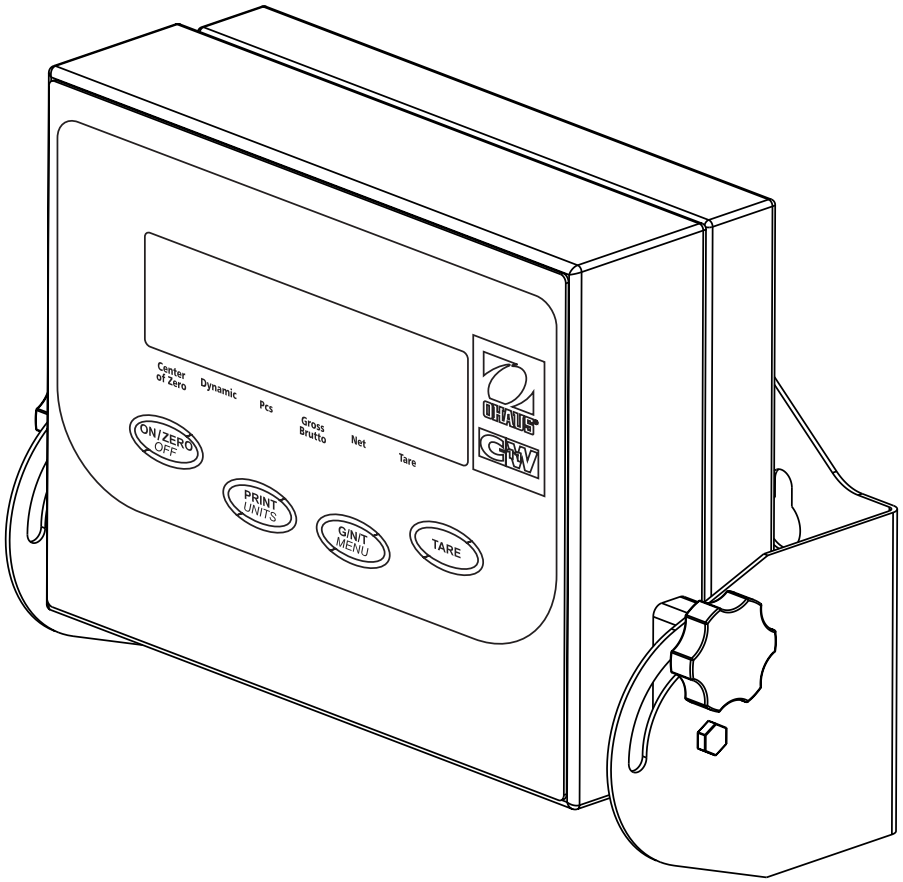
Model CW-11 Indicator
Instruction Manual



Ohaus Corporation, 19A Chapin Road, P.O. Box 2033 Pine Brook, New Jersey, 07058, 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.

Instrument Type/Waagentyp/Type de instrument/Tipo de instrumento/Tipo di strumento: **CW-11**

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/EEC** Low Voltage Niederspannung Basse tension Baja tensión Bassa tensione	**EN61010-1:1993 + A2: 1995** Safety Regulations Sicherheitsbestimmungen Consignes de sécurité Disposiciones sobreseguridad Prescrizioni di sicurezza
CE	**EU 89/336/EEC** Electromagnetic compatibility Elektromagnetische Verträglichkeit Compatibilité électromagnétique Compatibilidad electromagnética Compatibilità elettromagnetica	EN55011: 1991 (class B) Emissions; EN61000-3-2 EN50082-2:1995 Immunity; EN61000-3-3 EN55011: 1991 (class B) Funkstörungen; EN61000-3-2 EN50082-2:1995 Immunität; EN61000-3-3 EN55011: 1991 (class B) Emissions parasites; EN61000-3-2 EN50082-2:1995 Immunité; EN61000-3-3 EN55011: 1991 (class B) Radiointerferencias; EN61000-3-2 EN50082-2:1995 Inmunidad; EN61000-3-3 EN55011: 1991 (class B) Radiointerferenze; EN61000-3-2 EN50082-2:1995 Immunità; EN61000-3-3
CE 0103 M	**EU 90/384/EEC** NAWI FNSW BFNA PBNA BFNA	**EN45501** 1) 2) Non Automatic Weighing Instruments Für nicht selbsttätige Waagen Balances à fonctionnement non automatique Para balanzas no automátäcas Per bilance a funzionamento non automatics

1) Applies only to certified non-automatic weighing instruments
Betrifft nur zertifizierte nicht selbsttätige Waagen
S'applique uniquement aux instruments de pesage à fonctionnement non automatique approuvés
Applicabile solamente a strumenti di pesatura a funzionamento non automatico
Aplicable solamente a instrumentos de pesaje aprobados de funcionamiento no automático
2) Valid only for CW-11 terminals in connection with approved load cells
Gültig nur für Anzeigegeräte in Verbindung mit eichzulässigen Wägezellen
Valable seulement pour les indicateurs CW-11 connectés à des cellules de pesée approuvées.
Valido soltanto per indicatori CW-11 collegati a celle di carico approvate
Válido solamente para terminales CW-11 en conexión con células de carga aprobadas

Date: March 28, 2003

Ted Xia
President
Ohaus Corporation
Pine Brook, NJ USA

Johan Dierbach
General Manager
Ohaus Europe
Greifensee, Switzerland

ISO 9001 Registration for Ohaus Corporation. Ohaus Corporation, USA, was examined and evaluated in 1994 by the Bureau Veritas Quality International, BVQI, and was awarded ISO 9001 registration. 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 Qualitátssicherung (ISO 9000er-Reihe) entspricht. Anlässlich von Wiederhol-Audits durch das BVQI wird periodisch überprüft, ob das Qualitätssystem zweckmässig gehandhabt wird.

Certificat ISO 9001 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 dal Bureau Veritas Quality International BVQI, e così fomisce la dimostrazione che il suo sistema di Garanzia Qualità soddisfa i massimi requisiti. Verifiche periodiche del BVQI garantiscono che il sistema qualità opera correttamente.

NOTE: THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A 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 A 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.

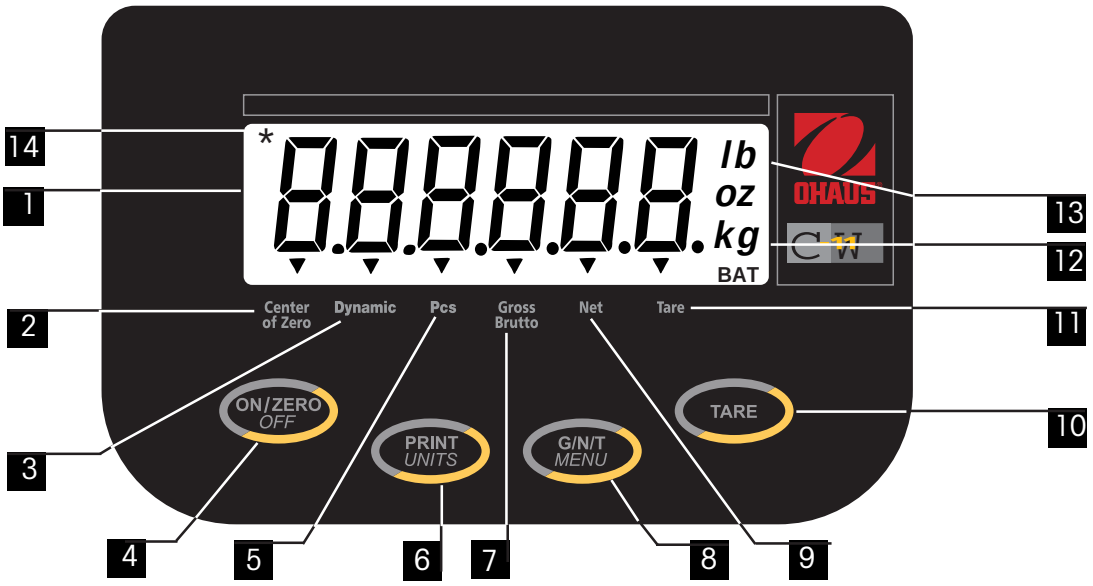
CET APPAREIL NUMERIQUE RESPECTE LES LIMITES DE BRUITS RADIOELECTRIQUES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE A PRESCRITES DANS LA NORME SUR LE MATERIEL BROUILLEUR : "APPAREILS NUMERIQUES", NMB-003 EDICTEE PAR LE MINISTRE DES COMMUNICATIONS.

