Model 3825
BENCH SCALE

User's Manual

UNITED STATES

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.

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INTRODUCTION

This manual contains information for efficient installation/ operation of the Model 3825 Bench Scale. The Model 3825 is an electronic weighing instrument, switch configured (internally) for either avoirdupois or metric operation.

SPECIFICATIONS

Capacity & Resolution

Nominal base capacities are available in 10, 20, 50 and 100 lb. These base capacities can be configured for scale capacities as shown in the following tables.

POUNDS	OUNCES	GRAMS
10 lb. x .002 lb	160 oz. x .05 oz.	5000 g x 1 g
25 lb. x .005 lb	500 oz. x .1 oz.	
50 lb. x .01 lb	1000 oz. x .2 oz.	25 kg x .005 kg
100 lb. x .02 lb	1600 oz. x .5 oz.	50 kg x .01 kg

Electrical Requirements

Power Source: 117 VAC, (+10%, -15%) 60 Hz ±3 Hz with an earth ground.

Power Consumption: 30 watts maximum

Temperature Range -10°C to 40°C (14°F to 104°F)

Humidity 10-95% relative humidity, non-condensing

OPTIONS

Remote Display: Display available as a seven-inch high adjustable remote, with 2.5, 5, and 15-foot cable lengths. Display available as a 12-inch high remote, with 2.5, 5, and 15-foot cable lengths. Display to base mounting bracket available with mounting hardware.

Platters: ¼" deep dished, 1.5" high backstop

Internal Display: Display is available to install within the scale base. Has display board, ribbon cable, and lens.

Tare Foot Switch: Remote foot switch available with six-foot cable.

UNPACKING CONTAINER

Remove the contents of the shipping container(s) and inspect for damage. The following items should be present:

1. Model 3825 Bench Scale
2. Two anti-skid locating brackets.

ELECTRICAL REQUIREMENTS

The Model 3820 requires 117 VAC, 60 Hz power, 30 VA maximum.

> WARNING
>
> The AC power source must provide an earth ground for the scale chassis to ensure safe and proper operation.

SCALE INSTALLATION

The scale must be mounted on a stable, level surface, free from air currents, where the scale platter is unobstructed. Locating brackets are provided to ensure that the scale remains fixed in position once it is installed. After the scale has been positioned, mark the location of the feet and fasten the two triangular locating brackets in place. Refer to Figure 2.

LEVELING THE SCALE

Scale level can be checked by lifting the platter off the load bridge and observing the level bubble in the center of the load bridge. If the level bubble is not centered use the four leveling feet in each corner of the scale to adjust to level position. Jam nuts on the leveling feet must be loosened before this adjustment can be made, and must be retightened once the scale is level. Ensure all four feet are in firm contact with the counter.

Replace the platter, making sure it rests evenly on the load bridge.

