



Operating instructions

[incl. installation manual]

TESTit

EN

Translation of the original operating instructions

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1 General

1.1 Information about this manual

This manual enables you to work safely and efficiently with the product.

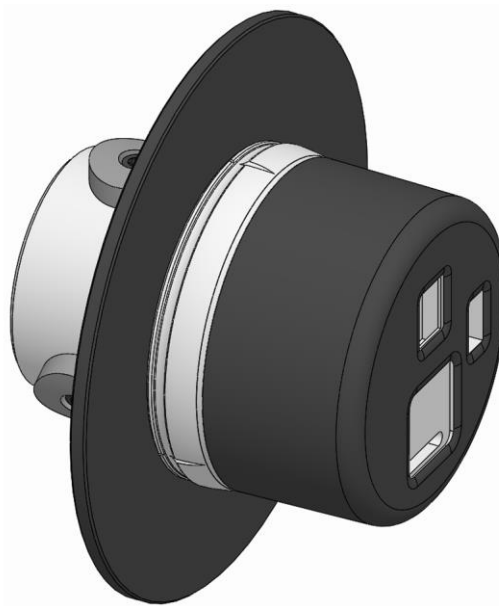
This manual is part of the product and must be kept in a location directly beside the product that is accessible to the personnel at all times. The personnel must have read this manual carefully and understood its contents before starting any work. The basic requirement for safe work is compliance with all stipulated safety notices and work-related instructions in this manual.

If the product is passed onto a third party, this manual must accompany it.

Illustrations in this manual are there to facilitate a basic understanding, and may differ from the actual design configuration of the product.

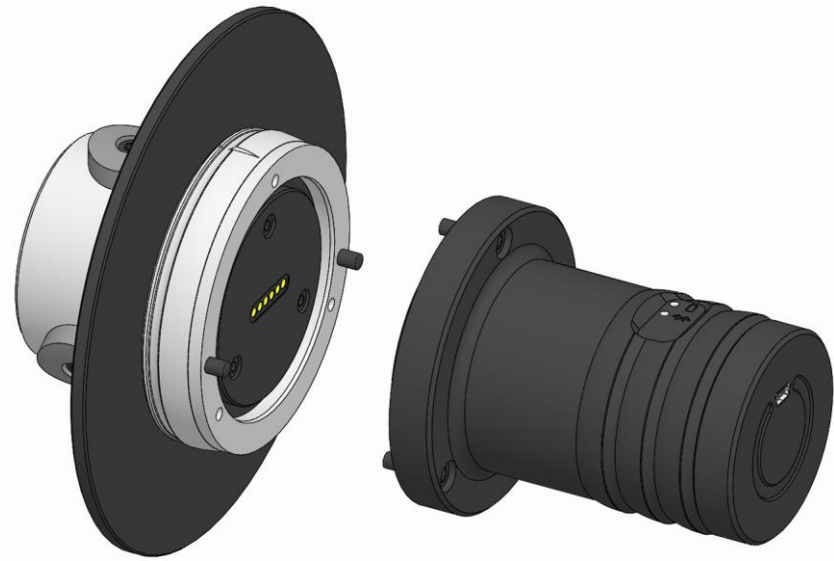
1.2 Variants

1.2.1 TESTit V1



- One-piece design.
- The electronics and the force transducer are inseparably connected.
- Communication via Bluetooth Classic.

1.2.2 TESTit V2



- Two-piece version
- The electronics »IT Module« and the force transducer »TEST Module« can be separated from each other.
- Communication via Bluetooth Low Energy [BLE].

1.3 Key to symbols

Safety instructions in this manual are designated by symbols. The safety notices are invoked by signal words that express the level of hazard involved.

Always comply with safety notices and exercise caution to avoid accidents, injury to people and damage to materials.

Safety notices



DANGER

... indicates an immediate and hazardous situation that can lead to death or serious injury if not avoided.



WARNING

... indicates a potentially hazardous situation that can lead to death or serious injury if not avoided.



CAUTION

... indicates a potentially hazardous situation that can lead to moderate or slight injuries if not avoided.



NOTE

... indicates a potentially hazardous situation that can lead to damage to materials if not avoided.

Tips and recommendations



INFORMATION

... highlights useful tips and recommendations as well as information for efficient and problem-free operation.



... refers to other documents relating to personal and general safety.

Warning symbols may appear on the product or its components.

Always pay attention to warning symbols, and exercise caution to avoid accidents, injury to people and damage to materials.



... warns of stored energy [for example involving springs].



... warns of hand injuries.



... draws attention to the fact that the operating instructions of the product must be read.

1.4 Limitation of liability

All details and notices in this manual were compiled with due reference to applicable standards and specifications, state-of-the-art technology and our many years of expertise and experience.

The manufacturer accepts no liability for damage arising from any of the following:

- Non-compliance with this manual
- Unintended use
- Use of untrained personnel
- Autonomous conversion work
- Technical modifications
- Use of non-approved spare parts
- Use of non-approved accessories

Subject to any commitments agreed to in the supplier contract, the General Terms & Conditions of Business and the delivery terms of the manufacturer and all legislative stipulations valid at the time of conclusion of this contract.

1.5 Copyright

This manual is protected by copyright, and are only intended for internal use.

The dissemination of this manual to third parties, reproductions in any shape or form - even in part - as well as commercial use and/or communication of their contents are prohibited for anything other than internal use, except with the written consent of the manufacturer.

Infringements oblige the offending party to pay compensation. Without restriction on further claims.

1.6 Scope of delivery

IT module without display device

The scope of delivery of this product includes:

- IT module [basic unit]
- USB stick with the measurement and TESTit archiving software
- Bluetooth stick
- USB charger / power adapter
- USB charging cable for the IT module
- Magnet holder
- Torx wrench
- Storage case
- The operating instructions

Additionally needed and included as optional items in the scope of delivery:

- TEST module [measuring device]

IT module with display device

The scope of delivery of this product includes:

- IT module [basic unit]
- Display device [tablet] with the measurement and TESTit archiving software
- USB charger / power adapter
- USB charging cable for tablet
- USB charging cable for the IT module
- Magnet holder
- Torx wrench
- Storage case
- The operating instructions

Additionally needed and included as optional items in the scope of delivery:

- TEST module [measuring device]

TEST module

The scope of delivery of this product includes:

- TEST module [measuring device]
- Service pass and test protocol
- Torx wrench [only for TEST module for external clamping devices]
- Storage case

Additionally needed and included as optional items in the scope of delivery:

- IT module [basic unit]
- Measuring adapter [only for TEST module for T211 mandrel and TEST module for zero point clamping system]
- Spindle flange and drawtube adapter [only for TEST module for drawtube]

1.7 Spare parts and accessories



WARNING

Serious injuries can be caused by incorrect or defective spare parts!

- Always use genuine spare parts made by the original manufacturer.



NOTE

Damage, malfunctions or total failure of the product or the machine tool caused by an incorrect or defective spare parts!

- Always use genuine spare parts made by the original manufacturer.

Spare parts and accessories can be sourced from contract dealers or directly from the manufacturer [see »Contact« chapter].

Without exception, wearing parts and components in contact with the workpiece are not covered by warranty.

1.8 Warranty terms

The warranty terms are included in the manufacturer's General Terms & Conditions of Business.



NOTE

Effect on or destruction of the preinstalled TESTit software by any system change and external influence on the display device!

- Effects such as
 - Installation of additional software
 - Software updates
 - Connection with external devices and / or a networkIs prohibited.

HAINBUCH accepts no responsibility for loss of data on the display device.

The warranty for the TEST module is one year from delivery.



NOTE

Damage, malfunctions or total failure of the product or the machine tool from incorrect or defective accessories!

- Use only the accessories included in the scope of delivery:
 - Power adapter
 - USB cable

2 Safety

This section provides an overview of all the important safety aspects for optimum protection of personnel, and for safe and problem-free operation.

2.1 Responsibility of the operator

The product is used in the industrial sector. The operator of the product is therefore governed by the provisions of Health & Safety at Work legislation.

As well as the safety notices in this manual, the area of use of the product must also comply with locally applicable safety, accident prevention and environmental protection specifications as well as those in the manual for the machine tool.

No modifications must be made to the product. The operator is wholly and solely responsible for any resultant personal injury and/or damage to materials.



INFORMATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2.2 Personnel requirements



WARNING

Serious injuries caused by incorrect handling of the product by insufficiently skilled or trained personnel!

- All activities must be performed by skilled staff from the relevant specialist field.



WARNING

Serious injuries caused by unauthorized presence of unauthorized personnel in the working area!

- Keep unauthorized people away from the working area.
- If in doubt, speak to people and direct them to leave the working area.
- Interrupt work until unauthorized people have left the working area.



NOTE

Serious damage to materials caused by incorrect handling of the product by insufficiently skilled or trained personnel!

- All activities must be performed by skilled staff from the relevant specialist field.

This manual name the following skills sets required for various different areas of activity:

Skilled specialist

Skilled specialists, due to their professional training, knowledge and experience and awareness of applicable provisions, are capable of carrying out the work entrusted to them and independently to identify and avoid potential hazards.

Hydraulics specialist

Hydraulics specialists are trained in the specific task profile for which they are employed, and are familiar with the relevant standards and legislative provisions.

Due to their vocational training and experience, hydraulics specialists can work on hydraulic systems and can independently identify and avoid potential hazards.

Pneumatics specialist

Pneumatics specialists are trained in the specific task profile for which they are employed, and are familiar with the relevant standards and legislative provisions.

Due to their vocational training and experience, pneumatics specialists can work on pneumatic systems and can independently identify and avoid potential hazards.

Electricians

Electricians are trained in the specific task profile for which they are employed, and are familiar with the relevant standards and legislative provisions.

Due to their vocational training and experience, electricians can work on electrical systems and can independently identify and avoid potential hazards.

Trainees

Trainees can only work on the machine under the supervision and direction of staff skilled in the relevant specialist field.

The only people admitted as personnel are those who can reasonably be expected to carry out their work to a reliable standard. People whose response capabilities are impaired, for example by drugs, alcohol or medication, are prohibited.

For the selection of personnel, pay attention to the stipulations applicable at the place of work governing age and specific vocational requirements.

2.3 Intended use

The measuring device is intended for measuring the force of a product in a CE-compliant machine tool.

The product is only intended for the type of use described in this manual [see »Use« chapter]. Furthermore, an extended form of use can be agreed contractually between manufacturer and operator.

Only skilled staff from the appropriate specialist fields may operate and clean the product [see »Personnel requirements« chapter].

Never exceed the technical values stipulated for the product [see »General information« and »Operating conditions« chapters].

Furthermore, never exceed the limits for use of the product [see »Limits of use« chapter].

The product must be serviced regularly [see chapter »Annual factory calibration«].

When used for its intended purpose, the operational safety of the product is assured, subject to compliance with relevant safety stipulations, to the full extent foreseeable.

Intended use also includes compliance with all stipulations in this manual.

Any form of use beyond the scope of intended use, or other forms of use of the product, is considered as misuse, and can lead to dangerous situations.



WARNING

Serious injuries caused by misuse of the product!

- Only in a CE-compliant machine tool with a separating set of guards.
- Only use for the type of use indicated [see »Use« chapter].
- Only skilled staff from the appropriate specialist fields may use the product [see »Personnel requirements« chapter].
- Never exceed the technical data indicated on the product [see »General information« and »Operating conditions« chapters].
- Never exceed the limits for use of the product [see »Limits of use« chapter].
- The product must be serviced regularly [see chapter »Annual factory calibration«].
- Only use with compatible products.



NOTE

Damage to materials caused by incorrect use of the product!

- Only in a CE-compliant machine tool with a separating set of guards.
- Only use for the type of use indicated [see »Use« chapter].
- Only skilled staff from the appropriate specialist fields may use the product [see »Personnel requirements« chapter].
- Never exceed the technical data indicated on the product [see »General information« and »Operating conditions« chapters].
- Never exceed the limits for use of the product [see »Limits of use« chapter].
- The product must be serviced regularly [see chapter »Annual factory calibration«].
- Only use with compatible products.

Claims of all kinds will be rejected that are due to unintended use.

Here are some examples of unintended use of the product

- if the product is used for unintended clamping devices.

2.4 Personal protective equipment

During work, it is essential to wear personal protective equipment to minimize the health hazards.

Always wear the required personal protective equipment when working on any given job.

Always pay attention to any notices about personal protective equipment displayed in the working area.

Always wear



Workplace clothing

Workplace clothing should be close-fitting, with low tear-resistance, narrow cuffs and no protruding parts. It serves primarily to protect the wearer from coming into contact with moving machine parts. Do not wear rings, chains or other jewelry.



Safety footwear

To protect the wearer from any heavy items that may fall, and from losing their footing on slippery ground.



Protective goggles

To protect the eyes from projectile parts and liquid splashes.



Hair net

To protect long hair from getting snagged in rotating parts on the machine tool.

Additional personal protective equipment



When carrying out certain work, additional personal protective equipment is required. Separate reference is made to this in the individual chapters of this manual. The following section explains these additional items of personal protective equipment:

Protective gloves

To protect the hands from friction, chafing, stabbing or deeper injuries and from contact with hot surfaces.



Hard hat

To protect against falling and projectile parts and materials.

2.5 Particular hazards

The following section names residual risks resulting from the installation of the product in a machine tool. In all cases, the residual risks detected during a risk assessment of the machine tool need to be named by the operator.

Pay attention to the safety instructions named here, as well as the warning notices in other chapters of these operating instructions to reduce the risk of health hazards and to prevent dangerous situations.

Sharp-edged parts



WARNING

Serious cut injuries caused by sharp-edged parts and burrs!

- All installation of individual parts must be performed by skilled staff from the relevant specialist field.
- Also wear the following items of personal protective equipment, in addition to the basic equipment:



2.6 Functionality



WARNING

Serious injuries caused by severe contamination of the product!

- Always comply with the cleaning instructions and intervals [see »Cleaning« chapter].



NOTE

Incorrect measurement results due to insufficient cleaning and service intervals.

- Always comply with the cleaning and intervals [see »Cleaning« chapter].

2.7 Environmental protection



NOTE

Substantial damage to the environment can result from non-compliant handling or incorrect disposal of environmentally hazardous substances!

- If environmentally hazardous substances enter the environment accidentally, take immediate remedial action.
- If in doubt, notify the relevant municipal authorities about the incident.

The following environmentally hazardous substances are used:

Rechargeable battery

Batteries and rechargeable batteries as well as other electronic parts and foreign materials contain toxic substances. These must not enter the environment.

Dispose of environmentally hazardous substances properly [see »Disposal« chapter].

3 Technical data

3.1 General information

TEST module for	external clamping devices [clamping force measurement]				
Size	AS 18	AS 32	AS 65	AS 65-30	AS 65-4
Clamping \varnothing	18	32	65	65	65
Max. clamping force measuring range [kN]: 4 measuring points	-	-	-	-	0-150
Max. clamping force measuring range [kN]: 3 measuring points	0-75	0-140	0-225	0-30	-
Max. clamping force measuring range [kN]: 2 measuring points	-	0-90*	0-150	0-15	0-150
Max. speed [min^{-1}]	10000	8000	6000	6000	6000
Dimensions \varnothing x length [mm]	$\varnothing 76$ x 30	$\varnothing 134$ x 28	$\varnothing 134$ x 36	$\varnothing 134$ x 36	$\varnothing 134$ x 36
Protection class	IP21	IP21	IP21	IP21	IP21

* To use size 32 with two measuring points, the flat measuring pins must be used, see chapter »Converting the TEST module«

Table 1: Technical data of TEST module for external clamping devices

TEST module for	Internal clamping devices [clamping force measurement]		
Size	IS 28	IS 50	IS 70
Clamping \varnothing	28	50	70
Max. clamping force measuring range [kN]: 3 measuring points	0-100	0-200	0-240
Max. speed [min^{-1}]	7000	7000	6000
Dimensions \varnothing x length [mm]	$\varnothing 76$ x 35	$\varnothing 76$ x 45	$\varnothing 95.5$ x 50
Protection class	IP21	IP21	IP21

Table 2: Technical data for TEST module for internal clamping devices

TEST module for	hollow tapered shanks [draw-in force]			
Size	HSK 40	HSK 50	HSK 63	HSK 100
Measuring range [kN]	0-20	0-20	0-50	0-90
Dimensions \varnothing x length [mm]	$\varnothing 76$ x 91	$\varnothing 76$ x 98	$\varnothing 76$ x 98	$\varnothing 100$ x 138.5
Protection class	IP21	IP21	IP21	IP21

Table 3: Technical data of TEST module for hollow tapered shanks

TEST module for	steep taper [draw-in force measurement]
Size	SK 40
Measuring range [kN]	0-25
Dimensions \varnothing x length [mm]	$\varnothing 76$ x 151
Protection class	IP21

Table 4: Technical data for TEST module for steep taper

TEST module for	zero point clamping systems [draw-in force measurement]
Size	ZP
Measuring range [kN]	0-35
Dimensions \varnothing x length [mm]	\varnothing 100 x 12
Protection class	IP21

Table 5: Technical data for TEST module for zero point measuring systems

TEST module for	centroteX S / centroteX AC [axial force measurement]
Size	centroteX S / centroteX AC
Measuring range [kN]	0-90
Dimensions \varnothing x length [mm]	\varnothing 224 x 153
Protection class	IP21

Table 6: Technical data for TEST module for centroteX S / centroteX AC

TEST module for	T211 mandrel [axial force measurement]
Size	ZB
Measuring range [kN]	0-70
Dimensions \varnothing x length [mm]	\varnothing 78 x 77
Protection class	IP21

Table 7: Technical data for TEST module for T211 mandrel

TEST module for	drawtube [axial force measurement]
Size	ZR
Measuring range [kN]	0-90
Dimensions \varnothing x length [mm]	$\varnothing 90$ x 69
Protection class	IP21

Table 8: Technical data for TEST module for drawtube

3.2 Performance values



NOTE

Material damage to the products use and/or to the machine tool caused by exceeding the maximum performance values!

- Do not exceed the maximum performance values [see »General information« chapter].
- On all products used, do not exceed the lowest of the maximum performance values.
- Only use product in machine tools with the same performance values.



INFORMATION

Details of maximum performance values can be found on each product.

3.3 Speed

The product is authorized for rotational operation.

The maximum speed is written on the product [maximum speed, see »General information« chapter].



DANGER

Serious injuries caused by parts being ejected centrifugally due to a non-compliant combination of several products!

- From all of the maximum speeds indicated for the combined products, always remain at the lowest of those maximum speeds.

3.4 Operating conditions

Indication	Value	Unit
Ambient temperature range	15 - 40	°C
Humidity	≤ 80	%

Table 9: Operating conditions

3.5 Type designation

The type designation is on the product and it includes the following indications:

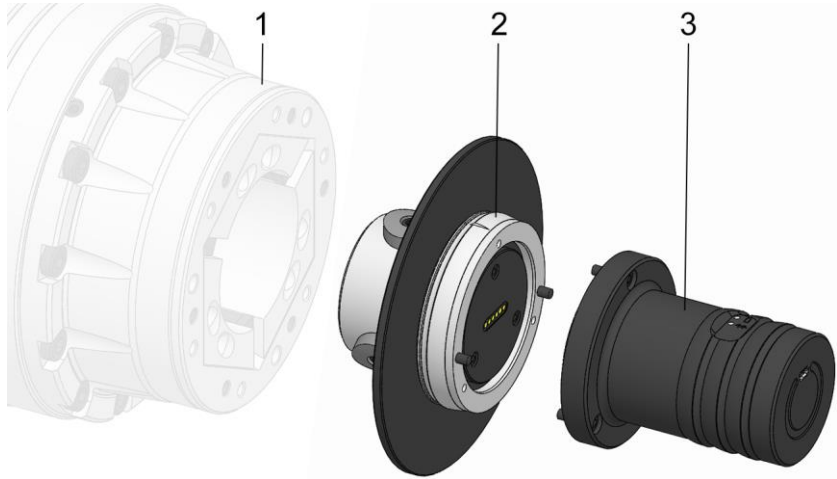
- Manufacturer
- Product designation
- ID number
- Serial number [marked with a # symbol]
- Build year
- Maximum speed n [min^{-1}]
- maximum clamping force F_{max} [kN] for the sum of all measuring points

4 Layout and function

4.1 Overview and brief description

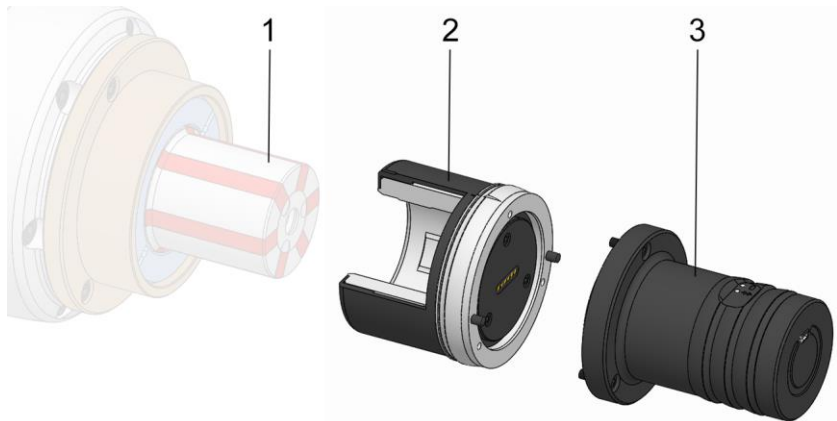
External clamping devices [clamping force measurement]

- 1 Clamping device
- 2 TEST module
- 3 IT module

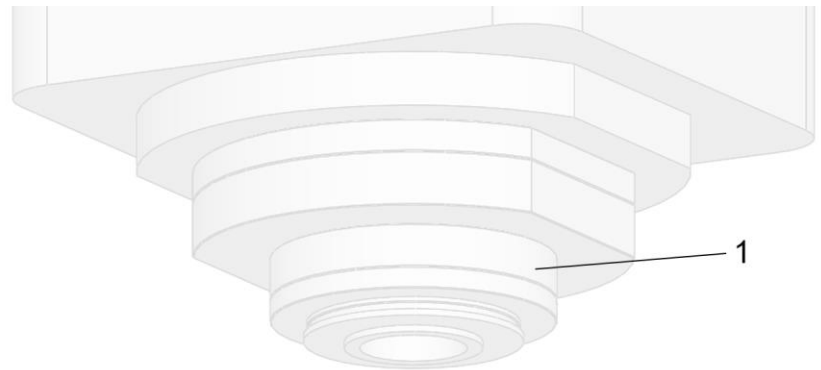


Internal clamping devices [clamping force measurement]

- 1 Clamping device
- 2 TEST module
- 3 IT module

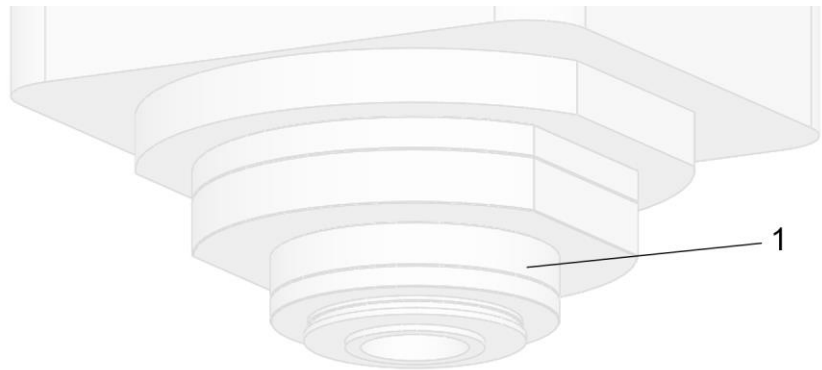


Hollow tapered shanks [draw-in force]



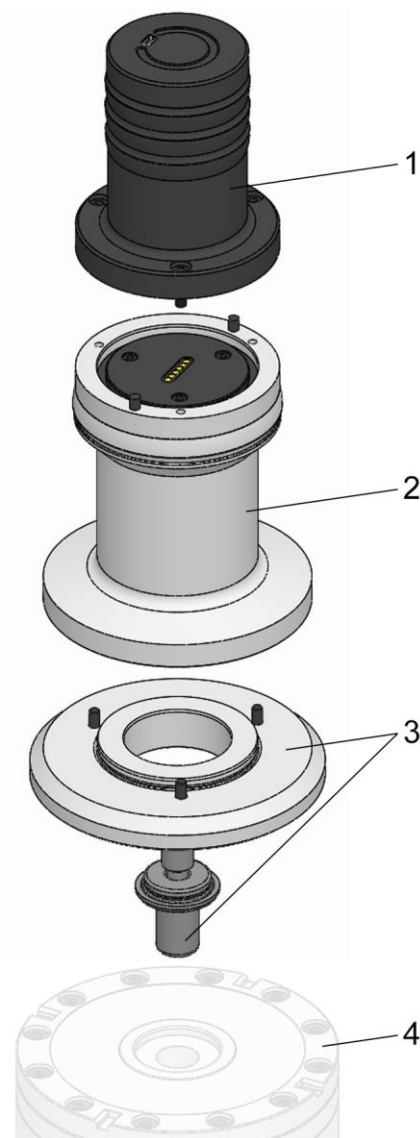
- 1 Tool holder
- 2 TEST module
- 3 IT module

Steep taper [draw-in force measurement]



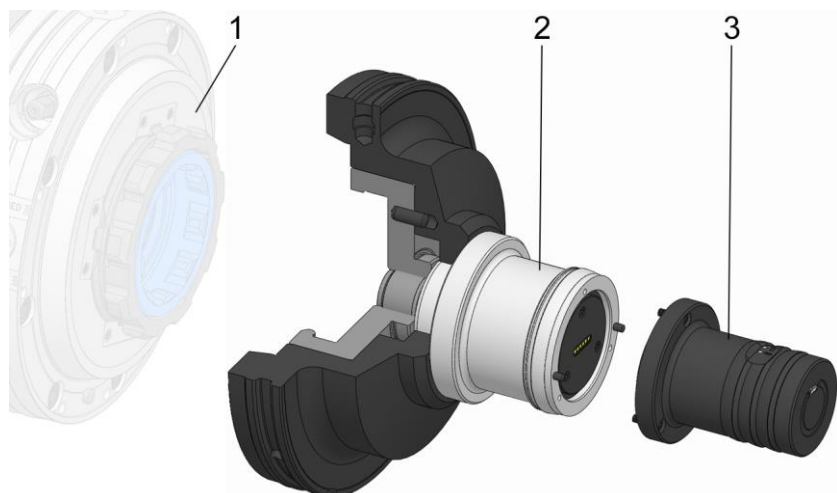
- 1 Tool holder
- 2 TEST module
- 3 IT module

Zero point clamping systems [draw-in force measurement]



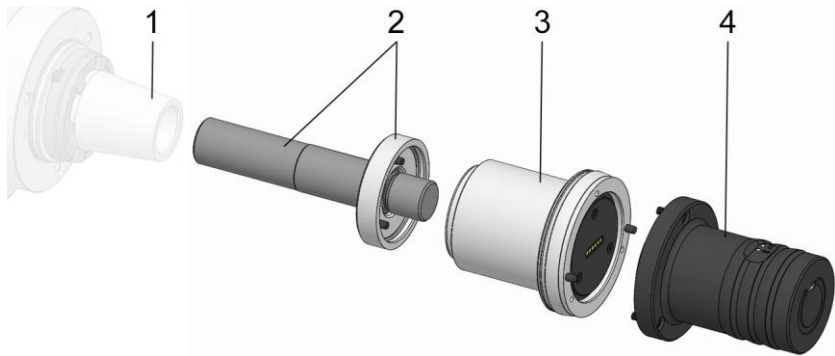
- 1 IT module
- 2 TEST module
- 3 Measuring adapter
- 4 Zero point clamping system

centroteX S / centroteX AC [axial force measurement]



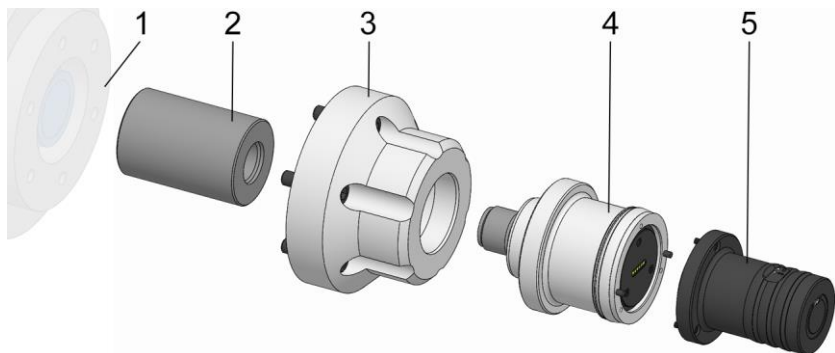
- 1 Machine adapter
- 2 TEST module
- 3 IT module

T211 mandrel [axial force measurement]



- 1 Mandrel
- 2 Measuring adapter
- 3 TEST module
- 4 IT module

Drawtube [axial force measurement]



- 1 Machine spindle
- 2 Drawtube adapter
- 3 Spindle flange
- 4 TEST module
- 5 IT module

Depending on the version, the measuring device is used to test the clamping force, the axial force or the draw-in force.

The measuring device consists of a basic unit, the IT module, and a measuring unit, the TEST module, which can be separated from each other.

The clamping device is equipped to hold the measuring device.

The measuring device is clamped by means of the clamping device.

The TEST module determines the force by means of sensors and transfers it to the IT module.

The TESTit software is designed to be used not only with the TESTit V2, but also in conjunction with the TESTit V1.

TESTit V1 devices must be taught and in this way learn the software.

TESTit V2 devices [TEST module and IT module] only need to be within radio range to connect.

The measured values are transmitted via Bluetooth Low Energy [BLE] to the output device with the installed TESTit software.

The measurement can be performed either while stationary and while rotating.

4.2 Accessories required

4.2.1 Display unit / USB stick with TESTit software

The TESTit software is already preinstalled on the display device that may be supplied.

The TESTit software, which must be installed on the display device, is on the USB stick that may be supplied.

The Bluetooth connection with the IT module is established via the internal Bluetooth interface of the display device.

4.2.2 TEST module

The TEST module is used to measure the clamping force on / in the mounted clamping device.

The TEST module is supplied in the size stated in the order. Together with the IT module, it forms a measuring device with which the actual measurement is made.

4.2.3 IT module

The IT module is used to transfer the measurement results to the TESTit software.

Together with the TEST module, it forms a measuring device with which the actual measurement is made.

4.2.4 Measuring adapter

The measuring adapter is required for measurement of the pull-in force of a zero point clamping system and for measurement of the axial force of a T211 mandrel.

The measuring adapter is used to connect the TEST module to the clamping device.

4.2.5 Spindle flange and drawtube adapter

For axial force measurement on the drawtube, a special spindle flange and a special drawtube adapter are required to connect the TEST module.

4.2.6 USB charging cable

The USB charging cable is used to charge the IT module.

While the IT module is not in use, it can be charged using the USB charging cable on the display unit or alternatively via the power adapter.

A static measurement is also possible during the charging process.

4.2.7 USB charger / power adapter

The power adapter is used to charge the IT module.

4.2.8 Storage case

The storage case is used to transport and store the TESTit components.

5 Use and limits of use

5.1 Use

The product is a measuring device that may only be used for force measurement.
Any other fields of application require the explicit approval of the manufacturer

With the help of suitable TEST modules from the manufacturer, the measuring device can rapidly be converted to suit a different measurement.

5.2 Limits of use

The measuring device is intended solely for use with smooth clamping points.

