# Boiler Auxiliary Plant , Bharat Heavy Electricals Limited , Ranipet Tamilnadu- 632406

## Purchase Department

Enquiry No: BAP/PUR/BH/9540949E dt.22.11.2014,
Due on : 16.12.2014

Item :Bearing Housing For 1211K

**Synopsis** :

(i) **Annexure-I**

(a) Part-A : Item description and quantity details
(b) Part-B : General terms and conditions of enquiry
(c) Part-C : Cover Details
(d) Part-D : Bearing Housing For 1211K Drawing (Enclosed PRQA 590 & PRQA 500)

(ii) **Annexure-II :** Supplier Registration Form (SRF)

(iii) **Annexure-III :** Commercial terms and conditions and MSME condition , CA certificate format.

**Contact Details**


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Sr Manger/Purchase
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# Annexure-I

**Enquiry No : BAP/PUR/BH/ 9540949E dt.22.11.2014**

## Part –A

**Item description and quantity details**

| Sl No | Material Code , Description and specification | Unit | Quantity |
|---|---|---|---|
| 01 | 961500270600<br>Bearing Housing For 1211K As Per BHEL Drg No : 3-79-017-00507/Rev 01 | No | 200 |

# Annexure-I

**Enquiry No : BAP/PUR/BH/ 9540949E dt.22.11.2014**

## Part- B

## General Terms and Conditions

1. Tender shall be submitted in **two parts**. Part-1 shall consist of Technical and all commercial terms without price . Part-2 shall consist only price bid. Both bids shall be submitted in separate covers sealed and superscribing **Enquiry no** , **Due date** and **Technical Bid / Price Bid as shown in Part-C** (Page#04 & 05). Please submit SRF (Annexure-II) along with techno-commercial offer in a separate sealed cover (cover format should be as per **Part-C** (Page#06)) and SRF should be kept inside techno-commercial offer. Please submit techno-commercial offer (including SRF ) and price bid under one main cover as per format shown **Part –C** (Page#07).

2. Techno- commercial bid will be opened first , evaluated and only then the price bids of qualified suppliers will be opened. This enquiry shall be subject to jurisdiction of the courts at Ranipet , Vellore District , Tamilnadu.

3. Any revised offer (s) sent by vendors on their own , after the tender opening will be treated as "Unsolicited Offer". Such offers will not be considered and necessary action as deemed fit will be taken by BHEL on those vendors. Hence , competitive offer to be given in the original offer itself.

4. Tender should be sent in duplicate in a **sealed cover**. Inner cover sealed with tenderer's distinctive seal and superscribed with correct **tender no** , **item of supply** , **due date of opening** and validity of offer addressed by designation to Manager/Purchase , Bharat Heavy Electricals Limited , Boiler Auxiliaries Plant , Indira Gandhi Complex , Ranipet , Vellore District-632406 , India.

5. Point wise confirmation required for material description , specification and quantity as indicated in part-A of Annexure-I.

6. Commercial terms and conditions Annexure-III is to be submitted along with technical offer. It should be filled in all respect.

7. Unpriced Bid (Price bid without price) is to be submitted along with techno-commercial offer.

8. Please submit your quotation so as to reach us on or before the due date by **2:00 PM**. Offer received after 2:00 PM at purchase department on the due date will be considered as late offer and may be liable for rejection. Quotations will be opened at **2:30 PM** at purchase department on the due date in presence of the tenderers who may like to be present.

9. **Authorization Letter** : Such of those tenderers who wish to participate in "tender opening" should attach an authorization letter which shall be duly signed and stamped in original , identifying the representative to be deputed for tender opening.

10. **All tenderers are requested to submit SRF "Supplier Registration Form (SRF)" as per Annexure-II along with "techno-commercial offer" for our records and further separate action.**

**11. All tenderers are requested to submit the CA certificate indicating the present MSME status of their enterprise in the format attached (Annexure-III , Page: 04) along with techno-commercial offer. It is also requested to attach the SSI certificate along with CA certificate and submit along with techno-commercial offer.**

