FLOW FORCE

Global Only 1. Company
for Professional Fluid Solution

With Circulation Pump

High Performance Air / Oil Cooler

● FC - Series

· CE Approval
· Optimized for Industrial Hydraulic System
(Off-Line Type Cooler)

FLOWFORCE CO., LTD.

Special benefits from the World-class of Air/Oil Cooler in FC Series

Maximum cooling capacity 77,400 Kcal/h

(at ETD 40˚C)

The Best Optimal Solution for the Industrial Hydraulic Cooling System!

With 28 years of business background and experience aiming to be the No. 1 in the global hydraulic cooling system technology field, FLOWFORCE CO., LTD. will implement its guaranteed, created, and shared value for the customers with FC series.

- Increase customer value and profit
- Increase durability and extend life-cycle of oil
- Easy installation and maintenance
- Global technical engineering service

It is the key to prevent unnecessary losses with the ideal temperature.

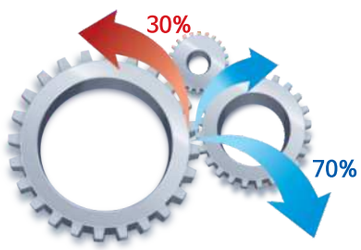
Selection of the insufficient heat exchange cooler and improper operation management of oil result in a risk of excessing energy consumption and operating maintenance costs.

- Increase internal leakage
- High potential risk of cavitation
- Shorten the life-cycle of components

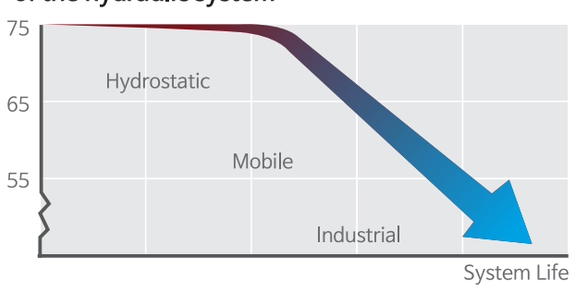
Consideration

30% energy loss in the hydraulic system is main cause raising the temperature of the operating oil.

- Friction loss occurred by hydraulic pump, control valve, etc…
- Heat generated due to the pressure drop, flow disturbance



Optimal temperature control based on the ideal of the hydraulic system



Technical consideration when selecting of oil cooler

- Hydrostatic System : 65℃
- Mobile Application : 55℃
- Industrial Appliction : 45℃

Remember!

1 ■ Oil service will be reduced by 50% when oil temperature increases 8℃ based on 40℃.

2 ■ There is a risk of cavitation because operating oil has the air at atmospheric pressure.

3 ■ Hydraulic hose will have its life-time reduced by 50% when the oil temperature increases every 10˚C from 60˚C

"Independent circulation pump mounted" Off-Line Type High Efficiency Air Oil Cooler

Customer value-oriented product

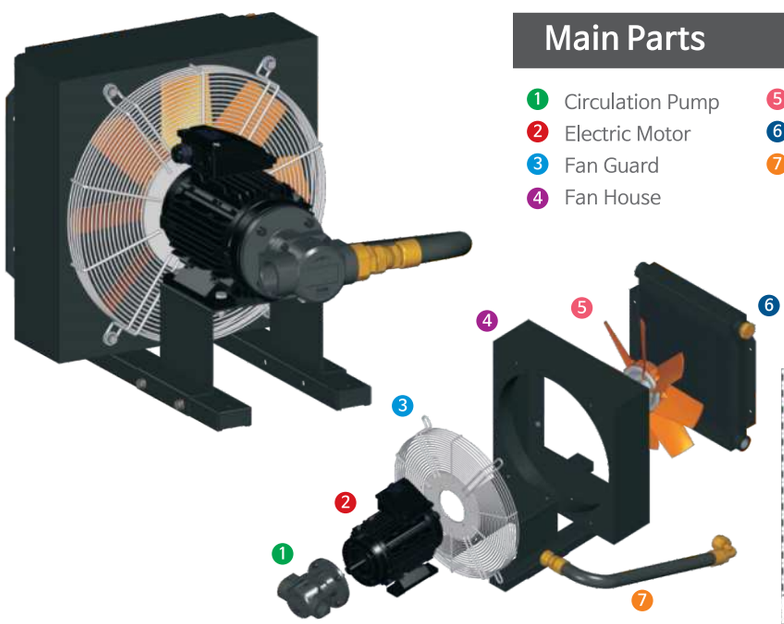
(Clever Design + High durability components = Low operation and maintenance cost)

