 Denver Instrument Company

AB SERIES

Electronic Analytical Balances

Operating Instructions

AB-120

AB-160

AB-300

AB-250D

700374.3

1/1/92

Read all instructions prior to operating your AB Series Analytical Balance. Whenever using this unit, remember to follow appropriate operating and safety procedures and to observe all warning labels.

Strict compliance with all warranty stipulations must be maintained or warranty service will be voided. Repairs or internal adjustments performed by unauthorized personnel may cause serious damage.

For your reference and protection, record

Model Number _____

Serial Number _____

Purchase Date _____

Date Warranty Card Mailed _____

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Thank you for choosing a Denver Instrument Analytical AB Balance for your weighing applications. This unit combines fully automatic operation with the latest in weighing technology to provide you with unprecedented ease of use and precision in weighing. In addition, this balance has been designed and engineered to the most rigorous standards in order to give you years of reliable weighing service.

This instruction manual covers the proper installation and operation of your balance and includes all warranty and guarantee information. In addition, our customer service department representatives and trained technicians are available to assist you with any problems or to answer any questions.

If we at Denver Instrument Company can be of further assistance to you, please call our toll-free number

In Colorado, call **1-800-321-1135.**
(303) 431-7255.

 Denver Instrument Company

FEATURES

Your AB Balance features:

- High-resolution liquid crystal display.
- Menu-driven user interface with highlighted cursor for easy selection.
- Temperature Activated Calibration (TAC).
- Keyboard with four "soft" keys plus 2 dedicated keys and TARE that provide access to more than 100 options and functions for custom balance applications.
- Choice of fifteen different weighing units, including parts counting.
- Motorized doors for easy chamber access.
- Statistical analysis.
- Help key provides easy-to-read messages for immediate information.
- Capacity indicator continuously displays total weight value to help avoid possible overload.
- Foot switch for remote door activation.
- Auto-switching power supply.
- Bidirectional RS-232C interface.
- Two-year warranty.
- Designed and manufactured in the U.S.A.

SPECIFICATIONS

Models	Single-Range Models			Dual-Range Model
	AB-120	AB-160	AB-300	AB-250D
Weighing Range/ Capacity	0 to 120 g	0 to 160 g	0 to 300 g	0 to 205 g 0 to 52 g
Readability	0.01 mg	0.1 mg	0.1 mg	0.1 mg 0.01 mg
Reproducibility	0.02 mg	0.1 mg	0.1 mg	0.1 mg 0.02 mg
Linearity	±0.06 mg	±0.2 mg	±0.2 mg	±0.2 mg 0.03 mg

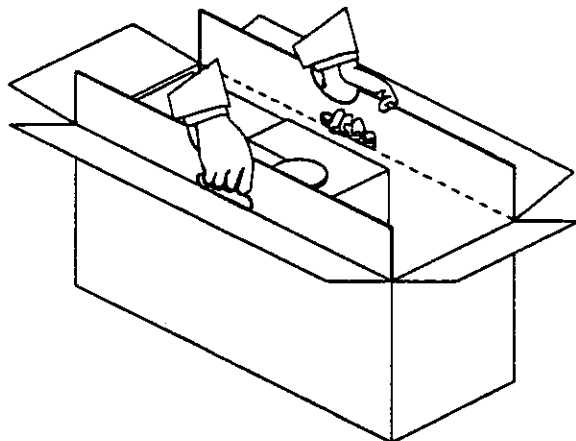
Common Specifications For All Models	
Pan Size:	3.25 inch (8cm)
Temperature Specifications:	57° - 104°F (14° - 40°C)
Dimensions (LxWxH):	19 x 9 x 12 inch (48 x 20 x 31cm)
Net Weight:	30 lb. (14kg)
Electrical Requirements:	115/230 vac, 50/60Hz, universal input
Controls:	Silicone rubber keyboard, 4 soft keys, 2 dedicated keys, Tare bar
Display:	Liquid Crystal Display with .5" high digits
Motorized Doors:	Manual and automatic control
RS-232C interface	Standard on all models

