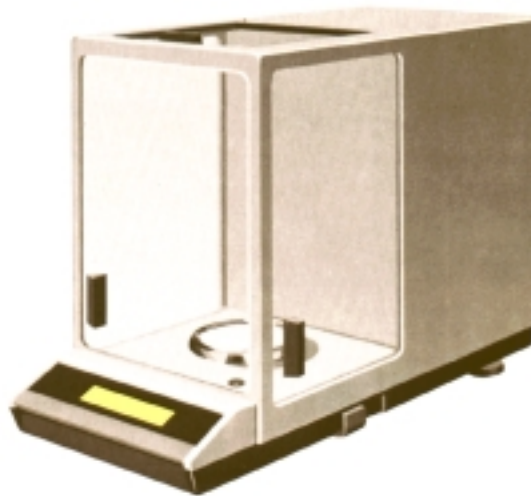


Mettler

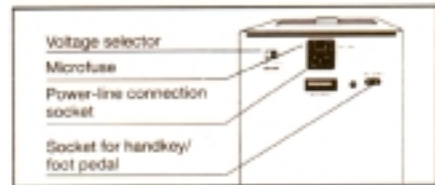
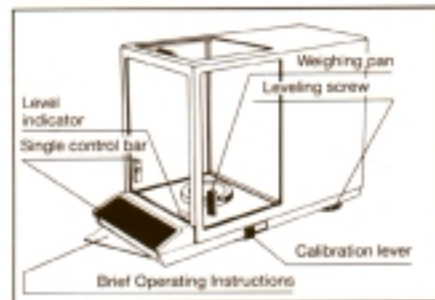
Analytical balance AE166 DeltaRange



Operating Instructions

Leveling the balance	Calibrating the balance	Integration time	Stability detector	Taring; weighing
<p>1</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>Coarse range: 0...162 g Readability: 0.001 g DeltaRange: 60 g Readability: 0.0001 g</p> <p>1</p>
<p>Switching the display on</p> <p>1</p>	<p>2</p>	<p>2</p>	<p>2</p>	<p>2</p>
<p>Switching the display off</p> <p>1</p>	<p>3</p>	<p>3</p>	<p>3</p>	<p>3</p>
<p>Mettler Instruments AG, CH-8606 Greifensee, Switzerland, Tel. (01) 944 2211, Telex 836130</p> <p>A Mettler Instruments Gesellschaft mbH, A-1100 Wien, Dammgasse 7, Tel. (0222) 504 19 80, Telex 315484 metins-mettler</p> <p>B SA M.V.L. NV, Chaussée de Louvain 1026-1048, B-1140 Brussels, Tel. (02) 720 48 30, Telex 21084</p> <p>CH Mettler Instruments (Schweiz) AG, Grabenstrasse, CH-8606 Hbikon-Unter, Tel. (01) 941 61 61, Telex (01) 941 60 16, Telex 83614</p> <p>D Mettler Instruments GmbH, Postfach 110840, D-5300 Giessen 11, Tel. (0641) 507 0, Telex 482912</p> <p>F Mettler Instruments S.A., boîte postale 14-2 A.E. 18-20, av. de la République, F-78220 Villefray, France, Tel. (1) 3024 1314, Telex 695840</p> <p>I Mettler Strumenti s.r.l., Via Vialbo, 43-44, I-20026 Novate Milanese, Tel. (02) 3566 825, Telex 319378</p> <p>NL Mettler Instrumenten B.V., Postbus 6006, 4000 HA Tel, Holland, Tel. (03440) 11311*, Telex 71079</p> <p>UK Mettler Instruments Ltd., Abbey Farm Road, High Wycombe, Buckinghamshire HP11 1QW, Tel. (0494) 490202, Telex 837564</p> <p>USA Mettler Instrument Corporation, Box 71, Highstown, N.J. 08520, USA, Tel. (609) 448-3000, Telex 840352</p>				
<p>4</p>				

OPERATING ELEMENTS AND CONNECTIONS



PRELIMINARY STEPS

Checking the operating voltage

The operating voltage setting must agree with your local power-line voltage; please check this setting and, if needed, change it.

Admissible power-line voltage in the switch positions:
115 V: 92 V...132 V
220 V: 184 V...265 V

Location

- A stable location; as free from vibration as possible.
- Make sure there are no large temperature fluctuations.
- Avoid direct sunlight and drafts.
- Connect the power cable at the work station.

Installing the weighing pan; leveling the balance

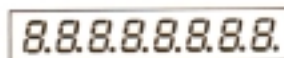
- Place weighing pan on balance; the conical peg centers the pan in the opening in the base of the weighing chamber.
- The two leveling screws should be adjusted so that the bubble is in the middle of the circle.

Whenever the location of the balance is changed, the balance should be relevelled.

