

Tokyo Metropolitan Government

Inspection Institute of Weights and Measures

**Operations of Inspection Institute of
Weights and Measures
~ Verification and Inspection of
Verification Standards**

Verification Section, Tokyo Metropolitan Government
Inspection Institute of Weights and Measures

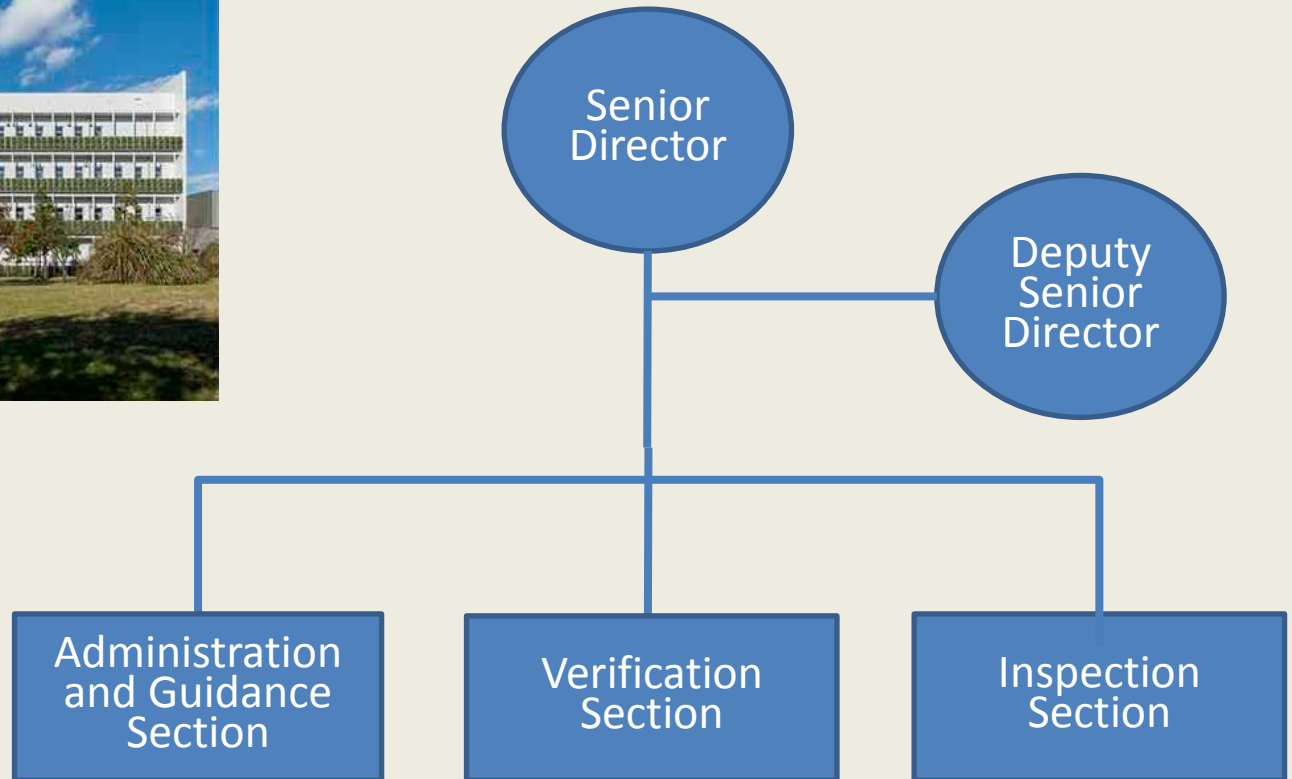
Ken Aso

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Outline of the organization

東京都計量検定所



For implementation of “Reliable measurement”

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**4 Primary
measures
for
implemen-
tation**

Measures to supply accurate
measuring instruments

Measures to use the measuring
instruments properly

Measure to provide correct
measurements

Measure to disseminate correct
understanding on measurement

Measures to supply accurate measuring instruments

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- **Verification and inspection of verification standards**

“Specified measuring instruments” in the Measurement Act is subject to inspection by local governments based on the applicable regulations.

