

## REVERSIBLE AIR-TO-WATER HEAT PUMP



Monobloc inverter  
Compact, reliable and efficient

## 30AWH

Nominal heating capacity: 4 to 15 kW  
Nominal cooling capacity: 4 to 17 kW

The 30AWH air-to-water heat pump is designed for heating and cooling applications in new and existing individual homes and small businesses.

When installed alone, the 30AWH is compatible with low to medium temperature emitters (underfloor heating, fan coil units, water cassettes, radiators, mixed installations, etc.).

The 30AWH is also compatible with medium to high temperature emitters for boiler back up operation.

The 30AWH heat pump is installed outdoors in an open area, ideally as close as possible to the boiler room.

Each device is tested in the factory and delivered ready for operation.



AQUASNAP®



CARRIER participates in the ECP programme for LCP/HP  
Check ongoing validity of certificate:  
[www.eurovent-certification.com](http://www.eurovent-certification.com)

## RANGES

The 30AWH range of reversible heat pumps comprises 4 single-phase models and 2 three-phase models.

Operation in cooling mode with an outdoor temperature of 0 °C to 46 °C.

Operation in heating mode with an outdoor temperature of -20 °C to 35 °C. If the heat pump is the only source of heat:

Below the equilibrium temperature, heating must be provided

by another heating source or using an additional electrical supply actuated by the 30AWH.

If the heat pump is used for back up operation:

it operates down to the equilibrium point (temperature below which the heat pump can no longer keep up with heating requirements); below this point, the heat pump and boiler run alternately (heat pump or boiler).

## COMPLIANCE

EMC: Electromagnetic Compatibility directive 2014/30/EU

RoHS: Restriction of Hazardous Substances directive 2011/65/EU

Ecodesign 2009/125/EC

Machinery 2006/42/EC

## FEATURES AND BENEFITS

The new 30AWH air-to-water reversible heat pumps, with Inverter technology, have been designed for residential applications and for small commercial installations. They offer excellent energy efficiency and exceptionally quiet operation.

These units integrate the very latest technological innovations: R410A refrigerant fluid which does not contribute to ozone depletion, Twin Rotary DC Inverter compressors, a low-noise fan with an electronic control.



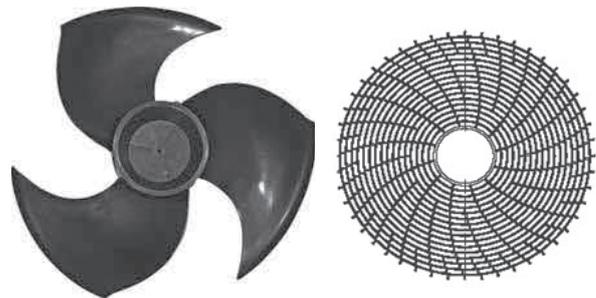
Ecodesign is the European environmental design directive, aimed at improving the energy efficiency of energy-related products (ErP) through regulation. Carrier supports initiatives to reduce the environmental impact of its products.

### Characteristics

- A vast operating range, both in cooling and heating mode, offering great performance across a broad range of temperatures.
- Twin Rotary DC Inverter compressors with pulse amplitude modulation (PAM) and pulse wave modulation (PWM) for increased reliability, reduced energy consumption and operation without vibrations, whatever the operating conditions.
- Variable speed fans with a patented innovative blade shape, ensuring better distribution of air at exceptionally low sound levels.
- Pre-configured or customisable water laws, for stable power levels which correspond to the losses.
- The option to connect and integrate the unit into existing heat sources or into an auxiliary heating source (approach with a single or dual energy source), which allows for increased savings and optimal comfort, no matter the weather conditions.
- Inlet and outlet connections to the three-way valve, to enable connection to a domestic hot water buffer tank, increase the flexibility of use, regardless of the application.
- A water outlet temperature of up to 60 °C for heating and domestic hot water in residential applications.
- Plug and play control for intrinsic maintenance and servicing safety.
- For enhanced safety, an incoming alarm signal can force the unit to shut down, and is compatible with external safety devices or control systems.
- Outgoing signal making it possible to control the operation of a customer's accelerator pump or additional pump to increase the versatility of the installation.