## Annexure-I

**Enquiry No : BAP/PUR/BH/ 9540949E dt.22.11.2014**

## Part-C

**Enquiry No : dt. Due dt:**

## Techno – Commercial Bid

## Item : Bearing Housing For 1211K

**To,**

**Manager /Purchase,**

**Bharat Heavy Electricals Limited,**

**Boiler Auxiliaries Plant,**

**Indira Gandhi Industrial Complex ,**

**Ranipet , Dist : Vellore , Tamilnadu – 632406 , India.**

**From**

**"Vendor Address"**

## Annexure-I

**Enquiry No : BAP/PUR/BH/ 9540949E dt.22.11.2014**

## Part-C

**Enquiry No : dt. Due dt:**

## Price Bid

## Item : Bearing Housing For 1211K

**To,**

**Manager /Purchase,**

**Bharat Heavy Electricals Limited,**

**Boiler Auxiliaries Plant,**

**Indira Gandhi Industrial Complex ,**

**Ranipet , Dist : Vellore , Tamilnadu – 632406 , India.**

**From**

**"Vendor Address"**

## Annexure-I

**Enquiry No : BAP/PUR/BH/ 9540949E dt.22.11.2014**

## Part-C

**Enquiry No : dt. Due dt:**

## Supplier Registration Form (SRF)

## Item : Bearing Housing For 1211K

**To,**

**Manager /Purchase,**

**Bharat Heavy Electricals Limited,**

**Boiler Auxiliaries Plant,**

**Indira Gandhi Industrial Complex ,**

**Ranipet , Dist : Vellore , Tamilnadu – 632406 , India.**

**From**

**"Vendor Address"**

# Annexure-I

**Enquiry No : BAP/PUR/BH/ 9540949E dt.22.11.2014**

## Part-C

**Enquiry No : dt. Due dt:**

**Techno – Commercial Bid ,Price Bid and SRF**

**Item : Bearing Housing For 1211K**

**Kind Attn : Mr Biswajit Rath**

**To,**

**Manager /Purchase,**

**Bharat Heavy Electricals Limited,**

**Boiler Auxiliaries Plant,**

**Indira Gandhi Industrial Complex ,**

**Ranipet , Dist : Vellore , Tamilnadu – 632406 , India.**

**From**

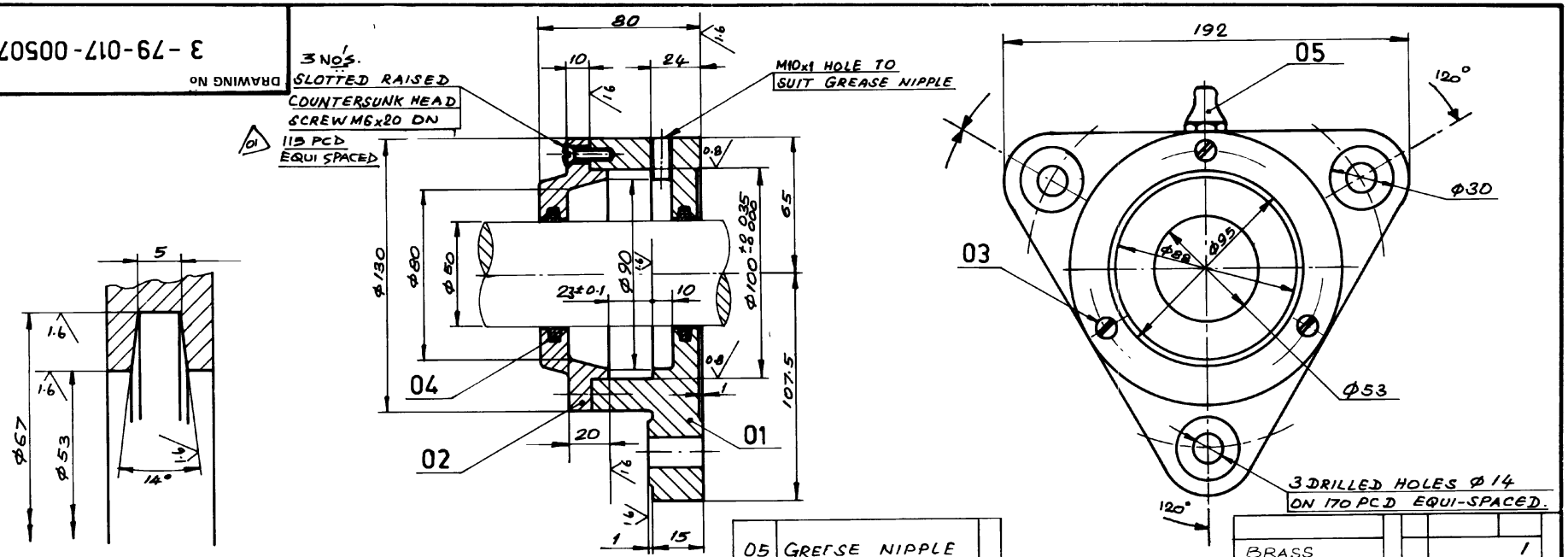
**"Vendor Address"**

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETERS)

