

USER MANUAL

(05/05)

WH 50

WH 80

Portable fan heaters for water-carried
central heating



EU DECLARATION OF CONFORMITY
EU:N VAATIMUKSEN MUKAISUUSVAKUUTUS



It is ensured through internal quality control that the equipment specified here
comply with the requirements of the current Directive(s) and the relevant standards
at all times.

Sisäisellä laatuvalvonnalla on varmistettu, että tässä eritelty laite vastaa nykyisten
direktiivien ja standardien vaatimuksia.

Type of equipment Laitetyyppi	Water-to-air heater Kiertovesitoiminen lämpöpuhallin
Type of designation Tyyppimerkintä	WH 50 WH 80
Directives Direktiivit	Machinery Directive – Konedirektiivi: 89/396/EEC Low Voltage Directive – Pienjännitedirektiivi: 73/23/EEC
Manufacturer Valmistaja	POLARTHERM OY Polarintie 1 FIN-29100 Luvia, Finland
Date Päiväys	Luvia 12.5.2005

Signature
Allekirjoitus

Jyrki Salomäki
Manager, Product Development

1. Introduction

Before using the heater please read this manual carefully. This manual should be always situated close to the heater.

Terms of warranty:

WH- heaters have a warranty of 1 year for defects in material or manufacturing. All use, placement, maintenance etc. of the heater which is not in accordance with the instructions specified in this manual will lead into avoidance of warranty.

2. Safety instructions

WH- heaters are manufactured according to the latest level of technical development. The improper use of equipment by untrained personnel may lead to dangerous situations.

- local building regulations must be complied
- person using the equipment is responsible for safe installation of the equipment and electricity
- equipment must be situated in a way which does not expose the personnel to radiating heat
- installation of the equipment, water couplings and electricity is allowed only by trained professional personnel
- the equipment should not be placed or used in combustible or explosive environment
- the equipment should be placed outside passages, min. 1 m safety area around the heater
- water hoses should be placed and protected to prevent them from being damaged
- when moving equipment connected to water circulation one should be very careful to avoid unnecessary water damage
- water hoses must meet the standards for pressure hoses
- roll cage and air filter must not be removed
- equipment can only be used within the specified power limits
- the guard net for incoming air must be clean and free from any objects
- filter must be cleaned regularly
- discharge opening must not be closed when using the equipment
- any objects are not to be placed inside the heater
- the equipment must not be exposed to water jet
- water leakage inside the equipment must be avoided
- external electric cables must be protected from damage

3. Placement and installation

- equipment should be placed in a way which does not cause direct air flow to lounges or work spaces of personnel
- equipment must be placed only horizontally on even floor
- enough free space (min. 250 mm) should be left outside the equipment onto the incoming air side to assure enough air flow
- hoses / pipes and heat exchangers should be connected in a way which does not cause stress or distortion
- the boiler and water pump power should be sufficient when the equipment is connected to an existing water heating system

4. Information on water cell and circulated water couplings

Heat exchangers are made of copper pipes and on top of them is the aluminium baffle. Other parts are made out of metal or steel.

- standard delivery: circulated water coupling consists of 1" aluminium cam-lock joints with female joint for incoming water and male joint for return water
 - incoming water is below; elbow joint, reducing double nipple and male cam-lock joint on the incoming side
 - return water is above; elbow joint with air valve, reducing double nipple, closing valve and female cam-lock joint
- made to order: joints etc. removed and circulated water is connected straight to water cell couplings (R1 1/4" external thread)
- all threaded couplings are secured with glue (Loctite 577)
- max water temperature 130 °C
- max water pressure 16 bar
- **WARNING! Heat exchanger are not suitable for steam or oil use**

5. Connecting to heating equipment

Make sure that the heating and water pump power meet the technical specifications of the equipment. The heater will work properly only when the incoming water temperature and water flow are sufficient.

After installation the air should be removed carefully from the heater water cell. The air pockets left inside the heater will lower the output power.

Important!

If the couplings should be tightened or other plumbing should be done use a suitable tool to avoid any damage to pipe connections of the water cell.