Unauthorized changes or modifications to this equipment are not permitted.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

OVERVIEW OF CONTROLS AND INDICATOR FUNCTIONS



No.	Designation	Function
1	Display	LCD display, indicates weight, modes and setup information.
2	Center of Zero	LCD indicator prompt, indicates center of zero when within +/- 0.25d.
3	Dynamic	LCD indicator prompt, indicates that Indicator is in dynamic weighing mode.
4	ON/ZERO/OFF button	Turns Indicator on or off. Secondary use, provides zero function.
5	Pcs	LCD indicator prompt, indicates parts counting function.
6	Print/Units button	Short press, prints data which is displayed on the Indicator. Long press, changes unit of measure. When in menus, each press advances horizontally through the menus. Finalizes a menu selection.
7	Gross Brutto	LCD indicator prompt, indicates gross weight.
8	G/N/T/Menu button	Recalls Gross/Net/Tare. Long press allows entry into menus. When in menus, advances through individual menu items.
9	Net	LCD indicator prompt indicates net weight.
10	Tare button	When pressed, enters tare value into memory.
11	Tare	LCD indicator prompt indicates tare weight.
12	kg g	LCD indicator, when lit, indicates weight in kilograms. LCD indicator, when lit, indicates weight in grams.
13	lb oz	LCD indicator, when lit, indicates weight in pounds. LCD indicator, when lit, indicates weight in ounces.
14	*	Stability indicator, when lit, indicates stable weight.

1. GETTING TO KNOW YOUR INDICATOR

1.1 Introduction

Thank you for deciding to purchase a CW-11 Indicator from Ohaus. The Ohaus CW-11 Indicator is a rugged, reliable, electronic weight indicator in an IP65 washdown enclosure designed for easy operation in washdown applications. The CW-11 Indicator can drive up to four 350 ohm load cells and provides capacity selections up to 20,000 lb/kg with a maximum resolution of 1:20,000.

The CW-11 operates from AC power and can also be powered by six Alkaline "C" batteries internally. A six digit LCD display is 1.0 inches/2.5 centimeters in height provides easy visibility when working at distances from the indicator. Four switches mounted on the front panel enable simple set up procedures. A menu lockout switch can be set to lock out various functions of the indicator to prevent settings from being changed. An RS232 Interface is built in. An adjustable mounting bracket permits the Indicator to be installed on a table or wall.

Behind your instrument stands OHAUS, a leading manufacturer of precision Indicators, Scales and Balances. An Aftermarket Department with trained instrument technicians is dedicated to providing you with the fastest service possible in the event your instrument requires servicing. OHAUS 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 CW-11 Indicator, please read the manual completely before installation and operation.

1.1.1 Features

Major features include:

- 6 digits, 7-segments, 25 mm Numeric LCD display
- 4 membrane switches
- Supports up to four (4) 350 ohm analog load cells
- Suitable for 2mV/V and 3mV/V load cell with no jumper
- Up to 20,000d display resolution
- Push-button Tare/Clear
- Flexible unit switching-lb/kg/oz/g
- Enhanced digital filtering
- Overload/Underzero display indication
- 3-wire RS232 Serial Communication in Ohaus RS-Interface
- Up to 100 hours continuous battery operation with one 350 load cell
- AC & DC power supply
- Low - BAT warning comes on 20 minutes prior to low power point
- Auto shut off for power saving
- IP65 washdown SS enclosure
- Either Animal weighing or parts counting function

2. INSTALLATION

2.1 Unpacking and Checking

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 Indicator.

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. Your Indicator package should contain:

- Indicator CW-11
- Warranty card
- Capacity label
- Screw driver for terminal connections
- Instruction Manual
- lead seal for weights and measures sealing

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 Indicator should be used in an environment which is free from corrosives, vibration or temperature extremes. These factors will affect displayed weight readings. Scale bases used with the Indicator should be located on a stable level surface and kept away from vibrating sources such as large machinery. Maximum accuracy will be achieved when the area is clean and vibration free.

2.3 Connecting the Indicator to a Scale Base

At the bottom of the back cover of the Indicator are two slots. There is a spring clip at each slot location which holds the cover in place. Insert the small scewdriver blade into each slot and press and work the back cover off. With the cover removed, proceed as follows:

Remove the rear cover. Inside is the battery compartment which is wired to the PC board underneath.

Remove batteries if installed.

Remove the four corner screws from the battery board. One of the screws is crossed drilled to accept a wire seal when used for legal for trade applications.

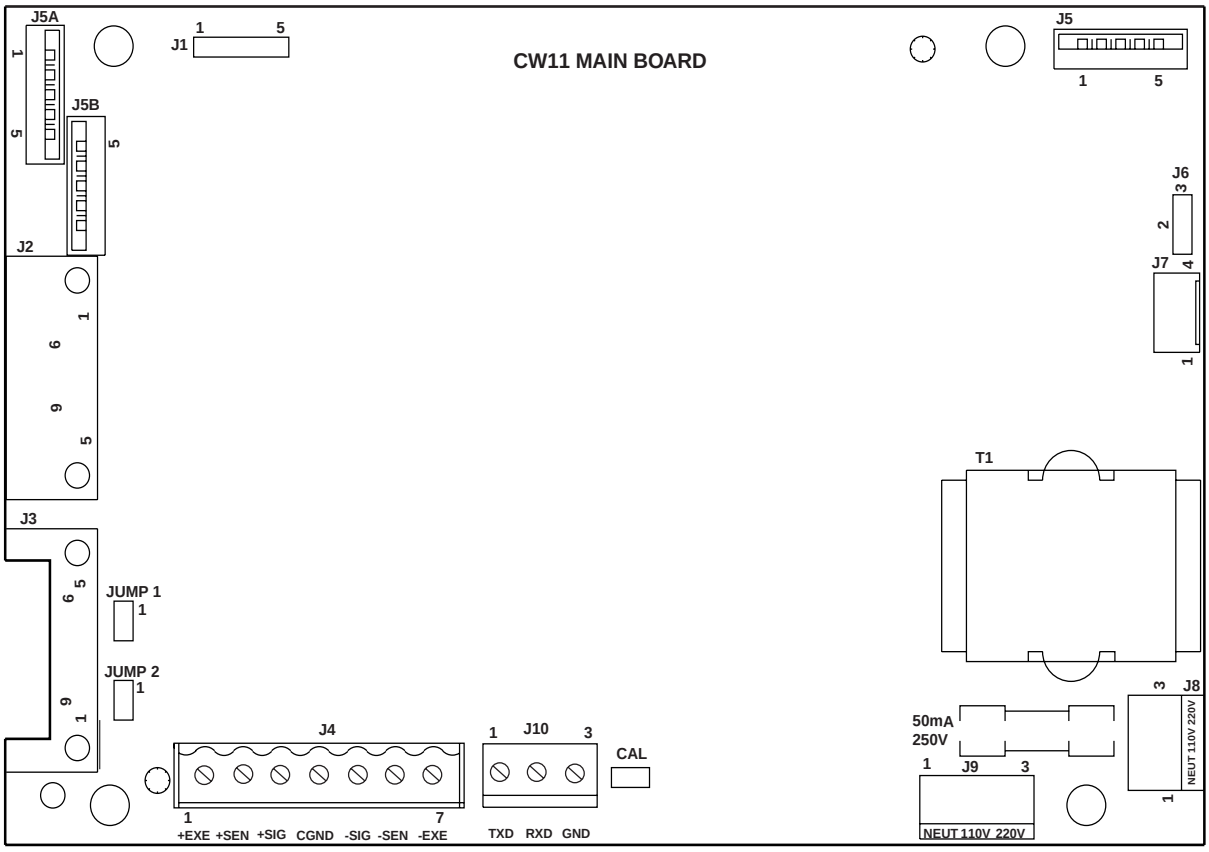
Carefully lift the battery board up and out of the indicator. The wires can be disconnected from the main PC board by unplugging the connector.

Pass the load cell cable through the large or small liquid tight connector on the bottom of the housing. (Depending on cable size.)

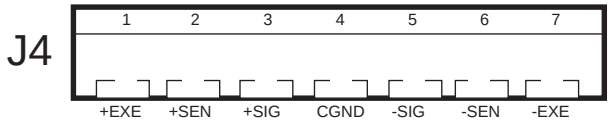
2.3 Connecting the Indicator to a Scale Base (Cont.)

Refer to the color code of the load cell cable and connect the wires to Terminal Strip J4. Tighten all screws securely. The connections are shown for a 6 wire cable. When a 4 wire cable is used, the Jump 1 and Jump 2 jumpers on the PC board must be positioned as shown in the illustrations below.

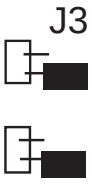
For obtaining better performance, it is recommended to keep both JUMP 1 and JUMP 2 jumpers open when a 6-wire load cell is connected to the CW-11.