- **JCSS***

Supplies calibration service only for weights as an accredited calibration laboratory

*JCSS = Japan Calibration Service System

Activities for other 3 measures

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Periodic
inspections



On-site spot
inspections



Dissemination of
information



Exhibition room

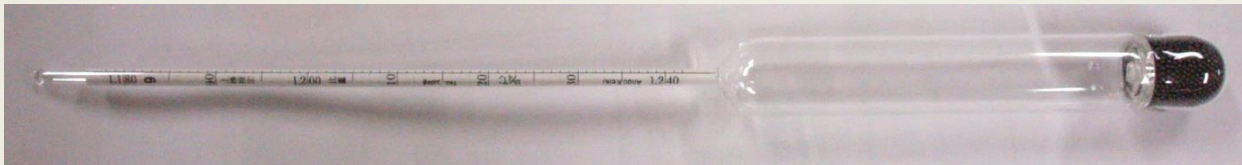
Operations of verification staffs

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- Verification of fuel dispensers
- Verification of clinical thermometers and glass thermometers



- Verification of hydrometers



- Inspection of verification standards

Verification of fuel dispensers

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- Check conformance to the approved type and the dispenser to be verified
- Verification of structure
 - Confirmation of marked items and performance, etc.
- Verification of instrument errors
 - At max. flowrate, min. flowrate
 - Tolerance $\pm 0.5 \%$
- Consultation with manufacturers and report to the persons in charge at the site

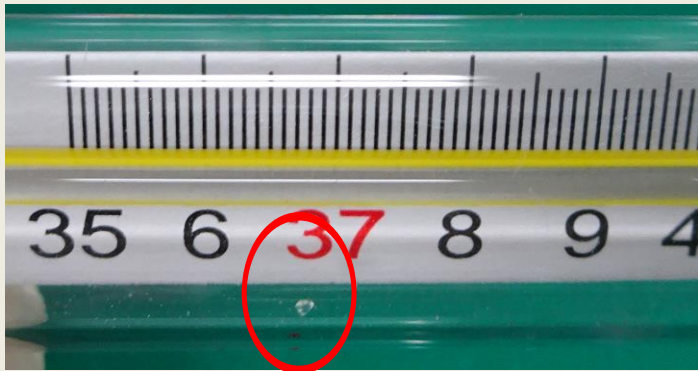
Achievement in 2015:
Approx. 1,200 sets

Verification of clinical thermometers

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- **Verification of structure**
→ Mixed broken pieces, broken column of mercury, markings such as scales, etc.
- **Verification of instrument errors**
→ 36, 38, 40 °C
→ Tolerance ± 0.1 °C
- Proposal for improvement of quality control to the manufacturers.



Mixed broken piece



Verification of instrument errors
at 36 °C

**Number of verifications
in 2015:
Approx. 74,000 pieces**

JIS T 4206

Verification of hydrometers

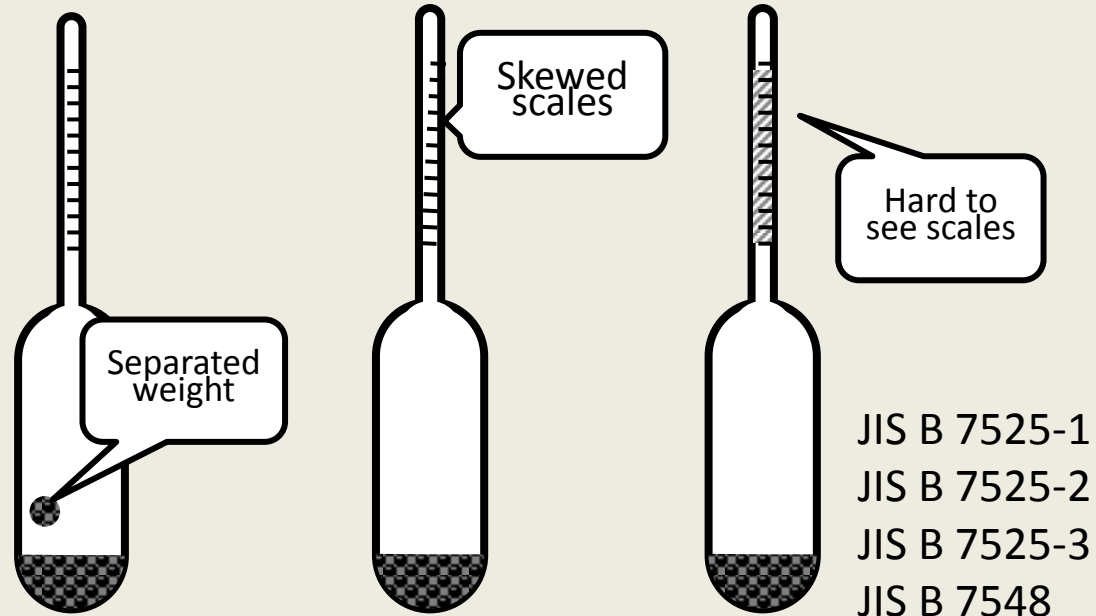
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Hydrometer: Instrument to measure specific gravity of liquid from balance between buoyancy and gravity force



