

ANNEXURE - I


List of Drawings Enclosed

Performance Testing of 600 MM Dia. Impeller Low Flow Stage

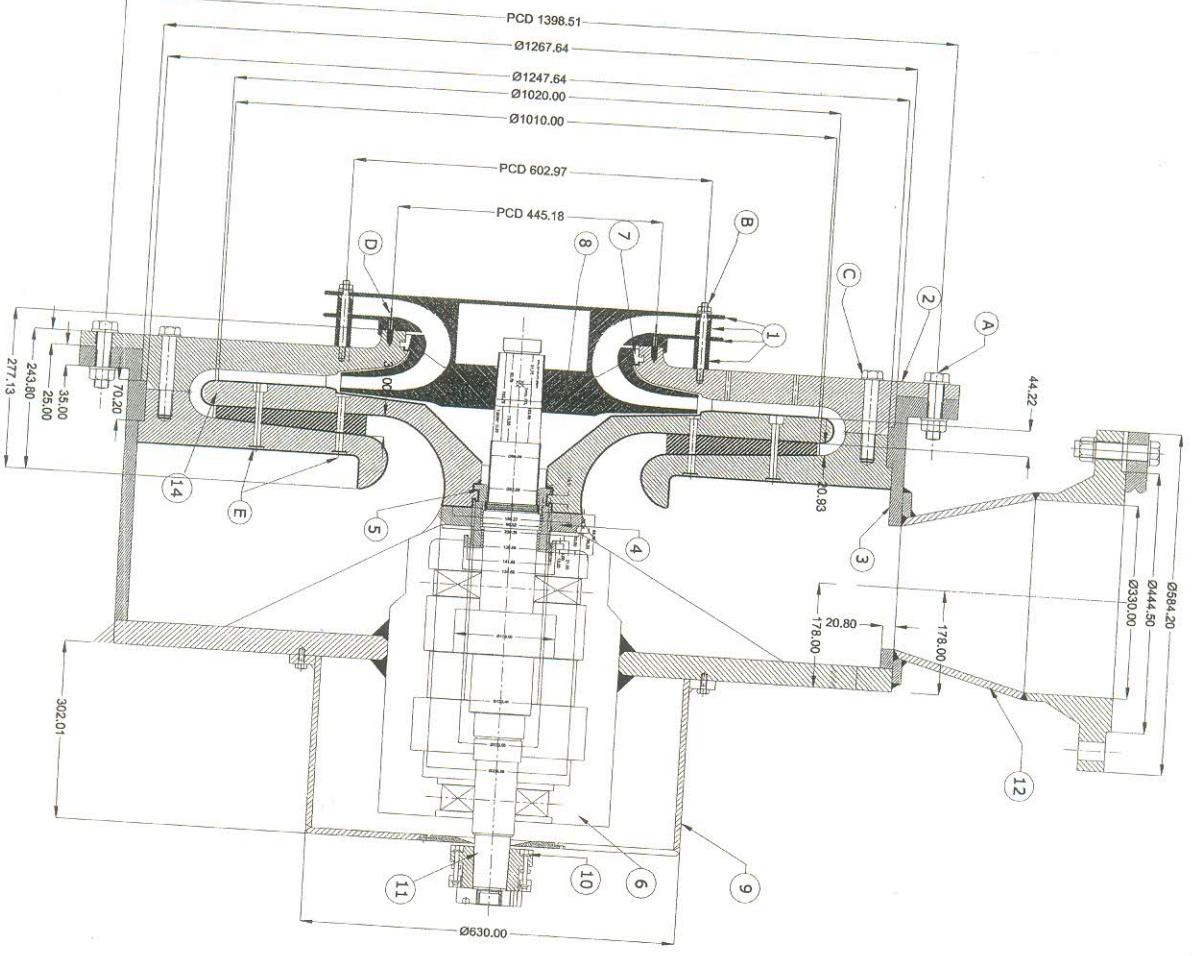
Sl.No.	Title	Drawing No.	No. of Sheets
1	Assy. of New BT4-1 Low Flow Impeller Dia. 600 MM Stage (Study Drawing) sectional front view	RD DG 3 TM 13 1601	1
2	Diaphragm assembly	RD DG 3 TM 13 1602	1
3	Diaphragm Part -1	RD DG 3 TM 13 1603	1
4	Diaphragm Part -2	RD DG 3 TM 13 1604	2
5	Diaphragm Part -3	RD DG 3 TM 13 1605	2
6	Suction Casing Assembly	RD DG 3 TM 13 1613	1
7	Suction Casing Part-1	RD DG 3 TM 13 1606	1
8	Suction Casing Part-2	RD DG 3 TM 13 1607	1
9	Sleeve for Inlet casing	RD DG 3 TM 13 1608	1

Performance Testing of 600 MM Dia. Impeller High Flow Stage.

Sl.No.	Title	Drawing No.	No. of Sheets
1	Assy. of New BT4-1 High Flow Impeller Dia. 600 MM Stage (Study Drawing) sectional front view	RD DG 3 TM 13 0101	1
2	Diaphragm assembly	RD DG 3 TM 13 0102	1
3	Diaphragm Part -1	RD DG 3 TM 13 0103	1
4	Diaphragm Part -2	RD DG 3 TM 13 0104	2
5	Diaphragm Part -3	RD DG 3 TM 13 0105	2
6	Suction Casing Assembly	RD DG 3 TM 13 0113	1
7	Suction Casing Part-1	RD DG 3 TM 13 0106	1
8	Suction Casing Part-2	RD DG 3 TM 13 0107	1
9	Sleeve for Inlet casing	RD DG 3 TM 13 0108	1


K S R SWAMY
MANAGER / TML

FIRST ANGLE PROJECTION



THIS DRG. IS TENTATIVE

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

GENERAL NOTE :

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

FASTENER LIST

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 BOLTS	M24 X 100 L	10

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

TYPE OF PRODUCT: NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM
 NAME OF CUSTOMER/PROJECT: COMPRESSOR STAGE TESTING

BHARAT HEAVY ELECTRICALS LIMITED
 Comp. R&D Division, Vikasnagar
 HYDRABAD - 500 093

