OLEFINI®

FAN HEATER

HOT - COLD WATER

www.olefini.gr

PAGE

A FAN HEATER is a device used mainly for Heating and Cooling Industrial spaces and Warehouses as well.

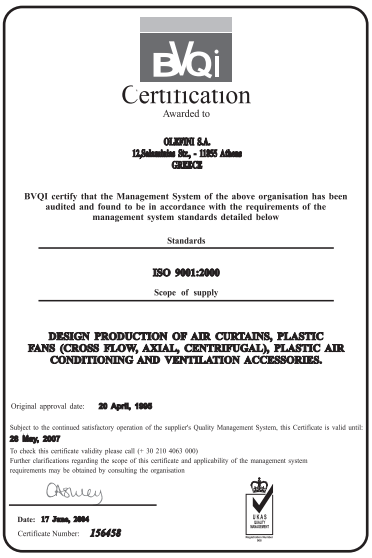
They are usually positioned in connection with Air Conditions in order to protect spaces and save Energy from the Air Condition units.

A FAN HEATER consists of a Water Element, an Axial Fan with a motor and a Room Thermostat for it's proper operation.

All OLEFINI FAN HEATER bare the CE Mark for complying with the European Safety Standards and PCT for Russian Standards and are produced under ISO 9001:2000 Guidelines which company follows for 25 years .

EN 60335-1 LVD 73/23/EEC
EN 60335-2-30 by 93/68/EEC
} LOW VOLTAGE DIRECTIVE

EN 61000-6-1 EMC 89/336
EN 61000-6-3 by 91/263/EEC
92/31/EEC
93/68/EEC
93/97/EEC
} EMC COMPATIBILITY



BVQi

Certification

Awarded to

OLEFINI S.A.
12,Salaminos Str., - 11855 Athens
GREECE

BVQI certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

ISO 9001:2000

Scope of supply

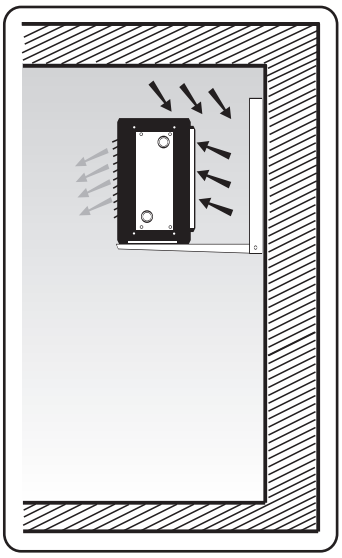
DESIGN PRODUCTION OF AIR CURTAINS, PLASTIC FANS (CROSS FLOW, AXIAL, CENTRIFUGAL), PLASTIC AIR CONDITIONING AND VENTILATION ACCESSORIES.

Original approval date: 20 April, 1995

Subject to the continued satisfactory operation of the supplier's Quality Management System, this Certificate is valid until: 20 May, 2007

To check this certificate validity please call (+ 30 210 4063 000)
Further clarifications regarding the scope of this certificate and applicability of the management system requirements may be obtained by consulting the organisation

Date: 17 June, 2004
Certificate Number: 156458



2. LABELING AND SYMBOLISM

Usually 90% of all faults are caused by negligence in transportation of the Unit and loading operations. Pay attention to the special labeling on the outer surface of the package and strictly follow the instructions marked by the specific symbols.

Protect from moisture

Don't drop

Don't try to put more than 6 units in a stack

Don't step on the package

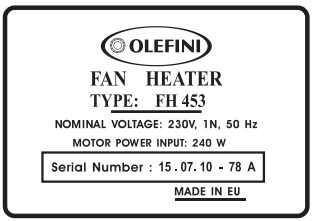
Each Fan Heater has a special labelling about the model designation and it's technical characteristics for it's full identification. Company "OLEFINI S.A." provides 100% quality control of each unit produced which is ensured by a unique serial number - S/N.

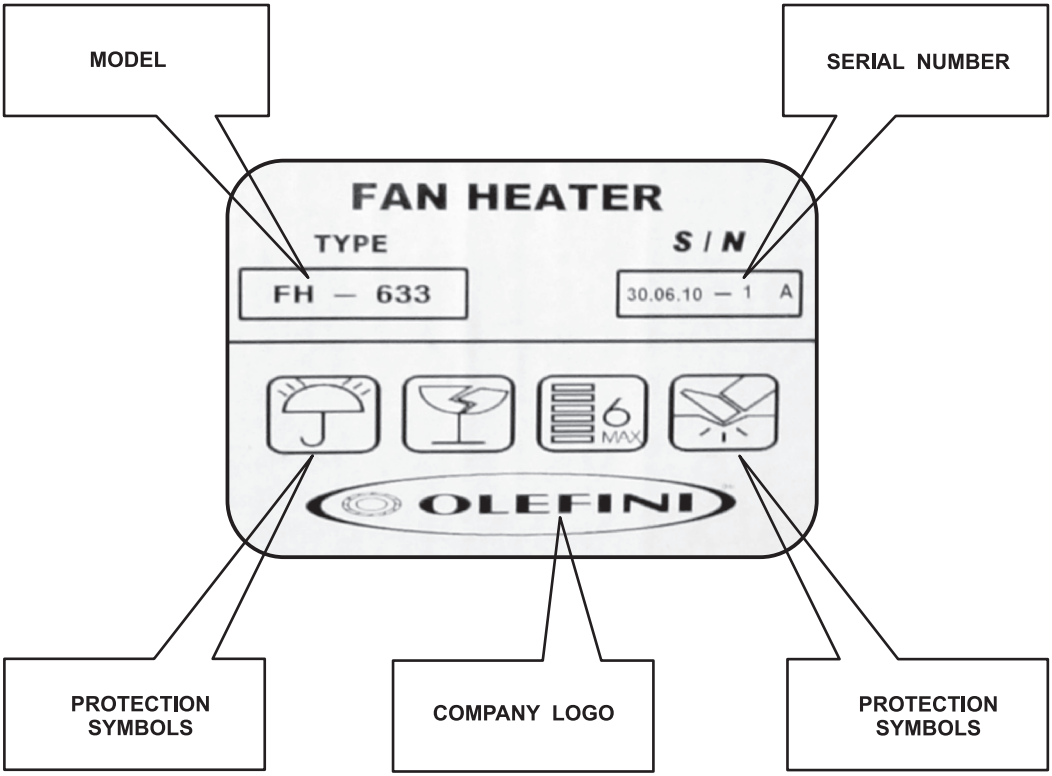
This device is NOT intended to be used from people (including children) with lower mental, physical abilities or lack of experience and knowledge, except when they are under surveillance or they have been given instructions for it's correct operation from a person responsible for their safety.

