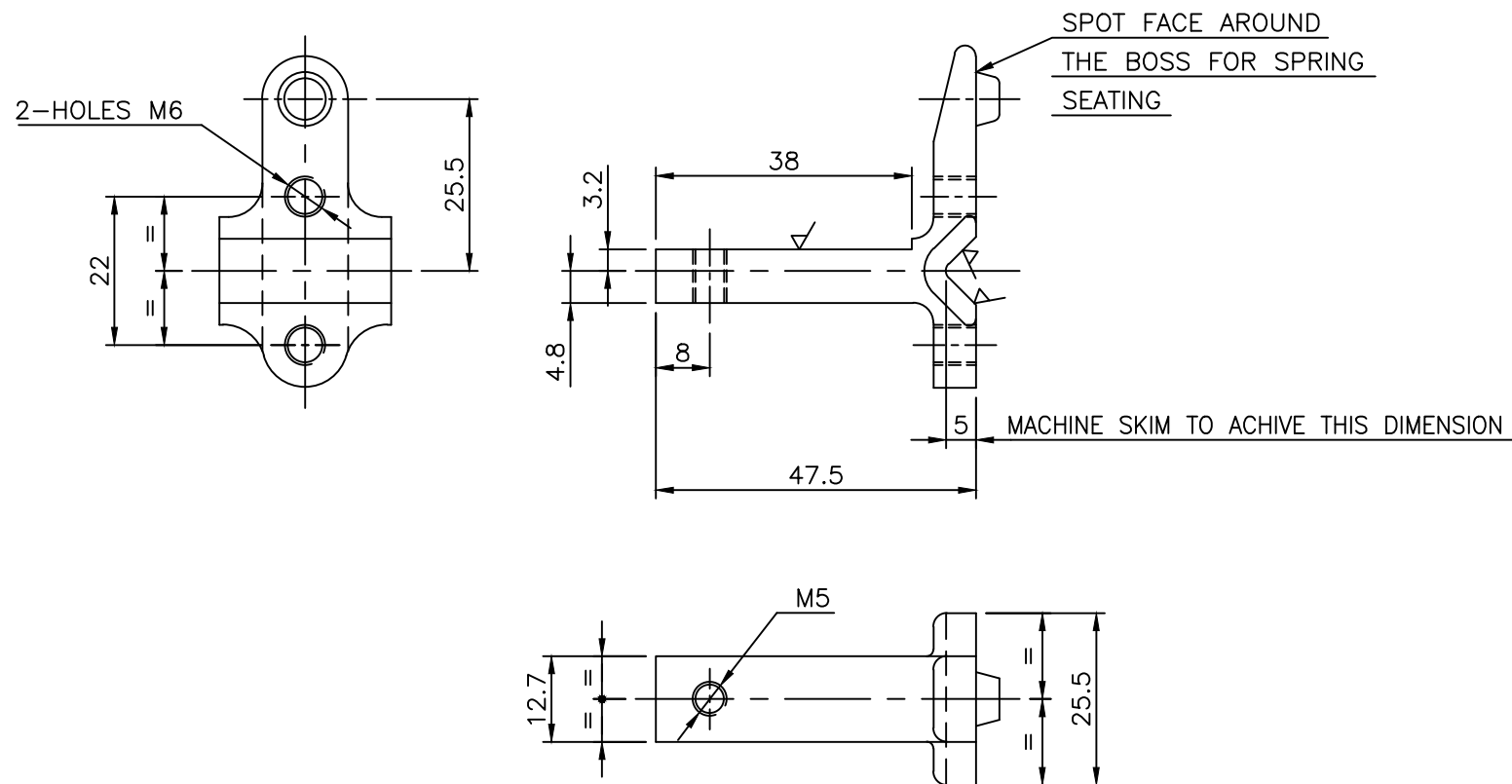


(ALL DIMENSIONS ARE IN mm.)

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DRAWING NO. 3 583 15 3 0012



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| STYLE NO. | ITEM INCLUDED | DESCRIPTION OR REMARKS | RECORDED | |
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| BP 9078608188 | 001 | TRIP PAWL | Sd/— | 07.9.89 |

| TOOL LIST | | |
|-----------|---------|---------------------|
| ITEM | TOOL | DESCRIPTION |
| 001 | 1555224 | M.F. FOR 'V' GROOVE |
| 001 | 1555729 | SPOT FACE CUTTER |
| 001 | 1485579 | DRILL JIG |

FINISH :-
ELECTROTIN (0.008TK) TO PR.S. AA 0673602.

