

Rules for Participation - Amended November 2010

Voluntary Energy Rating Labelling Program for Swimming Pool Pump-units

Issued by the Equipment Energy Efficiency Committee under the auspices of the
Ministerial Council on Energy



A joint initiative of Australian, State and Territory and
New Zealand Governments



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I Overview

In households with swimming pools, the pool pump-unit is usually the largest single electricity user, after the electric water heater (if there is one in the household). Yet there is very little information available to pool owners about how much energy is used by their swimming pool pump-units, or about the comparative energy efficiency of alternative models of pump-units. Energy efficiency labelling, using the Energy Rating Label, would address this information failure, to the benefit of consumers without significantly altering price, product quality or the competitiveness of the market.

This document sets out the Rules for Participation ("**Rules**") that apply to suppliers who choose to participate in the Voluntary Energy Rating Labelling Program for Swimming Pool Pump-units ("**Program**") which is being offered under the Equipment Energy Efficiency (E3) program. The Australian Government Department of Climate Change and Energy Efficiency (DCCEE) will administer the scheme on behalf of E3.

No application fee is charged for participation.

This voluntary program allows energy efficiency labelling in accordance with the Australian Standard AS 5102-2009, Performance of household electrical appliances - Swimming pool pump-units:

Part 1: Energy consumption and performance

Part 2: Energy labelling and minimum energy performance standard requirements

The testing, labelling and minimum efficiency requirements in AS 5102-2009 Parts 1 and 2, govern the operation of this voluntary scheme. Therefore, these Program Rules need to be read in conjunction with AS 5102-2009 which can be purchased online from SAI Global.

The two relevant links are:

<http://infostore.saiglobal.com/store2/Details.aspx?ProductID=1381273>

<http://infostore.saiglobal.com/store2/Details.aspx?ProductID=1381274>

For the purpose of the Program, testing and reporting the noise measurement on the energy rating label are optional.

While swimming pool pump suppliers are not required to participate in this Program, if a supplier does decide to participate and attach the Energy Rating Label detailing the relative energy efficiency of a particular pump, the supplier must then abide by the Rules set out in this document. In particular:

- Suppliers who qualify to label their pump-units and choose to participate in the Program may only label qualifying swimming pool pump-units ("**pump-units**") in accordance with these Rules.

- Suppliers are responsible for adhering to these Rules and for ensuring that their authorised representatives, who are taken to include, for the purpose of the Rules, advertising agencies, dealers, retailers and distributors, also adhere to these Rules. If a supplier fails to abide by these Rules, then action consistent with Section 3.5.2 of these Rules may be taken in relation to the supplier.
- Participation in the Program is at the discretion of the administrator, who will, however, consult with E3 Committee members if complex policy or technical advice is needed. The administrator may withdraw permission to participate in the Program at any time.

2 Definition

Below is a brief description of some of the main terms relevant to the Program, taken from the list of definitions given in the relevant Standards AS 5102.1-2009 and AS 5102.2-2009.

Model: Pump-units of one brand, to which a single set of test reports is applicable and where each of the pump-units has similar relevant physical characteristics, comparative energy consumption, energy efficiency rating and performance characteristics.

Star rating: The number of stars displayed on the Energy Rating Label. Available stars are between a minimum of one and a maximum of 10, shown in increments of ½ stars from 1 to 6 stars and in increments of 1 star from 6 to 10 stars. The star rating is calculated from the Star Rating Index (SRI).

Star rating index (SRI): An indication of the claimed energy efficiency of a model. A higher SRI indicates higher energy efficiency. The SRI is derived from the energy factor (EF_D) which is calculated from parameters measured during testing in accordance with Part 1 of AS 5102-2009.

The administrator: The officer(s) nominated by the Department of Climate Change and Energy Efficiency to administer the scheme on behalf of E3.

3 Rules for Participation

3.1 Eligibility criteria

The pump-units that qualify for this Voluntary Labelling Program are those covered in Section 1.1 (Scope) in Parts 1 and 2 of AS 5102–2009. This includes pump-units intended for filtration, circulation of pool water to solar heating, water features or for a combination of pool functions.

