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REV 01	DATE	ALTERED : CHD & APPD :
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NOTES:

- 1) DESIGN PRESSURE : 285.8 Kg/Cm² (g)
- 2) DESIGN TEMPERATURE : 601 °C
- 3) WORKING MEDIUM : STEAM
- 4) FOLLOW TDC No. 102(LATEST REVISION)
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN, MANUFACTURING, INSPECTION, TOLERANCES AND TESTING SHALL BE AS PER IBR
- 7) CONNECTING PIPE SIZE IS PIPE ID280X74
- 8) MATERIAL SPECIFICATION SHALL BE SA234WP91
- 9) THE CROSS SECTIONAL AREA SHOULD NOT BE LESSER THAN 90% OF THE SPECIFIED AREA CORRESPONDS TO THE ID280MM

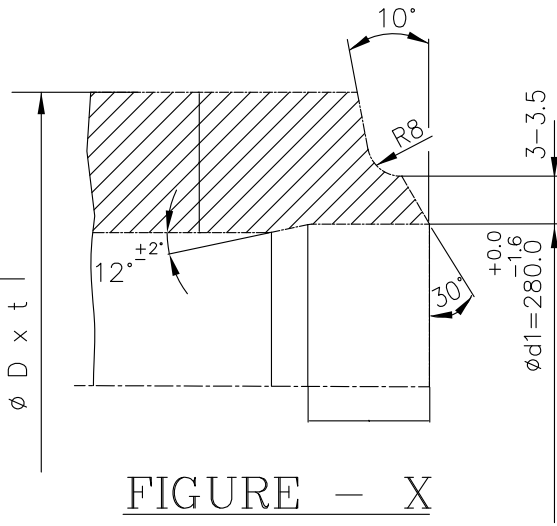
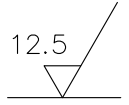
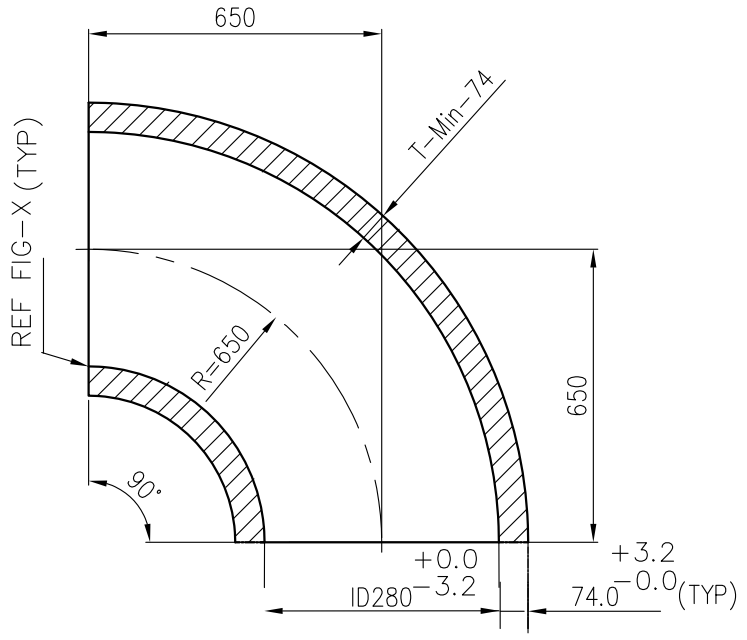


FIGURE - X



-	BW LR 90DEG ELBOW φ ID280 X 74	STD	xx xxx xxx xxxx	A	659	230
			SA 234 WP91			1
VAR No.	DESCRIPTION		MATERIAL CODE	A/C/P	UNIT	UNIT WT. (KG)
			MATERIAL SPECN			QUANTITY



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

	NAME	SIGNATURE	DATE
DRN	M.R.K	—sd—	13.04.2015
CHD	I.D.B	—sd—	13.04.2015
APPD	S.R.M	—sd—	13.04.2015

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE			N.T.S	659.230	—
TITLE					REV
BW LR 90DEG ELBOW ID280 X 74					4-80-300-79146 00

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REV 01	DATE	ALTERED :
		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 285.8 Kg/Cm² (g)
- 2) DESIGN TEMPERATURE : 601 °C
- 3) WORKING MEDIUM : STEAM
- 4) FOLLOW TDC No. 102(LATEST REVISION)
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN, MANUFACTURING, INSPECTION, TOLERANCES AND TESTING SHALL BE AS PER IBR
- 7) CONNECTING PIPE SIZE IS PIPE ID280X74
- 8) MATERIAL SPECIFICATION SHALL BE SA234WP91
- 9) THE CROSS SECTIONAL ARE SHOLUD NOT BE LESSER THAN 90% OF THE SPECIFIED AREA CORRESPONDS TO THE ID280MM

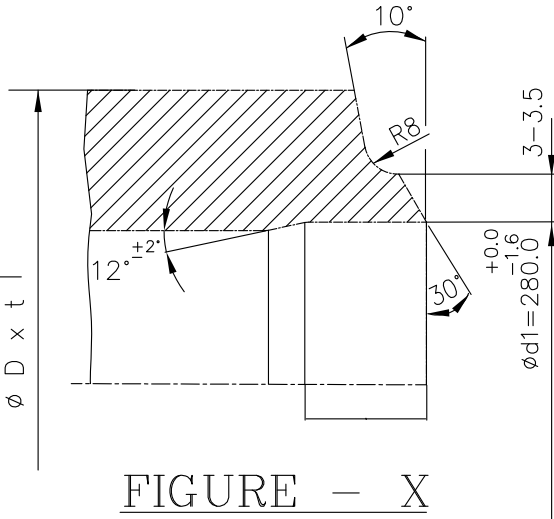
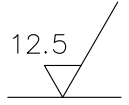
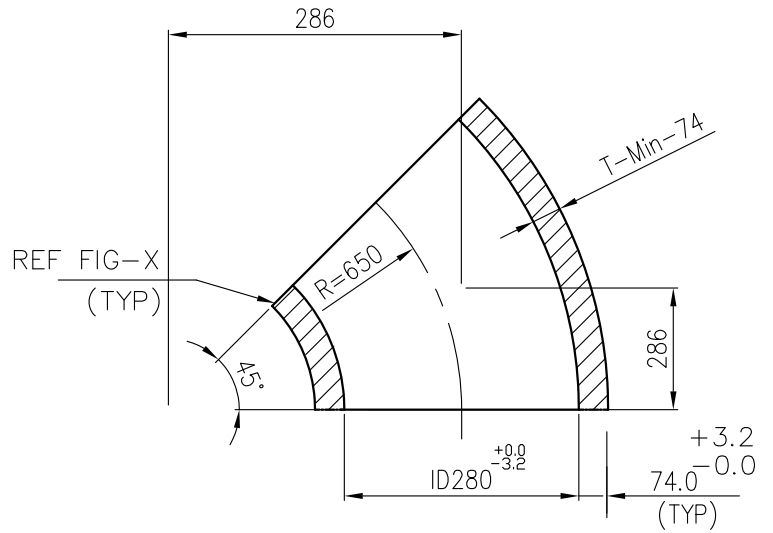


FIGURE - X



-	BW LR 45DEG ELBOW ø ID280 X 74	xx xxx xxx xxxx	A	329	620
				1	
VAR No.	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT
			MATERIAL SPECN		UNIT WT. (KG)
					QUANTITY



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

	NAME	SIGNATURE	DATE
DRN	M.R.K	—sd—	13.04.2015
CHD	I.D.B	—sd—	13.04.2015
APPD	S.R.M	—sd—	13.04.2015

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE			N.T.S	659.230	—
TITLE					REV
BW LR 45DEG ELBOW ID280 X 74					4-80-300-79148 00

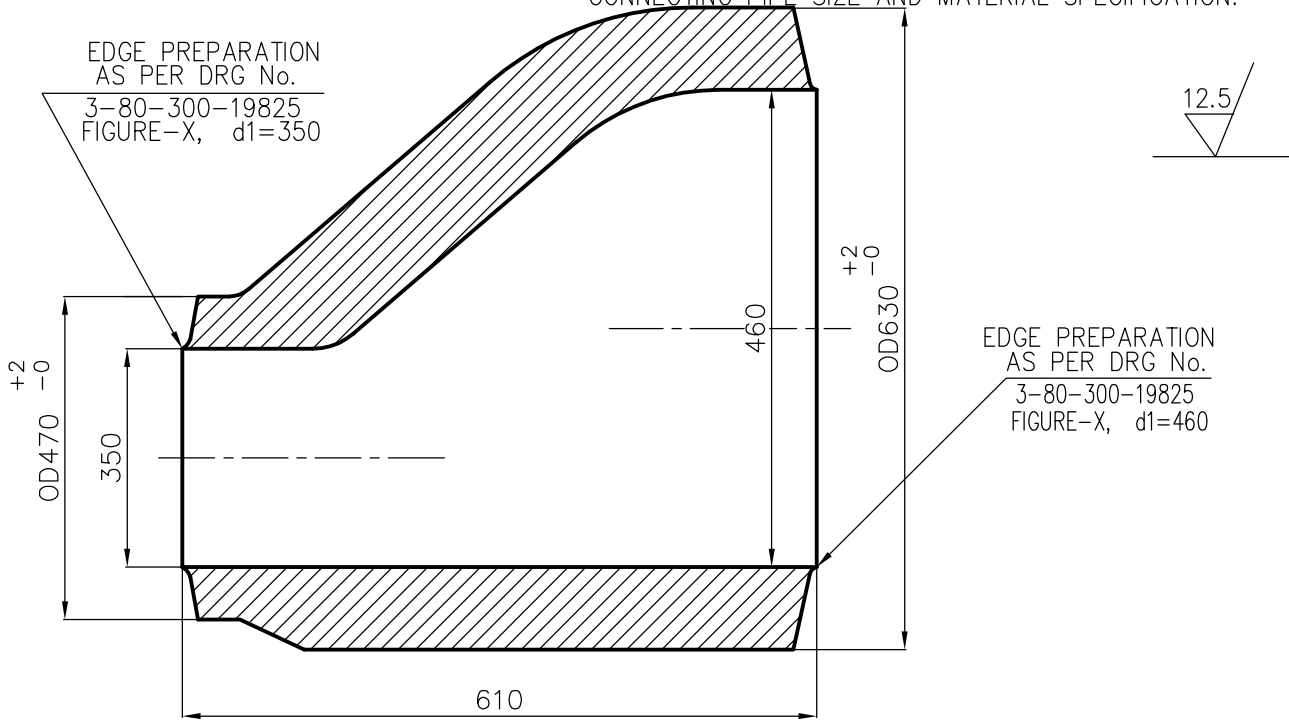
ALL DIMENSIONS ARE IN MILLIMETRES

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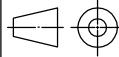
REV	DATE	ALTERED
		APPROVED

NOTES:-


01. DESIGN PRESSURE : 269 Kg/Cm²(g)
02. DESIGN TEMPERATURE : 568° C
03. FITTING SHALL CONFORM TO ALL THE REQUIREMENTS OF ASME B16.9 & A 234(LATEST).
04. FOLLOW TDG.TDC.102.REV04
05. THIS DRAWING IS FOR INDICATING THE OVER ALL DIMENSIONS, CONNECTING PIPE SIZE AND MATERIAL SPECIFICATION.



