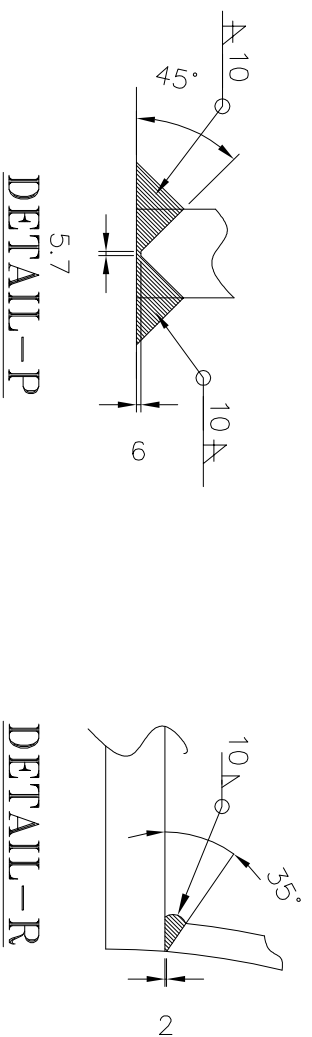
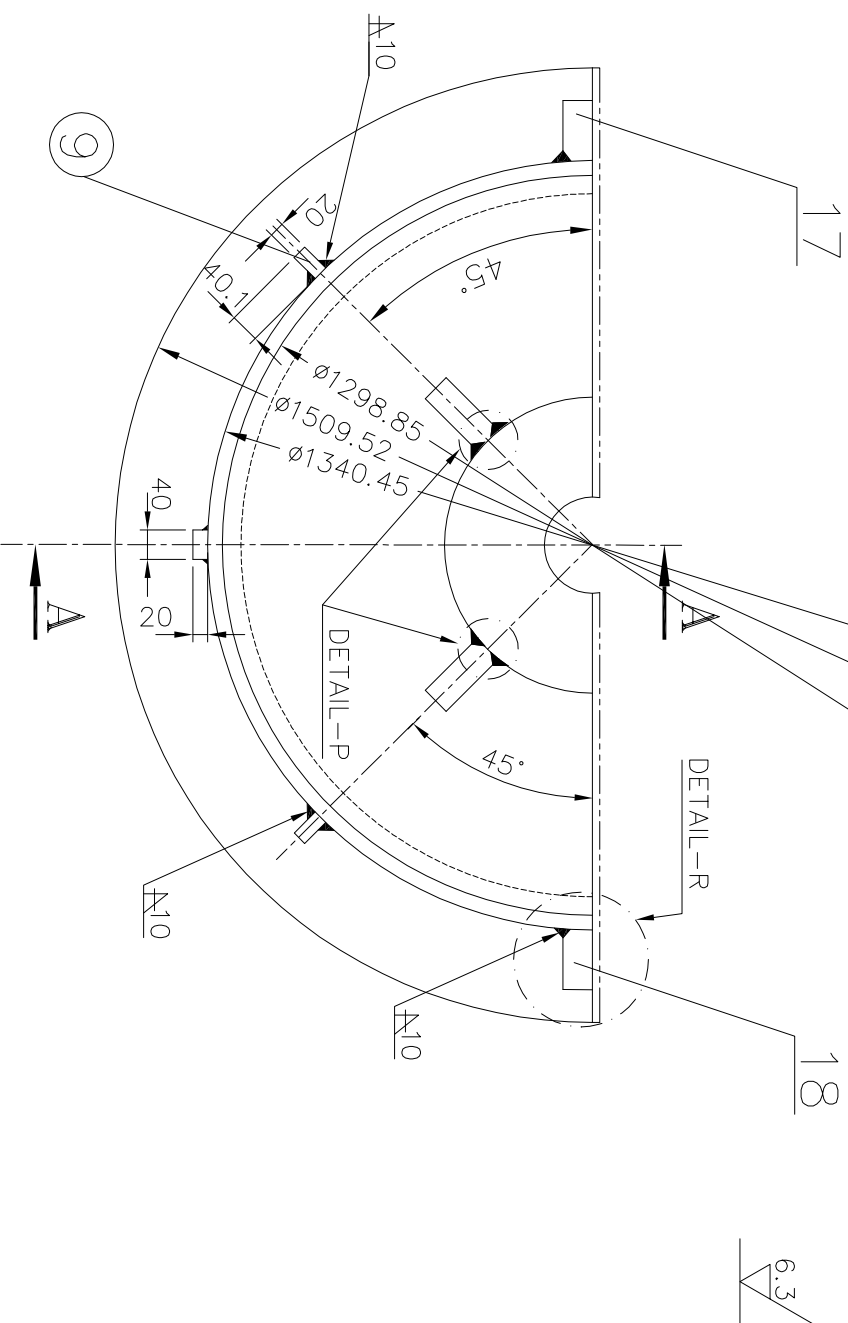
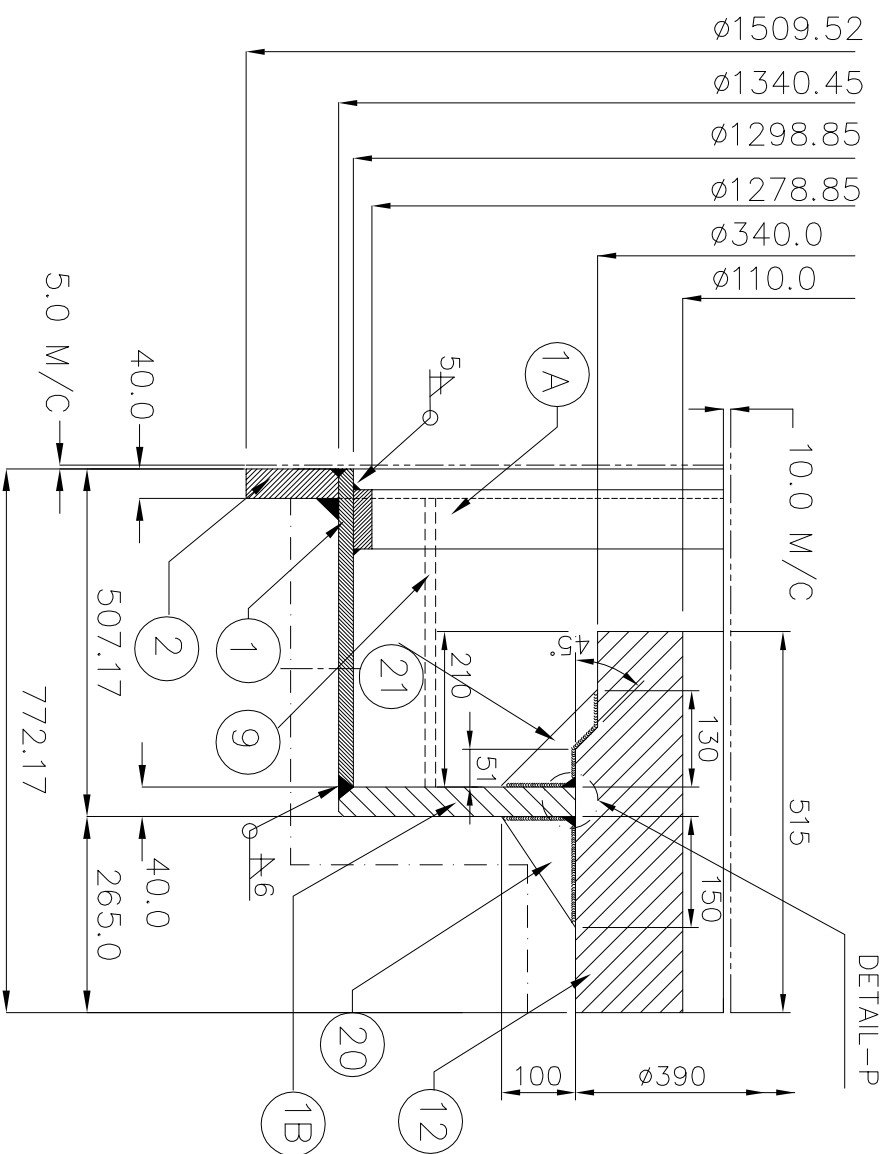


FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)



SECTION A-A

DETAIL-P

DETAIL-R

S.NO.	DESCRIPTION	DRAWING NO	MATERIAL	QTY
21	BRG.HSG. INNER RIB		IS: 2062 FE 410 W	2
20	BRG.HSG. OUTER RIB		IS: 2062 FE 410 W	2
18	BOTTOM SHELL RIGHT FLANGE		IS: 2062 FE 410 W	1
17	BOTTOM SHELL LEFT FLANGE		IS: 2062 FE 410 W	1
12	BEARING HOUSING		IS: 2062 FE 410 W	1
9	STIFFNER		IS: 2062 FE 410 W	3
1B	SHELL END PLATE		IS: 2062 FE 410 W	1
1A	INNER RING		IS: 2062 FE 410 W	1
1	SHELL		IS: 2062 FE 410 W	1

TYPE OF PRODUCT HIGH SPEED COMPRESSOR TEST RIG
OR
NAME OF CUSTOMER/PROJECT FOR 600MM DIA. IMPELLER

BHEL BHARAT HEAVY ELECTRICALS LTD.
CORPORATE R&D
VIKASNAGAR : HYDERABAD

DRN.	NAME	SGN.	DATE	NO.OF VAR.
DRN.	Vinoy Kumar		21.10.13	-NA-
CHD.	KSR Swamy		21.10.13	-NA-
APPD.	Pgowri Shankar		21.10.13	-NA-

DEPT. COMP. CODE	UNTOOL. DIMS. GR. q/m/y	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS
420		1:10	1030	RD DG 3 TM 13 0101	-NA-	-NA-