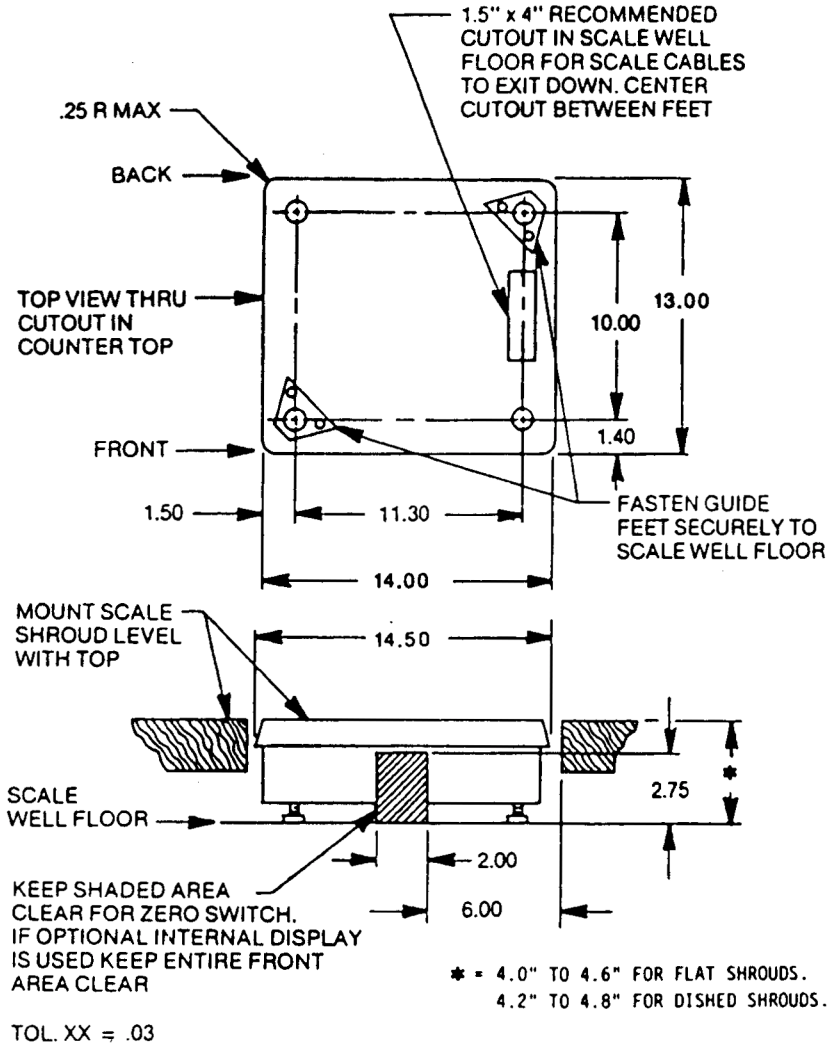

FIGURE 1: COUNTER CUT-OUT INSTALLATION

1. I/O Bracket
2. Power Cord
3. Tare Footswitch Cable, or RS232 Communications Cable
4. Remote Display Cable
5. Locating Brackets

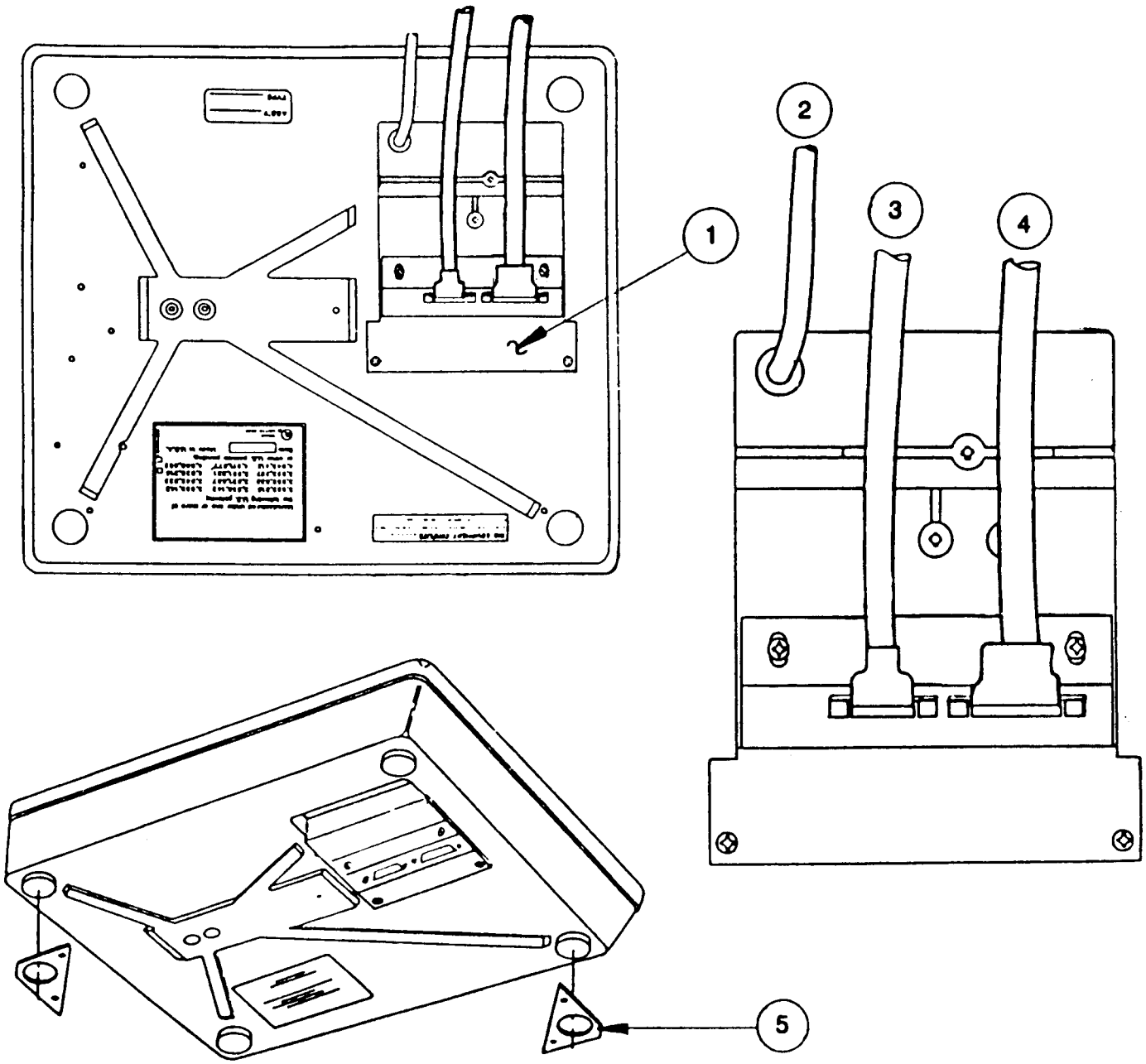

FIGURE 2: LOCATION OF CABLE CONNECTORS
AND INSTALLATION OF LOCATING BRACKETS

REMOTE DISPLAY CONNECTION

Remove shroud and turn scale over. Connect the cable from the remote display to the 15 pin connector. Secure the connector housing to the receptacle by tightening the screws adjacent to the connector housing.

