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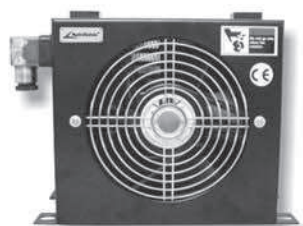
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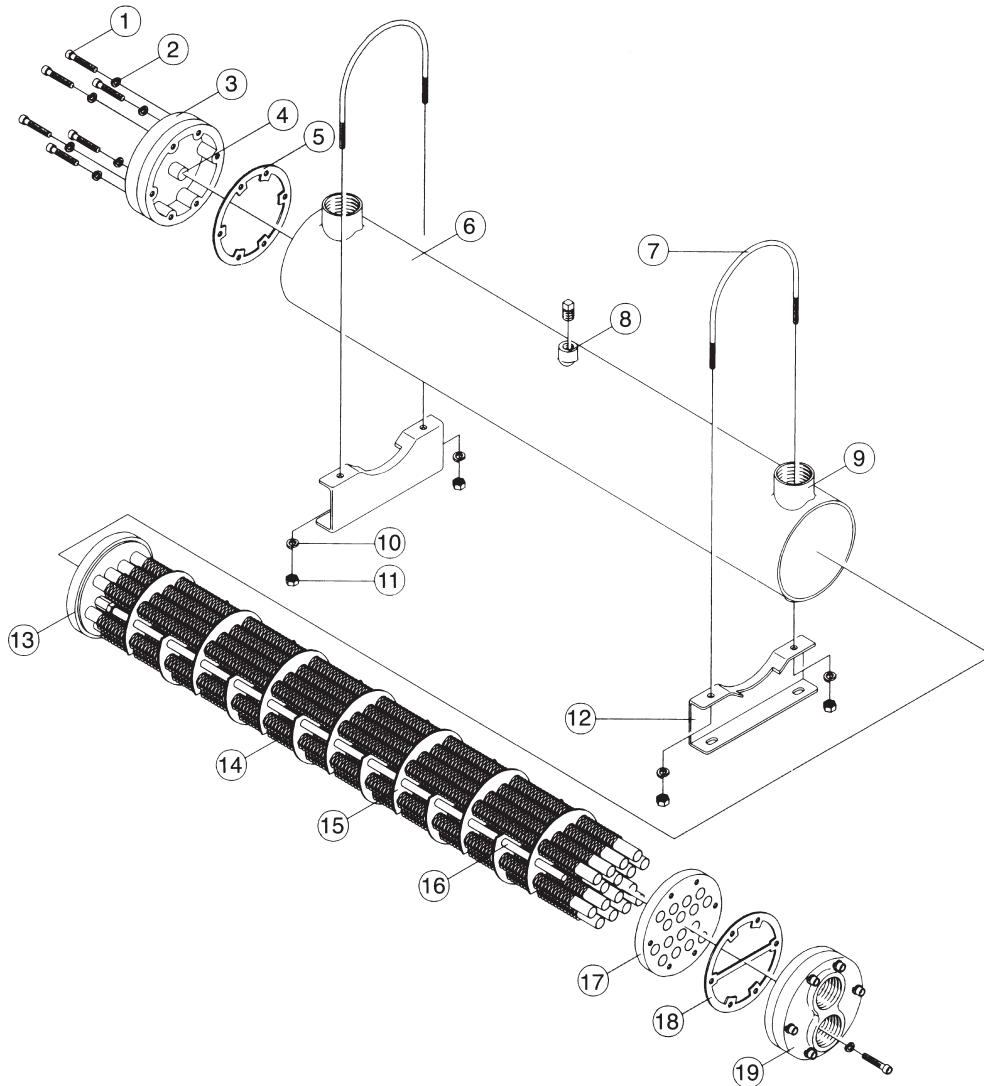
Cooler

- 15 • Water Cooled Oil Coolers " TJ / TJF " Series
- 20 • Water Cooled Oil Coolers " OR " Series
- 21 • Air-Oil Coolers " AW / AH " Series

Cooler



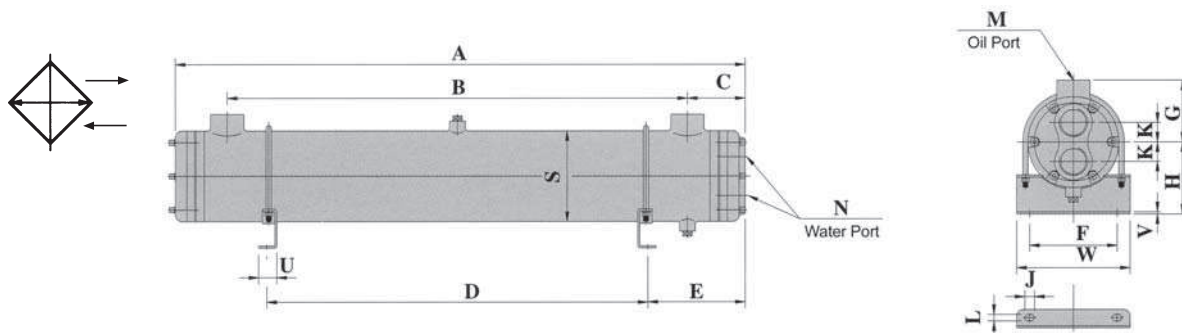
◆ Assembly



NO	Name for the parts	Material (Fresh or sea water)	NO	Name for the parts	Material (Fresh or sea water)
1	Socket cap screws	SCM (435)	11	Nut	NUT
2	Washer	SPM	12	Supporting leg	SS41
3	End cover for water U-loop	FC20	13	Tube end plate	SS41
4	anti-corrosion zinc bar	ZnB	14	Tube for cooling water	JIS (H3300)(1220T)
5	Oil sealer	NBR	15	Baffle plate	SS41
6	Shell-side	BPE	16	Supporting rod	SS41
7	Supporting hanger	AISI(1006)	17	Tube bundle end plate	SS41
8	Air vent	SS41	18	O-ring	NBR
9	Oil port	STPG(370)	19	End cover plate for water inlet and outlet	FC20
10	Vibration Absorber	FWL			

Water Cooled Oil Coolers " TJ / TJF " Series

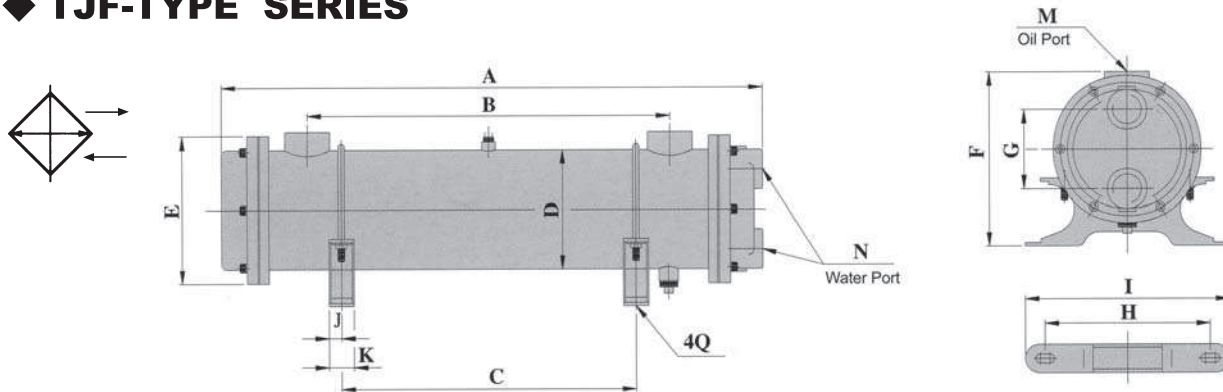
◆ TJ-TYPE SERIES



TYPE	A	B	C	D	E	F	J	G	H	K	L	M	N	S	U	V	W	Heat Transfer Area m ²	Oil Flow Rate l/min	Mass kg
TJ-0905- _A _B	590	408	88	270	150	80	25	63	80	22	10	3/4"	3/4"	89.5	30	2.3	115	0.41	60	10
TJ-0908- _A _B	880	720	78	500	190	80	25	63	80	22	10	3/4"	3/4"	89.5	30	2.3	115	0.7	100	14
TJ-1405- _A _B	600	398	100	270	162	140	32	90	110	28	12	1 1/4"	1 1/4"	140.8	40	3.2	176	1.1	150	20
TJ-1408- _A _B	890	710	85	500	202	140	32	90	110	28	12	1 1/4"	1 1/4"	140.8	40	3.2	176	1.9	250	25
TJ-1412- _A _B	1310	1110	100	700	303	140	32	90	110	28	12	1 1/2"	1 1/4"	140.8	40	3.2	176	2.9	350	37
TJ-1712- _A _B	1335	1060	138	700	310	145	32	115	125	32	12	2"	1 1/4"	166.5	40	3.2	200	4.6	600	48
TJ-1716- _A _B	1745	1510	118	850	460	145	32	115	125	32	12	2"	1 1/4"	166.5	40	3.2	200	6.5	840	56
TJ-1722	2200	1850	160	1650	270	145	32	115	125	32	12	2"	1 1/4"	166.5	40	3.2	200	7.2	1000	72

