8182
8185

Technical Manual
and
Parts Catalog

INTRODUCTION

This publication is provided solely as a guide for individuals who have received METTLER TOLEDO Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

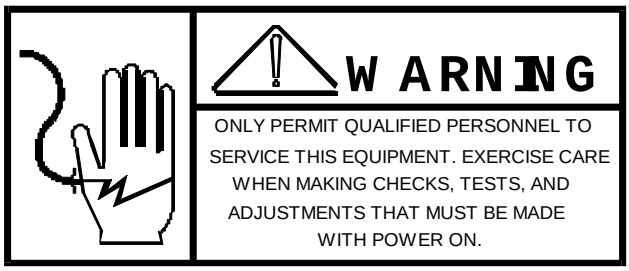
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.

- **ALWAYS REMOVE POWER** and wait at least 30 seconds **BEFORE** connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.

- **ALWAYS** take proper precautions when handling static sensitive devices.



- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

- **SAVE** this manual for future reference.

- **DO NOT** allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

- **ALWAYS DISCONNECT** this equipment from the power source before servicing.

- **CALL** METTLER TOLEDO for parts, information, and service.

1. GENERAL DESCRIPTION

The Model 8182/8185 is a heavy duty industrial parts counting scale. The 8182 will accept one or two additional scale bases, which may be used along with the scale contained in the console. The 8185 wall mount does not have a self-contained scale, but does have provisions for three external scale bases. Any one or two of the three bases used with the 8182/8185 may be used for a specific counting operation.

The 8182/8185 also has a full alphanumeric keyboard to allow entry of part numbers, operator codes, or any other type of identification data.

1.1 STATEMENT OF PERFORMANCE

The performance of any count-by-weighing scale is dependent on uniformity of weight per piece, number of pieces in the sample, individual piece weight and the percent of rated load placed on the scale. In application, count accuracy is also dependent upon the ability of the operator to read and record the count information accurately.

1.2 ACCURACY CONSIDERATIONS

Counting accuracy is determined primarily by these factors:

1. Digital resolution of the Sample Weight.
2. Digital resolution of the Gross Weight.
3. Piece to piece weight variation.

Item 1 is the most frequent cause of parts counting inaccuracy because of users desire to count and handle the minimum number of sample pieces. For example, with a sample weight of 0.2% of full scale, sample weight resolution is ± 1 part in 400, so counting error is ± 0.25% at best. Use of the 0.5% or 1% minimum sample weights will significantly improve counting accuracy.

Item 2, resolution of the gross weight is normally not a problem unless the gross scale is used below 2% of scale capacity. At 2%, weight resolution is 1 part in 4000.

Item 3 is not under control of the Parts counter, but is a factor which merits serious attention by the user. The overall count accuracy can be no better than the piece to piece variation, and may be much lower if the sample is not representative of the average piece weight.

1.3 FEATURES

- Alphanumeric display and micro-motion keyboard for ease of operation.
- Ability to enter up to 16 characters of alphanumeric identification.
- 12 and 24 hour time and date selectable.
- Ability to repeat ID, Tare or Average Piece Weights from one transaction to the next.

- One, two, or three understructure flexibility.
- Two speed cutoff by piece count
- Internal resolution of 1 part in 200,000 of scale capacity.
- Variety of settings for sufficient sample.
- Pushbutton zeroing (within ± 2% of scale capacity).
- 20mA current loop output for printer.
- Memory feature for storage of Tare and/or Average Piece weights as well as accumulation of piece count.
- Keyboard selection of LB or KG.
- Automatic Zero Maintenance for each scale.
- Excitation current is provided for 4-240 ohm load cells or 6-350 ohm load cells for each A/D PCB.
- External interfacing capabilities.

2. SYSTEM DESCRIPTION

The 8182/8185 provides 15 volts of excitation for strain gauge load cell (s). Zero drift and temperature change are compensated for by gating this voltage. The microvolt signal from the load cell is then conditioned, amplified and converted to a digital signal and displayed.

The initial range is adjustable from 0 to 30mV.

The span range is adjustable from 3 to 30mV.

Excitation current is proved for 4-240 ohm load cells or 6-350 ohm load cells for each A/D PCB.

The Model 8182/8185 Parts Counting scale uses a bus arrangement, with a non-dedicated Mother PCB. Simply stated, this means that any PCB will operate in any one of the four slots located on
the Mother PCB. Each A/D PCB is assigned a different address number, see Section 4, Paragraph 4 for jumper locations, this number is used for scale identification during operator programming.

The Model 8182/8185 consists of eight (8) major blocks which follow:

2.1 POWER SUPPLY

Provides various DC voltages to the other PCB'S, as well as supplying battery back-up power for the Logic PCB Memory.

2.2 MOTHER PCB

This PCB distributes the power to the Logic and Analog PCB's, as well as providing intercommunication lines between the Logic PCB and Analog PCB.

2.3 LOGIC PCB

Provides control over operating functions and serial I/O ports assigned to the following tasks.

2.4 DISPLAY PCB

The Display PCB provides 16 characters of alphanumeric data, for weight, product identification, operator prompting and set-up. The Display PCB to the Logic PCB interface consists of a transmit, receive and four control lines of TTL level.

2.5 KEYBOARD

The keyboard has 56 keys (one key is not used) containing all the standard alphanumeric symbols, some special characters and 16 control keys. The keyboard allows for operator input for control and data entry.

2.6 AUDIO ALARM

Provides an audible tone to the scale operator as an indication that a pushbutton has been activated.

2.7 ANALOG TO DIGITAL PCB

The A/D PCB contains the load cell excitation and analog to digital circuitry, as well as the program switches necessary for calibration.

2.7.1 Automatic Zero Maintenance

Automatic Zero Maintenance (AZM) is provided for each scale, and is limited to 4% of scale, and is limited to 4% of scale capacity. Weight variations which occur at the rate of 0.2 increments per second or slower will be compensated.

2.7.2 Motion Detector

Each scale includes a motion detector, which inhibits scale zeroing or data output to a printer when the weight is changing. ‘‘No Motion’’ is defined a 3 successive weight readings within 0.5 display increments.

2.8 LOAD CELL/ WEIGH MODULE

Either a moment insensitive load cell or a weigh module with a general purpose load cell is supplied with the 8182. The load cells supply an output signal to the A/D PCB in proportion to the applied load.

In addition, two external scales may be connected with the addition of optional A/D PCB(s) and load cell harness(es).

3. SPECIFICATIONS

3.1 ELECTRICAL & PHYSICAL SPECIFICATIONS

3.1.1 Environment

The Model 8182/8185 is operable from 15°F (-10°C) to 122°F(+40°C), at 10 to 95% relative humidity, non-condensing.

Zero temperature coefficient is 0.1 microvolts/°C maximum.

Span temperature coefficient is ± PPM/°C maximum.

3.1.2 Power Requirement

The 8182/8185 is operable upon selection, at 120V, 220V, and 240VAC, (+10%, -15%), 50Hz to 60Hz. Power consumption is less than 75 watts.

CAUTION: All units shipped for 120V AC operation. Refer to Section 4 for alternate voltage operation.

3.1.3 U.L. & C.S.A. Standards

Materials, components, and electrical design comply with U.L. & C.S.A. standards and requirements, including grounding of all metal parts, fusing, etc.

3.1.4 RFI

The Model 8182/8185 is unaffected by RFI signals in accordance with SMA testing procedures, i.e,. 7V/meter at 27 MHz and at 460 MHz.

3.1.5 Appearance and Dimensions

8182 - The Model 8182 is fog white with a flat black base cover and bezel assembly. The unit is 21.6 cm 8.5 in.) tall, Z42.4 cm (16.7 inc.) wide, X 47 cm 18.5 in.) deep. The 8182 weights approximately 23.6 KG (52.1 LBS).

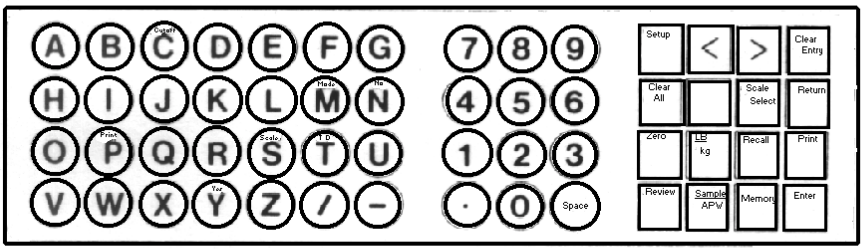
8185- The Model 8185 is housed in a fog white steel enclosure, rated as NEMA 12. The unit is 37.5 cm (14.8 in.) tall, X 42.6 cm (168 in.) wide, X 20.3 cm (8 in.) deep. The Model 8185 weights approximately 22.7 KG. (50 LBS).

3.2 EXTERNAL FUNCTIONS

The 8182/8185 keyboard controls all weighing and printing functions. The keyboard contains 56 keys providing the following functions.

Digits: 0-9
Letters: A-Z
Special Characters:/, -—, ., and (space).
Control Functions:

Set-up, < >, Clear Entry, Clear All, (Blank Key), Scale Select, Return, Zero, LB/KG, Recall, Print, Review, Sample/APW, Memory, and Enter.



In addition to the main keys, the following access keys are labeled in the alpha part of the keyboard.

M- Mode
S- Scale
T- Time and Date
C- Cutoff
P- Print
Y- Yes
N- No

These keys are used by the operator in selecting various mode of operation and feature selections and yes-no type answers.

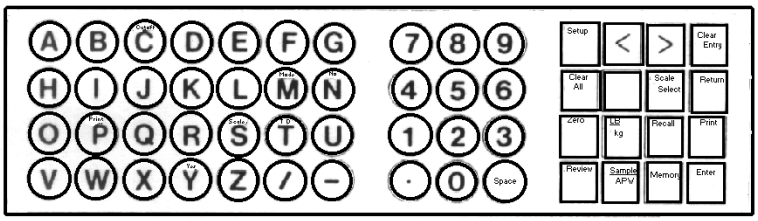
For detailed information on these keys refer to Section 5, Operation Instructions.

3.3 DISPLAY FORMAT

The display consists of a 16 segment alphanumeric display, vacuum fluorescent, with 0.5'' high characters. The display operates in a ''prompting' mode where the operator action required is shown on the display as are the units. i.e., LB, KG, PCS, (pieces) associated with the data displayed.

TOLEDO SCALE
8182/8185

COUNT 000250 PCS



3.4 DATA INTERFACE

The following data interface specifications are provided solely to aid those individuals trained in digital communication.

3.4.1 Printer I/O
Demand Only

Two modes of printer output are provided, these modes are selectable by program switches located on the Logic PCB. Both outputs operate on a 20mA current loop, ASCII, at 300 baud. The serial bit format is at even parity with one stop bit.

A program switch permits disabling the CHECKSUM* feature which permits the use of a variety of standard 20mA serial input printers.

*CHECKSUM is defined as the 2's complement of the binary sum of the 7 low order bits of all characters preceding the checksum bit, including STX and CR.

Other programs switches provide selection of ''double width'' printing of the actual piece count and auto print, which will automatically initiate a print whenever a stable piece count is displayed.

1. Single line Mode
   Any two fields of Time 7 Date, ID, Gross, Tare, Net, APW, or Count may be selected. The order in which the two fields are printed will be designated by First and Second.

2. Multiple Line Mode

   Any one or all of the six fields, as required, may be printed. In this mode COUNT is always outputed. The fields to be printed will be designated by entering a YES when the operator is questioned on each filed.

3.4.2 External Interface

This interface, if used, provides a communication link between 8182/8185 and a external device. the external device may be used to increase the data storage and/or accumulation capabilities of the unit. For a more detailed description of this interface refer to Section 8.

3.5 RAM CONFIGURATION GUIDE

MODEL 8182

Ram Number	Indication Avoirdupois	Commodity Equipment
8182-0001	5 LB. x 0.0005 LB. 10 LB. x 0.001 LB.	8'' x '' Platter
8182-0002	5 LB. x 0.0005 LB. 10 LB. x 0.001 LB.	3 Qt. S.S. Scoop
8182-0003	20 LB. x 0.002 LB.	8'' x 8'' Platter
8182-0004	20 LB. x 0.002 LB.	3 Qt. S.S.Scoop
8182-0005	30 LB. x 0.005 LB	
8182-0007	40 LB. x 0.005 LB. 50 LB. x 0.005 LB. 80 LB. x 0.001 LB.	11'' x 16'' S.S. Platter

MODEL 8185

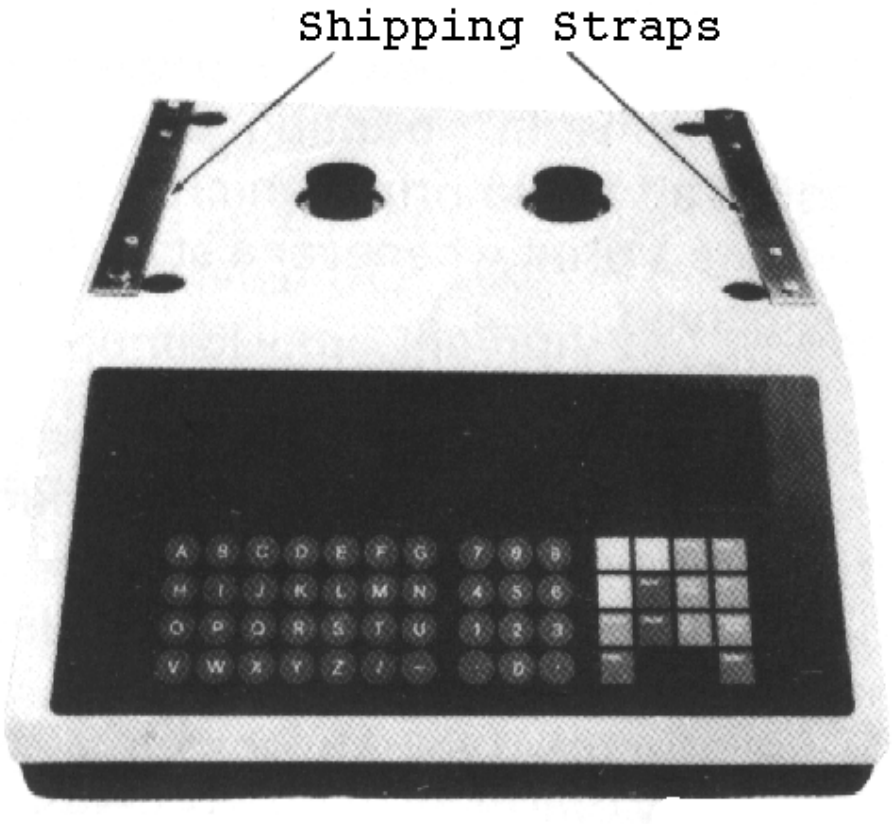
Ram Number	Description
8185-0001	Wall Mount, NEMA XII Enclosure (Includes one remote scale KOP)

