



**STANDARD OPERATING PROCEDURE**

<b>Department:</b> Quality Control	<b>SOP No.:</b>
<b>Title:</b> Operation and Calibration of Electronic Balance	<b>Effective Date:</b>
<b>Supersedes:</b> Nil	<b>Review Date:</b>
<b>Issue Date:</b>	<b>Page No.:</b>

**1.0 OBJECTIVE:**

To lay down a procedure for Operation & Calibration of Electronic balance.

**2.0 SCOPE:**

This SOP is applicable for Operation & Calibration of Electronic Balance in the Quality Control Department.

**3.0 RESPONSIBILITY:**

Officer, Executive – Quality Control Department.

Head – Quality Control Department

**4.0 DEFINITION(S):**

NA

**5.0 PROCEDURE:**

**Make : A&D, Model : GR – 202**

**5.1 Operation:**

5.1.1 Ensure that instrument is clean and free from dust.

5.1.2 Switch 'ON' the mains & level the balance (bubble position in center).

5.1.3 Press 'ON' of the instrument, wait for weighing mode, to display 0.0000 g on balance screen.  
Now balance is ready for operation.

5.1.4 Place empty container or butter paper on which sample weight is to be taken. Then press O/T for tare and place the sample as required. Display will show actual weight of sample. Note the weight.

5.1.5 After weighing is over, bring display to 0.0000 by pressing O/T.

5.1.6 Operate the balance in range 20 mg to 200 g.

**5.2 Calibration:**

**5.2.1 Auto calibration:**



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- 5.2.1.1 Switch On the instrument, wait till weighing mode appear.
- 5.2.1.2 Press the CAL button of the instrument.
- 5.2.1.3 The instrument start auto calibrating by shifting the point from decimal to decimal.
- 5.2.1.4 The balance automatically returns to weighing mode after calibration.
- 5.2.2 Daily Verification:**
- 5.2.2.1 After completion of internal calibration, press tare to display 0.0000 g.
- 5.2.2.2 Place 20 mg standard weight on the pan with help of forceps.
- 5.2.2.3 Note the displayed weight after the display is stable.
- 5.2.2.4 Repeat operation with 100 mg, 500 mg, 5 g, 50 g standard weights. Note the displayed weight after the display is stable & record in Annexure- I.
- 5.2.2.5 Readings should be within  $\pm 0.1$  % of actual weight.
- 5.2.3 General Calibration:**
- 5.2.3.1 Calibrate the balance with each individual standard weight (200 g, 100 g, 50 g, 20 g, 10 g, 5 g, 2 g, 1g, 0.5 g, 0.2 g, 0.1 g, 0.05 g, 0.02 g,) and record the readings in Annexure II.  
Readings should be within  $\pm 0.1$  % of actual weight.
- 5.2.4 Uncertainty:**
- 5.2.4.1 Take 20 mg standard weight for uncertainty test.
- 5.2.4.2 Take at least 10 replicate readings for same on the balance and note down.
- 5.2.4.3 Calculate the standard deviation of above 10 readings.
- 5.2.4.4 Calculate the uncertainty as follows :
- $$3 \times \frac{\text{Standard deviation}}{\text{Actual weight}}$$
- 5.2.4.5 Record the same in Annexure II. It should not exceed 0.001.
- 5.2.5 Drift check:**
- 5.2.5.1 Place 20 g standard weight on the pan.
- 5.2.5.2 Read the displayed weight after display is stable and note down the reading in Annexure - II.
- 5.2.5.3 Repeat five times the above procedure at different places on the pan shown in Annexure - III



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and calculate average of displayed weights and record in Annexure - II.

5.2.5.4 The observed weight should not exceed 0.1% of the average weight.

**5.2.6 Frequency:**

5.2.6.1 Auto calibration & Daily verification – Daily

5.2.6.2 General calibration, Uncertainty & Drift check – Monthly

5.2.6.3 If instrument is out of calibration, affix “UNDER MAINTENANCE” and call for service engineer.

5.2.6.4 Fill the calibration status on metallic calibration label of the instrument, record the calibration results in annexure-I & in annexure-II

**5.3 Cleaning:**

5.3.1 Clean the balance Pan properly with soft brush.

Clean the glass doors with soft cotton cloth.

**5.4 Precaution:**

5.4.1 Balance should be placed on stable, vibration free and leveled support.

5.4.2 Balance should not be placed in hazardous area.

5.4.3 Clean the pan properly before and after use.

5.4.4 Always keep the glass doors of the balance closed.

**6.0 ABBREVIATION(S):**

g - Gram

QCD – Quality Control Department

SOP – Standard Operating Procedure

NA – Not Applicable

**7.0 REFERENCE(S):**

NA

**8.0 ANNEXURE (S):**







**PHARMA DEVILS**  
QUALITY CONTROL DEPARTMENT

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**ANNEXURE II**

<b>Calibration Record: Electronic Balance - Drift check</b>			
<b>Location</b>		<b>Model No.</b>	
<b>Make</b>	AND	<b>Identification No.</b>	
<b>Calibration Done On</b>		<b>Calibration Due On</b>	
<b>Capacity</b>		<b>Least Count</b>	
<b>Reference SOP No.</b>			<b>Page No. : 6 of 1</b>

