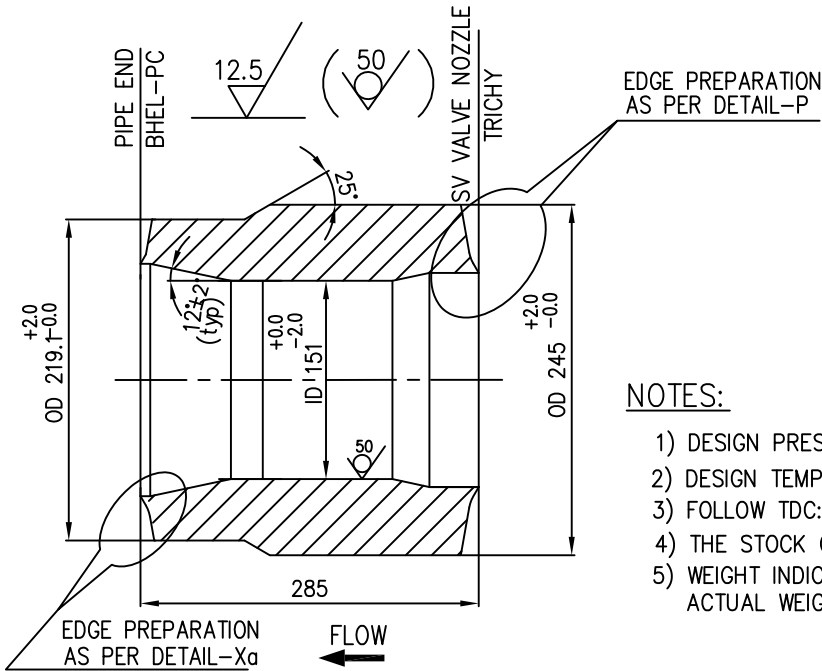


ALL DIMENSIONS ARE IN MILLIMETRES

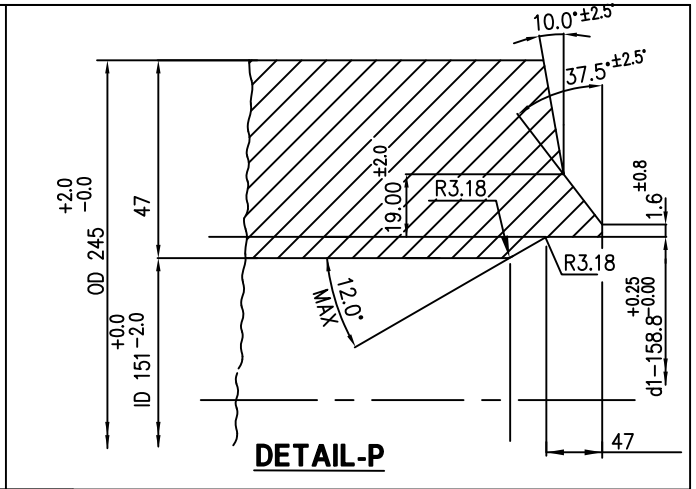
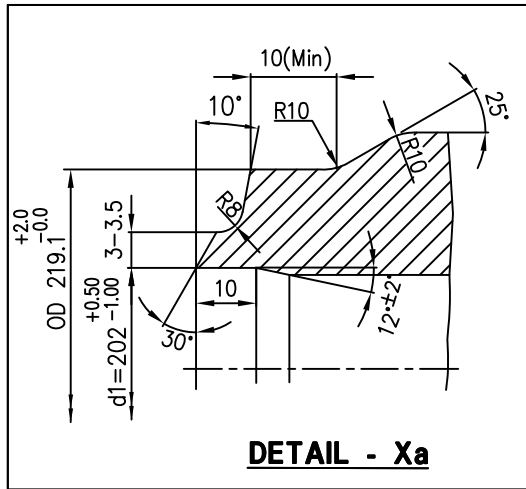
REV 01	DATE	ALTERED : CHD & APPD :	REV 02	DATE	ALTERED : CHD & APPD :	REV 03	DATE	ALTERED : CHD & APPD :
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NOTES:

- 1) DESIGN PRESSURE : 53.1 Kg/sq.cm(g)
- 2) DESIGN TEMPERATURE : 574 °C
- 3) FOLLOW TDC:104 LATEST REVISION
- 4) THE STOCK CODE FOR THE MATCHING PIECE:92117140000
- 5) WEIGHT INDICATED IN THE DRG IS INDICATIVE ONLY, ACTUAL WEIGHT SHALL BE FURNISHED BY FITTING SUPPLIER



VARIANT NUMBER	DESCRIPTION	STD	MATCHING PIECE OD245x47/OD219.1x9.02 L=285	92 117 140 0000	A	50	031
				SA 182 F91			
			MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT(KG)	
			MATERIAL SPECN			QUANTITY	

	BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017			DRN	NAME I.D.B.RAJU	SIGNATURE Sd.....	DATE 04.07.2015
	CHD	I.D.B.RAJU	Sd.....	04.07.2015			
	APPD	S.RAMAMURTHY	Sd.....	04.07.2015			
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE N.T.S	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
CODE							
TITLE MATCHING PIECE OD245x47/OID219.1x9.02				DRAWING NO : 4-80-310-79231			REV 00

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

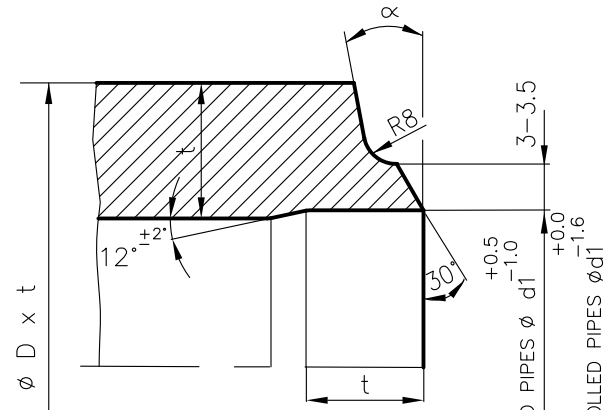


FIGURE - X

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

- 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)

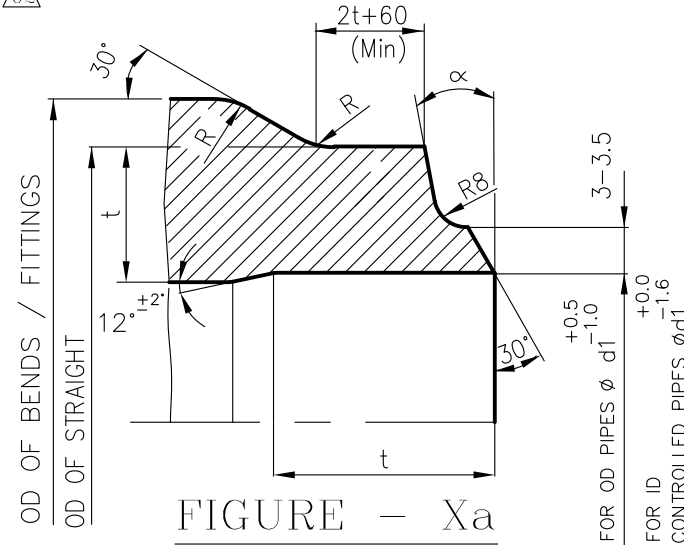
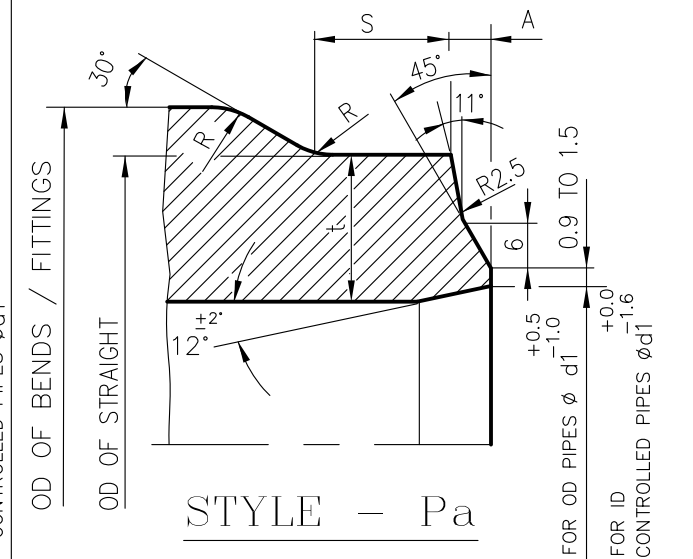


