WEIGH-TRONIX

3600B Series
Bench Scale

User's Manual

UNITED STATES

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.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.

EUROPEAN COUNTRIES

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which the user may be required to take adequate measures.

CAUTION

Risk of electrical shock. Do not remove cover. No user service-able parts inside. Refer servicing to qualified service personnel.

Weigh-Tronix reserves the right to change specifications at any time.

02/15/01 3600_U.P65 PN 29705-0015e3 Printed in USA

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Specifications

Capacity and Dimensions

Model	Capacity	Dimensions
3632B*	10 lb (5 kg)	12 x 14"
3632B	50 lb (25 kg) 100 lb (50 kg)	12 x 14"
3634	250 lb (150 kg)	18 x 18"

*Model 3632B-10 has an 8" dia. round stainless steel platter.

Construction

Model 3632B: Die cast aluminum with stainless steel shroud

Model 3634B: Mild steel with stainless steel shroud

Display

Seven-digit liquid crystal display. 0.5-inch digits with blue electro luminescent backlight

Units of measure

lb, kg, g selectable from scale display

Controls

ZERO key **PRINT** key

TARE key **GROSS/NET** key

UNITS key (lb/kg/g)

Display dimensions

9.5" wide, 3.25" high (24 cm x 8.25 cm) , front mounted

Power

Input: 120 VAC ±10%, 60 Hz 0.1 amp maximum
Output: 15 VDC @ .3 amps DC minimum
(Battery Option)

Power cord

6 ft (1.83 meters)

Environment

-10°C to 40°C (14°F to 104°F)

Agencies

NTEP Certificate #95-071A2
CSA Pending
UL Pending

Warranty

Two-year limited warranty applies

Introduction

The 3600B series of bench scales uses the Quartzell™ weight transducer for higher resolution and greater weighing accuracy. This manual covers the installation and operation of the different size and capacity scales that make up the 3600B series.

If you find any omissions or inaccuracies in this manual, please call 507-238-4461 and ask for a technical writer.

Installation

Unpacking

Unpack the scale and check for any obvious shipping damage. Keep all packing materials and report any damage to your Weigh-Tronix distributor immediately.

Models 3632B allows the transformer to be attached to the bottom of the scale or separated from the scale base. Model 3634B's transformer is internal. See Figure 1 for location of transformer.

Maximum battery life with continuous backlight usage is approximately 12 hours on a full charge. Without backlight enabled, battery life is approximately 24 hours. Recharge time is approximately 8 hours.

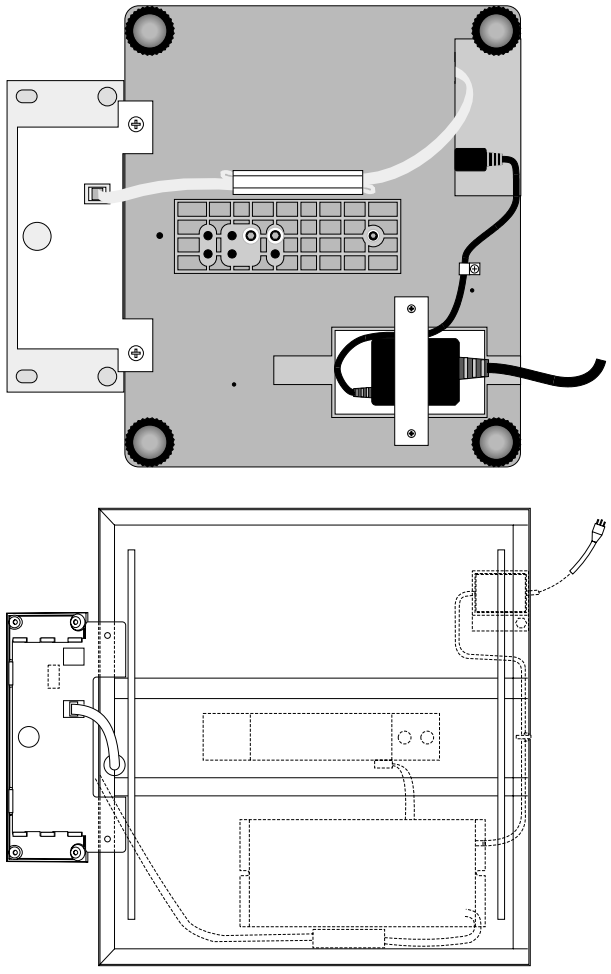

Figure 1
TOP: Transformer location on Model 3632B.
BOTTOM: Transformer loction in Model 3634B.

Place the scale on a solid surface and level the scale by using the level bubble located under the scale platform as a guide. Loosen the jam nuts on the leveling feet and turn them until the bubble indicates level. Tighten the jam nuts.

