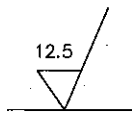


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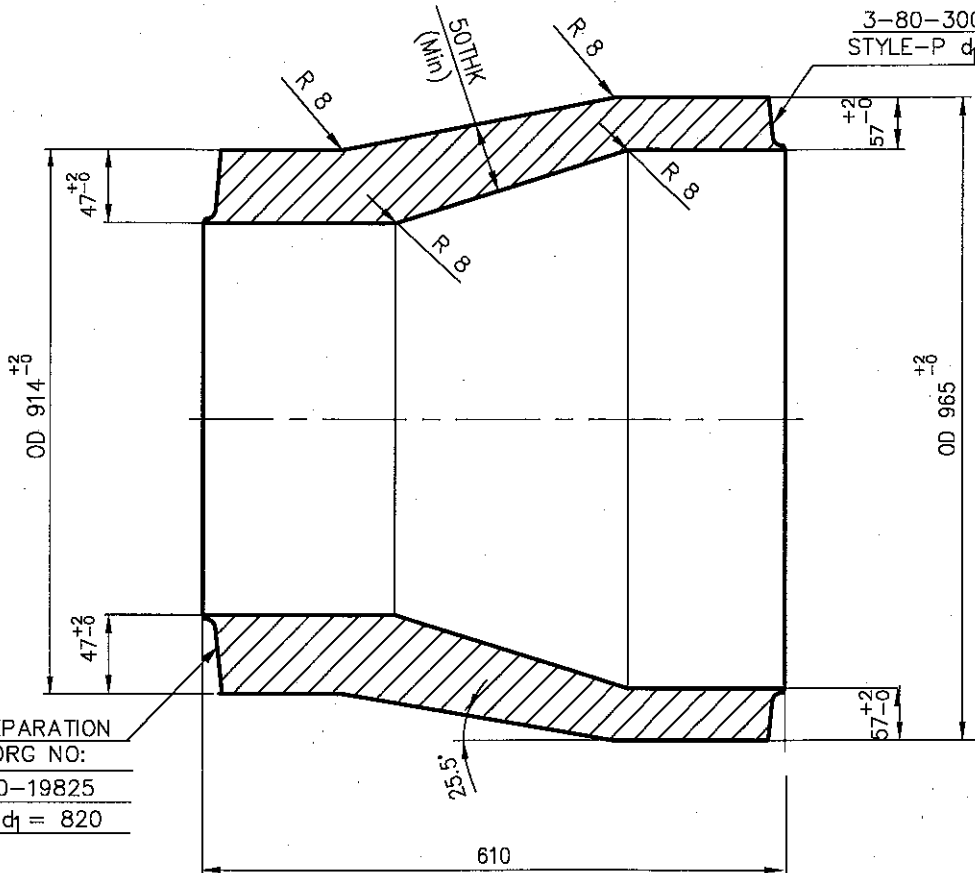
REV	DATE	ALTERED
01		APPROVED

NOTES :- ALL DIMENSIONS ARE IN MILLIMETRES

- DESIGN PRESSURE : 75.0 Kg/Cm² (g)
- DESIGN TEMPERATURE : 510° C
- FITTING SHALL CONFORM TO ALL THE REQUIREMENTS OF ASME B16.9 & A 234(LATEST).
- FOLLOW APPLICABLE TDG
- 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
STYLE-P d₁ = 860



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
STYLE-P d₁ = 820

	REDUCER L=610 OD 965 x thk57min/ OD 914X47	92 117 931 0000 SA 234 WP22CL1	A	695	000
VAR NO.	DESCRIPTION	STD	MATL. CODE	UNIT	UNIT.WT.(Kg)
			MATL. SPECN.	DI	QTY.

		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO.OF VAR
DEPT		GRADE OF UNTOL.DIM	SCALE	CHD	S.R.MURTHY	-sd-	31.12.13	
CODE		C / M / F	N.T.S	APPD	S.R.MURTHY	-sd-	31.12.13	
TITLE		WEIGHT (KG).	BHEL PO REF.NO:	DRAWING NO.		REV		
REDUCER				4-80-320-77640		00		
(OD965Xthk57min/OD914X47)SA234WP22CL1		CARD CODE						
		U 01						

Size A4

Eng. sl. no. 10

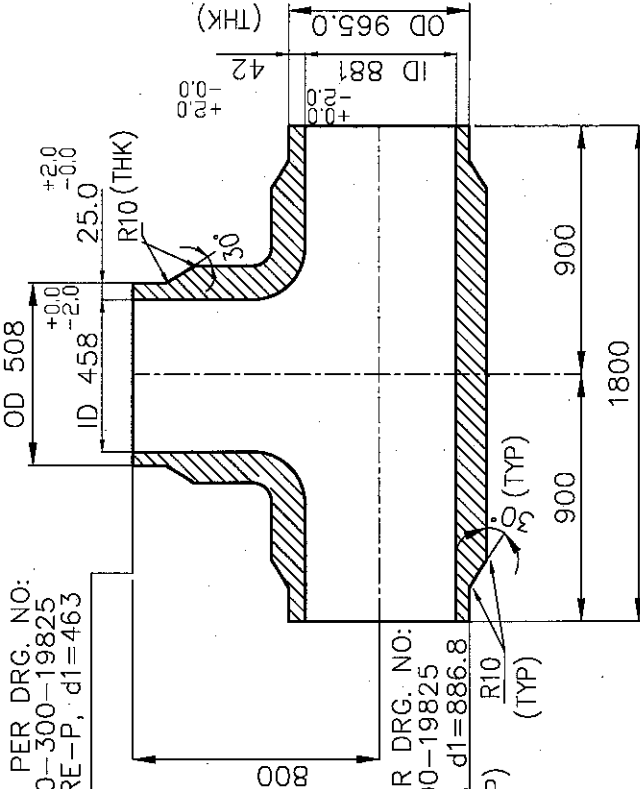
FIRST ANGLE PROJECTION(ALL DIMENSIONS IN MILLIMETRES)

17273-103-80-8-3

DRAWING No



EP, AS PER DRG. NO:
3-80-300-19825
FIGURE-P, d1=463



EP, AS PER DRG. NO:
3-80-300-19825
FIGURE-P, d1=886.8

NOTES :-

01. DESIGN PRESSURE : 73.1 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 380° 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 AND TOLERANCES ARE AS PER THIS DRAWING.
06. FITTING SPECIFICATION SA234WP11(A) CAN ALSO BE USED IN PLACE OF SA234WP11(A)
06. FOLLOW TDG: AS APPLICABLE
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 - OD965x42/OD508x25
11. AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE

Eng. S. no. 17

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	UNIT WT.	QTY.
	BW UNEQUAL TEE	3-80-320-32221	92 505 052 0000	A	1905.000	
	OD965X42/OD508X25		SA 234 WP11	A	1	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



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

NAME	SIGN	DATE	NO OF
M.R. KRISHNA		30.04.15	ITEMS
I.D. RAJU		30.04.15	
S. RAMAMURTHY		30.04.15	

GRADE OF UN TOL. DIM C/M/F	SCALE	WEIGHT (Kg)	ITEM No.
C/M/F	N.T.S.	1905.00	

DEPT.	CODE	REV
		01

TITLE	CARD CODE	DRAWING No.	REV
BW UNEQUAL TEE	U 01	3-80-320-32221	00
OD965x42/OD508x25-SA234WP11)			

SIZE A3

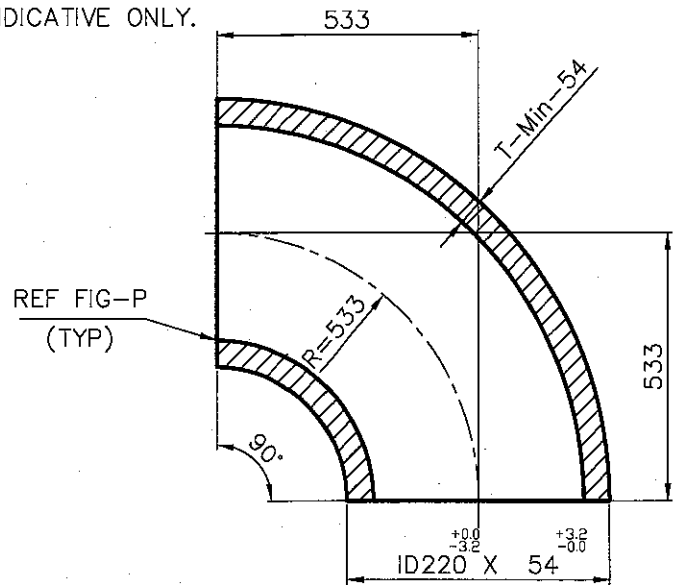
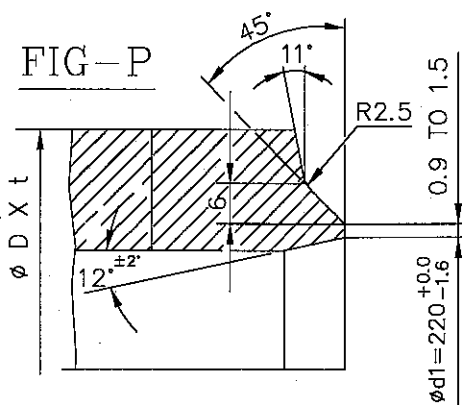
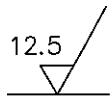
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 IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.
 CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 505 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 ID220X54
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 90DEG ELBOW Ø ID220 X 54	92 504 051 0000	A	332	340
				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	332.340	-

TITLE	DRAWING NO :	REV
BW LR 90DEG ELBOW ID220 X 54	4-80-425-78983	00

Enq. sl. no. 29

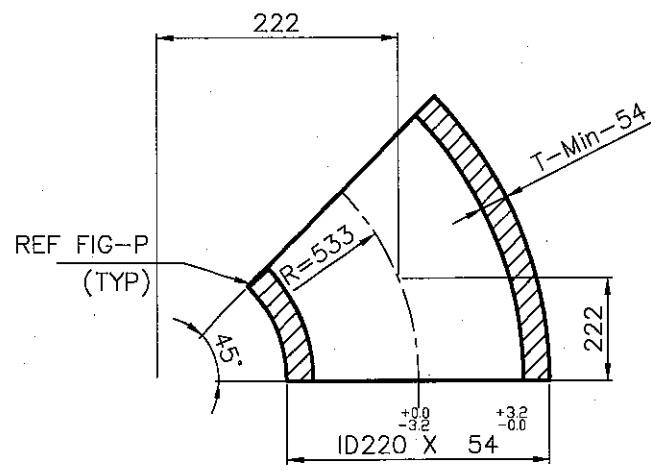
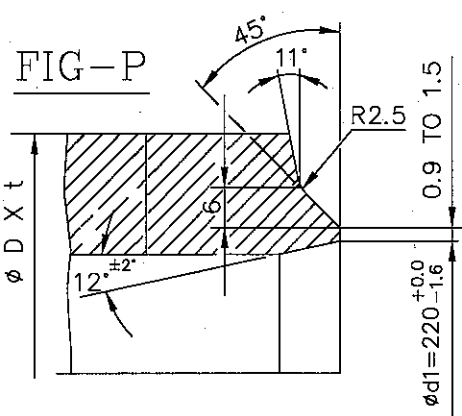
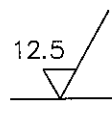
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CAUTION:

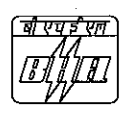
REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 505 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 ID220X54
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



VAR No.	DESCRIPTION	STD	92 504 052 0000		A	166	170
			SA 234 WPC			1	
			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		-

TITLE	DRAWING NO :	REV
BW LR 45DEG ELBOW ID220 X 54	4-80-425-78984	00

Enq. sl. no. 30

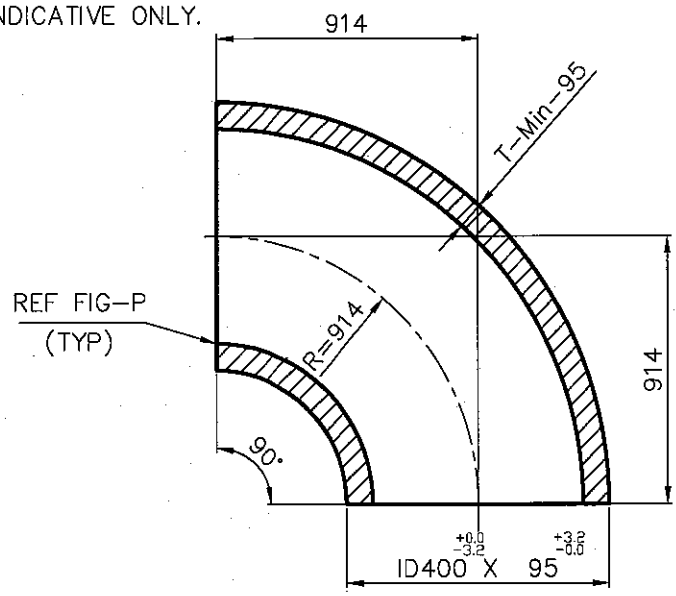
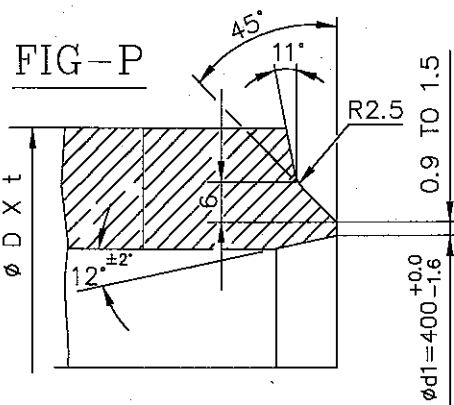
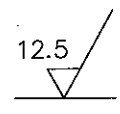
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CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 505 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 ID400X95
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 90DEG ELBOW ø ID400 X 95	92 504 053 0000	A	1749	100	
				1		
VAR No.	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WT. (KG)
						MATERIAL SPECN



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		-

TITLE	DRAWING NO :	REV
BW LR 90DEG ELBOW ID400 X 95	4-80-425-78987	00

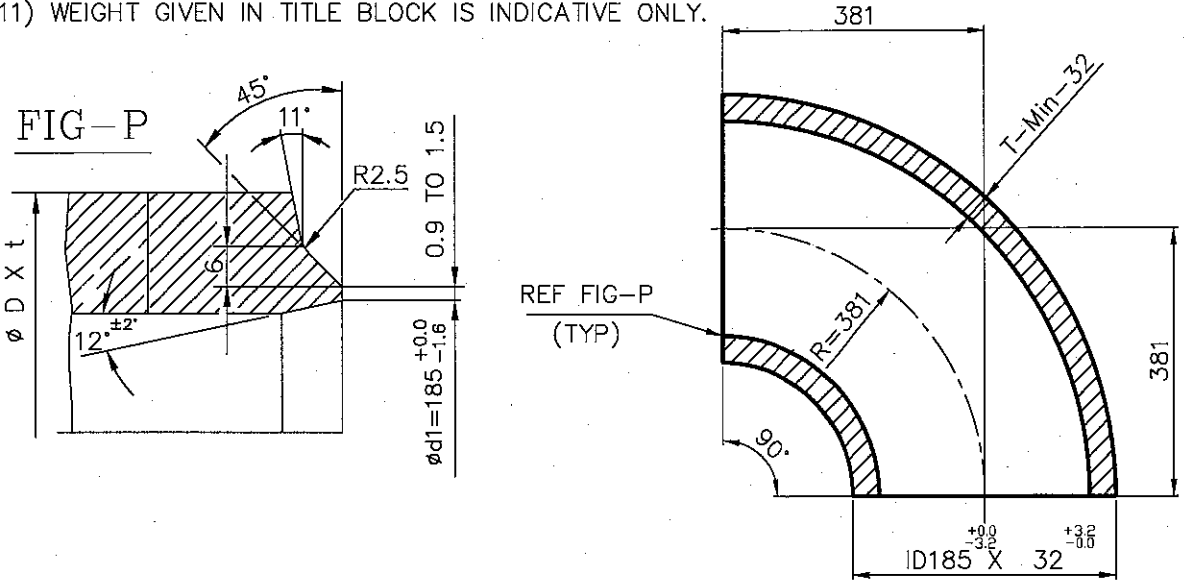
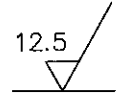
Eng. no. 31

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 CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 366 Kg/Cm² (g)
- 2) DESIGN TEMPERATURE : 315 °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 ID185X32
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 90DEG ELBOW ø ID185 X 32	92 504 054 0000	A	113	640
		SA 234 WPC			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		—

TITLE	DRAWING NO :	REV
BW LR 90DEG ELBOW ID185 X 32	4-80-425-78989	00

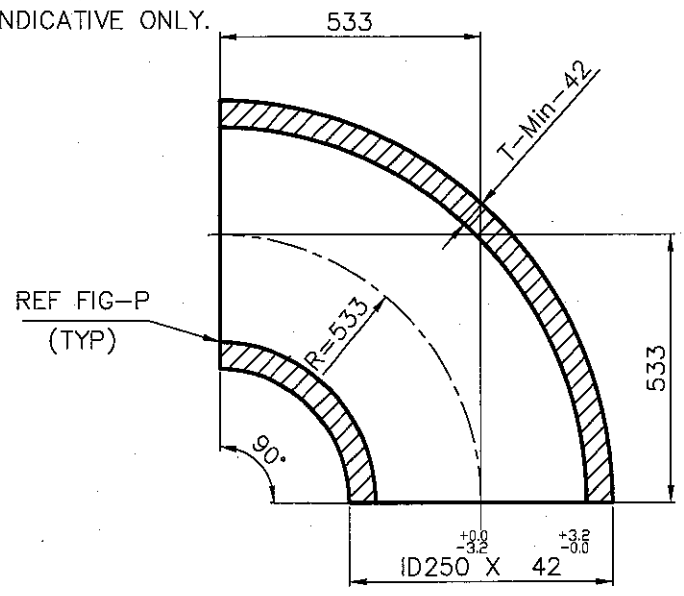
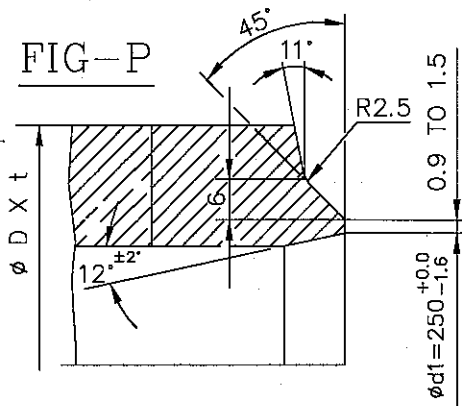
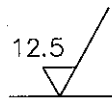
Eng. E.J. no. 32

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 CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 366 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °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 ID250X42
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 90DEG ELBOW Ø ID250 X 42	92 504 055 0000	A	272	090
		SA 234 WPC			1
VAR No.	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT
			MATERIAL SPECN		QUANTITY
					UNIT WT. (KG)



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		

TITLE	DRAWING NO :	REV
BW LR 90DEG ELBOW ID250 X 42	4-80-425-78988	00

Enq. sl. no. 33

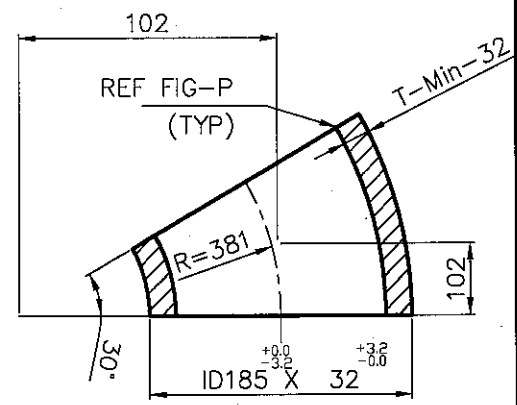
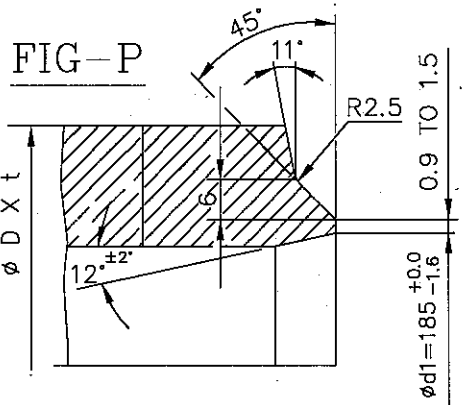
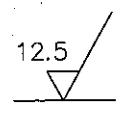
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CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 366 Kg/Cm² (g)
- 2) DESIGN TEMPERATURE : 315 °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 ID185X32
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 30DEG ELBOW	92 504 057 0000	A		37 880	
	ø ID185 X 32	SA 234 WPC			1	
VAR No.	DESCRIPTION	STD	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		

