REVISED TESTING MANUAL FOR SPRING BALANCES

1. Definition:

A spring balance shall mean an instrument which on the application of the load to be weighed indicates the whole weight by the extension or compression of a spring, such extension or compression being indicated by means of a pointer or dial.

2. Capacities:

Suspended spring balances shall have capacities ranging from 1kg to 500kg.

Pedestal spring balances capacities range from 1kg to 20kg.

Capacities or denominations must be clearly marked on the instrument.

3. General Requirements:

(a) Dimensions of indicator must not exceed 1mm in width and must not be more than 3mm from the chart or dial.

(b) Dimensions of graduation will have a minimum width apart of not less than 1.5mm for capacities up to 20 kg and not less than 2.5mm for capacities above 20kg.

(c) If the indicator is adjustable the range of adjustment will not exceed 1% of the capacity of the spring balance

(d) In spring balances of hanging type, the spring shall be suspended from a stand, support or bracket.

(e) The body of the spring balances shall be constructed of aluminium, brass, bronze, cast iron, mild steel or any other suitable material and shall be sufficiently robust in construction.

(f) If receptacles or pans are provided for the balance, they shall be made of aluminium brass, bronze, cast iron, mild steel or stainless steel. Metal chains or metal support shall be provided if the pans are suspended. When the pans are manufactured from mild steel, it shall be suitably protected. Against corrosion.

(g) In case of removable receptacle or pan, it shall be numbered or otherwise identified with the machine to which it belongs, and every such part shall be so made and fitted that its operating position remains unchanged. For the purpose of this requirement the part or the receptacle shall be deemed to be readily

removable if it can be removed without the use of a tool.

(h) successive graduations on the scale shall correspond to the weights in the following table:

Capacity of instrument	**Maximum weight corresponding to successive graduations**
500g but not exceeding 2.0 kg	5g
Exceeding 2.0kg but not exceeding 6 kg	10g
Exceeding 6 kg but not exceeding 20 kg	20g
Exceeding 20kg but not exceeding 30 kg	50g
Exceeding 30kg but not exceeding 50 kg	100g
Exceeding 50kg but not exceeding 100 kg	200g
Exceeding 100 kg	$^{1}/_{250}$ of capacity

4. Accuracy Testing:

Before starting the actual accuracy testing of a spring balance, a visual examination for completeness and other requirements as laid down in item 2 and 3 above should be conducted. If the instrument does not conform to the requirements, the instrument is rejected forthwith, but if it conforms to the requirements, Accuracy test is conducted as follows:-

(a) Balance the scale at zero loads.

(b) Load the scale with weights corresponding to each numbered graduation and note the errors if any. Each numbered graduation shall be tested for accuracy.

(c) The intermediate graduations may also be tested if necessary.

(d) Accuracy test is done both ways; forwards and backwards i.e. increasing and decreasing loads allowing vibrations to subside before taking readings. The spring balance shall be correct within the maximum permissible error whether the test is made by progressively increasing or decreasing loads, provided that, in either case the spring shall be allowed to vibrate before the reading is taken.

(e) If the pan is in the form of a scoop and a load equal to half the capacity is placed at the farthest point from the centre of the scoop and a similar load at any other position, the spring balance shall be correct within the prescribed limits of error.

(f) for spring balances with pans above the spring:

- The variation from the indication achieved when a load is placed at the centre of the pan shall not exceed half of the maximum limit of error when half the load is placed anywhere on the pan.

(g) for spring balances with pans below the spring:

- The indication shall not exceed the maximum error when a load equal to its capacity is placed in any position on the pan.

(h) The error at full load must not exceed the amounts given in the table in item 5 below.

5. Limits of Error:

Capacity	**When new or after repair**	**On re-verification or inspection**
Not exceeding 500g	2g	4g
1 kg	3g	6g
2kg	4g	8g
3kg	5g	10g
4kg	6g	12g
5kg but not exceeding 10kg	10g	20g
11kg but not exceeding 20kg	15g	40g
Exceeding 20kg	¼ of a division (smallest division)	½ of a division (smallest division)

6. Sensitivity:

Spring balance shall not be tested for sensitiveness.

7. Sealing:

Spring balances shall be fitted with a soft plug or stud to receive the stamp or seal of the verification authority and this plug shall pass through the dial or frame. The plug or stud shall be so supported as to allow no risk or injury to the instrument.

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TEST FORM FOR SPRING BALANCES

1. **OWNER'S NAME AND ADDRESS:**

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2. **GENERAL EXAMINATION: (***REDISITS*)
(Note the instrument shall be examined for Recognition, Entirety, Denomination, Strength, Individual novel features, Trade mark, Type, Model, Stamping plug
and whether instrument bears a valid stamp)

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3. **ACCURACY TESTS:**

(a) Balance at zero……

(b) Loading with standard weights to determine errors……

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(c) Unloading the standard weights (Backward test) to determine errors

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4. **DECISION:**

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Assizer's Signature ..…… Date ……

Signature of owner ……..

Date…….....