### Advanced technology

- Electronic system management: several sensors placed in key positions within the refrigerant circuit detect the operating status of the system. Two micro-controls receive signals sent by the sensors; these are managed using advanced control algorithms and optimise the refrigerant flow rate and the operation of all the main components – the compressor, the fan motors, and the electronic expansion valve.
- The electronic expansion valve is an electronic dual-flow expansion device, which optimises the volume of refrigerant fluid present in the circuit and overheating, preventing the fluid from returning to the compressor. This device further improves system performance and reliability.
- The air management system, which comprises the axial flow fan, the orifice and the air discharge grille, guarantees minimised sound levels.



### New patented fan blade shape and low pressure drop grille

- The new coil has a blue hydrophilic coating which allows water to migrate more easily to the exchanger using gravity.
- In particular, this innovation enables:
- the frosting time to be increased by reducing the accumulation of frost on the coil
  - better defrosting by improving the flow of water over the fins

Operation in heating mode is thereby improved.

## FEATURES AND BENEFITS

### Advanced performances

- The 30AWH offers extremely high energy efficiency, both in heating mode and in cooling mode, thereby guaranteeing significant energy savings. Large coils with high efficiency and optimised circuits ensure that all the combinations meet the European objectives concerning tax deductions relating to energy savings. The part load efficiency (seasonal energy efficiency) reaches the highest level in this industrial sector.
- Year-round comfort – the advanced technology used in the 30AWH provides users with optimised levels of comfort, in terms of water temperature regulation and the low sound level. The required temperature is obtained rapidly, and kept constant, without any fluctuations. The 30AWH offers optimised levels of comfort in both winter and summer.
- The 30AWH can operate at low ambient temperatures in cooling mode (from outdoor temperatures of 0 °C to 46 °C). To ensure the comfort of users, the units operate down to an outdoor temperature of -20 °C in heating mode, while in summer, they can produce hot water up to 60 °C, at an outdoor temperature of up to 35 °C for domestic hot water applications.
- The 30AWH has also new Positive Defrost software. This advanced control logic allows energy extraction from outdoor air in order to melt frost on the coil using fans while compressor is OFF.

Unlike traditional defrost, Specific defrost has almost no impact on the water loop because the refrigerant circuit is not forced in cooling mode.

### Environmental care

- Non-ozone depleting R410A refrigerant,
- Fluid from the HFC family, a chlorine-free product which does not deplete the ozone layer,
- Very dense, so a smaller amount is required than other fluids,
- Highly efficient, it enables a high energy efficiency ratio (EER) to be obtained,
- The components of the 30AWH are free from hazardous substances,
- The packaging offers increased protection during transport and handling, and is 100% recyclable,

### Quick and simple to install and maintain

- Easy access to all internal components: simply undo three screws to remove the entire front panel, in order to access all of the components.
- The advanced circuit design and choice of components has enabled a compact unit to be created, with an exceptionally small footprint that is easy to transport even through narrow doors.
- The reduced weight of the unit, and the presence of a handle on the panels, ensure it is easy to transport.
- 3 bar safety valve fitted as standard.
- Internal two- or three-litre expansion vessel.
- Protection against high refrigerant temperatures.
- Water flow controller to ensure that the circuits contain enough water to operate correctly.
- Several options for the electrical cable outlets: prepunched holes in the casing panels enable the cable to be fed via the side, front, or rear.
- The 30AWH has gas type male couplings.
- The built-in hydraulic module reduces the space required

and simplifies installation. Simply connect up all the connections: electrical, water supply, and return pipes.

- The coupling between the condensate draining pipe and the unit has an airtight rubber gasket.
- The mounting brackets have a specially designed shape to ensure that the unit is safely and securely attached to its base.