FIGURE - Xa

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

- 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

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

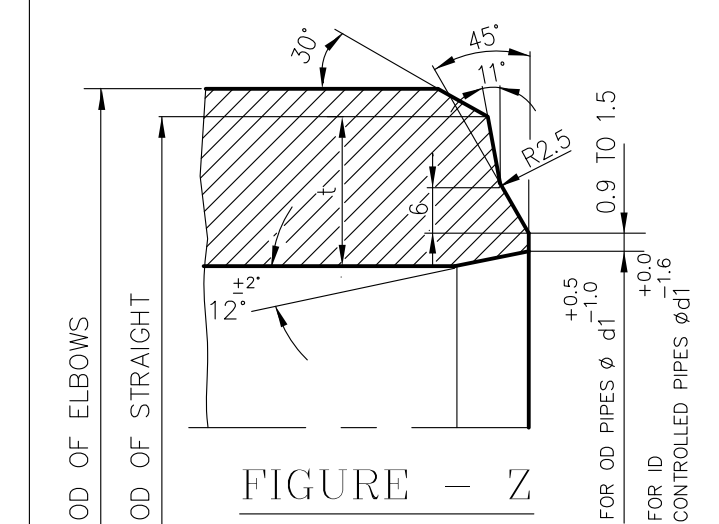


FIGURE - Z

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.

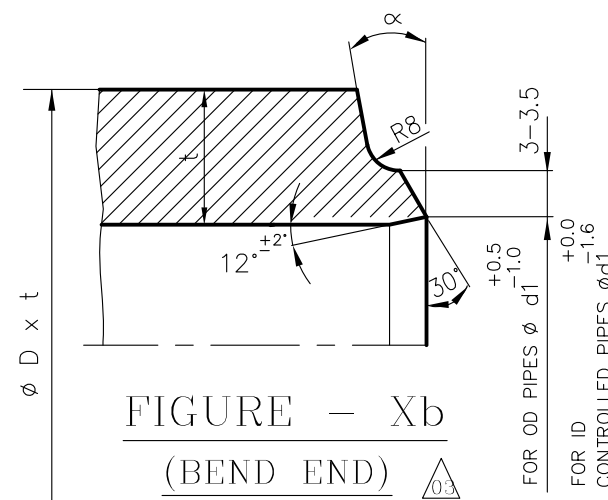


FIGURE - Xb
(BEND END)

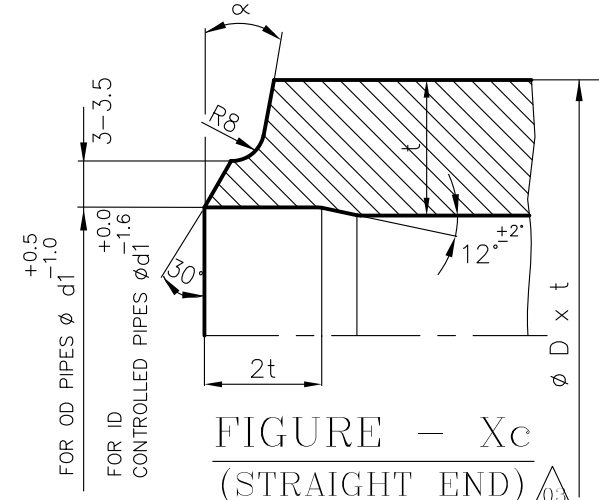
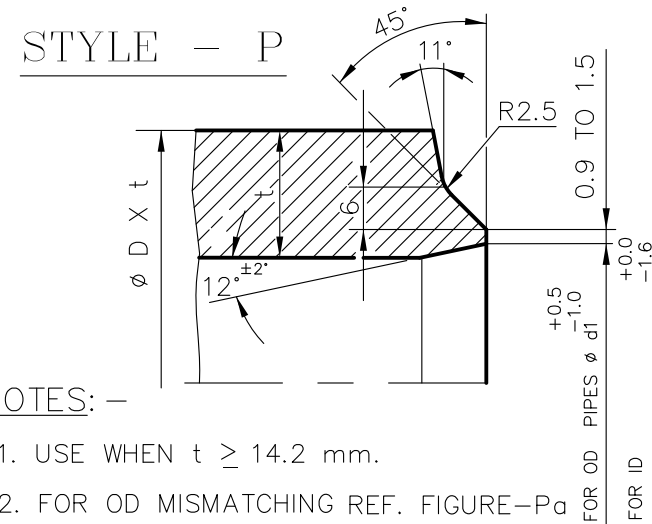


