



**Bharat Heavy Electricals Limited**  
**(Seamless steel Tube Plant)**  
Tiruchirappalli – 620014, TAMIL NADU, INDIA

<b>TITLE:</b> <b>SUPPLY OF BEVEL HELICAL GEAR BOX</b>	Phone: +91 431 257 8439 Email : pcsn@bheltry.co.in Web : <a href="http://www.bhel.com">www.bhel.com</a>
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<b>Reference Number: 9440618E</b>	<b>Date: 29.05.2014</b>	<b>Due date for submission of application: 19.06.2014</b>
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**BHEL/SSTP, Trichy is looking for vendors to supply of BEVEL HELICAL GEAR BOX as per Tender documents attached.**

**A. Important Note to New Vendors (Viewers thro' web site)**

The new vendors will be required to furnish the following documentary proof/ information along with their offers:

1. Certificate of registration (copy of certificate to be submitted).
2. Banker's information (copy of bank pass book first page to be submitted).
3. MSME vendor certificate (if applicable).
4. Address of your organization (complete postal address with PINCODE).
5. Contact person's Phone No. /Mobile No. / FAX No. /E-mail ID.
6. Statutory documents – VAT / TIN / EXCISE REGISTRATION / CST REGN / SERVICE TAX REGISTRATION etc. (copy to be furnished)
7. NSIC/SSI Certificate (if applicable)
8. ISO Certificate (if applicable)
9. Experience certificate as proof of supply of similar items to any Govt. agencies / PSU / Organisations (copy of PO's to be furnished).

\*\*\*\*Pre Inspection certificate from Bearing manufacturers shall be given with supply after placing the order.

10. Audit Report/ IT Return (if applicable)
11. Agency agreement with manufacturer (if applicable)
12. Partnership Deed (if applicable).

**If the new vendors fail to submit the above documentary proof/information, their offers will not be considered for this enquiry.**

Purchase Officer / Purchase /SSTP  
Phone: 0431-257 8440.  
Mail: [neerajxalxo@bheltry.co.in](mailto:neerajxalxo@bheltry.co.in)



**BHARAT HEAVY ELECTRICALS LIMITED**  
 (A GOVERNMENT OF INDIA UNDERTAKING)  
 SEAMLESS STEEL TUBE PLANT  
 TIRUCHIRAPALLI - 620 014.  
 TAMILNADU (INDIA)

PHONE : 0431-2578480/8491  
 : 0431-2578406/8419  
 : 0431-2578568  
 FAX : 0431-2576828

TIN : 33243560005  
 CST. No. : 239383  
 Dated : 11.06.1991

**PURCHASE ENQUIRY**

VENDOR CODE 22239	ENQUIRY NUMBER 9440618E	ENQUIRY DATE 29/05/2014	ENQUIRY DUE DATE 19/06/2014	No. OF ITEMS 01
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Office Copy

- IMPORTANT POINTS :**
1. Tender Closing Time : 14.00 Hrs.
  2. Tender Opening Time : 15.00 Hrs.
  3. Tender should be submitted in a sealed cover, duly indicating enquiry No. Enquiry date & Enquiry Due Date on the cover.
  4. Offer(s) received through Courier Services after 14.00 Hrs. on Enquiry Due Date will not be considered.
  5. Late Tender(s) is/are liable for rejection.
  6. Offer(s) shall be valid for 60 days from Enquiry Due Date.
  7. Offer(s) in Vendor's Letter head shall contain.
    - a. Offer No. and Date
    - b. Delivery Period
    - c. Delivery Terms
    - d. Payment Terms
    - e. Excise Duty with Tariff Heading Sales Tax (against form-XVII/Form-C). etc.
    - f. Excise Regn. No. and SSI Regn. No.

Kindly arrange to submit your COMPETITIVE OFFER for the following item(s)  
 If you are not in a position to submit your Offer, kindly arrange to send your REGRET LETTER.

**THIS IS ONLY A REQUEST FOR OFFER AND NOT AN ORDER**

Sl.No.	BHEL Material Code and Description	Unit	Requirement	
			Quantity	Delivery
01	BHEL Material Code : SP9112546000 ----- BEVEL HELICAL GEAR BOX 1.GEAR BOX DETAILS DRG.NO:1-9-1124-00-00257 2.DETAILS OF HOUSING DRG.NO.1-9-1124-00-00256 3.DETAILS OF LUB.SYSTEM DRG.NO.1-9-1124-30-00258 Part Drawings as per Annexure Enclosed ----- NOTE: 1.Over all dimensions of casing must be as per our drawing and any deviation will not be accepted. 2.Supply to be without Motor, Damper & Couplings 3.Supply of Gear Box to be in Assembled condition. 4.Bearings used in Gear Box should be of SKF,FAG,NTN,KOYO,TIMKEN,INA AND NSK make only acceptable.	Nos.	01 1.000	23/09/2014
	Foot Note :: ----- 1.Gear Box Housing and internals to be as per drawing only. 2.Gear Box to be painted with Opalene Green. ----- SPECIAL NOTE: ===== THIS TENDER IS CALLED ON TWO BID SYSTEM.KINDLY REFER THE ANNEXURE <del>A &amp; C</del> ATTACHED. ----- CONFIRM THE FOLLOWING COMMERCIAL POINTS WITHOUT FAIL:			

A, B, C & D

**IMPORTANT NOTE :**

1. Delivery Terms : "Free Delivery at BHEL-SSTP STORES" is preferable.
2. Payment Terms : 100% payment after 45 days after receipt and acceptance of materials by BHEL.
3. Terms and Conditions of Tender : Please see reverse.
4. The Technical Requirements/Specification Details/Quality Requirements/Commercial Terms & Conditions are clearly furnished in the Tender. If Deviation(s) is/are not explicitly brought out in the Offer, it will be construed that the Tenderer is complying with the requirement of BHEL in full without any deviation(s).

For and on behalf of  
**BHARAT HEAVY ELECTRICALS LTD.**

*(Handwritten Signature)*

**PURCHASE EXECUTIVE**



**BHARAT HEAVY ELECTRICALS LIMITED**  
 (A GOVERNMENT OF INDIA UNDERTAKING)  
 SEAMLESS STEEL TUBE PLANT  
 TIRUCHIRAPALLI - 620 014.  
 TAMILNADU (INDIA)

PHONE : 0431-2578480/8491  
 : 0431-2578406/8419  
 : 0431-2578568  
 FAX : 0431-2576828

TIN : 33243560005  
 CST. No. : 239383  
 Dated : 11.06.1991

**PURCHASE ENQUIRY**

VENDOR CODE  
22239

ENQUIRY NUMBER  
9440618E

ENQUIRY DATE  
29/05/2014

ENQUIRY DUE DATE  
19/06/2014

No. OF ITEMS  
01

Office Copy

- IMPORTANT POINTS :**
1. Tender Closing Time : 14.00 Hrs.
  2. Tender Opening Time : 15.00 Hrs.
  3. Tender should be submitted in a sealed cover, duly indicating enquiry No. Enquiry date & Enquiry Due Date on the cover.
  4. Offer(s) received through Courier Services after 14.00 Hrs. on Enquiry Due Date will not be considered.
  5. Late Tender(s) is/are liable for rejection.
  6. Offer(s) shall be valid for 60 days from Enquiry Due Date.
  7. Offer(s) in Vendor's Letter head shall contain.
    - a. Offer No. and Date
    - b. Delivery Period
    - c. Delivery Terms
    - d. Payment Terms
    - e. Excise Duty with Tariff Heading Sales Tax (against form-XVII/Form-C). etc.
    - f. Excise Regn. No. and SSI Regn. No.

Kindly arrange to submit your COMPETITIVE OFFER for the following item(s)  
 If you are not in a position to submit your Offer, kindly arrange to send your REGRET LETTER.

**THIS IS ONLY A REQUEST FOR OFFER AND NOT AN ORDER**

Sl.No.	BHEL Material Code and Description	Unit	Requirement	
			Quantity	Delivery
	<p>1.OUR STD PAYMENT TERMS IS 100 % PYT WITH IN 45 DAYS ON RECEIPT AND ACCEPTANCE OF MATERIALS THRO E-PAYMENT.FORMAT WILL BE SENT ALONG WITH PUR ORDER.</p> <p>2.INSPECTION WILL BE CARRIED OUT AT YR WORKS PRIOR TO DESPATCH BY BHEL.FOR WHICH ONE WEEK ADVANCE INTIMATION IS TO BE GIVEN ON READINESS OF MATERIAL.</p> <p>3.PL QUOTE THE RATE ON DOOR DELIVERY BASIS DULY INCLUDING PKG,FORWARDING, FREIGHT AND INSURANCE CHARGES.</p> <p>4.TEST AND GUARANTEE CERTIFICATES ARE TO BE SUBMITTED ALONG WITH SUPPLIES.</p> <p>5.PERFORMANCE BANK GUARANTEE FOR 10 % ON BASIC VALUE IS TO BE SUBMITTED WHILE RELEASING PAYMENT.</p> <p>6.CONFIRM YR ACCEPTANCE FOR LD AND RISK PURCHASE CLAUSES.</p>			

**IMPORTANT NOTE :**  
 Delivery Terms : "Free Delivery at BHEL-SSTP STORES" is preferable.  
 Payment Terms : 100% payment after 45 days after receipt and acceptance of materials by BHEL.  
 Terms and Conditions of Tender : Please see reverse.  
 The Technical Requirements/Specification Details/Quality Requirements/Commercial Terms & Conditions are clearly furnished in the Tender. If Deviation(s) is/are not explicitly brought out in the Offer, it will be construed that the Tenderer is complying with the requirement of BHEL in full without any deviation(s).

For and on behalf of  
**BHARAT HEAVY ELECTRICALS LTD.**  
  
**PURCHASE EXECUTIVE**

## HANGING GEAR BOX – CRIMPING LINE

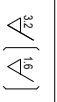
### PART DRAWING DETAILS

1. DETAIL OF BEARING COVER (INPUT SIDE) – 3-9-1124-00-00246
2. DETAIL OF RETAINER PLATES – 3-9-1124-00-00245
3. DETAIL OF BRG.COVER (INPUT) – 3-9-1124-00-00244
4. DETAIL OF BEARING COVER – 3-9-1124-00-00243
5. DETAIL OF BEARING COVER – 3-9-1124-00-00242
6. DETAIL OF BRG.COVER (OUTPUT) – 3-9-1124-00-00241
7. DETAIL OUTPUT SHAFT – 3-9-1124-00-00240
8. DETAIL OF OUTPUT GEAR – 3-9-1124-00-00239
9. DETAIL OF 4<sup>th</sup> INTERMEDIATE PINION SHAFT – 3-9-1124-00-00238
10. DETAIL OF 3<sup>rd</sup> INT. GEAR – 3-9-1124-00-00237
11. DETAIL OF 2<sup>nd</sup> INTERMEDIATE PINION SHAFT – 3-9-1124-00-00236
12. DETAIL OF INPUT GEAR – 3-9-1124-00-00235
13. BEVEL GEAR – 3-9-1124-00-00234
14. BEVEL PINION SHAFT – 3-9-1124-00-00233
15. DETAIL OF 1<sup>st</sup> INPUT PINION SHAFT – 3-9-1124-00-00232
16. DETAIL OF MOTOR MOUNTING FLANGE – 2-9-1124-00-00208
17. DETAIL OF SPACERS – 2-9-1124-00-00207
18. DETAIL OF SPACER – OUTPUT – 4-9-1124-00-00298





LTEN	SHEET
2V	ON SWIMMING



1	2	3	4	5	6	7	8
REV.	ALT.	RES.	DR.	CH.	AP.	REV.	ALT.

Please Do Not Scale. If in Doubt, ASK

CHAMFER ALL EDGES 1x45°. DO NOT SCALE. IF IN DOUBT, ALWAYS AIM FOR MID RANGE OF GIVEN TOLERANCE. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

Underlined dimensions should conform to IS:202 (Part 1):1993 Medium.

Permissible deviations for Linear dimensions (medium):

RANGE (mm)	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2.0
0.5-6	6-30	30-120	120-400	400-1000	1000-2000	2000-4000	