### Tried and tested reliability

- Exceptional endurance tests:
  - All the units undergo tests at various stages of their manufacture to ensure tightness of the circuits, electrical conformity, and to check the water and refrigerant pressure.
  - At the end of production, all the unit's operating parameters are thoroughly tested.
  - Corrosion resistance test.
  - Accelerated ageing test on the critical components and on the fully-assembled units, simulating thousands of hours of continuous operation.
  - Impact testing on the packaging, to ensure that the units are suitably protected against accidental impacts.
  - Numerous, comprehensive test on-site.

### Economical operation

- High energy efficiency:
  - The exceptionally high energy efficiency of 30AWH heat pumps is the result of a long selection and optimisation process.
  - The use of ambient air as the main energy source in residential heating applications considerably reduces energy consumption and CO<sub>2</sub> emissions.
  - Sleep mode, with reduced compressor speed at night, provides a low operating sound level, and significant reductions in energy consumption.
  - An easily adjustable and economic silent mode reduces the compressor speed.
  - The R-410A refrigerant is easier to use than other fluids.

### NHC Control

NHC control associate with compressor and fan variable frequency driver combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressor, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

- Ease-of-use
  - NHC control can be associated with a new User interface (WUI) which allow an easy access to the configuration parameters (frequency compressor, refrigerant circuit temperature, sets points, air temp, entering water temp, alarm report...).
  - This user interface is also very intuitive in its use. It allows reading and easy selection of the operating mode. The functions are represented by icons on the LCD backlit screen.

To facilitate the use of this interface, 3 levels of access are available: end user, installer and factory.

- Key features
  - Heating and cooling mode
  - Predefined climatic curves (12) or customized climatic curve (Water temperature set-point control)
  - Air temperature set-point control
  - Scheduling mode
  - Low noise level or night mode
  - Antifreeze protection by triggering the internal accelerator

- pump
- Slab curing mode
- Backup electric heater controlled in 1 /2 /3 heat stage(s)
- Backup by oil or gas boiler
- Hydraulic module with control of the flow rate
- Managed an additional pump
- Management of swimming pool heating during spring and autumn
- Manage domestic hot water with or without
  - Anti-legionella mode
  - DHW backup
  - DHW backup + Boosted by 1 or 2 or 3 electric heat stage(s)
- Master/slave control of 2 units operating in parallel with operating time equalization and automatic changeover in case of a unit fault (sensor in accessory).
- ModBUS Protocol

#### ■ Choice of control product

Two options are available to actuate the 30AWH heat pump:

- User interface WUI
- ModBus protocol

#### User Interface WUI



This interface can be installed up to 50 m away. It is connected to the NHC control using 4 H07RN-F 0.75 mm<sup>2</sup> cables.

The WUI has an internal sensor to measure the room temperature.

Regulation can be based on the room air temperature.

#### ■ Modbus

Direct access with Modbus connection to set, configure and monitor the Ereba He unit.

#### ■ Large choice of input contacts:

- Remote On/Off Contact
- Remote Heat/Cool Contact: This switch is used to select the Cooling Mode (contact opened) or the Heating Mode (contact closed).
- Remote Economic Contact: This switch is used to select the regular Home Mode when contact is opened or the Economic Away Mode when contact is closed.
- Safety Input Contact: This switch is normally closed type, according to configuration it is used either to stop the unit, to ban the Heating Mode or to ban the Cooling Mode when contact is opened.

Several functions can be configured by the installer. They allow to adapt to the environment of the machine:

- Power Limitation / Night Mode: This switch is used to reduce the compressor maximum frequency to avoid noise.
- Off Peak: If the General Purpose Contact, configured to "Off Peak", is closed then the Electric Heat Stages are not allowed.
- Loadshed Request: If the General Purpose Contact, configured to "Loadshed Request", is closed then unit shall be stopped as soon as possible.
- Solar Input: If the General Purpose Contact, configured to "Solar Input", is closed then the unit is not allowed to run in Heating or DHW Mode because hot water is produced from a solar source.
- DHW Priority : When this input is closed, the unit is switching to Domestic Hot Water production regardless of the Space Heating demand and the current DHW

- schedule (need DHW sensor delivered in accessory).
- Anti-Legionella Cycle Request : When this input is closed, the Domestic Hot Water production is requested with the Anti-Legionella set-point.
- Summer Switch : This switch is used to select the Winter (contact opened) or the Summer Mode (contact closed).
- Energy Meter Input : This input is used to count the number of pulses received from an external energy meter (not supplied)
- External Alarm Indication Input : When this input is opened, alarm is tripped. This alarm is for information only, it does not affect the unit operation.