6 Transport, packaging, storage

6.1 Safety, transport, packaging, storage



WARNING

High level of physical strain due to the weight of the product or of its components if not transported properly!

- From a weight of 10 kg, use appropriate transport equipment, lifting gear and lifting tackle.



WARNING

Serious crushing injuries and breakages caused by falling parts if transported incorrectly!

- Ensure that the product cannot roll away or fall.
- Place on a non-slip surface.
- When using lifting gear, use appropriate load-bearing equipment and lifting tackle.



WARNING

Serious injuries caused by transporting off-center equipment!

- Pay attention to marks on the packaging items.
- Attach the crane hook directly above the center of gravity.
- Raise carefully and correct the lifting points if necessary.



WARNING

Serious injuries caused by incorrect transport with lifting gear!

- Never raise loads above people.
- Never step under suspended loads.
- Pay attention to information about the intended lifting points. Ensure that the lifting gear is mounted on a secure base.
- Only use authorized and undamaged lifting gear, load-bearing equipment and lifting tackle.
- Never exceed the maximum load-bearing capacity of lifting gear, load-bearing equipment and lifting tackle.



NOTE

Damage to materials caused by falling parts if transported incorrectly!

- Ensure that the product cannot roll away or fall.
- Place on a non-slip surface.
- When using lifting gear, use appropriate load-bearing equipment and lifting tackle.



NOTE

Damage to materials or total failure of the product due to improper transport!

- Transport product with extreme care.
- Never drop or otherwise subject the product to strong shocks.

6.2 Symbols on the packaging



Fragile

Designates packaging items with fragile or breakable contents.

Handle the packaging item with care. Do not drop it and protect it against collision impacts.



Keep it dry

Keep packaging items dry and protect them from the ingress of water.



Position designation

Points to the correct upright position of the packaging item.

6.3 Transport inspection

Check the delivery on receipt immediately to ensure it is complete and has not been damaged in transit.

Proceed as follows if you find any externally visible signs of damage while in transit:

- Refuse to accept the delivery, or only subject to later approval
- Make a note of the extent of damage on the transportation documents or on the delivery note of the transportation company
- Initiate a complaint



INFORMATION

Raise a complaint for every defect as soon as it is discovered. Compensation claims can only be enforced during the applicable complaint periods.

6.4 Storage



INFORMATION

The packaged items may display information relating to storage and readmission to storage that extend beyond the scope of these requirements. Pay attention to these notices.

Store packaged items under the following conditions:

- Safe for storage.
- Do not store outdoors.
- Store in a dry, dust-free place.
- Avoid exposure to aggressive media.
- Protect against direct sunlight.
- Avoid mechanical vibration.
- Storage temperature: 15 to 35°C.
- Relative humidity: Maximum 60%.

6.5 Return to storage

Return product to storage under the following conditions:

1. Clean the product [see »Cleaning« chapter].
2. The product must be stored safely in the original case.
3. For storage conditions, see the »Storage« chapter.

7 Installing and setting up the TESTit software

7.1 Installing the TESTit software

The TESTit software is offered in 2 versions:

- IT module set with display device

The software is already installed on the display device when the device is delivered.

- IT module set without display device.

The TESTit software is delivered on a USB stick when the device is delivered. The TESTit software must be installed on a suitable display device.



INFORMATION

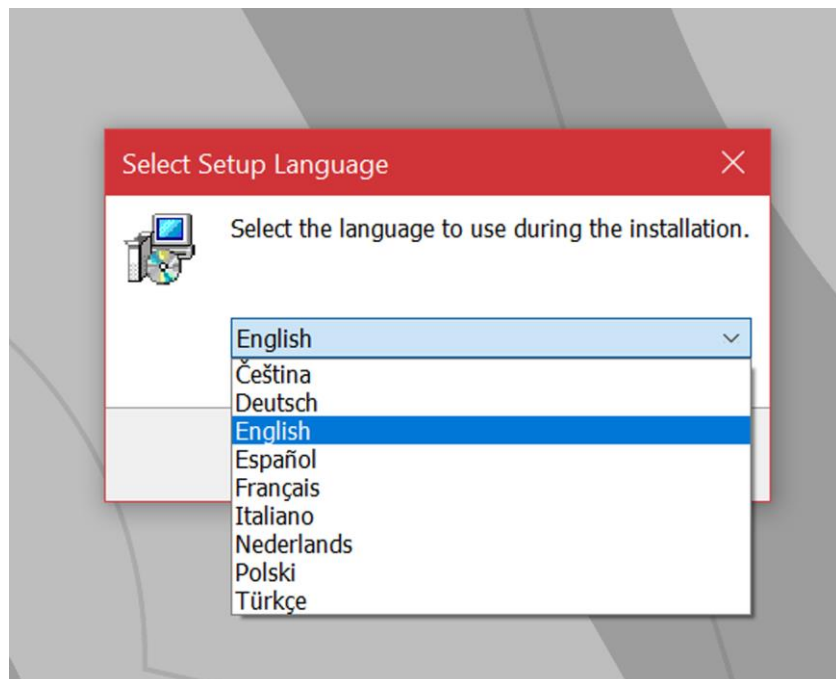
The selected display device must meet the hardware requirements of the TESTit software:

- Operating system WINDOWS 10 with version 1709 or newer [version code number must be 1709 or greater].
- Operating systems such as Android or IOS [Apple] are not compatible with TESTit software.

Installing the TESTit software

A Setup Wizard guides you through the installation process.

1. Start the »TESTit_Setup« application from the USB stick.



2. Select the language in which you want to run the Setup Wizard.
3. Confirm by pressing »OK«.

The welcome greeting appears on the screen.

TESTit

Installing and setting up the TESTit software



4. Click »Next«.

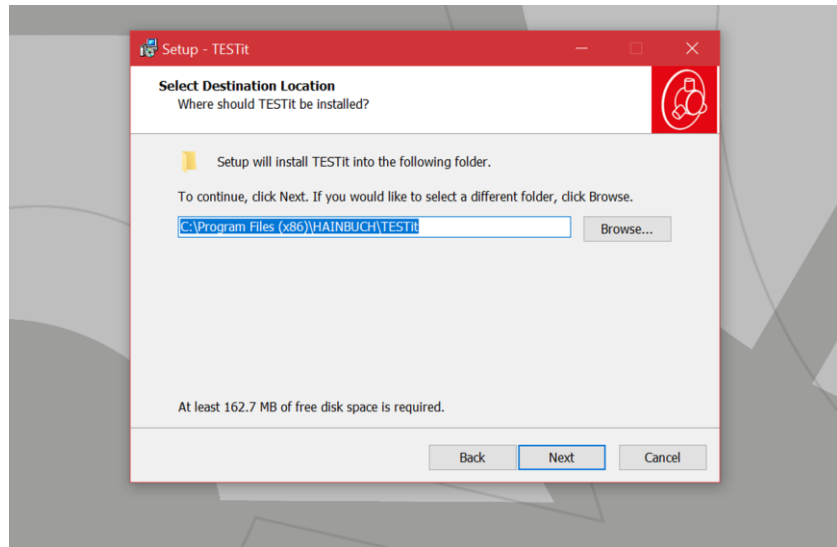


5. Accept the license agreement.

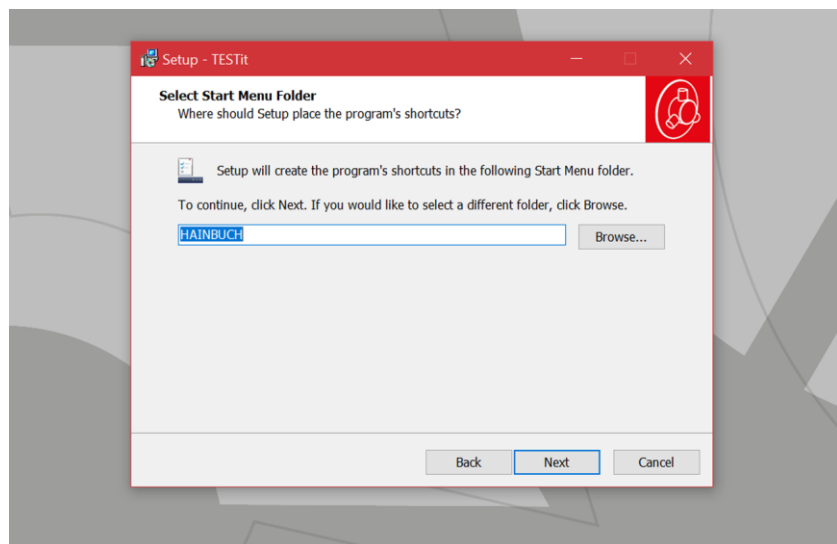
6. Click »Next«.

TESTit

Installing and setting up the TESTit software



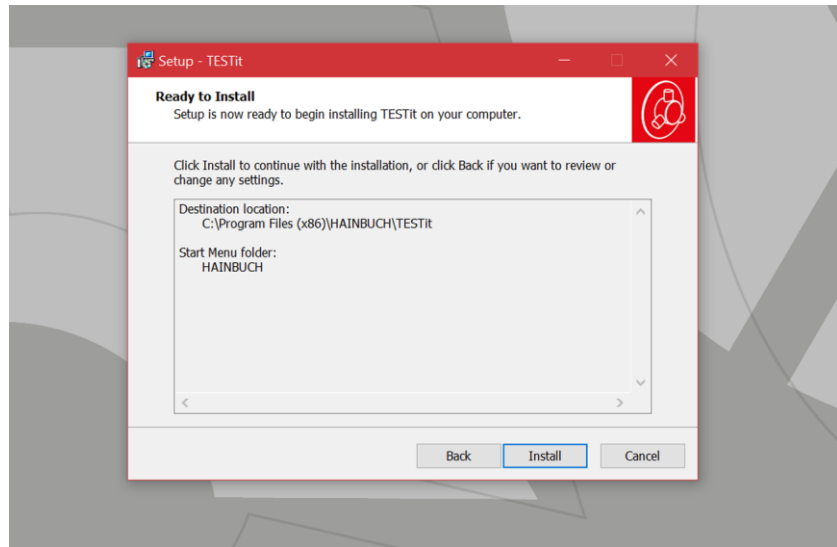
7. Select the destination folder for installation of the TESTit software.
8. Click »Next«.



9. Select the Start menu folder for the program shortcuts.
10. Click »Next«.

TESTit

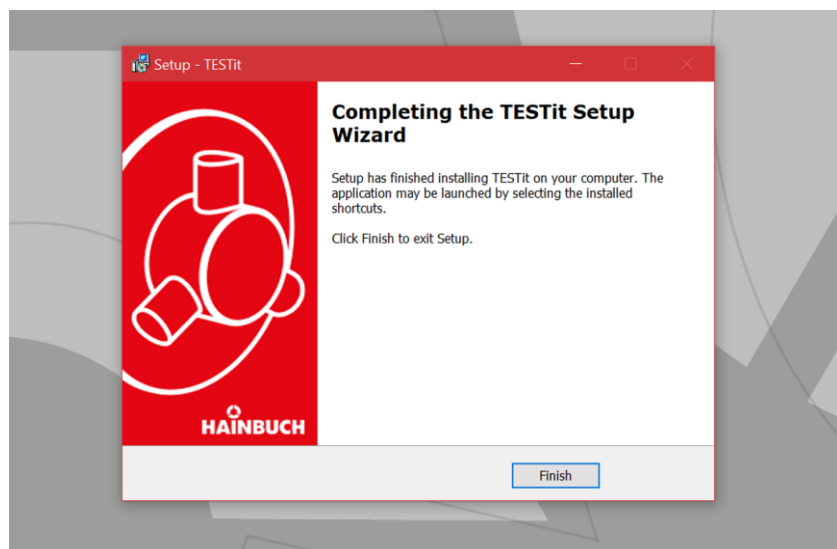
Installing and setting up the TESTit software



11. Click »Install«.

The TESTit software is being installed. Following installation, the TESTit software is started automatically.

12. Exit the TESTit software to complete the installation.



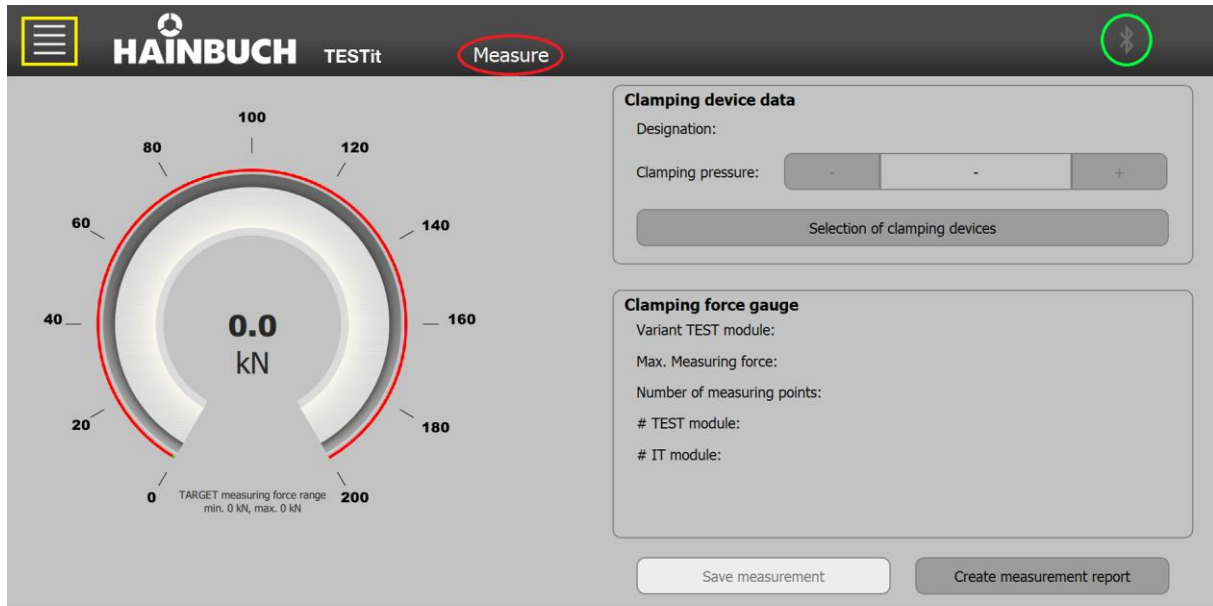
13. Click »Finish«.

The TESTit software is installed.

The TESTit software can be found in the selected Start menu folder.

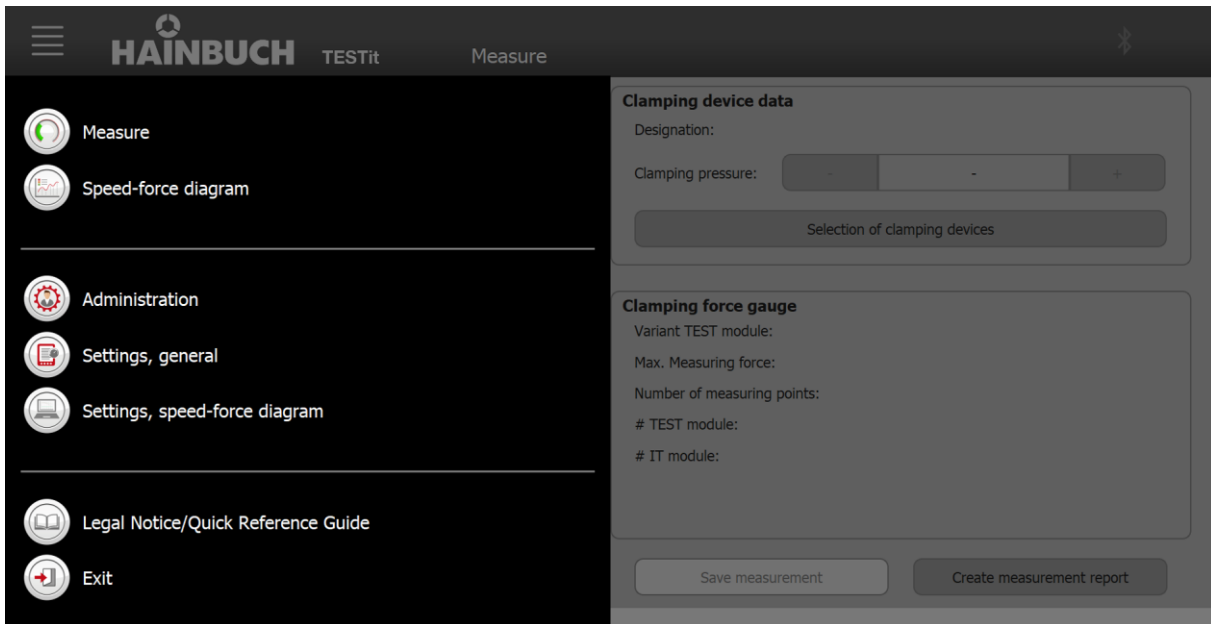
7.2 Start page of the TESTit software

After the TESTit software has been started, the »Measure« page is displayed.



- The area highlighted in yellow opens the menu.
- The area highlighted in red shows the page currently in use.
- The area highlighted in green indicates whether there is a Bluetooth connection.

7.2.1 Menu



The menu is visually divided into three areas.

- The upper area contains the pages relevant for performing a measurement.
- The middle area shows the administrative pages.
- The bottom area contains a page with help settings.

7.2.2 The Bluetooth® symbol



INFORMATION

If the customer's display device does not have an internal Bluetooth module, the Bluetooth stick included in the scope of delivery must be plugged into a USB port on the display device. The Bluetooth stick is a plug-and-play device.

The Bluetooth® symbol appears if a TESTit V2 is within range for connection or a TESTit V1 has been programmed. The Bluetooth® symbol can be displayed in different colors.

gray	There is no connection to a measuring device.
white	In combination with a rechargeable battery symbol, it indicates an existing connection to a measuring device.

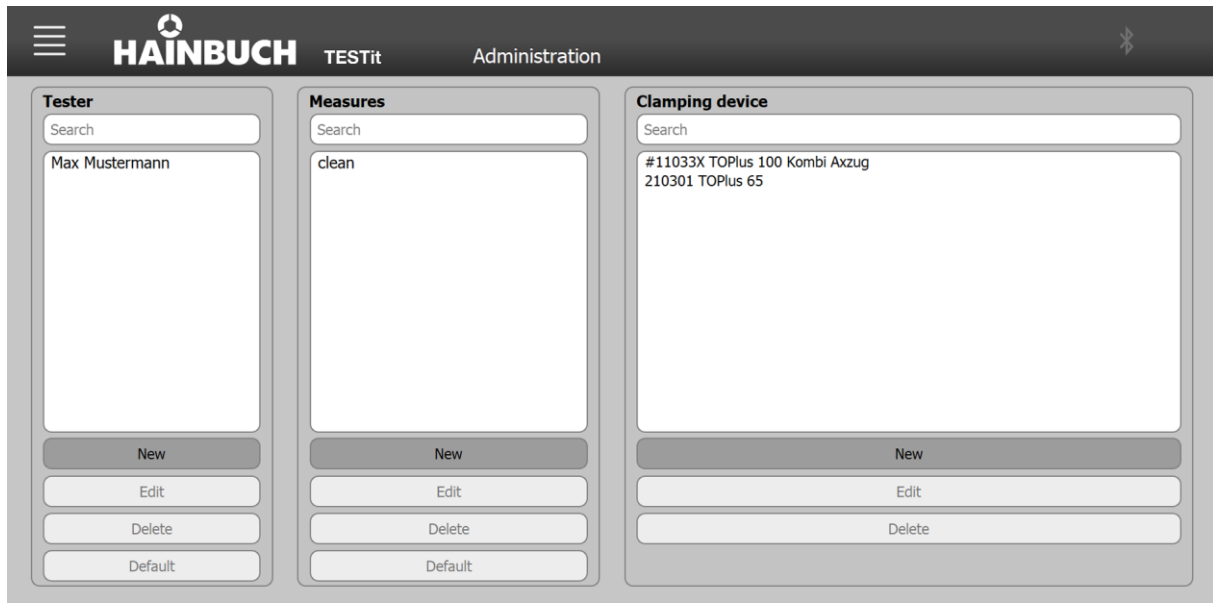
Table 10: Display colors of the Bluetooth® symbol

7.3 Administration

It is recommended that you make certain settings before using for the first time.

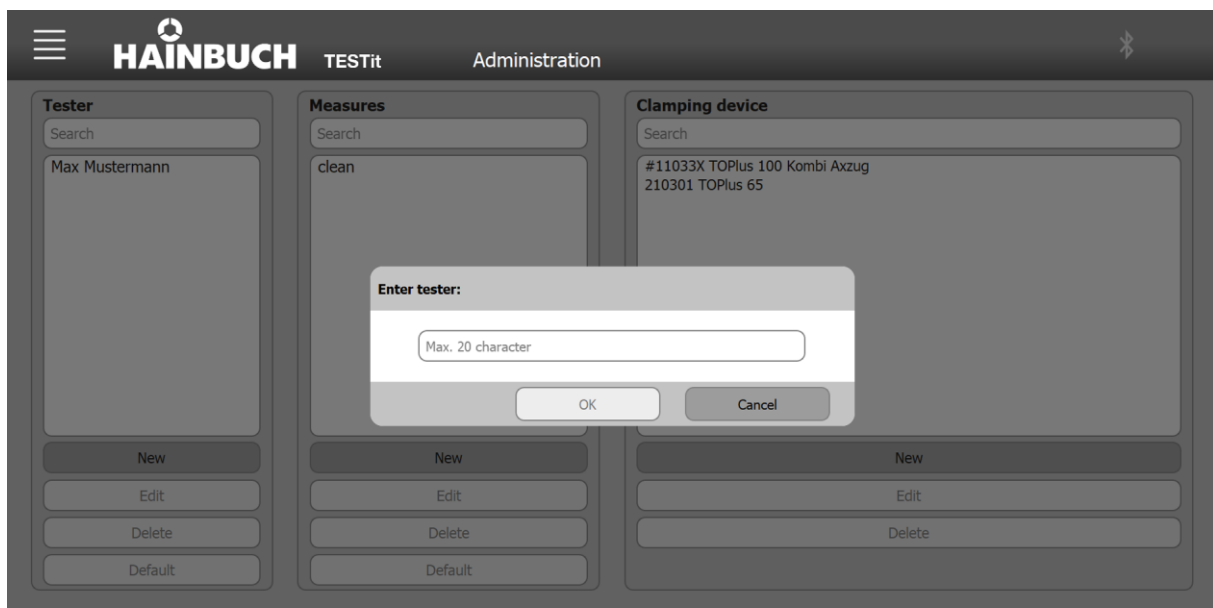
On the »Administration« it is possible to create

- Tester
- Actions
- Clamping device



7.3.1 Tester

To create a new tester:



1. Click the »New« button.

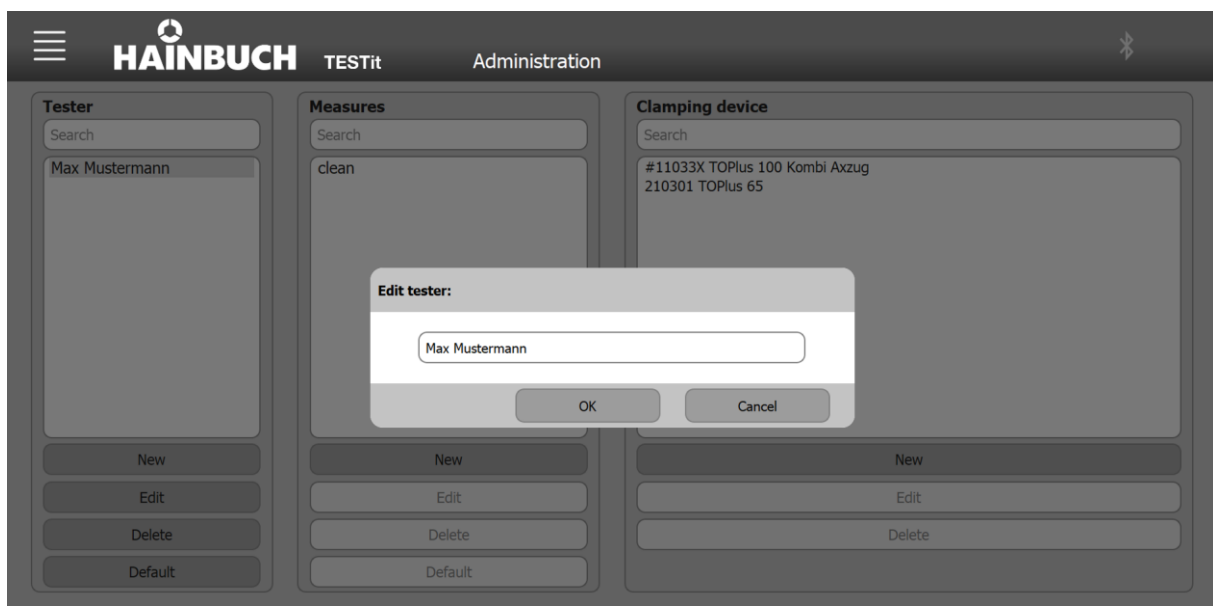


INFORMATION

The input field is limited to 20 characters.

2. Enter the name of the new tester.
3. Click »OK«.

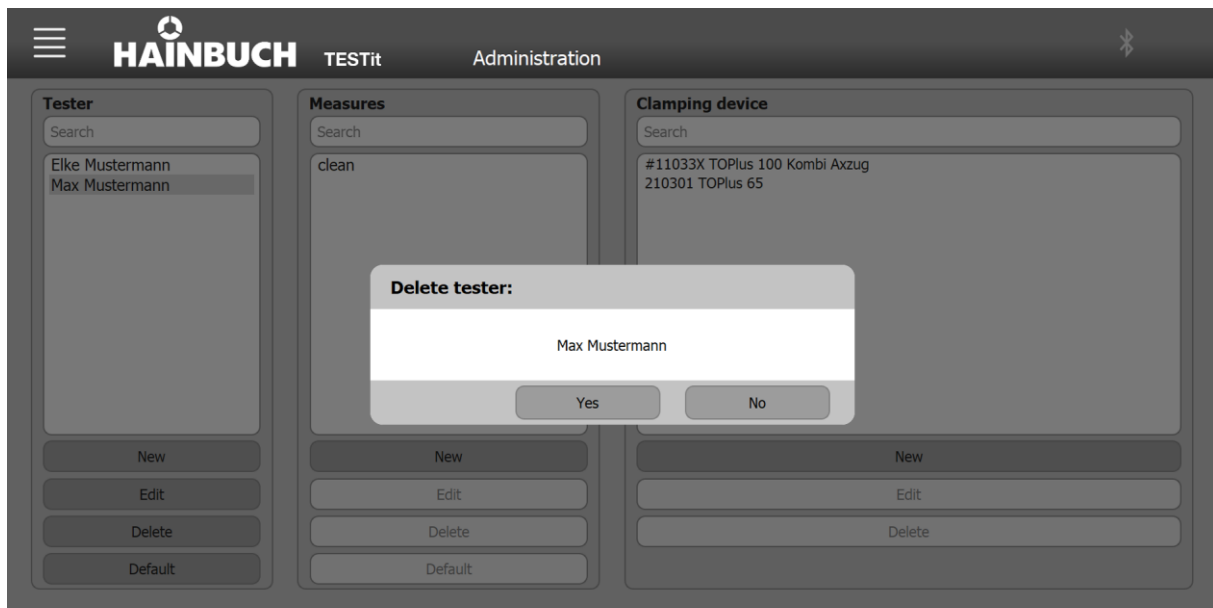
If an existing tester is selected from the list, this tester can be



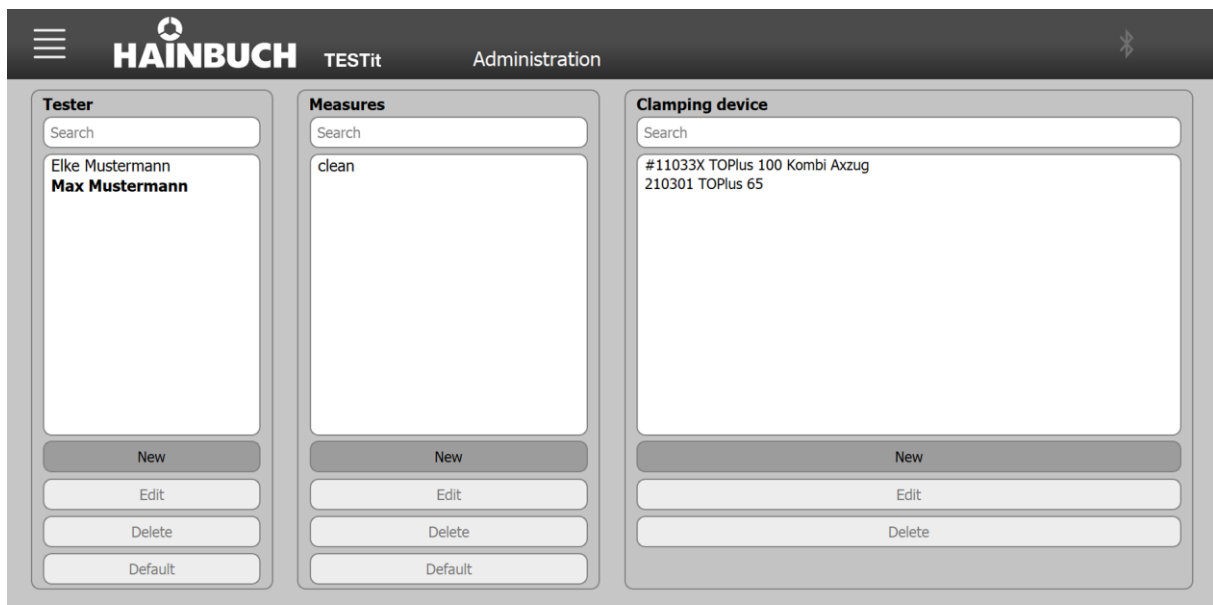
- edited

TESTit

Installing and setting up the TESTit software



- deleted



- that can be set as the default
 - A tester who is set as the default is highlighted in bold in the listing.
 - When a measurement is saved, the tester set here as the default is preset.

7.3.2 Actions

What applies to the tester also applies to the actions.

Actions can also be

- Created
- Edited
- Deleted
- Set as default

7.3.3 Clamping device

Various information and data are required to create a new clamping device.

- Name *
- ID number *
- Actuation type *
 - force-actuated [radial]
 - Maximum radial clamping force *
 - Maximum axial draw-in/pressing force *
 - Actuation pressure at maximum axial draw-in/pressing force [diagram] if power-operated*
 - force-actuated [axial]
 - Maximum axial draw-in/pressing force *
 - Actuation pressure at maximum axial draw-in/pressing force [diagram] if power-operated*
 - manually actuated [radial]
 - Maximum radial clamping force *
 - Maximum axial draw-in/pressing force *
 - Max. torque if manually actuated *
 - manually actuated [axial]
 - Maximum axial draw-in/pressing force *
 - Max. torque if manually actuated *
 - Draw-in force measurement [ZP]
 - Maximum axial draw-in/pressing force *
 - Actuation pressure at maximum axial draw-in/pressing force [diagram] if power-operated*
 - Draw-in force measurement [spring force]
- Allowed tolerance [+/-] *
- Maintenance interval
- Machine/location

* Mandatory field

To create a new clamping device:

The screenshot shows the HAINBUCH TESTit Administration interface. A dialog box titled "Enter clamping device:" is open, displaying several input fields for creating a new clamping device. The fields are:

- Designation: Max. 30 character
- ID number: Max. 20 character
- Actuating type: power operated [radial] (selected)
- Max. radial clamping force: manually operated [radial], power operated [radial] (selected), power operated [axial], manually operated [axial], pull-in force [spring force], pull-in force [ZP] (units: kN)
- Max. axial draw force/compression force: pull-in force [spring force], pull-in force [ZP] (units: kN)
- Actuating pressure at max. axial draw force / compression force [diagram]: Only numeric input possible, e.g. 30 (units: bar)
- Permissible tolerance [+/-]: Only numeric input possible, e.g. 15 (units: %)
- Time period maintenance interval: Only numeric input possible, e.g. 7 (units: Days)
- Machine/site: Max. 20 character

At the bottom of the dialog box, there are "OK" and "Cancel" buttons.

