WEIGH-TRONIX

Model WI-152
Battery-Operated Indicator
Service Manual

Table Of Contents

WI-152 Specifications

Display:	7-segment LCD, 8 digits, 1.0 inch high with 10 annunciators	
Display Rate:	1, 2 or 5 times per second	
Accuracy :	Span: ±5.0 ppm/°C Span: ±10 ppm/°C	Zero: ±.066 uV/°C (-10 to 40°C) Zero: ±0.13 uV/°C (-30 to 60°C)
Linearity:	±0.005% of capacity, maximum	
Repeatability:	±0.005% of capacity, maximum	
Hysteresis:	0.005% of capacity, maximum	
Power:	6-volt version 5.5 to 12v @ = 18 mA 12-volt version 10 to 16v @ = 106 mA	
Weigh bar drive capacity:	Up to eight 350 ohm weigh bars. Up to twenty-two 1000 ohm weight sensors.	
Environment:	-10 to 40°C (14 to 104°F) for HB-44 specs -30 to 60°C (-22 to 140°F) reduced accuracy 10 to 90% relative humidity	
Calibration and Programming:	All calibration and programming is done through the front panel with data stored in non-volatile memory.	
Analog Range:	-0.14 to +3.5 mV/V	
Scale Capacities:	.00001 to 999999, programmable to any number between these limits.	
Scale Division Sizes:	.0001 to 20000, programmable to any division size between these limits.	
Push Button Zero Range:	0 to ±100% of capacity; programmable independent positive and negative limits; unit will not allow zeroing beyond capacity.	
Tare:	The unit may be configured to have pushbutton tare and/or 0 to 10 keyboard tare storage registers. May also pushbutton tare into the keyboard tare registers. Push-button tare and keyboard tare may tare only positive gross weights up to the capacity of the unit.	
Over Range Capacity:	The scale will display weights up to and including full scale capacity less any weight zeroed out by the operator.	
Motion Detection Window:	Programmable from 0 to 999999 divisions, decimal entries are accepted.	
Automatic Zero Tracking:	Window:	Programmable from 0 to 999999 divisions, decimal entries are accepted.
	Net Mode Tracking:	May be enabled or disabled.
	Rate:	0.1 division per second
	Starting Delay:	2 seconds
Linearity Adjustment:	Second order correction provides smooth curve fit through three points.	
Analog Low Pass Filter:	Two section with .06 second time constant.	
Software Low Pass Filter:	One section with .05 second time constant.	

12-volt version

FEATURES:
- +10 to +16v power supply
- RS-232 serial I/O
- Real time clock
- Dual cutoffs

6-volt version

FEATURES:
- 6 volt battery pack with replaceable D-cells
- Long battery life—4 1/2 months (40 hours/week, 1 weigh bar, asleep 50% of the time)
- SLEEP mode to conserve battery power

OPTIONS:
- RS-232 serial I/O
- Real time clock
- Dual cutoffs

Introduction

This service manual will help you prepare your WI-152 indicator for use in your facility. This manual covers the following:

- Introduction
- Operational Modes
- Sealing the Indicator
- Keyboard
- Configuration Mode
- Reset Menu and Master Clear
- Board Schematics and Parts Lists

Operational Modes

The WI-152 operates in three modes:

- operations mode
- test mode
- configuration mode

Operations Mode

Operations mode contains all normal weighing operations. In this mode you can view or set any of the following parameters if the unit is so configured:

- pushbutton tare
- one to ten keyboard tare registers
- identification number
- one to two cutoff registers
- time
- date

Any combination of these items can be secured behind a security code. Any items secured by the code number can be viewed but not changed.

Operations mode is fully explained in the *User's Manual*.

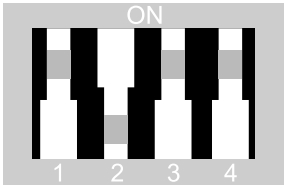
Test Mode

Use this mode to perform tests on the WI-152. The test mode is covered in the *User's Manual*.

Configuration Mode

Use this mode to setup options and program the operation of the scale and indicator. Configuration is explained fully in the *Configuration Mode* section of this manual.

Sealing the Indicator



Switch positions for 6V version shown

The WI-152 can be sealed. If sealed, no configuration items can be changed in the configuration menu. Seal the unit by placing switch S1-1 in the OFF position. Unseal the unit by placing S1-1 in the ON position. Remove the front panel of the indicator to gain access to switch S1-1. The switch is located near the center of the PC board behind the display and looks like the diagram at right. On the 6V version, switches S1-1, S1-3 and S1-4 should be in the ON position for optimal functioning of the indicator. On the 12V version, switch S1-1 is the only one that should be in the ON position.

Keyboard

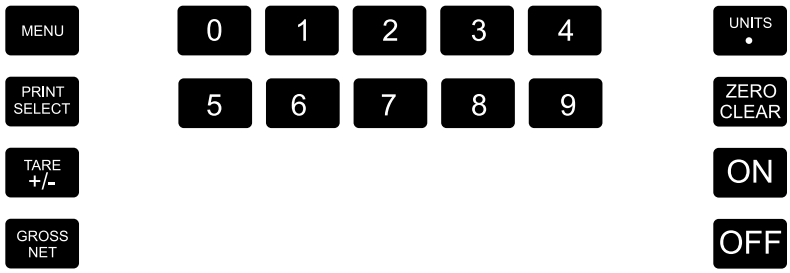


Figure 1
WI-152 Keyboard

OFF — Turns the 12 volt model off. Puts the 6-volt model into an ultra-low power consumption mode called the sleep mode.

ON — Turns the 12-volt model on. Wakes the 6-volt model from sleep mode.

ZERO CLEAR — Zeros the scale in gross/net weigh mode. This button also clears keyed in digits on the display before they are accepted.

UNITS • — Changes the unit of measure during operations mode and inserts a "." decimal when keying in values.

0 **to** 9 **keypad** — Enters numbers and specifies tare and cutoff registers.

MENU — Used to access menus and move among choices in a menu.

PRINT SELECT — Sends a print command and is used to select menu items.

TARE +/- — Enters a pushbutton tare in gross/net operation. During data entry this key is used to toggle between positive and negative values.

GROSS NET — Accesses the gross/net weighing mode from any other function, and toggles the unit between gross and net weights, assuming there is an active tare weight.

Configuration Mode

This section of the manual explains how to set up and view parameters in the configuration mode. Follow the configuration menu and instructions in Figure 2 to set up the WI-152 indicator to suit your specific needs. Below are explanations for each section of the menu. The non-bold heading for each section is the pathway you follow on the configuration menu to get to the parameter or parameter options shown in bold text.

Sidestepping Security Code Entry to Configuration

In case you forget the security code or the security code is altered without your knowledge, access the configuration menu as follows: First, make sure switch S1-1 is in the OFF position. Then enter the default code number, 152. Go into the configuration menu as instructed in the key to Figure 2. When ***CODE NO.*** is displayed in the menu, flip switch S1-1 from the OFF position to the ON position. Understand that opening the indicator to access the switch effectively unseals the indicator! Then enter a new code number--twice, as the display prompts. Now you have complete access to the configuration menu.

Setup, Scale, Units-
Pounds, 1000g, Gallons

Under each unit of measure you have the option of selecting *ON* or *OFF.* Choosing the *OFF* option under a unit of measure disables that unit of measure. If a unit is disabled, it will not appear in the configuration menu under *CAPACITY* or *DIVISION* nor will you be able to choose it during weighing procedures. Also, if gallons is disabled, *DENSITY* will not appear in the configuration menu.

