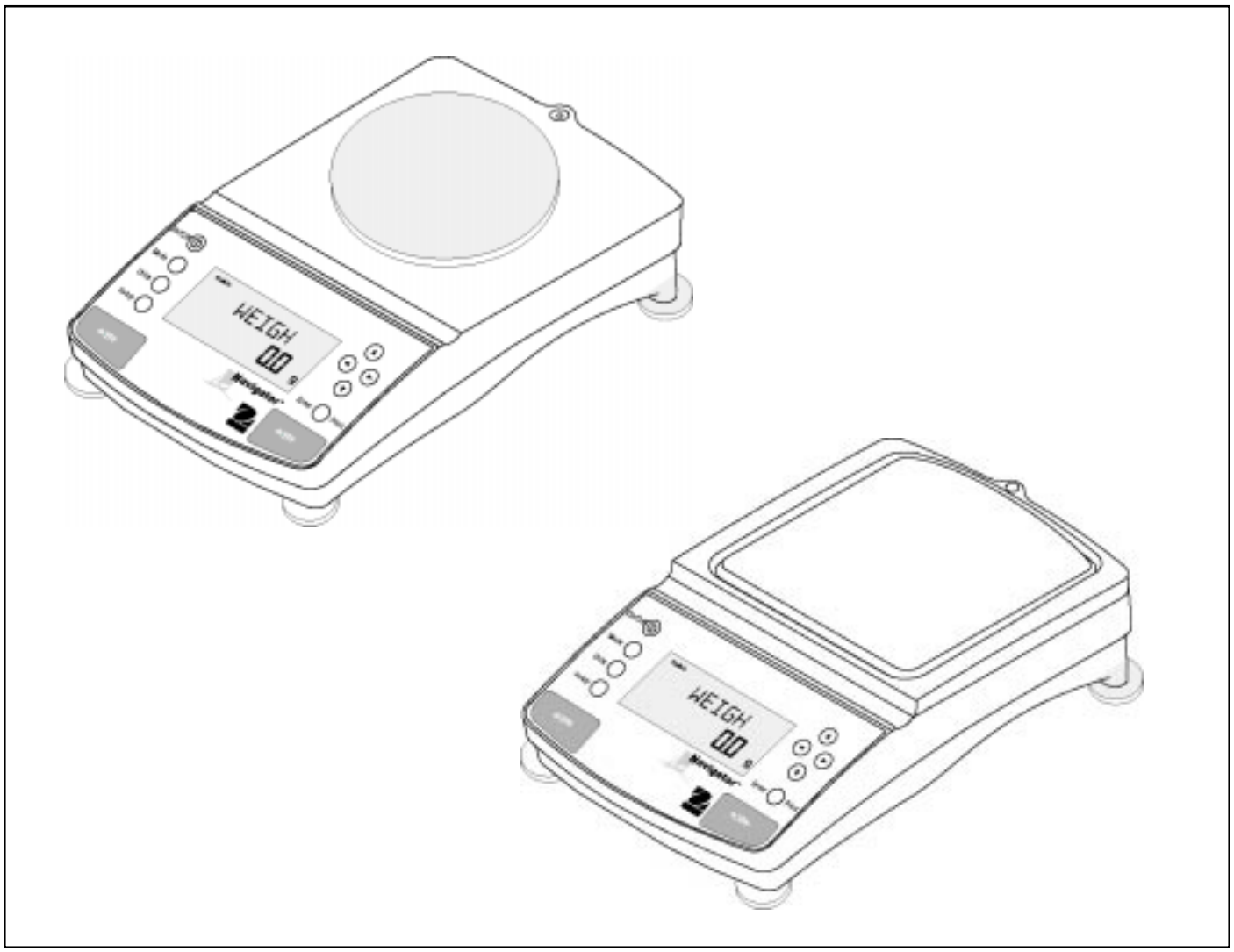
Ohaus Corporation
29 Hanover Road
Florham Park, NJ
07932-0900

INSTRUCTION MANUAL

Navigator™ Balances



Ohaus Corporation, 29 Hanover Road, Florham Park, New Jersey, 07932, USA

Declaration of Conformity We, Ohaus Corporation, declare under our sole responsibility that the balance models listed below marked with "CE" - are in conformity with the directives and standards mentioned.

Konformitätserkärung Wir, die Ohaus Corporation, erklären in alleiniger Verantwortung, dass die untenstehenden Waagentypen, gekennzeichnet mit "CE" - mit den genannten Richtlinien und Normen übereinstimmen.

Déclaration de conformité Nous, Ohaus Corporation, déclarons sous notre seule responsabilité, que les types de balance ci-dessous cité - munis de la mention «CE» - sont conformes aux directives et aux normes mentionnées ci-après.

Declaración de Conformidad Nosotros, Ohaus Corporation, declaramos bajo responsabilidad exclusiva que los modelos de balanzas indicados a continuación - con el distintivo ‚CE' - están conformes con las directivas y normas citadas.

Dichiarazione di conformità Noi, Ohaus Corporation, U.S.A, dichiariamo sotto nostra unica responsabilità, che i tipi di bilance specificati di seguito - contrassegnati con la marcatura "CE" - sono conformi alle direttive e norme citate.

Balance Type/Waagentyp/Type de balance/Modelo de balanza/Tipo di biliancia **Navigator**

Marked with: Gekennzeichnet mit: Munis de la mention: Con el distintivo: Contrassegnati con la Marcatura:	Directive Richtlinie Directive Directiva Direttiva	Standard Norm Norme Norma Norma
CE	EU 73/23 Low Voltage EU 73/23 Niederspannung EU 73/23 Basse tension EU 73/23 Baja tensión EU 73/23 Bassa tensione EU 89/336, 92/31, 93/68 Electromagnetic compatibility EU 89/336, 92/31, 93/68 Elektromagnetische Verträglichkeit EU 89/336, 92/31, 93/68 Compatibilité électromagnétique EU 89/336, 92/31, 93/68 Compatibilidad electromagnética EU 89/336, 92/31, 93/68 Compatibilità elettromagnetica	IEC1010-1 & EN60950:1992 Safety Regulations IEC1010-1 & EN60950:1992 Sicherheitsbestimmungen IEC1010-1 & EN60950:1992 Consignes de sécurité IEC1010-1 & EN60950:1992 Disposiciones sobre seguridad IEC1010-1 & EN60950:1992 Prescrizioni . di sicurezza EN55022:1987 Emissions EN50082-1:1992 Immunity NOTE: The displayed value may be adversely affected under extreme electromagnetic influences, eg. when using a radio unit in the immediate vicinity of the device. Once the interference has been rectified, the product can once again be used for its intended purpose. EN55022:1987 Funkstörungen EN50082-1:1992 Immunität Hinweis: Unter extremen elektromagnetischen Einflüssen z.B. bei Betreiben eines Funkgerätes in unmittelbarer Nähe des Gerätes kann eine Beeinflussung des Anzeigewertes verusacht werden. Nach Ende des Störeinflusses ist das Produkt wieder bestimmungsgemäss benutzbar. EN55022:Emissions parasites EN50082-1:1992 Immunité Remarque: Dans des conditions d'influences électromagnètiques extrêmes, par exemple en cas d'exploitation d'un appareil radio à proximité immédiate de l'appareil la valeur d'affichage risque d'être influencée. Une fois que l'influence parasite est terminée, le produit peut être de nouveau utilisé de manière conforme aux prescriptions. EN55022:1987 Radiointerferencias EN50082-1:1992 Inmunidad Nota: Bajo influencias electromagnèticas extremas, p.ej. cuando funciona una radio en las inmediaciones del aparato, se pueden alterar los valores del display. Cuando concluye el efecto perturbador, el producto puede ser utilizado de nuevo, de acuerdo con lo estipulado. EN55022:1987 Radiointerferenze EN50082-1:1992 Immunità Nota: Il valore visualizzato può essere influenzato negativamente dalla presenza di forti interferenze elettromagnetiche, per esempio quando viene usata una radio in prossimità della bilancia. Eliminata la fonte dell'interferenza, il prodotto può essere nuovamente utilizzato per le funzioni cui è preposto.

James Ohaus
President

ISO 9001 Certificate for Ohaus Corporation. Ohaus Corporation, USA, was examined and evaluated in 1994 by the Bureau Veritas Quality International, BVQI, and was awarded the ISO 9001 certificate. This certifies that Ohaus Corporation, USA, has a quality system that conforms with the international standards for quality management and quality assurance (ISO 9000 series). Repeat audits are carried out by BVQI at intervals to check that the quality system is operated in the proper manner.

ISO 9001-Zertifikat für Ohaus Corporation. Die Firma Ohaus Corporation, USA, wurde 1994 durch das Bureau Veritas Quality International BVQI geprüft, und erhielt das ISO 9001 Zertifikat. Dieses bescheinigt, dass Ohaus Corporation, USA über ein Qualitätssystem verfügt, welches den internationalen Normen für Qualitätsmanagement und Qualitätssicherung (ISO 9000er-Reihe) entspricht. Anlässlich von Wiederhol-Audits durch das BVQI wird periodisch überprüft, ob das Qualitätssystem zweckmässig gehandhabt wird.

Certificat ISO 9000 pour Ohaus Corporation. La société Ohaus Corporation, USA, a été contrôlée en 1994 par Bureau Veritas Quality International BVQI et a obtenu le certificat, degré ISO 9001. Celui-ci atteste que Ohaus Corporation, USA, dispose d'un système qualité correspondant aux normes internationales pour la gestion de la qualité et pour l'assurance qualité (degré ISO 9000). Des audits réguliers effectués par la BVQI vérifient si le système qualité est appliqué de facon appropriée.

Certificado ISO 9001 para Ohaus Corporation. La firma Ohaus Corporation, USA, ha sido inspeccionada por la Bureau Veritas Quality International (BVQI) y ha obtenido el certificado ISO 9001. Esto acredita que Ohaus Corporation, USA, dispone de un sistema de calidad que cumple las normas internacionales para gestión y garantfa de calidad (ISO serie 9000). Con ocasión de las inspecciones de repetibilidad por parte de la BVQI, se comprueba periódicamente si el sistema de calidad se manipula de forma correcta.

Certificato ISO 9001 per la Ohaus Corporation. Il sistema di garanzia della qualità della Società Ohaus Corporation, USA è certificato ISO 9001 sin dal 1994 dall Bureau Veritas Quality International BVQI, e così fornice la dimostrazione che il suo sistema die Garanzia Qualità soddisfa i massimi requisite. Il sistema della garanzia della qualità Ohaus Corporation viene verificato periodicamente dall BVQI, dando cosi evidenza di.

NOTE: THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS B DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE INTERFERENCE-CAUSING EQUIPMENT STANDARD ENTITLED "DIGITAL APPARATUS", ICES-003 OF THE DEPARTMENT OF COMMUNICATIONS.

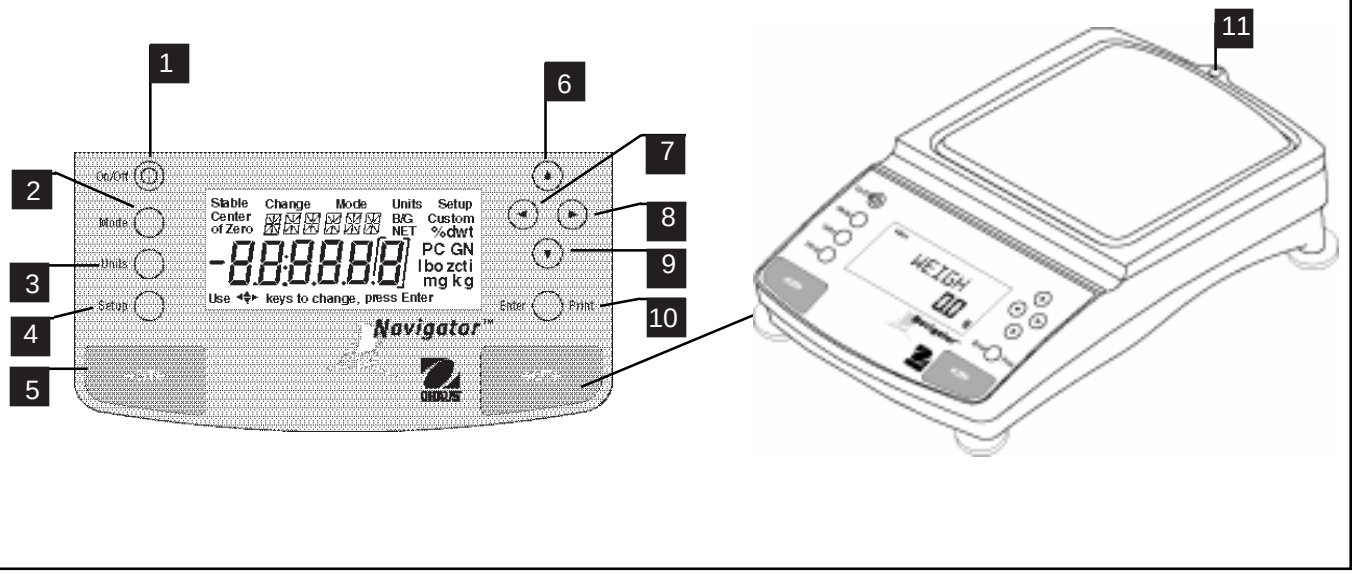
CET APPAREIL NUMERIQUE RESPECTE LES LIMITES DE BRUITS RADIOELECTRIQUES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE B PRESCRITES DANS LA NORME SUR LE MATERIEL BROUILLEUR : "APPAREILS NUMERIQUES", NMB-003 EDICTEE PAR LE MINISTRE DES COMMUNICATIONS.

Unauthorized changes or modifications to this equipment are not permitted.

TABLE OF CONTENTS

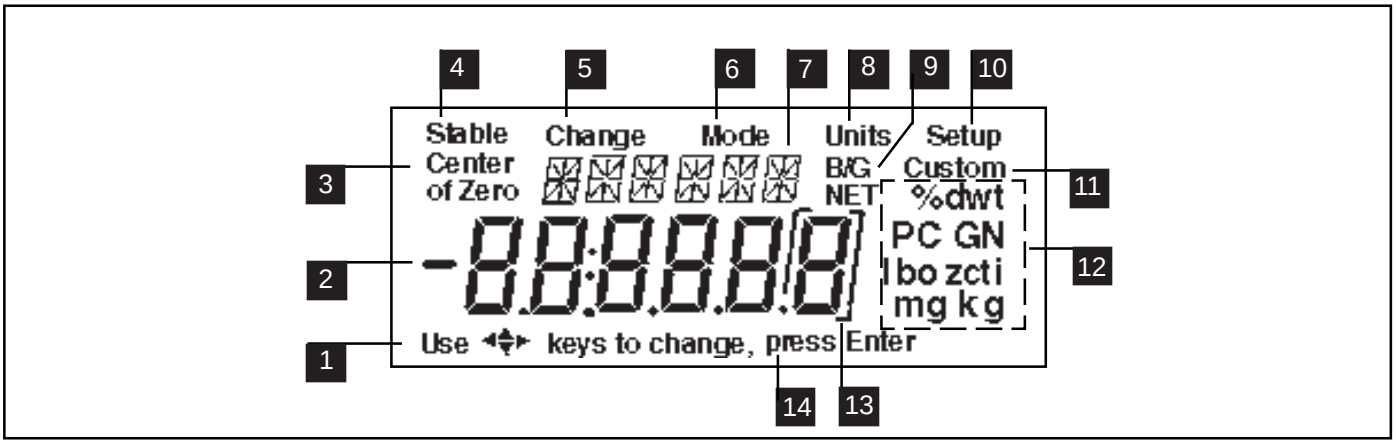
TABLE OF CONTENTS (Cont.)

OVERVIEW OF CONTROLS



No.	Designation	Function
1	⏻ On/Off button	Power on/off button.
2	Mode button	Selects standard weighing, percent, parts counting, animal weighing and checkweighing modes.
3	Units button	Selects weighing units.
4	Setup button	Selects various menus: calibration, date, time, readout, GLP data, GLP set, print, RS232, mode, units, global, custom and auto shut-off.
5	->O/T<- button	When pressed, performs tare or rezero function.
6	▲ button	When pressed, travels up through menus.
7	◄ button	When pressed, travels to the left through menus.
8	► button	When pressed, travels to the right through menus.
9	▼ button	When pressed, travels down through menus.
10	Enter/Print button	When in menus, selects item on display, otherwise prints data.
11	Leveling indicator	Indicates leveling position of the balance.

OVERVIEW OF DISPLAY INDICATORS



No.	Function
1	**Use** (Pointer Group) **key to change** - used to prompt the user while navigating through the menu system.
2	Standard (7) segment numeric characters. Six characters are available and are used for displaying weight values.
3	**Center of Zero** - Not used
4	**Stable** - Indicates that the measured value has become stable.
5	**Change** - Is displayed together with **Mode**, **Units** or **Setup** signifying that a change to balance settings is being performed.
6	**Mode** - Is displayed when the **Mode** button is pressed. Allows the user to know what area of the balance menu is being addressed.
7	(14) segment alpha numeric characters. Six characters are used to present features and functions.
8	**Units** - Is displayed when the **Units** button is pressed. Allows the user to know what area of the balance menu is being addressed.
9	**B/G & NET** - Not used
10	**Setup** - Is displayed when the **Setup** button is pressed. Allows the user to know what area of the balance menu is being addressed.

No.	Function
11	**Custom** - The user can input a factor to meet unique unit measuring applications.
12	Symbols for weighing units and modes, include: **mg** - Milligrams **g** - Grams **kg** - Kilograms **dwt** - Pennyweight **ct** - Carats **oz** - Ounces **oz t** - Ounces troy **GN** - Grain **t** - Taels. Taels are available in three types; Hong Kong, Singapore, and Taiwan **m** - Mommes **lb** - Pounds **N** - Newton **ti** - Tical **%** - Percent weighing **PC** - Parts counting **tola** - tola (appears on 14 segment display)
13	⌈⌉ - Not used
14	**press Enter** - Used as a prompt to the user to press the **Enter** button. The menu item displayed is accepted/selected.

1. GETTING TO KNOW YOUR BALANCE

Please read through this section carefully, as it contains important information for safe and economical operation of your Navigator™ balance.

