

1 Control unit (BE)

Brief description

Bolting operations (all implemented tightening torques and further rotation angles) or tensioning operations can be stored using the optional control unit (BE). After being transferred to a computer, the data can serve as verifiable proof of work.

pA# 82954

Scope of delivery

The scope of delivery for the control unit (BE) comprises the following:

- Control unit (BE)
- Docking station
- Adapter cable
- CD
- Holder (option)

1.1 Illustration

Illustration of the control unit (BE)



- 1 Housing with port for the docking station
- 2 Display
- 3 Docking station
- 4 Menus and navigation buttons
- 5 Input buttons
- 6 Port for the adapter cable

Fig. 1: Illustration

Control unit (BE)

Illustration

Display

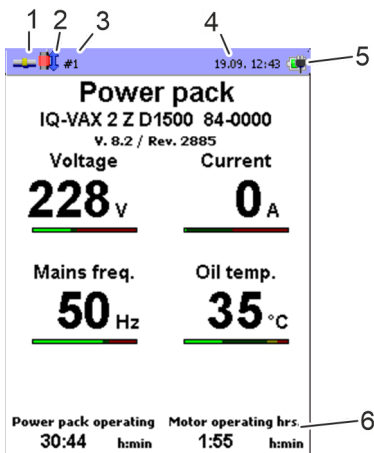


Fig. 2: Display elements

1	Connection status	
		Control unit (BE) not connected to the hydraulic power pack
		Control unit (BE) connected to the hydraulic power pack
		Control unit (BE) has a data connection to the PC
2	Hydraulic power pack status	
		Hydraulic tensioner mode
		No bolting application transmitted
		Torque function
		Loosening function
		Torque rotation angle function
		Pressure adjustment mode active 1,500 bar – hydraulic tensioner function 800 bar – bolts function – learning required
3	Number of the current bolting operation	
4	Date, time	
5	Battery charge status or mains supply	
6	Footer	

Menus and navigation buttons

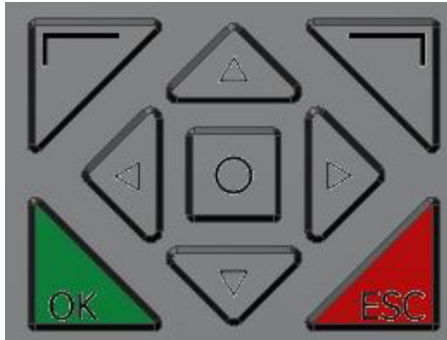


Fig. 3: Menus and navigation buttons

	Triangular button
	Navigation buttons
	Menu button
	Confirmation button [OK]
	Cancel button [ESC]

Input buttons

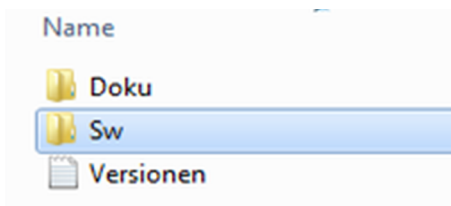


Fig. 4: Input buttons

Inputs of letters and numbers

Switch between upper case, lower case, and numerical input

Software



The "BE32.exe" PC software is part of the scope of delivery for the control unit (BE). This allows you to create bolting applications on the PC, which can then be transferred to the connected hydraulic power pack via the control unit.

A CD containing the following is enclosed with the control unit:

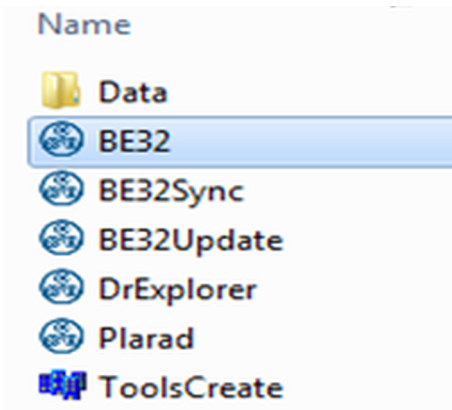
Doku - Operating instructions in several languages

Sw - Folder containing saved functions

Versionen - Information about the current software version

Control unit (BE)

Safety



The 'Sw' folder contains the following:

- Data - Data folder
- BE32 - Program for entering documentation specifications
- BE32Sync - Program for synchronising the specifications from the computer with the control unit (BE) and transferring the bolting application data
- BE32Update - Online update for new functions and parameters
- DrExplorer - Online update for new functions and parameters
- ToolsCreate - Tool database

Adapter cable



Fig. 5: Adapter cable

An adapter cable is part of the scope of delivery for the control unit (BE). This cable connects the control unit (BE) to the data interface of the hydraulic power pack.

Red bushing - Connect the red bushing to the control unit (BE).

Blue plug - Insert the blue plug in the documentation and service interface of the hydraulic power pack.

Docking station



Fig. 6: Docking station

A docking station is part of the scope of delivery for the control unit (BE). The docking station allows you to charge the battery of the control unit (BE).

1.2 Safety

If using the control unit (BE), also observe the following safety instructions regarding residual risks posed by the hydraulic power pack and the hydraulic tool:

Battery

The control unit (BE) is equipped with a battery.

**WARNING!****Danger of injury from incorrect handling of batteries!**

Incorrect handling of rechargeable batteries can result in fire, explosions and electric shock. Escaping gases or smoke can lead to poisoning and suffocation.

- Only use the docking station included in the delivery to charge the battery.
- Never open the control unit (BE) and remove the battery. Always dispose of the battery together with the control unit.
- If the battery is faulty, contact PLARAD® service.

Data protection

Data is recorded while the control unit (BE) is in use.

The operator must ensure that saving and processing of personal data complies with the locally applicable data protection laws.

1.3 Charging the control unit (BE)

If the control unit (BE) is connected to the hydraulic power pack, the hydraulic power pack supplies the control unit (BE) with electrical energy.

The control unit (BE) is also equipped with a battery. If the control unit (BE) is connected to the hydraulic power pack, the battery is not charged.

Connecting the PSU

1. ➔

**DANGER!****Danger of death due to electrical energy!**

Only use the original PSU.

To charge the battery, connect the docking station to the PSU and plug the power plug into the power socket.

Docking station

2. ➔

Connect the control unit (BE) to the docking station.

⇒ The battery of the control unit is charged.

The control unit can be operated for roughly 2 hours without an external power supply if the battery is fully charged.