Qualifying pump-units that meet the energy efficiency requirement specified in Section 3.3 (MEPS) of AS 5102.2-2009 are eligible for participation in the Program.

In assessing whether a particular pump-unit meets these requirements, the pump-unit must be tested according to the testing requirements set out in AS 5102.1-2009.

3.2 Testing your pump to calculate the star rating

If the pump-unit meets the eligibility criteria, the star rating needs to be determined so that the pump-unit can be labelled appropriately.

In order to label the pump-unit, the supplier must first undertake a series of tests involving measurements and calculations to determine the efficiency of the pump-unit in accordance with the Standard AS 5102.1-2009.

AS 5102.1-2009 specifies the tests to be undertaken as well as the testing processes and arrangements, equipment and calibration requirements and the allowable uncertainty.

The Standard specifies that three or more pump-units need to be tested and the data on the Energy Rating Label is derived from an average of the results for the three units tested.

TEST REPORTS

If a supplier intends to participate in the Voluntary Labelling Program, the supplier must provide a copy of the test report(s) to the administrator to demonstrate that the relevant product(s) satisfy the qualifying requirements specified in these Rules. In-house test reports are acceptable. The supplier must cover the costs of such testing.

The pump-unit test report form, provided in Appendix A of AS 5102.1 must be used to present the test results. The reporting of noise (dBA) in the Voluntary Energy Rating Labelling Program is optional.

CALCULATING THE STAR RATING

All pump-units participating in the program must display the appropriate star rating as determined by using the calculations specified in AS 5102-2009. For an example of calculations carried out on a typical set of test results, refer to Appendix B of AS 5102.2-2009.

3.3 Suppliers to give notice to the administrators

Before a supplier can label a qualifying pump-unit under this Program, the supplier must submit a completed registration form and send it to the administrator.

At the time of registration, the applicant shall provide test results in support of the proposed label for a particular product and also supply an image of the proposed label. The supplier shall use the form at Appendix C to provide the details of the proposed label.

The application to participate will not be considered complete if the relevant test report has not been submitted.

The administrator will notify the applicant in writing that the application has been accepted or it will provide the reasons for a rejection. The supplier **must not** label any pump-units of the models in question until the administrator has notified the applicant (supplier) in writing that the application for that model has been accepted.

From time to time the administrators may publish names of participating suppliers together with a list of models participating in the scheme and the relevant data from the label, e.g. star rating, projected annual energy consumption (PAEC), flow rate, head and noise rating (for pump-units where the supplier chooses to register a value). This may be done for a variety of reasons including publicity for the scheme. Participation in the scheme will be taken as agreement for administrators to publish the participating supplier's details at their discretion.

3.4 The Energy Rating Label

Upon receiving acknowledgement of a successful application from the administrator, the supplier of the qualifying pump-unit will be regarded as participating in the Program in respect of that product and the product may bear an energy efficiency label reflecting its performance as calculated in accordance with the test requirements set out in Section 4. The label must meet the requirements specified below and an image of the label needs to accompany the registration form (see Appendix C).

Pump-units shall be labelled according to their star energy rating as shown in the examples in Appendix B. The Standard sets the minimum dimensions of the label at 70mm wide and 105mm long. Detailed specifications for label placement, material, shape, colours, size and content appear in Section 5 in AS 5102.2-2009.

Including the Noise level in the energy rating label is optional. While the Noise measurement value may be left blank on the label, the Noise measurement box must not be removed from the label. An example of an energy rating label without the Noise level indicated, is shown in Figure B4.

3.5 Compliance

If a supplier has registered their interest to participate in the Program and labelled their pump-unit in accordance with the Rules, then that product may still be subjected to further compliance check testing. Validity Criteria for testing appear in the National Appliance and Equipment Energy Efficiency Program Administrative Guidelines – Edition 5, June 2005 (see <http://www.energyrating.gov.au>) and the validity limits are given in Section 3.6 of Standard AS 5102.2-2009.

This check testing will be arranged by the administrator or agent.