1. Click the »New« button.



INFORMATION

The input field is limited to 30 characters.

2. Enter the required data for the new clamping device correctly.
3. Click »OK«.

TESTit

Installing and setting up the TESTit software

If an existing clamping device is selected from the list, the following is possible

Edit clamping device:

Designation:	TOPlus 65
ID number:	#239874
Actuating type:	power operated [radial] ✓
Max. radial clamping force:	120.0 kN
Max. axial draw force/compression force:	45.0 kN
Actuating pressure at max. axial draw force / compression force [diagram]:	40.0 bar
Permissible tolerance [+/-]:	15.0 %
Time period maintenance interval:	14 Days
Machine/site:	Showroom

OK Cancel



INFORMATION

The ID number of the clamping device cannot be changed after it has been created.

- edited

Delete clamping device:

210301 TOPlus 65

Yes No

The background interface shows three panels: 'Tester' (Elke Mustermann, Max Mustermann), 'Measures' (clean), and 'Clamping device' (#11033X TOPlus 100 Kombi Axzug, 210301 TOPlus 65). Each panel has 'New', 'Edit', 'Delete', and 'Default' buttons.

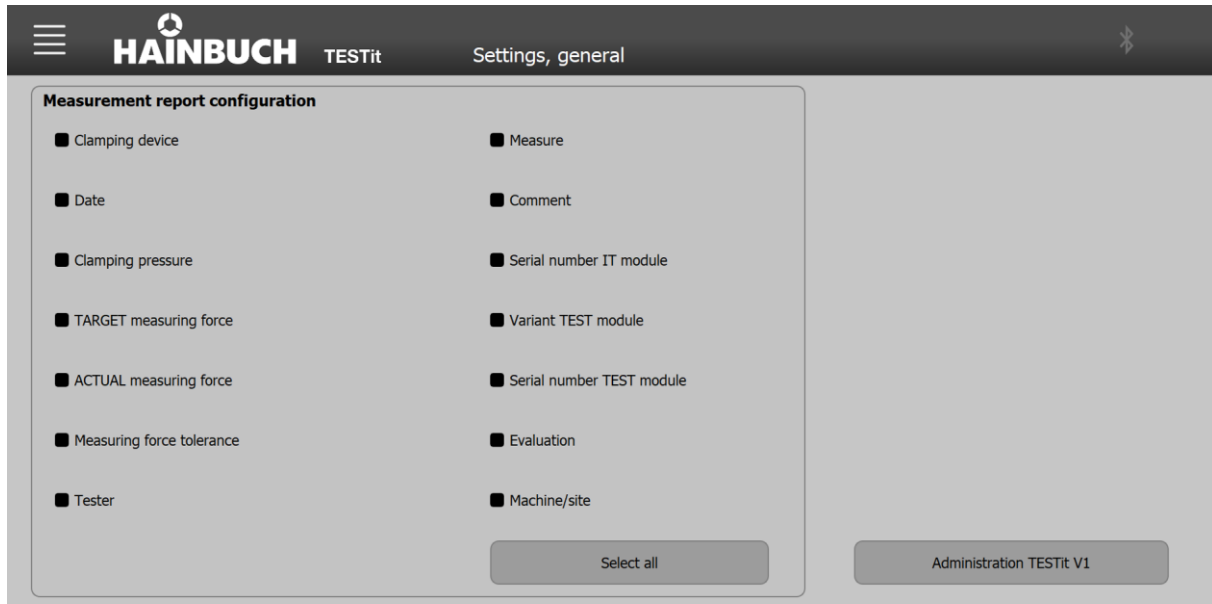
- deleted

7.4 General settings

The following functions are available on the »General Settings« page:

- Settings for configuring the measurement protocol
- Managing the TESTit V1 devices

7.4.1 Configuring the measurement protocol



The configuration page can be used to select all the information to be provided on the measurement report.

Selected information is indicated by a solid box.

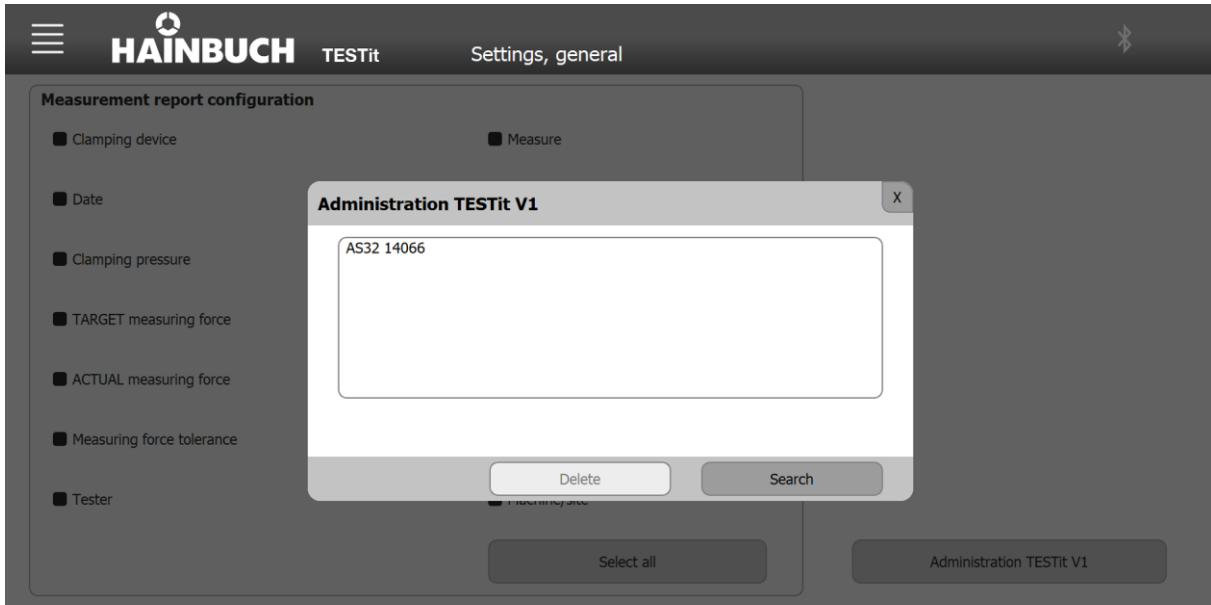
Information that is not selected is indicated by an empty box.

Information that you do not want can be deselected.

7.4.2 Managing the TESTit V1 devices

The TESTit V2 software is compatible with the TESTit V1 devices.

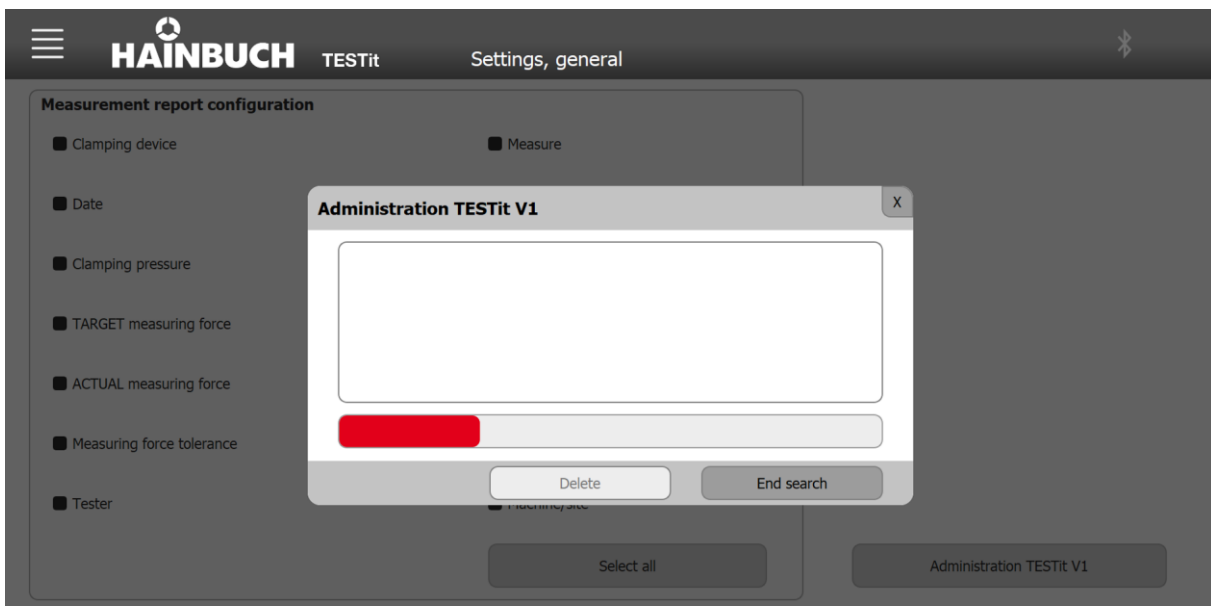
The »Administration TESTit V1« button can be used to manage the TESTit V1 devices.



When the »Search« button is pressed, the system searches for TESTit V1 devices that are switched on and within range. A red progress bar is displayed during the search.

If a TESTit V1 device is found, it is automatically taught and listed.

During the search for TESTit V1 devices, the function of the right button changes from »Search« to »Stop search«.



The search can be ended temporarily by clicking »Stop search«.

Taught TESTit V1 devices can be deleted by means of the »Delete« button.

7.5 Speed/force diagram settings

The appearance of the diagrams/curves to be generated can be customized.

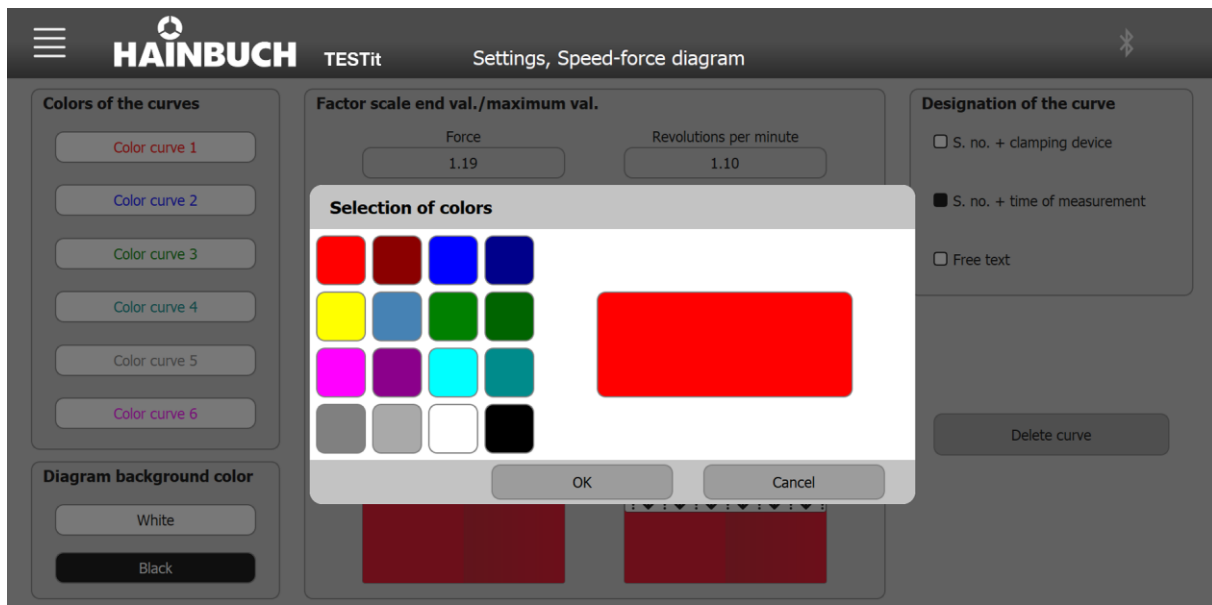
The following adjustments are possible:

- Color of the curve and curve background
- Maximum values of the X and Y axes
- Name of the curve

7.5.1 Customizing the colors of the curves

The colors of the curves and the curve background can be customized.

Clicking on the relevant field opens a window where the new color is selected.



7.5.2 Customizing the background color of the diagram

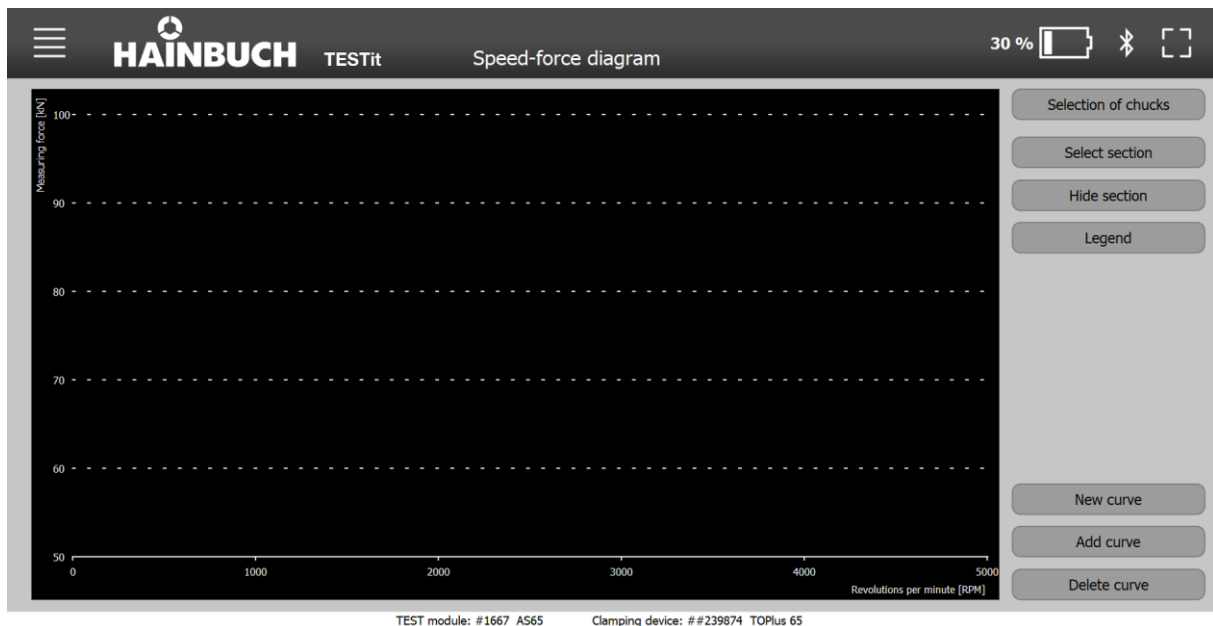
The color of the selected field can be adjusted by clicking on the respective colored button and confirming with »OK«.

The background of the diagram can be set to white or black. A white background with black font is the default setting. However, the background of the diagram can be changed to a black background with white font by clicking the »Black« button.

The background of the curves in the »Colors of curves« area changes, depending on the selected background color of the diagram. This is used to preview the selected curve colors on the respective background color selected.

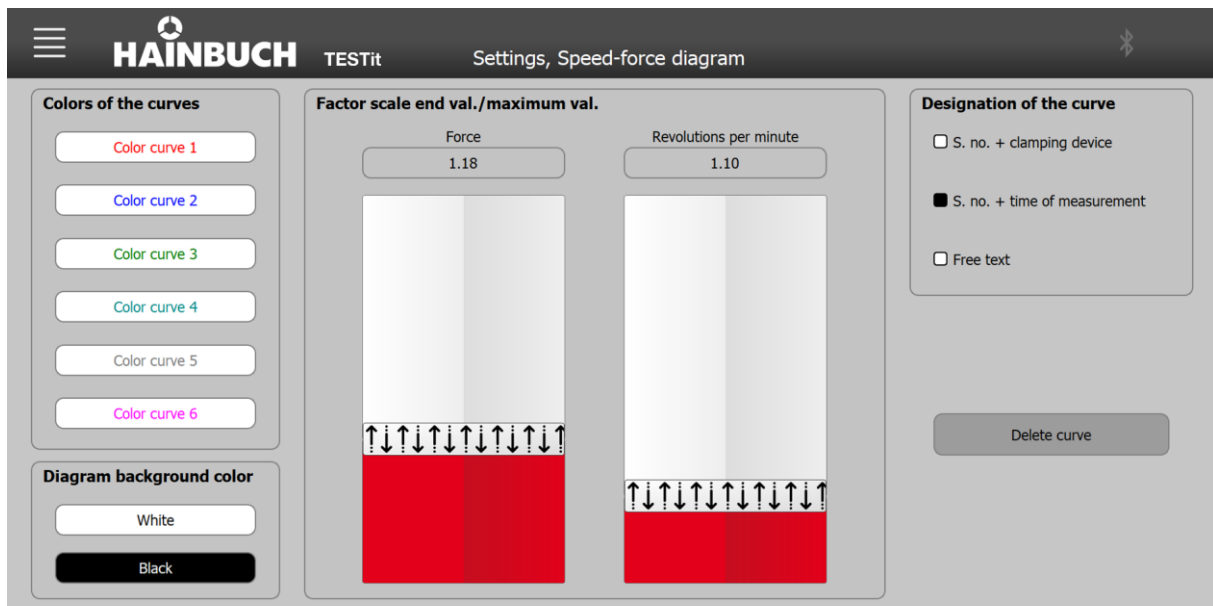
TESTit

Installing and setting up the TESTit software



7.5.3 Customizing the scale values / maximum values factor

Two sliders are displayed in the area for the scale values / maximum values factor.



These controls can be used to change the maximum value for the force and speed to be displayed.

The controller shows the maximum values in percent/100.

The value 1 corresponds to 100%, the value 1.05 corresponds to 105%.

If a new centrifugal force curve is recorded under »Speed/force diagram« or an already saved centrifugal force curve is added to the diagram, the maximum values for the force and speed of the diagram are determined on the basis of set factor.

The maximum measuring force value in a centrifugal force curve is multiplied by the set factor and then serves as the maximum value for scaling the diagram.

If several curves are now added, the curve with the maximum measuring force value is always used to scale the diagram.

The same procedure is used for scaling the speed.

These settings are the basic settings.

Example

- Maximum measuring force value $F_{\max.\text{Messkraft}} = 71\text{kN}$
- The set factor for force is $Faktor_{\text{Kraft}} = 1.05$

The maximum force value displayed by the speed / force diagram is calculated as follows:

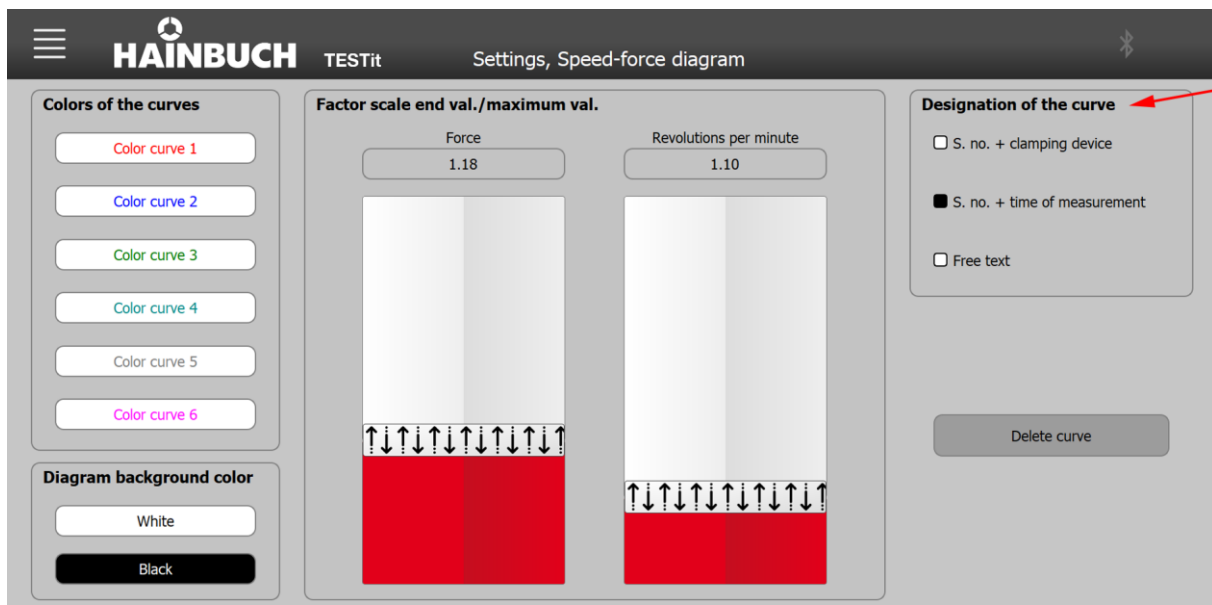
$$F_{\max.\text{Diagramm}} = F_{\max.\text{Messkraft}} * Faktor_{\text{Kraft}}$$

$$F_{\max.\text{Diagramm}} = 71\text{kN} * 1.05 = 74.55\text{kN} \approx 75\text{kN}$$

Specifically, the factor indicates that the graph shows a 5% larger value.

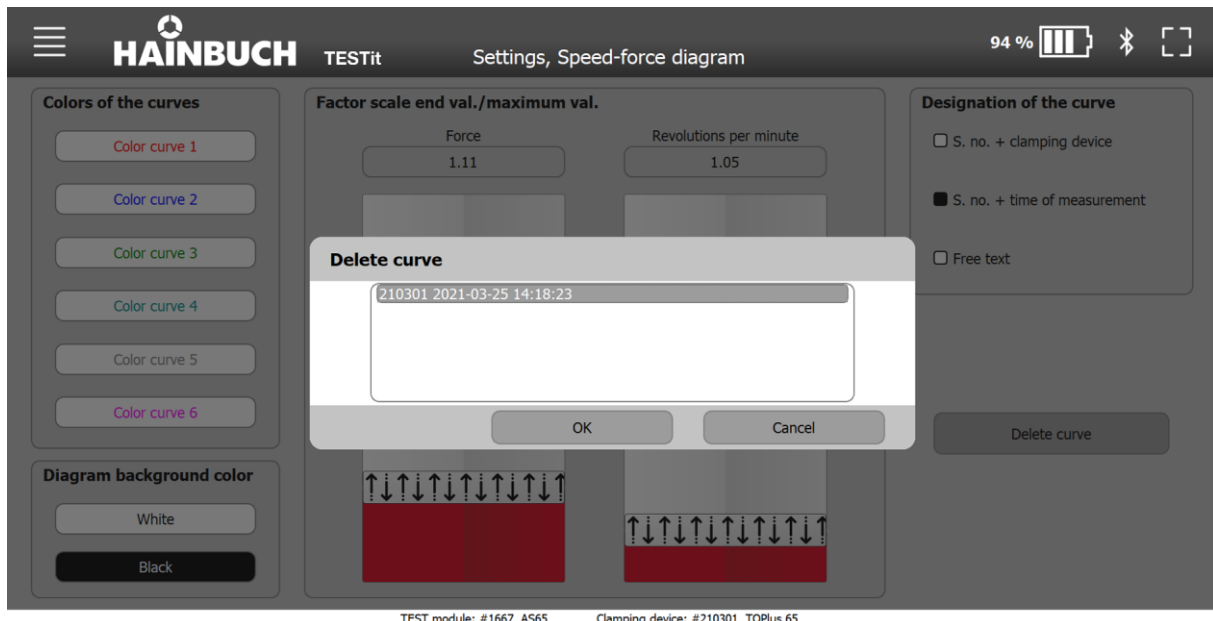
7.5.4 Customizing the name of the curve

In the settings you select which form of the name is to be used for the curve. The selected name of the curve is indicated by a solid box.



7.5.5 Delete curve button

Clicking on the »Delete curve« button opens a window where a saved curve can be deleted from the database.



Selecting the corresponding curve and clicking on »Delete« removes the curve from the database.

7.6 Language selection

The language setting for the TESTit software is set via the language of the Windows 10 operating system. This means that on an English operating system, the TESTit software will also be English.

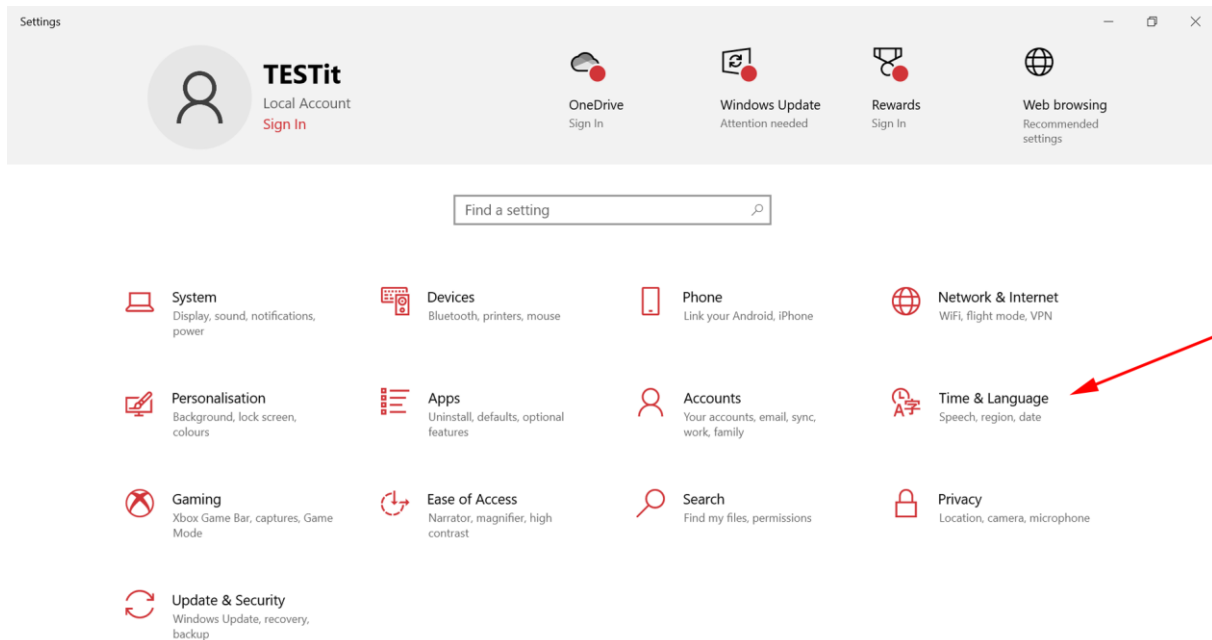
If the operating system is set to a language that is not present in the TESTit software, the TESTit software is displayed in English by default.

The language settings in Windows 10 are discussed in the following.

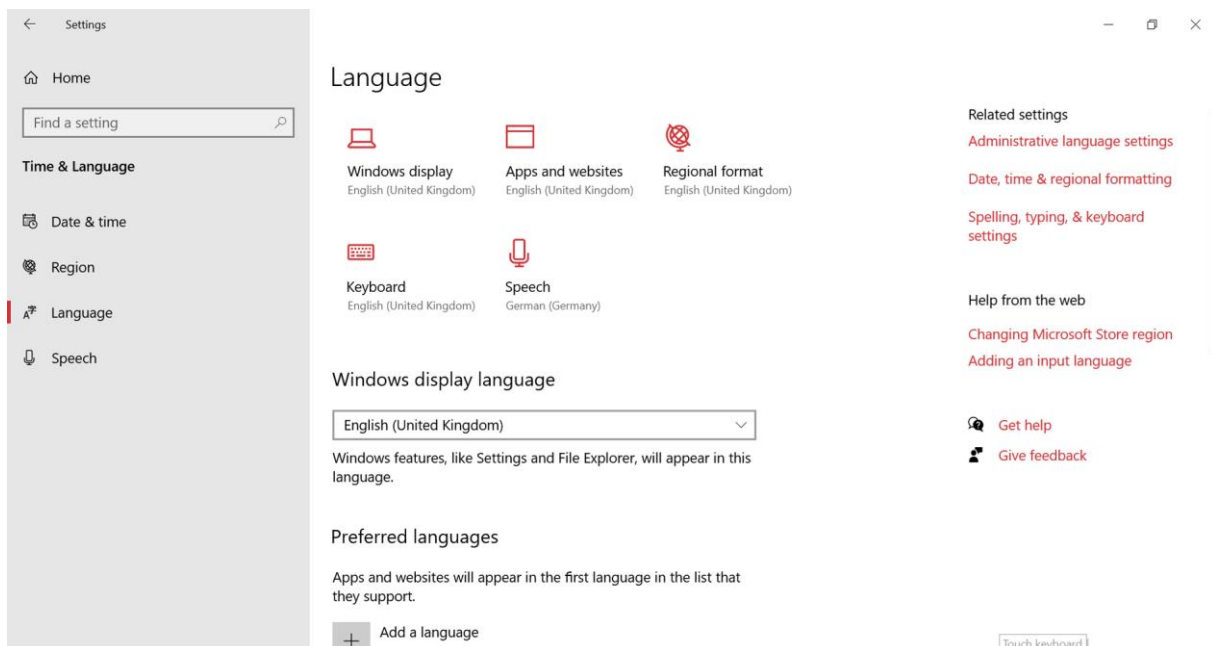
TESTit

Installing and setting up the TESTit software

1. In the Start menu select »Settings«.



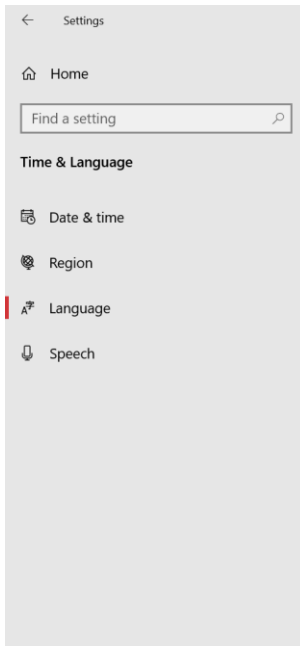
2. Select the tab »Time and Language«.



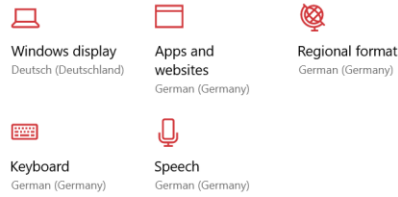
3. Select the »Language« tab.

TESTit

Installing and setting up the TESTit software



Language



Related settings

[Administrative language settings](#)

[Date, time & regional formatting](#)

[Spelling, typing, & keyboard settings](#)

Help from the web

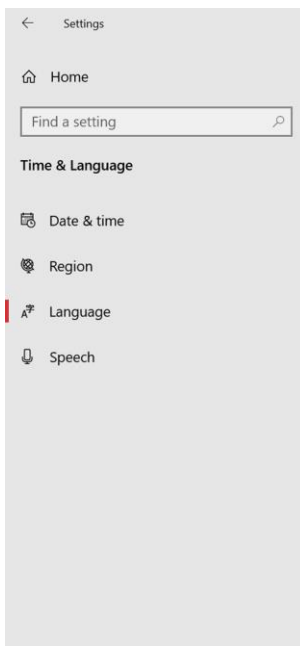
[Changing Microsoft Store region](#)

[Adding an input language](#)

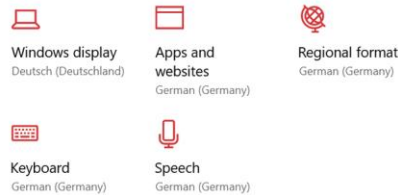
[Get help](#)

[Give feedback](#)

4. In the example, German is the currently selected display language.



Language



Related settings

[Administrative language settings](#)

[Date, time & regional formatting](#)

[Spelling, typing, & keyboard settings](#)

Help from the web

[Changing Microsoft Store region](#)

[Adding an input language](#)

[Get help](#)

[Give feedback](#)

Windows display language



Windows features, like Settings and File Explorer, will appear in this language.

