Electronic-Scale – Operating instructions

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Electronic-Scale – Operating instructions

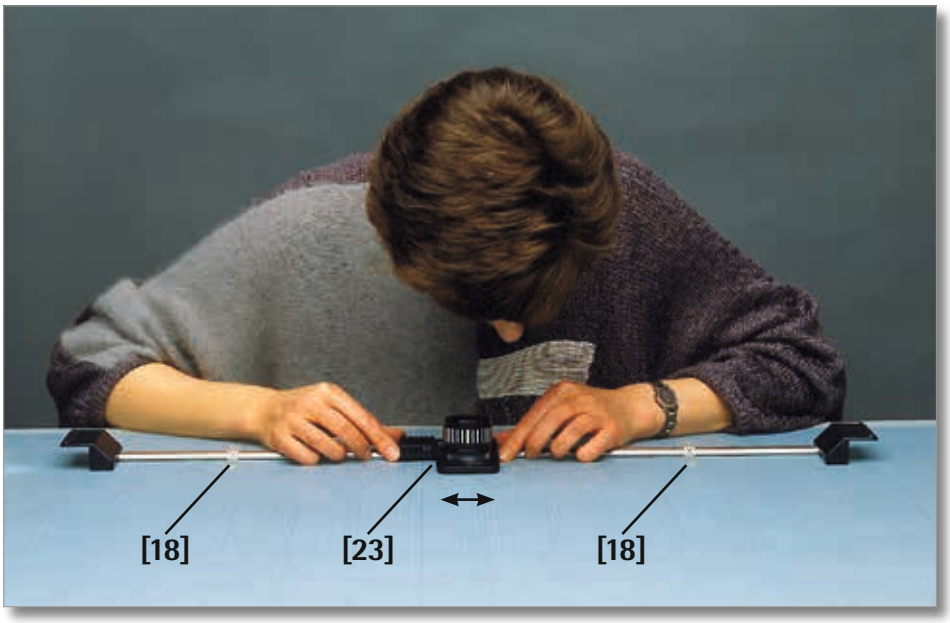
Preparation

Lay test object on a flat surface. Place the Electronic Scale on top of the product, adjust it parallel to the marks with the help of the positioning slides **[18]**, loosen the locking screw **[15]** (Photo 2).

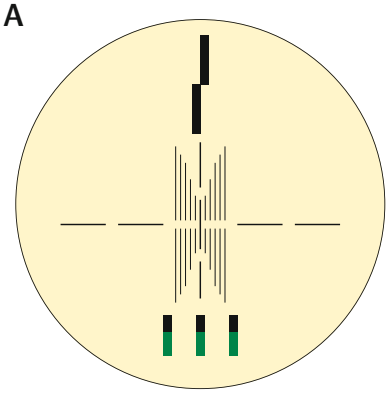
If high precision is required, adjust the parallelity using the crosshairs of the scale plate.

Measuring

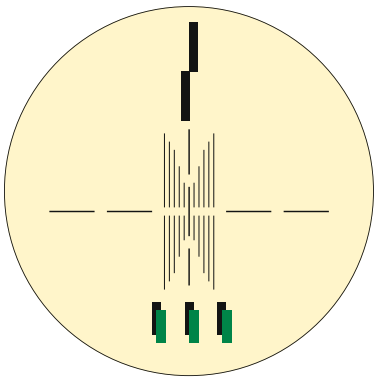
Align to first mark (look through the lens, move the carriage **[23]** until the scale marks correspond), reset the display, align to 2nd mark, read value from display.



A



correct



wrong

Using the scaleplate

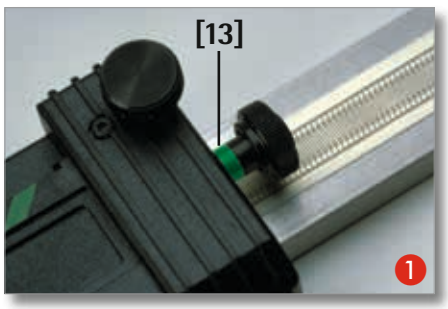
The arrangement of lens markings offers a variety of possibilities:

Checking parallax (A)

Parallax indicators will tell you whether you are looking straight into the lens. This may be important if you are measuring off contact.

