

SA HEAT PUMP ENGINEERS

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TESTING OF SA HEAT PUMP FOR COMPLIANCE TO THE REQUIREMENTS OF THE ESKOM REBATE PROGRAM

1. SUMMARY

The sample as described in clause 2 below was tested to confirm compliance with the requirements for Eskom's rebate program for domestic air source hot water heat pumps, for use with storage tanks of up to **300 liters**. These following requirements were verified:

- 1.1.1. If the sample complied with selected technical requirements of the ESKOM rebate program,
- 1.1.2. If the sample complied with selected requirements of the national standard SANS 10252:2012 "Water supply and drainage for buildings, Part 1: Water supply installations for buildings"
- 1.1.3. To determine whether the sample complied with the energy efficiency requirements of the Eskom rebate program.
- 1.1.4. To determine whether the sample complied with the noise level requirements of the Eskom rebate program.

Compliance with SANS 10252-1 clauses 5.4.11.1 and 6.6.1.3 a) could not be confirmed. SA HEAT PUMP provided evidence to support their claim that the sample complied with this requirement. SABS neither confirm nor discount the acceptability of this declaration. Please refer to clause 5.2 for detail.

The sample complied with all other requirements. See clause 5.1, 6 and 7 for details.

2. DESCRIPTION OF SAMPLE

The Sample consisted of an Air Source Hot Water heat Pump bearing the following markings:

Brand Name	SA HEAT PUMP ENGINEERS
Model number	SHPS300S
Serial number	XSDH1306187459
Heating capacity	8 kW
Type of gas	R417a/ 1.3 kg

The sample also included supporting documentation defining the sample and its method of installation, as well as all components and materials used for the installation of the sample in the test room.

See table below for specified data, annex A for photos of the sample, and annex B for supporting documents.

Controller max set point	56°C
Model Type	Split Type
Electrical Element	Non
Tank temperature sensing method	The micro temperature sensor is installed with the standard thermostat inside the thermostat pocket on the element flange.

3. SAMPLE SUBMITTED

Supporting documents received : 2013-08-15
 Sample test start date: : 2013-08-15
 Sample test completion date: : 2013-08-21

4. METHODS OF TESTING AND VERIFICATION

All tests and verifications were performed in line with SABS document HP01. This document describes all test procedures and requirements to be verified for the Eskom rebate program. A copy of this document can be made available on request.

NOTE: Where component data was provided (e.g. material properties) this was used to verify compliance. The validity of such data was not verified.

5. TEST RESULTS

5.1. To verify compliance as described in clause 1.1.1, the sample was verified to confirm if it complies with selected requirements of the Eskom rebate program. These requirements are described in document HP01. Table 1 below lists the results of these comparisons.

Column 1 of the table list the specific requirement from Eskom's rebate program.
 Column 2 of the table indicates compliance.

Table 1 "Comparison to Eskom rebate requirements"

1	2
Description	Result
For both integrated and split types the hot water storage tank size should be between 100L and 500L	COMPLIED Tested for use with a 300l storage tank.
The replacement element complies with SANS 181 and SANS 514 in full.	N/A The original element was not replaced.
If a heating element is used as part of the heating system, then it must be connected to the same power circuit as the heat pump.	N/A
The control panel should incorporate a programmable time setting function which makes provisions for hour and minute settings for each calendar day of the year.	COMPLIED A on and off setting X 2 a day can be set.
For air-source heat pump when at highest fan setting and located within 1m of the external building envelope the noise level of the systems feeding a tank size in the range 100 - 300L shall not exceed a maximum of 55dB and for a system feeding a tank size in the range 301 - 500L shall not exceed a maximum of 60dB.	COMPLIED A noise level 48.2dB was measured. Refer to clause 7
The condensate should be fed away from the unit via a pipe configuration which would be considered durable and UV resistant.	COMPLIED Copper pipe was used

This test was performed by SABS Commercial (SOC) Ltd.

This report relates only to the specific sample(s) tested as identified herein. It does not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested. (Refer also to the complete conditions printed on the back of official test reports).

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1	2
Description	Result
Water-line particle filter shall be fitted between the circulation pump and heat pump 'return' valve connection to avoid any unauthorized debris or foreign objects from the heating system entering into or passing into the condenser and manufacturer sealed-copper water flow pipes to the heat pump.	COMPLIED Cobra ¾ in-line strainer
Acoustic 'feet' or neoprene matting shall be used to the frame base of the air-source heat pump when 'free-standing' and/or to the brackets and frame assemblies when fixing to the building envelope. Acoustic damping material to avoid any potential vibration transmission into noise, transferring into the heating system or building as a whole.	COMPLIED Rubber Foot Mounts
The system supply temperature of either a split or an integrated unit, without a backup element, must not be less than 55°C under normal weather conditions.	COMPLIED A average temperature of 54.8°C was achieved for ambient temperatures from 14°C to 32°C See test report clause 6.2
The supplier must ensure that they have a Letter Of Authority (LOA) to trade such import machines in South Africa in accordance with the NRCS. In particular for split phase Heat Pumps, the supplier must comply with both SANS 60335-2-21 and SANS 60335-2-40 in terms of the LOA.	COMPLIED LOA certificate number 073648/001
For the purpose of maintenance the inlet and outlet lines feeding the heat pump shall be configured with isolating valves (ball valves) approved in terms of SANS.	COMPLIED Cobra ball valves
The average integrated system (i.e. heat pump, pipe work and fixed electric storage water heaters) C.O.P. achieved for the defined ambient temperature test range should not be less than 2.8.	COMPLIED An average of 3.1 was achieved. Also see test report clause 6.2
Refrigerant types: In terms of the Kyoto Protocol certain types of refrigeration gasses will not be allowed to be used in South Africa in the future. It is the responsibility of the supplier to ensure that the products offered complies with the latest agreements of South Africa and the Eskom rebate program for residential heat pumps in terms of phasing out CFCs, HFCs and HCFCs. Refrigerants offered for the domestic heat pump incentive scheme will be less corrosive, non-ozone layer depletion and environmentally friendly. Special attention is drawn to R22 that would not be accepted for the Eskom rebate program. Recommended refrigerants are as follows: HCF R-410a and R-407c, R717, R744, R134a, If available, R-600 could be used.	COMPLIED R417a

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