Will be display language after next sign-in

Preferred languages

Apps and websites will appear in the first language in the list that they support.

5. Select the Windows display language. Already installed languages can be selected via a drop-down menu. As an example, English is now selected as the Windows display language.



INFORMATION

The change of the Windows display language becomes active only after the next login. This means:

1. The user must log out.
2. The use must log in again.

Now both Windows and the TESTit software are displayed in the previously selected language.

If a Windows display language that is not available in the TESTit software is selected, the TESTit software is displayed in English by default.

7.7 Legal notice / quick guide

HAINBUCH TESTit Legal Notice/Quick Reference Guide

HAINBUCH TESTit

Version 1.0.12 (32-bit)
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71672 Marbach
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<https://www.hainbuch.com>

Video tutorials

TEST module for measuring of O.D. clamping

TEST module for measuring of I.D. clamping

TEST module for measuring of Draw-in force HSK

Connection

Administration and settings

RPM / Force diagram

The software terms, privacy policy and user manual are linked as PDFs on the »Legal notice/Quick Guides« page.

In addition, support and contact data are listed.

How-To videos are also provided on the right side. These videos are intended to provide guidance. How to use different TEST modules correctly is explained here.

Additionally, the connection setup, working with the clamping device database and the speed /force diagram are explained.

8 Measuring device

8.1 Safety when using the measuring device



NOTE

Sensor distortion due to excessively high tightening torque!

- Do not exceed the specified tightening torque.

8.2 Displays

The IT module has two LEDs for display purposes:

- The orange LED, located below the rechargeable battery symbol, lights up during charging and goes out when the rechargeable battery is charged. A fully charged rechargeable battery holds its charge for up to 7 hours.



INFORMATION

At a residual charge of <1%, the IT module switches itself off. The IT module must then be recharged.

- The blue LED, located below the Bluetooth symbol, lights up if there is a connection to the TESTit software. It goes out again as soon as the connection is interrupted.

8.3 Connections

Measuring device connection:

- Mini-USB connection

8.4 Screw tightening torques

The tables show the specified values.

Knowledge of the applicable guidelines and design criteria is essential.



NOTE

Damage to materials caused by defective screw tightening torques!

- To secure the product to the machine, pay attention to the values specified by HAINBUCH and by the machine manufacturer for screw tightening torques. If the machine manufacturer stipulates different values, you must consult HAINBUCH.

Metric control threads

The following table contains the guide values in Nm for screw tightening torques for achieving the highest permitted pre-load for metric control threads.

- Total friction coefficient $\mu_{ges} = 0.12$

Thread designation	Tightening torque at screw quality [Nm]	
	10.9	12.9
M4	4	5
M5	7	9
M6	12	15
M8	25	38
M10	50	70
M12	100	130
M16	220	300
M20	400	550
M24	600	800

Table 11: Screw tightening torques, metric control threads

Aluminum components

The following table contains the reduced screw tightening torques for securing aluminum components.

Thread designation	Tightening torque [Nm]	Minimum screw depth [mm]
M6	10	12
M8	23	16
M10	46	20

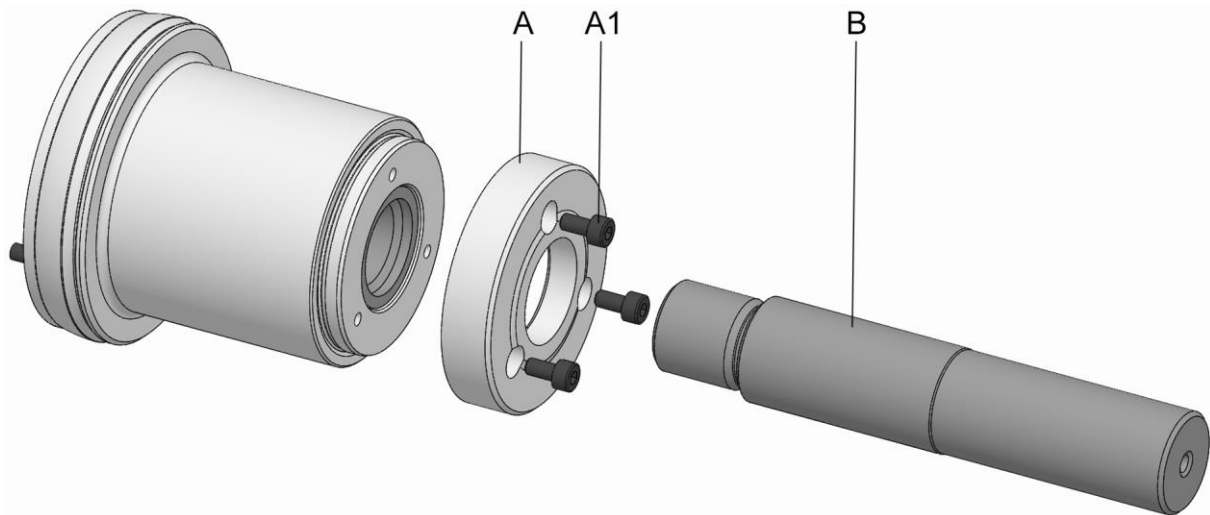
Table 12: Screw tightening torques for aluminum components

8.5 Setting up the TEST module

Setup of the respective TEST module with measuring adapter is described in the following.

If the TEST module is to be converted for a different T211 mandrel / for a different zero point clamping system, the measuring adapter must also be reattached as described below.

8.5.1 TEST module for T211 mandrel



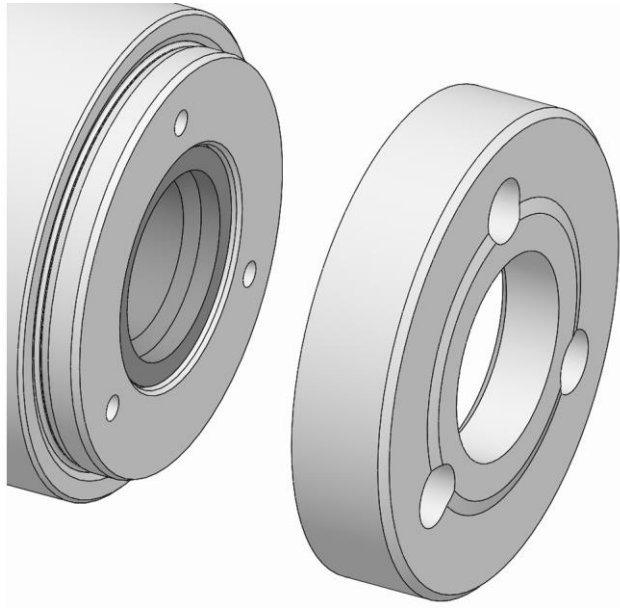
- A Disc
- A1 Disc fixing screws
- B Tension bolt

The following steps are necessary to set up the TEST module:

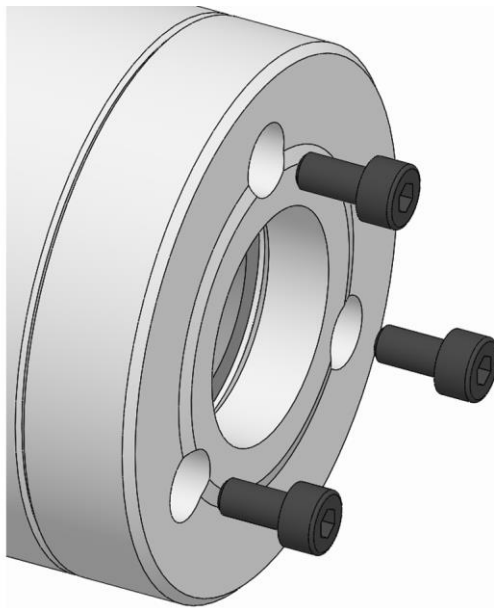


INFORMATION

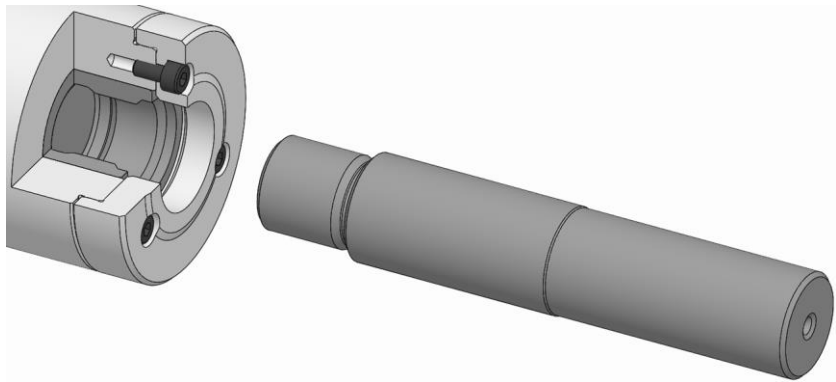
Depending on the version of the measuring adapter, it may be necessary to screw in the tension bolt before mounting the disc.



1. Place the disc on the product.



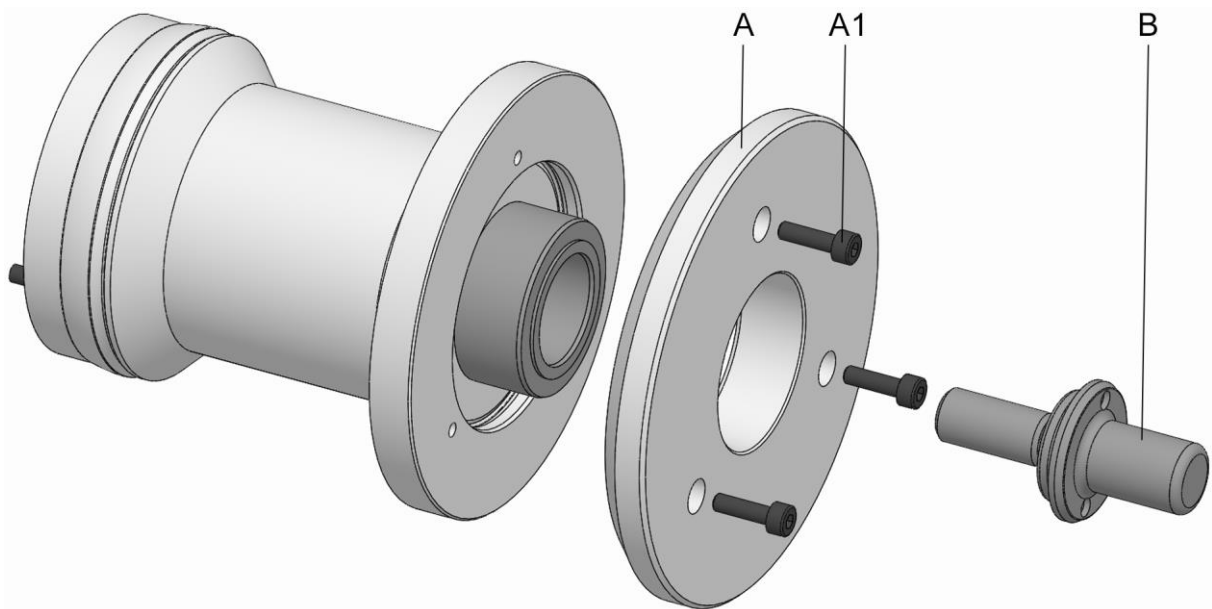
2. Screw in the fastening screws for the disc and tighten them to the specified tightening torque [see chapter »Screw tightening torques«].



3. Screw the tension bolt into the product and apply light pressure.

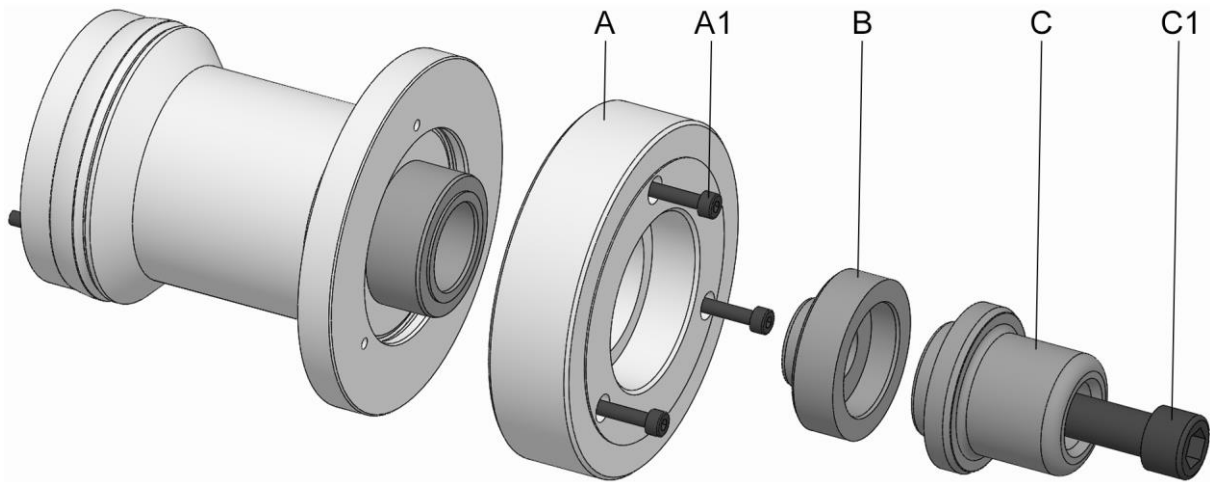
8.5.2 TEST module for zero point clamping system

Variant 1



- A Disc
- A1 Disc fixing screws
- B Clamping pin

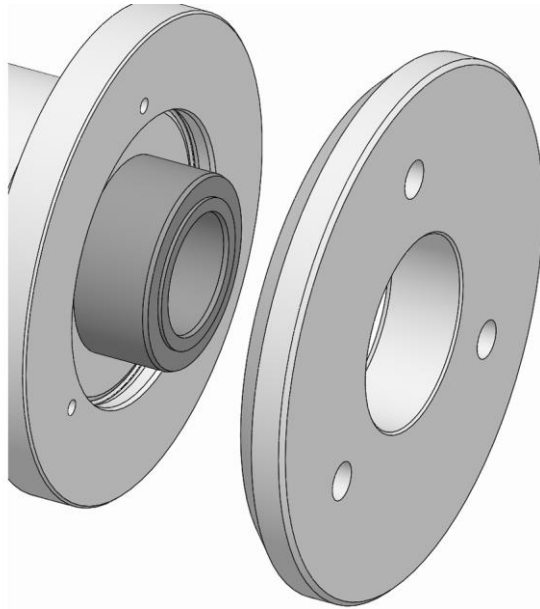
Variant 2



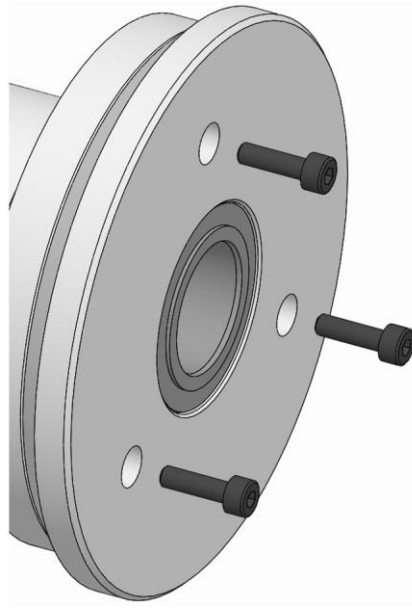
- A Disc
- A1 Disc fixing screws
- B Adapter
- C Clamping pin
- C1 Clamping pin fastening screw

The following steps are necessary to set up the TEST module:

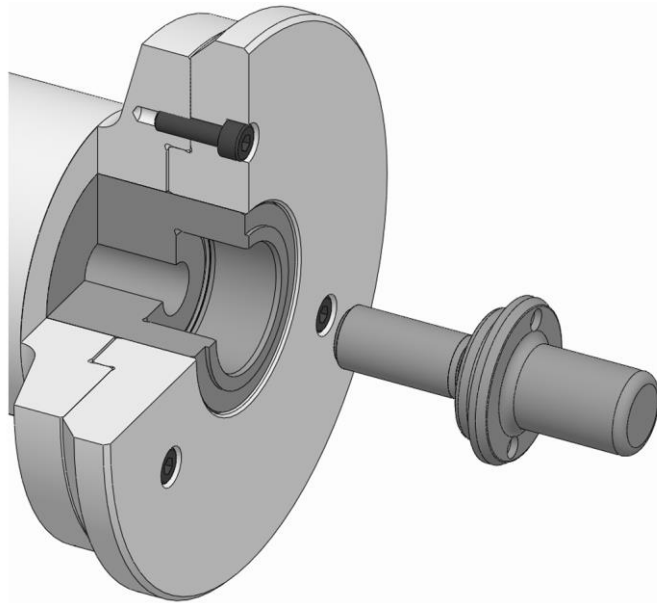
Variant 1



1. Place the disc on the product.

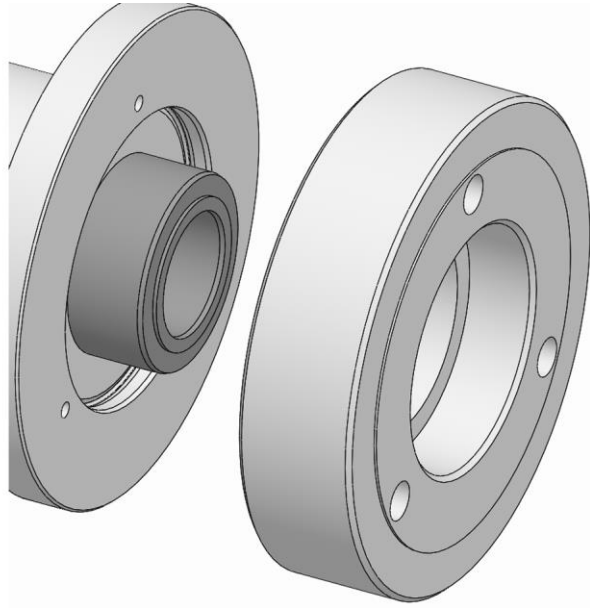


2. Screw in the fastening screws for the disc and tighten them to the specified tightening torque [see chapter »Screw tightening torques«].

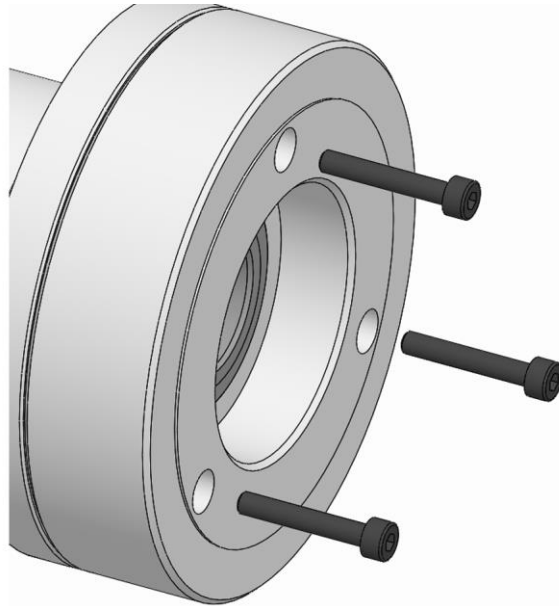


3. Screw the clamping pin into the product and apply light pressure.

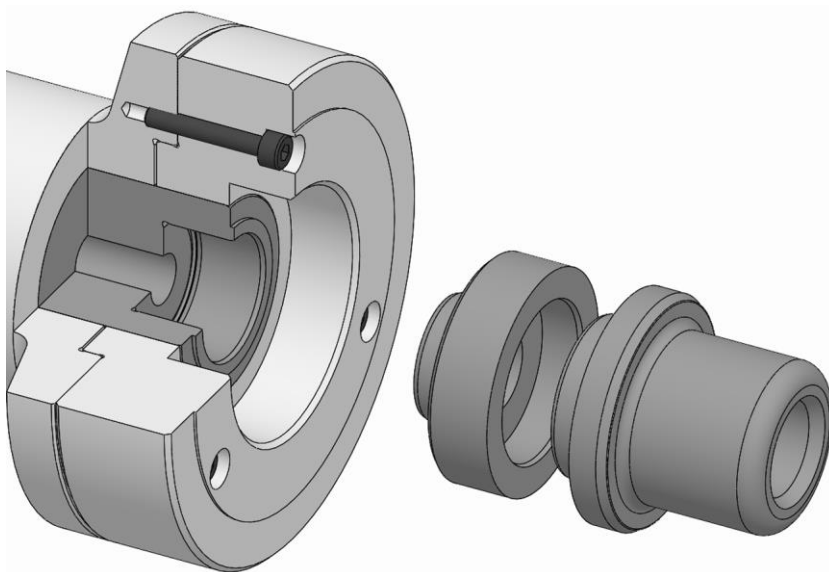
Variant 2



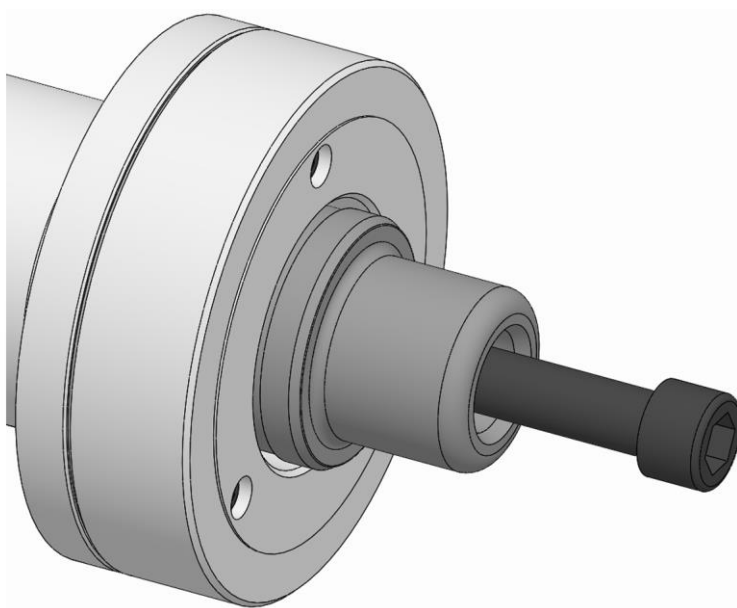
1. Place the disc on the product.



2. Screw in the fastening screws for the disc and tighten them to the specified tightening torque [see chapter »Screw tightening torques«].



3. Screw the clamping pin together with the adapter into the product.



4. Screw in the clamping pin fastening screw and apply light pressure.

8.6 Converting the TEST module

Conversion of the respective TEST module to two measuring points is described in the following.

If the TEST module needs to be converted to a different size or back to several measuring points again, all measuring pins must be removed and then reattached as described below. The tightening torque of 0.8 Nm for the measuring pin fastening screw must be observed.

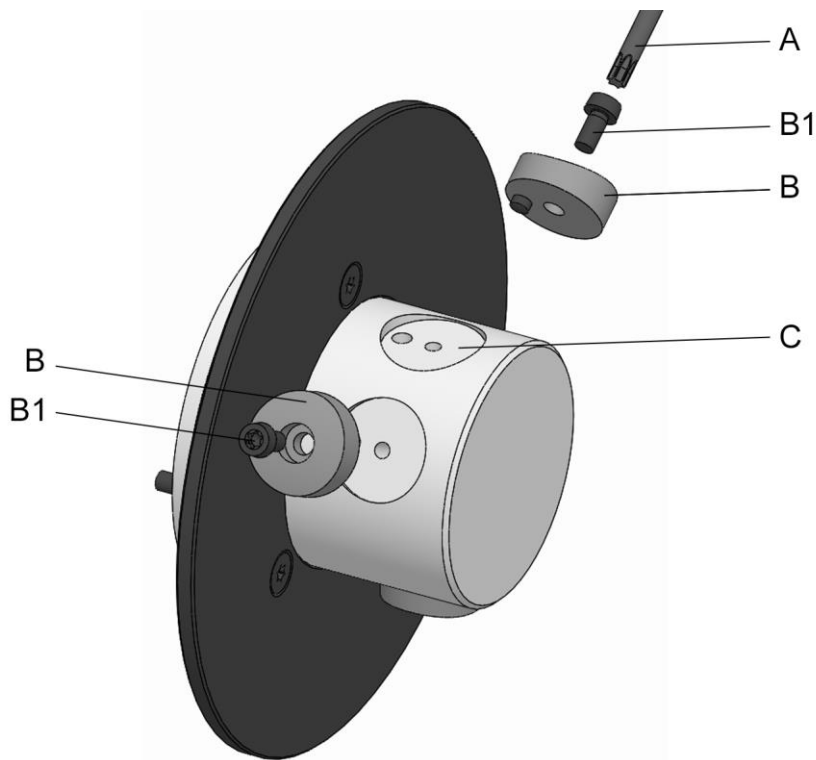
For size 32, make sure that the correct measuring pins [not the flat measuring pins] are used for three-point clamping.



INFORMATION

After the TEST module has been converted, the measuring pins that belong to each other must always be mounted at each required measuring point.

8.6.1 TEST module for external clamping device size 65 and size 65-30



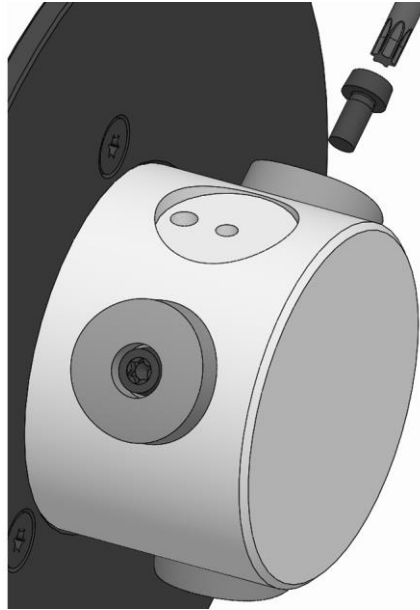
- A Torx wrench
- B Measuring pin
- B1 Measuring pin fastening screw
- C Attachment point of two clamping points

The TEST module is prepared for three clamping points. The following steps are necessary to convert the TEST module from three clamping points to two clamping points:

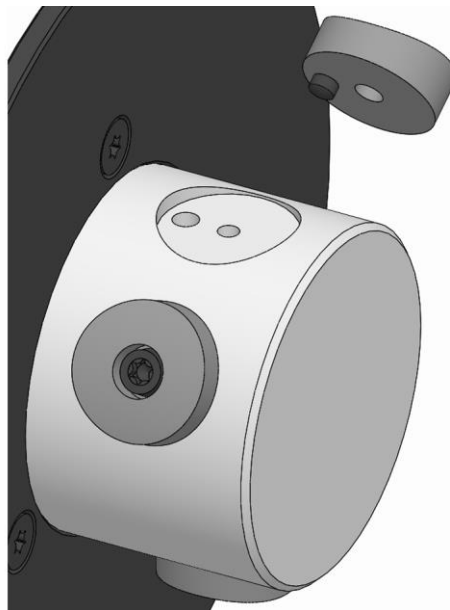


INFORMATION

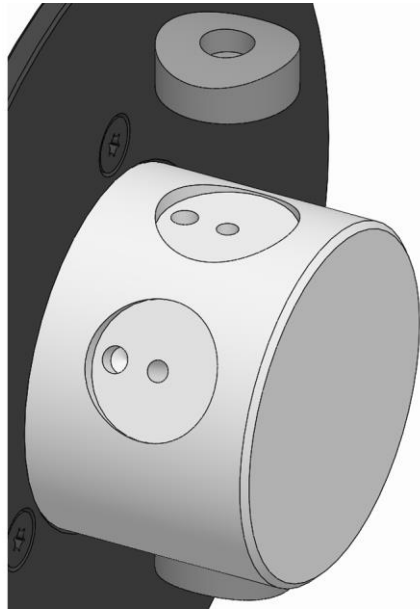
For conversion, first remove the two measuring pins which are next to the free attachment point.



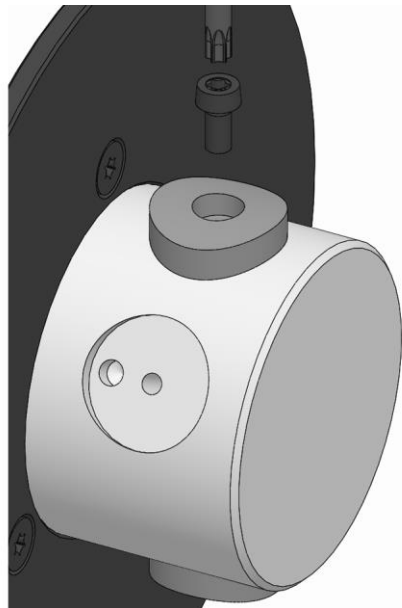
1. Loosen and remove the fastening screw for the measuring pin.



2. Remove the measuring pin from the product.
3. Also remove the second measuring pin as described.



4. Place the measuring pin on the attachment point for two clamping points on the product.



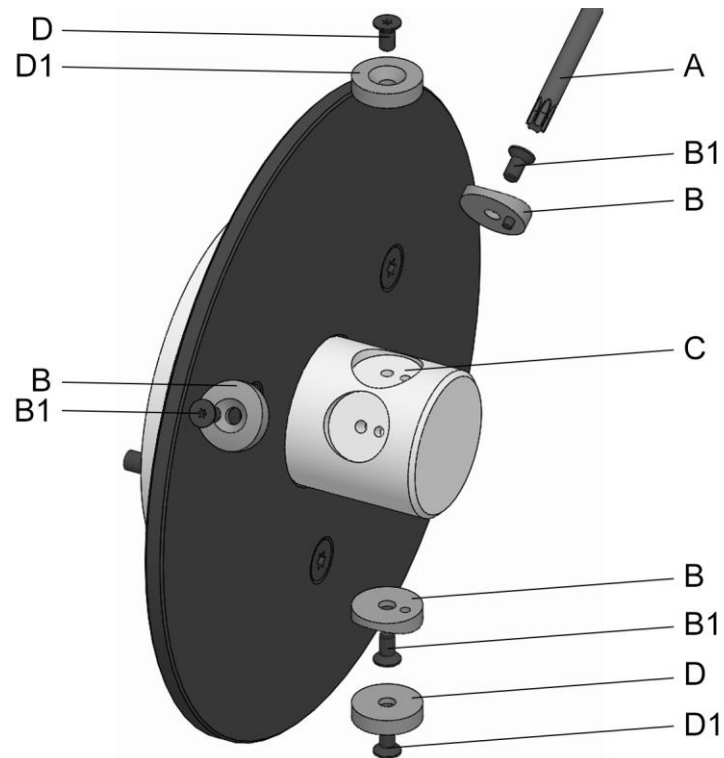
5. Screw in the fastening screw of the measuring pin and tighten it to a tightening torque of 0.8 Nm.



INFORMATION

After conversion, the number of clamping points must be set in the TESTit software.