Setup, Scale, Units, Capacity-
Pounds, 1000g, Gallons

This menu section lets you set the scale capacity for those units of measure enabled under *UNITS*. For lb/kg scales to be sealed in the USA, you must be sure the capacities are within one division. For example, if you want a 10,000 by 2 lb scale, the kg capacity must be 4536 kg. Note that the indicator will show over range at 10,000 lb. If a 2.5% over range is desired, you must enter 10250 lb and 4649 kg as the capacities in this example.

You must calculate the gallons capacity according to the specific gravity (density) of the liquid you are weighing. For example, if your scale is set at 10,000 lb capacity and you are weighing water at 62°F, water's specific gravity is .9988736 and weighs 8.336 pounds/gallon. (Water's specific gravity is 1.0 at 4°C) 10,000 pounds divided by 8.336 equals 1200 gallons. This would be the capacity in gallons for this scale. Density is the weight of your material calculated in grams per cubic centimeter. Consult an Engineering Handbook for the density of your material. If a liquid you are weighing has a specific gravity of 1.5, for example, you take 1.5 times 8.336 to find out how much each gallon of your liquid weighs. Divide this into 10,000 and you will have the capacity in gallons of your 10,000 pound scale. 1.5 x 8.336 = 12.504 pounds/gallon. Then 10,000 pounds / 12.504 pounds per gallon = 800 gallons capacity.

Setup, Scale, Units, Capacity, Division-
Pounds, 1000g, Gallons

This option lets you set the division size for the units of measure enabled under *UNITS*.

One feature not readily apparent is that the number of displayed leading zeros can be specified. For example; for 10 pound divisions, if you want 5 zeros displayed when no weight is on the scale, key in 00010 for a division size. The display will read 00000 when the scale is empty. If you want two zeros displayed when the scale is empty, key in a division size of 10.

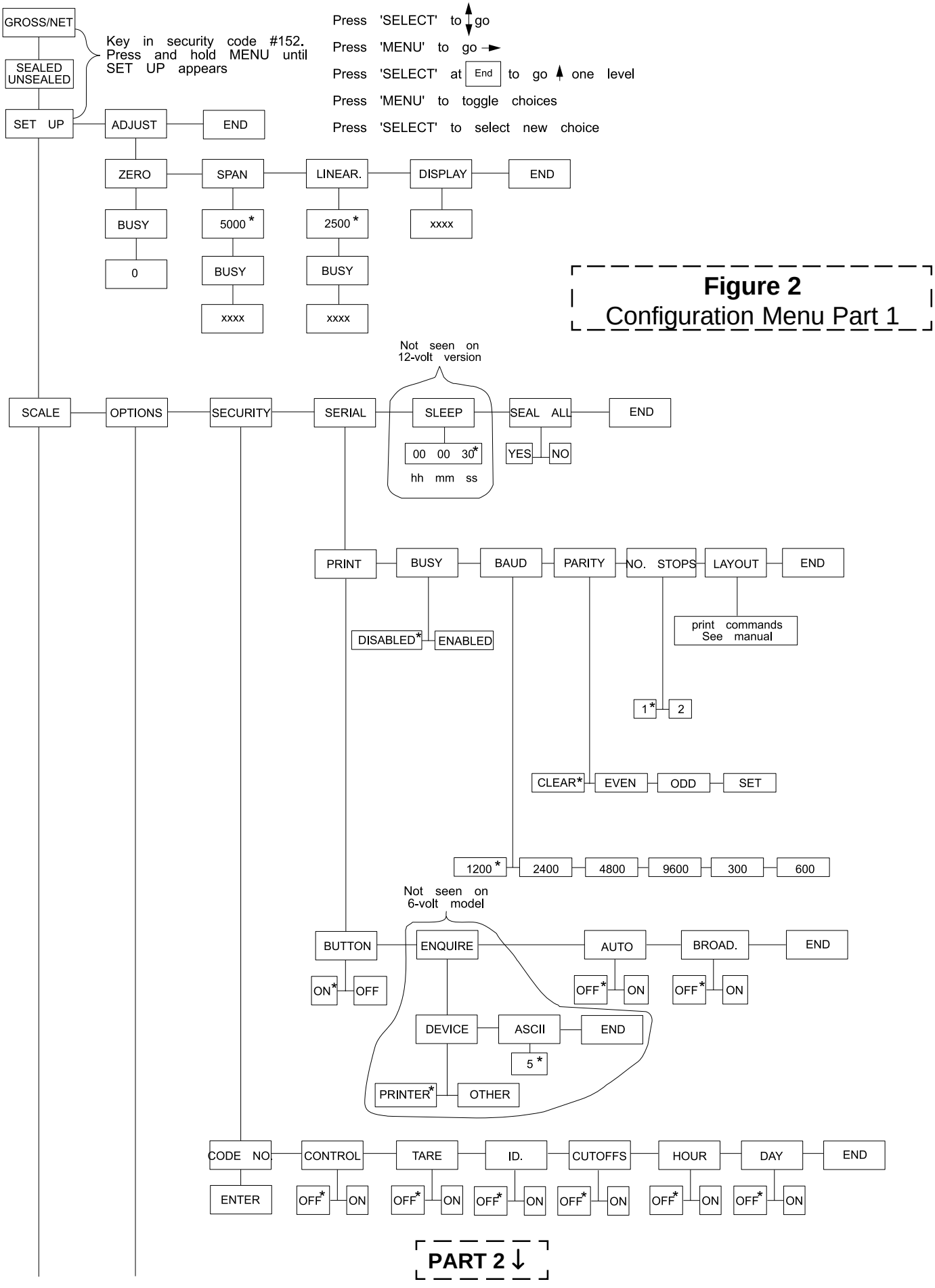
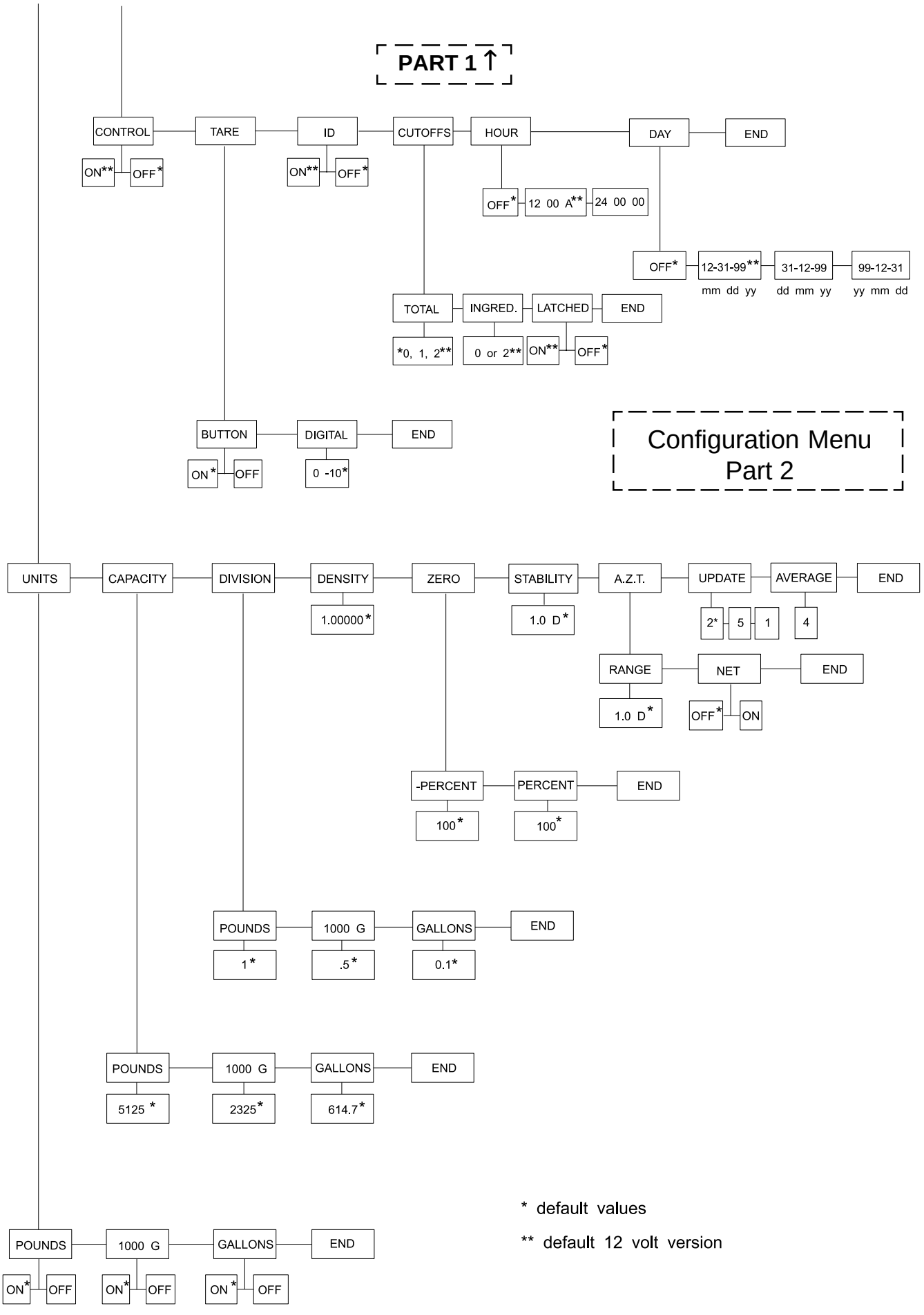


