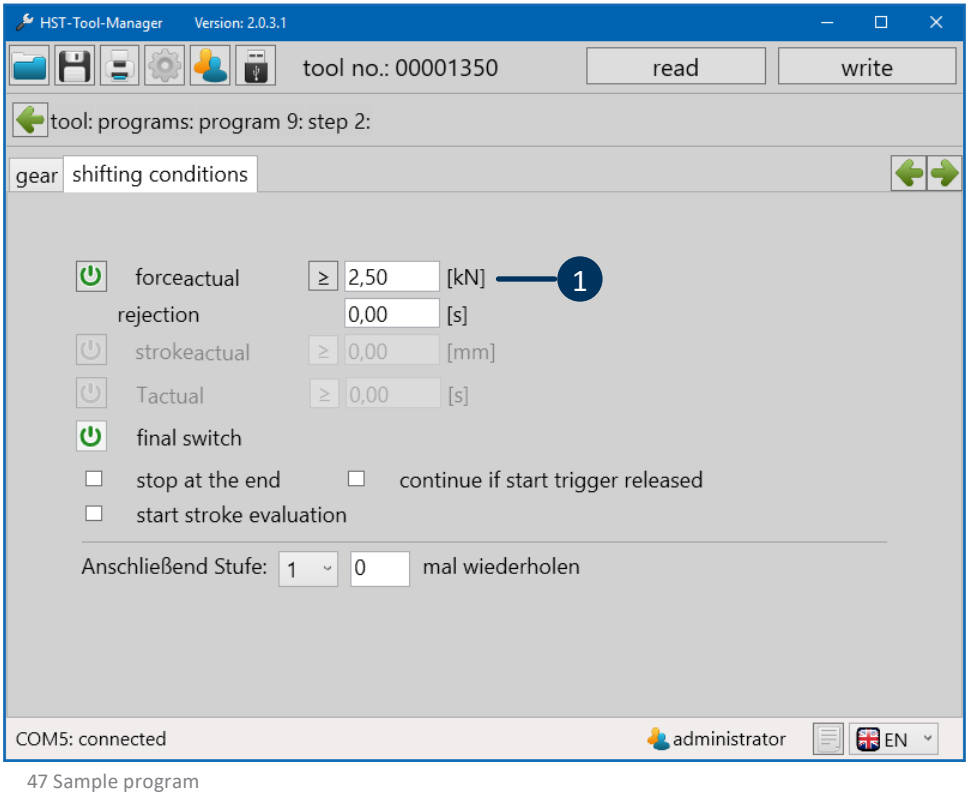
In step 2 “gear”, we also run in pulling direction and activate a start-up time in order to let the device start-up a bit slower. Furthermore, we use the control method “regulate rpm + force” in order to regulate the speed in accordance with the applied force.
The “setting speed $_{target}$” is set to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

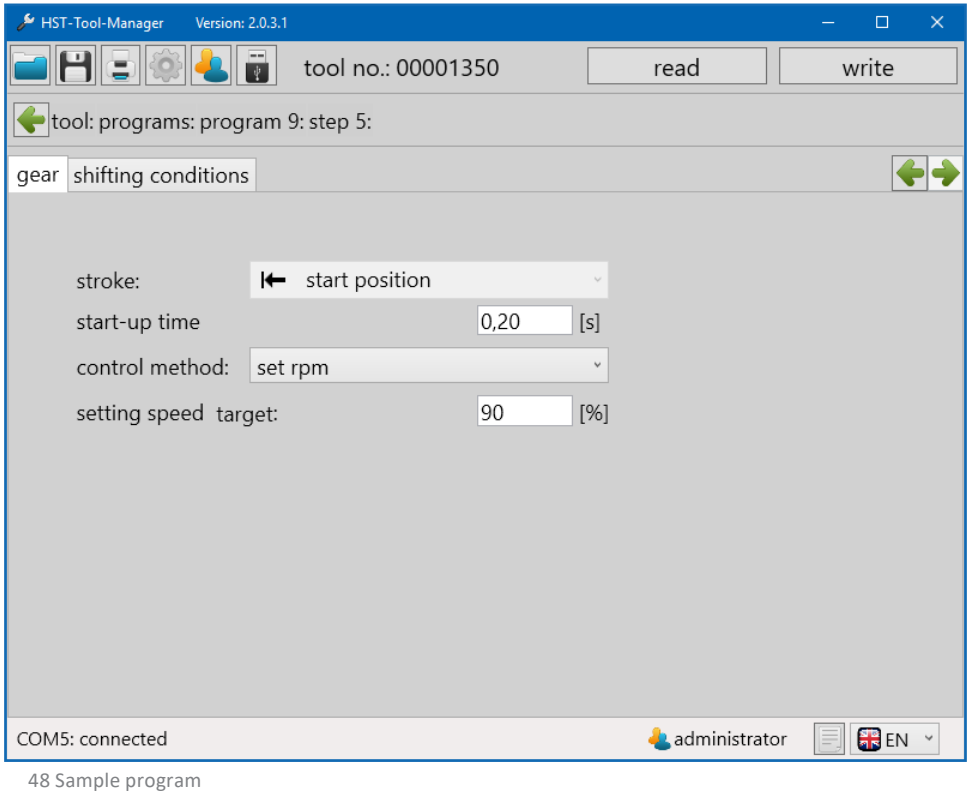
The data sheet from the manufacturer should specify a recommendation for the maximum riveting force for the blind rivet nut. If this value is not available, a suitable maximum setting force must be determined empirically. In our example, the maximum setting force is 2.5 kN.

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 70.



47 Sample program

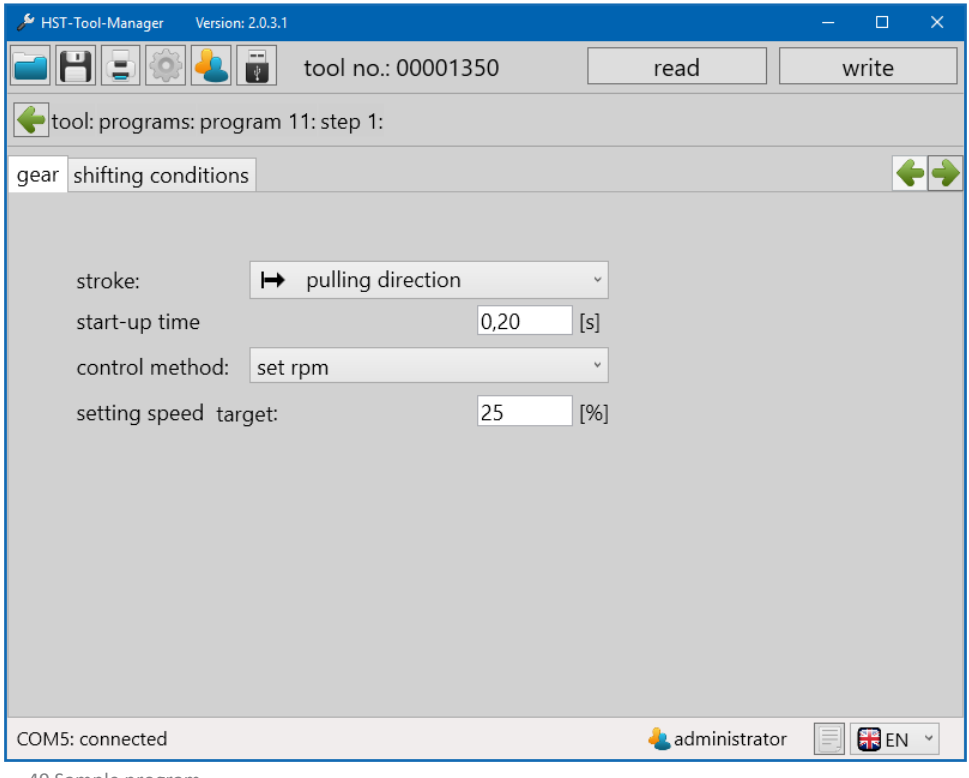
As a default, the last step (step 5) is used as a reverse step. This moves the tool back to the home position.
The start-up time should also be set here. The default setting of 0.2 seconds is recommended. Since only minor loads are expected, “set rpm” is chosen as control method. The setting speed $_{target}$ can thus be set to 90 %.



48 Sample program

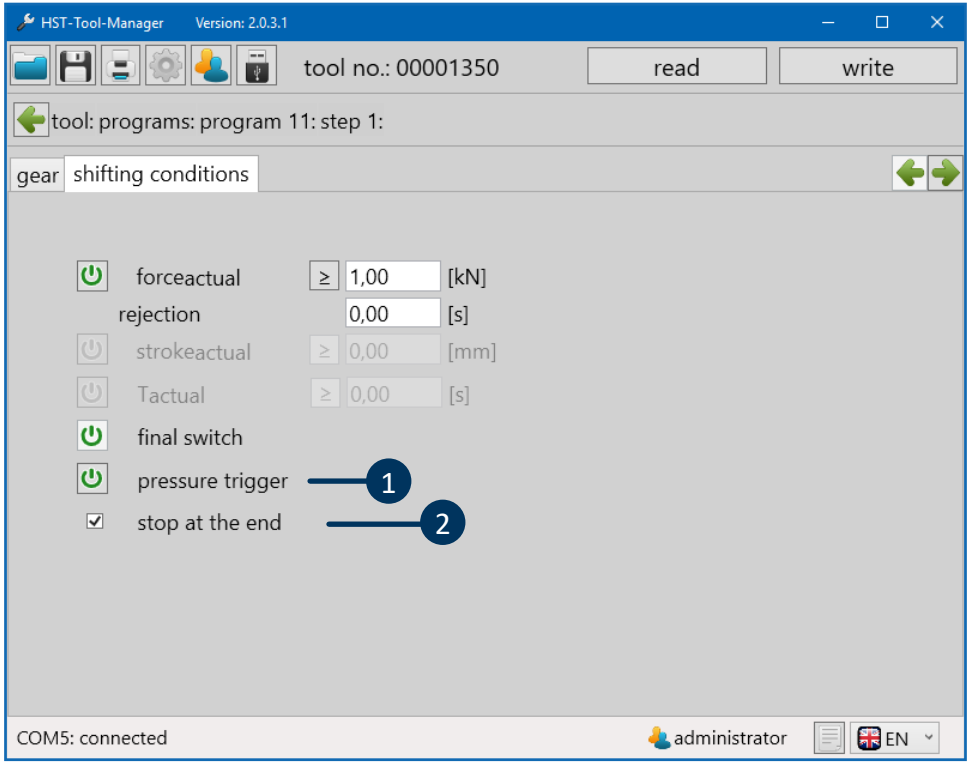
7.1.2 SAMPLE PROGRAM M8 ALUMINUM RIVET NUT

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



49 Sample program

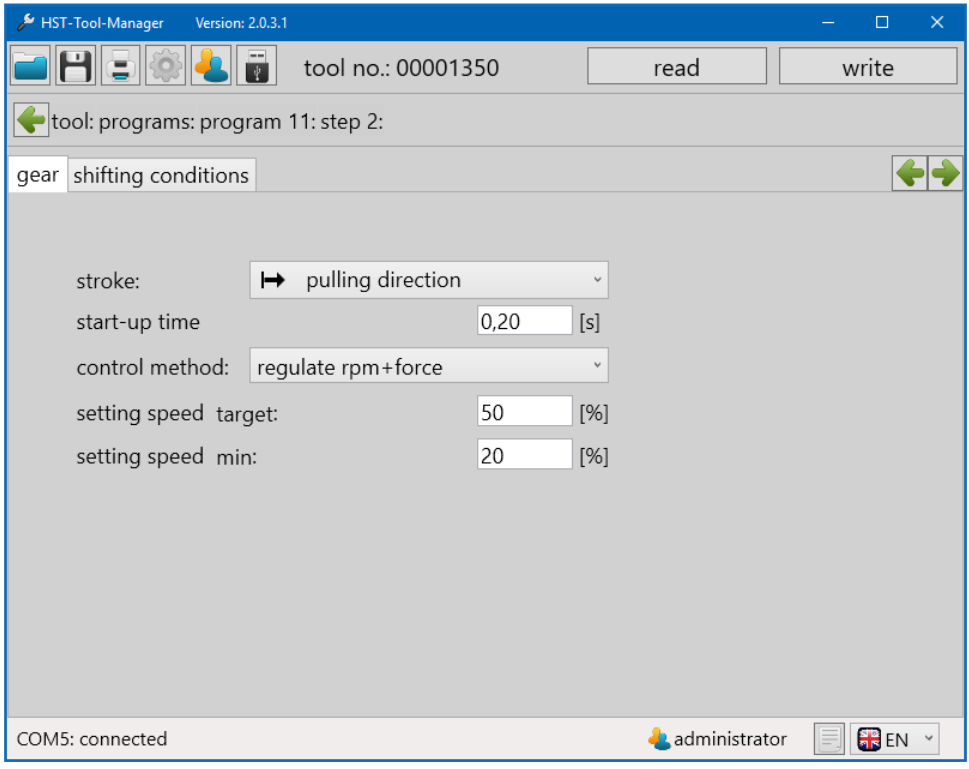
In step 1, on the “gear” tab, we work with a stroke in pulling direction, a short start-up time of 0.2 seconds, set the control method to “set rpm” and a low speed of 25 % for onscrewing the nut.
The low onscrewing speed prevents the threading from being damaged and makes it easier to put on the rivet nut for onscrewing.
Additional information about the individual functions can be found in chapter 6.3.1 “gear” tab from page 67.



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 70.

