

**Model WS Range
Model SBI-140 Indicator**

User Manual

11 January 2007

AWT35-000056 Issue B



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WARNINGS

Safe installation

Safety



THE EQUIPMENT CONTAINS NO USER SERVICEABLE COMPONENTS.

Installation and maintenance of the equipment must only be carried out by trained and authorised personnel.

Electrical installation

The mains lead must be connected to a supply outlet with a protective earth contact. The electrical supply at the socket outlet must provide over current protection of an appropriate rating. For your protection all mains (110V or 230V) equipment used out of doors or in wet or damp conditions should be supplied from a correctly fused source and protected by an approved ground fault protection device (RCD, GFCI etc.)

IF IN DOUBT SEEK ADVICE FROM A QUALIFIED ELECTRICIAN.



Routine maintenance

To avoid the possibility of electric shock or damage to the machine, always switch off the machine and isolate from the power supply before carrying out any routine maintenance.

To avoid the risk of the machine falling, where applicable, ensure that it is placed securely on a flat and level surface.

Safe use

Caution – Cleaning the indicator/weigh head

Harsh abrasives, solvents, scouring cleaners and alkaline cleaning solutions, such as washing soda, should not be used especially on the display windows. Under no circumstances should you attempt to wipe the inside of the machine.

The outside of standard products may be wiped down with a clean cloth, moistened with water containing a small amount of washing up liquid.

The outside of products waterproofed to IP65, IP66 and IP67 may be washed down with water containing a small amount of proprietary detergent.

Training

Do not attempt to carry out any procedure on a machine unless you have received the appropriate training or read the Instruction Manual.

EMC compliance

The following may be applicable to your machine.

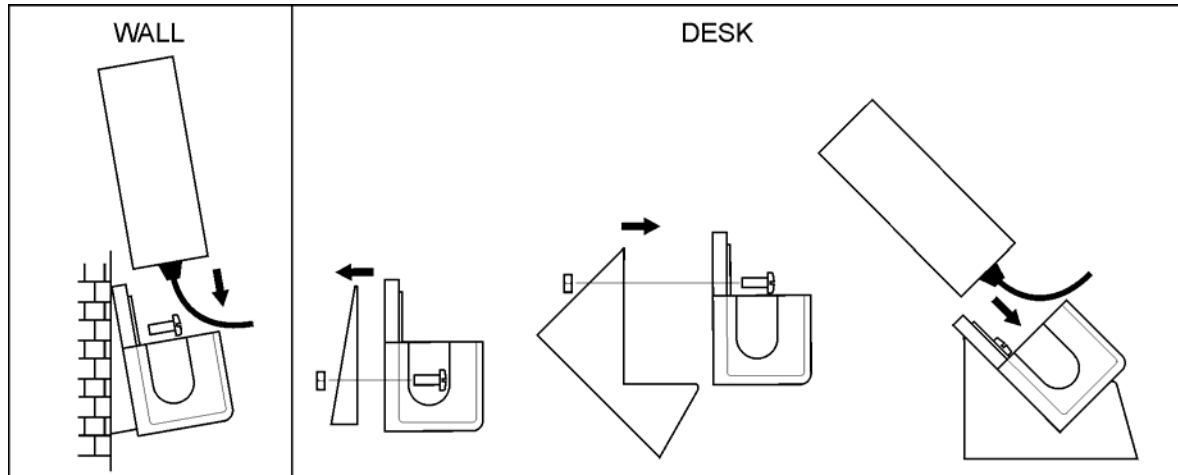
WARNING:

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

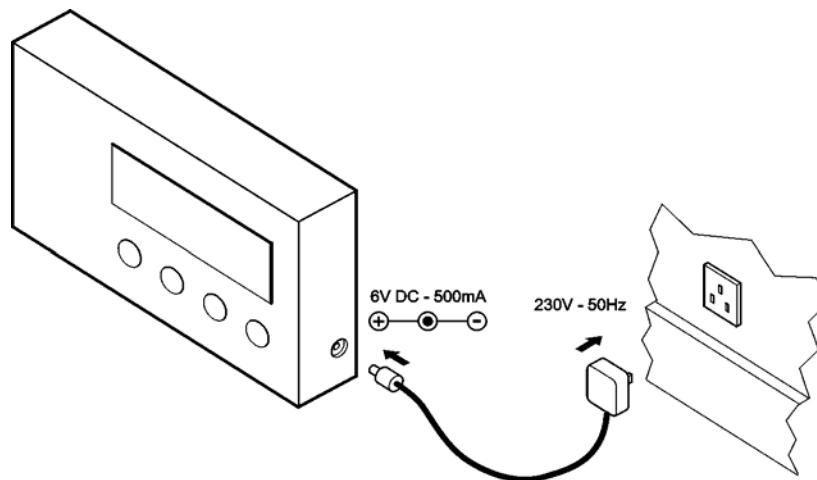
Setup Instructions

Desk/Wall Bracket

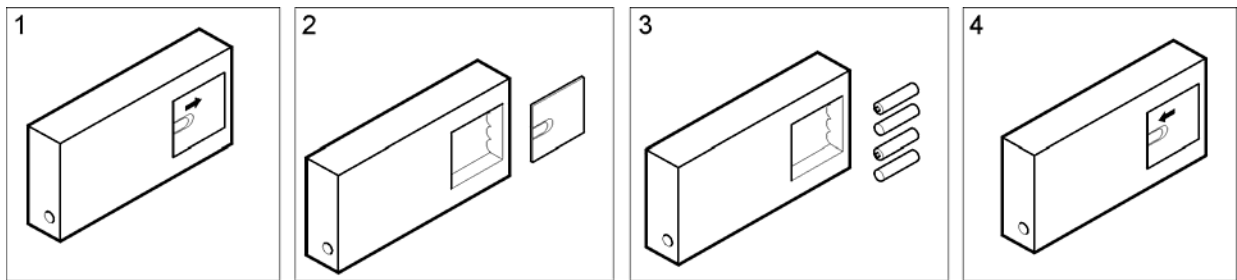
By changing the angle blocks as shown below, the indicator bracket can be converted into a wall mounting bracket.



Power Supply

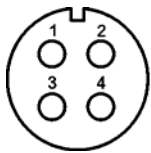


Installing Batteries

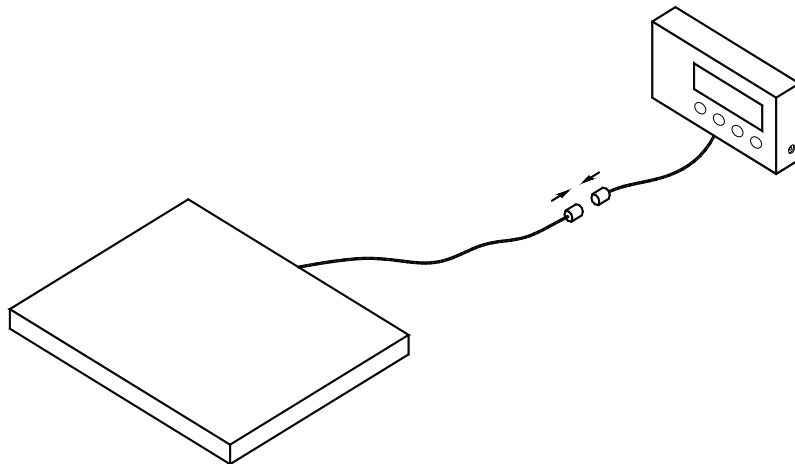


Connecting Indicator to Platform

If necessary, wire the cable attached to the base as shown.

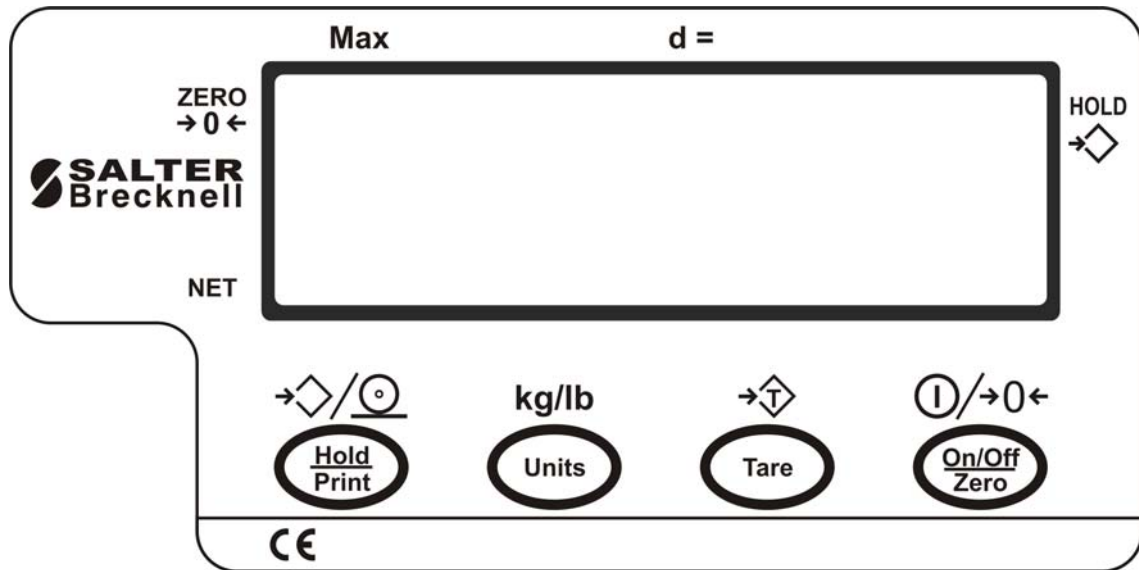




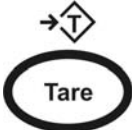

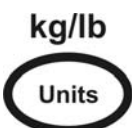
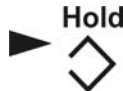
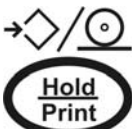