PROVISION OF TEST SAMPLES FOR CHECK TESTING

The administrator will be responsible for the initial purchasing and check testing of the pump-unit. Where a test on a particular pump-unit is found to result in a calculated energy rating that is lower than the claimed energy rating as labelled on the pump-unit (see Section 3.6 of AS 5102.2-2009 for energy label validity) a further three samples may be requested. Participating suppliers may be asked to provide the administrator or their agent, with up to three pump-unit samples for testing and to pay all costs related to testing, whatever the outcome of the testing.

Suppliers will receive a copy of the test report for every pump-unit supplied for testing. The label will be considered valid if the further testing meets the specifications claimed on the label.

NON-CONFORMING PRODUCT

A non-conforming product is one:

- For which the energy rating as determined after the check testing process in Section 3.5.2 of this document is a lower number of stars than indicated on the energy label; or
- That has been labelled for sale without prior approval from the administrator.

If the product is found to be non-conforming then the administrator may take various actions, including the following steps:

1. Inform the supplier that it has failed to comply with the rules of the Program and request a written explanation.
2. If within 14 days the supplier has either not responded or has not shown why it should be permitted to continue in the Program a notice may be issued requesting the supplier to remove all labels from all relevant products (this could be all products of the supplier or only products of the supplier similar to the product tested, depending upon the circumstances of the case); and/or cease participating in the Program.
3. Further to this, the administrators may seek to refer the matter to the Australian Competition and Consumer Commission (ACCC) for consideration of further legal action in relation to the product on the basis of false and misleading claims about a product's energy efficiency. In this regard it should be noted that the ACCC takes green marketing claims seriously (see "*Green marketing and the Trade Practices Act*" at www.accc.gov.au.)

4 Future Revisions

E3 reserves the right to revise the Rules of the Program should technological and/or market changes affect the usefulness of the Program to consumers or industry or its impact on the environment. In keeping with current policy, revisions to these Rules will be discussed with stakeholders. In the event of a revision of the Rules, a product may no longer meet the eligibility criteria of the Program, in which case it will no longer be entitled to be labelled according to the Program.

Furthermore, governments are assessing the impacts of introducing a mandatory labelling scheme for swimming pool pump-units based on AS 5102-2009. In the event that a mandatory scheme is introduced, the voluntary pool pump labelling scheme would cease to exist. In this event, a transition process would be determined in consultation with industry.

Appendix A - Testing requirements

The qualifying pump-unit must be tested and labelled in accordance with AS 5102 – 2009, Parts 1 and 2.

A1 Number of units required

The minimum number of individual pump-units to be tested to determine the information on the Energy Rating Label is three, but the supplier may choose to test more than three units.

For example suppliers may judge that the performance of individual samples is so variable that more than three tests are necessary to be confident that a randomly selected unit of that model will pass a check test.

A2 Number of tests per unit

Each unit shall be tested with sufficient test runs to enable valid values of EF_D , H_D , P_D , $PAEC_D$, Q_D and L_{WD} to be determined for that unit. (Refer to Standard AS 5102.1). This determination shall be documented in a test report containing the test results for all test runs used to derive these values.

A3 Results

After testing three or more separate units in accordance with Standard AS 5102.1, the average values of EF_D , H_D , P_D , $PAEC_D$, Q_D and L_{WD} shall be calculated. These average values are $EF_{D(av)}$, $H_{D(av)}$, $P_{D(av)}$, $PAEC_{D(av)}$, $Q_{D(av)}$ and $LW_{D(av)}$.

