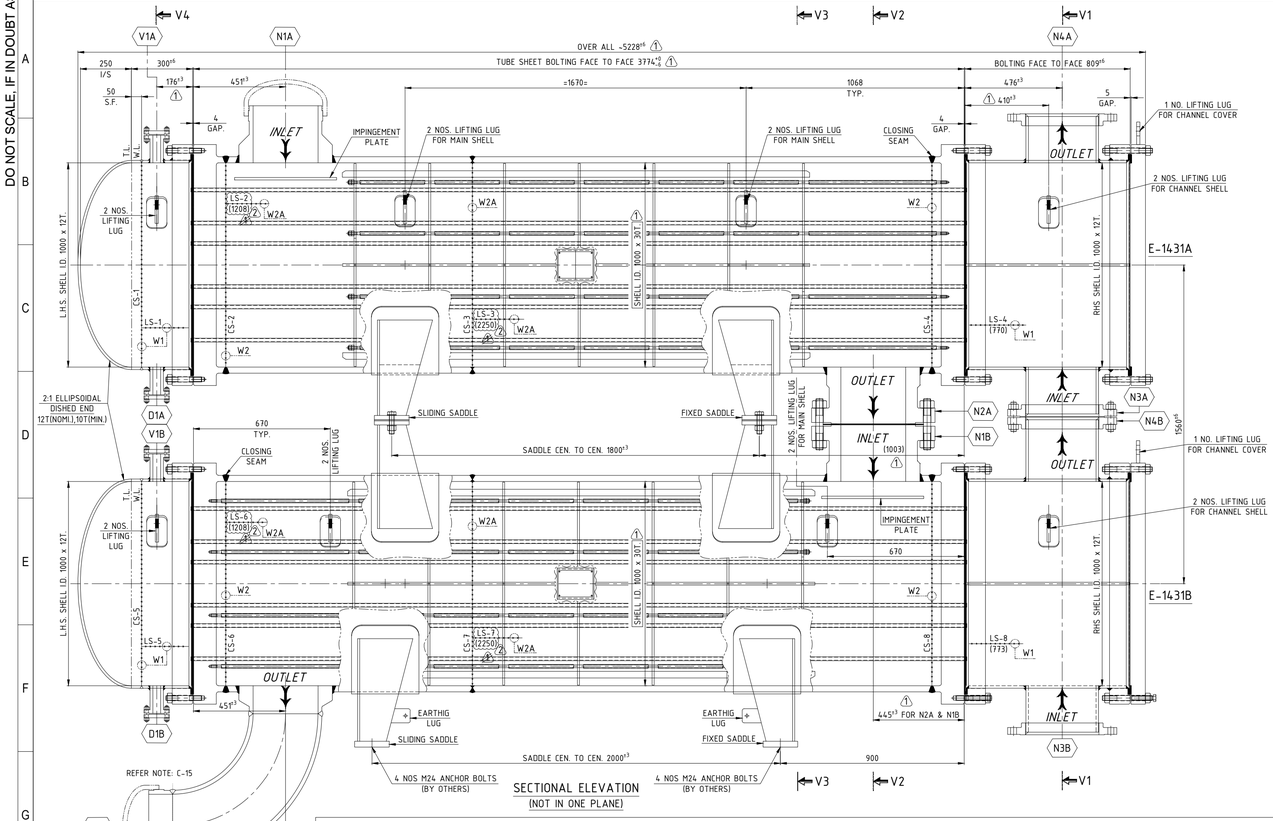
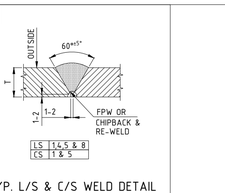
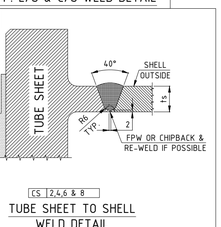
DO NOT SCALE, IF IN DOUBT ASK

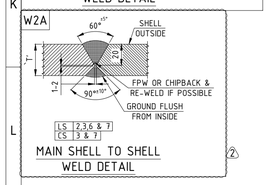




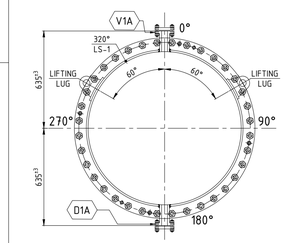
TYP. L/S & C/S WELD DETAIL



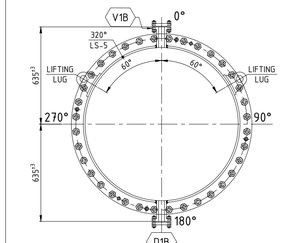
TUBE SHEET TO SHELL WELD DETAIL

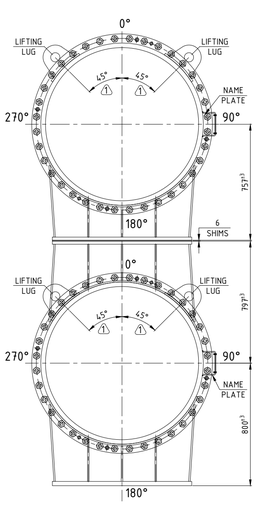


MAIN SHELL TO SHELL WELD DETAIL (2)

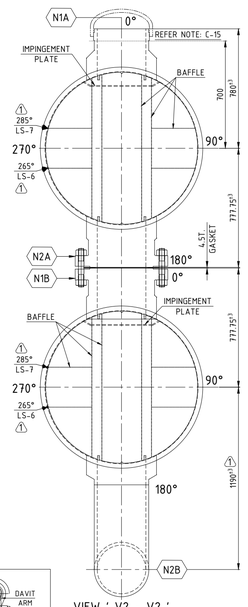


VIEW ' V4 - V4 '
(LHS CHANNEL SIDE)

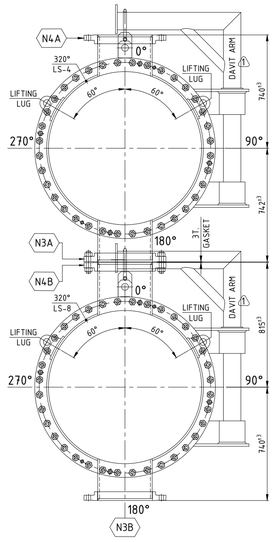




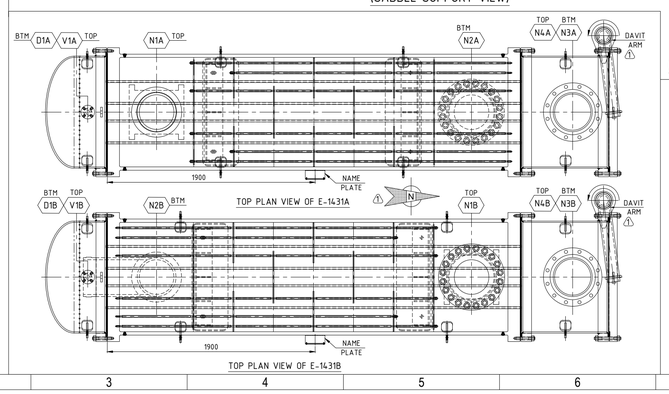
VIEW ' V3 - V3 '
(SADDLE SUPPORT VIEW)



VIEW ' V2 - V2 '
(SHELL SIDE NOZZLES)



VIEW ' V1 - V1 '
(RHS CHANNEL SIDE)



EXAMINED

Lloyd's Register

This document has been examined and given the status as shown in the Design Appraisal Document (DAD) number below:

DAD Number: BPA 2006203/1

Date: 12 March 2020 Initials: AMM

Mumbai Plan Appraisal
Lloyd's Register Asia

LRQA 1.2.014.05

GENERAL NOTES :-

A) GENERAL
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS OF STD NOZZLE FLANGES UPTO DN600 ARE AS PER ASME B16.5 (ED. 2013).
3. NOZZLE FLANGE, BODY FLANGE & TUBE SHEET GASKET FACE TO HAVE SERRATED FINISH OF 125-250 MICRO INCH AARH.
4. ALL NOZZLE PROJECTIONS ARE TAKEN FROM H.E CENTER LINE TO GASKET CONTACT FACE OF FLANGES.
5. ALL BOLT HOLES IN NOZZLE FLANGES & BODY FLANGES TO STRADDLE PRINCIPAL C.L. OF EQUIPMENT.
6. BEING A REPLACEMENT JOB, NOZZLE SIZES AND DETAILS HAVE BEEN FOLLOWED AS PER EXISTING EQUIPMENT. NOZZLE DESIGN HAS NOT BEEN EVALUATED FOR EXTERNAL NOZZLE LOADS IN ABSENCE OF LOADING.

B) MATERIAL
1. FOR ALL PRESSURE RETAINING PARTS, MATERIAL TEST REPORTS SHALL CONFIRM TYPE 3.1 AS PER EN10204.

