DIGI®
When Accuracy Counts

DC-1 90

Counting Scale

Operation Manual

RICE LAKE WEIGHING SYSTEMS
Industrial Solutions on a Global Scale®

ISO 9001 REGISTERED

73352

DC-190 SERIES OPERATING MANUAL

✍See pages 24,42 & 43 for revisions in this manual

1.0. GENERAL

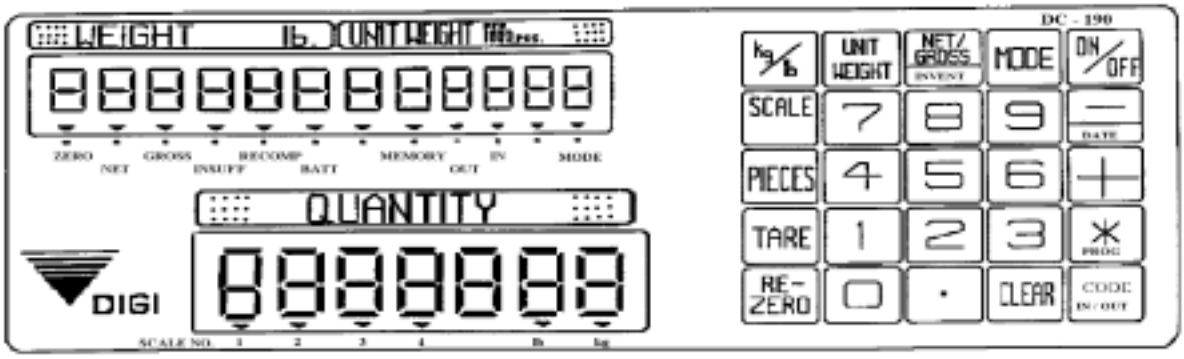
1.1. Description

The DC-190 counting scale offers a practical solution to a full range of precision counting applications. There are a variety of models available ranging from a weight capacity of 0.5 lb. through 100 lb. utilizing an internally mounted load cell and a full range of capacities from 0.5 to 50,000 lb. utilizing external second and third platform. A console model is also available with 3 external platforms in any of the above mentioned capacities in any combination. An ultra-high resolution force balance scale may also be used as a sample scale.

This manual will provide the user with information necessary to operate and program the DC-190. Included in this manual are descriptions, specifications, operating instructions and service guide.

1.2. Appearance

1.3. Keyboard & Display Layout



1.4. Indicator Lamps

LAMP	"ON"
Zero	When the gross weight is zero.
Tare	When tare weight is set.
Gross	When **[Gross/Net]** key is pressed.
Insuff	When the net weight is below a specific percentage of capacity weight.
Recomp	When unit weight recomputing is possible.
Memory	When quantity is being accumulated or when memory overflows.
Prog	When in the programming mode with **[MODE]** key pressed.
Kg	When the item is weighed in Kg unit with **[Kg/Lb]** key pressed.
Lb	When the Item is weighed in Lb unit with **[Kg/Lb]** key pressed.
Batt	When battery's power level is low.
Scale 1	When Scale 1 is used.
Scale 2	When Scale 2 is used
Scale 3	When Scale 3 is used.
Scale 4	When Scale 4 is used.
IN	Inventory In
OUT	Inventory Out

1.5. Key Functions

KEY	FUNCTIONS
ON/OFF	For turning the machine ON and OFF.
0 TO 9	Numeric Keys.
.	Decimal Point.
REZERO	Used to reset the scale to zero. Used to enter the maintenance mode along with other keys
TARE	Used for setting and clearing tare weight.
Kg/Lb	Used to change the weighing unit between Kilogram and Pound. (Used in Weight Mode)
CLEAR	Used to clear the key entries and unit weight. (See Spc 6 Bit 2)
NET/GROSS	Used to change between Gross and Net. Also used as inventory key
UNIT WEIGHT	Used to enter the unit weight using numeric keyboard.
MODE	Used for entering programming mode from weighing mode.
SCALE	Used to switch between different scales
+	Used for Accumulation function and for incrementing SPEC numbers in SPEC setting mode. Also used to program set point in programming mode
–	Used for Subtraction function and for decrementing SPEC numbers in SPEC setting mode. Also use to program Part No in programming item. In Programming mode , it can be used for viewing or setting date/time.
✻	Used for storing the specification data and used to print out weight information when printer is connected.
CODE IN/OUT	**[CODE]** key, for calling out ITEM memory data. Also used to program commodity name in programming mode
PIECES	Used for computing unit weight by sampling.

1.6. DC190 Message List

DC190 MESSAGE LIST	
MESSAGE	CONTENTS
ACC	Accuracy
---Add XX	Sampling quantity is Insufficient
ALL	All Memory
C XX	Number of Items in Memory
CH XXX	Checking Item Code
ALL CLEAr	Clear Memory
dFt SPC	Default Spec
EntEr tIñE	Enter Time from 0000 to 2400
EntEr y-ñ-d	Enter Year Month and Date
Fb Coñ Err	Force Balance Communication Error
FrI	Friday
FULL	Memory Full
InVEnt	Inventory
Lo-Err	Span Is Out Of Range (on the low side)
ñon	Monday
ñon-SUn 0-6	Mon=0, Tue=1, Wed=2,Thu=3,Fri=4,Sat=5,Sun=6
not F	Item Not Found
OF	Overflow
P-nAñE	Part Name
P-no	Part No
PrESS CodE	Calibration Mode : Press Code Key to auto find Zero Number
ProG	Programming Mode
P-SP	Item Set Point
rS232 Coñ Err	RS232 Communication Error (PC/Printer)
S-on	Span Switch is On
Sat	Saturday
SEt P	Set Point
SEt X	Set Point Number
SPCXX	Spec Number
SUn	Sunday
TArE	Tare
tArE oFF LoAd	Tare Is Not Allowed Since Weight >0
t-C XX XX – XX	Teraoka Code | Character Position | Character Code - Character
THU	Thursday
totAL XXXXXX	Accumulating or Subtracting Operation
TUE	Tuesday
UF	Underflow
UnIt u	Unit Weight
UP-Err	Span Is Out Of Range (on the high side)
VEr X.XX	Version Number
UED	Wednesday

1.7. DC190 CHARACTER CODE LIST (TERAOKA CODE)

CODE	CHARACTER	CODE	CHARACTER	CODE	CHARACTER
00	SPACE	20	T	40	@
01	A	21	U	41	!
02	B	22	V	42	"
03	C	23	W	43	#
04	D	24	X	44	$
05	E	25	Y	45	%
06	F	26	Z	46	&
07	G	27	,	47	/
08	H	28	.	48	(
09	I	29	-	49	)
10	J	30	0	50	‘
11	K	31	1		
12	L	32	2		
13	M	33	3		
14	N	34	4		
15	O	35	5		
16	P	36	6		
17	Q	37	7		
18	R	38	8		
19	S	39	9		

2.0. SPECIFICATIONS

This section includes a detailed listing of all pertinent specifications and parameters for the DC-190 counting scales. The system weighing accuracy is 0.02 % . All models meet or exceed the requirements of OIML, Class III, and NIST Handbook, Number 44.

2.1. Capacities

The following resolution specifications apply to all models of DC-190 counting scales:

Dc-190 Single Scale

Capacity	Mounting Internal/External	Weight Resolution	Counting Resolution	Platform Dimension
0.5 lb.	Both	0.00005	0.0000005	6” x 8”
1.0 lb.	Both	0.0001	0.000001	6” x 8”
2.5 lb.	Both	0.0002	0.000002	7” x 10”
5.0 lb.	Both	0.0005	0.000005	12” x 14”
10.0 lb.	Both	0.001	0.00001	12” x 14”
25.0 lb.	Both	0.002	0.00002	12” x 14”
50.0 lb.	Both	0.005	0.00005	12” x 14”
100.0 lb.	Both	0.01	0.0001	12” x 14”

DC-192D Dual Scale

Capacity Scale 1	Capacity Scale 2	Sample Platform	Bulk Platform
0.5000	5.0000	4” x 6”	9” x 12”
1.0000	5.0000	4” x 6”	9” x 12”
1.0000	10.000	4” x 6”	9” x 12”
1.0000	25.000	4” x 6”	9” x 12”
1.0000	50.000	4” x 6”	9” x 12”
2.5000	10.000	4” x 6”	9” x 12”
2.5000	25.000	4” x 6”	9” x 12”
2.5000	50.000	4” x 6”	9” x 12”

Dc-192l Remote Platforms

Platform capacity	Weight Resolution	Counting Resolution	Platform Dimensions
250.00	0.02	0.0002	17” x 21” **
500.00	0.05	0.0005	17” x 21” **
1000.0	0.1	0.001	24” x 28” **
2500.0	0.2	0.002	36” x 36” or 48” x 48” **
5000.0	0.5	0.005	48” x 48” **
10000	1.0	0.01	48” x 48” or 60” x 60” **
25000	2.0	0.02	48” x 72” or 60” x 84” **
50000	5.0	0.05	60” x 84” **

** Other platform sizes are available; consult factory for more information.
* Units are selectable from lb. to kg. and can be programmed to weigh in other primary Units ; lb., kg., g., oz., or dwt.

3.0. INSTALLATION

This section provides the information required for installing this counting system for operation. The following steps accomplish installation.

1. Unpacking
2. Set-up Procedure

3.1. Unpacking

Each component of the DC-190 system is packed in a specially designed carton. Remove each component from its carton, separate the component from its polystyrene shell assembly and set aside. Inspect the carton interior to be sure that all accessories have been removed from the carton. Inspect the carton inner panels for accessories.

NOTE: Be sure to repack all materials within the carton set. Store the cartons in A secure area so they can be available whenever future shipment of the scale is required.

3.2. Inspection

Immediately after unpacking, a visual inspection of the scale should be performed. If any damage has been incurred during transportation notify the shipper and DIGI MATEX, Inc. immediately. Instructions for assessment of damage and further procedures will then be determined.

3.3. Repackaging

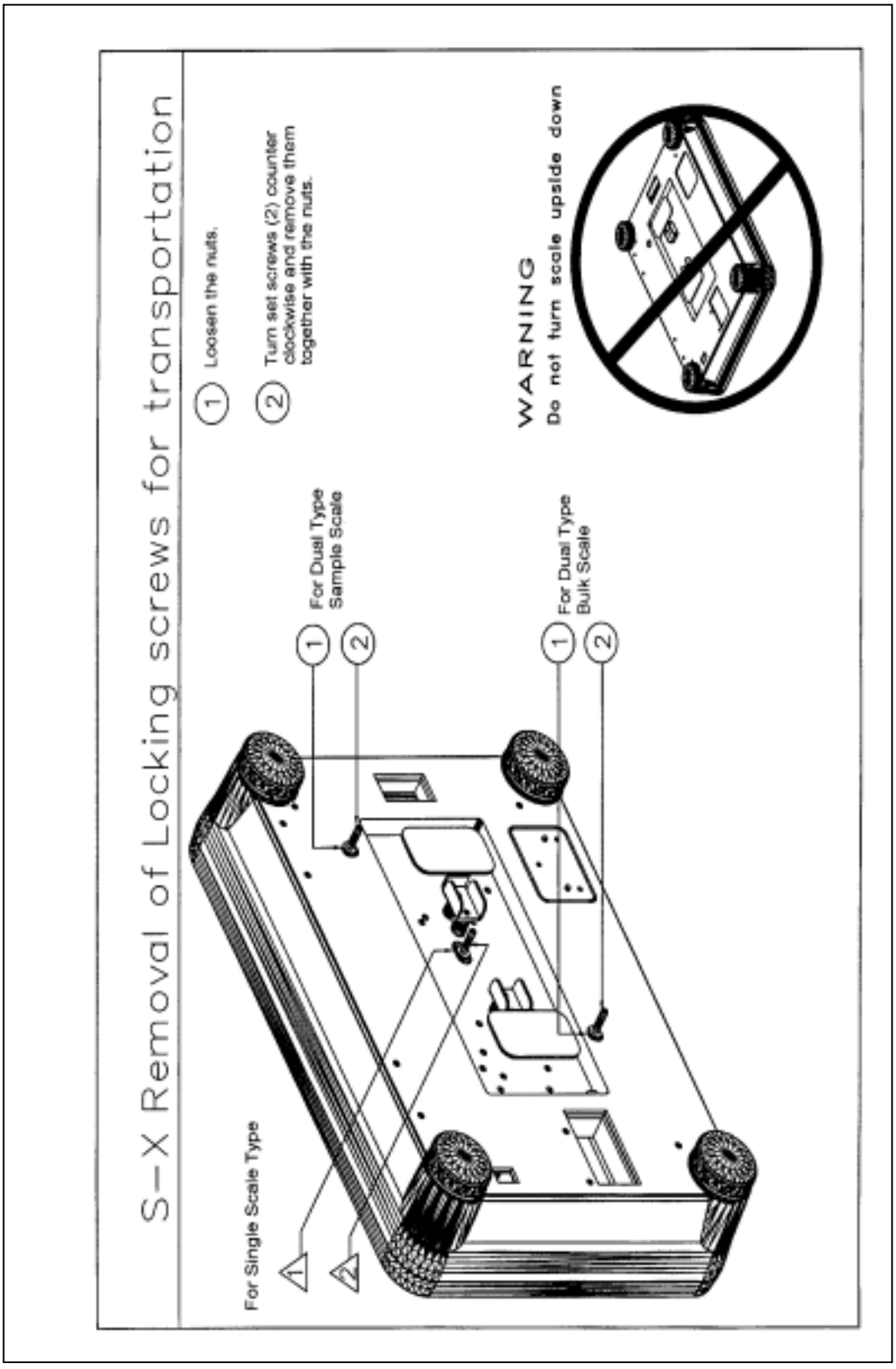
If, at anytime, the DC-190 counting scale must be returned for modification, calibration, or repair, be sure that it is properly packed with sufficient cushioning materials.

Whenever possible, the original carton assembly should be retained for this purpose. Any damage caused by improper packaging will not be covered by warranty.

3.4. Unlocking Procedure

The unlocking procedure is included on the next page. The DC-190 should be properly locked whenever it is being transported.

3.4. Sx Unlocking Procedure



4.0 OPERATION GUIDE IN WEIGHING MODE

4.1 Tare Reduction :

4.1.1 One Touch Tare Operation :

All weights listed in these instructions are for example only use smaller weights for lower capacity scales!

1 Display in the weighing mode

2 Place 0.5 Lb weight on the platter. (Example : of a .5lb tare)

3 Press the **[TARE]** key to tare the weight on the platter

4 Remove the weight from the platter

4.1.2. Digital Tare Operation :

1 Display in the weighing mode.

2 Enter **[0][.][5][0][0][0]** (Example : of a .5lb tare)

3 Press the **[TARE]** key to tare the weight entered by keyboard.

4.2 Net/Gross Operation :

1 Display in the weighing mode.

2 Place 0.5 Lb. weight on the platter.

3 Press the **[TARE]** key to tare the weight on the platter.

4 Place an additional 0.5 Lb. on the platter.

5 Press the **[NET / GROSS]** key. 1.0000 lb is the Gross Weight.

6 Press the **[NET / GROSS]** key. 0.5000 lb is the Net Weight.

4.3 Unit Weight Operation :

4.3.1 Unit Weight Operation by Sampling :

1 Display in the weighing mode

2 Place 10 pcs of the item to be sampled on the platter.

3 Press the **[PIECES]** key. Please wait for a few seconds for the computation.

4 The *Unit Weight Display* shows the *Unit Weight* of the samples (1.255/1000 pieces) and the *Quantity Display* shows the *Quantity* of the pieces i.e. 10 in this case.