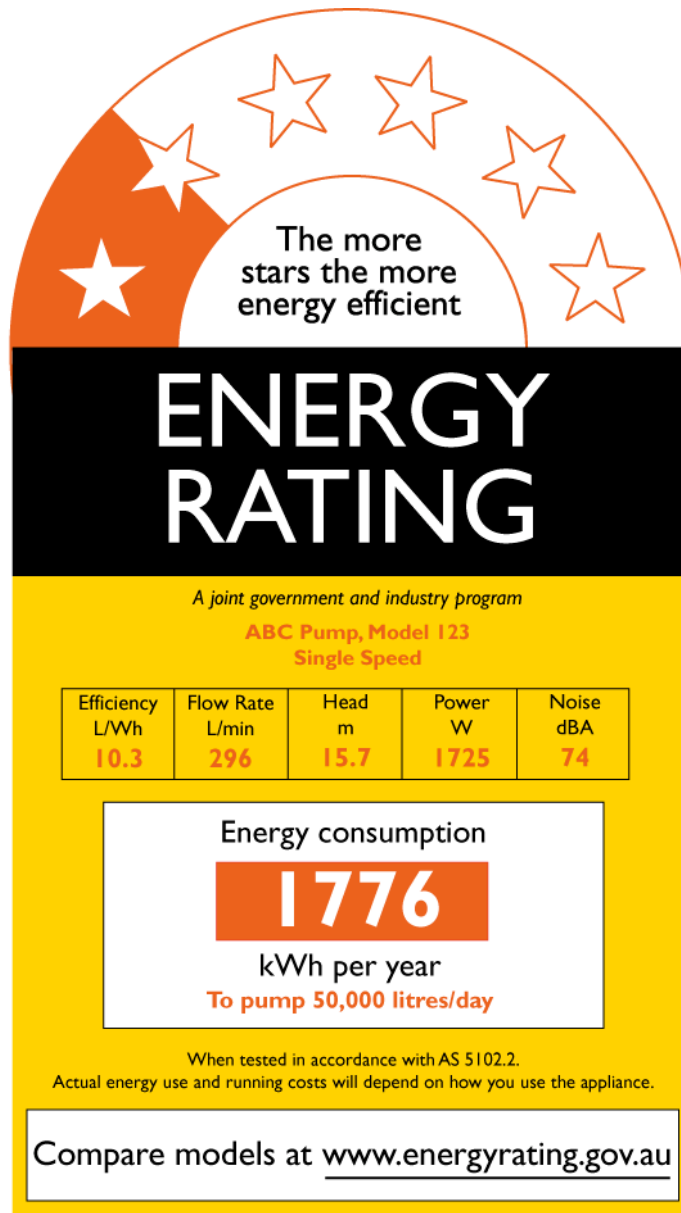


Figure B1: Sample label indicating a 1.5 star rating

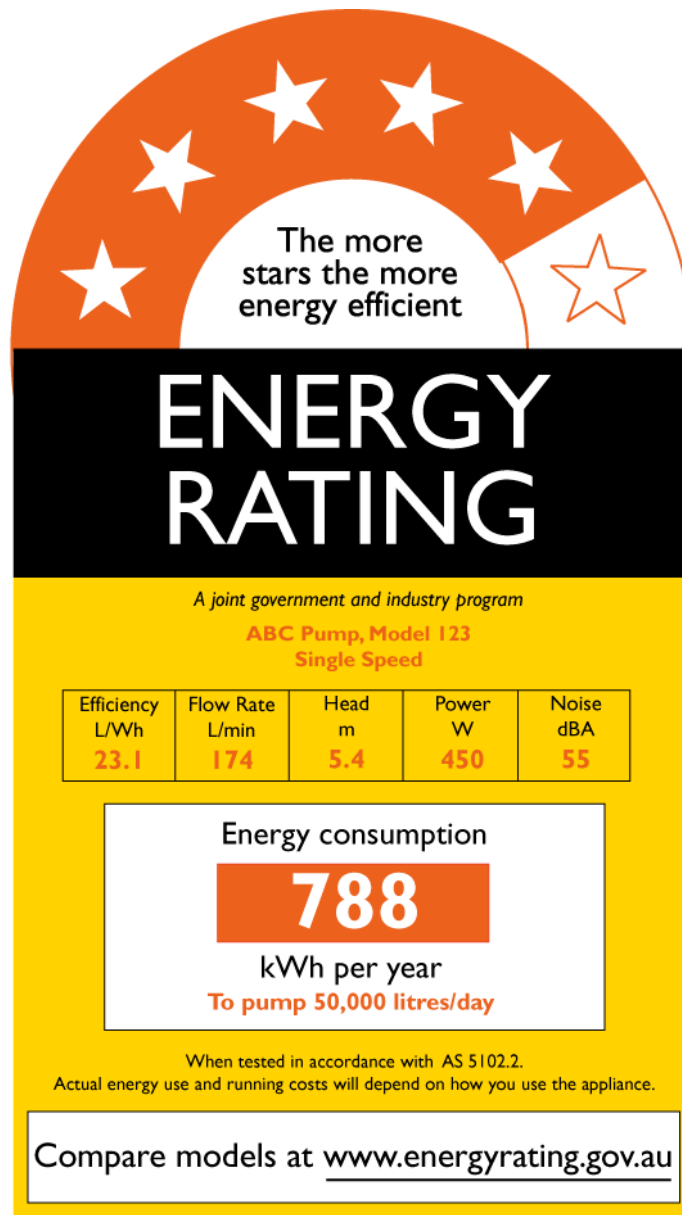


