



WEIGH-TRONIX

SCALES FOR AGRIBUSINESS



Model 915 Indicator Service Manual

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Programming

The Model 915 Weight Indicator provides a setup mode for the following functions:

- Configuration
- Over-capacity
- Calibration
- Internal Raw Counts — Used for J-Box coarse zero adjustment.
- Automatic zero tracking (AZT)
- Motion stability
- Filter selection
- Display update rate
- Alarm warning
- Serial communication protocol

The Hidden E Key

The hidden **E** key is used to access the setup mode. The **E** key is touch-sensitive like all other indicator keys, but unlike other keys, the **E** key has no key face. Access to the setup modes is intended only for trained technicians who use this *Service Manual*, rather than for end users. Figure 1 shows the location of the hidden E key.

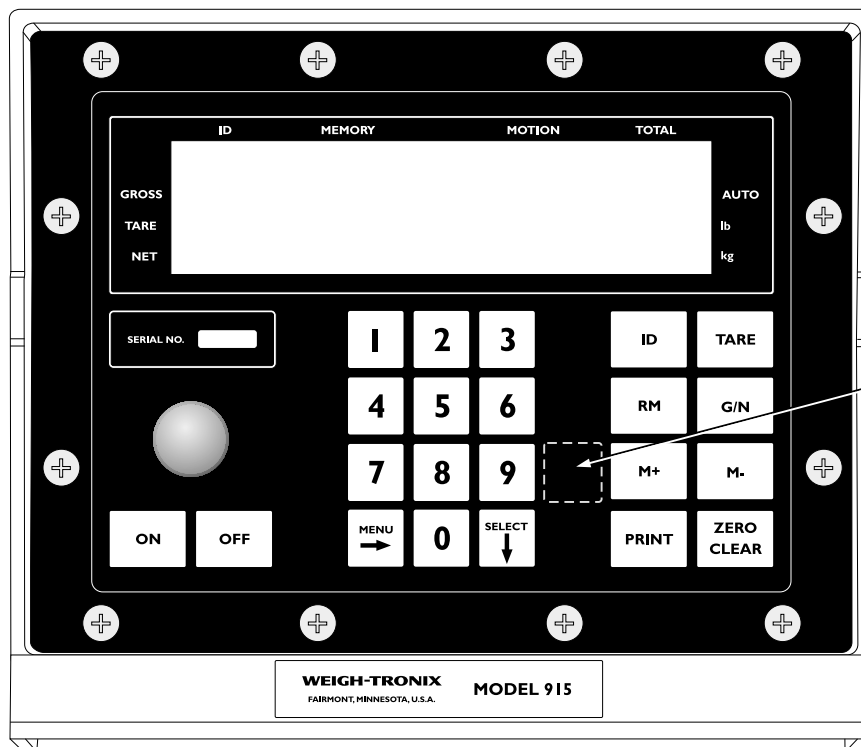
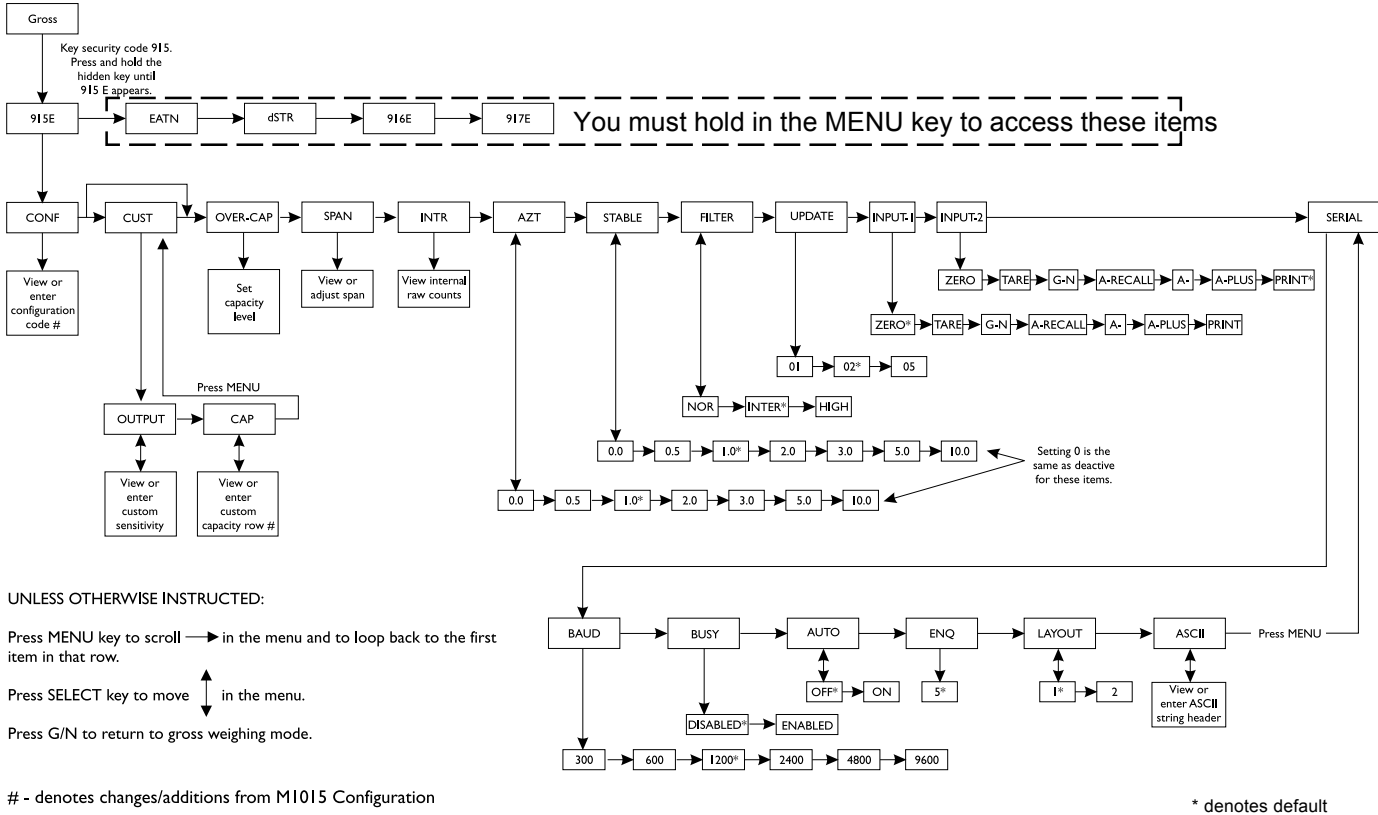


Figure 1
Hidden **E** Key on Model 915 Indicator

915 Configuration Menu



Configuration Mode

In this mode you will key in a four- or five-digit Configuration Code to program the following operational parameters:

	Represented by
- Calibration Size	1st and 2nd digits
- Capacity x Increment Size	3rd digit
- N/A	4th digit
- Units of Measure	5th digit

Instructions in this section include:

- Viewing a Current Configuration Code
- Entering a New Configuration Code
- Configuring Custom Sensitivity with Capacity x Increment Size
- Setting Custom Sensitivity and Capacity Row Numbers
- Setting Custom Capacity Level

Viewing Current Configuration Code

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **SELECT**. Current Configuration is displayed.
5. Press **SELECT**. **ConF** is displayed.
6. Press **G/N** to return to corresponding operation mode.

Entering a New Configuration Code

1. Determine an appropriate Configuration Code number from chart in Table I.
2. Key in **915**. **915** is displayed.
3. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
4. Press **SELECT**. **ConF** is displayed.
5. Press **SELECT**. Current configuration code is displayed.
6. Key in new configuration code.
7. Press **SELECT**. **ConF** is redisplayed.
8. Press **G/N** to return to corresponding operational mode.

If you want custom configuration, start with 19XXX.



Calibration Diameter

(Refer to Table 1 on following page.)

Physical size and calibration size are not the same for some Weigh Bars. If your Weigh Bar physically measures 5/8" in diameter but is marked with a calibration size of 2-1/4" D (Dual), then use data shown in Table 1 for a 5/8" bar. If your Weigh Bar measures 1" in diameter but is marked with a calibration size of 2-1/8", use data shown in Table 1 for a 1" bar.

For Weigh Bars or weight transducers which have a physical size of either 5/8" or 1" but which have a calibration size other than 2-1/4" D or 2-1/8", respectively, select Custom Sensitivity and Capacity x Increment in Table 1.

For all other Weigh Bars or weight transducers, if physical size and calibration size of a bar do not match, use the calibration size for Table 1.

Using Table 1: Configuration Code Example

Table 1 shows you how selections shown for these parameters would be represented by a Configuration Code of **5151**:

CONFIGURATION CODE EXAMPLE		
Parameter	Represented by	Selection
Calibration Dia.	2nd digit	2-1/8"
Capacity X Increment Size	3rd digit	20K x 2
N/A	4th digit	N/A
Units of Measure	5th digit	lb

CODE **5151** uses 2nd, 3rd, 4th and 5th of five available digits.

Table 1: Configuration Code Chart

CALIBRATION SIZE+	CAPACITY x INCREMENT SIZE					
0: 5/8***	200 x 0.01	200 x 0.02	200 x 0.05	2K x 0.1	2K x 0.2	2K x 0.5
1: 1***	2K x 0.1	2K x 0.2	2K x 0.5	20K x 1	20K x 2	20K x 5
2: 1-1/4"	2K x 0.1	2K x 0.2	2K x 0.5	20K x 1	20K x 2	20K x 5
3: 1-7/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
4: 2"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
5: 2-1/8	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
6: 2-1/4"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
7: 2-1/4"D	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
8: 2-1/4"D-P	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
9: 2-1/2	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
10: 3-1/8"	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
11: 4"	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
12: CC-20	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
13: Alley Weigh	2K x 0.1	2K x 0.2	2K x 0.5	20K x 1	20K x 2	20K x 5
18: Factory Cal.	20K x 1	20K x 2	20K x 5	200K x 15	200K x 20	200K x 50
19: Custom Sensitivity and Capacity x Increment (See text: <i>Configuring Custom Sensitivity with Capacity x Increment Size.</i>)						

Column

Numbers

0: }
 1: }
 2: }
 3: }
 4: }
 5: }
 6: }
 7: }
 8: }
 9: }

UNITS

0: lb
 1: lb
 2: kg
 3: kg

N/A 0-9 are all acceptable, as this is an unused parameter.

 is the Configuration Code number representing selections cited in *USING Table 1: CONFIGURATION CODE EXAMPLE.*

↑↑↑↑↑

1 2 3 4 5 are place numbers for each digit in Configuration Code.

- + Calibration size determines Weigh Bar sensitivity in mV/V. Refer to Table 3 to relate axle sizes to exact sensitivity values.
- K = Multiply by 1000
- * If physical size of your Weigh Bar equals 5/8" or 1", but differs from its identifying calibration size, see text: Calibration Diameter
- D-P =Dual Platform: Eight 350-ohm Weigh Bars and junction box with span pots.
- D =Dual: double-ended Weigh Bar

Table 2
Valid Numbers for the Configuration Code

PARAMETERS	VALID #'S	INVALID #'S
Calibration Size	0 - 13, 19	14 - 17
Capacity x Increment Size	0 - 5	Any number greater than 5 will be recognized as a 5.
N/A	0 - 9	
Units	0 - 3	Any number greater than 3 will be recognized as a 3.

Table 3
Model 915 Calibration Table

Calibration Size	Scale Capacity	Number of Weigh Bars	mV/V	Calibration
5/8**	200 lb	4	0.2	180.039 lb
1**	2,000 lb	4	0.5	1,831.03 lb
1-1/4"	2,000 lb	4	0.2	1,742.58 lb
Alley Weigh	2,000 lb	2	1.0	1,913.8 lb
1-7/8"	20,000 lb	4	0.7	17,965.8 lb
2"	20,000 lb	4	0.6	19,143.8 lb
2-1/8"	20,000 lb	4	0.5	18,310.3 lb
2-1/4"	20,000 lb	4	0.4	18,003.9 lb
2-1/4"D	20,000 lb	4	0.2	18,003.9 lb
2-1/2"	20,000 lb	4	0.3	18,811.4 lb
2-1/4"D	200,000 lb	4	1.0	90,019.3 lb
2-1/4"D-P	200,000 lb	8/350	1.0	186,816.0 lb
3-1/8"	200,000 lb	4	1.0	126,402.0 lb
4"	200,000 lb	4	0.7	181,152.0 lb
CC-20	200,000 lb	4	2.0	109,940.0 lb
Factory Calibration	20,000 lb	-	2.0	20,000.0 lb

* If physical size of your Weigh Bar equals 5/8" or 1", but differs from its identifying calibration size, see previous text: CALIBRATION DIAMETER.

D-P is Dual Platform: Eight 350-ohm Weigh Bars and junction box with span pots.

D is Dual: double-ended Weigh Bar.

Configuring Custom Sensitivity with Capacity x Increment Size

YOU MAY EXIT this procedure from any main menu display by pressing the **G/N** key.

This procedure allows you to select a weight transducer sensitivity rating other than those referenced by calibration diameter in Table 1. You may even configure another manufacturer's weight transducer for interface with the Model 915. Before starting the keying procedure for custom configuration, you must verify three facts about your interfaced transducer(s):

- Trade name of transducer
- Sensitivity of transducer
- Capacity x Increment Size of transducer

Trade Name Of Transducer

To configure custom sensitivity for Weigh-Tronix Weigh Bars, continue now to the next topic, SENSITIVITY.

To configure for transducers from manufacturers other than Weigh-Tronix, refer now to instructions located in the PROGRAMMING APPENDIX. Then, if you find that custom configuration of sensitivity is required, return to this section and proceed to the next topic.

Sensitivity Of Transducer

- A. Determine the sensitivity rating, that is, mV/V output at full capacity, for the weight transducer(s) you are using. The transducer probably carries this information, or access to it, stamped or printed on the transducer itself.
- B. Call the factory at 1-800-458-7062 for help in determining the Model 915 sensitivity rating for your transducer(s).

Because many different types of bars are used by various manufacturers, it is impossible to generically document a way to determine Model 915 sensitivity ratings for all available weight transducers.

- C. Write down your calculated sensitivity rating: . _____ , using this format:

n.nnnnnnn = your sensitivity rating
1 2345678 = digit places

You may key in a mV/V value of up to eight digits. Selection range for sensitivity is from 0.075 to 6.0 mV/V.

Capacity X Increment Size Of Transducer

- D. Refer to Table 4 and locate a Capacity x Increment Size combination that is appropriate for your Indicator.
- E. Note the column number in which appropriate Capacity x Increment Size combination is located. Write down the column number: . Keep your notation handy for entry in step 3 of the following keying procedure.
- F. Now look to the right, and find the row number that applies to your selected Capacity x Increment Size.
- G. Write down the appropriate row number for use in step 10:

Table 4
Row Numbers for Custom Capacity x Increment Size

Column Numbers:						Row
0	1	2	3	4	5	#'s
200K x 10.0	200K x 20.0	200K x 50.0	200K x 100.0	200K x 200.0	200K x 500.0	0
20K x 1.0	20K x 2.0	20K x 5.0	200K x 10.0	200K x 20.0	200K x 50.0	1
2K x .1	2K x .2	2K x .5	20K x 1.0	20K x 2.0	20K x 5.0	2
200 x .01	200 x .02	200 x .05	2K x .1	2K x .2	2K x .5	3

Setting Custom Sensitivity & Capacity Row Numbers

*Custom configuration starting with 19xxx must be previously entered to access **CuSt** menu.*



1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **CuSt** is displayed.
5. Press **SELECT**. **OutPut** is displayed.
6. Press **SELECT**. Current sensitivity will be displayed.
7. Key in desired sensitivity if other than the one displayed and press **SELECT**. **OutPut** is displayed.
8. Press **MENU**. **CAP** is displayed.
9. Press **SELECT**. Current capacity row number is displayed.
10. Key in desired capacity row number if other than the one displayed and press **SELECT**. **CAP** is displayed.
11. Press **MENU** to return to main configuration menu.
12. Press **G/N** key to return to corresponding operational mode.

Setting Custom Capacity Level

The OVER-CAP setting you enter will determine when the indicator displays a row of dashes for overcapacity.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **OVER-CAP** is displayed.
5. Press **SELECT**. Current capacity is displayed.
6. Key in desired capacity.
7. Press **SELECT**. New capacity is set and **OVER-CAP** is redisplayed.
8. Press **G/N** key to return to corresponding operational mode.

Calibration Mode

Calibrating Using a Known Weight

YOU MAY EXIT this procedure from any main menu display by pressing the **G/N** key.

Instructions for Calibration Mode include:

- Calibrating Using a Known Weight
- Getting Ready to Calibrate with BLH Model 625 Calibrator
- Calibrating with BLH Model 625 Calibrator

Use a reliable known weight equal to or greater than the maximum weight of material that will be weighed.

1. Empty and zero the scale.
2. Key in **915**. **915** is displayed.
3. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
4. Press **SELECT**. **ConF** is displayed.
5. Press **MENU** repeatedly until **SPAn** is displayed.
6. Press **SELECT**. Zero value should be displayed before you continue. If re-zeroing is necessary, press **ZERO/CLEAR**.
7. Place known weight on the scale. . . Display represents gross weight of known weight prior to calibration.
8. **Adjust span**, using numeric keys as shown, **until weight display equals value of known weight**
(Span is adjustable +/- 10%):
 - To increase span, press 1, 2, or 3;
 - To decrease span, press 7, 8, or 9;
 - To return span to factory-calibrated value, press 4, 5, or 6. . . Calibration is complete.
9. Press **SELECT**. . . **SPAn** is displayed.
10. Press **MENU** to advance or press **G/N** to return to corresponding operational mode.

