WEIGH-TRONIX

WI-150 Ultra Low-Power Weight Indicator Service Manual

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Introduction

This service manual will help you prepare your WI-150 indicator for use. This manual covers the following:

- Introduction
- Operational Modes
- Sealing the Indicator
- Keyboard
- Configuration Mode
- Adjusting Dead Load
- Calibration Procedures
- Reset Menu and Master Clear
- Board Schematics and Parts Lists

Operational Modes

The WI-150 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:

- cutoff control
- pushbutton tare
- one to ten keyboard tare registers
- one to eight cutoff values
- identification number
- 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

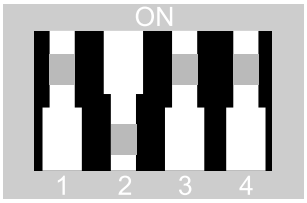
Use this mode to perform tests on the WI-150. The test mode is covered in the *User's Manual*.

Configuration Mode

Use this mode to set up 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

The WI-150 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. S1-3 and S1-4, which connect the



WI-150's ON/OFF keys to the appropriate circuitry, should always be in the ON position to allow optimal functioning of the indicator. S1-2 is not functional.

Keyboard

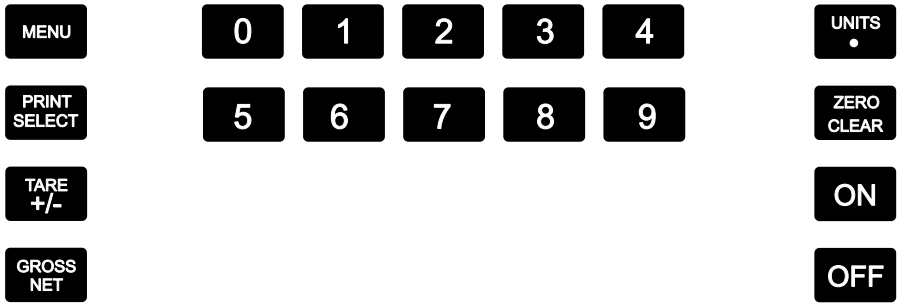


Figure 1
WI-150 Keyboard

OFF Places the battery-powered version in sleep mode. Is not functional in the AC/DC powered version.

ON Wakes the battery-powered version from sleep mode. Is not functional in the AC/DC powered version.

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 point (.) when keying in values.

0 **to** **9** **keypad**	Enters numbers and specifies tare registers and cutoff values.
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. Used to enter a dash (-) in ID numbers.
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 for software revisions 45790-0025J (battery pack) and 45790-0017L (AC-powered). Note that earlier software may not have all of these programming selections. Follow the configuration menu and instructions in Figure 2 to set up the WI-150 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. The menu reflects a WI-150 model with time and date and other options installed and enabled. Your system may differ.

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, flip switch S1-1 to the OFF position (sealed). Next, enter the default code number, 150. Get 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 OFF 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.

SC-150

This parameter allows you enable or disable the SC-150. The default setting is “no.”

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*. Capacity is automatically converted--entering the capacity for either lbs or kgs automatically sets the capacity of the other unit.

Capacity for gallons is determined according to density and cannot be entered since it is a function of weight, not volume. 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.

Setup ↓ Scale ↓ Units → Capacity → Division ↓

Pounds → 1000g → Gallons

This option lets you set the division size for the units of measure enabled under *UNITS*. Division size is automatically converted--entering division size for either lbs or kgs automatically sets the division size for the other. Division size for gallons is independent.

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.

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 → 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 *CUTOFFS* in the *OPTIONS* section of this menu must be a non-zero value.

Setup ↓ Scale → Options ↓ Control → 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.

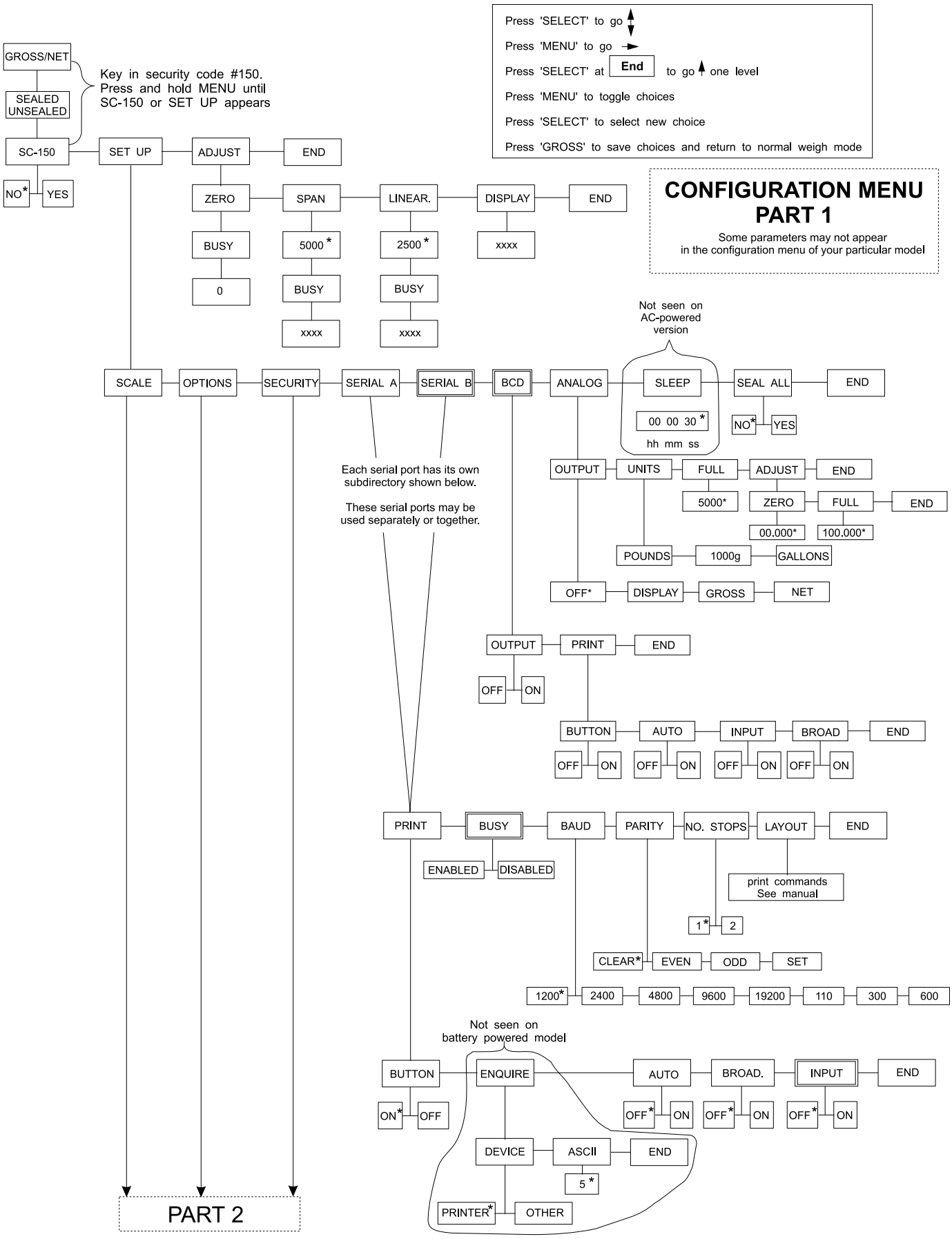
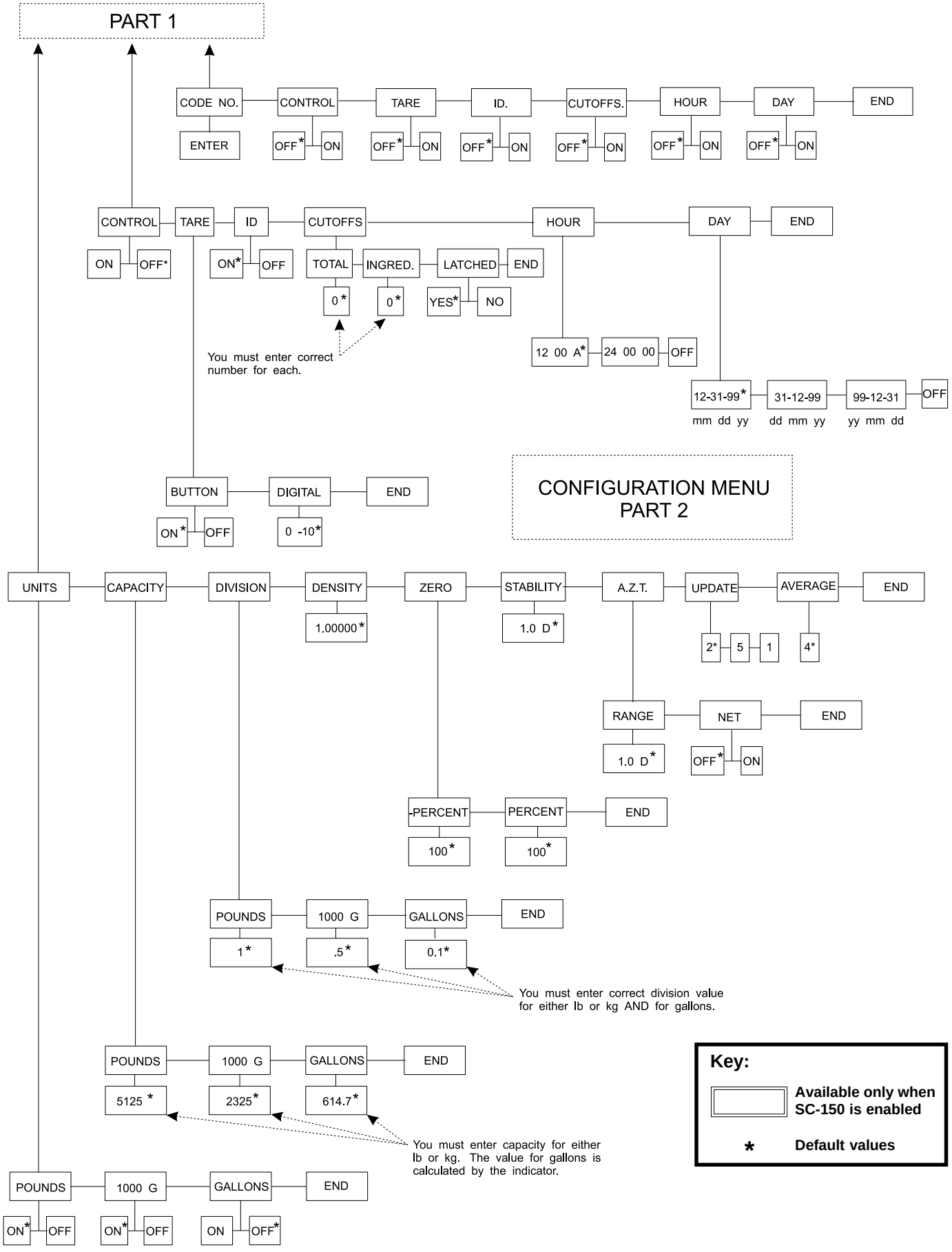


Figure 2
Configuration Menu


PART 1
CODE NO.
CONTROL
TARE
ID.
CUTOFFS.
HOUR
DAY
END
ENTER
OFF* ON
OFF* ON
OFF* ON
OFF* ON
OFF* ON
OFF* ON
CONTROL
TARE
ID
CUTOFFS
HOUR
DAY
END
ON OFF*
ON* OFF
TOTAL
INGRED.
LATCHED
END
0*
0*
YES* NO
You must enter correct number for each.
12 00 A*
24 00 00
OFF
12-31-99*
31-12-99
99-12-31
OFF
mm dd yy
dd mm yy
yy mm dd
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*
You must enter correct division value for either lb or kg AND for gallons.
POUNDS
1000 G
GALLONS
END
5125 *
2325*
614.7*
You must enter capacity for either lb or kg. The value for gallons is calculated by the indicator.
POUNDS
1000 G
GALLONS
END
ON* OFF
ON* OFF
ON OFF*
Key:
Available only when SC-150 is enabled
* Default values

Setup ↓ Scale → Options ↓ Control → 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 ↓ Control → Tare → ID → Cutoffs ↓

Total , Ingred., Latched

Total— This option lets you choose the number of cutoffs you want by keying in a number. If you choose 0 (zero) cutoffs, *CUTOFFS* will not appear in the *SECURITY* section of this menu or in the Operations Menu. Also, in order for *CONTROL* to appear in the Operations Menu, a non-zero number must be entered.

Ingred.— This option lets you choose the number of cutoffs you wish to be “ingredient cutoffs” by keying in a number. If you pick 0, *INGRED.* will not appear in the menu and the cutoffs you have will be “setpoint cutoffs.” Cutoffs occur according to weight. The lightest cutoffs occur first, followed by the heavier ones. See *Viewing and Setting Cutoffs* in the *User's Manual*.

Latched— Selecting "yes" means that once a cutoff output is turned off, it is to stay off until control is halted and then started again. Further, once all cutoffs are off, the control is automatically halted. Selecting "no" disables this behavior. *LATCHED* is offered only if *CONTROL* is enabled under *OPTIONS* and the total number of cutoffs is not zero. Default = yes.

Setup ↓ Scale → Options ↓ Control → 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 S*ECURITY* section of this menu and *DAY* will not appear in the *OPTION*S or *SECURITY* section of this menu.

Setup ↓ Scale → Options ↓ Control → 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. →

Control

Enabling this function requires that the security code be keyed in before accessing the *CONTROL* sub-menu of the Operations Menu. Default = OFF.

Setup ↓ Scale → Options → Security ↓ Code No. → Control →

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 A / Serial B

These two serial ports allow interface with peripheral devices when the SC-150 in employed. Serial communication includes RS-232, RS-422/485 and Current Loop. These ports may be used separately or they may be used in conjunction with each other. When the SC-150 is disabled only Serial A appears in the Configuration Menu.

Setup ↓ Scale → Options → Security → Serial A/B ↓ Print ↓

Button

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

Setup ↓ Scale → Options → Security → Serial A/B ↓ Print ↓ Button →

Enquire

This option is not seen on the battery-powered version of the WI-150. On the AC//DC powered 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.

