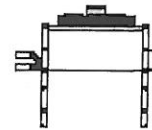


**HEATPUMP AIR TO WATER**  
**Indirect system**  
**QVANTUM FREE OF LOSSES**  
**DEFROSTING SYSTEM**

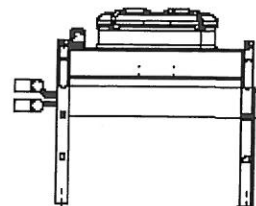
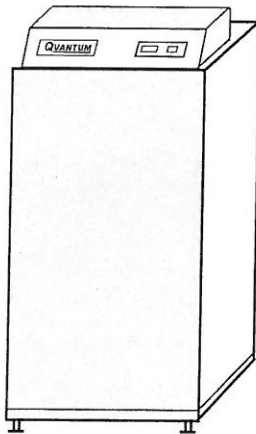
Heating power 6-43 kW

REFRIGERANT : R404A

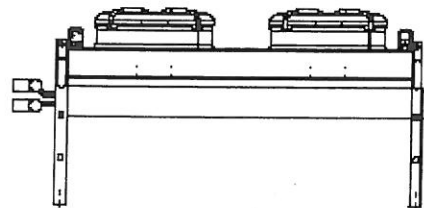
400 V - 3 phase - 50 Hz



Q8LB-Q17LB



Q21LB-Q32LB



Q41LB-Q48LB

## Air to water heatpump with free of losses defrost system

**DESCRIPTION**

**QVANTUM SERIES LB**, outside air/water heatpump, should be used with a conventionell boiler or Qvantum system boiler. The heating of the house is performed in three modes:

- 1) heatpump alone
- 2) heatpump and supplementary heat in parallell
- 3) supplementary heat alone

When the need for heat is moderate the house is heated by the heatpump alone. As the outside temperature gets lower at one point (the balance temperature) the heat from the heatpump will not be enough. The heatpump and the supplementary heater will then work in parallell. When the outside temperature falls very low about -10 to -20 °C the heatpump will stop. The house should in this situation be heated by the supplementary heater alone. The supplementary heater must be of suficciant power

**UNIQUE DEFROST SYSTEM**

**QVANTUM SERIES LB** uses an exeptional effective defrost system. This unique system makes it possible to defrost the air coil free of losses. The defrost system uses a accumulator to store "free" defrost energy. The defrost accumulator is internal up to heatpump size Q15 and external for the larger heatpumps. When a defosting cycle is initiated the energy stored in the defrosting accumulator is used to defrost the aircoil. The defrosting system makes it possible to make use of the heatpump even when the temperature is low. The aircoil is specially designed with a fin thickness of 0,25 mm and fin pitch of 4/5 mm. The 4/5 mm fin pitch will allow long intervalls between defrosting.

**HEATPUMP SELECTION**

Prior to a **QVANTUM SERIES LB** installation the most appropriate heatpump size should be determind, calculated. The table below gives a approximative indication

**FUNCTION**

**QVANTUM SERIES LB** "collects" heat from the outside air via an air coil placed on the outside. The collected heat is tranfered to the inside heatpump via a brine liquide (indirect system). The liquide ia a mixture of water and anti-freeze liquide (brine). Normaly a mixture of 40 % ethylen glycol and water is used. The inside heatpump transfer the heat to the heating water witch then is circulated to the radiators and also (pre)heats the hotwater boiler.

**PLACEMENT**

The outside aircoil can be placed where it is convenient. From the air coil there will be water condensate flowing especially in high outside temperatures. This condensate should be taken care of so that it won't effect the house or the environment. The coil also has one or two fans ,depending on model. Much attention has been made to reduce the sound pressure created by the fans. The évaporator has a very large area and slow rotating fan(s).

The heatpump unit is placed inside. The inside placement has several advantages compared to a heatpump entirely placed outside. All moving parts exept for the fan is placed inside. This contributes to a longer lifespan and also makes service more effective and convinient. The maximun distance between the inside and outside unit is determined by the pressuredrop in the brine circut and choosen brine pump. Normally up to 25 meters is acceptable if the recommended size of tubes is used. If it is necessary to have longer lines a calculation must be performed, contact Qvantum Energi AB.

