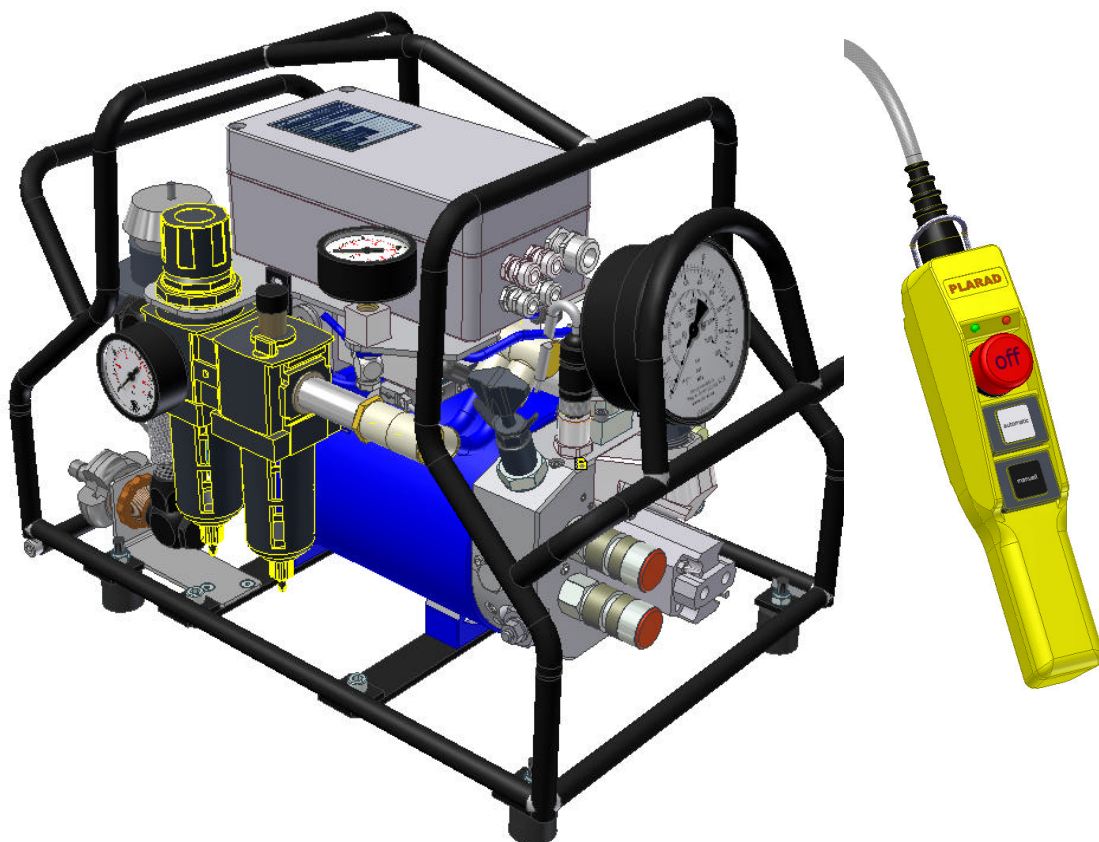


## Plarad Screw System with Documentation Capabilities

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### IQ VAX 2-P-Z

#### Operating instructions



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# IMPORTANT INFORMATION

## 1. NOTES

### 1.1. CE SYMBOL

These products carry the CE conformity symbol. The conformity declaration ensures that the products comply with the safety directives of the European Union.

### 1.2. GENERAL INSTRUCTIONS

Before using the screwing system...

...carefully note all the instructions given in the operating instructions. Legislation requires that we give you important instructions for your safety, and draw your attention to how you can avoid damage to the machine.

In the event of failure to follow these instructions, the "Maschinenfabrik Wagner" accepts no liability for damages resulting from negligent or deliberate failure to observe these instructions.

- The operating instructions form an integral part of the system, and must be kept in the immediate vicinity of the system at all times. Accurate observation of these instructions is an essential requirement for the proper use and correct operation of the system.
- The safety of operators and trouble-free operation of the system is only ensured if original parts and components are used. If other components are used, the "Maschinenfabrik Wagner" can offer no guarantee for the safe operation and function of the system. In this case, all claims on the grounds of resulting damages are invalidated.
- The "Maschinenfabrik Wagner" only considers itself responsible for the system with regard to safety, reliability and functional capability if installation, new settings, modifications, additions and repairs are carried out by the "Maschinenfabrik Wagner" or other persons authorised by the "Maschinenfabrik Wagner", and if the operating unit is used in accordance with the operating instructions.

## 1.3. GENERAL SAFETY INSTRUCTIONS

- All applicable laws in force at the place of use must be observed when operating the system. In the interests of safe working, the operator and user are responsible for observation of the applicable regulations.
- Before using the system, the user must satisfy himself of the proper functional capability and proper condition of the system.
- The user must be completely familiar with the operation of the system.

## 1.4. SYMBOLS AND WARNINGS



- CE symbol



- Note the installation and usage instructions!



- Attention: Special instruction





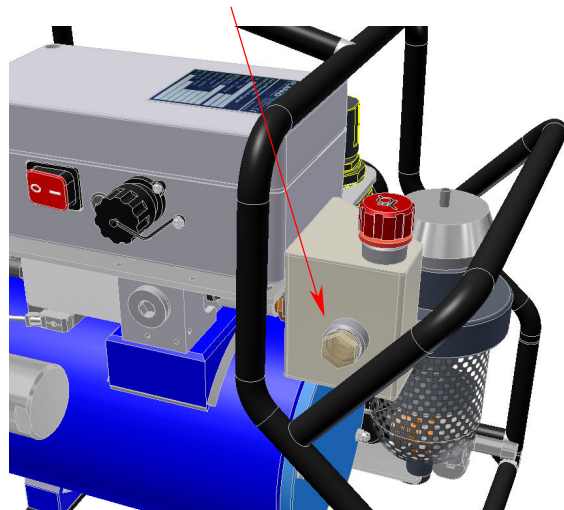
## 5. DESCRIPTION OF FUNCTION

The hydraulic power pack and its connected hydraulic screwing devices can carry out screwing operations according to the torque procedure. In this procedure, the screwing process is controlled automatically and also switched off automatically when the pre-set pressure has been reached. The hydraulic power pack can operate a single hydraulic screwing device or two devices in tandem use. In tandem use, no special settings are necessary. All procedures are equivalent to screwing with a screwdriver.

### 5.1. STARTUP

#### 5.1.1. CHECK OIL LEVEL

Before every startup, check the oil level. The oil level must be at half of the oil level window.



Oil level window



**Note:** When checking the oil level, ensure the motor is in a horizontal position.

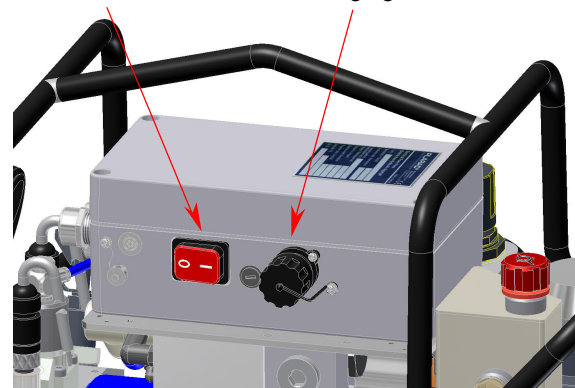
#### 5.1.2. CHARGE BATTERY

The 24-volt DC battery for the control unit power supply is pre-charged in the factory. However, due to possible power discharges outside of our company, it should be charged again before use. To do this, connect one side of the battery charger to the battery's socket and the other side to the power supply.



**Note:** Before connecting the charger, you must ensure that the power pack is off (Switch set to 0). Otherwise there is a danger of damaging the control unit by excessive voltage.

On/off switch      Charging socket



**Note:** Always switch off the power pack after use (Switch set to 0). Otherwise there is a risk of damage to the battery through extreme discharge.



battery charger



The LED on the charger shows yellow at the beginning of the charging process. The charging process is being initialized. Then the LED colour changes to orange while the charging process is underway. If the LED color does not change to orange, then there is no battery in the power pack.

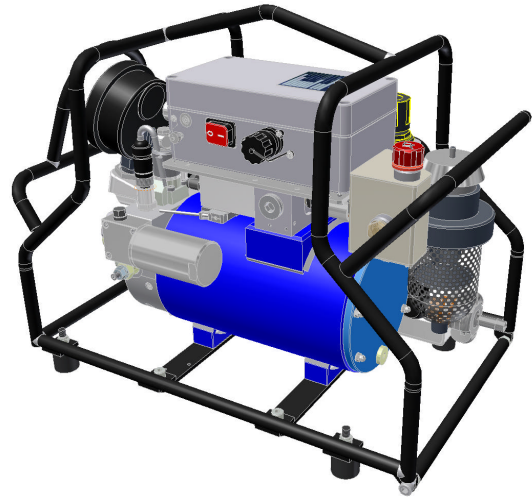
At the end of the charging process, the LED color will change to green. If the charger is not separated from the battery, the charge retention mode will be activated.

If the LED flashes alternately orange and green, there is an error.

More detailed information on battery charging and the charger can be found in the operating instructions for the battery charger, also included.