Under the Enquire, Device option, if "Printer" is selected, the display will freeze while printing, and if printing is timed-out, a recovery menu is presented. If "Other" is selected, data are transmitted without affecting the front panel operation.

Setup ↓ Scale → Options → Security → Serial A/B ↓ 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 A/B ↓ Print ↓ Button → Enquire → Auto →

Broad.

Broad. stands for broadcast. If you enable (*ON*) broadcast, the weight data to be transmitted are updated 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 A/B ↓ Print ↓ Button → Enquire → Auto → Broad

Input

Used only with the SC-150 for remote print input.

Setup ↓ Scale → Options → Security → Serial A/B ↓ Print → Busy →

Enabled, Disabled

This parameter refers to the ready/busy handshake between the indicator and any peripheral devices. This function requires two additional wires in the cable for the Clear To Send and Date Terminal Ready signals to be used.

Setup ↓ Scale → Options → Security → Serial A/B ↓ 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 A/B ↓ 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).

	Data Bits	Stop Bits	Parity
Set	7	2	none
Clear	8	1	none
Mark	7	2	none
Space	8	1	none
Odd	7	1 or 2	odd
Even	7	1 or 2	even

Setup ↓ Scale → Options → Security → Serial A/B ↓ Print → Busy → Baud → Parity → No. Stops ↓

1, 2

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

Setup ↓ Scale → Options → Security → Serial A/B ↓ Print → Busy → Baud → Parity → No. Stops →

Layout

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

Figure 3 shows a sample of the default printout generated when you press the **PRINT** key on a new indicator and the layout menu in Figure 4 shows the default order of print commands. Notice that the time, date, and ID-number items do appear in Figure 3. The print commands for time, date, and ID-number are present in the default print-layout menu, and these items are enabled under *OPTIONS* in the configuration.

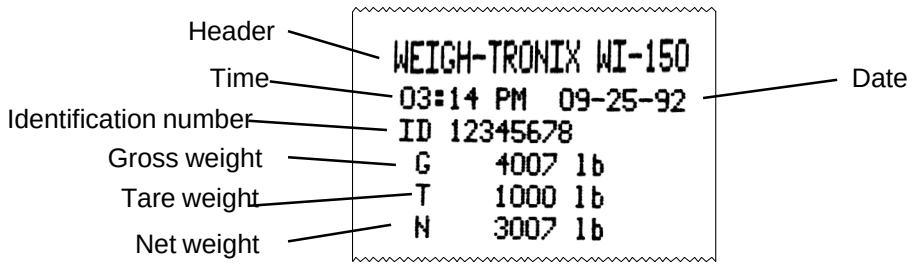
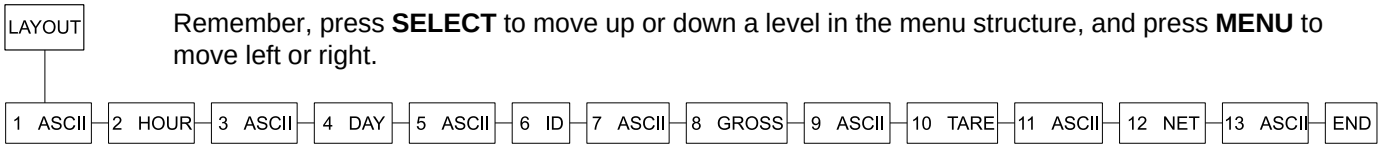


Figure 3
Default Printout As Configured on a New Indicator

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. Figure 4 shows the default layout menu.



Remember, press **SELECT** to move up or down a level in the menu structure, and press **MENU** to move left or right.

Figure 4
Default Layout Menu

As in the other WI-150 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.

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 5. You view these sequence numbers and ASCII code numbers by repeatedly pressing **MENU**. These ASCII strings contain the codes for your custom wording.

Figure 5 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*.

In Figure 5, the MENU key advances you through the ASCII control-character displays. The **SELECT** key returns you to the ***1 ASCII*** display.

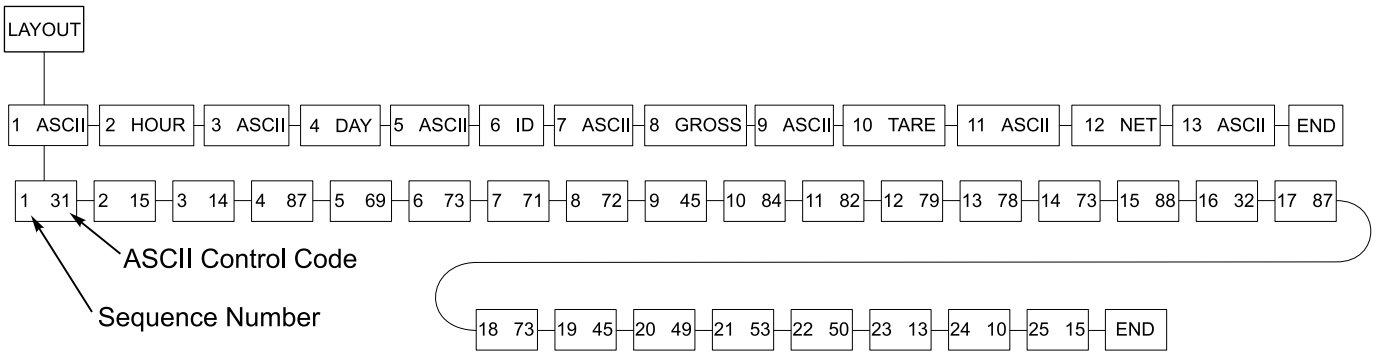


Figure 5
ASCII Control Code under the Print Command, ***1 ASCII***

#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-	–	#48-	0
#84-	T	#13-	Carriage return (CR)
#82-	R	#10-	Line feed (LF)
		#15-	Sets next line's characters to double wide

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

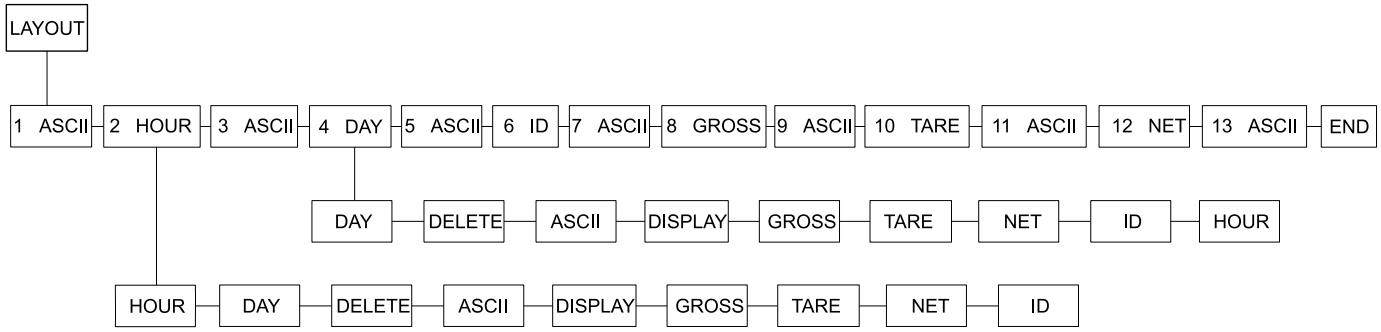


Figure 6
Layout Submenu, ***2 HOUR*** or ***4 DAY***

Examples and Step by Step Instructions

Example A: If you want to change the second print command in Figure 4 from *2 HOUR* to *2 TARE,* with *2 HOUR* displayed, press **SELECT**. Now scroll to the *TARE* print command in the submenu 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 *(2 HOUR)* in Figure 4: with *2 HOUR* displayed, 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 the layout to your liking. These step by step instructions relate to the layout shown in Figure 5.

- 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 5, 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 5.

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

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.*

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

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 Os 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 you 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 A → Serial B →

BCD

Binary Coded Decimal which allows transmission to certain printers. This paramter appears only when the SC-150 is enabled.

Setup ↓ Scale → Options → Security → Serial A → Serial B → BCD → Analog ↓

Output

This lets you specify which weight the analog output will follow. Choices are: off, displayed weight, gross weight, or net weight.

Setup ↓ Scale → Options → Security → Serial A → Serial B → BCD → Analog ↓ Output →

Units

Analog output is independent of the unit of measure selected for the display. This menu lets you specify which unit of measure is used for the analog output. Choices are: pounds, 1000 g, or gallons.

Setup ↓ Scale → Options → Security → Serial A→ Serial B → BCD →Analog ↓ Output → Units →

Full

When selected, the indicator will display the last value used or the default value. You enter the full capacity of the analog output which may be less than or greater than the capacity of the scale. For example, the capacity of the indicator may be 5000 lb, but it may be desirable to have 3000 lb as the full capacity of the analog output. In any case, the analog output has nominal under range and over range limits of 20%.

Setup ↓ Scale → Options → Security → Serial A → Serial B → BCD → Analog ↓ Output → Units → Full → Adjust ↓

Zero → Full → End

The choices present under *ADJUST* allow the zero and the span of the analog outputs to be adjusted without actually putting weights on and off the scale.

Selecting *ZERO* lets you adjust the zero of the analog output for a zero weight reading. This is done by pressing the 0, 1, 2, 3, or 4 key to increase the output and by pressing the 5, 6, 7, 8, or 9 key to decrease the output. The number on the display gives a visual representation of the zero setting, with 00.000 being the nominal value. The zero adjustment has a ±10% range, -10.000 to +10.000 on the display.

Selecting *FULL* lets the operator adjust the span of the analog output for the full capacity weight reading. The keys and the number on the display function like the zero adjustment above, with 100.000 as the nominal full capacity value. The span has a +/- 10% range, 90.000 to 110.00 on the display. Weight does not have to be on the scale to perform this task.

When *ZERO*, *FULL*, or *END* are displayed, the analog output follows the value selected under *OUTPUT* and *UNITS*. The only time the value is not output is while actually adjusting zero or full.

Setup ↓ Scale → Options → Security → Serial A → Serial B → BCD → Analog →

Sleep

This option, which is available only on the battery pack version, 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 A → Serial B → BCD → Analog →Sleep →

Seal All

When switch S1-1 is in the OFF position, if you choose the *YES* option, all items under configuration are sealed . 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

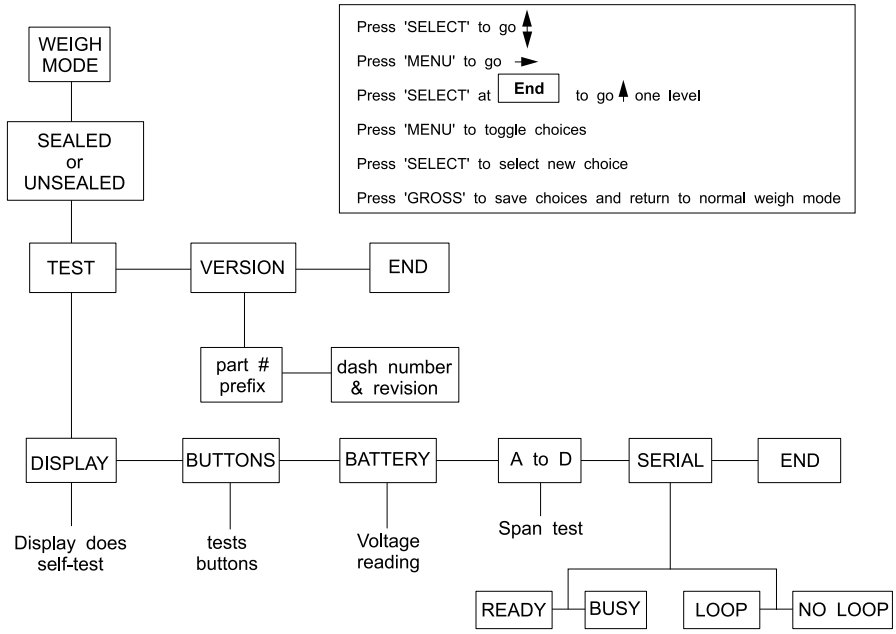
This option lets you set the zero, span, and linearity of the indicator. The following pages contain specific instructions for setting these parameters.

Adjusting Dead Load

The dead load offset adjustment provides compensations to cancel out the weight of the scale platform and any permanently fixed weight supporting structures on the platform. Adjusting the dead load should be completed before calibration of the Indicator.

To adjust the dead load:

1. Enter the test menu by pressing and holding the **MENU** key until *TEST* is displayed. Then proceed to the *A to D* display by following the directions in the box below:



2. While *A to D* is displayed, press **PRINT/SELECT**.
3. Access the junction box on your scale and adjust the zero balance potentiometer until the indicator displays a zero weight or an amount very close to it.

The dead load offset is adjusted and your indicator may now be calibrated.

Calibration Procedures

Make sure your test weights match the selected unit of measure on your indicator.

To calibrate your WI-150, you must enter the Configuration Menu outlined below. If you are already in the Configuration Menu, go directly to the procedures for setting Zero & Span and Linearity and viewing Display which are continued on the next page.

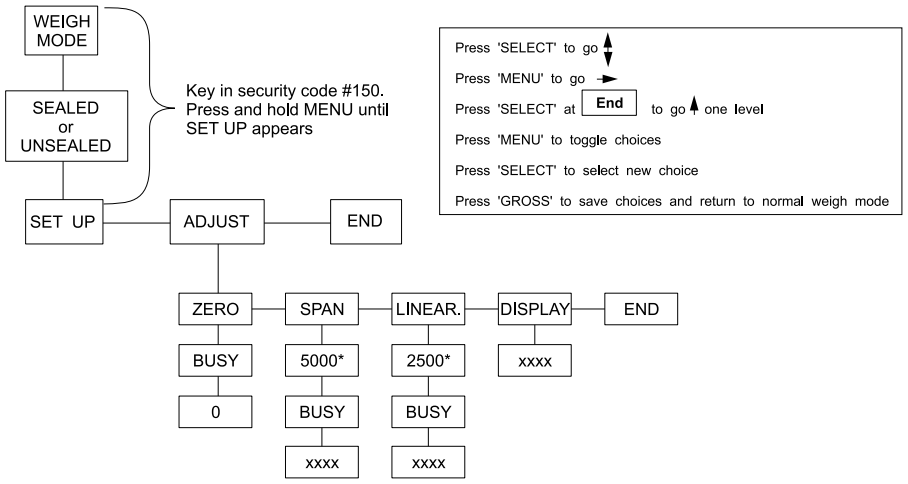
To Enter the Configuration Mode:

1. While in Gross/Net Weighing Mode, scroll in the security code number 150 by using the ↑ and ← keys.
2. With the number ***150*** displayed, press and hold the **MENU** key until *SET UP* is displayed.