4. INSTALLATION INSTRUCTIONS

4.1 SET-UP PROCEDURE

4.1.1 Inspect the outside of the scale for any loose or damaged parts.

4.1.2 Remove the shipping straps (Rams 5, 7 only).



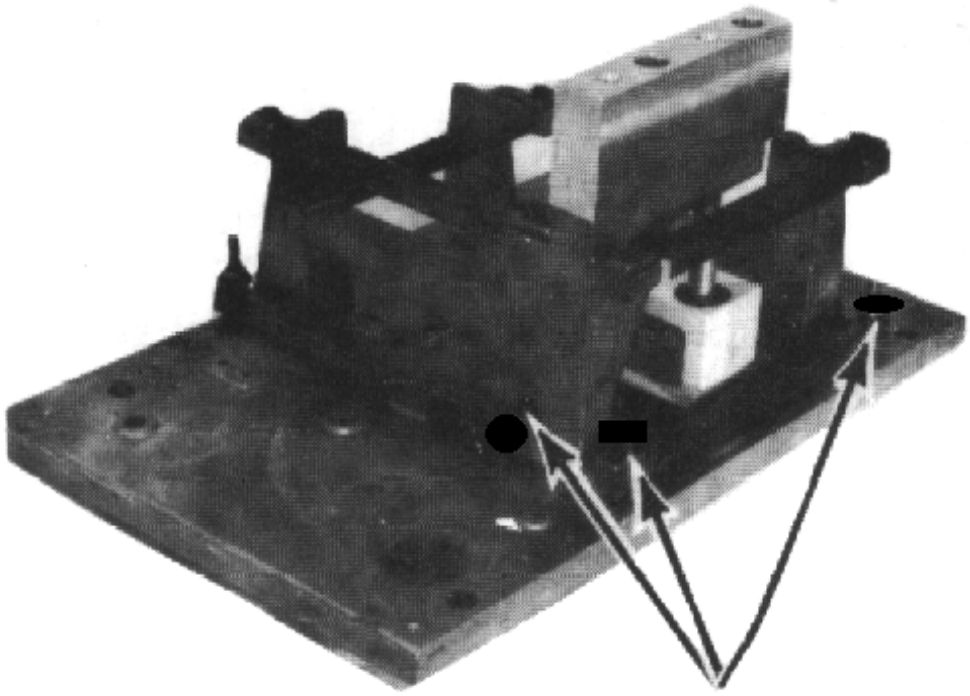
4.1.3 Remove the top cover. **USE CAUTION WHEN REMOVING THIS COVER AS THE KEYBOARD HARNESS IS SHORT AND PLUGS DIRECTLY INTO THE DISPLAY PCB.**

4.1.4 Check all internal wiring harnesses for proper connections and that they are securely fastened.

NOTE: If you have a Ram 1 thru 5 proceed to step 5.

If you have a Ram 7 this step is not necessary.

4.1.5 Inspect the weight module for loose or missing hardware. Check all hardware associated with the weight module for proper torque settings using a torque wrench and the following diagram.



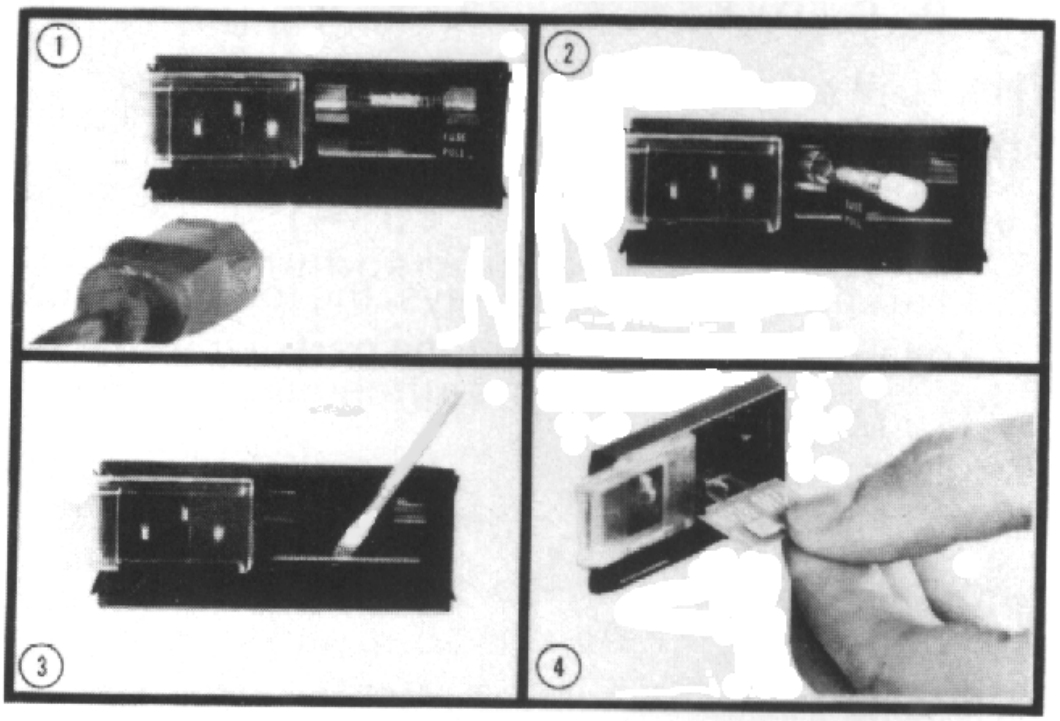
Flexure Screws
Ten (10) Screws Total

NOTE: Torque flexure and weigh module mounting screws to 55 to 60 inch/ pounds.

4.1.6 The following photos will assist you in checking or changing voltage selection. **THIS MUST BE PERFORMED PRIOR TO APPLYING POWER TO THE UNIT.**

The following photos will assist you in checking or changing the voltage selection. This step MUST be performed prior to applying power to the unit.

1. This photo shows the line cord detached and the fuse cover moved to the left.
2. In this photo, the fuse is removed by pulling the handle labeled ''FUSE PULL''
3. With the fuse removed, use a small screwdriver or smaller object, and gently pry the card from the assembly. A hole in the card is provided to assist removal.
4 Once you have determined the proper voltage, return the card to the slot. The voltage desired will be on the left side of the card in a readable position. In the photo, the voltage selected is 120V. Replace the fuse with one of the correct rating. Slide fuse cover back into place.



CAUTION: All units are shipped for 120V AC operation. Refer to Section IV for alternate voltage operation.

4.1.7 **DO NOT APPLY POWER AT THIS TIME.**

4.1.8 Preliminary Calculations

Before any work is done it should be determined if the load cell(s) are of a size that will work correctly with the instrument and platform. If it is a standard build, proceed with the installation of the scale. However, if it is a special build or if it is a conversion of an existing mechanical scale, the microvolt per increment should be calculated. Figure out the microvolts per increment, then check with the chart to make sure the proposed load cell(s) are the correct size.

4.1.9 HOW TO FIND MICROVOLTS PER INCREMENT

FIRST FIND:

- Scale capacity
- Increment size*
- Number of load cells and total lever ratio
- Load cell(s) capacity*
- Cell output rating in mV/V (millivolts per volt of excitation).

*In LB or KG depending on how the scale is to be calibrated and used.

THEN:

1. Multiply the cell size by the number of cells or the lever ratio (depending on the type of scale). This will be the overall scale capacity.

2. Divide the overall scale capacity the increment size. This will be the number of increments needed.

3. Multiply the cell output rating* by 15 volts (15 volts is the excitation voltage). This will be the output of the cell(s) in millivolts at full load.

4. Multiply cell output in millivolts by 1000 to get cell output in microvolts.

5. Divide cell output in microvolts by the overall number of increments to get the microvolts per increment.

*Load cells built by Toledo are 2mV/V.
Load cells built by BLH are usually 2 mV/V or 3 mV/V.

The Microvolt Chart shows the limits in micrvolts for each available number of increments.

MICROVOLT CHART

Number of Increments Programmed	Maximum* uV Increment	Minimum** uV/Increment
20,000	1.5	0.15
16,000	1.8	0.187
15,000	2.0	0.20
12,000	2.5	0.36
10,000	3.0	0.30
8,000	3.7	0.37
6,000	5.0	0.50
5,000	6.0	6.60
4,000	7.5	0.75
3,000	10	1.0
2,000	15	1.5

NOTE: *The 8182/8185 cannot be adjusted on builds that are greater than the voltage shown for maximum uV/ increment.

NOTE: ** The instrument should never be programmed to less than 1uV/Increment

If these limits are exceeded, the scale will not be stable.

EXAMPLE #1

Model 2184
Scale Capacity in pounds.....300 LB
Increment Size in pounds.....0.1 LB
Lever Ratio.....8.1 to 1
Size of Cell in pounds.....100 LB
Cell Output Rating.....2mV/V

STEP 1

300 LB scale capacity -0.1 LB increment
300 ÷ 0.1 = 3,000 increments

STEP 2

8.1 lever ration - 100 LB load cell
8.1 X 100 = 810 LB overall scale capacity

STEP 3

810 LB overall scale capacity -0.1 LB increment
810 ÷0.1= 8,100 overall number of increments

STEP 4

2 mV/V cell output rating
2 mV/V X 15 = 30 millivolts cell output at full capacity

STEP 5

30 uV X 1,000 = 30,000 microvolts at full capacity

STEP 6

30,000÷ 8,100 = 300 ÷ 81 = 3.7 Uv per increment

Check with chart to see if the uV/INC. fits in the range listed for 3000 increments. The range listed is 1.0 uV//INC. with 3.7 uV/INC. inside this range. Therefore, it will be a satisfactory build.

EXAMPLE #2

Model 1985
Scale
Capacity.....
.....50 LB
Increment
Size.....
..0.01 LB
Number of
Cells.....
.....1
Size of
Cells.....
.....100 LB
Cell Output
Rating.....
.2mV/V

STEP 1

50 LB scale - capacity .01 LB increment
50 ÷ .01 = 5000 increments
STEP 2

1 load cell - 100 LB load cell
1 X 100 = 100 LB overall scale capacity

STEP 3

100 LB overall scale capacity - 0.1 LB increment
100 ÷.01 = 10,000 overall number of increments

STEP 4

2 mV/V cell output rating
2 mV/V X 15 = 30 millivolts cell output at full capacity

STEP 5

30 uV X 1,000 = 30,000 microvolts at full capacity

STEP 6

30,000 ÷10,000= 3 uV/increment

Check the chart to see if the uV/INC. fits in the range listed for 5000 increments. The range listed is 0.60 uV/INC. inside this range. Therefore, it will be a satisfactory build.

4.1.10 At this time set all programming switches, with the exception of initial and span, for the desired operation. Refer to Section 4, Part 4.

4.2 PRECALIBRATION OF THE INSTRUMENT

USING A LOAD CELL SIMULATOR

FIRST FIND:

- Number of cells used
- Capacity of one cell*
- Total lever ration (if required)
- Millivolt output of the cell (s)

* In LB or KG depending on how the scale is to be calibrated and used.

THEN:

4.2.1 Multiply the cell capacity by the number of cells used. Multiply this number by the ratio, if required, to find the Total Cell Capacity.

4.2.2 Divide the Total Cell capacity by the correct division number to find LB or KG per step on simulator. Refer to the following chart for this number..

Millivolts/Volt Cell Output	Division Number
1.8	9
2	10
3	15

4.2.3 At this time connect the simulator to the instrument.

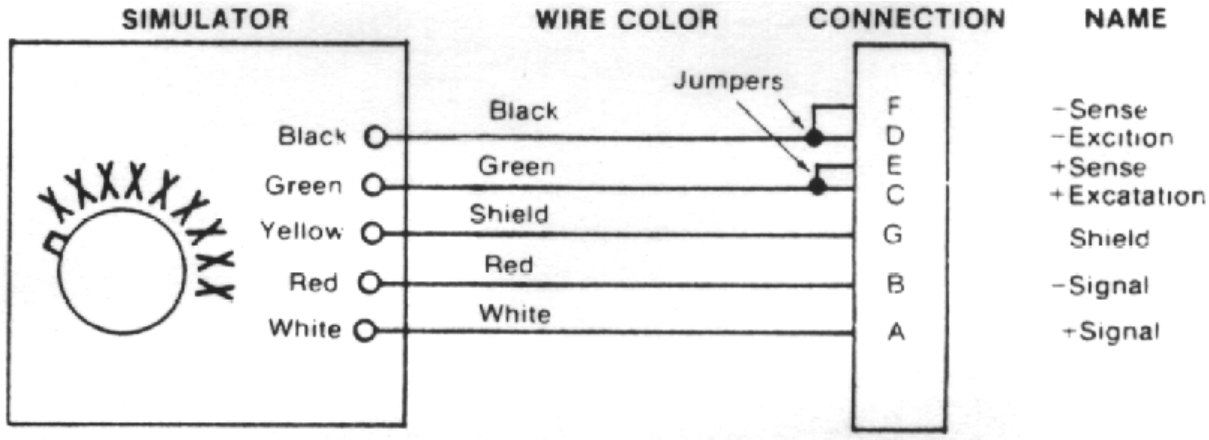
4.2.4 Turn the simulator switch to the zero position and set the instrument to zero using the initial switches and potentiometer..