## 5.2. FILL OIL

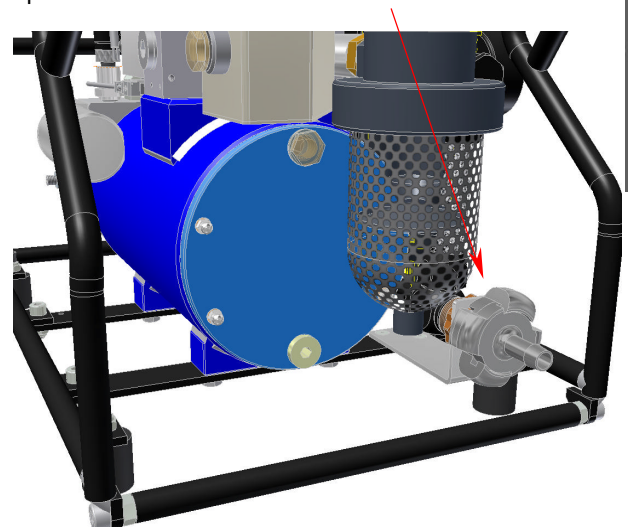
Unscrew the oil filling support, and fill with oil up to the oil level mark. Screw the oil filling supports back in firmly by hand.



Oil fillingsupports

## 5.3. CONNECT POWER PACK AIR PRESSURE SUPPLY

The tube for connecting the pressure can be fixed in place (e.g. with a tube clamp). It must be ensured that the air pressure supply tube cannot come off during operation.



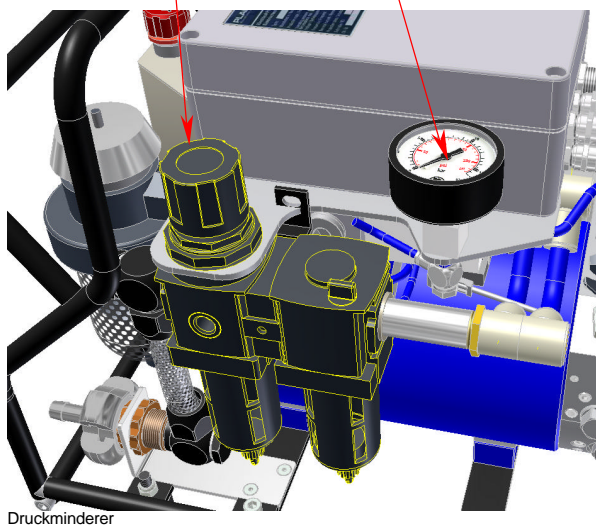
Air pressure connection




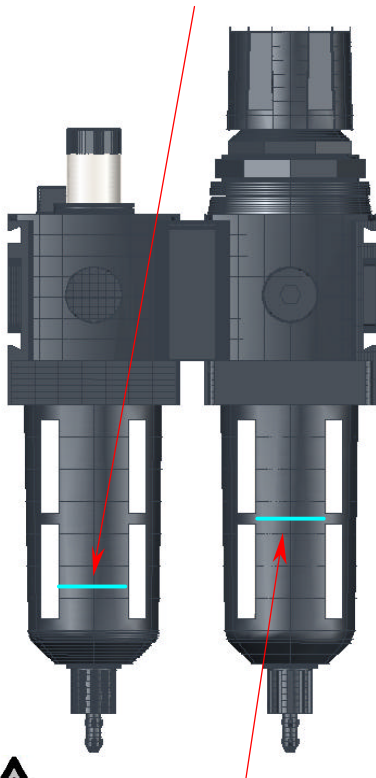
**Note:** Take note of the supply data on the specification plate.


## 5.4. SET PRESSURE SUPPLY

The pneumatic pressure is set to a maximum of 90 psi at the pressure reducer in the motor's maintenance unit. The flow pressure (pressure while the motor is running) must not drop lower than 55 psi.



 **Note:** Watch the oil level in the oil sprayer. If the minimum level is reached, you must add more oil.

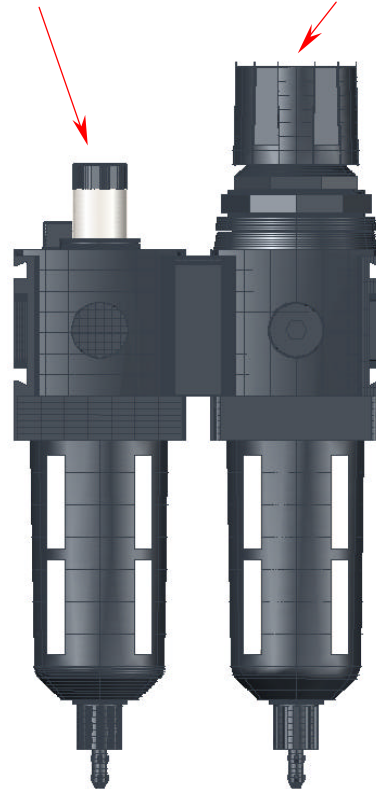


 **Note:** Watch the water level in the water catchment. If the maximum level is reached, the water must be drained.

## 5.5. AIR PRESSURE MAINTENANCE UNIT

Oil sprayer

Pressure reducer



## 5.6. PRESSURE REDUCER

From time to time, lightly grease the O-rings on the seal cone. To do this, switch off the air pressure and let the pressure out of the pressure reducer. Unscrew the sealing cap (knurled nut) and remove the seal cone. Lightly grease the O-ring.

Before starting to use the air pressure supply, relieve the pressure reducer by unscrewing the regulating screw and then screwing it back in until the manometer on the pressure reducer shows the desired working pressure.

To drain the water in the water catchment, unscrew the knurled nut on the water catchment by about a half turn. After the water is drained, tighten the knurled nut again.

## 5.7. OIL SPRAYER

During operation, set the oil amount as necessary, using the dosage screw. The number of drops can be seen in the sight glass. To fill oil, remove the seal screw, fill the container up to the filling level mark, and close it again.

It is possible to refill the oil during operation. The air supply does not need to be switched off.

An amount of 1 mm<sup>3</sup> of oil per 1 m<sup>3</sup> pressured air is enough to keep wear down and ensure the correct





RPM and the optimal torque moment for the pneumatic motor.

The oiler is set to approx. one drop per minute.

Recommended oil types:

VIA	Avilup RSL 46
BP	Energol HPL 46
ESSO	Nuto H
TEXACO	Rando Oil HD C 38
WILKERSON	Airline Oil F442001

## 5.8. FILTER SOUND INSULATOR



Drainage screw

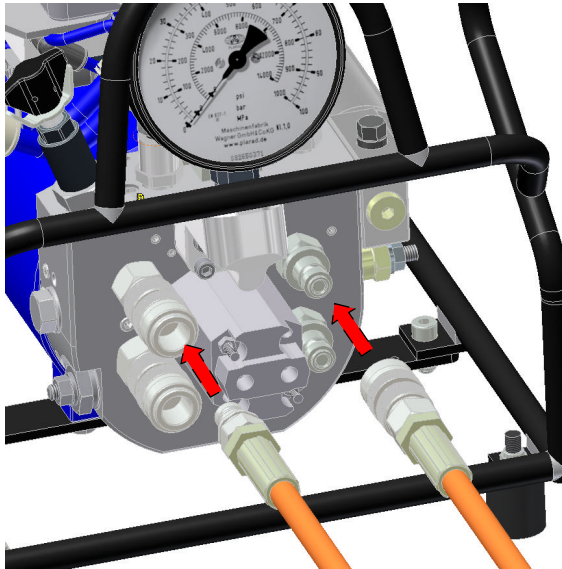
Drain the condensed water regularly, and clean the sinter filter. To do this, undo the screw, remove the container, undo the fixing nut from the sinter filter and take it out. Dunk the sinter filter in solvent, shake gently and allow to dry before re-installing it. Ensure the seal is perfect.



## 6. SCREWING OPERATION

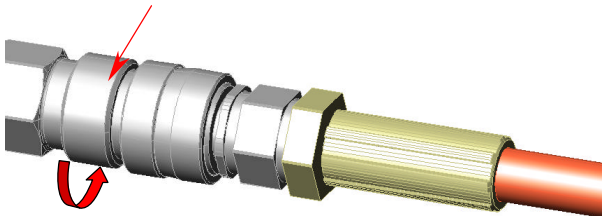
### 6.1. PRESET SETTINGS

- Connect the power pack's air pressure supply.
- Set the pressure reducer.
- Attach the tubes to the hydraulic power pack.



Connect the hydraulic tubes

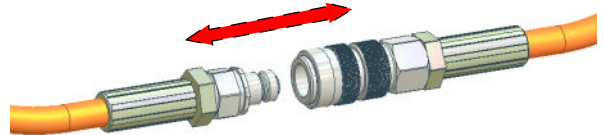
- Ensure that the connections click properly into place.
- Fix the tube connections to avoid unintentional disconnection. Screw the fixing ring tight.



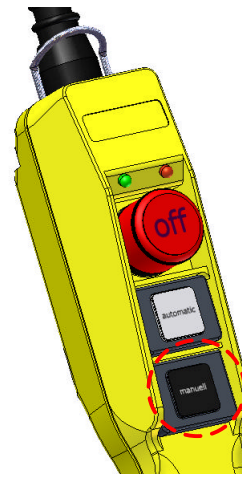
**Note:** do not connect the hydraulic screwing device yet.

- Ensure that the tubes are in an open horizontal position.

- Connect the hydraulic tubes at the other end. If you are operating in tandem mode, connect both pairs of tubes.



- Switch on the device.
- Press the Manual button to start the power pack.



