

Expression Of Interest for manufacture of Gr. 22-Lugs and Clamps on Conversion basis.

PC:OS:EOI:GR22-LCL

24-04-12

BHEL, Piping Centre, Chennai invites expression of interest [EOI] from vendors for manufacture of lugs and clamps made out of SA387GR22CL2 with BHEL material as per the pre-qualification criteria given below .

**Pre-qualification criteria for manufacture of SA387GR22CL2 lugs and clamps with free-issue of materials by BHEL**

1. In-house facilities for forming of lugs and clamps.
2. Availability of calibrated facility for heat-treatment [inhouse / outsourced].
3. Availability of NDT facility - LPI / MPI, Hardness, PMI [inhouse / outsourced].
4. Vendor shall have prior experience in forming and capable of supplying components as per drawing in bulk quantity production.
5. Vendor shall accept to manufacture lugs and clamps as per BHEL QP Ref.: QPG:45 Rev.:00 and BHEL drawing.
6. Willing to execute Bank Guarantee for 5 Lakhs to take care of material cost of Gr. 22 material in case of loss/ damage
7. Shall have a production capacity of minimum 20 tonnes/month and a turnover of Rs. 30 lakhs per annum.
8. Vendor should furnish willingness to recover the cost of material in case of faulty fabrication / damage / loss of material.

The total quantum of requirement is approximately 200 Tonnes.

**SCOPE OF WORK :**

- A] COLLECTION OF RAW MATERIALS FROM BHEL, TRICHY STORES.
- B] MANUFACTURE OF Gr.22-LUGS AND CLAMPS AS PER THE DRAWING AND QUALITY PLAN.
- C] INSPECTION BY BHEL / THIRD PARTY INSPECTORS AUTHORISED BY BHEL / CUSTOMER.
- D] DELIVERY OF FINISHED PRODUCTS TO ANY BHEL SITE IN INDIA / BHEL TRICHY.

**NOTE :**

- 1] Vendors who meet the above criteria can download the **SUPPLIER REGISTRATION FORM** from our website, fill up the same attach the credentials and send the same to AGM / OS  
BHEL, PIPING CENTRE  
80-G.N. ROAD, T.NAGAR  
CHENNAI – 600017
- 2] Also the enclosed format listing down pre-qualification requirement to be filled by the vendor furnishing necessary documentary proof to be sent along with the above.
- 2] This is only an advertisement calling for expression of interest from prospective vendors and not an enquiry / tender.
- 3] BHEL will evaluate the applications received from the vendors, empanel vendors found suitable and thereafter enquiry will be sent to them.
- 4] Quality plan and sample drawings are enclosed for vendor's reference to understand the work involved.
- 5] In case of any clarifications please contact :  
Phone : 044-28161306 / 28161297 E-Mail : [csv@bhelmpc.co.in](mailto:csv@bhelmpc.co.in) / [kbalu@bhelmpc.co.in](mailto:kbalu@bhelmpc.co.in)
- 6] Last date for receipt of EOI from prospective vendors : 31-05-12

Encl : Quality Plan and sample drawings and PQR format.

Sd....  
AGM / OS

**Expression Of Interest for manufacture of Gr. 22-Lugs and Clamps on Conversion basis  
Questionnaire to be filled up by vendor and sent along with necessary documentary evidence.**

SL. NO	DESCRIPTION	VENDOR'S RESPONSE [YES / NO]	DETAILS OF DOCUMENTS ENCLOSED.
01	In-house facilities for forming of lugs and clamps		
02	Availability of calibrated facility for heat-treatment [inhouse / outsourced].		
03	Availability of NDT facility - LPI / MPI, Hardness, PMI [inhouse / outsourced].		
04	Vendor shall have prior experience in forming and capable of supplying components as per drawing in bulk quantity production.		
05	Vendor shall accept to manufacture lugs and clamps as per BHEL QP Ref.: QPG:45 Rev.:00 and BHEL drawing.		
06	Willing to execute Bank Guarantee for 5 Lakhs to take care of material cost of Gr. 22 material in case of loss/ damage.		
07	Shall have a production capacity of minimum 20 tonnes/month and a turnover of Rs. 30 lakhs per annum.		
08	Vendor should furnish willingness to recover the cost of material in case of faulty fabrication / damage / loss of material.		