| | | | | | | | | | | | | | |
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| | | | 001 | RESET TRIP PAWL | | 3 583 15 3 0013 | 001 | | | | | | |
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| VAR. 00 | REMARKS | VAR NO. | ITEM NO. | DESCRIPTION | STD. | DRAWING NO. | IT. NO. | MATL. CODE. | A C | UNIT | UNIT WT. | QTY. | QTY. |
| | | | | | | | VAR | MATL. SPCN. | | | | | |

| COMPUTERISED DRAWING | | |
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| | CKD. | APPD. |
| NAME | V.JOHN | BKT |
| SIGN. | <i>[Signature]</i> | <i>[Signature]</i> |
| DATE | 01.12.12 | 01.12.12 |

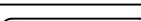
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|  | भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL | क्याया | नाम / NAME | हस्ता / SIGN. | दि. / DATE | पत्र की संख्या NO. OF VAR. - |
| | | DRN. | R.C.B. | Sd/- | 05.02.82 | |
| | | जॉया | A.S.A. | Sd/- | 13.02.82 | |
| | | स्वीकृत | V.P.A. | Sd/- | 29.10.82 | |
| | | APPR. | | | | |


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| कोड CODE. 407 | CG 06503 | | 1:1 | | 2 583 15 3 0001 1 583 15 3 0001 1 583 15 3 0002 | 004 009 003 | 001 |
| शीर्षक/TITLE | | | | | ड्राईंग क्र./DRGAWING NO. | | पुन./REV. |
| RESET TRIP PAWL | | | | | 3 583 15 3 0012 | | 05 |
| | | | | | शीट क्र./SHT.NO 01 | शीटों की सं./NO.OF.SHT. 01 | |

(ALL DIMENSIONS ARE IN mm.)

INVENTORY No. _____

Technical drawing of a mechanical part showing dimensions: 5.5, 11, and 25.5.

FINISH :-
ELECTROTIN (0.008TK) TO PR.S. AA 0673602.

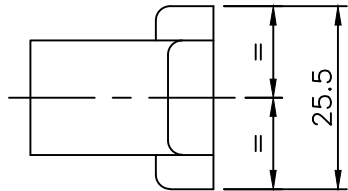
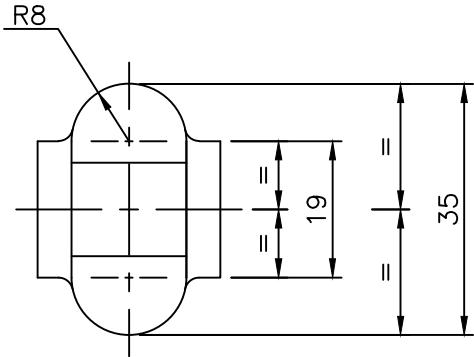
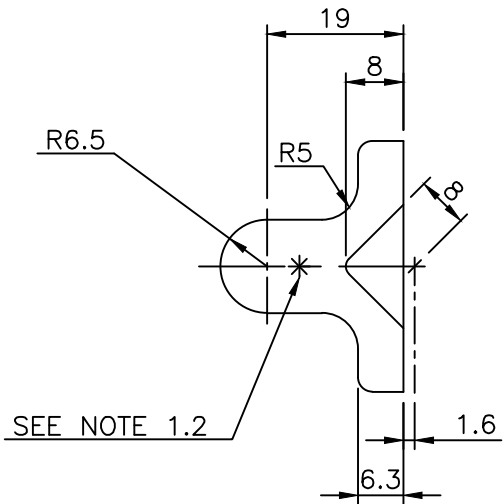
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| कोड CODE. 407 | CG 06503 | | 1:1 | - | 1 583 15 3 0001 | 005 | 001 |
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| | | | | | 3 583 15 3 0018 | | 03 |
| | | | | | शीट क्र./SHT.NO 01 | शीटों की सं./NO.OF.SHT. 01 | |

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm.)

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6100 8 91 889 8
DRAWING NO.



1. GENERAL REQUIREMENTS

- 1.1 SUPPLIER SHOULD REFER THE MACHINING DRG. 3 583 15 3 0018, ITEM-001 BEFORE PROCEEDING WITH THE MANUFACTURE OF CASTING.
- 1.2 SUPPLIER SHOULD CAST THE NAME OF HIS FIRM AND CASTING DRG. NO. IN THE PLACE MARKED THUS *.
- 1.3 THE SUPPLIER SHOULD FURNISH TEST CERTIFICATES ALONG WITH THE SUPPLY OF CASTINGS REGARDING MECHANICAL PROPERTIES AND CHEMICAL COMPOSITION AS PER AA 19943.
- 1.4 THE CASTINGS SHOULD BE SOUND, CLEAN AND FREE FROM POROSITY, BLOW HOLES, HARD SPOTS, COLD SHUTS AND DISTORTION.
- 1.5 ONE PERCENT OF EACH BATCH OF SUPPLY (MIN. TWO CASTINGS) SHOULD BE MACHINED AS PER THE M/C DRG. 3 583 15 3 0018, ITEM-001 FOR CHECKING ITS MACHINABILITY.
- 1.6 ALL OTHER REQUIREMENTS AS PER AA 19943.