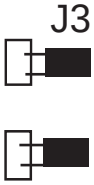
Printed Circuit Board Connector Locations.



Connector J4 Terminations.



6-Wire Jumper Connections.



4-Wire Jumper Connections.

2.4 Communication Connections

Provisions are made in the Indicator to communicate with an external computer or printer using an RS232 protocol. To connect, proceed as follows:

Pass the communication cable through one of the liquid seal connectors at the bottom of the Indicator.

Connect the cable to the J10 connector on the PC board. Observe the functions and connect correctly.

Connect the opposite end of the cable to the device.

After all connections have been made to the main PC board, replace the battery cover and lightly secure with the four screws previously removed. If the Indicator is to be used in a legal for trade application, you will have to gain access to the legal for trade switch on the main PC board again after all Indicator settings have been made. Once this is done, the rear cover can be replaced.

2.5 Cautionary Notes

Model CW-11 Indicator must not be operated in hazardous areas.

Before connecting AC power, verify that the Indicator operating voltage corresponds to the local mains voltage. If this is not the case, check terminal board J9 connections on the main PC board. There are provisions for 110V or 220V operation. Please contact your local Ohaus dealer if the voltages do not match.

Model CW-11 Indicator may be used in a washdown environment.

The CW-11 Indicator may be operated using the AC power cord , or 6 Alkaline C-type batteries (not supplied). When the Indicator is plugged into a power source, the batteries are automatically disconnected. In the event of a power failure, the batteries if installed will automatically continue to operate the balance.

2.6 Connecting Power

2.6.1 Battery Installation

With the back cover removed from the Indicator, insert 6 Alkaline C-type batteries into the battery holder making sure that the batteries are properly orientated (correct polarity).

NOTE: It is recommended that when the CW-11 is operated from batteries, the Auto-Off Timer feature be turned on to extend battery life. When setting up the Indicator, refer to Intial Setup,Readout menu, paragraph 2.8.5.

2.6.2 AC Power

Connect the AC power cord from the Indicator and plug into a convenient power outlet.

NOTICE:
The socket/outlet must be installed near
the equipment and shall be easily accessible.

2.6.3 Operating the Indicator

Once the Indicator and Scale Base are connected and installed, follow the setup procedure outlined below.

Power On/Off

With the Indicator connected to an appropriate power supply, press the **ON/ZERO/*OFF*** button. The Indicator performs a self-test, indicates the software revision momentarily and then goes to a weighing mode. At this point, the Indicator is on and ready for initial setup.

Stabilization

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

2.7 Setup Protection

The CW-11 Indicator is equipped with menus which permit certain functions to be locked out (not changed) during operation. If you intend to lock out changes to the setup selections you make, **do not re-assemble** the indicator. You will need to access the cal jumper located on the main PC circuit board following the setup procedure.

2.8 Initial Setup

For first time setup, step through all menus and set the parameters as desired. As the last step, enter the CAL menu and calibrate the system.

The indicator has five menus; CAL, SETUP, READ, PRINT and LOCSW which are entered by pressing and holding the **G/N/T/*MENU*** button until MENU is displayed, then releasing it. The display then switches to CAL. To access the rest of the menus, the **PRINT/*UNITS*** button is repeatedly pressed until the desired menu is reached.

2.8.1 Control Functions

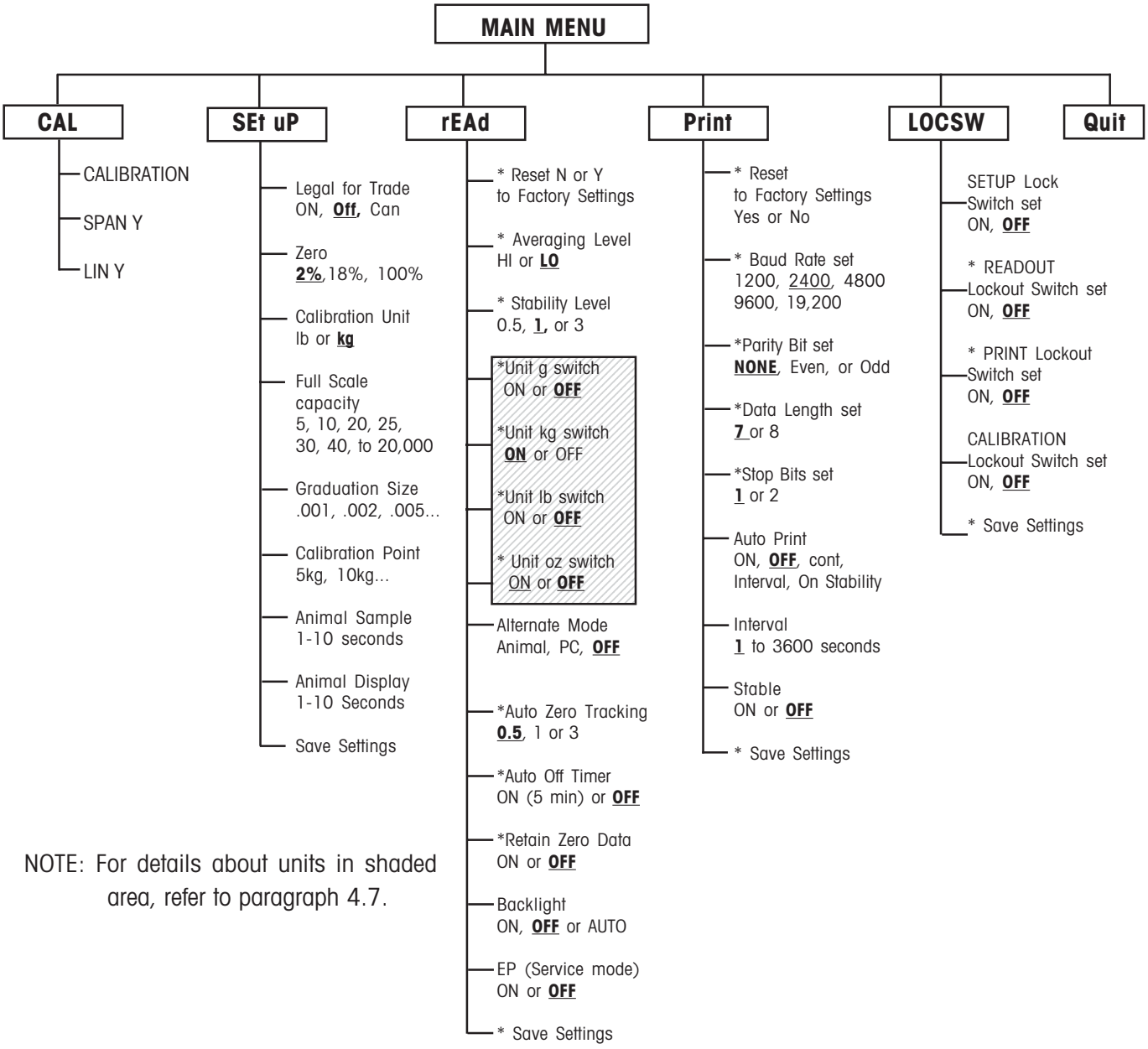
During setup, only the **PRINT/*UNITS*** and **G/N/T/*MENU*** buttons are used.

PRINT/*UNITS* Button
Change between menus horizontally or change sub-menu parameters.

G/N/T/*MENU* Button
Press and hold to enter menu. Enters menu and steps through sub-menus vertically.

2.8.2 Menu Structure

The following table illustrates the menu structure in the CW-11 Indicator.



NOTE: For details about units in shaded area, refer to paragraph 4.7.

Press (**G/N/T/*MENU***) to enter the display submenu or select a displayed setting.

Press (**PRINT/*UNITS***) to change the displayed submenu or setting.

Factory default settings are shown in **underlined and boldface** type.

When jumper (CAL) on the circuit board is opened, all of the menus can be reached except CALIBRATION Menu, but only the submenus which are marked ' * ' can be setup, see menu structure.

2.8 Initial Setup (Cont.)
2.8.3 Load Cell Capacity Information

Review the specifications of the scale base to be used with the Indicator. Make sure the settings you select in the indicator are compatible with the scale base. Below is a Load Cell Scale Capacity (lb or kg) table. Use this table to determine the settings of the Indicator based on the capacity and resolution of the scale base.