SIGNATURE OF VENDOR :

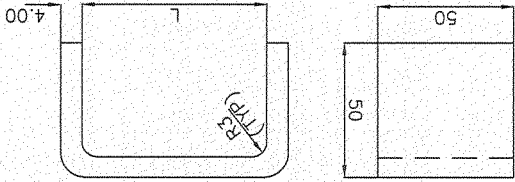
NAME OF VENDOR :

SEAL :

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95876-666-08-3  
DRAWING No

STYLE NO	DESCRIPTION	L	MATL.SPECN.	WEIGHT IN Kg
41	1-4 50 x 469 SHEET	380	SA387GR22CL2	0.577
42	1-4 50 x 479 SHEET	370	SA387GR22CL2	0.590
43	1-4 50 x 499 SHEET	390	SA387GR22CL2	0.610
44	1-4 50 x 549 SHEET	440	SA387GR22CL2	0.680
45	1-4 50 x 569 SHEET	460	SA387GR22CL2	0.700
46	1-4 50 x 593 SHEET	485	SA387GR22CL2	0.931
47	1-4 50 x 613 SHEET	505	SA387GR22CL2	0.962



STYLE NO	DESCRIPTION	L	MATL.SPECN.	WEIGHT IN Kg
21	1-4 50 x 314 SHEET	210	SA387GR22CL2	0.386
22	1-4 50 x 319 SHEET	215	SA387GR22CL2	0.392
23	1-4 50 x 324 SHEET	220	SA387GR22CL2	0.398
24	1-4 50 x 334 SHEET	230	SA387GR22CL2	0.410
25	1-4 50 x 344 SHEET	240	SA387GR22CL2	0.423
26	1-4 50 x 354 SHEET	250	SA387GR22CL2	0.435
27	1-4 50 x 364 SHEET	260	SA387GR22CL2	0.448
28	1-4 50 x 369 SHEET	265	SA387GR22CL2	0.454
29	1-4 50 x 374 SHEET	270	SA387GR22CL2	0.460
30	1-4 50 x 374 SHEET	275	SA387GR22CL2	0.466
31	1-4 50 x 384 SHEET	280	SA387GR22CL2	0.472
32	1-4 50 x 389 SHEET	285	SA387GR22CL2	0.478
33	1-4 50 x 394 SHEET	290	SA387GR22CL2	0.485
34	1-4 50 x 399 SHEET	295	SA387GR22CL2	0.491
35	1-4 50 x 404 SHEET	300	SA387GR22CL2	0.497
36	1-4 50 x 414 SHEET	310	SA387GR22CL2	0.509
37	1-4 50 x 424 SHEET	320	SA387GR22CL2	0.522
38	1-4 50 x 434 SHEET	330	SA387GR22CL2	0.534
39	1-4 50 x 449 SHEET	340	SA387GR22CL2	0.550
40	1-4 50 x 459 SHEET	350	SA387GR22CL2	0.565

REV	01	DATE	APPROVED	DEPT	GRADE OF	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	ITEM No.	NO OF
REV	00									
TITLE		CODE		C/M/F		UN TOL DIM		REV		
SUPPORT LUG		FOR INSULATION AS		U 01		3-80-999-97856 00		DRAWING No.		
BHARAT HEAVY ELECTRICALS LTD.		PIPING CENTRE		CHENNAI 600 017		C/SARAVANAN		16.07.2011		16.07.2011
DRN		LAIT		-SA-		16.07.2011		APPD		P.MADHAVAKRUTTY
NAME		SIGN		DATE		NO OF		ITEMS		16.07.2011