2. TECHNICAL REQUIREMENTS

2.1 DIMENSIONS

- 2.1.1 DIMENSIONS GIVEN INCLUDE MACHINING ALLOWANCES REQUIRED BY US.
- 2.1.2 ALL CASTING RADII TO BE 3 UNLESS OTHERWISE SHOWN.

2.2 TOLERANCES

- 2.2.1 A TOLERANCE OF ± 0.5 IS ALLOWED ON ALL DIMENSIONS UNLESS OTHERWISE SHOWN.

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| | STYLE NO. BP 9308522000 | | 001 | LEVER, RED BRASS CASTING | | PATT. 1285166 SHELL PATT. 1185036 | | | | | | | | |
| VAR. 00 | REMARKS | VAR NO. | ITEM NO. | DESCRIPTION | STD. | DRAWING NO. | IT. NO. | MATL. CODE. | A C | UNIT | UNIT WT. | QTY. | UNIT | QTY. |

ADDITIONAL INFORMATION

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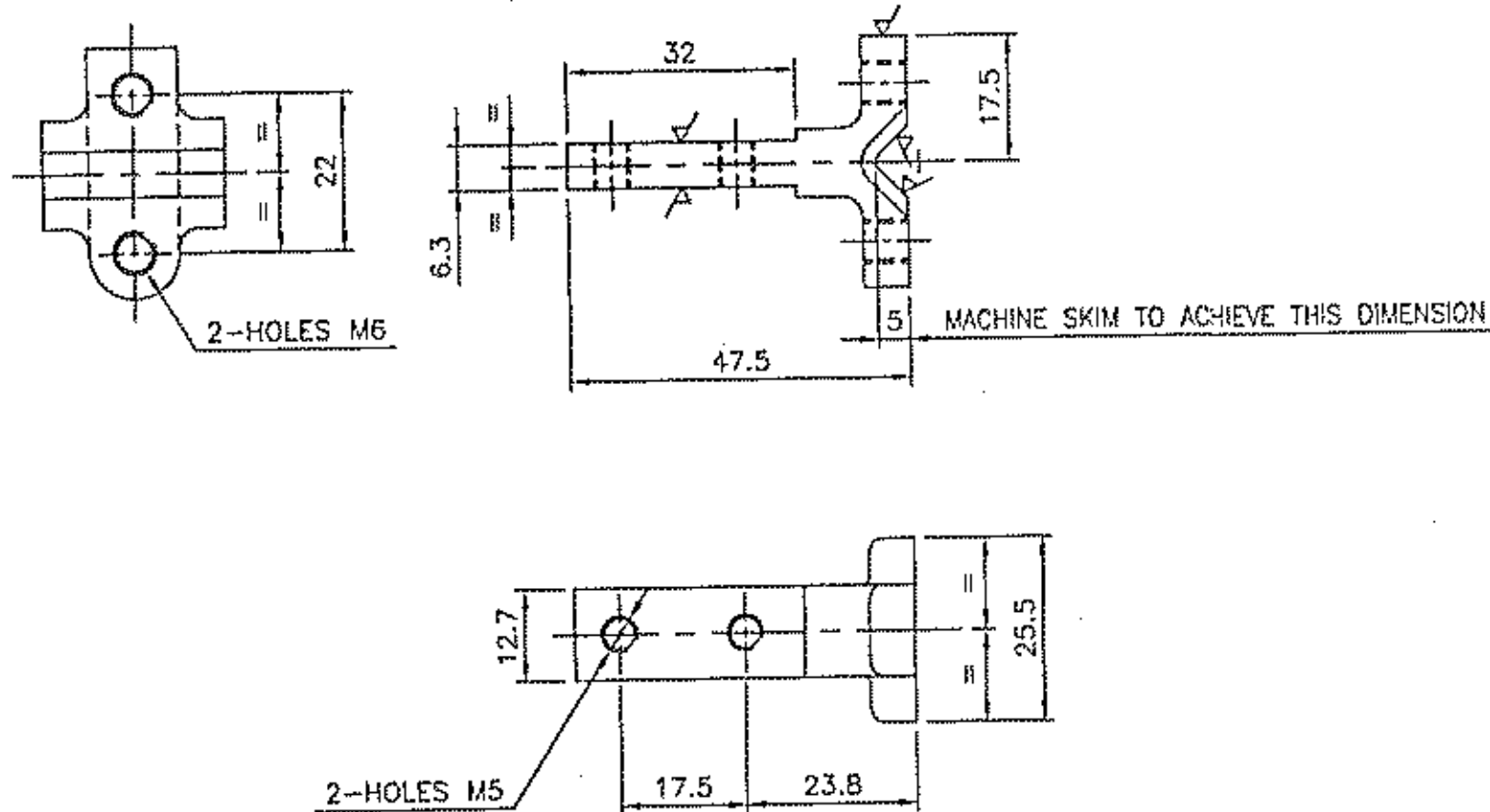
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| TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT | | INDIAN RAILWAYS | | | |
| बी.एच.ई.एल. भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल | ड्राफ्ट/DRN. | नाम /NAME | हस्ता/SIGN. | दि./DATE | पैरि की संख्या NO. OF VAR. |
| BHEL BHARAT HEAVY ELECTRICALS LTD. BHOPAL | जांचा CKD. | A.S.A. | Sd/- | 24.03.82 | - |
| | स्वीकृत APPD. | V.P.A. | Sd/- | 21.11.82 | - |
| विभाग DEPT. CEE | अनु. टोल. नाप की श्रेणी UNTOL. DIMS. GR. | अनुपात SCALE | भारत का भार WEIGHT (K.G.) | असे. ड्राईंग का संदर्भ REF. TO ASSY. | मद संख्या ITEM NO. |
| कोड CODE. 407 | CG 06503 | 1:1 | 0.1 | 3 583 15 3 0018 | 001 |
| शीर्षक/TITLE | | | ड्राईंग क्र./DRGAWING NO. | | |
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| | | SHELL PATT. NO. 1185036 ADDED. | | |
| | | STYLE NO. ADDED. | | |