Getting Ready to Calibrate with BLH Model 625 Calibrator

This method of calibration is intended for trained technicians using specialized equipment.

1. Use appropriate instruction shown in Table 5 to connect the BLH Model 625 Calibrator to the Model 915 Indicator.
2. Determine highest mV/V reading according to factors of Weigh Bar size and full capacity of system, using appropriate Calibration Table as referenced in Table 5.
3. Write down highest mV/V reading for use in Step 8 of following procedure: _____.

Table 5
Calibrator Connections And Calibration Tables

Number of Weigh Bars and Type of Connector	Instructions for Connecting Indicator with BLH Calibrator	Calibration Tables
Four Weigh Bars w/ 5-Pin Connectors	Connect single cable from BLH Calibrator to one of the 5-pin Weigh Bar connectors.	Use W-T Spec P/N 24375 Model 915 Calibration Tables.
Four Weigh Bars w/ 4-Pin Connectors	Connect four cables from a modified BLH Calibrator to all four 4-pin Weigh Bar connectors.	Use W-T Spec P/N 14599 Farm Scale Calibration Tables.
One Weigh Bar w/ 7-pin Connector	Connect single cable from BLH Calibrator to the single 7-pin Weigh Bar Connector.	Use W-T Spec P/N 24375 Model 915 Calibration Tables.

Calibrating with a BLH Model 625 Calibrator

1. Dial BLH Calibrator to zero mV/V.
2. Zero indicator.
3. Key in **915**. **915** is displayed.
4. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
5. Press **SELECT**. **ConF** is displayed.
6. Press **MENU** repeatedly until **SPAn** is displayed.
7. Press **SELECT**. Zero value should be displayed before you continue. If re-zeroing is necessary, press **ZERO/CLEAR**.

8. Turn BLH Calibrator dial to highest mV/V setting for this system, as determined in Step 2 of *Getting Ready to Calibrate with BLH*.
Display represents gross weight prior to calibration.
9. Adjust span, using numeric keys as shown, until weight display equals weight value known in Calibration Table for highest mV/V setting
(Span is adjustable to +/- 10%):
 - Press 1, 2, or 3 to increase span;
 - Press 7, 8, or 9 to decrease span;
 - Press 4, 5, 6 to return span to factory calibrated value. . .Calibration is completed. .
10. Press **SELECT**. . . **SPAn** is displayed.
11. Press **MENU** to advance or press **G/N** to return to corresponding operational mode.

Internal Raw Counts Mode

Use this mode to access Internal Raw Counts display. Internal Raw Counts value is useful in two ways:

- A. In troubleshooting, to verify correct A-D output.
- B. In conjunction with a coarse zero potentiometer on a junction box, to adjust absolute zero.

Viewing Internal Raw Counts Display

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **Intr** is displayed.
5. Press **SELECT**. Internal Raw Count value is displayed.

At 1.0 mV/V, the display will always read 10,955 counts, +/- 6%.

You May Adjust Absolute Zero if your scale system includes a junction box with a coarse zero potentiometer. When Internal Raw Counts are displayed, remove all weight from the scale and adjust the coarse zero potentiometer until the display reads 0.

6. Press **SELECT**. . . **Intr** is displayed.
7. Press **MENU** to advance or press **G/N** to return to corresponding operational mode.

Auto Zero Tracking Selection

Disabling Azt

YOU MAY EXIT this procedure from any main menu display by pressing the **G/N** key.

Model 915 comes standard with Auto Zero Tracking (AZT) of +/- 1 division. This section explains how to disable this feature if necessary.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **AZt** is displayed.
5. Press **SELECT**.
6. Press **MENU** repeatedly until **0.0** is displayed.
7. Press **SELECT**. AZT is now disabled.

AZT division sizes are 0, .5, 1.0*, 2.0, 3.0, 5.0, and 10.0. Use this section to enable the appropriate division size. * = factory default

Enabling Azt

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **AZt** is displayed.
5. Press **SELECT**.
6. Press **MENU** repeatedly until desired AZT setting is displayed.
7. Press **SELECT**. AZT is now enabled.
8. Press **MENU** key to advance or press **G/N** key to return to corresponding operational mode.

Setting Motion Stability Window

Disabling the Motion Stability Window

YOU MAY EXIT this procedure from any main menu display by pressing the **G/N** key.

Enabling the Motion Stability Window

This option lets you set the size of the motion detection window in divisions. This section explains how to disable this option if necessary.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **StAbIE** is displayed.
5. Press **SELECT**.
6. Press **MENU** repeatedly until **0.0** is displayed
7. Press **SELECT**. Motion stability is now disabled.

Selections of motion detection are 0, .5, 1.0*, 2.0, 3.0, 5.0, and 10.0 divisions. Use this section to enable the appropriate division. * = factory default

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **StAbIE** is displayed.
5. Press **SELECT**.
6. Press **MENU** repeatedly until desired division is displayed.
7. Press **SELECT**. Motion stability is now enabled.
8. Press **MENU** key to advance or press **G/N** key to return to corresponding operational mode.

Setting Filter Selection

YOU MAY EXIT this procedure from any main menu display by pressing the **G/N** key.

This option allows you to choose the level of weight averaging that the indicator will display. You may choose between a normal, intermediate (which is the default), or high level of filtering.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **FiltEr** is displayed.
5. Press **SELECT**.
6. Press **MENU** repeatedly and scroll to desired setting. **Nor** is displayed for normal filtering, **IntEr** is displayed for intermediate filtering, and **High** is displayed for high filtering.
7. Press **SELECT**. **FiltEr** is displayed and filtering level is set.
8. Press **MENU** key to advance or press **G/N** key to return to corresponding operational mode.

Setting Update Selection

This option allows you to choose the rate at which your display updates information, 1, 2, or 5 times per second. Two is the default value.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **UPdAtE** is displayed.
5. Press **SELECT**.
6. Press **MENU** repeatedly until desired setting is displayed.
7. Press **SELECT**. **UPdAtE** is displayed and update rate is set.
8. Press **MENU** key to advance or press **G/N** key to return to corresponding operational mode.

Configuring Input 1 and Input 2

A-Recall = RM key
A- = M- key
A-Plus = M+ key



Inputs 1 and 2 allow you to perform certain functions remotely. Input 1 is used with the XM710-L remote. Input 2 is used with a switch you connect to the Model 915.

When you choose a parameter under either Input 1 or Input 2, that becomes the function performed when the remote key or switch is activated.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **inPUt 1** or **inPUt 2** is displayed.
5. Press **SELECT**. **ZErO** is displayed.
6. Press **MENU** to scroll through the list shown below:



7. Press **MENU** until desired function is displayed, then press **SELECT**. Function is now set.
8. Press **MENU** key to advance or press **G/N** to return to corresponding operational mode.

Setting Serial Functions

The serial option allows you to set the following functions:

- Baud rate
- Busy
- Auto
- Enquire
- Layout
- ASCII

Baud Rate

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

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **SEriAl** is displayed.
5. Press **SELECT**. **bAUd** is displayed.
6. Press **SELECT**.
7. Press **MENU** repeatedly until desired baud rate is displayed.
8. Press **SELECT**. Baud rate is now set.
9. Press **MENU** to scroll to next desired option or **G/N** to exit.

Busy Display

This option enables or disables busy display.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **SEriAl** is displayed.
5. Press **SELECT**. **bAUd** is displayed.
6. Press **MENU** repeatedly until. . . **bUSY** is displayed.

Auto Print

7. Press **SELECT**.
8. Press **MENU** to display either **diSAbIEd** or **EnAbIEd**.
9. Press **SELECT**.
Depending on your choice, busy display is now either enabled or disabled.
10. Press **MENU** to scroll to next desired option or **G/N** to exit.

With auto print enabled, the indicator automatically transmits standard printout when motion ceases.

1. Key in **915**.
915 is displayed.
2. Press hidden **E** key and hold for two seconds.
915 E is displayed.
3. Press **SELECT**.
ConF is displayed.
4. Press **MENU** repeatedly until **SEriAl** is displayed.
5. Press **SELECT**.
bAUD is displayed.
6. Press **MENU** until **Auto** is displayed.
7. Press **SELECT**.
8. Press **MENU** to display either **OFF** or **on**.
9. Press **SELECT**.
Depending on your choice, auto print is now either off or on.
10. Press **MENU** to scroll to next desired option or **G/N** to exit.

Enquire

This submenu 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 recognize as the enquire code number. ASCII decimal 0005 is the default value. If a device sends the enquire code number to the indicator, the indicator will recognize the value, then transmit weight data. If a computer sends the enquire code number, the Auto selection is overridden and will not function.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **SEriAl** is displayed.
5. Press **SELECT**. **bAUd** is displayed.
6. Press **MENU** repeatedly until **Enq** is displayed.
7. Press **SELECT**. Current enquire code number is displayed.
8. View or change enquire code.
9. Press **SELECT**. Enquire code is now set.
10. Press **MENU** to scroll to next desired option or **G/N** to exit.

Layout

Use this setting to choose whether Layout 1 or Layout 2 will be printed:

- When you press the **PRINT** key during GTN displays
- When auto-printing occurs (after Acc-Sec timer runs out **or** when motion ceases)
- When an enquire character is received (default is HEX 05)

The printout will contain the following information:

Line 1: Optional User defined 40 ASCII characters (See *ASCII*)

Line 2: Optional ID number printout

Line 3: Layout 1 or Layout 2

Layout 1 will show:

Date Time
G weight
T weight
N weight

Layout 2 will show:

Date Time
Displayed weight (G, T, or N)

Below are samples of printouts with Layout 1 and Layout 2.

```
MODEL 915
ID 12345678
03/20/02 09:04:03
G 15140 1b
T 4320 1b
N 10820 1b
```

Layout 1 with optional ASCII line and optional ID number included

```
MODEL 915
ID 12345678
03/20/02 09:04:03
G 15140 1b
```

Layout 2 with optional ASCII line and optional ID number included

Below are the steps to choosing Layout 1 or 2.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **SEriAl** is displayed.
5. Press **SELECT**. **bAUd** is displayed.
6. Press **MENU** repeatedly until **LAYoUt** is displayed.
7. Press **SELECT**. **1** or **2** is displayed.
8. Press **MENU** until the layout you want is displayed, then press **SELECT**. That layout is now active.
9. Press **MENU** to scroll to next desired option or **G/N** to exit.

ASCII

The ASCII parameter lets you customize the first line of any printout. You key in the ASCII code number for the character you want to print. You can use up to 40 characters in the line. The ASCII codes are shown in Table 6.

1. Key in **915**. **915** is displayed.
2. Press hidden **E** key and hold for two seconds. **915 E** is displayed.
3. Press **SELECT**. **ConF** is displayed.
4. Press **MENU** repeatedly until **SEriAl** is displayed.

5. Press **SELECT**. **bA Ud** is displayed.
6. Press **MENU** repeatedly until **ASCII** is displayed
7. Press **SELECT**. **1** _ is displayed. The **1** refers to the first of the 40 characters you can insert.
8. Key in the control code from Table 6 and press **MENU**. **2** _ is displayed.

Following is an example of how to enter **Model 915, <CR><LF>**:

Enter the following control codes.

Sequence #	Control Code #	Control Character
01	#77	M
02	#79	O
03	#68	D
04	#69	E
05	#76	L
06	#32	SPACE
07	#57	9
08	#49	1
09	#53	5
10	#13	Carriage Return
11	#10	Line Feed

*To edit an existing sequence, display the sequence number you want to change, key in the new ASCII code number and press **SELECT** to return to the **ASCII** display. Press the **G/N** key when you are done.*

9. Repeat step 8 until all control codes are entered, and press **SELECT**. . . **ASCII** is displayed.
10. Press **G/N** key to exit programming mode and return to the gross/net weighing mode.

To Delete All ASCII Characters

1. Access **Serial-ASCII** in the configuration menu. . . **ASCII** is displayed.
2. Press the **ZERO/CLEAR** key. . . **ASCII** blinks and all the control codes are cleared.

Table 6 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		

Printing Out the Configuration Parameters

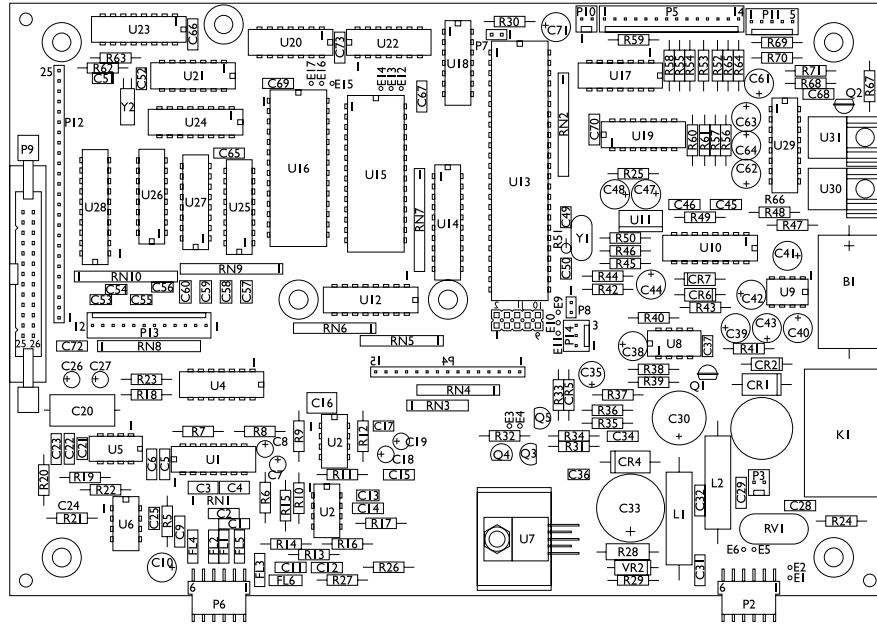
The 915 has the ability to print out the entire list of configured parameters. To obtain this printout follow these steps:

1. From gross mode key in 915. . . **915** is displayed.
2. Press and hold the hidden **E** key. . . **915 E** is displayed.
3. Press the **PRINT** key. . . **Print** is shown on the display and the following is printed:

(Default Printout Shown)

```
05/07/98 13:04:28
MODEL 915
VERSION: 51520-0012 Rev. X1
CONFIG: 18080
OUTPUT: 2.0000000
CAP: 1
OVER-CAP: 20000
SPAN: 0 lb
COUNTS: 0
AZT: 1.0
STABILITY: 1.0
FILTER: Normal
DISPLAY RATE: 2
INPUT-1: ZERO
INPUT-2: PRINT
BAUD: 1200
READY/BUSY: Disabled
AUTO PRINT: Off
ENQUIRE: 5
LAYOUT: 1
AXLE TIMEOUT: 0 Sec.
BATTERY VOLTS: 12.0
```

Circuit Descriptions



**Main Printed Circuit Card (47683-0039, -0047)
Component Side**

Power Supply

To prevent the unit from turning off below 8 volts, remove CR5 and C36. When configured this way, the unit will return to the previous mode if it loses power.

This printed circuit card contains the

- Power Supply
- Analog-To-Digital Circuitry
- Microprocessor Circuitry
- RS-232 Serial Circuitry.

This indicator, which is energized by 10 to 18 vdc in reference to a NEGATIVE GROUND utilizes two five amp fuses mounted on the bottom of the chassis for current protection. (Systems with a positive ground are modified by cutting jumpers from E1 to E2 and E5 to E6. Then install jumpers from E2 to E5 and E1 to E6.)

The circuit card receives power from the fuse at P2 and is protected against high voltage transients with varistor RV1.

Input voltage is monitored by 16 volt zener diode VR2. If the voltage across VR2 exceeds 16 vdc, Q3 will turn "ON" holding the power circuitry in the "OFF" condition. In addition, if the input voltage drops below 8 volts DC, PA7 disables the power circuitry by outputting a low signal.

A "Power On" command is generated when the ON key is pressed. This turns Q5 on and provides a low signal to +8v regulator (U7) pin1 enable input. When the power is turned off, the Q5 turns off, the Q4 turns on and a high signal disables (U7) the +8 regulator and turns it off.

The -7.5 vdc supply voltage is established by U9, a voltage convertor. This device inverts the input voltage to a -7.5 vdc level. It also acts as a voltage doubler to operate +14.5 V.

The +5 vdc voltage is provided by U8, a 7805 regulator.

As soon as the +8 volt power supply voltage is present, Q2 turns on which turns on the DS2 and DS3 LEDS.

Analog to Digital Circuitry

The analog-to-digital circuitry consists of two weight voltage amplifiers (U1 and U2), a reference amplifier (U3), an analog switch (U4), switch control logic gate (U18), a dual slope integrator (U5), and a comparator (U6).

An 8 vdc excitation voltage is supplied to the weight sensors from P6 pins 1 and 6. The millivolt signal received back from the weight sensors enters the analog-to-digital circuitry at P6, pins 3 and 4.

This millivolt signal is amplified and filtered by U1 and U2 to establish the amplified weight voltage (0 to +9 vdc) at U2 pin 6. This weight voltage is then provided to U4 pin 5. A logic low during the weight voltage interval at U4 pin 1 enables the amplified weight voltage to be received by the dual slope integrator (U5). Starting at zero volts, the integrator capacitor (C20) charges at ramp angle directly proportional to the amplified weight voltage but of opposite polarity. As the amplified weight voltage increases, the integrator output ramps more in the negative direction.