**Number of verifications
In 2015:
Approx. 15,000 pieces**

- **Verification of structure**
 - Flaws, marked items such as scales
- **Verification of instrument errors**
 - At max. scale, min. scale, intermediate
 - Tolerance depends on the scale interval

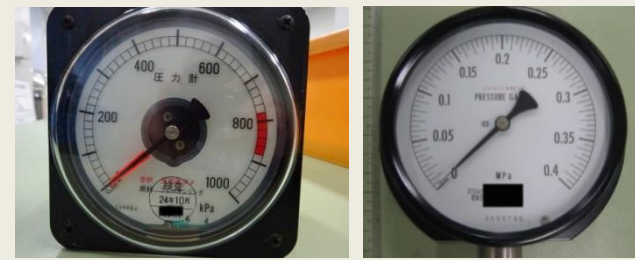


Operations of the group for weighing instruments and pressure gauges

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Verification

Aneroid type manometers



Sphygmomanometers



Weighing instruments



Inspection

Verification standard weights



Verification of pressure gauges

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Pressure verification standards



After completion of checking the actual pressure gauges and drawings for type approval;

- **Verification of structure**
 - Confirmation of sealings and marked items
 - Leakage test, etc.
- **Verification of instrument errors**
 - Instrument errors at pressures of more than 4 points

- Pressure balance when a deadweight is set.
- Pressure indicated by the pressure gauge.



Calculation of instrument error

Number of verifications of pressure gauges in 2015: Approx. 4,200 sets
 This number is about one third of the total number covered by local government in Japan.

Verification of sphygmomanometers

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Verification facility for sphygmomanometers



After completion of checking of drawings for type approval and actual meters;

- **Verification of structure**
 - Visual confirmation of marked items and indicating mechanism
 - Leakage test, etc.
- **Verification of instrument errors**
 - Instrument errors at the pressures more than 4 points

Number of verification in 2015:
Approx. 37,000 sets and rejections were approx. 2,600 sets

Examples of rejections



Verification of weighing instruments

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After completion of checking of drawings for type approval and actual meters;

- **Verification of structure**
 - Confirmation of marked items, etc.
 - Specified performance (Tests of eccentricity, repeatability, etc.)
- **Verification of errors**
 - At min. measuring capacity ~ max. capacity (Max)



Verification of weighing instruments



Verification of large weighing instruments

Large weighing instruments are difficult to move



Staffs visit the sites to implement verification

Number of verifications in 2015: Approx. 1,800 sets (\pm 60 larger weighing instruments included)

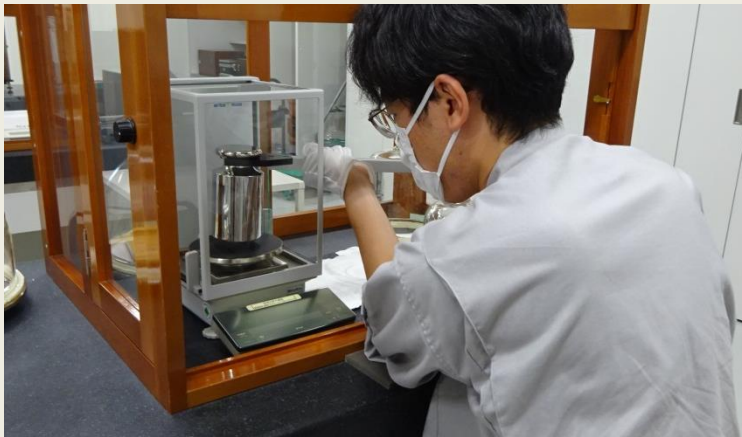
Inspection of verification standard weights

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Verification
standard
weights



- Inspection based on the regulation for inspection of verification standards
- Confirmation of exterior appearance and marked items
 - Inspection of instrument errors



Inspection of instrument errors:
Inspect with proper verification
standard weights



Platform scale room: Inspection with a
crane

- 50 kg or more

Number of inspection of verification standard
weights in 2015: Approx. 1,700 pieces

Closing remark

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Tokyo Metropolitan Government will positively deal with the administrations in metrology in the future through inspection, verification and the 4 primary measures as the leader of local governments in Japan.

Thank you for your attention.