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GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
CHIEF MARTIAL LAW ADMINISTRATOR'S SECRETARIAT

Science and Technology Division

NOTIFICATION

Dacca, the 11th September 1982

No. S.R.O. 327-L/82.—In exercise of the powers conferred by section 64 of the Standards of Weights and Measures Ordinance, 1982 (XII of 1982), the Government is pleased to make the following rules, namely:—

1. **Short title.**—These rules may be called the Bangladesh Standards of Weights and Measures Rules, 1982.

2. **Definitions.**—In these rules, unless there is anything repugnant in the subject or context,—

- (a) "Annexure" means an Annexure appended to these rules;
- (b) "Ordinance" means the Standards of Weights and Measures Ordinance, 1982 (XII of 1982);
- (c) "Schedule" means a Schedule annexed to these rules; and
- (d) "section" means a section of the Ordinance.

3. **National prototype.**—(1) The national prototypes of kilogram and metre shall be deposited in the custody of the Director who shall keep and maintain them at such places and in such manner so that their accuracy is not tampered with.

(2) The national prototypes of kilogram and metre shall be caused to be verified by the International Bureau of Weights and Measures in terms of the international prototypes of kilogram and metre.

4. Reference standard.—(1) The Director shall maintain sets of reference standards of weights and reference standards of measures in duplicate in the Institution.

(2) The originals of such sets shall be used for reference and for verifications of the accuracy of the duplicate sets and the duplicate sets shall be used for verification of the secondary standards.

(3) The reference standards shall conform, as regards denomination, material used in construction and design, to the specifications laid down by the International Bureau of Weights and Measures and adopted by the Institution.

5. Secondary standard.—(1) The secondary standards shall conform, as regards denomination, material used in construction and design, to the specifications laid down in Schedule I.

(2) The limits of error which may be tolerated in the secondary standards on verification or re-verification shall be as specified in Schedule I.

(3) The secondary standards shall be authenticated by the Director before they are put to actual use.

6. Working standard.—(1) The working standards shall conform, as regards denomination, material used in construction and design, to the specifications laid down in Schedule II.

(2) The working standards shall be kept and maintained in the custody of the Inspector of the area concerned at such place and in such manner as the Director may direct; and the Inspector shall maintain such standards in good and clean working condition so that their accuracy cannot be tampered with.

(3) The working standards shall, at least once in a year, be verified with the secondary standards, adjusted, if necessary, stamped and marked with the date of such verification by the Director.

(4) The limits of error which may be tolerated in the verification or re-verification after adjustment shall be as specified in Schedule II.

(5) The working standards shall be authenticated by the Director before they are put to actual use.

7. Precision balances.—(1) The Director shall maintain a set of precision balances at the place where the reference standards are kept.

(2) The number, types, and specifications of such balances shall be as laid down in Schedule III.

(3) The Director or his authorised person shall verify such balances at least once in a year, adjust them, if necessary, ensuring their correctness within the permissible limits of sensitivity, certify and stamp them with the date of verification:

Provided that not more than one year shall intervene between the verification in one year and the verification in the year next succeeding.

8. **Secondary standard balances.**—(1) A set of secondary standard balances shall be kept and maintained at every place where the secondary standards are kept.

(2) The number, types and specifications of such balances shall be as laid down in Schedule III.

(3) The Director or his authorised person shall, at least once in a year, verify such balances, adjust them, if necessary, ensuring their correctness within the limits of sensitivity and stamp them with the date of verification.

9. **Working standard balances.**—(1) A set of working standard balances shall be kept with the Inspector for the purpose of verifying the commercial weights.

(2) The number, types and specifications of such balances shall be as laid down in Schedule IV.

(3) The Director or his authorised person shall, at least once in a year, verify such balances, adjust them, if necessary, ensuring their correctness within the limits of sensitivity and stamp them with the date of verification.

10. **Commercial weights and measures.**—All commercial weights, measures of length and measures of capacity shall conform, as regards denomination, material used in preparation and design, to the specifications laid down in Schedule V.

11. **Weighing and measuring instruments.**—(1) Weighing instruments and measuring instruments used or intended to be used in transactions of trade and commerce shall conform, as regards capacities, material and design, to the specifications laid down in Schedule VI.

(2) The limits of error which may be tolerated in such weighing and measuring instruments at the time of verification and inspection shall be as specified in Schedule VI.

(3) A beam scale used in transactions in trade and commerce shall be suspended to a standard or to a chain by a hook:

Provided that this sub-rule shall not apply to hawkers and persons, other than shopkeepers, selling goods in weekly bazars.

12. **Commercial weights, etc., to be verified periodically.**—(1) All weights, measures, weighing instruments and measuring instruments used or intended to be used in transactions of trade and commerce in bullion and precious stones or by the Railway administration or by a factory, within the meaning of the Factories Act, 1965 (E.P. Act IV of 1965), shall be verified and stamped in accordance with the provisions of the Ordinance and these rules at least once in a year.

(2) All weights, measures, weighing instruments and measuring instruments used or intended to be used in transactions of trade and commerce, other than those specified in sub-rule (1), shall be verified and stamped in accordance with the provisions of the Ordinance and these rules at least once in every period of two years.

13. **Inspection and verification of weights, etc.**—(1) An Inspector shall visit every factory and place under his jurisdiction, where weights and measures, weighing instruments and measuring instruments are used or kept for use in transactions of trade and commerce, for verifying the same at least once in a year, and may also from time to time make surprise visits which may be necessary for the proper discharge of his duties.

(2) All weights, measures, weighing instruments and measuring instruments shall be verified and tested in clean condition, and the Inspector may require the owner or user of such instruments to clean them before such verification and test.

(3) Where a weight, measure, weighing instrument or measuring instrument is brought to an Inspector for re-verification, the Inspector shall proceed with the re-verification in the same manner as in the case of verification, but it shall not be necessary for him to verify a glass or earthen-ware measure unless the original stamp has been defaced.

(4) The denomination or capacity of weights and measures, weighing instruments and measuring instruments, if not marked in full, shall be indicated by using the abbreviations as specified in Schedule VII.

14. **Stamping of commercial weights, etc.**—(1) Before stamping any weight, measure, weighing instrument or measuring instrument used or intended to be used in transactions of trade and commerce, an Inspector shall satisfy himself that such weight or measure, weighing instrument or measuring instrument complies with the provisions of the Ordinance and these rules.

(2) Every weight, measure, weighing instrument or measuring instrument presented for verification shall be complete and shall not bear any mark which may be mistaken for the Inspector's stamp.

(3) The Inspector shall stamp every weight, measure, weighing instrument or measuring instrument with the seal specified in Schedule VIII, indicating clearly the area or district in which it has been stamped or the Inspector by whom it has been stamped or both:

Provided that no weight, measure, weighing instrument or measuring instrument shall be stamped which, in the opinion of the Inspector, is not sufficiently strong to withstand the wear and tear of its ordinary and normal use in the trade:

Provided further that no weighing instrument or measuring instrument other than beam scales of class "A" as specified in Schedule VI, manufactured after the coming into force of these rules, shall be so stamped unless a plug or stud of soft metal to place Inspector's stamp thereon is so made by the manufacturer that it cannot be removed by under cutting or in any other manner.

(4) The Inspector shall mark the date of stamping on all weights, measures (other than glass, earthenware or enamelled metal measuring), weighing instruments or measuring instruments verified and stamped by him except where the size of such weight, measure, weighing instrument or measuring instrument make it impracticable to do so.

(5) Where a weighing instrument has inter-changeable or reversible parts, it shall not be stamped, unless the inter-change or reversal does not affect the accuracy of the instrument.

(6) No weighing instrument with removable parts, the removal of which affects the accuracy of the instrument, shall be stamped, unless the parts are such that the instrument cannot be used without them.

(7) On completion of verification and stamping, the Inspector shall issue a certificate of verification in the form specified in Schedule IX.

15. **Margin of errors.**—(1) Permissible margin of error on re-verification of weights, measures, weighing instruments or measuring instruments shall be the same as provided for verification.

(2) For capacities not stipulated in these rules, the permissible margin of error shall be proportional.

16. **Procedure for inspection, etc.**—In the discharge of his duties of inspection, verification and stamping of weights, measures, weighing instruments or measuring instruments, an Inspector shall observe the procedure laid down in Schedule X.

17. **Monthly report of Inspector.**—An Inspector shall submit a monthly report to the Director showing the work done by him in such form as the Director may specify.

18. **Fee for verification and stamping and for copies of document.**—(1) The fee payable for verification or re-verification and stamping of weights, measures, weighing instruments and measuring instruments at the office of the Inspector shall be as specified in Schedule XI.

(2) If verification or stamping is done by the Inspector at the premises of any person, owner or user thereof, an additional fee at half the rate specified in Schedule XI shall be charged from such person, owner or user, as the case may be, and he shall also pay the actual travelling expenses incurred by the Inspector for visiting the premises and also the cost of transport of the working standards, balances and other equipment:

Provided that no additional fee shall be charged for verification, re-verification and stamping, on site, of—

(a) petrol or measuring instruments, weigh bridges, dormant platform machines and such other instruments as may be specified by the Director; and

(b) weights, measures, weighing instruments or measuring instruments in the premises of a manufacturer or stockist thereof.

(3) A weight, measure, weighing instrument or measuring instrument which, on verification, is found to be incorrect shall be returned to the person concerned for adjustment and when the necessary adjustment has been carried out, such weight, measure, weighing instrument or measuring instrument shall be re-verified on payment of 50% of the fee prescribed for verification and shall, if found correct, be stamped.

(4) Fee for the grant of copies of any document, not being a document of a confidential nature, shall be one taka for every one hundred words or less.

19. **No fee payable for re-stamping within a specified period.**—Notwithstanding anything contained in rule 20, no fee shall be payable for re-stamping of weights, measures, weighing instruments or measuring instruments within the period specified in rule 12 from the date on which it was last stamped.

20. **Collection of fee.**—(1) Before commencing the work of verification or re-verification, an Inspector shall receive the prescribed fee from or on behalf of the person concerned and issue a receipt in such form as may be prescribed by the Director and two copies of such receipt shall be kept on record.

(2) The Inspector shall maintain a register in such form as may be prescribed by the Director and shall fill it daily showing the amount of fee and carriage charges collected during the day.

(3) The fee including the additional fee and other charges, if any, collected by the Inspector shall be deposited in an account of the Institution kept for the purpose in a bank approved by the Government on every month, the receipt shall be posted in the accounts register to be maintained by the Inspector and intimation to this effect shall be sent by him to the Deputy Director of the Institution of his area or to the Director.

21. **Seizure, detention and disposal of unauthorised weights, measures and instruments.**—(1) An Inspector or a person authorised by the Director shall seize and detain any weight, measure, weighing instrument, measuring instrument, beam scales, spring balance, counter machine and steelyard used or intended to be used in transactions of trade and commerce if he is satisfied that—

- (a) they are not of the same denominations as are specified in Schedules V and VI and do not fulfil any of the requirements of the Ordinance or these rules;
- (b) they are false or defective;
- (c) fraud is committed in using them;
- (d) they are unstamped; or
- (e) the stamp on them is forged or transferred.

(2) Anything seized and detained under these rules, which is not subject matter of any proceedings in a court, shall, after the expiry of sixty days, be dealt with in accordance with the general or special orders of the Director or, where an appeal has been filed against such seizure and detention, after the decision of the appeal in accordance with the decision in appeal.

(3) Anything which is liable to seizure and detention under these rules and is or is likely to be required in connection with the proceedings of a court shall be seized and detained by the Inspector for being produced before the court and, on the conclusion of the proceedings, be dealt with in accordance with the instructions issued by the Director in this behalf.

(4) An Inspector shall issue a receipt in such form as may be specified therefor in respect of all articles seized and detained by him and shall maintain record thereof in a register specified by the Director.

(5) No unverified weight or measure shall be forfeited to the Government if the person from whom such weight or measure was seized under sub-section (3) of section 16 gets the same verified and stamped within 30 days from the date of such seizure.

22. Qualifications of Inspectors.—(1) No person shall be appointed as Inspector, unless—

- (a) he is a Graduate in Science, with Physics as one of the subjects, or a diploma holder in Mechanical or Instrumentation Engineering (with 3 years course) from a University or Polytechnic Institute recognized by the Government in this behalf; and
- (b) after selection for appointment as Inspector, he has successfully completed such training as may be approved by the Institution.

(2) Nothing in sub-rule (1) shall apply to persons who were working as Inspectors of the Institution immediately before the coming into force of these rules.

23. Duties of Inspectors.—The duties of an Inspector shall be as follows :—

- (a) verification, re-verification and stamping of weights, measures, weighing instruments and measuring instruments;
- (b) inspections as provided in these rules;
- (c) collection of fees and other charges and to deposit them into the Bank account of the Institution kept for the purpose;
- (d) preparation and submission of such reports and returns as are required by these rules or as may be directed by the Director;
- (e) keeping and maintaining such books, records and forms as may be supplied by the Director;
- (f) safe and proper custody of working standards and other instruments, equipment and articles entrusted to him or seized and detained by him in connection with the discharge of his duties;
- (g) popularising the enforcement of the standards of weights and measures;
- (h) surveying of traders, industrial establishments, manufacturers, repairers and other dealers coming within the purview of the Ordinance and these rules;
- (i) conducting of prosecution under the Ordinance; and
- (j) any other duty that may be assigned to him by the Director.

24. Articles to be provided to inspectors.—(1) Every Inspector shall be provided with working standards, scale beams and balances for verifying weights, measures, weighing instruments, measuring instruments, adequate instrumental equipment, and travelling kit and such other material and forms as the Director may consider necessary for inspection.

(2) Every Inspector shall be provided with such dies, punches, stencil plates, branding irons, etching and engraving and other implements as may be necessary for affixing the local verification stamp, the design and number of which shall be specified by the Director.

25. Certificate of approval of model to manufacturers, repairers and dealers of weights and measures, etc.—(1) Every manufacturer or repairer of, or dealer in weights, measures, weighing instruments or measuring instruments shall obtain a certificate of approval of model (hereafter referred to as the "certificate") from the authorised person in the appropriate form specified in Schedule XII.

(2) The fee payable for such certificates shall be as specified in Schedule XIII.

(3) The authorised person may, by order in writing, refuse to grant or renew a certificate or suspend or cancel the certificate of a manufacturer or repairer of, or dealer in, weights, measures, weighing instruments and measuring instruments if he is satisfied that such manufacturer, repairer or dealer has no proper and adequate workshop facilities or staff, or is otherwise incompetent or has failed to comply with any provision of the Ordinance or these rules:

Provided that no such order shall be made without giving the aggrieved person a reasonable opportunity of being heard.

(4) Any person aggrieved by an order made under sub-rule (3) may, within sixty days of such order, prefer an appeal to the Government, with a fee of Taka twenty-five paid in cash or bank draft.

(5) An appeal under sub-rule (4) shall be preferred in the form of a memorandum setting forth the grounds of appeal.

(6) The authorised person shall maintain a register of certified manufacturers and repairers of, and dealers in, weights, measures, weighing instruments and measuring instruments in the form set out in Schedule XIV.

26. Training Centre.—There shall be established a Metrology Training Centre in Dacca with its four sub-centres one each in four administrative Divisions of the country, wherein the theoretical as well as practical training in metrology shall be imparted. Guest speakers may be allowed to deliver lectures. A guest speaker may be paid suitable honorarium for a lecture of not exceeding 2 hours. The entire management and control of the affairs of the centre and all the sub-centres shall be vested with the Director. The course, curricula and qualification etc., are given in Schedule XV.

27. Records to be maintained by manufacturers, etc.—Every manufacturer or repairer of, or dealer in, weights, measures, weighing instruments or measuring instruments shall maintain such records in such forms, and submit such returns, as specified in Schedule XVI.

28. Certificate of verification to be exhibited.—Every person to whom a certificate of verification is issued shall exhibit the same at a conspicuous place in the premises where the weights, measures, weighing instruments or measuring instruments to which the certificate relates are used, and, in the case of a hawker, such certificate shall be kept on his person.

29. Conversion of existing weights and measures into standard measure.—The value expressed in terms of any weight or measure may be converted into the value expressed in terms of the standard of weight or measure according to the Conversion Table given in Schedule XVII.

30. **Conditions, limitations and restrictions under which non-standard weight or measure manufactured for export.**—(1) The provisions of this rule shall apply to weights or measures which are manufactured for the purpose of export only.

(2) No non-standard weight or measure shall be made or manufactured by any person unless he holds a valid licence or certificate issued by the Director, authorising him to do so:

Provided that it shall be lawful for an applicant for licence or certificate who, at the commencement of these rules,—

- (a) is *bonafide* carrying on the business of exporting non-standard weights and measures; or
- (b) has a firm offer for the export of any non-standard weight or measure,

to commence or continue the manufacture of non-standard weights and measures until he is informed by the Director in writing that a licence or certificate cannot be granted to him.

(3) Every person intending to manufacture any non-standard weight or measure for the purpose of export shall make an application to the Director on payment of a fee of twenty-five taka for licence or certificate authorising him to manufacture such weight or measure and shall in such applications indicate—

- (a) his name and full address;
- (b) location of factory in which such weight or measure is proposed to be manufactured;
- (c) description of weight or measure proposed to be manufactured;
- (d) documentary or other evidence indicating the existence of the firm contract for the export aforesaid or where there is no such firm contract for export, documentary or other evidence indicating that there is likely to be a demand for the export of non-standard weight or measure.

(4) The Director shall, if he is satisfied from the documentary or other evidence produced by the applicant or otherwise that the applicant intends *bonafide* to manufacture non-standard weight or measure for export, grant a licence or certificate authorising the applicant to manufacture such weight or measure:

Provided that the Director may, if he is satisfied that the licensee or certificate holder has contravened any term of the licence or certificate or that substantial number of weight or measure manufactured by the licensee or certificate holder have found their way into the local market or that the licensee or certificate holder had made any statement in his application for the licence or certificate which is false in material particulars or he had concealed some material particulars, cancel the licence or certificate.

31. **Registration of exporters and importers of weights and measures.**—

(1) Every dealer in, or manufacturer of, weights, measures, weighing instruments and measuring instruments who intends to export or import weights and measure, shall apply to the Director for registration in the Form specified in Schedule XVIII at least one month before the date on which such export or import is proposed to be made.

(2) Every person carrying on the business of export or import or both, immediately before the commencement of these rules, shall, within eighty days of such commencement, apply to the Director for registration.

(3) A fee of Taka 25 (Twenty-five) shall be paid for an application for such registration or renewal thereof.

(4) The registration shall remain valid for a period of two years but the Director may suspend or revoke registration before the expiry of that period for reasons to be recorded in writing. The Director may also renew the registration for a like period.

(5) Any person aggrieved by an order granting or refusing to grant or renew or suspending or revoking registration may, within thirty days from the date of the concerned order, prefer an appeal to the Government and the decision of the Government thereon shall be final.

32. **Certain units of weights and measures.**—The base, supplementary and derived units of weights and measures shall be as specified in Schedule XIX.

LIST OF SCHEDULES

- SCHEDULE I : Specification of secondary standards of weights and measures.
- SCHEDULE II : Specification of working standards of weights and measures.
- SCHEDULE III : Specifications of sensitivity of precision of balances and secondary standard balances.
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- SCHEDULE V : Specifications, denominations, materials and design of commercial weights and measures.
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- SCHEDULE IX : Form for Certificate of verification.
- SCHEDULE X : Procedure for inspection, verification and stamping of commercial weights and measuring instruments.
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LIST OF ANNEXURES

- ANNEXURE I : Description of lead.
- ANNEXURE II : Description of cast iron casting.
- ANNEXURE III : Description of forged mild steel.
- ANNEXURE IV : Description of cast brass.
- ANNEXURE V : Description of brass rod, other than forging stock.
- ANNEXURE VI : Description of cast bronze.
- ANNEXURE VII : Description of aluminium alloy, plate, sheet and strip.
- ANNEXURE VIII : Description of cold rolled brass sheet, strip and foil.

SCHEDULE I

(See rule 5)

Denominations, material, shape and permissible errors of secondary standards of Weights and Measures.

PART I 1. Secondary Standard of Weights

1.1 Denominations :

| Kilogram series (kg) | Gram series (g) | Milligram series (mg) |
|-------------------------|--------------------|--------------------------|
| 10 | 500 | 500 |
| 5 | 200 | 200 |
| 2 | 200 | 200 |
| 2 | 100 | 100 |
| 1 | 50 | 50 |
| | 20 | 20 |
| | 20 | 20 |
| | 10 | 10 |
| | 5 | 5 |
| | 2 | 2 |
| | 2 | 2 |
| | 1 | 1 |

1.2 Materials:

1.2.1 Weight of 10 kg to 1 g shall be cast from admiralty bronze of the following composition :—

| Constituent. | Per cent. |
|--------------|--------------|
| Copper | 87.5 to 88.5 |
| Tin | 9.5 to 10.5 |
| Zinc | 1.5 to 2.5 |

1.2.2 Weights of 500 mg to 50 mg shall be made of cupro-nickel alloy having a nominal composition of 75 per cent. copper and 25 per cent. nickel.

1.2.3 Weights of 20 mg to 1 mg shall be made of commercial aluminium sheets.

1.3 Shape and finish:

(a) For kilogram and gram series—Integral cylindrical body with knob flattened at the top. Weights of 10 kilogram to 100 gram (both inclusive) shall have adjusting devices. Lead shall not be used as an adjusting material.

(b) For milligram series—The weights shall be in the form of square sheets, one of the corners being bent at right angle.

(c) The denominations shall be marked only on kilogram and gram series weights.

(d) The entire surface of the weights, including their base and corners shall be free from any roughness and the surface of the weights, when inspected visually, shall not show any porosity and shall have a mirror polish appearance.

1.4 Limits of error to be tolerated.—The limits of error to be tolerated in excess and in deficiency shall be as follows :

| Denominations. | Limits of error to be tolerated, |
|----------------|----------------------------------|
| | µmg |
| 10 kg | 50 |
| 5 kg | 25 |
| 2 kg | 10 |
| 1 kg | 5 |
| 500 g | 2.5 |
| 200 g | 1.0 |
| 100 g | 0.5 |
| 50 g | 0.30 |
| 20 g | 0.25 |
| 10 g | 0.20 |
| 5 g | 0.15 |
| 2 g | 0.12 |
| 1 g | 0.10 |
| 500 mg | 0.08 |
| 200 mg | 0.06 |
| 100 mg | 0.05 |
| 50 mg | 0.04 |
| 20 mg | 0.03 |
| 10 mg | 0.025 |
| 5 mg | 0.020 |
| 2 mg | 0.02 |
| 1 mg | 0.02 |

1.5 Protective and carrying case :

(a) These weights shall be stored in their boxes made from teakwood or any other suitable non-corrosive material with proper housing lined with chemically neutral velvet, chamois leather or soft plastic material. Wood used in

such boxes shall be reasonably free from resins and volatile materials. Glue shall not be used for fixing velvet or such other material. The weights shall be housed in such a manner so as to avoid their movement during transit.

(b) Each milligram weight shall be provided with a separate housing. A covering glass or a sheet of any other transparent, non-reactive and non-corrosive material shall be provided so as to ensure that these weights are not dislocated during transit.

(c) A suitable device for lifting the kilogram and gram weights, covered with chamois leather or other suitable material, shall be provided. A pair of forceps capable of lifting easily milligram weights shall also be provided.

1.6 Inscription : The boxes containing the weights shall have the following inscription :—

- (a) the words 'SECONDARY STANDARD WEIGHTS',
- (b) the identification number of the secondary standard weights,
- (c) the name of the manufacturer,
- (d) the material used for weights—
 - (i) kilogram and gram series
 - (ii) milligram series
- (e) the year of manufacture,
- (f) the mark of verification.

PART II: 2. Secondary standard of Linear Measures.

2.1 Denomination : 1 METRE

2.2 Material : The secondary standard metre bar (hereafter called metre bar) shall be manufactured from 58 percent nickel-steel.

2.3 Shape and Dimensions :

(a) The metre bar shall have a rectangular cross-section with dimensions 30 mm × 15 mm approximately.

(b) The top surface shall have two rectangular grooves along its length.

(c) The overall length of the measure shall be 1030 ± 1 mm and the graduated length shall be 1010 mm.

(d) Ungraduated space of 10 mm shall be left after the last graduation mark.

2.4 Finish : The graduated surface shall be bright, highly polished and free from surface irregularities in the neighbourhood of the graduations marks.

2.5 Graduations :

(a) The metre bar shall be graduated in millimetres throughout from 0 to 1000 mm.

(b) A length of 10 mm before the zero graduation mark shall also be graduated in millimetres.

(c) The scale shall be regular. The width of the graduation marks shall lie between thirty and fifty micrometres.

(d) the width of the graduation marks shall be uniform to within \pm ten percent of the average width of all the marks.

(e) Each graduation mark shall be straight to within ten micrometres over its length.

(f) The graduation mark shall be parallel to one another to within ten micrometres.

(g) The graduation marks shall be square to the scale axis to within twenty minutes of arc.

(h) The graduation marks representing centimetres shall be longer than those representing half centimetres and the graduation marks representing half centimetres shall be longer than those representing millimetres.

(i) The length of the graduation marks shall be not less than:

- 2 mm for mm marks

- 3 mm for half cm marks

- 4 mm for cm marks

These marks shall be disposed equally on either side of an imaginary centre line defined by the two setting lines.

(j) There shall be two short longitudinal setting lines each of 5 mm in length which shall be drawn leaving a blank space of 2 mm, the one before the first and the other after the last graduation mark. The longitudinal lines shall be on a straight line which represented the imaginary central line and the departure from the central line shall be not more than 0.1 mm.

(k) When supported on the Bessel Points or on a flat surface the graduated surface shall be flat to within 0.05 mm, *i.e.*, all the points on the surface shall be between two parallel planes 0.05 mm apart.

2.6 Auxiliary Scale :

(a) Auxiliary scale shall be marked on one of the top edges of the metre bar.

(b) The auxiliary scale shall consist of centimetre and half centimetre marks corresponding to the marks of the main scale.

(c) The marks of the auxiliary scale shall be collinear (passing through the same vertical planes) with the graduations of main scale to within 1 mm.

(d) The width of the graduation marks shall be not more than one hundred micrometres.

(e) The graduation marks representing centimetres shall be longer than those representing half centimetres.

- (f) The length of the graduation marks shall be not less than:
- 3 mm for cm marks and
 - 2 mm for half cm marks

One of the ends of the marks shall lie on a straight line.

(g) The centimetre graduation marks shall be numbered in the increasing order of numeration.

(h) The height of the numerals and the letters shall be approximately 3 mm.

2.7 Maximum Permissible Error.

The errors on the length between any two graduation marks on the secondary standard metre bar, at the standard temperature of 20°C, shall not exceed the value "e" calculated according to the following formula:

$$e = \pm \left(25 + \frac{L}{40} \right) \text{ micrometres}$$

Where L is the nominal length in millimetres of that part of the metre bar between the two graduation marks, the error on which is being determined. The calculated value of "e" shall be rounded to the nearest integer.

2.8 Inscription

The metre bar shall bear the following inscriptions:

- (a) the words "SECONDARY STANDARD METRE BAR",
- (b) an identification number of the secondary standard metre bar,
- (c) the name of the manufacturer,
- (d) the material of the metre bar,
- (e) the words, figures and letter "STANDARD AT 20°C",
- (f) the year of manufacture,
- (g) the mark of verification on the plate of the carrying case of the metre bar.

2.9 Protective and carrying case :

(a) The metre bar shall be housed in a case made from suitable material and provided with a handle, lined internally with velvet, a plastic material or any other material, and in such a way that the measure is not likely to be damaged, particularly by shocks or corrosion.

(b) The case shall have affixed on it a plate bearing the inscription "SECONDARY STANDARD METRE BAR" and the identification number.

Note:—The existing secondary standard metre bars may differ in minor details in regard to setting lines and inscriptions, etc.

PART III: 3. Secondary standard of capacity measures.