- Press and hold the Manual button for approx. 30 seconds to purge the air from the hydraulic tubes.
- Switch off the power pack with the Stop button.
- Connect the hydraulic screwing device.

### 6.2. SCREWING, OPERATION

### MANUAL



- In manual operation, learning mode is not carried out. At the start of the screwing work, the pressure for the required torque is set according to the torque table for the hydraulic screwdriver.

Manual button activated: Screw head moves forward.

Manual button not activated: Screw head moves back.

- Press and hold the Manual button until the screw head stops turning. The green light will flash fast.
- Let go the Manual button and wait until the green light flashes slowly.
- Repeat this process until the screw head no longer turns when you press it again, and the preset pressure has been reached.



### 6.3. LEARNING MODE

In learning mode, measurements are carried out. The measured values are necessary for automatic control of the screwing procedure.

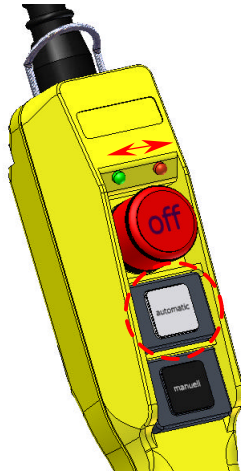


**Note:** Do not place the screwdriver on the screw.

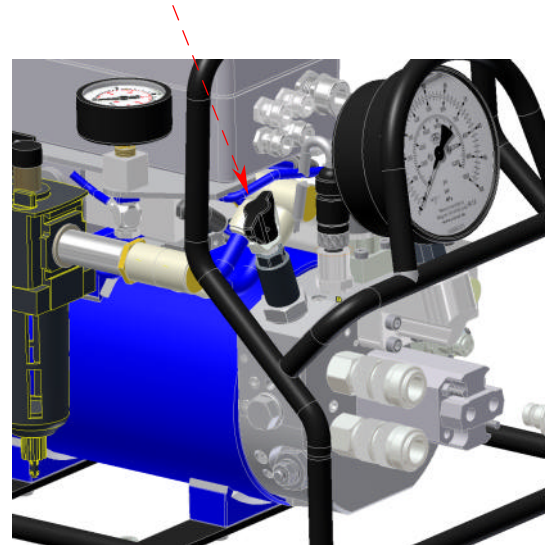
Light codes on the remote control:

Green light:	Tightening
Red light	Loosening

- The green light on the remote control will flash.
- If the lights flash slowly, the learning process is not yet complete.
- Use the Automatic button on the remote control to switch between tightening and loosening. You can only switch between tightening and loosening when the motor is not running.



- Then switch on the motor with the Manual button.
- While the power unit is switching on, the light will flash faster. This signals that a process is running. The start-up procedure is complete when the light flashes slowly again.
- Press and hold the Manual button and set the desired hydraulic pressure at the pressure setting valve.



Pressure setting valve

- The pressure you need to set can be found in the hydraulic screwdriver's torque table.
- Read the pressure from the power pack's manometer and set it at the pressure setting valve.
- Learning can be carried out in tightening or in loosening mode.
- For learning, press and hold the Automatic button. Then the learning mode will be carried out automatically. During the measurements, the hydraulic screwdriver will carry out several work cycles.
- The measured values are necessary for automatic control of the screwing machine. The measured values are only ever used for the screwing devices that are connected.
- When the learning process is successfully completed, the flashing light on the remote control will switch to continuous light (if the lights flash after completing the learning process, consult the list of error messages for the remote control).



**Note:** Check if you have a valid output diagram for the bottling device. The serial number of the correct output diagram is printed on the device and on the technical data sheet entitled "Output Diagram". In case of doubt, consult our technical department.



**Note:** When setting the pressure, you must absolutely ensure that the maximum permissible torsion for the screwing devices and accessory parts is not exceeded. The maximum permissible torsion is printed on the devices and accessories.

**The screwing device is now ready for the screwing procedure.**

- The learned and measured values will remain saved until the machine is separated from the power supply or until the measured values are deleted. To delete the learned values, press the



buttons Automatic and Off at the same time until the appropriate light flashes. Then you can restart the learning process.

## 6.4. SCREWING, AUTOMATIC MODE

- Set the screwdriver head on the screw.
- Press and hold the Automatic button to start the screwing procedure. Automatic operation is signalled by fast flashing of the light.
- The screwing procedure is carried out automatically.
- When the screwing procedure is complete, the green light will change from flashing to continuous (if the lights continue to flash after the process is complete, consult the list of error messages for the remote control).
- In case of error messages, check the pressure in the screwing system and carry out the learning procedure again.

## 6.5. SCREWING WITH THE UNIT

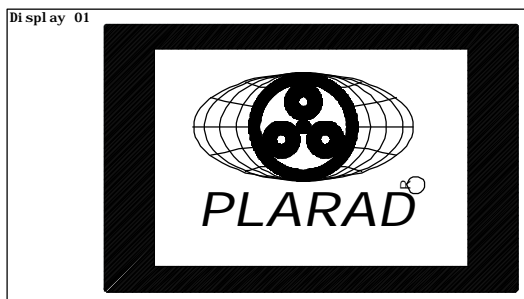



Start the machine as described above

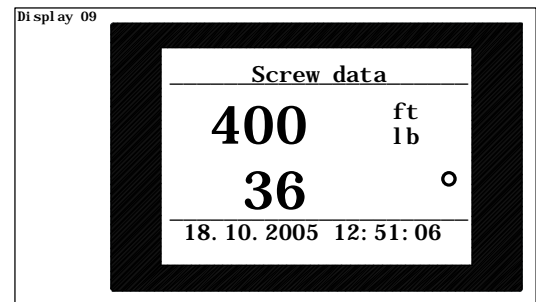
Connect the operating unit to the power unit with the adapter cable.

### 6.5.1. OPERATING UNIT MENU

- The starting screen appears on the display of the operating unit.

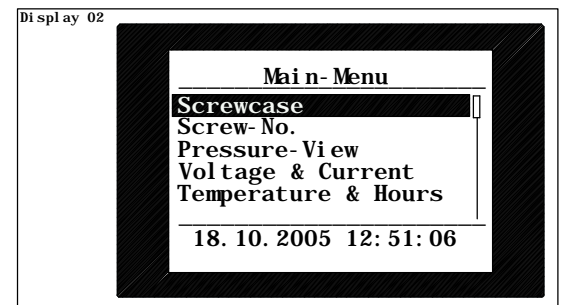




- Pressing the Enter key  accesses the screw data display window.



### 6.5.2. MAIN MENU

- Pressing the Menu key  accesses the Main Menu.

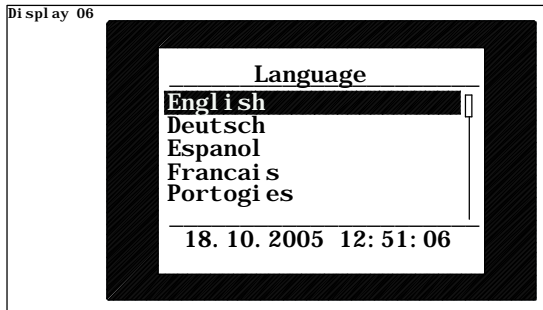


- Using the cursor keys  you can select the menu options. Only 5 lines of the menu can be shown on the screen at one time. The selected line is shown in inverted colors. When you open the menu, the first or the current option is highlighted. Use the cursor keys to select other options. When you reach the end of the list, pressing the cursor key again will jump back to the first line of the menu.
- Use the Enter key  to get into the different submenus.



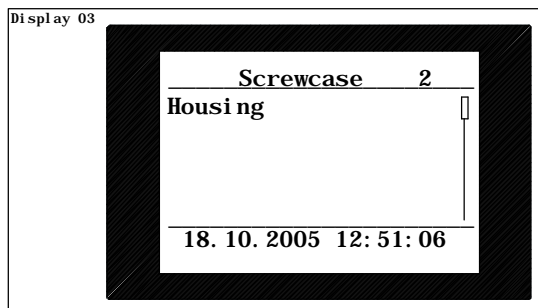
### 6.5.3. LANGUAGE SUBMENU

In the Language submenu, you can select the menu language.



### 6.5.4. SCREWCASE SUBMENU

In the Screwcase submenu, the names of the programmed screw cases are displayed for selection. In the upper right corner, the counter number of the screw case is shown. The selection includes the screw cases which have been previously loaded into the operating unit. (See section 4.4.3. – Loading the screw case list into the operating unit). These are defined in the PC using the PC software BE\_X2, and saved in a screwcase list. The screwcase list can have a maximum of 18 screwcases. If you need more than 18 screwcases, you must create more screwcase lists.



Use the cursor keys to select the appropriate screwcase.

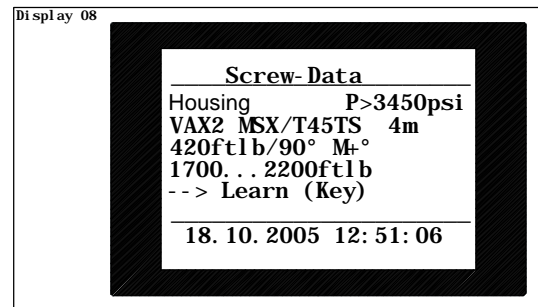


Use the Enter key to get to the Screw Data window.

### 6.5.5. SCREW DATA SUBMENU

In the Screw Data submenu, all the programmed parameters of the current screwcase are saved. The screwcase data is the data loaded via PC into the operating unit.