TITLE CASING BOTTOM HALF
CARD CODE RD DG 3 TM 13 0054
DRAWING NO. RD DG 3 TM 13 0054
REV. 0

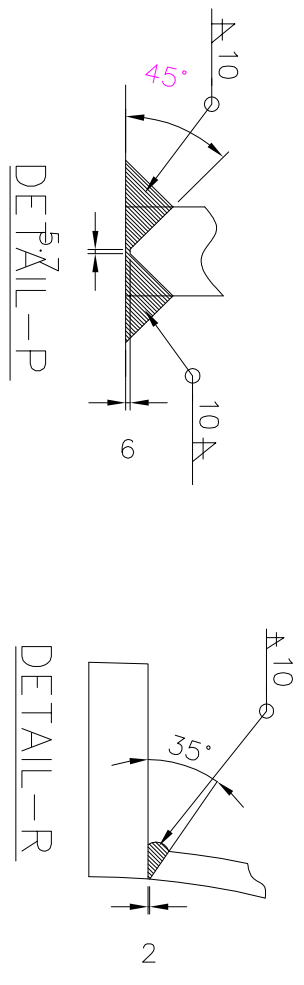
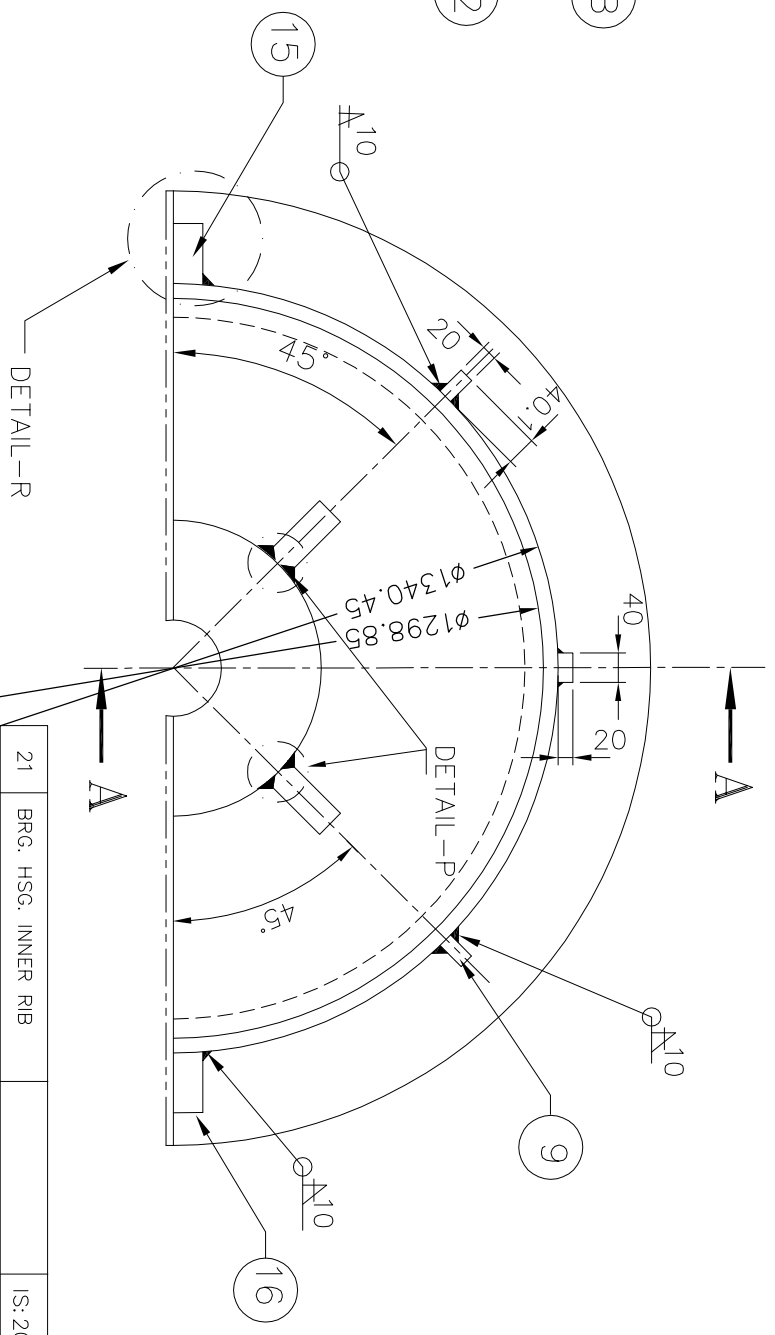
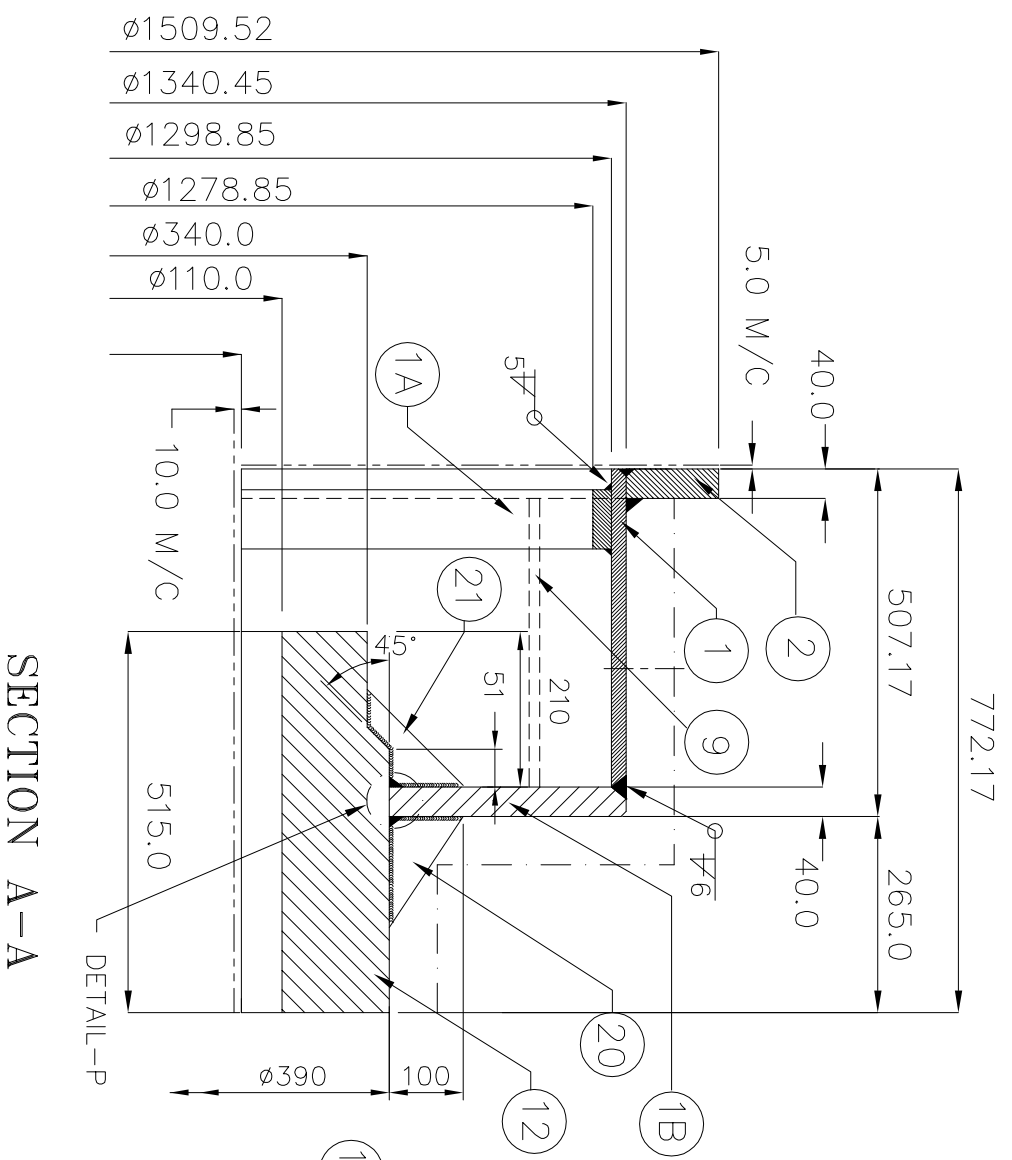
INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 33310500014-S00-R00.DWG THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD

PART NO. CHANGED AS PER ASSY.