3.1 Denominations:

| Litre series (l) | Millilitre series (ml) |
|---------------------|---------------------------|
| 10 | 500 |
| 5 | 200 |
| 2 | 100 |
| 1 | 50 |
| | 20 |
| | 10 |

3.1.1 Material: Secondary standard capacity measure shall be cast out of bronze of the same composition as in the case of secondary standard weights.

3.2 Shape of capacity measures :

- 10 and 5 litres-cylindrical with inside diameters approximately equal to the height of the measures, and two handles attached securely to their sides.
- 2 litres and below: Same shape as above but shall have one handle only.
- The denominations of the measures shall be engraved on the outside surface.
- Each set of measures shall be supplied with specially selected striking glasses.

3.3 Limits of error to be tolerated :

The limits of error in excess and deficiency to be tolerated shall be as follows :

| Denomination. | Limits of error to be tolerated. |
|---------------|----------------------------------|
| | ml |
| 10 (litre) | 4 |
| 5 " | 2 |
| 2 " | 1 |
| 1 " | 0.8 |
| 500 ml | 0.5 |
| 200 ml | 0.4 |
| 100 ml | 0.3 |
| 50 ml | 0.2 |
| 20 ml | 0.1 |
| 10 ml | 0.1 |

3.4 Protective and carrying cases:

These capacity measures shall be stored in their boxes made from teak wood or any other suitable non-corrosive material with proper housing lines with velvet, chamois leather or soft plastic material. Wood used in such boxes shall be reasonably free from resin and volatile materials. Glue may not be used for fixing velvet or such other materials. Each capacity measure shall be housed in such a manner so as to avoid their excessive movement during transit.

Each striking glass of the capacity measure shall be securely housed in proper grooves so as to protect them from breakage during transit.

3.5 Inscription :

The boxes containing these capacity measures shall have the following inscriptions :

- (a) the inscription "Secondary Standard capacity measures";
- (b) the identification number of secondary standard capacity measures;
- (c) the name of the manufacturer;
- (d) the year of manufacture;
- (e) the mark of verification of proper verification authority.

SCHEDULE II

[See rule 6]

Denominations, materials, shape and permissible errors of working standards of weights and measures.

PART I: 1. Working Standard of Weights.

1.1 Denominations:

| Kilogram series. | Gram series. | Milligram series. |
|------------------|--------------|-------------------|
| | 500 | 500 |
| 20 | 200 | 200 |
| 10 | 200 | 200 |
| 5 | 100 | 100 |
| 2 | 50 | 50 |
| 2 | 20 | 20 |
| 1 | 20 | 20 |
| | 10 | 10 |
| | 5 | 5 |
| | 2 | 2 |
| | 2 | 2 |
| | 1 | 1 |

1.2 Material :

1.2.1 Weights of 20 kg to 1 kg shall be cast from admiralty bronze of the following composition:—

| Constituent. | Per cent. |
|--------------|--------------|
| Copper | 87.5 to 88.5 |
| Tin | 9.5 to 10.5 |
| Zinc | Remainder. |

1.2.2 Weights of 500 mg to 100 mg shall be made out of admiralty bronze sheet metal from the sheets of nickel-chromium alloy (80 Ni, 20 Cr) or austenitic stainless steel (25 Ni, 20 Cr).

1.2.3 Weights of 50 mg to 1 mg shall be made out of aluminium sheets copper, silicon and iron contained as impurities in the aluminium shall not exceed 0.3 per cent in the aggregate.

1.3 Shape and finish:

(a) Weights of 20 kg and 10 kg shall be cylindrical in shape and shall be cast in two parts, the top part being screwed snugly into the bottom part. The top part shall be cast in the form of a handle for lifting purposes. The two parts after assembly shall be locked by means of a set screw over which the seal of the verifying authority shall be affixed.

(b) Weights of 5 kg to 200 g, (inclusive) shall be cast in two parts, the top part being screwed snugly into the bottom part. The top part shall be cast in the form of a knob for lifting purposes. The two parts, after assembly, shall be locked by means of a set screw, over which the seal of the verifying authority shall be affixed.

(c) Weights of 100 g to 10 g (inclusive) shall be as in (b) above except that there shall be no locking arrangement.

(d) Weights of 5 g to 1 g (inclusive) shall be integral weights with knob.

(e) Weights of 500 mg to 1 mg (inclusive) shall be of square shape with one of the sides bent at right angles to the flat surface for ease of handling.

(f) The denominations shall be marked on the weights.

(g) The entire surface of the weights, including their base and corners shall be free from roughness. The surface of the weights, when inspected visually, shall not show any porosity and shall have a mirror polish appearance.

1.4 Limits of error to be tolerated:

The limits of error in excess and in deficiency to be tolerated shall be as follows:

| Denomination. | Limits of errors to be tolerated. |
|---------------|-----------------------------------|
| | + (mg) |
| | — |
| 20 kg | 300 |
| 10 kg | 150 |
| 5 kg | 75 |
| 2 kg | 45 |
| 1 kg | 30 |
| 500 g | 15 |
| 200 g | 12 |
| 100 g | 9 |
| 50 g | 6 |
| 20 g | 4.5 |
| 10 g | 3.0 |
| 5 g | 2.40 |
| 2 g | 1.80 |
| 1 g | 1.20 |
| 500 mg | 1.20 |
| 200 mg | 0.60 |
| 100 mg | 0.60 |
| 50 mg | 0.30 |
| 20 mg | 0.30 |
| 10 mg | 0.25 |
| 5 mg | 0.15 |
| 2 mg | 0.15 |
| 1 mg | 0.15 |

1.5 Protective and carrying case :

(a) These weights shall be stored in their boxes made from teakwood or any other suitable non-corrosive material with proper housing lined with chemically neutral velvet, chamois leather or soft plastic material. Wood used in such boxes shall be reasonably free from resins and volatile materials. Glue shall not be used for fixing velvet or such other material. The weights shall be housed in such a manner so as to avoid their movement during transit.

(b) Each milligram weight shall be provided with a separate housing. A covering glass or a sheet of any other transparent, non-reactive and non-corrosive material shall be provided so as to ensure that these weights are not dislocated during transit.

(c) A suitable device for lifting the kilogram and gram weights, covered with chamois leather or other suitable material, shall be provided. A pair of forceps capable of lifting easily milligram weights shall also be provided.

1.6 Inscription:

The boxes containing the weights shall have the following inscriptions:

- (a) the words "WORKING STANDARD WEIGHTS",
- (b) the identification number of the working standard weights,
- (c) the name of the manufacturer,
- (d) the year of manufacture,
- (e) the mark of verification.

PART II: 2. Working standards for Linear measures.**2.1 Material :**

The working standard metre bar (hereafter called metre bar) shall be manufactured from 58 per cent nickel-steel, or austenetic stainless steel, or stainless steel with 13 per cent chromium or pure nickel (minimum purity 99 per cent).

2.2 Shape and Dimensions :

(a) The metre bar shall have a rectangular cross section of minimum dimensions 20 mm \times 10 mm. The existing cross section with dimensions 30 mm \times 15 mm shall be preferred.

(b) The overall length of the metre bar shall be 1030 ± 1 mm and the graduated length shall be 1010 mm.

(c) Ungraduated length of 10 mm shall be left after the last graduated mark.

2.3 Finish :

The graduated surface shall be bright, nicely polished and free from surface irregularities in the neighbourhood of the graduation marks.

2.4 Graduations :

(a) The metre bar shall be graduated in millimetres throughout 0 to 1000 mm on the wider upper surface.

(b) A length of 10 mm before the zero graduation mark shall also be graduated in millimetres.

(c) The scale shall be regular. The thickness of the graduation marks shall be uniform and shall lie between 30 and 80 micrometres.

(d) The width of the graduation marks shall be uniform to within \pm fifteen per cent of the average width of all the marks.

(e) The graduation marks representing centimetres shall be longer than those representing half centimetres and the graduation marks representing half centimetres shall be longer than those representing millimetres.

(f) Each graduation mark shall be straight to within ten micrometres over its length.

(g) The graduation mark shall be parallel to one another to within ten micrometres.

(h) The length of the graduation marks shall be not less than:

- 3 mm for mm marks
- 5 mm for half on marks
- 8 mm for cm marks.

(i) The centimetres graduation marks shall be numbered in the increasing order of numeration.

(j) The height of the numerals and the letters (symbols) shall be approximately 3 mm.

(k) The graduation marks shall be square to the scale axis to within 30 minutes of arc.

2.5 Cursor :

(a) The errors on the length measure under verification shall be determined by means of a scale marked on a plate, made from transparent material, which is carried by a cursor capable of moving along the length of the metre bar. The plate shall have appropriate and constant dimensions and thickness.

(b) The scale on the plate shall:

- (i) either be a length of 9 mm divided into 10 parts thus forming a vernier scale to read the errors to the nearest of 0.1 mm; or
- (ii) one millimetre divided into 10 parts for reading the errors directly to the nearest of 0.1 mm.

(c) The thickness of the graduation marks on the scale shall be less than that of the graduation marks on the metre bar.

(d) The graduation marks on the scale shall be inscribed on the surface facing the graduation marks on the metre bar.

(e) The readings shall be taken by means of a magnifying glass, the magnification of which shall be not less than 5 x if the scale is graduated in 0.1 mm and not less than 3 x if the scale is of vernier type.

(f) The cursor shall be such that it would be possible to move it smoothly without jerks, along a straight line from one end of the measure to the other.

(g) A mechanism to raise, lower and laterally move the measure under verification, with a view to putting its graduated surface at a proper level and aligning its zero mark with that of the metre bar shall be provided.

(h) For facilitating the verification of end measures, two vertical stops bearing reference lines shall be provided. The first stop shall be such that its reference line can be aligned with the zero mark of the metre bar. The second stop shall be capable of moving along the entire length of the metre bar.

2.6 Maximum permissible errors :

(a) The error on the length between any two graduation marks on the working standard length measure, at the standard temperature of 20°C, shall not exceed the value "e" calculated according to the following formula:

$$e = \left(50 + \frac{L}{20} \right) \text{ micrometres.}$$

Where L is the nominal length in millimetres of that the metre bar between the two graduation marks, the error on which is being determined. The calculated value of "e" shall be rounded to the nearest integer.

(b) The errors on the length between any two graduation lines on the plate shall not exceed ± 20 micrometres.

2.7 Inscription :

The metre bar shall bear the following inscription:

- (a) The words "WORKING STANDARD METRE BAR",
- (b) identification number of the metre bar,
- (c) the name of the manufacturer,
- (d) the material of the metre bar,
- (e) the words, figures and letter "STANDARD AT 20°C",
- (f) the year of manufacture.

2.8 Protective and carrying case:

(a) The standard metre bar shall be housed in a case made from suitable material and provided with a handle, lined internally with velvet, a plastic material or any other material and in such a way that the metre bar is not likely to be damaged, particularly by shocks or corrosion.

(b) The case shall have affixed on it a plate bearing the inscription "WORKING STANDARD METRE BAR" and the identification number.

Note—The existing working standard length measures (metre bars) may differ in minor details in regard to inscriptions etc., on, it.

PART III: 3. Working Standard of Capacity Measures.

3.1 Denominations:

| Litre series. | Millimetre series. |
|---------------|--------------------|
| (l) | (ml) |
| 10 | 500 |
| 5 | 200 |
| 2 | 100 |
| 1 | 50 |
| | 20 |
| | 10 |

3.2 Materials of construction:

Working standard of capacity measures shall be prepared out of oxygen free, deoxidised annealed copper sheets of deep drawing quality.

3.3 Shape:

3.3.1 Working standard capacity measures of 10 litres shall be cylindrical with two handles securely fixed to the sides. The diameter of the measures shall be approximately equal to its height.

3.3.2 All other working standards of capacity measures shall also be cylindrical but shall not be provided with handles. The diameter of each measures shall be suitably reinforced.

3.3.3 The denomination of the working standards of capacity measures shall be engraved on the outside surface.

3.3.4 The outside of the body of the working standard of capacity measures shall be oxidised to give a smooth dull black surface and the inside shall be tinned.

3.3.5 Each set of working standard capacity measures shall be supplied with specially selected striking glasses and the measures and glasses shall be securely packed in velvet lined teak wood boxes.

3.4 Limits of error to be tolerated :

The limits of error in excess and deficiency to be tolerated shall be as follows:—

| Denomination. | Limits of error to be tolerated. |
|---------------|----------------------------------|
| (Litre) | ±(ml) |
| 10 | 8 |
| 5 | 4 |
| 2 | 2 |
| 1 | 1.5 |
| 500 ml | 1.0 |
| 200 ml | 0.8 |
| 100 ml | 0.6 |
| 50 ml | 0.4 |
| 20 ml | 0.2 |
| 10 ml | 0.2 |

3.5 Pipette Measures:

Pipettes of the following description may also be used as working standard measures:

- (a) One mark pipettes of capacities 10 ml and 5 ml;
- (b) Graduated pipettes of capacities 5 ml graduated at every tenth of ml.

NOTE: 1 Litre = 1 dm³ = 0.001 m³

3.6 Delivery time and maximum permissible errors of pipette measures :

| Denomination. | Delivery time in seconds. | | Permissible errors. ±ml |
|------------------|---------------------------|----------|----------------------------|
| | Minimum. | Maximum. | |
| ml | | | |
| 10 | 15 | 25 | 0.04 |
| 5 | 10 | 20 | 0.03 |
| 5 (Graduated) | 10 | 40 | 0.05 |

3.7 Protective and carrying cases:

These capacity measures shall be stored in their boxes made from teak wood or any other suitable non-corrosive material with proper housing lined with velvet, chamois leather or soft plastic material. Wood used in such boxes shall be reasonably free from resins and volatile materials. Glue may not be used for fixing velvet or such other materials. Each capacity measure shall be housed in such a manner so as to avoid their excessive movement during transit.

Each striking glass of the capacity measure shall be securely housed in proper grooves so as to protect them from breakage during transit.

3.8 Inscription:

The boxes containing these capacity measures shall have the following inscriptions :

- (a) the words "Working Standard Capacity Measures",
- (b) the identification number of the capacity measures,
- (c) the name of the manufacturer,
- (d) the year of manufacture,
- (e) the mark(s) of verification of proper verification authority.

SCHEDULE III

[See rules 7 and 8(2)]

PART I: Specifications, with permissible limits of sensitivity of precision Balances and secondary standard balances.

1. Every reference standard balance shall be of such robust construction and have such metrological qualities so as to ensure the continued good performance as indicated in paragraph 2.

2. Sensitivity figure/readability and precision of measurement of every reference standard balance shall be such as to give overall precision of measurement of 1 part in one million for weights from 10 kg to 10 g and ± 0.01 mg, for weights from 5 g to 1 mg.

PART II: Secondary Standards Balances

1. Every secondary standard balance shall conform as regards capacity, sensitivity figure in mg per division, minimum scale division, variation in sensitivity figure with respect to load and overall accuracy of measurement, to the specifications as indicated in Table 1:

TABLE 1

| Capacity. | Sensitivity figure, mg/div. | Mini. scale division. | Maximum variation in sensitivity figure with respect to load. | Mini overall accuracy of measurement. |
|-----------|-----------------------------|-----------------------|---|---------------------------------------|
| 20 kg | 25 | 1.5 mm | 10 per cent | 25 mg in 10 kg |
| 5 kg | 7.5 | 1.0 mm | 10 per cent | 7.5 mg in 2 kg |
| 1 kg | 1.5 | 1.0 mm | 10 per cent | 1.5 mg in 500 g |
| 200 g | 0.5 | 1.0 mm | 10 per cent | 0.5 mg in 50 g |
| 20 g | 0.1 | 1.0 mm | 10 per cent | 0.1 mg in 5 g |
| 2 g | 0.02 | 0.75mm | 10 per cent | 0.02 mg in 1 mg |

2. The standard deviation of the 10 consecutive rest points for every secondary standard balance shall not be more than one scale division.

3. The deviation in arm ratio from unity, for every secondary standard equi-arm balance shall not be more than a fraction equal to sensitivity figure divided by full load (both being taken in the same unit).

4. The variation in time periods at different loads for every secondary standard balance shall not be more than 20 per cent.

5. Every secondary standard balance shall be provided with a device so that the contact between the knife-edges and their respective planes is broken when the balance is in arrested position.

6. The secondary standard balance shall, ordinarily, be used for indoor work in laboratories.

Note 1: Precision balances and secondary standard balances shall be used only for indoor work in laboratories and shall be handled carefully by competent trained personnel.

Note 2: The specifications of precision balances and secondary balance shall be according to International recommendations.

SCHEDULE IV

See rule 9(2)]

PART III : Working Standard Balances.

Specifications with permissible limits of sensitiveness of working standard balances.

1. Working standard balances may be of the following two types—

- (a) *Indoor type*—these balances are ordinarily intended to be used in the laboratory.
- (b) *Outdoor type*—these balances are ordinarily intended to be used for the field work and shall be capable of being easily assembled, dismantled and suitably packed for being transported from place to place.

2. Every indoor type working standard balance shall conform, as regards capacity, sensitivity figure in mg per division, maximum variation in sensitivity figure with respect to load and overall accuracy of measurement to the specification as indicated in the Table 2:

TABLE 2

| Capacity. | Sensitivity figure in mg/division of scale. | Maximum variation in sensitivity figure with respect to load. | Minimum overall accuracy of measurement. |
|-----------|---|---|--|
| 50 kg | 100 | 20 per cent | 100 mg in 10 kg |
| 5 kg | 10 | 20 per cent | 10 mg in 500 g |
| 200 g | 1 | 20 per cent | 1 mg in 100 g |
| 50 g | 0.4 | 20 per cent | 0.4 mg in 5 g |
| 2 g | 0.02 | 20 per cent | 0.05 mg in 1 mg |

3. Every outdoor type working standard balance shall conform as regards capacity, sensitivity figure, maximum variations in sensitivity figure with respect to load and overall accuracy of measurement, to the specifications, as indicated in the Table 3:

TABLE 3

| Capacity. | Sensitivity figure in mg./division. | Maximum variation in sensitivity figure with respect to load. | Minimum overall accuracy of measurement. |
|-----------|-------------------------------------|---|--|
| 50 kg | 500 mg | 20 per cent | 500 mg in 10 kg |
| 5 kg | 50 mg | 20 per cent | 50 mg in 500g |
| 200 g | 5 mg | 20 per cent | 5 mg in 5g |

4. The standard deviation of the 10 consecutive rest points for every working standard balance shall not be more than one scale division.

5. The deviation in arm ratio from unity, for every working standard equi-arm balance shall not be more than a fraction equal to sensitivity figure divided by full load (both being taken in the same unit).

6. The variation in time periods at different loads for every working standard balances shall not be more than 20 per cent.

7. Every indoor type working standard balance shall be provided with a device so that the contact between the knife edges and their respective places is broken when the balance is in arrested position.

Note—For verification of bullion or carat weights, only indoor type working standard balances shall be used.

SCHEDULE V

[See rule 10]

Specifications, denominations, materials and design of commercial weights and measure.

PART I: Commercial Weights

(PART I)

1. Rectangular Bar Weights.

1.1 *Denominations*—5, 10, 20 and 50 kilograms.

1.2 *Materials*:

Body—Gray cast iron conforming to the description given in Schedule XVII, Annexure II.

Handle—

Type 1 Seamless steel tube.

Type 2 Cast—in handle made of mild steel.

1.3 *Method of manufacture*: Any satisfactory casting or foundry method.

1.4 *Shape*: It must be in one single piece in the shape of rectangular parallelepiped with rounded edges and a rigid handle. The shape and dimension shall conform to figure 1 and read with table 1.

1.5 *Adjusting cavity*: One rectangular loading hole on the under surface tapering outside along the width.

1.6 **Adjustments:** The weights provided with loading holes shall be adjusted by pouring the required weighed quantity of melted lead into the loading hole and pressing the lead firmly. The lead used for adjusting may preferably conform to the description given in Schedule XVIII, Annexure I.

1.7 **Marking and distinctive signs:** Information relating to nominal value and trade mark etc. both in English and Bengali must appear in relief either on top of the sides or on face of the central part of the weight. The nominal value of the weight must be indicated in the form of 5 kg, 10kg, 50 kg. The letters k and g must be small.

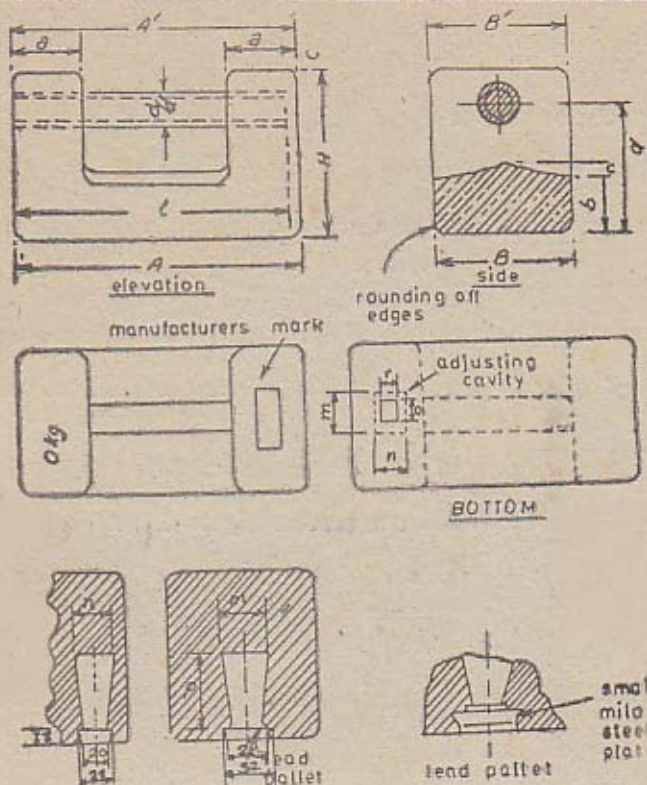
TABLE 1: Dimensions of Rectangular Bar Weights (In millimeters).

TYPE 1

| Nominal value. | A | A ₁ | B | B ₁ | H | a | b | c | d | d/d | l | r | o | m | n | p |
|----------------|----|----------------|-----|----------------|-----|-----|----|----|-----|-------|-----|----|----|----|----|----|
| 5 kg .. | .. | 150 | 152 | 75 | 77 | 84 | 36 | 6 | 66 | 12/20 | 145 | 5 | 12 | 16 | 13 | 36 |
| 10 kg .. | .. | 190 | 193 | 95 | 97 | 109 | 46 | 8 | 84 | 12/20 | 185 | 6 | 16 | 35 | 25 | 46 |
| 20 kg .. | .. | 230 | 234 | 115 | 117 | 139 | 61 | 12 | 109 | 24/32 | 220 | 8 | 20 | 50 | 30 | 64 |
| 50 kg .. | .. | 310 | 314 | 155 | 157 | 192 | 83 | 16 | 152 | 24/32 | 300 | 10 | 25 | 70 | 40 | 90 |

Dimensions A and A₁ as well as B and B₁ can be reversed.

The tolerance on dimensions shall be ± 5 per cent.



DETAILS OF FILLING UP OF LOADING HOLE

FIG -1 RECTANGULAR BAR WEIGHTS TYPE-1, AND TYPE-2 WHERE IN SEAMLESS STEEL TUBE OR MILD STEEL ROD IS TO BE USED

1.8 Stamping: The Inspectors seals shall be stamped on the lead pellet within the loading hole.

2. Flat Cylindrical Weights :

2.1 Denominations :

| Kilogram series. | Gram series. |
|------------------|--------------|
| 2 | 500 |
| 2 | 200 |
| 1 | 200 |
| | 100 |
| | 50 |
| | 20 |
| | 20 |
| | 10 |
| | 5 |
| | 2 |
| | 2 |
| | 1 |

2.2 *Materials*: Flat rectangular weights shall conform to one of the following materials:

1. Cast iron conforming to the description given in Annexure II.
2. Forged mild steel conforming to the description given in Annexure III.
3. Cast brass conforming to the description given in Annexure IV.
4. Brass rods conforming to the description given in Annexure V.
5. Cast bronze conforming to the description given in Annexure VI.

2.3 *Method of Manufacture*: Any method appropriate to the material chosen.

2.4 *Shape*: The weights of denominations of 2 kg and below to and including 1 g shall be flat, rectangular in shape and shall have a slight taper. The shapes and dimensions shall conform to figure 2 read with Table II.

2.5 *Adjusting Cavity*: Weights of denominations of 2 kg and below to and including 20 g shall have a round loading hole tapering outwards in the centre of the underside. The weights of 10, 5, 2, 1 g must be solid without adjusting cavity.

TABLE II: Dimensions of Flat Rectangular Weights

(All dimensions in millimetre)

Tolerance on dimensions shall be ± 10 per cent for weights of denominations of 500 g to 1 g both inclusive and ± 5 per cent for 1&2 kg.

| Denomination. | A ¹ | A | B ¹ | B | C | D (dia.) | F | H (dia.) | M | N | L | |
|---------------|----------------|-----|----------------|----|----|-------------|----|-------------|----|---|---|---|
| 2 kg | .. | 100 | 98 | 92 | 90 | 33 | 30 | 18 | 34 | 8 | 8 | 4 |
| 1 kg | .. | 82 | 80 | 72 | 70 | 22 | 16 | 15 | 20 | 8 | 8 | 4 |
| 500 g | .. | 64 | 62 | 52 | 50 | 20 | 16 | 14 | 20 | 7 | 7 | 4 |
| 200 g | .. | 47 | 45 | 35 | 33 | 16 | 13 | 9.5 | 15 | 3 | 4 | 3 |
| 100 g | .. | 37 | 35 | 25 | 23 | 14 | 14 | 9.5 | 13 | 2 | 5 | 2 |
| 50 g | .. | 28 | 26 | 20 | 18 | 12 | 10 | 8 | 12 | 2 | 3 | 2 |
| 20 g | .. | 19 | 17 | 16 | 14 | 10 | 8 | 4 | 10 | | | |
| 10 g | .. | 16 | 14 | 14 | 9 | 8 | | | | | | |
| 5 g | .. | 12 | 10 | 9 | 7 | 6 | | | | | | |
| 2 g | .. | 10 | 8 | 8 | 6 | 4 | | | | | | |
| 1 g | .. | 9 | 7 | 7 | 5 | 2 | | | | | | |

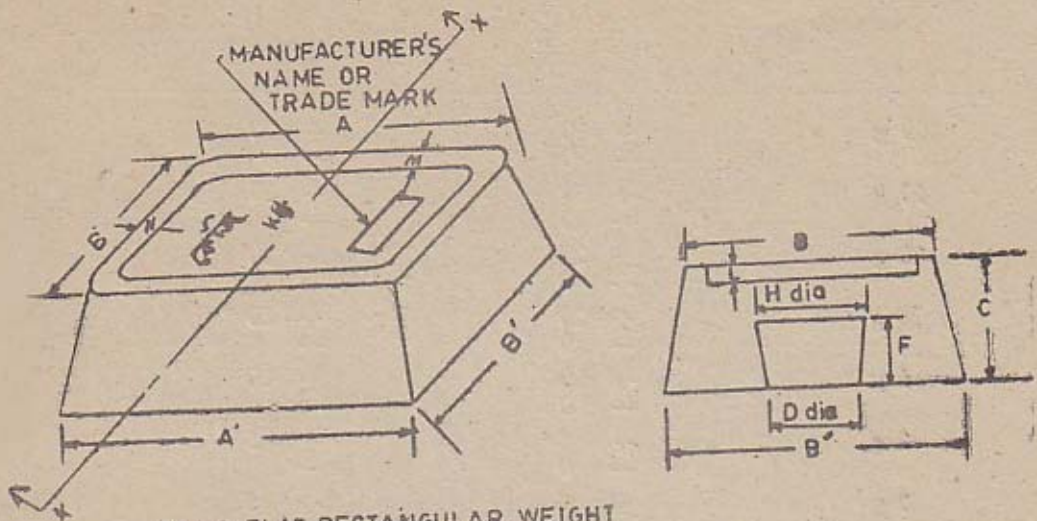


FIG.2. FLAT RECTANGULAR WEIGHT
(FIG.2. OF SCHEDULE V, PART I);
NOTE: NOT TO SCALE

3.1 *Adjustments:* The weights provided with loading holes be adjusted by pouring the required weighed quantity of molten lead into the loading hole and pressing the lead firmly. The lead used for adjusting may preferably conform to the description given in Annexe I.