**Note:** The Screwcase submenu serves only to check the screw data. Changes can only be made via the PC.



The following information can be read from the Screw Data menu:

#### Line 1

Left = screwcase title

In the example: Housing

Right = Minimum pressure to be set

In the example P>3450psi

#### Line 2

Left = Generator description

In the example: VAX2

Middle = Screwdriver title

In the example: MSX/T45TS

Right = Tube length

In the example 4m

#### Line 3 Screwing parameters

Left = Snug torque and tightening angle

In the example: 420Nm/90°

Middle = Screwing process

In the example: M+°

M = Torque

° = Tightening angle

#### Line 4

Window area for target torque

#### Line 5

Information on the next step


#### Line 6

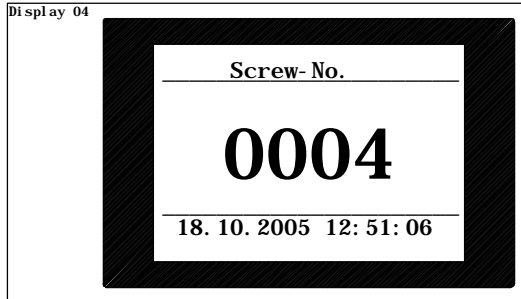
The current date and time always appears in the bottom part of the window.

### 6.5.6. SCREW NUMBER SUBMENU

The screw operations are automatically numbered by the operating unit, for documentation purposes. In the Screw Number submenu, the current counter number for the screw operation is shown.

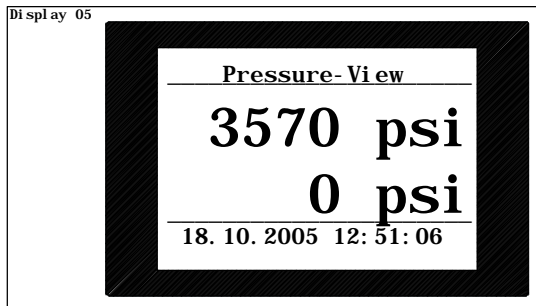
If there is no prescribed start number, the numbering will automatically continue from the last screw number. However, you can set the screw number for the operating unit to begin with.

- With the back and forward keys  you can select the individual digits of the screw number. The selected digit is shown in inverted colors. Use the number keys to change them.



### 6.5.7. PRESSURE DISPLAY SUBMENU

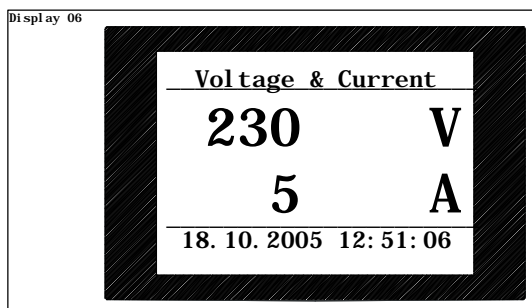
In the Pressure Display submenu, the current pressure for forward and backward flow is displayed.



Upper line forward flow (in the example 3570psi)  
Lower line backward flow (in the example 0psi)

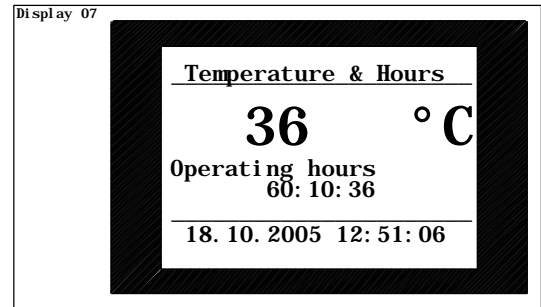
### 6.5.8. VOLTAGE & CURRENT SUBMENU

In the Voltage & Current submenu, for power units with electrical power, the present power current and the power unit's present power usage is displayed.



### 6.5.9. TEMPERATURE & HOURS SUBMENU

In the Temperature & Hours submenu, the power unit's temperature is displayed (only for electrically driven power units) and the number of operating hours to date.



### 6.6. LEARNING MODE

In learning mode, measurements are carried out. The resulting measured values are necessary for automatic control of the screwing process and to determine the tightening angle.



**Note: Do not set the screwdriver on the screw.**

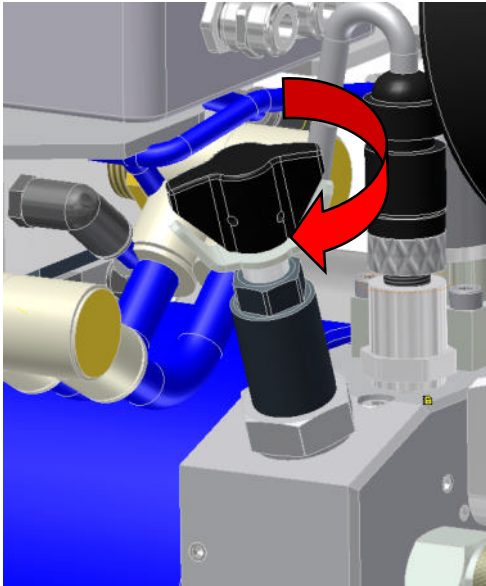
- The green light on the remote control will flash.
- When the green lights flash slowly, the learning is not yet complete. The signal lights on the remote control mean:
 

Green light	<b>Tightening</b>
Red light	<b>Loosening</b>
- Use the Automatic button to switch between tightening and loosening.
- Then switch the machine on with the Manual button.
- While the machine is starting up, the light will flash faster. This signals that a process is running. The start-up process is only complete when the light flashes slowly again.



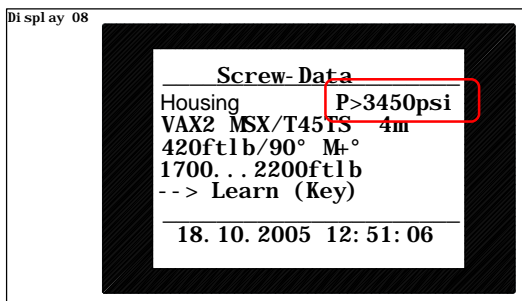


- Press and hold the Manual button on the remote control, and set the required hydraulic pressure at the pressure setting valve.



Pressure setting valve

- The minimum pressure to set is displayed in the screw case menu on the operating unit. In the example:  
P>(greater than) 3450psi



- Learning can be carried out in tightening or in loosening mode.

- To learn, press and hold the Automatic button. Then the learning mode will be carried out automatically. During the measurement, the hydraulic screwdriver will carry out several work cycles.
- The measured values are necessary for automatic control of the screwing machine. The measured values are always only intended for the attached components.
- When the learning process is complete, the signal light will change from flashing to continuous light (if the lights still flash after completion of learning, consult the list of error messages for the remote control).

### The screwing system is now ready for the screwing process.

The learned and measured values will remain saved until the machine is separated from the power supply or until the measured values are deleted. To delete the learned values, press the buttons Automatic and Off at the same time until the appropriate light flashes. Then you can restart the learning process.

- If a new screw case is selected on the operating unit, the signal light will automatically switch to flashing.

## 6.7. SCREWING

- Set the screwdriver head on the screw.
- Press and hold the Automatic button to start the screwing process. Automatic operation is signalled by fast flashing of the light.

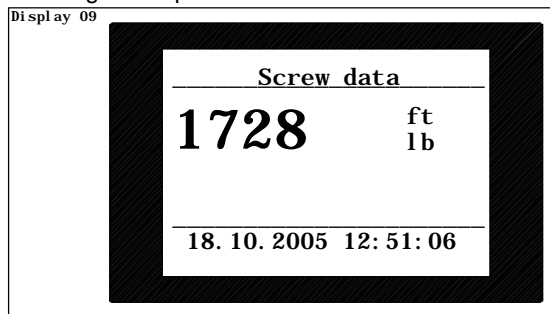


- The screw curtain is activated automatically. The screwing machine is controlled automatically until the final torque. During the screwing process you can follow its progress in the display on the operating unit. Here the current torques are displayed.
- When the screwing process is complete, the green light will change from flashing to continuous light (if the lights still flash after completion of



learning, consult the list of errors for the remote control).

- The completed screw parameters will be displayed in the Screw Data window after screwing is complete.




- The values are saved with the current date and time, the screw case and the screw number.
- These values serve as documentation for the screwing process and can be read using the PC software BE\_X2.

## 6.8. SAFETY FUNCTIONS

- If the completed parameters of the screwing process are different from the programmed parameters, the red and green lights will flash alternately.



- The error will be displayed in text form on the operating unit. The error must be acknowledged

by pressing the Enter key  on the operating unit. Until you press Enter, all functions of the operating unit except Off will be blocked. Error messages are saved and are available for reading in the screw data.

## 7. PC AND OPERATING UNIT

### 7.1. TRANSFER SOFTWARE TO THE PC

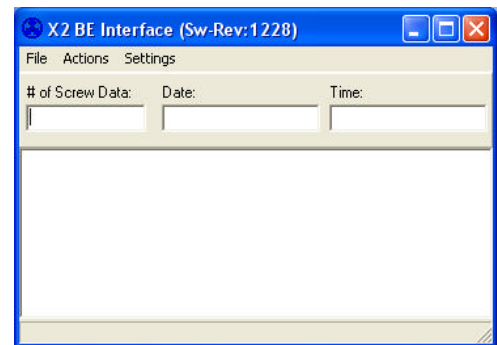
Copy all files from the included CD into a sub-folder on the local hard drive of the PC.

