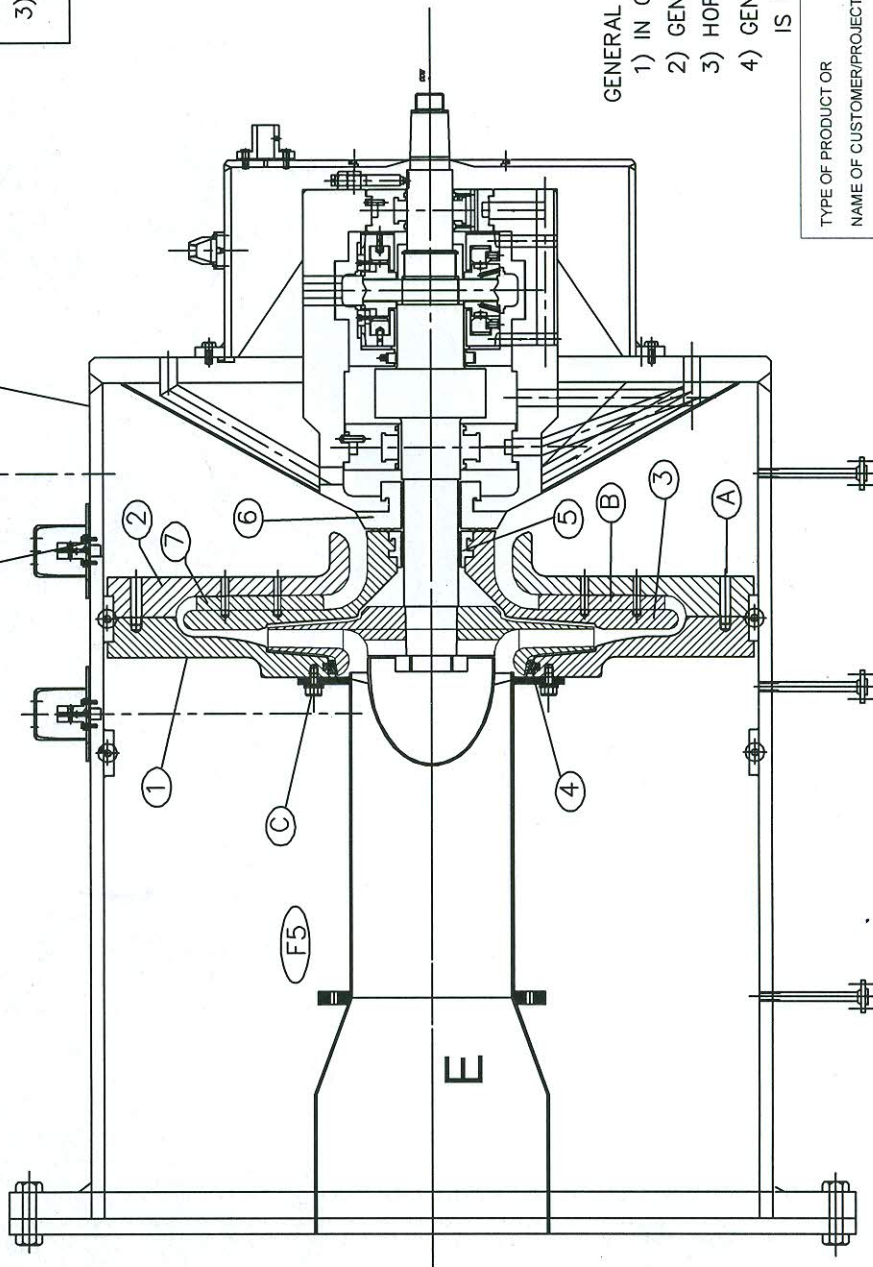


FIRST ANGLE PROJECTION

THIS IS TENTATIVE DRG.



NOTE:
 1) THIS DRAWING IS STUDY DRAWING WHICH SHOWS THE NEW PARTS TO BE MANUFACTURED FOR F-5 2D IMPELLER TEST RIG.
 2) ALL DIAPHRAGM SHOULD BE MADE 2062-FE-410-W
 3) MECHANICAL SEALS SHOULD BE MADE AVONAL-14

FASTENER LIST

ITEM	DESIGNATION	SIZE	QTY.
C	HEX. HEADED BOLT	M12X30L	16
B	HEX. HEADED BOLT	M12X60L	16
A	HEX. HEADED BOLT	M16X85L	16

GENERAL NOTE:

- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- 2) GENERAL TOLERANCE ± 0.1
- 3) HORIZONTAL SPLIT
- 4) GENERAL SURFACE FINISH WHERE IT IS NO MENTIONED IS 3.2 MICRONS.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
 PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15-752-RD-50)



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

UNTO. DIMS. GR. C/M/F
 DEPT. TML. CODE 050



WEIGHT (KG) REF. TO ASSY. DRG.

TITLE
 ASSEMBLY OF F-3 DIA. 500 MM
 2D IMPELLER STAGE (STUDY DRAWING)
 SECTIONAL FONT VIEW

DRN.	NAME	SIGN.	DATE	NO OF VAR.
VINAY	VINAY	AS	13.02.16	
CHD.	P.G.S			N.A
APPD.	P. G. SHANKAR		2014	PGS
			ITEM NO.	NO. OF ITEMS
				N.A
				REV.
			DRAWING NO.	
			RD DG 3 TM 16 F3-1A	
			SHT. No	NO. OF SHT.
			1	1

ITEM	DESCRIPTION	DRAWING NO.	NO. OF Sht.	MATERIAL
7	RETURN CHANNEL VANE	RD DG 3 16 F3-9	1	IS:2062 FE 410 W
6	BEARING SEAL	RD DG 3 16 F3-8	1	AVONAL-14
5	SHAT SEAL	RD DG 3 16 F3-7	1	AVONAL-14
4	IMPELLER SEAL	RD DG 3 16 F3-6	1	AVONAL-14
3	DIAPHRAGM-3	RD DG 3 16 F3-5	1	IS:2062 FE 410 W
2	DIAPHRAGM-2	RD DG 3 16 F3-4	1	IS:2062 FE 410 W
1	DIAPHRAGM-1	RD DG 3 16 F3-3	1	IS:2062 FE 410 W