Note : If the insufficient lamp is "ON", when the sample pieces are placed on the platter, add a few more pieces until the Insufficient lamp is "OFF. Enter the no. of pieces using the keyboard and press the **[PIECES]** key. For example : After putting ten pcs. on the scale as a sample, if the insufficient lamp is "ON", add a few more pieces (ex. 3) until the insufficient lamp is "OFF". Now using the keyboard, enter **[1][3]** and then press the **[PIECES]** key to compute the unit weight of the samples.

4.3.2. Unit Weight Operation by Key Entry : This following procedure is used if the unit weight is already known.

1 Display in the weighing mode

2 Enter the known Unit Weight using the keyboard. **[2][.][8][7]**

3 Press the **[UNIT WEIGHT]** key to enter the unit weight.

4 Place 2 lb weight on the platter. The scale displays the quantity for the weight placed on the platter. (A 2 lb. weight is used as an example only.)

4.4. Accumulation Operation When Spec 32 bit 1, Default Setting, (Auto Exit when Accumulation) is enabled, The Scale will automatically go back to weight mode after the Accumulation.

1 After Unit Weight entry. (See 4.3)

2 Press the **[+]** key. The *Total* is displayed in the *Quantity Display.*

3 The memory lamp will glow. After a moment the scale will resume operation mode.

4 Put 1.0lb on the platter

5 Press the **[+]** key. The *Total* is displayed in the *Quantity Display.*

6 The memory lamp will glow. After a moment the scale will resume operation mode.

7 The previous total of 25 and the present quantity of 15 are added and the *Total Of 40* is displayed in the *Quantity Display*.

8 The memory lamp will glow. After a moment the scale will resume operation mode.

9 Pressing the **[+]** key makes the total 15 + 40 = *55,* displayed in the *Quantity Display.*

4.5. Subtraction/Reduction Operation : When Spec32 bit1 (Auto Exit From Accumulation) is enabled. The Scale will automatically go back to Weight Mode after the Accumulation Mode.

1 Display in the weighing mode with memory lamp glowing.

from previous operation (See 4.4.)

2 Press the **[+]** key. The *Total Is Displayed* in the *Quantity Display*.

3 **Remove the 2.0 lb. Weight from platter**

Leave only the 1.0lb weight on the platter.

4 Pressing the **[–]** key deducts the quantity of 5 in the *Quantity Display* from the previous Total of 70 to give us a total of *65*.

5 The memory lamp will glow. After a moment the scale will resume operation mode.

6 Press the **[–]** key. The total quantity after subtracting is shown in the *Quantity Display*. 65 -5 =*60*

7 The memory lamp will glow. After a moment the scale will resume operation mode.

4.6. Clearing of Accumulated Data :

1 From previous operations (See 4.4. & 4.5.)

2 Pressing the **[∗]** key, clears the accumulated total.

4.7. Clearing Unit Weight :

1 Remove weight.

2 Pressing the **[CLEAR]** key, clears the unit weight.

4.8. Scale 1↔4 Operation :

Display in the weighing mode

Pressing **[SCALE]** key changes from Scale 1 to Scale 2.

Pressing **[SCALE]** key changes from Scale 2 to Scale 3

Pressing **[SCALE]** key changes from Scale 3 to Scale 4.

Pressing the **[SCALE]** key again changes back to Scale 1

Note: Default Position: The Position for Scale 1 to scale 4 can be set in Specs 16 & 1

Scale 1: Internal Scale 1 Scale 3: External Scale

Scale 2: Internal Scale 2 Scale 4: Force Balance

*** NOTE: ONLY SCALES PRESENT WILL BE SELECTED. EX. 2 SCALE SYSTEM SWITCHES BETWEEN SCALE 1 AND 2 ONLY.**

4.9. Recall The Item Memory

4.9.1. Recall The Item Memory For Normal Operation:

1 Check if the scale is in normal mode

2 Enter code no [**1] [2] [3]**

3 Press **[CODE]** key to recall the data for item code 123

4 Put item on the platter

4.9.2. Recall The Item Memory: For Normal Operation (With 16 Digits Teraoka Code)

1 Check if the scale is in normal mode

2 Press **[•]** key for Teraoka Code Entry

3 Input 2 digit Teraoka Code. Example: Enter 'A' type **[0] [1]**

4 Press **[+]** or **[–]** to shift to right or left position

5 Input 2 digit Teraoka Code. Example: Enter 'C' type **[0] [3]**

6 Press **[+]** or **[–]** to shift to right or left position

7 Press **[CODE]** key to call the Item Code

4.10. Recomputing Unit Weight In Memory: (See Spec 4 bit 3)

1 Display in the weighing mode

2 Recall an Item already in memory and weigh

3 Press **[PIECES]** key for recomputing

4 Press **[UNIT WEIGHT]** key to set the new unit weight into the memory

4.11. To Set New Item Code In Normal Operation:

(Example: During Normal Weighing Mode, New Item Code No. 246 Is Required)

This operation is valid only when the Spec Set New item in Normal Operation Is enabled.

1 Press new code no. example : enter **[2] [4] [6]**

2 Press **[CODE]** key

3 Press **[CODE]** key to set the new code no. Into memory

4 Enter unit weight **See pg. 11& 4.3.1. & 4.3.2.**

5 Press the **[UNIT WEIGHT]** key enter into memory

* If the new data is not required to be set in the memory, depress clear key after "not F" is displayed.

4.12. Inventory Operation:

Inventory In

1 Press **[CODE]** key until Indicator IN is lit.

2 Enter ID Code. example: **[1][2][3][4]** (This item must already be programmed into the memory of the scale)

3 Press **[CODE]** key

4 Place weight on the platter.

5 Press **[∗]** key. This Recalculates "QUANTITY IN STOCK" by adding the Quantity

Inventory Out

6 Press **[CODE]** key until Indicator OUT is lit

7 Enter ID Code. example: **[1][2][3][4]**

8 Press **[CODE]** key

9 Place weight on the platter.

10 Press **[∗]** key. This Recalculates "QUANTITY IN STOCK" by deducting the Quantity

11 Remove weight

12 Press **[NET /GROSS]** Key. Check Quantity in Stock

13 Press **[NET/GROSS]** Key

5.0. PROGRAMMING MODE:

5.1.Item Programming (Program Mode):

5 .1.1 Example 1 :

To Set Unit Weight Into The Item Code No. 123

1 Press **[MODE]** key to select **PROGRAM** mode

2 Enter code no **[1] [2] [3]**

3 Press **[CODE]** key

4 Put sample parts on the scale platter (e.g. 10 PCs)

5 Enter sample quantity

6 Press **[PIECES]** key

7 Press **[∗]** key to set the unit weight into the memory

5.1.2. Example 2 : Program Unit Weight, Tare, Quantity, Part No

1 Press **[MODE]** key to select **PROGRAM** mode

2 Enter code no **[1] [2] [3]**

3 Press **[CODE]** key

4 Enter Unit Weight 100

5 Press **[UNIT WEIGHT]** Key

6 Enter Tare Value

7 Press **[TARE]** key

8 Press **[NET/GROSS]** key For Quantity in Stock

9 Enter Quantity Number

10 Press **[NET/GROSS]** key to Store Quantity in Stock

11 Press **[–]** key for Part No

5.1.3. Example 3 : Program Part No, Part Name Using T-C For Alpha/Numeric via DC190 keypad And Set Points

12 Input 2 Digit Teraoka Code

13 Enter Part No: example **[01] [02] [03] [00] [31] [32] [33] = ABC 123**

14 Press **[+]** or **[–]** to shift to right or left position

15 Press **[–]** key to store Part No

16 Press **[CODE]** key for Part Name

17 Input 2 Digit Teraoka Code

18 Enter Part Name: example **[01] [02] [03] [00] [31] [32] [33] = ABC 123**

19 Press **[+]** or **[–]** to shift to right or left position

20 Press **[CODE]** key to store Part Name

21 Press **[+]** key to check set point 1

22 Press **[+]** key to check set point 2

23 Press **[+]** key to Store the set Point

24 Press **[⮌]** key to Store the Item into memory

5.2. Set Point Programming :

5.2.1. Set Point Programming by Quantity %

Set Point 1 : Quantity (See Note Below), Set Point 2 : % Quantity (See Note Below)
Set bit 0 and 1 of Spec 7 to 00

1 Display in the weighing mode

2 Press the **[MODE]** key to go into the programming mode.

3 Press **[+]** key to go into Set Point Programming Mode.

4 Enter the Quantity for Set Point 1 using the **[Numeric]** keys. Example type **[1][0][0][0][0]**

5 Press **[+]** key to go to Set Point 2.

6 Enter the new Set Point 2 value using the **[Numeric]** keys. Example type **[7][5] (**See ✍ below)

7 Pressing the **[+]** key exits from the Set Point Programming mode, but remains in the Programming mode.

8 Pressing the **[MODE]** key exits from Programming mode and returns to Weighing mode.

NOTE: Using the **[CLEAR]** key clears the key entry.

✍ **Note :** Set Point 1 : Must be a quantity value up to 999999.
Set Point 2 : Percentage value up to 999%, but set according to Set Point 1 value.
Ex: Suppose Set Point 1=999999, Set Point 2 cannot be set more than 100%.

5.2.2. Set Point Programming by Weight: %

Set Point 1 : Weight (See Note Below) Set Point 2 : % Weight (See Note Below)

Set bit 0 and 1 of Spec 7 to 01

1. Display in the weighing mode
2. Press the **[MODE]** key to go into the programming mode.
3. Press **[+]** key to go into Set Point Programming Mode.
4. Enter the Weight value for Set Point 1 using the **[Numeric]** keys depending on the capacity of the scale. Please see the note below. Example type **[3][.][0][0][0][0]**
5. Press the **[+]** key to program Set Point 2.
6. Enter the percentage value for Set Point 2 using **[Numeric]** keys. Please see the note below. **[7][5]**
7. Pressing the **[+]** key exits from the Set Point Programming mode, but remains in the Programming mode.
8. Pressing the **[MODE]** key exits from Programming mode and returns to Weighing mode.

Note : Set Point 1 : Must be a valid weight value up to the capacity of the scale.
Set Point 2 : Percentage value up to 999%, but set according to Set Point 1 value.
Ex: Set Point 1=5.0000 (capacity of the scale),
Set Point 2 cannot be set more than 100%.

5.2.3. Set Point Programming by Upper and Lower Limit of Quantity:

Set Point 1 : Quantity
Set Point 2 : Quantity
Set bit 0 and 1 of Spec 7 to 10

1. Display in the weighing mode
2. Press the **[MODE]** key to go into the programming mode.
3. Press **[+]** key to go into Set Point Programming Mode.
4. Enter the Quantity value for Set Point 1 using the **[Numeric]** keys. Example: type **[2][0][0][0][0]** Please see the note on next page.
5. Press the **[+]** key to program Set Point 2.
6. Enter the Set Point 2 value using the **[Numeric]** keys. Example: type **[1][0][0][0][0]** Please see note on next page.
7. Pressing the **[+]** key exits from the Set Point Programming mode, but remains in the Programming mode.
8. Pressing the **[MODE]** key exits from Programming mode and returns to Weighing mode.

5.2.4. Set Point Programming by Upper and Lower Limit of Weight:

Set Point 1 : Weight (See Note Below) Set Point 2 : Weight (See Note Below)
Set bit 0 and 1 of Spec 7 to 11

1 Display in the weighing mode

2 Press the **[MODE]** key to go into the programming mode.

3 Press **[+]** key to go into Set Point Programming Mode.

4 Enter the upper weight value for Set Point 1 using the **[Numeric]** keys depending on the capacity o the scale. Example: type **[3][.][0][0][0][0]** Please see the note below.

5 Press the **[+]** key to program Set Point 2.

6 Enter the lower weight value for Set Point 2 using **[Numeric]** keys. Example: type **[2][.][0][0][0][0]**Please see the note below.

7 Pressing the **[+]** key exits from the Set Point Programming mode, but remains in the Programming mode.

8 Pressing the **[MODE]** key exits from Programming mode and returns to Weighing mode.

Note : Set Point 1 : Must be a valid weight value up to the capacity of the scale.
Set Point 2 : Weight value up to the capacity of the scale, but Set Point 2 value must be less than Set Point 1 value.

5.2.5. Set Point Programming by Weight or by Quantity:

Set Point Weight (See Note Below) Set bit 0 and 1 of Spec 7 to 11
Set Point Quantity (See Note Below) Set bit 0 and 1 of Spec 7 to 10

1 Display in the weighing mode

2 Press the **[MODE]** key to go into the programming mode.

3 Press **[+]** key to go into Set Point Programming Mode.

4 Enter the Weight value for Set Point 1 using the **[Numeric]** keys depending on the capacity of the scale. Example: type **[2][.][0][0][0][0]** Please see the note below.

5 Press the **[+]** key to program Set Point 2.

6 Enter the weight value for Set Point 2 using **[Numeric]** keys. Example: type **[3][.][0][0][0][0]**Please see the note below.

7 Press the **[+]** key to program setpoint 3 through 6 or exits from the Set Point Programming mode(depends on spec 18), but remains in the Programming mode.

8 Pressing the **[MODE]** key exits from Programming mode and returns to Weighing mode.

Note: The DC-190 can program up to six setpoints by repeating the process 3 through 6. Spec 18 bit 0-1-2 determine the number of setpoints. The six setpoints are TTL Output for Quantity or Weight. These six setpoints may be programmed 1 through 6 low to high or 1 through 6 high to low.

5.3. Check Item Codes In Memory

1. Press **[MODE]** key
2. Press **[CODE]** key
3. Press **[+]** key to check entered code
4. Press **[–]** key to check prior entered code
5. Press **[TARE]** key to check an Item code no.
6. Press **[MODE]** key to return to the first step

5.4. Delete Item Memory:

1 Press **[MODE]** key

2 Enter **[•] [•] [0]** while pressing **[REZERO]** key

3 Press **[CLEAR]** key to complete deletion of all memories

Note:

Delete All Quantity In Stock : Press **[•] [•] [1]**
Delete All Item Unit Weight : Press **[•] [•] [2]**
Delete All Item Tare Weight : Press **[•] [•] [3]**
Delete All Item Part Number : Press **[•] [•] [4]**
Delete All Item :Set Point : Press **[•] [•] [5]**
Delete All Item Name : Press **[•] [•] [6]**
Reset SEQ No : Press **[•] [•] [7]** (Use for Printer BCP-30)
Delete All Set Point (Not Item) Press **[•] [•] [+]**
:

5.5. Check/Set Time And Date

1 Press **[MODE]** key

2 Press **[–]** Key to check the date and time

3 Press **[–]** Key

4 Enter Month Day and Year to program the date

5 Press **[–]** key to program the day

6 Enter Day 0:Mon,1=Tue….6=Sun

7 Press **[–]** key

8 Enter Time to program the time

9 Press **[➲]** key to store the setting. OR press **[–]** key to bypass the storing.

6.0. MAINTENANCE MODE:

6.1. Scale Calibration :

Prior to the calibration of the scale, please note that the SPEC settings corresponding to Minimum Display Weight Decimal Point Position and Load Cell Sensitivity for that particular scale have to be set correctly. The scale should be level, on a sturdy table, and away from breezes and vibration.

1. Enter **[8][7][1][5]** while pressing the [**REZERO]** key. The display will show *Weight* in the *Weigh Display* and *Zero Count* in the *Quantity Display*. The zero count should be 100,000±10,000.