1.1 Introduction

Thank you for deciding to purchase a Navigator™ balance from Ohaus. This versatile, portable balance offers a high level of operating convenience and useful functions to make accurate measurements usually obtained from higher priced laboratory instruments. A custom LCD panel has a large 6 digit, 7 segment display which indicates the weight value of an item being measured and a 6 character 14 segment display which spells out items selected in the menus. In addition, the display contains text which indicates the active operating mode of the balance. Arrow indicators in the display prompt the user as to what panel keys are to be pressed to initiate a change. Built-in RS232 communication is standard on all models and allows communication with printers or computers.

Panel controls are clearly marked as to their function with large zero/tare buttons on either side of the front panel. Operation and setup of the balance is straightforward and easy. Setup is simple with 4 cursor keys, straightforward menus, and prompts that easily guide you through the process.

Navigator™ is designed with contours for easy cleaning and has a sealed front panel and spill gutter to direct liquids off the balance. For leveling purposes, all models are equipped with adjustable feet and a level indicator.

Behind your instrument stands OHAUS Corporation, a leading manufacturer of precision weighing equipment. An Aftermarket Department with trained instrument technicians is dedicated to provide you with the fastest service possible in the event your instrument requires servicing. OHAUS Corporation also has a Customer Service Department to answer any inquiries regarding applications and accessories.

To ensure you make full use of the possibilities offered by your Navigator™ balance, we advise you to read through these operating instructions very carefully.

2. INSTALLATION

2.1 Unpacking and Checking the Standard Equipment

Open the package and remove the instrument and the accessories. Check the completeness of the delivery. The following accessories are part of the standard equipment of your new Navigator™ balance.

Equipment	Capacities						
	32g	210	410g	810g	2100g	4100g	8100g
• **Pan 3" Diameter**	•						
• **Pan Support, round 3"**	•						
• **Pan 4.75 Diameter**		•	•				
• **Pan Support, round 4.75"**		•	•				
• **Pan 6"x5.5"**				•	•	•	•
• **Pan Support, rectangular**				•	•	•	•
• **AC Power Adapter**	•	•	•	•	•	•	•
• **Scoop**	•						
• **Windshield**				•	•	•	•
• **30g Calibration mass**	•						
• **Glass Draft shield**	•						
• **Draft shield cover**	•						
• **Instruction Manual**	•	•	•	•	•	•	•
• **Warranty Card**	•	•	•	•	•	•	•

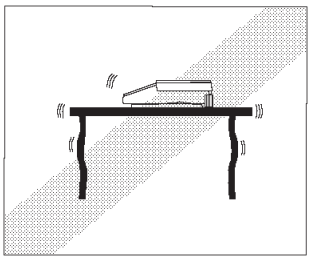
- Remove packing material from the instrument.

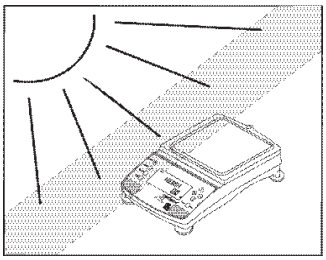
- Check the instrument for transport damage. Immediately inform your Ohaus dealer if you have complaints or parts are missing.

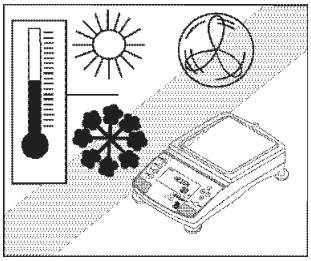
- Store all parts of the packaging. This packaging guarantees the best possible protection for the transport of your instrument.

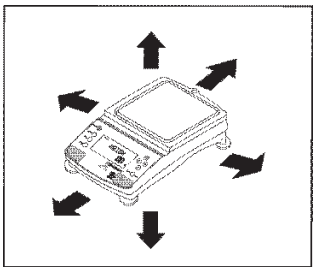
2.2 Selecting the Location

The balance should always be used in an environment which is free from excessive air currents, corrosives, vibration, and temperature or humidity extremes. These factors will affect displayed weight readings.





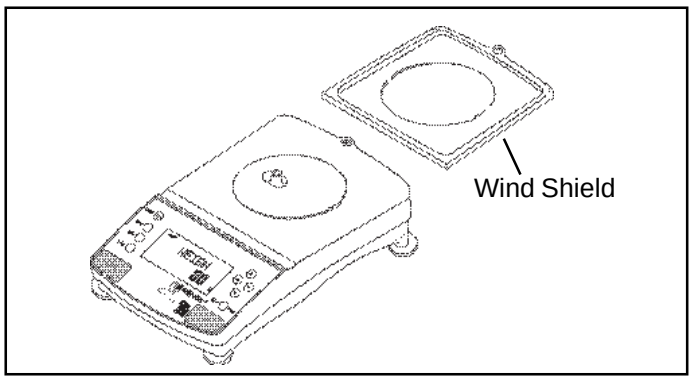




DO NOT install the balance:

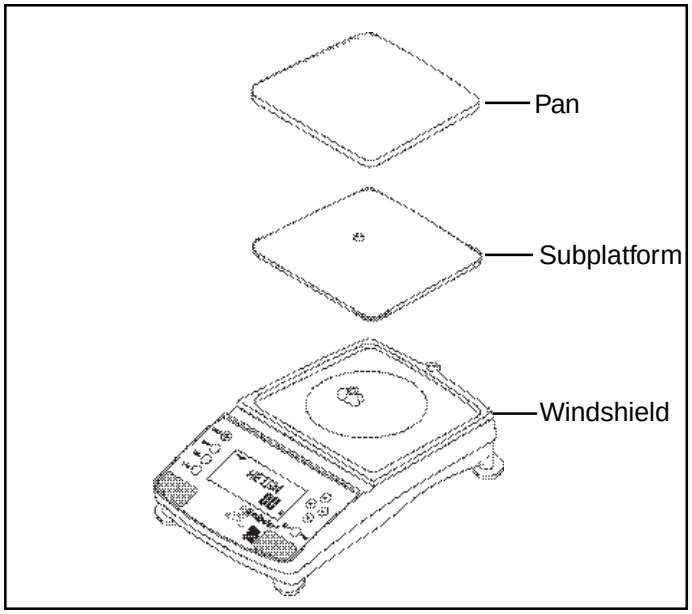
- Next to open windows or doors causing drafts or rapid temperature changes.
- Near air conditioning or heat vents.
- Near vibrating, rotating or reciprocating equipment.
- Near magnetic fields or equipment that generates magnetic fields.
- On an unlevel work surface.
- Allow sufficient space around the instrument for ease of operation and keep away from radiating heat sources.

2.3 Installing Wind Shield



On 810g to 8100g balances, a wind shield is provided to reduce the possibility of air currents from disturbing the pan. When the wind shield is in place, air currents are deflected up over the pan. Place the wind shield on top of the balance making sure the small alignment tab is located properly on the balance.

2.4 Installing Subplatform and Pan

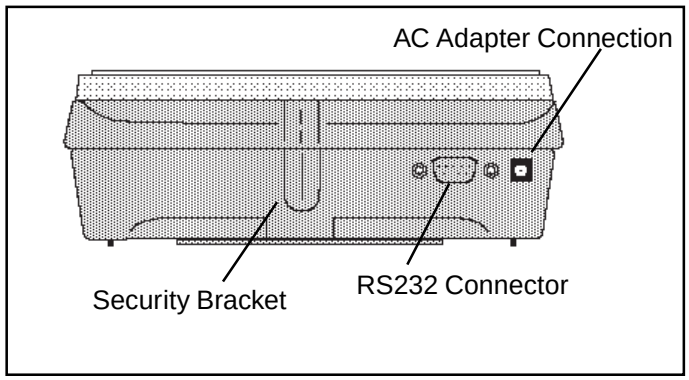


All balances are supplied with a subplatform and pan. The subplatform fits through the hole on top of the balance and rests on a cone assembly which is part of the measuring load cell.

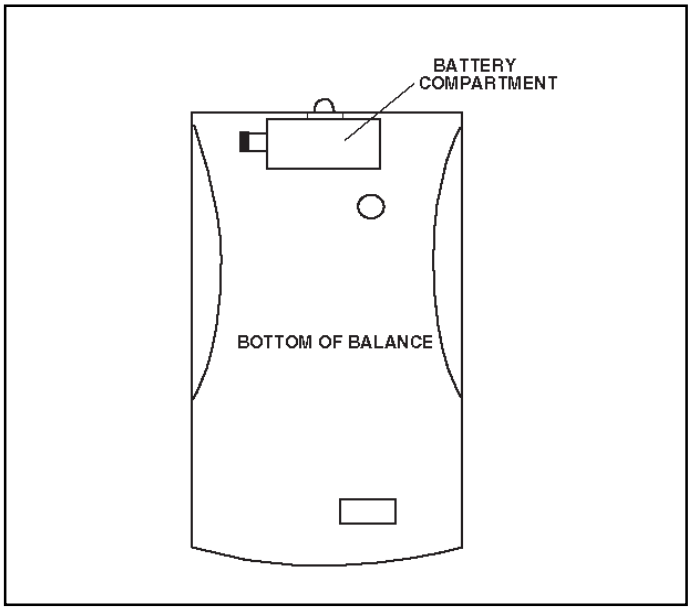
The bottom of the subplatform contains a slotted keyway for installation purposes. Place the subplatform in place aligning the slot with the pin on the cone assembly.

Install the pan on the subplatform. The illustration shows the rectangular pan.

2.5 Connecting Power and Communications



Rear of Balance



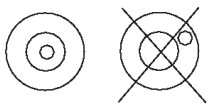
Bottom View of Balance

2.6 Leveling the Balance

Exact horizontal positioning and stable installation are prerequisites for repeatable results. To compensate small irregularities or inclinations at the location, the instrument can be leveled.

For exact horizontal positioning, the balance is equipped with a level indicator located at rear.

Position the balance in the intended operating location. Adjust the leveling feet until the air bubble in the indicator is centered.



NOTE: The instrument should be leveled each time its location is changed.

AC Power Operation

Connect the cord from the AC Adapter supplied to the connector located at the rear of the balance. Connect the AC Adapter to an appropriate power source.

Battery Operation

The balance can be operated using 8 AA alkaline batteries (not included). The battery compartment is located on the bottom of the balance. To install batteries, proceed as follows:

- Remove the pan, subplatform, and wind shield.
- Turn the balance over. **Do not rest the balance on the cone.**
- Press the tab on the battery cover inward and lift the cover off.
- Remove the battery holder.
- Install the 8 AA alkaline batteries in the battery holder, orienting the plus (+) and minus (-) ends as indicated on the holder.
- Replace the battery holder in the compartment. Make sure the snap connector is connected.
- Replace the battery cover.
- Turn the balance over and replace the wind shield, subplatform and pan.

Communication Connections

When an optional printer or computer is going to be used with the balance, connect an Ohaus RS232 Interface Cable to the connector at the rear of the balance and the external device. Refer to paragraph 5.7 Accessories for cable information and part numbers.

NOTE: A standard RS232 cable cannot be used as the pin connections are different.

The balance is now ready for operation.

Security Bracket

A security bracket (molded in base) is provided at the rear of the balance which allows the balance to be secured by the optional cable and lock accessory.

3 OPERATING YOUR BALANCE

3.1 The Menu (Basic Settings of the Instrument)

The balance has three basic menus; each is selected by front panel buttons marked **Mode**, **Units** and **Setup**.

Mode Button

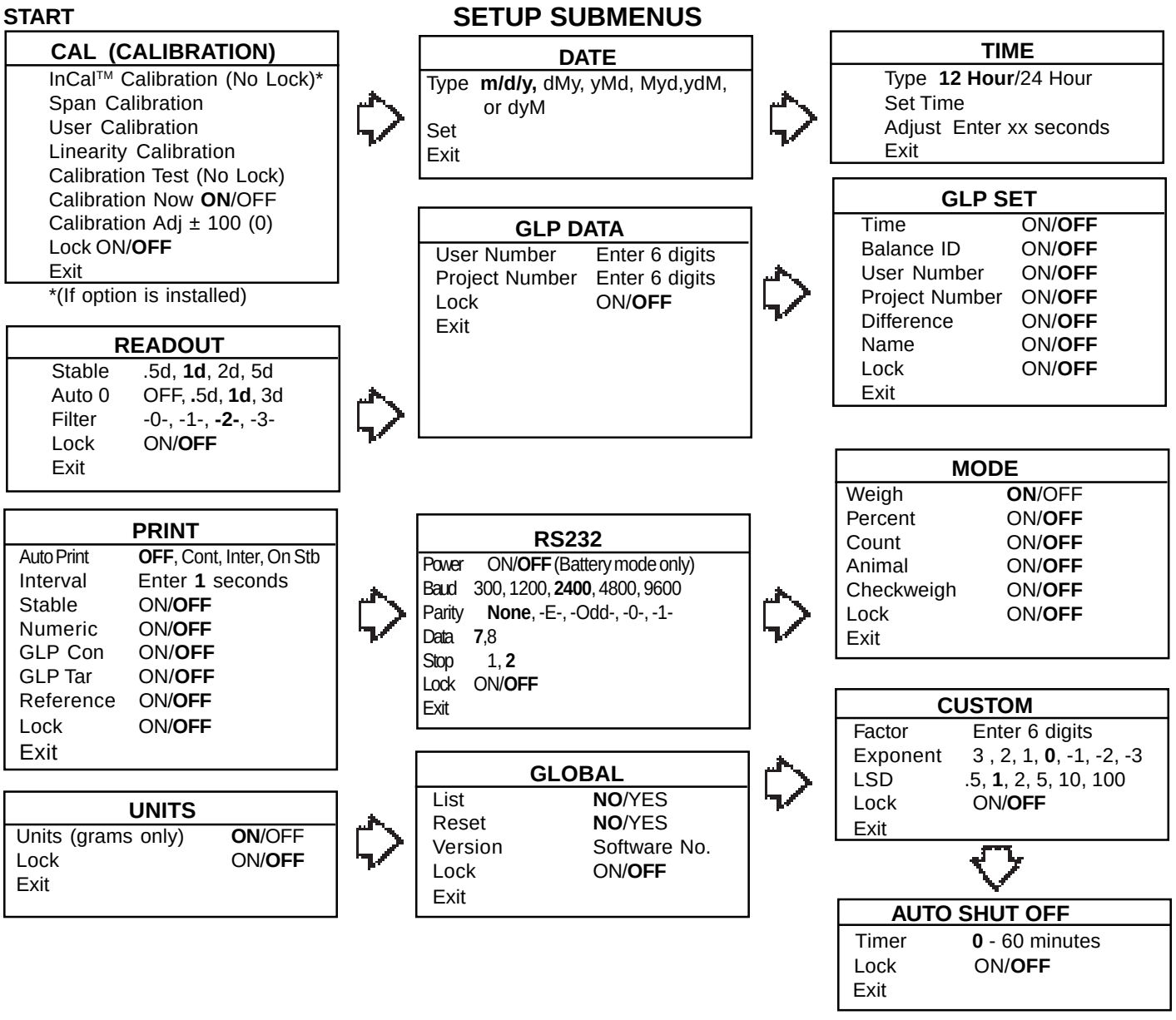
The Mode button, when pressed, permits the selection of five weighing modes which are: weigh, percent, count, animal weighing and checkweigh. These modes are controlled by an on or off selection made in the Setup menu under the Mode menu.

Units Button

The Units button, when pressed, allows you to select or change units.

Setup Button

The Setup button, when pressed, allows entry into menus which allow you to set the balance for specific operating parameters. Each of the menus contain settings which are user selectable. The tables below illustrates the various menus and the functions which are selectable. The items shown on the menu, which are bolded, are the factory default settings. If the Setup menu is not entered, the balance would function in the basic manner shown by the various settings which are bolded. The setup menus shown below are arranged in the order as displayed in the balance.

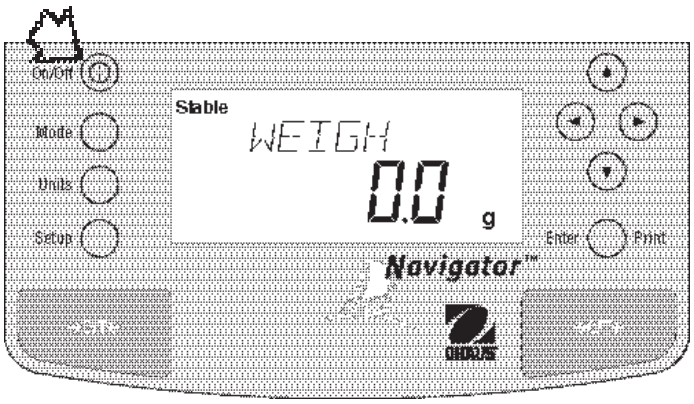


3.2 Turning On the Balance

The balance is ready to operate after the installation procedures are performed. When the balance is first turned on and it completes its checks, it can be used to weigh or tare materials without setting the menus.

It is recommended that you read this manual carefully and set the balance to operate for your specific applications using the procedures in Chapter 4 Setting up Your Balance and calibrate the balance before using.

In this section, you will enter the menu for the first time. Do not worry if you are unfamiliar with the function of the buttons on the panel, the display provides the necessary coaching as you go along.



Power On/Off

To turn the balance ON, press the ON/OFF button (circled button with an I inside) located at the upper left-hand corner of the panel once. To turn OFF, press button again.

NOTE: If the balance has been battery operated for a long period of time, and the batteries are low, the balance displays **LOWBAT**. Turn the balance OFF. Remove the batteries and replace.

Stabilization

Before initially using the balance, allow time for it to adjust to its new environment. Recommended warm up period is 5 minutes.

Calibration

Refer to paragraph 3.3 and calibrate the balance before proceeding.

3.3 Calibration

Navigator balances offer a choice of five calibration methods: Internal Calibration (InCAL™), Span Calibration, User Calibration, Linearity Calibration, and CalTest™.

