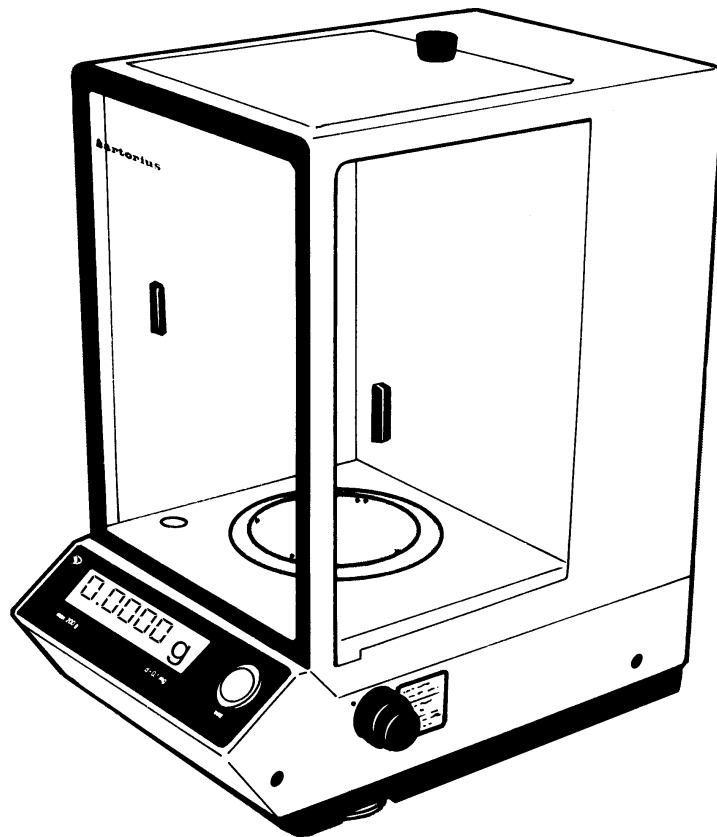
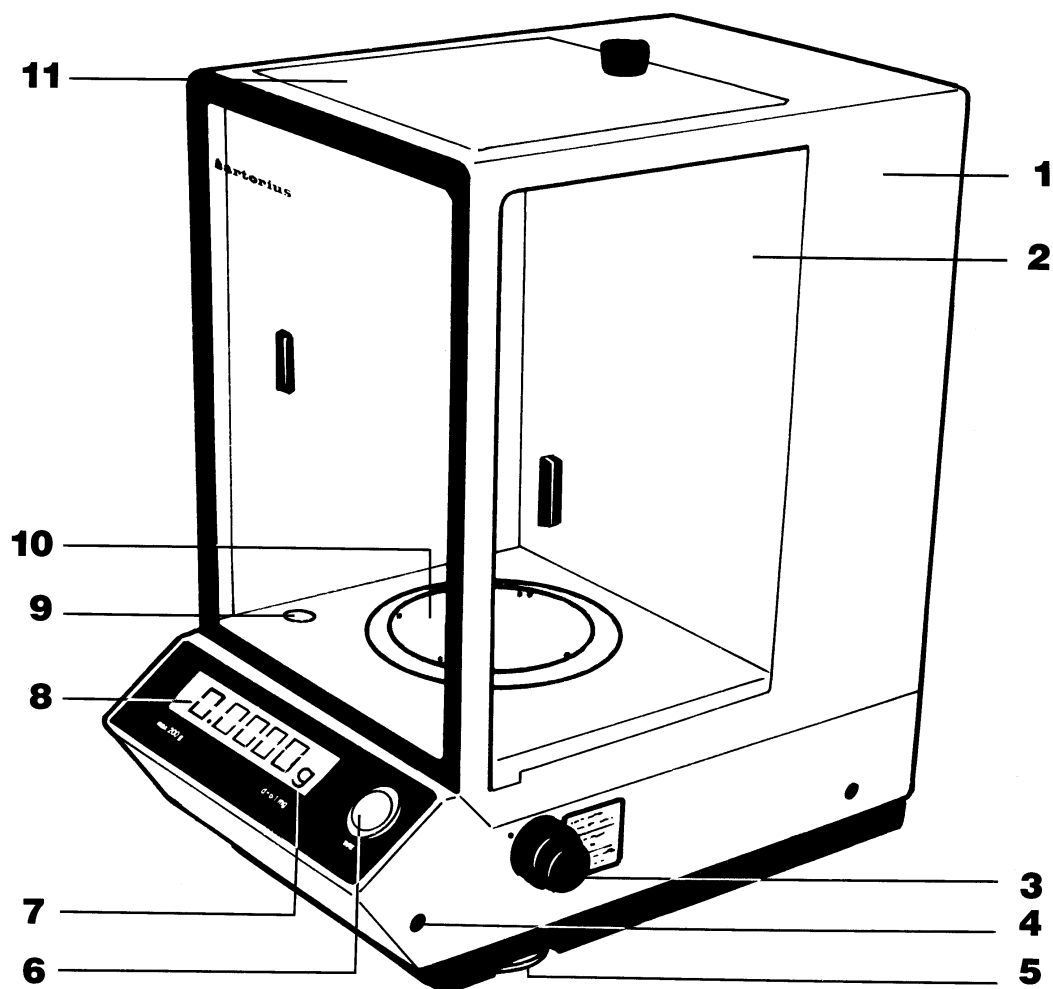