   Note: When calibrating a scale for the first time, it is normal to see only a single digit "0" in th *Quantity Display* and no activity in the *Weight Display.* Press the **[CODE]** key in order to comput the zero point. It takes a few moments for the zero calibration.
2. Press the **[CODE]** key in order to compute the zero point. It takes a few seconds for the zer calibration.
3. After computing the zero point, the *Quantity Display* shows the *Zero Counts*. Ensure that the coun are 100,000 ± 10000. If not, repeat Step 3 until the counts are in the above range.
4. Press the **[REZERO]** key to zero the weight in the weight column
5. Place capacity weight of 5lb or any weight on the platter. In this illustration, capacity weight is used a an example.
6. The Span Weight That Appears In The Weight Display Should Be As Close As Possible To The Actual Weight That Is Placed On The Platter. To Adjust The Span Weight Press **[PIECES]** OR **[TARE]** Key. If This Procedure Is Not Done Properly, The Scale May Appear Noisy.

   EXAMPLE (1) 5.1275 OR 4.7997 Example (1) 5.1275 is closer than 4.7997
   EXAMPLE (2) 5.3985 OR 4.9124 Example (2) 4.9124 is closer than 5.3985
7. **REMOVE WEIGHT AND REPEAT STEPS 2 THROUGH 4**
8. Place capacity weight of 5lb or any weight on the platter. In this illustration, capacity weight is used a an example.
9. Enter the weight placed on the platter using the **[Numeric]** Keys. Example type **[5][.][0][0][0][0]**
10. Press the **[⊂PROG]** key to start span calibration.
11. After a few seconds, the display shows the counts for the weight on the platter in the *Weight/Un Weight Display* and the *Quantity Display* shows the *Internal Count* with the zero point counts added t it.
12. Removing the weight, the unit weight should indicate zero and the *Quantity Display* the *Zero* startin point (If Spec38 bit 1 Internal Count is set to 1,000,000, the count should be around 200,000). If th zero point is not correct, please carry out the calibration procedure again.
13. Pushing the **[MODE]** key once exits calibration mode.
14. Pushing the **[MODE]** key once more returns the scale to the weighing mode.

Please Note: Pressing **[CODE]** key in step 2 is used for auto finding the zero number. Customer can manually search for zero number by pressing **[+]** and **[–]** keys. Load Cell Sensitivity can be set in SPEC or manually adjusted by pressing **[PIECES}** and **[TARE]** keys. The load cell Sensitivity specs may change during the calibration process.

6.2. Internal Count Display :

1. Enter **[⊃][⊃][+]** while depressing the **[REZERO]** key. *Unit Weight Display* will display the *Span Count* and the *Quantity Display* will display the *Zero Count*.
2. Press **[MODE]** key to exit from maintenance mode.
3. Press the **[MODE]** key to return to the weighing mode.

6.3. Spec 141 Setting: Spec 141(Customer Specifications) can be accessed from the weighing mode. Refer to pages 38 & 39 for a list of specs.

1. Enter **[1][4][1]** while depressing the **[REZERO]** key.
2. **[+]** key increases to the next SPEC number and also stores temporarily the SPEC data in the RAM location.
3. Enter 1011 as the new value for SPEC01 using the **[Numeric]** keypad
4. **[CLEAR]** key clears the **[Numeric]** entry.
5. **[+]** key increases to the next SPEC number.
6. **[–]** key decreases to the previous SPEC number.
7. **[–]**key decreases from SPEC 01 to SPEC 00.
8. **[–]** key decreases the SPEC number from SPEC00 to SPEC19
9. **[⊂PROG]** stores the new SPEC values to the NOV-RAM and exits from the SPEC setting mode.
10. Press **[MODE]** key to escape from maintenance mode to weighing mode.

NOTE: ✍ When making any spec changes it is necessary to follow this steps:
1. Advance to the next spec by pressing [+] key to store the changes into the temporary register.
2. Press [➲ProG] to save the changes.
3. Turn scale off and on to allow the scale to permanently update all newly changed specs.

6.4. Spec 142 Setting: To access the Spec 142 (W & M Spec) mode the procedure is similar to Spec 141 setting. Refer to pages 40 & 41 for a list of W &M specs.

1 Enter **[1][4][2]** while depressing the **[REZERO]** key.
2 **[+]** key increases to the next SPEC number and also stores temporarily the SPEC data in the RAM location.
3 Enter, (example, 1011) as the new value for SPEC21 using the **[Numeric]** keypad
4 **[CLEAR]** key clears the **[Numeric]** entry.
5 **[+]** key increases to the next SPEC number.
6 **[–]** key decreases to the previous SPEC number.
7 **[–]**key decreases from SPEC 21 to SPEC 20.
8 **[–]** key decreases the SPEC number from SPEC20 to SPEC36
9 **[➲PROG]** key stores the new SPEC values to the NOV-RAM and exits from the SPEC setting mode.
10 Press **[MODE]** key to return to the weighing mode.

NOTE: ✍ When making any spec changes it is necessary to follow this steps:
1. Advance to the next spec by pressing [+] key to store the changes into the temporary register.
2. Press [➲ProG] key to save the changes.
3. Turn scale off and on to allow the scale to permanently update all newly changed specs.

6.5. DC-190 SPECIFICATION LIST ver.3.37

Customer Specification : To enter this mode, press the following key sequence : **[R][1][4][1]** i.e. Numeric keys 1, 4 ,1 while holding **[RE-ZERO]** key.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
0	**Tare When Change Scale** 0 = Hold Tare 1 = Transfer Tare	**Digital Tare Accumulation** **0 = No** **1 = Yes**	**Terminator** **0 = Carriage Return** **1 = Carriage Return Linefeed (RS-232only)**	**Weighing unit** **0= U.W. per/1000** **1 = A.P.W.**
1 **0 0 0 0**	**Power Auto Off Function** **0000** : Auto Power Off Disable **0001 ~ 1111** : Duration to activate Power Off (in Minutes).			
2 **1 0 0 0**	**Weighing Units** **00** : Gram **01** : Kg **10** : Lb **11** : not used		**Kg/Lb Lamp Inhibit** **0 :** No **1 :** Yes	**Inventory Disp by Gross Key** **0:** Gross Disp **1:** No of Invnt
3 **0 1 1 1**	**RS-232 port commands** **00 = standard RS-232** **01 = ctm-290 (slip printer)** **10 = tm-200(with cutter command)** **11 = tm-200(with feed for tear off)**		**Print commands** **00 = bcp-30 (barcode printer)** **01 = ctm-290 (slip printer)** **10 = tm-200(with cutter command)** **11 = tm-200(with feed for tear off)**	
4 **1 0 0 1**	**Set New Item Code during Normal Mode** **0**: Yes **1**: No	**Extent of insufficient samples** **00** : 0.1 % **01** : 0.2% **10** : 0.0%		**Negative Counting** **0** : No **1** : Yes
5 **1 0 1 1**	**Sampling time for Unit Weight Calculation** **0** : 10 times **1** : 5 times	**Unit Wt. Auto Recomputing** **0** : No **1** : Yes	**Date Order** **00**: Year, Month, Date **01**: Date, Month, Year **11**: Month, Date, Year	
6 **1 0 0 1**	**Display Accuracy of Unit Weight** **0 :** No **1 :** Yes	**Clear All Input Key in One Touch** **0** : Yes **1** : No	**RS232 Continue Sending High** **0** : High **1** : Low	**Auto Shift To Next Position After Two Key of Teraoka Code Entry** **0** : No **1** : Yes
7 **0 0 0 0**	**Set Point Buzzer** **0** : Yes **1** : No	**Set Points** **0:** Latch **1:** No Latch	**Set Point Type** **00** : Quantity % **10** : Quantity **01** : Weight % **11** : Weight	
8 **0 0 1 0**	**RS-232C (Connection (Force Balance)** **0 :** No **1 :** Yes	**RS-232C (FB) Data Length** **0** : 7 bits **1** : 8 bits	**RS-232C (FB) Baud Rate** **00** : 19200 **10** : 4800 **01** : 38400 **11** : 9600	
9 **0 1 1 1**	**RS-232C (FB) Stop Bit** **0** :1 bit **1** :2 bits	**Force Balance Type** **0:** SHG-300 **1:** TP-200	**RS-232C (FB) Parity Bit** **00** : No **10** : Not Used **01** : Odd **11** : Even	

6.5. DC-190 Specification List ver.3.37 (continued)

10 **1 1 1 1**	**RS-232C Connection (PC / Printer)** **0 :** No **1 :** Yes	**RS-232C (PC/PRN) Data Length** **0** :7 bits **1** :8 bits	**RS-232C (PC/PRN) Baud Rate** **00** : 19200 **10** : 4800 **01** : 38400 **11** : 9600	
11 **0 1 0 0**	**RS-232C (PC/PRN) Stop Bit** **0** : 1 bit **1** : 2 bits	**PRINTER:** **0**: Eltron **1**: BCP-30 or Epson **0 = output on RS-232 comma delimited file** **1 = paper tape output on printer port (in prog mode)**	**RS-232C (PC/PRN)Parity Bit** **00** : No **10** : Not Used **01** : Odd **11** : Even	
12 **1 0 0 0**	**RS-232 (PC/PRN) Output (Optional)** **00** : Not Available **01** : When Counting Condition(PC) **10** : By ➲ Key **11** : In Both Cases (DP122)	**SET TO "0"**	**RS232C (PC/PRN) With Header** **0:** Yes **1:** No	
13 **0 0 0 1**	**RS232(PC/PRN) Header:** **0:** Code **1:** Title	**RS232 CONNECTOR** **Sub** / **Din** **000**: Printer — Force Bal. **001**: Force Bal. — Printer **100**: PC — Force Bal.	**Sub** / **Din** **101**: Force Bal, — PC **010**: Printer — PC **011**: PC — Printer	
14 **1 0 1 0**	**RS-232C Connection (Bar-code Pen)** **0 :** No **1 :** Yes	**RS-232C (BCP) Data Length** **0** :7 bits**1** : 8 bits	**RS-232C (BCP) Baud Rate** **00** : 19200 **10** : 4800 **01** : 38400 **11** : 9600	
15 **0 0 1 1**	**RS-232C (BCP) Stop Bit** **0** : 1 bit **1** : 2 bits	**RS232C (BCP) With Header** **0:** Yes **1:** No	**RS-232C (BCP)Parity Bit** **00** : No **10** : Not Used **01** : Odd **11** : Even	
*****SPEC 16 & 17 SHOULD ONLY BE CHANGED BY AN AUTHORIZED SERVICE TECHNICIAN !!!**				
16* * * ***Normally Set*** ***0 0 0 1*** **_ _ _ _**	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10**: External Scale **11**: Force Balance		
17* * * ***Normally Set*** ***1 0 1 1*** **_ _ _ _**	**SCALE 3**: **00**: Internal Scale 1 **01**: Internal Scale 2 ***10: External Scale*** **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***		
ALL SCALES ARE UNIQUE AND EACH MUST HAVE THEIR OWN CHANNEL LOCATION.				
18 **0 0 0 0**	**Set Point TTL Output** **0**: Active Low **1**: Active High	**Number Of Set Point** **000**: 2 Set Points **001**: 3 Set Points	**010**: 4 Set Points **011**: 5 Set Points **100**: 6 Set Points	
19 **1 0 0 0**	**Display "Not F" Message For Items Not Stored In Memory** **0** : Yes **1** : No	**Link To IMS** **0** : No **1** : Yes	**Type of Force Balance (Japan Version Only)** **0:** SHG-300 **1:** HR-60	**Print When Pressing + or – key in Add Mode** **0:** yes **1:** No

6.5. DC-190 Specification List ver.3.37 (continued)

Weight and Measures Specification : To enter this mode, enter the numeric keys 1,4,2 while pressing the Re-zero Key. The Span Switch must be "ON" to enter this mode.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20 _ _ _ _	**Minimum Display (Scale 1)** **00** : 2 **10** : 5 **01** : 1 **11** : 10		**Minimum Display (Scale 2)** **00** : 2 **10** : 5 **01** : 1 **11** : 10	
21 _ _ _ _	**Eltron Printer Selection** **0 = 2722** **1 =2742 or 2642**	**Weight Decimal Point Position (Scale 1)** **000** : 00000 **011** : 00.000 **001** : 0000.0 **100** : 0.0000 **010** : 000.00		
22 _ _ _ _		**Weight Decimal Point Position (Scale 2)** **000** : 00000 **011** : 00.000 **001** : 0000.0 **100** : 0.0000 **010** : 000.00		
23 **0 0 0 0**	**Display Resolution** **00** : 1/10,000 **10** : _,500 **01** : 1/5,000 **11** : Not Used		**Zero Setting Range** **00** : + Unlimited **10** : +- 10% FS - 10% FS **01** : +- 2% FS **11** : Not Avail.	
24 **0 0 0 0**	**Masked Display at Minus Wt.** **0** : Gross **1** : Net	**Display at Minus Wt.** **0** :Minus Display **1** :Masked	**Zero Lamp Lighting Method** **0** : Gross **1** : Net	**When No AC, Display Mask When Battery Low or No Battery.** **0** : Yes **1** : No
25 **0 0 _ 0**	**Scale Starting Method** **0** : Automatic **1** : Manual	**IR Mode protected by Span Switch** **0** : No **1** : Yes	**Scale Type** **0** : Single Scale **1** : Double Scale	**Gross Mode Available** **0 :** Yes **1 :** No
26 **0 0 0 0**	**Zero Tracking When Tare** **0** : Yes **1** : No	**Weight Reset when Tare** **0** : Yes **1** : No	**Initial Start Range** **00** :+ Unlimited **10** : +- 10% FS - 10% FS **01** : +- 2% FS **11** : Not Avail.	
27 **0 1 0 0**	**Comma Display** **0** : No **1** : Yes	**Digital Tare Setting** **0** : No **1** : Yes	**Tare Range** **00** : 100%FS **10** : 5% FS **01** : 50%FS **11** : Not Available	
28 **0 0 0 0**	**Auto Tare clear when Rezero** **0** : No **1** : Yes	**Automatic Unit Weight Clear Condition** **00** : Over Net 5d and Gross 21d and Weight Stable **01** : >= Net 1d and Weight Stable **10** : >= Net 1d and Quantity >0 and Weight Stable		**Automatic Unit Weight Clear** **0** : No **1** : Yes
29 **0 0 0 0**	**Digital Tare Rounding** **0** : Tare Exactly **1** : Round to Nearest Increment	**Tare Value Exchange** **0** : Yes **1** : No	**Tare Addition** **0** : Yes **1** : No	**Tare Subtraction** **0** : Yes **1** : No