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COMPUTER FILE NAME

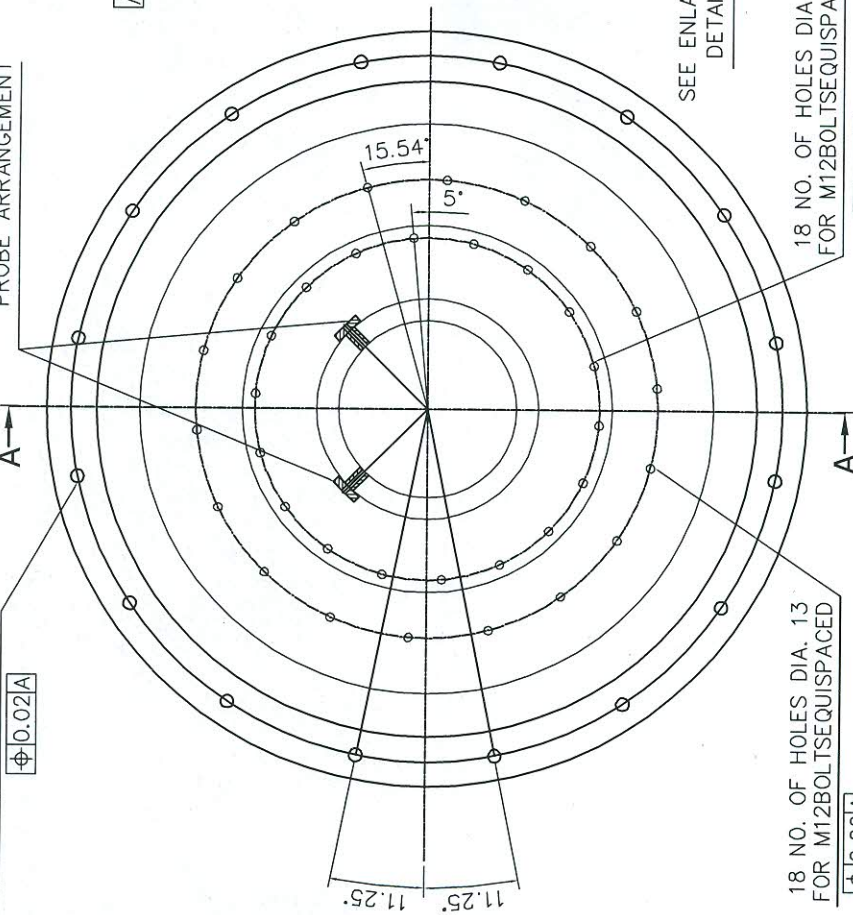
GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

INVENTORY NO

ALL DIMENSIONS ARE IN (MM)

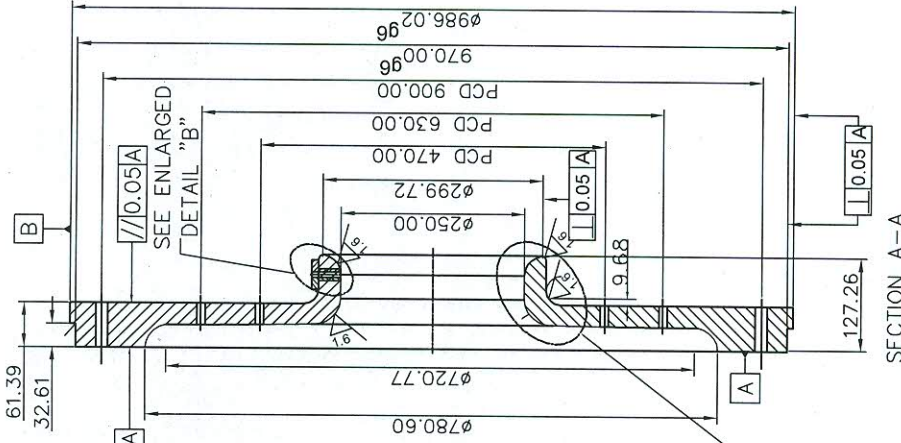
16 NO OF HOLES DIA.18 FOR M16 BOLTS EQUISPACED

MECHANISM FOR PROBE ARRANGEMENT

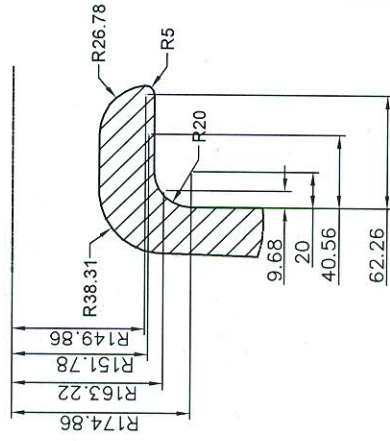


18 NO. OF HOLES DIA. 13 FOR M12BOLTSEQUISPACED

18 NO. OF HOLES DIA. 13 FOR M12BOLTSEQUISPACED

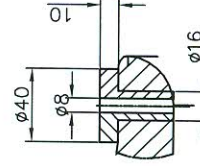


SECTION A-A



DETAIL "A"

SPLIT IN TO TWO PARTS



DETAIL "B"

THIS IS TENTATIVE DRG.