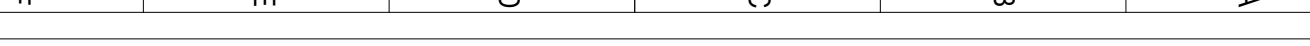
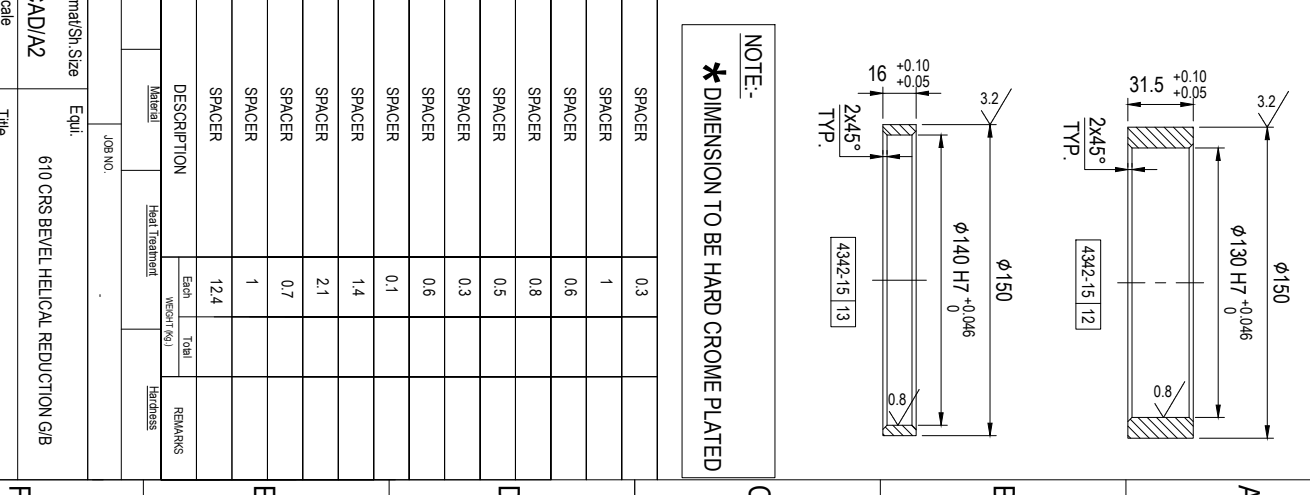
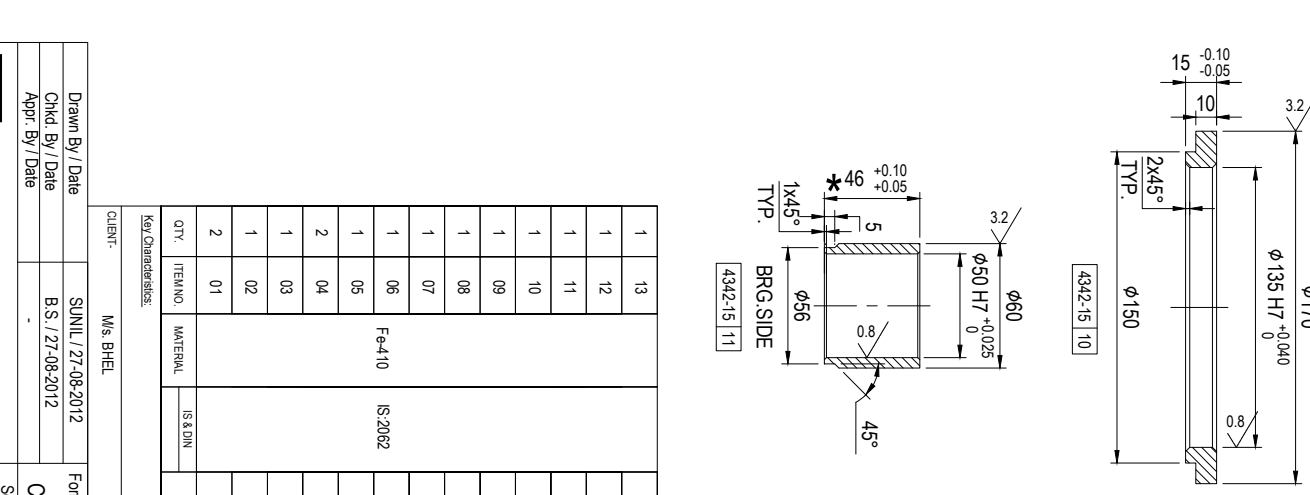
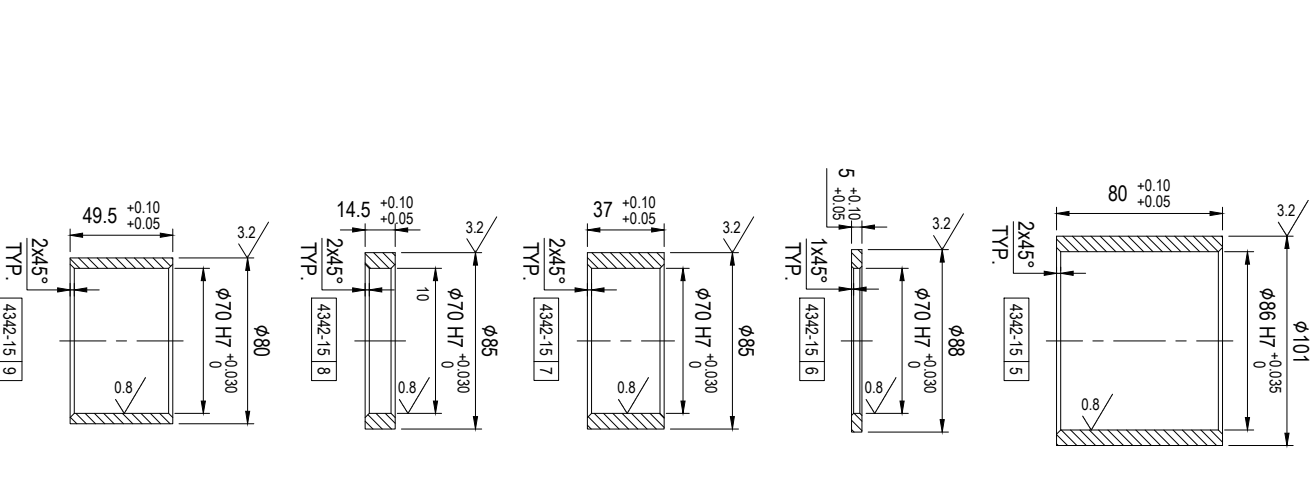
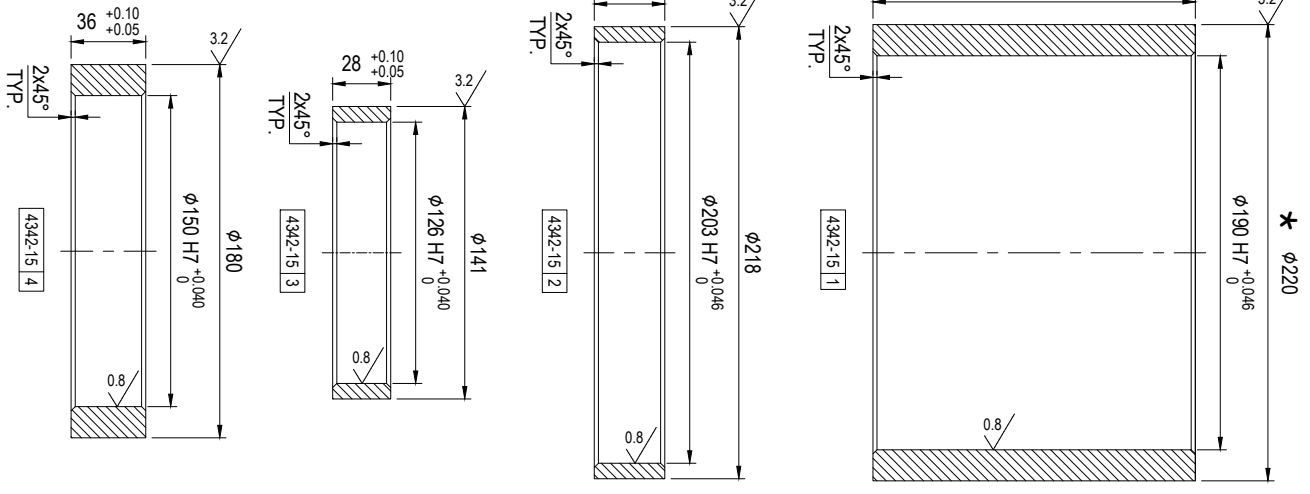
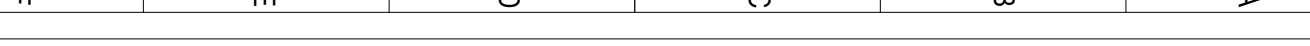
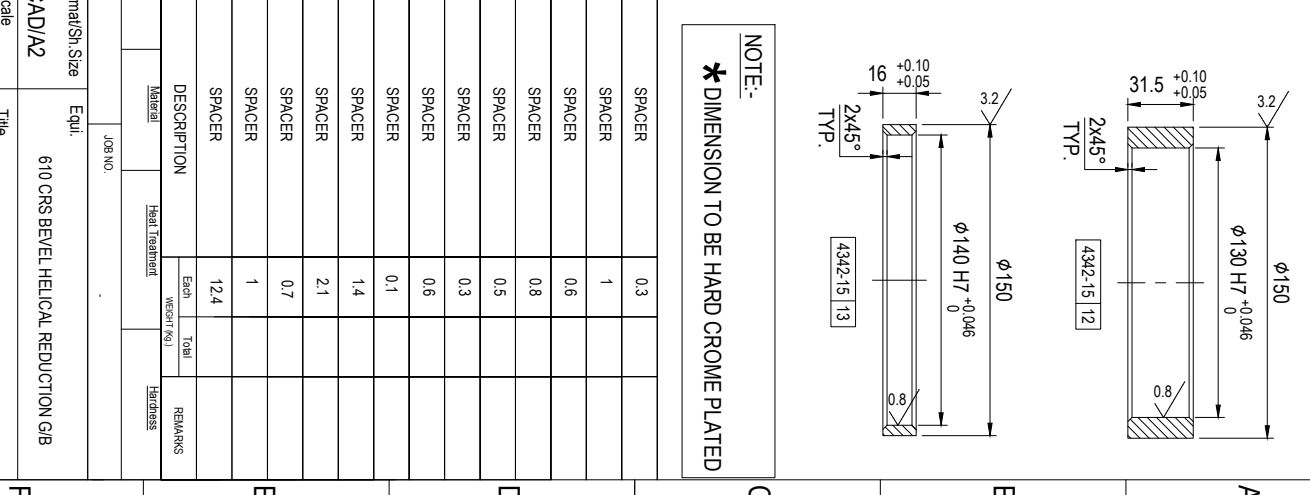
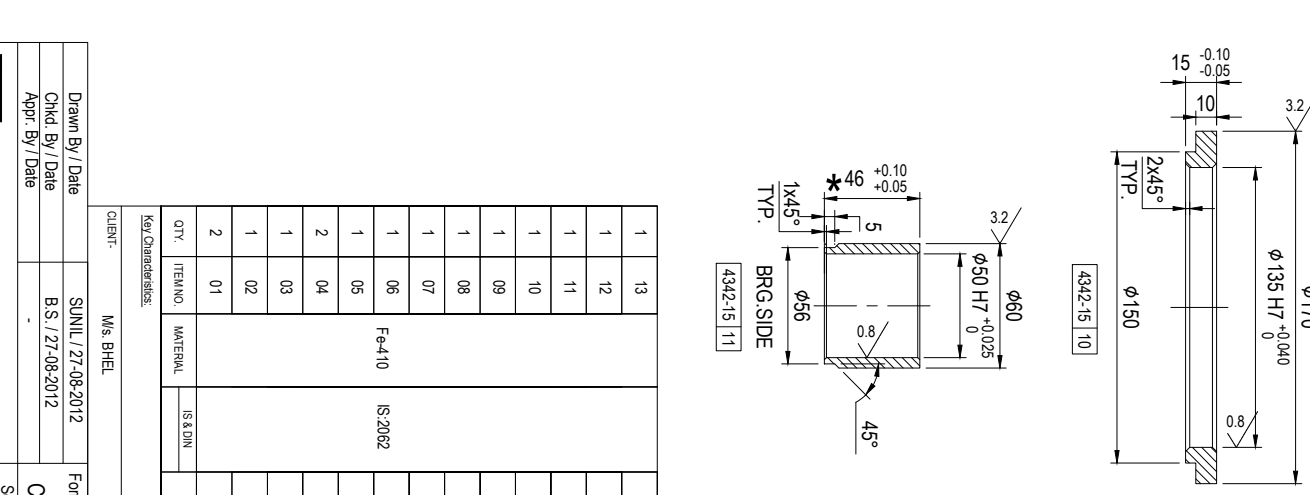
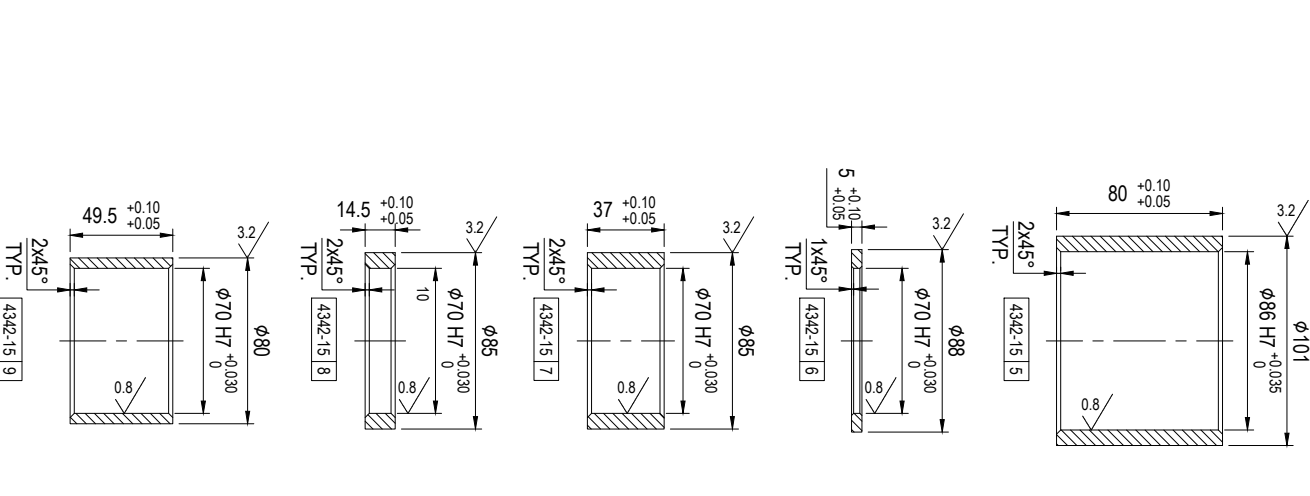
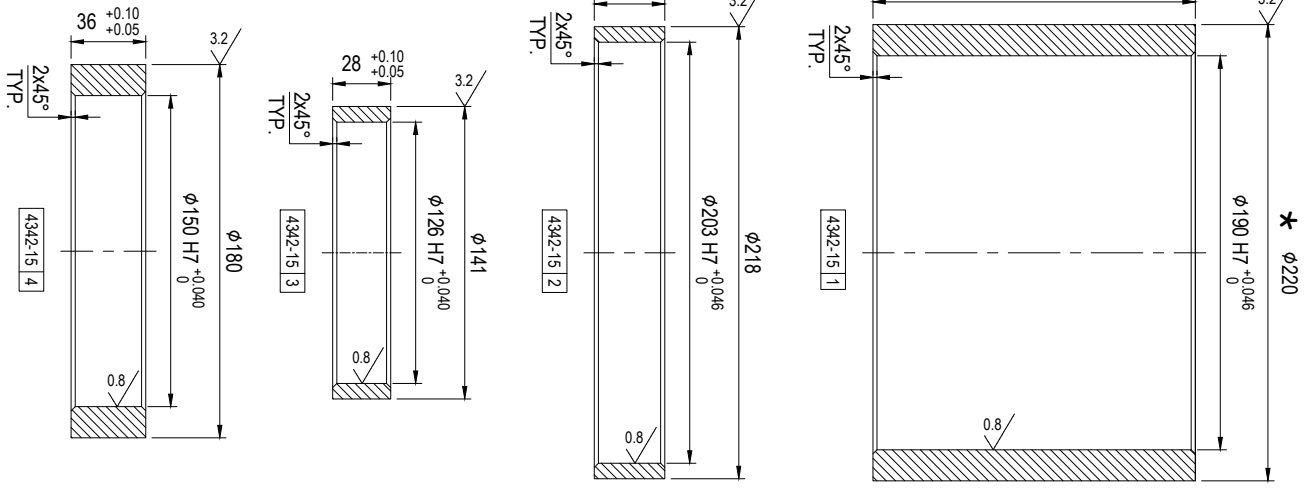
Permissible deviations for Angular dimensions (medium):

over (mm)	±6'	±10'	±20'	±30'
0-10	10-30	30-120	120-400	

SYMBOL

26	12.5	6.3	3.2	1.6	0.8	0.4	0.2	0.1
----	------	-----	-----	-----	-----	-----	-----	-----

RAU



NOTE:-  
\* DIMENSION TO BE HARD CROME PLATED

QTY.	ITEM NO.	MATERIAL	IS & DIN	DESCRIPTION	Weight (kg)	REMARKS
1	13	Fe-410	IS 2062	SPACER	0.3	
1	12			SPACER	1	
1	11			SPACER	0.6	
1	10			SPACER	0.8	
1	09			SPACER	0.5	
1	08			SPACER	0.3	
1	07			SPACER	0.6	
1	06			SPACER	0.1	
1	05			SPACER	1.4	
2	04			SPACER	2.1	
1	03			SPACER	0.7	
1	02			SPACER	1	
2	01			SPACER	12.4	