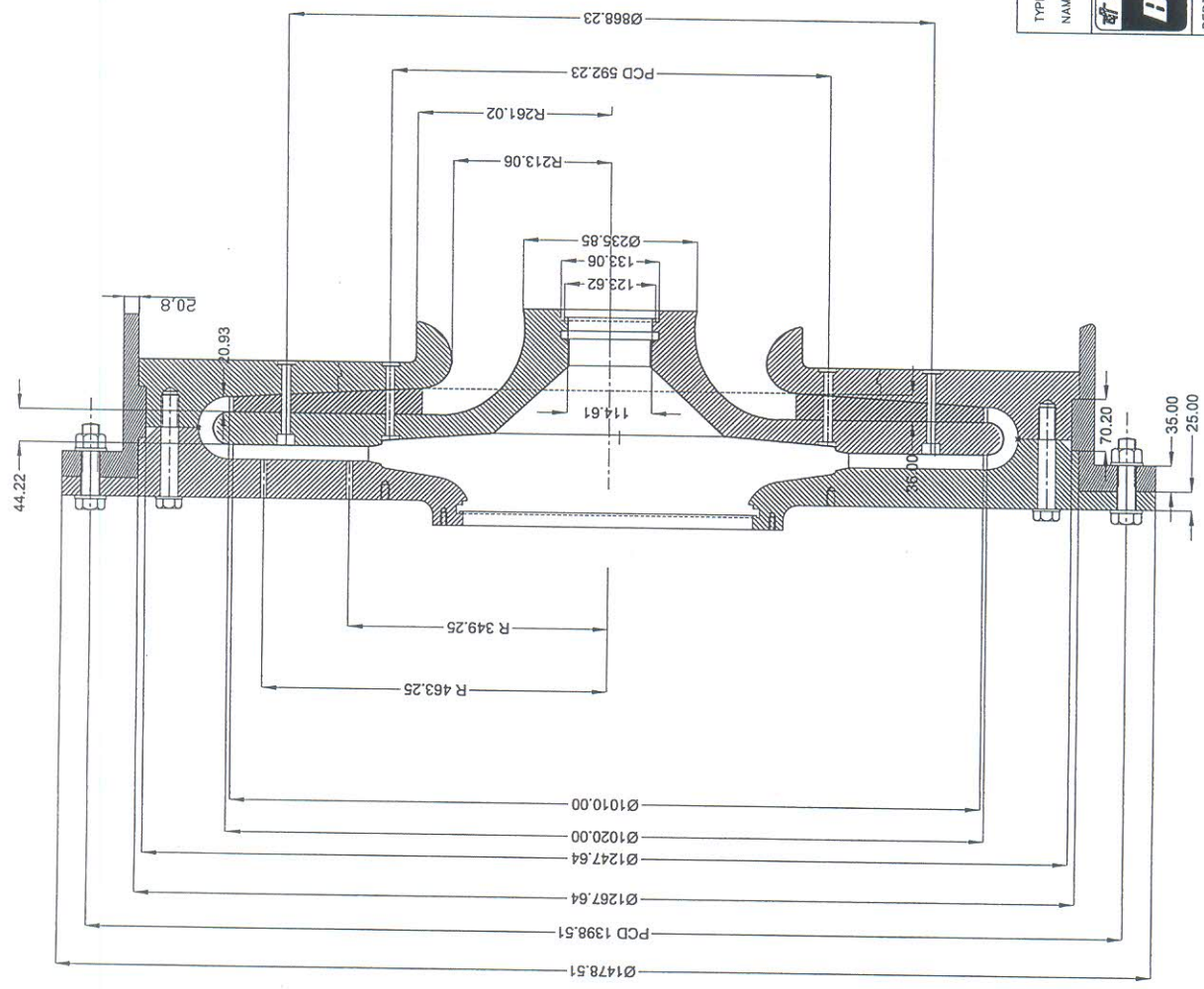
DRN: VIKAY KUMAR
 CHD: KSR SWAMY
 APPLD: P GOVIND SHANKAR

DATE: 21.8.13
 NO. OF VARS: 01

DEPT: 050
 CODE: TML
 SCALE: NTS
 WEIGHT(Kg):
 REF TO ASSY DRG:
 DRAWING NO: RD DG 3 TM 13 1601
 SHEET NO: 01
 NO OF SHEETS: 01

CALL DIMENSIONS ARE IN mm

FIRST ANGLE PROJECTION



THIS DRG. IS TENTATIVE

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING



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

NAME	SIGN.	DATE	NO.OF VAR.
Vinay Kumar		21.8.13	
KSR Swamy			
P Gowri Shankar			

DRN.	CHD.	APPD.	WEIGHT(kg)	SCALE	ITEM NO.	NO.OF ITEMS
			---	NTS	RD DG 3 TM 13 1601	--

DEPT.	CODE	TITLE	DRAWING NO.	REV.
050	TML	DIAPHRAM ASSEMBLY	RD DG 3 TM 13 1602	0

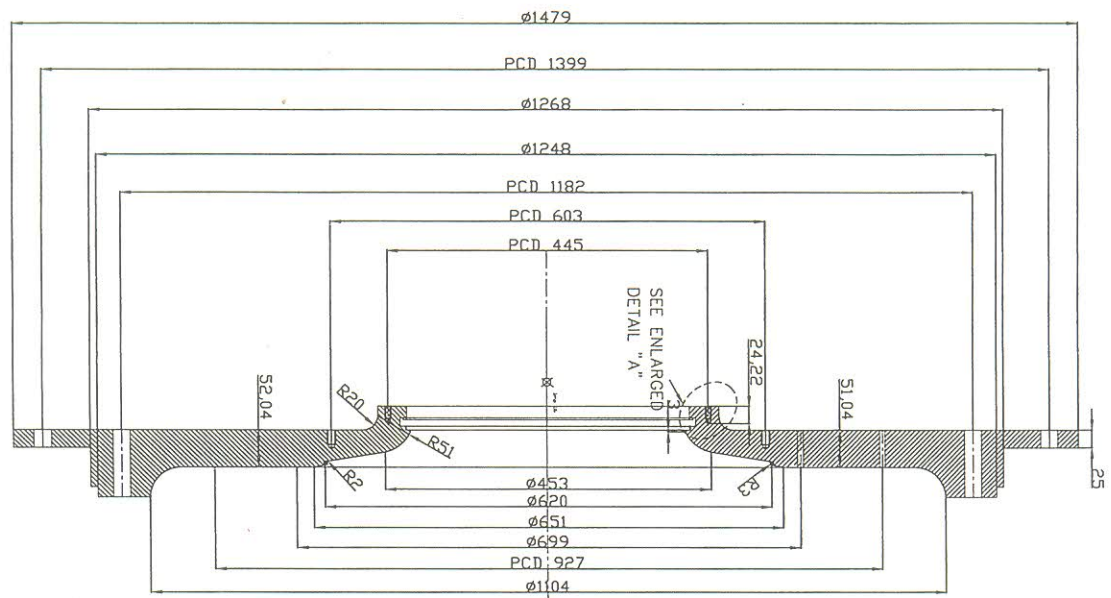
- NOTE :
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 - 4) ALL MECHANICAL SEALS ARE HORIZONTAL SPLIT SEALS.
 - 5) REFERENCE DRAWINGS FURNISHED ARE COMMON FOR BOTH STAGE-6 AND STAGE-9.