Figure 2
Configuration Menu Part 1


PART 1
CONTROL
TARE
ID
CUTOFFS
HOUR
DAY
END
ON**
OFF*
ON**
OFF*
OFF*
12 00 A**
24 00 00
OFF*
12-31-99**
31-12-99
99-12-31
mm dd yy
dd mm yy
yy mm dd
TOTAL
INGRED.
LATCHED
END
*0, 1, 2**
0 or 2**
ON**
OFF*
BUTTON
DIGITAL
END
ON*
OFF
0 -10*
Configuration Menu
Part 2
UNITS
CAPACITY
DIVISION
DENSITY
ZERO
STABILITY
A.Z.T.
UPDATE
AVERAGE
END
1.00000*
1.0 D*
2*
5
1
4
RANGE
NET
END
1.0 D*
OFF*
ON
-PERCENT
PERCENT
END
100*
100*
POUNDS
1000 G
GALLONS
END
1*
.5*
0.1*
POUNDS
1000 G
GALLONS
END
5125 *
2325*
614.7*
POUNDS
1000 G
GALLONS
END
ON*
OFF
ON*
OFF
ON*
OFF
* default values
** default 12 volt version

Setup, Scale, Units, Capacity, Division-
Density

This option lets you set the density of the liquid you are weighing in grams per cubic centimeter. Your scale will then convert the weight of the liquid into gallons. (Specific gravity is identical to density as expressed in grams per cubic centimeter.)

Setup, Scale, Units, Capacity, Division, Density, Zero-
-Percent, Percent

With this option you can set the plus and minus percent of capacity the indicator can zero. For example, if the capacity of the scale is 10000 lb and the zero range is ±2%, key in 2 for both the positive and negative ranges. You may key in decimal values.

Setup, Scale, Units, Capacity, Division, Density, Zero-
Stability

This option lets you set the size of the motion detection window in divisions. You may enter decimal values less than one or up to 999999 which turns off the motion detection.

Setup, Scale, Units, Capacity, Division, Density, Zero, Stability, A.Z.T.-
Range, Net

Range - With this option you can set the ±automatic zero tracking window in scale divisions. To turn off AZT, enter a range of 0.

Net - If an AZT range is set, *NET* will appear in the menu. This option lets you choose to enable

AZT during net weighing operations (ON) or disable it (OFF). The gross weight must be zero for AZT to work in net mode.

Setup, Scale, Units, Capacity, Division, Density, Zero, Stability, A.Z.T.-
Update

This option sets the display update rate. You may choose from among 1, 2, or 5 times per second.

Setup, Scale, Units, Capacity, Division, Density, Zero, Stability, A.Z.T., Update-
Average

This option allows you to choose the number of display period(s) over which the data are internally averaged prior to being displayed. Any number between 1 and 10 may be entered.

Setup, Scale, Control, Options-
Control

Choosing *ON* enables the cutoff control function. *OFF* disables this function. If cutoff control is disabled, *CONTROL* will not appear in the *SECURITY* section of this menu or in the Operations Menu. Note, however, that for *CONTROL* to appear in the Operations Menu, the number of outputs selected under *CUT-OFFS* in the *OPTIONS* section of this menu must be a non-zero value.

Setup, Scale, Options, Tare-
Button, Digital

Button - Choosing ON enables the pushbutton tare. Choosing OFF disables the pushbutton tare.

Digital - Select the number of tare registers you want by keying in a number. You can choose 0 through 10 tare registers.

If pushbutton tare is disabled and 0 tare registers are selected, **TARE** will not appear in the operations menu or in the SECURITY section of this menu.

Setup, Scale, Options, Tare-
ID

Choosing ON enables the ID number. OFF disables the ID number. If ID is disabled, ID will not appear in the SECURITY section of this menu.

Setup, Scale, Options, Tare, ID, Cutoffs-
Total, Ingred

Total - This option lets you choose the number of cutoffs you want by keying in a number. You can have 0, 1, or 2 cutoffs on the WI-152. If you pick 0 cutoffs, CUTOFFS will not appear in the SECURITY section of this menu.

Ingred. - This option lets you choose the number of cutoffs you wish to be ingredient types of cutoffs. 0 or 2 available. If you pick 0, INGRED. will not appear in the menu and the cutoffs you have will be setpoint type cutoffs. See *Viewing and Setting Cutoffs* in the *User's Manual.*

Setup, Scale, Options, Tare, ID, Cutoffs-
Hour

With this option you can choose to have the clock disabled (OFF) or the mode of clock you want. You can choose the 12 hour clock display or the 24 hour clock display. If the clock is disabled, HOUR will not appear in the SECURITY section of this menu and DAY will not appear in the OPTIONS or SECURITY section of this menu.

Setup, Scale, Options, Tare, ID, Cutoffs, Hour-
Day

This option lets you choose to disable the calendar (OFF) or choose the mode of calendar display you want. You can choose to display the days (**dd**), months (**mm**), and year (**yy**) as **mm dd yy**, or **dd mm yy**, or **yy mm dd**. If DAY is disabled, DAY will not appear in the SECURITY section of this menu.

Setup, Scale, Options, Security-
Code No.

This option lets you enter a personalized security code number. Digits are not shown on the display as you key them in so the display prompts you to enter the code number twice.

Setup, Scale, Options, Security, Code No.-
Tare, ID., Cutoffs, Hour, Day

Under each item you have the option of choosing OFF to leave the option unlocked or choosing ON to lock the option behind the security code. If ON is chosen, the security code is needed to change that particular parameter in the operations menu.

Setup, Scale, Options, Security, Serial, Print-
Button

Choosing OFF disables the front panel **PRINT** button. Choosing ON enables the front panel **PRINT** button.

Setup, Scale, Options, Security, Serial, Print, Button-
Enquire

This option is not seen on the 6-volt version of the WI-152. On the 12-volt version this sub-menu allows you to choose a printer or other device which will send an enquire code to the indicator. You may select the ASCII code number you wish to act as the enquire code number. ASCII decimal 005 is the default value. If a device sends the enquire character to the indicator, the indicator will transmit weight data. If a computer sends the enquire character, the Button, Auto and Broad. selections are overridden and will not function.

