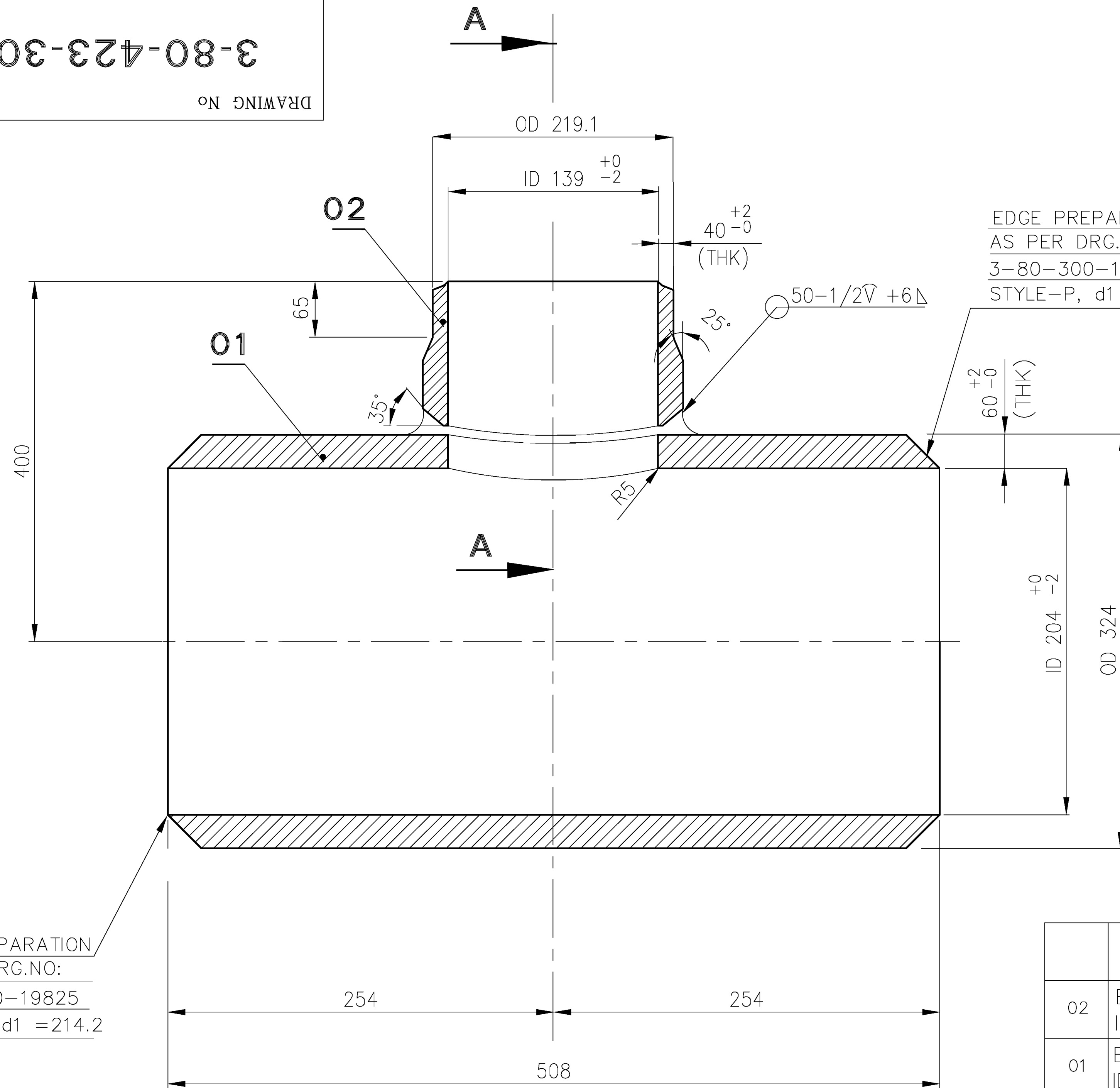


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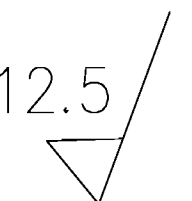
3-80-423-30241

DRAWING No



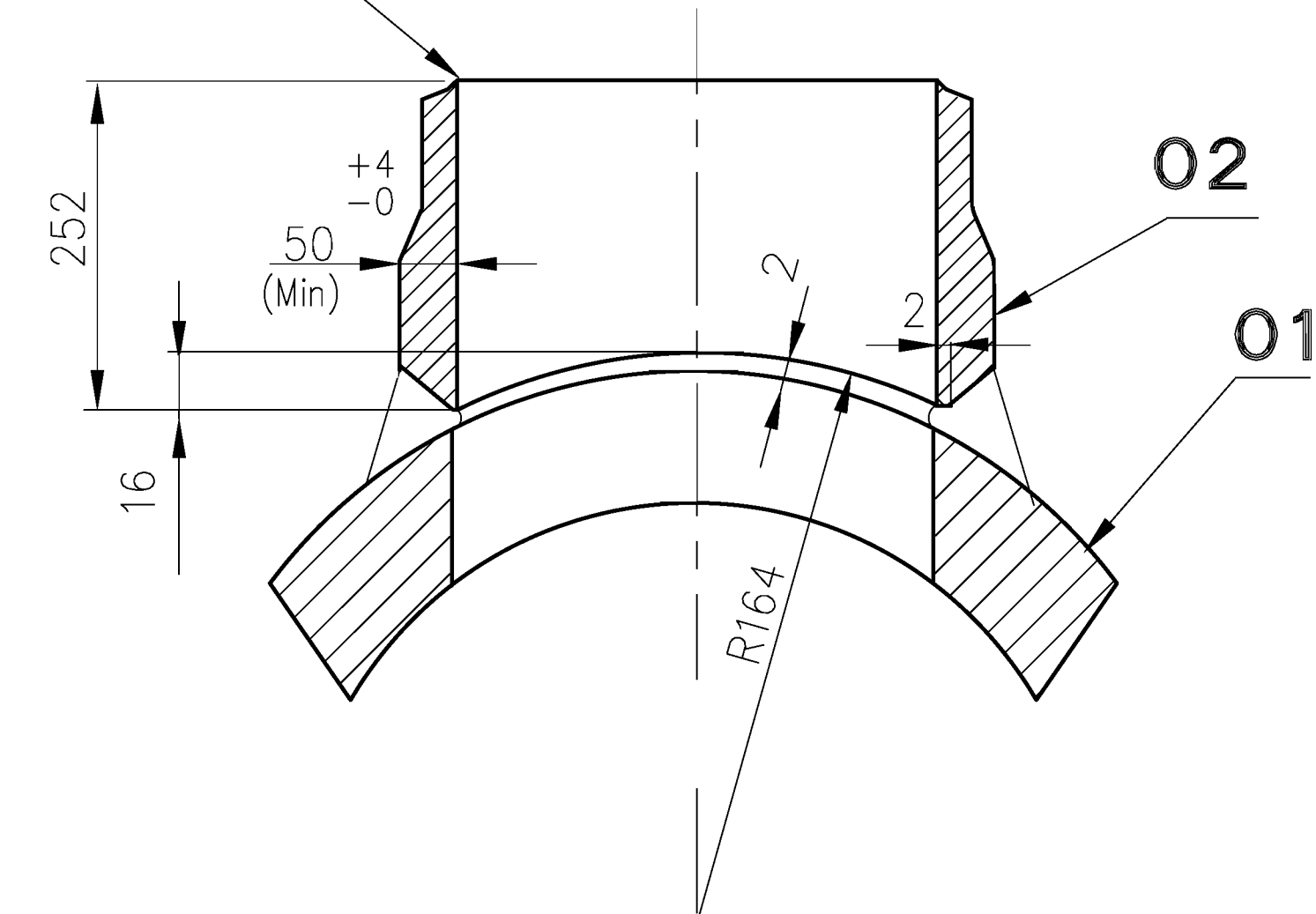
NOTES :-

- DESIGN PRESSURE : 470 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 200° C
- FOLLOW TDG : 108 LATEST
- PIPE SA106GRC(A) CAN ALSO BE USED IN PLACE OF SA105(A)



EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
STYLE-P, d1 =214.2

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
STYLE-P, d1 =143.6



SECTION-AA

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
STYLE-P, d1 =214.2

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. / VAR NO.	MATERIAL CODE / MATERIAL SPEC.	A / C	UNIT WT. / QTY.
02	BRANCH NOZZLE L=252 ID 139 x Thk 50 Min	3-80-423-30241		SA 105	A	59,000 1
01	BASE PIPE L = 508 ID 204 x Thk 60 Min	3-80-423-30241		SA 105	A	198,000 1

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
	M.MANO	-SD.-	23.12.12	
CHD	M.MANO	-SD.-	23.12.12	
APPD	R.SESHAGIRI	-SD.-	23.12.12	

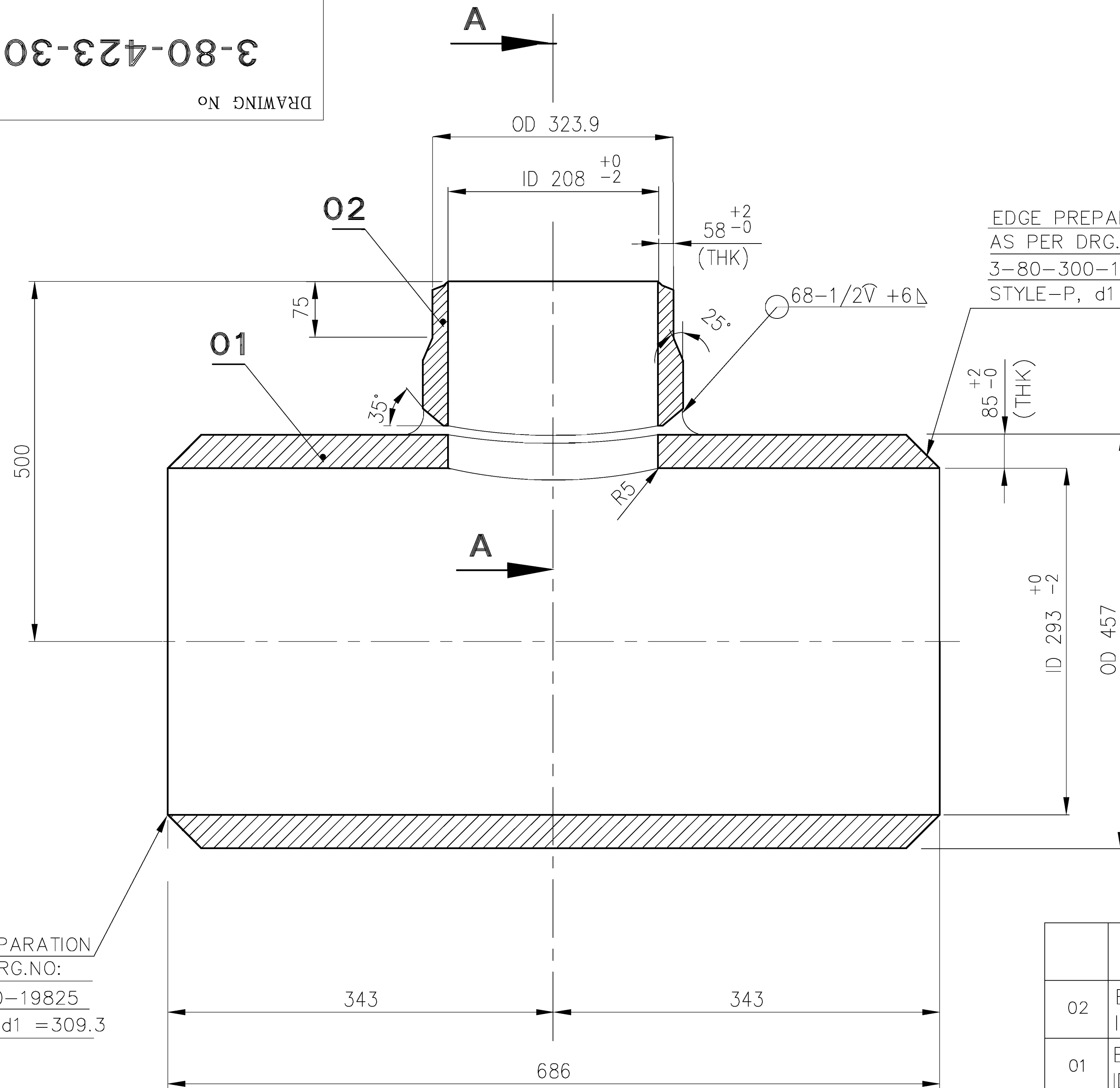
REV	DATE	ALTD:
01		APPD:
ZONE		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
	C/M/F	N.T.S.	257.000		
TITLE				CARD CODE	REV
FABRICATED UNEQUAL TEE (OD323.9x58/OD219.1x40) SA105				U 01	00
				DRAWING No.	
				3-80-423-30241	

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3-80-423-30240

DRAWING No



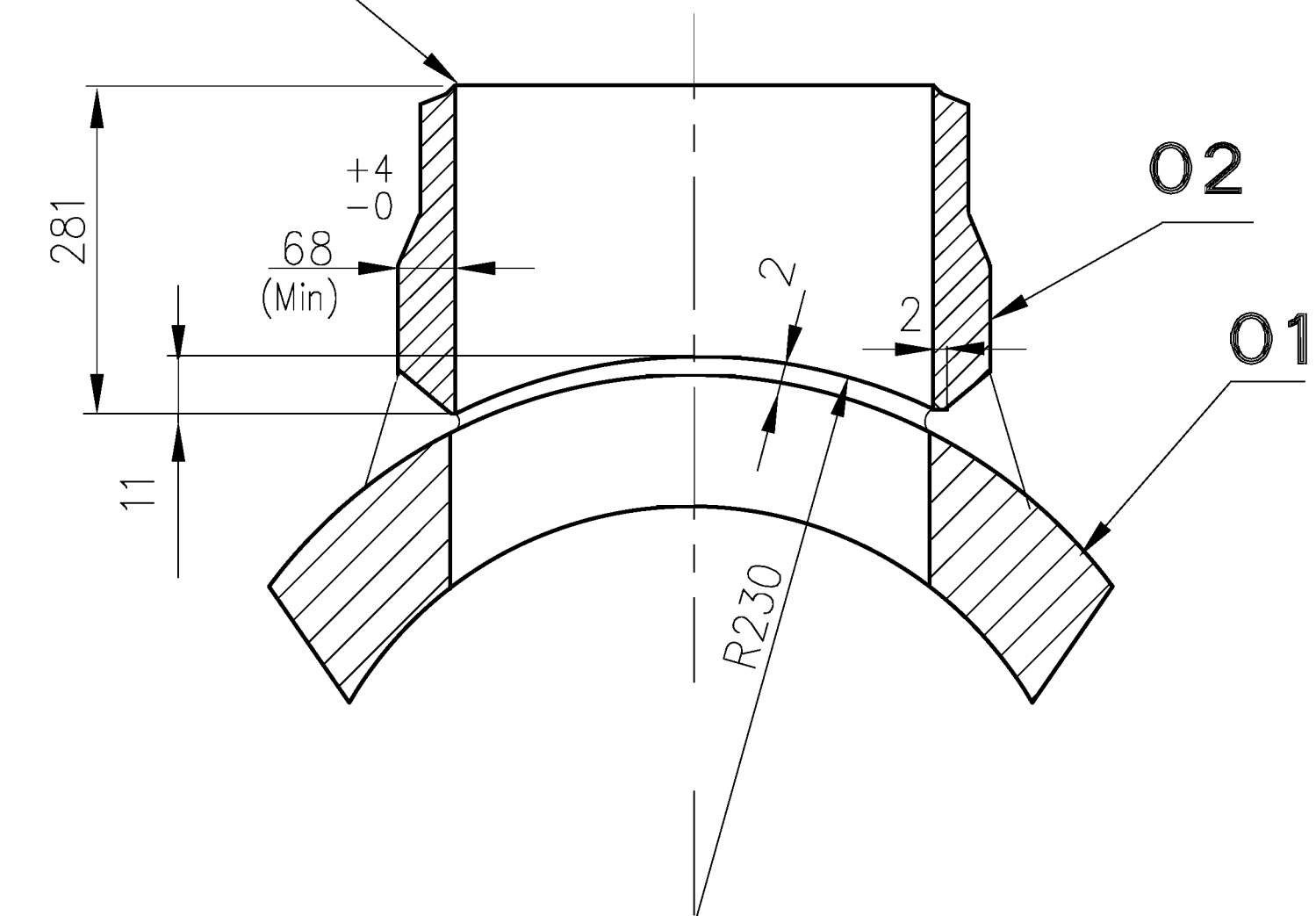
NOTES :-

- DESIGN PRESSURE : 470 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 200° C
- FOLLOW TDG : 108 LATEST
- PIPE SA106GRC(A) CAN ALSO BE USED IN PLACE OF SA105(A)

12.5

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
STYLE-P, d1 =309.3

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
STYLE-P, d1 =214.2



SECTION-AA

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
STYLE-P, d1 =309.3

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. / VAR NO.	MATERIAL CODE / MATERIAL SPEC.	A / C	UNIT WT. / QTY.
02	BRANCH NOZZLE L=281 ID 208 x Thk 68 Min	3-80-423-30240		SA 105	A	130,000 1
01	BASE PIPE L = 686 ID 293 x Thk 85 Min	3-80-423-30240		SA 105	A	543,000 1

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
	M.MANO	-SD.-	23.12.12	
CHD	M.MANO	-SD.-	23.12.12	
APPD	R.SESHAGIRI	-SD.-	23.12.12	

REV	DATE	ALTD:
01		APPD:
ZONE		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
	C/M/F	N.T.S.	673.000		
TITLE	CARD CODE	DRAWING No.	REV		
FABRICATED UNEQUAL TEE (OD457x82/OD323.9x58) SA105	U 01	3-80-423-30240	00		

NOTES :-

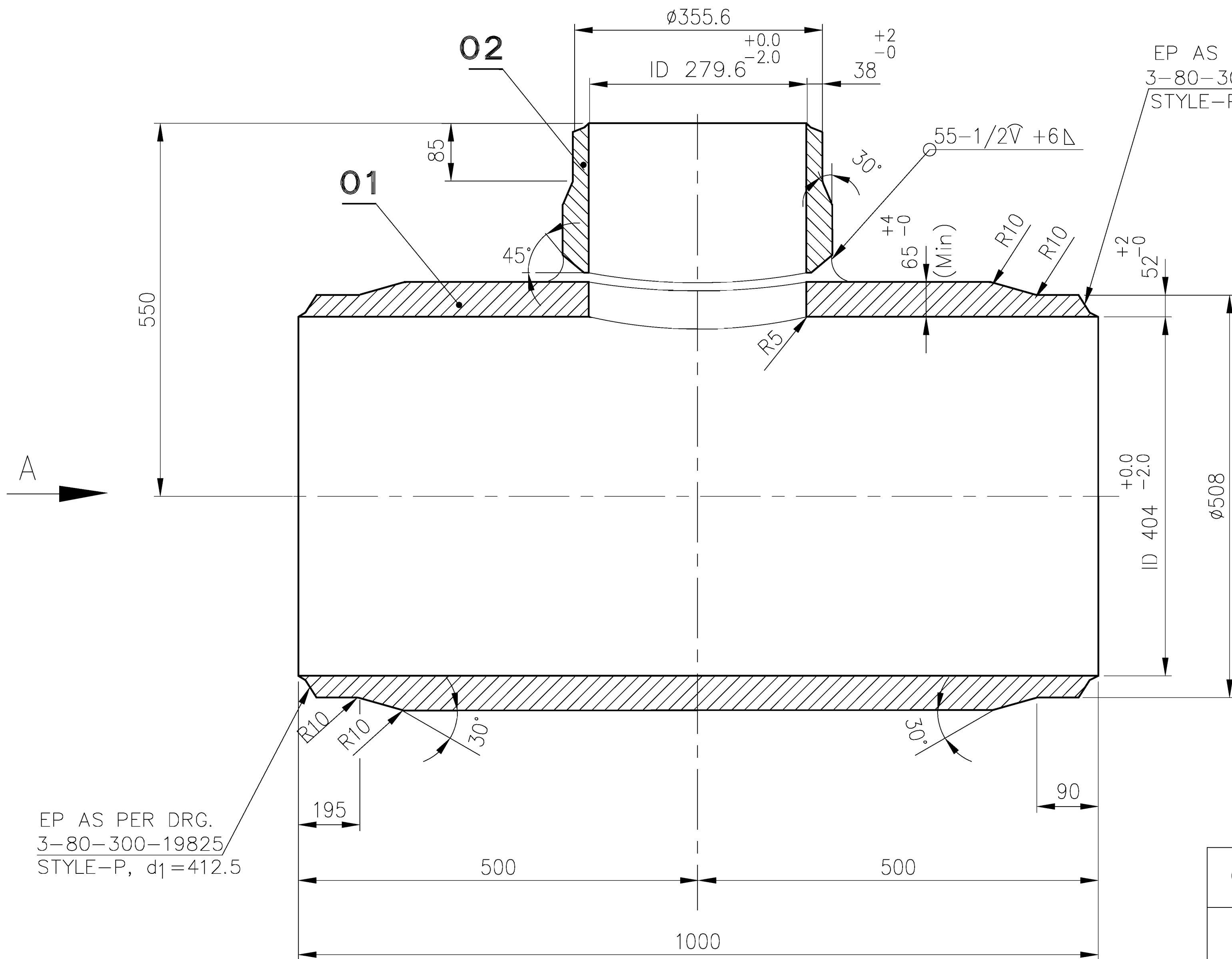
ALL DIMENSIONS ARE IN MILLIMETRES

- DESIGN PRESSURE : 260 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 290° C
- PIPE SA106GrC(A) CAN ALSO BE USED IN PLACE OF SA105(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA105 UNDER MATERIAL CODE: **925055960000**

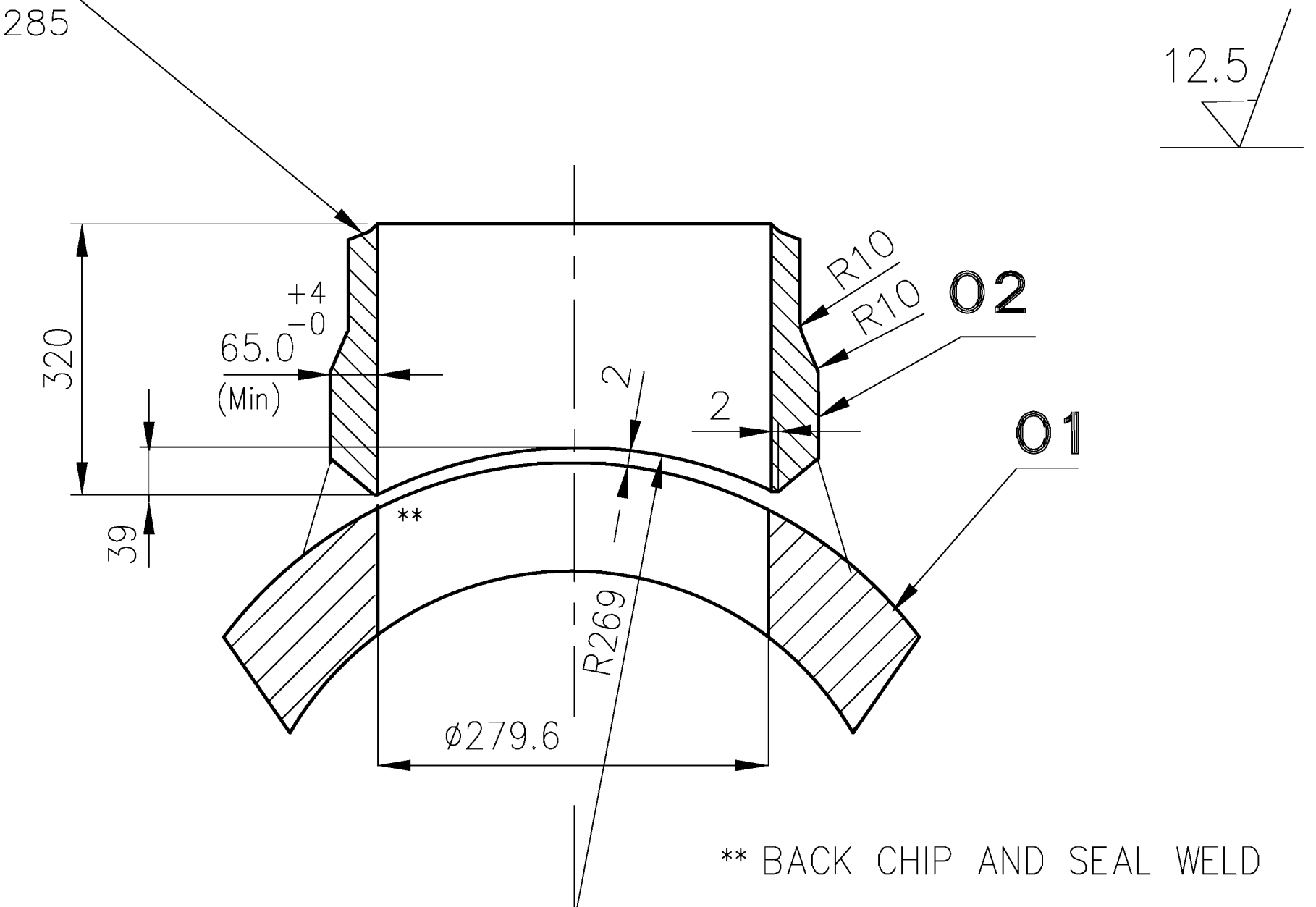
3-80-424-30262

DRAWING No

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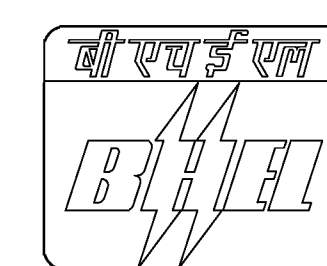
EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=285



VIEW-A

02	BRANCH NOZZLE L= 320 ID 279.6 x Thk 65.0 min	3-80-424-30262		SA105	A	142.000 1
01	BASE PIPE L = 1000 ID 404 x Thk 65.0 min	3-80-424-30262		SA105	A	673.000 1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME TRINADH	SIGN	DATE 02.01.13	NO OF ITEMS
CHD	TRINADH		02.01.13	
APPD	SESHAGIRI		02.01.13	

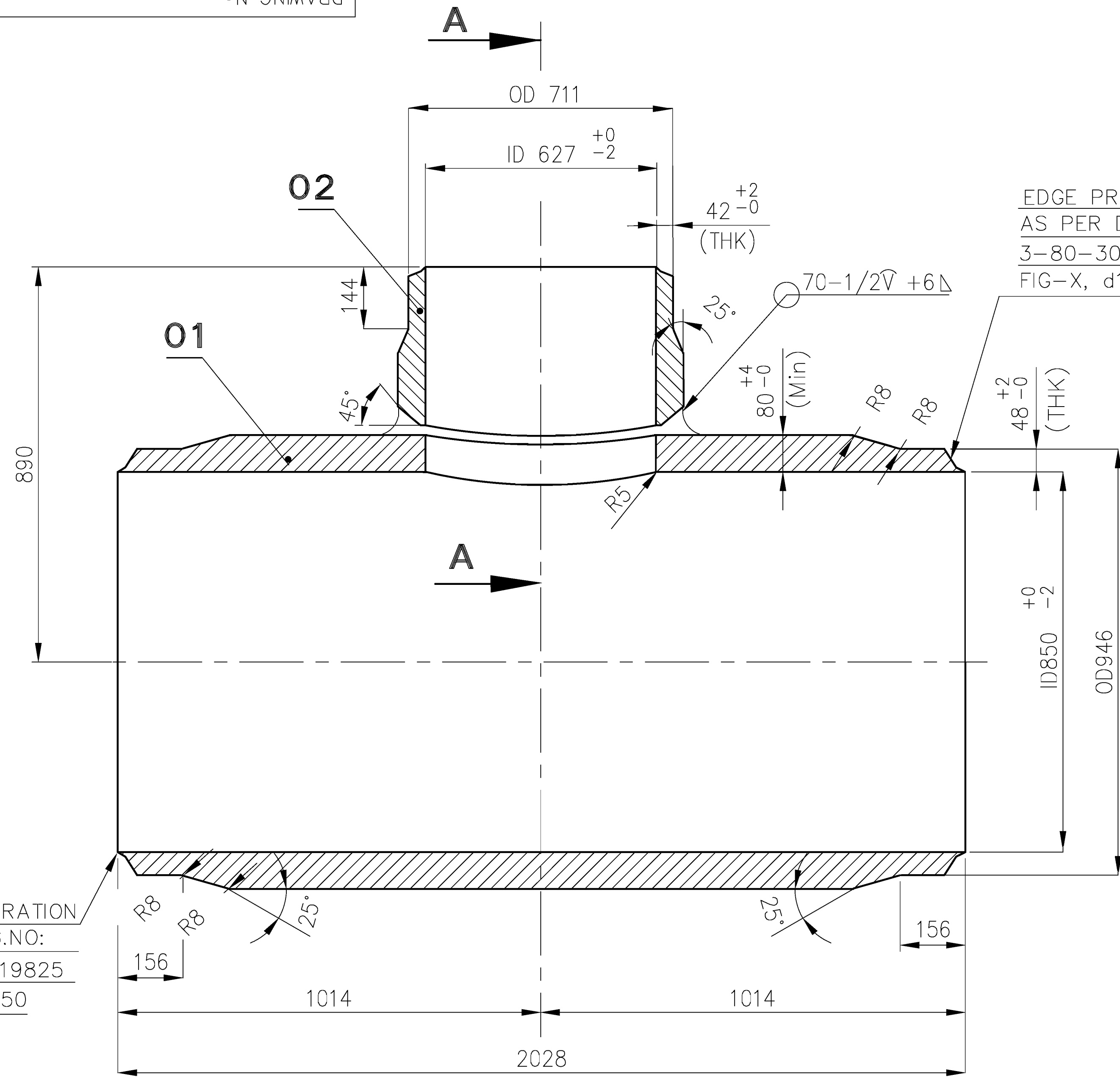
REV 01	DATE	ALTERED APPROVED
ZONE		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	REF TO MSE DRG. No.	ITEM No.
CODE	C/M/F	N.T.S.	815.000		
TITLE	FABRICATED UNEQUAL TEE OD508X52/OD355.6X38			CARD CODE	REV
				U 01	3-80-424-30262 00

6890E-01E-08-E

DRAWING No

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EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
FIG-X, d1=850

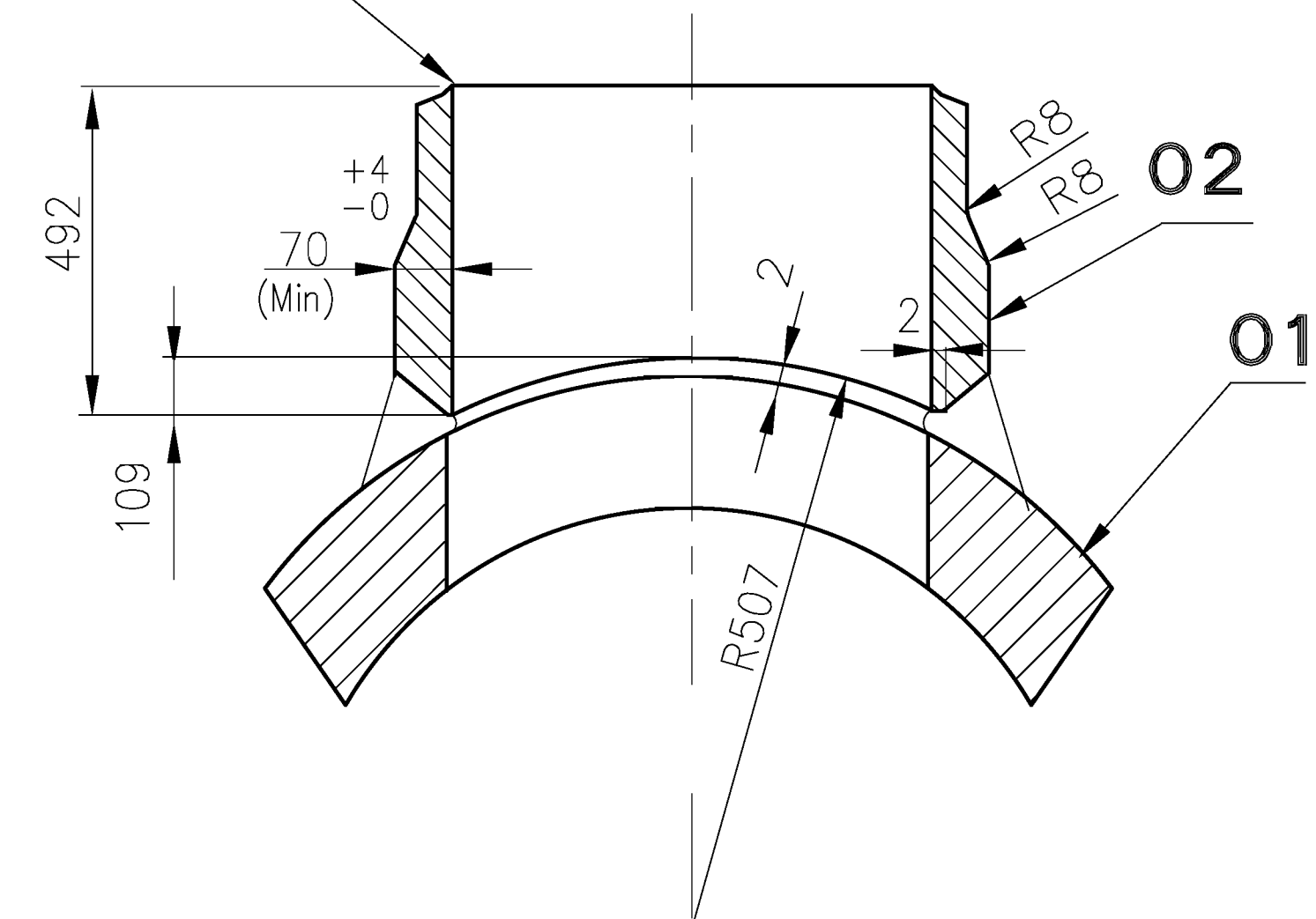
EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
FIG-X, d1 =850

