43-C-202

2025012

43-E-233

2025 11

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CHINA KUNLUN CONTRACTING & ENGINEERING CORP	PROJECT	2025	
	UNIT	2025	

F.APPR.		DISCIP			DOC.NO.	01EN25015D-0010-EQ-P10-003
APPR.	魏伟	PHASE				
CHKD.	袁国平	REV.	1			1 / 20
DESIGN	张东旭	DATE	2025.12.10			SHEET 1 OF 20

2025

/

2025012-43-EQ-ITB-0003

CHECKED	DISCIP.						
	SIGN						
	DATE	2025.12.10					

1

1.1 2025

43-E-233

1.2

1.3

1.4

1.5

2

2.1

	3.8
	1020 N/m^2
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	0.15g
	A

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3

1	43-E-233		1	

01EN25015D-0010-PR-04-43E233 “ ”

MPaG)	2.9/FV	2.32/FV
( )	150	175
(mm)	3	3
	Q345R 10	
	20	

4

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4.2

4.3

TSG 21-2016

GB/T 150.1~4-2024

GB/T 151-2014

2

GB/T 713.2-2023

GB/T 8163-2018

GB/T 9948-2013

GB/T 14976-2012

GB/T 25198-2023

NB/T 10558-2021

NB/T 47013.1~13

NB/T 47014-2023

NB/T 47015-2023

NB/T 47016-2023

NB/T 47008-2017

NB/T 47019

NB/T 47020~47027-2012

5

5.1

1

2

3

4

5

5.2

5.2.1

a)

b) D

5.2.2

a)

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5.2.3

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c)

5.2.4

a)

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5.3.1

a)

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d)

5.3.2

a)

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6

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2

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7.1

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7.3.1

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7.3.3

3 , 100mm

7.3.4

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8

8.1

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8.3

a) GB/T 9948-2013

b) NB/T 47019

GB/ 151

c) 20MPa 10

8.4

a)

NB/T 47008

b) NB/T47013 100% I

8.5

9

9.1

9.1.1 GB/T 150 GB/T 151 NB/T 47013

9.1.2 NB/T 47013

9.1.3 A B GB/T150.4 10.3.2

9.2

9.2.1 GB/T 150 NB/T 47015 GB/T 30583

9.2.2

9.2.3

9.2.4

3 100mm 6

9.2.5

9.3

9.3.1 GB/T 150 GB/T 151

TSG 21-2016

9.3.2 5

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9.4.2 ,

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9.4.3

10

10.1

10.1.1

a)

b)

c)

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e)

10.1.2

10.1.3 GB/T 8923 Sa2.5

10.1.4

10.1.5

10.2

10.2.1 NB/T 10558

10.2.2

10.2.3

10.2.4

10.2.5

10.2.6

10.2.7 0.05MPa

11

11.1

11.1.1

11.1.2

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c)

d)

e) 2

f) 1

g)

h)

i)

j) ( )

k)

l)

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a)

b)

c)

d)

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11.2.1 “ ” 3

11.2.2

11.3

11.3.1 “ ” 4

11.3.2 7 1 6 2

PDF A4

11.3.3 1

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12.1

12.1.1

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12.1.2

12.2

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12						

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1	( )	(X)	
2		(X)	
3		(X)	
4		(X)	
5		(X)	
6		(X)	
7		(X)	
8	(/)	(X)	
9	( )	(X)	
10	( )	(X)	
11	( )	(X)	
12		(X)	
13		(X)	
14		(X)	

3.

1				100%	
2				100%	
3					10% 4
4					

1

2

4.

1				100%	
2				100%	
3					10% 4

1

3:

1	PDF
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3	
4	(ITP)
5	WPS PQR
6	
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10	

4:

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4	WPS PQR
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7	( )
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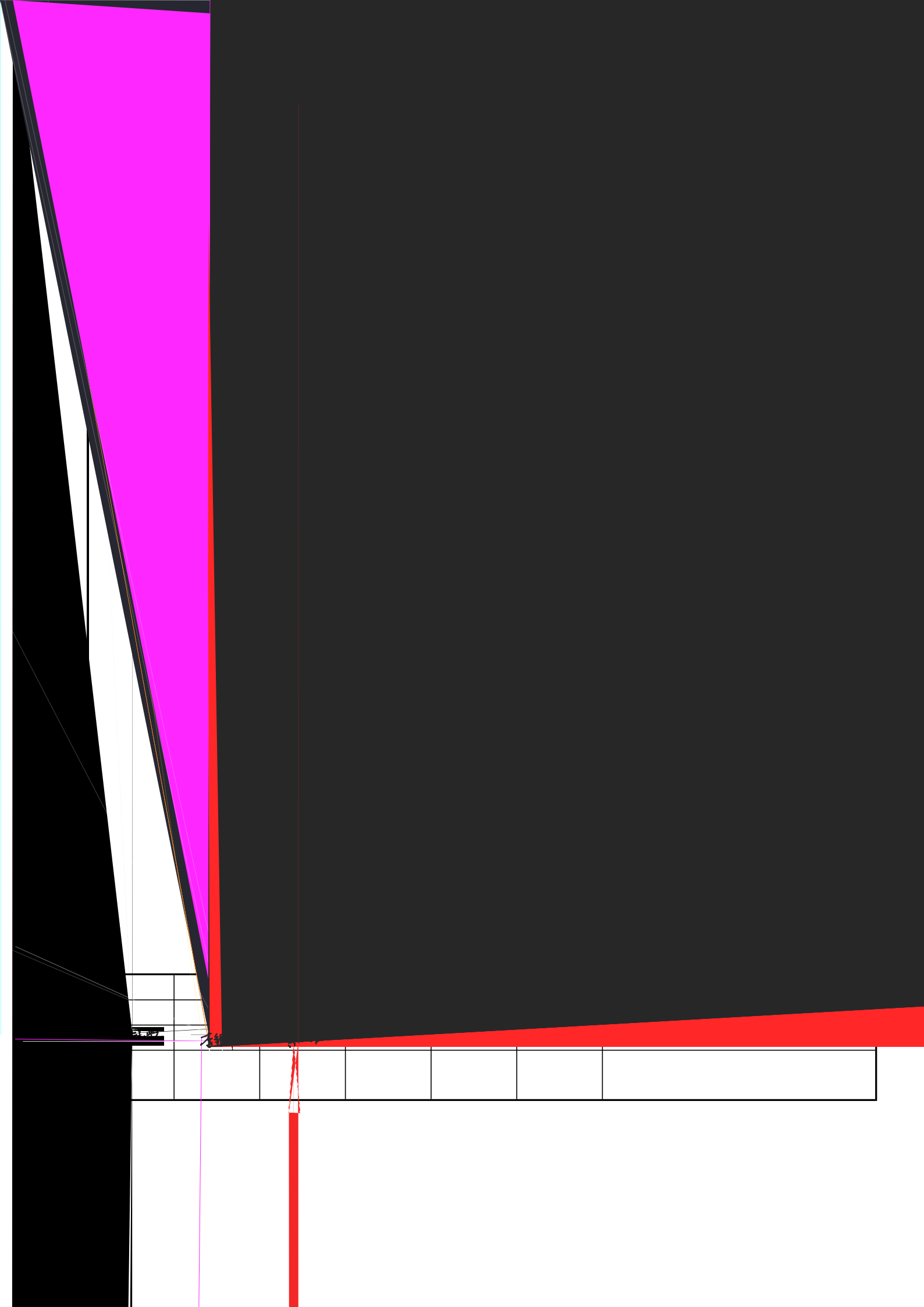
12	



DESIGN DATA

REV.

1	OPERATING CONDITION		100%	SUPPORT TYPE		
2	HEAT EXCHANGER TYPE		BEU	INSTALLATION POSITION		
3	HEAT TRANSFER AREA PER UNIT		466.87 m2	QUANTITY OF IN SERIES / IN PARALLEL	1	
4			SHELLSIDE		TUBESIDE	
5	/ OPERATING PRESSURE	Mpa.G	1.9			
6	DESIGN PRESSURE	Mpa.G	2.9		2.32	
7	FULL VACUUM		FV		FV	
8	/ OPERATING TEMPERATURE		103.98/121		155.46/153.58	
9	DESIGN TEMPERATURE		150		175	
10	METAL AVERAGE TEMP.		113.02		138.37	
11	CORROSION ALLOWANCE	mm	3		3	
12	TEST TYPE & PRESSURE	Mpa.G				
13	INSULATION THICKNESS	mm				
14	MEDIUM CHARACTERISTIC					
15	MEDIUM CORROSION CHAR.					
16	CLEANING METHOD					
17	HEAT TREATMENT					
18	DESIGN LIFE	year				

ESTIMATED WEIGHT PER UNIT

19	EMPTY WEIGHT	Kg	FULL OF WATER WEIGHT		Kg
20	BUNDLE WEIGHT	Kg	FULL OF MEDIUM WEIGHT		Kg
21	FABRICATED WEIGHT	Kg	OPERATING WEIGHT		Kg

DESIGN,FABRICATION AND INSPECTION STANDARDS

22

23

24

25

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28

DESIGN DATA REV.

29	NOMINAL DIAMETER	mm	SHELL	1200.0	CHANNEL	1200.0	
30	FULL VOLUME	m^3	SHELL		CHANNEL		
31	BUNDLE		TUBE		BAFFLE		
32							

PROCESS DATA REV.