- With Circulation Pump(Low pressure & pulsation)

Product Features

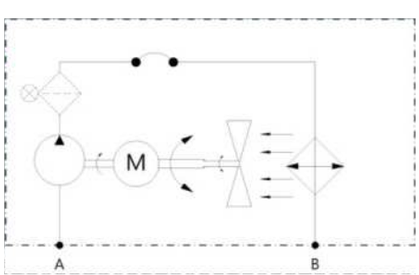
- Good to use in the hydraulic system which has irregular return flow
- Low noise of fan & fan motor
- Protect a cooler matrix from the surge pressure.
- Low pressure, low cost of integrated type by-pass and filters available as options.

1 Environment friendly & Easy to maintenance



Main Parts

1. Circulation Pump
2. Electric Motor
3. Fan Guard
4. Fan House
5. Fan Blade
6. Cooler Matrix
7. Hose



Design Feature

Cooling media for free + Low installation cost + Low operation cost + Easy maintenance + Direct heat recovery

Special orders are available in FC Air/Oil Coolers.

- FC - ATEX Version : Explosive environment
- FC - M Version : Corrosion proof in sea and marine environment.

Main Applications

- Hydraulic press
- Gear box
- Lubrication system
- Hydraulic lift
- Machine tools
- Hydraulic wrench
- Windlass & Mooring

2 How to select FC Air / Oil Cooler / Ordering code

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
FC	060	4	1	2.2	G3	00	0	0	0	0	0

① FC = Circulation Pump Type

FA	= AC Motor
FD	= DC Motor
FH	= Hydraulic Motor
FC	= Circulation Pump Type (Off-Line)
FTC	=Chiller

② Cooler size

050, 060, 070, 080, 090, 100

③ Number of pole

4	=4POLE
6	=6POLE(SPECIAL)

④ Voltage & Frequency

0	=Without motor
1	=Three-phase 220/380V/ 440V 60Hz
2	=Three-phase 380V 50Hz
3	=Three-phase 415V 50Hz

⑤ Motor power

0.75	=0.75Kw
1.1	=1.1Kw
1.5	=1.5Kw
2.2	=2.2Kw
3.0	=3.0Kw
4.0	=4.0Kw

⑥ Pump capacity

Gerotor pump		Screw pump	
G3	=40.8cc	S1	=20.7cc
G4	=61.2cc	S2	=27.6cc
		S3	=29cc
		S4	=42cc
		S5	=53.1cc

⑦ Thermo contact

00	=Without thermo contact
40	=40℃ -WIRE TYPE
50	=50℃ -WIRE TYPE
60	=60℃ -WIRE TYPE
41	=40℃ -DIN CONNECTER TYPE
51	=50℃ -DIN CONNECTER TYPE
61	=60℃ -DIN CONNECTER TYPE
Z	=Special

⑧ Cooler matrix

0	=Without matrix
1	=Standard
2	=By-pass
Z	=Special

⑨ Matrix protect guard

0	=Without guard
S	=Stone guard
D	=Dust guard
T	=Dust and Stone guard

⑩ Filter unit

0	=Without filter unit
1	=4" ELEMENT 5㎛(Pore size) 4/5
2	=4" ELEMENT 10㎛(Pore size) 4/10
3	=8" ELEMENT 5㎛(Pore size) 8/5
4	=8" ELEMENT 10㎛(Pore size) 8/10