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DRAWING NO. 3 583 15 3 0022



| TOOL LIST | | |
|-----------|---------|---------------------|
| ITEM | TOOL | DESCRIPTION |
| 001 | 1486521 | DRILL JIG |
| 001 | 1555224 | M.F. FOR 'V' GROOVE |

ELECTROTIN (0.008TK) TO PR.S. AA 0673602.

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| | | 8637955, 17-002 |



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| REV | DATE | ALTERED | 15/10/07 |
| | | CHECKED | 20/10/07 |
| 04 | 31.01.07 | APPROVED | 20/10/07 |
| DRG. REDRAWN & COMPUTERISED | | | |

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| बी.एच.ई.एल.  भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL | उत्पाद ORN. | नाम /NAME | हस्ता/SIGN. | दि./DATE | पृष्ठ की संख्या NO. OF VAR. |
| | चौका CKD. | A.S.A. | Sd/- | 24.03.82 | - |
| | मोबाइल APPL. | V.P.A. | Sd/- | 21.11.82 | - |
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| कोड CODE 407 | CG 06503 | | 1:1 | - | उत्प. इल. नाम ITEM NO. |
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| | | | | 1 583 15 3 0002 | 002 |
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| RESET TRIP PAWL | | | | 3 583 15 3 0022 | 04 |
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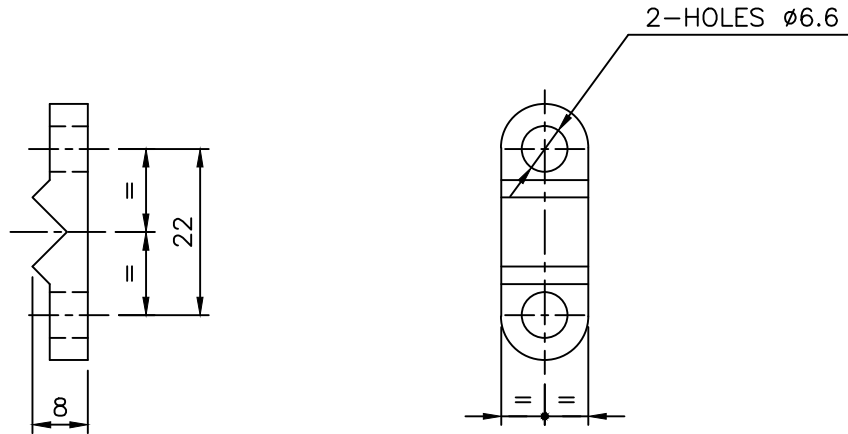
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| STYLE LIST | | | | |
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| STYLE NO. | ITEM INCLUDED | DESCRIPTION OR REMARKS | RECORDED | |
| | | | SIGN | DATE |
| BP 9108501130 | 001 | CLAMP | R.C.B. | 16.12.81 |

| TOOL LIST | | |
|-----------|---------|-------------|
| ITEM | TOOL | DESCRIPTION |
| 001 | 1489984 | DRILL JIG |

ELECTROTIN (0.008TK) TO PR.S. AA 0673602.



