



Polygraphische
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Technik Leipzig

Operating Manual

Traction Gauge TRAC CONTROL

Application Areas

- Traction forces can be measured with the TRAC CONTROL, thereby allowing the determination of traction force parameters. These parameters can be determined in the gap between mounted moving objects, especially between pairs of arranged rollers in machines which handle flat substrates, like folding machines or printing presses.
- The TRAC CONTROL can be used anywhere where traction force parameters can be measured or checked, like in opening forces or tear-away forces. This can be opening forces in gripper systems or tear-away forces on glued or welded materials like textiles, packaging material or adhesive tapes.

Device Design

- The TRAC CONTROL consists of the hand-held unit (Figure 1) and the measuring head connected by a cable (Figure 2).
- On the hand-held unit, there are push buttons for operating the device, a display for reading the measured values, entering parameters and menu information as well as signals for the optical and acoustic set point control of the traction force and the optical set point control of the range and power supply.
- The measuring head has a handle for applying the traction force by hand and a clamping device for clamping the test strip or any other testable material as well as any necessary additional clamps. In the clamping device, materials with a maximum thickness of 2.3 mm and a maximum width of 100 mm can be clamped in place. On top and on the sides of the measuring head are coloured LEDs for optically controlling the set point of the traction force and the angle.

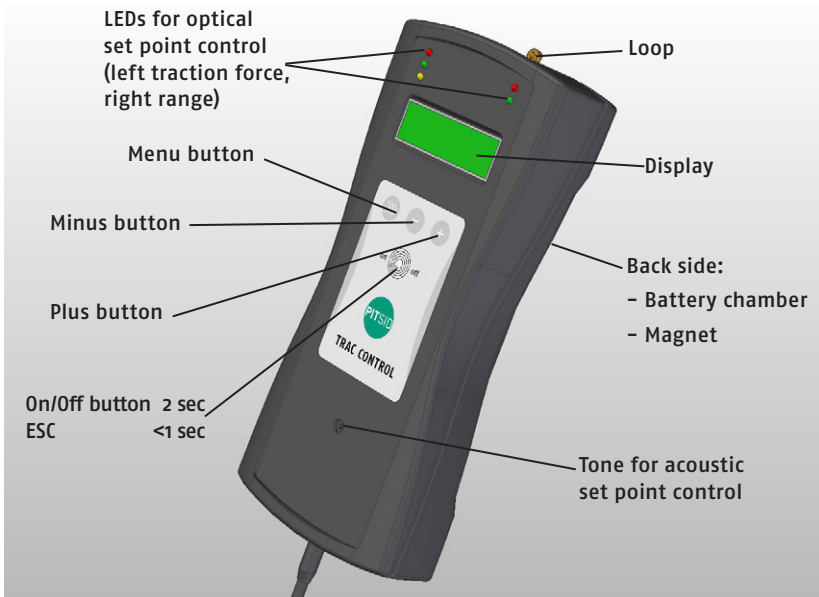


Figure 1: Hand-held unit

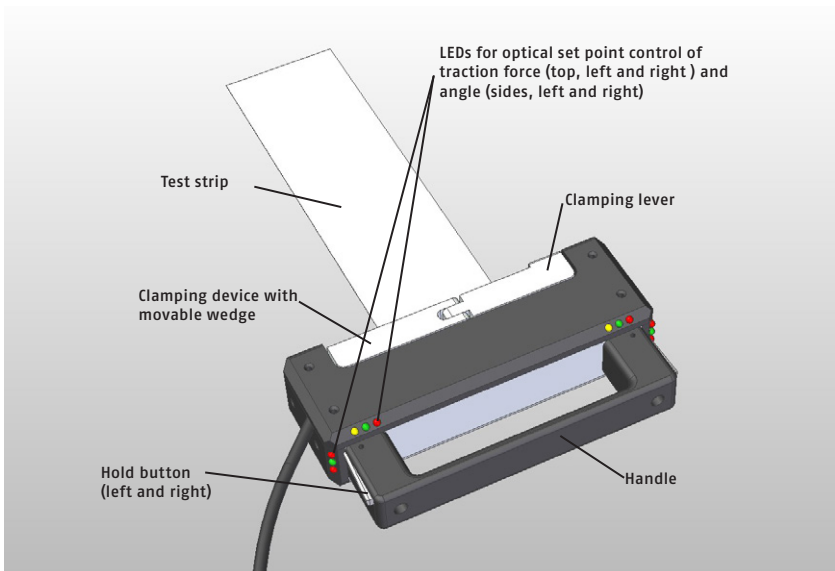


Figure 2: Measuring head

Measurement Principle and Special Characteristics

- A force sensor is built into the measuring head and registers the traction force acting on the clamping device.
- An integrated inclination sensor makes it possible to measure the **permanent reading of the angular position** of the measuring head. The traction force measurement can be made with a defined measuring head angle, allowing the prevention of measurement errors due to roller wrap-around effects, for example. Simultaneously, the angle generates the basis for a **permanent automatic zero point** so that a general zero positioning of the reading before every measurement is spared. **This means that no matter which angle the measuring head has, the reading without a load is always zero.**