The voltage received from the sense lines enters the analog-to-digital circuitry at P6 pins 2 and 5. This sense voltage establishes a reference voltage of -9 vdc at U3 pin 6. The reference voltage is applied to U4 pin 10.

After the integrator capacitor has been charged for a fixed period of time, the Weight Voltage Interval, U4 pin 1 goes high. U18 applies a logic low to pin 14 of U4 which allows the reference voltage to be applied to the integrator. Since the reference voltage (-9 vdc) is of opposite polarity to the amplified weight voltage, it causes the integrator output to ramp back toward zero. (This period of time is known as the Reference Voltage Interval.)

While the integrator output is ramping back to zero, the comparator (U6) signals the microprocessor to record this period of time in clock pulses. The microprocessor uses this number of pulses to calculate the amount of weight on the scale.

When the integrator reaches zero, the comparator output goes low which triggers U18 to remove the logic low at U4 pin 14 completing one analog-to-digital cycle.

This analog-to-digital conversion repeats at a frequency of 30 hertz.

Microprocessor Circuitry

The Microprocessor Circuitry consists of a Motorola MC68HC11A1 8-bit microprocessor IC (U13), a 74HC573 tristate latch (U14), a 57C256 EPROM (U16), and 32k x 8 RAM (U15).

The microprocessor features on chip memory 256 bytes of RAM, 512 bytes of EEPROM, along with a Computer Operating Properly (COP) watch dog system.

A 2 MHz internal clock is contained in the microprocessor and is controlled by an external crystal (Y1). Output (ECLK) from this clock provides timing reference for the EPROM (U16), RAM (U15), and input to voltage monitoring circuit U10.

The microprocessor communicates with Analog-to-Digital switch control logic gate U18 through ports PA2 and PA6. Through U18, the timing reference for the Reference Voltage Interval and Weight Voltage Interval are provided.

The switches on the front panel receive a signal from ports PD3-PD5 on the microprocessor and they are monitored for an electrical change by ports PE0-PE2 on the microprocessor. U12 (3-8 decoder) provides the 8 key scans to interface to the keypad.

As signals are received by the microprocessor, it will send them to the EPROM/RAM (U15, U16) on the address lines A0-A15. The signals will be translated and held by U14. Once all translating is completed, the microprocessor will enable U14 to return the new information on data lines D0-D7 to the microprocessor. Then, the appropriate device will receive a signal from the microprocessor.

The Computer Operating Properly (COP) watch dog system in the microprocessor detects errors introduced by electromagnetic interference. If an error is detected, the microprocessor is reset and operation continues. When the indicator is powered up, the momentary displayed "hi" message, indicates the watch dog system is active.

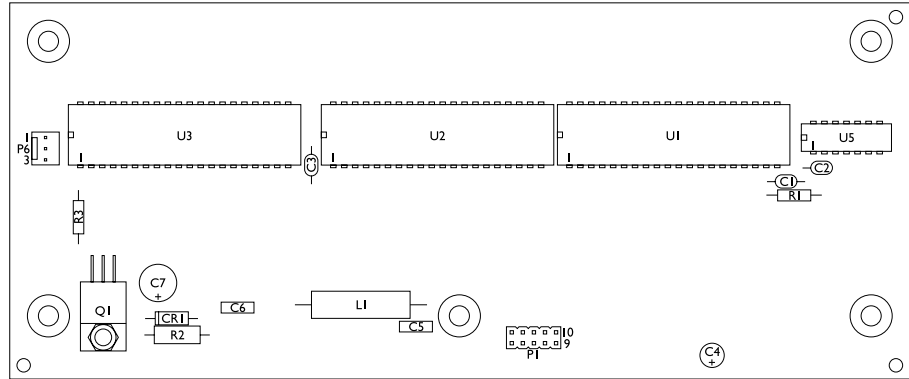
If a "hi" message is displayed, the indicator will perform correctly, but will not be guarded by the COP watch dog system. This may happen when a new microprocessor IC is installed. The COP watch dog system can be activated by following this procedure:

- Turn the indicator OFF jumper P7-1 to P7-2 and P8-1 to P8-2
- Turn the Model 915 ON for a few seconds
- Turn the Model 915 OFF
- Remove the jumpers

Display Card Circuitry

The eight digit liquid crystal display card features black segments against a silver transfective background.

Liquid crystal display driver U1-U3 require a +5 vdc power supply and three signal inputs: two 33 bit serial data lines and a clock signal which provide the interface to driving the display segments. These signals are provided to display board on connector J1. This display card also serves as the remote display card for the RD1012.



RS-232 Serial Circuitry

OPTIONAL RS-232 OR REMOTE CIRCUITRY

Additional circuitry required to provide either an RS-232 communications interface or a remote display interface requires R32-61, 64, 65, C61-64, U17, U19, U29, and P5 connector.

The RS-232 transmitter/receiver (U29) internally generates +10v and -10v supplies and meets all EIA RS-232C specifications. Through U10, the microprocessor communicates with peripherals which will accept the following protocol: baud rate 1200, 1 start bit, 8 data bits, no parity, and one stop bit. The RS-232 communications port supports X-on (HEX 11), X-off (HEX 13) handshake and responds to an inquire character (HEX 05) print request. You may also enable or disable the hardware handshaking ready/busy line (CTS) P5-13.

The inverter/buffer gates (U16) are used in the remote clock, remote data, remote zero, and remote print lines to provide isolation and assure proper logic levels to and from the remote display.

P6 connector provides external access to power supply voltages, RS-232 data lines, remote display drive lines, remote zero lines, and remote print lines.

TO INSTALL REMOTE RECEIVER

After installing the receiver assembly P/N 51762-0019 as shown in assembly section, plug 3 pin cable assembly into P8. This enables user to have remote capabilities (Print, Zero, M+, M-, RM, Tare) within the Model 915. Be sure to match dip switch selections between receiver card and transmitter. Place antenna through small hole in the lower stainless steel assembly in order to function properly.

Model 915 Master Reset



Warning

Only perform this procedure if absolutely necessary. Remember, all calibration, configuration, memory channels, and tares will be cleared.

To completely reset the Model 915's memory, including calibration (default factory calibration code = 18080), configuration, memory channels and tares, perform the following:

1. Turn the unit off.
2. Depress the **ZERO/CLEAR** and **G/N** keys and press the **ON** key. . . Unit displays **HELLO**.
3. After five seconds release the **ZERO/CLEAR** and **G/N** keys. . . Unit displays gross weight.
4. Follow instructions and recalibrate and adjust all configuration parameters as they will all be default values. To insure calibration accuracy the unit must be calibrated under factory calibration (Code 18080) at 2.0 mV/V = 20,000 lb.

The D-Star/Eaton interface protocol slightly modifies display and keying sequences for accessing Configuration Mode, Calibration Mode, and Internal Raw Counts Mode. The Model 915 has two more (916E, 917E) menus available to make converting between different Weigh-Tronix applications even more flexible.

Configuration for D-Star, Eaton and Two Additional Weigh-Tronix Menus

New displays and keying sequences require modified instructions. Modified documentation presented in the *Programming Appendix* applies whenever you change the transducer interface on your system, and the change means a different transducer trade name than that previously configured for. This includes switching from D-Star or Eaton transducers back to Weigh-Tronix Weigh Bars.

In applications where Weigh-Tronix Weigh Bars are retained, original documentation applies.

When switching the transducer interface on a system means a change in transducer trade names, follow the modified procedure shown below and illustrated in Figure 2 to access Configuration Mode, Calibration Mode, and Internal Raw Counts Mode.

Always execute the steps below before keying in a new Configuration Code or trying to calibrate a transducer with a different trade name.

1. Key in **915** and press **E** key for two seconds.

Currently configured menu is displayed: For Weigh-Tronix, **915E**, **916E**, **917E**; for Eaton, **EAtn**; for D-Star, **DStr**.

2. You now have two choices, A or B:
A. If displayed menu is correct, skip to step 4.

OR

- B. If displayed menu does not correspond with new transducer interface, press and hold **E** key until next option appears.

Configuration Code Charts

Using the Eaton Configuration Code Chart (Table 6)

- If each of the Weigh-Tronix menus have been configured for different applications, it is possible to bounce between the **915E**, **916E**, and **917E** menus. Press **915**, **916**, or **917** and hold the **E** key until the optional menu is displayed.



- Continue keying as appropriate to access desired modes.

To determine an appropriate Configuration Code for D-Star or Eaton transducers, consult the Configuration Code Charts in Tables 6 or 7.

The Eaton Configuration Code Chart (See Table 7) shows you how selections listed below for five configurable parameters would be represented by a configuration code of *4151*. Notice that each digit in the code represents a parameter, and the value of each digit represents a selection for that parameter as shown in Table 9.

Table 7
Eaton: A Sample Set of Configuration Choices and Its Corresponding Configuration Code, 4151

Parameter	Represented by	Selection	Config. Code
Sensitivity	2nd digit	.034/1K	4
Capacity x Increment Size	3rd digit	20K x 2	1
N/A	4th digit	N/A	5
Units of Measure	5th digit	lb	1

CODE 4151 uses 2nd, 3rd, 4th and 5th of five available digits.

**Using the D-Star
Configuration Code Chart
(Table 7)**

The D-Star configuration Code Chart (See Table 8) shows you how selections listed below for five configurable parameters would be represented by a Configuration Code of 3151. Notice that each digit in the code represents a parameter, and the value of each digit represents a selection for that parameter as shown in Table 10.

Table 8			
D-Star: A Sample Set of Configuration Choices and Its Corresponding Configuration Code, 3151			
Parameter	Represented by	Selection	Config. Code
Axle Size	2nd digit	2-1/8"	3
Capacity x Increment Size		3rd digit	20K x 2 1
N/A	4th digit		5
Units of Measure	5th digit	lb	1
CODE 3151 uses 2nd, 3rd, 4th and 5th of five available digits.			

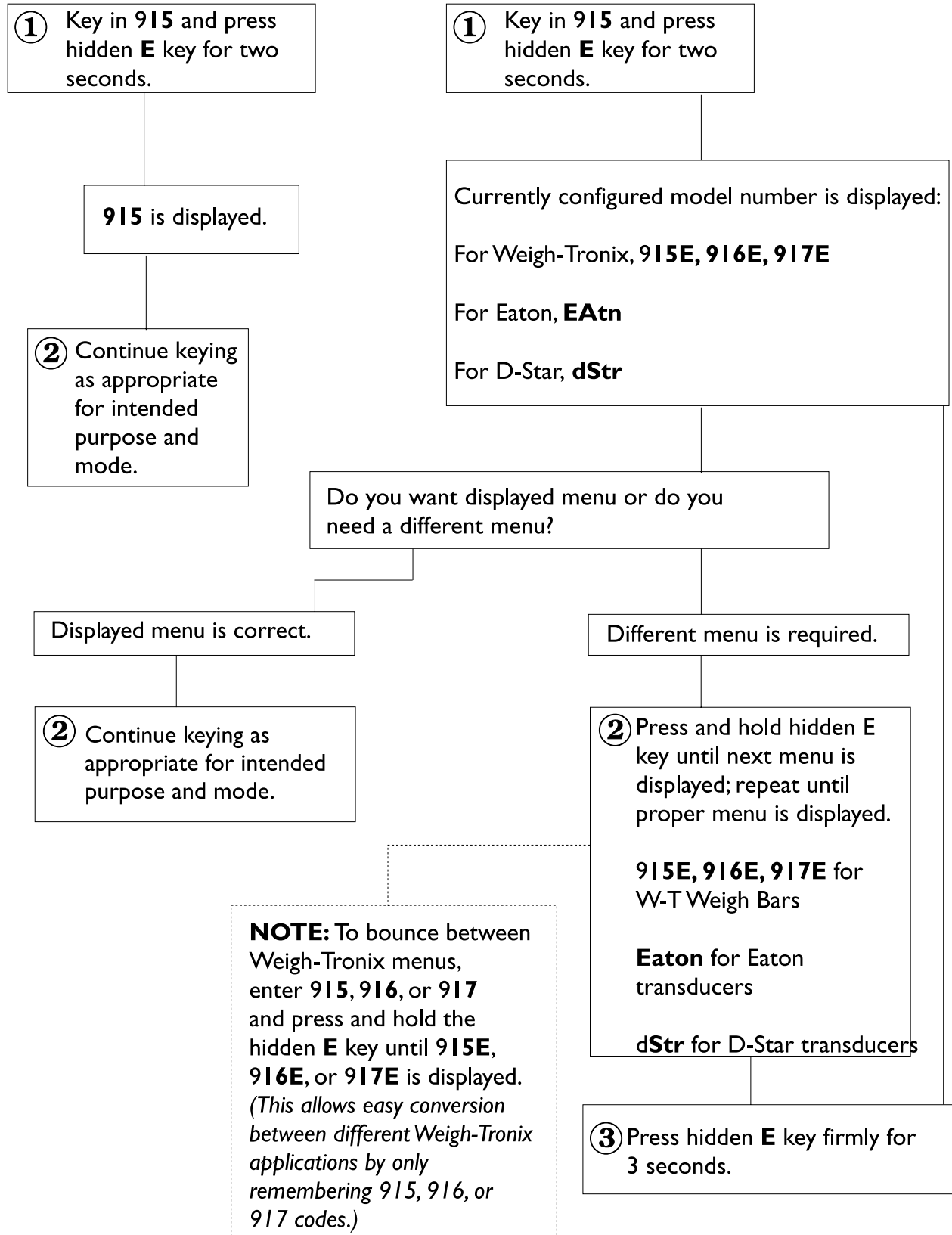
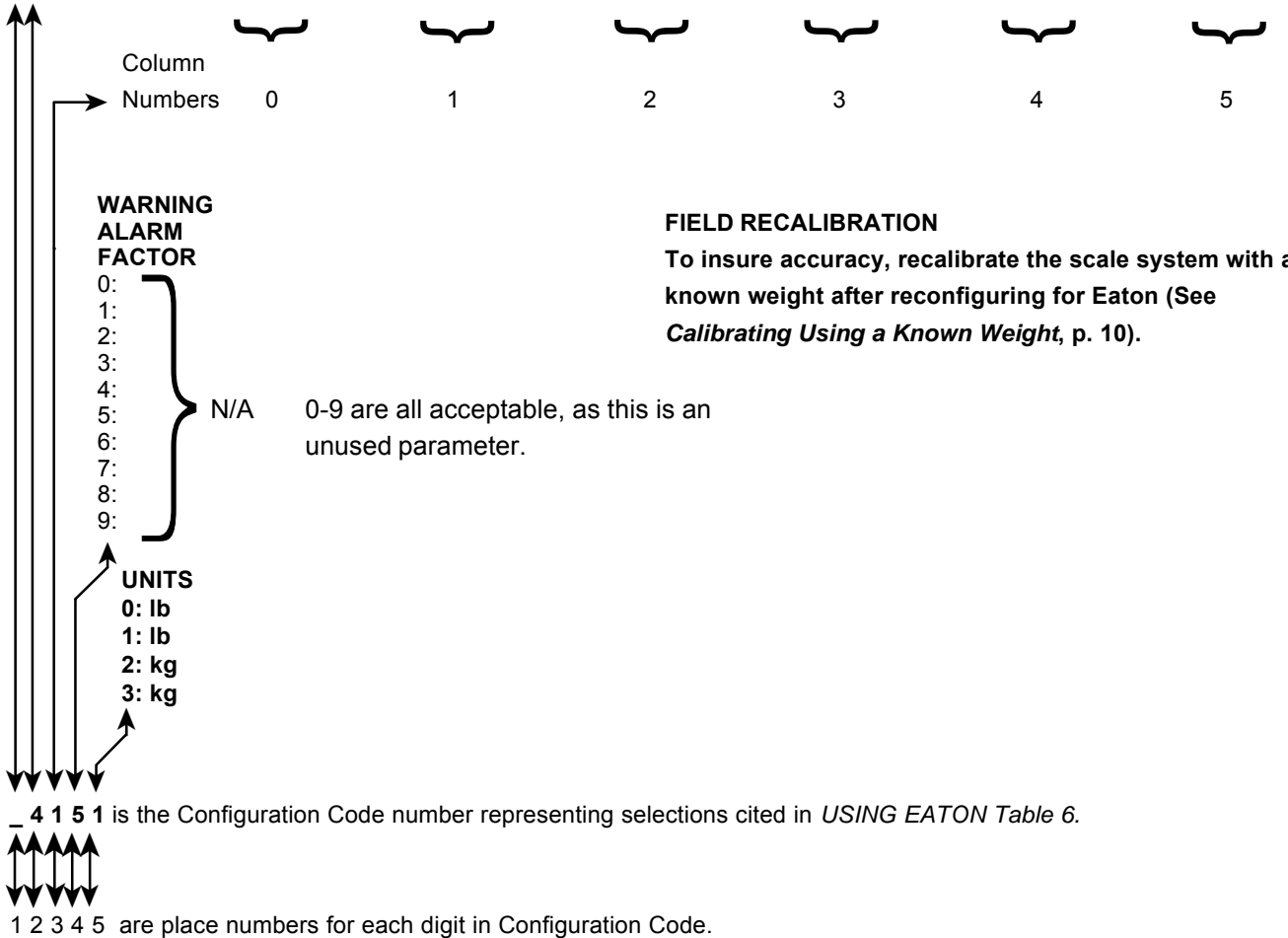