Figure B2: Sample label indicating a 5 star rating

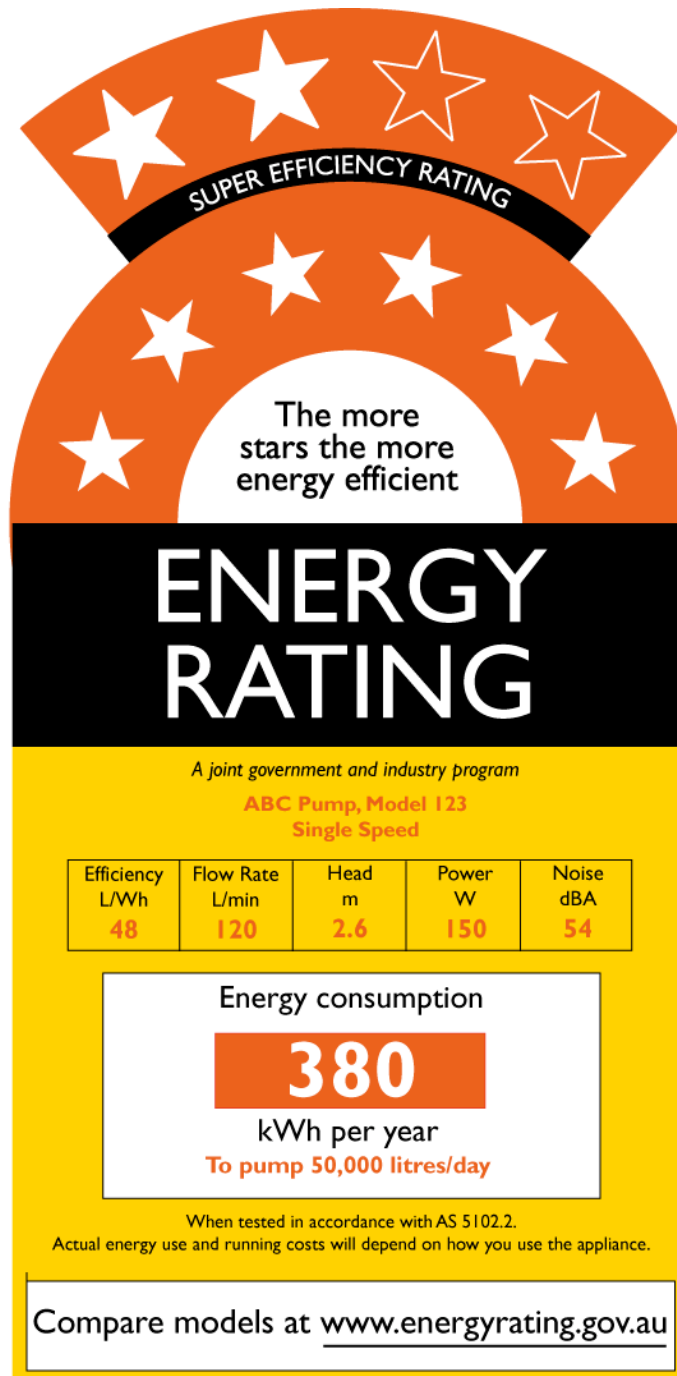


Figure B3: Sample Label indicating 8 stars.