SHT. No 03 NO. OF SHT. : 04



S.NO.	DESCRIPTION	DRAWING NO	MATERIAL	QTY
21	BRG. HSG. INNER RIB		IS:2062 FE 410 W	2
20	BRG. HSG. OUTER RIB		IS:2062 FE 410 W	2
16	TOP SHELL RIGHT FLANGE		IS:2062 FE 410 W	1
15	TOP SHELL LEFT FLANGE		IS:2062 FE 410 W	1
12	BRG. HOUSING		IS:2062 FE 410 W	1
9	STIFFNER		IS:2062 FE 410 W	3
1B	SHELL END PLATE		IS:2062 FE 410 W	1
1A	INNER RING		IS:2062 FE 410 W	1
1	SHELL		IS:2062 FE 410 W	1

TYPE OF PRODUCT: HIGH SPEED COMPRESSOR TEST RIG
 OR
 NAME OF CUSTOMER/PROJECT: FOR 600 MM DIA. IMPELEER

BHEL BHARAT HEAVY ELECTRICALS LTD.
 CORPORATE R&D
 VIKASNAGAR : HYDERABAD

DRN.	NAME	SIGN.	DATE	NO.OF VAR.
CHD.	Vinoy Kumar		21.10.13	21.10.13
APPD.	KSR Swamy		21.10.13	21.10.13
	P Gowri Shankar		21.10.13	21.10.13

DEPT. COMP. CODE	UNTOI. DIMS. q/m/y	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS
420		1:10	1030	RD DG 3 TM 13 0101	-NA-	-NA-

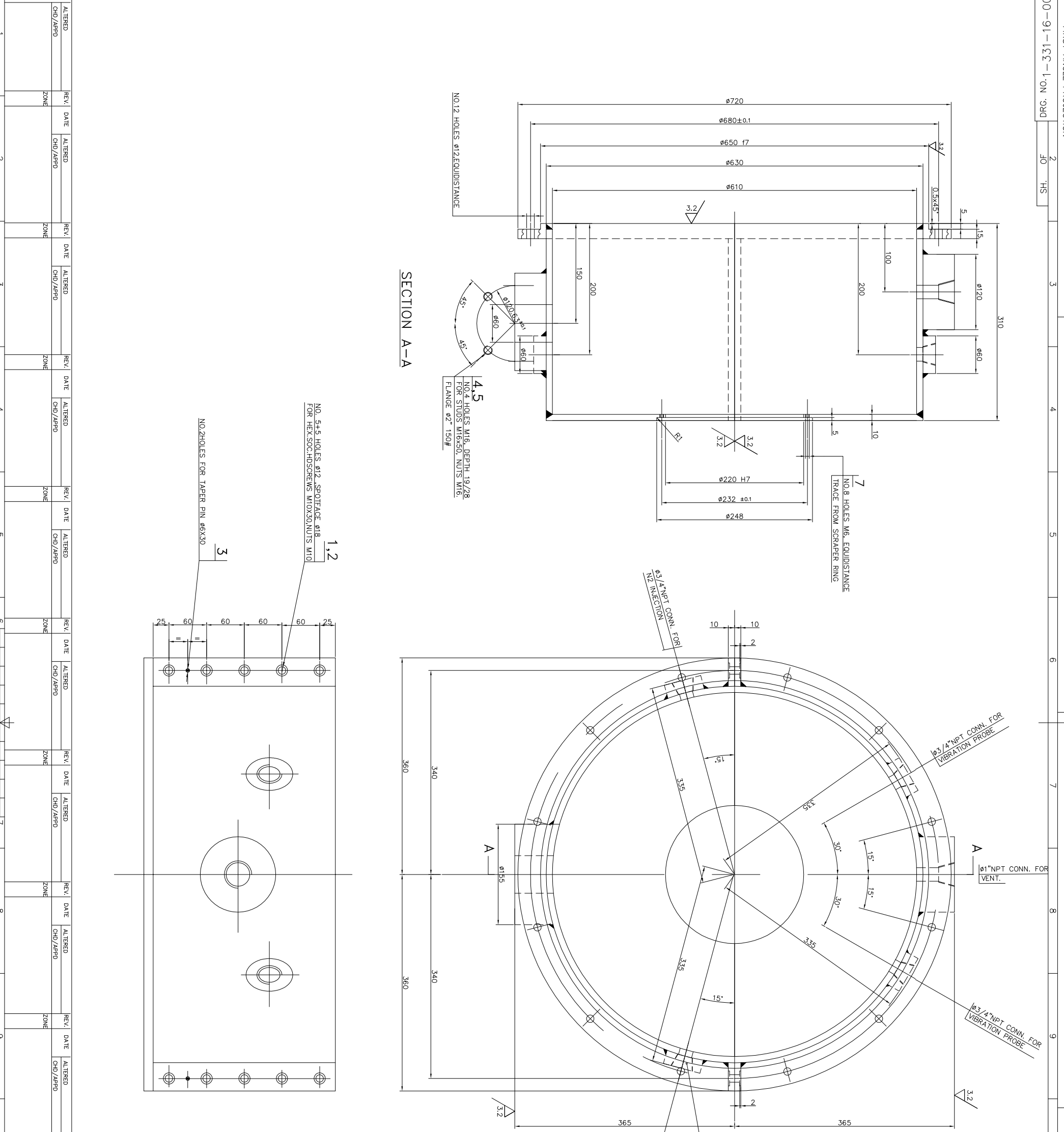
TITLE: CASING TOP HALF
 CARD CODE: RD DG 3 TM 13 0054
 DRAWING NO.: RD DG 3 TM 13 0054
 REV.: 00

INVENTORY NO: _____ SIGN. AND DATE: _____ REF. DRG. NO.: _____ COMPUTER FILE NAME: 33310500014-S00-R00.DWG THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

REV.	DATE	ALTERED	REV.	DATE	ALTERED
CHD/APPD			CHD/APPD		
ZONE			ZONE		
REV. <th>DATE</th> <th>ALTERED</th> <th>REV.</th> <th>DATE</th> <th>ALTERED</th>	DATE	ALTERED	REV.	DATE	ALTERED
01	8.12.07	T R K	01	8.12.07	T R K
ZONE			ZONE		
		PART NOS. CHANGED AS PER ASSY.			