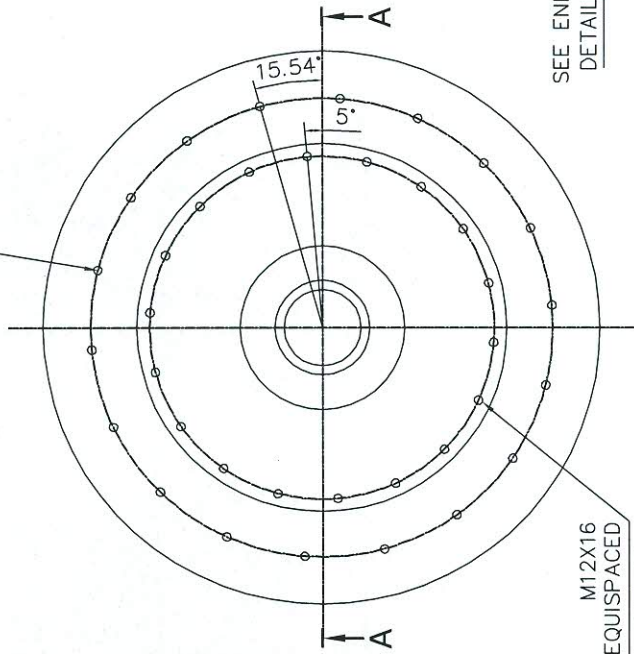
GENERAL NOTE:

- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- 2) GENERAL TOLERANCE ± 0.1
- 3) HORIZONTAL SPLIT
- 4) MATERIAL: IS: 2062 FE 410 W
- 5) GENERAL SURFACE FINISH WHERE IT IS NO MENTIONED IS 3.2 MICRONS.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15-752-RD-50)		NAME	SIGN.	DATE	NO OF VAR.
Bharat Heavy Electricals Limited Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		DRN.	VINAY KUMAR	AS	13.02.16		
DEPT. TML	UNTO. DMS. GR. CM/F	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO OF ITEMS	REV.
050	CM/F	N.T.S		RD DG 3 TM 16 F3-1A	30416	N.A	00
TITLE		DIAPHRAM PART-2		CARD CODE	DRAWING NO.		
				N.A.	RD DG 3 TM 16 F3-4		
INVENTORY NO		COMPUTER FILE NAME		332900169-500-R00.DWG		932900169-500-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					

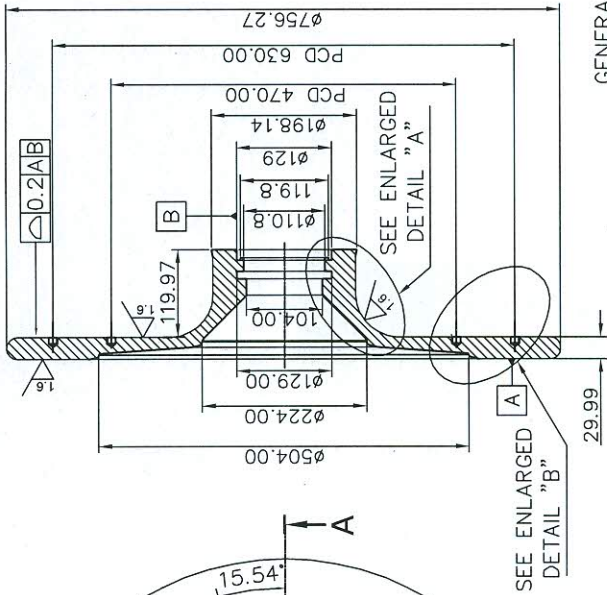
FIRST ANGLE PROJECTION

M12X16
EQUISPACED
0.02A

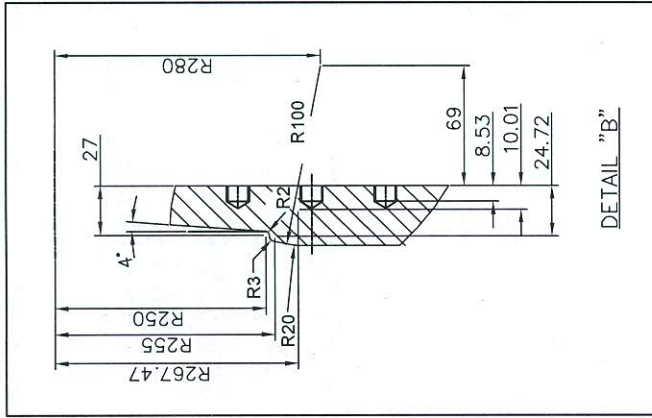


M12X16
EQUISPACED
0.02A

THIS IS TENTATIVE DRG.



SECTION A-A



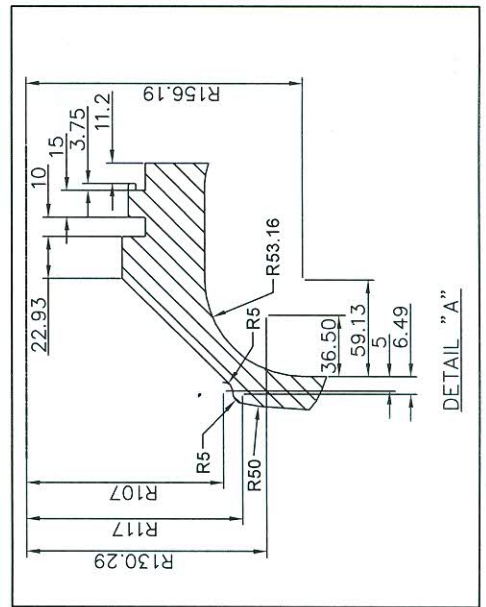
DETAIL "B"

GENERAL NOTE:

- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- 2) GENERAL TOLERANCE ± 0.1
- 3) HORIZONTAL SPLIT
- 4) MATERIAL: IS: 2062 FE 410 W
- 4) GENERAL SURFACE FINISH WHERE IT IS NO MENTIONED IS 3.2 MICRONS.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15-752-RD-50)

		DRN.	NAME	SIGN.	DATE	NO. OF VAR.
BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		CHD.	VINAY KUMAR	AS	13.02.16	N.A
DEPT. TML CODE 050	UNTO. DIMS. GR. C/M/F	APPD.	P. G. SHANKAR	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS N.A
SCALE N.T.S.	WEIGHT (KG)	RD DG 3 TM 16 F3-1A		RD DG 3 TM 16 F3-5		REV. 00
TITLE: DIAPHRAM PART-3			CARD CODE N.A.	SHT. No 1	NO. OF SHT. 1	

