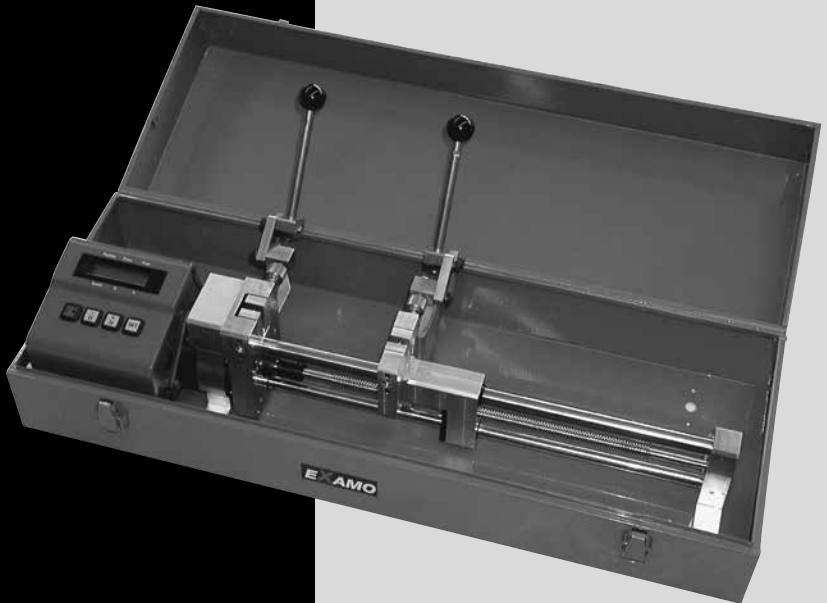


LEISTER®

ALLIED
POWER TOOLS

**EXAMO 300F
USB**

**EXAMO 600F
USB**



Leister Technologies AG
Galileo-Strasse 10
CH-6056 Kaegiswil/Switzerland

Tel. +41 41 662 74 74
Fax +41 41 662 74 16

www.leister.com
sales@leister.com



Please read operating instructions carefully before use and keep for further reference.

Leister EXAMO 300F USB / EXAMO 600F USB Tensiometer

Application

Tensiometer for peeling, shearing and tensile tests of geomembranes, geotextiles and films.

To determine the strength of a welding sample the test piece is fastened into the tensiometer and stretched under constant speed until it tears.

Peak force (F_{Peak}) and tear force (F_{Tear}) as well as the corresponding elongation data are on the display at the end of the test. If the sample is stretched, the tensile force of the maximum yield stress is displayed.

The test speed is adjustable from 20 – 550 mm/min or 0.8 – 21.6 inch/min, in 5 mm or 0.2 inch increments to cover all the relevant standards.



Warning



Danger to life when opening the tool, as live components and connections are exposed. Unplug the tool before opening it.



Connect the tool to a **line/mains socket with protective earth**. Every interruption of the protective earth inside or outside of the tool is dangerous!

Only use extension cables with protective earth!



Hazard of being pulled in or squeezed.

Do not touch the shaft. Wear tight-fitting clothes and a hair net.

Remove loose clothing (e.g. ties, scarves), jewelry and all other items which could get caught.



Caution



The **voltage rating** stated on the tool must correspond with the line/mains voltage.



For personal protection on building sites we strongly recommend the tool be connected to a **RCCB** (Residual Current Circuit Breaker).



The machine may only be used by **qualified specialists** or under their supervision. Children are not authorized to use this machine.



Protect the tool from **damp and wet**.



Do not touch drive shaft and sliding carriage during operation.



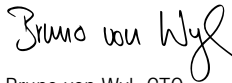
Do not operate the sliding carriage when a welding sample is fastened in.

Conformity

Leister Technologies AG, Galileo-Strasse 10, CH-6056 Kaegiswi/Switzerland confirms that this product, in the version as brought into circulation through us, fulfils the requirements of the following EC directives.

Directives: 2006/42, 2014/30, 2014/35, 2011/65
Harmonized Standards EN ISO 12100, EN 61326-1, EN 61000-3-2, EN 61000-3-3, EN 62233, EN 60335-1, EN 50581

Kaegiswil, 10.10.2018


Bruno von Wyl, CTO




Christoph Baumgartner, GM

Disposal



Electrical equipment, accessories and packaging should be recycled in an environmentally friendly way.
For EU countries only: Do not dispose of electrical equipment with household refuse!

