An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL EQUIPMENT/MATERIALS MANAGEMENT

TITLE **MARKING TABLE**	Phone: +91 431 257 7091/257 7343 Fax : +91 431 252 0719 Email : kp@bheltry.co.in

	Reference Number: **Enquiry** 2630900103	**Enquiry Date:** 31.12.09.	**Due date for submission of quotation:** 01.02.2010
You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order			

BHEL/Trichy is looking for ..... **MARKING TABLE**

BHEL commercial terms & conditions with Price Bid formats and all annexure can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units) Bharath Heavy Electricals Limited) under enquiry reference "2630900103 "	
Tenders should reach us before 14:00 hours on the due date Technical bid will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present.	Yours faithfully, For **Bharath Heavy Electricals Limited** Sr Manager / Capital Equipment

BHARAT HEAVY ELECTRICALS LIMITED

ENQUIRY
(INDIGENOUS)

429-002/A

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE : 2577091
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: kp@bheltry.co.in
Web:

Enquiry No	Enquiry Date	Due Date for Quotation
2630900103	31.12.2009	01.02.2010

Please quote Enquiry No, Date and due date in all correspondences.
This is only a request for quotation and not an order

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	Marking Table size 3000 x 5000 as per Drg. No. SK-3-ATP-001 (enclosed) and Specification as per IS 2285-2003-Gr.2 (copy enclosed). Material: Cast Iron Size can also be made up by adjoining two tables to get desired quality of flatness. 1) The supplier should have minimum 5 Years experience in providing this type of items. 2) The supplier should have supplied similar size already to any of the reputed companies in India recent past (Within 3 Years). 3) The supplier should deliver the item/s only after ensuring the Quality specified. Quality compliance certificate to be produced. 4) The transportation to our works should be done with proper packing to ensure safe delivery. Marking Table	NO	3.000	3.00	20.03.10

General Note:

COMMERCIAL TERMS AND CONDITIONS

Bhel commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be download from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units>Bharat Heavy Electricals limited page) under Enquiry reference "2630900103".

1,,QUOTATIONS

The Bidders shall submit the offer in TWO INNER ENVELOPES as indicated below which shall be sealed in one outer envelope.

Envelope I This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid. This envelope

The offers should reach us before the time of opening of tenders.
The offers will be opened at 14:30 hours on the due date in the presence of the tenderers who may like to be present.
Late tenders are liable to be rejected.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

R. KANNIKAPARAMESWARI
Sr. Manager (PURCHASE (FOSSIL BOILERS)
Capital Equipment / MM
BHEL Tiruchirappalli - 620 014.

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
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PHONE : 2577091
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E-mail: kp@bheltry.co.in
Web:

2630900103 / 31.12.2009

should be clearly marked "Part I - Technical and commercial bid", indicating Enquiry No., Due Date and Address & Reference of the Bidder.

Envelope II This sealed envelope should contain price details. This envelope should be clearly marked "Part II - Price bid", indicating Enquiry No., Due Date and Address & Reference of the Bidder.

Both the envelopes (Part I & II) shall be put in one cover, duly sealed, superscribing as Part I and Part II of Enquiry No., due date of opening and the address and reference of the Bidder.
The above offer should reach this office on or before the due date by 14.00 Hrs (IST).Late offers will not be considered.

2. POINT TO POINT CONFIRMATION TO BHEL'S SPECIFICATION AND COMMERCIAL TERMS AND CONDITIONS SHOULD BE PROVIDED IN THE ENCLOSED SHEET.

3. DETAILED CATALOGUE AND DRAWINGS SHOULD BE SENT ALONG WITH YOUR TECHNICAL OFFER.

Enclosures:

"LD clause has to be confirmed without fail."

"Payment to vendors will be made only thro E-Payment mode"

The offers should reach us before the time of opening of tenders.
The offers will be opened at 14:30 hours on the due date in the presence of the tenderers who may like to be present.
Late tenders are liable to be rejected.

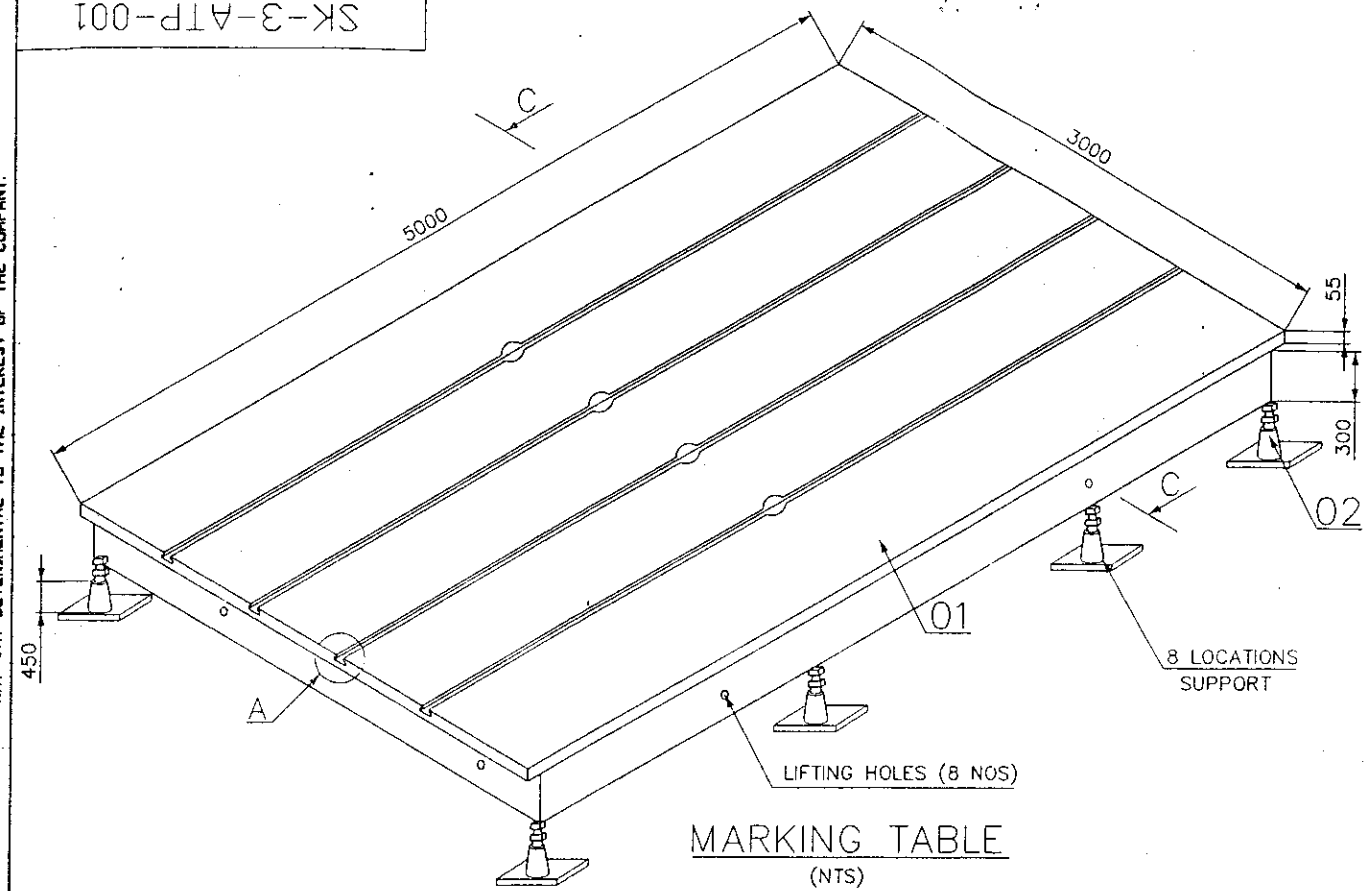
Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

R. KANNIKAPARAMESWARI
Sr. Manager
Capital Equipment / MM
BHEL, Tiruchirappalli - 620 014.

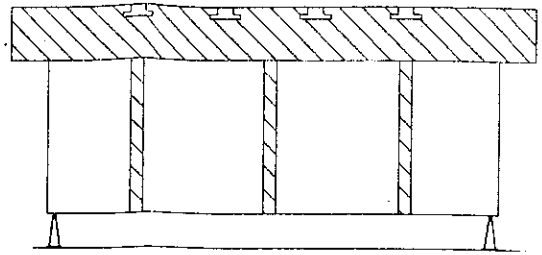
MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETERS)