DO NOT let go of the **MENU** key until *SET UP* is displayed or else *TARE* will be displayed. If this occurs, press the **GROSS/NET** key to return to Weighing Mode and begin again at Step 1.

3. Press **MENU** to display ***ADJUST***.
4. Press **SELECT** to display ***ZERO***.
5. You are now in the Configuration Menu and may calibrate your system.

   To move around within the Configuration Menu follow the instructions printed in the box below. Specific instructions for setting Zero & Span and Linearity and viewing Display are provided on the next page.



Setting ZERO and SPAN (Calibration)

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** again.	***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 amount of the test weight on the scale and press **SELECT**.	Display shows *BUSY* briefly, then the weight.

*You may exit to normal Weighing Mode by pressing **GROSS/NET**, or continue to Step 6.*

Setting LINEAR.

Make sure you have the proper amount of weight keyed in and the proper amount of weight on the scale when setting LINEAR. or SPAN.

6. Press **SELECT** to return to the ***SPAN*** display, then press **MENU** to advance to the ***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.

*You may exit to normal Weighing Mode by pressing **GROSS/NET**, or continue to Step 9.*

DISPLAY

Use this mode to do a build-up test or to check linearity.

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 Weighing Mode by pressing **GROSS/NET**.*

Reset Menu and Master Clear

*The only items active for a reset or master clear are those items that are **not** set to the factory defaults.*

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

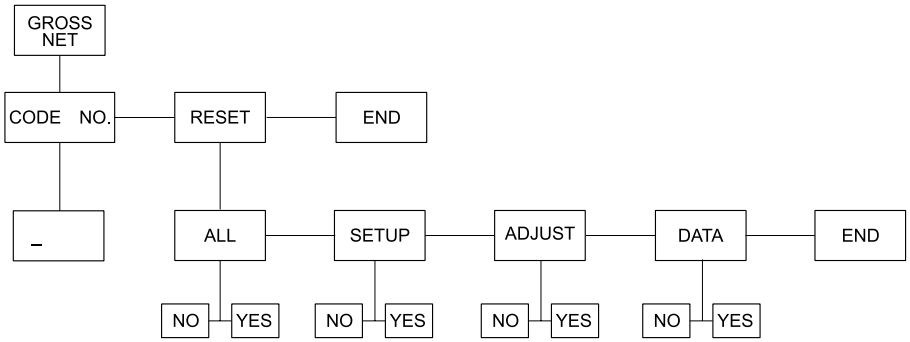
To perform a Master Clear follow these steps:

1. Disconnect the unit from its power source, hold the **8** and the **ZERO/CLEAR** keys down, and reconnect the power source to the indicator.	***CODE NO.*** is displayed.
2. Press **SELECT** . . .	**0** is displayed.
3. Enter in the security code number (150), then press **SELECT** . . .	***CODE NO.*** is displayed.

You must enter the security code number before you can reset any items.

4. Press **MENU** . . .	***RESET*** is displayed. From here you can access the rest of the menu items the same as you do for all the other menus.

Master Clear Menu

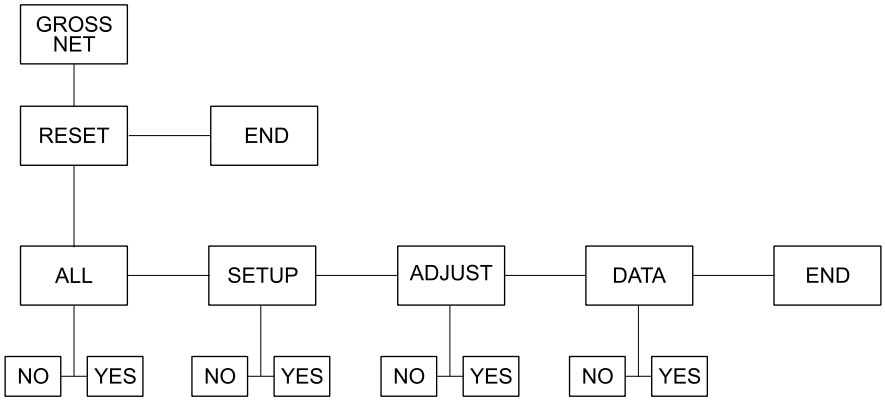


ALL - Includes Setup, Adjust, and Data
SETUP - Configuration selections
ADJUST - Calibration settings
DATA - User entered

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.

Reset Menu

*The only items active for a reset or master clear are those items that are **not** set to the factory defaults.*



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.

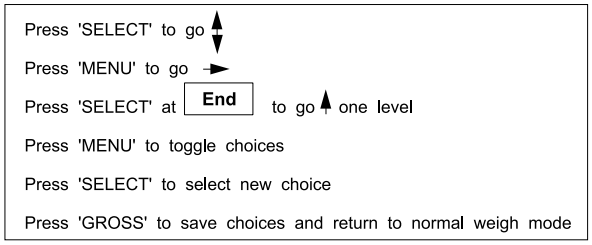
If *ALL* appears, you have the option to reset all values to their default settings simultaneously.

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 values**.

To reset any of the choices, use the **MENU** key to toggle between the choices. When the correct choice is displayed, press **SELECT**, then press **GROSS/NET** to save.

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.

The following are instructions for moving around within the Configuration Menu:

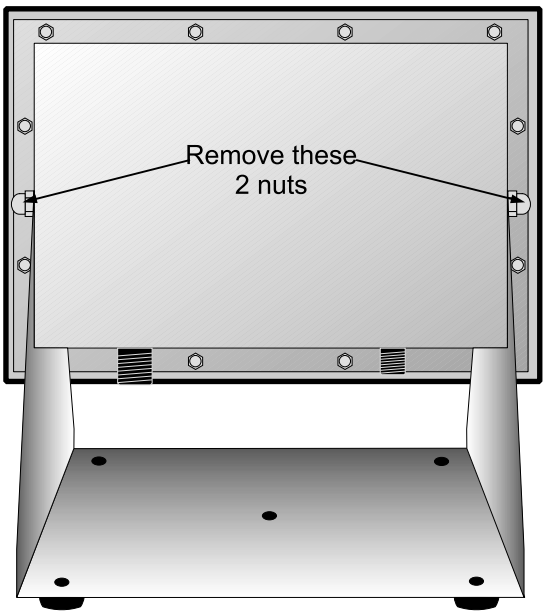


If a new microprocessor is installed in the WI-150, the COP (Computer Operating Properly) watchdog system will need to be reset. Do this by turning off the unit, placing a jumper between pin 1 and pin 2 of P7 and a jumper between pin 1 and pin 2 of P8. Turn on the unit for a few seconds then turn off and remove the jumpers. The COP is now reset and you are ready for normal operation.

Disassembly and Reassembly

Follow these steps to disassemble and reassemble your WI-150 indicator.

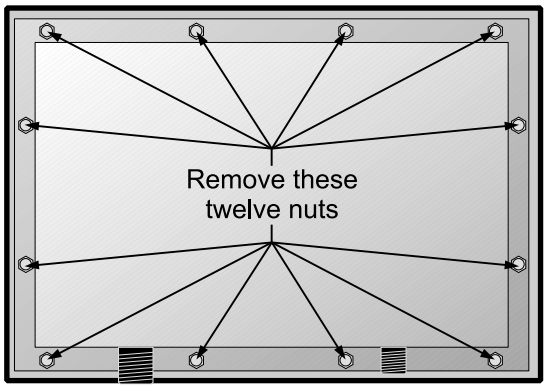
1. Be sure the unit is not connected to a power source and remove the indicator from the stand by removing the two nuts pointed out in Figure 7



Rear View of Indicator and Stand

Figure 7
Removing the indicator stand

2. Remove the 12 nuts pointed out in Figure 8.



Rear View of Indicator

Figure 8
Separating face and back of indicator

3. Pull the front panel from the back enclosure.
4. Remove any cables connected to the cards or main PC board.
5. Remove the 2 cards plugged into the main PC board by pulling them up and away from the main card. See Figure 9.

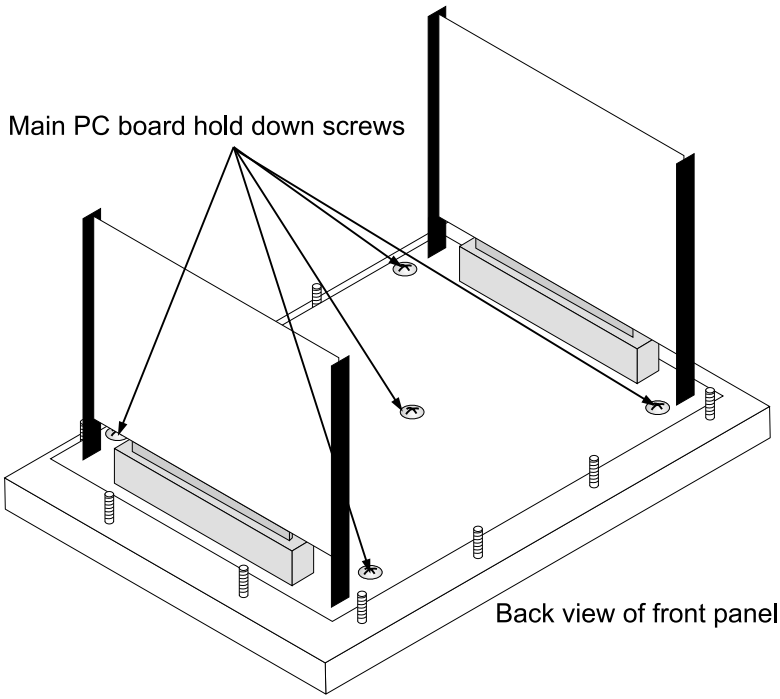
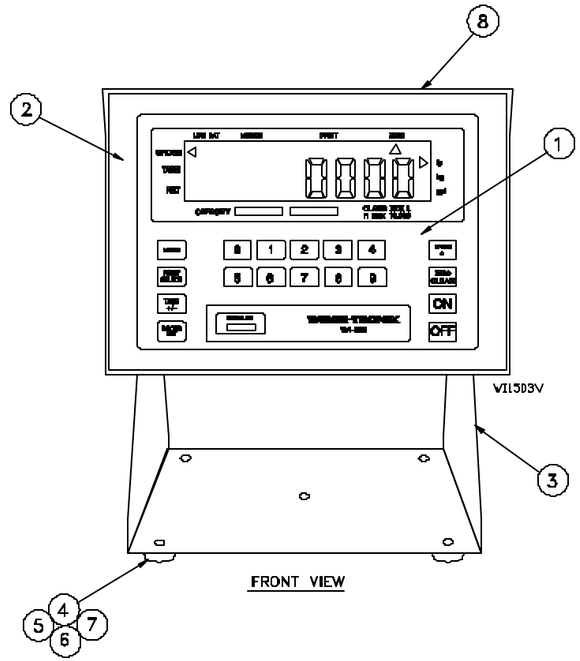
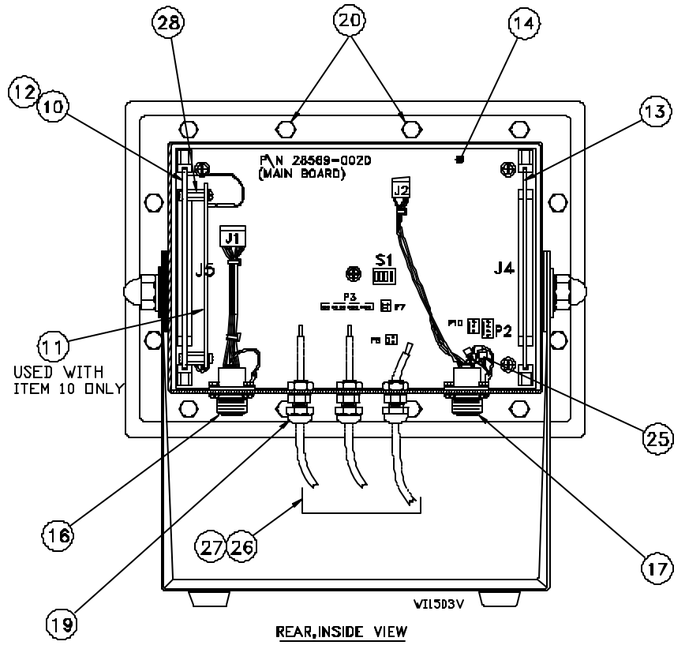
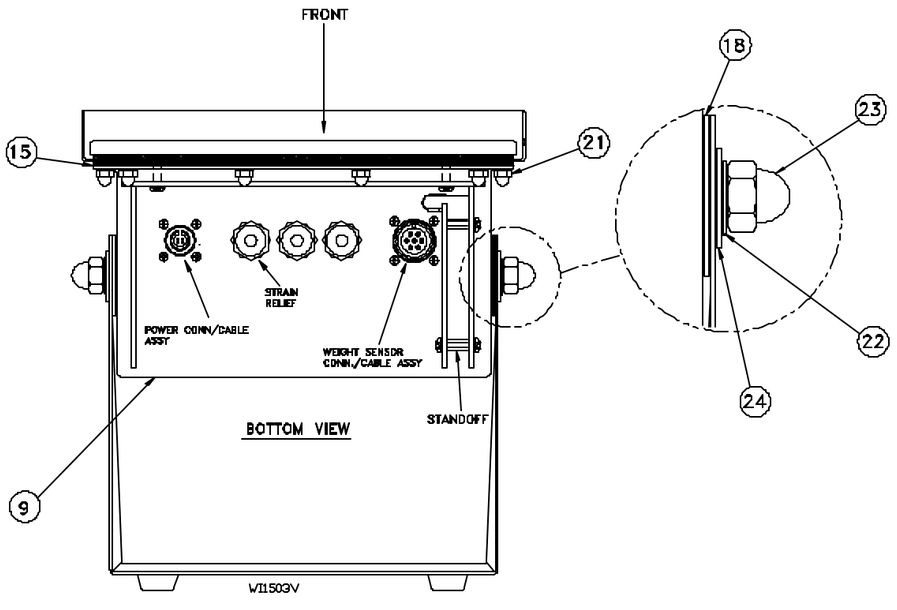


Figure 9
PC board layout

6. To remove the main PC board, remove the five screws pointed out in Figure 9 and pull the card up and away from the front panel.
7. Replace any defective components and reassemble by reversing the disassembly procedure.