⑪ Pressure drop indicator

0	=Without pressure drop indicator
V	=Visual differential pressure indacator with check valve(Function 2.2bar ±0.3bar)
E	=Electric Indicator Switch

⑫ Standard / Special

0	=Standard
Z	=Special

3 General Technical Specification

FLUID COMBINATIONS

- Mineral oil HL/HLP according to DIN 51524
- Oil/Water emulsion HFA, HFB according to CETOP RP 77 H
- Water glycol HFC according to CETOP RP 77 H
- Phosphate ester HFD-R according to CETOP RP 77 H

MATERIAL / SURFACE PROTECTION

- Cooler matrix : Aluminum powder coated
- Fan blades : Fiber-glass reinforced polypropylene
  Standard: PPG(-10˚C ~ 90˚C)
  Option: PAG(-40˚C ~ 120˚C)
- Hub & Fan boss : Aluminum
- Cooler housing : Steel
- Fan guard : Steel / Zinc plating
- Others : Steel
- Surface treatment : Electro statically powder-coated

TECHNICAL DATA for COOLER MATRIX

- Maximum test pressure : 21bar
- Dynamic operating pressure : 14bar
- Heat transfer tolerance : ±6%
- Maximum operating oil temperature : 120˚C
- Ambient temperature : -20˚C ~ 40˚C(standard)
- Painting specification : Epoxy RAL 9005
- Testing standard : ISO/DIS 10771-1

TECHNICAL INFORMATION OF CIRCULATION PUMP

- Max. Discharge pressure : 15bar
- Suction pressure : 0.5bar
- Working temperature : -20 ~ 80˚C
- Viscosity : 10 ~ 1500 cSt
- Max. shaft speed : 1750 rpm
- Contamination level : ISO4406:21(19/17)

TECHNICAL DATA for 3-PHASE MOTOR

- 3-Phase motors in accordance with IEC 34-1 and IEC 72 in accordance with DIN 57530/VDE 0530
- Insulation class : F
- Rise of temperature : B
- Protection class IP : 55

COOLING CAPACITY CURVE

The cooling capacity curves in this technical data sheet are based on tests in accordance with EN 1048 and have been produced using oil type ISO VG46 at 60˚C.

CONTACT FLOWFORCE for Special Order

- Oil Temperature 〉120 ˚C
- Oil Viscosity 〉100 cSt
- High-altitude and harsh environment

※ Caution

Please contact FLOWFORCE if the temperature difference is more than 50˚C between inlet oil temperature and the ambient temperature.

1. FC Series

Screw type

Gerotor type

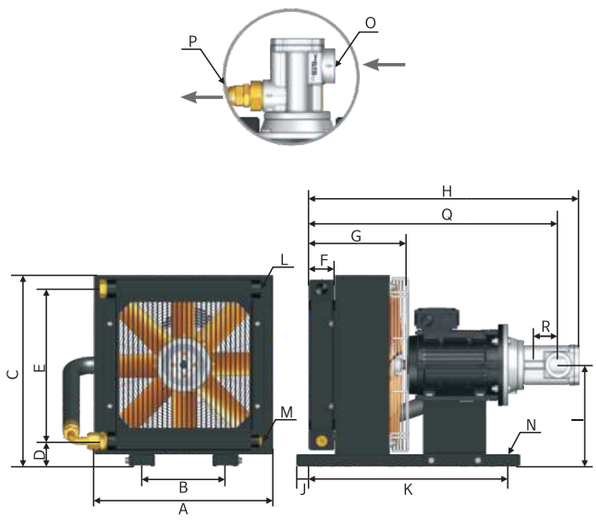
Technical Comments

- Cooling capacity(kw) = Specific cooling performance(kw/℃) X △t(℃)
- The performance curves are based on ETD at 40˚C(Inlet oil temperature=60˚C, ambient temperature=20˚C)
- 1kw = 860 Kcal/h
- Suction is the standard type but in case you need to have blow type, please contact FLOWFORCE.

