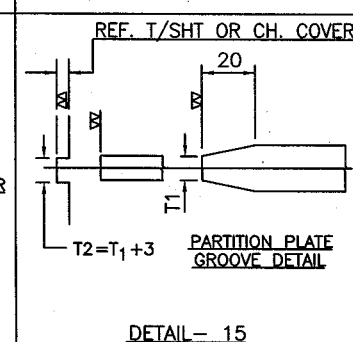
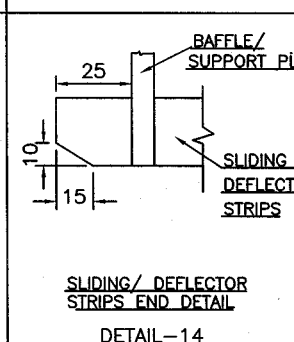
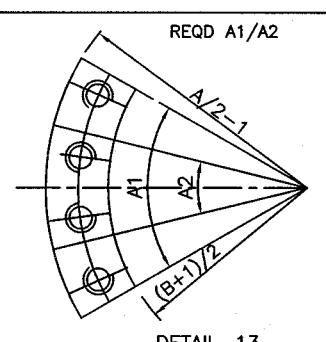
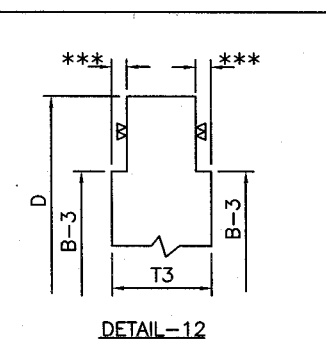
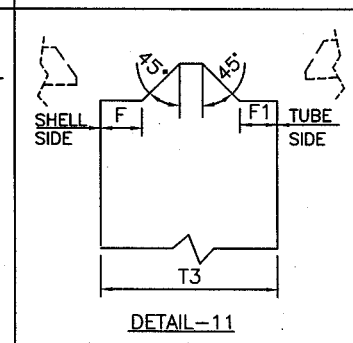
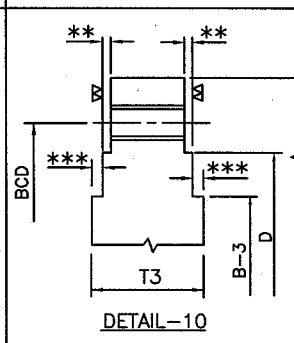
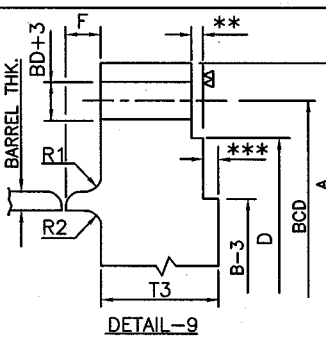
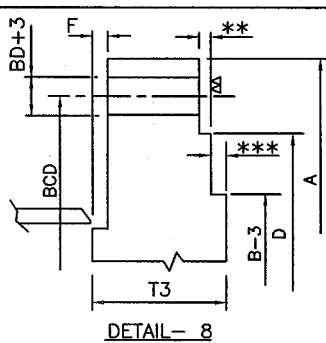
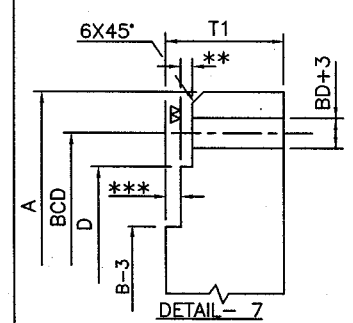
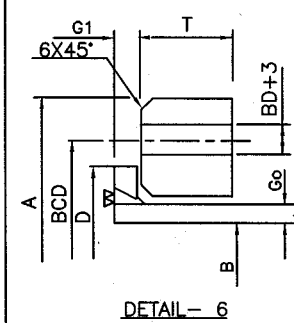
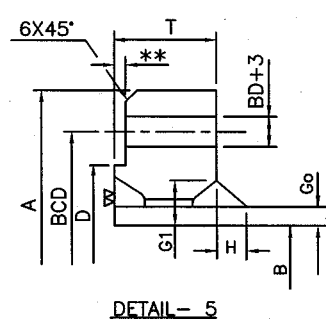
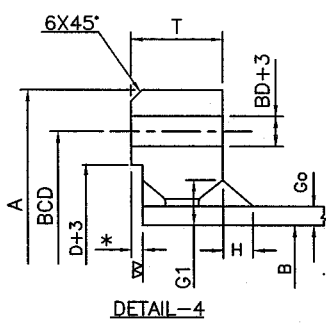
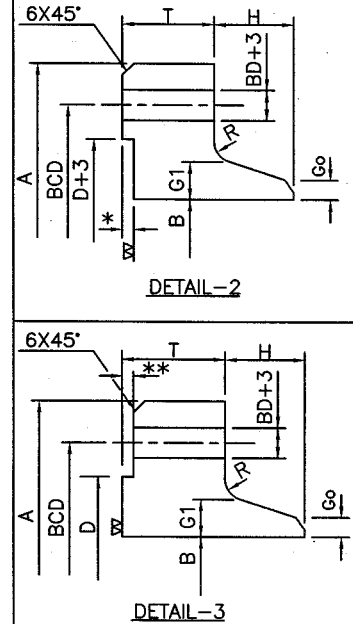
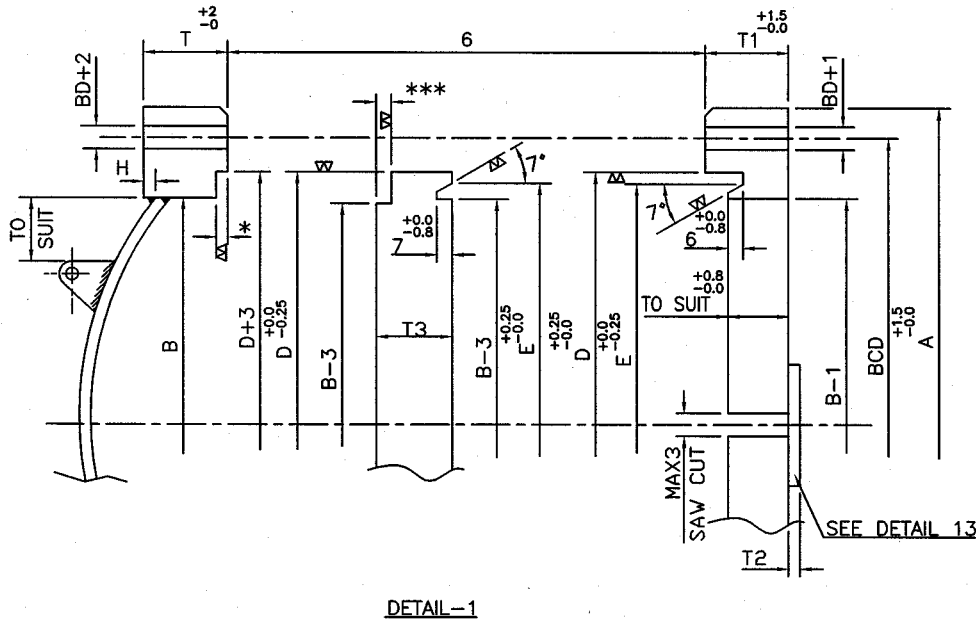
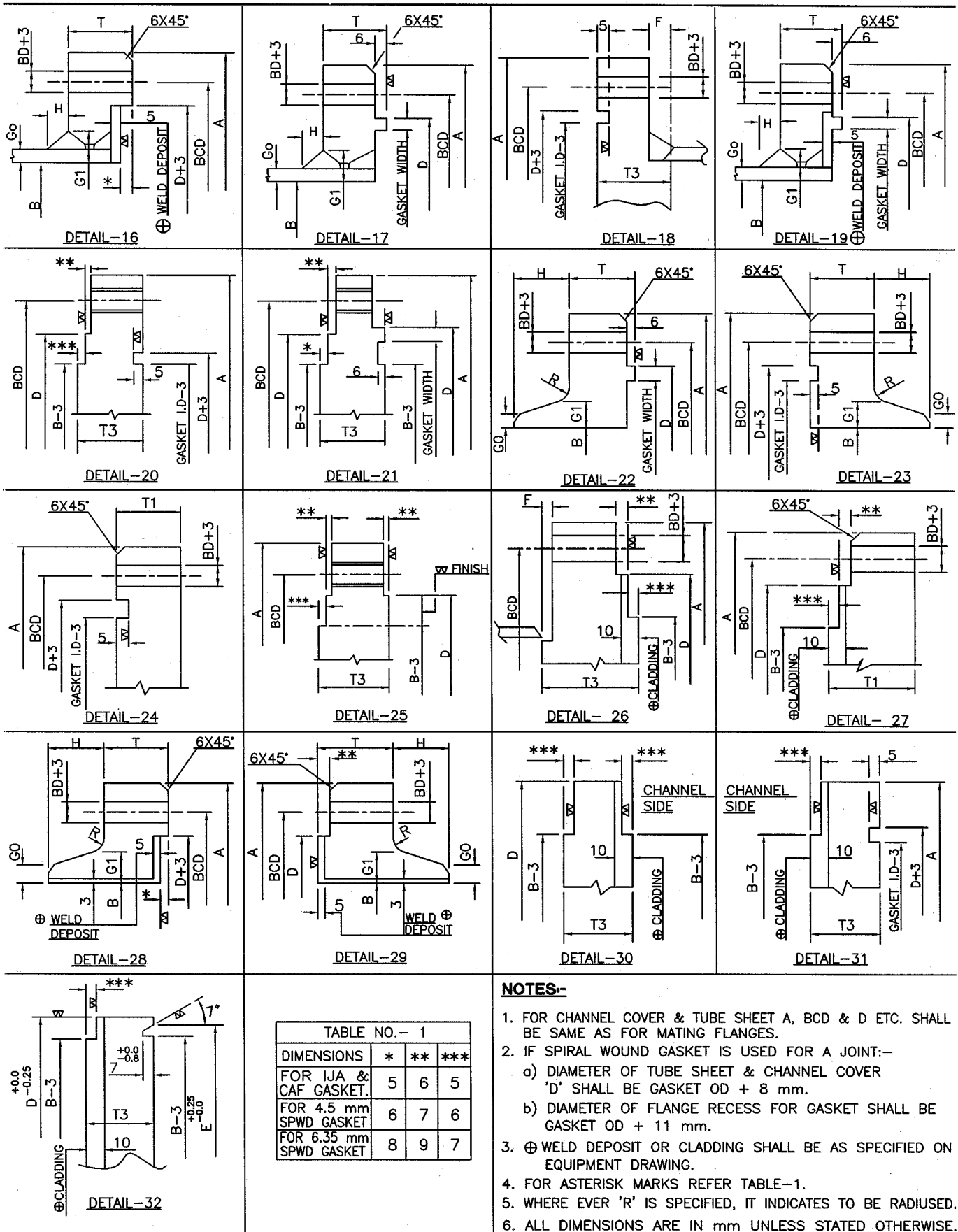
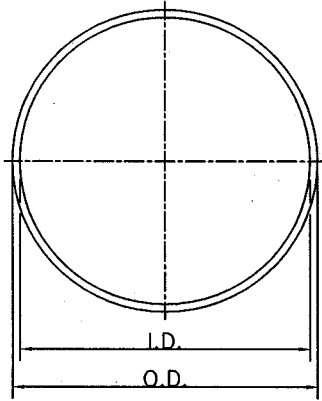




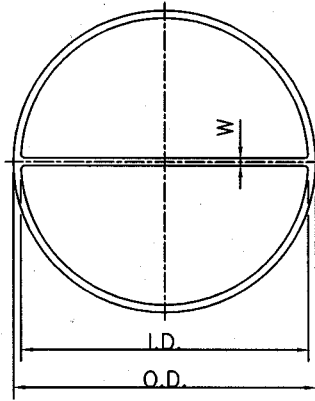
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	H JV/PK	SSA	
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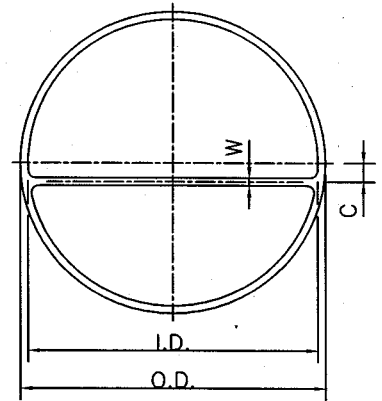
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
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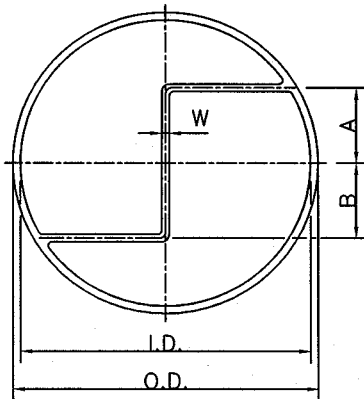
TYPE-1



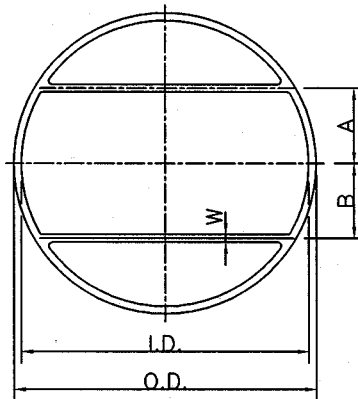
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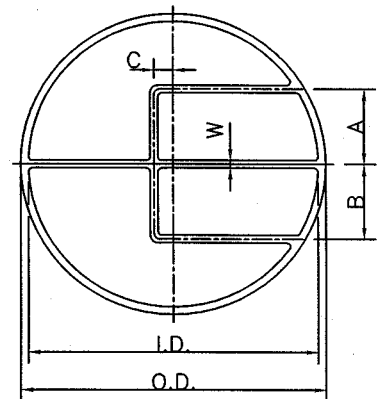
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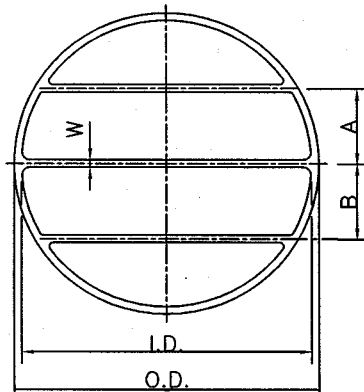
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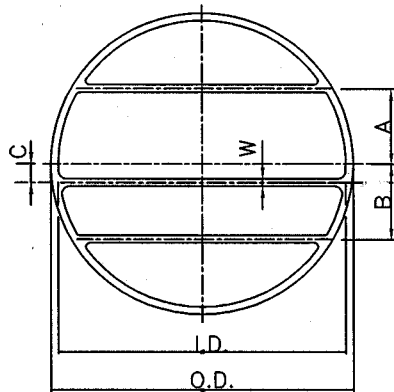
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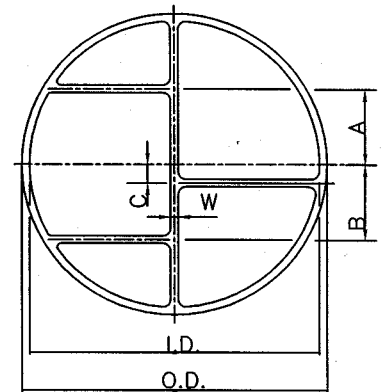
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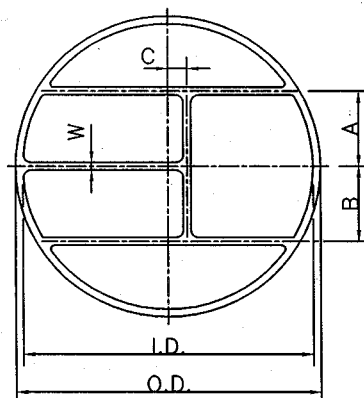
TYPE-7