#### ■ Output remote contact available

Two output contacts can be chosen on the NHC board, based on the desired configuration:

Status: alert (Machine still running), Alarm, Standby, in Cooling or Heating or DHW or Defrost mode, Cooling Mode, Heating Mode, DHW Mode, defrost mode, indoor air temperature reached, electric stage 2 activated, electric stage 3 activated.

## PHYSICAL DATA

30AWH		5H	7H	11H	15H	11 HT	15 HT			
<b>Heating</b>										
<b>Standard unit</b>		Nominal capacity	kW	5,10	7,15	11,25	15,10	11,20	15,00	
Full load performances*	HA1	COP	kW/kW	4,40	4,10	4,70	4,25	4,60	4,35	
		Nominal capacity	kW	4,85	6,80	11,30	13,40	10,40	13,50	
	HA2	COP	kW/kW	3,40	3,20	3,60	3,40	3,60	3,50	
		Nominal capacity	kW	4,45	6,75	11,20	11,65	10,25	11,80	
	HA3	COP	kW/kW	2,80	2,70	2,95	2,90	3,00	3,00	
		SCOP <sub>30/35°C</sub>	kWh/kWh	4,73	4,68	4,39	4,41	4,26	4,35	
Seasonal energy efficiency**	HA1	IJs heat <sub>30/35°C</sub>	%	186	184	173	173	167	171	
		SCOP <sub>47/55°C</sub>	kWh/kWh	3,32	3,36	3,35	3,45	3,34	3,40	
	HA3	IJs heat <sub>47/55°C</sub>	%	130	131	131	135	131	133	
		P <sub>rated</sub>	kW	3,49	4,32	8,69	10,30	8,69	11,09	
	Energy class			A++	A++	A++	A++	A++	A++	
	<b>Cooling</b>									
<b>Standard unit</b>		Nominal capacity	kW	4,00	5,55	11,20	12,80	10,65	13,00	
Full load performances*	CA1	EER	kW/kW	3,10	3,10	3,40	3,10	3,40	3,20	
		Eurovent class cooling			A	A	A	A	A	A
		Nominal capacity	kW	4,85	8,00	13,70	16,00	13,75	17,00	
	CA2	EER	kW/kW	4,35	4,00	4,60	4,10	4,65	4,15	
		Eurovent class cooling			A	A	A	A	A	A
		SEER 12/7°C Comfort low temp.	kWh/kWh	4,85	5,75	5,15	5,00	5,40	5,25	
Seasonal energy efficiency		IJs cool <sub>12/7°C</sub>	%	191	227	203	197	212	208	
<b>Sound levels</b>										
Sound power level <sup>(1)</sup>			dB(A)	64	65	68	69	69	69	
Sound pressure level at 10 m <sup>(2)</sup>			dB(A)	33	34	37	38	38	38	
<b>Dimensions</b>										
Length			mm	908	908	908	908	908	908	
Width			mm	350	350	350	350	350	350	
Height			mm	821	821	1363	1363	1363	1363	
<b>Operating Weight <sup>(3)</sup></b>										
Standard unit			kg	57	69	115	115	121	121	
<b>Compressors</b>		Rotary compressor		1	1	1	1	1	1	
<b>Refrigerant</b>		R410A								
Charge <sup>(3)</sup>			kg	1,10	1,60	2,80	2,80	3,00	3,00	