3.2 Permissible margin of error for Rectangular Bar Weights and Flat Rectangular Weights:

| Nominal value. | Permissible error in (mg) on verification. | On Inspection. |
|----------------|---|----------------|
| 50 kg | +8000 — 0 | +8000 — |
| 20 kg | +3200 — 0 | +3200 — |
| 10 kg | +1600 — 0 | +1600 — |
| 5 kg | + 800 — 0 | + 800 — |
| 2 kg | + 400 — 0 | + 400 — |
| 1 kg | + 200 — 0 | + 200 — |
| 500 g | + 100 — 0 | + 100 — |
| 200 g | + 50 — 0 | + 50 — |

| Nominal value. | Permissible error in (mg) On Inspection. on verification. | |
|----------------|--|-------------|
| 100 g | + 30 - 0 | + 30 - 0 |
| 50 g | + 30 - 0 | + 30 - 0 |
| 20 g | + 20 - 0 | + 20 - 0 |
| 10 g | + 20 - 0 | + 20 - 0 |
| 5 g | + 10 - 0 | + 10 - 0 |
| 2 g | + 5 - 0 | + 5 - 0 |
| 2 g | + 5 - 0 | + 5 - 0 |
| 1 g | + 5 - 0 | + 5 - 0 |

3.3 Stamping:

- (a) The Inspector's seals shall be stamped on the lead pellet within the loading hole, where loading hole is provided.
- (b) The Inspector's seals shall be stamped on the bottom of weights which have no loading hole.

4. Bullion Weights:

4.1 Denominations:

| Kilogram series. | Gram series. |
|------------------|--------------|
| 10 | 500 |
| 5 | 200 |
| 2 | 200 |
| 2 | 100 |
| 1 | 50 |
| | 20 |
| | 20 |
| | 10 |
| | 5 |
| | 2 |
| | 2 |
| | 1 |

TABLE III: Dimensions of Cylindrical Bullion Weights with Handle

| Denominations | A | B | C | D | E | F | G | H | I | J | K | S |
|---------------|-----|-----|----|-----|----|----|----|----|----|----|----|----|
| 20 kg | 133 | 157 | 71 | 106 | 41 | 16 | 55 | 51 | 25 | 26 | 14 | 25 |
| 10 kg | 106 | 130 | 64 | 85 | 33 | 14 | 50 | 49 | 25 | 26 | 13 | 2 |

All dimensions in millimetres.

Tolerance of dimensions \pm 5 per cent.

TABLE IV: Dimensions of Cylindrical Bullion Weight with Knob

| Denomination | A | B | C | D | E | F | G | H | L | J |
|--------------|----|----|------|----|------|------|------|------|-----|------|
| 5 kg | 86 | 88 | 41 | 56 | 37.5 | 22.5 | 18.5 | 38 | 19 | 20 |
| 2 kg | 64 | 67 | 27 | 39 | 24 | 14 | 13 | 27 | 17 | 17.5 |
| 1 kg | 50 | 50 | 23.5 | 33 | 21 | 12 | 11.5 | 25 | 16 | 17 |
| 500 g | 41 | 39 | 20 | 25 | 17 | 10.5 | 8.8 | 19 | 16 | 17 |
| 200 g | 32 | 29 | 16 | 20 | 12 | 9 | 7 | 13.5 | 13 | 13.5 |
| 100 g | 24 | 24 | 12 | 17 | 9.5 | 6 | 6 | 11 | 11 | 12 |
| 50 g | 19 | 19 | 10 | 14 | 8 | 5 | 5 | 9 | 9.5 | 10 |
| 20 g | 14 | 14 | 6 | 10 | 6 | 3 | 3 | 6 | 6 | 7 |
| 10 g | 11 | 11 | 5 | 8 | 5 | 3 | 2 | .. | .. | .. |
| 5 g | 9 | 9 | 4 | 6 | 4 | 2 | 2 | .. | .. | .. |
| 2 g | 6 | 6 | 3 | 4 | 2 | 1.5 | 1.5 | .. | .. | .. |
| 1 g | 6 | 6 | 2 | 3 | 1 | 1 | 1 | | | |

All dimensions in millimeters

Tolerance on dimensions:

(a) for weights above 1 kg \pm 5 per cent.

(b) for weights 1 kg and below \pm 10 per cent.

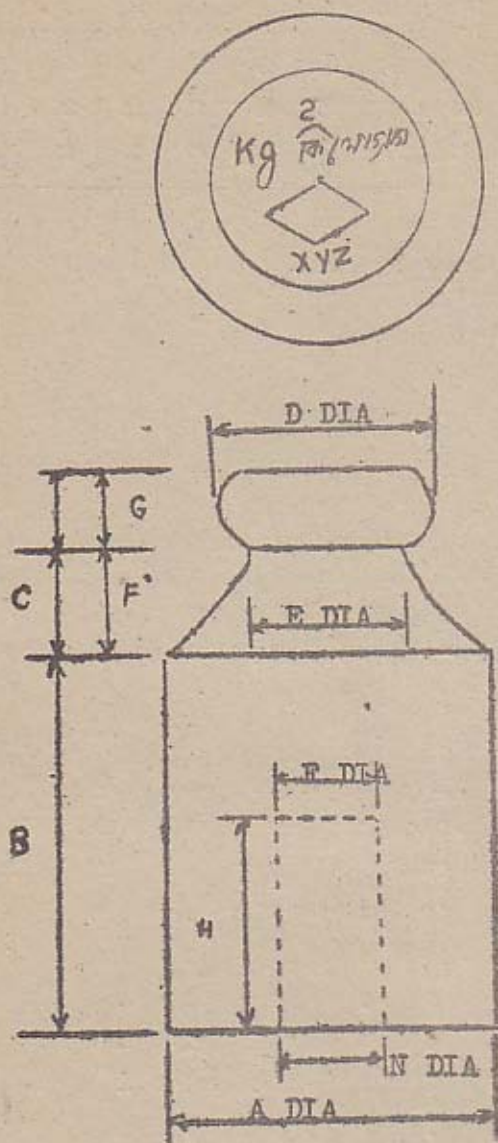


FIG 3 CYLINDRICAL BULLION WEIGHT WITH KNOB.
 of Schedule V (Part I).
 NOTE :- NOT TO SCALE.

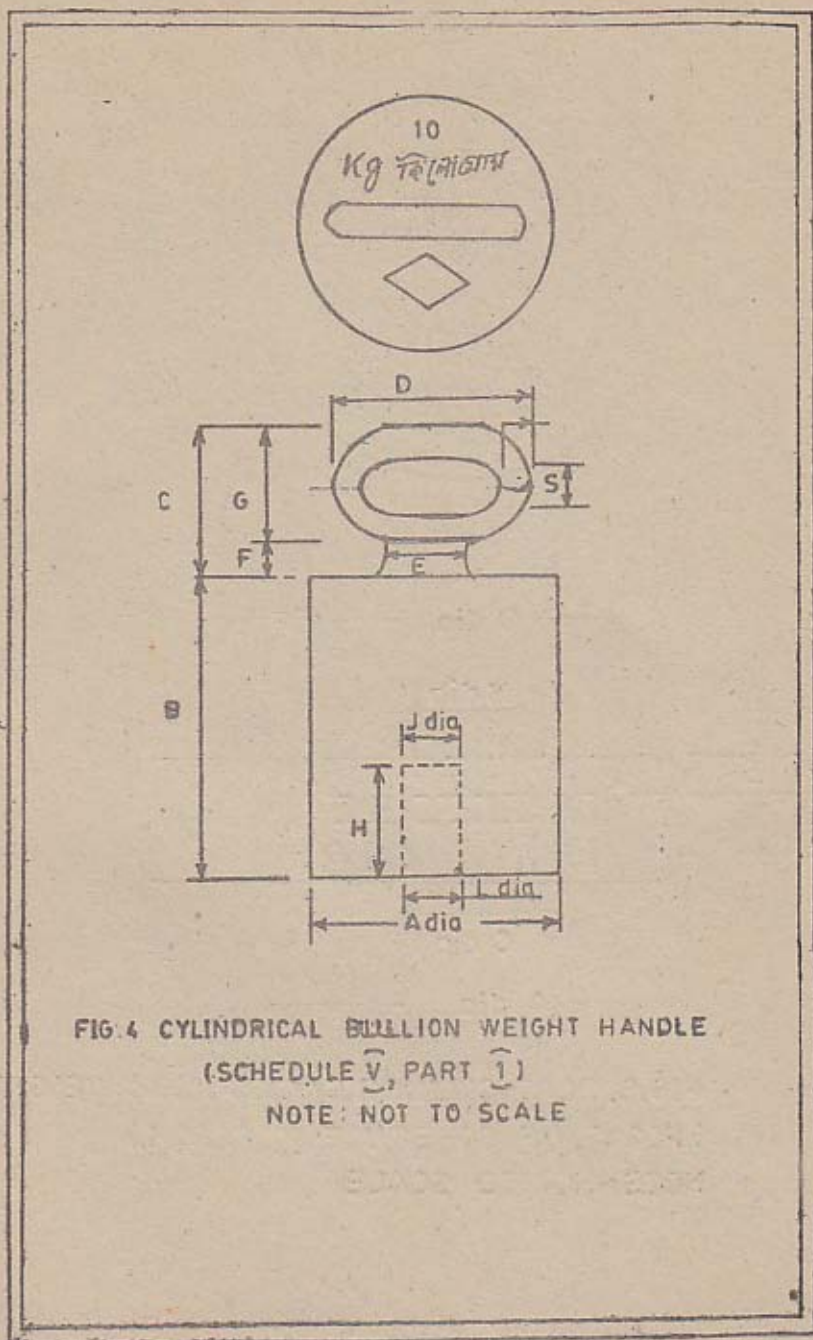


FIG. 4 CYLINDRICAL BULLION WEIGHT HANDLE
(SCHEDULE V, PART 1)
NOTE: NOT TO SCALE

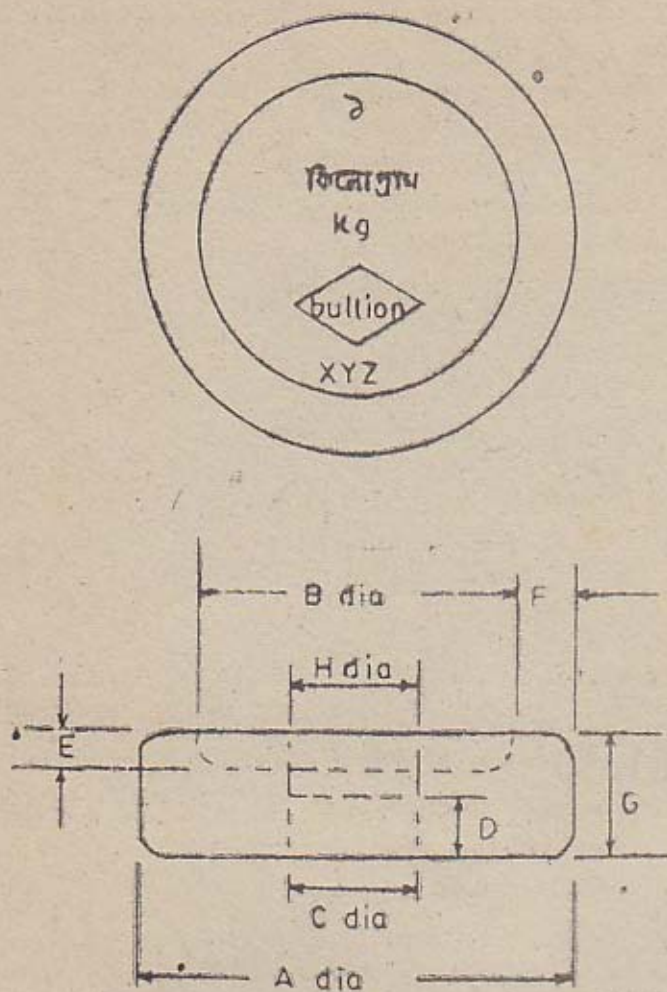


FIG.5. FLAT CYLINDRICAL BULLION WEIGHT
 (FIG.5. OF SCHEDULE V, PART 1)
 NOTE-NOT TO SCALE

TABLE V: Dimensions of Flat Cylindrical Bullion Weights

| Denomination | A | B | C | D | E | F | G | H |
|--------------|------|------|-----|-----|-----|------|------|----|
| 1 kg | 82.5 | 66.5 | 16 | 16 | 3 | 8.0 | 24 | 17 |
| 500 g | 65 | 49.5 | 16 | 13 | 2.5 | 7.75 | 19 | 17 |
| 200 g | 48.0 | 38.5 | 13 | 9.5 | 2.5 | 4.75 | 14 | 14 |
| 100 g | 37.5 | 19.5 | 11 | 7 | 2 | 4 | 15.5 | 12 |
| 50 g | 28.5 | 22.5 | 9.5 | 6 | 1.5 | 3 | 10.5 | 10 |
| 20 g | 21.5 | 17.5 | 8 | 4 | 1.5 | 2.0 | 7 | 8 |
| 10 g | 16.5 | 13.5 | .. | .. | 1 | 1.5 | 6 | .. |
| 5 g | 12.5 | 10.5 | .. | .. | 1 | 1 | 5 | .. |
| 2 g | 10 | 8.0 | .. | .. | 0.5 | 1 | 4 | .. |
| 1 g | 7.5 | .. | .. | .. | .. | .. | 2.5 | .. |

All dimensions in millimetres

Tolerance on dimension ± 10 per cent.

4.2 *Materials:* The weights shall be made of cast brass or cast bronze or processed from brass rods. The cast brass or brass rods may preferably conform to the description given in Annexure IV and V respectively. Cast bronze may preferably conform to the description given in Annexure VI.

4.3 *Method of Manufacture:* Any method appropriate to the material chosen.

4.4 *Shape:*

4.4.1 Weights of denominations of 10 kg and down to and including 1g shall be cylindrical in shape, with a handle for 20 kg and 10 kg weights and a knob for the rest of the denominations shapes and dimensions shall conform to figure 3 and 4 read with Table III and IV respectively. Weights of 20 kg and down to including 200 g shall be marked with the denominations of Arabic numerals in Latin Script and kilo and gram in Bengali with a diamond as shown fig. figure 3 and 4 and weights of 100 g and down to and including 10 g shall be marked with only a diamond.

4.4.2 Weights of denominations of 1 kg and down to and including 1 g shall be flat cylindrical in shape (without a knob) and shall nest with each other. Shapes and dimensions shall conform to figure 5 read with Table VI. Weights of 1 kg and below down to and including 20 g shall be marked with the denominations of Arabic numerals and kilo and gram in Bengali and English within a diamond as shown in figure 5 and weights of 10 g and below down to and including 1 g shall be marked with only a diamond.

4.5 *Adjusting Cavity:* Weights of denominations of 10 kilogram and down to including 20 g shall have a round loading hole tapering outwards in the centre of the underside.

4.6 *Permissible margin of error:*

| Denomination. | Permissible margin of error (mg). |
|---------------|-----------------------------------|
| 20 kg | + 500 — 0 |
| 10 kg | + 250 — 0 |
| 5 kg | + 150 — 0 |
| 2 kg | + 80 — 0 |
| 1 kg | + 50 — 0 |
| 500 g | + 30 — 0 |
| 200 g | + 20 — 0 |
| 100 g | + 16 — 0 |
| 50 g | + 12 — 0 |
| 20 g | + 10 — 0 |
| 10 g | + 8 — 0 |
| 5 g | + 6 — 0 |
| 2 g | + 4 — 0 |
| 1 g | + 2 — 0 |

4.7 *Stamping:*

- (a) The Inspector's seals shall be stamped on the lead pellet within the loading hole, where loading hole is provided.
- (b) The Inspector's seals shall be stamped on the bottom of weights which have no loading hole.

5. **Sheet Metal Weights:**

5.1 *Denominations:* The denomination of sheet metal weights shall be 500, 200, 200, 100, 50, 20, 20, 10, 5, 2, 2, 1 mg.

5.2 *Materials:* Sheet metal weights shall be made of stainless steel, aluminium, brass or nickel silver sheets. The aluminium and brass sheets may preferably conform to the requirements given in Annexure VII and VIII respectively:

5.2.1 *Nickel silver sheets:* Nickel silver sheets should preferably have the following composition:

| Constituent. | Per cent by weight. |
|--------------|---------------------|
| Copper .. | 63.0 to 66.5 |
| Nickel .. | 17.5 to 19.5 |
| Zinc .. | Remainder |

5.2.2 *Stainless steel sheet:* Stainless steel sheet should preferably conform to the following composition:

| Constituent, | Per cent by weight. |
|----------------------|---------------------|
| Carbon, maximum | 0.16 |
| Silicon, minimum | 0.20 |
| Manganese, maximum | 2.00 |
| Nickel .. | 7.0 to 10.0* |
| Chromium .. | 17.0 to 20.0* |
| Sulphur maximum | 0.045 |
| Phosphorus, maximum. | |

*Nickel plus chromium not less than 25.00 per cent.

5.3 *Shapes and Dimensions:*

5.3.1 Other than Bullion Weights: After bending along one of the sides (see Fig. 6) the weights shall have the dimensions given in Table VI and the following shapes:

| Denomination. (mg) | Shape. |
|-----------------------|----------|
| 500, 50, 5 | Hexagon |
| 200, 20, 2 | Square |
| 100, 10, 1 | Triangle |

TABLE VI
DIMENSIONS OF SHEET METAL WEIGHTS

| Denomination (mg) | B ¹ | B ² | B ³ | H | C |
|-------------------|----------------|----------------|----------------|-----|-----|
| 500 | .. | .. | 12 | 4 | 2 |
| 200 | .. | .. | .. | 3.5 | 2 |
| 100 | 9.0 | .. | .. | 3.5 | 2 |
| 50 | .. | .. | 9.0 | 3 | 1.5 |
| 20 | .. | 6.4 | 2.5 | 2.5 | 1.5 |
| 10 | 6.4 | .. | .. | 2 | 1.5 |
| 5 | .. | .. | 6.3 | 2 | 1 |
| 2 | .. | 3.6 | .. | 2 | 1 |
| 1 | 3.6 | .. | .. | 2 | 1 |

All dimensions in millimetres

Tolerance on dimensions ± 10 per cent.

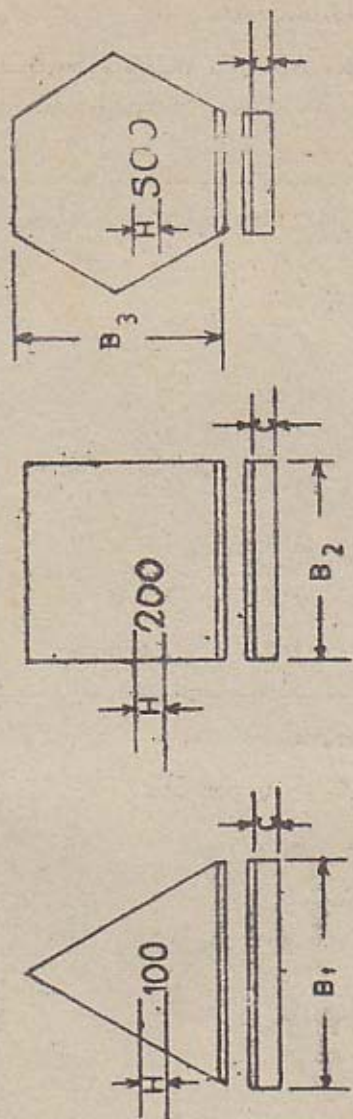


FIG 6. SHEET METAL WEIGHTS
(FIG 6. OF SCHEDULE V, PART 1)
NOT TO SCALE

TABLE VII
DIMENSIONS OF SHEET METAL WEIGHTS (BULLION)

| Denomination (mg) | D | C | H |
|-------------------|------|-----|-----|
| 500 | 11.0 | 2 | 2 |
| 200 | 10.0 | 2 | 2 |
| 100 | 9.0 | 2 | 2 |
| 50 | 8.0 | 1.5 | 2 |
| 20 | 6.3 | 1.5 | 1.6 |
| 10 | 5.6 | 1.5 | 1.6 |
| 5 | 5.0 | 1.0 | 1 |
| 2 | 4.0 | 1.0 | 1.0 |
| 1 | 3.2 | 1.0 | 1.0 |

All dimensions in millimetres

Tolerance on dimensions ± 10 per cent.

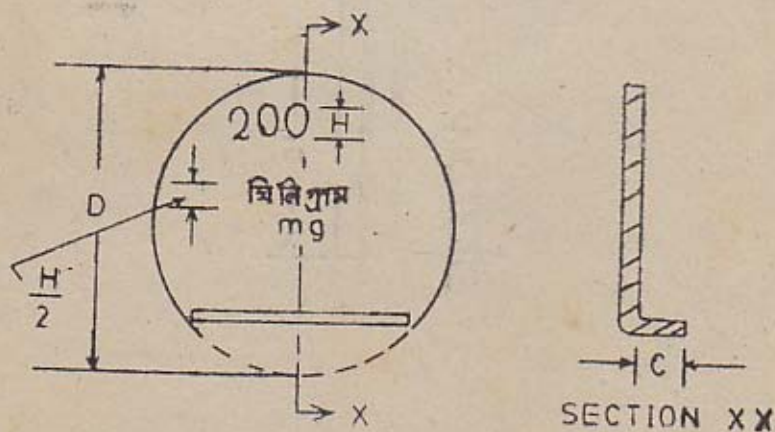


FIG. 7. SHEET METAL BULLION WEIGHT
(FIG. 7. OF SCHEDULE V, PART 1)
NOTE - NOT TO SCALE

5.3.2 *Bullion Weights*: When intended for use in the bullion trade, sheet metal weights shall, after bending, have circular shape, their diametres shall be as given in figure 7 read with table VII.

5.4 *Permissible errors*: The error in excess permissible for new weights shall not exceed the following limits:

| Denomination (mg) | Other than bullion weights (mg) | Bullion weights (mg) |
|-------------------|---------------------------------|----------------------|
| 500 | 8.0 | 1.6 |
| 200 | 6.0 | 1.2 |
| 100 | 4.0 | 0.8 |
| 50 | 2.0 | 0.4 |
| 20 | 2.0 | 0.4 |
| 10 | 1.0 | 0.2 |
| 5 | 0.4 | 0.2 |
| 2 | 0.2 | 0.2 |
| 1 | 0.1 | 0.1 |

5.4.1 The maximum permissible error in deficiency for used weights shall not exceed 50 per cent of the values prescribed for permissible errors in excess.

5.4.2 The deficiency figures are only for the information of users of weights and that the permissible error on new weights shall be only on the excess side.

Sheet metal weight.

5.4.3 *Stamping*: (a) Inspector's seal shall not be affixed on weights of 10 mg, 5 mg, 2 mg and 1 mg. These weights shall be authenticated by the issue of a certificate of verification which shall also mention the serial number on the box containing the weights.

(b) Inspector's seal for year alone shall be stamped on sheet metal weights of 20 mg.

(c) The Inspector's seals (namely, year, quarter and identification) shall be stamped on sheet metal weights on denominations 500 mg to 50 mg, both inclusive.

6. Manufacture and finish :

6.1 *General* : When the weights are cast, the castings shall be reasonably smooth, free from dross, pits, blow-holes and other defects. When weights are made by machining or forging, the surface shall be reasonably smooth. Sheet metal weights shall be clearly sheared and shall be free from burrs. Cast iron and forged weights shall be coated with a thin film of suitable black paint or varnish.

6.2 The raised markings on weights shall be clean and legible, the stamped markings on sheet metal weights shall be legible and deep enough to ensure indelibility over a long period, but not so deep as to crack the sheet.

6.3 When lead is used in adjusting weights, it shall be so fitted as to ensure that it does not dislodge itself under normal conditions of use.

6.4 The steel handles of cast iron weights shall be rigidly fixed.

7. Marking :

7.1 Every weight except weights of 10 g and lower denominations, shall have the name of the manufacturer, his initial or trade mark indelibly cast or stamped on it.

7.2 The denominations on the weights shall be indicated in Bengali and English in an indelible manner, with the abbreviations 'kg' to indicate kilogram, 'g' to indicate gram and 'mg' to indicate milligram. The numerals used shall only be in Arabic figures and the size of numerals and letters (letters need not be stamped on weights of 50 mg and below and on bullion weights, with knobs, of denominations of 5 g and below) indicating denominations of weights shall be at least twice the size of letters indicating the name or trade mark of the manufacturer.

8. Adjustments :

The weights provided with loading holes shall be adjusted by pouring the required weight quantity of molten lead into the loading hole and pressing the lead firmly. The approximate distance of the lead from the surface shall not be less than 20 per cent of the maximum thickness of the weight when new. The lead used for adjusting may preferably conform to the description given in Annexure I.

PART II. COMMERCIAL CARAT WEIGHTS.

1. Denominations :

1.1 The denominations of the carat weights shall be as given below (the gram and milligram equivalents are shown against each for ready reference).

1.1.1 Knob Weights :

| Denomination Carat (c) | Equivalent (g) |
|------------------------|----------------|
| 500 | 100 |
| 200 | 40 |
| 100 | 20 |
| 50 | 10 |
| 20 | 4 |
| 10 | 2 |
| 5 | 1 |

1.1.2 Sheet Metal Weights :

| Denomination Carat (c) | Equivalent (mg) |
|------------------------|-----------------|
| 2 | 400 |
| 1 | 200 |
| 50/100 | 100 |
| 20/100 | 40 |
| 10/100 | 20 |
| 5/100 | 10 |
| 2/100 | 4 |
| 1/100 | 2 |
| 0.5/100 | 1 |

2. Knob weights :

2.1 *Denominations* : The denominations of different types of knob weights shall be the same as laid down in paragraph 1.1.1.

2.2 *Materials :*

2.2.1 The weights shall be made from rolled, drawn or extruded material and shall not be cast.

2.2.2 The weights shall be made from brass, bronze, nickel silver, non-magnetic nickel chromium or non-magnetic stainless steel which may preferably conform to the following :

(a) *Brass*—The description given in Annexure V.