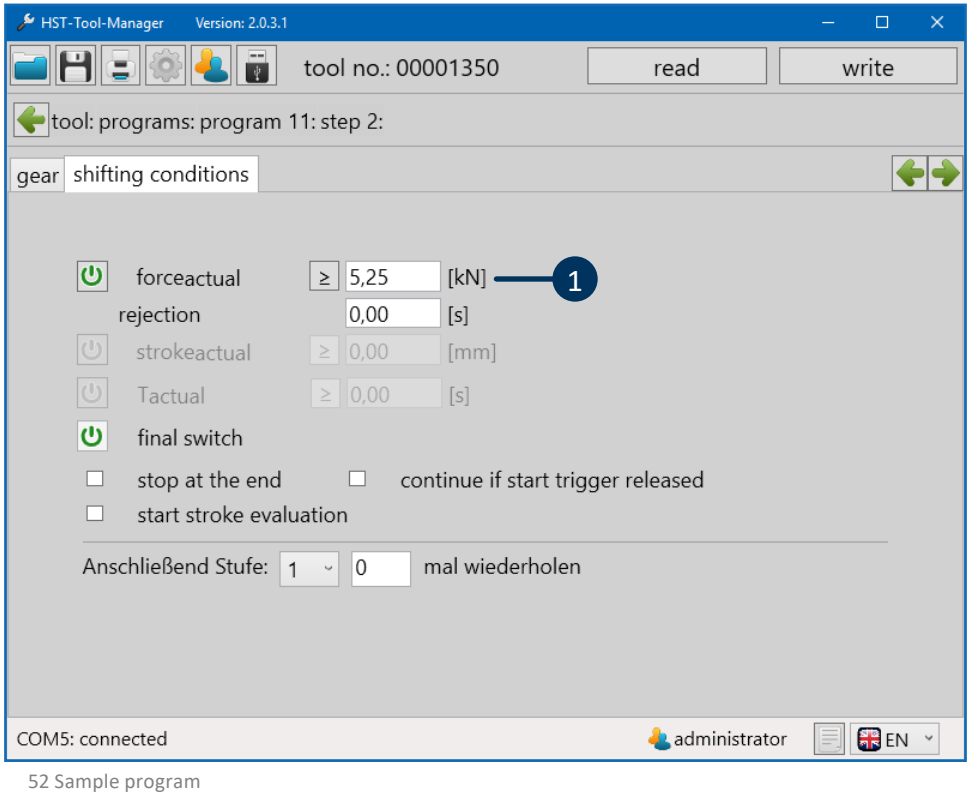
In step 2 “gear”, we also run in pulling direction and activate a “start-up time” in order to let the device start-up a bit slower. Furthermore, we use the control method “regulate rpm + force” in order to regulate the speed in accordance with the applied force.
The “setting speed $_{target}$” is set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

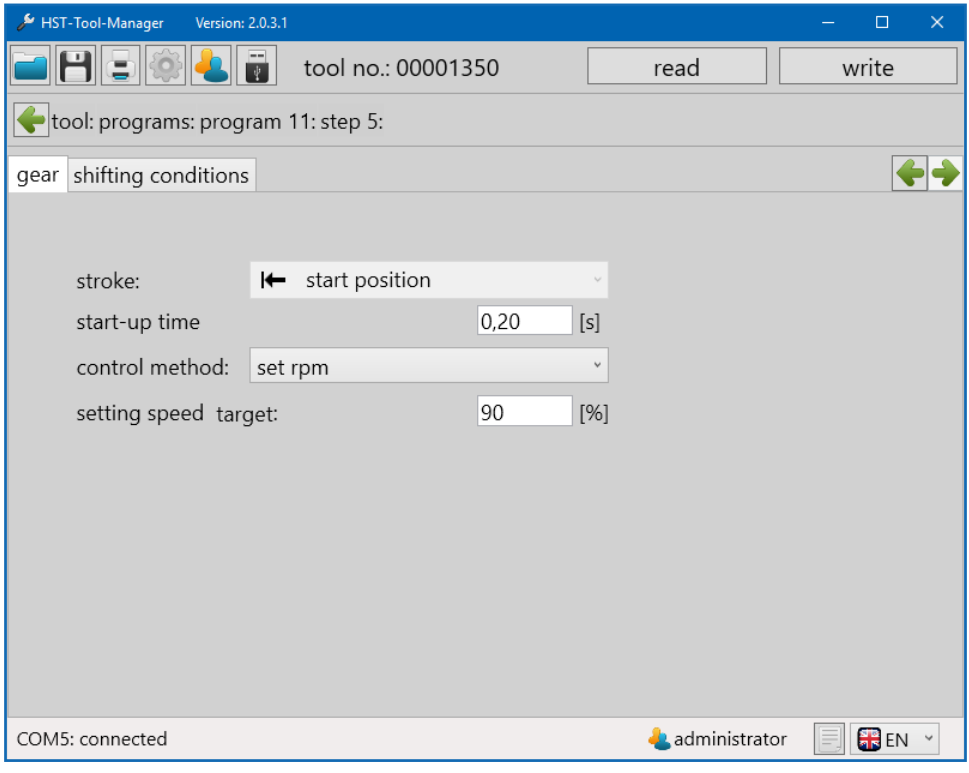
The data sheet from the manufacturer should specify a recommendation for the maximum riveting force for the blind rivet nut. If this value is not available, a suitable maximum setting force must be determined empirically. In our example, the maximum setting force is 5.25 kN.

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 70.



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.

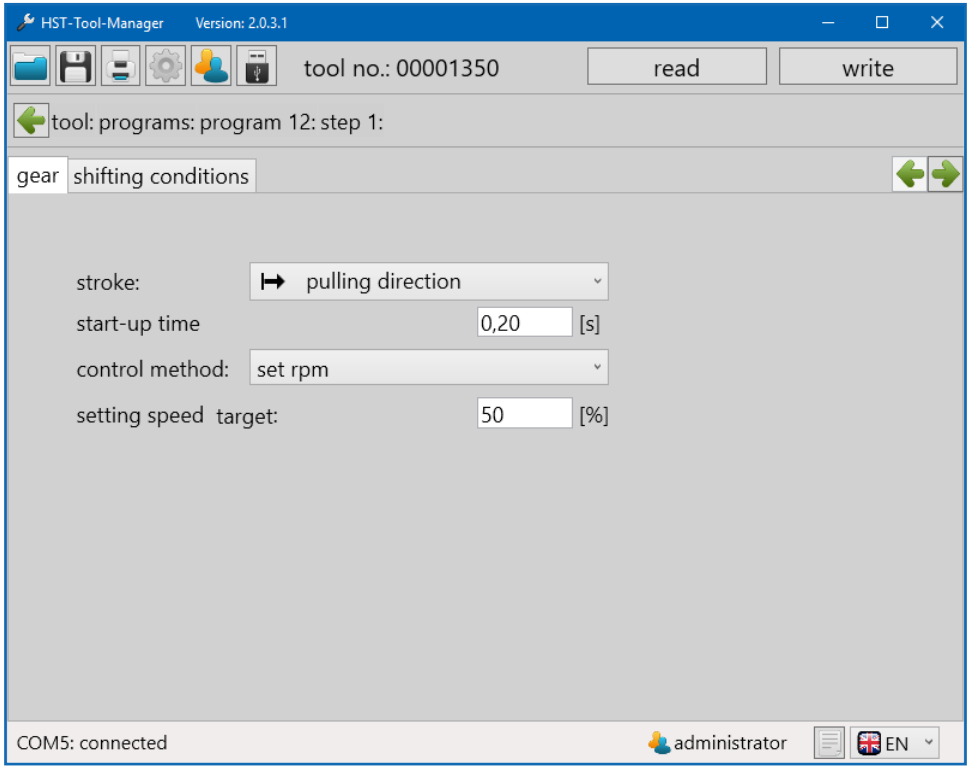


53 Sample program

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

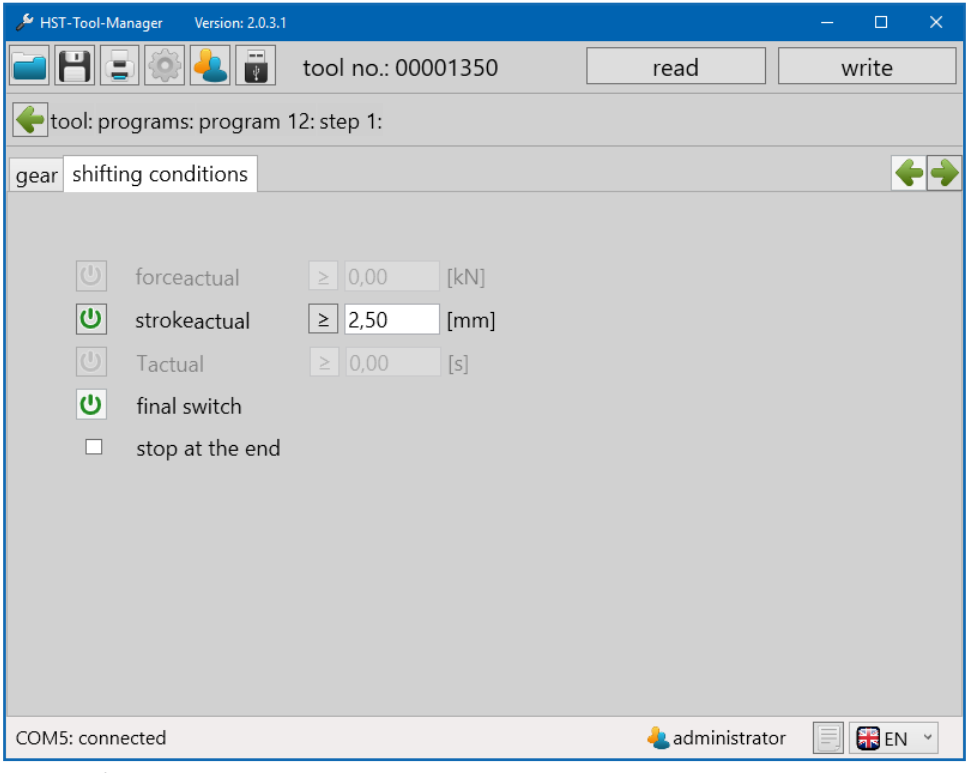
7.2.1 SAMPLE PROGRAM 6X16 STEEL RIVET



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 %.

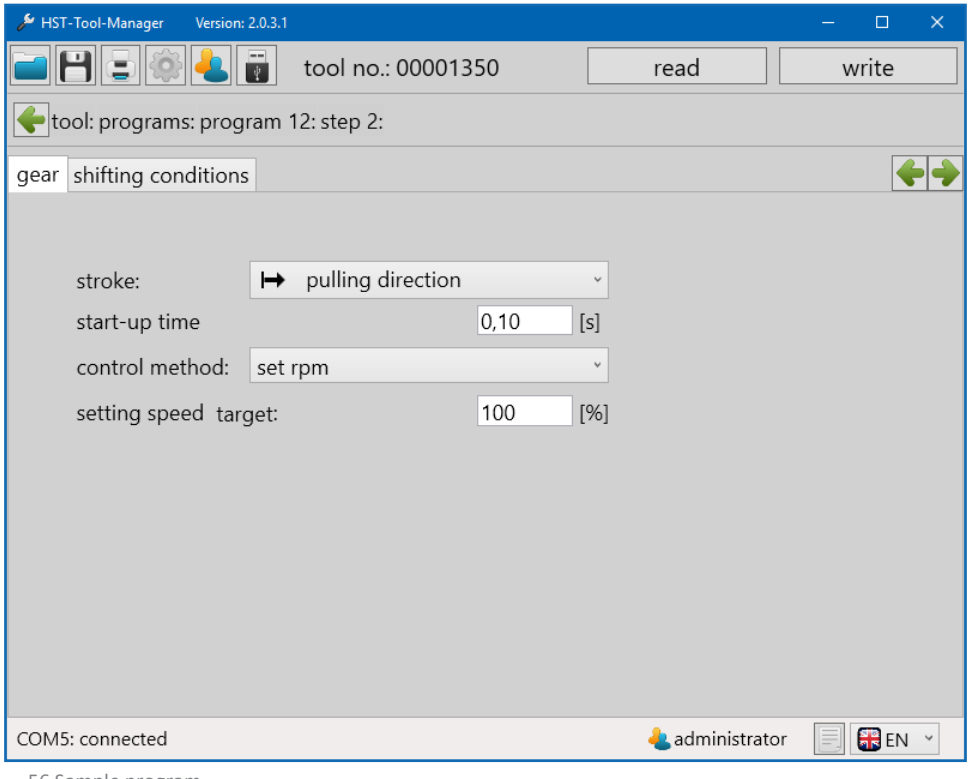
Additional information about the individual functions can be found in chapter 6.3.1 “gear” tab from page 67.



55 Sample program

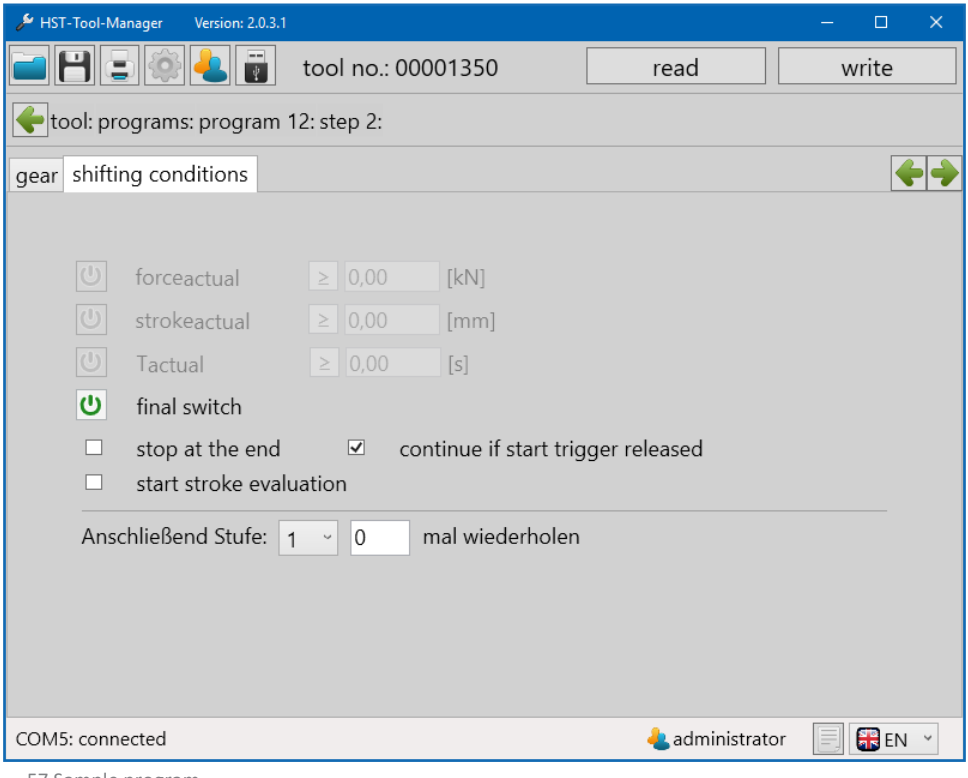
A stroke of 2.5 mm is run as a shifting condition. Slowly running for 2.5 mm ensures the clamping jaws close slowly which prevents the jaws from slipping.

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.



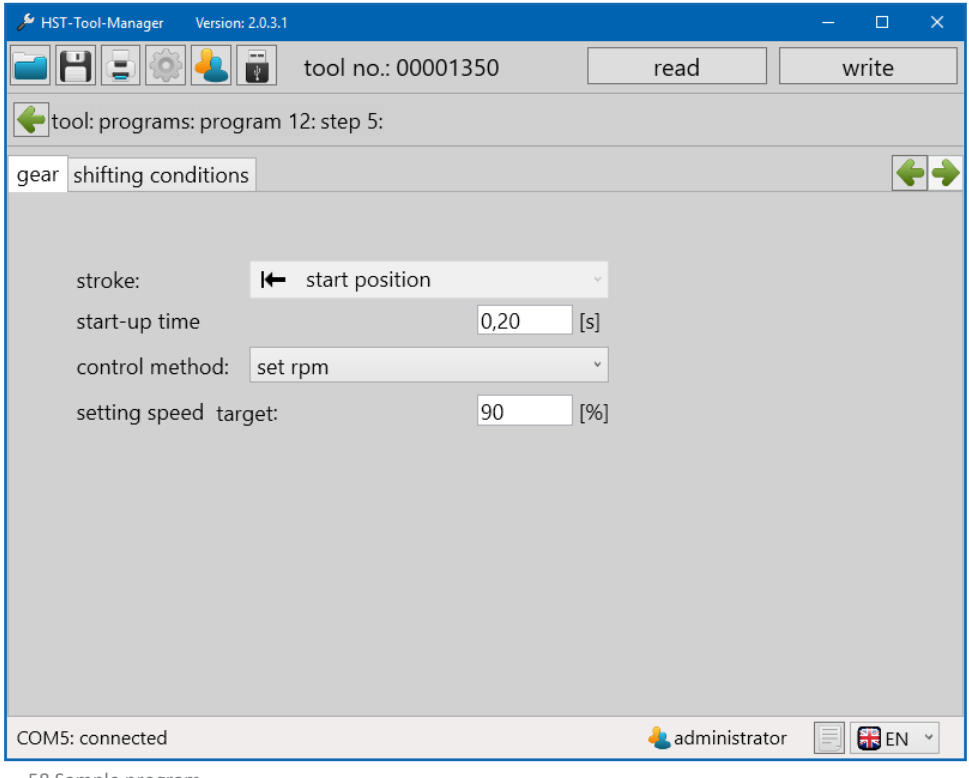
56 Sample program

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 70.



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 barcode 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 barcode scanner. This is activated as the hardware default on all tools with barcode scanners.
In administrator mode, the scanner can be activated or deactivated under “setup” - “basic settings”, see chapter 5.2.9. “basic settings” tab from page 49.
If “barcode” or “barcode & external control unit” is selected for “enable over”, see chapter 5.2.1 from page 34, the scanner will be activated. The count function must be active in the default program.