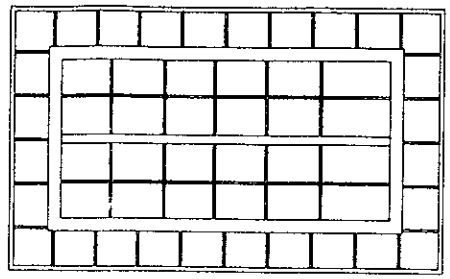
SK-3-ATP-001



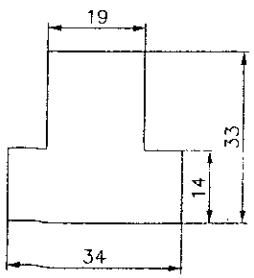
MARKING TABLE
(NTS)



SECTION-CC
(NTS)



BOTTOM ARRANGEMENT
(NTS)



DETAIL-A
(NTS)

IT.NO.	DESCRIPTION	MATERIAL	QTY.
01	MARKING TABLE	GUARDED CAST IRON	01
02	SUPPORTS	CAST STEEL	08

S. REGUNESAN
Sr. Manager / Production
Advanced Technology Products
BHEL, TRICHY - 620 014

CHD		TITLE: SKETCH FOR MARKING TABLE	SK. NO. SK-3-ATP-001 / REV 00
APPD			
DATE			

IS 2285 : 2003
ISO 8512-1 : 1990

भारतीय मानक

इंजीनियरी माप विज्ञान — मापने का उपस्कर — ढलवाँ लोहे की सतह प्लेटें — विशिष्टि

(तीसरा पुनरीक्षण)

Indian Standard

ENGINEERING METROLOGY — MEASURING EQUIPMENT — CAST IRON SURFACE PLATES — SPECIFICATION

(Third Revision)

ICS 17.040.30

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 2003

Price Group 6

Engineering Metrology Sectional Committee, BP 25

NATIONAL FOREWORD

This Indian Standard (Third Revision) which is identical with ISO 8512-1 : 1990 'Surface plates — Part 1 : Cast iron' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Engineering Metrology Sectional Committee and approval of the Basic and Production Engineering Division Council.

This standard was originally published in 1963 and revised in 1974 and 1991. The revision of this standard has again been taken up to harmonize the standard with ISO.

For many practical purposes, surface plates serve the user as a plane or datum surface. Surface plates are usually of cast iron or granite; other materials may be used provided they comply with the requirements for quality and accuracy specified in this standard. Granite surface plates are covered in IS 7327 : 2003 'Engineering metrology — Measuring equipment — Granite surface plates — Specification (*second revision*)' and harmonized with the International Standard ISO 8512-2 : 1990 'Surface plates — Part 2 : Granite'.

The choice between cast iron and granite surface plates depends on the conditions of use; some general information about care and use, testing and moderation in loading of plates is given in Annex A, B and C respectively. IS 12937 : 1990 'Engineering metrology — Methods of testing straightness, flatness and perpendicularity' may be referred for accuracy testing of surface plate.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear, referring to this standard, they should be read as 'Indian Standard'; and

b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

The concerned Technical Committee has reviewed the provision of ISO 185 : 1988 'Gray cast iron — Classification' referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard.

BIS CERTIFICATION MARKING

Details available with the Bureau of Indian Standards.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ENGINEERING METROLOGY — MEASURING EQUIPMENT — CAST IRON SURFACE PLATES — SPECIFICATION

(Third Revision)

1 Scope

This part of ISO 8512 specifies requirements for rectangular or square cast iron surface plates ranging from 160 mm x 100 mm to 2 500 mm x 1 600 mm, as preferred sizes, in four grades of accuracy 0, 1, 2 and 3.

This part of ISO 8512 applies to new cast iron surface plates, cast iron surface plates in use, and those reconditioned according to their grade.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 8512. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8512 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 185:1988, *Grey cast iron — Classification.*

3 Definition

For the purposes of this part of ISO 8512, the following definition applies.

deviation from flatness of the working surface: The minimum distance separating two parallel planes between which the working surface can just be contained.

4 Nomenclature

For the purposes of this part of ISO 8512, the nomenclature shown in figure 1 applies.

5 Material

Good quality, close-grained, plain cast iron or alloy cast iron at least equal to grade 250 of ISO 185 shall be used; the material shall be sound and free from blow holes and porous patches. Minor defects in working surfaces of grades 2 and 3 only may be repaired by plugging with material of composition similar to that of the plate.

6 Stress relief

After being cast and rough machined, all plates of grades 0 and 1 and of size up to and including 400 mm x 250 mm shall be given a suitable treatment to relieve internal stresses before being finished. It is strongly recommended that larger plates of all grades be stress-relieved by similar means; however, where facilities for this purpose are not available, such plates may be stabilized by natural ageing by agreement with the purchaser.

The manufacturer shall, on request, supply the purchaser with a statement of the stress-relieving process which the plate has received.

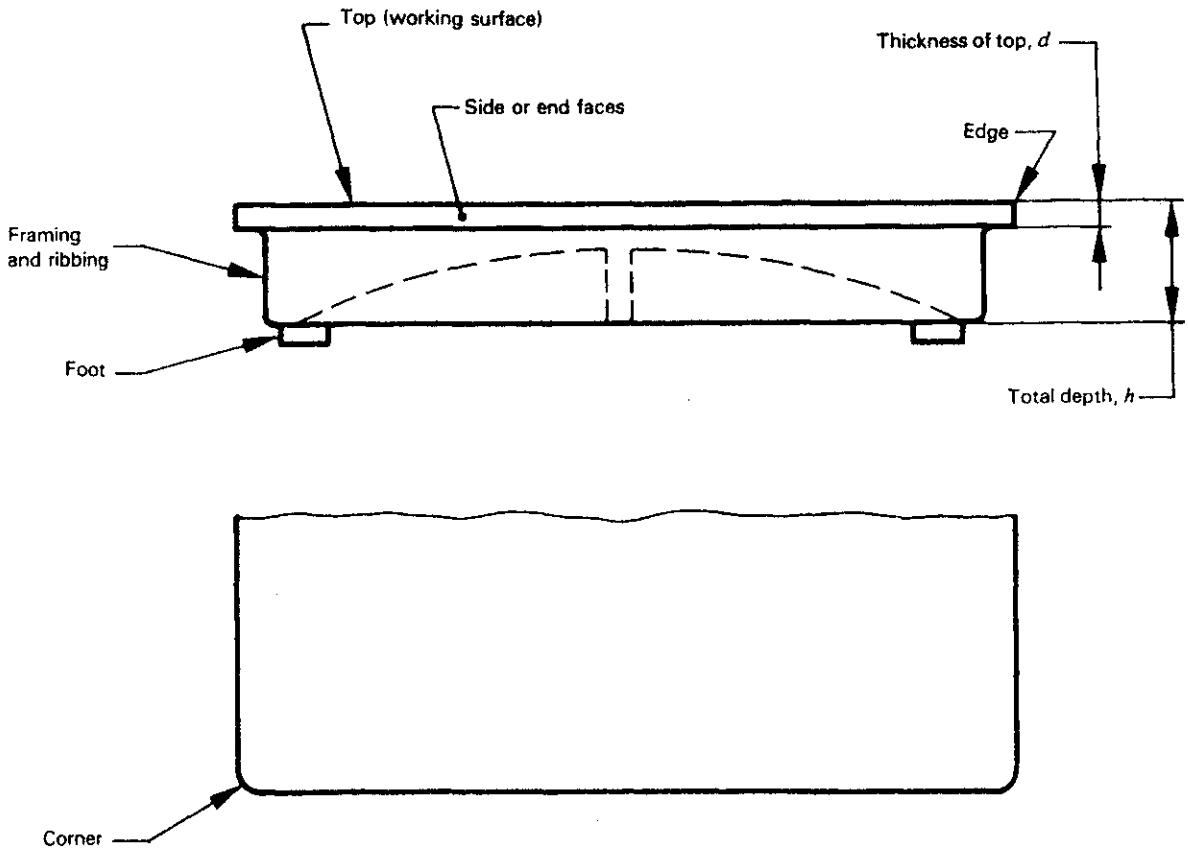


Figure 1 — Nomenclature

7 Preferred sizes

The preferred sizes for cast iron plates are given in table 1. If plates of other sizes are required, the requirements of this part of ISO 8512 shall nevertheless apply.

