AS 5102.1:2019

Australian STANDARD®

Performance of household electrical appliances — Swimming pool pump-units

Part 1: Measurement of energy consumption and performance

STANDARDS Australia

AS 5102.1:2019

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Australian Industry Group
Consumer Electronics Suppliers Association
Department of the Environment and Energy (Australian Government)
Electrical Compliance Testing Association of Australia
Energy Networks Australia
Engineers Australia
International Copper Association Australia
Swimming Pool and Spa Association of Australia

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Australian STANDARD®

Performance of household electrical appliances — Swimming pool pump-units

Part 1: Measurement of energy consumption and performance

Originated as AS 5102.1—2009.
Second edition 2019.

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee EL-058, Energy Efficiency for Swimming Pool Pumps, to supersede AS 5102.1—2009, *Performance of household electrical appliances — Swimming pool pump-units, Part 1: Energy consumption and performance*.

The objective of this Standard is to describe procedures to determine the energy consumption, energy efficiency and sound levels of swimming pool pump units.

The major changes in this edition are as follows:

(a) Change in title and scope.

(b) Classification of single-speed, two-speed, multi-speed and variable speed pump units.

(c) Specification of input power range for pump-units covered by this Standard.

(d) Introduction of weighted energy factor based on high flow rate and low flow rate measured performance to characterize multi-speed and variable speed pump units.

(e) Pump unit performance now directly measured while operating on a specified hydraulic resistance curve.

(f) Modification of construction and operation of the hydraulic circuit.

(g) Change of instrumentation error specifications.

(h) Specification of operating procedure needed to achieve pump unit operation on the required hydraulic resistance curve.

(i) Introduction of weighted energy factor uncertainty quantification.

(j) Change of reporting requirements.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

Contents

Introduction

Swimming pool pump units are significant users of electricity in homes where swimming pools are installed.

The desire of governments to improve the energy efficiency of appliances has led to the development of energy labelling and Minimum Energy Performance Standards (MEPS) for a range of products. This Standard describes measurements and analysis of data required for energy labelling and MEPS for swimming pool pump units.

Energy labelling and MEPS requirements are set out in the *Greenhouse and Energy Minimum Standards (Swimming pool pump-units) Determination*.

Australian Standard®

Performance of household electrical appliances — Swimming pool pump-units

Part 1: Measurement of energy consumption and performance

Section 1 Scope and general

1.1 Scope

This Standard specifies requirements for the determination of energy consumption of swimming pool pump units operating on single-phase electricity.

This Standard also specifies the classification of swimming pool pump units, requirements for the test facility, the test procedure and method of calculation and presentation of results.

This Standard applies to swimming pool pump units —

(a) that are capable of a flow rate equal to or greater than 120 L/min; and

(b) that have an input power range of —

  (i) single-speed pump units — 600 W to 1 700 W; or

  (ii) two-speed, multi-speed and variable speed pump units — 600 W to 3 450 W; and

(c) that are used for the circulation of water through —

  (i) pool filters, sanitization devices, cleaning devices, or water heaters (including solar); or

  (ii) spa or jet outlets or other features forming part of a pool.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

AS 1217, *Acoustics — Determination of sound power levels of noise sources, Part 2: Precision methods for broad-band sources in reverberation rooms*

ISO 3741, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Precision methods for reverberation test rooms*

ISO 3743.1, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for small movable sources in reverberant fields — Part 1: Comparison method for a hard-walled test room*

1.3 Terms and definitions

For the purposes of this Standard, the following terms and definitions apply.

1.3.1
curve D
swimming pool filtering system head versus flow rate friction resistance curve used for rating pump units as shown in Equation 1.3.1:

$$H_D = 0.00018Q_D^2 \text{ (m)} \qquad 1.3.1$$