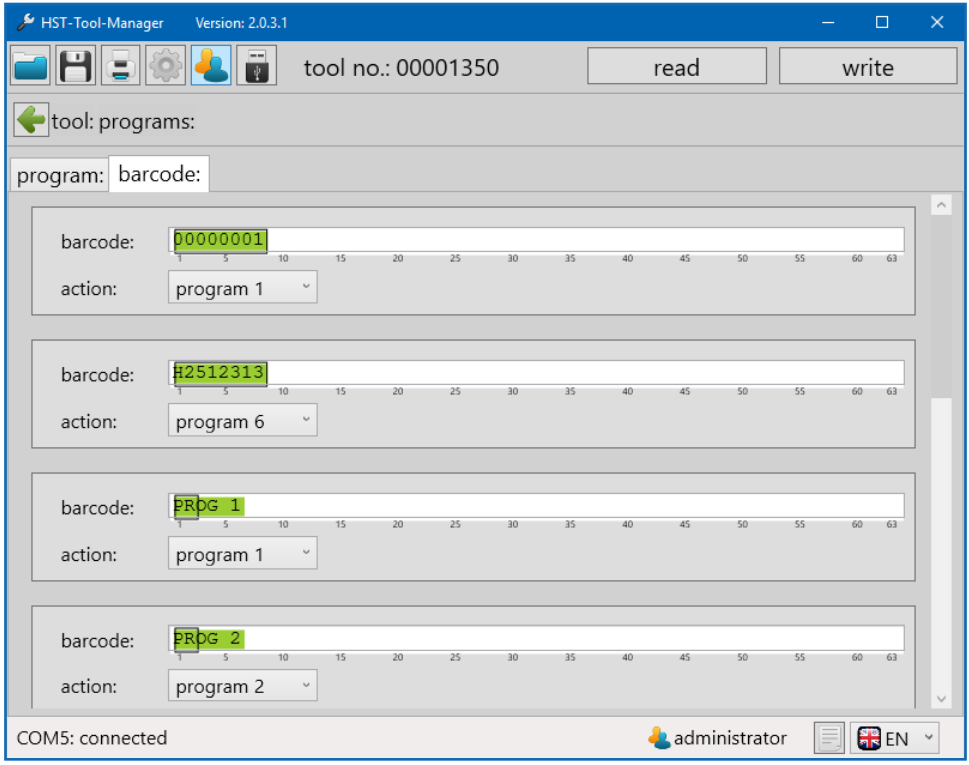
NOTICE
To work with the barcode scanner, the count function must be active in the default program.

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 10 characters.



59 Barcode

WW7-1348726

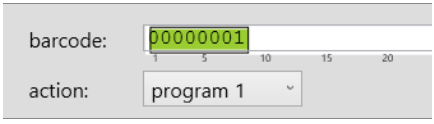
Will not be evaluated and can be variably modified (e.g. continuous serial number). For example: Indicator on the display.

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.

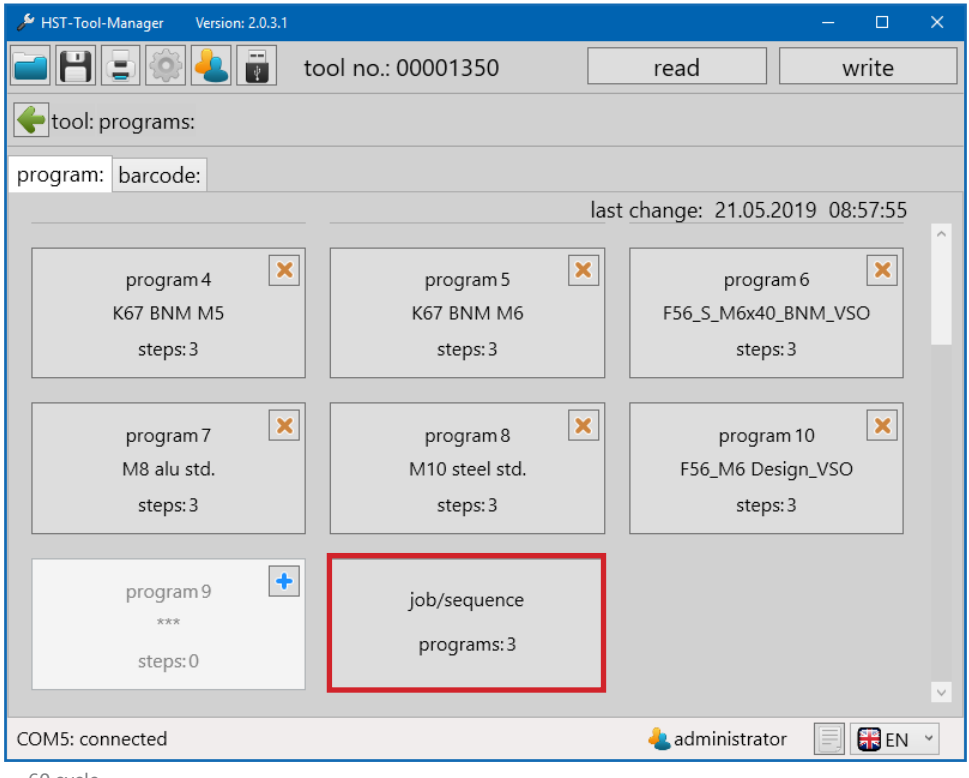


Example WW7-1348726

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

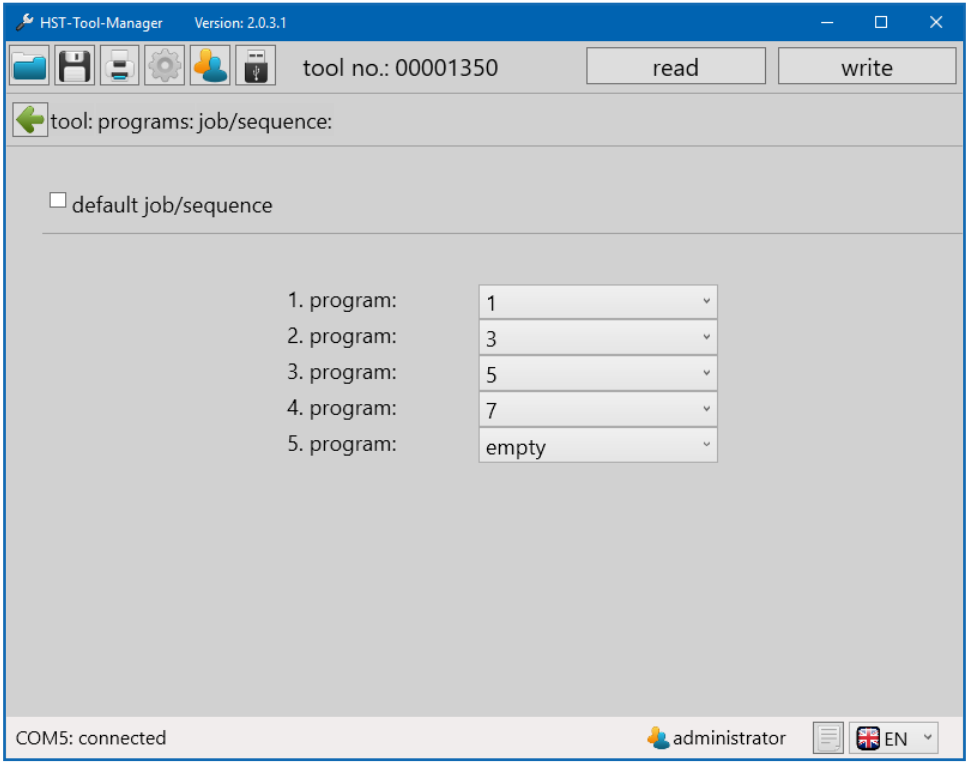
9 JOB

With the HST-Tool-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 from page 55	See Default program. Creating, deleting, editing programs, from page 57. 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 to be set to “empty”. This also hides the program(s) afterward and removes them from the job.

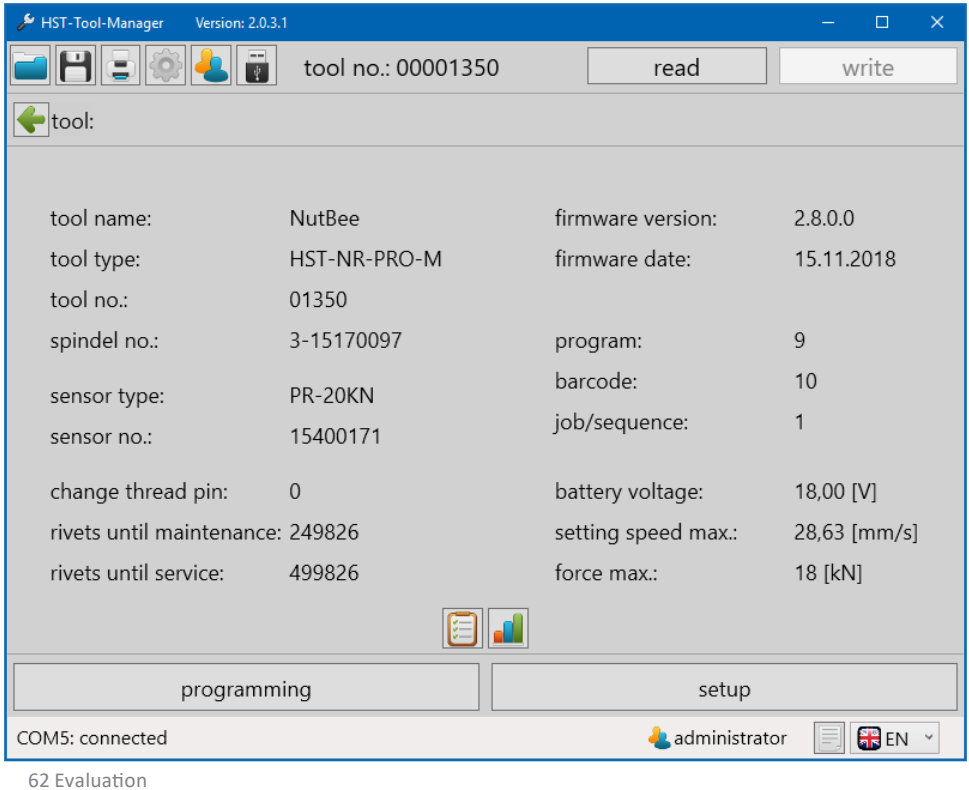
10 STATISTICS AND GRAPHICS

10.1 STATISTICS

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

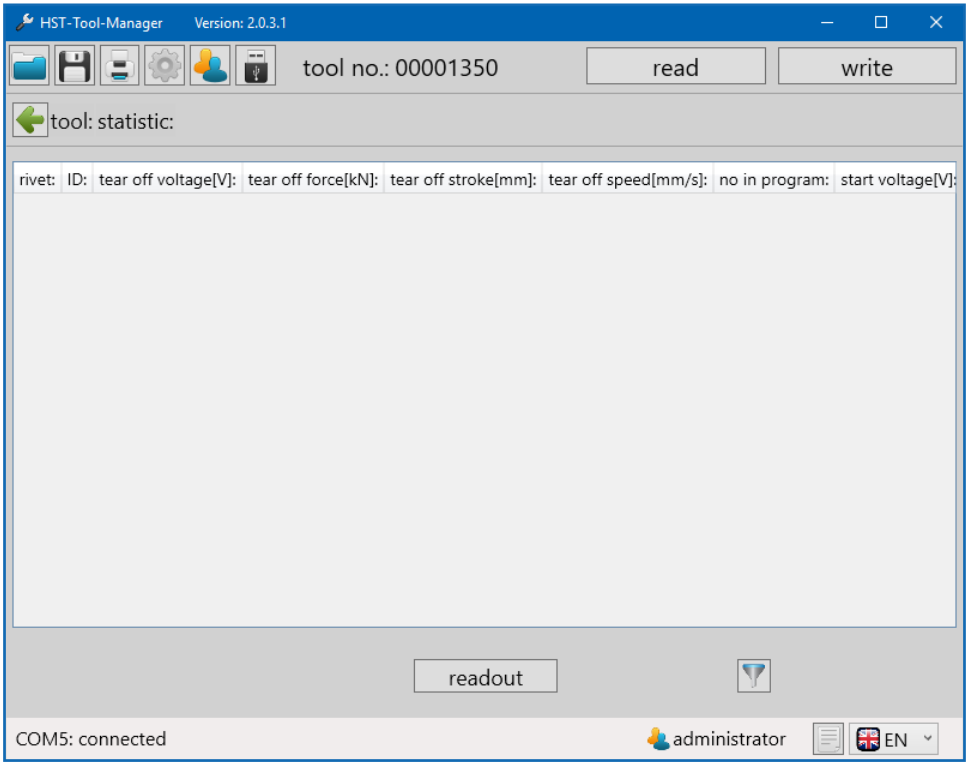
NOTICE
To read out the tool, it must be connected to the computer via USB.

Click on the button on the home screen.



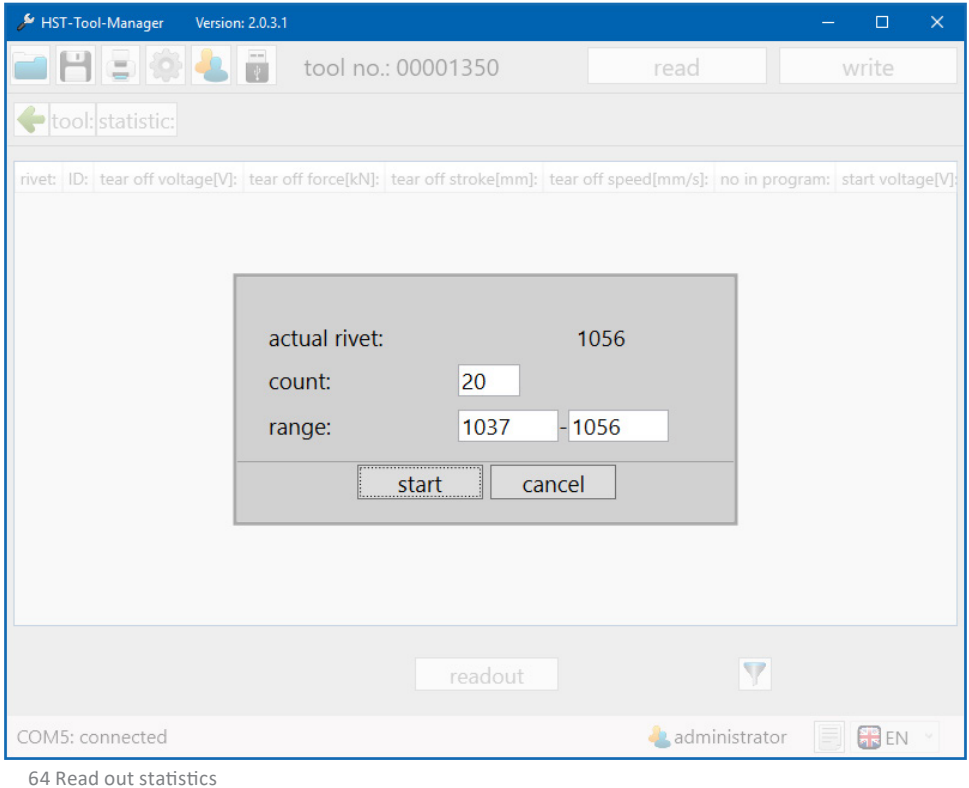
62 Evaluation

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

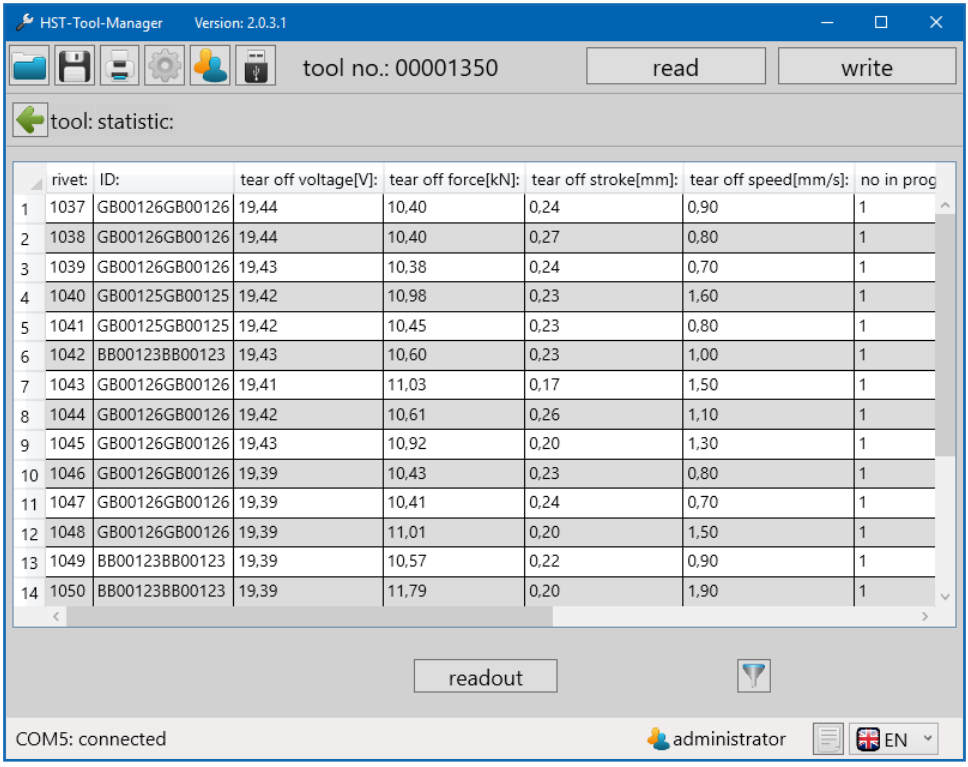
Under “count”, enter either how many values you want to read out or the exact number of rivets under “range”.

