ORGANISATION INTERNATIONALE

DE METROLOGIE LÉGALE

INTERNATIONAL DOCUMENT

Training of legal metrology personnel - Qualification - Training programmes

Formation du personnel en métrologie légale - Qualification - Programmes d'étude

OIML D 14

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FOREWORD

The Organisation Internationale de Métrologie Légale (OIML) is a world-wide, intergovernmental organization whose main task is that of harmonizing the metrological regulations and controls applied by the national metrological services, or related organizations, of its Member States.

The two main categories of OIML publications are :

— International Recommandations (OIML R), which are model regulations generally establishing the metrological characteristics required of the measuring instruments concerned and specifying methods and equipment for checking their conformity ; the OIML Member States shall implement these Recommendations as far as possible,

— International Documents (OIML D), of an informative nature, to help and improve the work of the metrological services.

Draft Recommendations and Documents of OIML are developed by Pilot Secretariats and Reporting Secretariats formed of Member States, in consultation with the international institutions (world-wide and regional) concerned.

The cooperative agreements between OIML and certain institutions (particularly ISO and IEC) aim at avoiding contradictory requirements so that manufacturers and users of measuring instruments, test laboratories etc., may apply simultaneously the OIML publications and the publications of other institutions.

International Recommendations and International Documents are published in French (F) and English (E) and are subject to periodic revision. The words " Edition... " refer to the year in which the document is printed.

OIML publications may be obtained from :

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This publication — reference OIML D 14, edition 1989 (E) — was developed by the Reporting Secretariats SP 31-Sr 1 " Training of metrology engineers " and SP 31-Sr 2 " Training of metrology technicians ".

The chapters 1 and 2 concerning the qualification of engineers respectively of technicians were adopted by the International Committee of Legal Metrology in 1985 and constitute a reprinting of an International Document already published in 1986 under the reference DI 14.

The chapters 3 and 4 concerning training programmes for engineers and technicians were adopted by the International Committee of Legal Metrology in 1988.

TRAINING
of
LEGAL METROLOGY PERSONNEL
QUALIFICATION — TRAINING PROGRAMMES

Scope

The aim of this Document is to define in general outlines the qualifications of metrology engineers and legal metrology technicians and to suggest models for training programmes in metrology for these two professions.

Chapter 1

RECOMMENDED QUALIFICATION FOR METROLOGY ENGINEERS

1.1. Definition

The term " metrology engineer " defines the qualification of a specialist, who has completed his/her higher education and has been properly trained in the field of metrology and measuring instruments, either as an integral part of the basic engineering or science degree programme or through specialized programmes in measurement science.

The metrology engineer can be employed in national or regional legal metrology services, or in measurement laboratories involved in production or scientific activities.

1.2. Level of knowledge

The metrology engineer should have a basic knowledge of mathematics (including statistics), physics, chemistry, industrial technology, electronics, automatic control devices.

The metrology engineer should also have a working knowledge of :

1.2.1. the essential principles and methods of obtaining measurement data in various measurement fields,

1.2.2. the essential measuring instruments, sensors and systems of analog and digital signal processing (measurement chains) (*),

1.2.3. the fundamental principles and methods for analyzing measurement results, comprising the evaluation of errors and uncertainties together with the application of computers,

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(*) Legal metrology services usually require extensive knowledge of measuring instruments used for commercial transactions and for health protection.

1.2.4. the methods of planning measurement experiments and ways for optimizing the choice of the necessary means,

1.2.5. the methods of testing measuring instruments when exposed to influence factors,

1.2.6. the methods of analyzing the dynamic characteristics of measuring instruments,

1.2.7. the standards applied in production, technical specifications and documentation necessary for the required level of production quality,

1.2.8. the means for organizing and accomplishing, under production conditions, the comparison of working instruments with reference measuring instruments (measurement standards),

1.2.9. the means for organizing and accomplishing expert analysis of production samples and of associated specifications,

1.2.10. the basic economics, the organization of work and management of quality,

1.2.11. the basic international standards and national laws, regulations and instructions related to the specialization of the metrology engineer.

1.3. Level of competence

The metrology engineer should be able to :

1.3.1. apply existing standards, technical specifications and other documentation to increase the efficiency of measurement techniques used in production,

1.3.2. develop modern methods of measurement and control of technical parameters in the given measurement field, and apply them in production,

1.3.3. carry out necessary measurements in a reliable manner, and make necessary adjustments to measuring instruments which will ensure their proper function in the production process.

1.3.4. analyse measurement errors and uncertainties, establish their sources and express them correctly in reports,

1.3.5. organize regular checks on the condition of instruments used in factories and in quality control laboratories and arrange for their periodic comparisons with reference measuring instruments (measurement standards),

1.3.6. carry out expert testing and technical analysis of production samples and of associated specifications,

1.3.7. carry out the formal administrative procedures for verification of the conformity of products to specifications defined by international standards, national legislative acts, or the codes of other institutions.

Chapter 2

RECOMMENDED QUALIFICATION FOR LEGAL METROLOGY TECHNICIANS

2.1. Definition

Legal metrology technicians means agents appointed by the State or local authority, or having a similar legal status, responsible for the execution of various tasks defined within the framework of the application of laws and regulations in the field of legal metrology. This chapter is therefore not concerned with technicians responsible for metrological control of production in all the industrial branches or with technicians in charge of measuring instrument maintenance or with technicians employed to help engineers and research workers in research laboratories and basic metrology laboratories.

2.2. Level of knowledge

The legal metrology technician should have a good general knowledge of :

2.2.1. the national law, in particular penal law and procedure,

2.2.2. the general regulations concerning legal metrology,

2.2.3. the particular regulations relative to the controls he should carry out and the measuring instruments he has to verify,

2.2.4. the bases of statistical calculus,

2.2.5. the principles of general metrology,

2.2.6. the foundations of industrial technology (*),

2.2.7. the principles of the construction and operation of the various instruments he has to verify.

2.3. Level of competence

The legal metrology technician should be able to :

2.3.1. spot breaches of the laws and regulations of legal metrology and establish reports of the facts in certified statements,

2.3.2. carry out measurements (weighing, gauging, etc.) in environmental conditions and at a given accuracy level,

2.3.3. carry out statistical calculations resulting from several measurements in control by sampling and deduce the correct conclusions,

2.3.4. carry out simple calibrations while taking account of external conditions and the level of accuracy demanded,

2.3.5. spot the non-application of mandatory standards on finished products and their components.

(*) Including technical drawing, materials technology, electrical engineering and electronics.

Chapter 3

TYPICAL STUDY PROGRAMME IN GENERAL METROLOGY FOR ENGINEERS

3.1. Introduction

Metrology as subject

The role of metrology within natural science and technical education. Aims of metrology. Main stages and prospects of metrology development.

3.2. Units and measurement standards

3.2.1. The concept of a physical quantity and measure

Choice of units for practical measurements. Basic equation of measurement. Category, magnitude, dimension and numerical value of a physical quantity. Problem of unification of units for physical quantities.

3.2.2. International System of Units

Base and derived units. Multiple and sub-multiples of a unit. Designations and symbols of units.

3.2.3. Measurement standards and their purpose

Classification of standards. Definitions of the SI units for length, mass, time, electric current, temperature, luminous intensity and quantity of substance. Conservation of standards. Transmitting the magnitude of a unit from standards to working measuring instruments. New tendencies in the development of measurement standards.

3.3. Random and systematic errors and estimation of uncertainties

3.3.1. Origin and classification of random and systematic errors

Error-inducing factors. Absolute, relative, systematic and random errors. Basic distribution laws (normal law, Poisson's law, Student's law). Numerical characteristics of random errors and measurement results (mathematical expectation and dispersion). Ways of detecting and correcting errors. Estimation, combination and expression of uncertainties.

3.3.2. Mathematical processing and presentation of measurement results

Processing of results of direct equally accurate measurements and weighting of results. Graphical presentation. Frequency distributions for the measured data. Calculation of the mean and the standard deviation. Determination of the necessary number of measurements. Processing of results when the number of measurements is small. Prescription of accuracy parameters and forms of presentation of measurement results.

3.4. Measuring instruments and their metrological characteristics

3.4.1. Classification of measuring instruments

Measures, measuring instruments, sensors and transducers. Measuring installations and measuring and data processing systems. Measuring chain of a instrument. Measuring mechanisms and indicating devices. Measurement range and limit. Scale interval.

3.4.2. Standardization of metrological characteristics of measuring instruments

Generalized performance of characteristics of measuring instruments. Static and dynamic characteristics. Intrinsic and complementary errors. Accuracy classes of measuring instruments. Marking and designation of accuracy classes.

3.5. Basic kinds and methods of measurement. Organization of measurement experiments

3.5.1. Dimensional measurements

Universal means for measuring length and angle. End standards. Angular standards. Optical instruments for linear and angular measurements. Measurement of surface texture. Measurement of speed and distance. Use of optical quantum sources for precise dimensional measurements.

3.5.2. Mechanical measurements (mass and force)

Mass measurements by weighing. Symmetrical and asymmetrical beam balances. Automation of the process of weighing. Means used for measurements of force and mechanical properties of materials. Methods of static and dynamic testing of materials. Measurement of vibration.

3.5.3. Electrical measurements

Measurement of electrical quantities : current, voltage, resistance, capacitance, inductance, phase angle, energy and power. Use of direct-reading instruments and comparators. Compensation methods. Potentiometer and bridge circuits. Digital electric measuring instruments. Measurement of magnetic quantities.

3.5.4. Temperature measurements

The International Practical Temperature Scale, its fixed points and methods of interpolation.

Instruments for measurement of temperature : glass and manometric thermometers, thermocouples and resistance sensors, optical pyrometers. Measurement of the quantity of heat. Calorimeters.

3.5.5. Pressure, volume and flow measurements

Instruments for measuring pressure : liquid gauges, elastic element gauges, deadweight gauges, differential and electric pressure gauges. Measurement of flowrate and volume : volumetric and gravimetric methods, volumetric standards, proving tanks and prover loops. Types of flowmeters : differential pressure, variable area, positive displacement, turbine, electro-magnetic, ultrasonic and thermal flowmeters for liquids and gases. Calibration of tanks.

3.5.6. Physico-chemical measurements

Physico-chemical methods for determining the composition and properties of substances. Measuring instruments used for these purposes : pH-meters, conductometers, saltmeters, saccharimeters, moisture meters for solid substances and gases, gas analyzers and equipment for density and viscosity measurement.

3.5.7. Electrical measurements at radio-frequencies

Main parameters, equipment and methods of measurement of high and very high frequency signals, spectrum analyzers. Signal generators.

3.5.8. Time and frequency measurements

Equipment and method for time and frequency measurements. Different time scales and their comparison. Determination of the unit of time - the second. Standard atomic-beam clock. Comparison of standard clocks. Metrological service of time and frequency.

3.5.9. The basic organization of measurement experiment

The choice of measurements and methods of measurement with regard to the nature of the object of study. Setting-up and testing of suitable measurement circuits. Determination of influence factors. Static and dynamic measurements. Sampling techniques. Computer and microprocessor capabilities in controlling measurement experiments.

3.6. Organization of metrological assurance

3.6.1. National metrological service

Metrological supervision of the condition and correct application of measuring instruments. Organization and procedures of tests and verification of measuring instruments. Functional structure, goals and tasks of metrological laboratories.

3.6.2. Legal status of national metrological services and laboratories

Legislative and regulatory acts in the field of technical measurements. Legal responsibility of an enterprise or an individual in cases of use of defective measuring instruments. Measures to prevent the violation of the basic legislative acts in metrology.

3.6.3. International co-operation in the field of metrology

The International Bureau of Weights and Measures (BIPM), conservation of international standards, comparison with national standards. Activities on improvement and dissemination of the International System of Units (SI). The International Organization of Legal Metrology (OIML), its functional structure, goals and tasks. BIPM and OIML activities to ensure the uniformity of measurement results. International Recommendations and other documents in the field of legal metrology.

Chapter 4

BASIC TRAINING OF LEGAL METROLOGY TECHNICIANS

4.1. The legal metrology technicians

4.1.1. Definition

As defined in point 2.1, legal metrology technicians means agents appointed by the State of local authority, or having a similar legal status, responsible for the execution of various tasks defined within the framework of the application of laws and regulations in the field of legal metrology. This Document is therefore not concerned with the technicians responsible for metrological control of production in all the industrial sectors, technicians in charge of maintenance of measuring instruments or technicians employed to help engineers and research workers in research laboratories and basic metrology laboratories, but it is evident that many of the subjects included in the study programme can also be useful for such technicians.

4.1.2. Recruitement level of legal metrology technicians

Legal metrology technicians are usually recruited at an educational level corresponding to university entry, in science and technology. They should in fact have been taught mathematics and physics and possibly basic engineering, as fully as possible for their age group, in classes with general education (expression in mother tongue, modern languages, notions of economy, general culture, etc.).

When selecting legal metrology technicians it is recommended to take into account not only scientific and technical knowledge but also general culture and human qualities.

It is also possible to recruit legal metrology technicians in other ways than those provided by general higher education : for example from vocational training schools or from schemes for continued education. This Document does not take into account these other solutions which may require that subjects of general culture must be added to the specialization described below.

4.1.3. Structure and duration of training

It is recommended to provide for a period of theoretical training, given by a school or institute, and a practical training session in a verification office.

The duration of theoretical training necessary for the programme described below is at least 6 months and that of practical training at least 3 months (these periods being counted for full time training). They may be reduced if the total programme is not followed, as for example when it is desired to train specialists within a limited field of legal metrology.

4.2. Type, programme and organization of the theoretical training

Since this training is given with the scope of applying the legal metrology regulations proper to the given country, it should naturally be adapted to these regulations and may differ from one country to another.

Therefore, the second part of the programme given below, called " specialized training ", must be adapted by each State in relation to its own needs.

The study of theoretical subjects (law, probability and statistics, etc.) can be added to classical training without any problem. For the technical studies of various measuring instruments and methods of measurement, it is advisable to follow the chronological order given below :

— an introduction to the category of measuring instruments to be studied by means of a verification session (in service, in a laboratory or in a factory),

— a series of theoretical courses on the principles of construction and operation of instruments under consideration and their regulations,

— when possible, a visit to a factory where these instruments are manufactured or assembled,

— practical experiments concerning handling of the instruments placed on a test bench, for example.

4.2.1. General training

4.2.1.1. Basic notions of national law

Notions of constitution, administrative/criminal law an criminal procedure and legal organization.

4.2.1.2. Specialized legislation

Studies of the general texts whose application is entrusted to the legal metrology service (law concerning units, laws and regulations concerning measuring instruments subject to State control) - the various aspects of control (pattern approval, initial verification, in-service verification, control sanctions, etc.) - affinitive legislation (economic legislation, fraud legislation, etc.) - application of standards.

4.2.1.3. Administrative relations

Administrative structures, administrative relations and correspondance, writing of reports.

4.2.1.4. Occupational safety

Prevention against accidents, safety equipment and clothing, methods of first aid.

4.2.1.5. General metrology

Quantities and units - measurement standards - errors and uncertainties - metrological qualities of an instrument - influence quantities - definiton and metrological qualities of a measuring chain (examples of sensors and transducers) - calibration and control - calibration chains.

4.2.1.6. Statistics and probabilities

Combinative analysis - calculation of probabilities - laws of probabilities - generalities on statistical variables - reduction of data - sampling - estimates - hypothesis tests - adjustments.

4.2.1.7. Computers

General notions concerning data processing - knowledge of the most common equipment - training in the use of important software - introduction to computer programming.

4.2.1.8. Basic technology and industrial design

Metal transformation and machining - main assemblies.

Reading of drawings - execution of simple drawings - standardized symbols.

Pupils who have already a technical training could obviously be exempt from this course.

4.2.1.9. Mathematics and physics

On the other hand, additional mathematics and physics could be necessary for pupils who have a technical training of a less advanced scientific nature.

The programme should be defined in terms of the needs evident in other courses and gaps in the training given to the pupils concerned.

4.2.2. Specialized training

4.2.2.1. Weighing

General notions on levers and the oscillating beam - non-automatic weighing instruments -automatic weighing machines - strain gauge devices - electronic devices - weights.

Density measurement.

4.2.2.2. Measurement of forces - materials testing

Dynamometers - materials testing machines: measurement of tension, compression and hardness.

4.2.2.3. Static measurement of volume of liquids - gauging

Measuring storage tanks - measuring transport tanks - proving tanks and gauging stations - assemblies for measuring volumes of water - level measuring devices.

Gauging by dimensional measurement - gauging by optical methods - calculation methods - computer processing of gauging data.

4.2.2.4. Packaging

Prepacked goods and measuring container bottles.

Gravimetric and volumetric filling machines - checkweighers.

4.2.2.5. Geometric measurements

Measures of length - length measuring instruments - planimeters - capacity measures - taximeters.

4.2.2.6. Dynamic measurement of liquids

Main types of measuring equipment (with alternating movement, rotary, turbine, discontinuous distributors) - water meters - meters for milk and other liquid foods - hydrocarbon meters - liquefied gas meters - thermometers - density meters - viscometers - electronic devices - air and gas elimination - test benches - temperature compensators - measuring assemblies.

4.2.2.7. Measurement of gas volumes

Fluid mechanics and thermodynamics (complement) - bell provers - gas volume meters - volume correctors - thermometers - manometers - differential pressure meters - differential manometers - electronic devices.

4.2.2.8. Measurement of electrical energy

Electricity and electrical engineering (complement) - single phase and three phase electricity meters - calibration equipment - measuring transformers.

4.2.2.9. Measurement of thermal energy

Thermodynamics (complement) - measurement of temperatures - thermal energy meters.

4.2.2.10. Agricultural measurements

Hectolitre mass of cereals - moisture meters for cereals and oilseeds - polarimetric saccharimeters and refractometers - alcoholometers - butyrometers.

4.2.2.11. Road safety

Chronotachographs - tachometers - tyre pressure gauges - breath analysers - parking meters.

4.2.2.12. Health

Medical thermometers - blood pressure manometers - medical glass measures - sound level meters - carbon monoxide analysers - dosemeters for ionizing radiation.

4.3. Organization of practical training in a metrology service

Pupils are allocated, either singly or in small groups, of two or three maximum, to verification offices the activity of which is sufficiently diversified to give them the greatest possible coverage of the work of a legal metrology service.

In these offices and under the authority of the chief of the office, they take part in all legal metrology operations, participate in and then carry out on their own the operations which correspond to their future positions.

They can thus build on the knowledge gained during the theoretical training period, combine this with the necessities of practical controls, see this confronted with difficulties related to human factors and gain the dexterity and experience they will require to further their career.

4.4. Follow-up training

Due to the rapid development of techniques in metrology it will be necessary to complement the basic training, described in this Document, within the framework of continued training consisting for instance of practical an theoretical courses of 5 to 10 days per year.