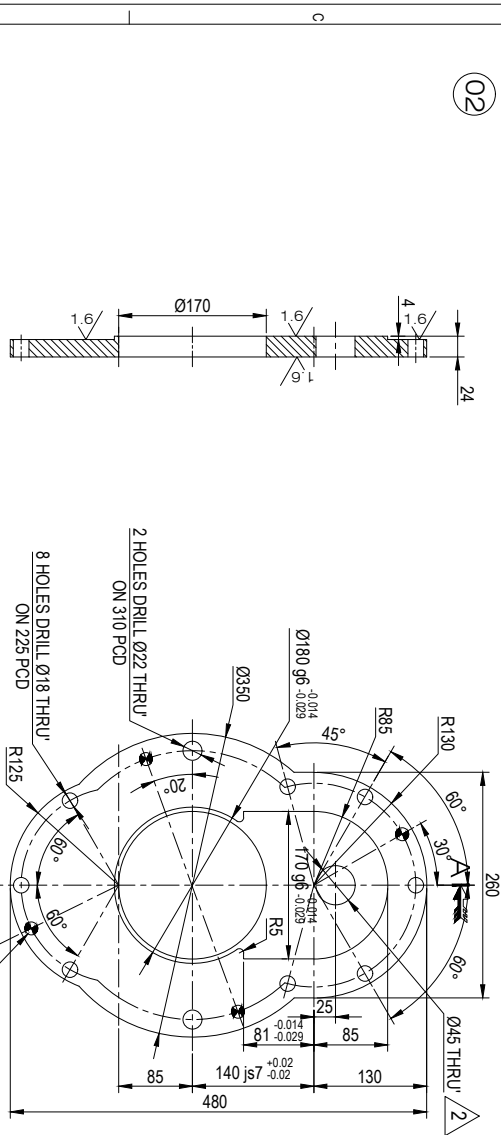
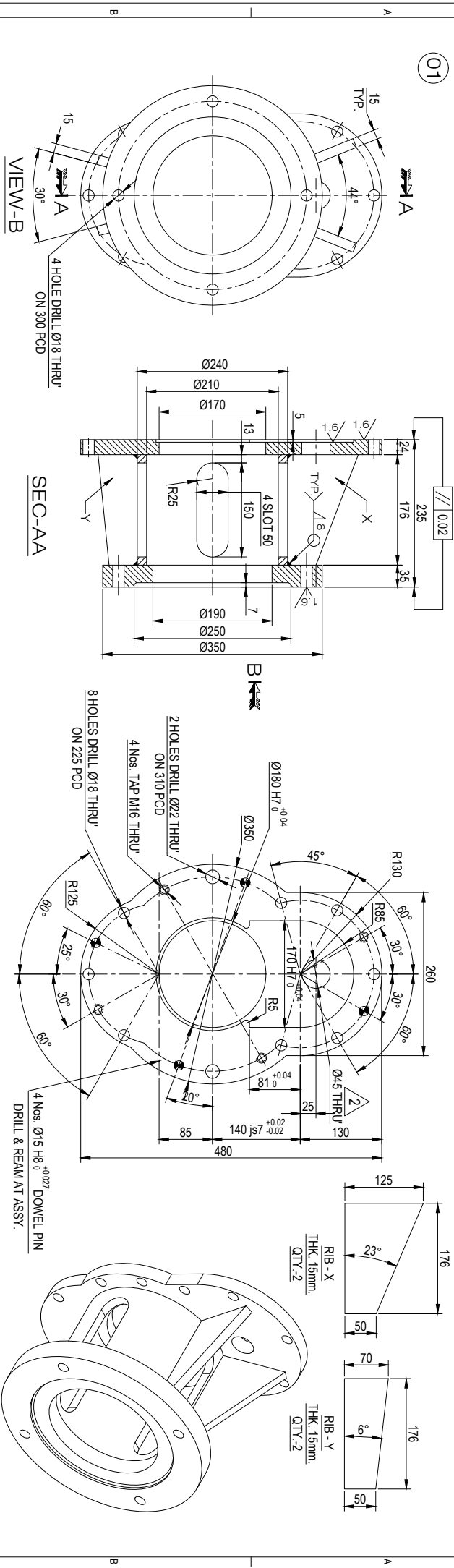
CLIENT	M/s BHEL	JOB NO.	
Drawn By/Date	SUNIL / 27-08-2012	Format/Sp. Size	Equil.
Chkd By/Date	B.S. / 27-08-2012	CAD/A2	
Appr. By/Date		Scale	N.T.S.
		Title	DETAIL OF SPACERS
		Drawing No.:-	4376-15
		Plot Date :-	18-02-2014
		Sheet	1 OF 1
		Revision	0

P.P. Rolling Mills Mfg. Co. Pvt. Ltd.  
Plot No. 142, D.L. Ind Area, Phase-II, Faridabad (Haryana)  
Phone -91-11-26836240, 26868885, 26313774  
Fax -91-11-26865635, website:www.prpm.in



REVISIONS

REV	ALT	REVISION DETAILS	DRAWN	CHECKED	APPROVED
1	Δ	MOTOR MOUNTING FLANGE MODIFIED	ANUJ	BS	-
2	Δ	ONE HOLE ADDED Ø45mm ITEM No. 01 & 02	12/12/12	12/12/12	12/12/12



SEC-AA

SEC-AA

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**PROPRIETARY AND CONFIDENTIAL**

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF PPRM. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE PERMISSION OF PPRM IS PROHIBITED.

**Handwritten Note:**  
01) Start holes to be from radius unless otherwise specified.  
02) All dimension are in millimeter (mm) unless otherwise specified.

All dimensions are in Millimeters unless otherwise stated. Do not Scale. If in doubt, please ask.

SURFACE	FINISH	PERMISSIBLE DEVIATIONS FOR LINEAR DIMENSIONS (mm):	PERMISSIBLE DEVIATIONS FOR ANGULAR DIMENSIONS (degrees):
Symbol	Value	Value	Value
25	125	63	32
16	0.8	0.4	0.2
0.1	0.1	0.1	0.1

Understated dimensions should conform to IS:2102 (Part 1):1993 Medium.

over (mm)	up to (mm)	over (mm)	up to (mm)
6	30	1	6
120	400	30	30
1000	2000	120	400
2000	4000	200	400
4000	-	300	400
10000	-	500	400
20000	-	700	400
40000	-	1000	400
100000	-	1500	400
200000	-	2000	400
400000	-	3000	400
1000000	-	5000	400

**P.P. Rolling Mills Mfg. Co. Pvt. Ltd.**  
P.O. Box No. 142, DLF, Ind. Area, Phase I, Faridkot (Punjab)  
Phone No. 91-171-2608300, 2608305, 2608304  
Fax No. 91-171-2608333, 2608335, 2608334

**Client:** M/s. BHEL  
**Drawn By/Date:** ANUJ/12.12.12  
**Chkd By/Date:** B.S./12.12.12  
**Appr. By/Date:**

**Formal/Std. Size:** CAD/A2  
**Scale:** NTS  
**Title:** DETAIL OF MOTOR MOUNTING FLANGE

**Equipment:** 610 CRS BEVEL HELICAL REDUCTION G/B  
**Drawing No.:** 4376-18  
**Revision:** 1 of 1

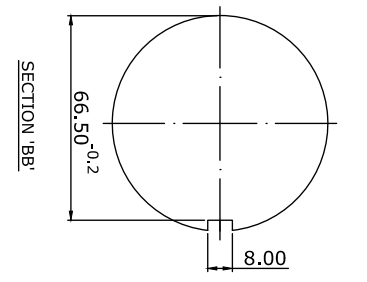
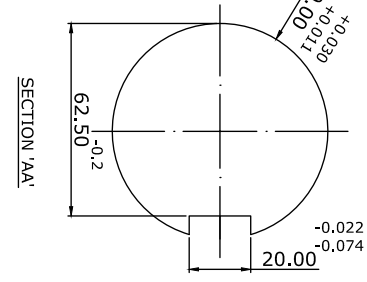
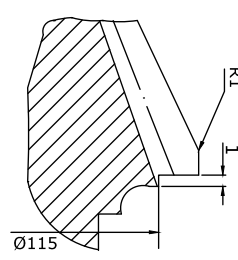
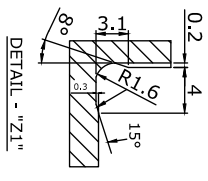
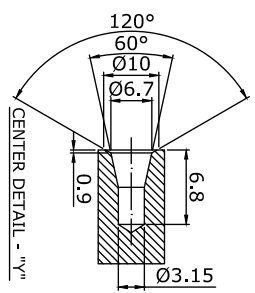
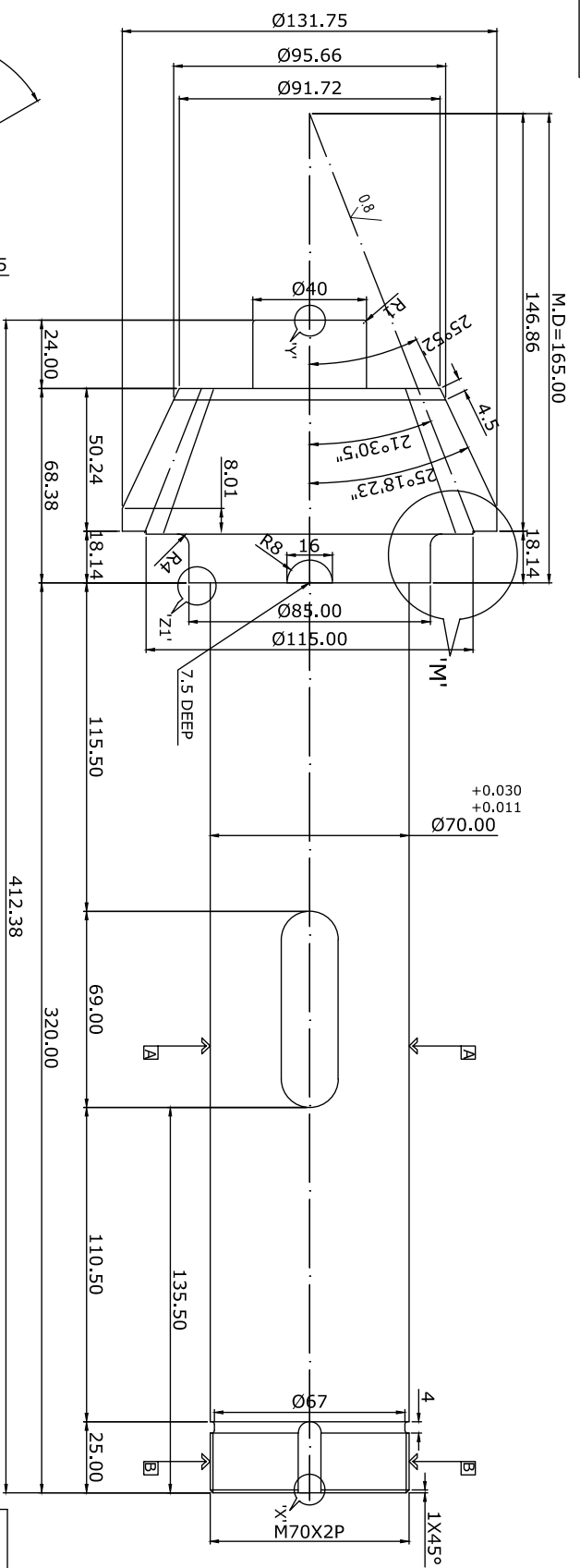


Rev	1
Sheet	1 of 1
Drawn	19/02/14
Checked	19/02/14
Approved	19/02/14

**HAND OF SPIRAL**

**LEFT**

Please Do Not Scale. If In Doubt, ASK.



DESCRIPTION	GEAR	PINION
NO. OF TEETH	33	13
MODULE (TRANS)	9.090	
HAND OF SPIRAL	RH	LH
SPIRAL ANGLE		35°
QTY		
M.D	91.50	165
WEIGHT		
CASE DEPTH	1.05-1.35	
MATERIAL	EN353	
GEAR HARDNESS	58-62 HRC	
PINION HARDNESS	58-62 HRC	

**Mathematical Note:**  
 01) Remove the chamfer & edges with firm chamfers & shall files to the firm radius unless otherwise specified.  
 02) All dimensions are in millimeter (mm), unless otherwise specified.

**PROPRIETARY AND CONFIDENTIAL**

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All dimensions are in millimeters unless otherwise stated. Do not scale. If in doubt, please ask.

Undercutted dimensions should conform to IS:2702 (Part 1):1993 Medium.

SURFACE FINISH	Permissible deviation for Linear dimension (mm):	
	over (mm)	up to (mm)
√	6	30
√	120	400
√	2000	4000
√	value (mm)	value (mm)
√	±0.1	±0.2
√	±0.3	±0.5
√	±0.8	±1.2
√	±2.0	±3.0

SURFACE FINISH	Permissible deviation for Angular dimension (medium):	
	over (mm)	up to (mm)
√	1	6
√	30	120
√	400	400
√	value (Deg)	value (Deg)
√	±6'	±10'
√	±20'	±30'

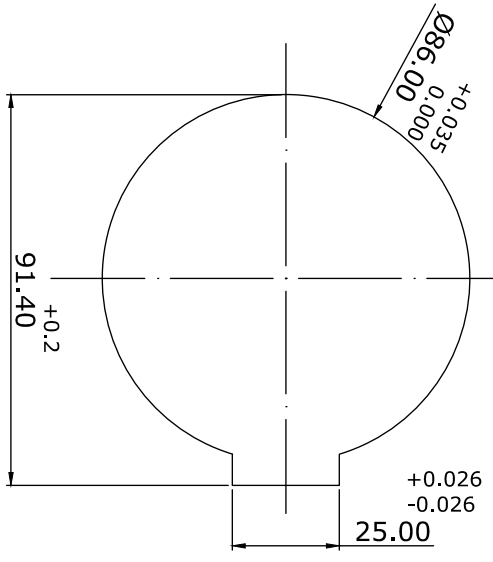
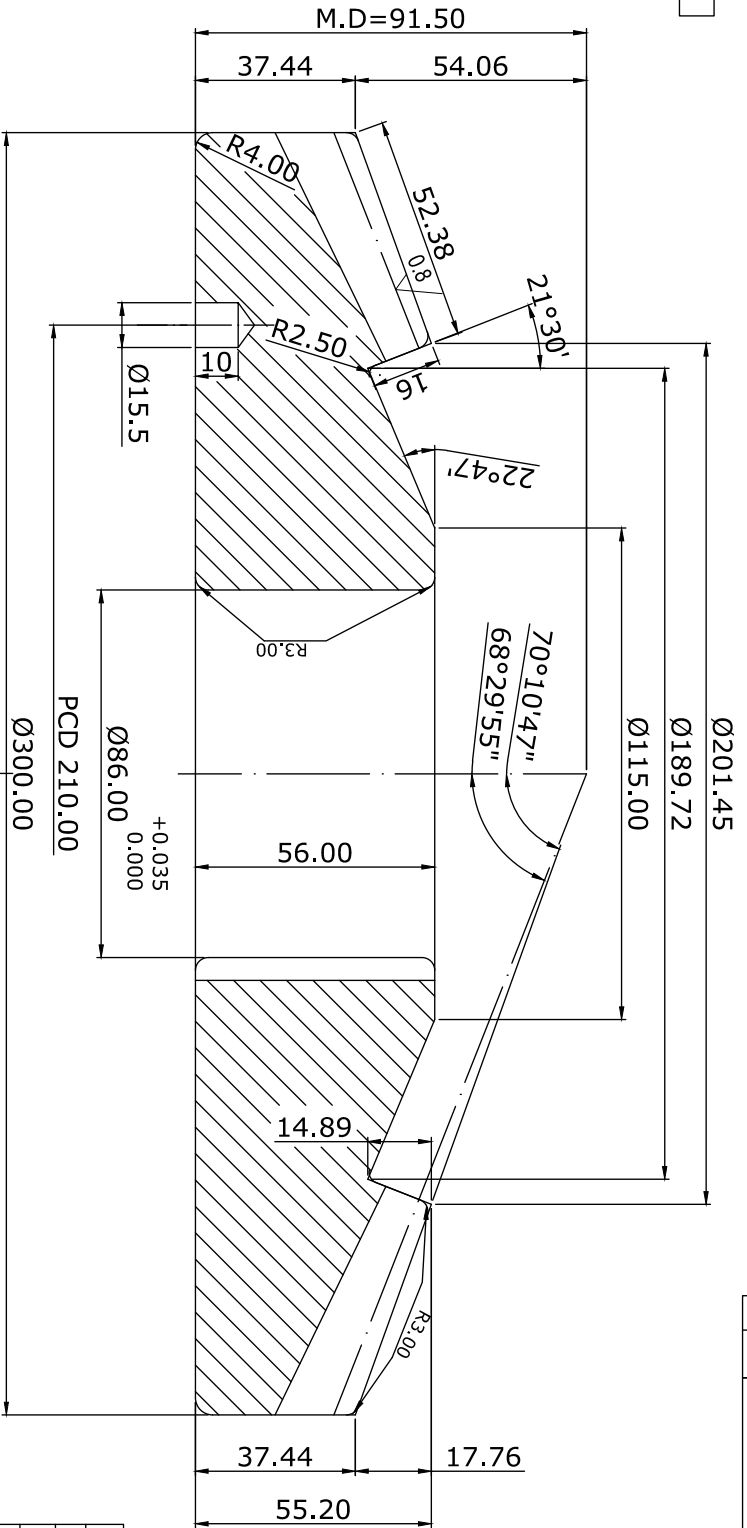
QTY	1	ITEM NO	01	EN-353	DNM-10084	BEVEL PINION SHAFT	DESCRIPTION	MATERIAL	Heat Treatment	Hardness	REMARKS
Client	M/s BHEL		Drawn By/Date	BS./Z/8.12		Formal / Str. Size	CAD/AS	Equipment	610 CRS BEVEL HELICAL REDUCTION GBOX.		
Appr. By/Date			Job No.			Scale	N.T.S.	Title	BEVEL PINION SHAFT		



Revision	1 OF 1
Sheet	1 OF 1
Plot Date	18 February, 2014

HAND OF SPIRAL  
RIGHT

Please Do Not Scale. If In Doubt, ASK.