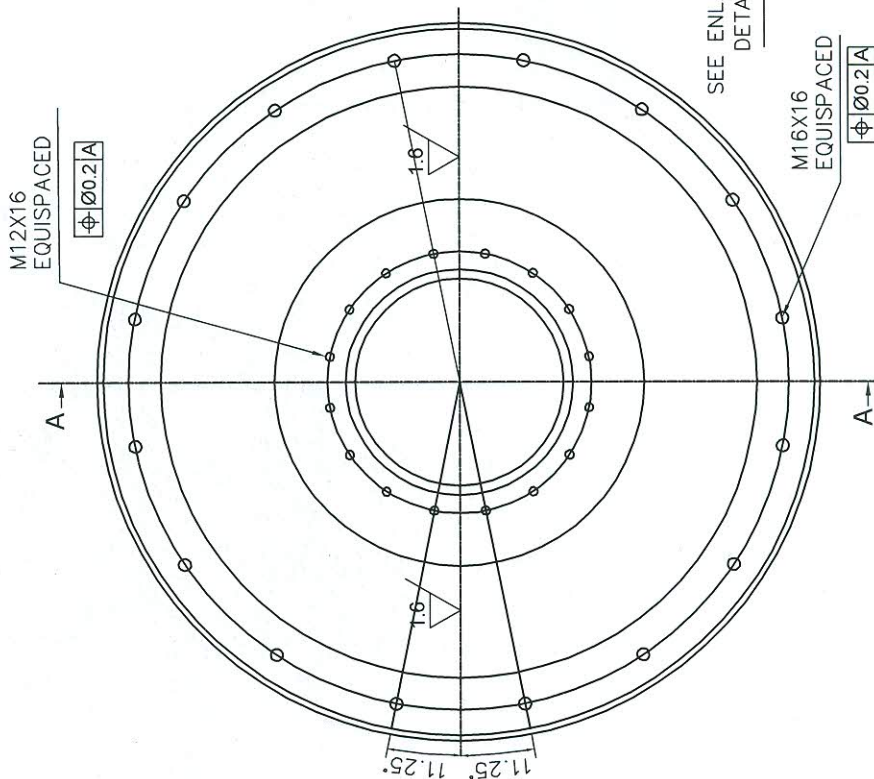


DETAIL "A"

INVENTORY NO. COMPUTER FILE NAME 3330900169-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

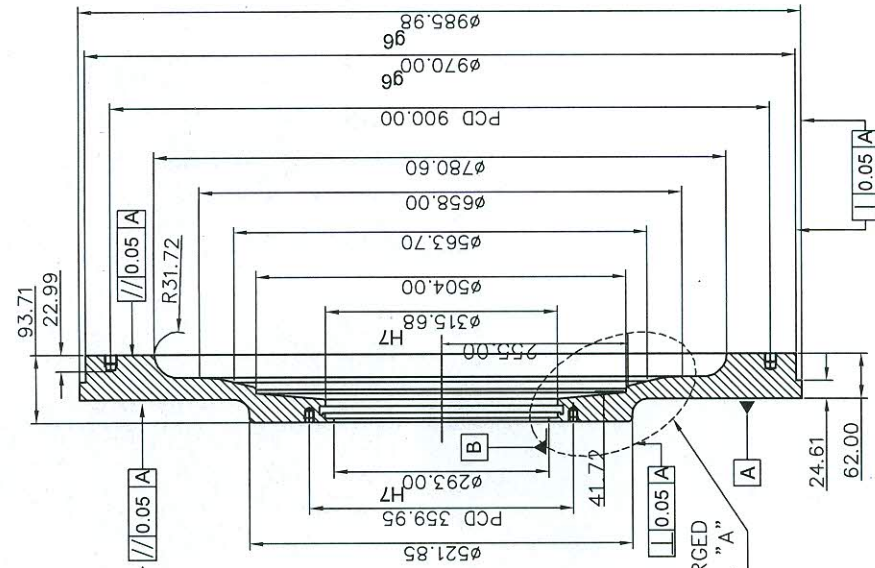
FIRST ANGLE PROJECTION



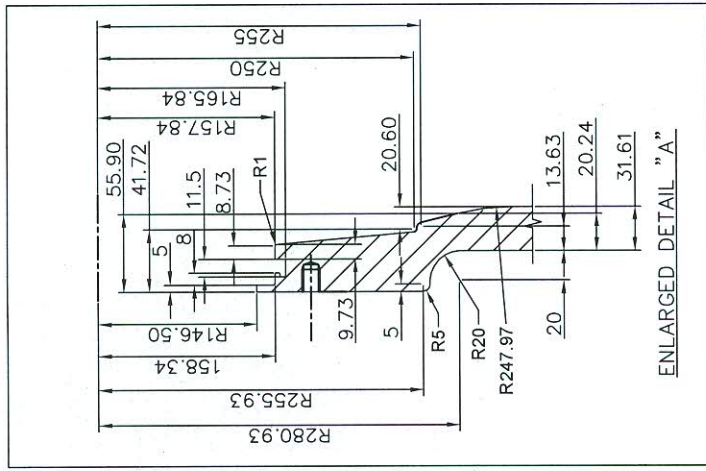
M12X16
EQUISPACED
Φ 100.2 A

M16X16
EQUISPACED
Φ 100.2 A

SEE ENLARGED
DETAIL "A"



SECTION A-A



ENLARGED DETAIL "A"

SPLIT IN TO TWO PARTS

THIS IS TENTATIVE DRG.