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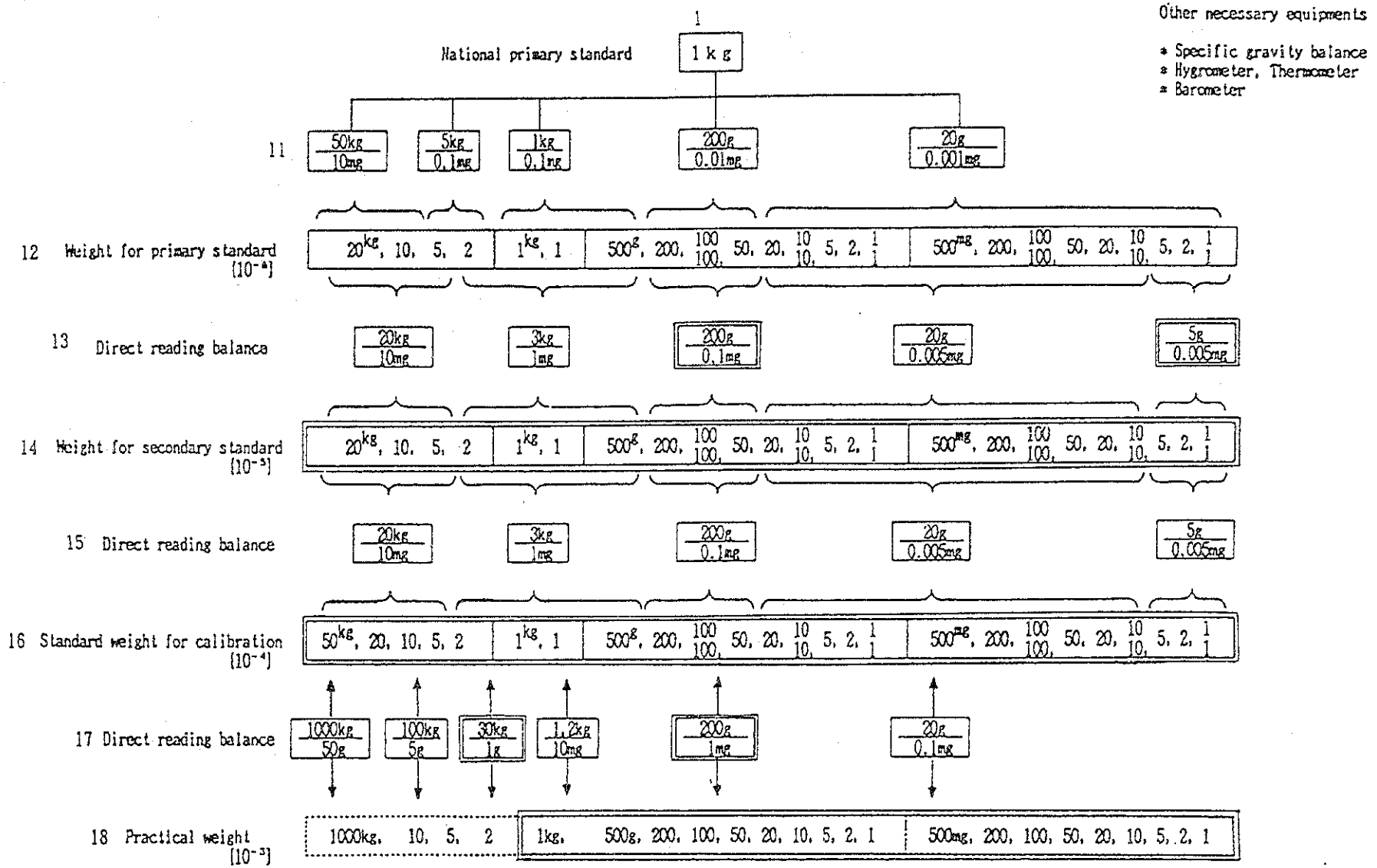

1
National primary standard
1 kg
Other necessary equipments
* Specific gravity balance
* Hygrometer, Thermometer
* Barometer
11
50kg 10mg
5kg 0.1mg
1kg 0.1mg
200g 0.01mg
20g 0.001mg
12 Weight for primary standard [10-6]
20kg, 10, 5, 2
1kg, 1
500g, 200, 100 100, 50, 20, 10 10, 5, 2, 1 1
500mg, 200, 100 100, 50, 20, 10 10, 5, 2, 1 1
13 Direct reading balance
20kg 10mg
3kg 1mg
200g 0.1mg
20g 0.005mg
5g 0.005mg
14 Weight for secondary standard [10-5]
20kg, 10, 5, 2
1kg, 1
500g, 200, 100 100, 50, 20, 10 10, 5, 2, 1
500mg, 200, 100 100, 50, 20, 10 10, 5, 2, 1
15 Direct reading balance
20kg 10mg
3kg 1mg
200g 0.1mg
20g 0.005mg
5g 0.005mg
16 Standard weight for calibration [10-4]
50kg, 20, 10, 5, 2
1kg, 1
500g, 200, 100 100, 50, 20, 10 10, 5, 2, 1
500mg, 200, 100 100, 50, 20, 10 10, 5, 2, 1
17 Direct reading balance
1000kg 50g
100kg 5g
30kg 1g
1.2kg 10mg
200g 1mg
20g 0.1mg
18 Practical weight [10-3]
1000kg, 10, 5, 2
1kg, 500g, 200, 100, 50, 20, 10, 5, 2, 1
500mg, 200, 100, 50, 20, 10, 5, 2, 1

List of measuring equipment

Mass

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
1	1kg	1kg 原器		
11	High Precision Hand Operated Balance	高精度天秤	Capacity: 50kg Readability: 10mg	
	Direct Reading Balance	直示天秤	Capacity: 5000g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 1000g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 200g Readability: 0.01mg	
	Direct Reading Balance	直示天秤	Capacity: 20g Readability: 0.001mg	
12	Standard Weight Set	標準分銅セット	1 ～20kg,1～500g,1～500mg Stainless Steel, class E2	
13	High Precision Hand Operated Balance	高精度天秤	Capacity: 20kg Readability: 10mg	
	Direct Reading Balance	直示天秤	Capacity: 3000g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 200g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 20g Readability: 0.005mg	

List of measuring equipment

Mass

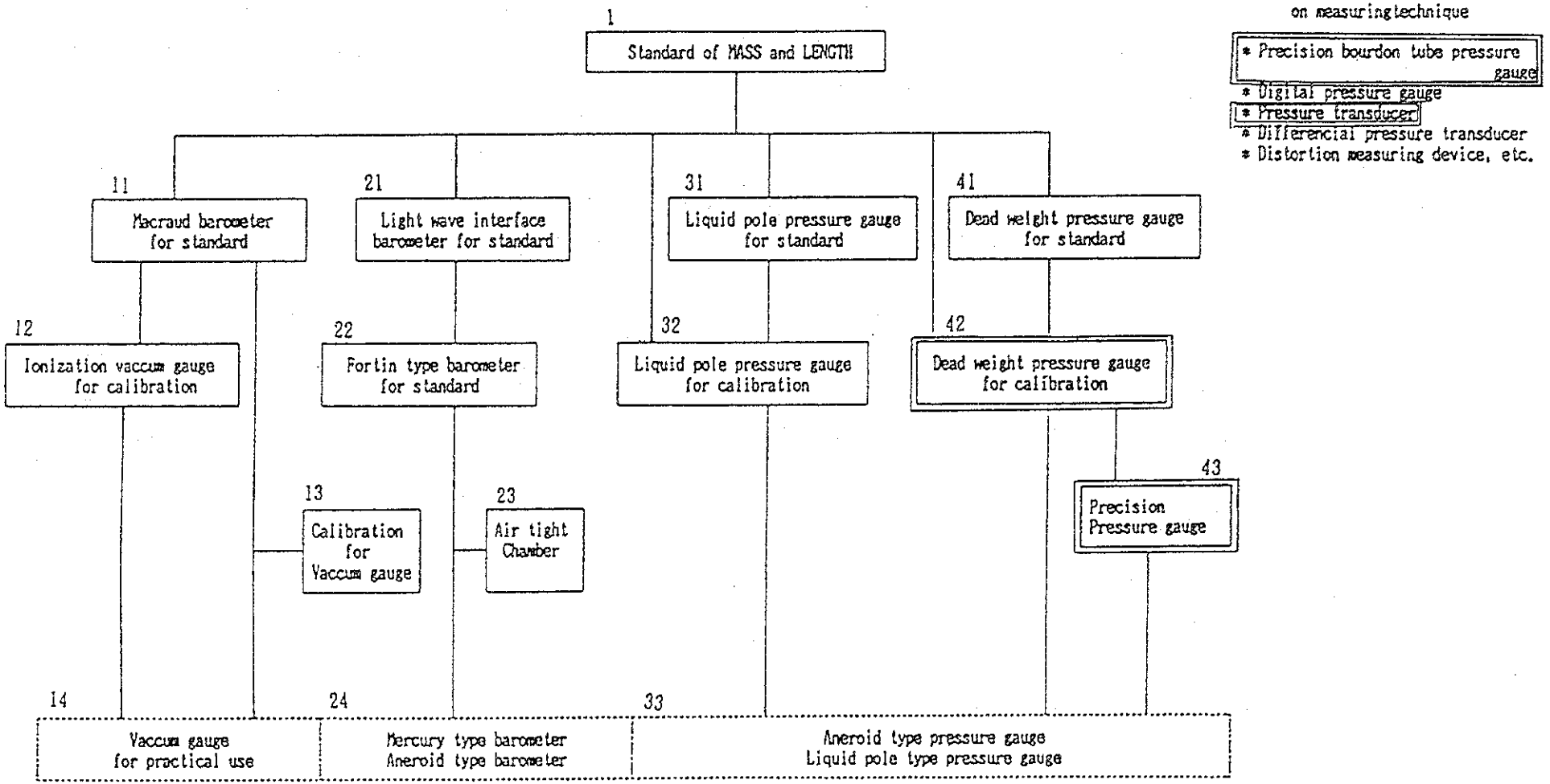
No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Direct Reading Balance	直示天秤	Capacity: 5g Readability: 0.001mg	
14	Standard Weight Set	標準分銅セット	1 ～20kg,1～500g,1～500mg Stainless Steel, Class F1	
15	High Precision Hand Operated Balance	高精度天秤	Capacity: 20kg Readability: 10mg	
	Direct Reading Balance	直示天秤	Capacity: 3000g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 200g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 20g Readability: 0.005mg	
	Direct Reading Balance	直示天秤	Capacity: 5g Readability: 0.001mg	
16	Standard Weight Set	標準分銅セット	1 ～50kg,1～500g,1～500mg Brass, class F2	
	Standard Weight Balance	標準分銅	20kg, Iron cast Readability: 0.001mg	25 pcs.
17	Floor Balance	精密台はかり	Capacity: 1000kg Readability: 50g	
	Electronic Floor Balance	電子台はかり	Capacity: 150kg Readability: 1g	

List of measuring equipment

Mass

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Electronic Floor Balance	電子台はかり	Capacity: 30kg Readability: 1g	
	Electronic Balance	電子天秤	Capacity: 1kg Readability: 10mg	
	Electronic Balance	電子天秤	Capacity: 200g/42g Readability: 0.1mg/0.01mg	
	Electronic Balance	電子天秤	Capacity: 300g Readability: 1mg	
	Balance Table	天秤台	Dimensions: 540x 600 x 750(mm) Balance Setting Plate: Steel	5 sets
	Balance Table	天秤台	Dimensions:1200x 600 x 750(mm) Balance Setting Plate: Steel	5 sets
	Barometer	水銀気圧計	Type: Fortin type Scale Range: 650 to 820mmHg	
	Hygrometer	アスマン通風乾湿計	Method:Assman Ventilated Psych -rometer	
	Digital Thermometer	デジタル温度計	Method: Thermister Thermometer Range: -50 to 50℃	2 sets
	Temperature/Humidity Recorder	自記式温湿度計	Temperature: -15 to 50℃ Humidity: 0 to 100%RH	

(Pressure)


Apparatus improving on measuringtechnique
* Precision bourdon tube pressure gauge
* Digital pressure gauge
* Pressure transducer
* Differencial pressure transducer
* Distortion measuring device, etc.
1
Standard of MASS and LENGTH
11
Macraud barometer for standard
21
Light wave interface barometer for standard
31
Liquid pole pressure gauge for standard
41
Dead weight pressure gauge for standard
12
Ionization vaccum gauge for calibration
22
Fortin type barometer for standard
32
Liquid pole pressure gauge for calibration
42
Dead weight pressure gauge for calibration
43
Precision Pressure gauge
13
Calibration for Vaccum gauge
23
Air tight Chamber
14
Vaccum gauge for practical use
24
Mercury type barometer
Aneroid type barometer
33
Aneroid type pressure gauge
Liquid pole type pressure gauge

List of measuring equipment

Pressure

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
1				
11	Macraud Vacuum Gauge	マクラウド真空計	Measuring Range: 10 mmHg to 1×10^{-4} mmHg	
12	Ionization vacuum Gauge	イオン真空計		
13	Calibration Apparatus for Vacuum Meter	真空計校正装置	Measuring Range: 10 mmHg to 1×10^{-4} mmHg Accuracy: 5% to 25%	
21				
22	Standard Barometer	精密水銀気圧計	Type: Fortin Scale Range: 650 to 820 mmHg	
23	Air Tight Chamber	エアータイトチャンバー	Dimension: 2000x 800x 300(mm) Pressure: Vacuum to 850mmHg	
24	Mercury type Barometer	水銀気圧計		
	Aneroid type Barometer	アネロイド型気圧計	Max.Pressure: 500mmH_2O, 0.1,1, 10;100,1000kgf/cm^2	24 pcs.
31	Liquid Column Pressure Gauge	液柱型標準圧力計	Range:0 to 1500mmHg Accuracy: 2mmHg	

List of measuring equipment

Pressure

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Liquid Column Pressure Gauge	液柱型標準圧力計	Range:0 to 2000mm H_2O Accuracy: 2mm H_2O	
32	Liquid Column Pressure Gauge	液柱型標準圧力計	Range:0 to 1500mmHg Accuracy: 2mmHg	
	Liquid Column Pressure Gauge	液柱型標準圧力計	Range:0 to 2000mm H_2O Accuracy: 2mm H_2O	
41	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 1000kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 500kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 100kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 20kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 5kg/cm^2 Accuracy: 0.2%	w/ Control Pack
42	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 1000kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 500kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 100kg/cm^2 Accuracy: 0.2%	

List of measuring equipment

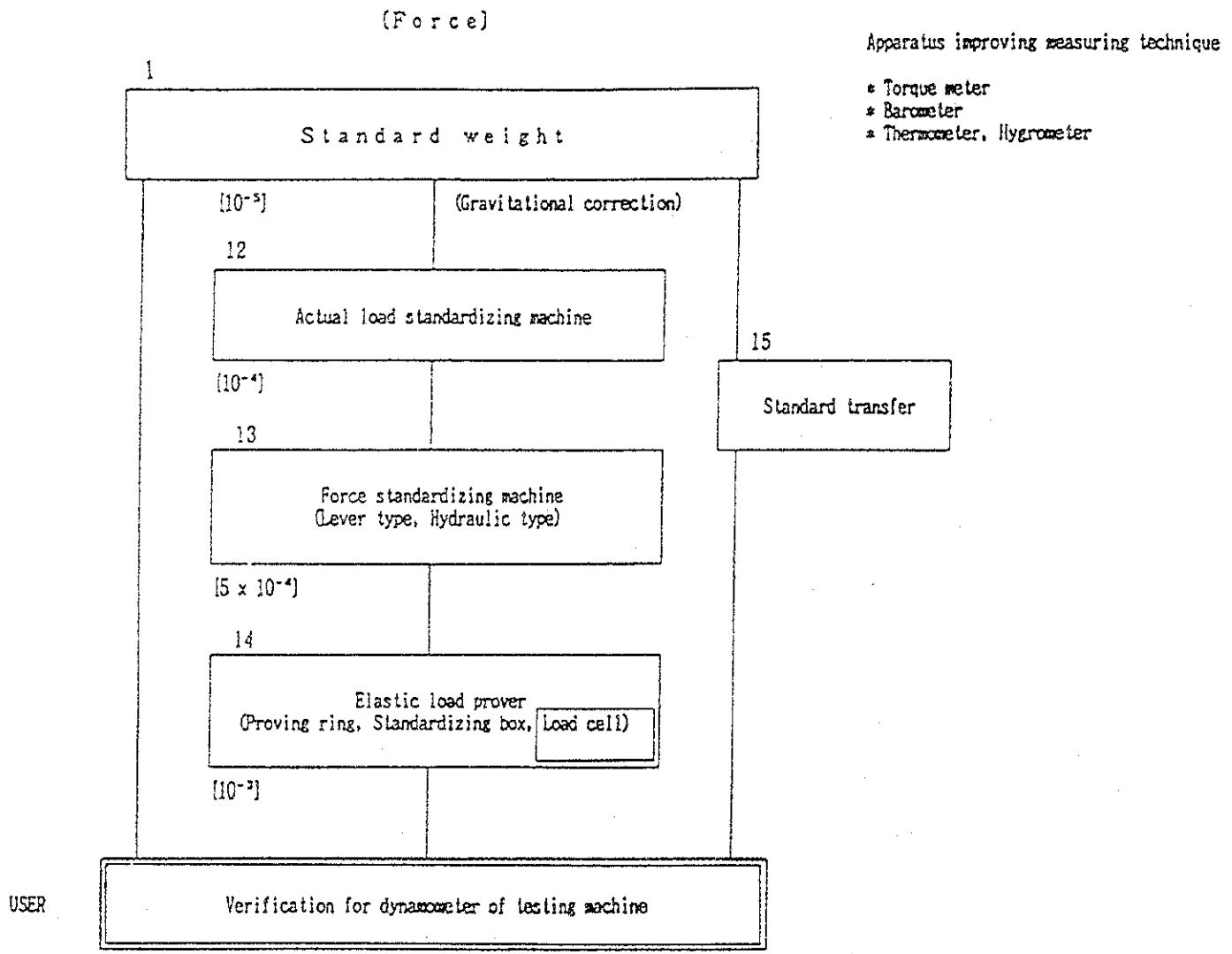
Pressure

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 20kg/cm^2 Accuracy: 0.2%	
	Dead Weight Piston Gauge	重錘型標準圧力計	Max. Pressure: 5kg/cm^2 Accuracy: 0.2%	w/ Control Pack
43				
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 6kg/cm^2 Accuracy: ±0.15%	
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 50kg/cm^2 Accuracy: ±0.15%	
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 100kg/cm^2 Accuracy: ±0.15%	
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 1 ton/cm^2 Accuracy: ±0.15%	
	Digital Pressure Gauge	デジタル圧力計	Max. Pressure: 2kg/cm^2 Accuracy: ±0.5%	3 sets
	Digital Pressure Gauge	デジタル圧力計	Max. Pressure: 2000mmH_2O Accuracy: ±0.5%	3 sets
	Digital Pressure Gauge	デジタル圧力計	Max. Pressure: 10kg/cm^2 Accuracy: ±0.5%	3 sets
	Pressure Transducer	圧力変換器	Capacity: 0 to 10kg/cm^2	2 pcs.