The lengths of faces of plates shall be within ± 5 % of the nominal size.

NOTES

1 There may be a transition period, however, until existing stocks of castings are exhausted and before patterns for the sizes specified in this part of ISO 8512 replace those currently in use. During this period national standards may be unable to make the ± 5 % tolerance mandatory.

2 It will be seen that the nominal lengths of faces, with one exception, are taken from the R5 series of preferred numbers; one plate, size 2 000 mm × 1 000 mm, is included because it is an established and widely used size, although 2 000 is not an R5 preferred number.

8 Rigidity

Cast iron surface plates shall be made with adequate ribbing and the total depth [i.e. the combined thickness of the top (working surface) and the depth of the framing] shall be such that when a concentrated load is applied about the centre of the plate, the loaded area shall not deflect below the remaining area of the plate by more than 1 µm/200 N. The limiting value for deflection applies to surface plates of size 400 mm × 250 mm and larger.

NOTE 3 A test method is given in annex B.

9 Finish of the working surface

The top (working surface) of grades 0 and 1 plates shall be finished by scraping or other process which results in a surface similar to that obtained by scraping. Grades 2 and 3 plates may be finished by the same processes or by machining.

The bearing area shall be not less than 20 % for grade 0, 15 % for grade 1 and 10 % for grades 2 and 3. High spots shall be uniformly distributed and the percentage of bearing area should not be so high as to cause wringing.

NOTE 4 A method of assessing the bearing area is given in annex B.

10 General features

10.1 Supporting feet of surface plates

All surface plates shall be supported on three feet. Plates larger than size 1000 mm x 630 mm shall have safety feet. Feet shall be positioned within the boundary of the working surface to minimize deflection.

NOTE 5 The setting of adjustable feet may affect the deviation from flatness of the working surface; specific instructions for adjusting the feet are given in footnote 3 to table 1.

The feet shall be smoothly machined, but machining of the supporting feet into a plane parallel to the working surface is optional.

10.2 Projection of top

The top of each plate of size 400 mm x 250 mm and larger shall extend at least 25 mm beyond the framing on all sides; the underside of this projecting surface shall be reasonably flat for accommodating clamps.

It is not mandatory for plates smaller than size 400 mm x 250 mm to extend beyond the framing, but if they do, the top shall extend at least 20 mm and shall be reasonably flat on the underside.

10.3 Edges

The side and end faces of the plate shall be machined; if the purchaser requires the side and end faces to be finished straight, mutually parallel and square, the tolerances shall be specified in the purchasing order.

All edges and corners shall be rounded with a radius of at least 2 mm. Alternatively, the edges and corners may be chamfered at an angle of approximately 45° using the value given above.

10.4 Handling

The plates shall be provided with means for convenient handling.

10.5 Clamping methods (i.e. tapped holes or slots)

The use of tapped holes in the plate for clamping purposes can cause distortion of the working surface if high clamping pressures are applied. The

Table 1 — Tolerances on deviation from flatness overall

Dimensions in millimetres; tolerances in micrometres

Size of plate	Diagonal length (approx.)	Border zone	Tolerance on deviation from flatness overall[1] [2] for plates of grade 0	1	2	3
Rectangular						
160 x 100	188	2	3	6	12	25
250 x 160	296	3	3,5	7	14	27
400 x 250	471	5	4	8	16	32
630 x 400	745	8	5	10	20	39
1 000 x 630	1 180	13	6	12	24	49
1 600 x 1 000[3]	1 880	20	8	16	33	66
2 000 x 1 000[3]	2 236	20	9,5	19	38	75
2 500 x 1 600[3]	2 960	20	11,5	23	46	92
Square						
250 x 250	354	5	3,5	7	15	30
400 x 400	566	8	4,5	9	17	34
630 x 630	891	13	5	10	21	42
1 000 x 1 000[3]	1 414	20	7	14	28	56

1) The bases of the tolerances specified are given in annex D.

2) Tolerances on deviation from flatness overall are expressed to the nearest

0,5 µm for plates of grade 0,

1 µm for plates of grades 1, 2 and 3.

3) These plates are supplied with more than three feet. Typically, after the plate has been carefully levelled by the three primary levelling screws, then the remaining supports may be adjusted either so that they are just in contact without disturbing the setting of the level or to give a minimum deviation from flatness. The tolerance applies after the supports have been adjusted and set in the manner agreed between the purchaser and manufacturer. These plates should be checked regularly to ensure that the setting has not been disturbed.

onus is on the purchaser whether or not tapped holes or slots in plates are to be provided.

11 Accuracy — Flatness tolerances

11.1 General

Two flatness tolerances are applied, one for the working surface overall and one for any local area of 250 mm x 250 mm of the working surface.

A border zone, the width of which shall not exceed 2 % of the shorter side with a maximum of 20 mm, may be excluded from these requirements for accuracy provided that no point on the border zone projects higher than the remainder of the working surface of the plate.

11.2 Flatness of the working surface overall

The flatness deviation of the working surface overall shall not exceed the appropriate tolerance for size and grade of accuracy specified in table 1.

NOTE 6 Test methods are given in annex B.

In the case of sizes which differ from those in the preferred range, the tolerance on deviation from flatness overall should be calculated in accordance with annex D.

11.3 Flatness of any local area of the working surface

The flatness deviation of any local area of 250 mm x 250 mm of the working surface shall not exceed

a) 3,5 µm for plates of grade 0;

b) 7 µm for plates of grade 1;

c) 15 µm for plates of grade 2;

d) 30 µm for plates of grade 3.

NOTES

7 The tolerances specified above are the same as those applied to the flatness overall of a 250 mm x 250 mm surface plate (see table 1).

8 Plates with a diagonal length smaller than 354 mm do not permit a 250 mm x 250 mm search area and in these cases the test on flatness overall serves to reveal local deviations from flatness.

12 Marking

Each plate shall be legibly and permanently marked or shall bear a designation plate attached to one face; the following information, in characters not less than 3 mm high, shall be included:

a) the manufacturer's name or trade-mark;

b) the number of this part of ISO 8512;

c) the grade of accuracy.

DESIGNATION EXAMPLE

X & Co. ISO 8512-1 Grade 0

Annex A
(informative)

Use and care of cast iron surface plates

A.1 A surface plate should be located in a circulated atmosphere under constant temperature control. Accordingly it should be protected from direct sunlight or draughts; in particular, it is important that these should not cause a vertical gradient of temperature such that the working surface and underside of the plate are at different temperatures. For example, if there is a persistent difference of 1 °C between the working surface and underside of a plate 1000 mm long and 250 mm thick, there can be a distortion of about 5 µm: this is 80 % of the total manufacturing tolerance in a 1000 mm × 630 mm plate of grade 0.

NOTE 9 The cellular form of the framing and ribbing, the relatively thin top of the plate and its thermal conductivity assist in acclimatizing cast iron surface plates readily when the ambient temperature returns to uniformity.

A.2 The plate should be supported firmly and levelled. Stands should be located on a stable foundation.

A.3 Attention is drawn to the procedure for setting surface plates (see footnote 3 to table 1).

A.4 Clause 8 and clause B.3 refer to the rigidity of a surface plate; care should be taken not to overload a plate. Suggestions regarding reasonable loading are given in annex C.

A.5 Point contact to scraped or machined surface plates is not permissible because of local irregularities of the surface.

Contact should be made through either an intermediate precision gauge block, preferably not more than 10 mm high, or a similar precision distance piece.

A.6 Use should be made of the available area of the plate and should not always be concentrated in one area.

A.7 The surface plate is a datum and should be protected against damage. The top should be frequently wiped clean from dust and other particles. When measurements are being made, a wiping cloth should be spread on the plate for small tools and gauge blocks.