- ***InCal*** ™ Internal calibration (InCAL™) of the balance is accomplished by an internal mass (If option is installed). When CAL NOW is selected and set ON, CAL NOW is displayed when the balance requires calibration. When CAL NOW is set OFF, the message CAL NOW is not displayed.
- ***Span*** - Span calibration ensures that the balance reads correctly within specifications using two weight values: zero and a weight value at 50% of full capacity and or 100% of the balance's full capacity.
- ***User*** - User calibration is a method where the balance can be calibrated using a mass of known value and entering that numeric value into the balance.
- ***Linearity*** - Linearity calibration minimizes deviation between actual and displayed weights within the balance's weighing range. Three weight values are used: zero, a weight value at midpoint of the balance's weighing range, and a weight value at or near the balance's specified capacity.
- ***Cal Test*** - Calibration test allows the stored calibration data to be tested against the current mass being used for the test.
- ***Lock*** - Can be set on or off. When set on, Span, User and Linearity calibration are locked out and cannot be used.

3.3 Calibration (Cont.)

Calibration Menu Protection

NOTES:
• Calibration may be locked out to prevent unauthorized personnel from changing calibration. If calibration has been locked out, you can only access Cal Test.

• To lock out calibration menu, after calibration, refer to the section titled Menu Lock-Out Protection, paragraph 4.12.

Calibration Masses

Before beginning calibration, make sure masses are available. If you begin calibration and realize calibration masses are not available, exit the menu. The balance will retain previously stored calibration data. Calibration should be performed as necessary to ensure accurate weighing. Masses required to perform the procedures are listed in the adjacent table and are available as accessories.

NOTE:
Any of the calibration modes can be terminated *at any time* by pressing either the **Mode**, **Units** or **Setup** buttons.

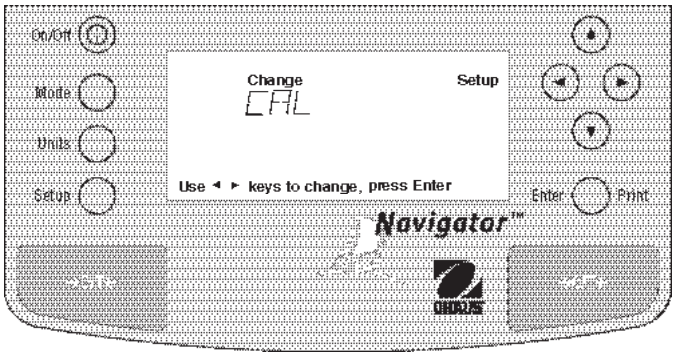
CALIBRATION MASSES

CAPACITY	LINEARITY MASSES	SPAN ONLY MASSES
32g	10g and 30g	30g
210g	100g and 200g	100g or 200g
410g	200g and 400g	200g or 400g
810g	400g and 800g	400g or 800g
2100g	1000g and 2000g	1000g or 2000g
4100g	2000g and 400g	2000g or 4000g
8100g	4000g and 8000g	4000g or 8000g

It is recommended that masses meet or exceed ASTM Class 4 Tolerance. Models 410g and 4100g use Class 2. Calibration masses are available as accessories.

3.3.1 Internal Calibration (InCAL™)

On Navigator™ balances equipped with the InCal™ feature, calibration can be accomplished using the internal calibration mass. InCal™ requires use of the AC adapter supplied with the balance. When the balance requires calibration, a screen prompt of CAL NOW appears. This display can be turned off as described under Calibration Message. Also, a software feature is incorporated which permits the internal calibration mass to be adjusted by ±100 divisions. The adjust feature is described under Calibration Adjust. Internal calibration can be performed at any time providing the balance has warmed up to operating temperature.



Procedure

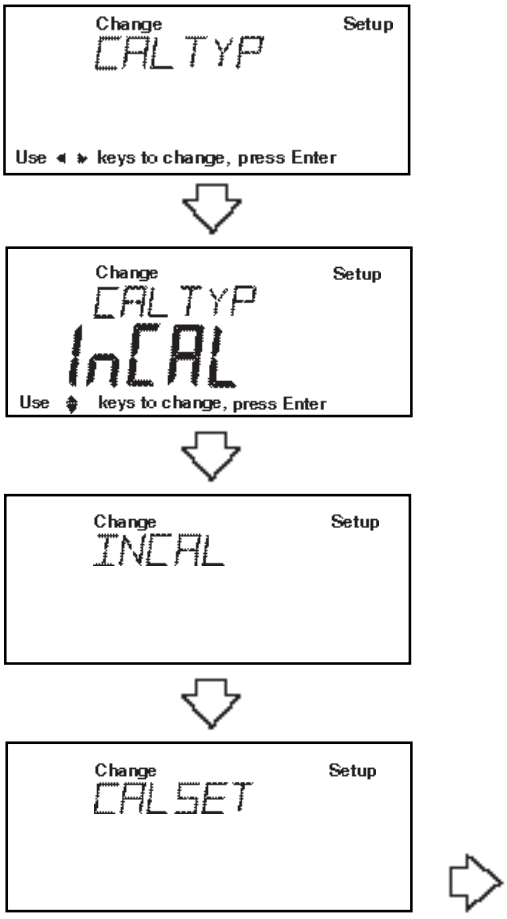
- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press **Enter** button, CAL TYP InCAL is displayed.
- Press **Enter** button, INCAL is displayed.

IMPORTANT !

DO NOT DISTURB THE BALANCE DURING CALIBRATION. IF THE MESSAGE UNSTBL IS DISPLAYED, THE BALANCE WAS UNABLE TO ACQUIRE STABLE DATA DURING INTERNAL CALIBRATION. THE BALANCE WILL CONTINUE TO PERFORM INTERNAL CALIBRATION UNTIL READINGS STABILIZE. THE BALANCE WILL THEN COMPLETE THE INTERNAL CALIBRATION FUNCTION.

TO EXIT INTERNAL CALIBRATION MODE BEFORE COMPLETION, PRESS ENTER OR SETUP BUTTONS.

STABILITY CAN BE AFFECTED BY TEMPERATURE CHANGES, AIR CURRENTS, VIBRATION, ETC...

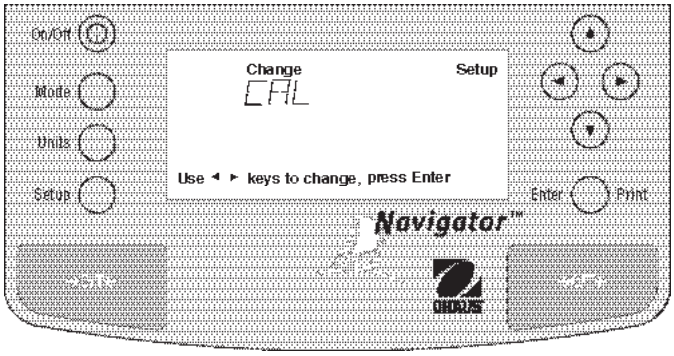


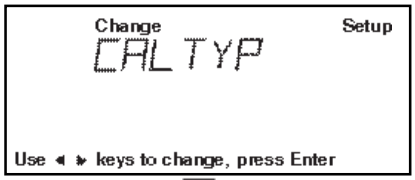
NOTE: If a weight is left on the pan, the balance will display CLR PAN (remove the weight from the pan). The balance automatically resumes calibration.

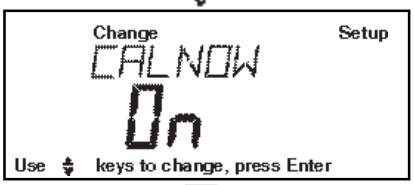
The internal mass is positioned several times during calibration and then removed, then after a few seconds, CAL SET is displayed indicating a successful calibration. The display returns to WEIGH mode.

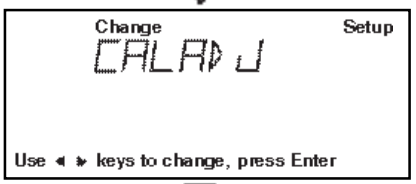
3.3.2 Calibration Message

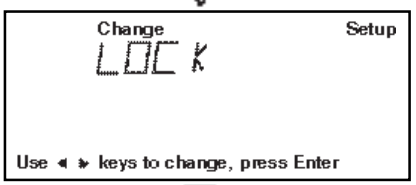
On Navigator™ balances equipped with the InCal™ feature, a screen prompt of CAL NOW appears when the balance requires calibration. This display can be turned off if it is desired not to have the balance indicate that calibration is required. Turning the display off has no effect on the basic balance operation.

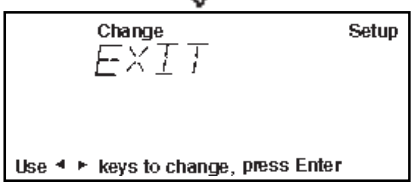












Procedure

- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press ► button, CAL NOW is displayed.
- Press **Enter** button, CAL NOW ON or OFF is displayed.
- Press ▲ or ▼ button and select either ON or OFF. When OFF is selected, the CAL NOW message will not appear in the display.
- Press **Enter** button, SAVED is momentarily displayed, then the display indicates CAL ADJ.

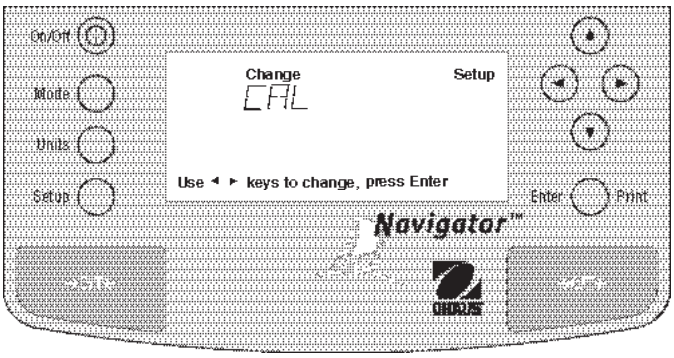
NOTE: At this point you may continue with the calibration adjust procedure on the next page or exit.

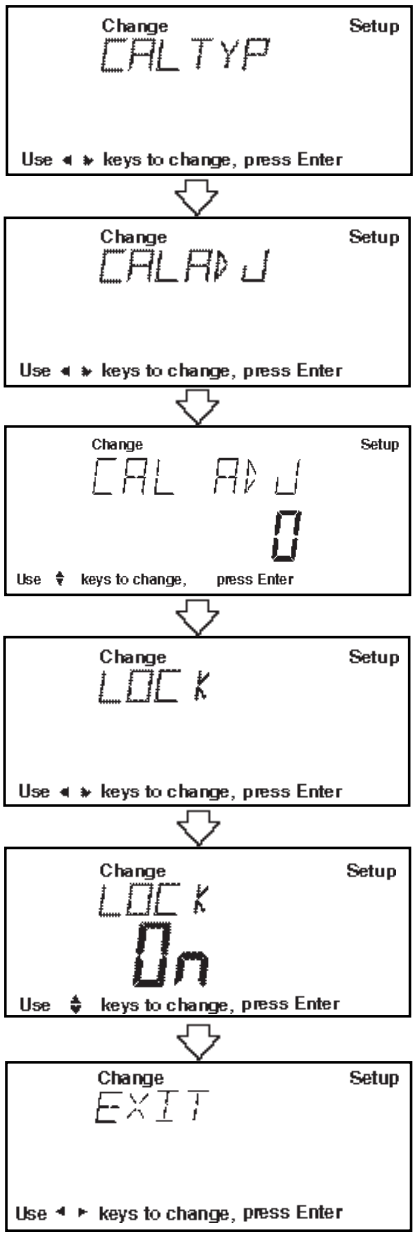
The calibration adjust procedure is only used when it is desired to calibrate the internal calibration mass to a known external mass if a difference exits between the known mass and the InCal™ value.

- Press **Enter** button, LOCK is displayed.
- Press ▲ or ▼ button and select either ON or OFF.
- Press **Enter** button, SAVED is momentarily displayed, then the display indicates EXIT.
- Press **Enter** button, display returns to WEIGH mode.

3.3.3 Calibration Adjust

Balances with InCal™ contain software which allows the internal calibration value to be adjusted by ± 100 divisions at full scale capacity using an external mass which is traceable to a certified standard.



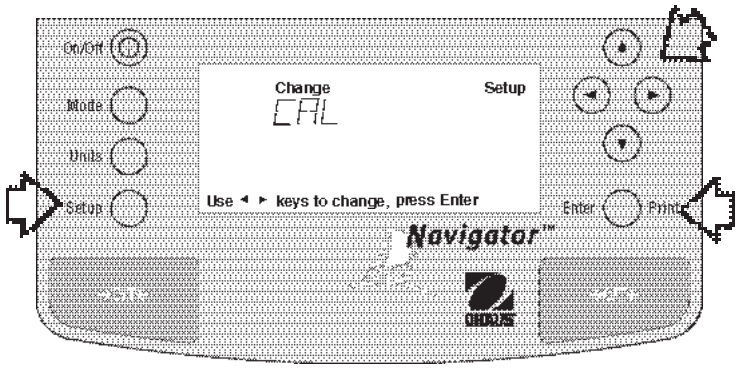


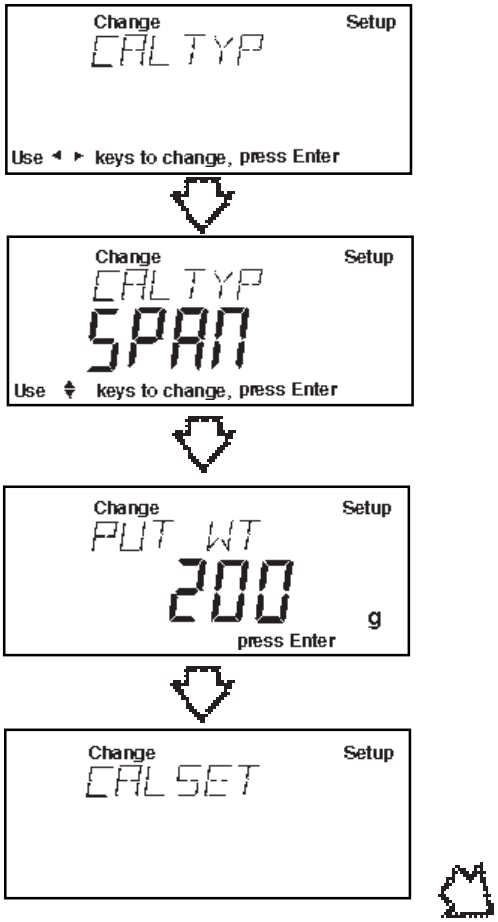
Procedure

- Perform the internal calibration procedure.
- Press **>O/T<** button to zero the balance.
- Place a mass equal to the ***span calibration value*** of the balance on the pan. Note the reading on the balance and see if the balance indicates the exact weight or indicates a higher or lower reading. If the reading is higher or lower, proceed.
- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press ► button until , CAL ADJ is displayed.
- Press **Enter** button, CAL ADJ 0 should be displayed (0 is factory setting).
  NOTE: Balance will retain last CAL ADJ setting.
- Press ▲ or ▼ button until desired number is displayed.
- Press **Enter** button, SAVED is momentarily displayed, then display indicates LOCK.
- Press **Enter** button, LOCK ON or LOCK OFF is displayed.
- Press ▲ or ▼ button and select either LOCK ON or LOCK OFF.
- Press **Enter** button, SAVED is momentarily displayed, then EXIT is displayed.
- Press **Enter** button, display returns to WEIGH mode. Note weight reading and remove mass from pan.
- Perform the internal calibration procedure. The value entered as an adjustment is now stored. Place the calibration mass on the pan and check. Repeat procedure if further correction is required.
- To return to factory setting, follow procedure above and set CAL ADJ to 0.

3.3.4 Span Calibration

Span calibration utilizes two calibration points, one at zero and a choice of either half capacity or full capacity. All balances will prompt for a particular weight which is shown in the table. If the prompt calls for a half capacity mass, you can use a full capacity mass, the balance will accept it. If the prompt calls for a full capacity mass, you can use a half capacity mass. This versatility allows calibration at other than full capacity. Sample display below illustrates a 210g balance.





Procedure

- Clear the pan.
- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press **Enter** button to select SPAN calibration, CAL TYP SPAN is displayed.
- Press **Enter** button, BUSY is displayed.

NOTE: If a weight is left on the pan, the balance will display CLR PAN (remove the weight from the pan). The balance automatically resumes calibration.

- Display changes to PUT WT 200g. The displayed weight is the value of the mass to be used. See the following table for masses that may be used with the different model balances. Values shown in bold are displayed.

SPAN CALIBRATION MASSES

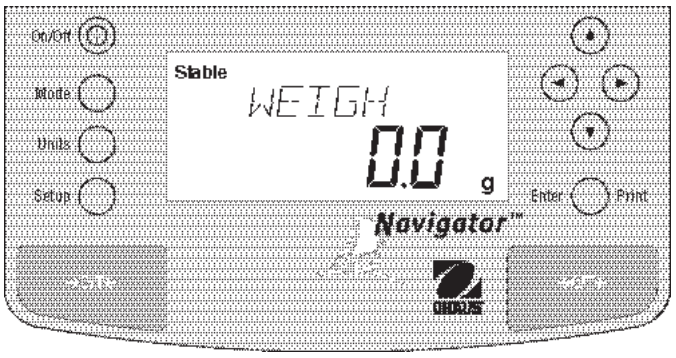
MODEL	32g	210g	410g
MASS	**30g**	100g, **200g**	200g, **400g**

MODEL	810g	2100g	4100g	8100g
MASS	**400g**, 800g	1kg, **2kg**	2kg, **4kg**	**4kg**, 8kg

- Place the calibration mass on pan.

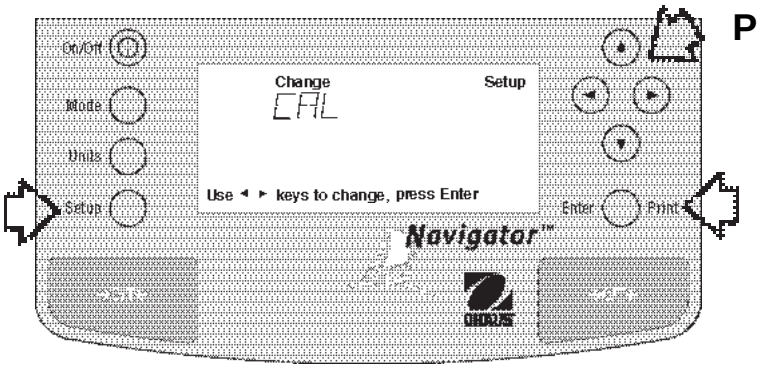
NOTE: The PUT WEIGHT message indicates the calibration mass that is on the pan.