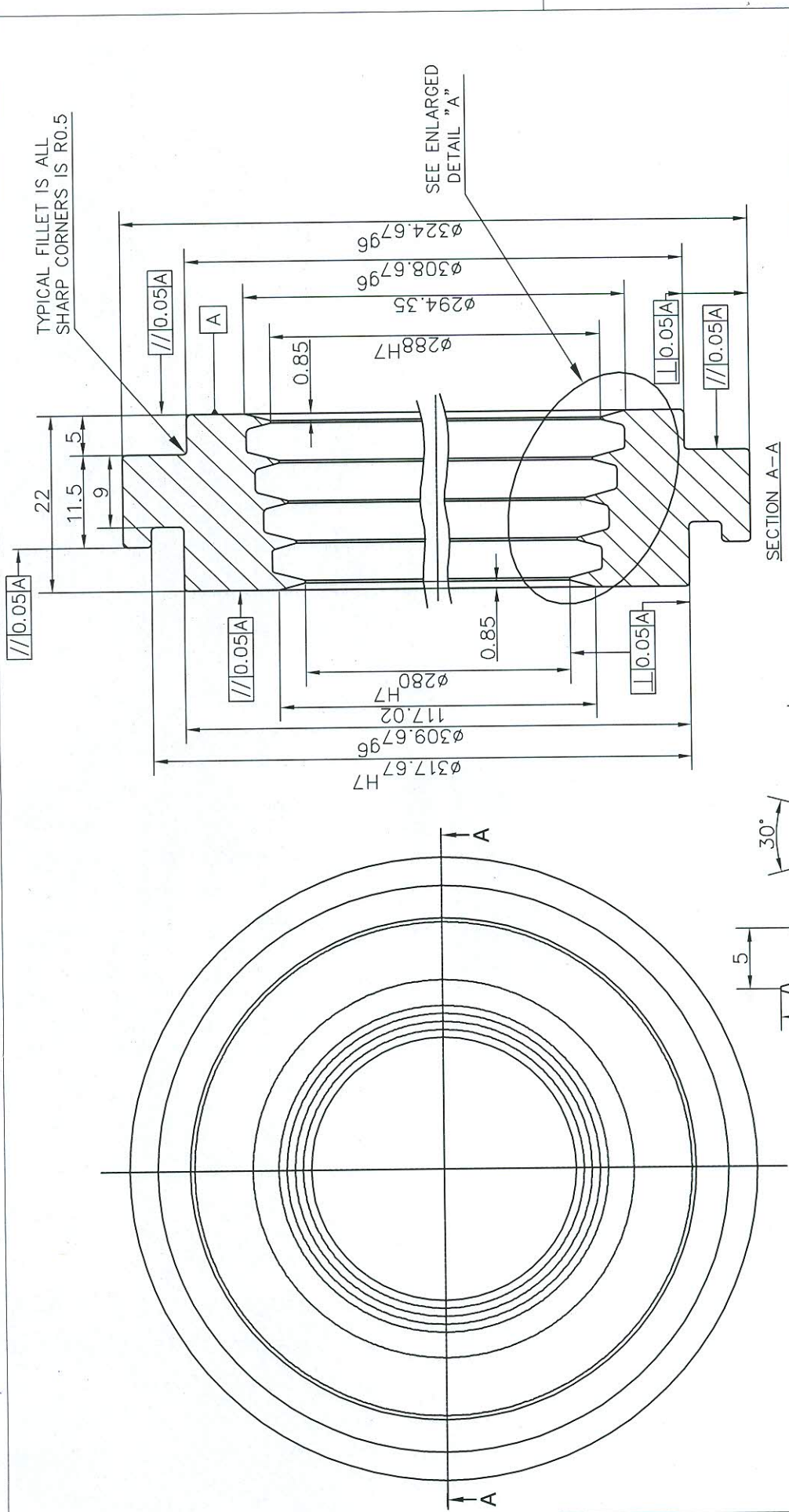
GENERAL NOTE:

- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- 2) GENERAL TOLERANCE ± 0.1
- 3) HORIZONATL SPLIT
- 4) MATERIAL: IS: 2062 FE 410 W
- 5) GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 3.2 MICRONS.

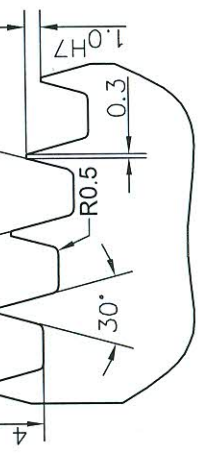
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15-752-RD-50)	
DRN.	NAME	SIGN.	DATE
CHD.	VINAY KUMAR	AS	13.02.16
APPD.	P. G. SHANKAR		
DEPT. TML. CODE 050	UNTO. DIMS. GR. C/M/F	SCALE	NO. OF VAR.
		N.T.S.	N.A.
BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		WEIGHT (KG)	ITEM NO.
			30411b
TITLE		REF. TO ASSY. DRG.	NO. OF ITEMS
DIAPHRAM PART-1		RD DG 3 TM 16 F3-1A	N.A.
CARD CODE	DRAWING NO.	REV.	
N.A.	RD DG 3 TM 16 F3-3	00	
SHT. No	1	NO. OF SHT.	1

ALL DIMENSIONS ARE IN (MM)

FIRST ANGLE PROJECTION



TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15.752-RD-50)	
DEPT. TML	UNTO. DIMS. GR. C/MIF	SCALE	WEIGHT (KG)
CODE 050		N.T.S.	
Bharat Heavy Electricals Limited Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		REF. TO ASSY. DRG. RD DG 3 TM 16 F3-1A	
DRN. VINAY KUMAR	CHD. P. G. SHANKAR	APPD. P. G. SHANKAR	DATE 15.02.16
SIGNATURE		NO. OF VAR.	NO. OF ITEMS
		N/A	N/A
COMPUTER FILE NAME		ITEM NO.	NO. OF SHT.
		3010116	1
INVENTORY NO		DRAWING NO.	REV.
		RD DG 3 TM 16 F3-6	00
		N.A.	

