BHEL :: BAP :: RANIPET

PURCHASE DEPARTMENT

ANNEXURE-A

NOTICE INVITING TENDER

ANNEXURE-A TO OPEN TENDER REF: 4530466E DT 27.06.2013

Sealed Tenders are invited from prospective suppliers for supply of Universal Beams, Columns and Narrow Parallel and Wide Parallel Flange Beams as per Scope, Size, Specification, Standards and Quantities as listed below.

LAST DATE FOR SUBMISSION OF BID: 28.07.2013 BEFORE 13:00 HRS IST

BID OPENING DATE: 28.07.2013 AT 14:30 HRS IST

SCOPE : SUPPLY OF SHOCK PAD AND SUPPORT FLANGE FORGINGS

SNO	MATERIAL CODE	MATERIAL DESCRIPTION	DRAWING	CH.LIST/PAINTING	SUPPLY CONDN	UNIT	QTY	DELIVERY SCHEDULE	
								QTY	DLY. DATE
01	942851860000	SUPPORT FLANGE	61720159/01	PAINTING AS PER	FORGED AND	NO	4000	2000	8 weeks from date of PO
				PRQA 590	AS PER DRG			2000	12 weeks from date of PO
02	961502660000	SHOCK PAD	47902400348/02	CH.LIST	FORGED AND	NO	45000	20000	8 weeks from date of PO
				ICL:500/00	AS PER DRG			15000	12 weeks from date of PO
								10000	16 weeks from date of PO

(AS PER DRAWINGS)

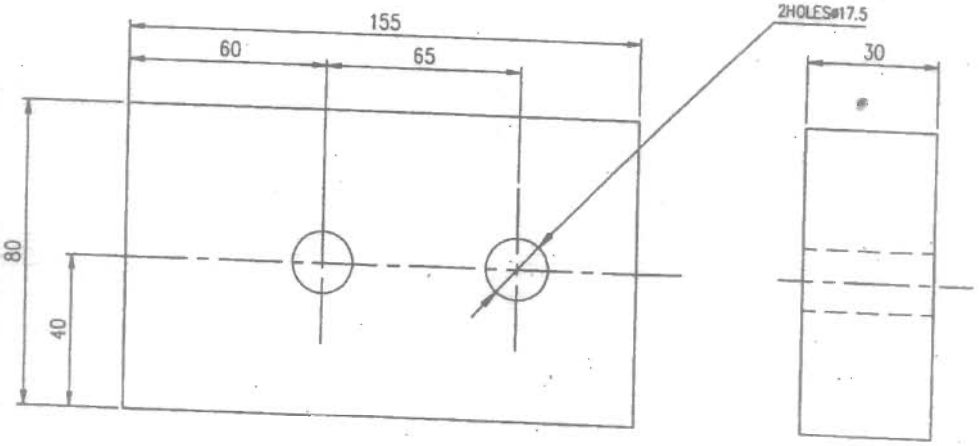
Note :-

1. Quantity Split is applicable in the ratio of 70:30 between L1 & next higher bidder excluding H1 for both the items.

REV	DATE	ALTERED:	REV	DATE	ALTERED:
01	8.9.1986	CHECKED: -SD-	02	4.5.2008	CHECKED:

MATL SPEC CHANGED FROM BMCQ-10 TO BMCQ-45

MATL SPEC CHANGED AS IS 2073/70 Gr.C-45



TO BE FORGED

NOTES:-

* THE MATERIAL CAN BE OF ANY ONE OF THE FOLL.EQUIVALENT SPECN.

⚠ IS 2073/70 Gr.C-45

BS-970/Pr.I/Gr.080.M46

DIN 17200/69 Gr./C45

VARIANT NO	ITEM NO	DESCRIPTION	STD	DRAWING NO.	ITEM NO	MATL. CODE	A	UNIT	UNIT WT.	KS	ZONE
	01					96150266			2.807		
					VAR NO	⚠ BMCQ 45 *	C	DI	1		
						MATL. SPEC			QUANTITY		

BHARAT HEAVY ELECTRICALS LTD.
UNIT: BOILER AUXILIARIES PLANT.
RANIPET - 632 406.