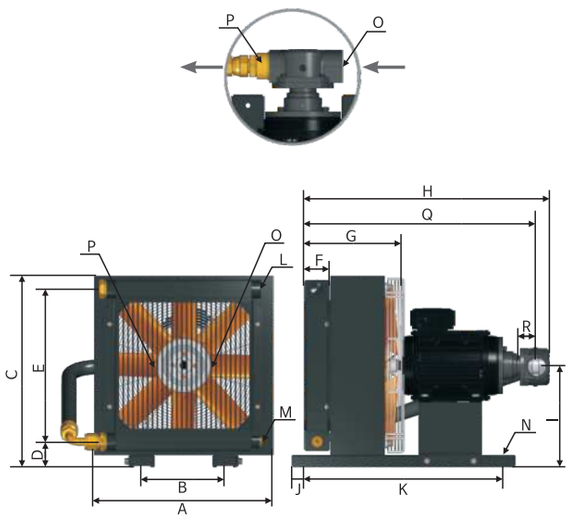
1 Technical Specification

MODEL	Pump Type	Motor Power (kw)	Motor Frame	Rev. (㎤)	Flow (/min) (1710RPM)	Cooling Capacity (kw) (ETD:40)	Specific Heat (Kw/℃)	Noise Level dB(A)1m	Weight (kg)
FC-050-4-1-1.1-S1	Screw	1.1	90S	20.7	35	5.1	0.13	68	37
FC-050-4-1-1.5-S2	Screw	1.5	90L	27.6	47	5.5	0.14	68	39
FC-060-4-1-1.5-S3	Screw	1.5	90L	29	50	11.7	0.29	70	44
FC-060-4-1-2.2-S4	Screw	2.2	100L	42	72	12.8	0.32	70	51
FC-060-4-1-2.2-S5	Screw	2.2	100L	53.1	91	13.4	0.34	70	51
FC-070-4-1-1.5-S3	Screw	1.5	90L	29	50	16.7	0.42	73	47
FC-070-4-1-2.2-S4	Screw	2.2	100L	42	72	19	0.48	73	55
FC-070-4-1-2.2-S5	Screw	2.2	100L	53.1	91	20.2	0.51	73	55
FC-080-4-1-2.2-S4	Screw	2.2	100L	42	72	26.2	0.66	79	60
FC-080-4-1-3.0-S5	Screw	3	100L	53.1	91	27.8	0.70	79	60
FC-090-4-1-4.0-S4	Screw	4	112M	42	72	33.1	0.83	87	78
FC-090-4-1-4.0-S5	Screw	4	112M	53.1	91	36.1	0.90	87	78
FC-100-4-1-4.0-S4	Screw	4	112M	42	72	43	1.08	88	84
FC-100-4-1-4.0-S5	Screw	4	112M	53.1	91	47.2	1.18	88	84
FC-050-4-1-1.5-G3	Gerotor	1.5	90L	40.8	70	5.7	0.14	68	39
FC-060-4-1-1.5-G3	Gerotor	1.5	90L	40.8	70	12.8	0.32	69	44
FC-060-4-1-2.2-G4	Gerotor	22	100L	61.2	105	13.7	0.34	70	51
FC-070-4-1-2.2-G3	Gerotor	2.2	100L	40.8	70	18.9	0.47	73	55
FC-070-4-1-2.2-G4	Gerotor	22	100L	61.2	105	20.7	0.52	73	55
FC-080-4-1-2.2-G3	Gerotor	2.2	100L	40.8	70	26	0.65	79	60
FC-080-4-1-3.0-G4	Gerotor	3	100L	61.2	105	28.6	0.72	79	60
FC-090-4-1-3.0-G3	Gerotor	3	100L	40.8	70	32.7	0.82	87	70
FC-090-4-1-4.0-G4	Gerotor	4	112M	61.2	70	37.7	0.94	87	78
FC-090-4-1-3.0-G3	Gerotor	3	100L	40.8	105	32.7	0.82	87	70
FC-090-4-1-4.0-G4	Gerotor	4	112M	61.2	105	37.7	0.94	87	78
FC-100-4-1-3.0-G3	Gerotor	3	100L	40.8	70	42.4	1.06	88	76
FC-100-4-1-4.0-G4	Gerotor	4	112M	61.2	70	49.5	1.24	88	84
FC-100-4-1-3.0-G3	Gerotor	3	100L	40.8	105	42.4	1.06	88	76
FC-100-4-1-4.0-G4	Gerotor	4	112M	61.2	105	49.5	1.24	88	84

※ Subject to change without any notice.