	ECCENTRIC REDUCER ID460X85 / ID350X60	92 117 568 0000	A	683 000
		SA 234 WP91		
VAR NO.	DESCRIPTION	MATL. CODE	A	UNIT.WT.(Kg)
		MATL. SPECN.	C	QTY.

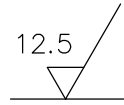
 BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		NAME DRN LALIT CHD C.SARAVANAN APPD C.SARAVANAN	SIGN 	DATE 19.05.10 19.05.10 19.05.10	NO.OF VAR 		
DEPT CODE	GRADE OF UNTOL.DIM C / M / F	 N.T.S	SCALE	WEIGHT (KG). 683.000	BHEL PO REF.NO: 	ITEM NO. 	NO. OF ITEMS
TITLE ECCENTRIC REDUCER (ID460X85 / ID350X60)SA234WP91			CARD CODE U 01	DRAWING NO. 4-80-301-71071		REV 00	

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REV	DATE	ALTERED : POONGKODI.V
01	06.01.12	CHD & APPD:C.V.NATHAN
d1 VALUE REVISED. REVISION MARKED AS 		


NOTES:

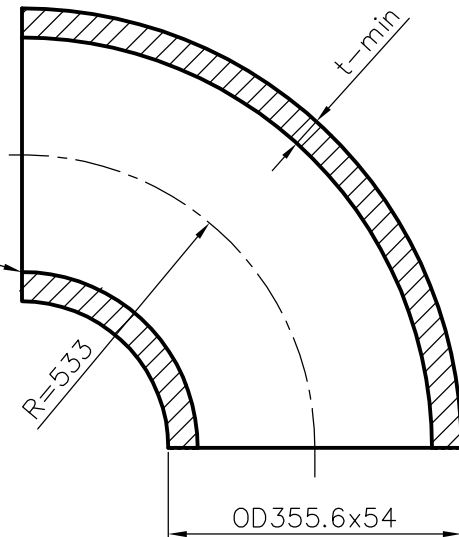
- 1) DESIGN PRESSURE : 270.7 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 568 °C
- 3) WORKING MEDIUM : STEAM
- 4) FOLLOW TDC No. : TDG-102 (LATEST REVISION)
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN, MANUFACTURING, INSPECTION, TOLERANCES AND TESTING SHALL BE AS PER IBR ANSI B16.9 AND SA 234.
- 7) FLOW AREA SHALL NOT BE LESS THAN 80% OF NOMINAL FLOW AREA.
- 8) t-min SHALL NOT BE LESS THAN 0.875 TIMES OF THE WALL THICKNESS (i.e 0.875 x THICKNESS)



****** d1=247.6mm IS APPLICABLE FOR KRISHNAPATNAM ONLY.
d1=250.1mm FOR OTHER PROJECTS.



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIGURE-X, d1= **
(TYP) 

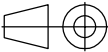


-	BW LR 90DEG ELBOW OD355.6x54	STD	92 524 975 0000	A	UNIT	396	000
			SA 234 WP91			1	
VAR No.	DESCRIPTION		MATERIAL CODE	A/C/P	UNIT	UNIT WT. (KG)	
			MATERIAL SPECN			QUANTITY	



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

	NAME	SIGNATURE	DATE
DRN	N.MEGANATHAN	—sd—	23/03/2010
CHD	N.MEGANATHAN	—sd—	24/03/2010
APPD	K.V.RAMANI	—sd—	25/03/2010

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (Kg) 396.000	REF TO ASSY / OLD DWG —
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TITLE ASME B16.9 BW LR 90DEG ELBOW OD355.6x54	DRAWING NO : 4-80-304-70628	REV 01
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ALL DIMENSIONS ARE IN MILLIMETRES

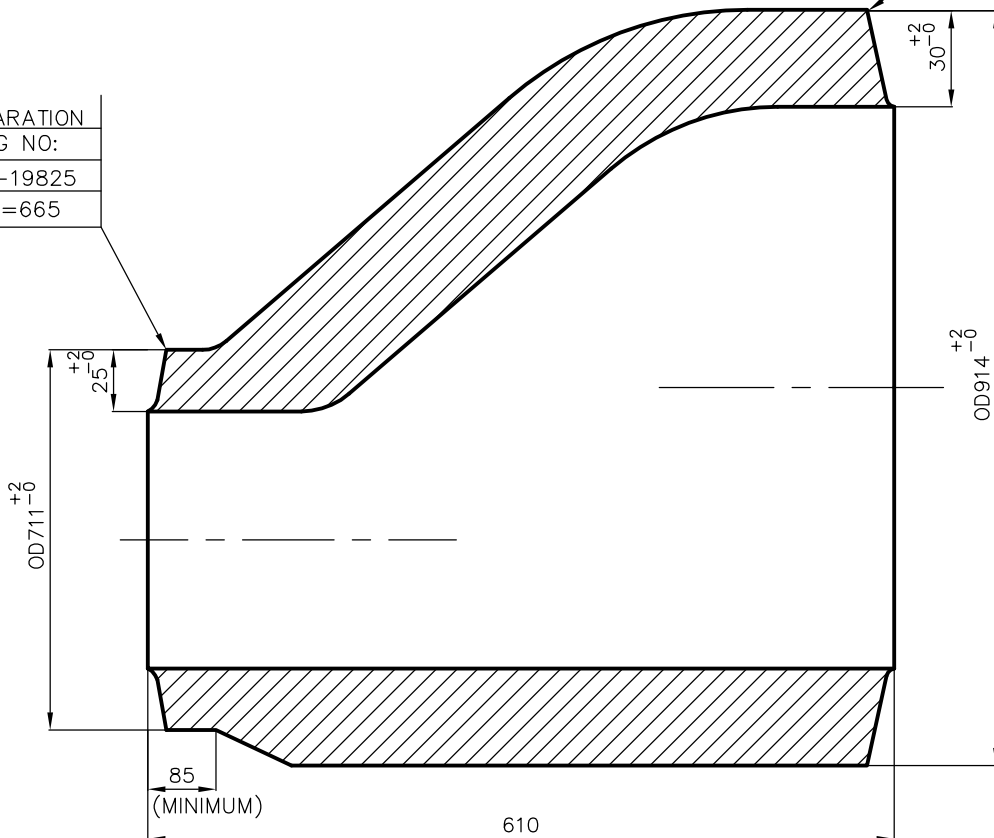
REV	DATE	ALTERED
01		APPROVED

NOTES:


- 1.DESIGN PRESSURE: 48.4Kg/cm²(g)
- 2.DESIGN TEMPERATURE: 568°C
- 3.FOLLOW QP:NO:
- 4.FITTING SHALL CONFORM TO ALL THE REQUIREMENTS OF ASME B16.9 & A 234.
- 5.THIS DRAWING IS FOR INDICATING THE OVER ALL DIMENSIONS, CONNECTING PIPE SIZE AND MATERIAL SPECIFICATION.
- 6.MANUFACTURING AND TESTING SHALL BE AS PER TDC / QP.

EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIG-X , d1=858.4

EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIG-X , d1=665



	ECCENTRIC REDUCER OD914x30 / OD711x25	92 117 442 0000	A	350	000
		SA 234 WP91			
VAR NO.	DESCRIPTION	MATL. CODE	A	UNIT	UNIT.WT.(Kg)
		MATL. SPECN.	C	DI	QTY.

	BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO. OF VAR
			CHD	A. AMALRAJ		02.01.07	
			APPD	M.SRINIVASAN		02.01.07	
DEPT	GRADE OF UNTOL. DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS
CODE	C / M / F	N.T.S	350.000				
TITLE			CARD CODE	DRAWING NO.			REV
ECCENTRIC REDUCER OD914x30 / 711x25			U 01	4-80-310-63823			00

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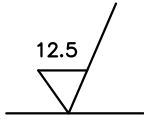
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV	DATE	ALTERED
01		APPROVED

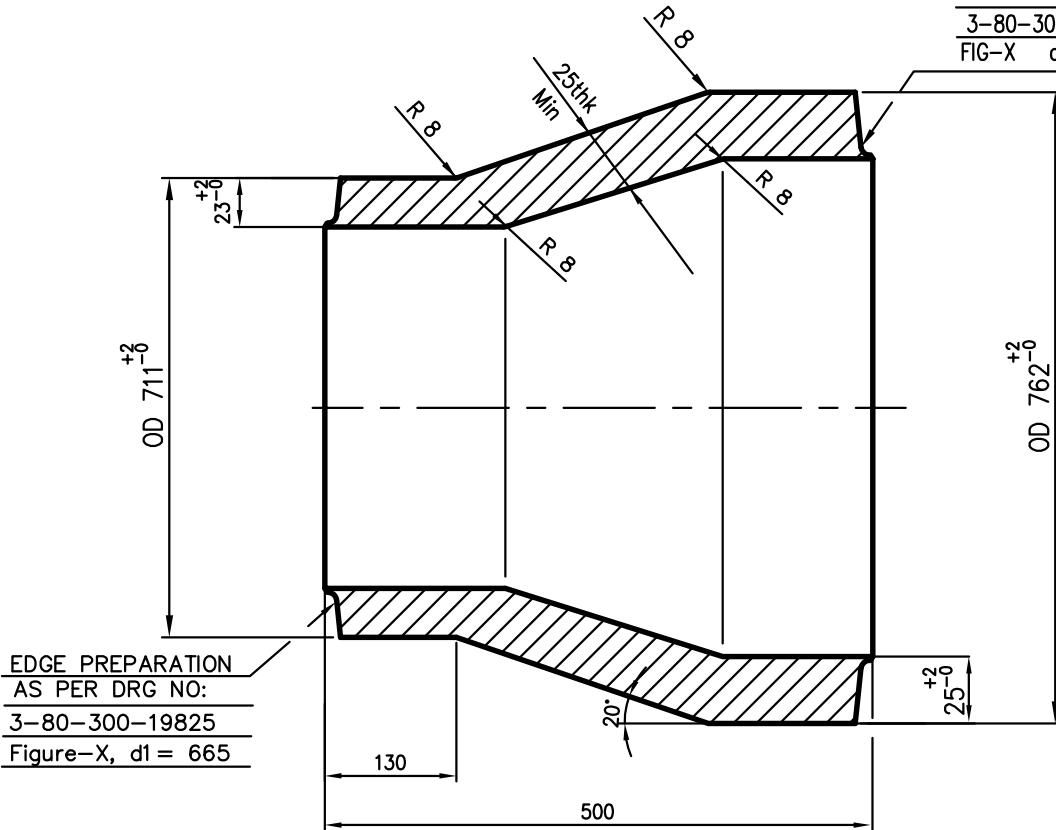
ALL DIMENSIONS ARE IN MILLIMETRES

NOTES :-

- DESIGN PRESSURE : 29.04 Kg/Cm² (g)
- DESIGN TEMPERATURE : 560° C



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



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
Figure-X, d_f = 665

	REDUCER OD 762x25/OD711x23	92 117 505 0000	A	217 000
VAR NO.	DESCRIPTION	SA234WP91	MATL. CODE	UNIT.WT.(Kg)
		STD	MATL. SPECN.	QTY.