Using the fine-adjustment

1. Preparation: Coarse alignment (move the carriage by hand), the green tape of the fine-adjustment nut **[13]** has to be centered (approx. 1.5 mm have to be visible);
2. Tighten the locking screw **[15]** of the clamp slide;
3. Fine alignment by turning of the fine-adjustment nut **[13]**.



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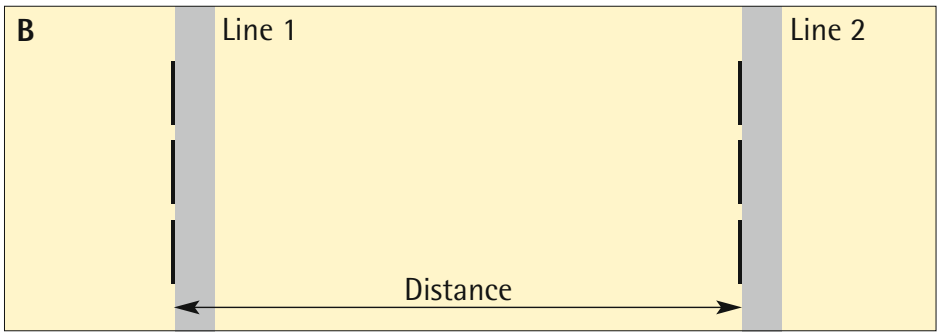
Using the center line (B)



Using the special markings (C)

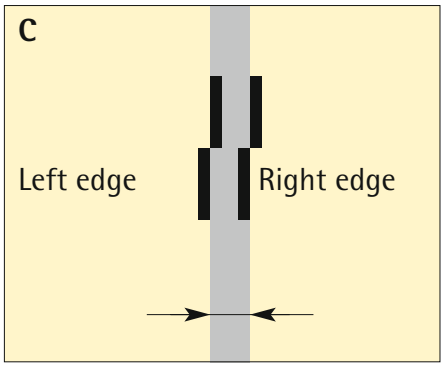
Special markings are provided to check the thickness of lines by aligning either line edge to the upper and lower brim of the special markings.

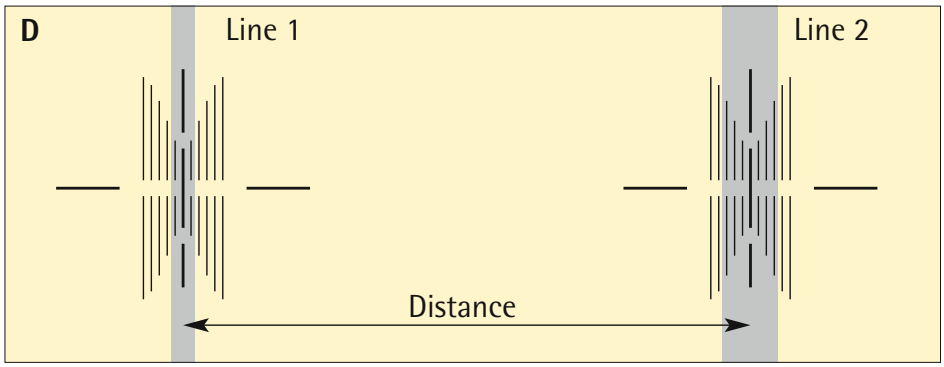
Using the symmetric image balance (D)

Symmetrical balanced images measure the distance between lines up to 1 mm wide by visually centering the line containing a symmetric image.

Checking period

It is recommended to check the accuracy of the device regularly, e.g.: once a year.





Pre-conditions for precise measurements

- flat surface
- the object should be accommodated to the ambient temperature and humidity and stabilized in this environment sufficiently
- stable conditions (ideal = 20°C)
  Attention:
  - radiant heat of illuminations
  - body temperature of the person using the scale
- take into consideration the accuracy of the measuring instrument, the deviation of single measurments and the co-efficients of expansion of different materials

Maintenance

Precautions

- Do not expose to any electrical fields or voltages
- Do not damage the scale surface
- Protect from cold, heat and moisture
- Avoid contact to fluids
- Use only «ENAVIT-N» for cleaning
- Reset electronics after each battery change (see «changing the battery», Photo 9)!
- For installing the scale into a device, contact your dealer

Trouble shooting guide

How to take care if...

- ...the carriage does not run smoothly or
- ...«impossible» values are displayed?