Control unit (BE)

Putting the control unit (BE) into operation

1.4 Connecting the control unit (BE)

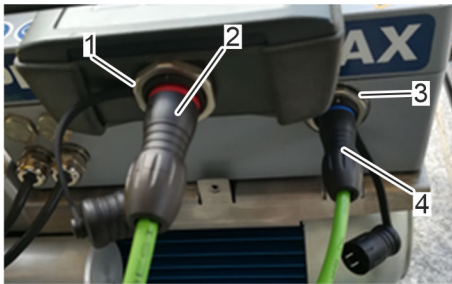


Fig. 7: Connecting the adapter cable

1. ➤ Connect the red bushing of the adapter cable (Fig. 7/2) to the control unit (BE) (Fig. 7/1).
2. ➤ Plug the blue plug of the adapter cable (Fig. 7/3) into the documentation and service interface of the hydraulic power pack (Fig. 7/4).
3. ➤ Supply the hydraulic power pack with power.
⇒ The control unit (BE) is supplied with electrical energy.

1.5 Putting the control unit (BE) into operation

To put the control unit (BE) into operation, proceed as follows:

Starting



1. ➤ Press  to switch on the control unit (BE).

⇒ The control unit (BE) is initialised.
The start screen is displayed.



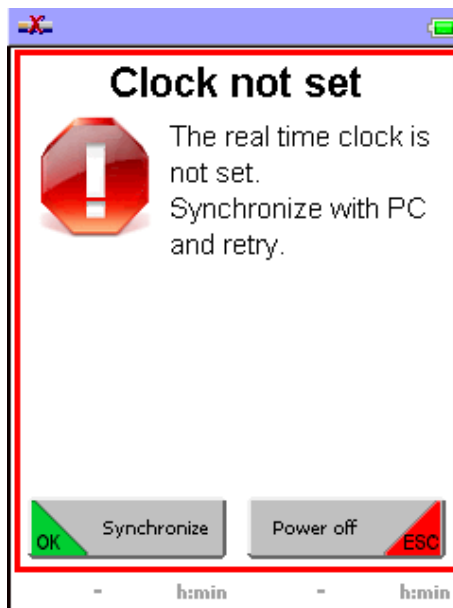


Fig. 8: Message

Initialisation

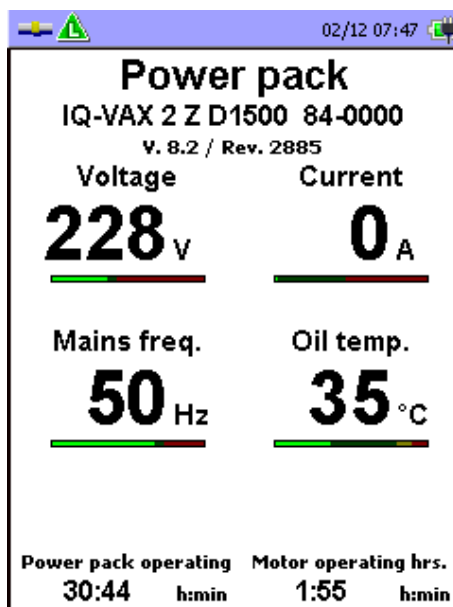


Fig. 9: Power pack data



2. ➤ If the control unit (BE) has never been synchronised with a PC, the message Fig. 8 is displayed. Synchronise the control unit with a PC (↪ *Chapter 1.11 'Data exchange between PC and control unit' on page 21*) and restart the control unit (BE) (↪ *'Starting' on page 6*).
3. ➤ If the message Fig. 8 is displayed in relation to an already synchronised control unit, the internal clock battery is faulty. Have the battery exchanged by PLARAD® service.

4. ➤ Wait until initialisation is complete.
 - ⇒ A proper connection between the hydraulic power pack and control unit (BE) is indicated in the connection status (Fig. 2/1) by .
 - ⇒ If the data connection has been established between the control unit (BE) and the hydraulic power pack, the 'Power pack' menu is displayed.

5. ➤ If there is a faulty connection between the control unit (BE) and the hydraulic power pack (connection status ) , ensure that the adapter cable has been connected correctly.

Control unit (BE)

Tensioning with the control unit (BE) (dual hydraulic power packs only)

1.6 Tensioning with the control unit (BE) (dual hydraulic power packs only)

Preparing the control unit (BE) and hydraulic power pack

Prerequisites:

- The hydraulic power pack and the control unit (BE) are connected ↗ *Chapter 1.4 'Connecting the control unit (BE)' on page 6.*
- The hydraulic power pack and the control unit (BE) are ready for use ↗ *Chapter 1.5 'Putting the control unit (BE) into operation' on page 6.*
- Bolting applications (hydraulic tensioner mode) have been created and were transferred to the control unit (BE) ↗ *Chapter 1.12 'Managing bolting applications' on page 23.*



1. Press  to call up the main menu of the control unit (BE).



2. Use  or  to select the 'Bolting App. Defs.' submenu and confirm with .

⇒ The list of available bolting applications is displayed.

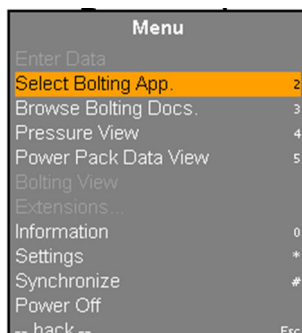


Fig. 10: Bolting application definitions



Fig. 11: Bolting application definitions

3. Use  or  to select the list of bolting applications and confirm with .



Fig. 12: List of bolting applications

4. Use  or  to select the bolting application and confirm with .

Tensioning with the control unit (BE) (dual hydraulic power packs only)

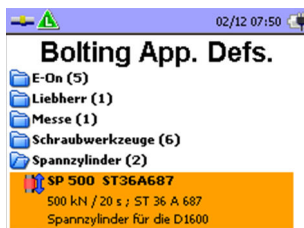


Fig. 13: Bolting application

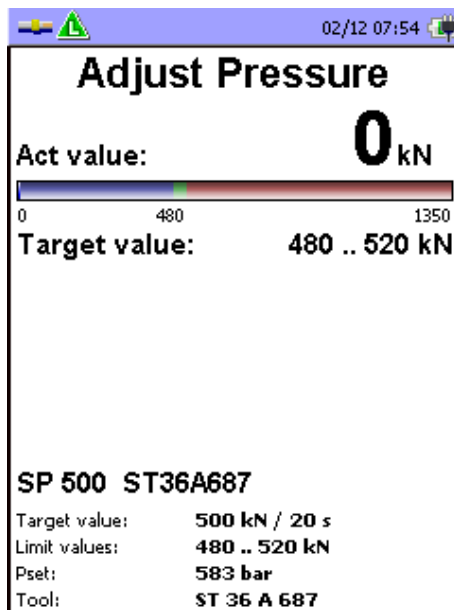


Fig. 14: Pressure adjustment

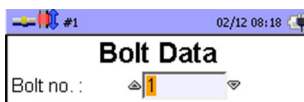


Fig. 15: Bolt data

5. Ensure that a bolting application created in hydraulic tensioner mode (marked with ) is selected.
⇒ The bolting application parameters are transferred to the hydraulic power pack.

