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3-80-300-19825
DRAWING No.

- NOTES: -
- 01. APPLICABLE FOR P91/P92
 - 02. FOR OD MISMATCH, REFER FIGURE-Xa
 - 03. REFER STYLE-D FOR THICKNESS <14.2mm (FOR ALL OD/ID)
 - 04. REFER STYLE-PL
 - 05. $\alpha = 6^\circ$ FOR WALL THICKNESS ≥ 20 mm AND ≤ 30 mm
 - 06. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm

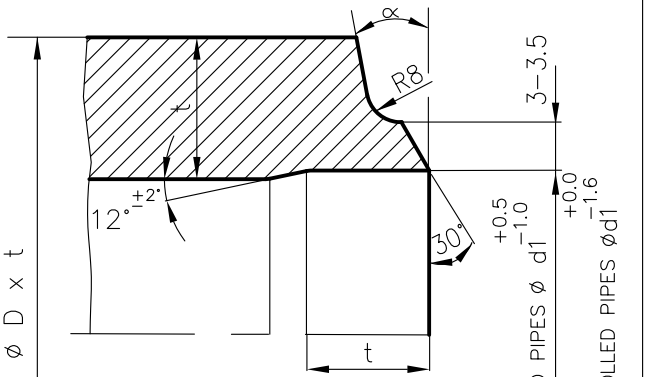


FIGURE - X

- 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. t = THK OF CONNECTING PIPE (STRAIGHT)

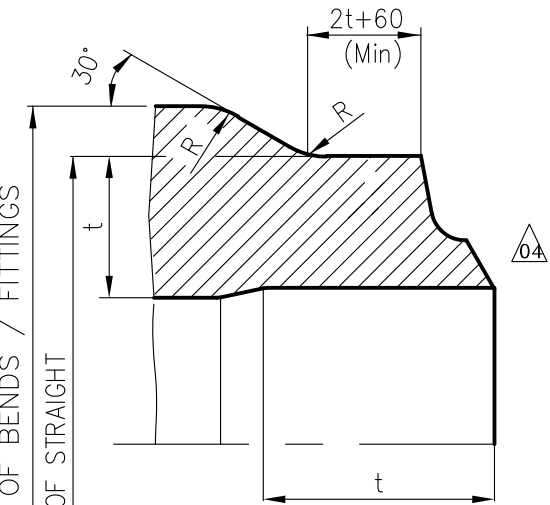
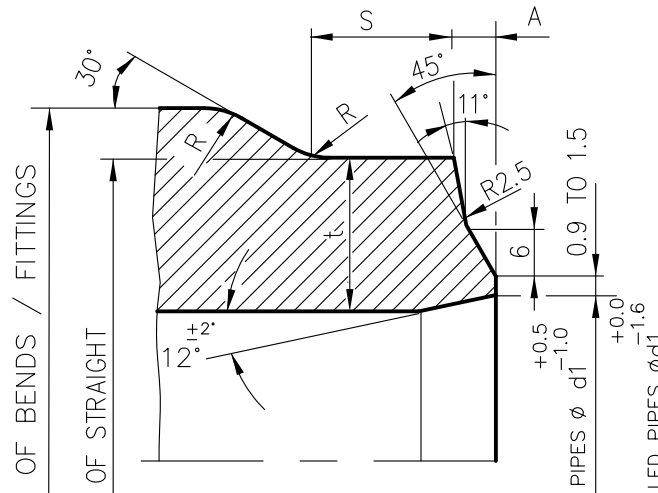


FIGURE - Xa

- 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.PE(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.PE(STRAIGHT)
 - 03. t = THK OF CONN.PE(STRAIGHT)

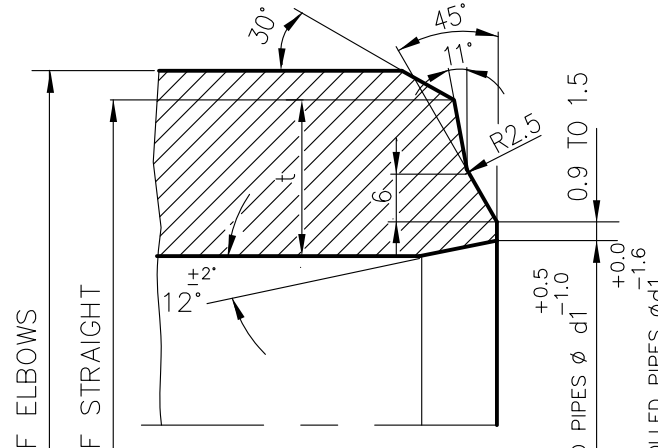


FIGURE - Z

- NOTES: -
- 01. APPLICABLE FOR P91/P92 ZERO ARM PIPEBEND WELDED WITH P91/P92 STRAIGHT PIPE
 - 02. FOR OD MISMATCH, REFER FIGURE-Xa
 - 03. REFER STYLE-D FOR THICKNESS <14.2mm (FOR ALL OD/ID)
 - 04. REFER STYLE-PL
 - 05. $\alpha = 6^\circ$ FOR WALL THICKNESS ≥ 20 mm AND ≤ 30 mm
 - 06. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm

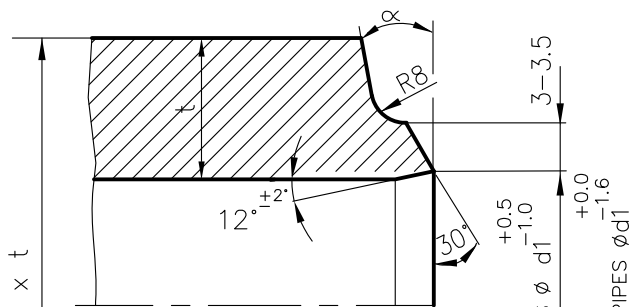


FIGURE - Xb

(BEND END)

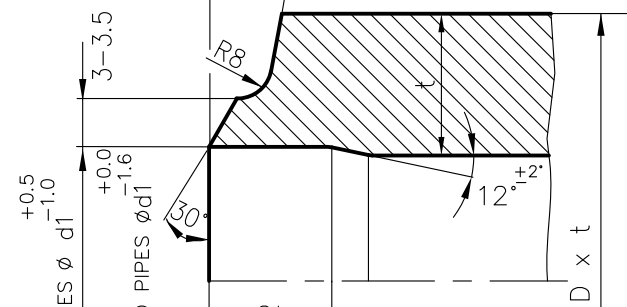
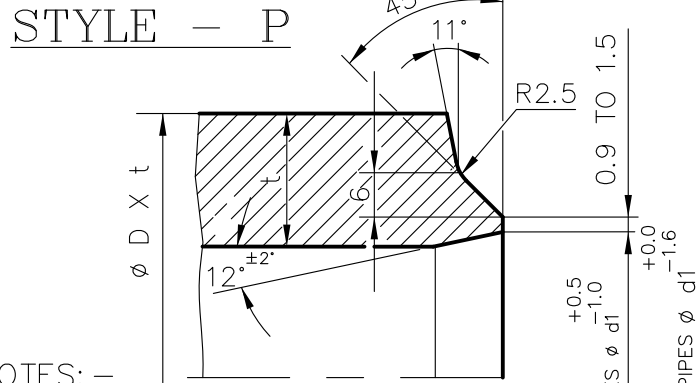


FIGURE - Xc

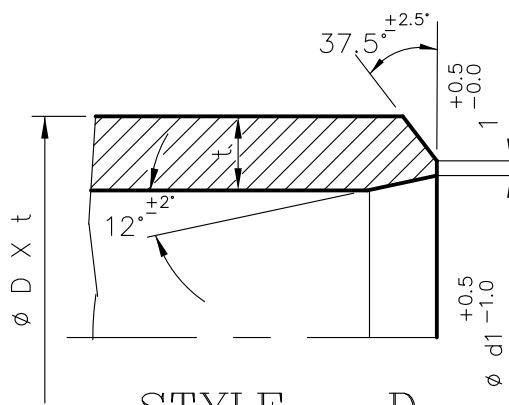
(STRAIGHT END)



- NOTES: -
- 01. USE WHEN $t \geq 14.2$ mm AND < 70mm.
 - 02. FOR $t \geq 70.0$ mm REF. STYLE-Pm
 - 03. FOR OD MISMATCHING REF. STYLE-Pa

STYLE - P

- NOTES: -
- 01. USE WHEN $t < 14.2$ mm.



STYLE - D

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

STANDARD

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 04	DATE 07.12.16	ALTERED: P SURESH APPROVED: R SESHAGIRI
ZONE	SHEET 2 OF 2 IS ADDED. NOTES ADDED, MODIFIED AND DELETED IN FIGURE-X, Xa, Xb, Xc AND STYLE-P	
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	



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE, MADRAS

DEPT.