| 001 | | | 001 | CLAMP | | 4 583 15 3 0013 | 001 | | | | 0.015 | |
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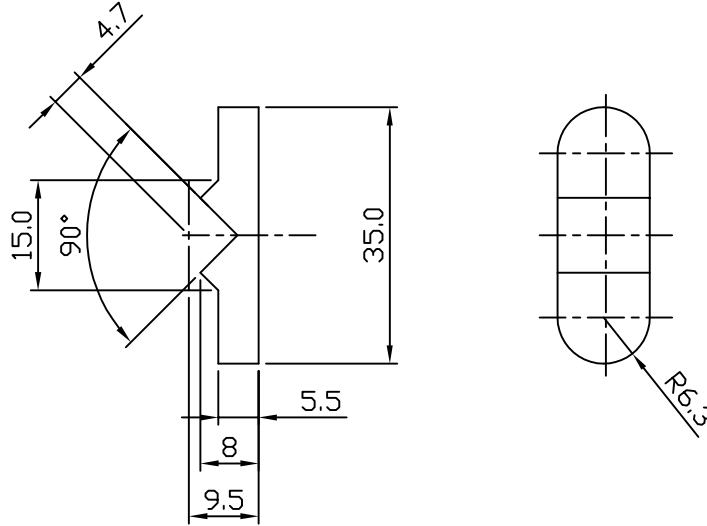
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| | | CHECKED | 02 | 09.06.06 | CHECKED | AC/DC EMU |
| | | APPROVED | | | APPROVED | |
| | | | DRAWING REDRAWN & COMPUTERISED. | | | STATUS OF DRAWING M |
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TOOL LIST

| ITEM | TOOL | DESCRIPTION |
|------|---------|-------------|
| 001 | 1486895 | DIE |

| - | 001 | CLAMP ALUMINIUM BZ. | - | AA 19934 | - |
|---------|----------|---------------------|-----|--------------|------|
| REMARKS | ITEM NO. | DESCRIPTION | STD | MATL. CODE | UNIT |
| | | | | MATL. SPECN. | QTY. |



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भोपाल
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BHOPAL

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|----------|-------------|----------|---------------------------|
| RCB | -Sd- | - | |
| ASA | -Sd- | 13.02.82 | |
| VPA | -Sd- | 29.10.82 | |

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| कोड 407 CODE | REF. CG 06503 | | | ड्राईंग क्र. /DRAWING NO. 4 583 15 30013 | पुन./REV 02 | |
| शीर्षक/TITLE CASTING DETAILS OF CLAMP | | | | शीट क्र /SHT.NO 01 | शीटों की सं./NO.OF.SHT. 01 | |

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|  | <p style="text-align: center;">CORPORATE STANDARD</p> | AA0673602 |
| | | Rev. No. 03 |
| | | PAGE 1 of 5 |

PROCESS FOR ELECTROPLATING TIN FROM ALKALINE BATH ON FERROUS AND NON-FERROUS METAL PARTS

1 GENERAL

This standard details the process for Tin plating by Vat and Barrel process from an alkaline tin solution on articles of steel, copper and copper alloys to protect them against corrosion, to provide surface for soldering of electrical contacts & terminals and for masking during nitriding. Barrel process for smaller components and tank process for larger components shall be followed.

2 APPLICATION

Used for bus-bar connections, spout connections, cable sockets, etc., of switchgear; hardware like nuts, bolts, connection cams of transformer; brush holder, cable glands, etc., of traction motors; clamp plates, support plates, etc., of capacitors; clamps, brackets, etc., of electronics.

3 COMPLIANCE WITH NATIONAL STANDARDS

This Standard has reference to IS 1359 : 1992: Electroplated coating Tin-Specification.

4 MATERIALS

| Materials | Available from |
|------------------------------|---|
| Satin Tin Salt-721 | M/S Platewel Processes & Chemicals Ltd., Baroda |
| Satin Tin Salt | M/S Grauer & Weil (I) Ltd., Mumbai |
| Mutton Tallow (Optional) | Having acid neutralization value of 2.3 to 6.6 mg of KOH/g of mutton tallow |
| Sodium Perborate | IS 3598 |
| Hydrogen Peroxide -20 volume | |
| Caustic Soda | AA54201 |
| Tin Anodes | IS 2384 |
| Sodium Stannate | IS 3026 |

5 EQUIPMENT

5.1 Plating Tank / Vat

The Tank/vat shall be made of mild steel. The vat shall be provided with an insulated frame on top fitted with insulators for holding the anode and cathode rods. The solution shall be heated by steam, gas or electrical heater.

5.2 Barrel

The plating barrel shall be constructed of hard rubber, polypropylene, etc., and shall be so driven as to rotate at 10 to 15 rpm.

5.3 Cold Water Rinsing Tank

Mild steel tank.