C) FABRICATION
1. NOZZLES 500N & BELOW EXCEPT LWN TYPE SHALL BE STIFFENED BY 3 NOS. 6Tx40W STIFFENERS @ 120°APART UNLESS OTHERWISE SPECIFIED.
2. SHELL AND HEAD SEAMS SHALL BE SO LOCATED SO AS TO CLEAR ALL NOZZLE ATTACHMENT WELDS BY AT LEAST FIVE TIMES THE SHELL THICKNESS OR 75mm WHICHEVER IS LARGER AND EXTERNAL OR INTERNAL NON PRESSURE ATTACHMENT WELDS BY AT LEAST 50mm.
3. ALL WELD (EXCEPT CORNER JOINTS) SHALL BE FPW EITHER BY BACK CHIPPING TO SOUND METAL & RE WELD FROM SECOND SIDE OR THE ROOT RUN SHALL BE MADE WITH TIG PROCESS TO ENSURE FULL PENETRATION WELD.
4. 1/8"BSP TELLTALE HOLE SHALL BE PROVIDED ON REINFORCING PADS .THE SAME SHALL BE AIR TESTED TO 1.0 kg/cm2 USING SOAP SOLUTION. TELLTALE HOLES SHALL BE FILLED WITH GREASE AFTER HYDRO TEST PRIOR TO SHIPMENT .
5. SURFACES TO BE WELDED SHALL BE FREE OF SCALE, RUST, OIL, GREASE, SLAG & DETRIMENTAL OXIDE.
6. ALL WELD SHALL BE SMOOTH & FREE OF UNDERCUTS, CAVITIES DEPRETIONS, CRACKS, INCLUSIONS. ALL INSIDE WELDS SHALL BE FLUSH WITH SHELL ID.
7. ALL INSIDE BUTT WELDS SHALL BE GROUND SMOOTH & ALL EXTERNAL WELDS & SURFACES SHALL BE CLEANED TO REMOVE SCALES,WELD SPATTERS,etc. ALL SHARP CORNERS ARE TO BE ROUNDED. ALL NOZZLE TO VESSEL WELDS SHALL BE GROUND FLUSH WITH INSIDE SURFACE OF THE VESSEL & INTERNAL EDGE OF THE NOZZLE PIPE SHALL BE ROUNDED OFF WITH 3mm RADIUS MIN.
8. ALL NOZZLE PIPE UPTO (& INCLUDING) 250DN SHALL BE SEAMLESS, ABOVE 250DN SHALL BE FABRICATED FROM PLATE.
9. ALL TEMPORARY ATTACHMENT SHALL BE REMOVED BY GRINDING ONLY & SUBJECTED TO EXAMINATION BY DP TESTING.
10. ALL STUD/BOLTS SHALL BE UNC SERIES BELOW 1" SIZE AND UN8 SERIES 1" & ABOVE SIZE AND ALL THREAD SHALL BE PROTECTED WITH MOLYKOTE.
11. ALL TUBE TO TUBE SHEET JOINTS SHALL BE EXPANDED IN PLAIN HOLES AND STRENGTH WELDED IN MIN. 2 RUNS WITH EACH PASS DP CHECKED. TUBE TO TUBE SHEET JOINT WELDING SHALL BE CARRIED OUT BY TIG METHOD.
12. EACH PARTITION PLATE SHALL BE WELDED TO CHANNEL FOR THEIR FULL LENGTH WITH FULL PENETRATION WELDS. EACH WELD SHALL HAVE 3 mm DIA DRAINAGE HOLE LOCATED AS FAR FROM TUBE SHEET AS POSSIBLE.
13. ALL SHARP CORNERS SHALL BE ROUNDED TO SMOOTH RADIUS.
14. PWHT CYCLE FOR SHELL SIDE AND LOCAL PWHT (FOR CS-4 AND CS-6) AS PER FOLLOWING:
LOADING TEMPERATURE: 300 °C
RATE OF HEATING: 80 °C/HOUR (MAX.)
SOAKING TEMPERATURE: 600-620 °C
SOAKING PERIOD: 1 HOUR 10 MINUTES
RATE OF COOLING: 80 °C/HOUR (MAX.) TILL 400 °C, THEN COOLING IN STILL AIR.
STRESS RELIEVING CYCLE FOR DISHED ENDS AS PER FOLLOWING:
LOADING TEMPERATURE: 300 °C
RATE OF HEATING: 80 °C/HOUR (MAX.)
SOAKING TEMPERATURE: 600-620 °C
SOAKING PERIOD: 30 MINUTES
RATE OF COOLING: 80 °C/HOUR (MAX.) TILL 400 °C, THEN COOLING IN STILL AIR.
15. EXTRA LENGTH IN NOZZLE GIVEN TO ATTACH END CAP DURING HYDROTEST. ACTUAL NOZZLE LENGTH SHALL BE AS PER DIMENSION SHOWN IN DRAWING. ADDITIONAL LENGTH SHALL BE REMOVED DURING COMMISSIONING.

D) NDE EXAMINATION
1. 100% RADIOGRAPHY IS REQUIRED FOR ALL BUTT WELD JOINTS EXCEPT FOR JOINTS IN DUMMY PIECES (TO BE REMOVED DURING COMMISIONING), ON SHELL SIDE OF THE EXCHANGER. IF RADIOGRAPHY IS NOT FEASIBLE, UT SHALL BE CARRIRD OUT FOR SUCH JOINTS.
2. THE LONG. WELD SEAM OF NOZZLE NECKS FABRICATED FROM PLATES SHALL FULL (100%) RADIOGRAPHED FOR THEIR ENTIRE LENGTH.
3. MP / PT TESTING:
- ROOT AND FINAL LAYER OF ALL BUTT WELDS,
- KNUCKLE REGION SURFACES OF THE DISHED ENDS,
- ALL FILLET AND BUTT WELDS AFTER HYDROTESTING, WHERE ACCESSIBLE, EACH PASS.
- ALL WELD SURFACES AFTER PWHT,
- ALL FORGINGS AFTER MACHINING,
- TUBE TO TUBESHEET JOINT AFTER
4. ALL FORGINGS AND ALL BUTT WELDS AFTER HYDROTEST SHALL BE UT TESTED.
5. ALL NDE EXAMINATION AS PER APPROVED ITP.

E) WELDING
1. ALL WELDING SHALL BE DONE BY QUALIFIED WELDER AND AS PER APPROVAL WELDING PROCEDURE.
2. ANY GRINDING SHALL BE TAPERED AND SMOOTH.
3. WELD REINFORCEMENT SHALL BE AS PER UW-35.
4. WELDING SHALL BE DONE FROM BOTH SIDES OF PLATE AND SHALL ACHIEVE FULL PENETRATION. HOWEVER, FOR SINGLE SIDE FULL PENETRATION WELD ROOT RUN SHALL BE WELDED BY GAS TUNGSTEN METAL ARC (GTAW OR TIG) IF BACK CHIPPING AND RE-WELDING IS NOT POSSIBLE FROM OTHER SIDE.
5. WELD OVERLAY SHALL BE MIN. OF 5mm THICKNESS WITH A GUARANTEED UNDILUTED CHEMISTRY TO A DEPTH OF 3mm. FROM THE SURFACE.
6. WELD OVERLAY SHALL BE SUBJECT TO 100% DYE PENETRANT TEST IN ACCORDANCE WITH ASTM E165.

F) INSPECTION & TESTING.
1. MACHINED SURFACES OF ALL FORGINGS SHALL BE EXAMINED FOR SURFACE DEFECTS BY D.P. TEST AFTER MACHINING.
2. ALL PARTS OF THE VESSEL SHALL BE CLEANED BEFORE HYDRO TEST OF ALL SCALES, RUST & FOREIGN MATTER & AFTER THE TEST THE VESSEL SHALL BE THOROUGHLY CLEANED INTERNALLY AND EXTERNALLY AND DRIED OUT.
3. REMOVABLE PRESSURE PARTS (CH.ASSEMBLY) SHALL BE PERMANENTLY MARKED WITH SERIAL No., ITEM No. & PART NAME IN A MANNER TO IDENTIFY THEM WITH VESSEL.
4. HYDRO TEST TO BE CARRIED OUT IN HORIZONTAL POSITION & WATER HAVING CHLORIDE CONTENT <30 PPM.
5. IMPACT TESTING & PTC EXEMPTED AS PER UCS-66 AND UHA-51(d)1(-a).
6. SERVICE GASKET SUPPLIED SHALL NOT BE USED FOR TESTING. HYDROTEST GASKET SHALL BE THE SAME AS SERVICE GASKET.
7. CARBON CONTENT IN ALL WELDEBLE CARBON STEEL SHALL NOT EXCEED 0.23%
8. ALL TUBE SHALL BE EDDY CURRENT TESTED AND HYDROTESTED.

G) EXTERNAL SURFACE PREPARATION & PAINTING

1	ALL EXTERNAL SURFACES OF CS PARTS	SURFACE TREATMENT: BLAST CLEANING TO SWEDISH SPECIFICATION SIS 05 59 00 WITH GRADE SA 2.5.	PRIMER: SOLVENT VASED SELF-CARE INORGANIC ZINC DFT: 75 MICRON (MIN.)	FINISH COAT: TWO COATS OF ALUMINUM PAINT DFT: 25 MICRON (MIN.) FOR EACH COAT
2	AFTER HYDROTEST, ALL SS SURFACE SHALL BE PICKLED AND PASSIVATED AS PER PROCEDURE SPECIFIED IN PARA. 7.3 AND 7.4 OF CONTRACT SPECIFICATION.			
3	AFTER HYDROTEST, BELZONA COATING SHALL BE APPLIED TO CHANNEL AND CHANNEL COVER INCLUDING NOZZLES AND TUBESHEET. MAKE OF PUTTY SHALL BE BELZONA 1311 CERAMIC R METAL, 1341 SUPERMETAL GLIDE AND 9111 CLEANER / DEGREASER WITH 200 MICRON DFT. (1)			
4	PLANT ITEM NO. CENTER OF GRAVITY AND SHIPPING WEIGHT OF THE EQUIPMENT TO BE PAINTED ON PROMINENT POSITION WITH NON-METALLIC PAINT.			

H) SPARE
1. GASKET - 3 SETS OF GASKETS AS SPARE PARTS FOR ALL BLINDED NOZZLES. FASTENER - 10% BOLTS,NUTS & WASHERS OF EACH SIZE. (MIN. 2 BOLTS WITH NUTS), PACKING RING (200%)
2. TWO YEAR OPERATIONAL SPARES SHALL BE CONSIDERED AS PER DRAWING NO: HEE000085-01-05

I) TRANSPORTATION
1. FOR NOZZLES NOT PROVIDED WITH BLIND FLANGES, 12MM THICK CS PLATE WITH MINIMUM 4 BOLTS / NUTS & NEOPRENE /CNAF GASKET TO PROTECT FACES DURNIG TRANSPORTATION.
2. CENTER OF GRAVITY OF EQUIPMENT SHALL BE MARKED ON THE EQUIPMENT FOR ERECTION PURPOSE.
3. HEAT EXCHANGER SHALL BE DISPATCHED WITH N2 PURGING AT 0.5 kg/cm2(g) PRESSURE.

J) TUBE TO TUBESHEET JOINTS
1. TUBE TO TUBE SHEET JOINT SHALL BE LIGHT EXPANDED (3 TO 5%) FOLLOWED BY STRENGTH WELD.
2. TUBE TO TUBE SHEET JOINT SHALL BE PNEUMATICALLY TESTED AT 1.25 kg/cm2 (g) USING SOAP SOLUTION AFTER EACH PASS OF WELD.

K) TOLERANCE
1. DIMENSIONAL TOLERANCES SHALL BE CONSIDERED AS MARKED IN DRAWING.

L) SITE ACTIVITY
1. CLIENT TO PREFORM CUTTING OF NOZZLES N1A AND N2B AT SITE AS PER TRIMMING LINE SHOWN IN DRAWING, PREPARE WELD EDGE AND PERFORM WELDING TO INLET AND OUTLET PIPING. AFTER WELDING, THESE JOINTS ARE REQUIRED TO BE HEAT TREATED AS PER FOLLOWING CYCLE:
-LOADING TEMPERATURE: 300 °C -RATE OF HEATING: 80 °C/HOUR (MAX.)
SOAKING TEMPERATURE: 600-620 °C -SOAKING PERIOD: 50 MINUTES
RATE OF COOLING: 80 °C/HOUR (MAX.) TILL 400 °C, THEN COOLING IN STILL AIR.