Apply applicable capacity label to the Remote Display panel.

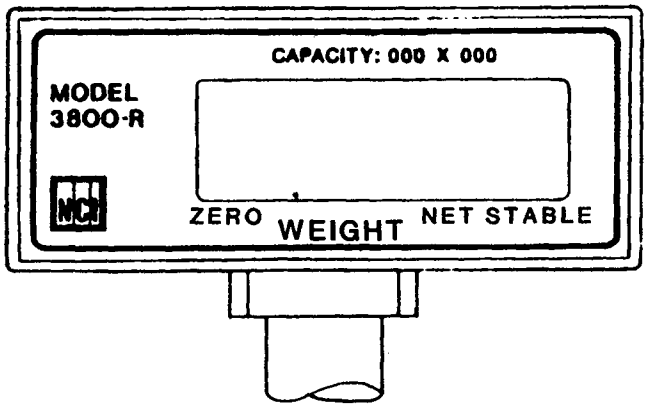

FIGURE 3: REMOTE/INTERNAL DISPLAY

TARE FOOTSWITCH CONNECTION

Remove shroud and turn scale over. Connect the Tare Footswitch cable assembly to the 9 pin connector. Secure the connector housing to the receptacle by tightening the screws adjacent to the connector housing. Turn the scale over and place shroud on scale.

ATTACHING REMOTE DISPLAY TO SCALE BASE

The remote display may be attached to the scale base by means of a bracket.

1. Remove the two rear leveling feet from the scale base.
2. Position the "T" shaped support bracket so that the center channel is lower than the outer arms of the "T", and the holes at the ends of the arms are over the threaded holes in the base into which the rear leveling feet are inserted.
3. Route the remote display cable through the channel in the mounting bracket and attach the base of the remote display to the bracket with 4 Phillips pan head 8-32 x .38 screws.
4. Install the rear leveling feet through the holes in the ends of the "T" as shown above, adjust the feet to ensure the scale is level, and tighten the jam nuts.

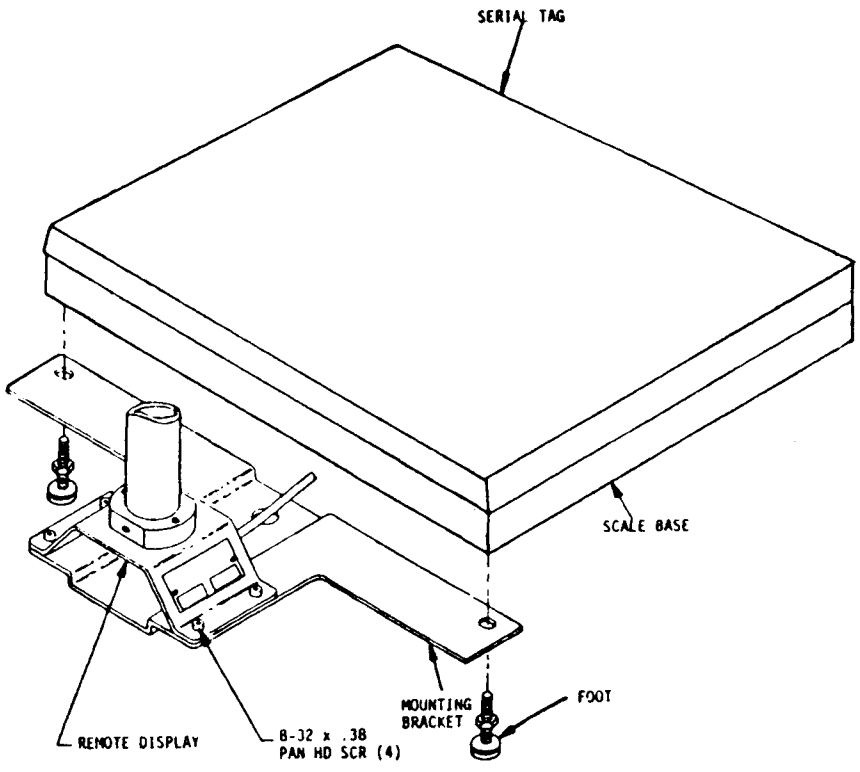

FIGURE 4: ATTACHING REMOTE DISPLAY TO SCALE BASE

INSTALLING AN INTERNAL DISPLAY

1. Disconnect the scale from AC power.

2. Hold the load bridge firmly in position and remove the two flat head, hex drive socket screws attaching the load bridge to the load cell.

> CAUTION
>
> Avoid imposing mechanical shock or torque to the load cell while removing the socket screws.

3. Remove the load bridge.

4. Remove the three screws attaching the enclosure top cover to the base, and the one screw attaching the calibration port cover to the top cover. Then remove the top cover and set the cover and screws aside.

5. Remove the blank panel covering the display window opening from the inside of the scale base next to the display board location.

6. Connect the internal display cable (from the option kit) to the internal display board and to J2 on the DC & PS Board. (Continued on next page.)