6.5. DC-190 Specification List ver.3.37 (continued)

Spec No.	Bit 3			Bit 2			Bit 1			Bit 0		
30	**Load Cell Sensitivities Selection (mV/V) (Scale 1)**											
	Spc	**Min**	**Max**	**Spc**	**Min**	**Max**	**Spc**	**Min**	**Max**	**Spc**	**Min**	**Max**
	0000	3.46	4.00	**0100**	1.95	2.25	**1000**	1.09	1.27	**1100**	0.61	0.71
	0001	3.00	3.46	**0101**	1.69	1.95	**1001**	0.95	1.09	**1101**	0.53	0.91
	0010	2.59	3.00	**0110**	1.46	1.69	**1010**	0.82	0.95	**1110**	0.46	0.53
	0011	2.25	2.59	**0111**	1.27	1.46	**1011**	0.71	0.82	**1111**	0.40	0.46
31	**Load Cell Sensitivities Selection (mV/V) (Scale 2)**											
	Spc	**Min**	**Max**	**Spc**	**Min**	**Max**	**Spc**	**Min**	**Max**	**Spc**	**Min**	**Max**
	0000	3.46	4.00	**0100**	1.95	2.25	**1000**	1.09	1.27	**1100**	0.61	0.71
	0001	3.00	3.46	**0101**	1.69	1.95	**1001**	0.95	1.09	**1101**	0.53	0.91
	0010	2.59	3.00	**0110**	1.46	1.69	**1010**	0.82	0.95	**1110**	0.46	0.53
	0011	2.25	2.59	**0111**	1.27	1.46	**1011**	0.71	0.82	**1111**	0.40	0.46
32 **1 0 1 0**	**Calibration Mode protected by Span Switch** **0** : Yes **1** : No			**Battery Low Lamp** **0:** Yes **1**: No			**Auto Exit from Add Mode** **0** : No **1** : Yes			**External Load Cell (Scale 3)** **0**: No **1**: Yes		
33 **0 _ _ _**	**Over Weight Mask at** **0** : +1d **1** : +9d			**Weight Decimal Point Position (Scale 3)** **000** : 00000 **001** : 0000.0 **010** : 000.00 **011** : 00.000 **100** : 0.0000								
34 **0 0 0 0**	**Not used**	**(For Scale 1)** **0** :For Std / Normal Load Cell **1**: For abnormal load cell with too large offset.		**A/D Board (Scale 1)** **00** : Normal **01** : Prevent from Small vibration/ fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display								
35 **0 0 0 0**	**Not used**	**(For Scale 2)** **0** :For Std / Normal Load Cell **1**: For abnormal load cell with too large offset.		**A/D Board (For Scale 2)** **00** : Normal **01** : Prevent from Small vibration/ fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display								
36 **_ _ 0 0**	**Minimum Display (Scale 3)** **00** : 2 **01** : 1 **10** : 5 **11** : 10			**A/D Board (For Scale 3)** **00** : Normal **01** : Prevent from Small vibration/ fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display								
37	**Load Cell Sensitivities Selection (mV/V) (Scale 3)**											
	Spc	**Min**	**Max**	**Spc**	**Min**	**Max**	**Spc**	**Min**	**Max**	**Spc**	**Min**	**Max**
	0000	3.46	4.00	**0100**	1.95	2.25	**1000**	1.09	1.27	**1100**	0.61	0.71
	0001	3.00	3.46	**0101**	1.69	1.95	**1001**	0.95	1.09	**1101**	0.53	0.91
	0010	2.59	3.00	**0110**	1.46	1.69	**1010**	0.82	0.95	**1110**	0.46	0.53
1 0 0 1	**0011**	2.25	2.59	**0111**	1.27	1.46	**1011**	0.71	0.82	**1111**	0.40	0.46
38 **0 0 1 0**	**(For Scale 3)** **0** :For Std / Normal Load Cell **1**: For load cell with large offset			**Digital Tare When Loaded** **0**: Allow **1**:Not Allow			**INTERNAL COUNT** **0:** 500,000 **1:** 1,000,000			**Stability Check When Changing Scale** **0** : Yes **1** : No		
39	**Set spec to "0" "0" "1" "0"**											

6.6. DC-190 RS-232 PORT SELECTION CHART

The DC-190 has two R-232 ports for use with a force balance, printer, and or PC. Only two options are available at one time. When selecting the options to be used the ports are also being selected in the following manner.
There are two primary port options and one secondary port option.

The Force Balance port is a primary port option controlled by spec 8 & 9.
The printer port is a primary port option controlled by specs 10 & 11.
The PC is a secondary port option and is controlled by the port option selected in spec 13, the primary option selected in spec 13 assumes its port and the PC assumes the remaining port. If two peripheral devices are turned on but only one device is installed on the scale an error message will appear on the scale.

13	**RS232(PC/PRN)**	**RS232 CONNECTOR**	
	Header:	**Sub**	**Din**
	0: Code	**000**: Printer	Force Bal.
		001: Force Bal.	Printer
	1: Title	**100**: PC	Force Bal.
0 0 0 1		**101**: Force Bal	PC
		010: Printer	PC (*1)
		011: PC	Printer(*2)

SPEC 13	SUB	DIN	CONTROL SPECS (SUB)				CONTROL SPECS (DIN)	
000:	Printer	Force Bal.		10 & 11	PRINTER		8 & 9	F.B.
001:	Force Bal.	Printer		8 & 9	Force Bal.		10 & 11	PRINTER
100:	PC	Force Bal.		10 & 11	PC		8 & 9	Force Bal.
101:	Force Bal.	PC		8 & 9	Force Bal.		10 & 11	PC
010:	Printer	PC		10 & 11	Printer		8 & 9	PC
011:	PC	Printer		8 & 9	PC		10 & 11	Printer

6.6. DC-190 RS-232 Specification

6.6.1. PRINTER BCP-300 / PC

6.6.1.1 GENERAL SPECIFICATION

Baud Rate	: 1200 /2400 / 4800 / 9600 bps	(Spec 10 bits 0 & 1)
Data Length	: 7 bits / 8 bits	(Spec 10 Bit 2)
Parity	: None/ Odd / Even	(Spec 11 Bit 0 & 1)
Stop Bit	: 1 bit / 2 bits	(Spec 11 Bit 3)

6.6.1.2. DC190 TO PC OUTPUT DATA FORMAT

A) With Header (SPEC12 BIT 0 set to 0)

HEADER	DATA	CR	HEADER	.....	CR	LF

One Data consists of “HEADER”, “DATA” & “CR”.
“CR” must be added at the end of the data.
“LF” must be added at the end as a termination code of the transmission.

There are two type of Headers:
(i) Header Code
(ii) Title

DC-190 RS-232 specification (continued)

(i) HEADER WITH HEADER CODE	(ii) HEADER WITH TITLE
Header Code is sent before the data to indicate type of the data.	Title is sent before the data to indicate type of the data. This can be used only when RS232 Output is set to Counting Condition, With Header and Title.
The following type of data can be sent:	The following type of data can be sent:

Header Code	ASCII Code	Data		Title	Data
0	30	Net Weight		NET WEIGHT	Net Weight
1	31	Unit Weight		UNIT WEIGHT	Unit Weight
2	32	Quantity		QUANTITY	Quantity
3	33	ID Code		ID CODE	ID Code
4	34	Tare Weight		TARE	Tare Weight
A	41	Gross Weight		GROSS WEIGHT	Gross Weight
B	42	Status		STATUS	Status
C	43	Date &Time		DATE & TIME	Date &Time
F	46	Set Point 1 [W]		SET P1(W)	Set Point 1 [W]
G	47	Set Point 1 [Q]		SET P1(Q)	Set Point 1 [Q]
H	48	Set Point 2		SET P2	Set Point 2
I	49	Total Quantity		TOTAL QUANTITY	Total Quantity
K	4B	Inventory		INVENTORY	Inventory
M	4D	Part No		PART NO	Part No
N	4E	Part Name		PART NAME	Part Name
V	56	Scale No		SCALE NO	Scale No
Q	51	Set Point 3		SET P3	Set Point 3
X	58	Set Point 4		SET P4	Set Point 4
U	55	Set Point 5		SET P5	Set Point 5
O	4F	Set Point 6		SET P6	Set Point 6

B) Without Header (SPEC12 BIT 0 set to 1)

DATA	CR	DATA	CR	.....	CR	LF

One Data Block consists of "DATA" & "CR".
"CR" must be added at the end of the data.
"LF" must be added at the end as a termination code of the transmission.

DC-190 RS-232 specification (continued)

(C) DATA

ID Code: Parts code is only sent when a ID Code is called during the counting mode.
The maximum is 16 characters. If the ID code is less than 16 characters, then the rest of the data will be filled with space (20H).

Ex. Parts code = 12

Header <---------- DATA ---------->

3	1	2	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	CR

Set Points : Set Point data is only sent when a ID Code is called during the counting mode.
There are 6 set point data to be sent : Set Point 1 (F or G) , Set Point 2 (H)., Set Point 3(a) , Set Point 4(b), Set Point 5(c) and Set Point 6 (d).
Set Point 1 (F) Weight : Variable length, Max 5 digits and 1 decimal point.
or (G) Quantity : Variable length, Max 6 digits.
(Note : Only one of "F" (set 1 weight) or "G" (set 1 quantity) is sent.)
Set Point 2 to 6 (H, a, b, c, d)
Percentage : Variable length, Max 5 digits and 1 decimal point.
or Lower Weight : Variable length, Max 5 digits and 1 decimal point.
or Lower Quantity : Variable length, Max 7 digits.

4 combinations of set point 1 and set point 2 can be sent as follows:

SET 1		SET 2,3,4,5,6
* Quantity	&	Percentage
* Upper Quantity	&	Lower Quantity
* Weight	&	Percentage
* Upper Weight	&	Lower Weight

Please Note: Set Point 2 to 6 must either increase or decrease .
The decimal point for weight must be correct.

Gross Weight : Variable length, Max 5 digits and 1 decimal point.

Net Weight : Variable length, Max 5 digits and 1 decimal point.

Unit Weight : Variable length, Max 5 digits and 1 decimal point.

Tare Weight : Variable length, Max 5 digits and 1 decimal point.

Quantity : Variable length, Max 7 digits.

Total Quantity : Variable length, Max 7 digits sent when PRINT key is depressed.

Note : Only one of "2" (Quantity) or "I" (Total Quantity) is sent at a time.

DC-190 RS-232 specification (continued)

Status : The status data byte is as follows:

Bit #	If set to **1**	If set to **0**
Bit 0	Positive weight	Negative weight
Bit 1	Lb mode	kg, g mode
Bit 2	Weight stable	Weight unstable
Bit 3	Output normally entered data	Others
Bit 4	Output by + key	Others
Bit 5	Output by - key	Others
Bit 6	Always set to “1”	
Bit 7	Always set to “0”	

When bit 3 (Output normally entered data) is “1”, bit 2 (weight stable) should be ignored.

Part No :	12 digits.
Inventory :	8 digits
Part Name :	16 digits
Scale No :	1digits
Date & Time:	

Header (C)	YEAR (2 DIGIT)	MONTH (2 DIGIT)	DATE (2 DIGIT)	HOUR (2 DIGIT)	MINUTE (2 DIGIT)	SEC (2 DIGIT)	CR

DC-190 RS-232 specification (continued)

6.6.3.1. Connect To BCP-300

DC190 can connect to BCP-300 printer.

Set the following Specs:					
Baud Rate	9600 bps	(Spec 10 bits 0 & 1)	Printer	BCP-30	(Spec11 Bit 2)
Data Length	8 bits	(Spec 10 Bit 2)	RS232 Output	By ➲	(Spec 12 Bit 3 & 2)
Parity	None	(Spec 11 Bit 0 & 1)	RS232 Output	+ & – Key	(Spec 19 Bit 0)
Stop Bit	1 bit	(Spec 11 Bit 3)			

6.6.3.2. RS232C Related Spec List

The following R-141 spec must be set correctly in order for DC-190 to communicate with the PC or BCP-30 printer .

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
3	**RS-232 port commands** 00 = standard RS-232 01 = ctm-290 (slip printer) 10 = tm-200(with cutter command) 11 = tm-200(with feed for tear off)		**Print commands** 00 = bcp-30 (barcode printer) 01 = ctm-290 (slip printer) 10 = tm-200(with cutter command) 11 = tm-200(with feed for tear off)	
10	**RS-232C Connection (PRINTER/PC)** **0 :** No **1 :** Yes	**RS-232C Data Length (Optional)** **0** : 7 bits, **1** : 8 bits	**RS-232C Baud Rate (Optional)** **00** : 19200 **10** : 4800 **01** : 38400 **11** : 9600	
11	**RS-232C Stop Bit (Optional)** **0** : 1 bit **1** : 2 bits	**PRINTER:** **0**: LP2622 **1**: BCP-30	**RS-232C Parity Bit (Optional)** **00** : No **10** : Not Used **01** : Odd **11** : Even	
12	**RS-232 Output (Optional)** **00** : Not Available **01** : When Counting Condition **10** : By ➲ Key **11** : In Both Cases		**Set to "0"**	**With Header** **0** Yes **1** No
13	**RS232(PC) Header:** **0:** Code **1:** Title	**RS232 CONNECTOR** **Sub** **Din** **000**: Printer Force Bal. **001**: Force Bal. Printer **100**: PC Force Bal.	**Sub** **Din** **101**: Force Bal, PC **010**: Printer PC **011**: PC Printer	

	Bit 3	Bit 2	Bit 1	Bit 0
Spec 3	0	0	0	0
Spec 10	1	1	1	1
Spec 11	0	1	0	0
Spec 12	1	0	0	0
Spec 13	0	0	1 (with / PC)	1
Or without PC				
Spec 13	0	0	0	1

Note: SPEC10 bit 3 for RS232 Connection is disable in Default Spec.

*1 & *2: The Baud Rate, Data Length, Stop Bit & Parity Setting for PC based on Spec8 & Spec 9. Also, when pressing valid print key, the scale will send data to PC.

DC-190 RS-232 SPECIFICATION (continued)

6.6.3.3. CONNECT TO LP2622, 2742, 2722

DC190 can connect to LP2622 printer.

Set the following Specs:					
Baud Rate	9600 bps	(Spec 10 bits 0 & 1)	Stop Bit	1 bit	(Spec 11 Bit 3)
Data Length	8 bits	(Spec 10 Bit 2)	Printer	LP2622	(Spec11 Bit 2)
Parity	None	(Spec 11 Bit 0 & 1)	RS232 Output	By * , + & -Key	(Spec 12 Bit 3 & 2)

Note:

DC190 will download some label formats to LP2622 when power up. Owing to this, LP2622 should connect to DC190 when DC190 power up. Also, make sure the printer has enough memory allocated for Form Memory (at least 3K). Please refer to the printer manual.

Eltron printer 2622 9 pin "D" sub to 9 pin "D" sub.

	Bit 3	Bit 2	Bit 1	Bit 0
Spec 3	0	0	0	0
Spec 10	1	1	1	1
Spec 11	0	0	0	0
Spec 12	1	0	0 (fixed format)	0
Spec 12	1	0	1(custom down load)	0
Spec 13	0	0	1 (with P/C)	1
Or without PC				
Spec 13	0	0	0	1

6.6.3.4. CONNECT TO EPSON TM-200

DC190 can connect to Epson tm-200 printer.

Epson TM - 200 printer 25 pin "D" sub to 8 pin "DIN" .

	Bit 3	Bit 2	Bit 1	Bit 0
Spec 3	0	0	1	0
Spec 10	1	1	1	1
Spec 11	0	1	0	0
Spec 12	1	0	0	0
Spec 13	0	0	1(with P/C)	1
Or without PC				
Spec 13	0	0	0	1

6.6.3.5. Connect to EPSON TM-200 using 9 pin "D" sub connector and BCP-30 (SE250) using 8 pin din connector. With both printer printing at the same time.

	Bit 3	Bit 2	Bit 1	Bit 0
Spec 3	0	1	0	0
Spec 8	0	1	1	1
Spec 9	0	1	0	0
Spec 10	1	1	1	1
Spec 11	0	1	0	0
Spec 12	1	0	0	0
Spec 13	0	0	1	1

6.6.3.6. Connect to EPSON TMU-295 using 8 pin "Din" connector.

	Bit 3	Bit 2	Bit 1	Bit 0
Spec 3	0	0	0	1
Spec 10	1	1	1	1
Spec 11	0	1	0	0
Spec 12	1	0	0	0
Spec 13	0	0	1	1
Or without PC				
Spec 13	0	0	0	1

With release

	Bit 3	Bit 2	Bit 1	Bit 0
Spec 3	0	0	1	1
Spec 10	1	1	1	1
Spec 11	0	1	0	0
Spec 12	1	0	0	0
Spec 13	0	0	1	1
Or without PC				
Spec 13	0	0	0	1

DC-190 RS-232 specification (continued)

6.6.4. Bar Code Scanner

DC190 can support:

RS232: Pen Scanner: ZB800- Can Support Up to 16 digits
PSC Laser Scanner

6.6.4.1 General Specification

Baud Rate	1200 /2400 / 4800 / 9600 bps	(Spec 14 bits 0 & 1)
Data Length	7 bits / 8 bits	(Spec 14 Bit 2)
Parity	None/ Odd / Even	(Spec 15 Bit 0 & 1)
Stop Bit	1 bit / 2 bits	(Spec 15 Bit 3)

6.6.4.2. Output Data Format

There are also two ways to input data:

1) **With Header**:

Header	Data	CR

2) **Without Header (judged as ID code)**

Data	CR

6.6.4.3. Three Lines Bar Code

DC190 can read Three lines bar code (Ver. D2.14 & above, must be with header):

Line 1:

Header	Space	Data1	CR

Line 2:

Space	Data2	CR

Line 3:

Data3	CR

Communication available in OPERATION mode:
UNIT WEIGHT, TARE WEIGHT, PART CODE, QUANTITY

Communication available is PROGRAM mode
PART CODE, PART NO, PART NAME, INVENTORY, UNIT WEIGHT, TARE WEIGHT, SET POINTS.

