

Test Report No
Dated

70.452.18.12375.01
2019-05-27



ORIGINAL

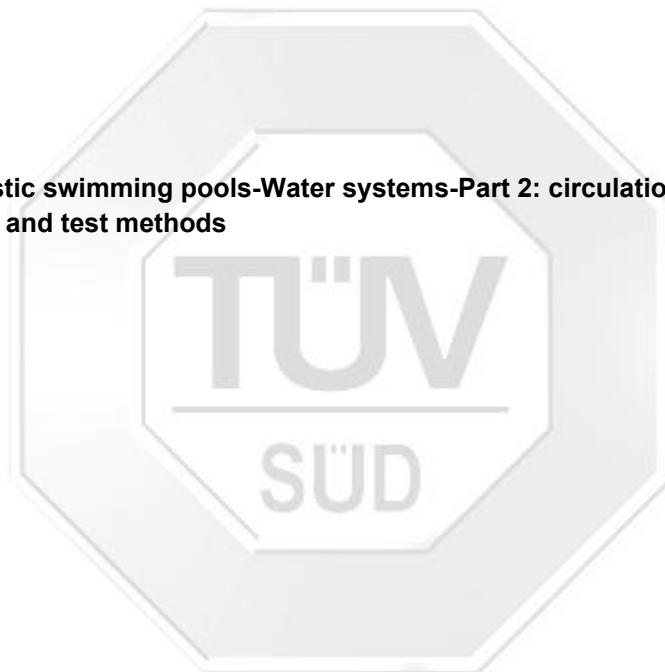
Applicant: BESTWAY (HONGKONG) INTERNATIONAL LTD.
Address: SUITE 713, 7/FLOOR, EAST WING, TSIM SHA TSUI CENTRE, 66 MODY ROAD,
KOWLOON, HONGKONG
Product Name: Water Pump
Item No.: 58386
Country of Origin: China
Receipt Date of Sample: 2018-11-26
Date of Testing: 2018-11-26 to 2019-05-13
Sample Submitted: The sample(s) was (were) submitted by applicant and identified.
Test Result: Refer to the data listed in following pages

Test Specification:

1. EN 16713-2:2016 Domestic swimming pools-Water systems-Part 2: circulation systems- Requirements and test methods

Conclusion:

Pass



TÜV SÜD Certification and Testing (China) Co.,Ltd.
Shanghai Branch

Prepared by: _____

Wu Jingqing
Technical Engineer



Checked by: _____

Sawyer Tang
Technical Manager

Disclaimer Measurement Uncertainty:

Unless otherwise agreed upon, Pass or Fail verdicts are given based on the measured values without any considerations of measurement uncertainties.

Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO/IEC 17025 requirement.

By taking measurement uncertainties into account it might happen that measured values can neither be assessed as Pass nor as FAIL.

Note: (1)The TÜV SÜD Certification and Testing (China) Co., Ltd."General Terms & Conditions" applied.

For full version, please visit: <http://www.tuv-sud.cn/cn-scn/terms-and-conditions>

(2)The results relate only to the Items tested,(3)The test report shall not be reproduced except in full without the written approval of the laboratory

Laboratory:
TÜV SÜD Certification and Testing
(China) Co.,Ltd.
Shanghai Branch Testing Center
Hardgoods Laboratory

Phone : +86 21 60376300
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Regd. Office:
TÜV SÜD Certification and Testing (China) Co., Ltd.
Shanghai Branch Testing Center
No. 1999 Du Hui Road, Minhang District, Shanghai
201108 P.R. China

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ORIGINAL

Description of the Tested Subject

Sample	Description	Photo
A	Pump #58386 (220-240V; 50Hz; 32W)	
B	Pool 4.27m x 1.07m (#56950)	

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ORIGINAL

Sample	Description	Photo
C	Pool 4.27m x 1.22m (#56993)	
D	Pool 4.88m x 2.44m x 1.22m (#56996)	

Test Report No
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70.452.18.12375.01
2019-05-27



ORIGINAL

Sample	Description	Photo
Reference Item	Pump #58386 (220-240V; 50Hz; 40W)	



Test Report No
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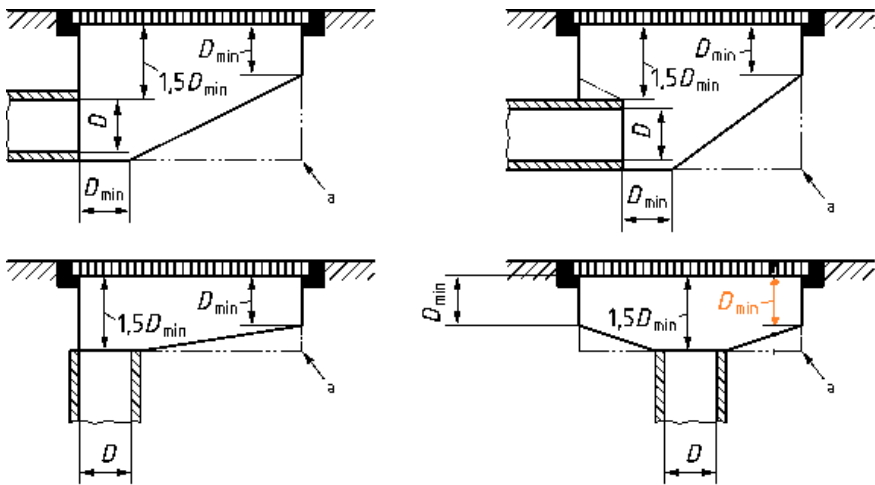
Test Results