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
FIG-X, d1=630.4

NOTES :-

- DESIGN PRESSURE : 70 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 601° C
- FOLLOW TDG : 108
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
- THE STOCK CODE FOR THE FINISHED UEQ. TEE:92 505 611 0000

12.5



SECTION-AA

02	BRANCH NOZZLE L=492 ID 627 x Thk 70 Min	3-80-310-30689		SA 182 F91	A	---	---
01	BASE PIPE L = 2028 ID 850 x Thk 80 Min	3-80-310-30689		SA 182 F91	A	---	---
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT.	QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME KONDAPA	SIGN	DATE 07.06.13	NO OF ITEMS
CHD	KONDAPA		07.06.13	
APPD	R.SESHAGIRI		07.06.13	

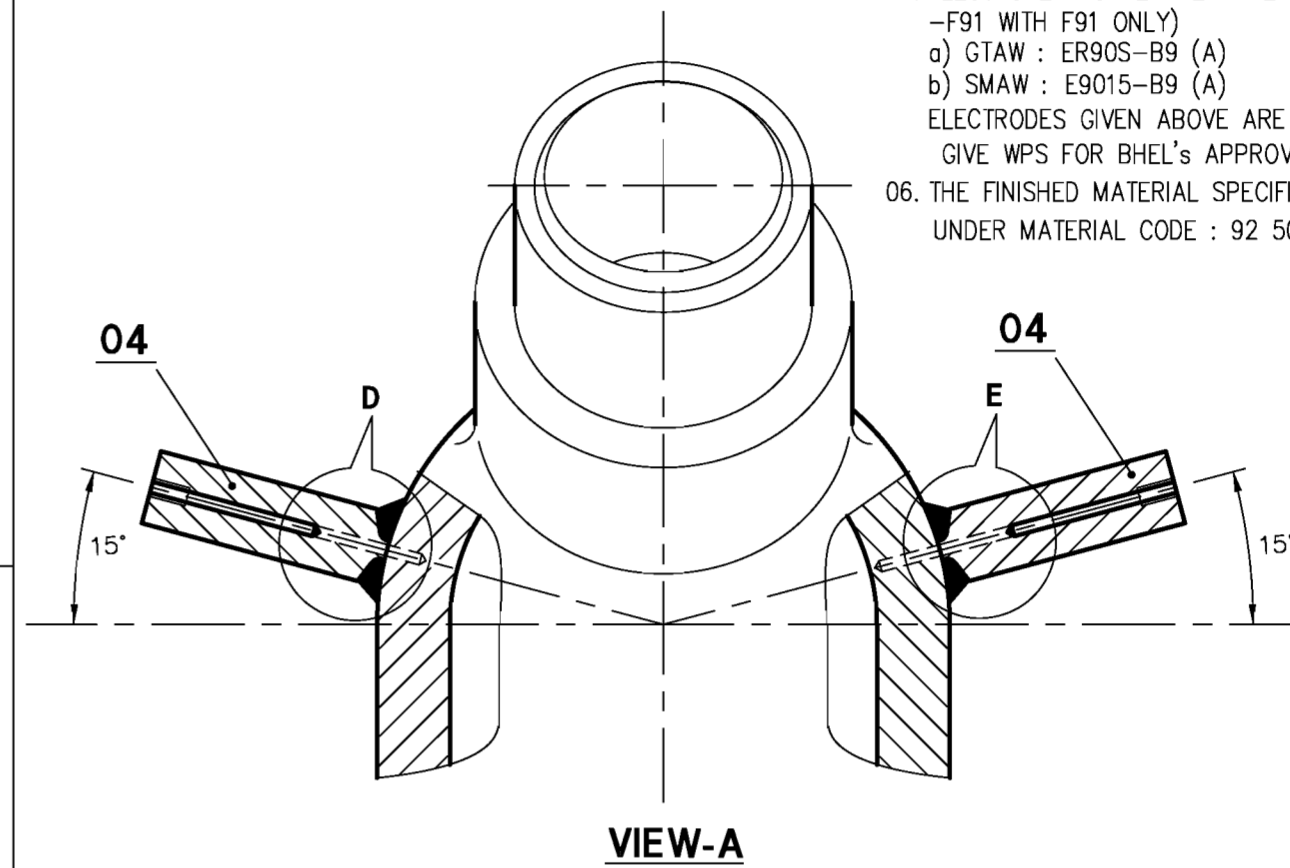
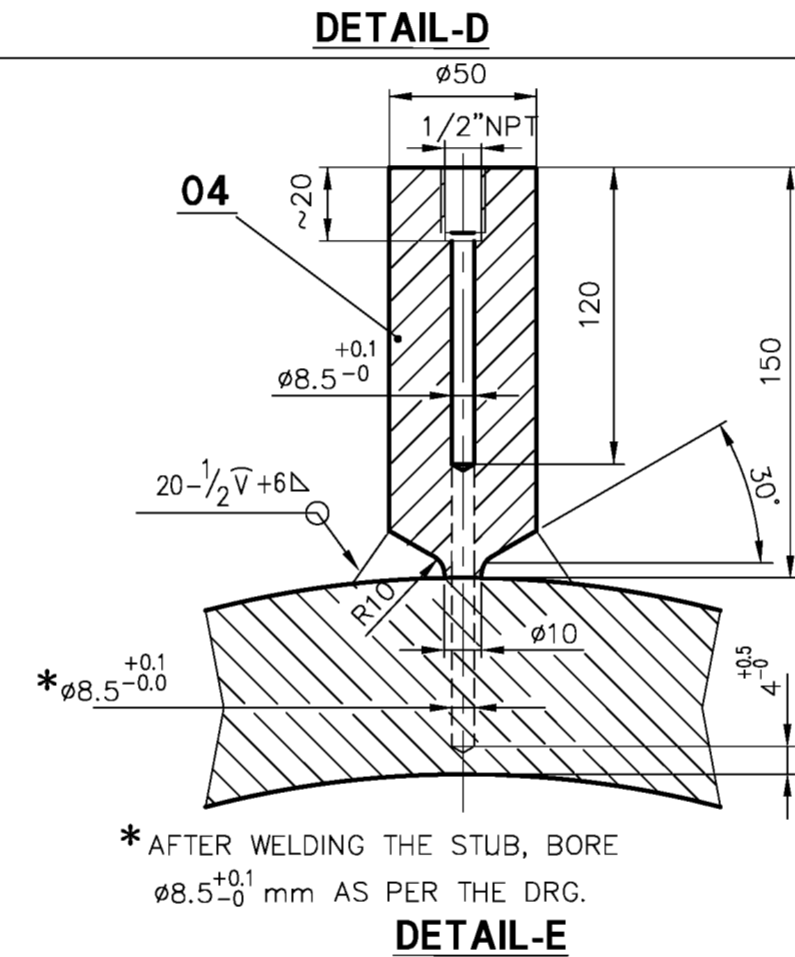
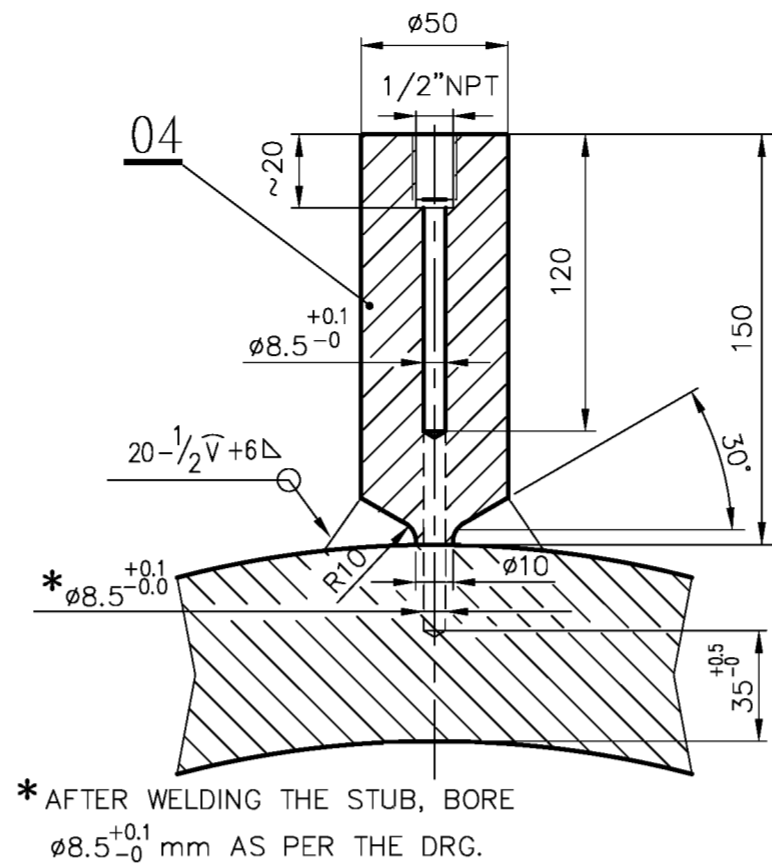
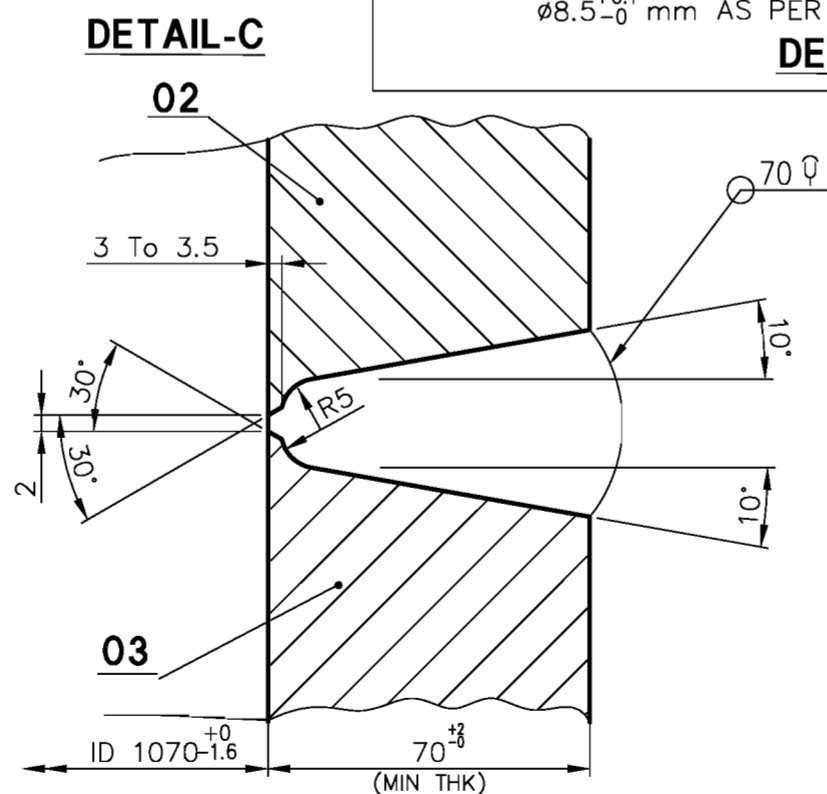
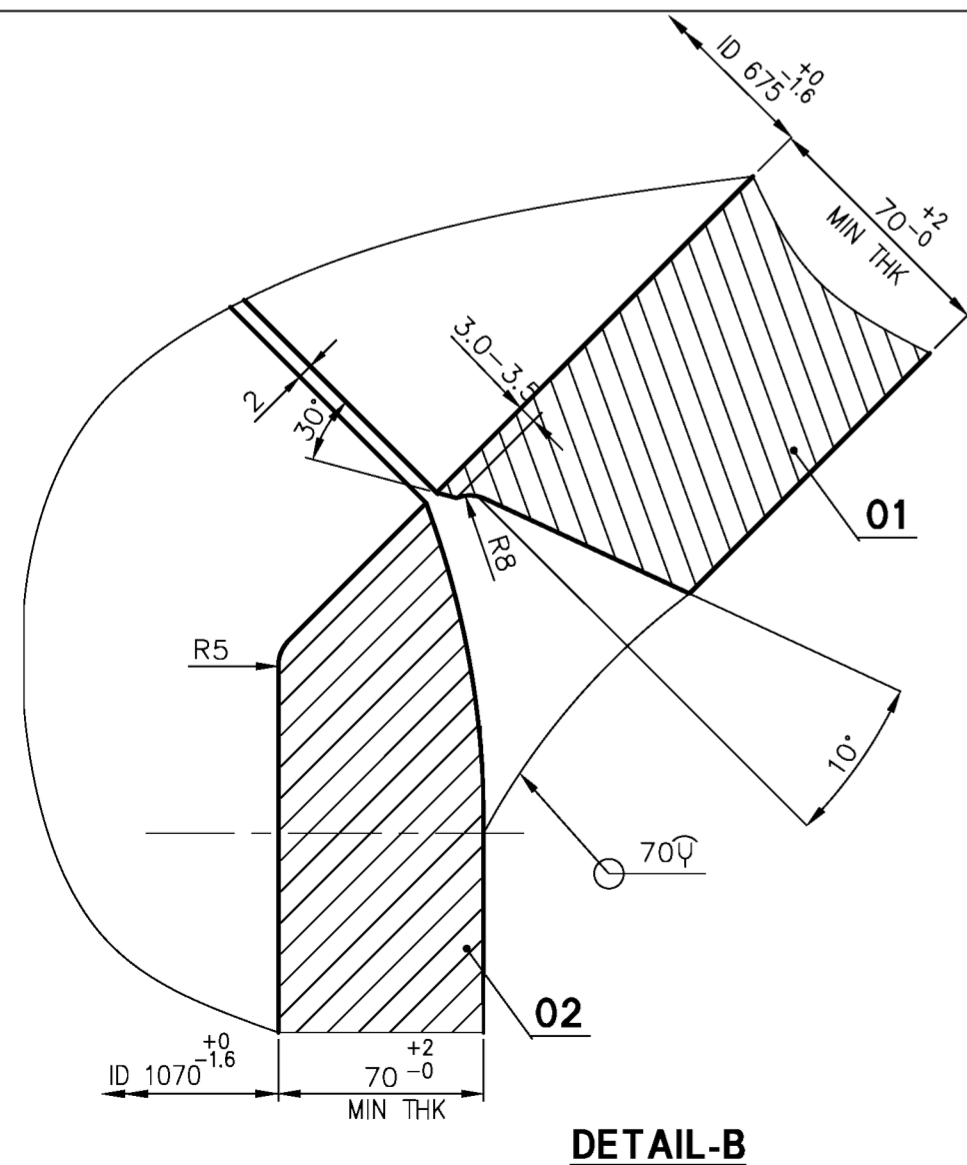
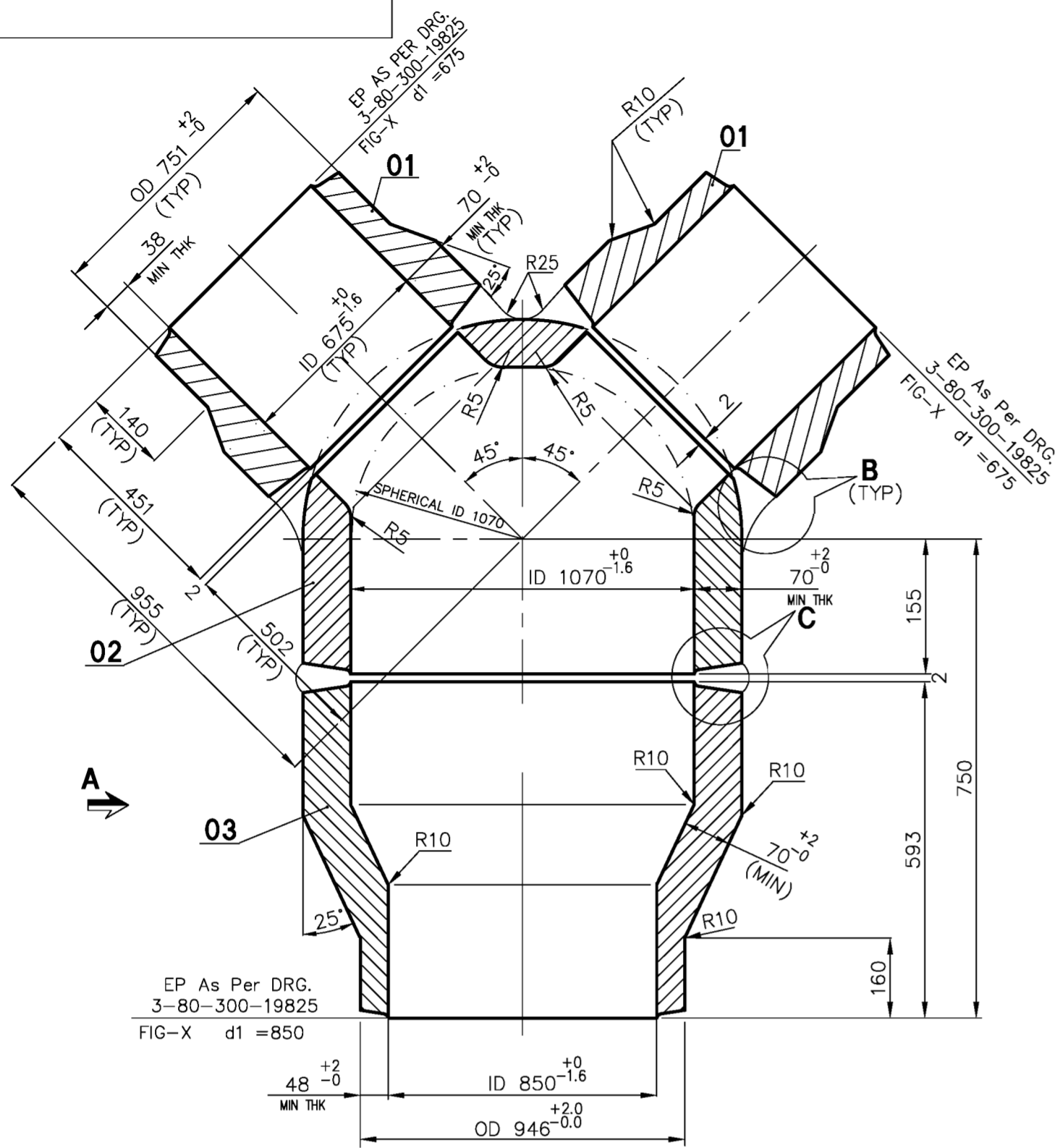
REV 02	DATE	ALTD :	REV 01	DATE	ALTD :
ZONE		APPD :	ZONE		APPD :

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
CODE	C/M/F	N.T.S.	3700		
TITLE	FABRICATED UNEQUAL TEE (ID850X48/OD711x42) SA182F91			CARD CODE	REV
				U 01	00

DRAWING No.
3-80-310-30689

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2-80-310-12439



ALL DIMENSIONS ARE IN MILLIMETRES

NOTES :-

01. DESIGN PRESSURE : 70.0 Kg/Cm² (g)
02. DESIGN TEMPERATURE : 601° C
03. FOLLOW TDG:108.
04. PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
05. ELECTRODES TO BE USED ARE (FOR WELDING OF -F91 WITH F91 ONLY)
 - a) GTAW : ER90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
 ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
06. THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE : 92 505 612 0000

VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	MATERIAL SPECN	UNIT WEIGHT	QUANTITY
	04	TEMP. STUB. Ø50 L=150	2-80-310-12439	SA 182 F91	A	2	200
	03	OUTLET FORGING ID1070 x THK70 MIN / ID850 x 48 MIN THK	2-80-310-12439	SA 182 F91	A	885	000
	02	BODY FORGING ID 1070 x THK 70 MIN	2-80-310-12439	SA 182 F91	A	1590	000
	01	INLET FORGING ID 675 x THK 70 MIN	2-80-310-12439	SA 182 F91	A	472	000

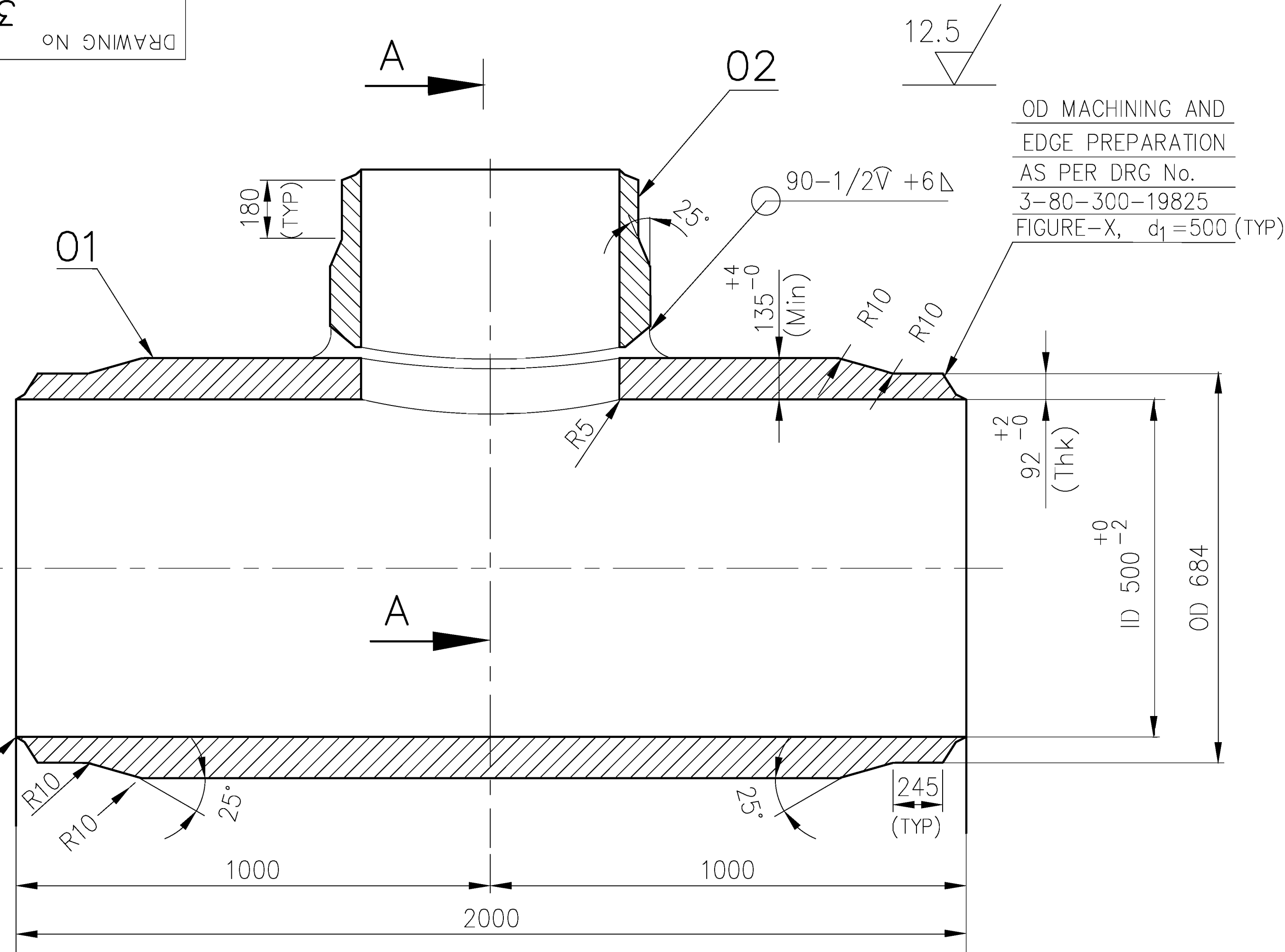
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	DRN KONDAPA	SIGN	DATE 10-06-13	NO OF ITEMS
		CHD KONDAPA		10-06-13	
		APPD R.SESHAGIRI		10-06-13	

DEPT.	GRADE OF UN TOL DIM C/M/F	SCALE N.T.S.	WEIGHT (Kg). 3423.400	BHEL PO REF. NO.	ITEM No.
TITLE Y-PIECE ID 850x48 / ID 675x38 (SA182F91)			CARD CODE U 01	MSE DRAWING NO. 2-80-310-12439	REV 00

88802-102-08-3
DRAWING No

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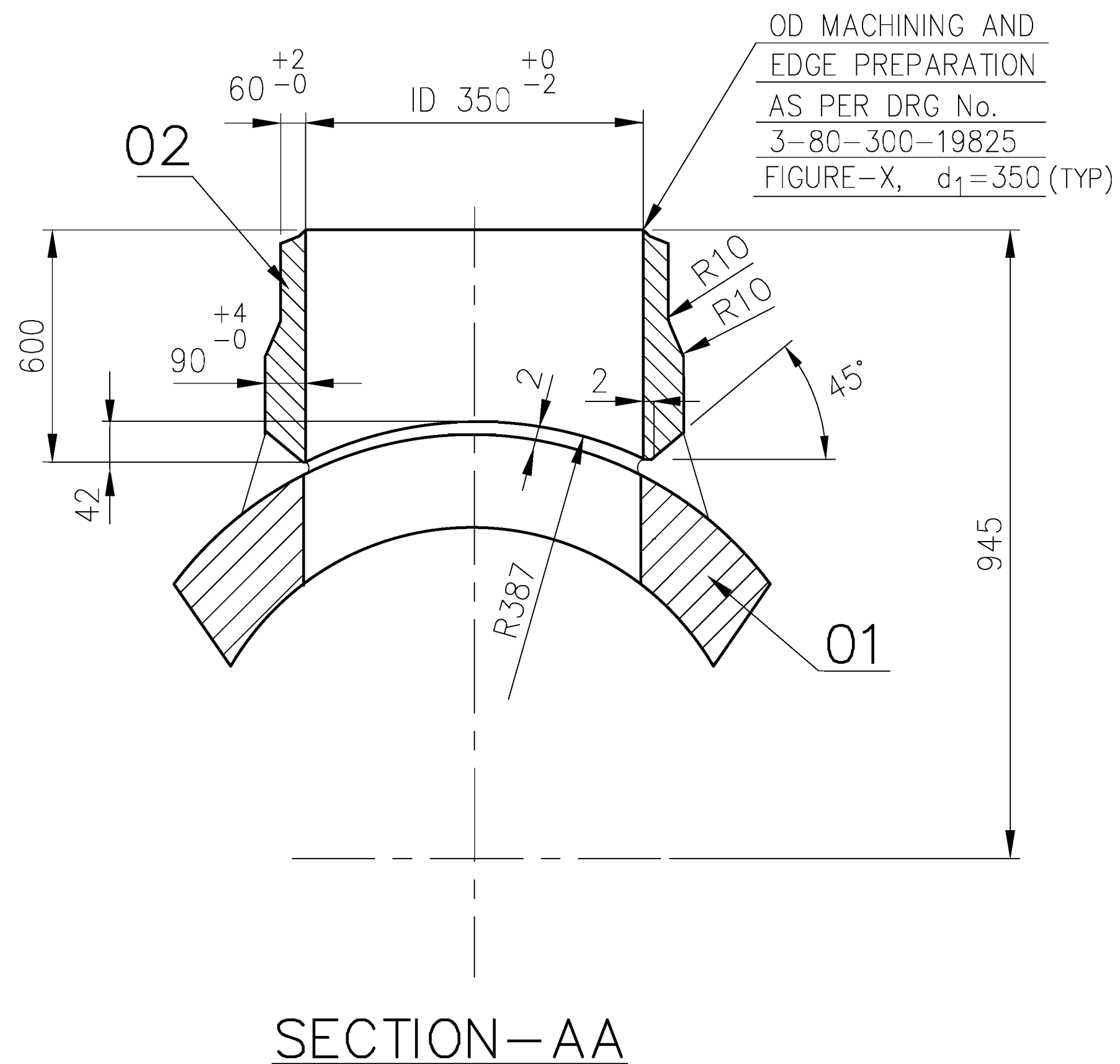


OD MACHINING AND
EDGE PREPARATION
AS PER DRG.No.
3-80-300-19825
FIGURE-X, d₁=500(TYP)

OD MACHINING AND
EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X, d₁=500(TYP)

NOTES

- DESIGN PRESSURE : 269 Kg/Cm²(g)
- DESIGN TEMPERATURE : 568 °C
- FOLLOW TDC No. : TDG-108 (LATEST REVISION)
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- PIPE 'SA 335 P91'(A) CAN ALSO BE USED IN PLACE OF 'SA 182 F91'(A)
- THE FINISHED MATERIAL SPECIFICATION IS 'SA 182 F91'(A)
- THE FINISHED MATERIAL CODE IS '92 505 617 0000'



OD MACHINING AND
EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X, d₁=350(TYP)

SECTION-AA

02	BRANCH FORGING L=600 ID 350 x Thk 90 Min	3-80-301-30888		-	A	450,000
01	BASE FORGING L=2000 ID 500 x Thk 135 Min	3-80-301-30888		-	A	5300,000
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

SPACE FOR IBR APPL.