5.4 Hot Water Rinsing Tank

Mild steel tank with heating arrangements.

| | | | | | |
|--|----------|------------|---|---------------------|--|
| Revisions: As per Clause 31.11.5 of MOM of MRC-CPO | | | APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC (CPO&NM) | | |
| Rev. No. 03 | Amd. No. | Reaffirmed | Prepared HEP, Bhopal | Issued Corp. R&D | Dt. of 1 st Issue 01-01-1985 |
| Dt: 15-10-2002 | Dt: | Year: 2021 | | | |

AA0673602

Rev. No. 03

PAGE 2 of 5

CORPORATE STANDARD**6 COMPOSITION OF ELECTROLYTE AND OPERATING INSTRUCTIONS****6.1 Electrolyte (Bath Solution) And Operating Conditions**

The electrolyte shall be of the following compositions and operating conditions as specified below:

| | SATIN TIN SALT-721 | SATIN TIN SALT |
|--|--|--|
| Salt for Vat Plating | 150 g/l | 110 g/l |
| Salt for Barrel Plating | 250 g/l | 200 g/l |
| Temperature | 60 - 70°C | 60 - 80°C |
| Ratio of Anode to Cathode Area (Approximately) | 1:1 | 1:1 |
| Current density (for information only and not a controlling parameter) | 1.5-2 A/dm ² (15-20 A/sq.ft) | 1.5-2 A/dm ² (15-20 sq/ft) |
| Voltage for Vat | 2-6 V | 2-6 V |
| Voltage for Barrel | 10±2 V | 10±2 V |

6.2 Preparation of Electrolyte

The vat/barrel shall be filled with water to about 2/3rd capacity and then heated to nearly 50°C.

The required amount of tin salt shall be added to the water in small quantities with stirring.

After complete dissolution, the electrolyte shall be brought upto the working level by adding water and subsequently stirred thoroughly and heated to the operating temperature.

6.3 Analysis of the Electrolyte

The electrolyte shall be analysed after initial make-up and subsequently at suitable intervals.

The concentration of the electrolyte shall be maintained at the following limits:

Tin (Metal) For vat plating : 30 - 40 g/litre

For barrel plating : 50 - 60 g/litre

Free Caustic Soda (NaOH) For vat plating : 8 - 16 g/litre

For barrel plating : 20 - 30 g/litre

6.4 Temperature and voltage shall be recorded during plating.

7 PROCESS OF PLATING**7.1 Cleaning**

All articles shall be properly cleaned as described in BHEL Standard AA0673601:

Process for cleaning and preparation of metal surfaces prior to electroplating, except passivation. If required electrolytic cleaning can also be carried out additionally.

7.2 Rinsing


All articles shall be rinsed thoroughly after cleaning to avoid contamination of the plating solution.

7.3 Pre-heating (Optional)

Before dipping in the plating bath all articles should be dipped in a hot water (80-90°C) bath for pre-heating purpose.

7.4 Plating

All articles shall be plated at the specified current density for a duration which will depend on the thickness of the deposit required.

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|  | <h2 style="text-align: center;">CORPORATE STANDARD</h2> | AA0673602 |
| Rev. No. 03 | | |
| PAGE 3 of 5 | | |

Note: It shall be ensured that the anodes are never put in the solution before the vat/barrel is loaded and the current switched on. Likewise the anodes shall be removed before switching off the current after the plating is done.

7.5 Cold Rinsing

After removal from the plating bath, all articles shall be rinsed thoroughly in cold running water till any trace of tin solution is removed.

7.6 Hot Rinsing

Finally, all articles shall be rinsed in clean hot water at 80-90°C and dried.

7.7 Reflowing of Tin Deposit (Optional)

Castings having surface impurities like cavities and blow holes, where removal of entrapped alkaline tin solution is not possible, shall be immersed in a mutton tallow bath maintained at 260±10°C for 2 to 10 seconds. After flow melting, the articles are quenched in a bath containing kerosene oil at the top and water at the bottom. The residual oil from the flow melted surface shall be removed by vapour degreasing or by dipping in trichloroethylene. The thickness range of coating that can be flow melted is 2.5 to 7.5 microns.

8 HEAT TREATMENT

8.1 Stress Relieving Before Plating

Severely cold-worked steels or parts made from steel of tensile strength of 100 kgf/mm² or greater which have been ground or subjected to severe machining after tempering, shall normally be stress relieved by maintaining them at 200 ± 10°C, for not less than one hour or, preferably, for 30 minutes at the highest temperature within the limits imposed by the tempering temperature.

8.1.1

Some steels which have been carburized, flame-hardened or induction-hardened and subsequently ground would be impaired by the above treatment and shall instead be stress relieved at 140 ± 10°C for not less than five hours.

8.2 Heat Treatment after Plating (Optional)

8.2.1

Components subjected to critical fatigue or sustained loading stressed in service and made from severely cold-worked steels or from steels exceeding 100 kgf/mm² tensile strength shall be heat treated at 185 ± 5°C for not less than two hours.

8.2.2

Where the temperature of heat treatment in 8.2.1 would be harmful, for example, for some surface-hardened parts, a lower temperature for a longer time may be required.

NOTE:

When tin is plated on the article for soft soldering purposes, it may be flow melted at a temperature of 250 to 260°C to overcome difficulties in soldering during long periods of storage.