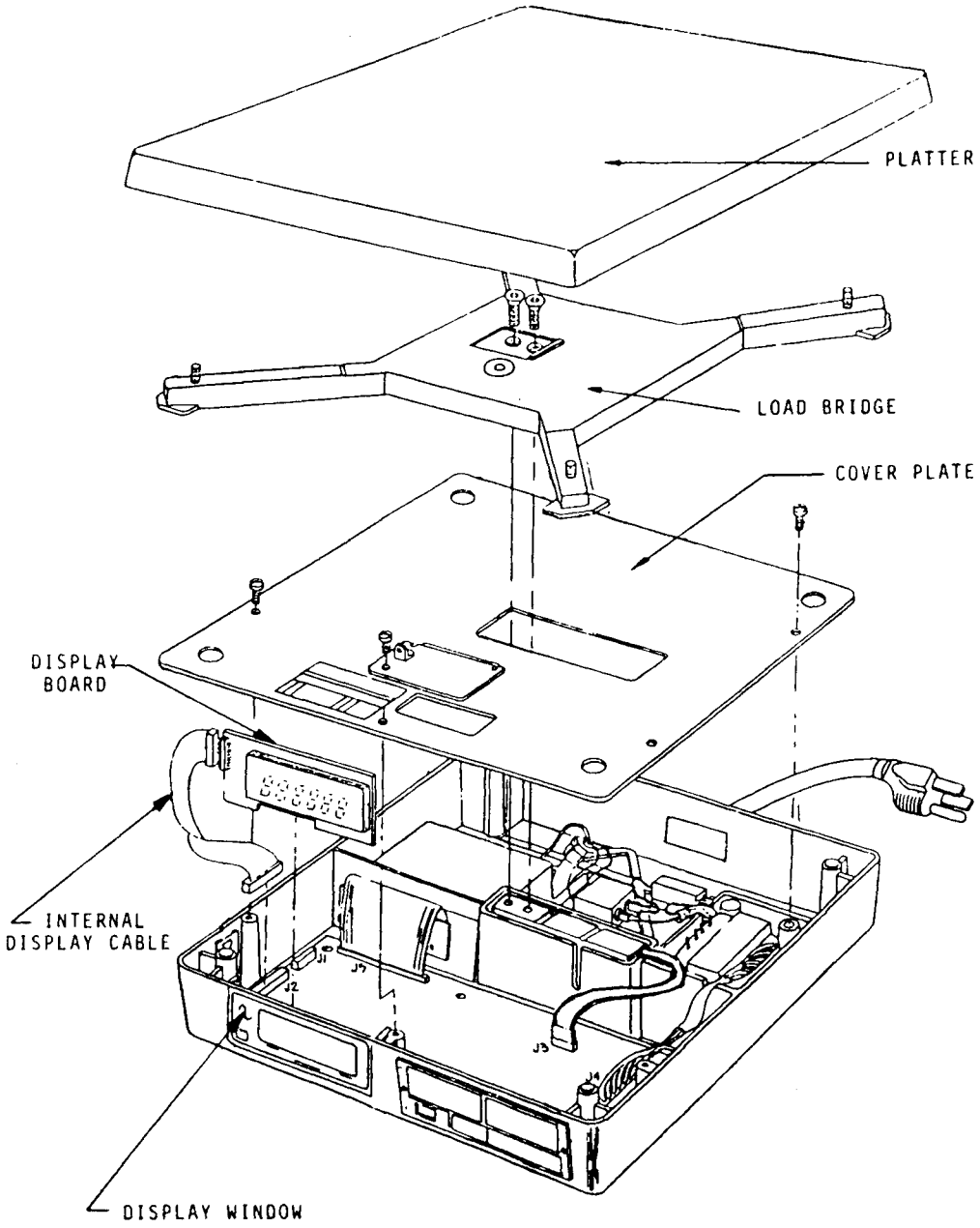

FIGURE 5: ASSEMBLY DRAWING

7. Insert the display board, from the installation kit, into the slot provided in the enclosure base, behind the display window opening.

8. Remove the release liner from the 1/2" two-sided adhesive tape (from the kit) and adhere it to the underside of the top enclosure so that it will be just above the display board when the top enclosure is in place. This holds the display board in position.

9. Replace the top enclosure cover and calibration port cover, and fasten in place with the screws previously removed.

10. Reconnect AC power to scale, and zero the scale.

11. Remove the release liner from the display window lens and position it so that the Zero legend is properly aligned under the zero indicator light, and the top of the lens panel is parallel with the top edge of the bottom enclosure. When aligned, adhere in place.