GRADE OF UN TOL. DIM

CODE

C/M/F

TITLE

EDGE PREPARATION
DETAILS

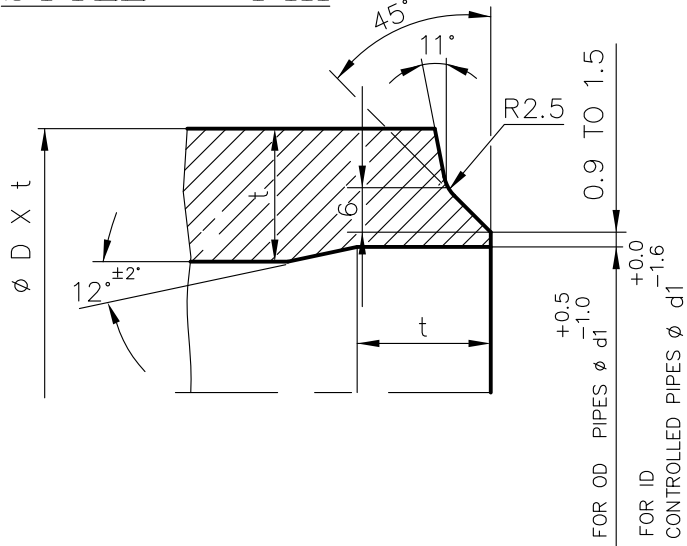
DRN	NAME K.B.RAGUNATH	SIGN	DATE 11.10.01	NO OF ITEMS
CHD	M.C.SEKARAN		11.10.01	
APPD	A.VELAYUTHAM		11.10.01	
DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	NAME OF ORIGINAL ORGANISATION
CODE	C/M/F			
TITLE	EDGE PREPARATION DETAILS	CARD CODE U 01	DRAWING No. 3-80-300-19825	REV 04
			SHEET 1 OF 2	

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3-80-300-19825

DRAWING No.

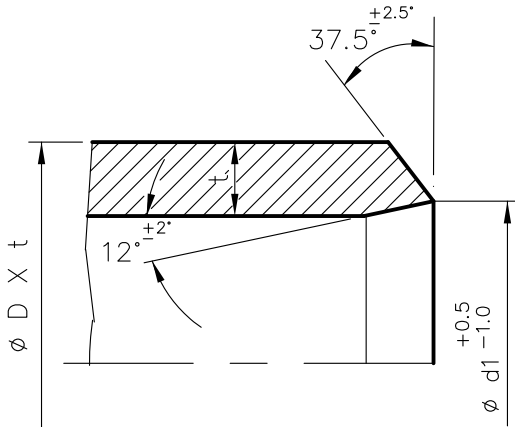
STYLE - P_m



NOTES: -

01. USE FOR SA106GRC PIPES WHEN $t \geq 70.0$ mm.
02. FOR OD MISMATCHING REF. FIGURE-P_a
03. FOR FITTINGS USE STYLE-P.

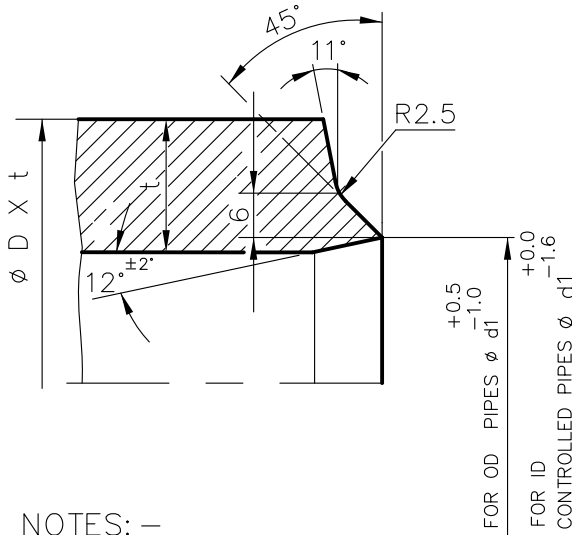
STYLE - D_L



NOTES: -

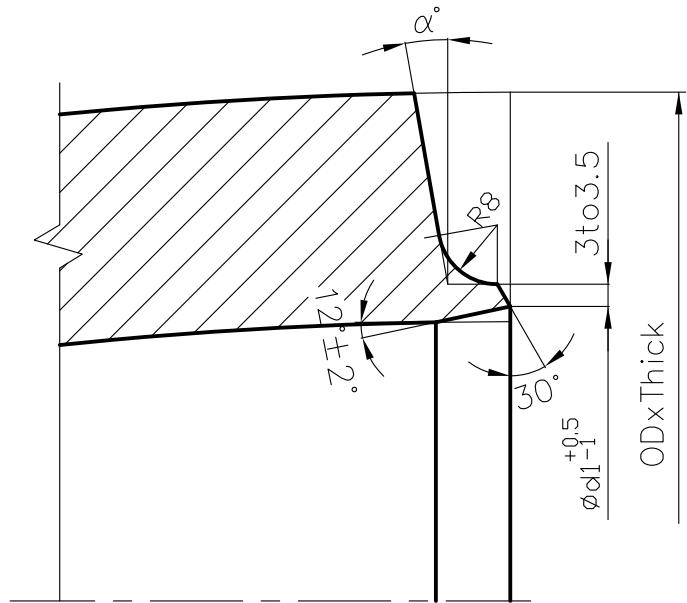
01. USE FOR P91 / P92 PIPES AND FITTINGS WHEN $t < 14.2$ mm (ALL OD/ID).