Display and Controls

Figure 2 shows the control panel of the 3600B series bench scales. This panel contains the weight display, annunciators and keys.

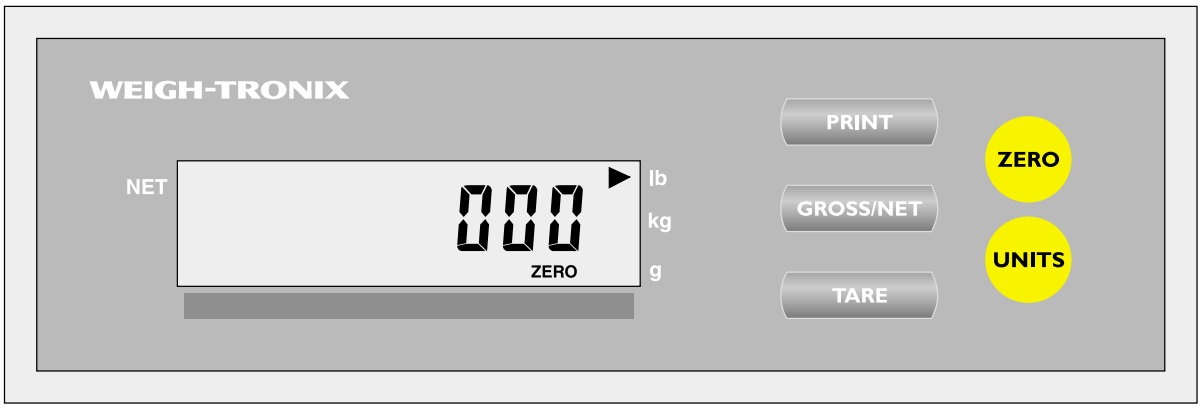

Figure 2
Control panel

Keys

ZERO	Use this key to zero the scale. Default zero window is ±100% of capacity. If weight falls outside the zero window the zero key will not work.
UNITS	Use this key to change unit of measure to either lb, kg, or g.
PRINT	Use this key to send weight information to a peripheral device.
GROSS/NET	Use this key to switch the display between gross and net displays.
TARE	Use this key to tare a weight from the scale.

Annunciators

Following are the annunciators which appear on the display:

LB, KG, G, NET, MOTION, ZERO, LO BAT

Operating the Scale

Powering Up the Scale

Warning

Always plug the scale into an appropriate, easily accessible outlet with an earth ground. Failure to do so may cause a fatal shock.

The scale requires a 120 VAC, 60 Hz power source, isolated from electrical noise inducing equipment such as motor starters, fluorescent lighting, etc. The scale is supplied with a UL standard 3-prong plug for AC operation and must be connected to an outlet which provides a third wire earth ground to insure proper operation and safety. (see note at left). Upon power up the unit performs the following startup sequence:

- display shows model and revision level of software
- display shows a segment test

Performing a Normal Weighment

Follow these steps to perform a normal weighment:

1. Press the **ZERO** key if the scale is not at zero weight. . . — Zero weight should be displayed.
2. Place the item to be weighed on the scale platform. . . — The gross weight will be displayed.
3. Remove the item from the scale.

Using the Tare Function

Follow these steps to perform a weighment using the **TARE** key:

1. Press the **ZERO** key if the scale is not at zero weight. . . — Zero weight should be displayed.
2. Place the container to be tared on the scale platform. . . — The gross weight will be displayed.
3. Press the **TARE** key. . . — The weight is tared, zero weight is displayed and the NET annunciator illuminates.
4. Place the item to be weighed in the container. . . — The net weight will be displayed.
5. Remove the items from the scale.

To clear a tare value, empty the scale and press the **TARE** *key.*

Changing Unit of Measure

To change from one unit of measure to another, press the **UNITS** key. You can choose from pound, kilogram and gram units of measure.

Error Codes

Below are the possible error codes you may see during operation of this scale. You may continue with operation by pressing the **TARE** key except in the case of the calibration error. The scale must be recalibrated to continue.

"--------"	Lower dashes mean the scale is below the initial zero range.
"--------"	Upper dashes mean the scale is over capacity.
"CAL Err"	Calibration error

Communication

Connections

The 3600B series uses a DE-9 connector for EIA Standard RS-232 serial communication.

Pinout for the DE-9 connector is as follows:

DE-9 Female Scale		
Pin	**Name**	**Direction**
1	JMP 1	-
2	TXD	OUT
3	RXD	IN
4	JMP 1	-
5	SG	-
6	JMP 1	-
7	JMP 2	-
8	JMP 2	-
9	NC	-

Computer to Scale Serial Protocols

Standard Protocol

(NCI) Normal bidirectional **C**omputer **I**nterface

Your system uses one of two protocols; Standard (nCi Stn) and 8213. The Standard protocol is described below.