12. Apply the appropriate capacity label to the display panel as illustrated.

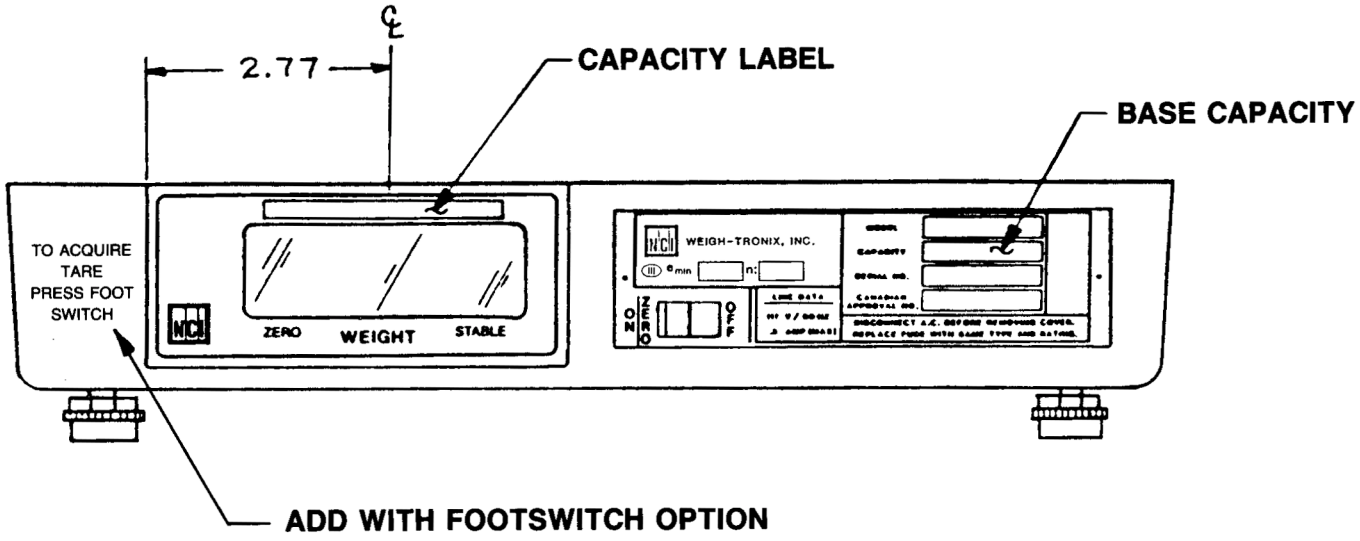

FIGURE 6: INSTALLING AN INTERNAL DISPLAY

INSTALLING REMOTE DISPLAY CABLE THROUGH CONDUIT

When installing a remote display with a requirement that the cable from the scale to the display run through conduit, the following variation to the normal installation procedure must be used since the cable connector to the I/O port is too large to pass through the conduit.

1. Snap out the back plate of the remote display housing.

2. Remove the Display Board and disconnect the display cable from the board.

3. Pull the cable through the base of the remote display column.

4. Remove the strain relief from the cable at the base of the remote display column.

5. Turn the cable connector on the end connecting to the remote display board so that it is parallel to the cable and wrap it with tape to enable it to be passed through the conduit.

6. Attach a (user supplied) pulling device to the taped end of the cable and draw the cable through the conduit.

7. Remove the pulling device and push the taped end of the remote display cable through the base of the remote display stand, until the cable terminating shield reaches the bottom side of the display housing.