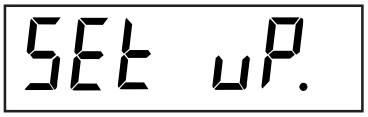
Grad	LOAD CELL SCALE CAPACITIES (LB OR Kg)													
	1000d	1200d	1500d	2000d	2500d	3000d	4000d	5000d	6000d	7500d	10000d	20000d	12500d	15000d
0.001	-	-	-	2	-	3	-	5	-	-	10	20	-	15
0.002	-	-	-	4	-	6	-	10	-	15	20	40	25	30
0.005	5	-	-	10	-	15	20	20	30	-	50	100	-	75
0.01	10	-	-	20	25	30	40	50	60	75	100	200	-	150
0.02	20	-	30	40	50	60	-	100	120	150	200	400	250	300
0.05	50	60	75	100	-	150	200	250	300	-	500	1000	-	750
0.1	100	120	150	200	250	300	400	500	600	750	1000	2000	-	1500
0.2	200	-	300	400	500	600	-	1000	-	1500	2000	-	2500	3000
0.5	500	600	750	1000	-	1500	2000	2500	3000	-	5000	10000	-	7500
1	1000	1200	1500	2000	2500	3000	-	5000	-	7500	10000	20000	-	-
2	2000	-	3000	-	5000	-	-	10000	-	-	20000	-	-	-
5	5000	-	7500	10000	-	-	20000	-	-	-	-	-	-	-

2.8 Initial Setup (Cont.)

2.8.4 Setup Menu

The CW-11 Indicator Setup Menu *must be entered the first time* the Indicator is used to set the scale base parameters to match the Indicator. Do not attempt to calibrate the Indicator before setting up the Setup Menu. All other menus should be entered and set up the first time the Indicator is used.

Procedure



With the Indicator ON, press and hold the **G/N/T/*MENU*** button until MENU is displayed. When you release **G/N/T/*MENU*** button, CAL is displayed when the CAL jumper on the PC board is in place. When the CAL jumper is removed, the Indicator will not permit calibration. This jumper should be in place initially.

Press **PRINT/*UNITS*** button, SETuP is displayed.

Press **G/N/T/*MENU*** button, LFTOFF is displayed. legal for trade selections are:

'LFT ON' - LFT is ON
'LFTOFF' - LFT is OFF
'LFTCAn' - LFT is set for Canada

Press **PRINT/*UNITS*** button and select either ON , OFF or Canada.

Press **G/N/T/*MENU*** button, 0 2 is displayed. This is the Zero 2%, 18% or 100% setting. 2% - zero operation range is - 2% to + 2%. 18% - zero operating range is -2% to +18%, 100% - zero operation range is -2% to +100%.
NOTE: If LFT is ON, only 2% and 18% are available.

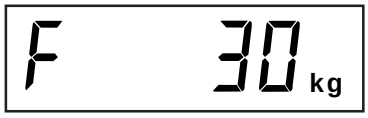
Press **PRINT/*UNITS*** button, and select either 2%, 18% or 100%.

Press **G/N/T/*MENU*** button, CAL Un kg is displayed. This is the calibration unit setting. Selections are:

'lb' - calibration unit is lb
'kg' - calibration unit is kg.

Press **PRINT/*UNITS*** button, and select either kg or lb.

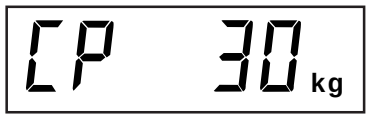
2.8 Initial Setup (Cont.)
2.8.4 Setup Menu (Cont.)



Press **G/N/T/*MENU***, F xx is displayed. This is full scale capacity selections. xx= value last set. Selections are:
5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, 500, 600, 750, 1000, 1200, 1500, 2000, 2500, 3000, 5000, 7500, 10000, 20000 (lb or kg).

Press **PRINT/*UNITS*** button until desired capacity value is reached.

Press **G/N/T/*MENU*** button, Gd0.01 is displayed. This is the graduation size. Refer to paragraph 2.8.3 Load Cell Capacity Information table. For available selections, press **PRINT/*UNITS*** button until desired graduation value is reached.



Press **G/N/T/*MENU*** button, CP 30 kg is displayed. This is the full scale calibration point setting. The range is from 20% to 100% Full scale capacity. Press **PRINT/*UNITS*** button until desired calibration value is reached.

Press **G/N/T/*MENU*** button, AS 3 is displayed. This is the duration of animal sample time which can be set from 1 to 10 seconds.
Press **PRINT/*UNITS*** button until desired sample time value is reached. See Note below.

Press **G/N/T/*MENU*** button, Ad 4 is displayed. This is the duration of animal weighing display time which can be set from 1 to 10 seconds. The default is 10 seconds. See Note below.
Press **PRINT/*UNITS*** button until desired sample time value is reached. See Note below.

Press **G/N/T/*MENU*** button to end this block, SAVE is displayed.

Press **G/N/T/*MENU*** button, rEAD is displayed which is the next menu or press **PRINT/*UNITS*** button to return to Setup menu.

The Indicator is now matched up with the scale base and the Indicator parameters may now be set and calibrated.

NOTE: Not available if LFT is ON. Only available if ALT is set to ANI.

2.8 Initial Setup (Cont.)

2.8.5 Readout Menu

The Readout menu is used to adapt the Indicator to environmental conditions, set measuring units on/off, alternate modes - animal weighing & parts counting, auto zero tracking, timer on/off, retain zero data and backlighting. Review all of the settings available before proceeding.

Procedure

To select any of the items in the Readout menu, proceed as follows: **NOTE**: If you have entered from the preceeding menu, disregard the first step.

With the Indicator ON, press and hold the **G/N/T/*MENU*** button until MENU is displayed. When you release the **G/N/T/*MENU*** button, CAL is displayed, then press **PRINT/*UNITS*** button, until rEAd is displayed.

Press **G/N/T/*MENU*** button, rESETn is displayed. This allows resetting the readout menu to factory defaults. rESETn = no and does not reset settings. rESETy= yes and will reset the entire readout menu as follows: AL Lo, StAb 1, Un Off g, Un On kg, Un Off, lb, Un Off oz, Alternate Mode Off, AZt 0.5, Aot Off, rZd Off and Backlight auto.

Press **PRINT/*UNITS*** button,and select N or Y.

AVERAGING LEVEL

Averaging level compensates for vibration or excessive air currents on the scale base. During operation, the indicator continually takes weight readings from the load cell. Successive readings are then digitally processed to achieve a stabilized display. Using this feature, you specify how much processing you need.

HI and LO settings are available.
HI setting:
More processing, greater stability and slower stabilization time.

LO setting:
Less processing, less stability and faster stabilization time.

2.8 Initial Setup (Cont.)
2.8.5 Readout Menu (Cont.)

Procedure

AVERAGING LEVEL (Cont.)

Press **G/N/T/*MENU*** button, AL LO is displayed. This is averaging level settings. Selections are:

'Lo' - Averaging level is low
'Hi' - Averaging level is high.

Press **PRINT/*UNITS*** button,and select LO or HI.

STABILITY

The stability range specifies the weighing results and must be within a preset tolerance limit for a certain time to turn the stability indicator 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.

.5d Smallest range: stability indicator is ON only when displayed weight is within .5 divisions.
1d Normal setting. - Fixed for LFT
3d More stable course

Press **G/N/T/*MENU*** button, StAb1 is displayed.The stability range specifies the weighing results and mustbe within a preset tolerance limit for a certain time to turn the stability indicator ON. When a displayed weight changes beyond the allowable range, the stability indicator turns OFF, indicating an unstable condition. 0.5 d smallest range, stability indicator is ON only when displayed weight is stable within 0.5 divisions. 1 d-stable within 1 division. 3 d-largest range, stability indicator is ON even though displayed weight changes 3 divisions. Factory default setting is 1.

Press **PRINT/*UNITS*** button,and select 0.5, 1, or 3. Normal 1d stability is default/recommended.

2.8 Initial Setup (Cont.)
2.8.5 Readout Menu (Cont.)

Procedure

UNITS SELECTION

Press **G/N/T/*MENU*** button, Un OFF g is displayed.

Press **PRINT/*UNITS*** button, and select ON or OFF. OFF is the default setting.

Press **G/N/T/*MENU*** button, Un ON lb is displayed. This is unit pounds which can be turned ON or OFF. This will be displayed when CAL UNIT kg was selected. When lb was selected as calibration unit, kg will display.

Press **PRINT/*UNITS*** button,and select ON or OFF. ON is the default setting.

Press **G/N/T/*MENU*** button, Un OFF oz is displayed. This unit is ounces which can be turned ON or OFF. Default setting is OFF.

Press **PRINT/*UNITS*** button,and select ON or OFF.

NOTE: If CAL Unit is kg, then UNIT kg is fixed to ON menu not shown. The same if CAL Unit is set to lb.

ALTERNATE MODE - Not available if LFT is ON.