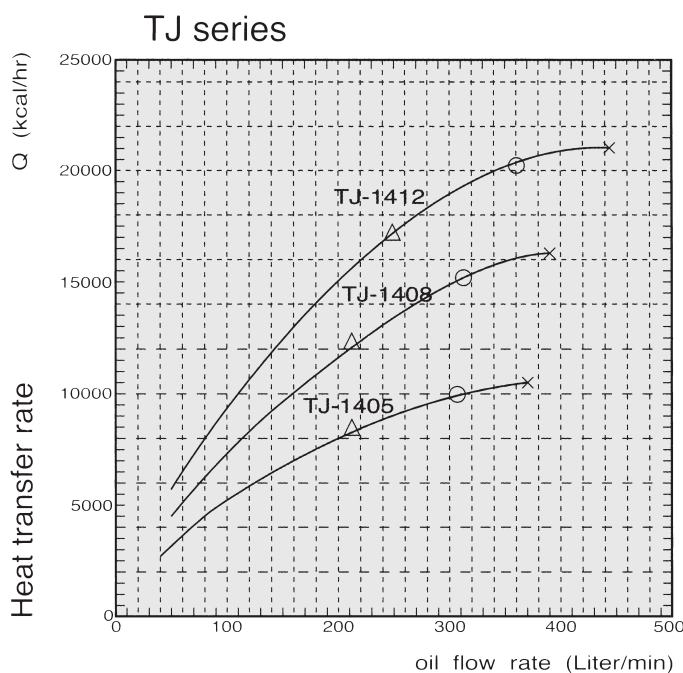
Note / A : Fresh water B : Sea water

◆ TJF-TYPE SERIES



TYPE	A	B	C	D	E	F	G	H	I	J	K	M Oil Port	N Water Port	Q Hole	Heat Transfer Area m ²	Oil Flow Rate l/min	Mass kg
TJF-2208	950	640	Free	219	265	323	137	290	360	38	50	2"-2 1/2"	1 1/2"-2"	5/8	5.6	800	72
TJF-2212	1370	1060	Free	219	265	323	—	—	—	—	—	2"-2 1/2"	1 1/2"-2"	5/8	8.6	1200	93
TJF-2216	1780	1490	Free	219	265	323	—	—	—	—	—	2"-2 1/2"	1 1/2"-2"	5/8	11.6	1500	118
TJF-2222	2210	1860	Free	219	265	323	—	—	—	—	—	2"-2 1/2"	1 1/2"-2"	5/8	14.6	1800	260
TJF-2508	980	640	Free	270	325	385	160	345	405	38	50	2"-3"	2"	5/8	8.0	1000	100
TJF-2512	1400	1060	Free	270	325	385	160	345	—	—	—	2"-3"	2"	5/8	12.2	1600	146
TJF-2516	1810	1470	Free	270	325	385	160	345	—	—	—	2"-3"	2"	5/8	16.4	1800	168
TJF-2522	2240	1860	Free	270	325	385	160	345	—	—	—	2"-3"	2"	5/8	20.8	2200	260

- ◆ The following curves were based on the tests performed by the Energy & Resources Laboratories, Industrial Technology Research Institute, TAIWAN.

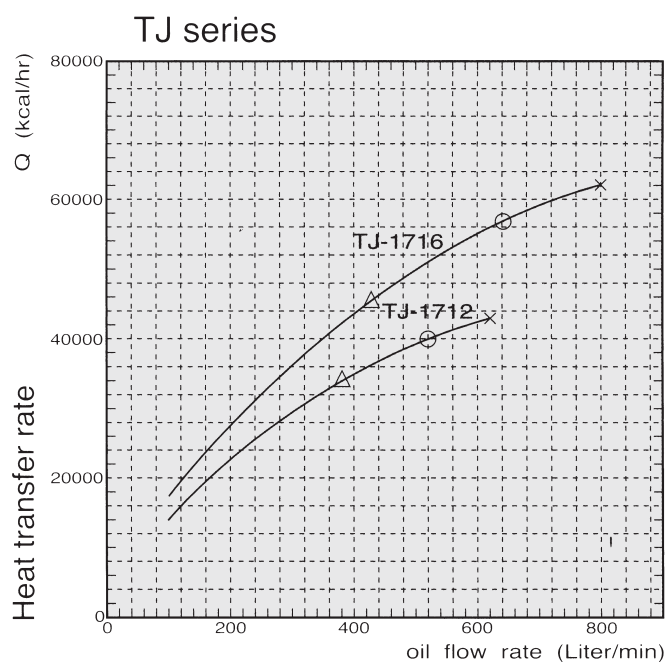


Pressure drop of oil
 $\triangle \triangle P = 0.5 \text{ kg / cm}^2$
 $\bigcirc \triangle P = 1.0 \text{ kg / cm}^2$
 $\times \triangle P = 1.5 \text{ kg / cm}^2$

Standard conditions for the performances :

- (1) The volume flow rate of oil is twice as water.
- (2) The outlet temperature of oil is 50°C.
- (3) The inlet temperature of water is 30°C.
- (4) The viscosity of oil is ISO-68.

Figure-1 Performance curves for TJ-1405, TJ-1408, and TJ-1412



Pressure drop of oil
 $\triangle \triangle P = 0.5 \text{ kg / cm}^2$
 $\bigcirc \triangle P = 1.0 \text{ kg / cm}^2$
 $\times \triangle P = 1.5 \text{ kg / cm}^2$

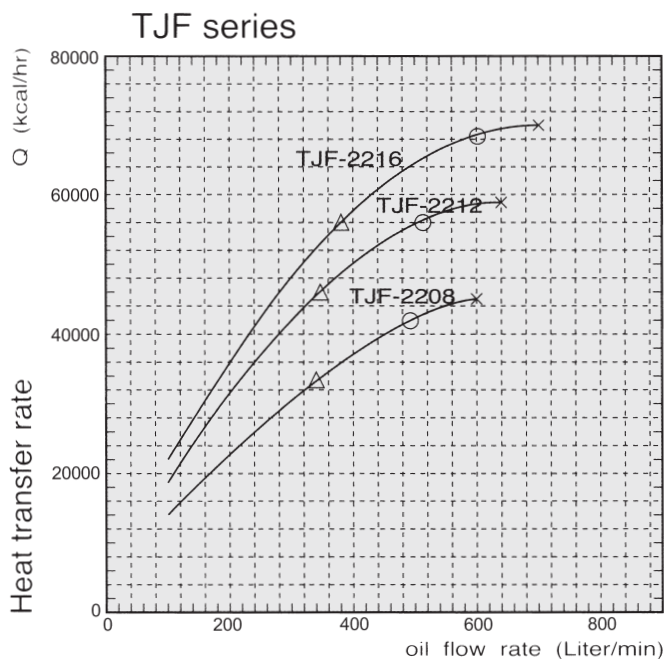
Standard conditions for the performances :

- (1) The volume flow rate of oil is twice as water .
- (2) The outlet temperature of oil is 50°C.
- (3) The inlet temperature of water is 30°C .
- (4) The viscosity of oil is ISO-68.

Figure-2 Performance curves for TJ-1712 and TJ-1716

Water Cooled Oil Coolers " TJ / TJF " Series

- ◆ The following curves were based on the tests performed by the Energy & Resources Laboratories, Industrial Technology Research Institute, TAIWAN.