INVENTORY NO. REFERENCE NO. COMP. FILE NAME. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

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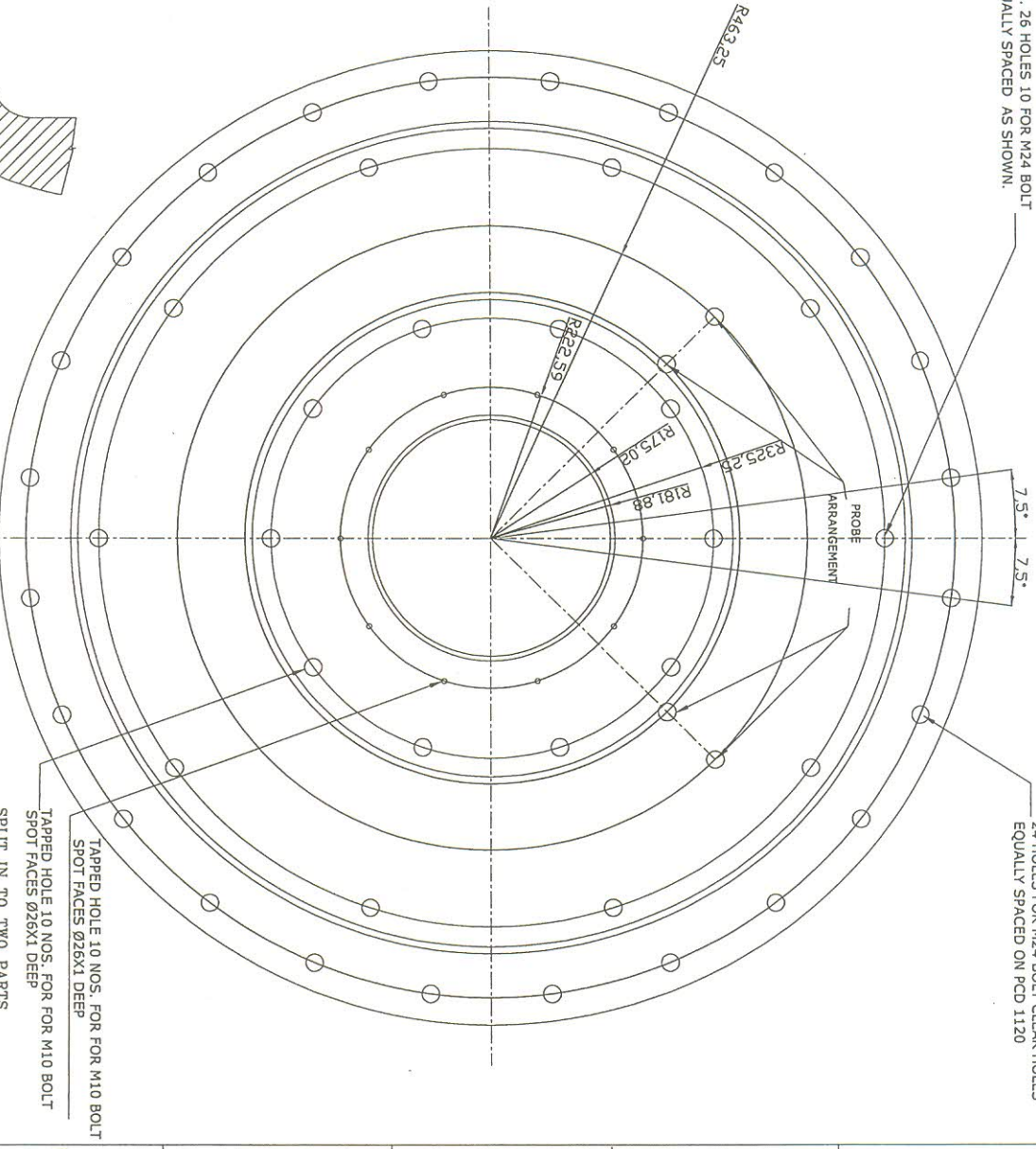
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN MM)



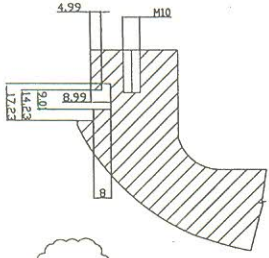
DIA. 26 HOLES 10 FOR M24 BOLT EQUALLY SPACED AS SHOWN.

24 HOLES FOR M24 BOLT CLEAR HOLES EQUALLY SPACED ON PCD 1120



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 - 4) ALL MECHANICAL SEALS ARE HORIZONTAL SPLIT SEALS.

DETAIL "A"



THIS DRG. IS TENTATIVE

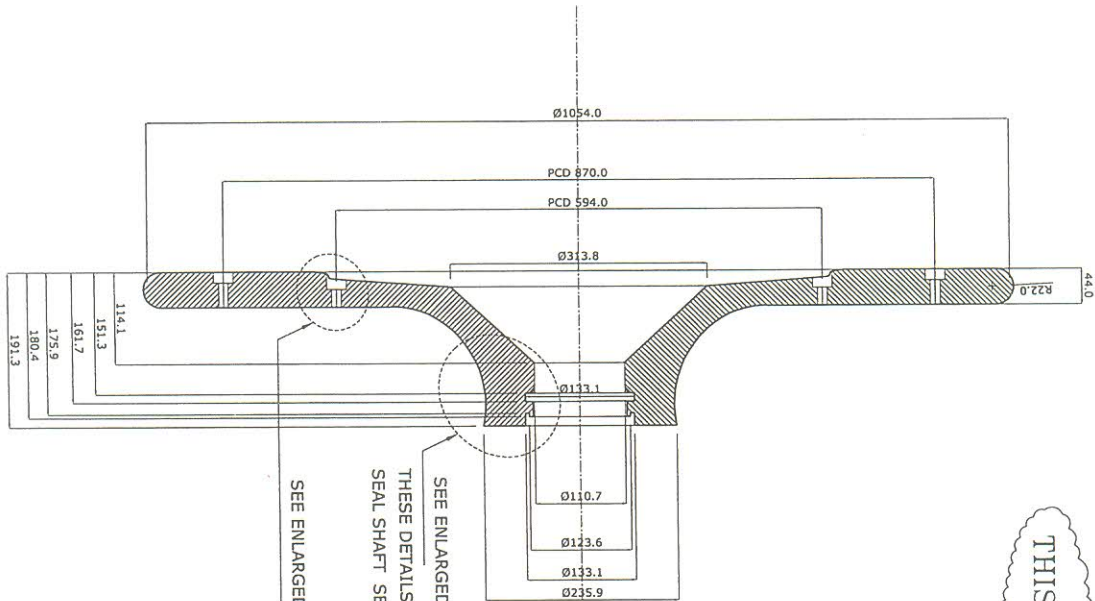
		BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDRABAD - 500 093		NAME: Vinyay Kumar CHD: KSR Swamy APD: P Govind Shankar		SIGN. DATE:		NO. OF VARS.	
TYPE OF PRODUCT NAME OF CUSTOMER/PROJECT NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING		DEPT.: 050 CODE: TML		SCALE: NTS WEIGHT(KG): ---		REF. TO ASSY DRG. RD DG 3 TM 13 1603		ITM NO. REV.	
TITLE DIAPHRAM PART -1		DRAWING NO. RD DG 3 TM 13 1603		SHEET NO. 01		NO. OF SHEETS. 01		REV.	