Press **G/N/T/*MENU*** button, ALtOFF is displayed. This enables either animal weighing or simple parts counting functions. The alternate mode can be turned off so that neither mode is available. It is not possible to have both modes activated at the same time.

Press **PRINT/*UNITS*** button, and select either OFF, ALtAn i (animal) or ALt PC (parts counting). OFF is the default setting.

2.8 Initial Setup (Cont.)
2.8.5 Readout Menu (Cont.)

AUTO ZERO

Press **G/N/T/*MENU*** button, AZt 0.5 is displayed. This is the Auto Zero Threshold setting. Auto Zero minimizes the effects of temperature changes and small disturbances on the zero reading. The Indicator maintains the zero display until the threshold is exceeded. Settings are shown as follows:

OFF
0.5d Sets threshold to 0.5 divisions. - Fixed in LFT
1d Sets threshold to 1 division.
3d Sets threshold to 3 divisions.
Factory default setting is 0.5d.

Press **PRINT/*UNITS*** button,and select either 0.5, 1 or 3.

AUTO POWER OFF

Press **G/N/T/*MENU*** button, AOtOFF is displayed. This is the Auto Off Timer. When set ON, the Indicator will shut off automatically after 5 minutes has elapsed based on the condition that no button is pressed and the scale base is stable during that period.

Press **G/N/T/*MENU*** button,and select ON or OFF. OFF is the default setting.

RETAIN ZERO DATA

Press **G/N/T/*MENU*** button, Un rZdOFFis displayed. This is Retain Zero Data which can be turned on or off. When set On, the Indicator stores the current zero point and restores it on the power-up.

Press **PRINT/*UNITS*** button, and select ON or OFF. OFF is the default setting.

2.8 Initial Setup (Cont.)
2.8.5 Readout Menu (Cont.)

LCD BACK LIGHT

Press **G/N/T/*MENU*** button, bLAutOis displayed. You can select to have the LCD backlight either on contiuously, off or in an automatic mode which turns off the display in 5 seconds.

Press **PRINT/*UNITS*** button, and either select ON, OFF or Auto. Auto is the default setting.

EP

This is service function and is not a user operated command. OFF is the default setting.
Not available w/LFT ON.

SAVE

Press **G/N/T/*MENU*** button to end this block, SAVE is displayed. All settings are retained.

Press **G/N/T/*MENU*** button, setting are saved and PRINT is displayed which is the next menu or press **PRINT/*UNITS*** button to go back to Setup menu without saving.

NOTE:(If initial setup, go to the next paragraph. To exit from the Setup, press **PRINT/*UNITS*** button to skip to PRINT then to LOCKSW, then QUIT. Press **G/N/T/*MENU*** button to go back to the weighing mode).

2.8 Initial Scale Setup (Cont.)
2.8.6 Print Menu

The Print menu provides data communication settings which can be entered. It contains 9 submenus: Reset, Baud rate, Parity Bit, Data Length, Stop Bits, Auto Print, Interval, Stable and Save.

Procedure

PRINT

To select any of the items in the Print menu, proceed as follows: **NOTE**: If you have entered from the preceeding menu, disregard the first step.

With the Indicator ON, press and hold the **G/N/T/*MENU*** button until MENU is displayed. When you release the **G/N/T/*MENU*** button, CAL is displayed, then press **PRINT/*UNITS*** button, until Print is displayed.

RESET

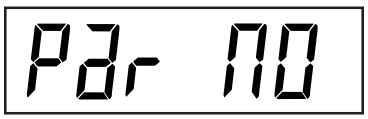
Press **G/N/T/*MENU*** button, rESEtn is displayed. This allows resetting the Print menu to factory defaults. rESETn = no does not reset settings. rESETy= yes will reset the entire Print menu as follows:
Baud rate =2400, parity =none, data length=7, stop bit=2.

Press **PRINT/*UNITS*** button, and select N or Y.

BAUD RATE

Press **G/N/T/*MENU*** button, bd2400 displayed.

Press **PRINT/*UNITS*** button, and select desired baud rate. Baud rate selections are: 1200, 2400, 4800 9600 and 19200. 2400 is the default setting.



PARITY

Press **G/N/T/*MENU*** button, PAr NO is displayed. This is the parity bit.

Press **PRINT/*UNITS*** button, and select desired parity of NO=none, Odd=odd, E=even. Default setting is none.

2.8 Initial Scale Setup (Cont.)
2.8.6 Print Menu (Cont.)

Procedure (Cont.)

DATA

Press **G/N/T/*MENU*** button, dAtA 7 is displayed. This is the data length.

Press **PRINT/*UNITS*** button, and select desired data length of 7 or 8. Default setting is 7.

STOP BITS

Press **G/N/T/*MENU*** button, StOP 2 is displayed. This is the stop bit.

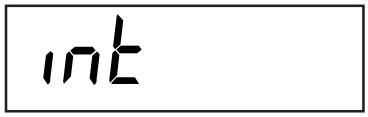
Press **PRINT/*UNITS*** button, and select desired stop bit of 1 or 2. Default setting is 2.

AUTO PRINT

Auto print has settings which enables data to a printer or PC to be set Off, run continuously, at selected preset intervals or on stability. On stability will print first stable non-zero value after each change in weighing value.

Press **G/N/T/*MENU*** button, AP OFF is displayed.

Press **PRINT/*UNITS*** button, and select either Off, Continous, Interval or On Stability. Default setting is OFF.



INTERVAL - PRINTING

When interval has been selected in the previous step, you may now set an interval from 1 to 3600 seconds.

Press **G/N/T/*MENU*** button, int is displayed, after a few seconds, a second display appears which allows you to set in the time in seconds.

Pressing the **PRINT/*UNITS*** button advances the zero from left to right. Sample at left indicates 10 seconds.

NOTE: 0000 not valid.

2.8 Initial Scale Setup (Cont.)
2.8.6 Print Menu (Cont.)

INTERVAL - PRINTING (Cont.)

Pressing the **TARE** button increments the digit from 1 to 0. When the desired number of seconds have been entered, press the **G/N/T/*MENU*** button. Stb OFF is displayed.

STABLE

When set ON, allows only stable weight values to be printed. When set OFF, prints immediate value with an indication of stability. In LFT, fixed to ON.

With Stb OFF displayed, press **PRINT/*UNITS*** button, and select ON or OFF. Default setting is OFF.

SAVE

Press **G/N/T/*MENU*** button to end this block, SAVE is displayed. All settings are retained.

Press **G/N/T/*MENU*** button to save settings, LOCSW is displayed which isthe next menu or press **PRINT/*UNITS*** button to go back to Read menu without saving.

NOTE:(If initial setup, go to the next paragraph. To exit from the Setup, press **PRINT/*UNITS*** button to skip to LOCKSW, then QUIT. Press **G/N/T/*MENU*** button to go back to the weighing mode).

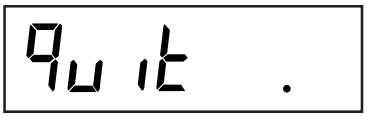
2.8 Initial Scale Setup (Cont.)
2.8.7 Lockout Switch Menu

Lockout Switch menu (LOCSW) is a software controlled option which can lock the settings in the Calibration, Setup, Readout, and Print menus to prevent tampering. When used in conjunction with the Lock Switch (jumper) on the printed circuit board, the Calibration, Setup, Readout and Print menus can be read only and not changed by an operator or the jumper can be left in place and the LOCSW menu is used to prevent accidental changes..

Procedure

To select any of the items in the Lockswitch menu, proceed as follows: **NOTE**: If you have entered from the preceeding menu, disregard the first step.

2.8 Initial Scale Setup (Cont.)
2.8.7 Lockout Switch Menu (Cont.)



Procedure (Cont.)

With the Indicator ON, press and hold the **G/N/T/*MENU*** button until MENU is displayed. When you release the **G/N/T/*MENU*** button, CAL is displayed, then press **PRINT/*UNITS*** button, until LOCSW is displayed.

Press **G/N/T/*MENU*** button, LSTOFF is displayed. This permits locking the Setup menu. OFF is unlocked, ON is read only (locked). This menu is hidden if the CAL jumper is off.

Press **PRINT/*UNITS*** button, and select ON or OFF.

Press **G/N/T/*MENU*** button, LrdOFF displayed. This permits locking the Readout menu. OFF is unlocked, ON is read only (locked).

Press **PRINT/*UNITS*** button, and select ON or OFF.

Press **G/N/T/*MENU*** button, LPtOFF is displayed. This permits locking the Print menu. OFF is unlocked, ON is read only (locked).

Press **PRINT/*UNITS*** button, and select ON or OFF.

Press **G/N/T/*MENU*** button, LCLOFF is displayed. This permits locking the Calibration menu. OFF is unlocked, ON is read only (locked). This menu is hidden if the CAL jumper is off.

