doron

Model 7000
Model 7000XL
Model 8000XL

Digital Scale

INSTRUCTION MANUAL

Made in USA

Table of Contents

Introduction

Introducing the Doran Scales, Inc. Model 7000, 7000XL, 8000XL Digital Scale Indicator. This scale uses state of the art technology to provide you with a low cost solution to the most demanding weighing applications. With ease of use and setup in mind, the scale is simple to set up and ready to use. The Model 7000, 7000XL, 8000XL offers many features. A few of these features are listed below:

- NTEP certification for Class III installations to 10,000d (CoC 99-129).
- A six digit, 0.56" red LED display for easy reading.
- lb, kg, oz, g, lb-oz display units supported.
- Fully configurable duplex printer port with RS232 support.
- EEPROM nonvolatile data storage of all calibration and setup information.
- Microprocessor monitoring system to prevent scale failure under severe fault conditions.
- Support for up to four 350 ohm load cells.
- 115/230 VAC 50/60 Hz (jumper selectable) operation.
- Field selectable digital filtering.
- Software configurable remote push-button support (Optional).
- Non NTEP parameters are user configurable.
- Password protected, Front Panel Calibration Access Feature (Optional on 7000).
- 60 hour of battery operation, with built in charger (8000XL).
- Six digit, 0.56" red LED remote display (Optional).
- 4-20mA analog output (Optional).

Please be sure to read the entire manual to ensure obtaining all the benefits that the Model 7000, 7000XL, 8000XL can provide. If any questions arise, please feel free to contact the Doran Scales Technical Support Department at 1-800-262-6844.

Unpacking Your Scale
Before unpacking your Doran scale, please read the instructions in this section. Your new scale is a durable industrial product, but it is also a sensitive weighing instrument. Normal care should be taken when handling and using this product. <u>Improper handling or abuse can damage the scale and result in costly repairs that will not be covered by the warranty</u>. If you notice any shipping damage, notify the shipper immediately. Please observe the following precautions to insure years of trouble free service from your new scale.
- DO NOT drop the scale.
- DO NOT immerse the scale.
- DO NOT drop objects on the platform.
- DO NOT pick up the scale by the "spider."
- Carefully remove the scale from the shipping carton.

Quick Start User's Guide
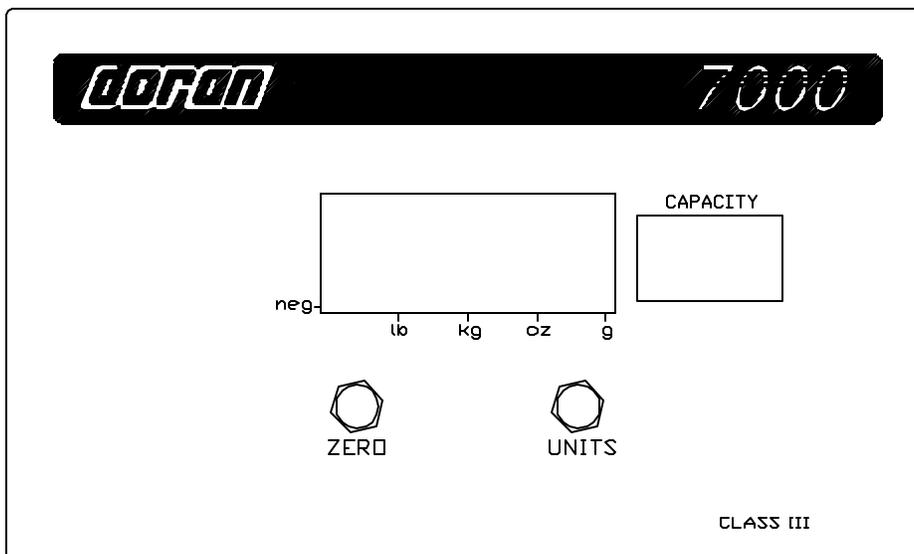
Fig. 1: Model 7000 Front Panel Layout

<u>**Model 7000:**</u>

The Model 7000 (Fig. 1) controls consist of the **ZERO** and optional **UNITS** buttons located under the main display. A six-digit LED display is used to provide weight indications, negative polarity (except lb/oz) and operator messages describing scale operation. A status annunciator, "NEG," is used to display negative polarity as well as the minus sign (except in lb & oz). The "NEG" LED is located in the lower left corner of the display area. Four LED's located at the bottom of the display indicate the current weighing units. Motion is indicated when the units LED's are off. The LED's are on when stable.
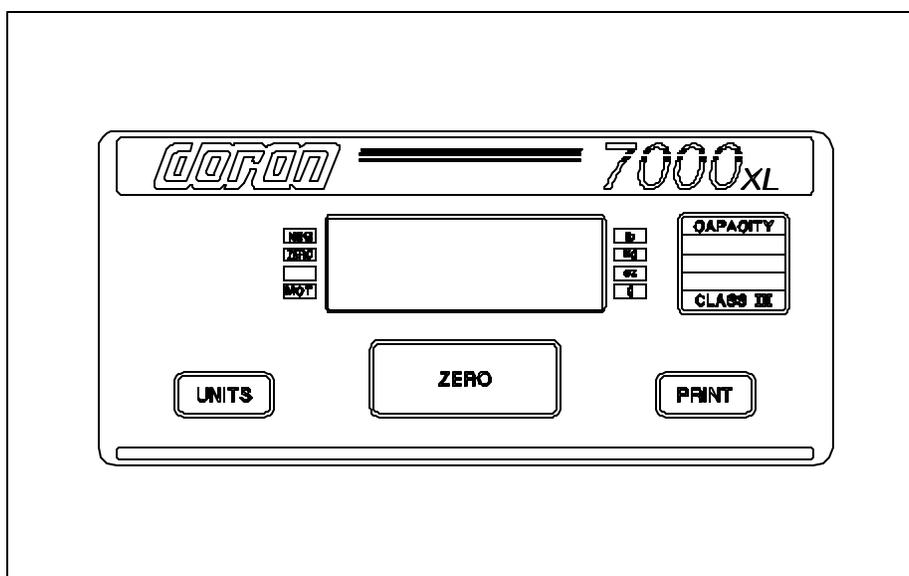
Fig. 2: Model 7000XL Front Panel Layout

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Model 7000XL:

The operational controls for the Model 7000XL (Fig. 2) consist of the **ZERO**, **PRINT** and **UNITS** buttons. A six digit LED display is used to provide weight indications and operator messages describing scale operation. Scale status such as motion (MOT), polarity (NEG) and center of zero (ZERO) is displayed on annunciators located to the left of the display area. Scale units are displayed on four annunciators located to the right of the main display.
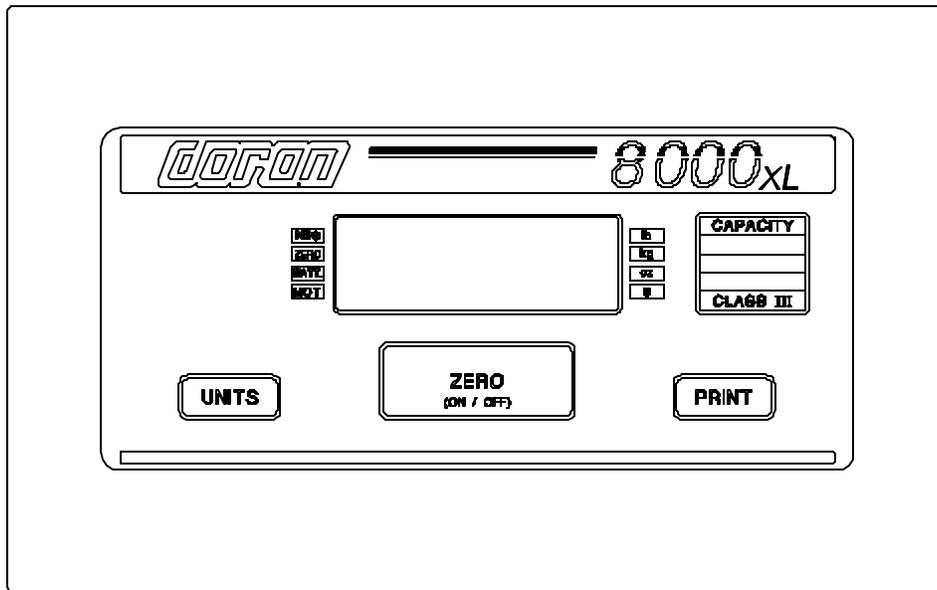
Fig. 3: Model 8000XL Front Panel Layout

Model 8000XL:

The operational controls for the Model 8000XL (Fig. 3) consist of the **ZERO (on/off)**, **PRINT** and **UNITS** buttons. A six digit LED display is used to provide weight indications and operator messages describing scale operation. Scale status such as motion (MOT), polarity (NEG), center of zero (ZERO), and low battery (BATT) are displayed on annunciators located to the left of the display area. Scale units are displayed on four annunciators located to the right of the main display.

Power Up:

Connect the Model 7000, 7000XL to a compatible power source. With the 8000XL, press and release ZERO to turn on scale.

Basic Weighing Operation:

1) Remove all items from the scale platter.
2) Press ZERO to zero the scale. The weight display should now read zero.
3) Place an item on scale platter and wait for the motion (MOT) indicator to go out, indicating a stable weight.
4) Read the weight on the scale display.

Turn Off: (8000XL)

1) To turn off manually, press and hold the ZERO push button until the display shows "rEL Pb" Then release, the ZERO button and, the indicator will turn off, or…
2) Indicator will turn off automatically at the end of the unit on timer setting when that mode is selected (see page 23).