R 06-229/C



DRAWING No 3-79-017-00507




## FELT GROOVE DETAIL

| VARIANT NO | ITEM NO | DESCRIPTION | STD | DRAWING NO | ITEM NO / VAR NO | MATL CODE / MATL SPEC | A/C | UNIT / D1 | UNIT WT / QTY |
|---|---|---|---|---|---|---|---|---|---|
| | 05 | GREASE NIPPLE | | | | BRASS | | | 1 |
| | 04 | FELT - 8x65x200 | | | | DIN 61200 F2 | | | 2 |
| | 03 | SCREW M6x20 | 6 | | | IS: 1365 | | | 3 |
| | 02 | COVER | | | | IS:210 Gr FG200 | | | 1 |
| | 01 | BODY | | | | IS:210 Gr FG200 | | | 1 |

## NOTE

1 FELT MUST BE SOAKED IN OIL PRIOR TO MOUNTING

2 PAINTING COLOUR = GREEN.

REF:PRQA:590 FOR PAINTING
REF:PRQA:500 FOR UNTOL.DIMNS

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
BOILER AUXILIARIES PLANT
RANIPET-632 406

| | NAME | SIGN | DATE |
|---|---|---|---|
| DRN | IQBAL | | 27.11.91 |
| CHD | PSK | | 27.11.91 |
| APPD | BBR | | 27.11.91 |

NO OF VAR

| REV | DATE | ALTERED / CHECKED |
|---|---|---|
| 01 | 11.12.96 | PCD FOR ITEM NO 03 INCLUDED. |

DEPT 4ACS
CODE 862
GRADE OF UN TOL DIM E/M/F
SCALE 1:2 2:1
WEIGHT (Kg) 4.100
REF TO ASSY/OLD DRG
ITEM NO

TITLE: BEARING HOUSING
CARD CODE U 01
DRAWING NO 3-79-017-00507
REV. 01

SIZE A3

BHEL
RANIPET

BHARAT HEAVY ELECTRICALS LTD.
BOILER AUXILIARIES PLANT
RANIPET 632 406



# QUALITY DEPARTMENT

PROCEDURE FOR: ALLOWABLE DEVIATIONS FOR DIMENSIONS WITHOUT SPECIFIED TOLERANCES

EFFECTIVE DATE: 16/01/93

| | NAME | SIGNATURE | DATE |
|---|---|---|---|
| PREPARED BY | K NITHIANANDAM | | 16/1/93 |
| REVIEWED BY | S ANIL KUMAR | | 16/1/93 |
| APPROVED BY | P H TAMBAKHE | P H Tambakhe | 16/1/93 |

| | |
|---|---|
| ISSUED BY | : QUALITY ASSURANCE |
| REVISION | : NIL |
| DATE | : |

DOCUMENT CONTROL NO: [ ]

File Name :PHT.RSU

1. Table 1 given below indicates the permissible variation in Linear Dimension of fabricated and machined components. The corase grade is to be followed for fabricated components and medium grade for machined components.

2. Table 2 given below indicates the permissible deviations for Radii & Chamfers for machined components.

3. Table 3 given below indicates the permissible deviations for Angular dimensions for machined components.

4. Table 4 given below indicates the conditions under which the deviations given in this standard are not applicable.

5. Special rulings may be stated for linear dimensions of welded structures consisting of several assemblies.

6. If closer tolerances than those given in this procedure are necessary, the same shall be indicated in the relevant drawings.

TABLE - 1

| Degree of accuracy | Deviations in mm for the nominal size range in mm | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 * up to 3 | Over 3 upto 6 | Over 6 upto 30 | Over 30 upto 120 | Over 120 upto 400 | Over 400 upto 1000 | Over 1000 upto 2000 | Over 2000 upto 4000 | Over 4000 upto 8000 | Over 8000 upto 12000 | Over 12000 upto 16000 | Over 16000 upto 20000 |
| f (fine) | ± 0.05 | ± 0.05 | ± 0.1 | ± 0.15 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | - | - | - | - |
| m(medium) | ± 0.1 | ±0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.0 | ± 2 | ± 3 | ± 4 | ± 5 | ± 6 |
| g(coarse) | ± 0.15 | ± 0.2 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 | ± 4 | ± 5 | ± 6 | ± 7 | ± 8 |
| sg(very coarse) | - | ± 0.5 | ± 1 | ± 1.5 | ± 2 | ± 3 | ± 4 | ± 6 | ± 8 | ± 10 | ± 12 | ± 12 |

* In the case of nominal sizes below 0.5 mm, the deviations must be specified directly by the side of the nominal size.