(b) *Bronze :*

| Constituent : | Per cent. |
|------------------------|--------------|
| Copper | 89.0 to 91.0 |
| Tin | Remainder |
| Impurities : | |
| Lead, maximum | 0.05 |
| Iron, maximum | 0.05 |
| Other (total), maximum | 0.13 |

(c) *Nickel Silver :*

| Constituent : | Per cent. |
|--------------------|--------------|
| Copper | 63.0 to 66.5 |
| Nickel | 17.5 to 19.5 |
| Zinc | Remainder |
| Impurities : | |
| Iron, maximum | 0.25 |
| Manganese, maximum | 0.50 |
| Lead, maximum | 0.05 |

(d) *Non-magnetic Nickel Chromium :*

| Constituent : | Per cent. |
|--------------------|--------------|
| Carbon, maximum | 0.10 |
| Manganese, maximum | 0.50 |
| Chromium | 19.0 to 21.0 |
| Silicon, maximum | 0.80 |
| Copper, maximum | 0.20 |
| Iron, maximum | 1.20 |

(e) *Non-magnetic stainless steel :*

| Constituent : | Per cent. |
|-----------------|-----------|
| Carbon, maximum | 0.08 |
| Silicon | 0.02 |

TABLE I
 NOMINAL DIMENSIONS OF KNOB CARAT WEIGHTS
 (All dimensions in mm)

| Denomination (Carat) (c) | A | B | C | D | E | F | G | H | K | L |
|--------------------------------|----|-----|------|-----|-----|-----|------|-------|------|---|
| 500 | 12 | 2.5 | 1.25 | 5.0 | 1.5 | 8.0 | 33.2 | 13.26 | 0.40 | |
| 200 | 10 | 2.2 | 1.10 | 4.5 | 1.5 | 6.5 | 24.4 | 9.60 | 0.30 | |
| 100 | 9 | 2.0 | 1.00 | 4.0 | 1.0 | 6.0 | 19.1 | 7.63 | 0.30 | |
| 50 | 8 | 1.8 | 0.90 | 3.5 | 1.0 | 5.5 | 15.0 | 5.95 | 0.25 | |
| 20 | 7 | 1.7 | 0.85 | 3.0 | 1.0 | 5.0 | 10.8 | 4.13 | 0.25 | |
| 10 | 6 | 1.6 | 0.80 | 2.5 | 1.0 | 4.5 | 8.2 | 3.26 | 0.20 | |
| 5 | 5 | 1.5 | 0.75 | 2.0 | 1.0 | 4.0 | 6.3 | 2.49 | 0.20 | |

Note.—The above nominal dimensions are related to material with a density of 8.4 g/cc. To take into account variations in materials and manufacturing practices, a tolerance of +5 per cent is permitted on the obligatory dimensions (that is, other than C, E, and K).

| Constituent | Per cent |
|---------------------|--------------|
| Manganese, maximum | 2.00 |
| Nickel | 8.0 to 11.0 |
| Chromium | 17.5 to 20.0 |
| Sulphur, maximum | 0.045 |
| Phosphorus, maximum | 0.045 |

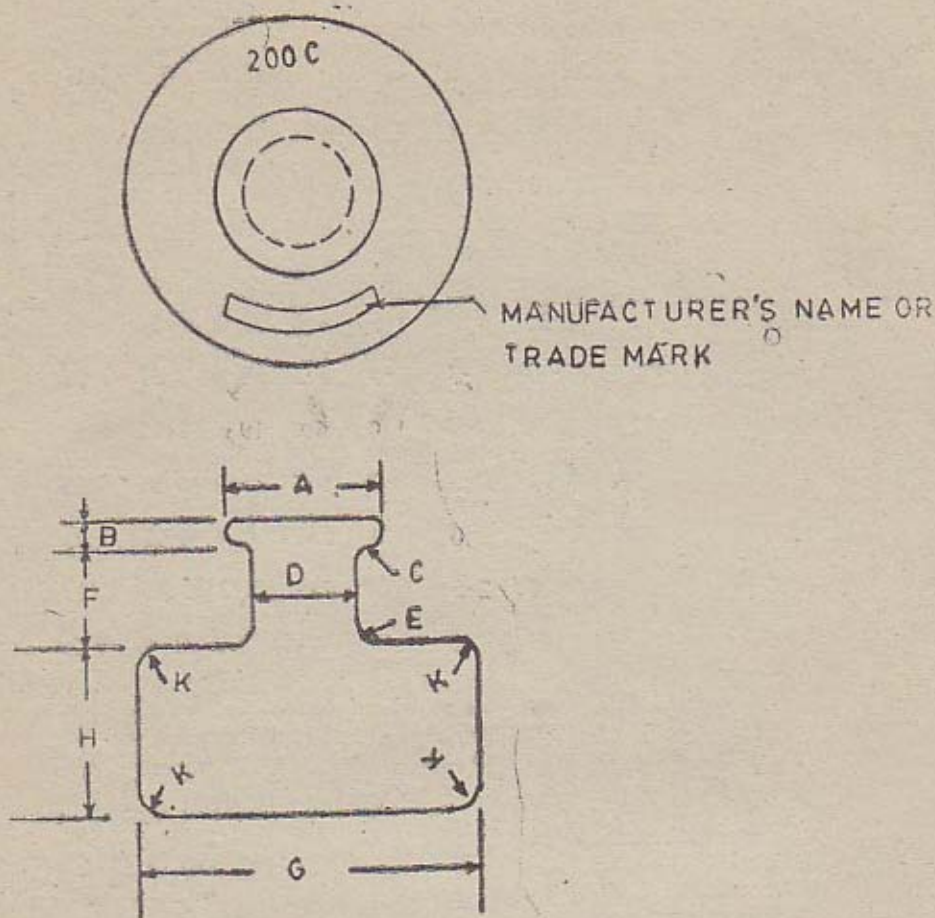


FIG.1. KNOB CARAT WEIGHT
(FIG.1.OF SCHEDULE V, PART II)
NOTE - NOT TO SCALE

2.3 *Shape and dimensions* : The shape and dimensions of the weights shall be as shown in figure 1 and Table I.

2.4 *Permissible errors* : The errors in excess for new weights shall not exceed the following limits. No errors in deficiency shall be permitted.

| Denomination Carat (c) | Permissible error in excess (mg) |
|---------------------------|-------------------------------------|
| 500 | 8 |
| 200 | 6 |
| 100 | 5 |
| 50 | 4 |
| 20 | 3 |
| 10 | 2 |
| 5 | 1 |

- 2.4.1. The maximum permissible errors in deficiency for used weights shall not exceed 50 per cent of the values prescribed for permissible errors in excess.
- 2.4.2. It should be noted that the deficiency figures are only for the information of users of weights and that the permissible error on new weights shall be only on the excess side.

3. Sheet metal weights :

3.1. *Denominations* : The denominations of different types of sheet metal weights shall be as laid down in paragraph 1.1.2.

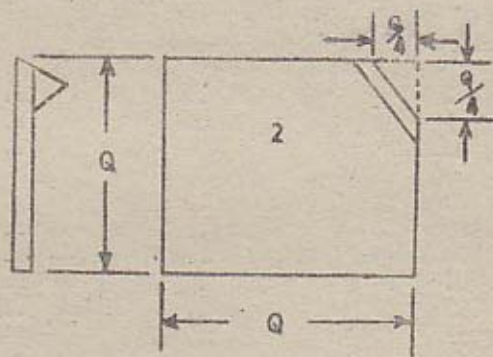


FIG.2, SHEET METAL CARAT WEIGHT
(SCHEDULE V, PART II)

NOTE: NOT TO SCALE

3.2 *Materials*: Weights of denominations 2/100 carat and below shall be made of aluminium sheet which may preferably conform to the description given in Annexure VII. Weights of higher denominations shall be made of sheets of brass aluminium, nickel silver, nickel chromium or bronze, which may preferably conform to the following:

3.2.1 *Brass*—conform to the description given in Annexure V

3.2.2 *Bronze*—As in 2.2.2(b)

3.2.3 *Nickel Silver*—As in 2.2.2(c)

3.2.4 *Non-magnetic Nickel Chromium*—As in 2.2.2(d)

3.2.5 *Non-magnetic stainless steel*—As in 2.2.2(e)

3.2.6 *Aluminium*—As described in Annexure VII

3.3 *Shape and Dimensions*: Sheet metal weights shall be square with a raised corner to facilitate manipulation (see Fig.2). They shall have the dimensions given in Table II.

TABLE II

Nominal Dimensions of Sheet Metal Carat Weights

| Denomination Carat (c) | Size (Q) mm |
|---------------------------|----------------|
| 2 | 12 |
| 1 | 10 |
| 50/100 | 9 |
| 20/100 | 8 |
| 10/100 | 7 |
| 5/100 | 6 |
| 2/100 | 5 |
| 1/100 | 4 |
| 0.5/100 | 3 |
| Tolerance | ±10 per cent. |

3.4 *Permissible errors*: The errors in excess for new weights shall not exceed the values given below. No errors in deficiency shall be permitted.

| Denomination Carat (c) | Permissible Error in Excess mg. |
|------------------------------|---------------------------------------|
| 2 | 0.8 |
| 1 | 0.6 |
| 50/100 | 0.4 |
| 20/100 | 0.2 |
| 10/100 | 0.2 |
| 5/100 | 0.1 |
| 2/100 | 0.1 |
| 1/100 | 0.1 |
| 0.5/100 | 0.1 |

3.4.1 The Maximum permissible errors in deficiency for used weights shall not exceed 50 per cent of the value prescribed for permissible errors in excess.

3.4.2 It should be noted that the deficiency figures are only for the information of users of weights and that the permissible errors on new weights shall be only on the excess side.

4. Manufacture and finish:

4.1 The surface of the weights shall be reasonably smooth. Sheet metal weights shall be smoothly sheared and shall be free from burrs.

4.2 For better durability and finish, the weights may be nickel, chromium gold or rhodium plated.

5. Marking:

5.1 Every weight, except weights of 50 carat and lower denominations shall have the manufacturer's name, initial or trade mark and the denomination indelibly stamped on it.

5.2. The denomination shall consist of the Arabic numerals in Latin Script 'kilo' and 'gram' in Bengali within a diamond, except that in the case of weights below 50 carat, only the numerals shall be marked. The size of numerals and letters indicating denominations of weights shall be at least twice the size of letters indicating the manufacturer's name or trade mark.

5.3 The marking shall be legible and deep enough to ensure indelibility over a long period of use.

6. Packing:

6.1 Each set of carat weights shall, in addition to the series of denominations specified under paragraph 2, consist of an additional piece of weights of the relevant decimal multiple of two.

6.2 The weights shall be supplied in a suitable velvet-lined box. The small sheets metal weights shall be so housed and provided with a cover of glass or any other transparent material so that they will not get dislodged from their proper places. The box shall also contain a pair of forceps for lifting the weights.

PART III

Commercial Linear Measures (non-flexible)

1. General:

1.1 This part deals with the non-flexible type of commercial length measures made of metal or wood. Metallic measures are usually used for measuring textiles, ribbons and similar materials and wooden measures generally in the timber trade.

2. Denominations:

The denominations of the length measures shall be as follow:—

| Metallic measures | Wooden measures |
|-------------------|-----------------|
| 1m | 2m |
| 0·5 m | 1m |
| | 0·5 m |

2.1. *Metallic measures.*

2.1.1 *Materials*:—The measures shall be made of mild steel or brass plated with nickel and chromium or of stainless steel. The mild steel rods and brass bars may preferably conform to the description given in Annexure III and IV respectively.

2.1.2 *Shape and Dimensions*.—The shape and dimensions of the measures shall be as shown in Fig. 1.

2.1.3 *Graduation*:—The graduation marks shall be made at every centimetre for the first ten centimetres and thereafter at every five centimetres. The graduation marks at every ten centimetres shall be numbered. The marks at the centimetre divisions shall extend over half the breadth and those at five centimetres divisions over full breadth of the measures. A cross mark shall be provided at 25 centimetres in the case of 0·5 m measures and at 25, 50 and 75 cm in the case of 1 m measures (see Fig. 1.). The graduations shall be only on one side of the measures.

2.1.4 *Limits of error to be tolerated*—The mark at every five centimetres shall not exceed or be deficient by more than 0·25 mm, and further the error from the beginning of the measures to any line mark shall not exceed 1·0 mm, provided that the errors on the full length of the measures shall not exceed the following limits:—

| Denomination | Verification | | Inspection | |
|--------------|--------------|------------|------------|------------|
| | Excess | Deficiency | Excess | Deficiency |
| 1 m | 1·0 mm | 0·5 mm | 1·0 mm | 0·5 mm |
| 0·5 m | 0·5 mm | 0·25 mm | 0·5 mm | 0·5 mm |

2.1.5 *Provision for stamping*.—The measures shall be provided with a copper rivet near each end (see Fig.1.) firmly fixed in a hole, countersunk on both sides for the Inspector's stamp. An arrow lead shall be marked at each end of the measure to provide the points for checking the length.

2.2 *Wooden Measures: Materials*.—The measures shall be made from well seasoned timber of any one of the following species:—

- (i) Teak (*Tectona grade Linn. f.*)
- (ii) Rosewood (*Dalbergia Latifolia Roxb.*)

- (iii) Shisham (*Dalbergia sisso* Roxb).
- (iv) Haldu (*Adhina cordifolia* Hoek. F).
- (v) Bijasal (*Paterocarous maruspius* Roxb).
- (vi) Boxweed (*Buxux sempervirens*).
- (vii) Bech (*Fagus sylvatica*).

2.2.1 *Shape and dimensions*: The shape and dimensions of the measures shall be as shown in Fig. 2.

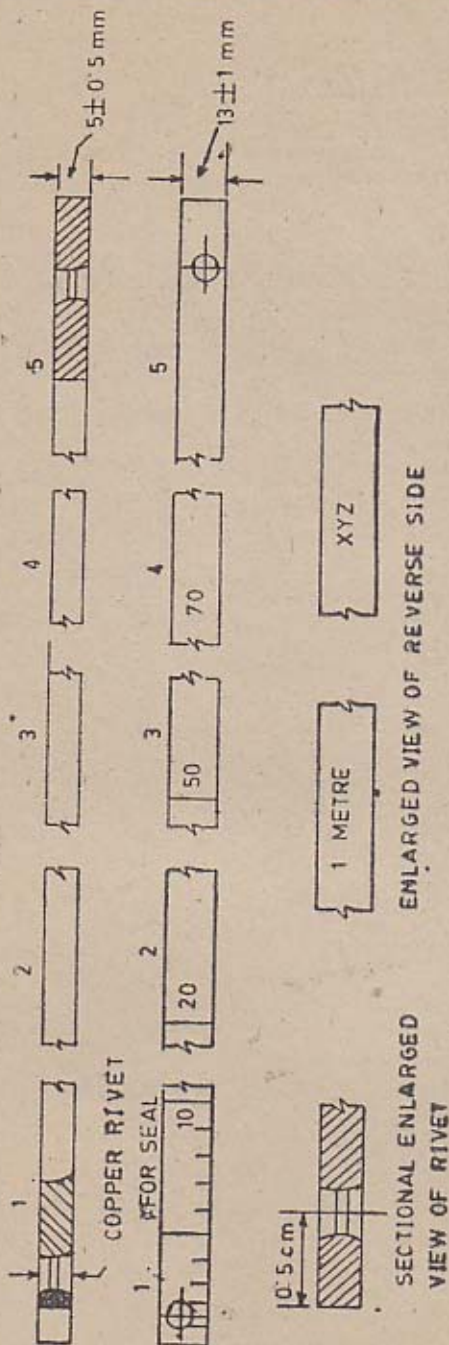


FIG 1
 (SCHEDULE V, PART III)
 NOTE NOT TO SCALE

2.2.2 *Graduation* : The graduation marks shall be made at every centimetre for the first ten centimetres and thereafter at every five centimetre. The graduation marks at every ten centimetres shall be numbered. The marks at the centimetre divisions shall extend over half the breadth and those at the five centimetre divisions over the full breadth of the measures. A cross mark shall be provided at every 25 cm, excluding the one metre and two metre graduation (see Fig. 2). The graduations shall be on one side of the measures only.

2.2.3 *Limits of error to be tolerated*: The mark at every five centimetres shall not exceed or be deficient by more than 1 mm, and further the error from the beginning of the measures to any line mark shall not exceed 2 mm, provided that the errors on the full length of the measure shall not exceed the following limits:

| Denomination | Verification | | Inspection | |
|--------------|--------------|------------|------------|------------|
| | Excess | Deficiency | Excess | Deficiency |
| 2m | 4 mm | 2 mm | 4 mm | 4 mm |

2.2.4 *Provision for Stamping*: Each measure shall be provided at each end with a metal tip not less than 1 cm in width, securely riveted with two rivets at each end, as shown in Fig. 2, for receiving the Inspector's stamp. The width of the tips shall be included in the total length of the measure.

3. Manufacture and finish:

3.1 The measure shall be evenly finished and shall be reasonably straight.

3.2 In the case of metallic measures, the graduation marks and the cross marks shall be legible and deep enough to ensure indelibility over a reasonably long period of use, but not so deep as to make the measures liable to be easily bent. In the case of wooden measures, the markings shall be finished neatly, sharply and legibly, in a colour contrasting with the wood finish. They shall be visible from a distance and shall remain indelible over a reasonably long period of use.

4.1 The denomination shall be stamped, on the un-graduated side of the measure at about one-third of the total length from the beginning of the measure and the manufacturer's name or trade mark at a similar distance from the end of the measure. In the case of wooden measures, the markings shall be finished in the same manner as the graduation.

4.2 The denomination shall be given in Arabic numerals preceded by the word 'metre' and succeeded by the word 'metre'. The size of numerals and letters, indicating denominations of the measures, shall be twice that of the letters indicating the manufacturer's name or trade marks.

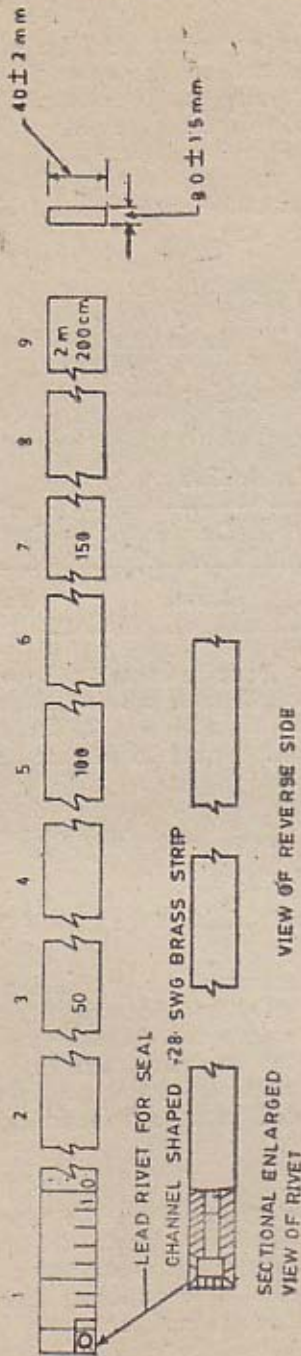


FIG. 2
COMMERCIAL WOODEN LINEAR MEASURE.
NOTE -NOT TO SCALE

PART IV : Commercial Liquid Capacity Measures

1. Scope :

This standard prescribes the requirements for capacity measures of cylindrical and conical shapes intended for use in normal commercial transactions. These measures are intended for measuring liquid only.

2. Types and shapes :

2.1 Cylindrical measures shall be of the dipping and pouring types and shall have the shapes as illustrated in Fig. 1A and Fig. 1B, respectively.

2.2 Conical measures, which are of the pouring types, shall have the shape as illustrated in Fig. 2.

3. Denominations :

The denominations of the different types of measures shall be as follows :

| Cylindrical Measures. | | Conical Measures. | |
|-----------------------|----------|-------------------|--|
| Dipping Type. | | Pouring Type | |
| 1 litre | 2 litres | 20 litres | |
| 500 ml | 1 litre | 10 litres | |
| 200 ml | 500 ml | 5 litres | |
| 100 ml | 200 ml | 2 litres | |
| 50 ml | 100 ml | 1 litre | |
| 20 ml | 50 ml | 500 ml | |
| | 20 ml | 200 ml | |
| | | 100 ml | |

4. Materials :

4.1 *Cylindrical measures* :—The body of cylindrical measures shall be pressed from aluminium alloy sheets, brass sheets or stainless steel sheets, as may be specified by the purchaser. The minimum thickness of the sheets shall be as specified in Table 1. The aluminium alloy sheets may preferably conform to the requirement in Annexure VII specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) and brass sheets to Annexure VIII specification for rolled brass plate, sheet, strip and foil respectively.

TABLE I: Nominal Dimensions of Cylindrical Capacity Measures.

| Denomination | D | H | B | O | O |
|--------------|------|-----|---------|---------|---------|
| | | | Maximum | Minimum | Minimum |
| 2 litres | 120 | 180 | 360 | 250 | 1.60 |
| 1 litre | 95 | 142 | 254 | 210 | 1.60 |
| 500 ml | 75 | 1.4 | 224 | 160 | 1.60 |
| 200 ml | 55.5 | 83 | 160 | 120 | 1.25 |
| 100 ml | 44 | 66 | 132 | 100 | 1.25 |
| 50 ml | 35 | 32 | 104 | 80 | 1.25 |
| 20 ml | 26 | 38 | 76 | 60 | 1.10 |

Note 1.—All dimensions in millimetres.

Note 2.—Tolerance on dimension ± 10 per cent.

4.2 *Conical measures* :—The conical measures shall be fabricated from galvanized steel sheets, aluminium alloy sheets, copper sheets, brass sheets, stainless steel sheets or tin-plate, as specified by the purchaser. The minimum thickness of the sheets shall be as specified in Table II. The galvanized steel sheets, aluminium alloy sheets, brass sheets and tinplate may preferably conform to the description in Annexure VII. Specification for galvanized steel sheets (plain and corrugated). Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes), Annexure VIII. Specification for rolled brass plate, sheet, strip and foil and grade brass plate, sheet, strip and foil. Specification for black plate for tinning and tin-plate respectively.

4.3 The handles for the measures shall be fabricated from the same material as that used for the body.

5. Dimensions :

5.1 The nominal dimensions of cylindrical measures and conical measures shall conform to Fig. 1 read with Table I and Fig. 2 with Table II, respectively.

TABLE II
Nominal Dimensions of Conical Capacity Measures

| Denomination. | A | B | C | D | E | F | G Min | H | J | K | M |
|---------------|----|-----|-----|------|-----|-----|----------|----|------|----|----|
| 20 litres .. | 97 | 388 | 388 | 208 | 194 | 390 | 1.00 | 35 | 86 | 29 | 30 |
| 10 litres .. | 77 | 308 | 307 | 174 | 154 | 309 | 1.00 | 30 | 75 | 26 | 25 |
| 5 litres .. | 61 | 244 | 245 | 147 | 122 | 247 | 0.80 | 25 | 65.5 | 24 | 20 |
| 2 litres .. | 45 | 180 | 180 | 118 | 90 | 182 | 0.80 | 20 | 56 | 22 | 16 |
| 1 litre .. | 36 | 143 | 143 | 95.5 | 72 | 145 | 0.63 | 20 | 45 | 18 | 16 |
| 500 ml .. | 28 | 114 | 113 | 74 | 56 | 116 | 0.63 | 15 | 35 | 14 | 12 |
| 200 ml .. | 21 | 84 | 84 | 53 | 42 | 86 | 0.63 | 10 | 24.5 | 10 | 8 |
| 100 ml .. | 17 | 66 | 67 | 41 | 34 | 69 | 0.63 | 10 | 18.5 | 7 | 8 |

Note 1.—All dimensions in millimetres.

Note 2.—Tolerance on dimensions \pm per cent for 20 litres and 10 litres and \pm per cent for 5 litres and below.

6. Manufacture :

6.1 Measures made of brass sheet and copper sheets shall be well tinned, preferably with pure tin, uniformly all over the inside as well as the outside surface.

6.2 The handles shall be of robust construction and shall be well formed and generally shaped as shown in Fig. 1 and Fig. 2. They shall be securely fixed to the body by means of riveting, welding, soldering or brazing.

Note 1.—Capacity measures when used for measuring milk shall have the handle fixed either by welding soldering or brazing so as not to provide any pockets for accumulation of dirt and unhygienic materials.

Note 2.—Dipping type of cylindrical measures may have the handle substituted by to suitable but diagonally opposite brackets affixed to the walls of the measure by means of soldering, brazing or welding so as to hold the measure properly by a handle at right angles to the walls of the measure to facilitate its use in hot and boiled milk trade.

6.3 The measures shall be free from any surface defects and indentations and shall be smoothly finished.

6.4 Cylindrical measures shall be provided with a well formed and proportioned spout to facilitate pouring.

6.5 Conical measures shall be provided with a retaining lip to avoid spilling. The retaining lip shall be provided with a brass plug with a collar to receive the lead seal which shall be stamped by the Inspector at the time

of verification and periodic inspection. A small hole, about 5 mm in diameter, shall be provided at the bottom of the retaining lip to indicate the level to which the measure shall be filled and the hole shall be located on the side at right angles to the handle.

6.6 The measures shall be so designed that when they are tilted 120 degrees from the vertical, they shall become completely empty.

7. Permissible errors in capacities :

7.1 The permissible errors in excess shall not exceed the limits given below. No errors in deficiency shall be permitted :

| Denomination | Permissible errors in excess | |
|--------------|------------------------------|-------------------|
| | Cylindrical measures. | Conical measures. |
| | (ml) | (ml) |
| 20 litres | — | 100 |
| 10 litres | — | 50 |
| 5 litres | — | 30 |
| 2 litres | 30 | 15 |
| 1 litre | 20 | 10 |
| 500 ml | 15 | 8 |
| 200 ml | 8 | 4 |
| 100 ml | 5 | 3 |
| 50 ml | 3 | — |
| 20 ml | 2 | — |

7.2 Stamping :

- (a) *Cylindrical Capacity Measures* : The Inspector's seal shall be stamped just above the indication of the denomination of the capacity measures.
- (b) *Conical Capacity Measures* : The Inspector's seal shall be stamped on the lead pellet provided for this purpose.

8. Marking :

8.1 Every cylindrical measure shall have the denomination and manufacturer's name or registered trade-mark legibly and indelibly stamped on it. In the case of conical measures, the denomination and manufacturer's name or trade-marks shall be either embossed on the body or indelibly marked on a name-plate securely fixed to the body.

8.2 The denomination shall consist of Latin Arabic numerals and the abbreviation 'L' to indicate litre, and 'ml' to indicate millilitre. The size of letters indicating denominations on the measures shall be twice the size of the letters indicating the manufacturer's name or trade-mark.

PART IV—Dispensing Measures

1. General :

1.1 This part deals with two types of dispensing measures made of glass and transparent plastic materials used for dispensing purposes.

2. Types and denominations :

2.1 Dispensing measures shall be of the following types and denominations :

2.1.1 Conical measures 200 ml, 100 ml, 50 ml, 20 ml, 10 ml and 5 ml.

2.1.2 Beaker measures 1,000 ml and 500 ml.

3. Materials :

3.1 *Glass measures.*—The measures shall be made of clear and transparent glass. They shall be well annealed free from stones, cracks and chippings and as free as possible from blisters and other defects. Lead glass shall not be used for the measure.

3.2 *Transparent plastic measures.*—The measures shall be made of clear and transparent plastic materials, manufactured from plasticised polyvinyl chloride or copolymer, the major constituent of which is polyvinyl chloride. The plastic material used shall not contain any constituents known to be injurious to health and likely to be extracted by contact with liquids.

4. Definition of capacity :

4.1 The capacity corresponding to any graduation mark is defined as the volume of water at 27°C expressed in millilitres, required to fill the measure to that graduation mark at 27°C, the observer's eye being at level with the front graduation mark and the lowest point of the water meniscus appearing to touch the top edge of that mark.

5. Conical measures :

5.1 *Shape.*—The measures shall be conical as shown in Fig. 3A to 3G, the 50 ml measures shall be either tall, or squat as shown in Figs. 3C and 3D respectively.

5.2 *Constructions :*

- 5.2.1 Each measure shall have a pouring lip. The form of the lip shall be such that when the measure is filled with water to the highest graduation mark, the contents may be poured from the lip in a stream falling clear of the outside of the measure.
- 5.2.2 Each measure shall have a base on which it shall stand vertically without rocking when placed on a horizontal surface. The size of the base shall be such that the measure, when empty, shall not fall when placed on a plane inclined at 15° to the horizontal. The bottom of the measuring space shall be uniformly rounded and shall merge smoothly into the sides of the measure.
- 5.2.3 The wall thickness of the measure shall be sufficient to ensure sturdy construction and shall not show any local departures from uniformity.
- 5.2.4 The external surface of the measure shall be a cone having an included angle of not less than 13° and not more than 14° .
- 5.2.5 The overall volume of the measure shall be such that when it is filled with water to the highest graduation mark and a volume of water equal to half its nominal capacity is added to it, there shall be no overflow. But the addition of a further quantity of water equal to quarter the nominal capacity shall result in water overflowing from the pouring lip.