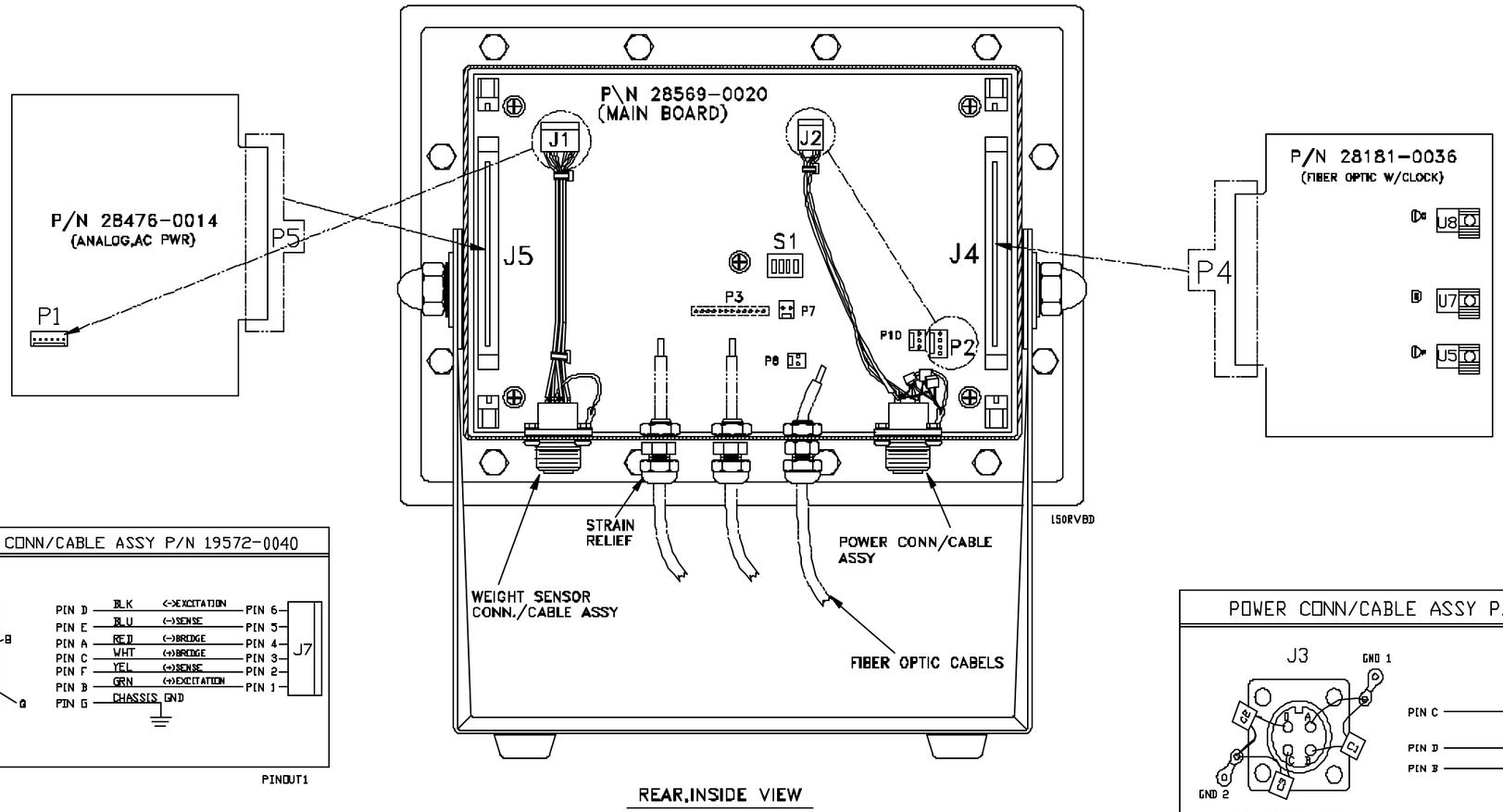




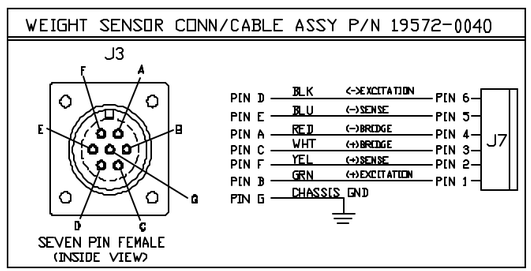


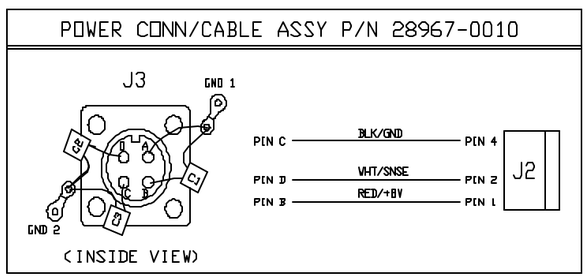
ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Front Panel Switch Overlay	28880-0014	1
2	Bezel	28928-0018	1
3	Stand	28919-0019	1
4	Rubber Foot	15349-0024	4
5	Flat Washer	14475-0023	4
6	Screw	14473-0116	4
7	Standoff	15457-0022	4
8	Front Panel	28892-0010	1
9	Enclosure *(stainless)*	28888-0016	1
*10	Analog A/D pwr saver Board	28175-0018	1
*11	Digital A/D pwr saver Board	28178-0023	1
**12	Analog A/D Board	28476-0014	1
13	Fiber Optic w/ clock Board	28181-0028	1
14	Main Pc Bd Assy *(w/ display)*	28569-0020	1
15	Front Panel Gasket	28886-0018	1
16	Weight Sensor conn/cable Assy	19572-0040	1
17	Power conn/cable Assy	28967-0010	1
18	Neoprene Pad	19563-0025	2
19	Strain Relief	15257-0024	2
20	Nut, Special #10-32	26513-0013	2
21	Capnut, #10-32	15786-0016	10
22	Tooth Washer	15698-0088	2
23	Capnut	15771-0070	2
24	Flat Washer	16163-0066	2
25	Capacitor,0.01 UF/100V	15620-0123	3
26	Fiber Optic "*forward*" Cable Assy (Incl. 50' cable, connectors ea. end & strain relief) specify if other.	29352-0011	1
27	Fiber Optic "*reverse*" Cable Assy (Incl. 50' cable, connectors ea. end & strain relief) specify if other.	29352-0029	1
28	Standoff, # 6-32 x ½"	14510-0756	4

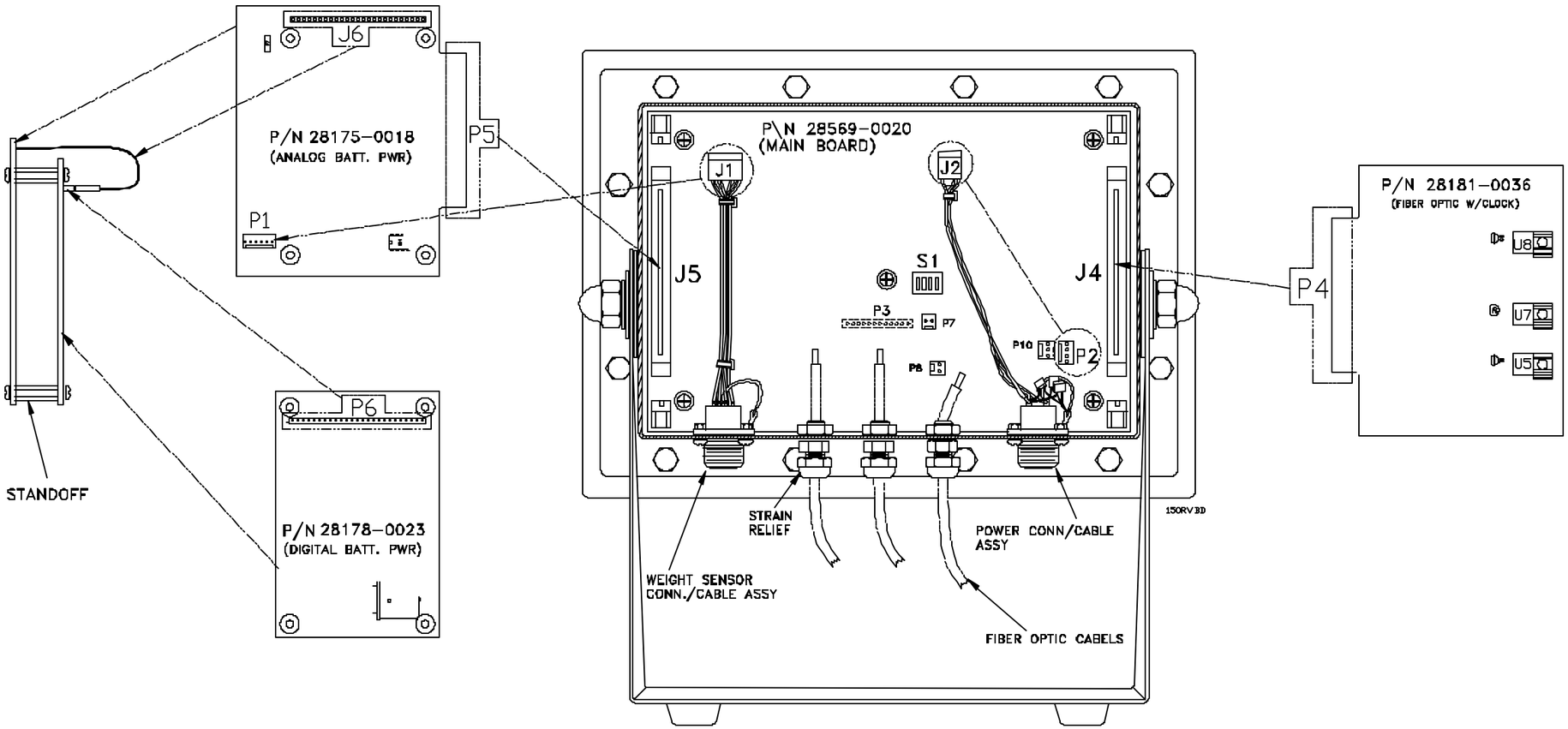
* Battery Powered Version Only.
** AC/DC Powered Version Only.