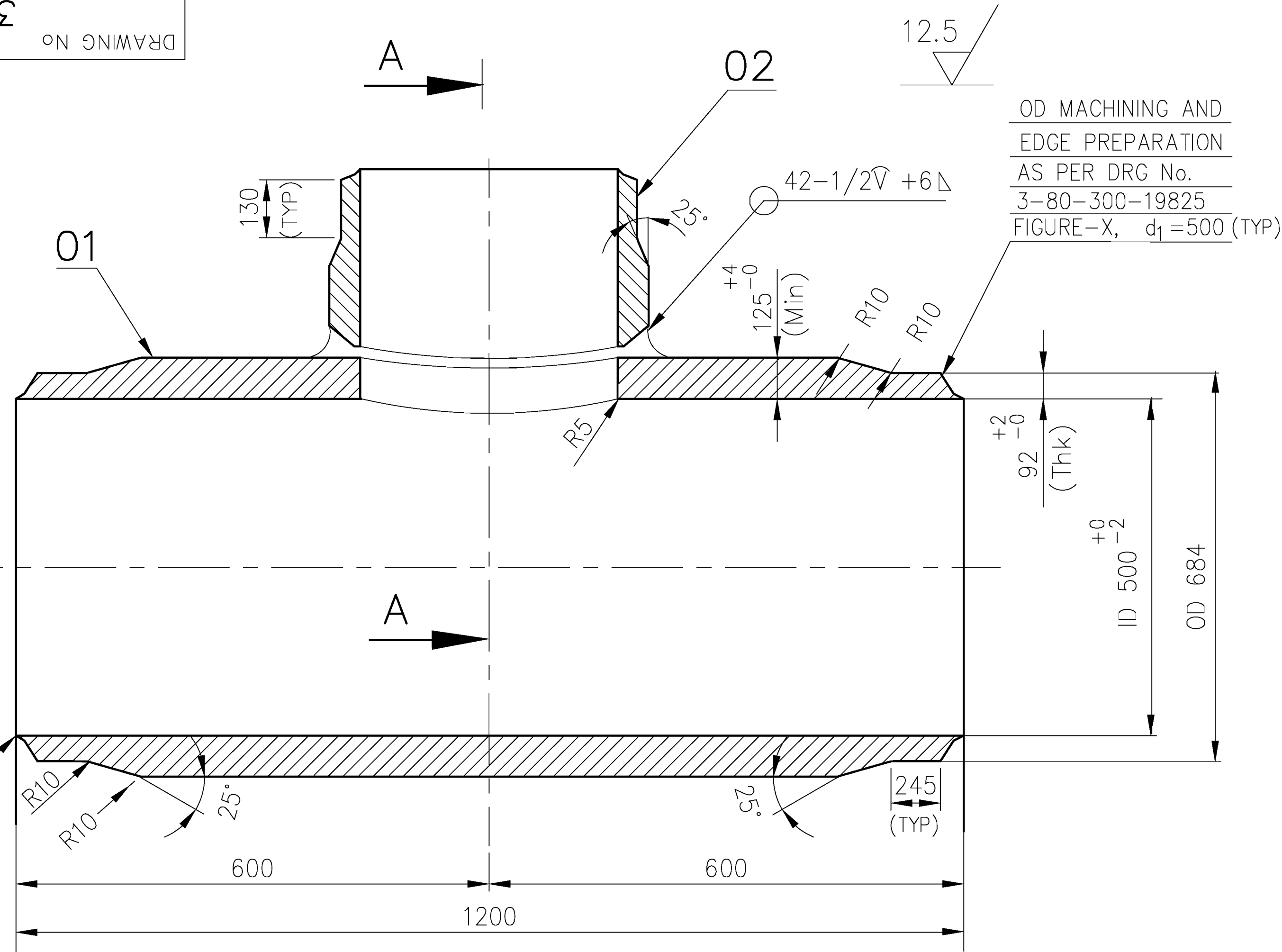
BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

	NAME	SIGN	DATE	NO OF ITEMS
DRN	POONGKODI.V	..sd..	08/08/2013	
CHD	SUKUMAR.B	..sd..	08/08/2013	-
APPD	C.V.NATHAN	..sd..	08/08/2013	

REV 01	DATE	ALTD APPD	DEPT.	GRADE OF UN TOL. DIM C/M/F	SCALE N.T.S.	WEIGHT (Kg) 5750	BHEL PO REF.NO. -	ITEM No. -
ZONE			TITLE FABRICATED UNEQUAL TEE (ID500x92/ID350x60)	CARD CODE U 01	DRAWING No. 3-80-301-30888		REV 00	

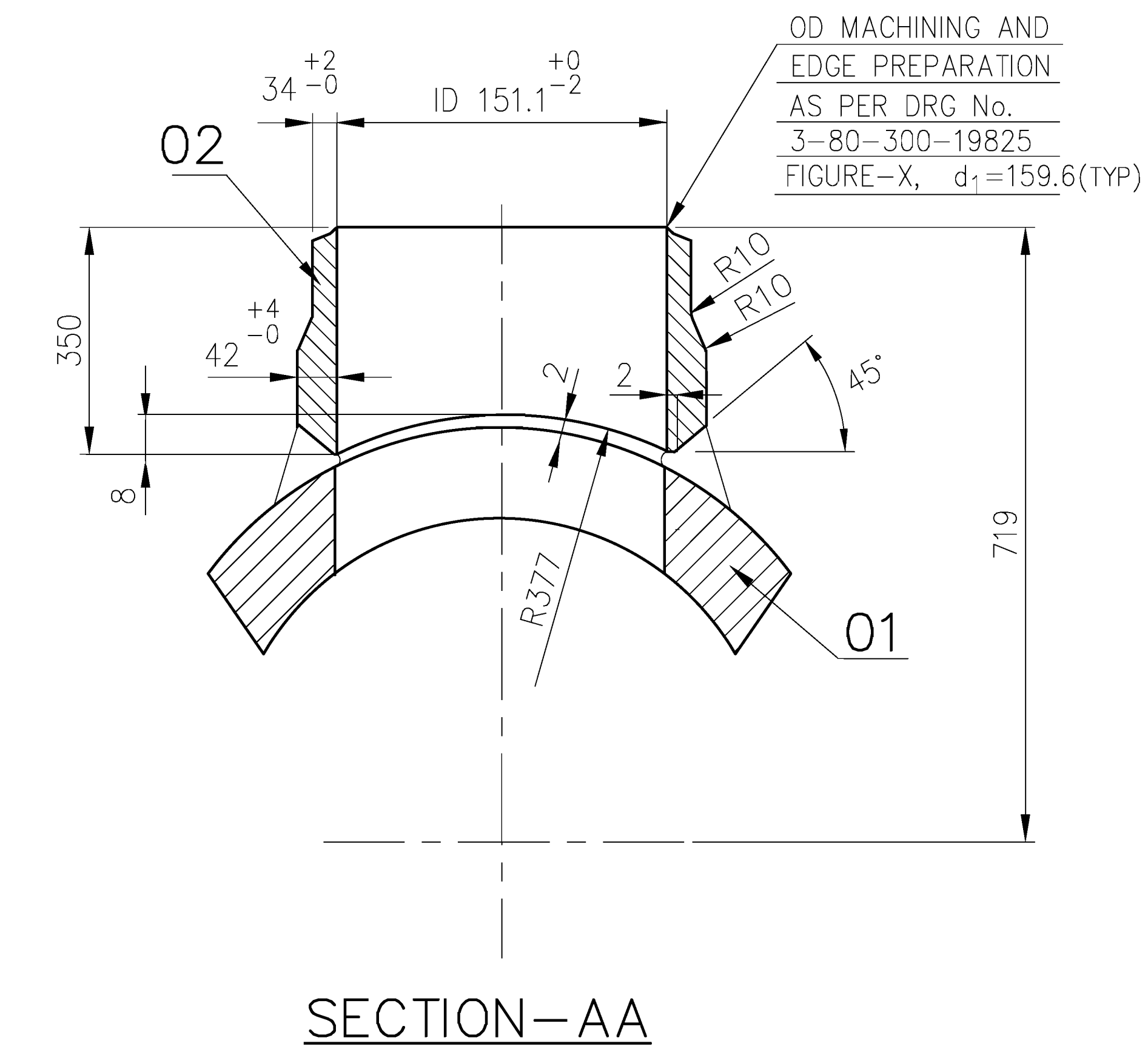
68802-102-08-2
DRAWING No

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OD MACHINING AND
EDGE PREPARATION
AS PER DRG.No.
3-80-300-19825
FIGURE-X, d₁=500(TYP)

OD MACHINING AND
EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X, d₁=500(TYP)



OD MACHINING AND
EDGE PREPARATION
AS PER DRG.No.
3-80-300-19825
FIGURE-X, d₁=159.6(TYP)

SECTION-AA

NOTES

- DESIGN PRESSURE : 269 Kg/Cm²(g)
- DESIGN TEMPERATURE : 568 °C
- FOLLOW TDC No. : TDG-108 (LATEST REVISION)
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- PIPE 'SA 335 P91'(A) CAN ALSO BE USED IN PLACE OF 'SA 182 F91'(A)
- THE FINISHED MATERIAL SPECIFICATION IS 'SA 182 F91'(A)
- THE FINISHED MATERIAL CODE IS '92 505 618 0000'

02	BRANCH FORGING L=300 ID 151.1 x Thk 42 Min	3-80-301-30889		-	A	60,000
01	BASE FORGING L=1200 ID 500 x Thk 125 Min	3-80-301-30889		-	A	1680,000
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

SPACE FOR IBR APPL.



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

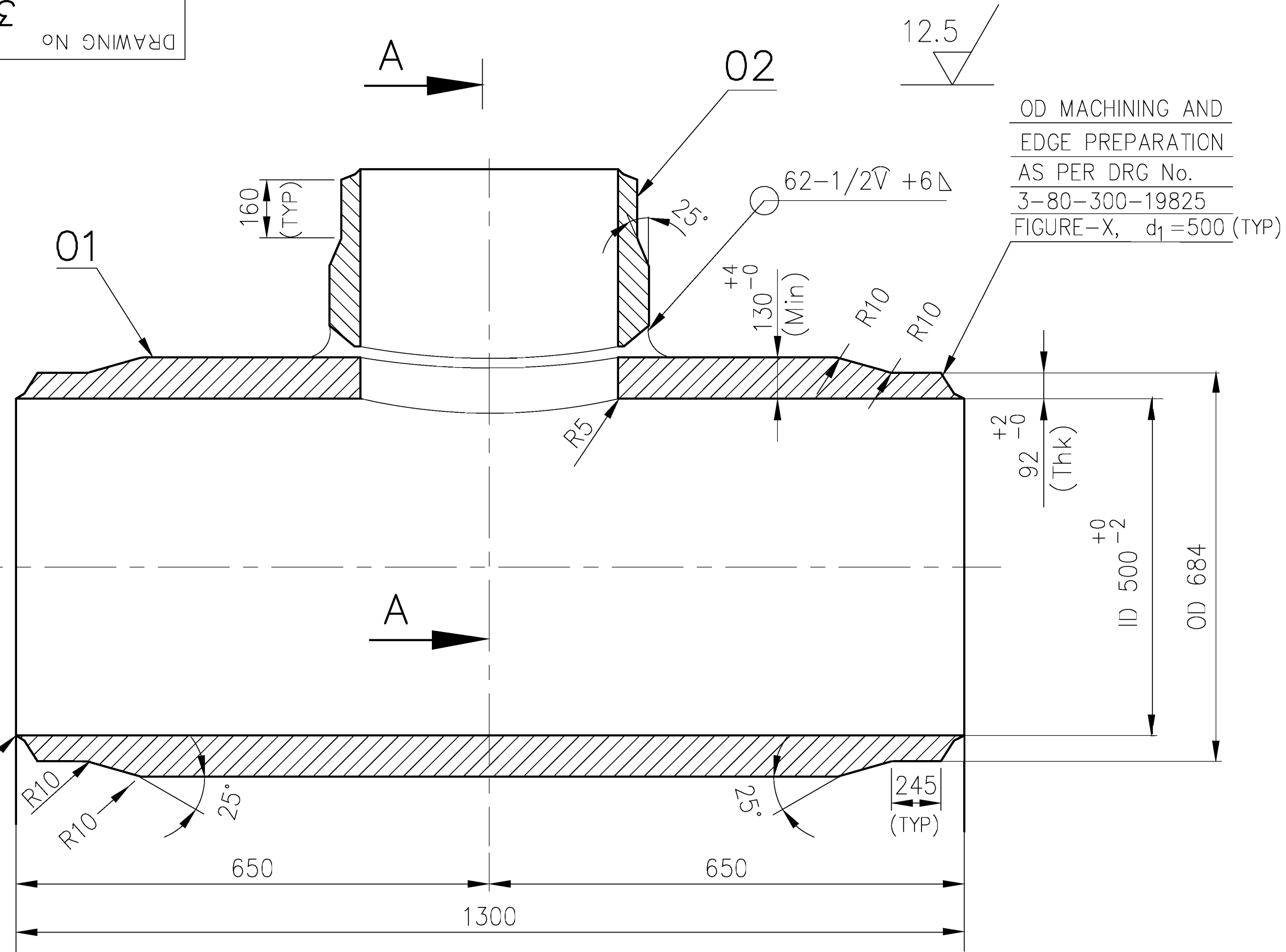
	NAME	SIGN	DATE	NO OF ITEMS
DRN	POONGKODI.V	..sd..	08/08/2013	
CHD	SUKUMAR.B	..sd..	08/08/2013	-
APPD	C.V.NATHAN	..sd..	08/08/2013	

REV	DATE	ALTD
01		APPD
ZONE		

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
	C/M/F	N.T.S.	1740	-	-
TITLE	CARD CODE	DRAWING No.	REV		
FABRICATED UNEQUAL TEE (ID500x92/OD219.1x34)	U 01	3-80-301-30889	00		

0680C-10C-08-3
DRAWING No

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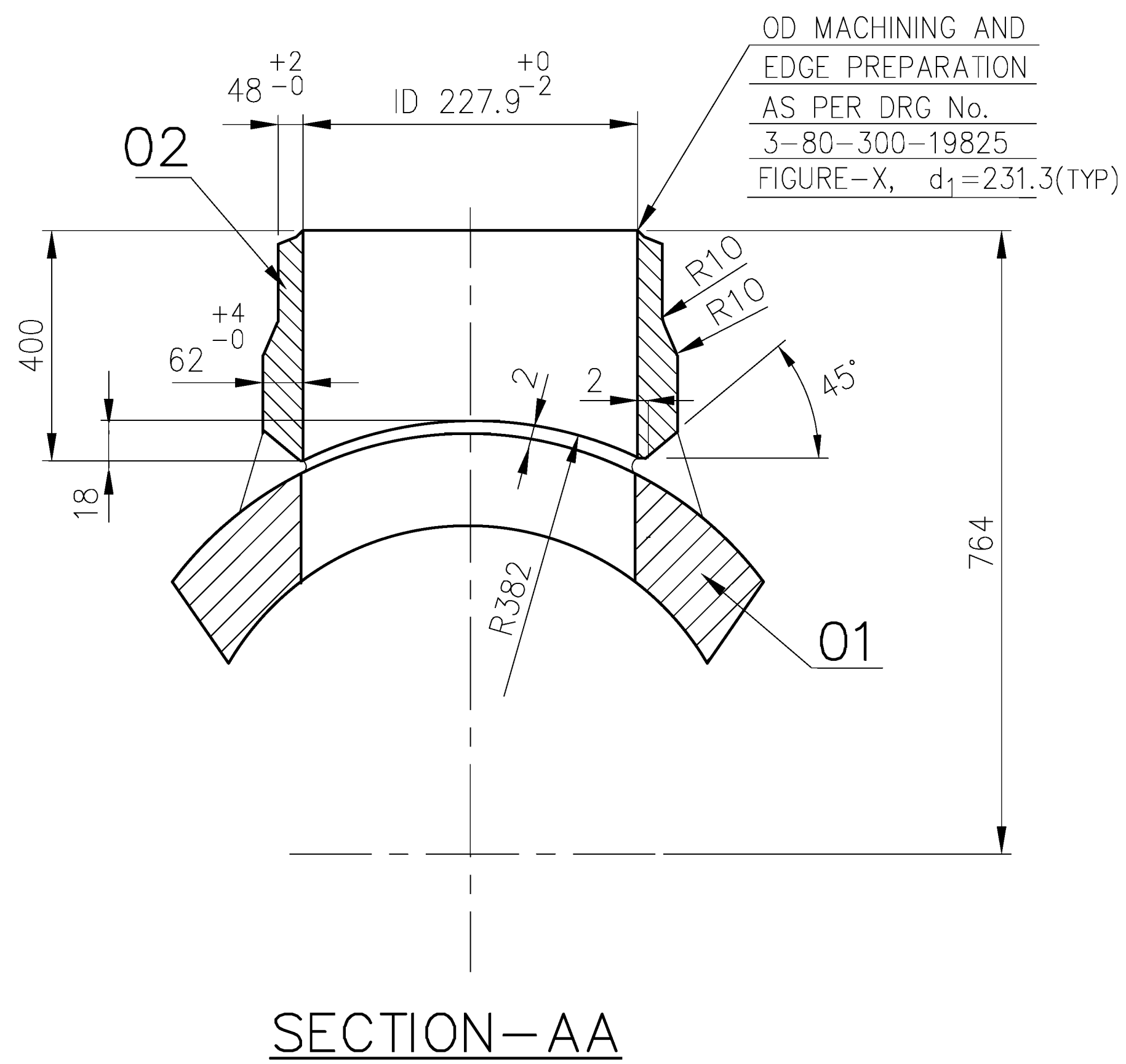


OD MACHINING AND
EDGE PREPARATION
AS PER DRG.No.
3-80-300-19825
FIGURE-X, d₁=500(TYP)

OD MACHINING AND
EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X, d₁=500(TYP)

NOTES

- DESIGN PRESSURE : 269 Kg/Cm²(g)
- DESIGN TEMPERATURE : 568 °C
- FOLLOW TDC No. : TDG-108 (LATEST REVISION)
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- PIPE 'SA 335 P91'(A) CAN ALSO BE USED IN PLACE OF 'SA 182 F91'(A)
- THE FINISHED MATERIAL SPECIFICATION IS 'SA 182 F91'(A)
- THE FINISHED MATERIAL CODE IS '92 505 619 0000'



OD MACHINING AND
EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X, d₁=231.3(TYP)

02	BRANCH FORGING L=400 ID 227.9 x Thk 62 Min	3-80-301-30890		-	A	160,000
01	BASE FORGING L=1300 ID 500 x Thk 130 Min	3-80-301-30890		-	A	2010,000
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. / VAR NO.	MATERIAL CODE / MATERIAL SPEC.	A / C	UNIT WT. / QTY.

SPACE FOR IBR APPL.



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

NAME	SIGN	DATE	NO OF ITEMS
DRN POONGKODI.V	..sd..	08/08/2013	1
CHD SUKUMAR.B	..sd..	08/08/2013	-
APPD C.V.NATHAN	..sd..	08/08/2013	-

REV 01	DATE	ALTD APPD
ZONE		

DEPT. CODE	GRADE OF UN TOL. DIM C/M/F	SCALE N.T.S.	WEIGHT (Kg) 2170	BHEL PO REF.NO. -	ITEM No. -
TITLE FABRICATED UNEQUAL TEE (ID500x92/OD323.9x48)			CARD CODE U 01	DRAWING No. 3-80-301-30890	REV 00

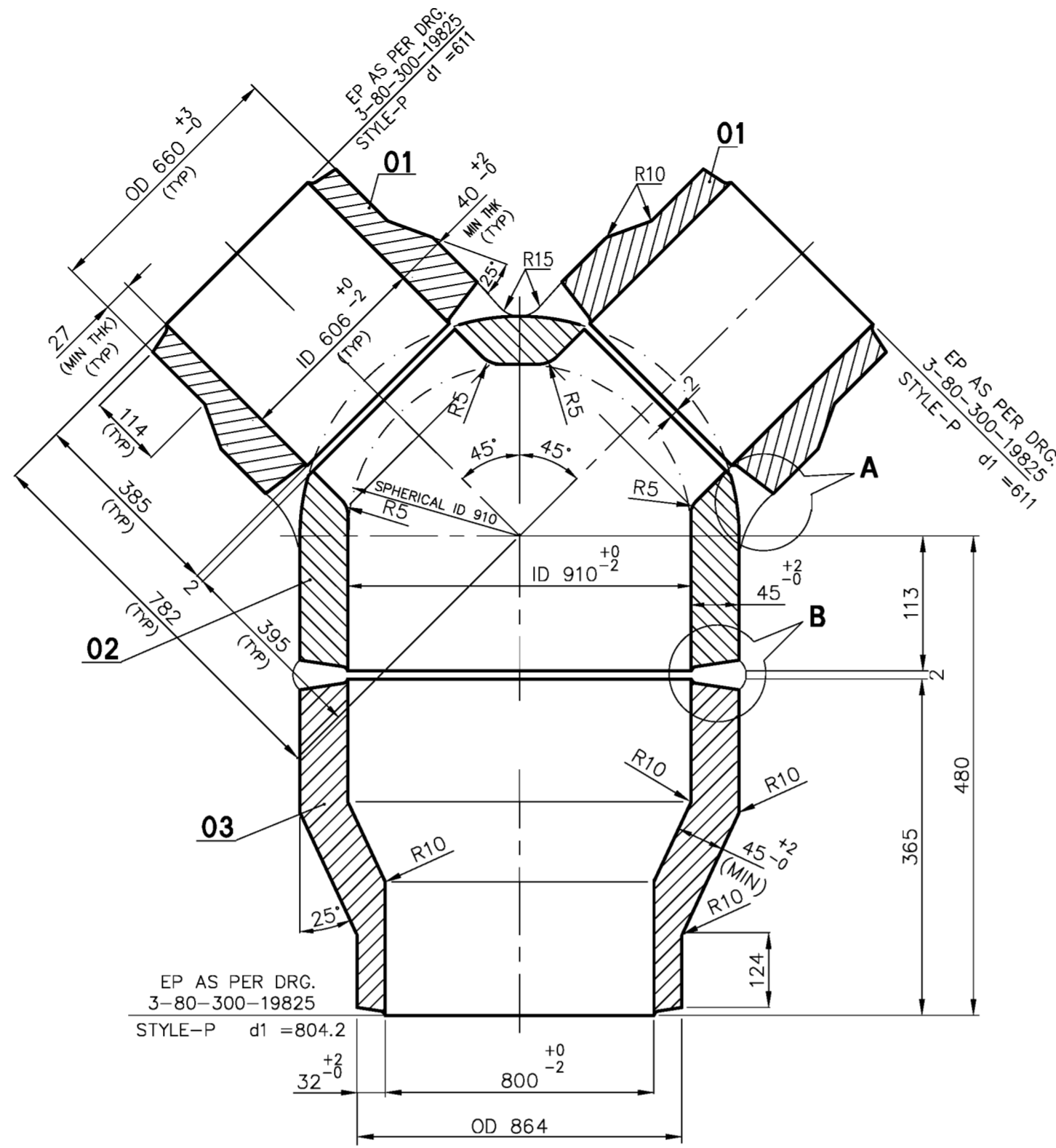
2-80-320-12515

DRAWING No.

ALL DIMENSIONS ARE IN MILLIMETRES

05-228/C

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NOTES :-

- 01. DESIGN PRESSURE : 73.1 Kg/Sq.Cm (g)
- 02. DESIGN TEMPERATURE : 378° C
- 03. FOLLOW TDG : 108 LATEST
- 04. PIPE SA106GRC(A) CAN ALSO BE USED IN PLACE OF SA105(A).
- 05. THE FINISHED MATERIAL SPECIFICATION WILL BE SA105 (A) UNDER MATERIAL CODE: 92-505-620-0000

EP AS PER DRG.
3-80-300-19825
STYLE-P d1 = 804.2

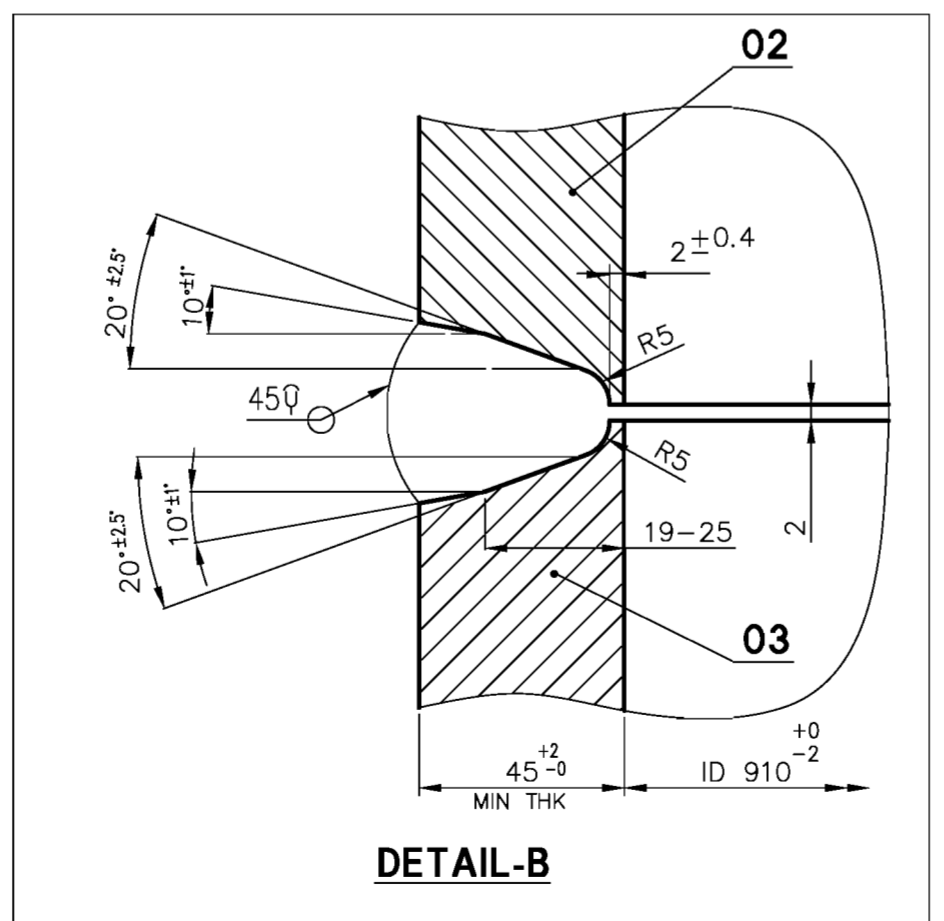
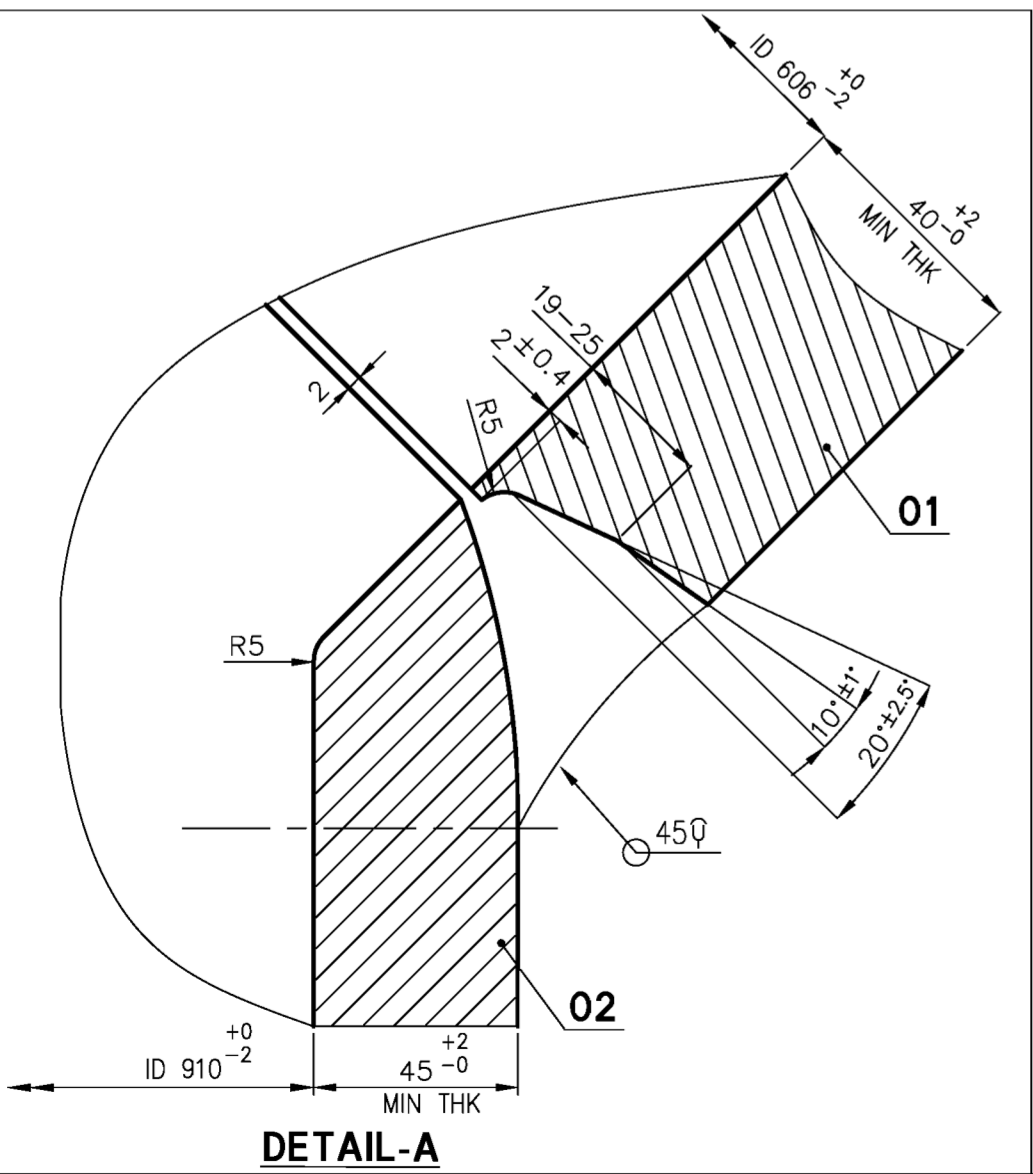
VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	A	UNIT WEIGHT
				MATERIAL SPECN	C	QUANTITY
	03	OUTLET FORGING ID 910 x THK45 MIN / ID 800 x 32 THK	2-80-320-12515	SA 105	A	325 000
	02	BODY FORGING ID 910 x THK45 MIN	2-80-320-12515	SA 105	A	930 000
	01	INLET FORGING ID 606 x THK40 MIN	2-80-320-12515	SA 105	A	220 000

JOB NO.		REL NO.		DATE	
---------	--	---------	--	------	--

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

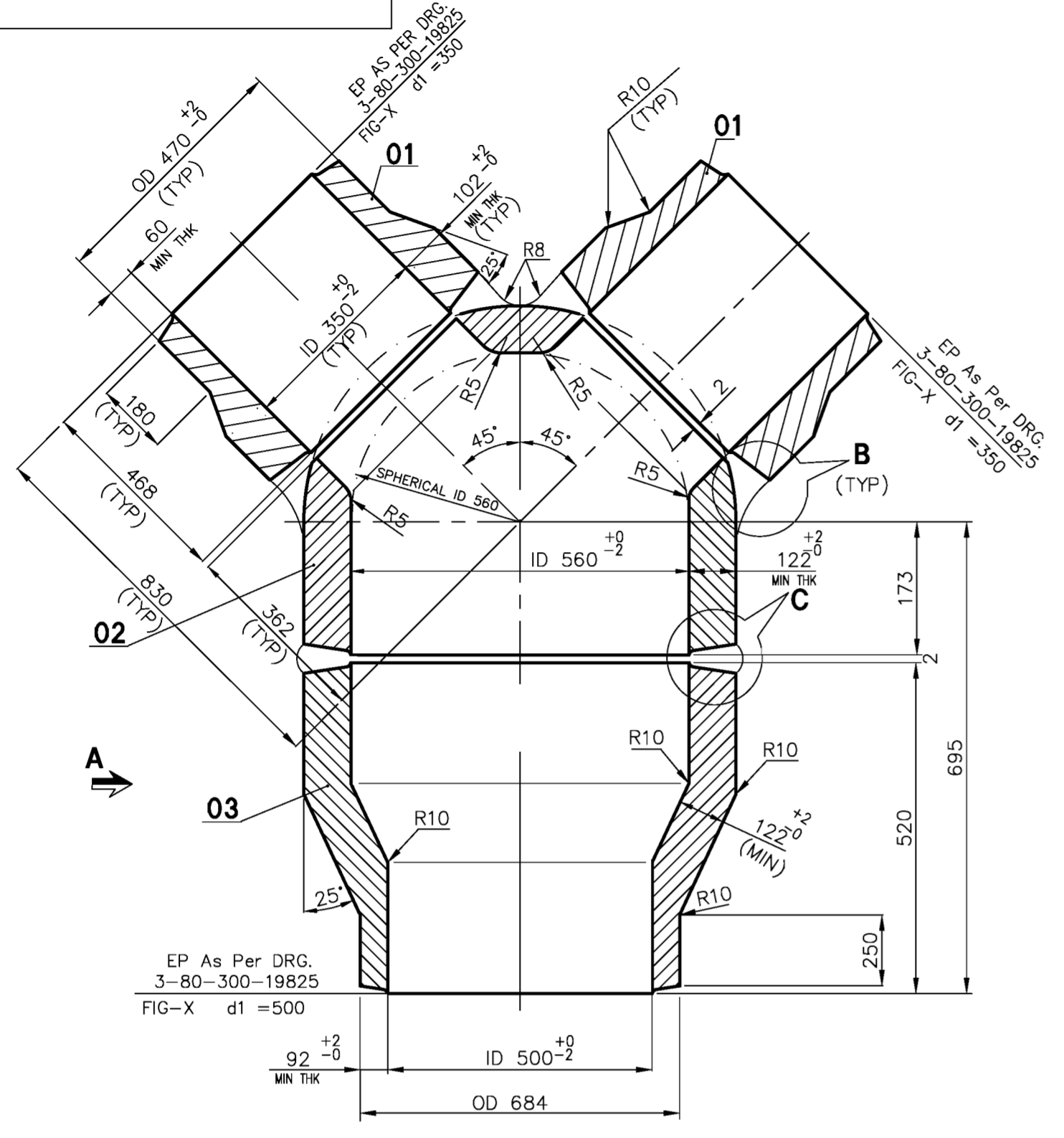
	BHARAT HEAVY ELECTRICALS LTD.,		NAME	SIGN	DATE	NO OF ITEMS
	PIPING CENTRE,		DRN POONGKODI.V	-Sd-	06.08.13	
	CHENNAI 600 017		CHD SUKUMAR.B	-Sd-	06.08.13	
			APPD C.V.NATHAN	-Sd-	06.08.13	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF. NO.	ITEM No.
CODE	C/M/F	N.T.S.	1695		
TITLE			CARD CODE	MSE DRAWING NO.	REV
CRH Y-PIECE (OD864.0x32/OD660.0x27)SA105			U 01	2-80-320-12515	00