- 1 Red Excitation +
- 2 Black Excitation -
- 3 Green Signal -
- 4 White Signal +



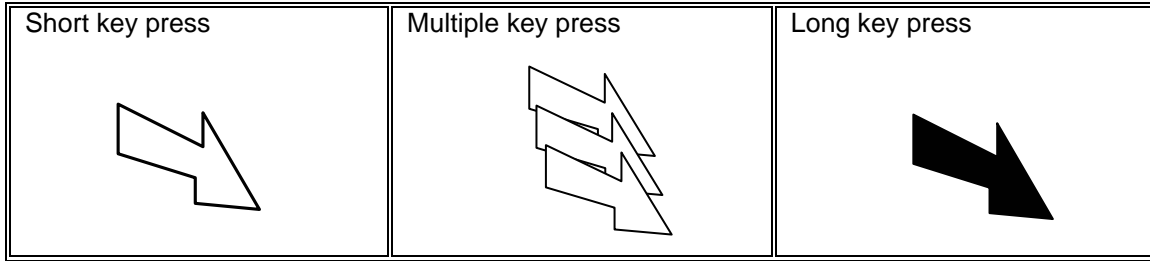
General Operating Instructions

Display



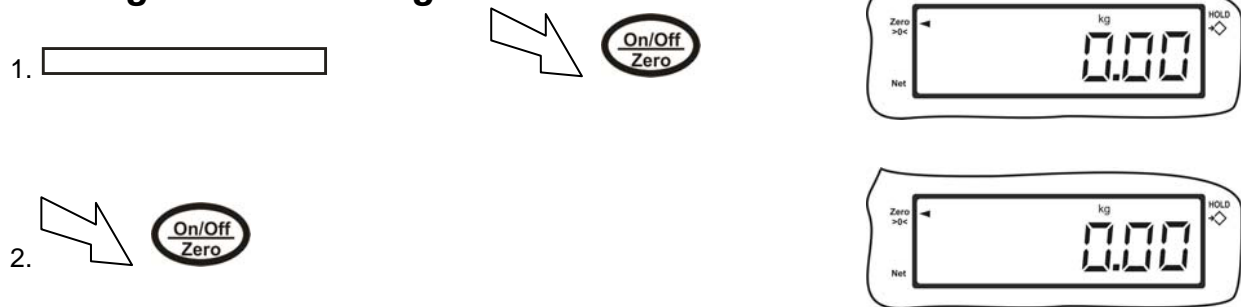
Function Keys		Annunciators	
	On/Off/Zero	Zero 	Centre of zero
	Activate the tare	Net 	Net weight displayed
	Select unit		Hold activated
	Hold/Print	kg, lb, oz	Active unit of measure
			Scale in motion

Manual symbols



Indicator Operation

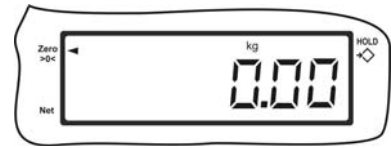
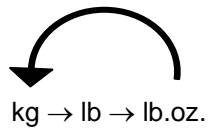
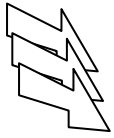
Turning On and Zeroing the Indicator



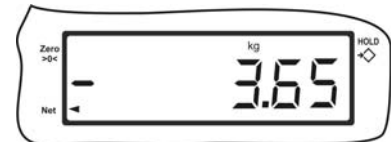
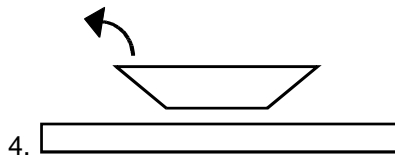
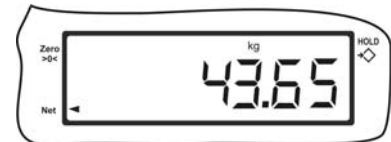
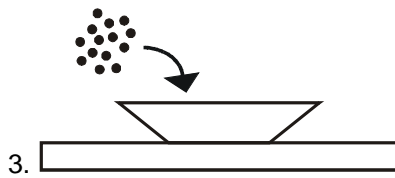
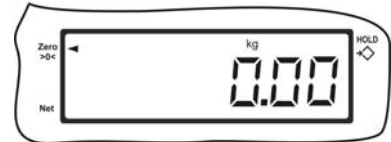
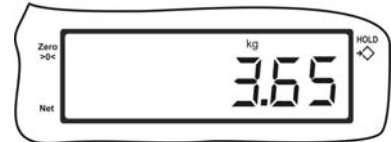
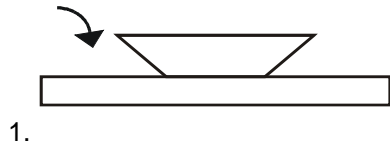
Turning off the Indicator