Heatpump Size	Heatingpower*) kW	Reduces oil 90-80 % by **) m <sup>3</sup> /year	Maximum heating power**) kW	Soundpressure outside dB(A)ff10 m.
QVANTUM Q8 LB	8,0	3,4 - 4,6	9 - 12 kW	30 dB(A)
QVANTUM Q12LB	9,9	4,2 - 5,8	11 - 15 kW	31 dB(A)
QVANTUM Q15LB	11,5	5,4 - 7,2	14 - 19 kW	37 dB(A)
QVANTUM Q17LB	14,3	6,2 - 8,6	17 - 23 kW	37 dB(A)
QVANTUM Q21LB	16,7	8,4 - 11,4	22 - 30 kW	30 dB(A)
QVANTUM Q25LB	20,8	9,9 - 13,5	26 - 36 kW	30 dB(A)
QVANTUM Q32LB	29,4	12,7 - 17,2	34 - 46 kW	30 dB(A)
QVANTUM Q41LB	35,4	16,4 - 22,2	44 - 59 kW	33 dB(A)
QVANTUM Q48LB	42,8	17,5 - 23,7	47 - 63 kW	33 dB(A)

\*) +7/+45 °C air in/cond out Refrigerant R404A      \*\*) h. w. cons. 20 % of total heatenergy +8 °C norm. temp , max 55 °C cond out

**SERIES LB , REFRIGERANT R404A**

LB - R404A		Q8LB	Q12LB	Q15LB	Q17LB	Q21LB	Q25LB	Q32LB	Q41LB	Q48LB
Heating power	kW	8,0	9,9	11,5	14,3	16,7	20,8	29,4	35,4	42,8
Water <sub>in</sub> Low Δt=7°C	LI/s	0,27	0,34	0,39	0,48	0,57	0,71	1,00	1,20	1,46
ΔP <sub>condensor</sub>	kPa	25	20	21	22	23	22	25	29	27
Max temp heating	°C	55	55	55	55	55	55	55	55	55
Brine flow 40% EG	l/s	0,47	0,59	0,69	0,85	1,01	1,24	1,73	2,14	2,36
Min.temp air by 45°	°C	-15	-15	-15	-15	-15	-15	-15	-15	-15
Rated input	kW	2,4	3,1	3,5	4,2	4,8	6,2	9,0	10,3	13,3

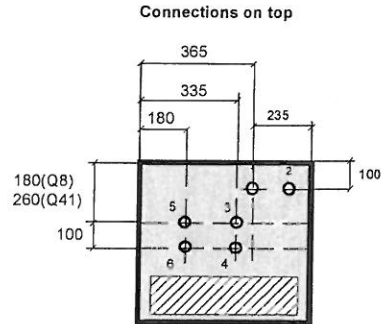
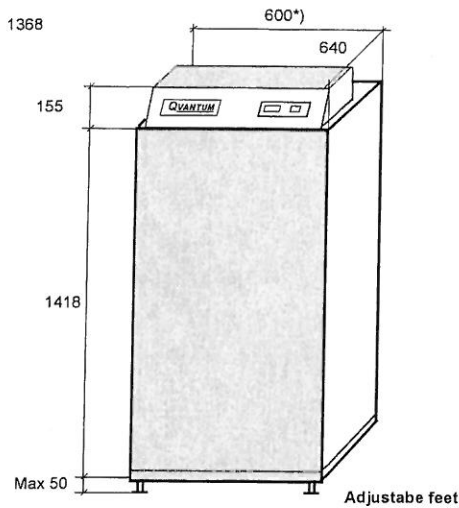
Output data at airtemp +7°C , heating water +45 °C