Other special characteristics:

Choice of **tone** on/off

Choice of measurement with the **integrated clamping device** or with **additional clamps** (not included in delivery)

Choice of **measurement routine**

SINGLE MODE = Single measurement

Reading is automatically held after the threshold value of 2 N has been exceeded and after the starting time and measuring time has expired.

Delete = Measurement readiness is started again by pressing the Hold button (Measurement time is indicated by the tone and all three LEDs lighting up ●●●)

RUN MODE = Continuous measurement

Permanent reading, continuously updated during the measuring time

Choice of **measuring time** (= data logging time = notification time) 0.2 s ... 4 s

Choice of **starting time** (= lead-in time) only in SINGLE MODE 0.2 s ... 5 s

Choice of **traction force set point** 3 N ... 25 N

Choice of **traction force set point tolerance** ±0.2 N ... ±3 N

Set point control Optically with LEDs on the hand-held unit and measuring head
 Acoustically with a signal tone (only in RUN MODE with "Tone on" and a traction force ≥ 0.5 N)

● Set point not reached = long intermittent tone

● Set point maintained = continuous tone

● Set point exceeded = short intermittent tone

Choice of **angle set point** for the measuring head angle:

-90° (handle down) ... +90° (handle up)

(No upside-down measurements, i.e. measuring head cover always is facing up)

Choice of **angle set point tolerance** ±1° ... ±20°

Optical set point control by means of LEDs on the measuring head

● Reduce measuring head angle

● Measuring head angle within tolerance

● Increase measuring head angle

Choice of **range set point**

1N ... 10N

Optical set point control by means of LEDs on the hand-held unit

- Set point exceeded
- Set point maintained

Choice of **measurement with/without memory access** i.e.

with live entry of the measurement parameters under machine No. 0 or

with access to previously saved measurement parameters under machine No. (Ma) 1 ff. and pair number (Pa) 1 ff. For finding/organising Ma and Pa when saving/measuring, it is helpful/necessary to have a measurement outline of the roller scheme with noted pair numbers for every machine.

An optimised sequence when entering parameters makes a **guided measurement** possible.