REAR,INSIDE VIEW

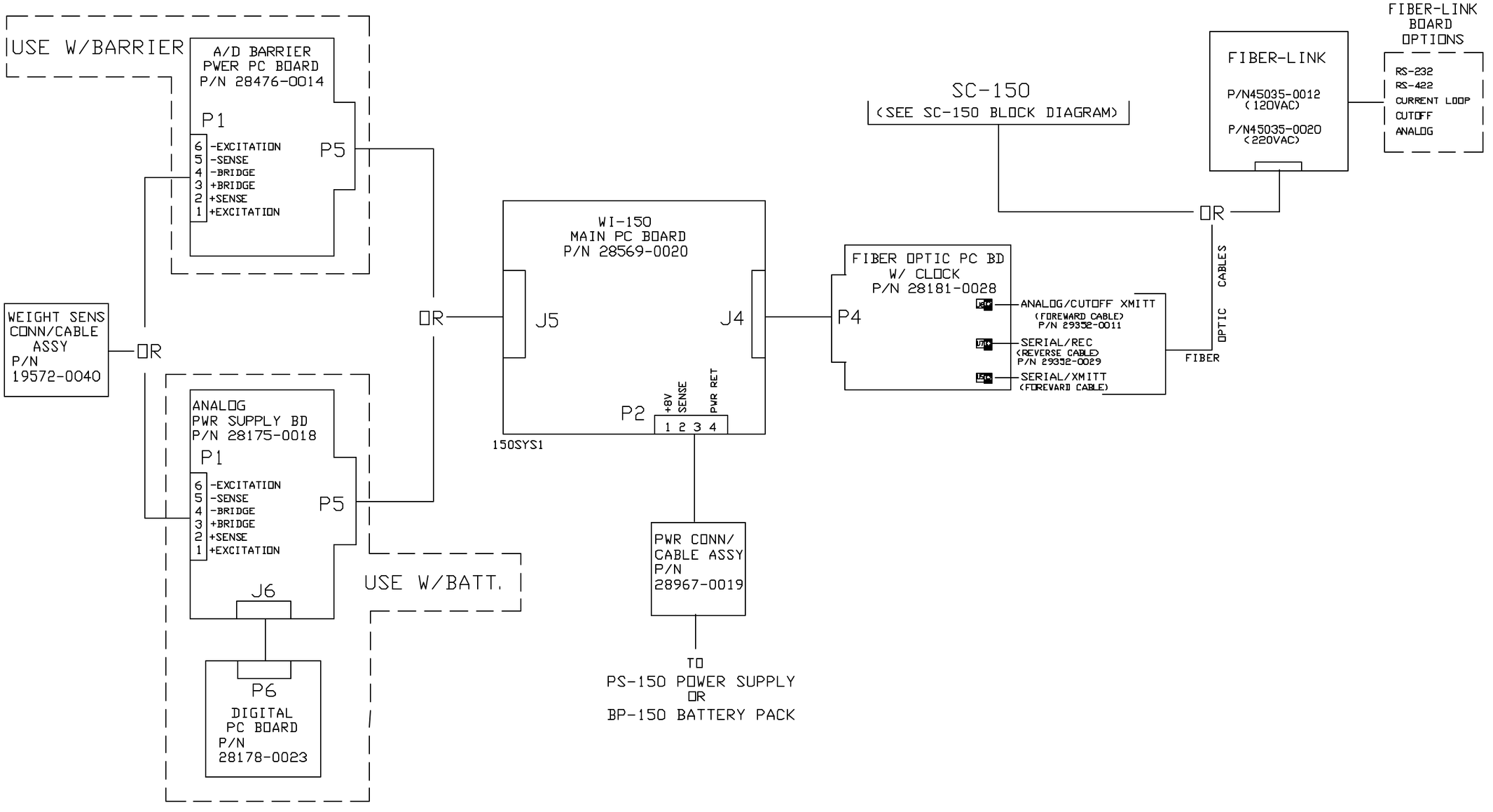






REAR,INSIDE VIEW

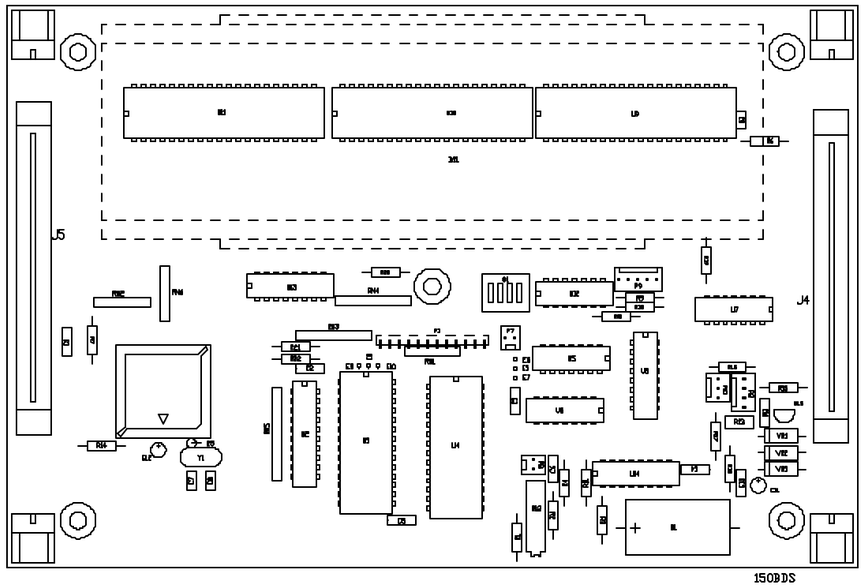
WI-150 INDICATOR
SYSTEM BLOCK DIAGRAM



WI-150 INDICATOR MAIN PC BOARD *P/N 28569-0020*

Main PC Board Description

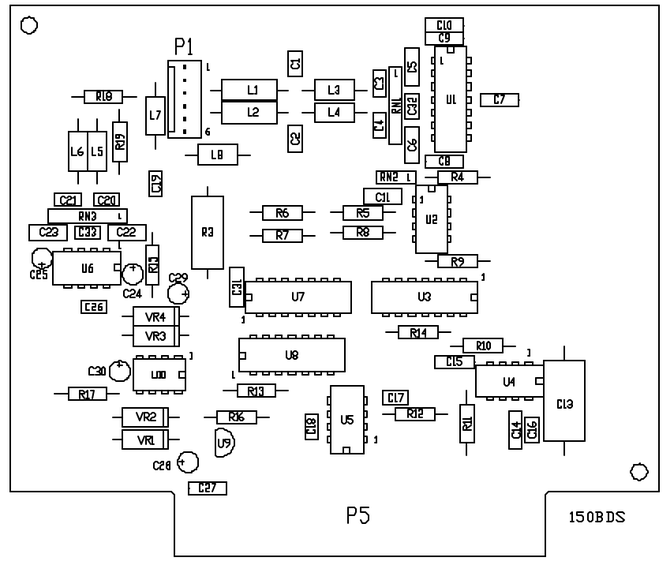
The main board consists of a motorola microprocessor
IC (U1), control circuitry (U2 & U8), random access memory or RAM (U3),
Read only memory or EPROM (U4), display drivers (U9 & U11), display (DS1),
And the monitoring of the front panel switches through U13.



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).

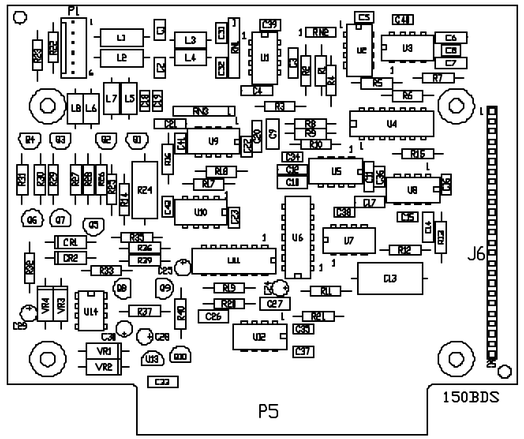


Board Check Chart *(use chasis gnd. For reference)*		
Description	**Test Location**	**Voltage**
+VDC analog	U4 pin 7	+5VDC +/-5%
-VDC analog	U4 pin 4	-5VDC +/-5%
+Excitation	P1 pin 1	+5VDC +/-5%
-Excitation	P1 pin 6	OVDC
Amplified Input	U2 pin 2	+0.13VDC (no load)
Amplified Input	U2 pin 2	+3VDC (3mv/v)

A/D PC BOARD, *P/N 28175-0018*

Battery Powered Analog to Digital Board Description

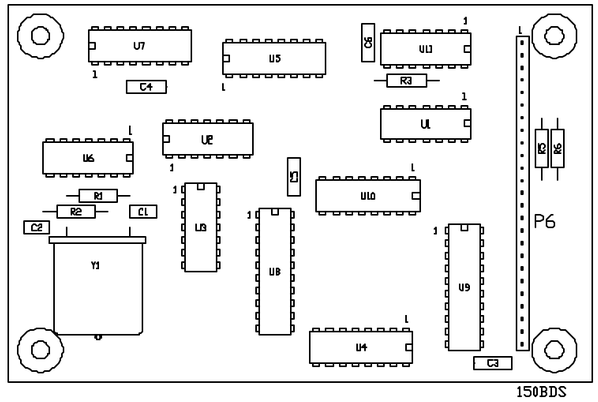
This board consists of weight amplifiers (U1 & U3), reference voltage amplifiers (U9 & U10), Switching circuitry (U4-U6, U11, U12), a dual slope ratiometeric integrator (U7), a comparator (U8), analog voltage supply circuitry (U13, U14, Q8-Q10) and excitation circuitry (Q1-Q7).



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

Battery Powered Power Saver Board Description

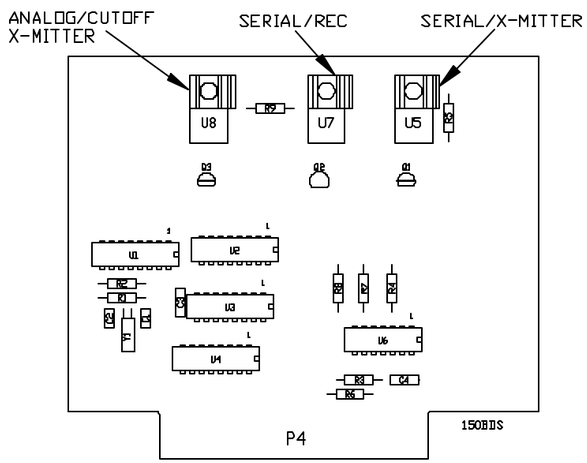
This board provides the control timing circuitry for the analog to digital board. It Activates the analog circuitry as needed to reduce power consumption.



I/O ANALOG CUTOFF W/CLOCK FIBER OPTIC PC BOARD *P/N 28181-0036*

Clock/Fiber Optic Board Description

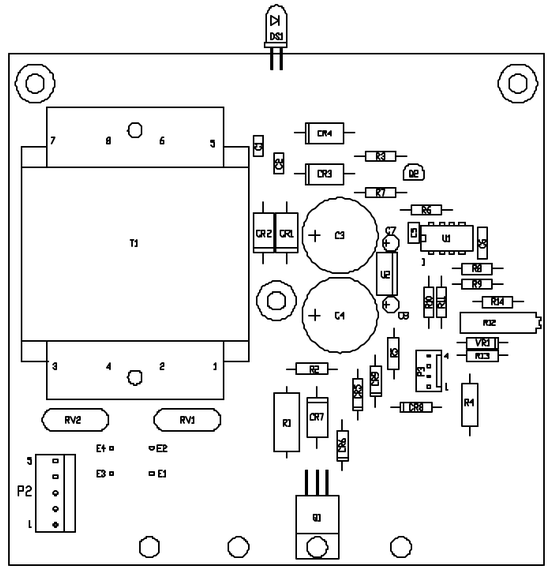
This board consists of time/date circuitry (U1-U4) and the fiber optic input/output circuitry (U5-U8, Q1-Q3)



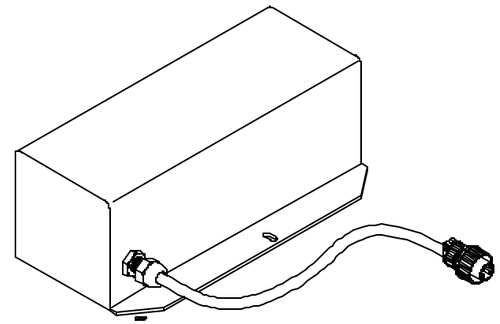
BP-150 BATTERY PACK *and*
BC-150 BATTERY CHARGER, 115/230 VAC
PARTS AND ASSEMBLY

BC-150 BATTERY CHARGER MAIN PC BOARD *P/N 28243-0016*

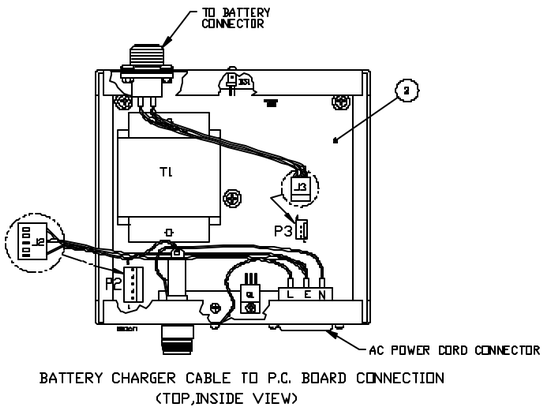
The PC board changes the supplied AC voltage to a DC output. When connected, this DC output is used to charge a battery pack such as the WEIGH TRONIX BP-150. The board senses the level of the battery pack, and turns the charging circuitry “on” and “off” To maintain the level of the battery pack.



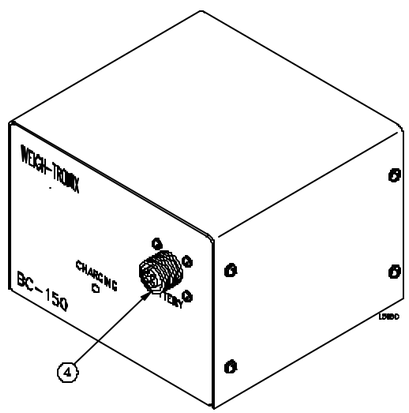
BP-150 BATTERY PACK *P/N 28980-0013*

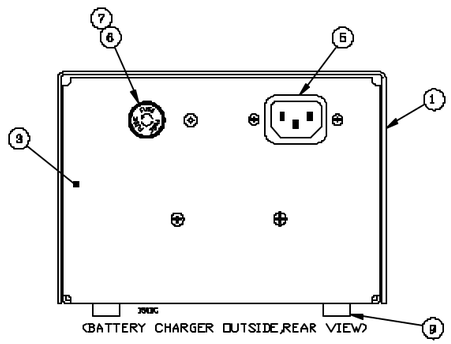


ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Cover	22447-0013	1
2	PC Board	28243-0016	1
3	Enclosure	28441-0016	1
4	Battery Conn/Cable ass’y	28439-0010	1
5	Power Conn/Cable ass’y	28440-0017	1
6	Fuse, ½ amp	15453-0083	1
7	Fuse holder	15455-0018	1
8	Power Cord (not shown)	17790-0016	1
9	Rubber Bumper Ass’y	18056-0013	4



BATTERY CHARGER CABLE TO P.C. BOARD CONNECTION
(TOP,INSIDE VIEW)