Clean the whole length of the guide rail **[24]** with cleaner's naphta on a clean rag. Then apply preservative spray «ENAVIT-N» to the rod's surface and distribute with a clean rag.
The protective film created in this way prevents moisture (e.g. from sweaty hands or breathing) from disturbing the electronics.

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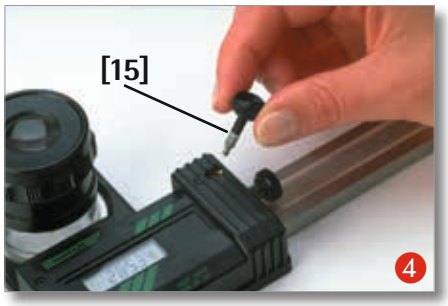
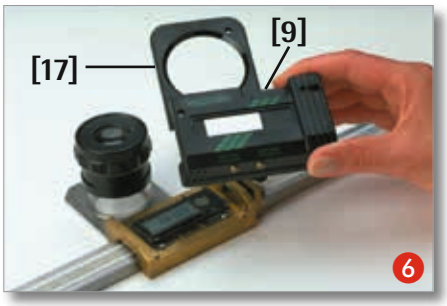
Changing the battery

4 Remove the locking screw **[15]**
5 Remove the screws (3 pcs.)
6 Remove the casing **[17]**, remove the protective insert **[9]**
7 Remove the battery
8 Insert new battery («+»-pole looking upwards)
9 Reset electronics





Microscope

10 Cleaning the scale plate of the microscope (with cotton)

Mounting the microscope **[42]:**

11 type «ESM»: using the stand **[43]**
12 13 type «ES»: using the adapter **[41]**

Packing notes

Unpacking:
Remove the two transport protectors (white HR foam parts) left and right. Please keep them for transportation purposes!

Storage:
Observe the following when putting your Electronic Scale into its case: Put positioning slides **[18]** outside to the handles; turn lens **[8]** clockwise into the lowest possible position, and move measuring carriage **[23]** to the left on the field provided for this purpose. Secure with locking screw **[15]**!

Transport:
As described under «Storage» but in addition to that please use transport protectors!

Specifications:

Resolution: 0.01mm/0.0005"
Repeat accuracy: 0.01 mm
Error range
up to 500 mm = 0.03 mm
up to 800 mm = 0.04 mm
up to 1000 mm = 0.05 mm
up to 1300 mm = 0.08 mm
up to 1500 mm = 0.10 mm
Measurement units: metrical(mm) and british (inch)
Power supply: 1 lithium battery 3V, type CR2032, capacity 190 mAh
Battery life: approx. 4000 h
Operating temperature: +10°C to +40°C
Data output: RS232 compatible

Guarantee: 1 year

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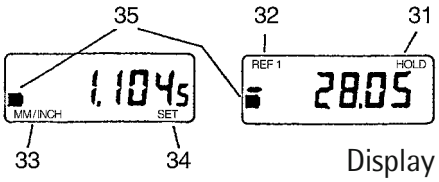
Using the electronics



Display

- **Turn ON**

  Press button **[1]**. The electronics will be in the same mode as prior to turning it off

- **Changing the mode**

  Press button **[2]** until the indicators change **[32]** ↔ **[33]**(>2 sec./possible only when «HOLD» [31] is not displayed)

  Mode 1:

  display = MM/INCH **[33]**

  Mode 2:

  display = REF 1 **[32]**

- **Resetting (reset the display)**
  in mode 1 only:
  press button **[1]**
- **Changing the unit (mm/inch)**
  in mode 1 only:
  press button **[2]**
- **Memorizing (holding) a value**
  in mode 2 only, no peripheral units may be connected:

  press button **[1]**, «HOLD» **[31]** will be displayed, the value will be stored until the memory is cleared
- **Clear the memory**
  in mode 2 only:

  press button **[1]**, «HOLD» **[31]** will disappear and the current value will be displayed
- **Send data**
  in mode 2 only:

  1. Preparation:
     start peripheral unit, remove the protective insert **[9]**, insert the opto-cable.
  2. Send data
     press button **[1]**
- **Turn OFF**

  press button **[1]** (>2 sec.)