Choice of **displaying different traction force parameters**

- | | | |
|---|------|-------------------------------------|
| 1) Average traction force | in N | during the measuring time cycle |
| 2) Traction force range (Diff. max–min) | in N | during the measuring time cycle |
| 3) Traction force minimum value | in N | during the measuring time cycle |
| 4) Traction force maximum value | in N | during the measuring time cycle |
| 5) Traction force standard deviation | in N | during the measuring time cycle |
| 6) Traction force variation coefficient | in % | during the measuring time cycle |
| 7) Recorded single values MIN MAX | in N | during a cycle of 25, 50, or 100 ms |
| 8) Measuring head angle | in ° | during a cycle of 200 ms |

Pressing the **Hold** button:

SINGLE MODE, after every single measurement: **Delete = Ready to measure**

RUN MODE, during the continuous measurement: **Record and delete = Continue reading**

Blinking set point LEDs:

Signals recorded traction force parameter values

Operational Readiness

- The TRAC CONTROL is ready to use after pressing the on/off button (approx. 2 sec).
- Switching off the device is also done by pressing the on/off button (approx. 2 sec) or the device automatically switches off after approx. 5 min.

Measurement Procedure and Handling

The measurement procedure differs slightly depending on if the measurement is made, for example, for the traction force between stopped or moving rollers, for opening forces in a gripper system, or for various tear-away forces.

The **traction force measurement between rollers** can be carried out as single measurements, continuous measurements as well as continuous measurements with memory access.

Therefore, in the following **examples**, the **three basic measurement procedures** dealing with the **essential handling** of the device are described.

Generally, it is recommended to record the temperature during the measurement. This can be helpful when assessing the measurement results which may be influenced by temperature effects.

1) Single measurement **SINGLE MODE** (Example: Measurement between rollers at a standstill) Measurement parameters are not saved in the memory, live entry under machine 0

- Switch on the TRAC CONTROL (see point Operation Readiness).
- The test strip is slid centred into the measuring head's test strip slit when the clamping lever is opened. For this, the measuring head needs to be turned in order for the integrated wedge to move out of place due to gravity, thereby opening the slit. When turned back, the wedge lightly holds the test strip in the slit.
Underneath the slit opening there is a peg that is connected to the wedge. When pressure is placed on this peg from the side, it will also help lightly hold the strip.
The test strip is fixed in place after pushing down the clamping lever.
- After repeatedly pressing the menu button on the hand-held unit through the menu points "Measure yes" "Machine o ok" "Additional clamp no", you will reach the measurement routines **RUN MODE/SINGLE MODE**. Pressing the plus/minus button sets the unit to **SINGLE MODE** since single measurements are better suited for rollers at a standstill.
A continuous measurement (RUN MODE) is principally also possible when rollers are at a standstill but the continuous measurement is limited when pulling out a test strip with a limited length.
- Pressing the menu button switches to the starting time and can be changed when required. The starting time serves as a lead-in before the actual measurement takes place.

- Pressing the menu button switches to the measuring time and can be changed when required. A longer measuring time means a greater average effect.
- Pressing the menu button switches to the traction force set point and can be changed when required.
- Pressing the menu button switches to the set point tolerance and can be changed when required.
- Pressing the menu button switches to the angle set point and can be changed when required.
- Pressing the menu button switches to the angle set point tolerance and can be changed when required.
- Pressing the menu button switches to the range set point and can be changed when required.
- Pressing the menu button switches to the momentary display "Device ready" and to a readout of the traction force parameters and angles. A suitable combination can be chosen by repeatedly pressing the menu button.

The device is ready for measurement when the yellow LED is lit.

