



Real Tern
Industrial Co., Ltd.

- Heat Exchange Solutions
- New Energy Applications
- Custom Projecting & Service

- 熱交換解決方案
- 新能源解熱應用
- 客製化專案製造



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Heat Exchanger Leadership

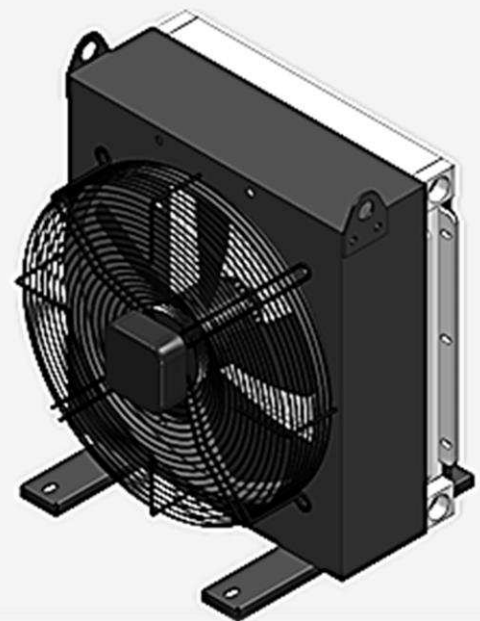
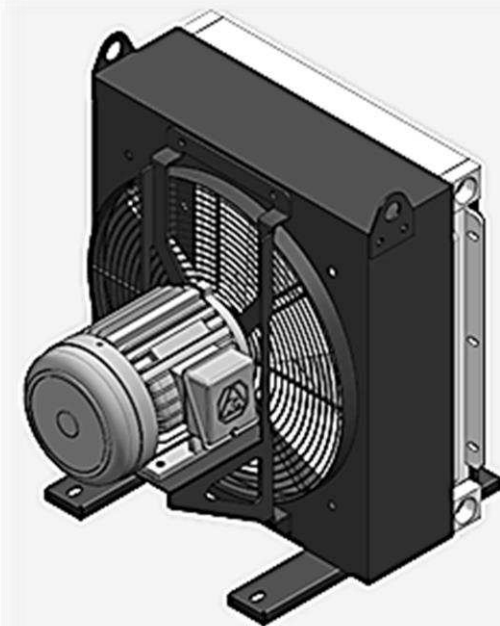


RT Series- Industrial Air Cooled Aluminum Fins

The series is designed specifically for European standard. The oil cooler's dimensions, port threading, mounting, fan motor (ie. DC driven, axial fan, electric motor, hydraulic motor) are spec'd as per EU standard.

The oil cooler core is made with aluminum finned tubes attached, in order to increase the surface area available for heat transfer.

The oil cooler can be used in: machine tool hydraulic cooling, machine tool power unit cooling, power pack cooling, pipe bending machine cooling, injection molding machine cooling, hydraulic oil cooling, mobile machine thermal management, and agriculture machine cooling.





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How To Order

Model Example: RT10.10432.1000.1

Model	Core	Motor Drive	RPM	Phase	Volts	Air Filter	Temp Switch	Filter	Bypass	Air					
RT	<u>10</u>	<u>1</u>	<u>04</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>					
RT	10	1 : <u>Outer rotor</u> 2 : <u>Electric motor</u>	02 : <u>2300RPM</u>	1 : <u>Single</u> 3 : <u>Three</u>	1 : <u>115V</u>	0 : N 1 : Y	0 : N 1 : 2 : 3 : 4 :	0 : N 1 : 2 : 3 : 4 :	0 : N max 1 : 2 : <u>200bar</u> 3 : 4 :	1 : <u>suction(s)</u> 2 : <u>blowing</u>					
	20		04 : <u>1500RPM</u>		2 : <u>230V</u>										
	30		06 : <u>1000RPM</u>		3 : <u>380V</u>										
	31				4 : <u>400V</u>										
	32				5 : <u>415V</u>										
	40				6 : <u>440V</u>										
	41				7 : <u>460V</u>										
	50	3 : <u>DC motor</u>	00	0	8 : <u>DC12V</u>										
	60				9 : <u>DC24V</u>										
	70														
	80	4 : <u>Hydraulic motor</u>	11 : <u>11CC</u> 14 : <u>14CC</u> 19 : <u>19CC</u>	0	0										
	90														
	100														