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

STYLE NO	DESCRIPTION	L	MATL.SPECN.	WEIGHT IN Kg
01	1-4 50 x 134 SHEET	30	SA387GR22CL2	0.163
02	1-4 50 x 144 SHEET	40	SA387GR22CL2	0.176
03	1-4 50 x 154 SHEET	50	SA387GR22CL2	0.188
04	1-4 50 x 164 SHEET	60	SA387GR22CL2	0.200
05	1-4 50 x 174 SHEET	70	SA387GR22CL2	0.213
06	1-4 50 x 194 SHEET	90	SA387GR22CL2	0.237
07	1-4 50 x 204 SHEET	100	SA387GR22CL2	0.250
08	1-4 50 x 214 SHEET	110	SA387GR22CL2	0.262
09	1-4 50 x 219 SHEET	115	SA387GR22CL2	0.268
10	1-4 50 x 224 SHEET	120	SA387GR22CL2	0.274
11	1-4 50 x 234 SHEET	130	SA387GR22CL2	0.287
12	1-4 50 x 244 SHEET	140	SA387GR22CL2	0.299
13	1-4 50 x 254 SHEET	150	SA387GR22CL2	0.312
14	1-4 50 x 264 SHEET	160	SA387GR22CL2	0.324
15	1-4 50 x 274 SHEET	170	SA387GR22CL2	0.336
16	1-4 50 x 284 SHEET	180	SA387GR22CL2	0.349
17	1-4 50 x 289 SHEET	185	SA387GR22CL2	0.355
18	1-4 50 x 292 SHEET	190	SA387GR22CL2	0.361
19	1-4 50 x 299 SHEET	195	SA387GR22CL2	0.367
20	1-4 50 x 302 SHEET	200	SA387GR22CL2	0.373

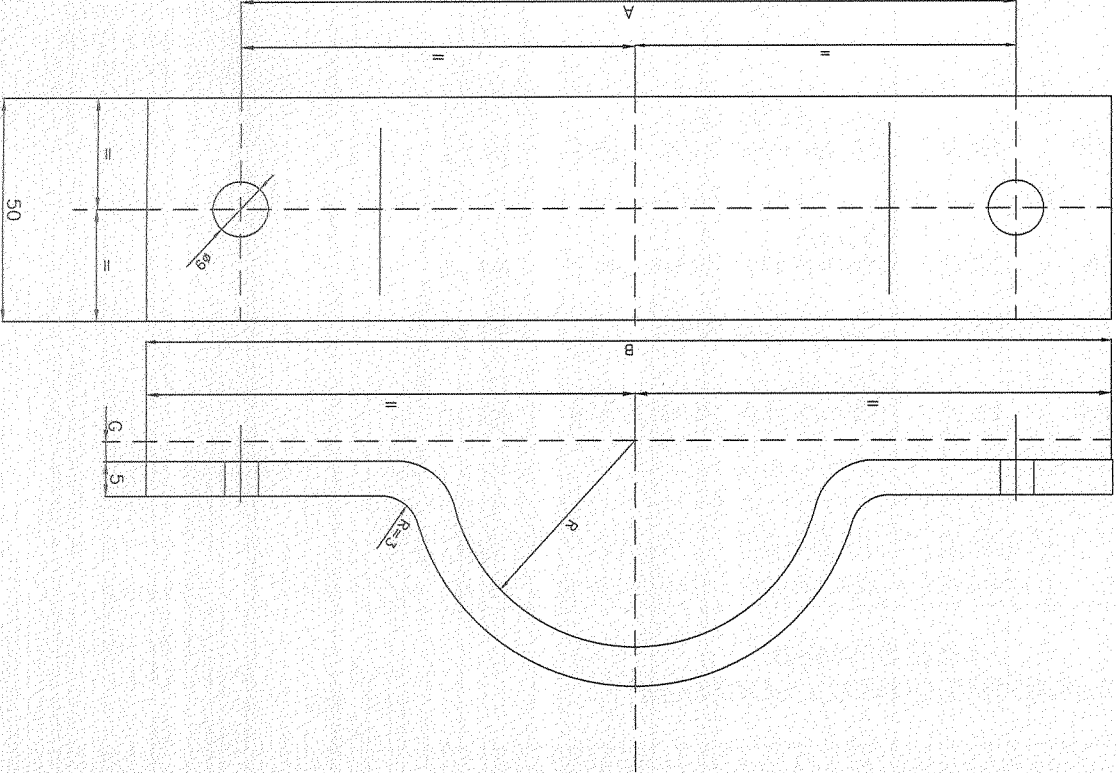
FIRST ANGLE PROJECTION(ALL DIMENSIONS IN MILLIMETRES)