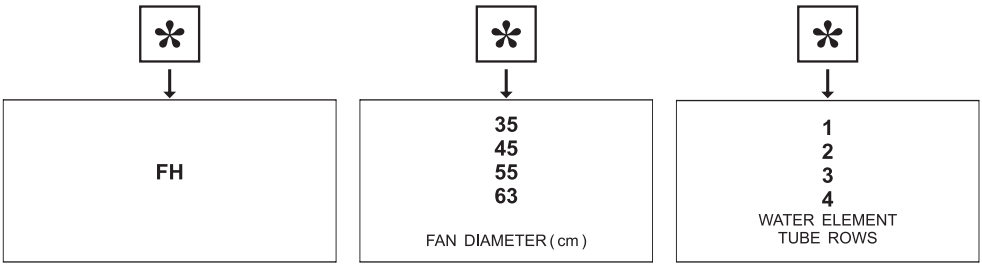
Children should Always be under surveillance and must be assured that they do not play with the device.

Device must not be used in spaces with High humidity concentrations, such as baths.

Symbols - CE, QC - stand for a guarantee of reliability of the device according to the European standards and continues quality checks.







EXAMPLE :

FH	**45**	**3**

FAN HEATER with 450 mm diameter Fan and 3 tube Rows water coil .

3. TECHNICAL CHARACTERISTICS

In the Table Bellow we provide the Technical details for OLEFINI FAN HEATERS.

All given characteristics have been calculated having in mind the bellow prevailing conditions:

HEATING: Air Inlet Temperature 20 ^{0}C, Water Inlet Temperature 85 ^{0}C, Water Outlet temperature 75 ^{0}C

COOLING: Air Inlet Temperature 28 ^{0}C, Water Inlet Temperature 7 ^{0}C, Water Outlet Temperature 12 ^{0}C, Relative Humidity 55%

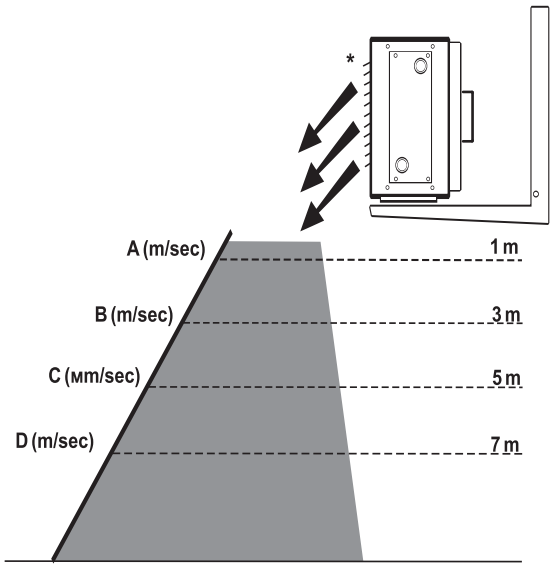
- In case of different prevailing conditions please consult supplier or factory for further details.

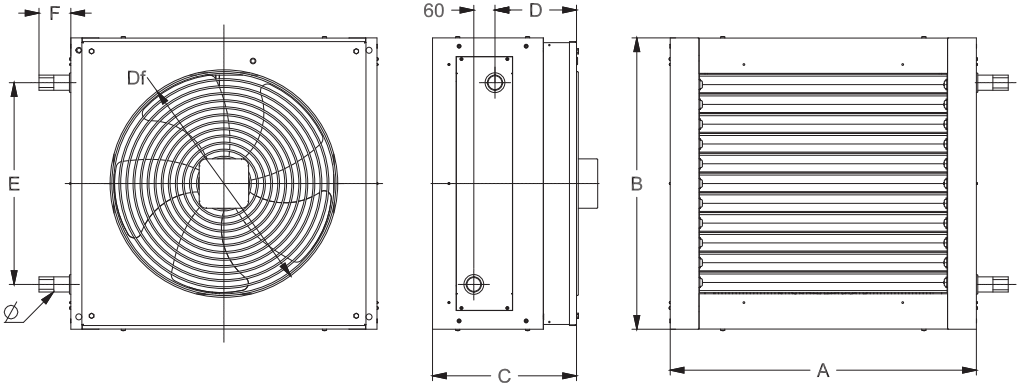
MODEL		FAN SPEED	AIR VELOCITY (m / sec)	AIR VOLUME (m^3 / h)	WATER FLOW (lt/s)	HEATING POWER (kW)	AIR OUTLET TEMPERATURE (^{0}C)	COOLING POWER (kW)	AIR OUTLET TEMPERATURE (^{0}C)	NOISE LEVELS dB(A)	SUPPLY LIVE	MAXIMUM MOTOR INPUT (W)	FAN SPEED (RPM)	WEIGHT (Kgr)	INGRESS PROTECTION IP
FH 35	FH35 1	HI	4,54	2000	0,3	7,7	31	1,4	27	57	230/50/1~	160	1400	34,0	IP44
		LOW	4,09	1800	0,3	7,3	32	1,3	26	54			1300		
	FH35 2	HI	3,96	1750	0,7	14,2	44	5,1	22	56			1400	35,0	
		LOW	3,52	1550	0,7	13,2	45	4,7	22	54			1290		
	FH35 3	HI	3,40	1500	1,0	17,7	55	7,7	19	57			1400	36,0	
		LOW	3,06	1350	1,0	16,5	56	7,1	18	55			1290		
	FH35 4	HI	3,18	1400	1,3	19,6	61	8,0	17	58			1400	37,0	
		LOW	2,84	1250	1,3	18,0	62	7,4	17	56			1290		
FH 45	FH45 1	HI	5,33	3900	0,6	15,3	32	4,5	26	69	230/50/1~	235	1300	44,0	IP44
		LOW	4,25	3100	0,6	13,5	33	4,1	25	65			1060		
	FH45 2	HI	4,53	3300	1,1	26,4	44	10,7	22	69			1265	45,5	
		LOW	3,56	2600	1,1	22,7	46	9,2	21	65			990		
	FH45 3	HI	4,25	3100	1,7	34,9	53	15,3	19	68			1295	47,0	
		LOW	3,02	2200	1,7	27,5	57	12,9	18	64			1000		
	FH45 4	HI	3,70	2700	2,2	37,6	61	17,6	17	67			1275	48,5	
		LOW	2,81	2050	2,2	30,7	64	14,6	15	64			980		
FH 55	FH55 1	HI	5,88	6400	0,8	25,0	30	8,4	25	66	230/50/1~	540	1350	60,0	IP44
		LOW	4,64	5000	0,8	21,0	33	7,5	25	60			1100		
	FH55 2	HI	5,42	5900	1,6	44,9	43	18,2	22	67			1430	62,0	
		LOW	4,04	4400	1,6	37,5	45	15,8	21	61			1040		
	FH55 3	HI	4,96	5400	2,5	57,1	51	24,0	19	68			1315	65,0	
		LOW	3,58	3900	2,5	45,9	55	20,1	18	61			1000		
	FH55 4	HI	4,59	5000	3,3	65,2	59	28,7	17	68			1300	68,0	
		LOW	3,31	3600	3,3	51,4	62	23,4	16	61			960		
FH 63	FH63 1	HI	5,21	7400	1,1	29,8	32	9,9	25	68	230/50/1~	530	880	76,0	IP44
		LOW	3,85	5400	1,1	25,2	34	8,6	25	60			660		
	FH63 2	HI	4,23	5900	2,1	48,1	44	18,6	22	67			875	78,0	
		LOW	3,08	4300	2,1	39,4	47	15,8	21	59			660		
	FH63 3	HI	3,56	5000	3,2	59,4	55	26,4	18	66			890	80,0	
		LOW	2,66	3700	3,2	48,0	58	22,1	17	58			660		
	FH63 4	HI	3,46	4800	4,2	68,3	55	31,5	16	65			880	83,0	
		LOW	2,37	3300	4,2	51,9	58	24,5	15	57			620		