FIGURE - Xc
(STRAIGHT END)

STYLE - P

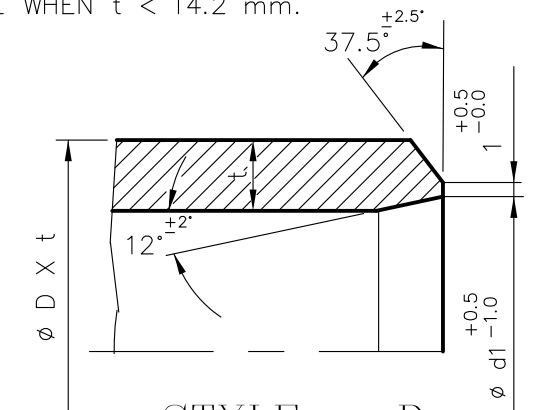


NOTES: -

- 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

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

STANDARD

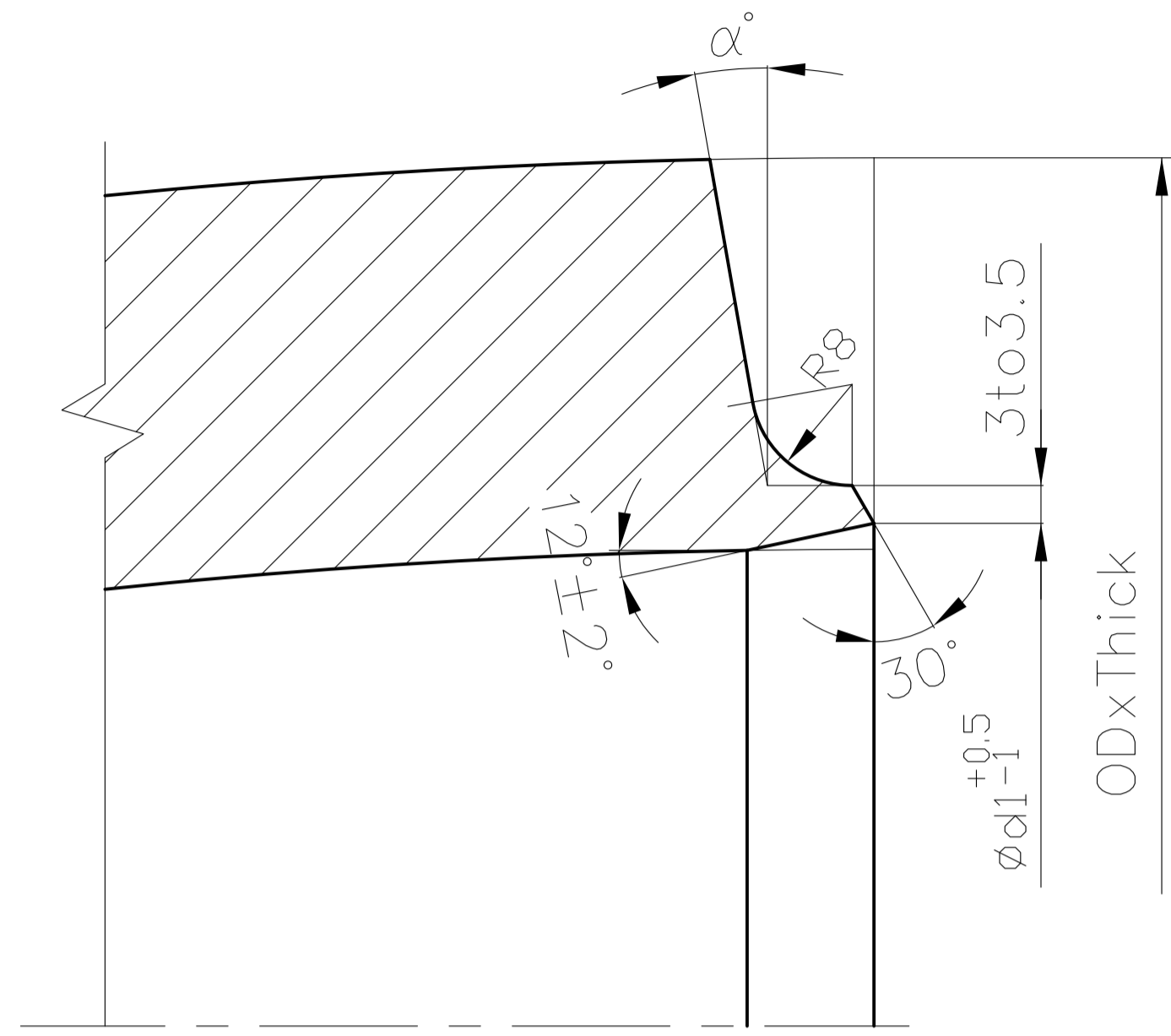
	BHARAT HEAVY ELECTRICALS LTD.		DRN	NAME	SIGN	DATE	NO OF ITEMS
	PIPING CENTRE, MADRAS		CHD	K.B.RAGUNATH		11.10.01	
			APPD	M.C.SEKARAN		11.10.01	
				APPD	A.VELAYUTHAM	11.10.01	