Pressure drop of oil

$\Delta \Delta P = 0.5 \text{ kg / cm}^2$

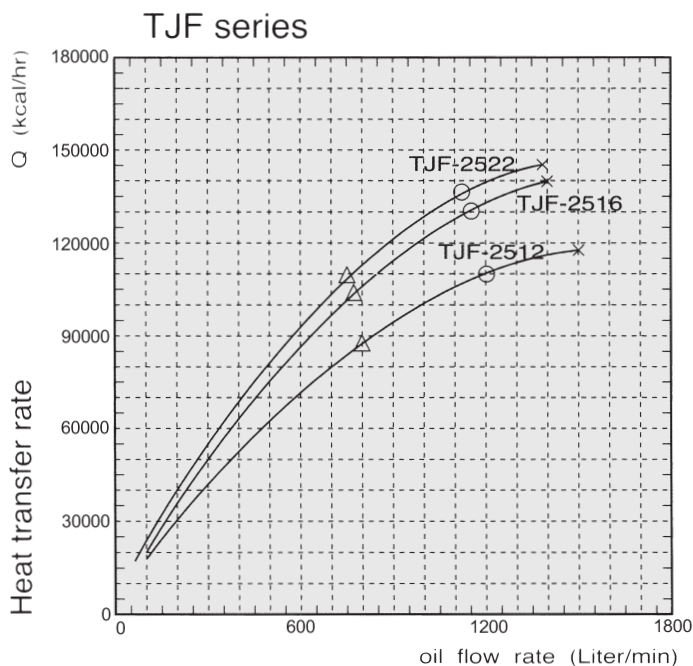
$\bigcirc \Delta P = 1.0 \text{ kg / cm}^2$

$\times \Delta P = 1.5 \text{ kg / cm}^2$

Standard conditions for the performances :

- (1) The volume flow rate of oil is twice as water.
- (2) The outlet temperature of oil is 50°C .
- (3) The inlet temperature of water is 30°C .
- (4) The viscosity of oil is ISO-68.

Figure-3 Performance curves for TJF-2208, TJF-2212, and TJF-2216



Pressure drop of oil

$\Delta \Delta P = 0.5 \text{ kg / cm}^2$

$\bigcirc \Delta P = 1.0 \text{ kg / cm}^2$

$\times \Delta P = 1.5 \text{ kg / cm}^2$

Standard conditions for the performances :

- (1) The volume flow rate of oil is twice as water;
- (2) The outlet temperature of oil is 50°C ;
- (3) The inlet temperature of water is 30°C ;
- (4) The viscosity of oil is ISO-68.

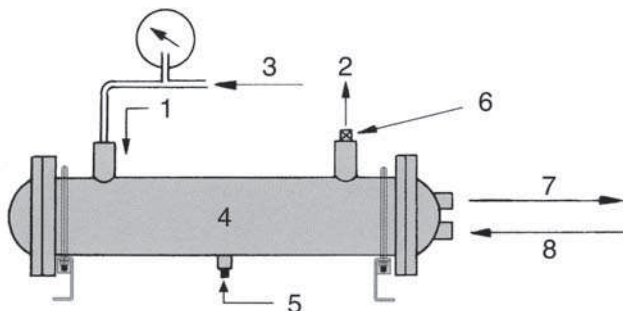
Figure-4 Performance curves for TJF-2512, TJF-2516, and TJF-2522

◆ Check and Maintenance

1. The schedule for the routine check should be half or every year depend on the flow conditions.
2. Open the end cover in the U-loop for the water side and check the fouling conditions. Remove the oil drain valve, discharge the oil in the shell-side to check the oil condition. The fluid conditions on both sides should be used to reschedule the maintenance schedule.
3. Check the anti-corrosion zinc plate.
Replace it if the length less than half of the original length.
The schedule should be changed with the fluid conditions.
It may be 3, 6, or 10 months.
4. In order to avoid the freeze during the winter season, the cooling water should be drained out of the oil cooler at the end of the day.
5. If the maintenance and repair are required, the action should be taken immediately. This is the best way to prevent the corrosion, fouling, and leakage.

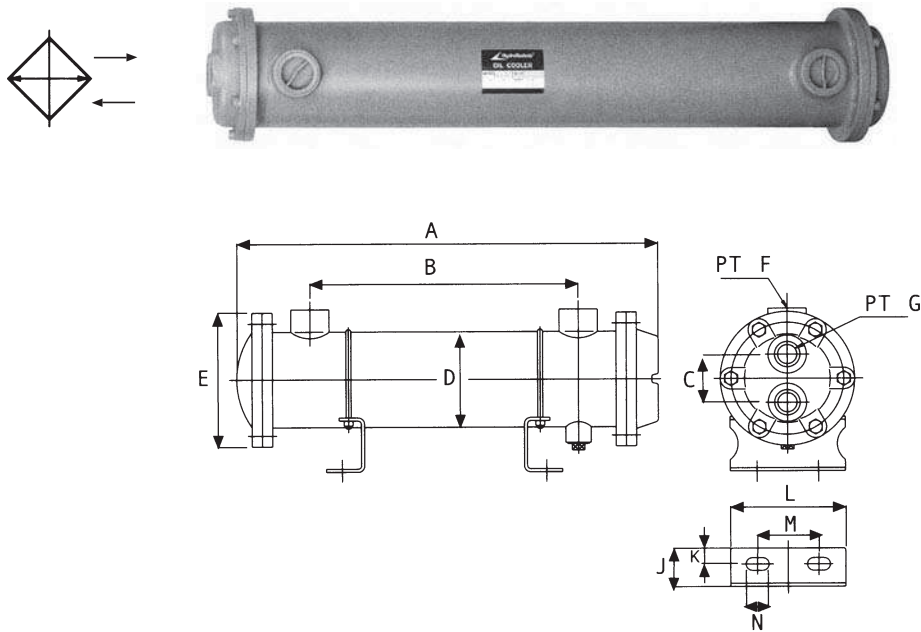
◆ Method of Check

Put a plug on the oil outlet cock after the assembly. Introduce the compressed air with pressure less than 6.5kg/cm² and inspect the water inlet and outlet port and all the location of flange to see any air leakage.



1	Oil inlet port
2	Oil outlet port
3	Air
4	Shell-side
5	cock for the water drain
6	cock plug
7	outlet port of cooling water
8	inlet port of cooling water

◆ OIL COOLER



Specification :

Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	J mm	K mm	L mm	M mm	N mm	Fin Tube	Flow l/min	Weight kg
OR-60	450	305	46	89.1	121	3/4"	3/4"	23	11	115.5	95	7x10	22	60	8.5
OR-100	555	400	57	101.6	134	3/4"	3/4"	33	12.5	145.5	106.5	10x20	26	100	11.1
OR-150	575	385	76	139.8	175	1 1/4"	1"	30	12.5	175	130	13x16	42	150	19
OR-250	780	585	76	139.8	175	1 1/4"	1"	30	12.5	175	130	13x16	58	250	24
OR-350	1180	990	76	139.8	175	1 1/4"	1"	30	12.5	175	130	13x16	58	350	32.5
OR-600	1175	950	87	165.2	207	2"	1 1/4"	34	12.5	205	161	13x16	58	600	40
OR-800	1700	1490	87	165.2	207	2"	1 1/4"	34	12.5	205	161	13x16	58	800	54
OR-1000	2135	1910	87	165.2	207	2"	1 1/4"	34	12.5	205	161	13x16	58	1000	62