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261



SECTION A-A

MATERIAL :- ASME : SA516

S.NO.	DESCRIPTION	MATL.	QTY.	WT.Kg	REMARKS
7	HEX. HD. SCREW M6x15	IS: 1364	8		
6	Ø 3/4" NPT PLUG		4		
5	HEX. NUTS M16	IS: 1364	4		
4	STUDS M16x50	IS: 1862	4		
3	TAPER PINS Ø6x30	IS: 3524	2		
2	HEX. NUTS M10	IS: 1364	10		
1	HEX. SOC.HD.SCREW M10x30	IS: 2269	10		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
HIGH SPEED COMPRESSOR TEST RIG FOR 600 MM DIA. IMPELLER

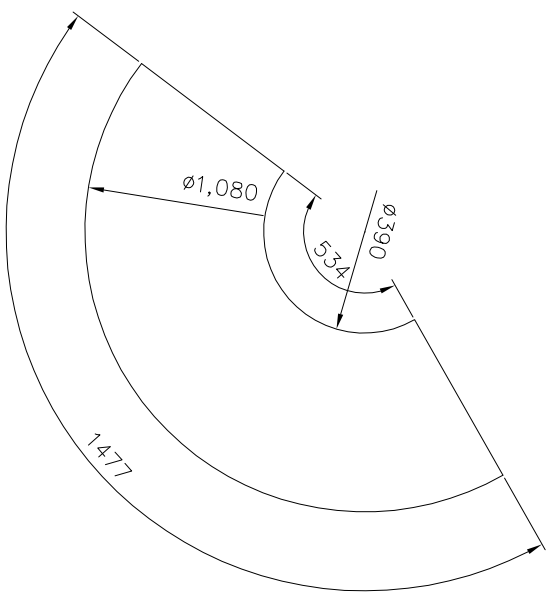
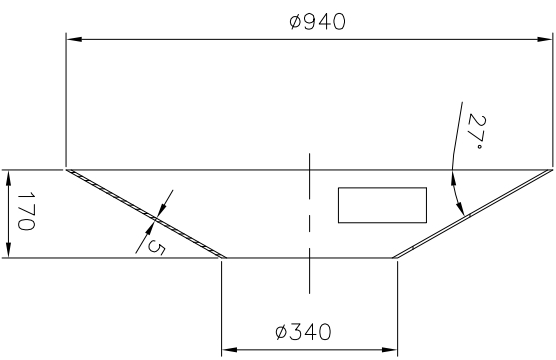
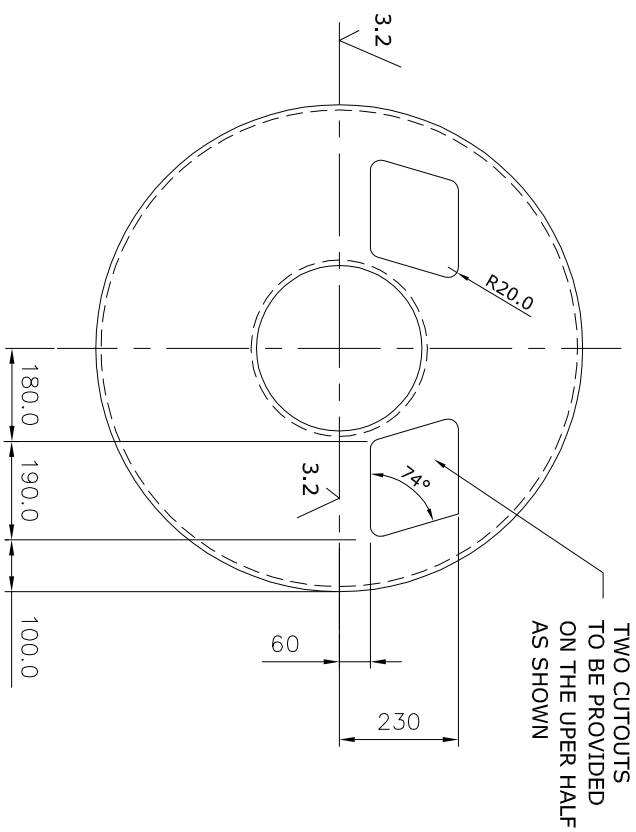
BHARAT HEAVY ELECTRICALS LIMITED
 CORP. R&D DIVISION, Vikasranga
 HYDERABAD - 500 093

DRN.	VINAY KUMAR	DATE	23.10.13
CHD.	KSR SWAMY	DATE	23.10.13
APRD.	P. GOVIND SWAMY	DATE	23.10.13

REF: TO ASSY DRG. RD DG 3 TM 13 0101

DEPT.	050	SCALE	NTS	WEIGHT (KG)	REF. TO ASSY DRG.
CODE	TM1	SCALE	NTS	RD DG 3 TM 13 0101	ITEMS NO. 11
TITLE	END COVER (DISCHARGE SIDE)		DRAWING NO.	RD DG 3 TM 13 0056	REV. 00
SHEET NO. : 01			NO OF SHEETS : 01		

REV.	DATE	CHD/APRD	ZONE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			



DEVELOPED SHEET

DRG.NO.

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COMP. FILE NAME

REF.DRG.NO.

INVENTORY NO.

REV. DATE	ALTERED	APPD.	REV. DATE	ALTERED	APPD.
	CHECKED		01		

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...
 1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
 2. CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
 3. INTERNAL M/CD CORNER RADI 1 TO 0.7.
 4. THE SURFACE ROUGHNESS, WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

ITEM NO	DESCRIPTION	MATERIAL SPECN.	QTY
GUIDE PLATE 2/2	IS:2062 FE 410 W		01

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
HIGH SPEED COMPRESSOR TEST RIG FOR 600 MM DIA. IMPELLER



BHARAT HEAVY ELECTRICALS LIMITED
 Corp. R&D Division, Vikasnagar
 HYDERABAD - 500 093