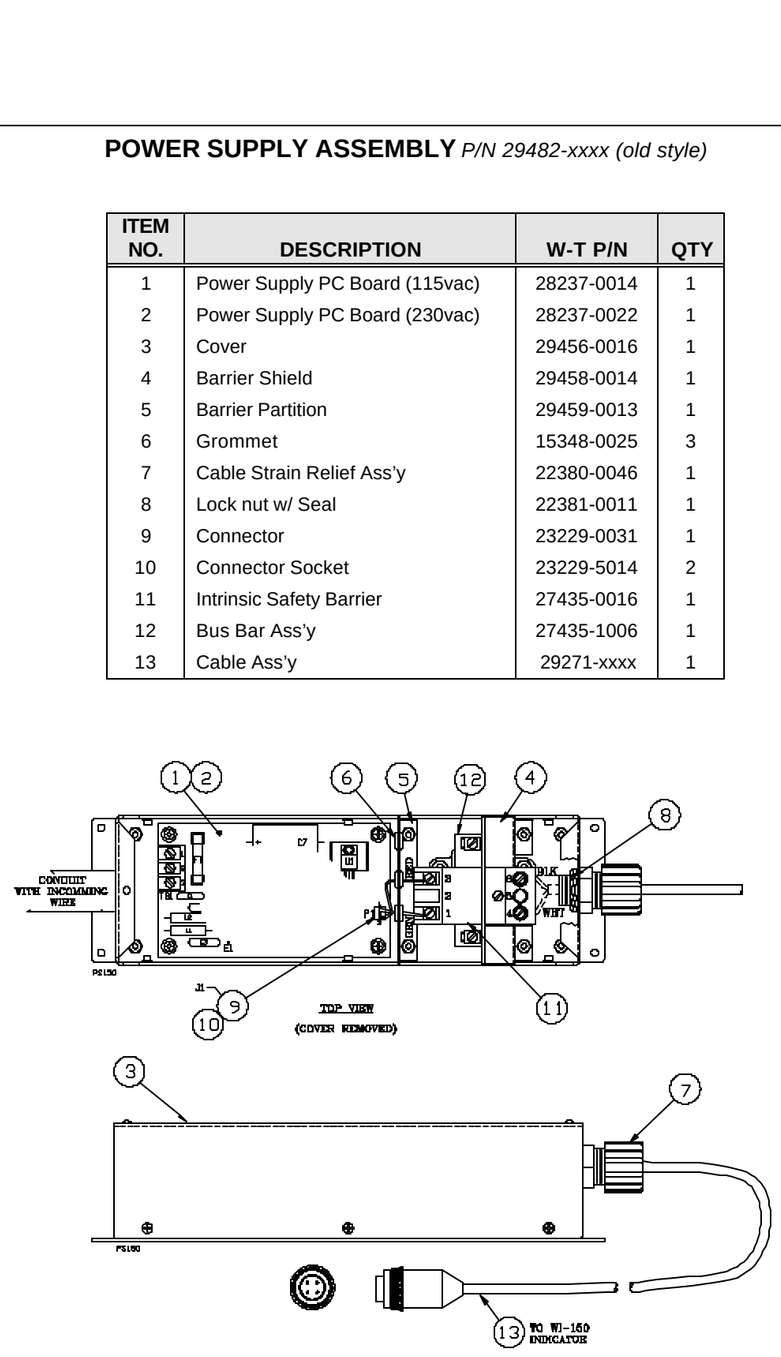




PS-150 POWER SUPPLY
115/230 VAC, PARTS AND ASSEMBLY

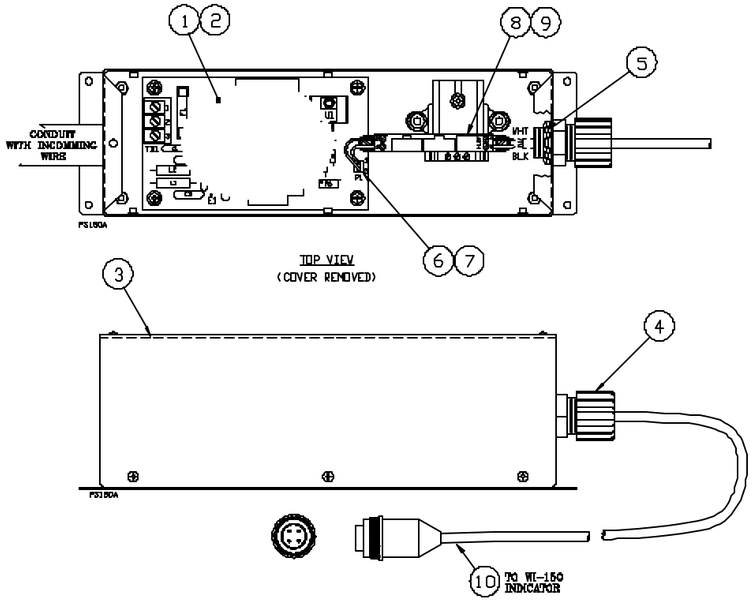
POWER SUPPLY ASSEMBLY *P/N 29482-xxxx (old style)*

ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Power Supply PC Board (115vac)	28237-0014	1
2	Power Supply PC Board (230vac)	28237-0022	1
3	Cover	29456-0016	1
4	Barrier Shield	29458-0014	1
5	Barrier Partition	29459-0013	1
6	Grommet	15348-0025	3
7	Cable Strain Relief Ass'y	22380-0046	1
8	Lock nut w/ Seal	22381-0011	1
9	Connector	23229-0031	1
10	Connector Socket	23229-5014	2
11	Intrinsic Safety Barrier	27435-0016	1
12	Bus Bar Ass'y	27435-1006	1
13	Cable Ass'y	29271-xxxx	1

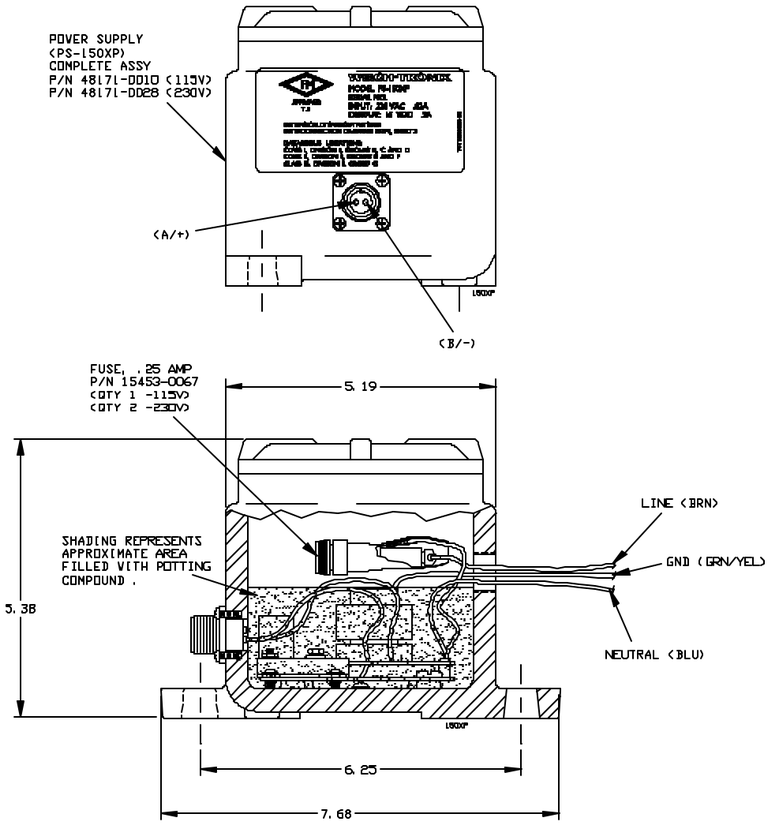


POWER SUPPLY ASSEMBLY *P/N 29482-xxxx (new style)*

ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Power Supply PC Board (115vac)	28237-0014	1
2	Power Supply PC Board (230vac)	28237-0022	1
3	Cover	29456-0024	1
4	Cable Strain Relief Ass'y	22380-0046	1
5	Lock nut w/ Seal	22381-0011	1
6	Connector (3-pin)	23229-0031	1
7	Connector Socket	23229-5014	2
8	Intrinsic Safety Barrier	27435-0024	1
9	Bus Bar Ass'y	27435-1006	1
10	Cable Ass'y	29271-xxxx	1

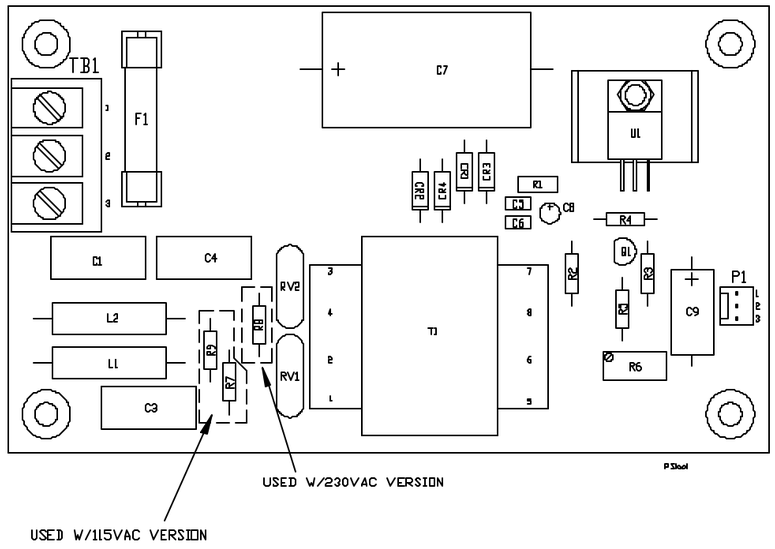


PS-150XP POWER SUPPLY, P/N 48171 *–0010(115V), -0028(230V)*

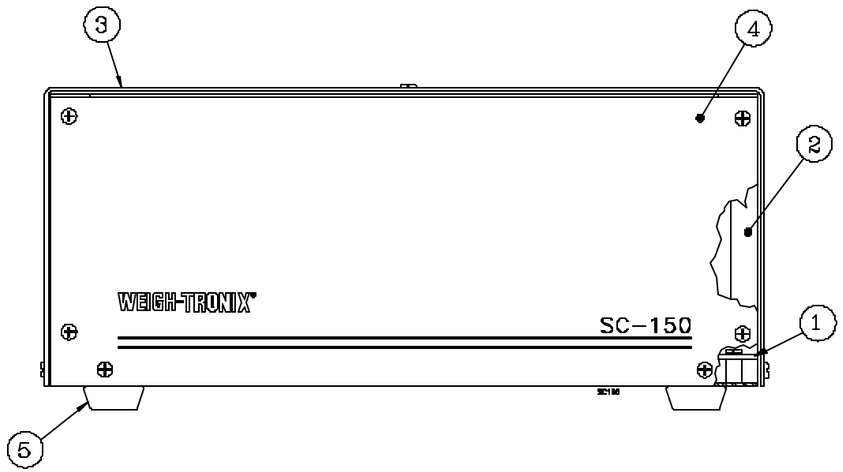


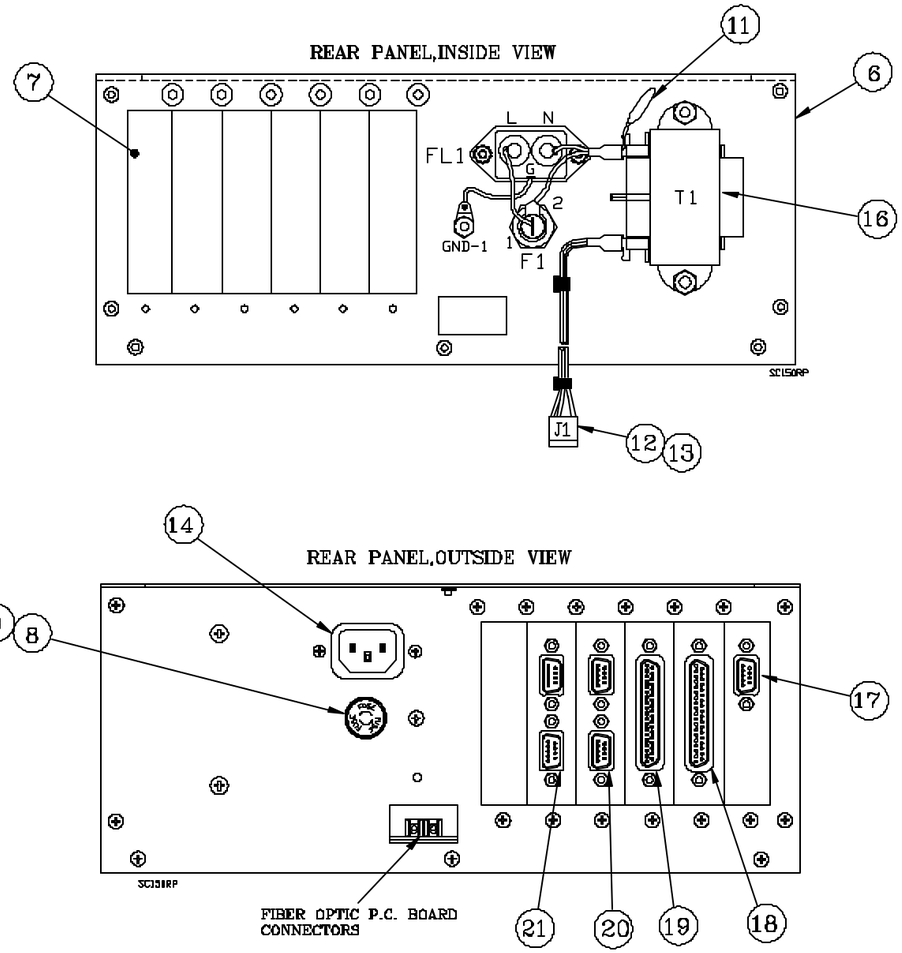
PS-150 PC BOARD, P/N 28237 *–0014(115VAC), -0022(230VAC)*

The PS-150 PC board converts either 115vac or 230vac input to a regulated output of 13.5vdc with no load.



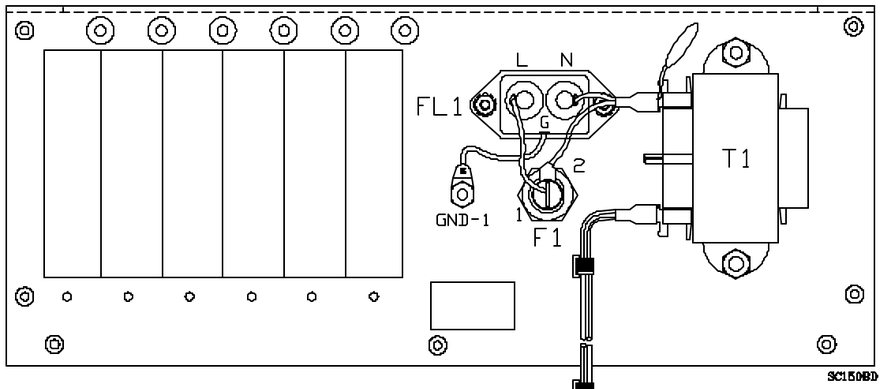
SC-150 REMOTE CONTROL
PARTS AND ASSEMBLY



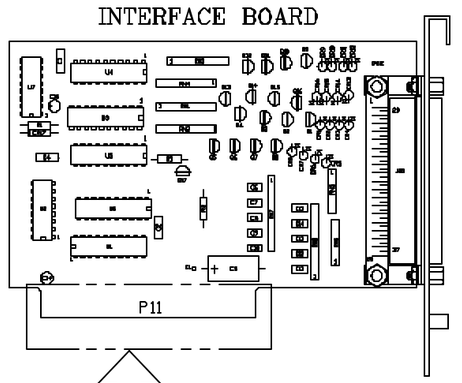


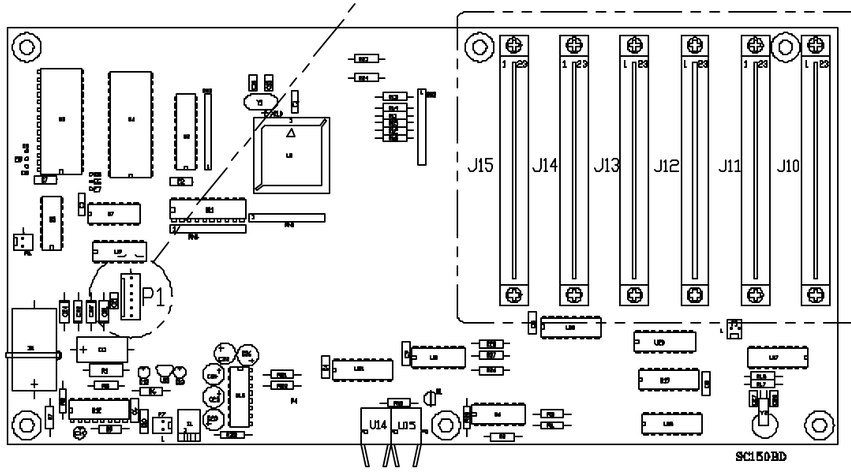
ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Main Pc Board Assembly	28231-0036	1
2	Chassis	28925-0011	1
3	Enclosure	28924-0012	1
4	Front Panel	29330-0018	1
5	Rubber Foot	15349-0024	4
6	Rear Panel	28926-0010	1
7	Connector Blank	28941-0011	specify
8	Fuse, ¼ A (230VAC)	15453-0067	1
9	Fuse, ½ A (115VAC)	15453-0083	1
10	Fuse holder	15455-0016	1
11	Varister	16046-0010	2
12	Connector	23229-0064	1
13	Connector Socket	23229-5014	4
14	Power connector/filter Assy (3 amp)	27387-0022	1
15	Power Cable (not shown)	17790-0016	1
16	Transformer	27434-0165	1
17	Analog Interface Board Assy	28234-0017	1
18	Cutoff Interface Board Assy	28228-0015	1
19	Parallel Interface Board Assy	28821-0016	1
20	RS-232/RS485 Interface Board Assy	28024-0011	1
21	RS-232/RS485 Current Loop Interface Board Assy	28225-0018	1