6.  *The pressure adjustment only works in pressure adjustment mode if using the control unit (BE).*

To switch to pressure adjustment mode, press the white button to activate adjustment mode or learning mode while keeping the red button pressed down.

Use the pressure reducing valve to set the value of the pre-tensioning force in kN displayed on the control unit (BE).

Press the white button and red button on the remote control simultaneously to deactivate pressure adjustment mode.

- ⇒ The window for data entry appears.

 *In the 'Bolt Data' submenu, data for the bolted connection (e.g. operator's name, operator's number, workpiece designation) can be entered in six assignable user-defined text fields.*

The number and name of the fields is defined in the PC software "BE32.exe" included in the delivery. The control unit (BE) cannot be used to make any changes in this regard. It is only possible to enter data in the fields if a bolting application was selected beforehand.

Entering bolt data

7. Select the data field.

Control unit (BE)

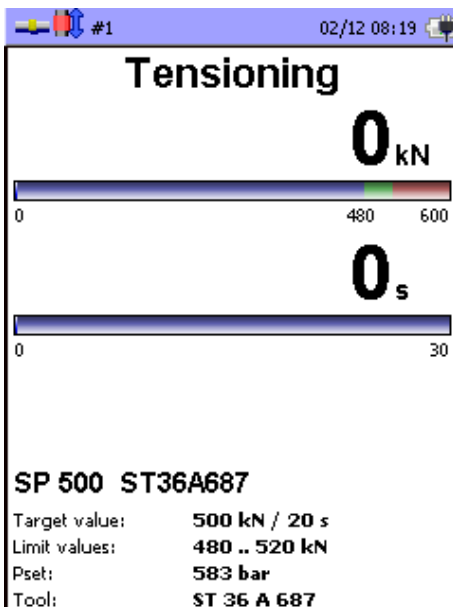
Tensioning with the control unit (BE) (dual hydraulic power packs only)



8. ➤ Use the input buttons to enter free text.

Press **#↑** to switch between upper case, lower case, and numerical input.

9. ➤ Confirm the entry with **▲** or cancel with **▲**.



⇒ If the entry is confirmed, the data is transferred and the selected bolting application is shown on the control panel. The header displays the number of the next bolted connection.

10. ➤ Connect the hydraulic tensioner to the hydraulic hose.

⇒ Documented operation of the hydraulic tensioner has been prepared.

Fig. 16: Bolt data

Tensioning

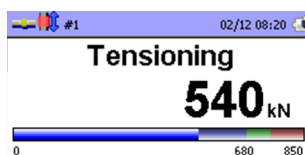


Fig. 17: Pressure build-up

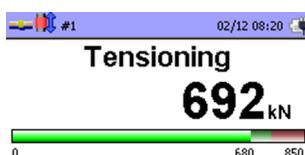


Fig. 18: Control unit display

1. ➤ Press and hold the white button on the remote control.

⇒ The pressure build-up is shown on the control unit (BE).

2. ➤ Press and hold the white button on the remote control until the green and red LEDs light up continuously and simultaneously on the remote control.

⇒ The tensile force achieved is within the tolerance window and the control unit (BE) indicates Fig. 18.

Tensioning with the control unit (BE) (dual hydraulic power packs only)

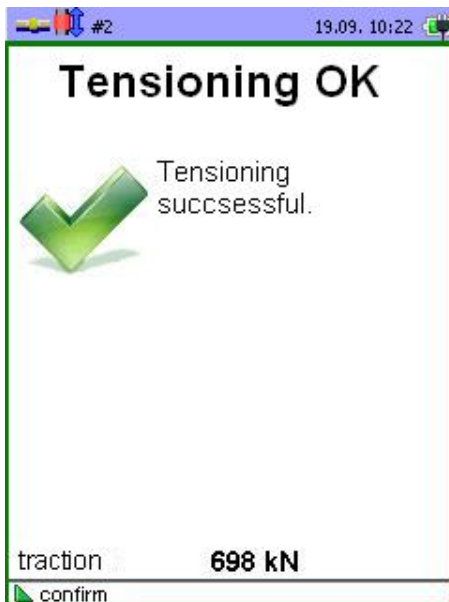


Fig. 19: Remote control display

⇒ The remote control display indicates Fig. 19.

3. ➔ Tighten the fastening element.
 - ⇒ If using the control unit (BE), the hydraulic power pack always re-pumps if, for example, the pressure reached drops due to settling losses.
4. ➔ Relieve pressure from the hydraulic tensioner after tightening the fastening element. Press the green button on the remote control to do so.
 - ⇒ The control system documents the pressure measured immediately before pressure relief as the bolting result.

Documentation for the tensioning process

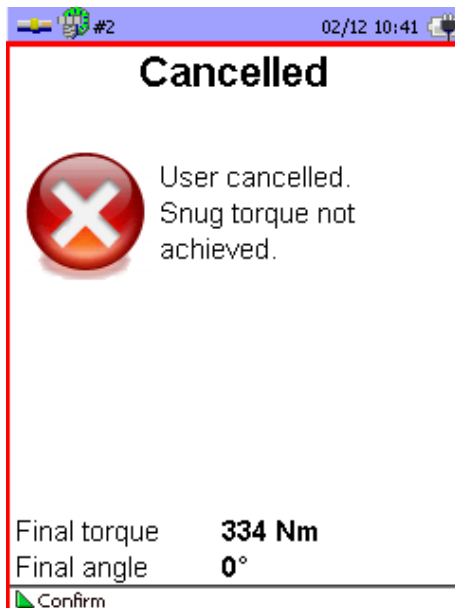


If the tensioning process has been completed successfully, the 'Bolting OK' message appears on the control unit (BE).

Control unit (BE)

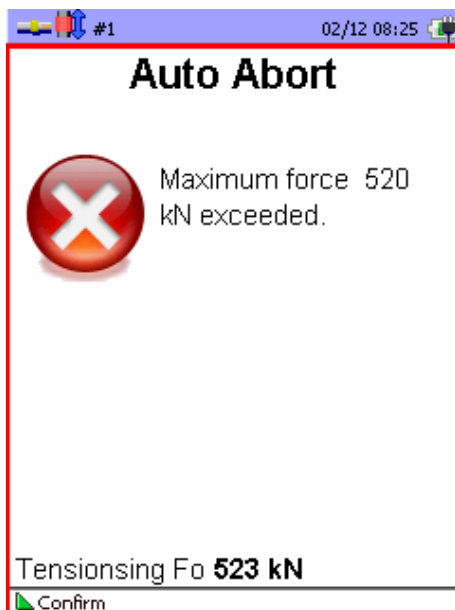
Bolting with the control unit (BE)

Cancellation by the user



If the tensioning process was cancelled by pressing the red button on the remote control, the 'User Cancelled' error message appears on the control unit (BE).