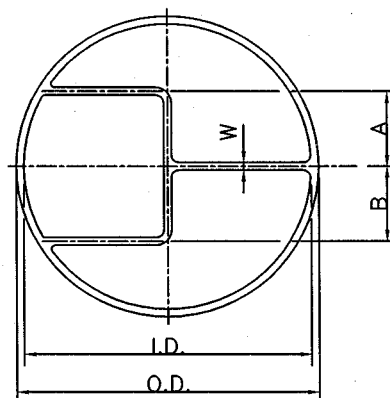
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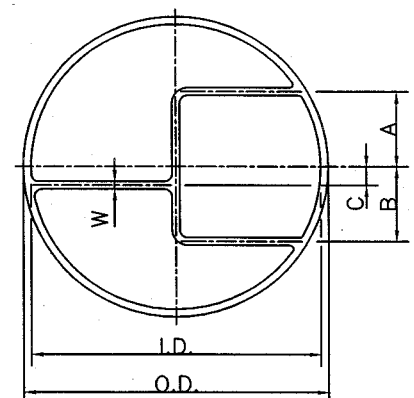
TYPE-9



TYPE-10

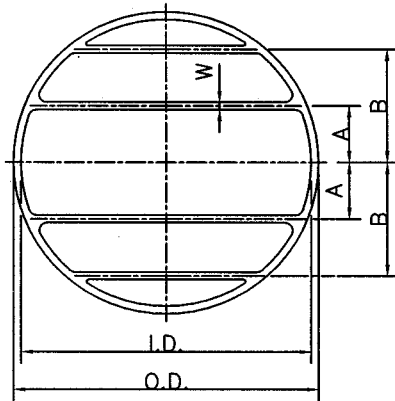


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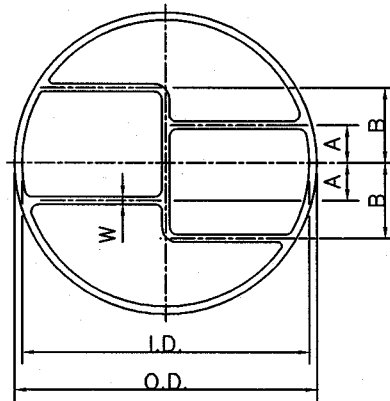


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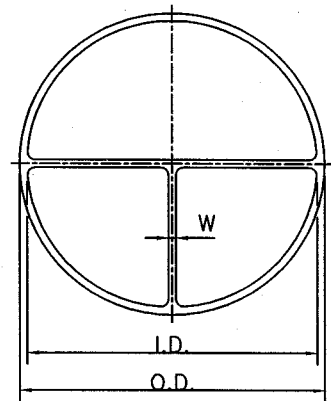
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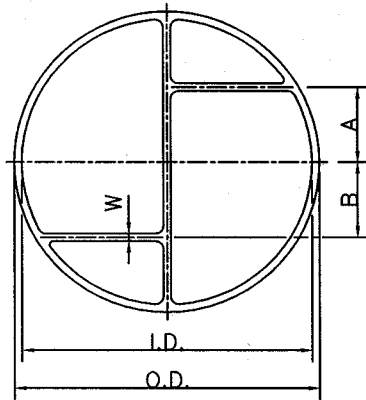
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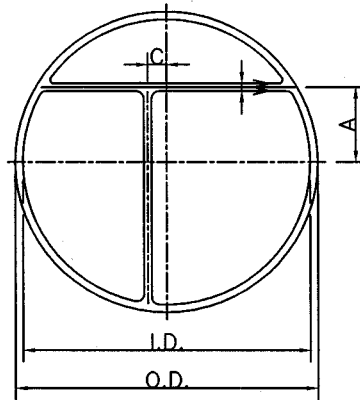
TYPE-14



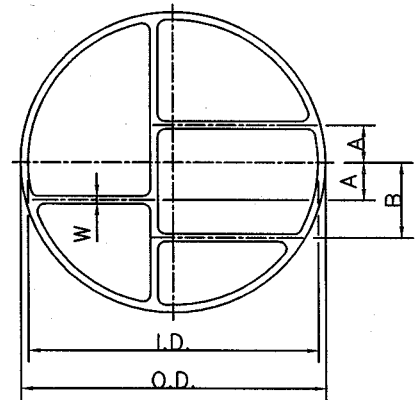
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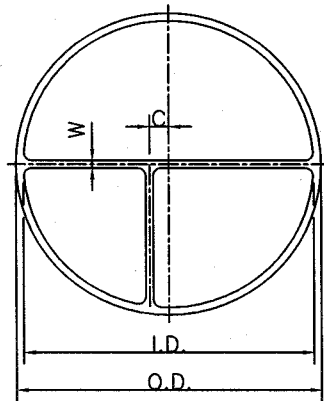
TYPE-16



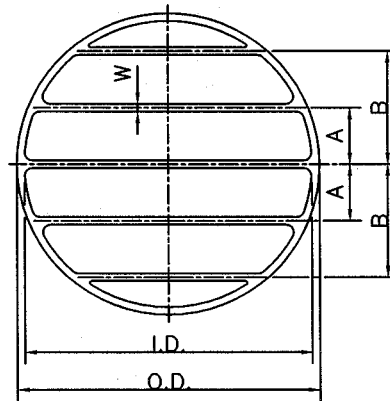
TYPE-17



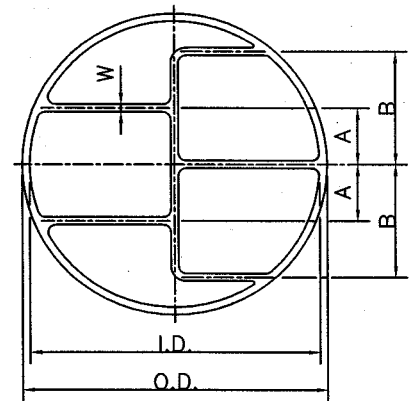
TYPE-18



TYPE-19



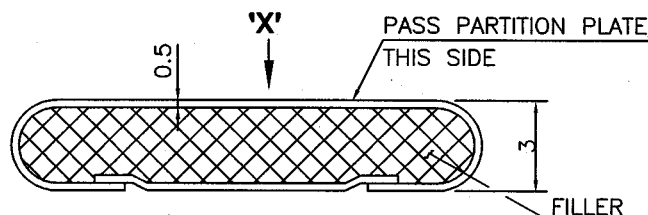
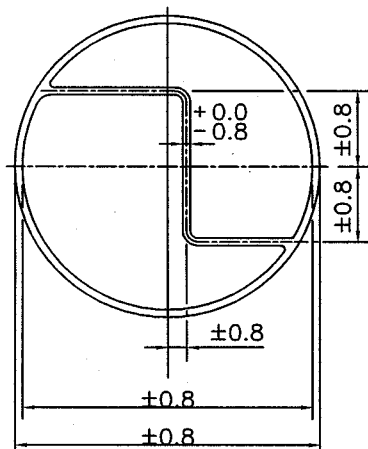
TYPE-20



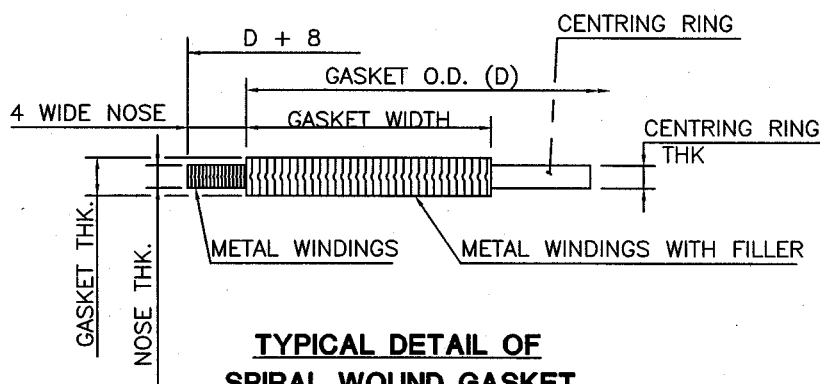
TYPE-21

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PERMISSIBLE TOLERANCES



**TYPICAL SECTION OF METAL
JACKETED GASKETS**



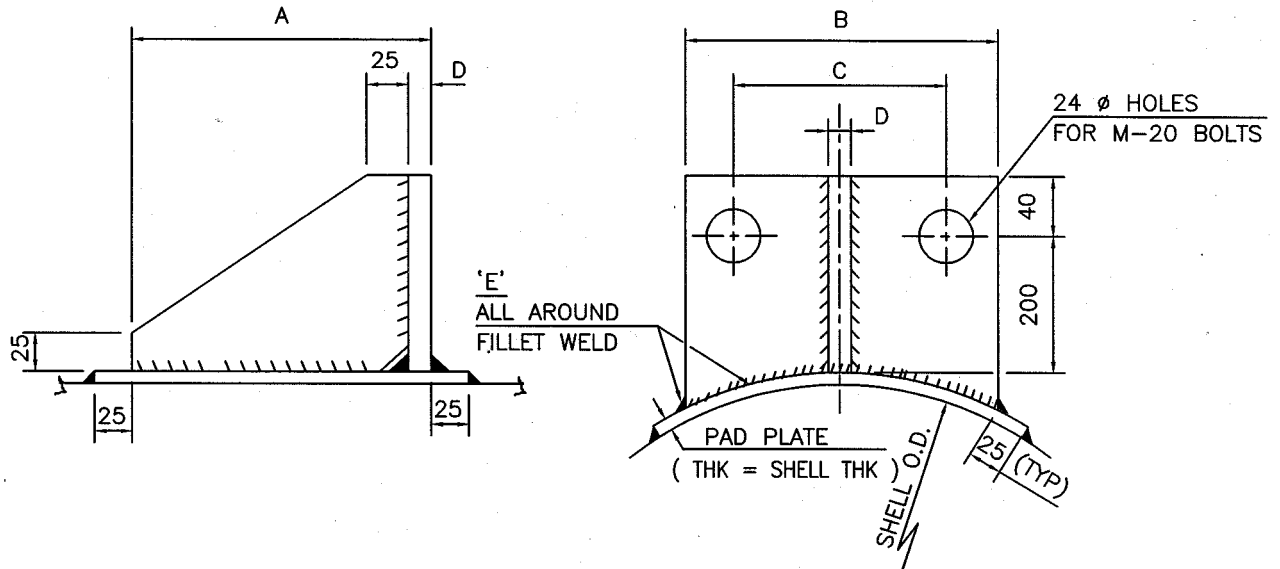
**TYPICAL DETAIL OF
SPIRAL WOUND GASKET**

GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. THE HARDNESS OF THE METAL FOR SOLID OR CLAD GASKETS SHALL BE MINIMUM 15 BHN LOWER THAN THAT OF THE MATERIAL OF THE FLANGE GASKET SEATING SURFACE AND IN ANY CASE NOT TO EXCEED THE FOLLOWING.

(a) LOW CARBON STEEL / LAS	- 110 BHN
(b) 5 Cr. 1/2 Mo.	- 130 BHN
(c) STAINLESS STEEL	- 160 BHN
(d) 11 - 13 Cr.	- 170 BHN
(e) MONEL	- 130 BHN
(f) SOFT IRON	- 90 BHN
(g) COPPER, BRASS	- 50 BHN
(h) ALUMINIUM	- 30 BHN
3. FILLER IN METAL JACKETED GASKETS SHALL NOT BE OF COMPRESSED TYPE.
4. ALL GASKETS SHALL BE MADE IN ONE CONTINUOUS PIECE ALL AROUND INCLUDING THE PASS PARTITION RIBS AND THEREFORE MUST BE CUT FROM ONE SHEET.
5. THE CORNER RADII OF ALL GASKETS TO BE 10 mm.
6. SOLID FLAT METAL GASKET SHALL BE 2 mm. THK.
7. FOR SPIRAL WOUND GASKETS:-
 - a) THE PASS PARTITION RIB SHALL BE OF SOLID METAL OR METAL JACKETED WELDED TO CENTRING RING.
 - b) CENTRING RING THK. SHALL BE SAME AS NOSE THK.
 - c) GASKET THK. SHALL BE AS SPECIFIED IN EQUIPMENT DRAWINGS. IT SHALL BE MIN. 4.5 FOR SHALL DIA UP TO 1000 & MIN. 6.35 FOR SHALL DIA MORE THEN 1000, IF NOT SPECIFIED.
8. 'm' AND 'y' VALUES SHALL BE AS PER ASME SEC. VIII DIV. I.
9. GASKET PLAN IS VIEWED FROM DIRECTION 'X'.
10. FILLER SHALL BE ARAMIDE FIBRE UNLESS SPECIFIED OTHERWISE IN DRAWINGS & ASBESTOS NOT TO BE USED.

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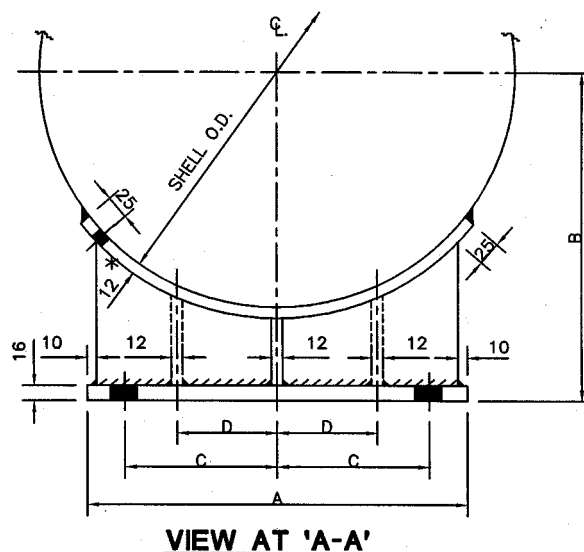
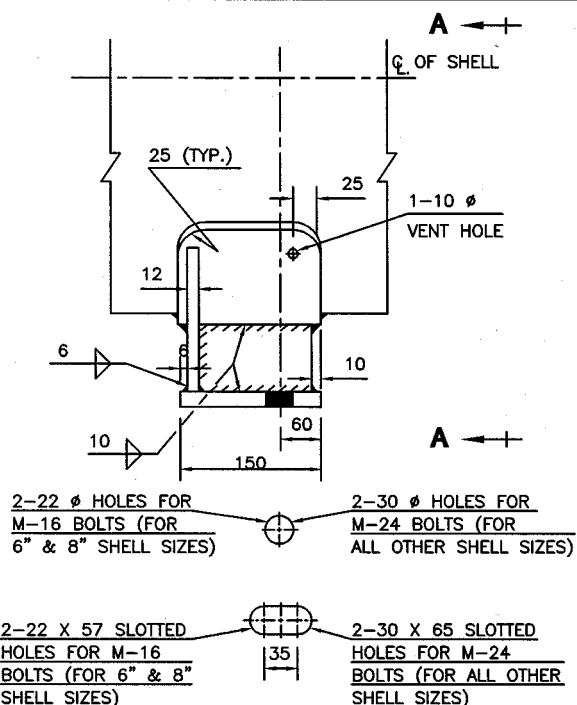


UNIT SIZE O.D.	A	B	C	D	E	NO. REQD.
219.1	230	130	90	14	10	2
273 TO 323.8		150				
355.6 TO 406.4				16		
457.2	250				12	
500 TO 550		180	100			
600				20		
650 TO 700	280					
750 TO 800		200	130		16	
850 TO 900	310			22		
950					20	
1000						4
1050		230	150			
1100 TO 1250				26		

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. ALL CORNERS OF PAD PLATE SHALL BE SUITABLY RADIUS.
3. PROVIDE 1-6 Ø VENT HOLE IN PAD.