- After entering all the necessary values, the device is ready to measure and can be fixed to the machine by either the magnet attached to the back of the unit or with the loop which is located on top of the unit. That way you can have your hands free to handle the measuring head and for eventual adjustments. When attaching the unit on the machine, it should be placed so that the display and the set point LEDs can be seen and the measuring head cable is safely positioned.
- The measuring head handle should be held in such a way so that the clamped-in test strip can be fed between the rollers and pressed. Feeding can be assisted by either turning a hand wheel, using inching mode or by slowly moving the rollers.
- While keeping the movement as tangential as possible, the test strip can now be pulled out between the rollers as slowly and smoothly as possible. Slow movement is necessary since the test strip length is limited. The pull-out speed has only an insignificant effect on the measured value.
- The tangential position of the test strip can be controlled by the angle shown on the display. Reaching the optimal angle will be signaled by the green angle LEDs on the measuring head.
- The measurement starts after exceeding a traction force threshold of 2 N and after the preset lead-in time expires. During the measuring time, all three LEDs light up simultaneously and the signal tone begins.
- The average traction force will be automatically compared to the entered set point and the set point tolerance and as a result, the appropriate signals for the optical set point control will be activated (see Measurement Principle and Special Characteristics).
- **The traction force parameters which are determined during the measuring time are automatically saved. This is signaled when the set point LEDs begin to blink. Deleting, and therefore, being ready for the next measurement takes place by pressing the Hold button. Advancing to the next traction force parameter in the display takes place by pressing the menu button. The readout MAX > 30 N signals an exceeded measurement range.**
- If needed, the mounted rollers can be adjusted using adjustment elements based on the signals of the optical set point control.
- Switch the TRAC CONTROL off (see point Operational Readiness).
Hint: Pressing the on/off button switches to "Measure yes/no" at any time (ESCAPE function)

2) Continuous measurement RUN MODE (Example: Measurement between rollers in creep mode) Measurement parameters are not saved, live entry under machine o

- Switch on the TRAC CONTROL (see point Operational Readiness).
- The test strip is slid centred into the measuring head's test strip slit when the clamping lever is opened. For this, the measuring head needs to be turned in order for the integrated wedge to move out of place due to gravity, thereby opening the slit. When turned back, the wedge lightly holds the test strip in the slit. Underneath the slit opening there is a peg that is connected to the wedge. When pressure is placed on this peg from the side, it will also help lightly hold the strip. The test strip is fixed in place after pushing down the clamping lever.

- After repeatedly pressing the menu button on the hand-held unit through the menu points "Measure yes" "Machine ok" "Additional clamp no", you will reach the measurement routines RUN MODE/SINGLE MODE. Pressing the plus/minus button will set to **RUN MODE** since continuous measurements are better suited during creep mode than a single measurement.
- Pressing the menu button switches to the measuring time and can be changed when required. A longer measuring time means a greater average effect but also a longer time period between when the measured value is updated. The measuring time should be at least as long as the roller rotation time otherwise the MIN/MAX values will not be entirely recorded. (see point Measuring Time Help).
- Pressing the menu button switches to the traction force set point and can be changed when required.
- Pressing the menu button switches to the set point tolerance and can be changed when required.
- Pressing the menu button switches to the angle set point and can be changed when required.
- Pressing the menu button switches to the angle set point tolerance and can be changed when required.
- Pressing the menu button switches to the range set point and can be changed when required.
- Pressing the menu button switches to the momentary display "Device ready" and to a readout of the traction force parameters and angles. A suitable combination can be chosen by repeatedly pressing the menu button.
The device is ready for measurement when the yellow LED is lit.
- After entering all the necessary values, the device is ready to measure and can be fixed to the machine by either the magnet attached to the back of the unit or with the loop which is located on top of the unit. That way you can have your hands free to handle the measuring head and for eventual adjustments. When attaching the unit on the machine, it should be placed so that the display and the set point LEDs can be seen and the measuring head cable is safely positioned.
- The measuring head handle should be held in such a way so that the clamped-in test strip can be fed between the rollers and pressed. Because the rollers are in crawl mode, a permanent traction force will be applied on the test strip and it should be held in the same position tangential to the rollers as best as possible.
- The tangential position of the test strip can be controlled by the angle shown on the display. Reaching the optimal angle will be signaled by the green angle LEDs on the measuring head.
- **The traction force parameters are permanently shown in the display and updated after each measuring time cycle. Pressing the Hold button saves the parameters and they can easily be read. This is signaled when the set point LEDs begin to blink. Advancing to the next traction force parameter in the display takes place by pressing the menu button. Deleting, and therefore, continuing the permanent reading takes place by pressing the Hold button again.**
The readout MAX > 30 N signals an exceeded measurement range.
- The average traction force will be automatically compared to the entered set point and the set point tolerance and as a result, the appropriate signals for the optical set point control will be activated (see Measurement Principle and Special Characteristics).
- If needed, the mounted rollers can be adjusted using adjustment elements based on the signals of the optical set point control.
- Switch the TRAC CONTROL off (see point Operational Readiness).