A.8 A common sign of damage is burrs on the surface. The excess metal may be stoned away by local treatment confined to the burr; this operation should be followed by thorough cleaning from abrasive dust.

Rusting is a sign of neglect and misuse; it can be reduced by frequently wiping the top when in use and on occasions by gently rubbing with another plate using a paste of a little "jewellers' rouge" and paraffin as a lubricant.

A.9 When the plate is not in use the top should always be kept covered. If the plate is not required for some days the surface should be coated with a corrosion-preventive such as vaseline.

A.10 Plates wear as a result of use. The user can detect evidence of wear by rubbing the plate with a superior grade plate and studying the rubbed appearance and/or by checking straightness along lines on the plate and/or by using the datum gauge (see the tests described in annex B).

A.11 Users are advised to take advantage of the specialist services of surface plate manufacturers to have plates reconditioned.

Annex B
(informative)

Testing of surface plates

NOTE 10 Various test methods are available and details can be found in technical books; selected typical methods are outlined below.

B.1 Deviations from flatness overall

B.1.1 Surface plates with a machined finish may be tested by comparison with a superior grade plate of larger area.

A robust comparator stand is moved on a region of the working surface of the larger plate selected for minimum deviation from flatness. The measuring head having light operating force is carried in a right extension arm from the stand and is in contact with a gauge block or similar distance piece (see clause A.5) which is moved on the plate under test. This method is suitable for small plates.

B.1.2 Larger surface plates with a machined finish may be tested by measuring deviation from straightness along various lines parallel to the faces, and along the diagonals, by comparison with a reference straight edge. The results are then integrated into deviation from flatness by relating the results at the centrepoint of the plate where the two diagonal surveys cross and at other points where lines of test intersect.

B.1.3 Plates may also be tested by checking straightness along various lines on the plate using a block which, as it is moved along a line step by step, tilts according to the deviations from straightness.

The tilts may be measured by means of a spirit level or an electronic level where the block is of an appropriate size for testing the plate in some detail, but also large enough to carry the instrument. The plate should itself be solid enough not to be deflected by the load of the level and block, and the foundation should be stable enough to remain untilted by the movements of observer and apparatus.

Alternatively, an optical instrument, namely an autocollimator, is suitable for observing the tilts of an exploring block on any of the surface plates complying with this part of ISO 8512. Plates of grade 0 require a sensitivity of reading of 1 second of arc; less sensitive instruments may be used more conveniently on coarser grades of plate.

B.2 Deviations from flatness locally

B.2.1 Inspection of a new plate for deviation from flatness locally is recommended; moreover it is also particularly necessary if wear is suspected and/or if the working surface is not a consistent datum.

B.2.2 Although the methods described, in clause B.1 may use 50 or more located positions of measurement for the contour map of a plate, there nevertheless remain local positions, and on large plates, local areas, which may not be covered in the overall survey. Accordingly, an exploration of flatness of local areas is necessary, and, for this purpose, the methods described in clause B.1 can be applied to many more positions of measurement. However, this approach is cumbersome. Alternatively, since local deviations from flatness affect the surface plate as a datum, they may be traced by a datum gauge. A typical example of a datum gauge is shown in figure B.1: it is a freely moved, scribing block base with three fixed contacts representing a datum; an extension carries a sensitive indicator in contact with a pad in spring contact with the surface plate. It is recommended that insulated handles be fitted to isolate the warmth of the hand from the device and to facilitate its use.

B.2.3 The following procedure is recommended.

a) First visually inspect the working surface to note any irregularities of appearance. The results of measurement of deviation of flatness overall should be studied to identify where abrupt or large changes in contour occur. A rapid sweep of the whole plate can be made with the datum gauge to identify the areas of greatest variation.

b) Check areas where the datum gauge shows variations of reading exceeding the tolerance on local deviation using the methods described in clause B.1.

B.3 Rigidity test

B.3.1 A surface plate being subjected to a rigidity test is illustrated in figure B.2a): the apparatus used comprises essentially

a) a beam comparator Ⓐ incorporating a sensitive indicator Ⓕ;

b) a central mass support Ⓑ independent of the beam;

c) the requisite number of masses Ⓒ [only one mass is shown in figure B.2a)].

An end-on view of the apparatus, with the central support Ⓑ unloaded, is illustrated in figure B.2b); the plate is standing on its three feet.

The beam comparator is a rigid structure which is supported on two feet Ⓓ, each of which can be positioned along the length of the beam. A third foot Ⓔ [see figure B.2b)], which is positioned centrally along the beam and offset, is provided to keep the beam stable. A sensitive indicator Ⓕ, with its contact tip pressed against the surface plate, is rigidly clamped to the centre of the beam.

