



Certificate No: MCS BBA 0055  
Technology : MCS007 Heat Pumps

## Technical Information Sheet

### High Temperature Compact Heat Pumps

#### Features and Benefits

- High Outlet Temperatures
- Low Carbon Emissions
- Ease of Installation
- Complete Kit Available
- UK Manufacture
- Access to industry grants



#### Product Description

The Kensa High Temperature range of Compact heat pumps are designed to provide high temperature space heating and domestic hot water production (optional extra) for well insulated buildings. Kensa heat pumps use low grade renewable energy from the ground and concentrates this to a higher temperature to provide heat into a buildings heating system.

High Temperature Compact Heat Pumps can be used to produce hot water up to a 60°C outlet flow temperature. This allows the heat pump to be used in applications where there is a requirement for higher flow temperatures that can be provided

from a standard heat pump. The heat pumps use R134a refrigerant, which allows a higher outlet temperature as opposed to the R407C used in standard heat pumps.

At the higher flow temperatures the pump's efficiency will be decreased and hence it is important to assess the viability of installing a unit against the alternative fuels available.

As a UK manufacturer, Kensa offer a high quality product which is supported by industry leading technical support to ensure the application engineering is performed to the highest standard.

Continued...

**Kensa Engineering Ltd**  
Mount Wellington, Chacewater, Truro, Cornwall, TR4 8RJ  
Tel: 01872 862140 Fax: 01872 862440  
info@kensaengineering.com  
[www.kensaengineering.com](http://www.kensaengineering.com)



Certificate Number MCS1216  
Heat Pumps

Copyright ©2009 Kensa Engineering Ltd

Kensa Engineering Ltd  
Mount Wellington  
Fernsplat, Chacewater, Truro.  
Cornwall TR4 8RJ

Company Registered in England and Wales: 03739805





Certificate No: MCS BBA 0055  
Technology : MCS007 Heat Pumps



# Technical Information Sheet

## High Temperature Compact Heat Pumps

	Single Phase							Three Phase								
<b>Nominal thermal kW rating @ B0/W35</b>	<b>3.5</b>	<b>4.3</b>	<b>6</b>	<b>7</b>	<b>8.5</b>	<b>12</b>	<b>17</b>	<b>3.5</b>	<b>4.3</b>	<b>6.1</b>	<b>7.1</b>	<b>8.6</b>	<b>10.3</b>	<b>12.1</b>	<b>17.1</b>	<b>20.5</b>
Nominal thermal kW rating @ B0/W60	3.3	4	5.7	6.4	7.7	11.3	15.3	3.1	3.9	5.5	6.3	7.7	9.2	10.9	15.3	18.4
Nominal thermal kW rating @ B0/W65	3.2	3.9	5.5	6.3	7.5	11.0	15.0	3.1	3.8	5.3	6.2	7.5	9.0	10.6	15.0	18.0
Model Ref	H035 -S1H	H043 -S1H	H062 -S1H	H070 -S1H	H085 -S1H	H124 -T1H	H170 -T1H	H034 -S3H	H046 -S3H	H061 -S3H	H070 -S3H	H085 -S3H	H103 -S3H	H122 -T3H	H170 -T3H	H206 -T3H
MCS Approved	BBA00 55/19	BBA00 55/20	BBA00 55/21	BBA00 55/22	BBA00 55/23	BBA00 55/28	BBA00 55/29	No	No	No	No	No	No	No	No	No
Compressors	Single					Twin		Single					Twin			
<b>Performance data—rated heating output at BS EN14511</b>																
Power consumption @ B0/W65	1.79	2.28	2.98	3.14	3.69	5.79	7.23	1.77	2.18	2.78	2.98	3.69	4.39	5.39	7.11	8.51
Coefficient of performance @ B0/W65	2.11	2.10	2.08	2.16	2.10	2.08	2.10	2.25	2.33	2.31	2.42	2.39	2.30	2.31	2.39	2.30
Coefficient of performance @B0/W35	4.13	4.13	4.17	4.20	4.15	4.16	4.15	4.09	4.34	4.37	4.47	4.40	4.21	4.37	4.40	4.21
Immersion heater output	Kensa heat pumps do not feature back-up electric immersion heaters**															
<b>Brine (primary) - figures quoted @ 0°C in –4°C out</b>																
Design flow rate kg/min	5.61	6.98	10.1	11.9	14.9	20.2	29.8	5.33	7.01	10.1	12.2	14.9	17.9	20.2	29.8	40.4
Pressure drop kPa at design flow rate	1.65	2.42	2.55	3.38	5.04	2.55	5.04	1.51	2.44	2.53	3.57	5.04	7.00	2.53	5.04	2.55
Max inlet temperature °C	20															
Min outlet temperature °C	-5 (at standard settings)															
<b>Heating water (secondary) - figures quoted @ 30°C in 35°C out</b>																
Design flow rate l/min	10.1	12.3	17.8	20.1	24.4	40.2	48.8	10.1	12.9	17.2	20.1	24.4	28.7	34.4	48.8	57.4
Pressure drop kPa at design flow rate	2.83	4.25	4.68	5.94	8.71	5.94	8.71	2.83	4.64	4.38	5.94	8.71	12.0	4.38	8.71	12.0
Max flow temperature °C***	65															

\* The COP figures quoted are calculated according to EN14511 at the stated conditions.

\*\* In-built immersion heaters will increase running costs and CO2 emissions as they use direct electricity, because of this Kensa heat pumps do not include them.

\*\*\* By decreasing the flow temperature from the heat pump the efficiency and COP of the unit will increase.

\*\*\*\* Kensa single phase compact heat pumps incorporate smart starts as standard to limit the starting current of the compressors. For full details on how the starting currents are calculated please contact Kensa.