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Selection Procedure

STEP 1 Determine the Heat Load

The formula for calculating heat generation is as follows: $Q = Cp \cdot p \cdot V \cdot \Delta t / h$

Q: Heat load (Kcal/h) Cp: Oil specific heat capacity=0.47kcal/kg V: oil tank volume (liter)

p: Oil specific gravity=0.876kg/ m³ Δt: temperature h: hour

Unit Conversion: 860Kcal/h=1 Kw 1Hp=635Kcal/h

STEP 2 Determine Approach Temperature

Desired oil leaving cooler °T – Ambient air temp. °T = Actual Approach

Estimated heat generation: Use 60% of the actual input horsepower as the operating heat generation. If a hydraulic motor or metering pump is used in the circuit, calculate it at 100%.

Calculation: $Q = N \cdot 860 \cdot \%$

Q: Heat load (Kcal/h) N: Input

STEP 3 Determine Curve Horsepower Heat Load

Enter the information from above: Horsepower heat load x 30 x Cv = Curve Horsepower Actual Approach

STEP 4 Enter curves at oil flow through cooler and curve horsepower

Any curve above the intersecting point will work.

STEP 5 Determine Oil Pressure Drop from Curves

Multiply pressure drop from curve by correction factor found in oil s P correction curve.

Desired Reservoir Temperature

Return Line Cooling: Desired temperature is the oil temperature leaving the cooler. This will be the same temperature that will be found in the reservoir.

Off-Line Recirculation Cooling Loop: Desired temperature is the oil temperature entering the cooler. In this case, the oil temperature change must be determined so that the actual oil leaving temperature can be found. Calculate the oil temperature change (oilΔ T) with this formula: $\text{Oil} \Delta T = (\text{Kcal/HR}) / (\text{LPM Oil Flow} \times 210)$. To calculate the oil leaving temperature from the cooler, use this formula: $\text{Oil Leaving Temp.} = \text{Oil Entering Temp.} - \text{Oil} \Delta T$. This formula may also be used in any application where the only temperature available is the entering oil temperature.

Oil Pressure Drop: Most systems can tolerate a pressure drop through the heat exchanger of 20 to 30 PSI. Excessive pressure drop should be avoided. Care should be taken to limit pressure drop to 5 PSI or less for case drain applications where high back pressure may damage the pump shaft seals.