5.3 Graduation :

5.3.1 The conical measures shall be graduated in accordance with Table III

TABLE III
Details of Conical Measures.

| Denomina- tion. | Graduated at. | Numbered at. | Back Lines at. | Height of | | |
|--------------------|--------------------------------------|--------------------------------------|-------------------|------------------------------------|---|---------------------------------------|
| | | | | Lowest Gradua- tion Mark. | Lowest Gradua- tion Mark above of Bottom of Measur- ing space. | Mini- mum Length of Mark. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ml | ml | ml | ml | ml | cm | cm |
| 200 .. | 50, 100, 120, 140, 160, 180, 200. | 50, 100, 120, 140, 160, 180, 200. | 50, 100, 200 | 50 | 6.5+0.5 | 2.0 |
| 100 .. | Every 10 ml from 10 to 100 ml. | 10, 20, 40, 60, 80, 100. | 20, 60, 100 | 10 | 3.0+0.5 | 1.75 |
| 50 (Tall) | Every 10 ml from 10 to 50 ml. | 10, 30, 50 | 30, 50 | 10 | 4.5+0.5 | 1.5 |
| 50 (Squat) | Every 10 ml from 10 to 50 ml. | 10, 30, 50 | 30, 50 | 10 | 2.0+0.5 | 1.5 |
| 20 .. | Every 5 ml from 5 to 20 ml. | 5, 10, 20 | 10, 20 | 5 | 2.5+0.5 | 1.25 |
| 10 .. | Every 2 ml from 2 to 10 ml. | 2, 4, 6, 8, 10 | 2, 6, 10 | 2 | 2.5+0.5 | 1.0 |
| 5 | Every 1 ml from 1 to 5 ml. | 1, 3, 5 | 3, 5 | 1 | 2.5+0.5 | 0.75 |

5.3.2 With the pouring lip of measure facing to the right, the front graduation marks shall be placed at right angles to and on the right hand side of a vertical line extending from above the top graduation mark to near the base of the measure and below the bottom graduation mark.

5.3.3 The graduation marks shall be marked as shown in Fig. 3A to 3G. The marks shall be engraved or etched and they shall be of a uniform thickness not exceeding 0.3 mm., provided that they may taper slightly towards the ends. The graduation marks shall lie in planes perpendicular to the axis of the measures and shall be horizontal when the measure is standing on a horizontal surface.

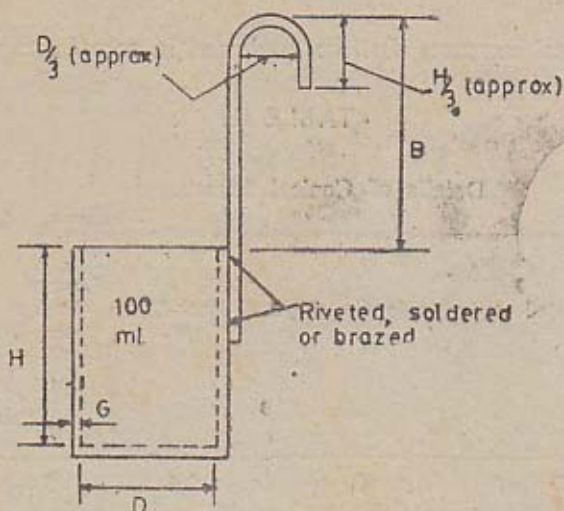


FIG 1A DIPPING TYPE CYLINDRICAL MEASURE (SCHEMATIC)
 (SCHEDULE V, PART IV)
 NOTE—NOT TO SCALE

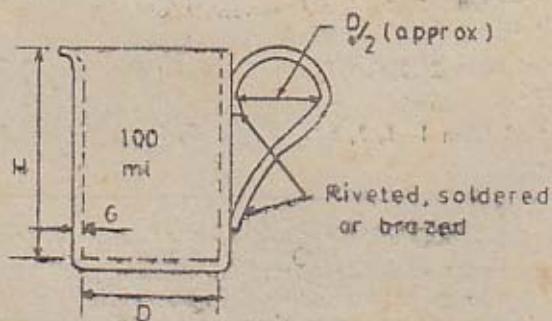


FIG.1B. POURING TYPE CYLINDRICAL MEASURE (SCHEMATIC)
 (SCHEDULE V, PART IV)
 NOTE—NOT TO SCALE

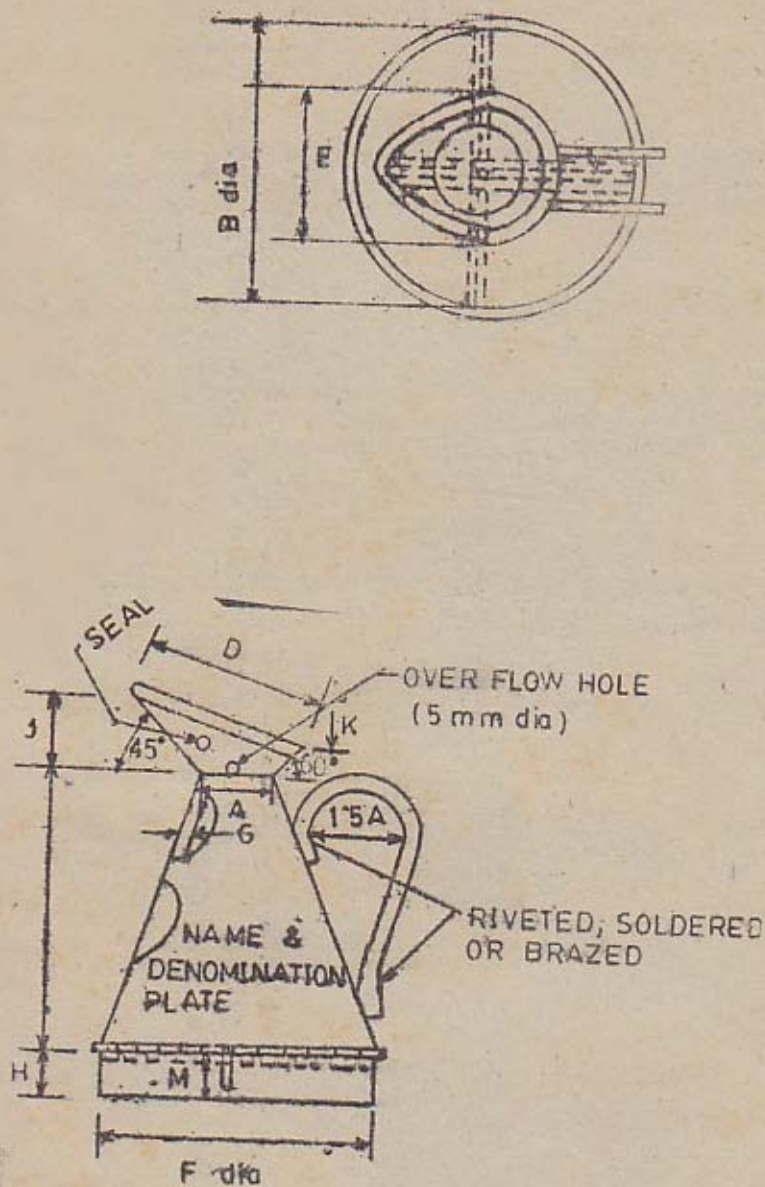
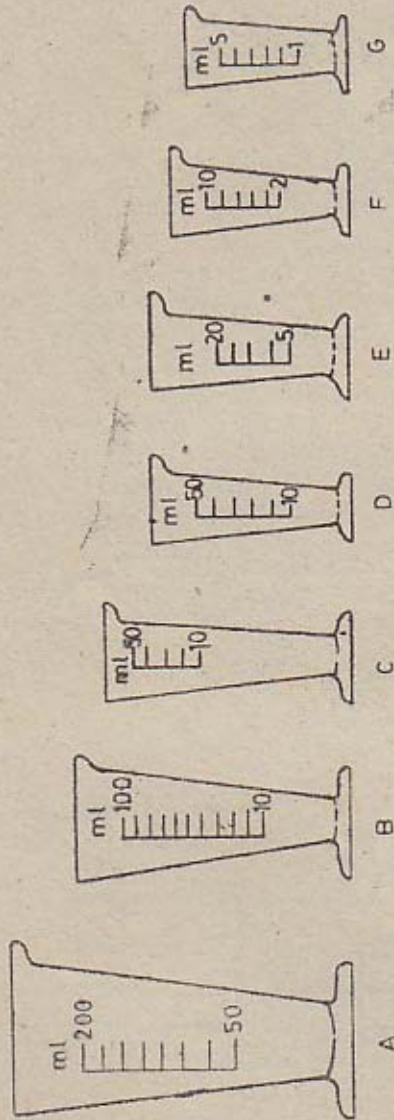


FIG.2 POURING TYPE CONICAL MEASURE
(SCHEMATIC)

(SCHEDULE V, PART IV)

NOTE: NOT TO SCALE



CONICAL DISPENSING MEASURES OF 3I SERIES - TAIL AND SQUAT TYPES

FIG - 3A FIG - 3B FIG - 3C FIG - 3D FIG - 3E FIG - 3F FIG - 3G 200 ml 100 ml 50 ml 20 ml 10 ml 5 ml (SQUAT)

FIG. 3. CONICAL MEASURES
(SCHEDULE V, PART IV)

NOTE:- NOT TO SCALE

- 5.3.4 Each graduation number shall be etched or engraved close to the end of the graduation mark to which it relates and in such a manner that it would be bisected by a prolongation of that graduation mark.
- 5.3.5 The numbered graduation marks shall have the minimum length specified in column 7 of Table III. The unnumbered graduation marks shall be at least two thirds the length of the numbered graduation marks and clearly shorter than the numbered marks.
- 5.3.6 The height of the lowest graduation mark above the lowest point of the bottom of the measuring space shall be within the limit given in column 6 of Table III.
- 5.3.7 Limits of error to be tolerated—The limits of error to be tolerated in capacity shall not exceed the figures given below. The permissible errors in excess or deficiency shall be the same for verification or inspection.

TABLE IV
Permissible Errors in Capacity of Conical Measures.

| Capacity corresponding to Graduation Mark. | Measures except 50 ml. (squat) | 50 ml. (squat) Measures. |
|--|--------------------------------|--------------------------|
| 200, 180, 160 | 3.0 | ... |
| 140, 120, 100 | 2.0 | — |
| 90, 80, 70, 60 | 1.5 | ... |
| 50, 40 | 1.0 | 1.0 |
| 30 | 0.8 | 1.0 |
| 20 | 0.6 | 0.8 |
| 15 | 0.5 | ... |
| 10, 9 | 0.4 | 0.6 |
| 8, 7, 6 | 0.3 | ... |
| 5 | 0.25 | ... |
| 4 | 0.20 | ... |
| 3 | 0.16 | ... |
| 2 | 0.12 | ... |
| 1 | 0.08 | .. |

Note.—The permissible errors apart from those of the 30 ml. (Squat) measure apply to graduation marks corresponding to the capacities stated, irrespective of nominal capacity of the conical measure concerned.

6. Beaker measures :

6.1 *Shape*—The measures shall be in the form shown in Fig. 4A and 4B.

6.2 *Construction* :

6.2.1 Each measure shall be provided with a pouring lip. The form of the lip shall be such that, when the measure is filled with water to the highest graduation mark, the contents may be poured from the lip in a stream falling clear of the outside of the measure.

6.2.2 Each measure shall be provided with base on which it shall stand vertically without rocking when placed on a horizontal surface. The size of the base shall be such that the measure, when empty, shall not fall when placed on a plane inclined at 15° to the horizontal. The bottom of the measuring space shall be uniformly rounded and shall merge smoothly into the sides of the measure.

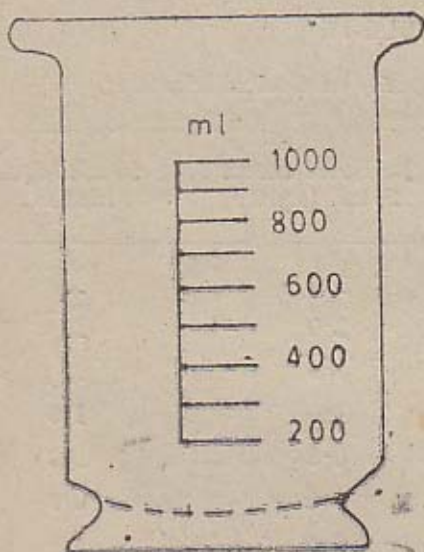


FIG 4.A 1000 ml

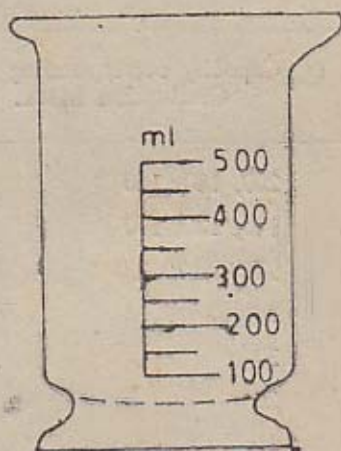


FIG 4 B 500 ml

FIG. 4. BEAKER MEASURES.
(SCHEDULE V, PART IV)
NOTE—NOT TO SCALE

6.2.3 The overall volume of the measure shall be such that when the measure is filled with water in the highest graduation mark and a volume of water equal to quarter the denomination volume is added to it, the water shall not overflow.

6.3 Graduation:

- 6.3.1 The graduation marks shall be marked as shown in Figs. 4A and 4B and Table V. The marks shall be etched or engraved and shall be of a uniform thickness not exceeding 0.5 mm provided that they may taper slightly towards the ends. The graduation marks shall lie in class perpendicular to the axis of the measure and shall be horizontal when the measure is standing on a horizontal surface.
- 6.3.2 Each graduation number shall be etched or engraved close to the end of the graduation mark to which it is related and in such a manner that it would be bisected by a prolongation of that graduation marks.
- 6.3.3 The distance between the highest and lowest graduation marks and the height of the lowest graduation mark above the inside of the base of the measure shall be in accordance with columns (3) and (4) respectively of Table V.

TABLE V
Graduation and Dimensions of Beaker Measure

| Denomination. | Graduation at | Distance between lowest and highest graduation Marks. | Height of lowest graduation Mark above bottom of measuring of surface. | Diameter of top. | Minimum diameter of base. | Overall height. |
|---------------|--|---|--|------------------|---------------------------|-----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ml | | cm | cm | cm | cm | cm |
| 1000 | 20 to 1000 ml at each 100 ml numbered at each 200 ml; unnumbered back lines at 200, 600 and 1000 ml. | 11±1 | 4±2 | 12 | 9 | 23 |
| 500 | 100 to 500 ml at each 50 ml numbered at each 100 ml; unnumbered back lines at 100, 300 and 500. | 9±0.5 | 3±0.55 | | 8 | 18 |

6.4 *Limits of error to be tolerated:* The permissible error in excess or in deficiency for verification or inspection shall not exceed 7 ml for 1000 ml measure and 5 ml for 500 ml measure.

6.5 *Stamping:* The Inspector's seal shall be affixed after each verification just above the upper most graduation mark.

7. Marking:

7.1 Each measure shall have permanently and legibly engraved or etched on its denomination in Arabic numerals the abbreviation 'ml' being used to indicate millilitres. The manufacturer's name or trade mark shall be marked on the underside of the base of each measure.

SCHEDULE VI

(See rule 11)

1. Specifications for weighing instruments and measuring instruments for use in transactions of trade and commerce and limits of errors to be tolerated in verification or re-verification.

PART 1

General Requirements

1.1 These specifications deal with all types of weighing instruments for commercial use and lay down broad essential constitutional requirements to ensure accuracy and long life. It also deals with markings, graduation, methods and manner of verifying the tolerances, errors and sensitiveness.

1.2 Weighing instruments of the following categories are included in these specifications:

- (a) Beam Scales
- (b) Platform Weighing Machines
- (c) Steel Yards
- (d) Counter Machines
- (e) Spring Balances
- (f) Dormant Platform Machine and Weigh bridges
- (g) Crane Weighing Machines
- (h) Automatic Weighing Machine.

2.1 Weighing instruments shall be of such material, design and construction so as to ensure under normal conditions of service the following:

- 2.1.1 Maintenance of accuracy.
- 2.1.2 Continued satisfactory functioning of operating parts.
- 2.1.3 Adjustments remaining reasonably permanent.
- 2.1.4 Prevention of the development of undue stresses.

2.2 All weighing instruments shall be of the type commonly known as vibrating type. A vibrating type of instrument is an instrument which has its indicators oscillating on either side of the position of equilibrium.

2.3 Weighing instruments shall be of good workmanship and finish and shall be verified in clean condition.

2.4 Weighing instruments with assembly parts, the assembly of which will affect the accuracy of the instrument, shall be so constructed as to make their use impossible without such parts. They will be suitably identified with the weighing instruments of which they form essential components.

2.5 Where an instrument has an interchangeable part, the interchange or reversal shall not affect the accuracy of the instrument.

2.6 *Knife edges and bearings.*—Knife edges and bearings used in weighing instruments shall be of such material as will have a hardness not less than 62 RC or equivalent. They shall be so fitted as to allow the beam or steel-yard to move easily and to allow the knife edges to bear upon practically the whole length of the bearings.

2.7 All graduation shall consist of sharply defined uniform lines.

3. Marking :

3.1 All weighing machines shall be prominently, legibly and indelibly marked with manufacturer's name or the registered trade mark, capacity and class (wherever applicable).

3.2 The markings shall be both in Bengali and English.

3.3 The manufacturer's name or the registered trade mark specified in clause 3.1 shall be such as will not be mistaken for the stamp or the seal of the verifying authority.

3.4 The capacity of the weighing instruments shall be indicated in the following manner, namely:

To weigh .. (To be written in Bengali) kg.

To weigh..... g.

4. Sealing :

4.1 All weighing instruments shall be provided by the manufacturer with a plug or stud of soft metal to receive the stamp or seal. Such plug or stud shall be provided in a conspicuous part of the instrument and shall be made in such a manner as to prevent its removal without obliterating the seal of the verifying authority.

5. Verification :

5.1 All weighing instruments shall be verified in the condition their normal use wherever practicable. Non-portable weighing instruments shall be verified in situ in addition to any other test that may be taken at the manufacturer's or dealer's premises.

5.2 Weighing instruments shall be verified for sensitiveness (wherever applicable) and for greatest error at full load.

5.3 The terms "sensitiveness" and "error" mean as follows:—

Sensitiveness is the least weight required to be added or removed from the loading platform or, as the case may be, pan to cause an appreciable movement of the indicator from its position of equilibrium. Error is the least weight requires to bring the indicator to the position of poise or equilibrium from its position of imbalance.

PART II: Beam Scales.

1. Definition:

1.1 A beam scale is a weighing instrument with equal arms, having three knife edges, three bearings, an indicator in the centre and pans suspended from the end knife edges.

2. Classes of beam scales: Beam scales shall have the following four classes:

2.1 Class 'A' shall include chemical and assay balances and other beam scales provided with means of relieving all bearing and knife edges and satisfying the requirements of Table I.

2.2 Class 'B' shall include beam scales generally used in bullion trade satisfying the requirements of Table I.

2.3 Class 'C' shall include beam scales satisfying the requirements of Table III.

2.4 Class 'D' shall cover beam scales satisfying the accuracy requirements of Table IV and distinguished from Class 'C' scales by the provision of two holes through the blade, one on higher side of the central knife edge.

2.5 This part does not prescribe the trades for which different Classes of beam scales may be used. The following information may, however, serve as a guide:—

- (i) Class 'A' beam scales are intended to be used for assay and for fine weighments.
- (ii) Class 'B' scales are intended to be used in the trades mentioned below:
 - (1) Bullion.
 - (2) Precious metals, precious stones and jewellery.
 - (3) Saffron and similar expensive commodities.
 - (4) Chemists and druggists.
 - (5) Perfumery.
- (iii) Class 'C' scales are intended to be used in the trades mentioned below:
 - (1) Base metals.
 - (2) Relatively costlier commodities such as tea, coffee, tobacco, dry fruits, spices, oil-seeds, etc.

- (iv) Class 'D' scales are intended to be used for weighing of relatively cheaper commodities, such as scrap iron, fuel, wood, charcoal, cotton waste, vegetables, charcoal, etc.

3. Materials:

3.1 Beam scales shall be made of either mild steel, brass, bronze, aluminium alloy or stainless steel.

3.2 The pans shall be made of either mild steel, stainless steel, or bronze, hard wood or leather. Wood and leather shall be permissible only in classes 'C' and 'D' beam scales.

3.3 Pans shall be suspended from the beam by metal chains or metal stirrup supports.

3.4 Beam scales of capacity less than 100 kg with wooden pans shall have metal sheets covering the pans.

4. Beam fittings:

4.1 The knife edges and bearings used in beam scales shall be of the following types:

4.1.1 "Agate-box" wherein agate bearings are fitted in brass or iron box, with side holes, which permit of the projecting ends of the knife edges passing into the boxes and resting on or rising to their bearings.

4.2 "Dutch end" wherein the end bearings are fixed inside plates bolted together across the beam to form a shackle.

4.3 "Swan-neck" wherein the ends are curved and slotted, the bottom of the slot forming a knife edge, the extremities of the beam being widened in a direction at right angles to its length so that the base of the slot is parallel to the central knife edge.

4.4 "Continuous, knife-edges" wherein the knife-edges bear along their whole length.

5. Construction:

5.1 Beam scales shall have a loaded weight pan.

5.2 Class 'A' scale shall be provided with a glass case. It shall also be provided with level indicator and levelling screws, to facilitate levelling of the beam scale.

5.3.1 A beam scale of classes 'C' and 'D' category may be provided with a balance ball or a balance box securely attached to one of the suspension chains or pans.

5.3.2 Beam scales with wooden pans shall be provided with balancing ball or box.

5.3.3 Any attachment for adjusting the balancing of beam scales shall be permanently fastened and where a balancing ball or box is used for occasional adjustments, it shall be so fixed that it cannot readily be tampered with.

5.3.4 Balance ball or box shall not be so large as to contain more loose material than an amount exceeding one per cent in weight of the capacity of beam scale under 50 kg or an amount exceeding 1 kg for beam scales of capacity over 50 kg.

6. Marking:

Beam scales shall be conspicuously, legibly and indelibly marked so as to indicate their class, capacity and the manufacturer's name or initials or trade mark. The capacity and class shall be indicated in Bengali as well as English script.

7. Verification :

7.1 Beam scales shall be verified for sensitiveness and error at full load and shall comply with the requirements of Table I, II, III and IV.

7.2 Beam scales shall also be verified with the pans loaded to half the capacity. At this load, the beam scales shall not have a difference exceeding 50 per cent of the permissible error at full load when the knife edges or bearings are moved laterally within their limits of movements. Similarly, when the load on the pan is moved to any position, the difference in weight shown shall not exceed 50 per cent of the error permissible at full load.

TABLE I
Sensitiveness and Errors for Beam Scales Class 'A'

| Capacity. | Verification. | | | Inspection. | |
|-----------|--|---|---|--|--|
| | Sensitiveness per division of scale when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. | | Sensitiveness per division of scale when fully loaded. | Error to be tolerated either in excess or in deficiency when fully loaded. |
| | 1 | 2 | 3 | 4 | 5 |
| 2 g | 0.02 mg | 0.1 mg | | 0.06 mg | 0.2 mg |
| 10 g | 0.05 mg | 0.5 mg | | 0.15 mg | 1.0 mg |
| 20 g | 0.08 mg | 0.8 mg | | 0.24 mg | 1.6 mg |
| 50 g | 0.10 mg | 1.0 mg | | 0.30 mg | 2.0 mg |
| 200 g | 0.15 mg | 1.2 mg | | 0.45 mg | 2.4 mg |
| 1 kg | 5.0 mg | 20.0 mg | | 15.0 mg | 40.0 mg |
| 5 kg | 10.0 mg | 40.0 mg | | 30.0 mg | 80.0 mg |
| 20 kg | 20.0 mg | 80.0 mg | | 60.0 mg | 160.0 mg |

TABLE II
Sensitiveness and Errors for Beam Scales Class 'B'

| Capacity. | Verification. | | Inspection. | | |
|-----------|----------------------------------|---|----------------------------------|---|-------------|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. | |
| | 1 | 2 | 4 | 5 | |
| 20 g .. | | 2.0 mg | 4.0 mg | 6.0 mg | 8.0 mg |
| 50 g .. | | 5.0 mg | 10.0 mg | 15.0 mg | 20.0 mg |
| 100 g .. | | 8.0 mg | 16.0 mg | 24.0 mg | 32.0 mg |
| 200 g .. | | 15.0 mg | 30.0 mg | 45.0 mg | 60.0 mg |
| 500 g ... | | 30.0 mg | 60.0 mg | 90.0 mg | 120.0 mg |
| 1 kg ... | | 40.0 mg | 120.0 mg | 180.0 mg | 240.0 mg |
| 2 kg ... | | 100.0 mg | 200.0 mg | 300.0 mg | 400.0 mg |
| 3 kg .. | | 200.0 mg | 400.0 mg | 600.0 mg | 800.0 mg |
| 10 kg .. | | 400.0 mg | 800.0 mg | 1,200.0 mg | 1,600.0 mg |
| 20 kg .. | | 650.0 mg | 1,300.0 mg | 1,950.0 mg | 2,600.0 mg |
| 50 kg .. | | 1,200.0 mg | 2,400.0 mg | 3,600.0 mg | 4,000.0 mg |
| 100 kg .. | | 2,500.0 mg | 5,000.0 mg | 7,500.0 mg | 10,000.0 mg |

TABLE III: Sensitiveness and Errors for Beam Scales Class 'C'

| Capacity. | Verification. | | Inspection. | |
|-----------|----------------------------------|---|----------------------------------|---|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. |
| 1 | 2 | 3 | 4 | 5 |
| 100 g | 100.0 mg | 200.0 mg | 300.0 mg | 400.0 mg |
| 200 g | 200.0 mg | 400.0 mg | 600.0 mg | 800.0 mg |
| 500 g | 300.0 mg | 600.0 mg | 900.0 mg | 1,200.0 mg |
| 1 kg | 400.0 mg | 800.0 mg | 1,200.0 mg | 1,600.0 mg |
| 2 kg | 600.0 mg | 1.2 g | 1,800.0 mg | 2.4 g |
| 5 kg | 1.8 g | 3.6 g | 5.4 g | 7.2 g |
| 10 kg | 4.5 g | 9.0 g | 13.5 g | 18.0 g |
| 20 kg | 7.0 g | 14.0 g | 21.0 g | 28.0 g |
| 50 kg | 10.5 g | 21.0 g | 31.5 g | 42.0 g |
| 100 kg | 20.0 g | 40.0 g | 60.0 g | 80.0 g |
| 200 kg | 27.0 g | 54.0 g | 81.0 g | 108.0 g |
| 300 kg | 32.0 g | 64.0 g | 96.0 g | 120.0 g |
| 500 kg | 55.0 g | 110.0 g | 165.0 g | 220.0 g |
| 1,000 kg | 105.0 g | 210.0 g | 315.0 g | 420.0 g |

TABLE IV: Sensitiveness and Errors for Beam Scales Class 'D'

| Capacity, | Verification. | | Inspection. | |
|-----------|----------------------------------|---|----------------------------------|---|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. |
| 1 | 2 | 3 | 4 | 5 |
| 200 g | 800.0 mg | 800.0 mg | 2,400.0 mg | 1,600.0 mg |
| 500 g | 1,200.0 mg | 1,200.0 mg | 3,600.0 mg | 2,400.0 mg |
| 1 kg | 2.0 g | 3.0 g | 6.0 g | 6.0 g |
| 2 kg | 3.0 g | 4.5 g | 9.0 g | 9.0 g |
| 5 kg | 6.0 g | 9.0 g | 18.0 g | 18.0 g |
| 10 kg | 12.0 g | 18.0 g | 36.0 g | 36.0 g |
| 20 kg | 25.0 g | 40.0 g | 75.0 g | 80.0 g |
| 50 kg | 30.0 g | 45.0 g | 90.0 g | 90.0 g |
| 100 kg | 50.0 g | 75.0 g | 150.0 g | 150.0 g |
| 200 kg | 70.0 g | 100.0 g | 210.0 g | 200.0 g |
| 300 kg | 90.0 g | 150.0 g | 217.0 g | 300.0 g |
| 500 kg | 130.0 g | 250.0 g | 390.0 g | 500.0 g |
| 1,000 kg | 250.0 g | 500.0 g | 750.0 g | 1,000.0 g |

PART III

Platform Machines.

1. Definition :

1.1 A platform weighing machine is a weighing instrument with compound levers and with the goods receptacle generally in the form of a platform. The capacity of these machines shall not exceed 3,000 kg and weight of the load shall be indicated either with a steelyard or with any other form of indicator.