Certificate No: MCS BBA 0055  
Technology : MCS007 Heat Pumps



# Technical Information Sheet

## High Temperature Compact Heat Pumps

	Single Phase								Three Phase								
Nominal thermal kW rating @ B0/W35	3.5	4.3	6	7	8.5	12	17	3.5	4.3	6.1	7.1	8.6	10.3	12.1	17.1	20.5	
<b>Electrical Values</b>																	
Rated Voltage	220 – 240 V / 50-60 Hz								400V / 50-60 Hz								
Power supply rating amps	16	25	25	32	32	50	60	16	16	25	25	25	25	32	32	32	
Rated current (max) amps	15.2	18.4	21.8	26.2	26.7	42.9	52.2	5.73	7.21	8.01	9.41	11.8	13.5	15.3	22.4	25.8	
Typical running current @ B0/W65 amps	7.2	10.1	13.8	13.2	13.8	26.9	27.9	3.56	4.53	5.94	6.24	7.92	9.17	11.2	14.7	17.2	
Starting current amps****	25	30	30	30	30	42	42	23	29	41	46	57	66	48	55	79	
<b>Refrigerant circuit</b>																	
Process medium	R134a																
Fill volume kg	1.2	1.3	1.0	1.3	1.3	2.0	2.6	1.2	1.2	1.0	1.3	1.3	1.4	2.0	2.6	2.8	
Compressor type	Scroll																
<b>Dimensions</b>																	
H x W x L (mm)	900 x 550 x 570					900 x 900x 570		900 x 550 x 570					900 x 900 x 570				
Dry weight kg	85	90	95	100	105	165	167	85	90	95	100	105	110	165	167	170	
<b>Operating pressure</b>																	
Brine circuit min (primary) bar g	0.3																
Heating water circuit min (secondary) bar g	0.3																
Low pressure reset bar g	1.8																
<b>Connection sizes</b>																	
Primary IN and OUT (speedfit) mm	28					50		28					50				
Heating flow and return (speedfit) mm	28					50		28					50				



Certificate No: MCS BBA 0055  
Technology : MCS007 Heat Pumps

# Technical Information Sheet

## High Temperature Compact Heat Pumps

### Sizing

**SPACE HEATING:** Assumes 40 watts per square metre peak heating requirement. Precise sizing can be established by referring to the SAP report. In every instance reviewed in 2007/8, heat losses are between 30 - 40 watts per square metre for properties built to Part L 2006 (England and Wales). As a result, it may be possible to offer a smaller, less expensive heat pump and accessories. In every instance, Kensa heat pumps are sized to handle the peak heating load; Kensa appliances do not feature integral immersion heaters.

**DOMESTIC HOT WATER - SLINKY REQUIREMENT:** Sizing a heat pump and its ground arrays for domestic hot water is more complex. Whereas occupancy levels and lifestyle habits will not greatly affect the space heating load, they will impact on domestic hot water requirements. Clearly, an additional burden is imposed on the ground arrays; in addition, the year round requirement for domestic hot water means there is a lesser opportunity for the ground to recover temperature. As a consequence, extra pipework must be buried. The Slinky requirement outlined in the table below reflects typical water usage; please contact Kensa if requirements are considered exceptional.

**DOMESTIC HOT WATER - METHOD OF OPERATION:** The heat pump can be in space heating OR domestic hot water mode. When in DHW mode, the heat pump will achieve the highest possible stored water temperature which means its performance will be enhanced in the summer months (when ground conditions are warmest). After completing its DHW duty, the heat pump will return to space heating mode, if required. The heat pump will not be able to return to DHW model for two hours. For this reason, a suitably -sized storage cylinder should be specified. Any cylinder should be equipped with integral immersion heaters to provide a boost, if required. These immersion heaters should be run during the low cost periods provided with an Economy Ten tariff. Contact Kensa for further information. Kensa supplies a special three way valve to divert between modes. The installer would need to provide a time clock to control DHW periods.

Nominal thermal kW rating	3.5	4.3	6	7	8.5	10	12	17	20
<b>Building size (assumes a heat loss of 40W/m<sup>2</sup> and a space heating flow temperature of 35°C)</b>									
Building size m <sup>2</sup>	85	105	150	175	200	250	300	425	500
<b>Space heating</b>									
Slinkies	1 x 40m	1 x 40m	2 x 30m	2 x 40m	2 x 40m	2 x 50m	3 x 40m	4 x 40m	4 x 50m
Manifold	1 way	1 way	2 way	2 way	2 way	2 way	3 way	4 way	4 way
Antifreeze* litres	50	50	50	75	75	125	125	150	150
<b>Space heating and domestic hot water production</b>									
Slinkies	2 x 30m	2 x 30m	2 x 40m	2 x 50m	2 x 50m	3 x 40m	3 x 50m	4 x 50m	5 x 50m
Manifold	2 way	2 way	2 way	2 way	2 way	3 way	3 way	4 way	5 way
Antifreeze* litres	50	50	75	100	100	125	125	150	200
Recommended minimum heat transfer area in DHW tank (optional extra)	0.7m <sup>2</sup>	0.9m <sup>2</sup>	1.2m <sup>2</sup>	1.4m <sup>2</sup>	1.7m <sup>2</sup>	2.0m <sup>2</sup>	2.4m <sup>2</sup>	3.4m <sup>2</sup>	4.0m <sup>2</sup>

\* Antifreeze quantities quoted are a minimum and may need to be increased depending on the distance between the heat pump and ground array manifold. The concentration should be a minimum of 20% and offer a protection to -10 °C.

The values in the table are a guide only and Kensa would require a copy of the buildings SAP or heat loss report to provide a more accurate sizing before ordering.