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

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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	

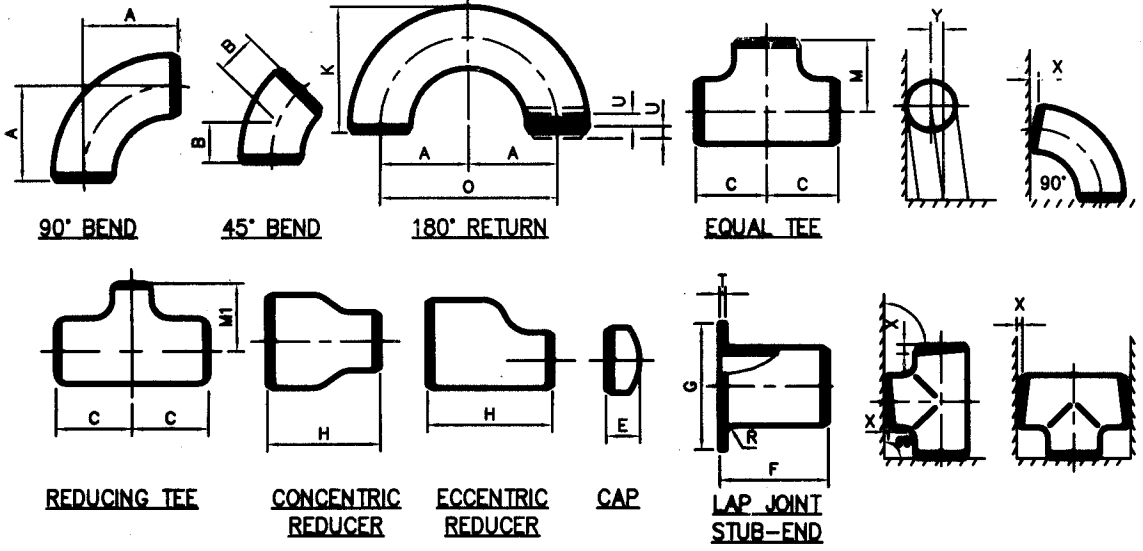
REV	DATE	ALTERED
01		APPROVED

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	<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		
		APPD	J. JUDE	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	