OPERATION

Switching the display on/off

- Briefly press the single control bar; all display segments light up for several seconds:



- Afterwards, the display automatically sets itself to 0.0000.
- Lightly lift the control bar; the display is switched off.

Calibration

Make absolutely sure: The balance must be left connected to the power supply for at least 60 minutes before "calibrating".

- Press and hold the single control bar until -CAL- appears in the display, then release control bar. The display changes to CAL----, then to CAL100 (blinks).
- Move calibration lever all the way to the rear; the display changes to CAL----, followed by 100.000, then to CAL 0 (blinks).
- Move calibration lever all the way back towards the front of the balance; the display changes to ----, followed by 0.0000.

Measuring cycle/measuring accuracy

By selecting a particular integration cycle, as well as a particular stability detection step, the balance can be configured according to your weighing location and needs.

- Integration time:
Step 1: Used for very stable, vibration-free weighing table (short measuring cycle).
Step 2: Normal setting.
Step 3: Used for unfavorable ambient conditions (long measuring cycle).
- Press the control bar and hold it until -Int- appears in the display, then release the control bar.
 - Immediately press the control bar briefly; the display will change to the next step.
 - Stop at the step you wish to use and wait for the display to return to the weighing mode (0.0000).
- Stability detector:
Step 1: Great sensitivity (long pause before data are released).
Step 2: Less sensitivity (short pause before data are released).
Normal setting.
OFF: The stability detector is switched off. Make sure Step: that when this is the case, DeltaDisplay is also switched off (described in Paragraph entitled, "Weighing-in").
- Press the control bar and hold until -ASd- appears in the display, then release control bar.
 - Immediately press control bar again briefly; the display changes to the next step.
 - Stop at the step you wish to use and wait for the display returns to the weighing mode (0.0000).

Note: After selecting the integration time, you can go directly to the selection of the stability detector setting by holding the control bar down.

Taring

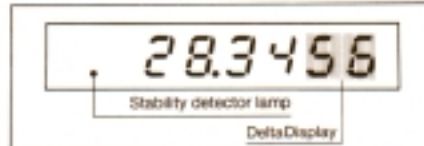
- Open the sliding glass door.
 - Place a tare container on the weighing pan.
 - Close the sliding glass door.
 - Press the control bar briefly; the display changes to 0.0000.
- Note: It is possible to carry out external taring by using the handkey or foot pedal from the "ACCESSORIES, optional" (connection sockets on rear of balance). The weight of the container is now tared out. To weigh-in, the balance weighing range --minus the weight of the tare container -- is now available.

Please note:
The display indicates four decimal places in the DeltaRange (60 g). If the DeltaRange is exceeded, the last decimal place blanks out. By pressing the bar again to tare, it is possible to again use the DeltaRange (described in the Paragraph entitled, "Weighing-in").

Weighing-in

- Open the sliding glass door.
 - Fill in substance up to the desired target weight (to read the weight accurately, the door must be closed).
- If different components are to be weighed, one after the other, into the same container, it is possible to tare after each weighing and start the next weighing from zero (up to 60 g in the DeltaRange). This can be done until the tare container and all the components together reach the end of the weighing range.

DeltaDisplay:



The DeltaDisplay switches on automatically when weighing in substances quickly; the last two digits in the DeltaRange or the last digit in the coarse range is blanked out and the display change sequence speeds up. This allows the increase in weight to be followed better. When weighing in slowly towards the target weight, the two digits (DeltaRange) or the last digit in the coarse range switches back on.

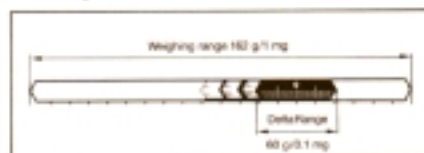
The display change sequence remains rapid. Only when weight changes are very small does the balance switch back to the normal display change with the full number of decimal places.

Stability detector:

When stability is achieved (determined by the step selected for the stability detector), the green dot in the display goes out. The result is then stable.

Note: When the green dot lights up in the display, the data interface is blocked; when the green dot goes out (stability), the data interface is unblocked.

DeltaRange:

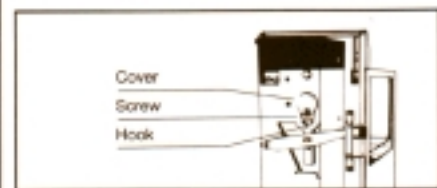


Your AE166 has a coarse range of from 0...162 g; in this range, readability is 1 mg. The DeltaRange (fine range) turns your "milligram balance" into an "analytical balance". This means that the readability is increased to 0.1 mg in a range of 60 g (by pressing tare each time, it can be moved throughout the entire weighing range). Every time the fine range is exceeded, the last decimal goes out; you are then weighing in the coarse range.

Brief Operating Instructions

Brief Operating Instructions can be found on a card that swings out from underneath the balance housing.