8.6.2 TEST module for external clamping device size 32



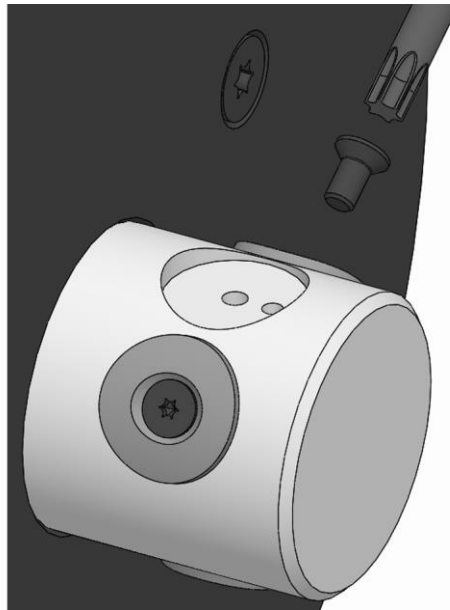
- A Torx wrench
- B Measuring pin
- B1 Measuring pin fastening screw
- C Attachment point of two clamping points
- D Flat measuring pin
- D1 Flat measuring pin fastening screw

The TEST module is prepared for three clamping points. The following steps are necessary to convert the TEST module from three clamping points to two clamping points:

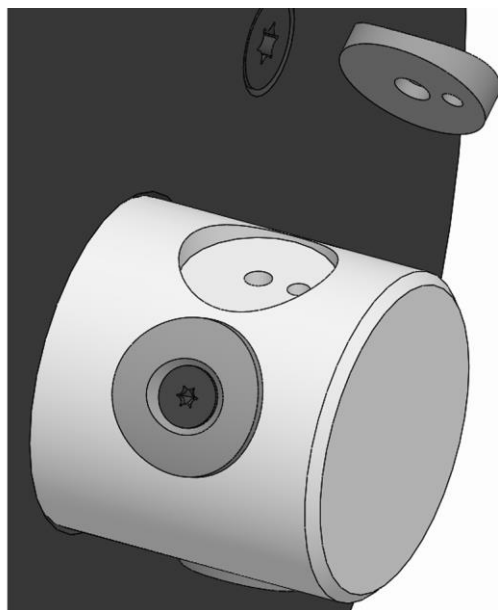


INFORMATION

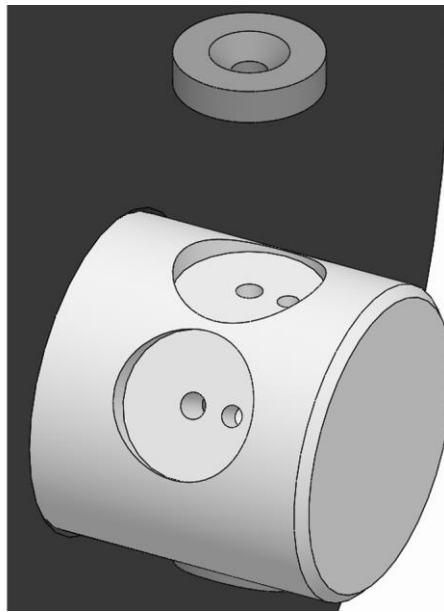
For conversion, first remove the two measuring pins which are next to the free attachment point.



1. Loosen and remove the fastening screw for the measuring pin.



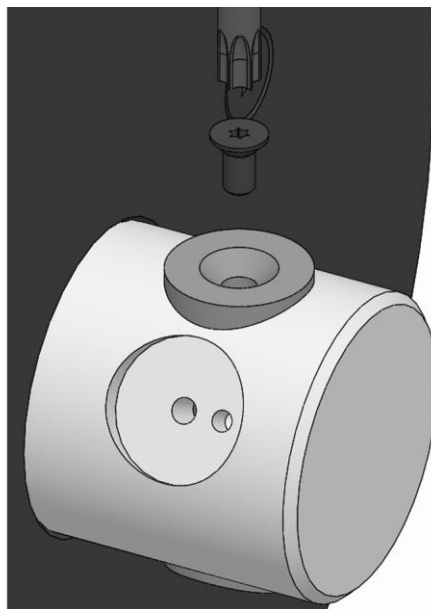
2. Remove the measuring pin from the product.
3. Also remove the second measuring pin as described.



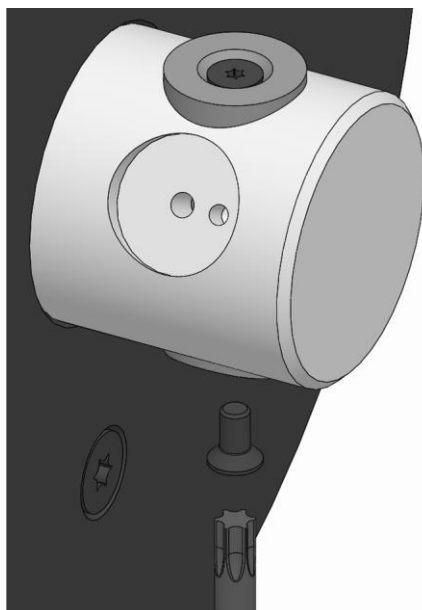
INFORMATION

When measuring with two clamping points, for example in a vice, the flat measuring pins [not included in the scope of delivery] must be used.

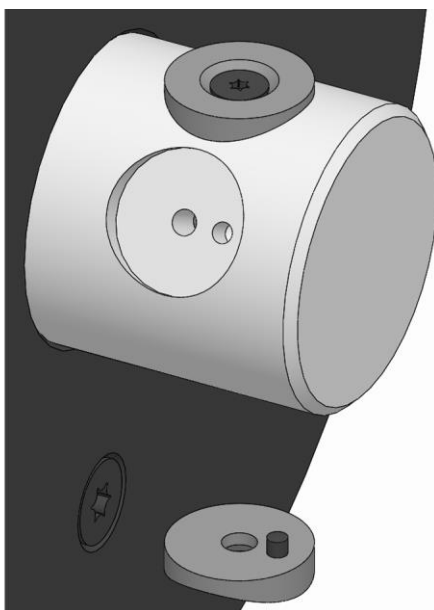
4. Place the flat measuring pin on the attachment point for two clamping points on the product.



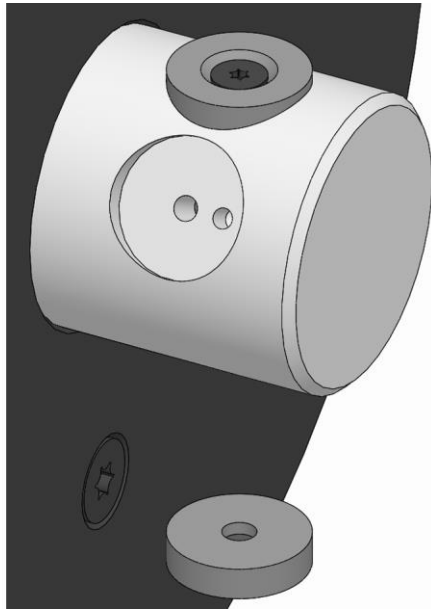
5. Screw in the fastening screw for the flat measuring pin and tighten it to a tightening torque of 0.8 Nm.



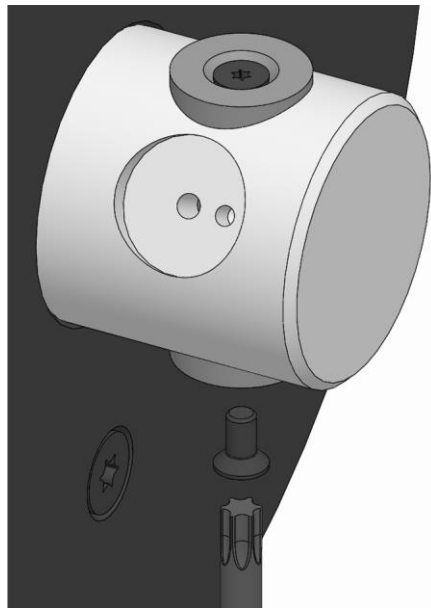
6. Loosen and remove the fastening screw for the measuring pin located opposite the attachment point of two clamping points.



7. Remove the measuring pin from the product.



8. Place the flat measuring pin on the product opposite the attachment point of two clamping points.



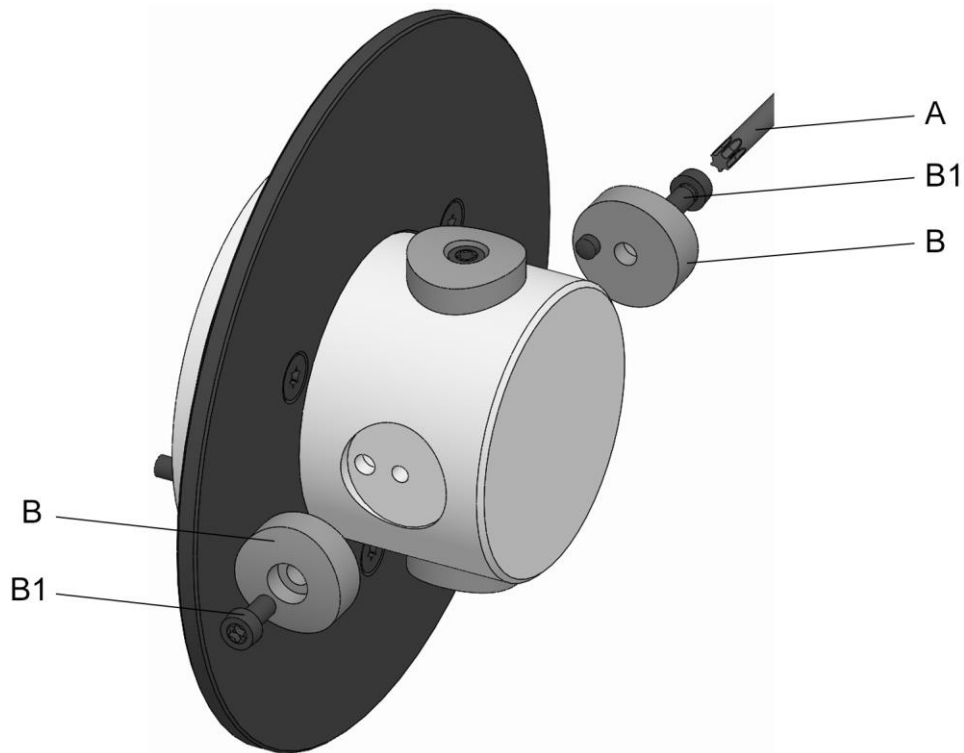
9. Screw in the fastening screw for the flat measuring pin and tighten it to a tightening torque of 0.8 Nm.



INFORMATION

After conversion, the number of clamping points must be set in the TESTit software.

8.6.3 TEST module for external clamping device size 65-4



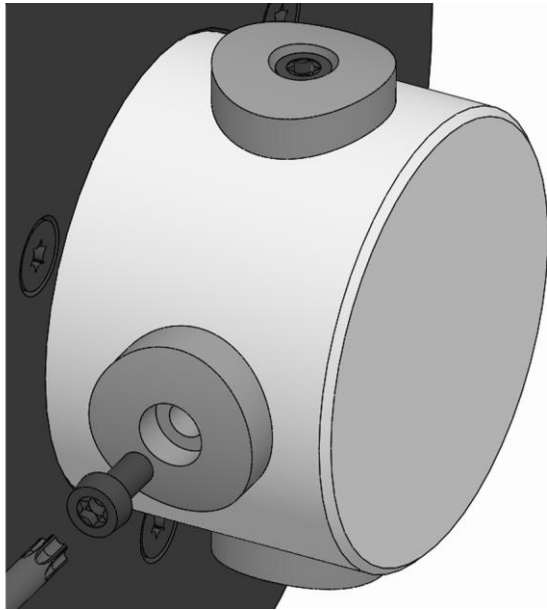
- A Torx wrench
- B Measuring pin
- B1 Measuring pin fastening screw

The TEST module is prepared for four clamping points.
The following steps are necessary to convert the TEST module from four clamping points to two clamping points:

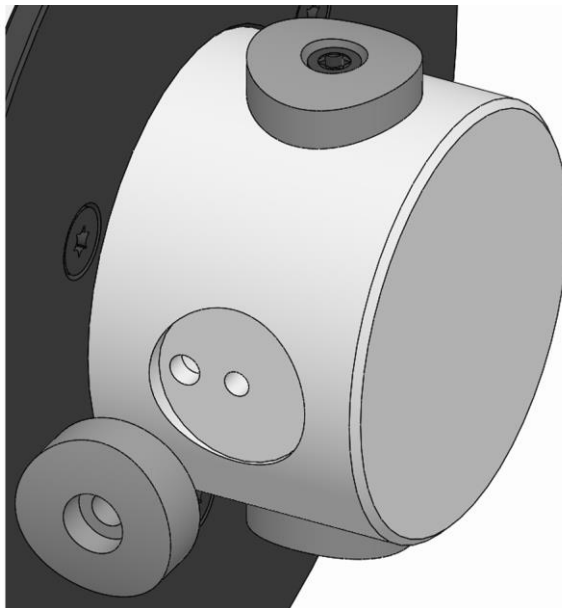


INFORMATION

Two opposite measuring pins must be removed for the conversion.



1. Loosen and remove the fastening screw for the measuring pin.



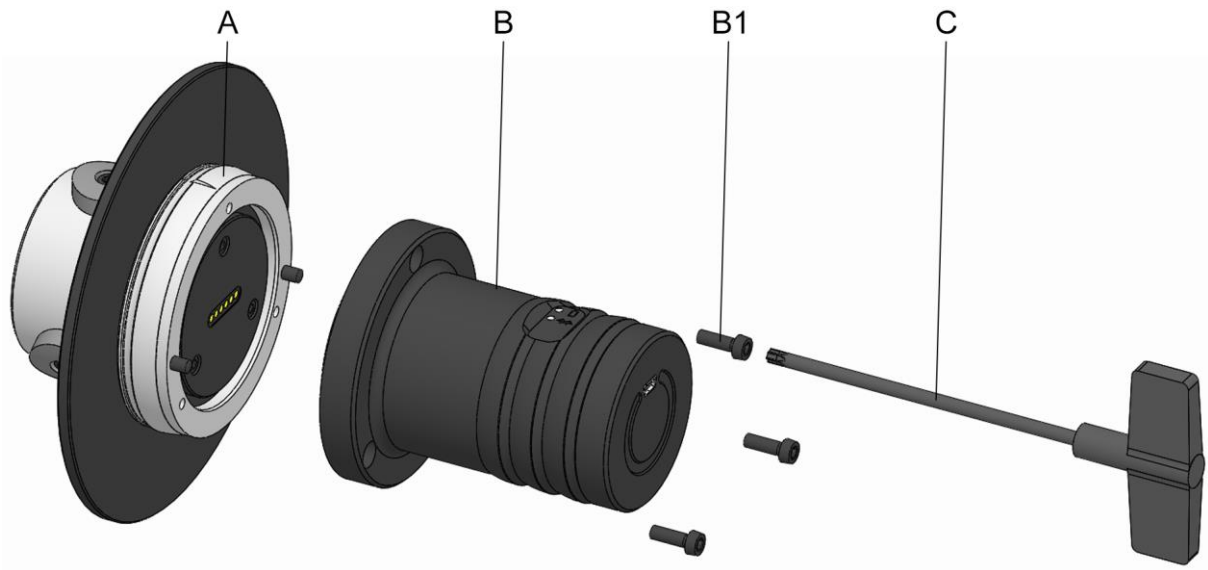
2. Remove the measuring pin from the product.
3. Also remove the second measuring pin as described.



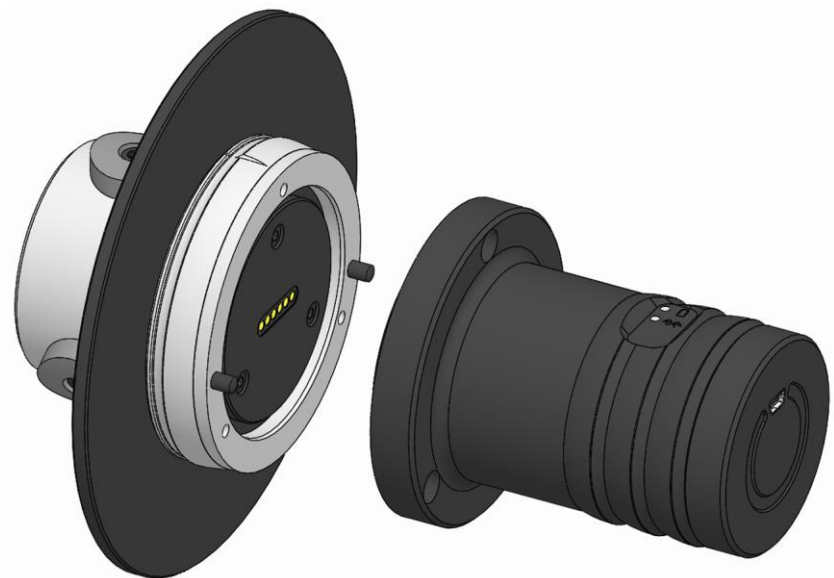
INFORMATION

After conversion, the number of clamping points must be set in the TESTit software.

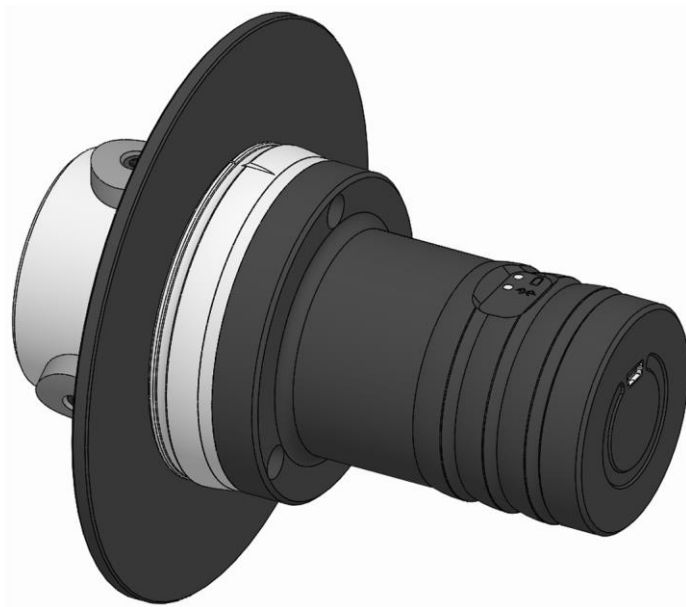
8.7 Assembling a TEST module with an IT module



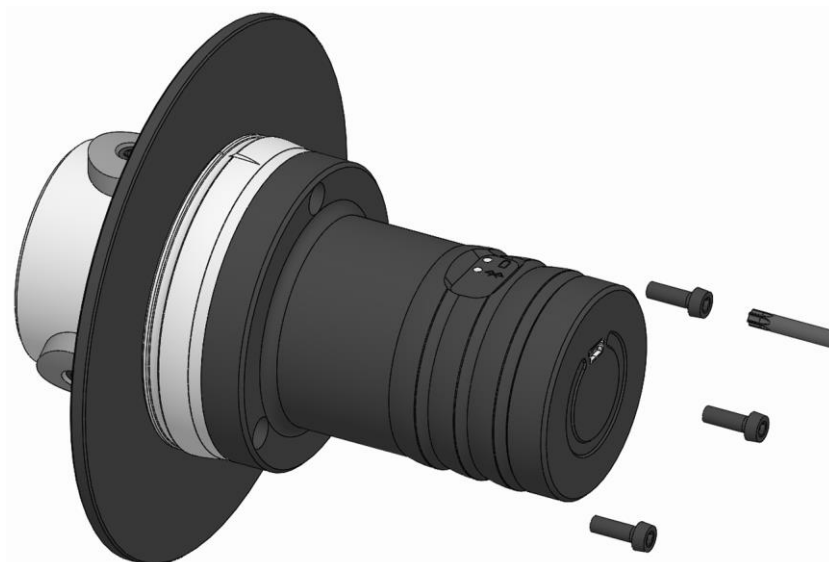
- A TEST module
- B IT module
- B1 IT module fastening screws
- C Torx wrench



1. Put the TEST module and the IT module together, position them using the pins and the hole circles.

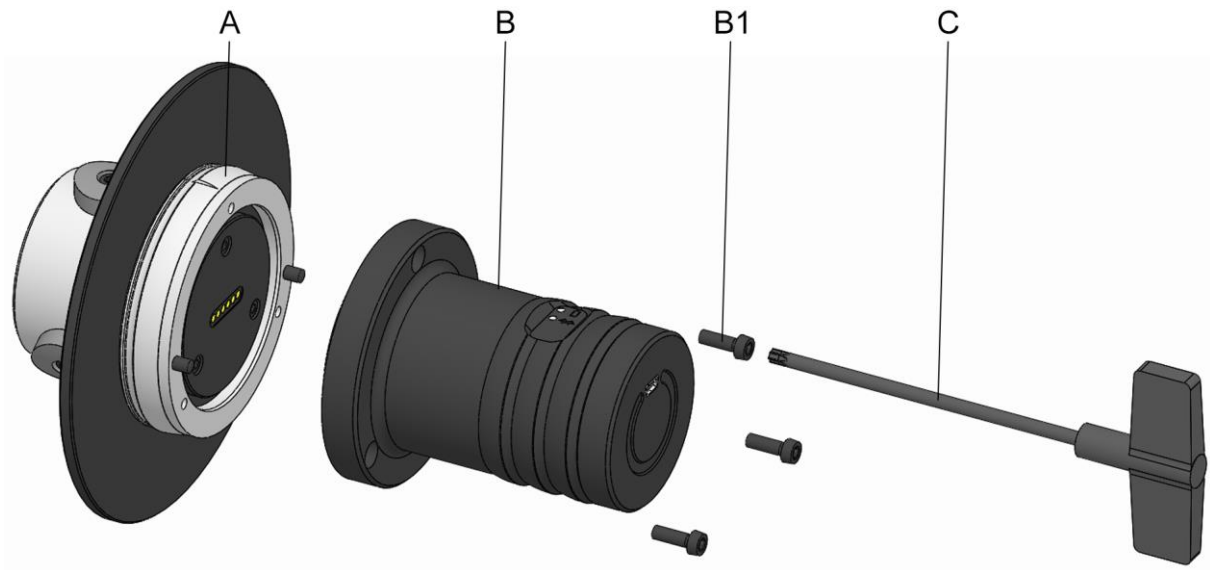


2. Press the TEST module and IT module firmly together.

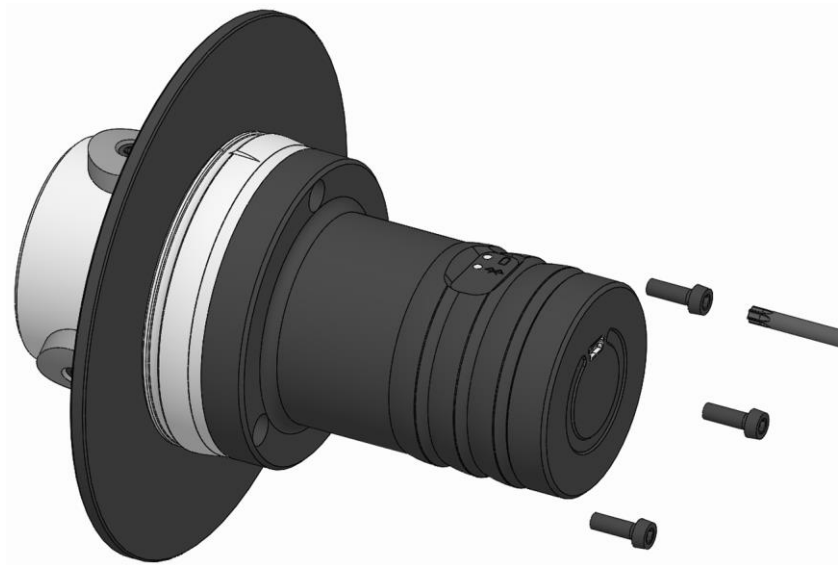


3. Screw in the IT module fastening screws and tighten them hand-tight.

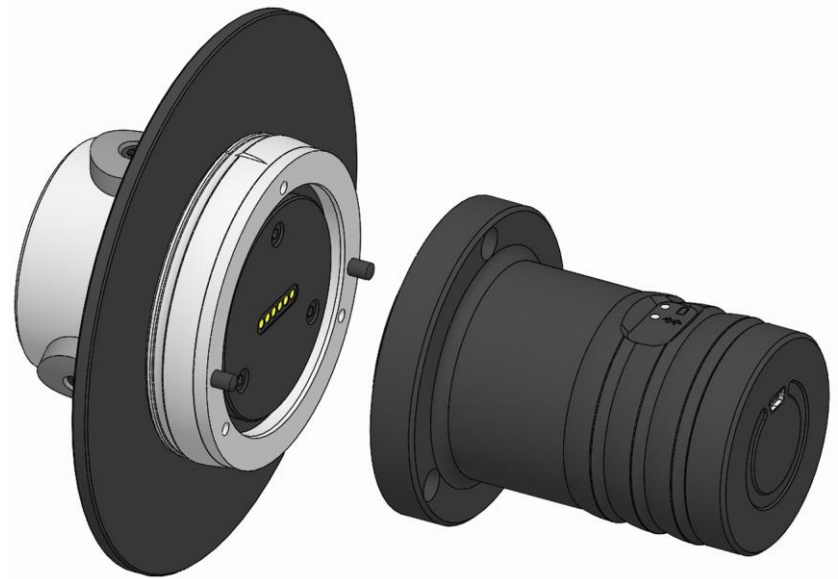
8.8 Disconnecting a TEST module from an IT module



- A TEST module
- B IT module
- B1 IT module fastening screws
- C Torx wrench



1. Loosen and remove the IT module fastening screws.



2. Pull the TEST module and IT module apart, thereby separating them.

9 Measurement

9.1 Safety while measuring



WARNING

Serious injuries from unplanned process start in automatic mode!

- Before starting the measurement, set the machine to manual operation.



CAUTION

Destruction of the measuring device due to unwanted supply of cooling lubricant.

- Make sure that the cooling lubricant supply is switched off during the measurement.



NOTE

Damage to the measuring device from unplanned process start in automatic mode!

- Before starting the measurement, set the machine to manual operation.



INFORMATION

Before measuring:

- Switch off supply of cooling lubricant to the machine.
- Clean the clamping surfaces of the clamping elements with a soft, lint-free cloth.



INFORMATION

- The measuring device must not strike a workpiece stop or the face of the clamping device during clamping.
- Check the clamping diameter of the clamping element.



INFORMATION

For correct use of the measuring device, the clamping device must have sufficient reserve stroke.

- Read and follow the manual for the clamping device used.

9.2 Preparation

Both the TESTit software and the measuring device must be prepared for the measurement.

9.2.1 Preparing the software

1. Check the charge status of the display unit's rechargeable battery and charge if necessary.
2. If the clamping device to be measured has not yet been saved in the TESTit software, create the clamping device [see chapter »Administration«].



INFORMATION

The tester and actions should already be created [see chapter »Installing and setting up the TESTit software«].

9.2.2 Preparing the measuring device

1. For an axial force measurement of a T211 mandrel or a pull-in force measurement of a zero point clamping system, attach the measuring adapter [see chapter »Setting up the TEST module«].
2. When measuring the clamping force of an external clamping device, convert the TEST module to the required number of measuring points if necessary [see chapter »Converting the TEST module«].
3. Assemble the measuring device [see »Assembling a test module with an IT module« chapter].



INFORMATION

The rechargeable battery must be sufficiently charged to use the measuring device.

- If necessary, use the enclosed USB cable to connect the measuring device to the display device.
- Maintain the connection until the measuring device's rechargeable battery is fully charged.

4. Check the charge status the measuring device's rechargeable battery and charge it if necessary.

9.3 Clamping the measuring device

9.3.1 External clamping devices

The following steps are required to check the radial clamping force:



In addition to these operating instructions, also read and follow the operating instructions for the relevant clamping device.

1. Attach the clamping device [see operating instructions for the clamping device].
2. Attach the clamping element to the clamping device [see operating instructions for the clamping device].



INFORMATION

When a clamping head is used, all measuring surfaces of the measuring device must be completely covered by the steel segments of the clamping head.



INFORMATION

The marking on the TEST module must always be positioned at the center of the steel segments of the clamping element.

3. Insert the measuring device into the clamping device so that the measuring device rests against the clamping element and NOT against the workpiece stop. All measuring surfaces of the measuring device must be completely covered by the clamping elements.
4. Clamp the measuring device.

9.3.2 Internal clamping devices

The following steps are required to check the radial clamping force:



In addition to these operating instructions, also read and follow the operating instructions for the relevant clamping device.

1. Attach the clamping device [see operating instructions for the clamping device].
2. Attach the clamping element to the clamping device [see operating instructions for the clamping device].



INFORMATION

When a segmented clamping bushing is used, all measuring surfaces of the measuring device must be completely covered by the steel segments of the segmented clamping bushing.



INFORMATION

The marking on the TEST module must always be positioned at the center of the steel segments of the clamping element.

3. Place the measuring device over the clamping element on the clamping device so that the measuring device does not touch the face of the clamping device. All measuring surfaces of the measuring device must be completely covered by the clamping elements.
4. Clamp the measuring device.

9.3.3 Hollow tapered shanks

The following steps are required to check the draw-in force:

1. Remove the tool from the HSK holder.
2. Inspect the HSK holder and clean if necessary.
3. Place the measuring device in the HSK holder.
4. Draw in the measuring device.

9.3.4 Steep taper

The following steps are required to check the draw-in force:

1. Remove the tool from the SK holder.
2. Inspect the SK holder and clean if necessary.
3. Place the measuring device in the SK holder.
4. Draw in the measuring device.

9.3.5 Zero point clamping systems

The following steps are required to check the draw-in force:

1. Inspect the zero point clamping system and clean if necessary.
2. Place the measuring device in the zero point clamping system.
3. Clamp the measuring device.

9.3.6 centroteX S / centroteX AC

The following steps are required to check the draw-in force:



In addition to these operating instructions, you should also read and follow the operating instructions for the associated machine adapter.

1. Mount the machine adapter [see operating instructions for the machine adapter].
2. Mount the measuring device on the machine adapter [see chapter »Mounting the quick-change unit« in the operating instructions for the machine adapter]. This clamps the measuring device.

9.3.7 T211 mandrel

The following steps are required to check the axial force:



In addition to these operating instructions, also read and follow the operating instructions for the relevant clamping device.

1. Attach the clamping device [see operating instructions for the clamping device].
2. Move the clamping device into release position.
3. Loosen and remove the tension bolt from the clamping device.
4. Screw the measuring device into the clamping device and tighten it down.
5. Move the clamping device into a reserve position. This clamps the measuring device.