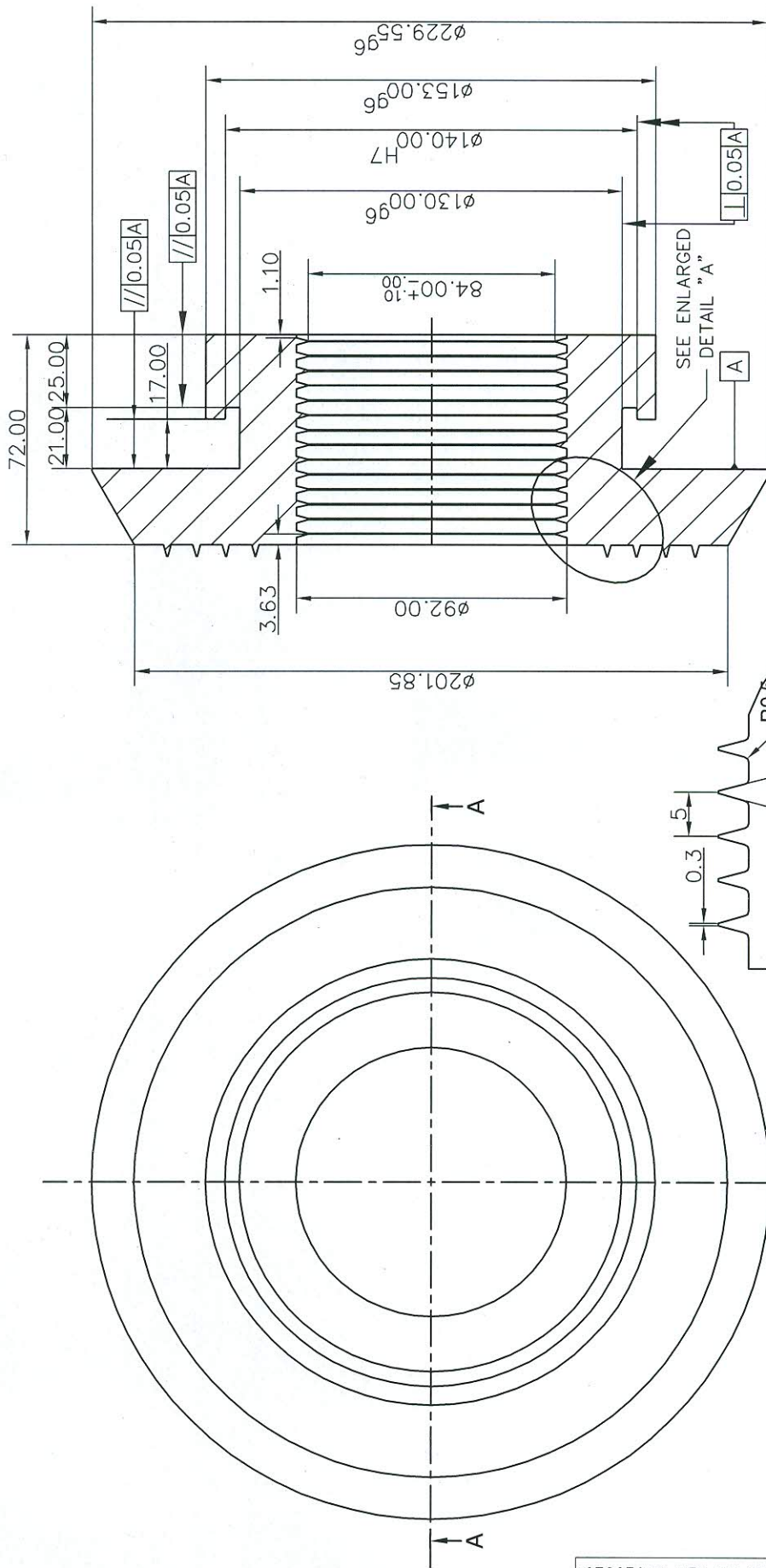


THIS IS TENTATIVE DRG.

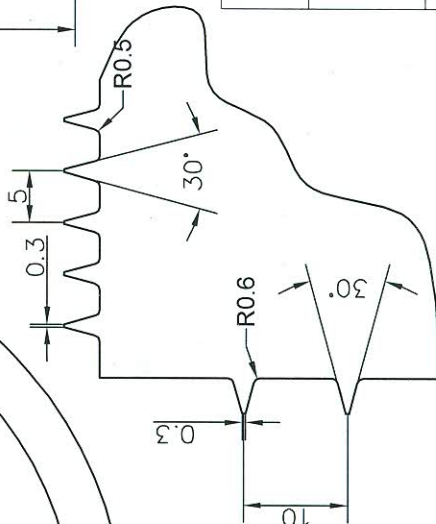
- GENERAL NOE:
- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
 - 2) GENERAL TOLERANCE ± 0.1
 - 3) HORIZONTAL SPLIT
 - 4) MATERIAL: AVIONAL-14
 - 5) GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 3.2 MICRONS.
 - 6) SEAL DIMENSIONS SHOULD BE MATCHED WITH THE CORRESPONDING GROOVE IN THE DIAPHRAGM-1.

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN (MM)



SECTION A-A



DETAIL "A"

THIS IS TENTATIVE DRG.