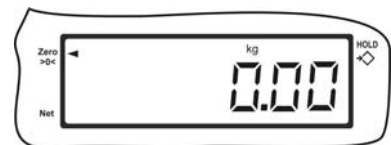
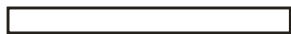
Selecting Unit of Measure



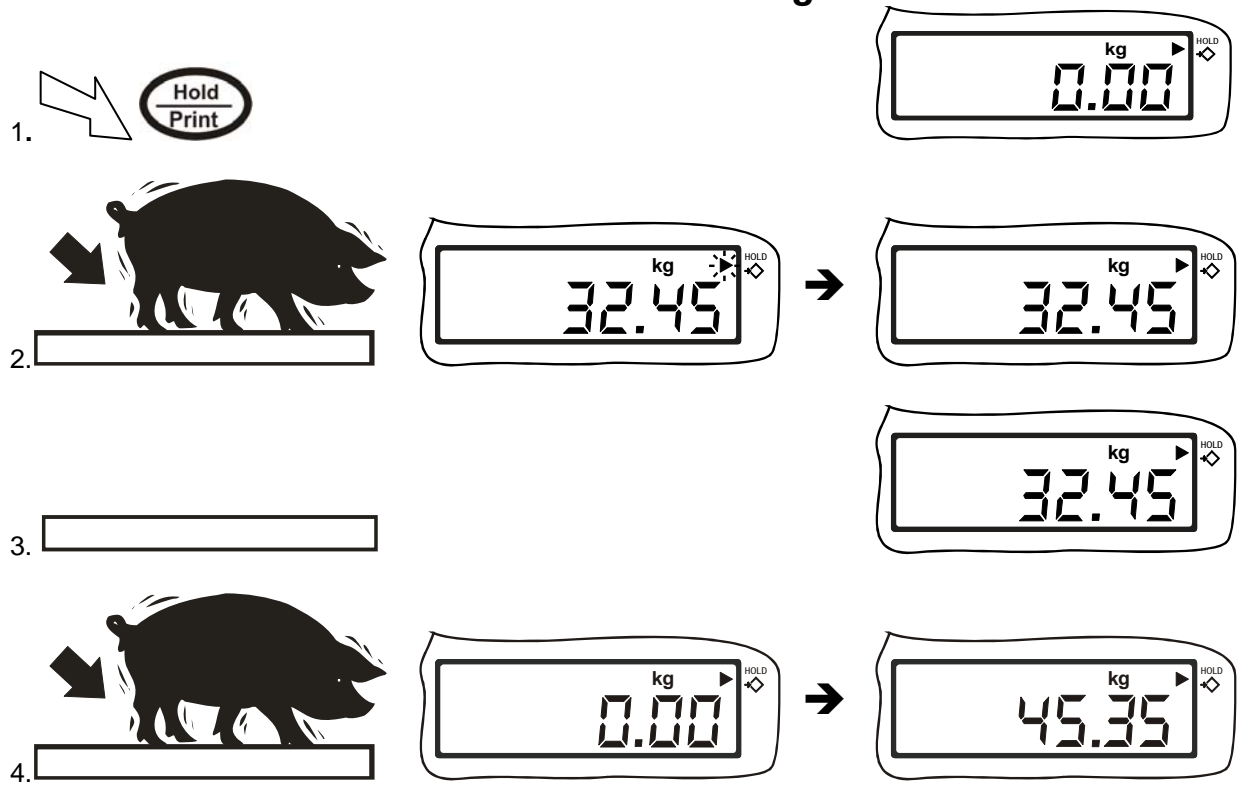
Using the Tare



Removing the Tare

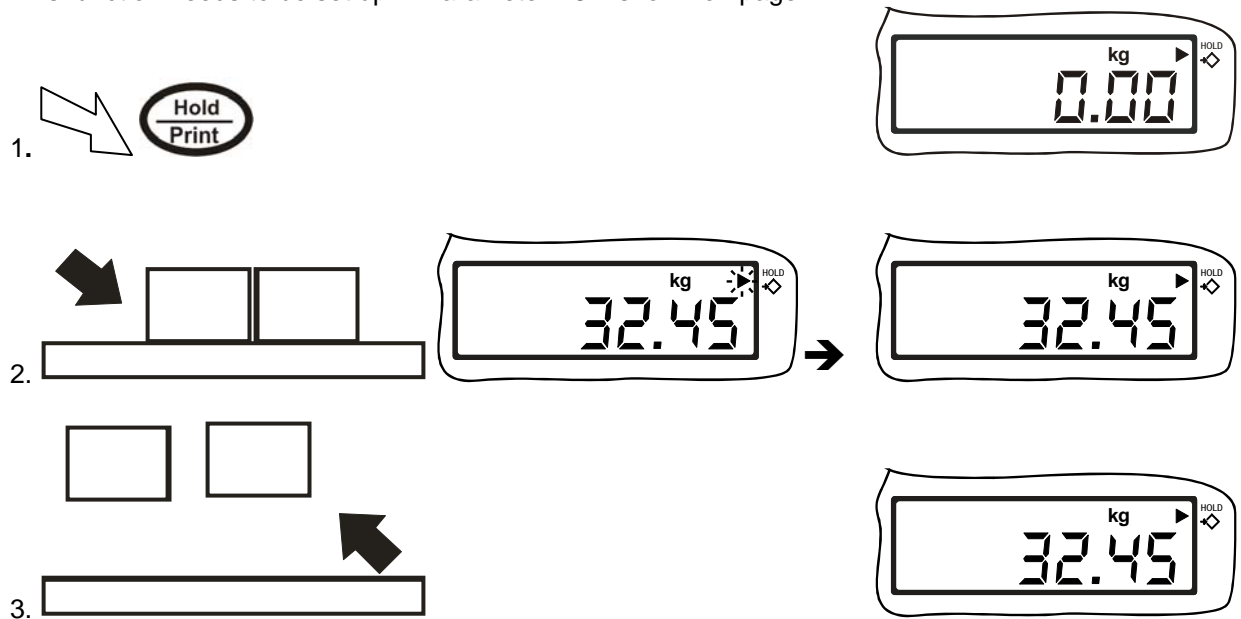


Hold Function - Automatic Zero on Next Weigh

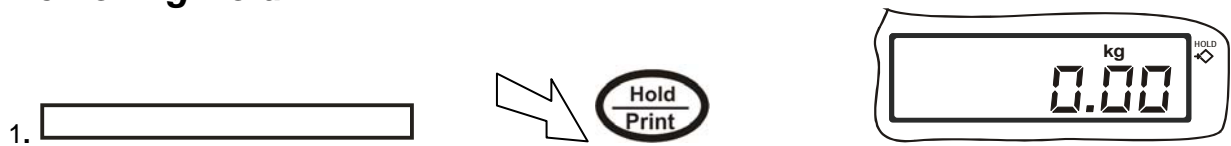