9.3.8 Drawtube

The following steps are required to check the axial force:

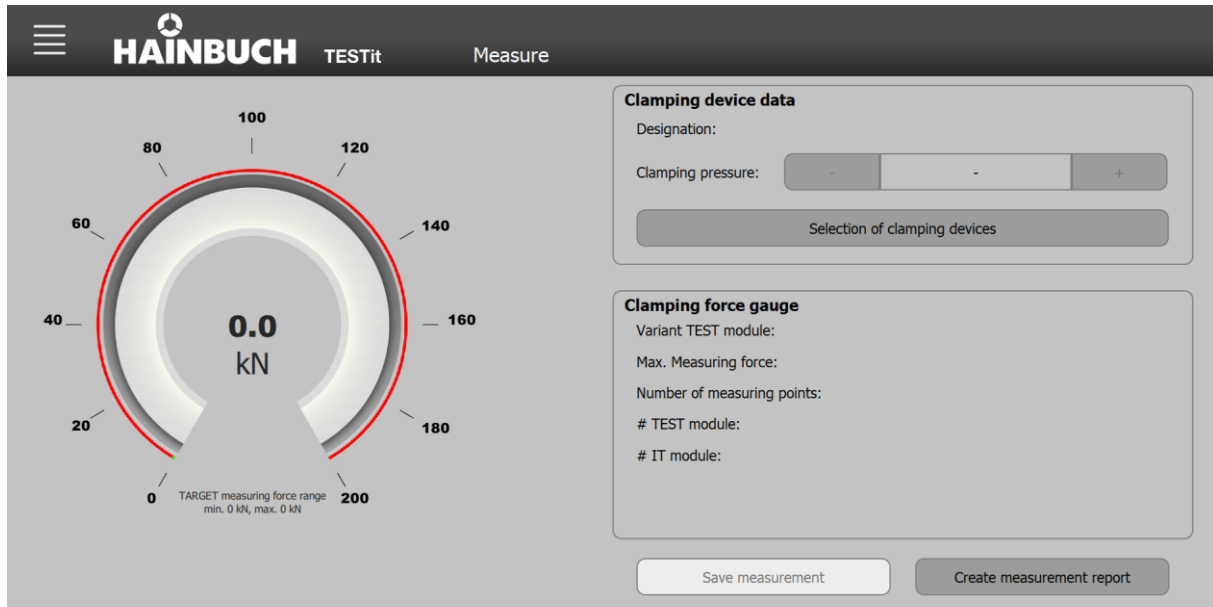
1. Mount the drawtube adapter and spindle flange that are appropriate for the measuring device.
2. Move the machine drawtube to the front limit stop.
3. Screw the measuring device into the drawtube adapter and tighten it.
4. Move the machine drawtube to its rear limit stop. This clamps the measuring device.

9.4 Measuring

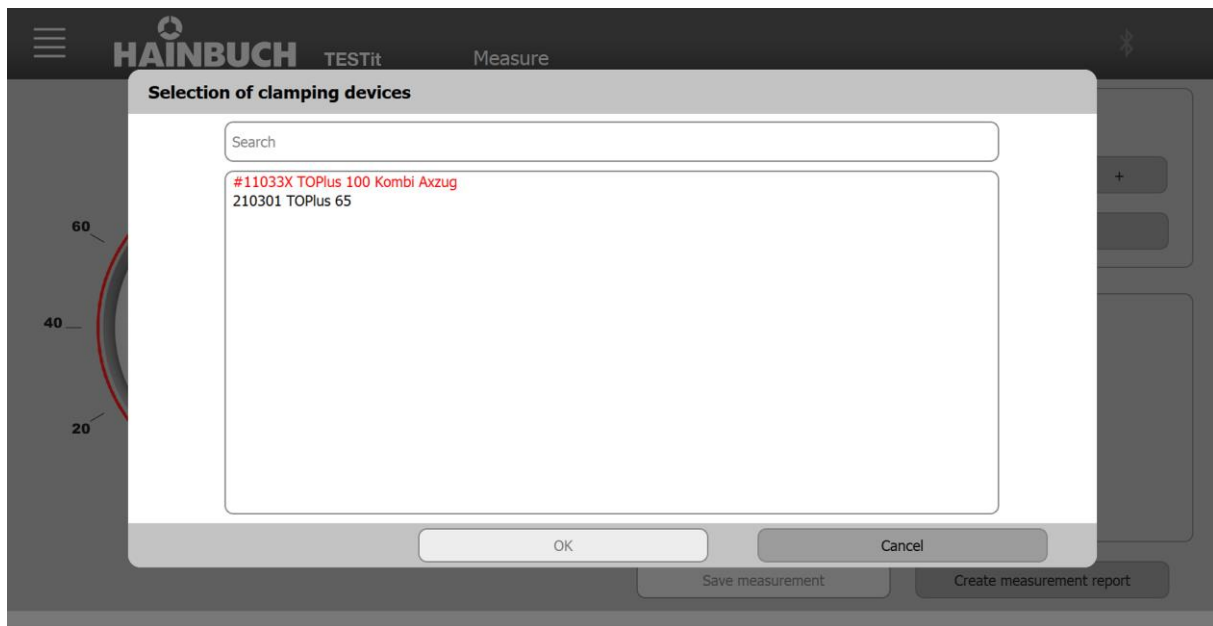
The measurement process is performed by the TESTit software.

1. Select »Measure« in the menu.

9.4.1 Selecting a clamping device



1. Click the »Select clamping device« button.



INFORMATION

In the selection window, two colors are used to list the clamping devices.

- Clamping devices written in red indicate to the worker that the clamping device has a missing measurement. A clamping device is marked in red if the time from the last measurement exceeds the time of the selected maintenance interval. The maintenance interval is defined when creating a clamping device, but can be changed at any time.
- Clamping devices written in black mean that the time of the maintenance interval has not yet elapsed. The time from the last measurement to the current date is less than the time of the selected maintenance interval.



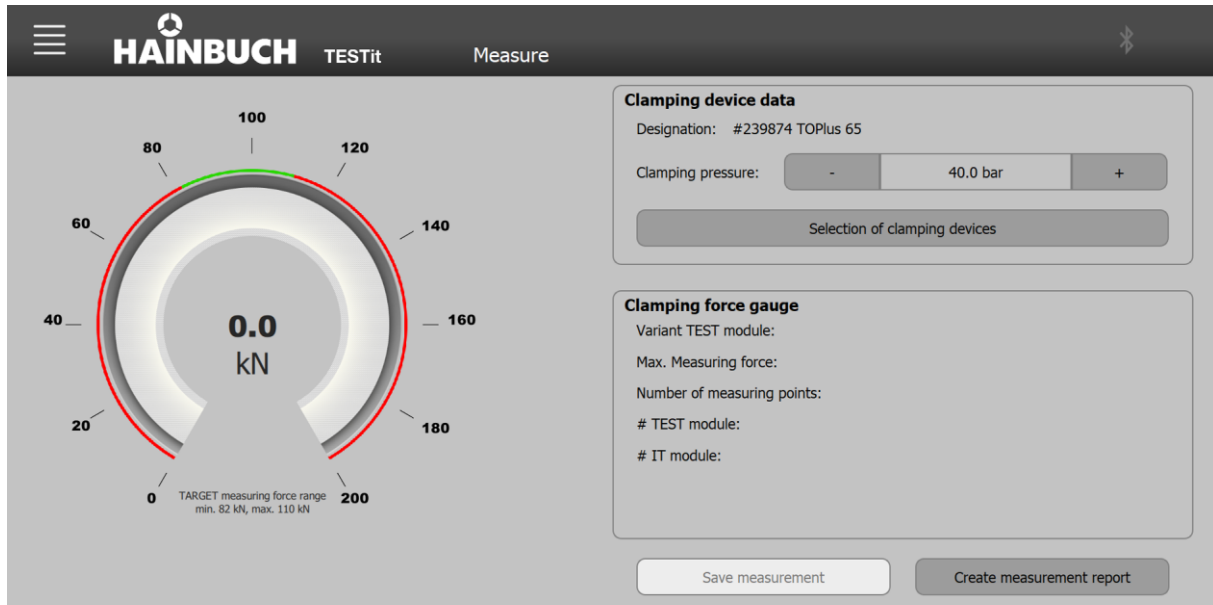
INFORMATION

In the selection window you can search for a clamping device by means of the ID number.

2. Select the desired clamping device.
3. Click »OK«.

Once a clamping device has selected, the following items change, depending on the clamping device data saved

- the scaling of the tachometer
- the SET measuring range for force
- the clamping pressure / the torque



INFORMATION

If a clamping device with manual operation is selected, the »Clamping pressure« field changes to »Torque«.



INFORMATION

If a clamping device for draw-in force measurement, i.e. spring force, is selected, the »Clamping force« field does not appear.

4. Set the clamping pressure or torque to the value set on the machine tool.

The clamping pressure or the torque, as well as the clamping device data [axial/radial ratio, selected tolerance] must be entered correctly in the TESTit software so that the SET measuring force range [green range] is determined correctly in the tachometer.

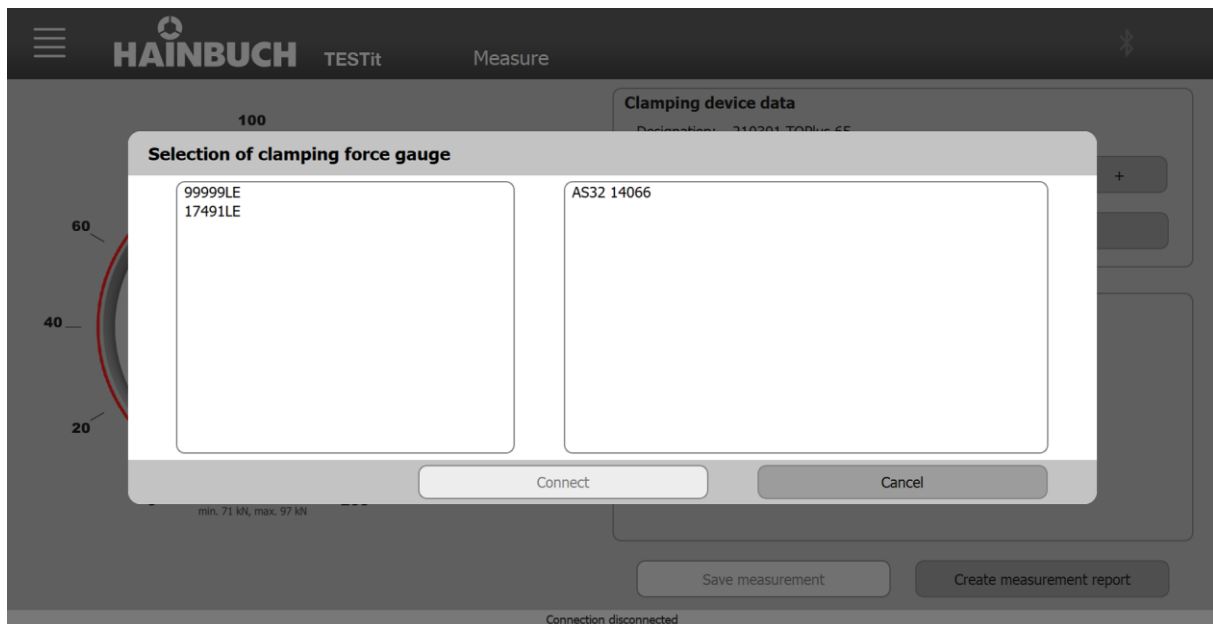
9.4.2 Selecting a measuring device

If the Bluetooth® symbol is visible and gray, connectible TESTit V2s are within range or TESTit V1s have already been taught.

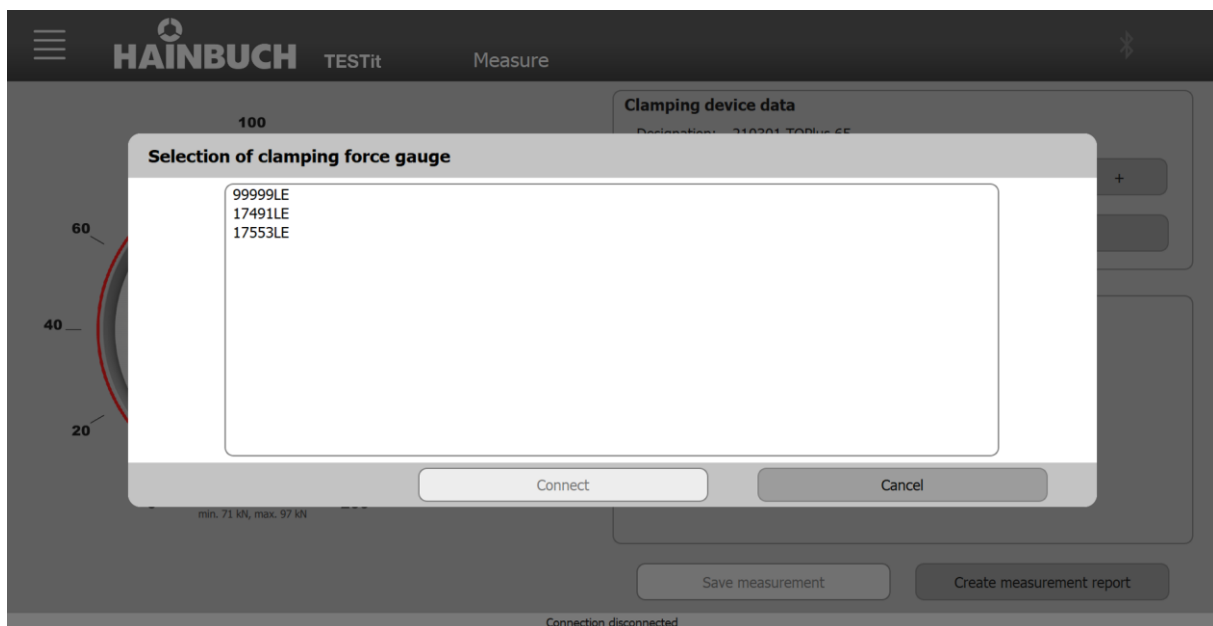
1. Click on the Bluetooth® symbol.

A selection window opens.

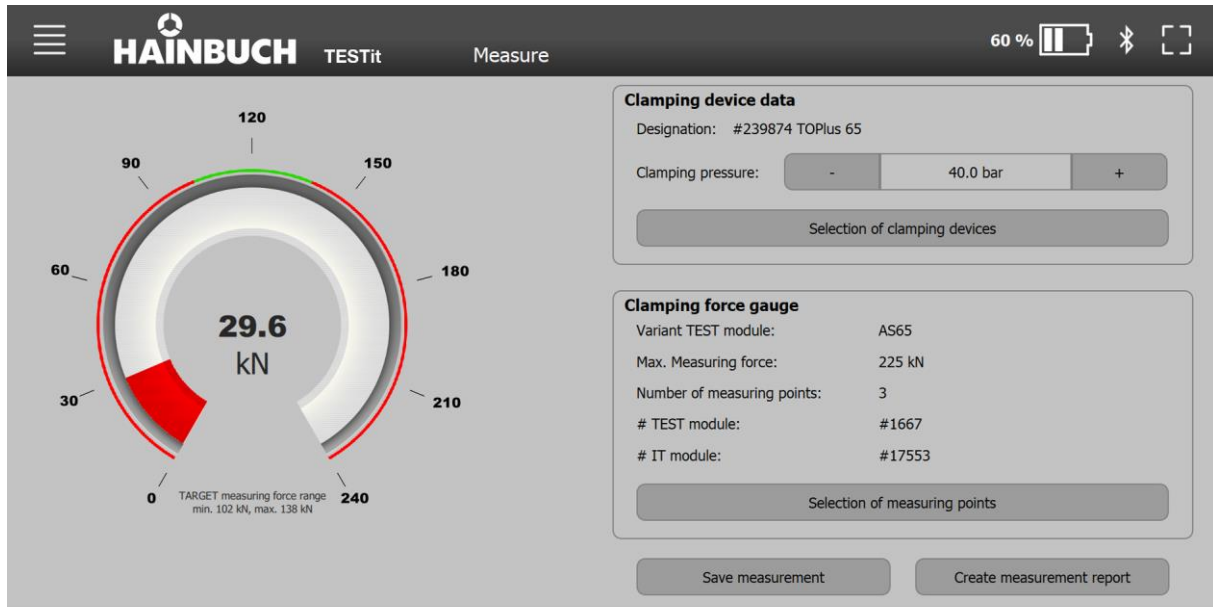
If TESTit V1 devices have been taught, they appear in the right-hand column of the selection window. The TESTit V2 devices are listed in the left-hand column.



If no TESTit V1 devices have been taught, the left column is displayed in full on the selection window.



2. Select the desired measuring device.
3. Click »Connect«.



If there is a connection to a measuring device, the Bluetooth® symbol changes from gray to white. In addition, an icon for the rechargeable battery is displayed with the capacity indicator in percent.

All relevant data for the selected measuring device are displayed in the »Clamping force measuring device« area.

For a TESTit V1:

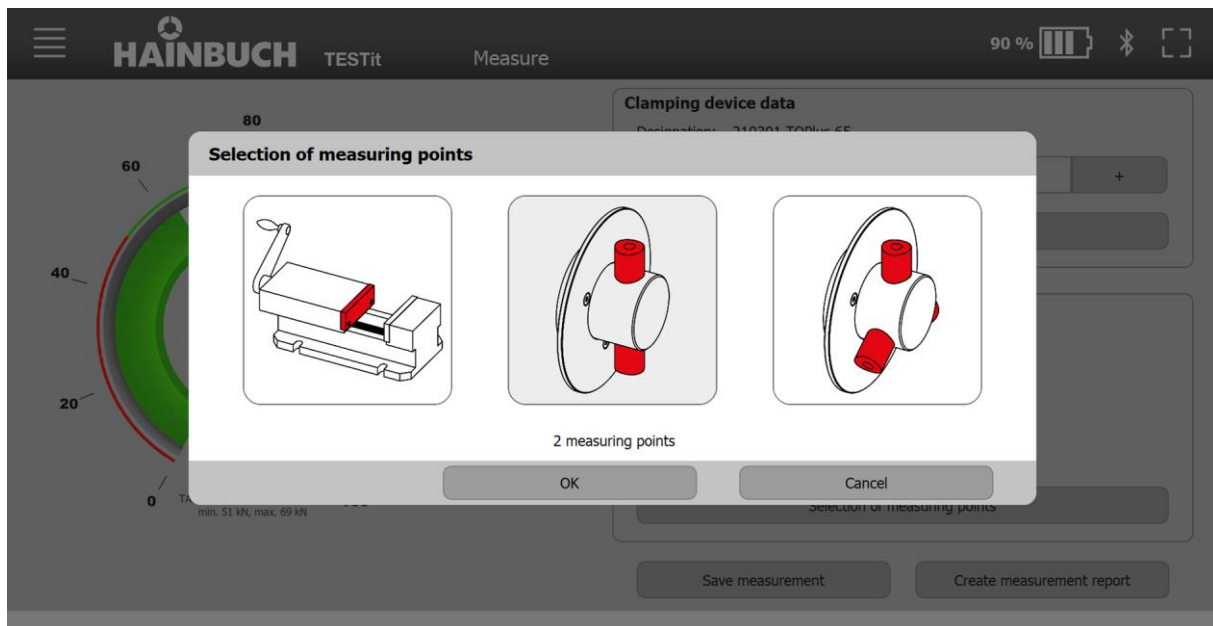
- Variant of the TESTit
- the maximum measuring force
- the number of clamping points if selection of the measuring points is provided
- The TESTit serial number

For a TESTit V2:

- Variant of the TEST module
- the maximum measuring force
- the number of clamping points if selection of the measuring points is provided
- the TEST module and IT module serial numbers

In the case of a measuring device for an external clamping device, the »Select measuring points« button is displayed.

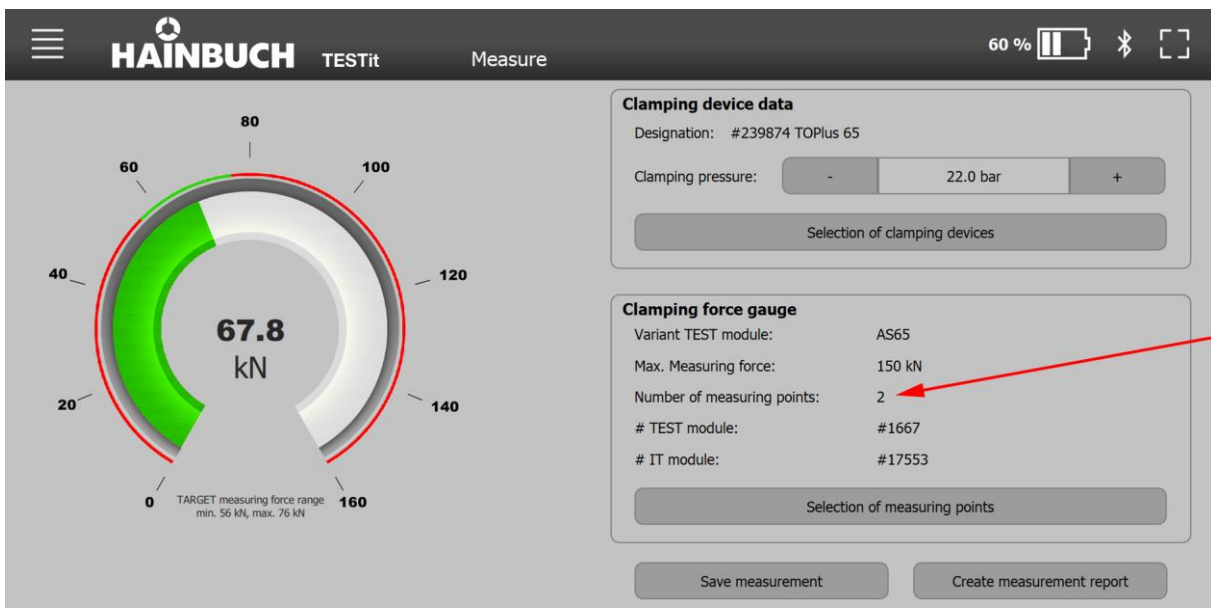
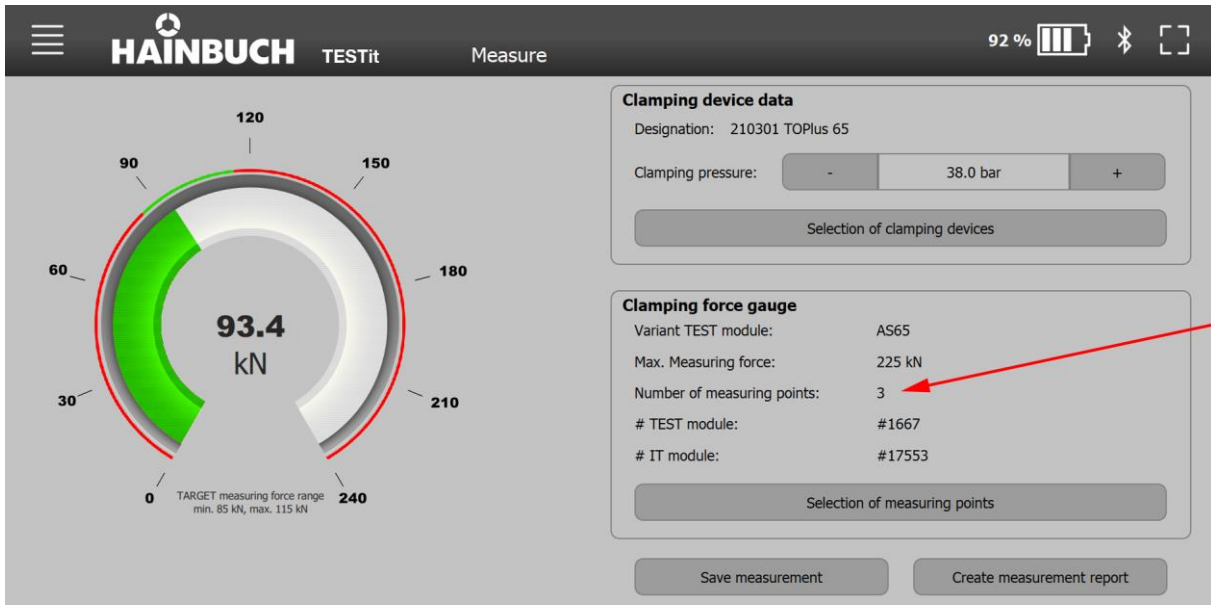
4. Click the »Select measuring points« button.



5. Select the number of measuring points with which the connected measuring device is equipped.

6. Click »OK«.

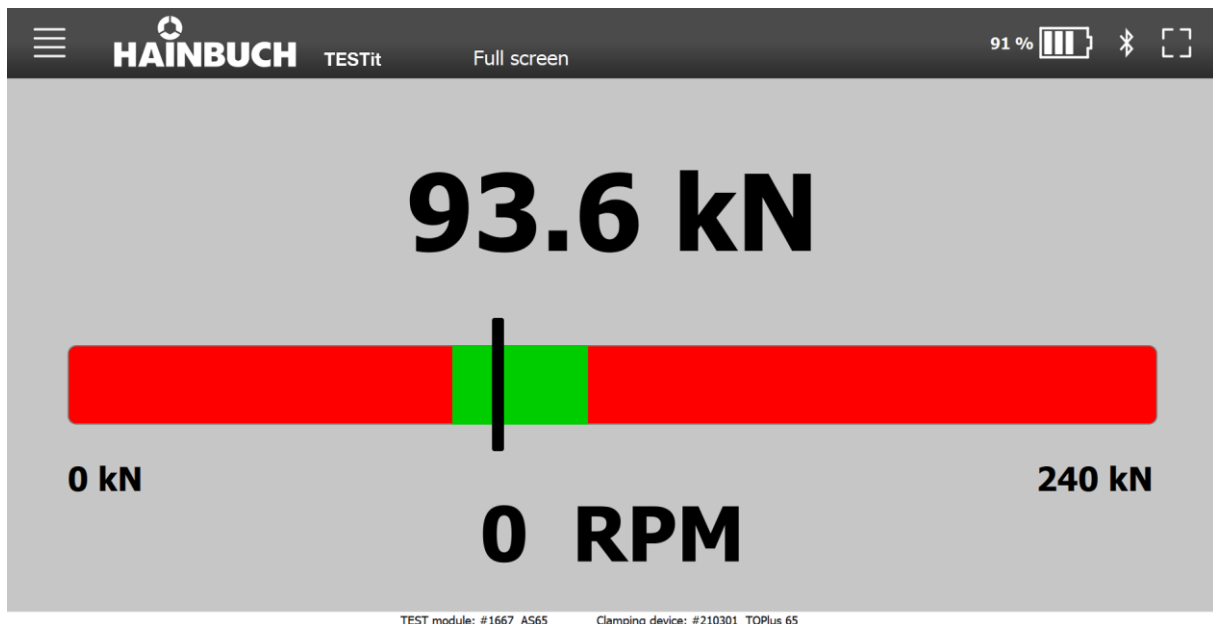
The scaling of the tachometer and the maximum measuring force are updated on the basis of the selected measuring point variant. The following two figures serve as an explanation through comparison.



Full screen

If there is a connection to a measuring device, a square appears at the right in the header. This takes you to the full screen mode.

In full screen mode, the data for the selected clamping device and measuring device are hidden. The force display [tachometer] is enlarged and displayed as a bar. The red bar represents the measuring range of the tachometer in linear form. The SET measuring force range is represented by the green bar and the current measuring force by the black line. In the case of a centrifugal force measurement, the speed is also displayed.



To exit full screen mode, click once again on the square at the right side in the header.

9.4.3 Performing a measurement

1. Prepare the TESTit software and the measuring device [see chapter »Preparation«].
2. Select the clamping device in the TESTit software.
3. Select the measuring device in the TESTit software.
4. Clamp the measuring device [see chapter »Clamping the measuring device«]. The measurement is started and visualized by the TESTit software.

9.4.4 Saving the measurement

A measurement can be saved. The status of the measurement is saved, and can be seen in the TESTit software.

The saving process involves a total of four selection/input windows.

- Evaluate the measurement. The evaluation of a measurement is carried out at the discretion of the worker
- Select tester
- Select action [optional]
- Enter comments [optional]

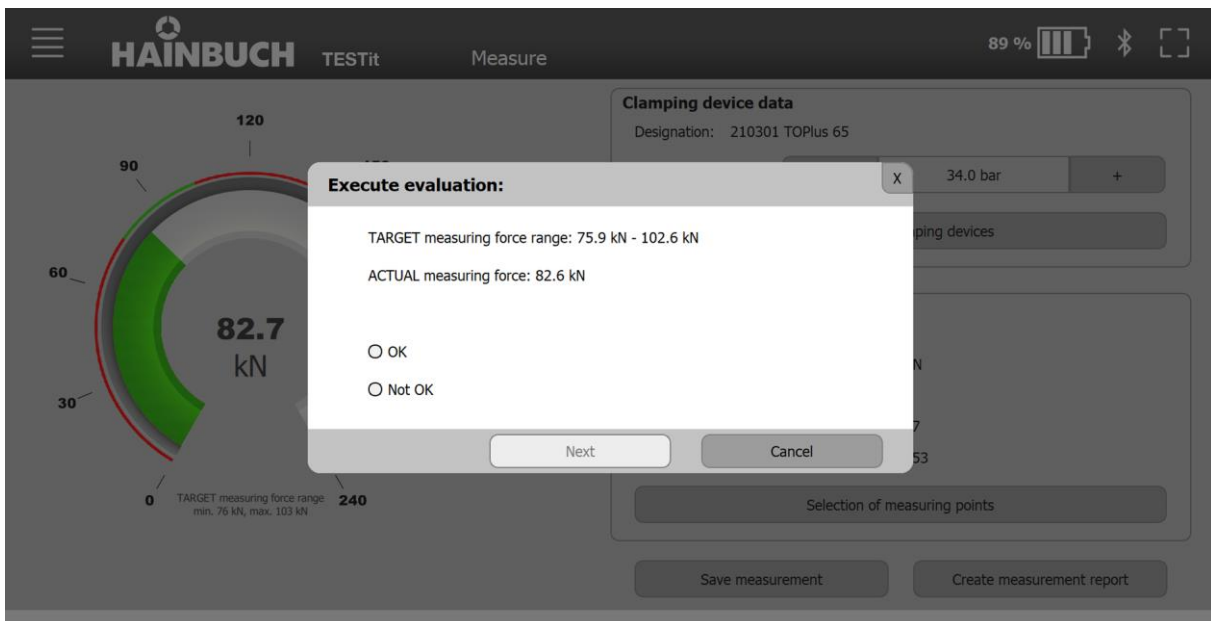


INFORMATION

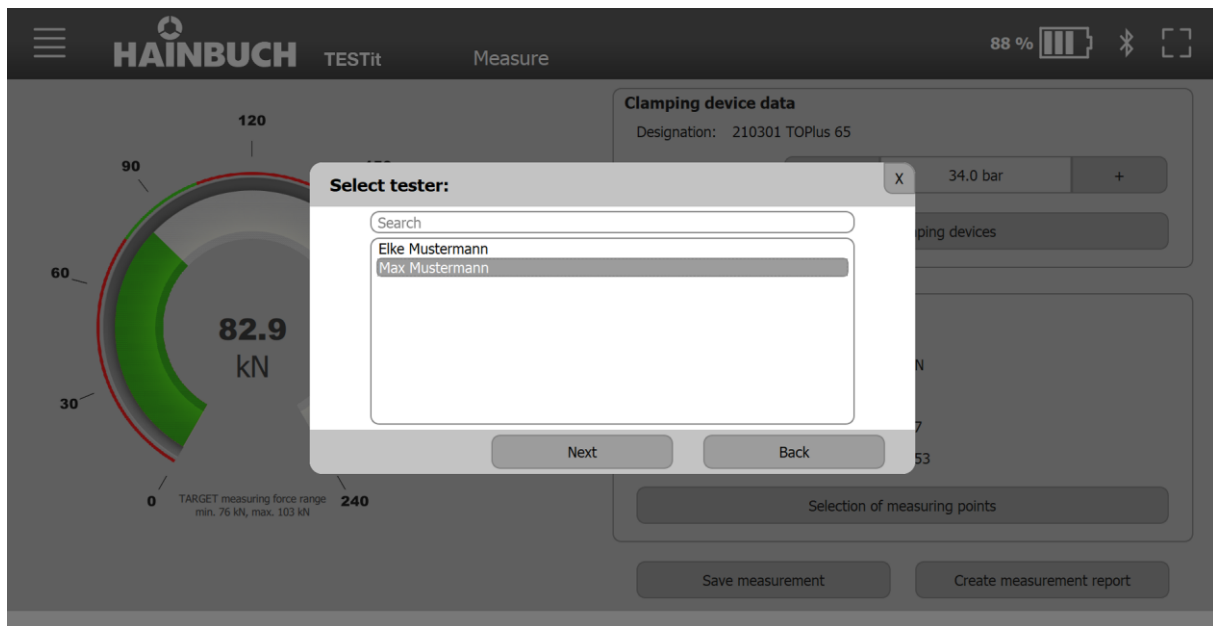
The saving process can be canceled at any time via the »X« in the upper right corner.