List of measuring equipment

Pressure

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Pressure Transducer	圧力変換器	Capacity: 0 to 100kg/cm^2	2 pcs.
	Differential Pressure Tranceducer	差圧変換器	Capacity: 0.1kgf/cm^2	2 pcs.
	Differential Pressure Tranceducer	差圧変換器	Capacity: 1kgf/cm^2	2 pcs.
	Strain Meter	ひずみ測定器	Range: -30000 to +30000 x 10^{-6} Resolution: 1 x 10^{-6}	



Apparatus improving measuring technique

* Torque meter
* Barometer
* Thermometer, Hygrometer

List of measuring equipment

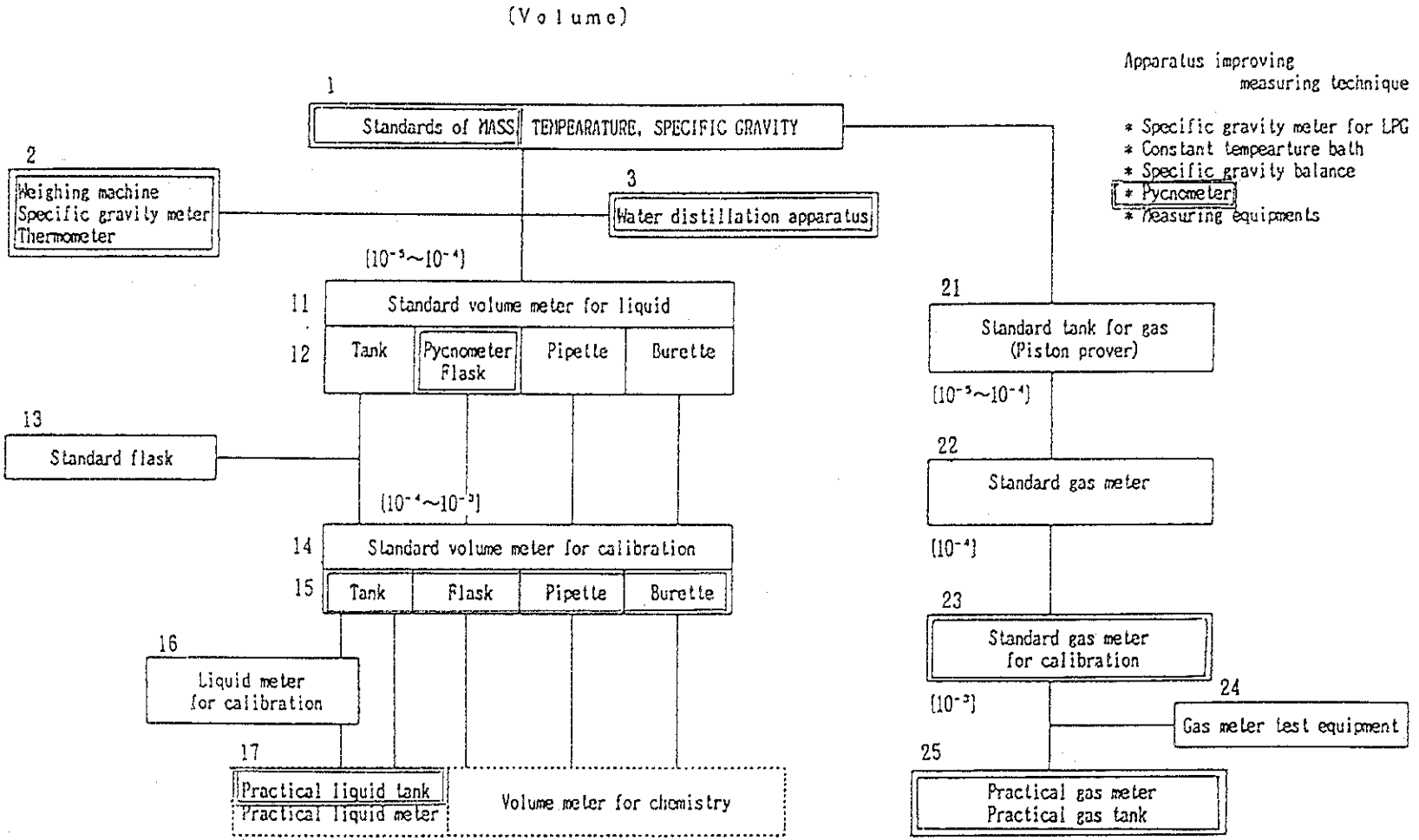
Force

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
1				
12				
13	Force Standard Machine	力標準機	Type: Lever type Capacity: 10 tonf	
	Force Standard Machine	力標準機	Type: Lever type Capacity: 1 tonf	
14	Standard Proving Ring	環状バネ型力計	Capacity: 100kgf(1 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 500kgf(5 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 2 tonf(20 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 5 tonf(50 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 10 tonf(100 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 50 tonf(500 kN) Repeatability: >0.2%	

List of measuring equipment

Force

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standardizing Box	容積型力計	Type: Box Type Dynamometer Capacity: 300 tonf(3 MN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 100 kgf (1 kN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 1000 kgf (10 kN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 10 tonf (100 kN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 100 tonf (1 MN)	
	Load Cell Indicator	デジタル指示計	Sensitivity: 10V at 0.5mV/V IN with amplifier	4 sets
	Wire Strain Gauge, Strain Meter	ひずみ測定器	Range:±60000 x 10^{-6}	
	Torque Transducer	トルク変換器	Capacity: 100kgf/m Output: 1.5mV/V ±10%	
	Torque Transducer	トルク変換器	Capacity: 1000kgf/m Output: 1.5mV/V ±10%	
	Barometer	水銀気圧計	Type: Fortin Range: 650 to 850 mmHg	
	Temperature/Humidity Recorder	自記式温湿度計	Temp. Range: -15 to 50°C Humi. Range: 0 to 100%RH	


(Volume)
Apparatus improving measuring technique
* Specific gravity meter for LPG
* Constant tempearture bath
* Specific gravity balance
* Pycnometer
* Measuring equipments
1
Standards of MASS
TEMPEARATURE, SPECIFIC GRAVITY
2
Weighing machine
Specific gravity meter
Thermometer
3
Water distillation apparatus
[10⁻⁵~10⁻⁴]
11
Standard volume meter for liquid
12
Tank
Pycnometer Flask
Pipette
Burette
13
Standard flask
[10⁻⁴~10⁻³]
14
Standard volume meter for calibration
15
Tank
Flask
Pipette
Burette
16
Liquid meter for calibration
17
Practical liquid tank
Practical liquid meter
Volume meter for chemistry
21
Standard tank for gas (Piston prover)
[10⁻⁵~10⁻⁴]
22
Standard gas meter
[10⁻⁴]
23
Standard gas meter for calibration
[10⁻³]
24
Gas meter test equipment
25
Practical gas meter
Practical gas tank

List of measuring equipment

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
1				
2	Weighing Machine	電子台はかり	Capacity: 300kg Readability: 1g	
	Specific Gravity Meter	比重計		
	Thermometer	温度計		
3	Water Distillation Apparatus	蒸留水製造装置	Method:Ion exchange and distillation method Capacity: 0.4 to 0.7 liter/min	with accessories
11				
12	Standard Tank	標準タンク	Capacity: 50 liter Accuracy: 0.1%	
	Standard Tank	標準タンク	Capacity: 200 liter Accuracy: 0.1%	
	Standard Tank	標準タンク	Capacity: 500 liter Accuracy: 0.1%	
12	Pycnometer	ピクノメーター	Capacity:10ml,20ml,50ml,100ml, 150ml,250ml	40 pcs.

List of measuring equipment

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Flask	標準フラスコ	Capacity: 1 liter	3 sets
	Standard Flask	標準フラスコ	Capacity: 2 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 5 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 10 liter	2 sets
12	Standard Pipette	標準ピペット	Capacity: 10ml	4 sets
	Standard Pipette	標準ピペット	Capacity: 100ml	4 sets
12	Standard Burette	標準ビュレット	Capacity: 25ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 50ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 100ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 100ml	2 sets
13	Standard Flask	標準フラスコ	Capacity: 1 liter	3 sets

List of measuring equipment

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Flask	標準フラスコ	Capacity: 2 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 5 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 10 liter	2 sets
14				
15	Standard Tank	標準タンク	Capacity: 50 liter Accuracy: 0.1%	
	Standard Tank	標準タンク	Capacity: 200 liter Accuracy: 0.1%	
	Standard Tank	標準タンク	Capacity: 500 liter Accuracy: 0.1%	
15	Standard Flask	標準フラスコ	Capacity: 1 liter	3 sets
	Standard Flask	標準フラスコ	Capacity: 2 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 5 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 10 liter	2 sets

List of measuring equipment

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
15	Standard Pipette	標準ピペット	Capacity: 10ml	4 sets
	Standard Pipette	標準ピペット	Capacity: 100ml	4 sets
15	Standard Burette	標準ビュレット	Capacity: 25ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 50ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 100ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 100ml	2 sets
16				
21	Piston Prover	ピストンプルーバ	Capacity: 110 liter Flow range: 0.1 to 3m³/h Accuracy: 0.005%	
22	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 2 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 10 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 20 liter Accuracy: 0.2%	

List of measuring equipment

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
23	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 2 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 10 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 20 liter Accuracy: 0.2%	
24	Gas Meter Test Equipment	ガスメーター試験装置	Flow Capacity: 0.2 to 4 m^3/h with accessory	
	Water Master Meter	水道マスターメーター	Flow Range: 0.2 to 1.2 m^3/h Test Pressure: 17.5 kgf/cm^2	4 sets
	Standard Density Hydrometer	標準密度計	Density Range: 0.6 to 2.0g/cm^3 at 24 hydrometers	24 pcs.
	Specific Gravity Meter for LPG	LPG 用比重試験器	Range: 0.500 to 0.650g/cm^3 Temperature: -10 to 40℃	2 sets
	Barometer	水銀気圧計	Type: Fortin(Mercury column) Scale Range: 650 to 820 mmHg	
	Constant Temperature Bath	恒温水槽	Temperature: RT+10 to 80℃ Temperature Control:±0.07℃ Capacity: 50liter	
	Thermometer	標準ガラス温度計	Temperature Range:-50 to 360℃ at 8 hydrometers	8 pcs.
	Thermometer	サーミスタ温度計	Temp. Range: -100 to 200℃ Resolution: ± 0.1℃	T thermocouple

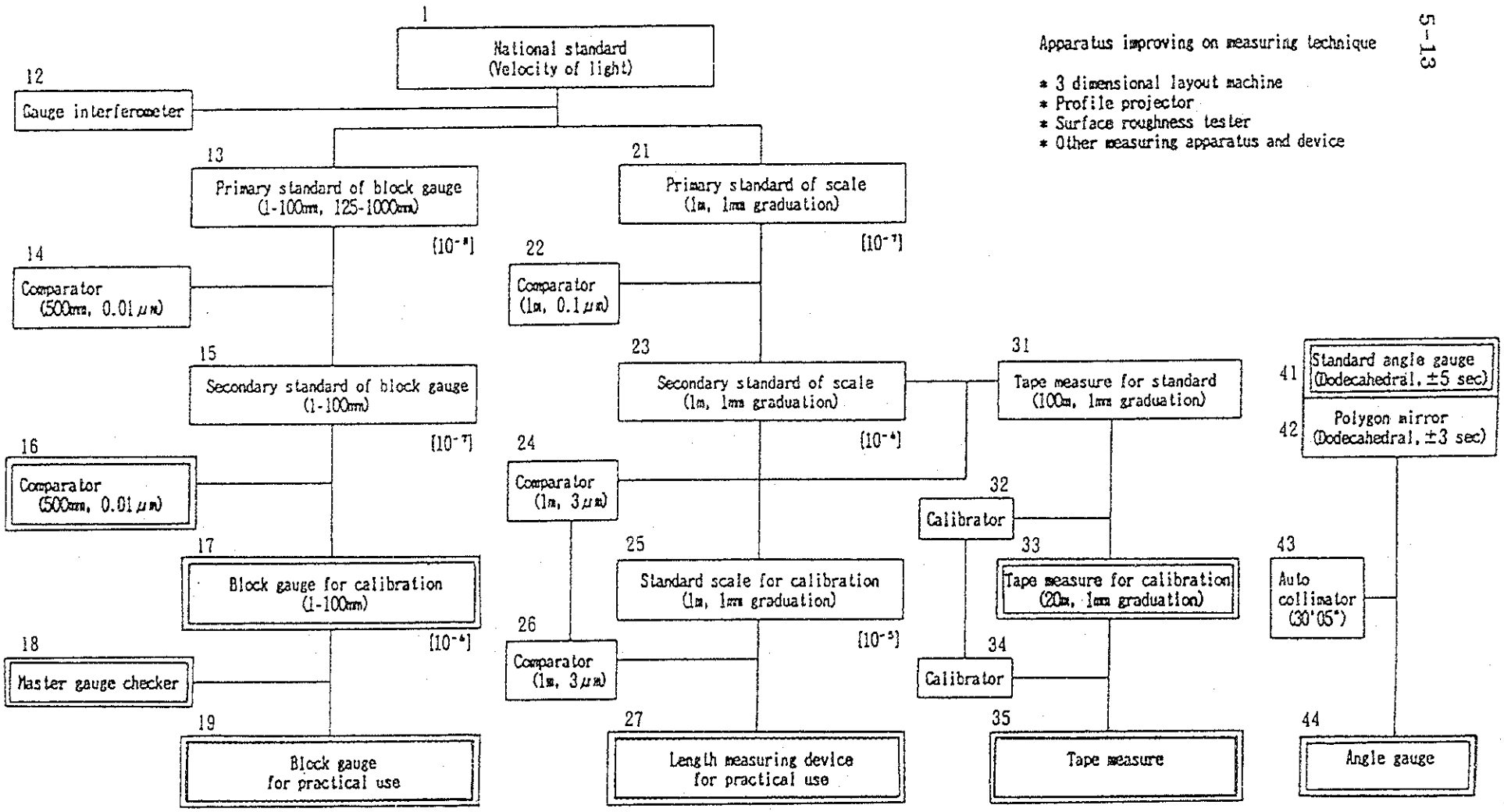
List of measuring equipment

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Specific Gravity Balance	比重天秤	Capacity: 300g Readability: 1mg	
	Standard Weight Set	標準分銅	1 ～1000g, 1mg～500mg, class 1 Brass, Stainless Steel	

STANDARD SYSTEM OF MEASUREMENT AND
LIST OF EQUIPMENT CORRESPONDING THERETO

(Length)



List of measuring equipment

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
1				Difinition
12	Interferometer	光波干渉計	Max.Measuring Range:250mm Accuracy: >100mm- ±0.03μm 100～250mm-±0.05μm	
13	Gauge Blocks	ブロックゲージ	112 pcs. JIS B7506 class 00 with accessories	
14	Electronic comparator (Electronic micrometer)	デジタル電子測微器	Measuring range:250mm Resolution: 0.01μm	
15	Gauge Blocks	ブロックゲージ	112 pcs. JIS B7506 class 0 with accessories	
16	Electronic comparator (Electronic micrometer)	デジタル電子測微器	Measuring range:250mm Resolution: 0.01μm	
17	Gauge Blocks	ブロックゲージ	112 pcs. JIS B7506 class 1 with accessories	
18	Master for Height	デジタルハイトマスター	Range: 5 to 610mm	
	Caliper Checker	キャリパチェッカー	Range: 600mm	
	Dial gauge checker	ダイヤルゲージチェッカー	Range:25mm, Graduation:0.001mm	
	Depth Micrometer checker	ﾃﾞﾌﾟｽ･ﾏｲｸﾛﾒｰﾀｰ･ﾁｪｯｶｰ	Range: 0 to 300mm	

List of measuring equipment

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Inside Micrometer Checker	内側ﾏｲｸﾛﾒｰﾀｰ･ﾁｪｯｶｰ	Range: 25 to 300mm	
	Height Gauge	ハイトゲージ	Measuring Range: 0 to 600mm	
	Dail Gauge	ダイヤルゲージ	Measuring Range: 0 to 5mm Graduation: 0.01mm	5 sets
	Degimatic Indicator	デジタルインジケータ	Measuring Range: 0 to 12mm Resolution: 0.001mm	2 sets
	Cylinder Gauge	シリンダゲージ	Measuring Range:7-10mm (6pcs.) 10-18mm (8pcs.)	2 sets
	Standard Outside Micrometer	標準外側マイクロメーター	Measuring Range: 0 to 25mm 25 to 50mm 50 to 75mm 75 to 100mm	
	Digimatic Standard Outside Micrometer	ﾃﾞｼﾞﾀﾙ標準外側ﾏｲｸﾛﾒｰﾀｰ	Measuring Range: 0 to 25mm 25 to 50mm 50 to 75mm 75 to 100mm	
	Rod Inside Micromete	棒形内側マイクロメーター	Measuring Range: 50 to 300mm 25mm step, 10pcs	
	Indicating Micrometer	指示マイクロメーター	Measuring Range: 0 to 25mm 25 to 50, 50 to 75, 75 to 100	

List of measuring equipment

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Electronic Micrometer	電子マイクロメーター	Measuring Range: 0 to 25mm 25 to 50, 50 to 75, 75 to 100 Graduation: 0.01mm Instrumental error: ± 3μm	
	Digimatic Bench Micrometer	ﾃﾞｼﾞﾏﾁｯｸ･ﾍﾞﾝﾁ･ﾏｲｸﾛﾒｰﾀｰ	Measuring Range: 0 to 50mm Resolution: 0.001mm	
	Digimatic Caliper	デジマチック・キャリパー	Measuring Range: 0 to 200mm Resolution: 0.01mm	3 sets
	Standard Caliper	M形標準ノギス	Measuring Range: 0 to 200mm Vernier scale: 0.05mm	3 sets
	Dial Caliper	ダイヤルノギス	Measuring Range: 0 to 200mm Graduation: 0.01mm	2 sets
21	Standard Scale	標準直尺	Range: 1m, Graduation: 1mm H shape, stainless steel	
22	Comparator	直尺比較器	Range: 1m, Graduation: 1mm Accuracy:0.1μm	
23	Standard Scale	標準直尺	Range: 1m, Graduation: 1mm Flat shape, brass	
24	Comparator	直尺比較器	Range: 1m, Graduation: 1mm Accuracy: 3 μm	
25		標準直尺	Range: 1m, Graduation: 1mm Flat shape, brass	