DESCRIPTION	GEAR	PINION
NO. OF TEETH	33	13
MODULE/(TRANS)	9.090	
HAND OF SPIRAL	RH	LH
SPIRAL ANGLE		35°
QTY		
M.D	91.50	165
WEIGHT		
CASE DEPTH	1.05-1.35	
MATERIAL	EN353	
GEAR HARDNESS	58-62 HRC	
PINION HARDNESS	58-62 HRC	

Manufacture Note:  
01) Remove the chamfer & edges with firm chamfers & shall files to the firm radius unless otherwise specified.  
02) All dimension are in millimeter (mm), unless otherwise specified.

PROPRIETARY AND CONFIDENTIAL

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All dimensions are in millimeters unless otherwise stated. Do not scale. If in doubt, please ask.

SYMBOL	SURFACE FINISH
√	12.5
√	6.3
√	3.2
√	1.6
√	0.8
√	0.4
√	0.2
√	0.1

Undercutted dimensions should conform to IS:2702 (Part 1):1993 Medium.

Permissible deviations for Linear dimensions (medium):		for Angular dimensions (medium):	
over (mm)	-	over (mm)	1
up to (mm)	6	up to (mm)	6
value (mm)	30	value (Deg)	30
	120		120
	400		400
	1000		120
	2000		400
	4000		400
	10000		430

1	01	EN-353	DNM-10084	BEVEL GEAR	24		
QTY	ITEM NO.	MATERIAL	IS & DNM	DESCRIPTION	Each	TOTAL	REMARKS
			SIR				
Key Characteristics:				Material	Heat Treatment	Hardness	
Client: M/s BHEL				JOB No.			
Drawn By/Date: BS/27.8.12				Formal / Site/Stage	Equipment		
Ckng. By/Date:				CAD/3	610 CRS BEVEL HELICAL REDUCTION GBOX.		
Appr. By/Date:				Scale			
P.P. Rolling Mills Mfg. Co. Pvt. Ltd.				N.T.S.	BEVEL GEAR		
Plot Date: 18 February 2014				Revision	Sheet		

3.2

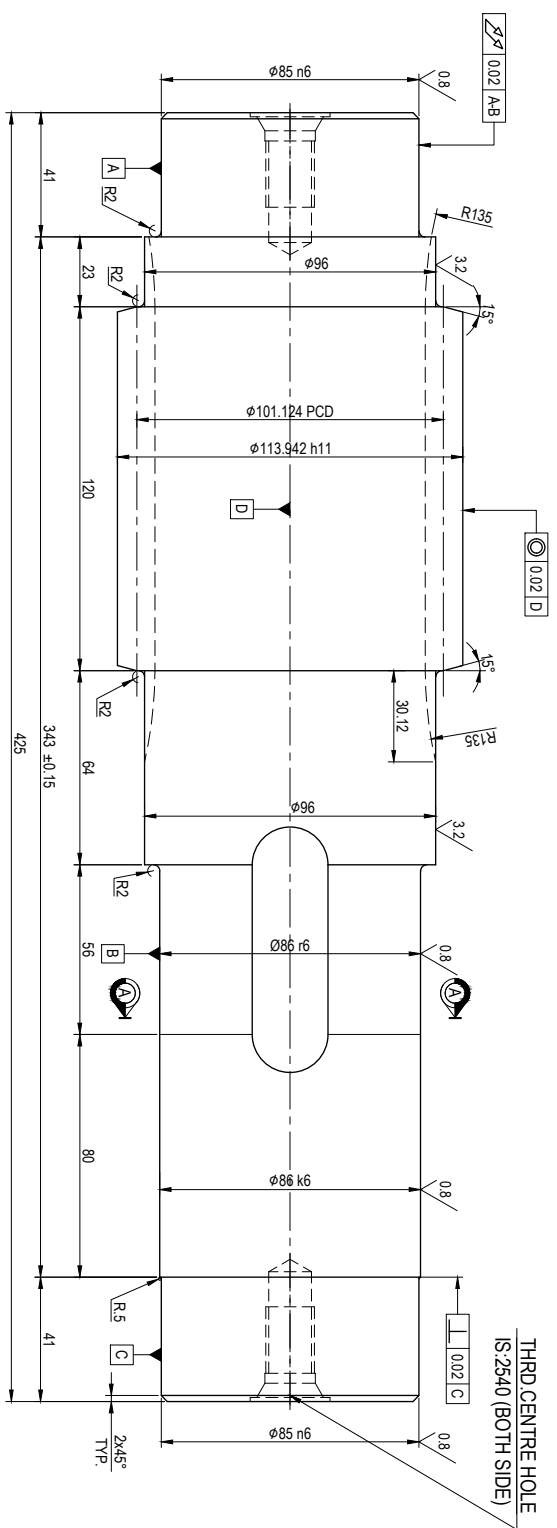
REV.	ALT.	DATE	BY	CHKD.	APPROVED
REVISION DETAILS			DRAWN	CHECKED	APPROVED



1 1  
 Next Sheet  
 CV (on drawing)

3.2 (0.9)

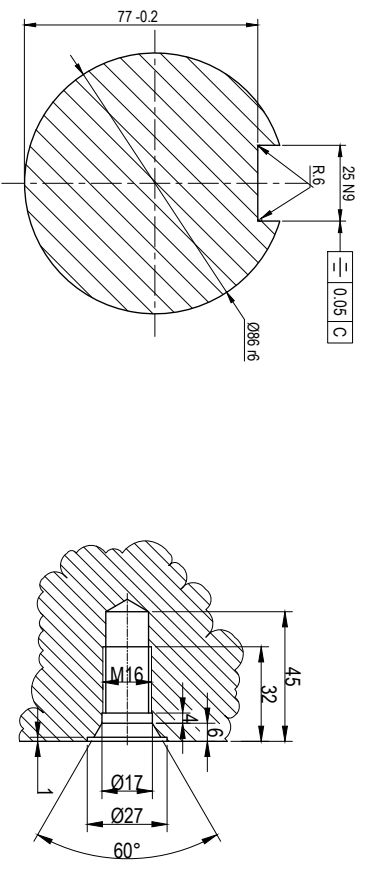
Please Do Not Scale. If in Doubt, ASK



THIRD CENTRE HOLE  
 IS:2540 (BOTH SIDE)

GEAR GEOMETRICAL DETAILS.

Normal module [m]	5.5
Number of teeth [z]	18
Helix angle [β]	12°
Helix direction	R.H.
Reference diameter [d]	101.212
Tip diameter [da]	113.942
Operating pitch diameter [dw]	101.124
Profile shift coefficient [x]	0.1575
Normal pressure angle	20°
Gear quality [Q]	DIN-6
Choral height of a tooth [ha]	-
Chodal tooth thickness [sn]	(-)
B.T. L. Value [wk]	42.661
B.T. L. Measured over teeth [k]	3
Control dimension of tooth thickness (M.O.T.)	42.586
Normal backlash [ln]	0.15-0.25
Mating gear Drawing No	4376-08
Mating gear No of teeth	71
Center distance [a]	250



SEC.A.A

CENTRE HOLE DETAIL

NOTE:-  
 1. (-----) case hardened and tempered to 58-62 HRC to a effective case depth of 1.32 - 1.72mm at 550 Hv.  
 2. Core hardness 35-40 HRC.

113.942	h11	0.000	113.942
Ø85	n6	+0.045	85.045
Ø86	r6	+0.073	90.073
25	N9	0.00	25.00
	Fit	-0.052	24.948

Client	M/S. BHEL	JOB No.	
Drawn By/Date	Sunit/24.08.2012	Formal / S.No	Equipment
Chkd By/Date	B.S./29.08.2012	CAD/DA2	610 CRS BEVEL HELICAL REDUCTION GB
Appr. By/Date		Scale	Title
		NTS	DETAIL OF 2nd INTERMEDIATE PINION SHAFT
			Drawing No.: 4376-07
			Pdt. Date: 23 February 2012
			Revision Sheet 1 of 1

PROPRIETARY AND CONFIDENTIAL

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All dimensions are in Millimeters unless otherwise stated. Do not scale. If in doubt, please ask.

SYMBOL	STANDARD FINISH	over (mm)	under (mm)
✓	✓	6	30
✓	✓	30	120
✓	✓	63	400
✓	✓	125	1000
✓	✓	250	2000
✓	✓	500	4000
✓	✓	1000	10000
✓	✓	2000	20000
✓	✓	4000	40000
✓	✓	8000	80000
✓	✓	16000	160000
✓	✓	32000	320000
✓	✓	64000	640000
✓	✓	128000	1280000
✓	✓	256000	2560000
✓	✓	512000	5120000
✓	✓	1024000	10240000
✓	✓	2048000	20480000
✓	✓	4096000	40960000
✓	✓	8192000	81920000
✓	✓	16384000	163840000
✓	✓	32768000	327680000
✓	✓	65536000	655360000
✓	✓	131072000	1310720000
✓	✓	262144000	2621440000
✓	✓	524288000	5242880000
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✓	✓	2097152000	20971520000
✓	✓	4194304000	41943040000
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REV	1	Next	Sheet
CV		on drawing	

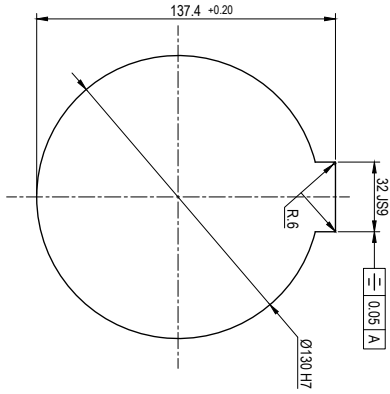
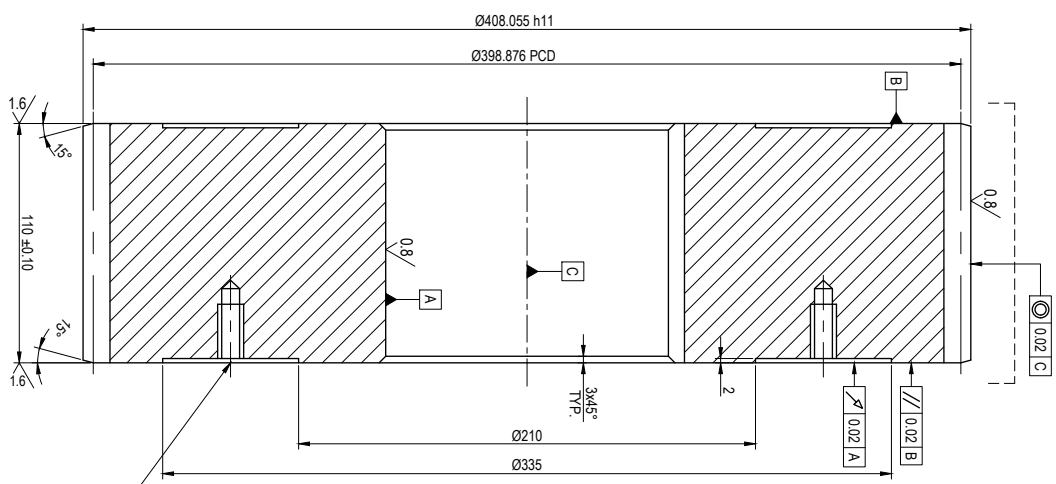
3/2 (0.9)

Please Do Not Scale. If in Doubt, ASK

REV	ALTN	REVISION DETAILS	DRAWN	CHECKED	APPROVED

### GEAR GEOMETRICAL DETAILS.

Normal module [m]	5.5
Number of teeth [z]	71
Helix angle [β]	12°
Helix direction	L.H.
Reference diameter [d]	399.224
Tip diameter [da]	408.055
Operating pitch diameter [dw]	398.876
Profile shift coefficient [x]	-0.1970
Normal pressure angle [α]	20°
Gear quality [Q]	DIN-6
Choral height of a tooth [ha]	-
Chordal tooth thickness [sn]	(-)
B.T.L. Measured over teeth [k]	9
B.T.L. Value [wk]	143.096
(M.O.T.)	142.971
Normal backlash [jn]	0.15-0.25
Mating gear Drawing No	4376-07
Mating gear No of teeth	18
Center distance [a]	250



NOTE:-  
 1. (-----) case hardened and tempered to 58-62 HRC to a effective case depth of 1.32 - 1.72mm at 550 Hv.  
 2. Core hardness 35-40 HRC.

2 NOS. M12X25 DEEP TAPPED HOLES ON 272.5±0.15 PCD.

Manufacture Note:  
 01) Root fillet sharp corner & edges with firm chamfered & steel files to be firm, radius unless otherwise specified.  
 02) All dimension are in millimeter (mm) unless otherwise specified.