FIRST ANGLE PROJECTION

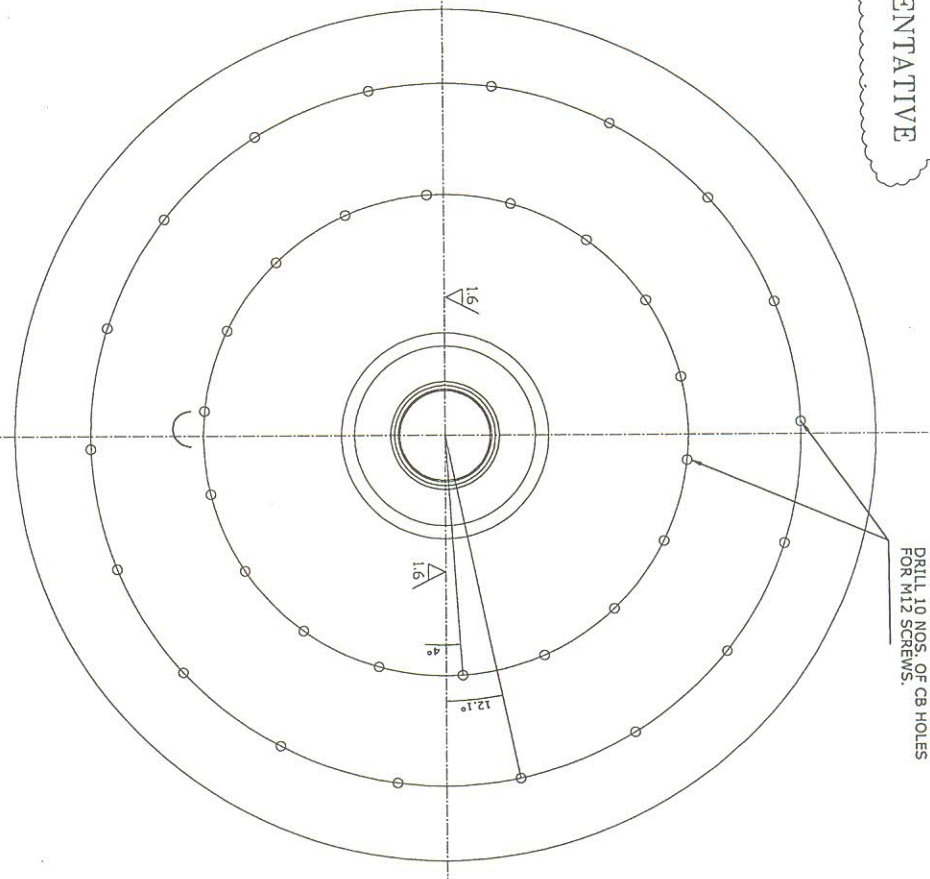
Ø584.20

(ALL DIMENSIONS ARE IN mm)

THIS DRG. IS TENTATIVE



SEE ENLARGED DETAIL IN SHEET 02
 THESE DETAILS WILL CHANGE W.R.T
 SEAL SHAFT SEAL
 SEE ENLARGED DETAIL IN SHEET 02



DRILL 10 NOS. OF CB HOLES
 FOR M12 SCREWS.

SPLIT IN TO TWO PARTS

INVENTORY NO. REF.DRG.NO. COMP. FILE NAME 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.

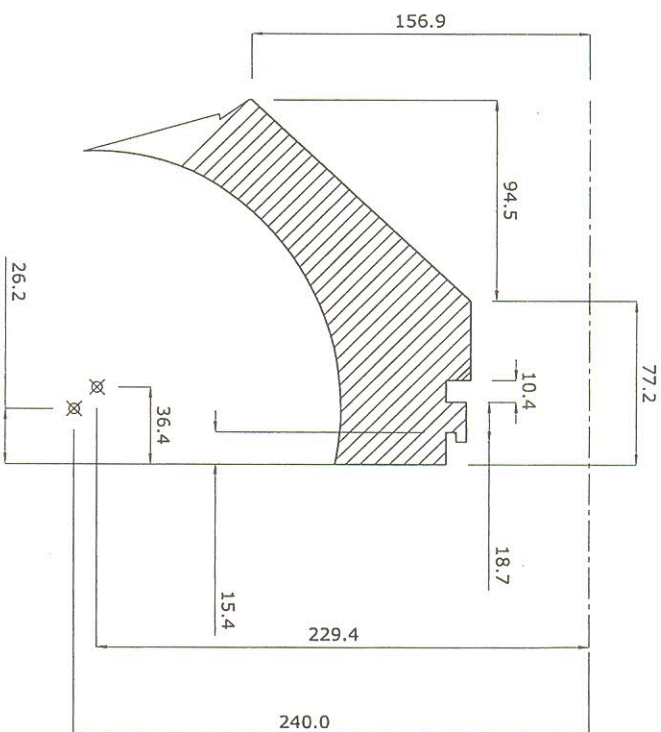
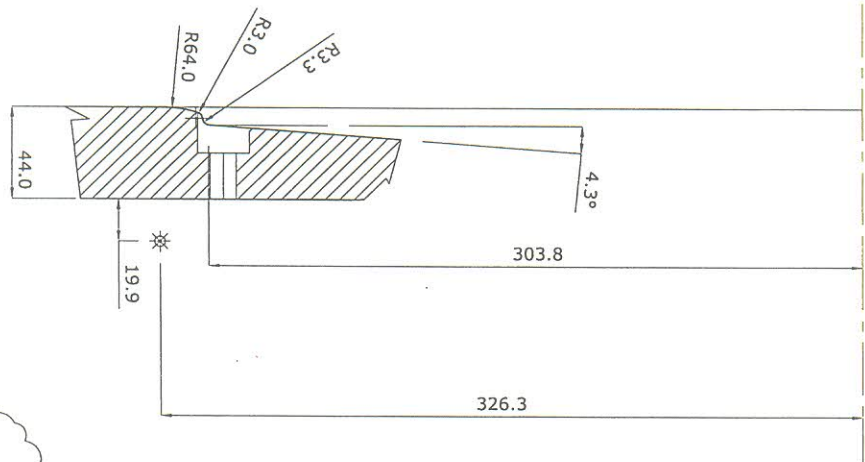
- NOTE :
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 - 2) GENERAL TOLERANCE WHERE IT IS NOT SPECIFIED IS ± 0.1 .
 - 3) GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 1.6 MICRONS.
 - 4) ALL MECHANICAL SEALS ARE HORIZONTAL SPLIT SEALS.