55	FLUID PHYSICAL PROPERTIES		IN	SHELLSIDE OUT		IN	TUBESIDE OUT	
56	FLUID							
57	TOTAL FLUID FLOW	Kg/h	1000000	1000000		34260		34260
58	VAPOUR FLOW	Kg/h						
59	LIQUID FLOW	Kg/h						
60	STEAM	Kg/h				34260		
61	WATER	Kg/h	100	1000000				34260
62	NON-CONDENSATIO	Kg/h						
63	DENSITY	Kg/m^3	956.07	942.86				912.68
64	VISCOSITY	cP	0.2706	0.2303				0.1768
65	SPECIFIC HEAT	KJ/Kg	4.2188	4.2452				4.3225
66	CONDUCTIVITY	W/m	0.6794	0.6830				0.6800
67	SURFACE TENSION	dyne/cm						
68								

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	HOTSIDE FLUID PROPERTIES									REV.
83	FLUID COMPOSITION	%/WW								
84	PRESSURE	Mpa.G								
85	TEMPERATURE									
86	VAPOUR	DENSITY	Kg/m^3							
87		VISCOSITY	Cp							
88		SPECIFIC HEAT	KJ/Kg							
89		THERMAL COND. FACTOR	W/m							
90	LIQUID	DENSITY	Kg/m^3							
91		VISCOSITY	Cp							
92		SPECIFIC HEAT	KJ/Kg							
93		THERMAL COND. FACTOR	W/m							
	COLDSIDE FLUID PROPERTIES									
94	FLUID COMPOSITION	%/WW								
95	PRESSURE	Mpa.G								
96	TEMPERATURE									
97	VAPOUR	DENSITY	Kg/m^3							
98		VISCOSITY	Cp							
99		SPECIFIC HEAT	KJ/Kg							
100		THERMAL COND. FACTOR	W/m							
101	LIQUID	DENSITY	Kg/m^3							
102		VISCOSITY	Cp							
103		SPECIFIC HEAT	KJ/Kg							
104		THERMAL COND. FACTOR	W/m							

NOZZLE LOAD

	NOZZLE NAME/MARK	FORCE(N)			MOMENT(Nm)			
			Fy	Fz	Mx	My	Mz	
105								
106								
107								
108								
109								
110								

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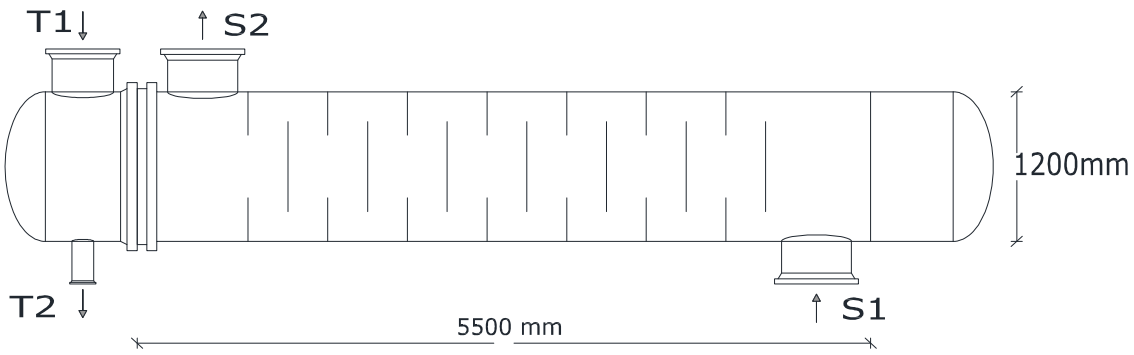
NOZZLE SUMMARY

REV.

	MARK	NO.	NOM.DIA. mm	NOM.PRESS. MPa.G	FLANGE STD.	FLANGE TYPE	FLANGE SEAL	FUNCTION OR NAME	mm	NOTE	
111					HG/T20615	WN	RF				
112					HG/T20615	WN	RF				
113					HG/T20615	WN	RF				
114					HG/T20615	WN	RF				
115											
116											
117											
118											
119											
120											
121											
122											
123											
124											
125											
126											
127											
128											
129											

FATIGUE DESIGN DATA OF TUBESHEET AND BELLOWS

	CONDITIONS	CYCLES	SHELLSIDE PRESS. Mpa.G		TUBESIDE PRESS. Mpa.G		
130	DESIGN CONDITION						
131	DESIGN CONDITION						
132	EXPANSION						
133	COMPRESSION						
134	OPERATING CONDITION						
135	START UP						
136	SHUT DOWN						
137	CAUSTIC WASH						
138	SHELLSIDE FLUID FAILURE						
139	TUBESIDE FLUID FAILURE						
140	SHELLSIDE HYDRAULIC TEST						
141	TUBESIDE HYDRAULIC TEST						



Unit	Shell 1
TEMA type	BEU
Shell ID	1200.0 mm
Actual OTL	1186.4 mm
Height under inlet nozzle	191.39 mm
Height under outlet nozzle	204.09 mm
Tube type	Plain
Tube OD	19.000 mm
Tube pitch	25.000 mm
Tube layout angle	30 deg
Tubes	1448
Tube positions available	1448
Tie rods	8
Seal strip pairs	0
Tube Passes	2
Perpendicular passlane width	61.000 mm
Baffle cut % diameter	20

TUBEPASS DETAILS

Pass	Rows	Tubes
1	17	724
2	17	724

SYMBOL LEGEND

- Tube
- Dummy Short Tube
- Dummy Long Tube
- Plugged Tube
- Tie Rod
- Seal Rod
- Impingement Rod

1

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