CUSTOMER REFERENCE STANDARDS & SPECIFICATION

SPEC. No.	DESCRIPTION
494156	EXCHANGER SPECIFICATION SHEET
431-00384	E-1431A & E-1431B 1ST SYN. GAS INTERCOOLER ASSEMBLY & DETAILS

CLIENT TO CONFIRM / HOLD LIST

1	~~NAME PLATE ENGRAVEN & ORIENTATION ARE ON HOLD~~
2	~~DAVIT MODEL~~
3	~~MAIN SHELL SUPPORT REQUIREMENT ON BASIS OF APPLICABLE~~

NOZZLE DATA

$1 : WITH BLIND + FASTENER + GASKET
$2 : WITH ELBOW + BUTT END

NOZ. MARK	SIZE (DN)	QTY.	SERVICE	RATING	TYPE	FACE	SCH. / THK.	RF PAD (OD,xT)	PROJ.FROM CTR. LINE	REM.	TAG NO.
				FLANGE							
V1B	40	1	VENT	150	LWN	RF	-/13.45	-	635	$1	E-1431B
D1B	40	1	DRAIN	150	LWN	RF	-/13.45	-	635	$1	
N4B	350	1	C.W. OUTLET	150	SO	FF	- / 12	-	815	-	
N3B	350	1	C.W. INLET	150	SO	FF	- / 12	-	740	-	
N2B	350	1	GAS OUTLET	-	SRN	-	- /18.8	-	SEE DRG.	$2	
N1B	350	1	GAS INLET	600	SRN	RF	- /57	-	777.75	-	
V1A	40	1	VENT	150	LWN	RF	-/13.45	-	635	$1	E-1431A
D1A	40	1	DRAIN	150	LWN	RF	-/13.45	-	635	$1	
N4A	350	1	C.W. OUTLET	150	SO	FF	- / 12	-	740	-	
N3A	350	1	C.W. INLET	150	SO	FF	- / 12	-	742	-	
N2A	350	1	GAS OUTLET	600	SRN	RF	- /57	-	777.75	-	
N1A	350	1	GAS INLET	-	SRN	-	- /18.8	-	SEE DRG.	(BUTT END)	

DESIGN DATA

CONSTRUCTION CODE :- ASME SEC.-VIII DIV. 1 (ED. 2017), TEMA-'Class R'-2007 9th EDITION
INSPECTION AGENCY:- LRVL
CERTIFICATION :- NO
NATIONAL BOARD REGISTRATION REQUIRED :- NO

DESCRIPTION	Units	DATA SHELL SIDE	DATA TUBE SIDE
NUMBER OF PASSES		ONE	TWO
NO. OF ITEMS		1 STACK (2 UNITS)	
SERVICE		SYNTHESIS GAS SERVICE	
OPERATING PRESSURE (MAX)	kg/cm2(g)	52.71	3.5
OPERATING TEMPERATURE (IN/OUT)	°C	128.1 / 38	33.5 / 43.5
FLUID (VAPOR/LIQUID) (1)	-	SYN. GAS (VAPOUR)	WATER (LIQUID)
SPACIFIC GRAVITY		0.014	1
INTERNAL DESIGN PRESSURE	kg/cm2(g)	63	6
EXTERNAL DESIGN PRESSURE	kg/cm2(g)	-	-
DESIGN TEMPERATURE	°C	193	70
MAXIMUM ALLOWABLE WORKING PRESSURE / MAXIMUM ALLOWABLE EXTERNAL WORKING PRESSURE	kg/cm2(g)	63	6
M.D.M.T. AT M.A.W.P	°C	-10	-10
CORROSION ALLOWANCE (FOR CS PART) (1)	mm	3.2	3.2
RADIOGRAPHY (SHELL / HEAD)		(100% (ALL BUTT WELD)) (2)	(2) SPOT/FULL
JOINT EFFICIENCY (SHELL / DISH)		1 / -	0.85 / 1
POST WELD HEAT TREATMENT		YES (NOTE C-14)	EXEMPTED AS PER UCS-56(a)
POST FORMING HEAT TREATMENT		EXEMPTED AS PER UCS-79(d)	STRESS RELIEVING OF DISHED ENDS (NOTE C-14)
IMPACT TEST		EXEMPTED AS PER UCS-66	EXEMPTED AS PER UCS-66, UHA-51(d)
WIND DESIGN CODE / BASIC WIND SPEED(m/s)		IS-873 / 45	
EARTHQUAKE CODE		IS-1893 RSM	
SHOP TEST PRESSURE (HORI.)	kg/cm2(g)	94.5	9
EQUIPMENT PAINTING		REFER NOTE G-1	
INSULATION (BY OTHERS) (THK./TYPE)	mm	NA (1)	
BUNDLE WEIGHT (FOR ONE UNIT / TOTAL)	kg	5300 / 10600 (1)	
FLOW RATE	1000 x kg/h	79.976	612.51
EXCHANGER TYPE / TEMA NOTATION		FIXED TUBESHEET / AEM	
HEAT TRANSFER AREA (GROSS / EFFECTIVE) PER SHELL	m²	268.81 / 251.13	
MEAN METAL TEMPERATURE (E-1431A / E-1431B)	°C	79.56 / 44.14	58.53 / 39.07
PRESSURE DROP (CALCULATED / ALLOWED)	kg/cm2(g)	0.507 / 0.647	0.572 / 0.572
HEAT EXCHANGER DUTY	1000 x kcal/h	6169.8	

WEIGHT SUMMARY (FOR STACK)

FABRICATED WT.	Kg.	23030
OPERATING WT.	Kg.	(1) 30170
HYDROTEST WT.	Kg.	30230

LOADING TABLE

SEISMIC SHEAR	kgf	3530
SEISMIC MOMENT	kgf-m	9390
WIND SHEAR	kgf	(1) 13642
WIND MOMENT	kgf-m	36288

MATERIAL OF CONSTRUCTION

ALL MATERIAL SHALL CONFORM TO ASME SECTION-II PART-A, ED-2017 IN ADDITION TO THIS MATERIAL SHALL CONFORM APPLICABLE TDC

PART DESCRIPTION	MATERIAL OF CONSTRUCTION SHELL SIDE	MATERIAL OF CONSTRUCTION CHANNEL SIDE
SHELL, PARTITION PLATE, IMPINGEMENT PLATE & NOZZLE PIPES (SIZES >250 DN)	SA-516 GR. 70N (TDC NO.-HEE000085/TDC/02)	SA-516 GR. 70N (TDC NO.-HEE000085/TDC/02)
STANDARD NOZZLE FLANGE (≤600 DN) & SRN (1)	SA-105N (TDC NO.-HEE000085/TDC/03)	SA-105N + 3mm (SS304L WOL) (TDC NO.-HEE000085/TDC/03)
STANDARD NOZZLE FLANGE (≤50 DN)	-	SA-182 GR. F304 (TDC NO.-HEE000085/TDC/04)
TUBESHEET	-	(1) SA-105N + 10mm (SS304L WOL) (TDC NO.-HEE000085/TDC/03)
GIRTH FLANGES	(1) SA-105N + 3mm (SS304L WOL) GASKET SEATING AREA (TDC NO.-HEE000085/TDC/03)	
END COVER	(1) SA-105N + 3mm (SS304L WOL) GASKET SEATING AREA (TDC NO.-HEE000085/TDC/03)	
INTERNAL BOLTS & NUTS (FULL THREADED) (HEAVY)	SS304L	
EXTERNAL BOLTS & HEAVY HEX NUTS (NOZZLE FLANGES AND GIRTH FLANGES)	SA-193 GR. B7 / SA-194 GR. 2H	
GASKET FOR NOZZLE FLANGES	(1) 4.5 mm THK SS304 SPWD, GRAPHITE FILLER SS INNER AND CS OUTER RING (m=3, y=703.07 kg/cm2)	
GASKET FOR GIRTH FLANGE	(1) 4 mm THK KAMMPROFILE GASKET (m=2, y=175.77 kg/cm2)	
TIE ROD	SS304L	
TUBES (SMLS.)	SA-213 GR. TP304L (TDC NO.-HEE000085/TDC/01)	
BAFFLE PLATE & SEALING STRIP	SS304L	
SPACER (SMLS.)	SA-213 GR. TP304L (TDC NO.-HEE000085/TDC/01)	
FITTINGS	SA-234 GR. WPB (TDC NO.- HEE000085/TDC/05)	
SADDLE SUPPORT & LIFTING LUG	SA/IS2062 E250B	
WEAR PLATE, LIFTING LUG, LIFTING LUG PAD & NAME PLATE BRACKET	SA-516 GR. 70 (TDC NO.- HEE000085/TDC/02)	
NAME PLATE & EARTHING LUG	SS304	

APPLICABLE CODE, STANDARDS

(A)	ASME SEC.II PART A, ED 2017	(G)	ASME B 16.5 - 2013
(B)	ASME SEC.II PART C, ED 2017	(H)	ASME B 16.47 - 2015
(C)	ASME SEC.II PART D, ED 2017	(I)	ASME B 36.10M / 36.19M - 2015
(D)	ASME SEC. IX, ED 2017	(J)	ASME B 16.20, 2016
(E)	ASME SEC. V, ED 2017	(K)	ASME SEC.VIII DIV 1, ED 2017
(F)	ASME B18.2.1 / B18.2.2M- 2010	(L)	TEMA 9th, ED 2007

LIST OF APPLICABLE GMM DRAWING

DRAWING NO.	DESCRIPTION (1)
HEE000085-01-00	GA DRAWING FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
HEE000085-01-01	TUBE BUNDLE DETAIL FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
HEE000085-01-02	TUBE SHEET LAYOUT FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
HEE000085-01-03	FABRICATION DETAIL FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
HEE000085-01-04	NAME PLATE & NAME PLATE BKT. DETAIL FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
HEE000085-01-05	LIST OF TWO YEAR OPERATIONAL SPARES FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
HEE000085-01-06	DAVIT ASSEMBLY DETAIL FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR

REV.	DATE	REVISION STATUS	DRN. BY.	DES. BY.	CHD. BY.	APPD. BY.
2	19.02.2020	REVISED NDT IN DESIGN DATA & W2A REVISED AS MARKED (2)	AGM	ABP	ABP	SDP
1	12.02.2020	DRAWING REVISED AS PER CLIENT COMMENTS	AGM	ABP	ABP	SDP
0	09.01.2020	ISSUE FOR AAPROVAL	AGM	ABP	ABP	SDP

REVISION STATUS

S.O. NO. : HEE000085 A/B		OWNER :	NATIONAL FERTILIZERS LTD
QTY. : ONE STACK		PURCHASER :	NATIONAL FERTILIZERS LTD
SCALE	NTS	PROJECT :	-
DRN.	AGM 04.01.2020	CLIENT PO NO. :	PC3372AMA190049U1
DESIGN	ABP 06.01.2020	DATE :	19.12.2019
CHKD.	ABP 06.01.2020		
APPD.	SDP 09.01.2020		

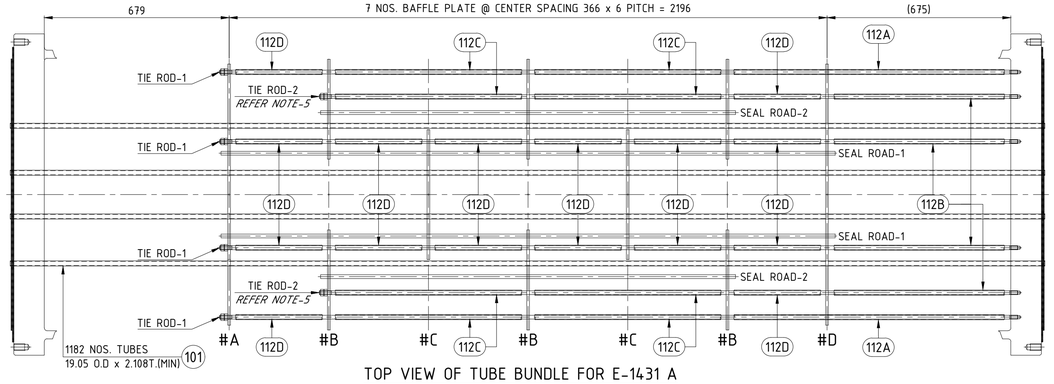
GMM Pfaudler — Defining the standard

TITLE: GA DRAWING FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR (1) TAG. NO.: (E-1431 A/B)