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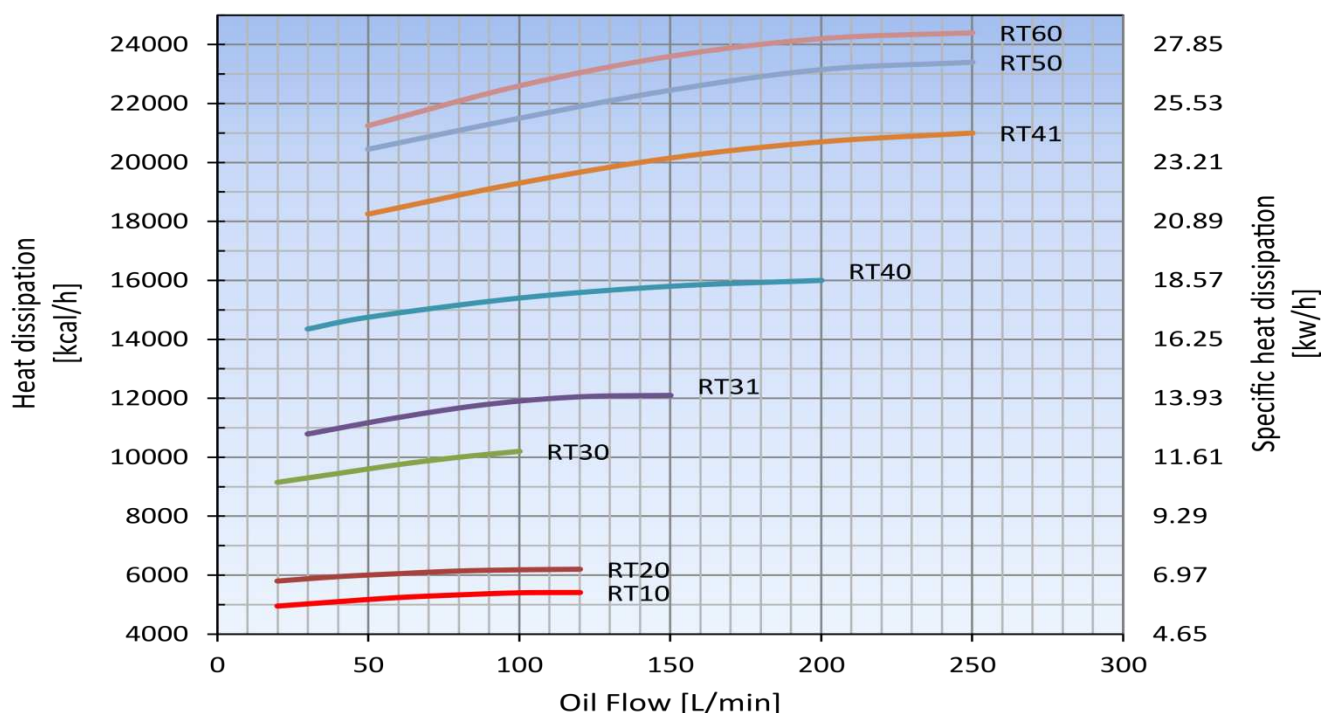
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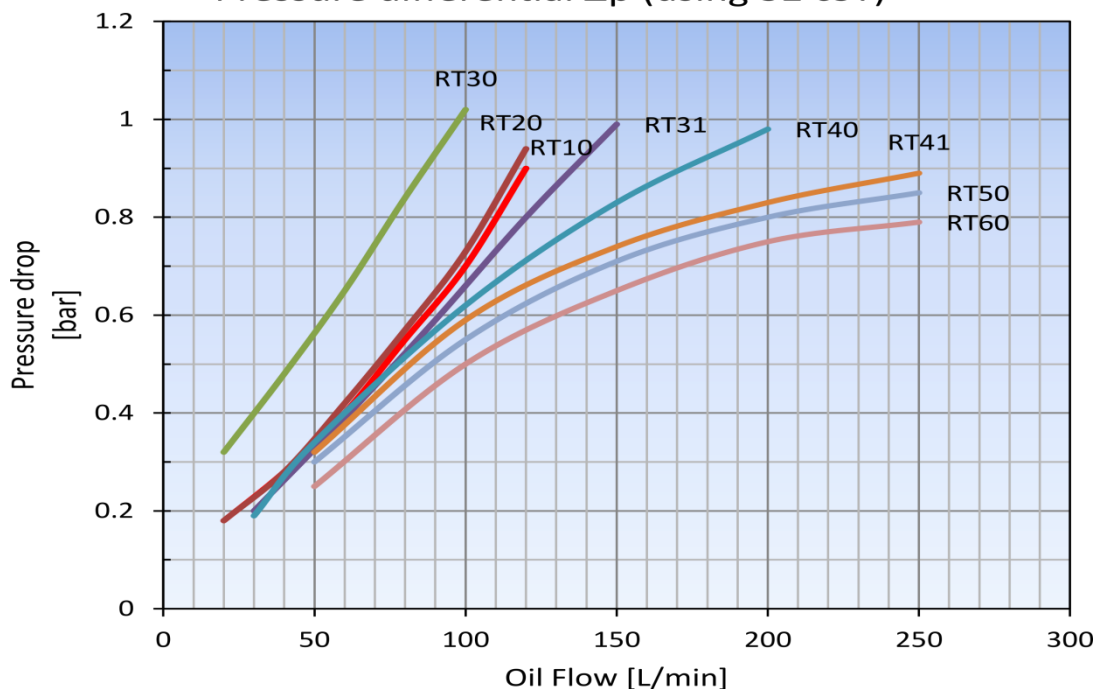