2. Capacities :

2.1 Platform weighing machines shall be of one of the capacities shown in Table V.

2.2 The steelyard in the platform weighing machine shall not have any readily removable parts except the support for counterpoise proportional weights. There shall be a stop or stops to prevent the sliding poise or poises from travelling behind the zero mark.

The minimum travel of a steelyard in platform machines shall be 10 mm either way.

2.3 If a movable butch, barrow, frame or bucket is used instead of the ordinary platform, it shall form an essential part of the machine without which the machine cannot be balanced. The movable butch, barrow, frame or bucket shall be identified with the machine.

2.4 Where a balance box is provided on the steelyard, the balance ball should not be easily accessible.

2.5 The balancing arrangement for daily wear and tear shall have range between 0.25 per cent and 0.5 per cent of the capacity of the machine and not less than 0.125 per cent of the capacity each way. The balance box containing the balancing ball shall be securely attached to the steelyard, preferably by passing a bolt through the easing to the steelyard. The balancing ball shall be actuated by a detachable key (see Table VI).

2.6 In the case of the platform machines provided with dials.—

2.6.1 Racks and pinions shall be of hard wearing material ;

2.6.2 The extremity of the index shall, in no position at a greater distance from the graduated surface of the dial than 5 mm and shall be made to meet but not to obscure the graduation marks ; and

2.6.3 the dial shall be graduated into equal parts and the minimum width apart of the graduations shall not be less than 3 mm.

2.7 The permissible extension of the platform on either side of the box in the case of extended platform shall be not more than 25 per cent of the length of the box.

3. Counterpoise proportional weights :

3.1 All loose counterpoise proportional weights in a platform machine shall be identified with the machine by a number of any other suitable mark of identification, which shall be indelible. The counterpoise weights shall be marked with their equivalent weights in the following manner :

(to be written in Bengali)=100 kg.

3.2 The counterpoise weights shall be hexagonal in shape with the slot of a suitable size to allow them being placed on the counterbalance.

3.3 The counterpoise proportional weights shall be made of cast iron.

3.4 The proportional weights shall have one rectangular loading hole which should be undercut or tapered inside so as to hold lead securely for normal wear and tear. The surface of the lead in the loading hole, when new, shall be at least 3 mm inside from the bottom surface of the weight.

3.5 In the case of platform machines provided with proportional counterpoise weights, the smallest denomination of the counterpoise weights shall be equivalent to the maximum graduation on the minor steelyard.

3.6 The denomination of the proportional weights shall be in the ratio of 1:2:2:5 and the total equivalent weight of all the proportional weights provided shall not exceed the capacity of the weighing machine.

Note.—While arriving at the capacity of the platform machine, the maximum graduation shown in the steelyard in the case of loose weight platform machine and on the minor steelyard in the case of no loose weight type machines shall not be taken into account.

4. Verification :

4.1 The steelyard of the platform machine shall remain horizontal at no load. With one quarter of the maximum load or as near thereto as is practicable, the platform machine shall indicate the same weight within half the prescribed limits of error, whether the load is placed in the centre or on any of the four corners of the platform.

4.2 Platform machines shall be verified to test the accuracy of any graduation up to the total capacity. All loose counterpoise weights, where such are provided, shall be verified and suitably sealed to prevent tampering.

4.3 When a platform machine is fitted with relieving gear, the prescribed limits of error shall not be exceeded when the machine is put steadily out of and into gear. The plate or platform, shall be entirely disengaged from its bearings when the machine is in relief.

4.4 Dial machines shall be verified for error only. No sensitiveness test shall be taken on such machines. The error at any load shall not exceed the limits prescribed in Table V.

4.5 Platform machines with the steelyard arrangement shall be verified for error as well as for sensitiveness at full load. The permissible errors and sensitiveness are indicated in Table V.

4.6 Platform machines shall not be verified for sensitiveness at loads less than full load.

Sealing :

A stud or a plug of soft metal shall be provided on the steelyard for receiving the seal in the case of Steelyard Weighing Machines. In the case of dial machines such a plug shall be provided on the dial where it is accessible otherwise on the body of the machine.

TABLE V: Sensitiveness and Errors for Platform Machines.

| Capacity. | Verification. | | | Inspection. | | |
|-----------|----------------------------------|--|--|----------------------------------|--|--|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated in excess or in deficiency when fully loaded. | | Sensitiveness when fully loaded. | Greatest error to be tolerated in excess or in deficiency when fully loaded. | |
| | | Vibrating machines. | Platform machines fitted with dials. | | Vibrating machines. | Platform machines fitted with dials. |
| 50 kg | 15 g | 30 g | On half the weight represented by the interval between consecutive graduation marks. | 45 g | 60 g | The weight presented by the interval between graduation marks. |
| 100 kg | 25 g | 50 g | | 75 g | 100 g | |
| 150 kg | 30 g | 60 g | | 90 g | 120 g | |
| 200 kg | 35 g | 70 g | | 105 g | 140 g | |
| 250 kg | 45 g | 90 g | | 135 g | 180 g | |
| 300 kg | 50 g | 100 g | | 150 g | 200 g | |
| 500 kg | 90 g | 180 g | | 270 g | 360 g | |
| 1,000 kg | 150 g | 300 g | | 450 g | 600 g | |
| 1,500 kg | 200 g | 400 g | | 600 g | 800 g | |
| 2,000 kg | 250 g | 500 g | | 750 g | 1,000 g | |

Note.—The capacities 150 kg and 250 kg are not preferred and shall not be used as far as possible.

TABLE VI : Range of Balancing arrangement for Platform Machines.

Range of balancing arrangement.

| Capacity. | Maximum 0.5 per cent. of capacity. | Minimum 0.25 per cent. of capacity. | 0.125 per cent. each way. |
|-----------|------------------------------------|-------------------------------------|---------------------------|
| 50 kg | 250 g | 120 g | 60 g |
| 100 kg | 500 g | 250 g | 120 g |
| 150 kg | 750 g | 370 g | 180 g |
| 200 kg | 1,000 g | 500 g | 250 g |
| 250 kg | 1.3 kg | 620 g | 310 g |
| 300 kg | 1.5 kg | 750 g | 370 g |
| 500 kg | 2.5 kg | 1.25 kg | 620 g |
| 1,000 kg | 5.0 kg | 2.50 kg | 1.25 kg |
| 1,500 kg | 7.5 kg | 3.75 kg | 1.87 kg |
| 2,000 kg | 10.0 kg | 5.00 kg | 2.50 kg |

PART IV

Steelyards.

1. Definition:

A steelyard is an unequal arms balance.

2. Capacities :

Steelyards shall be of one of the capacities mentioned in Table VII.

3. Design and construction :

Steelyards shall be made of either mild steel or stainless steel. The shank shall be perfectly straight. Notches or graduation on the shank shall be cut in one plane and at right angles to the shank. All steelyards shall be provided with a stop or other suitable arrangement to prevent excessive oscillation of the shank. The sliding poise and suspending hooks shall be securely attached to the instrument. All end fittings such as the nut attach to prevent the poise carrier riding off the steelyard shall be securely fixed to the shank. The slide poise shall be freely movable and shall be a stop to prevent it from travelling behind the zero mark. Steelyards having a counterpoise or travelling poise shall be provided with a hole or suitable means for the further adjustment of the counterpoise or travelling poise, such hole being undercut. Wherever loose material is used in the travelling poise, it shall be securely enclosed. Steelyards shall be neither reversible nor have three hooks, and shall not be of counter type. Steelyards shall have a zero graduation.

4. Verification :

4.1 Steelyards shall be verified at full load for sensitiveness and error and shall comply with the requirements of Table VII.

4.2 The verification for sensitiveness is carried out by loading the instrument with the maximum testing load with the steelyard in horizontal position and ascertaining that it turns with the addition of the amount shown in the table for sensitiveness.

4.3 Each numbered graduation shall be verified and the instrument shall be correct whether it is carried out with increasing or decreasing loads.

4.4 The intermediate graduations shall also be tested to see that they are correct and are at proper distance apart.

4.5 Steelyard shall be verified for error by ascertaining the weight in excess or deficiency (if any) required to bring the steelyard to a horizontal position when fully loaded.

4.6 No verification for sensitiveness at a lower load shall be made.

5. Sealing:

Each instrument shall be provided with a plug or stud of soft metal on the front face of the shoulder of the steelyard for receiving the seal, such a plug stud should be made irremovable by undercutting it or in some other suitable manner/method.

TABLE VII: Sensitiveness and Errors For Steelyards

| Capacity. | Verification | | Inspection | |
|-----------|----------------------------------|---|----------------------------------|---|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. | Sensitiveness when fully loaded. | Greatest error to be tolerated either in excess or in deficiency when fully loaded. |
| 1 | 2 | 3 | 4 | 5 |
| 10 kg | 5 g | 5.7 g | 15 g | 15.0 g |
| 20 kg | 10 g | 15.0 g | 30 g | 30.0 g |
| 50 kg | 25 g | 50.0 g | 75 g | 100.0 g |
| 100 kg | 40 g | 80.0 g | 120 g | 160.0 g |
| 150 kg | 60 g | 120.0 g | 180 g | 240.0 g |
| 200 kg | 65 g | 130.0 g | 195 g | 260.0 g |
| 250 kg | 80 g | 160.0 g | 240 g | 320.0 g |
| 300 kg | 90 g | 180.0 g | 270 g | 360.0 g |

PART V: Counter Machines

1. Definition:

Counter machine is an equal armed weighing instrument of a capacity not exceeding 50 kg the pans of which are above the beam.

2. Capacities:

Counter machines shall be one of the capacities mentioned in Table VIII.

3. Design and Construction:

3.1 When the beam or body has two sides, they shall be connected together by not less than two cross bars. The supports for the pans shall be of a suitable rigid structure such as cross strengthened by straps. Central pieces or forks shall be fixed so that they cannot twist or get out of place.

3.2 Bearing surfaces and points of contact of all stays, hooks and loops shall be of hard steel or agate. The knife edges and bearings shall be so fitted as to allow the beam to move freely and the knife edges shall practically bear upon the whole length of their working parts.

3.3 A counter machine may have a balance box for minor adjustment. In such cases, the balance box shall be permanently fixed beneath the weight pan and shall be large enough to contain loose material to an amount not exceeding 1 per cent of the capacity to be verified for error by ascertaining the weight in excess or deficiency (if any) required to bring the beam of the instrument to a horizontal position when fully loaded.

3.4 With the pans loaded to half the capacity, no appreciable difference in the accuracy of the counter machine shall result from moving the knife edges or bearing laterally or backwards and forwards within their limits of movement.

3.5 When the goods pan is not in the form of a scoop, the counter machines shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the goods pan anywhere within a distance from the centre equal to one third of the greatest length of the pan or if the pan has a vertical side, against the middle of the side, the weight being entirely on the weight pan, but in any position on it.

3.6 When the goods pan is in the form of scoop, the counter machine shall be correct if half of the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.

4. Sealing:

Each instrument shall be provided with a plug or stud of soft metal in a conspicuous part of the machine. No other adjusting contrivance shall be used.

4.1 The pan shall be made of mild steel, stainless steel, brass or bronze.

4.2 The minimum fall either way on counter machines shall be as under:—

| Capacity. | Fall. |
|---|-------|
| Not exceeding 2 kg | 6 mm |
| Above 2 kg and not exceeding 15 kg | 10 mm |
| Above 15 kg and not exceeding 25 kg | 12 mm |
| 50 kg | 13 mm |

5. Verification :

5.1 All counter machines shall be verified for sensitiveness and error at full load and shall comply with the requirements of Table VIII.

5.2 Counter machines shall be verified on a level plane.

5.3 Where an instrument has an interchangeable or reversible part, the interchange or reversal shall not affect the accuracy of the instrument.

5.4 The counter machine shall be verified for sensitiveness at full load with the beam in horizontal position and for ascertaining that the addition of the amount specified in the Table shall cause the pointer to rise or fall to the limit of its range of movement.

5.5 No verification for sensitiveness at a lower load shall be made.

5.6 The counter machines shall be provided with a plug or stud of a soft metal in a conspicuous part of the beam or body for receiving a seal. Such a plug or stud shall be made irremovable by undercutting it or in some other suitable manner.

TABLE VIII

Sensitiveness and errors for counter Machines

| Capacity of Machine. | Verification. | | Inspection. | |
|----------------------|----------------------------------|--|----------------------------------|--|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated in excess or in deficiency when fully loaded. | Sensitiveness when fully loaded. | Greatest error to be tolerated in excess or in deficiency when fully loaded. |
| 1 | 2 | 3 | 4 | 5 |
| 500 g .. | 1.3 g | 1.95 g | 3.9 g | 3.9 g |
| 1 kg .. | 1.8 g | 2.65 g | 5.4 g | 5.3 g |
| 2 kg .. | 2.6 g | 3.5 g | 7.8 g | 7.0 g |
| 5 kg .. | 4.5 g | 6.25 g | 13.5 g | 12.5 g |
| 10 kg .. | 6.0 g | 9.0 g | 18.0 g | 18.0 g |
| 15 kg .. | 7.0 g | 10.0 g | 21.0 g | 20.0 g |
| 20 kg .. | 8.5 g | 15.0 g | 25.5 g | 26.0 g |
| 25 kg .. | 10.0 g | 15.0 g | 30.0 g | 30.0 g |
| 50 kg .. | 14.0 g | 28.0 g | 42.0 g | 56.0 g |

PART VI

Spring Balances

1. Definition :

Spring balance is an instrument which determines the weight of an object by the extension or compression of a spring, such extension or compression being registered by means of a pointer on a dial or on a graduated scale.

2. Capacities :

Spring balances shall be of one of the capacities mentioned in Table IX.

3. Design and construction :

3.1 Spring balances with the pan below the spring shall be suspended permanently from a stand, support or bracket.

3.2 The extremity of the index finger shall not exceed 1 mm in width and shall not be more than 3 mm from the scale or dial.

3.3 The scale shall be graduated into equal parts, and the width apart of the graduations shall not be less than 3 mm for a capacity of 15 kg and under and not less than 3 mm for a capacity of 20 kg and above.

3.4 The weight corresponding the interval between consecutive graduation marks shall not exceed the values given in Table IX.

3.5 When the graduation commences at a fixed load, the position of the range of adjustment shall not exceed 1 per cent, of the capacity of the instrument except in the case of instrument used for mixing purposes where it shall not exceed 2 per cent.

3.6 The body shall be constructed either of brass, or cast iron, or any other suitable material, and shall be sufficiently robust in construction. If pans are provided for the balance, they shall be made of brass, bronze, cast iron, mild steel or stainless steel. Metal chains or metal stirrup supports shall be provided if pans are suspended. Rock and pinions, if provided, shall be made of hard wearing materials.

4. Verification :

4.1 Where the pan is below the spring —prescribed limits of error shall not be exceeded whenever the load is placed on it.

4.2 Where the pan is above the spring—

4.2.1 When the goods pan is not in the form of a scoop, the instrument shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the pan anywhere within the distance from the centre equal to the one third of the greatest length of the pan or if that pan has a vertical side against the middle of that side.

4.2.2 When the pan is in the form of a scoop, the spring balance shall be correct, if half the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.

4.3 Each numbered graduation shall be verified and the intermediate graduation may also be verified.

4.4 The instrument shall be correct whether the verification is made by increasing or decreasing loads provided that in either case the spring shall be allowed to vibrate before the reading is taken.

4.5 The instrument shall be verified for ability to recover by allowing the load equal to its maximum capacity remaining on the same for a period of 24 hours and then after the expiry of 4 hours tested for accuracy, the load being removed in the meantime.

4.6 Spring balances shall not be verified for sensitiveness.

5. Sealing :

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

TABLE IX
Limits of Errors for spring Balance to be tolerated

| Capacity. | Weight corresponding to interval between consecutive graduations shall not exceed. | Maximum permissible error, | | Remarks. |
|-----------|--|--|--|--|
| | | Verification. | Inspection. | |
| 500 g | 5.0 g | A weight corresponding to a quarter of the interval between successive graduation. | A weight corresponding to half the interval between successive graduation. | While fixing diameter of one effective circle on dial of one revolution a blank space of 20 mm at the end of graduation has to be provided. The minimum width apart to graduation shall not be less than 2 mm for capacities from 500 g to 15 kg and 3 mm for the rest of the size. In the case of multi-revolution spring balances, the minimum blank space will not apply. |
| 1 kg | 5.0 g | | | |
| 2 kg | 20 g | | | |
| 3 kg | 20 g | | | |
| 5 kg | 20 g | | | |
| 10 kg | 50 g | | | |
| 15 kg | 50 g | | | |
| 20 kg | 100 g | | | |
| 30 kg | 100 g | | | |
| 50 kg | 250 g | | | |
| 100 kg | 500 g | | | |
| 150 kg | 1.0 kg | | | |
| 200 kg | 1.0 kg | | | |
| 300 kg | 1.0 kg | | | |
| 500 kg | 2.0 kg | | | |

PART VII: Weigh-Bridges

1. Definition :

Weigh bridges means of Weighing Instrument constructed with compound levers with the indicator system carried on foundation, separate from the lever systems to weigh loads of a capacity of 3,000 kg and over, through the medium of proportional weights or indicating mechanism.

Note.—Weigh-bridges of 2,000 kg. and below, commonly known as Dormant platform Machines, are also included in this Part.

2. Capacities :

Weigh-bridges shall be of one of the capacities mentioned in Table X.

3. Design and Construction :

3.1 The steelyard of a weigh-bridge shall not involve any readily removable parts except the support for the counterpoise. There shall be one or more steps to prevent the sliding poise or poises from travelling behind the zero mark.

3.2 The minimum travel of the steelyard in weigh-bridges shall be 13 mm both ways.

3.3 If a movable hutch, barrow, frame of bucket is used instead of the ordinary platform, it shall form an essential part of the machine without which it cannot be balanced.

3.4 All loose counterpoise shall be identified with the machine by a number or other sufficient mark of identification which shall be indelible. They shall be marked with their equivalent weights in the following manner—

(To be written in Bengali and English—100 kg)

3.5 Proportional weights shall be of the hexagonal shape with a slot of a suitable size to allow them being placed on the counter balance.

3.6 The proportional weights shall be made of cast iron. The proportional weights shall have one rectangular loading hole which should be undercut or tapered so as to hold lead securely for adjustment. Surface of the lead in loading hole, when new, shall be at least 3 mm inside from the bottom surface of the weight.

3.7 The smallest denomination of the proportional weight shall be equivalent to the maximum graduation on the minor steelyard.

3.8 The denomination of the proportional weight shall be in the ratio of 1:2:2:5 and the total equivalent weight or all the proportional weights shall not exceed the total capacity of the weigh-bridge.

Note.—While arriving at the capacity of the weigh-bridge the maximum graduation shown on the steelyard in the case of loose weight weigh bridges and on the minor steelyard in the case of no loose weight type weigh-bridge shall not be taken into account.

3.9 The balancing arrangement for daily wear and tear shall have a range between 0.25 per cent and 0.5 per cent of the capacity of the machine and not less than 0.125 per cent of the capacity each way (see Table XI). The balance box containing the balancing ball shall be securely attached to the steelyard, preferably by passing a bolt through the casing of the steelyard. The balancing ball shall be actuated by a detachable key.

3.10 The following provisions shall apply to weigh-bridges with dials:—

3.10.1 Rock and pinions shall be of hard metal.

3.10.2 The extremity of the index shall in no position be at a greater distance from the graduated surface of the dial than 5 mm and shall be made to meet but not to obscure the graduation mark (except where dual graduations are made).

3.10.3 The dial shall be graduated into reasonably equal parts and minimum width a part from the graduation shall not be less than 3 mm.

3.11.1 The framework shall be built up of mild steel rolled sections or cast iron or steel casting. It shall be of rigid structure, strengthened suitably so that it will be capable of resisting any vibration and shall not throw the lever system out of alignment due to any subsidence of the foundation.

3.11.2 Brackets shall be cast on the side frames to support the framework.

3.12.1 Where relieving gear is fitted, the relieving apparatus shall disengage the under-lever and save the knife edges from shock or wear.

3.12.2 The plate or platform of the machine shall be entirely disengaged from its bearings when the machine is in relief.

3.13 All knife edges and steel bearings shall be special high quality steel accurately lapped to gauge after hardening and shall be interchangeable (steel knife edges and bearings, which are welded into iron may also be permitted) knife edges and steel bearings shall be readily replaceable without dismantling so that the weigh-bridges can be maintained in perfect working order. The knife edges and bearings shall be accurately and firmly secured in machine beds preferably by two shanks and nuts or alternatively by bolts, nuts or screws. All knife edges and bearings shall be protected against dirt and corrosion.

3.14 The platform shall be steel chequered plate and shall be rigid. Accessibility to the pit shall be ensured.

4. Verification :

4.1 All weigh-bridges shall be verified for sensitiveness and error at full load and shall comply with the requirements of Table X. When fully loaded, the load being equally distributed on the platform, it shall indicate the weigh correctly with no greater error in excess or deficiency (if any) than permitted.

4.2 Spring crane machines shall not be verified for a sensitiveness, the total capacity of the machine, or to such smaller capacities as the minimum graduation on the steelyard may indicate, shall be carried out.

4.3 Loose counterpoises, where they are provided, shall be verified.

4.4 The machines shall be verified by adding loads equal to the major divisions or notches and then ascertaining that additional load equal to the value of one notch or division is correctly indicated.

4.5 The verification of dial machines shall be carried out in a similar manner with the exception of sensitiveness verification.

4.6 The verification for sensitiveness and error, other than in dial machines, is to be made at maximum load or as near thereto as possible.

4.7 With one quarter of the maximum load or as near thereto as is practicable the weigh-bridge shall indicate the same weight within half the prescribed limits of error whether the load is placed in the middle or at any of the corners of the platform.

4.8 When provided with a relieving gear, the prescribed limits of error shall not be exceeded when the machine is steadily put out of or into gear.

5. Marking :

All parts of each weigh-bridge shall be indelibly numbered or marked so as to facilitate erection at site.

6. Sealing :

6.1 Dial machines shall be fitted with a soft metal plug to receive a seal and, wherever practicable, this plug shall be passed through the dial and frame. The plug or stud fitted on the dial shall be so supported as to allow no risk of injury to the instrument.

6.2 On weigh-bridges, other than dial machines, a plug or stud shall be provided in a conspicuous part on the indication lever or steelyard.

TABLE X
Sensitiveness and errors for weigh-bridges

| Capacity of Machines. | Sensitive- ness when fully loaded. | Verification. | | Sensitiv- ness when fully loaded. | Inspection. | | The weight re- presented by the interval between con- secutive gra- duation marks. |
|--------------------------|---|--|---|--|--|----------------------------|---|
| | | Greatest error to be tole- rated in excess or in defi- ciency when fully loaded. | | | Greatest error to be tole- rated in excess or in deficiency when fully loaded. | | |
| | | Vibrating Machines. | Machines fitted with dials. | | Vibrating Machines. | Machines with dials. | |
| 1,000 kg .. | 700 g | 700 g | One-half the weight repre- sent interval between conse- cutive gra- duation marks. | 2.1 kg | 1.4 kg | | |
| 2,000 kg .. | 900 g | 900 g | | 2.7 kg | 1.8 kg | | |
| 3,000 kg .. | 1.25 kg | 1.25 kg | 3.75 kg | 2.5 kg | | | |
| 5,000 kg .. | 1.55 kg | 1.8 kg | 4.5 kg | 3.6 kg | | | |
| 10,000 kg .. | 2.3 kg | 2.7 kg | 6.9 kg | 5.4 kg | | | |
| 15,000 kg .. | 2.5 kg | 3.0 kg | 7.5 kg | 9.0 kg | | | |
| 20,000 kg .. | 3.0 kg | 4.5 kg | 9.0 kg | 9.0 kg | | | |
| 25,000 kg .. | 3.5 kg | 5.4 kg | 10.5 kg | 10.8 kg | | | |
| 30,000 kg .. | 3.8 kg | 6.1 kg | 11.4 kg | 12.2 kg | | | |
| 40,000 kg .. | 4.2 kg | 7.3 kg | 12.6 kg | 14.6 kg | | | |
| 60,000 kg .. | 5.0 kg | 9.0 kg | 15.0 kg | 18.0 kg | | | |
| 80,000 kg .. | 5.5 kg | 10.5 kg | 16.5 kg | 21.0 kg | | | |
| 1,00,000 kg .. | 6.4 kg | 12.7 kg | 19.2 kg | 25.4 kg | | | |
| 2,00,000 kg .. | 8.2 kg | 19.0 kg | 24.6 kg | 38.0 kg | | | |

TABLE XI

Range of Balancing arrangement for weigh-bridges

| Capacity. | Range of Balancing Arrangement. | | |
|-------------|------------------------------------|------------------------------------|--------------------------|
| | Maximum 0.25 per cent of capacity. | Minimum 0.25 per cent of capacity. | 0.125 per cent each way. |
| 1,000 kg | 5 kg | 2.5 kg | 1.3 kg |
| 2,000 kg | 10 kg | 5.0 kg | 2.5 kg |
| 3,000 kg | 15 kg | 7.5 kg | 3.5 kg |
| 5,000 kg | 25 kg | 12.5 kg | 6.2 kg |
| 10,000 kg | 50 kg | 25.0 kg | 12.5 kg |
| 15,000 kg | 75 kg | 37.5 kg | 18.7 kg |
| 20,000 kg | 100 kg | 50.0 kg | 25.0 kg |
| 25,000 kg | 125 kg | 62.5 kg | 31.7 kg |
| 30,000 kg | 150 kg | 75.0 kg | 37.5 kg |
| 40,000 kg | 200 kg | 100.0 kg | 50.0 kg |
| 60,000 kg | 300 kg | 150.0 kg | 75.0 kg |
| 80,000 kg | 400 kg | 200.0 kg | 100.0 kg |
| 1,00,000 kg | 500 kg | 250.0 kg | 125.0 kg |
| 2,00,000 kg | 1,000 kg | 500.0 kg | 250.0 kg |

PART VIII: Crane Machine

1. Definition:

Crane machine means a weighing instrument specially constructed to be suspended from the hook of a crane and is fitted with a hook for lifting the loads and may be constructed upon the lever or spring principle.

2. Capacities:

Crane machines shall be of one of the capacities mentioned in Table XII.

3. Design and Construction:

3.1 A crane machine shall be sufficiently strong to withstand wear and tear in the exacting conditions under which it works.

3.2 No crane machine shall become a permanent link in the lifting gear. All working parts shall be suitably protected from the dust and damp of the atmosphere. In a lever machine, the steelyard shall be made of corrosion resisting steel to resist the atmospheric influence and shall be sufficiently rigid and accurate.

3.3 In a dial machine, the rock and pinions shall be of suitable hard wearing materials.

3.4 The range of balancing or adjusting arrangement shall not exceed 2 per cent of the capacity of the machine.

3.5 There shall be free movement of steelyard and on a dial machine, the dial indicator shall work freely and return to its initial starting point after the load is removed.

4. Verification:

4.1 Crane machines of the lever type shall be verified for a sensitiveness and error at full load and shall comply with the requirements of Table XII.

4.2 Spring crane machines shall not be verified for sensitiveness.

4.3 For spring machines, the limits of error shall be double than those of lever machines and are given in Table XIII.

4.4 Each numbered graduation shall be tested as far as practicable.

5. Sealing:

Crane machines shall be fitted with a plug or stud in a conspicuous part either on the steelyard or on the dial of the machine to receive the seal.