Hold Function - Manual Release

This function needs to be set up in Parameter P3.1 shown on page 14.

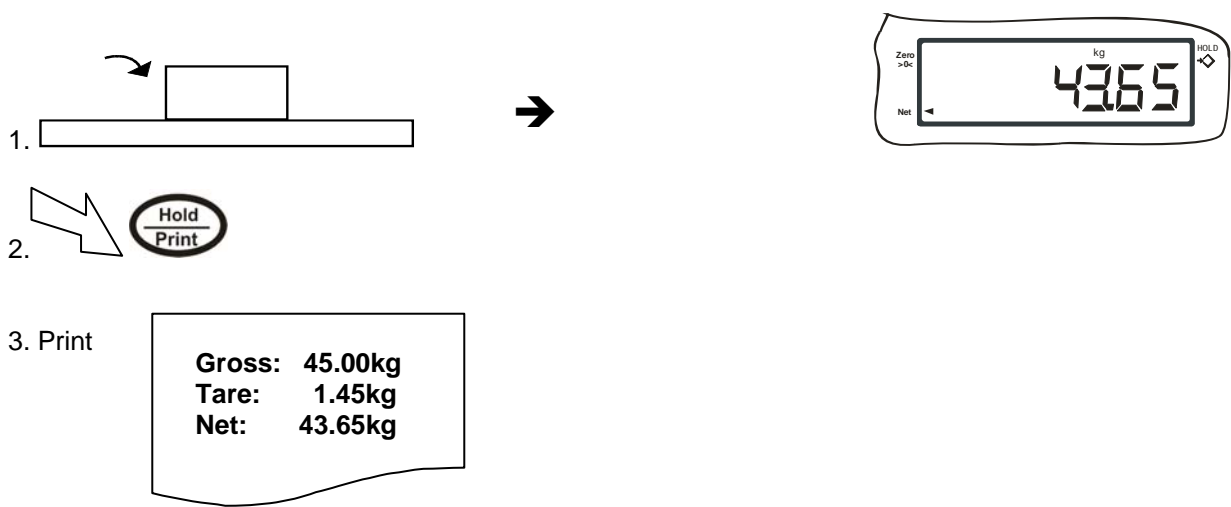


Removing Hold



Print Function

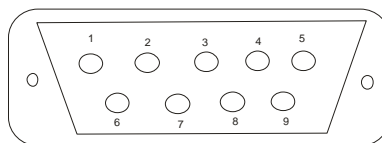
For communications to a printer or PC, the indicator has to be set up in the following parameters P2, P4, P5 and P6.