Dimensions in millimetres

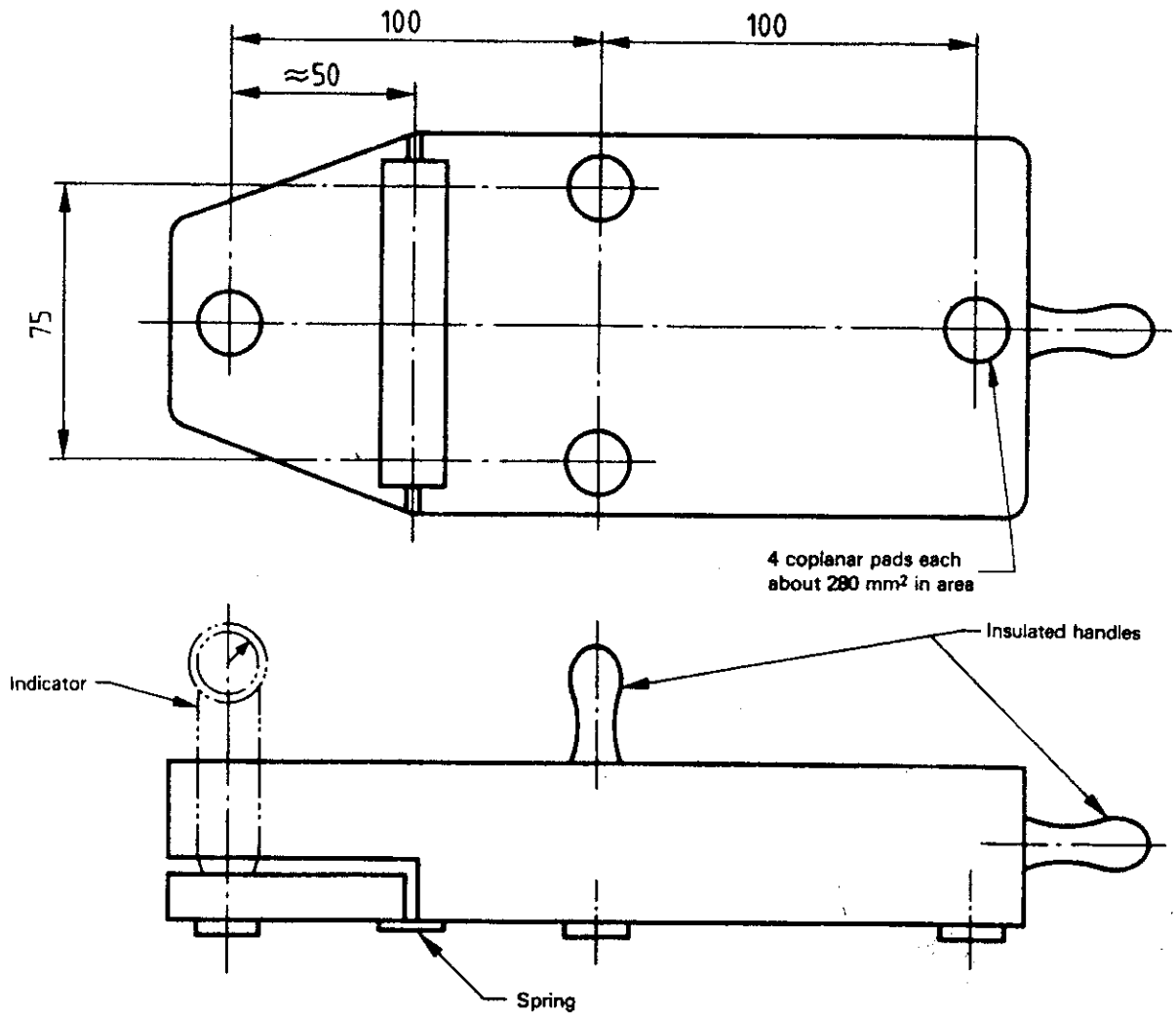
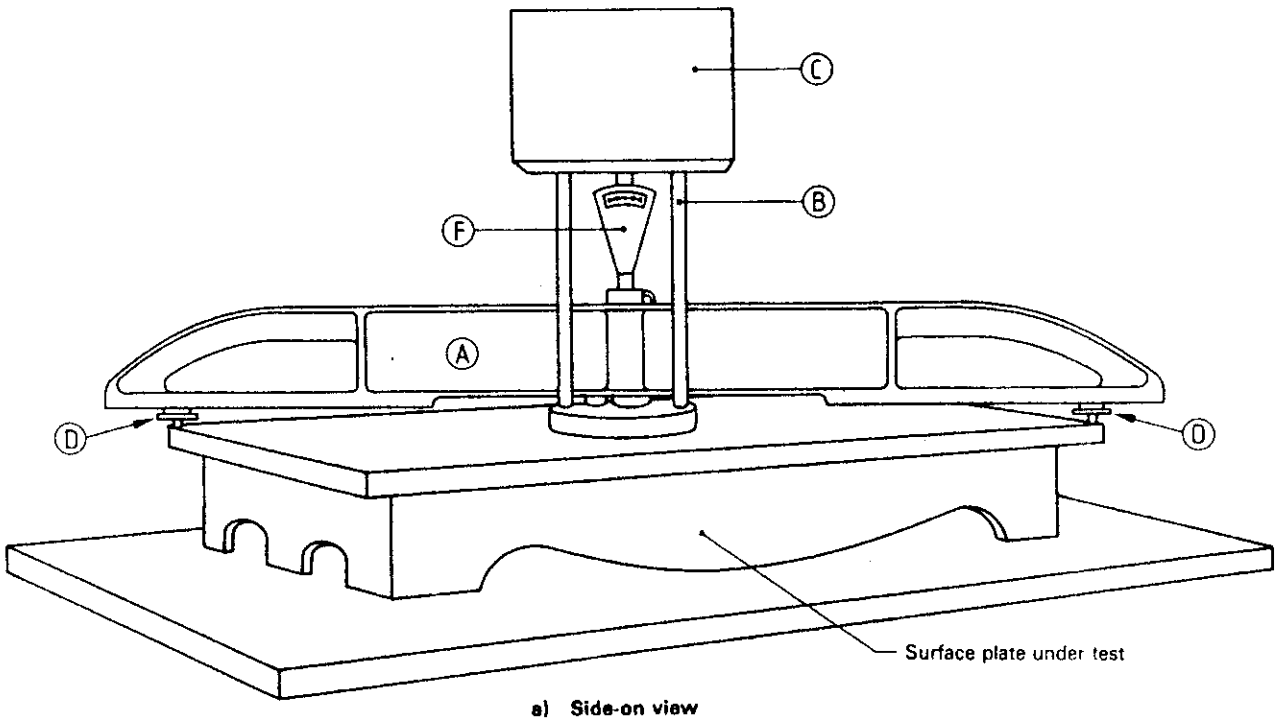
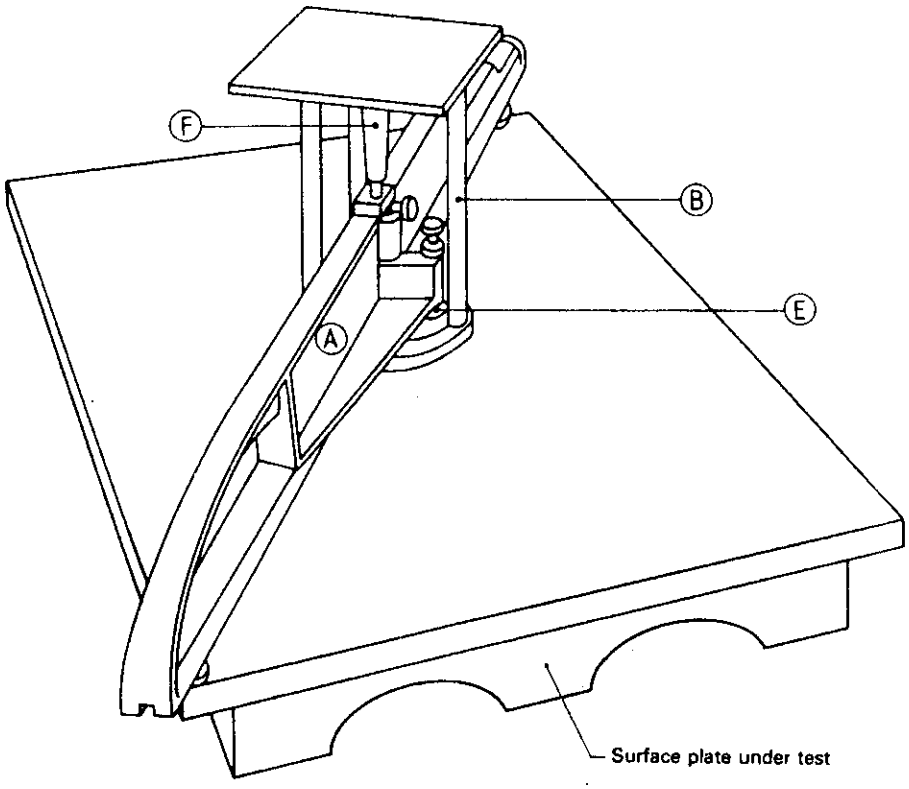


Figure B.1 — Example of typical datum gauge



a) Side-on view



b) End-on view

Key

(A)	Beam comparator	(C)	Mass(es) (for application of load)	(E)	Third foot (offset)
(B)	Central mass support	(D)	Supporting feet (two)	(F)	Sensitive indicator

Figure B.2 — Test apparatus for rigidity test

The central mass support is independent of the beam, and it can be moved, within limits, on the surface plate relative to the beam. The offset foot Ⓔ, in addition to its principal function as a stabilizer, also serves as a useful fine adjustment for setting the zero of the instrument as the indicator Ⓕ is very slightly offset from the centreline of the two feet Ⓓ. (This offset has to be very small relative to the offset of foot Ⓔ, if inaccuracies in measurement are to be minimized.)

The applied load should be reasonably proportional to the size of the plate and normally should not be so large as to deflect the plate by more than half the permitted tolerance on deviation from flatness overall.

The central area over which the load is applied should range from a circle about 120 mm in diameter for small plates to a circle 300 mm in diameter for large plates.

B.3.2 Adjust the beam feet lengthwise so as to span the diagonal of the surface plate under test; set the indicator to read on the plate when the beam is in position and note its reading. Then load the central mass support and again note the indicator reading, after which repeat the initial unloaded reading.

B.3.3 The difference between the indicator readings for the loaded and unloaded states will give the deflection of the plate under the load applied.

B.4 Assessment of bearing area

A method for determining the proportion of the bearing area of a scraped plate involves "blueing" the surface and rubbing it with another suitable plate so that the small bearing areas are highlighted. After "blueing" and rubbing, place a small glass plate*), on which an area 50 mm × 50 mm has been ruled into 400 small squares 2,5 mm × 2,5 mm**), on the surface. Then visually inspect each small square in turn and make a note of the estimated fraction of its area (in tenths) which is occupied by a "high spot" of the surface underneath.

The addition of all these fractions when divided by four gives the percentage of the bearing area of the surface over the region tested.

After testing a few plates using this method, the results obtained coupled with the general appearance of the bearing areas mean that a fairly close estimate can be made of the proportion of bearing area of a plate merely from its general appearance.

*) These glass plates can be readily produced like lantern-slides by photographing a chart drawn on paper.

**) The exact size of the squares is unimportant provided that all the squares are of the same size.

Annex C
(informative)

Resistance to deflection of cast iron surface plates under load

The limiting value for deflection (i.e. 1 µm/200 N), as given in clause 8, applies to all grades of plate from size 400 mm × 250 mm and larger.