REAR PANEL,INSIDE VIEW



INTERFACE BOARD

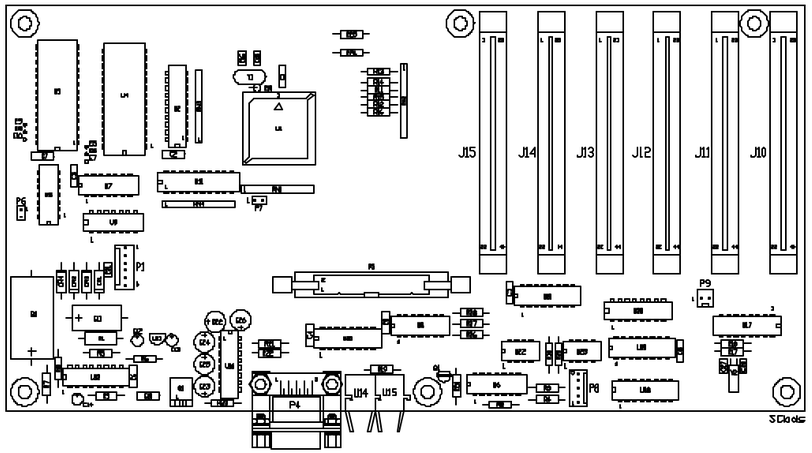




INTERFACE BOARDS
HAVE NO SPECIAL
CONNECTOR PLACEMENT

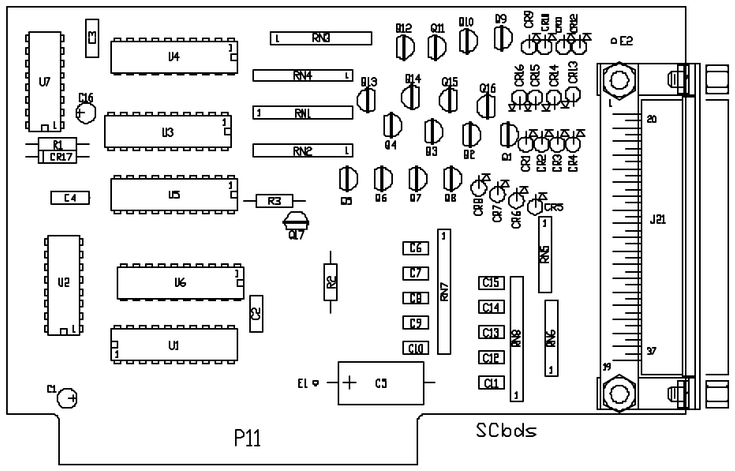
28231-0036
(MAIN BOARD)

MAIN PC BOARD ASSY, *P/N 28231-0036*

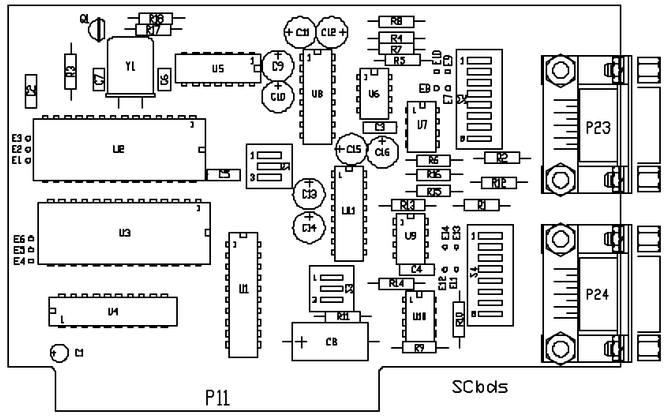


CUTOFF I/O INTERFACE BOARD *P/N 28228-0015*

This board provides multiple low current logic controlled outputs for switching external devices on or off at pre-Programmed or operator selected levels. Remote inputs for operations such as printing or zeroing the indicator are also available.



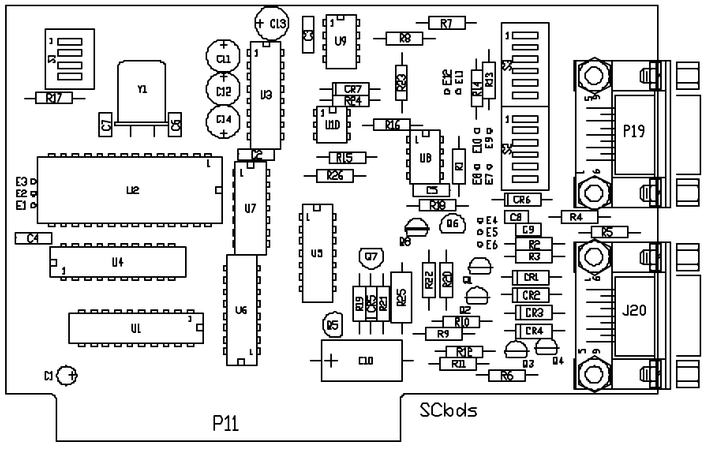
DUAL RS-232/RS-422/RS-485 BOARD ASSEMBLY *P/N 28024-0011*



Note: Special software is required for RS-485 communication.

RS-232/RS-422/RS-485/20 Ma CURRENT LOOP/CUTOFF BOARD *P/N 28225-0018*

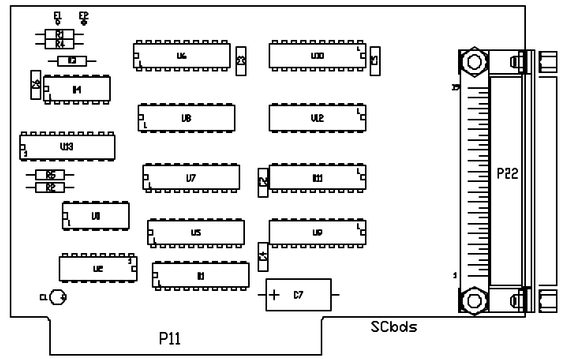
The RS-232/RS-485/20 mA Current Loop/4-Cutoff Control board provides one of three types of serial communications between your indicator and a peripheral device such as a printer, computer or programmable controller.
The RS-232/RS-485/20 mA Current Loop/4-Cutoff Control board also provides circuitry for control of up to four Cutoff activated outputs.
The Cutoff circuitry provides a low current logic control for switching external devices on or off at preprogrammed Or operator-selected levels.
The single serial output port is switch selectable for RS-232 communications, Current Loop (3 or 4 wire) Communication, RS-422 communication, or RS-485 (full or half duplex) communications.
There are set and reset inputs to accommodate an external or remote print switch.



Note: Special software is required for RS-485 communication.

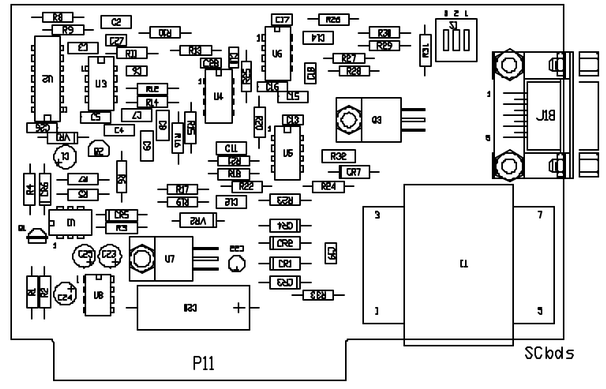
PARALLEL OUTPUT BCD BOARD *P/N 28821-0016*

The Parallel BCD Output board provides latched parallel BCD data for peripheral devices such as printers or remote displays. An input is provided for a “remote print” command to a printer if a “print” command is actuated by pressing the data send key or by an external print switch.

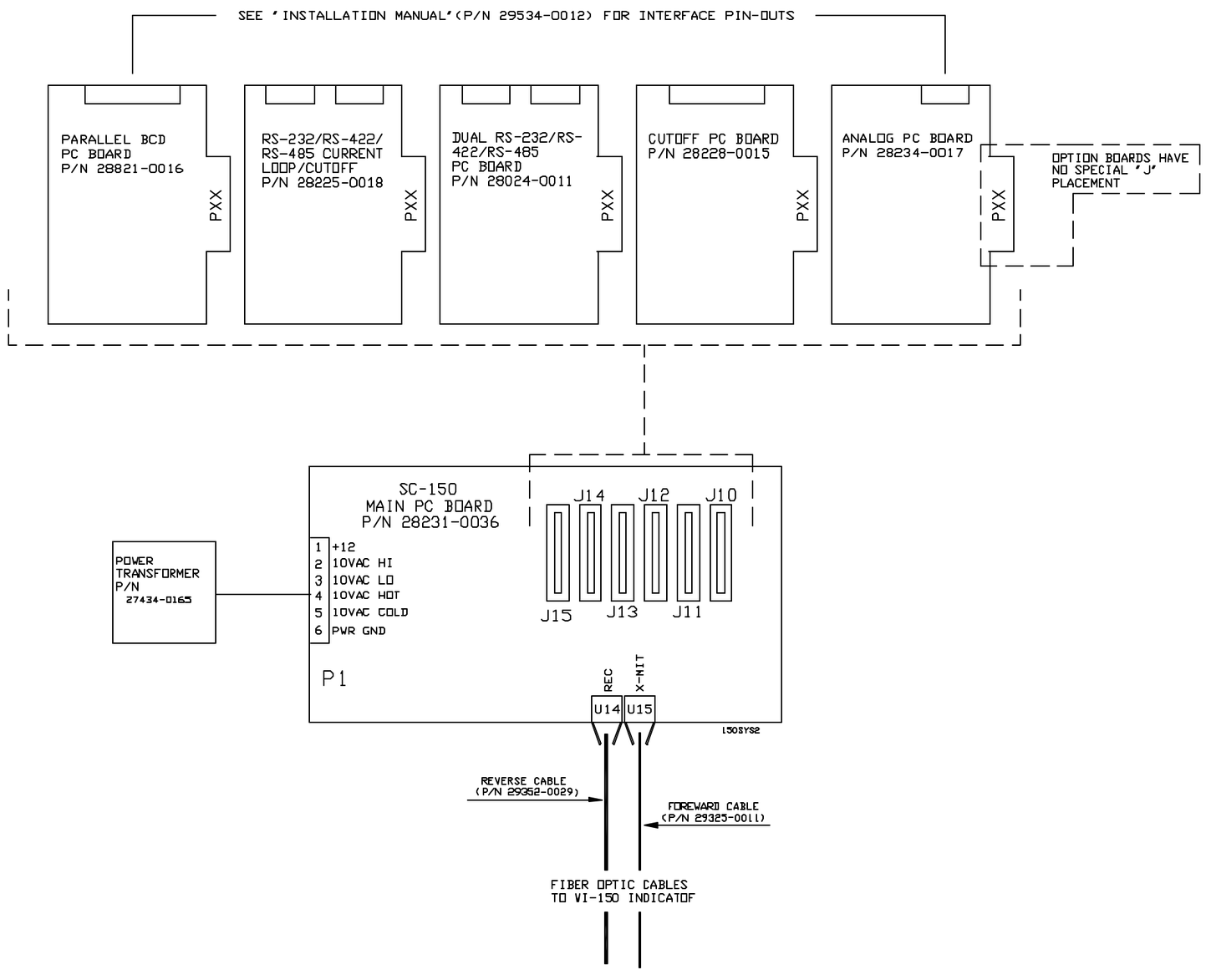


ANALOG OUTPUT BOARD *P/N 28234-0017*

The Analog Output board provides a switch selectible range of current or DC voltage to a peripheral device. The output from this board is software selectable from the indicator to be proportional to either the gross, net or displayed weight.