◆ **AH Series (20 Bar)**



AH0608T-CA*



AH0608LT-CA*



AH1012-CA2



AH1417(1470)-A*



AH1470-CA*



AH1490-CA*

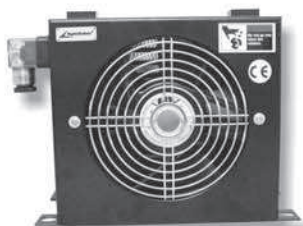


AH1890-CA*

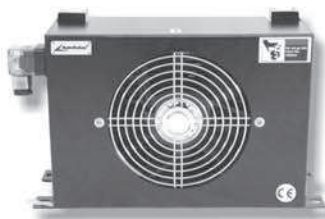


AH1680-CA*

◆ **AW Series (10 Bar)**



AW0607-CA*

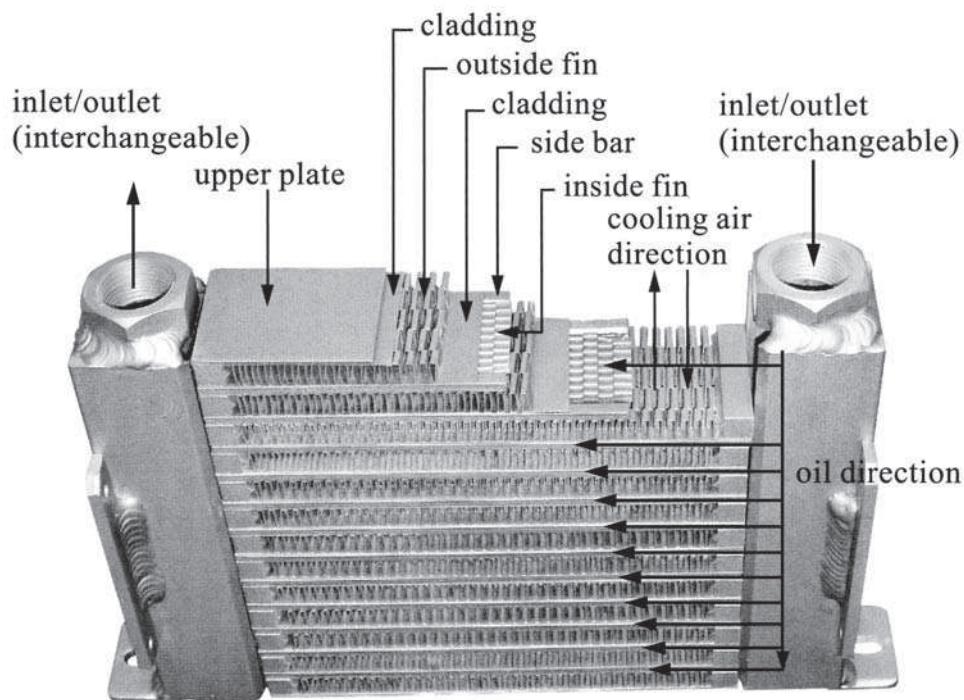


AW0608-CA*

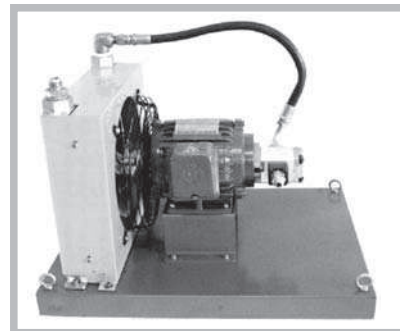
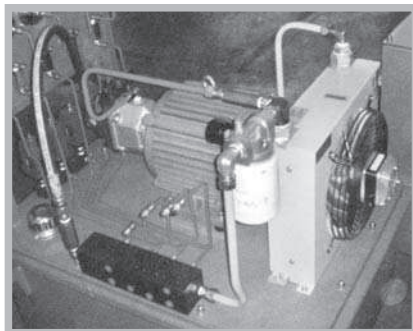
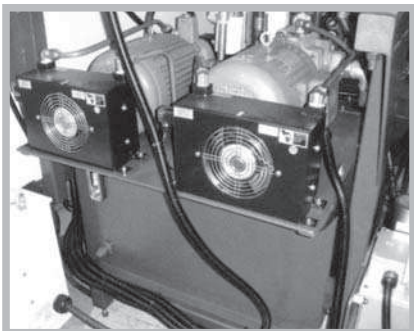


AW0608L-CA*

◆ Assembly

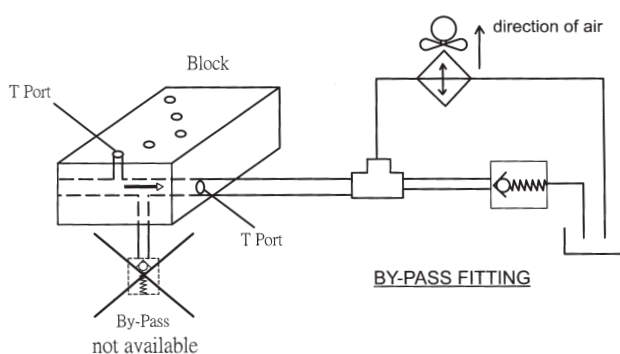
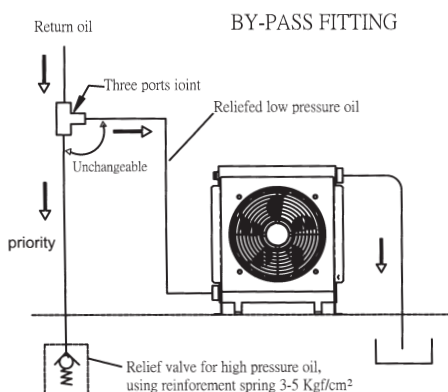


◆ Application

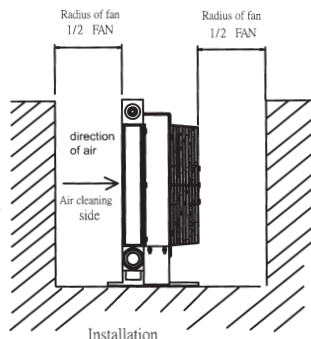


◆ Warning

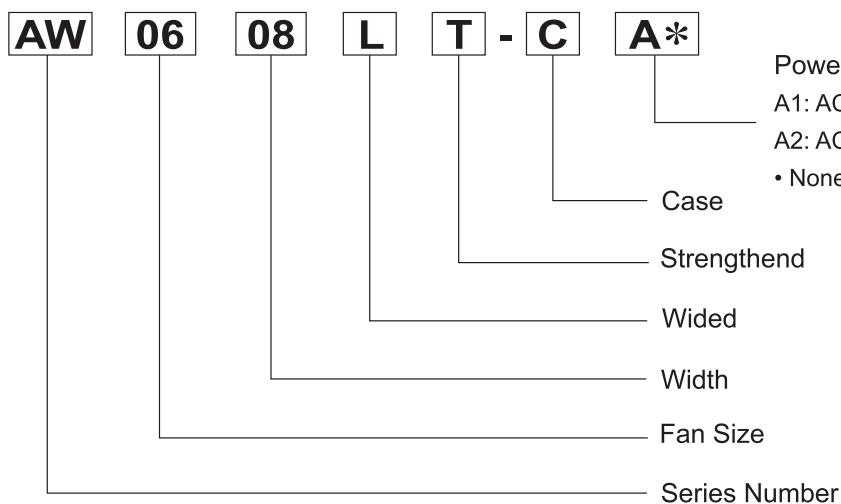
1. A by pass valve should always be mounted in parallel to the exchanger in order to avoid excessive pressure drop. particularly when the machine is started up with cold oil.
2. The exchanger must, be sure to clean at least once a week with an air gun.
3. Fitting caution:



4. Mounting caution:



◆ Model Number Designation :



Power Source
A1: AC 110V D1: DC 12V
A2: AC 220V D2: DC 24V
• None: If without Fan

◆ AH Series Plate-Fin Heat Exchangers Specification

	Port size	Flow range	Operating pressure	Capacity	Hydraulic	Diagram	Weight
Model	PT"	L/Min	Bar	Kcal/h	system power	L x H x W	Kg
	RC"			$\Delta t=30^{\circ}\text{C}$	Hp	m/m	
AH0608T-CA*	3/4"	60	20	1200	2~3	305x200x115	4.2
AH0608LT-CA*	3/4"	60	20	2400	3~5	405x200x115	6
AH1012-CA*	1"	100	20	5000	5~7.5	410x370x200	10
AH1417-A*	1"	100	20	9000	7.5~10	556x411x200	10.5
AH1470-A*	1 1/4"	200	20	11000	10~15	570x407x225	13
AH1470-CA*	1 1/4"	200	20	13000	15~20	520x475x320	25
AH1490-CA*	1 1/2"	300	20	16000	20~25	520x640x300	30
AH1680-CA*	1 1/2"	300	20	21000	25~40	520x640x320	35
AH1890-CA*	1 1/2"	300	20	25000	30~50	650x800x380	52

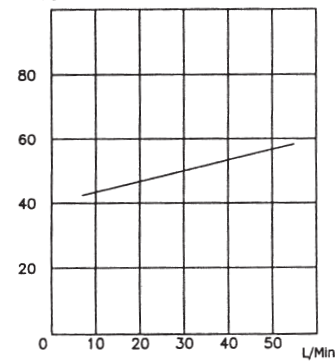
◆ AW Series Plate-Fin Heat Exchangers Specification

	Port size	Flow range	Operating pressure	Capacity	Diagram	Weight
Model	PT"	L/Min	Bar	Kcal/h	L x H x W	Kg
	RC"			$\Delta t=30^{\circ}\text{C}$	m/m	
AW0607-CA*	1/2"	20	10	700	251x195x110	3.3
AW0608-CA*	1/2"	20	10	900	310x195x110	3.7
AW0608L-CA*	1/2"	20	10	1500	410x195x110	5.2