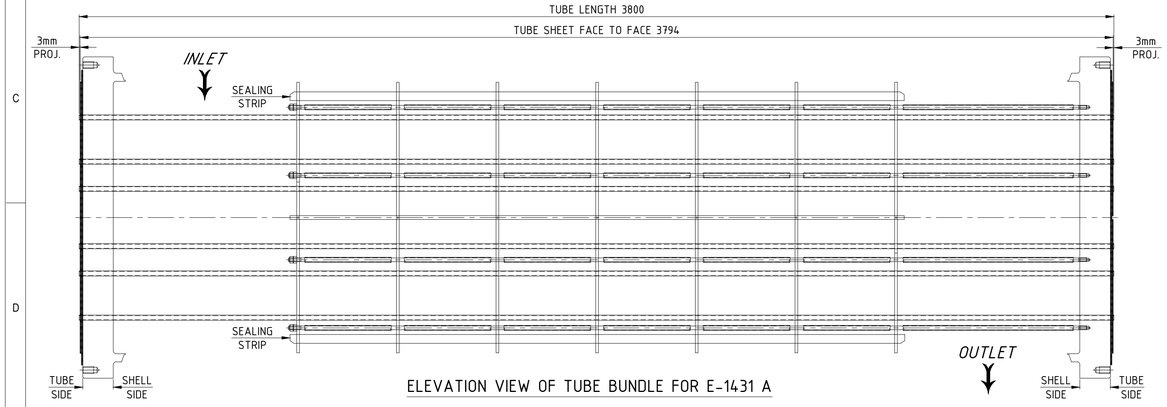
DRG. NO.: HEE000085-01-00 ITEMCODE : 90TMHE-0125 REV. 2

GMM A1

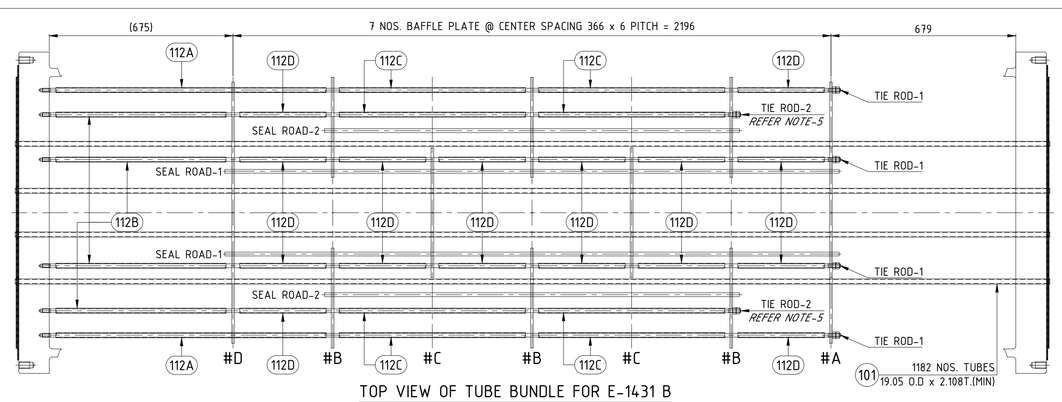
DO NOT SCALE, IF IN DOUBT ASK



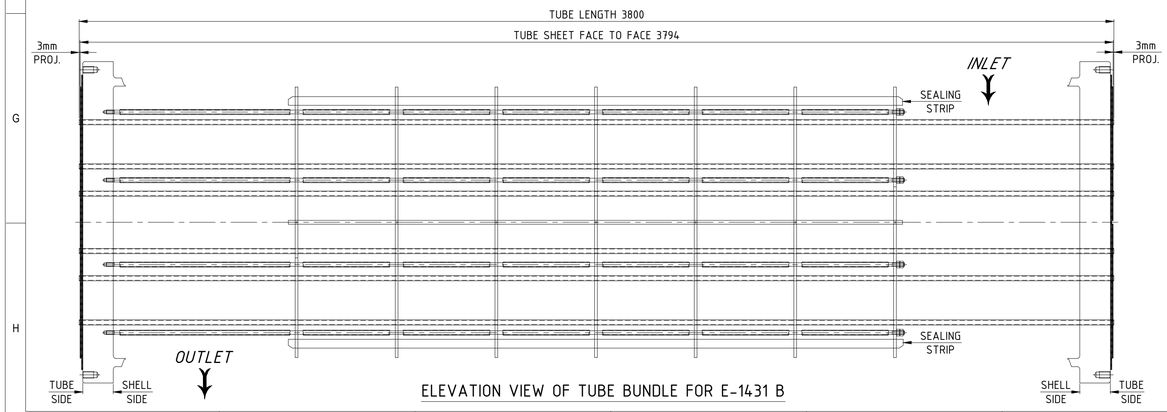
TOP VIEW OF TUBE BUNDLE FOR E-1431 A



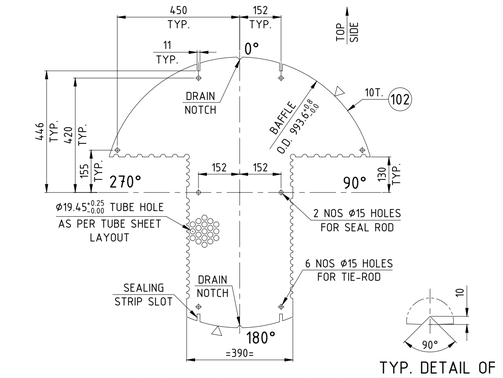
ELEVATION VIEW OF TUBE BUNDLE FOR E-1431 A



TOP VIEW OF TUBE BUNDLE FOR E-1431 B

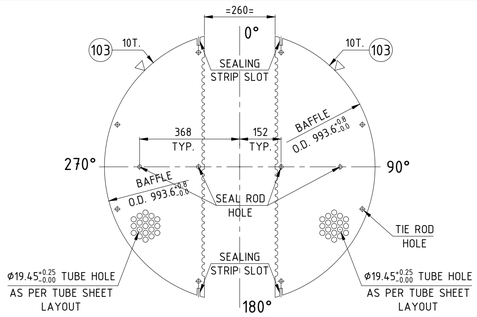


ELEVATION VIEW OF TUBE BUNDLE FOR E-1431 B



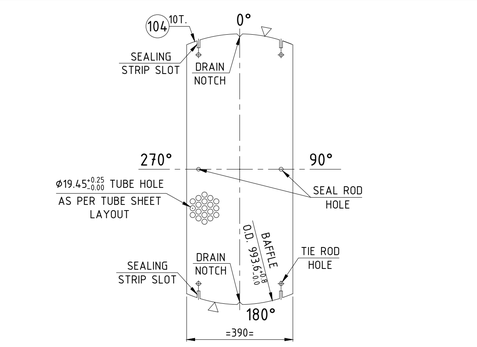
DETAIL OF BAFFLE TYPE #A

TYP. DETAIL OF DRAIN NOTCH



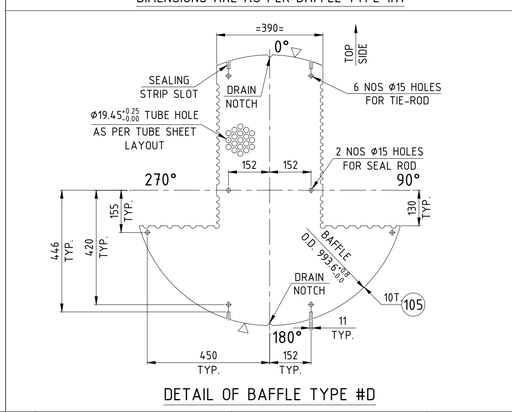
DETAIL OF BAFFLE TYPE #B

TIE ROD HOLE, SEAL ROD HOLE & SEALING STRIP SLOT DIMENSIONS ARE AS PER BAFFLE TYPE #A

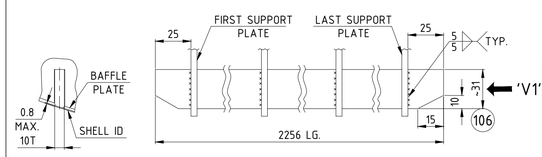


DETAIL OF BAFFLE TYPE #C

TIE ROD HOLE, SEAL ROD HOLE & SEALING STRIP SLOT DIMENSIONS ARE AS PER BAFFLE TYPE #A

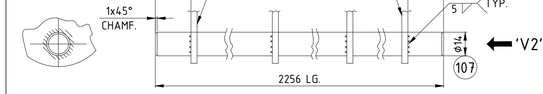


DETAIL OF BAFFLE TYPE #D



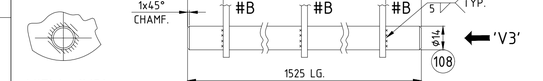
VIEW- 'V1'

TYP. DETAIL OF SEALING STRIP



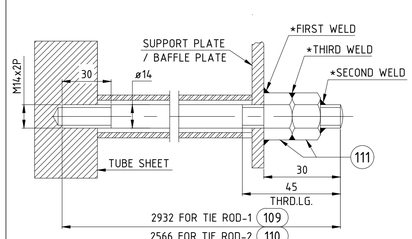
VIEW- 'V2'

TYP. DETAIL OF SEALING ROD-1



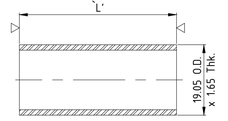
VIEW- 'V3'

TYP. DETAIL OF SEALING ROD-2



DETAIL OF TIE ROD ASSEMBLY

* WELDS ARE EXTENDED UP TO ONE FLAT FACE OF NUT.



SPACER		
P.NO.	QTY.	LENGTH ' L '
112A	4	1036
112B	12	670
112C	16	722
112D	56	356

DETAIL OF TIE SPACER

EXAMINED

This document has been examined and given the status as shown in the Design Appraisal Document (DAD) number below:

DAD Number: BPA 2006203/1

Date: 12 March 2020 Initials: AMM

Mumbai Plan Appraisal
Lloyd's Register Asia

Form: 1.2014.05

GENERAL NOTES:-

1. ALL DIMENSION ARE IN mm.
2. TUBE HOLES ARE AS PER TUBE SHEET LAYOUT DRAWING REFER DRAWING HEE000085-01-02.
3. DIMENSIONS ARE SHOWN IN BRACKET FOR REFERENCE ONLY.
4. REFER G.A. DRAWING FOR GENERAL NOTES.
5. TIE ROD-2 ARE SHOWN FOR REF. ONLY.
6. FOR TIE ROD HOLE MATCH AS PER TUBE SHEET LAYOUT.
7. TUBE HOLES IN BAFFLES SHOULD BE DEBURRED AND ROUNDED OFF FROM BOTH SIDES.