List of measuring equipment

Length

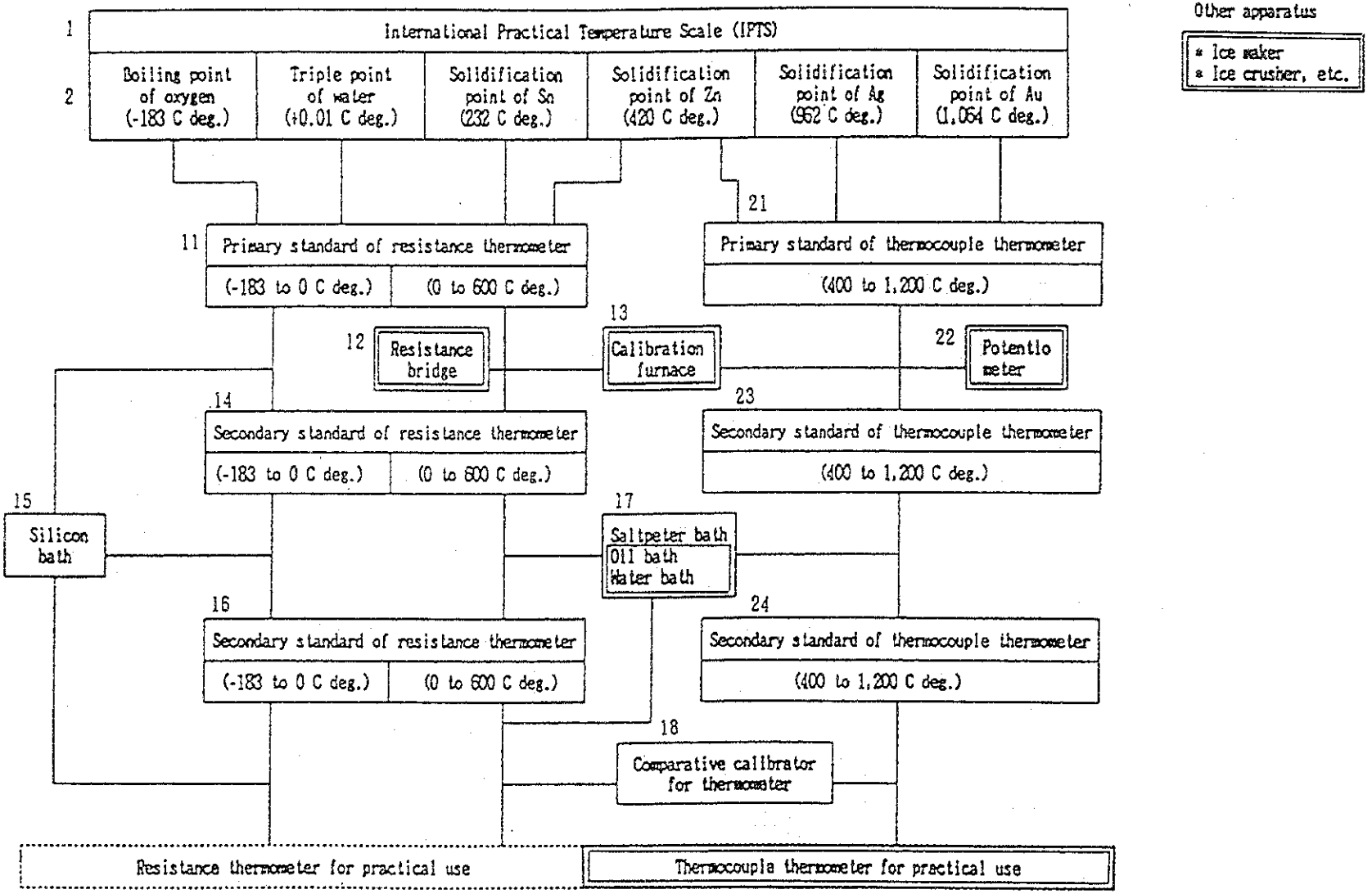
No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
26	Comparator	直尺比較器	Range: 1m, Graduation: 1mm Accuracy: 3 μm	
31	Standard Tape Measure	標準巻尺	Measuring Range: 100m JIS class 1, Steel	
32				
33	Standard Tape Measure	標準巻尺	Measuring Range: 20m JIS class 1, Steel	
34				
41	Standard Wedge Angle Block	標準角度ゲージブロック	Measuring Range: 0 to 90° Angle Accuracy: 3", 12 pcs.	
42	Autocollimeter & Polygon Mirror	オートコリメーター及び ポリゴン鏡	Measuring Range: 30' of arc Minimum Reading: 0.5" of arc Type: 12 faces	
43	Autocollimeter & Polygon Mirror	オートコリメーター及び ポリゴン鏡	Measuring Range: 30' of arc Minimum Reading: 0.5" of arc Type: 12 faces	
	Master for Square	スコヤマスター	Measuring Range: 0 to 450mm Straightness: 3.5μm Squareness: 9μm	
	Surface Roughness Tester	表面あらさ計	Measuring Range: 0 to 300 μm	

List of measuring equipment

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Optical Parallel	オプチカルパラレル	Diameter: 30mm Thickness: 12.0, 12.12, 12.23, 12.27mm Parallelism: 0.2μm	
	Optical Flat	オプチカルフラット	Diameter: 45mm Thickness: 12mm Flatness: 0.2μm	3 kinds
	Profile projector	万能投影機	Diameter: 600mm	
	Precision Level	精密水準器	Size: 300mm Accuracy: ±0.2mm/1m	2 sets
	Base Plate	精密石定盤	Size: 300x 300x 100 JIS B7513 class 0	2 sets
	Base Plate	精密石定盤	Size: 2000x 1500x 300 JIS B7513 class 00	2 sets

(Temperature)



List of measuring equipment

Temperature

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
1 2	Thermocouple/Resistance Thermometer Fixed Point Calibration Equipment	熱電対・抵抗体定点 校正装置	Boiling Point of O_2:90.188K Accuracy: ±0.01K Triple Point of H_2O:273.16K Accuracy: ±0.001K Solidification of Sn:232℃ Solidification of Zn:420℃ Solidification of Ag:962℃ Solidification of Au:1,064℃	
11	Standard Resistance Thermometer	標準白金測温抵抗体	Range: 13.81K to 231.91 ℃ Range: 90.188K to 630.74℃ Range: 90.188K to 961.93℃	
	Comparative Calibration Equipment for Resistanse Thermometer	抵抗体比較校正装置	Range: 90K to 650℃	
12	Resistance Bridge (Electronic micrometer)	精密ブリッジ		
13	Calibration Furnace	校正用炉	Temperature: 50 to 450℃ Stability:±0.15K/30min	
			Temperature: 200 to 1050℃ Stability:±0.25K/30min	
			Temperature: 800 to 1450℃ Stability:± 0.5K/30min	
14	Standard Resistance Thermometer	標準白金測温抵抗体	Range: 13.81K to 231.91 ℃ Range: 90.188K to 630.74℃ Range: 90.188K to 961.93℃	

List of measuring equipment

Temperature

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
15	Silicon Bath	シリコンバス		
16	Standard Resistance Thermometer	標準白金測温抵抗体	Range: 13.81K to 231.91 ℃ Range: 90.188K to 630.74℃ Range: 90.188K to 961.93℃	
17	Saltpeter Bath			
	Oil Bath			
	Water Bath			
18				
21	Standard Thermocouple	標準熱電対	Max.Temperature: 1064.43℃	
	Comparative Calibration Equipment for Thermocouple Thermometer	熱電対比較校正装置	Range: 600℃ to 1400℃	
22	Potentiometer			

List of measuring equipment

Temperature

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
23	Standard Thermocouple	標準熱電対	Max.Temperature: 1064.43℃	
24	Standard Thermocouple	標準熱電対	Max.Temperature: 1064.43℃	
	Ice Maker	製氷器		
	Ice Crusher	砕氷器		

Specific Standard Materials Production and Measurement Devices

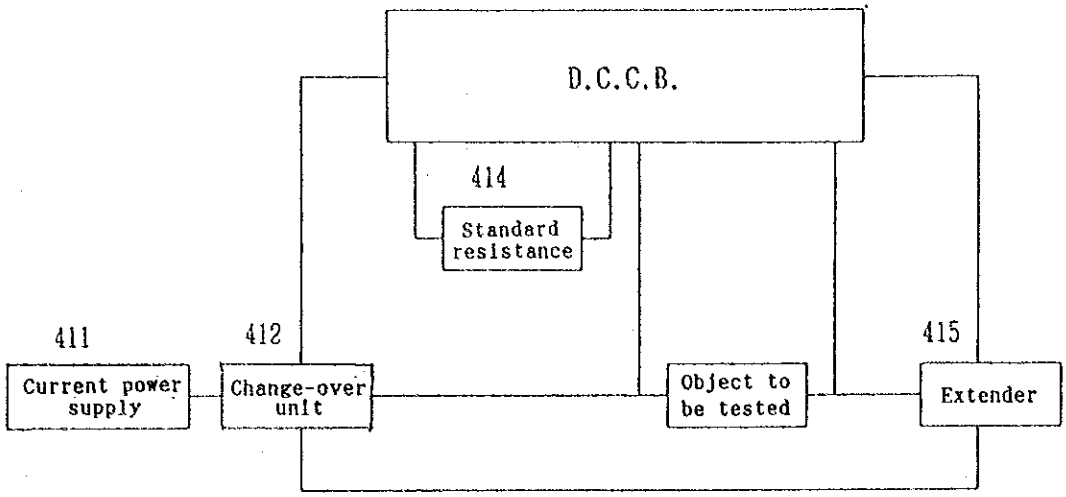
1. Specific standard gas production and measurement devices

Device name	Number of units
1. Precision balance (capacity 30 kg, readability 1 g)	1
2. Standard gas measurement device (filling platform) (CO, SO_2, NO_x, O_2)	1
3. Gas chromatograph (for measuring impurities)	1
4. Non-dispersal infrared densitometer (for CO)	1
5. Non-dispersal infrared densitometer (for SO_2)	1
6. Chemical emission spectrical analysis device for nitrous oxides	1
7. Oxygen densitometer	1

2. Specific standard liquid production and measurement devices

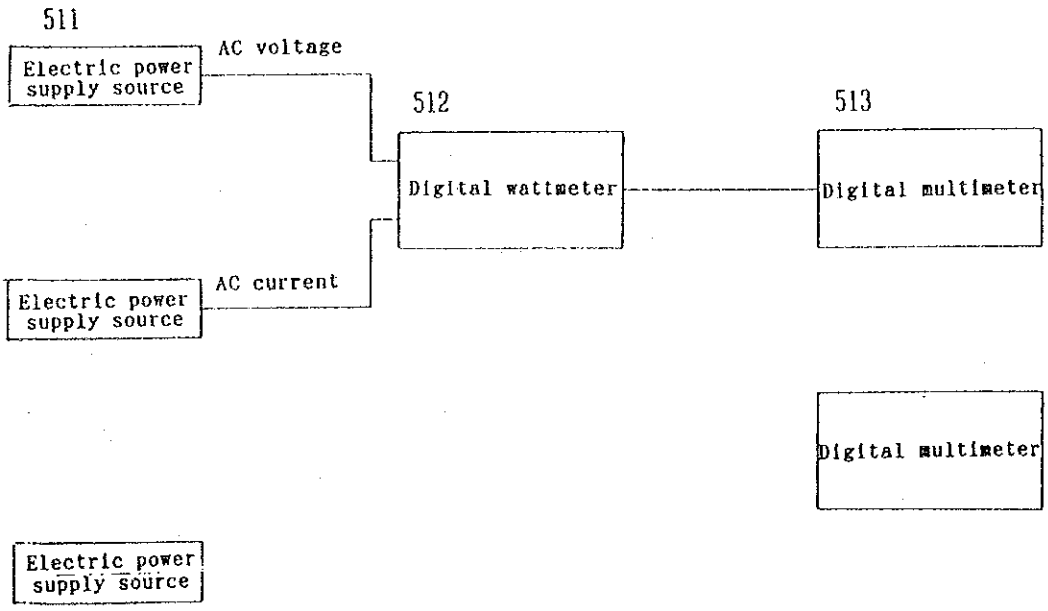
Device name	Number of units
1. Precision balance (capacity 3 kg, readability 1 mg)	1
2. Electronic balance (capacity 205 kg, readability 0.01 mg)	1
3. Pure production device	1
4. Precision pH meter (readability 1/10000 pH)	1

4
Resistance calibration system



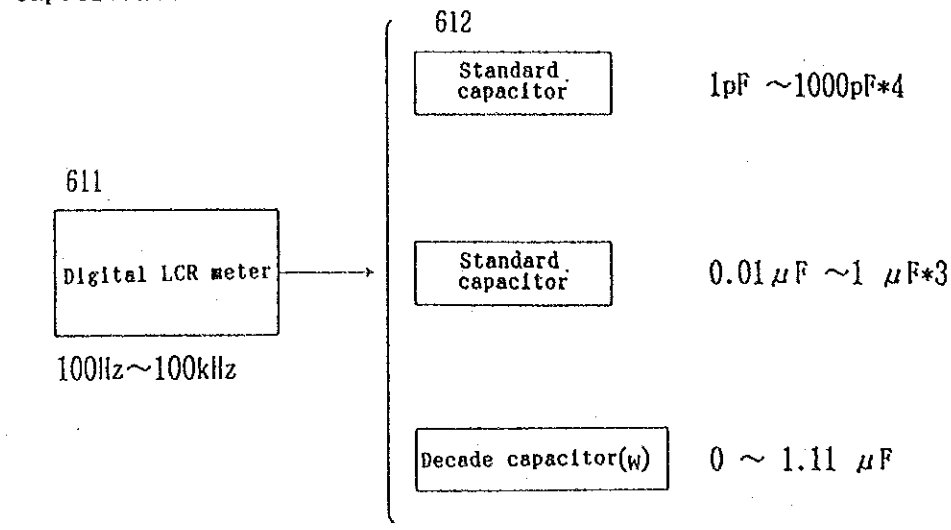
D.C.C.B.: Direct Current Comparator Resistance and Temperature Bridge

5
Power measurement

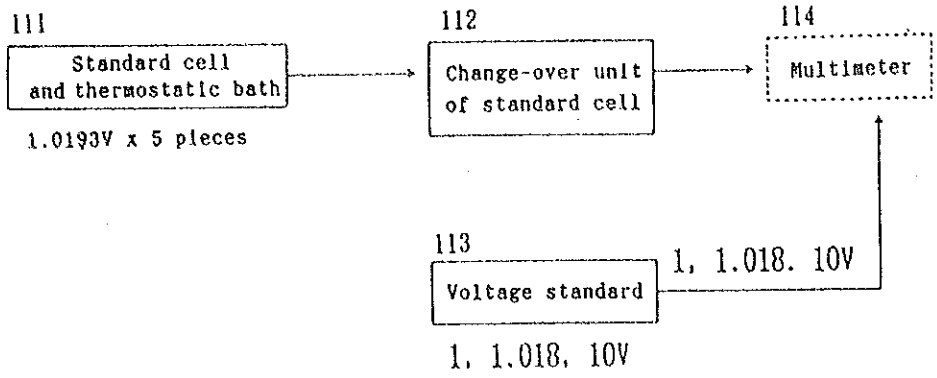


6

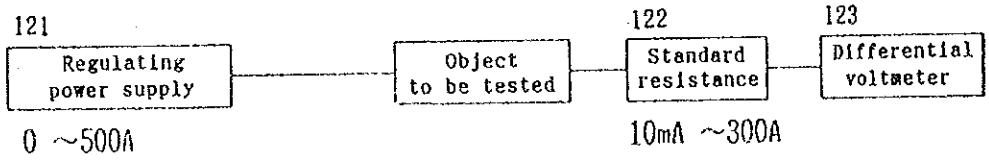
Capacitance measurement



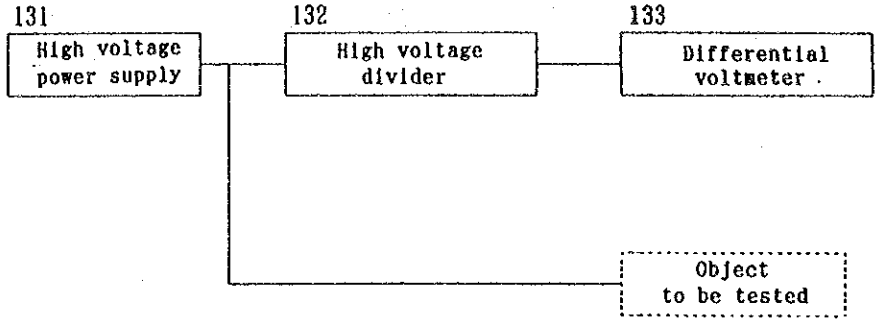
11
Calibration of voltage standard



12
DC large current calibration system

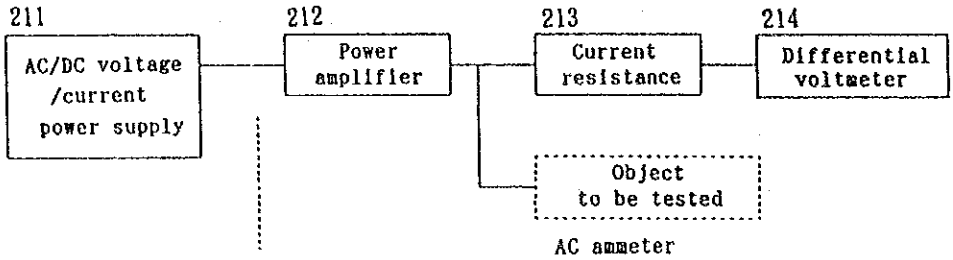


13
DC high voltage calibration system

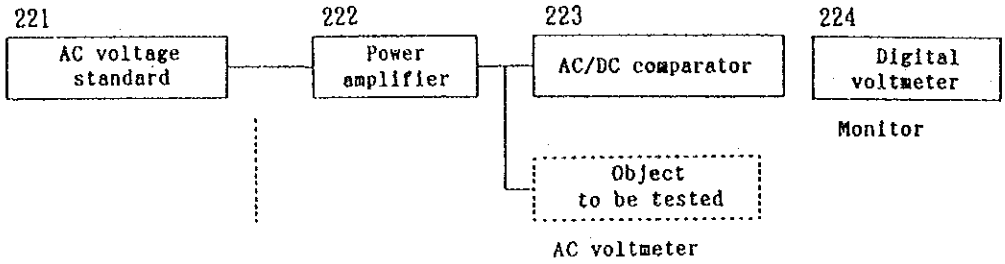


2
AC voltage/current measurement

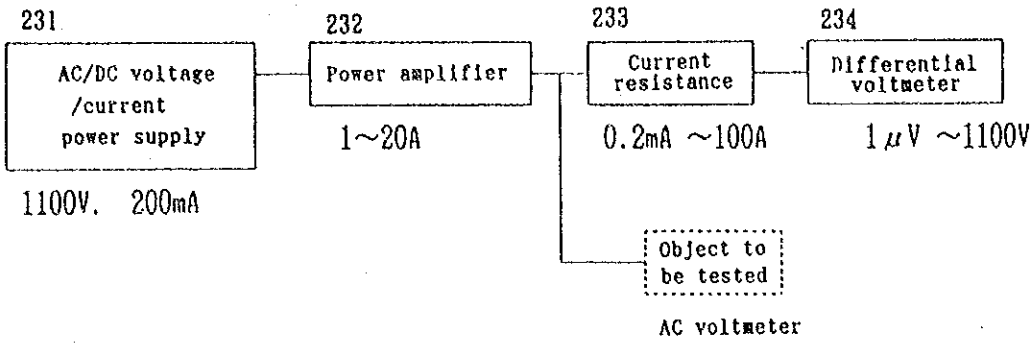
21
〈AC current measuremtn〉



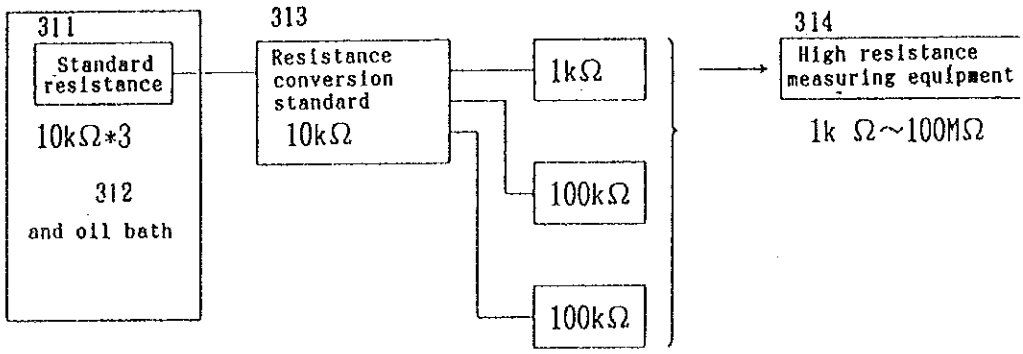
22
〈AC voltage measurement〉



23
AC current calibration



3
Resistance measurement



List of measuring equipment

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
5				
511	Power Source	電力電源	Output(V): 0.01mV to 1200V Output(A): 6mA to 0.5A	3 sets
512	Digital Power Meter	デジタル電力計	Range(V): 3 to 600V Range(A): 100mA to 30A	2 sets(single phase) 2 sets(three phase)
513	Digital Multimeter	デジタルマルチメーター	Range:±100mV to ±1000V(DC) Range:1V to 500V(AC)	2 sets
6				
611	Digital LCR Meter	デジタルＬＣＲメーター	Range(L): 100nH to 1000H Range(C): 1pF to 1F	3 sets
612	Standard Capacitance	標準容量	Capacitance: 1pF, 10pF, 100pF, 1000pF	
613	Standard Capacitance	標準容量	Capacitance:0.01μF, 0.1μF, 1μF	
1				
11				
111	Standard Cell	標準電池	Electromotive Force:1.0193V at 20℃ Accuracy: ±50ppm	with Thermal control Water Bath 4 sets