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Scale: If in doubt, please ask.	Surface Finish	Permissible deviations for Linear dimensions (medium):	for Angular dimensions (medium):
Symbol	Value	Value (mm)	Value (Deg)
Rau	25 2.5 6.3 2.2 1.6 0.8 0.4 0.2 0.1	0.05 (mm) to 120 (mm)	1 6 30 120

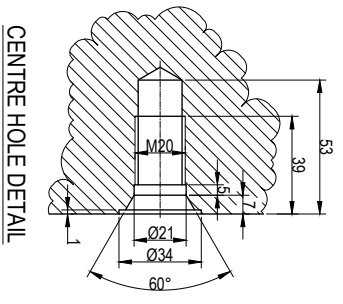
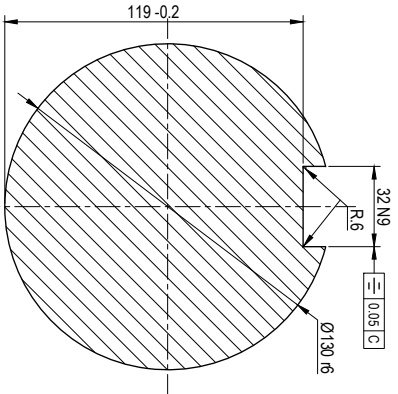
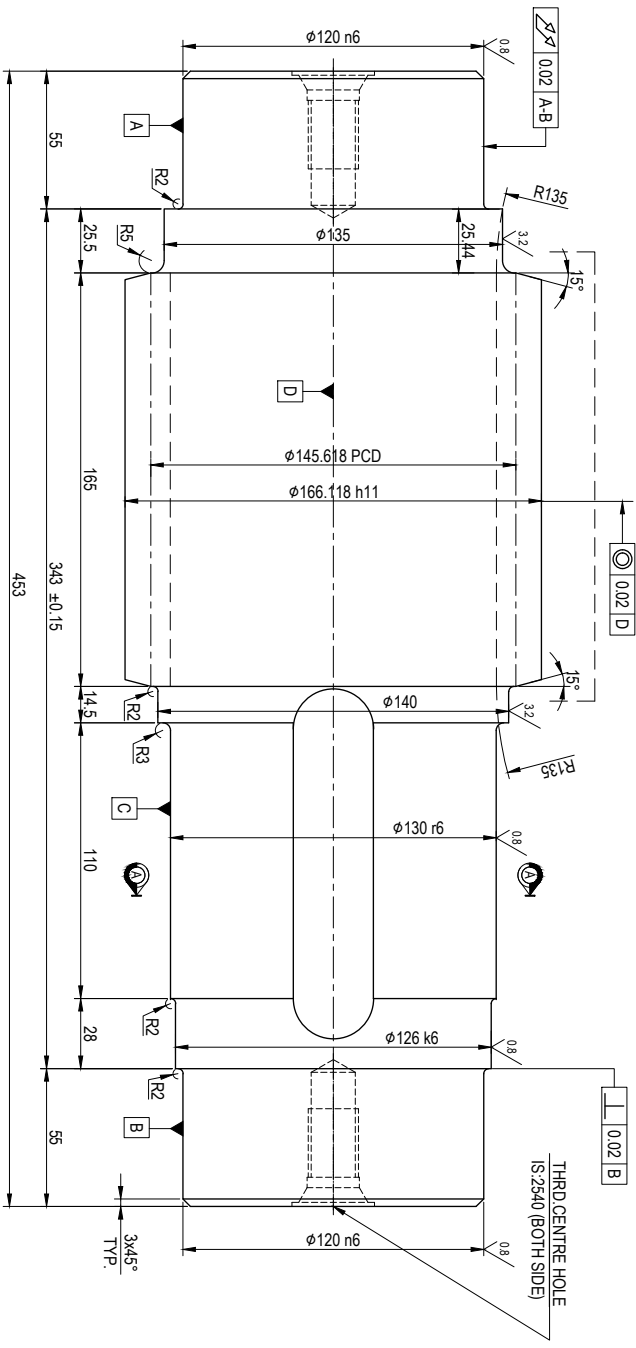
408.055	h11	0.000	408.055
32	JS9	0.031	32.031
Fit			

Client	M/s. BHEL	Job No.	
Drawn By/Date	Sunit/24.08.2012	Formal / S/S/Size	Equipment
Chkd By/Date	B.S./29.08.2012	CAD/A2	610 CRS BEVEL HELICAL REDUCTION GB
Appr. By/Date		Scale	Title
		NTS	DETAIL OF 3rd INT. GEAR

PPRM Logo: P.P. Rolling Mills Mfg. Co. Pvt. Ltd.  
 Reg. No. 142, D.I. 2nd Floor, Phase 1, Gandhinagar (Hydrabad)  
 Ph: +91 11 53650333, Fax: +91 11 53650333, Website: www.pprm.com

Drawing No.:	4376-08	Revision	Sheet
Pdt. Date:	23 February 2012		1 of 1

Please Do Not Scale. If in Doubt, ASK



**NOTE:-**  
1. (-----) case hardened and tempered to 58-62 HRC to a effective case depth of 1.51 - 1.91mm at 550 Hv.  
2. Core hardness 35-40 HRC.

Dimen.	Fit
166.118	h11
130	r6
126	k6
120	n6
32	N9

GEAR GEOMETRICAL DETAILS.			
Normal module [m]	8		
Number of teeth [z]	18		
Helix angle [β ]	10°		
Helix direction	L.H.		
Reference diameter [d]	146.221		
Tip diameter [da]	166.118		
Operating pitch diameter [dw]	146.618		
Profile shift coefficient [x]	0.2464		
Normal pressure angle [α ]	20°		
Gear quality [Q]	DIN-6		
Choral height of a tooth [ha]	-		
Chordal tooth thickness [sn]	(-)		
B.T. L. Measured over teeth [k]	3	62.373	62.323
B.T. L. Value [wk] (M.O.T.)		62.498	62.323
Normal backlash [ln]	0.25-0.35		
Mating gear Drawing No	4376-10		
Mating gear No of teeth	71		
Center distance [a]	360		

QTY.	ITEM NO.	MATERIAL	IS 8 DN	DESCRIPTION	Material	Heat Treatment	Hardness
1	01	18 crNiMo 7-8	DIN	4th INT. PINION SHAFT (1817X80)			

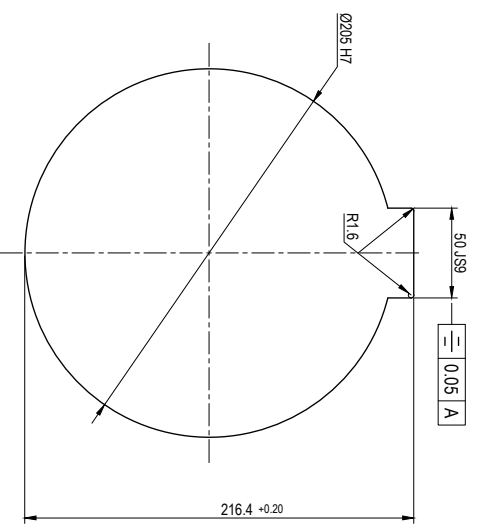
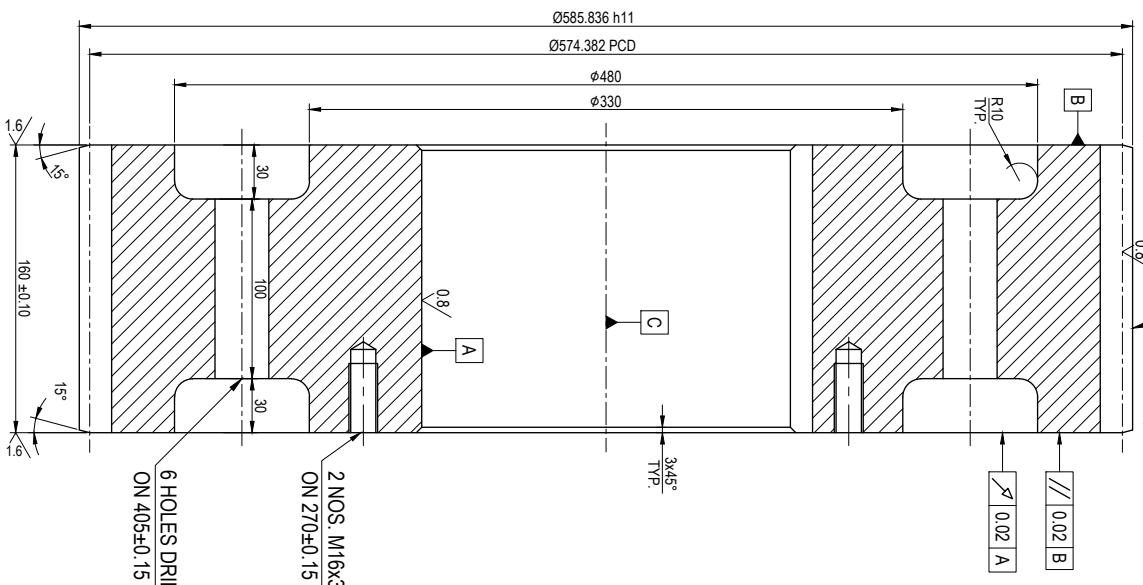
Client	M/S. BHEL	JOB No.	
Drawn By/Date	Sunit/24.08.2012	Formal / Sh.Size	Equipment
Chkd By/Date	B.S./29.08.2012	CAD/A2	610 CRS BEVEL HELICAL REDUCTION GB
Appr. By/Date		Scale	Title
		NTS	DETAIL OF 4th INTERMEDIATE PINION SHAFT

1	1	Sheet
2	1	Next
3	1	On Drawing

3.2 / (0.9)

Please Do Not Scale. If in Doubt, ASK

REV	ALTN	REVISION DETAILS	DRAWN	CHECKED	APPROVED



585.836	h11	0.000	585.836
		-0.440	585.396
Ø205	H7	+0.046	205.046
		0.000	205.000
50	JS9	+0.031	50.031
		-0.031	49.969
Dimen.	Fit		

NOTE:-  
 1. (-----) case hardened and tempered to 58-62 HRC to a effective case depth of 1.51 - 1.91mm at 550 HV.  
 2. Core hardness 35-40 HRC.

GEAR GEOMETRICAL DETAILS.		
Normal module [Mn]	8	
Number of teeth [z]	71	
Helix angle [β]	10°	
Helix direction	R.H.	
Reference diameter [d]	576.762	
Tip diameter [da]	585.836	
Operating pitch diameter [dw]	574.382	
Profile shift coefficient [x]	-0.4300	
Normal pressure angle [α]	20°	
Gear quality [Q]	DIN-6	
Choral height of a tooth [ha]	-	
Chordal tooth thickness [sn]	(-)	
B. T. L. Measured over teeth [k]	8	182.96
B. T. L. Value [M.O.T.]	183.085	182.91
Normal backlash [ln]	0.25-0.35	
Mating gear Drawing No	4376-09	
Mating gear No of teeth	18	
Center distance [a]	360	

All dimensions are in Millimeters unless otherwise stated. Do not scale. If in doubt, please ask.

Understood dimensions should conform to IS:2102 (Part 1)-1993 Medium.

for Angular dimension (medium):

over (mm)	1	6	30	120
up to (mm)	6	30	120	400
value (Deg)	±6	±10	±20	±30

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SYMBOL	STRAIGHT FINISH	over (mm)	6	30	120	400	2000	4000
	RAU	up to (mm)	6	30	120	400	2000	4000
RAU	25	25	63	32	16	0.8	0.4	0.2
	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Client: M/S. BHEL

Drawn By/Date: Sunil/24.08.2012

Checked By/Date: B.S./29.08.2012

Appr. By/Date: [Signature]

Scale: NTS

Job No.:

Equipment: 610 CRS BEVEL HELICAL REDUCTION GB

Title: DETAIL OF OUTPUT GEAR

Drawing No.: 4376-10

Pdt. Date: 23 February 2012

Revision Sheet: 1 of 1

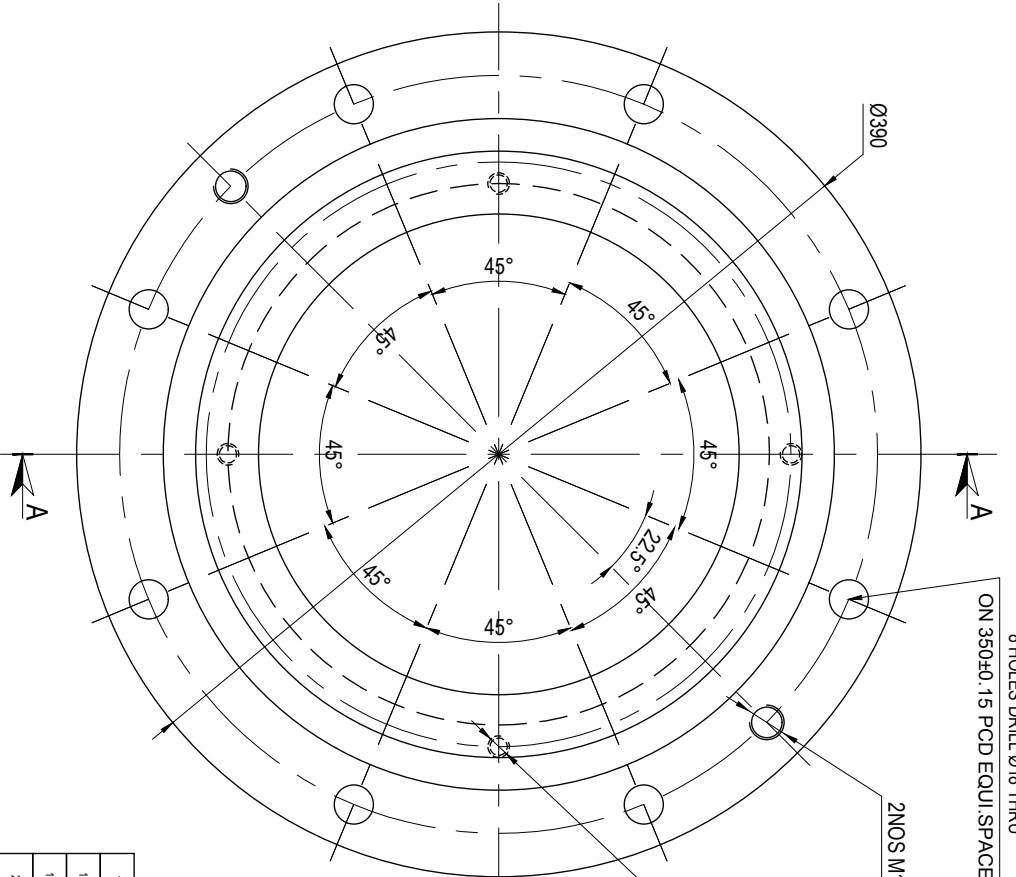
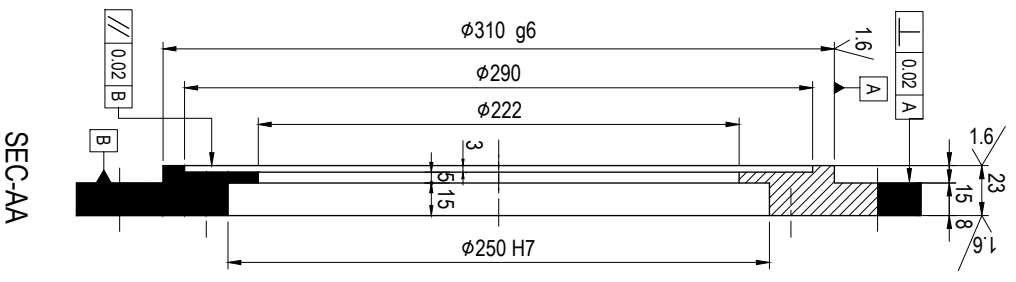


1	1
Next	Sheet
Drawn	Drawn ID

32 / ( 16 )

Please Do Not Scale. If in Doubt, ASK

REV.	ATMS	REVISION/DETAILS	DRAWN	CHECKED	APPROVED



310	g6	-0.017	309.983
250	H7	+0.046	309.951
		0	250.00
<b>Dimen.</b>	<b>Fit</b>		

1	04	STD	SUN SEAL	OIL SEAL (Ø230xØ250x15)		
16	03	STD	IS-3083	SPRING WASHER M16		
16	02	HTS	IS-1984	HEX HD SCREW M16x6 Lg		G R 8 8
2	01	Fe-410	IS-2062	BEARING COVER OUTPUT (BOTTOM)		
QTY.	ITEM NO.	MATERIAL	IS & DIN	DESCRIPTION	Each	TORQ
			Std			REMARKS
Key Characteristics:				Material	Heat Treatment	Hardness
Client				M/S. BHEL	JOB No.	
Drawn By/Date				Sunit/25.08.2012	Formal / S.No	Equipment
Chkd By/Date				B.S./25.08.2012	CAD/A2	610 CRS BEVEL HELICAL REDUCTION GIB
Appr. By/Date					Scale	Title
					NTS	DETAIL OF BRG COVER (OUTPUT)
					1 of 1	Revision Sheet

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Technical Note:  
 01) Radii and chamfers corners & edges with firm, diameter & start files to be firm, radius unless otherwise specified.  
 02) All dimension are in millimeter (mm) unless otherwise specified.

All dimensions are in Millimeters unless otherwise stated. Do not Scale. If in doubt, please ask.