Outer Rotor Motor

Cooling capacity



Pressure differential Δp (using 32 cST)





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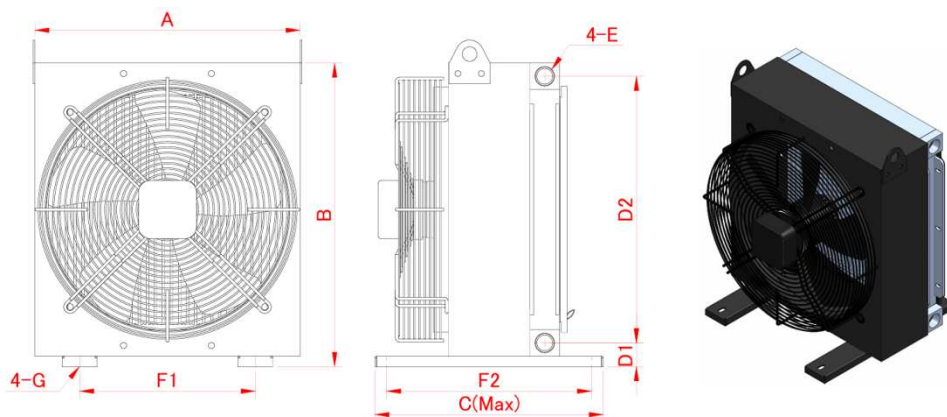
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MODEL	A	B	C	D1	D2	E	F1	F2	G
RT10.1	395	393	336	40.5	330	1"	280	280	φ10×20
RT20.1	423	476	350	40.5	413	1"	300	310	φ12×20
RT30.1	453	518	390	40.5	455	1"	300	350	φ10×20
RT31.1						1-1/4"			
RT40.1	528	588	460	46	514	1-1/2"	330	420	φ12×20
RT41.1						1-1/2"			
RT50.1	630	768	480	55.5	675	1-1/2"	500	440	φ12×20
RT60.1	615	950	550	57.5	855	1-1/2"	350	510	φ12×20

MODEL	FLOW [L/min]	COOLING CAPACITY [kcal/h] ΔT=30°C	SPEED [rpm]	VOLTAGE [V]	FREQUENCY [Hz]	INPUT [W]	PRESSURE [bar]
RT10.1	20~100	5400	1400/1600	3φ220V 3φ380V	50/60	60/60	20
RT20.1	20~100	6200	1380/1550		50/60	80/100	20
RT30.1	30~100	10200	1380/1550		50/60	150/180	20
RT31.1	30~150	12000	1380/1550		50/60	150/180	20
RT40.1	30~200	16000	1380/1550		50/60	180/250	20
RT41.1	30~250	21000	1380/1550		50/60	180/250	20
RT50.1	30~250	23500	1380/1550		50/60	250/300	20
RT60.1	30~250	24400	1380/1550		50/60	250/300	20