The framing and ribbing and the thickness of the top of cast iron surface plates should be designed to comply with the rigidity requirement. However, the user may well seek information on the reasonable load that a plate can withstand. The values in table C.1 give the approximate mass, in kilograms, of concentrated load that will cause a maximum deflection of half the tolerance on deviation from flatness overall.

NOTE 11 It should be understood that table C.1 is intended to control loading and to complement clause A.4. The relatively generous tolerances on deviation from flatness overall of coarse grade plates might encourage extreme loadings and consequently overload foundations: the maximum values in table C.1 have accordingly been limited to 500 kg. The recommendation to distribute loads over the available surface applies whenever conditions permit.

Table C.1 — Maximum concentrated loading of cast iron surface plates (see also clause D.2)

Dimensions in millimetres; masses in kilograms

Size of plate	Mass in concentrated load that will cause a maximum deflection of half the tolerance on deviation from flatness overall, specified in table 1, for plates of grade			
	0	1	2	3
Rectangular				
400 × 250	40	80	160	320
630 × 400	50	100	200	390
1 000 × 630	60	120	240	490
1 600 × 1 000	80	160	320	500
2 000 × 1 000	95	190	380	500
2 500 × 1 600	115	230	460	500
Square				
400 × 400	45	90	170	340
630 × 630	50	100	210	420
1 000 × 1 000	70	140	280	500

Annex D
(informative)

Bases of tolerances

D.1 Basis of tolerances in table 1

D.1.1 The values specified in table 1 are based on the following formula:

$$t = c_1 l + c_2$$

where

t is the tolerance on deviation from flatness overall, in micrometres;

l is the nominal length of the diagonal of the plate rounded up to the next 100 mm;

c_1 and c_2 are constants for the grade of plate and are given in table D.1.

Table D.1 — Values for c_1 and c_2

Grade of plate	c_1	c_2
0	0,003	2,5
1	0,006	5
2	0,012	10
3	0,024	20

D.1.2 In the case of plate sizes which differ from those in the preferred range (i.e. those not given in table 1), the tolerance on deviation from flatness overall should be calculated using the formula given in D.1.1.

D.2 Basis of table C.1

Table C.1 gives the maximum load for a deflection not to exceed half the tolerance on deviation from flatness overall appropriate to the size and grade of plate.

EXAMPLE

From table 1, the tolerance on deviation from flatness overall of a 400 mm × 250 mm plate of grade 0 is 4 µm. When half the tolerance (i.e. 2 µm) is to be the maximum permitted deflection, it corresponds to a force of not more than 400 N (i.e. 2 × 200 N; see clause 8) or approximately 40 kg of mass acting as a load (see table C.1).

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act,* 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. BP 25 (0181).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

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Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
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An ISO 9001 Company
MM/CAPITAL EQUIPMENT/MODERNISATION

BHEL reserves the right to go for a Reverse Auction (RA) instead of Opening the submitted sealed bid, which will be decided after technical evaluation. Information and general terms and conditions governing RA are given below.

GENERAL TERMS AND CONDITIONS OF RA

Against this enquiry for the subject item/system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING ON INTERNET.

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHEL will inform the vendor in writing in case of reverse auction, the details of Service Provider to enable them to contact & get trained.
4. Business rules like event date, time, Start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to Participate in the event.
6. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
7. Reverse auction will be conducted on scheduled date & time.
8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. BHEL reserves the right to negotiate if need be, with the "L1" vendor of the Reverse Auction

(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT AND THE EXPIRY DATE OF BG MUST BE AFTER 60 DAYS FROM THE DATE OF COMPLETION OF WARRANTY PERIOD)

PERFORMANCE BANK GUARANTEE

In accordance of M/s. Bharat Heavy Electricals Limited (A Government of India undertaking, a company incorporated under the Companies Act 1956 having its Registered Office at "BHEL House", SIRI Fort, New Delhi 110 049) through its High Pressure Boiler Plant Division located at Tiruverumbur, Tiruchirapalli- 620 014 (hereinafter called 'the Company') having entered into a contract with .....hereinafter called ' the said contractor ' which term includes 'suppliers' for the purpose of this Bond and under the terms and conditions of the contract No..... Dt ..... Between BHEL, Trichy and as per the contract, the contractor / supplier is to furnish a performance bank guarantee for Rs..... for the due performance of the equipment to be supplied under the above referred contract and for the fulfillment of all the terms and conditions of the contract, We .....(indicate the name of the bank) (herein after referred to as the bank) at the request of ..... (Contractor(s)) do here by undertake to pay the company an amount not exceeding Rs.....against any loss or damage caused to or suffered or would be caused to or suffered by the company by reason of any breach by the said contractor (s) of any of the terms and conditions contained in the said agreement.

2. We .....(indicate the name of the bank with full address), do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Company stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of breach by the said Contractor(s) of any of the terms and conditions contained in the said Agreement or by the reason of the contractor(s) 'failure to perform' the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs._____.

3. We undertake to pay unconditionally to the Company any money so demanded notwithstanding any dispute(s) raised by the Contractor in any suit, or proceedings pending before any Court or Tribunal or Arbitration or before any other authority relating thereto our liability under this present being absolute and unequivocal. The payment under this guarantee would not wait till the disputes have been decided by any Court or Tribunal or in the arbitration proceedings or by any other authority. The payment so made by us under this Bond shall be a valid discharge of liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We.....(indicate the name of Bank), further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ Office / Department/ Division of the Company certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this

5. (I) Unless a demand or claim under this guarantee is made on us in writing on or before the _____we shall be discharged from all the liability under this guarantee thereafter. But where such claim or demand has been preferred by the Company with the Bank before the expiry of the said date, the claim shall be enforceable notwithstanding the fact that the said enforcement is effected after the said date.

(ii) For the purpose of this clause, any letter making demand on the Bank by M/s. BHEL dispatched by Registered Post with Ack.Due or by Telegram or by any Electronic media addressed to the above mentioned address of the Bank shall be deemed to be the claim / demand in writing referred to above irrespective of the fact as to whether and when the said letter reaches the Bank, as also any letter containing the said demand or claim is lodged with the bank personally.

6. We .....(indicate the name of Bank), further agree with the company that the Company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said Contractor(s) or for any forbearence, act or omission on the part of the company or any indulgence by the company to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating would, but for this provision, have effect of not so relieving us.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

8. It shall not be necessary for the company to proceed against the contractor before proceeding against the guarantor-bank and the guarantee herein contained shall be enforceable against them notwithstanding any security, which the company may have obtained or obtain from the Contractor shall, at the time when proceedings are taken against the guarantor hereunder be outstanding or unrealised.

9. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirapalli.

10. The guarantor hereby declare that it has power to execute this guarantee and the executant has full powers to do so on its behalf under the proper authorities granted to him/them by the guarantor.

11. We .....(indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the company in writing.

In witness whereof we....., (indicate the name of Bank) have hereunto setout Bank Seal the_____day _____month 200

BANK E-MAIL ID:

BANK PHONE NO

BANK FAX NO:

Bharat Heavy Electricals Limited, Trichirapalli – 620 014

(To be filled and submitted along with offer)