TABLE - 2

DEVIATIONS FOR RADII & CHAMFERS

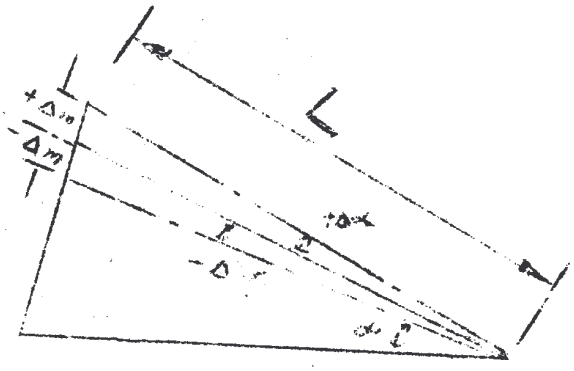
All dimensions are in mm

| CLASS OF DEVIATION | RANGE OF NOMINAL DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | Above | 0.5 | 3 | 6 | 30 | 120 |
| | Upto and Including | 3 | 6 | 30 | 120 | 315 |
| Fine & Medium | | ± 0.2 | ± 0.5 | ± 1 | ± 2 | ± 4 |

TABLE - 3

DEVIATIONS FOR ANGULAR DIMENSIONS

$\Delta\alpha$=Angle Tolerance in angular units
$\Delta$ m=Angle Tolerance in linear units




All Dimensions are in mm

| | Length (L) of shorter side of angle in mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CLASS OF DEVIATIONS | Above | - | 10 | 50 | 120 | 500 | 800 | 1250 |
| | Upto & including | 10 | 50 | 120 | 500 | 800 | 1250 | 2000 |
| FINE AND MEDIUM | $\Delta$m (mm) | ± 0.1 | ± 0.2 | ± 0.6 | ± 0.8 | ± 0.96 | ±1.125 | ± 1.5 |
| | $\Delta\alpha$(deg or min) | ± 1° | ± 30' | ± 20' | ± 10' | ± 4' | ± 3' | ±2'3" |

TABLE - 4
NON APPLICABILITY OF THE STANDARD

| STANDARD SPECIFICATION | CONDITIONS FOR TOLERANCING | DIMENSIONS | PRODUCTION METHOD | SPECIAL AGREEMENTS |
|---|---|---|---|---|
| Where Permissible deviations have been specified | Where higher values than those specified in Table 1 and 2 may be allowed. | For dimensions required to give a certain class of it | Casting, forging, pressing, rolling, welding, flame cutting | Where variations from this standard are agreed upon between the purchaser and the manufacturer |
| | Where only positive or only negative deviations are desired | For dimensions resulting after assembly | | |
| | Where parts are manufactured separately and are required to be assembled together without any further treatment (selective assembly, spare parts etc) | Where concentricity between parts is required | | |
| | | For angular dimensions of a circular division (For example, angular positioning of teeth of clutches) | | |
| | | For angular dimensions in precision taps and in pipe bends | | |
| | | For dimensions of welded assemblies (unless the part is to be machined) | | |

# *Procedure for Surface preparation and Painting*

| | | |
|---|---|---|
| **Prepared By** | V SUNDARAM SEF/QA | |

| | | |
|---|---|---|
| **Reviewed By** | B SRINIVASA RAO DGM/QA | |
| | S RAGHUNATHAN SM/EDC/APH | |
| | P JAYAKANTH DGM/EDC/AQCS | |
| | K GOPALASAMY SDGM /EDC/FANS | |
| | P RAVIKUMAR DGM/ EDC /G&D AND DP | |

| | | |
|---|---|---|
| **Approved By** | H ANANTHANARAYANAN AGM/QA&OLI | |

## Record of revision

| Rev No. | Effective Date | Details of revision |
|---|---|---|
| 00 | 10 10 02 | RP0674199 Rev 05 requirements and PRQA 590 rev 12 requirements were fully reviewed and this document is released as Rev 00 taking care of painting requirements of BAP projects. For project specific painting schemes respective CIS or contract specific painting schemes to be referred. |
| 01 | 22 05 07 | Painting requirement are fully reviewed. Red oxide Zinc chromate for primer application (IS 2074) is corrected as Red oxide Zinc phosphate primer (IS 12744) and also number coats & DFT corrected. |

**1.0 SCOPE**

1.1. This procedure specifies requirements for surface preparation and painting and coating, for APH, Fan, ESP, Gates & Dampers and Chimney. (For WEG and Desalination, please refer PRQA: 518/Latest and PRQA: 526/Latest respectively).