Low Battery Indication: (8000XL)

The "BATT" indicator indicates that the battery is in need of recharging. Once the "BATT" indicator turns on, there will be approximately one more hour of battery life before the scale shuts down. When the battery is too low to run the scale, the Model 8000XL simply turns off and will not operate again until the battery is recharged. The Model 8000XL remains accurate and useable even with the "BATT" indicator on.

> **Note:** Battery life can vary depending on the following:

- The operating temperature.
- If optional remote display is installed.
- Whether or not the battery is fully charged after each low battery event.
- Load cell input impedance.

Electrical Connections:

Prior to connecting your Model 7000, 7000XL, 8000XL to power, check the serial number tag on the scale for the correct operating voltage. Verify that the power matches the rated voltage.

Be sure the AC power is not excessively noisy - this can occur if large inductive loads, such as solenoids or motors, are on the same power line. The Model 7000, 7000XL, 8000XL has a filtered power supply to reduce the effects of normal line noise, but they cannot limit severe fluctuations. If problems occur, noise producing devices may have to be suppressed to minimize their effect.

Zero:

The ZERO push button is used to zero the scale prior to making a reading. The zero button can function over the full range of the scale or it can be limited to a zero band equal to 4% of scale capacity for Canadian Legal for Trade applications. To zero the scale, wait until the scale is stable and press the ZERO button. The scale will zero immediately. The scale will not "zero" if the scale is in motion. The scale is equipped

with an optional "Zero on Demand" feature which holds "zero" requests until motion stops. This option may be activated during the scale setup procedure.

Units:

The UNITS button permits the operator to change the 7000XL, 8000XL, and 7000(optional) units by pressing a button. After pressing UNITS, the next display update will indicate the correct weight in the new units. The UNITS button has several configuration parameters, which can disable the UNITS button or limit the display units available.

Print:

The PRINT button permits the operator to send data to a printer or other external devices. Like the ZERO button, the user must wait for motion to stop before pressing the PRINT button. The current weight will then be transmitted to the printer. The 7000XL, 8000XL, and 7000(optional) has a "Print on Demand" feature which stores a PRINT request until the scale is stable. Once stable, the scale transmits the current weight. These models also have several automatic print options, which may be used to simplify printer operation.

Battery Operation: (8000XL)

The 8000XL is equipped with a self-contained rechargeable, sealed, gelled-electrolyte battery and charging circuit, both internal. The 8000XL is designed to run continuously for 60 hours (with one 350 ohm loadcell) on a fully charged battery. The charging circuit will fully charge the battery in approximately four hours. To charge the battery, simply plug the line cord into a standard 115V (230V optional) wall outlet.

The 8000XL can be used while recharging the battery, in fact, the 8000XL can be used with the AC charger cord plugged in on a continuous basis. A full recharge takes four hours, whether the 8000XL is on or off.

If an AC power failure occurs with the charger plugged in, the 8000XL battery immediately takes over to provide uninterrupted scale operation for up to 60 hours.

The 8000XL's charging circuit is a two-stage, current limited type charger. The 8000XL will sense the charge condition of the battery and charge at a high rate when the battery is depleted. When the battery comes up to a fully charged state, the charger will switch to a "float" or "trickle" mode which maintains the battery at a fully charged state without overcharging.

The "BATT" indicator indicates that the battery is in need of recharging. The 8000XL will continue to operate accurately for approximately four hours (with one 350 ohm loadcell) after "BATT" is lit. When the battery is too low to run the scale, the 8000XL simply turns off and will not operate again until the battery is recharged. At this point, when ZERO (ON/OFF) is pressed, the "BATT" indicator will be lit as the 8000XL performs its display test and then the scale will shut down immediately. This eliminates any potential scale errors.

Quick Setup Guide
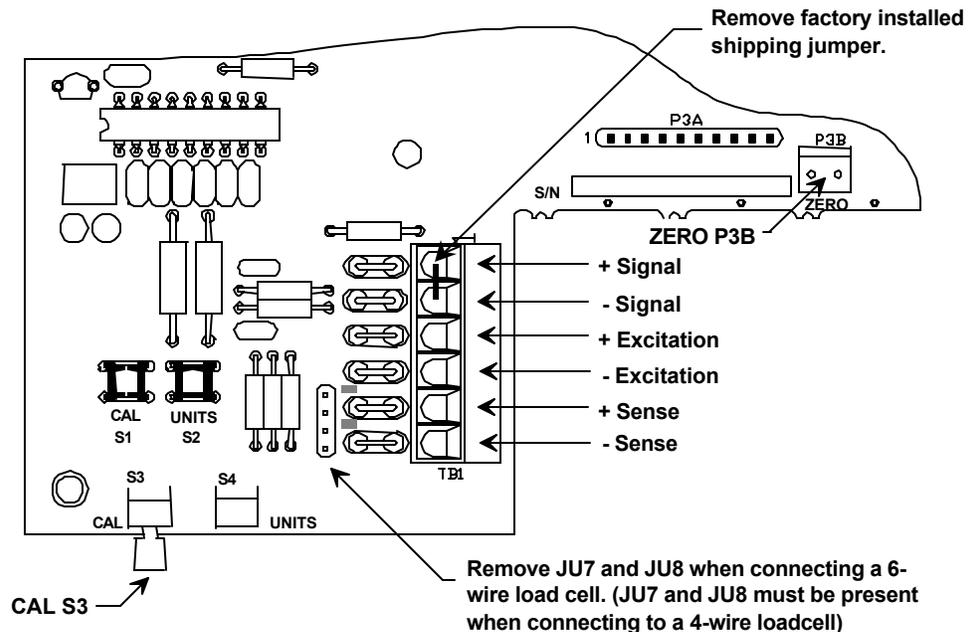
Fig. 4: Load Cell connections

Load Cell and Power Connections:

Load cell connections are made through a terminal block located at the bottom center of the main PC. Board. The power cord connects to a connector adjacent to the transformer. These connections are accessible by removing the rear cover screws and laying the rear cover and main board on the work surface. Locate the ferrite core kit and read "load cell cable grounding and ferrite assembly" instruction sheet. Thread loadcell wires through the ferrite core as shown in Fig. 9. Connect load cell per Fig. 4.

Option Connections:

The Remote Switch and Serial Communications connector is found on the topside of the main PC. Board. This connection is accessed by removing the rear cover. Connections are made by either crimping (or soldering) a connector contact onto each lead of the option cable. After crimping (or soldering), the contact is pressed into a connector housing. The completed option connector is then snapped onto the option connector found on the main board. Like the load cell cable and power cord, the option cables are passed through watertight fittings mounted on the back of the indicator.
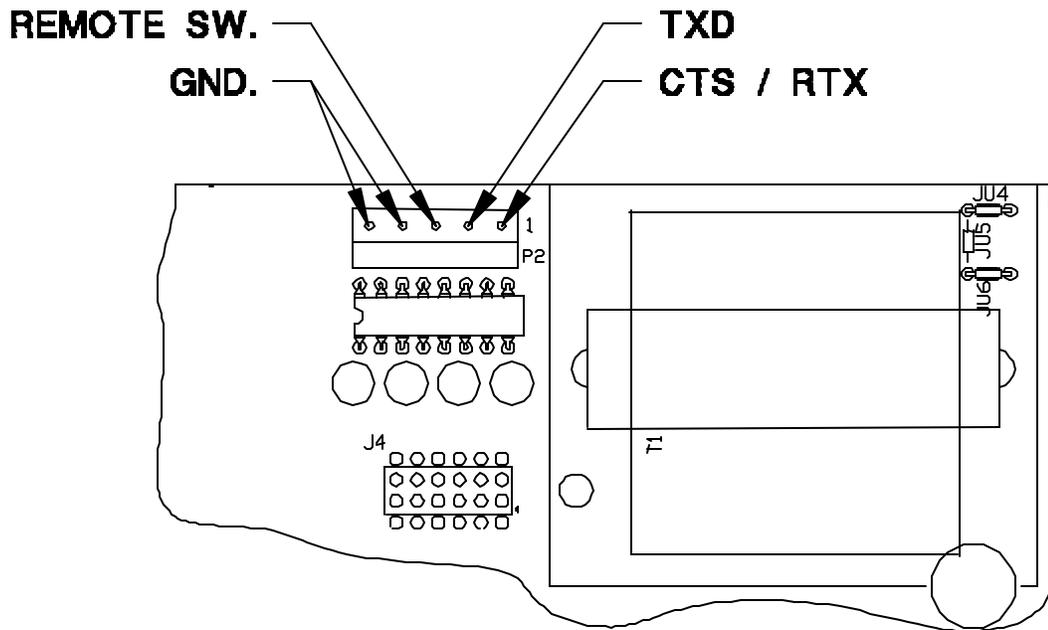
Fig. 5: Serial Communications and Remote Push Button Connections

Re-assembling Rear Cover:

The rear cover must be pressed solidly against the front cover to ensure a good seal. To accomplish this, torque the four rear cover attachment screws to 20 in-lb.

Entering Calibrations and Parameter setup Mode:

The Calibration and Parameter Setup Mode can be entered by two different ways.

1) The **Front Panel CAL Access Feature** is only available when scale is not in Legal For Trade mode ("oP" = "Std"). This feature is not available on 7000 without the units push button option. To enter the calibration mode, power up scale while pressing the ZERO and the UNITS button at the same time. When the "rEL Pb" is shown, release both buttons. The display will momentary show "Ent Cd" then go blank. Press the ZERO button five times, the display will indicate the number of times the button has been pressed. When " 5 " is displayed then press and release the units button and wait a few seconds. *Note: If the code is not entered before the timer is finished, the scale will bypass code entry and enter the normal run mode.*

2) The **CAL switch** S1 is a momentary push button located in the lower left corner of main PC. Board (see Fig. 4). On the 7000XL and 8000XL, the calibration switch can be accessed by removing the meter's back cover. For the 7000 remove the Cal access panel located on bottom of indicator.