9 MAINTAINANCE OF ELECTROLYTE

9.1

If the electrolyte is low in tin and caustic soda, then add tin salt according to the requirement

9.2

To increase the tin content without affecting the caustic soda content, and addition of sodium stannate should be made.

9.3

If the bath works sluggishly and the anodes are coated with a thick encrustation, it is an indication that the solution is deficient in free caustic soda. The deficiency shall be corrected by maintaining free caustic soda as per clause 6.3.

9.4

If the deposit is rough, dark spongy, sodium perborate shall be added to the solution at the rate of 0.4 g/l of solution. Alternatively, 20 volume Hydrogen Peroxide to the extent of 1.5 ml/litre of solution may be added.

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10 CARE OF ANODES

When working correctly the anodes are covered with a greenish yellow film the continuous maintenance of which is most important.

To obtain this film in the first instance, the vat/barrel shall be loaded with dummy cathodes (e.g. steel sheets). The current switched on and then the tin anodes shall be introduced on the one as each becomes filmed over. This is known as polarisation of anode. The current density necessary for this operation is about twice that normally used for plating. The formation of the film shall be at once apparent by the pale yellow brassy appearance of the anodes and shall also be indicated by a rapid fall in amperage and increase in voltage. As soon as the anodes are properly polarised in this manner, the current shall be reduced to normal and dummy cathodes replaced, one by one, with the articles to be plated. The batch shall be operated continuously for several hours, if possible, removing a number of articles at a time and replacing them with others before further unloading. In this way there will always be sufficient current passing to keep the anodes filmed the whole time they are in the vat/barrel.

At the end of day's work, anodes shall be taken out, current switched off and finally plated articles shall be removed. On commencing work again, the vat/barrel shall be loaded with articles current switched on and then anodes shall be introduced. If for any reason, the anodes lose their greenish yellow surface film and become a normal tin color they must be 'worked in' again as directed at the beginning of this clause until properly filmed over. It is important that the current be kept flowing continuously the whole time the anodes are in the vat/barrel in order to maintain the necessary film upon them. Failure to observe this precaution and keeping the anodes polarised will give rise to the formation of stannite (i.e. stannous tin) in solution and cause the plating to be dark and rough in texture.

11 PRECAUTIONS

Solution shall be kept covered when not in use.

Any chemical that may be necessary to be added shall be dissolved in a part of the original solution before adding it to the vat/barrel. It shall be poured through a filter.

Any metal that may be deposited on any part of the vat/barrel shall be removed

Any article that becomes lodged in any part of the vat / barrel shall be removed.

12 INSPECTION AND QUALITY OF DEPOSIT

12.1 Sampling

A sample from each batch of tank/barrel load shall be tested.

12.2 Condition of Surface

The plated surface shall appear as a smooth and continuous film over the base metal and shall be free from defects such as pits, stains, cracks, blisters, unplated areas and other superficial blemishes visible to the unaided eye. The plated surface shall be matt white and free from nodules.

12.3 Thickness of Deposit

Thickness of deposit shall be as per Appendix A of IS 1359.

12.4 Adhesion Type Test (CI 9.3, Appendix- C of IS 1359)


The flaking and blistering of the coating shall be taken as evidence of unsatisfactory adhesion.

12.5 Solderability test (CI 9.5, Appendix-D of IS 1359)

This test shall be carried out whenever specified on BHEL order.

The samples shall be considered solderable, if they show a uniform coating free from discontinuities of breaks visible to the unaided eye.

Samples of tin coating on copper and copper alloys shall be subjected to preliminary artificial ageing treatment as per clause D-3.1.

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13 REJECTION

If the samples taken do not comply with clauses 12.2 to 12.5 a further quantity not less than twice the number originally taken shall be subjected to these tests. If any one of these samples also fails, the whole batch shall be rejected.

14 REFERRED STANDARDS (Latest Publications Including Amendments)

- 1) IS 1359
- 2) IS 2384
- 3) IS 3026
- 4) IS 3598
- 5) AA54201
- 6) AA0673601

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ALUMINIUM BRONZE SAND CASTINGS GR.AB-1

1.0 GENERAL:

This specification governs the requirements of Aluminium Bronze Sand Castings of Grade AB-1.

2.0 APPLICATION:

Suitable for engineering applications where resistance to wear, oxidation and corrosion are required.

3.0 CONDITION OF DELIVERY:

As specified in the order/drawing.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply with the requirements of the following national standards and also meet the requirements of this specification.

IS:305-1981, Gr.AB-1: Aluminium bronze ingots and castings

5.0 DIMENSIONS AND TOLERANCES:

The dimensions of the castings shall be in accordance with the drawing supplied with the order. For un-machined surfaces, unless otherwise specified in the order, the tolerances on linear dimensions and wall thickness shall be as per BHEL Standard AA0230402.