List of measuring equipment

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
112	Channel Switch for Standard Cell	標準電池切換器	Max. Generation of Terminal EMFs: ≧0.01μV	
113	Voltage Standard	電圧標準	Voltage: 10V, 1.018V, 1V Stability: ±0.5 ～±12.0ppm	
114	Multimeter	マルチメーター	DC V: ±100mV ～±1000V Accuracy: 0.01%	2 sets
12				
121	Stabilized Source	安定化電源	Output: 0 to 35VDC, 0 to 500ADC Stability(A): 0.05%	
122	Standard Shunt	標準抵抗	Current Rating: 300A(0.333mΩ) 0.01mA(10kΩ)	
123	Differencial Voltmeter	差動電圧計	Range: 1V to 1000VDC Accuracy: ±25ppm	
13				
131	High Voltage Source	高電圧電源	Output: 0 to 60kV, 0 to 50mADC Stability(A): ±0.01%	
132	High Voltage Divider	高電圧分圧器	Input Resistance: 2000 MΩ Readability: 10,000 to 1	
133	Differencial Voltmeter	差動電圧計	Range: 1V to 1000VDC Accuracy: ±25ppm	

List of measuring equipment

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
2				
21				
211	AC/DC Voltage and Current Supply	交流／直流電圧電流電源	Output(V): 0 to 1100V (AC, DC) Output(A): 0 to 2A(DC) 0 to 2A(AC 10Hz to 50kHz)	
212	Power Amplifier	電力増幅器	Output: 20A (AC, DC) Accuracy: 0.025%	
213	Current Shunt	電流抵抗	Range: 200μA to 100A(AC/DC) Accuracy: ±0.01%	
214	Differencial Voltmeter	差動電圧計	Range: 1V to 1000VDC Accuracy: ±25ppm	
22				
221	AC Standard Voltage Source	交流電圧標準	Max. Voltage: 120V(10Hz-1MHz) Accuracy: 1 nV to 100μV	
222	Power Amplifier	電力増幅器	Output: 100 to 1099.99V Resolution: 1mV	
223	AC/DC Comparator	交流直流比較器	Range(V): 225mV to 1100V(RMS) Range(F): DC, 10Hz to 100MHz	
224	Digital Voltmeter	デジタル電圧計	Range: 200mV to 1000V Resolution: 1 μV	

List of measuring equipment

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
23				
231	AC/DC Voltage and Current Supply	交流／直流電圧電流電源	Output(V): 0 to 1100V (AC, DC) Output(A): 0 to 2A(DC) 0 to 2A(AC 10Hz to 50kHz)	
232	Power Amplifier	電力増幅器	Output: 20A (AC, DC) Accuracy: 0.025%	
233	Current Shunt	電流抵抗	Range: 200μA to 100A(AC/DC) Accuracy: ±0.01%	
234	Differencial Voltmeter	差動電圧計	Range: 1V to 1000VDC Accuracy: ±25ppm	
3				
311	Standard Resistor	標準抵抗	Resistance: 1 Ω Accuracy: 0.0005%	3 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±1ppm	3 sets
	Standard Resistor	標準抵抗	Resistance: 0.001 Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.01Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.1 Ω Accuracy: ±0.002%	2 sets

List of measuring equipment

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Resistor	標準抵抗	Resistance: 100kΩ Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 10Ω Accuracy: ±0.02%	1 sets
	Standard Resistor	標準抵抗	Resistance: 100 Ω Accuracy: ±0.002%	1 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±0.005%	1 sets
312	Oil Bath	油槽	Range: 0 to 65℃ Stability: 0.002℃	2 sets
313	Resistance Transfer Standard	抵抗交換標準	Standard Value: 1kΩ/step Transfer Accuracy:±1ppm	2 sets
	Resistance Transfer Standard	抵抗交換標準	Standard Value: 10 kΩ/step Transfer Accuracy:±1ppm	2 sets
	Resistance Transfer Standard	抵抗交換標準	Standard Value: 100kΩ/step Transfer Accuracy:±1ppm	2 sets
314	High Resistance Measurement Set	高抵抗測定装置	Measuring range:1kΩ to 100MΩ Resolution: 20μΩ	
4				
411	Current Source	電流電源	Output Range: 0 to 200A Drift: 0.03%	
412	Switch	切換器	Max.Current: 100A Max.Switching Frequency: 0.5Hz	

List of measuring equipment

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
413	Direct Current Comparator Resistance & Temperature Bridge(DCCB)	ＤＣＣＢ	Range:10^{-6} to $10^{9}\Omega$ Accuracy: ±0.2ppm Stability:±0.2ppm	
414	Standard Resistor	標準抵抗	Resistance: 1 Ω Accuracy: 0.0005%	3 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±1ppm	3 sets
	Standard Resistor	標準抵抗	Resistance: 0.001 Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.01Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.1 Ω Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 100kΩ Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 10Ω Accuracy: ±0.02%	1 sets
	Standard Resistor	標準抵抗	Resistance: 100 Ω Accuracy: ±0.002%	1 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±0.005%	1 sets
415	Extender	エクステンダー	Ratio: 1000:1/100:1/10:1 Max. Input Current:100A(1000:1)	

List of measuring equipment(Key operation center)

Mass

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
14	Standard Weight Set	標準分銅セット	1 ～20kg, 1～500g, 1～500mg Stainless Steel, Class F1	
15	High Precision Hand Operated Balance	高精度天秤	Capacity: 20kg Readability: 10mg	
	Direct Reading Balance	直示天秤	Capacity: 3000g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 200g Readability: 0.1mg	
	Direct Reading Balance	直示天秤	Capacity: 20g Readability: 0.005mg	
	Direct Reading Balance	直示天秤	Capacity: 5g Readability: 0.001mg	
16	Standard Weight Set	標準分銅セット	1 ～50kg, 1～500g, 1～500mg Brass, class F2	
	Standard Weight Balance	標準分銅	20kg, Iron cast Readability: 0.001mg	25 pcs.
17	Floor Balance	精密台はかり	Capacity: 1000kg Readability: 50g	
	Electronic Floor Balance	電子台はかり	Capacity: 150kg Readability: 1g	

List of measuring equipment(Key operation center)

Mass

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Electronic Floor Balance	電子台はかり	Capacity: 30kg Readability: 1g	
	Electronic Balance	電子天秤	Capacity: 1kg Readability: 10mg	
	Electronic Balance	電子天秤	Capacity: 200g/42g Readability: 0.1mg/0.01mg	
	Electronic Balance	電子天秤	Capacity: 300g Readability: 1mg	
	Balance Table	天秤台	Dimensions: 540x 600 x 750(mm) Balance Setting Plate: Steel	5 sets
	Balance Table	天秤台	Dimensions:1200x 600 x 750(mm) Balance Setting Plate: Steel	5 sets
	Barometer	水銀気圧計	Type: Fortin type Scale Range: 650 to 820mmHg	
	Hygrometer	アスマン通風乾湿計	Method:Assman Ventilated Psych -rometer	
	Digital Thermometer	デジタル温度計	Method: Thermister Thermometer Range: -50 to 50℃	2 sets
	Temperature/Humidity Recorder	自記式温湿度計	Temperature: -15 to 50℃ Humidity: 0 to 100%RH	

List of mesuring equipment(Key operation center)

Pressure

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
22	Standard Barometer	精密水銀気圧計	Type: Fortin Scale Range: 650 to 820 mmHg	
32	Liquid Column Pressure Gauge	液柱型標準圧力計	Range:0 to 1500mmHg Accuracy: 2mmHg	
	Liquid Column Pressure Gauge	液柱型標準圧力計	Range:0 to 2000mm H_2O Accuracy: 2mm H_2O	
43				
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 6kg/cm^2 Accuracy: ±0.15%	
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 50kg/cm^2 Accuracy: ±0.15%	
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 100kg/cm^2 Accuracy: ±0.15%	
	Precision Bourdon Tube Pressure Gauge	精密圧力計	Pressure Range: 0 to 1 ton/cm^2 Accuracy: ±0.15%	
	Digital Pressure Gauge	デジタル圧力計	Max. Pressure: 2kg/cm^2 Accuracy: ±0.5%	
	Digital Pressure Gauge	デジタル圧力計	Max. Pressure: 2000mmH_2 Accuracy: ±0.5%	
	Digital Pressure Gauge	デジタル圧力計	Max. Pressure: 10kg/cm^2 Accuracy: ±0.5%	

List of mesuring equipment(Key operation center)

Pressuret

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Pressure Transducer	圧力変換器	Capacity: 0 to 10kg/cm^2	
	Pressure Transducer	圧力変換器	Capacity: 0 to 100kg/cm^2	
	Differential Pressure Tranceducer	差圧変換器	Capacity: 0.1kgf/cm^2	
	Differential Pressure Tranceducer	差圧変換器	Capacity: 1kgf/cm^2	
	Strain Meter	ひずみ測定器	Range: -30000 to +30000 x 10^{-6} Resolution: 1 x 10^{-6}	

List of measuring equipment(Key operation center)

Force

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
14	Standard Proving Ring	環状バネ型力計	Capacity: 100kgf(1 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 500kgf(5 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 2 tonf(20 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 5 tonf(50 kN) Repeatability: >0.2%	
	Standard Proving Ring	環状バネ型力計	Capacity: 10 tonf(100 kN) Repeatability: >0.2%	
	Standard Proving Ring Standardizing Box	環状バネ型力計 容積型力計	Capacity: 50 tonf(500 kN) Repeatability: >0.2% Type: Box Type Dynamometer Capacity: 300 tonf(3 MN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 100 kgf (1 kN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 1000 kgf (10 kN)	
	Load Cell	ロードセル	Type: For Compression Capacity: 10 tonf (100 kN)	

List of measuring equipment (Key operation center)

Force

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Load Cell	ロードセル	Type: For Compression Capacity: 100 tonf (1 MN)	
	Load Cell Indicator	デジタル指示計	Sensitivity: 10V at 0.5mV/V IN with amplifier	4 sets
	Wire Strain Gauge, Strain Meter	ひずみ測定器	Range: $\pm 60000 \times 10^{-6}$	
	Torque Transducer	トルク変換器	Capacity: 100kgf/m Output: 1.5mV/V ±10%	
	Torque Transducer	トルク変換器	Capacity: 1000kgf/m Output: 1.5mV/V ±10%	
	Barometer	水銀気圧計	Type: Fortin Range: 650 to 850 mmHg	
	Temperature/Humidity Recorder	自記式温湿度計	Temp. Range: -15 to 50℃ Humi. Range: 0 to 100%RH	

List of mesuring equipment(Key operation center)

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
14				
15	Standard Tank	標準タンク	Capacity: 50 liter Accuracy: 0.1%	
	Standard Tank	標準タンク	Capacity: 200 liter Accuracy: 0.1%	
	Standard Tank	標準タンク	Capacity: 500 liter Accuracy: 0.1%	
15	Standard Flask	標準フラスコ	Capacity: 1 liter	3 sets
	Standard Flask	標準フラスコ	Capacity: 2 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 5 liter	2 sets
	Standard Flask	標準フラスコ	Capacity: 10 liter	2 sets
15	Standard Pipette	標準ピペット	Capacity: 10ml	4 sets
	Standard Pipette	標準ピペット	Capacity: 100ml	4 sets
	Standard Burette	標準ビュレット	Capacity: 25ml	2 sets

List of mesuring equipment (Key operation center)

Volume

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Burette	標準ビュレット	Capacity: 50ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 100ml	2 sets
	Standard Burette	標準ビュレット	Capacity: 100ml	2 sets
16				
21	Piston Prover	ピストンプルーバ	Capacity: 110 liter Flow range: 0.1 to 3m^{3}h Accuracy: 0.005%	
22	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 2 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 10 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 20 liter	
23	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 2 liter Accuracy: 0.2%	
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 10 liter Accuracy: 0.2%	

Volume

List of mesuring equipment (Key operation center)

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Wet Gas Meter	標準湿式ガスメーター	Capacity: 20 liter Accuracy: 0.2%	
24	Gas Meter Test Equipment	ガスメーター試験装置	Flow Capacity: 0.2 to 4 m^3/h with accessory	
	Water Master Meter	水道マスターメーター	Flow Range: 0.2 to 1.2 m^3/h Test Pressure: 17.5 kgf/cm^2	4 sets
	Standard Density Hydrometer	標準密度計	Density Range: 0.6 to 2.0g/c at 24 hydrometers	4 pcs.
	Specific Gravity Meter for LPG	LPG 用比重試験器	Range: 0.500 to 0.650g/cm^2 Temperature: -10 to 40℃	t2 sets
	Barometer	水銀気圧計	Type: Fortin(Mercury column) Scale Range: 650 to 820 mmHg	
	Constant Temperature Bath	恒温水槽	Temperature: RT+10 to 80℃ Temperature Control: ±0.07℃ Capacity: 50liter	
	Thermometer	標準ガラス温度計	Temperature Range: -50 to 360℃ at 8 hydrometers	8 pcs.
	Thermometer	サーミスタ温度計	Temp. Range: -100 to 200℃ Resolution: ± 0.1℃	T thermocouple
	Specific Gravity Balance	比重天秤	Capacity: 300g Readability: 1mg	
	Standard Weight Set	標準分銅	1 ～1000g, 1mg～500mg, classi Brass, Stainless Steel	

Liat of measring equipment (Key operation center)

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
15	Gauge Blocks	ブロックゲージ	112 pcs. JIS B7506 class 0 with accessories	
16	Electronic comparator (Electronic micrometer)	デジタル電子測微器	Measuring range:250mm Resolution: 0.01μm	
17	Gauge Blocks	ブロックゲージ	112 pcs. JIS B7506 class 1 with accessories	
18	Master for Height	デジタルハイトマスター	Range: 5 to 610mm	
	Caliper Checker	キャリパチェッカー	Range: 600mm	
	Dial gauge checker	ダイヤルゲージチェッカー	Range:25mm, Graduation:0.001mm	
	Depth Micrometer checker	ﾃﾞﾌﾟｽ･ﾏｲｸﾛﾒｰﾀｰ･ﾁｪｯｶｰ	Range: 0 to 300mm	
	Inside Micrometer Checker	内側ﾏｲｸﾛﾒｰﾀｰ･ﾁｪｯｶｰ	Range: 25 to 300mm	
	Height Gauge	ハイトゲージ	Measuring Range: 0 to 600mm	
	Dail Gauge	ダイヤルゲージ	Measuring Range: 0 to 5mm Graduation: 0.01mm	5 sets
	Degimatic Indicator	デジタルインジケータ	Measuring Range: 0 to 12mm Resolution: 0.001mm	2 sets

Liat of measring equipment(Key operation center)

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Cylinder Gauge	シリンダゲージ	Measuring Range:7-10mm (6pcs.) 10-18mm (8pcs.)	2 sets
	Standard Outside Micrometer	標準外側マイクロメーター	Measuring Range: 0 to 25mm 25 to 50mm 50 to 75mm 75 to 100mm	
	Digimatic Standard Outside Micrometer	ﾃﾞｼﾞﾀﾙ標準外側ﾏｲｸﾛﾒｰﾀｰ	Measuring Range: 0 to 25mm 25 to 50mm 50 to 75mm 75 to 100mm	
	Rod Inside Micromete	棒形内側マイクロメーター	Measuring Range: 50 to 300mm 25mm step, 10pcs	
	Indicating Micrometer	指示マイクロメーター	Measuring Range: 0 to 25mm 25 to 50, 50 to 75, 75 to 100	
	Electronic Micrometer	電子マイクロメーター	Measuring Range: 0 to 25mm 25 to 50, 50 to 75, 75 to 100 Graduation: 0.01mm Instrumental error: ± 3μm	
	Digimatic Bench Micrometer	ﾃﾞｼﾞﾏﾁｯｸ･ﾍﾞﾝﾁ･ﾏｲｸﾛﾒｰﾀｰ	Measuring Range: 0 to 50mm Resolution: 0.001mm	
	Digimatic Caliper	デジマチック・キャリパー	Measuring Range: 0 to 200mm Resolution: 0.01mm	3 sets
	Standard Caliper	M形標準ノギス	Measuring Range: 0 to 200mm Vernier scale: 0.05mm	3 sets

Liat of measring equipment(Key operation center)

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Dial Caliper	ダイヤルノギス	Measuring Range: 0 to 200mm Graduation: 0.01mm	2 sets
23	Standard Scale	標準直尺	Range: 1m, Graduation: 1mm Flat shape, brass	
24	Comparator	直尺比較器	Range: 1m, Graduation: 1mm Accuracy: 3 μm	
25		標準直尺	Range: 1m, Graduation: 1mm Flat shape, brass	
26	Comparator	直尺比較器	Range: 1m, Graduation: 1mm Accuracy: 3 μm	
31	Standard Tape Measure	標準巻尺	Measuring Range: 100m JIS class 1, Steel	
32				
33	Standard Tape Measure	標準巻尺	Measuring Range: 20m JIS class 1, Steel	
34				
41	Standard Wedge Angle Block	標準角度ゲージブロック	Measuring Range: 0 to 90° Angle Accuracy: 3", 12 pcs.	
42	Autocollimeter& Polygon Mirror	オートコリメーター及び ポリゴン鏡	Measuring Range: 30' of arc Minimum Reading: 0.5" of arc Type: 12 faces	

Liat of measring equipment(Key operation center)