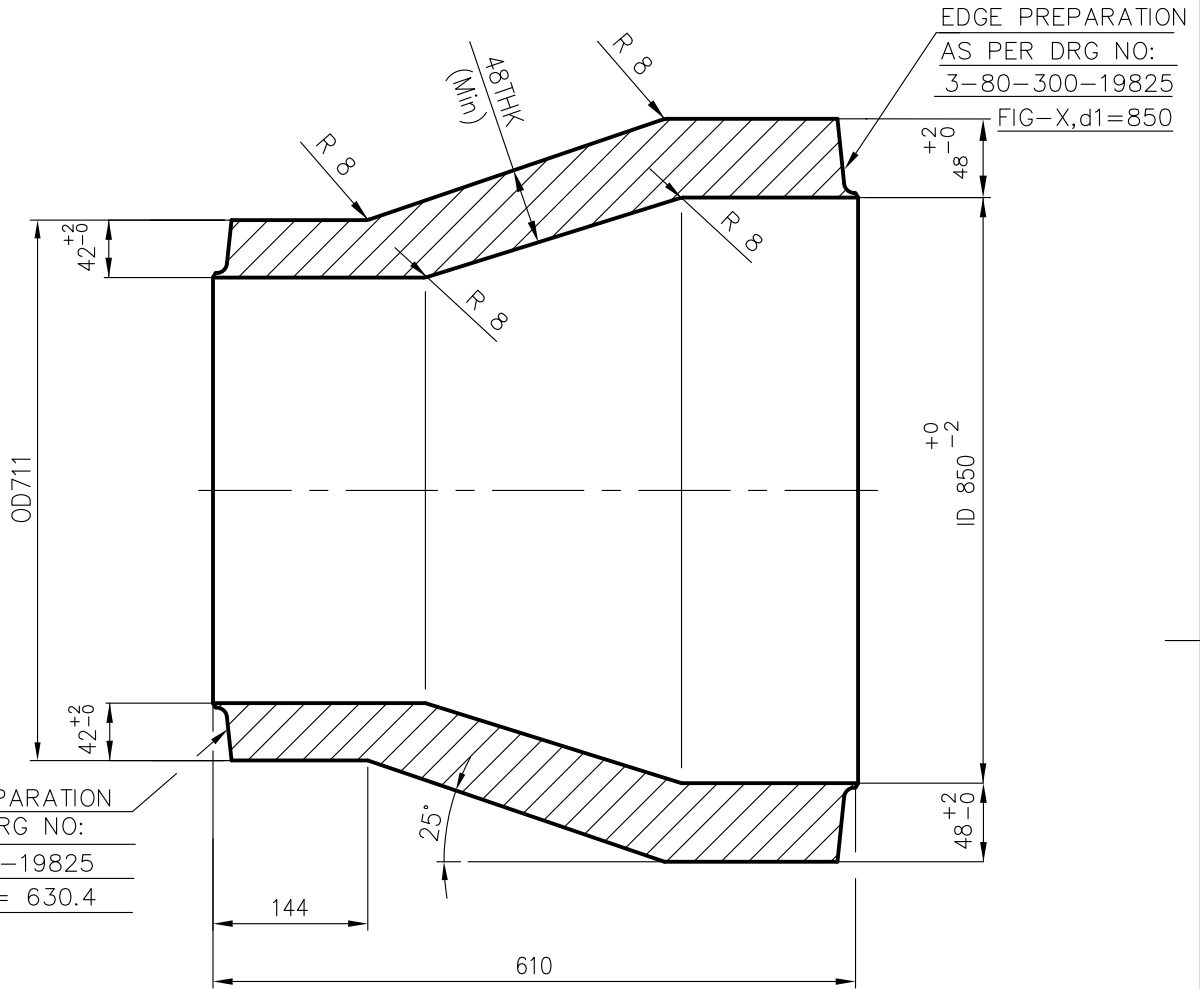
	BHARAT HEAVY ELECTRICALS LIMITED		DRN	NAME	SIGN	DATE	NO.OF VAR
	PIPING CENTRE		CHD	SUDHAKAR		20.08.09	
	CHENNAI- 600 017		APPD	PARAM		20.08.09	
DEPT	GRADE OF UN.TOL.DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS
CODE	C / M / F	N.T.S	217.000				
TITLE			CARD CODE	DRAWING NO.		REV	
REDUCER (OD762x25/OD711x23)			U 01	4-80-312-69328		00	

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NOTES :-


ALL DIMENSIONS ARE IN MILLIMETRES

- 01. DESIGN PRESSURE : 70 Kg/Cm²(g)
- 02. DESIGN TEMPERATURE : 601° C
- 03. FOLLOW TDG: 104
- 04. THE FINISHED MATERIAL CODE IS 92 117 829 0000



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

	BW CONCENTRIC REDUCER ID850X48/OD711X42	92 117 829 0000	A	560 000
		SA 234 WP91		
VAR NO.	DESCRIPTION	MATL. CODE	A	UNIT
		MATL. SPECN.	C	DI
				UNIT.WT.(Kg)
				QTY.

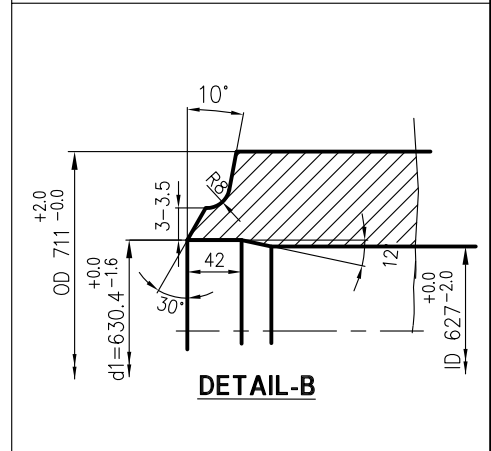
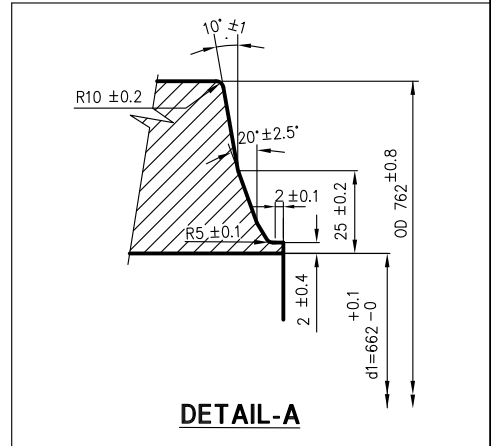
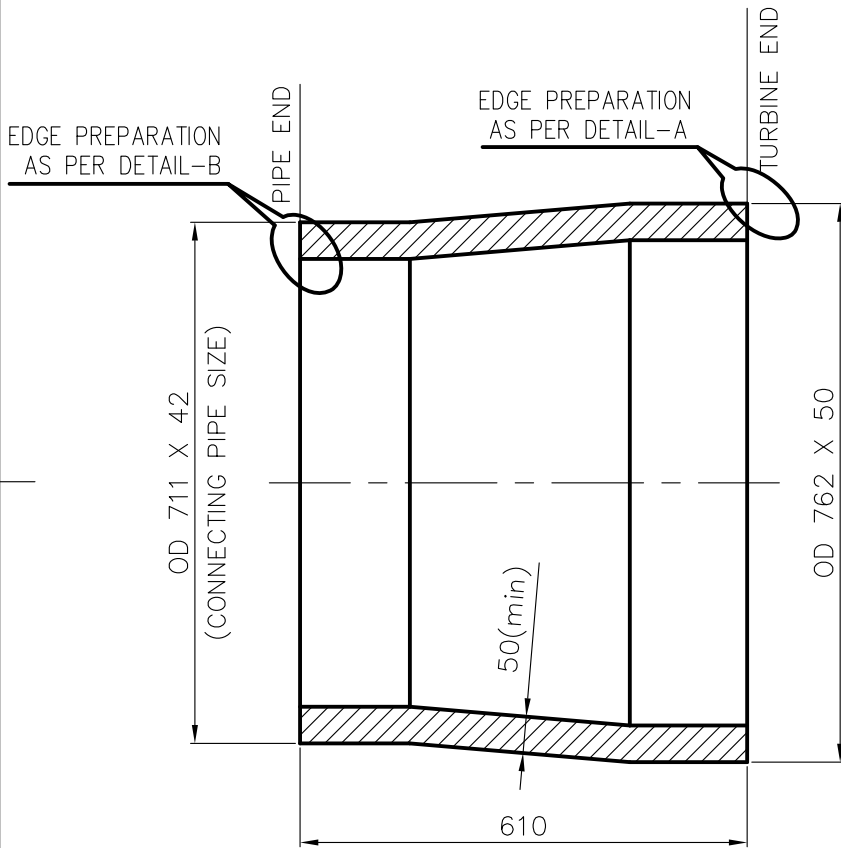
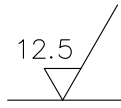
		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO.OF VAR
DEPT		GRADE OF UNTOL.DIM	SCALE	CHD	KONDAPA		10.06.13	
CODE		C / M / F	N.T.S	APPD	R.SESHAGIRI		10.06.13	
TITLE			WEIGHT (KG).	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS	
BW CONCENTRIC REDUCER ID850X48/OD711X42 (SA234WP91)			560.0					
CARD CODE		DRAWING NO.		REV				
U 01		4-80-310-77032		00				

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REV 01	DATE	ALTERED : CHD & APPD :
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NOTES:

- 1) DESIGN PRESSURE : 68 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 596 °C
- 3) WORKING MEDIUM : STEAM
- 4) FOLLOW TDC No. : TDG-102 (LATEST REVISION)
- 5) DESIGN, MANUFACTURING, INSPECTION, TOLERANCES AND TESTING SHALL BE AS PER IBR, ANSI B16.9 AND SA 234.