6. Preventing the equipment from freezing

The heater is equipped with a freeze protection thermostat to prevent the equipment from freezing.

When the discharge air temperature goes below +4 °C the thermostat stops the fan (thermostat value should not be changed). The sensor is situated behind the lowest discharge baffle.

NOTE!

At times the thermostat may prevent the fan from working normally. This may happen for instance when the heater is taken into use straight from a cold warehouse etc. when the sensor is not warm enough. To warm up the sensor you may use just fingers and the fan will start after a while.

Warning!

The heater does not empty water throughout by itself. To empty the heat exchanger totally from water it is necessary to use compressed air.

In freezing conditions make sure that the water cell is empty. If it is not possible to empty the cell mix antifreeze with the water.

Warranty is void in cases where the cell is frozen!

7. Electric connection

Neglecting proper user manuals and electrical diagrams or changing them may cause malfunctions and other consequences. In these cases the warranty is void.

Connecting the equipment

In WH heaters there is an axial fan with single phase asynchronous external rotor motor (230V/1~/50Hz). In the motor there is a built-in winding protection which will turn the motor off at 130 °C.

The equipment is equipped with a central box containing all necessary electric couplings (see 12. Electrical diagram). The fan shuts off only when the switch is turned to the "stop" position.

The heater also has a separate two-piece plug box which can be used for linking multiple heaters or as a plug for other electrical appliances.

NOTE! Make sure that the fuse is sufficient for these uses.

8. Implementation

Before first use:

- make sure that all couplings are appropriate
- check the safety distances around the equipment
- cabling should be made according to existing regulations
- make sure the air intake filter is clean
- make sure that the discharge opening and baffles are free from any objects
- in case the fan should not start normally the frost protector thermostat may be switched off (in case the heater is taken into use straight from cold storage or transportation). Warming up the thermostat pupil (behind the lowest baffle) with e.g. hands usually helps to start the fan.

During the first use:

- check the balance of the fan blade
- check the equipment for any possible vibration
- check the installation protection and tightness of the plumbing / hoses

9. Maintenance

In normal use the WH heaters are almost maintenance free except for the air intake filter. To assure trouble-free working of the equipment the heaters must be checked regularly and cleaned if necessary.

Air intake filter should be cleaned regularly and changed into new one when necessary. Do not use the equipment without the filter!

Before maintenance:

- close the water circulation and prevent it from opening
- wait until the heat exchanger has cooled down
- stop the heater appropriately remove it from the electric network

Cleansing agents

Do not use any abrasive scratchy or agents including solvents. Soft cloth and soap solution are enough in most cases to remove the dirt.

Cleaning the equipment:

- remove the filter unit and clean or replace it with a new one
- clean the air intake openings and discharge baffles
- clean the fan blade (remove the motor guard grill only if necessary)
- heat exchanger baffles are cleaned by blowing, vacuum-cleaning or soft brush. The most dirt from the fan blades and baffles can be removed by soap solution
- in case the fan motor holders and guard net have been removed they should be reinstalled after which the free rotation of the fan blade should be checked carefully

Maintenance precautionary measures:

- do not water the motor
- in any case do not use high pressure water or steam
- avoid damaging or bending the baffles and fan blade during the maintenance

Maintenance repair:

Always before repair unplug the equipment from electric network to prevent the heater from turning on

Changing the fan:

- 1) Open the motor electric coupling from the electric box
- 2) Remove the filter frame and fan frame from the fan cover
- 3) Install the new fan with guard net into the fan cover
- 4) Connect the motor back to electric box and check the free fan rotation. After this install the filter frame

Changing the heat exchanger:

- 1) Open the motor electric coupling from the electric box
- 2) Remove water from the heat exchanger and open the couplings
- 3) Remove the filter frame and rear panel including the fan
- 4) Open the screws of the heat exchanger and remove the heat exchanger through the air intake side
- 5) Install the new heat exchanger and assemble the equipment in reverse order