Faulty tensioning process



Other error messages, such as exceeding the maximum permissible tensile force by inadvertently shifting the pressure adjustment valve, are shown as a plain text message.

If there is a pending error message, the number of the bolted connection does not increase automatically.

1.7 Bolting with the control unit (BE)

Preparing the control unit (BE) and hydraulic power pack

Prerequisites:

- The hydraulic power pack is suitable for torque-angle bolting applications.
- The hydraulic power pack and the control unit (BE) are connected ↗ *Chapter 1.4 'Connecting the control unit (BE)' on page 6.*

- The hydraulic power pack and the control unit (BE) are ready for use ↪ *Chapter 1.5 'Putting the control unit (BE) into operation' on page 6.*
- Bolting applications (torque mode or torque-angle mode) have been created and were transferred to the control unit ↪ *Chapter 1.12 'Managing bolting applications' on page 23.*



1. ➔ Press  to call up the main menu of the control unit (BE).



2. ➔ Use  or  to select the 'Bolting App. Defs.' submenu and confirm with .

⇒ The list of available bolting applications is displayed.

3. ➔ Use  or  to select the list of bolting applications and confirm with .

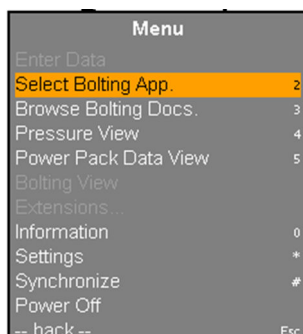


Fig. 20: Bolting application definitions

Control unit (BE)

Bolting with the control unit (BE)



Fig. 21: Bolting application

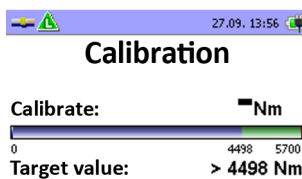


Fig. 22: 'Calibration' display

Setting the pressure

4. Use  or  to select the bolting application and confirm with .



Torque-angle bolting applications can only be performed with suitable hydraulic power packs.

The control unit detects whether the connected hydraulic power pack can perform torque-angle bolting applications. If the hydraulic power pack is not suitable, stored torque-angle bolting applications will be greyed out on the control unit.

- ⇒ The bolting application parameters are transferred to the hydraulic power pack.
- ⇒ The 'Calibration' display appears.
- If the power pack requires calibration, this is indicated by  in the status bar.
- ⇒ If the calibration pressure corresponds to a previously learned bolting pressure and the same hydraulic wrench is used, the 'Calibration' display appears. Calibration is not performed again. Bolting can commence.

5. Connect the hydraulic wrench to the hydraulic hose.

6. Set the pressure.

■ Torque bolting applications:

On the pressure reducing valve of the hydraulic power pack, set the pressure ("target value") as precisely as possible so that it corresponds to the indicated torque.

■ Torque-angle bolting applications:

The torque indicated on the control unit is a minimum value. Set the hydraulic power pack to any given pressure corresponding to a torque in excess of this minimum value.

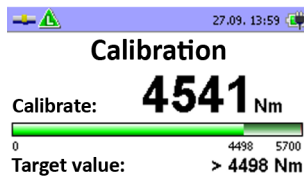


Fig. 23: Torque

7. ➔



WARNING!

Danger of injury from high pressure!

Excessive pressure can cause components to burst, and result in injuries and property damage.

- Never exceed the maximum permissible operating pressure for the connected hydraulic wrench.

While adjusting the pressure, observe the increase in the resulting torque on the control unit.

Example: torque-angle bolting process

The value for the set pressure corresponds to a torque of 4,541 Nm and is thus greater than the target value of 4,498 Nm. The result is OK.

- ⇒ If the necessary pressure has been set properly, the bar display indicating the torque is green.

8. ➔

Perform the 'Calibration' function of the hydraulic power pack.

- ⇒ An error during calibration is indicated as follows:

- The LEDs on the remote control flash in alternation.
- A clear text message is displayed on the control unit (BE).

Calibration

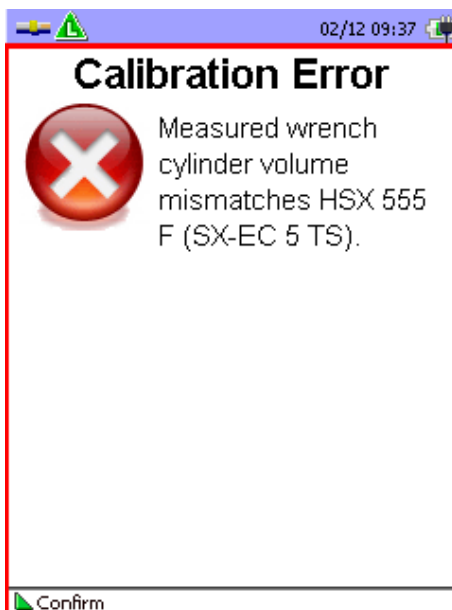


Fig. 24: Calibration error

Control unit (BE)

Bolting with the control unit (BE)

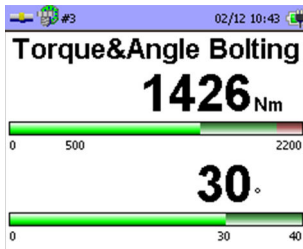


Fig. 25: Example: torque-angle bolting process

9. ➔ Rectify the calibration error by pressing the green button and repeat calibration.

⇒ If calibration was performed correctly, this is indicated as follows:

- The green LED on the remote control switches from blinking to permanent light.

⇒ After successfully undergoing calibration, the power pack is prepared for automatic bolting processes and their documentation on the control unit (BE).

The control unit displays the bolting screen associated with the bolting application:

- Torque bolting process
- Torque-angle bolting process

Bolting

10. ➔ Bolt.

⇒ During bolting, the control unit (BE) indicates the progress of the bolting process.

- Torque
The increase in torque is shown.
- Torque-angle bolting process
First the increase of the torque until the snug torque is reached and then the increase of the angle of further rotation is shown.