1.2. Section I deals with surface preparation schedule and section II deals with painting and coating.

1.3. Special contractual requirements, if any, will be indicated through a separate contract specific documents with customer approval, when required. The linkage will be provided in the CQR issued by QA.

**2.0 GENERAL**

2.1 This procedure specifies painting requirements to provide adequate protection up to one year in open yard at site.

2.2 No painting shall be applied on the stainless steel, galvanized and any plated surfaces. For estimation of requirements of painting, the approximate area of coverage on non-absorbing surface is as given below: -

| SL. No. | Generic nature of paint | Theoretical covering area (Sq.M/litre) | DFT /Coat (Min) | Shade |
|---|---|---|---|---|
| 1 | Red oxide zinc phosphate primer to IS 12744 | 10 | 30 | Red oxide |
| 2 | Synthetic enamel paint to IS 2932 | 10 | 20 | Smoke grey |
| 3 | Heat resistant aluminum paint to IS 13183 | 10 | 20 | Aluminium |

2.3 For bought out items, the painting scheme shall be as per purchase specification. If this is not specified in purchase specification, the following is the minimum requirement

a) Primer: One coat of red oxide zinc Phosphate primer to IS 12744- DFT 30 microns
b) Finish: Two coats of synthetic enamel to IS 2932 smoke grey shade No.692 of IS 5. -DFT 20 microns per coat

## Section –I

**3.0 SURFACE PREPARATION REQUIREMENTS FOR PAINTING AND COATING**

3.1. The effectiveness and duration of the protection provided by organic, inorganic and metallic coatings for corrosion protection depends among other things decisively on proper surface preparation. This section deals with the methods of surface preparation, their effectiveness and fields of application.

3.2. This section largely based on ISO 8501 – 1: 1988 that in turn is based on the Swedish standard SS 05 59 00.

### 3.3. SURFACE PREPARATION METHODS

3.3.1. Surface preparation depends on initial condition of uncoated surfaces. The details of rust level, rust removal methods and characteristics surfaces are given in table 1.0.

### 3.4. DEFINITIONS AND METHODS OF CLEANING

### 3.5. CLEANLINESS OF SURFACES.

3.5.1. Cleaning requirements and levels of cleanliness, contaminants such as dirt, oil that will interfere with the adhesion or effectiveness of the proposed coating must be removed. Coats of materials related to the metal (scale, rust) and coats of different materials (e.g. existing coating) should be removed until the agreed level of cleanliness is attained.

3.5.2. Contaminants/coats, both of related material and of materials different from the metal may be removed in one operation if the nature, level and thickness permit this. The required level of cleanliness depends on

- The corrosion protection system selected
- The type of corrosion exposure expected
- The initial condition of the surface being prepared
- The possible rust removal method
- Economic considerations

3.5.3. Generally, the standard levels of cleanliness as in table 1.0 should be used as a basis. This does not cover the removal of weld spatter, weld or flame cutting slag or chips, repair grinding of rolling defects (laminations) deburring and similar operations.

### 3.6. MECHANICAL METHODS OF REMOVING RUST

**3.6.1.** Manual rust removal:

3.6.1.1.This applies to standard levels of cleanliness St 2, St3 as per table 1.0 manual cleaning uses wire brush, stripping knife, Swedish scraper, rust removing hammer etc., The method must not damage the metal being derusted. Subsequent cleaning by sweeping or brushing off or by blowing off with dry air.

### 3.6.2. Mechanical rust removal:

3.6.2.1.This applies to standard levels of cleanliness St2, St3 as per table 1.0 cleaning can be done by mechanically driven rust removing tools viz., rotating wire brush, impact piston devices or rotary descalers, sanding discs etc. The surface areas where the power driven tool cannot enter, manual cleaning should be done. The method must not damage the metal being derusted. Subsequent cleaning by sweeping or brushing off or blowing off with dry air.

### 3.6.3. Blast cleaning

3.6.3.1.This applies to standard levels of cleanliness Sa 1,Sa 2½,Sa 3 as per table- 1.0. Chemically contaminated surfaces must be pre-washed. Surfaces having coarse rust must be pre-cleaned with impact tools prior to blast cleaning.

3.6.3.2.Compressed air blasting is generally recommended for our operations. It is a freely directed air blasting in blasting cubicles,. Rooms or sheds with re-circulation of blasting abrasives.

3.6.4. REMOVAL OF CONTAMINANTS/COATS OF MATERIAL DIFFERENT FROM THE METAL

3.6.4.1. Surface of metal contaminated with cutting fluid (machine coolant) oil or grease shall be wiped with mineral turpentine/tri-chloroethylene prior to applying any methods of mechanical surface preparation.