BHEL Enquiry No. 2630900103 **Date: 31.12.2009**

BHEL Commercial Terms and Conditions for INDIGENOUS SUPPLIES	**Vendor's Confirmation / Comments (To be furnished along with offer copy (or) Technical Bid Copy (Part No - I)**
Technical confirmation to BHEL's Specification as called for in BHEL Format shall be furnished. If needed additional sheets shall be used.	
Prices shall be **quoted item wise** only as per the model format enclosed.	
Prices shall be quoted on **"FIRM PRICE"** basis only. The prices should by only on F.O.R / Despatching station basis inclusive of Packing & Forwarding charges if any. Applicable percentage of ED & Sales Tax (VAT) should be clearly indicated.	
Validity of offer shall be for a minimum period of 120 days from the date of Tender opening	
Delivery period from the date of Letter of Intent shall be clearly mentioned in the offer.	
Liquidated damages @ ½% per week subject to a maximum of 15% of the order value shall be applicable for delay in deliveries.	
Following Risk Purchase clause shall be applicable: The purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated or if the same were not available, the best and the nearest available substitute therefore. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.	
Submission of Performance Bank Guarantee (PBG): Vendor should provide a performance bank guarantee(PBG) for 10% of the total Purchase order value valid for a period of 12 months from the date of commissioning (or) 18 months from the date of dispatch whichever is later with an additional claim period of 2 months. This PBG shall form one of the documents for effecting payment. The PBG shall be submitted in non-judicial stamp paper value of not less than Rs.80/- issued by any one of the following banks who is a member bank in our consortium of banks. **1) State Bank of India, 2) State Bank of Hyderabad, 3) State Bank of Travancore, 4) State Bank of Mysore, 5) Canara bank, 6) Bank of Baroda, 7) Punjab National bank, 8) Deutsche Bank, 9) HDFC Bank, 10) Standard Chartered Bank, 11) Citi Bank, 12) Standard Chartered Grindlays Bank 13) Bank of America and 14) Any one of the Nationalised banks.**	
Payment terms for supply portion: • **100%** payment will be made within 45 to 90 days after receipt and acceptance / commissioning of goods at BHEL. against submission of PBG for 10% of Order value with required validity. **(or)** • **80%** value of the goods will be paid within 45 to 90 days against dispatch documents negotiated through bank. Balance 20% will be paid within 45 to 90 days from the date of commissioning / acceptance of goods against submission of supplementary invoice and also against submission of PBG for 10% of Order value with required validity. **All bank charges are to vendor's account only.** **NOTE:** All direct Payment of more than one lakh will be made through **E-mode Payment**. As per BHEL e-mode Format, which will be given at time of ordering along with order copy. (Original filled **E-mode payment format** is to be get it signed by the both vendor's authorized signatory and their banker's along with a copy of **cheque leaf / cancelled cheque** leaf for the respective account number and forward the original hard copy to BHEL/Trichy to process invoices for making payment, after supplies are made).	

Contd.....2

Erection / commissioning: Erection / commissioning shall be done at free of cost.	
The equipment shall be guaranteed for a period of 12 months from the date of commissioning.	
Equipment will be inspected and proved at vendor's works prior to dispatch. However final inspection and acceptance of equipment will be after installation at BHEL,Trichy.	
The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost.	
Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis.	
Offers should be submitted only in **sealed cover super-scribing clearly the Enquiry reference and due date.**	

NOTE:-

a) **It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.**

b) **Your specific acceptance to the BHEL Payment terms, LD, Risk Purchase Clause & Submission of PBG for 10% of the order value are essential for consideration of your offer. Other wise your offer is liable for rejection.**

Signature & Office Seal of the vendor

MM : CAPITAL EQUIPMENT

Bharat Heavy Electricals Limited, Trichirapalli – 620 014

(To be filled and submitted along with Offer)

BHEL Enquiry No. 2630900103 **Date : 31.12.2009**

BHEL Commercial Terms and Conditions for **IMPORT SUPPLIES**	Vendor's Confirmation / Comments
Technical confirmation to BHEL's Specification as called for in BHEL Format shall be furnished. If needed additional sheets shall be used.	To be furnished along with offer (or) Technical Bid – Part No. I
Prices shall be **quoted item wise** only as per the model format enclosed.	
Prices shall be quoted on **"FIRM PRICE"** basis only. The prices should be only on FOB/FCA basis inclusive of Packing & Forwarding charges if any.	
Validity of offer shall be for a minimum period of 120 days from the date of Tender opening	
Delivery period from the date of Letter of Intent shall be clearly mentioned in the offer.	
Liquidated damages @ ½% per week subject to a maximum of 15% of the order value shall be applicable for delay in deliveries.	
Following Risk Purchase clause shall be applicable: The Purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated or if the same were not available , the best and the nearest available substitute therefore. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.	
Payment terms for Foreign vendor (Principal): 80% value of the goods will be paid through an irrevocable Letter of Credit established by our bankers. Balance 20% will be paid against acceptance / commissioning of goods for which supplementary invoice and PBG for 10% of total Purchase order value shall be submitted. **All bank charges outside India are to vendor's account only.**	
Payment terms for Indian Agent: Indian Agency commission, if any, shall be clearly specified in the offer and the same will be paid in Indian Rupees against acceptance / commissioning of the equipment.	
Erection / commissioning: Erection / commissioning shall be done at free of cost.	
Submission of Performance Bank Guarantee (PBG): Vendor should provide a performance bank guarantee(PBG) for 10% of the total Purchase order value valid for a period of 12 months from the date of commissioning (or) 18 months from the date of dispatch **whichever is later** with an additional claim period of 2 months. This PBG shall form part one of the documents for effecting the balance 20% payment.	
Part Shipment or Transhipment is not permissible	
In case of any short shipment in the main equipment / spares, where separate rates are not available in the contract, the customs duty levied on such supplies , shall be borne by the supplier / Indian agent.	
Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis.	
Equipment will be inspected and proved at vendor's works prior to dispatch. However final inspection and acceptance of equipment will be after installation at BHEL,Trichy.	
The equipment shall be guaranteed for a period of 12 months from the date of commissioning.	
The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost.	
Offers should be submitted only in **sealed cover super-scribing clearly the Enquiry reference and due date.**	

NOTE:-

a) **It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.**

b) **The prices are to be offered only on FOB/FCA basis, inclusive of Packing & Forwarding charges if any.**

c) **Your specific acceptance to BHEL Payment terms, LD, Risk Purchase Clause & Submission of PBG for 10% of the order value are essential for consideration of your offer. Other wise your offer is liable for rejection.**

Signature & Office Seal of the vendor

	BHEL Enquiry No. & Date		**Vendor's Offer Ref No. & Date**		
	2630900103 & 31.12.2009				
	MODEL PRICE BID FORMAT FOR INDIGENOUS VENDORS				
Sl No.	Description	Unit	Qty	Rate in Rs	Value in Rs
1					
2					
3					
4					
5					
6					
7					
8					
	Total Ex-works Value in Rs				
	Add Packing & Forwarding Charges if extra				
	FOR- Despatching Station Value in Rs				
	% of Excise Duty (If Extra or If inclusive)				
	% of Excise Duty (If inclusive)				
	% Sales Tax - CST against "C" Form (If extra)				
	% Sales Tax - CST With out "C" Form (if extra)				
	% VAT (if extra)				
	% VAT (if inclusive)				
	Approximate Freight Charges in Rs				
	Approximate Transit Insurance Charges in Rs				
	Installation / Commissioning Charges in Rs.				
	(If extra applicable)				
	% Service Tax **(if extra applicable)**				
	Consignment Package Details				
	Approximate Net / Gross Weight in Kgs				
	Dimension of Consignment				
			Signature & Seal of Vendor		
	NOTE:				

	BHEL Enquiry No. & Date			**Vendor's Offer Ref No. & Date**	
	2630900103 & 31.12.2009				
	MODEL PRICE BID FORMAT FOR IMPORT VENDORS				
Sl No.	Description	Unit	Qty	Rate Currency	Value Currency
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
	Total Ex-works Value in currency				
	Add Packing & Forwarding Charges if extra				
	OR FOB /FCA Charges if extra				
	FOB / FCA Value in Currency				
	Approximate Freight Charges in Currency				
	Approximate Transit Insurance Charges in Currency				
	Installation / Commissioning Charges in Currency				
	(If extra applicable)				
	% Service Tax **(if extra applicable)**				
	Consignment Package Details				
	Approximate Net / Gross Weight in Kgs				
	Dimension of Consignment				
				Signature & Seal of Vendor	
	NOTE:				
	The Price Bid should be submitted strictly in line with the above **FORMAT**				

MM : CAPITAL EQUIPMENT

COMMERCIAL TERMS AND CONDITIONS

1.0 QUOTATIONS

The Bidders shall submit the offer in TWO INNER ENVELOPES as indicated below which shall be sealed in one outer envelope.

Envelope I This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid. This envelope should be clearly marked "Part I - Technical and commercial bid", indicating Enquiry No., Due Date and Address & Reference of the Bidder.

Envelope II This sealed envelope should contain Price Details. This envelope should be clearly marked "Part II - Price Bid", indicating Enquiry No., Due Date and Address & Reference of the Bidder.