TITLE	DRAWING NO :	REV
BW LR 30DEG ELBOW ID185 X 32	4-80-425-78991	00

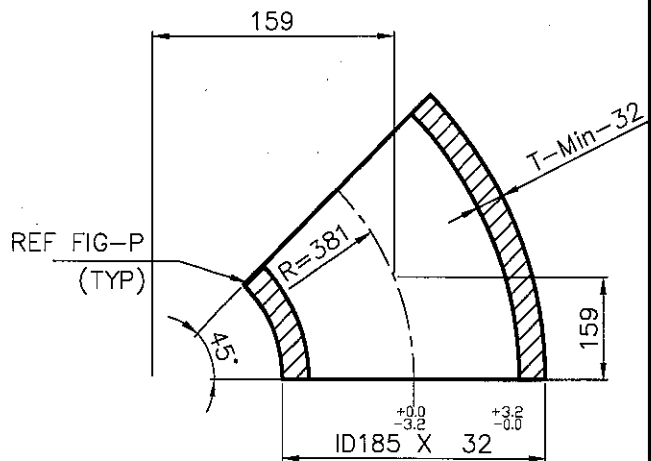
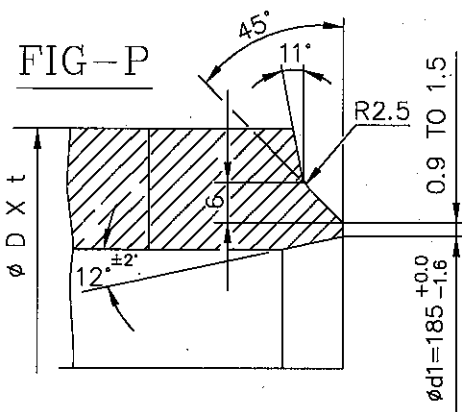
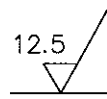
Eng. ed. no. 34

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 CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 366 Kg/Cm² (g)
- 2) DESIGN TEMPERATURE : 315 °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 ID185X32
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 45DEG ELBOW phi ID185 X 32	92 504 058 0000	A	56 820
VAR No.	DESCRIPTION	STD	MATERIAL CODE	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		—

TITLE	DRAWING NO :	REV
BW LR 45DEG ELBOW ID185 X 32	4-80-425-78990	00

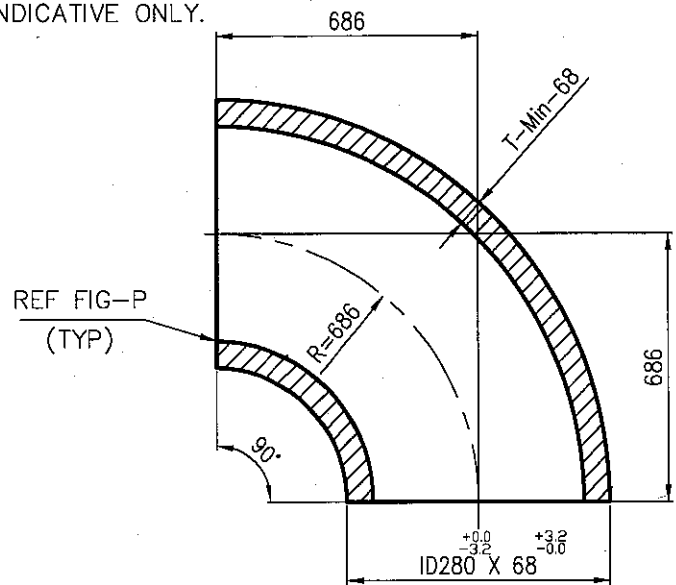
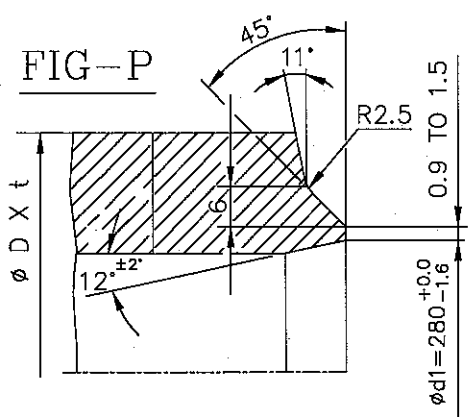
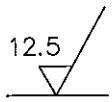
Eng. Sl. no. 35

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 IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.
 CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 505 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 ID280X68
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



VAR No.	DESCRIPTION	STD	BW LR 90DEG ELBOW	92 504 060 0000	A	673	500
			Ø ID280 X 68	SA 234 WPC			1
			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		-

TITLE	DRAWING NO :	REV
BW LR 90DEG ELBOW ID280 X 68	4-80-425-78992	00

Enq. sl. no. 37

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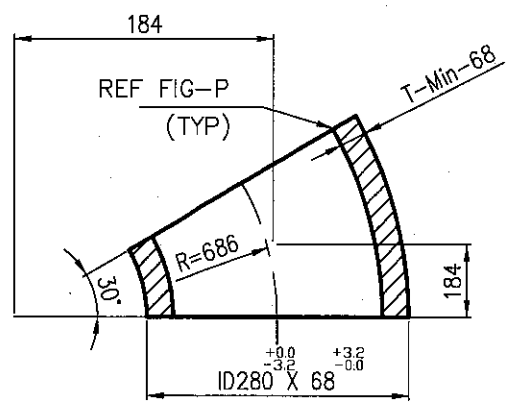
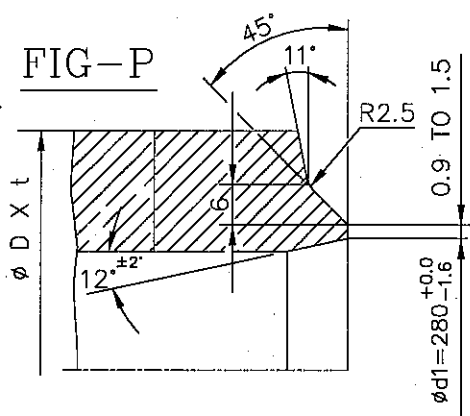
REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 505 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 ID280X68
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.

12.5

CAUTION:



-	BW LR 30DEG ELBOW φ ID280 X 68	92 504 061 0000	A	224	500
				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 N.T.S	WEIGHT (Kg)	REF TO ASSY / OLD DWG
------	--------------------------	------------	-------------	-------------	-----------------------

TITLE	DRAWING NO :	REV
BW LR 30DEG ELBOW ID280 X 68	4-80-425-78993	00

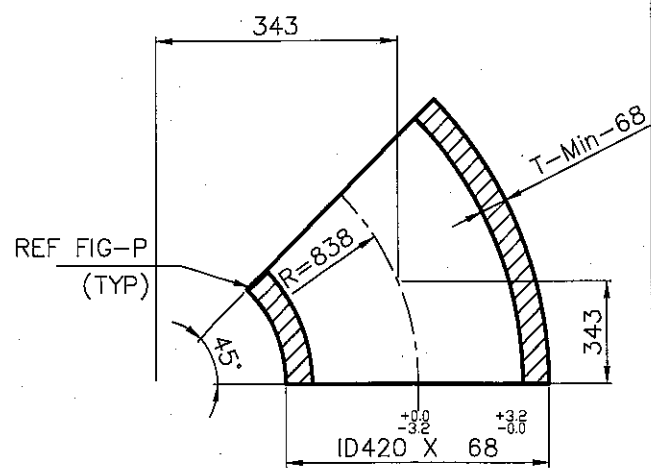
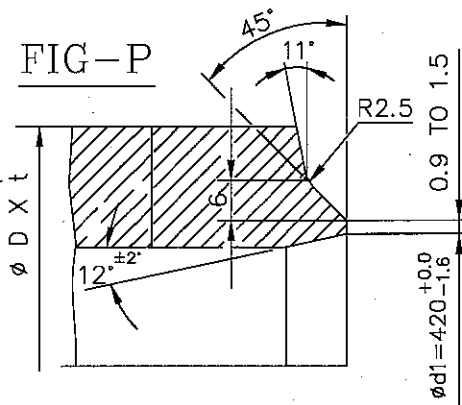
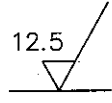
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 CAUTION:

REV	DATE	ALTERED :
01		CHD & APPD :

NOTES:

- 1) DESIGN PRESSURE : 366 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °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 ID420X68
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.



-	BW LR 45DEG ELBOW	92 504 064 0000	A	555	590	
	phi ID420 X 68	SA 234 WPC			1	
VAR No.	DESCRIPTION	STD	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		-

TITLE	DRAWING NO :	REV
BW LR 45DEG ELBOW ID420 X 68	4-80-425-78986	00

Enq. sd. no 41

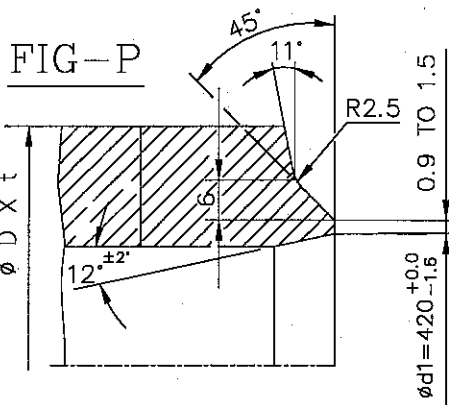
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REV	DATE	ALTERED :
01		CHD & APPD :

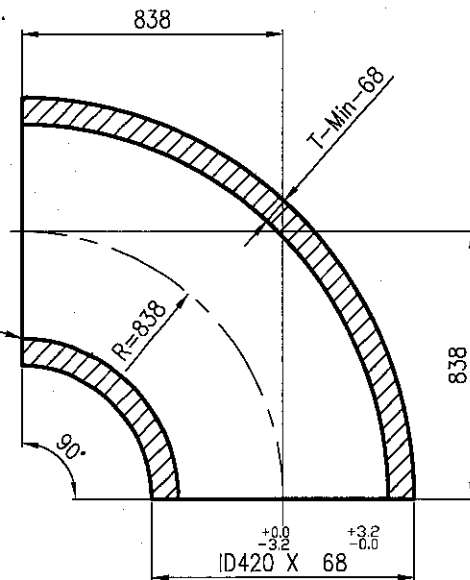
NOTES:

- 1) DESIGN PRESSURE : 366 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °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 ID420X68
- 8) MATERIAL SPECIFICATION SHALL BE SA234WPC
- 9) CONSTRUCTION SHALL BE SEAMLESS
- 10) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 11) WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY.