FURTHER CAPABILITIES



GD hanger (for weighing below the balance)

- Open all sliding glass doors.
 - Remove the weighing pan.
 - Place the balance on its back.
 - Loosen the screw on the bottom of the balance.
 - Swing the cover to one side.
 - Retighten the screw.
- A hook is visible in the opening; the object or substance can be weighed by attaching a hanger from this hook.
- Place the balance back on its feet, place the weighing pan back on and level the balance.
 - With the hanger attached to the hook, press tare.
- Note: The weighing pan does not have to be placed back on if the hanger is at least as heavy as the pan. The hanger is not available from METTLER!

CARE AND MAINTENANCE

Cleaning

A cloth with some soapy water is sufficient to clean the weighing pan and housing. Do not use any strong solvents. To remove residues from the weighing chamber, use the small artist's brush that is included in the balance standard equipment (do not blow air through the chamber).

Replacing the microfuse

- Disconnect the power cable.
- Turn out the fuse holder (in the power-line connection socket) with a screwdriver.
- Replace the fuse (spare fuse in the fuse holder).
- Place the fuse holder back on.
- Plug the power-line cable back in.

ACCESSORIES

Optional equipment

Optional equipment	Order No.
- Centering disk (for draft shield cylinder)	38509
- Draft shield cylinder, can be stacked: 1 unit	38594
- Tweezers, 210 mm long (with plastic tips)	70209
- Density (specific gravity) determination kit	40290
- Foot pedal	46278
- Handkey	42500
- Microfuses, 160 mA slow-blowing (set of 3)	65144
- Data interfaces:	
011 Option - CL/RS232C unidirectional	38750
012 Option - CL/RS232C bidirectional	38751
013 Option - IEEE488	38752
040 Data Output (unidirectional mode)	38795

Standard equipment

- Power-line cable	neutral	87576
	Switzerland	87920
	Germany	87925
	USA	86668
- Weighing pan, 80 mm dia.		38590
- Hair-bristle brush		70114

SPECIFICATIONS

	AE166 DeltaRange	
	60 g DeltaRange	160 g
Readability	0.1 mg	1 mg
Weighing range	0...60 g	0...162 g
Tare range (subtractive)	0...60 g	0...162 g
Reproducibility (standard deviation)	0.1 mg	0.5 mg
Linearity	± 0.2 mg	± 1 mg
Stabilization time (typical)	5 sec	
Integration time (adjustable)	1.5/3/6 sec	
Display sequence	- Mettler DeltaDisplay off - Mettler DeltaDisplay on	
Stability detector		1/2/off
- Sensitivity selectable in three steps		± 2 x 10 ⁻⁶ /°C
Sensitivity drift (10...30°C)		
Calibration weight (built-in), adjusted to an apparent mass of 8.0 g/cm ³ in an air density of 1200 mg/l		100 g, adjusted to ± 0.1 mg
Dimensions:	Weighing pan	80 mm dia.
	Open space above weighing pan	215 mm
	Balance housing (W x D x H)	205 x 410 x 290 mm
	Net weight	10.3 kg
Power supply:	Voltage, adjustable	115 V, 220 V
	Admissible voltage range	92...132 V, 184...265 V
	Frequency	50...60 Hz
	Power consumption	10 VA
Admissible ambient conditions during operation:		
Temperature		10...40°C
Relative humidity (non-condensing)		25...85%

WHAT'S WRONG IF...

- ...the entire display does not light up?
- ...the OFF display appears?
- ...only the upper horizontal segments light up in the display?
- ...only the lower horizontal segments light up in the display?
- ...the weighing result is unstable?
- ...the weighing result is obviously incorrect?
- ...only a portion of the display lights up?
- ...the middle horizontal segments in the display are blinking (for more than 30 sec)?
- ...CAL Err appears in the display?
- ...no CAL appears in the display?
- ...a zero display does not appear after pressing tare?

THEN...

- no power reaching the instrument.
- the fuse is defective.
- a temporary power failure has taken place. (Press the control bar.)
- the weighing range has been exceeded.
- the calibration weight has been activated.
- there was weight on the pan when the instrument was switched on.
- the weighing pan is not installed.
- there was weight on the pan when the instrument was switched on.
- there are too many drafts.
- the weighing table is unstable.
- the integration time setting is too low.
- the object being weighed is not at room temperature.
- the balance must be calibrated or has been calibrated using the wrong external weight.
- a temporary malfunction has occurred (pull out power cable and plug it back in).
- the weighing table or the load is too unsteady (close sliding glass doors, set a longer integration time and/or change the stability detection setting).
- the weighing pan was not unloaded before calibrating the balance, or the wrong external calibration weight was used (return to the weighing mode by pressing and holding the control bar).
- a temporary malfunction has occurred (recalibrate balance).
- the weighing table or the load is too unsteady (close sliding glass doors, set a longer integration time and/or change the stability detection setting).