P.NO	DESCRIPTION	PARENT	SIZE	MATERIAL	QTY	WEIGHT	ITEM CODE
				TOTAL WEIGHT	4858	Kg.	
112 A-D	SPACERS	E-1431_A & E-1431_B	19.05 O.D. x 1.65T (MIN) x REF. TABLE.	SA-213 TP 304L (1)	REF. TABLE	7.6	02SS0232
111	HEX NUTS		M14 x 2P x STD.	SS 304L	32	4.8	13SSNT0368
110	TIE ROD-2		ø14 x 2566 LG.		4	12.7	TM5695-0002
109	TIE ROD-1		ø14 x 2932 LG.		12	43.5	TM5695-0001
108	SEALING ROD-2		ø14 x 1525 LG.		4	7.5	06SS0313
107	SEALING ROD-1		ø14 x 2256 LG.		4	11.2	06SS0313
106	SEALING STRIP		10 THK x 31 W x 2256 LG.		8	44.9	CPEPROF31R-0001
105	BAFFLE TYPE #D		10 THK x AS PER DETAIL		2	44.0	CPEBFL-0001
104	BAFFLE TYPE #C		10 THK x AS PER DETAIL	SS 304L	4	68.0	CPEBFL-0003
103	BAFFLE TYPE #B		10 THK x AS PER DETAIL		12	271.2	CPEBFL-0002
102	BAFFLE TYPE #A		10 THK x AS PER DETAIL		2	44.0	CPEBFL-0001
101	TUBES		19.05 O.D. x 2.108T (MIN) x 3800 LG.	SA-213 TP 304L (1)	2364	4298.5	02SS0107

BILL OF MATERIAL (FOR STACK ONLY)

REV.	DATE	REVISION STATUS	DRN. BY.	DES. BY.	CHD. BY.	APPD. BY.
1	12.02.2020	DRAWING REVISED AS MARK	AGM	ABP	ABP	SDP
0	09.01.2020	ISSUE FOR APPROVAL	AGM	ABP	ABP	SDP

REVISION STATUS

S.O. NO. : HEE000085 A/B				
QTY. : ONE STACK			OWNER/PURCHASER : NATIONAL FERTILIZERS LTD	
SCALE NTS			PROJECT : -	
DRN.	AGM	04.01.2020	CLIENT PO NO. :	PC3372AMA190049U1
DESIGN	ABP	06.01.2020	DATE :	19.12.2019
CHKD.	ABP	06.01.2020		
APPD.	SDP	09.01.2020		
TITLE:	TUBE BUNDLE DETAIL FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR TAG. NO.: (E-1431 A/B)			
DRG. NO.: HEE000085-01-01			ITEMCODE : 90TMHE-0125	REV. 1

GMM Pfaudler — Defining the standard

GMM A2

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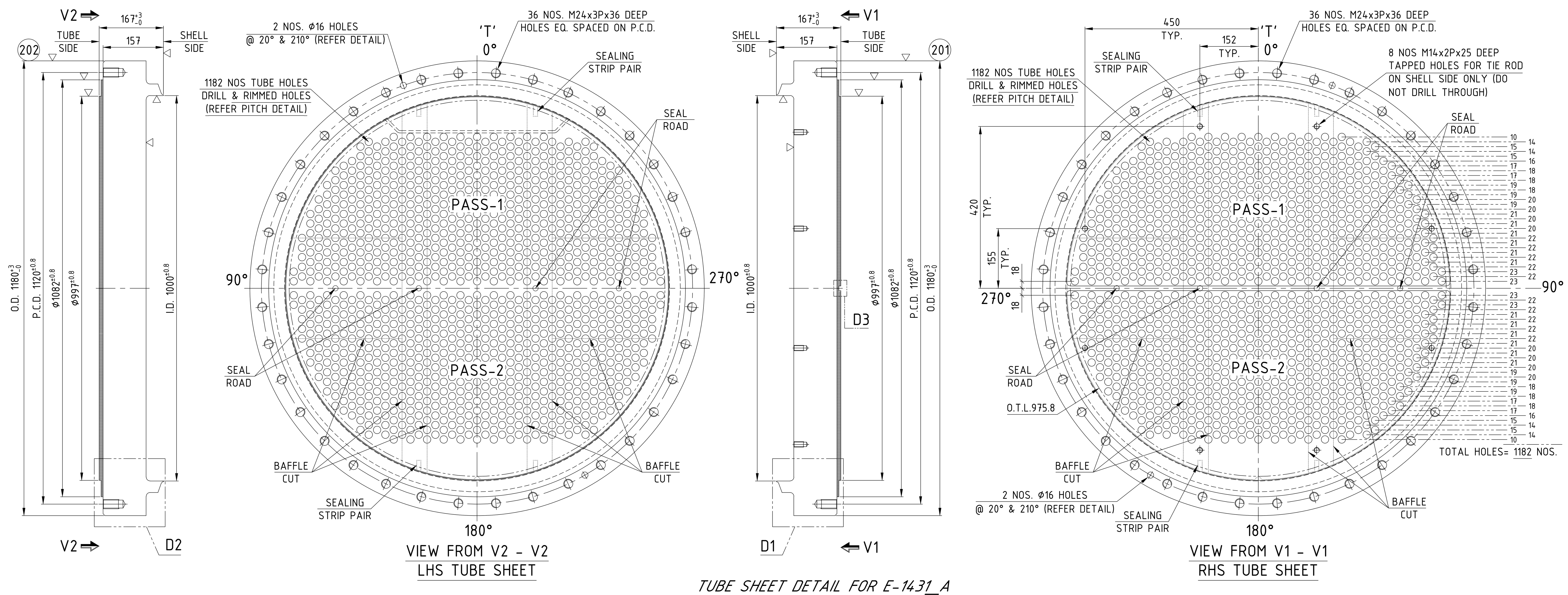
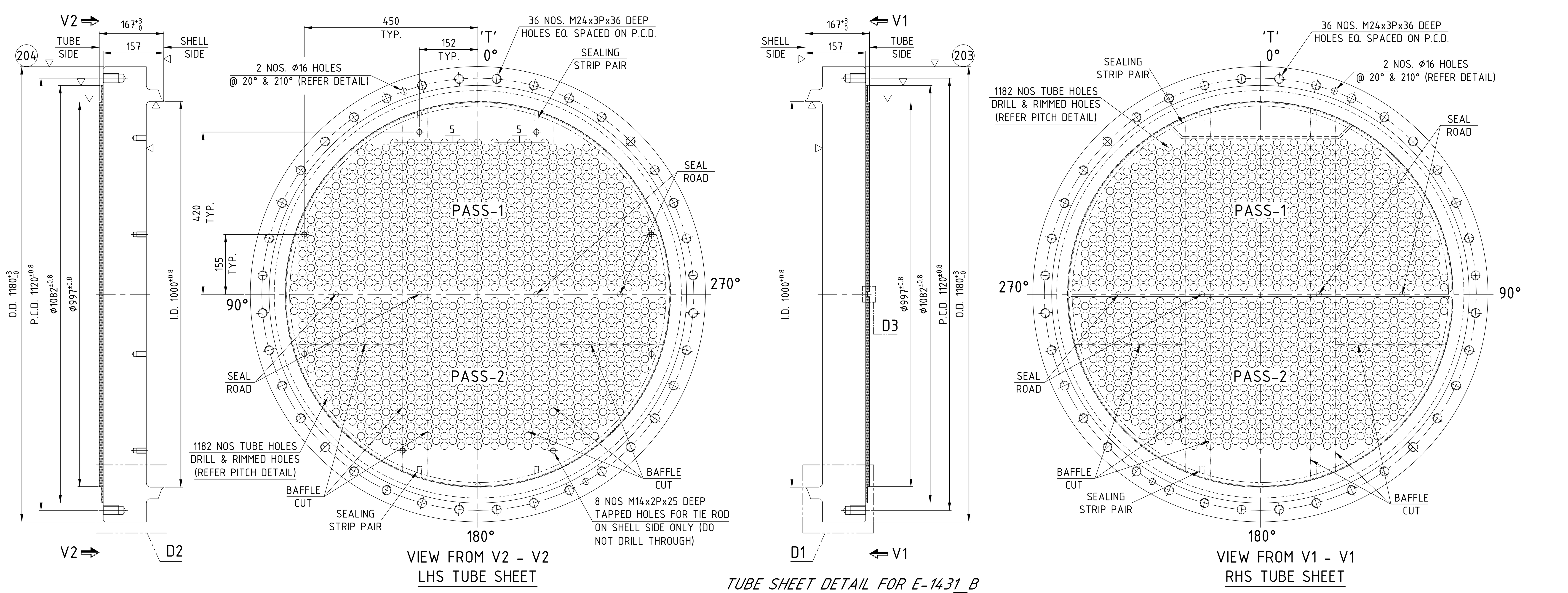
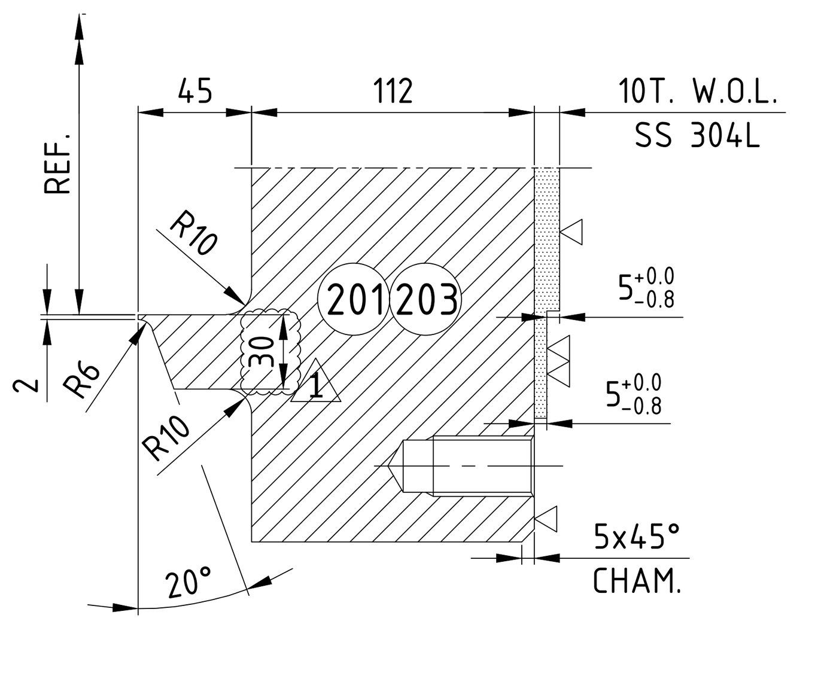
DO NOT SCALE, IF IN DOUBT ASK