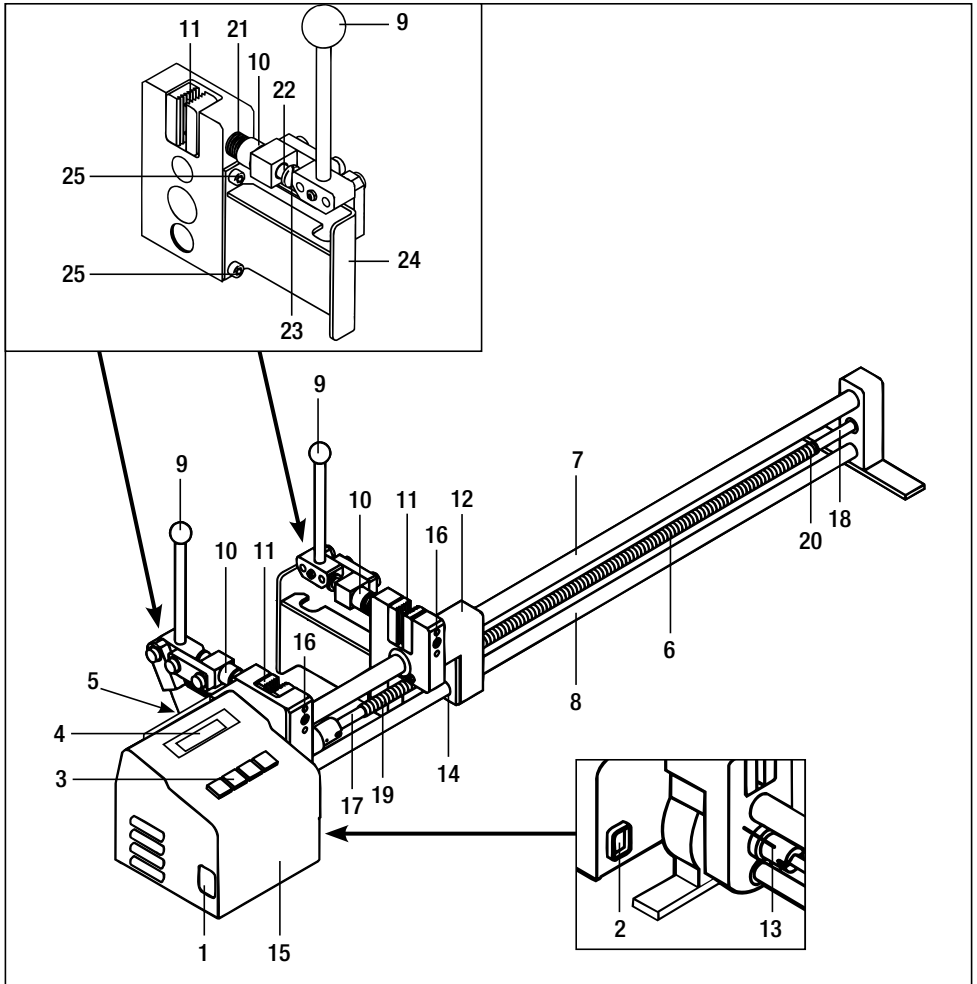
Technical Data

		EXAMO 300F USB	EXAMO 600F USB
Voltage *	V~	100, 120, 230	100, 120, 230
Power consumption	W	200	200
Max. tensile load	N/lbf	4000 / 900	4000 / 900
Temperature range	°C/°F	-5 bis +80 / +23 to +176	-5 bis +80 / +23 to +176
Load measure range	N/lbf	0 – 4000 / 0 – 900	0 – 4000 / 0 – 900
Diviation indicator	%	< 3 % FS at 20 °C	< 3 % FS at 20 °C
Range	mm/in	300 / 11.8	600 / 23.6
Testing speed	mm/min. in/min.	20 – 550 0.8 – 21.6	20 – 550 0.8 – 21.6
Max. sample thickness	mm/in	4 / 0.16	4 / 0.16
Max. sample width	mm/in	40 (60 optional) / 1.57 (2.35 optional)	40 (60 optional) / 1.57 (2.35 optional)
Emission level	L _{pA} (dB)	< 70	< 70
Weight **	kg/lbs	14 / 30.9	17.5 / 30.9
Dimensions (L × W × H)	mm	750 × 270 × 190	1050 × 270 × 190
Mark of conformity		CE	CE
Protection class I			