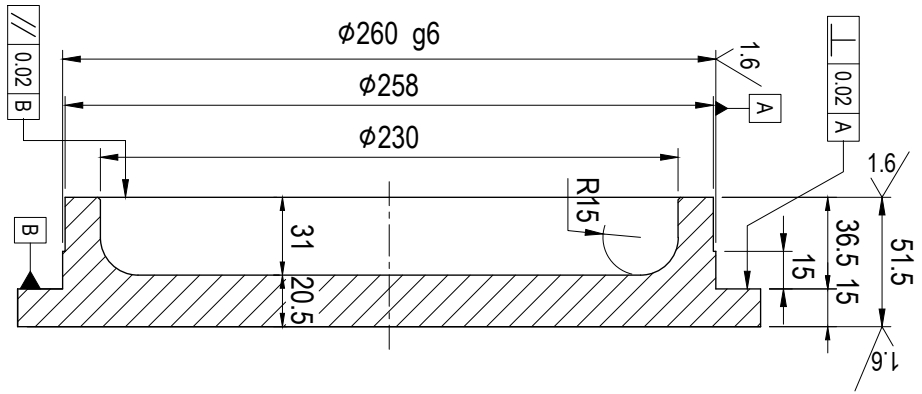
SYMBOL	SURFACE FINISH		
	25	12.5	6.3
Ra	0.4	0.8	1.6
	3.2	6.3	12.5

Understood dimensions should conform to IS:2102 (Part 1)-1993 Medium.

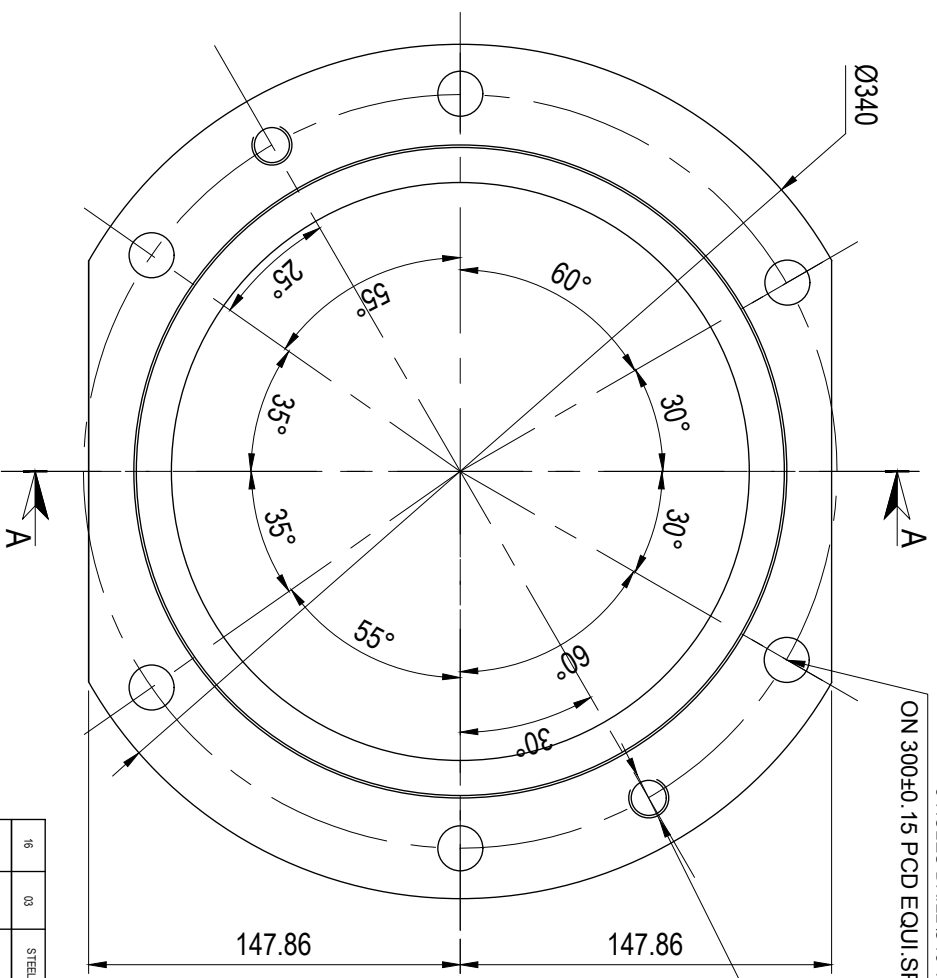
Permissible deviations for Linear dimension (medium):	over (mm)	6	30	120	400	1000	2000	4000
	up to (mm)	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2.0
for Angular dimension (medium):	over (mm)	1	6	30	120	400	1000	2000
	up to (mm)	±5'	±10'	±20'	±30'	±45'	±1'	±30'

PPRM Logo: P.P. Rolling Mills Mfg. Co. Pvt. Ltd.  
 Reg. No. 442, D.I.T. Rd. Kolar, Dist. Channarayana, Karnataka 562112  
 Phone: +91 11 26580333, Website: www.pprm.com

Scale: NTS  
 Title: DETAIL OF BRG COVER (OUTPUT)  
 Pkt. Date: 23 February 2012  
 Revision: 1 of 1



SEC-AA



260	g6	-0.017	259.983
Dimen.	Fit	-0.049	259.951

16	03	STEEL	IS-3083	SPRING WASHER M16	-	-
16	02	HTS	IS-1364	HEX HD SCREW M16x5 Lg	-	G R88
2	01	Fe-410	IS-2062	BEARING COVER	13.5	-
QTY.	ITEM NO.	MATERIAL	IS & DIN	DESCRIPTION	Each	TORQ
			Std.		WEIGHT (KG)	REMARKS
Key Characteristics:				Material	Heat Treatment	Hardness
Client		M/s. BHEL		JOB No.		
Drawn By / Date		Sunit / 25.08.2012		Formal / S.No		
Chkd By / Date		B.S. / 25.08.2012		CAD/A2		
Appr. By / Date				Scale		
				NTS		
				Title		
				DETAIL OF BEARING COVER		
				Drawing No.:		
				4376-13		
				Pdt. Date:		
				23 February 2012		
				Revision		
				Sheet		
				1 of 1		

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Underscored dimensions should conform to IS:2102 (Part 1)-1993 Medium.

over (mm)	-	6	30	120	400	1000	2000	4000
up to (mm)	6	30	120	400	1000	2000	4000	-
value (mm)	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2.0	±3.0

over (mm)	1	6	30	120
up to (mm)	6	30	120	400
value (mm)	±0.05	±0.1	±0.2	±0.3

for Angular dimensions (medium):

over (mm)	1	6	30	120
up to (mm)	6	30	120	400
value (Deg)	±5	±10	±20	±30

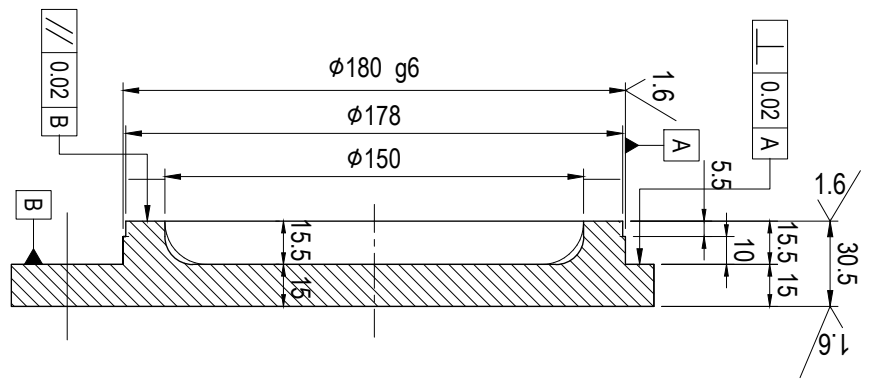
Mechanical Note:  
01) Bead radii on sharp corners & edges with firm chamfers & draft fillets to be firm, unless otherwise specified.  
02) All dimensions are in millimeter (mm), unless otherwise specified.

Text	1
Sheet	1
Drawing No.	4376-14

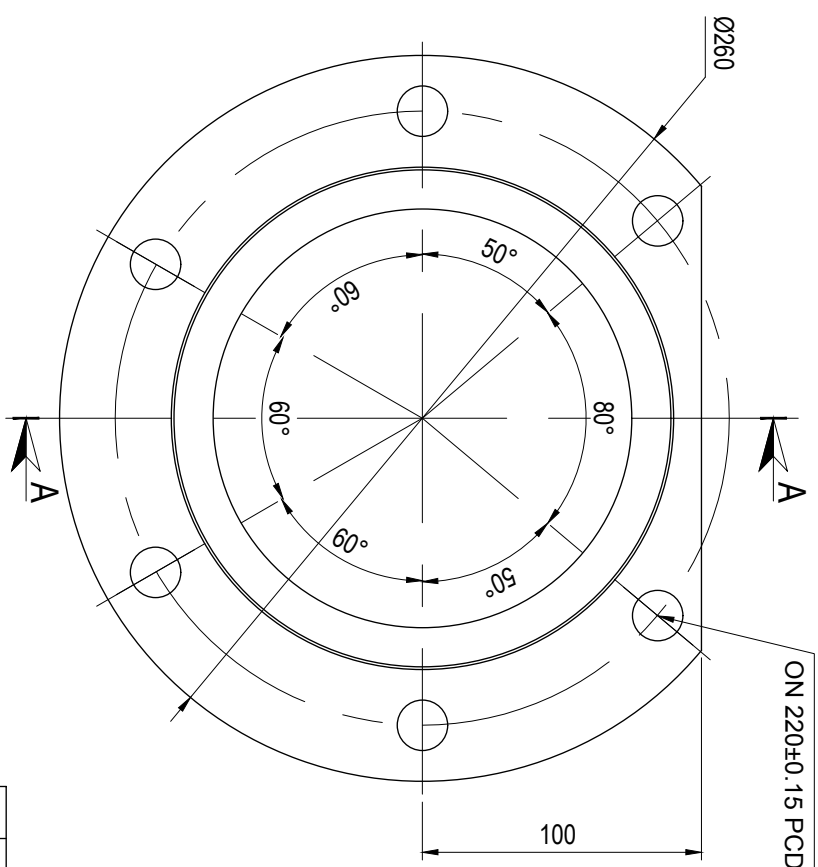
1:6 (0.8)

Please Do Not Scale. If in Doubt, ASK

REV.	ATTN.	REVISION/DETAILS	DRAWN	CHECKED	APPROVED
1					



**SEC-AA**



8 HOLES DRILL Ø18 THRU  
ON 220±0.15 PCD EQU.SPACED@45°

180	g6	-0.014	179.986
Dimen.	Fit	-0.039	179.610

Notes:  
01) Radii unless otherwise specified.  
02) All dimensions are in millimeter (mm) unless otherwise specified.

**PROPRIETARY AND CONFIDENTIAL**

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SYMBOL	STANDARD FINISH
√	1.6
√	3.2
√	6.3
√	12.5
√	25
√	50
√	100
√	200
√	400
√	800
√	1600
√	3200

Undersized dimensions should conform to IS:2102 (Part 1)-1993 Medium.

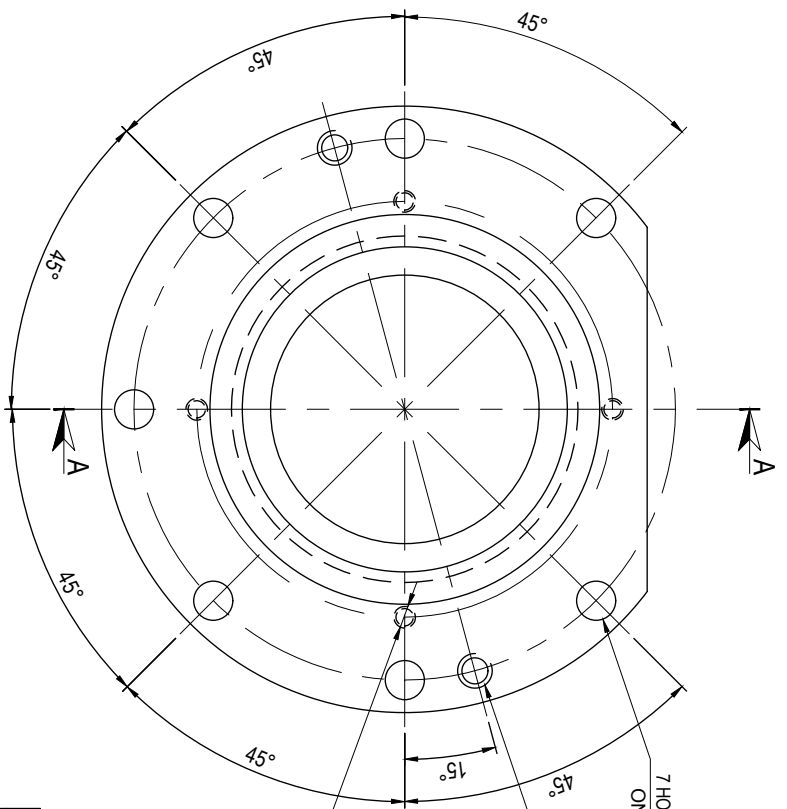
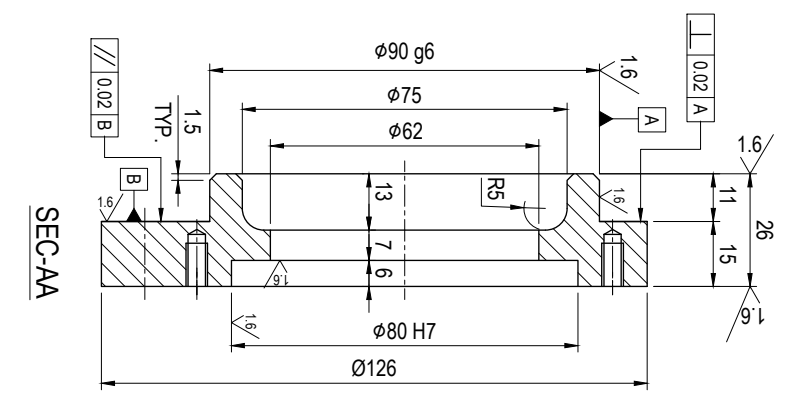
Permissible deviations for Linear dimensions (medium):	for Angular dimensions (medium):
over (mm)	over (mm)
up to (mm)	up to (mm)
value (mm)	value (Deg)
±0.1	±6
±0.2	±10
±0.3	±15
±0.5	±20
±0.8	±30
±1.2	±45
±2.0	±60
±3.0	±90

Client	M/s. BHEL	JOB No.	
Drawn By/Date	Sunit/25.08.2012	Formal / S.No	Equipment
Chkd By/Date	B.S./25.08.2012	CAD/A2	610 CRS BEVEL HELICAL REDUCTION GB
Appr. By/Date		Scale	NTS
		Title	DETAIL OF BEARING COVER
		Drawing No.:	4376-14
		Pkt. Date :-	23 February 2012
		Revision	Sheet
		1 of 1	



P.P. Rolling Mills Mfg. Co. Pvt. Ltd.  
Plot No. 4/2, D.I. Ind. Area, Phase I, Gandhinagar (Bhopal)  
Pin: 461113, Dist. Bhopal, M.P.  
Phone: +91 11 25950333, Fax: +91 11 25950333

REV.	ATTN.	REVISION/DETAILS	DRAWN	CHECKED	APPROVED
1	△	BEARING COVER MODIFIED	ANU 12.12.12	BSB 12.12.12	-



90	g6	-0.012	89.988
80	H7	-0.034	89.966
		+0.030	80.030
		0	80.000

Dimen. Fit

1	04	STD	SUN SEAL	OIL SEAL (Ø90xØ96 THK)	-
7	03	STD	IS-3083	SPRING WASHER M8	-
7	02	HTS	IS-1984	HEX HD. SCREW M8x20 Lg	G.R88
1	01	Fc410	IS-2062	BEARING COVER	27
QTY.	ITEM NO.	IS & DIN	DESCRIPTION	WEIGHT (KG)	REMARKS
	MATERIAL	IS & DIN	DESCRIPTION	WEIGHT (KG)	REMARKS
			Material	Heat Treatment	Hardness

Client	M/s. BHEL	JOB No.	-
Drawn By/Date	Sunit / 1/09/2012	Formal / S.No	Equipment
Chkd By/Date	B.S. / 1/09/2012	CAD/A2	610 CRS BEVEL HELICAL REDUCTION GIB
Appr. By/Date		Scale	NTS
		Title	DETAIL OF BRG COVER (INPUT)

<p>P.P. Rolling Mills Mfg. Co. Pvt. Ltd.          Plot No. 4/2, D.I.E. Ind. Area, Phase I, Faridkot (Punjab)          Dist. Ludhiana, PIN-141005, India          Phone: +91 11 25958333, Website: www.pprml.com</p>	Drawing No.: 4376-16 Pdt. Date: 23 February 2012	Revision Sheet 1 of 1
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**PROPRIETARY AND CONFIDENTIAL**

All dimensions are in Millimeters unless otherwise stated. Do not scale. If in doubt, please ask.