—	CON REDUCER OD762x50/OD711x42 L=610	92 117 844 0000	A	520 000
VAR No.	DESCRIPTION	MATERIAL CODE SA 234 WP91	A/C/P UNIT	QUANTITY 1
		MATERIAL SPECN		UNIT WT. (KG)



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

	NAME	SIGNATURE	DATE
DRN	POONGKODI.V	—sd—	15/06/2013
CHD	SUKUMAR.B	—sd—	15/06/2013
APPD	C.V.NATHAN	—sd—	15/06/2013

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE			N.T.S	520.000	

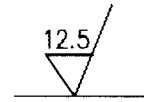
TITLE	DRAWING NO :	REV
ASME B16.9 BW CON REDUCER OD762x50/OD711x42	4-80-310-77057	00

ALL DIMENSIONS ARE IN MILLIMETRES

REV	DATE	ALTERED
		APPROVED

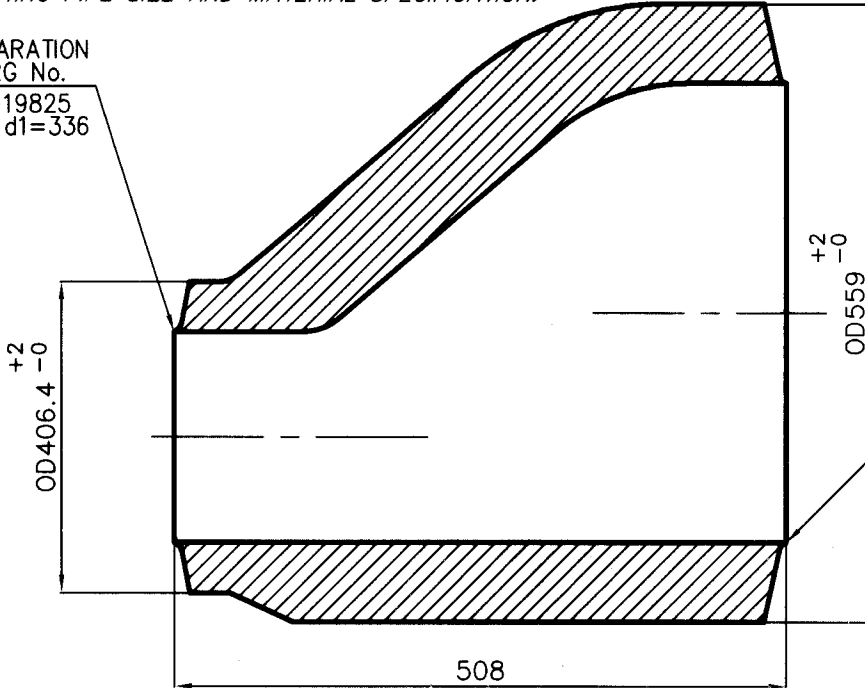
NOTES:-

- FITTING SHALL CONFORM TO ALL THE REQUIREMENTS OF ASME B16.9 & A 234.
- THIS DRAWING IS FOR INDICATING THE OVER ALL DIMENSIONS, CONNECTING PIPE SIZE AND MATERIAL SPECIFICATION.



EDGE PREPARATION
AS PER DRG No.

3-80-300-19825
FIGURE-X, d1=336



EDGE PREPARATION
AS PER DRG No.

3-80-300-19825
FIGURE-X, d1=460

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	ECCENTRIC REDUCER OD559x54 / OD406.4x38	92 517 944 0000	A	520	000
		SA 234 WP91			
VAR NO.	DESCRIPTION	STD	MATL. CODE	UNIT	UNIT.WT.(Kg)
			MATL. SPECN.	DI	QTY.

STANDARD

	BHARAT HEAVY ELECTRICALS LIMITED		NAME	SIGN	DATE	NO. OF VAR
	PIPING CENTRE		DRN	K.R.BALA	19.07.06	
	CHENNAI 600 017		CHD	C.SARAVANAN	19.07.06	
			APPD	T.N.ELANGOVAN	19.07.06	

DEPT	GRADE OF UNTOL DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:	ITEM NO.	NO. OF ITEMS
CODE	C / M / F	N.T.S	520.000			

TITLE	CARD CODE	DRAWING NO.	REV
ECCENTRIC REDUCER OD559X54 / OD406.4X38	U 01	4-80-301-62569	00

Size A4

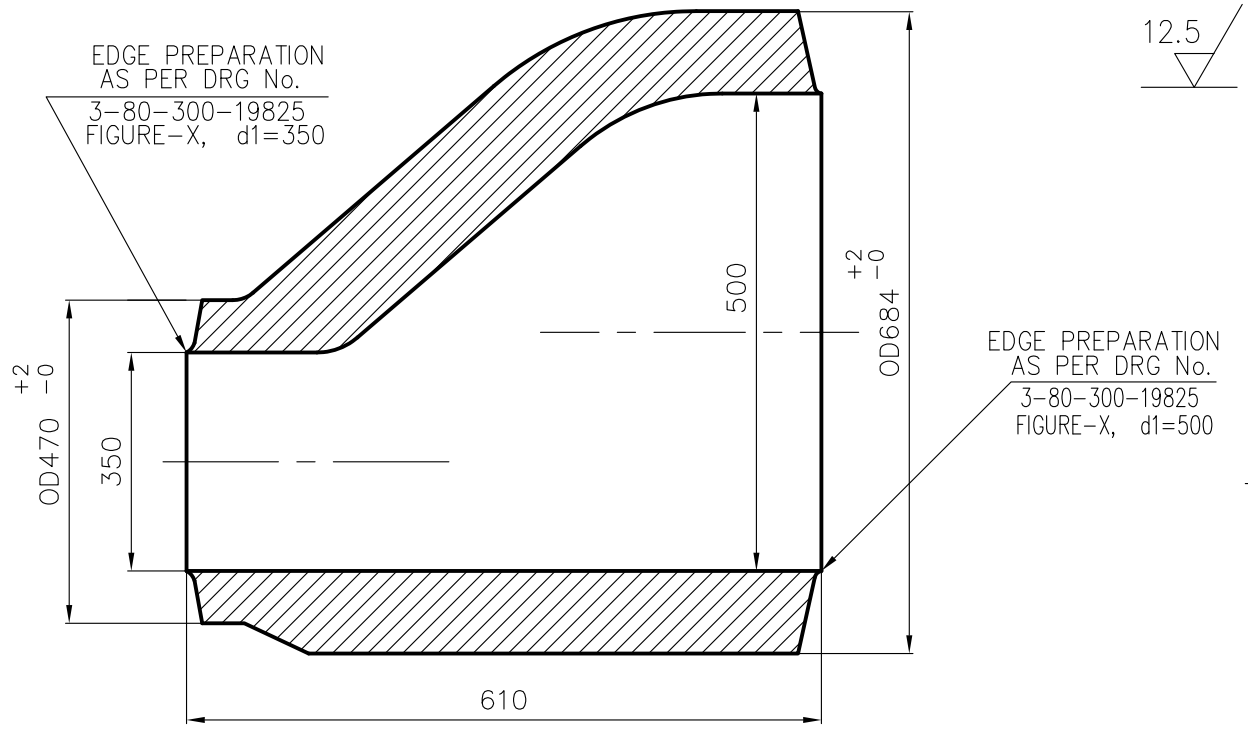
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV 01	DATE	ALTERED
		APPROVED

NOTES

ALL DIMENSIONS ARE IN MILLIMETRES

- 1) DESIGN PRESSURE : 269 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 568 °C
- 3) FOLLOW TDC No. : TDG-102 (LATEST REVISION)
- 4) FITTING SHALL CONFORM TO ALL THE REQUIREMENTS OF ASME B16.9 & A 234(LATEST)
- 5) THIS DRAWING IS FOR INDICATING THE OVERALL DIMENSIONS, CONNECTING PIPE SIZE AND MATERIAL SPECIFICATION
- 6) THE FINISHED MATERIAL CODE IS '92 517 759 0000'