* Line/mains voltage cannot be switched over ** Without power supply cord

Technical data and specifications are subject to change without prior notice

Description of tool



- | | | |
|-------------------|--|------------------------------------|
| 1 Plug socket | 10 Adjustment screw | 18 Safety position for direction |
| 2 Main switch | 11 Clamping jaws | 19 Thread start for return passage |
| 3 Keyboard | 12 Sliding carriage | 20 Thread start for test direction |
| 4 Display | 13 Spacer | 21 Spring |
| 5 USB-Port | 14 Trapezoidal thread nut | 22 Cocking-lever shaft |
| 6 Drive shaft | 15 Housing for drive motor and electronics | 23 Flat head screw |
| 7 Upper guide bar | 16 Set screw for fixing clamping jaw | 24 Holder |
| 8 Lower guide bar | 17 Safety position for return passage | 25 Set screw |
| 9 Clamping lever | | |

Description of tool keyboard (3)



Start /Stop



Fast motion
back/MINUS





Fast motion
forward/PLUS



Select menu

Description of tool display (4)

J	A	K	B	C
	Position		F_{Peak}	F_{Tear}
A	3 1 4 <	3 7 2 0	2 5 2 0	
>	1 0 0 →	1 5 7	1 6 3	
	Speed	%	%	
G	D	H	E	F

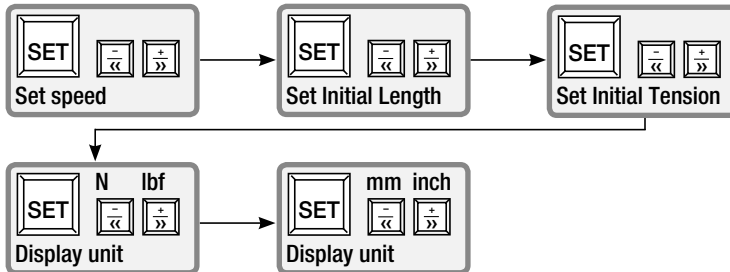
- A** Actual sledge position (test parameter) [mm] / [inch]
 When pushing keys  or  absolute sledge position [mm] / [inch]
- B** Max. tensile load of test in progress [N] / [lb]
- C** Before shearing: actual tensile load [N] / [lb]
 After shearing: tearing force [N] / [lb]
- D** Test speed set value [mm/min] / [inch/min]
- E** Elongation at F_{Peak} (stops with F_{Peak})
- F** Elongation at shearing
- G** Status of machine
 > testing
 Stop
 >> Fast motion forward
 << Fast motion backward
- H** USB status
 I Current file identified
 → Recording
- J** Shut-off status
 A Automatic stop at F_{Tear}
 M Manual stop
- K** Drive motor overload
 < excess current measured

Readiness for working

- Open storage case
- Connect enclosed power **cable to socket (1)**.
- Connect the machine to the line/mains
- Pull out **clamping lever (9)** until it is locked
- Turn-on main **switch (2)**
 - Position of sliding carriage is not at **spacer (13)**
 - Press \llcorner , for Initialize appears on **display (4)**
 - Push key $\boxed{\frac{-}{\llcorner}}$, Wait for Initialize appears on **display (4)** and **sliding carriage (12)** moves to **spacer (13)**.
 - **Display (4)** shows standard mode
 - Position of sliding carriage is at **spacer (13)**
 - **Display (4)** shows standard mode

Test parameter

- Set the test parameters using the following keys:

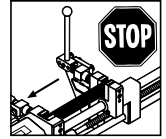


- Speed: Test speed in mm / min or inch /min (depending on the settings below)
- Initial Length: Clamping distance in mm or Inch of the device jaws after actuation with the key $\boxed{\frac{-}{\llcorner}}$ oder $\boxed{\frac{+}{\gg}}$.
The jaw spacing can be corrected at any time with the key $\boxed{\frac{-}{\llcorner}}$ or $\boxed{\frac{+}{\gg}}$.
The absolute position of the **sliding carriage (12)** (jaw spacing) appears on the **display (4)**.
- Initial Tension: Level of initial tension. When the set initial tension is achieved, the evaluation of the tensile test starts. If the initial tension is set to **0**, the test evaluation can be started by pressing the $\boxed{\text{Start}}$ Start key.
- Exit menu by pushing $\boxed{\text{SET}}$ key
- When setting the initial length, the force display may show the value $\neq 0$. Reason: Influence of temperature on the equipment and/or force on the **clamping jaws (11)** which are close to the **housing of the drive motor and circuit board (15)**.
- When starting the test, the force values are reset to 0.