Hint: Pressing the on/off button switches to "Measure yes/no" at any time (ESCAPE function)

- 3) **Continuous measurement RUN MODE (Example: Measurement between rollers in crawl mode)**
Measurement with memory access, Prerequisite: The measurement parameters have already been saved in the memory under Ma 1 ff. (see Additional Information "Memory setup...").
When saving, the machine number is to be noted on the measurement outline (copy of the machine roller scheme) as well as the roller pair numbers (Pa) marked, if possible, in color at their corresponding positions.
In order to know which data is saved in which device, the TRAC CONTROL device number should also be noted on the measurement outline.
When measuring with memory access, only RUN MODE can be used, any additional clamps cannot be used, the entered parameters are excluding the set angle, and the measuring time is "hidden".

- Switch on the TRAC CONTROL (see point Operational Readiness).
- The test strip is slid centred into the measuring head's test strip slit when the clamping lever is opened. For this, the measuring head needs to be turned in order for the integrated wedge to move out of place due to gravity, thereby opening the slit. When turned back, the wedge lightly holds the test strip in the slit.
Underneath the slit opening there is a peg that is connected to the wedge. When pressure is placed on this peg from the side, it will also help lightly hold the strip.
The test strip is fixed in place after pushing down the clamping lever.
- After repeatedly pressing the menu button on the hand-held unit to the menu point "Measure yes", you reach "Machine 1 ff ok". The desired machine number (Ma) and afterwards the desired roller pair number (Pa) are set using the plus/minus buttons and confirmed with ok.
- A momentary informative display of the saved values "Measuring time:..." and "Set angle:..." is shown for the roller pair to be measured.
The saved measuring time can be changed when required (see Additional Information: "Memory setup,..." Example 2). A longer measuring time means a greater average effect but also a longer time period until the measured value is updated. The measuring time should be at least as long as the roller rotation time otherwise the MIN/MAX values will not be entirely recorded. (see point Measuring Time Help). The information about the saved set angle is used to position the measuring head at approximately the correct angle at the beginning of the measurement.
- After the memory information, "Device ready" is momentarily displayed and then switches to a readout of the traction force parameters and angles. A suitable combination can be chosen by repeatedly pressing the menu button.
The device is ready for measurement when the yellow LED is lit.
- After entering in all the necessary values, the device is ready to measure and can be fixed to the machine by either the magnet attached to the back of the unit or with the loop which is located on top of the unit. That way you can have your hands free to handle the measuring head and for eventual adjustments. When attaching the unit on the machine, it should be placed so that the display and the set point LEDs can be seen and the measuring head cable is safely positioned.
- The measuring head handle should be held in such a way so that the clamped-in test strip can be fed between the rollers and pressed. Because the rollers are in crawl mode, a permanent traction force will be applied to the test strip and it should be held in the same position tangential to the rollers as best as possible.
- The tangential position of the test strip can be controlled through the angle shown on the display.
Reaching the optimal angle will be signaled by the green angle LEDs on the measuring head.
- **The traction force parameters are permanently shown in the display and updated after each measuring time cycle. Pressing the Hold button saves the parameters and they can easily be read. This is signaled when the set point LEDs begin to blink.**
Advancing to the next traction force parameter in the display takes place by pressing the menu button.
Deleting, and therefore, continuing the permanent reading takes place by pressing the Hold button again.
The readout MAX > 30 N signals an exceeded measurement range.
- The average traction force will be automatically compared to the entered set point and the set point tolerance and as a result, the appropriate signals for the optical set point control will be activated (see Measurement Principle and Special Characteristics).
- If needed, the mounted rollers can be adjusted using adjustment elements based on the signals of the optical set point control.