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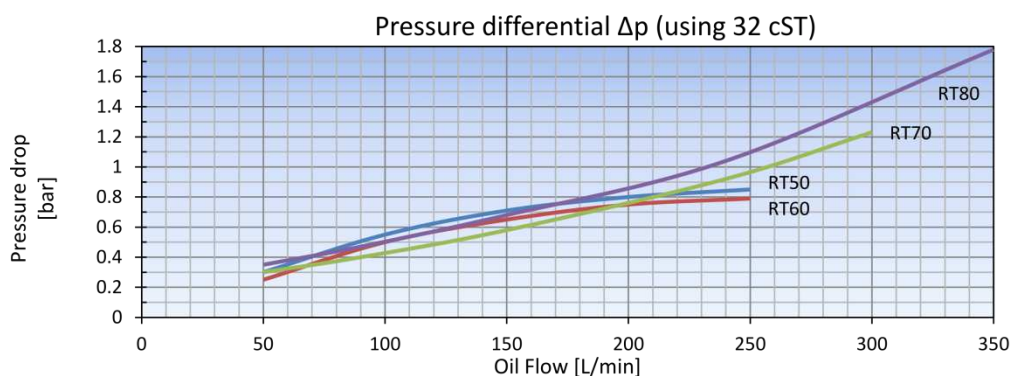
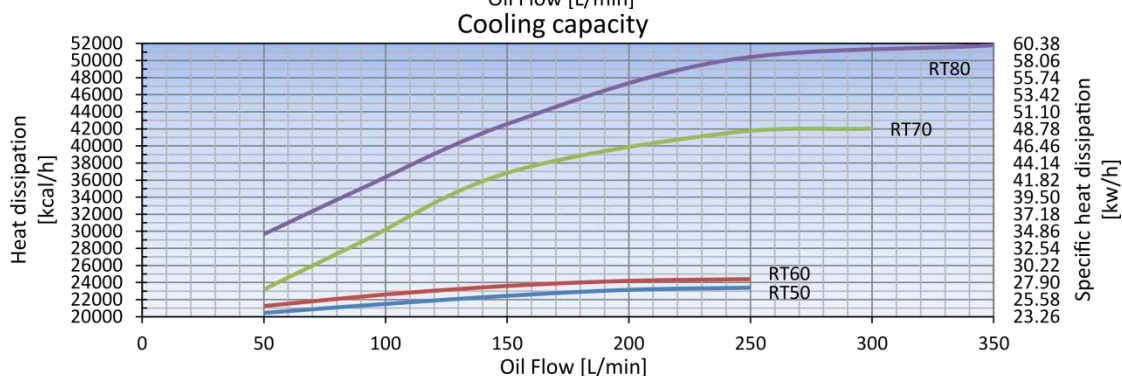
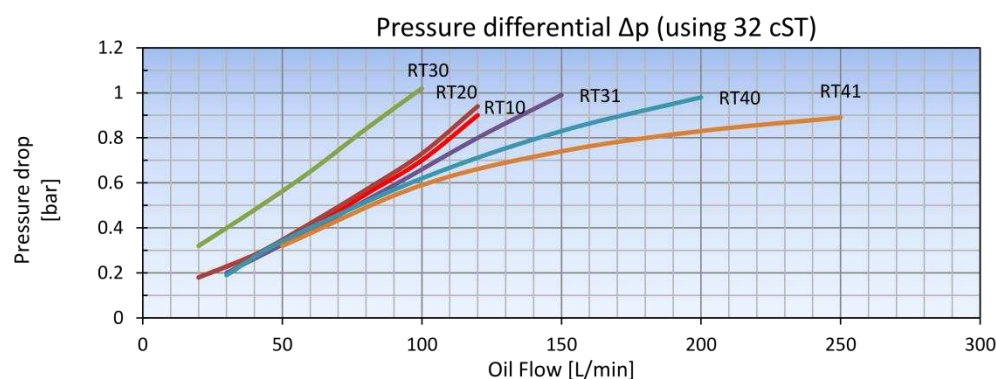
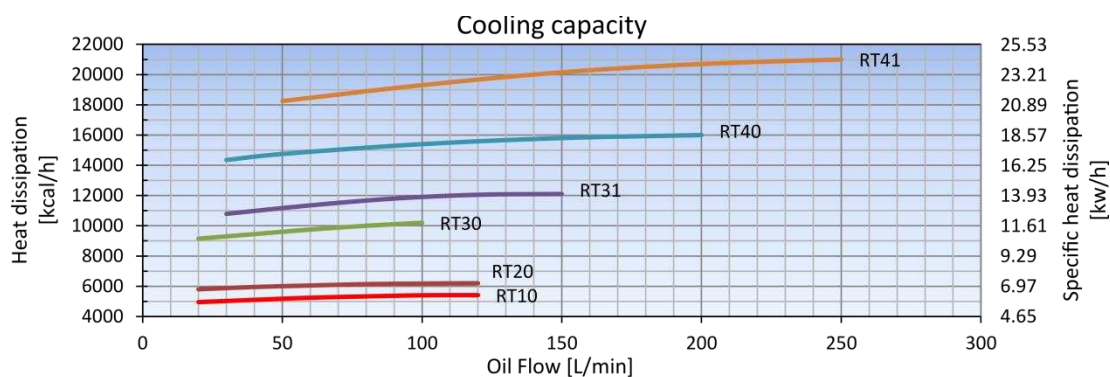
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Electric Motor