Screw Pump Type



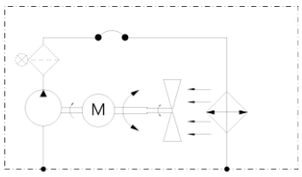
Gerotor Pump Type

2 Dimension

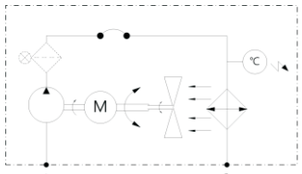
MODEL	Pump Type	A	B	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
FC-050-4-1-1.1-S1	Screw	365	203	60	305	65	214	597	213	20	510	G1	G1/2	Φ9	G1	G3/4	597	41
FC-050-4-1-1.5-S2	Screw	365	203	60	305	65	214	605	213	20	510	G1	G1/2	Φ9	G1	G3/4	605	41
FC-060-4-1-1.5-S3	Screw	440	203	62.5	375	65	242	667	250	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	667	56
FC-060-4-1-2.2-S4	Screw	440	203	62.5	375	65	242	709	250	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	709	56
FC-060-4-1-2.2-S5	Screw	440	203	62.5	375	65	242	709	250	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	709	56
FC-070-4-1-1.5-S3	Screw	496	203	58.5	439	65	258	683	278	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	683	56
FC-070-4-1-2.2-S4	Screw	496	203	58.5	439	65	258	725	278	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	725	56
FC-070-4-1-2.2-S5	Screw	496	203	58.5	439	65	258	725	278	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	725	56
FC-080-4-1-2.2-S4	Screw	579	355	57	525	63	271	738	320	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	738	56
FC-080-4-1-3.0-S5	Screw	579	355	57	525	63	271	738	320	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	738	56
FC-090-4-1-4.0-S4	Screw	692	356	68.5	615	65	315	796	376	20	510	G1-1/4	G1/2	Φ9	G1-1/2	G1-1/4	796	56
FC-090-4-1-4.0-S5	Screw	692	356	68.5	615	65	315	796	376	20	510	G1-1/4	G1/2	Φ9	G1-1/2	G1-1/4	796	56
FC-100-4-1-4.0-S4	Screw	692	356	63.5	615	85	335	816	376	20	510	G1-1/2	G1/2	Φ9	G1-1/2	G1-1/4	816	56
FC-100-4-1-4.0-S5	Screw	692	356	63.5	615	85	335	816	376	20	510	G1-1/2	G1/2	Φ9	G1-1/2	G1-1/4	816	56
FC-050-4-1-1.5-G3	Gerotor	365	203	60	305	65	214	576	213	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	576	
FC-060-4-1-1.5-G3	Gerotor	440	203	62.5	375	65	242	604	250	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	604	
FC-060-4-1-2.2-G4	Gerotor	440	203	62.5	375	65	242	683	250	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	683	
FC-070-4-1-2.2-G3	Gerotor	496	203	58.5	439	65	258	664	278	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	664	
FC-070-4-1-2.2-G4	Gerotor	496	203	58.5	439	65	258	699	278	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	699	
FC-080-4-1-2.2-G3	Gerotor	579	355	57	525	63	271	677	320	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	677	
FC-080-4-1-3.0-G4	Gerotor	579	355	57	525	63	271	712	320	20	510	G1	G1/2	Φ9	G1-1/2	G1-1/4	712	
FC-090-4-1-3.0-G3	Gerotor	692	356	68.5	615	65	315	721	376	20	510	G1-1/4	G1/2	Φ9	G1-1/2	G1-1/4	721	
FC-090-4-1-4.0-G4	Gerotor	692	356	68.5	615	65	315	735	376	20	510	G1-1/4	G1/2	Φ9	G1-1/2	G1-1/4	735	
FC-090-4-1-3.0-G3	Gerotor	692	356	68.5	615	65	315	756	376	20	510	G1-1/4	G1/2	Φ9	G1-1/2	G1-1/4	756	
FC-090-4-1-4.0-G4	Gerotor	692	356	68.5	615	65	315	770	376	20	510	G1-1/4	G1/2	Φ9	G1-1/2	G1-1/4	770	
FC-100-4-1-3.0-G3	Gerotor	692	356	63.5	615	85	335	741	376	20	510	G1-1/2	G1/2	Φ9	G1-1/2	G1-1/4	741	
FC-100-4-1-4.0-G4	Gerotor	692	356	63.5	615	85	335	755	376	20	510	G1-1/2	G1/2	Φ9	G1-1/2	G1-1/4	755	
FC-100-4-1-3.0-G3	Gerotor	692	356	63.5	615	85	335	776	376	20	510	G1-1/2	G1/2	Φ9	G1-1/2	G1-1/4	776	
FC-100-4-1-4.0-G4	Gerotor	692	356	63.5	615	85	335	790	376	20	510	G1-1/2	G1/2	Φ9	G1-1/2	G1-1/4	790	