Figure 2
Standard and Optional Procedures for Accessing Optional Setup Modes

Table 9
Eaton Configuration Code Chart

TRANSDUCER DESCRIPTION: SENSITIVITY	CAPACITY x INCREMENT SIZE					
	0: .068/100 (5-pin)	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
1: .034/100	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
2: .017/100	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
3: .068/1K	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
4: .034/1K	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
5: .017/1K (5-pin)	200K x 10	200K x 20	200K x 50	200K x 100	200K x 200	200K x 500
6: .100/1K (5-pin)	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50

19: Custom Sensitivity and Capacity x Increment (See text: *Configuring Custom Sensitivity with Capacity x Increment Size.*)

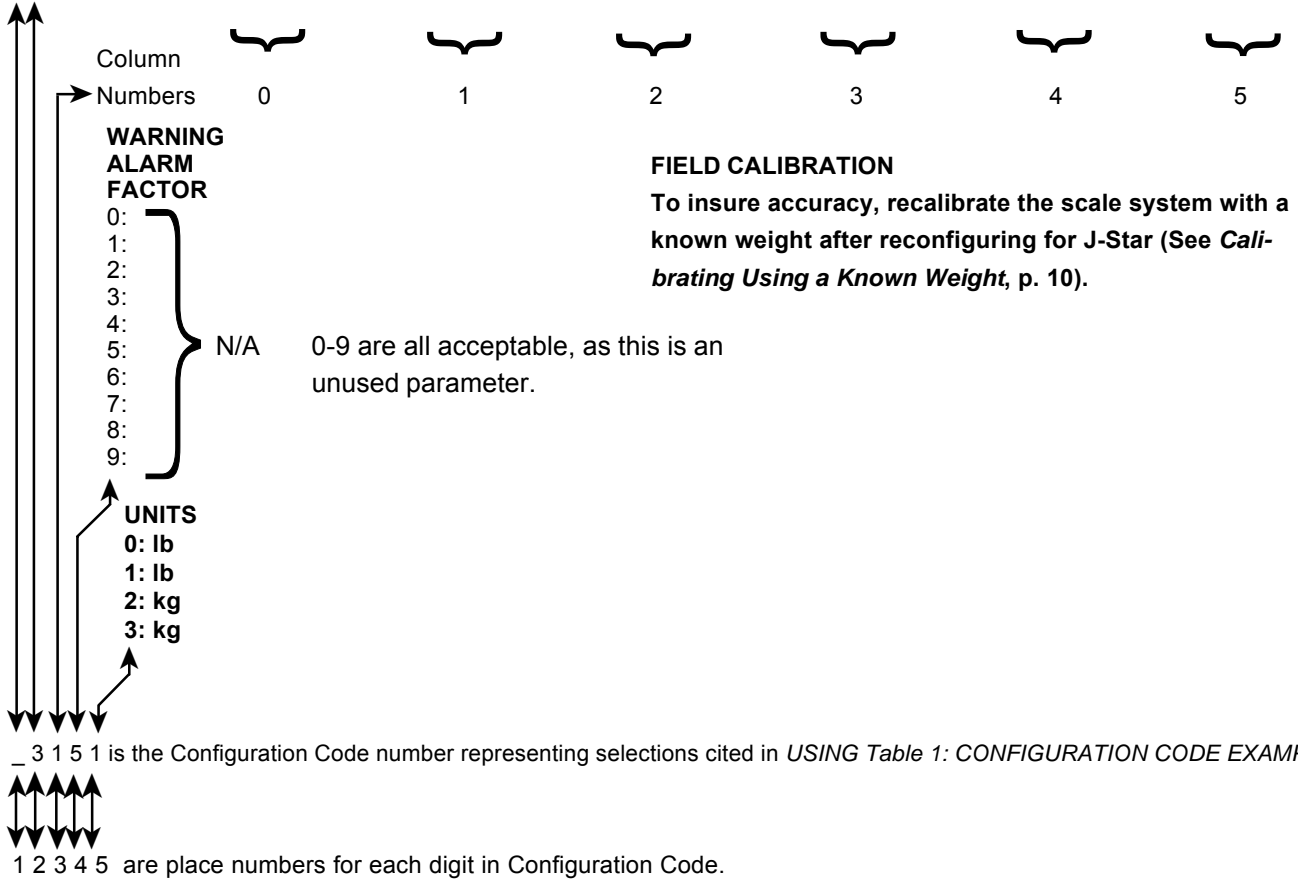


Symbols Used in Table 8

K Multiply by 1000

Table 10
D-Star Configuration Code Chart

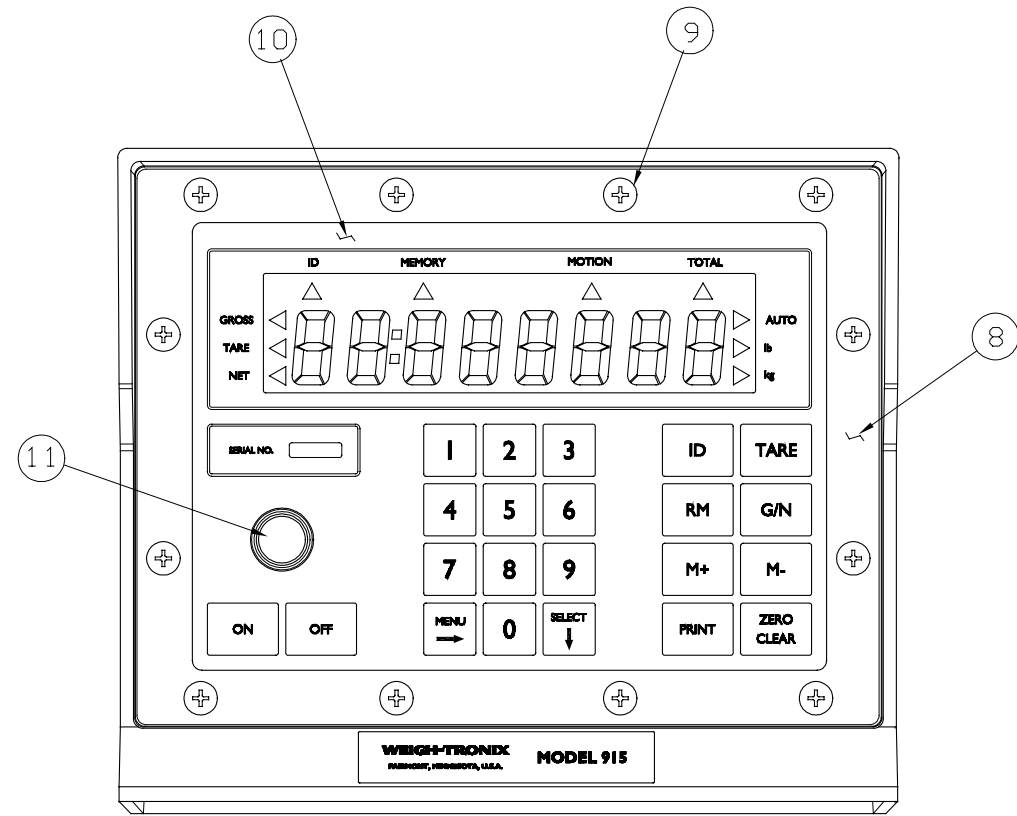
TRANSDUCER DESCRIPTION: AXLE SIZE	CAPACITY x INCREMENT SIZE					
	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
0: 1"	2K x .1	2K x .2	2K x .5	20K x 1	20K x 2	20K x 5
1: 1" (Poly)	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2: 1-7/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
3: 2-1/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2-1/2"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
2-7/8"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
3-3/4"	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
4: CT	20K x 1	20K x 2	20K x 5	200K x 10	200K x 20	200K x 50
19: Custom Sensitivity and Capacity x Increment (See text: <i>Configuring Custom Sensitivity with Capacity x Increment Size.</i>)						



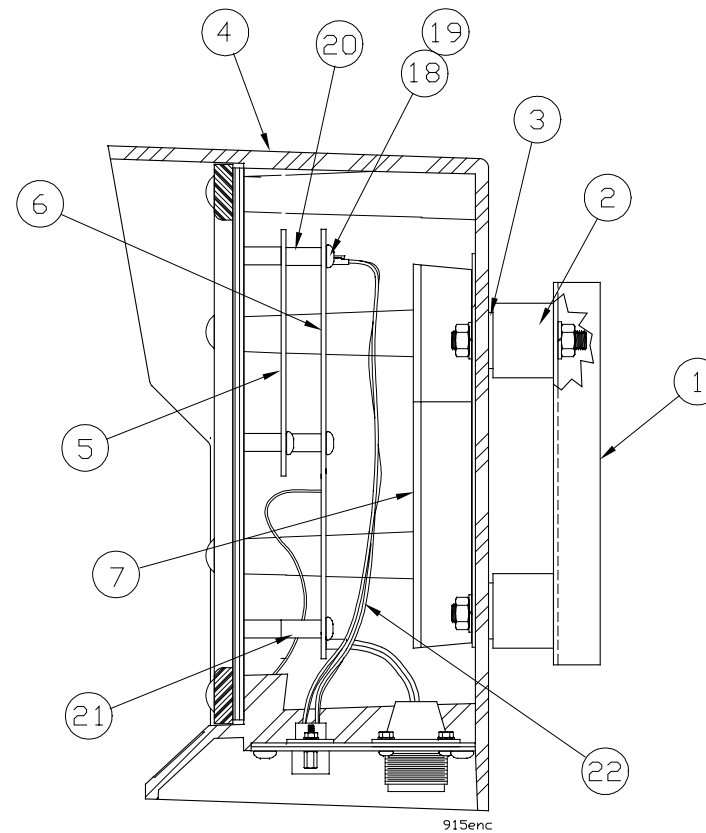
Symbols Used in Table 9

K Multiply by 1000

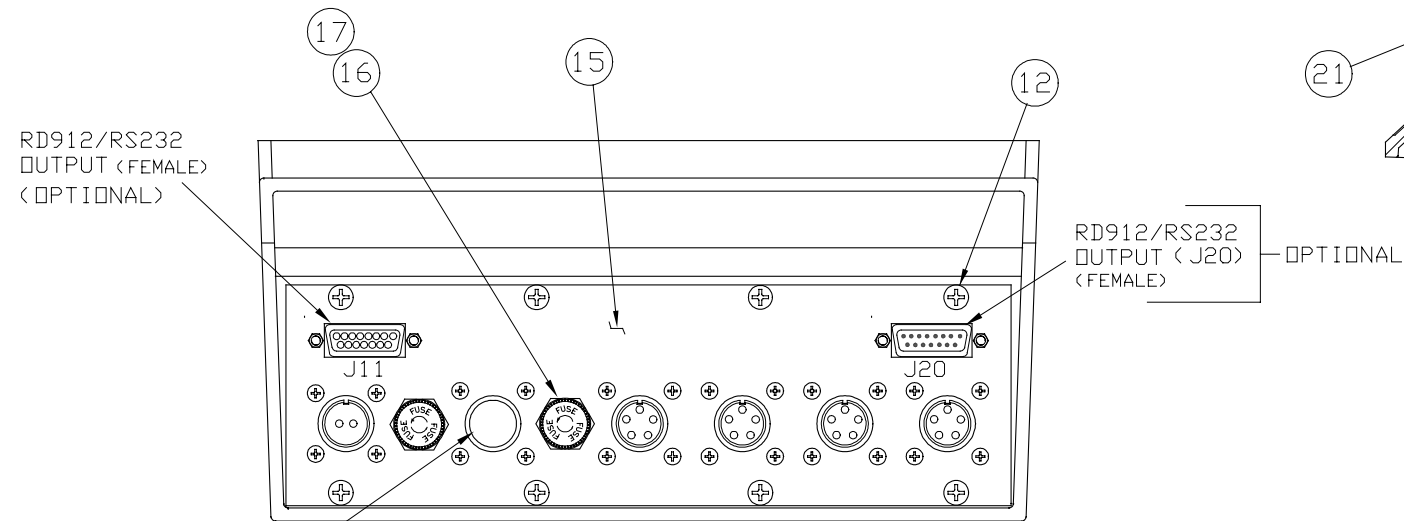
MODEL 915 INDICATOR 12VDC PARTS & ASSEMBLY



FRONT VIEW



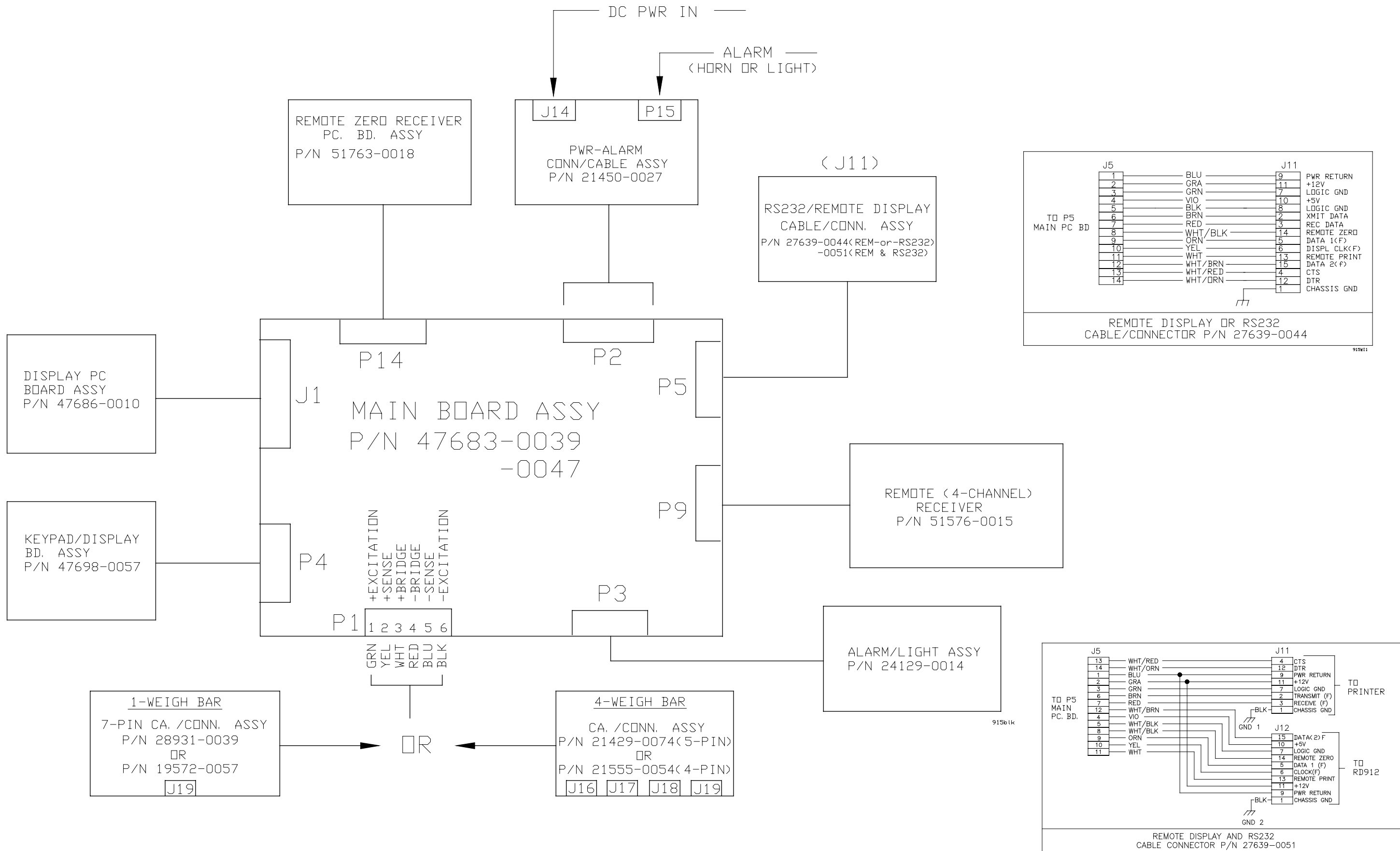
SIDE VIEW



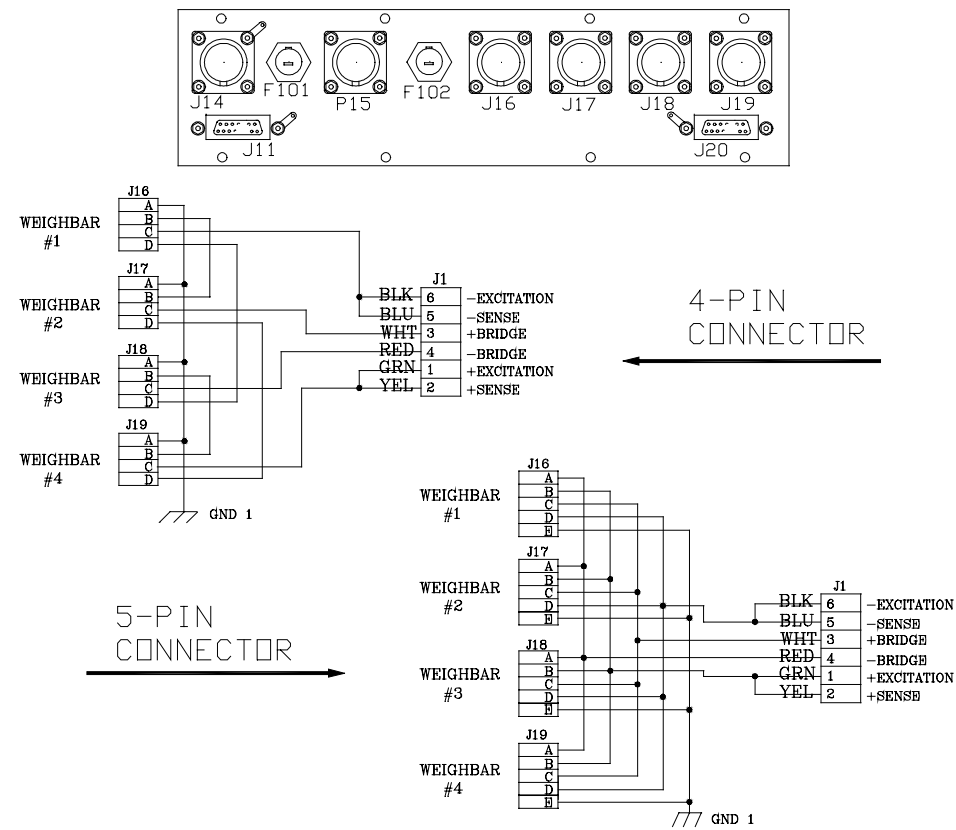
BOTTOM VIEW, LOWER PANEL
(4 WEIGH BAR, 5 PIN CONN. , RS232 PANEL SHOWN)

ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Mounting Bracket	11899-0043	1
2	Rubber Mount	17807-0058	4
3	Neoprene Washer	27357-0010	4
4	Enclosure	47017-0010	1
5	Display Board Assy	47686-0010	1
6	Main Pc Board	47683-0039	1
*	Main Pc Board W/ Rs-232, R/D	47683-0047	1
7	"Remote Zero" Receiver Kit (Optional)	51762-0019	1
8	Bezel	21356-0014	1
9	Screw, #10-32 X .75"L	18087-0073	12
10	Keypad Ass'y	47698-0057	1
11	Alarm Light Ass'y	24129-0014	1
12	Screw, #10-32 X .31"L	14473-0348	8
13	Plastic Cap (Threaded)	15351-0029	1
14	XM710-L, Hand-Held Remote	51760-0011	1
15	Pnl Assy, Single W/B Conn (7-Pin)	52956-0054	1
	Pnl Assy, Single W/B Conn (7-PIN) w/ RD or RS232	52956-0104	1
	Pnl Assy, Single W/B Conn (7-PIN) w/ RD & RS232	52956-0120	1
	Pnl Assy 4-W/B Conn (4-Pin)	52956-0021	1
	Pnl Assy 4-W/B Conn (5-Pin)	52956-0013	1
	Pnl Assy 4-W/B Conn (4-PIN) w/ RD or RS232	52956-0070	1
	Pnl Assy 4-W/B Conn (5-PIN) w/ RD or RS232	52956-0062	1
	Pnl Assy 4-W/B Conn (5-PIN) w/ RD & RS232	52956-0112	1
16	Fuse Holder	15455-0016	2
17	Fuse (5 Amp)	15453-0042	2
18	Screw, #6-32 X .25, SS	14473-0223	7
19	Lock Washer, #6	14474-0032	7
20	Standoff, #6-32 X .50 (M-F)	15437-0449	3
21	Standoff, #6-32 X .56 (M-F)	15437-5000	2
22	Remote Display/RS-232 Wire Harness (remote or RS-232)	27639-0044	1
	Remote Display/RS-232 Wire Harness (remote & RS-232)	27639-0051	1

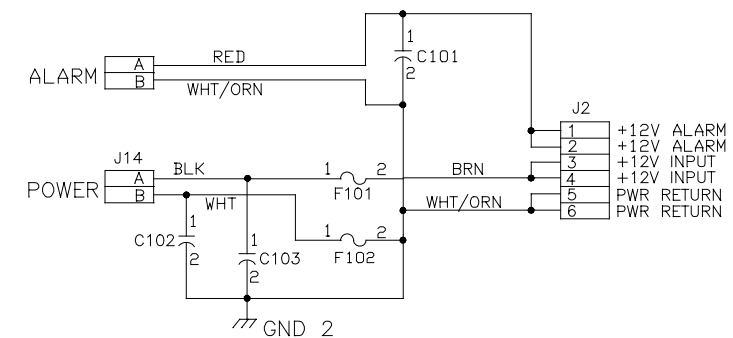
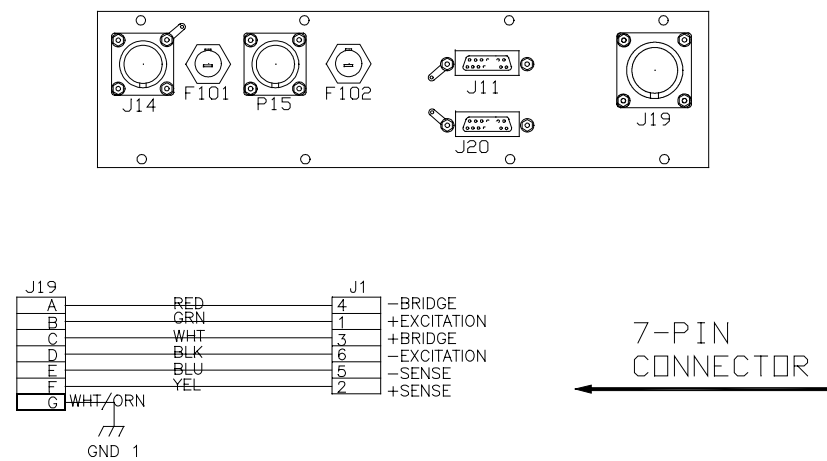
MODEL 915 INDICATOR 12VDC
SYSTEM BLOCK DIAGRAM (WITH REMOTE DISPLAY PIN-OUTS)



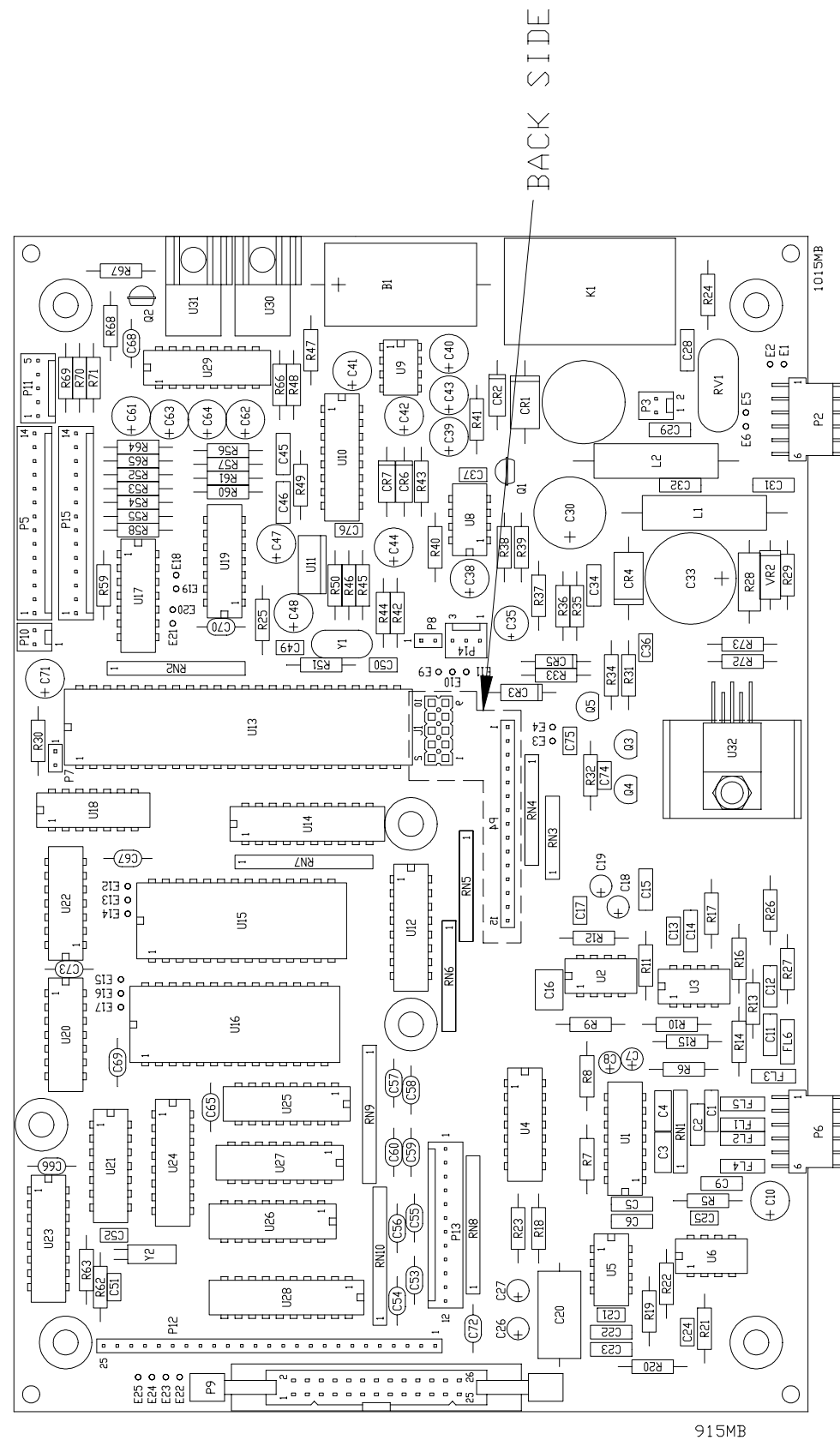
MODEL 915 INDICATOR 12VDC
W/B PANEL ASSY & CABLE/CONNECTOR
SCHEMATICS



3 BAR SYSTEM
 USE 4 BAR LOWER ASSEMBLIES
 WITH DUMMY PLUG.



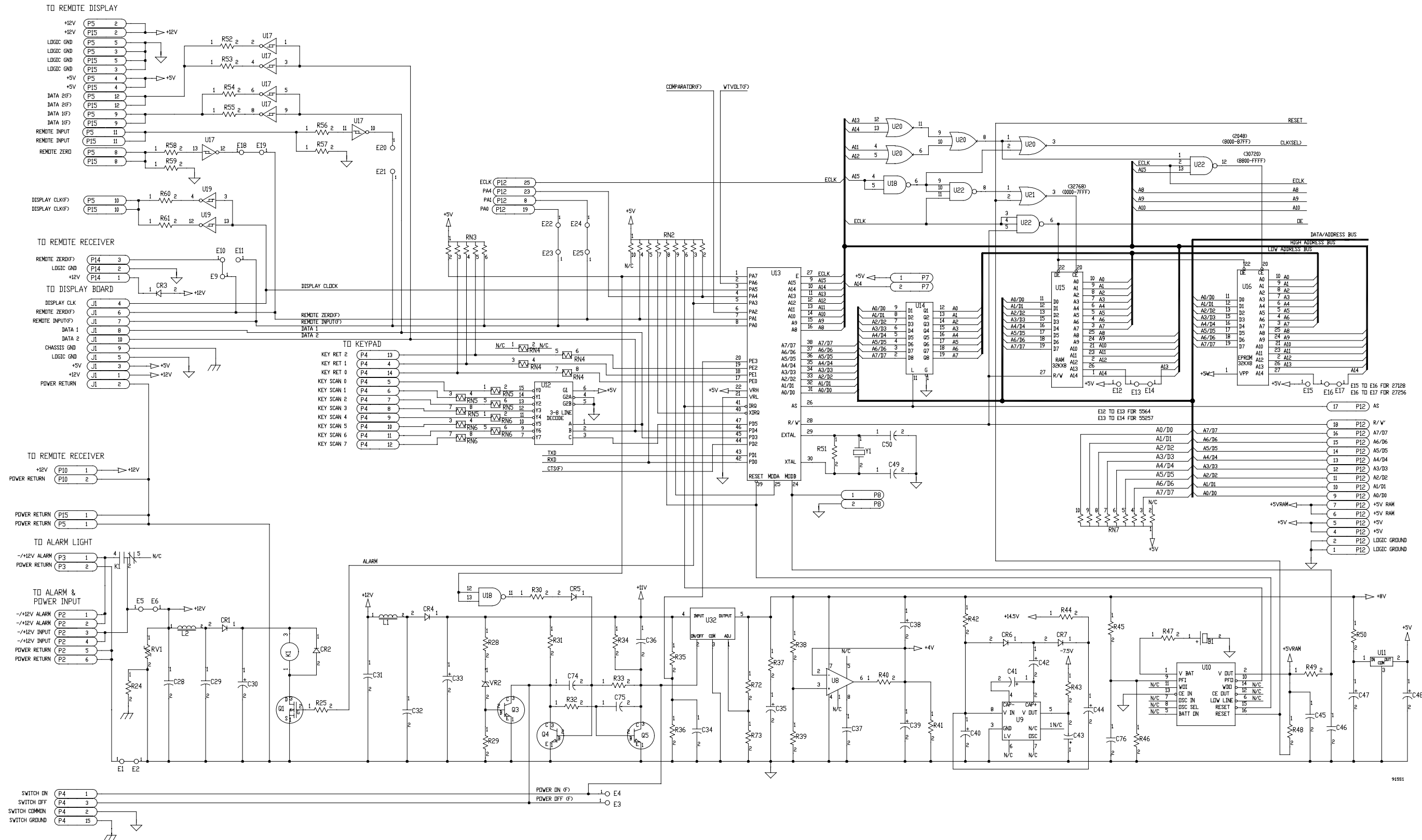
MODEL 915 INDICATOR 12VDC
MAIN PC BOARD A/D ASSEMBLY
P/N 47683-0039 -or- -0047 (w/ Remote / RS-232)



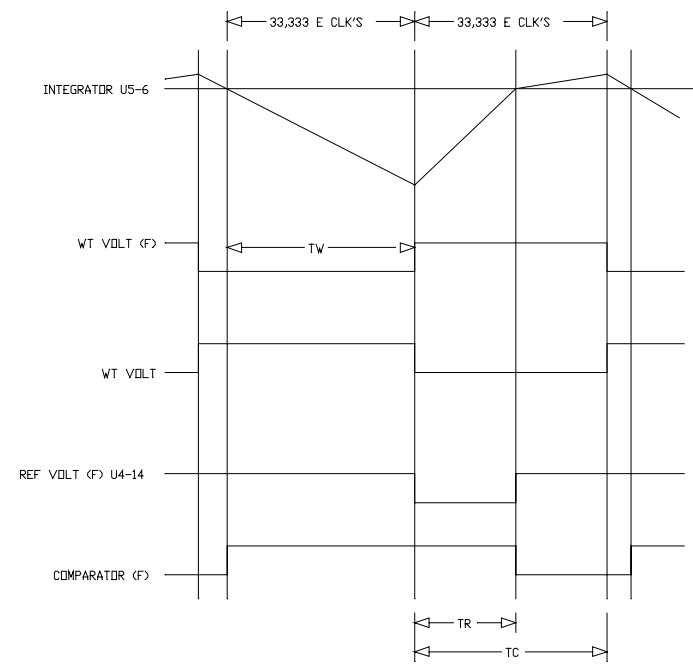
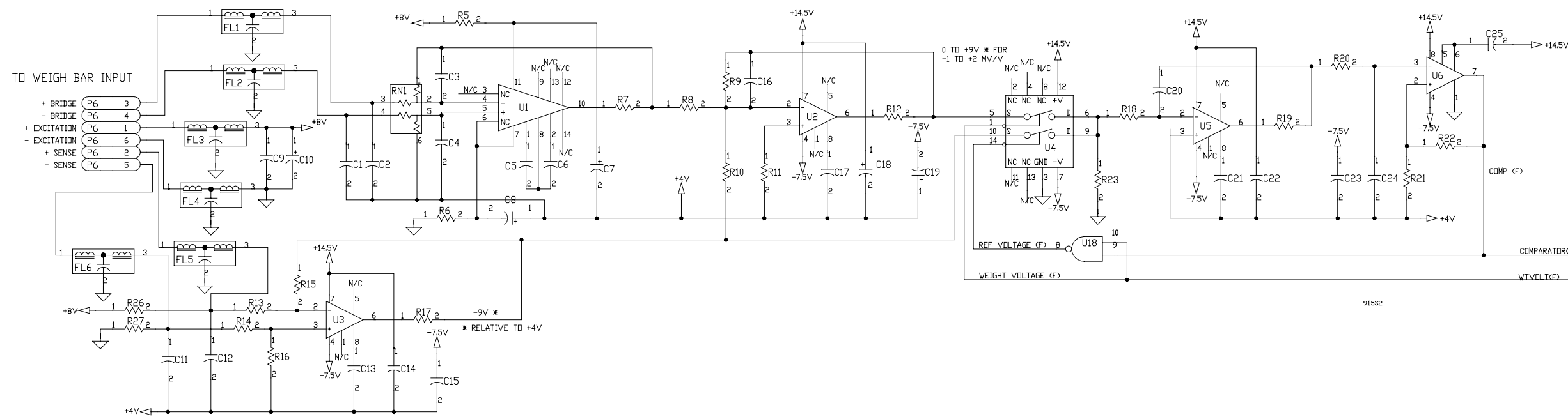
SYMBOL	DESCRIPTION	W-T P/N
B1	BATTERY, 3.6 V	23957-0021
C1,2,5,6,9, 11,12,14,15,2 2,23,26,29,31, 32,34,45,46	CAP. 0.1 UF 100 V	15623-0120
C65-70,72 ,73	CAP. 0.1 UF 50 V	46684-0040
C3,4	CAP. .22 UF 50 V	23267-0117
C7,8,18,19,26, 27,	CAP. 1.0 UF 35 V	22327-2519
C10,38-44, 47,48,61-64 ,71	CAP. 47 UF 16 V	17993-0094
C13,17,21, 37	CAP. 100PF 200 V	15619-0134
C16	CAP. 1.0 UF 50 V	23267-0158
C20	CAP. .15 UF 100 V	18083-0127
C24	CAP. 4700PF 100 V	15620-0018
C25,36,74-76	CAP. 0.01 UF 100 V	15620-0123
C34	CAP. 1000 UF 35 V	17995-0142
C35	CAP. 10 UF 35 V	22327-2618
C49,50,51	CAP. 22PF 200 V	15619-0050
C52	CAP. 15 PF 200 V	15619-0035
C53-60	CAP. 0.01 UF 100V	46684-0030
CR1,4	DIODE, 1N4142	15668-0076
CR2,6,7	DIODE, 1N4004	15668-0043
CR3	DIODE, 1N5817	15668-0324
CR5	DIODE, 1N4148	15668-0035
DS1	DISPLAY, LCD	22329-0040
DS2,3	LED, H-2000	27472-0010
FL1-6	FILTER, EMI	46547-0011
J1	CONNECTOR, 10 SOCKET	46635,0055
K1	RELAY	17982-0022
L1,2	CHOKER, 10 UHY	15779-0015
P2,6	CONN. 6 PIN RIGHT ANGLE	17945-0057
P3	CONN. 2 PIN	17794-0012
P4	CONN. 15 PIN	17734-0148
P5	CONN. 14 PIN	17794-0137
P7,8	CONN. 2 PIN	17734-0015
P9	CONN. 26-PIN MALE	17818-0295
Q1	TRANSISTOR, VN10KM	15665-0152
Q2	TRANSISTOR, TIP122	16271-0032
Q3-5	TRANSISTOR, 2N3904	15665-0012
R5-7,12,17,19, 30, 40	RESISTOR, 100 OHM	14477-0492
R8	RESISTOR, 9.09 K	17873-1899
R9	RESISTOR, 64.9 K	17873-2715
R10	RESISTOR, 196 K	17873-3176
R11	RESISTOR, 8.06 K	15677-3764
R13,14	RESISTOR, 37.4 K	17873-2483
R15,16	RESISTOR, 42.2 K	17873-2533
R18	RESISTOR, 110 K	15673-4857
R20,21	RESISTOR, 182 OHM	15677-2188
R22	RESISTOR, 470 K	14477-1375
R23,63	RESISTOR, 22 MEG	14477-1771
R24,25	RESISTOR, 3.3 K	14477-0856
R26,27	RESISTOR, 2.0 K	14477-1110
R28	RESISTOR, 750 OHM	15670-0700