4.2.5 Calibrate instrument. Use the maximum number of steps on the simulator without exceeding the instrument’s capacity.

4.2.6 Record the indication at all steps on the simulator along with the simulator’s serial number. Attach this record to the instrument housing for future troubleshooting assistance.

4.2.7 Disconnect the simulator from the instrument and connect the load cell (s). At this time the display will indicate the initial weight. Reset to zero using the initial switches and potentiometer. Make final calibration test with test weights. See Section 4, Paragraph 3.

TYPICAL SIMULATOR HOOK-UP



NOTE: You can calibrate the scale with the simulator and expect to be within a few increments of actual weights. It is then a simple job to put the test weights on one time for a final check.

4.3 CALIBRATION OF THE INSTRUMENT USING

TEST WEIGHTS

For ease of calibration, it might be helpful to first calibrate the indicator with a load cell simulator. See Section 4, Paragraph 2.

4.3.1 Calibration Procedure

1. Connect the load cell(s) to the load cell connector. Refer to Section 7, Part 3 for typical hook-up.

2. Set all initial switches SW2-1 through SW2-7 and SW3-4 to the OFF position.

3. Set all span switches SW1-1 through SW1-9, SW1-1 through SW1-9, SW2-8 and SW2-9 to the ON position.

4. Connect to the power line.

5. Set indication to zero with R-20.

6. Set span switch SW2-8 to the OFF position. This is done to minimize the interaction when calibration.

7. Reset indication to zero with the initial switches SW2-1 through SW2-7 and SW3-4. With all switches OFF, turn them ON one at a time beginning with SW3-4. If it takes the indication below zero turn it OFF and try the next switch. Continue this procedure with all the initial switches leaving ON only the ones that do not take the indication below zero. Make the final adjustment to zero using the initial potentiometer (R-20).

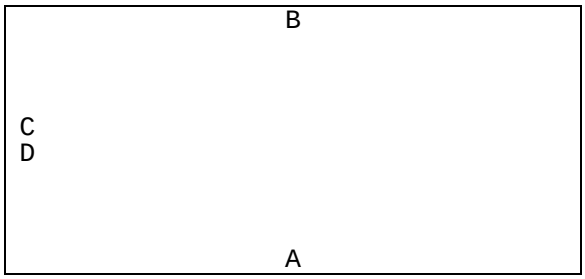
8. At this time, set all span switches SW1-1 through SW1-9, SW2-8 and SW2-9 to the OFF position. With the indication reading zero, place test weights on the platform (test

weights should equal or exceed 10% of scale capacity). Turn SW2-8 ON, if it takes the indication below the actual weight turn it OFF and try the next switch. Continue this procedure with all the span switches leaving ON only the ones that do not take the indication below the actual weight. Make the final span adjustment using the span potentiometer (R-14).

4.3.2 Shift Test

Shift test is acceptable only if all of the follwoing guidelines are met.

Test weights equal to 1/2 scale capacity are used.
Weights are placed on any one of the four points shown below and the indication does not differ from the other points by more than 50 minor increments.



NOTE: The diagrammed points are 1/2 the distance from the center of the platter to the edge of the platter.

Use the following procedure when adjusting for shift in a flexure type base.

1. Set the instrument to operate in the Expand Mode by turning switch SW1-4 on Logic PCB to the ON position.

2. Place test weights equal to tone-half capacity on the test platter at ''A'' and note the indication. Move test weights to location ''B'' and note the indication.

3. Equalize readings, as close as possible, by fine adjustment of Differential screws " A" And " B" on adjustment bars, after loosening lock nuts, Figure 1.

Tightening the lock nuts may slightly offset the shift adjustment. With practice, the fine adjustment and tightening the lock nuts can be accomplished using two wrenches.

If position A is less than B, turn screw ''B'' counterclockwise.

If position A is more than B, turn screw ''B'' clockwise.

If position D is less than C, turn screw ''A'' counterclockwise.

If position D is more than C, turn screw ''A'' clockwise.

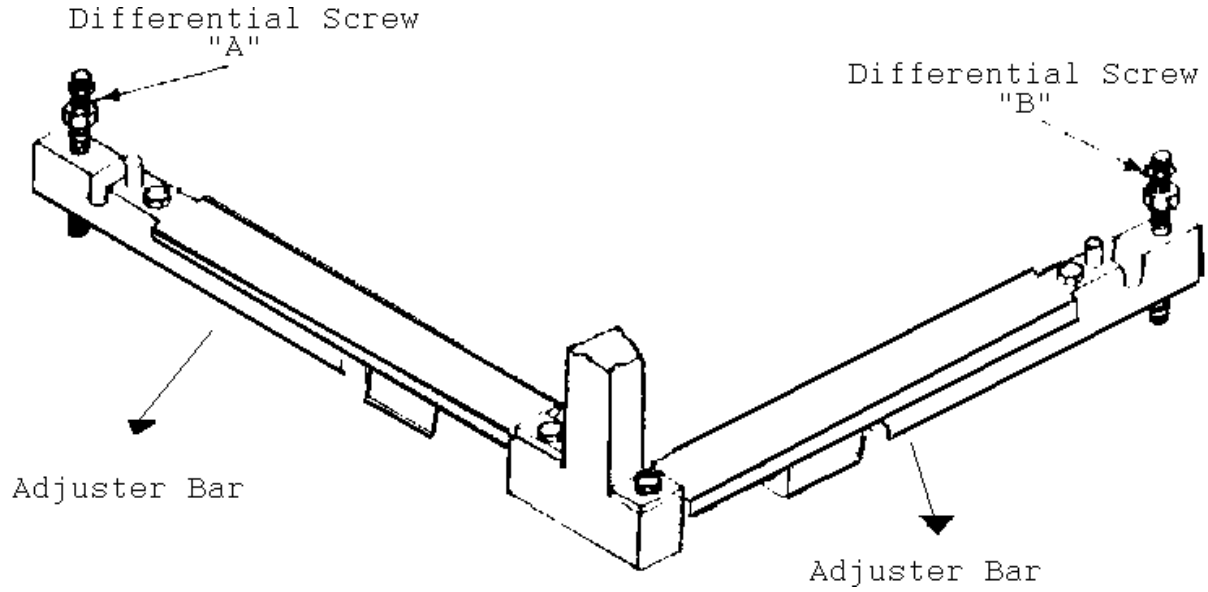


FIGURE 1

4. Return switch SW1-4 to the OFF position.

4.3.3 Final Testing Procedure

The following steps should only be performed after the instrument is initially calibrated and all shift adjustments are completed.

1. Turn switch SW1-4 on the logic PCB to the ON position.
2. Adjust zero with the initial potentiometer (R-20).

3. Apply test weights to the center of the platter.

4. Adjust the span potentiometer (R-14) for the proper indication.

5. Repeat these steps until no further adjustments are required.

6. Return switch SW1-4 to the OFF position.

4.4 PROGRAM SWITCH SUMMARY

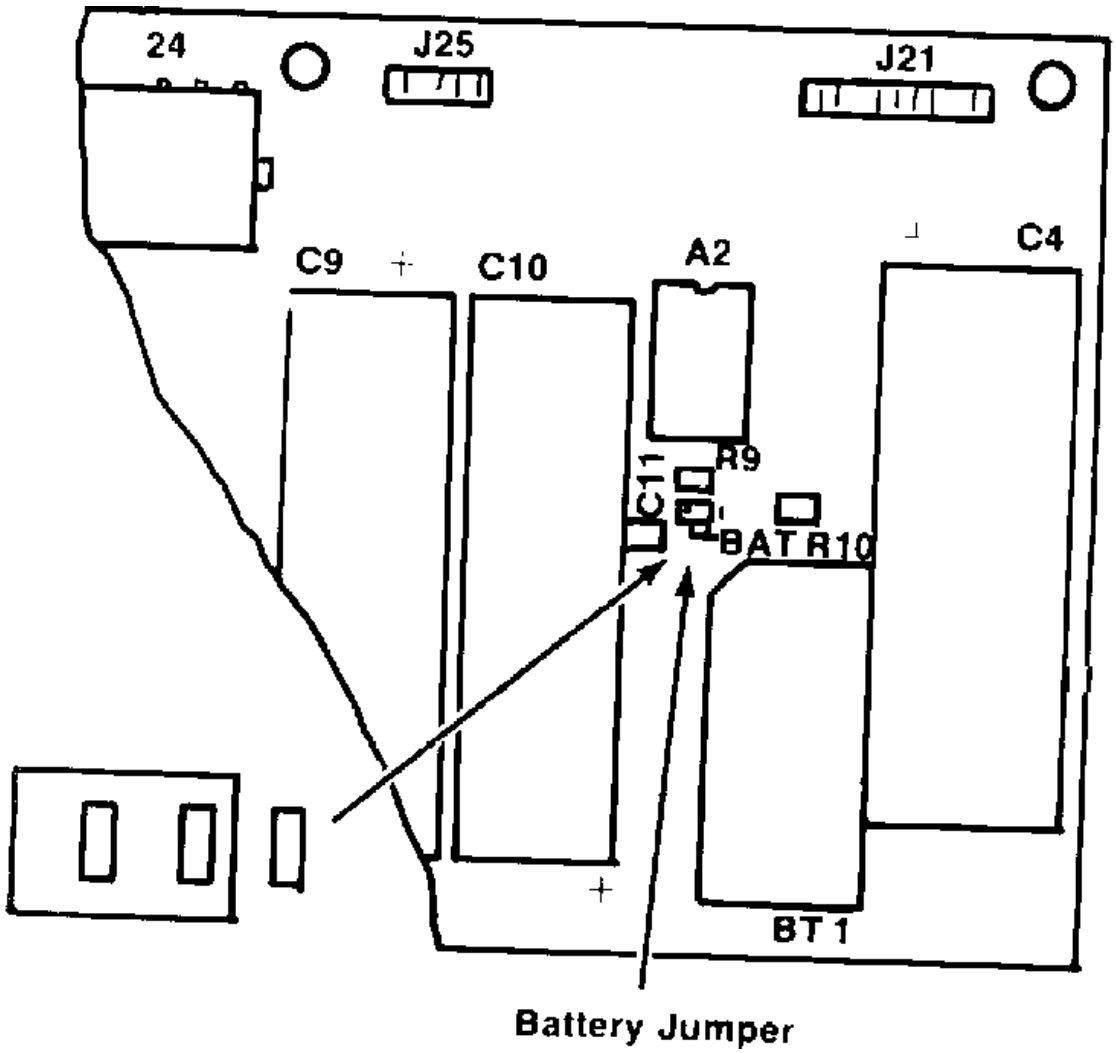
IT IS IMPORTANT THAT YOU FIRST CHECK THE TECHNICAL MANUAL OF THE PRINTER TO BE USED, IF SO ORDERED, FOR PROGRAM SWITCH SETTINGS THAT WILL AFFECT THE SCALE AND PRINTER OPERATIONS.

PRELIMINARY PRINTER PROGRAMMING

The following switches MUST be selected in the appropriate printer, PRIOR to programming the 8182/.8185.

Model	Switch	Action
8805	SW1-7 & 2-1 SW2-4 SW2-6 SW2-7 SW2-8 SW2-9	Set line feed as required Character size as required OFF-CKSM not used ON} OFF} Dumb Printer mode ON}
301	SW1-8 SW1-9 SW2-5 SW2-7 SW2-8	50 or 60 Hz. as Required Auto Print enable Serial Input Parts Mode 300 baud NOTE: SW2-6 in 301 Printer must be the same as SW2-4 on Logic PCB in 8182/8185. Both must be on or both off.

POWER SUPPLY PCB

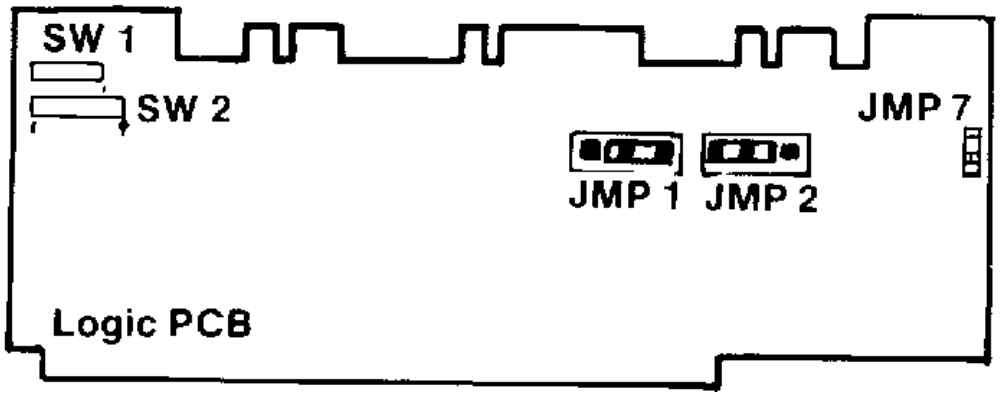


Battery Jumper

Jumper plug is to be in position shown for memory operation.

Plug should be on right terminal pair for storage or shipment of the scale.

PROGRAM SWITCHES LOGIC PCB



SW1-1}
TIME AND DATE FORMAT
SW1-2}

SW1-1	SW1-2	
OFF	OFF	80 Aug. 19 14:03 (Canada)
OFF	ON	06 Jan. 80 15:46 (Europe)
ON	OFF	Not Used (Same as USA)
ON	ON	02:03 PM Aug. 19, 80 (USA)

SW1-3 ID (IDENTIFICATION)

ON- Display will request an identification (Up to 16 characters).