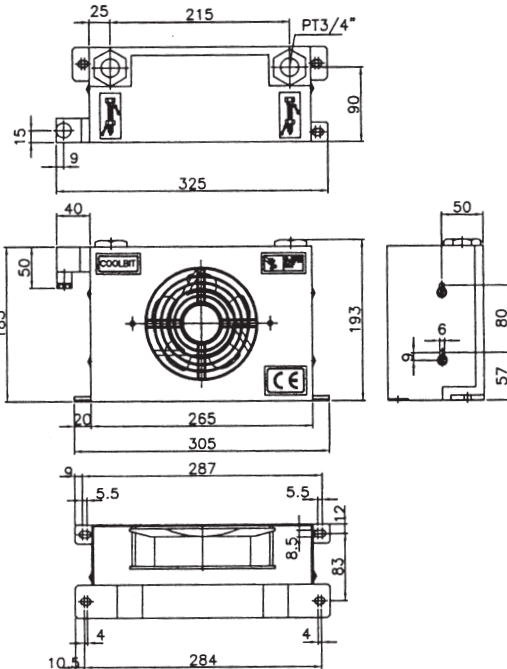
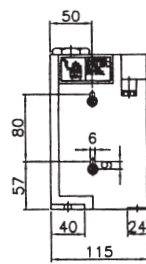
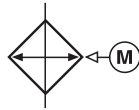
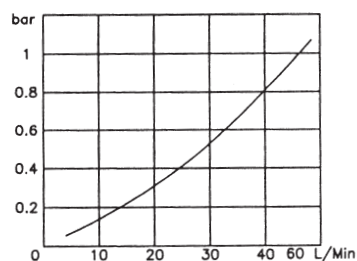
Note : AW Type Used on Variable Displacement Pump Drain Port.

◆ AH0608T-CA *

PERFORMANCE DIAGRAM



LOSE OF PRESSURE DIAGRAM (32 CST)



Port Size : PT 3/4"

Fan Motor Power : 35W

Heater Material : Aluminun

Flow Range : 60 L/min

Voltage : 1P AC110, 220, 380V / DC12, 24V

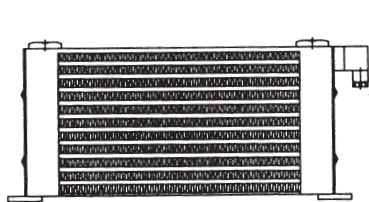
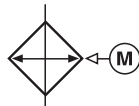
Heater Width : 45m/m

Operating Pressure : 20 Bar

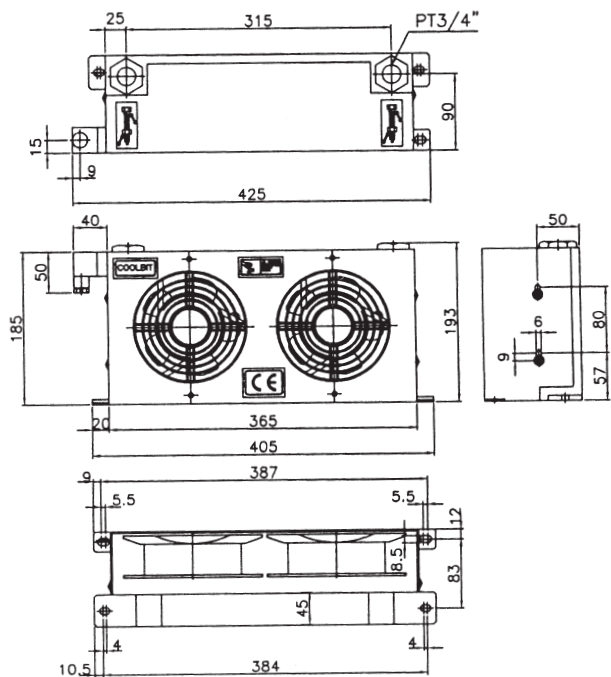
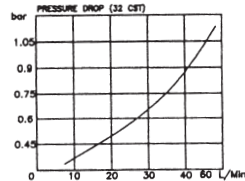
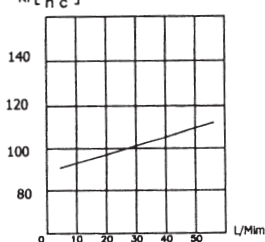
Plate-Fin Heat Exchangers

Weight : 4.2kg

◆ AH0608LT-CA *



PERFORMANCE DIAGRAM



Port Size : PT 3/4"

Fan Motor Power : 35W x 2

Heater Material : Aluminun

Flow Range : 60 L/min

Voltage : 1P AC110, 220, 380V / DC12, 24V

Heater Width : 45m/m

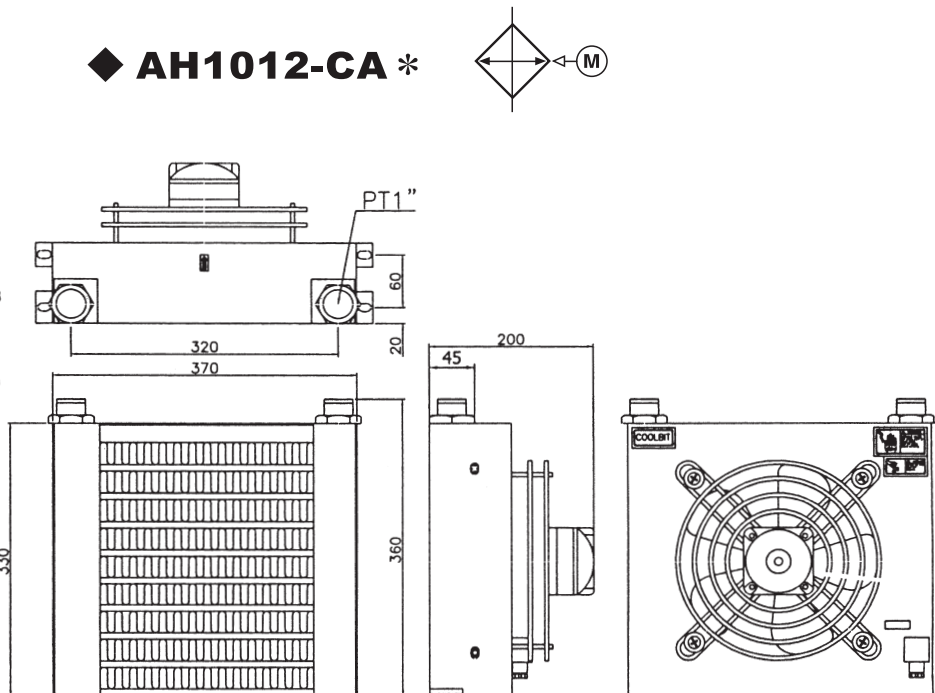
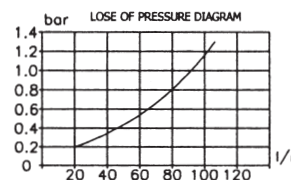
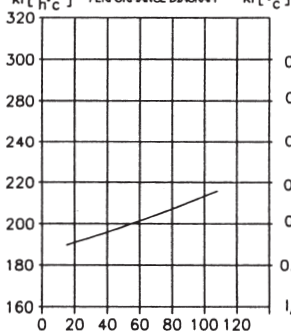
Operating Pressure : 20 Bar

Plate-Fin Heat Exchangers

Weight : 6kg

Air - Oil Coolers " AH / AW " Series

◆ **AH1012-CA ***



Port Size : PT 1"

Fan Motor Power : 16W (EBM)

Heater Material : Aluminun

Flow Range : 100 L

Voltage : 1P AC220V

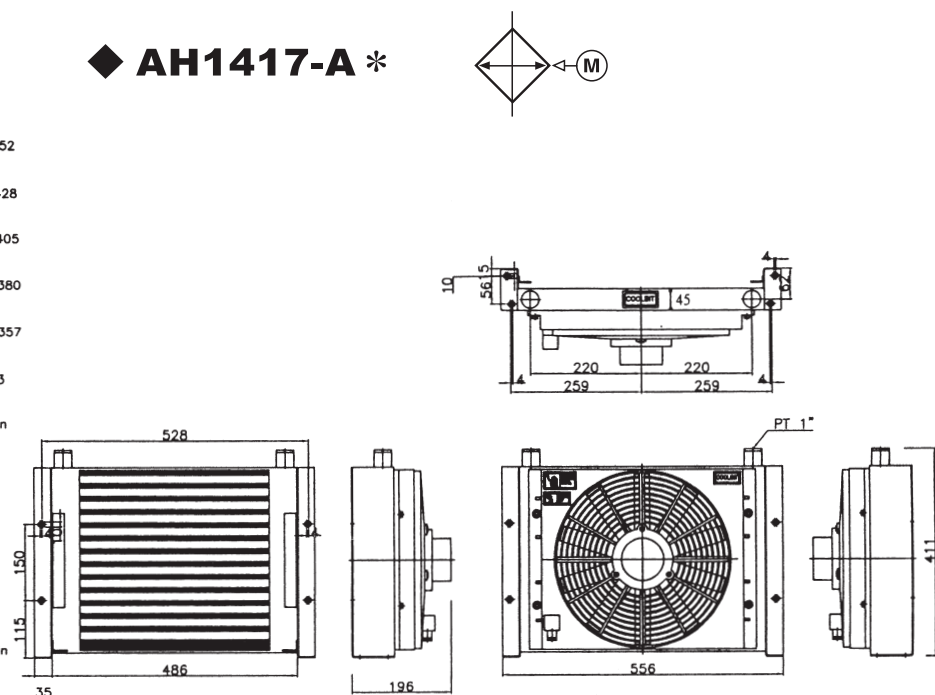
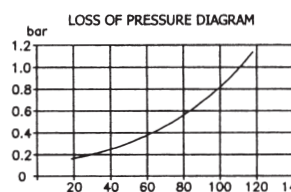
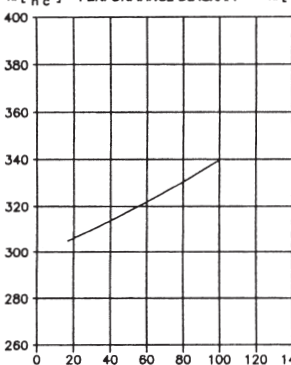
Heater Width : 45m/m