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SADDLE NO.	UNIT SIZE O.D. mm.	A	B	C	D	NO. OF RIBS	TOTAL WT. OF 2 SADDLES (kg.)	REMARKS
1	168.3	160	200	50	—	1	17	
2	219.1	160	230	50	—	1	18	
3	273	220	260	70	—	1	21	
4	323.8	230	270	75	—	1	22	
5	355.6	260	280	90	—	1	26	
6	406.4	300	310	110	—	1	30	
7	457.2	350	330	135	80	2	36	
8	500	400	350	160	105	3	44	
9	550	400	380	160	105	3	44	
10	600	430	400	175	120	3	46	
11	650	460	430	190	135	3	50	
12	700	510	450	215	160	3	56	
13	750	530	480	225	165	3	60	
14	800	590	500	240	180	3	82	
15	850	610	530	255	195	3	84	
16	900	660	550	280	220	3	92	
17	950	690	580	295	235	3	98	

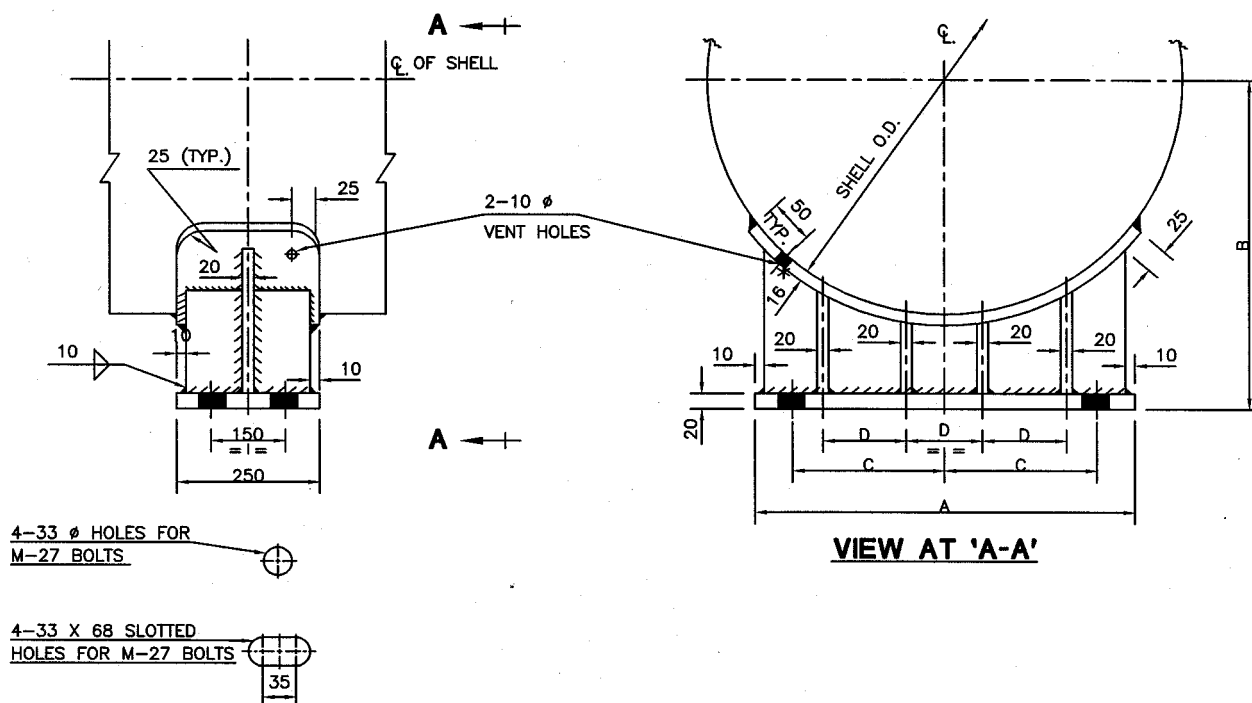
NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

2. INTERMEDIATE SADDLES TO BE TAKEN TO THE NEAREST SIZE.

* 3. FOR S.S. 10 mm THK. FOR SADDLE NOS. 1 TO 17 & 14 mm THK. FOR SADDLE NOS. 18 TO 37.

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SADDLE NO.	UNIT SIZE O.D. mm.	A	B	C	D	NO. OF RIBS	TOTAL WT. OF TWO SADDLES (kg)	REMARKS
18	1000	900	650	370	180	8	258	
19	1050	950	675	390	200		278	
20	1100	1000	700	420	220		290	
21	1150	1050	725	440	230		302	
22	1200	1100	750	470	250		320	
23	1250	1150	775	490	270		336	
24	1300	1200	800	520	280		348	
25	1350	1200	825	520	280		356	
26	1400	1250	850	540	300		368	
27	1450	1300	875	570	320		380	
28	1500	1350	900	590	340		398	
29	1600	1400	950	620	350		406	
30	1700	1500	1000	670	380		440	
31	1800	1600	1050	720	420		472	
32	1900	1700	1100	770	450		516	
33	2000	1800	1150	820	480		546	
34	2100	1850	1200	840	500		568	
35	2200	1950	1250	890	530		602	
36	2300	2000	1300	920	550		606	
37	2400	2100	1350	970	580		640	

25 R 6 (TYP.) 10 60 150 1-10 Ø VENT HOLE 2-10 Ø VENT HOLES IN WRAPPER PLATE 6 (TYP.)	30° SHELL O.D. 30° 25 (TYP.) 15 (TYP.) 12 12 (TYP.) 16 (TYP.) D C A B 15 (TYP.) 12 12 (TYP.) 16 (TYP.) * 10 FOR S.S.	TYPE-I
25 R 12 10 (TYP.) 150 250 2-10 Ø VENT HOLES 2-10 Ø VENT HOLES IN WRAPPER PLATE 10 (TYP.) 12 (TYP.)	30° SHELL O.D. 30° 25 (TYP.) 16 12 12 (TYP.) 16 D C A B 15 (TYP.) 12 (TYP.) 20 (TYP.) * 14 FOR S.S.	TYPE-III
2-30 Ø HOLES FOR M-24 BOLTS 2-30 X 65 SLOTTED HOLES FOR M-24 BOLTS 35 FOR TYPE I AND II SADDLES	4-33 Ø HOLES FOR M-27 BOLTS 4-33 X 68 SLOTTED HOLES FOR M-27 BOLTS 35 FOR TYPE III AND IV SADDLES	TYPE-II
** REFER SETTING PLAN.		

** REFER SETTING PLAN.

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SL. NO.	UNIT SIZE O.D. mm.	A	B	C	D	NO. OF RIBS	
						TYPE-I	TYPE-II
1	219.1	400	230	130	—	1	3
2	273	460	260	160	—	1	3
3	323.8	510	270	190	—	1	3
4	355.6	540	280	200	—	1	3
5	406.4	590	310	220	—	1	3
6	457.2	640	330	250	80	2	4
7	500	680	350	270	103	3	5
8	550	730	380	290	105	3	5
9	600	780	400	320	120	3	5
10	650	830	430	340	135	3	5
11	700	880	450	370	160	3	5
12	750	930	480	390	165	3	5
13	800	980	500	410	180	3	5
14	850	1030	530	430	195	3	5
15	900	1080	550	460	220	3	5
16	950	1130	580	480	235	3	5

TYPE-III / IV

SL. NO.	UNIT SIZE O.D. mm.	A	B	C	D	NO. OF RIBS	
						TYPE-I	TYPE-II
17	1000	1190	650	510	180	AS SHOWN	
18	1050	1240	675	530	200		
19	1100	1290	700	560	220		
20	1150	1340	725	580	230		
21	1200	1390	750	610	250		
22	1250	1440	775	630	270		
23	1300	1490	800	660	280		
24	1350	1540	825	680	280		
25	1400	1590	850	710	300		
26	1450	1640	875	730	320		
27	1500	1690	900	760	340		
28	1600	1790	950	810	350		
29	1700	1890	1000	860	380		
30	1800	1990	1050	910	420		
31	1900	2090	1100	960	450		
32	2000	2190	1150	1010	480		
33	2100	2290	1200	1060	500		
34	2200	2390	1250	1110	530		
35	2300	2490	1300	1160	550		
36	2400	2590	1350	1210	580		

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

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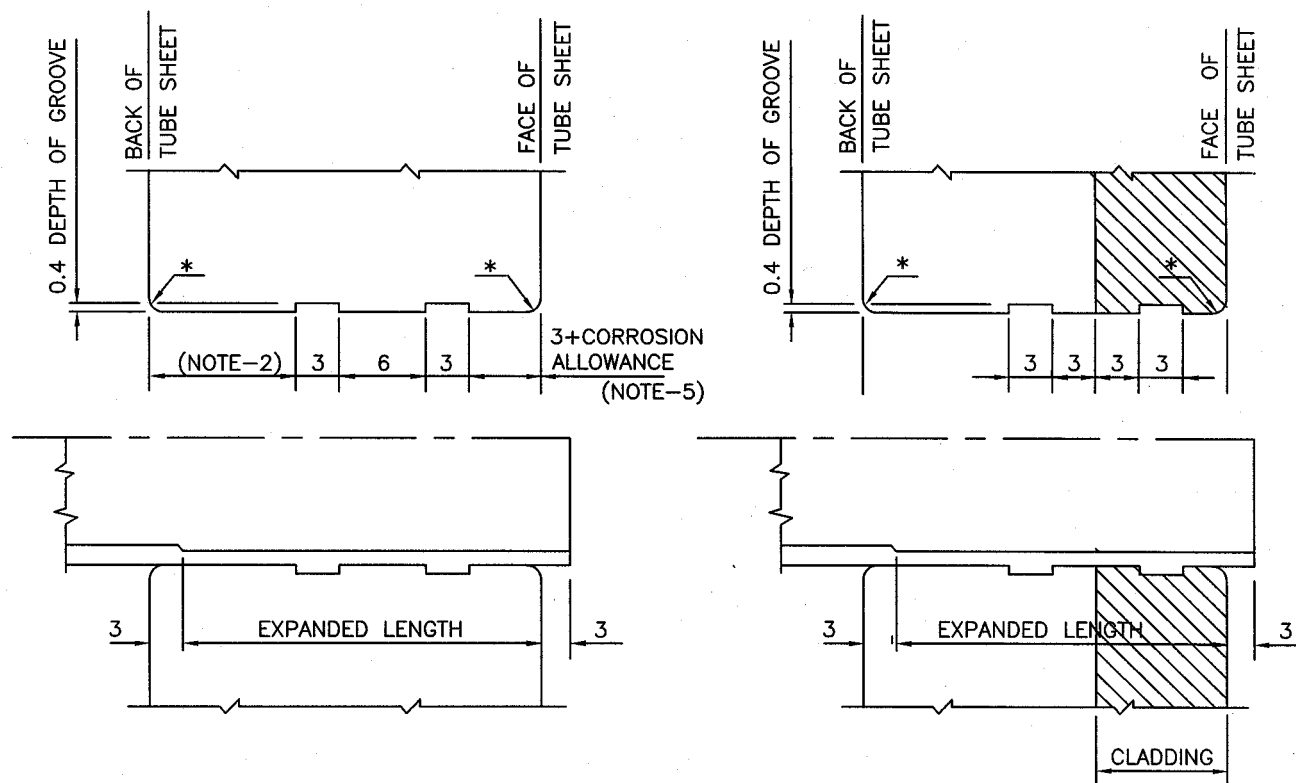


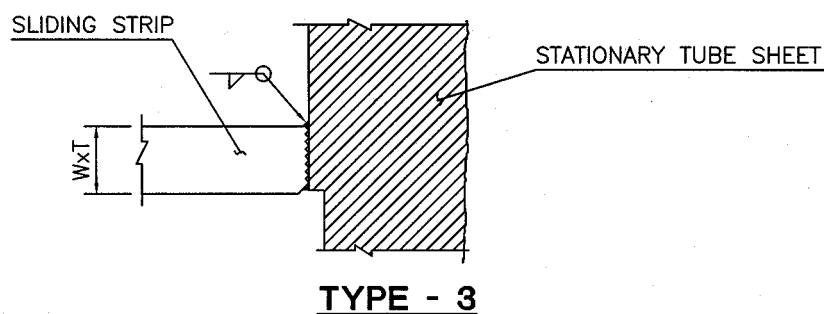
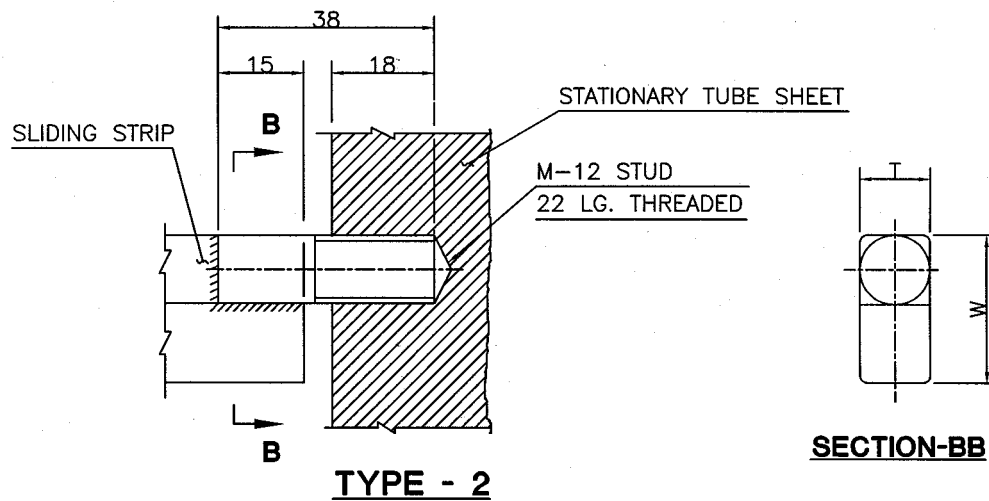
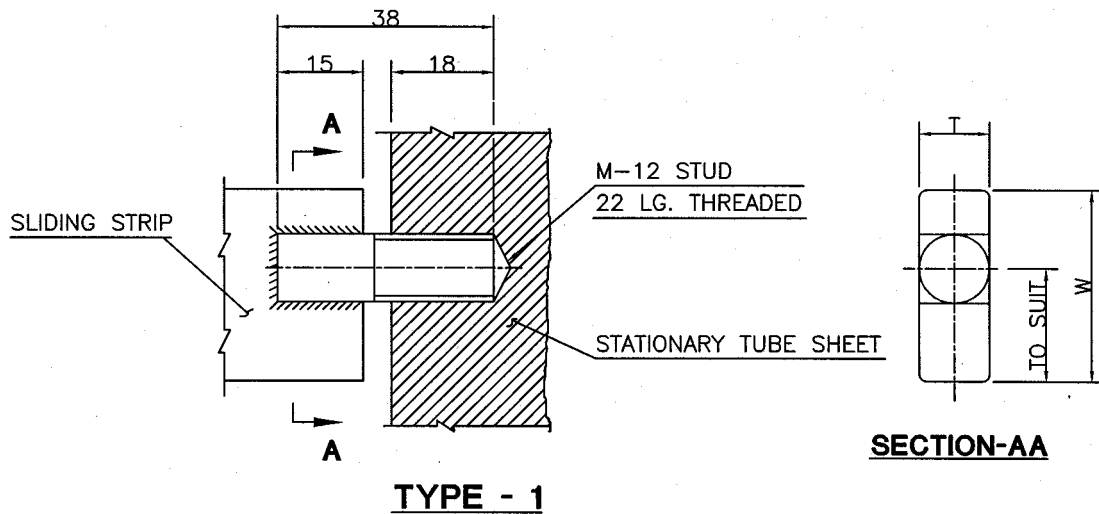
FIG.-1

FIG.-2

NOTES :-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. FOR TUBESHEET THICKNESS WHERE THE GAP BETWEEN 2ND GROOVE & BACK OF TUBE SHEET IS LOWER THAN 6 mm DELETE 2ND GROOVE.
3. FOLLOW SPECIAL CLOSE FIT AS PER TEMA / API 661 UNLESS SPECIFIED OTHERWISE.
4. FOR CORROSION ALLOWANCE LESS THAN 4 mm., INCREASE THIS DIMENSION TO TUBE SHEET THICKNESS MINUS 18 mm. BUT NOT TO EXCEED 7 mm.
- * 5. CHAMFER (1X45°) OR RADIUS (R=1).