Capacity:

Capacity selection is performed by entering in the Calibration mode, then press and release UNITS until **"CAP XX"** appears on the display (where "XX" can be any valid capacity). Once the **CAP** prompt appears press and release ZERO until the desired capacity is displayed. When finished, return to the run mode by pressing the CAL switch again or scroll through the menu with the UNITS button to "donE n" and select "donE Y" with the ZERO button, then press the UNITS button.

Once the desired capacity has been selected, place the correct capacity label on the front panel, to the right of the display.

NOTE: On scales with factory installed platforms, the capacity is set at the factory. It will not be necessary to set the scale capacity.

Calibration:

1) Enter Calibration mode, then press and release the UNITS until "CAL 0" appears on the display.
2) Remove all weight from the scale platter and wait for about 10 seconds. Press ZERO and wait for the display to count down to 0. If the calibration zero was in range, the display will return with "CAL FS". If the display returns with a "CAL 0". Repeat the process.

NOTE: If "r9 Err" appears on the display, the calibration zero is out of range. Press ZERO to clear error. Refer to the A/D Ranging section for additional information.

3) The scale can be calibrated using (a) full capacity weight, (b) half capacity, (c) quarter capacity, (d) one tenth capacity, or (e) any capacity weight between 2% and 100% of full scale (7000XL and 8000XL only).

To select the weight to calibrate the scale, press the UNITS button and select one of the four following capacities.

> CAL FS: Full load calibration.
> CAL .50: Half load calibration. (50% of full load)
> CAL .25: Quarter load calibration. (25% of full load)
> CAL .10: 1/10th load calibration. (10% of full load)

If you want to use a weight between 10% and 100% of capacity, not 25% or 50%, select the capacity above the closest to the desired weight (do not use CAL FS). Then scroll to the exact weight by pressing CAPACITY to go higher or PRINT to go lower. This is not available on the Model 7000.

4) To complete the calibration process, place the correct weight on the platter and press ZERO, wait for the display to count down to 0. If the span calibration was in range, the display will return with "*donE*". If the display returns with a "*CAL 0*", repeat steps 2 and 3.

NOTE: If "*SPAnE*" appears on the display, the calibration span is out of range. Press ZERO to clear error. Refer to the A/D Ranging section for additional information.

NOTE: Calibration at 10% of capacity has been provided as a convenience to customers with high capacity scales in remote or inaccessible locations. Scales calibrated at 10% of capacity are more likely to have significant errors at full capacity than are scales calibrated at 25% or 50%. Doran Scales recommends that all scales be calibrated at full capacity whenever possible. 10% calibration should not be used when calibrating scales for legal for trade applications. It is the responsibility of the installer/user to ensure that NTEP accuracy is achieved after any calibration.

A/D Ranging:

(Refer to this section only if you encounter a calibration problem)

NOTE: On scales with factory installed platforms, the zero and span will lie within permissible limits.

1) Enter Calibration mode by using Front Panel CAL Access feature or by pressing the CAL switch (S1).
2) Press and release UNITS until in the raw counts mode.
3) Return the scale platform to "No Load" by removing all items from the platform.
4) Record the "No Load" counts. The "No Load" or dead load raw counts must be between 130,000 and 393,000 counts. If the readings are outside of the limits specified, change dead load until you meet the requirements.
5) Place "Full Load" on the platform and record the "Full Load" counts. Subtract the "No Load" counts from the "Full Load" counts to calculate "span". Refer to Table 1 and verify that the span falls within the limits specified range. The "Full Load" raw counts (span + dead load) should not exceed 900,000 counts.
6) When using 50%, 25% or 10% of full load to calibrate, refer to Table 1 50%, 25%, 10% span ranges.

Calibration requirements in raw counts		
Platform load	Minimum span	Maximum span
Full	50,000	600,000
50%	25,000	300,000
25%	12,500	150,000
10%	5,000	60,000

Table 1: Calibration requirements in raw counts

Parameter Setup

The Models 7000/7000XL/8000XL have 22 calibration and parameters setup menu items, which can be accessed two different methods, CAL switch and the Front Panel CAL Access Feature. The Front Panel CAL Access Feature allows the user to change the scale's calibration and parameter settings by way of entering in a password code. This Feature is only available when scale is not configured for legal for trade mode (see Operating mode on page 22).

Entering and Exiting the Calibration and Parameter Setup Mode:

The Calibration and Parameter Setup Mode can be entered by two different methods.

1) The **Front Panel CAL Access Feature** is only available when scale is <u>not</u> in Legal For Trade mode ("oP" = "Std"). This feature is not available on 7000 without the units push button option. To enter the calibration mode, power up scale while pressing the ZERO and the UNITS button at the same time. When the "rEL Pb" is shown, release both buttons. The display will momentary show "Ent Cd" then go blank. Press the ZERO button five times, the display will indicate the number of times the button has been pressed. When " 5 " is displayed then press and release the UNITS button and wait a few seconds.

    Note: If the code is not entered before the timer is finished, the scale will bypass code entry and enter the normal run mode.

2) Apply power to the Scale. Then momentarily press the **CAL switch** S1 located in the lower left corner of main PC. Board (see Fig. 4). The calibration switch can be accessed by removing the meter's back cover. **Warning:** do not press CAL switch while powering up scale, this will cause the scale to reset all parameter settings.

The scale will Momentarily display a Parameter and Calibration audit counters. The indicator will then display the first menu item, "CAL 25" (Where 25 can be any valid capacity). Press the UNITS button to access the next menu item.

To exit the Calibration and Parameter Setup Menu, momentarily press the CAL switch or scroll through the menu options, by pressing the UNITS button, until "donE n" appears. Press ZERO button until "donE Y" appears and then press the UNITS button. The indicator will return to the normal weighing mode. If any menu selections were changed, The new values will be saved

NOTE: No new setup information is saved until the scale displays "SAUEd" and returns to the RUN mode. In the event of a power failure while in the Calibration and Parameter Mode, any changes that have been made will be lost.

Stepping through the menu parameters:

Once the Calibration and Parameter Setup Mode has been entered, you may step through the menu by pressing and releasing UNITS. A different display prompt will appear for each parameter in the menu.

The parameter list on the following pages corresponds to the parameters available in the Calibration Setup Menu.

Changing a Parameter:

After finding the desired menu item, the parameters for that item may be changed. Press and release **ZERO** to step through the parameter list for that item. The list of choices will repeat if you keep pressing and releasing **ZERO**. When you have found the desired setting, press UNITS to go to the next menu item.

Quick Review of Setup Parameters:

The Setup parameters for the Model 7000, 7000XL, 8000XL may be quickly reviewed without entering in the Calibration and Parameter Setup Mode. Remove power and press and hold the **ZERO** button while you apply power. Hold the button until the scale begins to scroll through the setup parameters. The button may be released anytime after the review has begun. After parameters are displayed, scale will then go to the normal weighing mode automatically.

Legal for Trade Restrictions:

When the Legal for Trade mode is enabled, it automatically disables some menus and parameter options. This is done to comply with NTEP requirements. The menus and parameter sections are shown on the following pages. Those menus and/or parameters not available when in the Legal for Trade mode are marked by an asterisk.

Audit Counters:

When entering calibration mode, the Parameter audit counter and the Calibration audit counter will momentarily be displayed. The Parameter audit counter only increments when *A2t*, *nnA*, *SUD*, *oP* values are changed (ZERO pb is pressed). The Calibration audit counter only increments when *CAL 0*, and Span are performed or the *CAP*, *CtS*, values are changed (ZERO pb is pressed).

Setup Menus Explained
(In order of occurrence)

Calibration Setup Menu → C   P

CAP	CAL	AUG	AZt	mmA	SUO	2od	Pod	d.o	For.	br.
2	0	A0	oFF	1	on	on	on	tod	F0	12
100.	FS	A9	N.S	3	rin	nFF	nFF	r.P.	2H	24
xxxxxx	N.S	A7	1	5	PAN			A.P.1	SSP	4A
	0.25	A6	3					A.P.2	F9	96
	0.1	A5								14.4
		A4								
		A3								
		C4								
		C8								
		C16								
		C32								
		C64								