INSTALLING YOUR BALANCE

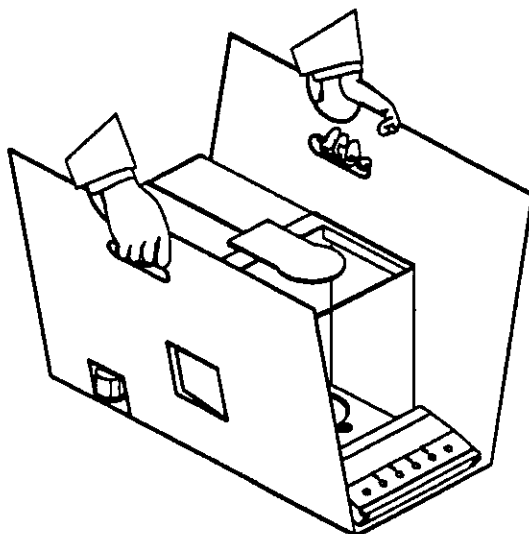
Before installing your balance, **read this entire section.**

Unpacking

- ▶ Try to avoid damaging the box and packing materials when you unpack the balance. We recommend that you keep all packing materials for possible future use.



Open the top of the box and locate the inner liner that has a handle at each side.



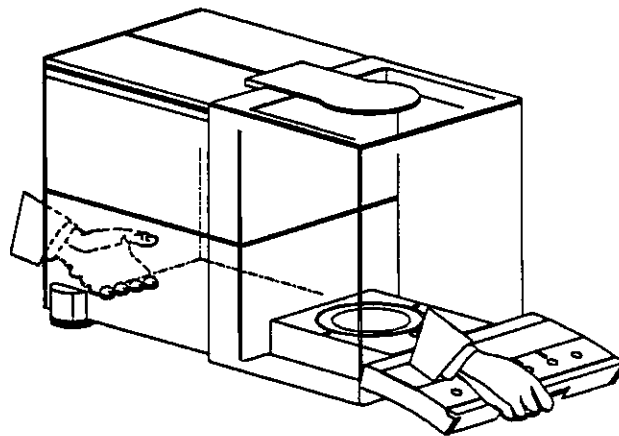
Lift the balance out of the box by raising the liner by its handles.

- Check the contents of the shipping carton.

You will find the following items:

- AB Analytical Balance
- Power Supply
- Power Cord
- Weighing Pan
- Foot Switch
- Stainless steel trim plate
- AB Operating Instructions
- Warranty Card

- **Important:** Carry the balance by placing one hand under the rear housing and the other hand under the front panel. **Do not** lift the front of the balance by the **TARE** bar because that could damage the balance.

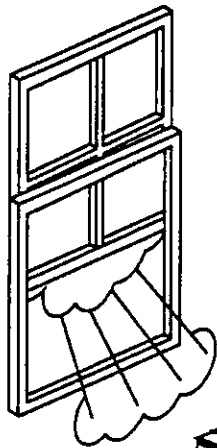


Selecting A Work Area

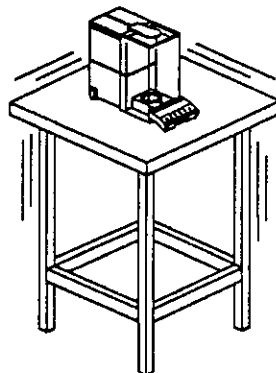
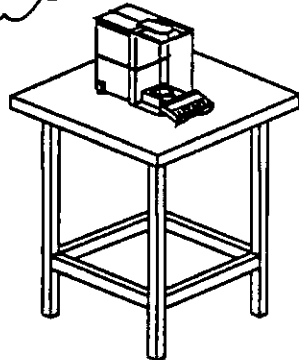
To optimize the performance of your AB Balance, select a suitable work area. In choosing a proper location, consider the following conditions that can affect the operation and accuracy of your balance performance.

Environment

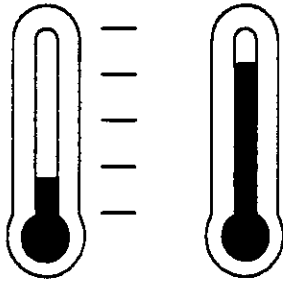
Environmental conditions do affect balance operation. Selecting a suitable environment is an important step in setting up your balance.



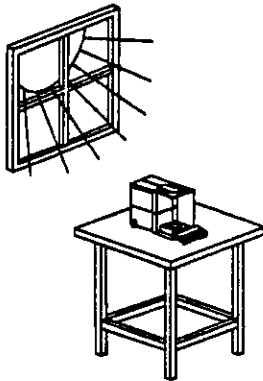
— No excessive drafts.