	NAME	SIGN	DATE	NO OF VAR
DRN	M.MADHAVAN	-SD-	21.12.84	
CHD	D.D.SAHAYAM	-SD-	21.12.84	
APPD	M.K.LUXMAN	-SD-	21.12.84	

DEPT	GRADE OF UNTOL DIM		SCALE	WEIGHT (KG).	REF. TO ASSY./OLD DRG.	ITEM NO.	NO. OF ITEMS
AQCS	C / M / F		1:2	2.807			
CODE 862							

TITLE	CARD CODE	DRAWING NO.	REV
SHOCK PAD	U 01	4-79-024-00348	02

Size A4

4530466E

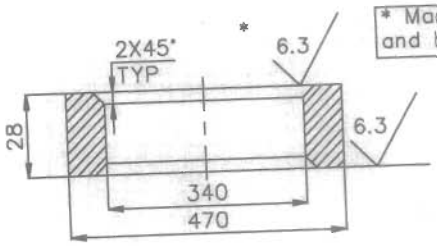
\\bapecs2\BPS-ALLsmg$\61720159.tif

REV	DATE	ALTERED: C.Ganesh
01	30.08.10	CHECKED: C.Ganesh

Drg revised from machining to Forging based on MPLG feed--back vide Letter dated 050510

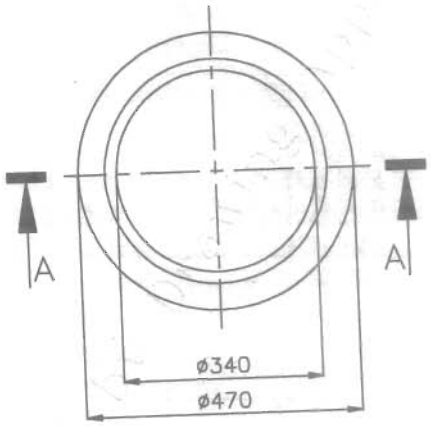
ALL DIMENSIONS ARE IN MILLIMETRES

FOR PRODUCTION
REF.-PR:QA:590 FOR PAINTING
REF.-PR:QA:500 FOR UNTOL. DIMNS.



* Machining on both top and bottom surfaces.

SECTION-AA



BPS CODE:942851860000

VAR NO.	DESCRIPTION	STD	MATL. CODE / MATL. SPECN.	A I C	UNIT / DI	UNIT WT. / QTY
01	PL 32Xø470		SA 105 Forged			18.144 / 1

BHARAT HEAVY ELECTRICALS LTD.,
UNIT: BOILER AUXILIARIES PLANT.
RANIPET - 632 406.

	NAME	SIGN	DATE	NO.OF VAR
DRN	M.R.PRABU		10/05/07	01
CHD	MPG		10/05/07	
APPD	MPG		10/05/07	

DEPT	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	REF. TO ASSY./OLD DRG.	ITEM NO.	NO. OF ITEMS
AQCS	PR: QA: 500	NTS	18.144	4-79-013-00292	-	
CODE 862						

TITLE	CARD CODE	DRAWING NO.	REV
SUPPORTING FLANGE-Forged	U 01	6172-0159	01

Size A4

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 a) Bearing Pedestals, Base frame, Servomotor assy, shaft with Bearing assy, OGV, IGV (55-1XX,55-2XX 55-3XX). 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) 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 a) Suction chamber, diffuser, housing, OGV, impeller (55-1XX, 55-2XX, 55-3XX), b) Spiral casing, damper, IGV, RVC, impeller, shaft (56-1XX, 56-2XX, 56-3XX 56-4XX). 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 DEPARTMENT

BAP:QA:ESP:02
22 October 2002

Sub: Forwarding of Inspection Check List for BPS Components – reg

Please find enclosed the following Inspection Check List for BPS items meant for APH, FAN & ESP products.

Document Details	**Inspection Check List for BPS components Doc. Ref: ICL : 500 / Rev. 00 Dt. 10/10/2002**

Note :

1. Material Planning to include the above Inspection Check List (ICL : 500) in the indent itself.
2. Purchase to implement the above Inspection Check List (ICL:500) for the future procurements.