- To measure any additional roller pair, the pair number needs to be changed. The pair number can be changed with the plus/minus button. After confirming with "ok", the memory information for the selected roller pairing is shown (measuring time and set angle). Continue based on the previously described steps.
- Switch the TRAC CONTROL off (see point Operational Readiness).
Hint: Pressing the on/off button switches to "Measure yes/no" at any time (ESCAPE function)

Calling Up Single Values for Information about the Force Characteristics

With all three principle measurement modes, the displayed values can be saved (in SINGLE MODE automatically, in RUN MODE by means of the Hold button). This is signaled when the set point LEDs blink. At this point, after pressing the menu button to switch to the next traction force parameter, the menu item "Single value?" is shown. After pressing the plus button which is underneath "yes", the single traction force values i.e. the MIN and MAX values in a cycle of 25, 50 or 100 ms during the measuring time are shown. With a measuring time of, for example, 2 s, a total of 80 single traction force values can be shown. Advancing forward/backward between the single values takes place by means of the plus/minus buttons. The related time information is also shown in the display.

Tone On/Off

- The signal tone from the device is used as an acoustic set point control in RUN MODE and in SINGLE MODE as an acoustic signal for the measuring time duration. In this way, the tone is an additional aid when used together with the optical LED signals.
- Turning the tone on and off can be done as follows:
 - Switch on the TRAC CONTROL (see point Operational Readiness).
 - In the display, the serial number is shortly shown followed by "Measure yes/no".
 - After pressing the plus button, which is underneath "no", the function "Tone on/off" is triggered and the tone will be turned on or off by pressing the buttons underneath "on" or "off".
 Further actions are carried out through the menu-driven display messages.

Measuring Time Help

- With the traction force measurement in crawl mode, the measuring time should be as long as the roller rotation time otherwise the MIN/MAX values will not be entirely recorded. Therefore, there is a correlation between measuring time, roller rotation time and machine speed.
- Based on this correlation, assistance for the measuring time calculation can be called upon as follows:
 - Switch on the TRAC CONTROL (see point Operational Readiness).
 - In the display, the serial number is shortly shown followed by "Measure yes/no".
 - After pressing the plus button, which is underneath "no", the function "Tone on/off" is triggered.
 - Going through the menu, the function "Measuring time help" is found.
 - By triggering "Measuring time help yes", you can enter the roller diameter "Dm roller" and then enter the machine speed "Speed".
- With the plus/minus buttons, the displayed values can be adjusted to the roller pair to be measured.
- After pressing the menu button, a calculated minimum value for the measuring time based on the entries is shown. This value serves as an orientation and the entered measuring time should not be below this value.

Measurement with Additional Clamps (not included with delivery)

- When measuring packaging materials, laminates, adhesives, etc. it may not be possible to clamp these materials in the integrated clamping device on the measuring head.
- These materials can be fixed with an additional clamp which would then be clamped in the clamping device as described previously.
- In order for the automatic zeroing function to also work for this application, there is a choice in the measurement menu; "Additional clamp yes/no". When "yes" is selected, the mass of the additional clamp will be asked to be entered. The value for the mass in grams is shown in the display and the current value can be entered by pressing the plus/minus buttons.

- The correctness of the entry or rather the functionality of the automatic zeroing can be easily controlled in RUN MODE with a given measuring time of, for example, 0.2 s:
No matter at which angle the measuring head is held, the result without a load will always be zero.

Changing Batteries

- The TRAC CONTROL uses 6 x 1.5 V alkaline batteries (AA).
 When the message "Change batteries" is shown, a battery change is necessary.

Maintenance, Repair, Service

- Special maintenance before, during or after the measurement is not required. When multi-functional stainless steel test strips are used instead of constantly changing paper strips, then it may eventually be necessary to eliminate any contaminants with conventional cleaning solutions.
- Repairs and service measures are only to be carried out by the manufacturer.