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VAR	PIPE NO	SIZE	WT	DESCRIPTION	A	B	C	R
01	219.1		0.765	PL 5X50X390	257	277	4	111
02	323.9		1.093	PL 5X50X557	384	384	4	164
03	ID 350X60		1.594	PL 5X50X817	534	514	5	240
04	508		1.658	PL 5X50X845	570	550	6	257
05	610		1.974	PL 5X50X1006	674	654	7	309
06	ID 460X85		2.086	PL 5X50X1063	694	674	7	320
07	711		2.286	PL 5X50X1165	776	756	8	360
08	864		2.757	PL 5X50X1405	930	910	9	437
09	1118		3.596	PL 5X50X1832	1184	1164	9	564

DRAWING No  
3-81-318-02391

FIRST ANGLE PROJECTION(ALL DIMENSIONS IN MILLIMETRES)



- NOTES:
1. HOLES TO BE DRILLED AFTER FORMING
  2. RAW MATERIAL LENGTH GIVEN IN THE DRAWING IS APPROXIMATE ONLY
  3. VARIABLE ALLOWANCE MAY BE GIVEN FOR MANUFACTURING VARIATION
  4. MATERIAL SPECIFICATION IS SA387GR22C2
  5. MATERIAL CODE IS 150422650000
  6. MATERIAL IS CERTIFIED

REV		DATE	APPROVED	ZONE
01				
DEPT.		GRADE OF	C/M/F	CODE
		UN TOL DIM	N.T.S	
ITEM No.		WEIGHT (Kg)	SCALE	TITLE
		REF TO ASSY / OLD Dwg		PIPE CLAMP FOR INSULATION (AS)
DRAWING No.		CARD CODE	U 01	REV
3-81-318-02391				00
RETRACTED SIZE A3				

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		BHARAT HEAVY ELECTRICALS LTD.	
		CHENNAI 600 017	
		PIPING CENTRE	
		APPD	
		A.P.MADHAVAKRISHN	
		-SD-	
		15.07.2011	
		CHD	
		C.SARAVANAN	
		-SD-	
		15.07.2011	
		DRN	
		LAIT	
		-SD-	
		15.07.2011	
		DATE	
		SIGN	
		NAME	
		NO OF	
		ITEMS	





**STANDARD QUALITY PLAN FOR  
 PIPE CLAMPS**

QP NO : QPG : 45  
 REV. NO : 00  
 DATE : 04.10.2008

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		REMARKS
								M	B	
1								9	10	11

3.1	Forming (Cold/Hot)	Time/Temp	Major	Doc. Review	100%	BHEL approved vendor forming procedure.		Log book	P	V	
3.2	a) Heat treatment -Forming	Time/Temp	Major}	Visual, Review of HT chart.	100%	Note 1, & 2		Chart	P	V	
3.2	b) Heat treatment -Welding	Time/Temp	Major}		100%	Note 3		Chart	P	V	
3.3	Machining, Drilling	Dimensions	Major	Measurement	100%	Drawing		Register	P	V	
3.4	NDE on a) bend portion.	Surface Quality	Major	LP/MP1 \$	100%	ASME SEC V/ASME B 31.1 CL : 136.44 / 136.43		Report	P	W*	\$ Only on the bend area
	b) Fillet Welds (RIBS)	Soundness	Major	LP/MP1	100%	ASME SEC V/ASME B 31.1 CL : 136.44 / 136.43		Report	P	W*	W*Random
	c) Hardness	Surface hardness	Major	Visual	10% @	Max 197 BHN		Report	P	W*	@-10% per Heat treatment batch.
3.5	PMI for Alloy Steel	Material Identification	critical	Spectrography / X-ray fluorescence	100%	Material Specification		Report	P	W*	
4.0	Final inspection.	Dimensions	Major	Measurement	100%	Drawing and Note 5 & 9		Register	P	W	PMI - Positive Material Identification
4.1	Pipe clamp Assembly	Appearance, DFT, Identification.	Major	Visual	100%	Note 6 & 7.		IR	P	W*	
5.0	Painting and Identification	QP compliance	Major	Compilation of Records.	100%	Mill TC, NDE Reports, HT Charts and inspection report.			P	V	
6.0	Documentation										

Prepared by G.PANNEER SELVAM  
 SM / QA.