OFF- No identification request is generated by the scale.

SW1-4 EXPAND (SET-UP MODE ONLY)

ON- Weight display is expanded for calibration.

OFF- Normal mode.

SW1-5 LB/KG WITH WEIGHT DISPLAY

ON- LB or KG weight legend displayed.

SW1-6}
MINIMUM SAMPLE WEIGHT
SW1-7}

SW1-6	SW1-7	

OFF	OFF	No Minimum
OFF	ON	0.2% of Full Capacity
ON	OFF	0.5% of Full Capacity
ON	ON	1.0% of Full Capacity

SW2-1 KEYBOARD TARE

ON- Tare must be entered in whole increment multiples.

OFF- Tare entered in other than whole increment multiples will be rounded off to the nearest whole increment.

NOTE: In either position, automatic tare may be entered by pressing the TARE button.

SW2-2 LB /KG SELECTION (MUST BE SET BEFORE POWER IS APPLIED)

ON- Power up KG only, not switchable from the keyboard.

OFF- LB or KG legend is switchable from the keyboard.

NOTE: SW2-2 on the logic PCB and SW3-3 on each A/D PCB must be in the same position. If this switch is changed after power has been applied calibration will be effected.

SW2-5 PRINTING MODE

ON- Single line printing selected.
Models 301, 8805, 8855 and 8810 series Ram 1.

OFF- Multiple line printing selected.
Models 8805, 8855 and 8810 series Ram 1.

SW2-6 DOUBLE WIDTH PRINTING

ON- The number of pieces and the word PIECES are printed in twice the normal width.

OFF- All printed field are single width.

SW2-7 DISPLAY A.P.W. (AVERAGE PIECE WEIGHT) IN G (GRAMS)

ON- The APW is entered and displayed in grams.

OFF- The APW is entered and displayed in either LB or KG.

NOTE: If switch 2-7 is ON, switch 2-8 must be OFF.

SW2-8 PIECES PER POUND

ON- Sample is entered in pieces per pound.

OFF- Sample is entered in average piece weight.

SW2-9 EXTERNAL INTERFACE

ON- External interface is activated.

OFF- External interface is not useable.

NOTE: For a more detailed description of the External Interface, see Section 8.

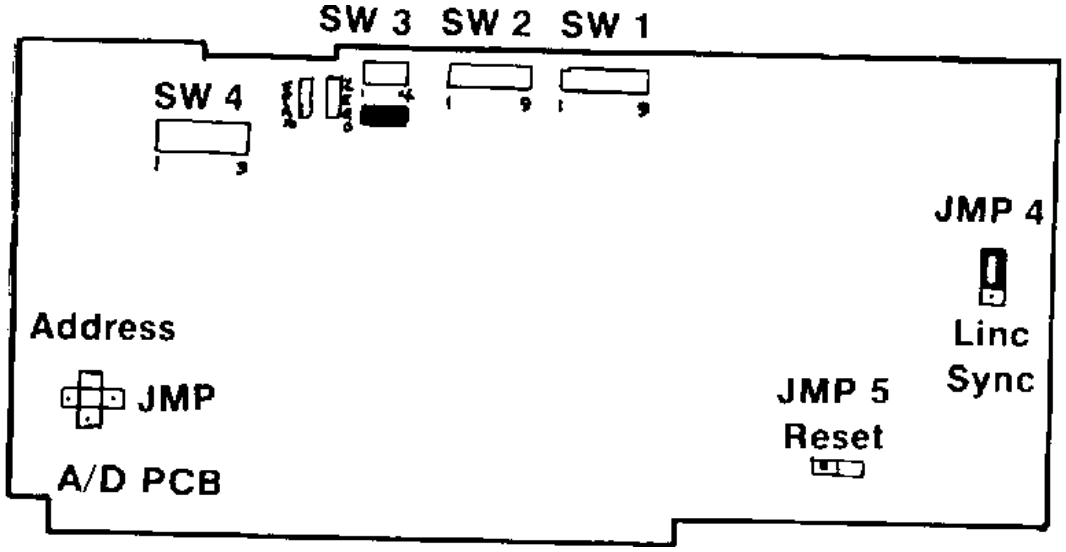
LOGIC PCB PROGRAM JUMPERS

There are three jumpers located on the Logic PCB. The combined setting of two of these jumpers control the 20mA current loop. The third jumper controls the battery back-up memory.

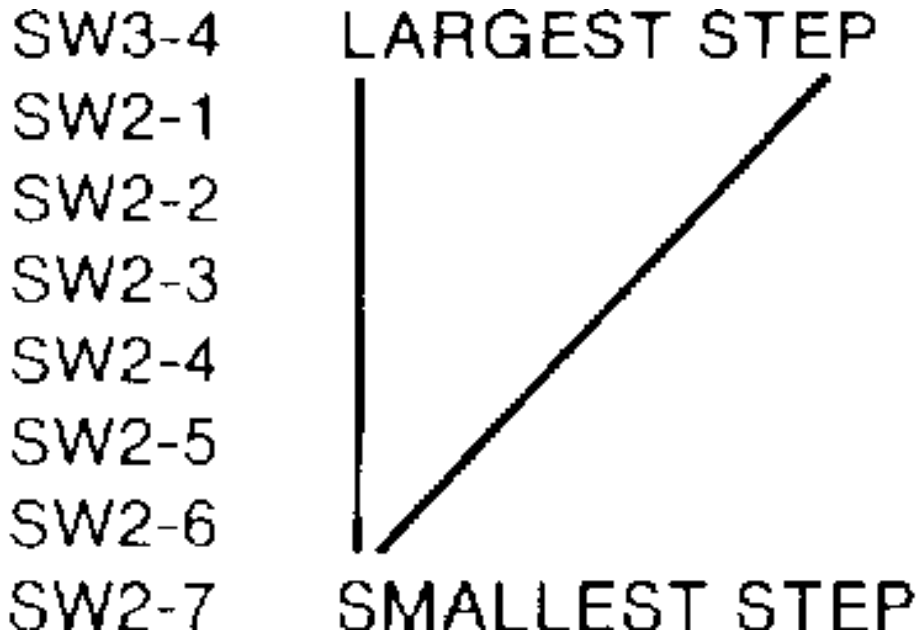
Jumper 1 and 2 should be located to the inside, as shown in the diagram.

Jumper 7 should be located on the two pins marked battery (BAT).

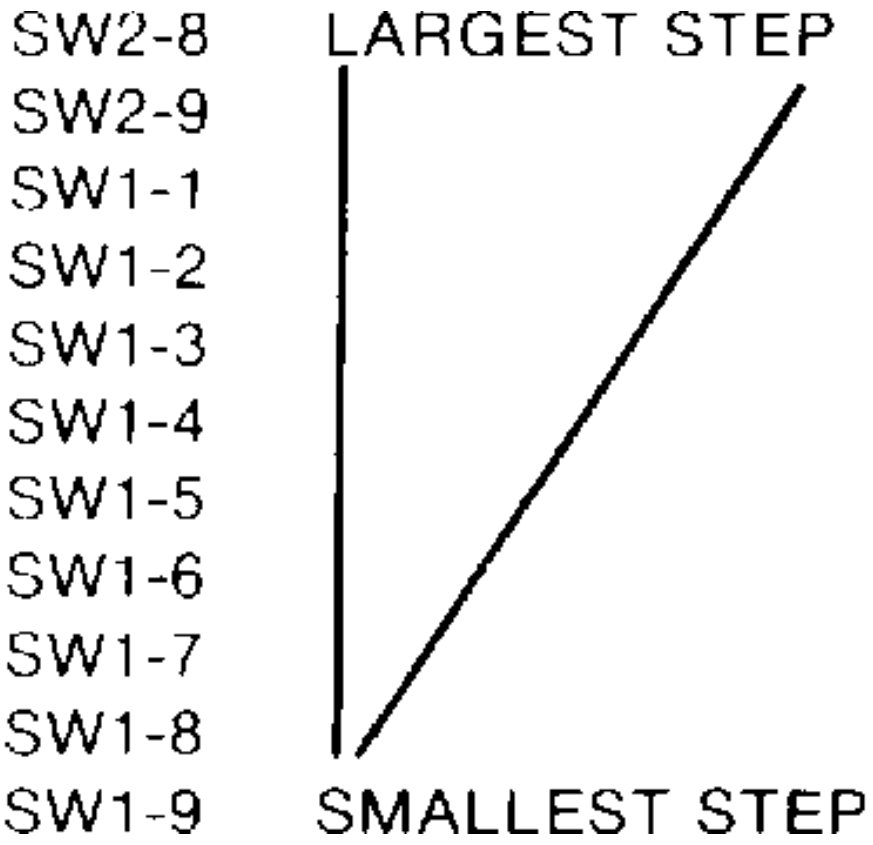
PROGRAM SWITCHES A/D PCB



PROGRAM SWITCHES A/D PCB



Turning ON any of the initial switches will increase the initial compensation.



Turning OFF any of the span switches will increase the weight indication.

SW3-1 NOT USED

SW3-2 AZM (AUTOMATIC ZERO MAINTENANCE)

ON- AZM is enabled allowing the scale to correct for weight variations of 0.2 increments per second or slower. Range is limited to ±2% of scale capacity from true zero.

OFF- AZM is disabled.

SW3-3 LB/KG SELECTION (MUST BE SET BEFORE POWER IS APPLIED)

ON- Power up KG only, not switchable from the keyboard.

OFF- LB or KG legend is switchable from the keyboard.

NOTE: SW2-2 on the Logic PCB and SW3-3 on each A/D PCB must be in the same position. If this switch is changed after power has been applied calibration will be effected.

INCREMENT SIZE

SW4-5	SW4-6	LB	KG
OFF	OFF	X1	X.5
ON	OFF	X2	X1
OFF	ON	X5	X2
ON	ON	X10	X5

FULL SCALE INCREMENTS

SW4-1	SW4-2	SW4-3	SW4-4	COUNTS
ON	ON	ON	ON	2,000
OFF	ON	ON	ON	3,000
ON	OFF	ON	ON	4,000
OFF	OFF	ON	ON	5,000
ON	ON	OFF	ON	6,000
OFF	ON	OFF	ON	8,000
ON	OFF	OFF	ON	10,000
OFF	OFF	OFF	ON	12,000
ON	ON	ON	OFF	15,000
OFF	ON	ON	OFF	16,000
ON	OFF	ON	OFF	20,000

DECIMAL POINT SELECTION

SW4-7	SW4-8	SW4-9	Increment Size LB or KG X1,X2, X5, and X10	Increment Size X.5 KG
ON	ON	ON	NOT LEGAL	XXXXXX
OFF	ON	ON	XXXXXX	XXXXX.X
ON	OFF	ON	XXXXX.X	XXXX.XX
OFF	OFF	ON	XXXX.XX	XXX.XXX
ON	ON	OFF	XXX.XXX	XX.XXXX
OFF	ON	OFF	XX.XXXX	X.XXXXX
ON	OFF	OFF	X.XXXXX	.XXXXXX
OFF	OFF	OFF	.XXXXXX	.XXXXXX

SCALE ADDRESS JUMPER

Scale	Pins
Not Used	4-5
Scale 1	3-5
Scale 2	2-5
Scale 3	1-5

NOTE: ALL A/D PCB must have the address selection made prior to applying power to the scale.

Failure to do so will result in confusion as to which scale the logic PCB is communicating with.

A/D PCB PROGRAM JUMPERS

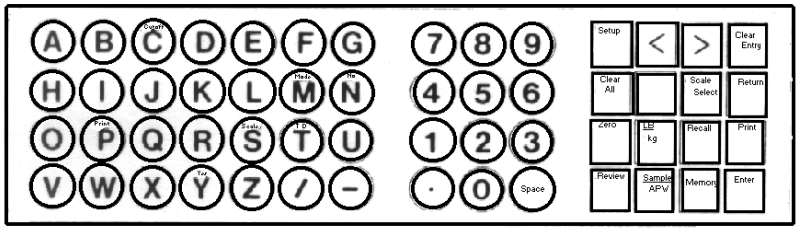
There are two jumpers located on the A/D PCB. The combined setting of these two jumpers controls the timing circuit used by the Gated Power Supply.

With JMP-4 (Line Sync) on pins 2 and 3, and JMP-5 (reset) on pins 2 and 3, an internal timing pulse is used as a reference.

With JMP--4 (Line Sync) on pins 1 and 2, and JMP-5 (reset) on pins 1 and 2, the Line Sync option is used. This option allows the use of the A.C. power line as a timing pulse reference.

5. OPERATION INSTRUCTIONS

5.1 OPERATORS PANEL DESCRIPTION



Setup	<	>	Clear Entry

SETUP

Used in conjunction with the supervisory code to access set-up sequence.

CURSOR CONTROL

Used to move cursor to the left to correct inaccurate keyboard entry.

CURSOR CONTROL

Used to move cursor tot he right to correct inaccurate keyboard entry.

CLEAR ENTRY

Used to correct any inaccurate or erroneous keyboard entry.

Zero	LB / kg	Recall	Print

ZERO

Used to zero scale(s); zero adjustment.

POUNDS (LB) KILOGRAM (KG)

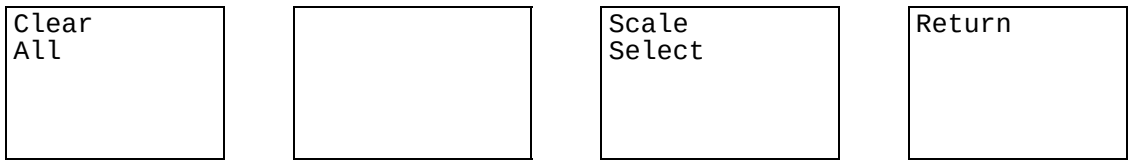
Used to select either pound of kilogram units.

RECALL

Used to recall and display all weight information (APW, Net, Tare and Gross) once count is attained.