STYLE - P_L



NOTES: -

01. USE FOR P91 / P92 PIPES AND FITTINGS
 - i) WHEN THICKNESS IS ≥ 14.2 mm AND < 20 mm FOR ALL OD/ID.
 - ii) WHEN THICKNESS ≥ 20 mm AND OD < 219.1 mm.
02. FOR OD MISMATCHING REF. FIGURE-P_a



01. USE FOR P91 / P92 FITTINGS
02. REFER STYLE-D_L FOR THICKNESS < 14.2 mm FOR ALL OD/ID.
03. REFER STYLE-P_L
 - i) WHEN THICKNESS IS ≥ 14.2 mm AND < 20 mm FOR ALL OD/ID.
 - ii) WHEN THICKNESS ≥ 20 mm AND OD < 219.1 mm.
04. $\alpha = 6^\circ$ FOR WALL THICKNESS ≥ 20 mm AND ≤ 30 mm
05. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm.
06. FIGURE-X_f IS APPLICABLE FOR ALL BUTT WELDED FITTINGS NOT COVERED IN NOTES 02 & 03

FIGURE-X_f

NOTE :

01. FOR GENERAL NOTES AND NOTES FOR WELDING REFER SHEET 1 OF 2.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

STANDARD

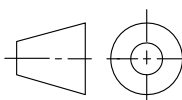


BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE, MADRAS

DRN	NAME	SIGN	DATE	NO OF ITEMS
CHD	P SURESH		07.12.16	
APPD	R SESHAGIRI		07.12.16	
	C KARUNAKARAN		07.12.16	

DEPT.

GRADE OF
UN TOL. DIM



SCALE

WEIGHT (Kg).

NAME OF ORIGINAL
ORGANISATION

ITEM
No.

TITLE

EDGE PREPARATION
DETAILS

CARD
CODE

U 01

DRAWING No.

3-80-300-19825

SHEET 2 OF 2

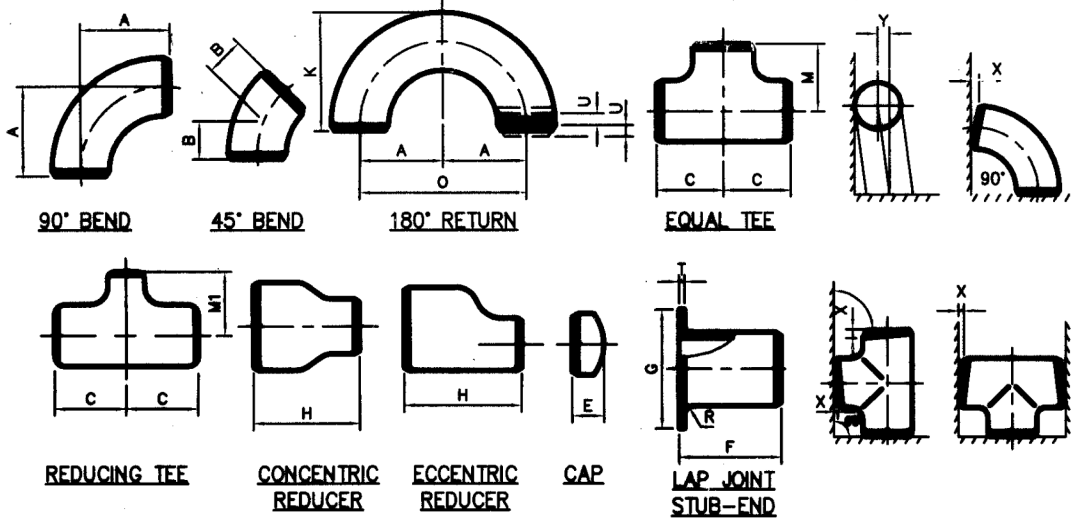
REV

04

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	05.02.05	APPROVED 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