Electronic Analytical Balances 1601 MP 8, 1602 MP 8 und 1612 MP 8



Installation and Operating Instructions



Electronic Analytical Balances 1601 MP 8, 1602 MP 8 and 1612 MP 8



1 Electronic analytical balance

2 sliding door

3 operating mode switch

4 calibration button

5 leveling screws

6 tare button

7 stability indicator

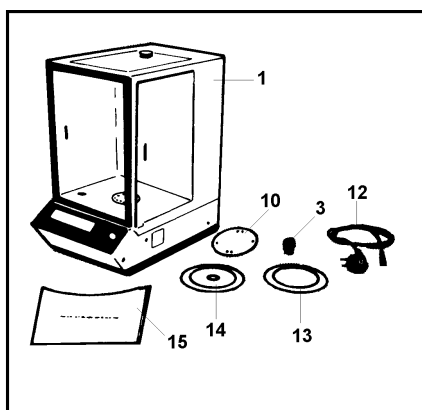
8 weight display

9 level indicator

10 pan

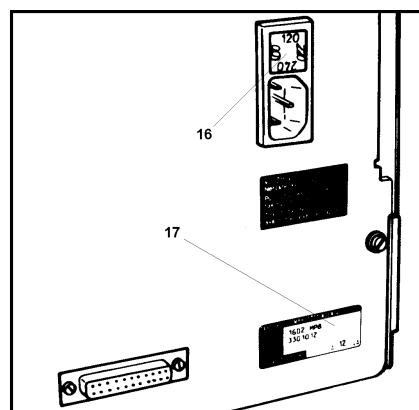
11 swivel deck

Performance Data		1601 MP 8	1602 MP 8	1612 MP 8
Weighing range	g	100	200	30/160
Readability	mg	0,1	0,1	0,01/0,1
Taring range (By subtraction)	g	100	200	30/160
Standard deviation	mg	$\leq \pm 0,1$	$\leq \pm 0,1$	$\leq \pm 0,02/0,1$
Linearity	mg	$\leq \pm 0,2$	$\leq \pm 0,2$	$\leq \pm 0,03/0,2$
Stabilization time	s	3	3	5/3
Integration time		four optimized digital filters		
Display update		0,2...0,8 s adjustable from outside		
Stability range		0,25...64 d adjustable from outside		
Permissible ambient operating temperature		+10 °C to +40 °C		
Sensitivity drift in the +10°C...+30°C range		$\leq \pm 2 \cdot 10^{-6}/K$		
Deviation from result when tilted 1:1000	mg	$\leq \pm 0,1$		
Calibration weight		extern 100 g (see accessories)	built-in 150 g weight standard feature tol. $\pm 0,1$ mg	built-in 30 g + 100 g standard feature tol. $\pm 0,002/\pm 0,2$ mg
Data output		optional		
Below-balance weighing device		standard feature		
Pan diameter	mm	90		
clearance above pan	mm	240		
Weighing chamber (w x h x d)		186 x 248 x 170 mm		
Balance housing (w x h x d)		203 x 363 x 318 mm		
Net weight	kg	13		
Voltage supply		100 V/120 V 220 V 240 V		
Permissible fluctuations voltage		-15% ... +10%		
Frequency	Hz	50/60		
Consumption	VA	13,5		