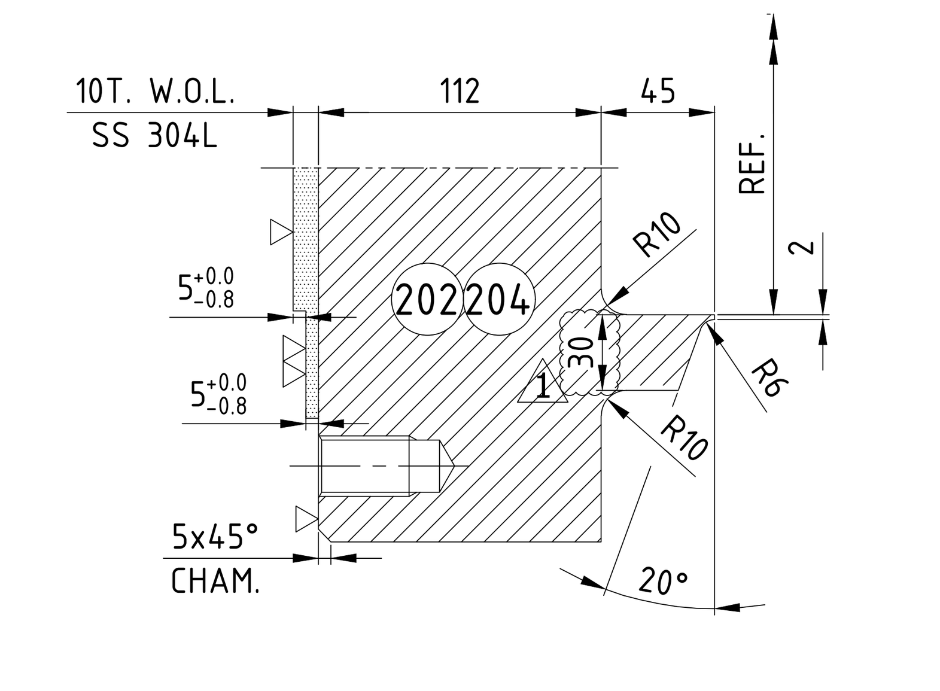
TUBE SHEET DETAIL FOR E-1431_A



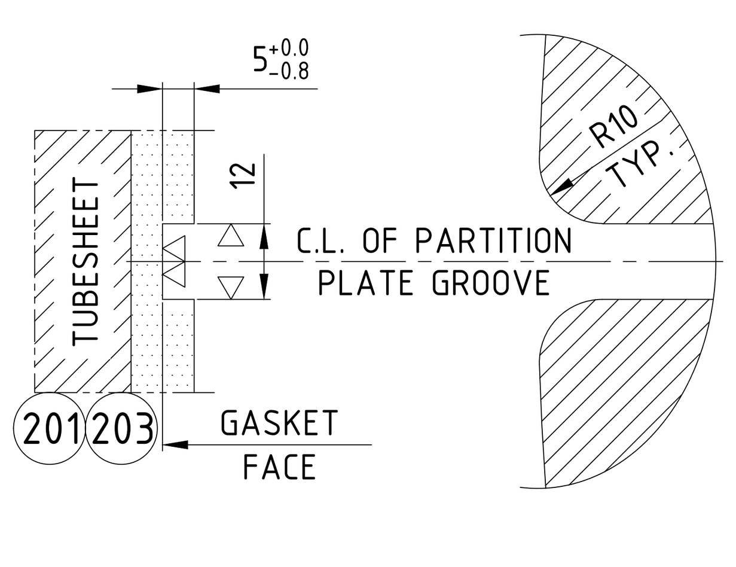
TUBE SHEET DETAIL FOR E-1431_B



DETAIL AT ' D1 '

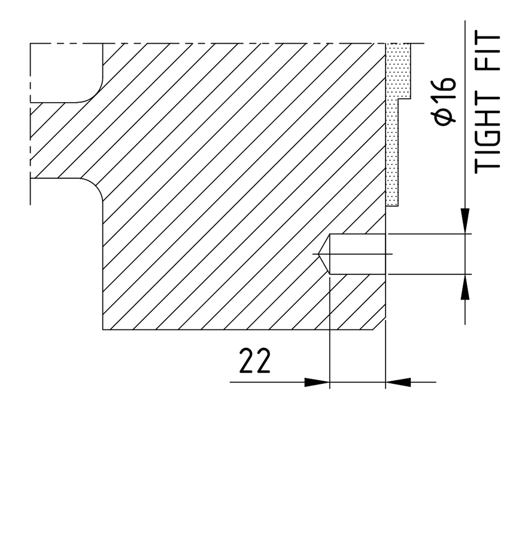


DETAIL AT ' D2 '

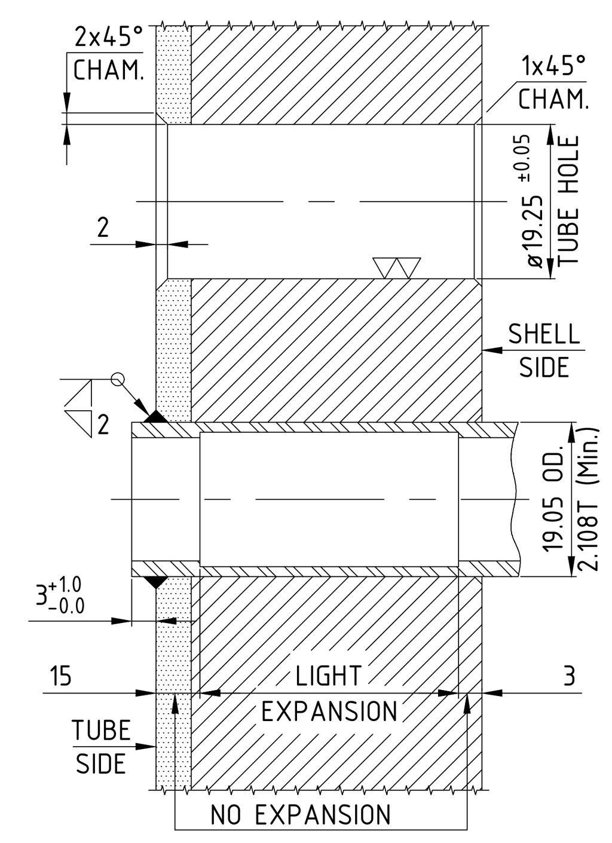


DETAIL AT ' D3 '

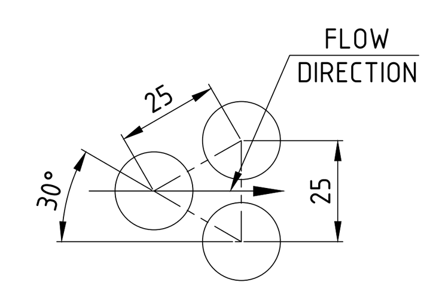
GROOVE DETAIL



DOWEL PIN HOLE DETAIL



TUBE HOLE & TUBE TO TUBESHEET JOINT DETAIL



TRIANGULAR TUBE PITCH DETAIL

NOTES :

1. TUBE HOLES SHALL BE DEBURRED & SHALL HAVE SMOOTH FINISH (▽▽) ≤ 0.8μm TO 63μm.
2. FINAL HOLE SIZE TO BE ACHIEVED BY REAMING
3. TUBE TO TUBE SHEET JOINT SHALL BE STRENGTH WELD. FOLLOW BY LIGHT EXPANSION
4. LIGHT EXPANSION % = 3 TO 5
5. TUBE TO TUBE SHEET JOINT SHALL BE CARRIED OUT IN TWO LAYERS AND STAGGERED EACH OTHER BY 180°

GENERAL NOTES:-

1) ALL DIMENSION ARE IN mm.
2) (▽▽) GASKET SURFACE FINISH SHALL BE 125-250 AARH. WITH SERRATED FINISH.
3) MARK 0°, 90°, 180°, 270° RESPECTIVELY ON TUBESHEET THICKNESS FACE.
4) REFER G.A. DRAWING FOR GENERAL NOTES.

EXAMINED
Lloyd's Register
This document has been examined and given the status as shown in the Design Appraisal Document (DAD) number below:
DAD Number: BPA 2006203/1
Date: 12 March 2020 Initials: AMM
Mumbai Plan Appraisal
Lloyd's Register Asia

P.NO	DESCRIPTION	PARENT	SIZE	MATERIAL	QTY	WEIGHT	ITEM CODE
				TOTAL WEIGHT		5735	Kg.
204	LHS TUBE SHEET	E-1431_B	157 LG + 10 THK x 1180 O.D.	SA-105N + SS 304L W.O.L	1	1433.6	CPETSH-0002
203	RHS TUBE SHEET	E-1431_B	157 LG + 10 THK x 1180 O.D.	SA-105N + SS 304L W.O.L	1	1433.6	CPETSH-0001
202	LHS TUBE SHEET	E-1431_A	157 LG + 10 THK x 1180 O.D.	SA-105N + SS 304L W.O.L	1	1433.6	CPETSH-0002
201	RHS TUBE SHEET	E-1431_A	157 LG + 10 THK x 1180 O.D.	SA-105N + SS 304L W.O.L	1	1433.6	CPETSH-0001

BILL OF MATERIAL (ONE STACK ONLY)

REV.	DATE	REVISION STATUS	DRN. BY.	DES. BY.	CHD. BY.	APPD. BY.
1	12.02.2020	REVISED THICKNESS OF LIP, AS MARKED 1	AGM	ABP	ABP	SDP
0	09.01.2020	ISSUE FOR APPROVAL	AGM	ABP	ABP	SDP

REVISION STATUS

S.O. NO. : HEE000085 A/B		OWNER :	NATIONAL FERTILIZERS LTD
QTY. : ONE STACK		PURCHASER :	NATIONAL FERTILIZERS LTD
SCALE	NTS	PROJECT :	-
DRN. AGM	04.01.2020	CLIENT PO NO. :	PC3372AMA190049U1
DESIGN ABP	06.01.2020	DATE :	19.12.2019
CHKD. ABP	06.01.2020		
APPD. SDP	09.01.2020		

GMM Pfaudler — Defining the standard

TITLE: TUBE SHEET LAYOUT FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR
TAG. NO.: (E-1431 A/B)

DRG. NO.: HEE000085-01-02 | ITEMCODE : 90TMHE-0125 | REV. 1

GMM A2

DO NOT SCALE, IF IN DOUBT ASK

HEAT EXCHANGER ARRANGEMENT OF E-1431A & E-1431B

▽ GASKET SURFACE FINISH SHALL BE 125-250 AARH. WITH SERRATED FINISH.

DETAIL OF VENT HOLE

DETAIL OF JACK SCREW

DETAIL OF DOWEL PIN HOLE & DOWEL PIN

DETAIL OF PARTITION PLATE

DETAIL D1

DETAIL OF LHS GASKET (304)

DETAIL OF RHS GASKET (309)

DETAIL OF PARTITION PLATE

NOTE:
1) WEEP HOLE SHALL BE PROVIDED AT THE CENTER OF EACH PASS PARTITION PLATE.