12.5



REF FIG-P
(TYP)



-	BW LR 90DEG ELBOW Ø ID420 X 68	92 504 065 0000	A	1111	190	
				1		
VAR No.	DESCRIPTION	STD	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 N.T.S	WEIGHT (Kg) 1111.190	REF TO ASSY / OLD DWG
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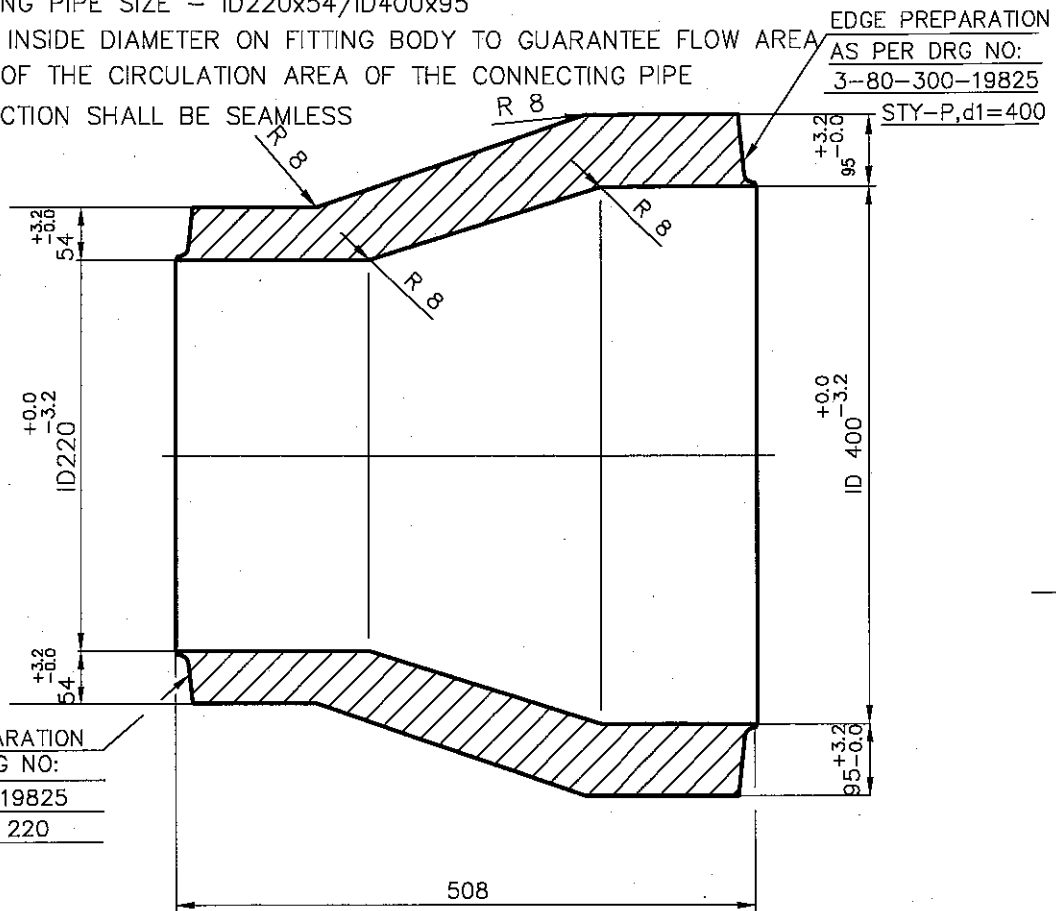
TITLE	BW LR 90DEG ELBOW ID420 X 68	DRAWING NO : 4-80-425-78985	REV 00
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Eng. sl. no. 42

NOTES :-

ALL DIMENSIONS ARE IN MILLIMETRES

- 1) DESIGN PRESSURE : 505.0 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 & TESTING SHALL BE AS PER IBR ANSI B16.9 & SA234
- 7) DIMENSIONS & TOLERANCES ARE AS PER THE DRAWING
- 8) CONNECTING PIPE SIZE - ID220x54/ID400x95
- 9) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 10) CONSTRUCTION SHALL BE SEAMLESS



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIG-P, d₁ = 220

	BW CONCENTRIC REDUCER ID400X95/ID220X54	92 117 031 0000	A	512	010
		SA 234 WPC			
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 M.R.KRISHNA	NAME M.R.KRISHNA	SIGN	DATE 30.04.15	NO.OF VAR
DEPT CODE	GRADE OF UNTOL.DIM C / M / F		SCALE N.T.S	WEIGHT (KG). 512.01	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS
TITLE BW CONCENTRIC REDUCER ID400X95/ID220X54 (SA234WPC)				CARD CODE U 01	DRAWING NO. 4-80-423-79040			REV 00

Size A4

Enq. no. 88

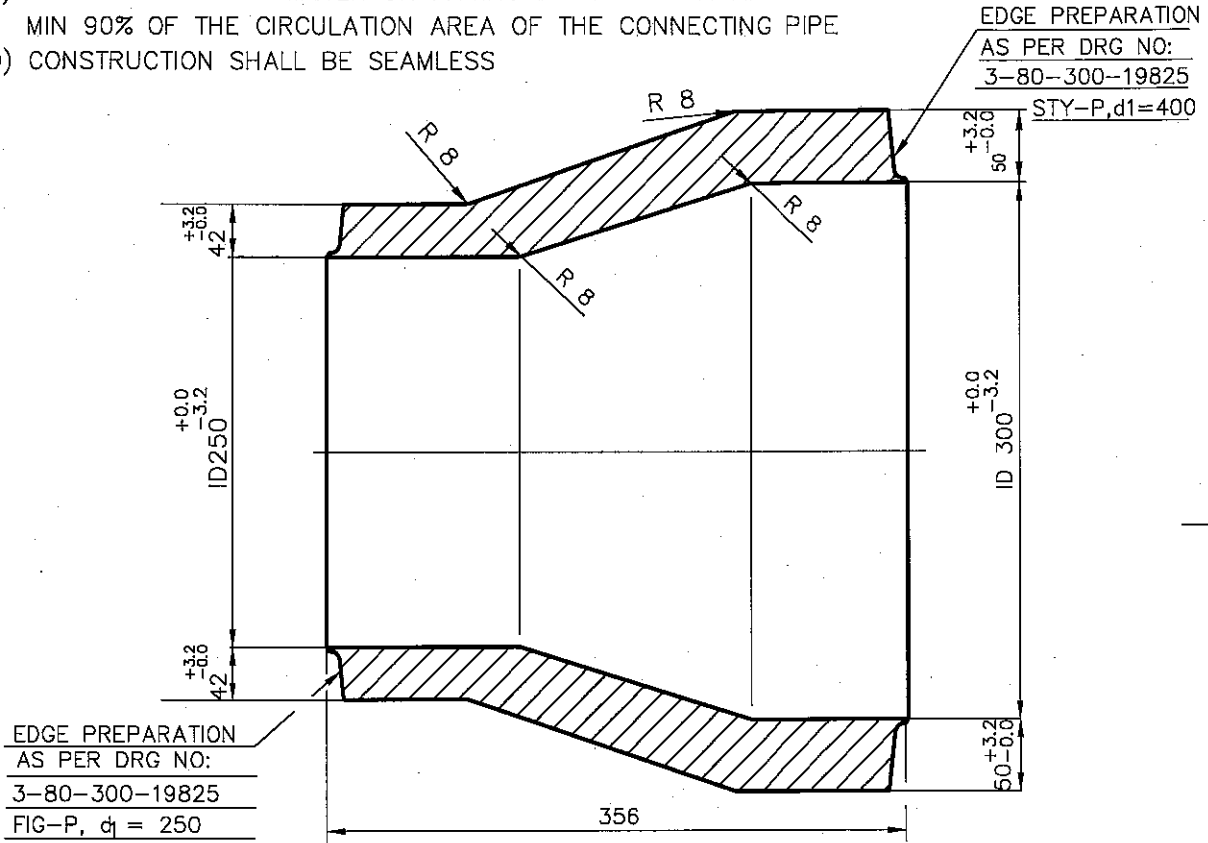
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NOTES :-

ALL DIMENSIONS ARE IN MILLIMETRES

- 1) DESIGN PRESSURE : 366.0 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °C
- 3) WORKING MEDIUM : WATER
- 4) FOLLOW TDC No. : AS APPLICABLE
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN,MANUFACTURING,INSPECTION & TESTING SHALL BE AS PER IBR ANSI B16.9 & SA234
- 7) DIMENSIONS & TOLERANCES ARE AS PER THE DRAWING
- 8) CONNECTING PIPE SIZE – ID250x42/ID300X50
- 9) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 10) CONSTRUCTION SHALL BE SEAMLESS



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIG-P, d₁ = 250

	BW CONCENTRIC REDUCER ID300X50/ID250X42	92 117 032 0000	A	154	650
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	M.R.KRISHNA	SIGN	DATE	NO.OF VAR
DEPT	GRADE OF UNTOL.DIM		SCALE	CHD	I.D.B.RAJU		30.04.15	
CODE	C / M / F			APPD	S RAMAMURTHY		30.04.15	
TITLE		WEIGHT (KG).	BHEL PO REF.NO:	ITEM NO.	NO. OF ITEMS			
BW CONCENTRIC REDUCER ID300X50/ID250X42 (SA234WPC)		154.650						
CARD CODE		DRAWING NO.		REV				
U 01		4-80-423-79041		00				