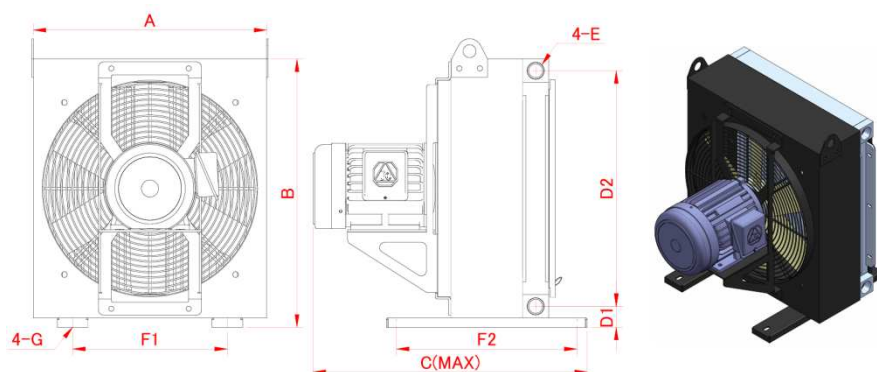


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MODEL	A	B	C	D1	D2	E	F1	F2	G
RT10.2	395	393	487	40.5	330	1"	280	280	φ10×20
RT20.2	423	476	487	40.5	413	1"	300	310	φ12×20
RT30.2	453	518	532	40.5	455	1"	300	350	φ10×20
RT31.2						1-1/4"			
RT40.2	528	588	577	46	514	1-1/2"	330	420	φ12×20
RT41.2									
RT50.2	630	768	607	55.5	675	1-1/2"	500	440	φ12×20
RT60.2	615	950	650	57.5	855	1-1/2"	350	510	φ12×20
RT70.2	930	1040	890	95	890	1-1/2"	700	660	φ15×24
RT80.2	1050	1221	960	99	1062	1-1/2"	700	660	φ15×24

MODEL	FLOW [L/min]	COOLING CAPACITY [kcal/h] ΔT=30℃	SPEED [rpm]	VOLTAGE [V]	FREQUENCY [Hz]	INPUT [kW]	PRESSURE [bar]
RT10.2	20~100	5400	1720	3φ220V 3φ380V	50/60	0.75	20
RT20.2	20~100	6200	1720		50/60	0.75	20
RT30.2	30~100	10200	1720		50/60	0.75	20
RT31.2	30~150	12000	1720		50/60	0.75	20
RT40.2	30~200	16000	1720		50/60	0.75	20
RT41.2	30~250	21000	1720		50/60	0.75	20
RT50.2	30~250	23500	1720		50/60	0.75	20
RT60.2	30~250	24400	1720		50/60	0.75	20
RT70.2	50~300	42000	960		50/60	2.2	20
RT80.2	50~350	51800	960		50/60	5.5	20