※ Subject to change without any notice

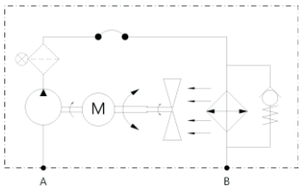
2. Cooler installation / Piping Diagram



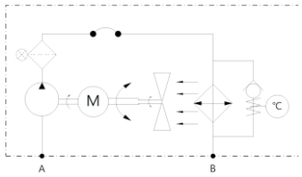
Standard Suction Type Model A



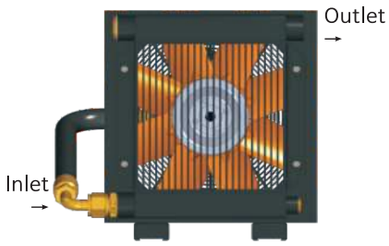
With thermo-sensor Model B



With by-pass valve Model C, D



With temperature operated by-pass Model C, D



Model A

Model B

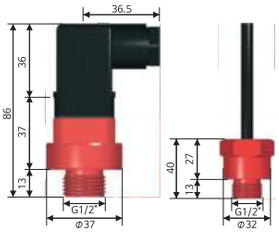
Model C
2PASS

Model D

1 Thermo contact switch

Responsive to the temperature to operate the oil cooler in the desired temperature by sensing the motor signal.

Type	:	Bi-metal control system
Switching capacity	:	24VDC 5A (In the case of inductive loads, the relay controller should be used)
Max working Temp	:	120℃
Set temperature	:	Refer to the specification
Proctction	:	IP65



(DIN Connection type) (Wire type)

1-1 Types of thermo contacts

Model	Temperature	Connectrion
T40-W	40	Wire
T40-C	40	Connector
T50-W	50	Wire
T50-C	50	Connector
T60-W	60	Wire
T60-C	60	Connector

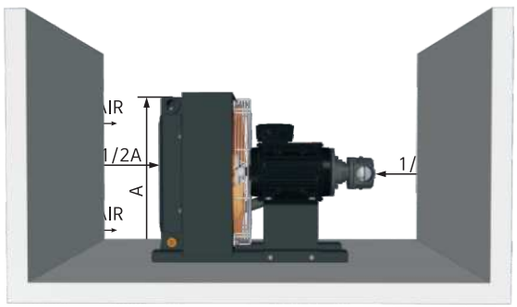
ex:T40-W : 45℃ ± 5℃ (ON), 35℃ ± 5℃ (OFF)
(Operating range will be varied based on the temperature change of oil)

2 Temperature sensor

Please see the catalogue of Temperature Sensor for more technical information.