#### 7.1.1. CONNECT PC AND OPERATING UNIT

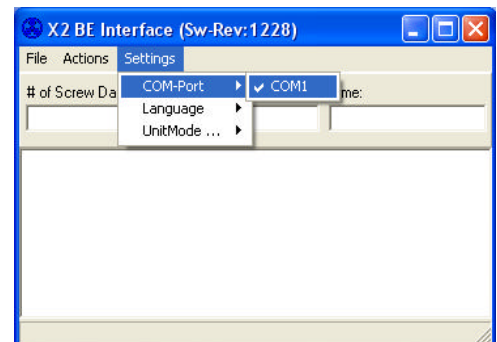
- Use the Adapter Cable for PC to connect the operating unit to the PC.
- Plug in the power cable for the operating unit.
- Start the PC software by double-clicking on BE\_X2.exe.



- The program window will open.

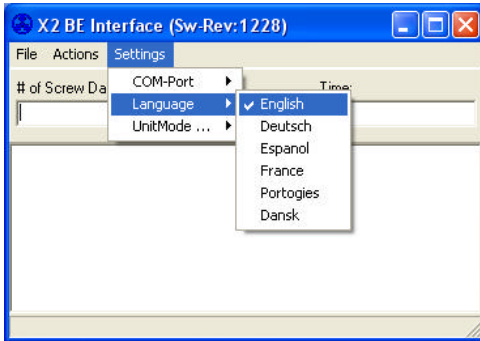


- Use the menu Settings > Port to select the port you are using. This is preset to COM1.

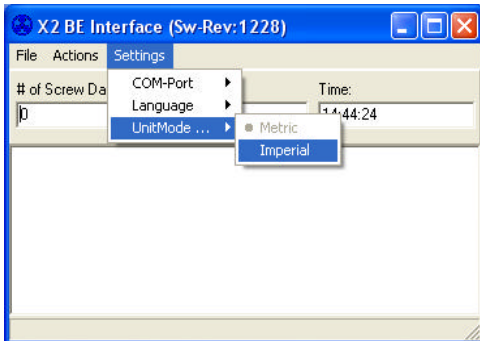


- Use the menu Settings > Language to select the language. This is preset to German.

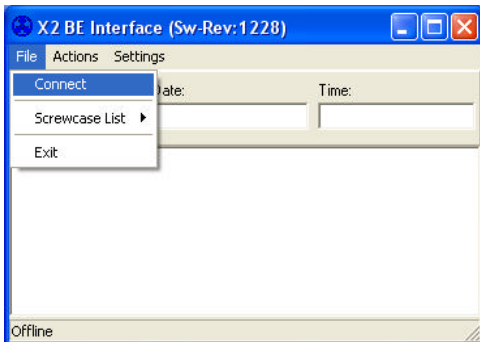




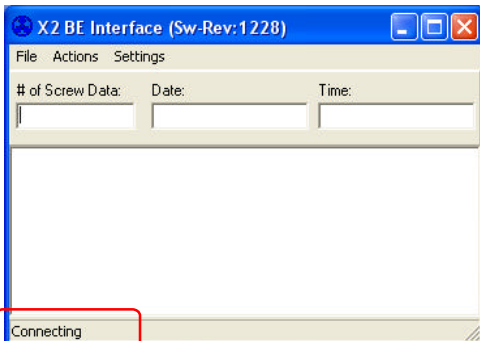
- Use the menu Settings > Units to select the measurement system (metric or imperial).



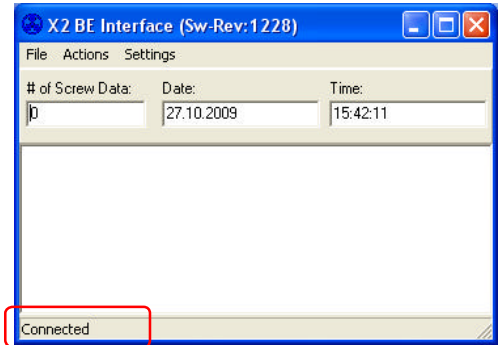
- Use the menu File > Connect to create communication between the PC and the operating unit.



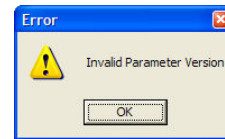
- During the connection process, the status line will read Connecting.



- When the connection is correctly connected, the status line will read Connected.



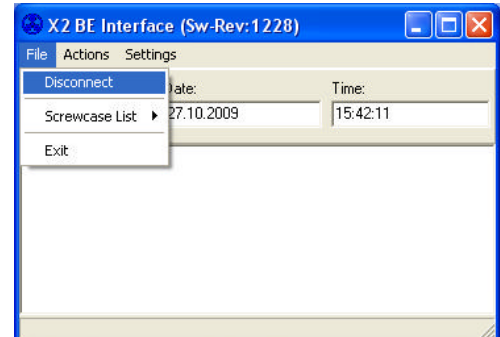
Error message: **Invalid Parameter Version**



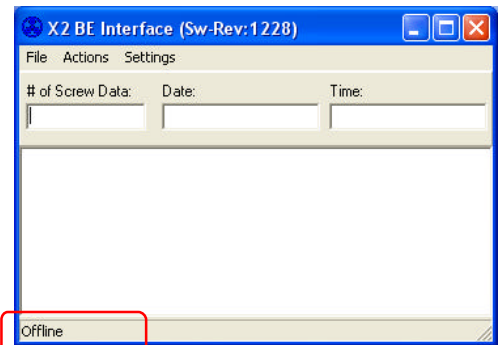
- The PC software BE\_X2 and the software for the operating unit are not compatible. It must be used with the software included with the operating unit.

### 7.1.2. SEPARATE PC AND OPERATING UNIT

- Use the menu File > Disconnect to end the communication between the operating unit and the PC.

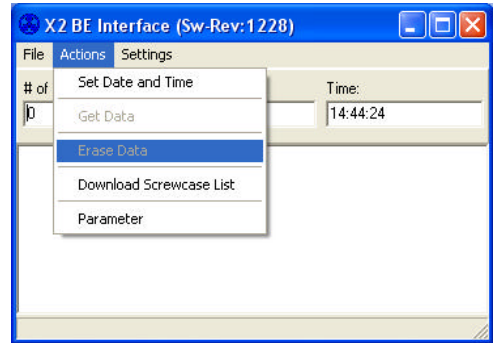
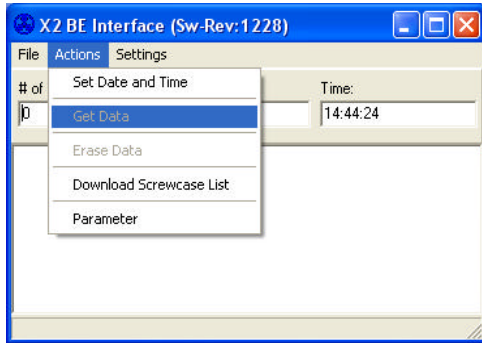


- When the connection is ended, the status line will read Offline.



### 7.1.3. READING THE SAVED DATA

- Use the menu Actions > Get Data to transfer the saved data from the operating unit to the PC.



- In the next window, the screwing data will be displayed.

Bolt-No.	Date	Time	Boltcase	Mode	Set/Pre-Nm	Min-Nm	Max-Nm	Set*	Result	Res-Nm	Res*
1	19.04.2007	10:51:27	Blatt	M+*	500	1000	3000	60	OK	1956	60
2	19.04.2007	10:52:19	Blatt	M+*	500	1000	3000	60	OK	1626	60
	19.04.2007	10:53:01	Blatt	M+*	500	1000	3000	60	Max M	3029	53

- Use the menu File > Save you can save the screw data in .csv format.
- The screw data can then be edited further, e.g. in Excel.

Save	Time	Boltcase	Mode	Set/Pre-Nm	Min-Nm	Max-Nm	Set*	Result	Res-Nm	Res*	
Print	4.2007	10:51:27	Blatt	M+*	500	1000	3000	60	OK	1956	60
Exit	4.2007	10:52:19	Blatt	M+*	500	1000	3000	60	OK	1626	60
	19.04.2007	10:53:01	Blatt	M+*	500	1000	3000	60	Max M	3029	53

- Use the menu File > Print to print the screw data.

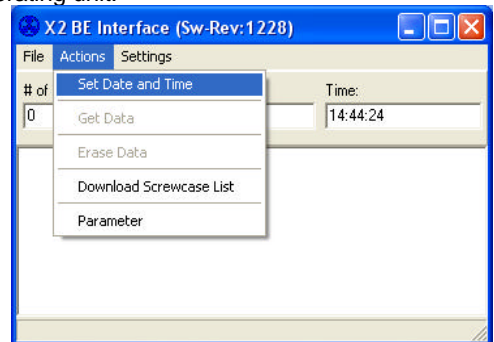
Save	Time	Boltcase	Mode	Set/Pre-Nm	Min-Nm	Max-Nm	Set*	Result	Res-Nm	Res*	
Print	4.2007	10:51:27	Blatt	M+*	500	1000	3000	60	OK	1956	60
Exit	4.2007	10:52:19	Blatt	M+*	500	1000	3000	60	OK	1626	60
	19.04.2007	10:53:01	Blatt	M+*	500	1000	3000	60	Max M	3029	53

### 7.1.4. DELETE THE DATA IN THE OPERATING UNIT

- Use the menu Actions > Erase data, to delete the screw data from the operating unit.