Occupational Safety

- When taking measurements on machines, for example, between stopped rollers or grippers, safety is to be ensured by blocking the machine during the measurement with the "emergency stop" switch. During the assembly of a machine, there can be other suitable ways to secure against the machine being mistakenly turned on. Caution is especially recommended when measuring during crawl mode and the usual precautions are to be followed for machines with turning parts. Particularly, this involves high concentration and avoiding distractions during the measurement to avoid the risk of a hand or clothing being caught in the machine.
 It is necessary to ensure that the connection cable between the measuring head and the hand-held unit is positioned so that it does not become kinked and does not get caught between turning parts.

Transport, Storage

- The TRAC CONTROL is to be protected from dust and moisture during operation and storage.
- Strong shocks or vibration impacts on the device are to be avoided.
- The carrying case which came with the delivery is to be used for safely and practically transporting the device. The hand-held unit, the measuring head and the operating manual can be placed inside.

Technical Data

Traction force measurement range	0.0 ... 30.0 N
Resolution	0.1 N
Measurement uncertainty	± 0.2 N
Angle measurement range	- 90° (handle down) ... +90° (handle up)
Resolution	1°
Hand-held unit dimensions	210 x 100 x 40 mm
Measuring head dimensions	138 x 73 x 30 mm
Hand-held unit weight	450 g
Measuring head weight	330 g
Operating temperature	15 °C ... 30 °C
Power supply	6 x 1.5 V alkaline batteries (AA)
Battery control	Battery change displayed as "Change batteries"
Included in delivery	Hand-held unit incl. batteries, measuring head, operating manual in German/English, carrying case



Operating Manual Traction Force Measurement Device TRAC CONTROL

Additional Information: „Memory setup, entering measurement parameters...“

It is always recommended to use a copy of the machine roller scheme as a measurement outline with the following recorded information listed here:

- TRAC CONTROL – Serial number (in order to know which data is saved in which device)
- Machine number (Ma): (automatically assigned when saving data to the device)
- Pair number (Pa): (automatically assigned when saving data to the device; with this number, the positions of the roller scheme pairs are identified)

In general, the following functions are possible when setting up the memory:

- Change machine/pair, new machine/pair, delete machine/pair, copy machine.
- The function change machine/pair can also be used to view/check previously entered measurement parameters (measuring time, traction force set point, traction force set point tolerance, angle set point, angle set point tolerance, range set point).
- With the function new machine/pair, the default measurement parameter values are given and can be changed from their current values.
- Copy machine means: Copying all roller pairs and parameters of the selected machine.

Settings on the Device:

- Switch on the TRAC CONTROL (see point Operational Readiness).
- In the display, the serial number is shortly shown followed by “Measure yes/no”.
- After pressing the plus button, which is below “no”, “Tone on/off” is triggered. Going through the menu, the function “Measurement time help” is found first followed by “Memory setup”. Further actions are carried out through the menu-driven display messages.
- By pressing the on/off button, you can get back to “Measure yes/no” at any time (ESCAPE function).

Example 1: Entering measurement parameters for 2 roller pairs for machine X

The TRAC CONTROL serial number is to be noted on the measurement outline.

(The serial number is always shown shortly in the display when switching on the device)

The position of roller pairs 1 and 2 in the roller scheme is to be marked on the measurement outline.