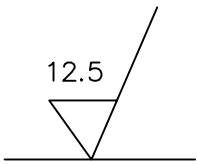
STANDARD

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

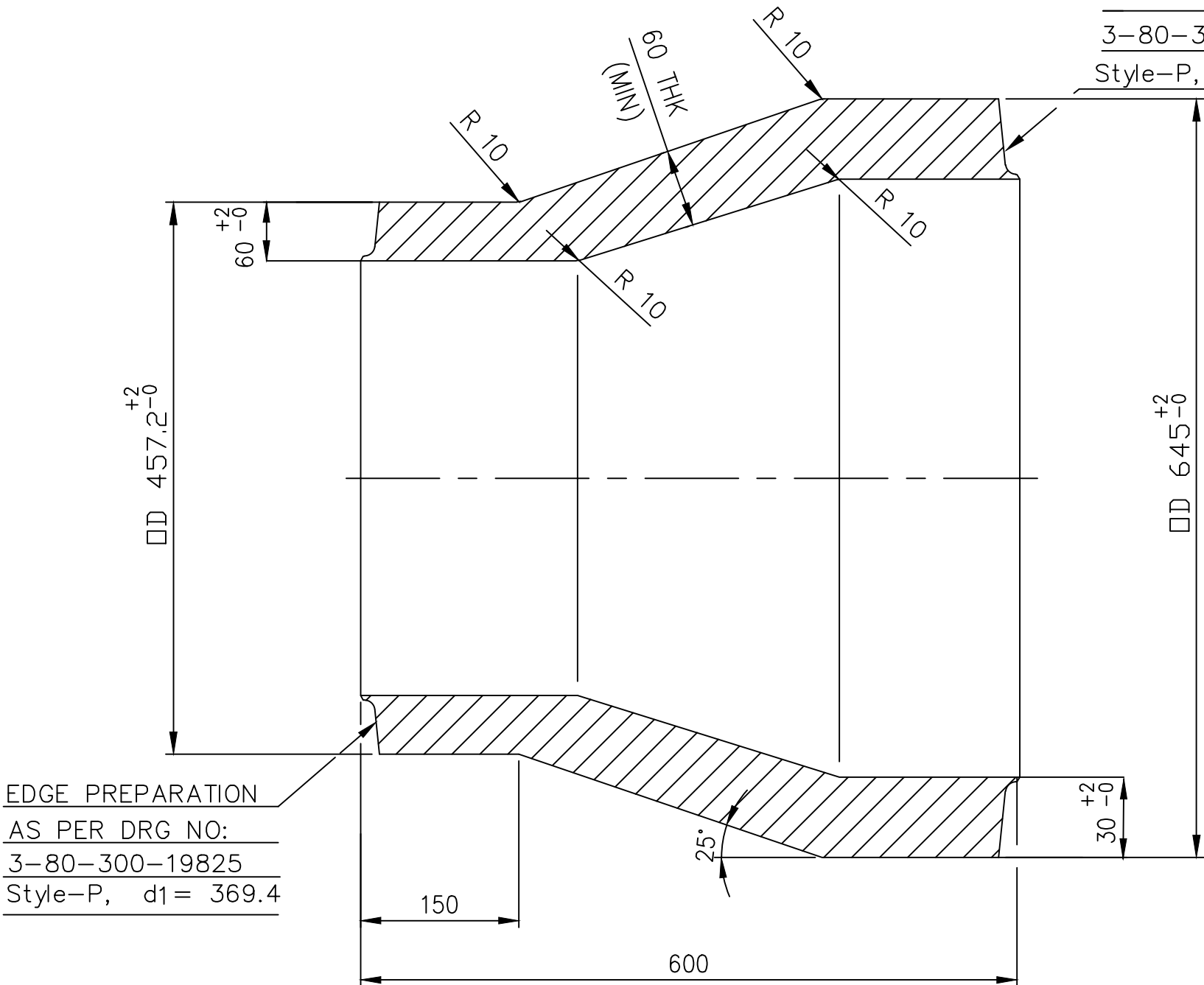
NOTES :-

01. DESIGN PRESSURE : 74.0 Kg/Cm²(g)
02. DESIGN TEMPERATURE : 380° C
03. THIS DRAWING IS FOR INDICATING THE OVERALL DIMENSIONS, CONNECTING PIPE SIZE AND MATERIAL SPECIFICATION
04. FOLLOW APPLICABLE QP & TDG

ALL DIMENSIONS ARE IN MILLIMETRES

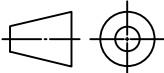


EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
Style-P, d1 = 590



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
Style-P, d1 = 369.4

	REDUCER OD645X30/OD457.2X60	92 117 514 0000 SA234WP22CL1	A		350	000
VAR NO.	DESCRIPTION	STD	MATL. CODE	A	UNIT	UNIT.WT.(Kg)
						QTY.
			C		DI	

बी एच ई एल  BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017				DRN	NAME PRADEEP	SIGN —Sd—	DATE 07.05.20	NO.OF VAR
				CHD	I.D.B.RAJU	—Sd—	07.05.20	
				APPD	SARAVANAN.C	—Sd—	07.05.20	
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				
TITLE BW REDUCER (OD645x30/OD457.2x60)				CARD CODE U 01	DRAWING NO. 4—80—321—84046			REV 00