Operating Pressure : 20 Bar

Plate-Fin Heat Exchangers

Weight : 9.5kg

◆ **AH1417-A ***



Port Size : PT 1"

Fan Motor Power : 50W

Heater Material : Aluminun

Flow Range : 100 L

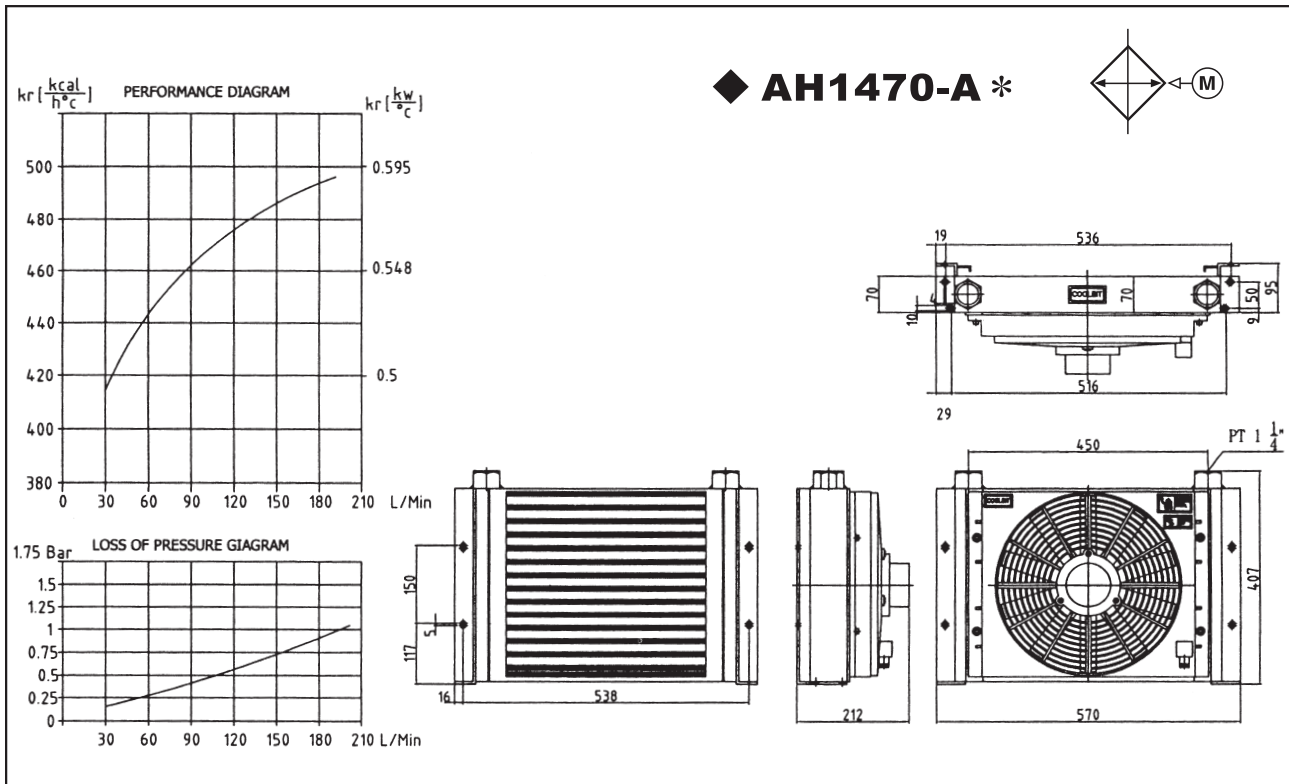
Voltage : 1P AC110, 220V / DC12, 24V

Heater Width : 45m/m

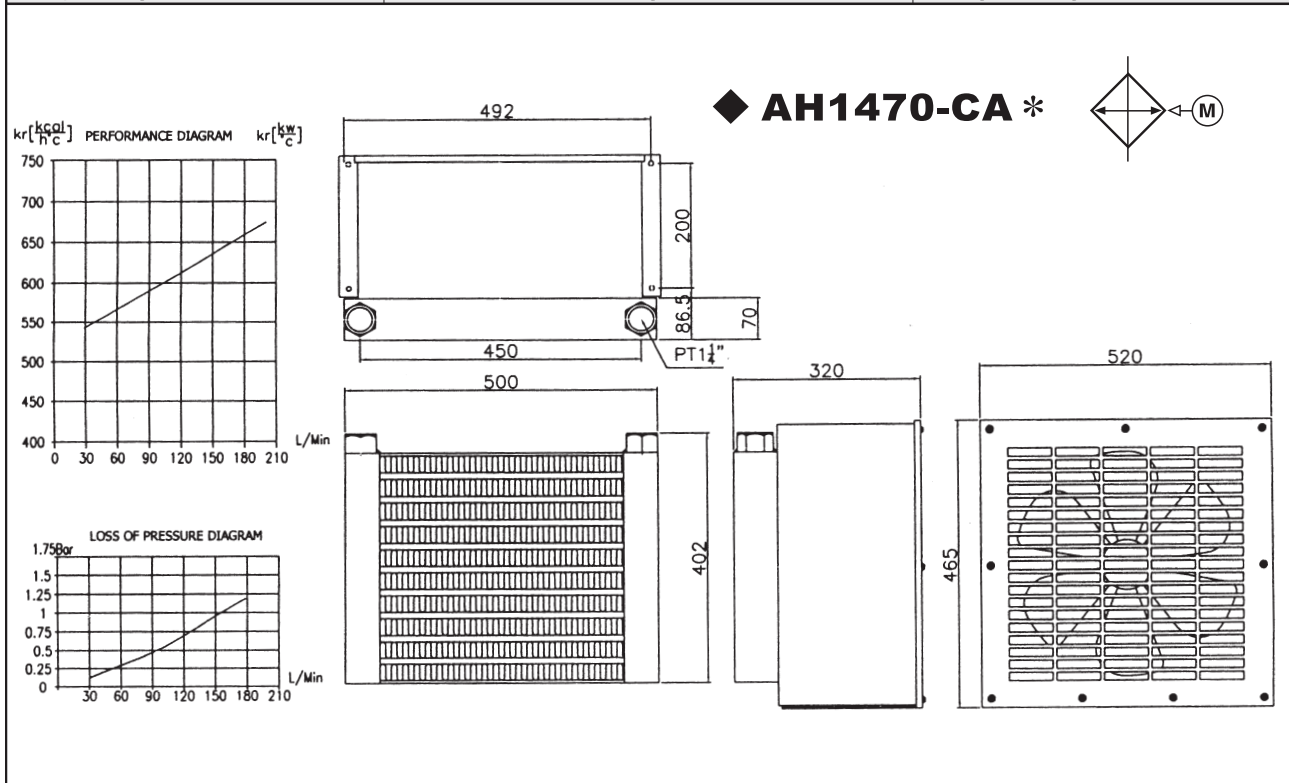
Operating Pressure : 20 Bar

Plate-Fin Heat Exchangers

Weight : 10.5kg

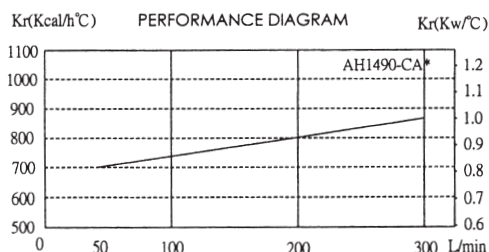
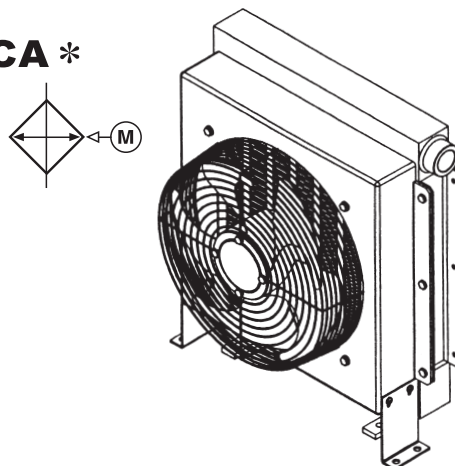
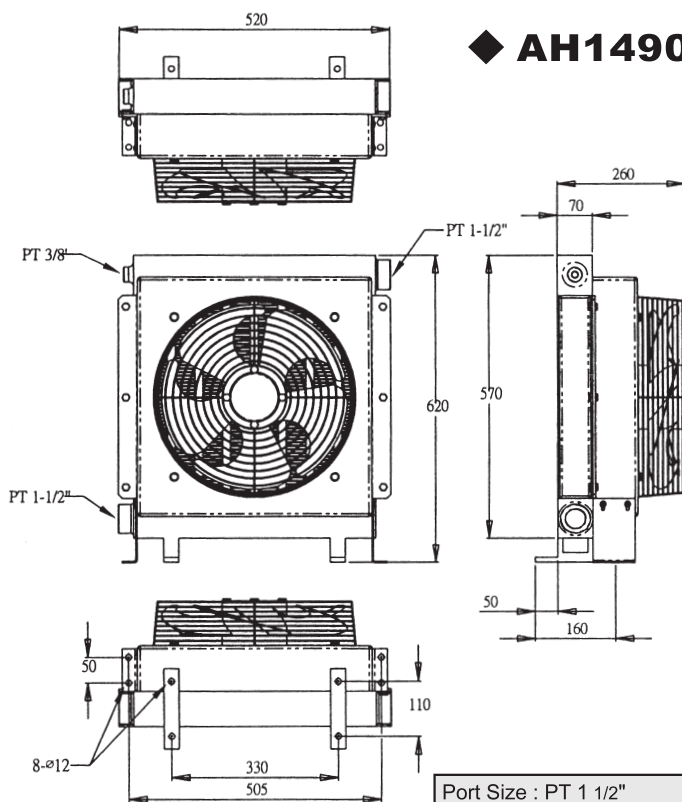


Port Size : PT 1 1/4"	Fan Motor Power : 35W	Heater Material : Aluminun
Flow Range : 200 L/min	Voltage : 1P AC110, 220V / DC12, 24V	Heater Width : 70m/m