— No vibrations.



- No extreme temperature fluctuations or excessive room temperatures. (Avoid room temperatures above 40°C / 104°F or below 14°C / 57°F.)



- No direct sunlight.

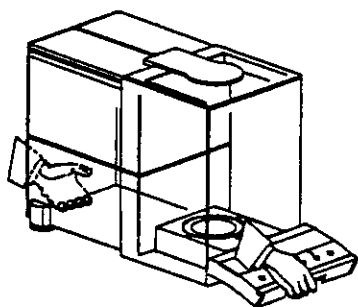
Work Station

Choosing a suitable work station ensures that your balance will give you maximum performance. Selecting a proper location is another important step in setting up your balance.

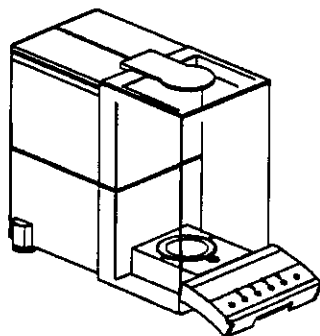
- A firm, level surface.
- No power surges.
- No magnetic materials nearby.

Setting Up Your Balance

After selecting a suitable work area, set up your balance by following the steps below:



- Place the balance in a suitable location, taking care to carry it with one hand under the rear housing and the other hand under front panel. **Do not** raise the front of the balance by the TARE bar.

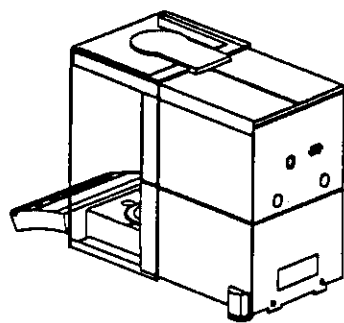


- Level the balance by using the level bubble and leveling feet.

- Place stainless steel trim plate in weighing chamber.

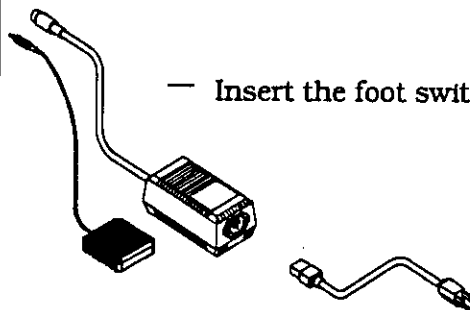
- Place the weighing pan in position and gently rotate until properly seated. Pan should be centered within stainless trim plate and **not** be touching anything.

- Insert the power cord and position the power supply away from the unit.



- Insert the RS-232C cable if used.

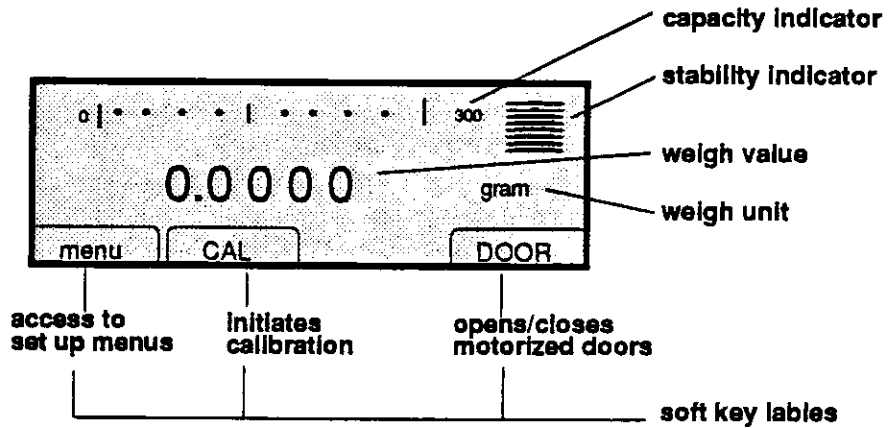
- Insert the foot switch if desired.