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 HST-Tool-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

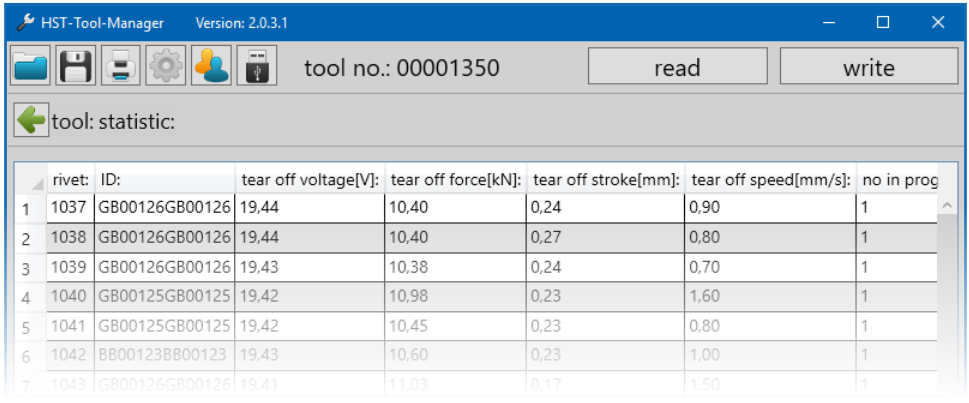
65 Statistical values

“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 ≙ 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.

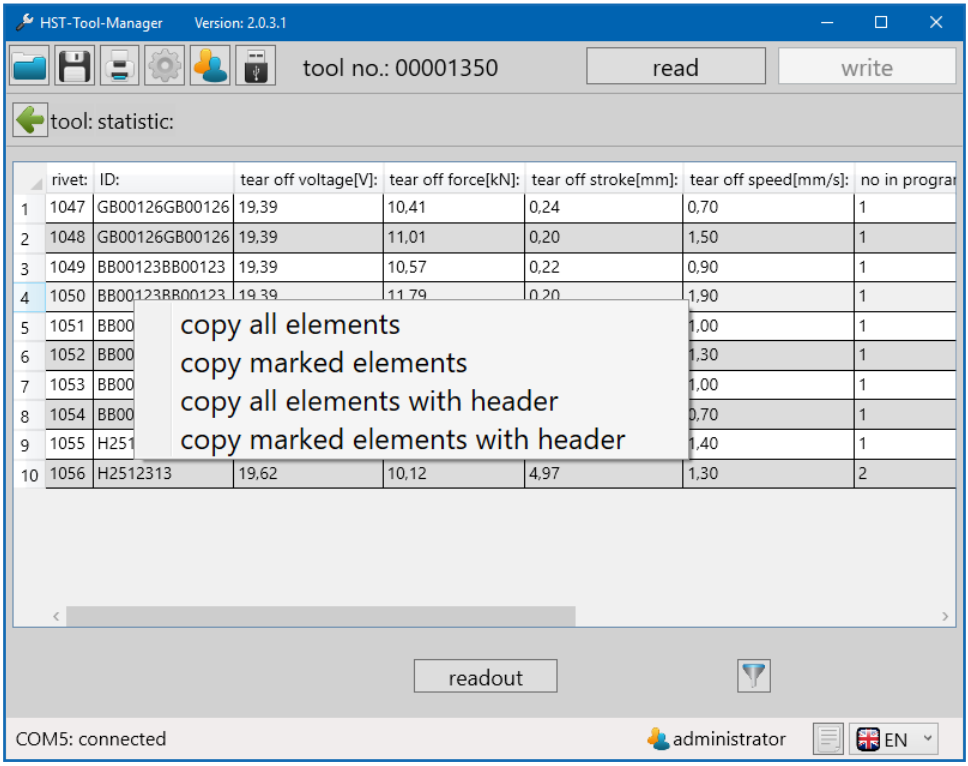


	rivet:	ID:	tear off voltage[V]:	tear off force[kN]:	tear off stroke[mm]:	tear off speed[mm/s]:	no in prog
1	1037	GB00126GB00126	19,44	10,40	0,24	0,90	1
2	1038	GB00126GB00126	19,44	10,40	0,27	0,80	1
3	1039	GB00126GB00126	19,43	10,38	0,24	0,70	1
4	1040	GB00125GB00125	19,42	10,98	0,23	1,60	1
5	1041	GB00125GB00125	19,42	10,45	0,23	0,80	1
6	1042	BB00123BB00123	19,43	10,60	0,23	1,00	1
7	1043	GB00126GB00126	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.

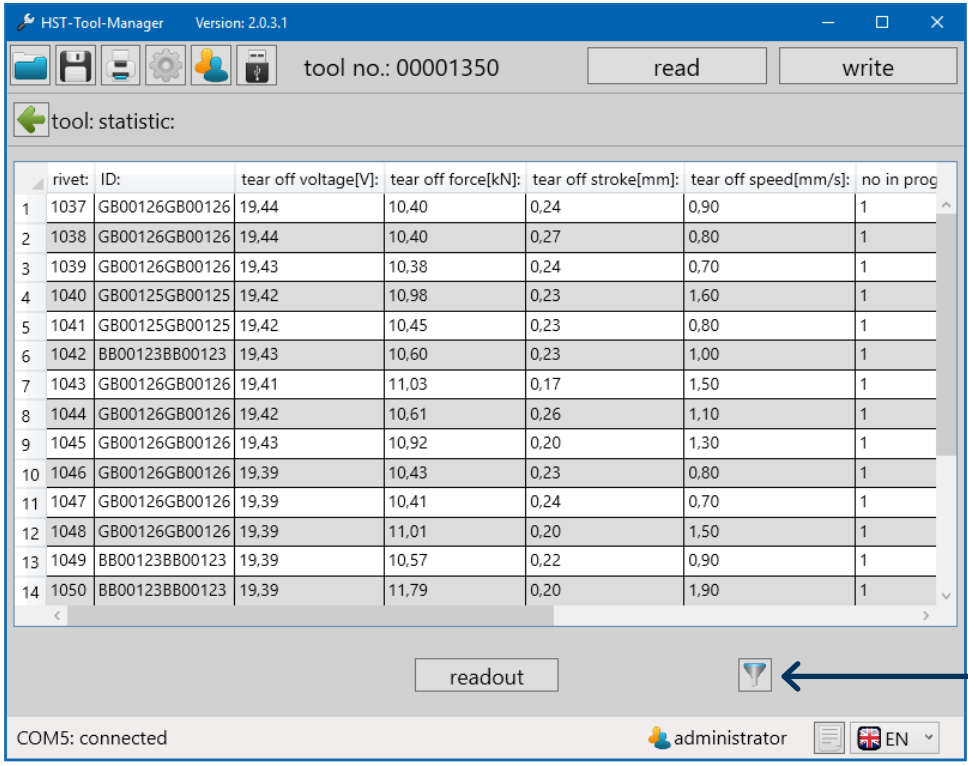


67 Move evaluation

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

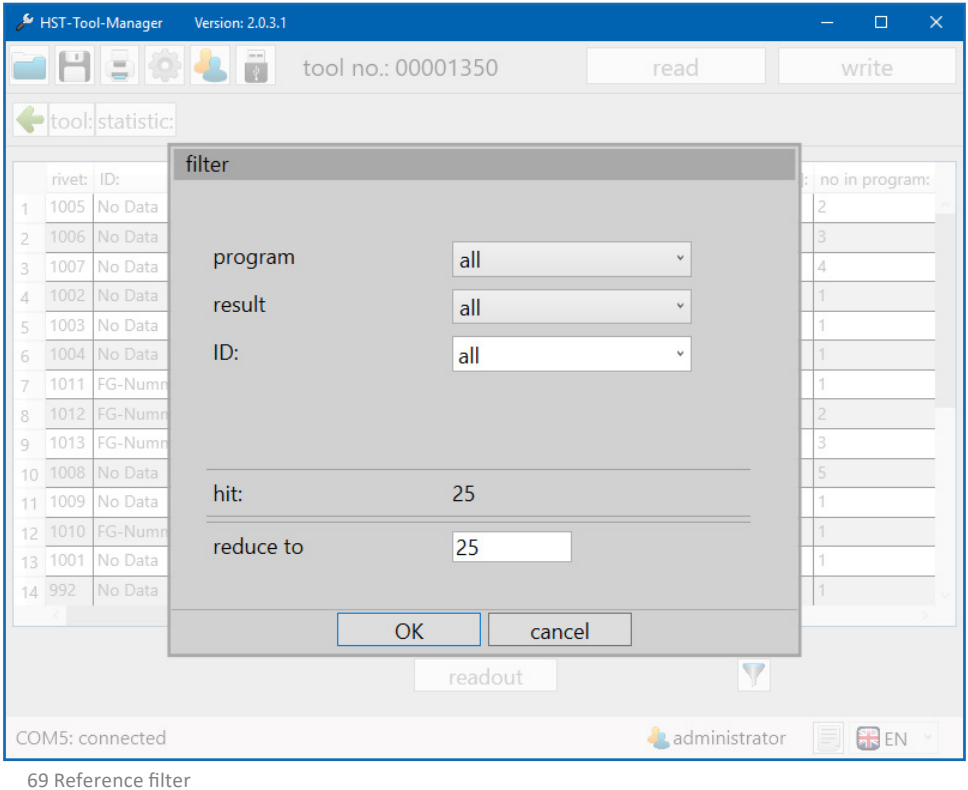
10.1.3 FILTER

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



	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.

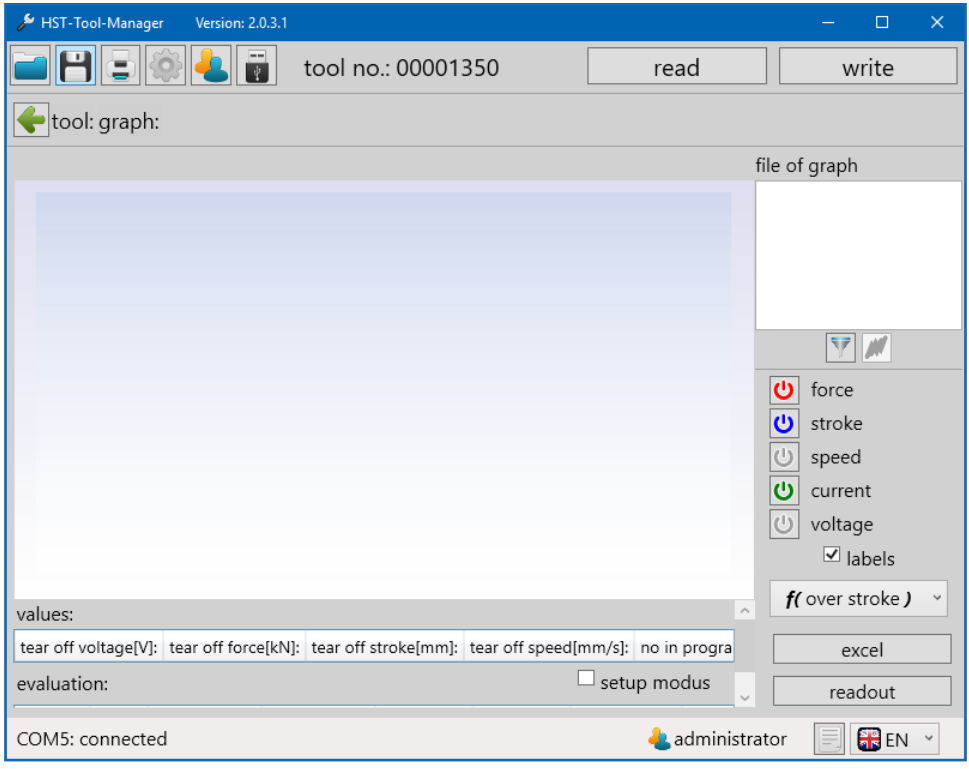
10.2 GRAPHICS

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

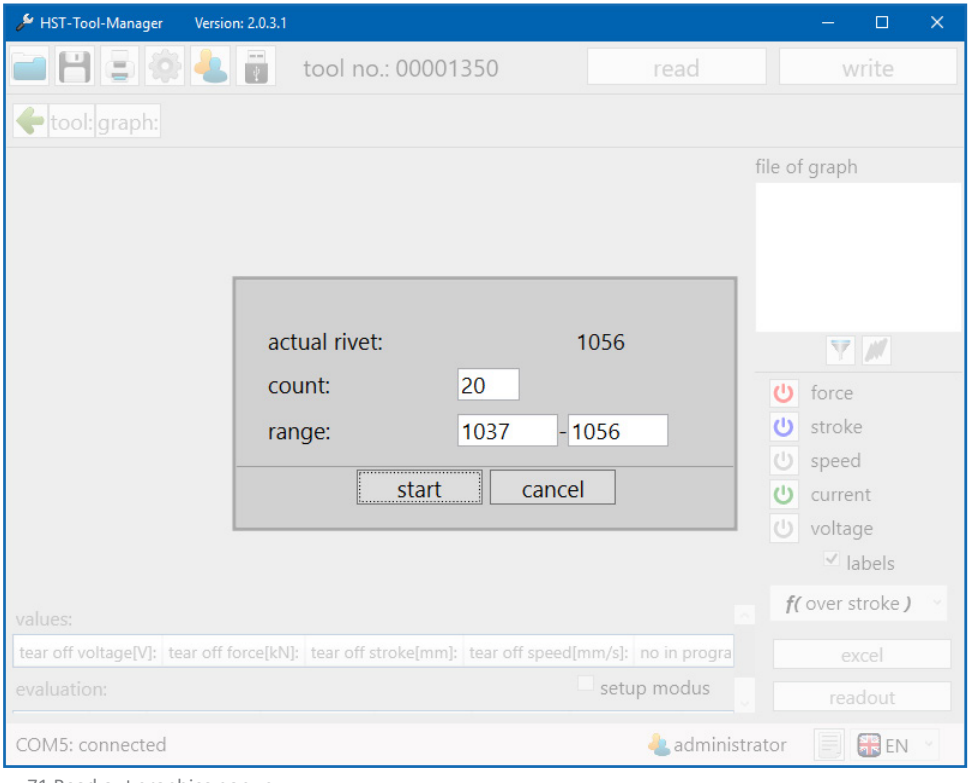
The “graphics” interface will open.