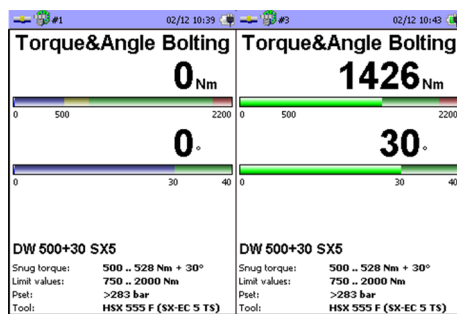
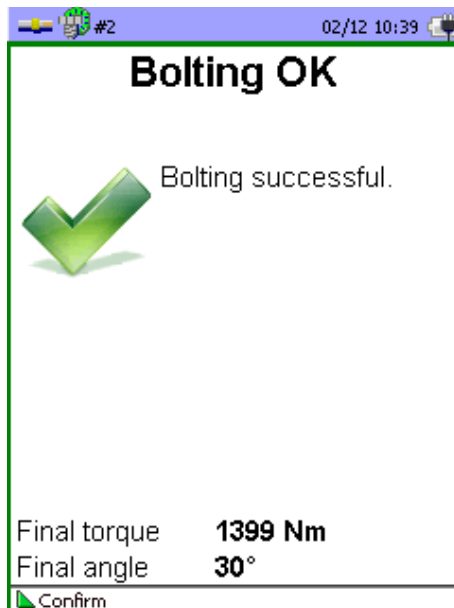


Fig. 26: Example: torque-angle bolting process

Left During bolting

Right After completion of the bolting operation

Bolting documentation



If the bolting process has been completed successfully, the 'Bolting OK' message appears on the control unit (BE).

- Torque
The torque reached is within the allotted time frame.
- Torque-angle
The angle of further rotation was reached. The torque corresponding to the angle of further rotation is within the tolerance window stored during bolting application definition.

Repositioning the hydraulic wrench

Before repositioning the hydraulic wrench, switch off the power pack by pressing the red button on the side.

The hydraulic wrench can be attached to the next bolted connection and can make this connection without there being any need to acknowledge the data on the control unit that was reported to the control unit (BE) by the power pack. The active bolting counter increases by one. The control unit continues to count automatically.

The system automatically decides whether the bolting operation was performed correctly. The bolting data (operator's name etc.) is automatically transferred for the next bolting operation, unless this data is changed (e.g. during a shift change).

Erroneous bolting process

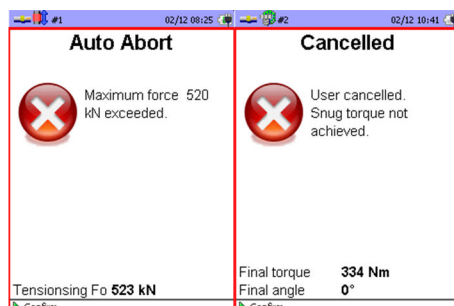


Fig. 27: Example: erroneous bolting process

Left Tightened bolt
Right Cancellation by the user

An error message appears if an error is detected during the bolting process.

Examples:

- An already tightened bolt was tightened again.
- The white button is inadvertently released during the automatic bolting process.

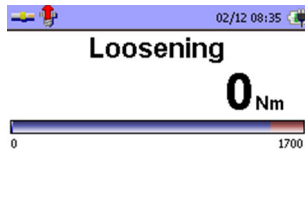
An error message must be acknowledged on the control unit (BE) by pressing .

The bolting number does not automatically increase by one. The bolting process can be repeated.

Control unit (BE)

Getting to know additional features of the control unit (BE) > User data input

1.8 Loosening with the control unit (BE)



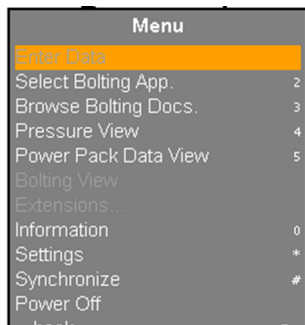
The procedure for loosening bolts is the same with and without the control unit (BE).

The 'Loosening' message appears on the control unit (BE) during the loosening process.

Fig. 28: Loosening

1.9 Getting to know additional features of the control unit (BE)

1.9.1 Calling up the menu



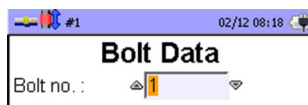
1. Press  to call up the main menu of the control unit (BE).
2. Use  or  to select the desired submenu and confirm with .

Fig. 29: Menu

1.9.2 User data input

To modify the data that was entered after the pressure adjustment (e.g. operator's name during a shift change), proceed as follows:

1. Select  'Menu' → submenu 'Enter Data' and confirm with .
- ⇒ The available data fields are displayed.



2. Enter data in the user-defined text fields (maximum six).



The number and name of the fields is defined in the PC software "BE32.exe" included in the delivery. The control unit (BE) cannot be used to make any changes in this regard. It is only possible to enter data in the fields if a bolting application was selected beforehand.

1.9.3 Viewing documentation and data

The completed bolted connections are shown as a list in the 'Documentations' submenu.



Fig. 30: Documentation

1. Select 'Menu' → submenu 'Documentations' and confirm with .
- ⇒ The available records are displayed.
2. To view a set of documentation, use or to select the desired record and confirm with .



Fig. 31: Detailed view

⇒ The complete data for this bolted connection is displayed:

- Date
- Pretensioning force entered
- Torque entered
- Snug torque
- Angle of further rotation
- Tool used
- Bolting designation

3. Use or to navigate to the next or previous record in the detailed view.

⇒ If no data is available, the 'No data' message appears.

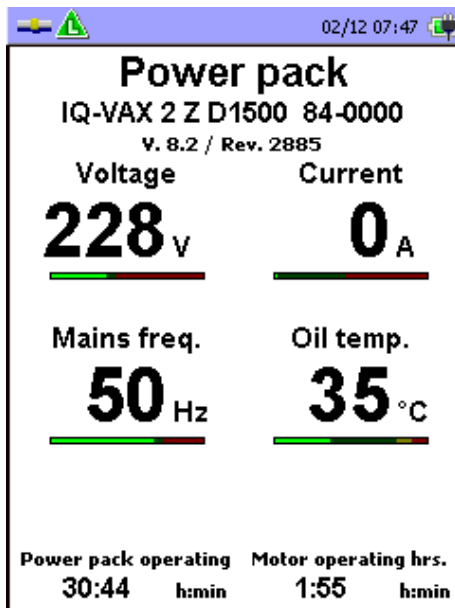
4. Press to confirm this message.



Control unit (BE)

Getting to know additional features of the control unit (BE) > Modifying settings

1.9.4 Viewing hydraulic power pack data



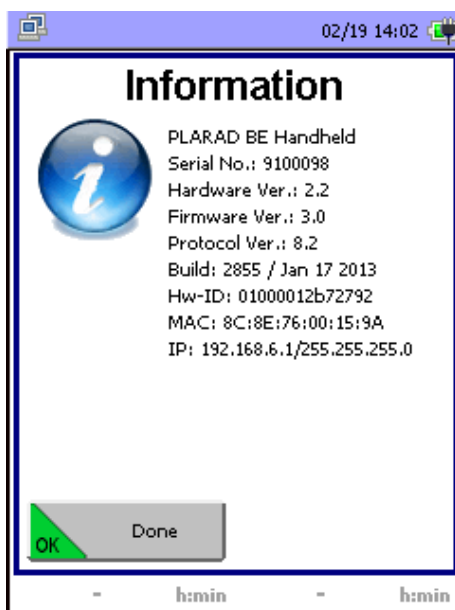
The 'Power Pack Data View' submenu allows you to view the data of the hydraulic power pack connected to the control unit (BE).