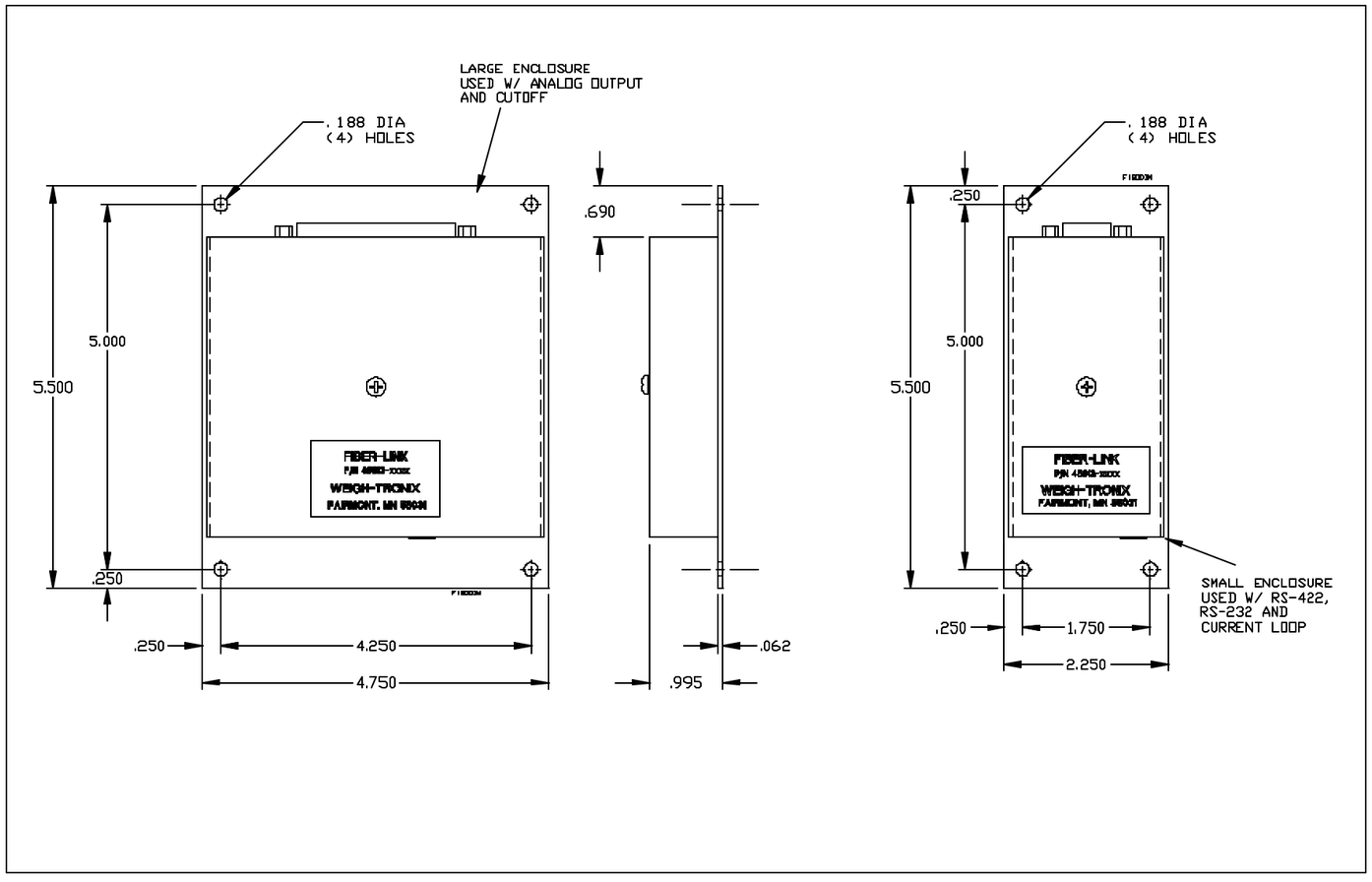


SC-150 REMOTE CONTROL
SYSTEM BLOCK DIAGRAM



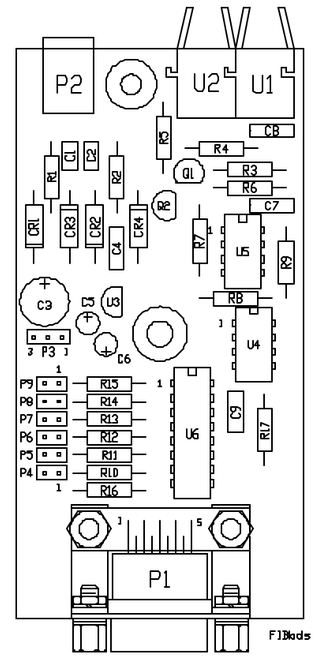
FIBER-LINK CONVERTER MODULE

ENCLOSURE OUTLINE DIMENSIONS *AND*
PC BOARDS



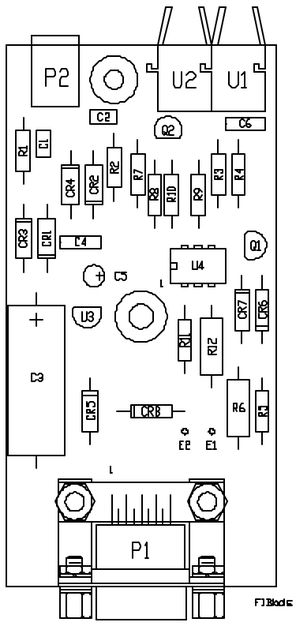
RS-422 PC BOARD *P/N 45788-0011*

The Fiber Link RS-422 Serial Interface board allows the weight indicator to communicate via fiber optic cables with peripheral devices such as a printer, computer, or programmable controller.



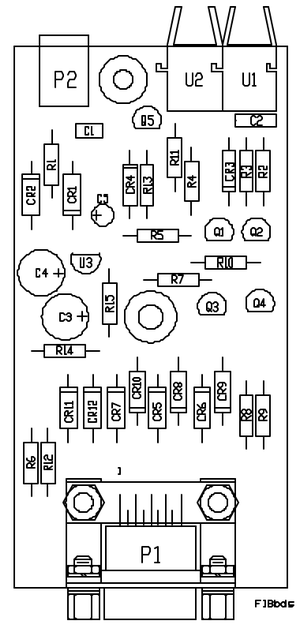
CURRENT LOOP BOARD, *P/N 45785-0014*

This Fiber-Link board is able to be configured as either a 3 or 4 wire mA Current loop serial communication port to a peripheral device such as a printer, computer, or a programmable controller. The Fiber-Link communicates to the weight indicator via fiber optic cables.



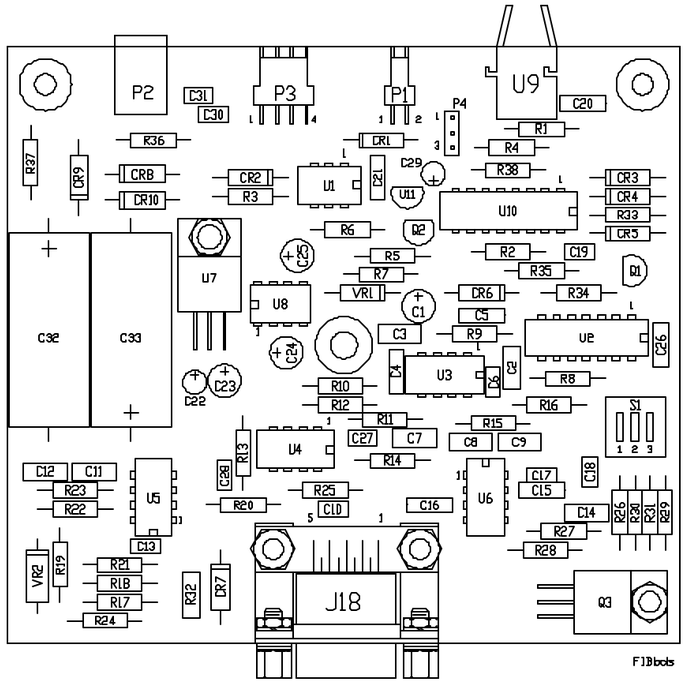
RS-232 PC BOARD *P/N 45164-0015*

The Fiber-Link Serial Interface provides a serial communication link between a Weigh-Tronix weight Indicator and a peripheral device such as a printer, computer, or programmable controller. Bi-directional communication between these devices is accomplished via fiber optic cables.



ANALOG PC BOARD *P/N 45833-0016*

The analog Output Interface provides a switch selectable range of current or DC voltage to a peripheral device. The output from this Fiber Link is software selectable to be proportional to the displayed weight, gross weight or net weight.



CUTOFF PC BOARD *P/N 45836-0013*

The Fiber-Link Cutoff interface provides multiple, low current logic controlled outputs for switching external devices on or off at pre programmed or operator selected levels.
This Fiber-Link is also capable of supporting communication to the Analog Fiber-Link via connector P1. However, both Fiber-Links will require independent power sources.

Connectors:

U1 Fiber Optic receiving port.

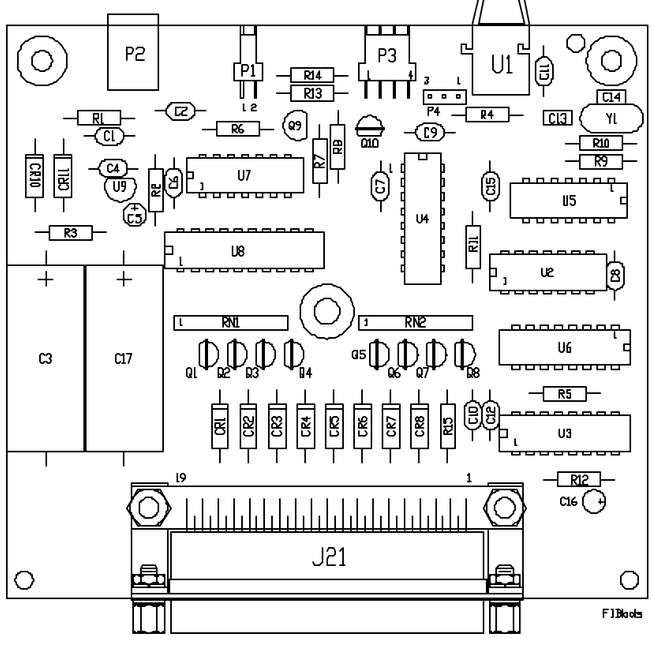
P1 Provides the output signal from the Cutoff Fiber-Link to the Analog Fiber-Link via a 2-wire cable when both Fiber-Link options are required in an installation.

P2 Connector for 18 VAC wall-mount transformer (W-T P/N 45035-0038). The Cutoff Board changes the 18VAC Into 28 VDC which is capable of supplying up to 167mA of current for the operation of relay coils. The 28 VDC is also regulated to +5 VDC to power the board.
Note: If the number of relays to be operated will exceed the 167 mA of current, an external DC power source will be needed. See Connector J21 for more information.

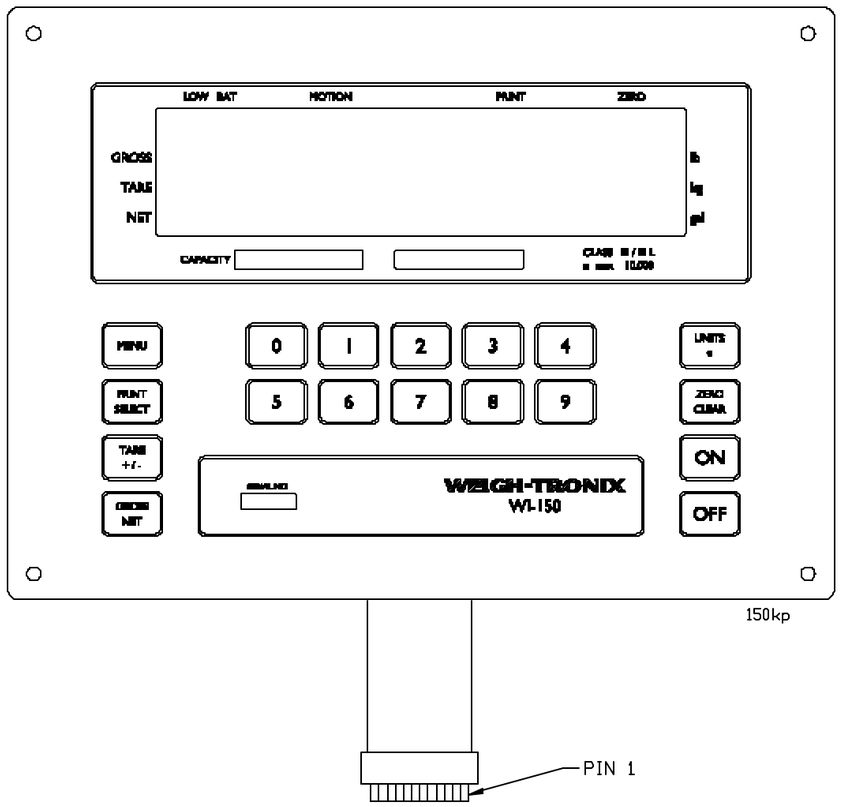
P3 Not used.

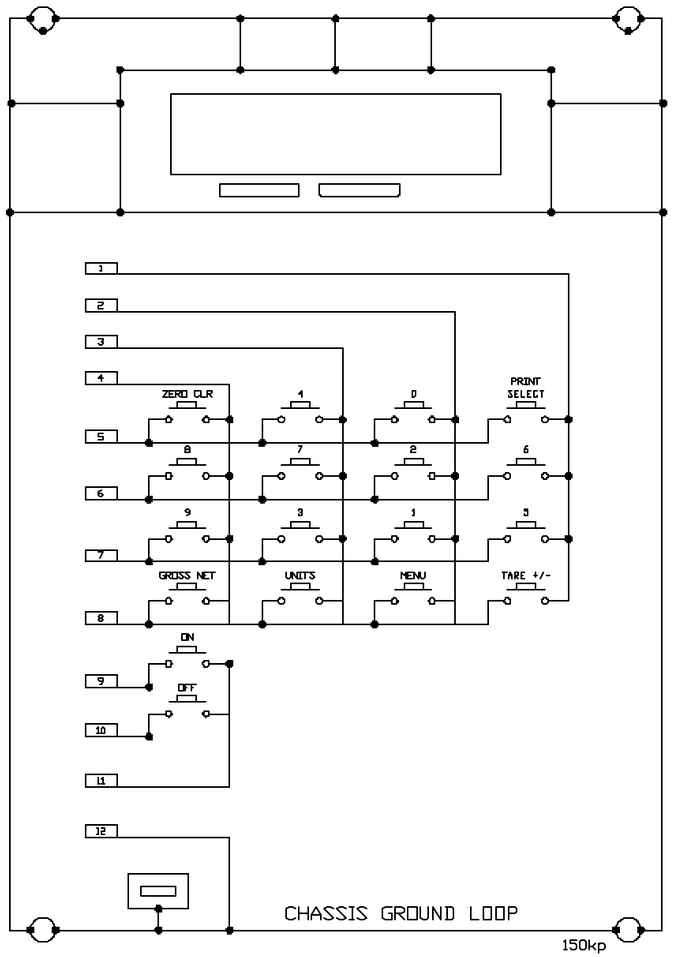
P4 Pins 1 and 2 are shorted together to allow the board to receive data from U1.

J21 Relay coil connection. When an external power source is required, connect the minus(-) side of the DC power source to J21, pin 37 and the +12 VDC to +28 VDC power source to J21, pins 24 and 33.



WI-150 KEYPAD
P/N 28880-0014





SCHEMATIC DIAGRAM

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