HS	CSL	UntS	P.b	r.P.b	oP	CtS	tdY	dEFt	xxxxxx	donE
nFF	rA	lh	rP	nFF	9td	3	nn	n		n
9F	19n	h9	P	P	44	P	N.S	4		4
CtS	Lh	02	C	C	CAn	SP	1	n		
	Lo	9	non	0			1.5	4		
	9o	lb o2					2			
							3			
							5			
							10			
							30			
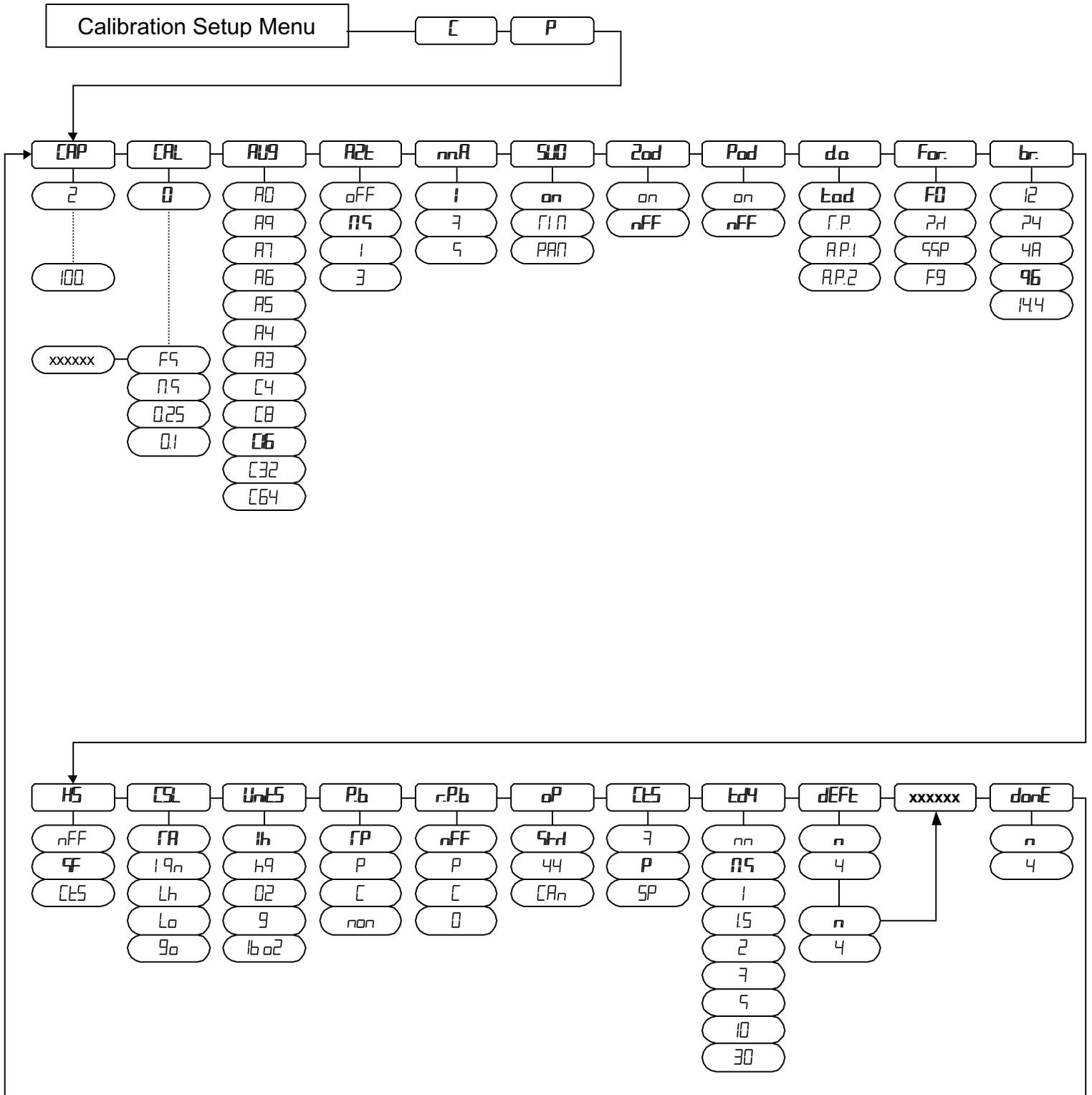
Capacity Setup Menu

CAP	Capacity Select Menu Allows the selection of scale capacity.
2	2 pounds [3]
5	5 pounds
6	6 pounds
10	10 pounds
15	15 pounds [2,3]
20	20 pounds [3]
25	**25 pounds** [3]
30	30 pounds [3]
50	50 pounds
60	60 pounds
100	100 pounds
150	150 pounds [2,3]
200	200 pounds [3]
250	250 pounds [3]
300	300 pounds [3,4]
500	500 pounds [2,3,4]
600	600 pounds [2,3,4]
1.	1000 pounds [1,2,3,4]
1.5	1500 pounds [1,2,3,4]
2.	2000 pounds [1,2,3,4]
2.5	2500 pounds [1,2,3,4]
3.	3000 pounds [1,2,3,4]
5.	5000 pounds [1,2,3,4]
6.	6000 pounds [1,2,3,4]
10.	10,000 pounds [5]
15.	15,000 pounds [5]
20.	20,000 pounds [5]
25.	25,000 pounds [5]
30.	30,000 pounds [5]
50.	50,000 pounds [5]
60.	60,000 pounds [5]
100.	100,000 pounds [5]

1) No lb-oz display for this capacity in standard resolution.

2) No lb-oz display for this capacity in precision resolution.

3) No lb-oz display for this capacity in super precision resolution.
4) No grams display for this capacity.
5) Pound - kilograms display only at this capacity.

Calibration Menu

CAL	Zero Calibration Mode.
0	**Calibration Zero** Press ZERO to perform calibration of the scale zero. Successful calibration is indicated by "*donE*"

NOTE: The scale will automatically adjust the offset and gain to compensate for dead load and span. When making these adjustments, the scale may ask you to repeat zero calibration immediately after performing a zero calibration or after a span calibration. Successful calibration is indicated by "*donE*"

CAL	Span Calibration Mode. (Does not appear if CAL 0 is not activated.)
FS	**Full load calibration.**
.50	Half capacity calibration.
.25	Quarter capacity calibration.
.10	1/10th of capacity calibration.
XXXXXX	By pressing the optional print push button weight value can be entered in. (note: XXXXXX will be the dialed in weight value. This feature is not available on 7000.)

NOTE: For maximum accuracy, Doran Scales recommends that all scales be calibrated at full capacity. When location or installation make it difficult to bring full capacity weights to the scale, calibration with as little 10% of capacity is possible.

Digital Filter Setup Menu

Au9	Averaging mode **Determines the number of samples to average**
A0	Stabil-izer© auto averaging. All readings are averaged. Display updates 10 times a second.
A9	Stabil-izer© auto averaging. All readings are averaged. Display updates 9 times a second.
A7	Stabil-izer© auto averaging. All readings are averaged. Display updates 7 times a second.
A6	Stabil-izer© auto averaging. All readings are averaged. Display updates 6 times a second.
A5	Stabil-izer© auto averaging. All readings are averaged. Display updates 5 times a second.
A4	Stabil-izer© auto averaging. All readings are averaged. Display updates 4 times a second.
A3	Stabil-izer© auto averaging. All readings are averaged. Display updates 3 times a second.
C4	Fixed averaging 4 readings are averaged. Display updates 10 times a second.
C8	Fixed averaging 8 readings are averaged. Display updates 5 times a second.
C16	**Fixed averaging 16 readings are averaged.** **Display updates 3 times a second.**
C32	Fixed averaging 32 readings are averaged. Display updates 1½ times a second.
C64	Fixed averaging 64 readings are averaged. Display updates 1 time every 1.4 seconds.

Automatic Zero Tracking Setup Menu

A2t	Automatic Zero Tracking Range **Small weights within the specified number of divisions are automatically zeroed.**
oFF	Zero tracking is off. No automatic zeroing.
0.5	**Zero tracking to within 0.5 division.**
1*	Zero tracking to within 1.0 division.
3*	Zero tracking to within 3.0 divisions.

* **NOTE**: The Legal for Trade mode disables some options and selections listed above. These items have been indicated by an asterisk.

Motion Aperture Setup Menu

mA *	**Motion aperture *** **Determines how many divisions consecutive readings must change before the scale is considered in motion.**
1	**1 division change must be seen to enter motion.**
3	3 division change must be seen to enter motion.
5	5 division change must be seen to enter motion.

Start Up Zero Setup Menu

*SUO**	**Start Up Zero** **Controls the start up zero status.**
on	**Zeros on the first stable reading on power up.**
CLO	Loads the calibration zero for zero reference
*PBO**	Loads the last pushbutton zero. (8000XL option only)

Latching Zero Request Setup Menu

Zod	**Zero on Demand** **Enables or disable zero latching.**
on	If ZERO is pressed, it is saved until the scale becomes stable.
oFF	**If the scale is in motion, the zero request is discarded.**

Latching Print Request Setup Menu

Pod	**Print on Demand** **Enables or disables print latching.**
on	If PRINT is pressed, the print request is saved until the scale becomes stable.
oFF	**If the scale is in motion, the print request is discarded.**

* NOTE: The Legal for Trade mode disables some options and selections listed above. These items have been indicated by an asterisk.

Printer Data Output Setup Menu

do	**Data Output Mode (see page 25)** **Determines when serial data will be sent.**
tod	**Transmit on demand. Print when the PRINT button is pressed.**
C.P.	Continuous Print. Print when display is updated.
A.P.1	Auto Print 1. Print once only when scale goes stable.
A.P.2	Auto Print 2. Print once only when scale goes stable. Scale must return to zero to before it can print again.

Output Formats

For.	**Data Input / Output Format (see page 26)** **Defines the appearance of the serial data sent.**
F0	**Basic output format.** **(See the Data Communication section for details)**
2d	Basic Dual Print Format. Includes Kilogram weight.
SSP	Basic Output for Eltron printer.
F9	Model 8000 emulation

Baud Rate Setup Menu

br.	**Baud Rate Setup** **Determines baud rate for serial data.**
12	1200 baud (bits per second)
24	2400 baud (bits per second)
48	4800 baud (bits per second)
96	**9600 baud (bits per second)**
14.4	14,400 baud (bits per second)

Serial Data Handshaking Setup Menu

HS	**Serial Data Output Handshaking** **Selects the type of serial data handshaking used.** **(See the Data Communication section for details)**
oFF	No handshaking is used. Data is sent when ready, receiving device (printer) must be fast enough to keep up with the data.
SF	**Software handshaking. Data is sent when ready. Transmission can be controlled by the receiving device. The software handshaking option activates Bi-directional RS232 communications. Refer to the communications section for details.**
CtS	CTS Handshaking. Data is sent only when CTS is active. Disables bi-directional communications.