➔ Select 'Menu' → submenu 'Power Pack Data View' and confirm with .

⇒ The current data of the hydraulic power pack is displayed.

Fig. 32: Hydraulic power pack data

1.9.5 Viewing data about the control unit (BE)



The 'Information' lets you view all data about the control unit (BE).

1. ➔ Select 'Menu' → submenu 'Information' and confirm with .

⇒ The current data of the control unit (BE) is displayed.

2. ➔ Press to exit the information view.

Fig. 33: Data about the control unit (BE)

1.9.6 Modifying settings

You can alter the settings for the control unit (BE) in the "Settings" submenu:

- Language
- Unit for temperature indication (degrees Celsius or Fahrenheit)

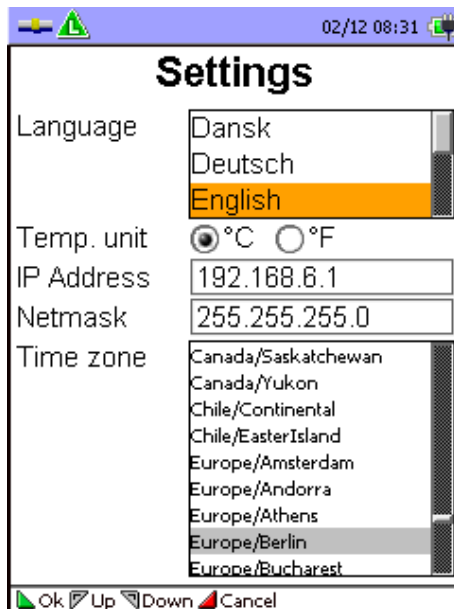


Fig. 34: Settings

- Time zone
- If using the control unit (BE) in a network
 - IP address
 - Netmask

1. ➔ Select 'Menu' ➔ submenu 'Settings' and confirm with .
- ➔ The available settings are displayed.
2. ➔ Use or to select a setting.
- ➔ '123' is displayed in the status bar if IP address or netmask are selected. The input buttons of the control unit can be used to enter digits.
3. ➔ Use , , or to change the language or temperature unit.
4. ➔ The input buttons of the control unit can be used to enter digits. This allows you to enter an IP address or netmask.
5. ➔ Press to confirm the entry.
6. ➔ Press to cancel the entry.

1.10 Switching off the control unit

- ➔ To switch off the control unit (BE), select 'Menu' ➔ submenu 'Power Off' and confirm with .

Alternatively, press and hold the red button on the control unit (BE).

1.11 Data exchange between PC and control unit

PC

The control unit (BE) can only be used with a hydraulic power pack if bolting application data was previously transferred from the PC to the control unit (BE).

Software

Only the PC software included in the delivery can be used to create or modify bolting applications. This ensures that the parameters of the bolting application cannot be tampered with at a subsequent point in time.

Control unit (BE)

Data exchange between PC and control unit

Connecting to the network

1. ➤ Use one of the following options to connect the control unit (BE) to the network:
 - Connect the docking station directly to the PC via a network cable.
 - Connect the docking station using the network adapter included in the delivery.

Have the network connection set up by the network administrator. Observe the corresponding documentation on the CD in the 'Doku' folder.
2. ➤ If the network adapter (see enclosed installation CD) included in the delivery is used, connect the control unit (BE) to a USB port of the PC.
3. ➤ If the control unit is addressed via a network, connect the control unit (BE) to the network directly via a network cable.
4. ➤ Assign a valid IP address to the control unit (BE) or to the network interface.

Performing data exchange

1. ➤ Insert the control unit in the docking station.
 - ⇒ If the control unit (BE) is properly connected to the PC via the docking station,  is displayed in the status bar.
2. ➤ Synchronise the control unit with the PC.

To do so, select  'Menu' → submenu 'Synchronize' and confirm with .

 - ⇒ The bolting documentation (data of the completed bolting operations) is transferred to the PC database.

The bolting application definitions selected for the data transfer are transferred from the PC to the control unit (BE).



The 'Initializing...' message is displayed during synchronisation.



Fig. 35: Synchronisation

If the control unit (BE) is not properly connected to the PC or if the synchronisation program is not running on the PC, the 'Synchronizing' message appears.

1. ➤ Press  to cancel the synchronisation process.
2. ➤ Establish the connection or start the synchronisation program "BE32Sync.exe" on the PC.

1.12 Managing bolting applications

1.12.1 Using the PC software "BE32.exe"

Bolting applications are created and managed using the PC software "BE32.exe".

Prerequisite:

- PC software and driver have been installed.
The operating instructions and the software can be found on the enclosed software CD.

Launching the software

1. ➤ Launch the PC software "BE32.exe".

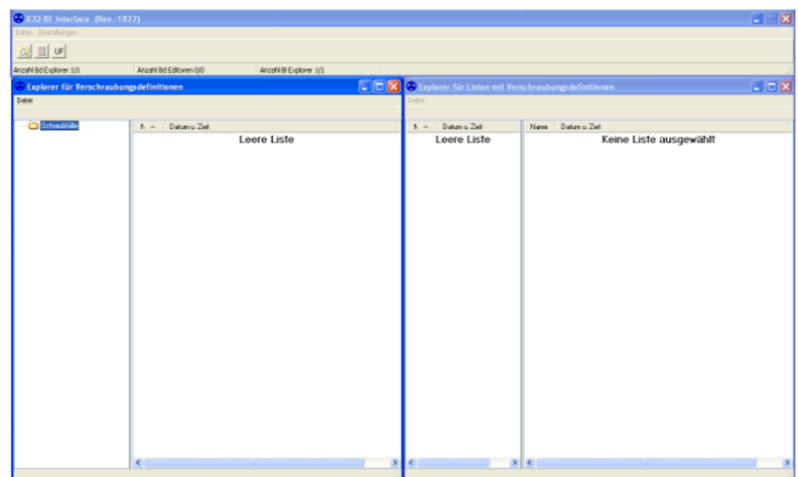


Fig. 36: Main window

- ⇒ The main window 'X32 BE Interface' with the 'Bolting definition browser' and the 'Browser for bolting definition lists' is displayed.