※Caution※ Please be sure to use within the allowable voltage and current ranges. When using the motor directly inductive loads will cause damage to the contacts.

3. Service Instruction



Installation

FC Series Air / Oil Coolers can be installed and mounted in any position but an upright installation is recommended. Prior to the installation, please consider the enough space for the air-flow of the coolers. In order to keep the best performance of the coolers, please do not disturb air-flow.

Cleaning

- Cooler body: When cleaning exterior of the coolers by water, ensure to disconnect the power supply.
- Cooler matrix: Using the compressed air to clean the cooler matrix but no damages on the cooler matrix.
- Fan housing: Remove the cooler matrix, when cleaning the inside of the fan housing. Use compressed air to clean the fan housing and blow the compressed air from the electric motor to fan guard.

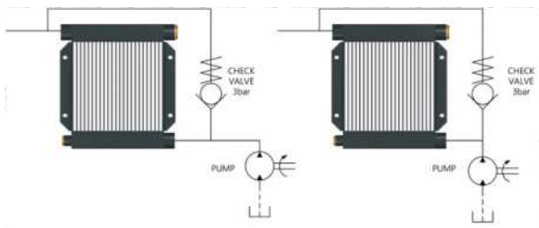
Noise Level

The noise level of the oil cooler might vary with depending on reflection from surrounding objects, natural frequency and interference sources.

Connection of cooler matrix

Using flexible hydraulic hoses to connect the cooler matrix. Make sure that all the hydraulic hoses and connections should be considered for the required pressure, flow and temperature of application. If there is a risk of pressure peaks or flow peaks the coolers should be mounted together with a filters in a separate cooling circuit.

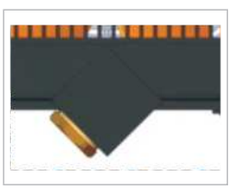
How to install an external by-pass



[Incorrect installation case] [Correct installation case]

Take the next step

Use the right accessories (options)



Pressure-controlled by-pass valve

Integrated type that allows the oil to bypass the cooler matrix if the pressure is too high and it reduces the risk of the cooler burst.

Temperature controlled by-pass valve

Integrated type and same function with pressure controlled by-pass valve but working by the temperature.

Thermo contact

Work by the sensor with fixed set point.
Automatic switching on and off the fan motor.

Stone guard / Dust guard

Protect components and cooling system. Good to use under tough working condition

Temperature-controlled an external 3-way valve

Same function as the temperature-controlled by-pass valve but installed externally.

4. Model selection & Calculation

1 How to select the appropriate cooler

- Determination of cooler size and model
- Determination of expected pressure drop

Definition

- **Tio [°C]** Inlet oil temperature
- **Tia [°C]** Inlet air temperature
- **△t [°C]** Entrance Temperature Difference, △t = Tio − Tia
- **Pa [kw/°C]** Corrected amount of heat exchange
- **P2 [kw/°C]** Cooling capacity, P2 = P1 / △t
- **P1 [kw]** Total amount of heat exchange
- **Q [ℓ/min]** Oil flowrate
- **Cp** Specific heat capacity (2.08 kJ / kg°C)
- **Sg** Oil density (0.89 kg/dm³)

Example of Calculation

- Tank oil volume (V) 300Liter
- Oil temperature at start-up (T^1) 15°C
- The oil is heated up approx.
  - Oil temperature after 25 min (T^2) 45°C
  - Inlet oil temperature (Tio) 55°C
  - Inlet air temperature (Tia) 25°C
  - Oil flow rate (Q) 90 ℓ/min

Calulation

1. Calculation of P1

$$P_1 = \frac{300 \times 0.89 \times 2.08 \times (45-15)}{25 \times 60} = 11.11\text{kw}$$

2. △t = Tio - Tia = 55°C − 25°C = 30°C
3. Required specific performance :
   P2 = P1 / △t = 11.11kw / 30°C = 0.37kw/°C
4. Corrected amount of heat exchange
   Pa = P2 x 1.1 = 0.4kw/°C
5. Using the performance curve, select the appropriate cooler at 90 ℓ/min
6. Suggested model to cover the required cooling capacity is one of FA 070-4 or FA 080-6

Discuss with FLOWFORCE for better cooling solution that we, FLOWFORCE always stay with customers.