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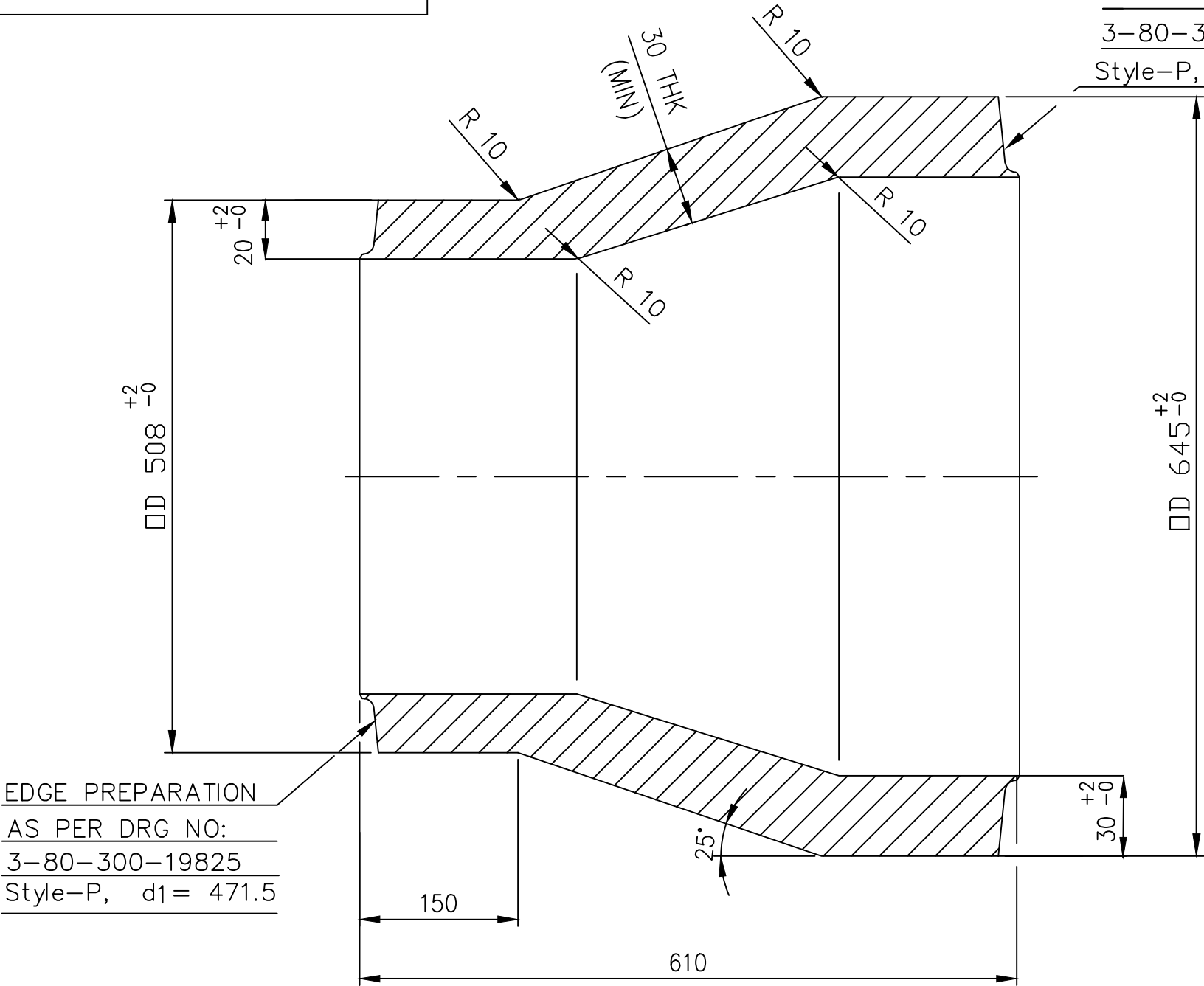
REV	DATE	ALTERED:
01		APPROVED:
REV	DATE	ALTERED:
02		APPROVED:

NOTES :-

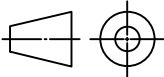
01. DESIGN PRESSURE : 74.0 Kg/Cm²(g)
02. DESIGN TEMPERATURE : 380° C
03. THIS DRAWING IS FOR INDICATING THE OVERALL DIMENSIONS, CONNECTING PIPE SIZE AND MATERIAL SPECIFICATION
04. FOLLOW APPLICABLE QP & TDG

ALL DIMENSIONS ARE IN MILLIMETRES

EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
Style-P, d1 = 590



	REDUCER		99 517 156 0000	A		250	000
	OD645X30/OD508X20		SA234WP22CL1				
VAR NO.	DESCRIPTION	STD	MATL. CODE	A	UNIT	UNIT.WT.(Kg)	
			MATL. SPECN.	C	DI	QTY.	