4.SPEED DISTRIBUTION CHART

MODEL		DISTANCE FROM THE SUPPORTING LEVEL			
		1 m	3 m	5 m	7 m
		A (m/sec)	B (m/sec)	C (m/sec)	D (m/sec)
FH 35	FH35 1	3,6	1,8	1,0	-
	FH35 2	3,2	1,6	0,6	-
	FH35 3	2,9	1,4	0,4	-
	FH35 4	2,7	1,2	0,2	-
FH 45	FH45 1	4,0	2,0	1,2	1,0
	FH45 2	3,5	1,8	1,1	0,8
	FH45 3	3,1	1,6	1,0	0,6
	FH45 4	2,9	1,4	1,0	0,5
FH 55	FH55 1	5,1	4,0	2,8	1,5
	FH55 2	4,8	3,9	2,6	1,2
	FH55 3	4,4	3,0	2,3	1,0
	FH55 4	4,0	2,8	1,9	0,8
FH 63	FH63 1	5,1	3,5	3,0	2,0
	FH63 2	4,0	2,8	1,9	0,8
	FH63 3	3,0	2,3	1,5	0,4
	FH63 4	2,5	2,0	1,0	0,2

*** AIR LOUVERS ANGLE 45 ^{0}**





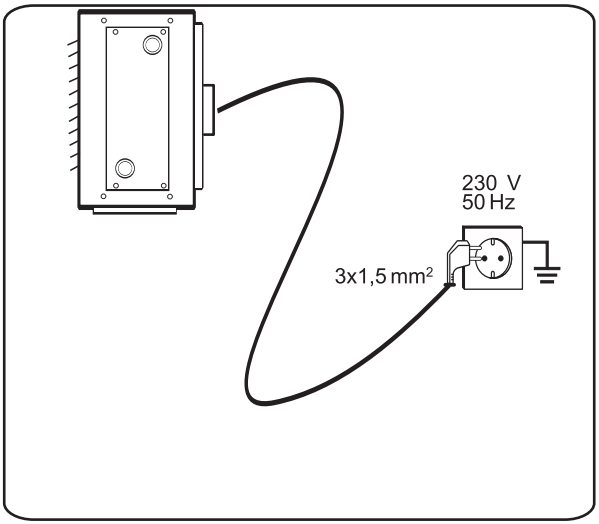
MODEL	A	B	C	D
FH 35	592	497	394	232
FH 45	692	597	394	232
FH 55	792	751	394	232
FH 63	868	826	394	217

MODEL	E	F	Df	Ø
FH 35	313	82	350	G 3/4”
FH 45	406	86	450	G 1”
FH 55	497	90	550	G 1 1/4”
FH 63	572	90	630	G 1 1/4”

6. ELECTRICAL CONNECTIONS

All OLEFINI FAN HEATERS are supplied with Single phase power at 230 V, 1 N, 50 Hz grounded.

These models are delivered with the Euro plug TYPE F and should be used with a socket of the same type with grounding. The standard power cable should have profile at least 3x1.5 mm^2. All the FAN HEATER connections , should be performed only through a unipolar 6 Amperes automatic safety device switch, where the gap between the contacts to be at least 3 mm.



ATTENTION

*** Read the instruction attentively before connecting the fan heater to the alternating-current mains, and also check the labeling on the Unit.**
*** Check up the system grounding once again before the final connection.**
*** Only qualified electrician is allowed to connect the Fan Heater to the alternating-current mains, after having studied the electric schemes and the circuit network features.**
*** If power supply cable is damaged or corrupted must be replaced by manufacturer or qualified personnel.**

7. HYDRAULIC CONNECTIONS

All FAN HEATERS are equipped with WATER ELEMENT for use with either Hot or Cold water.

During operation pay attention that Maximum water temperature inside the element does NOT exceed 95 ^{0}C and operation pressure 10 bar.

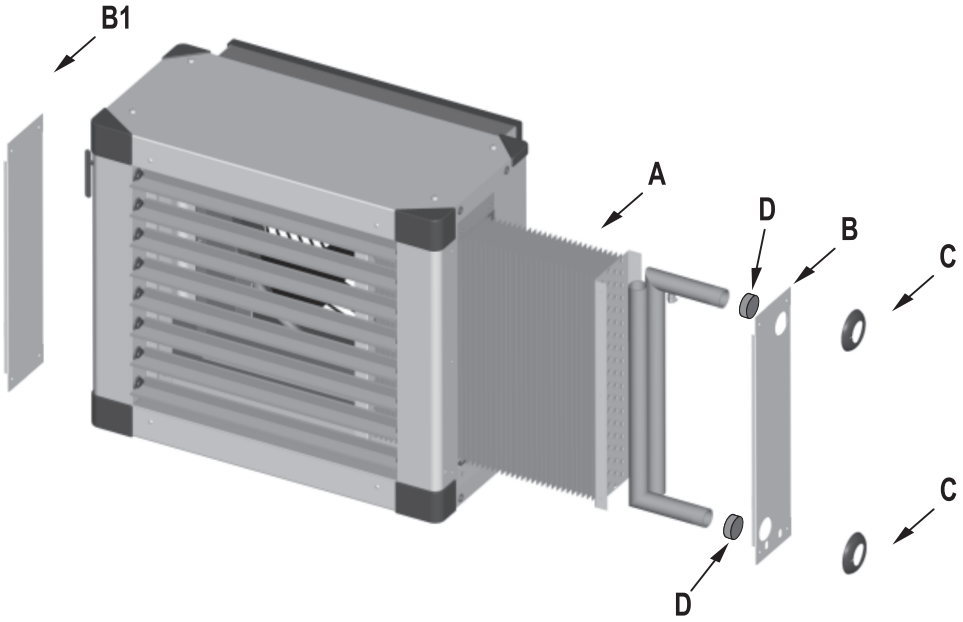
It is recommended to connect a Solenoid valve in the network for which the wiring connections should be done by a qualified electrician.