Setup, Scale, Options, Security, Serial, Print, Button, Enquire-
Auto

With auto print enabled, the indicator automatically transmits data when the scale weight stabilizes at greater than 1% of capacity. To print again, scale weight must fall below 1% of capacity and stabilize above 1% of capacity again. OFF disables the auto print feature. ON enables the auto print.

Setup, Scale, Options, Security, Serial, Print, Button, Enquire, Auto-
Broad.

Broad. stands for broadcast. If you enable (ON) broadcast, weight data is transmitted at the display rate. Choosing OFF disables the broadcast. If broadcast is enabled, the Button, Enquire, and Auto selections are overridden and will not function.

Setup, Scale, Options, Security, Serial, Print, Busy-
Disabled, Enabled

Disables or enables the hardware ready/busy line. If your printer does not have a ready/busy line, this parameter must be set to disabled. If your printer has a ready/busy line, you can enable this parameter so the indicator will know if the printer is busy or ready.

Setup, Scale, Options, Security, Serial, Print, Busy, Baud-
1200, 2400, 4800, 9600, 300, 600

This option lets you choose the baud rate for your printer or device.

Setup, Scale, Options, Security, Serial, Print, Busy, Baud, Parity-
Clear, Even, Odd, Set

This option lets you choose parity as even, odd, clear (logic 0 or space), or set (logic 1 or mark).

Setup, Scale, Options, Security, Serial, Print, Busy, Baud, Parity, No. Stops-
1, 2

With this option you can set the number of stop bits as 1 or 2.

Use this print-layout option to customize the physical arrangement of your printed information. The next several pages deal with the layout of your printed output. The rest of the documentation on configuration follows this layout section.

You may print eight items:

- Time
- ID number
- Net weight
- Displayed weight
- Date
- Gross weight
- Tare weight
- Custom wording you choose

There are eight print commands you use to print these eight items. They are

Print Command	**Item**
HOUR	Time
DAY	Date
ID	ID number
GROSS	Gross weight
NET	Net weight
TARE	Tare weight
DISPLAY	Displayed weight
ASCII	Custom wording (ASCII string)

The layout menu in Figure 5 shows the default order of print commands, and Figure 3 shows a sample of the default printout generated when you press the **PRINT** key on a new 6V indicator. Notice that the time, date, and ID-number items do not appear in Figure 3. These are optional in the 6V version. The print commands for time, date, and ID-number are present in the default print-layout menu, but these items are disabled under *OPTIONS* in the configuration. The 12 volt version has each of these items enabled. With time, date, and ID-number parameters enabled, the printout looks like the sample shown in Figure 4.

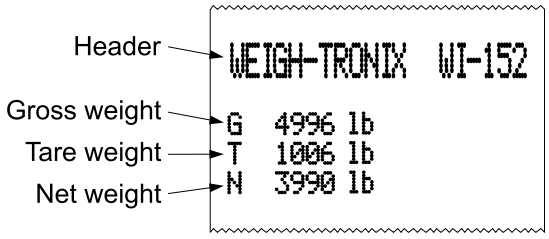


Figure 3
Default Printout As Configured on a New Indicator (6V)

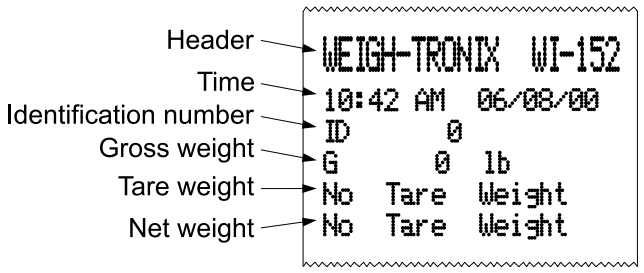


Figure 4
Default Printout with All Options Enabled (12V)

Customizing the Layout Menu

The default layout menu can be changed to suit your needs. Any of the eight print commands can be deleted or rearranged to accomplish this customization.

As in the other WI-152 menus, the **SELECT** key opens up the next level of the menu. There is one more level of information under the print commands in the layout menu. This information may be one of two types:

- an ASCII string or
- a layout submenu

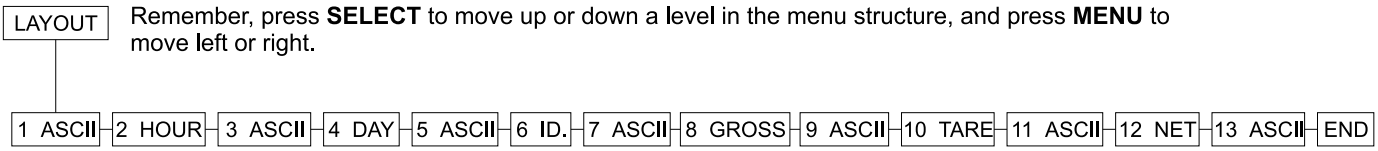


Figure 5
Default Layout Menu

ASCII Strings

*ASCII is an acronym for **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange. ASCII codes are just numbers a computer can translate into letters, numbers and instructions. See Table 2.*

ASCII strings are stored under the ASCII print commands, such as Nos. 1, 3, 5, 7, etc. (see Figure 5). An ASCII string is a sequence of ASCII code numbers. Each code number is preceded on the indicator display by a sequence number. See Figure 6. You view these sequence numbers and ASCII code numbers by repeatedly pressing **MENU**. These ASCII strings contain the codes for your custom wording.

Figure 6 shows the default ASCII string under the *1 ASCII* print command. Table 1 shows the relationship between this sequence of codes and the output of the printer. You can change the ASCII string or delete it entirely to suit your needs. To delete an ASCII print command from the layout menu you first need to delete the entire ASCII string which is stored in that ASCII print command.

Find complete instructions for these procedures in the section *Examples and Step by Step Instructions*.

Layout Submenu

Under each non-ASCII print command (*HOUR, DAY*, etc.) is a layout submenu. The layout submenu contains all eight print commands and a *DELETE* command. From this submenu you select what you want printed and in what order. The same submenu is available in every case, but the currently selected item is always offered first. See Figure 7.

Find complete instructions for these procedures in the section *Examples and Step by Step Instructions*.

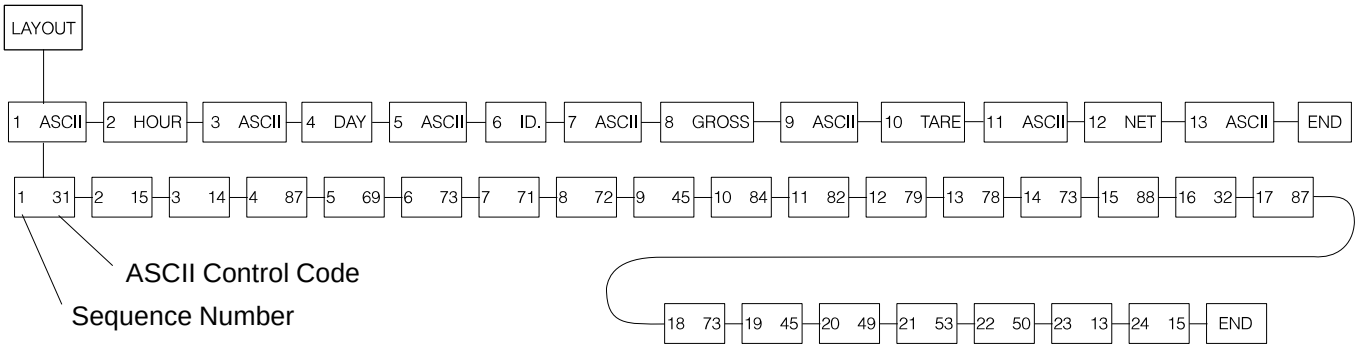


Figure 6
ASCII Control Code under the Print Command, 1 ASCII

In Figure 6, the MENU key advances you through the ASCII control-character displays. The **SELECT** key returns you to the *1 ASCII* display.