Use the »Back« button to navigate back to the previous window.

1. Click the »Save measurement« button.



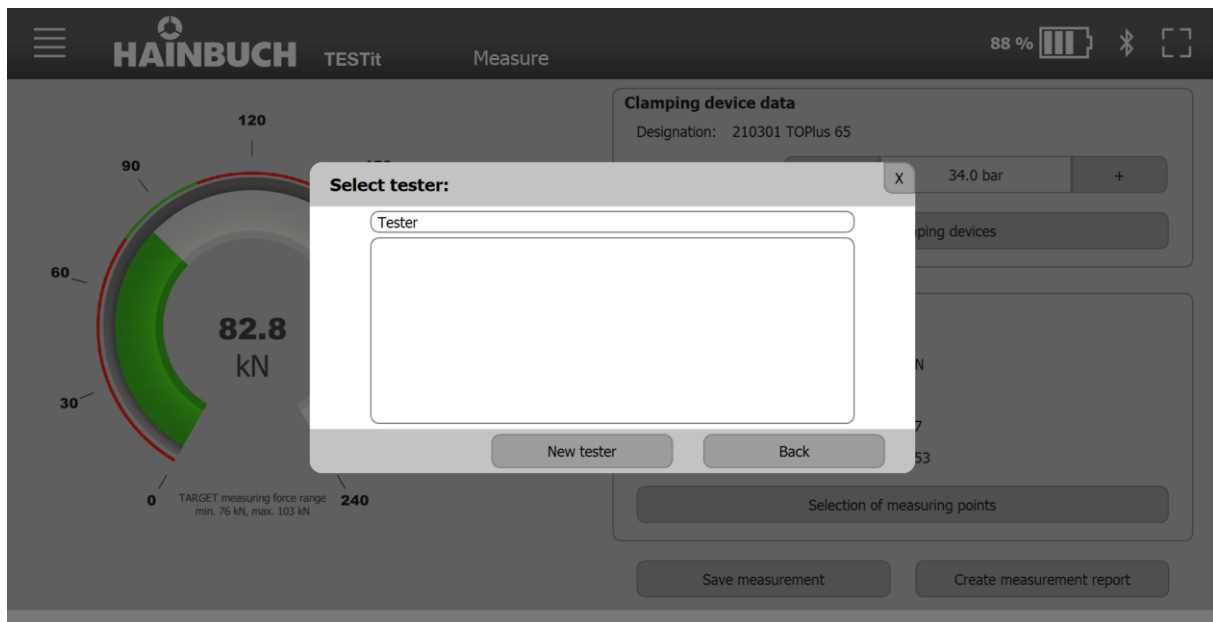
2. Evaluate the measurement by selecting »OK« or »Not OK«. The evaluation of a measurement is carried out at the discretion of the tester.
3. Click »Next«.



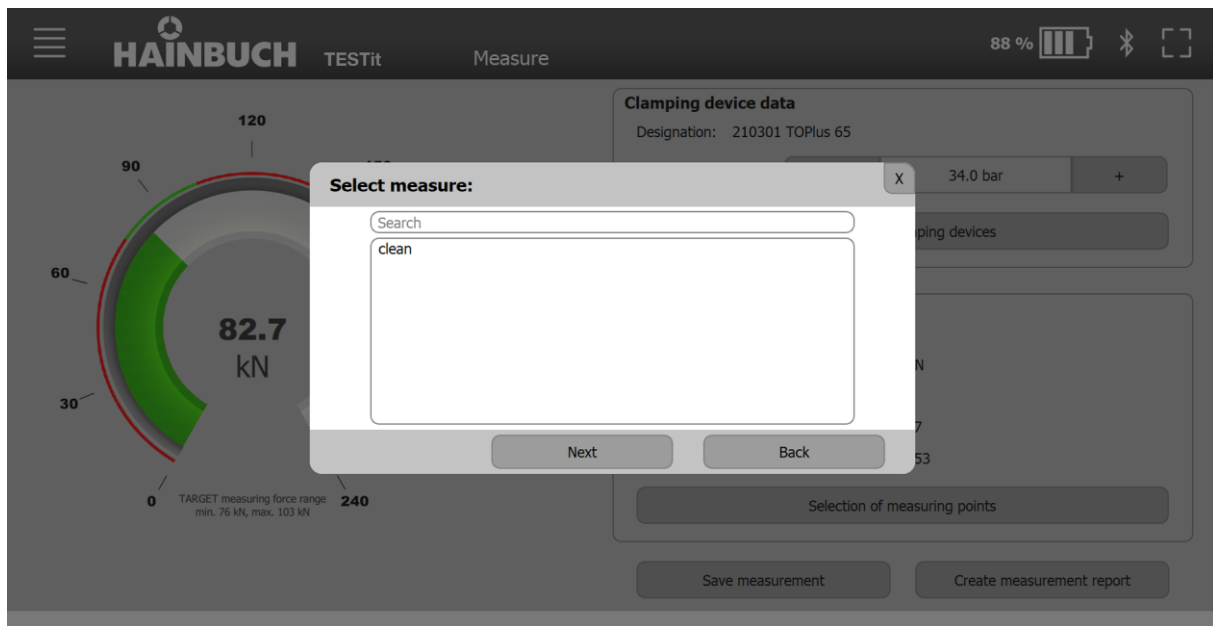
4. Select the tester.

5. Click »Next«.

Alternatively, create a new tester:



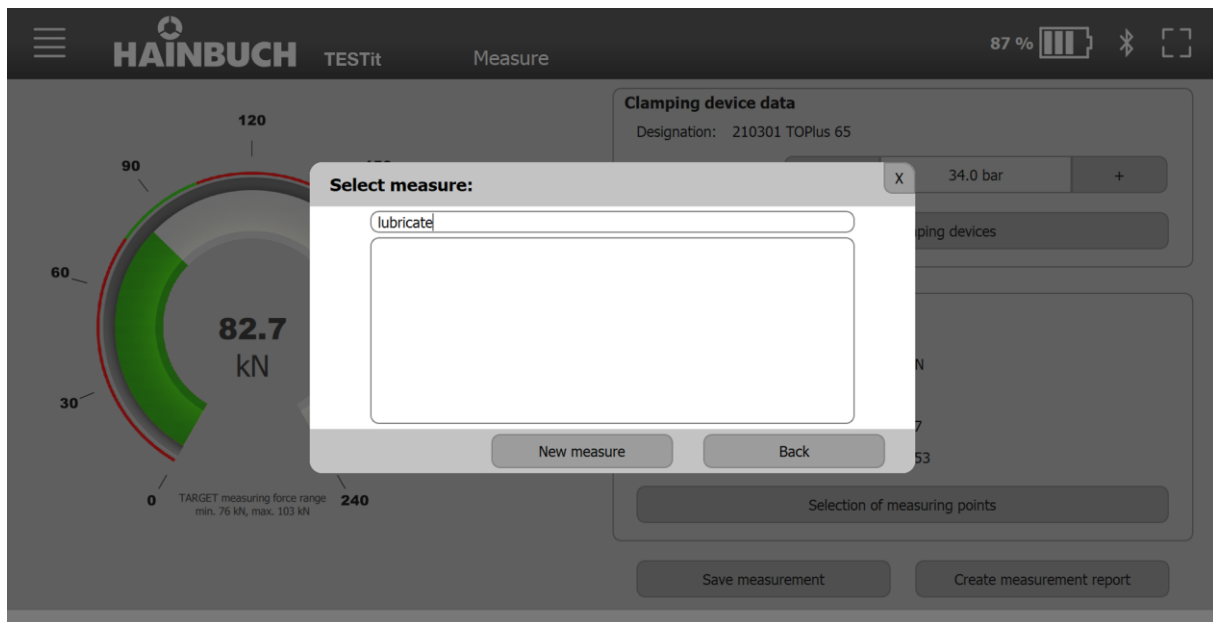
- Enter the new tester in the search field.
- Click »New tester«. This creates new testers and automatically saves them for this measurement.



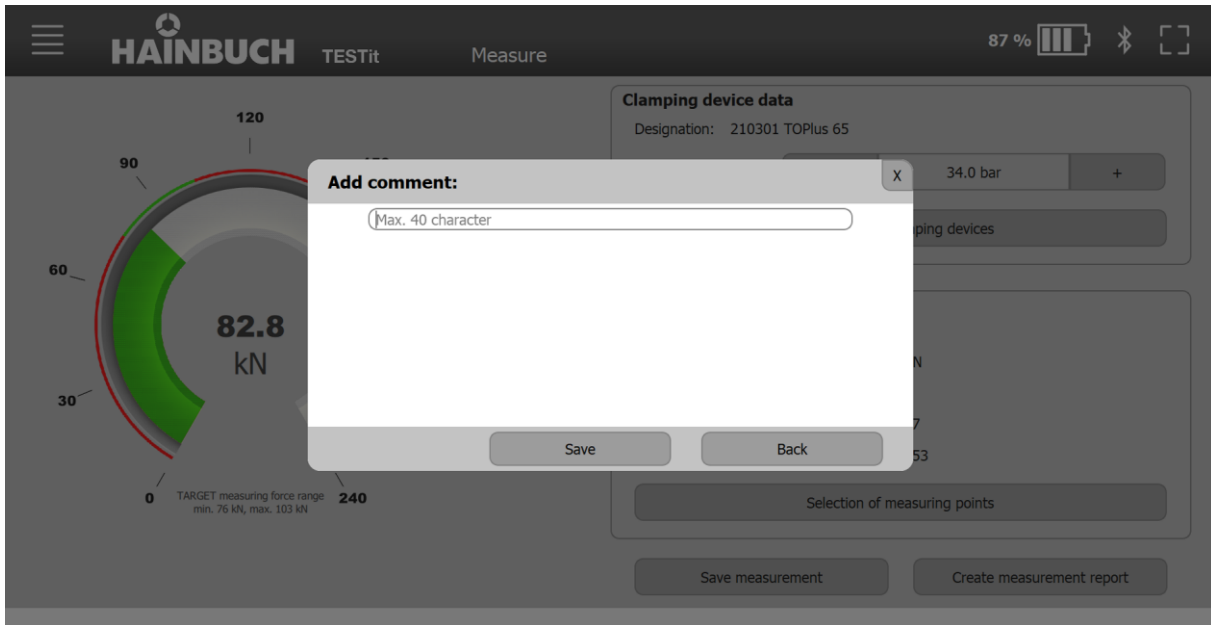
6. Optionally, select an action.

7. Click »Next«.

Alternatively, create a new action:



- Enter the new action in the search field.
- Click »New action«. This creates the new action and automatically save it for this measurement.



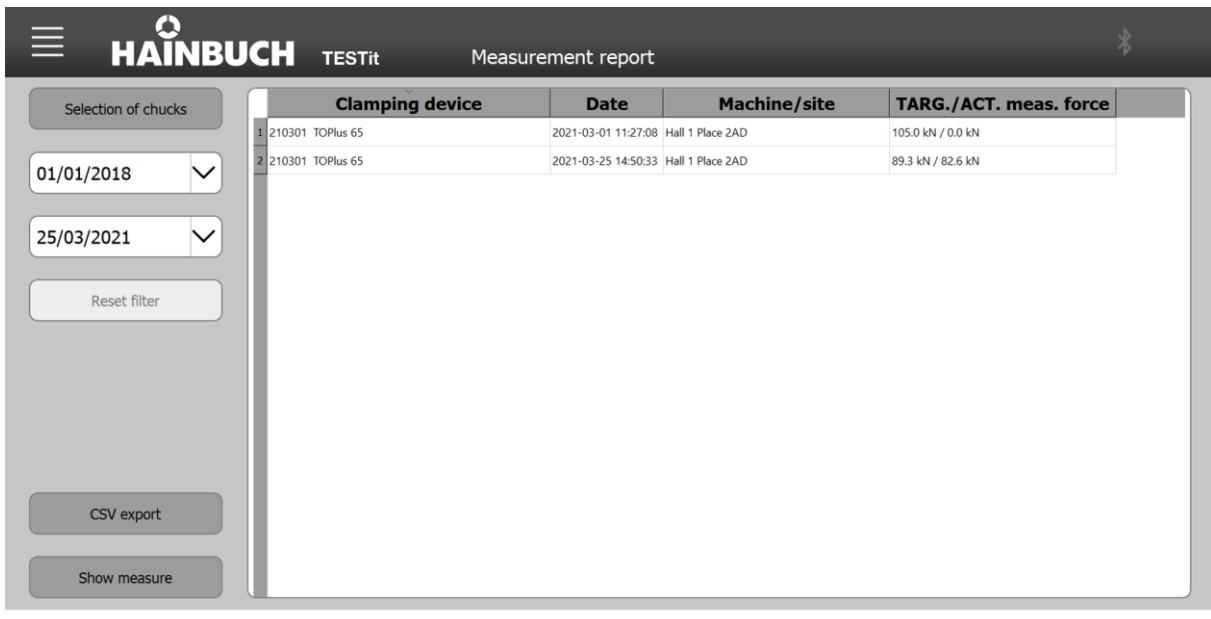
8. Optionally add a comment.
9. Click »Save«.

9.4.5 Creating a measurement protocol

A measurement protocol can be created from a saved measurement. This is possible regardless of whether a measuring device is connected or not.

The measurement report can be created as a CSV-formatted file or in PDF format.

1. Click the »Create measurement protocol« button.



INFORMATION

If no measurement is selected, the log of all displayed measurements is created.

2. Select one or more measurements.

PDF format

1. Click the »Display measurement« button.

The measurement report will be opened in PDF format.

2. Save the displayed document by using »Save As«. The location where the document is saved can be freely selected by the operator.

CSV-formatted file

1. Click the »CSV Export« button.
2. Save the displayed document by using »Save As«. The location where the document is saved can be freely selected by the operator.

Filtering and sorting

The list of saved measurements can be sorted and filtered.

The listed measurements can be sorted by different criteria:

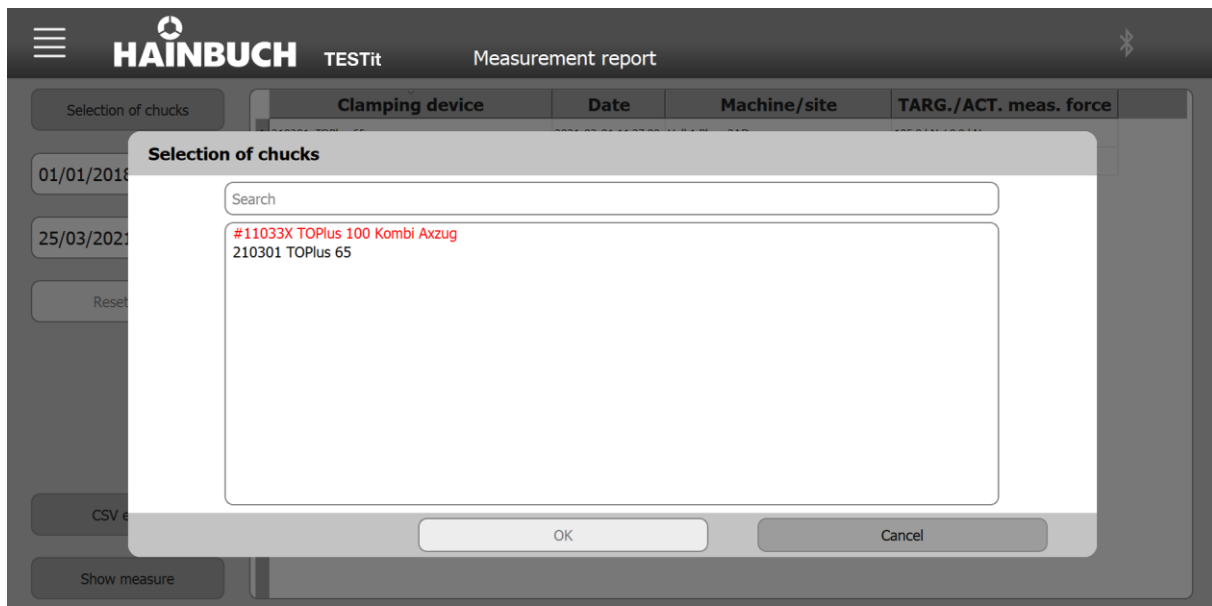
- »Clamping device« [depending on ID number, ascending / descending]
- »Date« [ascending / descending based on how current]
- »Machine/location« [alphabetically, ascending / descending]

The listed measurements can be filtered by different criteria:

- »Clamping device«
- »Date«

To filter by clamping device:

1. Click the »Select clamping device« button.



INFORMATION

In the selection window, two colors are used to list the clamping devices.

- Clamping devices written in red indicate to the worker that the clamping device has a missing measurement. A clamping device is marked in red if the time from the last measurement exceeds the time of the selected maintenance interval. The maintenance interval is defined when creating a clamping device, but can be changed at any time.
- Clamping devices written in black mean that the time of the maintenance interval has not yet elapsed. The time from the last measurement to the current date is less than the time of the selected maintenance interval.



INFORMATION

In the selection window you can search for a clamping device by means of the ID number.

2. Select the desired clamping device.
3. Click »OK«.

To filter by date:

1. Enter the start date and the end date in the corresponding fields.

	Clamping device	Date	Machine/site	TARG./ACT. meas. force
1	Nr.19289 TOPlus 65	2020-01-15 07:41:52		120.0 kN / 0.0 kN
2	Nr.19289 TOPlus 65	2020-01-15 07:43:51		120.0 kN / 0.0 kN
3	#239874 TOPlus 65	2022-02-01 10:51:57	Showroom	120.0 kN / 0.0 kN
4	#239874 TOPlus 65	2022-02-02 13:45:43	Showroom	72.0 kN / 73.9 kN
5	#239874 TOPlus 65	2022-02-02 13:46:15	Showroom	96.0 kN / 67.4 kN
		2022-02-01 13:46:44	Showroom	141.0 kN / 156.6 kN
		2022-02-01 10:53:10	Halle C 11	87.5 kN / 0.0 kN

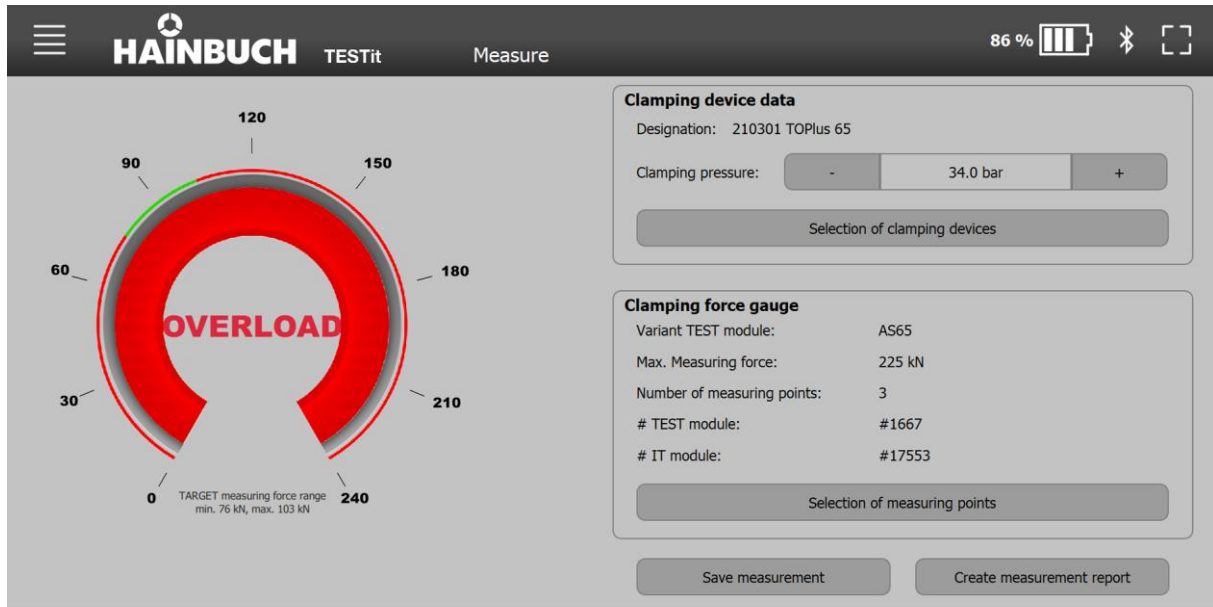
9.4.6 Overload

Each variant of the TEST modules is designed for a maximum measuring force.

Clamping device data
Designation: 210301 TOPlus 65
Clamping pressure: 34.0 bar

Clamping force gauge
Variant TEST module: AS65
Max. Measuring force: 225 kN
Number of measuring points: 3
TEST module: #1667
IT module: #17553

If the maximum measuring force is exceeded by up to 3%, the measured value is colored red in the tachometer.



If the measuring force exceeds the maximum measuring force by $> 3\%$, the display changes. In this case, the measured value in the tachometer is overwritten with the text »OVERLOAD«.

As soon as the current measuring force is smaller than the maximum measuring force, the display changes again.

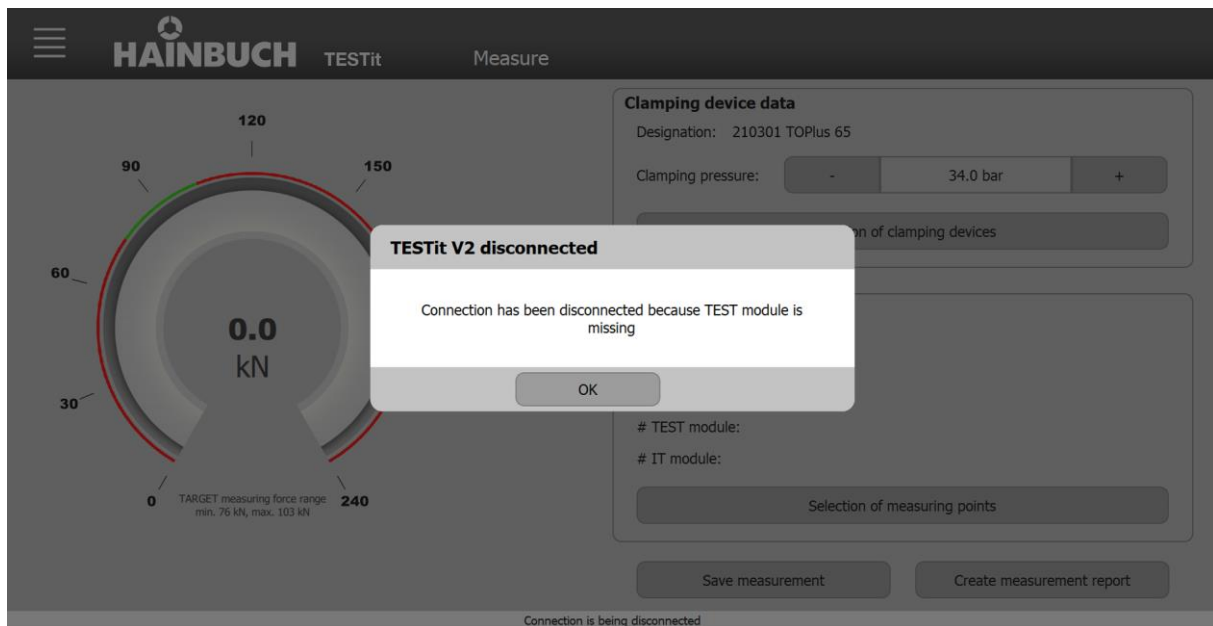
If an overload is indicated, it is recommended that you return the TEST module to HAINBUCH for checking and factory calibration.

9.4.7 Checking the connection between TEST module and the IT module

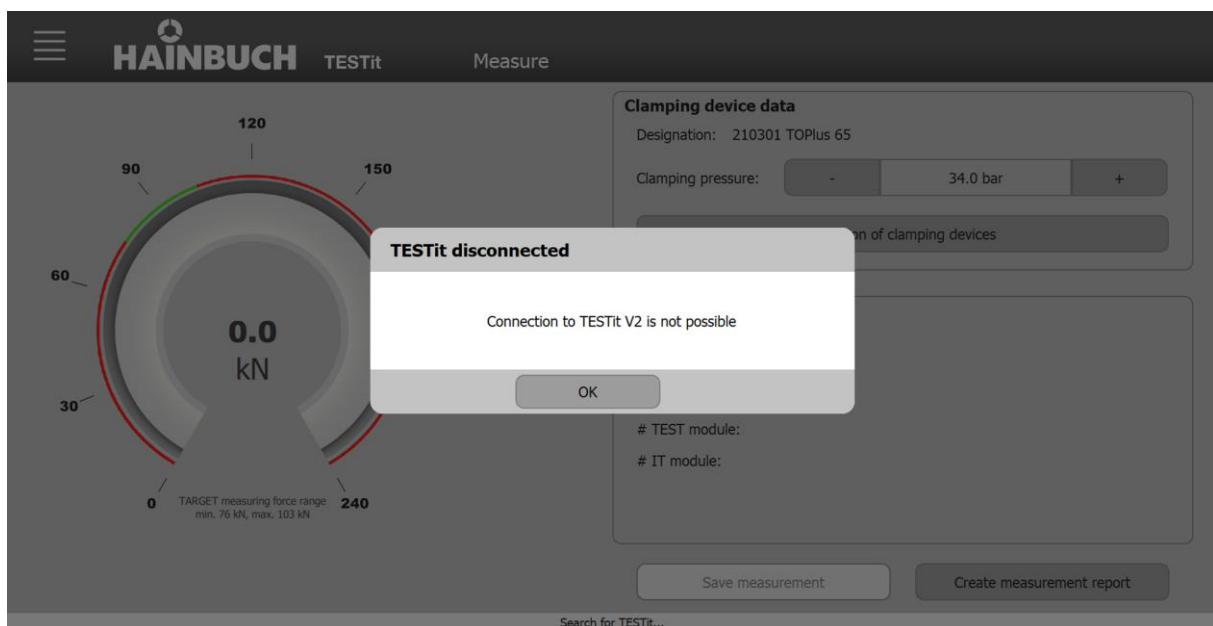
An IT module cannot be connected to the TESTit software unless an TEST module is attached.

To ensure that an IT module is correctly connected to a TEST module, a query of the TEST module takes place. whether the TEST module is still connected to the IT module is determined while a connection exists between the TESTit software and the measuring device.

If a TEST module is disconnected from the IT module while the measuring device is connected to the software, the measuring device is disconnected from the TESTit software. In the TESTit software, the following message window draws attention to this.



After a 30-second-long unsuccessful attempt to reconnect, the following message window appears.



9.5 Speed/force diagram

Under »Speed/force diagram«:

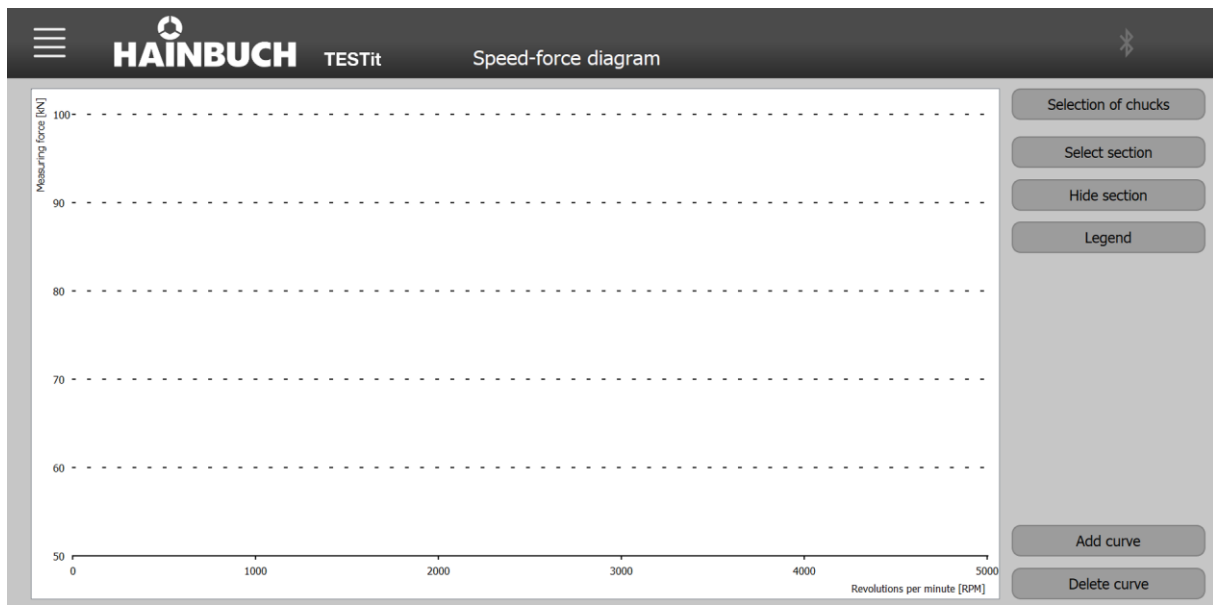
- A new centrifugal force curve can be created
- Several centrifugal force curves can be compared

In the centrifugal force curve, the measured force values [y-axis] are recorded versus the associated speed values [x-axis].

9.5.1 Selecting a clamping device

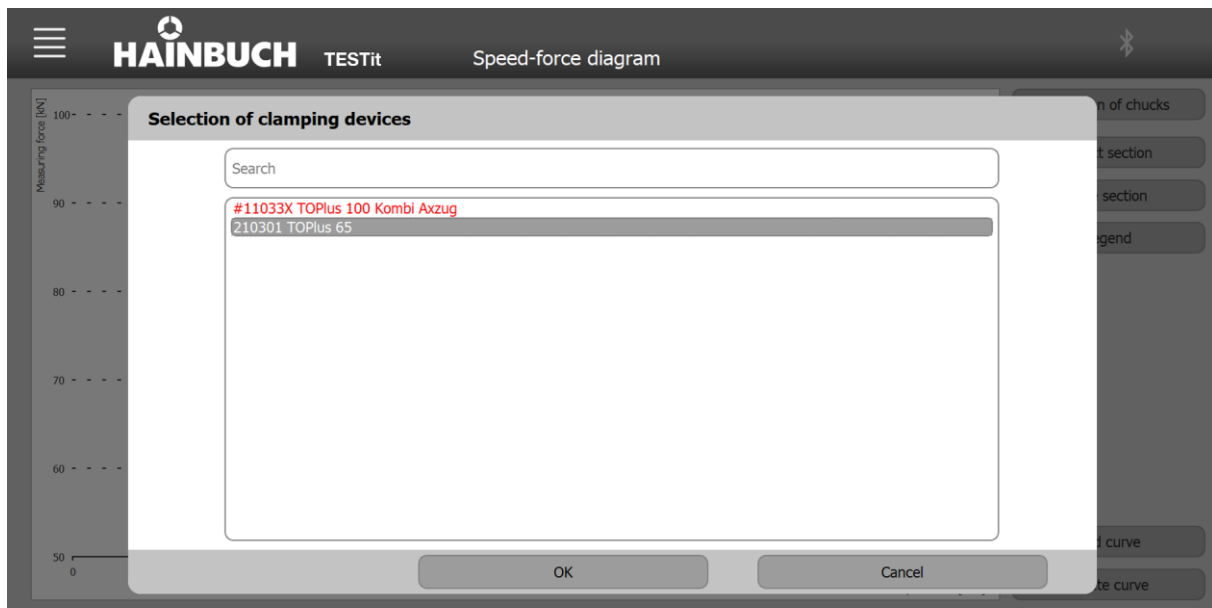
If a clamping device is already selected on the »Measure« page, it will be used for the measurement of a centrifugal force curve.