बी एच ई एल  BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017			DRN		NAME	SIGN	DATE	NO.OF VAR	
			CHD		I.D.B.RAJU	-Sd-	07.05.20		
			APPD		SARAVANAN.C	-Sd-	07.05.20		
DEPT	GRADE OF UNTOL.DIM		SCALE	WEIGHT (KG).	BHEL PO REF.NO:			ITEM NO.	NO. OF ITEMS
CODE	C / M / F		N.T.S	250					
TITLE				CARD CODE	DRAWING NO.			REV	
BW REDUCER (OD645x30/OD508x20)				U 01	4-80-321-84047			00	

REV 01	DATE	ALTERED :
		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 385 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 200 °C
- 3) WORKING MEDIUM : WATER
- 4) FOLLOW TDC No. : AS APPLICABLE
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN, MANUFACTURING, INSPECTION, TOLERANCES AND TESTING SHALL BE AS PER IBR, ASME B16.9 & SA234
- 7) CONNECTING PIPE SIZE IS PIPE ID290 X 50
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC(A)
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) WEIGHT GIVEN IN BOM IS INDICATIVE ONLY.

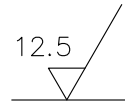
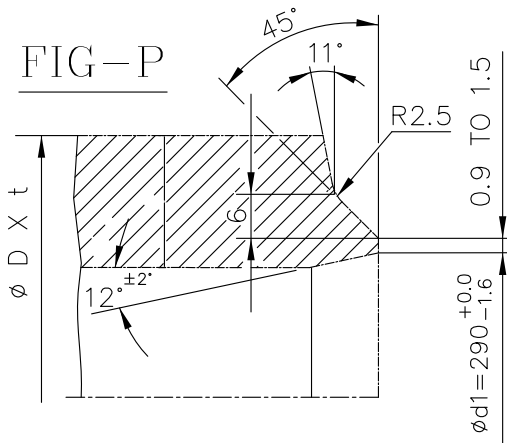
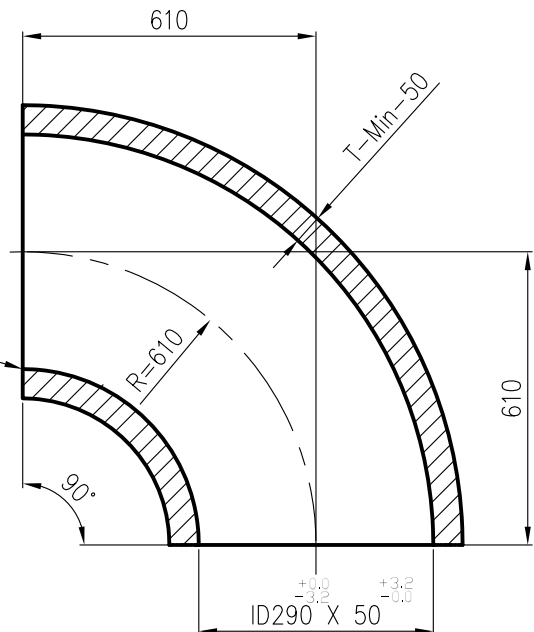


FIG-P



REF FIG-P
(TYP)



—	BW LR 90DEG ELBOW ø ID290 X 50	92 504 172 0000	A	401	480
		SA 234 WPC			1
VAR No.	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT
			MATERIAL SPECN		UNIT WT. (KG)
					QUANTITY