—	ECCENTRIC REDUCER ID500X92/ID350X60	—	A	715	000
VAR NO.	DESCRIPTION	STD	UNIT	UNIT.WT.(Kg)	QTY.
			A		
			C		
			DI		



BHARAT HEAVY ELECTRICALS LIMITED
 PIPING CENTRE
 CHENNAI 600 017

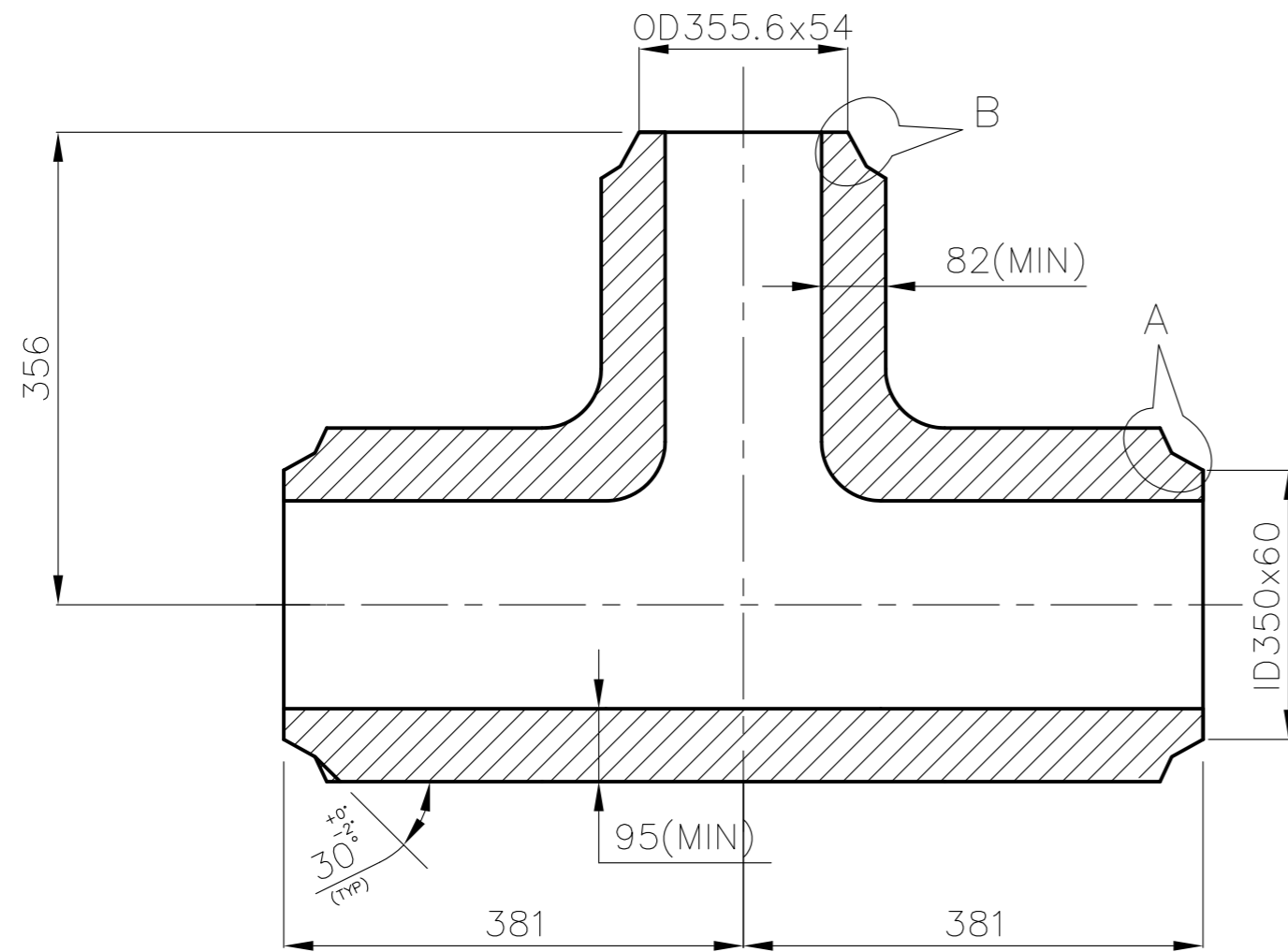
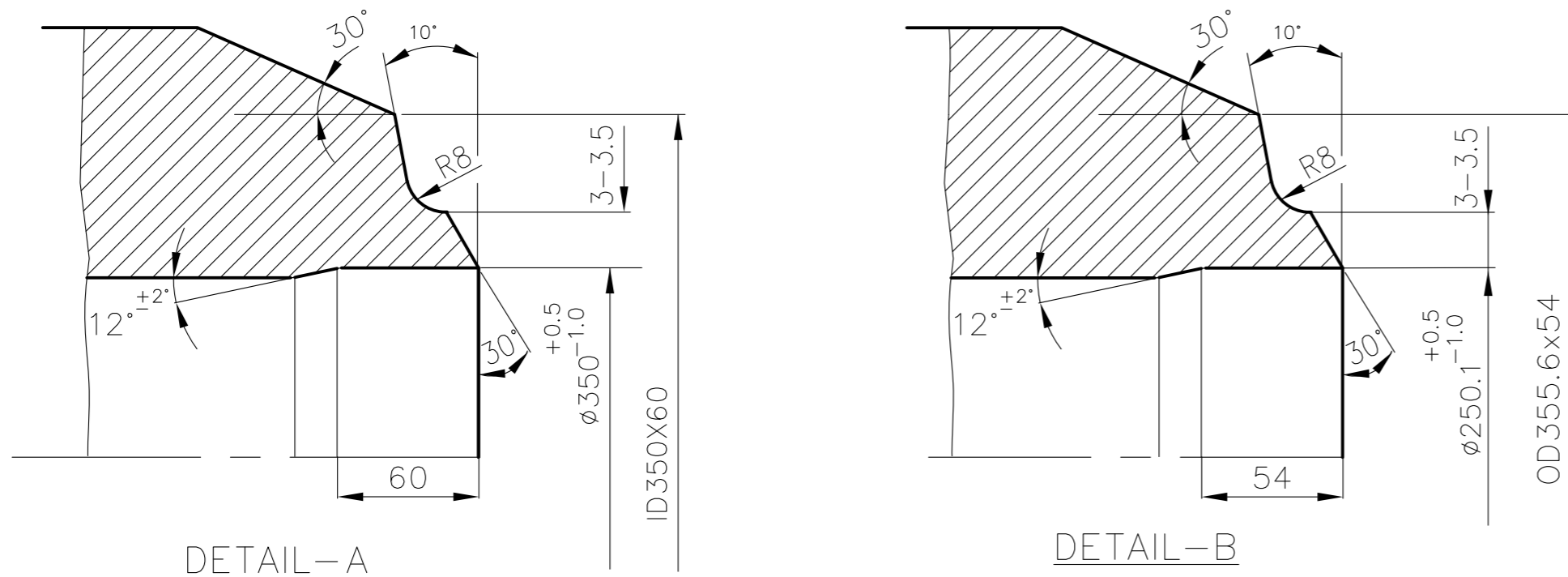
	NAME	SIGN	DATE	NO. OF VAR
DRN	POONGKODI.V	—sd—	08/08/2013	—
CHD	SUKUMAR.B	—sd—	08/08/2013	—
APPD	C.V.NATHAN	—sd—	08/08/2013	—

DEPT	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:	ITEM NO	NO. OF ITEMS
CODE	C / M / F	N.T.S	715	—	—	—

TITLE	CARD CODE	DRAWING NO.	REV
ECCENTRIC REDUCER (ID500x92/ID350x60) SA234WP91	U 01	4-80-301-77260	00

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DRAWING No

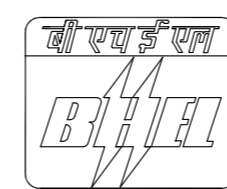


NOTES

- DESIGN PRESSURE: 272.4 Kg/cm² (g)
- DESIGN TEMPERATURE : 568 °C
- DESIGN MANUFACTURING, INSPECTION AND TESTING SHALL BE AS PER IBR & EN-13480-3
- CONSTRUCTION SHALL BE SEAMLESS/FORGED
- MATERIAL SPECIFICATION SHALL BE SA182F91
- FOLLOW APPLICABLE TDC
- CONNECTING PIPE SIZES ARE ID350X60/OD355.6X54
- AVERAGE INSIDE DIAMETER ON FITTING BODY SHOULD GUARANTEE A FLOW AREA OF MIN. 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- PROFILE & END TO END DIMENSIONS ARE INDICATIVE ONLY
- WEIGHT MENTIONED IN THE DRAWING IS INDICATIVE ONLY

01	BW UEQT ID350X60/OD355.6X54	3-80-301-32314		925050330000	A	250.000
				SA 182 F91		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



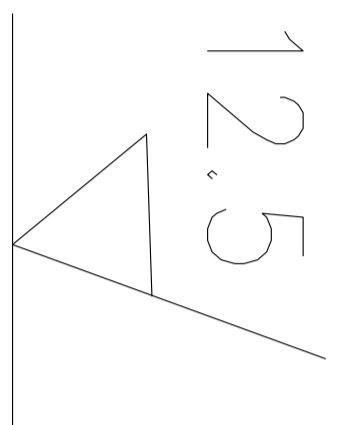
BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME	SIGN	DATE	NO OF ITEMS
	C.M.KARTHIK	--sd--	19.09.15	
CHD	M.MANOCHARAN	--sd--	19.09.15	
APPD	K.V.RAMANI	--sd--	19.09.15	

REV 01	DATE	ALTERED APPROVED	DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	REF TO ASSY / OLD DRG	ITEM No.
ZONE			CODE	C/M/F		250.000		
			TITLE	UNEQUAL TEE		CARD CODE	DRAWING No.	REV
				ID350x60/OD355.6x54 (P91)		U 01	3-80-301-32314	00