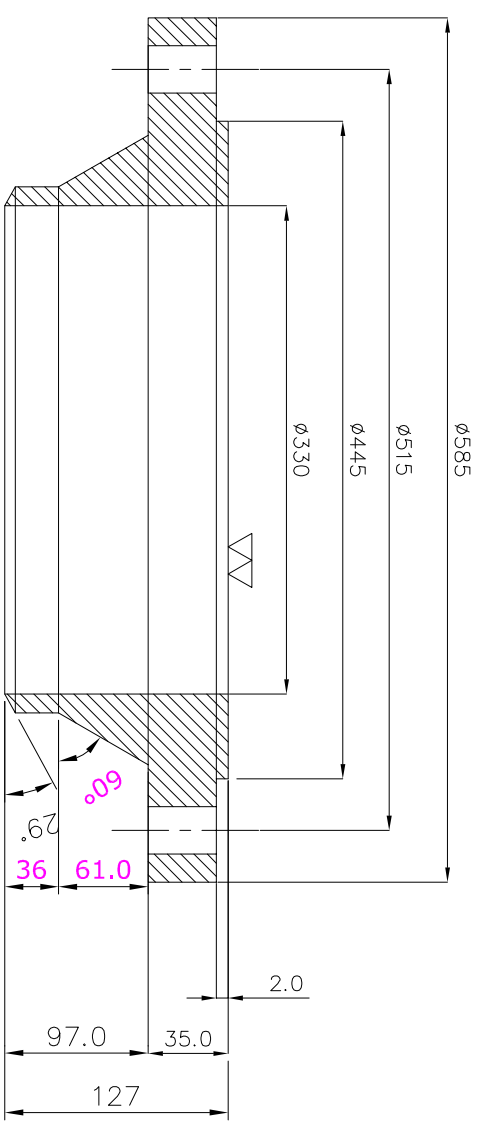
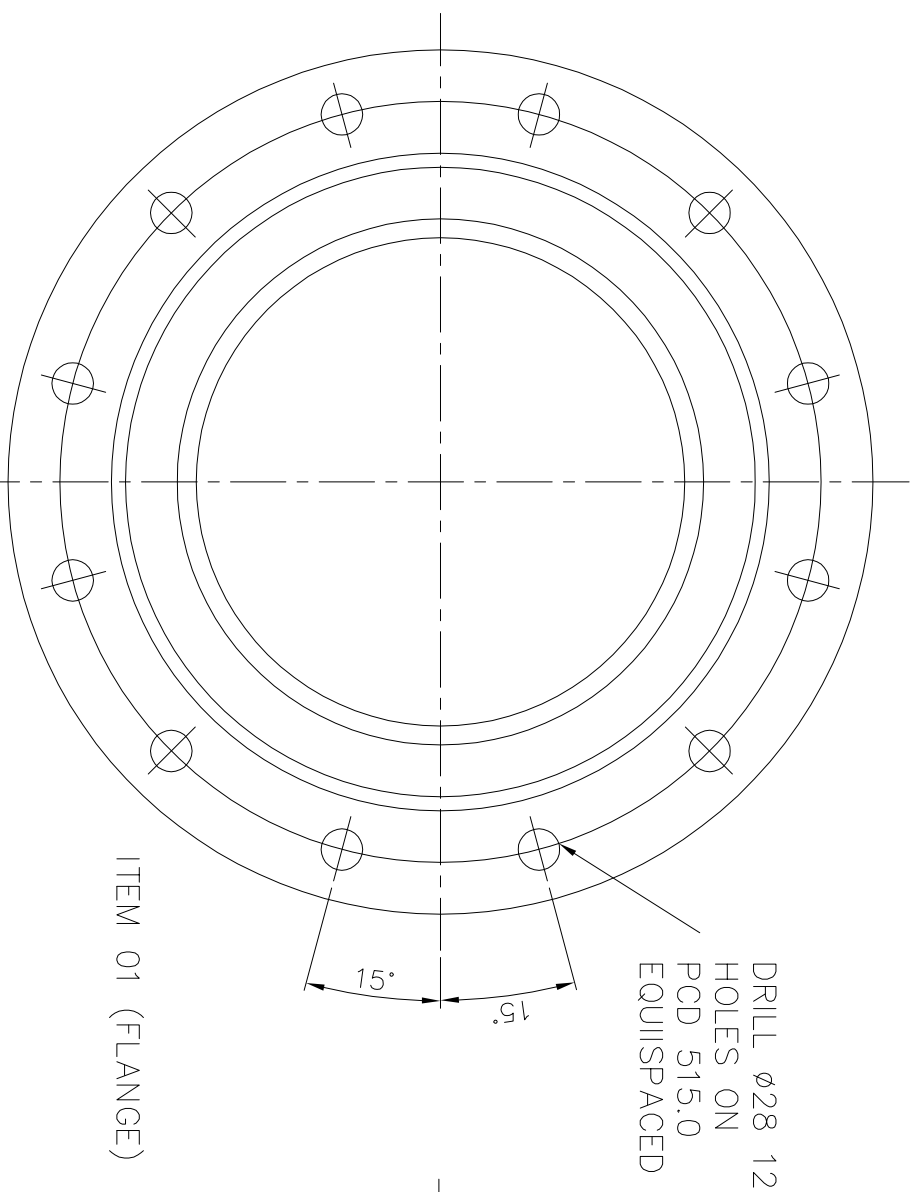
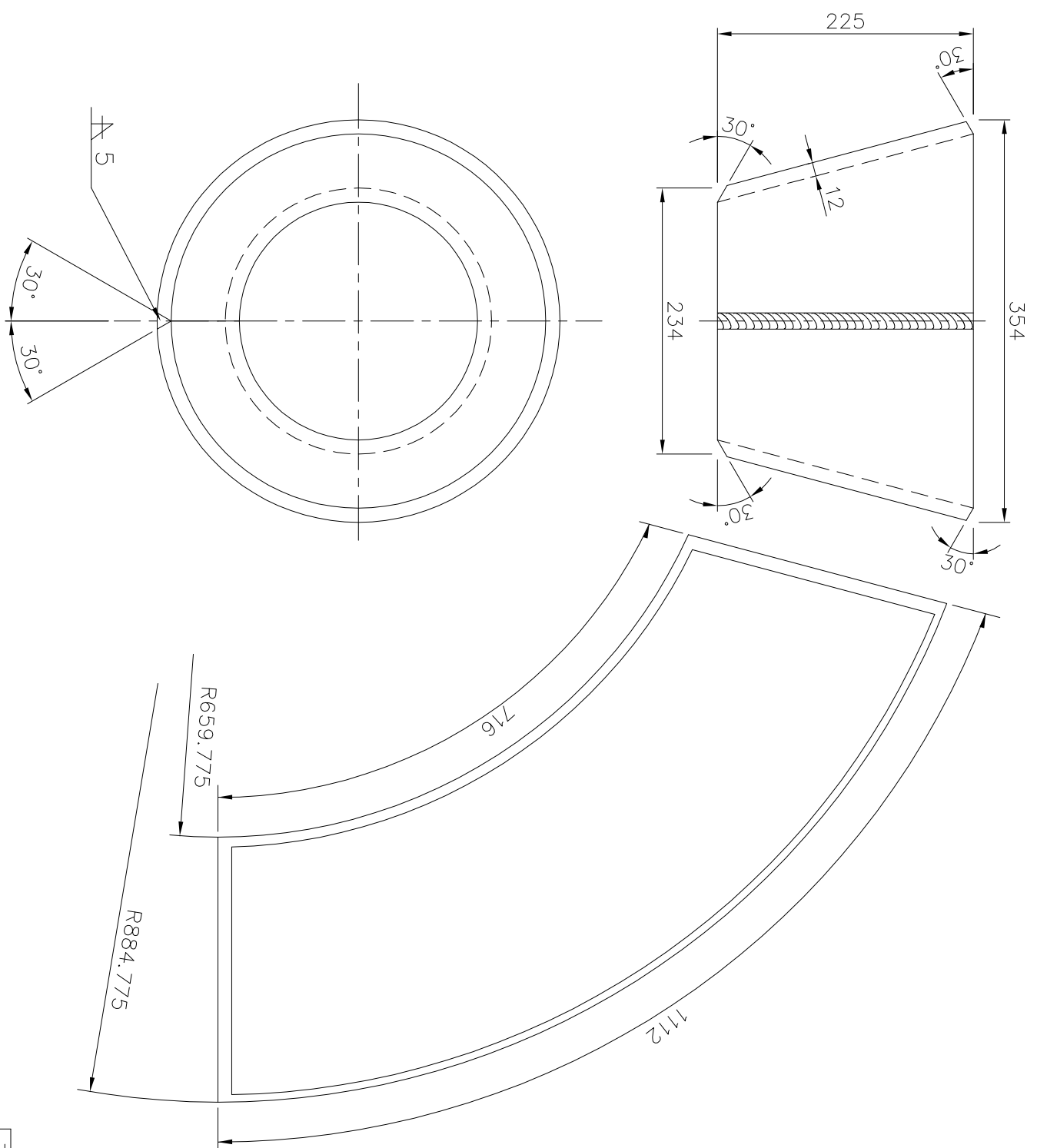
DRN.	NAME	DATE	NO. OF VAR.
CHD.	SIGN.		
APPD.			