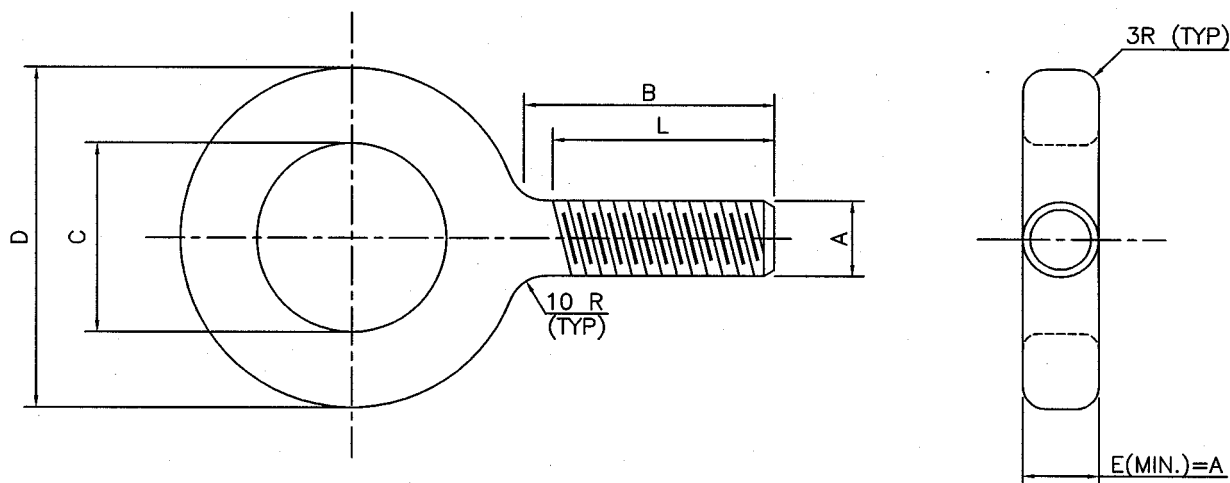
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	HJV/PK	SSA	m/10/4 12-001
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NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. USE TYPE-1 WHEN SLIDING STRIP & TUBE SHEET MATERIAL IS DIFFERENT & $W \geq 25$
3. USE TYPE-2 WHEN SLIDING STRIP & TUBE SHEET MATERIAL IS DIFFERENT & $W < 25$
4. USE TYPE-3 WHEN SLIDING STRIP & TUBE SHEET MATERIAL IS SAME
5. FOR DIMENSIONS 'T' AND 'W' REFER GUIDE LINES FOR TUBE LAYOUT.
6. FOR DEFLECTOR STRIPS UNLESS SPECIFIED OTHERWISE USE DETAILS AS ABOVE.

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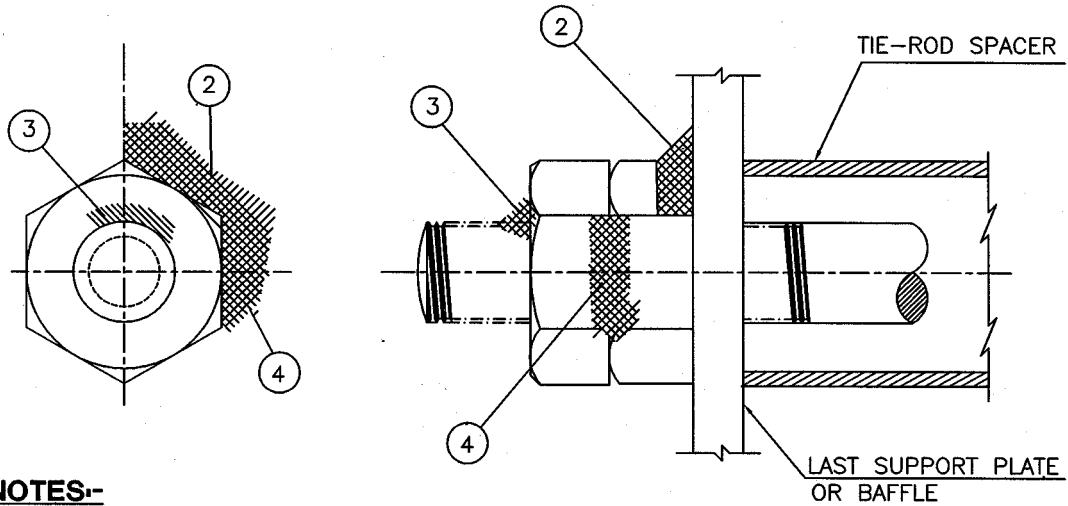
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M10	20	32	26	42	600
M12	24	38	30	52	1000
M16	32	45	35	64	1800
M20	40	50	38	72	2700
M22	44	58	44	84	3000
M24	48	64	46	92	3300
M27	54	70	50	102	4200
M33	66	76	56	114	6800
M39	78	90	64	132	8100
M45	90	96	74	154	9900
M48	96	102	84	162	11400
M56	112	127	102	168	14200

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. EYE BOLT SHALL BE MADE OF FORGING.
3. MATERIAL OF CONSTRUCTION CARBON STEEL HAVING U.T.S OF 42 kg/mm² MIN.
4. UPTO M22 COARSE THREAD SERIES, M24 & ABOVE SHALL HAVE 3 mm PITCH.

2	26.03.04 REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	
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					Stds. Bureau Chairman
					Approved by

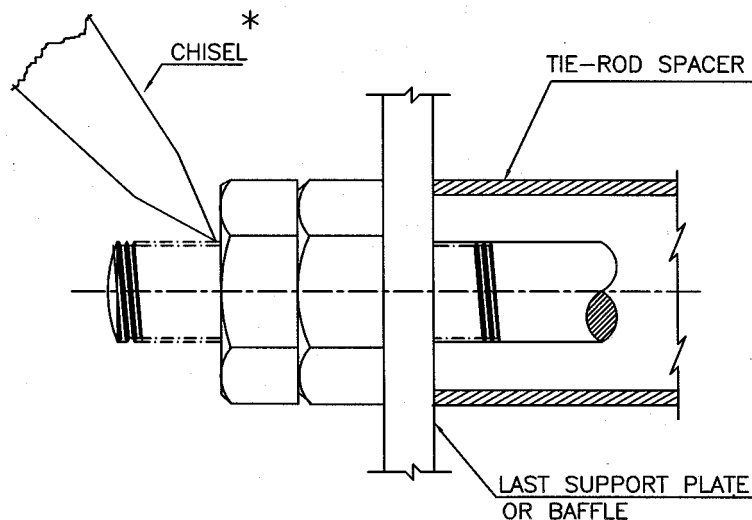
STEEL TIE-ROD



NOTES:-

1. ALL DIMENSIONS ARE IN mm. UNLESS STATED OTHERWISE.
2. WELD 1st NUT TO SUPPORT PLATE
3. WELD 2nd NUT TO TIE-ROD
4. WELD BOTH NUTS TOGETHER
5. ALL WELDS TO EXTEND THE LENGTH OF ONE FLAT OF NUT.

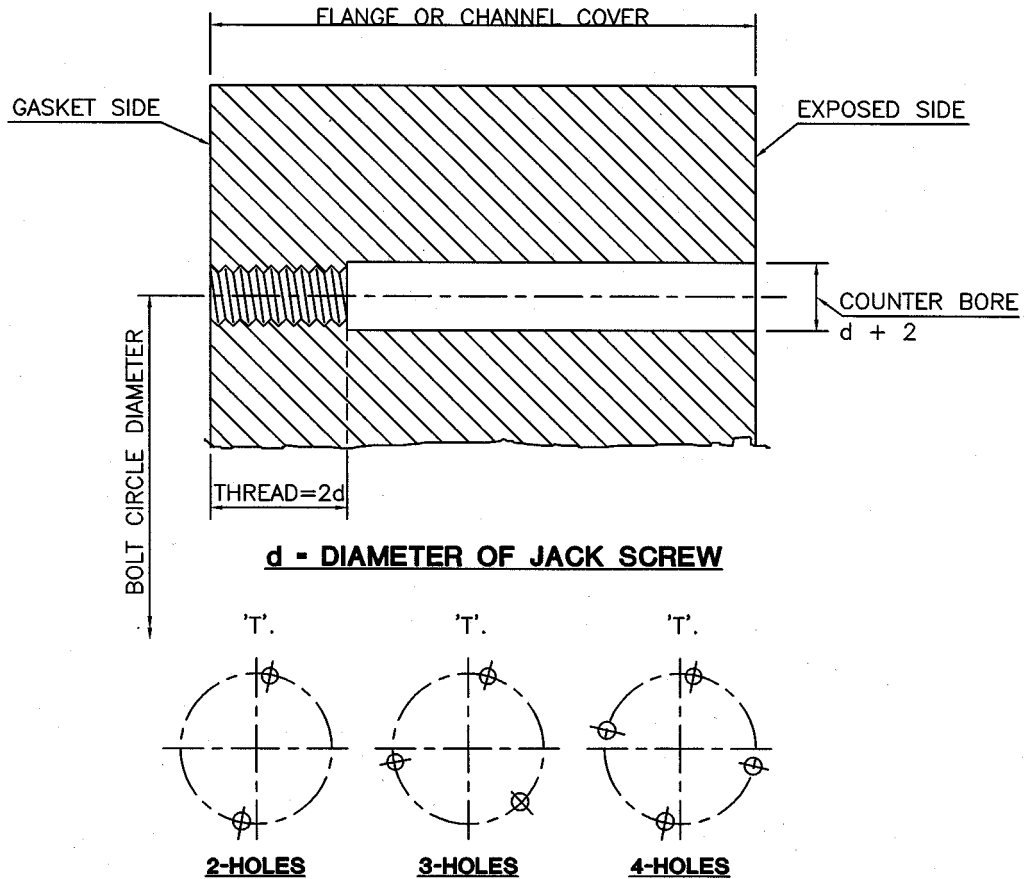
NON FERROUS TIE-ROD



NOTE:-

- * BREAK THREAD OF TIE-ROD IN TWO PLACES NEAR LAST NUT
WITH BLUNT CHISEL TO LOCK TIE-ROD NUTS IN PLACE.

2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	HJV/PK	SSA	m/low
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NO. REQD.	'd'	SHELL I.D.
2	14	UPTO & INCL. 300
3	16	301 TO & INCL. 580
4	20	581 & LARGER

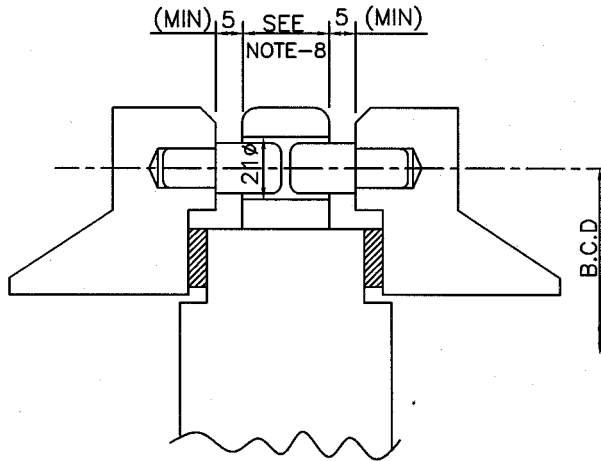
LOCATION OF JACK SCREW TAPPING HOLES

- HOLES ARE TO BE LOCATED ON THE BOLT CIRCLE DIAMETER OF FLANGE AND HALF WAY BETWEEN ADJACENT HOLES.
- FIRST HOLE SHALL BE LOCATED BETWEEN FIRST AND SECOND BOLT HOLE COUNTING CLOCKWISE FROM MARK 'T'.
- HOLES SHALL BE SPACED AS FOLLOWS
2-HOLES LAYOUT 180° APART
3-HOLES LAYOUT APPROX 120° APART
4-HOLES LAYOUT 90° APART.

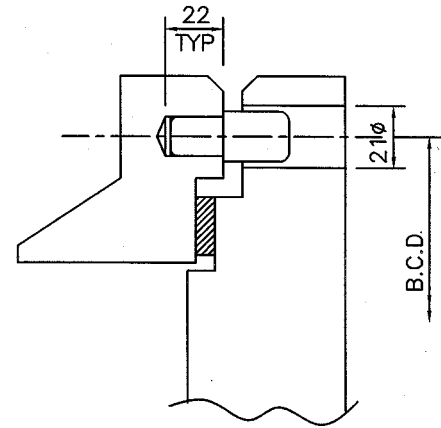
NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

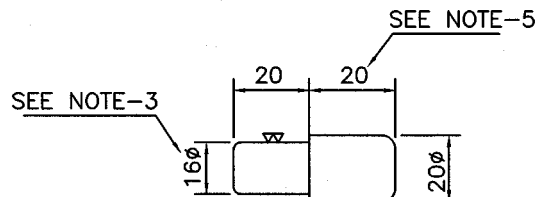
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	
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**FIXING DETAIL OF DOWEL PINS
(AT STATIONARY TUBE SHEET)**



**FIXING DETAIL OF DOWEL PINS
(AT CHANNEL COVER)**



NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. DOWEL PINS TO BE PROVIDED ONLY WHEN CHANNEL CONSISTS OF PASS-PARTITION PLATE/S.
3. DOWEL PIN SHALL BE OF CARBON STEEL UNLESS SPECIFIED OTHERWISE.
4. MIN. 2 DOWEL PINS SHALL BE PROVIDED FOR EACH FLANGE & SHALL NOT BE LOCATED AT 180° APART.
5. ALL SHARP EDGES OF DOWEL PINS SHALL BE ROUNDED OFF.
6. SMALL END OF DOWEL PIN SHALL BE HELD IN POSITION BY TIGHT FIT.
7. LUG TO BE WELDED TO TUBESHEET. HOWEVER LUG FOR DOWEL PIN MAY BE THREADED AND SCREWED IN TUBE SHEET TO AVOID PWHT IN SPECIFIC CASES. MATERIAL OF LUG SHALL BE COMPATIBLE WITH TUBE SHEET MATERIAL.
8. WHEN GAP BETWEEN SHELL & CHANNEL FLANGES IS 25 MM. OR LESS, DOWEL PINS SHALL BE PROVIDED IN CHANNEL FLANGE ONLY.
9. AT THE LARGER END OF DOWEL PIN THE LENGTH CAN BE REDUCED IN CASE OF A SMALLER GAP BETWEEN SHELL AND CHANNEL FLANGES.