- Press **Enter** button, BUSY is displayed. After a few seconds CAL SET is displayed, the display then returns to WEIGH mode.
- Span calibration is completed.
- Remove calibration mass from the pan.



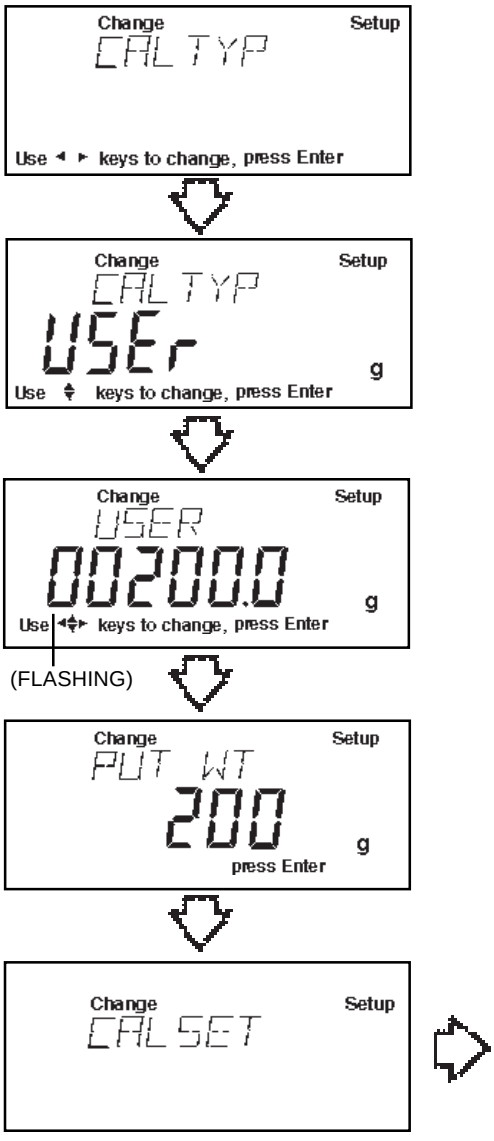
3.3.5 User Calibration

User calibration is used when it is desired to calibrate the balance using a mass of known value. User calibration limits are no less than the 1/2 nominal capacity point and no more than the display over limit. For example, on a 210g balance, it's no less than 100.00g and no more than 210.09g. To use this calibration feature, proceed as follows:



Procedure

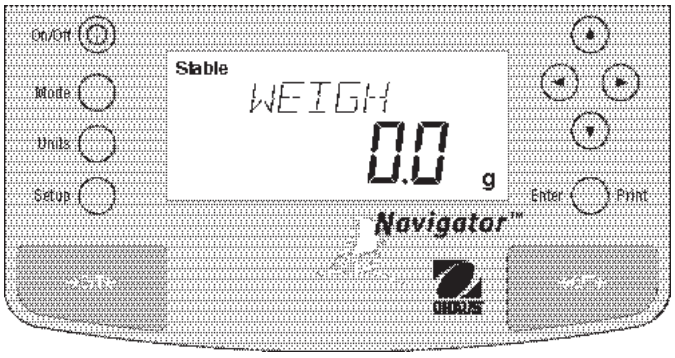
- Clear the pan.
- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press **Enter** button.
- Press ▲ ▼ and scroll to select USER calibration, CAL TYP USEr is displayed.
- Press **Enter** button, the display indicates the last calibration mass value which was entered with the first digit flashing. (Sample illustrates 200g).



- Press ▲ ▼ to change value of digit and ► button to advance to next digit. Enter the desired mass value for your balance. **This number must be at least 50% of the full span value.**
- After entering value, press **Enter** button, BUSY is displayed.

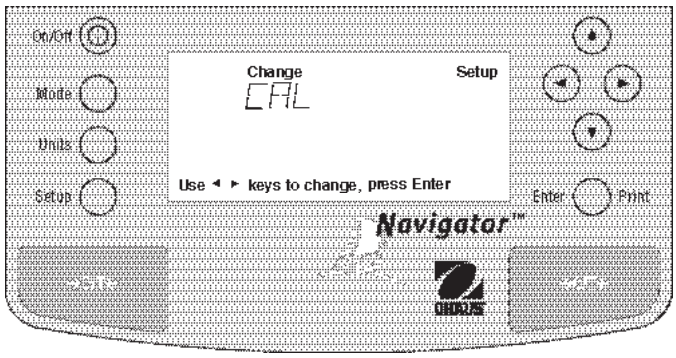
NOTE: If a weight is left on the pan, the balance will display CLR PAN (remove the weight from the pan). The balance automatically resumes calibration.

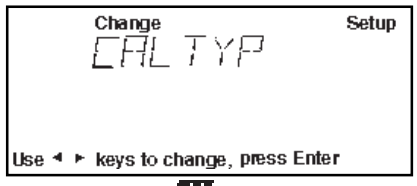
- Display changes to PUT WT 200 g.
- Place specified calibration mass on pan.
- Press **Enter** button, BUSY is displayed. After a few seconds CAL SET is displayed, the display then returns to WEIGH mode.
- User calibration is completed.
- Remove calibration mass from the pan.

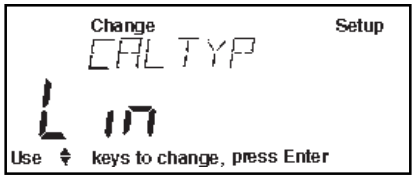


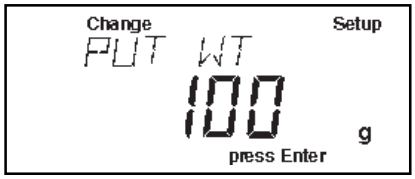
3.3.6 Linearity Calibration

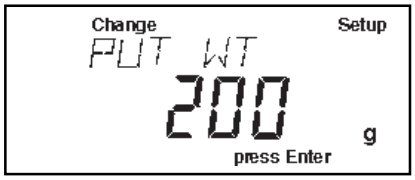
Linearity calibration utilizes three calibration points, one at zero, center span and full span. This method minimizes deviation between actual and displayed weights within the balance's weighing range. Sample display illustrates a 210g balance.









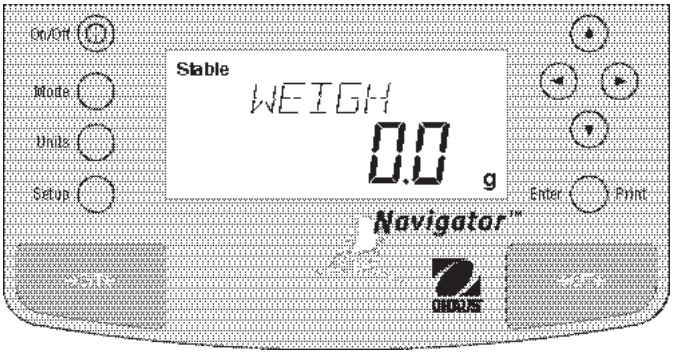


Procedure

- Clear the pan.
- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press **Enter** button.
- Press ▲ ▼ button and scroll to select Linearity calibration, CAL TYP Lin is displayed.
- Press **Enter** button, BUSY is displayed.

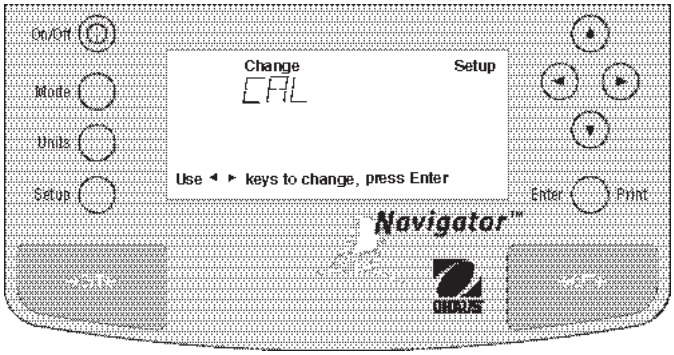
NOTE: If a weight is left on the pan, the balance will display CLR PAN (remove the weight from the pan). The balance automatically resumes calibration.

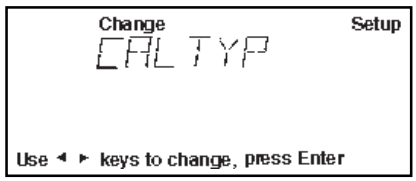
- Display changes to PUT WT 100 g. The displayed weight is half the capacity of the balance.
- Place specified calibration mass on pan.
- Press **Enter** button, BUSY is displayed. After a few seconds display changes to PUT WT 200 g. The displayed weight is the full capacity of the balance.
- Place specified calibration mass on pan.
- Press **Enter** button, BUSY is displayed. After a few seconds CAL SET is displayed, the display then returns to WEIGH mode.
- Linearity calibration is completed.
- Remove calibration mass from the pan.

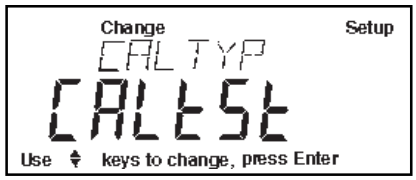


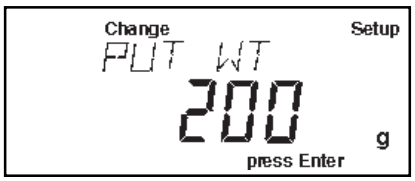
3.3.7 Calibration Test

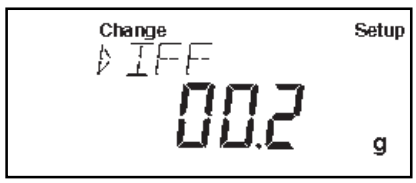
Calibration test feature allows a check of a known calibration mass against the last stored calibration information in the balance. Sample display illustrates a 210g balance.









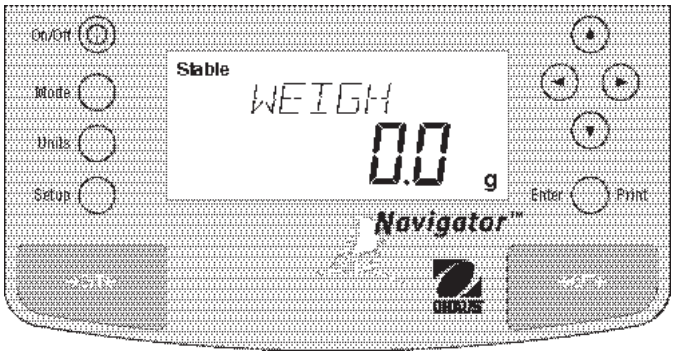


Procedure

- Clear the pan.
- Press the **Setup** button, CAL is displayed.
- Press **Enter** button, CAL TYP is displayed.
- Press **Enter** button.
- Press ▲ ▼ button and scroll to select CALtSt calibration, CAL TYP CALtSt is displayed.
- Press **Enter** button, BUSY is displayed.

NOTE: If a weight is left on the pan, the balance will display CLR PAN (remove the weight from the pan). The balance automatically resumes calibration.

- Display changes to PUT WT 200 g. The displayed weight is the full capacity of the balance.
- Place specified calibration mass on pan.
- Press **Enter** button, BUSY is displayed. After a few seconds, DIFF is displayed. The display now indi cates the actual difference in weight between what value was just placed on the pan and the previous weight value which was stored in the balance. After approximately 8 seconds, the display returns to the WEIGH mode.
- Remove calibration test mass from the pan.



3.3.8 Calibration GLP Printout

If any option in the GLP Set Menu is turned On, GLP automatically prints data after calibration is completed.

Span Calibration Printout

When performing Span calibration with all GLP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - SPAN CAL - - - - - -
12/01/98     1:00:00 PM
Bal Id  1234
Cal:              200.00g
Old:              200.00g
Dif:                0.00g
Wt.Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

Linearity Calibration Printout

When performing a Linearity calibration with all GLP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - LIN CAL - - - - - -
12/01/98     1:00:00 PM
Bal Id  1234
Cal:              200.00g
Old:              199.80g
Dif:                0.20g
Wt.Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

Calibration Test Printout

When performing a Calibration Test with all GLP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - CAL TEST - - - - - -
12/01/98     1:00:00 PM
Bal Id  1234
Cal:              200.00g
Act:              200.20g
Dif:                0.20g
Wt.Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

User Calibration Printout

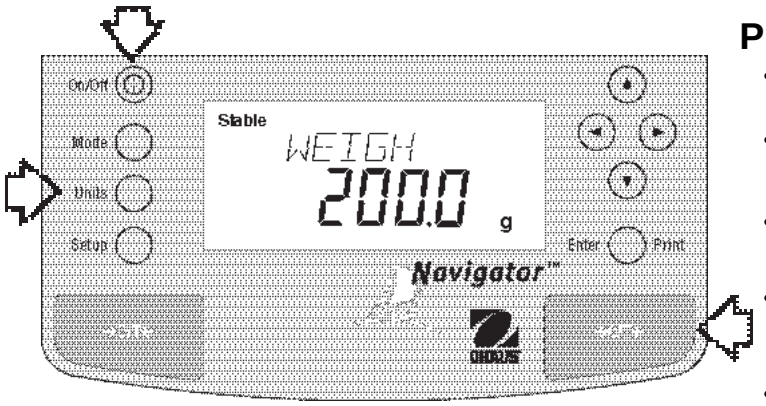
When performing a User Calibration with all GLP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - USER  CAL - - - - - -
12/01/98     1:00:00 PM
Bal Id  1234
Cal:              200.00g
Old:              200.20g
Dif:                0.20g
Wt.Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

3.4 Weighing

Navigator™ balances are shipped with grams only enabled. When the balance is to be used with other units of measure, the desired unit must be enabled. Refer to paragraph 4.8 to enable other measuring units. 32g models are shipped ready to weigh in g, oz t, dwt and ct.

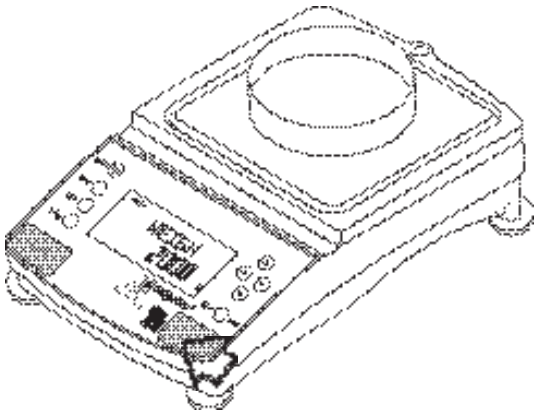


Procedure

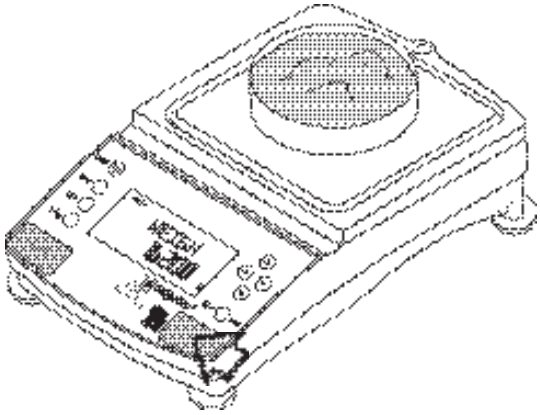
- Press →0/T← to rezero the display.
- Press **Units** button to select measuring unit.
- Press ◄ or ► button for desired measuring unit.
- Press **Enter** button, balance is now ready for weighing.
- Place the object(s) or material to be weighed on the pan. Example illustrates a 200 gram weight on a high capacity model.
- Wait for the stability indicator to appear before reading the weight.

Zero/Tare

When weighing material or objects that must be held in a container, taring stores the container weight in the balance's memory separate from the weight of the material in the container.



(*Example* Container 200g)



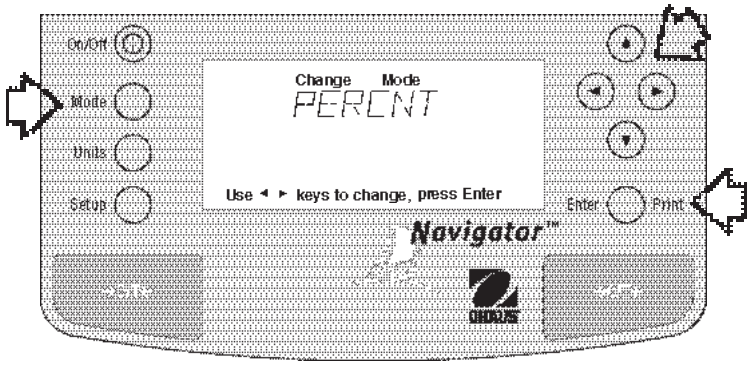
(*Example* Material 1620g)

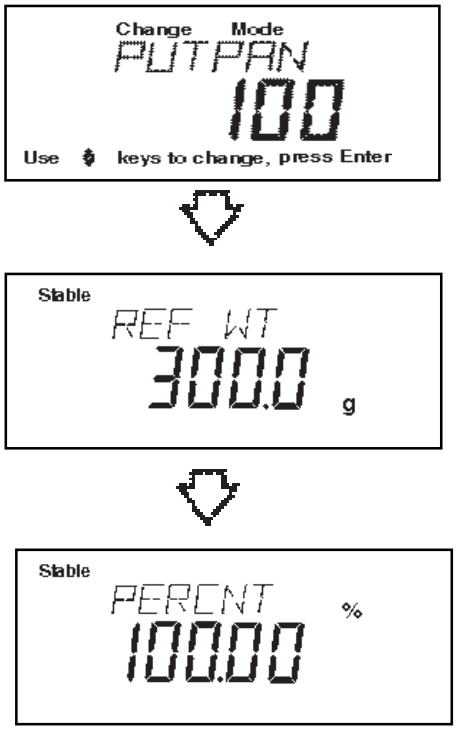
Procedure

- Press →0/T← with no load on the pan to set the balance to zero.
- Place an empty container on the pan. Its weight is displayed.
- Press →0/T← . The display blanks until stable weight readings are received, then indicates zero. The container's weight is stored in memory.
- Add material to the container. As material is added, its net weight is displayed.
- Removing the container and material from the platform will cause the balance to display the container's weight as a negative number. The tared weight will remain in memory untili →0/T← is pressed again or the balance is turned off.
- Pressing →0/T← resets the balance to zero.