DEPT.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	NO. OF ITEMS
050	NTS		RD DG 3 TM 13 0101	
CODE				
TML				

TITLE	DRAWING NO.	REV.
DISCHARGE GUIDE PLATE 2/2	RD DG 3 TM 13 0063	00
	SHEET NO.: 01	NO. OF SHEETS: 01

0900 31 TM 3 DG 3 RD
 DRG. NO. 20 JO 20 THS

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ITEM 02 (CONE)

ITEM 01 (FLANGE)

TYPE OF PRODUCT **HIGH SPEED COMPRESSOR TEST RIG**
 OR
 NAME OF CUSTOMER/PROJECT **FOR 600 MM DIA. IMPELLER**

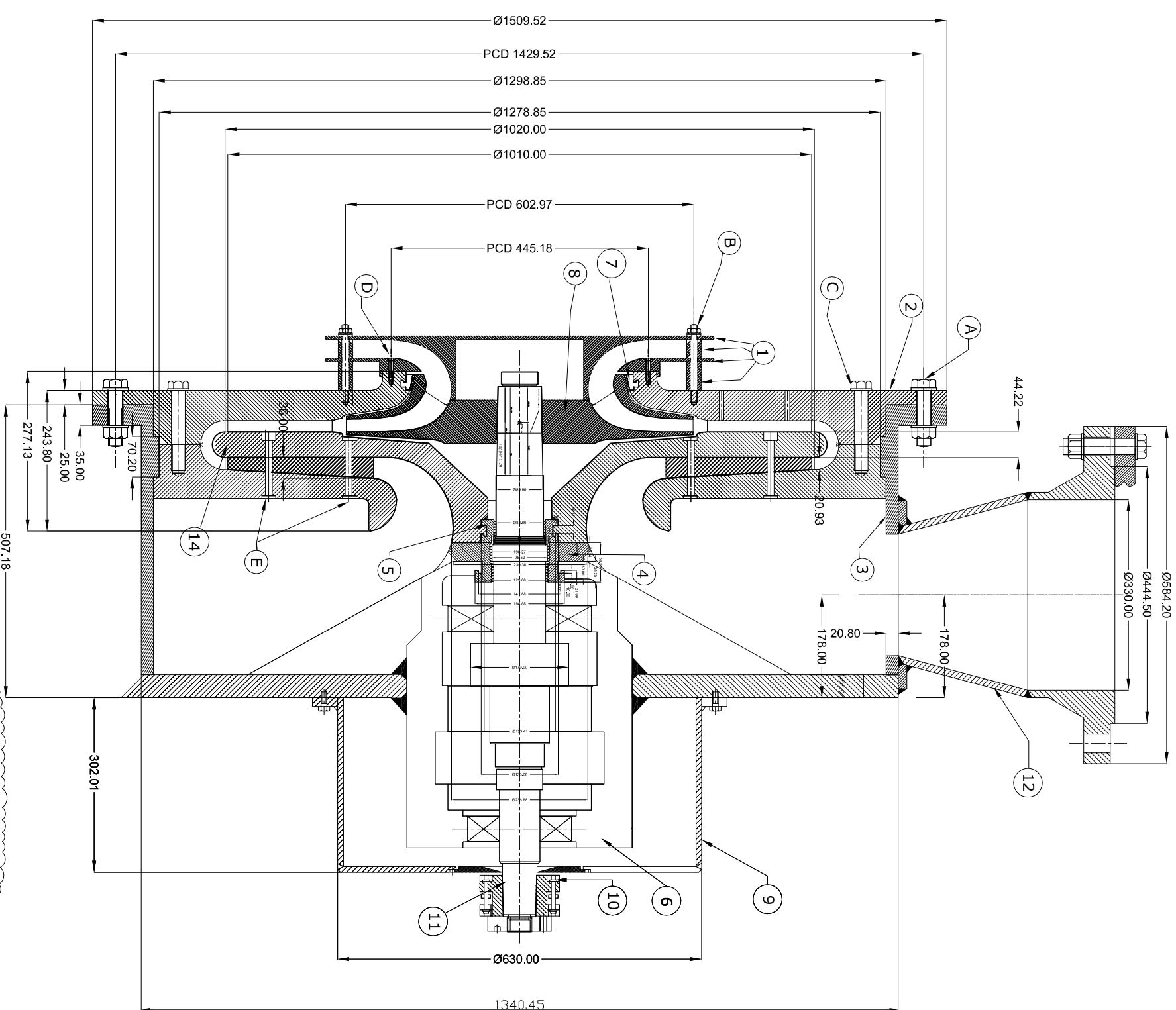
		BHARAT HEAVY ELECTRICALS LTD	
CORPORATE R&D : VIKASNAGAR		HYDERABAD - 500 093	
DRN.	NAME	SIGN.	DATE
Vinoy Kumar			21.10.13
CHD.	NAME	SIGN.	DATE
KSR Swamy			21.10.13
APPD.	NAME	SIGN.	DATE
P Gowri Shankar			21.10.13