8. Remove the tape from the connector to the display board and reconnect the cable to the display board.

9. Replace the strain relief on the cable at the base of the remote display column.

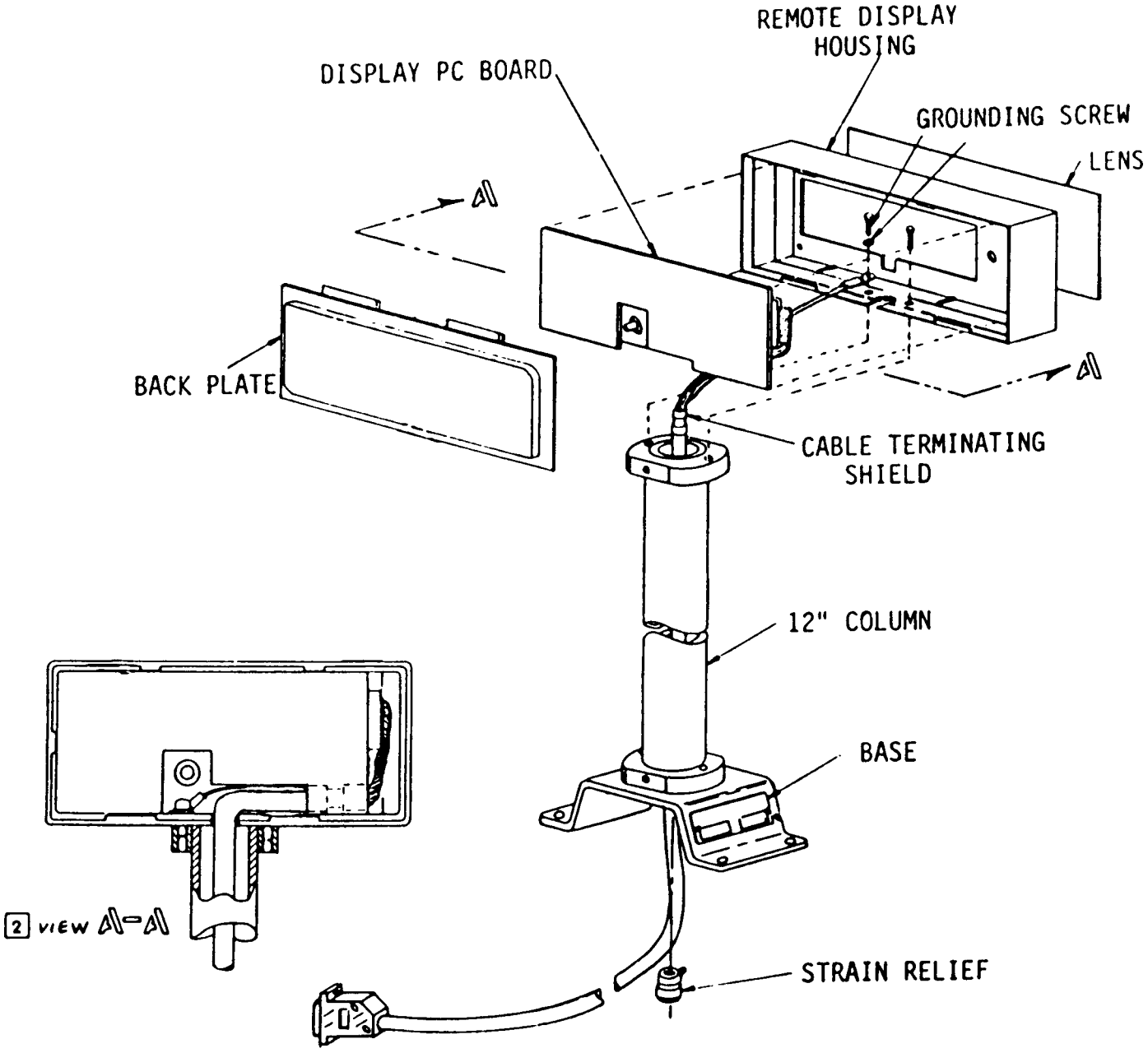

FIGURE 7: REMOTE DISPLAY ASSEMBLY

SCALE SETUP

> CAUTION
>
> All adjustments must be performed by a qualified electronic scale technician.

Equipment Required: Non-conductive screwdriver
7/16" open end wrench
5/64" hex wrench
Calibration weight totaling 110% of scale capacity.

1. Remove the scale platter and place it upside down on the load bridge to allow access to the adjustment slot.

2. Remove the calibration port cover (located above the ZERO/ON switch).

3. Place full capacity weight on the inverted platter, then remove it at least three times to ensure that the load cell is at its unstressed zero position.

4. Locate SW-2 and CAL switches inside the calibration port. Refer to Figure 8, or to the Function Chart located adjacent to the calibration port.

5. Turn on the scale model selection function by placing SW-2 switch 2 in the ON position.

6. Ensure that SW-2 switches 1, 3, and 4 are in the OFF position.

7. The scale displays the model number currently selected (3815, 3820, 3825 or 3875).

8. If "3825" is not displayed, press the CAL button repeatedly until "3825" is displayed. *Selecting a model number will default the capacity to 10 lb.*

9. Select the desired unit of measure by placing the appropriate switches in the proper ON/OFF positions. Refer to functions 3 thru 6 on the function chart.

10. If the display does not show the correct capacity, press the CAL button repeatedly, until the correct capacity is displayed.

EXAMPLE: 100 lb capacity is desired. Place SW-2 switches 1 and 2 in the On position and switches 3 and 4 in the Off position to select "lb" as the unit of measure. The display shows "OFF", "10", "25", "50" or "100". If anything other than "100" is displayed, press the CAL button repeatedly until it is displayed.

11. Return all switches to OFF position

SW-2 (ON: X X X X / OFF: O O O O; 1 2 3 4) CAL SW.

TO SELECT A FUNCTION
1. SET SW-2 FOR FUNCTION CODE
2. REPEATEDLY PUSH CAL SW UNTIL DESIRED SETTING IS DISPLAYED
3. REPEAT 1 & 2 FOR OTHER FUNCTIONS

CODE	SW-2 1234	FUNCTION	CODE	SW-2 1234	FUNCTION
0-	0000	NORMAL (SW-2 ALL OFF)	8-	000X	FILTERING
1-	X000	CUSTOM	9-	X00X	CAL-0
2-	0X00	MODEL (3815,20,25,75)	10-	0X0X	CAL-SPAN
3-	XX00	(lbs) -SELECTIONS	11-	XX0X	BAUD RATE
4-	00X0	(kgs) -SELECTIONS	12-	00XX	PARITY
5-	X0X0	(lbs-oz) -SELECTIONS	13-	X0XX	SIGN
6-	0XX0	(oz) -SELECTIONS	14-	0XXX	STATUS/DISPLAYED
7-	XXX0	Hz	15-	XXXX	TEST