DC-190 RS-232 specification (continued)

HEADER

The following type of header can be received

Header Code	ASCII Code	Data		Header Code	ASCII Code	Data
1	31	Unit Weight		I	49	Total Quantity
2	32	Quantity		K	4B	Inventory
3	33	ID Code		M	4D	Part No
4	34	Tare Weight		N	4E	Part Name
A	41	Gross Weight		Q	51	Set Point 3
F	46	Set Point 1 [W]		X	58	Set Point 4
G	47	Set Point 1 [Q]		U	55	Set Point 5
H	48	Set Point 2		O	4F	Set Point 6

6.6.4.4. Z Command

Z Command Functions as Function key.

Z Command	FUNCTION		Z Command	FUNCTION
Z0	REZERO		Z6	CLEAR
Z1	PRINT		ZS1	SCALE 1
Z2	UNIT WEIGHT CLEAR		ZS2	SCALE 2
Z3	PLUS		ZS3	SCALE 3
Z4	MINUS		ZS4	SCALE 4
Z5	TARE			

6.6.4.5. RS232C Related Spec List

The following R-141 spec must be set correctly in order for DC-190 to communicate with the Scanner:

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
14	**RS-232C Connection (SCANNER)** **0 :** No **1 :** Yes	**RS-232C Data Length (Optional)** **0** : 7 bits **1** : 8 bits	**RS-232C Baud Rate (Optional)** **00** : 19200 **10** : 4800 **01** : 38400 **11** : 9600	
15	**RS-232C Stop Bit (Optional)** **0** : 1 bit **1** : 2 bits	**With Header** **0** Yes **1** No	**RS-232C Parity Bit (Optional)** **00** : No **10** : Not Used **01** : Odd **11** : Even	

USA Default Spec	
SPEC14:	0010
SPEC15:	0011

Note: SPEC14 bit 3 for RS232 Connection is disable in Default Spec.\

DC-190 RS-232 specification (continued)

6.6.5. FORCE BALANCE

DC190 can support: OHAUS EXPLORER

6.6.5.1. General Specification

Baud Rate	1200 /2400 / 4800 / 9600 bps	(Spec 8 bits 0 & 1)
Data Length	7 bits / 8 bits	(Spec 8 Bit 2)
Parity	None/ Odd / Even	(Spec 9 Bit 0 & 1)
Stop Bit	1 bit / 2 bits	(Spec 9 Bit 3)
F. Balance Type	OHAUS EXPLORER	(Spec 9 Bit 2)

6.6.5.2. Calibration

6.6.5.2. OHAUS EXPLORER /TP200

Preparation For EXPLORER

1. Perform Initial Setup For EXPLORER according to its Service Manual
2. Set the RS232 setting in EXPLORER
3. Set Auto Print with Continuously option.
4. Set Numeric Only to Off .
5. Set the Unit to OZ or G

Linking to DC190

1. 1.Connect two scales with cable.
2. Select Scale 4 by pressing Scale key several times.
3. Calibration is not needed

Please Note:

1. Re-zero and zero tracking are disable when using EXPLORER/TP200.
   Weight Display in Dc190 will mask.
2. The negative start range for oz mode can up to around –3.00000oz of the capacity.
3. The max tare range for oz mode can up to 7oz.

6.6.5.3. RS232C Related Spec List

The following R-141 spec must be set correctly in order for DC-190 to communicate with the Force Balance

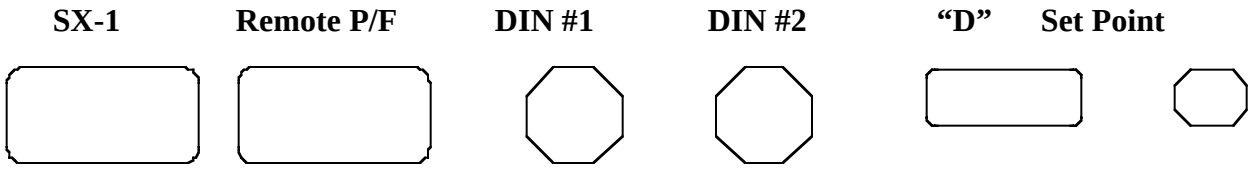
Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
8	**RS-232C Connection (Force Balance)** **0 :** No **1 :** Yes	**RS-232C Data Length (Optional)** **0** : 7 bits **1** : 8 bits	**RS-232C Baud Rate (Optional)** **00** : 19200 **10** : 4800 **01** : 38400 **11** : 9600	
9	**RS-232C Stop Bit (Optional)** **0** : 1 bit **1** : 2 bits	**Force Balance Type** **0**: SHG-300 **1**: TP-200	**RS-232C Parity Bit (Optional)** **00** : No **10** : Not Used **01** : Odd **11** : Even	
13	**RS232(PC) Header:** **0:** Code **1:** Title	**RS232 CONNECTOR** **Sub** **Din** **000:** Printer Force Bal. **001:** Force Bal. Printer **100:** PC Force Bal. **101:** Force Bal. PC **010:** Printer PC (*1) **011:** PC Printer (*2)		

USA Default Spec:	
SPEC08:	0010
SPEC09:	0111
SPEC13:	0001

Note: SPEC08 bit 3 for RS232 Connection is disable in Default Spec.
SPEC13 bit 0, 1 &2 need to be changed before using the force balance.

6.7. CONNECTOR MATRIX

6.7.1.1. DC-90 Connector Matrix



SX-1 Platforms	Remote Platforms	Bar Code DIN #1	Din #2	"D"	Set Point
Single SX Platform	Any Remote 2nd Platform	Laser/Pen	Force Balance Spec 13	PC Spec13	
Dual SX Platform	Any Remote 3rd Platform		BCP-30 Spec 10 & 11	BCP-30 Spec 13	
Single SX & Any 2nd P/F	Any Remote 3rd Platform		PC Spec 8 & 9	Force Balance Spec 13	
SX Provides AC or Battery Power					
Single Non SX P/F	Any Remote 2nd Platform	Requires PS-100 A/C Adapter			
Two Non SX Platforms	Any Remote 3rd Platform	Requires PS-100 A/C Adapter And "Y" Cable			

NOTE: WHEN THE DC-190 CONSOLE IS BENG USED WITH A PLATFORM OTHER THAN AN SX PLATFORM THE PS-100 A/C ADAPTER IS REQUIRED

6.7.1.2. Comm Cables ✍ALL DC-190 counting scales have hardware handshaking lines for RTS/CTS on DIN #2 and the 9 PIN "D" sub connectors. This is for use with certain printers listed in this manual. For devices that do not require this type of handshaking, jump the RTS/CTS lines on the scale side of the cable.

[8 PIN]	DIN # 1 & # 2	
pin 1	DTR	DTR
pin 2	S. GND	S. GND
pin 3	DSR	DSR
pin 4	RXD	RXD
pin 5	TXD	TXD
pin 6	CTS	CTS
pin 7	RTS	RTS
pin 8	vcc (5V)	n/c

9 PIN "D" Female	
pin 1	DCD
pin 2	RD
pin 3	SD
pin 4	DTR
pin 5	SG
pin 6	DSR
pin 7	RTS
pin 8	CTS
pin 9	Ri

Setpoint Output	
MINIDIN 8 PIN	
pin 1	SP-1
pin 2	SP-2
pin 3	SP-3
pin 4	SP-4
pin 5	SP-5
pin 6	SP-6
pin 7	+ 24V
pin 8	GND

6.7.1.3. Remote Platform Wiring

DIGI REMOTE PLATFORM WIRING					
PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
(+) EXCITATION	(–) EXCITATION	SHIELD	(+) SIGNAL	(–) SIGNAL	GROUND

6.7.2. SETTING UP DC – 190

When setting up a DC – 190 or adding a second channel, third channel or even a force balance, it is necessary to assign a different location for each scale whether it is present or not.

Specs 16 & 17 only set up the location for each of the four scales. These specs do not turn on the additional scales. Scales 2 and 3 are turned on and off in the Weights & Measures specs (see spec 25 bit 1 & spec 32 bit 0). The Force Balance is turned on and off in spec 8 bit 3 and the connector type is selected in spec 13 bits 2-1-0.

✍**When setting up a DC-190 or adding a second or third platform. Be sure to plug in the remote scale, simulator or dummy plug (consult factory on dummy plug wiring), before connecting A/C to the DC-190 and before turning on Scales 2 and/or 3. Do not unplug remote scale from the DC-190 while the DC-190 is powered.**

***SPEC 16 & 17 SHOULD ONLY BE CHANGED BY AN AUTHORIZED SERVICE TECHNICIAN !!!		
16* * *** ***Normally Set ***0 0 0 1*** _ _ _ _	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10**: External Scale **11**: Force Balance
17* * *** ***Normally Set ***1 0 1 1*** _ _ _ _	**SCALE 3**: **00**: Internal Scale 1 **01**: Internal Scale 2 ***10: External Scale*** **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***
ALL SCALES ARE UNIQUE AND EACH MUST HAVE THEIR OWN CHANNEL LOCATION.		

IF YOU WISH TO USE THE REMOTE PLATFORM CONNECTOR FOR SCALE 2, IT IS NECESSARY TO CHANGE THE SCALE 3 SPEC LOCATION.

EXAMPLE : USING SINGLE SX PLATFORM SCALE: It is necessary to assign a different location for each scale whether it is present or not.

SPEC 16 SCALE 1 = 00: INTERNAL SCALE 1 / SCALE 2 = 10 EXTERNAL SCALE
SPEC 17 SCALE 3 = 01: INTERNAL SCALE 2 / SCALE 4 = 11 FORCE BALANCE

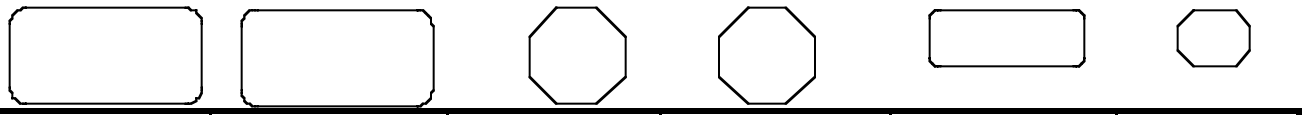
The Spec Setting Below Is Not Acceptable As It Will Cause Scale To Lock Up In All 888888's In The Weight Display. When This Condition Has Occurred Access To The Spec Codes And Calibration Will Also Be Locked Out.

SPEC 16 SCALE 1 = 00: INTERNAL SCALE 1 / SCALE 2 = 10 EXTERNAL SCALE

SPEC 17 SCALE 3 = 10: EXTERNAL SCALE / SCALE 4 = 00 FORCE BALANCE

Should the DC – 190 become locked in all 888888's as a result of invalid spec setting, **AN AUTHORIZED SERVICE TECHNICIAN** may perform the following procedure:

1. Unplug scale AC from outlet.
2. Press and hold the **[3]** and **[9]** keys in while plugging in AC to outlet.
3. The display will show "S – on", then release the **[3]** and **[9]** keys.
4. Press and hold **[REZERO]** key while pressing **[1] [4] [1]** , press **[+]** key to advance to spec 16, change specs 16 & 17 to assign a different location for each scale whether it is present or not.

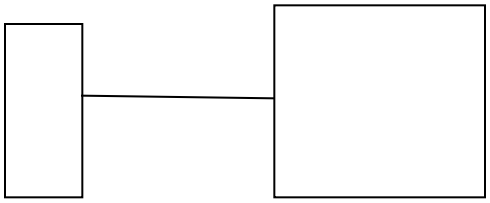


SX-1 Platforms SINGLE / DOUBLE	Remote Platforms	Bar Code DIN #1	Din #2	"D"	Set Point

NOTE: THE FOLLOWING PAGES PROVIDE A MORE DETAILED EXPLANATION OF SPEC SETTINGS FOR SPEC 16 & 17.

IF YOU ARE SETTING UP A…

SINGLE PLATFORM SCALE

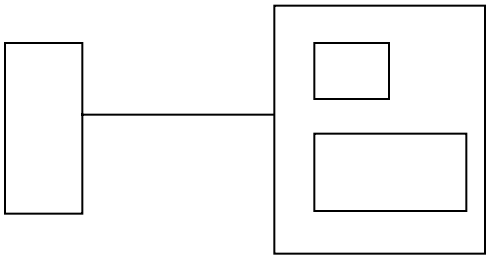


❶ DIGI SX-L PLATFORM SEE PAGE 48

❷ OTHER DIGI PLATFORM SEE PAGE 48
(YOU WILL NEED A PS-100 POWER SUPPLY)

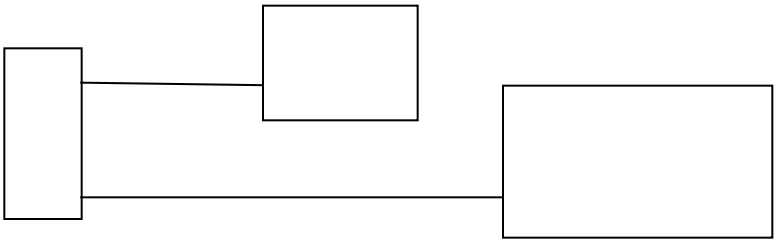
❸ OTHER MANUFACTURER'S PLATFORM SEE PAGE 48
(YOU WILL NEED A PS-100 POWER SUPPLY)

DUAL PLATFORM SCALE



❶ DIGI SX-DUAL PLATFORM SEE PAGE 49

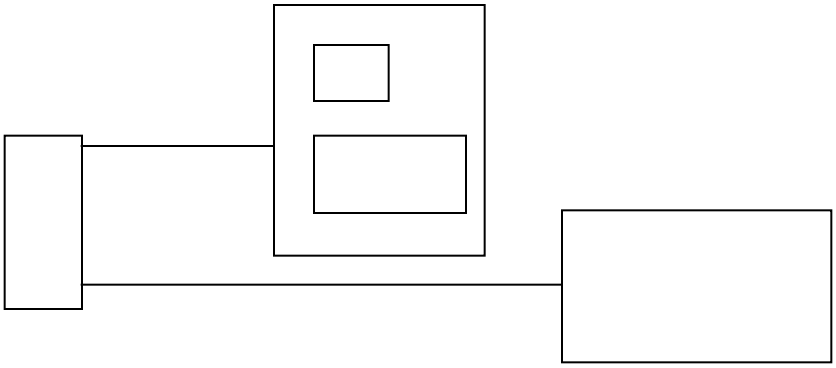
TWO PLATFORM SCALE



❷ DIGI SX-L AND ONE OTHER PLATFORM
DIGI OR OTHER MANUFACTURER'S PLATFORM SEE PAGE 50

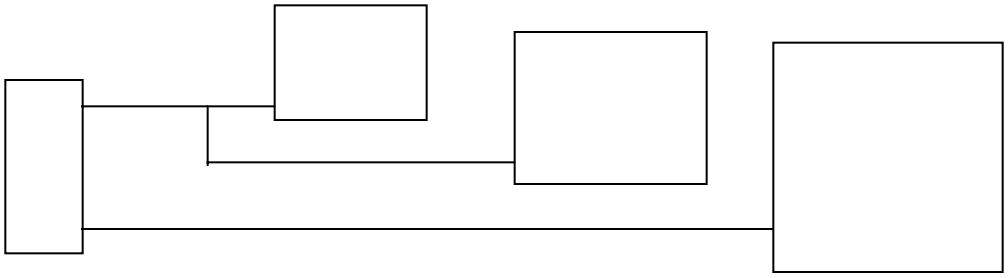
❸ DIGI OR OTHER NON SX- L PLATFORM AND ONE OTHER SEE PAGE 50
(YOU WILL NEED A PS-100 POWER SUPPLY)