DEPT. TML	UNTL. DIMS. GR. q/m/y	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO
050		NTS		RD DG 3 TM 13 0060 P1	13

TITLE	CARD CODE	DRAWING NO.	REV.
DISCHARGE NOZZLE DETAILS		RD DG 3 TM 13 0060	
	SHT. No	NO. OF	SHT.02

INVENTORY NO	SIGN. AND DATE	REF. DRG. NO.	COMPUTER FILE NAME
PCC			33310500012-S00-R00.DWG
REV.	DATE	ALTERED	CHD/APPD
ZONE			

REV.	DATE	ALTERED	CHD/APPD
ZONE			



SHAFT DIA. AT ID OF IMPELLER SHOULD MATCH WITH ROTOR DYNAMICS CONSIDERATIONS OR THE SAME 70MM DIA. SHALL BE CONSIDERED FOR ROTOR DYNAMICS TO AVOID CHANGES IN SEALS (THICKNESS), SHAFT DRG. AND DIAPHRAGMS.

THIS DRG. IS TENTATIVE

NOTE :

- THIS DRAWING IS STUDY DRAWING WHICH SHOWS THE NEW PARTS TO BE MANUFACTURED FOR HIGH SPEED COMPRESSOR TEST RIG.
- ITEMS MARKED (*) IN THE LIST BELOW EXCLUDED FROM THE VENDOR'S SCOPE OF SUPPLY.
- ALL DIAPHRAGMS SHOULD BE MADE OF 2062-FE-410-W
- ALL FASTENERS SHOULD BE ALONG WITH NUTS, WASHERS, AND LOCK WASHERS WHEREVER NEEDED

GENERAL NOTE :

- IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- GENERAL TOLERANCE FINISH WHERE IT IS NOT SPECIFIED IS ± 0.1 .
- GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 1.6 MICRONS.
- ALL MECHANICAL SEALS ARE HORIZONTAL SPLIT SEALS.
- REFERENCE DRAWINGS FURNISHED ARE COMMON FOR BOTH STAGE-1 AND STAGE-16.

ITEM NO	DEIGNATION	SIZE	QTY.
E	HEX. HEADED SCREWS	M12 X 103 L	20
D	COUNTER SUNK SCREW	M8 X 27 L	10
C	HEEX. HEADED BOLTS	M24 X 130 L	10
B	STUD BOLTS	M12 X 170 L	10
A	HEX. HEADED BLOLTS	M24 X 100 L	10

FASTNER LIST

* 14	RETURN CHANNEL VANES			
* 13	LOCK NUT			
* 12	DISCHARGE NOZZLE			
* 11	SHAFT			
* 10	COUPLING			
* 09	BEARING HSG. END COVER			
* 08	IMPELLER			
* 07	SEAL ON IMPLER			
* 06	BEARING HOUSING			
* 05	SEAL ON SHAFT			
* 04	SEAL ON BEARING			
* 03	DIAPHRAGM CASING			
02	DAIPHRAM ASSEMBLY	RD DG 3 TM 13 1602	01 IS : 2062 FE 410 W	
	DAIPHRAM PART-3	RD DG 3 TM 13 1605	02 IS : 2062 FE 410 W	
	DAIPHRAM PART-2	RD DG 3 TM 13 0604	02 IS : 2062 FE 410 W	
01	DAIPHRAM PART-1	RD DG 3 TM 13 1603	01 IS : 2062 FE 410 W	
	SUCTION CASING ASSEMBLY	RD DG 3 TM 13 1613	01 IS : 2062 FE 410 W	
	SLEAVE FOR INLET CASING	RD DG 3 TM 13 1608	01 IS : 2062 FE 410 W	
01	SUCTION CASING PART-2	RD DG 3 TM 13 1607	01 IS : 2062 FE 410 W	
	SUCTION CASING PART-1	RD DG 3 TM 13 1606	01 IS : 2062 FE 410 W	
ITEM	DESCRIPTION	DRAWING NO	No.of Sht.	MATERIAL

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING

DEPT. 050

CODE TML

TITLE ASSY. OF NEW BT4-1 LOW FLOW IMPELLER DIA. 600 MM STAGE (STUDY DRAWING) SECTIONAL FRONT VIEW

DRAWING NO. RD DG 3 TM 13 1601

SHEET NO. 01 NO OF SHEETS. 01

REV. 0

BHARAT HEAVY ELECTRICALS LIMITED
Corp. R&D Division, Vikasnagar
HYDERABAD - 500 093

DRN. Vinay Kumar
CHD. KSR Swamy
APPD. P Gowri Shankar

DATE 21.8.13

NO.OF VAR.

REF. TO ASSY DRG.

NO.OF ITEMS