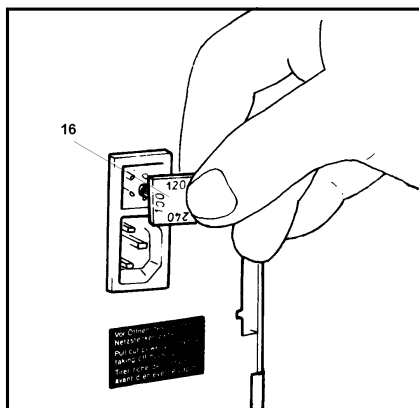
Consignment consists of:

electronic analytical balance (1), protective ring (13), line cable (12), operating mode switch (3), pan (10), shield plate (14), dust cover (15).



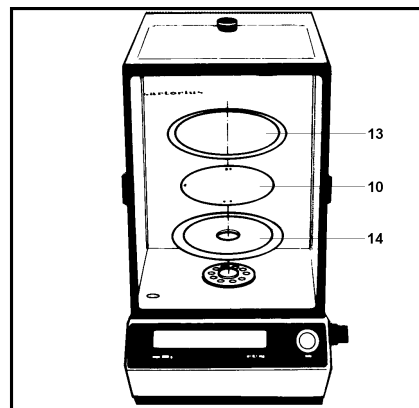
Line voltage selector (20)

Compare factory-set voltage to available local line voltage and reset, if necessary.



Resetting the line voltage

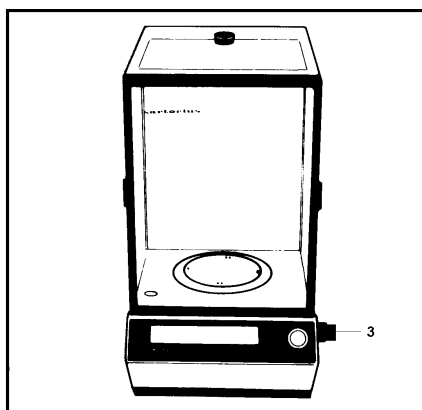
Pull out and turn the voltage selector (16), and plug it in such that the desired voltage is aligned with the arrow mark. Be sure to write the new setting on the manufacturer's label (17).



Installing the pan

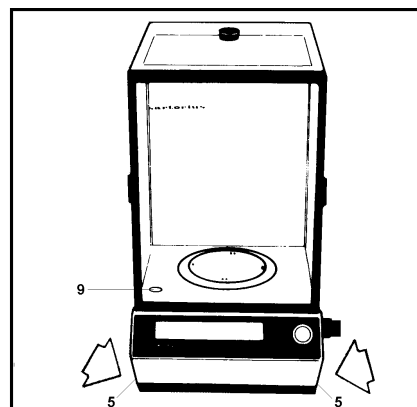
Proper sequence:

- shield plate (14)
- pan (10)
- protective ring (13)



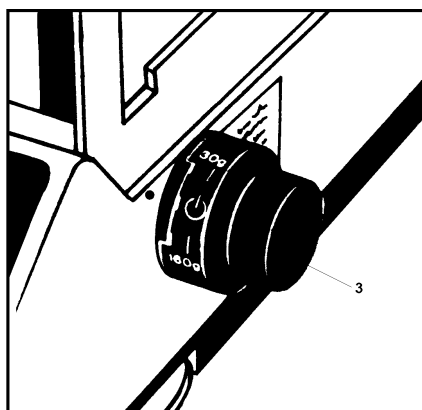
Balance competently assembled

Insert the operating mode switch (3) such that "TA" is across from marker.



Leveling

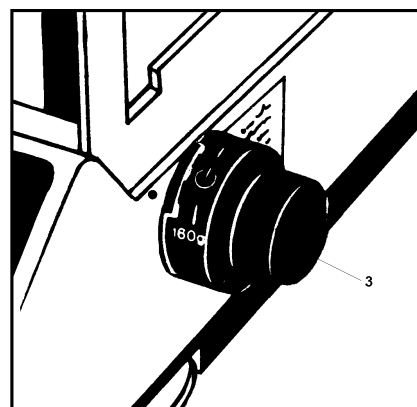
Level the balance using leveling screws (5) and level indicator (9) (On model 1612 MP8, the level indicator is to right of the pan).