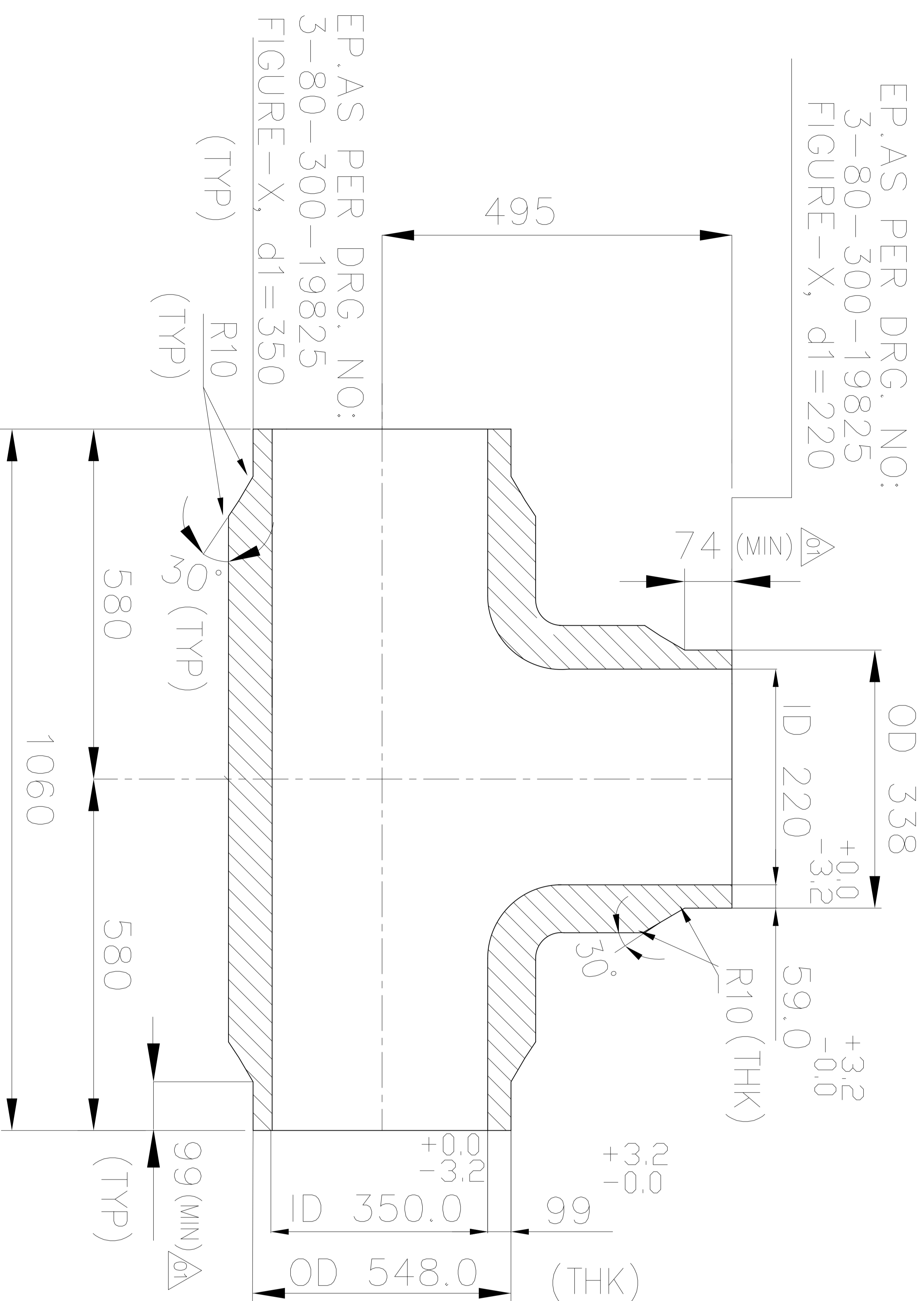
14123-103-08-3

ON DRAWING



NOTES :-

01. DESIGN PRESSURE : 285.8 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 601° C
03. ALL DIMENSIONS ARE FINISHED DIMENSIONS.
04. DESIGN,MANUFACTURING, INSPECTION AND TESTING SHALL BE AS PER IBR, ASME B16.9 AND SA234.
05. FITTING TO COMPLY WITH ASME B16.9 AND DIMENSIONS ARE AS PER THIS DRAWING.
06. FITTING SPECIFICATION SA182F91 CAN ALSO BE USED INPLACE OF SA234WP91
07. FOLLOW TDG:102 (LATEST REVISION)
08. WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY. ACTUAL WEIGHT TO BE FURNISHED BY FITTING SUPPLIER.
09. CONSTRUCTION SHALL BE SEAMLESS
10. CONNECTING PIPE SIZE - ID350x99/ID220x59
11. AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE



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REV	DATE	ALTD :	M.R.K
01	09.11.15	APPD :	S.R.M

MATERIAL SPECIFICATION ALTERED

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	MATERIAL SPEC.	UNIT WT.	QTY.
	BW UNEQUAL TEE	3-80-301-32141	92	505 037 0000	A	1311	230
	ID350X99/ID220X59			SA 234 WP91	A		1

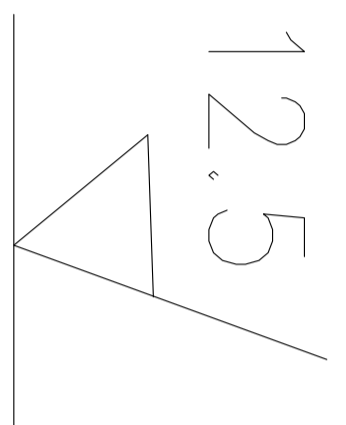
DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO.	ITEM No.
	C/M/F	N.T.S.	1311.230		

TITLE	CARD CODE	DRAWING No.	REV
BW UNEQUAL TEE (ID350x99/ID220x59-SA234WP91)	U 01	3-80-301-32141	01

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	NAME	SIGN	DATE	NO OF ITEMS
BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	M.R.KRISHNA		30.04.15	
	I.D.B.RAJU		30.04.15	
	S.RAMAMURTHY		30.04.15	

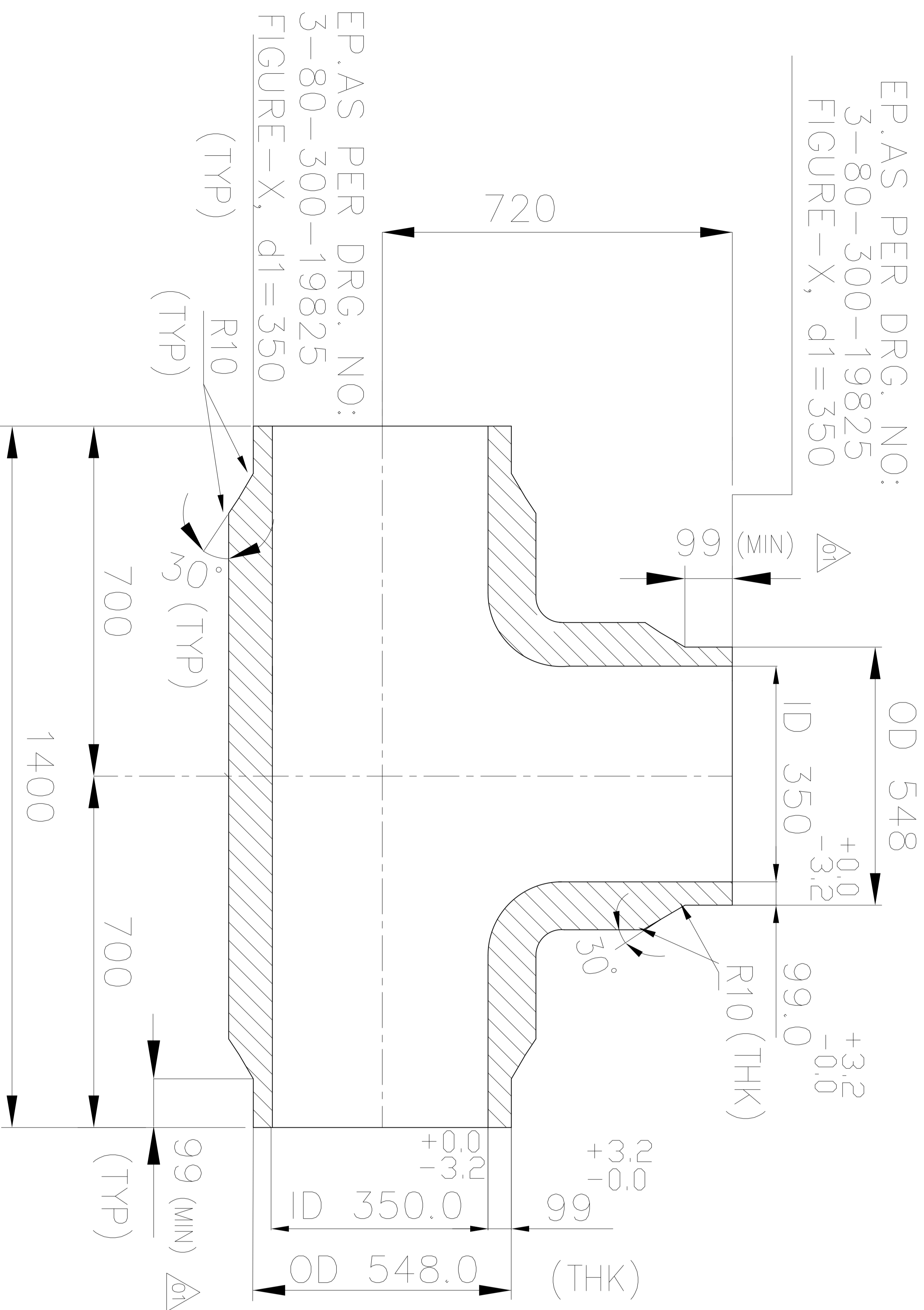
24123-103-08-3

ON DRAWING



NOTES :-

01. DESIGN PRESSURE : 285.8 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 601° C
03. ALL DIMENSIONS ARE FINISHED DIMENSIONS.
04. DESIGN,MANUFACTURING, INSPECTION AND TESTING SHALL BE AS PER IBR, ASME B16.9 AND SA234.
05. FITTING TO COMPLY WITH ASME B16.9 AND DIMENSIONS ARE AS PER THIS DRAWING.
06. FITTING SPECIFICATION SA182F91 CAN ALSO BE USED INPLACE OF SA234WP91
07. FOLLOW TDG:102 (LATEST REVISION)
08. WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY. ACTUAL WEIGHT TO BE FURNISHED BY FITTING SUPPLIER.
09. CONSTRUCTION SHALL BE SEAMLESS
10. CONNECTING PIPE SIZE - ID350x99
11. AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE



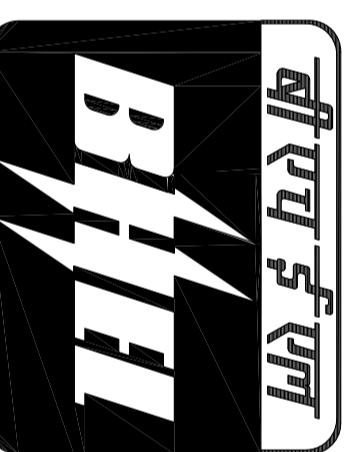
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REV	DATE	ALTD :	M.R.K
01	09.11.15	APPD :	S.R.M

MATERIAL SPECIFICATION ALTERED

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	UNIT WT.
	BW EQUAL TEE	3-80-301-32142	92	505 038 0000	1468.670
	ID350X99			SA 234 WP91	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	M.R.KRISHNA		30.04.15	
APPD	I.D.B.RAJU		30.04.15	
	S.RAMAMURTHY		30.04.15	

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
C/M/F	N.T.S.	1468.670			

TITLE	CARD CODE	DRAWING No.	REV
BW EQUAL TEE (ID 350x99-SA234WP91)	U 01	3-80-301-32142	01

3-80-300-19825

DRAWING No.

NOTES: -

- 01. APPLICABLE FOR P91/P92**
i) STRAIGHT WITH STRAIGHT/FITTING
ii) BEND WITH BEND/FITTING
 02. FOR OD MISMATCHING REF. FIGURE-Xa.
 03. $\alpha = 6^\circ$ FOR WALL THICKNESS ≤ 30 mm
 04. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm

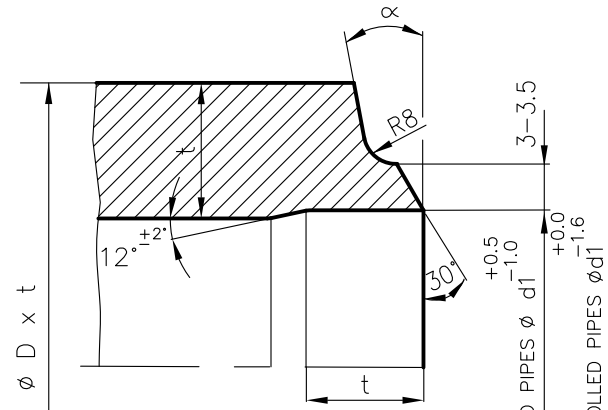


FIGURE - X

MATCHING EDGE PREPARATION FOR MISMATCH OD APPLICABLE FOR BENDS/FITTINGS OF P91/P92 MATERIALS

NOTES: -

01. OD OF STRAIGHT TO BE PHYSICALLY MEASURED/VERIFIED.
 02. $\alpha = 6^\circ$ FOR WALL THICKNESS ≤ 30 mm
 03. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm
 04. $t =$ THK OF CONNECTING PIPE (STRAIGHT)