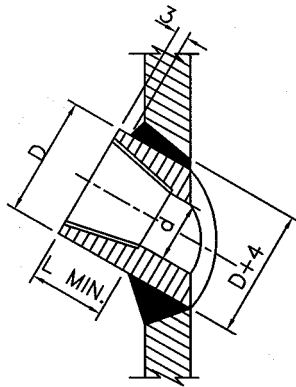
2 26.03.04 REAFFIRMED AND REISSUED AS STANDARD

D.PAL

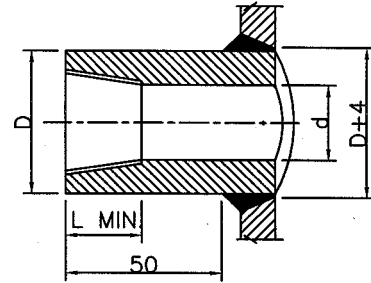
JV/PK

SSA

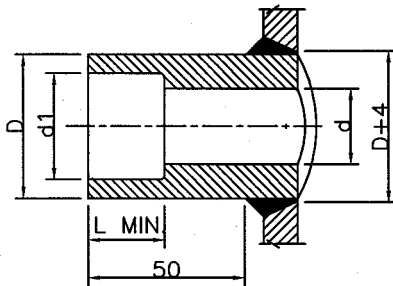
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					Approved by	



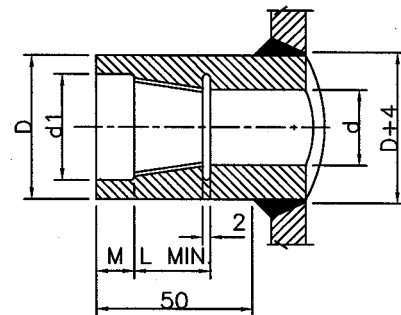
TYPE-1



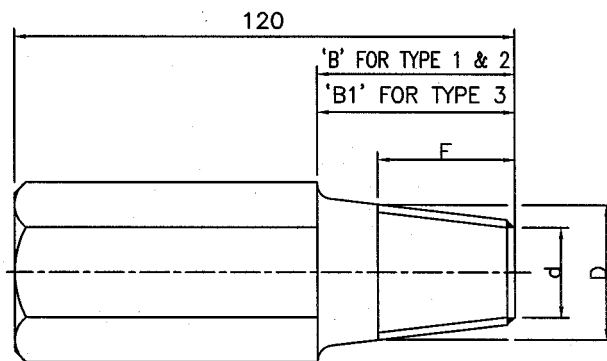
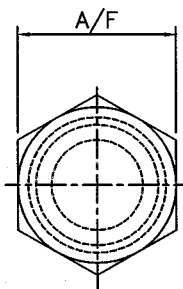
TYPE-2



TYPE-3



TYPE-4



PLUG DETAIL

2	26.03.04	REVISED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	
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COUPLINGS:-

NOM. DIA. (INCHES)	D (φ)		L	d (φ) (APP)	d1 (φ)	M
	3000 #	6000 #				
1/8"	19	22	12	7	—	—
1/4"	19	25	13	9	—	—
3/8"	22	32	15	12.5	—	—
1/2"	29	38	17	16.6	21.7	13
3/4"	35	45	18	21.8	27	15
1"	45	57	21	27.5	33.8	16
1 1/2"	64	76	23	42.1	48.6	19
2"	76	92	24	54.1	61.1	23

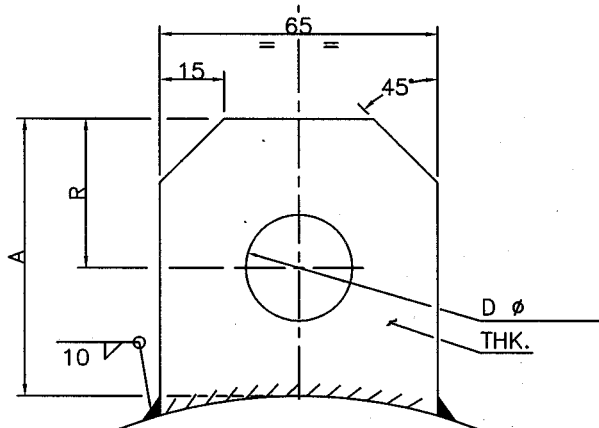
PLUGS:-

NOM. DIA. (INCHES)	A / F	B	D (φ)	F	B1	
1/8"	16	20	10.2	10	—	
1/4"	21	25	13.7	15	—	
3/8"	23	26	17.2	15.5	—	
1/2"	27	30	21.3	19.8	37	
3/4"	32	30	26.7	20.2	39	
1"	41	35	33.4	25	43	
1 1/2"	54	36	48.2	26.1	46	
2"	67	37	60.3	26.9	50	

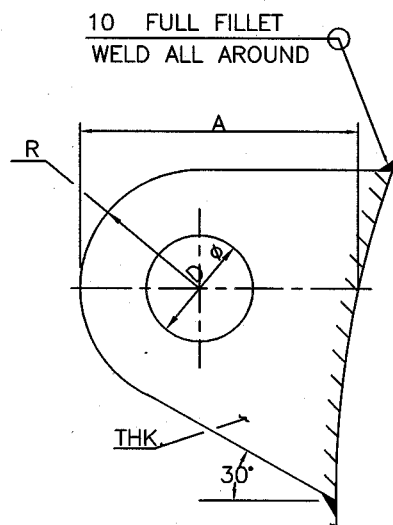
NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. ONLY THREADED COUPLINGS TO BE USED FOR SIZES BELOW 1/2"
3. TAPER ON THREADS 1:16 (MEASURE ON DIAMETER) AS PER ASME B 2.1

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**LIFTING LUG FOR SHELL COVER,
CHANNEL AND CHANNEL COVER**



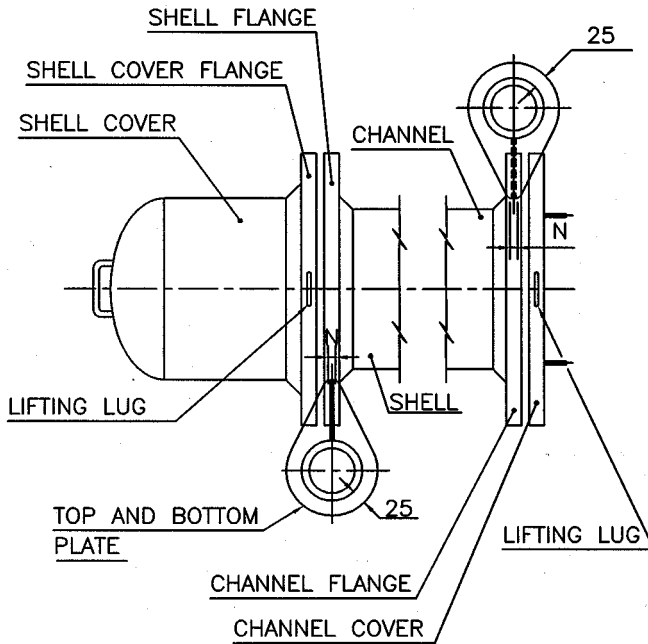
**LIFTING LUG FOR
FLOATING HEAD COVER**

SHELL I. D.	A	D	R	THK.
UPTO 450	65	25	28	12
451 – 1000	75	30	35	16
1001 – 1200	100	30	35	20
1201 & ABOVE	CUSTOM DESIGN			

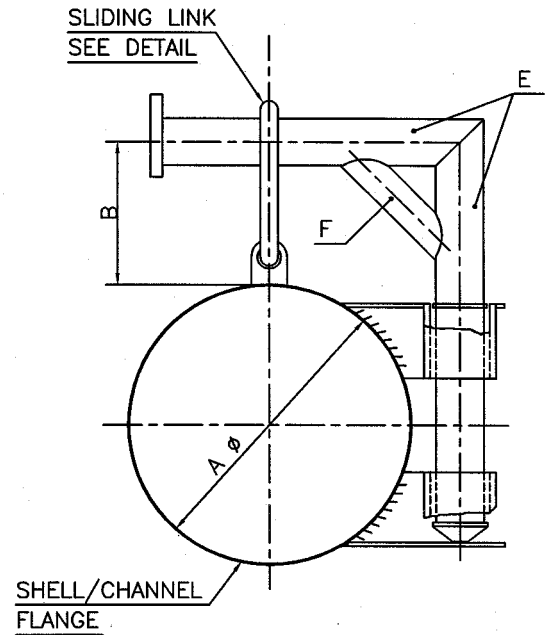
NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. MATERIAL SHALL BE COMPATIBLE WITH PART IT IS WELDED TO. (USE BOILER QUALITY FOR CARBON STEEL)
3. USE TWO LIFTING LUGS EACH FOR CHANNEL AND SHELL COVER AND ONE FOR CHANNEL COVER AND FLOATING HEAD COVER.

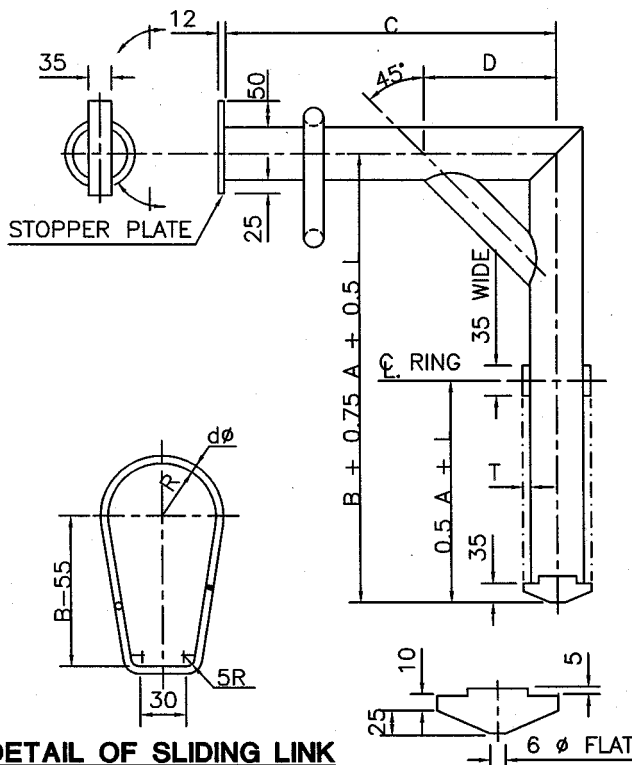
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	H JV/PK	SSA	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman



PLAN OF DAVIT SUPPORT

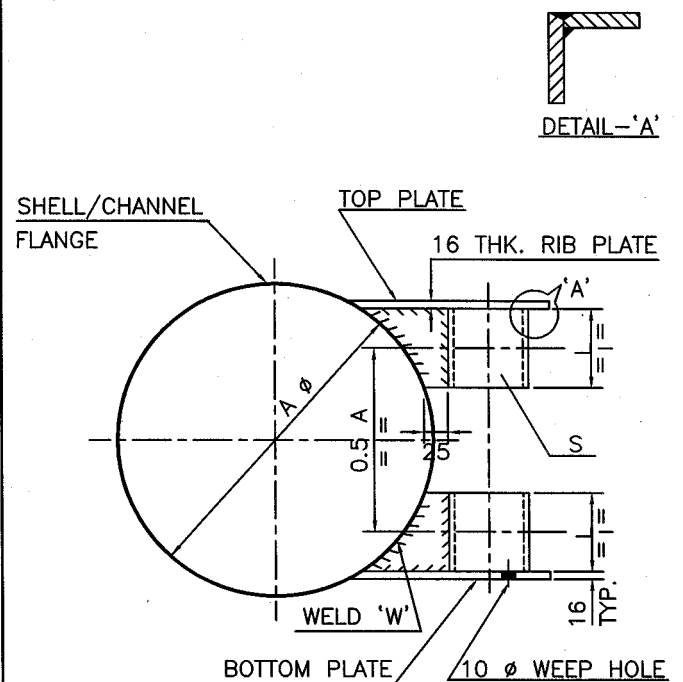


ASSEMBLY OF DAVIT ON EXCHANGER



DETAIL OF SLIDING LINK

DETAIL OF DAVIT



DETAIL OF DAVIT SUPPORT

2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JJV/PK	SSA	12.06.04
Rev. No.	Date	Purpose	Prepared by	Checked by	Std. Committee Convenor	Std. Bureau Chairman
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DAVIT FOR SHELL COVER TABLE-1

DAVIT	DIMENSION-A															
	UPTO	501 TO 600	601 TO 700	701 TO 800	801 TO 900	901 TO 1000	1001 TO 1100	1101 TO 1200	1201 TO 1300	1301 TO 1400	1401 TO 1500	1501 TO 1600	1601 TO 1700	1701 TO 1800	1801 TO 1900	1901 TO 2000
DIMN.	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
B	230	230	250	250	250	250	275	275	275	300	300	300	325	325	325	325
C	580	650	750	800	850	900	1000	1050	1100	1190	1240	1290	1360	1410	1460	1510
D	260	260	300	300	300	300	340	350	380	390	400	430	430	430	430	450
L	125	150	180	200	230	250	280	300	330	350	390	400	430	450	480	500
N	20	20	25	25	30	30	30	30	30	30	30	30	30	30	30	30
d	16	16	20	20	20	20	20	20	20	25	25	25	25	25	30	30

DAVIT FOR CHANNEL COVER TABLE-2

DAVIT	DIMENSION-A															
	UPTO	501 TO 600	601 TO 700	701 TO 800	801 TO 900	901 TO 1000	1001 TO 1100	1101 TO 1200	1201 TO 1300	1301 TO 1400	1401 TO 1500	1501 TO 1600	1601 TO 1700	1701 TO 1800	1801 TO 1900	1901 TO 2000
DIMN.	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
B	180	180	200	200	200	200	200	230	230	260	260	260	260	260	290	290
C	350	400	450	525	575	625	675	750	800	875	925	975	1025	1075	1150	1200
D	210	210	250	250	260	260	270	300	300	350	350	350	375	375	410	410
L	125	150	180	200	230	250	280	300	330	350	380	400	430	450	480	500
N	20	20	25	25	30	30	30	30	30	30	30	30	30	30	30	30
d	16	16	20	20	20	20	20	20	20	25	25	25	25	25	30	30

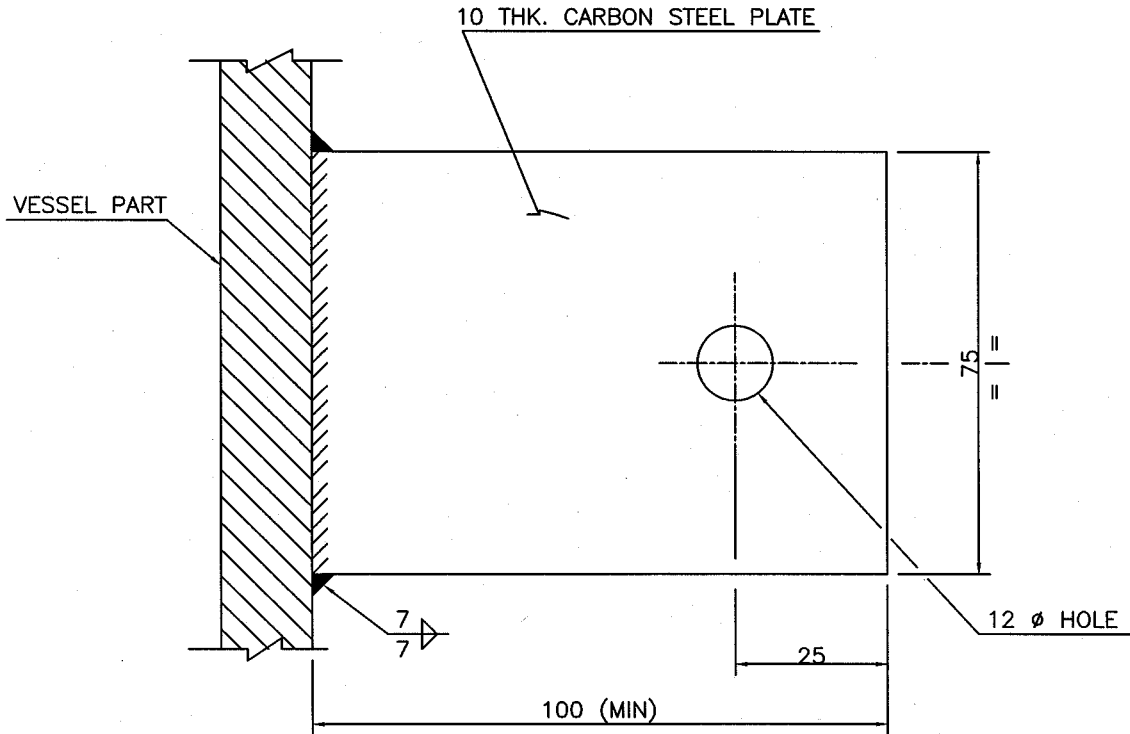
TABLE - 3

WT. X C. (TON) (MTR)	DIMENSIONS/SIZE OF DAVITS				
	^E NB SCH	^F NB SCH	T	R	^S NB SCH
UPTO 0.1	2"-160	1-1/2"-160	3	32	3"-160
0.11-0.3	3"-160	2"-160	3	47	4"-80
0.31-0.6	4"-160	2"-160	13	59	6"-80
0.61-1.25	6"-80	3"-160	10	86	8"-80
1.26-2.5	8"-80	3"-160	11	112	10"-60
2.6-4.0	10"-60	4"-120	8	139	12"-60
4.1-6.3	10"-120	4"-120	8	139	12"-60
6.4-7.8	10"-160	4"-120	8	139	12"-60

NOTES:-

- ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE INDICATED.
- WHEN DAVITS ARE REQUIRED, USE THE FOLLOWING PROCEDURE TO FIND OUT THE DIMENSIONS
 - IDENTIFY THE DIMENSION A, i.e. THE MAXIMUM DIAMETER OF THE COMPONENT TO BE HANDLED.
 - REFER TABLE-1 OR TABLE-2 (AS THE CASE MAY BE) FOR THE DIMENSIONS AND SIZES B,C,D,L,N & d INDICATED IN THE COLUMN CORRESPONDING TO DIMENSION A.
 - DETERMINE WEIGHT OF THE PART TO BE HANDLED (i.e. WT. OF SHELL COVER ASSEMBLY OR CHANNEL COVER)
 - CALCULATE THE PRODUCT OF WEIGHT (IN TONNES) X DIMENSION C (IN METRES)
 - REFER TABLE-3 & OBTAIN DIMENSION AND SIZES E,F,T,S & R INDICATED IN THE ROW AGAINST THE PRODUCT CALCULATED AT 2.4 ABOVE.
- MATERIALS OF CONSTRUCTION-a. TOP/BOTTOM/RIB PLATE- COMPATIBLE WITH PART IT IS WELDED TO (USE BOILER QUALITY FOR CARBON STEEL)
b. OTHERS -IS 1239 OR EQUIV

2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	HJV/PK	SSA	12-4-04
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						



NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. DO NOT WELD EARTHING LUGS TO PRESSURE PARTS. IF REQUIRED, TAKE PRIOR APPROVAL OF COMPANY.
3. EARTHING LUG TO PROTRUDE OUT OF INSULATION, WHEREVER REQUIRED.
4. ALL EXCHANGERS TO BE FITTED WITH 2 EARTHING LUGS.
5. LOCATION OF EARTHING LUGS :-
 - (i) FOR VERTICAL EXCHANGER WITH 2 LUG SUPPORTS :- ON BOTH LUG SUPPORTS AT VERTICAL WEB.
 - (ii) FOR VERTICAL EXCHANGER WITH 3 LUG SUPPORTS :- ON ANY TWO AT VERTICAL WEB.
FOR VERTICAL EXCHANGER WITH 4 LUG SUPPORTS :- ON ANY TWO DIAMETRICALLY OPPOSITE AT VERTICAL WEB.
 - (iii) FOR HORIZONTAL EXCHANGER ON TWO SADDLE SUPPORTS ONE ON CENTRAL WEB.