Serial Interface Settings

RS232 serial interface wiring:

- Pin/xxxxxx/xxxxx/xxxxx/
- 2 (TXD)
- 3 (RXD)
- 4 (DSR)
- 5 (GND)
- 6 (DTR)
- 7 (CTS)
- 8 (RTS)



Error Messages

Error Message	Definition	Required Solution
0 ⁻ - - - :	Weight above range for calibrated zero point	Remove load before zeroing, -or- Recalibrate the scale.
0 ____ :	Weight below range for calibrated zero point	Remove load before zeroing, -or- Recalibrate the scale.
____ :	Indicates an under-range condition	Remove all loads, and zero the scale.
- - - - :	Capacity exceeded	Remove the load, and try again. A greater capacity scale may be required.
CAL-Er:	Calibration error	Restart calibration.
Lo.bAt:	Low Battery	Recharge the battery.

User Configuration Settings

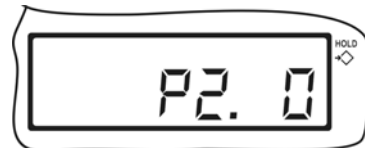
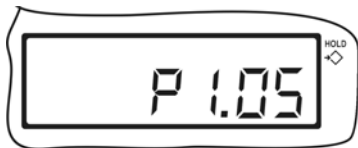
Setup Controls

Moves flashing digit Change flashing digits Saves data and move down to next parameter setting Exits setup mode

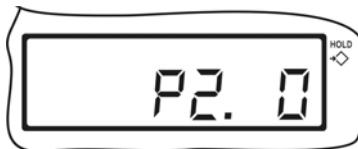
1. Entering Setup



2. Selecting parameter



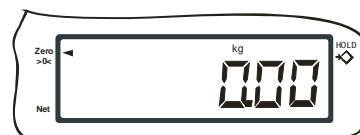
3. Changing data within parameter



4. Saving data



5. Exiting setup



Configuration Settings

Parameter	Setting	Default settings in bold
P1.xx	Auto shut-off timer in minutes <i>Set up time for the auto-off function</i> (00 = Off, 01-15 = time in minutes)	P1.00 P1.01 – P1.15 P1.05
P2.x	Hold and print key functionality <i>Set up button function</i> 0 = Press button once to activate hold. 1 = Press button once to print. 2 = Press button to print. Press and hold button to activate hold.	P2.0 = Hold P2.1 = Print P2.2 = Print & Hold
P3.xx	Hold Function Settings 0 = <u>No hold function active.</u> 1 = <u>Animal averaging hold with manual push-button release.</u> The weight reading is held on the display until a higher weight is applied. This automatically releases the held weight and re-holds it at the new higher weight reading. 2 = <u>Animal averaging hold with automatic release and re-hold.</u> As above, but the weight reading is held on the display until the platform is emptied and the next weight reading over 10 divisions is applied. 3-50 = <u>Selectable hold window from +/- 3 to 50 divisions.</u> Once stable, holds display reading within a selectable weight range. Must be re-pressed to release the hold button.	P3.0 P3.1 P3.2 P3.3 to 50
P4.x	RS232 – Serial Interface <i>Settings for serial interface</i> 0 = No RS232 output. 1 = Once stable, print displayed data when print key is pressed. 2 = Once stable, print gross, tare and net weight when print key is pressed. 3 = Continuously output gross weight. 4 = Continuously output gross, tare and net weight (compatible with NCI-SP1). 5 = Once stable, print displayed data one time only. 6 = Once stable, print gross, tare and net weight one time only. 7 = Bidirectional-RS232 (also compatible with NCI-SP1).	P4.0 P4.1 P4.2 P4.3 P4.4 P4.5 P4.6 P4.7
P5.x	RS232 Baud rate	P5.0 = 1200 P5.3 = 9600 P5.1 = 2400 P5.4 = 19200 P5.2 = 4800
P6.x	RS232 Data format 0 = 8 digits, no odd or even, 1 start bit, 1 stop bit 1 = 7 digits, 1 even, 1 start bit, 1 stop bit 2 = 7 digits, 1 odd, 1 start bit, 1 stop bit	P6. 0 P6. 1 P6. 2
P7-P19 .x	SERVICE CONFIGURATIONS ONLY (See page 16.) <i>Any adjustment to these settings could seriously affect the indicators performance. Seek advice from a service engineer before changing.</i>	

Data Commands for Bi-directional Interface

The RS232 can be set so a bi-directional connection can be established between the indicator and the host. To establish this connection, set parameter P4 to 7, so it is compatible with the NCI-SP1. Commands can then be sent from the host to the indicator using the following commands (ensure the letters entered are in CAPS) (<CR> = Enter).