In addition it is advised to use a water filter in line as well for better protection of the water circuit.

WARNING: In case of a long period of No Use of the unit it is recommended to empty the element from Water.

All Fan heaters can be supplied with the Water Element positioned on either the Left or the Right Side of the Unit.

A - WATER ELEMENT
B - RIGHT WATER ELEMENT COVER
B1 - LEFT WATER ELEMENT COVER
C - DECORATIVE TUBE COVER
D - DECORATIVE THREAD COVER



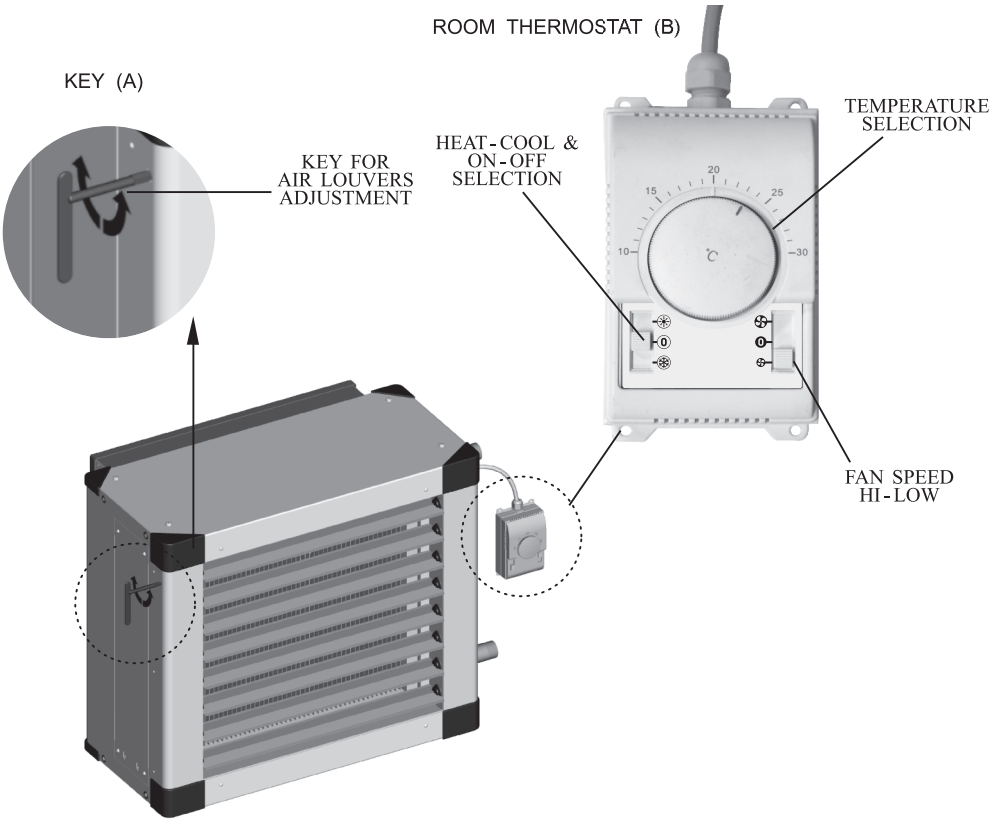
8. OPERATION AND ADJUSTMENT

All OLEFINI FAN HEATERS have a very Simple system in order to adjust the air louvers in the desired each time position. With the help of KEY (A) (provided inside the box) we can adjust the air louvers in the Air outlet for such purpose.

All FAN HEATER S are supplied with a Wired Room Thermostat (B) for their operation and Adjustment and also for adjusting the working Temperature, able for:

- Unit operation selection [- 0 -] [HEAT - OFF - COOL]
- Fan Speed selection [- 0 -] [LOW - OFF - HIGH]
- Selection of desired room temperature [10-30 °C]

WARNING: IT IS NOT ALLOWED TO POSITION THE WALL MOUNTED ROOM THERMOSTAT UNDER THE HYDRAULIC CONNECTIONS OF THE DEVICE FOR AVOIDING SHORT CIRCUITS IN CASE OF WATER LEAKAGE.

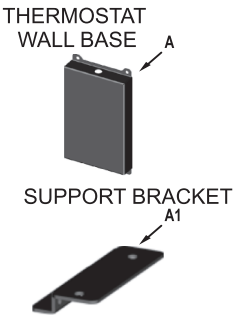


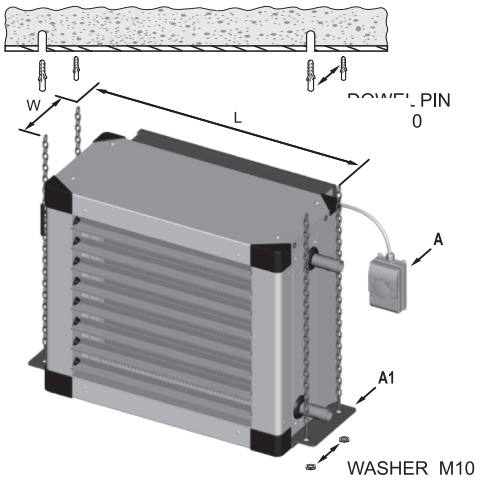
The Fan Heater must be positioned in such a way so it won't bother Air Inlet and Outlet Normal circulation.

- During operation, it is Prohibited to close the Air Louvers Completely.
- Always position Unit above 2 m from the floor level.

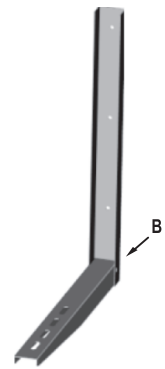
1). With the help of Support bracket A1 device can be hanged either from the ceiling with chains or in an existing metallic construction.