THREE PLATFORM SCALE USING



❶ DIGI SX-DUAL AND ONE OTHER PLATFORM ——→ SEE PAGE 51

THREE PLATFORM SCALE USING



❷ DIGI SX-L AND TWO OTHER PLATFORMS
DIGI OR OTHER MANUFACTURER'S PLATFORMS ——→ SEE PAGE 52
(YOU WILL NEED A "Y" CABLE)

❸ DIGI OR OTHER NON SX-L AND TWO OTHER PLATFORMS
DIGI OR OTHER MANUFACTURER'S PLATFORMS ——→ SEE PAGE 52
(YOU WILL NEED A "Y" CABLE)
(YOU WILL NEED A PS-100 POWER SUPPLY)

SCALE CALIBRATION

❶ SCALE CALIBRATION PROCEDURE ——————→ SEE PAGES 24

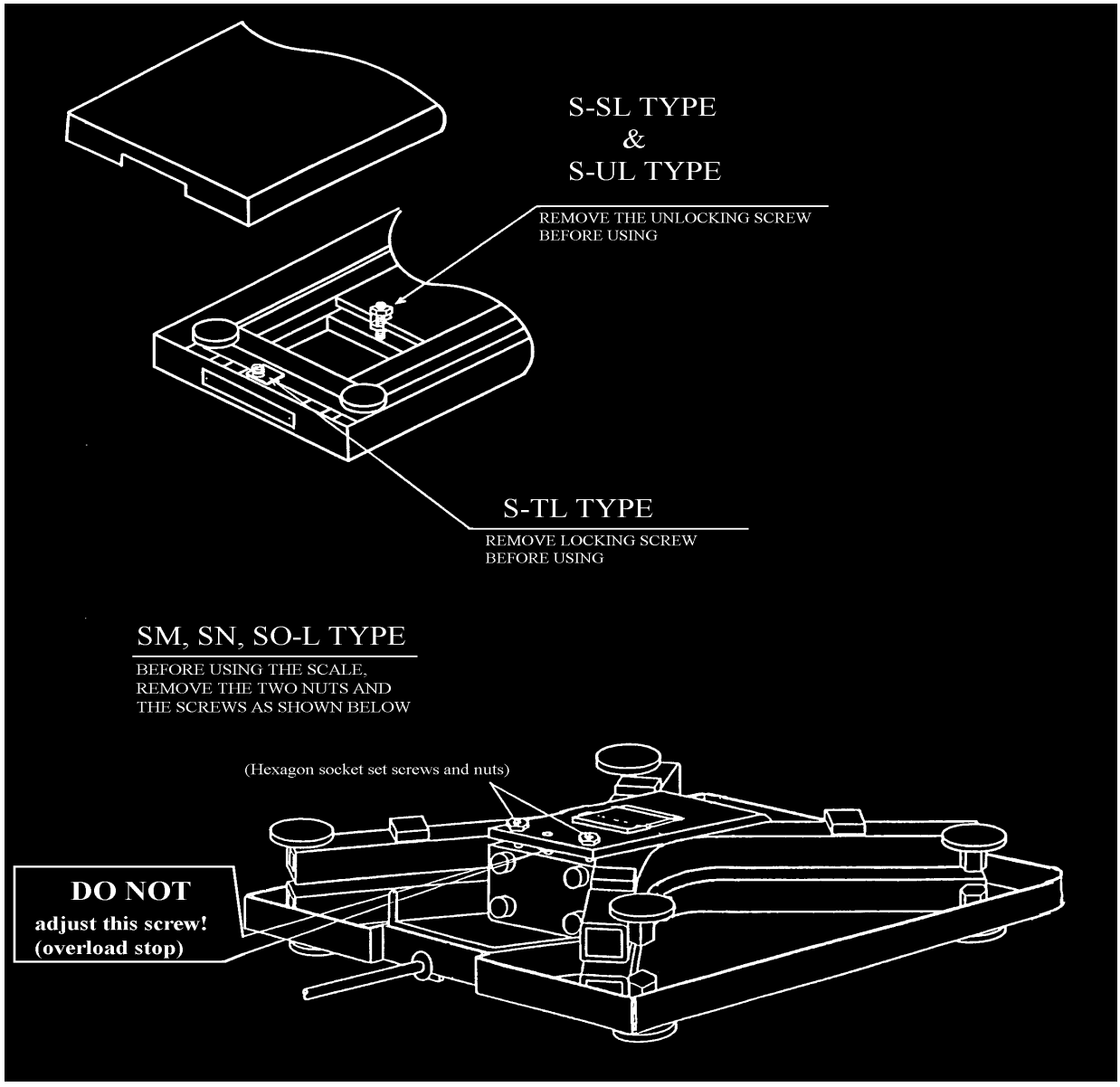
❷ VIEW INTERNAL COUNT ——————→ SEE PAGE 24

PLATFORM WIRING

❶ REMOTE PLATFORM WIRING ——————→ SEE PAGES 42& 53

❷ "Y" CABLE WIRING ——————→ SEE PAGE 54

Platform Unlocking Procedure



6.7.2.1. SETTING – UP SINGLE CHANNEL SCALE

IF YOU ARE SETTING UP A SINGLE CHANNEL SCALE WITH ONE LOAD CELL THIS IS THE WAY THE SPECS 16 & 17 SHOULD BE SET.

16* * *** ***Normally Set ***0 0 0 1*** _ _ _ _	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10**: External Scale **11**: Force Balance
17* * *** ***Normally Set ***1 0 1 1*** _ _ _ _	**SCALE 3**: **00**: Internal Scale 1 **01**: Internal Scale 2 ***10: External Scale*** **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***

The Load Cell Would Be Plugged Into The SX-1 Load Cell Connector. (See pg. 13 for wiring.)

If You Are Using The SX-L Load Cell Platform No Power Supply Will Be Necessary As Power Will Be Supplied By The Platform.

If You Are Using Any Other Type Of Platform It Will Be Necessary To Use A PS-100 Power Supply.

In This Case Other Specs That Will Need To Be Set Are As Follows:

Weight and Measures Specification: To enter this mode, enter the numeric keys 1,4,2 while pressing the Re-zero Key. The Span Switch must be "ON" to enter this mode.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20 _ _ _ _	**Minimum Display (Scale 1)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**		**Minimum Display (Scale 2)** **00** : 2 **10** : 5 **01** : 1 **11** : 10	
21 _ _ _ _		**Weight Decimal Point Position (Scale 1)** **000** : 00000 **011** : 00.000 **001** : 0000.0 **100** : 0.0000 **010** : 000.00 ✍**1**		
23 ***Normally Set*** **0 0 1 1**	**Display Resolution** **00** : 1/10,000 **10** : 1/2,500 ✍**1** **01** : 1/5,000 **11** : Not Used		**Zero Setting Range** **00** : + Unlimited **10** : +- 10% FS - 10% FS **01** : +- 2% FS **11** : Not Avail.	
25 **0 0 0 0**	**Scale Starting Method** **0** : Automatic **1** : Manual	**IR Mode protected by Span Switch** **0** : No **1** : Yes	**Scale Type** 0 : Single **Scale** ✍**2**	**Gross Mode Available** **0 :** Yes **1 :** No

Spec No.				
32 **1 0 1 0**	**Calibration Mode protected by Span Switch** **0** : Yes **1** : No	**Battery Low Lamp** **0:** Yes **1**: No	**Auto Exit from Add Mode** **0** : No **1** : Yes	**External Load Cell (Scale 3)** 0: No ✍**2**

✍**1** To Select The Minimum Display And Decimal Location Divide Capacity By The Display Resolution Selected In Spec 23.
✍**2** In This Case Only Scale 1 Will Be Turned On.

6.7.2.2. SETTING – UP TWO CHANNEL SCALE SX-D PLATFORM

IF YOU ARE SETTING UP A TWO CHANNEL SCALE WITH PLATFORM CONTAINING TWO LOAD CELLS BUILT –IN, THIS IS THE WAY THE SPECS 16 & 17 SHOULD BE SET.

16* * * ***Normally*** ***Set*** ***0 0 0 1*** _____	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10**: External Scale **11**: Force Balance
17* * * ***Normally*** ***Set*** ***1 0 1 1*** _ _ _ _	**SCALE 3**: **00**: Internal Scale 1 **01**: Internal Scale 2 ***10: External Scale*** **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***

The SX-D Platform Would Be Plugged Into The SX-1 Load Cell Connector.

Using The SX-D Platform In Scale 1 SX-1 Connector No Power Supply Will Be Necessary As Power Will Be Supplied By The Platform.

In This Case Other Specs That Will Need To Be Set Are As Follows:

Weight and Measures Specification: To enter this mode, enter the numeric keys 1,4,2 while pressing the Re-zero Key. The Span Switch must be "ON" to enter this mode.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20 _ _ _ _	**Minimum Display (Scale 1)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍ **1**		**Minimum Display (Scale 2)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍ **1**	
21 _ _ _ _		**Weight Decimal Point Position (Scale 1)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍ **1**		
22 _ _ _ _		**Weight Decimal Point Position (Scale 2)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍ **1**		
23 ***Normally Set*** **0 0 1 1**	**Display Resolution** **00** : 1/10,000 **10** : 1/2,500 ✍ **1** **01** : 1/5,000 **11** : Not Used		**Zero Setting Range** **00** : + Unlimited **10** : +- 10% FS - 10% FS **01** : +- 2% FS **11** : Not Avail.	
25 **0 0 0 0**	**Scale Starting Method** **0** : Automatic **1** : Manual	**IR Mode protected by Span Switch** **0** : No **1** : Yes	**Scale Type** 1 : Double **Scale** ✍2	**Gross Mode Available** **0 :** Yes **1 :** No
32 **1 0 1 1**	**Calibration Mode protected by Span Switch** **0** : Yes **1** : No	**Battery Low Lamp** **0:** Yes **1**: No	**Auto Exit from Add Mode** **0** : No **1** : Yes	**External Load Cell (Scale 3)** 0: No ✍**2**
33 **0** _ _ _	**Over Weight Mask at** **0** : +1d **1** : +9d	**Weight Decimal Point Position (Scale 3)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000		
36 _ _ **0 0**	**Minimum Display (Scale 3)** **00** : 2 **10** : 5 **01** : 1 **11** : 10	**A/D Board (For Scale 3)** **00** : Normal **01** : Prevent from Small vibration / fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display		

✍ **1** To Select The Minimum Display And Decimal Location Divide Capacity By The Display Resolution Selected In Spec23. ✍ **2 In This Case Scale 1 & 2 Will Be Turned On.**

6.7.2.3. SETTING – UP TWO CHANNEL SCALE

IF YOU ARE SETTING UP A TWO CHANNEL SCALE WITH ONLY TWO PLATFORMS AND NO "Y" CABLE THIS IS THE WAY THE SPECS 16 & 17 SHOULD BE SET.

16* * *** ***Set ***0 0 1 0*** _ _ _ _	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 **01:** Internal Scale 2 ***10: External Scale*** **11**: Force Balance
17* * *** ***Set ***0 1 1 1*** _ _ _ _	**SCALE 3**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10:** External Scale **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***

One Load Cell Would Be Plugged Into The SX-1 Load Cell Connector, The Second Load Cell Would Be Plugged Into The Remote Platform Connector. (See pg. 12 for remote platform connector)

If You Are Using The Digi SX-L Platform In Scale 1 Sx-1 Connector No Power Supply Will Be Necessary As Power Will Be Supplied By The Platform.

If You Are Using Any Other Type Of Platform It Will Be Necessary To Use A PS-100 Power Supply.

In This Case Other Specs That Will Need To Be Set Are As Follows:

Weight and Measures Specification: To enter this mode, enter the numeric keys 1,4,2 while pressing the Re-zero Key. The Span Switch must be "ON" to enter this mode.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20 _ _ _ _	**Minimum Display (Scale 1)** **00** : 2 **10** : 5 ✍**1** **01** : 1 **11** : 10		**Minimum Display (Scale 2)** **00** : 2 **10** : 5 **01** : 1 **11** : 10	
21 _ _ _ _		**Weight Decimal Point Position (Scale 1)** **000** : 00000 **010** : 000.00 **100** : 0.0000 ✍**1** **001** : 0000.0 **011** : 00.000		
23 ***Normally Set*** **0 0 11**	**Display Resolution** **00** : 1/10,000 **10** : 1/2,500 ✍**1** **01** : 1/5,000 **11** : Not Used		**Zero Setting Range** **00** : + Unlimited **10** : +- 10% FS - 10% FS **01**: +- 2% FS 11: Not Avail.	
25 **0 0 0 0**	**Scale Starting Method** **0** : Automatic **1** : Manual	**IR Mode protected by Span Switch** **0** : No **1** : Yes	**Scale Type** 0 : Single **Scale** ✍2	**Gross Mode Available** **0 :** Yes **1 :** No
32 **1 0 1 1**	**Calibration Mode protected by Span Switch** **0** : Yes **1** : No	**Battery Low Lamp** **0:** Yes **1**: No	**Auto Exit from Add Mode** **0** : No **1** : Yes	**External Load Cell (Scale 3)** 1: Yes ✍**2**
33 **0** _ _ _	**Over Weight Mask at** **0** : +1d **1** : +9d	**Weight Decimal Point Position (Scale 3)** **000** : 00000 **010** : 000.00 **100** : 0.0000 ✍**1** **001** : 0000.0 **011** : 00.000		
36 _ _ **0 0**	**Minimum Display (Scale 3)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**	**A/D Board (For Scale 3)** **00** : Normal **01** : Prevent from Small vibration / fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display		

✍ 1 To Select The Minimum Display And Decimal Location Divide Capacity By The Display Resolution Selected In Spec23. ✍ 2 In This Case Scale 1 & 2 Will Be Turned On.

6.7.2.4. THREE CHANNEL SCALE

IF YOU ARE SETTING UP A THREE CHANNEL SCALE, USING AN SX-D AS SCALE 1 & 2 AND A REMOTE PLATFORM WITH NO "Y" CABLE THIS IS THE WAY THE SPECS 16 & 17 SHOULD BE SET.

16* * *** ***Normally Set ***0 0 0 1*** _ _ _ _	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10**: External Scale **11**: Force Balance
17* * *** ***Normally Set ***1 0 1 1*** _ _ _ _	**SCALE 3**: **00**: Internal Scale 1 **01**: Internal Scale 2 ***10: External Scale*** **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***

The SX-D Dual Platform Would Be Plugged Into The SX-1 Load Cell Connector, The Other Load Cell Would Be Plugged Into The Remote Platform Connector. (See pg. 12 for remote platform connector)

Using The SX-D Platform In Scale 1&2 SX-1 Connector No Power Supply Will Be Necessary As Power Will Be Supplied By The Platform.