Size A4

Eng. Bd. no. 89

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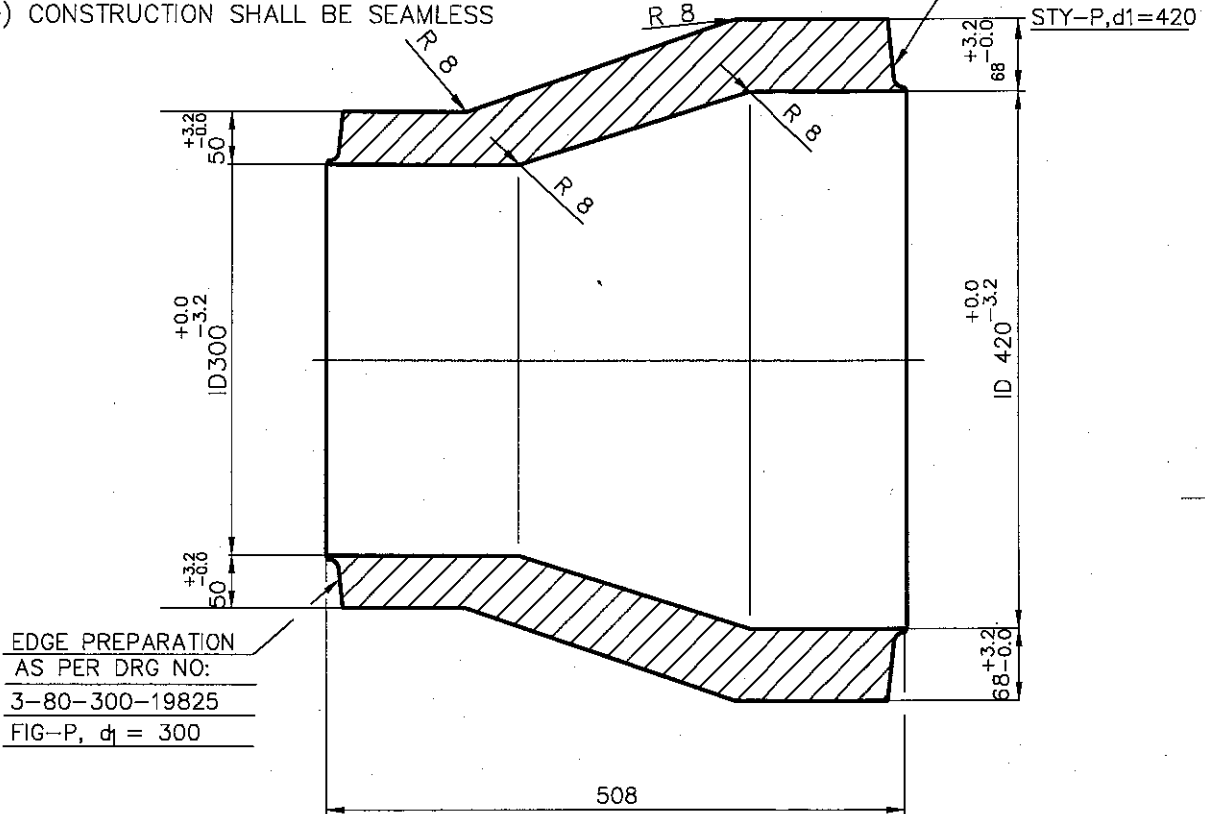
NOTES :-

ALL DIMENSIONS ARE IN MILLIMETRES

- 1) DESIGN PRESSURE : 366.0 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °C
- 3) WORKING MEDIUM : WATER
- 4) FOLLOW TDC No. : AS APPLICABLE
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN,MANUFACTURING,INSPECTION & TESTING SHALL BE AS PER IBR ANSI B16.9 & SA234.
- 7) DIMENSIONS & TOLERANCES ARE AS PER THE DRAWING
- 8) CONNECTING PIPE SIZE - ID420x68/ID300X50
- 9) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 10) CONSTRUCTION SHALL BE SEAMLESS



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
STY-P, d1=420



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

	BW CONCENTRIC REDUCER ID420X68/ID300X50	92 117 033 0000	A	376	840
		SA 234 WPC			
VAR NO.	DESCRIPTION	MATL. CODE	A/C	UNIT	UNIT.WT.(Kg)
		MATL. SPECN.		DI	QTY.

		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO.OF VAR
				CHD	M.R.KRISHNA		30.04.15	
				APPD	I.D.B.RAJU		30.04.15	
					S RAMAMURTHY		30.04.15	
DEPT	GRADE OF UNTO L.DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS	
CODE	C / M / F	N.T.S	376.840					
TITLE				CARD CODE	DRAWING NO.		REV	
BW CONCENTRIC REDUCER ID420X68/ID300X50 (SA234WPC)				U 01	4-80-423-79042		00	

Size A4

Enq. sl. no. 90

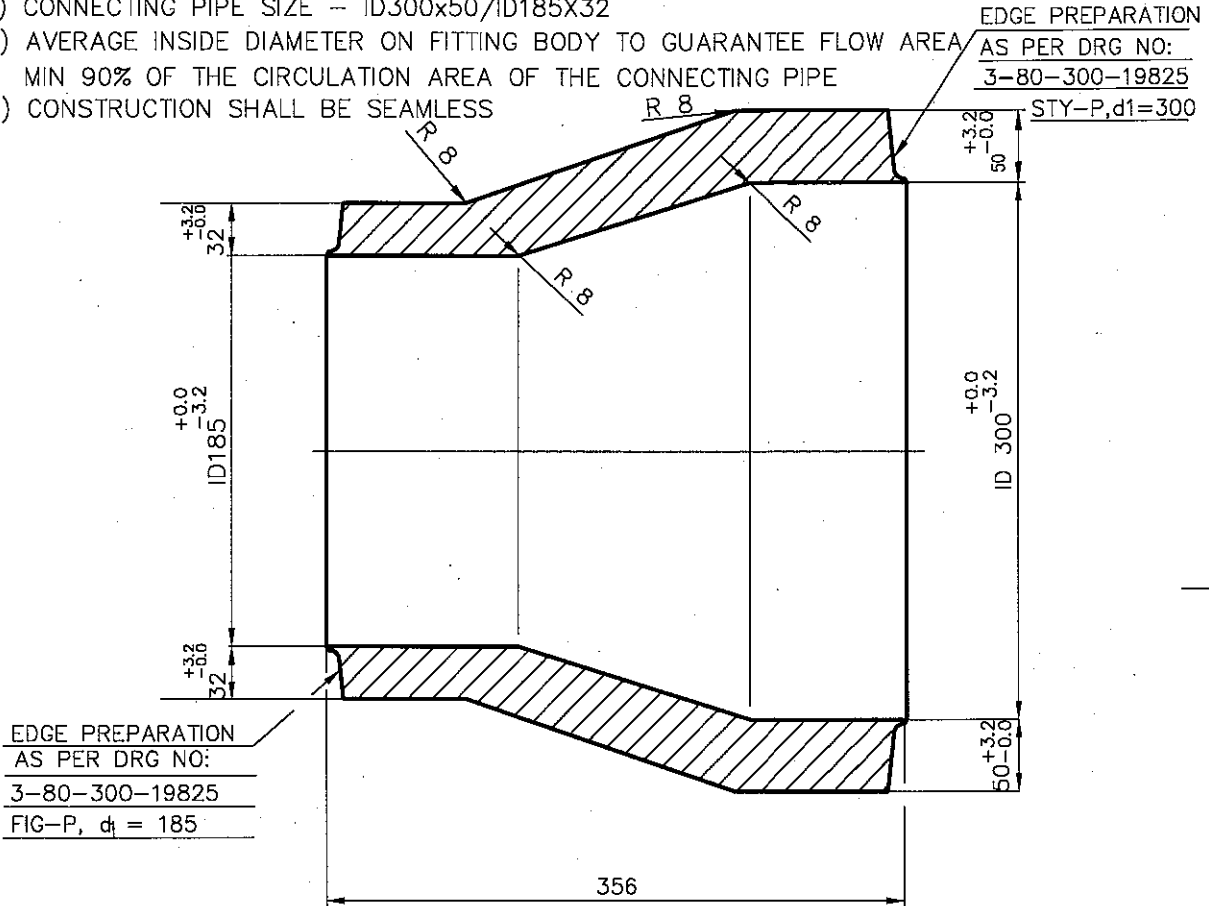
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NOTES :-

- 1) DESIGN PRESSURE : 366.0 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °C
- 3) WORKING MEDIUM : WATER
- 4) FOLLOW TDC No. : AS APPLICABLE
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN,MANUFACTURING,INSPECTION & TESTING SHALL BE AS PER IBR ANSI B16.9 & SA234.
- 7) DIMENSIONS & TOLERANCES ARE AS PER THE DRAWING
- 8) CONNECTING PIPE SIZE -- ID300x50/ID185X32
- 9) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 10) CONSTRUCTION SHALL BE SEAMLESS

ALL DIMENSIONS ARE IN MILLIMETRES

12.5
▽



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIG-P, d1 = 185

	BW CONCENTRIC REDUCER ID300X50/ID185X32	92 117 034 0000	A	141	560
		SA 234 WPC			
VAR NO.	DESCRIPTION	MATL. CODE	A/C	UNIT	UNIT.WT.(Kg)
		MATL. SPECN.		DI	QTY.

		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	M.R.KRISHNA	SIGN	DATE	NO.OF VAR
				CHD	I.D.B.RAJU		30.04.15	
				APPD	S RAMAMURTHY		30.04.15	
DEPT	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS	
CODE	C / M / F	N.T.S	141.560					
TITLE				CARD CODE	DRAWING NO.		REV	
BW CONCENTRIC REDUCER ID300X50/ID185X32 (SA234WPC)				U 01	4-80-423-79043		00	