Operating mode switch (3)

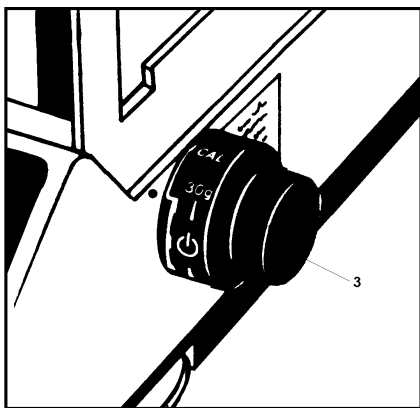
1. Stand-by/ON.

"○" - all components subject to wear are switched off (stand-by operation)
 "I" - after the autocheck, balance is instantly ready to operate..

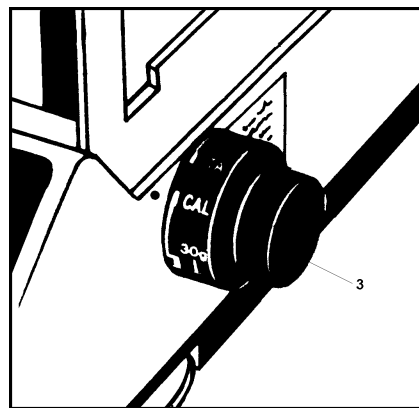


2. Rang switching

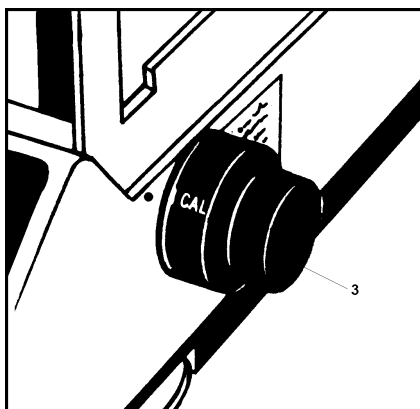
— on model 1612 MP8 only: —
 macro range (160 g/0,1 mg) in pos. "I" "160 g".



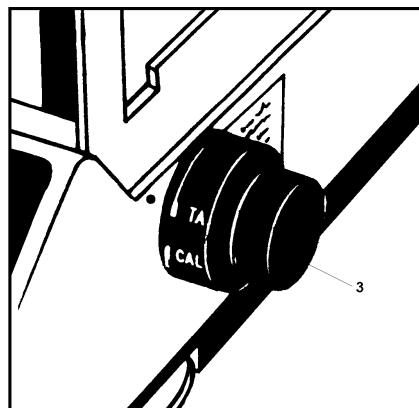
Semimicro range (30 g/0,01 mg) in pos. »|« »30«



3a. Position »CAL« application of internal calibration weight on 1612 MP8 "CAL" can only be reached via switch position "30 g".



3b. Position "CAL" application of internal calibration weight on model 1602 MP8 (150 g) and model 1612 MP 8 (30/100 g)



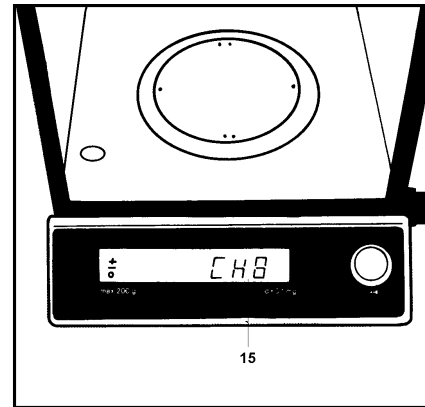
4. Position "TA"
Before transporting 1612 MP8, make sure mode switch is set to "TA" (3).

Caution:

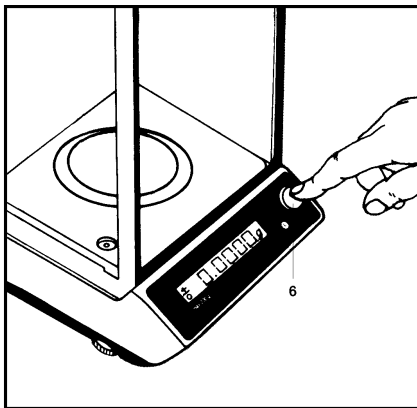
For balance shut-down and prior to connection/disconnection of peripherals, pull power plug!.