- \* In accordance with standard EN 14511-3:2013
- \*\* In accordance with standard EN 14825:2013, Average climate conditions
- HA1 Heating mode conditions : Water heat exchanger water entering/leaving temperature 30°C/35°C, fouling factor 0m<sup>2</sup> K/W. Outside air temperature 7°C db / 6°C wb
- HA2 Heating mode conditions : Water heat exchanger water entering/leaving temperature 40°C/45°C, fouling factor 0m<sup>2</sup> K/W. Outside air temperature 7°C db / 6°C wb
- HA3 Heating mode conditions : Water heat exchanger water entering/leaving temperature 47°C/55°C, fouling factor 0m<sup>2</sup> K/W. Outside air temperature 7°C db / 6°C wb
- CA1 Cooling mode conditions : evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0m<sup>2</sup> K/W
- CA2 Cooling mode conditions : evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0m<sup>2</sup> K/W
- IJs heat<sub>30/35°C</sub> & SCOP<sub>30/35°C</sub> Applicable Ecodesign regulation (EU) No 813/2013
- IJs heat<sub>47/55°C</sub> & SCOP<sub>47/55°C</sub> Applicable Ecodesign regulation (EU) No 813/2013
- IJs cool<sub>12/7°C</sub> & SEER<sub>12/7°C</sub> Applicable Ecodesign regulation: (EU) No 2016/2281
- (1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-2dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
- (2) In dB ref 20 µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-2dB(A)). For information, calculated from the sound power level Lw(A).
- (3) Values are guidelines only. Refer to the unit nameplate.