2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	HJV/PK	SSA	m. Javed 12.06.09
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					Approved by	

6R 6 4 - 5.5 ϕ HOLES

2.5

NAME OF MANUFACTURER

DESIGNED BY ENGINEERS INDIA LIMITED

MANUFACTURED FOR

ITEM NO.

MANUFACTURER'S SERIAL NO. YEAR BUILT

CODES

INSPECTED BY

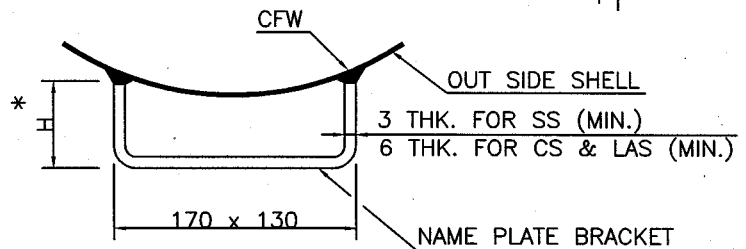
	SHELL	TUBES	
DESIGN PRESSURE			kg/cm ² g
DESIGN TEMPERATURE			°c
TEST PRESSURE (HYD)			kg/cm ² g
DATE OF TEST			
OPERATING FLUID			
CORROSION ALLOWANCE			mm
RADIOGRAPHY			
HEAT TREATMENT			
DUTY / SURFACE	kcal /hr		m ²
WEIGHT FULL OF WATER		kg	
TOTAL WEIGHT EMPTY		kg	
BUNDLE WEIGHT		kg	

4 52 78 15 20 4

150

110

2



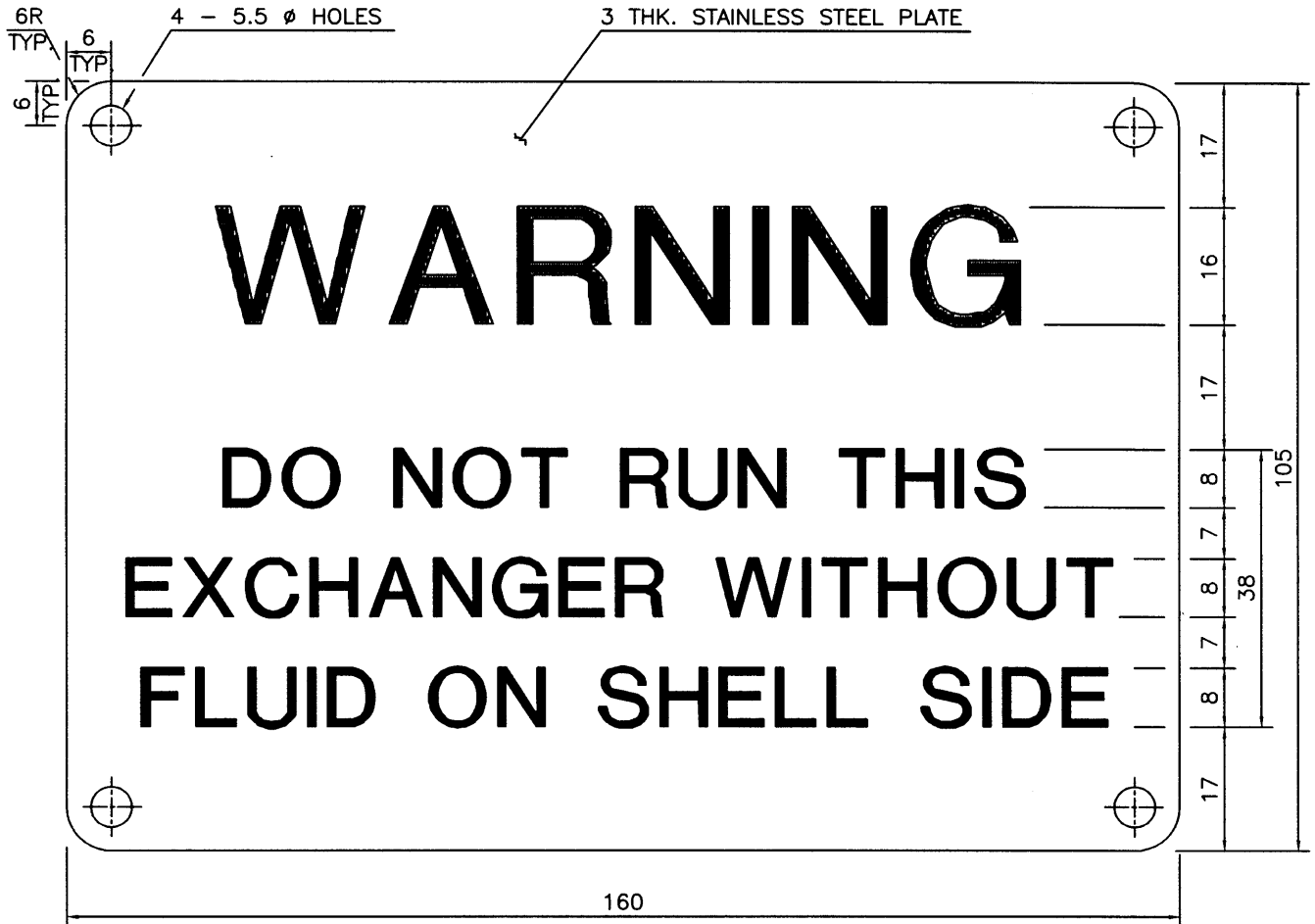
MATERIAL :-

NAME PLATE :- STAINLESS STEEL 18 : 8
NAME PLATE BRACKET :- SAME AS EXCHANGER SHELL

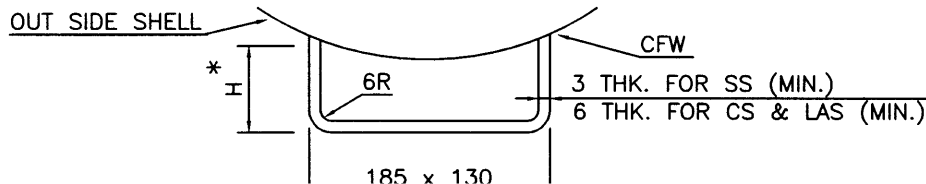
NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- ALL LETTERS AND LETTER BLOCKS SHALL BE ENGRAVED IN BLACK.
- * H = 75 OR 'INSULATION THK. + 10 WHICHEVER IS GREATER.
- NAME PLATE SHALL BE RIVETED WITH 5 ϕ ALUMINIUM RIVETS AND SHALL BE TACK WELDED TO BRACKET ON ALL FOUR SIDES.
- BRACKET WITH NAME PLATE TO BE LOCATED AS MARKED ON DRAWING.

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DETAIL - 1



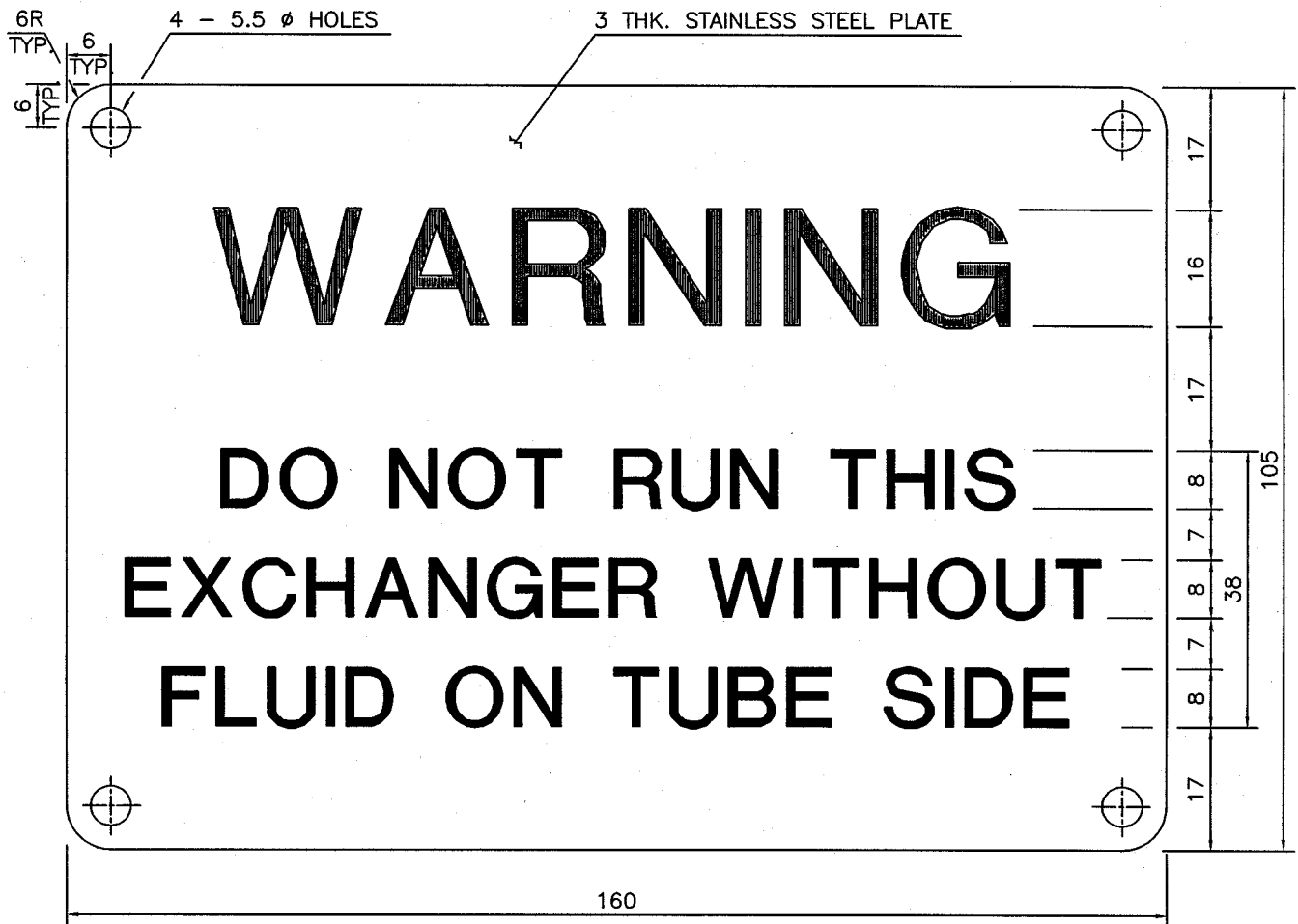
WARNING PLATE BRACKET DETAIL

MATL. SPEC.:— SAME AS EXCHANGER SHELL
* H = 75 OR 'INSULATION THK. + 10
WHICHEVER IS GREATER.

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. MATERIAL TO BE 18:8 STAINLESS STEEL FOR WARNING PLATE.
3. ALL LETTERING WITH THE EXCEPTION OF WORD 'WARNING' TO BE ENGRAVED 2 mm. WIDE x 2 mm. DEEP AND FILLED WITH BLACK PAINT AFTER ENGRAVING.
4. THE WORD "WARNING" IS TO BE ENGRAVED 2.5 mm. WIDE x 2 mm. DEEP AND FILLED WITH RED PAINT AFTER ENGRAVING.
5. WARNING PLATE TO BE HELD WITH 5 Ø ALUMINIUM RIVETS ON WARNING PLATE BRACKET AND SHALL BE TACK WELDED TO BRACKET ON ALL FOUR SIDES.
6. BRACKET WITH WARNING PLATE TO BE LOCATED AS MARKED ON DRAWING.

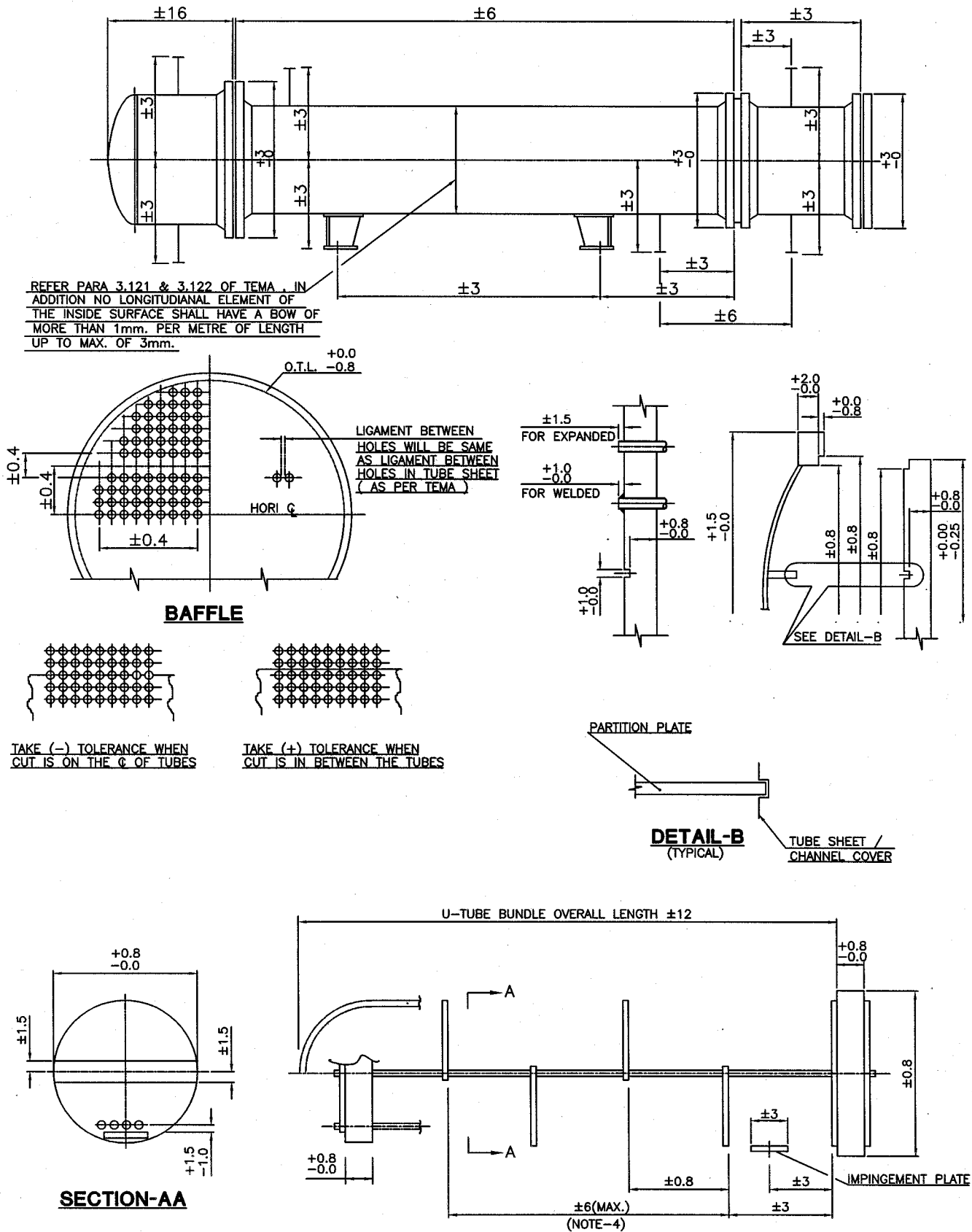
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	12.11.04
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DETAIL - 2

FOR NOTES REFER SHEET 1 OF 2.