SYMBOL	DESCRIPTION	W-T P/N
R29	RESISTOR, 910 OHM	14477-0724
R31-34	RESISTOR, 15 K	14477-1011
R35	RESISTOR, 200K	15677-5108
R36	RESISTOR, 59 K	15677-4598
R37	RESISTOR, 0.470 OHM	46602-0179
R38,39,74	RESISTOR, 10.0 K	15677-3855
R41	RESISTOR, 3.9 K	14477-0872
R42,50	RESISTOR, 4.7 OHM	14477-0179
R43,44	RESISTOR, 22 OHM	14477-0336
R45	RESISTOR, 57.6K	15677-4580
R46	RESISTOR, 13 K	15677-3962
R47	RESISTOR, 464 OHM	15677-2576
R48	RESISTOR, 100 K	14477-1219
R49	RESISTOR, 5.1 K	14477-0906
R51	RESISTOR, 10 MEG	14477-1698
R52-55,60, 61	RESISTOR, 120 OHM	14477-1698
R53	RESISTOR, 5.1 K	14477-0906
R62	RESISTOR, 330 K	14477-1334
R64	RESISTOR, 4.7 K	14477-0898
R65	RESISTOR, 200 OHM	14477-0575
R66,70,71	RESISTOR, 10 K	14477-0971
R72	RESISTOR, 5.23 K	15673-3586
R73	RESISTOR, 1.0 K	15673-2893
RN1	RESISTOR NETWORK, 5.62/301 K	23256-0011
RN2,8	RESISTOR NETWORK, 9 X 10 K	17852-0045
RN3	RESISTOR NETWORK, 5 X 10 K	17852-0086
RN4-6	RESISTOR NETWORK, 4 X .1 K	17852-0037
RN9,10	RESISTOR NETWORK 10 K	17852-0029
RV1	VARIABLE RESISTOR, V827A12	16046-0028
U1	IC, 7652	14323-0464
U2,3,5,8	IC, 308A	14323-0266
U4	IC, DG200	14323-0241
U6	IC, 311	14323-0258
U9	REGULATOR 7660	15658-0227
U10	IC MAX691CPE	15657-0665
U11	REG 7805	15658-0011
U12,24	IC, 74HC138	18080-0260
U13	IC MC68HC11A1P	15657-0632
U14	IC, 74HC573	18080-0559
U15	IC, 55257	15657-0442
U16	IC, PROG. EPROM M915	51520-0012
U17,19	IC, 74HC14	18080-0096
U18	IC, 74HC00	18080-0013
U20,21	IC, 74HC32	18080-0138
U22	IC, 74HC10	18080-0070
U23	IC, 4060	15656-0245
U25-27	IC, 74HC590	18080-0617
U28	IC, 74HC541	18080-0575
U29	IC, MAX232CPE	14323-0621
U32	REGULATOR 2941T	15658-0359
VR2	DIODE, ZENER 1N5353B 16V	15669-0158
XU7	HEAT SINK	15556-0014
Y1	CRYSTAL, 8.00 MHZ	16125-0212
Y2	CRYSTAL, 32, 768 MHZ	16125-0188

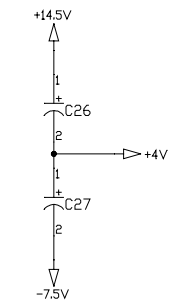
MODEL 915 INDICATOR 12VDC MAIN PC BOARD A/D ASSEMBLY SCHEMATIC



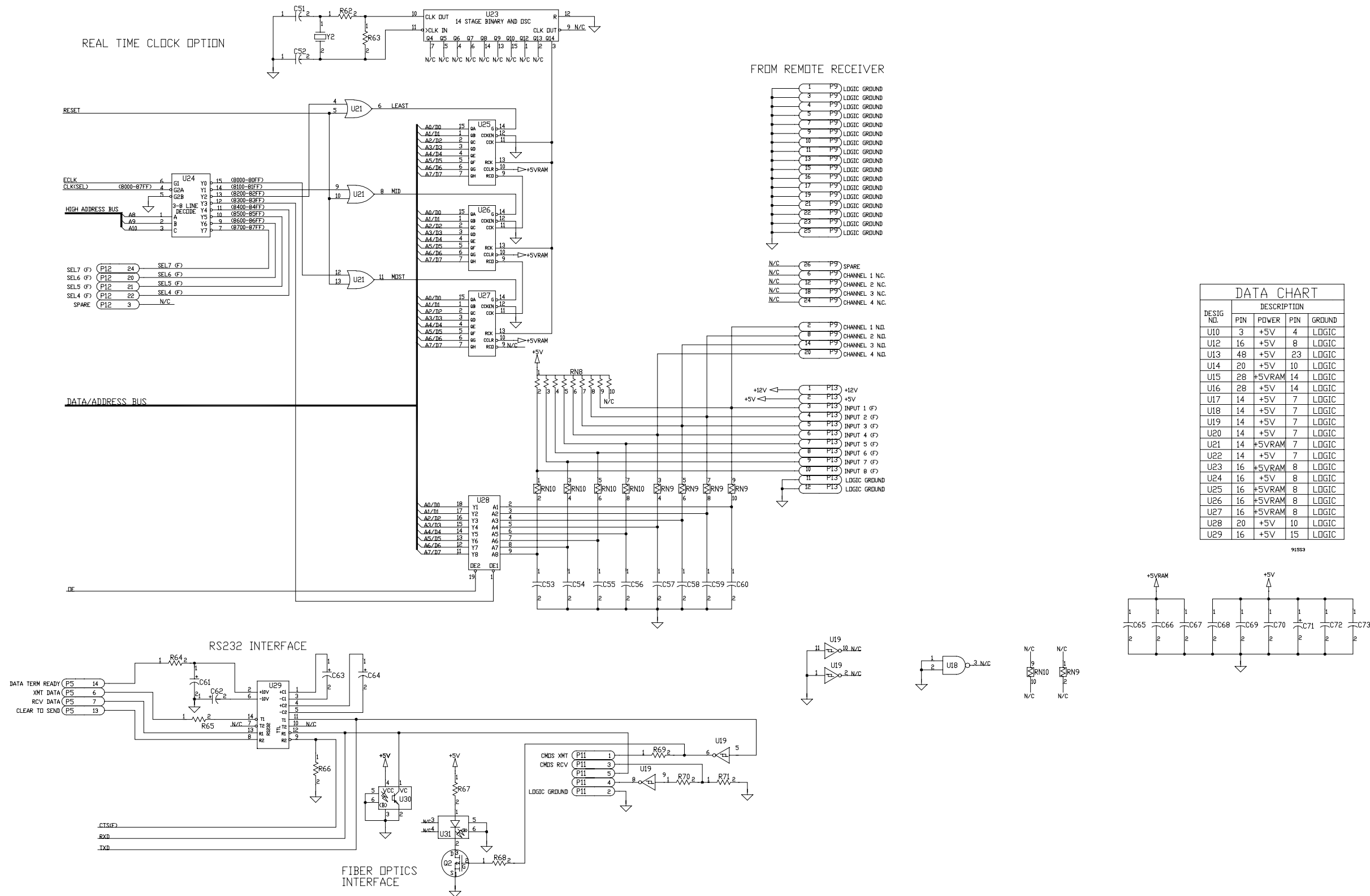
MODEL 915 INDICATOR 12VDC MAIN PC BOARD A/D SCHEMATIC (continued)



TW = WEIGHT VOLTAGE TIME
 TR = REFERENCE VOLTAGE TIME
 MICROPROCESSOR TAKES WT VOLT (F) LINE (U4-1) LOW AND INTEGRATOR STARTS GOING DOWN. WHEN COMP(F) LINE (U6-7) GOES HIGH, MICROPROCESSOR STARTS COUNTING WEIGHT VOLTAGE TIME. IN THIS CASE IT IS 33,333 E CLK CYCLES. (0.1667 MILLISEC) WHEN 33,333 E CLKS ARE COUNTED, MICROPROCESSOR TAKES WT VOLT(F) LINE (U4-1) HIGH AND STARTS COUNTING THE REFERENCE VOLTAGE TIME, TR. WHEN COMP(F) LINE (U6-7) GOES LOW, THE MICROPROCESSOR STORES THE NUMBER OF E CLKS COUNTED AFTER THE WT VOLT(F) LINE WENT HIGH. THIS NUMBER IS PROPORTIONAL TO THE RATIO OF THE WEIGHT VOLTAGE AND REFERENCE VOLTAGE. THE MICROPROCESSOR CONTINUES COUNTING E CLKS UNTIL IT COUNTS 33,333 FROM WHEN THE REFERENCE CYCLE STARTED. THIS IS TC. THE PROCESS NOW STARTS OVER.



MODEL 915 INDICATOR 12VDC
MAIN PC BOARD A/D SCHEMATIC (continued)

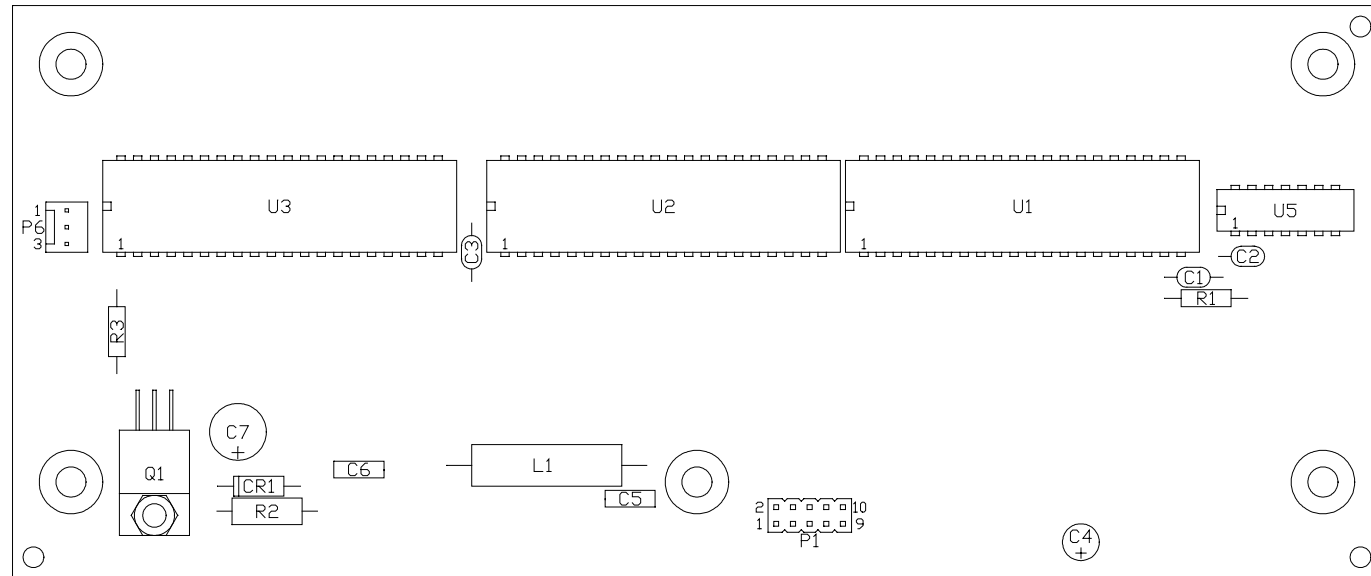


DATA CHART

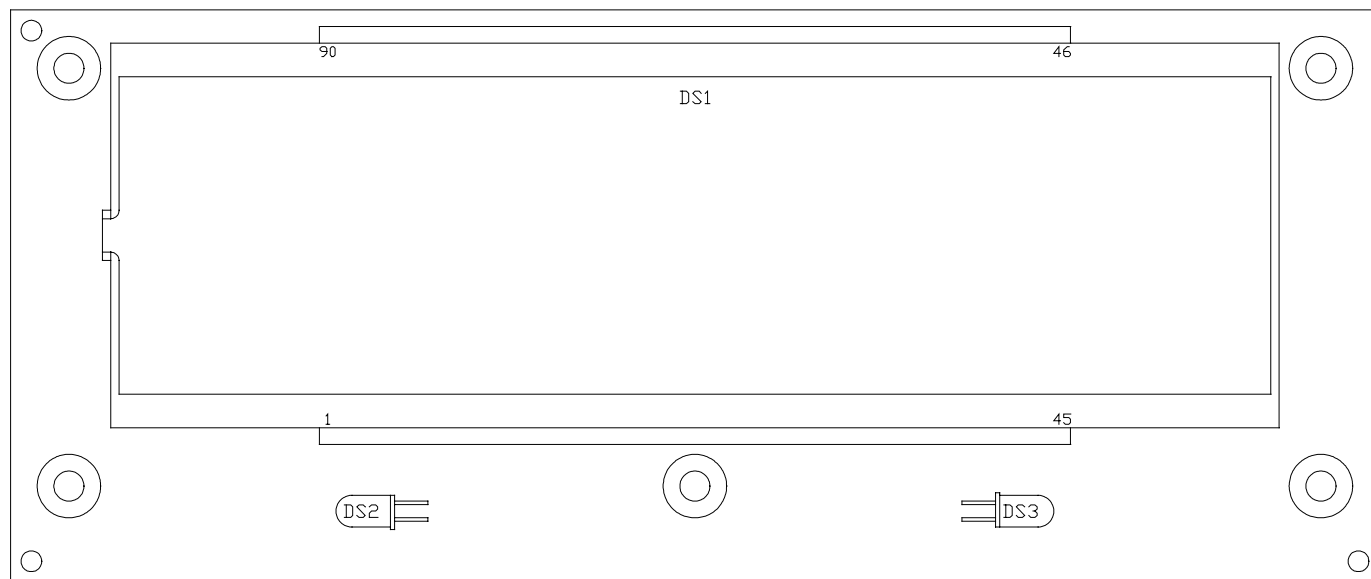
DESIG. NO.	DESCRIPTION			
	PIN	POWER	PIN	GROUND
U10	3	+5V	4	LOGIC
U12	16	+5V	8	LOGIC
U13	48	+5V	23	LOGIC
U14	20	+5V	10	LOGIC
U15	28	+SVRAM	14	LOGIC
U16	28	+5V	14	LOGIC
U17	14	+5V	7	LOGIC
U18	14	+5V	7	LOGIC
U19	14	+5V	7	LOGIC
U20	14	+5V	7	LOGIC
U21	14	+SVRAM	7	LOGIC
U22	14	+5V	7	LOGIC
U23	16	+SVRAM	8	LOGIC
U24	16	+5V	8	LOGIC
U25	16	+SVRAM	8	LOGIC
U26	16	+SVRAM	8	LOGIC
U27	16	+SVRAM	8	LOGIC
U28	20	+5V	10	LOGIC
U29	16	+5V	15	LOGIC