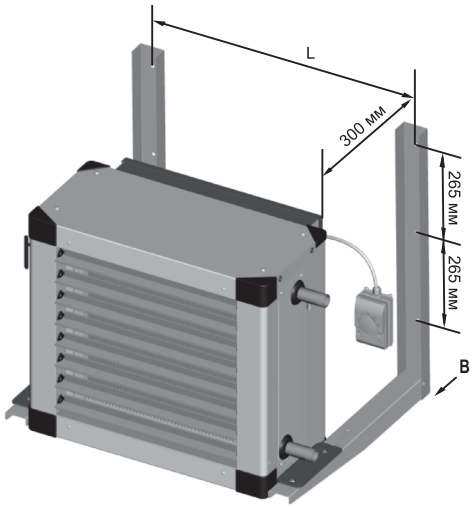
MODEL	W ± 1 мм	L ± 1мм
FH35	165	674
FH45	165	774
FH55	165	874
FH63	165	950





2. With the help of wall support base B unit can be positioned on the wall.
(Bracket B is OPTIONAL)





10. MAINTENANCE

All "OLEFINI" FAN HEATERS are designed and produced for a long-term operation under condition of observance of the following rules for maintenance and servicing:

AIR CURTAINS WITHOUT HEATING

1. Clean the Water Element on a regular basis (each 7-15 days) by water or by air stream (by means of a vacuum cleaner).

2. See to it that extraneous subjects do not get into the Fan Heater (screw-drivers, pencils etc.). They can damage the fan.

3. Unusual noise or vibration of the Device can be a malfunction sign. It is necessary to apply to the service center.

ATTENTION:

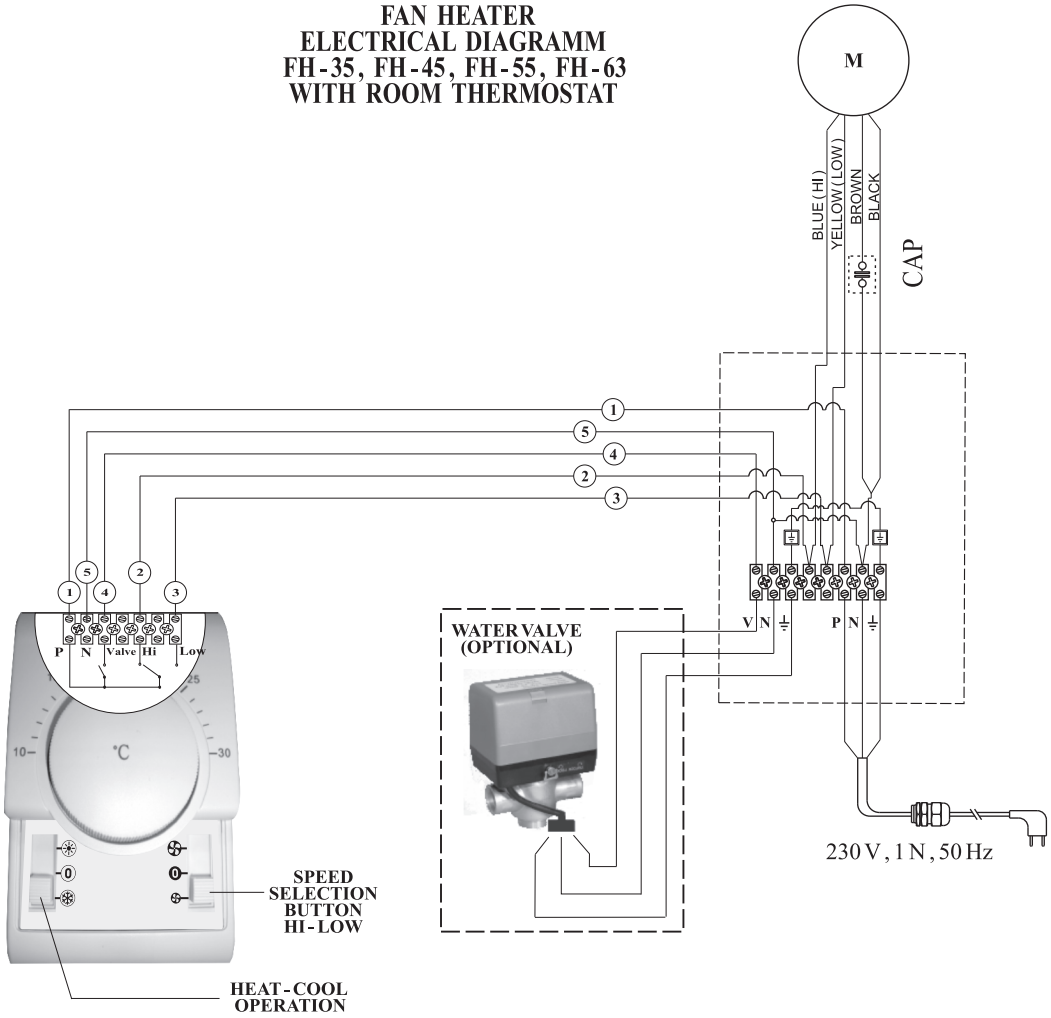
Before start Servicing Always Turn unit OFF first.

For Difficult cases or Very Dusty environments Always call qualified technician or Installer for cleaning the Unit.

In case of negligence of all the above critical damage may occur to the Device.

Always see to it that the FAN HEATER is never switched off by an electric knife switch. Switch the unit off only by the remote control.