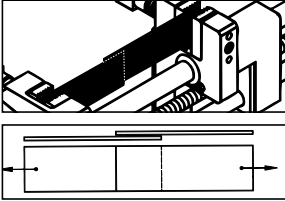
Version with USB port has more menu items (see operation of USB port).

Fasten test piece

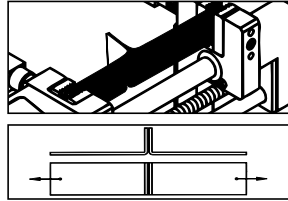
- Release tension **clamping jaws (11)** with the **clamping lever (9)**.
- Adjust **clamping jaws (11)** at the **adjusting screw (10)** to thickness of sample.
- Fix sample material with **clamping lever (9)**.
- Do not operate the sliding carriage backwards when the sample is fastened in, overload fuse will be activated.



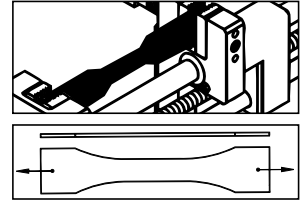
Shear test




Peel test







Tensile test







Start test procedure

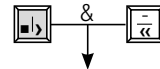
- Press Start/Stop  key
- When the set initial tension value is achieved, the elongation and position values are reset to nought and the test evaluation starts (if the initial tension value is already set to **0 N / 0 lbf**, the test evaluation starts immediately).
- During the test the parameters cannot be changed.



End test procedure

- In case the sample tears, push key  to stop **sliding carriage (12)**.
- If key  is not pressed, the **sliding carriage (12)** stops automatically at the end.
- To interrupt or stop the tensile test, press  Start/Stop key.
- When sample shears, the **sliding carriage (12)** stops automatically.
- If the sample does not shear, the **sliding carriage (12)** stops at the end of the run.
- To interrupt or stop the tensile test, press  Start/Stop key. When interrupting the tensile test, the measuring values are not reset if the power sensor is under pressure the initial tension value (see F_{Peak} display). This guarantees that the existing test can be continued.
- The automatic shut-off can be a hindrance during certain tensile tests when the sample tears (FTear). Therefore, this function can be deactivated.



Go to the selection menu by pressing the  and  keys at the same time.

With the  key the automatic shut-off is active (default) and with  key it is deactivated (manual).



 Auto - Stop
 Manual - Stop

Reading test data

- Read the test values on the **display (4)**
- By pressing the key , the **sliding carriage (12)** will return to its programmed starting position. The position display reverts back to the absolute jaw spacing.
- By pressing the key  again, the test data are cancelled and a new tensile test can be started.

Remove test piece

- Relieve **clamping jaws (11)** with **locking lever (9)** and remove welding sample.
- The tool is ready for further testing.

Ready to transport

- Push **locking lever (9)** down until to the limit.
- Unplug tool from the line/mains.
- Unplug cable from **socket (1)** and put it into the storage case.
- Close the storage case.

Change of clamping jaws

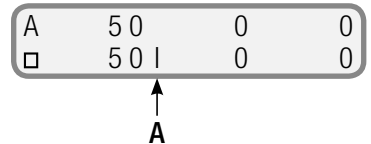
- Flexible jaws
 - Fasten adjustment **screw (10)** against the **clamping jaw (11)**.
 - Unscrew the **cocking-lever shaft (22)** from **clamping jaw (11)** with a 8 mm spanner.
 - Remove **clamping jaw (11)**.
- Fixed clamping jaws
 - Unscrew **set screw (16)** with 4 mm hexagonal box spanner.
 - Pull off **clamping jaw (11)**.
- Assemble clamping jaws in reverse order.
 - Watch the alignment of **clamping jaws (11)**.