If no clamping device has been selected, or if you wish to select a different clamping device, the following steps are necessary.



=

1. Click the »Select clamping device« button.



INFORMATION

In the selection window, two colors are used to list the clamping devices.

- Clamping devices written in red indicate to the worker that the clamping device has a missing measurement. A clamping device is marked in red if the time from the last measurement exceeds the time of the selected maintenance interval. The maintenance interval is defined when creating a clamping device, but can be changed at any time.
- Clamping devices written in black mean that the time of the maintenance interval has not yet elapsed. The time from the last measurement to the current date is less than the time of the selected maintenance interval.



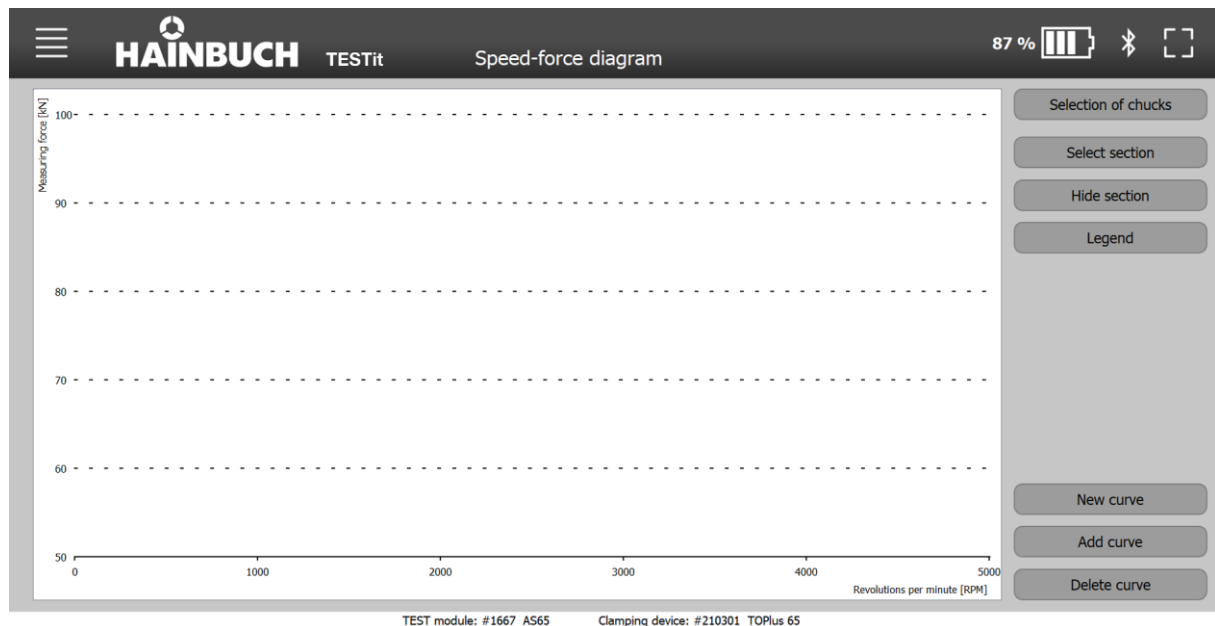
INFORMATION

In the selection window you can search for a clamping device by means of the ID number.

2. Select the desired clamping device.
3. Click »OK«.

The selected clamping device appears on the »Measure« page.

Once a clamping device is selected, the »New curve« button is displayed.



9.5.2 Selecting a measuring device

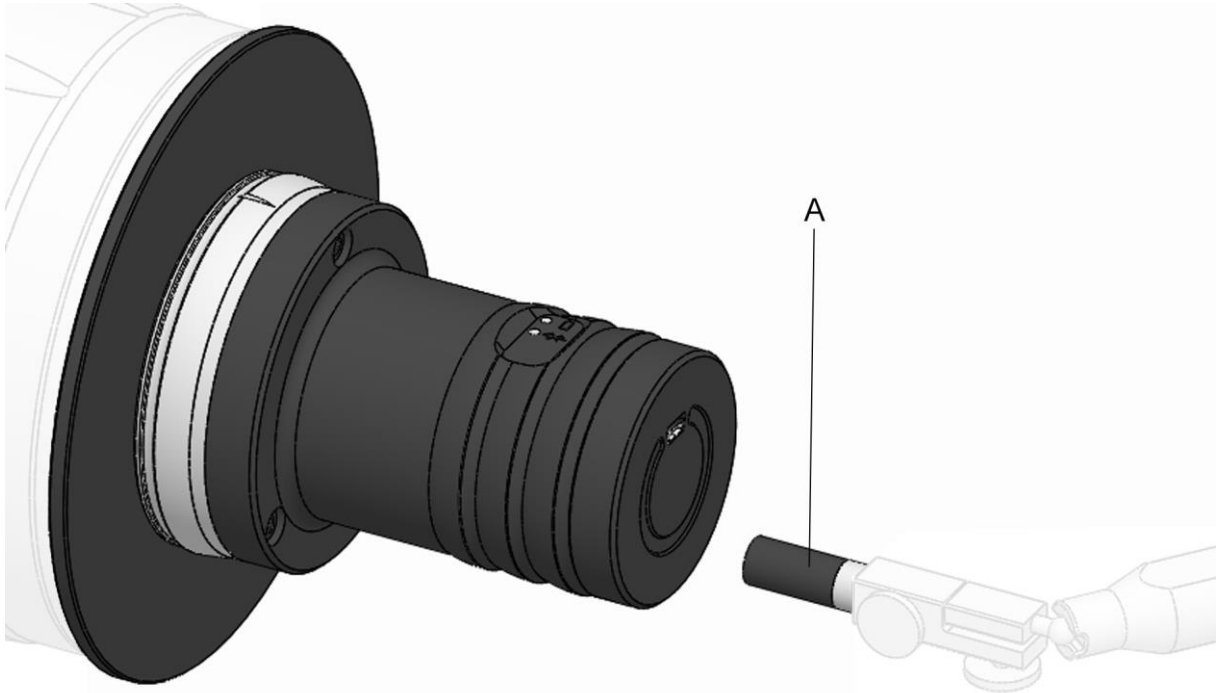
The measuring device is selected as described in the chapter »Measuring«.

The selected measuring device appears on the »Measure« page.

All relevant data for the selected measuring device are displayed on the »Measure« page in the »Clamping force measuring device« area.

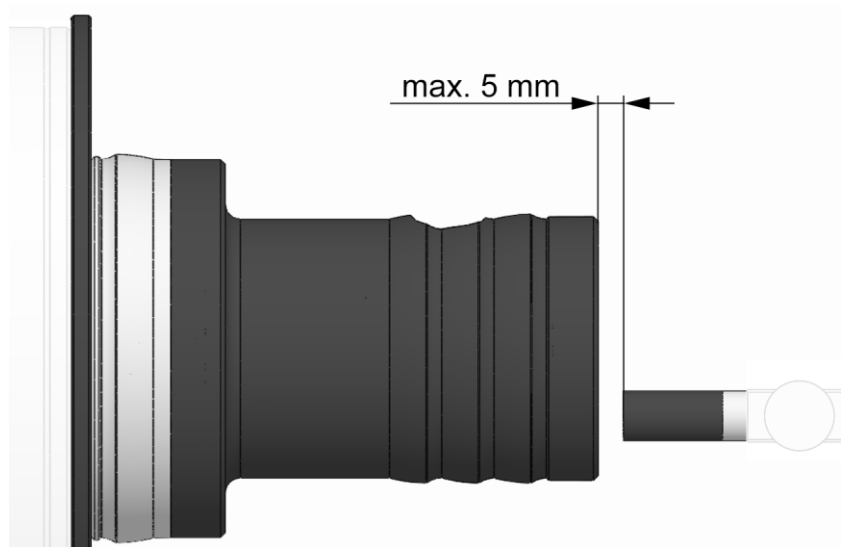
In the case of a measuring device for an external clamping device, the number of measuring points must be set on the »Measure« page.

9.5.3 Creating a centrifugal force curve



A Magnet

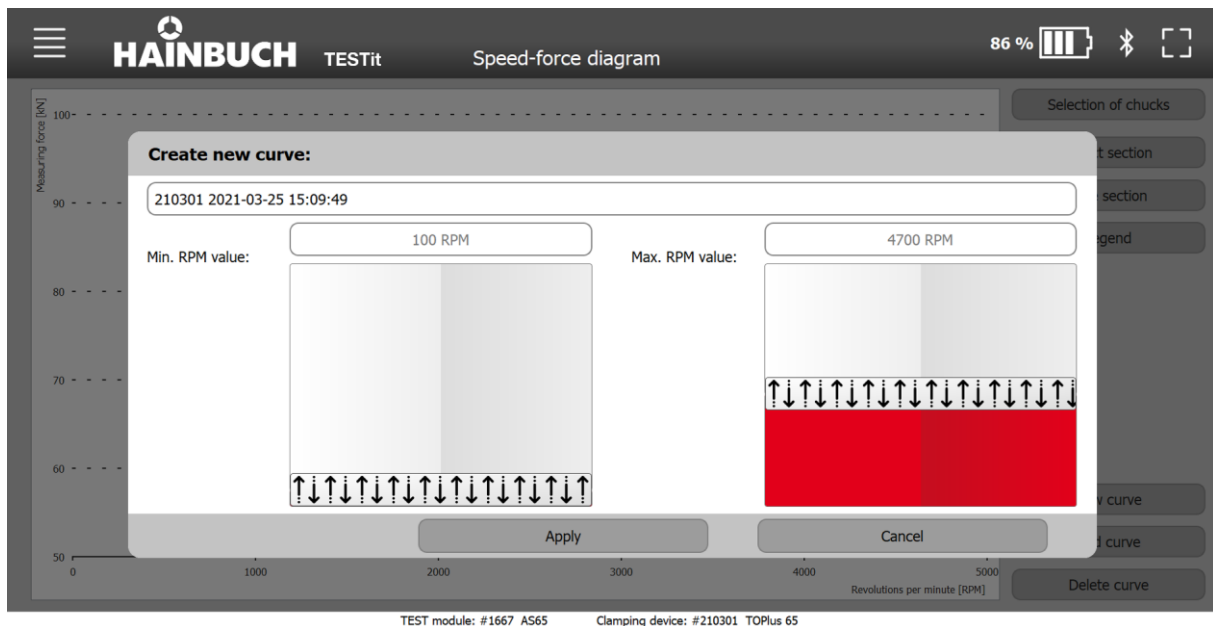
1. Prepare the TESTit software and the measuring device [see chapter »Preparation«].
2. Select the clamping device in the TESTit software.
3. Select the measuring device in the TESTit software.
4. Clamp the measuring device [see chapter »Clamping the measuring device«]. The measurement is started and visualized by the TESTit software.



INFORMATION

The magnet must be positioned over the turned groove on the measuring device housing so that the distance between the magnet and the measuring device is a maximum of 5 mm.

5. Position the magnet over the measuring device, but so that it does not touch the measuring device.
6. Click the »New curve« button.



INFORMATION

The name of the centrifugal force curve can be preset under »Speed/force diagram settings«. The default setting can be changed at any time.

7. Enter the name of the centrifugal force curve or modify it if necessary.



INFORMATION

The minimum speed value defines at which speed the recording of the centrifugal force curve is started.

8. Enter the minimum speed value.



INFORMATION

The maximum speed value defines the final value for determining the centrifugal force curve.

9. Enter the maximum speed value.
10. Click »Apply«. The TESTit software is ready for measurement.



INFORMATION

The maximum speed value must be reached within 10 seconds after the minimum speed value is exceeded, otherwise the TESTit software will automatically abort the measurement process. »Recording canceled« appears in the status bar.

11. Bring the clamping device up to the maximum speed saved in the TESTit software.

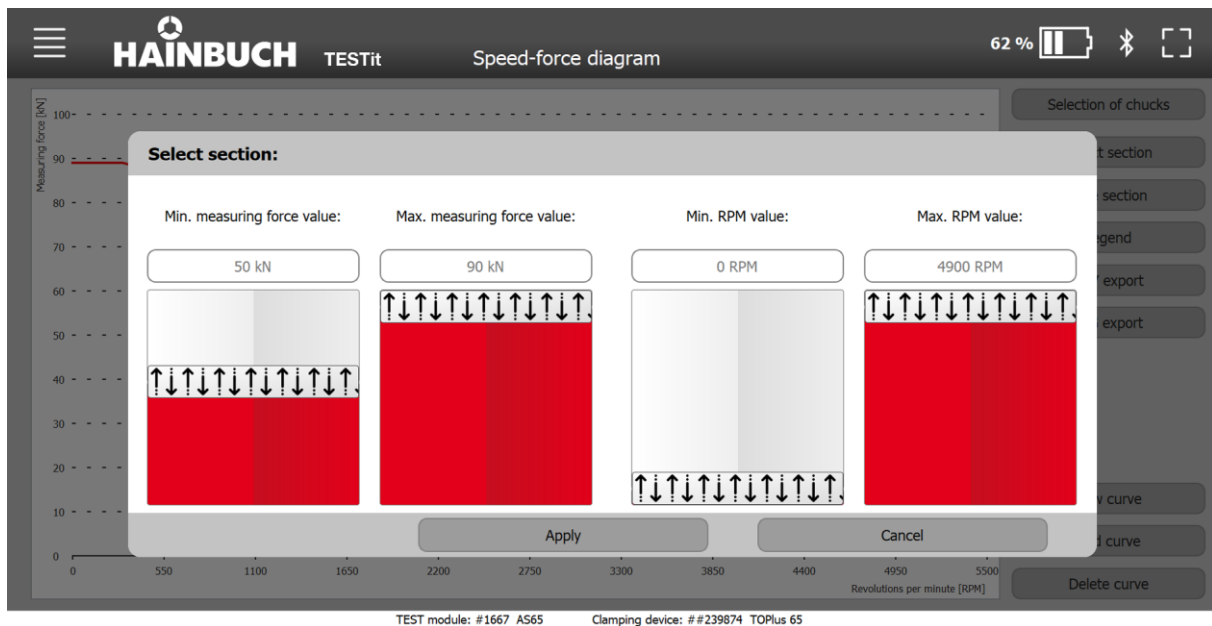
Recording of the measurement curve in the TESTit software starts and ends at the selected speed values.

The centrifugal force curve is plotted in the diagram only after recording has ended. The axes are scaled independently, depending on the maximum values of force and speed.

The centrifugal force curve is automatically stored in the TESTit software.

9.5.4 Selecting a segment

1. Click the »Select segment« button.



2. Enter the minimum and maximum measuring force, as well as the minimum and maximum speed value.

To undo the zoom:

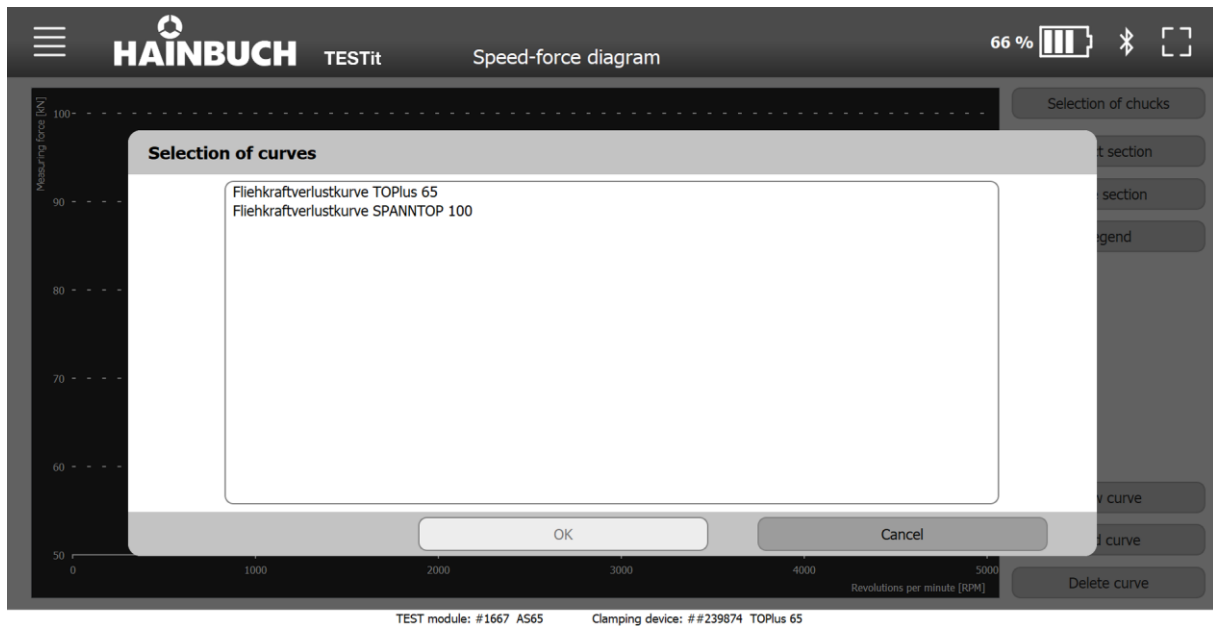
1. Click the »Hide segment« button.

9.5.5 Adding a curve

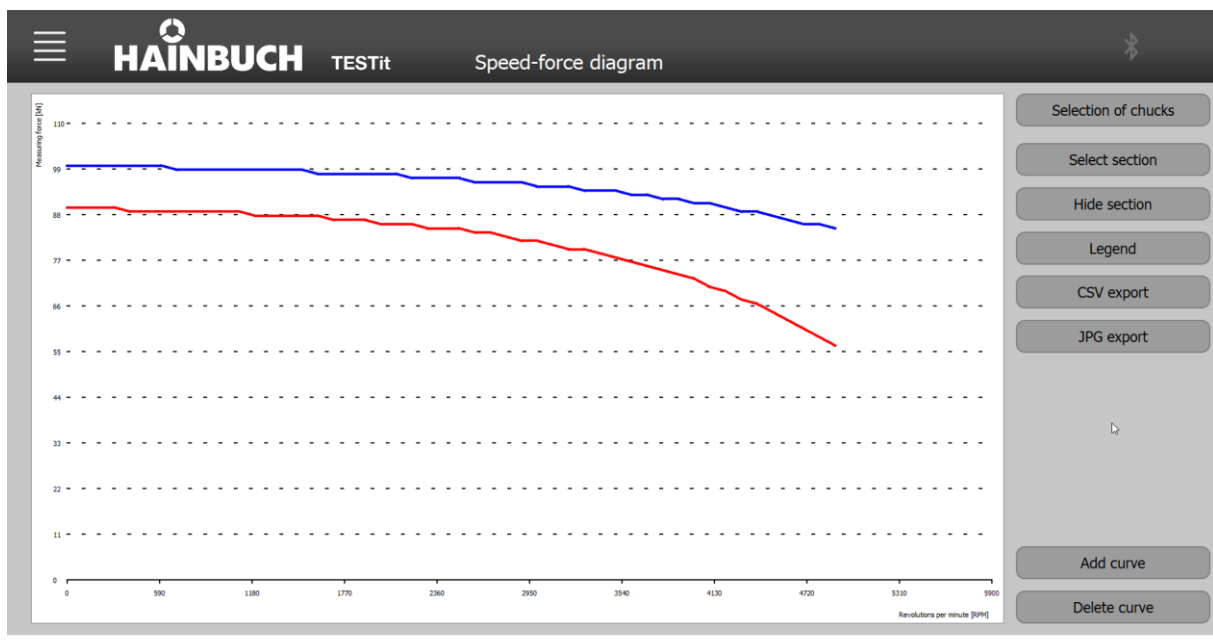
If several curves have already been recorded, it is possible to load curves into the diagram via »Add curve« and compare them. It is not necessary to select a clamping device to visualize stored curves.

Up to six curves can be loaded into the diagram at the same time and compared.

1. Click the »Add curve« button.



2. Select a curve.
3. Click »OK«.

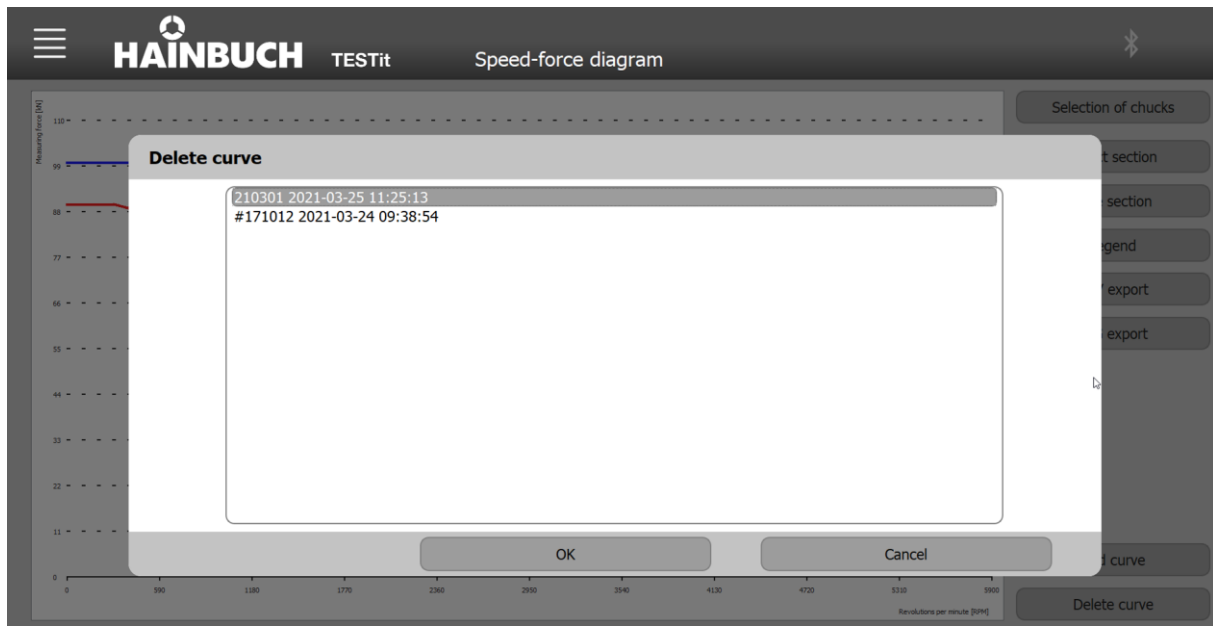


9.5.6 Deleting a curve

A curve can also be deleted from the displayed diagram. Only the visualization of the curve is removed from the diagram.

A saved curve can only be deleted from the database on the Speed/force diagram settings page [see chapter »Speed / force diagram settings«].

1. Click the »Delete curve« button.



2. Select a curve.
3. Click »OK«.

9.5.7 Curve overview

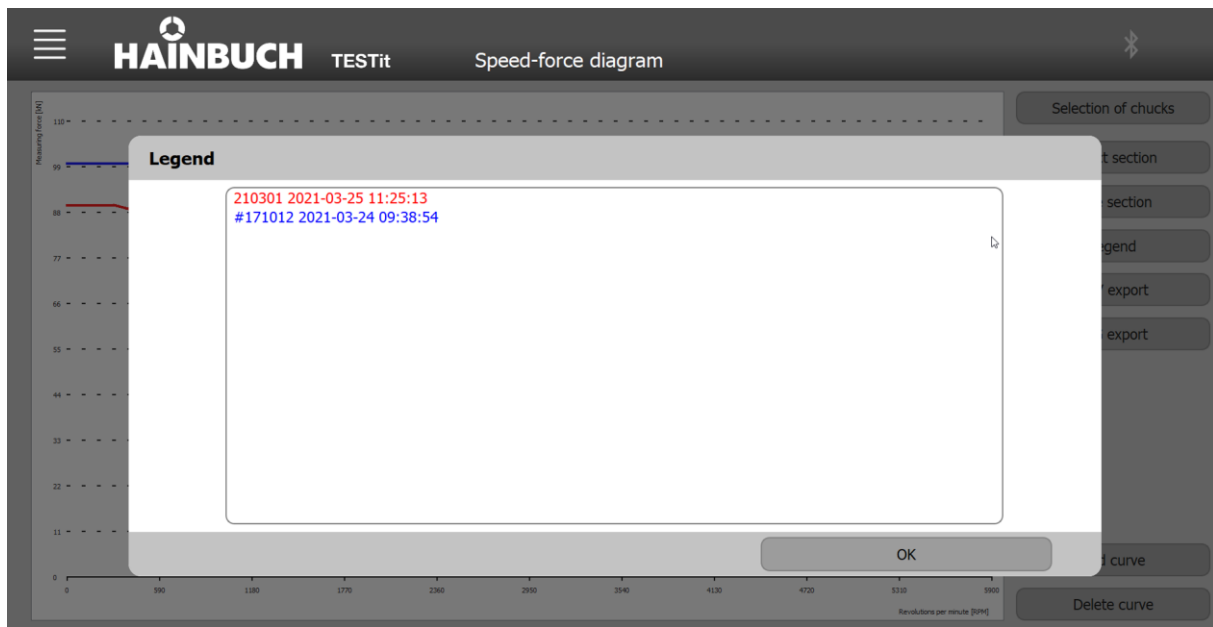
The caption of the diagram is stored under Curve Overview. You can see all the curves added to the diagram here. The name of the curve is displayed in the color in which the curve is shown in the diagram.



INFORMATION

The color of the curves can be changed [see chapter »Speed/force diagram settings«]. The color is assigned in the order in which the curves are added to the diagram. That means that the first added curve gets the color that is saved for »Curve 1«.

1. Click the »Curve overview« button.



9.5.8 Exporting a curve

The curve can be exported as a CSV-formatted file or as an image.

All curves displayed in the diagram are exported.

CSV-formatted file

1. Click the »CSV Export« button.

The measurement is opened as an Excel file. It shows the name of the curve and columns for the speed and force values.

Image

1. Click the »JPG Export« button.

The measurement is opened as a JPG file.

10 Maintenance

10.1 Maintenance safety

The measuring device must be handled with care.



INFORMATION

Special attention must be given to the surface of the TEST module. This can become worn as a result of the clamping forces that are applied with frequent use.

- Replace the measuring device if there are visible or measurable signs of wear.

10.2 Cleaning



WARNING

Eye injuries and cuts caused by failure to wear protective clothing during cleaning operation!

- Never use compressed air to clean the product.
- Also wear the following items of personal protective equipment, in addition to the basic equipment:



1. Use a cloth moistened with detergent to remove all oil and grease residues from the product.

10.3 Annual factory calibration

The TEST module is already calibrated at the factory when delivered. This can be read on the stamp in the associated service passport.

The TEST module must be recalibrated annually to ensure measurement accuracy.

Each time a measuring device is connected to the TESTit software, the date of the last calibration is displayed for 20 seconds in the status line.



NOTE

Damage to materials from service work on the product by the customer!

- Service work on the TEST module or the IT module by the customer is not permitted.
- Return the TEST module and/or the IT module to HAINBUCH for service.

Return the TEST module together with its service passport to HAINBUCH for the annual factory calibration.

Other service work performed by HAINBUCH will also be noted in the service passport and this will be returned together with the newly calibrated TEST module.



TESTit Spannkraftmessgerät // Clamping force gauge

Servicepass // Service Pass

Seriennummer
Serial number

HAINBUCH
SPANNENDE TECHNIK

11 Disposal

When the measuring device has reached the end of its useful life, please return it to HAINBUCH for disposal. Note »For disposal« on the delivery papers.

The specific guidelines of the carrier for transport of lithium polymer rechargeable batteries installed in equipment must be observed.



DANGER

Serious injuries from possible fire and explosion when removing the battery!

- Never remove the rechargeable battery.
- The display device, the power adapter and the USB charging cable must be disposed of in accordance with the manufacturer's operating instructions.
- These parts can also be returned to HAINBUCH for disposal.

12 Faults

The following chapter describes possible causes for faults, and the work involved in remedial action.

If multiple faults occur, shorten the maintenance intervals in accordance with actual load levels.

Contact the manufacturer if faults occur that cannot be remedied by following these instructions [see »Contact« chapter].

12.1 Procedure with faults

This applies in all cases:

1. With faults that constitute an immediate danger to people or capital equipment, press the Emergency Stop button on the machine tool immediately.
2. Establish the cause of the fault.
3. If troubleshooting requires work to be conducted in the danger area, switch the machine tool into set-up mode.
4. Notify the person on location of the fault immediately.
5. Depending on the type of fault, get it remedied by authorized and appropriately skilled specialists.



INFORMATION

The troubleshooting table in the following section provides information about who is authorized to remedy a given fault.

6. In the event of a fault not caused by the product, the fault may be caused by something close to the machine tool. For this, refer to the operating instructions of the machine tool.

12.2 Fault table

Fault	Possible cause	Remedial action	Remedied by
IT module is not found, the gray Bluetooth symbol is not displayed	IT module's rechargeable battery is discharged	Charge IT module	Skilled specialist
	Bluetooth driver of the display device is not working correctly	Restart the display device and the TESTit software	Skilled specialist
	Bluetooth is deactivated on the display device	Activate Bluetooth in Windows settings	Skilled specialist
	IT module not in range	Move IT module closer to TESTit software [display device]	Skilled specialist
Unable to connect to IT module although it is detected and listed	Rechargeable battery of the IT module is too weak	Charge IT module	Skilled specialist
	IT module not attached to TEST module	Attach IT module to TEST module	Skilled specialist
	IT module is at range limit of the radio signal	Move IT module closer to TESTit software [display device]	Skilled specialist
	IT module needs to be rebooted	Reboot the IT module [see chapter »Resetting the IT module«]	Skilled specialist
Gray Bluetooth symbol is displayed, but IT module is not shown in the selection window	IT module was not visible for Bluetooth driver at the time the gray Bluetooth symbol was pressed	Close and reopen the »Select clamping force measuring device« window by pressing »Cancel«.	Skilled specialist
Connection to the TESTit V1 device cannot be established	TESTit V1 device is out of Bluetooth range	Bring the TESTit V1 device within range of the software and connect again	Skilled specialist
Display device does not start	Display device's rechargeable battery is discharged	Charge the rechargeable battery of the display device	Skilled specialist
	Display device has a defect	Return the display device to the manufacturer	HAINBUCH

Fault	Possible cause	Remedial action	Remedied by
TESTit software displays a measuring force although no measurement is being performed	Measuring device was overloaded during a previous measurement	TEST module must be recalibrated	HAINBUCH
Measuring device is damaged	Measuring device dropped / struck	Functional test at the factory; If necessary, components must be replaced	HAINBUCH

Table 13: Fault table

12.3 Resetting the IT module

In rare cases, it is necessary to restart the IT module. This restart is performed by means of the reset button.



INFORMATION

The Reset button can be reached with a suitable tool through the 1.5 mm hole.

1. Press the Reset button.

If the LED lights up green, the restart of the IT module has been performed successfully.

If the LED does not light up, the charge level of the IT module's rechargeable battery may be too low. The IT module must then be recharged.

13 Annex

13.1 Contact

The following hotlines are available to you for orders, schedule tracking and emergencies.

Order hotline

Ordered quickly, supplied swiftly. Just phone:

+49 7144. 907-333

Tracking hotline

Current status of your order? Just call:

+49 7144. 907-222

24 hour emergency phone line

Has a system crash occurred, or some other technical emergency?

Our experts are there for you around the clock:

+49 7144. 907-444

For advice or help, you can contact the sales partners and service staff listed in www.hainbuch.com.

13.2 Conformity declaration

The conformity declaration is supplied with the product and with its manual.

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Warranty 12



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