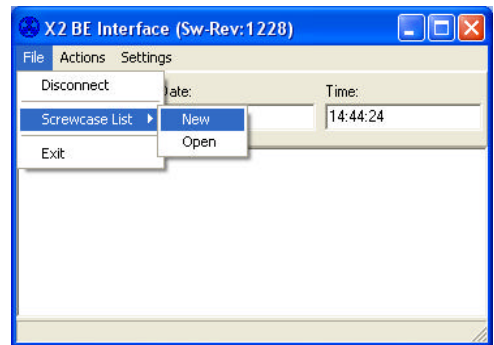
### 7.1.5. SET DATE AND TIME

- Use the menu Actions > Set date and time, to apply the current date and time from the PC to the operating unit.



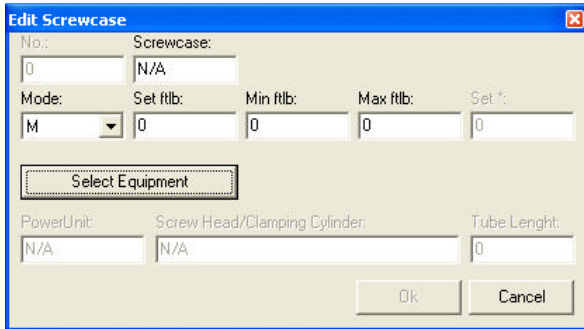
### 7.1.6. CREATE SCREWCASE LIST

- Use the menu File > Screwcase List > New to open an empty screwcase list.

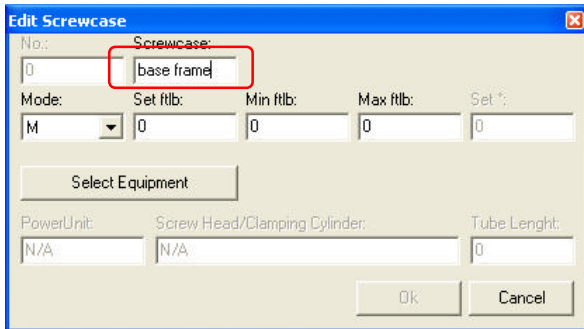


Screwcase	Mode	Set/Pre Nm/kib	Min Nm/kib	Max Nm/kib	Set*	PowerUnit	Screw Head/Clamping Cylinder	Tube Length
...								

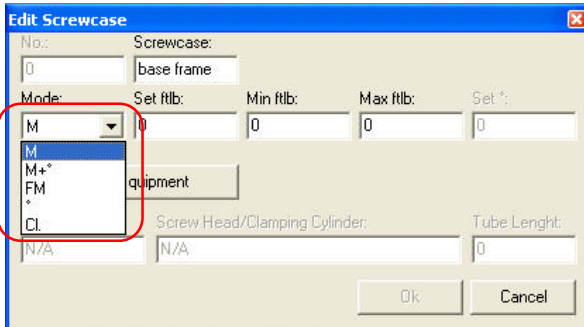
Double-clicking on the highlighted line will open the entry form.



- In the entry field **Screwcase** enter the screwcase title, maximum 11 characters.



- In the entry field Mode, select the screwing mode.



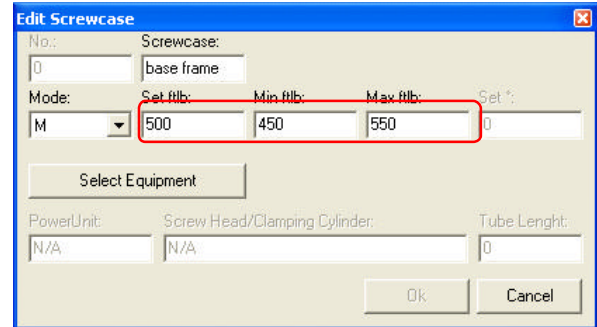
The abbreviations have the following meanings:

<b>M</b>	Screw according to torque procedure
<b>M+°</b>	Screw according to torque and tightening angle procedure
<b>FM</b>	Snug torque for separate torque and tightening angle procedures
<b>°</b>	Tightening angle for separate torque and tightening angle procedures
<b>SpZ</b>	Screwing with tensioning cylinder

## 7.1.7. CREATE SCREW PROCESS ACCORDING TO TORQUE PROCEDURE

In the torque procedure, the following fields are activated:

**Set Nm**                      **Min Nm**                      **Max Nm**



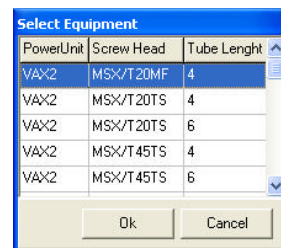
**Set Nm**                      Here, enter the required torque.

**Min Nm**                      Lower torque limit for the screwing to be OK

**Max Nm**                      Upper torque limit for the screwing to be OK

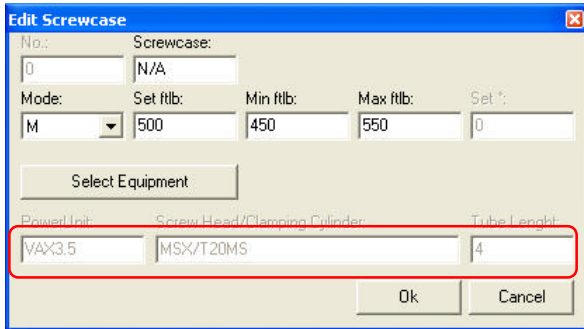
If the screw data is defined for a screw case, then the combination of equipment will be selected for this crew case.

Using the button Select Equipment you can get into the list of available equipment combinations. Here you can select the appropriate equipment combination by clicking on the appropriate line.

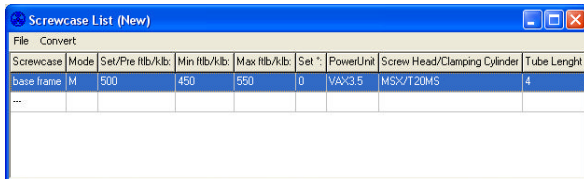


Then confirm with OK. The Select Equipment window will close and the equipment data will be carried over to the Edit Screwcase window, in the fields PowerUnit, Screw Head, and Tube Length.



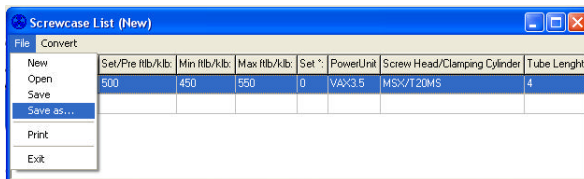


If all the data is correct, click OK to enter the screwcase in the screwcase list.



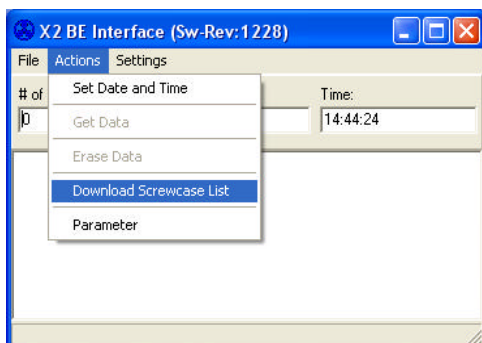
In each screwcase list you can define up to 18 screwcases.

Use File > Save As to save the screwcase list. As a standard, the folder is selected in which the BE\_X2 software is also located.

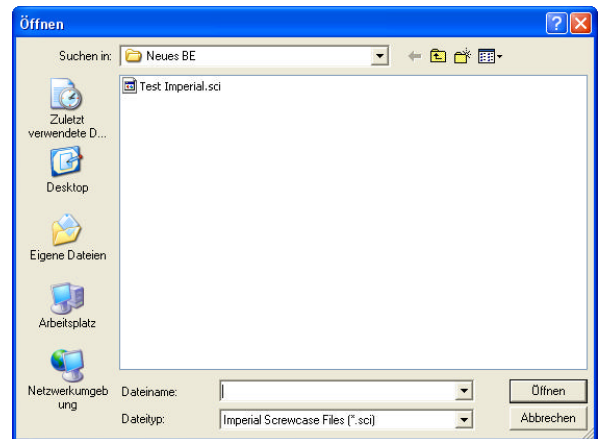
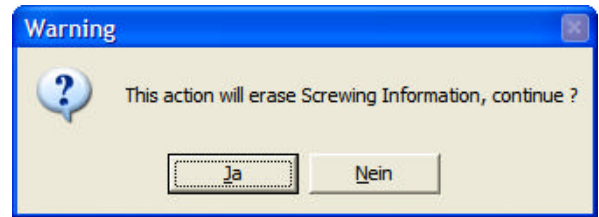


### 7.1.8. LOAD SCREWCASE LIST INTO OPERATING UNIT

- Use the menu Actions > Download Screwcase List, to open the folder with the existing screwcase lists.



The following window informs you that current screwing information will be erased and replaced on the operating unit.



- Select and open a screwcase list. Screwcase lists with metric data have the file extension .scs and those with imperial data have .sci.
- The screwcase list will be loaded into the operating unit.