Autocheck

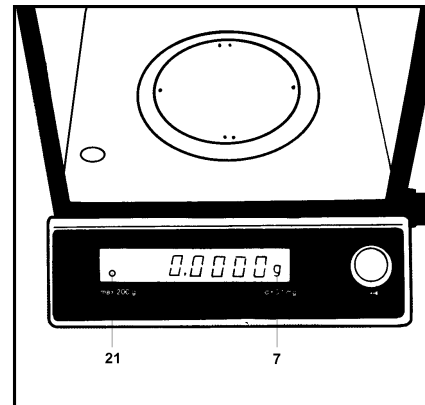
checks the balance for proper function. Defect message appears.



as code number in display **(8)**. It tells the service technician where to troubleshoot

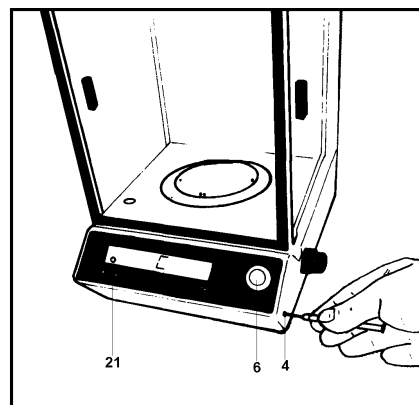
**Taring**

Press tare button **(6)** —
display shows “0.0000 g”

**Stability control (7)**

When stability symbol “g” appears, readout is reliable

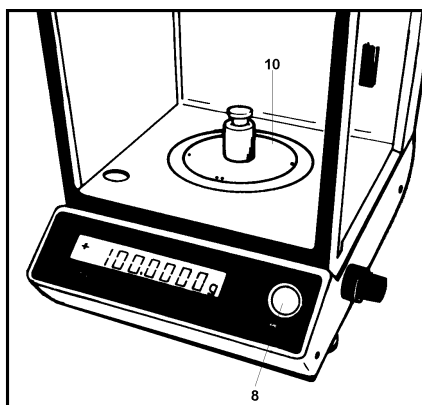
Busy-Symbol (21) signals temporary power failure (disappears when you push tare button (6) or indicates that microprocessor is completing previous function and not ready for the new job..



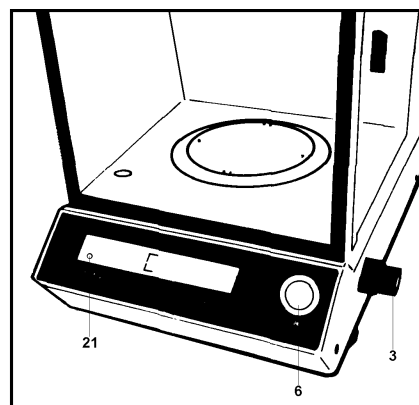
Sensitivity adjustment 1601 MP 8

is done **with external calibration weight only** (see accessories 100g $\pm$ 0.15mg).

Remove cap from calibration button (4) clear pan, tare (6), and wait for stability (7). Press calibration button (4). Display shows "C" and the busy symbol (21) (if display shows "CE", repeat calibration starting from tare.)

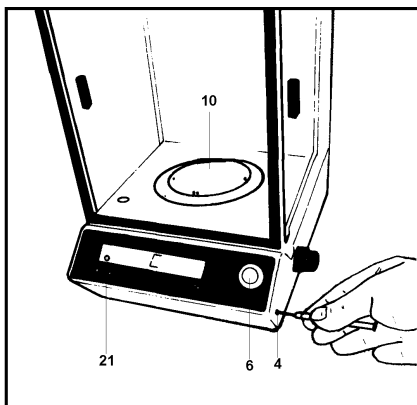


Place 100 g calibration weight on pan. Wait for display "100.0000g" and the beeper signal. Balance automatically returns into weighing program.

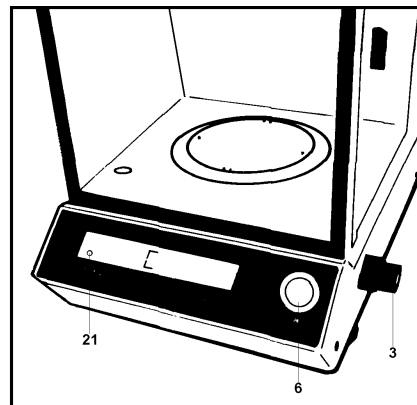


Sensitivity adjustment 1602MP8 using the built-in calibration weight.