Eurovent certified values

## PHYSICAL DATA

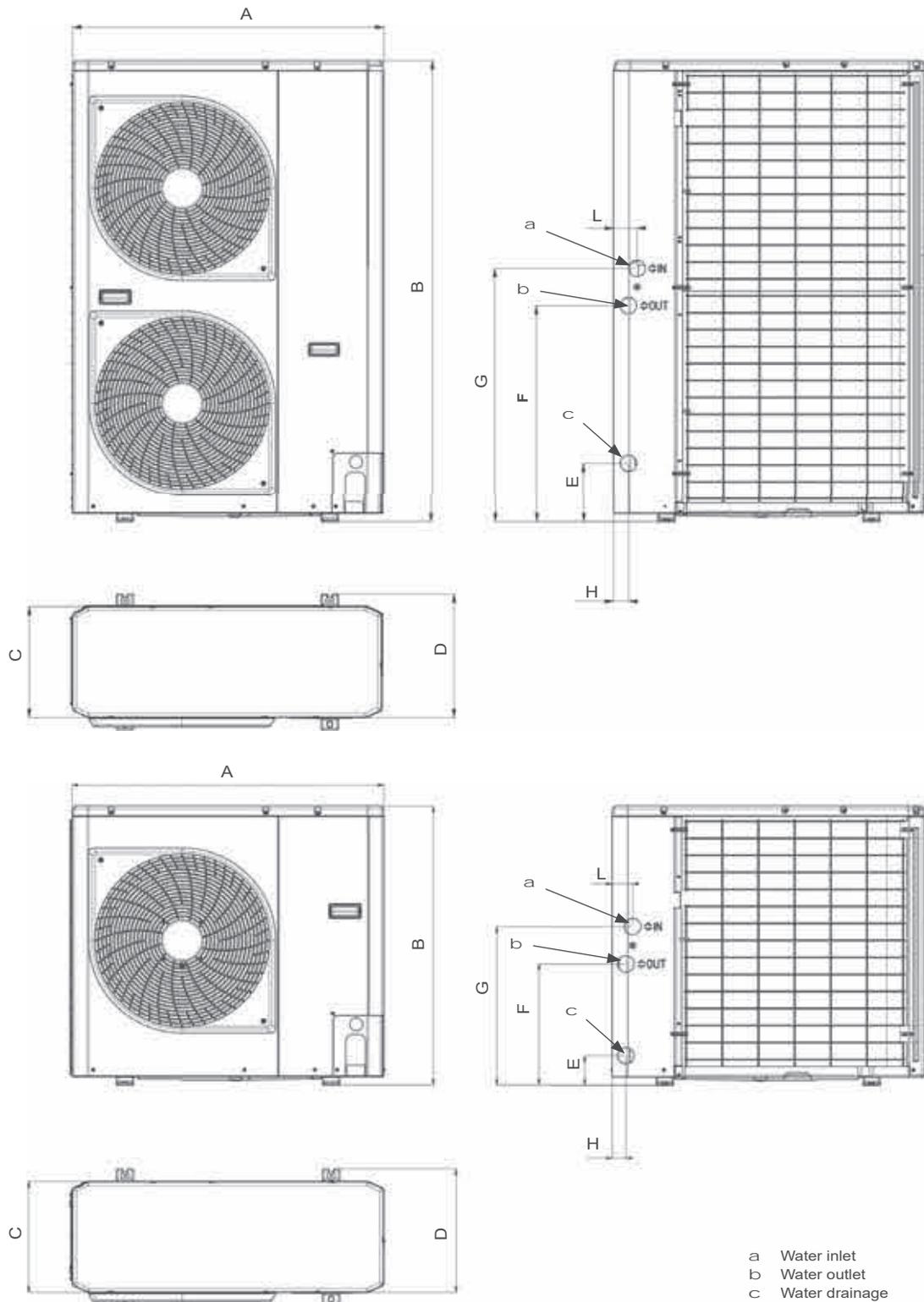
30AWH		5H	7H	11H	15H	11 HT	15 HT
<b>Capacity control</b>							
Minimum capacity <sup>(4)</sup>	%	23%	20%	20%	17%	20%	17%
<b>Air heat exchanger</b>		Grooved copper tubes, aluminium fins					
<b>Fans</b>		Axial type					
Quantity		1	1	2	2	2	2
Maximum total air flow	l/s	800	800	1800	1800	1800	1800
Maximum rotational speed	rps	560	660	820	820	820	820
<b>Water heat exchanger</b>		Braze plate heat exchanger					
Water volume	l	1,7	2,3	4,4	4,4	4,4	4,4
<b>Hydraulic module (Option)</b>		Circulator, relief valve & expansion tank					
Circulator		Centrifugal pump (variable speed)					
Expansion tank volume	l	2	2	3	3	3	3
Max. water-side operating pressure with hydraulic module <sup>(5)</sup>	kPa	300	300	300	300	300	300
<b>Water connections</b>							
Inlet diameter (BSP GAS)	inch	1	1	1	1	1	1
Outlet diameter (BSP GAS)	inch	1	1	1	1	1	1
<b>Chassis paint colour</b>		Colour code: RAL 7035					

(4) Cooling Eurovent condition

(5) Min. water-side operating pressure with variable speed hydraulic module is 40 kPa.

## ELECTRICAL SPECIFICATIONS

30AWH		5H	7H	11H	15H	11 HT	15 HT
Nominal power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Voltage range	V	220-240	220-240	220-240	220-240	380-415	380-415
Current at full load	A	8,9	16,7	23,3	25,6	16,8	16,8
Fuse capacity	A	16	20	32	32	20	20
Electrical power cable section (H07 RN-F)	mm <sup>2</sup>	2,5	2,5	4	4	2,5	2,5
WUI (user interface) cable section	mm <sup>2</sup>	H07RN-F 4 x 0.75					
Circuit breaker	Am	10	16	25	25	16	16

**DIMENSIONS (MM)**


30AWH	A	B	C	D	E	F	G	H	L	masse (kg)
<b>5H</b>	908	821	326	350	87	356	466	40	60	57
<b>7H</b>	908	821	326	350	87	356	466	40	60	69
<b>11H</b>	908	1363	326	350	169	645	744	43	73	115
<b>15H</b>	908	1363	326	350	169	645	744	43	73	115
<b>11HT</b>	908	1363	326	350	169	645	744	43	73	121
<b>15HT</b>	908	1363	326	350	169	645	744	43	73	121