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.



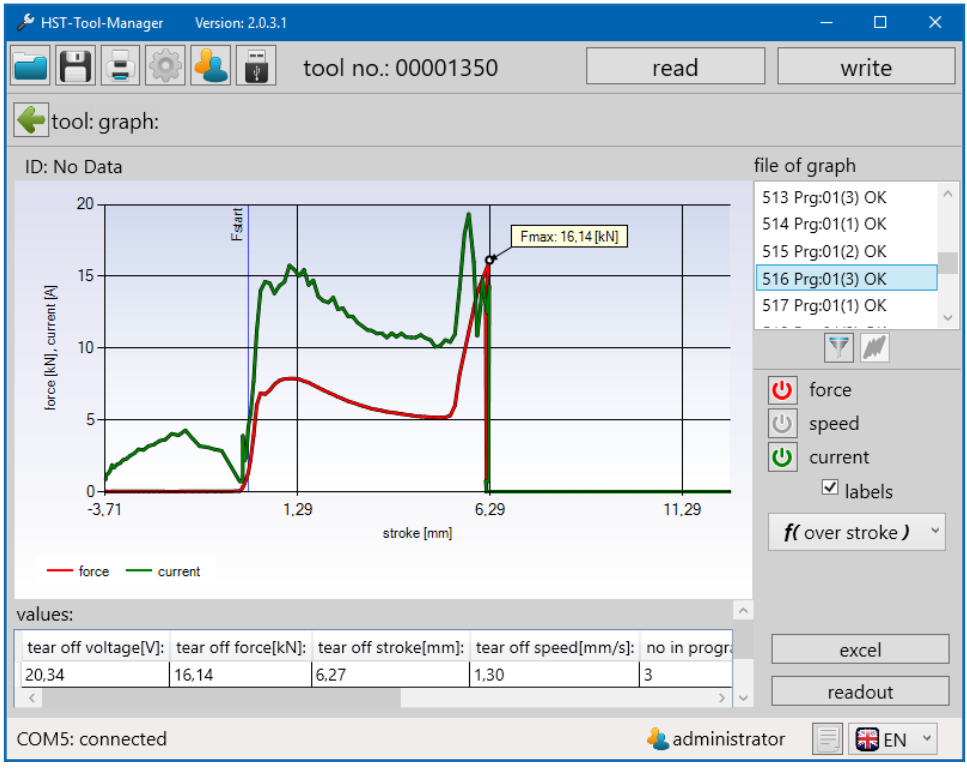
71 Read out graphics popup

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

Then click on “start”.

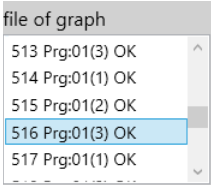
The amount of riveting processes the internal tool counter has reached is displayed under “actual rivet”.

The HST-Tool-Manager loads and displays the data.

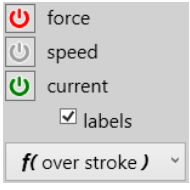


72 Readout graphics

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 5.2.8 “graphics” tab from page 48.

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”.

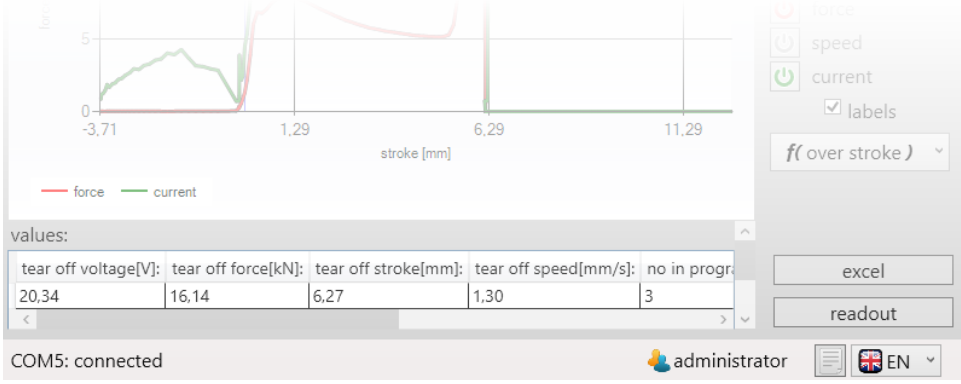
NOTICE

Please observe the settings under “setup - graphics - measurand” see chapter 5.2.8 “Graphics” tab from page 48. 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:

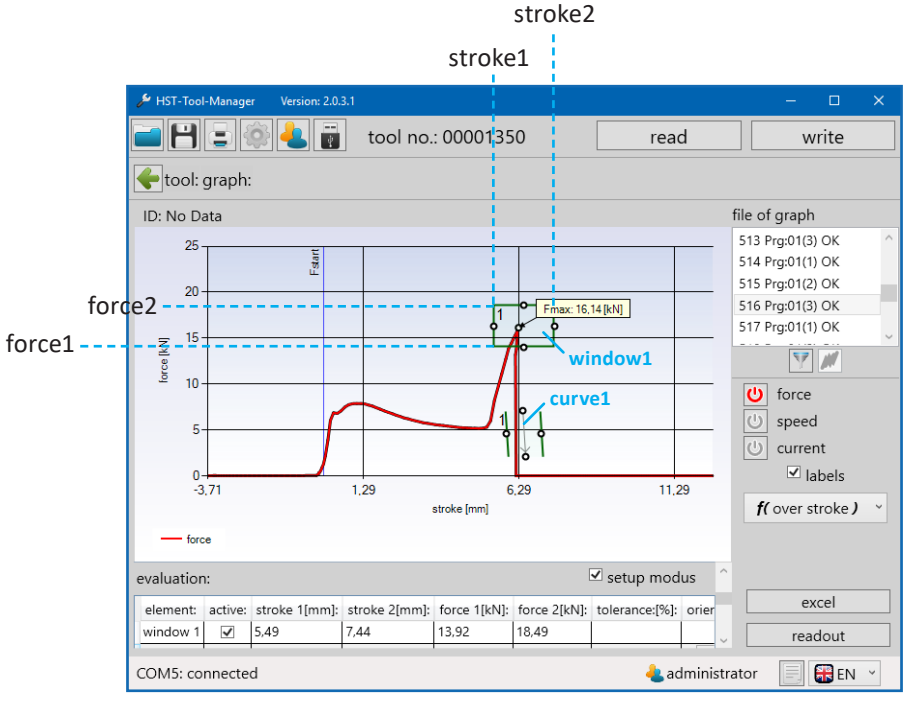
“tear off voltage[V]”	Voltage at the end of the riveting process A.-Force [kN] Force at the end of the riveting process
“tear off stroke[mm]”	Required stroke for the riveting process
“tear off speed[mm/s]”	Speed at the end of the riveting process
“no. in the program”	No. of program used
“starting voltage[V]”	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)



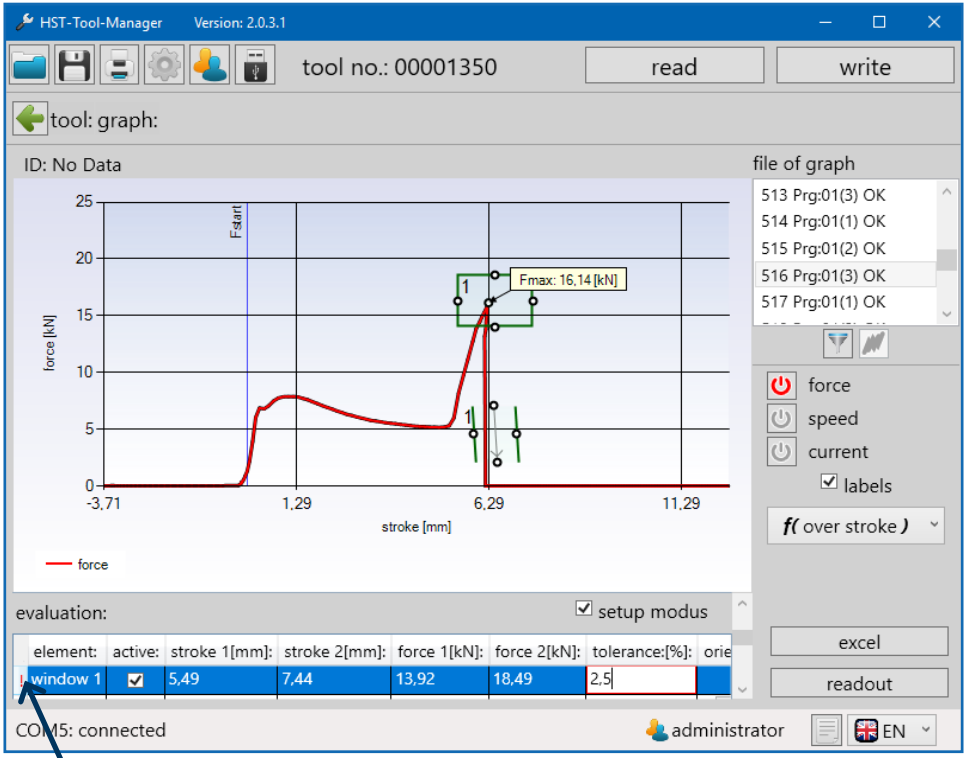
73 Graphics values below

Evaluation:

“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 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

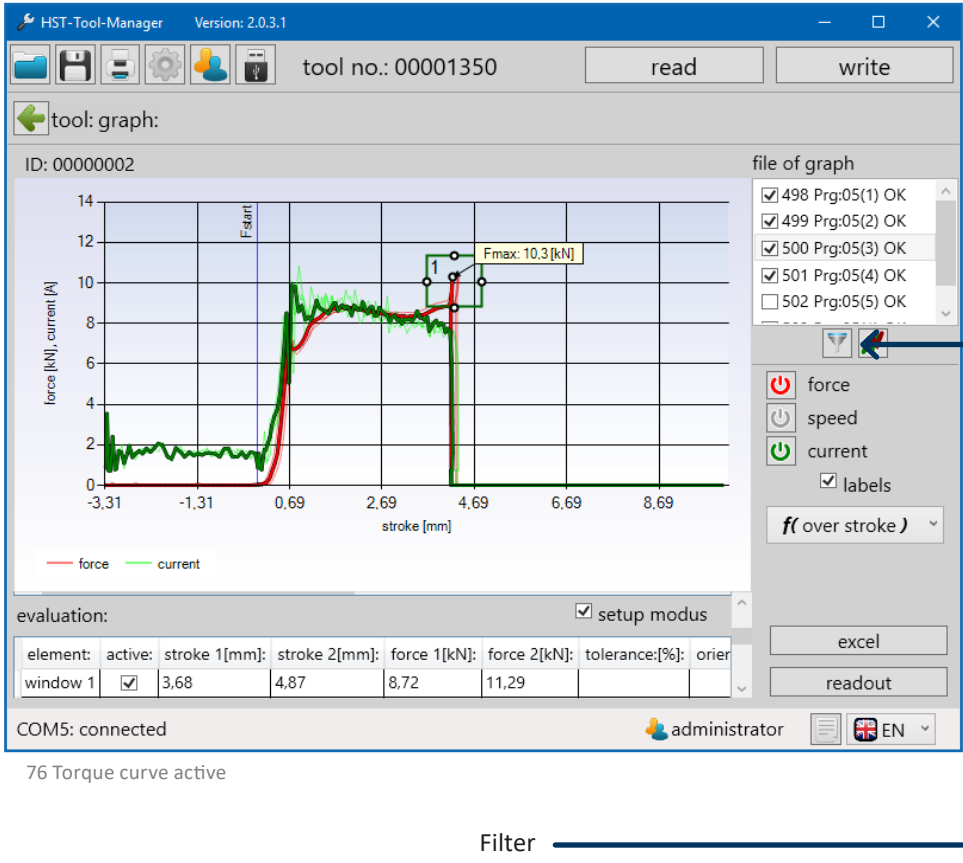


75 Graphics evaluation below incorrect

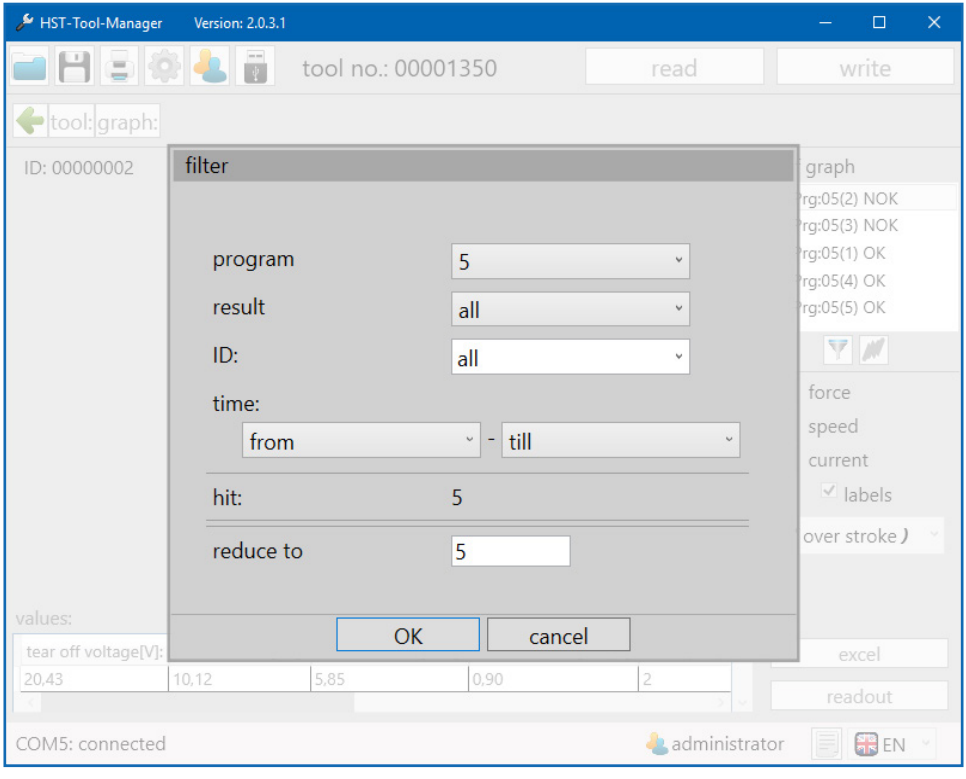
If an entry is incorrect or invalid, a red exclamation mark will appear in the 1st column. The corresponding field will also be bordered in red.

10.3 FILTER

There is a filter function to display selected values.