Table 1
ASCII Control Characters under the Print Command, 1 ASCII

#31-	Sets IMP printer to 40 column print mode	#79-	O
#15-	Makes double wide characters until a carriage return	#78-	N
		#73-	I
#14-	Makes double high characters until a carriage return	#88-	X
		#32-	Space
#87-	W	#87-	W
#69-	E	#73-	I
#73-	I	#45-	-
#71-	G	#49-	1
#72-	H	#53-	5
#45-	-	#50-	2
#84-	T	#13-	Carriage return (CR)
#82-	R	#15-	Sets next line's characters to double wide

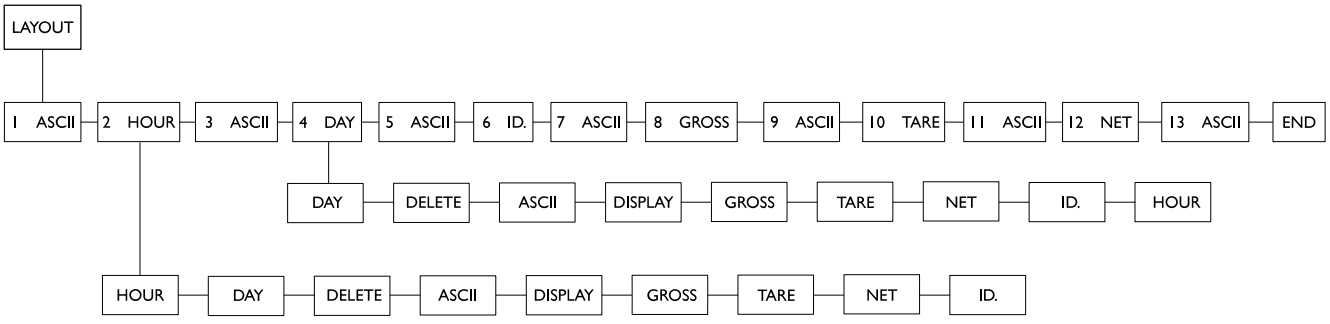


Figure 7
Layout Submenu

Examples and Step by Step Instructions

Example A: If you want to change the second print command in Figure 5 from *2 HOUR* to *2 TARE,* you scroll to the *TARE* print command in the submenu under *2 HOUR* and press **SELECT** to select it. The print command *2 HOUR* is now changed to *2 TARE.*

Example B: If you want to delete the second print command in Figure 5, *2 HOUR,* scroll to *DELETE* in the submenu under *2 HOUR* and press **SELECT.** This deletes the *2 HOUR* print command from the layout and *3 ASCII* becomes *2 ASCII, 4* becomes *3, etc*.

Below is a list of procedures to customize your layout. The steps for each procedure are explained below the list. Use the appropriate procedure or procedures to customize your layout to your liking. These step by step instructions relate to the layout shown in Figure 6.

- Deleting one ASCII code from an ASCII string
- Deleting all the ASCII codes in an ASCII string
- Deleting an ASCII print command after the ASCII codes are deleted
- Deleting a non-ASCII print command from the layout menu
- Inserting a print command in the layout menu
- Adding ASCII codes to an ASCII string

Deleting one ASCII code from an ASCII string

For example, to delete the hyphen in WEIGH-TRONIX you need to delete the ASCII control code for the hyphen. In Table 1 you can see that this is #45. In Figure 6, the 9th ASCII control code is code #45.

With *9 45* displayed, press **CLEAR**, then press **+/-** . . .

CLEAR deletes the value, and **+/-** deletes that step in the string. When you deleted #9, #10 becomes #9, etc.

Deleting all the ASCII codes in an ASCII string

For example, to delete the entire line of text at the top of the printout shown in Figure 4 you need to delete all the ASCII control codes under the *1 ASCII* display shown in Figure 6.

With the first ASCII control code of the string displayed *(1 31)*, press **CLEAR**, then press **+/-**. Repeat this two-step process until *END* is displayed. When *END* is displayed press **SELECT**. . .

1 ASCII is displayed. All the control characters under it are now gone.

Deleting an ASCII print command after the ASCII codes are cleared

With *1 ASCII* displayed, press **CLEAR** . . .

The item is removed from the menu and all the following items move up one number value on the menu. What was item 2 becomes item 1, etc.

Deleting a non-ASCII print command from the layout menu

For example, to delete *2 HOUR* from the menu, display *2 HOUR*, then press **CLEAR** . . .

The item is removed from the menu and all the following items move up one number value on the menu. What was item 2 becomes item 1, etc.

Inserting a print command in the layout menu

Inserting an ASCII, ID, TARE, GROSS, or NET item in the menu works in the same way.

For example, let's reinsert *HOUR* in the #2 position.

Display *2 ASCII,* the menu item currently in the #2 position.
Press **+/-**. . .

The layout submenu shown in Figure 7 appears. Scroll through the menu by pressing **MENU**. When *HOUR* is displayed press **SELECT**. *2 HOUR* is displayed showing that it has been inserted in the second position. *2 ASCII* becomes *3 ASCII, etc.*

Adding characters to an ASCII string

You may insert new codes in an existing ASCII string. Display the code you want the new code to precede and press ***±.*** *A cursor appears and you may enter the new code number. All the following code numbers move down one position in the sequence.*

To repeat any ASCII code, instead of entering it multiple times, enter the code number, then a decimal, then the number of times you want that code repeated. For example: To enter seven carriage returns, enter 13.7. To enter two capital letter O's in a row, enter 79.2.

For example, let's say you've just created a new ASCII print command in the #1 position in the menu *(1 ASCII).*

To insert new codes, display *1 ASCII*, then press **SELECT**. . .

1 _ is displayed.

Key in the control code you want and press **MENU**. . .

2 _ is displayed prompting your for the 2nd control code in the ASCII string.

Repeat this step until you have entered all the ASCII control codes you want or the indicator tells you the memory is full, then press **SELECT**. . .

1 ASCII is displayed in this example.

Table 2

ASCII Control Codes

Code #	Control Character	Code #	Control Character	Code #	Control Character	Code #	Control Character
0	NUL	33	!	66	B	99	c
1	SOH	34	"	67	C	100	d
2	STX	35	#	68	D	101	e
3	ETX	36	$	69	E	102	f
4	EOT	37	%	70	F	103	g
5	ENQ	38	&	71	G	104	h
6	ACK	39	'	72	H	105	i
7	BEL	40	(	73	I	106	j
8	BS	41	)	74	J	107	k
9	HT	42	*	75	K	108	l
10	Line Feed	43	+	76	L	109	m
11	VT	44	,	77	M	110	n
12	Form Feed	45	-	78	N	111	o
13	Carriage Return	46	.	79	O	112	p
14	S0	47	/	80	P	113	q
15	S1	48	0	81	Q	114	r
16	DLE	49	1	82	R	115	s
17	DC1	50	2	83	S	116	t
18	DC2	51	3	84	T	117	u
19	DC3	52	4	85	U	118	v
20	DC4	53	5	86	V	119	w
21	NAK	54	6	87	W	120	x
22	SYN	55	7	88	X	121	y
23	ETB	56	8	89	Y	122	z
24	CAN	57	9	90	Z	123	{
25	EM	58	:	91	[	124	|
26	SUB	59	;	92	\	125	}
27	ESC	60	<	93	]	126	~
28	FS	61	=	94	^	127	Delete
29	GS	62	>	95	_		
30	RS	63	?	96	`		
31	US	64	@	97	a		
32	Space	65	A	98	b		

NOTE: To repeat a control code a number of times, enter the control code #, a decimal, then the number of times you want it repeated. Spaces, letters, or carriage returns can easily be repeated this way.