Operating Pressure : 20 Bar	Plate-Fin Heat Exchangers	Weight : 13kg



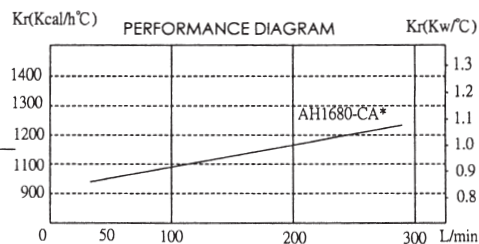
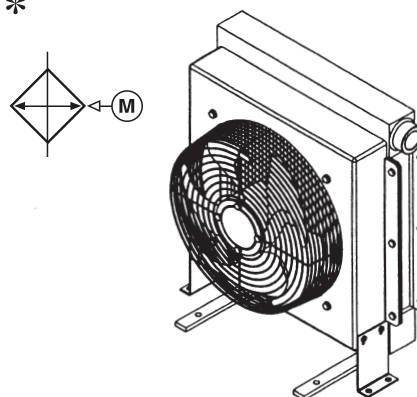
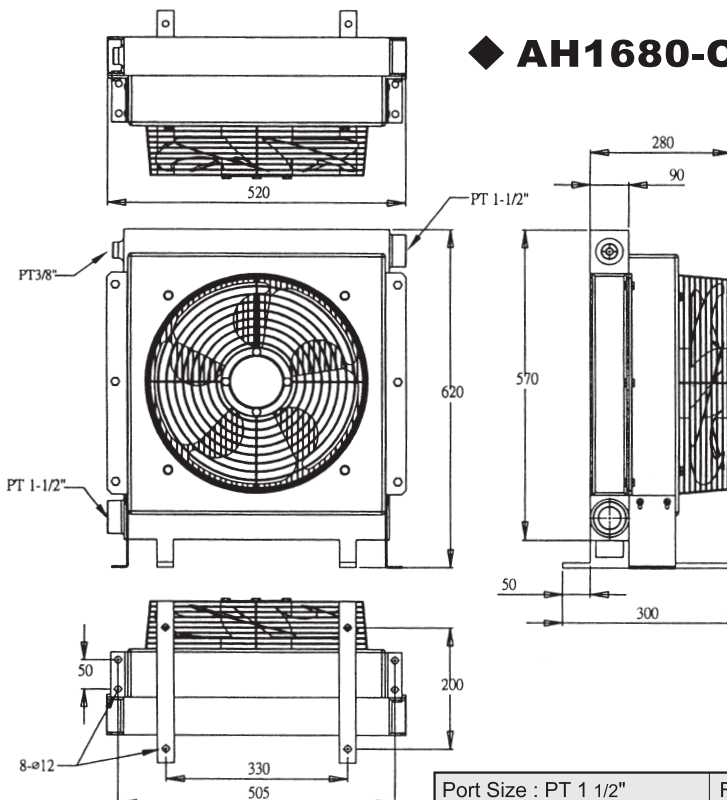
Port Size : PT 1 1/4"	Fan Motor Power : 1/2 Hp	Heater Material : Aluminun
Flow Range : 200 L/min	Voltage : 3P AC220, 380, 415,440,460,480V	Heater Width : 70m/m
Operating Pressure : 20 Bar	Plate-Fin Heat Exchangers	Weight : 25kg

◆ AH1490-CA *



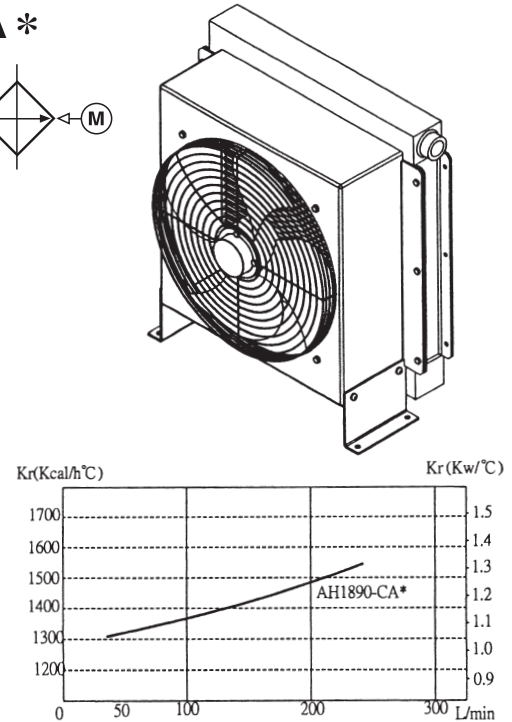
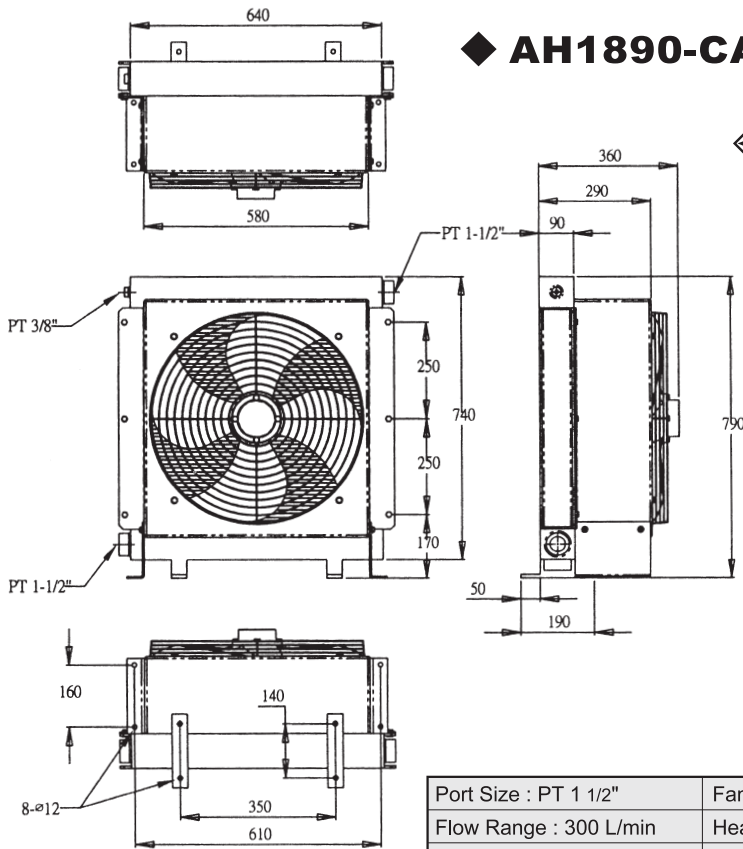
Port Size : PT 1 1/2"	Fan Motor Power: 3P, 230/400V,50/60Hz,145/240W (ELCO)	
Flow Range : 300 L/min	Heater Material : Aluminun	Heater Width : 70m/m
Operating Pressure : 20Bar	Heat - Exchangers	Weight : 30kg