Measure	no
Memory setup	yes
Change machine	no
New machine	yes (the machine number is automatically assigned, in this case No. 1)

Machine X is to be noted as machine No. 1 on the measurement outline

Machine No.: 1	ok
Roller pair No.: 1	ok
Measuring time 1.2 s	Change the measuring time for the roller pair with (-) or (+) to the current value, then >>>
Set traction 8 N	Change the traction force set point with (-) or (+) to the current value, then >>>
Tol traction 1.0 N	Change the traction force set point tolerance with (-) or (+) to the current value, then >>>
Set angle 0 °	Change the angle set point with (-) or (+) to the current value, then >>>
Tol angle 5 °	Change the angle set point tolerance with (-) or (+) to the current value, then >>>
Set range 2 N	Change the range set point with (-) or (+) to the current value, then >>>
Control values	no (if “yes”, the entered values starting with measuring time can be displayed/corrected)
New roller pair	yes
Roller pair No.: 2	ok (continue like with roller pair No. 1)
New roller pair	no

Example 2: Changing the saved value for Tol traction for machine 1 and roller pair 2

Measure	no
Memory setup	yes
Change machine	yes
Machine No.: 1	Switch to No. 1 with (-) or (+) (if No. differs from 1), then ok
Change pair	yes
Pair No.: 1	Switch to pair No. 2 with (-) or (+), then ok
Measuring time 1.2 s	>>>
Set traction 8 N	>>>
Tol traction 1.0 N	Change the traction force set point tolerance with (-) or (+) to the current value, then >>>
Set angle 0 °	>>>
Tol angle 5 °	>>>
Set range 2 N	>>>
Control values	no (if "yes", the entered values starting with measuring time can be displayed/corrected)
Other roller pair	no

The Tol traction changed value for roller pair 2 is to be noted in the measurement outline of machine 1

Example 3: Entering measurement parameters for an additional roller pair in machine 1

Measure	no
Memory setup	yes
Change machine	yes
Machine No.: 1	Switch to No. 1 with (-) or (+) (if No. differs from 1), then ok
Change pair	no
New roller pair	yes
Roller pair No.: e.g. 3	ok (roller pair No. is automatically assigned from the device)
Measuring time 1.2 s	Change the measuring time for the roller pairing with (-) or (+) to the current value, then >>>
Set traction 8 N	Change the traction force set point with (-) or (+) to the current value, then >>>
Tol traction 1.0 N	Change the traction force set point tolerance with (-) or (+) to the current value, then >>>
Set angle 0 °	Change the angle set point with (-) or (+) to the current value, then >>>
Tol angle 5 °	Change the angle set point tolerance with (-) or (+) to the current value, then >>>
Set range 2 N	Change the range set point with (-) or (+) to the current value, then >>>
Control values	no (if "yes", the entered values starting with measuring time can be displayed/corrected)
New roller pair	no

The additional roller pair with the device-assigned No. (here No. 3) is to be noted on the measurement outline of machine 1

Example 4: Checking the measurement parameters in machine 1 and roller pair 2

Like Example 2 but only view the values and do not change them with (-) or (+)

Example 5: Copying machine 1 (i.e. copying all roller pairs of machine 1)

Measure	no
Memory setup	yes
Change machine	no
New machine	no
Delete machine	no
Copy machine	yes
Machine No.: 1	Switch to No. 1 with (-) or (+) (if No. differs from 1), then ok
Machine 1 → Copy 2	The new machine number will be automatically assigned from the device, here No. 2
Copy created	

In a copy of the measurement outline of machine 1, machine 2 (copy of machine 1) is to be noted

Example 6: Deleting roller pair 2 in machine 1

Measure	no
Memory setup	yes
Change machine	yes
Machine No.: 1	Switch to No. 1 with (-) or (+) (if No. differs from 1), then ok
Change pair	no
New pair	no
Delete pair	yes
Pair No.: 1	Switch to pair No. 2 with (-) or (+), then ok
Delete pair	yes
Pair deleted	

Roller pair 2 is to be deleted from the measurement outline of machine 1

Example 7: Deleting machine 1 (i.e. deleting all roller pairs of machine 1)

Measure	no
Memory setup	yes
Change machine	no
New machine	no
Delete machine	yes
Machine No.: 1	Switch to No. 1 with (-) or (+) (if No. differs from 1), then ok
Delete machine	yes
Machine deleted	

The measurement outline of machine 1 is to be removed