In This Case Other Specs That Will Need To Be Set Are As Follows:

Weight and Measures Specification: To enter this mode, enter the numeric keys 1,4,2 while pressing the Re-zero Key. The Span Switch must be "ON" to enter this mode.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20 _ _ _ _	**Minimum Display (Scale 1)** **00** : 2 **10** : 5 ✍**1** **01** : 1 **11** : 10		**Minimum Display (Scale 2)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**	
21 _ _ _ _		**Weight Decimal Point Position (Scale 1)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍**1**		
22 _ _ _ _		**Weight Decimal Point Position (Scale 2)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍**1**		
23 ***Normally Set*** **0 0 1 1**	**Display Resolution** **00** : 1/10,000 **10** : 1/2,500 ✍**1** **01** : 1/5,000 **11** : Not Used		**Zero Setting Range** **00** : + Unlimited **10** : +- 10% FS - 10% FS **01** : +- 2% FS **11** : Not Avail.	
25 **0 0 1 0**	**Scale Starting Method** **0** : Automatic **1** : Manual	**IR Mode protected by Span Switch** **0** : No **1** : Yes	**Scale Type** 1 : Double **Scale** ✍2	**Gross Mode Available** **0 :** Yes **1 :** No
32 **1 0 1 1**	**Calibration Mode protected by Span Switch** **0** : Yes **1** : No	**Battery Low Lamp** **0:** Yes **1**: No	**Auto Exit from Add Mode** **0** : No **1** : Yes	**External Load Cell (Scale 3)** 1: Yes ✍**2**
33 **0** _ _ _	**Over Weight Mask at** **0** : +1d **1** : +9d	**Weight Decimal Point Position (Scale 3)** **000** : 00000 **010** : 000.00 **100** : 0.0000 ✍**1** **001** : 0000.0 **011** : 00.000		
36 _ _ **0 0**	**Minimum Display (Scale 3)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**	**A/D Board (For Scale 3)** **00** : Normal **01** : Prevent from Small vibration / fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display		

✍**1** To Select The Minimum Display And Decimal Location Divide Capacity By The Display Resolution Selected In Spec23. ✍**2** In This Case Scale 1, 2 & 3 Will Be Turned On.

6.7.2.5. SETTING – UP THREE CHANNEL SCALE

IF YOU ARE SETTING UP A THREE CHANNEL SCALE WITH THREE PLATFORMS USING A "Y" CABLE THIS IS THE WAY THE SPECS 16 & 17 SHOULD BE SET.

16* * * Normally Set 0 0 0 1 _ _ _ _	**SCALE 1**: ***00: Internal Scale 1*** **01**: Internal Scale 2 **10**: External Scale **11**: Force Balance	**SCALE 2**: **00**: Internal Scale 1 ***01: Internal Scale 2*** **10**: External Scale **11**: Force Balance
17* * * Normally Set 1 0 1 1 _ _ _ _	**SCALE 3**: **00**: Internal Scale 1 **01**: Internal Scale 2 ***10: External Scale*** **11**: Force Balance	**SCALE 4**: **00**: Internal Scale 1 **01**: Internal Scale 2 **10**: External Scale ***11: Force Balance***

Load Cells 1 & 2 Would Be Plugged Into The SX-1 Load Cell Connector, Using A DC-190 "Y" Cable. The Other Load Cell Would Be Plugged Into The Remote Platform Connector. (See pg. 12 for remote platform connector)

If You Are Using The SX-L Platform As Scale 1 No Power Supply Will Be Necessary As Power Will Be Supplied By That Platform.

If You Are Using Any Other Type Of Platform It Will Be Necessary To Use A PS-100 Power Supply.

In This Case Other Specs That Will Need To Be Set Are As Follows:

Weight and Measures Specification: To enter this mode, enter the numeric keys 1,4,2 while pressing the Re-zero Key. The Span Switch must be "ON" to enter this mode.

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20 _ _ _ _	**Minimum Display (Scale 1)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**		**Minimum Display (Scale 2)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**	
21 _ _ _ _		**Weight Decimal Point Position (Scale 1)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍**1**		
22 _ _ _ _		**Weight Decimal Point Position (Scale 2)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍**1**		
23 ***Normally Set*** **0 0** 1 1	**Display Resolution** **00** : 1/10,000 **10** : 1/2,500 ✍**1** **01** : 1/5,000 **11** : Not Used		**Zero Setting Range** **00** : + Unlimited **10** : +- 10% FS - 10% FS **01** : +- 2% FS **11** : Not Avail.	
25 0 0 **1** 0	**Scale Starting Method** **0** : Automatic **1** : Manual	**IR Mode protected by Span Switch** **0** : No **1** : Yes	**Scale Type** 1 : Double **Scale** ✍2	**Gross Mode Available** **0 :** Yes **1 :** No

32 1 0 1 **0**	**Calibration Mode protected by Span Switch** **0** : Yes **1** : No	**Battery Low Lamp** **0:** Yes **1**: No	**Auto Exit from Add Mode** **0** : No **1** : Yes	**External Load Cell (Scale 3)** 1: Yes ✍**2**

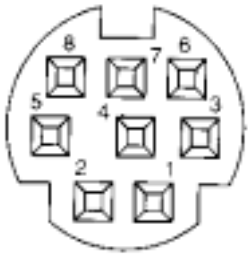
33 **0** _ _ _	**Over Weight Mask at** **0** : +1d **1** : +9d	**Weight Decimal Point Position (Scale 3)** **000** : 00000 **010** : 000.00 **100** : 0.0000 **001** : 0000.0 **011** : 00.000 ✍**1**

36 _ _ **0 0**	**Minimum Display (Scale 3)** **00** : 2 **10** : 5 **01** : 1 **11** : 10 ✍**1**	**A/D Board (For Scale 3)** **00** : Normal **01** : Prevent from Small vibration / fast change in display **10** : Prevent from Medium vibration **11** : Prevent from Large slow change in display

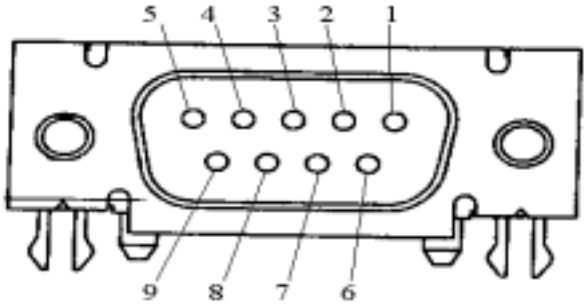
✍**1** To Select The Minimum Display And Decimal Location Divide Capacity By The Display Resolution Selected In Spec23. ✍**2** In This Case Scale 1, 2 & 3 Will Be Turned On.

6.7.3. Connector Pin-Outs (Front View)

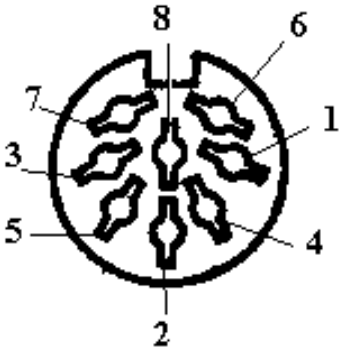
SET POINT MINI DIN FEMALE



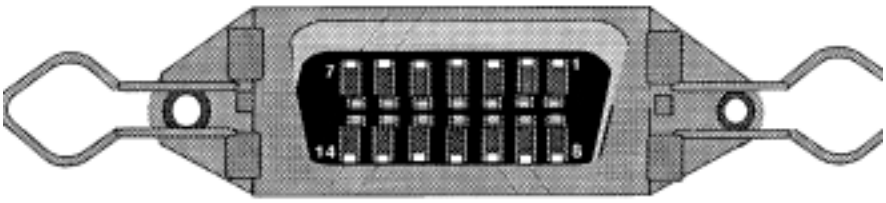
9 PIN "D" SUB FEMALE



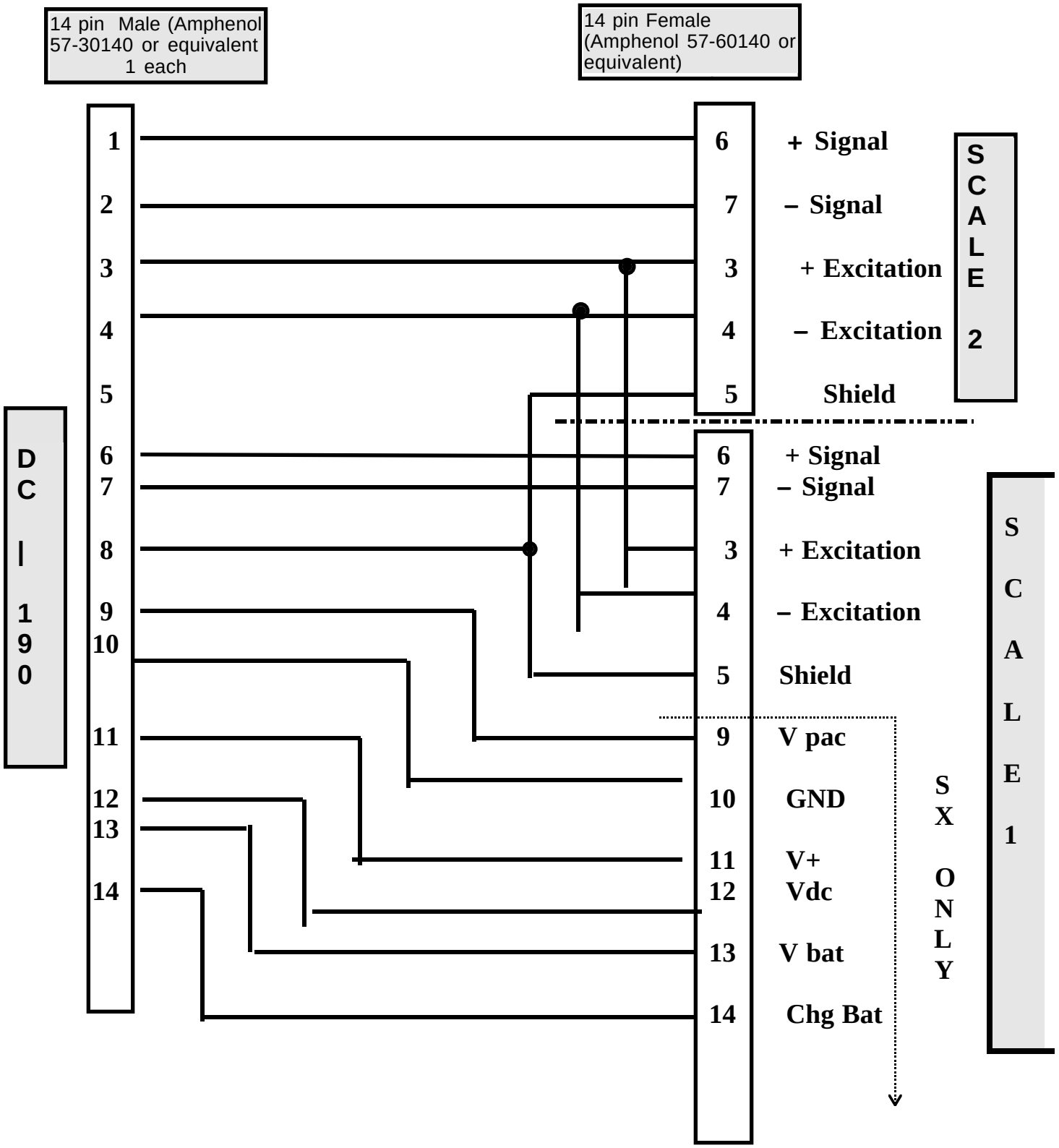
8 PIN DIN FEMALE



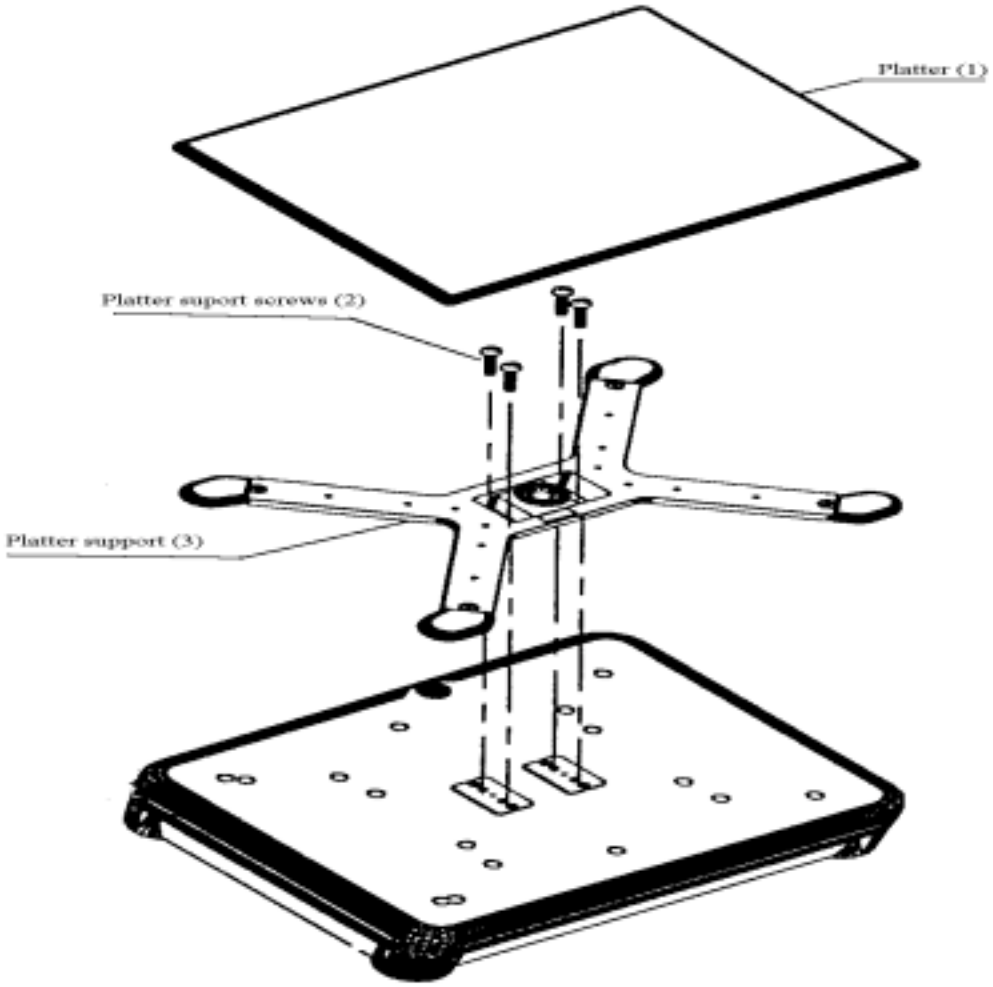
14 PIN AMPHENOL FEMALE



6.7.4. DC-190 Platform "Y" Cable Assembly



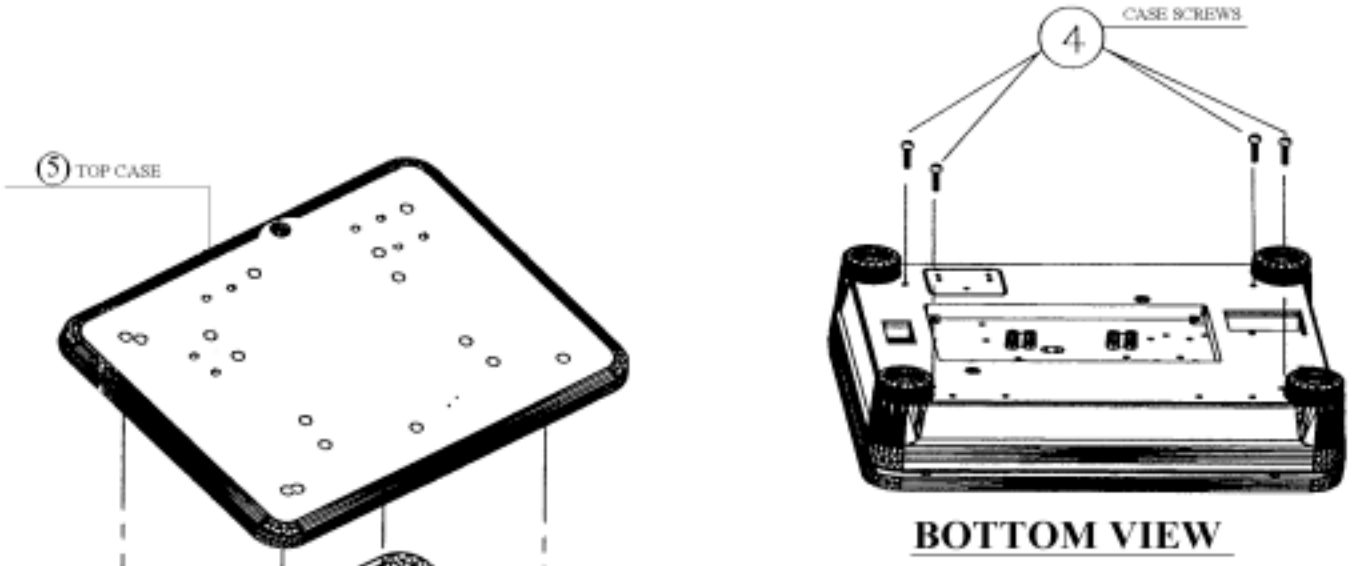
6.8. DC-190 Battery Installation Instructions