Length

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
43	Autocollimeter& Polygon Mirror	オートコリメーター及び ポリゴン鏡	Measuring Range: 30' of arc Minimum Reading: 0.5" of arc Type: 12 faces	
	Master for Square	スコヤマスター	Measuring Range: 0 to 450mm Straightness: 3.5μm Squareness: 9μm	
	Surface Roughness Tester	表面あらさ計	Measuring Range: 0 to 300 μm	
	Optical Parallel	オプチカルパラレル	Diameter: 30mm Thickness: 12.0, 12.12, 12.23, 12.27mm Parallelism: 0.2μm	
	Optical Flat	オプチカルフラット	Diameter: 45mm Thickness: 12mm Flatness: 0.2μm	3 kinds
	Profile projector	万能投影機	Diameter: 600mm	
	Precision Level	精密水準器	Size: 300mm Accuracy: ±0.2mm/1m	2 sets
	Base Plate	精密石定盤	Size: 300x 300x 100 JIS B7513 class 0	2 sets
	Base Plate	精密石定盤	Size: 2000x 1500x 300 JIS B7513 class 00	2 sets

List of mesuring equipment(Key operation center)

Temperature

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
14	Standard Resistance Thermometer	標準白金測温抵抗体	Range: 13.81K to 231.91 ℃ Range: 90.188K to 630.74℃	
15	Silicon Bath	シリコンバス		
16	Standard Resistance Thermometer	標準白金測温抵抗体	Range: 13.81K to 231.91 ℃ Range: 90.188K to 630.74℃ Range: 90.188K to 961.93℃	
17	Saltpeter Bath			
	Oil Bath			
	Water Bath			
18				
23	Standard Thermocouple	標準熱電対	Max.Temperature: 1064.43℃	
24	Standard Thermocouple	標準熱電対	Max.Temperature: 1064.43℃	
	Ice Maker	製氷器		
	Ice Crusher	砕氷器		

List of measuring equipment (Key operation center)

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
5				
511	Power Source	電力電源	Output(V): 0.01mV to 1200V Output(A): 6mA to 0.5A	3 sets
512	Digital Power Meter	デジタル電力計	Range(V): 3 to 600V Range(A): 100mA to 30A	2 sets(single phase) 2 sets(three phase)
513	Digital Multimeter	デジタルマルチメーター	Range: ±100mV to ±1000V(DC) Range: 1V to 500V(AC)	2 sets
6				
611	Digital LCR Meter	デジタルＬＣＲメーター	Range(L): 100nH to 1000H Range(C): 1pF to 1F	3 sets
612	Standard Capacitance	標準容量	Capacitance: 1pF, 10pF, 100pF, 1000pF	
613	Standard Capacitance	標準容量	Capacitance: 0.01μF, 0.1μF, 1μF	
1				
11				
111	Standard Cell	標準電池	Electromotive Force: 1.0193V at 20℃ Accuracy: ±50ppm	with Thermal control Water Bath 2 sets

List of measuring equipment(Key operation center)

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
112	Channel Switch for Standard Cell	標準電池切換器	Max. Generation of Terminal EMFs: ≧0.01μV	
113	Voltage Standard	電圧標準	Voltage: 10V, 1.018V, 1V Stability: ±0.5 ～±12.0ppm	
114	Multimeter	マルチメーター	DC V: ±100mV ～±1000V Accuracy: 0.01%	1 sets
2				
21				
211	AC/DC Voltage and Current Supply	交流／直流電圧電流電源	Output(V): 0 to 1100V (AC, DC) Output(A): 0 to 2A(DC) 0 to 2A(AC 10Hz to 50kHz)	
212	Power Amplifier	電力増幅器	Output: 20A (AC, DC) Accuracy: 0.025%	
213	Current Shunt	電流抵抗	Range: 200μA to 100A(AC/DC) Accuracy: ±0.01%	
214	Differencial Voltmeter	差動電圧計	Range: 1V to 1000VDC Accuracy: ±25ppm	
22				
221	AC Standard Voltage Source	交流電圧標準	Max. Voltage: 120V(10Hz-1MHz) Accuracy: 1 nV to 100μV	

List of measuring equipment(Key operation center)

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
222	Power Amplifier	電力増幅器	Output: 100 to 1099.99V Resolution: 1mV	
223	AC/DC Comparator	交流直流比較器	Range(V): 225mV to 1100V(RMS) Range(F): DC, 10Hz to 100MHz	
224 23	Digital Voltmeter	デジタル電圧計	Range: 200mV to 1000V Resolution: 1 μV	
231	AC/DC Voltage and Current Supply	交流／直流電圧電流電源	Output(V): 0 to 1100V (AC, DC) Output(A): 0 to 2A(DC) 0 to 2A(AC 10Hz to 50kHz)	
232	Power Amplifier	電力増幅器	Output: 20A (AC, DC) Accuracy: 0.025%	
233	Current Shunt	電流抵抗	Range: 200μA to 100A(AC/DC) Accuracy: ±0.01%	
234	Differencial Voltmeter	差動電圧計	Range: 1V to 1000VDC Accuracy: ±25ppm	
3				
311	Standard Resistor	標準抵抗	Resistance: 1 Ω Accuracy: 0.0005%	1 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±1ppm	1 sets

List of measuring equipment(Key operation center)

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Resistor	標準抵抗	Resistance: 0.001 Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.01Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.1 Ω Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 100kΩ Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 10Ω Accuracy: ±0.02%	1 sets
	Standard Resistor	標準抵抗	Resistance: 100 Ω Accuracy: ±0.002%	1 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±0.005%	1 sets
312	Oil Bath	油槽	Range: 0 to 65℃ Stability: 0.002℃	1 sets
313	Resistance Transfer Standard	抵抗交換標準	Standard Value: 1kΩ/step Transfer Accuracy:±1ppm	1 sets
	Resistance Transfer Standard	抵抗交換標準	Standard Value: 10 kΩ/step Transfer Accuracy:±1ppm	1 sets
	Resistance Transfer Standard	抵抗交換標準	Standard Value: 100kΩ/step Transfer Accuracy:±1ppm	1 sets

List of measuring equipment(Key operation center)

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
4				
411	Current Source	電流電源	Output Range: 0 to 200A Drift: 0.03%	
412	Switch	切換器	Max.Current: 100A Max.Switching Frequency: 0.5Hz	
413	Direct Current Comparator Resistance & Temperature Bridge(DCCB)	D C C B	Range:10^{-6} to $10^{9}\Omega$ Accuracy: ±0.2ppm Stability:±0.2ppm	
414	Standard Resistor	標準抵抗	Resistance: 1 Ω Accuracy: 0.0005%	1 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±1ppm	1 sets
	Standard Resistor	標準抵抗	Resistance: 0.001 Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.01Ω Accuracy: ±0.02%	2 sets
	Standard Resistor	標準抵抗	Resistance: 0.1 Ω Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 100kΩ Accuracy: ±0.002%	2 sets
	Standard Resistor	標準抵抗	Resistance: 10Ω Accuracy: ±0.02%	1 sets

List of measuring equipment (Key operation center)

Electrical

No	Equipment Name(Eng.)	Equipment Name(Jpn.)	Specification	Remarks
	Standard Resistor	標準抵抗	Resistance: 100 Ω Accuracy: ±0.002%	1 sets
	Standard Resistor	標準抵抗	Resistance: 10 kΩ Accuracy: ±0.005%	1 sets
415	Extender	エクステンダー	Ratio: 1000:1/100:1/10:1 Max. Input Current:100A(1000:1)	

MEASUREMENT LAW, JAPAN

(Law No. 51, 1992)

(Promulgated on 20, may 1992)

National Research Laboratory
of Metrology, JAPAN

Contents

MEASUREMENT LAW, JAPAN

Chapter I General Provisions

(Purpose)

Article 1 The purpose of this Law is to establish the standards of measurement and secure administration of proper measurement and thereby to contribute toward the development of economy and uplifting of culture.

(Definition, Etc.)

Article 2 The term "measurement" as used in this Law shall mean to measure the following matters (Hereinafter referred to as "quantity of the state of physical phenomena") and the term "measuring units" shall mean the standards for measurement :

(1) Length, mass, time, electric current, temperature, amount of substance, luminous intensity, angle, solid angle, area, volume, angular velocity, angular acceleration, velocity, acceleration, frequency, rotational frequency, wave number, density, force, moment of force, pressure, stress, viscosity, kinematic viscosity, work, power, mass flow rate, flow rate, quantity of heat, thermal conductivity, specific heat capacity, entropy, quantity of electricity, electric field strength, voltage, electromotive force, capacitance, magnetic field strength, magnetmotive force, magnetic flux density, magnetic flux, inductance, electric resistance, electric conductance, impedance, active power, reactive power, apparent power, active energy, reactive energy, apparent energy, attenuation of electromagnetic wave, electric power density of electromagnetic wave, radiant intensity, luminous flux, luminance, illuminance, sound power, sound pressure level, oscillating acceleration level, concentration, neutron emission rate, radioactivity, absorbed dose, absorbed dose rate, kerma, kerma rate, exposure,

exposure rate, dose equivalent or dose equivalent rate ;

(2) Linear density, specific gravity and others prescribed by Cabinet Order.

2. The term "transaction" as used in this Law shall mean any act in business, irrespective of compensation or not, for the purpose of supply of goods or services and the term "certification" shall mean to express to other persons, in public or in business, that a certain fact is true.

3. The measurement, prescribed by Cabinet Order for the prevention of impairments of human lives or properties with respect to driving carriages or ships or to handling explosives, gases and other dangerous materials shall be deemed to be certification in the application of this Law.

4. The term "measuring instruments" as used in this Law shall mean appliances, machines or equipment used for measurements and the term "specified measuring instruments" shall mean measuring instruments used in transaction or certification, or supplied chiefly for the life of general consumers and prescribed by Cabinet Order as being necessary to establish the standards with respect to the construction or the instrumental error for the purpose of securing performance of proper measurements.

5. The manufacture of measuring instruments in this Law shall include remodelling prescribed by the Minsistry of International Trade and Industry Ordinance and the repair of measuring instruments shall include remodelling other than that prescribed by the same Minsistry of International Trade and Industry Ordinance.

6. The term "reference material" as used in this Law shall mean a material attached with the specified value of the quantity of the state of physical phenomena prescribed by Cabinet Order and used for measurements of instrumental errors of measuring instruments for measuring the same quantity of the state of the physical phenomena.

7. The term "calibration of a measuring instrument" as used in this Law shall mean to

measure the difference between the quantity of the state of physical phenomena which the measuring instrument indicates and the specified quantity of the state of the physical phenomena, as the standard of the measuring instrument, which the measuring instruments pertaining to the specification prescribed in Article 134 Paragraph 1. or the refernce material manufactured by use of the appliances, machines or equipment pertaining to the specification prescribed by the same Paragraph, represent.

8. The term "valuing of a reference material" as used in this Law shall mean to revise the value of the quantity of the state of physical phenomena given to the reference material by measuring the difference between that quantity of the state of physical phenomena and the specified quantity of the state of the physical phenomena, as the standard of the measuring instrument, which the reference material manufactured by use of the appliances, machines or equipment pertaining to the specification prescribed in Article 134 Paragraph 1, represents.

Chapter II Measuring Units

(Measuring Units relating to the International System of Units)

Article 3 The measuring units of the quantities of the state of physical phenomena enumerated in the left column of Table I among the quantities of the state of physical phenomena enumerated in Paragraph 1 Item (1) of the preceding Article are as listed up in the right column of the same Table and the definition of them shall be prescribed by Cabinet Order according to the Resolution of the General Conference on Weights and Measures and other international decisions and customs relating to the measuring units.

(Other Measuring Units)

Article 4 The measuring units of the quantities of the state of physical phenomena enumerated in the left column of Table II besides the quantities of the state of physical phenomena prescribed in the preceding Article are as listed up in the right column of the same Table and the definitions of them shall be prescribed by Cabinet Order.

2. The measuring units of the quantities of the state of physical phenomena in the left column of TableIII of the ones enumerated in the left column of TableI besides the measuring units prescribed in the preceding Article are as listed up in the right column of the same Table and the definitions of them shall be prescribed by Cabinet Order.

Article 5 Besides the measuring units prescribed in the two preceding Articles the decimal multiples and sub-multiples of these measuring units and the definitions of them shall be prescribed by Cabinet Order.

2. Besides the measuring units prescribed in the two preceding Articles and the preceding Paragraph. the measuring units of length. mass. angle. area. volume. velocity. acceleration. pressure or quantity of heat used for length measurement in navigation as well

as for special measurement prescribed by Cabinet Order and the definitions of them shall be prescribed by Cabinet Order.

(Measuring Units of Linear Density, Etc.)

Article 6 The measuring units of the quantities of the state of physical phenomena enumerated in Article 2 Paragraph 1 Item 2 and the definitions of them shall be prescribed by Cabinet Order.

(Symbols)

Article 7 The symbols of the measuring units prescribed in Article 3 through the preceding Article and which ought to be typical in the expression by use of the symbols of measuring units shall be prescribed by the Ministry of International Trade and Industry Ordinance.

(Prohibition against Use of Non-legal Measuring Units)

Article 8 The measuring units (Hereinafter referred to as non-legal measuring units) other than the measuring units (Hereinafter referred to as legal measuring units) prescribed in Article 3 through 5 shall not be used for transaction or certification with respect to the quantities of the state of physical phenomena enumerated in Article 2 Paragraph 1 Item 1.

2. The measuring units prescribed in Cabinet Order under Article 5 Paragraph 2 shall not be used for transaction or certification unless they are used for transaction or certification relating to special measurement prescribed in Cabinet Order under the same Paragraph.

3. The provisions in two preceding Paragraphs shall not apply to the following transaction or certification :

(1) Transaction or certification of goods to be exported ;

(2) Transaction or certification relating to import of goods ;

(3) Transaction or certification prescribed by Cabinet Order which are mutually performed

between any persons having no address or no place to continuously stay in Japan and any other persons prescribed by Cabinet Order, and between any of these persons and any other persons.

(Measuring Instruments Graduated with Non-Legal Measuring Units)

Article 9 Measuring instruments used for measurements of the quantity of the state of physical phenomena enumerated in Article 2 Paragraph 1 Item 1 and graduated or marked with non-legal measuring units shall not be sold or exposed for sale. Measuring instruments, graduated or marked with measuring units prescribed by Cabinet Order under Article 5 Paragraph 2, other than the ones prescribed by the Ministry of International Trade and Industry Ordinance as being used exclusively for special measurements prescribed by Cabinet Order under the same Paragraph shall be handled in the same manner.

2. The provisions of the preceding Paragraph shall not apply to measuring instruments to be exported and others prescribed by Cabinet Order.

Chapter III Performance of Proper Measurement

Section 1 Accurate Measurement

Article 10 Any person who measures the quantity of the state of physical phenomena in transaction or certification by use of legal measuring units shall make efforts to accurately measure the quantity of the state of physical phenomena.

2. When the governor of Prefecture or the head of the city, town, village or special ward(Hereinafter referred to as "specified city, town or village") admits that inobservance of the provisions in the preceding Paragraph by a person prescribed in the same Paragraph may constitute a remarkable hindrance to preservation of the performance of proper measurement, he may recommend the person to take necessary measures. Provided, however, that this shall not apply in case that he may recommend the person according to the provisions of Article 15 Paragraph 1.

3. The governor of Prefecture or the head of the specified city, town or village may publish to the same effect in case that he has made recommendation to a person by the provisions of the preceding Paragraph and the recommended person will not follow him.

Section 2 Measurement relating to Sale of Commodities

(Declaration of Length, Etc)

Article 11 Any person who engages in the business of sale for commodities which are suitable for sale by measuring length, mass or volume shall make efforts to sell such commodities

indicating the length. mass or volume in legal measuring units.

(Measurement of Specified Commodities)

Article 12 When any person who engages in the business for sale of commodities prescribed by Cabinet Order(Hereinafter referred to as "specified commodities") sells the specified commodities by indicating the quantity of the state of specified physical phenomena (Meaning the quantity of the state of physical phenomena prescribed by Cabinet Order for each specified commodities. Hereinafter the same) in legal measuring units. he shall measure the quantity of the state of specified physical phenomena so as not to exceed the error prescribed by Cabinet Order(Hereinafter referred to as "quantity tolerance")

2. When any person who engages in the business for sale of specified commodities prescribed by Cabinet Order sells the specified commodities put into a container. the person shall declare the quantity of the state of specified physical phenomena in the legal measuring unit on the container in accordance with the provisions of the Ministry of International Trade and Industry Ordinance.

3. The provisions in two preceding Paragraph shall not apply to the quantities of the state of physical phenomena declared by the provisions of the following Article Paragraph 1 or 2. or Article 14 paragraph 1 or 2. Provided. however. that in case that the container or package or any seal affixed thereto has been broken. this shall not apply.

(Declaration of the Quantity of the State of Physical Phenomena relating to Sealed-up Specified Commodities)

Article 13 When a person who engages in the business of sale for specified commodities prescribed by Cabinet Order seals up (Meaning not to allow the increase or decrease of quantity of the relevant state of physical phenomena without breaking the container or package. or seal affixed thereto after the commodity is put into the container or packed. Hereinafter the same.) the specified commodities as to the quantity of the state of specified physical phenomena. he shall measure the quantity of the state of specified physical phenomena so as not to exceed the quantity tolerance and declare this on the

container or package by the provisions of the Ministry of International Trade and Industry Ordinance.

2. When any person who engages in the business of sale for specified commodities other than the specified commodities prescribed by Cabinet Order under the preceding Paragraph. seals up the specified commodities as to the quantity of the state of the specified physical phenomena and declares the quantity of the state of the specified physical phenomena in the legal measuring unit on the container or the package. he shall measure the quantity of the state of the specified physical phenomena to be declared so as not to exceed the quantity tolerance and declare it by the Ministry of International Trade and Industry Ordinance under the same Paragraph.

3. The declaration by the provisions of the two preceding Paragraphs shall include the name or title as well as the address of the person who declares them.

(Declaration of Quantity of State of Specified Physical Phenomena relating to Import of Specified Commodities)

Article 14 When any person who enagages in the business of import for specified commodities prescribed by Cabinet Order under the preceding Article Paragraph 1 imports and sells the specified commodities sealed up as to the quantity of the state of specified physical phenomena. he shall sell the commodities whose quantity of the state of specified physical phenomena is measured so as not to exceed the quantity tolerance and is indicated on the container or the package as prescribed by the Ministry of International Trade and Industry Ordinance.

2. The provisions of the preceding Paragraph shall apply correspondingly. in case any person who engages in the business of import for specified commodities other than the specified commodities prescribed by Cabinet Order under the preceding Article Paragraph 1. imports and sells the specified commodities sealed up as to the quantity of the state of the specified physical phenomena. when he sells the ones of which quantity of the state of

specified physical phenomena is declared in the legal unit on the container or the package.

3. The provisions of the preceding Article Paragraph 3 shall apply correspondingly to the declaration as prescribed of the two preceding Paragraphs. In this case "person who declares" in the same Article Paragraph 3 shall read "person who engages in the business of import".

(Recommendation. Etc)

Article 15 When the governor of Prefecture or the head of the specified city. town or village admits that the benefit of persons who buy the relevant specified commodities. may be likely to be damaged. because of inobservance by a person prescribed by Article 12 Paragraph 1 or 2. of these provisions. also inobservance by a person prescribed by Article 13 Paragraph 1 or 2. of the provisions of each Paragraph of the same Article or inobservance by a person prescribed by the preceding Article Paragraph 1 or 2. of the provisions of each Paragraph of the same Article. he can recommend these persons to take necessary measures.

2. The governor of Prefecture or the head of specified city. town or village can publish to the effect in case that he has made the recommendation as prescribed in the preceding Paragraph when the recommended person will not follow him.