Size A4

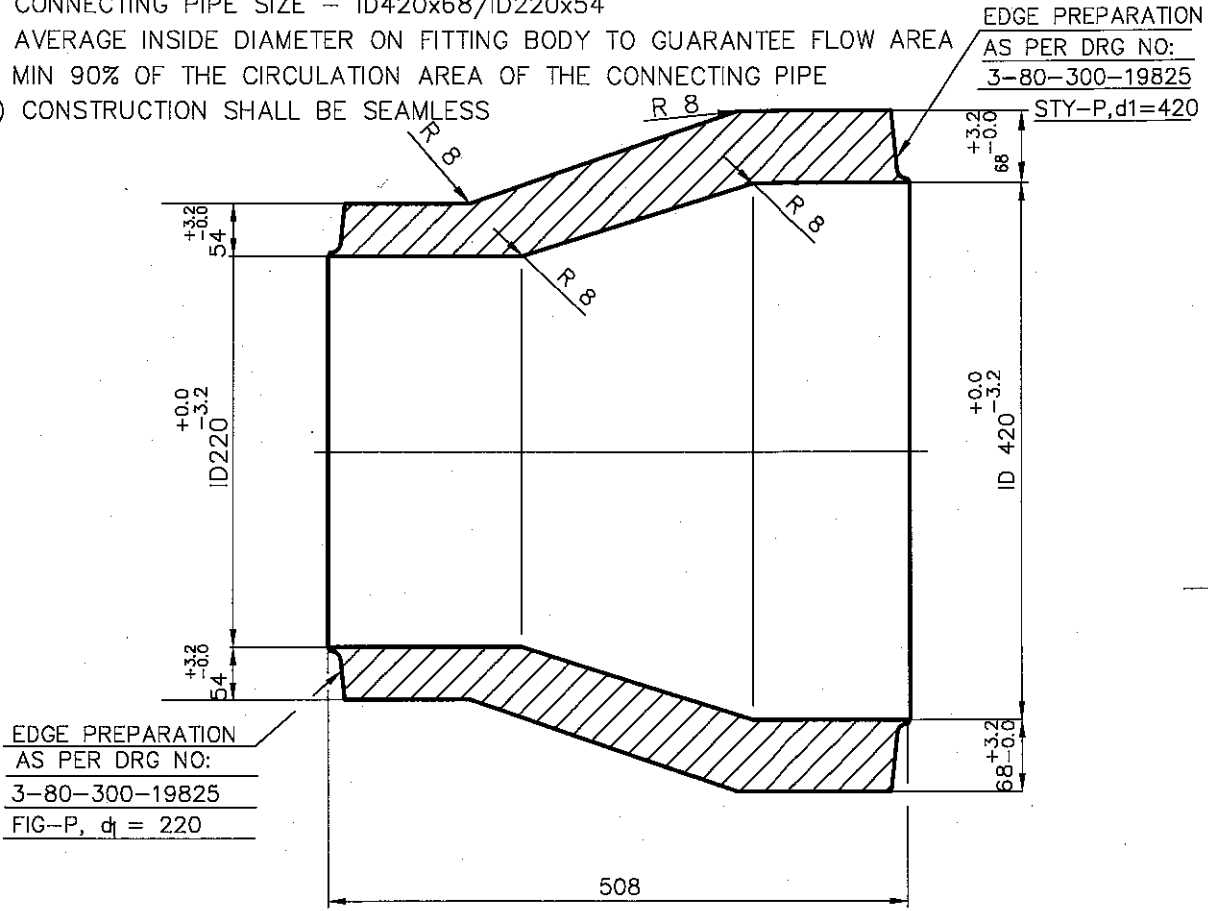
Enq. sl. no. 91

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NOTES :-

ALL DIMENSIONS ARE IN MILLIMETRES

- 1) DESIGN PRESSURE : 366.0 Kg/Cm²(g)
- 2) DESIGN TEMPERATURE : 315 °C
- 3) WORKING MEDIUM : WATER
- 4) FOLLOW TDC No. : AS APPLICABLE
- 5) ALL DIMENSIONS ARE FINISHED DIMENSIONS
- 6) DESIGN,MANUFACTURING,INSPECTION & TESTING SHALL BE AS PER IBR ANSI B16.9 & SA234.
- 7) DIMENSIONS & TOLERANCES ARE AS PER THE DRAWING
- 8) CONNECTING PIPE SIZE – ID420x68/ID220x54
- 9) AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE
- 10) CONSTRUCTION SHALL BE SEAMLESS



EDGE PREPARATION
AS PER DRG NO:
3-80-300-19825
FIG-P, d₁ = 220

	BW CONCENTRIC REDUCER ID420X68/ID220X54	92 117 035 0000	A	351	520
		SA 234 WPC			
VAR NO.	DESCRIPTION	MATL. CODE	A/C	UNIT	UNIT.WT.(Kg)
		MATL. SPECN.		DI	QTY.

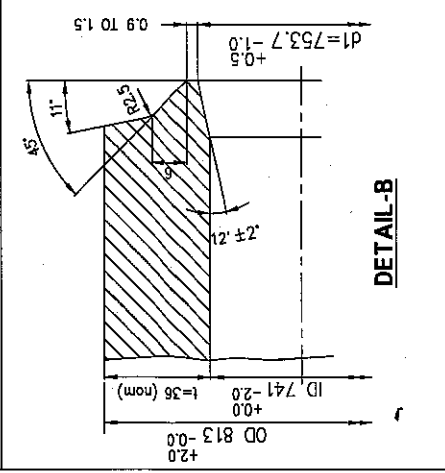
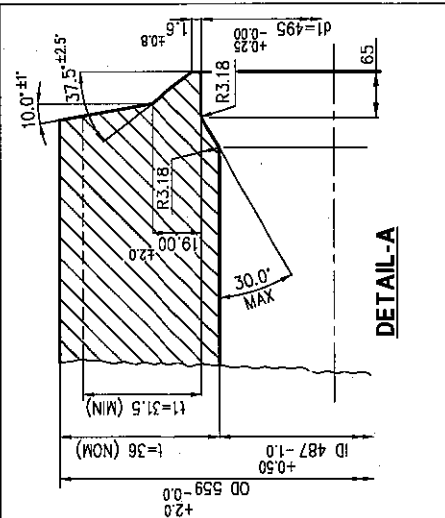
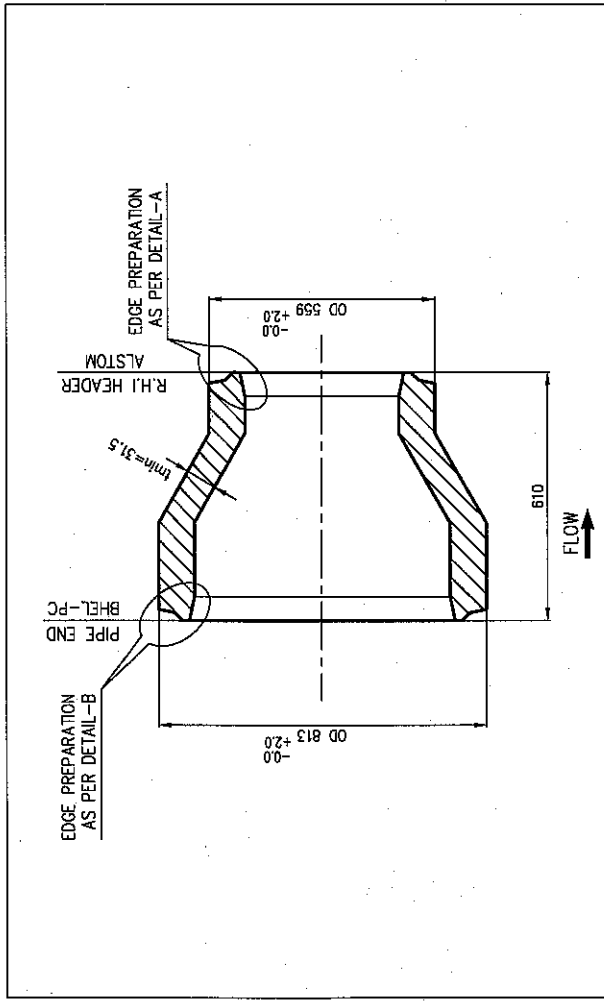
		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO.OF VAR
				CHD	M.R.KRISHNA		30.04.15	
				APPD	I.D.B.RAJU		30.04.15	
					S RAMAMURTHY		30.04.15	
DEPT	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	BHEL PO REF.NO:		ITEM NO.	NO. OF ITEMS	
CODE	C / M / F	N.T.S	351.520					
TITLE				CARD CODE	DRAWING NO.			REV
BW CONCENTRIC REDUCER ID420X68/ID220X54 (SA234WPC)				U 01	4-80-423-79044			00

Size A4

Enq. Sl. no. 92

FIRST ANGLE PROJECTION(ALL DIMENSIONS IN MILLIMETRES)

DRAWING No
3-80-320-28585



NOTES

- DESIGN PRESSURE : **73.5** Kg/Cm²(g)
- DESIGN TEMPERATURE : **370** °C
- THE FINISHED MATERIAL SPECIFICATION IS 'SA 234 WPC'(A)
- THE FINISHED MATERIAL CODE IS '**92 117 655 0000**'
- FOLLOW TDC No. : TDG-102 (LATEST REVISION)
- DESIGN, MANUFACTURING, INSPECTION, TOLERANCES AND TESTING SHALL BE AS PER IBR, ANSI B16.9 AND SA 234.



01	ASME B16.9 REDUCER L=610 OD813x31 / OD559x36	3-80-320-28585	A	420,000
ITEM NO.	DESCRIPTION	DRAWING NO.	MATERIAL CODE	UNIT WT.
			A	
			C	QTY.

Eng. S.L. no. 100

SPACE FOR IBR APPL.

		BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017		NAME POONKODIV	SIGN [Signature]	DATE 01/07/2011	NO OF ITEMS 1
DEPT. C/M/F	GRADE OF UN TOL. DIM C/M/F	SCALIS N.T.S.	WEIGHT (kg) 420.000	BHEL PO REF.NO. -	ITEM No. -	DATE 01/07/2011	NO OF ITEMS -
TITLE ASME B16.9 BW CON REDUCER (OD813x31/OD559x36)	CARD CODE U 01	DRAWING No. 3-80-320-28585	REV 01	SIZE A3			

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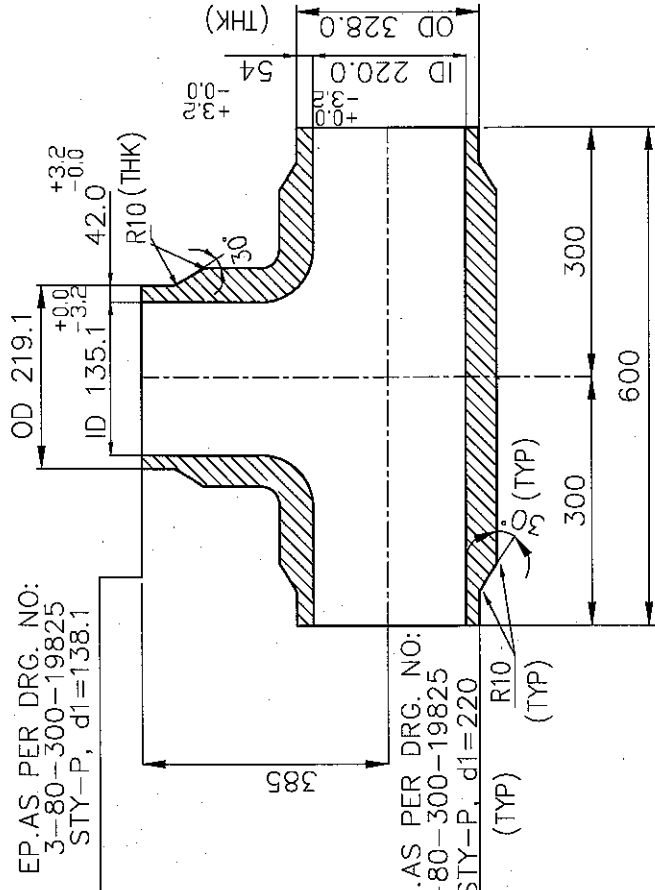
3-80-423-32147

DRAWING NO

12.5

EP.AS PER DRG. NO:
3-80-300-19825
STY-P, d1=138.1

EP.AS PER DRG. NO:
3-80-300-19825
STY-P, d1=220



NOTES :-

01. DESIGN PRESSURE : 505.0 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 200° 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 AND TOLERANCES ARE AS PER THIS DRAWING.
06. FOLLOW TDG:AS APPLICABLE
07. WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY. ACTUAL WEIGHT TO BE FURNISHED BY FITTING SUPPLIER.
08. CONSTRUCTION SHALL BE SEAMLESS
09. MATERIAL SPECIFICATION SHALL BE SA234WPC
10. CONNECTING PIPE SIZE - ID220X54/OD219.1X42
11. AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE

Erq. sl. no. 141

ITEM NO.	DESCRIPTION	DRAWING NO.	REV NO.	MATERIAL CODE	UNIT WT.	QTY.
BW UNEQUAL TEE ID220X54/OD219.1X42	3-80-423-32147		92 505 04.3 0000	SA 234 WPC	A	295.500
				MATERIAL SPEC.	C	1

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



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

NAME	SIGN	DATE	NO OF ITEMS
M.R.KRISHNA		30.04.15	
I.D.B.RAJU		30.04.15	
S.RANAMURTHY		30.04.15	

DEPT.	GRADE OF UN TOL. DIM C/M/F	SCALE	WEIGHT (kg)	BHEL PD REF.NO.
		N.T.S.	295.500	

REV	DATE	ALTD :
01		APPD :

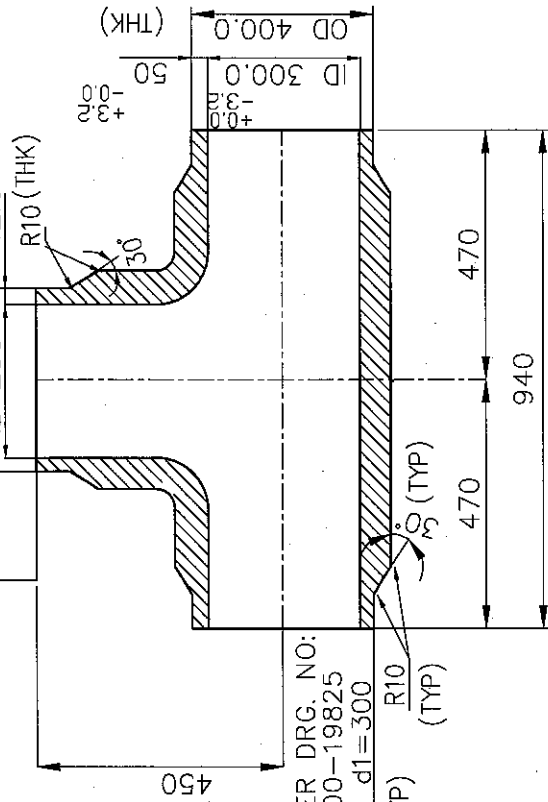
TITLE	CARD CODE	DRAWING No.	REV
BW UNEQUAL TEE (ID220x54/OD219.1X42-SA234WPC)	U 01	3-80-423-32147	00

3-80-423-32148

DRAWING No

12.5

EP, AS PER DRG. NO:
3-80-300-19825
STY-P, d1=250



EP, AS PER DRG. NO:
3-80-300-19825
STY-P, d1=300

NOTES :-

01. DESIGN PRESSURE : 366.0 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 315° 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 AND TOLERANCES ARE AS PER THIS DRAWING.
06. FOLLOW TDG: AS APPLICABLE
07. WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY. ACTUAL WEIGHT TO BE FURNISHED BY FITTING SUPPLIER.
08. CONSTRUCTION SHALL BE SEAMLESS
09. MATERIAL SPECIFICATION SHALL BE SA234WPC
10. CONNECTING PIPE SIZE - ID300x50/ID250X42
11. AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE

Eng. S.L. no. 142

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	UNIT WT.	QTY.
BW UNEQUAL TEE ID300X50/ID250X42	3-80-423-32148		92 505 044 0000 SA 234 WPC	A	402,100
			MATERIAL CODE	A	
			MATERIAL SPEC.	C	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT.



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

NAME	SIGN	DATE	NO OF ITEMS
M.R. KRISHNA		30.04.15	
ID. B. RAJU		30.04.15	
S. RAMAMURTHY		30.04.15	

DEPT. CODE	SCALE	WEIGHT (Kg)	ITEM No.
C/M/F	N.T.S.	402.100	

TITLE	CARD CODE	DRAWING No.	REV
BW UNEQUAL TEE (ID300x50/ID250X42-SA234WPC)	U 01	3-80-423-32148	00

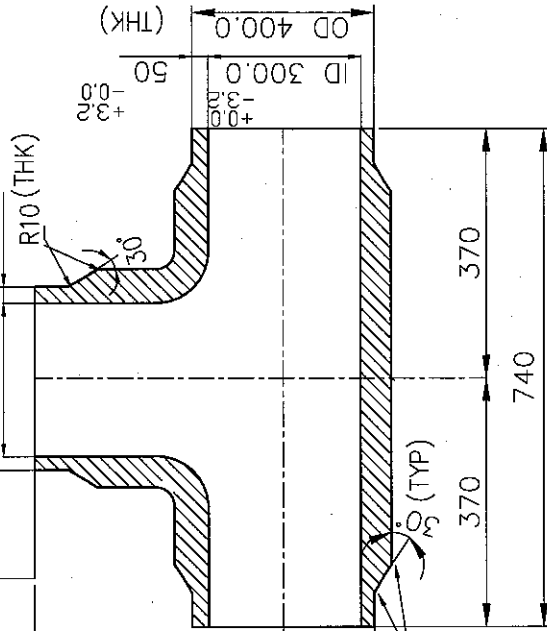
FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

3-80-423-32149

DRAWING No

12.5

EP.AS PER DRG. NO:
3-80-300-19825
STY-P, d1=185



EP.AS PER DRG. NO:
3-80-300-19825
STY-P, d1=300

NOTES :-

01. DESIGN PRESSURE : 366.0 kg/sq.cm.(g)
02. DESIGN TEMPERATURE : 315° 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 AND TOLERANCES ARE AS PER THIS DRAWING.
06. FOLLOW TDG:AS APPLICABLE
07. WEIGHT GIVEN IN TITLE BLOCK IS INDICATIVE ONLY. ACTUAL WEIGHT TO BE FURNISHED BY FITTING SUPPLIER.
08. CONSTRUCTION SHALL BE SEAMLESS
09. MATERIAL SPECIFICATION SHALL BE SA234WPC
10. CONNECTING PIPE SIZE - ID300x50/ID185X32
11. AVERAGE INSIDE DIAMETER ON FITTING BODY TO GUARANTEE FLOW AREA MIN 90% OF THE CIRCULATION AREA OF THE CONNECTING PIPE

Eng. sl. no. 1A-3

ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	UNIT WT.	QTY.
BW UNEQUAL TEE ID300X50/ID185X32	3-80-423-32149		92 505 045 0000	A	378.180	1
			SA 234 WPC	A		
				A		
				C		

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



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

NAME	SIGN	DATE	NO OF ITEMS
M.R. KRISHNA		30.04.15	
I.D. RAJU		30.04.15	
S. RAMAMURTHY		30.04.15	

DEPT. CODE	GRADE OF UN TOL. DIM C/M/F	SCALE	WEIGHT (kg)	BHEL PO REF. NO.	ITEM No.
		N.T.S.	378.180		

REV	DATE	ALTD.	APPD.	CARD CODE	DRAWING No.	REV
01				U 01	3-80-423-32149	00
TITLE				BW UNEQUAL TEE (ID300x50/ID185X32-SA234WPC)		

SIZE A3

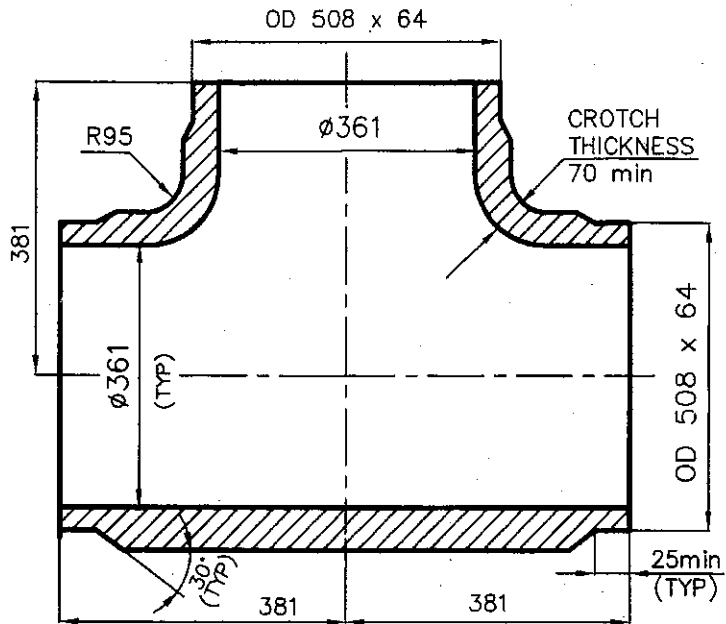
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CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV	DATE	ALTERED
		APPROVED

ALL DIMENSIONS ARE IN MILLIMETRES

RAW MATL SPECN: SA106Gr.C(A)
 FITTING SPECN : SA234WPC(A)
 FITTING SPECN : SA234WPC(A)
 FITTING MATERIAL CODE : 92 505 779 0000



NOTES:

- 1) ALL DIMENSIONS ARE FINISHED DIMENSIONS.
- 2) FOR TOLERANCES REFER STD. DRG. NO. 4-80-301-26192.
- 3) MANUFACTURING, INSPECTION AND TESTING SHALL BE AS PER IBR, ASME B16.9 & SA234.
- 4) MINIMUM THICKNESS FOR MAIN & BRANCH SHALL NOT BE LESS 56 mm
- 5) BORE TO $\phi 361$ AFTER FORMING, ON RUN AND BRANCH ENDS.
- 6) EDGE PREPARATION SHALL BE AS PER DRG. No. 3-80-300-19825
 STY. P d1=392.00
- 7) HIGHER THICKNESS RAW MATERIAL PIPE CAN ALSO BE USED IN VIEW OF NOTE 5.
- 8) TEE SHALL BE MACHINED ON THEIR OUTSIDE DIAMETER BOTH RUN OF BRANCH ENDS FOR A MINIMUM LENGTH OF 25mm AS SHOWN IN THE DRG

PIPE OD 812.8 x 75 NOM L=1200	15 983 567 1200	A	1635.000
	SA 106 GRC		
RAW MATL SIZE	MATL CODE	A	UNIT WT
	MATL SPECN.	C	QTY

STANDARD

		BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE MADRAS 600 017		NAME DRN K.R.BALA CHD T.N.ELANGOVMAN APPD T.N.ELANGOVMAN	SIGN 	DATE 21.07.06 21.07.06 21.07.06
DEPT	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG)	REF. TO ASSY./OLD DRG.		
CODE	C / M / F		1635.000			
TITLE		EQUAL TEE OD 508 x 64		CARD CODE U 01	DRAWING NO. 4-80-423-62608	REV 00