3.6.4.2.If any old paint film or rust preventive films are present they may be removed with paint removing jelly.

3.6.4.3.As far as possible the cleaning method should be so chosen that all the scale is removed from the metallic surface to be coated. For heavily scaled metallic surfaces either blasting or pickling may be adopted over and above the requirements called for in the table 1.0.

**3.6.5. NOTES TO TABLE 1.0**

3.6.5.1.Initial condition of uncoated surfaces (rust grade as per SS 05 59 00)

a) Steel surface largely covered with adhering mill scale but little, if any rust.
b) Steel surface, which has begun to rust, and from which the mill scale has begun to flake.
c) Steel surface on which the mill scale has rusted away or from which it can be scrapped, but with slight pitting visible under normal vision.
d) Steel surface on which the mill scale has rusted away and on which general pitting is visible under normal vision.

3.6.5.2.Standard level of cleanliness equivalent to steel structures painting council of US (SSPC) also given in brackets in table 1.0.

**Table 1.0**

| Standard level of cleanliness | Rust removal method | Initial condition of steel surfaces (Uncoated ref.4.5) | Essential Characteristics of the prepared steel surface |
|---|---|---|---|
| St 2 (SSPC–SP 2) | Thorough hand and power tool cleaning | B, C, D | When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and from poorly adhering mill scale, rust coatings and foreign matter. |
| St 3 (SSPC SP 3) | Very Through hand and power tool cleaning | B, C, D | As for St 2, but the surface shall be treated much more thoroughly to give a metallic sheen arising from the metallic substrate. |
| Sa 1 (SSPC SP 7) | Light blast cleaning | B, C, D | When viewed without magnification, the surface shall be free from visible oil, great and dirt, and from poorly adhering mill scale, rust, paint coatings and foreign matter. |
| Sa 2 (SSPC SP 6) | Thorough blast cleaning | B, C, D | When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and from most of the mill scale, rust, paint coatings and foreign matter. Any residual contamination shall be firmly adhering. |

| Standard level of cleanliness | Rust removal method | Initial condition of steel surfaces (Uncoated ef.4.5) | Essential Characteristics of the prepared steel surface |
|---|---|---|---|
| Sa 2 ½ (SSPC SP 10) | Very Through blast cleaning | B, C, D | When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and from the mill scale, rust, paint coatings, and foreign matter. Any remaining traces of contaminations shall show only as slight stains in the form of spots or stripes |
| Sa 3 (SSPC SP 5) | Blast cleaning to visually clean steel. | A,B, C, D | When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and from mill scale, rust, paint coatings and foreign matter. It shall have a uniform metallic colour. |

## Section -II

### 4.0 SCHEDULE OF PAINTING AND COATING:

**Table 2.0**

| Sl.No. | Component/PGMA | Surface preparation | Primer | DFT in µm (Min) | Finish | DFT in µm (Min) | Total DFT (Min) |
|---|---|---|---|---|---|---|---|
| **1.0** | **Regenerative Air Pre-Heaters** | | | | | | |
| 1.0.1 | Heating element baskets (without elements) 52 010, 024, 025 | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Nil | -- | 30 |
| 1.0.2 | Heating elements (with elements) 52 010, 024, 025 | -- | (*) Temporary rust preventive oil non dry type (Dipping) | -- | NIL | -- | -- |
| 1.0.3 | Rotor post assembly machined items of (52 011), Pin rack assembly (52 012) seals (52 013,054,055), sector plates (52 041,042) and machined components of APH. | -- | (**) Temporary rust preventive oil Dry type | 20 | NIL | -- | 20 |
| 1.0.4 | **Components in flue gas path and insulated** Rotor post assy (52 011), T bars (52 013), Rotor housing assy. (52 030), Hot and cold connecting plate assy. (52 041,042), | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 60 | NIL | NIL | 60 |

(*) Specification as per PRQA 522/Rev 00

(**) Specification as per PRQA 523/Rev 00

| Sl.No. | Component/PGMA | Surface preparation | Primer | DFT in μm (Min) | Finish | DFT in μm (Min) | Total DFT (Min) |
|---|---|---|---|---|---|---|---|
| 1.0.5 | **Components exposed to Atmosphere** Rotor drive assy (52 100), Access door (52 210, Air seal piping (52 211), observation port other than glass part (52 212), Rotor stoppage alarm other than aluminum (52 217), Loose items of Air receiver (52 220), Guide bearing assy (52 261), Support bearing assy (52 262), Oil piping GB, SB (52 271,272) oil circulation unit (52 274), Deluge and wash pipe assy. (52 301,302,401,402) Cleaning device assy (52 325, 326), Cleaning device drive (52 329,429), Thermo couple pipe assy. Other than SS (52 360) | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Two coats of synthetic enamel paint to IS 2932 shade 692 of IS 5 unless specified otherwise. | 40 | 70 |
| **2.0** | **TUBULAR AIRPREHEATER** | | | | | | |
| 2.1 | Side walls (external surfaces and internal surfaces). | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 60 | -- | -- | 60 |
| 2.2 | Machined surfaces, tubes of TAPH, Tube plates and intermediate plates | --- | (**) Temporary rust preventive oil Dry type | 20 | NIL | NIL | 20 |