Press **PRINT/*UNITS*** button, and select ON or OFF.

Press **G/N/T/*MENU*** button to end this block, SAVE is displayed.

Press **G/N/T/*MENU*** , Quit is displayed..

Press **PRINT/*UNITS*** button to go to CAL or press **G/N/T/*MENU*** button, Indicator returns to a weighing mode.

NOTE: At this point, the Indicator must be calibrated and the jumper removed from the CAL connector in order to lock out the menus. The top cover of the Indicator should be free to gain access to the CAL jumper.

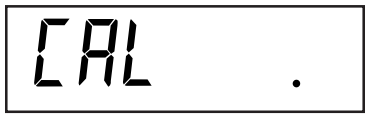
3. CALIBRATION AND SEALING

Model CW-11 Indicator requires span calibration before using. Span calibration ensures that the Indicator reads correctly within specifications using weight values from about 20% to 100% of capacity. For best results, calibrate at or near full capacity. Calibration unit can be set to either kg or lb.

NOTE: When the Indicator is used in Legal for trade applications, the calibration menu is locked out and is not accessable. This is to prevent unauthorized personnel from changing calibration. Before beginning calibration, make sure masses are available. If you begin calibration and realize calibration masses are not available, exit the menu. The Indicator will retain previously stored calibration data. Calibration should be performed as necessary to ensure accurate weighing. Masses required to perform the procedures should be in compliance with the requirements of the scale base being used with the Indicator. You have a choice of either span or linearity calibration. Span calibration checks zero and full span calibration points. Linearity calibration checks zero, mid span and full span points.

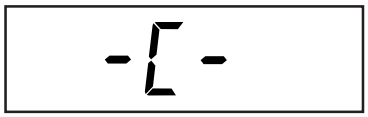
Procedure

SPAN CALIBRATION



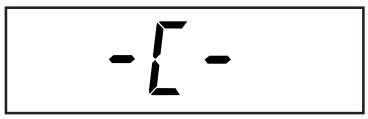
With the Indicator ON, press and hold the button **G/N/T/*MENU*** until MENU is displayed. When you release the **G/N/T/*MENU*** button, CAL is displayed.

Press **G/N/T/*MENU*** button, SPAN Y is displayed.



Press **G/N/T/*MENU*** button, -C- is displayed. The scale base MUST be stable during this period and is establishing a zero point. After a few seconds, the requested weight value is displayed. The sample illustration indicates a 10kg scale. (Cal Point CP was set for 10kg)

Place the indicated mass on the platform. Keep the platform stable during this period.



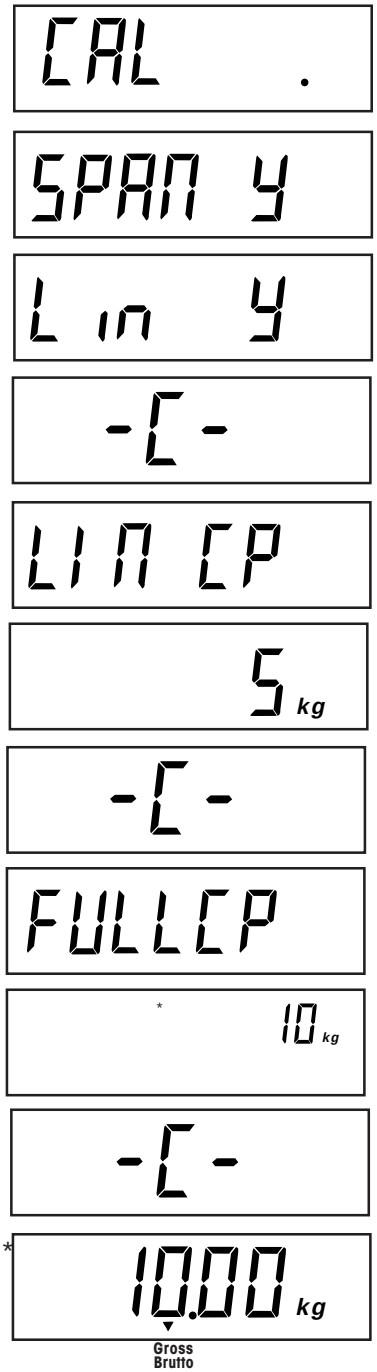
Press **G/N/T/*MENU*** button, -C- is displayed while the Indicator stores the reading and then displays the weight of the mass.

If the calibration was successful, the calibration mass is displayed and the calibration data is saved automatically. If unsuccessful, refer to the trouble-shooting section.

Remove calibration masses from platform.

NOTE: If the Indicator is to be used for legal for trade applications, it must be calibrated and the jumper removed from the CAL connector in order to lock out the menus. The top cover of the Indicator should be free to gain access to the CAL jumper. Refer to paragraph 3.1 for sealing for legal for trade use.

3. CALIBRATION AND SEALING (Cont.)



Procedure

LINEARITY CALIBRATION

With the Indicator ON, press and hold the button **G/N/T/*MENU*** until MENU is displayed. When you release the **G/N/T/*MENU*** button, CAL is displayed.

Press **G/N/T/*MENU*** button, SPAN Y is displayed.

Press **PRINT/*UNITS*** button, Lin Y is displayed.

Press **G/N/T/*MENU*** button, -C- is displayed. The scale base MUST be stable during this period and is establishing a zero point. After a few seconds, the display flashes LIN CP twice and the requested weight value is displayed. The sample illustration indicates a 5kg center point for a 10kg scale..

Place the indicated mass on the platform. Keep the platform stable during this period.

Press **G/N/T/*MENU*** button, -C- is displayed. The scale base MUST be stable during this period and is establishing a zero point. After a few seconds, the display flashes FULLCP twice and the requested weight value is displayed.

Place the indicated mass on the platform and press the **G/N/T/*MENU*** button -C- is displayed.

If linearity calibration was successful, the calibration mass is displayed and the calibration data is saved automatically. If unsuccessful, refer to the trouble-shooting section.

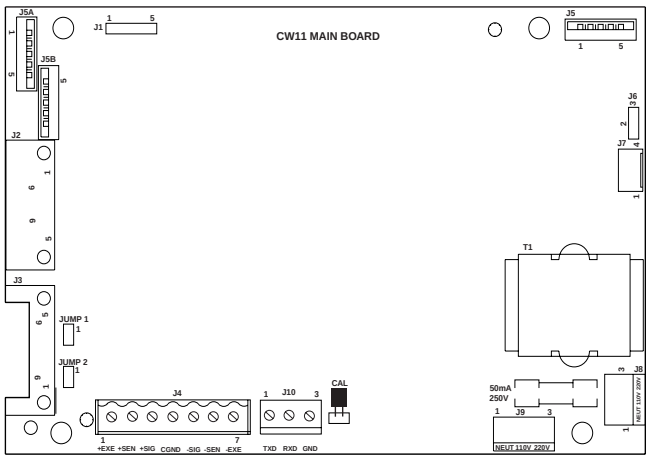
Remove calibration masses from platform.

NOTE: If the Indicator is to be used for legal for trade applications, it must be calibrated and the jumper removed from the CAL connector in order to lock out the menus. The top cover of the Indicator should be free to gain access to the CAL jumper. Refer to paragraph 3.1 for sealing for legal for trade use.

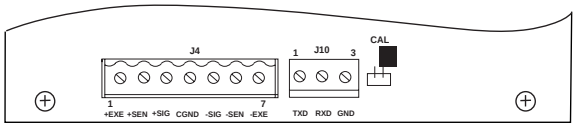
3.1 Legal for Trade (LFT) Operation and LFT Sealing

Before this product can be used in legal-for-trade or legally controlled applications, it must be inspected in accordance with local weights and measures or approval agency regulations. It is the responsibility of the purchaser to ensure that all pertinent legal requirements are met. Please contact your local weights and measures office or authorized manufacturer's representative for further details.

Legal for Trade (LFT) operation is possible through a Lock Switch (CAL jumper) located on the PC board. The Indicator MUST be set up and calibrated prior to performing this proceedure.



PC Board Connections.



Procedure

Set up Indicator, and calibrate. After this is done, remove power from the Indicator.

At the bottom of the rear cover of the Indicator are two slots. There is a spring clip at each slot location which holds the cover in place. Insert the small scewdriver blade into each slot and press and work the back cover off. With the cover removed, proceed as follows:

Remove the rear cover. Inside is the battery compartment which is wired to the PC board underneath.

Remove batteries if installed.

Remove the four corner screws from the battery board. One of the screws is crossed drilled to accept a wire seal when used for legal for trade applications.