**GENERALDATA**

Series LB		Q8	Q12	Q15	Q17	Q21	Q25	Q32	Q41	Q48
Connection brine	mm	28	28	28	28	35	35	35	35	35
Connetcion water	mm	28	28	28	28	35	35	35	35	35
Refrigerant approx.	kg	1,6	1,7	1,8	1,3	1,4	2,3	2,8	3,3	3,8
Electrical supp.50Hz	v/ph	400/3	400/3	400/3	400/3	400/3	400/3	400/3	400/3	400/3
Fuse size (C)	A	10	16	16	16	20	20	25	35	35
Max current	A	6,9	9,2	10,7	11,0	13,9	15,8	20,5	24,9	31,6
Comp.unit.With	mm	600	600	600	600	600	600	600	600	600
Depth	mm	640	640	640	640	640	640	640	640	640
Height	mm	1573	1573	1573	1573	1573	1573	1573	1573	1573
Weight	kg	133	141	148	152	158	198	208	225	236
Aircoil With	mm	1445	1445	1455	1455	1848	1848	1848	3355	3355
Depth	mm	800	800	800	800	1169	1169	1169	1169	1169
Height	mm	1060	1060	1060	1060	1380	1380	1380	1380	1380
Weight	kg	57	65	75	80	165	177	180	298	322
Sound.press f.f.10m	dB(A)	30	31	37	37	30	30	30	33	33
Ventilators	pcs	1	1	1	1	1	1	1	2	2
Air flow	m <sup>3</sup> /s	1,24	1,18	1,53	1,53	2,4	2,3	2,2	4,8	4,5

**INSIDE UNIT**

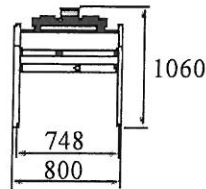
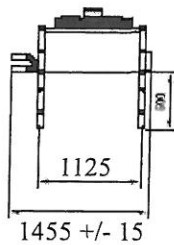
**QVANTUM SERIES Q8LB - Q48LB**



**OUTSIDE UNIT**

**Quantum Q8LB, Q12LB, Q15LB, Q17LB**

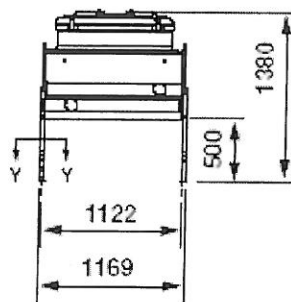
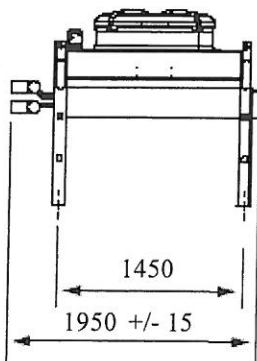
- Q8 -Cu 28
- Q12-Cu 28
- Q15-Cu 28
- Q17-Cu 28



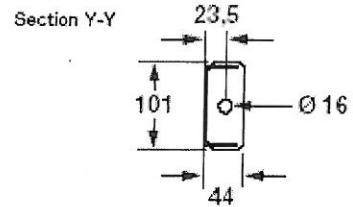
Type	weight	volume
Q8	57 kg	9,9 liter
Q12	65 kg	12,9 liter
Q15	65 kg	12,9 liter
Q17	65 kg	12,9 liter

**Quantum Q21LB, Q25LB, Q32LB**

- Q21-Cu 28
- Q25-Cu 28
- Q32-Cu 35

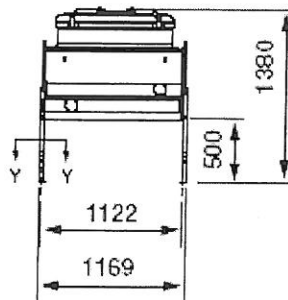
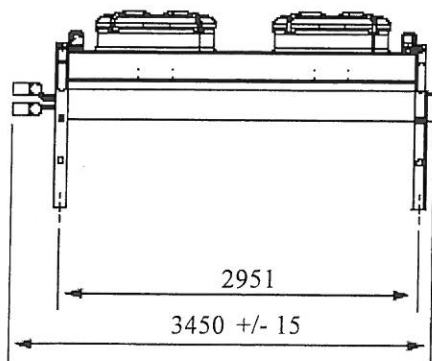