TYPE OF PRODUCT NEW BT4-(LOW FLOW) IMPELLER DIA. 600 MM		NAME OF CUSTOMER/PROJECT COMPRESSION STAGE TESTING	
DEPT. 050		APPRO. P GOWRI SHANKAR	
T.M.L.		SIGN. DATE	
SCALE NTS		NO. OF VARS.	
WEIGHT(Kg)		NO. OF SHEETS. 02	
RD DG 3 TM 13 1601		REV.	
DRAWING NO. RD DG 3 TM 13 1604		SHEET NO. 01	
TITLE DIAPHRAM PART-2		NO. OF SHEETS. 02	

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN MM)

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THIS DRG. IS TENTATIVE

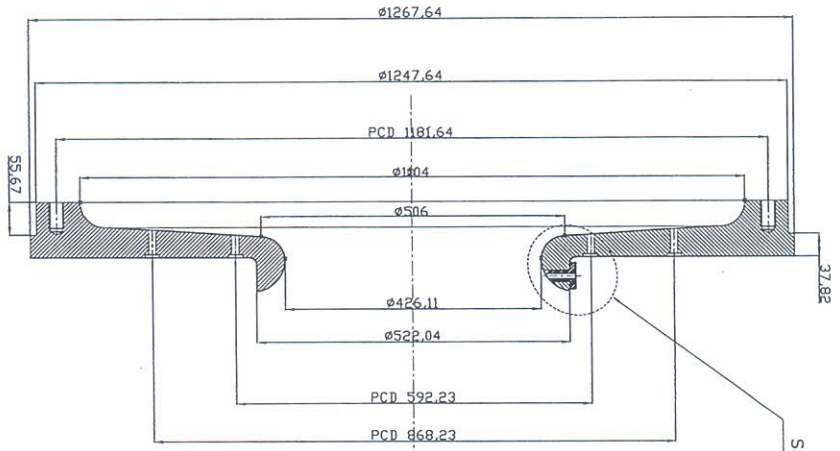
GENERAL NOTE:
IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
GENERAL DIMENSIONAL TOLERANCE IS ±0.1 MM
THESE DETAILS WILL CHANGE W.R.T SHAFT SEAL.

INVENTORY NO. REF.DRG.NO. COMP. FILE NAME

TYPE OF PRODUCT		NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM	
NAME OF CUSTOMER/PROJECT		COMPRESSOR STAGE TESTING	
DEPT.		BHARAT HEAVY ELECTRICALS LIMITED	
CODE		Corp. R&D Division, Vikasnagar	
TITLE		HYDERABAD - 500 093	
DEPT.	SCALE	WEIGHT(KG)	APPRO.
050	NTS	---	P. Govind Shankar
TM1	NTS	---	
NAME	SGN.	DATE	
Viney Kumar		21.8.13	
CHD.			
KSR Swamy			
REF. TO ASSY DRG.	ITEM NO.	NO. OF ITEMS	REV.
RD DG 3 TM 13 1601	---	---	---
DRAWING NO.			
RD DG 3 TM 13 1604			
SHEET NO.	NO. OF SHEETS		
02	02		

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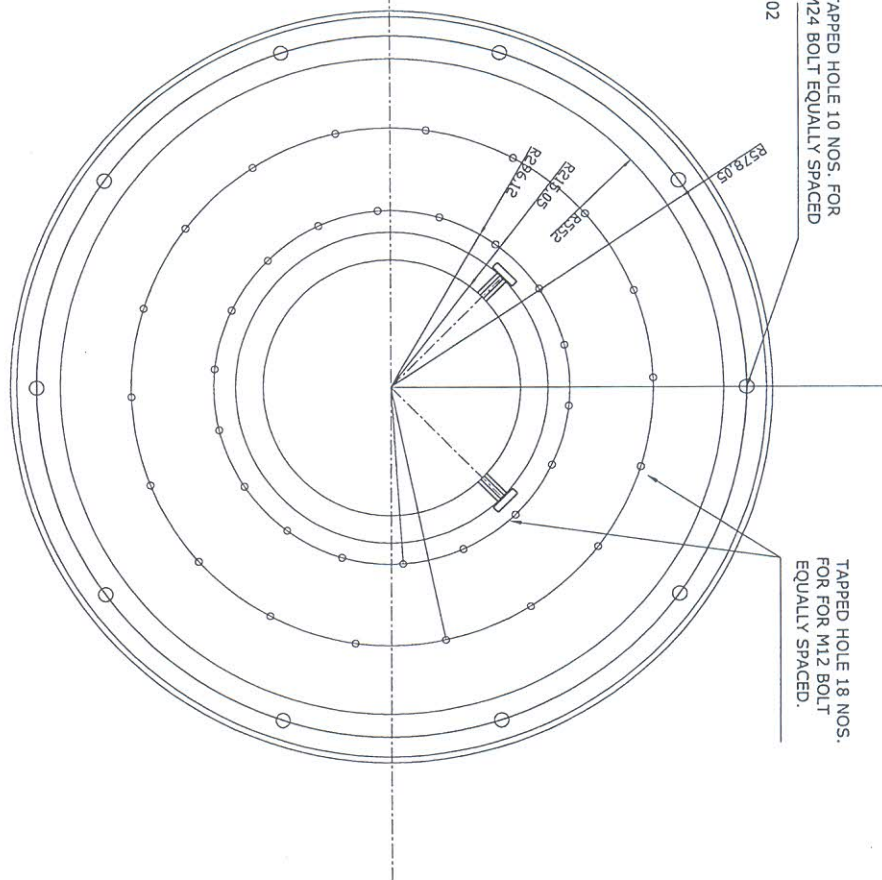
FIRST ANGLE PROJECTION



SEE ENLARGED DETAIL IN SHEET 02

TAPPED HOLE 10 NOS. FOR M24 BOLT EQUALLY SPACED

TAPPED HOLE 18 NOS. FOR FOR M12 BOLT EQUALLY SPACED.