Carefully lift the battery board up and out of the indicator making sure that that the wires are not pulled off of the battery connector on the main PC board.

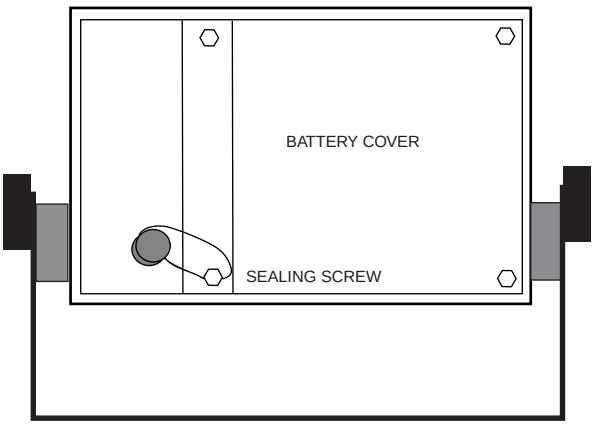
Refer to the illustrations at the left and note the position of the CAL jumper. The first illustration shows the jumper in place. To lock out the menus, remove the jumper and position it on one pin as shown in the second illustration. This removes the jumper and stores it in the event it has to be repositioned.

3.1 Legal for Trade (LFT) Operation and LFT Sealing (Cont.)

Replace the battery cover and four battery cover screws. One of these screws is cross drilled and can accept a wire seal.

NOTICE: The CW-11 has been tested and found to comply with Class III requirements of NIST Handbook 44.

After the Indicator has been tested and found to comply with local applicable regulations by a local weights and measures official, it may be sealed as follows:



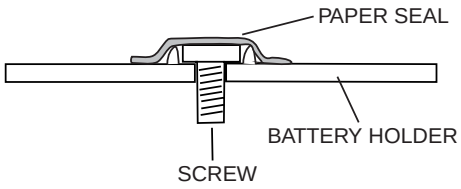
Sealing the Indicator

LEAD AND WIRE SEAL

See illustration at left. Place wire seal through the holes in the screw and ribs as shown and compress lead seal in place.

PAPER SEAL

If an audit trail or paper seal will be used, install the 6-32 pan head screw to the battery cover and place seal over the screw area.



CLOSING THE INDICATOR

After the Indicator has been calibrated and sealed, replace the rear cover and snap into place. Connect power to the Indicator and verify operation.

4. OPERATION

Before using the Indicator, make sure it has been properly set up and calibrated. Refer to Sections 2 and 3 and review settings. Four buttons are used: **ON/ZERO/*OFF*** = power on or OFF, **PRINT/*UNITS*** = short press =prints data, long press= changes unit of measure, **G/N/T/*MENU*** - short press = view gross net, or tare, long press = enter setup menu, **TARE** - short press = enter tare.

4.1 Turning On Indicator

Press and hold **ON/ZERO/*OFF*** button until the LCD display appears, then release **ON/ZERO/*OFF*** button. The display momentarily displays segment check, the software revision of the Indicator and then goes into a weighing mode. If the Indicator has been properly set upand connected, the display should be as shown to the left. The decimal point position may be different depending on the setup of the Indicator.

4.2 Turning Off Indicator

To turn the Indicator off, press the **ON/ZERO/*OFF*** button until OFF is displayed.

4.3 Zero Operation

Using a *short* duration press, press **ON/ZERO/*OFF*** button to zero the Indicator. The display acknowledges by indicating the selected measuring unit followed by a zeroed display.

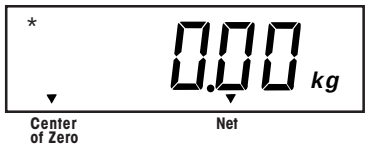
NOTE: Stable cursor must be lit to accept zero operation.

Place item to be weighed on the scale platform. The display indicates a sample of 5kg, gross weight.

4.4 Tare Operation

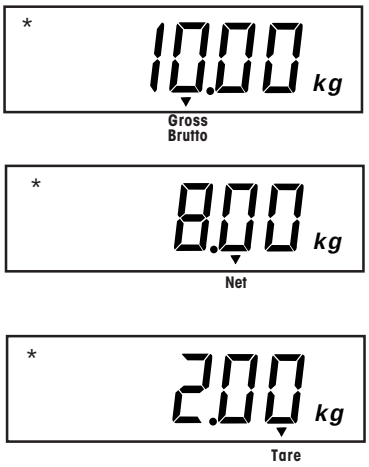
When weighing material or objects that must be held in a container, taring stores the container weight in the Indicator's memory. To store the container weight, proceed as follows:

Place the container on the scale. Sample shown is 2kg.



Press **TARE** button. Scale is tared and shows Net weight.

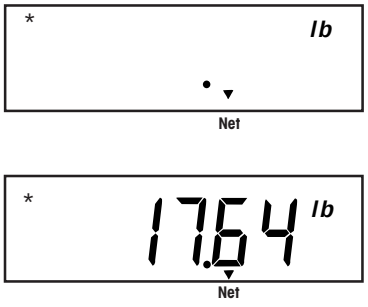
4. OPERATION (Cont.)



4.5 Gross/Net/Tare Recall Operation

When a container has been placed on the platform and tared, it's weight is stored in memory. Adding material to the container is shown as NET weight. The gross weight is a combination of the tared weight and the material. The **G/N/T/*MENU*** button allows switching between GROSS, NET and TARE weights.

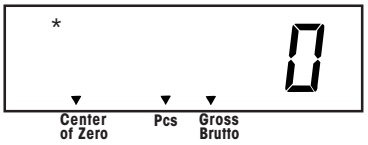
Repeately press (short presses) the **G/N/T/*MENU*** button to cycle through Gross, Tare and Net readings.The sample illustrations indicate a tare weight of 2kg simulating a container, a net weight of 8kg which would be the material in a container and a gross weight of 10kg which is the total weight of the container and material. After 3 seconds, display returns to Net weight.



4.6 Unit Switch Operation

To switch measuring units, proceed as follows:

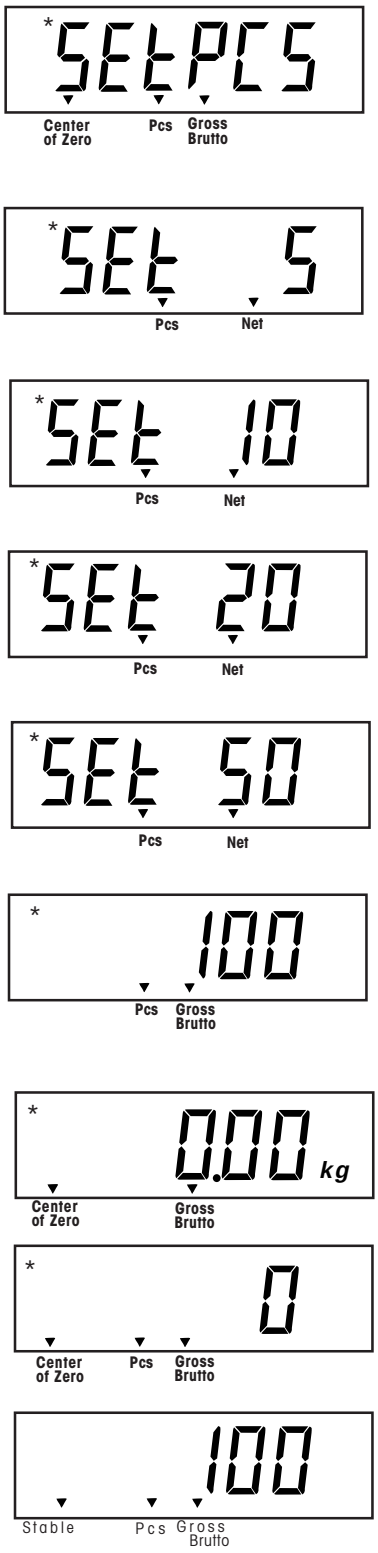
Press and hold **PRINT/*UNITS*** button until display changes to selected measuring unit. Depending on which units are enabled in the menu, you have a choice of g, lb, kg or oz. The display sample indicates 8kg load changed to lbs shown as a net weight because a tared weight of 2kg was used and stored in memory.



4.7 Parts Counting Operation

Parts counting is enabled only when turned ON in the Readout menu. Refer to paragraph 2.8.4. In the parts counting mode, the Indicator displays the quanitity of parts placed on the platform. The Indicator determines the quanitity based on the average piece weight of a sample. All parts must be reasonably uniform in weight for accurate measurements.

4. OPERATION (Cont.)



4.8 Establishing a New Average Piece Weight (APW)

If the APW has not been calculated previously, proceed as follows:

Press and hold **PRINT/*UNITS*** button until Pcs cursor is displayed.