Encl: a/a

(K Jothi Arulanandam)
General Foreman (QA)

CONTROLLED COPY DISTRIBUTION

Sl No	Name (S/Shri)	Designation	Control Number	Signature
1.	V Ramakrishnan	DM (QC – proc)	Q /WI / 004	
2.	G Subramanian	Mgr (MPL)	Q / WI / 026	
3.	P Jayakanth	Sr. Mgr (AQCS)	Q /WI / 020	
4.	P Ponnusamy	Sr. Mgr (APH)	Q / WI / 021	
5.	N Babu	Sr. Mgr (Pur)	Q / WI / 034	
6.	K Manoharan	DGM (FAN)	Q / WI / 019	

Ranipet	Inspection Check List For BPS Components	Doc Ref:	ICL : 500
		Rev.No.	0 0
		Date:	10 10 2002
		Page No.	Page 1 of 3

Sl No	Description & Drg No.	Application	Inspection Requirement	Painting & Preservation Requirement
01	Fixing Pin 6160 – 0130 / 03	ESP	1 & 4	B
02	Outer Arm – I &II 6172 – 0031 / 03 6172 – 0039 / 01	ESP	1,2,3 & 4	B + C
03	Shim Assembly 6171 0003 / 00	APH	1 & 4	B
04	Plain Bearing 6172 – 0066 / 01	ESP	3 & 4	A (for machined Surface) B +C(Other Areas)
05	Sleeve Tube 6172 – 0046/01	ESP	1 , 2 & 4	- DO -
06	U – Guide 6172 – 0080	ESP	1 , 2 & 4	B + D
07	Rectangular man hole Door - 6124 – 0310 / 03	ESP	1 & 2 (for pl & sheet material only) 4	B + C
08	Inner arm 6172 – 0030 / 00	ESP	1 , 2 & 4	B + C (for external) A (for machined surface)
09	Set Ring 6172 – 0038 / 01	ESP	1 , 3 & 4	A
10	Flat Sealing Ring 7147 – 0130 / 01	FANS	4	—
11	Pointer 6173 – 0001	FANS	4	A
12	Clutch 6172 – 0036 / 00	ESP	1 , 3 & 4	A
13	Adjusting Screw 6172 - 0084	ESP	1 & 4	A
14	Coupling I,II 6172 – 0035 / 00 6172 – 0037 / 00	ESP	1 & 4	A
15	Shim Assembly 6172 - 0060 / 00 6172 – 0061 / 00	ESP	1 & 4	A
16	Thrust Bearing 6172 – 0051 / 00	ESP	3 & 4	A
17	Blade fixing Screws 40 – A-FAN-452	FANS	1 , 2, 3 & 4	A
18	Sleeve Tube 6172 0047 / 00	ESP	1 & 4	B + C
19	Shock Pad 4 79 024 – 00348	ESP	1 , 3 & 4	B + C
20	Flat Nibbed Bolt & Nut 3-56-000-0264/01	FANS	1 , 3 & 4	A

Prepared By	Reviewed By	Approved By
(K Jothi Arulanandam)	(V Ramakrishnan)	(B Srinivasa Rao)

Sl No	Description & Drg No.	Application	Inspection Requirement	Painting & Preservation Requirement

INSPECTION REQUIREMENTS :

1. TC Verification for Chemistry
2. TC Verification for Mechanical properties
3. TC Verification for Hardness
4. Dimensional Inspection
5. Galvanizing Coating thickness measurement

PAINTING & PRESERVATION REQUIREMENTS :

A. Temporary rust preventive oil. Minimum DFT = 20 μm
B. Red Oxide Zinc chrome primer to IS 2074. Minimum DFT = 25μm
C. Synthetic Enamel finish paint to IS: 2932 Minimum DFT = 20 μm (Shade : Smoke grey)
D. Synthetic Enamel finish paint to IS: 2932 Minimum DFT = 20 μm(Shade: Black)
E. Synthetic Enamel finish paint to IS: 2932 Minimum DFT = 20 μm(Shade: Golden Yellow)

REV. NO.	DATE	CHANGES MADE
00	10 10 2002	Original Issue

Record of Revision