PRINT

Used to initiate printout of all programmed weight/count information.



CLEAR ALL

Used to clear retained APW, Tare or ID number.

BLANK

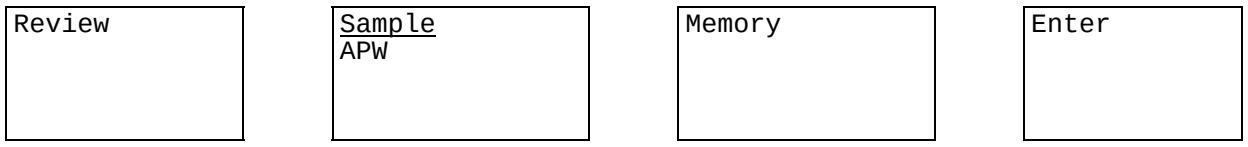
Not Used.

SCALE SELECT

Used for multiple scale operations. Allows operator to select single scale or assign sample and gross scales.

RETURN

Used to return the display tot he ‘‘home position’’. the scale is now ready for the next counting transaction.



REVIEW

Allows the operator to review how the scale is set up via displayed messages.

SAMPLE/AVERAGE PIECE WEIGHT

Used by the operator to select the mode of operation.

MEMORY

Used to gain access to the Tare/APW memory feature.

ENTER

Used to enter all inputs.

5.2 SET-UP PROCEDURE

Your 8182/8185 PROSPECTOR may be set up or tailored to your exact application. The keyboard allows the supervisor to select an assortment of options based on the desired operation.

There are two ways in which to gain access to the different routines in the program. The first is to enter a supervisory code word, then push ‘‘SET UP’’ button. At this time the display will read M-S-T-C-P-MEM-E. To access any one of the five routines simply push the corresponding alpha button on the keyboard. The second way is to push the ‘‘SET UP’’ button only, this time the display will read only CST. Access to any one of the three routines may be gained by pushing the corresponding alpha button.

The supervisory code word is: ‘‘D’’ ‘‘O’’.

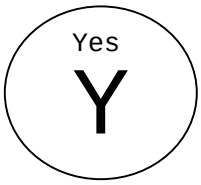
The code is entered by way of the alpha keyboard. Simply push ''D'' then the ''O'' button.

Why is this code word necessary? It may be desirable to prevent unauthorized personnel from gaining access tot he MODE and PRINT routines.

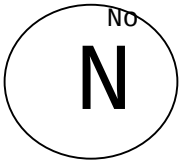
NOTE: This is the only page in the manual where the code word is identified.

? The question mark indicates that the operator is being asked to enter the requested information.

Y This means YES, the displayed feature or operation will be used.



N This means NO, the displayed feature or operation will not be used.



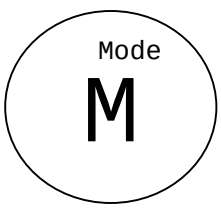
An example of an operator prompting sequence would be as follows:

RPT TARE ? Y-N N

The operator is being asked if the tare weight of the container will remain the same for the next counting transaction. The ''N'' on the right side of the display indicates that tare weight will not be retained form one transaction to the next. To maintain the setting, simply press the ''ENTER'' KEY. To change the setting, press the ''Y'' key; then press ''ENTER''.

To select any one of the set-up routines, simply press the appropriate key when the display reads M-S-T-C-P-MEM-E

MODE



In this routine, the operator will be requested to enter the following information:

INCLUDE SMPL? Y-N

1. This information is only requested in the dual scale operation. It is not asked when in a single scale operation, as the sample will always be Included.

Y- Sample included in total count.
N- Sample not included in total count.

RPT APW ? Y-N

2. Y - If average piece weight is to be repeated from one transaction to the next, APW will be retained until the ''CLEAR ALL'' key is activated.

N- If the average piece weight is not to be repeated from one transaction to the next.

RPT TARE? Y-N

3. Y- If tare weight is to be repeated form one transaction to the next.
N- If tare weight is not to be retained from one transaction to the next.

RPT ID? Y-N

4. This will be displayed only when the ID feature is used.

Y- If the ID is to be retained form one transaction to the next.

N- If the ID is not to be retained form one transaction to the next.

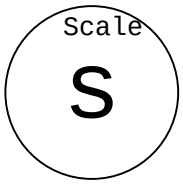
COUNT UP? Y-N

5. Y- The COUNT UP mode is normal operation. The total number of pieces placed on the scale or in the container will be displayed.

N- The COUNT DOWN mode displays the total number of pieces removed from the scale or container.

To access another set up routine, press ''RETURN''. The display is now back in the ''Home Position''. Enter the supervisory code, then press ''SETUP''. Now select the appropriate set up routine as before.

SCALE



Once the ''Scale'' routine has been accessed, the display will be as follows:

SCALE 1-2-3?

The operator is being prompted to select one understructure for display purposes. This function allows the operator to display the weight present on one specific scale. In a dual scale system, there are

numbers (1,2, or 3) associated with particular scales. To display any one of the understructures, complete the following procedure:

-enter the number (1,2 or 3) associated with the particular scale; then press ‘‘ENTER’.

If the operator selected scale 1, the following display would appear:

SCL 1 00000LB

The weight on scale 1 would be displayed as well.

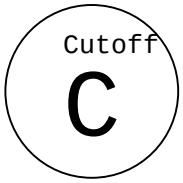
To select another understructure:

- press ‘‘CLEAR ENTRY’’
- enter the appropriate scale number, then press ‘‘ENTER’’.

If all three scale inputs are not utilized, selecting the unused scale position will cause the following display:

NO 3 NOT PRESENT

CUTOFF



This set up is applicable if the 8182/8185 PROSPECTOR is being used to provide cutoff signals to remote devices such as feeders or alarms. Cutoff is made based on piece count. Two cutoffs are available for two speed operation.

CUTOFF F? 000000

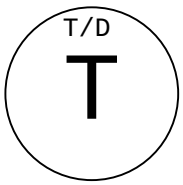
1. Enter the number of pieces at which the “ FAST” cutoff signal should occur then press the ‘‘ENTER’’ key.

CUTOFF 5? 000000

2. Enter the number of pieces at which the “ SLOW” cutoff signal should occur then press the ‘‘ENTER’’ key.

Typical cutoff circuit is shown in Section 7, part 3.

TIME AND DATE



This set up routine allows the operator to input 12 or 24 hour time and date information. The operator will be requested to input the following information:

EXAMPLE:

1. HOUR? “ 0” , “ 1” , press “ ENTER”

2. MINUTE? “ 5” , “ 3” , press “ ENTER”
3. AM or PM? “ P” , “ M” ; press “ ENTER”
4. MONTH? “ N” , “ 0” , “ V” ; press
‘‘ENTER’’ 5. DAY? ‘‘1’’, ‘‘3’’ press ‘‘ENTER’’
6. YEAR? “ 8” , “ 0” , press “ ENTER”

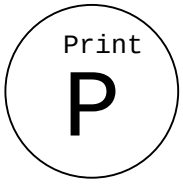
Based on the above example, the following information would be input:

0 1 53 NOV 13 80

Monthly abbreviations for USA format are:

JANUARY	JAN
FEBRUARY	FEB
MARCH	MAR
APRIL	APR
MAY	MAY
JUNE	JUN
JULY	JUL
AUGUST	AUG
SEPTEMBER	SEP
OCTOBER	OCT
NOVEMBER	NOV
DECEMBER	DEC

PRINT



This set-up routine allows operator of the print fields to be outputed. Selectable via a internal programming switch is single or multiple line printing. The setting of the switch (SW2-5) determines which set of input the operator must enter.

The first question asked in either mode is:

RPT PRINT Y-N

Y- If repetitive is required.

N- If repetitive printing is not required.

1. Single Line Print (Two Fields)

Any two of the following can be selected for printing:

ID	“ I” ; press “ ENTER”
TIME & DATE	“ T” , “ I” ; press ‘‘ENTER’’
GROSS	“ G” ; press “ ENTER”
TARE	“ T” , “ A” ; press “ ENTER”
NET	“ N” , “ E” ; press “ ENTER”
APW	“ A” ; press “ ENTER”
COUNT	“ C” ; press “ ENTER”

2. Multiple Line Print

The display will prompt the operator to input the requested information. Piece Count is always an output.

PRINT ID?

Enter Y (Yes) or N)No), press ‘‘ENTER’’

PRINT TIME?

Enter Y (Yes) or N (no)

PRINT GROSS?

Enter Y (Yes) or N (No), press ‘‘ENTER’’

PRINT TARE?

Enter Y (Yes) or N (No), press ‘‘ENTER’’

PRINT NET?

Enter Y (Yes) or N (No), press ‘‘ENTER’’

PRINT APW?

Enter Y (Yes) or N (No), press ‘‘ENTER’’

Memory

MEMORY (MEM)

This set-up routine is applicable if the 8182/8185 is being used with tare and/or APW stored in memory. When this button is pushed the operator will be prompted as to which memory location the tare and/or APW information is to be entered and stored.

5.3 SET-UP FOR VARIOUS OPERATING SEQUENCES

There are various ways in which the 8182/8185 can be operated. Below are examples of operations. For a more detailed description of operation, refer to the operators manual (OM 008182 I02).

5.3.1 Filling Empty Containers When:

1. Piece weight and container weight (tare) will change with each transaction.

2. Piece weight will be repeated, but tare weight will change with each transaction.

3. Piece weight will change, but tare weight will be repeated with each transaction.

4. Piece weight and tare weight will be repeated with each transaction.

5.3.2 Counting Full Containers With:

1. Known piece weight, and known tare weight.

2. Known tare weight only.

3. Count down mode.

5.3.3 Straight Weighting and Printing

5.3.4 Determining Average Piece Weight

5.3.5 Recall.

5.3.6 Scale Select

The ‘‘SCALE SELECT’’ key allows the operator to assign GROSS and SAMPLE scales for a particular counting operation.

In a single scale counting system, the GROSS and SAMPLE functions are performed by separate scales.

In a dual scale counting system, the GROSS and SAMPLE functions are performed by separate scales.

The operator assigns the SAMPLE and GROSS functions in accordance with the desired operation and the number of scales in the system.

Scale select procedure is as follows:

1. Single Scale

a). Press the “ SCALE SELECT” key. The display will read ‘‘GROSS SCALE’’? Enter digit number 1 via the keyboard.

b). Press the “ ENTER” . The display will read “ SAMPLE SCALE’’.

c). Enter digit number 1 via the keyboard press “ ENTER” .

2. Multiple Scale

a). Press “ SCALE SELECT” ; GROSS scale in use will be displayed.

b). To retain the same GROSS scale, press “ ENTER” . To assign a different GROSS scale, enter the appropriate number (1,2 or 3) via the keyboard; then press ‘‘ENTER’’.

c). SAMPLE scale in use will be displayed. To retain the same SAMPLE scale, press ‘‘ENTER’’ . To assign a different SAMPLE scale, enter the appropriate number (1, 2 or 3) via the keyboard; then press ‘‘ENTER’’.

.

5.3.7 Zero Adjustment

Zero

1. Single Scale

Procedure for Zero adjustment in a single scale counting system is as follows:

a). Press the ‘‘RETURN’’ key.

b). If zero adjustment is necessary, press the ‘‘ZERO’’ key.

2. Dual Scale

Procedure for Zero adjustment in a dual scale counting system is as follows:

a). Press the ‘‘RETURN’’ key; GROSS scale displayed.

b). If zero adjustment is necessary, press the “ ZERO” key.

c). Press the “ ENTER” key twice; SAMPLE scale displayed.

d). If zero adjustment is necessary, press the “ ZERO” key.

5.3.8 Identification Entry

The ID option is available for use with a printer. It is selected via an internal programming switch. If the ID feature Is used, the operator can enter up to 16 alphanumeric characters at the beginning of each count sequence. ID entry is as follows:

1. Press ''RETURN'' key to return display to ''HOME POSITION''.

2. Enter the appropriate ID (up to 16 characters) via the alphanumeric keyboard.

3 When the entire ID has been entered, press the ''ENTER'' key.

5.3.9 Memory

A memory feature is provided on the 8182/8185 Prospector. As many as 100 tare and piece weights may be stored in memory. The memory feature may also be used for the accumulation of piece count. A piece count of up to 999,999,999 can be stored in any of the memory locations.

Memory information is accessed via a two digit code. A different code is used for each of the 100 locations; codes range from ''00'' through ''99''.

Access to the memory feature is done by entering the supervisory code via the alphanumeric keyboard. Press the ''Set-Up" key; then press ''MEMORY''. You are now in memory set-up mode. For a more detailed description of memory set-up, refer to operators manual (OM 0008182 I02).

6. PREVENTIVE MAINTENANCE

The Model 8182/8185 scale is designed to require a minimum of maintenance and service. this section provides instructions and procedures for cleaning and maintenance of the scale.

It is suggested that assistance from Toledo Scale service personnel be requested in the event a problem should arise that is beyond the scope of this manual.

6.1 REQUIRED TOOLS AND MAINTENANCE

The following items are recommended for the scale maintenance and repairs. Common hand tools are also required.

1. Volt-Ohm Meter (Part #085481 020)
2. Load Cell Simulator (Part #085547 020)
3. Diagnostic KOP (Part #082122 020)
4. Cleaning Cloth
5. Mid Window Type Cleaner
6. Static Shield Bag 8'' X 10'' (Part #112736 00A)
7. Static Shield Bag 12'' X 16'' (Part #112737 00A)

6.2 MAINTENANCE SCHEDULE

The 8182/8185 scale maintenance requirements are limited to periodic scale calibration checks. The frequency of these checks is determined by local regulations or the customers desire for scheduled inspection.

6.3 CLEANING

To keep your 8182/8185 scale in like-new appearance, occasionally use a slightly dampened, clean, soft cloth with a mild window type cleaner and

clean the scale covers and platter. DO NOT SPRAY ANY CLEANER DIRECTLY ONTO THE SCALE.