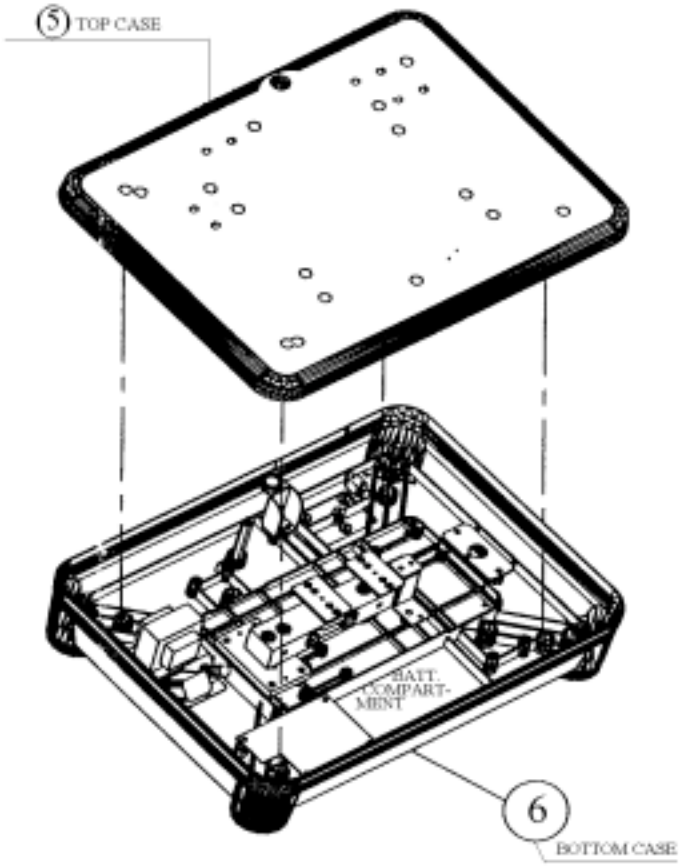
1. Unplug Scale from power source.
2. Remove platter.
3. Remove platter support screws and platter support.

WARNING! Do Not Turn Scale Upside Down

6.8. DC-190 Battery Installation Instructions (Continued)



BOTTOM VIEW



TOP VIEW

4. Remove case screws located on bottom of scale.
5. Remove top cover.
6. Place battery in battery compartment.
7. Attach red lead to positive (+) side of battery.
8. Attach black lead to negative (-) side of battery.
9. Re-assemble scale.

6.8. DC-190 AC / Battery Operation

The DC-190 can be operated with AC power or with the optional internal battery. The battery will automatically charge whenever the scale is plugged into AC power. The charging current is regulated by a battery monitor circuit, so that the battery can not be overcharged.

The DC-190 system is powered internally at a low power level whenever the scale is plugged into the AC line or the battery switch is in the "ON" position. The battery power switch is located on the bottom of the scale directly under the serial number on the side panel. The front panel "ON/OFF" switch enables the display and primary power.

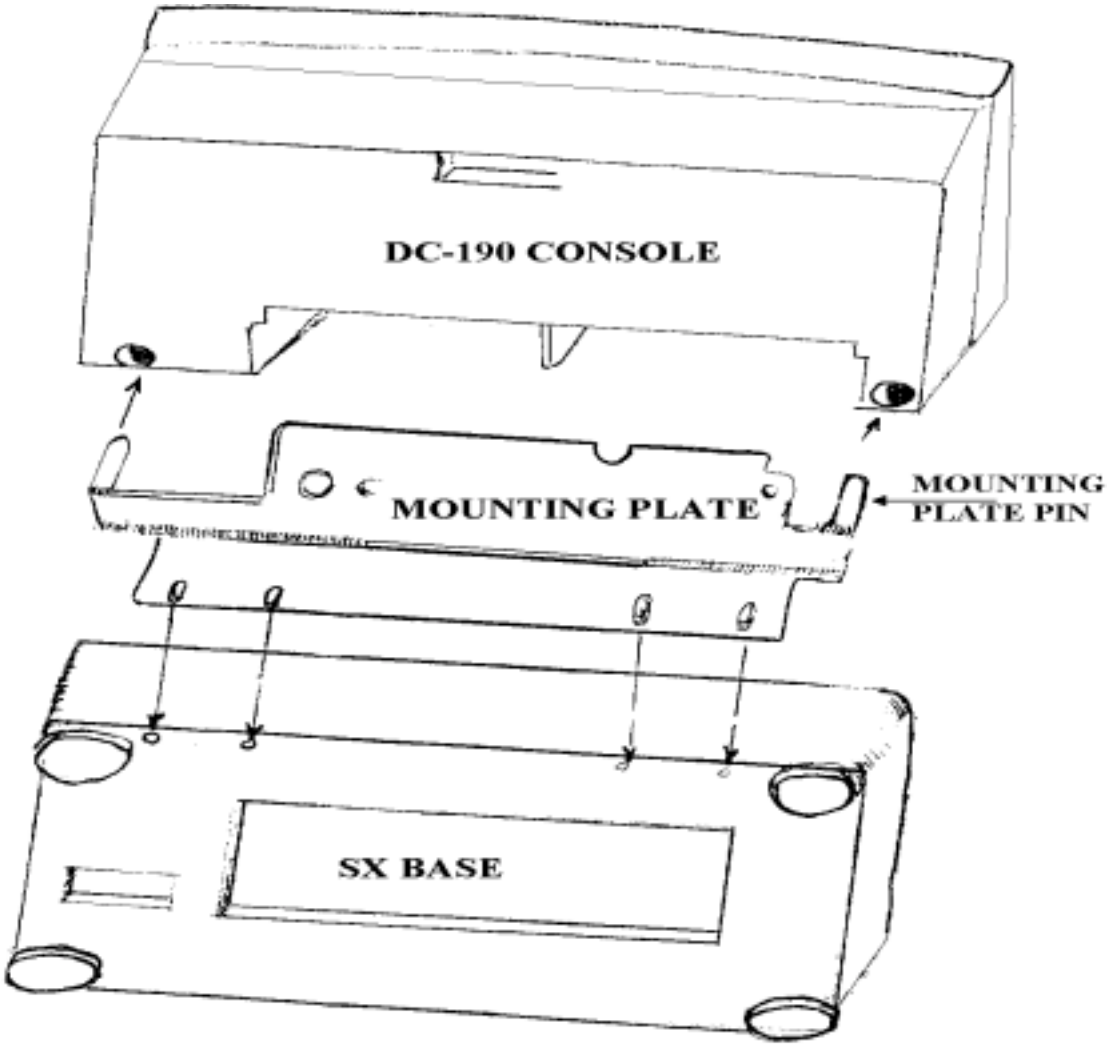
When the battery switch is "ON" and the AC is not connected, a low level battery current will flow even if the display is "OFF". To prevent battery discharge when stored turn the battery switch to "OFF" whenever unit is not used.

Do not store the scale without turning off the battery power switch.

CHARGING TIME: FOR OPTIMUM USE AND BATTERY LIFE, THE DC-190 BATTERY SHOULD BE FULLY CHARGED BEFORE EACH OPERATING RUN.

NOTE: ***Short Cycle Charging Will Reduce The Normal Use Time And Can Drastically Reduce Battery Life.***

The BP-190 battery is a sealed lead acid battery which needs to be charged periodically, similar to a car battery, if the BP-190 is left on the shelf for several months without being charged it will eventually drain to point that it can no longer be charged!



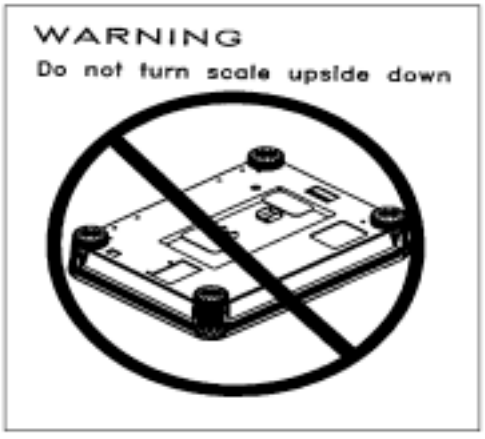
6.9. DC-190 Assembly Procedure :

Step 1. Attach mounting plate to bottom of SX Platform with (4) chrome screws provided.

Step 2 Place SX Platform on leveling feet.
Note: The (2) Pins at the ends of the mounting plate should be pointing upward.

Step 3. Place DC-190 Console on mounting bracket as shown above.

Step 4. With pins of mounting plate inserted in the holes at the rear of DC-190 Console, secure console with (2) remaining chrome screws provided.

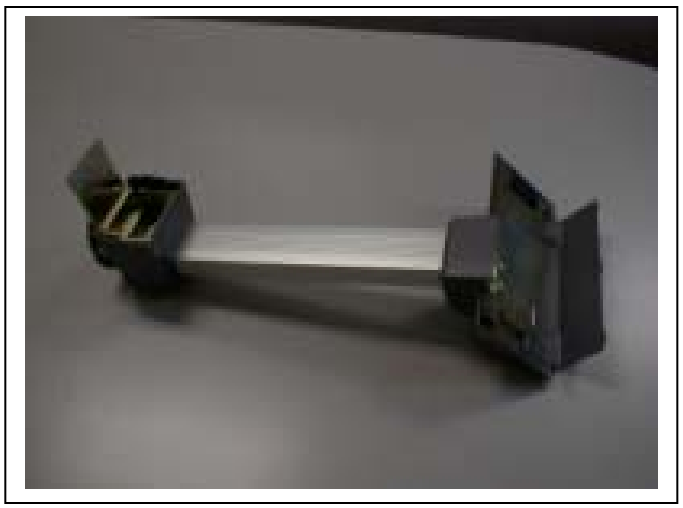


6.10. DC-190 Pole Mounting Instructions

WARNING! Do Not Turn Scale Upside Down

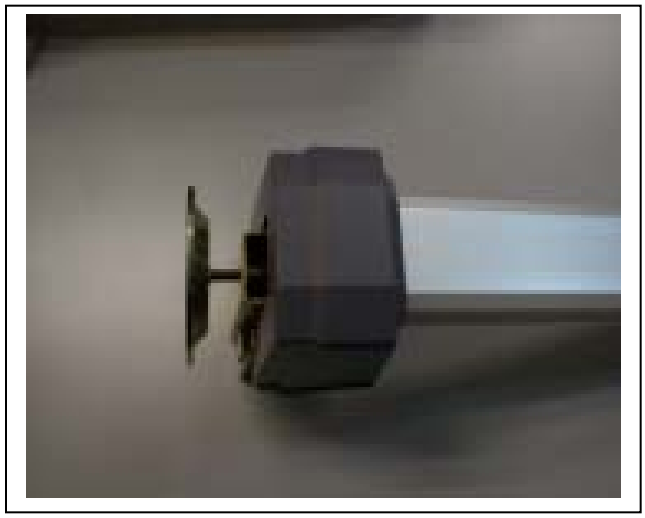
DC-190 Pole Mounting uses the underside bracket and leveling foot for support.

Fig. 1



DC-190 Pole Kit

Fig. 2



Remove Leg Support

Fig. 3

Insert load cell wire into the Pole kit

Fig. 4

Screw in the leg support

6.10. DC-190 Pole Mounting Instructions (continued)

Fig.5

Use M4x 14 screws to attach
Bracket to platform

Fig. 6

Pull some load cell wire
Through pole to be
Connected later

Fig. 7

Remove all (6) truss head
screws

Fig. 8

Remove the 2 plastic covers

6.10. DC-190 Pole Mounting Instructions (continued)

Fig. 9

DC-190 Console

Fig. 10

Remove all (3) truss head screws

Fig. 11

Remove rubber blocks and bracket
From DC-190 Console

Fig.12

Use the M4x10 screws to attach
The DC-190 console to pole
Bracket

6.10. DC-190 Pole Mounting Instructions (continued)

Fig. 13

Plug load cell connector into
DC-190 Console

Fig. 14

Pull excess load cell cable
Down the pole

Fig.15

Re-use the truss head screws
To fasten the 2 plastic covers

Fig.16

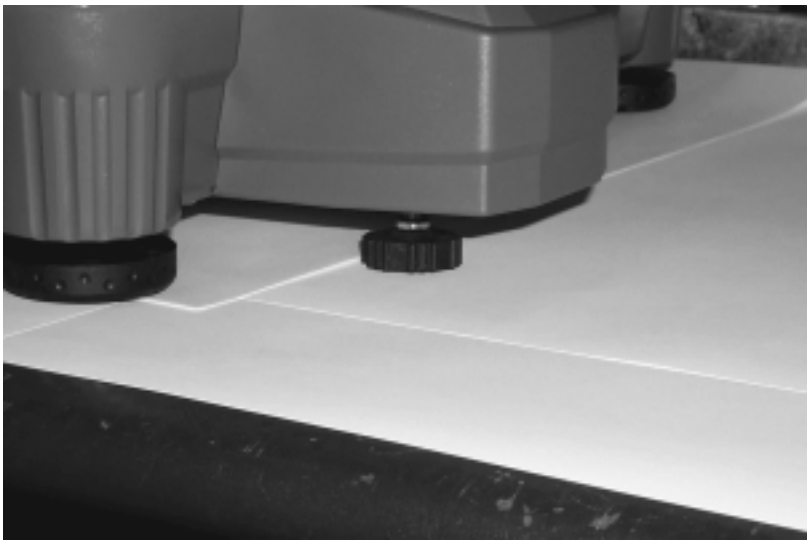
Coil the excess load cell cable
Around the cable holders on the
Bottom of the S-X platform

6.10. DC-190 Pole Mounting Instructions (Continued)

Fig.17

When pole is mounted, re-assemble scale.

Fig. 18



Place scale on feet and adjust leveling foot of the pole as shown above.

6.11. Shop Notes:

DC-190 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS'S SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.

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