**LEGEND:**

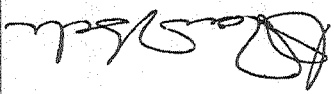

M : BHEL/BHEL Approved Vendor  
 B : BHEL/BHEL Authorized Inspection Agency  
 V : Verification  
 W : Witness  
 PQR - Procedure Qualification Report  
 WPS - Welding procedure Specification  
 IR - Inspection Report

Reviewed and Approved by P.BLANGOVAN  
 SDGM / QA

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		REMARKS
								M	B	
1									10	
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

**NOTE:-**

1.0 Cold Forming  
 1.1 Post forming Heat treatment is not required for following:  
 a) Material thickness upto 12.7 mm and inside radius (r2) 12.7 mm or more.  
 b) For materials thickness above 12.7 mm with inside radius (r2) is more than 2.5 times material thickness  
 1.2 In other cases, carbon steel shall be heat treated at 600 – 620 Deg.C and alloy steel at 680 – 720 Deg.C with 2.5 mts/mm thickness holding (not less than one hour) followed by furnace cooling. Heating and cooling rate as per Note 4.0.  
 2.0 **Hot Forming** : Hot formed Pipe clamps shall be heat treated as below :-  
 2.1 Carbon steel (SA 515 Gr 60/70) :- Normalised at 870 – 900 Deg. C (Holding time 2.5 mts/mm minimum 1 Hr). Heating and cooling rate as per Note 4.0.  
 2.2 Alloy steel (SA 387 Gr 11/22) :- Normalised at 920 – 950 Deg. C and tempered at 680 – 720 Deg. C (Holding time 2.5 mts/mm minimum 1 Hr). Heating and cooling rate as per Note 4.0.  
 3.0 For clamps having welding : If fillet thickness is >13mm for Alloy steel, and >19mm for carbon steel, stress relieving is applicable as indicated in Note 1.2. However PWHT may be combined with heat treatment cycle for forming.  
 4.0 Heating rate above 400 deg C shall be 220 deg C / hr for thickness up to 25 mm , 110 deg C / hr for thickness between 26 and 50 mm, 75 deg C / hr for thickness between 51 and 75 mm and 55 deg C / hr for thickness above 75 mm. Cooling rate up to 400 deg C shall 110 deg C for all thickness.  
 5.0 The following tolerances shall apply when not specified in the P.O./drawings.  
 Radius of curvature -1, +1mm.  
 Distance between hole center -0, +2 mm.  
 Overall length -0, +2 mm.  
 Hole variation (Axis / Slot) -0, +1 mm.  
 6.0 All pipe clamps shall be Hard punched and paint stenciled with Melt no., Matt. Spec. and Manufacturer's seal, if clamps are sent to BHEL stores. Otherwise Work order- DU details, DU qty, Melt no, Matt. Spec. and Manufacturer's seal to be hard punched.  
 7.0 All pipe clamps shall be painted as below **when not specified in the P.O./Project Painting Scheme /Drawings:-**  
 Carbon steel clamps:-Primer-One coat of Redoxide zinc phosphate primer IS12744 – to 30 microns DFT  
 Finish:-Two coats of Synthetic enamel paint (long oil alkyl)to IS 2932.Smoke grey shade No 692 of IS 5- to 20 micron per coat.  
 Total DFT : Primer 30+Finish 40= 70 microns.  
 Alloy steel clamps:-Painting scheme as per Carbon Steel clamps , however the **Shade shall be white.**  
 8.0 All other components like LOAD PIN,STUD,NUT,RIBS,SPACER RING,STUD WASHER,LOAD PIN WASHER used in clamp assy shall be as per applicable BPS/IS/as indicated in Drawing.  
 9.0 All clamps shall be supplied in assembled condition along with fasteners etc., as shown in the drawing.

Prepared by G.PANNER SELVAM 	<b>LEGEND:</b> M : BHEL/BHEL Approved Vendor B : BHEL/BHEL Authorized Inspection Agency WPS - Welding procedure Specification PQR - Procedure Qualification Report P : Perform V : Verification W : Witness IR - Inspection Report	Reviewed and Approved by P.BLANGOVAN  SDGM / QA
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