DETAIL OF SRN N1A (340)

DETAIL OF SRN N2B (344)

DETAIL OF SRN

DETAIL OF LIFTING LUG FOR MAIN SHELL

DETAIL OF LIFTING LUG FOR CHANNEL SHELL

VIEW FROM " V1 "
DETAIL OF IMPINGEMENT PLATE

DETAIL OF SADDLE SUPPORT

DETAIL OF NOZZLE N3A/B & N4A/B

NOZZLE CONNECTION OF N2B

DETAIL OF FABRICATED DUMMY PIPE

DETAIL OF NOZZLE V1 A/B & D1 A/B

DETAIL OF TUBE PLUG

END CAP DETAIL FOR HYDROTEST

DETAIL OF EARTHIG LUG

BASE PLATE DETAIL OF SLIDING & FIX SADDLE

FAB. PIPE WELD DETAIL

WELD DETAIL FOR L/S OF FAB. PIPE

WELD DETAIL FOR SO. FLG. TO NOZZLE NECK

WELD DETAIL FOR NOZZLE NECK TO SHELL

WELD DETAIL FOR SRN TO SHELL

WELD DETAIL FOR SRN / PIPE TO FITTINGS

GENERAL NOTES:-

1) ALL DIMENSION ARE IN mm.
2) (▽▽) GASKET SURFACE FINISH SHALL BE 125-250 AARH. WITH SERRATED FINISH.
3) DIMENSIONS ARE SHOWN IN BRACKET ARE FOR REFERENCE ONLY.
4) REFER G.A. DRAWING FOR GENERAL NOTES.

** 4.5 THK. SS 304 SPWD GASKET, GRAPHITE FILLED SS304 INNER & OUTER RING

P.NO	DESCRIPTION	NOZZLE MARK / PARENT	SIZE	MATERIAL	QTY	TOTAL WEIGHT 11959 Kg. WEIGHT	ITEM CODE
357	TUBE PLUG		Φ15 x 125 THK.	SS 304	60	10.6	
356	BLRF FLANGE		DN 40 x 150#	SA-182 F 304	4	7.2	41STDFL1452
355	STUD WITH TWO HEAVY HEX. NUT	V1 A/B & D1 A/B	1/2" UNC x 90 LG.	SA-193 GR. B8 SA-194 GR. 8	16	1.6	13SS3702
354	GASKET		DN 40 x 150#	**	4	0.3	27STDFD3086
353	LWNRF FLANGE		DN 40 x 150# x 150 LG.	SA-182 F 304	4	14	41STDFL3327
352	FAB PIPE	N4B	12 THK x 375 W x 1080 D.LG.	SA-516 GR 70N	1	38.2	TM5695-0008
351	FAB PIPE	N4A,N3A & N3B	12 THK x 300 W x 1080 D.LG.	SA-516 GR 70N	3	91.6	TM5695-0007
350	STUD WITH TWO HEAVY HEX. NUT	N4A/B & N3A/B	1" UNC x 150 LG.	SA-193 GR. B7 SA-194 GR. 2H	12	11	13CS4815
349	GASKET		DN 350 x 150#	**	1	1.1	27STDD0077
348	SORF FLANGE		DN 350 x 150#	SA-105+SS304L W.O.L.	4	45.6	TM5695MC-0002
347	PIPE CAP	N1A & N2B	DN 400 x SCH 80 x BW	SA-234 GR. WPB	2	87	42BUTWLD1309
346	FAB. DUMMY PIPE	N2B	363.5 O.D. x 317.5 I.D. x 120 LG.	SA-516 GR 70N	1	23.2	TM5695MC-0003
345	90° ELBOW		DN 350 x SCH 80 x L.R. (BW)	SA-234 GR. WPB	1	68	42BUTWLD1308
344	SRN		192 LG x 457.5 O.D. x 318 I.D.	SA-105N	1	128.1	CPE37NSUM-2042
343	STUD WITH TWO HEAVY HEX. NUT	N1B & N2A	1+3/8" UN8 x 250 LG.	SA-193 GR. B7 SA-194 GR. 2H	20	52.5	13CS5992
342	GASKET		DN 350 x 600#	**	1	1.6	27STD3440
341	SRN		333 LG x 605 O.D. x 318 I.D.	SA-105N	2	1087.7	CPE37NSUM-2040
340	SRN	N1A	335 LG x 457.5 O.D. x 318 I.D.	SA-105N	1	223.4	CPE37NSUM-2041
339	DELETED						
338	BOLT +WASHER+ HEAVY HEX. NUT		M24 x 3P x 90 LG.	SA-193 GR. B7 SA-194 GR. 2H	4	1.2	13CS3373+ 13WS0159
337	EARTHIG LUG		8 THK x 70 W x 95 LG.	SS 304	2	1	CPEPROF31R-0026
336	SHIMS PLATE		6 THK x 170 W x 910 LG.	IS 2062 GR.B	2	14.6	CPEPROF31R-0024
335	BASE PLATE	E-1431B	28 THK x 170 W x 910 LG.	IS 2062 GR.B	2	68	CPEPROF31R-0023
334	BASE PLATE		20 THK x 170 W x 910 LG.	IS 2062 GR.B	2	48.6	CPEPROF31R-0022
333	BASE PLATE	E-1431A	20 THK x 170 W x 910 LG.	IS 2062 GR.B	2	48.6	CPEPROF31R-0022
332	RIB PLATE-6	E-1431B	10 THK x 190 W x 235 LG.	IS 2062 GR.B	2	7	CPEPROF31R-0021
331	RIB PLATE-5		10 THK x 205 W x 285 LG.	IS 2062 GR.B	4	18.3	CPEPROF31R-0020
330	RIB PLATE-4		10 THK x 195 W x 230 LG.	IS 2062 GR.B	2	7	CPEPROF31R-0019
329	RIB PLATE-3		10 THK x 205 W x 280 LG.	IS 2062 GR.B	4	18	CPEPROF31R-0018
328	RIB PLATE-2	E-1431A	10 THK x 185 W x 200 LG.	IS 2062 GR.B	2	5.8	CPEPROF31R-0017
327	RIB PLATE-1		10 THK x 200 W x 250 LG.	IS 2062 GR.B	4	15.7	CPEPROF31R-0016
326	SIDE PLATE	E-1431B	10 THK x 260 W x 505 LG.	IS 2062 GR.B	4	41.2	CPEPROF31R-0015
325	SIDE PLATE		10 THK x 260 W x 510 LG.	IS 2062 GR.B	4	41.6	CPEPROF31R-0015
324	SIDE PLATE	E-1431A	10 THK x 260 W x 470 LG.	IS 2062 GR.B	4	38.4	CPEPROF31R-0014
323	WEB PLATE	E-1431B	10 THK x 935 W x 505 LG.	IS 2062 GR.B	2	74.1	CPEPROF31R-0013
322	WEB PLATE		10 THK x 935 W x 510 LG.	IS 2062 GR.B	2	74.9	CPEPROF31R-0013
321	WEB PLATE	E-1431A	10 THK x 935 W x 470 LG.	IS 2062 GR.B	2	69.0	CPEPROF31R-0012
320	WEAR PLATE	E-1431A & B	10 THK x 330 W x 1240 LG.	SA-516 GR 70N	6	192.7	CPEPROF31R-0005
319	IMPINGEMENT PLATE		6 THK x 500 W x 530 LG.	SS 304L	2	25.5	CPEPROF31R-0025
318	LIFTING LUG	MAIN SHELL	30 THK x 160 W x 180 LG.	IS 2062 GR.B	8	54.3	CPEPROF31R-0011
317	LIFTING LUG PAD		12 THK x 100 W x 250 LG.	SA-516 GR 70N	8	18.8	CPEPROF31R-0004
316	LIFTING LUG	LHS & RHS CHANNEL SHELL	16 THK x 114 W x 130 LG.	IS 2062 GR.B	8	14.9	CPEPROF31R-0010
315	LIFTING LUG PAD		12 THK x 100 W x 175 LG.	SA-516 GR 70N	8	13.2	CPEPROF31R-0003
314	PARTITION PLATE	E-1431A & E-1431B	14 THK x 800 W x 1000 LG.	SA-240 GR 304L	2	175.8	CPEPROF31R-0002
313	CHANNEL COVER		Φ1180 x 81 THK.	SA-105N+SS304L W.O.L.	2	1422.6	TM5695MC-0002
312	STUD WITH TWO HEAVY HEX. NUT		M24 x 3P x 245 LG.	SA-193 GR. B7 SA-194 GR. 2H	72	61.5	13CS3260
311	RHS CHANNEL SHELL		12 THK x 775 W x 3180 D.LG.	SA-516 GR 70N	2	464.3	TM5690-0003
310	RHS GIRTH FLANGE		100 THK x 1180 O.D. x 1027 I.D.	SA-105N+SS304L W.O.L.	4	832.7	TM5695MC-0001
309	RHS GASKET		4 THK x 1082 O.D. x 1056 I.D.	KAMMPROFILE	4	1	27NSFLB0121
308	MAIN SHELL		30 THK x 3460 W x 3235 D.LG.	SA-516 GR 70N	2	5272	TM5690-0002
307	DOWEL PIN		Φ20 x 40 LG.	SS 304	12	1.2	84PIN0675
306	JACK SCREW		M20 x 2.5P x 115 LG.	SS 304	24	7	13NS0090
305	STUD WITH HEAVY HEX. NUT		M24 x 3P x 175 LG.	SA-193 GR. B7 SA-194 GR. 2H	144	91.5	13CS0149
304	LHS GASKET		4 THK x 1082 O.D. x 1056 I.D.	KAMMPROFILE	2	0.7	27NSFLB0120
303	LHS GIRTH FLANGE		100 THK x 1180 O.D. x 1027 I.D.	SA-105N+SS304L W.O.L.	2	416.4	TM5695MC-0001
302	LHS CHANNEL SHELL		12 THK x 235 W x 3180 D.LG.	SA-516 GR 70N	2	140.8	TM5690-0001
301	DISHEND		12 THK x 1340 B.DIA	SA-516 GR 70N	2	265.7	HE5420ELP-0001

BILL OF MATERIAL (FOR ONE STACK)

REV.	DATE	REVISION STATUS	DRN. BY.	DES. BY.	CHD. BY.	APPD. BY.
1	12.02.2020	REVISED THICKNESS OF MAIN SHELL, AS MARKED ⚠	AGM	ABP	ABP	SDP
0	09.01.2020	ISSUE FOR AAPROVAL	AGM	ABP	ABP	SDP

REVISION STATUS

S.O. NO. : HEE000085 A/B		OWNER :	NATIONAL FERTILIZERS LTD
QTY. : ONE STACK		PURCHASER :	NATIONAL FERTILIZERS LTD
SCALE	NTS	PROJECT :	-
DRN.	AGM 04.01.2020	CLIENT PO NO. :	PC3372AMA190049U1
DESIGN	ABP 06.01.2020	DATE :	19.12.2019
CHKD.	ABP 06.01.2020		
APPD.	SDP 09.01.2020		

GMM Pfaudler — Defining the standard

TITLE: FABRICATION DETAIL FOR 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR ⚠
TAG. NO.: (E-1431 A/B)

DRG. NO.: HEE000085-01-03 | ITEMCODE : 90TMHE-0125 | REV. 1

GMM A1

EXAMINED

Lloyd's Register

This document has been examined and given the status as shown in the Design Appraisal Document (DAD) number below:

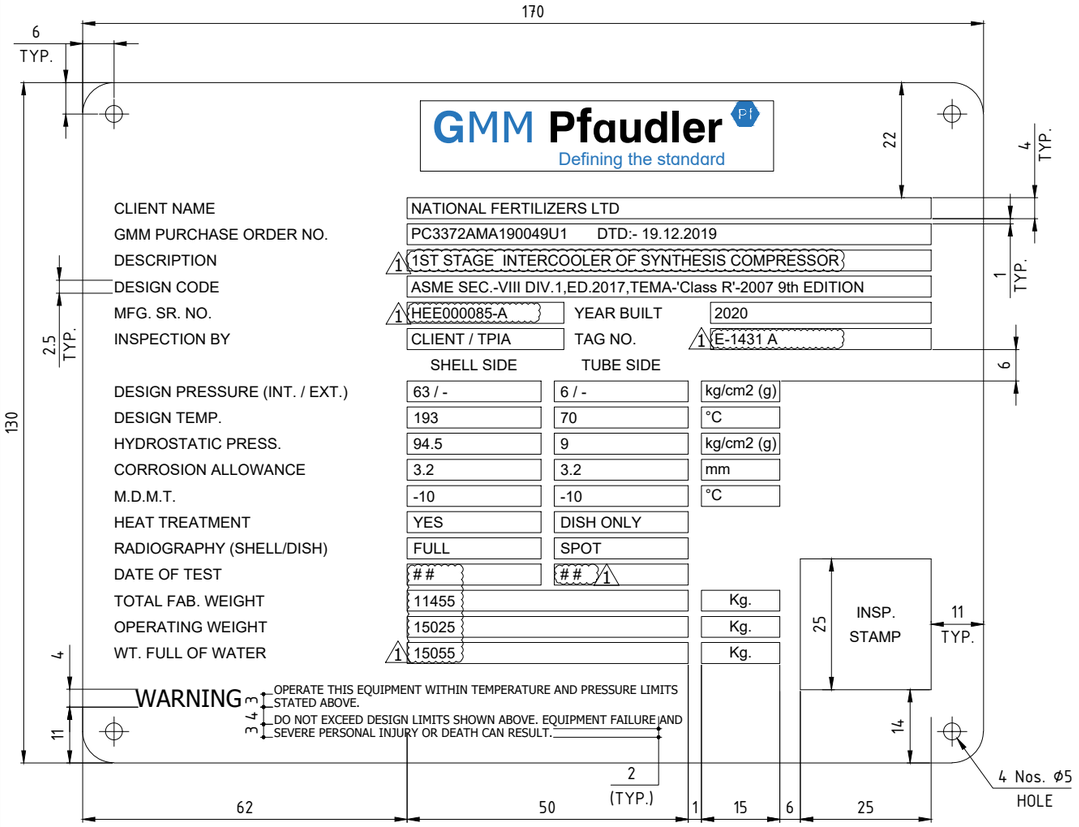
DAD Number: BPA 2006203/1

Date: 12 March 2020 Initials: AMM

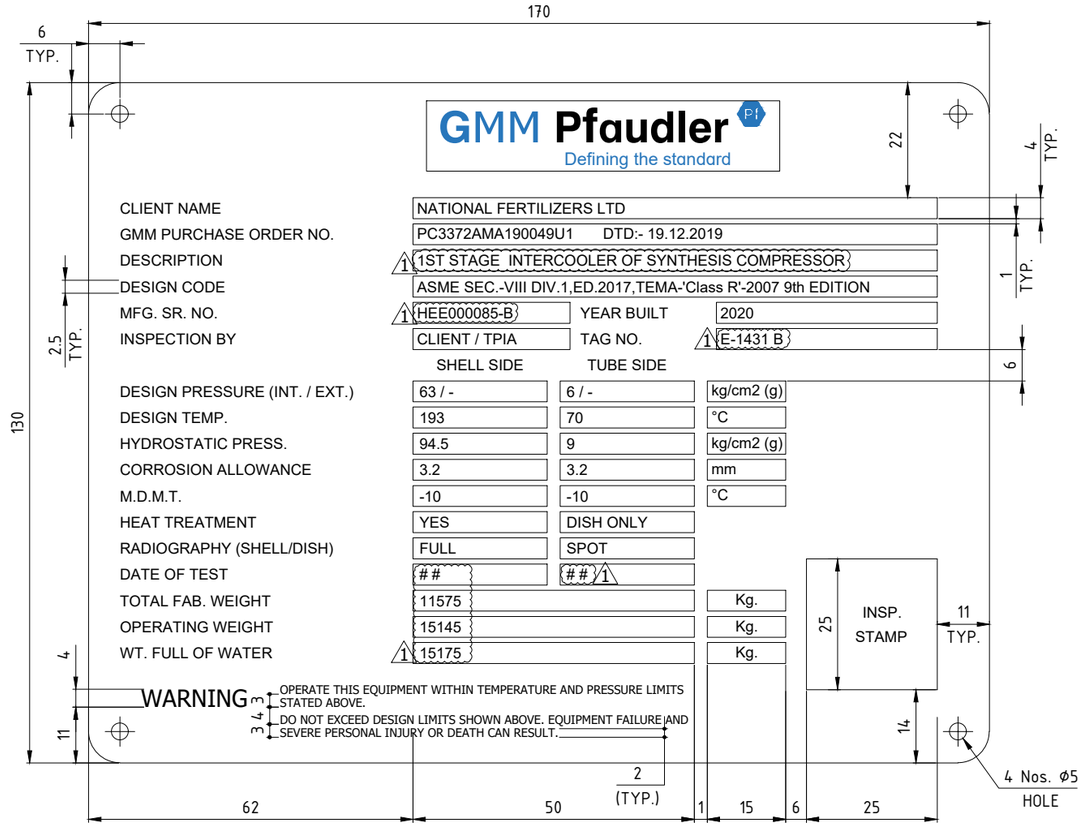
Mumbai Plan Appraisal
Lloyd's Register Asia

LR001.1.2016.05

DO NOT SCALE, IF IN DOUBT ASK



NAME PLATE DETAIL FOR E-1431 A (401A)



NAME PLATE DETAIL FOR E-1431 B (401B)

NOTES:-

1. ALL DIMENSION ARE IN mm. UNLESS OTHERWISE SPECIFIED.
2. BACK GROUND OF NAME PLATE :- WHITE.
3. ALL LETTERS BLOCKS & BORDER SHALL BE RAISED POLISHED FACE.
4. ALL LETTERS AND LETTER BLOCKS SHALL BE ENGRAVED IN BLACK.
5. MONOGRAM SHALL BE ENGRAVED IN DARK BLUE.
6. CHARACTERS INDENTED OR RAISED SHALL BE ATLEAST 0.10 mm.
7. HEIGHT OF CHARACTERS :- 2mm MIN.

PUNCH THE DATE OF TESTING AFTER HYDRO TEST. (ex. DD.MM.YYYY)

RETAINED FOR INFORMATION

Lloyd's Register

as referred to in the document numbered below:

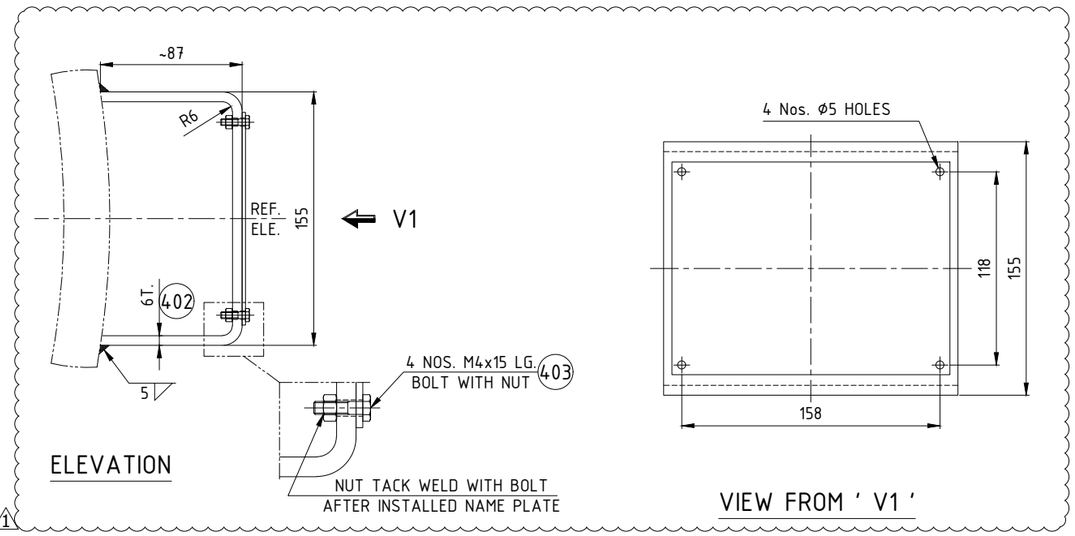
DAD Number: BPA 2006203/1

Date: 12 March 2020 Initials: AMM

Mumbai Plan Appraisal

Lloyd's Register Asia

LR1010.2016.05



				TOTAL WEIGHT	8	Kg.
403	BOLT WITH NUT	M4 x 0.7P x 20 LG	8	SS 304	1.1	13SS0130
402	NAME PLATE BRACKET	6T. x 190W x 335 D.Lg.	2	SA-516 GR 70	6.2	-
401 B	NAME PLATE	2T. x 130W x 170 D.Lg.	1	SS 304	0.4	-
1 401 A	NAME PLATE	2T. x 130W x 170 D.Lg.	1	SS 304	0.4	-
P.NO	DESCRIPTION	SIZE	QTY.	MATERIAL	WT. Kg	ITEMCODE

BILL OF MATERIAL (FOR STACK ONLY)

REV.	DATE	REVISION STATUS	DRN. BY.	DES. BY.	CHD. BY.	APPD. BY.
1	12.02.2020	DRAWING REVISED AS MARKED 1	AGM	ABP	ABP	SDP
0	09.01.2020	ISSUE FOR APPROVAL	AGM	ABP	ABP	SDP

REVISION STATUS

S.O. NO. : HEE000085 A/B			OWNER :	NATIONAL FERTILIZERS LTD
QTY. : ONE STACK			PURCHASER :	NATIONAL FERTILIZERS LTD
SCALE NTS			PROJECT :	-
DRN.	AGM	04.01.2020	CLIENT PO NO. :	PC3372AMA190049U1
DESIGN	ABP	06.01.2020	DATE :	19.12.2019
CHKD.	ABP	06.01.2020		
APPD.	SDP	09.01.2020		

GMM Pfaudler
Defining the standard

TITLE: NAME PLATE & NAME PLATE BRACKET DETAIL DRAWING FOR 1 1ST STAGE INTERCOOLER OF SYNTHESIS COMPRESSOR TAG. NO.: (E-1431 A/B)

DRG. NO.: HEE000085-01-04 ITEMCODE : 90TMHE-0125 REV. 1

GMM A3