6.0 MANUFACTURE: Sand casting.

7.0 FINISH:

All castings shall be properly fettled, dressed and thoroughly cleaned.

8.0 FREEDOM FROM DEFECTS:

The castings shall be free from defects, such as blow holes, inclusions, shrinkage, cavities, hard spots, cold shuts cracks etc, which may adversely affect the machining and utility of the castings. When it is necessary to remove the risers by flame cutting, care shall be taken to make the cut at sufficient distance from the body of the casting so as to prevent any defect being introduced into the casting due to local heating.

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| Revisions: Clause.25.1 of MOM of MRC-NFM+HE | | | APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(NFM+HE) | | |
| Rev No.04 | Amd No. | Reaffirmed | Prepared | Issued | Dt. of 1 st Issue |
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9.0 CHEMICAL COMPOSITION:

The chemical composition of the material when analysed in accordance with IS:4027 (Methods for chemical analysis of Bronzes) or any other conventional /instrumental methods shall be as follows:

| Element | Percent | |
|----------------------|-----------|---------|
| | Minimum | Maximum |
| Aluminium | 8.5 | 10.5 |
| Iron | 1.5 | 3.5 |
| Manganese* | - | 1.0 |
| Nickel* | - | 1.0 |
| Zinc | - | 0.5 |
| Tin* | - | 0.10 |
| Lead* | - | 0.05 |
| Silicon* | - | 0.25 |
| Magnesium* | - | 0.05 |
| Total (Sn+Pb+Si+Mg)* | - | 0.30 |
| Copper | Remainder | |

***Note:** These elements need not be determined when the material supplied conforms to the mechanical properties specified in this specification. However, the supplier shall ensure that the composition of the material lies within the limits specified above.

10.0 TEST SAMPLES:

The test sample shall be selected as follows:


Three tensile test specimens shall be poured from each heat/lot.

If any tensile test specimen shows defects on machining or reveals casting defects, it shall be discarded and replaced by another specimen.

11.0 MECHANICAL PROPERTIES:

When tested in accordance with IS:1608, the material shall show the following properties:

| Mode of Casting Test Pieces | Ultimate Tensile Strength, N/mm ² (Min) | 0.2% proof stress N/mm ² (Min) | Elongation % (Min) on 5.65 $\sqrt{S_0}$ Gauge length |
|--------------------------------|---|---|---|
| Separately Cast | 500 | 170 | 18 |

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12.0 OPTIONAL TESTS:

If specified in BHEL order/drawing, the following additional tests shall be conducted on the castings.

- 1) Pressure test
- 2) Radiographic test
- 3) Fracture test

12.1. Fracture test:

One sample casting shall be broken in the presence of representative from BHEL in such a manner that the area of fracture is as large as practicable in determining the uniformity of the grain structure of the metal. If the fracture shows segregation or dross or dirt spots or any other defects, all casting produced from the same melt as that of the sample tested, shall be rejected.

13.0 RETEST:

Should any of the test pieces first selected, fail to pass the prescribed tests mentioned under various clauses in this specification, two further samples from the same batch shall be selected for testing, one of which shall be from the same component from which the original test sample was taken, unless that component has been withdrawn by the supplier.

Should the test pieces from both these additional samples pass, the batch represented by the test sample shall be accepted. Should the test pieces from either of these additional samples fail, the batch represented by the test sample shall be rejected.

14.0 INSPECTION AT SUPPLIER'S WORKS:

Tests and inspection are to be conducted in the presence of BHEL's representative. The representative shall have free access at all times while the work on the contract is being performed, to all parts of the manufacturer's works. The supplier shall offer BHEL's representative all reasonable facilities without charge, to satisfy the latter that the material is being furnished in accordance with this specification. The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangement for carrying out the prescribed test elsewhere.

15.0 REPAIR OF CASTINGS:

The castings shall not be repaired, unless permission in writing has been obtained previously from BHEL.

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16.0 TEST CERTIFICATES:

The supplier shall submit three copies of test certificates giving the following information:

In addition, the supplier shall ensure to send one copy of test certificate along with the despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

BHEL Order No.

AA19934, Rev. 04: ALUMINIUM BRONZE SAND CASTINGS GR.AB-1

Supplier's reference and Name

Heat No.

Results of chemical analysis, mechanical and all other tests called for in this specification/ order.

Drawing/ Pattern No.

Consignment/ Identification No

17.0 PACKING AND MARKING

Castings shall be suitably packed to prevent corrosion and damage during transit. Machined surfaces shall be properly protected with anti-corrosive compounds.

Each package or casting shall be legibly marked with the following information:

BHEL Order No.

AA19934

Heat No.

Identification mark/ No.

Weight

Supplier's reference and Name

18.0 REFERRED STANDARDS (Latest Publications including Amendments)

1) AA0230402 2) IS:4027 3) IS:1608