Type	weight	volume
Q21	165 kg	24,6 liter
Q25	177 kg	30,4 liter
Q32	180 kg	31,4 liter

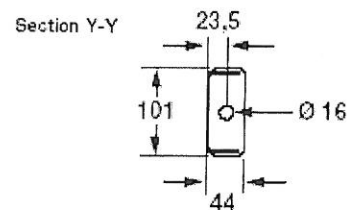


**Quantum Q41LB, Q48LB**

- Q41-Cu 35
- Q48-Cu 42



Type	weight	volume
Q41	298 kg	47,9 liter
Q48	322 kg	60,2 liter



## air / water Heatpump Quantum "free of losses" defrostsystem

**STANDARD REFRIGERANT:** R404A,  
**ALTERNATIVE:** R134a, R407C

**Capacity:** See technical data

A complete unit consists of:

- 1) An outside air coil with ventilator(s)
- 2) An inside unit with: compressor, expansion valve, magnetic defrost valve, recipient, pressostat, electrical equipment etc, internal or external defrost accumulator

### DESIGN THE INSIDE UNIT

The units are built on a frame of galvanized steel tubes, the housings are powder plated and have soundproof insulation. The top is made of aluminum. Top and bottom are also covered with soundproof insulation. The frame stands on four adjustable legs of rubber. All connections are on top of the unit.

**Dimensions :** 600x640x1573 mm (widthxdepthxheight)

**Weight:** SEE TECHNICAL DATA

**Color:** white sides , galvanized frame , aluminium top

**Compressor:** hermetic , reciprocating compressor (L) or scroll compressor (RL) with: rotalockvalves, crankcase heater , overheat protection in the electrical motor internal differential pressure valve , oil level indicator. The compressor is mounted on rubber antivibrating mountings.