Units Conversion Setup Menu

CSL	**Convert Select Modes** **Determines which units selections will be active.**
CA *	**Convert All. lb, kg, g, oz and lb-oz are active.**
LGo	lb, kg, g and oz are active.
Lh	lb and kg are active.
Lo	lb and oz are active.
Go	g and oz are active.

Start Up Units Selection Menu

UntS	**Start Up Units Select Mode** **Configures selection of start up units.**
	Press ZERO to scroll through the units activated in the CSL parameter. The selected units will be displayed on the units indicators to the right of the display.

NOTE: If an invalid start up unit is selected for a given capacity, the scale will automatically change the unit setting to a valid unit when exiting the setup menu.

* NOTE: The Legal for Trade mode disables some options and selections listed above. These items have been indicated by an asterisk.

Push-button Function Setup Menu

P.b	**Push Buttons** **Configures the active push button functions.**
CP	**UNITS, PRINT enabled**
P	PRINT enabled only.
C	UNITS enabled only.
non	UNITS, PRINT disabled.

Remote Push-button Configuration Menu

r.P.b	**Remote Push Button (P2 – pins 3 and 4)** **Configures the Remote Switch to perform one of the three front panel functions.**
OFF	**The remote switch is disabled.**
P	The remote switch functions as a PRINT button.
C	The remote switch functions as a UNITS button.
0	The remote switch functions as a ZERO button.

Legal For Trade Setup Menu

oP *	**Operating mode** **Activates the Legal for Trade mode.**
Std	**Standard operation**
44	Legal for Trade, Handbook 44 compliant.
CAn	Legal for Trade, Canadian W&M compliant.

Scale Resolution Setup Menu

CtS	**Counts select**
3	Standard precision mode (3000d typ.)
P	**Precision mode (5000d typ.)**
SP	Super precision mode (10,000d typ.)

* NOTE: The Legal for Trade mode disables some options and selections listed above. These items have been indicated by an asterisk.

Unit On Timer (8000XL only)

tdH	Selects the time value that the unit will remain on
on	Unit will remain on, On timer is off
0.5	**30 second "On timer"**
1	1 minute "On timer"
1.5	1.5 minutes "On timer"
2	2 minutes "On timer"
3	3 minutes "On timer"
5	5 minutes "On timer"
10	10 minutes "On timer"
30	30 minutes "On timer"

NOTE: The "On Timer" governs the amount of time the unit stays on after ON/ZERO is pressed. The electronics in the scale sense activity on the scale platform - when there is no activity on the platform within the time programmed for the "On Timer", the unit will turn itself off. Each time there is activity (motion) on the scale's platform or any pushbutton activity before the scale turns off, the "On Timer" is reset to its full time period.

Default all Scale Parameter settings

dEFt		Default Calibration and Parameter settings.
n		**Do not default settings.**
Y		1st yes answer, Default all Calibration and Parameter settings
	n	**Do not default settings**
	Y	Verify 2nd yes answer, Default all Calibration and Parameter settings

WARNING: Defaulting the scale will require recalibration.

Raw Counts Display Mode

Raw Counts	Displays the raw Analog to Digital converter data.
xxxxxx	Press UNITS to exit Raw Counts.

Calibration and Parameter Menu Exit

donE	Exit Calibration and Parameter Menu.
n	**Do not exit menu. Start over at the top of the parameter list.**
Y	Exit Calibration and Parameter menu. Save all parameter changes. The scale will return to normal weighing when UNITS is pressed.

Data Communications

Introduction to data communications:

In the Model 7000, 7000XL, 8000XL data is sent to a printer or computer by using "asynchronous serial data communications." Data is broken up and sent one piece at a time to the printer or computer. In spite of this apparent simplicity, a basic understanding of serial data communications is needed when setting up the scale.

The scale transmits letters and numbers to a printer or computer by replacing the letter (or number) with an eight bit ASCII code. This code is then transmitted, one bit at a time, to a printer or a computer. A bit is the smallest unit of data and can have a value of "1" or "0." By combining eight bits into a byte, it is possible to get 256 unique bit patterns. These patterns are used to create the ASCII codes used by the scale to represent letters and numbers.

When setting up a serial communications system, there are several concerns which affect the configuration of that system. These are:

- transmission rate
- knowing when data starts and stops
- the ability of the receiving equipment to digest the data sent

The transmission rate determines how fast the data is sent from the scale to the printer (or computer) and is measured in Baud or bits per second. (For applications such as the Model 7000, 7000XL, 8000XL, Baud and bits per second are interchangeable.) The transmission rate controls how many bits can be sent in a given time. It is important that the sending and receiving units are set to the same Baud settings. Typical values are 1200, 2400, 4800 and 9600 baud.

The term "asynchronous serial data communications" implies that the sending unit has no way of telling the receiving unit when a data bit has been sent or when to expect the next bit. To correct this problem, both the sending and receiving units use the baud rate setting to determine how fast data should be sent. If the baud rates at the sending and receiving units differ, the receiving unit will expect data to arrive at a different time than when the transmitting unit sent it. When this happens, data will be lost. When the baud rates match, the receiving unit has no problem with the data arriving early or late. The only problem is knowing when the data transmission started.

The scale and the equipment connected to it resolve this dilemma by sending a "start bit" at the beginning of each data byte. This bit tells the printer or computer that a new data byte is on the way. When the start bit is received, the bit timer starts running and runs until it has received the correct number of bits.

The number of bits sent by the scale is controlled by the data bits, parity and stop bit configuration. The scale is factory set for eight bits, no parity and one stop bit. This means that the eight bits following the start bit will be data, followed by a stop bit. The stop bit signals the end of the data and permits the bit timer a chance to reset itself before the next data byte is sent. No parity bits are sent.

In many cases, the receiving unit is a slow printer with limited memory. In these cases, more data may be sent than the printer can use. Again, data may become lost or scrambled. To prevent this from happening, "Handshaking" is used. When the receiving unit is busy or incapable of receiving further data, it activates the handshaking; telling the sending unit to stop transmission. Then, whenever the receiving unit is ready for more data, it deactivates the handshaking and data transmission continues.

The scale offers hardware and software handshaking. Hardware handshaking makes use of the CTS (clear to send) input on the unit. When this signal is active, the scale is permitted to send data. When the receiving unit is busy, the CTS line is deactivated and the scale stops sending data. When the receiving unit is ready for more data, the CTS is reactivated and the scale will finish sending the data string it was sending when transmission was interrupted. All readings created while transmission is halted are discarded.

Software handshaking relies on bi-directional communications to send the XON (Ctrl-Q) and XOFF (Ctrl-S) flow control characters. The scale has limited bi-directional serial communications to support software handshaking. When a "Ctrl-S" is received, the transmission of data is halted until a "Ctrl-Q" is received. To use this mode, the RTX line of the scale is tied to the TXD line of the receiving unit. Refer to Doran RS-232 Training Technical Bulletin (MAN0214) for in depth coverage of this subject.

Printer Modes:
The Model 7000, 7000XL, 8000XL offers four different print control modes. These modes dictate when printer data is sent.

Transmit on demand (tod):
In this mode, scale data is transmitted whenever the print button is pressed, the remote print button is pressed, or a print request is received from the serial port. The scale must be stable and the scale value must be valid before the data is printed.

Continuous print (CP):
In continuous print, data is transmitted each time the scale has a reading ready. Readings which occur when the scale is in motion are called out by the abbreviation "MOT." following the data.

Auto Print 1 (AP1):
Auto Print 1 transmits the first scale reading after the scale leaves motion. The reading must be stable and must be a valid reading before it can be sent.

Auto Print 2 (AP2):
Like Auto Print 1, Auto Print 2 transmits the first scale reading following the scale leaving motion. In Auto Print 2, no further readings will be sent until the scale returns to displayed zero. The reading must be stable and must be a valid reading before it can be sent.

Data output format:

In order for the serial data sent from the scale to be useful, the data must be organized so that it is easy to read. To accomplish this, the scale arranges the displayed data with additional text to indicate the active units and to indicate the presence of motion during the reading.

"F0" Format:
The basic data format sent by the scale is illustrated in Table 2. Each line of data begins with an STX character (start of text) followed by a polarity sign, which indicates the reading polarity. Next, the displayed data is sent. Six digits are used with a decimal point inserted in the correct position. After the weight data is sent, a space followed by the units are added to the string. When motion is present, another space is inserted followed by "MOT." The string is then finished by adding a carriage return and a line feed.

In the case of lb-oz data, the pounds value is placed after the polarity sign. A space followed by "lb" and another space follows the pounds data. Ounce data is then sent with a decimal point inserted where needed. Once again a space is inserted after the weight data followed by "oz." Only six digits are sent in the lb-oz mode so the allocation of these digits depends on the ounces resolution. Refer to Table 2 for details.

"2d" Format:
In the "DUAL PRINT" format, the current weight is first printed using the "F0" format. Then the weight is recalculated in kilograms and is sent as a second line of text. The kilogram data follows the "F0" data format except where parentheses are placed after the STX character and before the carriage return, line feed. Refer to Table 2 for details.

"SSP" format:
The data string produced by the SSP format allows the scale to communicate with an Eltron Label Printer. This printer allows the creation of custom labels containing weight information, bar codes and graphics. Refer to Table 2 for details.

"F9" Format:
In the "8000 emulation" format, the print string is the same as the "F0" format. The only difference is that "grs" message is add between the current units <uu> and the motion <MOT> status. Refer to Table 2 for details.