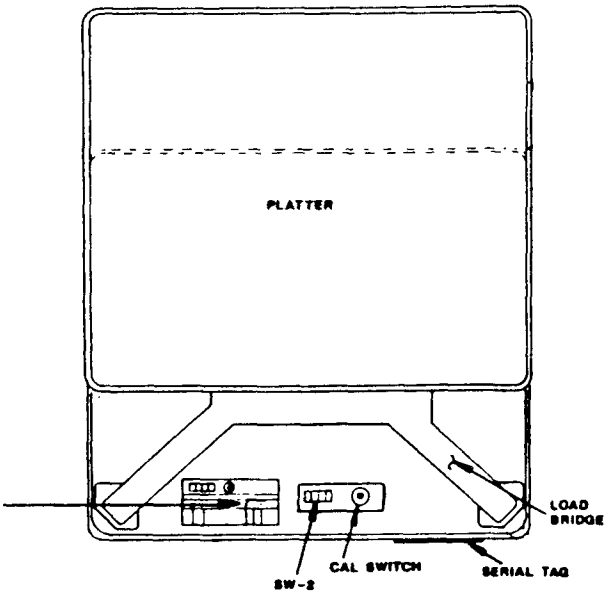

FIGURE 8: FUNCTION CODE CHART

LINE FREQUENCY (HERTZ)

1. To select the proper power line frequency of 50 Hz or 60 Hz (Code 7) ensure the SW-2 switches 1, 2, and 3 are **On**, and switch 4 is **Off**.

2. The scale displays the hertz currently selected, 60 Hz (default) or 50 Hz.

3. Select hertz by pressing the CAL button to display the desired value, then return all switches to **Off**.

FILTERING AND AVERAGING

1. Filtering and averaging selections may be set by setting Code 8 with the SW-2 switches 1, 2, and 3 **Off**, and switch 4 **On**.

2. The scale displays the filtering and averaging currently selected (1, 2, 3, or 4).

   1 = filtering on/normal averaging (slow)
   2 = normal filtering/normal averaging (medium)
   3 = normal filtering/reduced averaging (fast)
   4 = filtering off/reduced averaging (faster)

3. Select filtering/averaging combination desired by pressing the CAL button to display the appropriate number, then return all switches to **Off**.

COUNTRY SELECTION

1. The scale may be set for the country in which it will be used by setting Code 1 with SW2-1 ON and SW2-2,3,4 OFF.

2. The scale displays the setting currently selected; USA (default setting) or CAnAdA.

3. Select country by pressing CAL button to display the desired selection, then return all SW2 switches to off.

ZERO CALIBRATION

1. Place SW-2 switches 1 and 4 in the ON position and switches 2 and 3 in the OFF position.

2. The display shows "CAL 0".

3. Ensure there is no weight on the scale other than the scale platter, then press the CAL button. *Take care not to touch the load bridge or platter during this process.*

4. The display shows "done".

5. Return all switches to OFF.

SPAN CALIBRATION

1. Place SW-2 switches 2 and 4 in the On position and switches 1 and 3 in the OFF position.

2. The display shows "xxx" (indicating the weight required).

3. Carefully place weight equal to full capacity in the center of the scale platter. (Half capacity for the 100 lb scale.)

4. When the "stable" annunciator lights, press the CAL button.

CAUTION

Take care not to touch the load bridge or platter during this process.

5. The display shows "donE".

6. Return all SW-2 switches to the OFF position and replace the calibration port cover.

CORNER STOP ADJUSTMENTS

Corner stops are adjusted by placing 110% of full capacity directly over the corner and adjusting the stop. At initial installation these stops should be checked and adjusted only if necessary.

1. Remove the platter and place it upside down on the load bridge.

2. Place weight equal to 110% of full capacity in the corner to be adjusted. DO NOT STACK THE WEIGHTS.

3. Adjust the corner stop set screw so that it just touches the base, then back it off 1/4 turn. This ensures that the corner stop is set for a greater capacity than the scale.

4. Repeat Steps 1 through 3 for each corner.

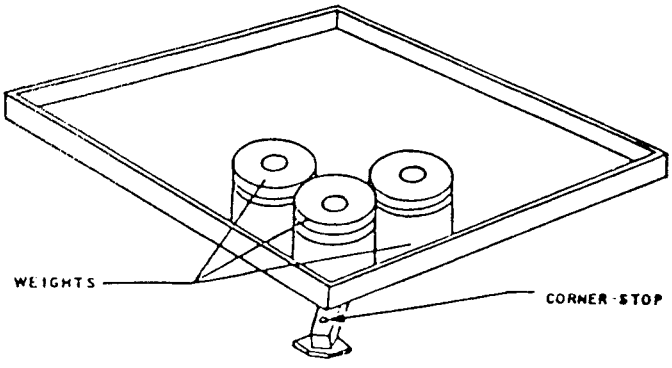

FIGURE 9: CORNER STOP ADJUSTMENTS

RS232 I/O PORT

The RS232 I/O port has a bi-directional interface for use with a computer or smart interface. Its characteristics are as follows:

Electrical - RS232, ±10V Excursion

Connector - 9-pin female (DE-9), with grounded metal shell

Word Length - 10 bits (1 start, 7 data, 1 parity, 1 stop)

Parity - Even, Odd, None

PIN	SIGNAL	DESCRIPTION	DIRECTION
2	TXD	Transmit Data	to peripheral
3	RXD	Recieve Data	from peripheral
7	SG	Signal Ground	
9		Chassis Ground	
6	DSR	Data Set Ready	from peripheral
8	DTR	Data Terminal Ready	to peripheral

BAUD RATE SETUP

1. Baud rate selections may be set by setting Code 11 with the SW-2 switches 1, 2, and 4 **On**, and switch 3 **Off**.
2. The scale displays the Baud rate currently selected (300, 600, 1200, 2400, 4800, or 9600).
3. Select Baud rate by pressing the CAL button to display the desired value, then return all switches to **Off**.