- The USB port enables recording of the process values **force, expansion and test speed**. The assessment is made using spreadsheet software, not included in the delivery, e.g. Microsoft® Excel.
- **Basic USB stick**
 - If a new USB stick is used, this should be formatted in format FAT 32 with memory size 512 bytes.
 - **IMPORTANT:** Always test new USB sticks on the device in advance! Sometimes not all USB sticks work with the device. This can depend on, e.g. USB copies, preinstalled software which wants to start up automatically, locked stick, etc.
 - **Never pull out the USB stick while it is saving!** The data will not be saved! Always end the test of a sample according to these instructions.
- **Date and time**
 - Set up or check the date and time the first time that the device is started up. You can find the instructions for this under the heading Presettings (diagram).
 - If the date has been altered, turn the device off for two seconds. Then turn it back on so that the date is accepted.
 - The date and time are powered by a battery independent of the power supply.
It is recommended to check its function periodically.

- **Inserting USB stick**

- Unscrew protective cover.
- Insert USB stick in the USB port.
- The symbol | (A) appears in the device display.



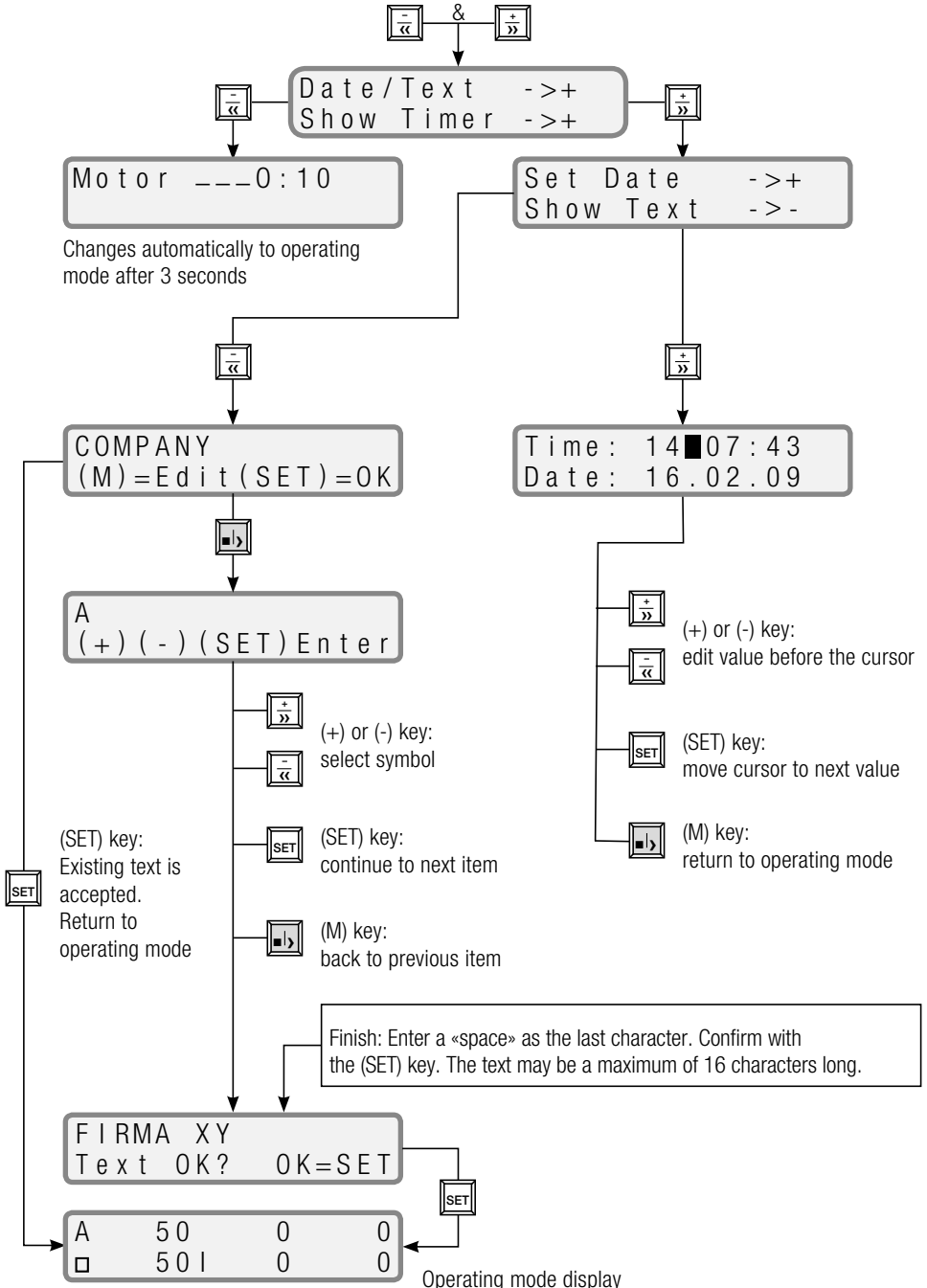
- **File name**

- A file name consisting of the current date (month and day) and the file number will be created automatically when recording is started. Example: 0309-002 = 09. March, second sample.
- The file number increases automatically every time it is saved. The number begins at 001 every day



To set date, edit client text or display of operating hours counter.

By pressing keys and at the same time, the following display appears:



Recording the test data



- After the presets have been entered correctly, the device is ready to record.