SPLIT IN TO TWO PARTS

THIS DRG. IS TENTATIVE

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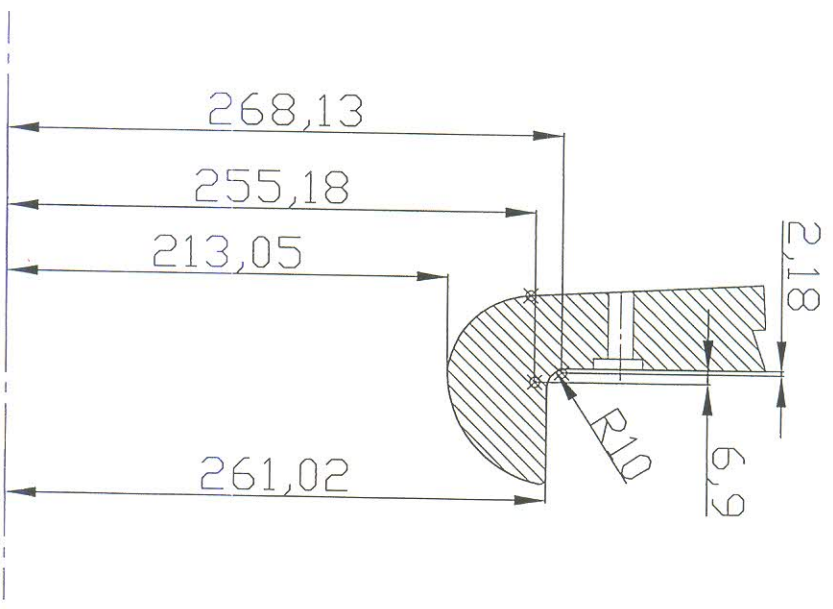
CALL DIMENSIONS ARE IN MM

		TYPE OF PRODUCT NAME OF CUSTOMER/PROJECT NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING	
DEPT.	050	SCALE	NTS
CODE	TML	WEIGHT(Kg)	---
BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		DRN.	Vinay Kumar
		CHD.	KSR Swamy
		APPRD.	P Govind Shankar
REF. TO ASSY DRG. RD DG 3 TM 13 1601		DATE	21.8.13
DRAWING NO. RD DG 3 TM 13 1605		NO. OF	0
SHEET NO. 01		NO. OF	02

TITLE DIAPHRAM PART-3	
NO. OF	0
REV.	---

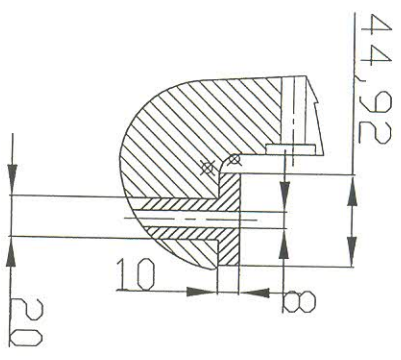
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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261



DETAIL "A"

GENERAL NOTE:
 1) IN CASE OF DOUBT, DON'T ASSUME,
 2) GENERAL TOLERANCE WHERE IT IS NOT SPECIFIED IS ± 0.1 MM.



PROBE ARRANGEMENT

THIS DRG. IS TENTATIVE

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM	
DEPT. TML.		BHARAT HEAVY ELECTRICALS LIMITED	
UNTD. DIMS. GR. C/M/F		Corp. R&D Division, Vikasnagar	
SCALE		HYDRABAD - 500 093	
N.T.S.			
DEPT. TML.	UNTD. DIMS. GR. C/M/F	SCALE	N.T.S.
CODE 090			
TITLE		DIAPHRAGM PART-3	
CARD CODE N.A.		DRAWING NO. RD DG 3 TM 13 1605	
SHT. No. 2		ND. OF SHT. 2	
REV. 0			
DRN.	NAME	SIGN.	DATE
CHD.	PRASAD		26.04.13
APPL.	KSR SWAMY		26.04.13
PGS			26.04.13
WEIGHT (KGS)	REF. TO ASSY. DRG.	ITEM NO.	ND. OF ITEMS
	RD DG 3 TM 13 1602		N/A