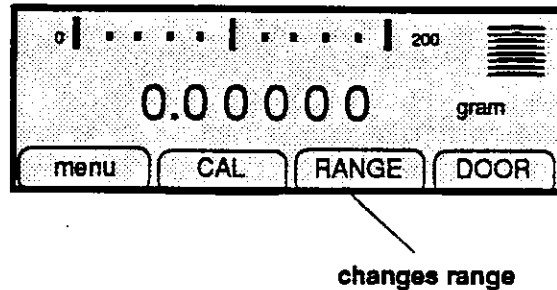
Power On

When the balance is plugged in, the display turns on and the main screen appears. The balance may take a few minutes to stabilize. If the balance is undisturbed and stable for several minutes, the automatic calibration cycle will begin. The main screen is the weighing screen and displays the weight value in large numerals. In addition, this screen supplies information related to your weighing application and your balance. It also provides access to other menus and features. However, the displays on the main screen vary slightly depending upon the model you are using. (See examples below.)

Main Screen
AB-300



Main Screen
AB-250D



FACTORY SETTINGS (Defaults)

- The AB Balance is set to operate using factory settings (defaults). These settings (with a brief description of each one) are listed below.

units — gram
Weight unit.

doors — manual
Doors operate by pressing the **DOOR** key or pressing the foot switch.

range* — coarse
Weight display shows value to 4 decimal places.

Balance set up

preset values — default
Activates factory settings.

auto calibrate — on
Balance will initiate calibration cycle using internal weights after an internal 1 degree C temperature change and a 2 minute delay provided display reading is stable.

auto zero - on
Correction for zero display is activated.

filter — 3
Sets filter speed and stability detection at 3 — Andante.

beeper — off
Beeper does not sound.

lock set up menu — off
A software lock that disables the set up keys is not engaged.

*applies to the AB-250D.

Printer set up (Defaults)

If you have interfaced this balance to a computer or printer, then the following printer defaults are used:

print — manual, after stable reading

Prints after the balance has stabilized when you press the **print** key.

print interval — 5 seconds

Prints every 5 seconds.

zero print — off

Does not print when weight is zero.

output format — 1

Uses the following output format:

Stable	Unstable
1+0010.0002	U+0010.0002
1-0000.0003	U-0000.0003

baud — 300

Data input/output rate is set at 300.

parity — none

This option that permits you to set a control bit to check the accuracy of serially transmitted data is not turned on.

echo — on (full duplex)

allows whatever is typed on the computer to appear on the host computer or terminal screen.

FINAL PREPARATIONS

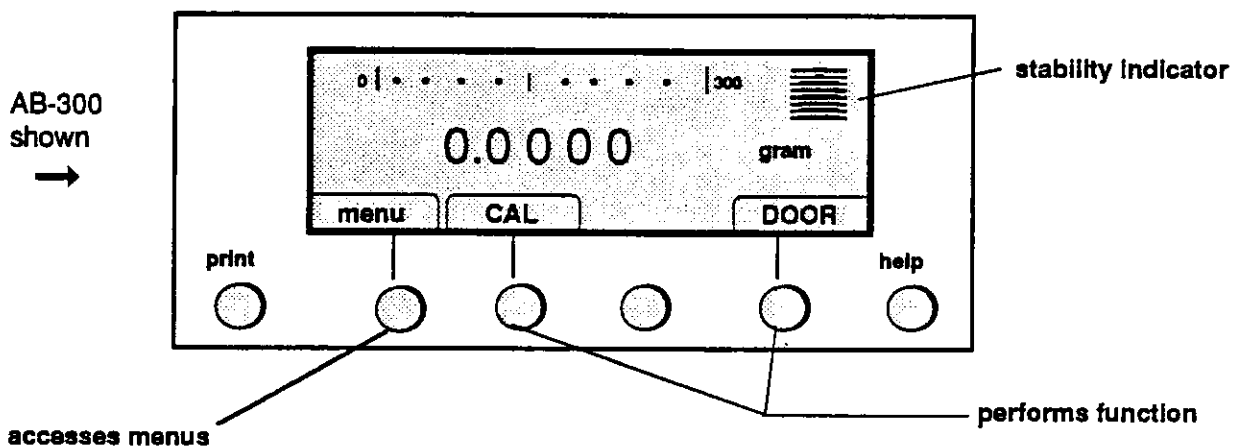
For AB-250D and AB-120 models, optimum results in the semi-micro range (0.00001) are obtained with a 24 hour warm-up period. Also, if a balance is to be moved it is optimum to wait 24 hours before precision weighing.