TEE342

Size A4

Eng. Bl. no. 149

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

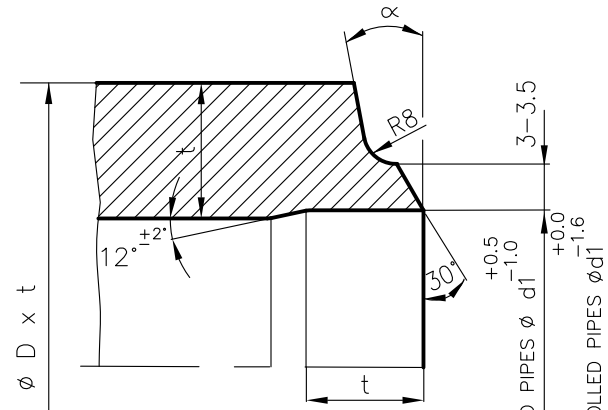


FIGURE - X

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)

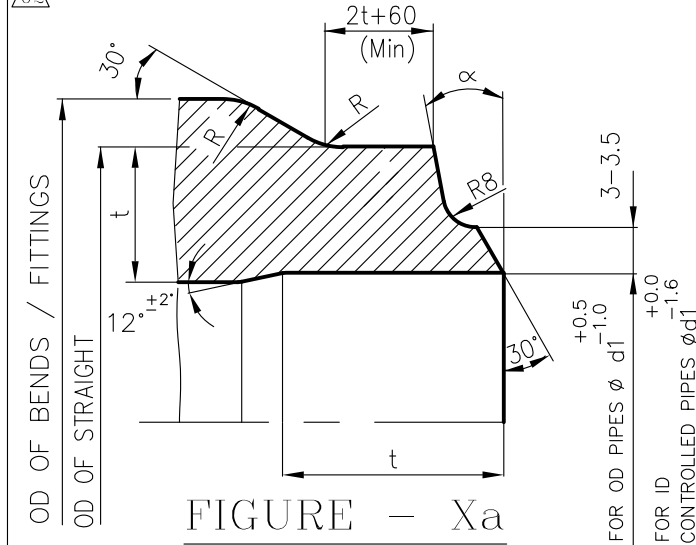
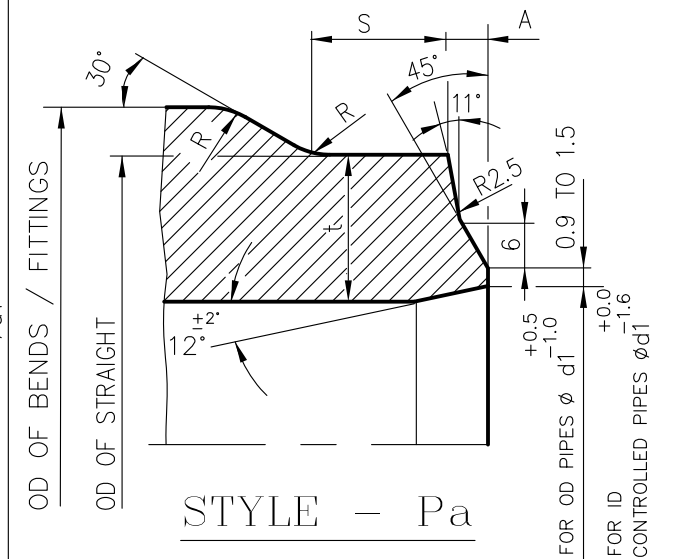


FIGURE - Xa

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)

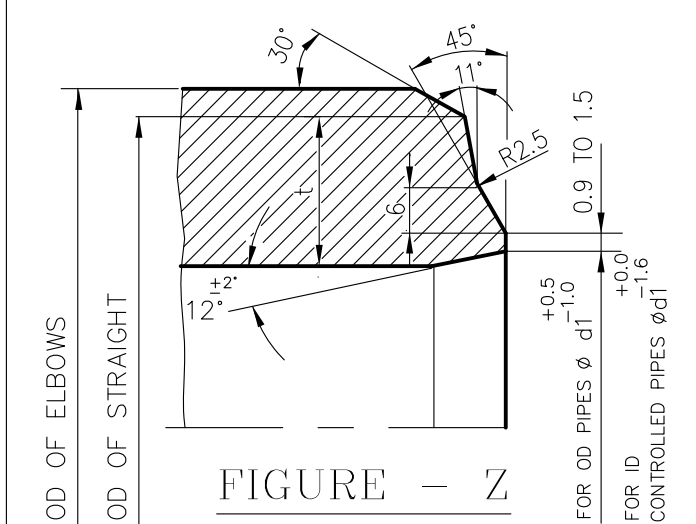


FIGURE - Z

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.

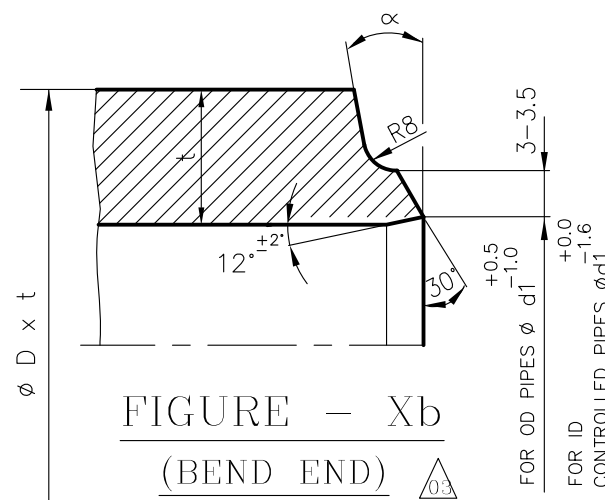


FIGURE - Xb
(BEND END)

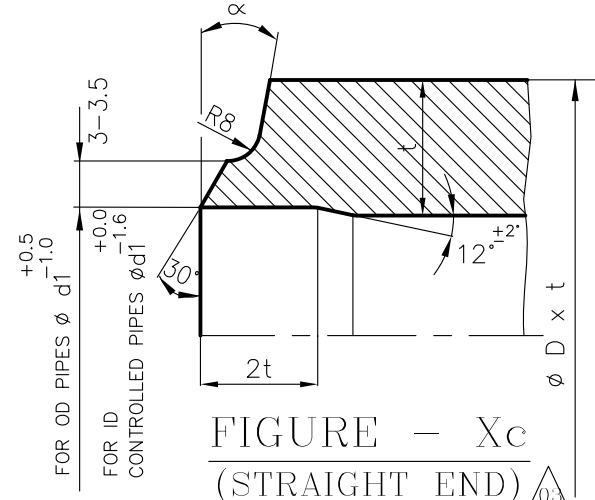
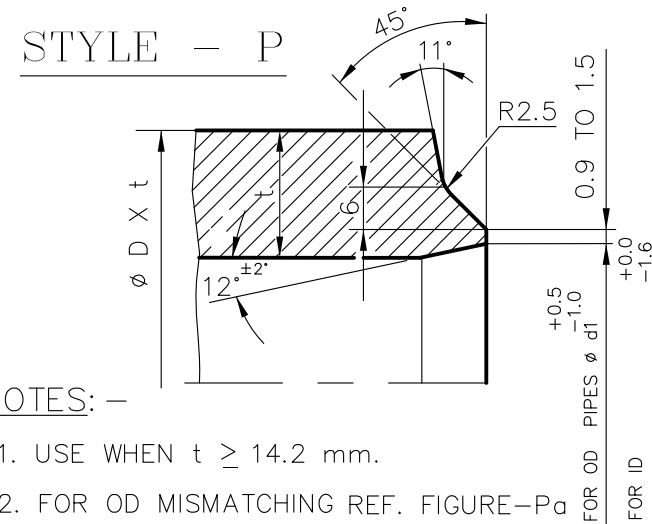


FIGURE - Xc
(STRAIGHT END)

STYLE - P

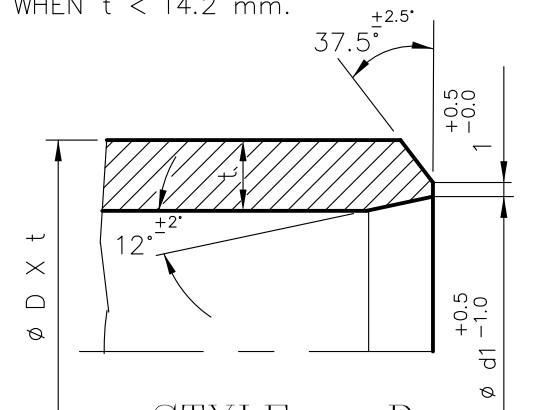


NOTES: -

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:

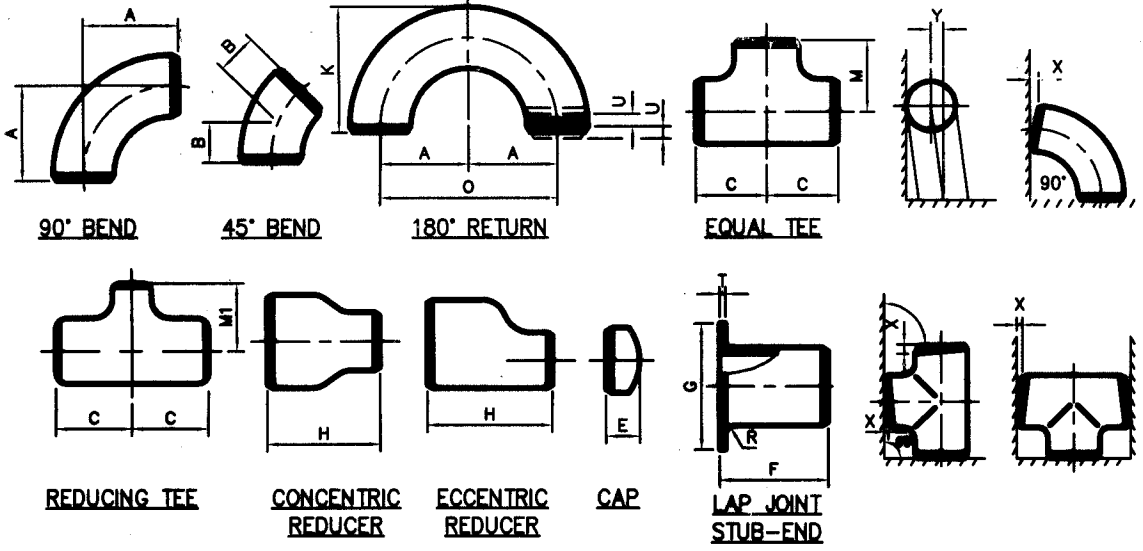
01. WELD REINFORCEMENT TO BE FLUSH GROUND AND MERGED WITH PARENT METAL WITHOUT ANY UNEVENNESS.

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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REV	DATE	ALTERED
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	