10. Technical information

POLAR water-to-air heaters		WH 50	WH 80
product code		6061	6062
nominal heat output @ 90/70 ° & 0 °C suction air	kW	45,8	74,9
voltage	V / Hz	230 / 1N~ / 50	
power input	W	370	440
nominal amperage	A	1,6	2,0
fuse size, max.	A	16	16
plug box 230 V/1N~	pcs	2	2
fan rotation speed	rpm	1280	880
air flow	m ³ /h	3000	4500
noise level	dB(A)	75	70
protection class		IP 34	
circulated water couplings (standard)		1" cam-lock	
circulated water couplings (made to order)		water connection straight to water cell couplings	
heating intermediate agent		hot water max 130 °C	
water pressure, max.	bar	16	16
nominal circulated water flow @ nominal heat output	m ³ /h	2,0 (0,56 l/s)	3,3 (0,9 l/s)
water cell counter pressure @ nominal water flow	kPa	4,8	9,3
dimensions (l x h x w)	mm	865x730x570	1025x840x570
weight (dry)	kg	57	72

Circulated water °C	intake air temperature °C	WH 50		WH 80	
		output power kW	intake air temperature °C	output power kW	intake air temperature °C
60 / 50	+ / - 0	31,6	33	51,9	35
70 / 50	+/- 0	32,4	33	53,5	36
80 / 60	-15	48,6	34	79,4	38
	-10	45,4	36	73,7	39
	-5	42,2	38	68,7	41
	+/- 0	39,2	40	63,8	43
	+5	36,0	43	59,0	46
	+10	32,9	44	54,0	47
	+15	29,7	45	59,0	48
	+20	26,4	47	43,5	50
90 / 70	-15	55,9	41	90,4	45
	-10	52,0	43	85,3	47
	-5	48,9	45	80,1	49
	+/- 0	45,8	47	74,9	51
	+5	42,6	49	69,7	53
	+10	39,6	50	64,3	54
	+15	36,4	52	59,4	55
	+20	33,2	54	54,4	57
110 / 90	-15	70,1	56	112,2	60
	-10	66,7	58	107,0	62
	-5	63,4	60	101,8	64
	+/- 0	60,2	62	96,6	66
	+5	59,8	64	91,6	67
	+10	53,5	65	86,5	68
	+15	50,2	66	81,3	69
	+20	46,4	67	76,0	71
130 / 100	+/- 0	70,0	70	110,0	74

11. Parts list

		WH 50 code	WH 80 code
1	heater chassis assembly (including discharge baffles, air intake panel, filter frame and case)	606199	606299
2	axle + holder (Ø 20 mm)	606198	606298
3	wheels, 2 pcs (Ø 200 mm)	74200	74200
4	support leg	606197	606297
5	roll cage	606194	606294
6	filter unit assembly (including filter cloth)	606195	606295
7	filter cloth	606196	606296
8	water cell (Cu/Al) (couplings R 1 1/4")	81020	81030
9	elbow joint 90° (R 1 1/4"), 2 pcs	65350	65350
10	reducing double nipple (R 1 1/4" x R1"), 2 pcs	66120	66120
11	ball valve (R1")	67005	67005
12	air screw	67150	67150
13	cam-lock joint (R1", male & female, Al), 2 pcs	82450	82450
14	fan (including motor, fan blade & air intake grill)	13560	13570
15	electric box, plastic	40860	40860
16	wheel locking link	74600	74600

See other electric parts from "12. Electric diagram"

Manufacturer:

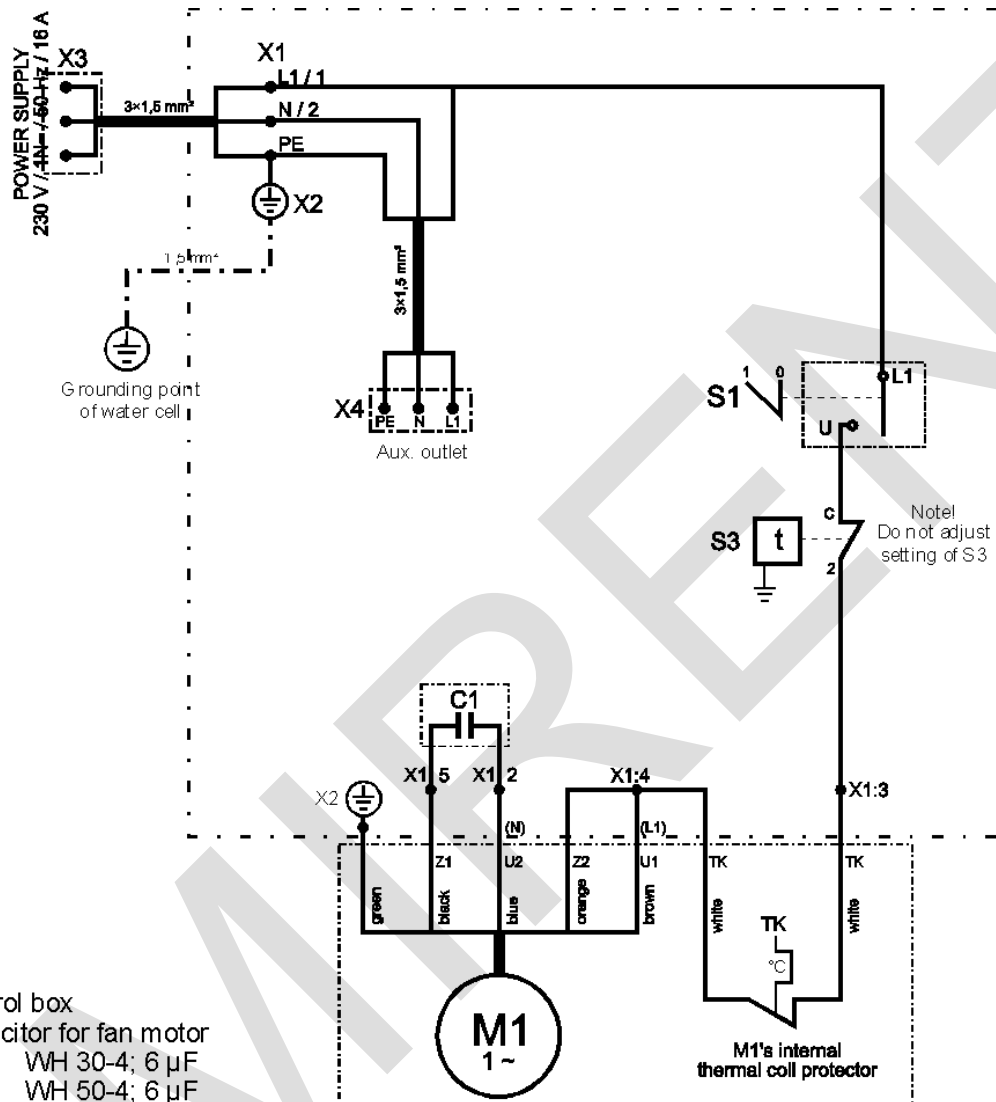
polartherm oy
AIR HEATING EQUIPMENT

Polarintie 1
FIN – 29100 LUVIA
FINLAND

tel: +358 2 529 2100
fax: +358 2 558 1844

e-mail: info@polartherm.fi
internet: www.polartherm.fi

12. Electrical diagram



- C1 Control box
- C1 Capacitor for fan motor
 - WH 30-4; 6 μ F
 - WH 50-4; 6 μ F
 - WH 80-4; 10 μ F
- M1 Fan motor
 - WH 30-4; Ziehl-Abegg 230 V/0,2 kW/1400 rpm/0,9 A
 - WH 50-4; Ziehl-Abegg 230 V/0,37 kW/1280 rpm/1,6 A
 - WH 80-4; Ziehl-Abegg 230 V/0,44 kW/880 rpm/2,0 A
- S1 Control switch, 0-1
- S3 Temperature limiter for freezing protection (pre-set +4 °C)
- TK Fan motor's internal coil protector
- X1 Terminal block
- X2 Grounding block
- X3 Plug + power cable
- X4 Auxiliary outlet