76 Torque curve active



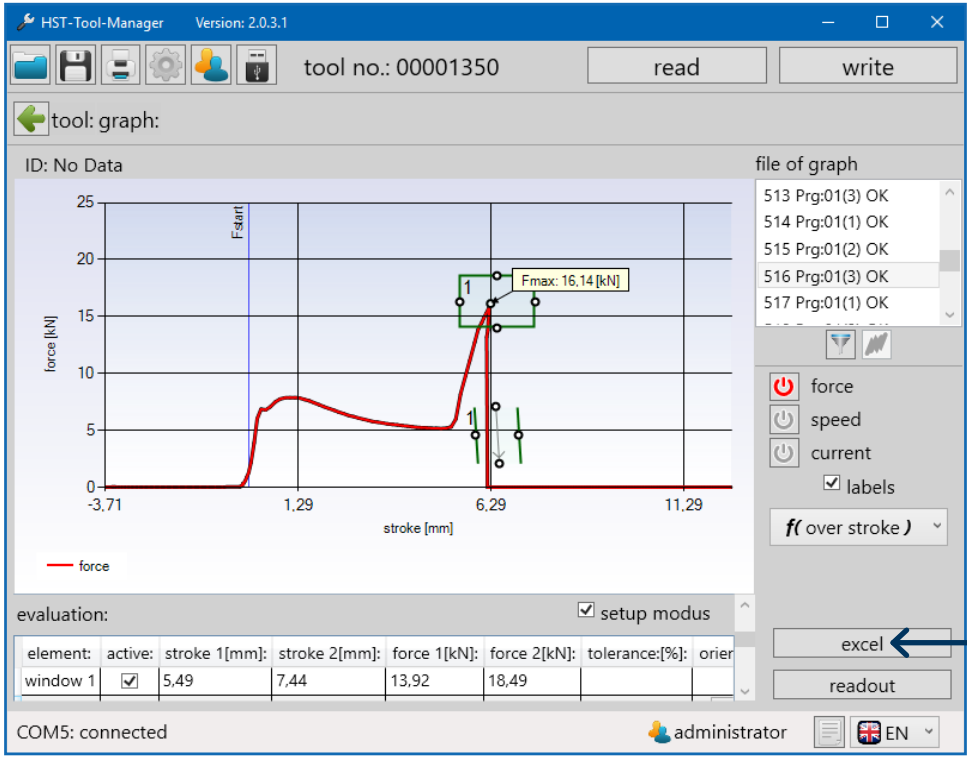
77 Graphics filter popup

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.

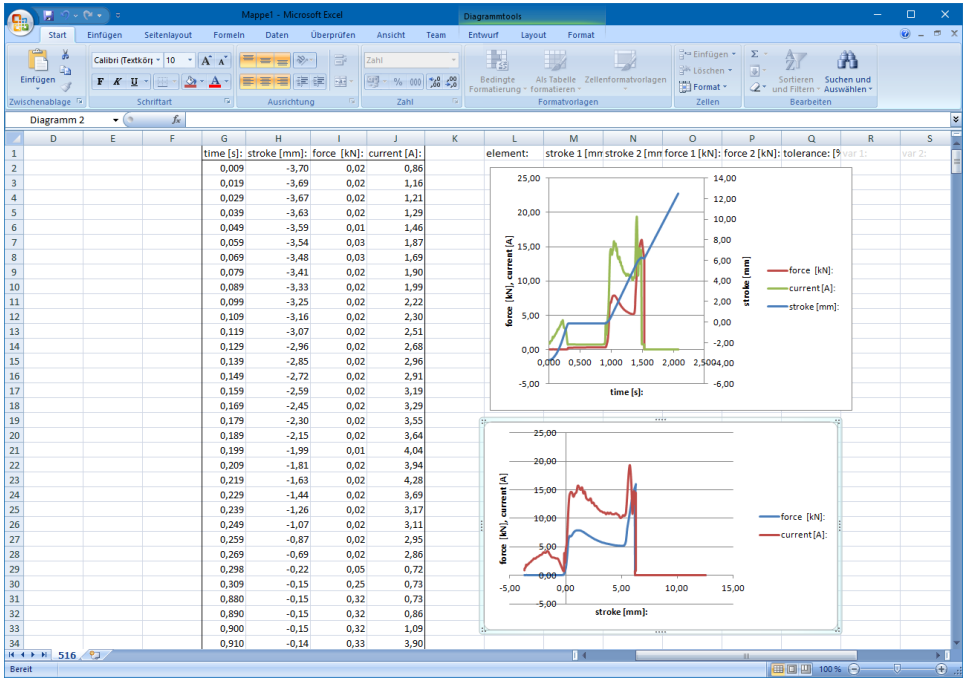
NOTICE
Microsoft Excel must be installed on the computer for this option.



78 Graphics evaluation below

Export

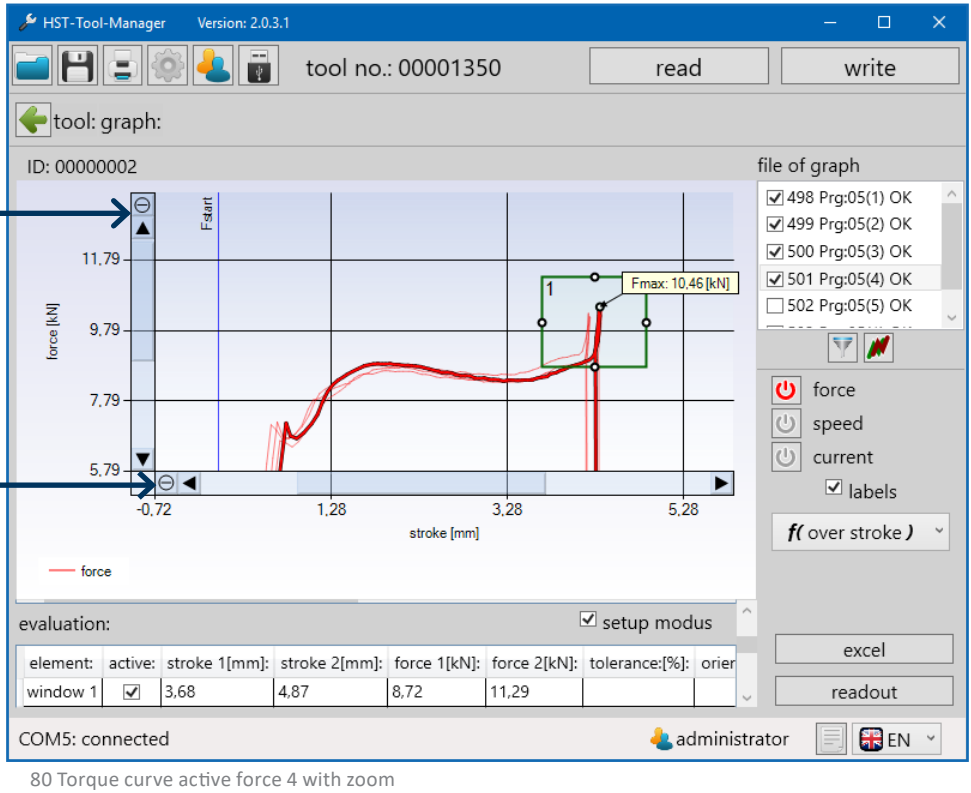
After clicking on the “excel” button, Excel will open and load the corresponding data. Then, a “save as” window in which you can define the save location for the file will open automatically. The file name, as a default, corresponds to the rivet number of the selected graphics file. These can, however,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

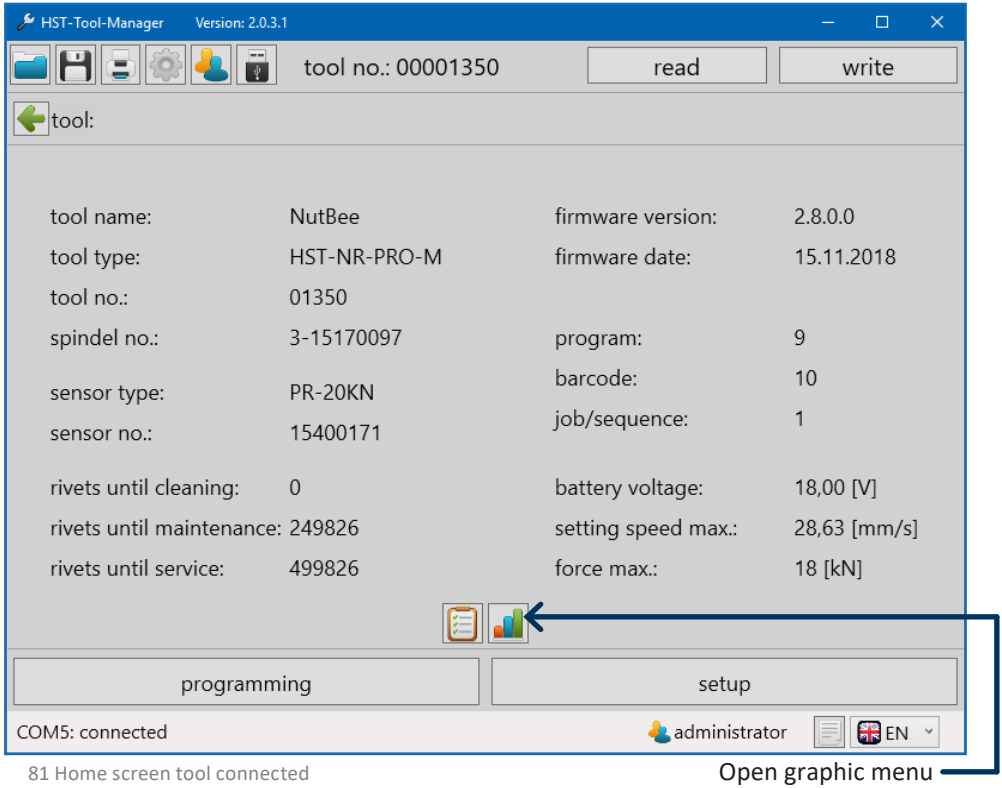
For information on how graphics are superimposed, see chapter 10.6 “adjust evaluation to reference rivets” from page 117.

10.6 ADJUST EVALUATION TO REFERENCE RIVETS

The PowerRiv® and NutBee® series tools (with the exception of the light versions) 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 104.

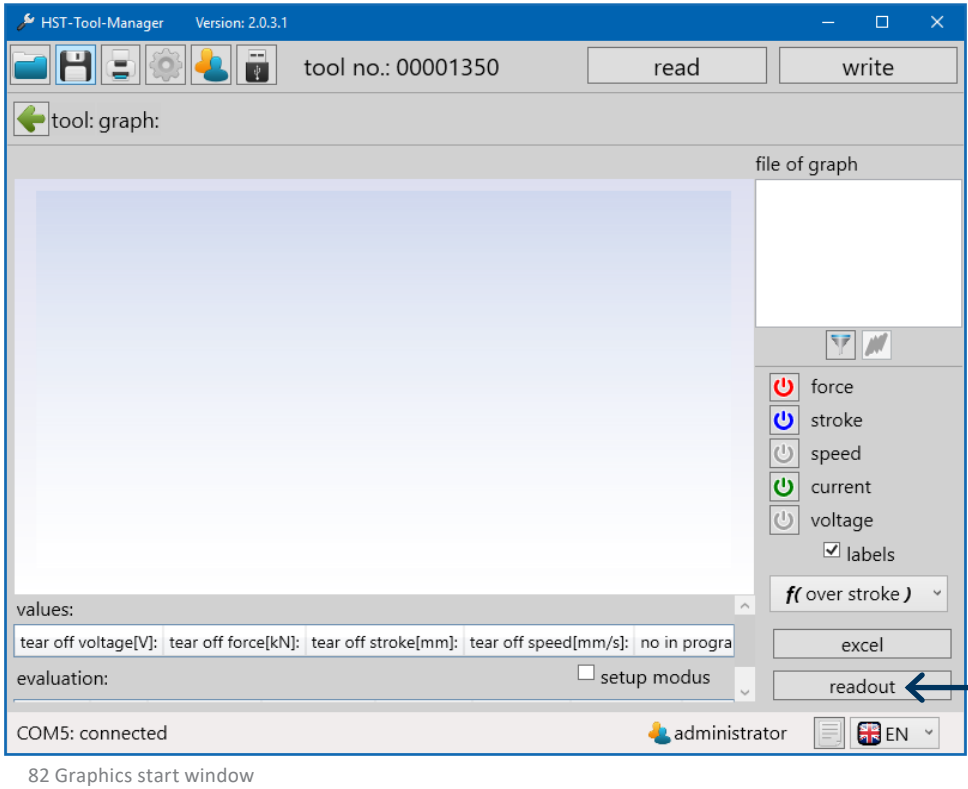
NOTICE

F_{start} must be set for an expressive evaluation, see page 64.