| Sl.No. | Component/PGMA | Surface preparation | Primer | DFT in μm (Min) | Finish | DFT in μm (Min) | Total DFT (Min) |
|---|---|---|---|---|---|---|---|
| **3.0** | **Fans** | | | | | | |
| 3.1 | Foundation materials 55 0XX, 56 0XX | Power tool cleaning to ST-3 (SSPC SP3) | Temporary Rust preventive | 20 | -- | -- | 20 |
| 3.2 | Components exposed to atmosphere<br>a) Bearing Pedestals, Base frame, Servomotor assy, shaft with Bearing assy, OGV, IGV (55-1XX,55-2XX 55-3XX).<br>b) Bearing Pedestals, Base frame, Shaft with bearing assy, RVC, IGV, Support for Seal, shaft protecting tube, Spiral casing (if no insulation is applicable), Damper (56-1XX, 56-2XX 56-3XX, 56-4XX)<br>c) Coupling guard (56-8XX, 55-8XX). Tools (56-000,55-000) | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Two coats of synthetic enamel paint to IS 2932 shade 692 of IS 5 unless specified otherwise. | 40 | 70 |
| 3.3 | Components in AIR/GAS and under insulation<br>a) Suction chamber, diffuser, housing, OGV, impeller (55-1XX, 55-2XX, 55-3XX),<br>b) Spiral casing, damper, IGV, RVC, impeller, shaft (56-1XX, 56-2XX, 56-3XX 56-4XX).<br>c) Silencer (56-9XX, 55-9XX) | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 60 | NIL | NIL | 60 |
| 3.4 | Journal area Of shaft (55-1XX, 56-1XX, 55-2XX, 56-2XX, 55-3XX, 56-3XX 56 4XX | | | | **Refer PRQA 341/ Latest** | | |
| 3.5 | All machined surfaces shall be applied with rust preventive. | | | | | | |

| Sl.No. | Component/PGMA | Surface preparation | Primer | DFT in μm (Min) | Finish | DFT in μm (Min) | Total DFT (Min) |
|---|---|---|---|---|---|---|---|
| **4.0** | **Electro static precipitator** | | | | | | |
| 4.1 | GD drive Arrangement (7X X10), Drive arrangement for emitting system (7X X17), Inspection doors (7X X23), Drive arrangement for CE rapping (7X X26), Outer roof (7X X42), ESP pent House (7X X55), ESP test equipment (7X X61) Water washing system (7X X66) Tools and tackles (7X 996), Lifting beam (7X X20), Columns (7X X81) Hopper approach platform (7X X 65), Stringer and Guard plates (7X 610). | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Two coats of synthetic enamel paint to IS 2932 shade 692 of IS 5 unless specified otherwise. | 40 | 70 |
| 4.2 | Insulator Housing assy.(7X X06), Gas distribution assy.(7X X08),GD rapping mechanism(7X X09), Gas screening (7X X11), Emitting system suspension (7X X13), Emitting electrode rapping (7X X16), Suspension arrangement for CE (7X X19), Frame of Emitting system Top & Bottom and Middle.(7X X21,X22,X32),Shock bars(7X X24), CE Rapping mechanism (7X X25), Ridges(7X X43), Hopper upper and Lower & Middle part (7X X44, X45),Insulator support panel (7X X46), Roof panel assy. (7X X47), Casing structure (7X X28, X48), Casing shell (7X X49), ESP Funnel (7X X50), Splitter&Guidevane (7X X57) | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 60 | NIL | -- | 60 |