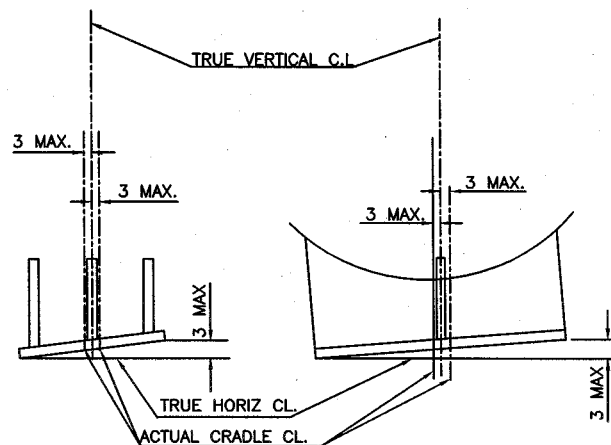
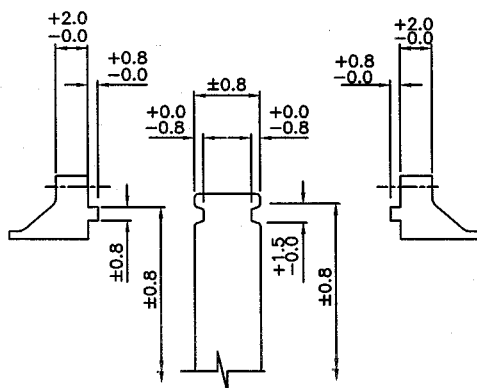
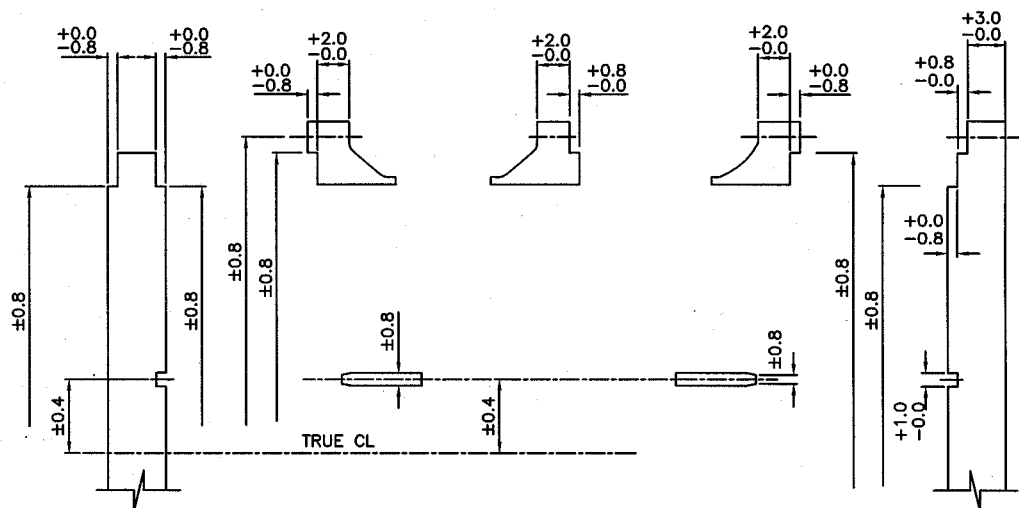
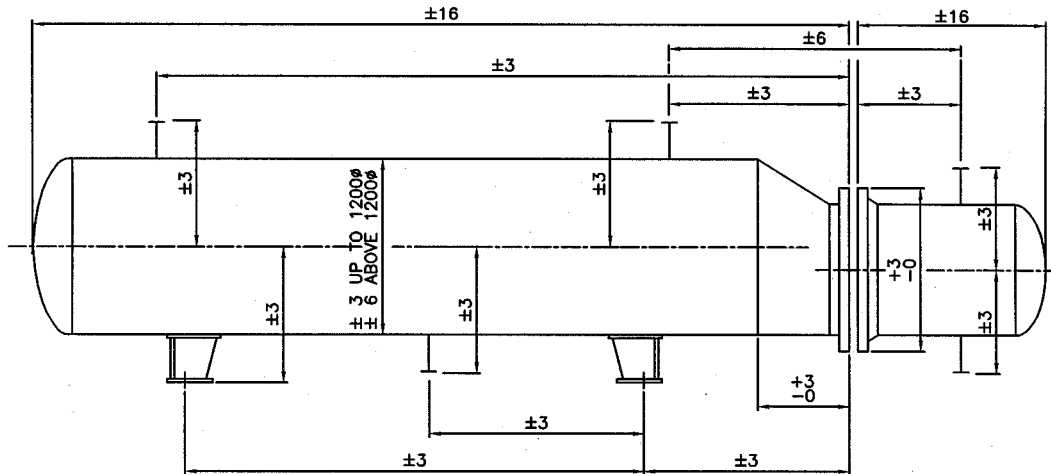
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
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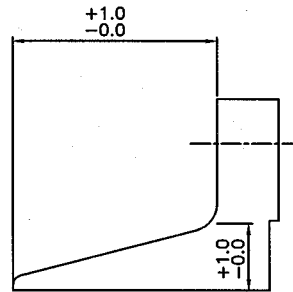
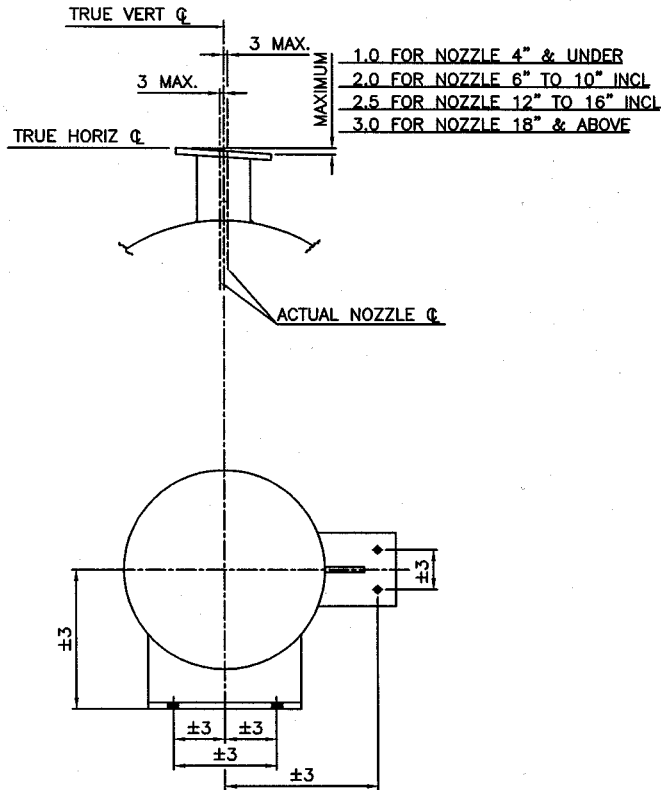
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	
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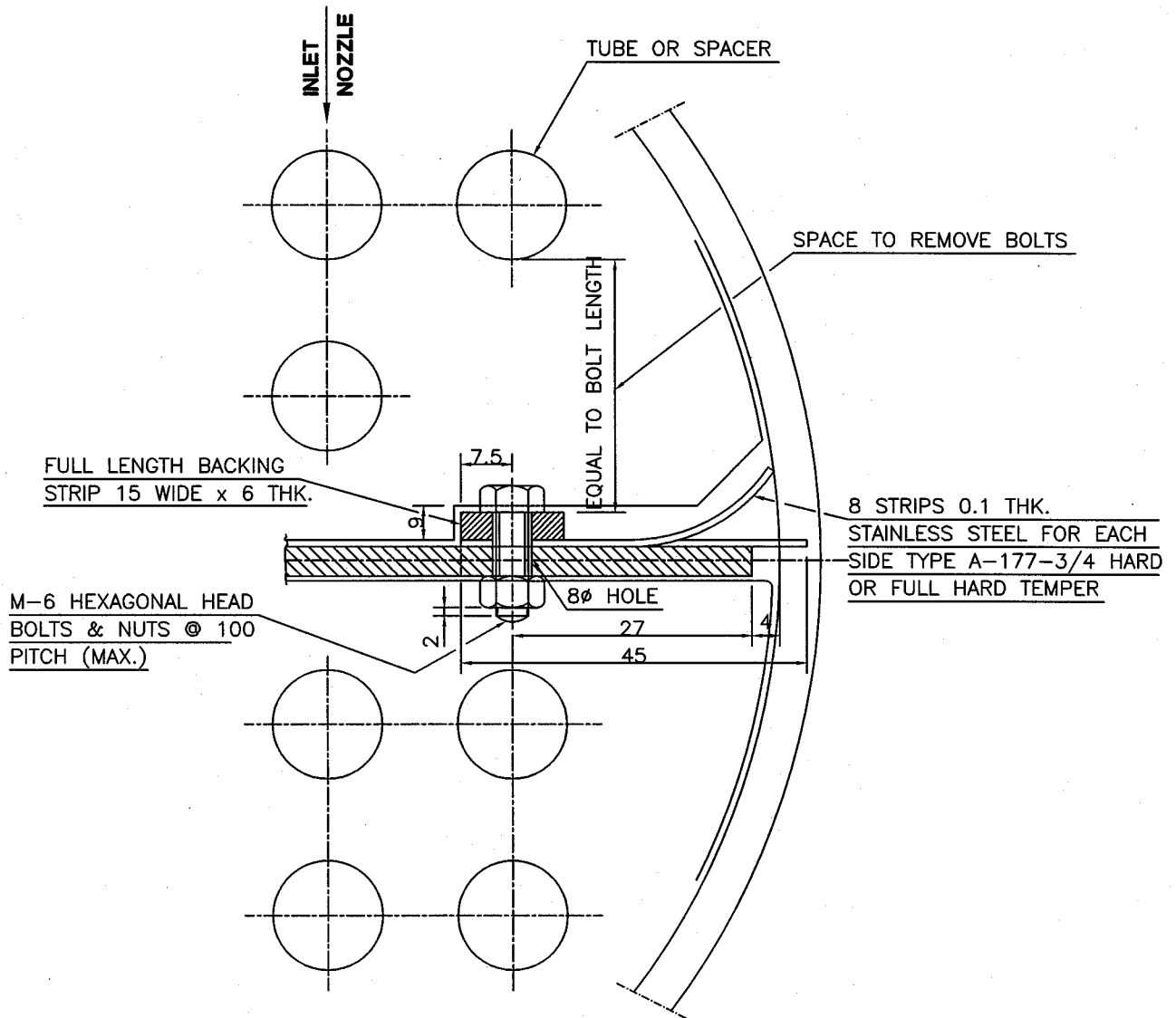
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	<i>[Signature]</i> JJV/PK	<i>[Signature]</i> SSA	<i>[Signature]</i> 12.4.04
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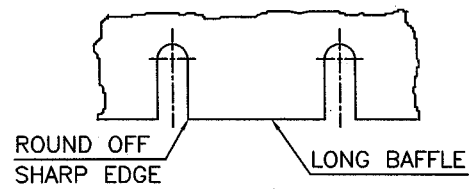
GENERAL NOTES:-

1. CUMULATIVE TOLERANCES ON CONSECUTIVE DIMENSIONS SHALL BE LIMITED BY OVERALL DIMENSION TOLERANCE.
2. SPECIFIC TOLERANCES DESIRED FOR ANY PART SHALL BE SHOWN ON THE DRAWING AND SHALL BE GIVEN PREFERENCE TO THOSE GIVEN IN THIS STANDARD.
3. TUBE HOLE TOLERANCES SHALL BE AS PER TEMA.
4. ONLY WHEN NUMBER OF BAFFLE PITCHES EXCEED EIGHT.

2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	RVV/PK	SSA	on touch 12.4.04
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**TO FACILITATE ASSEMBLY AND MAINTENANCE
HOLES DRILLED IN LONG BAFFLE TO BE
SLOTTED AS SHOWN**



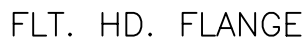
**DETAIL SHOWING BOLT HOLES
IN LONGITUDINAL BAFFLE**

NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	HJV/PK	SSA	12-4-04
Rev. No.	Date	Purpose	Prepared by	Checked by	Std. Committee Convenor	Std. Bureau Chairman
Approved by						

REV.	DATE	REVISION	BY	CHECKED	APPD.	APPD.
0	11.02.2010	ISSUED AS JOB SPECIFICATION	GCP	PKM	KA	



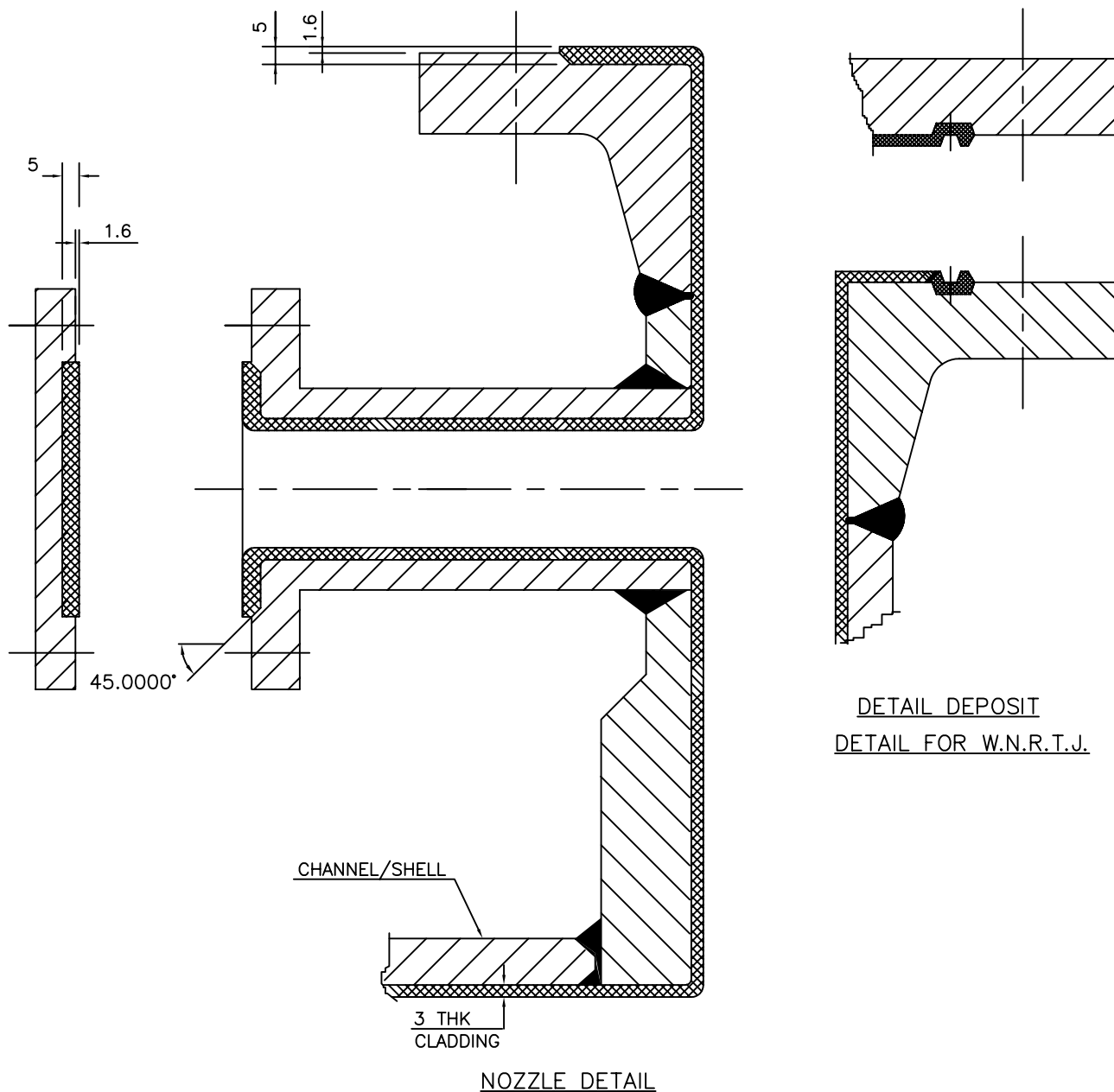
1. FOR WELD DEPOSIT MATERIAL SPECIFICATION REFER SECTION DRG. OF RELEVANT ITEM.