3.5 Percent Weighing

Percent Weighing is ***enabled only*** when Percent is turned ON in the Mode menu under Setup. Percent weighing permits you to place a reference load on the balance, then view other loads as a percentage of the reference. The load you place on the pan as a reference may be displayed as any percentage you select from 5% to 100% (in 1% increments). One hundred percent does not necessarily have to represent the reference load. Subsequent loads, displayed as a percentage of the reference are limited only by the capacity of the balance. The default setting is Reference 100%. Refer to paragraph 4.7 to enable percent weighing.



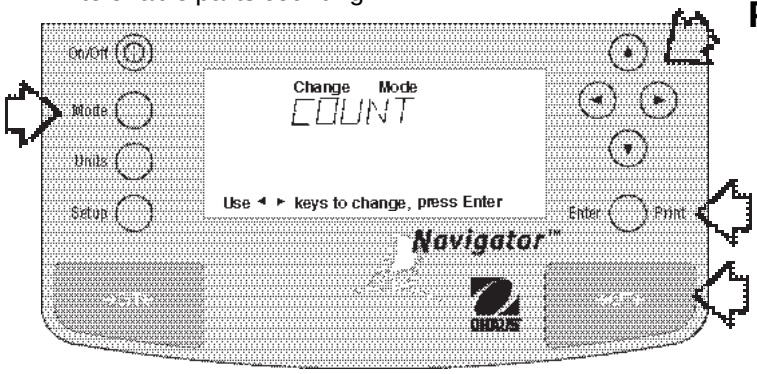


Procedure

- Press the **Mode** button, WEIGH is displayed.
- Press ► button until PERCNT is displayed.
- Press **Enter** button, PUTPAN 100% is displayed. If a container is used, the balance can be tared at this point. The % display momentarily blanks while the balance is taring out.
- Put the reference load on the pan.
- Press ▲ or ▼ button and select reference weight percentage (Percent Range 5 to 100). Hold button down for fast change.
- Press **Enter** button to save setting, BUSY is displayed while the balance calculates the reference weight. The balance shows the 100% equivalent reference weight for two seconds in the selected measuring unit, then displays the percentage which was entered.
- To view the weight of the reference load, press the UNITS button, then press ◄ button until unit of measurement such as GRAMS is displayed, then press the **Ente**r button.
- To return to percent weighing, press the UNITS button and then press ► button until PERCNT is displayed, then press the **Ente**r button.
- Remove the reference weight from the pan and replace it with another load. The second load is displayed as a percentage of the reference. The display illustrates 100% of the reference value.
- To return to weighing mode, press the MODE button and then press ◄ button until WEIGH is displayed, then press the **Ente**r button.

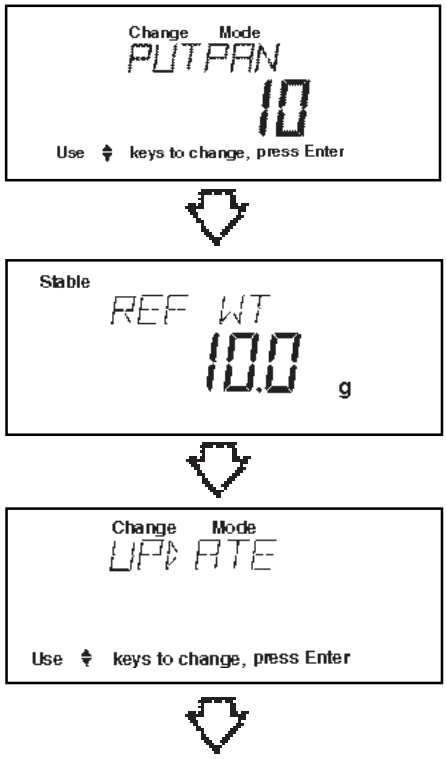
3.6 Parts Counting

Parts Counting is ***enabled only*** when Count is turned ON in the Mode menu under Setup. In the parts counting mode, the balance displays the quantity of parts you place on the pan. Since the balance determines the quantity based on the average weight of a single part, all parts must be reasonably uniform in weight. Refer to paragraph 4.7 to enable parts counting.



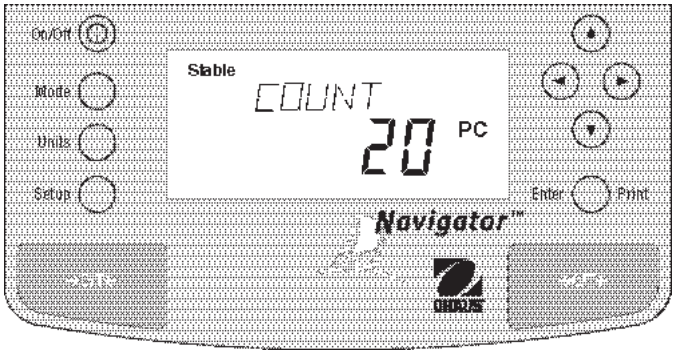
Procedure

- Press the **Mode** button.
- Press ► button until COUNT is displayed.
- Press **Enter** button. PUTPAN 10 is displayed (default setting). Balance will retain last sample size saved.
- Put a container on the pan and press →0/T← to tare.
- Press and hold ▲ or ▼ button and select sample size. Sample size may be 5 to 1000 parts.
- Place sample on the pan.
- Press **Enter** button to continue, display indicates BUSY.



Balance displays the reference weight of an **individual** part for five seconds and then displays the total number of parts on the pan.

- Place parts to be counted on the pan. Balance displays number of parts.
- To view the total weight of the parts, press the UNITS button, then press ◄ to select desired weighing unit, then press the **Ente**r button.
- To return to parts counting, press the UNITS button, then press ► button until COUNT is displayed, then press the Enter button.
- To begin counting with a new sample, repeat procedure.



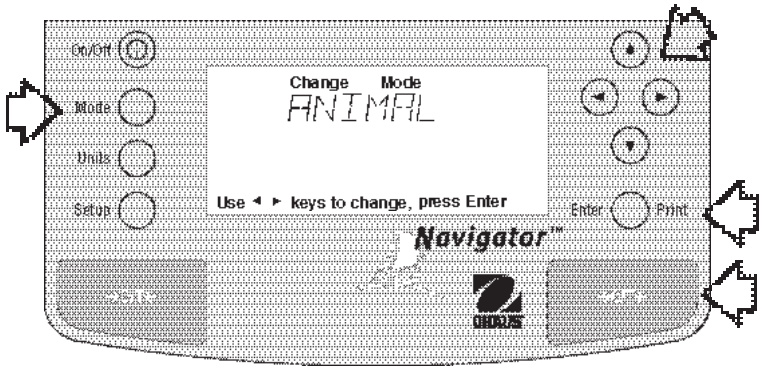
Update

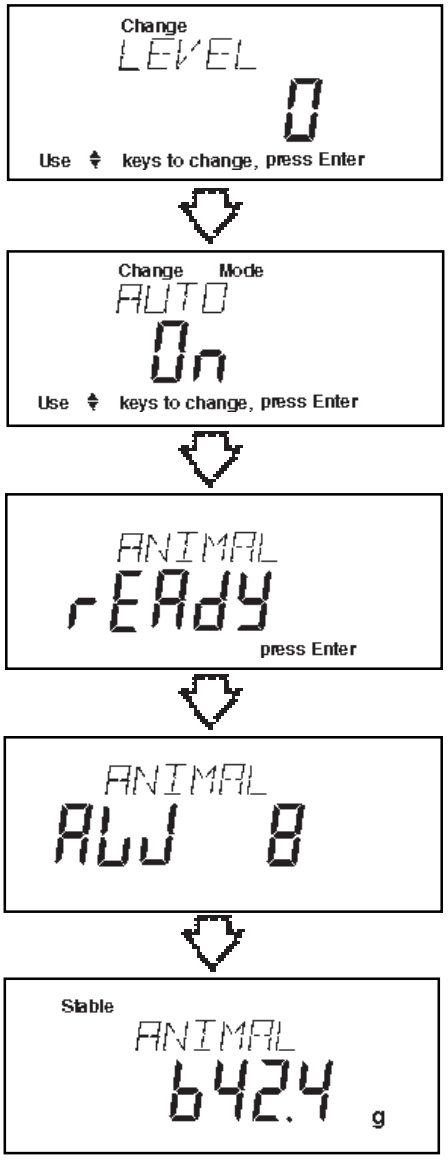
Update is a function which permits placing additional samples which are greater than the value of the original sample but less than three times the value. This action increases the accuracy of the measurement.

- Place sample on the pan which is at least one but not more than three times the original sample size.
- Press **Mode** button, COUNT is displayed.
- Press **Enter** button, UPDATE is displayed.
- Press **Enter** button, BUSY is displayed then the reference weight followed by the new sample size.

3.7 Animal Weighing

Animal Weighing is ***enabled only*** when Animal is turned ON in the Mode menu under Setup. Refer to paragraph 4.7 to enable animal weighing.





Procedure

- Press the **Mode** button.
- Press ► button until ANIMAL is displayed.
- Press **Enter** button to continue, LEVEL is displayed.
- Press ▲ or ▼ button to change sampling level, 0, 1, 2 or 3. 0 level is used for an inactive subject, 3 is used for a very active subject.
- Press **Enter** button to continue, AUTO is displayed.
- Press ▲ or ▼ button to select AUTO ON or OFF.
- Press **Enter** button to continue.

When the AUTO function is set ON, different subjects can be weighed one after another without pressing any buttons. When the balance displays READY, simply place the subject on the pan.

Starting Animal Cycle

- Place animal container (if used) on pan.
- Press →O/T← to tare the container.
- Place subject on pan.
- The animal cycle will automatically start if AUTO was set to ON.
- Press **Enter** button to start animal cycle if AUTO was set to OFF.

During Animal Cycle

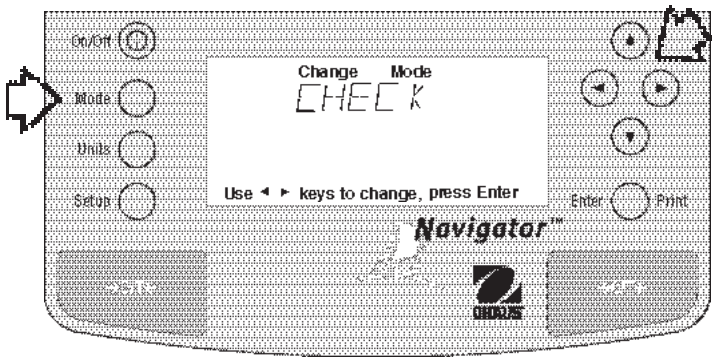
- Display shows countdown ending with AW 0, then displays the subjects weight.

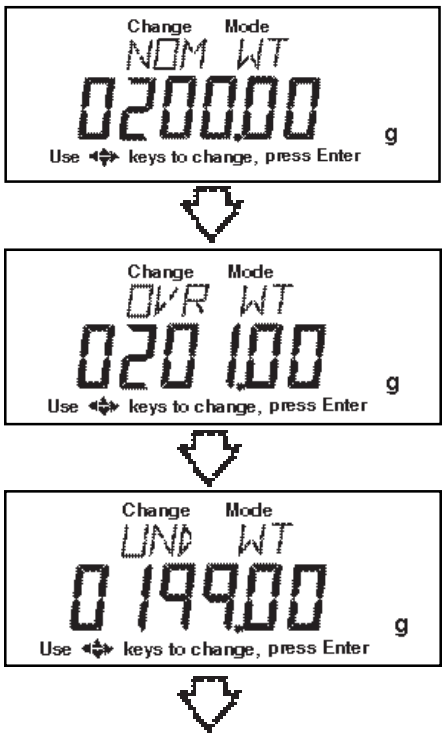
Completed Animal Cycle

- Balance displays weight until subject is removed from the pan.

3.8 Checkweighing

Checkweighing is ***enabled only*** when Check is turned ON in the Mode menu under Setup. Checkweighing mode permits you to set a target nominal weight, and over and under weight limits. This type of weighing is used where individual items must be checked against preset parameters. Refer to paragraph 4.7 to enable checkweighing.

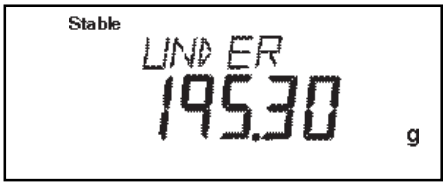




NOTE: Samples shown below are for a 200g nominal setting. The tolerances were set for 1g over and under.

Procedure

- Press the **Mode** button.
- Press ► button until CHECK is displayed.
- Press **Enter** button to continue, NOM WT is displayed. The numerical display indicates 0000.00 with the first digit flashing. The sample display indicates 0200.00g
- Press ▲ ▼ to change the digit and ◄ ► to go to the next digit. Enter the desired nominal value.
- Press **Enter** button to continue. OVR WT is displayed. The numerical display indicates 0000.00 with the first digit flashing. Enter the over weight value by pressing ▲ ▼ to change the digit and ◄ ► to go the next digit. The sample display indicates 0201.00g.
- Press **Enter** button to continue. UND WT is displayed. The numerical display indicates 0000.00 with the first digit flashing. Enter the under weight value by pressing ▲ ▼ to change the digit and ◄ ► to go to the next digit. The sample display indicates 0199.00g.
- Press **Enter** button to continue.
- Place item to be checked on the balance pan. ACCEPT is displayed when the item is within limits. OVER and/or UNDER is displayed if the item is out of the tolerance set in the limits.



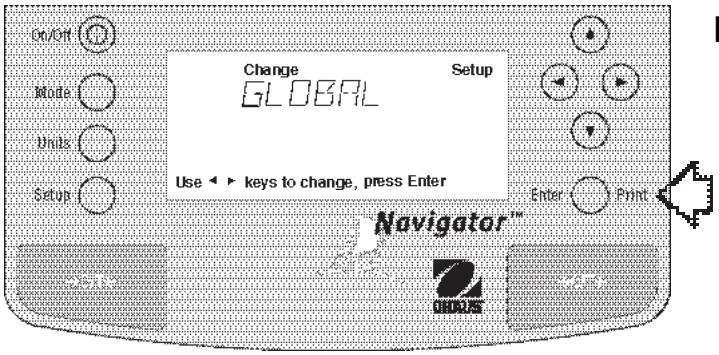
UNDER is displayed for weights less than or equal to the UND WT limit

Typical Nominal Weight Display

OVER is displayed for weights greater than or equal to the OVR WT limit

3.9 Printing Data

Printing data to an external computer or printer requires that the communications parameters in the Setup menu, print options and communication parameters be set first. Refer to page 23 Print menu settings and page 25 for RS232 communication settings.



Procedure

- Press the **Print** button. Printing to an external printer or computer will occur each time the Print button is pressed unless the autoprint feature is turned on in which case, printing can occur in a continuous fashion, at specified intervals or each time a stable reading is achieved.

Sample printout is shown below with time turned on.

SAMPLE PRINTOUT

12/01/98 12:01:37 AM
429.5 g

For a review of of printing samples, refer to Section 4 Setting Up Your Balance. What is printed is controlled by the GLP Set Menu and the selection of GLP Continous or GLP Tare in the Print Menu.

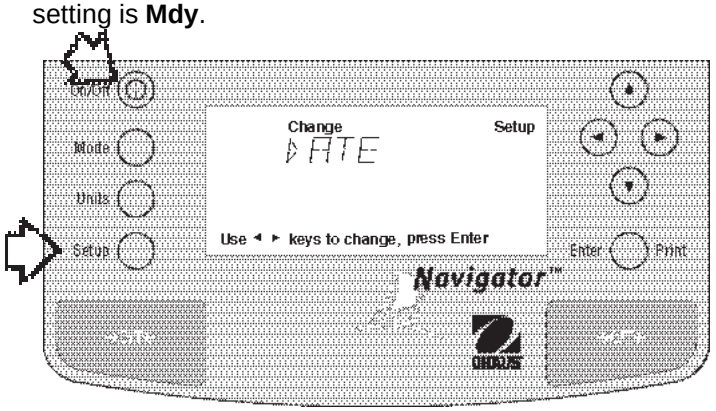
4. SETTING UP YOUR BALANCE

4.1 Setting Date and Time

Your Navigator™ balance provides date and time data which can be viewed on a computer or printed out on an external printer. When you put your new instrument into operation for the first time, you should enter the current date and the time. These settings are retained as long as the balance remains connected to an AC power source using the AC Adapter. Date and time are not retained with battery operation.

Date

Date is a feature which enables the balance to be set to a U.S. date standard or European date standard. U.S. standard has the month, day, followed by the year, each separated by (/) in the printout. The European date standard has the day first, followed by the month and then the year; each separated by a period. The default setting is **Mdy**.

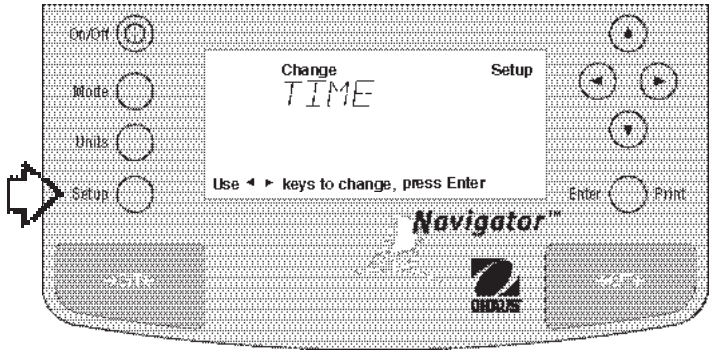


Procedure

- Press the **Setup** button, CAL is displayed.
- Press ► button and select Date from the menu.
- Press **Enter** button, TYPE is displayed.
- Press **Enter** button, SET M d y, d M y, y M d, M y d, y d M, or d y M is displayed.
- Press ▲ or ▼ button and select type of date.
- Press **Enter** button, SAVED is displayed, then SET is displayed.
- Press **Enter** button, date is displayed.
- Using arrow buttons, enter the correct date.
- When the correct date is entered, press **Enter** button, SAVED displays momentarily and EXIT appears.
- Press **Enter** button, balance returns to a weighing mode.

Time

Time is a feature which enables the balance to be set to the current time in either 12 hour or 24 hour periods. The default setting is **12** hour.