Command (RXD)	Scale output Response (TXD)	Description
W (hex 57)	<STX><p><xxxx.xx><SP><uu><SP><MOT><CR><LF> or <STX><p><xxxx.xx><SP><uu><SP><MOT><CR><LF> <(><p><xxxx.xx><SP><kg><SP><)><MOT><CR><LF> or <FR"L1"><LF><?><LF><p><xxxx.xx><LF><uu><LF> <GS><LF><MOT><LF><p><xxxx.xx><LF><kg><LF> <P1,1><LF> or <STX><p><xxxx.xx><SP><uu><SP><grs><MOT> <CR><LF>	"_F0" standard format, Prints current weight and units. "_2d" dual print format, Prints current and kg weight resolution. "55P" Label printer format, for Eltron printers "_F9" 8000 emulation format, Prints current weight, units, and "grs". **<xxxx.xx>** weight data (fixed field of 6 digits plus decimal or "-------" for overload, underload, gross underload, or gross overload) **<p>** polarity "-" or " " **<GS>** gross or net status (always "GS") **<uu>** current units **<SP>** line space (hex 20) **<MOT>** motion status ("MOT." or " ") **<CR>** carriage return (hex 0D) (control-M) **<LF>** line feed (hex 0A) (control-J)
U (hex 55)		**Scale changes units**
Z (hex 5A)		**Zeros scale**
XON (hex 11, ctrl-Q)		**Turns on serial handshaking** scale output disabled
XOFF (hex 13, ctrl-S)		**Turns off serial handshaking** scale output enabled

Table 2: Doran serial protocol

Specifications and Interconnect Data

Specifications:

Model:	7000	7000XL	8000XL
Resolution:	10,000d in precision mode		
Sensitivity:	0.5 uV min.		
Load Cell Capacity:	0.5 mV/V to 3.5 mV/V		
Power Supply:	115/230VAC 50/60Hz		115/230VAC 50/60Hz 6V Battery
Display:	6 digit LED. 0.56" high		
Displayed units:	lb, kg, oz, g and lb oz		
Capacities:	2 to 100,000 lb		
Printer Interface:	Bi-directional RS-232		
Calibration	Unit may be calibrated with 10%, 25%, 50%, or 100% of capacity Or user selected.		
Controls:	ZERO switches. Optional UNITS & PRINT switch.	Polycarbonate touch panel with built in ZERO, UNITS, PRINT and Hidden buttons.	
Construction:	Rugged Stainless Steel NEMA 4/4X (IP 65) construction.		
Options:	User configurable remote switch. 6 digit LED remote display Internal 4-20mA output		

Table 3: Scale Specifications

Interconnect Data:

PIN #	TITLE	WIRE COLOR CODE
1	+ Load Cell Signal	Red
2	- Load Cell Signal	White
3	+ Load Cell Excitation	Green
4	- Load Cell Excitation	Black
5	+ Sense Signal	Blue
6	- Sense Signal	Brown or Orange

Table 4: TB1 Load Cell Connections

NOTE: When connecting the loadcell, be sure to install the ESD and EMI protection inductor. Refer to Fig. 9 for details.

P2 Options Connections		
PIN #	TITLE	WIRE COLOR CODE
1	RTX	White
2	TXD	Red
3	Remote Switch High	White
4	Remote Switch Ground	Black
5	RS232 Signal Ground	Black

Table 5: P2 Options Connections

J1 Power Connections		
PIN #	TITLE	WIRE COLOR CODE
1	n/c	NA
2	Neutral	Blue
3	Ground	Green
4	Hot	Brown

Table 6: J1 Power Connections

P3 Keyboard Connections	
PIN #	TITLE
1	Zero Switch Ground
2	Zero Switch High
3	Units Switch
4	Print Switch
5	Hidden Switch
6	Keyboard Scan

**Table 7: P3 Keyboard Connections**

WHITE
BLACK
SHRINK
SHIELD
SHRINK
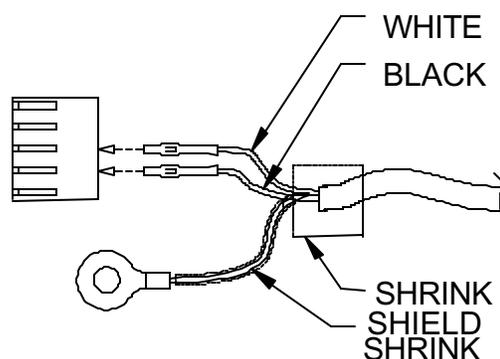
Fig. 6: Connector J2, Remote switch cable assembly
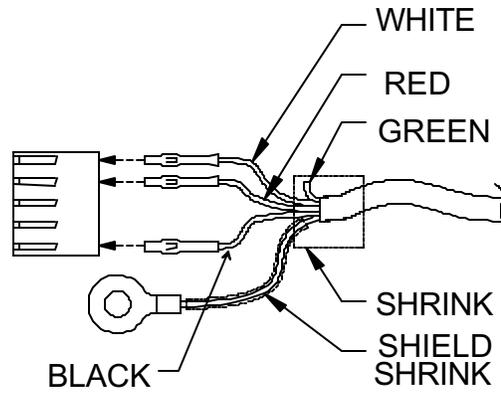
Fig. 7: Connector J2, Serial cable assembly

RS232 Output DB9 Female connector	
Function	**Pin**
N/A	1
TXD	2
RXD/CTS	3
N/A	4
Signal GND	5
N/A	6
N/A	7
N/A	8
N/A	9

**Table 8: Serial Output pin description**
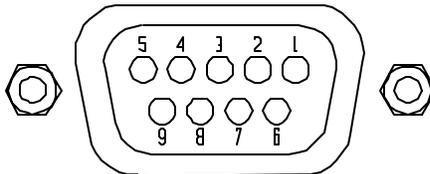
Fig. 8: RS232 Output DB9 Connector (optional)
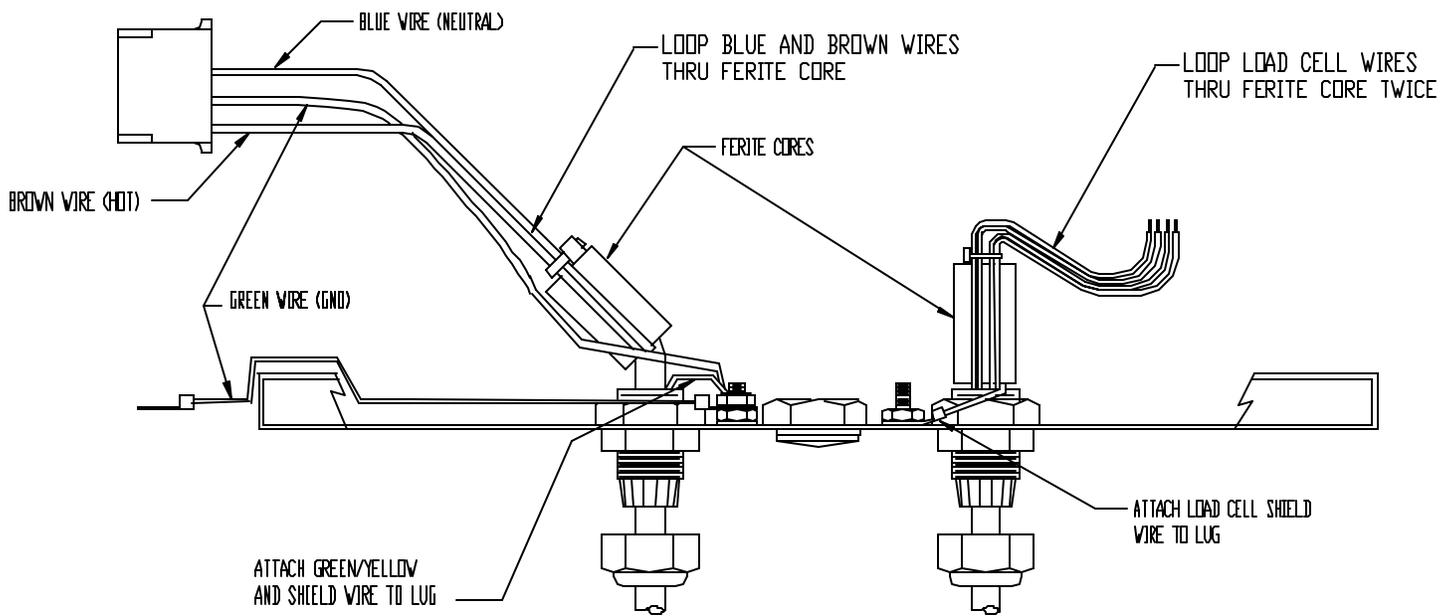
Fig. 9: Installation of EMI / RFI / ESD protection devices.