3. The governor of Prefecture or the head of specified city. town or village can. when a person who has been recommended as prescribed in Paragraph 1 because of inobservance of the provisions of Article 12 Paragraph 1 or 2. or Article 13 paragraph 1 or 2. does not take the measures relating to the recommendation without justificatory reasons. order the person to take the measures relating to the recommendation.

Section 3 Use of Measuring Instruments, Etc

(Restrictions on Use)

Article 16 Those coming under any one of the following items (excluding the ship of which the draft is taken for measurement of mass of the loaded goods and the specified measuring instruments prescribed by Cabinet Order) shall not be used or possessed for making use thereof for the purpose of measurements (including measurements by the measuring units as prescribed in the Ministry of International Trade and Industry Ordinance under Article 6 of the quantities of the state of physical phenomena enumerated in Article 2 Paragraph 1 Item (2) and prescribed by Cabinet Order. The same in Article 18. Article 19 Paragraph 1 and Article 151 paragraph 1) in the transaction or certification by the legal measuring units :

(1) Non-measuring instruments

(2) Specified measuring instruments other than the following specified measuring instruments enumeated

a) Specified measuing instruments which were submitted to the verification to be executed by the Minister of International Trade and Industry, the governor of Prefecture, Japan Electric Meters Inspection Corporation or a person designated by the Minister of International Trade and Industry (Hereinafter referred to as "designated verification body") and attached with the verification mark of Article 72 Paragraph 1 as being acceptable thereto.

b) Specified measuring instruments which the person designated by the Minister of International Trade and Industry manufactured and attached with the declaration of Article 96 Paragraph 1 (Including the case which applies correspondingly in Article 101 Paragraph 3. The same in the following item.)

(3) Specified measuring instruments prescribed by Cabinet Order under Article 72 Paragraph 2 and attached with the verification mark in the same Article Paragraph 1 or the dec-

laration (Hereinafter referred to as "verification mark. etc.") of Article 96 Paragraph 1 but of which the term of validity of the verification mark. etc. has expired.

2. An electric meter together with a transformer shall not be used or possessed for making use thereof for the purposes of measurements in the legal measuring units for transaction or certification. unless the electric meter which was submitted to the inspection to be executed by the Minister of International Trade and Industry. Japan Electric Meters Inspection Corporation or a designated verification body as to the electric meter (Meaning a specified measuring instrument used for measurement in the legal measuring units in transaction or certification of electricity and prescribed by Cabinet Order. Hereinafter the same.) and a transformer used therewith (Hereinafter reffered to as "inspection of electric meter with transformer") and which is attached with the matching number of Article 74 Paragraph 2 or 3 (Hereinafter referred to simply as "matching number") as being acceptable. should be used together with a transformer affixed with the same matching number.

3. Specified measuring instruments used by fixing to carriages or other machines or appliances and prescribed by Cabinet Order (Hereinafter simply refferred to "measuring instruments for fixing to carriages. etc.") shall not be used or possessed for making use thereof by the legal measuring units in transaction or certification. unless they were submitted to the inspection in the state fixed to machines or appliances (Hereinafter referred to as "fixing inspection") which the Minister of International Trade and Industry. the governor of Prefecture or an designated verification body executes and are affixed with the fixing inspection mark (Limited to the ones of which the term of validity does not elapse.) of Article 75 Paragraph 2 as being qualified.

(Use of Specified Container)

Article 17 The provisions of the preceding Article paragraph 1 shall not apply to the specified containers in case that any person designated by the Minister of International Trade

and Industry sells the commodities prescribed by Cabinet Order by volume in the legal measuring units. which are filled up to the height prescribed by the Ministry of International Trade and Industry Ordinance in the specified container (Meaning a transparent or semitransparent container prescribed by the Ministry of International Trade and Industry Ordinance. Hereinafter the same.) which he has manufactured. belonging to the type prescribed by the Ministry of International Trade and Industry Ordinance and affixed with the declaration under Article 63 Paragraph 1. (Including the case which applies correspondingly in Article 69 Paragraph 1. The same in the following paragraph.)

2. When a specified commodities relating to the specified container is not filled up to the height prescribed by the Ministry of International Trade and Industry Ordinance under the preceding Paragraph in the specified container affixed with the declaration under Article 63 Paragraph 1. the commodity shall not be sold. In case. however. that the purport that the said volume does not depend on the volume declared by the provisions of the same Article Paragraph 2 (Including the case which applies correspondingly in Article 69 Paragraph 1) is clearly represented. this shall not apply.

(Limitation on How to Use. Etc.)

Article 18 A specified measuring instrument. which does not allow the accurate measurement. unless it is used according to a specified method or for measurement of a specified subject or within a certain range and which is prescribed by Cabinet Order. shall not be used for the purpose of measurements by legal measuring units in transaction or certification. unless used as prescribed by Cabinet Order.

Section IV Periodic Inspection

(Periodic Inspection)

Article 19 The person who uses any specified measuring instrument (Excluding the ones prescribed by Cabinet Order under Article 16 Paragraph 1 or Article 72 Paragraph 2)which is admitted that the periodic inspection on its performance and instrumental error is suitable for it. judging from the construction. working conditions. working situations. etc. and which is prescribed by Cabinet Order. for the purpose of measurement by legal measuring units in transaction or certification. shall receive the periodic inspection on the said specified measuring instrument. conducted by the governor of Prefecture (or the head of a specified city. town or village. in case that the location is in the area of a specified city. town or village.) who exercises jurisdiction over the location of his business place (or his address. in case he has no place of business). Provided. however. that the same shall not apply to the following specified measuring instruments :

(1) Specified measuring instruments which a person who has received the registration of Article 107. uses for certification on measurements. (Hereinafter referred to as "measurement certification")

(2) Specified measuring instruments which a person who has received the accreditation under Article 127 Paragraph 1 uses in the business place relating to the accreditation (Excluding the ones enumerated in the preceding Item)

(3) Specified measuring instruments (Excluding the ones enumerated in the two preceding Articles) which are affixed with a periodic inspection mark. verification mark. etc. of Article 24 Paragraph 1 or a measurement certification inspection mark under Article 119 Paragraph 1. the year and month (Limited to only the ones declared by the provisions of Article 72 Paragraph 3 or Article 96 Paragraph 3. as to the year and month declared on the verification mark. etc.) declared on which does not pass the period prescribed for each specified measuring instrument by Cabinet Order starting from the first of the following month thereof on the date of execution (Hereinafter referred to as "executive term") of the periodic inspection published by the provisions of

Article 21 paragraph 2.

2. The person who has been designated under Article 127 Paragraph 1 shall make a certified measurer, prescribed by Article 128 Paragraph 1, inspect, once during the period prescribed by Cabinet Order under Article 21 Paragraph 1, whether the specified measuring instruments (Excluding the ones enumerated in the preceding Paragraph Item 1) prescribed by Cabinet Order under the preceding Paragraph and used in the business place relating to the designation, conform to all the items of Article 23 Paragraph 1 by the method prescribed by the Ministry of International Trade and Industry Ordinance under the same Article Paragraph 2 and 3.

(Designated Periodic Inspection Body)

Article 20 The governor of Prefecture or the head of a specified city, town or village may make a designated person (Hereinafter referred to "as designated periodic inspection body") execute the periodic inspection.

2. When the governor of Prefecture or the head of a specified city, town or village has decided to make the designated periodic inspection body execute the whole or a part of the periodic inspection service (Hereinafter referred to as "inspection service" in this chapter), he shall refrain from the whole or a part of the said inspection service.

(Time of Performing Periodic Inspection)

Article 21 The periodic inspection shall be performed once in the period of more than one year prescribed by Cabinet Order for each specified measuring instruments in each district.

2. The governor of Prefecture or the head of a specified city, town or village shall publish, not later than one nonth before the time of performance, the district where the periodic inspection is performed, the target specified measuring instruments, the time ahd place of performance and in case that he intends to make a designated periodic inspection body perform this in accordance with the provisions of the preceding Article Paragraph 1, the name of the said designated periodic inspection body.

3. In case a person who is unable to receive the periodic inspection on the date of per-

formance due to illness. trip or other unavoidable reason. has notified the same beforehand to the governor of Prefecture or the head of a specified city. town or village. the periodic inspection of the specified measuring instruments relating to the notification shall be performed on the date designated by the governor of Prefecture or the head of the specified city. town or village within the extent not exceeding one month from the date of notification in the place designated by the said governor or the said head.

(Prior Investigation)

Article 22 When the governor of Prefecture has performed public notice as to the periodic inspection under the provisions of the preceding Article Paragraph 2. the head of the city. town or village in the district where the said periodic inspection is performed. shall investigate the number of the target specified measuring instruments and report it to the said governor of Prefecture under the provisions of the Ministry of International Trade and Industry Ordinance.

(Conditions for Qualification of Periodic Inspection)

Article 23 When the measuring instruments which has received the periodic inspection conforms to the following Items. the same shall be regarded as qualified.

(1) That there is the verification mark affixed.

(2) That the performance conforms to the technical requirements prescribed by the Ministry of International Trade and Industry Ordinance.

(3) That the instrumental error does not exceed the in-service tolerance prescribed by the Ministry of International Trade and Industry Ordinance

2. Whether or not the measuring instrument conforms to the preceding Paragraph Item 2 shall be determined by the method prescribed by the Ministry of International Trade and Industry Ordinance.

3. Whether or not the measuring instrument conforms to Paragraph 1 Item 3 shall be determined by the method prescribed by the Ministry of International Trade and Industry

Ordinance by use of the measuring instrument (As to the instrumental error of the specified measuring instrument prescribed by the Ministry of International Trade and Industry Ordinance under Article 71 paragraph 3. reference material prescribed by the Ministry of International Trade and Industry Ordinance under the same Paragraph) which has passed the inspection of the verification standards.

(Periodic Inspection Mark)

Article 24 The specified measuring instrument which has passed the periodic inspection shall be affixed with a peiodic inspection mark under the Ministry of International Trade and Industry Ordinance.

2. The periodic inspection mark under the preceding Paragraph shall be declared with the year and month in which the said periodic inspection has been performed.

3. When the measuring instrument which has failed in the periodic inspection bears a verification mark. etc. such mark. etc. shall be removed.

(Inspection by Certified Measurer in Place of Periodic Inspection)

Article 25 When the person who uses the specified measuring instrument which should receive the periodic inspection under the provisions of Article 19 paragraph 1. which has been inspected by the certified measurer prescribed by the Ministry of International Trade and Industry Ordinance in accordance with the classification of the measuring instrument. by the method prescribed by the Ministry of International Trade and Industry Ordinance under Article 23 Paragraph 2 and 3 within the period prescribed by Cabinet Order under Article 19 Paragraph 1 Item 3 before the date of performance of the periodic inspeciton. and which is affixed with the declaration under the provisions of Paragraph 3. has notified the same effect as to such a measuring instrurment to the governor of Prefecture or the head of the specified city. town or village who has jurisdiction over the location of his place of business. such a notified measuring instrument shall not be required to receive the relevant periodic inspection notwithstanding the provisions of the same Article.

2. The notification under the provisions of the preceding Paragraph shall be made togther with the certification granted under the provisions of next Paragraph in accordance with the provisions of the Ministry of International Trade and Industry Ordinance.

3. The certified measurer who has performed the inspection in Paragraph 1 can, when the specified measuring instrument conforms to all the Items of Article 23 Paragraph 1, grant a certificate bearing to the same effect to the person who uses the specified measuring instrument and affix the declaration and the date of the inspection on the specified measuring instrument by the method prescribed by the Ministry of International Trade and Industry Ordinance.

Section 5 Designated Periodic Inspection Body

(Designation)

Article 26 The designation of Article 20 Paragraph 1 shall be performed by an application from a person who intends to perform the inspection service.

(Disqualification)

Article 27 The person who falls under any one of the following items shall not obtain the designation under Article 20 Paragraph 1 :

(1) Any person who has been sentenced to a fine or heavier penalty by violating this Law or any order based on this Law and has not yet passed two years from the date of completion of the execution of such penalty or the date on which such execution has been remitted.

(2) Any person whose designation was cancelled under the provisions of Article 38 and has not yet passed two years from the date of such cancellation.

(3) Any corporation who has any one director, of those who execute the business, falling under any one of the following Items :

a) A person who conforms to Item (1)

b) A person who has been dismissed by the Order under the provisions of Article 35 and has not yet passed two years from the date of dismissal

(Criteria of Designation)

Article 28 The governor of Prefecture or the head of the specified city, town or village shall not make designation, unless the application for the designation under Article 20 Paragraph 1 is recognized to conform to the following Items :

(1) That the applicant makes the periodic inspection by use of appliances, machines or equipment ;

(2) That the persons having knowledge and experience which conform to the conditions prescribed by the Ministry of International Trade and Industry Ordinance performs the periodic inspection and the number of the persons thereof is more than those prescribed by the Ministry of International Trade and Industry Ordinance :

(3) That the applicant is a corporation established by the provisions of Civil Law Article 34 and the organization of directors or staff members is not likely to cause hindrance to the fair performance of the periodic inspection ;

(4) That in case of being engaged in the business other than the inspection business, the contents of the business is not likely to make the periodic inspection unfair ;

(5) That the applicant has a financial basis necessary for an appropriate and smooth performance of the inspection business ;

(6) That the designation does not prevent the periodic inspection relating to the application from an appropriate and smooth performance.

(Method of Periodic Inspection)

Article 29 When the designated periodic inspection body performs the periodic inspection, it

shall use appliances, machines or equipment prescribed by the preceding Article Item (1) and make the person prescribed by the same Article Item (2) perform the periodic inspection.

(Rules for Business)

Article 30 The designated periodic inspection body shall establish the rules for business for the inspeciton business (Hereinafter referred to as "Rules for Business") and obtain the approval thereof from the governor of Prefecture or the head of the specified city, town or village. When it is intended to make amendment thereto, the same shall apply.

2. The matters to be provided for the rules for business shall be prescribed by the Ministry of International Trade and Indusry Ordinance.

3. When the governor of Prefecture or the head of the specified city, town or village have recognized that the rules for business which was approved as mentioned in Paragraph 1 have come to be inappropriate for a fair performance of the periodic inspection, he may order to amend the rules for business.

(Entry in Book)

Article 31 The disignated periodic inspection body shall prepare for a book in accordance with the provisions of the Ministry of International Trade and Industry Ordinance and keep it by entering the matters concerning the periodic inspection prescribed by the Ministry of International Trade and Industry Ordinance.

(Suspension and Discontinuance of Business)

Article 32 The designated periodic inspection body shall not suspend or discontinue a part or the whole of the inspection business without obtaining the permission from the governor of Prefecture or the head of the specified city, town or village.

(Business Program, Etc.)

Article 33 The disignated periodic inspection body shall prepare the business program and the budget for revenue and expenditure for the business year and obtain the approval thereof

from the governor of Prefecture or the head of the specified city, town or village before the start of each business year. The same shall apply when it is intended to make any amendment thereto.

2. The designated periodic inspection body shall prepare the business report and the final accounts of the expenditure and revenue of the business year within three months after the lapse of each business year and shall submit them to the governor of Prefecture or the head of the specified city, town or village.

(Appointment and Dismissal of Officers)

Article 34 The appointment and dismissal of officers of the designated periodic inspection body shall not be validated unless the recognition thereof has been obtained from the governor of Prefecture or the head of the specified city, town or village.

(Order of Dismissal)

Article 35 The governor of Prefecture or the head of the specified city, town, or village may, when any officer of the designated periodic inspection body or any person prescribed by Article 26 Item 2 has violated this Law or the provisions of orders based on this Law, or the rules for business, order the designated periodic inspection body to dismiss such an officer or the person prescribed by the said Item.

(Status of Officers and Staff Members)

Article 36 The officers or staff members of the designated periodic inspection body who are engaged in official business in accordance with laws and ordinances in the case of application of the Criminal Code (Law No. 45, 1907) and other penal provisions.

(Order to Conform)

Article 37 The governor of Prefecture or the head of the specified city, town or village may, when it is recognized that any designated periodic inspection body has not come to conform to Item (1) through Item (5) of Article 28, order such body to take necessary measures to conform to these provisions.

(Cancellation of Designation. Etc.)

Article 38 The governor of Prefecture or the head of the specified city. town or village may. when the designated periodic inspection body falls under any one of following Items. cancel the designation or order the suspension of the whole or a part of the inspection business by fixing a period :

(1) When the designated periodic inspection body has violated the provisions of this section :

(2) When the designated periodic inspection body has come to fall under Article 27 Item (1) or (3) :

(3) When the designated periodic inspection body has performed the periodic inspection. not following the rules business approved by Article 30 Paragraph 1 :

(4) When the designated periodic inspection body has violated the provisions of Article 30 paragraph 3. Article 35 or the preceding Article ;

(5) When the designated periodic inspection body has received the designation of Article 20 Paragraph 1 by unfair means.

(Performance of Inspection Business by Governor of Prefecture)

Article 39 The governor of Prefecture or the head of the specified city. town or village shall perform the whole or a part of the inspection business for himself. when the designated periodic inspection body has suspended the whole or a part of the said inspection business by receiving the permission of Article 32. When he has ordered the designated periodic inspection body to suspend the whole or a part of the inspection business under the preceding Article or When he recognizes it necessary to do so in case that it has become hard that the designated periodic inspection body performs the whole or a part of the inspection business due to a natural disaster or other reasons.

2. When the governor of Prefecture or the head of the specified city. town or village performs the whole or a part of the inspection business under the provisions of the pre-

ceding Paragraph for himself, when the designated periodic inspection body has discontinued the whole or a part of the inspection business by receiving the permission of Article 32 or when the designation of the designated periodic inspection body has been cancelled by the provisions of the preceding Article, the succession of the inspection business and other necessary matters shall be prescribed by the Ministry of International Trade and Industry Ordinance.

Chapter IV

Supply of Accurate Specified Measuring Instruments, Etc.

Section 1 Manufacture

(Notification of Business)

Article 40 Any person who intends to engage in an enterprise of manufacture of the specified measuring instruments (Excluding a person who engages in the enterprise of manufacture of the specified measuring instruments used by himself only for the purpose other than measurements in transaction or certification) shall notify the following matters beforehand to the Minister of International Trade and Industry in accordance with the classification of the business prescribed by the Ministry of International Trade and Industry Ordinance (Simply referred to as "classification of enterprise" in Item (2))

(1) Name or title and address as well as the name of the representative in the case of a corporation ;

(2) Classification of enterprise ;

(3) Title and location of factory or enterprise agency intended for manufacturing the relevant specified measuring instruments ;

(4) Name, performance and number of appliances, machines or equipment for inspection o the relevant meauring instruments prescribed by the Ministry of International Trad and Industry Ordinance ;

2. The notification by the provisions of the preceding Paragraph shall be made by way o the governor of Prefecture in accordance with the Ministry of International Trade an Industry Ordinance in the case relating to the specified measuring instruments other tha electric meters.

(Succession)

Article 41 When the person who made notification by the provisions of the preceding Article Paragraph 1 (Hereinafter referred to as "notifying manufacturer") has assigned the whole of the business relating to the relevant notification or in case there has been a succession or amalgamation with respect to the manufacturer, the person who has been assigned the whole of the business or the heir (The elected heir in case that there are two or more heirs and the successor to the business has been elected by the unanimous consent of the whole heirs. Hereinafter the same.) or a corporation which continues to exist after amalgamation or a corporation which has come to existence in consequence of amalgamation shall succeed the status of the notifying manufacturer.