| Sl.No. | Component/PGMA | Surface preparation | Primer | DFT in μm (Min) | Finish | DFT in μm (Min) | Total DFT (Min) |
|---|---|---|---|---|---|---|---|
| 4.3 | Hand rails, post, step treads, Floor grills (89 610,611,7X X65) | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Two coats of synthetic enamel paint to IS 2932 black shade | 40 | 70 |
| 4.4 | EE (7X X15)[EE hook, EE suspension hook (7X X13), CE (7X X20)[CE, CE suspension hook (7X X19), Foundation material foe ESP structures& ducts (7X X80). | -- | (**) Temporary rust preventive oil Dry type | 20 | -- | -- | 20 |
| **5.0** | **Gates and Dampers** | | | | | | |
| 5.1 | Gates and dampers temperature ≤ 95°C (57 XXX) | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Two coats of synthetic enamel paint to IS 2932 shade 692 of IS 5 unless specified otherwise. | 40 | 70 |
| 5.2 | Gates and dampers temperature > 95°C (57 XXX) | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 60 | NIL | -- | 60 |
| 5.3 | Gate blades, Machined components of G&D | --- | (**) Temporary rust preventive oil Dry type | 20 | NIL | NIL | 20 |
| **6.0** | **Chimney** | | | | | | |
| 6.1 | Foundation bolt (87 010) | Power tool cleaning to ST-3 (SSPC SP3) | (**) Temporary Rust preventive | 20 | -- | -- | 20 |
| 6.2 | Shells-Inside and Un insulated side, base plate (87 100), | Blast Cleaning to Sa 2 ½ (Near white metal with Surface profile 35 – 50 μm) | Two coats of Heat resistant aluminum paint as per IS 13183 (GR I -Up to 600°C,GR II 200°C to 400°C, GR III Up to 200°C) | 40 | NIL | -- | 40 |
| 6.3 | Ducts un insulated, Strakes, (87 150), Painter trolley (87 200) | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of Heat resistant aluminum paint as per IS 13183 (GR I -Up to 600°C,GR II 200°C to 400°C, GR III Up to 200°C) | 40 | NIL | -- | 40 |

| Sl.No. | Component/PGMA | Surface preparation | Primer | DFT in μm (Min) | Finish | DFT in μm (Min) | Total DFT (Min) |
|---|---|---|---|---|---|---|---|
| 6.4 | Shells –out side insulated (87 100), Ducts- Insulated (87 150) | Power tool cleaning to ST-3 (SSPC SP3) | Two coats of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd). | 60 | -- | -- | 60 |
| 6.5 | Ladders, Hand rails, floor grills, platforms (87 300) | Power tool cleaning to ST-3 (SSPC SP3) | One coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) | 30 | Two coats of synthetic enamel paint to IS 2932 black shade | 40 | 70 |
| **7.0** | **Products meant for overseas application** | | | | | | |
| 7.1 | Internal and External parts of APH, ESP. Fan and Gates and Damper | Blast Cleaning to Sa 2 ½ (Near white metal with Surface profile 35 – 50 μm) | Epoxy red oxide Zinc phosphate primer to IS 13238 | 30 | Epoxy polyamide cured paint to IS 14209 | 30 | 60 |

Note: All componenents covered under different PGMAs are to be painted .In case any component is left out, the same shall be deemed to be included under relevant section.

| QUALITY ASSURANCE |
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| **QWI NO: PR:QA:590 Rev.01 Dtd.02.02.2008** |
| ***Amendment to Quality Work Instruction (QWI)*** |
| **Amendment No: A1** **Date:11.10.2013** |
| **Title: *Procedure for Surface Preparation and Painting*** |

| Details of Amendment | | |
|---|---|---|
| **Clause No** | **Amended As** | **Basis for Amendment** |
| Refer Clause no 4.0 – Table 2 and further clause no. 3.2 a) and 3.3 a) of Table. | AP Fan components like Servo Motor Assy, Shaft with Bearing Assy (refer clause 3.2 a) and impeller (refer clause 3.3 a) of table 2.0<br>Presently Existing Painting Scheme:<br>1. Primer: one coat of red oxide zinc phosphate primer to IS 12744 (varnish medium alkyd) DFT = 30 µm.<br>2. Two coats of synthetic enamel paint to IS 2932 shade 692 of IS 5 Unless specified otherwise Finish= 40 µm(Primer+Finish: total DFT-30+40=70 µm)<br><br>The above painting scheme has been modified as below - only for AP fan components like Servo Motor Assy, Shaft with Bearing Assy (refer clause 3.2 a) and impeller (refer clause 3.3 a) of table 2.0<br>• Epoxy based Zinc Phosphate Primer (Two Pack system) as per IS:13238 – Two coats and each coat min. 30µm and total DFT will be 60 µm<br>• Finish Paint : Not Applicable | Feedback from RCA Sub-Committee Meeting. Dt-14.05.2013 (For quick drying of paint) |

| Prepared By (QA) | Reviewed By | Approved By |
|---|---|---|
| | QC-Shop | |
| | QA | |