INVENTORY NO

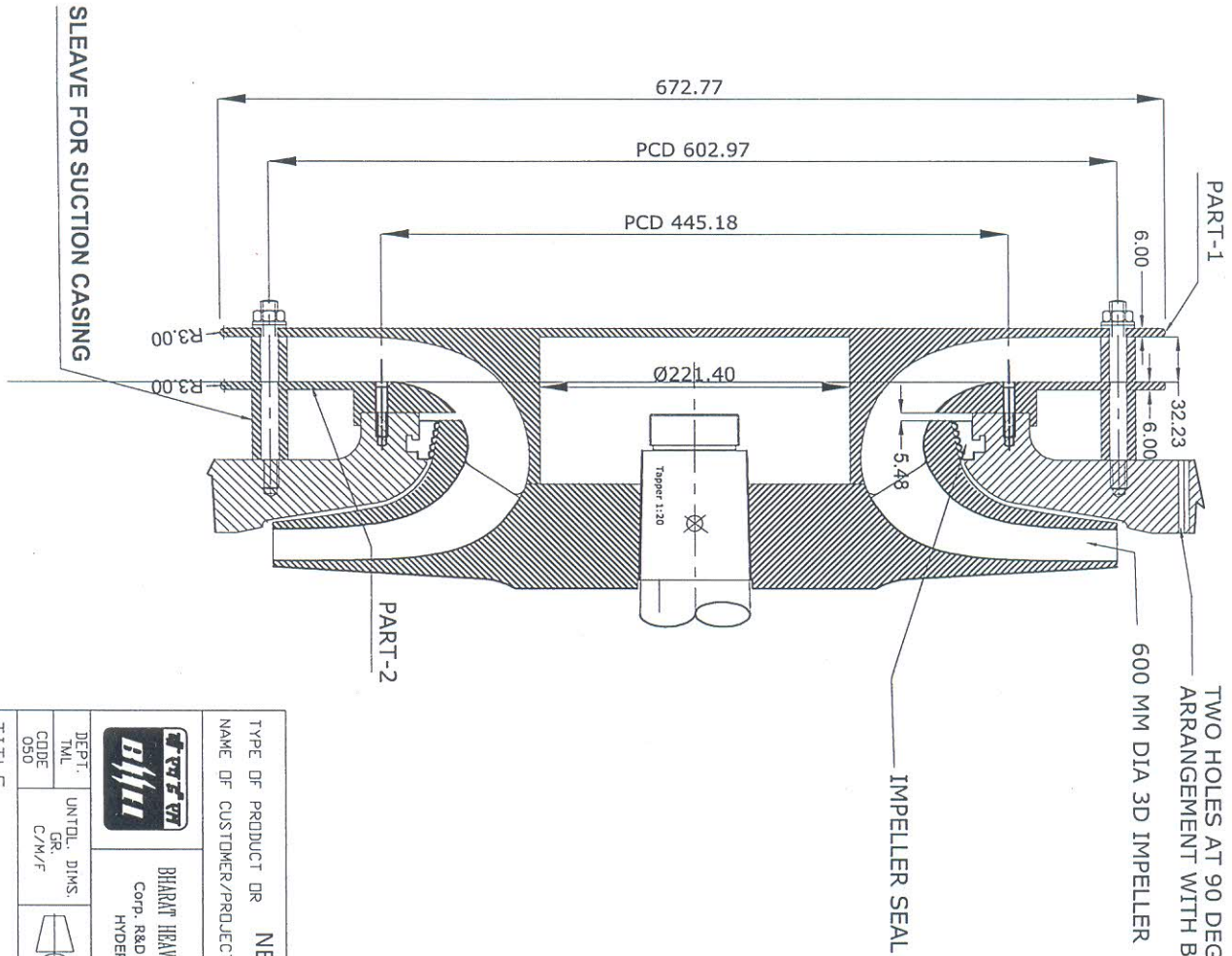
COMPUTER FILE NAME


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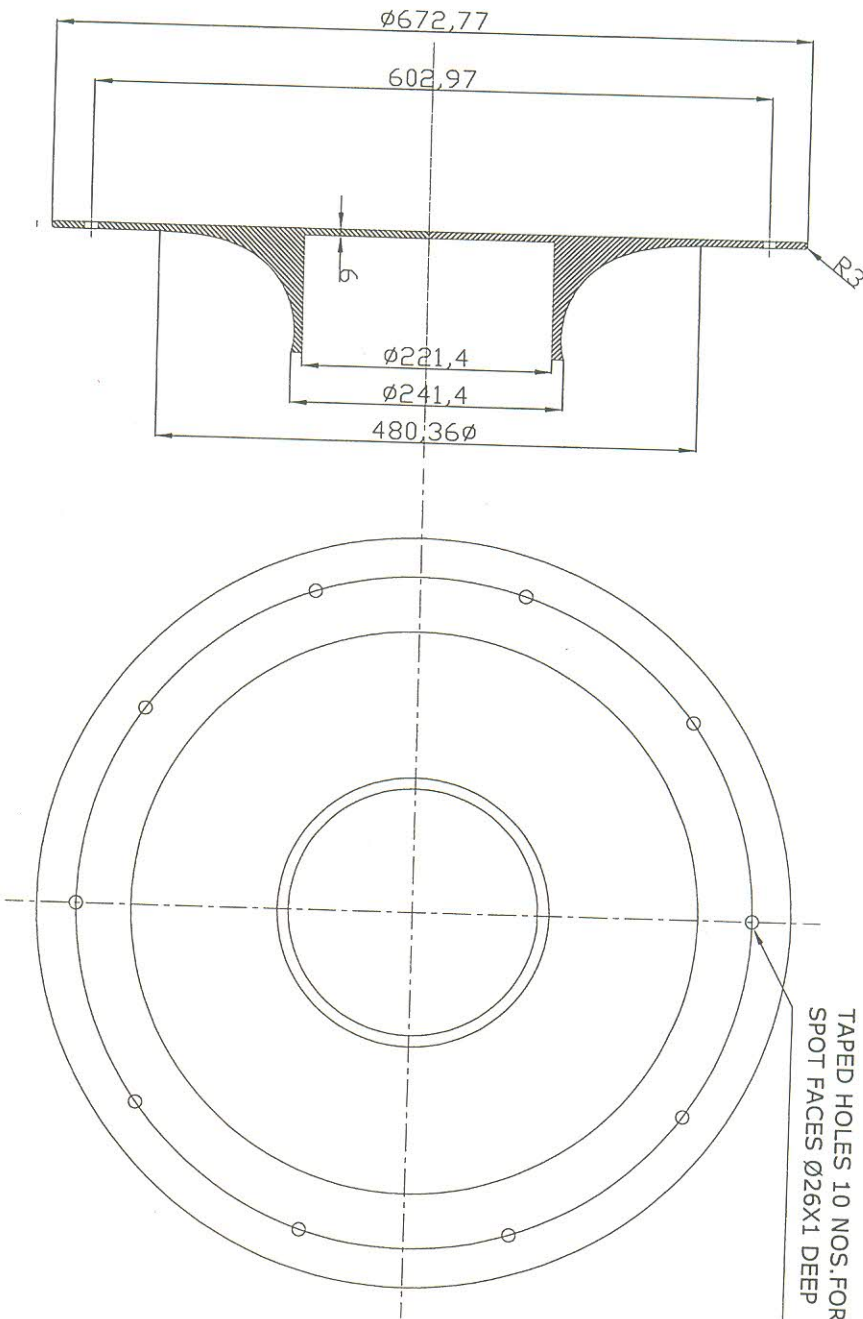
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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261



		DEPT. TML CODE 050		UNTO. DIMS. GR. C/M/F		SCALE N.T.S.		WEIGHT (KG) REF. TO ASSY. DRG.		CARD CODE N.A.	
BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		RD DG 3 TM 13 1601		N.T.S.		N.T.S.		RD DG 3 TM 13 1601		RD DG 3 TM 13 1613	
TITLE SUCTION CASING ASSEM.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING		NAME VINAY		SIGN. [Signature]		DATE 21.8.13		NO. OF VAR.	
APPD. PGS		CHD. KSR SWAMY		N/A		N/A		N/A		N/A	
REV. 0		SHIT. No 1		ND. OF SHIT. 1		ND. OF SHIT. 1		ND. OF SHIT. 1		REV. 0	