Setup, Scale, Options, Security, Serial-
Sleep

This option lets you set the time to elapse before sleep mode begins. Set 0 to disable the sleep mode. Up to 99 hours, 99 minutes and 99 seconds are programmable. The sleep timer is reset each time a button is pressed or scale motion more than twice the stability window is seen.

Setup, Scale, Options, Security, Serial, Sleep-
Seal All

If you choose the YES option, all items under configuration are sealed when switch S1-1 is in the OFF position. If NO is selected, units, capacity, division, zero range, stability, AZT, tare, layout, zero, span, linearity, and seal all are sealed.

Setup, Adjust-
Zero, Span, Linear., Display

This option lets you set the zero, span, and linearity of the indicator. Below are specific instructions for setting these parameters.

Setting ZERO and SPAN

1. When *ZERO* is displayed, remove all weight from scale. Wait till the scale is stable and press **SELECT**.	*BUSY* is displayed briefly, then *0*.
2. Press **SELECT**.	*ZERO* is displayed.
3. Press **MENU**.	*SPAN* is displayed.
4. Set test weight on scale and let the scale stabilize. Press **SELECT.**	A number is displayed.
5. Key in the weight of the test weight on the scale and press **SELECT**.	Display shows *BUSY* briefly, then the weight.

Setting LINEAR.

6. Press **SELECT** to return to the *SPAN* display, then press **MENU** to advance to *LINEAR* display.	
7. Place approximately half the span test weight on the scale. Press **SELECT.**	A number is displayed.
8. Key in the weight now on the scale and press **SELECT**.	*BUSY* is displayed briefly and then the weight.

DISPLAY

9. Press **MENU** twice to advance to *DISPLAY*.	
10. Press **SELECT** to see the displayed weight without exiting the configuration menu.	

*You may exit to normal weigh mode at any time by pressing **GROSS/NET**.*

Reset Menu and Master Clear

Caution

Do not reset anything unless it is absolutely necessary. If you reset ADJUST, this may mean you have to bring in a weight truck to re-calibrate your system.

If the indicator's memory, calibration or other data becomes corrupted, a reset menu will become active. *RESET* will be displayed telling you there has been a problem. You may also choose to perform a master clear to reset the setup, adjust or data values to default values.

Performing a master clear gives you access to the first reset menu below. If the indicator found a problem with itself, you will see the second menu below. In either case, you must turn switch S1-1 on before you can reset setup or adjust items.

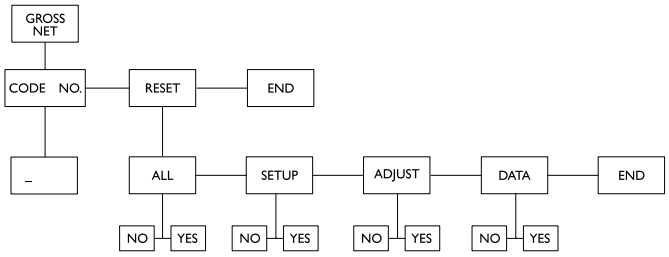
To perform a master clear on the 6-volt version:

1. Turn the unit off, hold the **8** key and the **ZERO/CLEAR** key down and turn on the unit with the master on/off switch. . . *CODE NO.* is displayed. You must enter the security code number before you can reset any items.
2. Press **SELECT**. . . *0* is displayed.
3. Key in your security code number, then press **SELECT**. . . *CODE NO.* is displayed.
4. Press **MENU**. . . *RESET* is displayed. From here you access the rest of the menu items the same as you do for all the other menus.

To perform a master clear on the 12-volt version:

Follow the steps outlined above, but turn on the unit using the **ON** key, not the master switch.

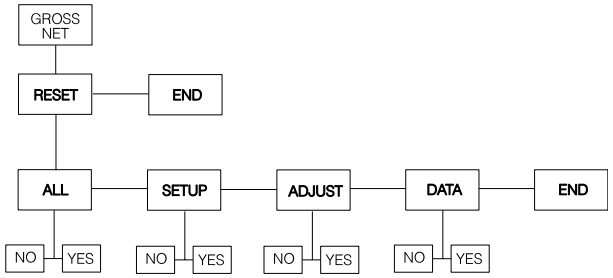
Master Clear Menu



- If *SETUP, ADJUST,* or *DATA* are set to defaults, they will not appear in the menu.
- If *SETUP, ADJUST,* or *DATA* appear, you have the option to reset one, two, or all three of them to default values.

ALL - Includes Setup, Adjust, and Data
SETUP - Configuration selections
ADJUST - Calibration settings
DATA - User entered

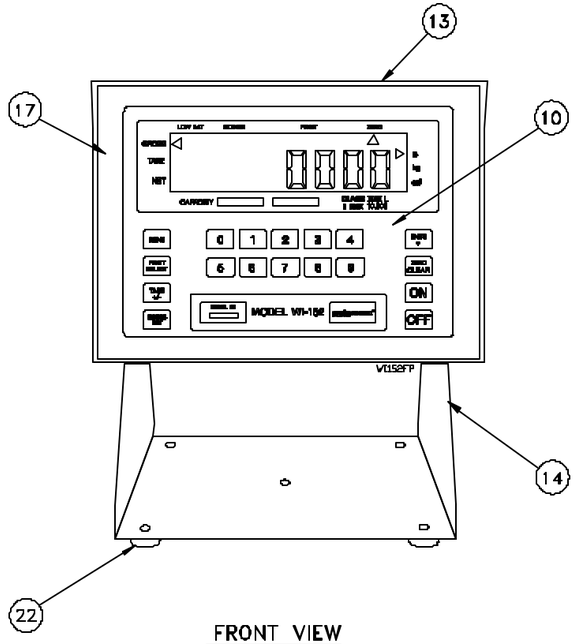
Reset Menu



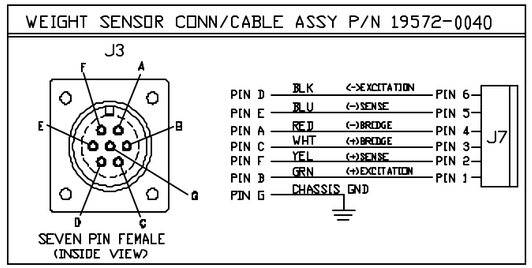
- If *SETUP, ADJUST,* or *DATA* appears and it is flashing, the indicator is telling you that it is corrupted and must be reset to default values.
- If *ALL* appears, you have the option to reset all values to their default settings simultaneously.
- If *ALL* is flashing, the indicator is telling you that *SETUP, ADJUST*, and *DATA* are all corrupted and you must reset them all to default values.