Key to symbols used:

<ETX>	End of text character (03 hex)
<LF>	Line Feed character (0A hex)
<CR>	Carriage Return character (0D hex)
<SP>	Space (20 hex)
x	Character from display including minus sign
hh. . .	Two or more status bytes
uu	Units of measure (using ANSI standard abbreviations)

Upper and lower case can be used.

Commands		
Command	**Scale Response**	**Results**
H<CR>	<LF>xxxx.xxuu<CR> <LF>hh...<CR><ETX>	Returns decimal weight in 10x with units plus scale status
W<CR>	<LF>xxxxxx<CR> <LF>hh...<CR><ETX>	Returns decimal weight with units plus scale status
S<CR>	<LF>hh...<CR><ETX>	Returns scale status
Z<CR>	<LF>hh...<CR><ETX>	Scale is zeroed, returns scale status
T<CR>	<LF>hh...<CR><ETX>	Scale is tared, returns scale status
U<CR>	<LF>uu<CR> <LF>hh...<CR><ETX>	Unit of measure is changed, returns the current unit followed by the status
all else	<LF>?<CR><ETX>	Unrecognized command

Weight Command ('W')

This command causes the scale to return a WYSIWYG (What You See Is What You Get) of its display when it is in normal weighing mode. That is, the scale will send whatever is showing on its display including any minus sign and/or decimal point. If it is weight, the units of measure will be returned in addition to the displayed weight. For decimal weight, the length of the weight field will be equal to the length of the scale's display plus two or three (one for the decimal point if necessary, and two for the units, e.g., "lb".) Units of measure will appear in their ANSI standard abbreviated form ("lb" for pounds, "kg" for kilograms, etc.) If the scale is displaying all upper bars (over capacity), the weight field will be filled with carets ("^^^^^^^). If the scale is displaying all lower bars (under capacity), the weight field will be filled with underscores ("_____".) If the scale is displaying middle bars (zeroing error), the weight field will be filled with dashes ("---------".)

Scale Status Command ('S')

There are three status bytes. The status bits are defined as follows:

Bit	First Status Byte	Second Status Byte	Third Status Byte
0	1=Scale in motion 0=Stable	1=Under capacity 0=Not under capacity	1=Low battery 0=Not low battery
1	1=Scale at zero 0=Not at zero	1=Over capacity 0=Not over capacity	Always 0
2	1=RAM error 0=No RAM error	1=ROM error 0=No ROM error	1=Net Weight 0=Gross Weight
3	Always 0	1=Faulty calibration data 0=Calibration data okay	Always 0

Zero Command ('Z')

If zeroing criteria are met, the scale is zeroed. In any case, scale status is returned.

High Resolution Command ('H')

It is the same as the W command except that when weight is returned, it is returned with ten times the scale's displayed resolution. Thus, for decimal weight, the length of the weight field is equal to the length of the scale's display plus three or four.

Undefined Commands

When the scale receives an unrecognized or unsupported command, it returns a question mark.

Serial Data Transmission

Modem control lines are not supported for RS-232

Baud Rates: 1200, 2400, 4800, 9600, 19,200

Word Length: 10 bits
7 Data, 1 Parity

Parity: Even, Odd or None

Optional (8213) Protocol

Commands		
Command	**Scale Response**	**Results**
W	*<STX>0XX.XX<CR>* *<STX>0XX.XX<CR>* *<STX>0XX.XX<CR>* *<STX>00XXXX<CR>* *<STX>?[STATUS]<CR>*	*Pounds - See notes 1, 2* *Kilos - See notes 1, 2* *Ounces - See notes 1, 2* *Ounces - See notes 2, 3* *- See note 4*
H	*<STX>0XX.XX<CR>* *<STX>0XX.XX<CR>* *<STX>0XX.XX<CR>*	*Pounds - See notes 1, 2* *Kilos - See notes 1, 2* *Ounces - See notes 1, 2*
	<STX>00XXXX<CR> *<STX>?[STATUS]<CR>*	*Ounces - See notes 2, 3* *- See note 4*
Z	*<STX>?[STATUS]<CR>*	*Zeros scale*
A	*<STX>?<CR>*	*Scale test*
B	*<STX>[CONFIDENCE]<CR>*	*Confidence*
E	*<STX>E<CR>*	*Echo on*
F	*<STX>F<CR>*	*Echo off*
All other	*<STX>?[STATUS]<CR>*	*Bad command*

Notes:

1. The decimal point position may be different depending on selected capacity and division.
2. A fixed leading zero is added to bring character count to the same as capacities with a decimal point.
3. This supports the 1600 x 1 capacity which does not require the decimal point.
4. A status byte is sent if the scale is in motion, under zero, or over capacity.

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