Note: Only full stars are given above 6 stars

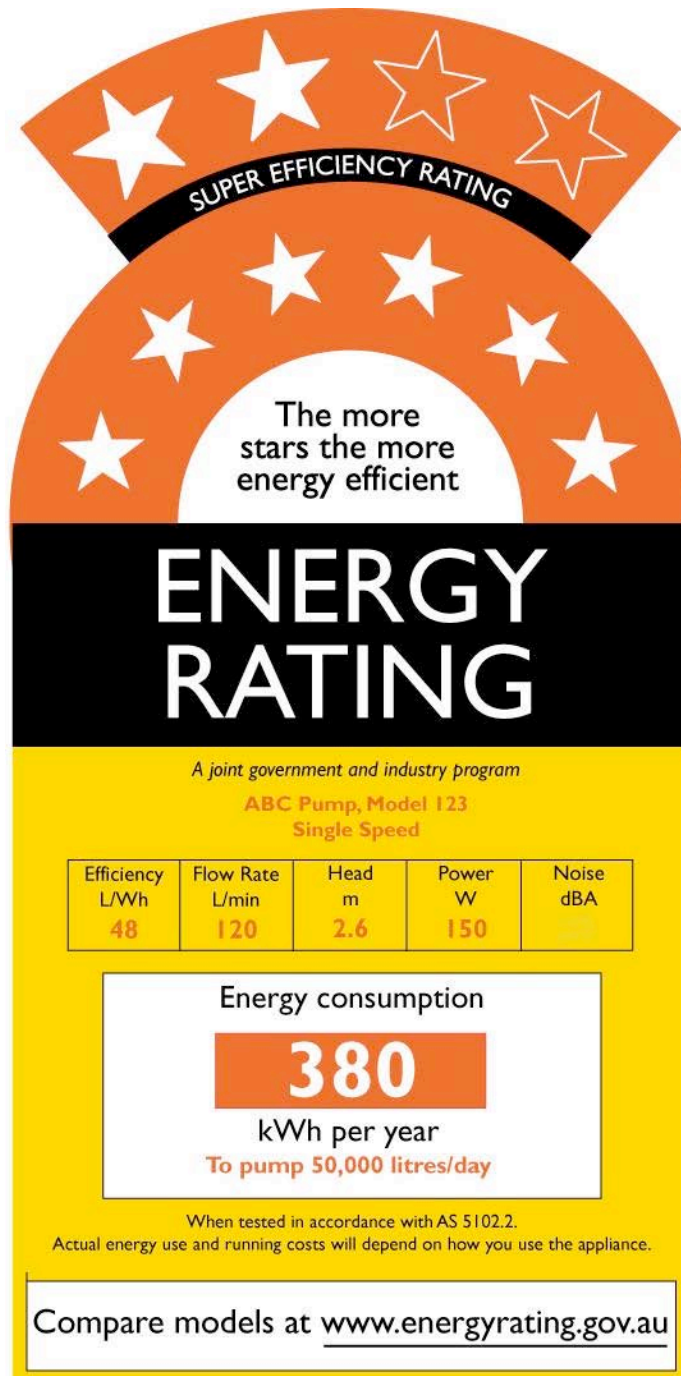


Figure B4. Sample label without a noise level indicated. The label must include the Noise parameter box but this may remain blank.

Appendix C - Registration form

This is to advise that [insert name of supplier] intends to label the following product in accordance with the Voluntary Energy Rating Labelling Program for Swimming Pool Pump-units: Rules for Participation.

| | |
|--|--------------------------------|
| Brand: | |
| Model number: | |
| Design: | |
| Date of manufacture: | |
| | Details on energy label |
| Projected Annual Energy Consumption (PAEC) | kWh/year |
| Star rating | |
| Power (P) | Watts |
| Flow rate (Q) | L/min |
| Head (H) | m |

Supplier's contact details:

The supplier can be contacted in relation to their labelling of these products using the following contact details:

| | |
|-------------------|--|
| Contact person: | |
| Name of supplier: | |
| Address: | |
| Phone number: | |
| Email address: | |

I (insert name of Contact person) hereby apply on behalf of (insert Name of supplier) to participate in the Voluntary Energy Rating Labelling Program for Swimming Pool Pump-units.

Signature Date

Please complete this form, attach test reports and an image of the label and post to the address below. Alternatively email energylabelling@climatechange.gov.au to ask for an electronic version of this form, which you can complete and return by email to the same address, with scanned copies of test reports and the image of the label.