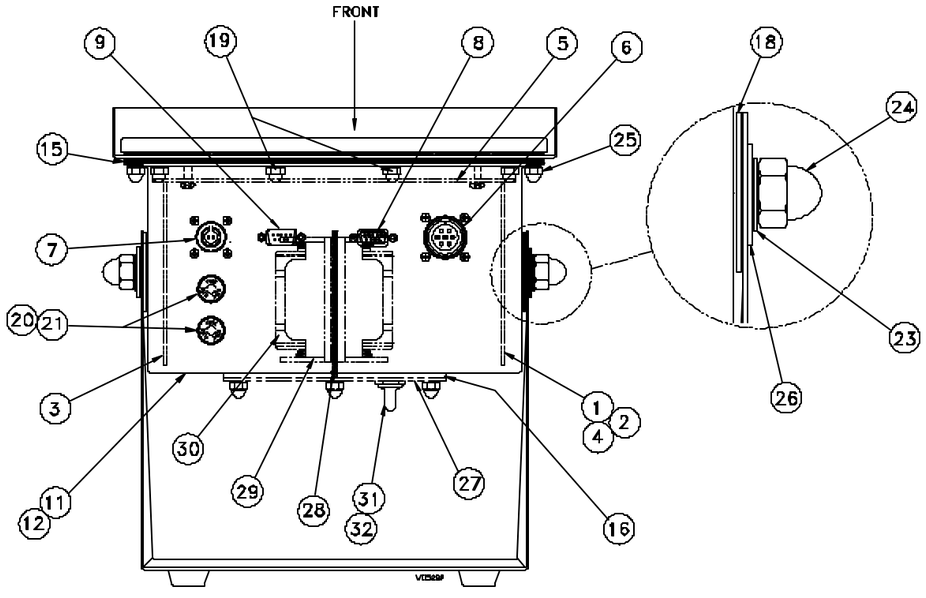
If you choose *ALL*, the unit returns automatically to weighing mode. All factory defaults are now in place, **including calibration**.

If you choose to reset some choices, but not all, the unit will return to weighing mode when you press **GROSS/NET**. If nothing is corrupted (no choices are flashing) you can return to weighing mode by pressing **SELECT** while *END* (after *RESET*) is displayed.



FRONT VIEW





BOTTOM VIEW

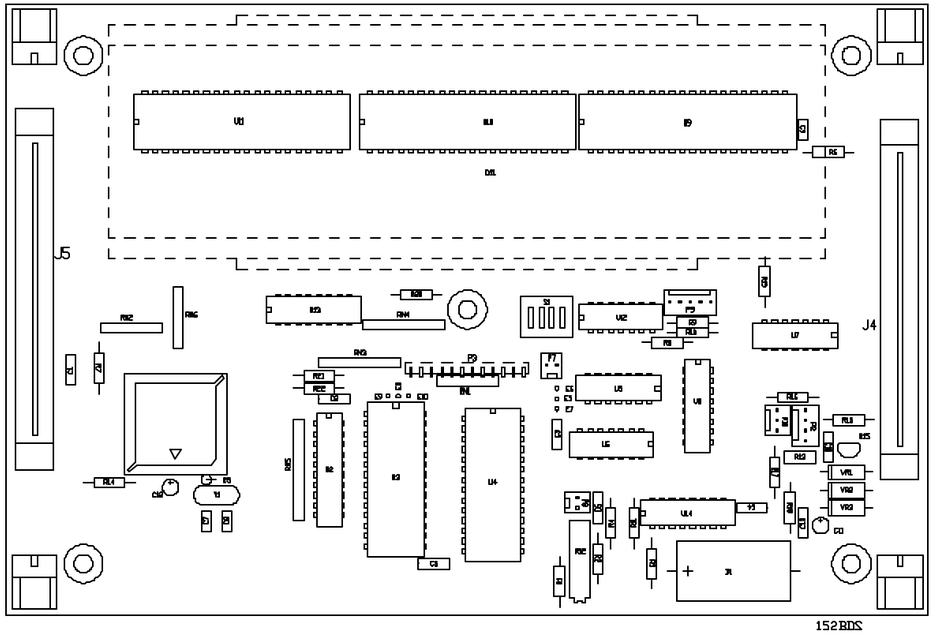
ITEM NO.	DESCRIPTION	W-T P/N	QTY
*1	Analog A/D pwr saver Board	28175-0018	1
*2	Digital A/D pwr saver Board	28178-0023	1
3	Pwr. Supply, RS-232,Cutoff, and Clock PC Board.	28186-0023	1
**4	Analog A/D Board	28476-0014	1
5	Main Pc Bd Assy *(w/ display)*	28569-0020	1
6	Weight Sensor conn/cable Assy	19572-0040	1
**7	12VDCPower conn/cable Assy	28968-0019	1
**8	Cutoff Connector Assy	29272-0018	1
9	RS-232 Connector Assy	29273-0017	1
10	Front Switch Overlay *(keypad)*	28880-0022	1
**11	Enclosure, *(12VDC version)*	29261-0011	1
*12	Enclosure, *(6VDC version)*	29261-0029	1
13	Front Panel	28892-0010	1
14	Stand	28919-0019	1
15	Front Panel Gasket	28886-0018	1
*16	Rear Panel Gasket	29263-0019	1
17	Bezel	28928-0018	1
18	Neoprene Pad	19563-0025	2
19	Capnut, Special #10-32	26513-0013	2
**20	Fuse, 1/2 A	15453-0083	2
**21	Fuse Holder	15455-0016	2
22	Rubber Foot	15349-0024	4
23	Tooth Washer	15698-0088	2
24	Capnut, 3/8”	15771-0070	2
*25	Capnut, #10-32	15786-0016	18
**	Capnut, #10-32	15786-0016	10
26	Flat Washer	16163-0066	2
*27	Rear Panel	29262-0010	1
*28	Battery Holder Mount	29264-0018	1
*29	Battery Holder , (“D” cell)	27431-0010	4
*30	Battery, “D” cell, 1.5V	15554-1048	4
*31	Toggle Switch	15259-0014	1
*32	Togle Switch Seal	15262-0019	1

* 6V Battery Powered Version Only.
** AC/DC Powered Version Only.

WI-152 INDICATOR MAIN PC BOARD *P/N 28569-0020*

Main PC Board Description

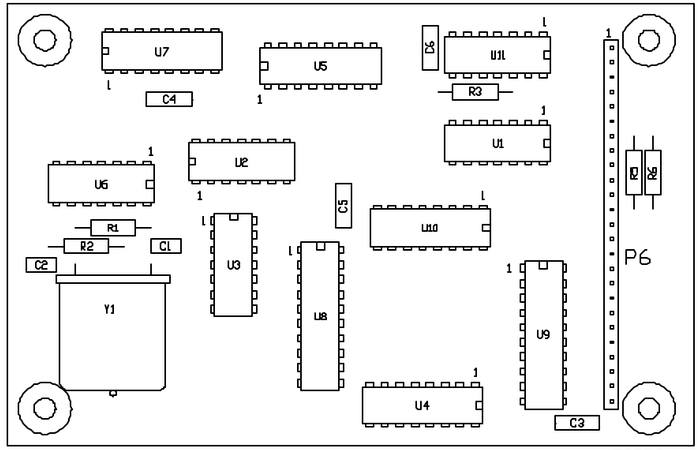
The main board consists of a motorola microprocessor
IC (U1), control circuitry (U2 & U8), random access memory or RAM (U3),
Read only memory or EPROM (U4), display drivers (U9 & U11), display (DS1),
And the monitoring of the front panel switches through U13.



POWER SAVER PC BOARD *P/N 28178-0023*

Battery Powered Power Saver Board Description

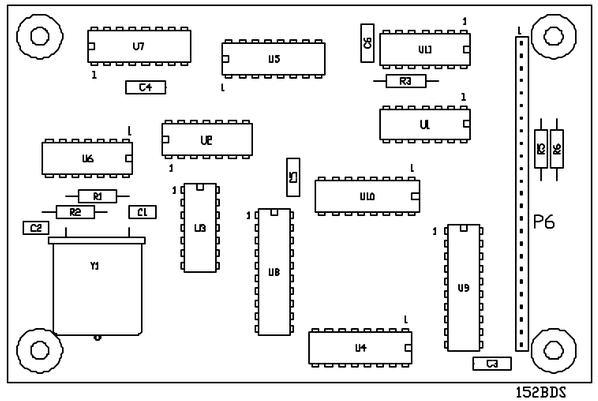
This board provides the control timing circuitry for the analog to digital board. It
Activates the analog circuitry as needed to reduce power consumption.