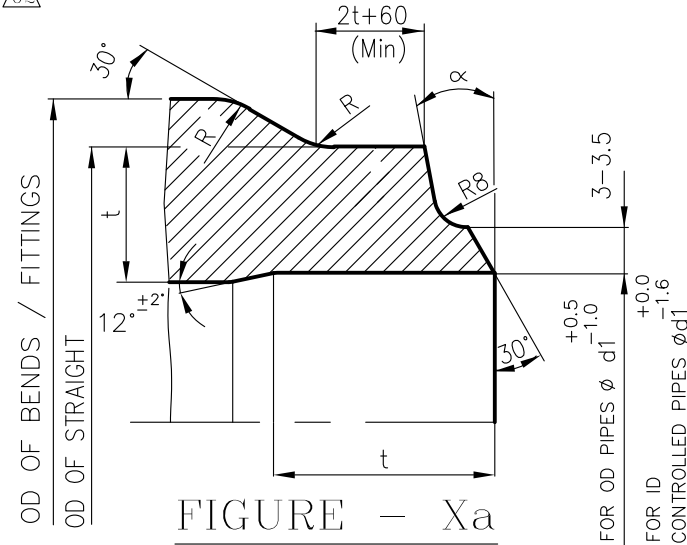
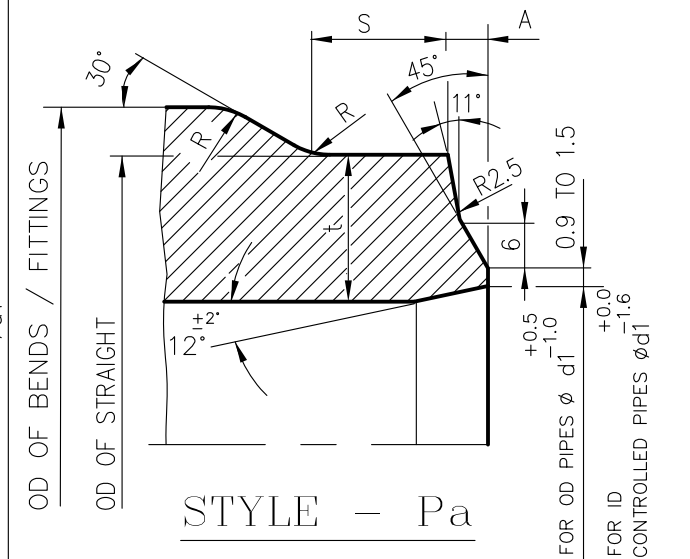


FIGURE - Xa

MATCHING EDGE PREPARATION FOR MISMATCH OD DIAMETRICALLY GREATER THAN 8 mm (ie OD1 - OD2 > 8mm) APPLICABLE FOR BENDS/FITTINGS OTHER THAN P91/P92 MATERIALS

NOTES: -

01. OD OF STRAIGHT TO BE PHYSICALLY MEASURED/VERIFIED.
 02. WHEN $t < 65$, $S+A = 65$ Min. & $t > 65$, $S=65$ Min. WHERE $t =$ THK OF CONN. PIPE (STRAIGHT).



STYLE - Pa

MATCHING EDGE PREPARATION FOR MISMATCH OD DIAMETRICALLY GREATER THAN 8 mm (ie OD1 - OD2 > 8mm) APPLICABLE FOR ELBOWS OTHER THAN P91/P92 MATERIALS

NOTES: -

01. OD = OUTSIDE DIA OF CONN. PIPE (STRAIGHT) TO BE PHYSICALLY MEASURED/VERIFIED.
 02. $t =$ THK OF CONN. PIPE (STRAIGHT)

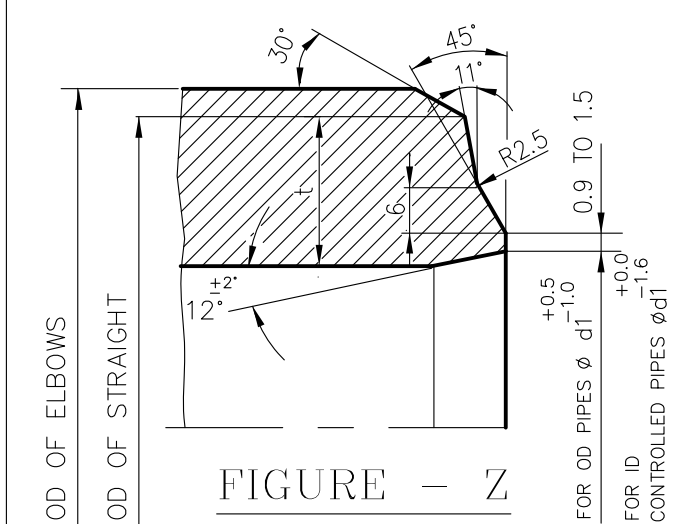


FIGURE - Z

NOTES: -

- 01. APPLICABLE FOR P91 PIPE BEND WELDED WITH P91 STRAIGHT PIPE FOR THICKNESS ≤ 30 mm AND OD ≥ 558 mm.**
 02. $\alpha = 6^\circ$ FOR WALL THICKNESS ≤ 30 mm
 03. FOR OD MISMATCH, REFER THE OD MACHINING ONLY SHOWN IN FIGURE-Xa
 04. FIGURE-Xb AND FIGURE-Xc ARE NOT APPLICABLE FOR P92 MATERIALS.

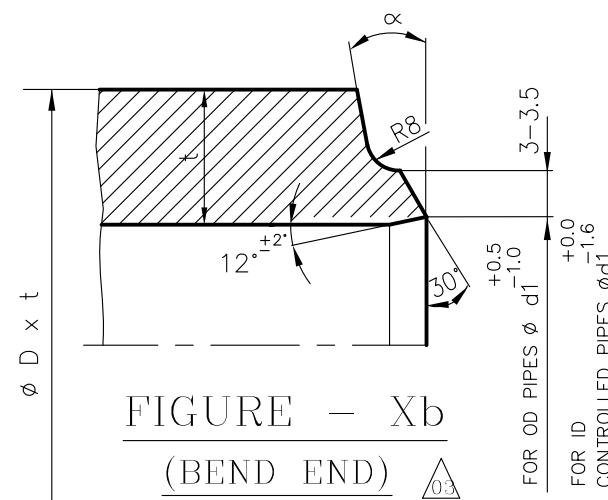


FIGURE - Xb
(BEND END)

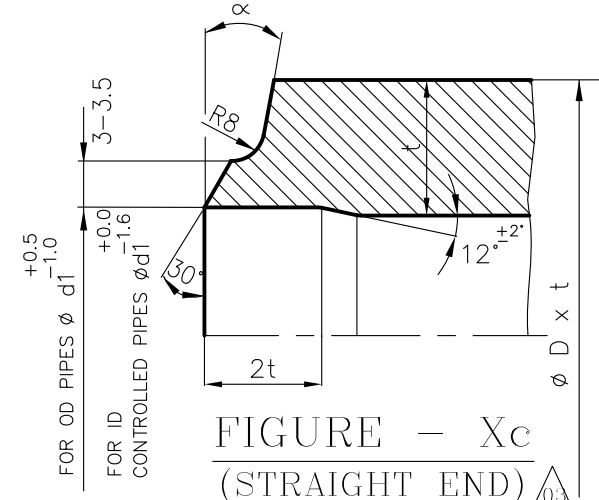
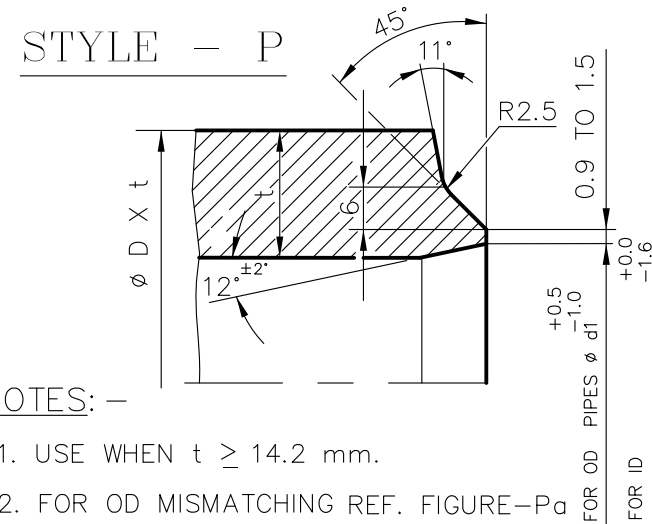


FIGURE - Xc
(STRAIGHT END)

STYLE - P

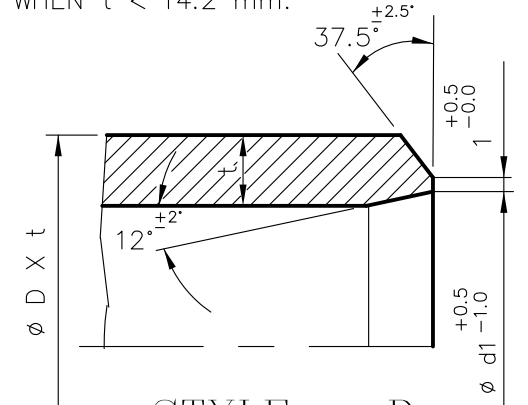


NOTES: -

01. USE WHEN $t \geq 14.2$ mm.
 02. FOR OD MISMATCHING REF. FIGURE-Pa

NOTES: -

01. USE WHEN $t < 14.2$ mm.



STYLE - D

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

STANDARD

	BHARAT HEAVY ELECTRICALS LTD.		DRN	NAME	SIGN	DATE	NO OF ITEMS
	PIPING CENTRE, MADRAS		CHD	K.B.RAGUNATH		11.10.01	
			APPD	M.C.SEKARAN		11.10.01	
				APPD	A.VELAYUTHAM	11.10.01	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	NAME OF ORIGINAL ORGANISATION	ITEM No.
CODE	C/M/F				

TITLE	CARD CODE	DRAWING No.	REV
EDGE PREPARATION DETAILS	U 01	3-80-300-19825	03

GENERAL NOTES :

01. THE MINIMUM THICKNESS AT WELD END SHALL NOT BE LESS THAN
 a) 0.875 TIMES t NOM. FOR OD PIPES.
 b) t MIN. FOR ID CONTROLLED PIPES.
 02. t NOM & t MIN SHALL BE AS PER SPECIFIED PIPE SIZE.
 03. SHARP CORNERS SHALL BE ROUNDED OFF WHEREEVER 'R' IS INDICATED.