Press and hold **G/N/T/*MENU*** until SEtPCS is displayed. This is displayed for about 1 second, then SEt 5 is displayed.

Select an alternate sample size by pressing and holding **PRINT/*UNITS*** button. Choices are 5, 10, 20, and 50. Place count samples on platform.

Press **G/N/T/*MENU*** button to accept current sample. The new APW is established. Place parts on platform or in a container to count. If a container is used, be sure to tare the empty container first.

Additional parts may be added to the platform as long as the same sample weight intially entered is the same as the parts being weighed.

4.9 Returning to a Weighing Mode

Press **PRINT/*UNITS*** button until the display indicates the desired measuring unit either kg, lb or g.

4.10 Returning to a Preset APW

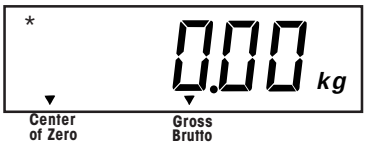
If the APW has been calculated previously, the Indicator stores the value in memory. Proceed as follows to use a previously set APW:

Press and hold **PRINT/*UNITS*** button until Pcs cursor is displayed.

Place samples on the platform. The display indicates the number of pieces based on the previously entered data. Sample shown at left indicates 100 pieces.

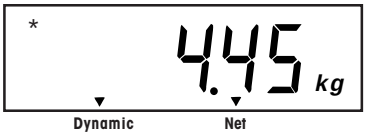
CAUTION
WHEN POWER IS TURNED OFF, APW WILL ALWAYS RETURN TO DEFAULT APW 5.

4. OPERATION (Cont.)



Sample Container Weight

Tared Container weight



Displayed Average Animal Weight

4.11 Animal Weighing

Animal weighing is enabled only when 'Ani' in the Read menu under Alternate Mode is turned ON and animal sample time and animal display time have been set in the Setup menu. Refer to paragraphs 2.8.4. and 2.8.5. Those menus allows setting animal sample time up to 10 seconds and to display the averaged animal weight for up to 10 seconds. Longer sampling times are used for highly active subjects.

With the Indicator in a weighing mode, place a holding container if used on the base. Press the **TARE** button to tare the container weight.

Place the subject in the container and momentarily press the **PRINT/*UNITS*** button. The display counts down the number of seconds you have set, averages the subjects weight and then displays this for the number of seconds you have selected. The average weight shown is stable. The value is also sent to the RS232.

At the end of the time out period, the actual weight is shown as the Indicator reverts to a normal weighing mode. If the subject is moving a lot, the displayed weigh will fluctuate.

Press the **TARE** button to remove the container weight from memory unless you intent to weigh additional subjects using the same container. The Indicator is now in a normal weighing mode.

4. OPERATION (Cont.)

4.12 RS232 Commands

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

4.12.1 Output Formats

Data output can be initiated in one of two ways:

1. By pressing the **PRINT/*Units*** button, or
2. Sending a print command ("P") from a computer.

Output Formats

The output format is as follows:

	Weight*	Spaces	Unit	Stable	Legend	CR	LF
Length:	9	1	3	1	1	1	1
				blank=stable	G,N,T		
				"?"= not stable			

* Displayed weight sent right justified with lead zero blanking. Nine characters (fixed) include: decimal point (1), weight (7 max), polarity (1) : blank if positive, floating negative (1)

RS232 USER COMMAND TABLE

Command Character	Description
?	Print current mode: kg, g, lb., oz.
P	Same as pressing PRINT button.
T	Same as pressing TARE button.
Z	Same as pressing ZERO button.
x S	Print Stable only. Where x=0 Off, and x=1 On
A S	Automatically send data when stable after motion.
xxxxS	Send at interval. Where xxxx=1 to 3600 seconds.
CS	Send as fast as possible (continuous print)
M	Increment to next enabled unit

To turn auto printing, interval printing or continuous printing off, send 1S or 0S to reset normal printing mode.

4.13 Printing Data

Printing data to an external computer or printer requires that the communications parameters in the Print menu, be set first. Refer to paragraph 2.8.6 Print Menu for proper set up.

To print data, press **PRINT/*UNITS*** button with a short press. The display acknowledges by momentarily blinking off.

NOTE: If you hold this button down too long, the display will advance to another measuring unit.

5 CARE AND MAINTENANCE

To keep the Indicator operating properly, the housing should be kept clean and free from foreign material. If necessary, a cloth dampened with a mild detergent may be used.

5.1 Troubleshooting

SYMPTOM	PROBABLE CAUSE(S)	REMEDY
Unit will not turn on.	Adapter not plugged in or properly connected.	Check power cord connections. Make sure adapter connector is plugged all the way into the Indicator.
	Batteries dead or not properly installed.	Check battery connector. Check orientation of the batteries. Replace batteries.
	Membrane switch failure.	Check functions of membrane switch.
Cannot zero Indicator, or will not zero when turned on.	Load on scale base exceeds allowable zero % entered in ZERO parameter of Setup menu.	Remove load on scale base to less than entered zero %. Change allowable zero % in ZERO parameter of Setup menu.
	Retain Zero Data is enabled in scale menu.	Normal operation when this feature is disabled.
Center of Zero display indicator erratic or does not appear with no load on scale base.	Scale base motion or disturbances exceed center of zero criteria.	Remove disturbances or reduce motion. Increase AZT level in readout menu. Increase averaging level in readout menu.

5 CARE AND MAINTENANCE (Cont.)

5.1 Troubleshooting (Cont.)

SYMPTOM	PROBABLE CAUSE(S)	REMEDY
Cannot display weight in desired weighing unit.	Desired unit not set to ON in Readout menu.	Enable desired unit in Readout menu. See paragraph 2.8.5 Conversion too large (typically in g).
RS232 not working.	RS232 communication parameters set up incorrectly. Improper or loose cable connections.	Verify communication parameters. Check cable connections.
Unable to calibrate unit.	Scale base disconnected. SETUP Lockout switch set to ON and jump CAL on the circuit board set to open position. Incorrect value for calibration mass.	Check connections. Set LCL to OFF in the LocSW menu, and set Jump CAL on the circuit board to short position. Refer to paragraphs 2.3 and 2.8.7. Use correct calibration mass.

5.2 Error Codes List

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

LoBat	Is indicated when batteries are weak. Approximately 20 minutes of operating time remain.
Error 1	Indicates an overload condition.
Error 2	Indicates an underload condition.
Error 7	EEPROM data incorrect.
Error 14	Zero exceeds ZERO% and cannot be zeroed.
Err 21	Calibration data does not match current full scale, Grad and Cal Point settings. Settings must be restored or the Indicator must be recalibrated using the current settings.

5.3 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.

5.4 Technical Data

Materials

Housing stainless-steel
Keypad/display overlay polyester

Ambient conditions

The technical data is valid under the following ambient conditions:

Ambient temperature	-10°C to 40C/ 14°F to113°F
Relative humidity	10%.....95%, noncondensing
Height above sea level	up to 4000m

Operability is assured at ambient temperatures between 5 and 40° C.

5.4 Technical Data (Cont.)

Capacity (lb or kg)	5 to 20,000*
Graduation (readability) lb or kg	0.001 to 5*
Displayed Resolution	1:5000 LFT or 1: 20,000 Non LFT*
Weighing modes	lb, kg, oz, g*
Functions	Parts counting, animal weighing
Over range capacity	Capacity plus 9d
Stabilization time	< 3 seconds
Auto-zero tracking capture range	0.5, 1, or 3 divisions*
Zeroing range	2%, 18%, or 100% of capacity*
Span calibration	push-button (selectable from 20% to 100% of scale base capacity)
Weighing system	Analog strain gauge load cell
Load cell excitation voltage	5V dc
Load cell input sensitivity	Up to 3mV/V
Load cell drive	60 mA at 5V dc (drives up to 4 x 350 ohm load cells)
Display (in/cm)	LCD (1.0/25.4)
Power	AC 120 or 230 V ac and 240 Vac, 43-63 Hz or 6 alkaline C-type batteries
Typical battery life	100 hours with one 350 ohm load cell, 40 hours with four load cells
Operating temperature	-10°C to 40°C (14°F to 113°F)
Keyboard	4 function membrane switches
Dimensions (WxDxH) (in/cm)	8.25 x 6.75 x 3/20.0 x 17.2 x 7.7
Shipping packing dimensions (in/cm)	7 x 9 x 12.5/17.7 x 22.8 x 31.7
Net weight (lb/kg)	4.3/1.9
Shipping weight (lb/kg)	7/3.1

* User selectable

NTEP Approved No: 99-100

Canada Weights and Measures Approved No: AM5340

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.