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0A38-000-16-46-SK03-0

STATIC EQUIPMENT

REV.	DATE	REVISION	BY	CHECKED	APPD.	APPD.
0	27.02.2010	ISSUED AS JOB SPECIFICATION	GCP	PKM	KA	



NOTE:-

1. ALL DIMENSION ARE IN mm. UNLESS STATED OTHERWISE.
2. UNDER CUTTING IN SHELLS AND NOZZLES IS NOT PERMITTED.
3. WELD METAL DEPOSIT MUST BE IN TWO LAYERS MINIMUM THICKNESS OF ALLOY WELD METAL TO BE MIN. THICKNESS OF CLAD THICKNESS.
4. FACING AND RF /RTJ TO BE AS PER APPLICABLE STANDARD.
5. THICKNESS OF WELD DEPOSIT ON STANDARD FLANGES/ BLIND FLANGES ETC. SHALL BE IN ADDITION TO THE STANDARD THICKNESS OF FLANGE/BLIND FLANGE ETC.
6. CORNER RADIUS OF WELD METAL DEPOSIT SHELL BEAR SMOOTH FINISH.
7. FOR WELD MATERIAL SPECIFICATION REFER RELEVANT ITEM SECTION DRAWING.



ENGINEERS INDIA LIMITED
NEW DELHI

**DETAIL OF WELD DEPOSIT
FOR CLADDED HEAT EXCHANGER**
PROJECT : DDFDP-PLQP
CLIENT : GSPC
JOB NO : A038 UNIT : GDU

SKETCH NO.

A038-000-16-46-SK03

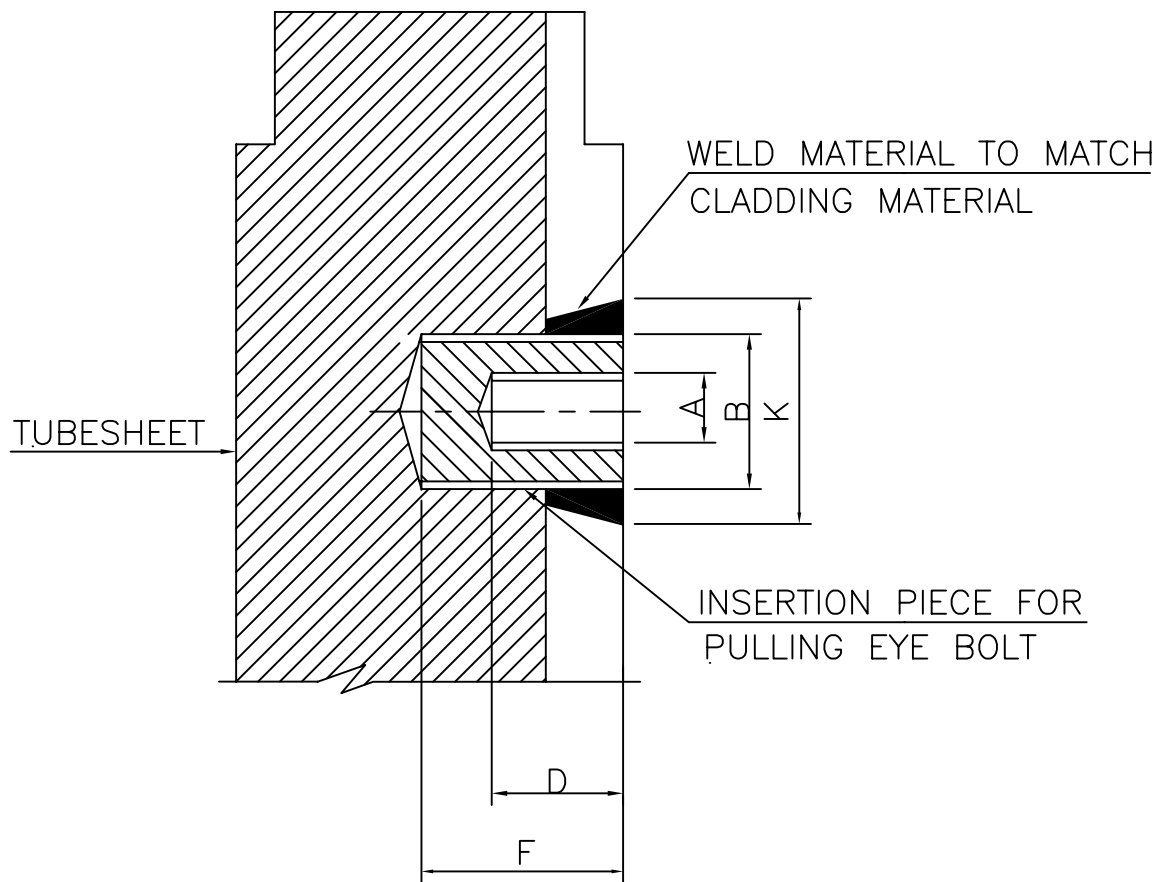
SHEET 1 OF 1

REV.

0

STATIC EQUIPMENT

REV.	DATE	REVISION	BY	CHECKED	APPD.	APPD.
0	11.02.2010	ISSUED AS JOB SPECIFICATION	GCP	PKM	KA	



NOM. SIZE A	B	K	D	F	
M16	M28	38	30	38	
M20	M30	40	32	41	
M22	M33	43	35	44	
M24	M36	46	38	48	
M27	M42	52	46	56	
M30	M48	58	48	58	
M36	M56	66	60	76	
M42	M64	74	63	80	

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A038-000-16-46-SK04-0



ENGINEERS INDIA LIMITED
NEW DELHI

**DETAIL OF INSERTION PIECE
FOR PULLING EYE BOLT**
PROJECT : DDFDP-PLQP
CLIENT : GSPC
JOB NO : A038 UNIT : GDU

SKETCH NO.

A038-000-16-46-SK04

SHEET 1 OF 1

REV.

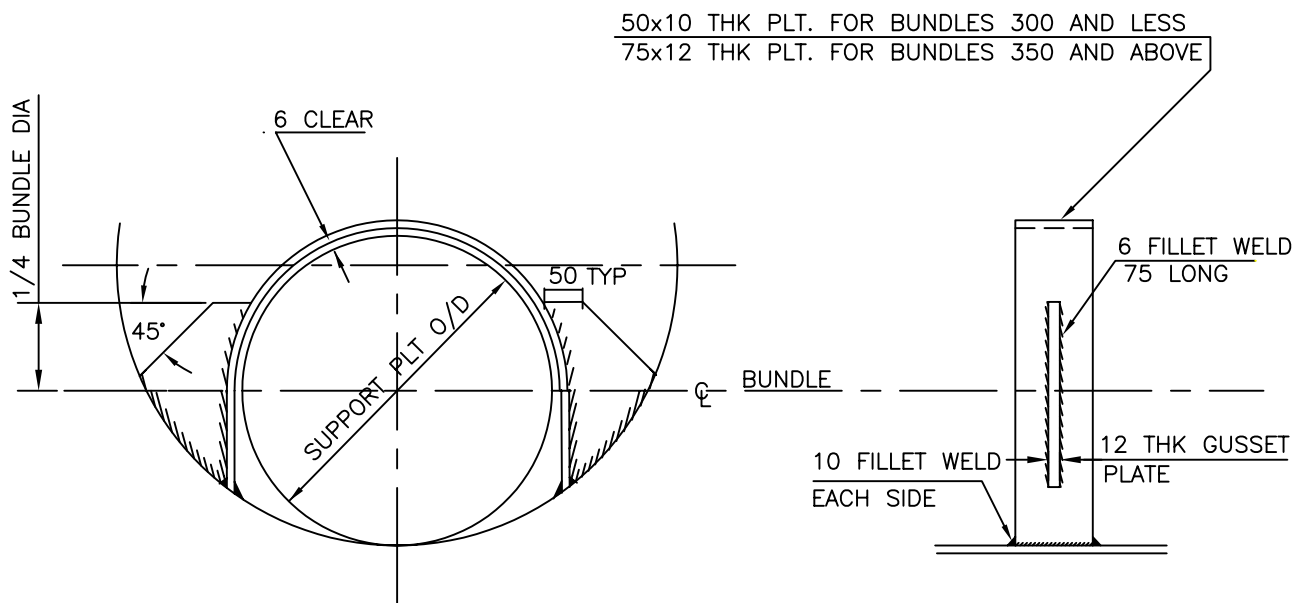
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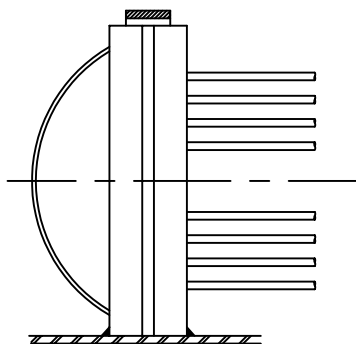
A038-000-16-46-SK05-0

STATIC EQUIPMENT

REV.	DATE	REVISION	BY	CHECKED	APPD.	APPD.
0	11.02.2010	ISSUED AS JOB SPECIFICATION	GCP	PKM	KA	

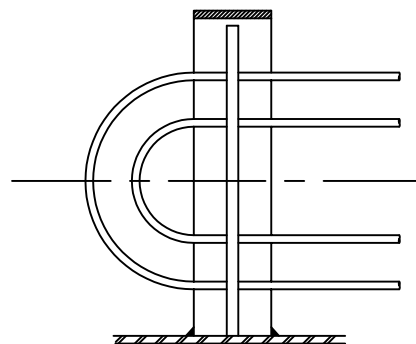


NOTE:- SEE ALTERNATE CONSTRUCTION



STRAIGHT TUBE BUNDLE

CENTER BUNDLE RETAINER OVER
FLOATING HEAD TUBESHEET AND COVER



U-TUBE BUNDLE

CENTER BUNDLE RETAINER
OVER LAST SUPPORT PLATE



ENGINEERS INDIA LIMITED
NEW DELHI

**DETAIL FOR
BUNDLE RETAINER**
PROJECT : DDFDP-PLQP
CLIENT : GSPC
JOB NO : A038 UNIT : GDU

SKETCH NO.

A038-000-16-46-SK05

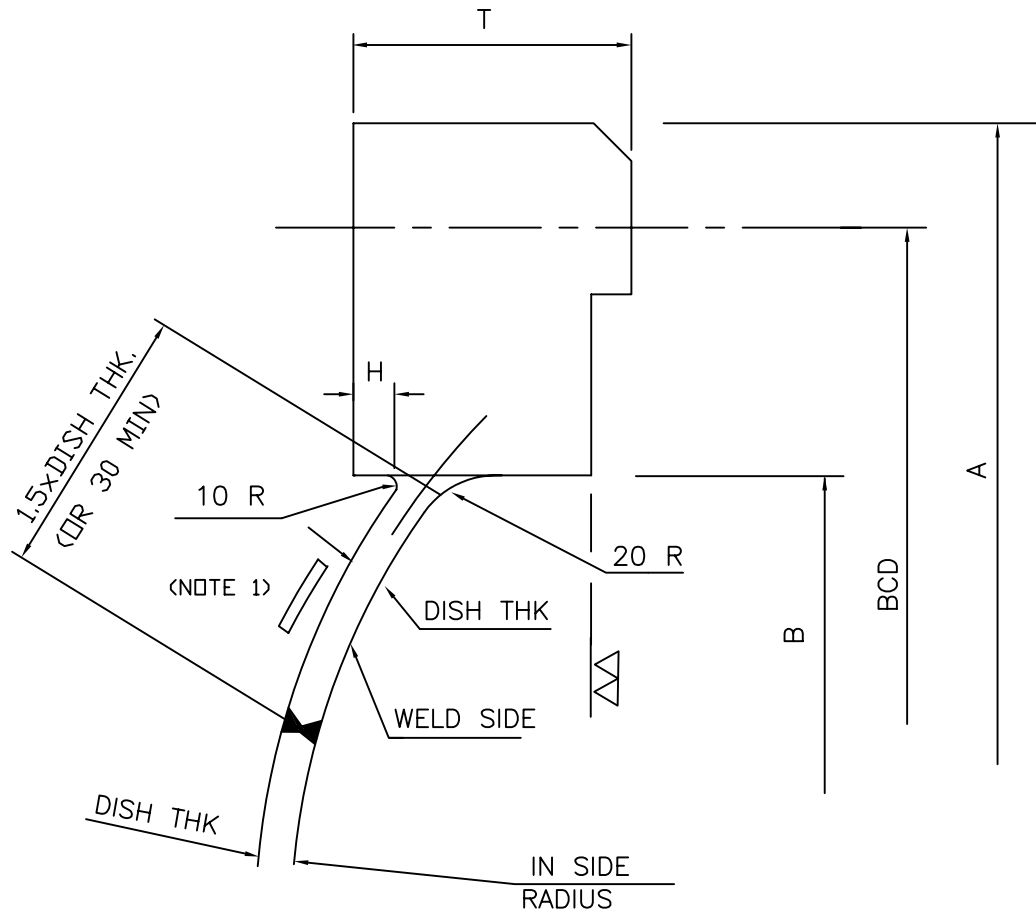
SHEET 1 OF 1

REV.

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STATIC EQUIPMENT

REV.	DATE	REVISION	BY	CHECKED	APPD.	APPD.
0	27.02.2010	ISSUED AS JOB STANDARD	GCP	PKM	KA	



FOR DIMENSIONS REFER SECTION DRAWING

NOTE:-

1. TENSION TEST SPECIMEN IN ADDITION TO THESE REQUIRED BY MATERIAL SPECIFICATION SHALL BE TAKEN IN A DIRECTION PARALLEL TO THE AXIS OF HUB AND AS CLOSE TO HUB AS PRACTICAL AT LEAST TWO TENSILE TEST SPECIMENS SHALL BE TAKEN FROM THE RING FORGINGS 90 APART. THE SPECIMENS SHALL MEET TENSILE AND YIELD REQUIREMENTS AS PER RELEVANT MATERIAL SPECIFICATIONS.
2. THE 'PERCENTAGE REDUCTION IN AREA' IN THE TEST SPECIMEN SHALL BE REPORTED.
3. COMPLETE FORGING SHALL BE UST EXAMINED (100%) BEFORE AND AFTER MACHINING.
4. HUB OF FLANGE SHOULD BE EXAMINED BY MP OR LP TESTS.

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ENGINEERS INDIA LIMITED
NEW DELHI

**SKETCH FOR LIPPED
FLOATING HEAD FLANGE**
PROJECT : DDFDP-PLQP
CLIENT : GSPC
JOB NO : A038 UNIT : GDU

SKETCH NO.

A038-000-16-46-SK06

REV.

0

SHEET 1 OF 1