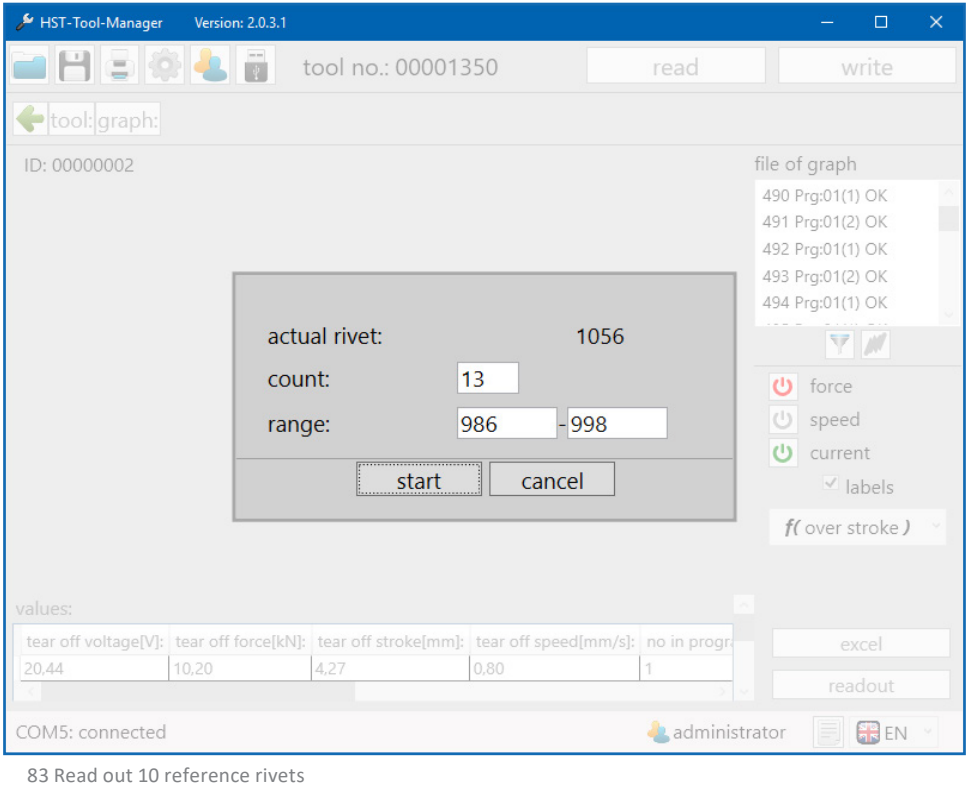
81 Home screen tool connected

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



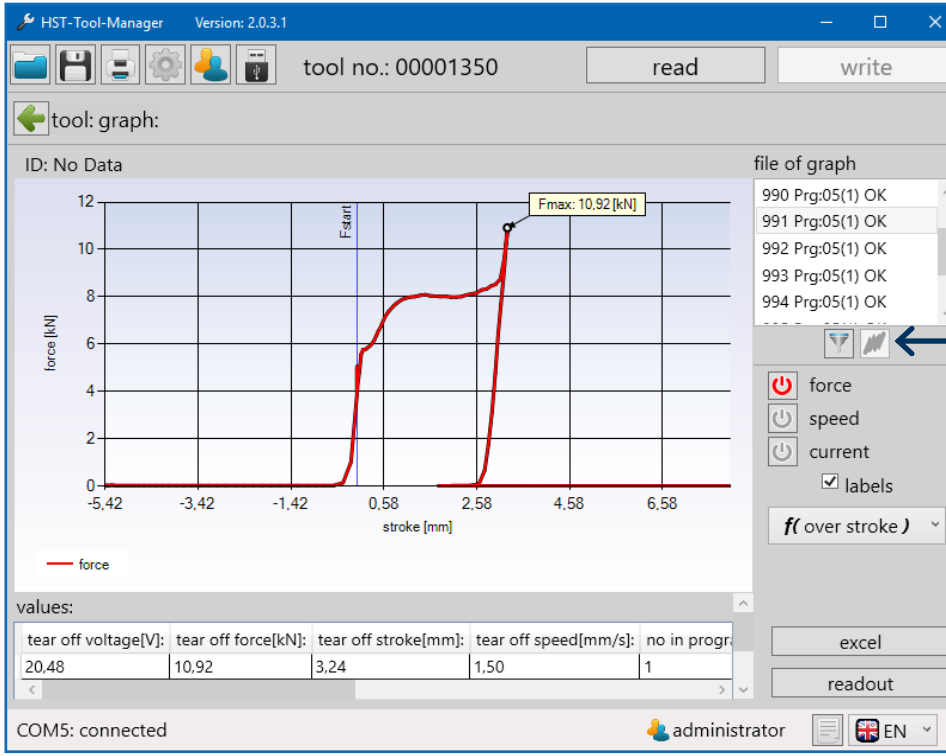
82 Graphics start window

Read out reference rivet



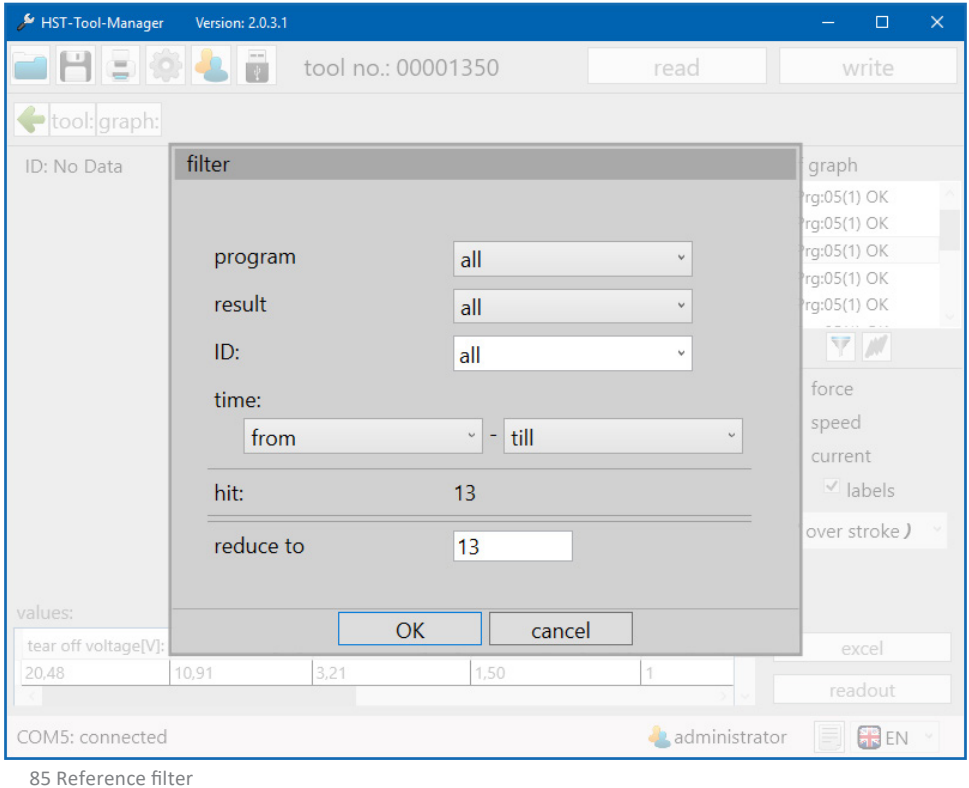
83 Read out 10 reference rivets

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

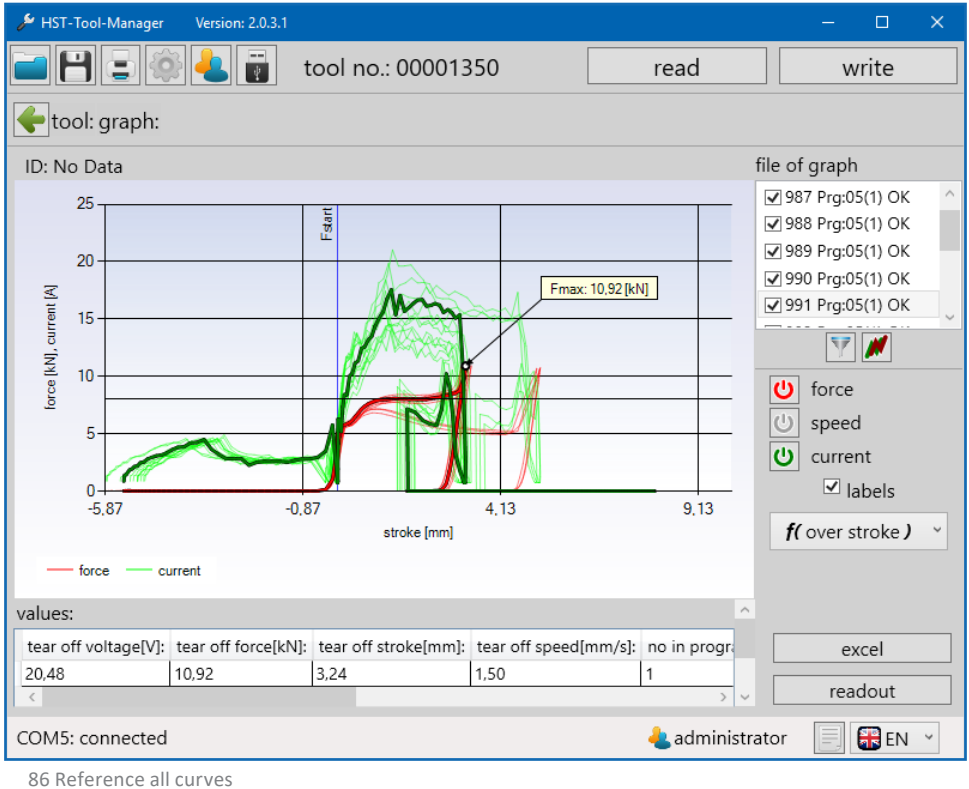


84 Graphics

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.



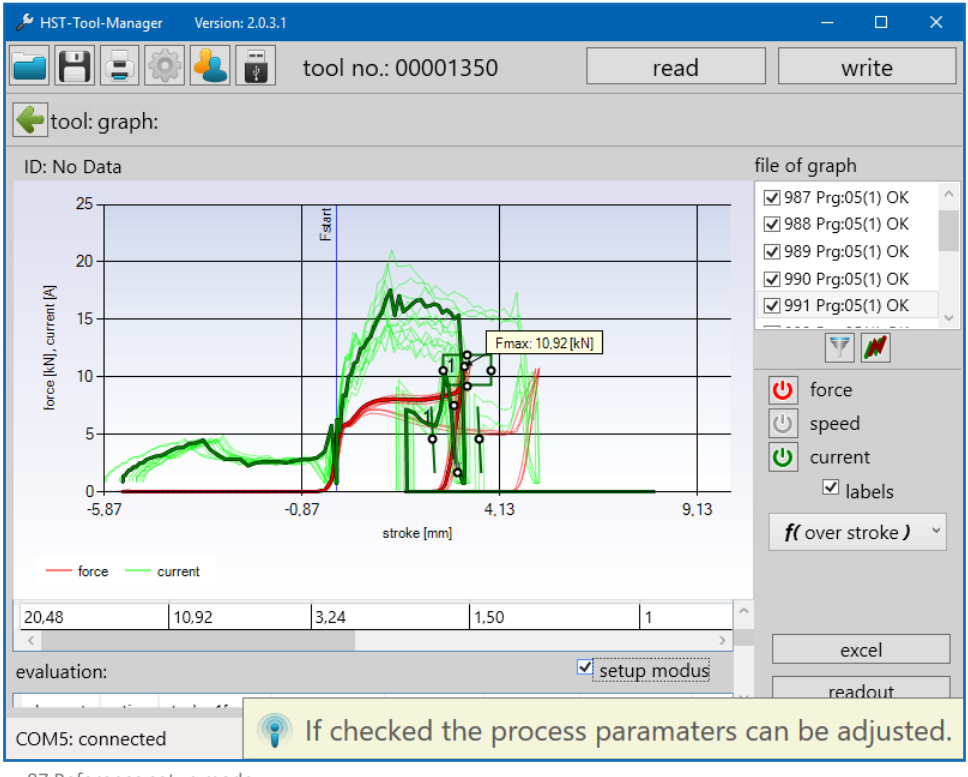
85 Reference filter



86 Reference all curves

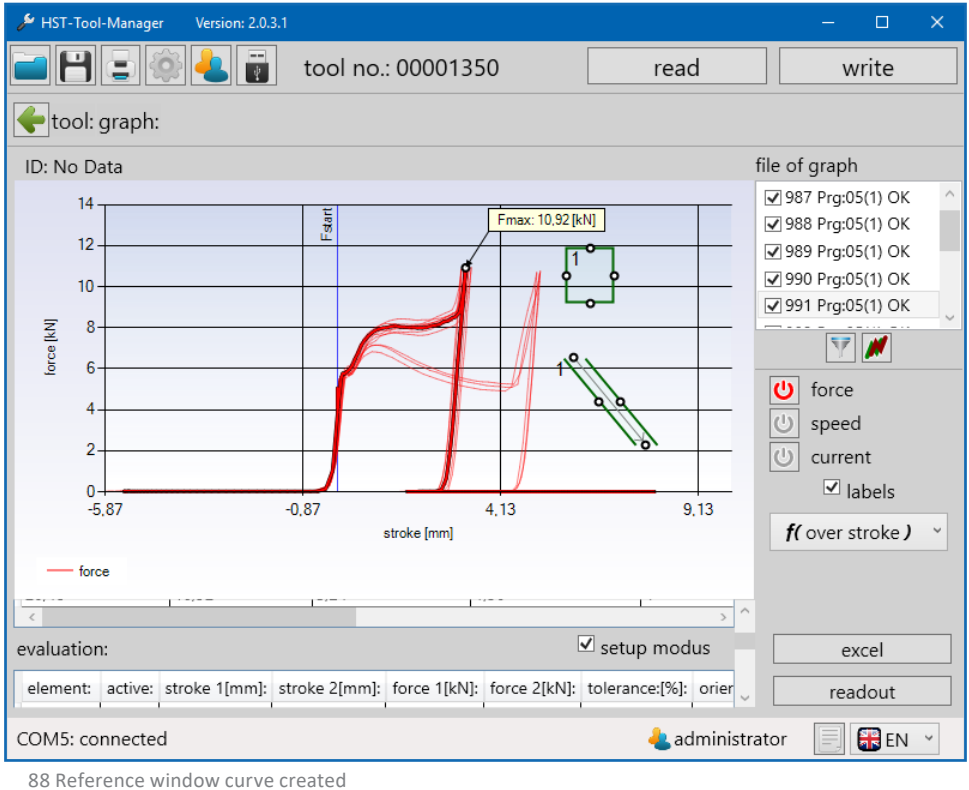
NOTICE

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



87 Reference setup mode

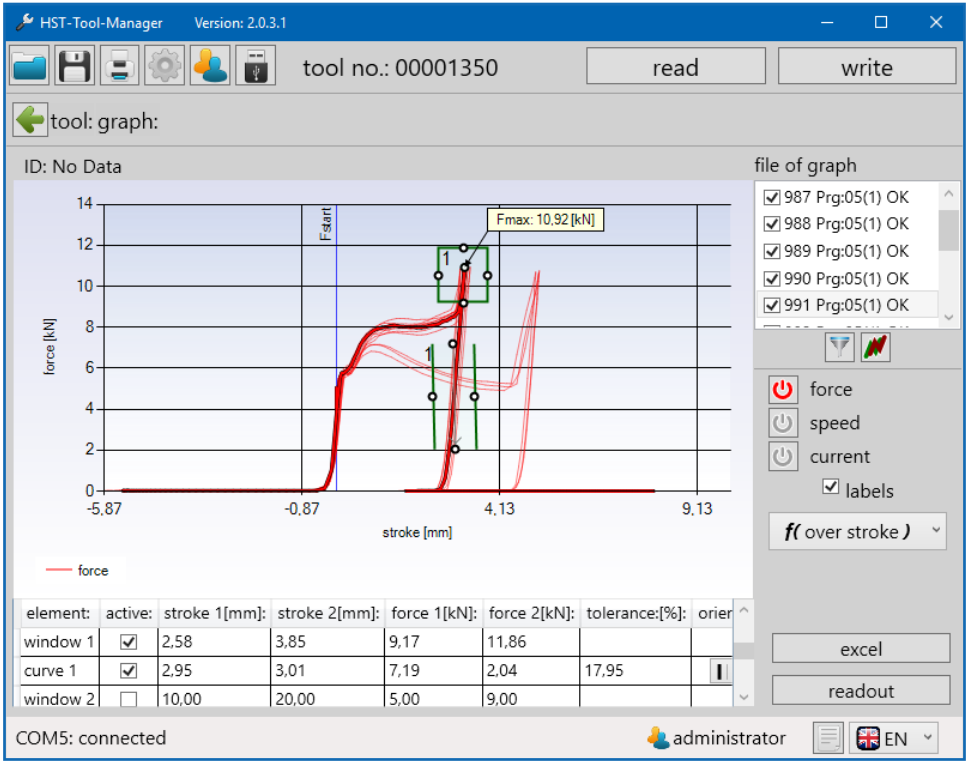
To change the thresholds of the window and curve to evaluate the riveting process, first “setup modus” must be activated. This is located below the “values” table.
Setting the checkmark in the “active” box, activates a new window and a new curve for the evaluation.



88 Reference window curve created

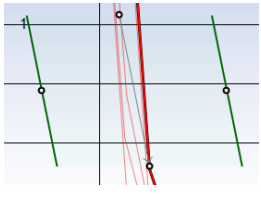
To position the window and curve, it can be moved by dragging the mouse in the graphic. Alternatively, the values can be entered directly in the respective row for the window or curve.

More information about “window” and “curve” in chapter 10.2.0 “graphics” from page 104.



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.



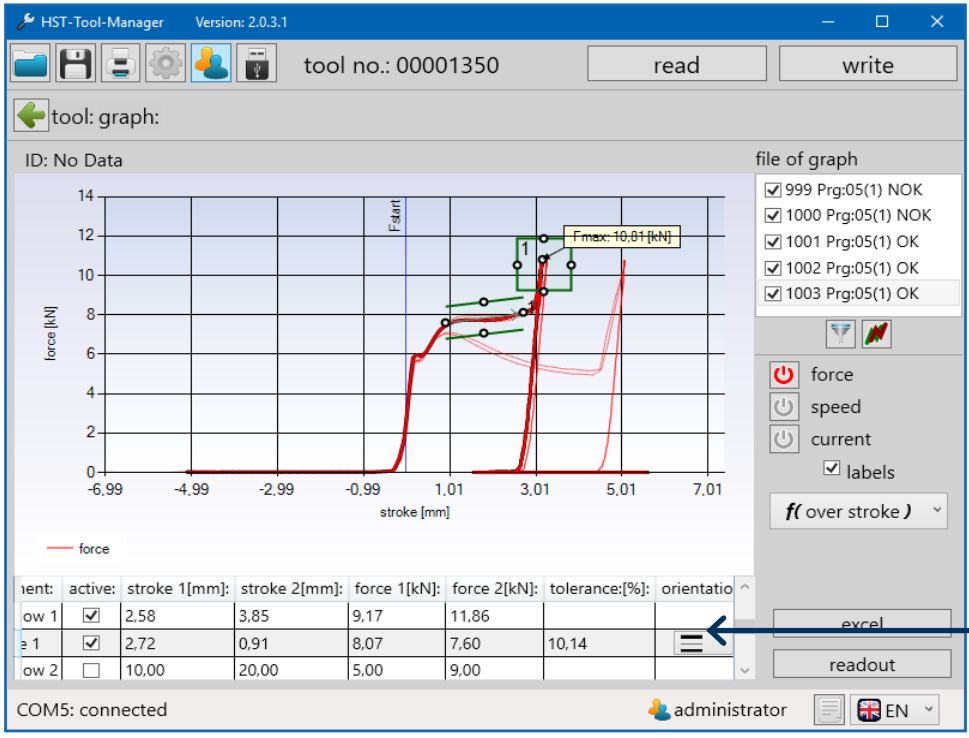
NOTICE

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.

