RAD RATING PROGRAM OUTPUT

CORE DESCRIPTION IS: Charge-air cooler (Aluminum) Isuzu Dies

CORE SPECIFICATIONS:

TUBE MATERIAL: ALUMINUM FIN MATERIAL: ALUMINUM
NUMBER OF TUBE ROWS = 1
TUBE TYPE : INTFIN FIN GEOMETRY: LOUVER

HEADER WIDTH = 8.5 IN. TUBE LENGTH = 24.0 IN.
FIN WEIGHT = 2.06 LBS CORE WET WEIGHT = 6.72 LBS
CORE DRY WEIGHT = 6.71 LBS BYPASS LENGTH =0.250 IN.

TUBE PITCH = 0.550 IN. MINOR DIAMETER = 0.250 IN.
MAJOR DIAMETER = 2.500 IN. TUBE WALL THICKNESS = 0.0250 IN.
TOT TUBE FLOW AREA = 7.438 SQUARE IN.

FIN THICKNESS = 0.0040 IN. FIN DEPTH = 2.500 IN.
FINS PER INCH = 18.0 LOUVER ANGLE = 27.0 DEGREES
LOUVER LENGTH/FIN HEIGHT = .82 LOUVER PITCH = 0.060 IN.

OPERATING CONDITIONS:

INLET AIR TEMP = 85.0 F INLET COOLANT TEMP = 299.0 F
ELEVATION = 0.0 FT
COOLANT PRESSURE DROP = 0.31 psig CMIN (CAPACITY RATE) = COOLANT SIDE
COOLANT FLOW RATE = 320.0 L/min OF AIR, Re = 19419. (LAMINAR IF Re < 2100)

CORE PERFORMANCE

Ufr (ft/s)	Q (Btu/hr)	DPair ("wat)	Air CFM	h-air	h-cool	n	DTC	RA/RT	Q*	ReDh	j	f	HXEFF
2.0	25270.	0.064	170.	13.5	25.	0.96	59.7	0.25	85.1	143.	0.0440	0.147	0.700
4.0	32979.	0.164	340.	18.0	25.	0.95	77.0	0.20	111.1	296.	0.0295	0.094	0.454
6.0	36744.	0.293	510.	21.8	25.	0.94	85.3	0.17	123.8	454.	0.0236	0.074	0.399
8.0	39390.	0.448	680.	25.0	25.	0.93	91.1	0.15	132.7	614.	0.0202	0.063	0.426
10.0	41162.	0.627	850.	27.9	26.	0.93	95.0	0.14	138.7	774.	0.0180	0.056	0.444
12.0	42443.	0.830	1020.	30.5	26.	0.92	97.8	0.13	143.0	934.	0.0165	0.052	0.457
14.0	43416.	1.056	1190.	33.0	26.	0.91	99.9	0.12	146.3	1095.	0.0152	0.048	0.467

Ufr = air frontal vel @ inlet air temp (ft/sec)
Q = heat rejection rate (Btu/hr)
DPair = air side core pressure drop (in. wat)
h-air = air side h.t. coeff. (Btu/hr-ft^2-F)
Air = air flowrate @ inlet air temp (ft^3/min)
h-cool = coolant side h.t. coeff. (Btu/hr-ft^2-F)
n = fin efficiency
DTC = coolant temp change (deg F)
RA/RT = ratio of air side to total h.t. resistance
Q* = Q/Afr-ITD (Btu/hr^2-F)
Afr = frontal area of the core (ft^2)
ITD = temp diff (inlet air - inlet coolant)(deg F)
ReD = Air Reynolds number (based on hyd dia)
HXEFF = Heat exchanger effectiveness