Designation of parts

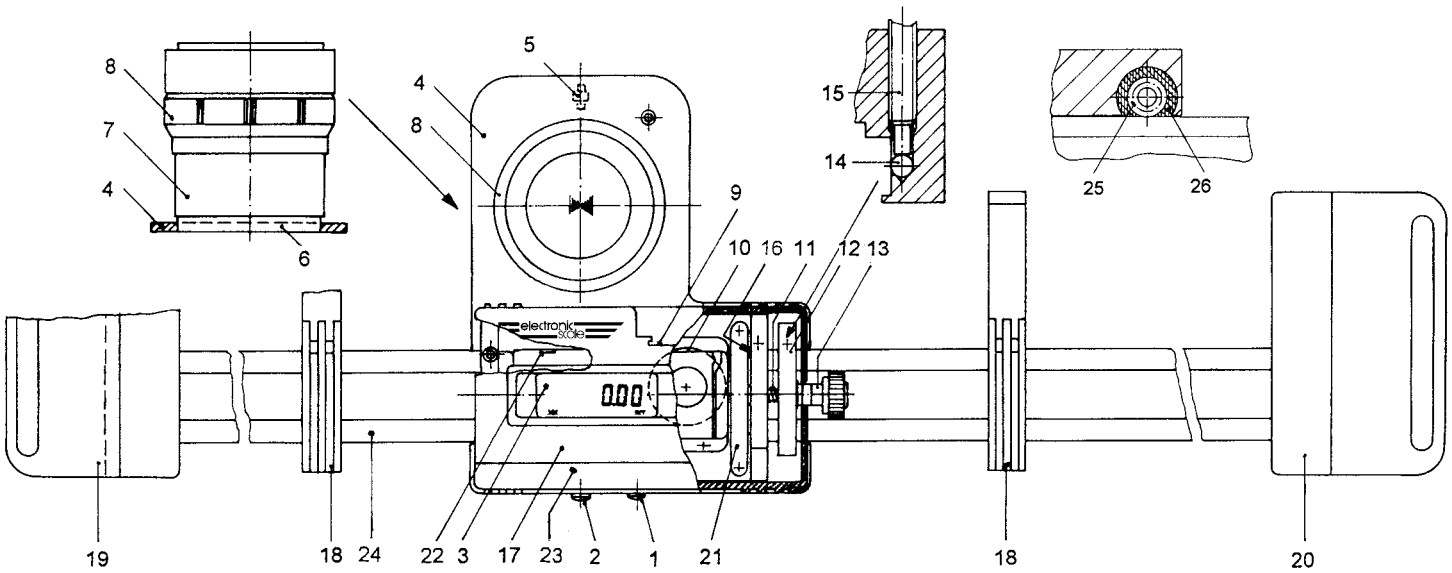
1. Button **[1]**:
   ON/OFF, reset, hold/send data
2. Button **[2]**:
   mm/inch toggle, mode selection
3. Display (LCD)
4. Support
5. Roller
6. Scale plate (standard or PCB)
7. Acrylic glass ring
8. Lens 10x
9. RS-232 data output, protective insert
10. Battery
11. Spring
12. Clamp slide
13. Fine adjustment nut
14. Ball
15. Locking screw
16. Plate: serial number
17. Casing
18. Positioning slide
19. Left handle
20. Right handle
21. Wiper for capacity strip
22. Reset opening
23. Measuring carriage
24. Guide rail
25. Ball bearing
26. Wiper for ball bearing

Display:

31. Indicator:
    memory function «HOLD»
32. Indicator:
    Mode 2 «REF 1»
33. Indicator:
    function of button **[2]**
34. Indicator:
    function of button **[1]**
35. Indicator:
    end of battery life

Accessories:

41. Adapter
42. Microscopes 25x or 50x
43. Stand for microscope



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Possible error messages and their resolution

When the Electronic Scale is used for a long time, one of the following error messages may appear on the display:

ERR 0 = Sensor error
e.g. moisture on the scale, under the electronics
or false relative position of the electronics to the capacitive band

ERR 3 = Data overflow
is either triggered by a voltage error, e.g. brief current surge with electronics switched off – static discharge
or by a count that was triggered but not stopped, e.g. if a contact to the capacitive band was missing – if for example the car is driven out over the end of the scale with the electronics switched off

Remedy = Wipe scale and/or reset the electronics 9
If this does not help, send Electronic Scale to be repaired

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