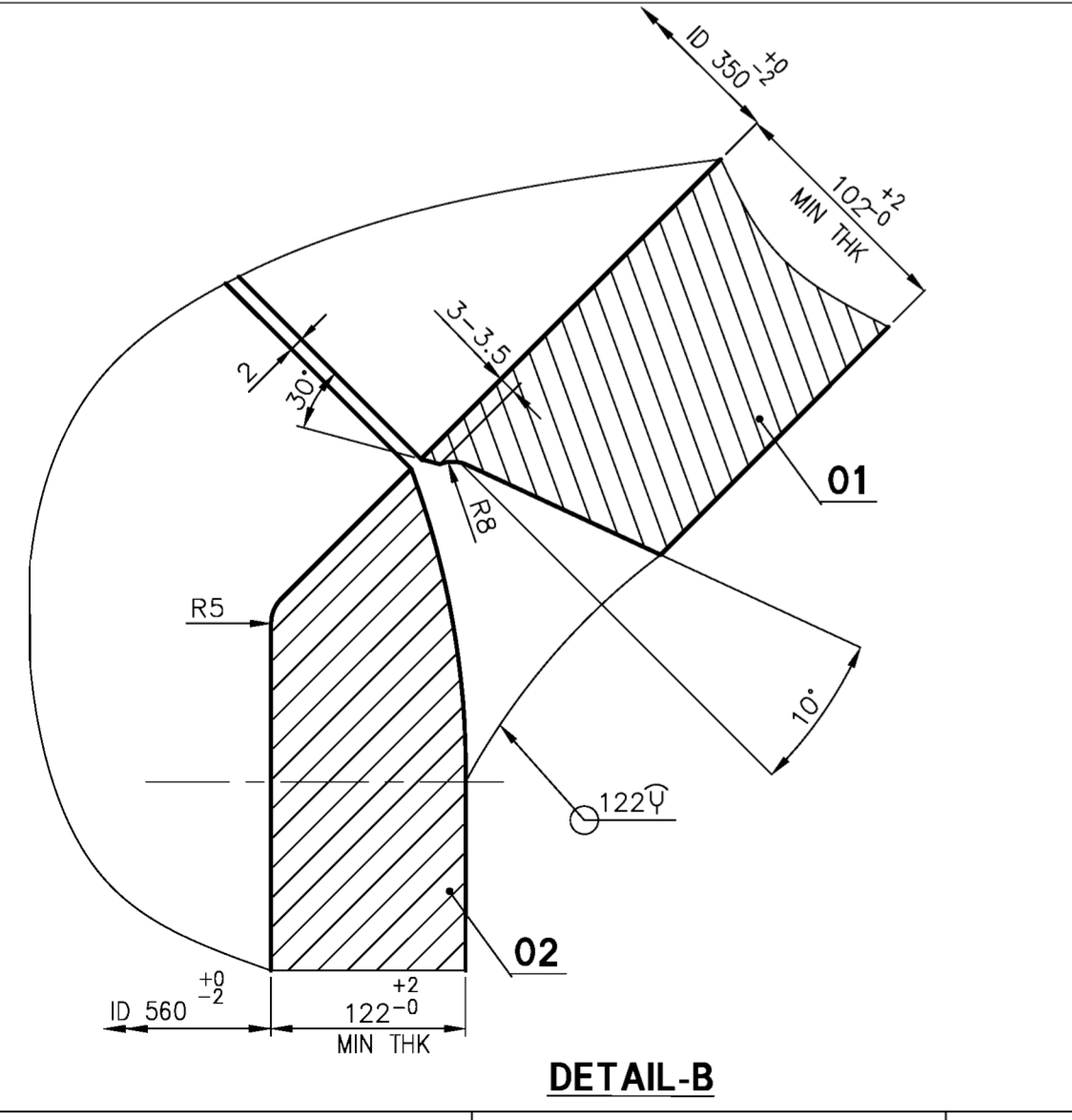
CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

2-80-301-12514

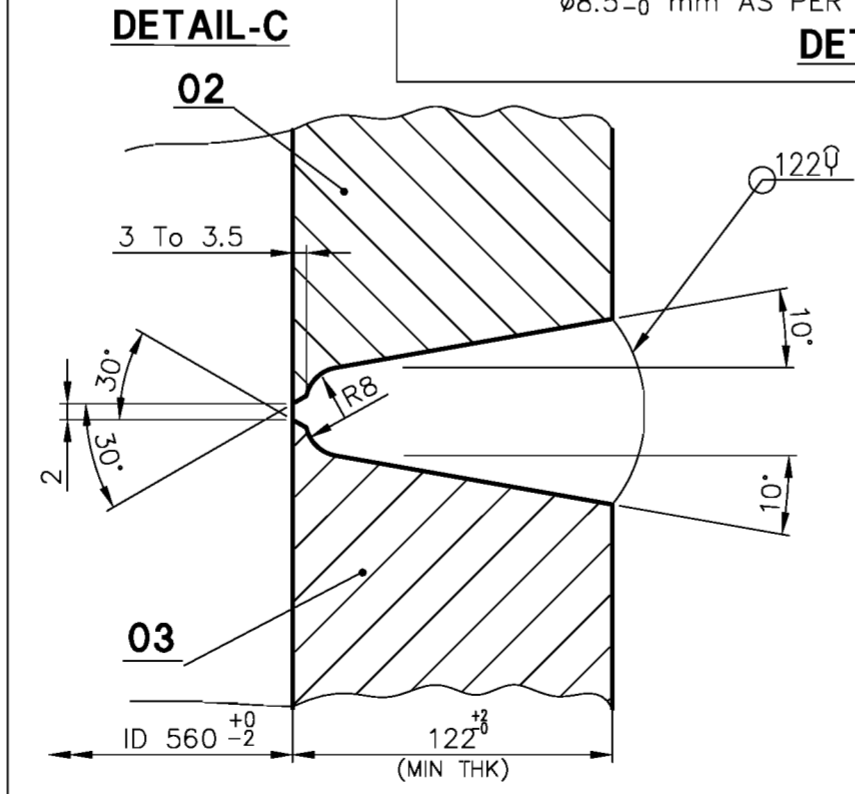


EP As Per DRG.
3-80-300-19825
FIG-X d1 = 500

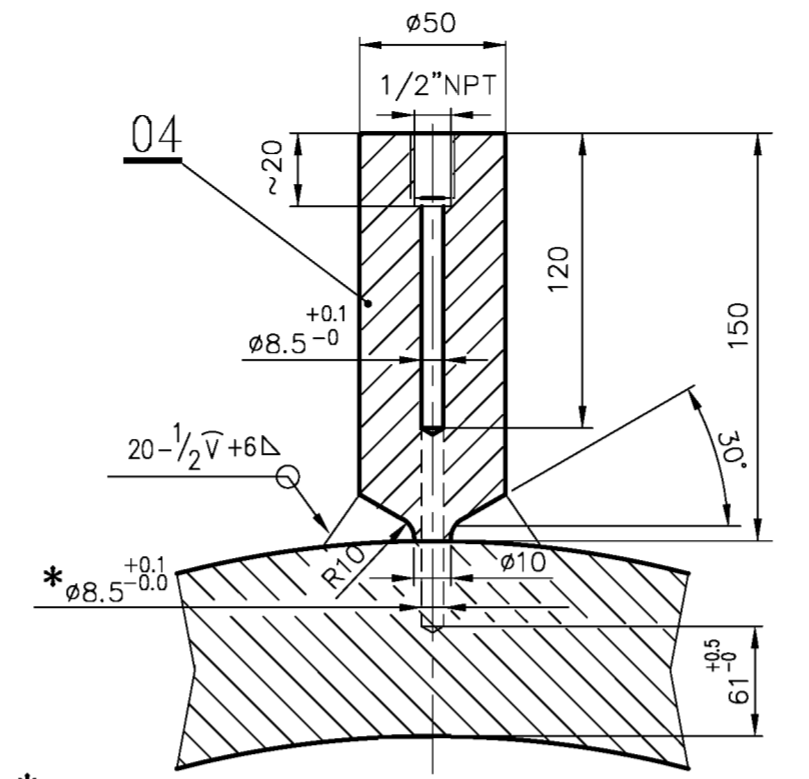
92⁺²₋₀ MIN THK ID 500⁺⁰₋₂ OD 684



DETAIL-B

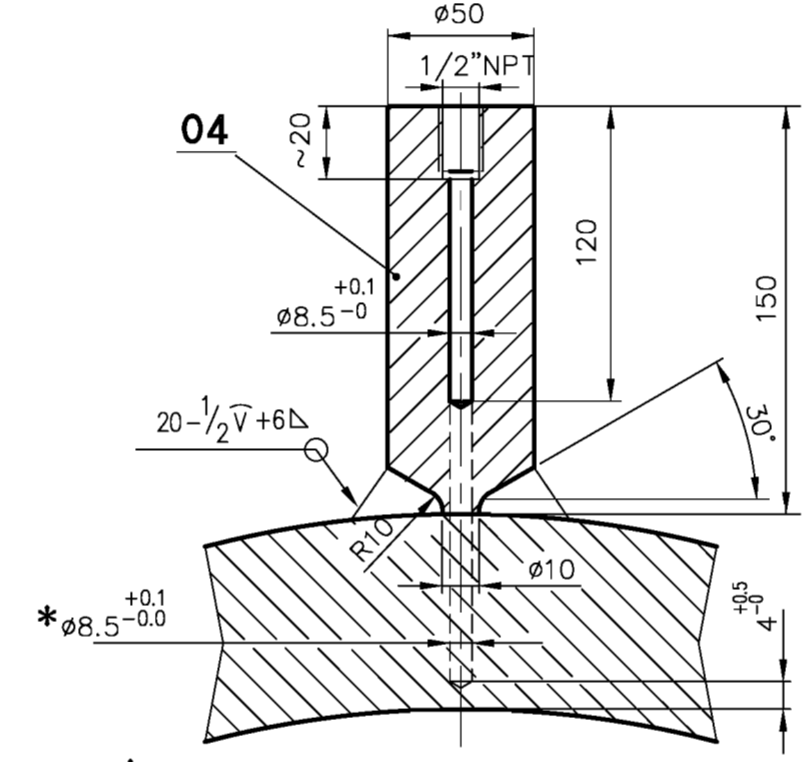


DETAIL-C



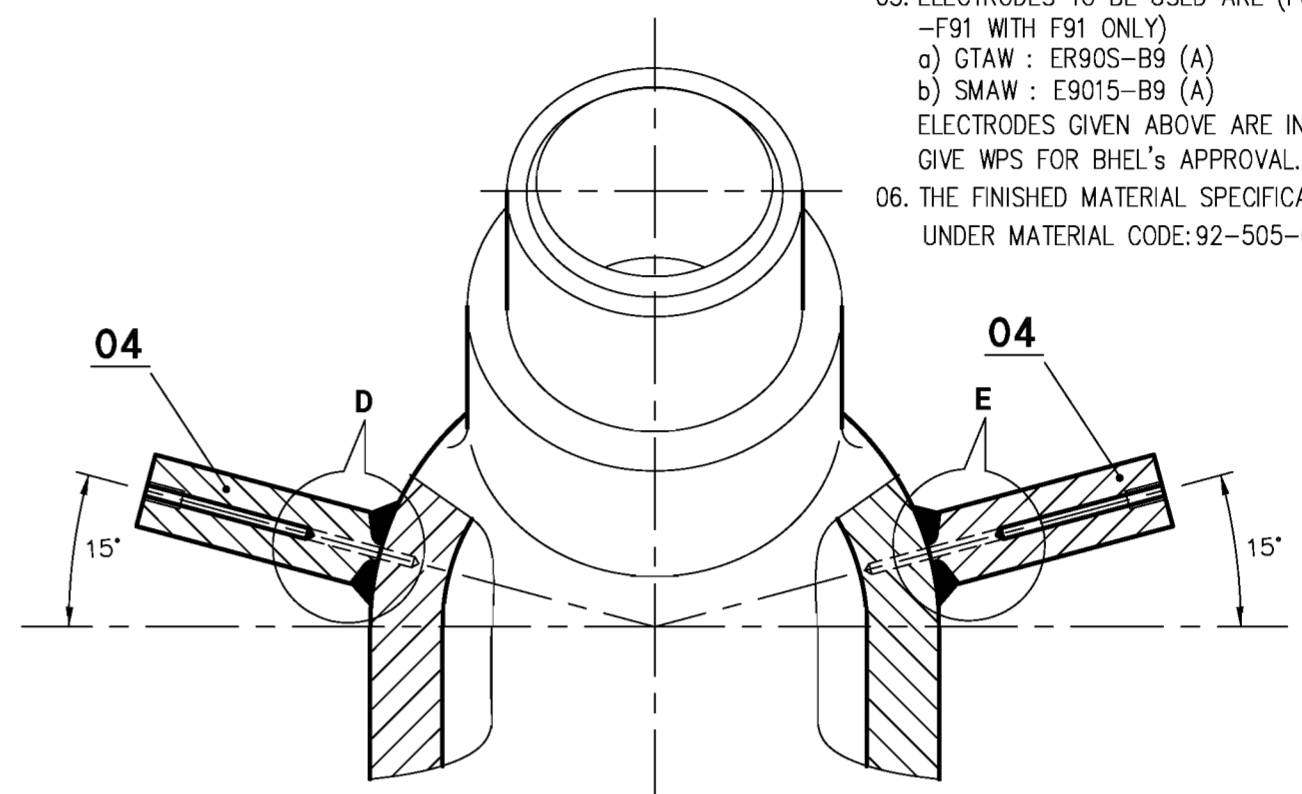
* AFTER WELDING THE STUB, BORE $\phi 8.5^{+0.1}_{-0}$ mm AS PER THE DRG.

DETAIL-D



* AFTER WELDING THE STUB, BORE $\phi 8.5^{+0.1}_{-0}$ mm AS PER THE DRG.

DETAIL-E



VIEW-A

NOTES :-

01. DESIGN PRESSURE : 269 Kg/Cm² (g)
02. DESIGN TEMPERATURE : 568° C
03. FOLLOW TDG:108. LATEST
04. PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
05. ELECTRODES TO BE USED ARE (FOR WELDING OF -F91 WITH F91 ONLY)
 - a) GTAW : ER90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
 ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
06. THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE:92-505-621-0000

VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	UNIT WEIGHT
				MATERIAL SPECN	QUANTITY
	04	TEMP. STUB. $\phi 50$ L=150	2-80-301-12514	SA 182 F91	4 000
	03	OUTLET FORGING ID560 x THK122 MIN / ID500 x 92 MIN THK	2-80-301-12514	SA 182 F91	855 000
	02	BODY FORGING ID 560 x THK 122 MIN	2-80-301-12514	SA 182 F91	1585 000
	01	INLET FORGING ID 350 x THK 102 MIN	2-80-301-12514	SA 182 F91	415 000

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

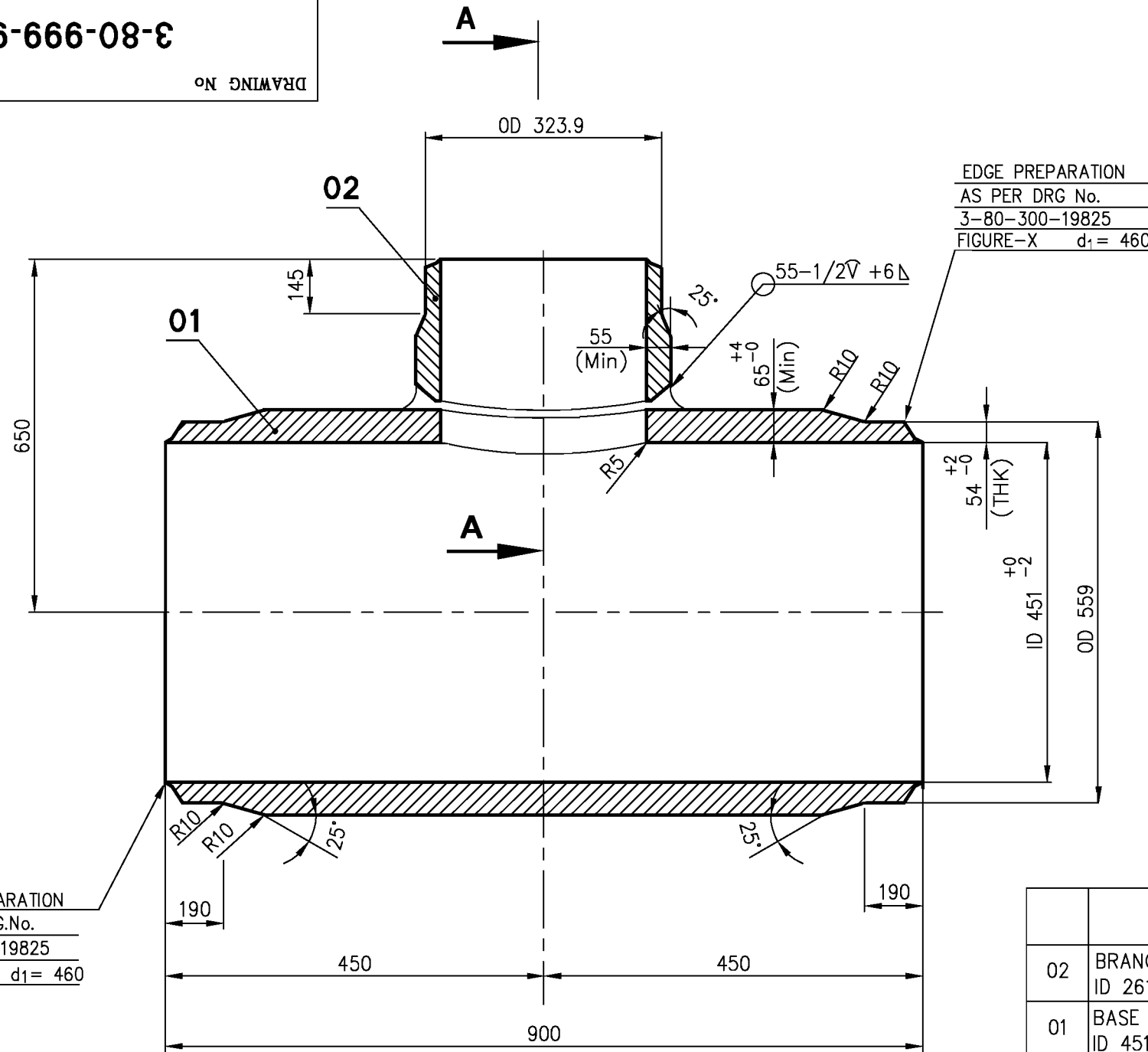
DRN	NAME	SIGN.	DATE	NO OF ITEMS
CHD	POONGKODI.V	-SD-	06-08-13	
APPD	SUKUMAR.B	-SD-	06-08-13	
	C.V.NATHAN	-SD-	06-08-13	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF. NO.	ITEM No.
CODE	C/M/F	N.T.S.	3278		
TITLE			CARD CODE	MSE DRAWING NO.	REV
MS Y-PIECE (ID500x92/ID350x60) SA182F91			U 01	2-80-301-12514	00

66976-666-08-ε

DRAWING No

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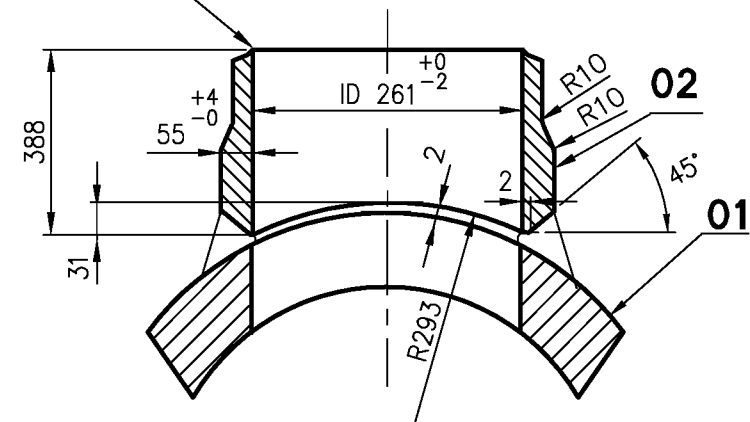
EDGE PREPARATION
AS PER DRG.No.
3-80-300-19825
FIGURE-X d1= 460

EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d1= 460

EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d1= 266

NOTES :-

- DESIGN PRESSURE : 200 Kg/Sq.Cm (g) $\triangle 01$ 12.5
- DESIGN TEMPERATURE : 545° C $\triangle 01$
- FOLLOW TDG : 108
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL's APPROVAL.
- PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE : **925057820000**



SECTION-AA

STANDARD

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. / VAR NO.	MATERIAL CODE / MATERIAL SPEC.	A / C	UNIT WT. / QTY.
02	BRANCH NOZZLE L=388 ID 261.0 x Thk 55.0 Min	3-80-999-97699		SA 182 F91	A	173,500 1
01	BASE PIPE L = 900 ID 451.0 x Thk 65.0 Min	3-80-999-97699		SA 182 F91	A	760,900 1

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

NAME	SIGN	DATE	NO OF ITEMS
DRN UBAITHULLAH		07.02.08	
CHD R.ANANTH		07.02.08	
APPD S.JAYAKUMAR		07.02.08	

REV	DATE	ALTD	JUDE ANTONE
01	25-02-11	APPD	A.P.M.KUTTY

ZONE DESIGN PRESSURE & DESIGN TEMPERATURE IS REVISED.
NOTE-06 ADDED.

ALL REVISIONS INDICATED AS $\triangle 01$

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
	C/M/F	N.T.S.	934.400	3-80-301-23660/00	
TITLE			CARD CODE	DRAWING No.	REV
FABRICATED UNEQUAL TEE (OD559.0x54.0/OD323.9x31.0)			U 01	3-80-999-97699	01

3-80-999-97703

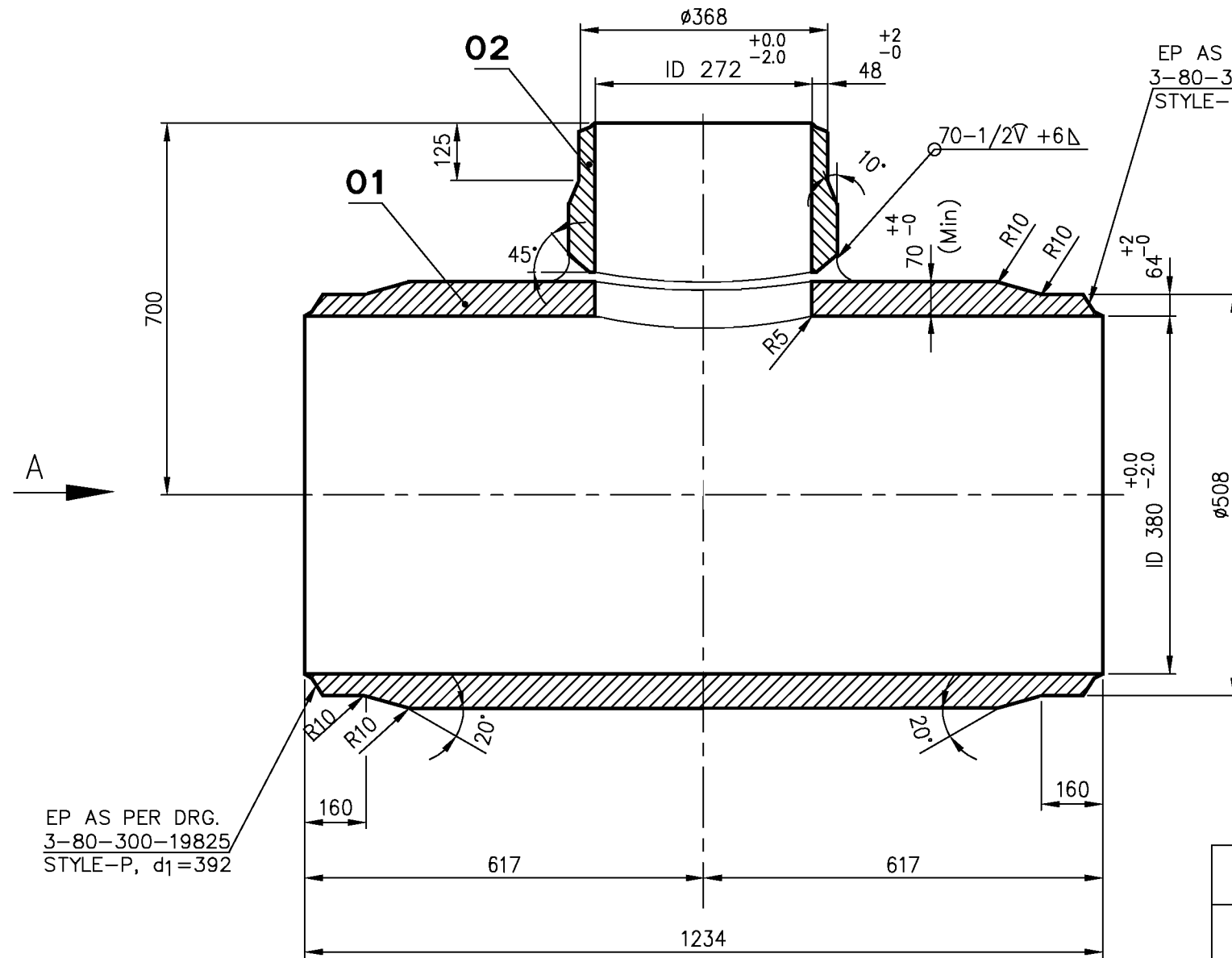
DRAWING No

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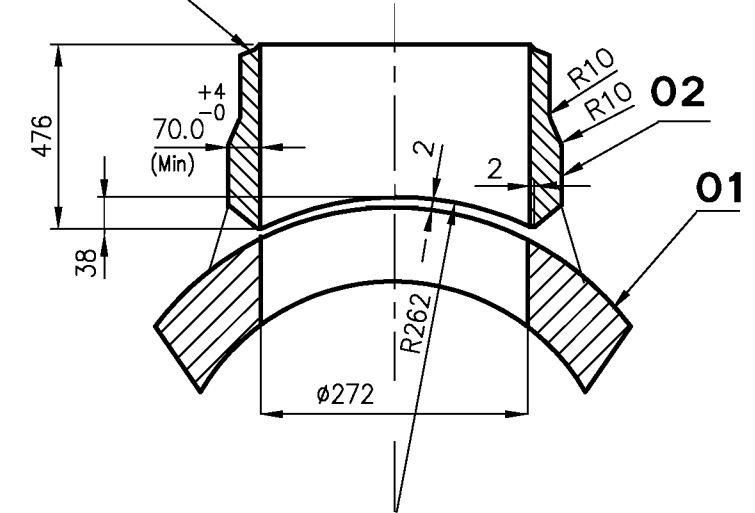
NOTES :-

- DESIGN PRESSURE : 320.0 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 260° C
- FOLLOW TDG : 108
- PIPE SA106GRC(A) CAN ALSO BE USED IN PLACE OF SA105(A).

12.5



EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=281



VIEW-A

EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=392

STANDARD

02	BRANCH NOZZLE L=476 ID 272 x Thk 70.0 min	3-80-999-97703		SA 105	A	295.200 1
01	BASE PIPE L = 1234 ID 380 x Thk 70.0 min	3-80-999-97703		SA 105	A	978.800 1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
CHD	UBAITHULLAH		07.02.08	
APPD	R.ANANTH		07.02.08	
	S.JAYAKUMAR		07.02.08	

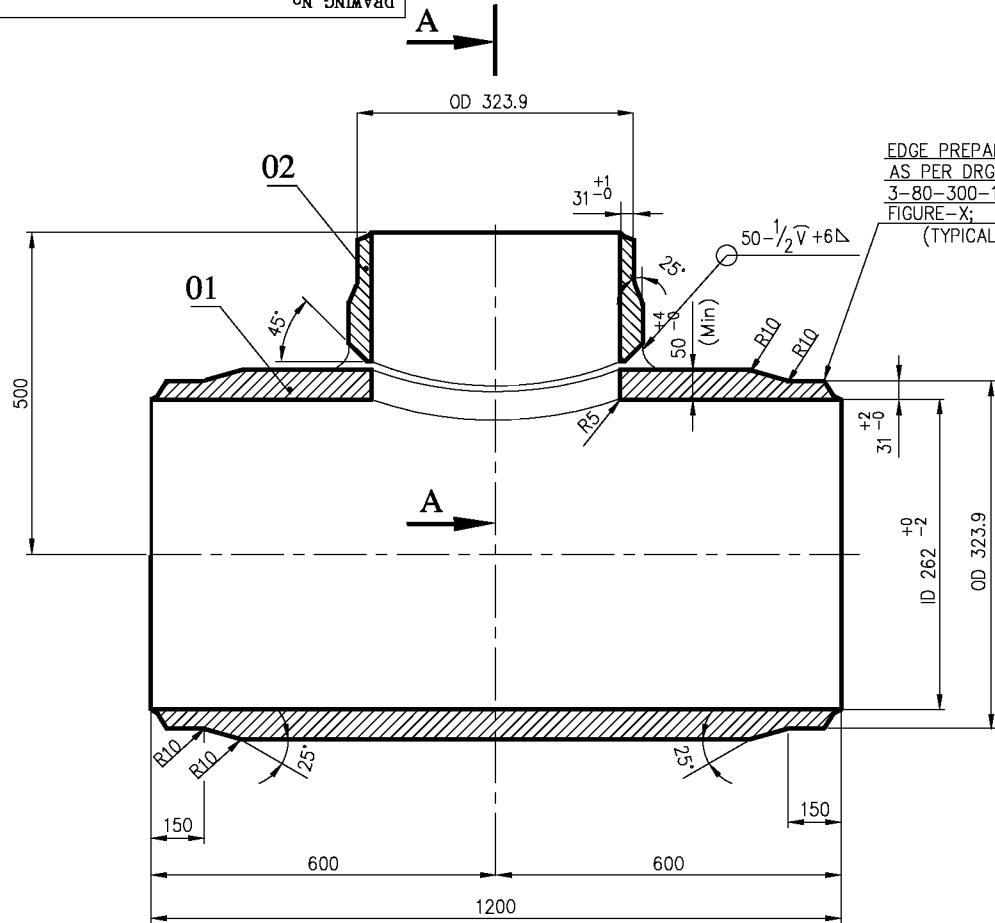
REV 01	DATE	ALTERED APPROVED
ZONE		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO MSE DRG. No.	ITEM No.
CODE	C/M/F	N.T.S.	1273.980	3-80-423-23672/00	
TITLE	FABRICATED UNEQUAL TEE (OD 508.0X64.0/OD 368.0X48.0)			CARD CODE	REV
				U 01	00

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11776-666-08-3

DRAWING No



EDGE PREPARATION
AS PER DRG No.:
3-80-300-19825
FIGURE-X; d1=266
(TYPICAL)

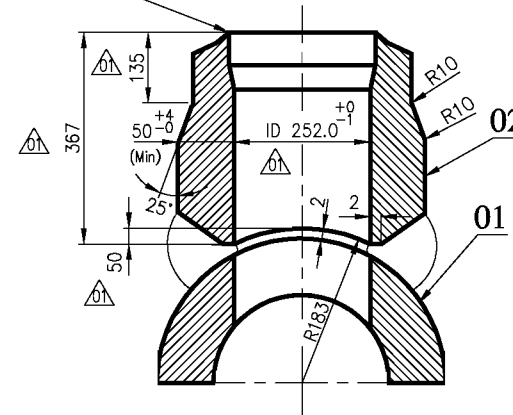
EDGE PREPARATION
AS PER DRG No.:
3-80-300-19825
FIGURE-X; d1=266.0

NOTES :-

1. DESIGN PRESSURE : 167.5 Kg/Sq.Cm (g)
2. DESIGN TEMPERATURE : 540° C
3. FOLLOW TDG : 108
4. ELECTRODES TO BE USED ARE,
 - a) GTAW : ER90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
 ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
5. PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).

12.5 ✓

SECTION-AA



STANDARD

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. OF MAT.	MATERIAL CODE	A/C	UNIT WT.
02	BRANCH NOZZLE L=387 ID 252.0 x Thk 50.0 Min	3-80-999-97711		SA 182 F91	A	110,000
01	BASE PIPE L = 1220 ID 262.0 x Thk 50.0 Min	3-80-999-97711		SA 182 F91	A	410,000
					C	1
						QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
CHD	UBAITHULLAH		07.02.08	
APPD	S.JAYAKUMAR		07.02.08	

REV	DATE	ALTD	REV	DATE	ALTD
02		APPD	01	02.04.08	APPD S.JAYAKUMAR
					R.SESHAGIRI

ZONE

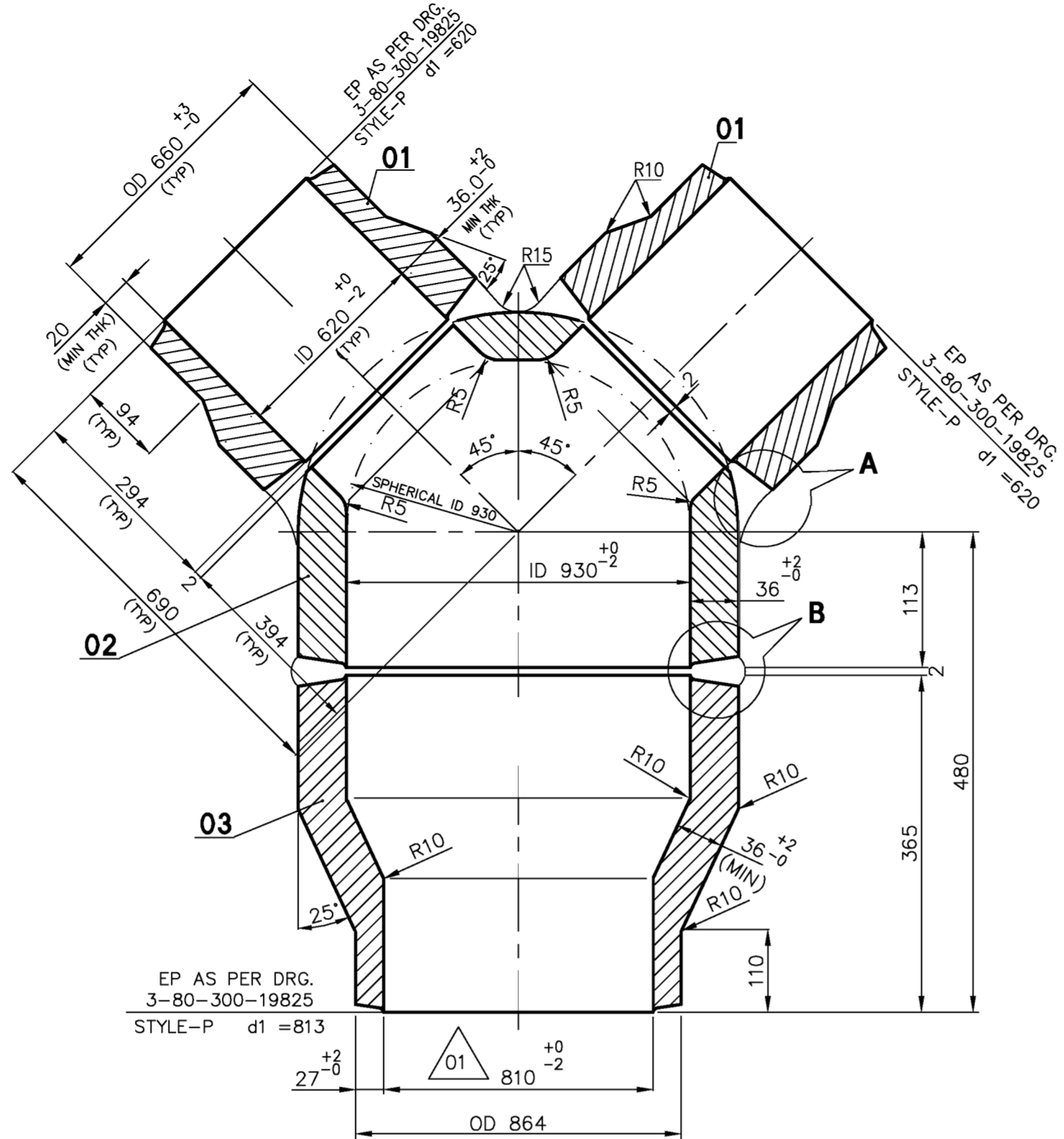
SECTION-AA REVISED.
DESIGN PRESSURE CORRECTED.
ALL REVISIONS INDICATED AS Δ

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	BHEL PO REF.NO:	ITEM No.
	C/M/F	N.T.S.	520.000	3-80-301-24071/00	
TITLE			CARD CODE	DRAWING No.	REV
FABRICATED EQUAL TEE OD323.9x31.0			U 01	3-80-999-97711	01

2-80-999-99496

DRAWING NO.