Control unit (BE)

Managing bolting applications > Creating user fields



2. ➤ Press to open additional browsers:
 - Bolting definition browser
 - Browser for bolting definition lists
 - Editor for standard user fields

⇒ The status bar indicates the current number of open browsers/editors.
3. ➤ To control the browsers and editors, move the cursor into the work area of the browser or editor.
4. ➤ Right-click to open the context menu.

1.12.2 Creating user fields

The editor for standard user fields can be used to define up to six free text user fields of your choice for the control unit (BE). During the bolting process, additional information can be entered in the fields created with this editor.



1. ➤ Press to open the editor for standard user fields.

2. ➤ Press 'Edit' to switch to the editor view.

3. Enter headings for the fields.

4. Press 'Preview' to view a preview.

⇒ The preview shows how the text entries will later appear on the control unit (BE).

The template created can be transferred to a bolting application & Chapter 1.12.3 'Creating and editing bolting applications' on page 25.

In the user fields in the example shown here are 'Bolting', 'Operator', 'Flange number' and 'Tower number'. These specifications are stored during bolting along with the bolt data.

1.12.3 Creating and editing bolting applications

The bolting definition browser can be used to create and manage bolting applications. A directory structure can also be created in which to store individual bolting applications (e.g. sorted by machine type).



1. Open the bolting definition browser. Press  to do so.



Fig. 37: Editor

2. Right-click to open the context menu.

3. Select 'Create bolting application' and enter a name.

⇒ The bolted application created is shown in the list.

⇒ A bolting application remains invalid until all data fields have been completed correctly and in full.

⇒ If the bolting application has been created correctly and in full, the icon for the respective bolting mode appears in front of the name.



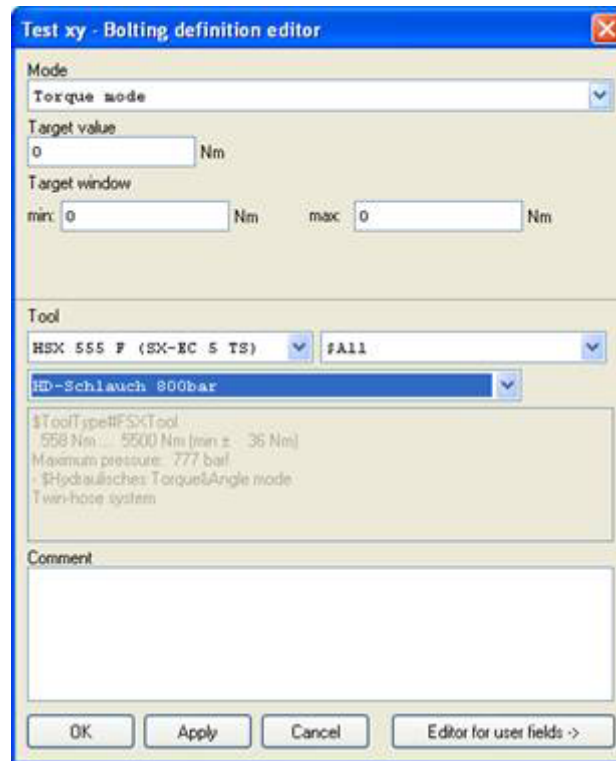


Fig. 38: Bolting definition editor

4. ➤ Open the 'Bolting definition editor' by double-clicking on the bolting application.
5. ➤ Enter the bolting application parameters in the editor window.

Information about the target window

Note regarding definition of the target window and subsequent adjustment of the working pressure on the hydraulic power pack:

Torque bolting operations

The exact pressure is set on the hydraulic power pack for torque bolting operations.

The torque resulting from the torque chart for the hydraulic wrench ensures that the bolt cannot be overtightened.

The hydraulic power pack checks during the calibration process whether the correct pressure expected by the BE32 is set within the appropriate tolerance window.

If the pressure is not set correctly, the hydraulic power pack rejects the calibration process.

Torque-angle bolting operations

With torque-angle bolting operations, a pressure is set on the power pack which is sufficient to apply the snug torque and, subsequently, the further angle of rotation.

The pressure set on the power pack must be greater than the pressure required to reach the maximum torque defined by the operator (which is obtained after applying the further angle of rotation) of the target window.

Two mechanisms prevent the overtightening of a bolt:

- a - At the start of the bolting operation, the hydraulic power pack detects whether the bolt has already been tightened. Due to external influences (e.g. skipping of a tooth on the ratchet system of the hydraulic wrench in the case of worn wrenches or sudden yielding of the incorrectly applied reaction arm during pressure build-up), it is possible that the hydraulic power pack will not recognise the tightened bolt. This is because, as with a non-tightened bolt, the pressure curve briefly collapses in such cases. This is due to external circumstances and is not a hydraulic power pack malfunction.
- b - The second safety mechanism to prevent overtightening the bolt is ensured by the fact that a torque window (upper and lower target value of the torque after applying snug torque and further angle of rotation) can also be meaningfully defined for torque-angle bolting operations:

Fig. 39: Torque window

If mechanism a does not intervene, the hydraulic power pack constantly checks the current system pressure and compares it with the pressure corresponding to the upper limit of the expected total torque.

If this pressure is not reached, the bolting operation is cancelled with an error message.

If the upper target value of the torque and its corresponding pressure have been meaningfully defined, the bolt cannot be overtightened.



The 'Enter Data' dialog box has a title bar with '{StatusBar}' and 'Enter Data'. It contains a label 'Bolting No.' followed by a text input field. At the bottom, there are four buttons: 'Loading standard', 'Save as standard', 'Preview', and 'Edit'.

1. ➤ Open the editor for standard user fields if user fields are to be created. Press **UF** to do so ➔ *Chapter 1.12.2 'Creating user fields' on page 24.*
2. ➤ If the user field definition is to be stored as default (as a template for other bolting applications), press 'Save as standard'.
3. ➤ If standard user field definitions have already been created and these are to be loaded, press 'Loading standard'.

1.12.4 Creating bolting definition lists

The browser for bolting definition lists can be used to compile application-specific lists based on the bolting applications you created.



1. ➤ Press to open the browser for bolting definition lists.
2. ➤ Right-click to open the context menu.
3. ➤ Select 'Create bolting definition list' and enter a name.

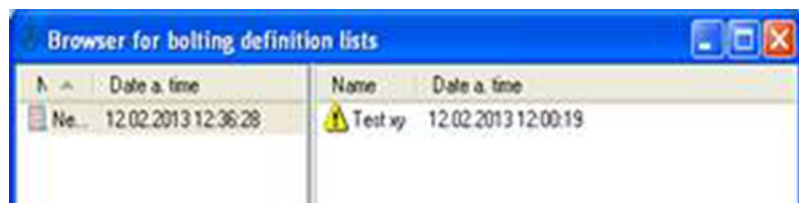


Fig. 40: Bolting definition browser

4. ➤ Drag-and-drop the desired bolting applications from the bolting definition browser to the selected list.