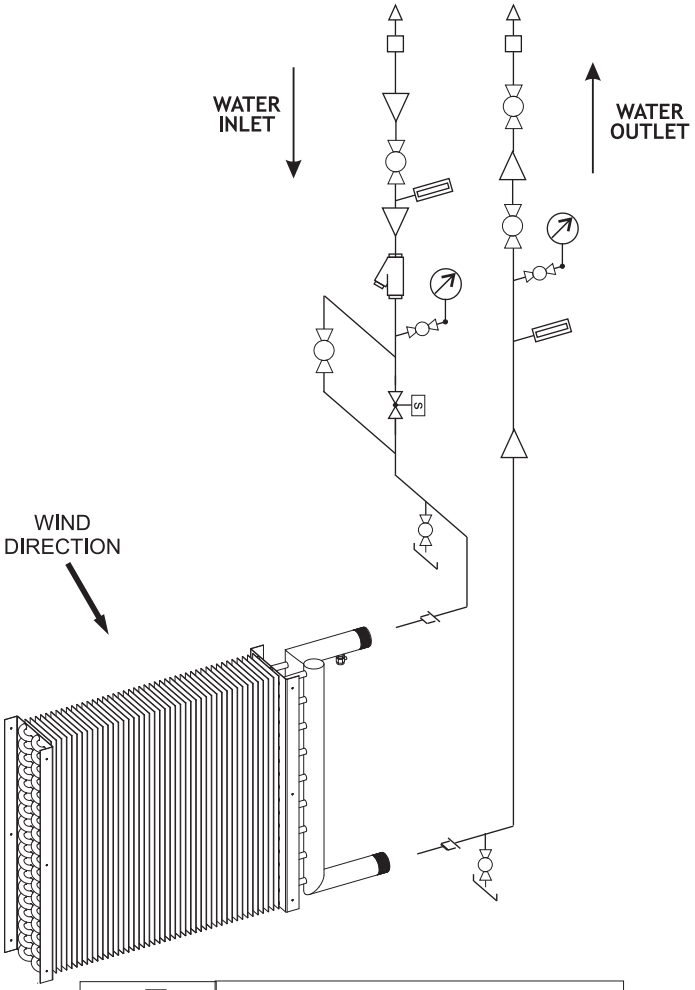
FAN HEATER
ELECTRICAL DIAGRAMM
FH-35, FH-45, FH-55, FH-63
WITH ROOM THERMOSTAT



TYPE	MOTOR	TECHNICAL CHARACTERISTICS	CAPACITOR
FH-35	YWF 4S-350	0.60A 130W 1350 r/min / 0.40A 100W 1200 r/min	5 µF / 450 V
FH-45	YWF 4S-450	1.10A 240W 1330 r/min / 0.80A 180W 1110 r/min	8 µF / 450 V
FH-55	YWF 4S-550	2.30A 505W 1330 r/min / 1.66A 345W 970 r/min	12 µF / 450 V
FH-63	YWF 6S-630	2.40A 500W 880 r/min / 1.60A 330W 640 r/min	12 µF / 450 V

P, N	230V, 1 N, 50 Hz
M	MOTOR
L	LOW SPEED
H	HI SPEED
CAP	CAPACITOR

12. HYDRAULIC DIAGRAM



S	SOLENOID VALVE
	THERMOMETER
	MANOMETER
	BALL VALVE
	PIPE THREAD
	WATER FILTER
	AIR VENT
	DRAIN

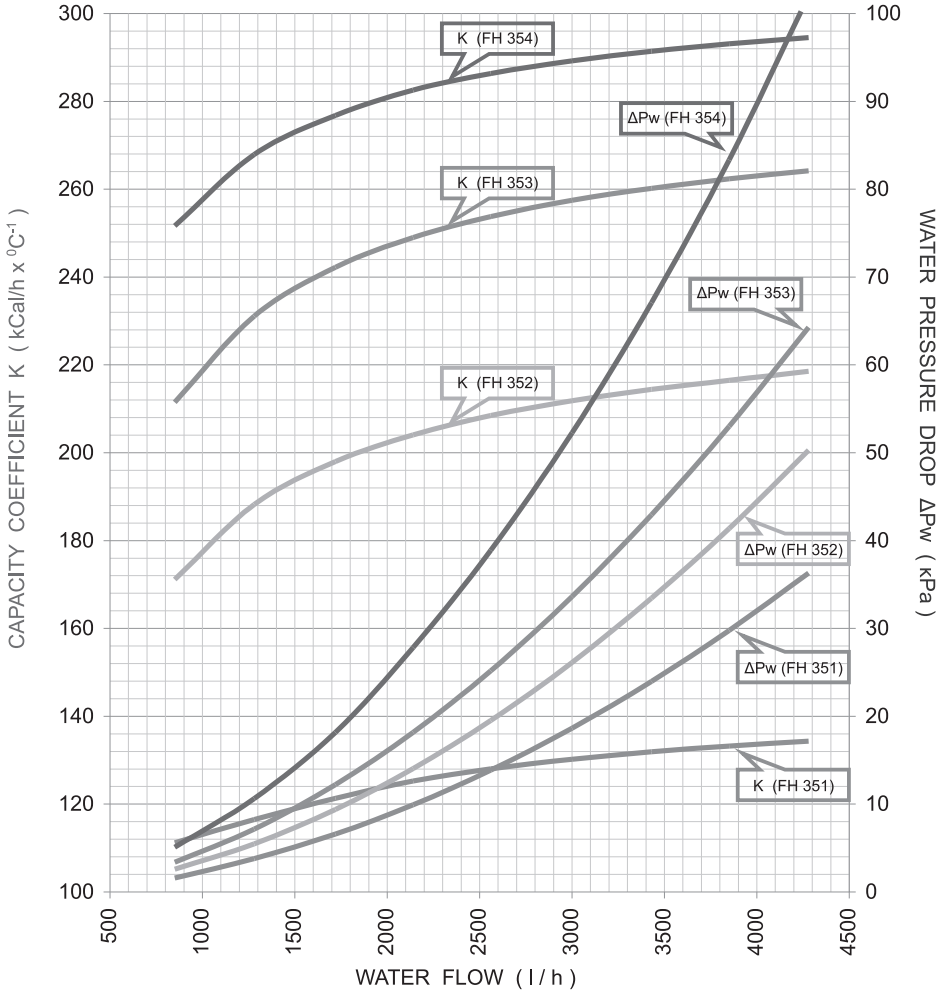
WARRANTY

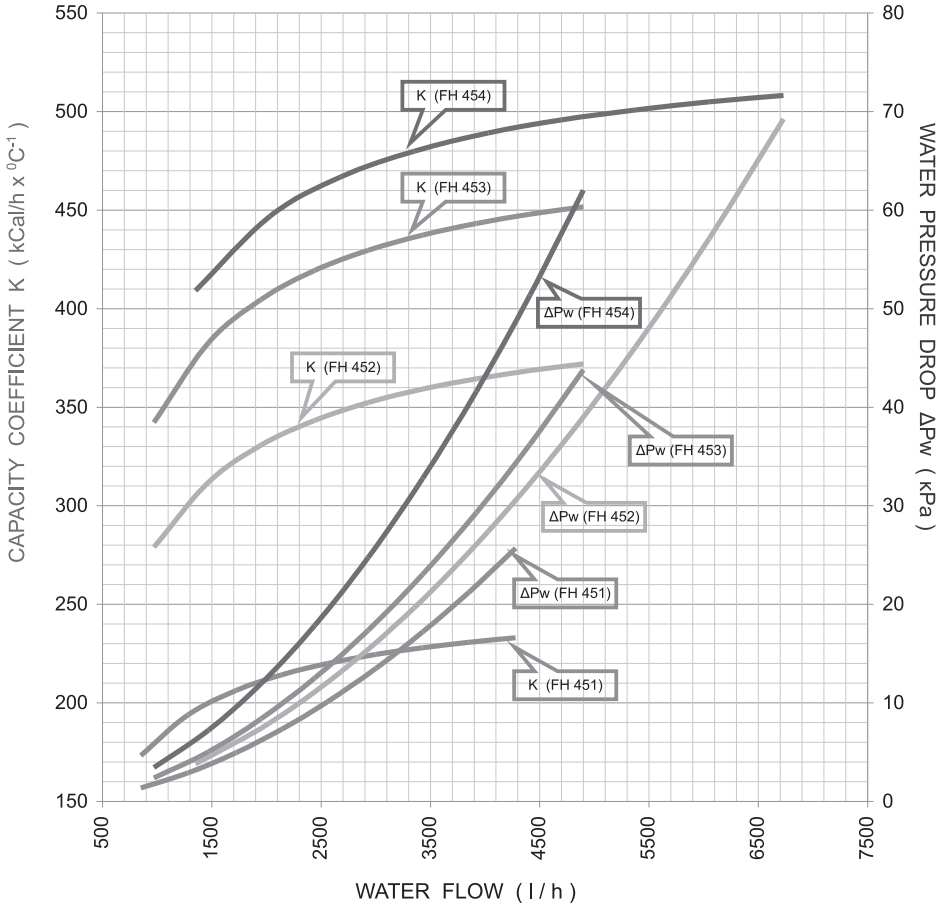
Company "OLEFINI S.A." gives a (3) three years guarantee for the supplied FAN HEATERS from the date of sale and under the condition that the buyer will follow the given instruction.