- Allow 60 minutes for the balance to warm up.
- While you're waiting:
 - Complete the enclosed warranty card and return it to Denver Instrument Company. Also, record the warranty information in the space provided inside the front cover of this manual.
 - Please read through this manual to be familiar with the balance features.

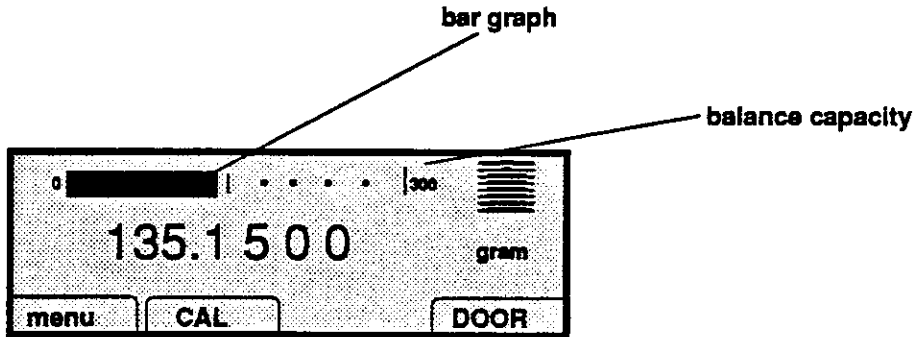
OPERATING YOUR BALANCE

General Directions

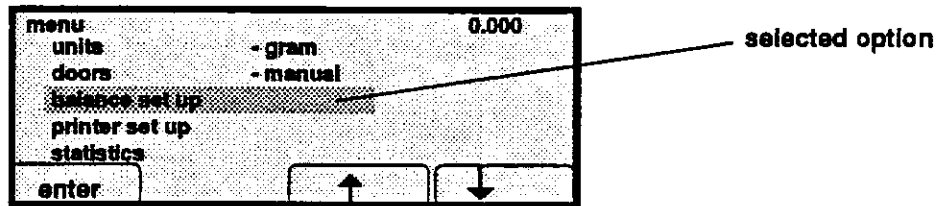
- Do not unplug your balance. This unit remains more stable if continuously plugged in.
- The number of decimal places in the display depends upon the model and units you are using.
- For best weighing results, all doors should be closed during the weighing process.
- When information is given on the display, **lower case words indicate selection of another screen** and upper case words indicate performance of a function.



- A bar graph on the main display indicates the total weight placed on the weighing pan in relation to the balance capacity.

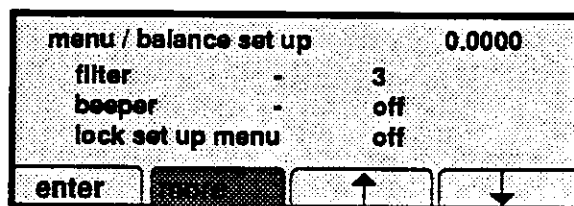


- When scrolling through the menus, the highlighted word(s) are the menu item selected.



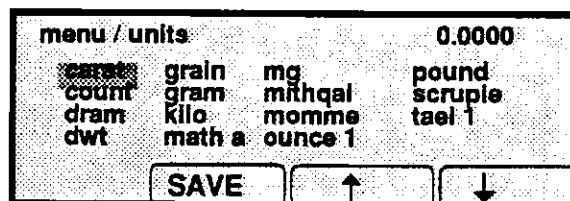
- To change the highlighted item in order to access a menu:
 - Use the appropriate arrow key to scroll to the desired option.
 - Press the **enter** key to select it.

- If menus have additional options displayed on another screen, the **more** key is highlighted as a reminder to press it. Pressing the **more** key toggles between both screens that reside under the same menu.



additional
menu listing

- To select and save a highlighted option:



- Use the appropriate arrow key to scroll to the desired option.
 - Press the **SAVE** key to select it.
(This also returns the display to the previous menu screen.)
- All settings reside in memory, even if the balance is powered down, if saved as a "user" number. (See page 50.)

- When you are not using your balance, you may put the balance in **STANDBY** by slightly lifting up the **TARE** bar. Pressing any key returns the display to its normal operating mode.