(Notification of Amendment, Etc.)

Aricle 42 In case that there be any change in the matters mentioned in Article 40 Paragraph 1 Item (1), (3) or (4), the notifying manufacturer shall without delay notify to the same effect to the Minister of International Trade and Industry.

2. In the case of the preceding Paragraph, the person who has succeeded the status of the notifying manufacturer by the provisions of the preceding Article shall submit a doocument evidencing such a fact.

3. The provisions of Article 40 Paragraph 2 shall apply correspondingly to the notification by the provisions of Paragraph 1.

(Duty for Inspection)

Article 43 A notifying manufacturer shall, when he has manufactured specified measuring instruments, inspect them in accordance with the specifications prescribed by the Ministry of International Trade and Industry Ordinance. Provided, however, that in case that a person who has received the designation of Article 16 Paragraph 1 Item (2) b) makes the inspection in accordance with the provisions of Article 95 Paragraph 2, this shall not apply.

(Order for Improvement)

Article 44 The Minister of Intenational Trade and Industry may. when he recognizes there is necessity for preservation of proper quality of the said specified measuring instruments. in case he recognizes that a notifying manufacturer has not inspected specified measuring instruments in accordance with the specifications prescribed by the Ministry of International Trade and Industry Ordinance under the preceding Article. order the notifying manufacturer to take necessary measures for improvement of appliances. machines or equipment for the inspection of the relevant specified measuring instruments or for improvement of the inspective method. Provided. however. that this shall not apply in the case of the proviso of the preceding Article.

(Notification of Abolition)

Article 45 The notifying manufacturer shall. when he has discontinued the business relating to the notification without delay notify to the same effect to the Minister of International Trade and Industry.

2. The provisions of Article 40 Paragraph 2 shall apply to the notification by the provisions of the preceding Paragraph.

Section 2 Repair

(Notification of Business)

Article 46 Any person who intends to engage in the business of repairing (Excluding slight repair prescribed by the Ministry of International Trade and Industry Ordinance. Hereinafter the same except Article 49 Paragraph 3) the specified measuring instruments (Excluding a person who engages in the business of repairing the specified measuring in-

struments used by himself only for the purpose other than measurements in transaction or certification) shall, in accordance with the classification of the business prescribed by the Ministry of International Trade and Industry Ordinance (Simply referred to as "classification of business" in Item (2)) notify the following matters beforehand to the Minister of International Trade and Industry in the case relating to electric meters and the governor of Prefecture who has the jurisdiction over the area including the location of the business place where the person itends to repair the said specified measuring instruments in the case relating to other specified measuring instruments. Provided, however, that this shall not apply in case that a notifying manufacturer intends to engage in the business of repairing the specified measuring instruments concerning the notification by the provisions of Article 40 Paragraph 1.

(1) Name or title and address as well as the name of the representative in the case of a corporation ;

(2) Classification of enterprise ;

(3) Name and location of the place of business intended to repair the specified measuring instruments ;

(4) Title, performance and number of appliances, machines or equipment for inspection of the said specified measuring instruments as prescribed by the Ministry of International Trade and Industry Ordinance.

2. The provisions of Article 41, Article 42 Paragraph 1 and 2 as well as the preceding Article Paragraph 1 shall apply to a person who has made the notification by the provisions of the preceding Paragraph. (Hereinafter referred to as "notifying repairer") In this case the term "Minister of International Trade and Industry" in Article 42 Paragraph 1 and the preceding Article Paragraph 1 shall be substituted for "the governor of Prefecture (For the Minister of International Trade and Industry in case of a notifying repairer of electric meters)"

(Duty for Inspection)

Article 47 The notifying manufacturer or the notifying repairer shall when he has repaired a specified measuring instrument. inspect the said specified measuring instrument in accordance with the specifications prescribed by the Ministry of International Trade and Industry Ordiance.

(Order of Improvement)

Article 48 The Minsister of International Trade and Industry or the governor of Prefecture may. when he recognizes there is necessity to preserve proper quality of the said specified measuring instruments in case that he recognizes that a notifying manufacturer or a notifying repairer has not inspeted them in accordance with the specifications prescribed by the Ministry of International Trade and Industry Ordinance under the preceding Article. order to take necessary measures to the notifying manufacturer or the notifying repairer as to the improvement of appliances. machines or equipment inspection of the said specified measuring instruments or the improvement of the method of inspection.

(Removal of Verification Mark. Etc.)

Article 49 Any person who has remodelled (Limited to "remodelling" prescribed by the Ministry of International Trade and Industry Ordinance under Article 2 Paragraph 5. The same in next Paragraph) or repaired a specified measuring instrument affixed with the verification mark.etc.. matching number of Article 74 Paragraph 2 or 3. or fitting inspection mark of Article 75 Paragraph 2. shall remove such a verification mark.etc.. matching number or fitting inspection mark. Provided. however. that in case that the notifying manufacturer or the notifying repairer has repaired the said specified measuring instruments or the person who has received the designation of Article 127 paragraph 1 has repaired specified measuring instruments used in the business place relating to the designation as prescribed by the Ministry of International Trade and Industry Ordinance. when the performance of the specified maeasuring instrument which has been repaired conforms to the

technical requirements prescribed by the Ministry of International Trade and Industry Ordinance and the insturmental error thereof does not exceed the in-service tolerance prescribed by the Ministry of International Trade and Industry Ordinance. this shall not apply.

2. Any person who has remodelled or repaired a specified measuring instrument affixed with the declaration of Article 84 Paragraph 1 (Including the case of corresponding application in Article 89 Paragraph 4) shall remove the declaration. Proveided.however. that this shall not apply in case that a notifying manufacturer or notifying repairer has repaired the said specified measuring instrument or the person who has received the designation of Article 127 Paragraph 1 has repaired the specified measuring instrument used in the business place relating to the designation as prescribed by the Ministry of International Trade and Industry Ordinance.

3. When any person who engages in the business of manufacture or repair of a transformer has remodelled or repaired (Excluding slight repair prescribed by the Ministry of International Trade and Industry Ordinance) a transformer affixed with matching number of Article 74 Paragraph 2. he shall remove the matching number.

(Repair relating to Specified Measuring Instrument having Term of Validity)

Article 50 When a notifying manufacturer of a notifying repairer has repaired. in accordance with the specifications prescribed by the Ministry of International Trade and Industry Ordinance. the specified measuring instrument prescribed by Cabinet Order under Article 72 Paragraph 2 and prescribed by Cabinet Order as requiring repair after lapse of a certain period. he may affix the declaration to this as prescribed by the Ministry of International Trade and Industry Ordinance.

2. The declaration in the preceding Paragraph shall bear the year when it has been repaired.

3. Any person shall not affix the declaration of the same Paragraph or any declaration

which is likely to be mistaken, excluding the case prescribed by Paragraph 1.

Section 3 Sale

(Notification of Business)

Article 51 Any person who intends to engage in the business of sale of the specified measuring instruments (Excluding the sale for export) prescribed by the Cabinet Order shall, in accordance with the classification of the business (Simply referred to as "classification of business" in Item (2)) prescribed by the Ministry of International Trade and Industry Ordinance, notify the following matters beforehand to governor of Prefecture who has the jurisdiction over the location of the business place wherein the person intends to carry out the business. Provided, however, that this shall not apply in case that a notifying manufacturer or a notifying repairer intends to carry out the business of sale for the specified measuring instruments relating to the notification prescribed by Article 40 Paragraph 1 or Article 46 Paragraph 1, which were manufactured or repaired by the said person :

(1) Name or title and address, as well as the name of the representative in the case of a juridical person ;

(2) Classification of enterprise ;

(3) Title and location of the business place intended for selling the relevant specified measuring instruments.

2. The provisions of Article 41, Article 42 Paragraph 1 and 2 as well as Article 45 Paragraph 1 shall apply correspondingly to the person who has notified in accordance with the provisions of the preceding Paragraph. In this case the term "Ministry of International

Trade and Industry" shall be substituted for "the governor of Prefecture".

(Matters to be Observed)

Article 52. The Minister of International Trade and Industry may, by the Ministry of International Trade and Industry Ordinance, establish the matters to be observed by a person who engages in the business of sale (Hereinafter referred to as "seller" in this Article) for specified measuring instruments prescribed by Cabinet Order under the preceding Article Paragraph 1.

2. When the governor of Prefecture recognizes that some obstacles are caused for securing the administration of proper measurement relating to the relevant specified measuring instruments because of the seller's inobservance of the matters prescribed by the Ministry of International Trade and Industry Ordinance under the preceding Paragraph, he may recommend the said seller to observe this.

3. In case that the governor of Prefecture has made such a recommendation as prescribed by the provisions of the preceding Paragraph, when the person who has been recommended, will not follow him, he may publish to the same effect.

4. When the governor of Prefecture recognizes necessary, in case that the seller who has been recommended as prescribed by Paragraph 2 because of inobservance of the matters prescribed by the Ministry of International Trade and Industry Ordinance under Paragraph 1, has not taken the measures relating to the recommendation without any sufficient reason, he may order the said person to take the measures relating to the recommendation.

Section 4 Special Measuring Instruments

(Duty for Conforming to Requirements in Manufacture, Etc.)

Article 53 When the notifying Manufacturer of specified measuring instruments (Excluding the specified measuring instruments prescribed by Cabinet Order under Article 57 Paragraph 1) which serve mainly for the use of the daily life of general consumers and are prescribed by the Cabinet Order. manufactures the relevant specified measuring instruments. he shall make them conform to the technical requirements prescribed by the Ministry of International Trade and Industry Ordinance. Provided. however. that this shall not apply in the case of manufacturing the relevant specified measuring instruments for export and the notification to that effect has been made in advance to the governor of Prefecture and in the case of making trial manufacture of the said specified measuring instrument.

2. Any person who intends to engage in the business of import of the specified measuring instruments prescribed by Cabinet Order under the preceding Paragraph shall. in the case of sale of the relevant specified measuring instruments. sell those which conform to the technical requirements prescribed by the Ministry of Intenational Trade and Industry Ordinance under the same Paragraph. Provided. however. that this provision shall not apply. in case that he intends to sell the relevant specified measuring instruments for export and the notification to the same effect has. in advance. been made to the governor of Prefecture.

(Declaration)

Article 54 The notifying manufacturer prescribed by the preceding Article Paragraph 1 or the person who is prescribed by the same Article Paragraph 2 shall. before he sells the relevant specified measuring instruments. affix the declaration thereto in accordance with the provisions of the Ministry of International Trade and Industry Ordinance.

2. The provisions of the preceding Paragraph shall not apply to the specified measuring instruments manufactured or sold under the provisions of Proviso of Paragraph 1 or Proviso of Paragraph 2 of the preceding Article and to the specified measuring instruments which has been affixed with the verification mark. etc.

3. Nobody shall, except for the case prescribed by Paragraph 1, affix to a specified measuring instrument the declaration mentioned in the same Paragraph of a declaration liable to be confounded with this.

Article 55 Any person who is ingaged in the business of sale of the specified meauring instrument prescribed by Cabinet Order under Article 53 Paragraph 1 (Excluding the business of sale of specified measuring instruments manufactured or imported by the notifying manufacturer prescribed by the same Paragraph or the person prescribed by the same Article Paragraph 2) shall not sell the relevant specified measuing instruments or expose it for the purpose of sale, unless the declaration mentioned in the preceding Article Paragraph or the verification mark, etc. is affixed thereto. Provided, however, that this shall not apply to the relevant specified measuring instruments which have been notified in advance to the governor of Prefectur, in case that they are sold for export.

(Order for Improvement)

Article 56 The Minister of International Trade and Industry may, when he reacognizes that a notifying manufacturer prescribed by Article 53 Paragraph 1 or the person prescribed by the same Article Paragraph 2 violates the provisions of the same Article Paragraph 1 or 2, order such a violating person to take the measures necessary for making the specified measuring instruments manufactured or sold conform to the technical requirements prescribed by the Ministry of International Trade and Industry Ordinance under the same Article Paragraph 1.

(Restriction on Transfer, Etc.)

Article 57 Any person who is engaged in the business of manufacture, repair or import of clinical thermometers and other specified measuring instruments prescribed by Cabinet Order shall not transfer or lend the relevant specified measuring instruments or deliver them to those who entrusted repair thereof, unless they have been affixed with the verification mark, etc. (Limited to only those which are within these term of validity of ver-

ification as to the specified measuring instruments prescribed by Cabinet Order under Article 72 Paragraph 2). Provided, however, that the provision shall not apply in the case of transferring, lending or delivering the relevant specified measuring instruments for export when he has notified in advance to that effect to the governor of Prefecture.

2. Any person who is engaged in the business of sale of the specified measuring instruments (Excluding those who are prescribed by the same Paragraph) shall not transfer, lend or possess for the purpose of transferring or lending the relevant specified measuring instruments, unless they have been affixed with the verification mark, etc. Provided, however, that the provisions shall not apply in the case of transferring or lending the relevant specified measuring instruments, when he has notified in advance to that effect to the governor of Prefecture.

Section 5 Business of Manufacture of Special Container

(Designation)

Article 58 The designation under Article 17 Paragraph 1 shall be performed for each factory or workshop by the application of any person who is engaged in the business of manufacture of the specified measuring instruments (Hereinafter referred to as "a manufacturer") or who is engaged in the business of manufacture of special containers abroad, which are exported to Japan (Hereinafter referred to as "a foreign manufacturer").

(Application for Designation)

Article 59 Any manufacturer who intends to obtain the designation under Article 17 Paragraph 1 shall submit the application to the Minister of International Trade and Industry stating the following matters :

(1) Name or title and address, and the name of the representative in the case of a corporation ;

(2) Title and location of the factory or workshop ;

(3) The matters on the method for manufacturing and inspecting special containers (Limited to only those prescribed by the Ministry of International Trade and Industry Ordinance) ;

(4) Symbol declaring the special container manufactured by the applicant.

(Standards for Designation)

Article 60 Any manufacturer whose designation has been cancelled under the provisions of Article 67 and has not yet passed a year from the day of cancellation cannot obtain the designation under Article 17 Paragraph 1.

2. The Minister of International Trade and Industry shall not make designation unless the application for designation under Article 17 Paragraph 1 is recognized to conform to each of the following items :

(1) That the manufacturing method of special containers conforms to the specifications prescribed by the Ministry of International Trade and Industry Ordinance ;

(2) That the inspecting method of special containers conforms to the specifications prescribed by the Ministry of International Trade and Industry Ordinance.

(Succession)

Article 61 When the manufacturer who has obtained the designation under Article 17 Paragraph 1 (Hereinafter referred to as "designated manufacturer") has transferred the whole of the business relating to the relevant designation or in case there has been a succession or amalgamation with respect to the designated manufacturer, the person who has been transferred the whole of the business or the heir or a corporation which continues to exist after amalgamation or a corporation which has come to existence in consequence of amalgamation shall succeed the status of the designated manufacturer. Provided, however,

that in case that the person who has been transferred the whole of the business or a heir or a juridical person which continues to exist after amalgamation or a juridical person which has come to existence in consequence of amalgamation comes under the preceding Article Paragraph 1. this shall not apply.

(Notification of Amendment. Etc.)

Article 62 In case that there be any change in the matters mentioned in Article 59 each Item. the designated manufacturer shall forthwith notify to the same effect to the Minister of International Trade and Industry.

2. In the case of the preceding Paragraph the person who has succeeded the status of the designated manufacturer under the provisions of the preceding Article shall submit a document evidencing such a fact.

(Declaration)

Article 63 The designated manufacturer may. when special containers manufactured at the factory or business place relating to the designation conform to each of the following Items. affix the declaration thereto under the provisions of the Ministry of International Trade and Industry Ordinance :

(1) That the special container belongs to the type prescribed by the Ministry of International Trade and Industry Ordinance under Article 17 Paragraph 1 ;

(2) That the instrumental error does not exceed the tolerance of volume prescribed by the Ministry of International Trade and Industry Ordinance.

2. The designated manufacturer shall. when he performs declaration under the preceding paragraph. declare the symbol mentioned in the application form of Article 59 under the same Article Item 4 and the volume prescribed by the Ministry of International Trade and Industry Ordinance under Article 17 Paragraph 1 as to the type on the special container in accordance with the method prescribed by the Ministry of International Trade and Industry Ordinance.

3. Any person shall not, except for the case prescribed by Paragraph 1 (including the case which applies correspondingly to Article 69 Paragraph 1) affix the declaration of Paragraph 1 or the declaration liable to be confounded therewith on the special container.

(Order to Conform)

Article 64 The Minister of International Trade and Industry may, when it is recognized that a designated manufacturer has not come to conform to Article 60 Pragraph 2 each item, order to the designated manufacturer to take necessary measures for conforming to these provisions.

(Notification of Abolition)

Article 65 when the designated manufacturer has abolished the business relating to the designation, he shall forthwith notify to the effect to the Minister of International Trade and Industry.

(Invalidation of Designation)

Article 66 When the designated manufacturer has abolished the business relating to the designation, the designation shall lose effect.

(Cancellation of Designation)

Article 67 The Minister of International Trade and Industry may, when the designated manufacturer falls under any one of the following items, cancel the designation :

(1) When the designated manufacturer has violated the provisions of Article 62 Paragraph 1 or Article 63 Paragraph 2 or 3 ;

(2) When the designated manufacturer has violated the order under the provisions of Article 64 ;

(3) When the designated manufacturer has obtained the designation under Article 17 Paragraph 1.

(Removal of Declaration)

Article 68 Any person who is engaged in the business of import of special containers (Including the case where commodities are put in a special container, which is imported with them. Hereinafter the same in this Article) (Hereinafter referred to as "importer of special containers") shall, when he has imported a special container affixed with the declaration of Article 63 Paragraph 1 or the one liable to be confounded with this, excluding the case where the declaration is affixed under the provisions of Article 63 Paragraph 1 (Including the case which applies correspondingly to the following Article Paragraph 1), remove such a declaration before he transfers or lends it.

(Designation relating to Foreign Manufacturer)

Article 69 The provisions of Article 59 and Article 60 shall apply correspondingly to the designation under Article 17 Paragraph 1 relating to a foreign manufacturer and the provisions from Article 61 to 67 shall, to the foreign manufacturer (Hereinafter referred to as "designated foreign manufacturer") who has obtained the designastion under the same Paragraph. In this case "Article 67" in Article 60 Paragraph 1" shall be substituted for "Article 67 or Article 69 Paragraph 2 which applies correspondingly to Article 69 Paragraph 1". "Any person "in Article 63 Paragraph 3 for "A designated foreign manufacturer", "the special container" for the special container exported to Japan", "order" in Article 64 for "request" and "has violated the order" in Article 67 Paragraph 2 for "has not met the request".

2. The Minister of International Trade and Industry may cancel the designation, when a designated foreign manufacturer falls under any one of the following items, besides the provisions of Article 67 which applies correspondingly to the preceding Paragraph :

(1) In case the Minister of International Trade and Industry has requested a report to a designated foreign manufacturer to the extent necessary for the enforcement of this Law in accordance with the provisions of Cabinet Order, when the report has not been made or a false report has been made :