91553

MODEL 915 INDICATOR 12VDC
 DISPLAY BOARD P/N 47686-0010
 PARTS AND ASSEMBLY



COMPONENT SIDE

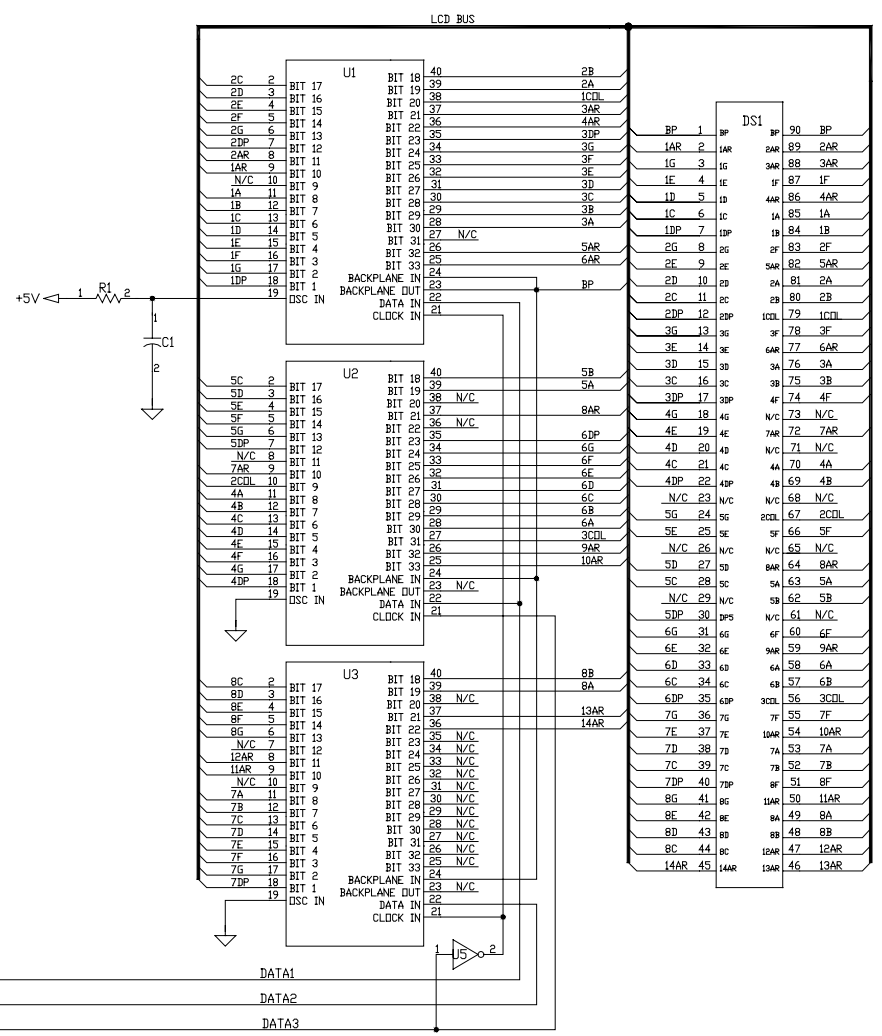
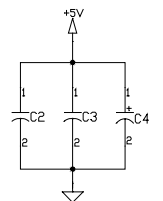
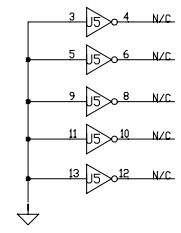
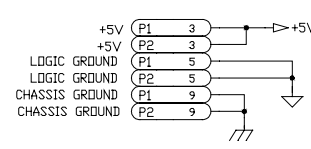
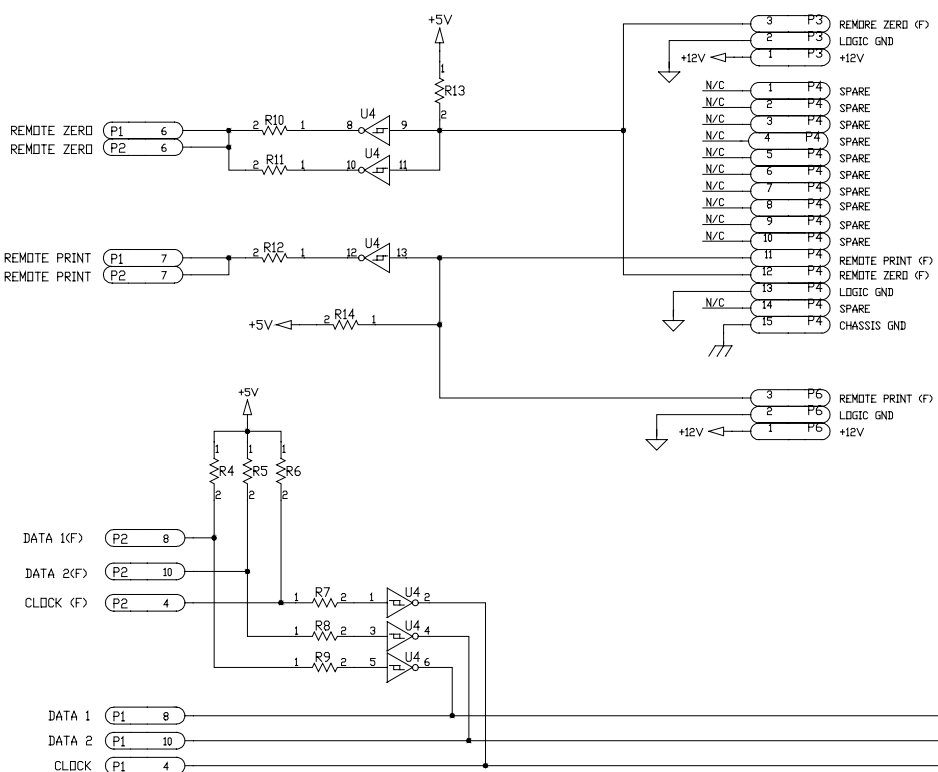
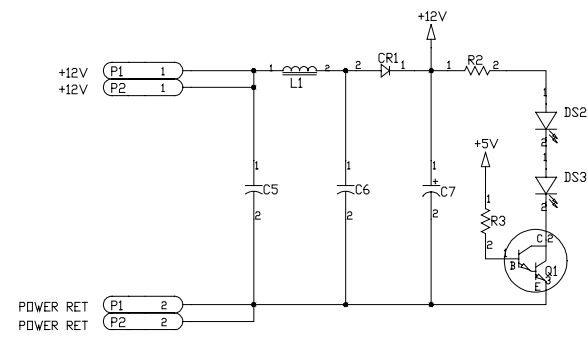


BACK SIDE

915DB

SYMBOL	DESCRIPTION	W-T P/N
C1	CAPACITOR, 1000 PF 100 V	46684-0022
C2,3	CAPACITOR, 0.1 UF 50 V	46684-0048
C4	CAPACITOR, 47 UF 10 V	17992-0095
C5,6	CAPACITOR, 0.1 UF 100 V	15623-0120
C7	CAPACITOR, 100 UF 25 V	17994-0101
CR1	DIODE, IN5817	15668-0324
DS1	DISPLAY, LCD	26483-0027
DS2,3	LED, H-2000	27472-0010
L1	INDUCTOR, 10 UH	15779-0015
P1	CONNECTOR, DUAL ROW, 10 PIN	23956-0022
Q1	TRANSISTOR, TIP122	16271-0032
R1	RESISTOR, 510 K	14477-1383
R2	RESISTOR, 330 OHM	15670-0619
R3	RESISTOR, 1 K	14477-0732
U1,2,3	IC, 5453N	15657-0624
U5	IC, 74HC04	18080-0047
XDS1	SOCKET, SIP 25 PIN	17847-1017
XDS1	SOCKET, SIP 20 PIN	17847-1041
XDS1	BACKLIGHT DISP, FIBER OPTIC	27459-0033

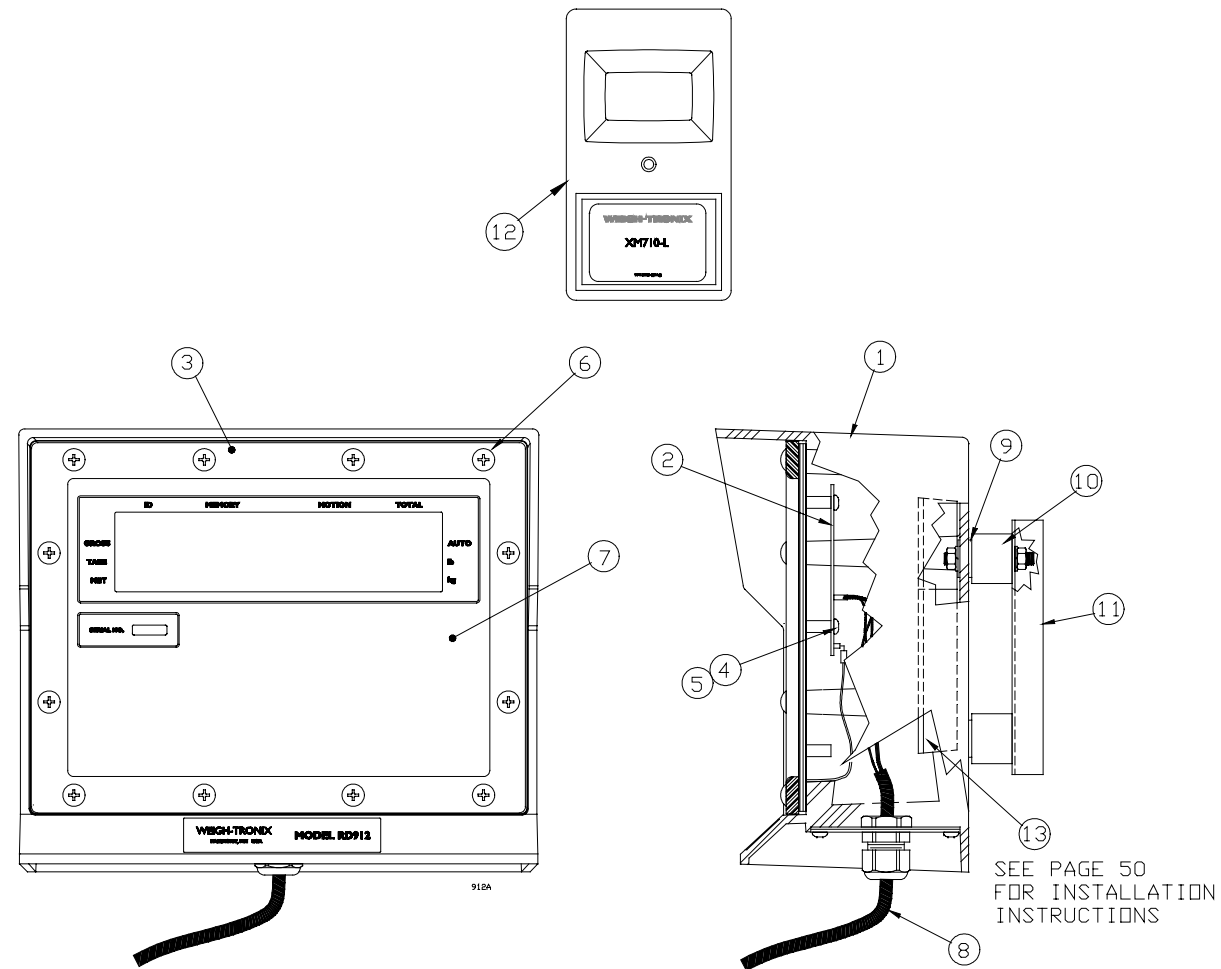
MODEL 915 INDICATOR 12VDC DISPLAY SCHEMATIC



DATA CHART				
DESIGN NO.	DESCRIPTION			
	PIN	POWER	PIN	GROUND
U1	20	+5V	1	LOGIC
U2	20	+5V	1	LOGIC
U3	20	+5V	1	LOGIC
U4	14	+5V	7	LOGIC
U5	14	+5V	7	LOGIC

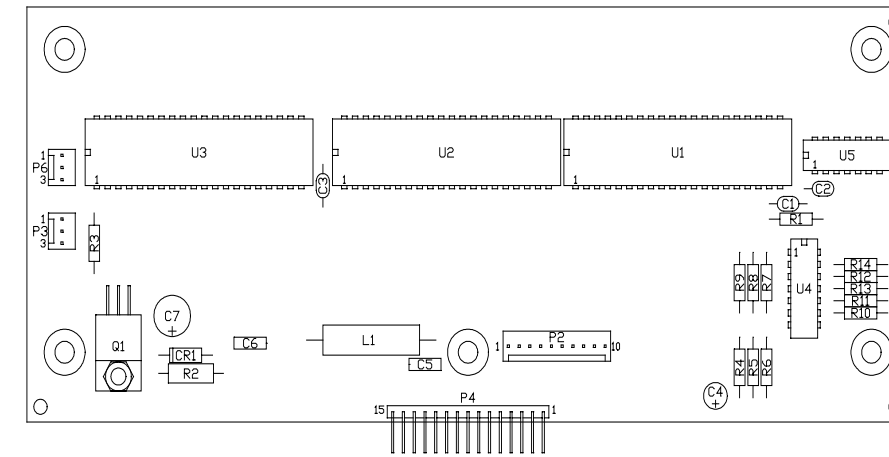
915051

RD 912 REMOTE DISPLAY PARTS AND ASSEMBLY



ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	ENCLOSURE	47017-0010	1
2	MAIN / DISPLAY BOARD ASSY	47686-0028	1
3	BEZEL	21356-0014	1
4	SCREW, #6-32 x .25, SS	14473-0223	7
5	LOCK WASHER, #6	14474-0032	7
6	SCREW, #10-32 x .75	18087-0073	12
7	KEYPAD ASSY	47698-0065	1
8	CABLE ASSY, 30'	48412-0019	1
	CABLE ASSY, 15'	48412-0027	1
9	NEOPRENE WASHER	27357-0010	4
10	RUBBER MOUNT	17807-0058	4
11	MOUNTING BRACKET	11899-0043	1
12	XM710-L, HAND-HELD REMOTE	51760-0011	1
13	XM710-L RECEIVER ASSY	51763-0018	1

RD 912 REMOTE DISPLAY MAIN PC BOARD P/N 47686-0028 PARTS AND ASSEMBLY



COMPONENT SIDE

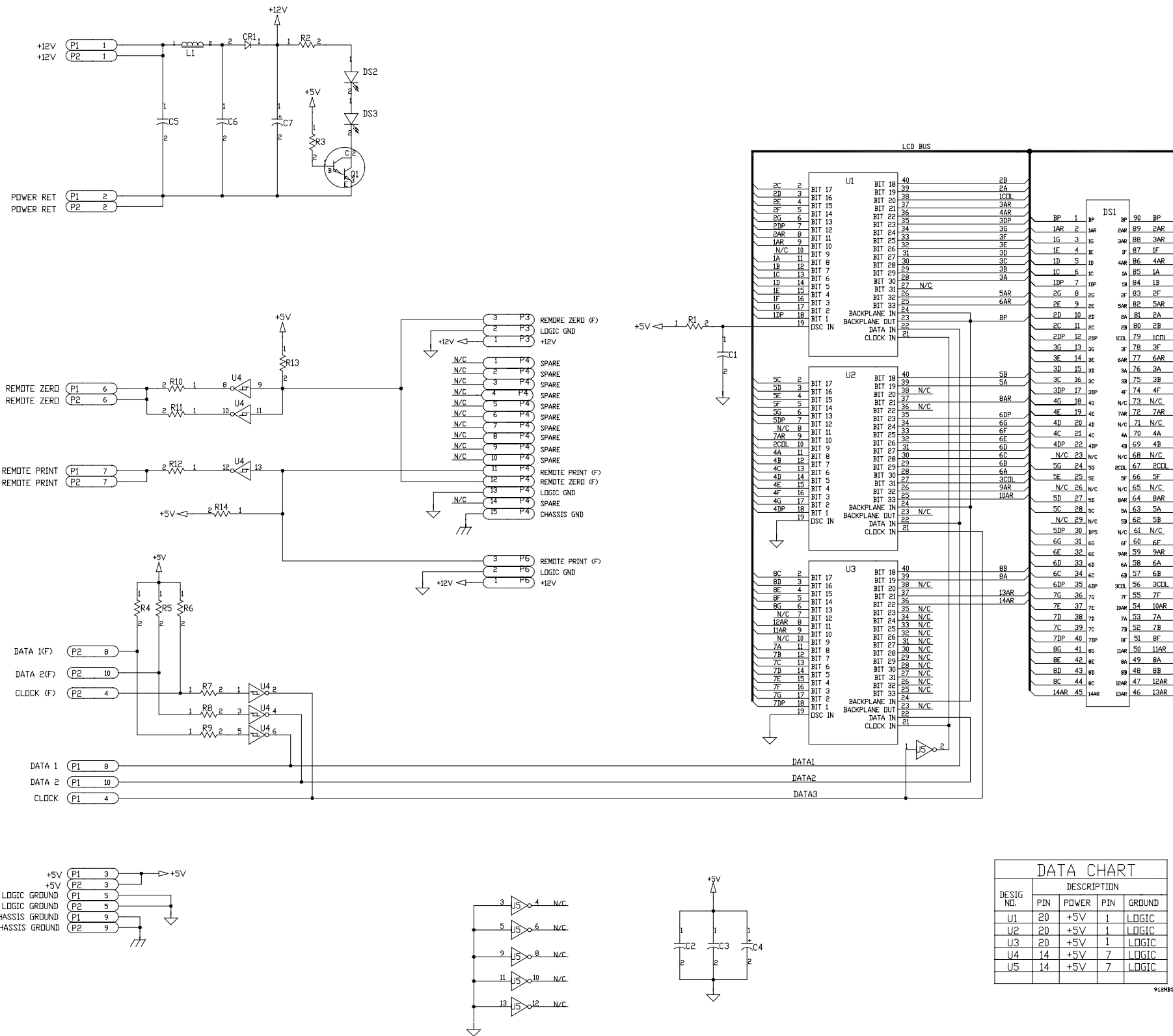


BACK SIDE

SYMBOL	DESCRIPTION	W-T P/N
C1	CAPACITOR, 1000 PF 100 V	46684-0022
C2,3	CAPACITOR, 0.1 UF 50 V	46684-0048
C4	CAPACITOR, 47 UF 10 V	17992-0095
C5,6	CAPACITOR, 0.1 UF 100 V	15623-0120
C7	CAPACITOR, 100 UF 25 V	17994-0101
CR1	DIODE, 1N5817	15668-0324
DS1	DISPLAY, LCD	26483-0027
DS2,3	LED, H-2000	27472-0010
L1	INDUCTOR, 10 UH	15779-0015
P2	CONNECTOR, 10 PIN	17794-0095
P3	CONNECTOR, 3 PIN	17794-0020
P4	CONNECTOR, 15 PIN	17731-0141
Q1	TRANSISTOR, TIP122	16271-0032
R1	RESISTOR, 510 K	14477-1383