POWER SAVER PC BOARD *P/N 28178-0023*

Battery Powered Power Saver Board Description

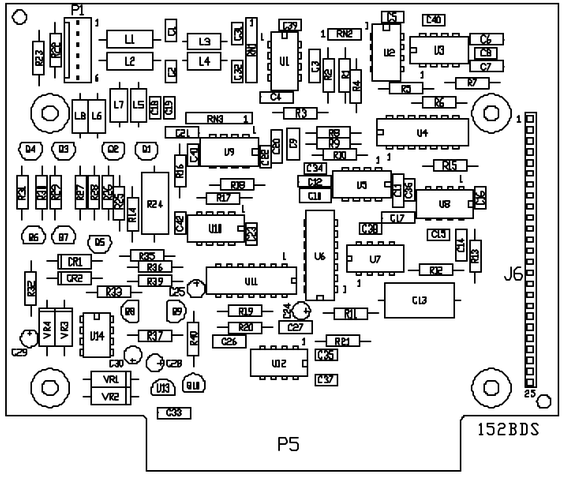
This board provides the control timing circuitry for the analog to digital board. It Activates the analog circuitry as needed to reduce power consumption.



A/D PC BOARD, *P/N 28175-0026*

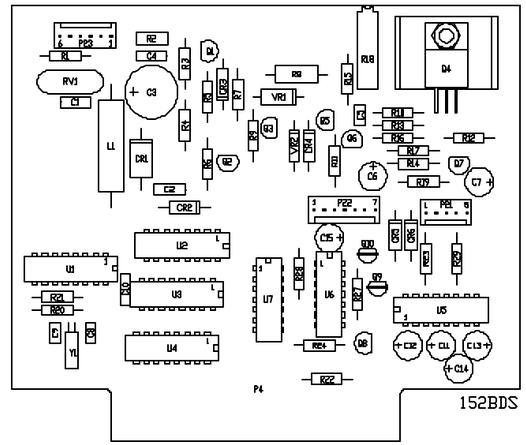
Battery Powered Analog to Digital Board Description

This board consists of weight amplifiers (U1 & U3), reference voltage amplifiers (U9 & U10), Switching circuitry (U4-U6, U11, U12), a dual slope ratiometeric integrator (U7), a comparator (U8), analog voltage supply circuitry (U13, U14, Q8-Q10) and excitation circuitry (Q1-Q7).



POWER SUPPLY, RS-232, TIME/DATE, CUTOFF BOARD, *P/N 28186-0023*

This board consists of power supply circuitry (Q1-Q7), RS-232 circuitry (U5), time/date circuitry (U1-U4), And the cutoff circuitry (U6, Q8-Q10).



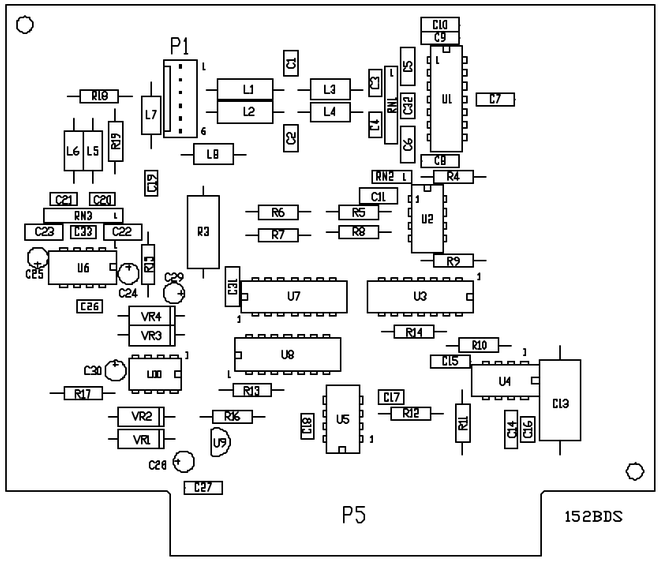
Board Check Chart *(use logic gnd.p23-6 For reference)*

Description	Test Location	Voltage
+Source	P23 pin 1	+10 to +15VDC
+VCC	P4 pin 20	+8VDC ±5%

BARRIER POWERED A/D PC BOARD *P/N 28476-0014*

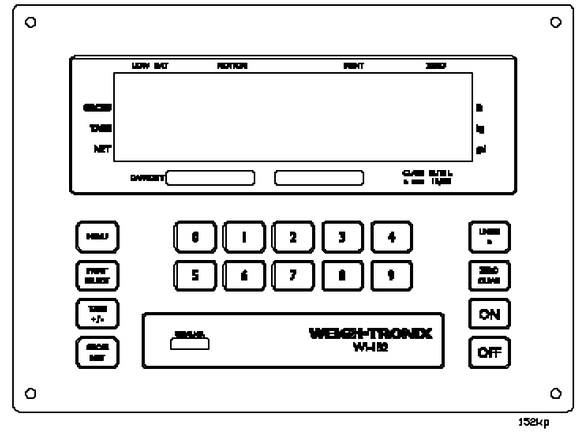
AC/DC Analog to Digital Board Description

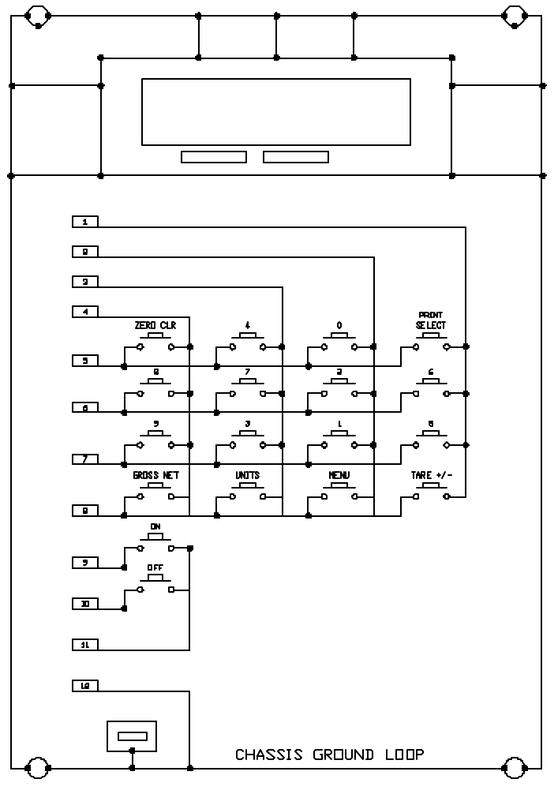
This board consists of weight voltage amplifiers (U1 & U2), reference voltage amplifier (U6), Switching circuitry (U3), a dual slope ratiometric integrator (U4), a comparator (U5), analog to Digital control logic circuitry (U4), comparator (U5), analog to digital control logic circuitry (U7 & U8), And the analog circuitry voltage supply (U9 & U10).



Board Check Chart *(use chasis gnd. For reference)*		
Description	**Test Location**	**Voltage**
+VDC analog	U4 pin 7	+5VDC +/-5%
-VDC analog	U4 pin 4	-5VDC +/-5%
+Excitation	P1 pin 1	+5VDC +/-5%
-Excitation	P1 pin 6	OVDC
Amplified Input	U2 pin 2	+0.13VDC (no load)
Amplified Input	U2 pin 2	+3VDC (3mv/v)

WI-152 KEYPAD OVERLAY *P/N 28880-0022*
AND SCHEMATIC





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