Command	Action	Response
W<CR>	Takes a reading Over capacity – Under capacity – Zero point error – Reading (kg or lb)	<LF>~~~~~u1u2<CR><LF>H1H2H3<CR><ETX> <LF>_____u1u2<CR><LF>H1H2H3<CR><ETX> <LF>-----u1u2<CR><LF>H1H2H3<CR><ETX> <LF><p>w1w2w3w4w5w6<dp>w7u1u2<CR><LF>H1H2H3<CR><ETX>
S<CR>	Prints Status Bytes	<LF>H1H2H3<CR><ETX>
Z<CR>	Zeros the scale	<LF>H1H2H3<CR><ETX>
T<CR>	Sets up a tare	<LF>H1H2H3<CR><ETX>
U<CR>	Changes the units	<LF>u1u2<CR><LF>H1H2H3<CR><ETX>
L<CR>	Activates the hold function	<LF>H1H2H3<CR><ETX>
X<CR>	Switches off the scale	Indicator switches off.
?	Unrecognised command	<LF>?<CR><ETX>

Key Symbols			
<LF>	Line feed	<p>	Polarity character including minus sign for negative weigh and space character for positive
<CR>	Carriage return	W1-W7	Weight data
<ETX>	End of text character	<dp>	Decimal point
<SP>	Space	U1U2:	Unit measure, kg, lb or oz
H1H2H3	3 status bytes		

Output Status Bit Meaning			
Bit	Byte 1	Byte 2	Byte 3
0	0 = Stable 1 = Unstable	0 = Not Under Capacity 1 = Under Capacity	00 = Not defined 01 = Normal working mode
1	0 = Not at zero point 1 = At zero point	0 = Not over capacity 1 = Over capacity	0 = Hold working mode 1 = Not defined
2	Always 0	Always 0	0 = Gross weight 1 = Net weight
3	0 = eeprom OK 1 = eeprom error	Always 0	Always 0
4	Always 1	Always 1	Always 1
5	Always 1	Always 1	Always 1
6	Always 0	Always 1	Always 0
7	Parity	Parity	Parity

Display, Measurement and Service Settings

WARNING! Any adjustment to these settings could seriously affect indicator performance. Seek advice from a service engineer before changing.



Scale setup and calibration

Before calibrating, the following parameter must be setup correctly:



- P7 Scale resolution (500 ~ 10000)
- P8 Division size (1, 2 or 5)
- P9 Decimal place (10 ~ 0.0001)
- P10 Calibration unit of measure lb or kg

For scale calibration, see page 18.



Setup controls


Moves flashing digit

Change flashing digits

Saves data and moves down to next parameter setting



Exits setup mode

For entering setup, refer to page 13.

Service Settings

Parameter	Settings	Default settings in bold
P7.xx	Displayed resolution in divisions <i>Graduations - Specifies number of full-scale graduations.</i>	P7.00 = 500 P7.11 = 3500 P7.22 = 25000 P7.01 = 600 P7.12 = 4000 P7.23 = 30000 P7.02 = 750 P7.13 = 5000 P7.24 = 35000 P7.03 = 800 P7.14 = 6000 P7.25 = 40000 P7.04 = 1000 P7.15 = 7000 P7.26 = 50000 P7.05 = 1200 P7.16 = 7500 P7.27 = 60000 P7.06 = 1500 P7.17 = 8000 P7.28 = 70000 P7.07 = 2000 P7.18 = 10000 P7.29 = 75000 P7.08 = 2400 P7.19 = 12000 P7.30 = 80000 P7.09 = 2500 P7.20 = 15000 P7.31 = 100000 P7.10 = 3000 P7.21 = 20000
P8.x	Displayed divisions size: Multiples of: 1, 2 or 5	P8.0 = 1 P8.1 = 2 P8.2 = 5
P9.x	Decimal point position	P9.0 = 1 P9.3 = 0.001 P9.1 = 0.1 P9.4 = 0.0001 P9.2 = 0.01 P9.5 = 10
P10.x	Calibration unit of measure. <i>Select the unit of measure the scale will be calibrated in.</i>	P10.0 = kg P10.1 = lb
P11.x	Units of measure: Selects the units of measure the scale will operate in from the unit's key.	P11.0 = only kg P11.4 = kg or lb:oz P11.1 = only lb P11.5 = lb or lb:oz P11.2 = only lb:oz P11.6 = kg, lb, or lb:oz P11.3 = kg or lb

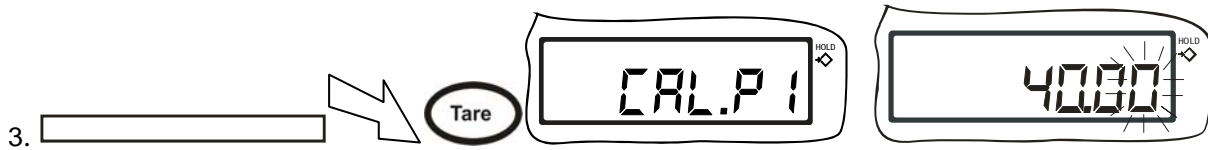
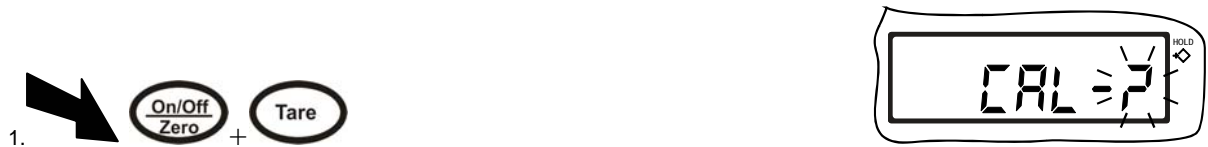
Service Settings Continued