6.4 INSPECTION

A scheduled periodic maintenance is recommended to insure proper operation and calibration are maintained.

The periodic maintenance schedule should include an inspection of the 8182/8185 itself for any loose hardware or interconnecting harnesses, as well as calibration check of the scale. All external scales, if so equipped, should also be inspected and retested.

7. PARTS REPLACEMENT

7.1 RECOMMENDED SPARE PARTS

PART NUMBER	DESCRIPTION
A107972 00A	Mother PCB
E107974 00A	A/D PCB
C107980 00A	Display PCB - 16 Segment
A114150 00A	Display PCB - Dot Matrix
C107984 00A	Power Supply PCB
H107987 00A	Logic PCB
105408 00A	Fuse 1.25A Slo-Blo
114618 00A	Audio Alarm PCB

In addition to these items, it also recommended that a parts catalog also be ordered so that items not listed above may be properly identified for correct and prompt delivery.

The Parts Catalog number for 8182 is PC 008182 I01.
The Parts Catalog number for 8185 is PC 008185 IOO.

7.2 TROUBLESHOOTING

If additional difficulties are being encountered, obtains as much information as possible regarding the particular trouble being experienced with the equipment, possibly eliminating lengthy detailed checkout procedure.

Check fuses, primary power line, external circuit elements and related wiring for possible defect. Failures and malfunctions often can be traced to simple causes such as loose or improper circuit or supply load connections or fuse failure.

Use the electrical diagrams as an aid to locating trouble causes. These diagrams contain various circuit voltages that are average for normal operation. Measure these voltages using the diagrams. Use measuring instrument probes carefully to avoid causing short circuits and damaging circuit components.

Due to the complexity of the instrument malfunctions in the 8182/8185 are best located by substitution. A printed circuit board or sub-assembly believed to be defective, may be checked by replacing it with a like item, known to be good, and then observing whether the problem is corrected. To be doubly sure, the suspected part can be re-installed in the instrument and if the problem now re-appears, it is certain the assembly is at fault.

Exchange PCB’s, or sub-assemblies are available from Service Parts. These assemblies are repaired and tested at the factory where the instrument was built.

NOTE: WHEN ANY HANDLING OF A PCB IS REQUIRED, YOU MUST USE A ''VELOSTAT'' TYPE STATIC BAG FOR BOTH THE NEW PCB AND THE DEFECTIVE PCB.

NOTE: When you install any new equipment or replace any PCB which is fastened down by a ground screw, first check to be sure solder mask does not interfere with the grounding affect of the screw.

Refer to Section IX, Interconnection Diagram for nominal voltages.

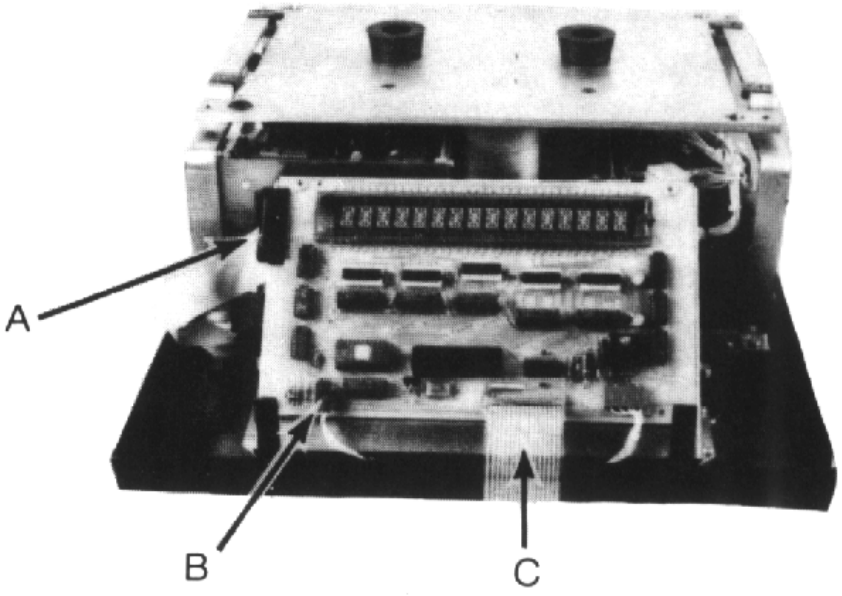
7.2.1. In addition to voltage checks the trouble may be isolated using the Display PCB self-test harness, use the following steps:

1. In addition to voltage check the trouble may be isolated using the Display PCB self test harness.

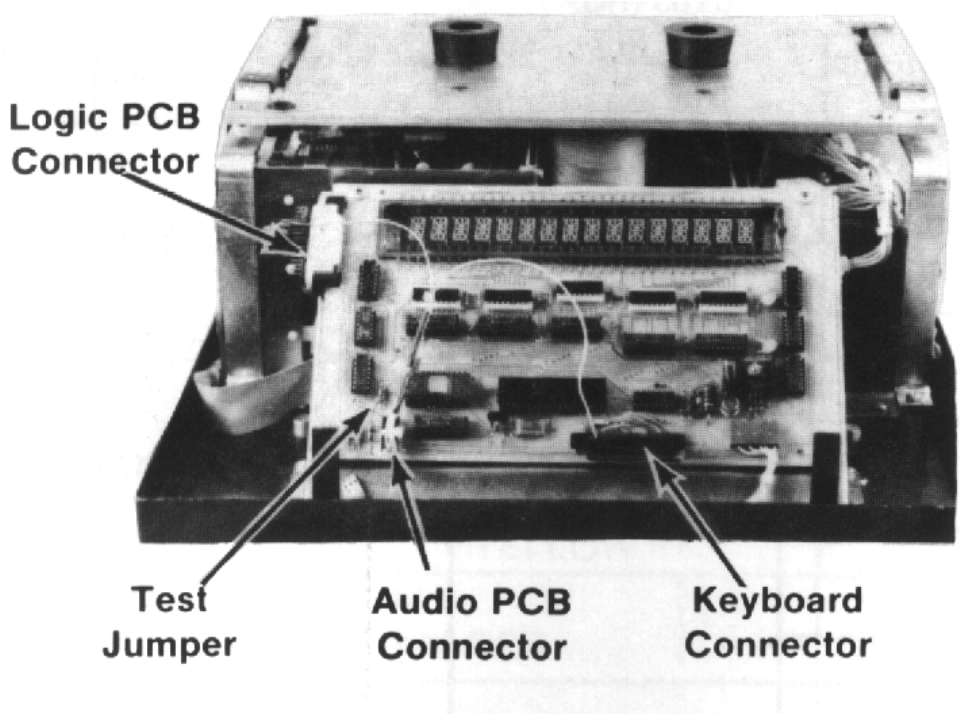
To use the self-test harness, use the following steps:

a). Remove power from the scale.

b). Using the following photo, disconnect the Logic I/O harness (A) , the Audio harness, (B) and the keyboard harness (C).
Leave the Display Power harness in place.



c). Connect the self-test harness as shown.



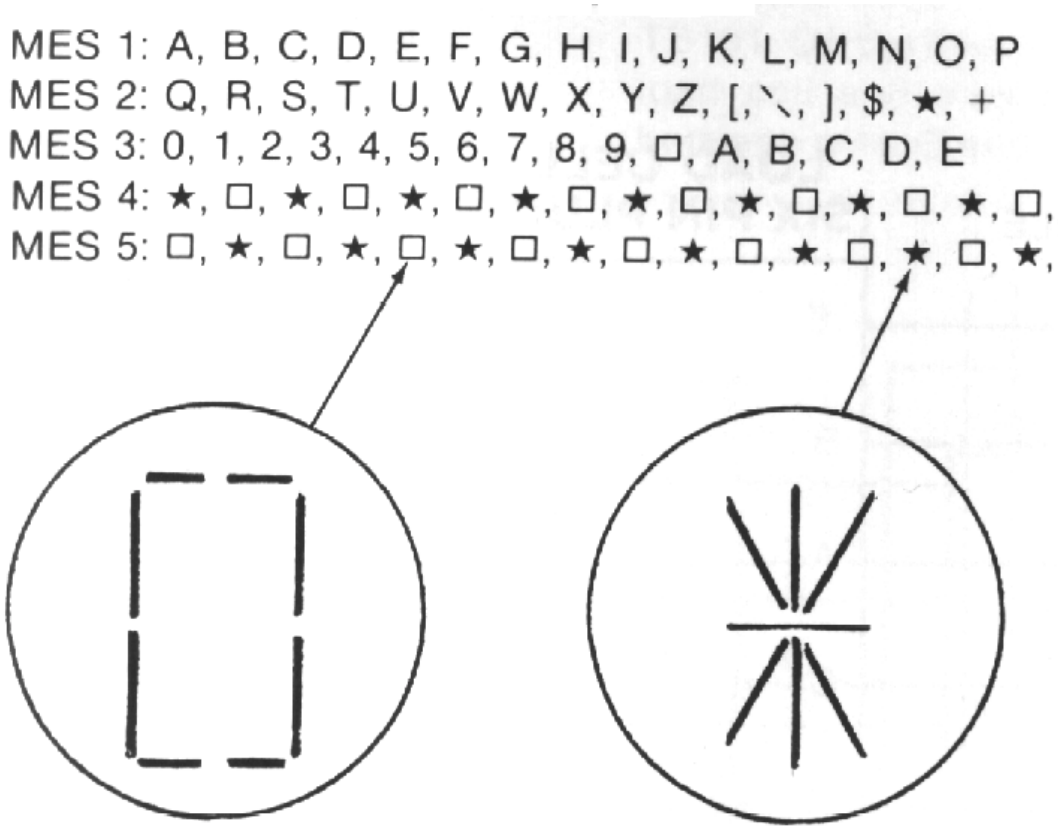
Apply power to the scale.

e). Next, place the supplied jumper on the two test pins shown in Step c)..

f). The Display PCB will now step thru a self-test routine and will display the messages shown in the following chart.

THE FOLLOWING SHOULD BE DISPLAYED:

START MES: START SELF-TEST



NOTE: MES 1-5: May be kept on display, by removing the jumper on the test pins. Replace jumper to continue. Any improper display denotes defective display PCB.

MES 6: KEYBOARD TEST

Audio output and keyboard input and scan lines will be tested, any flashing message denotes an error.

EXAMPLE: SCNO FAILED

To retest all failed locations of the keyboard test, remove the jumper on the test pins as the failed message is displayed.

MES 7: SERIAL I/O TEST

Transmit and receive lines will now be tested. Any flashing message denotes an error.

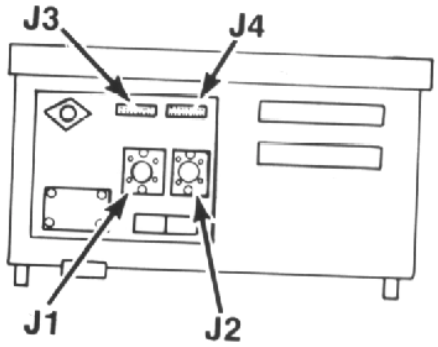
EXAMPLE: TTL DTR FAILED

To retest any failed location of serial I/O test. Remove jumper on test pins, as failed message is displayed.