TABLE XII: Sensitiveness and Errors for Crane Weighing Machine Lever Type.

| Capacity. | Verification | | Inspection | |
|-------------|----------------------------------|--|----------------------------------|--|
| | Sensitiveness when fully loaded. | Greatest error to be tolerated in excess or in deficiency when loaded. | Sensitiveness when fully loaded. | Greatest error to be tolerated in excess or in deficiency when fully loaded. |
| 1 | 2 | 3 | 4 | 5 |
| 500 kg | 80 g | 160 g | 240 g | 320 g |
| 1,000 kg | 700 g | 700 g | 2.1 kg | 1.4 kg |
| 2,000 kg | 1.0 kg | 1.0 kg | 3.0 kg | 2.0 kg |
| 3,000 kg | 1.0 kg | 1.2 kg | 3.6 kg | 2.4 kg |
| 5,000 kg | 1.5 kg | 1.5 kg | 4.5 kg | 3.0 kg |
| 10,000 kg | 2.5 kg | 3.0 kg | 7.5 kg | 6.0 kg |
| 15,000 kg | 3.0 kg | 3.5 kg | 9.5 kg | 7.0 kg |
| 20,000 kg | 3.5 kg | 4.5 kg | 10.5 kg | 9.0 kg |
| 30,000 kg | 4.0 kg | 6.0 kg | 12.0 kg | 12.0 kg |
| 50,000 kg | 5.5 kg | 8.0 kg | 13.5 kg | 16.0 kg |
| 1,00,000 kg | 6.5 kg | 13.0 kg | 19.5 kg | 26.0 kg |
| 2,00,000 kg | 9.0 kg | 18.0 kg | 24.0 kg | 36.0 kg |

TABLE XIII: Sensitiveness and Errors for Crane Machines—Dial Type (Spring and Flexure)

| Capacity. | Weight corresponding to interval between successive graduations shall not exceed. | Permissible maximum error | | |
|-------------|---|---|--|--|
| | | Verification | Inspection | Remarks |
| 500 kg | 5 kg | A weight corresponding to half the interval between successive graduations. | A weight corresponding to the interval between successive graduations. | The maximum width apart of graduation shall not be less than 3 mm. |
| 1,000 kg | 5 kg | | | |
| 2,000 kg | 5 kg | | | |
| 3,000 kg | 10 kg | | | |
| 5,000 kg | 25 kg | | | |
| 10,000 kg | 50 kg | | | |
| 15,000 kg | 100 kg | | | |
| 20,000 kg | 200 kg | | | |
| 50,000 kg | 250 kg | | | |
| 1,00,000 kg | 500 kg | | | |
| 2,00,000 kg | 500 kg | | | |

PART IX: Automatic Weighing Machine

1. Definition:

An automatic weighing machine means any weighing scale which has an integral mechanism for automatically admitting and discharging a load, and may be fitted with an apparatus for counting or otherwise recording the number of loads handled.

2. Capacities:

Automatic machines shall be of the capacities as agreed upon between the purchaser and the seller.

3. Design and construction:

3.1 Automatic weighing machines and their integral part shall be identified with the machines by an indelible number or other mark of identification.

3.2 The adjusting mechanism shall be suitably secured or constructed so that it cannot be tampered with.

3.3 The capacity of the automatic weighing machine shall be marked legibly on a conspicuous part of the machine.

4. Verification :

4.1 Automatic machines shall be verified for errors according to the requirements of Table XIV.

4.2 The accuracy of the out-put of the machine shall be verified by re-weighing in another weighing instrument not less than 20 continuous loads or, where practicable, the machine may be tested directly by the application of standard weights.

4.3 In verifying totalising machines, not less than 50 loads shall be passed over the machine, namely, 10 minimum loads, 10 maximum loads and 30 loads of the mean between the minimum and the maximum.

5. Sealing :

Automatic machine shall be fitted with a plug on the beam, shank or dial of the machine to receive the seal.

TABLE XIX: Limits of Errors for Automatic machines to be tolerated

| Use. | Capacity. | Error (Verification or Inspection). | |
|--|---------------------|--|--|
| Weighing small loads of tea, coffee, etc. | 20 g and upwards. | 0.5 per cent of the load in excess only. | The allowances in these cases are subject to the provision that the error tolerated shall not exceed the weight represented by half a minimum divisions marked on the dial or steelyard. |
| Weighing grain, etc. | 5 kg and upwards. | 0.25 per cent of the load in excess or in deficiency. | |
| Weighing coal, etc. | 50 kg and upwards. | 0.5 per cent of the load in excess or in deficiency. | |
| "Totalising" machines used for weighing coal, etc. | 500 kg and upwards. | 0.5 per cent of the total load of 50 weighings in excess or in deficiency. | |

SCHEDULE VII

[See rule 13(4)]

Abbreviations of Denominations and Capacity

1. Decimal Multiples and Sub-multiples:

| Prefix | Value in terms of unit | Abbreviation |
|--------|------------------------|--------------|
| Kilo | 1000 | k |
| Centi | $0.01(10)^{-2}$ | c |
| milli | $0.001(10)^{-3}$ | m |
| micro | $0.000,001(10)^{-6}$ | M |

2. Weights :

| Denomination | Value | Abbreviation |
|--------------|-------------------------------------|--------------|
| tonne | 1000 kg | t |
| quintal | 100 kg | q |
| kilogram | 1000 g | kg |
| gram | 1 g | g |
| milligram | $0.001\text{ g or } (10)^3\text{g}$ | mg |
| carat | 200 mg | c |

3. Capacity :

| Denomination | Value | Abbreviation |
|--------------|---------------------------------------|--------------|
| killolitre | 1000l | kl |
| litre | l | l |
| millilitre | $0.001\text{ ml. or } (10)^3\text{l}$ | ml |

4. Volume :

| Denomination | Value | Abbreviation |
|------------------|---------------|-----------------------------------|
| Cubic metre | m^3 | m^3 or cum^* |
| cubic centimetre | cm^3 | cm^3 or cu-cm^* |
| cubic millimetre | mm^3 | mm^3 or cu mm^* |

5. Length :

| Denomination | Value | Abbreviation |
|------------------|---|--------------|
| kilometre | 1000 m | km |
| metre | 1 m | m |
| centimetre | 0.01 m or $(10)^{-2}$ m | cm |
| millimetre | 0.001 m or $(10)^{-3}$ m | mm |
| micron | 0.001 mm or $(10)^{-6}$ mm or $(10)^{-3}$ mm | Mm |

6. Area :

| Denomination | Value | Abbreviation |
|-------------------------|-----------------|----------------------------|
| Square kilometre | km ² | km ² or sq km* |
| Square metre | m ² | m ² or sq m* |
| Square centimetre | cm ² | cm ² or sq. cm* |
| Square millimetre | mm ² | mm ² or sq mm* |

* Both this abbreviations are current, but the first set should preferably be used.

Note: No change shall be made in the abbreviations to indicate plurality.

SCHEDULE IX

[See rule 14(7)]

Certification of verification

S. No. Book No.

Receipt No. Date :

Name of Inspector.....

I hereby certify that I have this day verified and stamped the undermentioned weights, measures, etc., belonging to.....
rejected
 locality, under the Standards of Weights and Measures Ordinance, 1982 (No. XII of 1982).

| Qty. | Denomination Weights/Measures. | Weighing Capacity | Instruments Class | Measuring Instruments | Verifi- cation | Carriage conveyance Fee charges etc. |
|------|-----------------------------------|----------------------|----------------------|--------------------------|-------------------|--|
| | | | | | | |

Tk.

Total Tk.....

Grand Total Tk.....

In words.....

Signature of Inspector

Seal

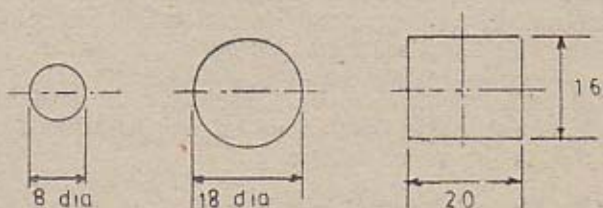
Repaired by.....

Next verification is due on.....

SCHEDULE VIII
See sub-rule(3) of 14

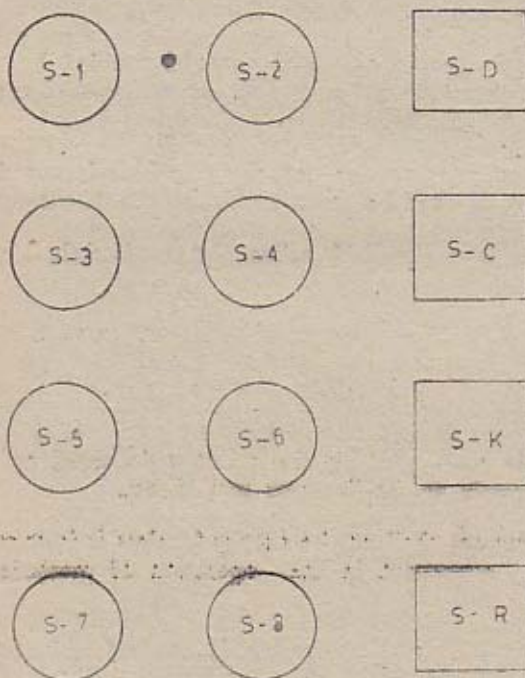
Seals to be used for stamping weights and measures.

Each set consists of the following 3 (three) seals and all their dimensions are in millimetre :-



Four sets of such seals are shown below :-

NOTE:- NOT TO SCALE



SCHEDULE X

(See rule 16)

Procedure to be followed for inspection, verification and stamping of commercial weights, measures, weighing instruments and measuring instruments.

PART I: Weights and Measures

1. Weights:

1.1 All weights before stamping shall be verified for correctness against the corresponding working standard model weight in the appropriate working model balance subject to the permissible errors specified.

1.2 All weights shall be stamped on the lead in the loading hole at the bottom of the weights, provided that weights without an adjusting hole shall be stamped on the under surface.

1.3 No weights used in gold and silver trade shall be stamped unless they are carat weights.

1.4 No weights used in pearl and precious stone trade shall be marked unless they are carat weights.

2. Liquid Measures of Capacity:

2.1 Liquid measures of capacity standard shall be verified by filling the working model measures with water and emptying the contents of the working model into the measure under verification.

2.2 In verifying a glass measure, the capacity of which is not defined by the brim, the level of the water shall be taken at the bottom of the meniscus.

2.3 Where the capacity is indicated by a line, the measure shall be verified, to the bottom of the line.

3. Measures for liquid fuel of lubricating oil, instruments, e.g., petrol pumps, flow metres, etc.

3.1 A measuring instrument shall not be stamped unless provided with one or more plugs, seals or sealing devices of suitable form and material to protect all stops or other adjustable parts affecting the quantity delivered or with such alternative sealing arrangements as the Director may direct.

3.2 A measuring instrument shall not be stamped unless it is complete with all parts and attachments concerned in the operation of measurement and delivery.

3.3 Every measuring instrument shall be legibly marked with the name of its maker or supplier.

3.4 A measuring instrument shall not be stamped if it bears any mark which might be mistaken for an Inspector's stamp or any statement or mark other than the stamp of Inspector which purports to be, or might be mistaken for, the expression of approval or guarantee of accuracy by anybody or person.

3.5 Every marking, notice, inscription or indication on a measuring instrument having reference to the method of operation or to the quantity delivered shall be conspicuously and legibly marked in a suitable position in plain block characters on a plain background and in distinct contrast thereto.

3.6 Each stop or setting device of a measuring instrument shall be marked in such a manner as to indicate the capacity it represents or shall be associated with a suitable indicating device for the same purpose.

3.7 Every indication of quantity on a measuring instrument shall be denominated either in full or by means only of one other of the abbreviation given in the rules. Provided that the indications of quantity on containers or on the dial or a sales indicator may be shown by figures only where the unit of measurement is boldly marked on the container or dial and no confusion can arise

3.8 Every measuring instrument of fixed type shall be so disposed that the purchaser can readily obtain a clear and unobstructed view of all the operations and indications or measurement and delivery; and shall be verified and stamped when completely erected ready for use and in the situation in which it is to be used notwithstanding that it may have been previously verified or stamped in some other location.

3.9 No measuring instrument used for measurement in the presence of the purchaser shall be arranged to deliver measured quantities at more than one outlet.

3.10 Every individual sales indicator fitted to a measuring instrument shall be so arranged that it can be readily reset to "zero" and that it is not possible to advance the indication by any means other than the proper operation of the instrument. In the instruments of the twin or multiple container type, the individual sales indicator shall be so arranged as not to register any measurement before discharge from each container has commenced.

3.11 No audible or other signals of discharge which can be operated to signal before the movement of the individual sales indicator shall be fitted to any measuring instrument.

3.12 Every graduated scale or other indicating device of a measuring instrument shall be denominated in numerical sequence reading in one direction only.

3.13 Where a measuring instrument is provided with a swing arm or rigid form of extension pipe such arm or pipe shall be so constructed as either—

- (a) to empty itself completely through the delivery outlet, or
- (b) to remain permanently filled up to its connection to the flexible hose.

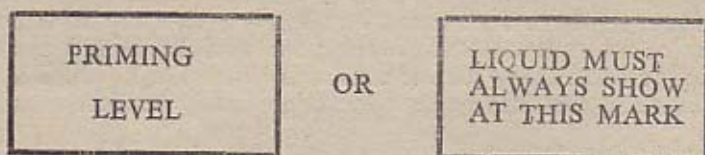
In the latter case, the sight glass shall be fitted at the highest point of the swing arm or extension pipe, immediately before the connection to the flexible hose.

3.14 No measuring instrument shall be fitted with a flexible discharged hose exceeding 4 metres in length.

3.15 No nozzle of a form liable when open to trap any portion of the liquid being delivered shall be attached to the discharge hose of any measuring instrument.

3.16 Before verifying any measuring instrument fitted with a discharged hose, the Inspector shall see that the liquid has first been passed through the instrument so that the discharge hose has been wetted.

3.17 Every measuring instrument of the piston type shall be fitted with an adequate sight glass or other device approved by the Director for showing clearly that the instrument is properly primed before use and shall bear, adjacent to the sight glass, a notice in one or other of the following forms indicating the priming level:



Provided that this rule shall not apply to instruments used for the measurement of lubricant oils where the delivery system remains permanently full up to the extremity of the discharge pipe.

3.18 A measuring instrument of the piston type, before being tested for accuracy, shall be tested for leakage by being first primed. If it is evident after the lapse of a reasonable interval of time that no measurable leakage is occurring, the Inspector may proceed to test for accuracy.

3.19 On verification or re-verification the errors permissible in measuring instruments both on any individual delivery and on the total quantity delivered by a complete cycle of operation of the instrument shall not exceed 6 ml per litre. On inspection half the above error shall be allowed in deficiency and twice the above error in excess. The measuring instrument shall deliver correctly within the above limits of errors at any reasonable speed of operation, provided that for any single delivery the speed of cooperation shall be as uniform as practicable.

3.20 Any liquid fuel or lubricating oil withdrawn from any tank or container for the purpose of an Inspector's test of a measuring instrument shall be forthwith returned to the tank or container from which it was withdrawn, and the Inspector shall, if requested, furnish to the person in charge of the instrument a signed statement of the quantities so withdrawn and returned.

Note:—If any person refuses to an Inspector the use of such liquid fuel or lubricating oil as he may require for the purpose of testing any measuring instrument, such refusal shall be deemed to be obstruction in the discharge of the duties of the Inspector.

4. Measure of Length:

4.1 Every measure of length shall be verified by comparison with the working standard model.

4.2 A link measure, or woven metallic or steel tape measure, shall be tested when subjected to a tension or pull as follows:

| | | | | |
|-----------------------------|----|----|----|------|
| Link Measure | .. | .. | .. | 8 kg |
| Woven Metallic Tape Measure | .. | .. | .. | 1 kg |
| Steel Tape Measure | .. | .. | .. | 5 kg |

4.3 The measures under verification shall be supported throughout its whole length on a plane and even base.

4.4 Tape measures which are intended to be used in cases may be accepted for verification and stamping if submitted even without the case.

4.5 All non-flexible measures of length shall be stamped on the rivets provided in the measure.

4.6 In the case of tape measure, the stamp shall be placed either on a metal label or disc permanently attached to the measure or on the brass handle.

5. Volume Measure:

5.1 All measures of volume shall be examined with the object of discovering flaws or want of straightness and proper right angles at the corners.

5.2 Every measure of volume shall be verified by comparing length of each side against the working standard of length of or near the normal temperature.

5.3 The limits of errors in the case of lengths of the sides of measures of volume shall be the same as prescribed for linear measures.

5.4 All measures of volume shall be stamped near the top edge or brass plate securely fastened to them.

PART II : Weighing instruments and Measuring instruments

1. General :

Weighing instruments and measuring instruments shall be verified to conform to the specification given in Schedule VI.

2. Beam scales:

2.1 On beam scales, the verification stamp shall be placed on the stud or plug on the beam, immediately under or over the central knife edge.

2.2 The Inspector may stamp the plug or stud in the same manner as he would stamp a weight.

3. Counter machines, spring balances, steel yards and automatic machines :

The verification stamp shall be placed upon the plug or stud provided in the instrument for that purpose.

4. Platform machines and weigh-bridges:

4.1 Weigh-bridges, platform machines and such other weighing instruments as the Director may specify in this behalf, shall be verified and stamped *in situ* in addition to any preliminary test in the manufacturer's or dealer's premises. Such preliminary verification shall be made at the request of the manufacturer or dealer.

4.2 The verification stamp shall be placed upon the plug or stud provided for the purpose in the machine.

5. Crane machines:

5.1 Hydraulic machine in which it is necessary, in order to get a correct weight indication, to twist the load hook shall not be stamped unless a prominent notice to this effect is permanently affixed to the machine.

5.2 The verification stamp shall be placed upon the plug or stud provided for the purpose in the machine.

SCHEDULE XI

[See rules 18 (1) & (2)]

Fees for verification

Fees payable for the verification and stamping of commercial weights and measures, weighing instruments and measuring instruments:

1. Weights:

| Denomination | Fees per piece |
|---|----------------|
| (a) Bullion weights : | Taka |
| 20 kg | 3.00 |
| 10 kg | 3.00 |
| 5 kg | 3.00 |
| 2 kg | 3.00 |
| 1 kg | 3.00 |
| 500 g | 1.50 |
| 200 g | 1.50 |
| 100 g | 1.50 |
| 50 g | 1.50 |
| 20 g | 1.50 |
| 10 g | 1.50 |
| 5 g | 1.50 |
| 2 g | 1.50 |
| 1 g | 1.50 |
| 500 mg | 1.00 |
| 200 mg | 1.00 |
| 100 mg | 1.00 |
| 50 mg | 1.00 |
| 20 mg | 1.00 |
| 10 mg | 1.00 |
| 5 mg | 1.00 |
| 2 mg | 1.00 |
| 1 mg | 1.00 |
| (b) Brass weights (other than bullion): | |
| 1 kg | 1.50 |
| 500 g | 0.50 |
| 200 g | 0.50 |
| 100 g | 0.50 |
| 50 g | 0.50 |
| 20 g | 0.50 |
| 10 g | 0.50 |
| 5 g | 0.50 |
| 2 g | 0.50 |
| 1 g | 0.50 |

| Denomination | Fees per piece |
|--------------|----------------|
|--------------|----------------|

(c) Sheet metal weights (other than bullion):

| | Taka |
|----------------|------|
| 500 mg | 0·50 |
| 200 mg | 0·50 |
| 100 mg | 0·50 |
| 50 mg | 0·50 |
| 20 mg | 0·50 |
| 10 mg | 0·50 |
| 5 mg | 0·50 |
| 2 mg | 0·50 |
| 1 mg | 0·50 |

(d) Iron and Steel weights:

| | |
|---------------|------|
| 50 kg | 1·50 |
| 20 kg | 1·50 |
| 10 kg | 1·50 |
| 5 kg | 1·50 |
| 2 kg | 1·50 |
| 1 kg | 1·50 |
| 500 g | 0·50 |
| 200 g | 0·50 |
| 100 g | 0·50 |

(e) Carat weights:

| | |
|-------------------|------|
| 500 c | 1·50 |
| 200 c | 1·50 |
| 100 c | 1·50 |
| 50 c | 1·50 |
| 20 c | 1·50 |
| 10 c | 1·50 |
| 5 c | 1·50 |
| 2 c | 1·00 |
| 1 c | 1·00 |
| 50/100 c | 1·00 |
| 20/100 c | 1·00 |
| 10/100 c | 1·00 |
| 5/100 c | 1·00 |
| 2/100 c | 1·00 |
| 1/100 c | 1·00 |
| 0·5/100 c | 1·00 |

2. Liquid capacity measures (including dispensing measures):

| | |
|--------------------------|---|
| | Taka |
| Above 100 litres | 3·00 |
| | for the first 100 litres <i>plus</i> |
| | 3·00 |
| | for every additional 100 litres or part thereof. |

Denomination Fees per piece

| | | | | Taka |
|--------|----|----|----|------|
| 100 l | .. | .. | .. | 3.00 |
| 50 l | .. | .. | .. | 3.00 |
| 20 l | .. | .. | .. | 3.00 |
| 10 l | .. | .. | .. | 3.00 |
| 5 l | .. | .. | .. | 1.50 |
| 2 l | .. | .. | .. | 1.50 |
| 1 l | .. | .. | .. | 1.50 |
| 500 ml | .. | .. | .. | 1.00 |
| 200 ml | .. | .. | .. | 1.00 |
| 100 ml | .. | .. | .. | 1.00 |
| 50 ml | .. | .. | .. | 1.00 |
| 20 ml | .. | .. | .. | 1.00 |
| 10 ml | .. | .. | .. | 1.00 |
| 5 ml | .. | .. | .. | 1.00 |
| 2 ml | .. | .. | .. | 1.00 |
| 1 ml | .. | .. | .. | 1.00 |

3. Length Measures:

| | | | |
|---------------------------|----|----|------|
| 10 metres and above | .. | .. | 3.00 |
| Above 1 metre to 9 metres | .. | .. | 1.50 |
| 1 metre and 0.5 metre | .. | .. | 1.00 |

4. Weighing Instruments other than Beam Scale of Class 'C and D'
Capacity:

| | | | |
|---|----|----|---|
| Above 50 tonnes | .. | .. | 150.00 |
| | | | for the first 50 metric tonnes <i>plus</i> |
| | | | 30.00 |
| | | | for each additional 25 metric tonnes or part thereof. |
| Above 20 tonnes but not exceeding 50 tonnes | | | Tk. 150.00 |
| Above 10 tonnes but not exceeding 20 tonnes | | | Tk. 90.00 |
| Above 5 tonnes but not exceeding 10 tonnes | | | Tk. 60.00 |
| Above 1 tonne but not exceeding 5 tonnes | | | Tk. 45.00 |

| Denomination | Fees per piece |
|--|----------------|
| | Tk. |
| Above 250 kg but not exceeding 1 tonne | 30.00 |
| Above 50 kg but not exceeding 250 kg | 15.00 |
| Above 20 kg but not exceeding 50 kg | 9.00 |
| Above 10 kg but not exceeding 20 kg | 6.00 |
| Above 500 g but not exceeding 10 kg | 4.50 |
| Not exceeding 50 g | 3.00 |

Note 1.—Where a weighing instrument has two or more sets of graduations (one marked for seers and maunds or for lbs. and cwt. and the other for metric units) the set marked for metric units only shall be verified and fees charged therefor.

Note 2.—Where two weight tables or platform are connected to one steelyard or office machines, two separate fees in accordance with the capacity of the respective weight tables or platforms are payable.

5. Beam Scales Classes C and D:

| Denomination | Fees per piece |
|--|----------------|
| | Tk. |
| Above 1 tonne | 45.00 |
| Above 250 kg but not exceeding 1 tonne | 18.00 |
| Above 50 kg but not exceeding 250 kg | 12.00 |
| Above 20 kg but not exceeding 50 kg | 6.00 |
| Above 10 kg but not exceeding 20 kg | 6.00 |
| Above 500 g but not exceeding 10 kg | 5.25 |
| Not exceeding 500 g | 2.25 |

6. Measuring instruments (Petro Pumps) :

| Capacity | Fees per instrument |
|--|--|
| | Tk. |
| Exceeding 100 litres | 60·00 |
| | for the first 100 litres <i>plus</i> |
| | 30·00 for each addi- tional 50 litres or part thereof sub- ject to a maximum of Tk. 500. |
| Exceeding 50 litres but not exceeding 100 litres. | 60·00 |
| Exceeding 25 litres but not exceeding 50 litres. | 45·00 |
| Not exceeding 25 litres | 30·00 |

SCHEDULE XII

[See rule 25(1)]

Forms of Certificate

(FORM 'A')

OFFICE OF THE DIRECTOR, BANGLADESH STANDARDS INSTITUTION

.....

Certificate to manufacture/repair weights, measures, weighing instruments or measuring instruments.

Certificate No..... Year.....

(1) The Director of Bangladesh Standards Institution acting as an authorised person within the meaning of Section 2(a) of the Standards Weights and Measures Ordinance, 1982 (XII of 1982) hereby grants to.....

.....(Name and address of the manufacturers/repairers).....

a certificate of approval in respect of the model of the following :

(Include details of the type of weights,.....

measures, weighing instruments or measuring.....

instruments that are certified to be manu-.....

factured or repaired by the party).....

(2) The certificate is valid for the manufacturer/repairer named above in respect of his premises located at.....

.....

(3) This certificate is valid from.....to.....

(4) The manufacturer/repairer shall comply with the conditions noted below. If he fails to comply with any one of these conditions, his certificate is liable to be cancelled.

Signature
Director of Bangladesh Standards Institution.

Date.....

Place

(Seal)

Note.—In the case of firm, its name with the names of all its members should be given in paragraph I.

CONDITIONS OF CERTIFICATE

1. The person in whose favour this certificate is issued shall—
 - (a) comply with all the relevant provisions of the Ordinance and the rules for the time being in force.
 - (b) not encourage or countenance any infringement of the provisions of the Ordinance, or the Rules for the time being in force and shall report without delay to the Inspector any infringement that may come to his notice.
 - (c) keep this certificate exhibited in some conspicuous part of the premises to which it relates.
 - (d) comply with any general or special directions that may be given by the Director of Bangladesh Standards Institution.
 - (e) surrender the certificate if and when required to do so by the Director or any other officer authorised in this behalf.

2. Every conditions prescribed after the issue of this certificate shall, if notified in the official Gazette, be binding of the person/persons to whom the certificate has been granted.

3. Any other condition that may be prescribed after the issue of this certificate and notified in the official Gazette shall be binding on the person in whose favour the certificate has been issued.

(FORM 'B')

OFFICE OF THE DIRECTOR OF BANGLADESH STANDARDS INSTITUTION

Certificate to a dealer in weights, measures, weighing instruments or measuring instrument.

Certificate No.....Year.....

(1) The Director of Bangladesh Standards Institution acting as an authorised person within the meaning of Section 2(a) of the standards of Weights and Measures Ordinance, 1982 (XII of 1982) hereby grants to.....
.....(Name and address of dealer or dealers).....

a certificate to deal in the following:

(Indicate details of the types of weights,
measures, weighing instruments or
measuring instruments that are certi-
fied to be dealt with by the dealer).....

(2) The certificate is valid for the dealer named above in respect of his premises located at.....
.....
.....

(3) This certificate is valid from.....
to.....

(4) The dealer shall comply with the conditions noted below. If he fails to comply with any one of these conditions, his certificate is liable to be cancelled.

Signature
Director of Bangladesh Standards Institution.

Date

Place

(Seal)

Note.—In the case of firm, its name with the names of all its members should be given in paragraph I.

CONDITIONS OF CERTIFICATE

1. The person in whose favour this certificate is issued shall—
 - (a) comply with all the relevant provisions of the Ordinance and the Rules for the time being in force ;
 - (b) not encourage or countenance any infringement of the provisions of the Ordinance, or Rules for the time being in force ;
 - (c) report without delay to the Inspector of his area any such infringement that may come to his knowledge ;
 - (d) keep this certificate exhibited at a conspicuous place of the premises to which it relates ;
 - (e) comply with any general or special directions that may be given to him by the Director of Bangladesh Standards Institution;
 - (f) surrender the certificate if and when required to do so by the Director or any officer authorised in this behalf.
2. Any other condition that may be prescribed after the issue of this certificate and notified in the official Gazette shall be binding on the person in whose favour the certificate has been issued.