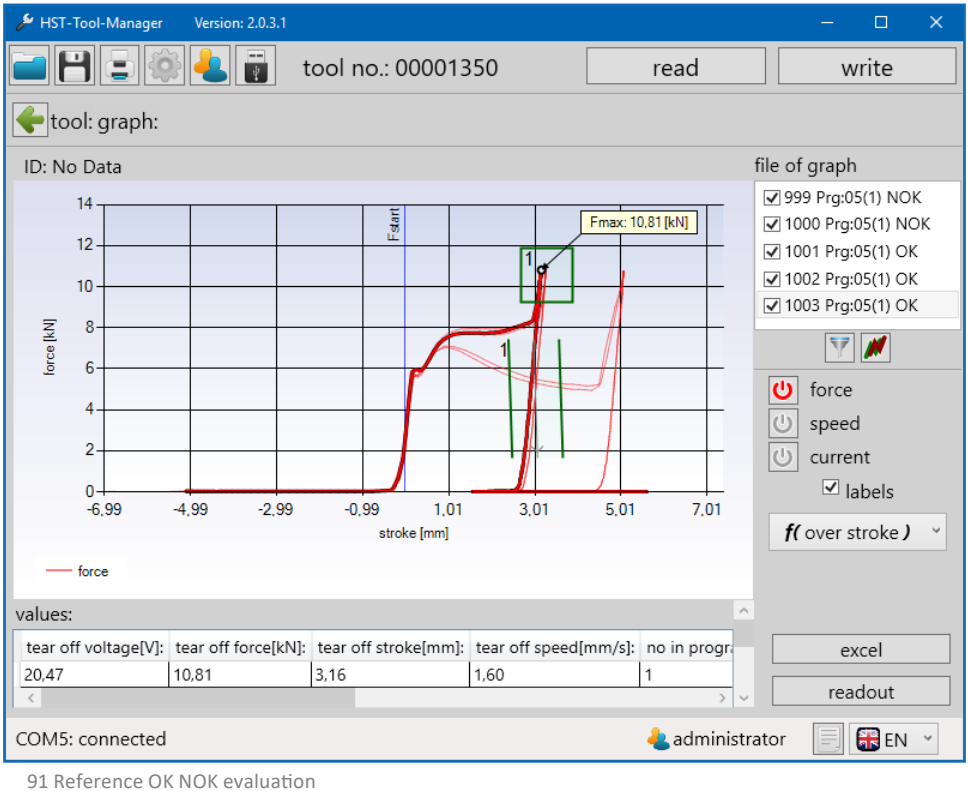
It is also possible to monitor the force progression during the riveting process with the help of a curve. For this, the orientation must be set from vertical (default) to horizontal. Then, the curve can be pulled to the desired point using the mouse or positioned directly via the table.



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.

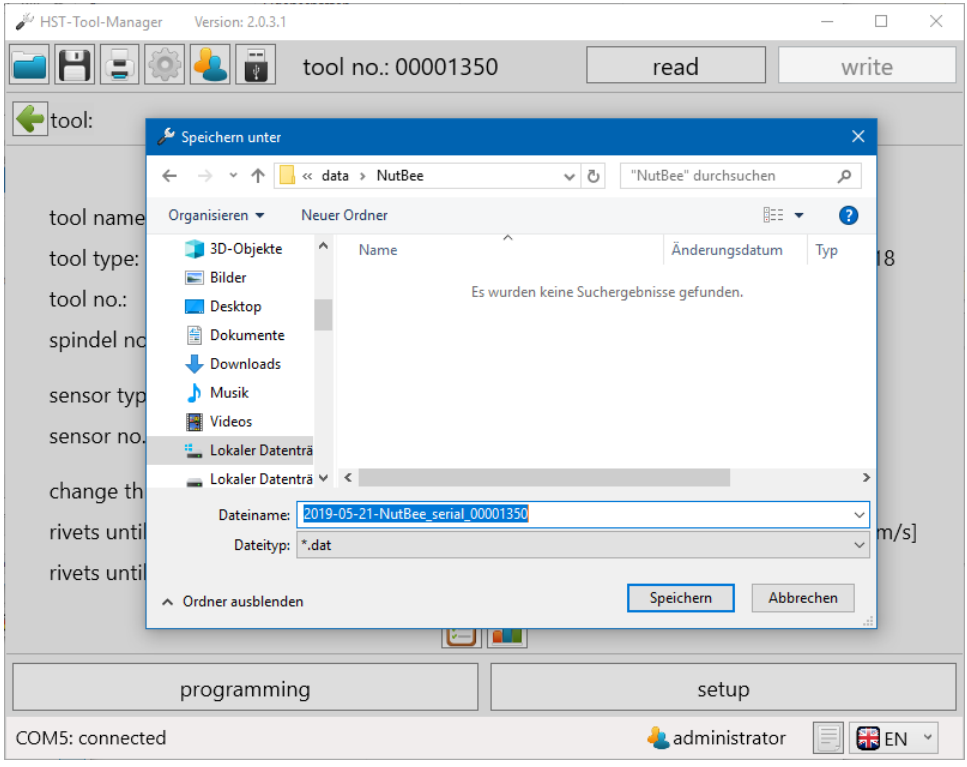
11 SAVING AND LOADING PARAMETERS

11.1 SAVE / LOAD

In the HST-Tool-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

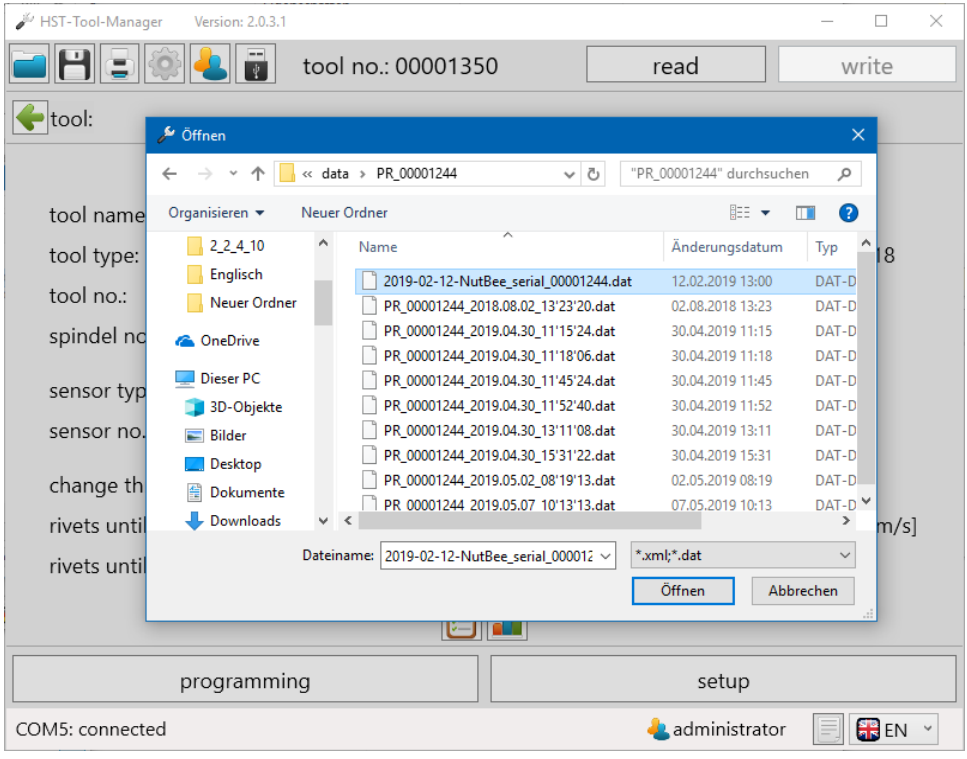
Then click on Save.

11.2 LOAD / RESTORE

The HST-Tool-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.

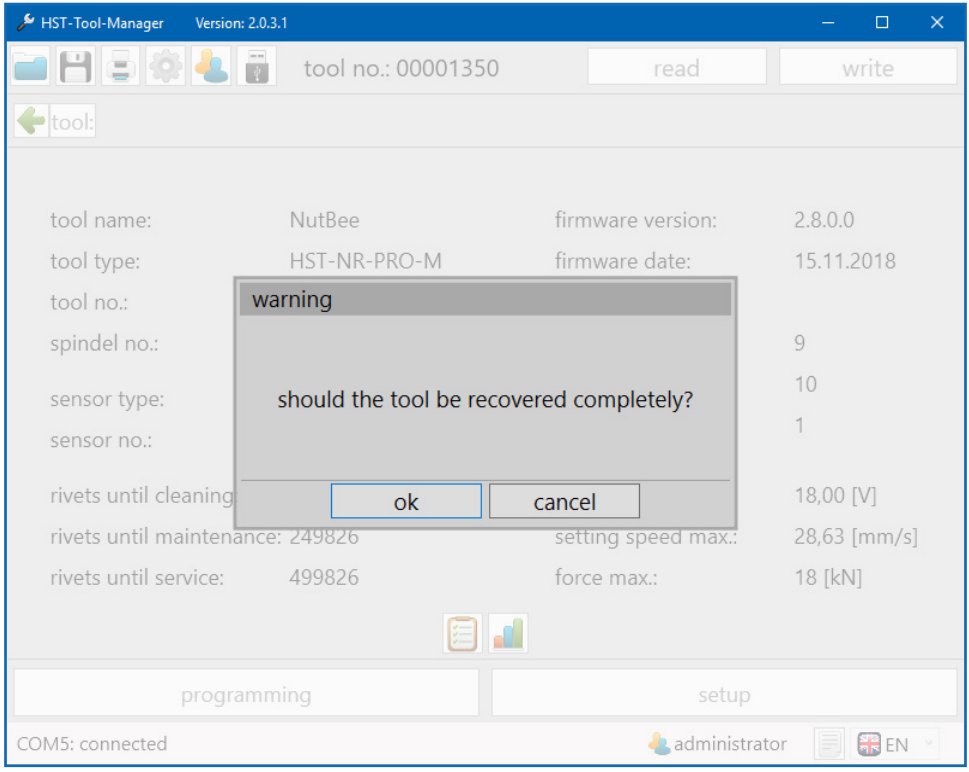
Open a file by pressing the button.

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



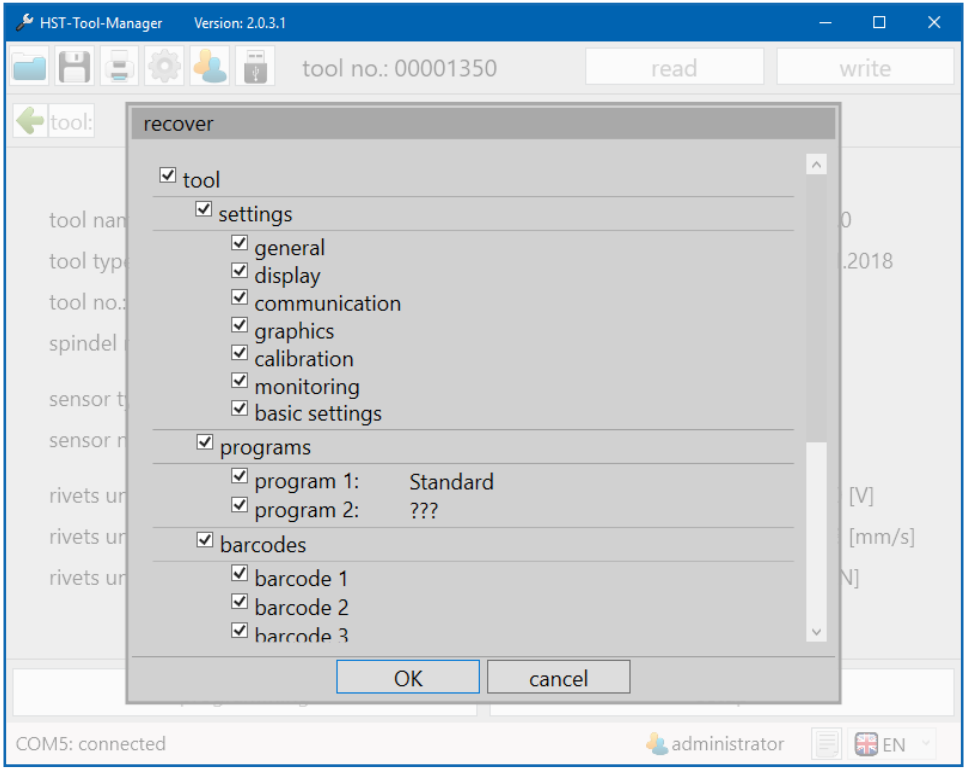
93 Open file

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 HST-Tool-Manager. Only after clicking on the “write” button will the data also be transferred to the tool. If unwanted data is loaded into the HST-Tool-Manager during the import, the actual status of the tool can be reloaded into the HST-Tool-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 NutBee® TROUBLESHOOTING

fault	cause	action
No connection to the tool	No USB cable connected	Connect the Cable to the tool and to the PC
	USB cable not properly plugged in	Check the connection
	No drivers installed	Install drivers See chapter 1 from page 7
	Firewall blocking the connection	Deactivate firewall Issue a release in the firewall
	Wi-Fi connection lost	Restore the Wi-Fi connection or wait until the tool automatically connects
Tool does not start	No program created	Setting in the program overview
	Incorrect program defined as default	Setting on the main program screen
	Incorrectly “enable over” function	Check how the tool is enabled in the settings.
Tool switches off too high	Speed too high for small or easily malleable rivet nuts	View sample programs Control spindle brake via drive
	Incorrect program activated	Setting under “The active program”
	Tool runs on force switch	Check settings Set display program to “00”
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.
	Work ratio not maintained	Display and comply with the table in the operating instructions for the NutBee®-PRO-M

Screw-on step	incorrect programming	“Stop at the end” checkmark not marked in step 1
	Contact pressure switch blocked and is thus always pressed	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 PowerRiv® TROUBLESHOOTING

fault	cause	action
No connection to the tool	No USB cable connected	Connect the Cable to the tool and to the PC
	USB cable not properly plugged in	Check the connection
	No drivers installed	Install drivers See chapter 1 from page 7
	Firewall blocking the connection	Deactivate firewall Issue a release in the firewall
	Wi-Fi connection lost	Restore the Wi-Fi connection or wait until the tool automatically connects
Tool does not start	No program created	Setting in the program overview
	Incorrect program defined as default	Setting on the main program screen
	Incorrectly “enable over” function	Check how the tool is enabled in the settings.
Tool shuts-off too high	Speed too high for small or easily malleable rivet nuts	View sample programs Control spindle brake via drive
	Incorrect program activated	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 104.
Then save the file as described.

Our support for the HST-Tool-Manager can be reached as follows:
service@hs-technik.com | Telephone: +49 (0) 7628 - 9111-57

HST201908xx

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