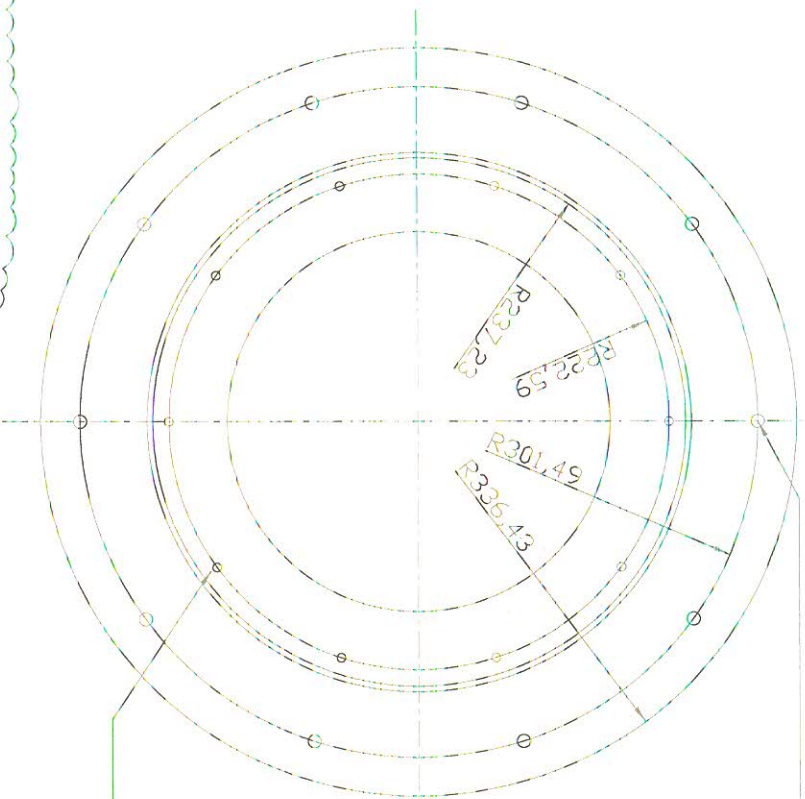
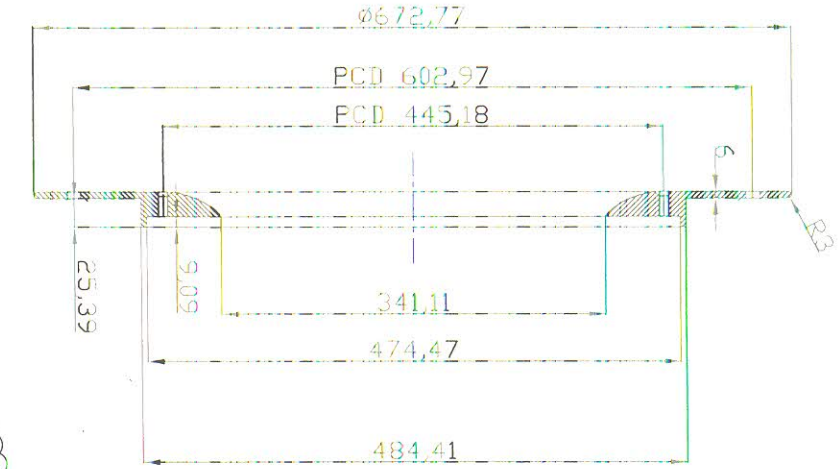
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THIS DRG. IS TENTATIVE

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TYPE OF PRODUCT		NEW BT-1 (LOW FLOW) IMPELLER DIA. 600 MM	
NAME OF CUSTOMER/PROJECT		COMPRESSION STAGE TESTING	
BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093			
DEPT	050	SCALE	NTS
CODE	TML	WEIGHT(Kg)	---
TITLE		DRAWING NO.	
SUCTION CASING PART 1		RD DG 3 TM 13 1606	
SHEET NO.	01	NO OF SHEETS	01
DRG. NAME	Vinay Kumar	DATE	
CHKD.	KSR Sharmy	VAR.	
APPD.	P Govth Shankar	REF. TO ASSY DRG.	



TAPED HOLES 10 NOS. FOR M10 BOLT
SPOT FACES Ø26X1 DEEP

TAPED HOLES 10 NOS. FOR
COUNTER SINK SCREW M8

THIS DRG. IS TENTATIVE

NOTE :

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INVENTORY NO. REF. DRG. NO. COMP. FILE NAME 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.

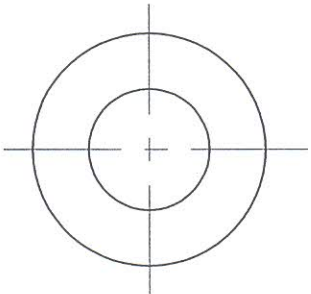
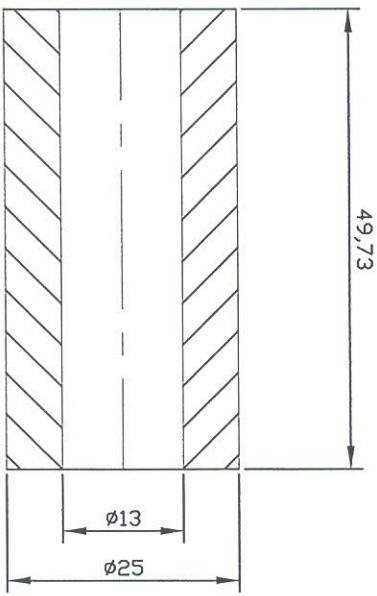
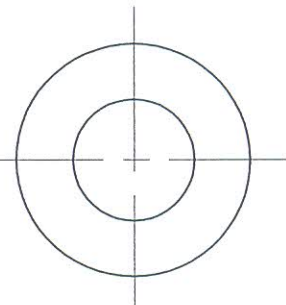
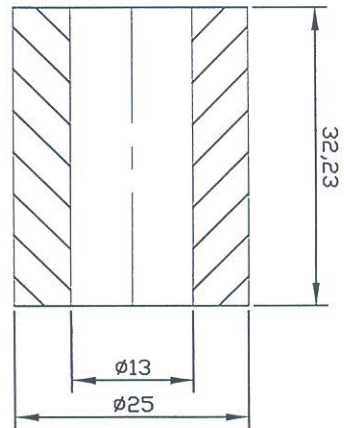
		TYPE OF PRODUCT NAME OF CUSTOMER/PROJECT		NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING	
DEPT CODE		SCALE NTS		NAME VIKAR KUMAR	
TML		WEIGHT(KG)		SCH. DATE	
SUCTION CASING PART 2		REF TO ASSY DRG		NO. OF VAR.	
DRAWING NO. RD DG 3 TM 13 1807		NO. OF SHEETS 01		REV.	

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN mm


INVENTORY NO _____ COMPUTER FILE NAME 33320900169-S00-R08.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



THIS DRG. IS TENTATIVE

GENERAL NOTE:
IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
QTY. REQUIRED : 10 NOS. EACH.

		BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093	
DEPT. TML	UNTO. DIMS. GR. C/M/F	SCALE	WEIGHT (KG)
050		N.T.S	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT NEW BT4-1 (LOW FLOW) IMPELLER DIA. 600 MM COMPRESSOR STAGE TESTING		NAME VINAY	SIGN. [Signature]
TITLE SLEEVE FOR INLET CASING		DRN. CHD. APPD. PGS VINAY KSR SWAMY [Signature]	DATE 26.04.13
CARD CODE	DRAWING NO.	REF. TO ASSY. DRG.	ITEM NO.
N/A	RD DG 3 TM 13 1608	RD DG 3 TM 13 1601	26.04.13
SH. No	1	ND. OF SH.	1
REV.	00	ND. OF VAR.	N/A