- Press the key to start a test. The message «PLEASE WAIT USB» and the file number appear flashing on the **display (4)**.
Now the file is opened and the header created

```
PLEASE WAIT USB
File 001
```

- As soon as the file has been created, the symbol on the **display (4)** changes from I to a flashing → and the test is started.

```
A    50    0    0
>   50→  0    0
```

- The force, speed and expansion values are recorded every millimetre.
- A header with client text, file number, date, time and settings is saved for every test (see Evaluation).

Stopping the recording



- The test is stopped automatically if the sample tears (F_{Tear}), if it is cancelled with keys , , or if the end of the track is reached.
- The message «PLEASE WAIT USB» appears on the display again.

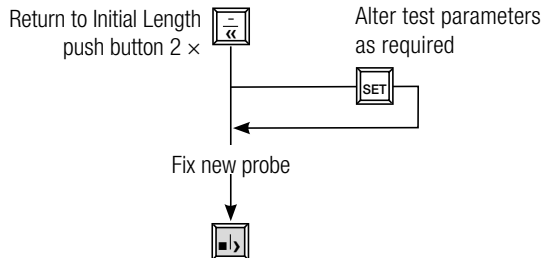
```
PLEASE WAIT USB
File 001
```

Never remove the stick while this message is still displayed!

Further recordings



- Take off the probe



- If the values are not recorded any more, the USB stick must be removed.
- From time to time, check the remaining memory of the USB stick on a PC.

Analysis



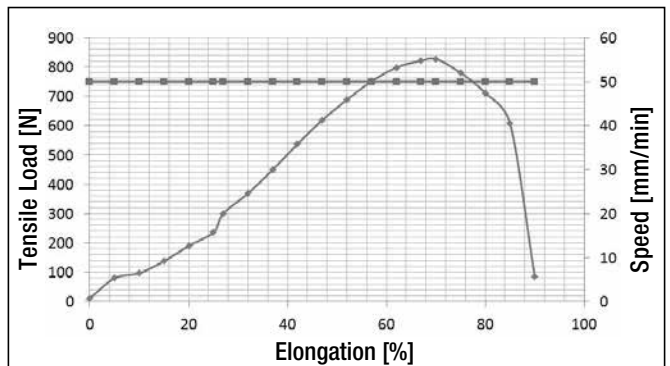
- Insert USB stick into USB port of a computer (not supplied).
- Start spreadsheet software (not supplied).
- Open file
- Select drive (drive with USB stick)
- File type: «all files»
- Select and open the desired recorded file (*.csv)
- The file opens. Example of file content:

Header	Client text (can be edited) Sample number	COMPANY-XY File-number: 1124-001 Leister Switzerland EXAMO Software Release 3.0 Date: 24.11.2015 Time: 10:44:25 Speed = 50 mm/min Init.Length = 40 mm Init.Tension = 10 N		
	Column headings Unit	Strain [%]	F_PV [N]	SPEED_PV [mm/min]
Data	1. record	0	11	50
	2. record	5	80	50
	3. record	10	97	50
	4. record	15	138	50
	FPeak	72	827	50
	FTear	90	473	50
	End of File	End of File		