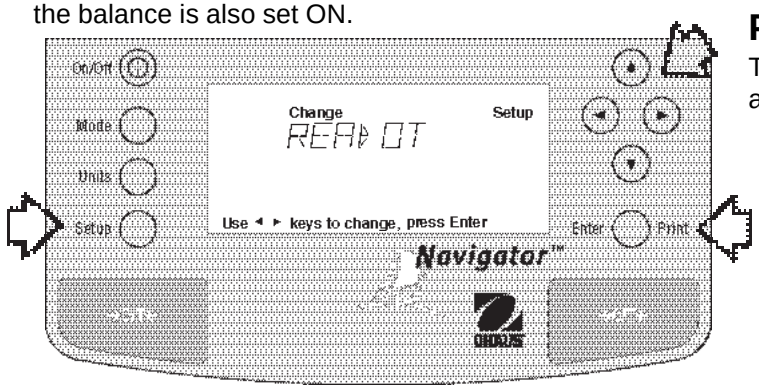
Procedure

- Press the **Setup** button, CAL is displayed.
- Press ► button and select Time from the menu.
- Press **Enter** button, TYPE is displayed.
- Press **Enter** button, TYPE 12 hr is displayed.
- Press ▲ or ▼ button and select 12 hr or 24 hr.
- Press **Enter** button, SAVED is displayed momentarily then SET is displayed.
- Press **Enter** button,SET with time is displayed.
- Using arrow buttons, enter the correct time.
- When the correct time is entered, press **Enter** button, SAVED displays momentarily and ADJUST appears.
- Press **Enter** button, 0 appears.

Adjustments up to ±60 seconds per day can be made to the balance internal clock. Using arrow buttons, enter time correction and press **Enter** button. SAVED displays momentarily and EXIT appears. Press **Enter** button, balance returns to a weighing mode.

4.2 Readout

The Readout menu is used to adapt the balance to environmental conditions. It contains four menus: **Stable**, **Auto 0, Filter**, **Lock** and Exit. Lock, when set ON, locks the Readout settings entered, providing the Lock switch underneath the balance is also set ON.



Procedure

To select any of the items in the Readout menu, proceed as follows:

- Press the **Setup** button, CAL is displayed.
- Press (►) button until READOT is displayed.
- Press **Enter** button to continue, STABLE is displayed.
- Press (◄) or (►) button until either STABLE, AUTO 0, FILTER, LOCK or EXIT is displayed.
- Press **Enter** button to continue.
- Press (▲) or (▼) button and select the desired menu setting. Review settings available below.
- Press **Enter** button, SAVED is displayed.
- Press (◄) or (►) button to continue to LOCK and EXIT.
- Press **Enter** button to continue.

Stability

The stability range can be set to a preset tolerance limit. When the balance reading is stable within preset limits, the stability indicator remains ON. When a displayed weight changes beyond the allowable range, the stability indicator turns OFF, indicating an unstable condition. Factory default setting is shown in bold type.

.5 d	Smallest range: stability indicator is ON only when displayed weight is stable within .5 divisions.
1 d	**Reduced range.**
2 d	Normal range.
5 d	Largest range, stability indicator is ON when displayed weight changes up to 5 divisions.

When the RS232 interface is configured to print stable data only, the stability range also governs data output. Displayed data will only be output if it is within the selected stability range.

Auto-Zero

Auto-Zero minimizes the effects of temperature changes and shift on the zero reading. The balance maintains the zero display until the threshold is exceeded. Factory default setting is shown in bold type.

OFF	Turns Auto-Zero OFF.
.5 d	Sets threshold to .5 divisions.
1 d	**Sets threshold to 1 division.**
3 d	Sets threshold to 3 divisions.

Filter

Filter compensates for vibration or excessive air currents. Default settings are shown bold.

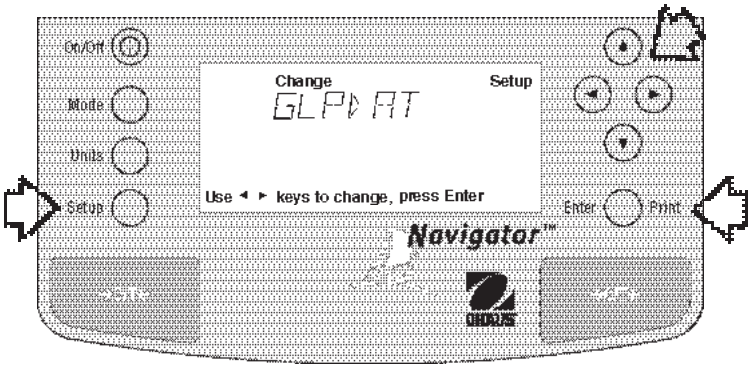
-0-	minimum filtering, fastest stabilization time
-1-	reduced filtering, fast stabilization time
-2-	**normal filtering, normal stabilization time.**
-3-	maximum filtering, slowest stabilization time.

Lock

Lock ON/OFF can only be changed when the hardware Lock Switch is set OFF/disabled. A menu is locked when the menu lock is set ON and the Lock switch is ON. Lock, when selected and turned on, locks all of the entries made under the Readout menu. In the locked condition, items may be looked at but not changed in the menu. When set OFF, entries may be changed. **OFF** is the default setting. Refer to paragraph 4.12 for Menu Lock-Out Protection.

4.3 Good Laboratory Practices (GLP) Data

The GLP Data menu enables the storage of a user identification number (6 digits) and/or a project number (6 digits). When entered into the balance, the identification number and project number are available when printing, provided they are turned on in the GLP Set menu. A lock setting is also available which locks in the user identification and project number.



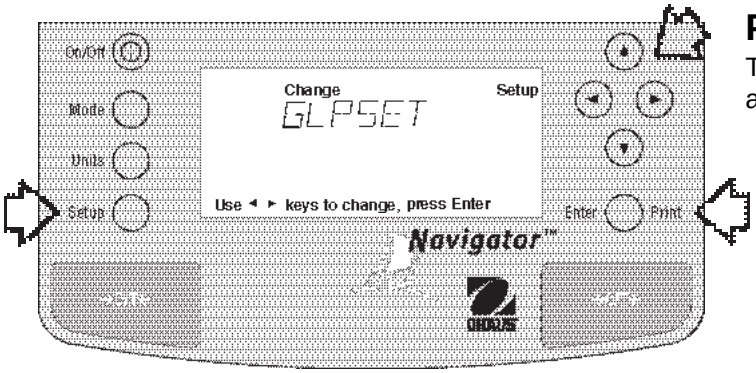
Procedure

To enter data in the GLP Data menu, proceed as follows:

- Press the **Setup** button, CAL is displayed.
- Press (►) button until GLPDAT is displayed.
- Press **Enter** button to continue, USERNO is displayed.
- Press **Enter** button to continue.
- Press (▲) (▼) buttons to change digit values and (◄) (►) buttons to advance to next digit and enter a 6 digit number for the user number.
- Press **Enter** button to save setting, PROJNO is displayed.
- Press **Enter** button to continue.
- Press (▲) (▼) to change digit values and (◄) (►) to advance to next digit as directed by the display and enter a 6 digit number for the project number.
- Press **Enter** button to save setting, LOCK is displayed.
- Press **Enter** button, press (▲) (▼) to select ON or OFF.
- Press **Enter** button to save setting, SAVED is displayed then EXIT.
- Press **Enter** button, balance returns to weigh mode.

4.4 Good Laboratory Practices (GLP) Set

Good Laboratory Practices (GLP) Set menu allows the selection of and will permit printing of Time, Balance Identification, User Number, Project Number, Difference and Name data. The default setting is OFF. When an external printer is used with the balance calibrated, and all items are set ON, the printer will print out calibration data for audit trail purposes and will indicate date, and time. (It should be noted that the User number and Project number must be entered in the GLP Data menu before printed data is available).



NOTE: Balance ID (BAL ID) represents the actual serial number of the balance and cannot be entered or changed. Setting BAL ID ON allows printouts to display the serial number of the balance during GLP data.

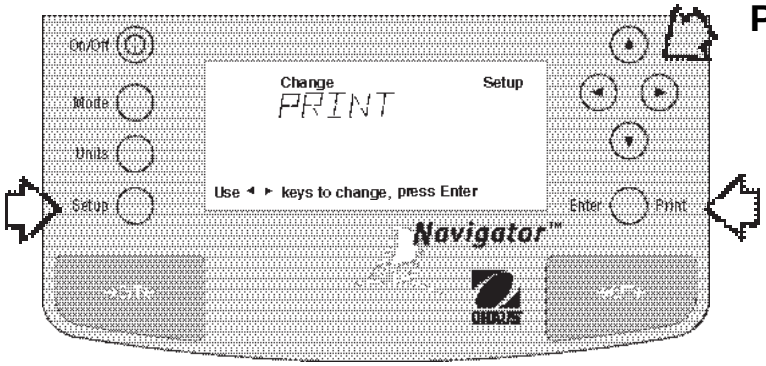
Procedure

To select any of the items in the GLP Set menu, proceed as follows:

- Press the **Setup** button, CAL is displayed.
- Press (►) button until GLPSET is displayed.
- Press **Enter** button to continue.
- Press (◄) or (►) button until either TIME, BAL ID (see note), USER NO, PROJ NO, DIFF, NAME, LOCK or EXIT is displayed.
- Press **Enter** button to continue.
- Press (▲) or (▼) button and select either ON or OFF for each entry.
- Press **Enter** button to save setting.
- Press (◄) or (►) button to continue or EXIT.
- Press **Enter** button, balance returns to weigh mode.

4.5 Print

The Print menu provides a number of options which can be turned ON or OFF. It contains eight menus: Auto Print, feature which includes selection of Off, Continuous, Interval and On Stability, Interval, specifies time interval for automatic output of displayed data, Stable data-only feature, Numerical only or full display data for output, GLP Continous, GLP Tare, Reference when selected prints reference weight value and Lock when set on enables you to lock the settings. Refer to decriptions below and review settings before proceeding.



Procedure

- Press the **Setup** button, CAL is displayed.
- Press ► button until PRINT is displayed.
- Press **Enter** button to continue.
- Press ◄ or ► button until either AUTOPR, INTER, STABLE, NUMERI, GLPCON, GLPTAR, REF, LOCK or EXIT is displayed.
- Press **Enter** button to continue.
- Press ▲ or ▼ button and select either menu settings of ON or OFF or settings shown below.
- Press **Enter** button to save setting.
- Press ◄ or ► button to select next item or EXIT.
- Press **Enter** button to continue.

Auto Print

When enabled, the Auto Print allows the balance to automatically output display data in one of three ways: continuously, at user specified time intervals, or upon stability. Default setting is shown in bold.

OFF	turns off auto print
Cont	outputs data continuously
Inter	provides a user specified output interval
On Stb	provides data output everytime a stable reading is achieved

Interval

Can be set to provide a specified output interval between 1 and 3600 seconds.

Print Stable Data Only

When set On, permits only stable display data to be output. **OFF** is the default setting.

Print Numeric Data Only

When Numeric Data Only function is turned ON, allows the balance to output numeric data only for RS232 output. **OFF** is the default setting.

4.5 Print (Cont.)

GLP Continuously

When the GLP Continuously function is set ON, it allows the balance to output the GLP selections each time a weight value is output. **OFF** is the default setting. The following example is with GLP Continuously On.

Sample Printout

```
12/01/98      12:01:37 AM
     129.50 g

12/01/98      12:01:52 AM
Bal Id
     129.80 g

12/01/98      12:02:17 AM
Bal Id
USER NO 1000001
     129.80 g

12/01/98      12:02:43 AM
Bal Id
USER NO 1000001
PROJ NO  2000002
     129.50 g

12/01/98      12:02:43 AM
Bal Id
USER NO 1000001
PROJ NO  2000002
Name . . . . . .. . . . .
     129.50 g
```

GLP Set Menu
Options Turned On

Time = On

Time = On
Balance ID = On

Time = On
Bal ID = On
User No. = On

Time = On
Bal ID = On
User No = On
Proj No = On

Time = On
Bal ID = On
User No = On
Proj No =
Name = On

GLP Once After Tare

When the GLP Tare function is set ON, it allows the balance to output the GLP selections and weight measurement once after tare. **OFF** is the default setting. The following example is with GLP Once After Tare.

```
12/01/98      12:01:37 AM
     129.50 g
     129.60 g
     129.70 g
     129.70 g
     129.70 g
```

GLP Set Menu
Options Turned On

Time = On

Reference

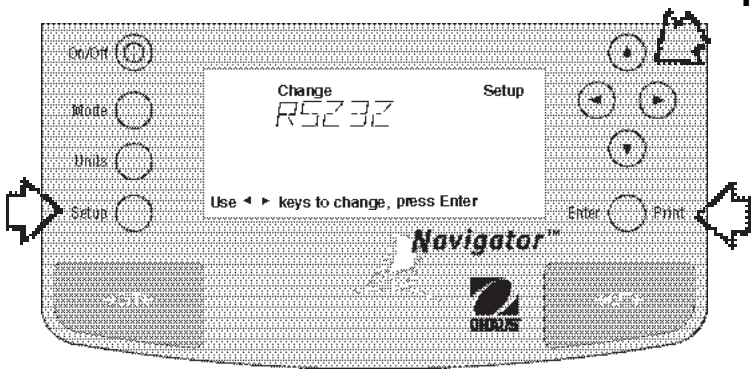
When the Reference function is set ON, it prints the value of weight used as a reference in either Percent or Parts Counting modes. **OFF** is the default setting.

Lock

Lock ON/OFF can only be changed when the hardware Lock Switch is set OFF/unlocked. A menu is locked when the menu lock is set ON and the Lock Switch is ON. Lock, when selected and turned on, locks all of the entries made under the Print menu. In the locked condition, items may be looked at but not changed in the menu. When set OFF, entries may be changed. **OFF** is the default setting. Refer to paragraph 4.12 for Menu Lock-Out Protection.

4.6 RS232

The RS232 menu provides communication parameters which can be set to accommodate external printers or computers. It contains six menus: **Power, Baud** rate, **Parity, Data, Stop** bits and **Lock** ON or OFF. Lock, when set ON, locks the communication settings entered, providing the Lock Switch underneath the balance is also set ON.



Procedure

- Press the **Setup** button, CAL is displayed.
- Press (►) button until RS232 is displayed.
- Press **Enter** button, POWER is displayed.
- Press **Enter** button.
- Using (▲) or (▼) button, select ON or OFF. If you are using the balance on battery power, and want communications to an external device, you must select ON. These settings do not matter when using the balance on AC Adapter power as the communications interface is always ON.
- Press **Enter** button,BAUD is displayed.
- Press **Enter** button.
- Using (▲) or (▼) button and select the desired menu setting, then press **Enter** button. The display advances to PARITY.
- Repeat the above three steps and enter desired settings for PARITY, DATA, STOP and LOCK. LOCK has a choice of ON or OFF. When set ON, the communication parameters are locked and cannot be changed. The display indicates LOCKED when viewing the parameters.
- When EXIT appears on display, press **Enter** button to save settings. Balance returns to weigh mode.

Power

This menu is used when balance is battery operated. The default setting is **Off.** To use the RS232 with battery operation, Power must be set ON. The RS232 is always operational when the balance is operated with an AC Adapter.

Baud Rate

This menu is used to select the desired baud rate. There are five available baud rates to choose from: 300, 1200, 2400, 4800 and 9600, the default setting is **2400**.

Parity

This menu is used to select parity settings. Parity can be set to either Odd, Even or None, the default setting is **None**.

Data Bits

This menu is used to select data bits. Data bits can be set to 7 or 8, the default setting is **7**.

Stop Bits

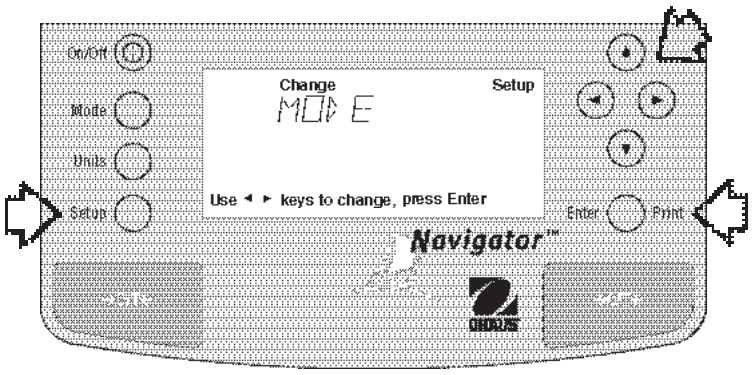
This menu is used to select the number of stop bits. Stop bits can be set to 1 or 2, the default setting is **2**.

Lock

Lock ON/OFF settings can only be changed when the hardware Lock Switch is set OFF/disabled. A menu is locked when the menu lock is set ON and the Lock Switch is ON. Lock when selected and turned on, locks all of the entries made under the RS232 menu. In the locked condition, items may be looked at but not changed in the menu. When set OFF, entries may be changed. **OFF** is the default setting. Refer to paragraph 4.12 for Menu Lock-Out Protection.

4.7 Mode

The Mode menu permits the selection of five modes which can be turned ON or OFF. These modes are: **Weigh**, **Percent**, **Count**, **Animal Weighing, Checkweighing.** Weigh is turned ON and all others have a default setting of **OFF**. When any of the modes are turned ON, they can be selected for operation from the Mode button.



Procedure

- Press the **Setup** button, CAL is displayed.
- Press (►) button until MODE is displayed.
- Press **Enter** button, WEIGH is displayed.
- Press **Enter** button.
- Press (▲) or (▼) button and select either ON or OFF.
- Press **Enter** button to continue. Display advances to PERCNT.
- Repeat above steps for PERCNT, COUNT, ANIMAL, CHECK and LOCK.
- When EXIT appears on the display, press **Enter** button to save setting. Balance returns to weighing mode.

Weigh

The Weigh menu is always set to **ON** as a default.

Percent

Percent weighing permits you to place a reference load on the balance, then view other loads as a percentage of the reference. Selection is made using the **Mode** button. The default setting is **OFF**.

Count

Count is used for counting quantities of parts. Selection is made using the **Mode** button. The default setting is **OFF**.

Animal weighing

Animal weighing provides special settings to compensate for animal movements. Selection is made using the **Mode** button. The default setting is **OFF**.

