

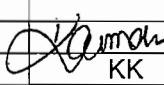
**DATA SHEET FOR
LUBE OIL COOLER
(TAG NO.117-EE-487)**

 Enriching Lives	REFRIGERATION PACKAGE 117-LZ-480	KIRLOSKAR PNEUMATIC CO. LTD.
TITLE: DATASHEET FOR LUBE OIL COOLER (TAG NO:117-EE-487)		Doc. No: PRJ/9742/11 Rev. 1

No. of Pages 4 Including this sheet

OWNER : BCPL- LEPETKATA, DIBRUGARH ASSAM
PROJECT : BRAHMAPUTRA PETROCHEMICAL COMPLEX PROJECT
UNIT : 220 KTA-LLDPE/HDPE
PMC : ENGINEERS INDIA LIMITED, NEW DELHI
EIL JOB NO. : 6907
VENDOR : KIRLOSKAR PNEUMATIC CO. LTD, PUNE
KPCL JOB NO. : 9742

REVIEW CODE	1	2	3
Signature & Name	[Signature]		
महोदय एवं नाम	[Signature]		
दिनांक	- 19/03/10		
क्र.सं.	6007/209		

1	REVISED AS MARKED	 KK	 KK	RCS	09/03/2010
0	ISSUED FOR REVIEW	BS	KK	RCS	25/01/2010
Rev.	Description	Prepared by	Reviewed by	Approved by	Approved Date

RE / 1	EIL JOB NO.	6907	ITEM NO.:	117-LZ-480
2	REQN. NO.	6907-117-LC-MR-4370	CUSTOMER:	BCPL
3	SERVICE OF UNIT	Lube oil cooling for Refrigeration compressor	PROJECT:	Brahmaputra Petrochemical Complex Project
4			LOCATION:	Lepetkata
5	SIZE	400 mmX 4000 mm 4055.55 TYPE BEM Horizontal	CONNECTED II	SERIES one PARALLEL
6	SURFACE PER UNIT	35.67/35.08 m ²	SHELL PER UNIT	one NO. OF UNITS 1
7	(gross/eff)	(gross/eff)	PERFORMANCE OF ONE UNIT	
8			SHELL SIDE	TUBE SIDE
9	FLUID CIRCULATED		Lube Oil	Cooling Water
10	TOTAL FLUID ENTERING	Kg/hr	5018.47 8198.61	20030.2 22032.6
11			INLET	OUT LET
12	VAPOUR	Kg/hr		
13	LIQUID	Kg/hr	5018.47 8198.61	22032.6 20030.2
14	STEAM	Kg/hr		
15	WATER	Kg/hr		22032.6
16	NON CONDENSABLES	Kg/hr		22032.6
17	DENSITY - LIQ/VAP IN/OUT	Kg/m ³	934.45 961.4	995.3 991.7
18	VISCOSITY - LIQ/VAP IN/OUT	Cp	12.307 12.439	0.7488 0.6177
19	SPECIFIC HEAT-LIQ/VAP IN/OUT	Kcal/Kg °C	0.505 0.4688	0.9986 0.9985
20	THER. COND.-LIQ/VAP IN/OUT	Kcal/hr m ² °C	0.1305 0.1332	0.5328 0.5441
21	OPERATING TEMPEARE	°C	100.28 50	33 43
22	MOL WEIGHT - VAP/NON COND.			
23	LATENT HEAT	Kcal/Kg		
24	INLET PRESSURE	Kg/cm ² g	22.6 24.14	3.97 4.47
25	NO. OF PASSES PER SHELL		1	6
26	VELOCITY	m/sec	0.18 0.20	4.47 1.23
27	PRESSURE DROP	Kg/cm ²	ALL: 0.30	CALC: 0.168
28	FOULING RESISTANCE	hr m ² °C/Kcal	0.0002	ALL: 0.80 CALC: 0.483
29	HEAT EXCHANGED	MMKcal/hr	0.219853	WEIGHTED M.T.D. (CORRECTED) 28.2 °C
30	TRANSFER RATE SERVICE	Kcal/hrm ² °C	199.31	CLEAN 268.14
31	CONSTRUCTION OF ONE SHELL			
32	DESIGN PRESSURE	Kg/cm ² g	26.70 25 Full Vacuum	20.60 20 Full Vacuum
33	TEST PRESURE	Kg/cm ² g	29.22 27.5 (Pneu) AS PER CODE	22 AS PER CODE 26.78 (Hydro)
34	DESIGN TEMPERATURE	°C	(-43/130) Δ	T/SHT 65 -45/80
35	NO. OF TUBES	154	OD 20 mm THK (MIN) 2 mm	LENGTH 11000 mm PITCH 25 mm Layout 30
36	SHELL PORT- ID 400 mm ID mm		SEALING STRIP	
37	BAFFLES	SINGLE SEGMENTAL	PITCH mm 100	NO. OF (DIA) 25 HORIZ IMPINGMEN - None
38	MATERIAL ACCORDING TO ASTM		GASKET	NOZZLES
39				
40	SHELL		IN	
41	SHELL COVER	Refer MOC table (Annexure -1)	OUT	Refer Annexure -2.
42	CHANNEL		IN	
43	CHANNEL COVER			
44	FLT. HD. COVER			
45	SHELL COVER			
46	SHELL CHANNEL			
47	FLOATING HEAD			
48	CHANNEL COVER			
49	BAFFLES-TUBE SUPPORT			
50	TUBE SHEET			
51	TUBES			
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ANNEXURE-I		
MOC table for oil cooler_9742		
Sr. No.	Description	Material of Construction
1	Shell	SA 516 GR. 70
2	Shell side nozzle necks	SA 333 GR. 6
3	Shell side nozzle flange	SA 350 Gr LF2, CI 1
4	Channel shell, Dished End	SA 516 GR. 70
5	Channel Girth flange	SA 350 Gr LF2, CI 1
6	Channel nozzle necks	SA 333 GR. 6
7	Channel nozzle flanges	SA 350 Gr LF2, CI 1
8	Tube Sheets	SA 350 Gr LF2, CI 1
9	Tubes	SA 334 Gr. 1
10	Baffles	SA 516 GR. 70
11	Tie Rods and seal rods	SS 304/ SA 516 Gr.70
12	Spacer Tubes	SS 304/ SA 333 Gr. 6
13	Pass Partition Plate	SA 516 GR. 70
14	Gasket (For Body flanges)	SS 316 jacketed graphite filled
15	Fastners - Channel Body flange	SA 320 Gr. L7/SA 194 Gr. 4
16	Internal attachments	SA 516 GR. 70
17	External attachments	SA 516 GR. 70
18	Saddle and Brackets	SA 516 GR. 70

NOTE: 1) All LTCS Material to be impact tested at -45 Deg as per SA 20

2) Read 'SA 516 Gr. 70' as 'LTCS SA 516 Gr. 70'



**ANNEXURE-2
NOZZLE SCHEDULE**

Nozzle	Size	QTY	RATING	Flange Type	Facing	SERVICE
N1	50	1	300#	WNRF	125 AARH	Lube oil inlet
N2	50	1	300#	WNRF	125 AARH	Lube oil outlet
N3	50	1	300#	WNRF	125 AARH	Cooling water inlet
N4	50	1	300#	WNRF	125 AARH	Cooling water outlet
N5	40	1	300#	WNRF	125 AARH	Shell side vent
N6	40	1	300#	WNRF	125 AARH	Shell side drain
N7	40	1	300#	WNRF	125 AARH	Channel side vent
N8	40	1	300#	WNRF	125 AARH	Channel side drain