ALL DIMENSIONS ARE IN MILLIMETRES



NOTES :-

- 01. DESIGN PRESSURE : 54 Kg/Cm² (g)
- 02. DESIGN TEMPERATURE : 360° C
- 03. FOLLOW TDG : 108
- 04. PIPE SA106GRC(A) CAN ALSO BE USED IN PLACE OF SA105(A).

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D

C

B

A

F

E

D

C

B

VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	MATERIAL SPECN	UNIT WEIGHT	QUANTITY
	03	OUTLET FORGING ID 930.0 x THK36.0 MIN / ID 813.0 x 27.0 THK	2-80-999-99496	SA 105	A	257.040	1
	02	BODY FORGING ID 930.0 x THK36.0 MIN	2-80-999-99496	SA 105	A	340.695	1
	01	INLET FORGING ID 620.0 x THK36.0 MIN	2-80-999-99496	SA 105	A	144.000	2

JOB NO.	REL NO.	DATE
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STANDARD

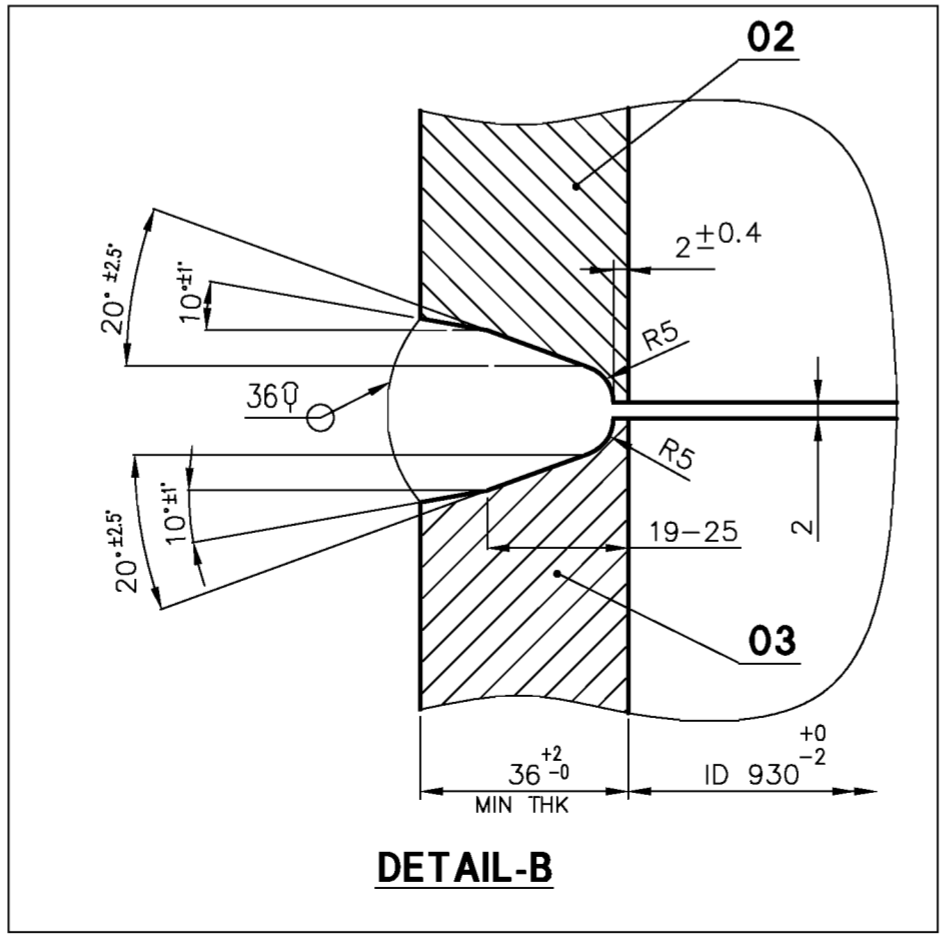
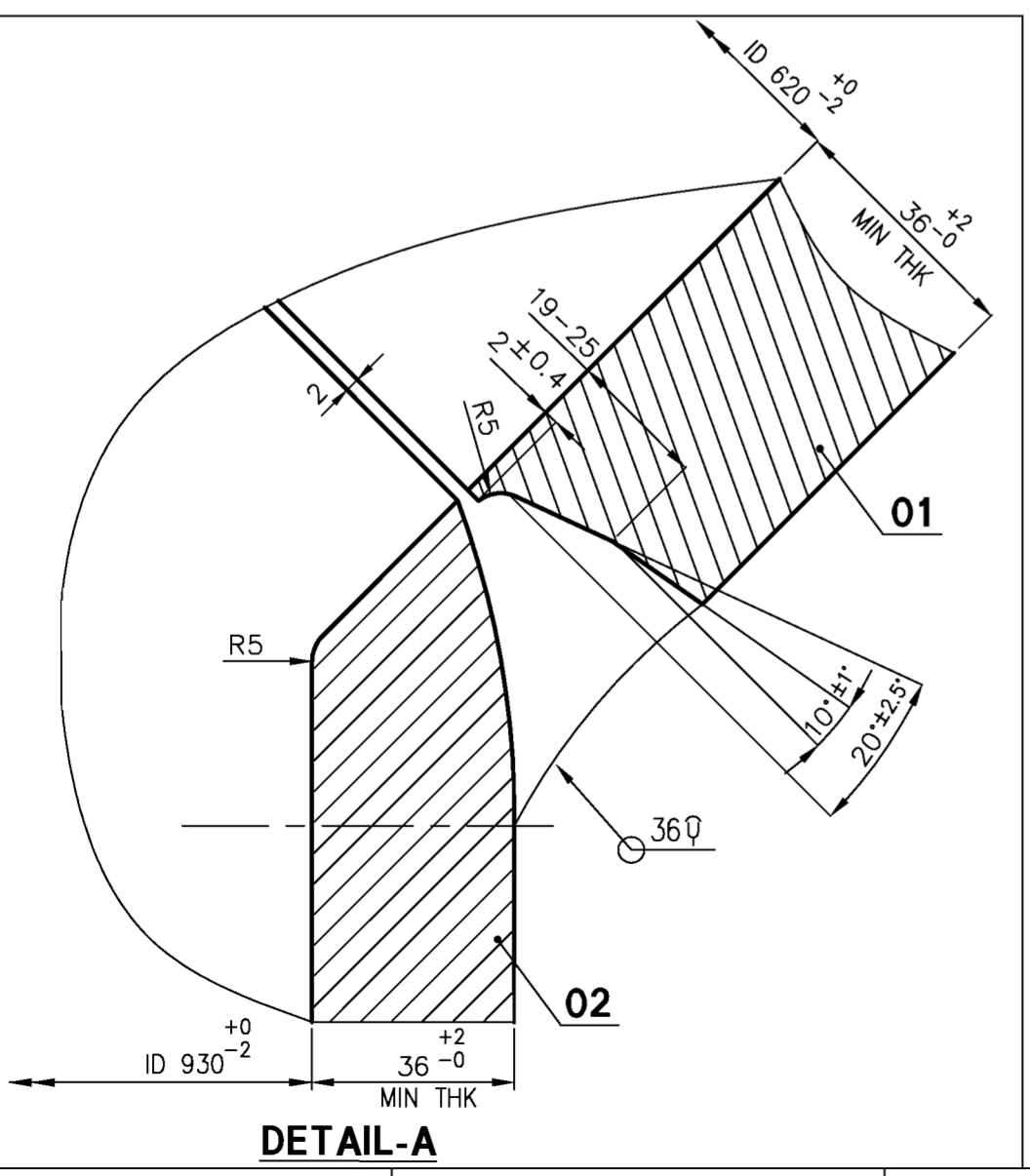
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017			
	DRN	R.ANANTH	SIGN	DATE
	CHD	R.ANANTH		06.02.08
APPD	S.J.KUMAR		06.02.08	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	BHEL PO REF. NO.	ITEM No.
	C/M/F	N.T.S.	885.735	2-80-320-06873	

TITLE	CARD CODE	MSE DRAWING NO.	REV
Y-PIECE (OD864.0x27.0/OD660.0x20.0)	U 01	2-80-999-99496	01

REV	DATE	ALTD: P.JUDE ANTONE
01	30.03.11	APPD: A.P.M.K
ZONE DIMENSION REVISED AND REVISION MARKED AS		



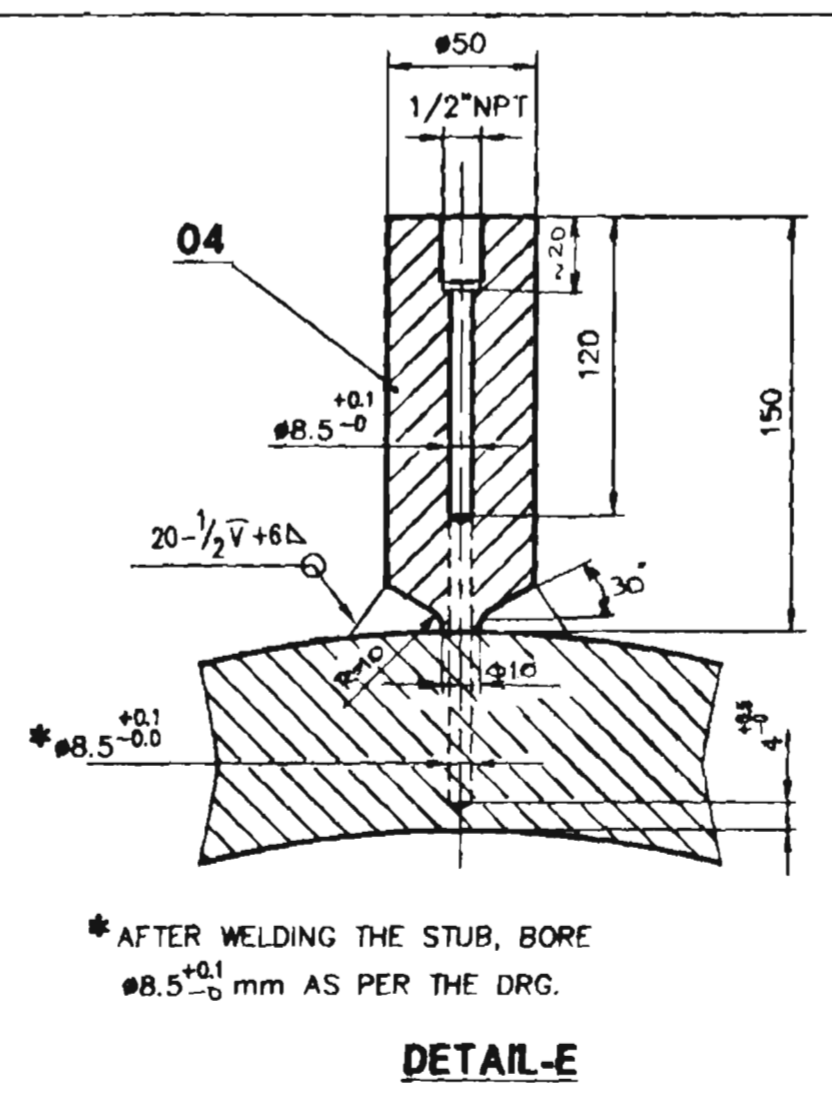
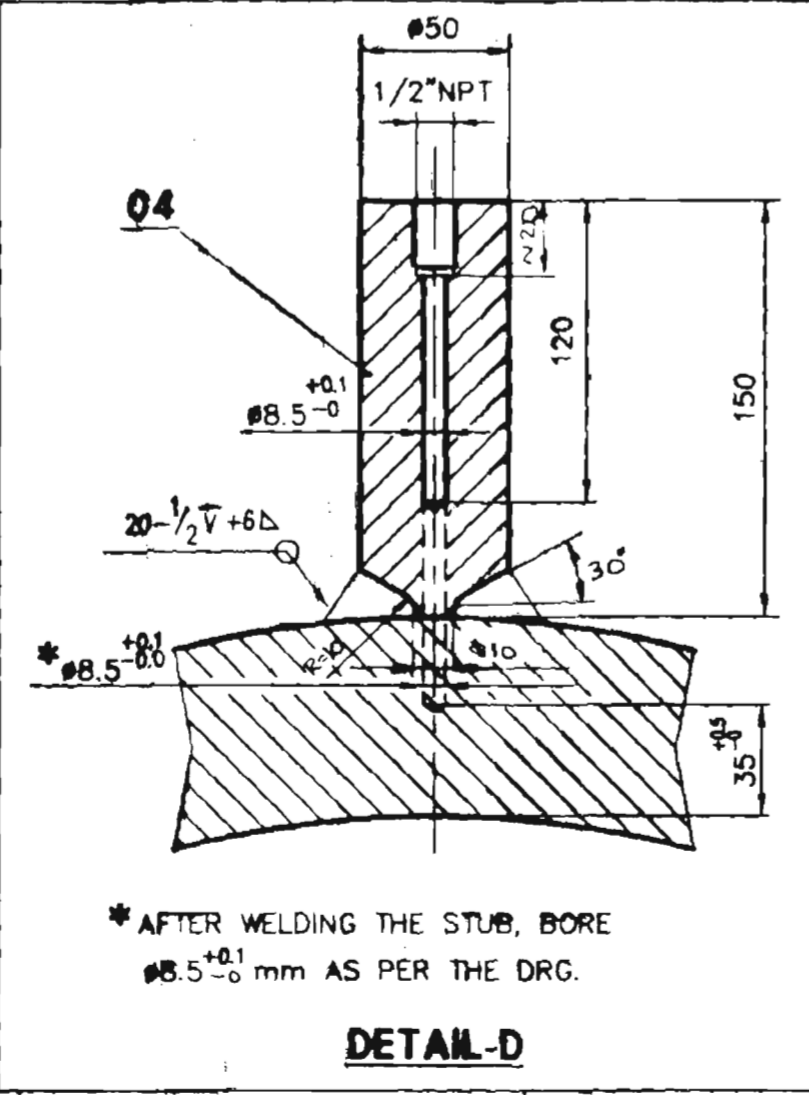
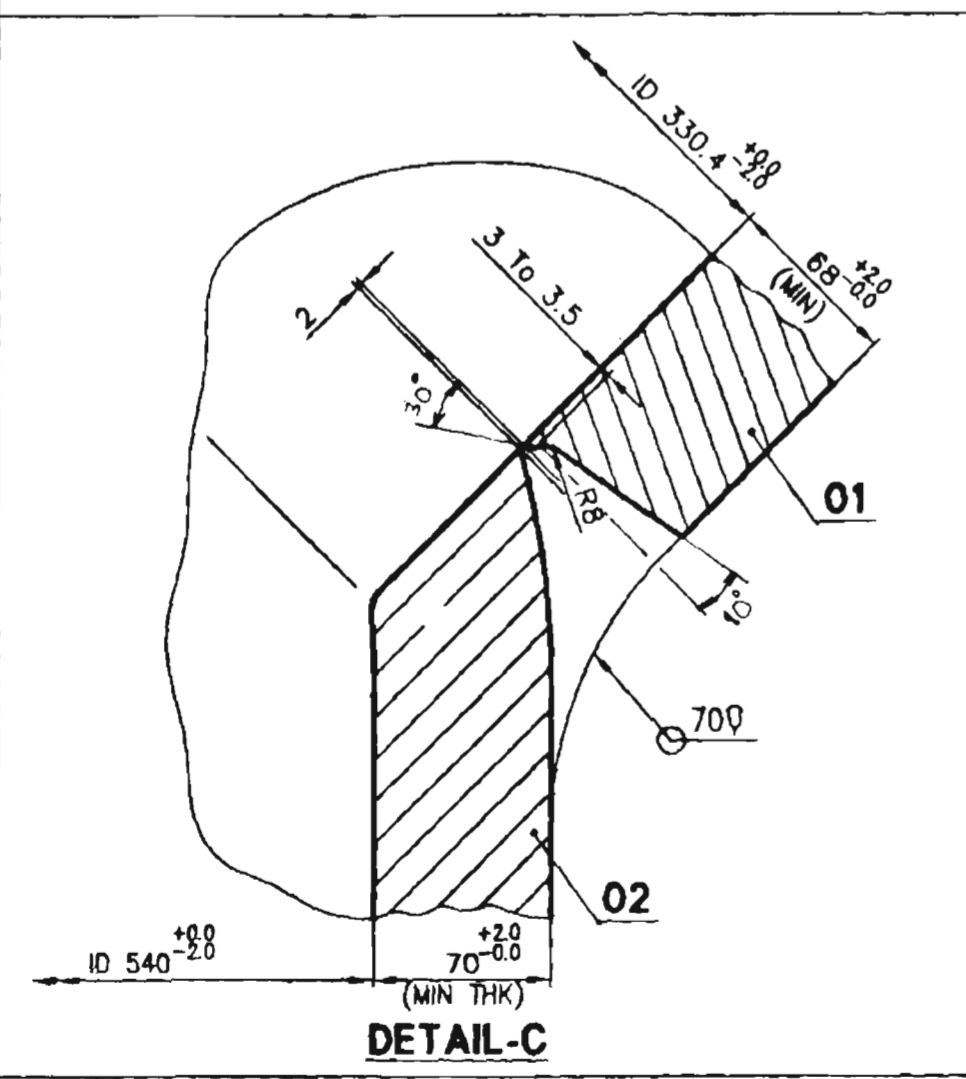
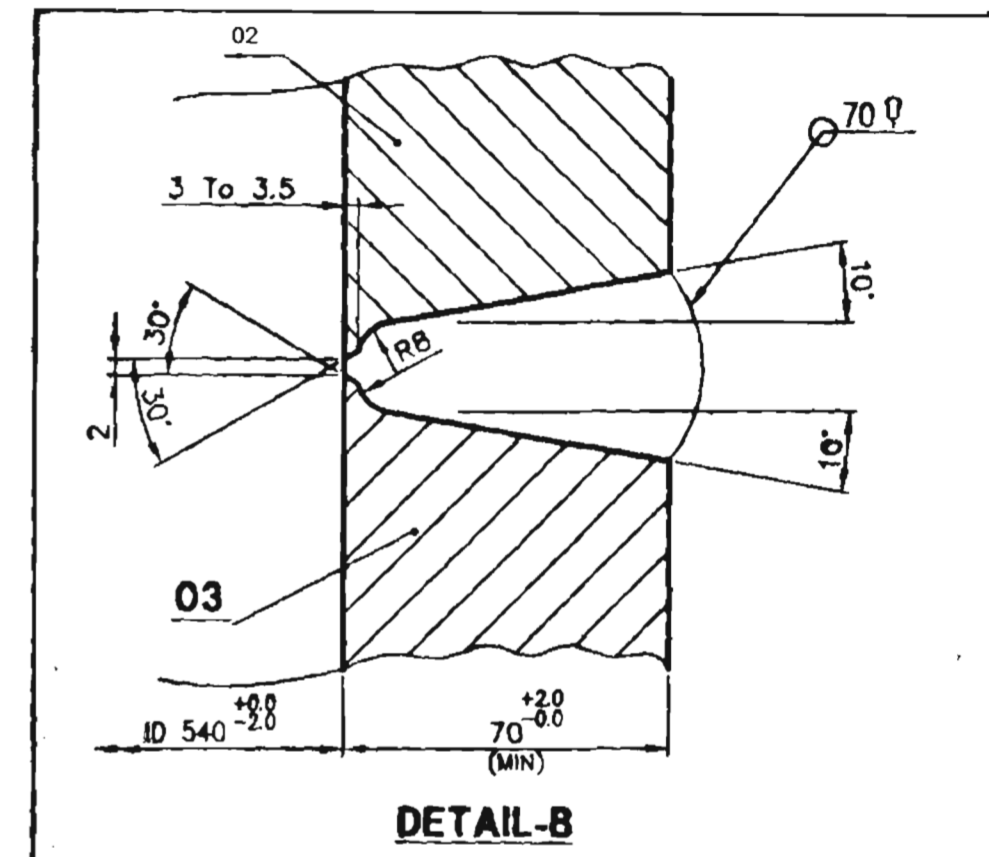
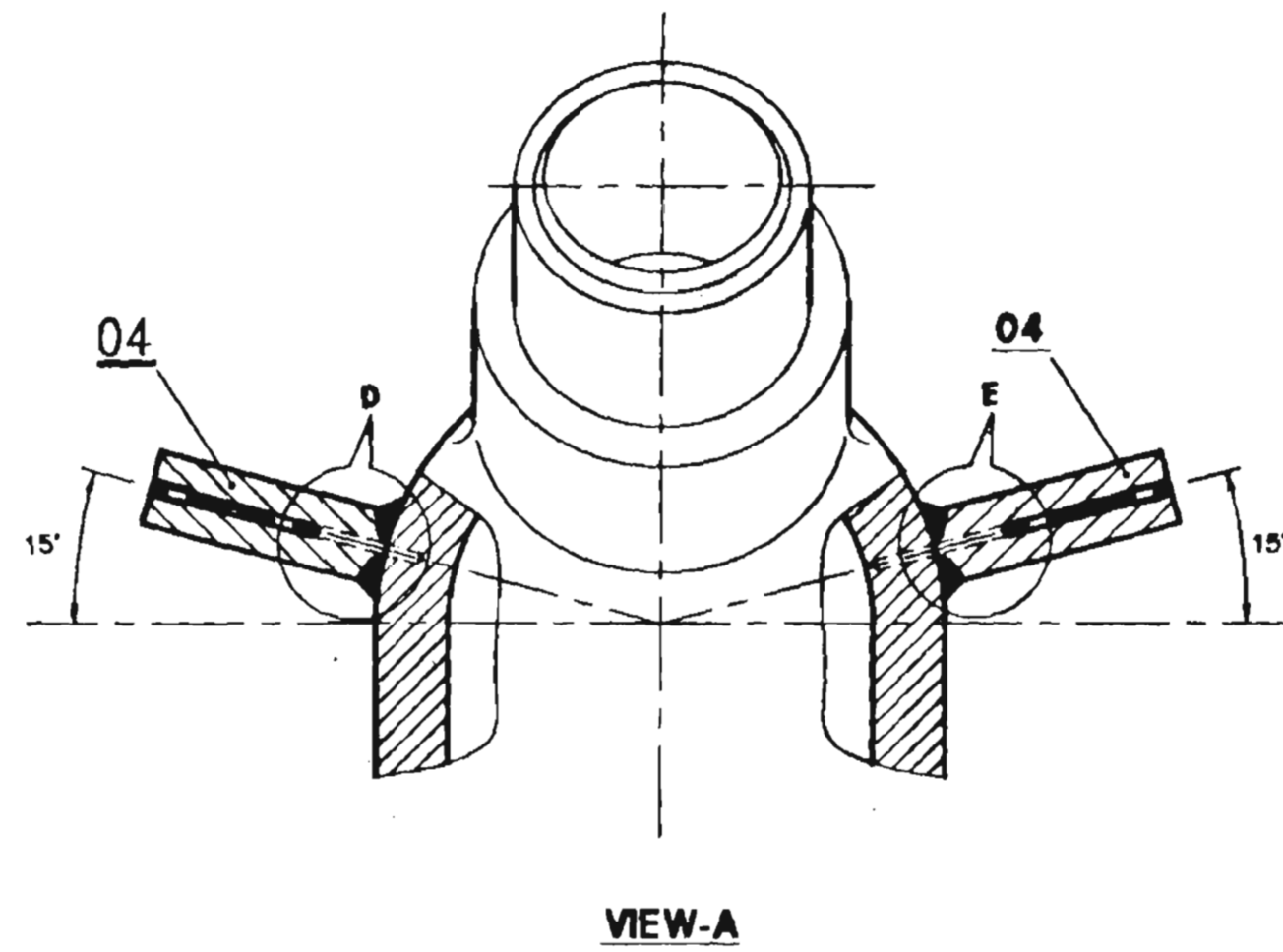
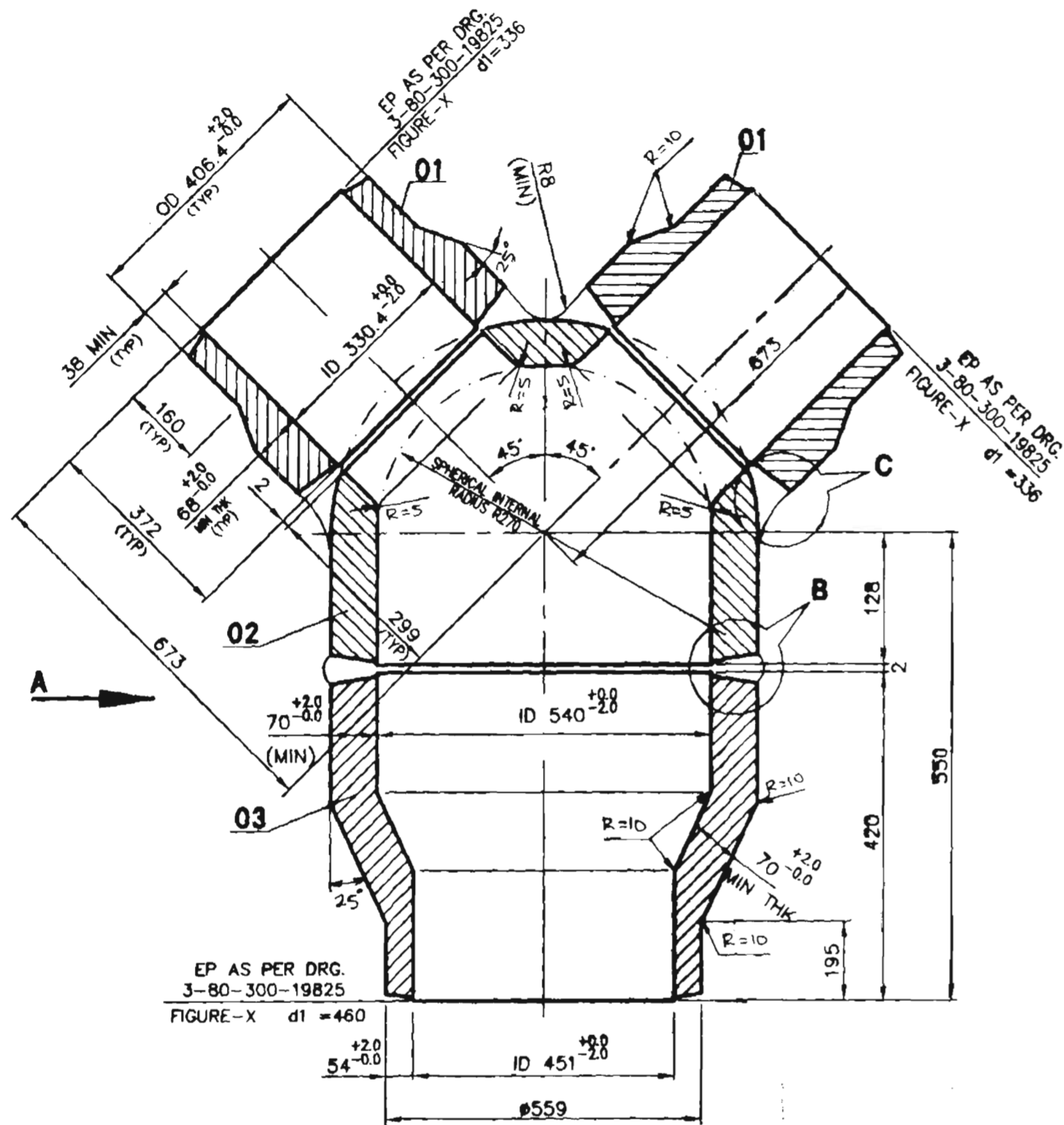
2-80-999-99492

DRAWING NO.