The process for the calculation of cooling capacity

1. What is required cooling capacity?
2. Required power in hydraulic system?
3. Flow in system? Working pressure? Supplied flow rate by pump?
4. The actual measurement of hydraulic unit

» Discuss with FLOWFORCE

Selection of the most appropriate oil cooler

5. Technical Questionnaire - Air Oil Cooler

Please contact FLOWFORCE by email(master@flowforce.co.kr) or fax(031-499-9886) after filling the blanks below.

Date :

Company / Dept.	/		Doc. No.	
Contact information	Person		Tel.	
	E-mail		Fax.	
System information	Name of system			
	Location	☐Indoor ☐Outdoor ☐Etc.( )		
Application				
Type of motor	☐AC FAN Motor ☐DC FAN Motor ☐HYD Motor ☐Off-line ☐Other( )			

1 Working Condition

Working fluid		Temperature	Inlet temperature	℃
Max. Allowable pressure drop	bar		Ambient temperature	℃
Flow rate	ℓ/min		Outlet temperature	℃
Required cooling	KW		Max. Working temperature	℃
Capacity Viscosity	ISO VG	Material	House ☐ Steel(STD.) ☐ SUS ☐ other( )	
			Matrix ☐ Aluminum(STD.) ☐ other( )	
			Motor ☐ Standard ☐ other( )	

2 Operation Condition

☐ AC FAN Motor		☐ DC FAN Motor		☐ HYD' Motor		☐ Off-line	
Motor	☐110V ☐220V	Motor	☐12v	Flow	cc/rev( )	Flow	☐ 20.7cc/rev
	☐220/380V		☐24v		rpm( )		☐ 27.6cc/rev
	☐440V						☐ 29.0cc/rev
Hz	☐50Hz ☐60Hz						☐ 42.0cc/rev
IP	☐Standard						☐ 53.1cc/rev
	☐Other( )						☐ 40.8cc/rev
							☐ 61.2cc/rev

3 Options

Themo contact	☐T40 ☐T50 ☐T60
	☐DIN-TYPE ☐WIRE-TYPE
By-pass valve integrated type	☐SINGLE PASS ☐TWO PASS
	☐By temperature ☐By pressure
	Temperature( )℃, Pressure( )bar
Temperature sensor	☐PT100
	☐Temperature Transmitter(4~20mA)
Temperature controler	☐Simple ON/OFF ☐Inverter PID
Filter unit	☐5㎛ ☐10㎛
Protective guard	☐STONE GUARD ☐DUST GUARD
Adapter(PF->PT)	☐1" ☐1"1/4 ☐1"1/2 ☐2"

4 Additional Specification

Nameplate	☐ Standard	Manufacturer's standard
	☐ Other	English/Other :
Paint	☐ Manufacturer's standard(RAL 9005)	
	Request	
Internal cleanliness	☐ Manufacturer's standard	
	☐ ISO4406	
Motor approval	☐ CE ☐ UL ☐ ATEX ☐ Other( )	
Certificaiton	☐ CE ☐ ASME ☐ CLASS( ) ☐ Other( )	
Other specification		

※ Please feel free to write below blanks.

Type / Series		Product model	
Q'ty		Requested delivery date	

The faith and belief in technology with new CI, FLOWFORCE is a hydraulic system accessory manufacturer with

28 years of business background and experience aiming to be the Global Only 1. Company in the hydraulic accessories and cooling solution technology.

FLOWFORCE also implements energy-saving on its site and lead the market with new technology by supplying the most efficient eco-friendly and next-generation products as its guaranteed, created and shared value for the customers.

By the experience together with next-generation technologies that we, FLOWFORCE will exert efforts to improve customer problems with differentiated engineering solutions and leading the market.

Thank you.

(주)플로우포스
Flowforce.Co., Ltd.

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