Underscored dimensions should conform to IS:2102 (Part 1)-1993 Medium.

Permissible deviations for Linear dimensions (medium):

over (mm)	-	6	30	120	400	1000	2000	4000
up to (mm)	6	30	120	400	1000	2000	4000	-
value (mm)	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2.0	±3.0

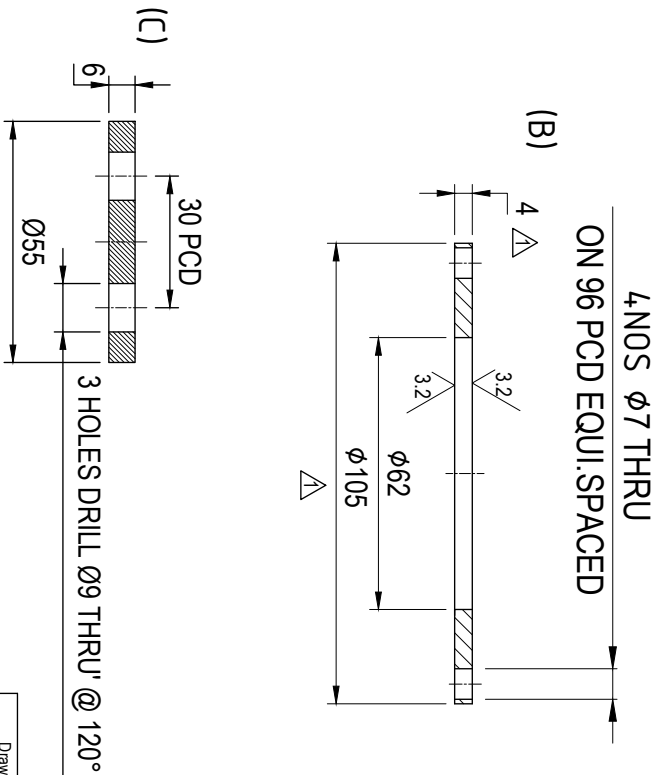
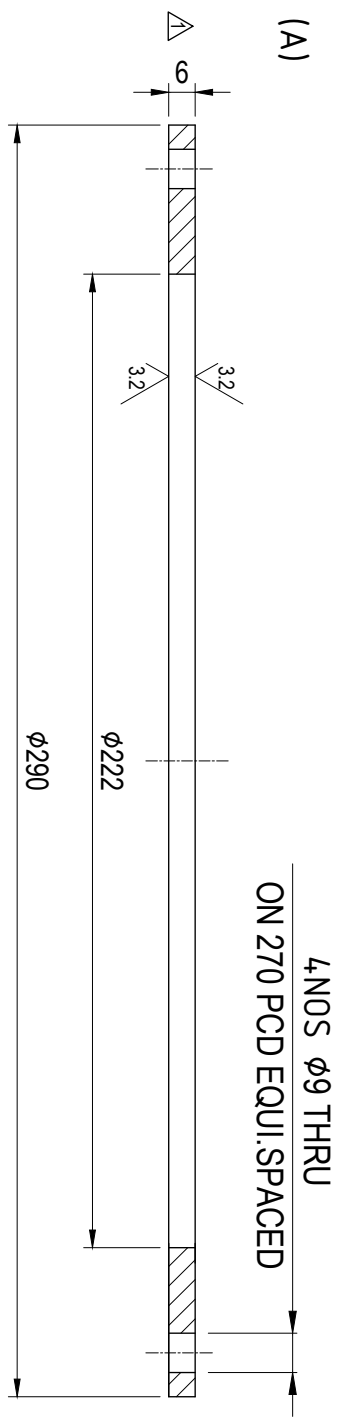
for Angular dimensions (medium):

over (mm)	1	6	30	120
up to (mm)	6	30	120	400
value (Deg)	±6	±10	±20	±30

Technical Note:  
 01) Round the sharp corners & edges with firm diameter & start fillets to be firm, radius unless otherwise specified.  
 02) All dimension are in millimeter (mm) unless otherwise specified.

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REV.	ALT.No.	REVISION DETAILS	DRAWN	CHECKED	APPROVED
1	1	RETAINER PLATE THK. REDUCED & VIEW CADDDED	ANUJ / 12.12.12	B.S. / 12.12.12	



CHAMFER ALL EDGES 1x45° DO NOT SCALE. IF IN DOUBT ASK. ALWAYS AIM FOR MID RANGE OF GIVEN TOLERANCE. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

Underranged dimensions should conform to IS:2102 (Part 1):1993 Medium.

Permissible deviations for Linear dimensions (medium):	
RANGE (mm)	value (mm)
0-56	±0.1
6-30	±0.2
30-120	±0.3
120-400	±0.5
400-1000	±0.8
1000-2000	±1.2
2000-4000	±2.0

for Angular dimensions (medium):	
value (Deg)	value (mm)
±6	0-10
±10	10-30
±20	30-120
±30	120-400

SURFACE FINISH	
SYMBOL	value
Rau	25 12.5 6.3 3.2 1.6 0.8 0.4 0.2 0.1

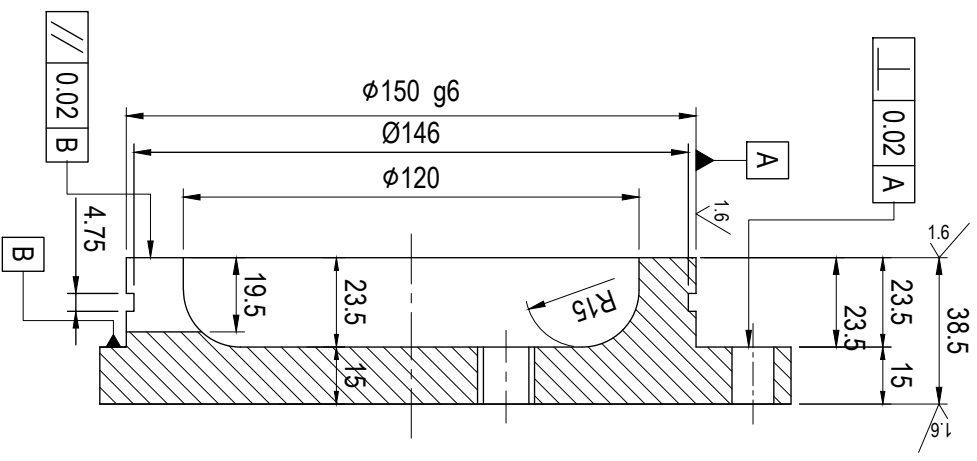
QTY.	ITEM NO.	MATERIAL	IS & DIN	DESCRIPTION	Material	Heat Treatment	WEIGHT	REMARKS
2	09	STD	IS: 3063	SPRING WASHER M8				
2	08	HTS	IS: 3063	HEX HD SCREW M8x25 Lg				
4	07	STD	IS: 3063	SPRING WASHER M8				
4	06	STD	IS: 3063	SPRING WASHER M8				
4	05	HTS	IS: 3064	HEX HD SCREW M8x20 Lg			G-10.9	
4	04	HTS	IS: 3064	HEX HD SCREW M8x25 Lg			G-10.9	
1	03	MS	IS:2062	LOCKING PLATE			0.5	
1	02	MS	IS:2062	RETAINER			0.5	
2	01	MS	IS:2062	RETAINER			2.4	

CLIENT: Ms. BHEL	JOB NO:
Drawn By/Date: SUNIL / 27-08-2012	Format/Sheet Size: Equi.
Chkd By/Date: B.S. / 27-08-2012	Title: 610 CRS BEVEL HELICAL REDUCTION G/B
Appr. By/Date: -	Scale: CAD/A3

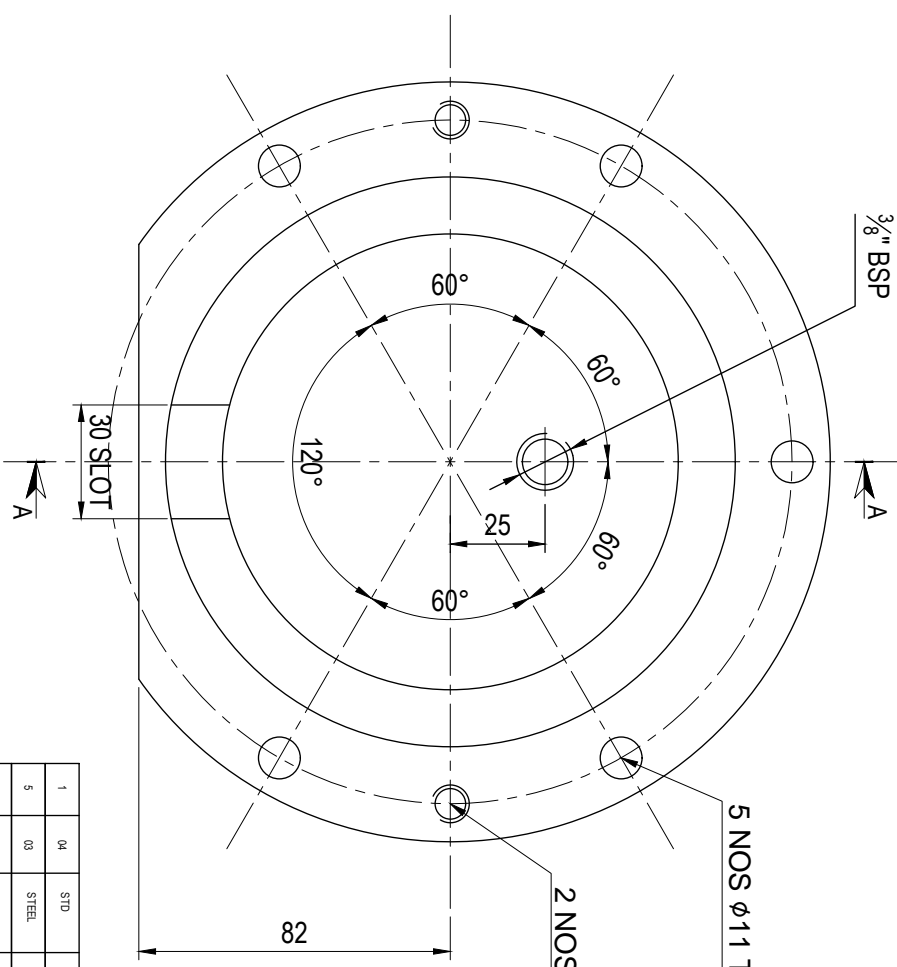
**P.P. Rolling Mills Mfg. Co. Pvt. Ltd.**  
 Plot No. 142 DLF Ind Area, Phase-I, Faridabad (Haryana)  
 Phone +91-11-26893540, 26848895, 26313774  
 Fax +91-11-26893535, website www.prpm.in

Scale: N.T.S.  
 Drawing No.: 4376-17  
 Plot Date: 18-02-2014  
 Sheet 1 OF 1  
 Revision

REV.	ATTN.	REVISION/DETAILS	DRAWN	CHECKED	APPROVED



SEC-AA



5 NOS  $\phi$ 11 THRU ON 180 PCD

2 NOS M10 THRU

150	g6	-0.014	149.996
Dimen.	Fit	0.039	149.961

ITEM NO.	QTY.	MATERIAL	DESCRIPTION	WEIGHT (KG)	REMARKS
1	04	STD	ORING 64x47.5 Lg. (DN 377.1 NBR9)	-	-
5	03	STEEL	SPRING WASHER M10	-	-
5	02	HTS	HEX HD SCREW M10x45 Lg	-	G R 8 8
1	01	Fe-410	BEARING COVER (INPUT GEAR SIDE)	5	-

Client	M/s. BHEL	Job No.	-
Drawn By/Date	Sunit / 12.12.2012	Formal / S.No	Equipment
Chkd By/Date	B.S. / 12-12-2012	CAD/A3	610 CRS BEVEL HELICAL REDUCTION GB
Appr. By/Date	-	Scale	NTS

**P.P. Rolling Mills Mfg. Co. Pvt. Ltd.**  
 Plot No. 4/2, D.I.E. Ind. Area, Phase I, Gandhinagar (Hydrabad)  
 Pin - 501115, Dist. Nalgonda, Andhra Pradesh  
 Tel: +91 11 26365033, Fax: +91 11 26365034

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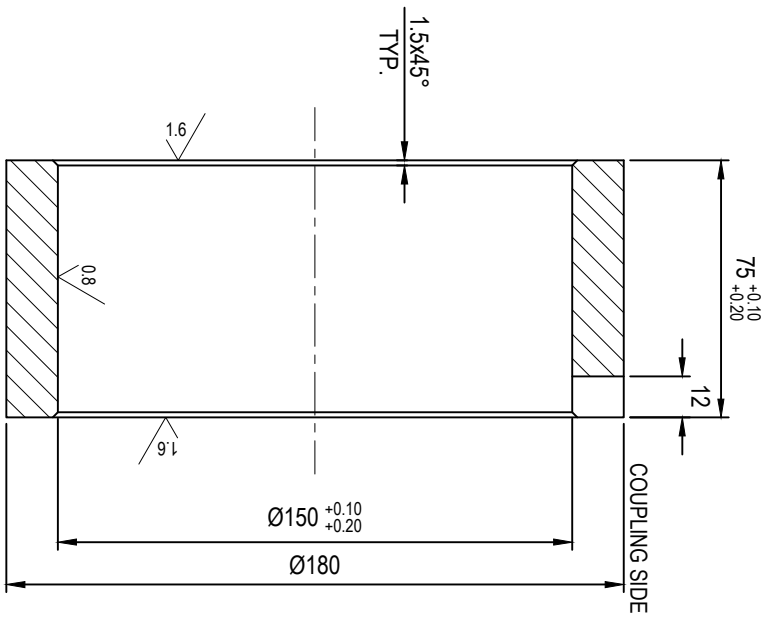
SYMBOL	STANDARD FINISH	over (mm)	up to (mm)	over (mm)	up to (mm)
$\sqrt{3.2}$	$\sqrt{3.2}$	6	30	120	400
$\sqrt{4.0}$	$\sqrt{4.0}$	6	30	120	400
$\sqrt{5.0}$	$\sqrt{5.0}$	6	30	120	400
$\sqrt{6.3}$	$\sqrt{6.3}$	6	30	120	400
$\sqrt{8.0}$	$\sqrt{8.0}$	6	30	120	400
$\sqrt{10.0}$	$\sqrt{10.0}$	6	30	120	400
$\sqrt{12.5}$	$\sqrt{12.5}$	6	30	120	400
$\sqrt{16.0}$	$\sqrt{16.0}$	6	30	120	400
$\sqrt{20.0}$	$\sqrt{20.0}$	6	30	120	400
$\sqrt{25.0}$	$\sqrt{25.0}$	6	30	120	400
$\sqrt{31.5}$	$\sqrt{31.5}$	6	30	120	400
$\sqrt{40.0}$	$\sqrt{40.0}$	6	30	120	400
$\sqrt{50.0}$	$\sqrt{50.0}$	6	30	120	400
$\sqrt{63.0}$	$\sqrt{63.0}$	6	30	120	400
$\sqrt{80.0}$	$\sqrt{80.0}$	6	30	120	400
$\sqrt{100.0}$	$\sqrt{100.0}$	6	30	120	400
$\sqrt{125.0}$	$\sqrt{125.0}$	6	30	120	400
$\sqrt{160.0}$	$\sqrt{160.0}$	6	30	120	400
$\sqrt{200.0}$	$\sqrt{200.0}$	6	30	120	400
$\sqrt{250.0}$	$\sqrt{250.0}$	6	30	120	400
$\sqrt{315.0}$	$\sqrt{315.0}$	6	30	120	400
$\sqrt{400.0}$	$\sqrt{400.0}$	6	30	120	400
$\sqrt{500.0}$	$\sqrt{500.0}$	6	30	120	400
$\sqrt{630.0}$	$\sqrt{630.0}$	6	30	120	400
$\sqrt{800.0}$	$\sqrt{800.0}$	6	30	120	400
$\sqrt{1000.0}$	$\sqrt{1000.0}$	6	30	120	400