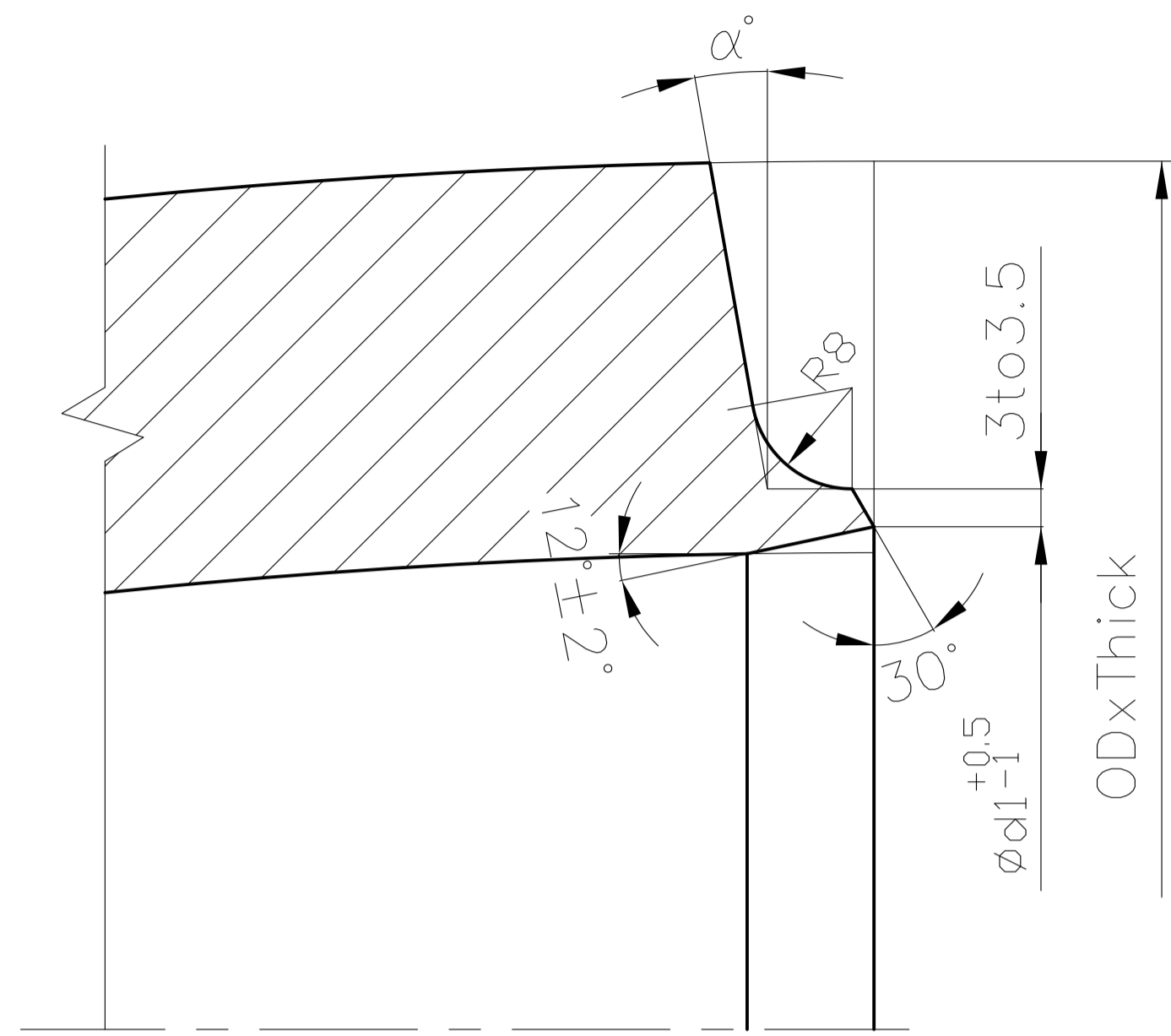
NOTES FOR WELDING:

01. WELD REINFORCEMENT TO BE FLUSH GROUND AND MERGED WITH PARENT METAL WITHOUT ANY UNEVENNESS.

REV 03	DATE 10.04.13	ALTERED: M.R.K	APPROVED: C.K.N
ZONE	FIG.Xb AND FIG.Xc ADDED. IN FIG.X. NOTE 01 MODIFIED. IN FIG.Xa, STY-Pa, FIG.Z. P92 MATERIAL ADDED		
REV 02	DATE 10.01.13	ALTERED: M.R.K	APPROVED: C.K.N
ZONE	IN FIG.Xa, NOTE 04 ADDED. GENERAL NOTES 03 ADDED. IN FIG.Xa, 8MM OD MISMATCH IS REMOVED		
REV 01	DATE 11.05.04	ALTERED: R.SENDHIL	APPROVED: A.VELAYUTHAM
ZONE	PROJECT NAME REMOVED AND STANDARD INCORPORATED IN TITLE BLOCK		

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3-80-999-97744
DRAWING NO.



$\alpha^\circ = 6^\circ$ FOR WALL THICKNESS ≤ 30 mm.
 $\alpha^\circ = 10^\circ$ FOR WALL THICKNESS > 30 mm.

FIGURE-Xf

STANDARD

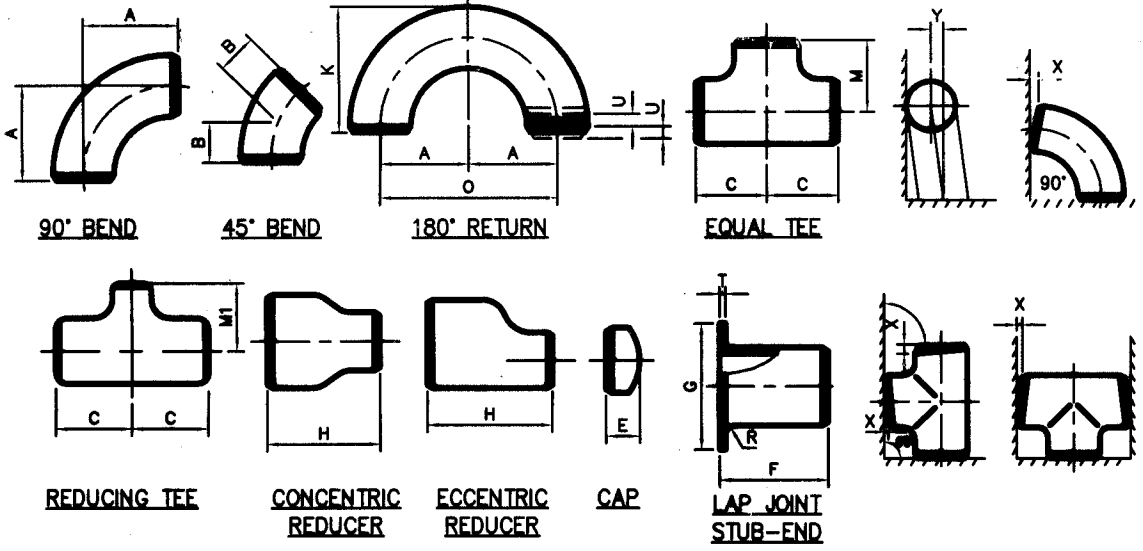
 BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI, 600 017	NAME	SIGN	DATE
	DRN	R.ANANTH	19.01.2009
	CHD	R.ANANTH	19.01.2009
	APPD	M.N.VASUDEVAN	19.01.2009
DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).
CODE	C/M/F	N.T.S.	
TITLE	REF.TO ASSY / OLD DRG.		
BW EP FOR WP91 ASMEB16.9 FITTINGS	CARD CODE	DRAWING No.	REV
U 01	3-80-999-97744	00	

REV	DATE	ALTERED
01		APPROVED

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REV	DATE	ALTERED	<i>[Signature]</i>
01	05.02.05	APPROVED	<i>[Signature]</i> APMK
TITLE BLOCK AND DRAWING ALTERED			

(REFERENCE : IBR ,REG.NO 361(A) INCLUDED IN AMENDMENT)



ALL FITTINGS				90° & 45° ELBOWS AND TEES	REDUCER	180° RETURNS			CAPS	LAP-JOINT		STUB END		
DN.	O.D AT BEVEL	I.D AT END	WALL THICKNESS	CENTER TO END A,B,C,M,M1	OVERALL LENGTH H	CENTER TO CENTER O	BACK TO FACE K	ALIGNMENT OF END U	OVER ALL LENGTH E	END TO END F	RADIUS R	DIA OF LAP G	THICKNESS OF LAP	
15 TO 65	+1.6 -0.8	±0.8	NOT LESS THAN 87 1/2% OF NOMINAL THICKNESS	±1.6	±1.6	±6.4	±6.4	±0.8	±3.2	±1.6	+ 0 -0.8	+ 0 -0.8	+1.6 - 0	
80 TO 90	±1.6	±1.6		±1.6	±1.6	±6.4	±6.4	±0.8	±3.2	±1.6	+ 0 -0.8	+ 0 -0.8	+1.6 - 0	
100	±1.6	±1.6		±1.6	±1.6	±6.4	±6.4	±0.8	±3.2	±1.6	+ 0 -0.8	+ 0 -0.8	+1.6 - 0	
125 TO 200	+2.4 -1.6	±1.6		±1.6	±1.6	±6.4	±6.4	±0.8	±6.4	±1.6	+ 0 -0.8	+ 0 -0.8	+1.6 - 0	
250 TO 400	+4.0 -3.2	±3.2		±2.4	±2.4	±9.5	±6.4	±1.6	±6.4	±2.4	+ 0 -1.6	+ 0 -1.6	+1.6 - 0	
500 & ABOVE	+6.4 -4.8	±4.8		±2.4	±2.4	±9.5	±6.4	±1.6	±6.4	±2.4	+ 0 -1.6	+ 0 -1.6	+1.6 - 0	

OFF-SQUARE TOLERANCES		
NOMINAL SIZE OF FITTING	OFF SQUARE TOLERANCE, X	OFF SQUARE TOLERANCE, Y
UP TO AND INCLUDING 100	0.8	1.6
125 TO 150	1.2	2.4
200 TO 550	1.6	3.2
600 & ABOVE	3.2	6.4

NOTES : 1. ALL DIMENSIONS ARE IN MILLIMETRES

STANDARD

		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO. OF VAR
				CHD	ENGG. ENTERPRISES	Sd	15.10.1986	
				APPD	R. ANANTH	Sd	15.10.1986	
DEPT	GRADE OF UNTOL DIM		SCALE	WEIGHT (KG)	REF. TO ASSY./OLD DRG.		ITEM NO.	NO. OF ITEMS
CODE	C / M / F		N.T.S	-	-		-	
TITLE				CARD CODE	DRAWING NO.			REV
TOLERANCES ON FITTINGS				U 01	4-80-301-26192			01