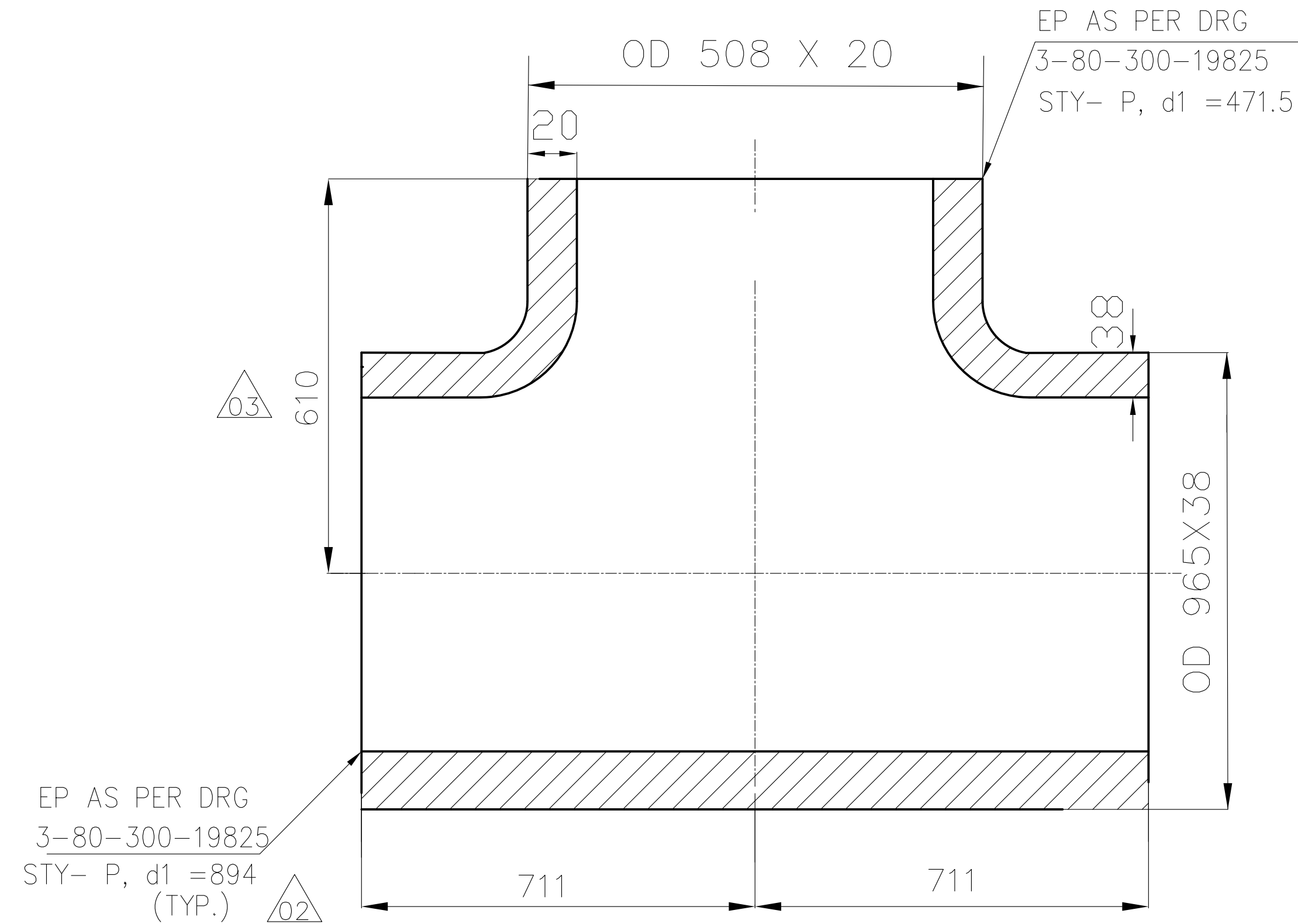


BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

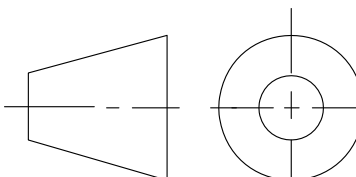
	NAME	SIGNATURE	DATE
DRN	P SURESH	—sd—	15.04.2017
CHD	R SESHAGIRI	—sd—	15.04.2017
APPD	R SESHAGIRI	—sd—	15.04.2017

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE			N.T.S	401.480	—
TITLE	BW LR 90DEG ELBOW ID290 X 50				DRAWING NO : 4-80-423-80910
					REV 00

DRAWING NO 3-80-320-35498



01. DESIGN PRESSURE : 74 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 380° C
03. ALL DIMENSIONS ARE FINISHED DIMENSIONS.
04. 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. FOLLOW APPLICABLE TDG OF THE PROJECT
07. WEIGHT GIVEN IN BOM IS INDICATIVE ONLY.
VENDOR SHALL SUBMIT FINAL DRG WITH DIMENSIONS & ACTUAL WEIGHT FOR APPROVAL BEFORE MANUFACTURING.
08. CONSTRUCTION SHALL BE SEAMLESS
09. CONNECTING PIPE SIZES – OD965X37/OD508X20

03								
	BW UN EQUAL TEE OD 965X38/OD508X20	01	3-80-320-35498		92 105 189 0000 SA 234 WP22	A	1765,000 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 CHD APPD N.SUDARSSAN V.PAVAN KUMAR R.SESHAGIRI SIGN -sd- -sd- -sd- DATE 22.02.2019 23.02.2019 24.02.2019 NO OF ITEMS								
DEPT.	GRADE OF UN TOL. DIM		SCALE	WEIGHT (Kg).	BHEL PO REF.NO:			ITEM No.
CODE	C/M/F		N.T.S.	1765.000				
TITLE				CARD CODE	DRAWING No.			REV
BW UN EQUAL TEE (OD965X38/OD508X20-SA234WP22)				U 01	3-80-320-35498			03