ALL DIMENSIONS ARE IN MILLIMETRES

NOTES :-

- 01. DESIGN PRESSURE : 188.5 Kg/Cm² (g)
- 02. DESIGN TEMPERATURE : 540° C
- 03. FOLLOW TDG-108
- 04. ELECTRODES TO BE USED FOR F91 TO F91, ARE,
 - a) GTAW : E90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
 ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- 05. PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
- 06. SA182F91 IS ALSO ACCEPTABLE FOR ITEM NO.4 (TEMP STUB)



VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	MATERIAL SPECN	UNIT WEIGHT	QUANTITY
	04	TEMP. STUB L=150 OD 50	2-80-999-99492	SA 182 F22 CL3	A	4.000	2
	03	OUTLET FORGING ID 540 x THK 70 MIN / ID 451 x 54	2-80-999-99492	SA 182 F91	A	352.000	1
	02	BODY FORGING ID 540 x THK 70 MIN	2-80-999-99492	SA 182 F91	A	368.000	1
	01	INLET FORGING ID 330.4 x THK 68 MIN	2-80-999-99492	SA 182 F91	A	190.000	2

JOB NO.	REL NO.	DATE

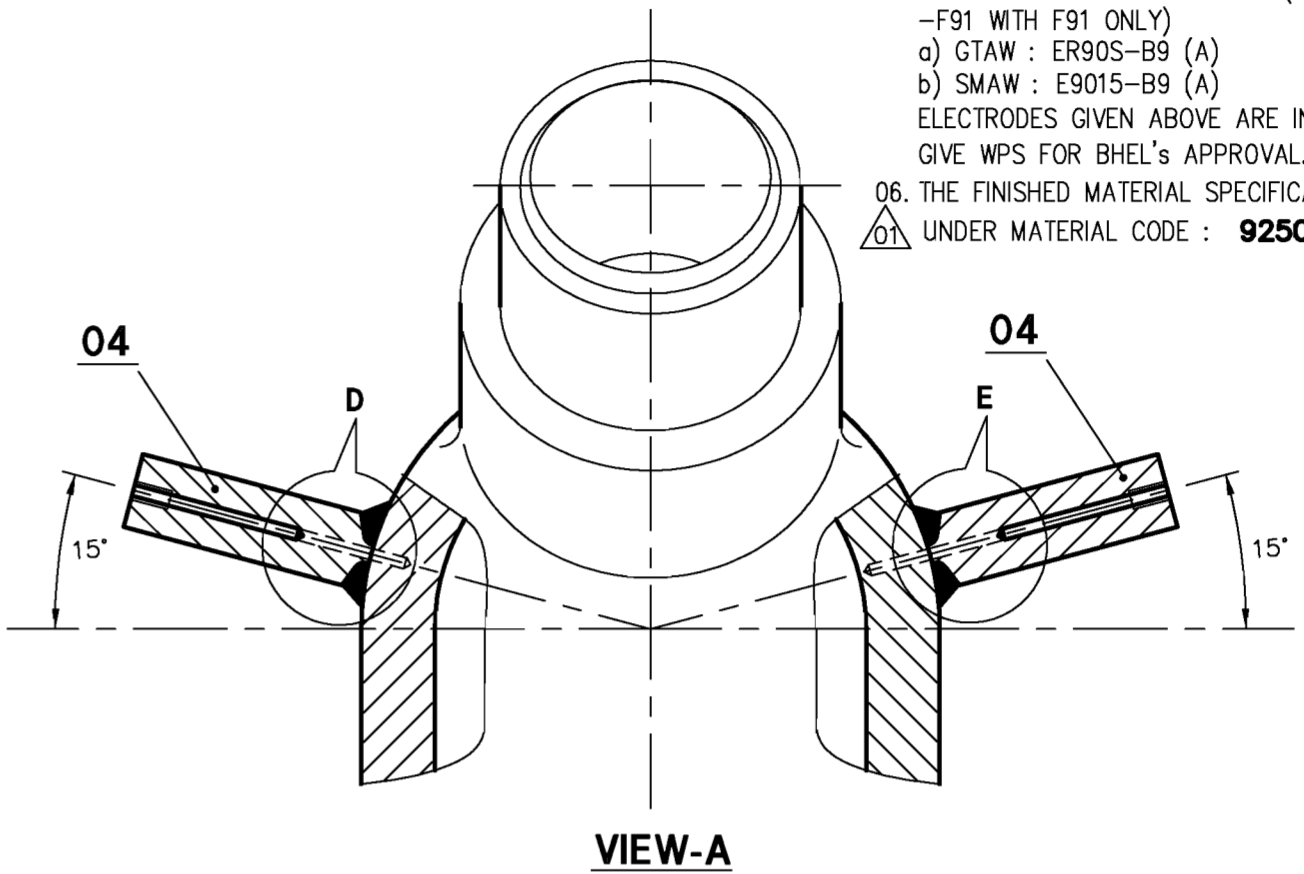
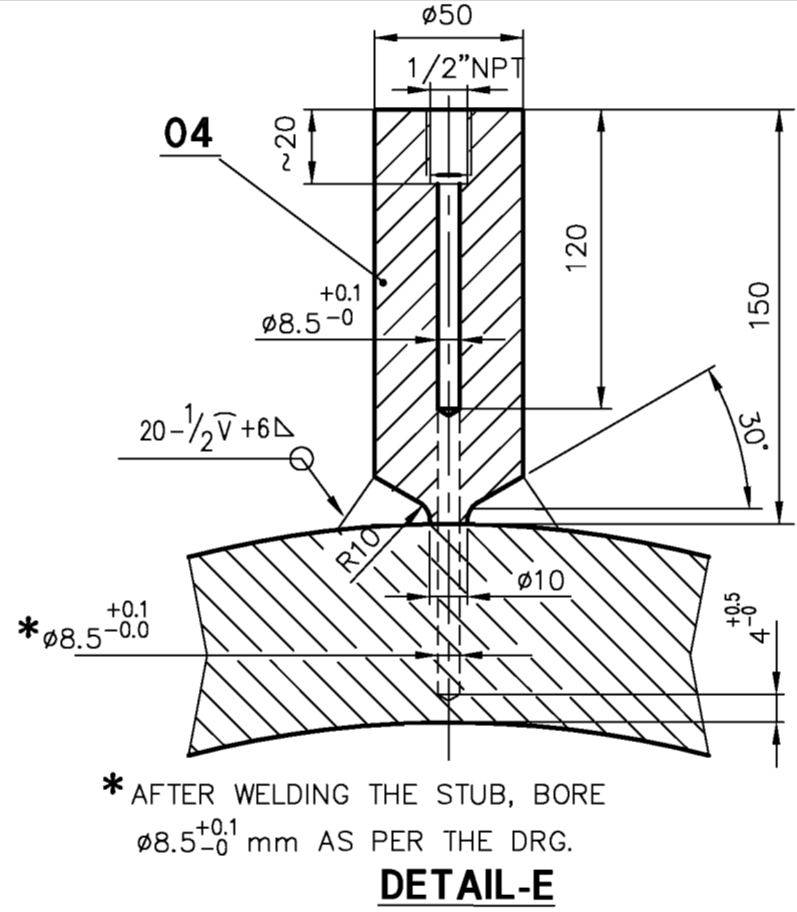
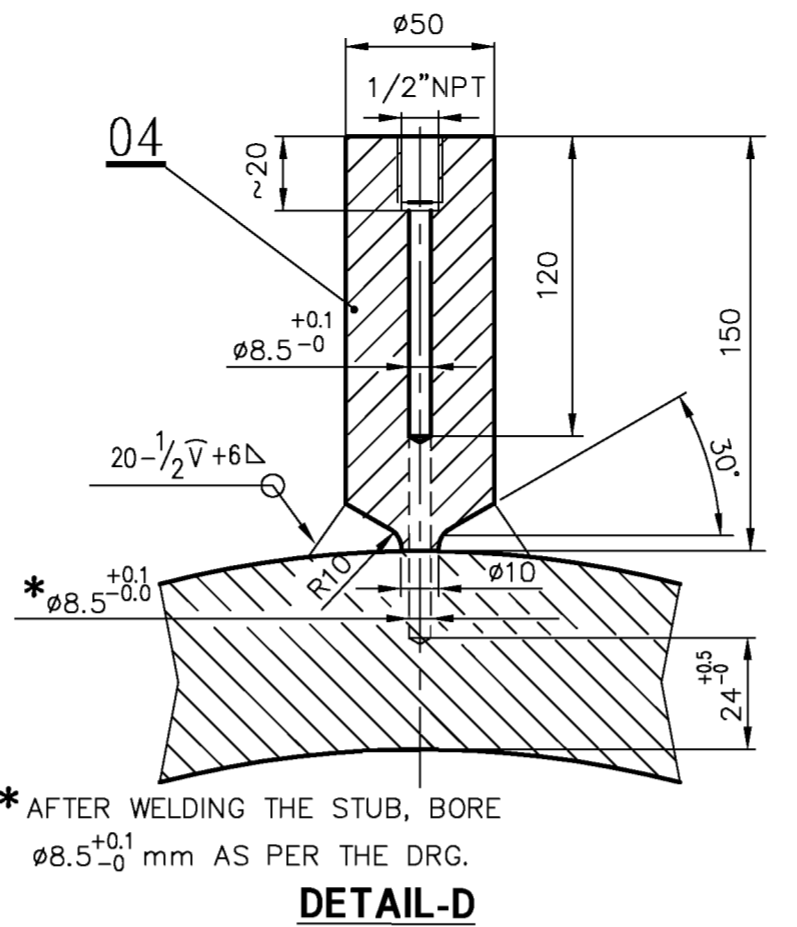
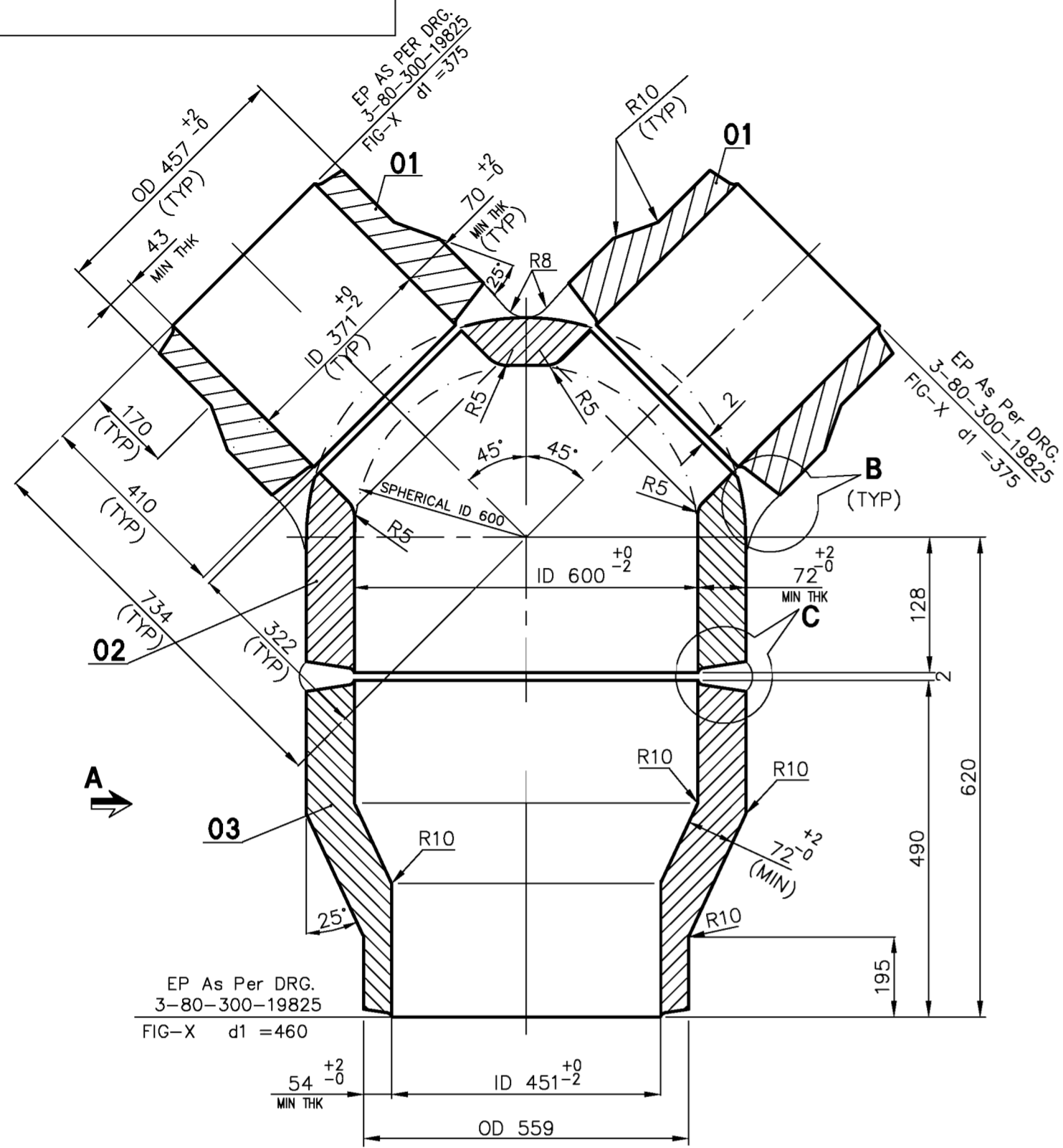
STANDARD

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	DRW: R.ANANTH CHD: R.ANANTH APPD: S.J.KUMAR	NAME: R.ANANTH DESIG: R.ANANTH DATE: 11.12.09	NO OF ITEMS: 1
DEPT: C/M/F CODE: N.T.S.	WEIGHT (Kg): 1108.00	BHEL PO REF. NO: 2-80-301-07842	ITEM No.
TITLE: Y-PIECE (OD559.0x54.0/OD406.4x38.0)	CARD CODE: U 01	WORK DRAWING NO: 2-80-999-99492	REV: 01

05-228/C CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

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- NOTES :-**
- 01. DESIGN PRESSURE : 188.9 Kg/Cm² (g)
 - 02. DESIGN TEMPERATURE : 540° C
 - 03. FOLLOW TDG:108.
 - 04. PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
 - 05. ELECTRODES TO BE USED ARE (FOR WELDING OF -F91 WITH F91 ONLY)
 - a) GTAW : ER90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
 ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
 - 06. THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A)
 - 07. UNDER MATERIAL CODE : **925058150000**

VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	A	UNIT WEIGHT
				MATERIAL SPECN	C	QUANTITY
	04	TEMP. STUB. $\phi 50$ L=150	2-80-301-09376	SA 182 F22 CL3	A	4 000
	03	OUTLET FORGING ID600 x THK72 MIN / ID451 x 54 MIN THK	2-80-301-09376	SA 182 F91	A	445 000
	02	BODY FORGING ID 600 x THK 72 MIN	2-80-301-09376	SA 182 F91	A	555 000
	01	INLET FORGING ID 371 x THK 70 MIN	2-80-301-09376	SA 182 F91	A	312 000

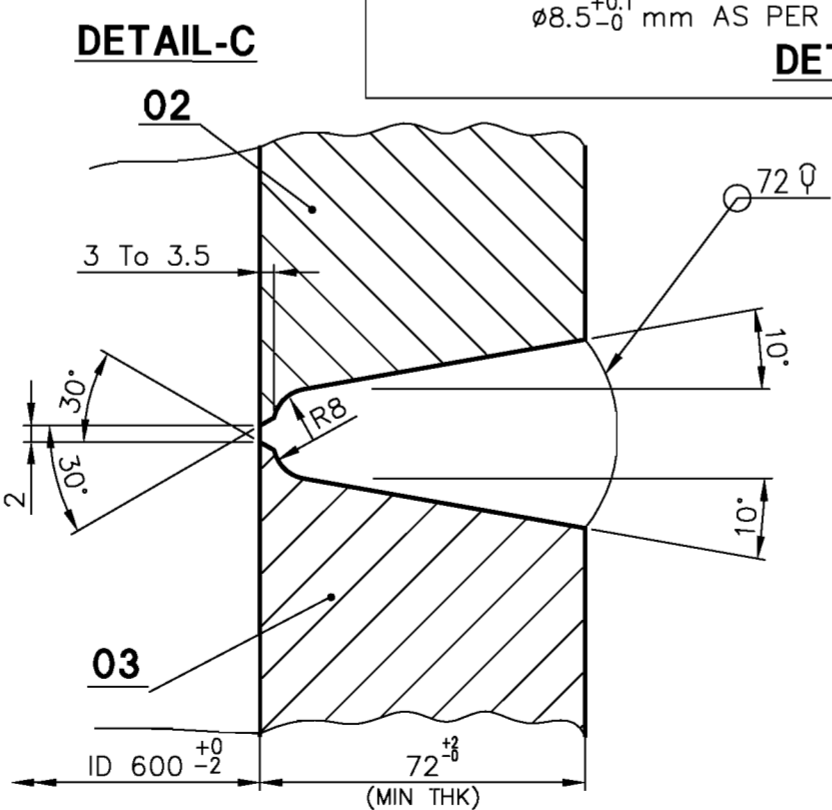
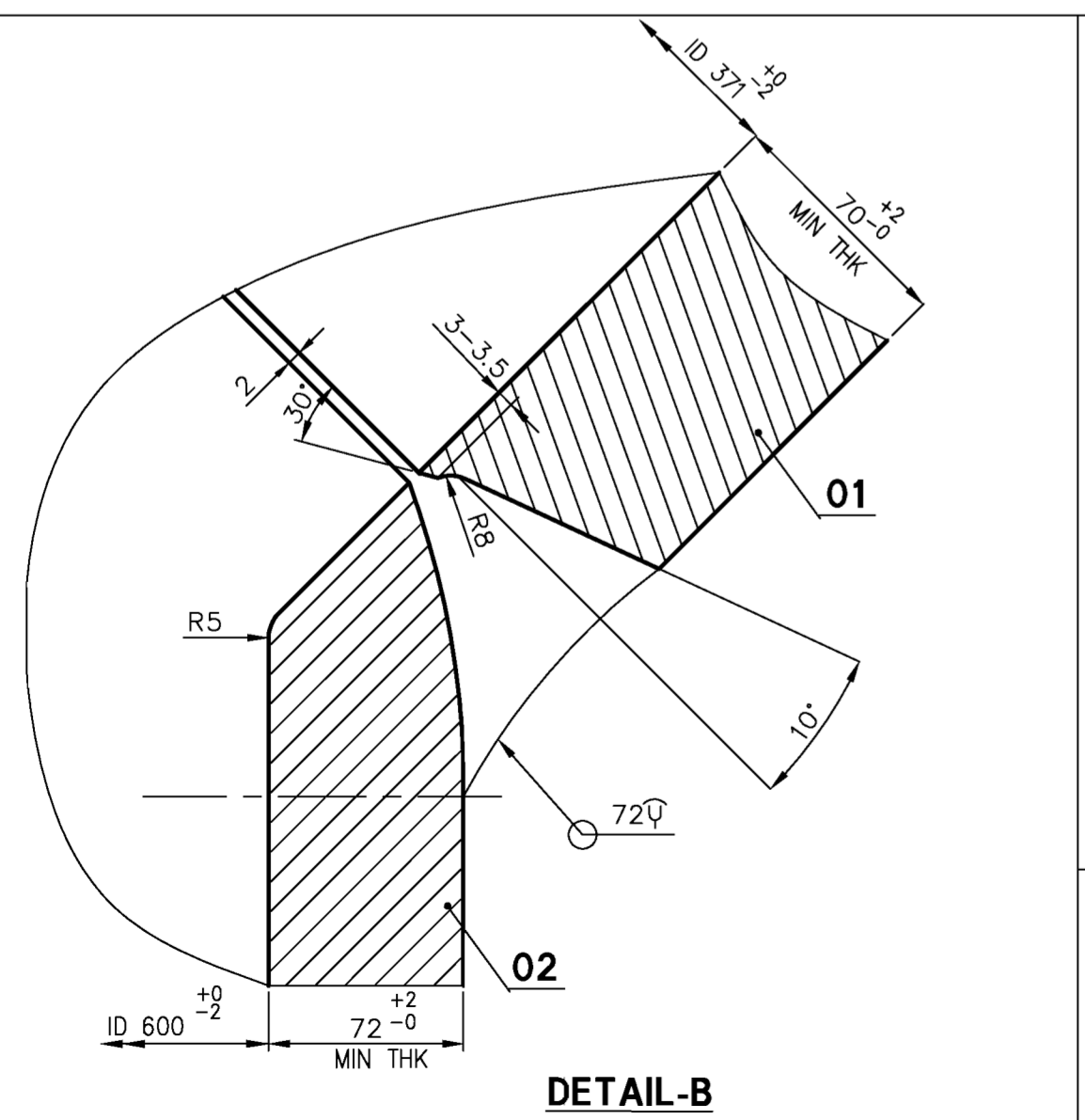
JOB NO.	REL NO.	DATE

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	DRN	NAME	SIGN	DATE	NO OF
	CHD	VENKAT		04-02-09	ITEMS
	APPD	K.V.RAMANI		04-02-09	

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF. NO.	ITEM No.
	C/M/F	N.T.S.	1632.000		

TITLE	CARD CODE	MSE DRAWING NO.	REV
Y-PIECE (OD559x54/OD457x43)	U 01	2-80-301-09376	02

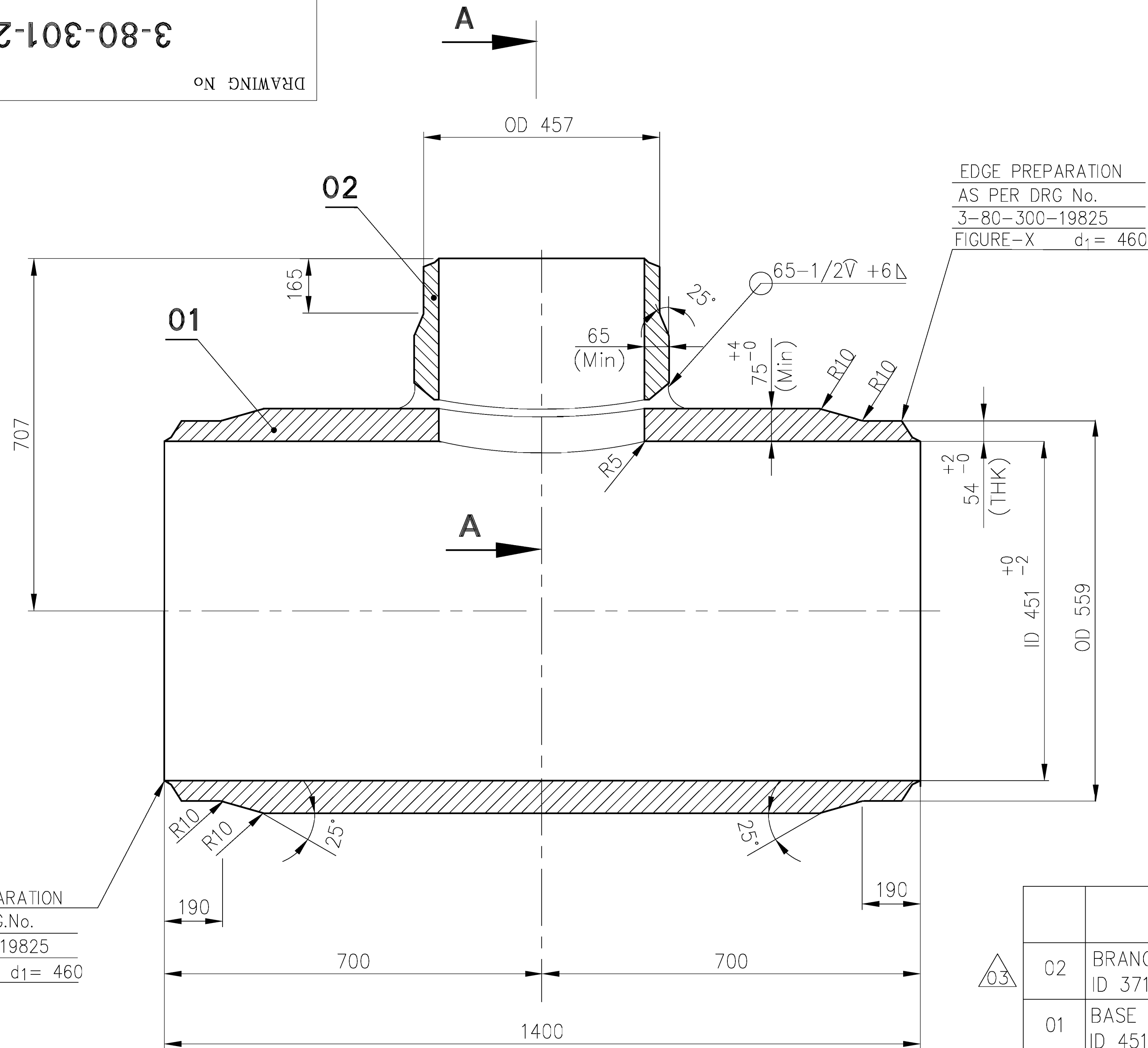


REV 01	DATE 01-03-11	ALTD : P. JUDE	APPD : AARTHI	DESIGN PRESSURE REVISED	ALL REVISIONS INDICATED AS $\Delta 02$
REV 01	DATE 06-03-09	ALTD : PALANI	APPD : VENKAT	NOTE-05 MATERIAL SPECIFICATION REVISED.	ALL REVISIONS INDICATED AS $\Delta 01$

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3-80-301-26022

DRAWING No



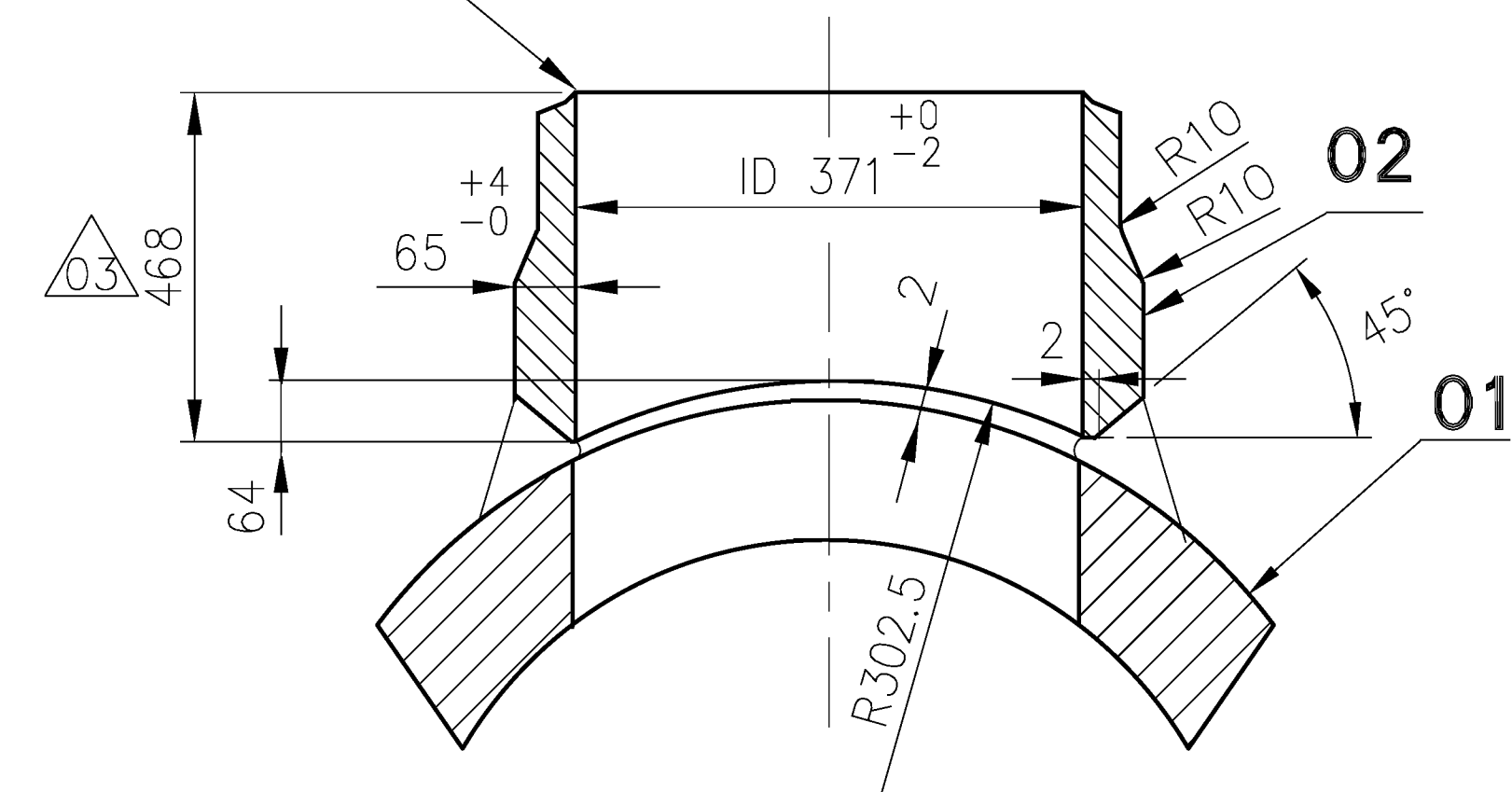
EDGE PREPARATION
AS PER DRG.No.
3-80-300-19825
FIGURE-X d1= 460

EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d1= 460

EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d1= 375

NOTES :-

- DESIGN PRESSURE : 200 Kg/Sq.Cm (g) $\triangle 02$ $\frac{12.5}{\sqrt{}}$
- DESIGN TEMPERATURE : 545° C $\triangle 02$
- FOLLOW TDG : 108
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE : **925058160000**



SECTION-AA

$\triangle 02$	BRANCH NOZZLE L=468 ID 371.0 x Thk 65.0 Min	3-80-301-26022		SA 182 F91	A	235,000 1
$\triangle 01$	BASE PIPE L = 1400 ID 451.0 x Thk 75.0 Min	3-80-301-26022		SA 182 F91	A	1150,000 1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

	NAME	SIGN	DATE	NO OF ITEMS
DRN	S.PALANI		05.02.09	
CHD	VENKAT		05.02.09	
APPD	K.V.RAMANI		05.02.09	

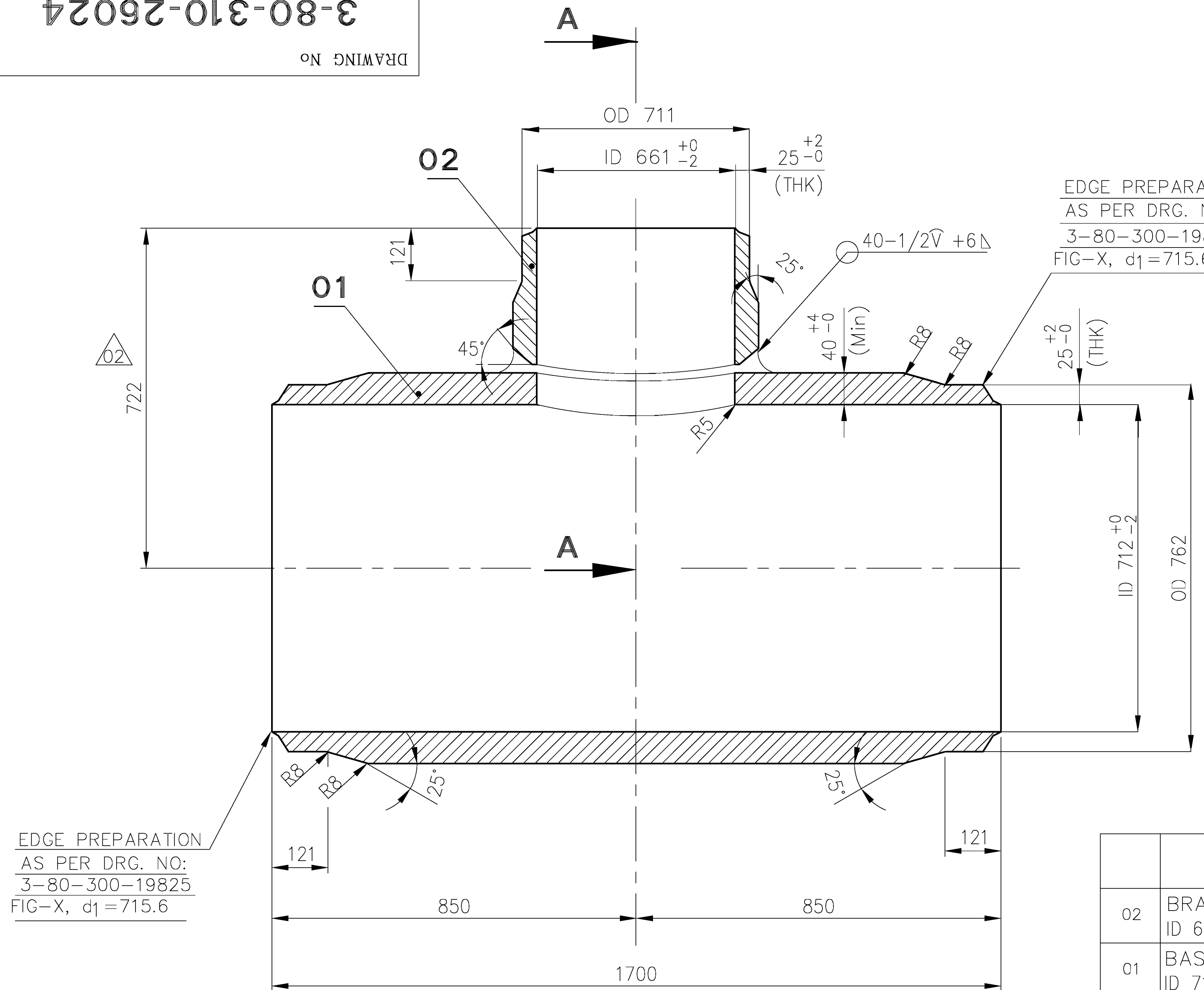
REV 03	DATE 29-04-11	ALTD APPD	JITEN VENKAT	REV 02	DATE 01-03-11	ALTD APPD	PALANI VENKAT	REV 01	DATE 06-03-09	ALTD APPD	PALANI VENKAT
ZONE	DIMENSIONS CORRECTED. ITEM NO. 02 LENGTH & WEIGHT CORRECTED ALL REVISIONS INDICATED AS $\triangle 03$			ZONE	DESIGN PRESSURE AND TEMPERATURE REVISED. ALL REVISIONS INDICATED AS $\triangle 02$			ZONE	NOTE-06 MATERIAL SPECIFICATION REVISED. ALL REVISIONS INDICATED AS $\triangle 01$		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
CODE	C/M/F	N.T.S.	1385.000		
TITLE	FABRICATED UNEQUAL TEE (OD559.0x54.0/OD457x43.0)		CARD CODE	DRAWING No.	REV
			U 01	3-80-301-26022	03

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3-80-310-26024

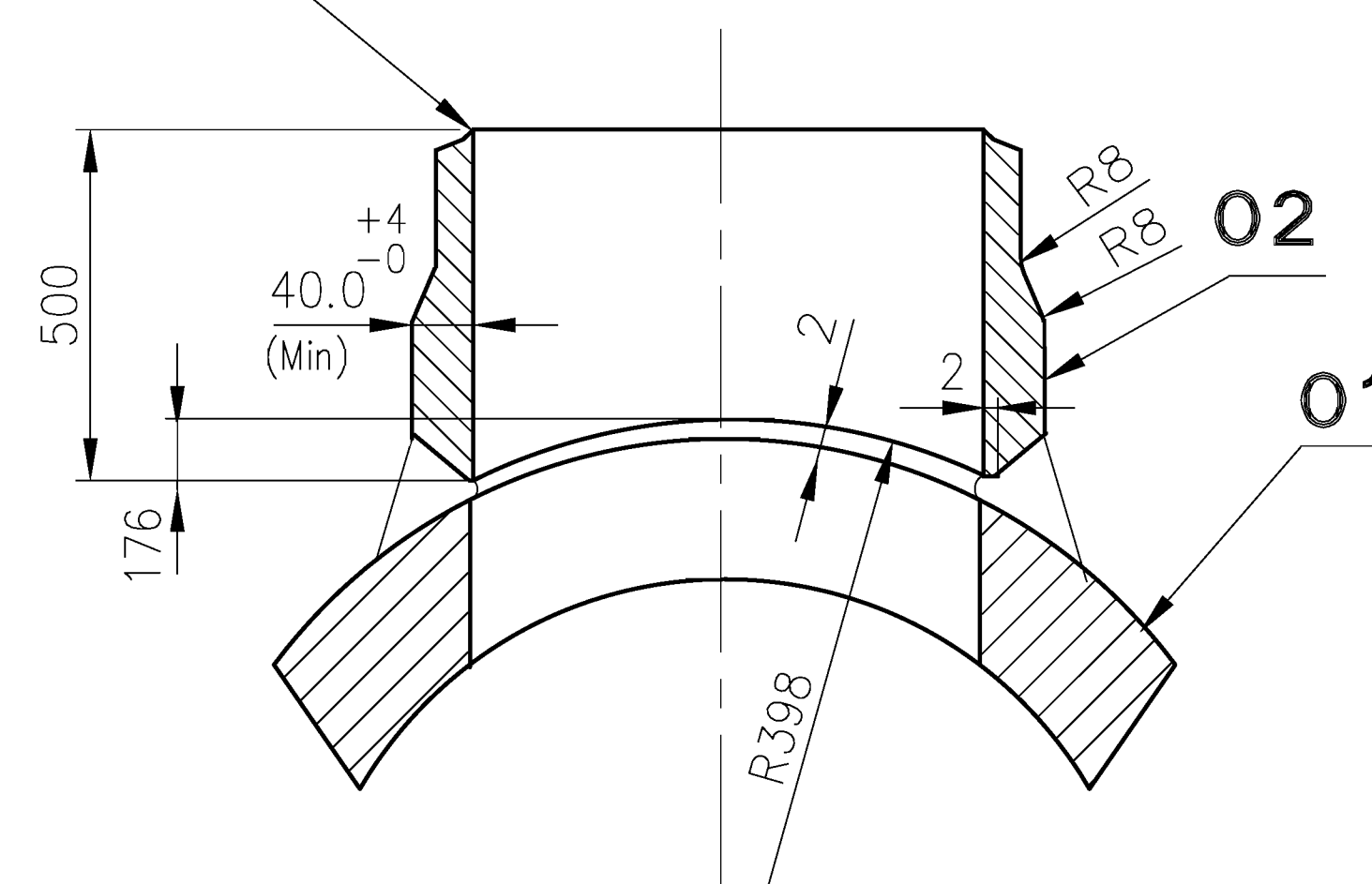
DRAWING No



EDGE PREPARATION
AS PER DRG. NO:
3-80-300-19825
FIG-X, d1=715.6

EDGE PREPARATION
AS PER DRG. NO:
3-80-300-19825
FIG-X, d1=715.6

EDGE PREPARATION
AS PER DRG. NO:
3-80-300-19825
FIG-X, d1=665.1



SECTION-AA

NOTES :-

- DESIGN PRESSURE : 48.6 Kg/Sq.Cm (g) 12.5
- DESIGN TEMPERATURE : 568° C
- FOLLOW TDG : 108
- ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
- PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE : 925058170000