SCHEDULE XIII

[See rule 25(2)]

Fees for granting certificates of approval in respect of a model relating to any weight or measure.

| | Tk. |
|---------------------------|-----------------|
| For manufacturers | 500·00 per year |
| For reairers | 500·00 per year |
| For dealers | 300·00 per year |

SCHEDULE XIV

[see rule 25(6)]

Register of licensed/certified manufacturers, repairers and dealers

OFFICE OF THE DIRECTOR OF BANGLADESH STANDARDS INSTITUTION

| Licence/ Certificate No. | Date of issue. | Name of licensed/ certified manufac- turer, re- pairer or dealer with father's name and residential address. | Place where work-shop, store-room, shop, or office is situated. | Articles for the manufac- ture/repair/ sale of which licence/ certificate was issued. | Trade mark or mono- gram used. | Orders re- garding cancellation of licence/ certificate, if any. | Result of appeal against cancellation of licence/ certificate. | Receipt | Date | Amount | Renewed up to. | Re- marks. |
|--------------------------------|----------------------|--|---|---|---|---|---|---------|------|--------|-------------------|---------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

Note—(1) In case of a firm, the name of the firm with the names of all its partners are to be given in column 3.

(2) Column 6 does not apply to repairers and dealers.

SCHEDULE XV

(See rule 26)

Training Course/curriculum and qualification, etc.

The training Course shall vary from 3 (three) to 6 (six) months as specified by the Director, BDSI. The minimum qualification required for the training shall be B.Sc. including Physics or Diploma (three years course after S.S.C.) in Engineering where, Director, BDSI is of the opinion that the qualification is relaxable for the benefit of inspection work, Director may do so.

SCHEDULE XVI

[See rule 27]

From to be maintained by the manufacturer/repairer/dealer.

1. Name of the Firm :
2. Installed capacity :
3. Actual production :
4. Quality control facilities available including test certificates :
5. Technical personnel employed :
(List of technical personnels)
6. Annual Sale :
 - (a) Quantity :
 - (b) Taka :

SCHEDULE XVII

(see rule No. 29)

Conversion Table

TABLE No. 1

| Denomination. | Value. | Abbreviations. |
|--------------------|-------------------------|----------------|
| 1. Weights : | | |
| tonne | 1,000 kg | t |
| quintal | 100 kg | q |
| Kilogram | 1,000 g | kg |
| gram | 1 g | g |
| milligram | 0.001 or $(10)^{-3}$ kg | mg |
| carat | 200 mg | c |
| 2. Length : | | |
| kilometre | 1,000 m | km |
| metre | 1 m | m |
| centimetre | 0.01 or $(10)^{-2}$ m | cm |
| millimetre | 0.001 or $(10)^{-3}$ m | mm |
| 3. Capacity : | | |
| kilolitre | 1,000 l | kl |
| litre | 1 l | l |
| millilitre | 0.001 or $(10)^{-3}$ l | ml |

TABLE No. 2

CONVERSION FACTORS

I. Weight :

| | |
|-------------------------------|-------------------------------|
| 1 tola | 11.6638 gram nearest to gram |
| 1 chhattak | 58.324 gram nearest to gram |
| 1 seer | 933.10 gram nearest to gram |
| 1 maund | 37.324 kg nearest to kilogram |
| 1 ounce (AV) | 28.3495 gram |
| 1 lb | 453.5924 gram |
| 1 cwt | 50.802 kilogram |
| 1 ton | 1 Metric Ton (+) 6 kilogram |
| 1 gram | 0.0352740 Ounce=0.085735 tola |
| 1 kilogram | 2.20462 pounds=1.07169 seer |
| 1 metric ton or tonne | 0.98421 Ton=26.7923 maunds |

II. Linear Measures :

| | |
|----------------------|--------------------|
| 1 inch | 25·40 millimetre |
| 1 foot | 30·48 centimetre |
| 1 yard | 0·9144 metre |
| 1 mile | 1·609344 kilometre |
| 1 centimetre | 0·393701 inch |
| 1 metre | 1·09361 yard |
| 1 kilometre | 0·62137 mile |

III. Capacity Measures :

| | |
|-------------------------|------------------------|
| 1 pint | 0·56824 litre |
| 1 quart | 1·13649 litre |
| 1 gallon (Imp.) | 4·54596 litre |
| 1 gallons (US) | 3·78533 litre |
| 1 litre | 1·75980 pint |
| 1 litre | 0·87990 quart |
| 1 litre | 0·219976 gallon (Imp.) |

Tolas, Chattaks, Seers and Maunds to g & mg

| | |
|----------------------------|---------------------------|
| Conversion factors | 1 tola = 11·6638 gram |
| | 1 seer = 0·93310 kilogram |
| | 1 maund = 37·524 kg |

| Tola | Gram (g)+Milligram (mg) | |
|------|-------------------------|-----|
| 1.0 | 11 | 664 |
| 2.0 | 23 | 330 |
| 3.0 | 34 | 990 |
| 4.0 | 46 | 660 |
| 5.0 | 58 | 320 |

| Chhattak | Gram (nearest in gram) rounded to gram. |
|----------|---|
| 1·0 | 58 |
| 2·0 | 117 |
| 3·0 | 175 |
| 4·0 | 233 |
| 5·0 | 292 |
| 6·0 | 350 |
| 7·0 | 408 |
| 8·0 | 467 |
| 9·0 | 525 |
| 10·0 | 583 |
| 11·0 | 642 |
| 12·0 | 700 |
| 13·0 | 758 |
| 14·0 | 816 |
| 15·0 | 875 |
| 16·0 | 933 |

SCHEDULE XVIII

(see rule 31)

Application form for registration of exporters/importers of weights and measures.

The Director,
Bangladesh Standards Institution,
Dacca.

Sir,

*I/We hereby apply for registration of *my/our name(s) as Exporter *or/and Importer of weights and measures including weighing and measuring instruments. Particulars with regards to the items specified in the table below are given against each such item. Registration fee of Tk. 25 has been paid by a bank draft No....., dated..... :

1. Name and full address :
2. Whether individual/firm/registered given :
3. Income-tax registration No.(if any) :
4. Date of registration as manufacturer/
dealer; registration No. and name of
registering authority :
5. Date and number of the licence to carry
on the business of weights and mea-
sures; the name of authority by whom
the licence was issued/re-newed :
 - (a) buying and selling :
 - (b) manufacturing :
6. Item(s) of weights and measures in
relation to which the application has
been registered as manufacturer and/
or dealer :
7. Item(s) of weights and measures for
which applicant is being made for
registration as the :
 - (a) Exporter :
 - (b) Dealer :

SCHEDULE XIX

(see rule 32)

Certain units of weights and measures.

(i) Base units :

| Quantity. | Name of base SI Units. | Symbol. |
|-----------------------------------|------------------------|---------|
| Length | .. Metre | m |
| Mass | .. kilogram | kg |
| Time | .. second | s |
| Electric current | .. ampere | A |
| Thermodynamic temperature | .. kelvin | k |
| Amount of substance | .. mole | mol |
| Luminous intensity | .. candela | cd |

(ii) Supplementary units :

| Quantity. | Name of derived supplementary SI units. | Symbol. |
|---------------------|---|---------|
| Plane angle | .. radian | rad |
| Solid angle | .. steradian | sr |

(iii) Some derived units :

| Quantity. | Name of derived units. | Symbol. |
|---|------------------------|---------|
| Frequency | .. hertz | Hz |
| Force | .. newton | N |
| Pressure, stress | .. pascal | Pa |
| Energy, work, quantity of heat | .. joule | J |
| Power | .. watt | W |
| Electric charge, quantity of electricity | .. coulomb | C |
| Electric potential, potential difference, electro-motive force. | volt | V |
| Electric capacitance | .. farad | F |
| Electric resistance | .. ohm | M |
| Electric conductance | .. siemens | S |
| Magnetic flux, flux of magnetic induction | .. weber | Wb |
| Magnetic flux density, magnetic induction | .. tesla | T |
| Inductance | .. henry | H |
| Luminous flux | .. lumen | lm |
| Illuminance: | .. lux | lx |
| Activity (radioactive) | .. becquerel* | Bq |
| Absorbed dose (of ionizing radiation) | .. gray* | Gy |

*These two derived units were authorized by the CGPM in 1975.

ANNEXURE I

(see para 1·6 of Schedule V)

Description of Lead

1. Lead used for loading holes :

1.1 Quality of material :

Lead shall conform to the following chemical analysis:—

Metallic lead not less than 99·99 per cent purity.

Total of all other impurities, such as copper, from Bismuth, Sulphur, etc., should not be more than 0·01 per cent.

2. Any other requirements :

For any other requirements or detailed description of the test methods, the BDSI should be consulted.

ANNEXURE II

(See item 1 of para. 2.2 of Schedule V)

Description of Cast Iron Castings

1. Grey Cast Iron Castings:

1.1 Quality of metal: The metal used for the manufacture of the casting shall be good quality cast iron of the tensile properties given in Table I.

TABLE I: Tensile Test

| Cross-Sectional thickness of casting | | Nominal diameter of test bar as cast. | Gauze diameter. | Tensile strength minimum. |
|--------------------------------------|----------------------|---------------------------------------|-----------------|---------------------------|
| Over. | Up to and including. | | | |
| mm | mm | mm | mm | kg/mm ² |
| .. | 9.5 | 15.2 | 10.1 | 17.3 |
| 9.5 | 19.0 | 22.2 | 14.3 | 16.5 |
| 19.0 | 29.6 | 30.5 | 20.3 | 15.7 |
| 29.6 | 41.3 | 40.6 | 28.6 | 15.0 |
| 41.3 | .. | 53.3 | 37.9 | 14.2 |

1.2 Freedom from defects: The castings shall be sound, clean and free from distortion and injurious defects. They shall be well dressed or fettled and shall be free from chill and other indication of free carbides. They shall be machinable by normal methods.

1.2.1 Any casting showing defects during subsequent manufacturing operations does not comply with this description, notwithstanding any previous certificate of satisfactory testing, provided the casting has not been improperly treated after delivery.

1.3 Testing: The tensile strength required are those which are to be given by the test bars cast separately from the castings which they refer, but shall be poured at the same time and from the same ladle of metal.

1.4 Re-Test: Should any of the tensile test pieces fail to pass the tests, two further tensile tests shall be made. If both pass, the batch of castings represented complies with the test requirements, but should one fail, the batch does not comply with this description.

1.5 Testings Facilities: The manufacturer, in supplying the test samples as required for testing shall prepare from them the necessary test pieces and supply the labour and appliances for making all tests on his premises in accordance with the description.

Failing Facilities for carrying out the test at his own works, the manufacturer shall carry out the tests elsewhere, agreed by the Inspector.

1.6 Any other requirements: For any other requirements e.g., transverse test, or detailed descriptions, the BDSI should be consulted.

ANNEXURE III

(See item 2 of para 2.2 of Schedule V)

Description of forged mild steel

DESCRIPTION

1. **Forged mild Steel:** For the purpose of this description or specification the steel used should weigh 793 kg/dm^3 (489.6 lb/ft^3) or 0.8 kg/cm^2 per meter run (3.4 lb/m^2 per foot run):

Chemical Composition:

(a) The Ladle analysis of steel shall be as follows:

| Constituent | .. | .. | .. | Percent, maximum. |
|---|----|----|----|-------------------|
| Carbon (for thickness/dia. 20 mm and below) | .. | .. | .. | 0.23 |
| Carbon (for thickness/dia. over 20 mm) | .. | .. | .. | 0.25 |
| Sulphur | .. | .. | .. | 0.055 |
| Phosphorous | .. | .. | .. | 0.055 |

(b) Product analysis:

| Constituent | .. | .. | .. | Variation over specified Max. limit in 2(a) above Percent, Max. |
|---|----|----|----|---|
| Carbon (for thickness/dia. 20 mm and below) | .. | .. | .. | 0.02 |
| Carbon (for thickness/dia. over 20 mm) | .. | .. | .. | 0.03 |
| Sulphur | .. | .. | .. | 0.005 |
| Phosphorous | .. | .. | .. | 0.005 |

Product analysis shall not apply to rimming quality steel.

3. **Any other requirement:** For any other requirement of Forged mild steel, the BDSI should be consulted.

ANNEXURE IV

(See item 3 of para. 2.2 of Schedule V)

DESCRIPTION OF CAST BRASS:

1. **Quality of the metal:** The chemical composition of the cast brass is as follows:

| Constituent | Percent, maximum. |
|----------------|-------------------|
| Copper | 61 to 64.0 |
| Tin | 1 to 1.5 |
| Zinc | Remainder |

2. **Any other requirement:** For any other requirement of the cast brass, the BDSI should be consulted.

ANNEXURE V

(See item 4 of para. 2.2 of Schedule V)

DESCRIPTION OF BRASS ROD, OTHER THAN FORGING STOCK.

1. Quality of metal: The chemical composition and mechanical properties are given in Table I below:

| Material. | Copper. | Tin. | Lead. | Iron. | Zinc. | Antimony. | Alu- minium. | Manganese | Total impurities. |
|---|---------------|-------|-------|-------|-----------|-----------|-----------------|-----------|----------------------|
| | % | % | % | % | % | % | % | % | % |
| 80/20 brass | 79.0/ 81.0 | .. | 0.10 | 0.10 | Remaining | .. | .. | .. | 0.40 |
| Leaded 80/20 brass | 79.0/ | .. | 0.1/ | .. | Remaining | .. | .. | .. | 0.60 |
| 70/30 brass | 81.0 | .. | 1.0 | .. | .. | .. | .. | .. | .. |
| | 68.5/ | .. | 0.05 | 0.05 | Remaining | .. | .. | .. | 0.30 |
| | 71.5 | .. | .. | .. | .. | .. | .. | .. | .. |
| Lead free 60/40 brass | 59.0/ | .. | 0.10 | .. | Remaining | 0.02 | .. | .. | 0.30 |
| | 62.0 | .. | .. | .. | .. | if reqd. | .. | .. | (excl. Pb) |
| Naval brass | 61.0/ | 1.0 | .. | .. | Remaining | .. | .. | .. | 0.75 |
| | 63.5 | 1.4 | .. | .. | .. | .. | .. | .. | .. |
| Naval brass (special mixture) | 57.50/ | 0.60/ | .. | .. | Remaining | .. | .. | .. | 0.75 |
| | 60.50 | 1.25 | .. | .. | .. | .. | .. | .. | .. |
| High tensile brass | 56.0/ | 0.2/ | 0.5/ | 0.25/ | Remaining | 0.02 | .. | 0.30/ | 0.30 |
| | 60.0 | 1.0 | 1.5* | 1.2 | .. | if reqd. | 1.5 | 2.0 | (excl. Al) |
| High tensile brass (soldering quality) | 56.0/ | 0.6/ | 0.5/ | 0.25/ | .. | .. | .. | 0.3/ | .. |
| | 60.0 | 1.1 | 1.5* | 1.2 | Remaining | .. | 0.2 | 2.0 | 0.50 |

| Material. | Copper. | Tin. | Lead. | Iron. | Zinc. | Antimony. | Alu- minium. | Manganese. | Total impurities. |
|--------------------|----------|------|-------|-------|-----------|-----------|-----------------|------------|----------------------|
| High tensile brass | .. 64.0/ | .. | .. | 0.25/ | Remaining | .. | 4.0/ | 0.3/ | 0.50 |
| Leaded brass .. | 68.0 | .. | .. | 1.2 | .. | .. | 5.0 | 2.0 | .. |
| 62% copper 2% lead | .. 61.0/ | .. | 1.0/ | .. | .. | .. | .. | .. | .. |
| Leaded brass .. | .. 64.0 | .. | 2.5 | .. | Remaining | .. | .. | .. | 0.30 |
| 58% copper 3% lead | .. 56.0/ | .. | 2.0/ | .. | .. | 0.02 | .. | .. | .. |
| Leaded brass .. | .. 59.0 | .. | 3.5 | .. | Remaining | if reqd. | .. | .. | 0.75 |
| 58% copper 2% lead | .. 56.5/ | .. | 1.0/ | .. | Remaining | 0.02 | .. | .. | .. |
| 60/40 brass | .. 60.0 | .. | 2.5 | 0.3 | .. | if reqd. | .. | .. | 0.7 |
| .. | .. 59.0/ | .. | 0.30/ | .. | Remaining | 0.02 | .. | .. | 0.30 |
| .. | 62.0 | .. | 0.80 | .. | .. | if reqd. | .. | .. | .. |

*If material is required with a lower lead content than that specified it may be ordered with a max. lead content of either 0.1% (lead free grade) or 0.5%.

| Material. | Condition. | Size. | | Tensile strength | | Elongation on proof stress, $5.65\sqrt{So}$. | | Bend test. | | Complies with or fails with ISO recommendation. |
|----------------------------|---------------|-------|-----------------|------------------|--------|---|-----|------------|---------|---|
| | | Over. | Up to and incl. | min. | hbar S | min. | % | Angle. | Radius. | |
| | | | | | | | | | | |
| 80/20 brass | .. | 6 † | .. | 31.0 | .. | 24 | 120 | t | .. | ISO R426 |
| Leaded | M | 6 † | .. | 31.0 | .. | 22 | 120 | t | .. | CuZn20 |
| 80/20 brass | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 70/30 brass | O | 6 † | .. | 28.0 | .. | 45 | .. | .. | .. | ISO R426 |
| Leaded free | M | 6 † | .. | 34.0 | .. | 28 | .. | .. | .. | CuZn30 |
| 60/40 brass | M | 6 † | 50 | 34.0 | 16.0 | 26 | 75 | t | .. | ISO R426 |
| Naval brass | M | 50 | .. | 31.0 | .. | 26 | 75 | t | .. | CuZn40 |
| Naval brass (spl. mixture) | M | 6 † | 20 | 40.0 | .. | 18 | 75 | t | .. | ISO R426 |
| High tensile brass | M | 20 | .. | 34.0 | .. | 20 | 75 | t | .. | CuZn38Sn |
| High tensile brass | M | 6 † | 20 | 40.0 | .. | 16 | 75 | t | .. | .. |
| High tensile brass | M | 20 | .. | 34.0 | .. | 18 | 75 | t | .. | .. |
| High tensile brass | M | 6 | 80 | 46.0 | 24.0 | 18 | .. | .. | .. | ISO R426 |
| High tensile brass | M | 80 | 160 | 46.0 | 20.0 | 18 | .. | .. | .. | CuZn39 |
| High tensile brass | H | 6 | 40 | 54.0 | 29.0 | 12 | .. | .. | .. | AlFeMn |
| High tensile brass | M Hot-worked | .. | .. | 46.0 | 19.0 | 20 | .. | .. | .. | ISO R426 |
| High tensile brass | M Cold-worked | 6 † | 40 | 54.0 | 28.0 | 12 | .. | .. | .. | CuZn39 |

| Material | Condition. | Size. | | Tensile strength | | Elongation on 5.65√S ₀ | Bend test. | | Complies with or fails with ISO recom-mendation. |
|---------------------|----------------------------|-------|-----------------|------------------|------|-----------------------------------|------------|---------|--|
| | | Over. | Up to and incl. | min. | min. | | Angle. | Radius. | |
| | | | | | | 0.2% proof stress. | | | min. |
| (soldering quality) | and stress-relieved. | 40 | 60 | 50.0 | 25.0 | 14 | .. | .. | AlFeMn |
| High tensile brass | M | 6 † | 100 | 54.0 | 29.0 | 12 | .. | .. | .. |
| Leaded brass | M | 6 † | 50 | 35.0 | .. | 22 | 180 | † | .. |
| 62% Cu 3% lead | M | 50 | .. | 32.0 | .. | 22 | 180 | † | .. |
| Leaded brass | M | 6 † | 80 | 38.0 | .. | 12 | .. | .. | ISO R426 |
| 58% Cu 3% lead | M | 80 | .. | 34.0 | .. | 16 | .. | .. | CuZn40Pb3 |
| Leaded brass | M | 6 † | 80 | 38.0 | .. | 18 | .. | .. | .. |
| 58% Cu 2% lead | M | 80 | .. | 34.0 | .. | 18 | .. | .. | .. |
| 60/40 brass | M | 6 † | 40 | 46.0 | 24.0 | 18 | .. | .. | .. |
| | M | 40 | 50 | 38.0 | 16.0 | 20 | .. | .. | .. |
| | M | 6 † | 50 | 34.0 | .. | 24 | 75 | † | ISO R426 |
| | M | 50 | .. | 31.0 | .. | 24 | 75 | † | CuZn40Pb |

Note :— S For conversion to kgf/mm², tonf/in², lbf/in², 1 hbar=100 bar = 10 MN/m²; = 10N/mm² = 0.64749 tonf/in²; —1450.38lbf/in² = 1.01972Kg/mm²
 O = Annealed (soft) M = As manufactured
 H = Hard.

† Material under 6mm in the condition given may reasonably be expected to have tensile strength in excess of that quoted for 6mm and over.

2. For copper and copper alloys, forging stock and forgings, the BDSI must be consulted.

ANNEXURE VI

(See item 5 of para 2.2 of Schedule V.)

DESCRIPTION OF CAST BRONZE

1. Quality of metal : The composition of the cast bronze is given below:

TABLE I: Chemical composition of copper alloy ingots and copper and copper alloy castings.

| Designation | PB4 | | 80/10/0/10 leaded bronze. | | 85/5/0/10 leaded bronze. | | 85/5/5/5 leaded gun- metal. | | 87/7/3/3 leaded gun- metal. | | Brass for sand castings. | |
|-----------------------------|------|------|------------------------------|------|-----------------------------|------|-----------------------------------|------|-----------------------------------|------|-----------------------------|------|
| | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. |
| Copper | 9.7 | 9.7 | 9.2 | 11.0 | 4.2 | 6.0 | 4.0 | 6.0 | 6.0 | 8.05 | 70.0 | 77.0 |
| Tin | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Zinc | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Lead | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Phosphorus | 0.5 | 0.5 | 0.4 | 0.10 | 0.10 | 0.10 | 4.0 | 6.0 | 1.7 | 3.2 | 1.0 | 3.0 |
| Nickel | .. | .. | .. | .. | .. | .. | .. | .. | 2.7 | 3.5 | .. | .. |
| Iron | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Aluminium | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Manganese | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Antimony | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Arsenic | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Iron+arsenic+anti- mony. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Silicon | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Bismuth | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Total impurities | .. | 0.50 | .. | 0.50 | .. | 0.50 | .. | 0.80 | .. | 0.70 | .. | 1.0 |

ANNEXURE VI—Concl'd.

| Designation. | Brass for sand castings. | | Brass for brazable castings. | | Brass for die castings. | | Brass for pressure die castings. | | Brass for die castings. | | Marks. | Elements. |
|-----------------------|--------------------------|-------------------|------------------------------|------------------|-------------------------|------|----------------------------------|-------------------------------|-------------------------|------|--------|------------------------|
| | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. | | |
| Copper | 63.0 | 70.0 | 83.0 | 87.0 | 59.0 | 62.0 | 58.0 | 63.0 | 57.0 | 60.0 | | Copper. |
| Tin | .. | 1.5 | .. | .. | .. | .. | 1.0 | .. | .. | 0.5 | | Tin. |
| Zinc | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | Zinc. |
| Lead | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | Lead. |
| Phosphorus | .. | 3.0 | .. | 0.5 | .. | 0.25 | .. | .. | .. | .. | | Phosphorus. |
| Nickel | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | Nickel. |
| Iron | .. | 1.0 | .. | .. | .. | .. | .. | .. | .. | .. | | Iron. |
| Aluminium | .. | 0.5 | .. | .. | 0.25 | 0.5 | .. | 0.5 | .. | 0.3 | | Aluminium. |
| Manganese | .. | 0.1 ^{††} | .. | .. | .. | .. | .. | .. | .. | 0.5 | | Manganese. |
| Antimony | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | Antimony. |
| Arsenic | .. | .. | .. | 0.05 | .. | .. | .. | .. | .. | .. | | Arsenic. |
| Iron+arsenic+antimony | .. | .. | .. | 0.20 | .. | .. | .. | .. | .. | .. | | Iron+arsenic+antimony. |
| Silicon | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | Silicon. |
| Bismuth | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | Bismuth. |
| Total impurities | .. | 1.0 | .. | 1.0 incl. Pb. | .. | 0.75 | .. | 2.0 excl. Ni+Pb +Al. | .. | 0.50 | | Total impurities. |

Note. 1—Analysis shall be carried out for the elements in heavy type and for the elements in light type marked with an asterisk.
 Note. 2—Total impurities include all elements in light type.

†BCB1. 0.1% maximum lead if required.

‡DCB3. Nickel to be counted as copper.

§Tin+1/2 nickel content must be within the range 7—8%.

¶For pressure tight castings aluminium shall not be greater than 0.02%.

2. Any other requirements: For any other requirements, the BDSI must be consulted.

ANNEXURE VII

(See para 5.2 of schedule V)

Description of Aluminium Alloy, Plate, Sheet and Strip.

1. Quality of the material : The material shall be free from defects prejudicial to its use.

2. Chemical composition : The chemical composition shall comply with the requirements given below :

| Material. | Percent (maximum). | | |
|-----------|--------------------|----|------------|
| Aluminium | .. | .. | Remaining |
| Copper | .. | .. | 0.1 |
| Magnesium | .. | .. | 0.1 |
| Silicon | .. | .. | 0.6 |
| Iron | .. | .. | 0.7 |
| Manganese | .. | .. | 0.8 to 1.5 |
| Zinc | .. | .. | 0.2 |
| Chromium | .. | .. | 0.2 |

| Condition. | Thickness | | 0.2% proof stress min. | Tensile strength. | | Elongation. | | | | | |
|------------|-----------|-----------------|------------------------|-------------------|-------------------|--------------------------------|----|---------|----|---------------------|----|
| | Over | up to and incl. | | min. | max. | on 50 mm material thicker than | | On over | | 5.65√s ₀ | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | mm | mm | N/mm ² | N/mm ² | N/mm ² | % | % | % | % | % | % |
| 0 | 0.2 | 6.0 | 90 | 130 | 130 | 20 | 23 | 24 | 24 | 25 | 25 |
| H2 | 0.2 | 6.0 | 120 | 145 | 145 | 5 | 6 | 7 | 9 | 9 | 9 |
| H4 | 0.2 | 12.5 | 140 | 175 | 175 | 3 | 4 | 5 | 6 | 7 | 7 |
| H6 | 0.2 | 6.0 | 160 | 195 | 195 | 2 | 3 | 4 | 4 | 4 | 4 |
| H8 | 0.2 | 3.0 | 175 | | | 2 | 3 | 4 | 4 | 4 | 4 |

Note :—10N/mm² = 0.64749 tonf/in² = 1450.381 bf/in²

= 1.01972 kgf/mm²

= 100 bar = 1 kbar

1 bar = 14.5038 1 bf/in²

0 = Annealed.

H2, H4 } Strain hardened.

H6, H8 } of cold work and partial annealing/stabilizing in order to secure the specified mechanical properties.

The designations are in ascending order of tensile strength.

3. Any other requirements : For methods of test or any other requirements the BDSI should be consulted and the directives given by the BDSI should be implemented.

Material subjected to the application of cold work after annealing (or hot forming) or to a combination of cold work and partial annealing/stabilizing in order to secure the specified mechanical properties.

ANNEXURE VIII

(See para 5.2 of Schedule V)

Description of cold rolled brass sheet, strip and foil

1. **Quality of material :** Cold rolled brass sheet, strip and foil in thickness up to and including 9.50 mm should conform to three alloys as given below :—

1. 80/20 brass (i.e., Cu/Zn)
2. 85/15 brass (i.e., Cu/Zn)
3. 90/10 brass (i.e. Cu/Zn)

2. **Impurities :** The material shall not contain the following impurities in excess of the amount stated.

Lead 0.10 per cent.

Iron 0.10 per cent.

Total 0.40 per cent.

3. **Manufacture :** The final rolling of the material shall be performed cold.

4. **Condition :** The material shall be supplied in one of the following conditions :—

| | |
|-------------------|-------|
| Annealed | 0 |
| Half hard | 1/2 H |
| Hard | H |

5. **Any other requirements :** For any other requirements, such as mechanical properties, the BDSI must be consulted and their directives should be implemented.

By order of the
Chief Martial Law Administrator

A. M. SHARAFUDDIN
Additional Secretary-in-Charge.