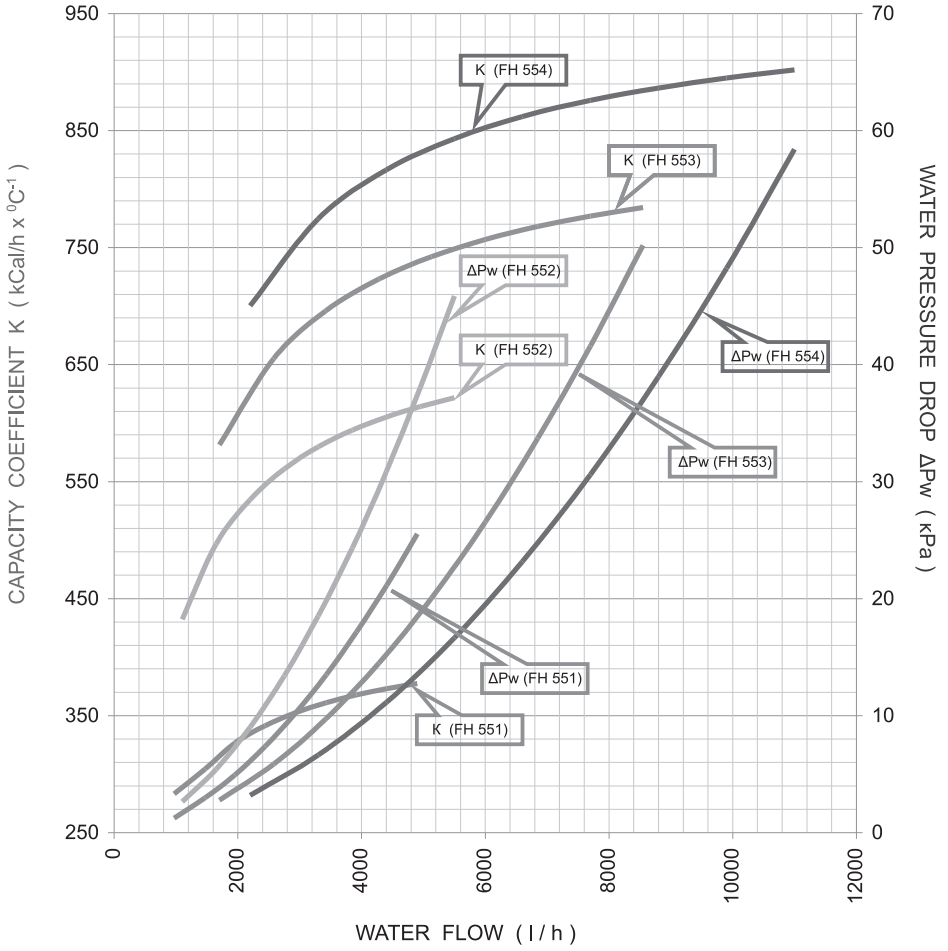
The guarantee means replacement of any faulty or defective part of the Unit, in case the fault is not caused by it's negligent use, it's drop or wrong mount.
The guarantee does not mean replacement of the whole FAN HEATER .

ATTENTION:
Any intervention in the mechanical or electric parts of the FAN HEATER by the buyer or by unauthorized personel cancels the right of the buyer to use the guarantee.

Tel: (+3022960) - 27624, 22960-23377
Fax: (+3022960) - 23361
www.olefini.gr, e-mail: sales@olefini.gr


K (FH 354)
ΔPw (FH 354)
K (FH 353)
ΔPw (FH 353)
K (FH 352)
ΔPw (FH 352)
ΔPw (FH 351)
K (FH 351)
CAPACITY COEFFICIENT K (kCal/h x $^0C^{-1}$)
WATER PRESSURE DROP ΔPw (kPa)
WATER FLOW (l / h)
300
280
260
240
220
200
180
160
140
120
100
100
90
80
70
60
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500


CAPACITY COEFFICIENT K (kCal/h x $^0C^{-1}$)
WATER PRESSURE DROP ΔPw (кPa)
WATER FLOW (l / h)
K (FH 454)
K (FH 453)
K (FH 452)
K (FH 451)
ΔPw (FH 454)
ΔPw (FH 453)
ΔPw (FH 452)
ΔPw (FH 451)
550
500
450
400
350
300
250
200
150
80
70
60
50
40
30
20
10
0
500
1500
2500
3500
4500
5500
6500
7500


950
850
750
650
550
450
350
250
70
60
50
40
30
20
10
0
0
2000
4000
6000
8000
10000
12000
K (FH 554)
K (FH 553)
ΔPw (FH 552)
K (FH 552)
ΔPw (FH 554)
ΔPw (FH 553)
ΔPw (FH 551)
K (FH 551)
CAPACITY COEFFICIENT K (kCal/h x $^0C^{-1}$)
WATER PRESSURE DROP ΔPw (kPa)
WATER FLOW (l / h)

From the given diagrams for : 350 / 450 / 550 / 630

Fan Heaters we obtain the capacity coefficient :

K (Kcal / h X $^{0}C^{-1}$) and ΔP (kPa) for each particular

Fan Heater model and the relative water flow .