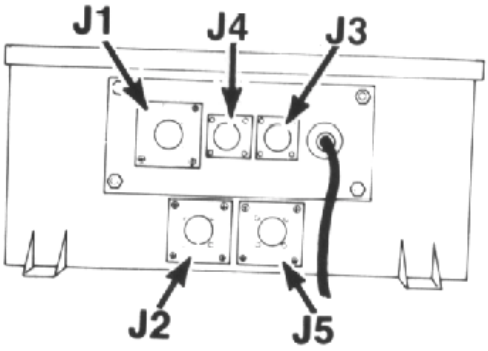
MES 8: END OF TEST

7.3 INPUT/OUTPUT CONNECTIONS

8182 REAR PANEL



8185 BOTTOM PANEL



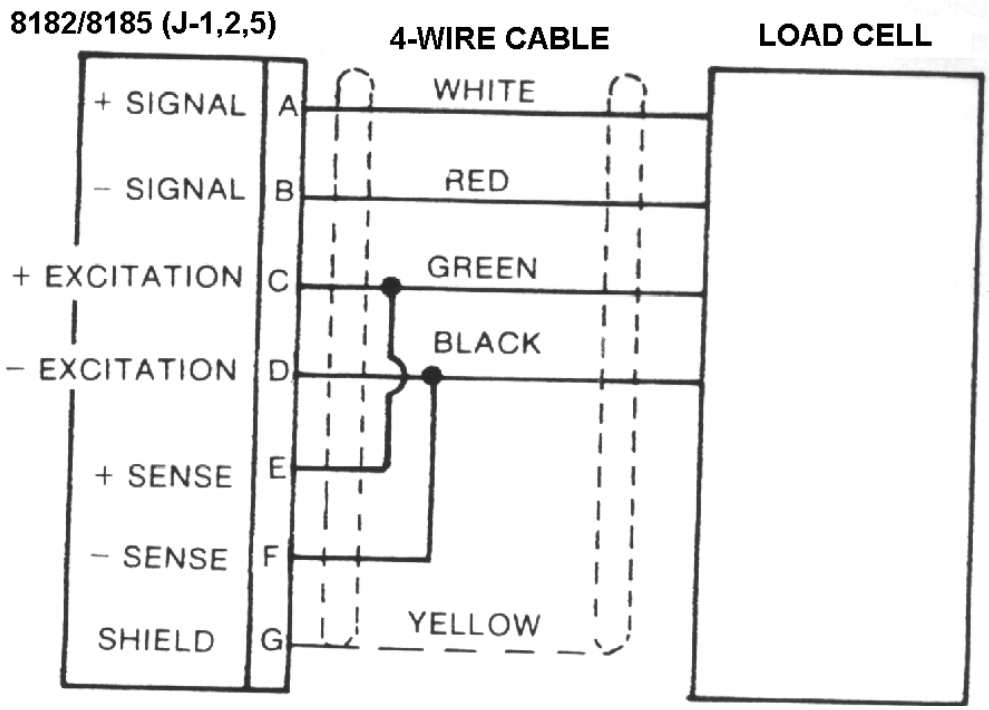
LOAD CELL CONNECTOR TABLE

7 PIN CONNECTOR

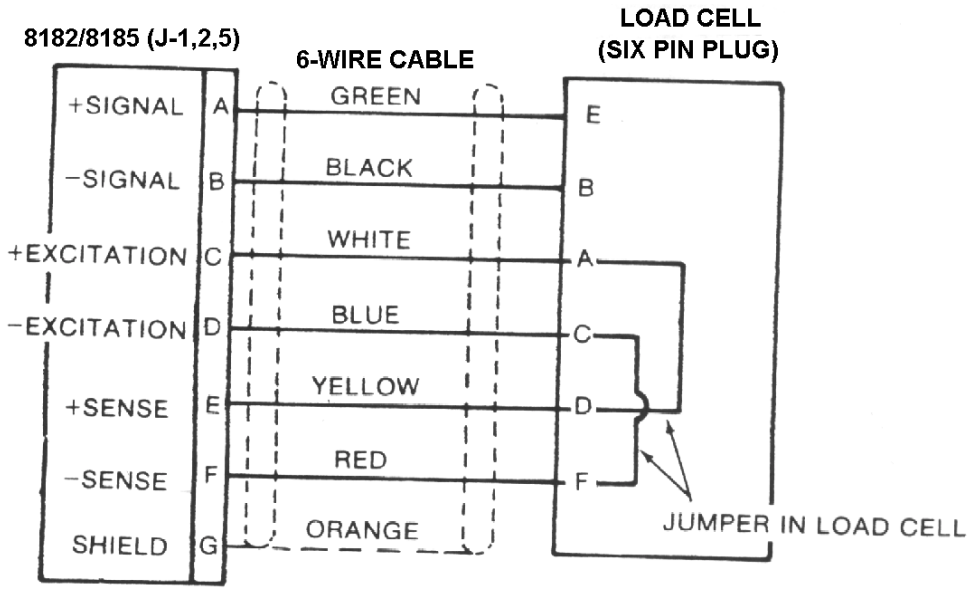
PIN	
A	+SIGNAL
B	-SIGNAL
C	+EXCITATION
D	-EXCITATION
E	+SENSE
F	-SENSE
G	-SHIELD

TYPICAL LOAD CELL WIRING CONNECTIONS

This arrangement is typical for a single load cell system connected directly to the Model 8182/8185 (no junction box).

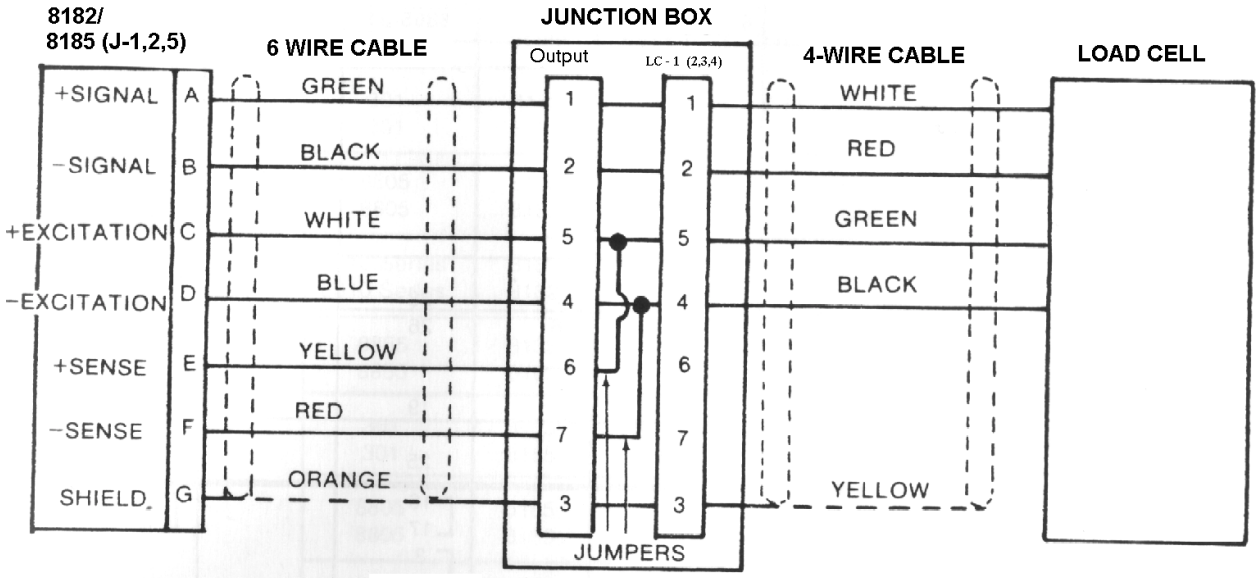


SINGLE 4 WIRE CELL CONNECTED DIRECTLY TO INSTRUMENT



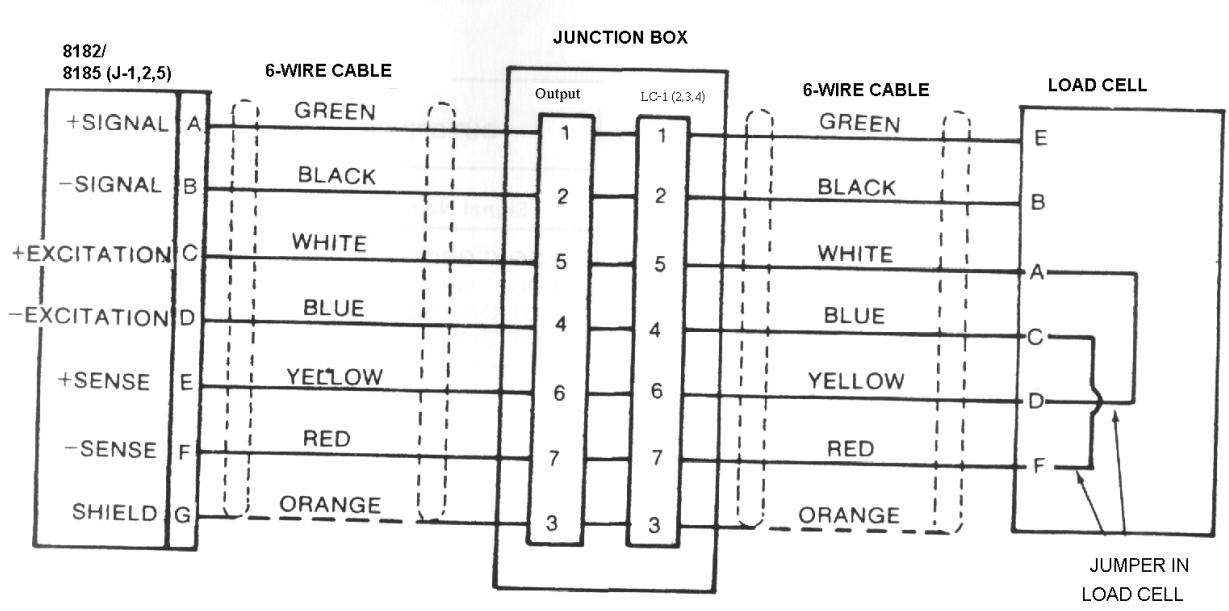
SINGLE 6 WIRE CELL CONNECTED DIRECTLY TO INSTRUMENT

These are typical load cell hookups for single and multiple cell installations.



4 WIRE LOAD CELL (S) WITH JUNCTION BOX

When using 4 wire cells, there will be jumpers between terminals 4 and 7 and between terminals 5 and 6 on TB101. On the 6 wire cells the jumpers are built into the load cell and they are between pins A and D and between pins C and F.



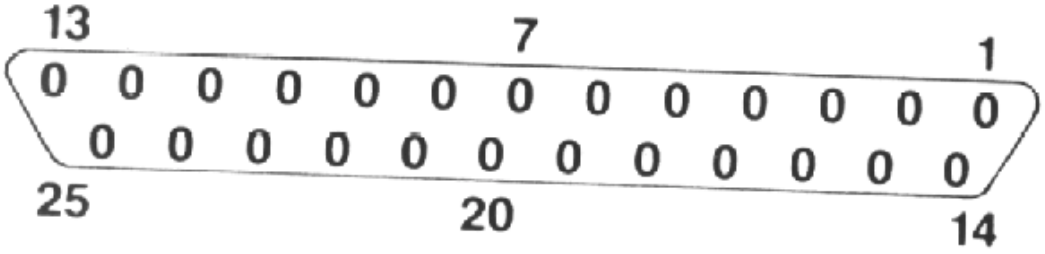
6 WIRE LOAD CELL (S) WITH JUNCTION BOX

PRINTER I/0 SERIAL CONNECTOR J-3

SIGNAL NAME	8182/8185-J3	301-J9	8805-J1	8855-J1	8810-J25
Transmit (TTL) (Output) REC (TTL) (Input) RTS (Request to Send) CTS (Clear to Send) DSR (Data Set Ready) Logic Ground Transmit	2 3 4 5 6 7 9				 9
Logic Ground Transmit +	11 14	7	28	22	18
20mA Current Loop supply Receive +	15 16	6	26	3	 2
Receive Current Loop Supply Receive -	17 18		19		7
ISP Common ISP Common	19 22		 25		
Jumpers shown are in the indicator end of the interconnecting cable.			[16 [17 [3 [5		[3 [5
Jumpers shown are in the printer end of the interconnecting cable.					[9 [19 [16 [17

25 PIN CONNECTOR VIEWED FORM REAR OF INSTRUMENT (DESK TOP ONLY)

CONNECTOR IS SHOWN TO AID IN PIN NUMBER IDENTIFICATION.



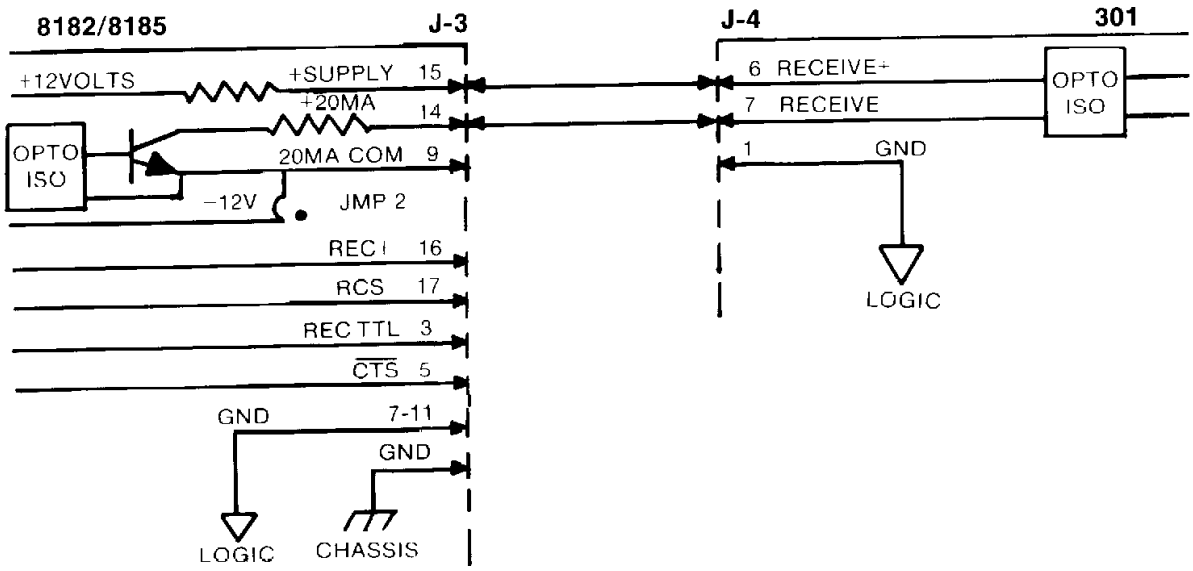
CUTOFF CONNECTIONS	
LOGIC GROUND	7
LOGIC GROUND	11
CUT-OFF FAST (OUT)	13
CUT-OFF SLOW (OUT)	25