Both the envelopes (Part I & II) shall be put in one cover, duly sealed, superscribing as Part I and Part II of Enquiry No., due date of opening and the address and reference of the Bidder.

The above offer should reach this office on or before the due date by 14.00 Hrs (IST). Late offers will not be considered.

Tender should not be addressed to any Individual's name but only by designation to:

SR.MANAGER / MM /CAPITAL EQUIPMENT
BHARAT HEAVY ELECTRICALS LIMITED
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620 014
TAMIL NADU, INDIA

Contd 2/-

Tenders should be free from **CORRECTION AND ERASURES,** Corrections if any, must be attested. All amount shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

Offers should be in **ENGLISH** and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in **ENGLISH** or otherwise, the offers will not be considered.

2.0 PART I (TECHNICAL & COMMERCIAL BID)

2.1 Technical

This part shall include / indicate the following :

2.1.1. Offer should contain complete scope of supply with all technical details, specifications, delivery and other commercial terms and conditions.

2.1.2. Point by point confirmation for the Technical Specification enclosed to be provided. if there are any deviation, the same should be clearly specified. Offers received without confirmation to our specification will be rejected.

2.1.3. List of customers to whom same or similar equipment have been supplied along with performance certificates to be enclosed.

2.1.4. Relevant catalogues to be attached

2.1.5. List of spares parts (with part numbers) for two years operation and maintenance should be attached.

2.1.6. Information on shipping weight and cubage (length, width & height) to be provided.

2.1.7. Incase of foreign bidder offer, the Principal's technical offer should be enclosed.

2.2 Commercial

This part shall include / indicate the following :

2.2.1. Port of shipment / Station of despatch

2.2.2. Terms of payment

2.2.3. Taxes & duties applicable.

2.2.4. Delivery Schedule

Contd 3/-

2.2.5. Offer validity

2.2.6. Country of origin

2.2.7. Percentage of agency commission if any along with a copy of Agency agreement.

2.2.8. A copy of "Un-Priced Part II" i.e., a copy of the Price Bid without the price details to be enclosed.

3.0 PART II (PRICE- BID)

This part should contain the schedule of price particulars and to be co-related to the technical details provided in Part I.

4.0 OPENING OF TENDERS

The Part I - Technical & commercial bid alone would be opened on the Tender opening date. The Part II - Price bid of Technically suitable Bidders alone would be opened. The Technically suitable Bidders would be informed about the tender opening date.

Clarifications if any required by BHEL for Technical evaluation would be sought from Bidders before opening of Part II - price bid.

5.0 GENERAL

5.1. Incomplete offers will not be considered.

5.2. **Fixed Price:** Prices quoted by the bidder shall be fixed and not subject to any escalation whatsoever during the period of bid validity and execution of the Purchase Order. A bid submitted with an adjustable price will be treated as non - responsive and rejected. Prices shall be written in words and figures. In the event of difference, the price in words shall be valid and binding. Unit prices shall be considered correct in the event of any discrepancy with regard to total price.

5.3. **Bid Currency:** Indian bidders should submit the prices only in Indian Rupees. Foreign bidders may submit their bid in their home currency.

5.4. **Terms of Delivery:** Bidders are required to quote their best delivery period. Foreign Bidders should submit their offer for net **FOB / FCA Nearest Sea / Air Port.** Indian Bidders should submit their offer for **FOR - Despatching Station.**

Contd 4/-

5.5. **Taxes and Duties :** All Taxes and Duties payable as extra to the quoted price should be specifically stated in offers along with CST & VAT / Tariff No. etc., failing which the purchaser will not be liable for payment of such Taxes and Duties.

5.6. **Validity :** The offers for main equipment and spares shall be kept open for acceptance for **120 days (one hundred and twenty days)** from the date of opening of the tender (Part I).

5.7. **Terms of Payment :**

5.7.1. **Indian Bidders**

5.7.1.1. The preferred payment terms are indicated below :

5.7.1.2. 100% payment, within 45 to 90 days, after receipt / acceptance / commissioning of equipment at BHEL, Tiruchi, against submission of 10% Performance Bank Guarantee on total order value.

or

5.7.1.3. 80% payment against documents through bank within 45 to 90 days, (after pre-despatch inspection) and balance 20% payment after receipt / acceptance / commissioning of the equipment 45 to 90 days, 45 to 90 days against submission of 10% Performance Bank Guarantee on total order value.

5.7.2. **Foreign Bidders**

An Irrevocable Letter of Credit shall be established for 80% of the value of the goods. Balance 20% shall be paid on receipt / acceptance / commissioning of the goods at BHEL against submission of Performance Bank Guarantee for 10% on total order value. All bank charges outside India are to Vendor's account.

5.8. **Performance Bank Guarantee (PBG):** The Bidder, in the event of an order, should furnish a bank Guarantee from an Indian Bank approved by BHEL, at no extra cost in a proforma prescribed by BHEL, along with the order, for an amount equivalent to 10% **(Ten Percent)** of the value of the contract. The PBG shall be valid for period of 18 **months** from the date of dispatch or **12 months** from the date of receipt / acceptance / commissioning of the equipment at BHEL, Tiruchi whichever is earlier with additional claim period of 2 months.

Contd 5/-

The Performance Bank Guarantee shall be obtained from any one of the following banks who is a member bank in our consortium of banks.

1) State Bank of India, 2) State Bank of Hyderabad, 3) State Bank of Travancore, 4) State Bank of Mysore, 5) Canara Bank, 6) Bank of Baroda, 7) Punjab National Bank, 8) Deutsche Bank, 9) HDFC Bank, 10) Standard Chartered Bank, 11) Citi Bank, 12) Standard Chartered Grindlays Bank, & 13) Bank of America or any other Nationalised Bank

5.9. **Liquidated damages** : It is clearly understood among the parties to the contract the **" Time is the essence of the contract "**. Therefore, the delivery of the goods specified in the purchase order should be made within the time prescribed. Where the seller supplies or despatches the goods, beyond the delivery period specified the purchaser will have no obligation to accept the goods. If accepted liquidated damages at the rate of 1/2% of the value of goods delayed for each week of delay subject to a maximum of 15% of the order value will be levied.

5.10. **Risk Purchase** : Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute therefor. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.

5.11. **Indian Agency Commission** : In case of Foreign Bidders, agency commission if any, payable to their Indian Agents, shall shown separately in the Offer. This will be paid by us in India, in Indian Rupees, on satisfactory completion of the Contract. Copies of current Agency Agreement / Authorization Letter in respect of Agency Commission shall be furnished alongwith offer. For calculation of Rupee equivalent of Agency Commission, exchange rate as prevailing on the date of offer will be taken.

NOTE:-

To curb possible manipulation by agents, it is desirable that as far as possible BHEL discourage in dealing with agents of OEMs. (**Original Equipment Manufacture**)s.

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i) When it is not possible to directly deal with OEMs and the involvement of agents become unavoidable, BHEL is made it clear to OEMs that while appointing Indian agents, it is responsibility to ensure that the agents are not representing other OEMs in the same tender.

ii) OEMs should also ensure that banned agents / employees of banded agents are not engaged by them in any capacity. An undertaking to this effect should be taken by OEMs and provided for each tender. It is also made it clear that if at any stage it is found that the OEM has appointed an agent who

a. is banned by BHEL or
b. is an employee of a banned agent or
c. is found to be representing more that one OEM in the same tender the OEM (s) shall be disqualified

5.12. **Test Certificates / Operating and Maintenance Manuals :** The Bidders shall clearly mention in their offer, that Test Certificates and Operating Maintenance Manuals, etc., as called for in the Technical Specification, in the required number of copies will be provided at no extra cost.

5.13. **Modvat Credit** : (for Indian Bidders only) If any Excise Duty is payable, the chapter head / sub-head reference and the rate of the duty should be quoted. If the tender is availing **MODVAT** credit for his input materials, the effect of proforma credit should be passed on to the purchaser.

5.14. **Packing and Marking :** The Supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.

5.15. BHEL shall be at liberty to reject or accept any tender, part or in full, at their own discretion and any such action is not liable for any question or claim against BHEL.