PARITY SELECTION

1. Parity selections may be set by setting Code 12 with the SW-2 switches 1 and 2 **Off**, and switches 3 and 4 **On**.
2. The scale displays the parity currently selected (even, odd, or none).
3. Select parity by pressing the CAL button to display the desired parity description, then return all switches to **Off**.

PROTOCOL RESPONSE SELECTION

1. Protocol response selections may be set by setting Code 13 with the SW-2 switches 1, 3 and 4 **On**, and switch 2 **Off**.
2. The scale displays the protocol response currently selected (SignSP, SignrP, SignLF, noSign).

   SignSP = minus sign or space character
   SignrP = replace MSD of weight digit with sign character
   (i.e. for a 50 x 50 lb capacity, a negative display is −9.95 lb maximum).
   SignLF = minus sign or LF character
   noSign = sign character omitted
3. Select protocol response by pressing the CAL button to display the desired protocol response, then return all switches to **Off**.

COMMUNICATIONS PROTOCOL

Computer commands and scale responses are ASCII character strings.

(CR) is an ASCII carriage return.
(LF) is an ASCII line feed.
(ETX) is an ASCII end of text.

COMPUTER COMMAND	SCALE RESPONSE	RESULTS
W (CR)	(LF)xx.xxxlb (CR) (LF)hh(CR) (ETX)	Returns weight, and returns scale status.
S(CR)	(LF)Shh(CR) (ETX)	Returns scale status in two ASCII bytes.
Z(CR)	no response	Zeros scale.
All else	(LF)?(CR)	Unrecognizable command.

Interpretation of Scale Status Hex Digits -

High Order Byte:
- Bit 0: High = scale in motion; Low = scale stable
- Bit 1: High = scale at zero; Low = scale not at zero
- Bit 2: Not used
- Bit 3: Not used

Low Order Byte:
- Bit 0: High = scale is under capacity; Low = scale is not under capacity
- Bit 1: High = scale is over capacity; Low = scale is not over capacity
- Bit 2: High = scale ROM program failure; Low = scale ROM is OK
- Bit 3: High = faulty calibration data; Low = calibration data OK

STATUS DISPLAY

1. To display the current selection status for the SW-2 code settings (Code 14), set switch 1 to **Off**, and switches 2, 3, and 4 to **On**.
2. The display shows the current scale setup by cycling through the following data until Code 14 is exited:

   Model number
   Code number of Units of Measure
   Capacity
   Hertz
   Number representing Filtering/Averaging setting
   Baud rate
   Parity

DESCRIPTION OF OPERATION

The Model 3825 is a reliable 5000 division weight meter, engineered for years of trouble free operation. It can be configured for both internal and remote display.

When the optional foot control switch is installed, it is capable of "tareing" a weight.

The ON—ZERO/OFF rocker switch is a standard feature. When placed in the ON—ZERO position, the weight meter is reset to display all zeros and the Zero annunciator lights. When left in the OFF position, the meter is held in reset with the display blank and RS232 communications disabled.

In normal operation the six-digit display illuminates the Stable annunciator when motion has stopped.

INITIAL POWER UP

When the power cord is plugged into a 117 VAC outlet electrical power is immediately applied to the scale.

> WARNING
> This scale must be operated from an AC power source that will provide an earth ground for the scale chassis to ensure safe and proper operation.

START UP

When power is applied, the scale will first display the model number, then a numeric representation of the program version and revision level. During warm-up the scale starts to count down from 999999 and continues to count down until weight stability is obtained. It is advisable to leave the scale powered up continuously so that warm-up time is not required.

ERROR SIGNALS

Scale motion, negative weight, or exceeding scale capacity causes error signals. These signals are displayed for the operator as follows:

Stable indicator blanks -	Scale is in motion.
Upper dashes -	Weight on the scale exceeds capacity.
Lower dashes -	Negative weight detected.

PRELIMINARY TROUBLESHOOTING CHECKS

If the Display is blank, re-zero the scale.

If zeroing does not correct the situation, some preliminary checks should be made to determine if the problem can be corrected by the operator.

1. Make sure the scale is warmed up.
2. Make sure the scale is not in motion. Motion can be caused by not allowing the scale to settle between weighings, by air currents, or by vibration from motors or other equipment.
3. Ensure that the scale is properly installed and that the platter is not coming into contact with any adjacent object.

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