Parameter	Settings	Default settings in bold	
P12.x	Power up Zero range Selects the Power up zero-point range based on the calibration zero point.	P12.0 = +1% P12.1 = +2% P12.2 = +5% P12.3 = +10% P12.4 = +20% P12.5 = +50% P12.6 = +100% P12.7 = No limitation	
P13.x	Zero button range Selects the zero range the zero buttons can zero off.	P13.0 = ±1% P13.1 = ±2% P13.2 = ±5% P13.3 = ±10% P13.4 = ±20% P13.5 = ±50% P13.6 = ±100% P13.7 = No limitation	P13.8 = +1% P13.9 = +2% P13.10 = +1%
P14.x	Scale Power up when <u>inside</u> the power up zero range Allows the scale to power up and zero from the following point. 0= Power up and zero at any weight. 1= Power up zero based off calibration zero-point. 2= Power up back at the zero-point the scale was powered off at and also display any active tare.	P14.0 P14.1 P14.2	
P15.x	Scale Power up when <u>outside</u> the power up zero range Allows the scale to power up and display the following: 0= Zero and display in current Gross weight. 1= Displays Gross weight based off calibration zero point. 2= Displays Gross or Net weight based off the zero-point when the scale was last powered Off. 3= Continuously display error message "0-----"	P15.0 P15.1 P15.2 P15.3	
P16.x	Zero tracking range	P16.0 = off P16.1 = ±0.25d P16.2 = ±0.5d P16.3 = ±1d P16.4 = ±1.5d	P16.5 = ±2d P16.6 = ±3d P16.7 = ±4d; P16.8 = ±5d
P17.x	Data filter intensity	P17.0 = very weak P17.1 = weak P17.2 = middle P17.3 = strong	
P18.x	Check weight stability range	P18.0 = ± 0.5d; P18.1 = ± 1d P18.2 = ± 1.5d P18.3 = ± 2d P18.4 = ± 3d	P18.5 = ± 4d P18.6 = ± 5d P18.7 = ± 6d P18.8 = ± 7d P18.9 = ± 8d
P19.x	Overload limit range	P19.0 = 0 P19.1 = + 9d P19.2 = 101% P19.3 = 102% P19.4 = 105 %	P19.5 = 110% P19.6 = 120% P19.7 = 150% P19.8 = 200% P19.9 = No limitation

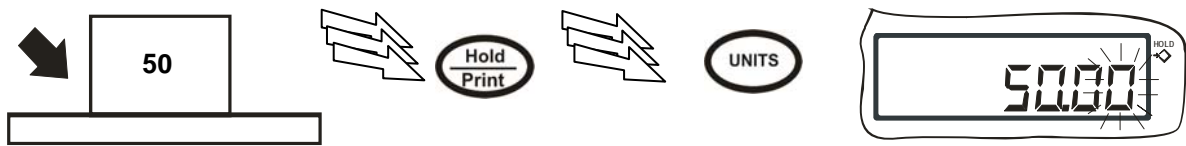
Note: Default settings may vary depending on platform configuration required.

Scale calibration

Calibration can be done with 25% to 100% of full load and can be calibrated with 1 or 2 calibration points.

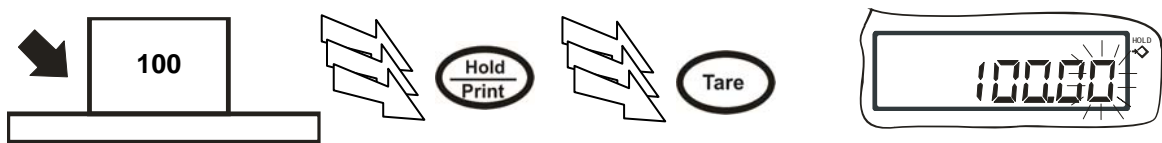


4. Enter in calibration weight from 25% to 100% full capacity.



6. For single-point calibration, enter the same weight in again and move to number 7.

For 2-point calibration, enter in the second calibration weight between 25% and 100% full capacity.



Declarations of Compliance

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 the radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

CE (Declaration of Conformity)

 Declaration of Conformity	
Manufacturer	Salter Brecknell
Type	WS / SBI-140
Corresponds to the requirements of the following EC directives:-	
Electro Magnetic Compatibility Directive: Low Voltage Directive:	EMC 89/336/EEC LVD 73/23/EEC
The application harmonised standards are:	EN60950 EN50081-1 EN50082-1

A copy of the original signed declaration for this instrument is available from the UK address below.