NOTE: Fig. 9 illustrates a 7000/7000XL/8000XL connected with a 4-wire load cell. When installing a 6-wire cell, remove shunts at JU7 and JU8.
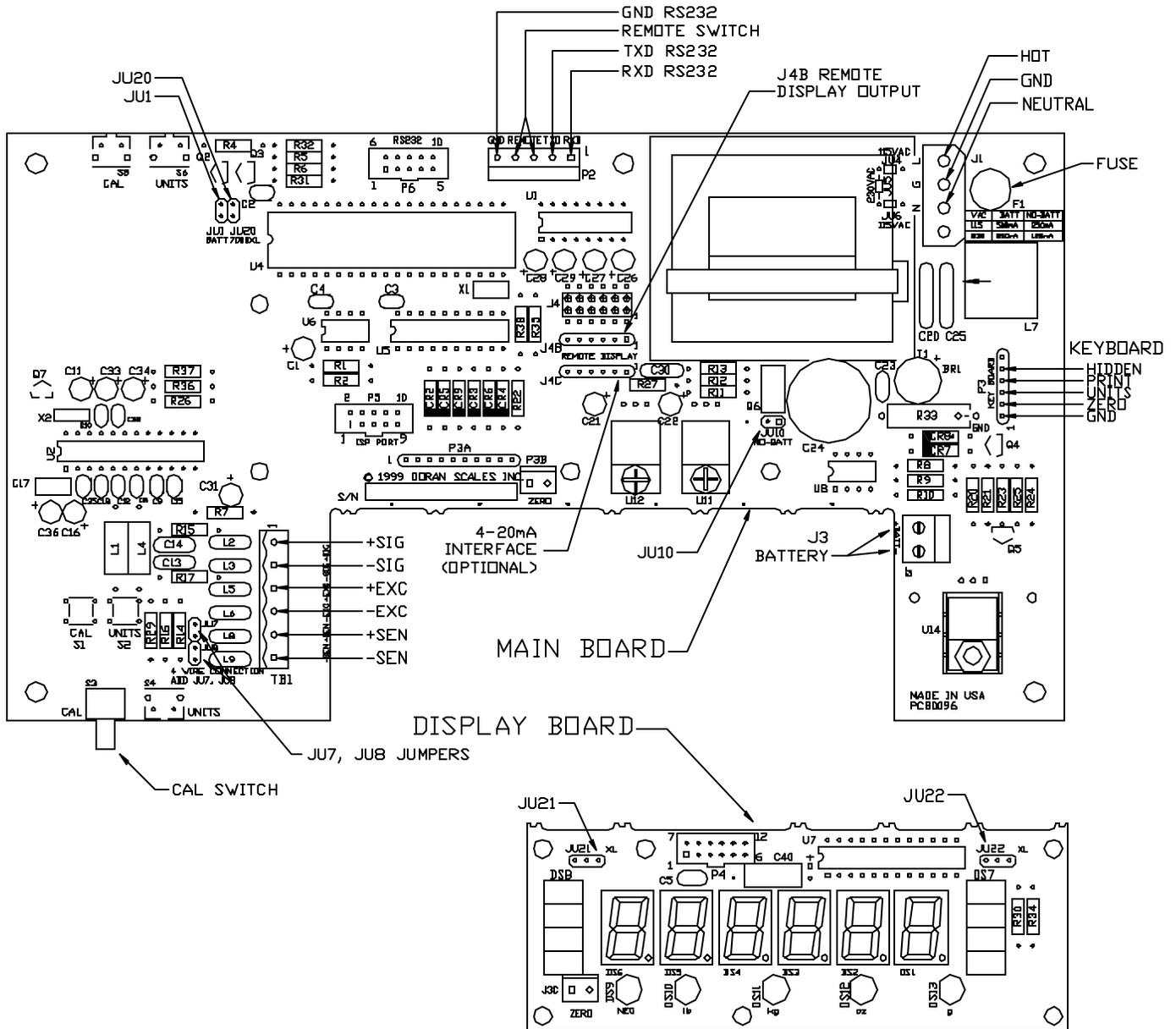
Fig. 10: Jumpers and Connector Locations

Jumper settings per model			
Jumper	7000	7000XL	8000XL
JU1	OUT	OUT	IN
JU7	In for 4 wire and Out for 6 wire loadcell connections		
JU8	In for 4 wire and Out for 6 wire loadcell connections		
JU10	IN	IN	OUT
JU20	OUT	IN	OUT
JU21	LEFT TWO PINS	RIGHT TWO PINS	RIGHT TWO PINS
JU22	LEFT TWO PINS	RIGHT TWO PINS	RIGHT TWO PINS

Table 9: Board Jumper settings

4-20mA Analog Output (optional)

Introduction

The 4-20mA Analog Output Option is used to provide an analog output that is proportional to the weight on the scale platform. Because of the inherent noise immunity present in a current loop, an isolated 4-20mA analog output is ideal for use in noisy environments. The 4-20mA analog output option can be used to send weight data to a process indicator, a simple on/off controller or to a programmable logic controller.

Setup

To setup the 4-20mA Analog Output Option, calibrate unit like a standard scale. This procedure is found in the instruction manual. The 4-20mA option is automatically calibrated for an output range of 4mA to 20mA, (i.e. 4mA equals zero weight and 20mA equals the scale's capacity). Once the basic scale has been connected and calibrated, attach the output cable from the appropriate controller or indicator to the 4-20mA option board. The white lead is connected to the + input of TB2 and the black lead is connected to the – input of TB2.

Active (default) or Passive mode, if your application requires a self power (Active mode) analog output, place jumpers on pins 3,4 (ACT) on JU1 and JU2. For loop power (Passive mode) applications, place jumpers on pins 1,2 (PAS) on JU1 and JU2. See Fig 11 for jumper locations.

Calibrate your process indicator or controller according to the manufacturer's instructions. Remember that the option will output 4mA when the scale reads "zero" and 20mA when the scale reads full capacity. **NOTE:** If the scale is in a fault condition, the 4-20mA output levels are 3.5mA for gross underload or underload, and 24mA for gross overload or overload. Output impedance range is zero to 600 ohms.

Operation

There is no effect on scale operation when the 4-20mA Analog Output Option is installed. The only exception to this is on the 8000XL where battery life will be reduced by 50% when the 4-20mA option is set to the active mode. To increase battery life back to normal, set option output for passive mode.

Connect serial interface cable to J4C terminal on scale's main board

Connect output cable to terminal block TB2

Active / Passive jumper settings
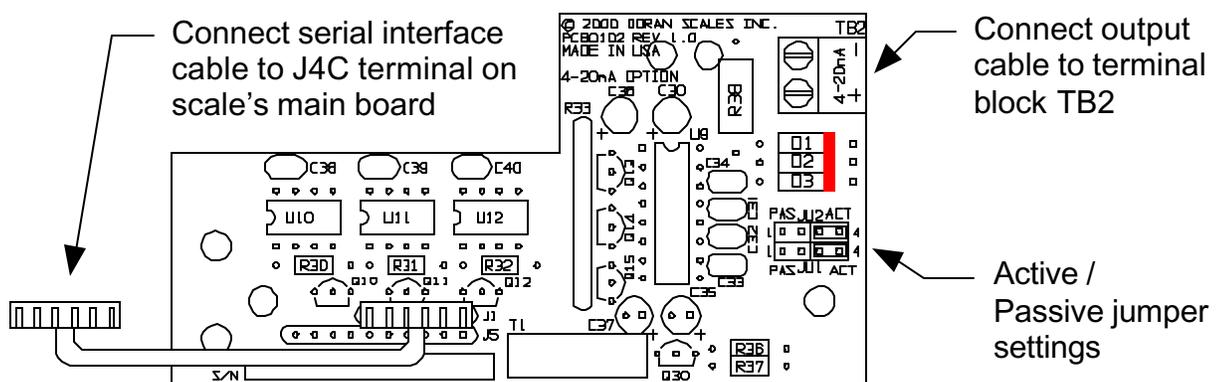
Fig. 11: 4-20mA analog option board

Troubleshooting

General problem resolution:

Problem:	What to Do or Check:
Weight reading will not repeat or scale does not return to zero when weight is removed.	Make sure that there is nothing caught in the platform under or around the load cell or spider interfering with its movement.
Scale overloads early.	Make sure all four corner overload stops are properly set, if present. Take the platter off the scale, invert it and place it back on the spider. With 1/2 of the scale's capacity in test weights concentrated over a corner of the platform, there should be approximately 1/32" of clearance between the stop and the bottom of the spider. Check all four corners then recalibrate the scale. If the problem persists, it is possible that the scale is being shock-loaded causing the load cell to be shifted.
Scale will not indicate full capacity or go into overload.	Make sure that there is nothing caught in the scale under or around the load cell or spider, which would interfere with their movement. If not, check the overload stops using the above procedure.
Scale will not come to zero when the ZERO button is pressed.	Make sure that the scale is stable ("MOT" annunciator is off) when ZERO is pressed. If excessive motion is a problem, then it may be necessary to activate the latching print feature (*P0d*) or lengthen the filter time (*Au9 C32*). If the scale is stable, the scale may be set to the Canadian Legal for Trade (4% zero bandwidth). An attempt is being made to zero more than 4% of capacity (see Parameter Setup section). There may be a problem with the touch-panel or main board.
Weight readings don't seem to be correct.	Check the scale's accuracy with a test weight. Recalibrate if necessary.
Scale drifts off of zero.	Check for air currents and/or vibration around the scale. If that is the cause, it may be necessary to set the AZT aperture to a wider setting to compensate (see Parameter Setup section).
Scale drifts off of zero.	Check for air currents and/or vibration around the scale. If that is the cause, it may be necessary to set the AZT aperture to a wider setting to compensate (see Parameter Setup section).
Scale reading is bouncing or "flighty".	Check for air currents and/or vibration around the scale. If that is the cause, it may be necessary to set the Digital Averaging to a higher setting to stabilize the reading (see Parameter Setup section).

If you are still experiencing a problem with your scale, or if the problem you are having is not covered in the above list, please contact your Doran Scales authorized dealer.