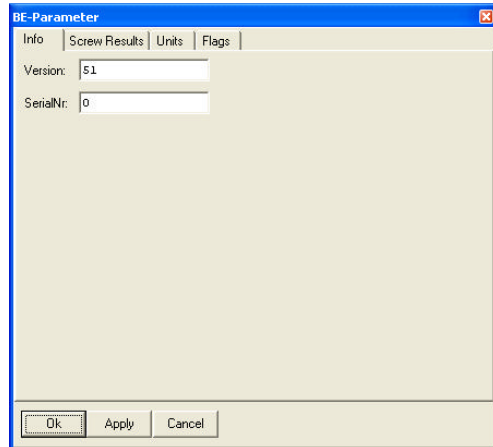


## 7.2. OPERATING UNIT PARAMETERS

### 7.2.1. INFO MENU

- *Version* gives you the number of the operating unit software version.

*SerialNr.* Gives you the serial number of the operating unit.



### 7.2.2. SCREW RESULTS MENU

In the Screw Results menu, settings are made for the operating unit.

The Save and Lock columns determine for the various screwing results:

- **Save:** whether this screwing result should be saved in the documentation.
- **Lock:** whether this screwing result should require a confirmation from the operator.

#### Result Type (Screwing result)

**OK** Screwing OK

**NOK** The screwing was assessed as NOT OK. There can be several reasons for this, e.g. if the screw was already tight, the pressure was below or above the learned pressure, or if pressure variations are too great.

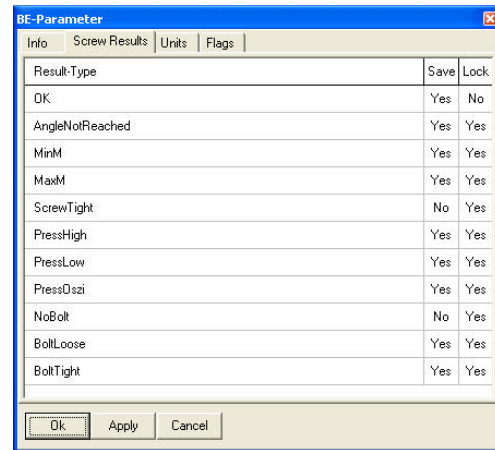
**AngleNotReached** This function is only for the torque/tightening angle process.

The screwing procedure was ended or canceled without reaching the target angle. The pressure is not set high enough.

**MinM** The screwing procedure was ended below the minimum torque of the defined window.

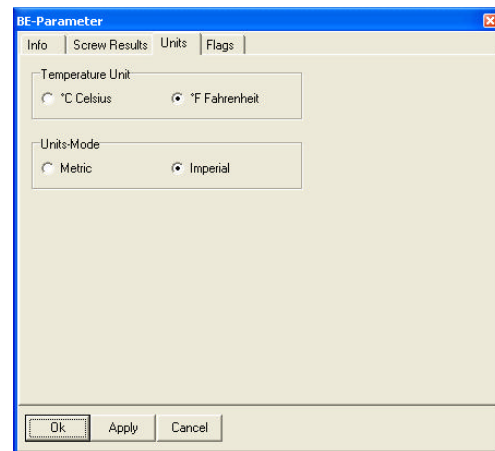
**MaxM** The screwing procedure was ended at the maximum torque of the defined window.

**Aborted** The screwing process was canceled by the operator, or the target snug torque was either not reached or exceeded.



### 7.2.3. UNIT MENU

In the Unit menu you can change the temperature display on the operating unit from °Celsius to °Fahrenheit and the measurement system from metric to imperial.



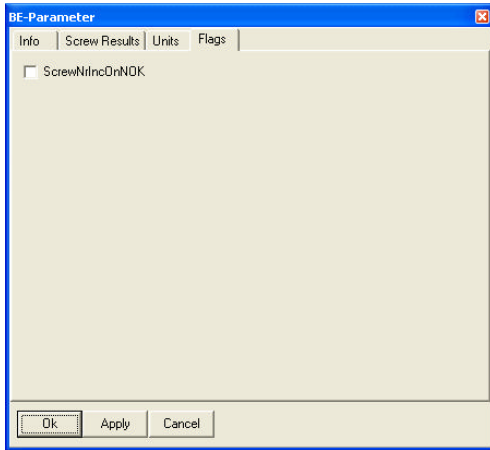
### 7.2.4. FLAG MENU

If the box is checked, in case of a faulty screwing procedure the next screw will be documented under the same screw number.



In the documentation, two lines will be included with the same screw number. The screw number will only count upward when the screwing process is OK.

If the box is not checked, a 0 will be documented in case of a faulty screwing procedure. The screw number will only count upward when the screwing process is OK.

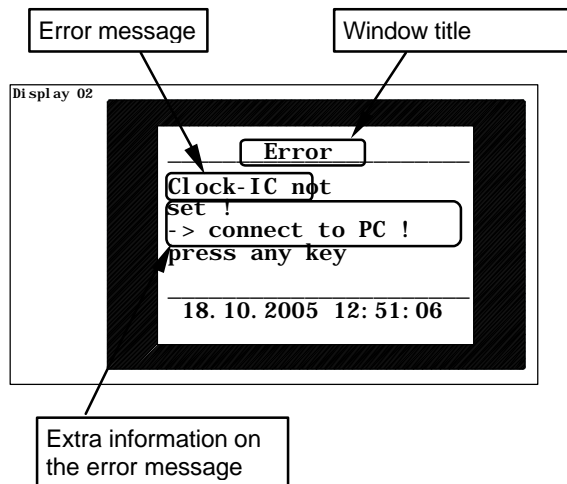




## 8. ERROR MESSAGES (GENERAL)


In case of error messages, the power unit's controls  are blocked. Pressing the Enter key  acknowledges the error message and the controls are released.

- In the error window the first line shows the appropriate error (see error list)
- After the error message, extra information is displayed. Not every error includes extra information.



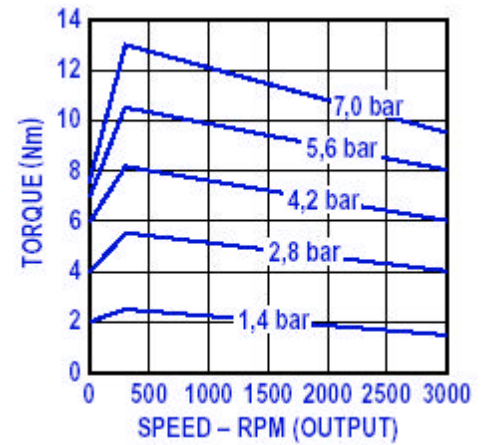
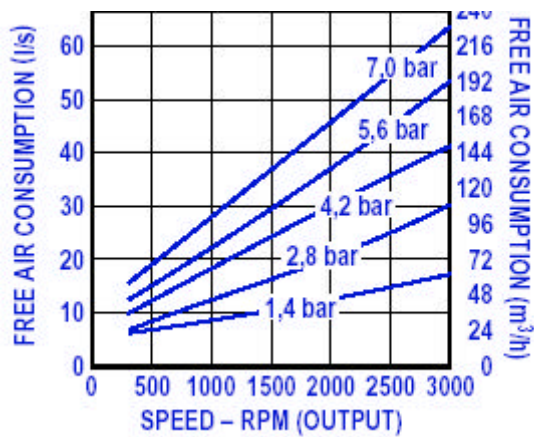
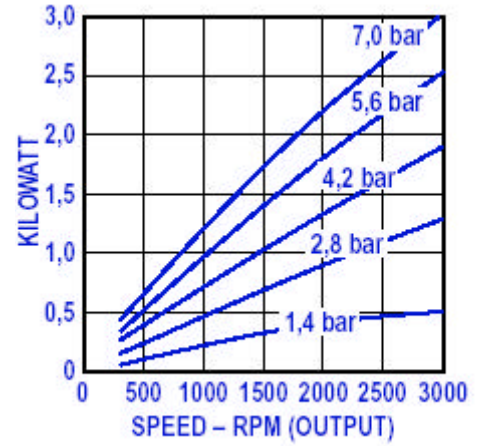
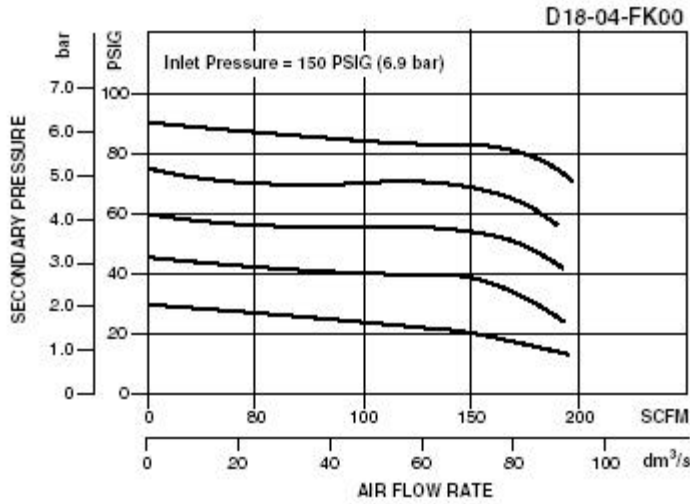
See also: Error messages for the operating unit

### 8.1. SAFETY FUNCTIONS

-  If the completed parameters of the screwing process are different from the programmed parameters, the red and green lights will flash alternately. The error message must be acknowledged by pressing the Automatic key. Until you press Enter, all functions of the operating unit except Off will be blocked.



## 9. AIR MOTOR CHARACTERISTICS





## 10. REMOTE CONTROL SIGNAL LIGHTS

Green light                      Red light



The green light is for the tightening functions of a screw connection.  
 The red light is for the loosening functions of a screw connection.  
 The different operating modes are shown by different light signals.