**Condensor:** Compact brazed plate heat exchanger, stainless steel

**Evaporator:** Compact brazed plate heat exchanger, stainless steel, armaflex insulated

**Defrost tank** Internal stainless steel or external steel, armaflex insulated

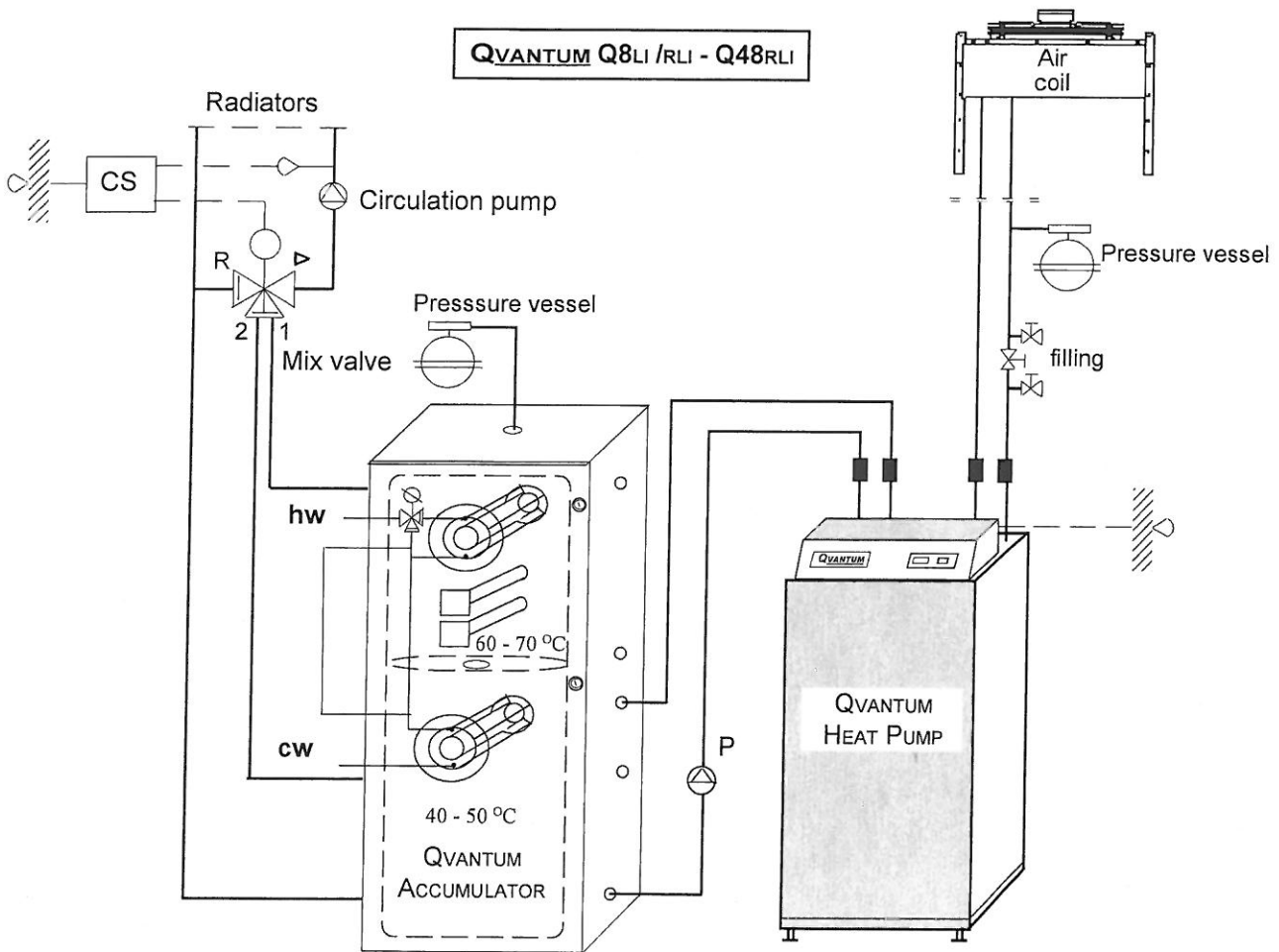
**Refrigerant loop:** filter dryer  
sightglass with moisture indicator  
thermostatic expansion valve with external pressure equalization  
Dual pressure control with manual reset  
service valves for pressure check  
Safety equipment for suction and discharge pressure

**Electricalsystem:** Built in with microprocessor control. Equipped with alarm- and safety functions

### Aircoil design

The aircoil is designed for outdoor placement and is designed for a brine indirect system. The airflow is vertical for all types and all sizes are of the same principal design. The aircoil and casing is made of aluminium. The stands and ventilator protection is made in galvanized steel. The heat exchanger is made of copper coil in aluminium fins. For extra protection , for example if the aircoil is placed in an aggressive environment, the fins can be made of epoxy coated aluminium. The fin thickness is 0,25 mm and the fin pitch is 4-5 mm. The ventilator motors are of a 3 phase design.

The combination of Quantum heat pump and Quantum accumulator, a system which covers the total energy consumption is achieved. The accumulator is designed to optimize the economy of the heat pump. The peak heat needed, can either be covered by electrical heaters direct in the accumulator or by a separate heat source conneted to the accumulator. The domestic hotwater is preheated in the lower part of the accumulator and additionally heated in the upper part by the peak heater. When the heating system mix valve opens, the connection to the lower part of the accumulator opens first and when additional heating is required, the connetion to the upper part opens. The mixing valve can be automatically controlled by a standard radiator control system.



Quantum System boiler	500	650	750
Total volumeliter	200 + 300	250 + 400	300 + 450
Dim (h x b x d) mm	1850 x 740 x 740	1900 x 780 x 780	1900 x 900 x 900
Max pressure bar	3,0	3,0	3,0
No hotw-loopsr	2	2	2
conn hot w. Cu	22	22	22
Conn 2" electr htr #	2	2	2
Max electr power	15 kW	15 kW	15 kW
Colour	galv(std) eller vit	galv	galv