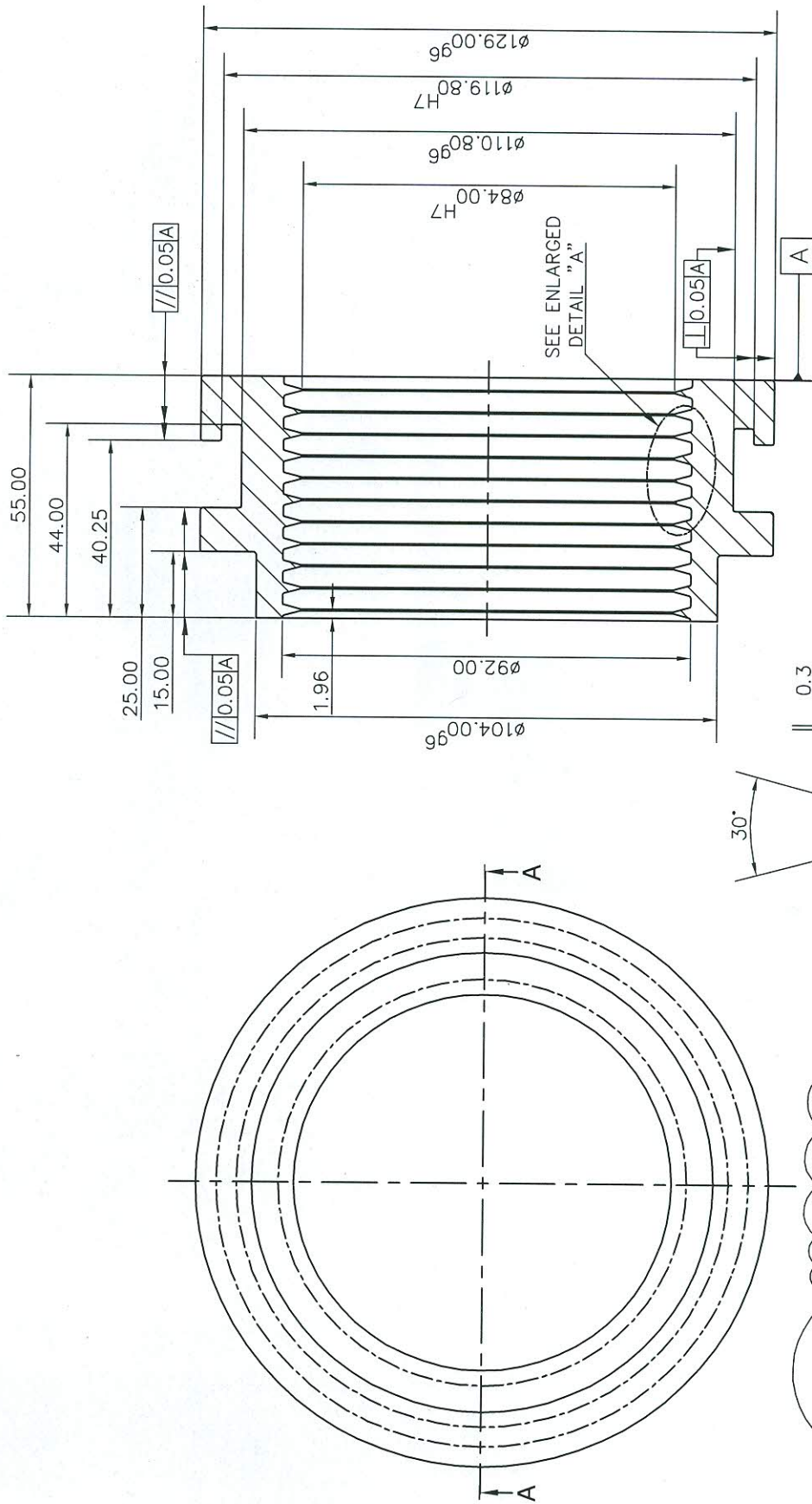
GENERAL NOE:

- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- 2) GENERAL TOLERANCE ± 0.1
- 3) HORIZONTAL SPLIT
- 4) MATERIAL: AVIONAL-14
- 5) GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 3.2 MICRONS.

		BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		DRN. VINAY KUMAR CHD. P. G. SHANKAR APPD. P. G. SHANKAR	SIGN. <i>AB</i> DATE 15.02.16	NO OF VAR. N/A ITEM NO. 16
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15.752-RD-50)	UNTO. DIMS. TML. CODE 050 GR. C/M/F	WEIGHT (KG) N.T.S. SCALE N.T.S.	REF. TO ASSY. DRG. RD DG 3 TM 16 F3-1A	NO. OF ITEMS N/A	NO. OF SHT. 1	REV. 01
TITLE BEARING SEAL			CARD CODE N.A.	DRAWING NO. RD DG 3 TM 16 F3-8		

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN (MM)



THIS IS TENTATIVE DRG.

GENERAL NOE:

- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
- 2) GENERAL TOLERANCE ± 0.1
- 3) HORIZONTAL SPLIT
- 4) MATERIAL: AVIONAL-14
- 5) GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 3.2 MICRONS.
- 6) SEAL DIMENSIONS SHOULD BE MATCHED WITH THE CORRESPONDING GROOVE IN THE DIAPHRAGM-2.