In the default setting, all available bolting definition lists will be transferred to the connected control unit (BE) during every synchronisation.

Invalid bolting applications contained in these bolting definition lists will not be included in the transfer.

1.12.5 Managing documentation data

The sets of bolting documentation stored in the control unit (BE) are transferred to the PC database during every synchronisation.

The sets of bolting documentation stored in the control unit are deleted after each successful transfer.

Program '*DrExplorer.exe*' is used to display and manage the sets of bolting documentation stored on the PC. This program shows the sets of bolting documentation in a table and makes it possible to filter, sort, and export them.

Launching the software

1. ➤ Launch the '*DrExplorer.exe*' software.

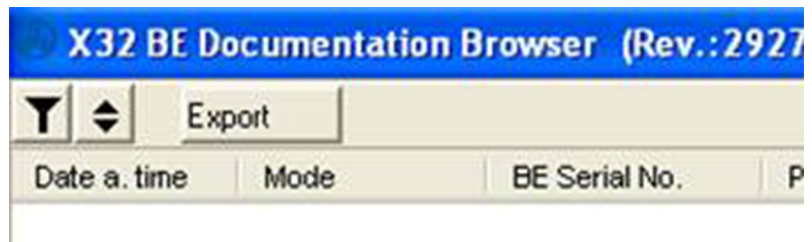


Fig. 41: "*DrExplorer.exe*" software

⇒ The program window is displayed.



2. ➤ To select the '*Filter*' function, press .



3. ➤ To select the '*Sort*' function, press .

Control unit (BE)

Managing bolting applications > Managing documentation data

4. ➤ Right-click to open the context menu.
⇒ The dialog for defining a filter or a sort sequence opens.

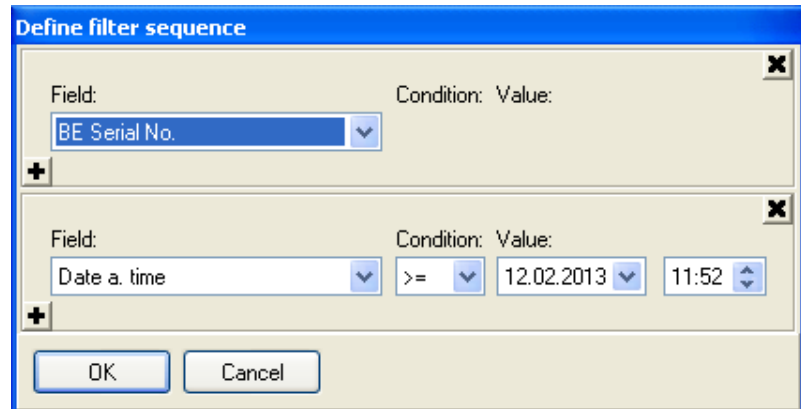


Fig. 42: Example: Filter according to serial number of the control unit and date/time

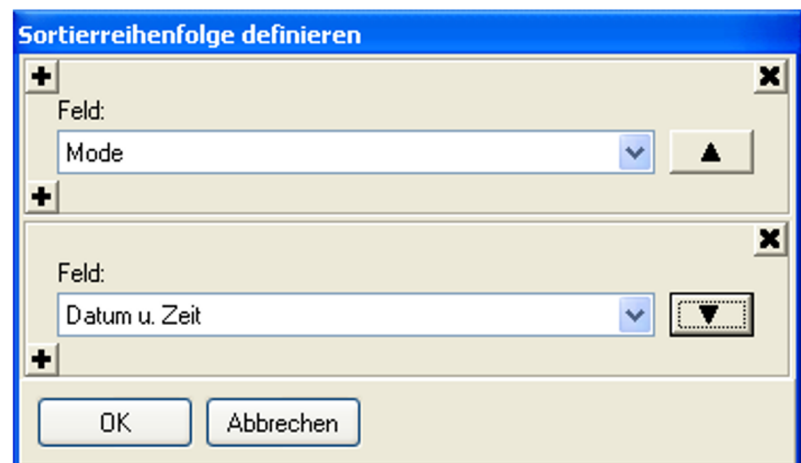
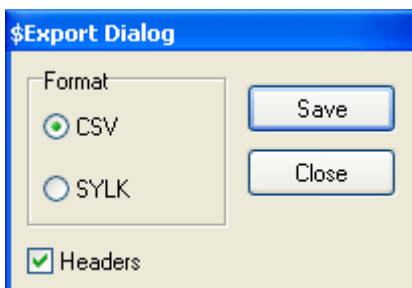


Fig. 43: Example: The results are sorted first by bolting mode (descending) and then by date/time (ascending)

5. ➤ Press 'Export' to export data.



6. ➤ Define the file format.
7. ➤ Press 'Close' to cancel the process.
8. ➤ Press 'Save' to export the data.

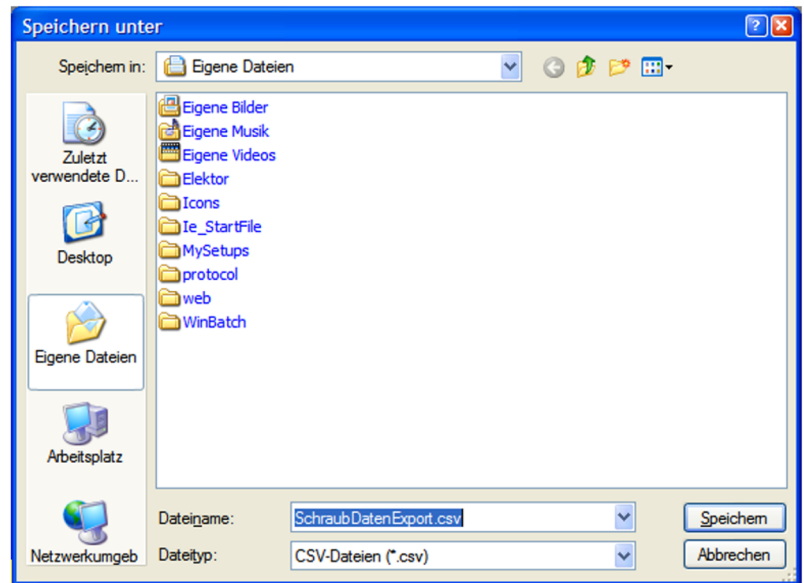


Fig. 44: Save dialog

9. Enter the file name and storage location, and press 'Save'.

⇒ Only data that was previously selected via the filter is exported.

The data is transferred in the sequence that was defined via the sort criteria.