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. / VAR NO.	MATERIAL CODE / MATERIAL SPEC.	A / C	UNIT WT. / QTY.
02	BRANCH NOZZLE L=500 ID 661.0 x Thk 40.0 Min	3-80-310-26024		SA 182 F91	A	295.000 1
01	BASE PIPE L = 1700 ID 712 x Thk 40.0 Min	3-80-310-26024		SA 182 F91	A	1055.000 1

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO OF ITEMS
			CHD	S.PALANI		05.02.09	
			APPD	VENKAT		05.02.09	
				K.V.RAMANI		05.02.09	

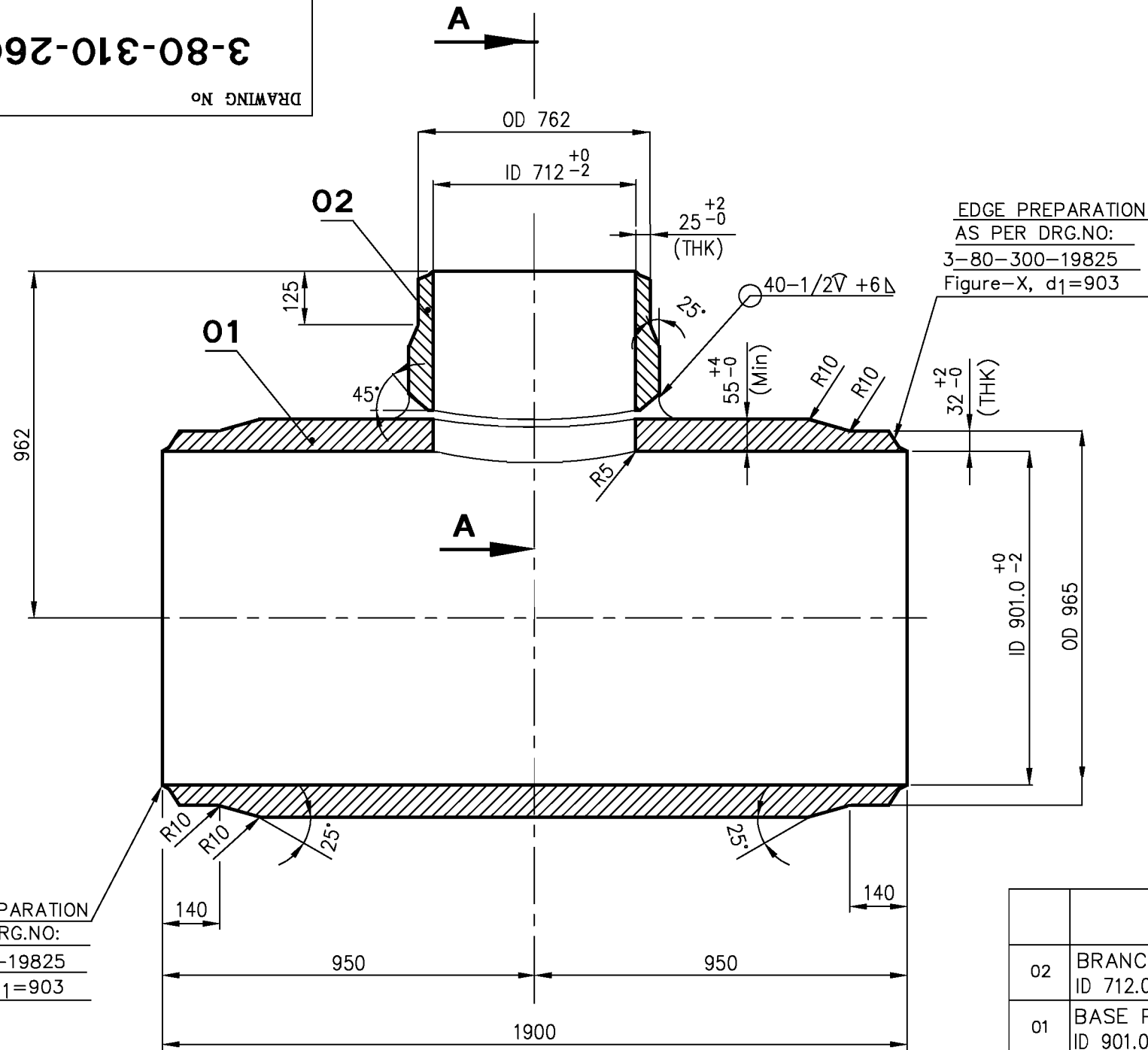
REV	DATE	ALTD	MURALI	REV	DATE	ALTD	PALANI
01	19-01-10	APPD	VENKAT	01	06-03-09	APPD	VENKAT
ZONE	DIMENSION REVISED.			ZONE	NOTE-06 MATERIAL SPECIFICATION REVISED.		
	ALL REVISIONS INDICATED AS $\triangle 02$				ALL REVISIONS INDICATED AS $\triangle 01$		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
	C/M/F	N.T.S.	1350.000		
TITLE	FABRICATED UNEQUAL TEE (OD762x25.0/OD711x25.0)		CARD CODE	DRAWING No.	REV
			U 01	3-80-310-26024	02

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3-80-310-26026

DRAWING No



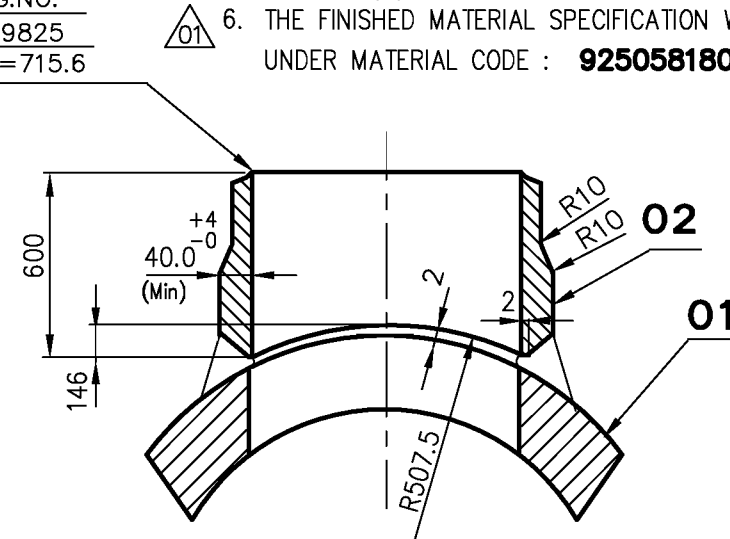
EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
Figure-X, d₁=903

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
Figure-X, d₁=903

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
Figure-X, d₁=715.6

NOTES :-

1. DESIGN PRESSURE : 48.6 Kg/Sq.Cm (g) 12.5/
2. DESIGN TEMPERATURE : 568° C
3. FOLLOW TDG : 108
4. ELECTRODES TO BE USED ARE,
a) GTAW : ER90S-B9 (A)
b) SMAW : E9015-B9 (A)
ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
5. PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
6. THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE : **925058180000**



SECTION-AA

02	BRANCH NOZZLE L=600 ID 712.0 x Thk 40.0 Min	3-80-310-26026		SA 182 F91	A	547,000 1
01	BASE PIPE L = 1900 ID 901.0 x Thk 55.0 Min	3-80-310-26026		SA 182 F91	A	2077,000 1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



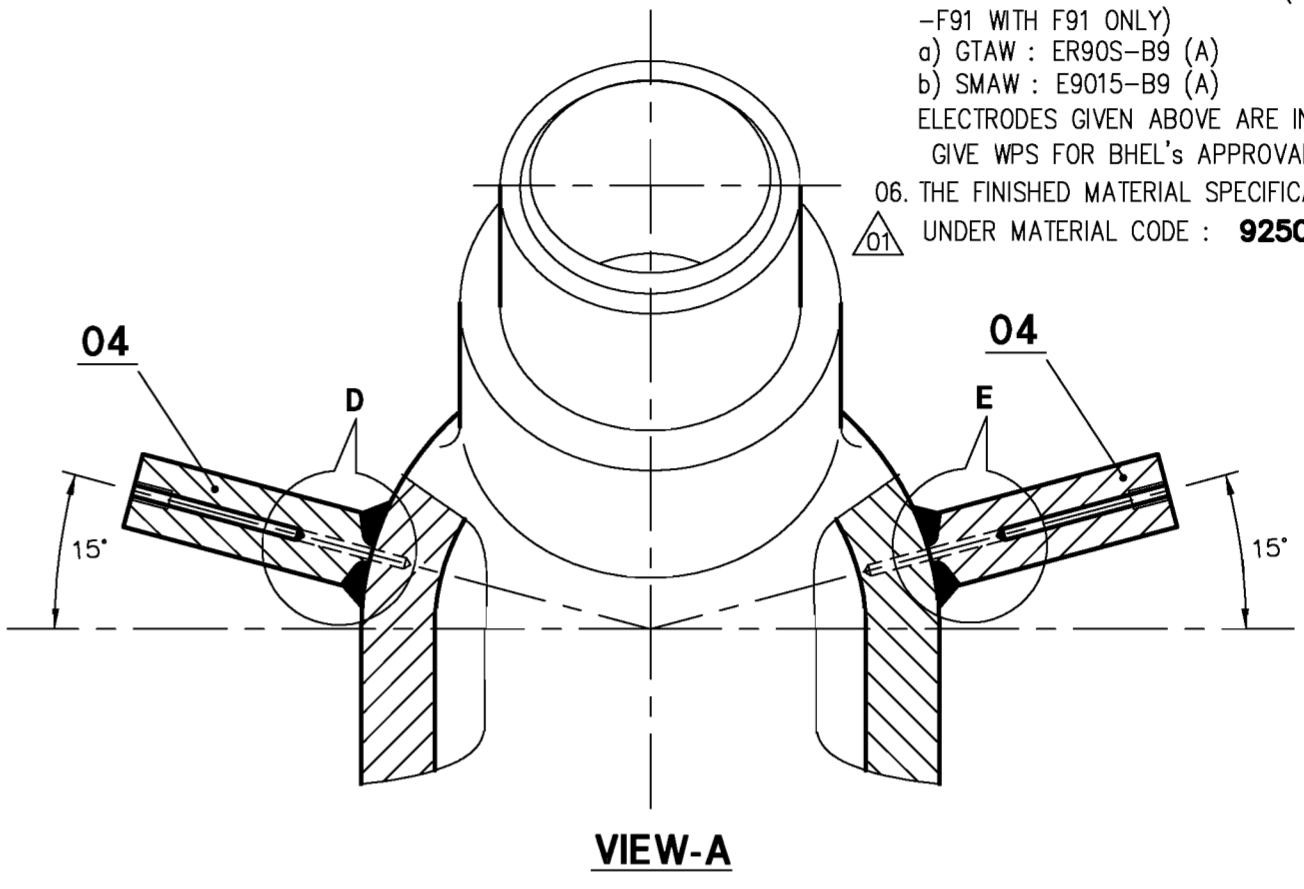
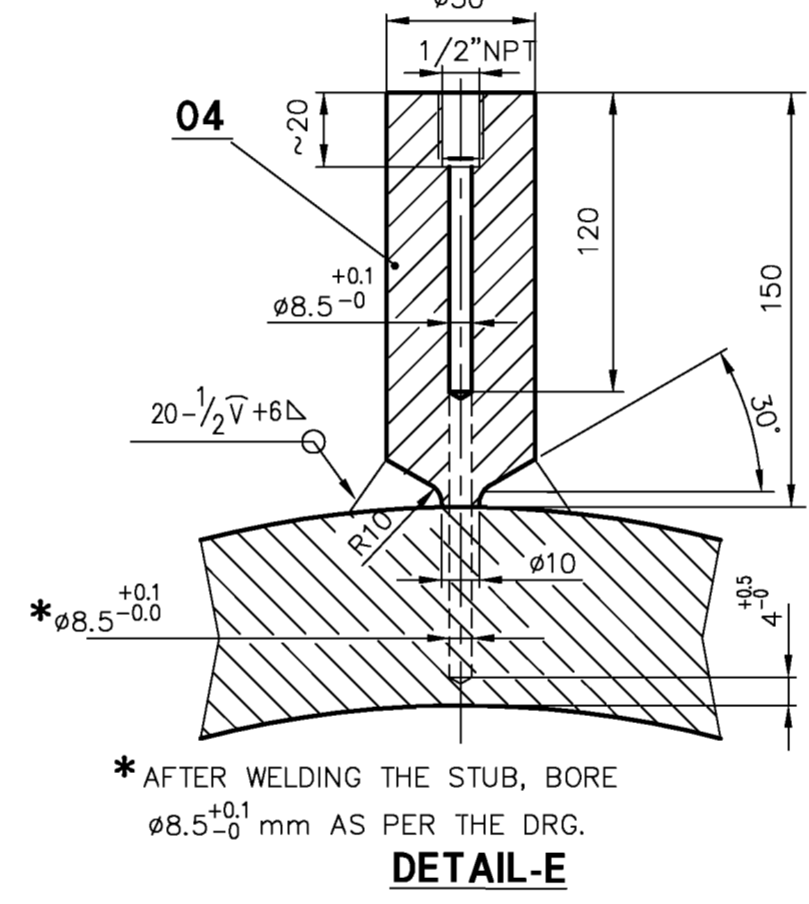
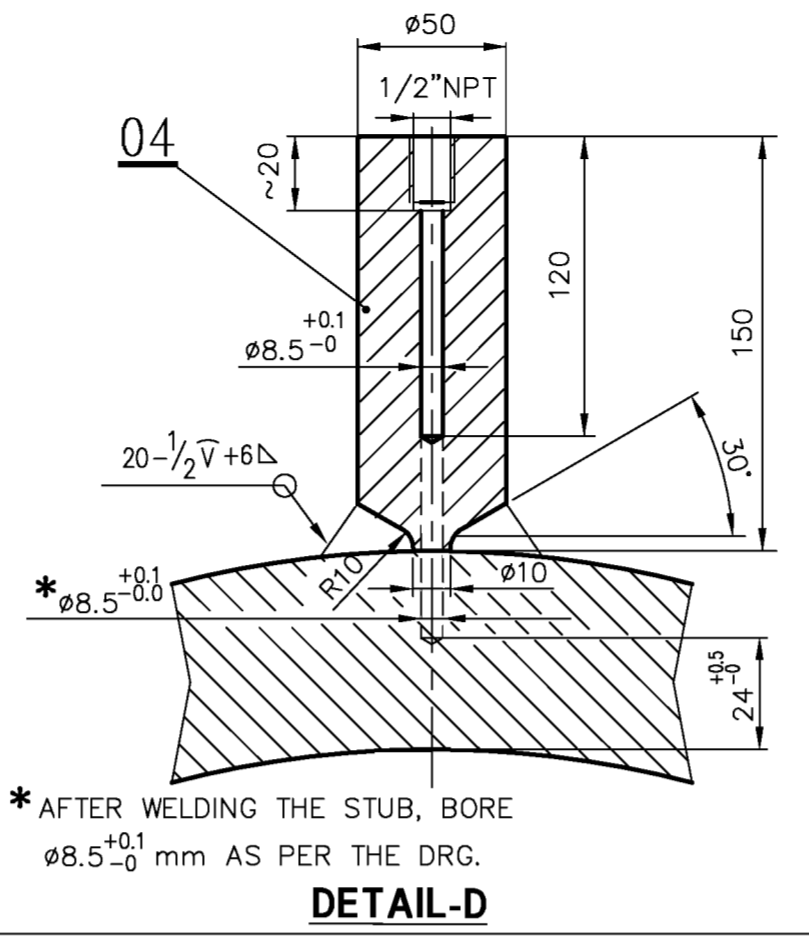
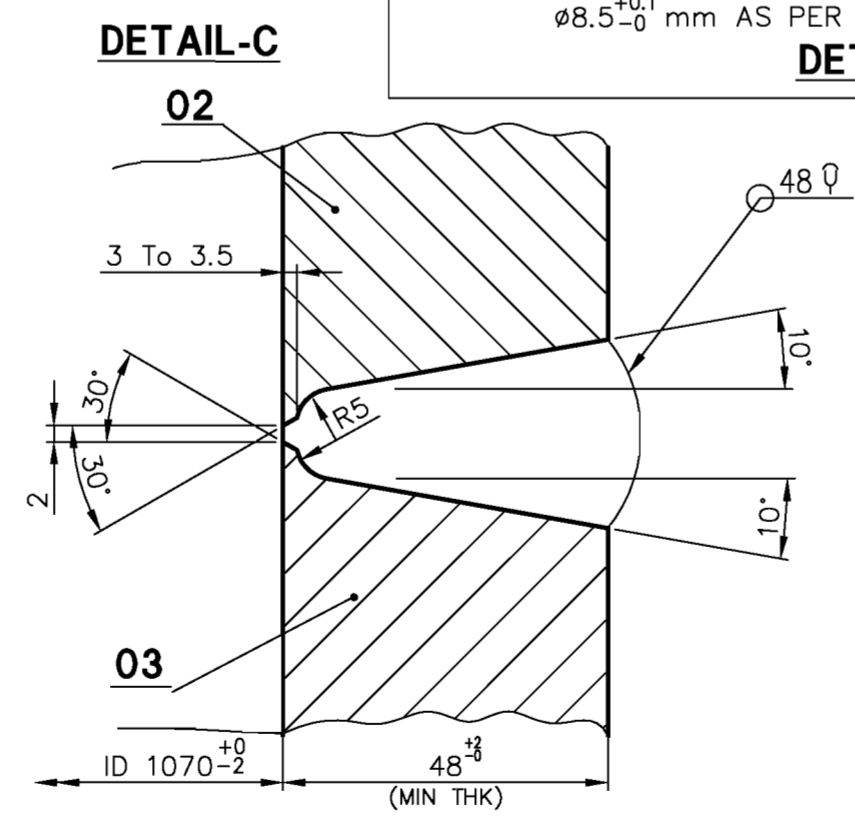
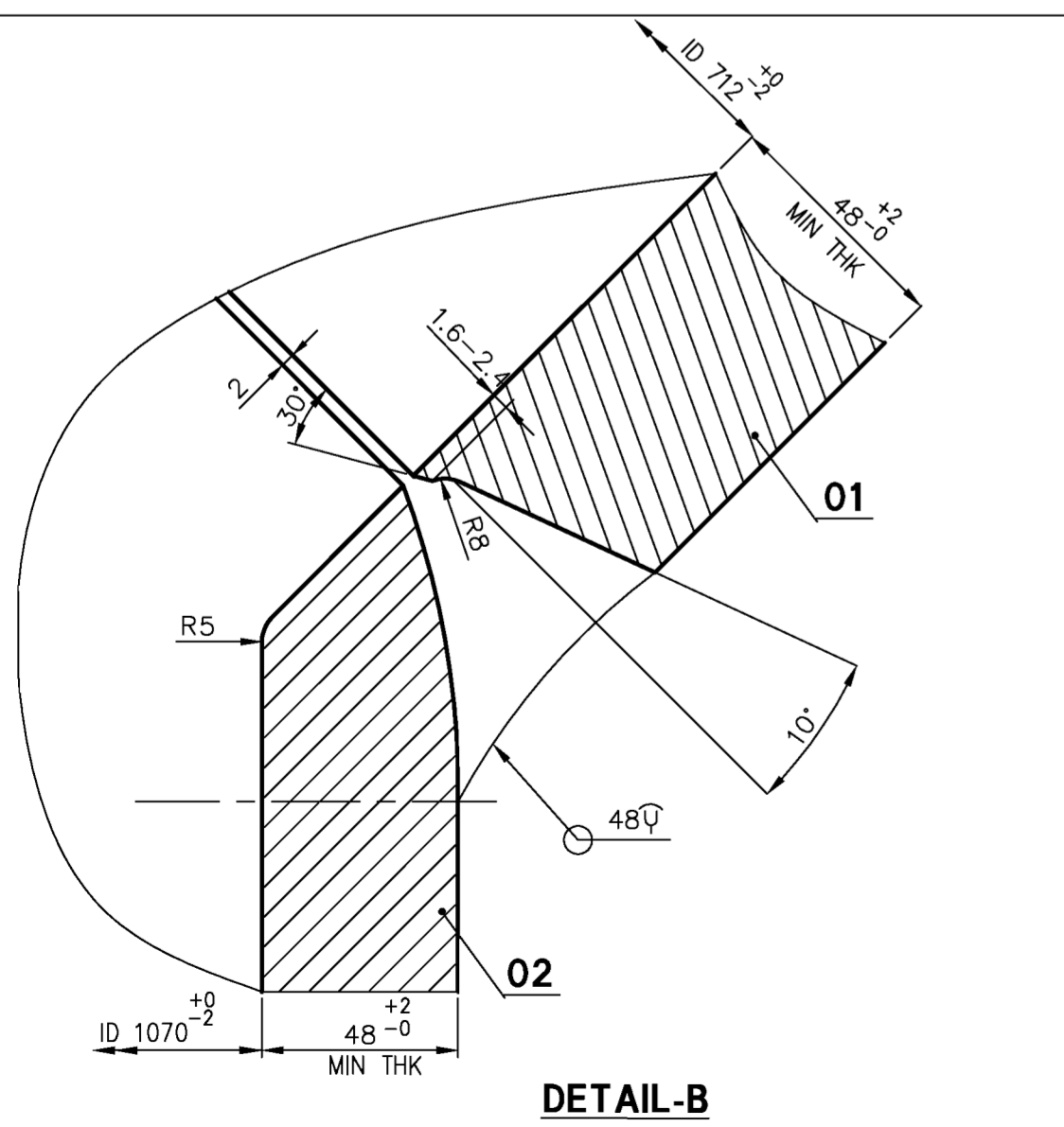
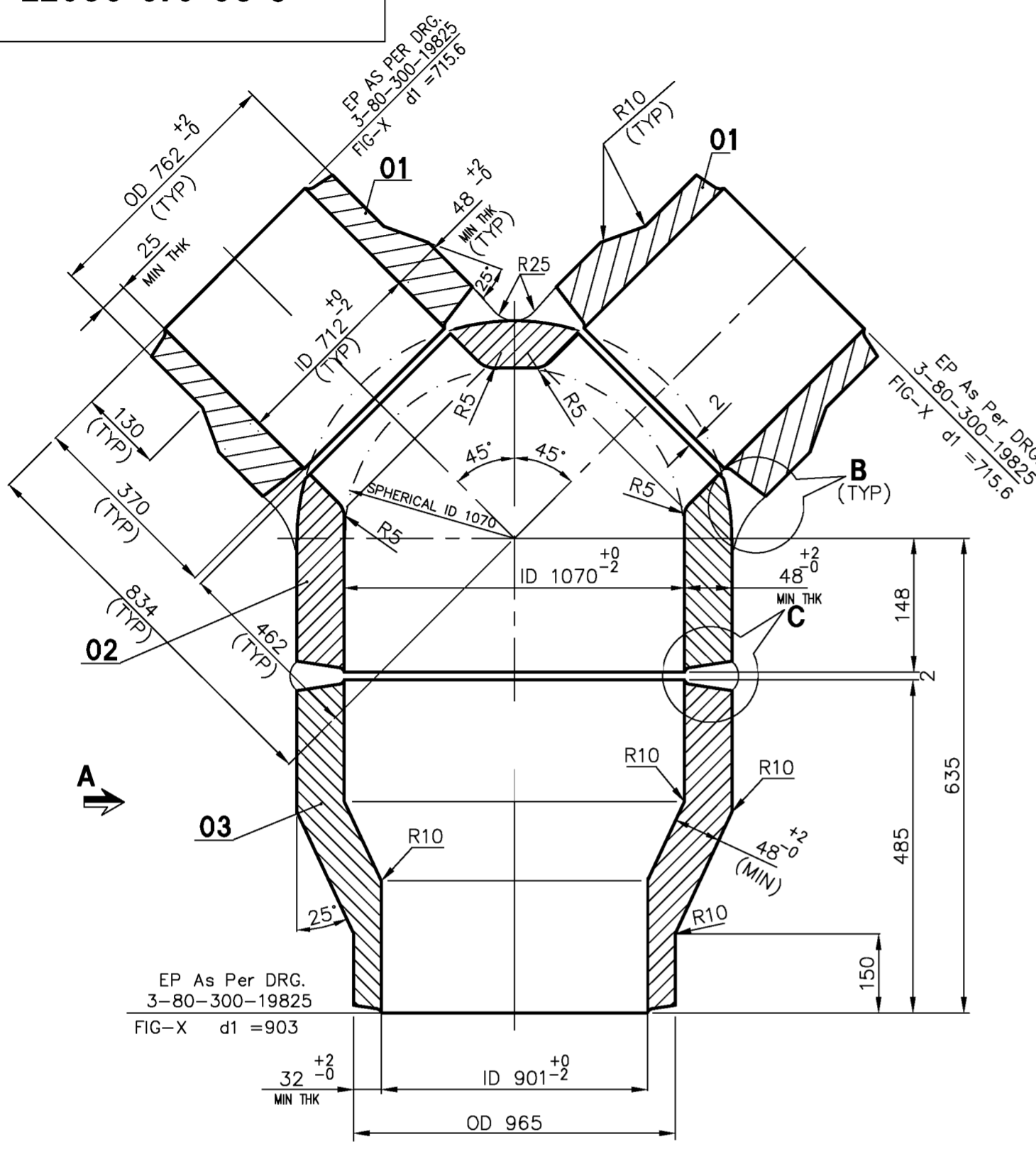
BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
CHD	S.PALANI		05.02.09	
APPD	VENKAT		05.02.09	
	K.V.RAMANI		05.02.09	

REV	DATE	ALTD	PALANI
01	06-03-09	APPD	VENKAT
ZONE	NOTE-06 MATERIAL SPECIFICATION REVISED.		
	ALL REVISIONS INDICATED AS		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
CODE	C/M/F	N.T.S.	2624.000		
TITLE	FABRICATED UNEQUAL TEE (OD965x32.0/OD762x25.0)		CARD CODE	DRAWING No.	REV
			U 01	3-80-310-26026	01

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- NOTES :-**
- DESIGN PRESSURE : 48.6 Kg/Cm² (g)
 - DESIGN TEMPERATURE : 568° C
 - FOLLOW TDG:108.
 - PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
 - ELECTRODES TO BE USED ARE (FOR WELDING OF -F91 WITH F91 ONLY)
 - a) GTAW : ER90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
 ELECTRODES GIVEN ABOVE ARE INDICATIVE. VENDOR TO GIVE WPS FOR BHEL'S APPROVAL.
 - THE FINISHED MATERIAL SPECIFICATION WILL BE SA182F91(A) UNDER MATERIAL CODE : **925058190000**

VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	MATERIAL SPECN	UNIT WEIGHT	QUANTITY
	04	TEMP. STUB. ø50 L=150	2-80-310-09377	SA 182 F22 CL3	A	4	000
	03	OUTLET FORGING ID1070 x THK48 MIN / ID901 x 32 MIN THK	2-80-310-09377	SA 182 F91	A	540	000
	02	BODY FORGING ID 1070 x THK 48 MIN	2-80-310-09377	SA 182 F91	A	938	000
	01	INLET FORGING ID 712 x THK 48 MIN	2-80-310-09377	SA 182 F91	A	264	000

JOB NO.	REL NO.	DATE

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

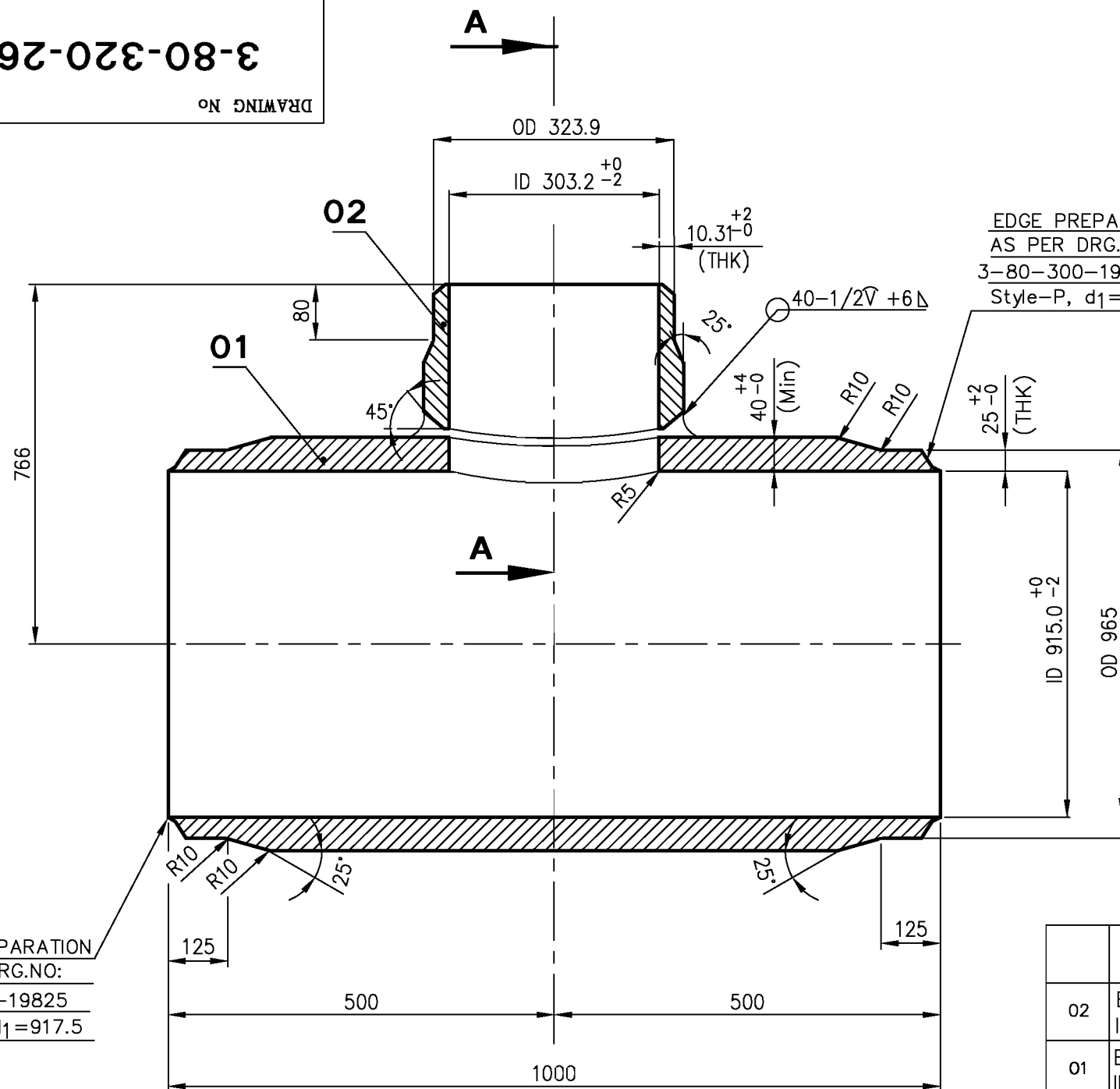
BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	DRN	NAME	SIGN	DATE	NO OF
	CHD	VENKAT		04-02-09	ITEMS
	APPD	K.V.RAMANI		04-02-09	
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF. NO.	ITEM No.
	C/M/F	N.T.S.	2014.000		
TITLE	CARD CODE	MSE DRAWING NO.	REV		
Y-PIECE (OD965x32/OD762x25)	U 01	2-80-310-09377	01		

REV 01	DATE 06-03-09	ALTD : PALANI	APPD : VENKAT
NOTE-05 MATERIAL SPECIFICATION REVISED.			
ALL REVISIONS INDICATED AS Δ			

3-80-320-26031

DRAWING No

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EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
Style-P, d1=917.5