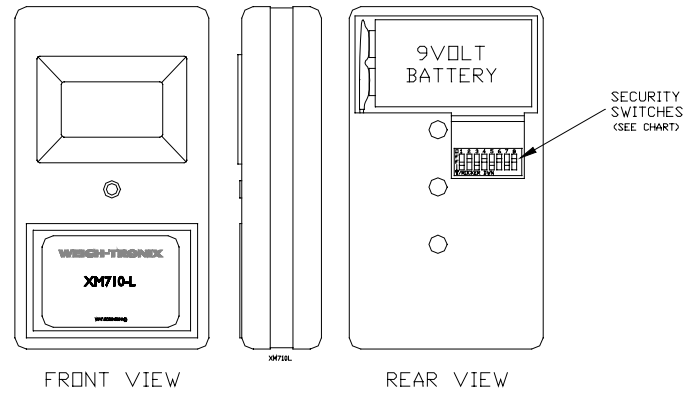
SYMBOL	DESCRIPTION	W-T P/N
R2	RESISTOR, 330 OHM	15670-0619
R3	RESISTOR, 1 K	14477-0732
R4,5,6,13, 14	RESISTOR, 10 K	14477-0971
R7,8,9	RESISTOR, 22 K	14477-1052
R10,11,12	RESISTOR, 120 OHM	14477-0581
U1,2,3	IC, 5453N	15657-0624
U4	IC, 74HC14	18080-0096
U5	IC, 74HC04	18080-0047
XDS1	SOCKET, SIP 25 PIN	17847-1017
XDS1	SOCKET, SIP 20 PIN	17847-1041
XDS1	BACKLIGHT DISP, FIBER OPTIC	27459-0033

MODEL 912 REMOTE DISPLAY MAIN PC BOARD SCHEMATIC



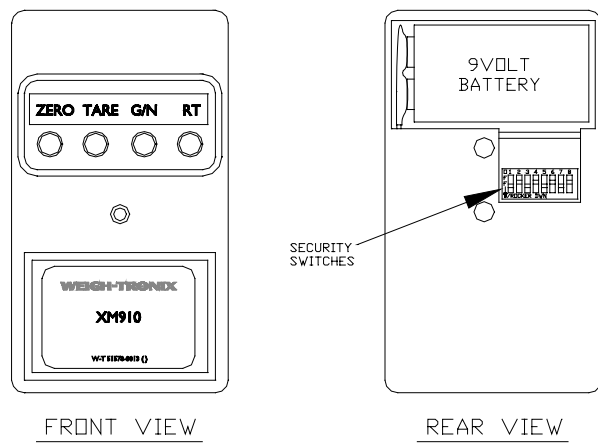
XM710-L HAND-HELD TRANSMITTER
P/N 51760-0011

SWITCH SETTING	
ON	OFF
1	2
3	4
5	6
7	8

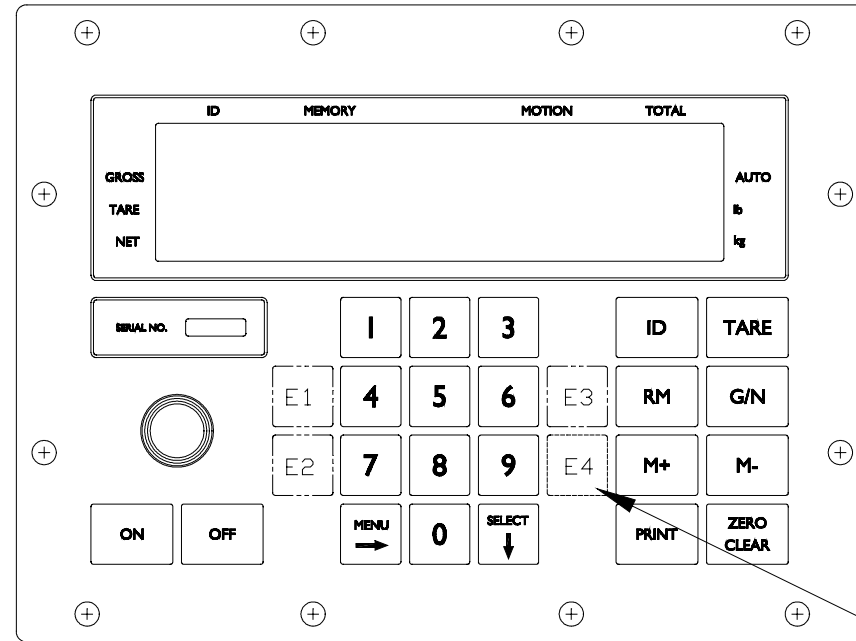


XM910 HAND-HELD TRANSMITTER (4-CHANNEL)
P/N 51579-0012

SWITCH SETTING	
ON	OFF
1	2
3	4
5	6
7	8

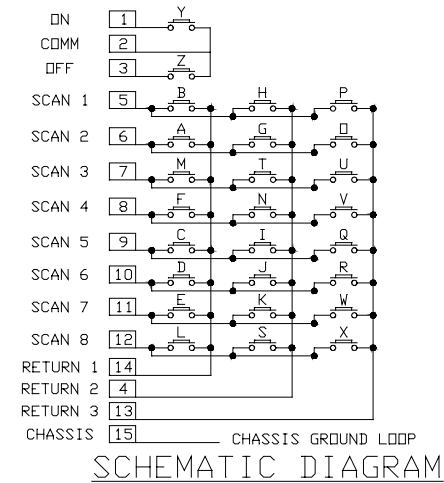
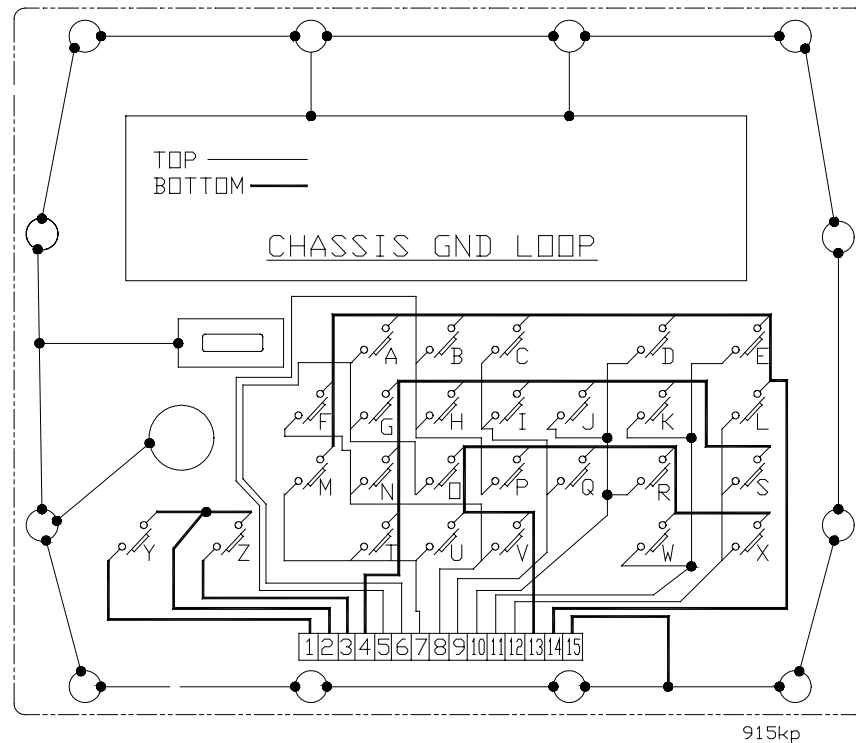


MODEL 915 INDICATOR 12VDC
KEYPAD SCHEMATIC
KEYPAD ASSY P/N 47698-0057

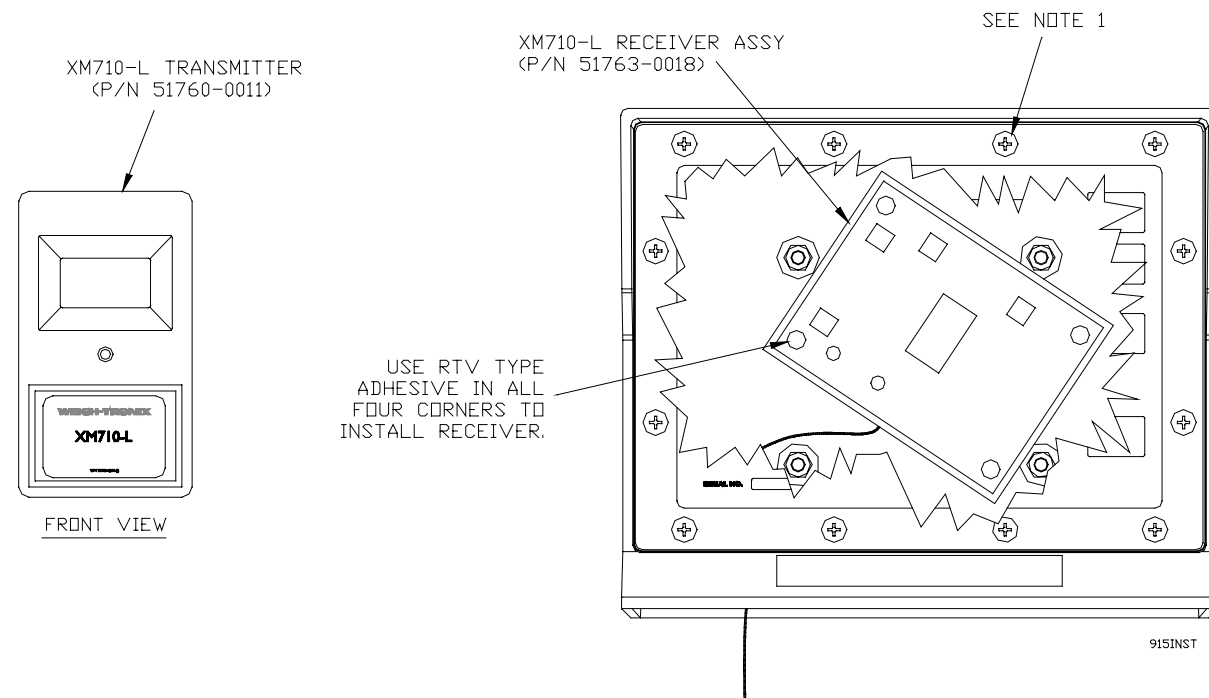


KEYPAD IDENTIFICATION CHART			
SCHEMATIC REFERENCE	MODEL 915 KEY I. D.	SCHEMATIC REFERENCE	MODEL 915 KEY I. D.
A	1	N	7
B	2	□	8
C	3	P	9
D	ID	Q	E4(hidden)
E	TARE	R	M+
F	E1(hidden)	S	M-
G	4	T	MENU
H	5	U	0
I	6	V	SELECT
J	E3(hidden)	W	PRINT
K	RM	X	ZERO CLEAR
L	G/N	Y	DN
M	E2(hidden)	Z	OFF

HIDDEN KEY



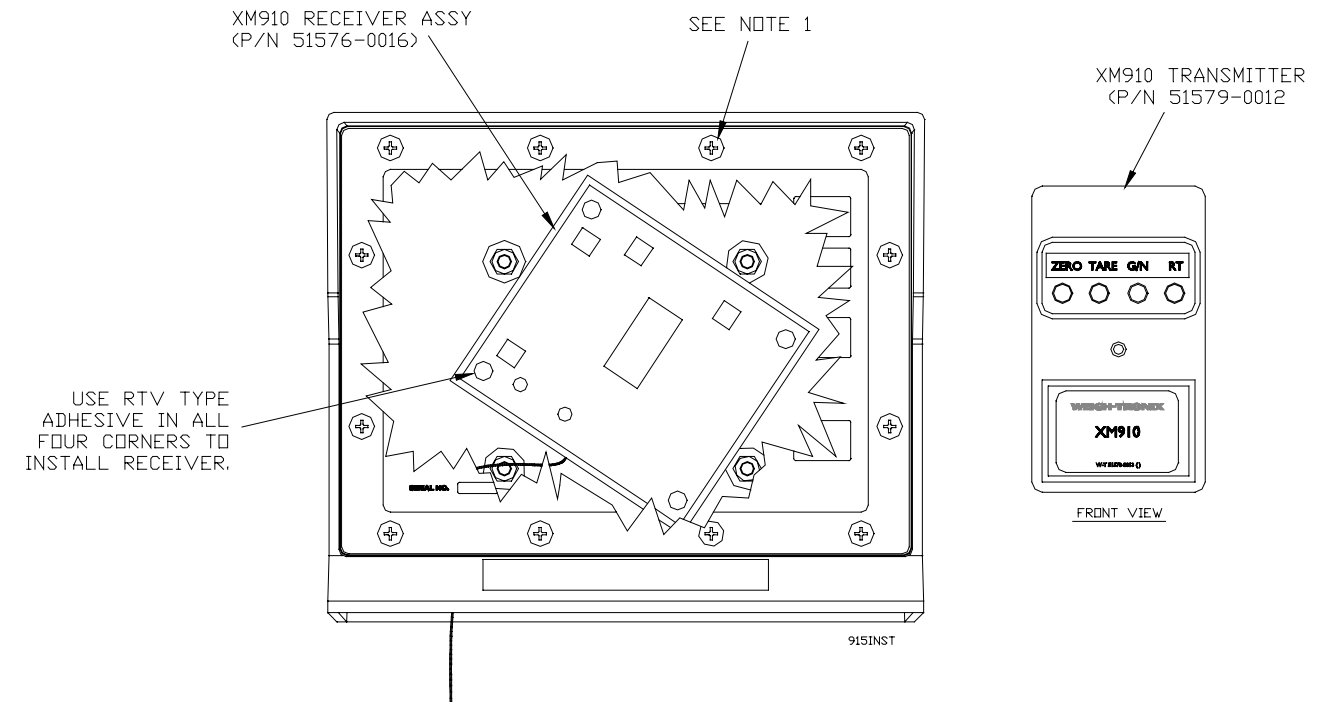
**MODEL 912 REMOTE DISPLAY
MAIN PC BOARD SCHEMATIC**



**XM710-L
INSTALLATION INSTRUCTIONS:**

1. TO DISASSEMBLE MODEL 915 (OR REMOTE DISPLAY RD912) , REMOVE THE 12 SCREWS FROM THE FRONT OF THE INDICATOR, THEN REMOVE THE FRONT ASSEMBLY.
2. WHEN INSTALLING IN THE FIELD, CUT THE FOLLOWING TRACES LOCATED ON UPPER RIGHT CORNER OF THE MAIN PC BOARD: MODEL 915 : BETWEEN E18 AND E19
RD912 : NONE
3. INSTALL RECEIVER CARD AS SHOWN, USING RTV TYPE ADHESIVE, AND MATCHING DIP-SWITCH SETTINGS TO XM710-L. PLUG 3-PIN CONNECTOR INTO THE FOLLOWING CONNECTORS, AND PLACE ANTENNA THROUGH HOLE ON STAINLESS STEEL BASE OF THE INDICATOR:

FROM M915 PLUG INTO P14
FROM RD912 PLUG INTO P3



**XM910
INSTALLATION INSTRUCTIONS:**

1. TO DISASSEMBLE MODEL 915, REMOVE THE 12 SCREWS FROM THE FRONT OF THE INDICATOR, THEN REMOVE THE FRONT ASSEMBLY.
2. INSTALL RECEIVER PC BOARD AS SHOWN USING RTV ADHESIVE. MATCH DIP SWITCH SETTING TO XM910. PLUG 2-PIN MOLEX INTO P10 ON 915 MAIN PC BOARD. PLUG RIBBON CABLE INTO P9. PLACE ANTENNA THROUGH HOLE IN STAINLESS STEEL BASE OF INDICATOR.

Standard Scale & Supply Company
25421 Glendale Avenue
Redford, MI 48239
313-255-6700
www.standardscale.com