Tare (6). At stability (7), set operating mode switch (3) to "CAL". Display shows "C" and the "Busy Symbol" (21). (If "CE" appears, restart adjustment with the "Stand-by" position "0"-) Wait for display to show CC and beeper Signal before you set operating mode switch (3) back to position "I".



Sensitivity adjustment 1602 MP 8 using an external calibration weight. Remove cap from calibration button (4). Tare (6) and wait for stability before pressing calibration button (4). Display shows "C" and the busy symbol (21). Load calibration weight (150 g, tolerance ± 0.1 mg). Wait for display to show "150.0000 g" and for beeper. Balance returns to weighing mode automatically.



Sensitivity adjustment 1612 MP 8 with the built-in calibration weights

1. Semimicro range (30 g/0.1 mg)

Clear pan. Tare (6).

Wait for stability (7).

Slightly depress operating mode switch (3) and carefully set it to "Cal 30 g" (see picture 7d).

Display shows "C" and the busy symbol (21). If you get CE display, restart calibration from tare(6). Place 30 g calibration weight (tol. ± 0.02 mg) on pan. When CC is displayed, balance will automatically return to weighing function.

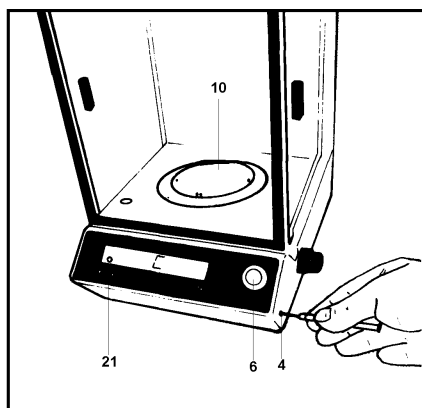
2. Macro range (160 g/0.1 mg)

Tare (6) and wait for stability (7).

Slightly depress operating mode switch and set it carefully to "Cal 160 g" (see picture 7c). Display shows "C" and the busy symbol (21).

(If CE is displayed, restart calibration from stand-by position $\odot$).

When CC appears in display, reset switch (3) to position "I".



Sensitivity adjustment 1612 MP8 with external calibration weights

1. Semimicro range (30 g/0.01 mg)

Remove cap from calibration switch (4). Clear pan and tare (6). Wait for stability (7). Press calibration button (3).

Display shows "C" and the busy symbol (21). If you get CE display, restart calibration from tare (g).

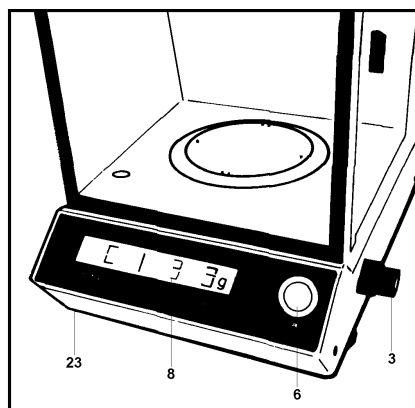
Place 30 g calibration weight (tol. ± 0.02 mg) on the pan. When CC is displayed, balance automatically returns to the weighing function.

2. Macro range (160 g/0.1 mg)

Remove cap from calibration switch.

Clear pan and tare (6). Wait for stability (7) then press calibration button. Display shows "C" and the busy symbol (21). If you get CE display, restart calibration from tare (6).

Place 100 g calibration weight (tol. ± 0.2 mg) on pan. When CC appears in the display, balance automatically returns to the weighing function.



Adaptation to application and environment

For Optimum adaption of the balance to your specific application and operating environment, a menu program provides selection of the ideal combination from the following parameters:

1. digital filter
2. stability range
3. display format
4. tare condition
5. Auto zero

Additional Parameters for data Output format and calculation programs with external keyboards are available. Please refer to accessories list or request our supplementary listing.

Access to the menu program

Remove protective cap (23).

Unlock menu program by sliding switch (23) to the right. Switch operating mode switch (3) from "O" to "I" while pressing tare button (6) at the same time.

Display shows "CO", numbers 0...4 appear in sequence.

Push the tare button when the "page" number appears, and the program will automatically go into the "line" selection display. Again confirm your chosen number with the tare button. Then the "word" numbers appear. Make your selection again by confirming with the tare button.

For a listing of available program codes, please refer to the program list on the last page.