Providing that we have the water inlet temperature [T_{WINLET}] and

the existing room temperature [T_{ROOM}] we can calculate the capacity

of our Fan Heater in : Kcal/h by using the following equation :

HEATING CAPACITY = K * (T_{WINLET} - T_{ROOM})

<u>EXAMPLE :</u>

Suppose we have :

T_{WINLET} = 85 ^{0}C water inlet and T_{ROOM} = 10 ^{0}C room temperature .

for a 2250 l/h water flow rate we have

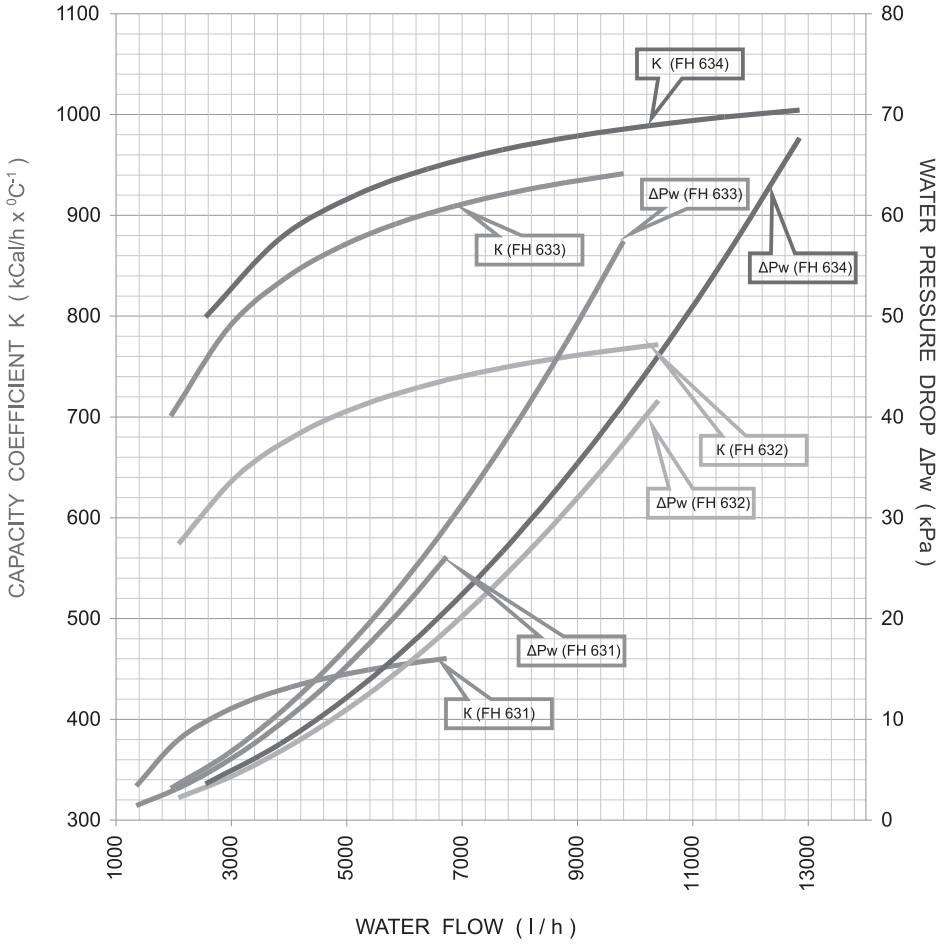
[from the 350 diagram] :

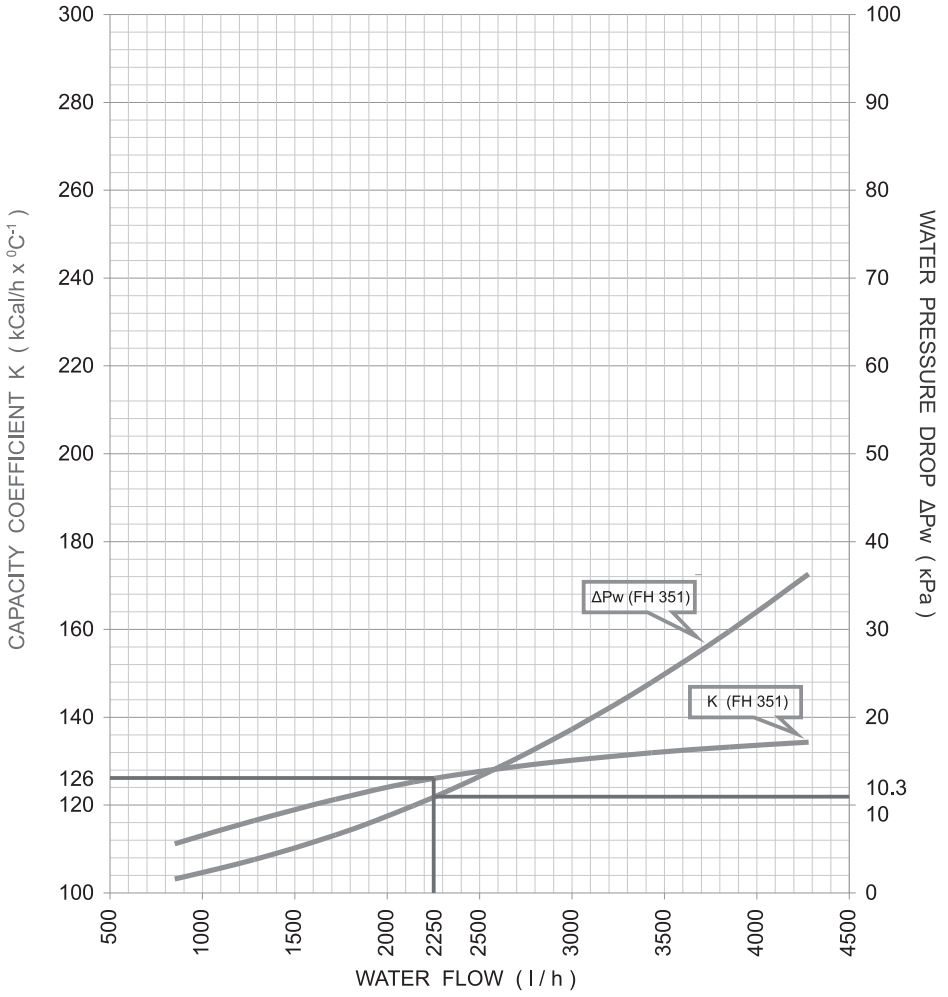
1). Pressure Drop of 10.3 kPa [for the specific model FH-351]

And

2). Heating Coefficient = K * (T_{WINLET} - T_{ROOM}) = 126 * (85 - 10) = 9450 Kcal / h

OR 11 kW [1 kW = 860 Kcal / h] .


CAPACITY COEFFICIENT K (kCal/h x ^{0}C^{-1})
WATER PRESSURE DROP ΔPw (кPa)
WATER FLOW (l / h)
1100
1000
900
800
700
600
500
400
300
80
70
60
50
40
30
20
10
0
1000
3000
5000
7000
9000
11000
13000
K (FH 634)
ΔPw (FH 633)
K (FH 633)
ΔPw (FH 634)
K (FH 632)
ΔPw (FH 632)
ΔPw (FH 631)
K (FH 631)


CAPACITY COEFFICIENT K (kCal/h x $^0C^{-1}$)
WATER PRESSURE DROP ΔPw (kPa)
WATER FLOW (l / h)
ΔPw (FH 351)
K (FH 351)
300
280
260
240
220
200
180
160
140
126
120
100
100
90
80
70
60
50
40
30
20
10.3
10
0
500
1000
1500
2000
2250
2500
3000
3500
4000
4500

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