Create diagram






- Select a test. Highlight column overview, unit and records (see table above)
- Click on the «create diagram» symbol and create diagram using the wizard (for more precise specifications, see the user's manual of the spreadsheet software, not supplied)
- Possible representation:




Operating faults and preventative measures



• Blockage of carriage on return passage

- If the carriage return is obstructed, the overload safety device will be activated.
- The **trapezoidal thread nut (14)** is released from the **sliding carriage (12)**.
- The **trapezoidal thread nut (14)** moves to the **safety position for return passage (17)** of the **drive shaft (6)**.
- The machine has to be stopped with the key .
- In case machine is in modus «Wait for Initialize», operate **spacer (13)** manually.
- Start the machine with the key .
- Move the **trapezoidal thread nut (14)** to the **thread start for return passage (19)** by hand. The **trapezoidal thread nut (14)** is caught by the **drive shaft (6)** and moved in test direction.
- If at least one pitch of the screw thread on the **drive shaft (6)** is visible on the left hand side of the **trapezoidal thread nut (14)**, stop the machine with the key .
- Push the **sliding carriage (12)** by hand until it stops at the **trapezoidal thread nut (14)**.
- Switch off the machine with **main switch (2)** and switch it on again.
- Re-initialize the machine according to operating instructions on page 4.




• Overload safety device in test direction

- If the maximum allowable tensile load is exceeded, the machine switches off automatically to prevent damages.
- Relieve probe by pushing the key .
- Remove sample.
- Fasten new sample and repeat test.

• Engine overload current

- The device always measures the engine record current. If the current exceeds the maximum permissible current the engine is adjusted by reducing the engine speed. The < symbol appears on the display.
- Switch off drive with  key and release the sample with the  key.
- Remove sample.
- Clamp new sample and repeat test.

• Overrunning the end of drive shaft in test direction

- If the end of the test run is not recognised, the **sliding carriage (12)** goes to the **safety position for test direction (18)**.
- Stop machine with  key.
- Start machine with  key.
- Bring **sliding carriage (12)** by hand to the **thread start for test direction (20)**.
- If at least one pitch of the screw thread on the **drive shaft (6)** is visible on the right hand side of the **sliding carriage (12)**, stop the machine with the  key.
- Switch off the machine with the **main switch (2)** and switch it on again.
- Re-initialize the machine according to operating instructions.

Maintenance

- Keep **drive shaft (6)** clean and grease after 40 hours of operation. When using under difficult environmental conditions, the intervals have to be reduced.
- Keep **guide bars (7) (8)** clean.
- Friction bearings as well as shaft bearing are maintenance free. Lubrication with grease or oil (with grease additives such as Zinc Sulphide, Molybdenum Sulphide and similar) is not allowed as this would affect the working life of the bearings.
- Damaged wiper devices on the **sliding carriage (12)** have to be replaced immediately.
- Check power supply cord and plug for any possible electrical or mechanical damages.

Service and Repairs

- The carbon brushes in the motor should be checked by your Service Centre after about 1000 hours of operation.
- Repairs have to be carried out by authorised **LEISTER Service Centres** only. They guarantee a specialized and reliable **repair service within 24 hours** using original LEISTER spare parts.

Warranty

- For this tool, the guarantee or warranty rights granted by the relevant distributor/seller shall apply. In case of guarantee or warranty claims any manufacturing or workmanship defects will either be repaired or replaced by the distributor at its discretion. Warranty or guarantee rights have to be verified by an invoice or a delivery document.
- Additional guarantee or warranty claims shall be excluded, subject to mandatory provisions of law.
- Warranty or guarantee shall not apply to defects caused by normal wear and tear, overload or improper handling.
- Warranty or guarantee claims will be rejected for tools that have been altered or changed by the purchaser.

Your authorised Service Centre is:



Allied Power Tools

12/ 76 Rushdale St, Knoxfield VIC 3180 Australia

T: + 61 3 9764 2911

E: sales@alliedpowertools.com.au

W: www.alliedpowertools.com.au

Leister Technologies AG
Galileo-Strasse 10
CH-6056 Kaegiswil/Switzerland

Tel. +41 41 662 74 74

Fax +41 41 662 74 16

www.leister.com

sales@leister.com