Rev	1
Date	11-09-14
By	ON
Checked	AW

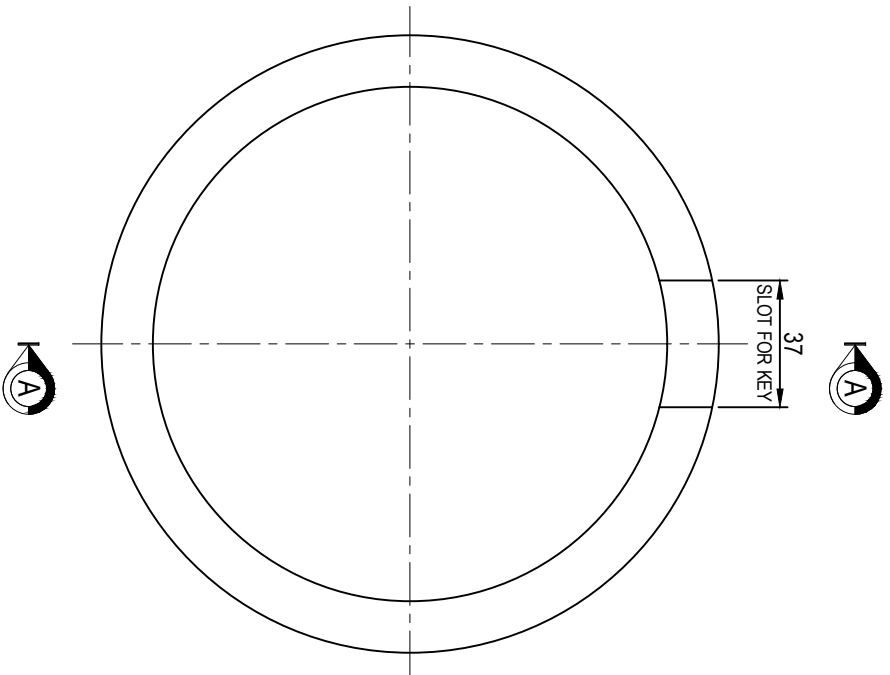
3.2 / 1.6 / 0.8

Please Do Not Scale. If in Doubt, ASK.

REV	ALTMS	REVISION DETAILS	DRAWN	CHECKED	APPROVED
1	AW				



**SEC-AA**



Manufacture Note:  
 01) Remove the sharp corner & edges with firm chamfered & shaft files to the firm, radius unless otherwise specified.  
 02) All dimension are in millimeter (mm) unless otherwise specified.

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All dimensions are in Millimeters unless otherwise stated. Do not Scale. If in doubt, please ask.

Surface Finish	1.6	0.8	1.5x45° TYP.
Symbol	√ 1.6	√ 0.8	√ 1.5x45° TYP.
Value	1.6	0.8	1.5x45° TYP.

Undimensioned dimensions should conform to BS:2102 (Part 1):1993 Medium.

Permissible deviations for Linear dimension (medium):	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.5	2.0	3.0	4.0	6.0	10.0	15.0	20.0	30.0	40.0	50.0	70.0	100.0	150.0	200.0	300.0	400.0	500.0	700.0	1000.0
Value (mm)	±0.1	±0.2	±0.3	±0.4	±0.5	±0.6	±0.8	±1.0	±1.5	±2.0	±3.0	±4.0	±6.0	±10.0	±15.0	±20.0	±30.0	±40.0	±50.0	±70.0	±100.0	±150.0	±200.0	±300.0	±400.0	±500.0	±700.0	±1000.0

Client: M/S BHEL

Drawn By/Date	ANNU/24/12/12
Checked By/Date	B.S/24/12/12
Appr/By/Date	

Equipment: 610 CRS BEVEL HELICAL REDUCTION G/B

DESCRIPTION	SPACER - OUTPUT
Material	N.T.S.
Heat Treatment	
Hardness	
Job No.	
Scale	N.T.S.
Formal / S/S Size	CAD/A4
Title	DETAIL OF SPACER - OUTPUT
Drawing No.:	4376-18A
Issue Date:	18 February 2014
Revision	Sheet 1 OF 1



## ANNEXURE-A

### IMPORTANT NOTE TO TENDERERS ( FOR INDIGENOUS & OVERSEAS SUPPLIERS )

**This Tender is floated on TWO-BID System.** Tenders are requested to submit their offers in TWO-BIDS (Part I: Un priced bid and Part II: Price Bid) separately in a sealed cover as follows.

1. **Part I: UN PRICED BID:** (Complete with technical & Commercial conditions as per enquiry including un priced copy of price schedule i.e. identical to part II with prices blanked and replaced by "Quoted") .

The Tenderer should confirm their acceptance / comments to the Enquiry along with other commercial Terms & Conditions of the Tender. In case any deviation is taken by the Tenderer from the Tender requirements, it is to be clearly indicated in the offer with reference to the particular clause. If such deviations are not explicitly indicated in the offer, it will be construed by BHEL that the Tenderer is complying with Annexure Clause(s), Commercial terms & conditions and other conditions in full.

2. **Part II: PRICE BID:** Price (with break-up details wherever required) to be indicated.
3. **Both Un priced Bid and Price Bid is** to be submitted in a single envelop before 1400 hours (Indian Time) on tender Due Date.
4. The **Unpriced Bid** shall be put in a separate sealed cover superscribed with Tender number, Tender Date & Tender Due Date and also the cover should be clearly marked with "UNPRICED BID".
5. The **Price Bid** shall be put in a separate sealed cover superscribed with Tender number, Tender Date & Tender Due Date & the cover should be clearly marked with "PRICE BID".
6. Both the individually enveloped **UNPRICED BID** and **PRICE BID** covers as mentioned above, have to be put in another single bigger cover clearly indicating Tender number, Tender Date & Tender Due Date at the top of the cover. This cover is to be addressed to

Purchase Executive,  
Purchase Department,  
Seamless Steel Tube Plant (SSTP),  
BHEL, Tiruchirapalli-620014, India.  
Phone No: 91 431 2578502, 2578491

7. Un-priced Bid shall only be opened on the Tender Due Date mentioned in the Tender, in the presence of Tenderers / their Authorized Representative, who may like to be present for such opening. The price bid will NOT be opened on the date of tender opening.
8. After opening the Un-priced Bid, they shall be evaluated by BHEL for their suitability. BHEL shall hold discussions with the responded Tenderers on the Technical and Commercial terms and freeze the terms & conditions of the offer. These frozen technical specifications will be communicated to responded tenderers.
9. BHEL shall offer opportunity to the responded and technically / commercially suitable Tenderers, to submit their latest Price Bid/ Impact of prices, if any in line with the frozen technical , Commercial , delivery conditions.
10. This latest Price Bid & the Impact of prices for the frozen technical specifications submitted by the Tenderers will be opened in the presence of Tenderers. Based on the above, the ranking of the Tenderers shall be made and accordingly the Tender shall be finalized.
11. "BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. **This will be decided after techno-commercial evaluation.** All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA, and if BHEL decides to go for opening the sealed envelop price bid, the offer submitted during the tender due date will considered.

In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit "online sealed bid in the Reverse Auction. Non-submission of "online sealed bid by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.

## **Terms & Conditions of REVERSE AUCTION**

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.

Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit "online sealed bid" in the Reverse Auction. Non-submission of "online sealed bid" by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.

2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
4. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
5. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.

In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.

6. Reverse auction will be conducted on scheduled date & time.
7. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
8. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
9. **In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.**
10. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the „Business Rules of Reverse Auction , which will be communicated before the Reverse Auction.
11. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as *per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
12. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
13. In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

### Important Note to MSE Vendors

1. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
2. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs.
3. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
4. MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.

### Certificate by Chartered Accountant

**This is to Certify that M/S .....,**  
**(hereinafter referred to as 'company') having its registered office at**  
 ..... **is registered under MSMED Act 2006, (Entrepreneur**  
**MeMemorandum No (Part—II).....dtd:.....,**  
**Category: .....** (Micro/Small)). (Copy enclosed).

**Further verified from the Books of Accounts that the investment of the company as on**  
**date ..... as per MSMED Act 2006 is as follows:**

1. **For Manufacturing Enterprises: Investment in plant and machinery** (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.5.0.1722(E) dated October 5, 2006:

**Rs. .... Lacs**

2. **For Service Enterprises: Investment in equipment** (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:

**Rs. .... Lacs**

**The above investment of Rs ..... Lacs is within permissible limit of**  
**Rs ..... Lacs for ..... Micro / Small (Strike off which is not applicable)**  
**Category under MSMED Act 2006.**

**Date:**

**(Signature)**

**Name -**

**Membership number -**

**Seal of Chartered Accountant**

**Annexure – B.**  
**Technical Conditions**

Vendor Code :

Vendor Name : M/s.

Tender No. :

Tender Date :

Tender Due Date :

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Sl.No.	Technical Requirement	Accepted	Not accepted
1.	Supply Materials as per Tender Documents, without any deviation.		
2.	Delivery of materials as per Tender Documents..		
3.	Furnish Certificate for <u>Raw Material Chemistry</u> , either from manufacturer or from Reputed Test House.		
4.	Furnish Certificate for Hardness		
5.	Furnish Temperature-Time Graph for Heat Treatment cycle.		
6.	Pre Inspection certificate from Bearing manufacturers shall be given with supply		
7.	Supply materials with marking (PO No., Name of Vendor)		
8.	Supply materials with suitable preservation and packing		
<u>Deviations, if any ( attach additional sheet, if reqd) :</u>			

Signature :

Date :

Seal :

**Annexure – C.**  
**Commercial Conditions**

Vendor Code:	Vendor Name:	
Tender No.:	Tender Date:	Tender Due Date:

Sl.No	Commercial Terms	Accepted
C1.	<u>Delivery Terms :</u> Free delivery at BHEL/SSTP Stores duly including Packing, Forwarding, Freight and Insurance charges	
C2.	<u>Payment :</u> 100% after 45 days after receipt and acceptance of materials by BHEL	
C3.	<u>LIQUIDATED DAMAGES:</u> It is clearly understood among the parties to the Contract that <b>TIME IS THE ESSENCE OF THE CONTRACT</b> . Therefore, the delivery of the goods specified in the Purchase Order shall be made within the time prescribed. Where the Seller supplies or despatches the goods, beyond the delivery period specified, and the Purchaser will have no obligation to accept the goods. If accepted, Liquidated Damages at the rate of 0.5% (Zero point five Percent) of the value of goods delayed, per week of delay, subject to a maximum of 10% (Ten Percent) or part thereof, will be levied without prejudice to any other relief or compensation due to the Purchaser under any other conditions of the Contract. <u>RISK PURCHASE:</u> Alternatively, the Purchaser, at his option, will be entitled to terminate the Contract and to purchase elsewhere at the risk and cost of Seller, either the whole of the goods or any part, which the Seller has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available the best and nearest available substitute thereof. The Seller shall be liable for any loss, which the Purchaser may sustain by reason of such Risk Purchase(s), in addition to penalty at the rate mentioned in Clause No.06 above.	
C4.	<u>Delivery Period :</u> As per Enquiry schedule.	
C5.	<u>Validity – minimum 60 Days from the date of Tender Opening.</u>	
<u>Deviations if any (attach additional sheet, if required) :</u>		

Sl.No.	Commercial Terms	
C6.	Validity of Offer (Date)	
C7.	Excise Duty (including Cess) % (with Break up details)	
C8.	TVNAT / CST (%)	
C9.	Delivery Period (Days/Weeks/Months) Please refer the Enquiry.	
C10.	Other Cost (if any) - % (or) Rs.	
C11.	Are you Micro/Small/Medium Industry? (If YES, please furnish MSM Regn.No., along with a copy of MSM Certificate)	YES / NO MSM No. MSM Certificate enclosed(Yes/NO)

Signature with Date :

**Respective procurement Groups shall incorporate the applicable conditions in the NIT for Indigenous and Imports separately.**

<b>Payment Term (Indigenous)</b>	
<b>If materials are receivable at Stores/Trichy <u>without PBG</u></b>	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.
<b>If materials are receivable at Stores/Trichy <u>with PBG</u></b>	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials and against 10% PBG valid for the warranty period.
<b>Any deviation in the above payment term will attract loading as mentioned below. “Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.</b>	

<b>Payment Term (Indigenous)</b>	
<b>If materials are receivable at Project Sites without PBG</b>	<b>Option-1:</b> Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement <b>Option-2:</b> Payment term is 90% direct payment after 45 days from the date of dispatch against submission of dispatch documents and balance 10% against site acknowledgement. <b>For this option -2, a loading of 2% on the 90% of the offered value shall be made.</b>
<b>If materials are receivable at Project Sites with PBG</b>	<b>Option-1:</b> Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement and against 10% PBG valid for the warranty period. <b>Option-2:</b> Payment term is 90% direct payment after 45 days from the date of dispatch against submission of dispatch documents and 10% PBG valid for the warranty period and balance 10% against site acknowledgement. <b>For this option -2, a loading of 2% on the 90% of the offered value shall be made.</b>

<b>To be incorporated in all NITs addressed to Indigenous Suppliers</b>	Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Site/Stores with Consignee copy attached. In this case Loading will be 3% on the offered value. In case of Direct to Site (DTS), only 90% through bank will be considered.
	Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection.

**Payment Term (Imports) - To be incorporated in all NITs addressed to Import Suppliers**

BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account.

**Any deviation in the above payment term will attract loading as mentioned below. “Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.**

**In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value.**

**For LC at sight the loading will be considered @ 3.5% on the offered Value.**

**Normally CAD at sight and Confirmed LCs are liable for rejection.**

**Liquidated Damages / Penalty - To be incorporated in all NITs addressed to both Indigenous and Import Suppliers**

Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.

For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

**Guarantee / Warranty Period - To be incorporated in all NITs addressed to both Indigenous and Import Suppliers**

Normally No deviation permitted and the deviated offers are liable for rejection.

**Performance Bank Guarantee - To be incorporated in all NITs addressed to both Indigenous and Import Suppliers**

Normally No deviation permitted and the deviated offers are liable for rejection.

**To be incorporated in all NITs addressed to both Indigenous and Import Suppliers**

BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.