Resetting the scale parameters:

- If at some point the Model 7000, 7000XL, 8000XL, user wishes to return the setup parameters to factory default, follow these steps.
  WARNING: Defaulting the scale will require recalibration.
- Enter Cal mode by using Cal access feature or by pressing the CAL button.
- Once in CAL menu, use the units button to scroll to menu item "dEFL n". Press ZERO button to select yes "dEFL Y". Press UNITS button to enter answer, display will show again "dEFL n", Press ZERO button to select yes "dEFL Y" and then press UNITS button, to default all parameters.
- The scale will then show "InIL" and "SAUEd". After the "SAUEd" message is displayed the scale then perform its normal power up routine and enter the Calibration mode. At this time, all the parameters will have been reset to their factory default settings. See Setup Menus Explained section for details on setting up the individual scale parameters.
- Return to the normal weighing position by scrolling to the end of the menu "donE Y" or press CAL push button again. The scale will save the revised parameters and will enter the normal weighing mode.

Note: A second method to default parameter settings is by holding the CAL push button while powering up scale. The indicator will display "rEL Pb" until the CAL button is released, then show "InIL" and "SAUEd".

Resetting the scale:

In the event that a power problem has disabled the scale, remove power, wait 15 seconds and restore power. The scale should restart and function properly.

Scale Messages:

Message	Meaning
"donE" Function complete.	The scale has successfully completed the requested action.
"AbortL" Aborted function.	The requested action has been canceled prior to completion.
"SAUEd" Parameter value saved.	The scale has successfully store and verified parameter value in nonvolatile memory.
"rEL Pb" Release push button.	The scale has detected that a key has been depressed for more than 3 seconds.

Error messages:

Error Message	What to Do or Check:
"our Ld" Scale overload	The scale is in overload. The load on the scale exceeds the capacity by more than 103%. Remove excess weight from scale.
"udr Ld" Scale underload	The scale is in underload. The load on the scale is less then the minimum scale capacity by more than -20%. Recalibrate scale or add additional dead load.
"9r5 oL" Gross overload	The scale is in gross overload. The load exceeds the scale ratings and might result in damage to the scale. Remove excess weight immediately. Ignore this message for the first 5 seconds after power up.
"9r5 uL" Gross underload	The scale is in gross underload. The load exceeds the minimum scale ratings and might result in damage to the scale. Loadcell connections might be wired in reverse. Ignore this message for the first five seconds after power up.
"SU 0 E" Startup zero error	The scale was not stable. <u>This error will only occur in Legal for Trade applications.</u> The scale will zero once it becomes stable.
"Er Ad" A/D failure	The scale has detected a failure in A/D circuit. Have scale serviced by a qualified scale repair technician.
"Err EP" EEPROM error	The setup parameters loaded in nonvolatile memory have become corrupted. The scale requires recalibration by a qualified scale technician.
"Err CAL" Calibration error	The calibration values loaded in nonvolatile memory have become corrupted. The scale requires recalibration by a qualified scale technician.
"Err 1" Program ROM error	The program memory in the scale has become corrupted. Have scale serviced by a qualified scale repair technician.
"Ld9 0" Loading zero.	The scale is attempting to load power up zero. This message will remain until scale is stable.
"SPAn E" Calibration Range Error	Calibration zero is out of range, refer to A/D Ranging section for additional information.
"rA Err" Calibration Span Error	Calibration Span is out of range, refer to A/D Ranging section for additional information.

Replacement Part List

SUB0408   **7000/7000XL Main PCB Assembly, 115 VAC**

SUB0408-1   **7000/7000XL Main PCB Assembly, 230 VAC**

PCA0223   **8000XL Main PCB Assembly, 115 VAC**

PCA0223D   **8000XL Main PCB Assembly, 230 VAC**

SUB0013D   **7000 Zero Switch Assembly**
Pushbutton switch with cable, S/S boot, & PCB connector

SUB0013-1   **7000 Zero Switch Assembly 3 Pack**
1 set of 3 P/N SUB0013D with S/S Boot

SUB0013C   **7000 Zero/Convert Switch Assembly**
2 pushbutton switches with cables,
S/S boots, convert label & connectors

SWI0007   **7000 Rubber Pushbutton Boot**

SWI0048   **7000 Stainless Steel Pushbutton Boot**

SUB0427   **7000XLTouch Panel Assembly**
Includes overlay, switch assembly, and installation instructions

SUB0439   **7000XL Face Plate Only**
Includes face plate and instructions

SUB0395   **8000XLTouch Panel Assembly**
Includes overlay, switch assembly, and installation instructions

SUB0396   **8000XL Face Plate Only**
Includes face plate and instructions

SWI0104-B   **7000XL/8000XL Inner Switch Assembly**

SHP0099   **Lens Replacement Glue**
Touch panel adhesive.

SUB0004-1   **Foot Assembly Set**
Rubber feet; S/S 10-24 x 1 screw, sold in sets of 6 only

HDW0042   **S/S Foot**
Sold singly, for 18"x18" & larger bases, 1/2-20 NF Thread

SUB0063-1 **Power Cord**
Shielded, 8 ft long, 18/3 SJEOW, with chosorb, connector,
assembly, and instruction sheet.

CNT0019 **Liquid-Tite Feed Thru**
For load cell, power cord & option inputs

SUB0399 **Sealing Plug Kit**

CNT0256 **Load Cell Connector/Plug**

LED0046 **70000/7000XL LED, Numeric**
One red 7 segment display

LED0023 **8000XL LED, Numeric**
One red 7 segment display

LED0042 **7000 LED, Units Indicator**
One red LED

LED0003 **7000XL LED, Units Indicator**
One red 4 segment LED

LED0016 **8000XL LED, Units Indicator**
One red 4 segment LED

LBL0173-A **Capacity Labels**

FUS0019 **Fuse, 1/4 Amp, Slo-Blo 7000/7000XL(115VAC), 8000XL(230VAC)**
Used in P/N SUB0408, PCA0223D

FUS0020 **Fuse, 1/2 Amp, Slo-Blo 8000XL(115VAC)**
Used in P/N PCA0223

FUS0021 **Fuse, 1/18 Amp, Slo-Blo 7000/7000XL(230VAC)**
Used in P/N SUB0408-1

SUB0038-4 **8000XL Battery**
4 Ah, 6 Volt, lead acid, rechargeable, with terminals, and wires

ENC0585 **8000XL Battery Bracket**

SUB0365 **7000 Lens Replacement Kit**
Clear lens, red lens, and RTV adhesive

XFR0027 **7000/7000XL Power Transformer, 115/230 VAC**

XFR0029 **8000XL Power Transformer, 115/230 VAC**

SUB0235   **Calibration Port Cover Assembly**
Includes cover, gasket & screws

SUB0438   **7000/7000XLGasket & Screw Set, Rear Panel**
3 standard, 1 cross-drilled 10-32 bolts, 4 rubber bonded metal
washers and 1 rear gasket.

SUB0398   **8000XLGasket & Screw Set, Rear Panel**
3 standard, 1 cross-drilled 10-32 bolts, 4 rubber bonded metal
washers and 1 rear gasket.

GSK0024   **Rubber Gasket, Rear Panel**

SUB0455   **E Mounting Brackets**-
Connects Base to Indicator, same as Option E. If the scale base
does have drilled and tapped holes on the side, this part *MUST* be
used.

SUB0417   **Kit, 14" Atlas Column with Hardware**

SUB0425   **Kit, 20" Atlas Column with Hardware**

SUB0426   **Kit, 30" Atlas Column with Hardware**

MAN0159   **7000 Operator User Manual**

MAN0192   **7000X Operator User Manual**

MAN0191   **8000XL Operator User Manual**

SUB0440   **7000 Case Cover Assembly**
(Specify Capacity)   With lens & zero S/S push button

SUB0441   **7000XL Case Cover Assembly**
With touch panel (backplate not included)

SUB0397   **Case Cover Assembly**
Touch panel included (Includes both SWI104-B & SWI105)

HDW0011   **Bubble Level**

ENC0624   **"U" Bracket**
Tilt Stand bracket for case

ENC0604   **7000/7000XL Backplate**
Rear cover

ENC0586   **8000XL Backplate**
Rear cover with cord wrap bracket (w/o battery bracket or battery)

SUB0210-1 **Knob, "U" Bracket Adjust**
Adjustment knob with washer

SUB0041-1 **Foot Switch**
Non wash down, cable included

70/70XL-042-C **RS-232 Data Cable**
Pigtail end.

70/70XL-042-C1 **RS-232 Data Cable**
With Female DB9 Connector

70/70XL-042-C2 **RS-232 Data Cable**
With Female DB25 Connector

SUB0442 **Calibration/Units Switch Replacement Kit**
Includes switches and caps

IND0006 **Power Cord Chosorb**

MSC0085 **7000/7000XL Scale Veil**

MSC0102 **8000XL Scale Veil**

70OPTX **7000 Analog 4-20mA Output**

7XOPTX **7000XL Analog 4-20mA Output**

8XOPTX **8000XL Analog 4-20mA Output (Passive only)**

30OPT36 **6-digit Remote Display**

Warranty Statement

LIMITED WARRANTY

DORAN SCALES, INC. warrants its products to be free from defects in material and workmanship for a period of two (2) years from date of shipment. Any product found to be defective within this time period may be returned to DORAN's factory, freight prepaid, with prior return authorization for repair or replacement at no charge.

DORAN's liability under this warranty is limited to the repair or replacement of the defective product and in no event shall DORAN be liable for consequential or indirect damages to equipment or personnel. Nor shall DORAN be liable for damages to equipment or for personal injury caused by misuse, overload, accidental damage, alteration, improper installation, or unauthorized opening of the equipment. Under no circumstances will DORAN be responsible for any indirect or consequential damages due to errors in weighing or failure of a DORAN product to perform properly.

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1315 PARAMOUNT PARKWAY   BATAVIA, ILLINOIS 60510

(630) 879-1200