Checkweighing

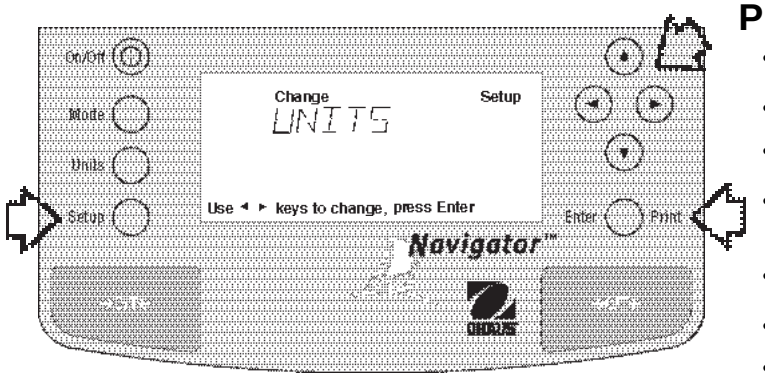
Checkweighing permits setting nominal weight, over weight and under weight values into the balance where individual items must be checked against preset parameters. The default setting is **OFF**.

Lock

Lock ON/OFF can only be changed when the hardware Lock Switch is set OFF/disabled. A menu is locked when the menu lock is set ON and the Lock Switch is ON. Lock when selected and turned on, locks all of the entries made under the Mode menu. In the locked condition, items may be looked at but not changed in the menu. When set OFF, entries may be changed. The default setting is **OFF**. Refer to paragraph 4.12 for Menu Lock-Out Protection.

4.8 Units

The Units menu permits the selection of the measuring units which can be turned ON or OFF and locked.



Procedure

- Press the **Setup** button, CAL is displayed.
- Press ► button until UNITS is displayed.
- Press **Enter** button to continue.
- Press ◄ or ► button until desired measuring unit is displayed.
- Press **Enter** button to continue.
- Press ▲ or ▼ button and select either ON or OFF.
- Press **Enter** button to save setting.
- Press ◄ or ► button to select next item.
- Repeat above steps to turn selected measuring units ON or OFF, then, continue to LOCK and EXIT.
- Press **Enter** button to save settings.

Units

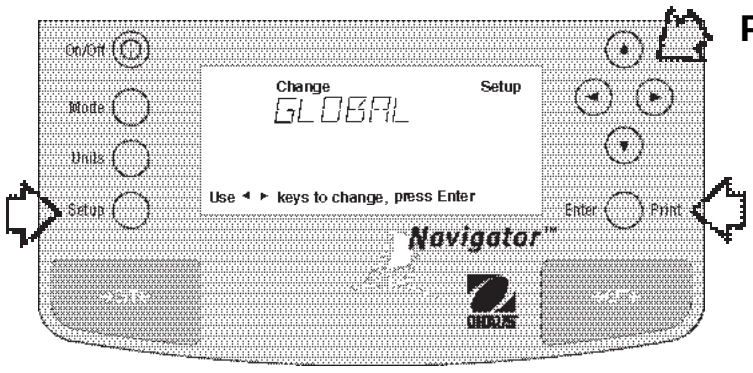
Measuring units settings are made using the Units menu. This menu permits the measuring units to be turned ON or OFF. The default setting is **OFF**.

Lock

Lock, when selected and turned ON, locks all of the entries made under the Units menu. The default setting is **OFF**. Refer to paragraph 4.12 for Menu Lock-Out Protection.

4.9 Global

This menu contains two functions which can be activated by selecting YES. These functions are: **List**, and **Reset.** The default settings are **NO**. Global List is a convienent method of examining which parameters are set up in the balance. The parameters do not show up on the display but print out when selected. When Version is selected, the software revision of the balance is displayed. Global Reset when set ON will reset ***all menus*** to factory default settings only if the Lock Switch is set OFF. This is a convienent method of restoring factory settings. To protect menu settings, each individual menu must have Lock ON, the Global menu Lock must be ON and the Lock Out switch must be set ON.



Procedure

- Press the **Setup** button.
- Press ► button until GLOBAL is displayed.
- Press **Enter** button to continue, LIST is displayed.
- Press ◄ or ► button until either LIST, RESET, VER, LOCK or EXIT is displayed.
- Press **Enter** button to continue.
- Press ▲ or ▼ button and select either YES or NO for LIST and RESET. When either LOCK or EXIT is selected, ON or OFF settings are available..
- Press **Enter** button to save setting.
- Press ◄ or ► button to select next item or **EXIT**.
- Press **Enter** button to save.

4.9 Global (Cont.)

List

This menu can be used to output a listing of current menu settings via the RS232 interface. When YES is selected, all menu settings will be output either to an external printer or computer. To use this feature, your balance must be connected to a computer or printer. The default setting is **NO**.

SAMPLE PRINTOUTS

```
NAVIGATOR xxxxxx-xxx
Sr #x.xx  OS#x.xx  G#x.xx

Time= 12hr       3:19:51  PM
Date=  m/d/y      12/01/98
Function = Weigh
ReadOut  Menu
     Stb= 2 d
     AZT= .5 d
     Filter= 1
GLP  Menu
     Time/Date= On
     Bal  Id= On
     User  No.= On
     Proj  No.= On
     DIFF=  On
     Name=  On
Print  Menu
     Auto Print=  Off
     Interval=  7
     Stable Print=  On
     NU=  On
     GLP Cont =  Off
     GLP on Tare =  Off
     Print Ref=  On
RS232 = 2400: N: 7: 2
```

The partial sample shown, indicates the status in the menus.

```
  LFT  is Off
  Mode Menu
    WEIGH= On
    PERCENT= Off
    COUNT=  Off
    ANIMAL=  Off
  Lock Switch is Off
  Menu Locks
    RS232=  Off
    READOUT=  Off
    GLPSET=  Off
    MODE=  Off
    UNITS=  Off
    PRINT= Off
    GLP Data = Off
    CAL=  Off
    GLOBAL= Off
    CUSTOM= Off
  Enabled Units:
    g
    custm
  C. Units:
    1.000000  E0 x 1
```

Global Reset

RESETTING ALL MENUS
Global Reset, when set to **YES** (default is NO) will reset all balance menus to factory default settings, this includes resetting all menu locks to OFF. Global Reset is functional only when the Lock Switch located under the balance is set to **OFF**.

DISABLING GLOBAL RESET
The Global Reset function is disabled when Global Reset is set to **NO**, the Global Reset Lock setting is **ON** and the Lock Switch under the balance is set **ON**. In this condition, Reset cannot be selected.

Version

Displays software revision number for servicing purposes. This number is installed with the balance at the time of manufacture.

Lock

Lock, when selected and set to ON, locks all of the entries made under the Global menu and the Lock Swich under the balance is set ON. The default setting is **OFF**. Refer to paragraph 4.12 for Menu Lock-Out Protection.

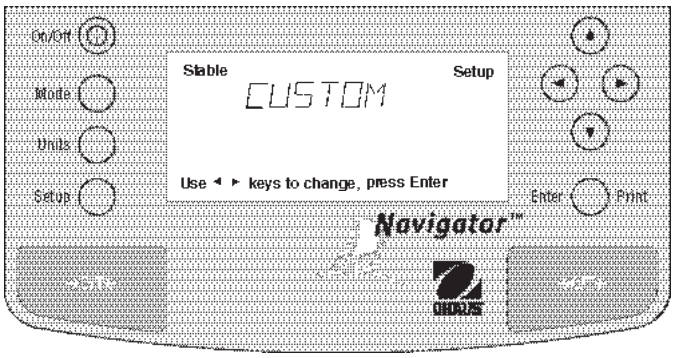
4.10 Custom Unit

Custom Unit is enabled when Custom Unit Setup under Units Menu is turned ON. This feature can be used to create your own custom weighing unit. It permits entering a conversion factor which the balance will use to convert grams to the desired unit of measure.

Conversion Factor x *Weight in grams* = *Weight in custom unit*

Conversion factors are expressed in scientific notation and entered into the balance in three parts:

- a factor between 0.1 and 1.99999
- a power of 10 called the exponent
- a least significant digit (LSD)

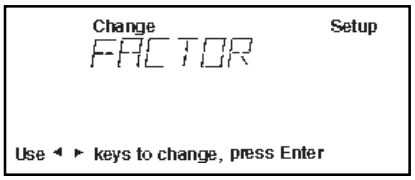


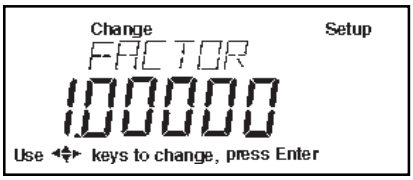
SCIENTIFIC NOTATION

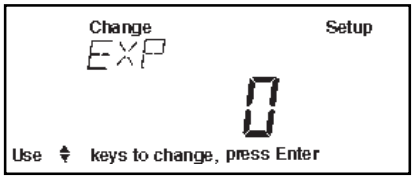
Conv. Factor		Number Between 0.1 and 1.99999		Power of 10		Factor Exp.
123.4	=	.1234	x	1000	=	.1234 x 10^{3}
12.34	=	.1234	x	100	=	.1234 x 10^{2}
1.234	=	.1234	x	10	=	.1234 x 10^{1}
.1234	=	.1234	x	1	=	.1234 x 10^{0}
.01234	=	.1234	x	.1	=	.1234 x 10^{-1}
.001234	=	.1234	x	.01	=	.1234 x 10^{-2}
.000123	=	.123	x	.001	=	.123 x 10^{-3}

EXPONENTS

E-3	Moves decimal point 3 places to the left.
E-2	Moves decimal point 2 places to the left.
E-1	Moves decimal point 1 place to the left.
E0	**Leaves decimal point in normal position.**
E1	Moves decimal point 1 place to the right.
E2	Moves decimal point 2 places to the right.
E3	Moves decimal point 3 places to the right.



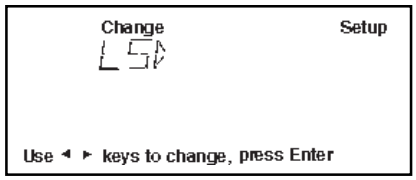


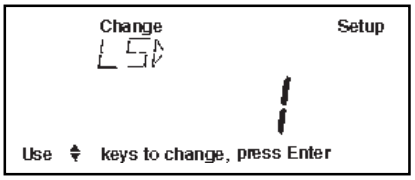


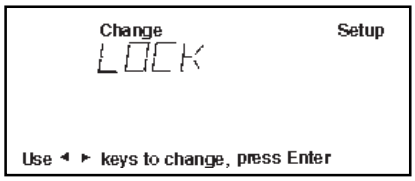
Procedure

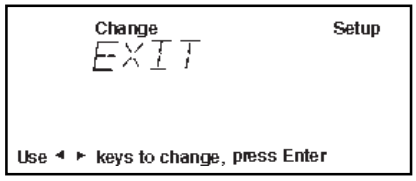
- Press the **Setup** button.
- Press (►) button until CUSTOM is displayed.
- Press **Enter** button to save setting, FACTOR is displayed.
- Press **Enter** button, The factor of the current conversion factor is displayed. This is a number between 0.1 and 1.99999 with the first digit flashing. For conversion factors outside of this range, the exponent will be used to move the decimal point.
- Press (▲) (▼) buttons to change values, press (►) buttons to advance to next digit and enter a 6 digit number for the conversion factor.
- Press **Enter** button, EXP (exponent) is displayed.
- Press **Enter** button, 0 (exponent) is displayed.
- Press (▲) or (▼) button and select exponent value either -3, -2, -1, 0, 1, 2, or 3.

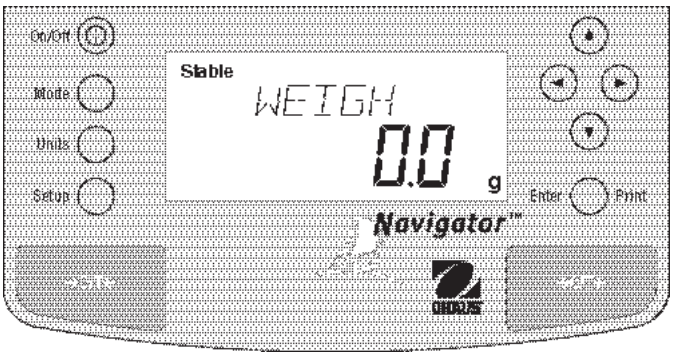
4.10 Custom Unit (Cont.)











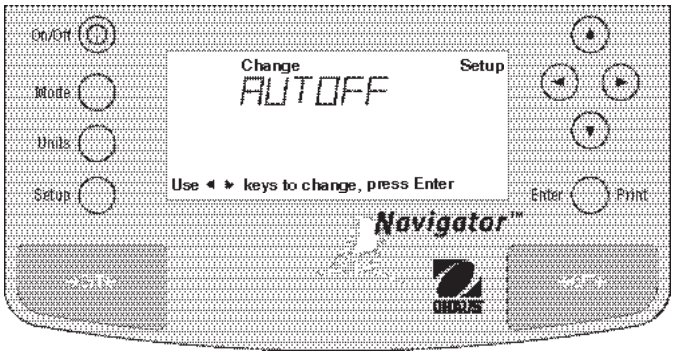
Procedure (Cont.)

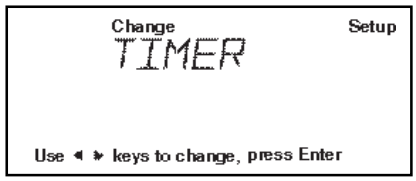
- Press **Enter** button to continue, LSD is displayed. There are 6 LSD (least significant digit) settings you can choose from (see table below).
- Press **Enter** button, LSD 1 is displayed.
- Press ▲ or ▼ button and select LSD value either .5, 1, 2, 5, 10 or 100.
- Press **Enter** button, SAVED is momentarily displayed followed by LOCK.
- Press **Enter** button.
- Press ▲ or ▼ button and select ON or OFF.
- Press **Enter** button, EXIT is displayed.
- Press **Enter** button to return to weighing mode.

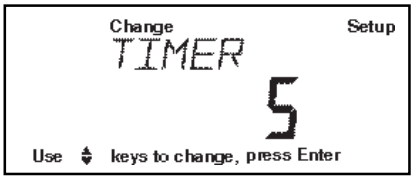
LSD's	
LSD .5	Adds one decimal place display counts by 5's.
LSD 1	**Display counts by 1's.**
LSD 2	Display counts by 2's.
LSD 5	Display counts by 5's.
LSD 10	Display counts by 10's.
LSD 100	Display counts by

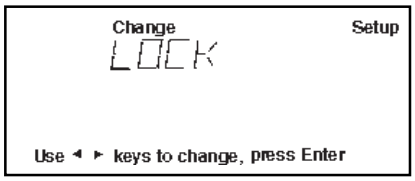
4.11 Auto Shut-Off

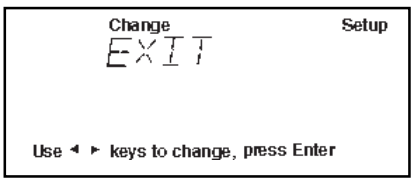
An energy saver is incorporated in the balance to prolong battery life and to conserve ac power. A built-in timer in the balance can be set from 1 to 60 minutes. If the balance is not used or disturbed during the entire timer period, the balance will shut off after the specified set time . A setting of zero allows continuous battery operation of the balance. The default setting of the timer is 0. To set a specific time, proceed as follows:









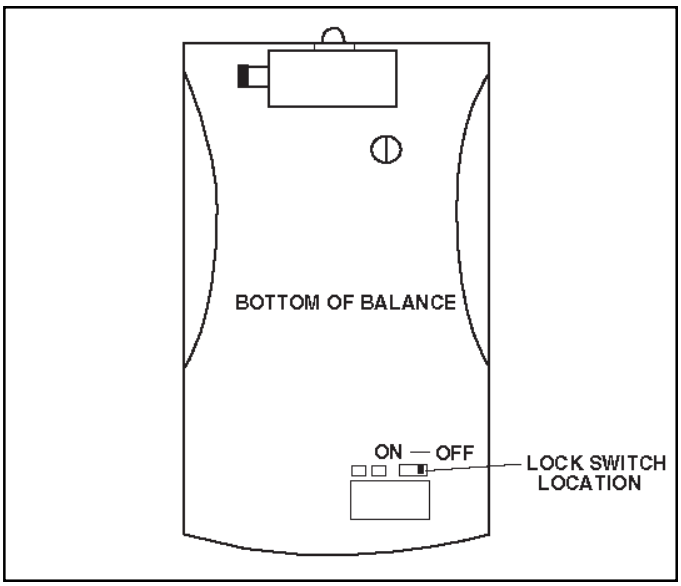


Procedure

- Press the **Setup** button, CAL is displayed.
- Press ► button until AUTOFF is displayed.
- Press **Enter** button, TIMER is displayed.
- Press **Enter** button, if a 0 appears, the timer is disabled. If a number other than 0 appears, it indicates the timer period which was previously set.
- To change the number of minutes the timer is to be ON, press ▲ or ▼ button, then press **Enter** button. SAVED is momentarily displayed followed by LOCK.
- Press **Enter** button.
- Select ON or OFF by pressing ▲ or ▼ button, then press **Enter** button.
- EXIT is displayed, press **Ente**r button to save setting. Balance returns to weighing mode.

4.12 Menu Lock-Out Protection

Access to the various menus can be disabled by setting the Lock Switch located on the printed circuit board inside of the balance to ON position. The Lock Switch locks out all menus which have had LOCK turned ON. The default setting for the Lock Switch is OFF.



Lock Switch Location and Settings.

Procedure

- Turn the balance off and unplug the power cord.
- Remove the pan and pan support.

CAUTION
In the next step, do not rest the balance on the pan support cone.