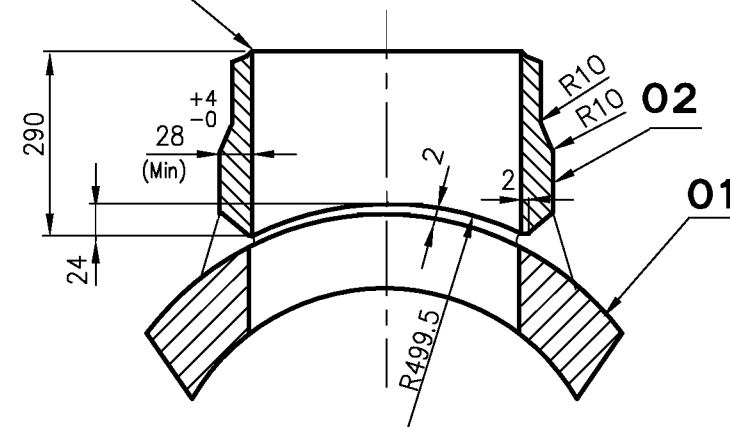
EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
Style-P, d1=917.5

EDGE PREPARATION
AS PER DRG.NO:
3-80-300-19825
Style-D, d1=303.2

NOTES :-

- DESIGN PRESSURE : 54 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 360° C
- FOLLOW TDG : 108
- PIPE SA106GrC(A) CAN ALSO BE USED IN PLACE OF SA105(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA105(A) UNDER MATERIAL CODE : **925058230000**

12.5/



SECTION-AA

02	BRANCH NOZZLE L=290 ID 303.2 x Thk 28.0 Min	3-80-320-26031		SA 105	A	48,000 1
01	BASE PIPE L = 1000 ID 915.0 x Thk 40.0 Min	3-80-320-26031		SA 105	A	806,000 1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD.,		DRN	NAME	SIGN	DATE	NO OF ITEMS
	PIPING CENTRE,		CHD	VENKAT		05.02.09	
	CHENNAI 600 017		APPD	K.V.RAMANI		05.02.09	

REV	DATE	ALTD	PALANI
01	06-03-09	APPD	VENKAT
ZONE	NOTE-05 MATERIAL SPECIFICATION REVISED.		
ALL REVISIONS INDICATED AS			

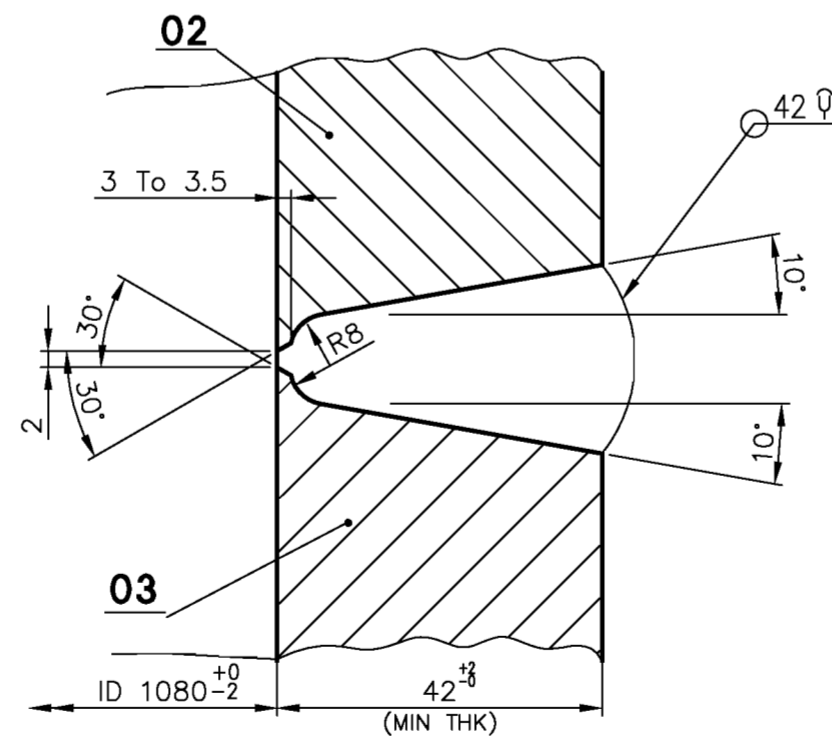
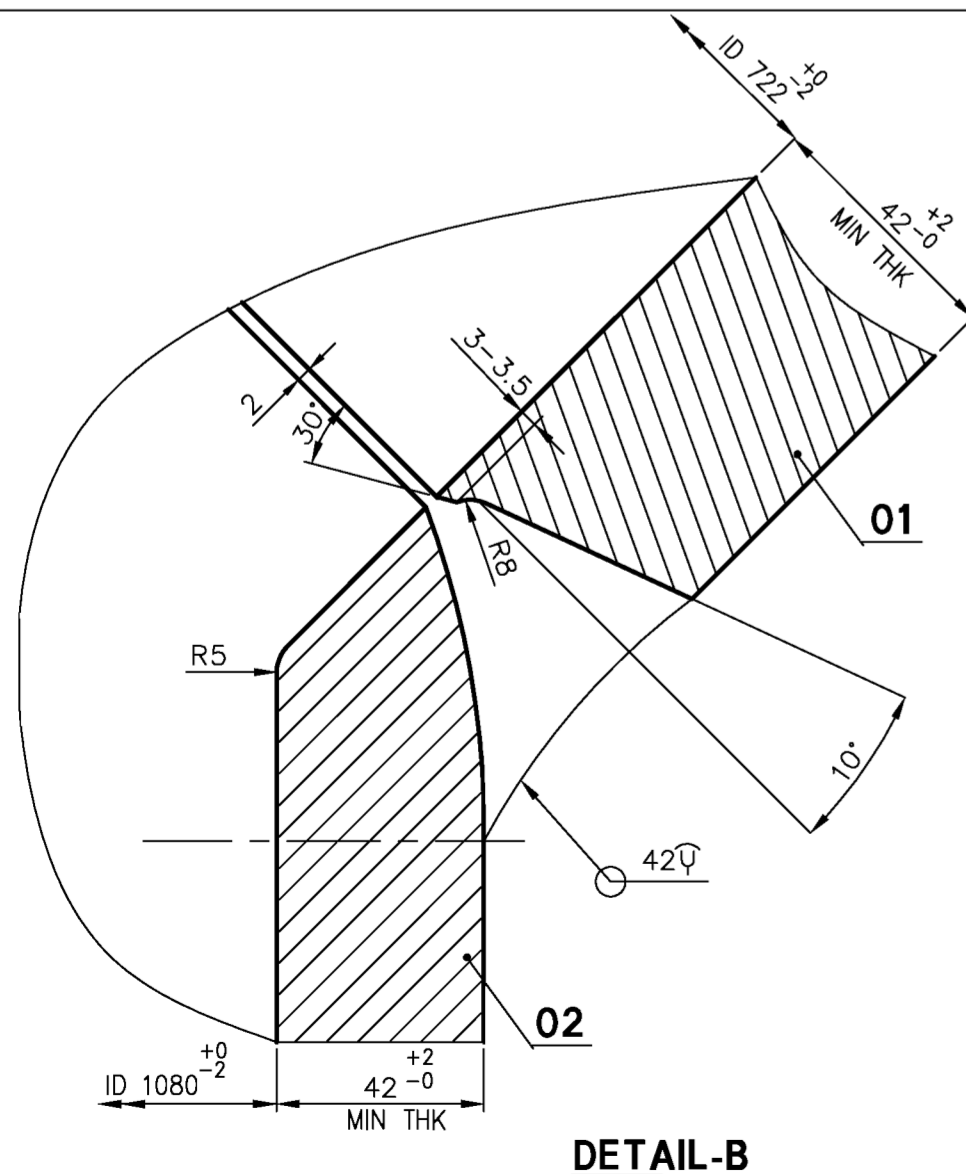
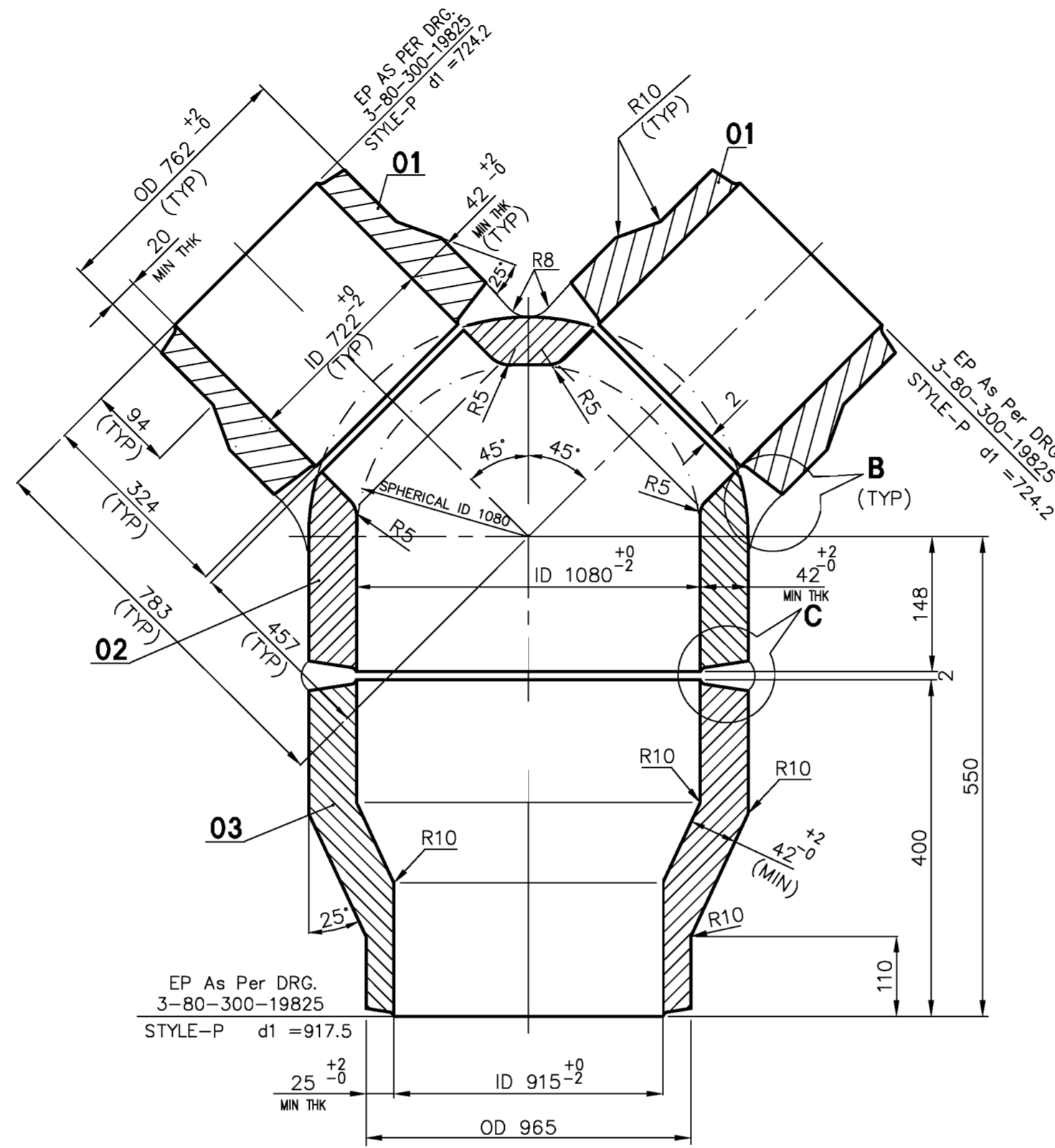
DEPT.	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
CODE	C/M/F		N.T.S.	854.000		
TITLE	FABRICATED UNEQUAL TEE (OD965x25.0/OD323.9x10.31)		CARD CODE	DRAWING No.		REV
			U 01	3-80-320-26031		01

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ALL DIMENSIONS ARE IN MILLIMETRES

NOTES :-

- 01. DESIGN PRESSURE : 54 Kg/Cm² (g)
- 02. DESIGN TEMPERATURE : 360° C
- 03. FOLLOW TDG:108.
- 04. PIPE SA106GRC(A) CAN ALSO BE USED IN PLACE OF SA105(A).
- 06. THE FINISHED MATERIAL SPECIFICATION WILL BE SA105(A) UNDER MATERIAL CODE : **925058240000**



DETAIL-B

DETAIL-C

VAR NO	ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	MATERIAL SPECN	UNIT WEIGHT	QUANTITY
	03	OUTLET FORGING ID1080 x THK42 MIN / ID915 x THK 25 MIN	2-80-320-09378	SA 105	A	370.000	1
	02	BODY FORGING ID 1080 x THK 42 MIN	2-80-320-09378	SA 105	A	830.000	1
	01	INLET FORGING ID 722 x THK 42 MIN	2-80-320-09378	SA 105	A	205.000	2

JOB NO.	REL NO.	DATE

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO OF
	CHD	VENKAT				04-02-09	ITEMS
	APPD	K.V.RAMANI				04-02-09	
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF. NO.		ITEM No.	
CODE	C/M/F	N.T.S.	1610.000				
TITLE			CARD CODE	MSE DRAWING NO.		REV	
Y-PIECE (OD965x25/OD762x20)			U 01	2-80-320-09378		01	

REV	DATE	ALTD :	PALANI
01	06-03-09	APPD :	VENKAT
NOTE-06 MATERIAL SPECIFICATION REVISED.			
ALL REVISIONS INDICATED AS			

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3-80-423-23672

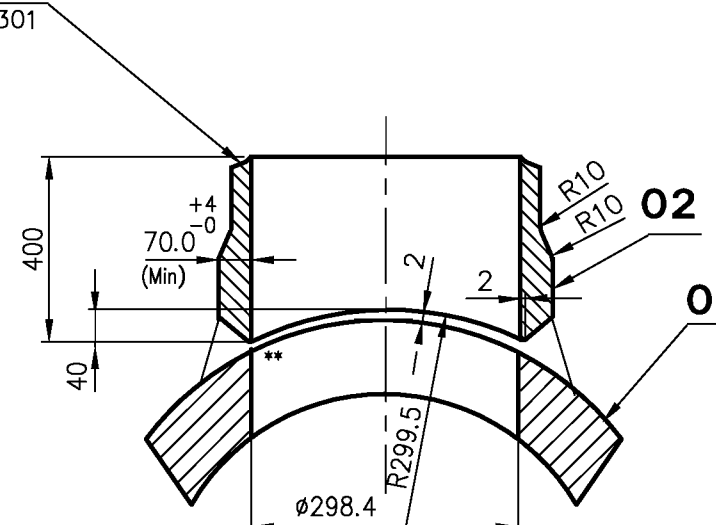
DRAWING No

NOTES :-

- DESIGN PRESSURE : 320 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 290° C
- FOLLOW TDG : 108
- PIPE SA106GrC(A) CAN ALSO BE USED IN PLACE OF SA105(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA105(A) UNDER MATERIAL CODE : **925058250000**

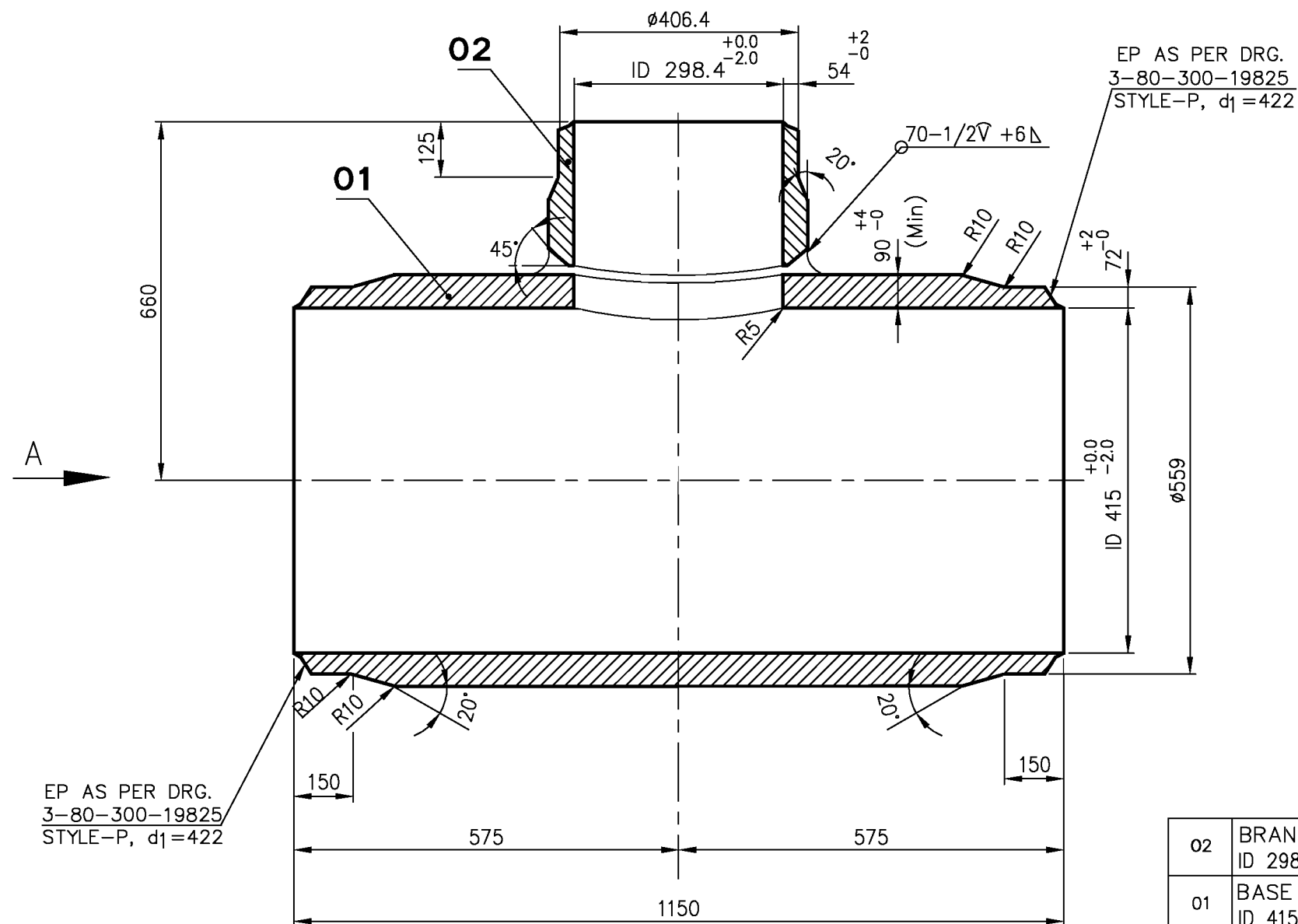


EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=301



** BACK CHIP AND SEAL WELD

VIEW-A



EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=422

02	BRANCH NOZZLE L=400 ID 298.4 x Thk 70.0 min	3-80-423-23672		SA 105	A	192 000
01	BASE PIPE L = 1150 ID 415 x Thk 90.0 min	3-80-423-23672		SA 105	A	1130 000
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME S.PALANI	SIGN	DATE 07.02.09	NO OF ITEMS
CHD	VENKAT		07.02.09	
APPD	K.V.RAMANI		07.02.09	

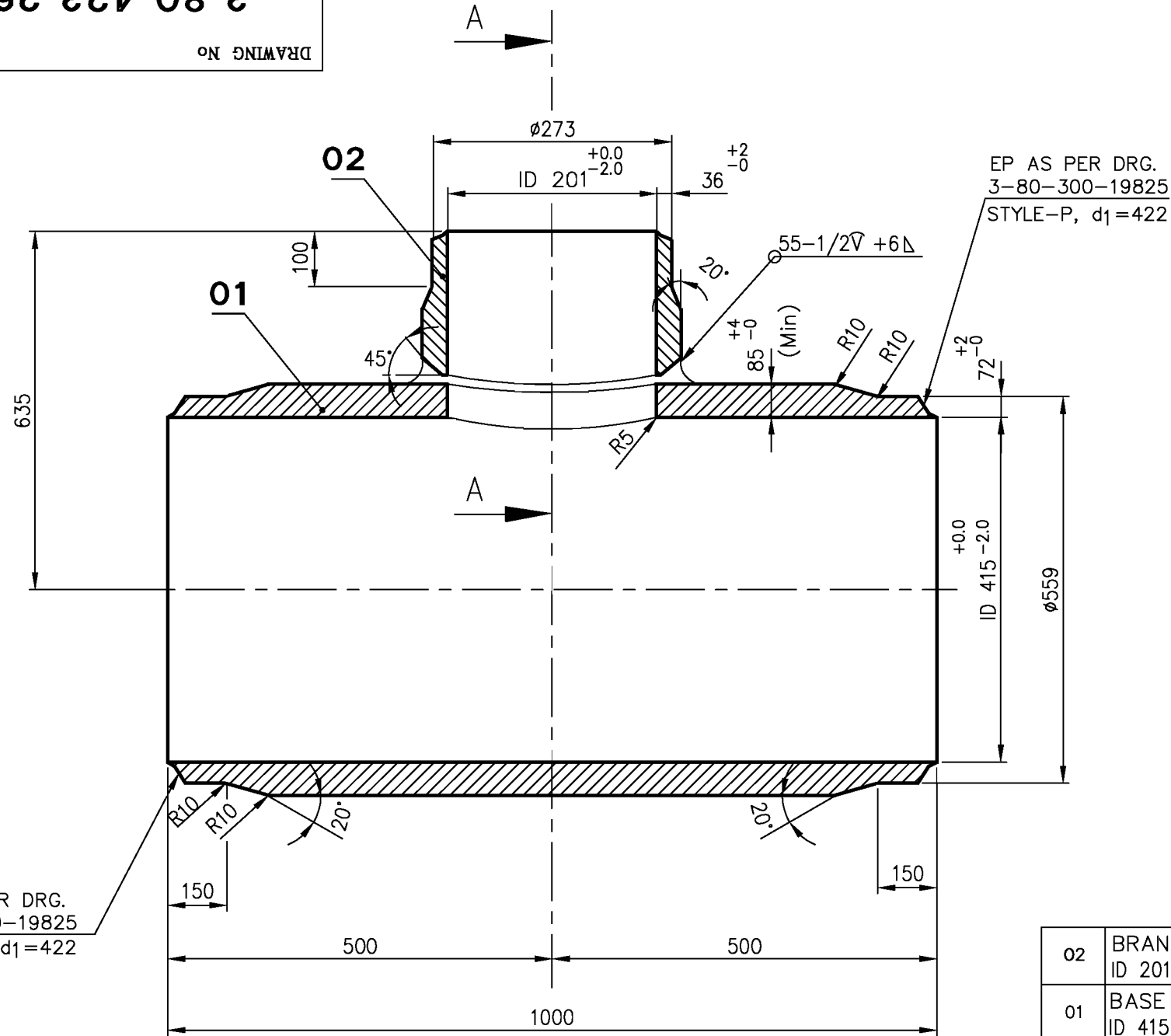
REV	DATE	ALTERED	PALANI
01	06-03-09	APPROVED	VENKAT
ZONE	NOTE-05 MATERIAL SPECIFICATION REVISED.		
ALL REVISIONS INDICATED AS			

DEPT.	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO MSE DRG. No.	ITEM No.
CODE	C/M/F		N.T.S.	1322.000		
TITLE	FABRICATED UNEQUAL TEE (OD 559.0X72.0/OD 406.4x54.0)		CARD CODE	DRAWING No.	REV	
			U 01	3-80-423-26098	01	

3-80-423-26099

DRAWING No

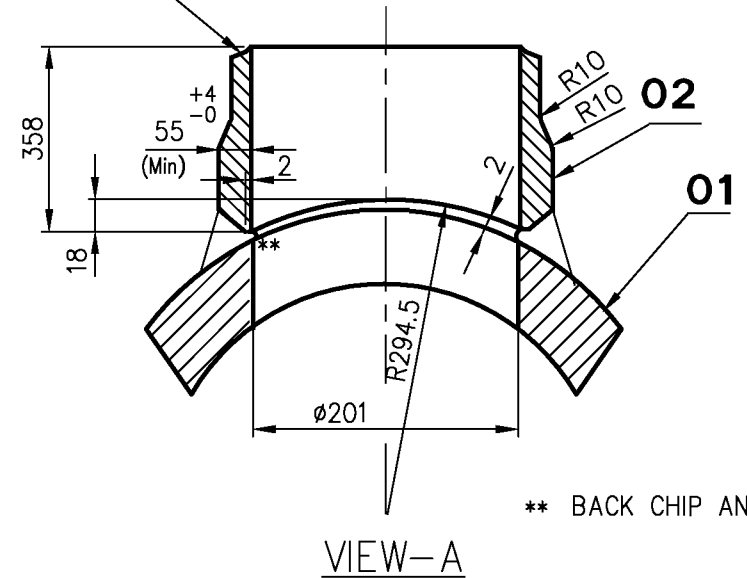
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NOTES :-

- DESIGN PRESSURE : 320 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 290° C
- FOLLOW TDG : 108
- PIPE SA106GrC(A) CAN ALSO BE USED IN PLACE OF SA105(A).
- THE FINISHED MATERIAL SPECIFICATION WILL BE SA105(A) UNDER MATERIAL CODE : **925058260000**

EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=208



EP AS PER DRG.
3-80-300-19825
STYLE-P, d1=422

02	BRANCH NOZZLE L=358 ID 201 x Thk 55.0 Min	3-80-423-26099		SA 105	A	132 000 1
01	BASE PIPE L = 1020 ID 415 x Thk 85.0 Min	3-80-423-26099		SA 105	A	941 000 1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.
			VAR NO.	MATERIAL SPEC.	C	QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
CHD	VENKAT		07.02.09	
APPD	K.V.RAMANI		07.02.09	

REV	DATE	ALTERED	PALANI
01	06-03-09	APPROVED	VENKAT
ZONE	NOTE-05 MATERIAL SPECIFICATION REVISED.		
ALL REVISIONS INDICATED AS \triangle 01			

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	REF TO MSE DRG. No.	ITEM No.
CODE	C/M/F	N.T.S.	1073.000		
TITLE	FABRICATED UNEQUAL TEE (OD 559.0x72.0/OD 273.0x36.0)		CARD CODE	DRAWING No.	REV
			U 01	3-80-423-26099	01

09/L6-666-08-3

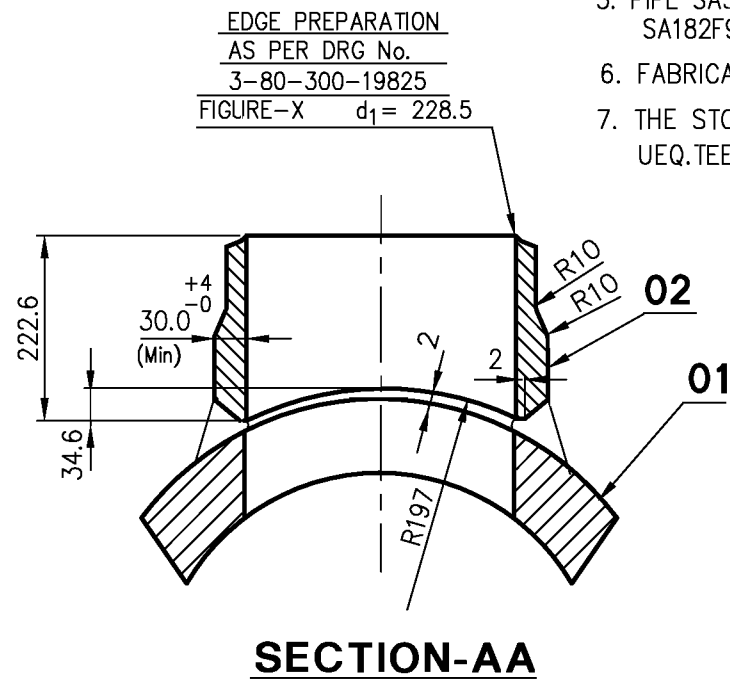
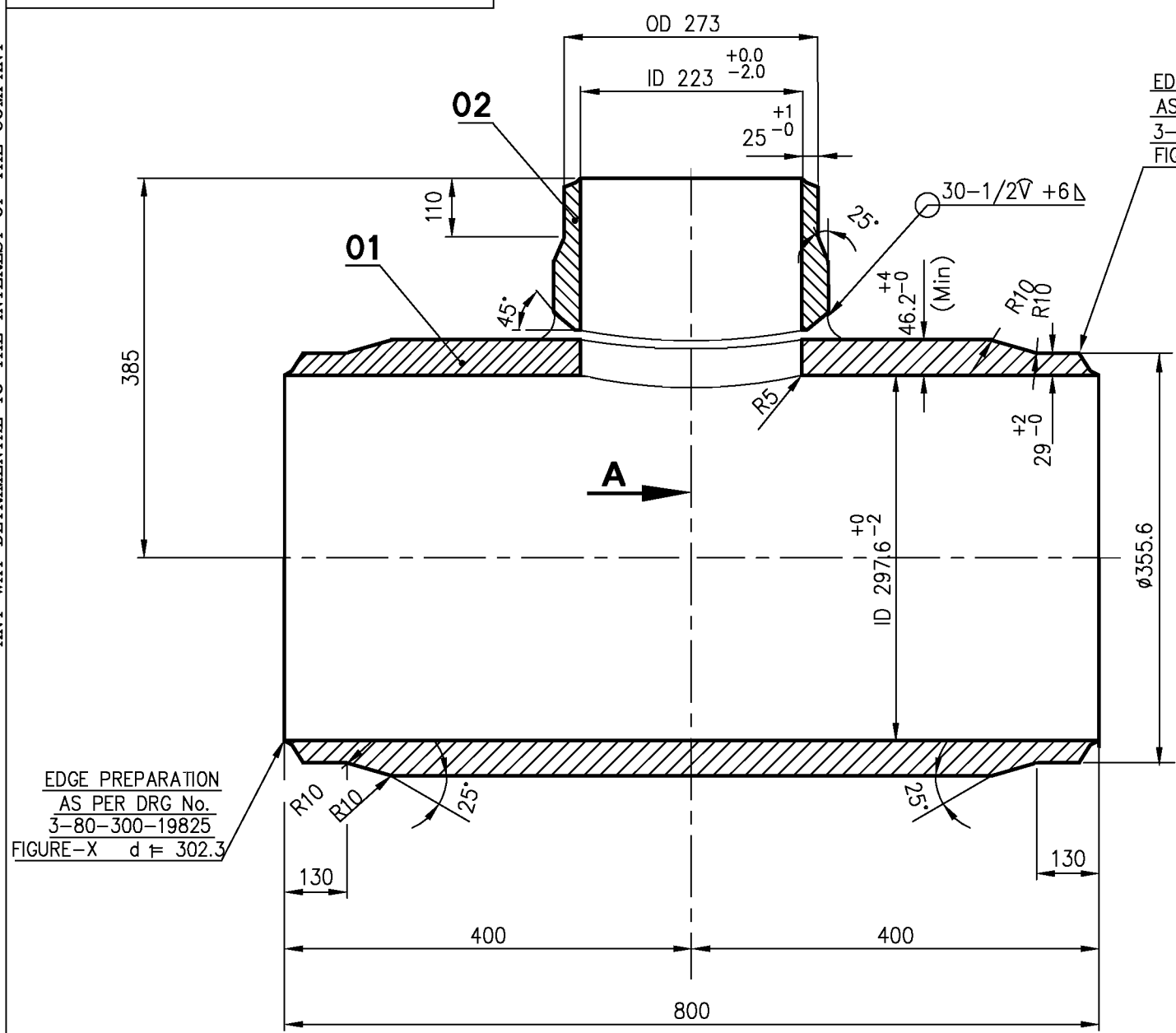
DRAWING No

CAUTION 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

12.5

NOTES :-

- DESIGN PRESSURE : 150 Kg/Sq.Cm (g)
- DESIGN TEMPERATURE : 540° C
- FOLLOW TDG : 108
- ELECTRODES TO BE USED ARE,
 - a) GTAW : ER90S-B9 (A)
 - b) SMAW : E9015-B9 (A)
- PIPE SA335P91(A) CAN ALSO BE USED IN PLACE OF SA182F91(A).
- FABRICATION, INSPECTION, TESTING AS PER IBR 1950.
- THE STOCK CODE FOR THE FINISHED UEQ.TEE IS : "9255058510000"



EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d = 302.3

EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d₁ = 302.3

EDGE PREPARATION
AS PER DRG No.
3-80-300-19825
FIGURE-X d₁ = 228.5

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.
			VAR NO.	MATERIAL SPEC.	C	QTY.
02	BRANCH NOZZLE L=222.6 ID 223 x Thk 30 Min	3-80-999-97760		SA 182 F91	A	41,200 1
01	BASE PIPE L = 800 ID 297.6 x Thk 46.2 Min	3-80-999-97760		SA 182 F91	A	313,000 1

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD.,				NAME	SIGN	DATE	NO OF ITEMS
	PIPING CENTRE,							
	CHENNAI 600 017							
	DRN	S.R.MURTHY		22.12.09				
CHD	S.R.MURTHY		22.12.09					
APPD	C.V.NATHAN		22.12.09					

STANDARD

REV	DATE	ALTD	REV	DATE	ALTD
02		APPD	01	05.03.10	APPD
ZONE			ZONE		TITLE REVISED.NOTE NO 04 REVISED

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO.	ITEM No.
CODE	C/M/F	N.T.S.	354.200		
TITLE	FABRICATED UN EQUAL TEE OD355.6x29/OD273x25 F91		CARD CODE	DRAWING No.	REV
			U 01	3-80-999-97760	01