1	131
page	line word

Balance operating program (active Parameters)

Code

1	1	1	1
1	1	1	2
1	1	1	3
1	1	1	4

Digital filter

filtration **normal**
filtration **amplified**
filtration **strong**
filtration **extreme**

Code

1	2	1
1	2	2
1	2	3
1	2	4
1	2	5
1	2	6
1	2	7
1	2	8
1	2	9

Stability range

0,25 digits
0,5 digits
1 digits
2 digits
4 digits
8 digits
16 digits
32 digits
64 digits

Code

1	3	1
1	3	2
1	3	3
1	3	4

Display format

last decimal ON
last decimal OFF
last decimal at stability
all decimal at stability

Code

1	4	1
1	4	2

Tare mode

without stability
at stability

Code

1	5	1
1	5	2

Auto zero

ON
OFF

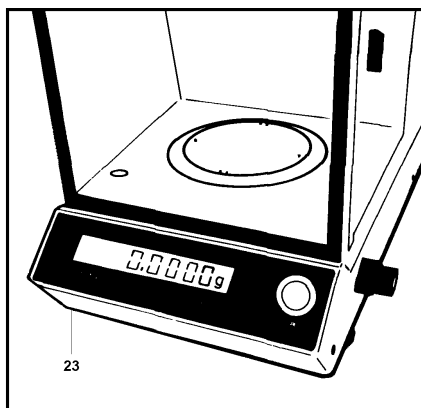
Code

4	1	1
4	1	2
4	1	0
4	0	
0		

Program lock OFF
Program lock ON
call program word
call program line
END of programming

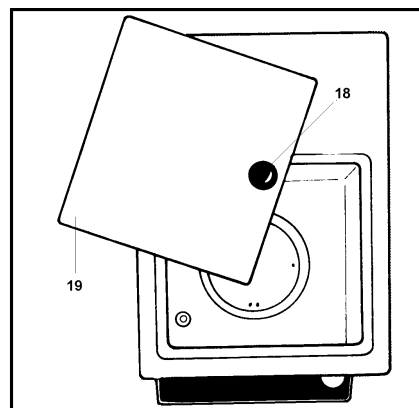
Factory
setting





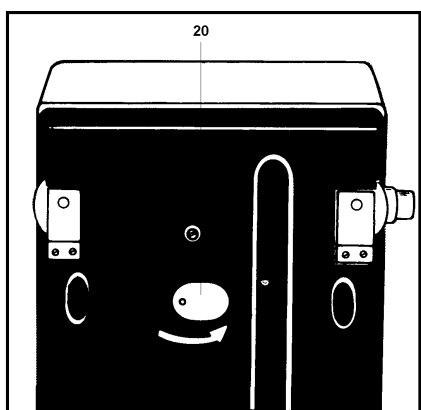
Menu program locking

Slide switch (23) to the left, replace protective cap on switch.



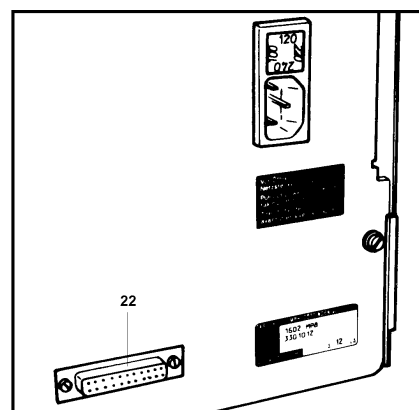
Loading through top deck

Lift up the button on the top swivel deck (19) and turn this button (18).



Below-balance weighing

Rotate cover disc (20) by $\sim 180^\circ$ and the weighing-below hook becomes visible.



Data output (22)

(optional refer to accessories).

4 wire voltage interface full duplex V 24 or RS 232
– specifications on request.

Accessories

Dust cover		696076
Carrying case		606703
vibration spatula		6025
weighing bowls		
chrome-nickel	20 g	6003
chrome-nickel	50 g	6002
glass	20 g	6015
Balance table		6801
Kit for density determination		6080
External calibration weight for 1601 MP8		707219
Data output		735736
External tare button		
(connects to data output)		7226
Printer Data Print		7279
External Keyboard Data Input		73432xxx*)
Combination Data Input/		
Data Print		73802xxx*)
Converter from RS 232/V 24 S to:		
JEC		725316
BCD parallel		725318
RS 422		725319
analog		7287

*) Programmset: Programme auf Anfrage

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