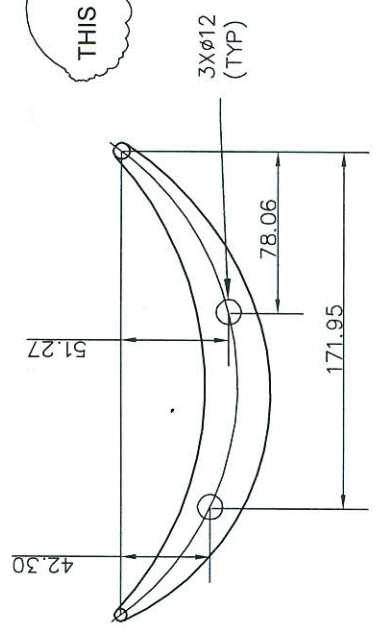
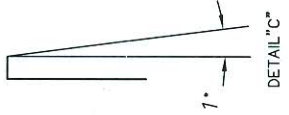
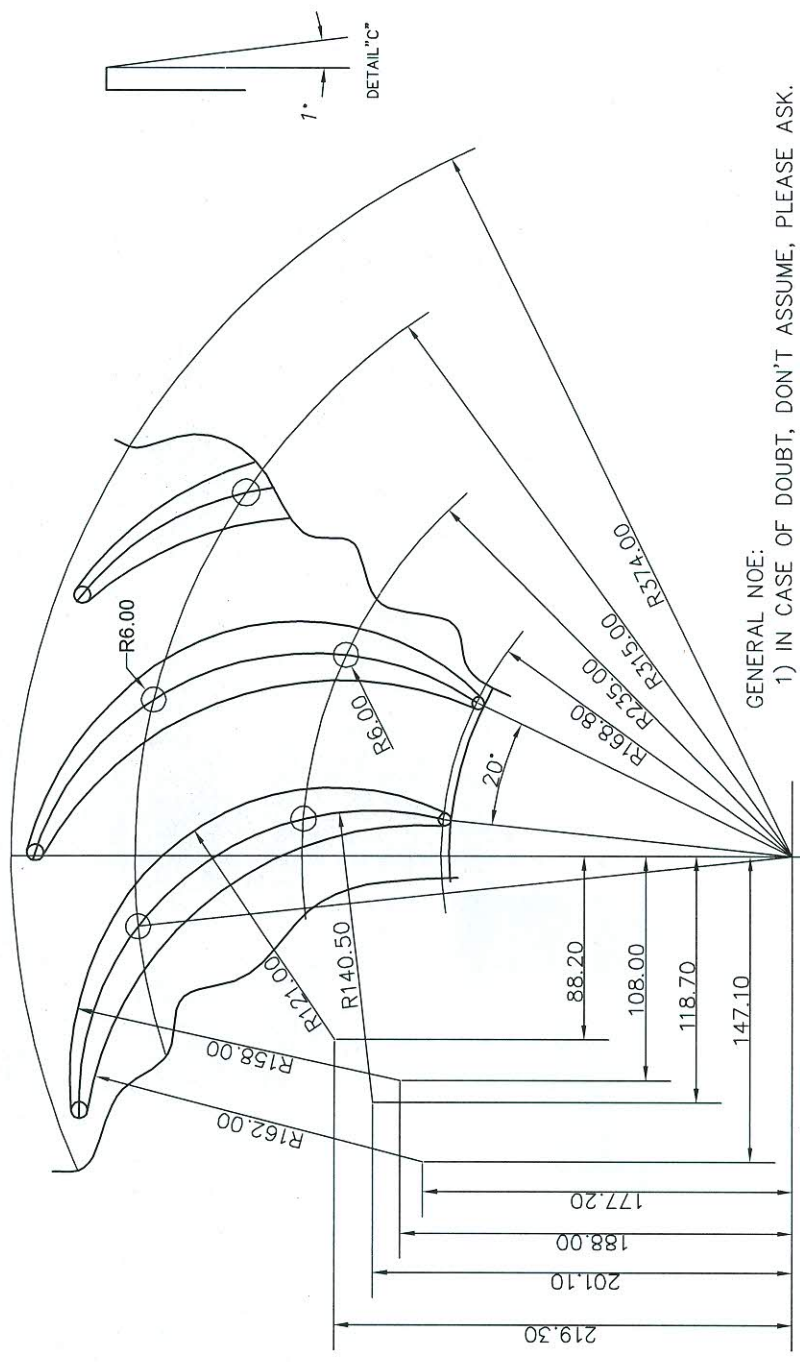
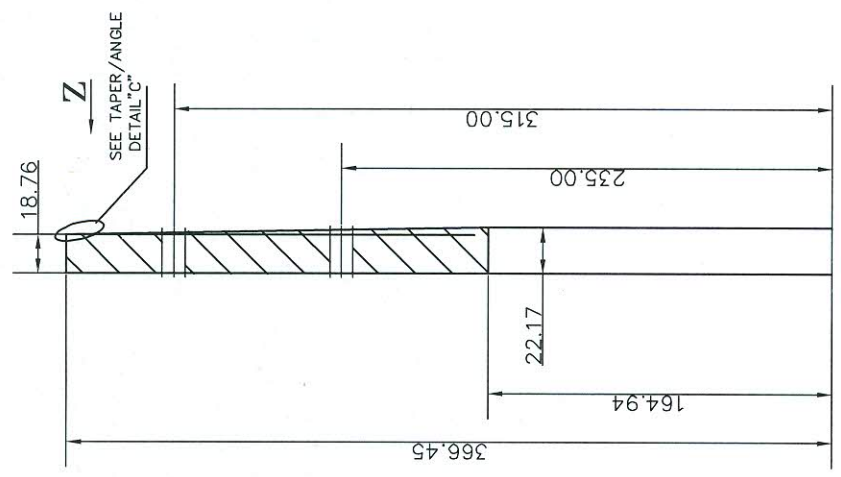
SECTION A-A

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15-752-RD-50)

		BHARAT HEAVY ELECTRICALS LIMITED		NAME	VINAY KUMAR	SIGN.	AB	DATE	15.02.16	NO. OF VAR.		
Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		DRN.		CHD.	P. G. SHANKAR					N.A.		
DEPT. TML	UNTO. DIMS. GR. CIMF	SCALE	N.T.S	WEIGHT (KG)		REF. TO ASSY. DRG.		ITEM NO.		NO. OF ITEMS	N.A.	
CODE 050						RD DG 3 TM 16 F3-1A						
TITLE			SHAFT SEAL			DRAWING NO.			RD DG 3 TM 16 F3-7			
INVENTORY NO			SHT. No			1			NO. OF SHT.			1
COMPUTER FILE NAME			REV.			00			REV.			00

ALL DIMENSIONS ARE IN MM

FIRST ANGLE PROJECTION



THIS IS TENTATIVE DRG.

- GENERAL NOE:
- 1) IN CASE OF DOUBT, DON'T ASSUME, PLEASE ASK.
 - 2) GENERAL TOLERANCE ± 0.1 .
 - 3) HORIZONTAL SPLIT.
 - 4) TOTAL VANES: 18 NOS.
 - 4) MATERIAL: IS: 2062 FE 410 W.
 - 4) GENERAL SURFACE FINISH WHERE IT IS NOT MENTIONED IS 3.2 MICRONS.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PERFORMANCE TESTING OF 500 MM DIA. 2D F3 IMPELLER (B-F-20-15-752-RD-50)	
DEPT. TML CODE 050	UNTOOL DIMS. GR CMIF	SCALE N.T.S	WEIGHT (KG)
BHAAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093		DRN. VINAY KUMAR	DATE 15.02.16
SEE TAPER/ANGLE DETAIL 'C'		CHD. P. G SHANKAR	SIGN. <i>AB</i>
SEE TAPER/ANGLE DETAIL 'C'		APPD. P. G SHANKAR	NO. OF VAR. NA
SEE TAPER/ANGLE DETAIL 'C'		REF. TO ASSY. DRG. RD DG 3 TM 15 F3-1A	ITEM NO. 301A 16
SEE TAPER/ANGLE DETAIL 'C'		CARD CODE N.A.	NO. OF ITEMS NA
SEE TAPER/ANGLE DETAIL 'C'		DRAWING NO. RD DG 3 TM 16 F3-9	
SEE TAPER/ANGLE DETAIL 'C'		REV. 00	
SEE TAPER/ANGLE DETAIL 'C'		SHT. No 1	NO. OF SHT. 1