Flashing frequency	Function
Green signal lamp flashing slowly	Bolting system is in tightening mode and learning was not executed Initial mode of the power pack-
Green signal lamp flashing quickly	Bolting system is in tightening mode Quick flashing always indicates that a process of the power pack is currently running, e.g. the engine is starting up or the bolting process is underway
Green signal lamp on permanently	Bolting system is in tightening mode Function 1 after successful learning process Function 2 after correctly executed bolting procedure
Red signal lamp flashing slowly	Bolting system is in loosening mode and learning was not executed
Red signal lamp flashing quickly	Bolting system is in loosening mode Quick flashing always indicates that a process of the power pack is currently running, e.g. the engine is starting up or the loosening process is underway
Red signal lamp on permanently	Bolting system is in loosening mode after successful learning process
Red and green signal lamps flash alternately	Indicates a fault. If a BE is connected, the fault will be given concretely in text form. Without a BE, see <b>Fehler! Verweisquelle konnte nicht gefunden werden..</b>

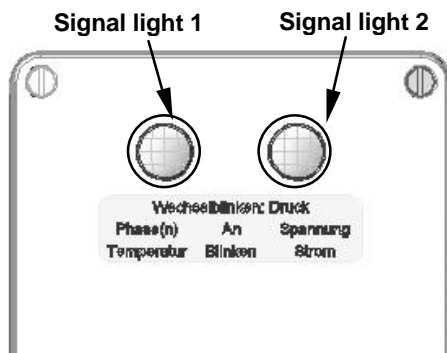


## 10.1. ERROR MESSAGE SIGNAL LIGHTS

There are 4 signal lights on the screwing machine. Two are on the top of the control casing and two are on the remote control.

The various functional errors signaled on the top of the control casing are errors that lead to problems in the power unit's operation. The signals on the remote control are for functions and operating statuses for the screwing process. The various functions are displayed by various flashing speeds.

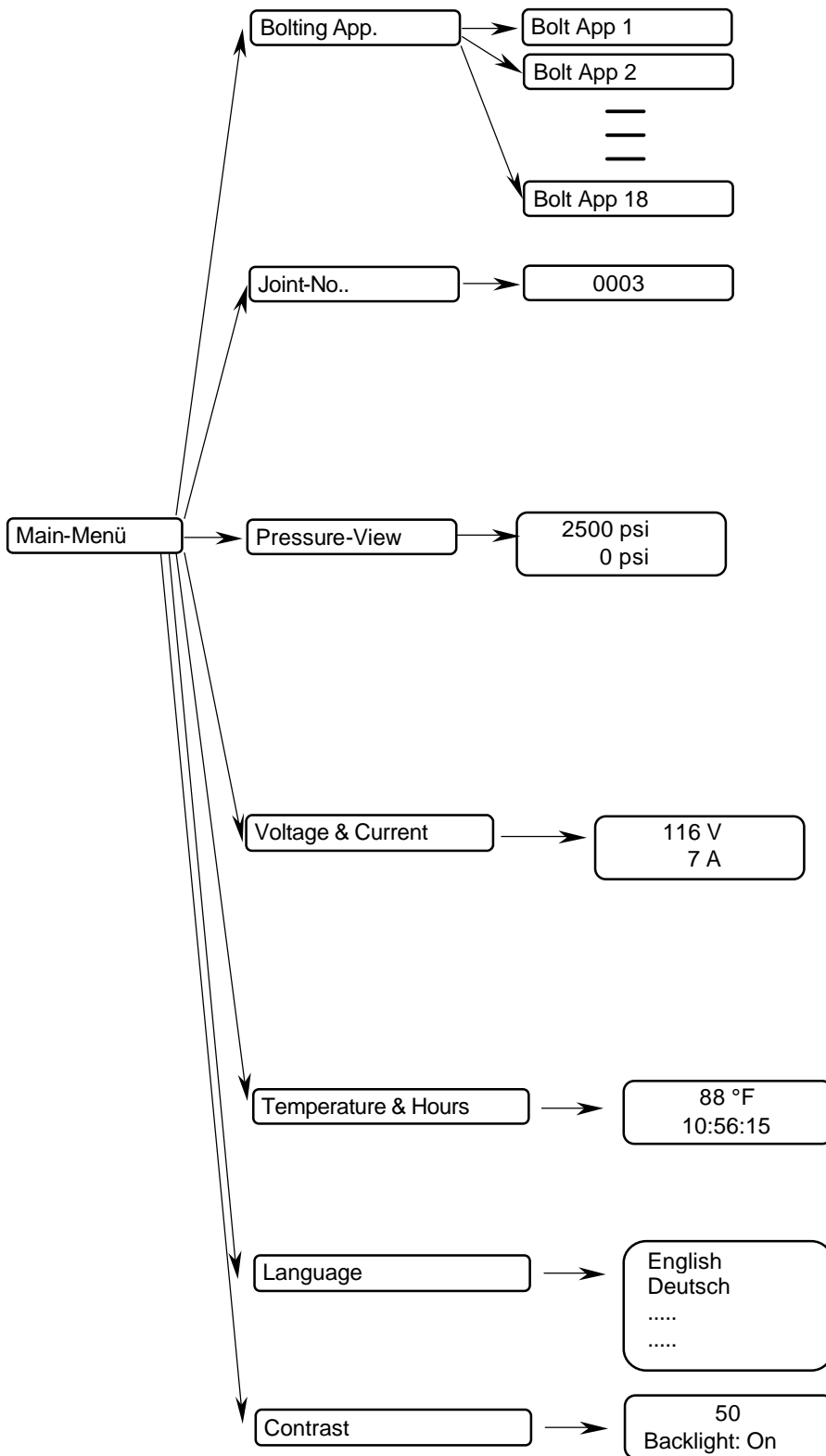
## 10.2. SIGNAL LIGHTS ON THE CONTROL CASING



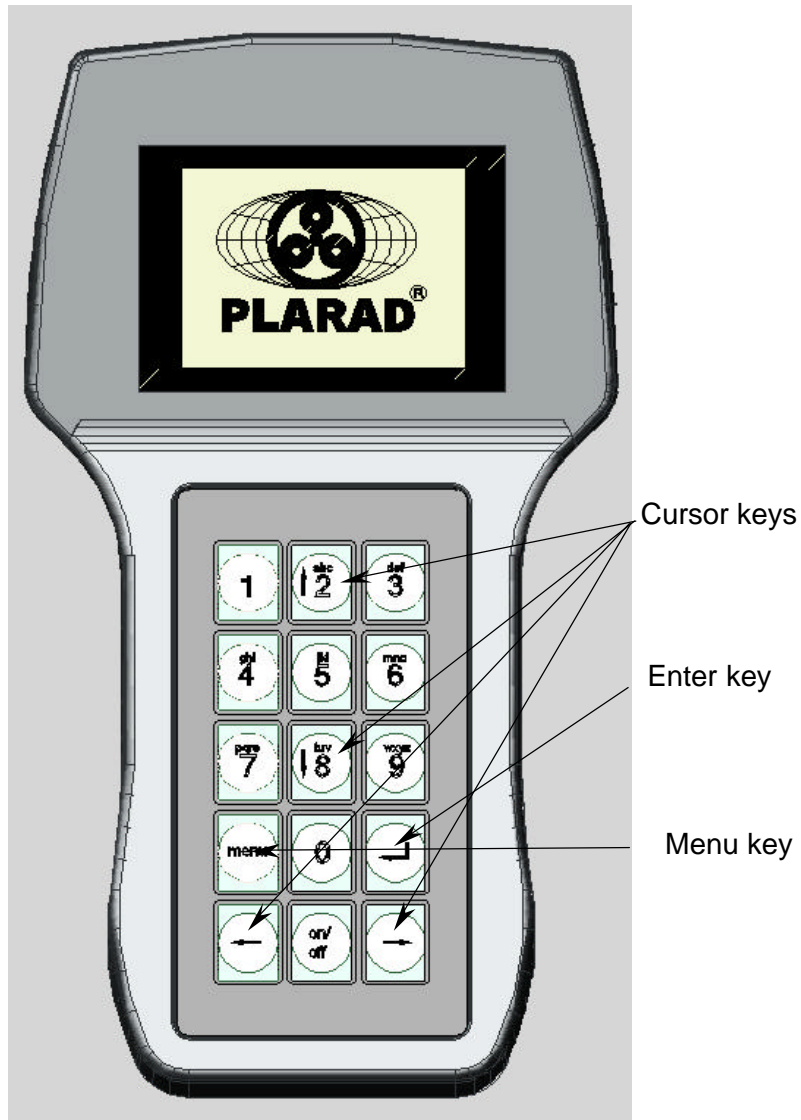
Flashing frequency	Cause
Signal lamp 1 on permanently	AC current units: Mains voltage was not detected 3-phase units: rotary field inverted
Signal lamp 1 flashing	The maximum permissible temperature of the unit has been exceeded
Signal lamp 2 on permanently	The voltage of the power supply is outside the permissible range
Signal lamp 2 flashing	The maximum permissible current consumption of the unit has been exceeded
Signal lamps 1 and 2 flash alternately	The maximum permissible pressure of the unit has been exceeded



# 11. OPERATING UNIT: MENU STRUCTURE



## 12. OPERATING UNIT KEYS



Subject to technical changes

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### 13. REMOTE CONTROL

A remote control with digital display is optional. Here the pressure of the screwing system is displayed on the remote control. The functions are the same as the standard remote control, except that the OFF button is mounted on the side.

