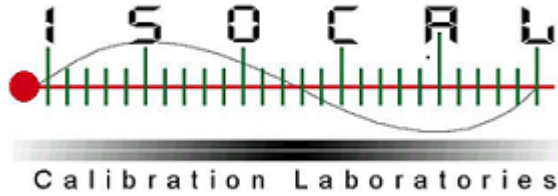


20200420132835



CAL-8 006



E-mail: Consolte@mweb.co.zw, 17038 Boshoff Road, Graniteside,
Harare, Zimbabwe

A SADCAS Accredited Calibration Laboratory

CALIBRATION CERTIFICATE

Date of Calibration : April 11, 2020
Date of Next Calibration : None
Calibrated For : scale
Calibration of : balance
Manufacturer : and
Serial Number : bal
Range : 0.0 - 200.0
Resolution : 0.0001
Calibrated At : isocal
Immersion Depth : depth

| | | |
|---------------|-------------|------|
| Calibrated by | | Sign |
| | | |
| Approved By | Lab Manager | Sign |
| | | |

1 Standards used:

| <i>Laboratory Standards and Equipment Used</i> | <i>Serial Number</i> | <i>Certificate Number</i> |
|------------------------------------------------|----------------------|---------------------------|
| OHAUS | OHAUS | 201103170800 |

2 Procedure used:

3 Calibration Conditions:

Temperature: $123 \pm 1^{\circ}\text{C}$

Humidity : $11 \pm 10\% \text{ RH}$

4 Units used : grams

5 Results:

| | |
|----------------------------------|----------------------|
| Settling time found to be | 20.17 |
| Weight used for corner load test | 55.0 |
| Max corner loading error | 3.0 |
| Cold start drift found to be | 195.0 |
| Repeatability at 1/2 load found | 0.3535533905932738 |
| Repeatability at full load found | 0.014142135623738184 |

| Nominal Mass | Actual Mass | Linearity Up | Difference |
|--------------|-------------|--------------|------------|
| 20.0 | 22.0 | 21.0 | 1.0 |
| 223.0 | 220.0 | 220.0 | 0.0 |

The uncertainty of the balance was estimated to be 225.1677 grams(95% confidence level)

| | | | |
|---------------|-------------|--------------------|----------------|
| Customer | scale | | |
| Location | isocal | Certificate Number | 20200420132835 |
| Manufacturer | and | Date | April 11, 2020 |
| Model | mod | Calibrated by | |
| Serial Number | bal | Valindation | YES |
| Range | 0.0 - 200.0 | Clean | YES |
| Resolution | 0.0001 | Level | YES |
| Units | grams | Warmed Up | YES |
| Tare Check | YES | Exercised | YES |

1) Standards Used

| Nominal | Actual | Uncertainty |
|---------|--------|-------------|
| 100.0 | 100.0 | 0.005 |

2) Cold Start:

| | |
|----------------|--------|
| Test Weight(g) | 200.0 |
| Test # | Result |
| 1 | 5.0 |
| 2 | 5.0 |
| 3 | 5.0 |
| Cold Drift | 195.0 |

3) Settling Time:

| | |
|---------|---------------|
| Reading | Settling Time |
| 1 | 20.4 |
| 2 | 18.1 |
| 3 | 22.0 |

4) Linearity(before calibration):

| Nominal Mass | Actual Mass | Linearity Up | Difference |
|--------------|-------------|--------------|------------|
| 20.0 | 22.0 | 21.0 | 1.0 |
| 223.0 | 220.0 | 220.0 | 0.0 |

5) Linearity(after calibration adjustments):

| | | | | | |
|--------------------|---------|---------|---------|-------|---------|
| Nominal Value | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Actual Value | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Linearity Up | 10.0 | 12.0 | 123.0 | 33.0 | 23.0 |
| Linearity Down | 23.0 | 33.0 | 33.0 | 22.0 | 33.0 |
| Linearity Up | 55.0 | 11.0 | 33.0 | 44.0 | 44.0 |
| Average Reading | 29.3333 | 18.6667 | 63.0 | 33.0 | 33.3333 |
| Difference | 23.1589 | 12.4231 | 51.9615 | 11.0 | 10.504 |
| Standard Deviation | 70.6667 | 81.3333 | 37.0 | 67.0 | 66.6667 |
| | | | | | |

6) Repeatability:

| | 1/2 Load | Full Load |
|--------------------|----------|-----------|
| Nominal Mass | 100.0 | 100.0 |
| Actual Mass | 100.0 | 100.0 |
| Reading #1 | 100.0 | 200.0 |
| Reading #2 | 100.5 | 200.02 |
| Average Reading | 100.25 | 200.01 |
| Standard Deviation | 0.3536 | 0.0141 |

7) Off Center Error

| | | |
|--------------------------------|---------|--------------------|
| Test Weight | | 55.0 |
| Position | Reading | Weight Difference |
| A | 55.0 | 0.0 |
| B | 54.0 | 1.0 |
| C | 52.0 | 3.0 |
| D | 56.0 | 1.0 |
| E | 55.0 | 0.0 |
| Minimum Reading | | 52.0 |
| Maximum Reading | | 56.0 |
| Average Reading | | 54.4 |
| Minimum Corner Error | | 52.0 |
| Standard Deviation of Readings | | 1.5165750888103102 |

The uncertainty of the measurement was estimated to be + 225.1677grams.(95% confidence level)

6 Traceability:

The standard set of mass pieces is traceable to CSIR National Metrology Laboratory South Africa through calibration certificate number ISOOHA01 MV/M-3640

7 Remarks:

The reported uncertainties of measurement were calculated and expressed in accordance with the BIPM, ISO, IEC, IUPAP, OIML document entitled: "A guide to the expression of Uncertainty in Measurement"(International Organization for Standardization, Geneva Switzerland, 1993)

The reported uncertainties of measurement are based on standard uncertainty multiplied by a coverage factor of k=2, which unless specifically stated otherwise provides a level of confidence of approximately 95%