Swimming pool pump-unit voluntary Energy Rating Labelling Program Administrator

Lighting and Equipment Energy Efficiency Team
 Department of Climate Change and Energy Efficiency
 GPO Box 854
 Canberra ACT 2601 Australia

Guidance Document to AS5102-2009:

Performance of Household Electrical Appliances – Swimming Pool Pump-Units

The aim of this document is to assist suppliers to interpret the Australian Standard AS5102-2009, Parts 1 and 2.

Please note that for the purpose of the Voluntary Energy Rating Labelling Program, reporting the sound measurement is optional (i.e. the measurements specified in Section 6.4 (d), 6.5 (d) and 6.6(d) of AS 5102.1). However, if the supplier does intend to not declare the noise level on the energy rating label, they must leave the “Noise” measurement box on the label blank (see Figure B4 of this document).

1 Thermal stability

Experience with testing electric motors for energy performance has highlighted the fact that small electric motors are not stable devices, but have characteristics which are strongly temperature dependent, ‘time of life’ dependent and can be significantly influenced by the presence of shaft seals. The latter tend to be most important in the case of high speed (i.e., 2 pole) motors of the type which form the majority of swimming pool pump drive systems. Motor characteristics are strongly temperature dependent, mostly because of the effect of temperature on motor winding losses. The temperature of the rotor of such a machine is particularly important, since slip at a given load torque, and therefore shaft speed, is significantly influenced by rotor circuit resistance.

To ensure that the motors are allowed to run-in and achieve thermal stability before the hydraulic measurements are made, it is recommended that the test method described below is followed.

- Run the pump-unit at the Q_D , H_D point (see AS 5102-2009, Section 1.5.1 and Table 2) by manual or automatic adjustment of the flow control valve for the time which is required for the electric motor to reach stable thermal operating conditions. Such conditions are generally accepted as having been achieved when the measured rate of temperature rise (above ambient temperature) is less than or equal to 2 Kelvin/hour.
- Measurements are made by attaching a temperature sensing device to the outside of the motor casing, immediately over the stator, and in such a position as to be ‘in the lee’, if possible of the cooling air stream. A fine-wire thermocouple, attached with self-adhesive aluminium foil tape is satisfactory for this purpose. Ambient temperature is measured by placing a temperature sensor in a ‘pot’ containing approximately 0.5 L of oil positioned at the height of the motor and approximately 1 metre from it.
- As the motor temperature rises, motor speed drops, and the pump characteristic changes. Regular adjustment of the flow control valve is necessary in order to maintain intersection of this changing characteristic with the Standard AS 5102-2009 pool Curve D.
- The process of attaining temperature stability usually takes from 2 to 3 hours for motors of the type in question, and provides an opportunity for seals and bearings to ‘run-in’.
- Once the motor has achieved thermal stability proceed to make the hydraulic measurements as described in AS 5102-2009.

It should be noted that this approach is likely to produce reproducible results, rather than making measurements on a cold pump-unit.

2 Two Speed, Multi-Speed and Variable Speed Pumps – Test Procedure

In Sections 6.5 and 6.6 of AS 5102.1-2009, the efficiency of two speed, multi-speed and variable-speed pump-units may be measured at any speed at which the pump-unit curve intersects curve D, as long as it results in a flow that is 120L/min or greater.

If the supplier wishes to maximise the reported energy rating, they could adjust the speed of their pump-unit to make the measurements at the lowest speed that meets the above requirements.

3 Sound Measurements

While at this stage participants in this program are not obliged to measure and report noise, some manufacturers may wish to do so. AS 5102-2009 allows a range of possible ways of undertaking the sound testing measurements according to one of several referenced standards. These are not reproduced in AS 5102-2009.

AS 5102-2009 does not specify physical layouts or details of the arrangements for sound measurements. However, AS 5102-2009 does specify criteria for measurement quality and the quality of reported results that must be taken in accordance with applicable standards.

For sound measurements to be taken it may be necessary to use a modified layout compared to that shown in Section 3 of AS 5102.1-2009. That diagram is only intended as a guide to setting up the test apparatus and is in no way a construction blueprint. To allow accurate sound measurements to be taken, dimensions may be increased to allow a reflective barrier to also be included to separate the pump-unit from the remaining equipment. For details please consult the referenced sound measurement standards.