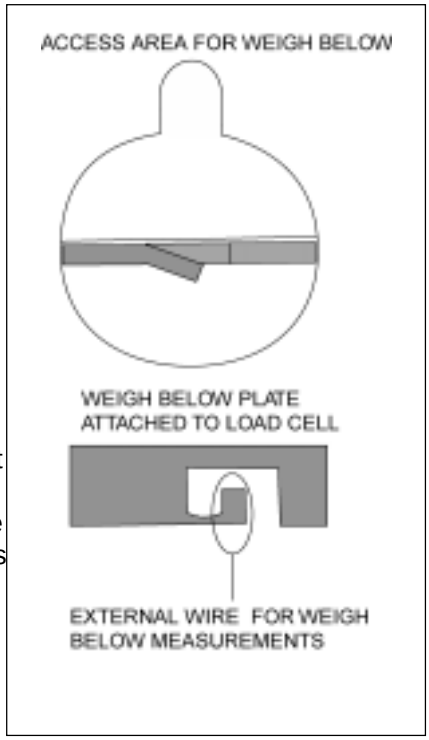
- Turn the balance over.
- The Lock Switch is located towards the front of the balance. See illustration for location and switch settings. The switch is recessed about 1/2 inch and is accessable through a slot in the printed circuit board. Use a small screwdriver or a thin rod to move the switch setting. A paper clip opened up will work. Remember, this switch when set on will lock all menus parameters which have the Lock set ON.
- Select the desired position on the Lock Switch, turn the balance in an upright position, install the pan support, pan and reconnect power.

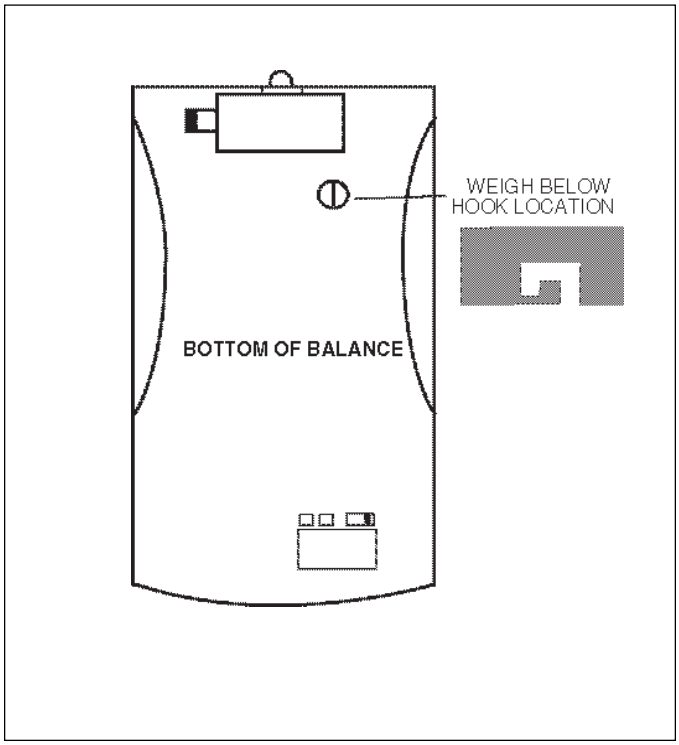
4.13 Weigh Below

A weigh below hook is located at the bottom of the balance. To use this feature, remove power from the balance and remove the protective cover underneath the balance. See illustration for location.

There is a flat, slotted, metal plate in the balance where a wire may be looped to and attached. The balance can be supported by any convienent method, ring stand, lab jacks, etc...

Make sure that the balance is level and secure. Attach a wire to the slotted support in the balance. Apply power and operate the balance. Attach items to be weighed to the wire just installed underneath the balance.





5 CARE AND MAINTENANCE

To keep the balance operating properly, the housing and pan should be kept clean and free from foreign material. If necessary, a cloth dampened with a mild detergent may be used. Keep calibration masses in a safe dry place.

5.1 Troubleshooting

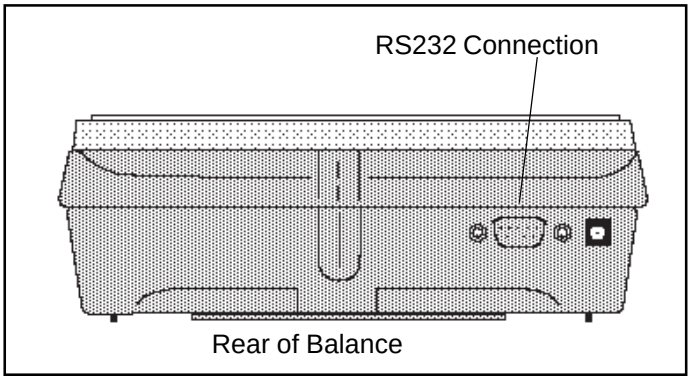
SYMPTOM	PROBABLE CAUSE(S)	REMEDY
Unit will not turn on.	Power cord not plugged in or properly connected to balance.	Check power cord connections.
Incorrect weight reading.	Balance was not re-zeroed before weighing. Balance not properly calibrated.	Press →O/T← with no weight on the pan, then weigh item. Recalibrate correctly.
Cannot display weight in desired unit.	Desired unit not enabled.	Press Units button until desired measuring unit is shown. Enable units in Setup menu.
Unable to store menu settings/ changes.	Enter was not used. Menu locked.	Press Enter when prompted. Unlock Menu.
RS232 interface not working.	Print menu settings not set properly. Cable connections. Cable configuration (Not Ohaus). RS232 Power submenu set to Off (battery operation only).	Verify interface settings in RS232 menu correspond to those of peripheral device. Check cable connections. Check all pin connections. Set Power under RS232 menu to ON (battery operation only).
Random segments displayed or display locks up.	Microprocessor locks up.	Reset balance by holding the ON/ OFF button for at least 5 seconds before releasing. If condition persists, unit must be serviced.
Unable to change settings.	Menu locked (Lock Switch set ON).	Set Lock Switch to OFF. Set menu Lock OFF.
Unstable readings.	Excessive air currents. Vibration on table surface.	Check environmental conditions. Place balance on a stable surface or change filter setting.
Error message display.	———	See Error Codes list.
Cannot access weighing mode.	Desired weighing mode is not enabled.	Press mode until desired weighing mode is displayed. Enable weighing mode in Setup Menu.

5.2 RS232 Interface

Navigator™ balances are equipped with a bi-directional RS232 compatible interface for communication with printers and computers. When the balance is connected directly to a printer, displayed data can be output at any time by simply pressing PRINT, or by using the Auto Print feature.

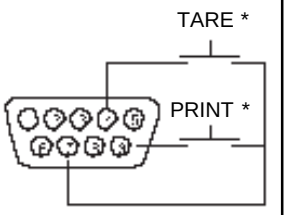
Connecting the balance to a computer enables you to operate the balance from the computer, as well as receive data such as displayed weight, weighing mode, stability status, etc.

The following sections describe the hardware and software provided with the balance



Hardware

On the rear of the balance, the 9-pin male subminiature "D" connector is provided for interfacing to other devices. The pinout and pin connections are shown in the adjacent illustration.



1	N/C
2	Data Out (TXD)
3	Data In (RXD)
4*	Tare (External signal)
5	Clear To Send (CTS)
6	Data Terminal Ready (DTR)
7	Ground
8	Request To Send (RTS)
9*	Print (External signal)

* External PRINT and/or TARE switches may be installed as shown in the diagram. Momentary contact switches must be used.

The balance will not output any data unless pin 5 (CTS) is held in an ON state (+3 to +15 V dc). Interfaces not utilizing the CTS handshake may tie pin 5 to pin 6 to defeat it.

IMPORTANT:
An Ohaus RS232 cable is required to operate with this balance. A standard RS232 cable will not work. See Accessories listed in paragraph 5.7.

Output Formats

Data output can be initiated in one of three ways: 1) By pressing PRINT; 2) Using the Auto Print feature; 3) Sending a print command ("P") from a computer.

The output format is illustrated in the RS232 command table which follows.

RS232 Commands

All communication is accomplished using standard ASCII format. Characters shown in the following table are acknowledged by the balance. Invalid command response "ES" error indicates the balance has not recognized the command. Commands sent to the balance must be terminated with a carriage return (CR) or carriage return-line line feed (CRLF). Data output by the balance is always terminated with a carriage return - line feed (CRLF).

RS232 COMMAND TABLE

Command Character	Description
?	Print current mode
nnnnA	Set Auto Print feature to "nnnn" (see table).

Field: Mode | Stab | CR | LF
Length: 5 | 1 | 1 | 1

Stab: blank if stable, " ? " if unstable

mg	GN	tical
g	tael HK (Hong Kong)	tola
kg	tael SG (Singapore)	custm
dwt	tael RC (Taiwan)	Pcs
ct	momme	%
oz	lb	
oz t	N	

nnnn = 0	Turns feature OFF
nnnn = S	Output on stability
nnnn = C	Output is continuous
nnnn = 1-3600	Sets Auto Print Interval

RS232 COMMAND TABLE (Cont.)

Command Character	Description
c	Description
xD	Set 1 second print delay (set x = 0 for OFF, or x = 1 for ON)
F	Print current function.
xI	Set Averaging Filter Level to "x", where x = 0 to 3 (see table). 0 = minimum level 1 = 2 = 3 = maximum level
L	Begin linearity calibration
xM	Places balance in unit "x", where x = 1 to 21 (see table). If unit is not already enabled, command will be ignored. 1 = milligrams 2 = grams 3 = kilo grams 4 = dwt 5 = Carats 6 = Ounces 7 = Ounces troy 8 = Grains 9 = Taels HK (Hong Kong) 10 = Taels SG (Singapore) 11 = Taels RC (Taiwan) 12 = Mommes 13 = Pounds 14 = 15 = Newton 16 = tical 17 = tola 18 = 19 = 20 = 21 = Custom Units
xF	Sets current mode to "x" where x = 0 to 4 (see table) 0 = "None" normal weighing mode 1 = "Percent" 2 = "Parts counting" 3 = "Animal weighing" 4 = "Checkweighing"
P	Print display data Field: Polarity | 1 | Weight | 1 | Mode | Stab | CR | LF Length: 1 | 1 | 7 | 1 | 5 | 1 | 1 | 1 polarity (1): blank if positive, "-" if negative Same as ? command When "numeric only"data is selected for output in the RS232 menu, the Mode field is not output. Displayed weight sent right justified w/lead zero blanking. Seven characters include: decimal point (1), weight (6 max)
xSL	Set stability level (set x = 0 to 3). 0=.5d, 1=1d, 2=2d, 3=5d
T	Same effect as pressing O/T button.
V	Print software version

RS232 COMMAND TABLE (Cont.)

Command Character	Description
xZ	Set Auto Zero to "x",where x = 0 to 3). 0=Off, 1=0.5d, 2=1d, 3=5d.
x%	Set % reference function. Uses x (Real Number) as current Percent Reference. * Reference weight must be entered in grams.
x#	Set PC reference function. Uses x (Real Number) as current Part Reference. * Reference weight must be entered in grams.
Esc R	Resets Setup and Print menus to factory defaults. CAUTION: This will reset RS232 configuration.
ON	Turns balance on.
OFF	Turns balance off.
#	Print current Parts Count Reference Weight.
%	Print current Percent Reference Weight.
xAW	Set Animal Level from 0 to 3. 0= least amount of sampling.
xE	Set/Reset Auto Restart in Animal mode. Where x is 0=Off and 1=ON.
E	Start Animal cycle.
xT	Download tare value, tare weight must be entered in grams.
ID	Print Current User ID String.
xID	Program User ID String, 1-8 characters.
AC	Abort Calibration.
xUC	Starts User Weight Calibration. Input format: x is the user weigh value and must be at least 50% of full span value. (enter full numerical value with no decimal point).
LE	Show Last Error Code. Response: Err: Error Number.
SN	Show Serial Number.
xS	Print Stable Only. Where x =0 Off and x=1 On.
TIME	Print Current Time. Note, a ? mark will follow if date or time has not been set.
mm/dd/yy SETDATE	Set Date Command and remove Invalid Indicator
hh:mm:ss SETTIME	Set Time Command and Remove Invalid Time Indicator
DATE	Prints Current Date. Note, a ? mark will follow the year if date or time has not been set.
W$TM	Write Clock Trim Value. The clock can be adjusted by ±60 seconds a day.
R$TM	Read Clock Trim value.
SW	Show Lockswitch status.
xCN	Set Checkweighing nominal weight. Reference weight must be entered in grams. *
xCO	Set Checkweighing over limit. Reference weight must be entered in grams. *
xCU	Set Checkweighing under limit. Reference weight must be entered in grams. *
CN	Print Checkweighing nominal weight.
CO	Print Checkweighing over limit.
CU	Print Checkweighing under limit.
xAO	Set Auto-shutoff. - Set timer from 0-60 minutes. 0 = timer disabled.
AO	Print Auto Shutoff

* Balance must be in correct weigh mode.

5.3 Error Codes List

Error Codes List

The following list describes the various error codes which can appear on the display and the suggested remedy.

Data Errors

1.0 Transient error (hardware error, probably static discharge). If error persists, the balance must be serviced.

1.1 Balance temperature transducer hardware error.

Tare Errors

2.0 Balance is unable to stabilize within time limit after taring. Environment is too hostile or balance needs recalibration.

Calibration Errors

3.0 Incorrect or no calibration mass used for calibration. Recalibrate with correct masses.

RS232 Errors

4.4 RS232 buffer is full.

User Errors

7.0 User entry out of bounds.

7.2 Number outside of display capacity.

Over-Under Load Errors

8.0 Hardware error causing an internal weight signal which is too low. Check if pan is off. If not, the balance must be serviced.

8.1 Hardware error caused by an internal weight signal which is too high. Check load on the pan which may be excessive. If error persists, the balance must be serviced.

8.3 Rated capacity exceeded. Remove excessive weight from pan.

8.4 Underload condition on balance. Check that the proper pan is installed.

CheckSum Errors

9.1 Bad factory checksum. If error persists, have the balance serviced.

9.2 Bad factory checksum. If error persists, have the balance serviced.

9.3 Bad factory checksum. If error persists, have the balance serviced.

9.5 Factory calibration data failed checksum.

9.8 User calibration data failed checksum.

9.9 Factory temperature compensation data failed checksum.

5.4 Information Messages

SAVED This message is flashed when an item is changed in the menu and the new value is written to the EEPROM.

LOCKED This message is flashed when an item can not be changed in the menu because the menu is locked and the Lock Switch is set locked.

LOW REF The message is flashed in parts counting or percent when the calculated reference weight is very low.

WT>NOM During checkweighing, message is shown when under weight is greater than nominal weight.

WT<NOM During checkweighing, message is shown when over weight is less than nominal weight.

WT>CAP During checkweighing, message is shown when the entered weight is greater than the capacity of the balance.

5.5 Service Information

If the Troubleshooting section does not resolve or describe your problem, you will need to contact an authorized Ohaus Service Agent. For Service assistance in the United States, please call Aftermarket, Ohaus Corporation toll-free at (800) 526-0659. An Ohaus Product Service Specialist will be available to help you.

5.6 Replacement parts

Description	Ohaus Part No.
AC Adapters:	
120V US plug for InCal™ models	90524-67
120V US plug	90524-66
230V Euro plug	90524-63
240V UK plug	90524-64
230V Australian plug	90524-65
Pan (32g model) 3"/7.6cm dia.	77063-10
Pan (210g and 410g models) 4.75"/12cm dia.	77262-00
Pan (810g, 2100g, 4100g, 8100g models) 5.5" x 6"/14cm x 15cm	300210-01
Glass draft shield for 32g Navigator	300233-01
Draft shield cover for 32g Navigator	300234-01
Scoop for 32g Navigator	5077-00
30g Calibration mass for 32g Navigator	53034-00

5.7 Accessories

Description	Ohaus Part No.
Calibration Masses - ASTM Class 4 Tolerance:	
200g for 210g and 410g Navigator	51025-06
400g for 810g Navigator	51045-06
2 kg for 2100g Navigator	51026-02
2 - 2kg required for 8100g Navigator	51026-02
Calibration Masses - ASTM Class 2 Tolerance:	
400g for 410g Navigator	49045-12
2 kg for 4100g Navigator	49026-12
Security Device	76288-01
Scoop, gold 4"x 3.5" (10.2cm x 8.9cm)	4590-00
Scoop, black, aluminum 4"x 3.5" (10.2cm x 8.9cm)	4590-30
Scoop, gold, aluminum 2.25"x 3" (5.7cm x 7.6cm)	5077-00
Impact printer, 42 column	AS142
Impact printer paper, 5 pack, 2.25" (5.7cm) wide	78204-01
Cable for AS142 printer	AS017-06
Cable, PC 25 pin	AS017-02
Cable, PC 9 pin	AS017-09

5.8 Specifications

Capacity	32	210	410	810	2100	4100	8100
Readability	0.002g	0.01g	0.01g	0.01g	0.1g	0.1g	0.5g
Repeatability	0.002g	0.01g	0.1g	0.1g	0.1g	0.1g	0.5g
Linearity	± 0.002g	± 0.01g	± 0.01g	± 0.1g	±0.1g	±0.1g	±0.5g
Units/Modes	g, mg, oz , lb, GN, N, oz t, dwt, ct, taels (3), tola, ti, m, custom						
Functions	Parts count, percent, animal, checkweigh						
Stabilization time	3 seconds						
Operating temperature range	10° to 40°C						
Power requirements	AC Adapter (supplied) or 8 - AA alkaline batteries (not included) Typical battery life without RS232 46 hours - with RS232, 37 hours						
Calibration	External cal mass (not included)						
Display (in/cm)	LCD, 95mm wide x 50mm high, 6 - 14 segment alphanumeric, 6 - 7 segment numeric						
Pan size (in/cm)	3/7.6	4.75/12		5.5 x 6/14 x 15.2			
Dimensions (in/cm)	7.25 x 2.25 x 10.5/18.4 x 5.7 x 25.4						
Item No. w/o InCal™	**N00330**	**N02120**	**N04120**	**N08110**	**N0B110**	**N0D110**	**N0H110**
Item No. w/Incal™	**N10330**	**N12120**	**N14120**	**N18110**	**N1B110**	**N1D110**	**N1H110**
Item No., CE, w/o InCal™	**N20330**	**N22120**	**N24120**	**N28110**	**N2B110**	**N2D110**	**N2H110**
Item No., CE, w/InCal™	**N30330**	**N32120**	**N34120**	**N38110**	**N3B110**	**N3D110**	**N3H110**

LIMITED WARRANTY

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.

Ohaus Corporation
29 Hanover Road,
Florham Park, NJ 07932, USA
Tel: (973) 377-9000,
Fax: (973) 593-0359

With offices worldwide.

P/N 300280-020