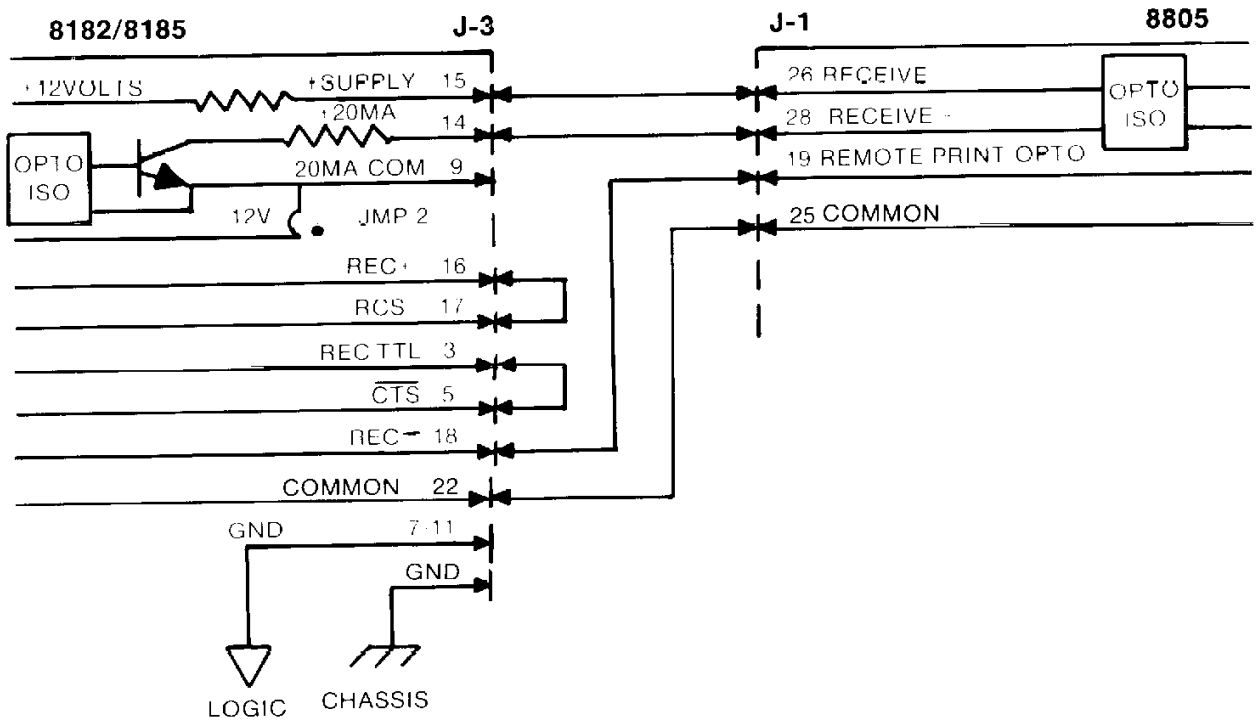
INTERCONNECTING CABLES

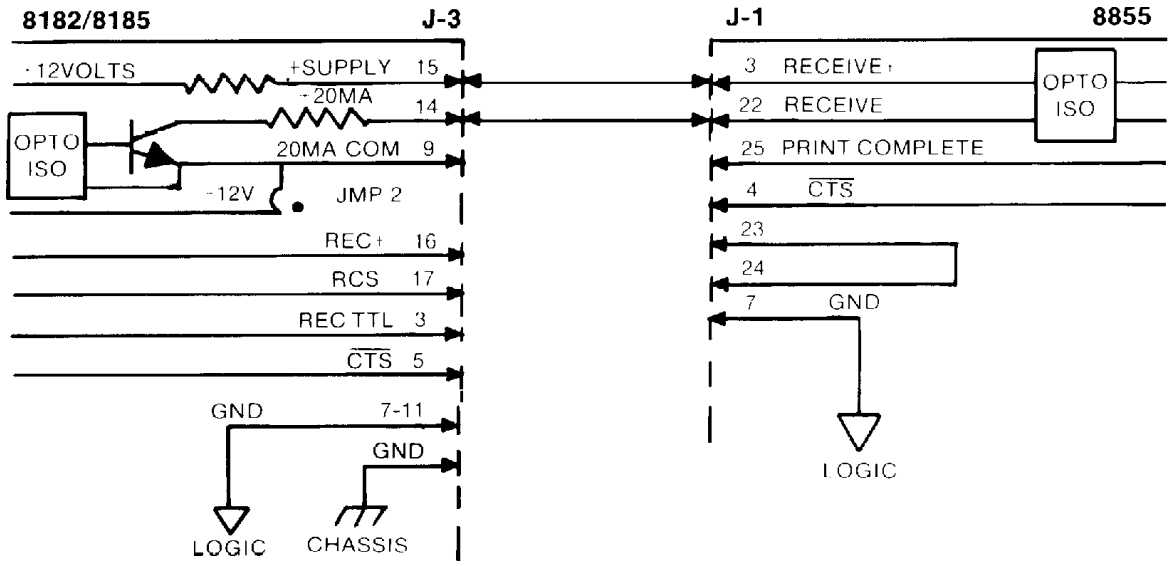
Model	Scale	Length	Part Number
301	8182	6′	A113210 00A
301	8182	20′	A113222 00A
8805	8182	6′	B113208 00A
8805	8182	20	B113220 00A
8810 Series	8182	6′	113209 00A
8810 Series	8182	20′	113221 00A
8855	8182	6′	A114283 00A
8855	8182	20′	A114406 00A
301	8185	6′	A113225 00A
301	8185	20′	A113250 00A
8805	8185	6′	B113223 00A
8805	8185	20′	B113248 00A
8810 Series	8185	6′	113224 00A
8810 Series		20′	A113249 00A
8855	8185	20′	A113237 00A

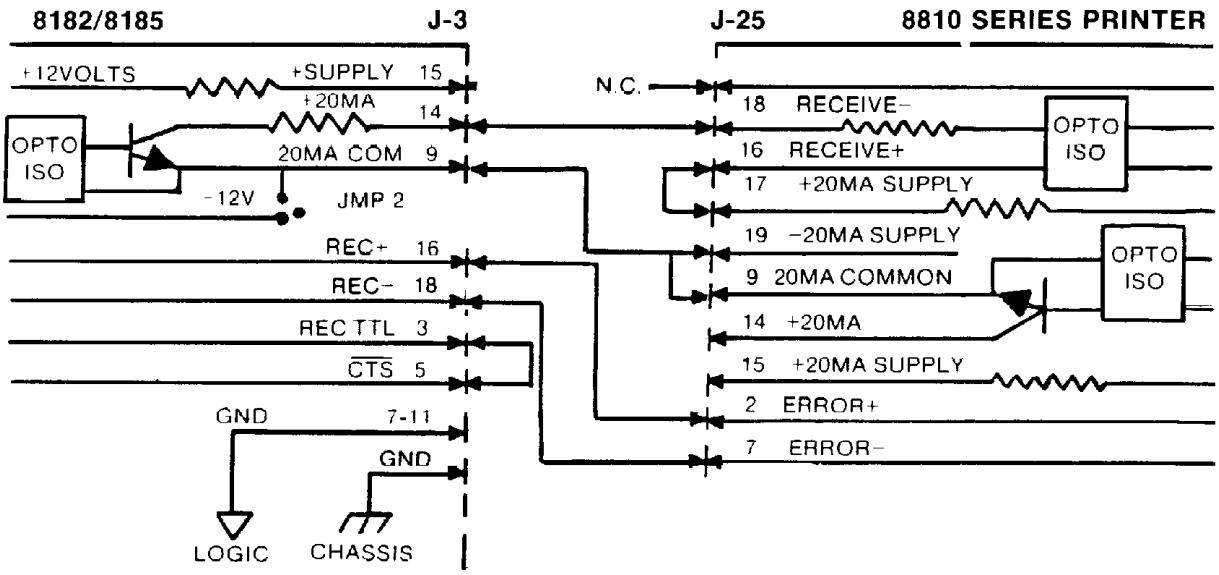
TYPICAL CONNECTIONS FOR ATTACHMENT

The 8182/8185 uses a 20 miliamp current loop output (ASCII) for printers and other devices. The output is designed so that it can be used with various types of interconnections to other devices. It may be used with an internal or external power

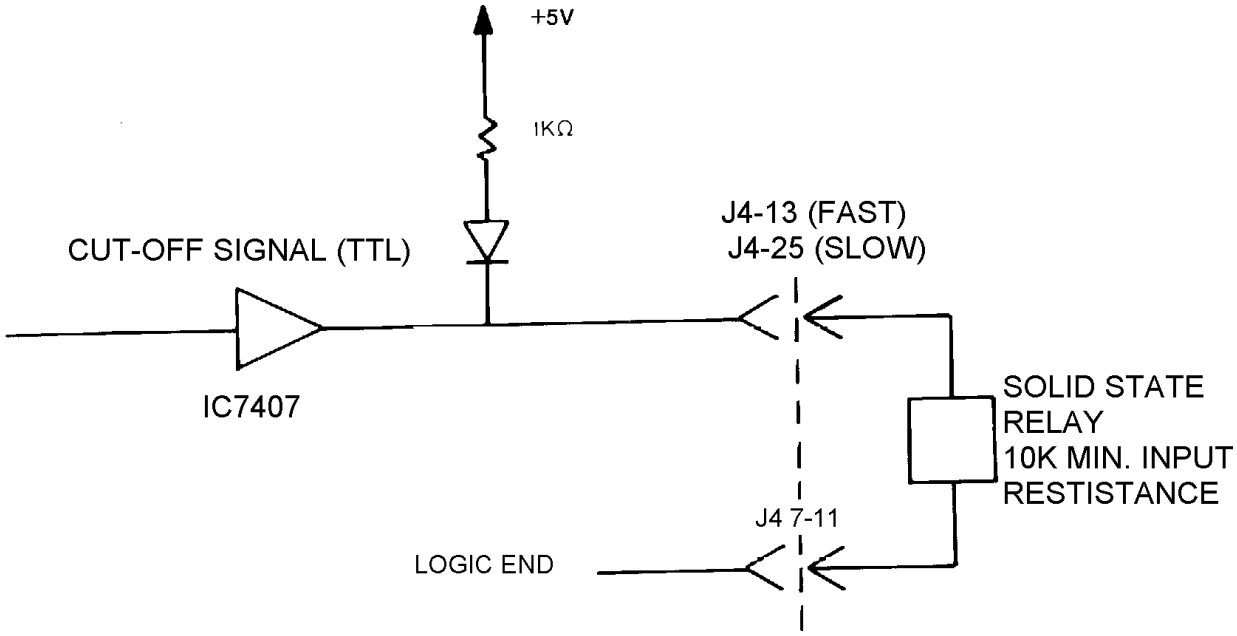



8182/8185
J-3
J-1
8805
+12VOLTS
+SUPPLY 15
+20MA
14
OPTO ISO
20MA COM 9
12V
JMP 2
REC+ 16
RCS 17
REC TTL 3
CTS 5
REC− 18
COMMON 22
GND 7-11
GND
LOGIC
CHASSIS
26 RECEIVE +
28 RECEIVE −
OPTO ISO
19 REMOTE PRINT OPTO
25 COMMON


8182/8185
J-3
J-1
8855
+12VOLTS
+SUPPLY 15
-20MA
14
OPTO ISO
20MA COM 9
-12V
JMP 2
REC+ 16
RCS 17
REC TTL 3
CTS 5
GND 7-11
GND
LOGIC
CHASSIS
3 RECEIVE+
22 RECEIVE
OPTO ISO
25 PRINT COMPLETE
4 CTS
23
24
7 GND
LOGIC



TYPICAL CUTOFF CIRCUIT



ASCII TABLE WITH BINARY CONVERSION

ASCII CHAR.	DECIMAL	HEX	76543210	ASCII CHAR.	DECIMAL	HEX	76543210
NULL	0	00	00000000	@	64	40	01000000
SOH	1	01	00000001	A	65	41	01000001
STX	2	02	00000010	B	66	42	01000010
ETX	3	03	00000011	C	67	43	01000011
EOT	4	04	00000100	D	68	44	01000100
ENQ	5	05	00000101	E	69	45	01000101
ACK	6	06	00000110	F	70	46	01000110
BELL	7	07	00000111	G	71	47	01000111
BACKSPACE	8	08	00001000	H	72	48	01001000
TAB	9	09	00001001	I	73	49	01001001
LineFeed	10	0A	00001010	J	74	4A	01001010
Vert. Tab	11	0B	00001011	K	75	4B	01001011
Form Feed	12	0C	00001100	L	76	4C	01001100
Carr.Retur n	13	0D	00001101	M	77	4D	01001101
Shift Out	14	0E	00001110	N	78	4E	01001110
Shift In	15	0F	00001111	O	79	4F	01001111
Data Link Esc	16	10	00010000	P	80	50	01010000
DC1	17	11	000010001	Q	81	51	01010001
DC2	18	12	00010010	R	82	52	01010010
DC3	19	13	00010011	S	83	53	01010011
DC4	20	14	00010100	T	84	54	01010100
NAK	21	15	00010101	U	85	55	01010101
SYNCH IDLE	22	16	00010110	V	86	56	01010110
End Trans. Block	23	17	00010111	W	87	57	01010111
CANCEL	24	18	00011000	X	88	58	01011000
End Of Medium	25	19	00011001	Y	89	59	01011001
SUBSTITUTE	26	1A	00011010	Z	90	5A	01011010
ESCAPE	27	1B	00011011	[	91	5B	01011011
FS (Cursor Right)	28	1C	00011100	\	92	5C	01011100
GS (Cursor Left)	29	1D	00011101	]	93	5D	01011101
RS (Cursor Up)	30	1E	00011110	^	94	5E	01011110
US (Cursor Down)	31	1F	00011111	_	95	5F	01011111
SPACE	32	20	00100000	`	96	60	01100000
!	33	21	00100001	a	97	61	01100001
"	34	22	00100010	b	98	62	01100010
#	35	23	00100011	c	99	63	01100011
$	36	24	00100100	d	100	64	01100100
%	37	25	00100101	e	101	65	01100101
&	38	26	00100110	f	102	66	01100110
'	39	27	00100111	g	103	67	01100111
(	40	28	00101000	h	104	68	01101000
)	41	29	00101001	i	105	69	01101001
*	42	2A	00101010	j	106	6A	01101010
+	43	2B	00101011	k	107	6B	01101011
,	44	2C	00101100	l	108	6C	01101100
-	45	2D	00101101	m	109	6D	01101101
.	46	2E	00101110	n	110	6E	01101110
/	47	2F	00101111	o	111	6F	01101111
0	48	30	00110000	p	112	70	01110000

1	49	31	00110001	q	113	71	01110001
2	50	32	00110010	r	114	72	01110010
3	51	33	00110011	s	115	73	01110011
4	52	34	00110100	t	116	74	01110100
5	53	35	00110101	u	117	75	01110101
6	54	36	00110110	v	118	76	01110110
7	55	37	00110111	w	119	77	01110111
8	56	38	00111000	x	120	78	01111000
9	57	39	00111001	y	121	79	01111001
:	58	3A	00111010	z	122	7A	01111010
;	59	3B	00111011	{	123	7B	01111011
<	60	3C	00111100	|	124	7C	01111100
=	61	3D	00111101	}	125	7D	01111101
>	62	3E	00111110	~	126	7E	01111110
?	63	3F	00111111		127	7F	01111111

Table ASCII TO Binary Conversion Table