◆ AH1680-CA *



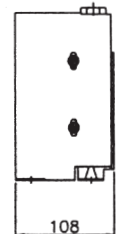
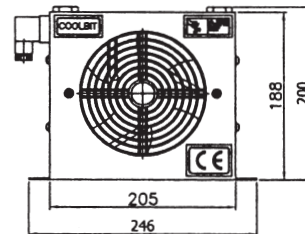
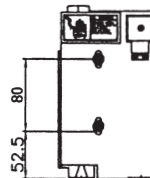
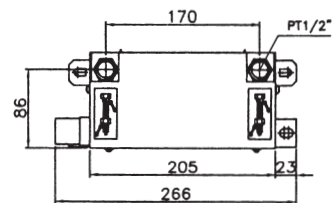
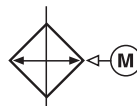
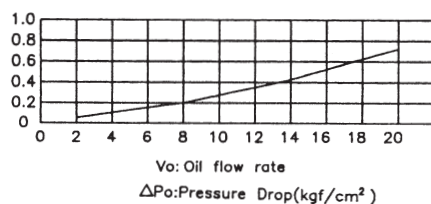
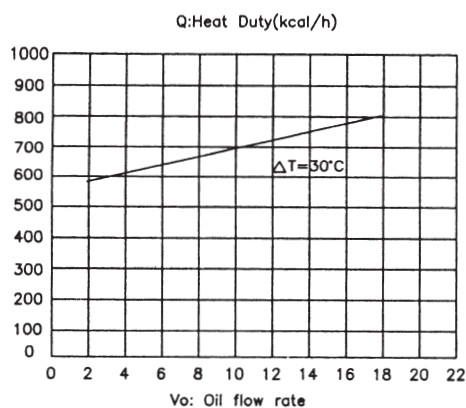
Port Size : PT 1 1/2"	Fan Motor Power: 3P, 230/400V,50/60Hz,135/185W (EBM)	
Flow Range : 300 L/min	Heater Material : Aluminun	Heater Width : 90m/m
Operating Pressure : 20Bar	Heat - Exchangers	Weight : 35kg

◆ AH1890-CA *



Port Size : PT 1 1/2"	Fan Motor Power: 3P, 230/400V, 50/60Hz, 200/285W (EBM)	
Flow Range : 300 L/min	Heater Material : Aluminun	Heater Width : 90m/m
Operating Pressure : 20Bar	Heat - Exchangers	Weight : 52kg

◆ AW0607-CA *



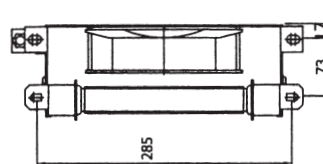
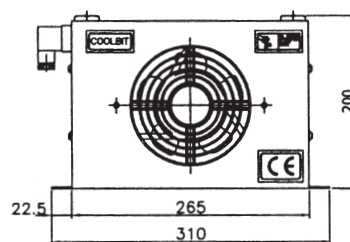
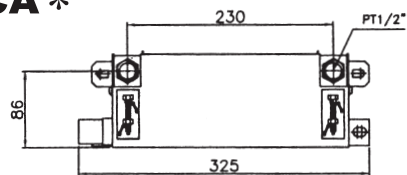
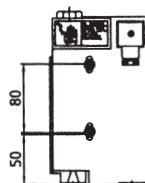
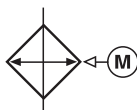
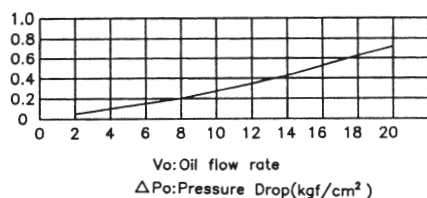
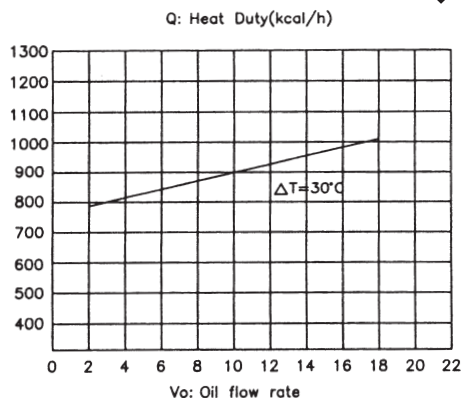
Port Size : PT 1/2"	Fan Motor Power : 35 W	Heater Material : Aluminun
Flow Range : 20 L/min	Voltage : 1P AC110, 220, 380V / DC12,24V	Heater Width : 30m/m
Operating Pressure : 10 Bar	Plate-Fin Heat Exchangers	Weight : 3.3kg

Air - Oil Coolers " AH / AW " Series

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AH/AW Series

◆ AW0608-CA *



Port Size : PT 1/2"

Fan Motor Power : 35 W

Heater Material : Aluminun

Flow Range : 20 L/min

Voltage : 1P AC110, 220, 380V / DC12, 24V

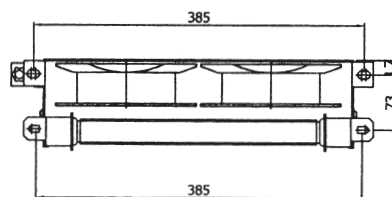
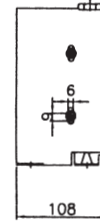
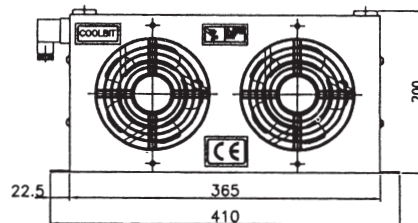
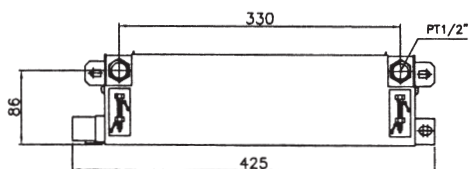
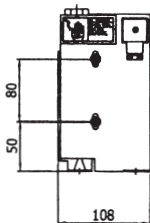
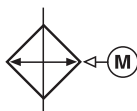
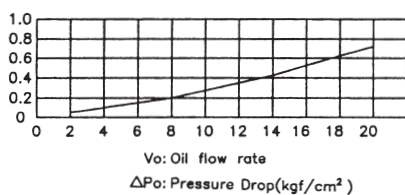
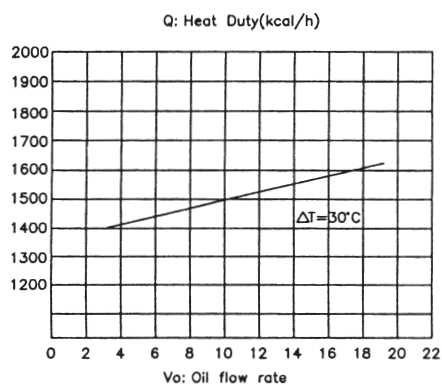
Heater Width : 30m/m

Operating Pressure : 10 Bar

Plate-Fin Heat Exchangers

Weight : 3.7kg

◆ AW0608L-CA *



Port Size : PT 1/2"

Fan Motor Power : 35W x 2

Heater Material : Aluminun

Flow Range : 20 L/min

Voltage : 1P AC110, 220, 380V / DC12, 24V

Heater Width : 30m/m

Operating Pressure : 10 Bar

Plate-Fin Heat Exchangers

Weight : 5.2kg