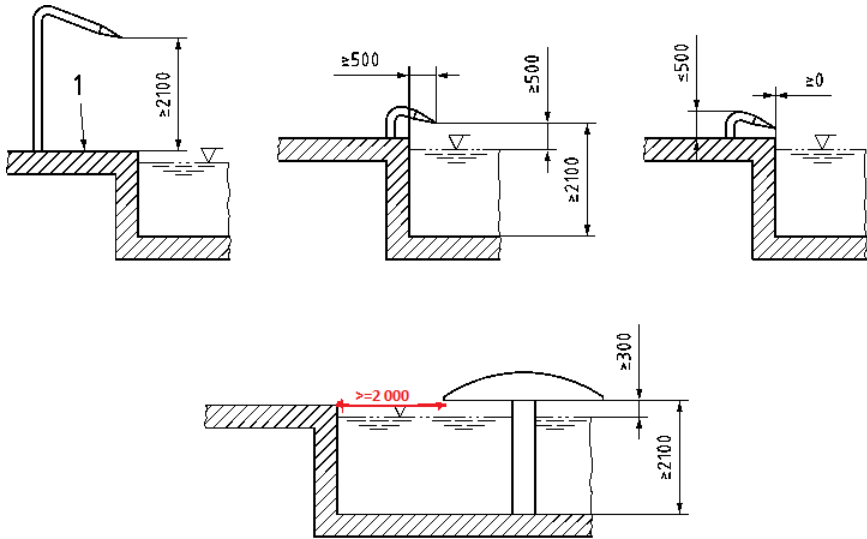
EN 16713-2:2016 Domestic swimming pools-Water systems-Part 2: circulation systems- Requirements and test methods

Clause	Requirement	Result	Verdict
4	Requirements		
4.1	Filtration system design		
	The components of the hydraulic system shall be sized or designed or be in sufficient number to meet the maximum performance requirements of the filtration unit (pump and filter).	Complied	P
4.2	Filtration system nominal flow rate		
	The filtration system shall have a sufficient nominal flow rate to allow the total volume of water contained in the pool to be recycled in no longer than 8 h. The filtration system nominal flow rate Q is calculated: $Q = V / T_{TO}$ Q is the filtration system nominal flow rate in m^3/h; V is the pool volume in m^3; T_{TO} is the turnover time of the pool volume in h.	B V: 13.030 m^3 Q: 2.00 m^3/h T_{TO}: 6.5 h C V: 15.232 m^3 Q: 2.00 m^3/h T_{TO}: 7.6 h D V: 11.532 m^3 Q: 2.00 m^3/h T_{TO}: 5.8 h	P
4.3	Extraction of pool water		
4.3.1	General		
4.3.2	Overflow channel		
4.3.2.1	Dimension of overflow channel and channel drains		
	The cross section of the overflow channel has to be designed adequately to achieve sufficient temporary water storage. If the channel is to be used as a balance tank, it should be sufficiently sized to accommodate the effective volume required (see a) to d) in 4.3.2.3). The dimension and numbers of channel drains have to be designed according to the expected: a) water displaced by bathers; b) amount of water created by waves; c) nominal filtration system flow rate; d) water and air based pool features. The dimension of the channel drains has to be sufficient to allow water flow without pressure (under gravity only) and to minimize noise. The internal surface of the overflow channel shall be easily cleaned to prevent the build of solid, bacteria biofilm, etc.	No such design	N/A
4.3.2.2	Overflow channel cover		
	The overflow channel cover has to be designed to avoid entrapment for	No such	N/A

Clause	Requirement	Result	Verdict
	fingers and toes, be capable of taking the design flow of water and also be able to support the weight of the bathers. The cover has to collect the flow of water. National safety regulations shall also have to be considered. The cover should be removable for maintenance and cleaning. Where the cover is not removable, an adapted cleaning system shall be provided.	design	
4.3.2.3	Water balance tank		
	The water balance tank should have: ☐ - access hatches to allow for cleaning and maintenance. The internal finish of the tank shall be easily cleaned so as to prevent the build-up of solids, bacteria etc.; ☐ - Venting or connection to the atmosphere; ☐ - overflow drain; ☐ - connection point for filling up water.	No such design	N/A
4.3.3	Skimmer		
4.3.3.1	General		
	With a skimmer, the water will be removed of one or more positions at the pool. The number of skimmers depends on, but is not limited to, the following: - ☐ surface area; - ☐ pool shape; - ☐ skimmer opening size; - ☐ nominal flow rate. A flow rate ratio of approx. 2/3 through the skimmers and approx. 1/3 through the bottom drain(s) or additional outlets is recommended.	No such design	N/A
4.3.3.2	Installation of skimmers		
	When installing more than one skimmer, the skimmers have to be installed to ensure balanced flow in each skimmer.	No such design	N/A
4.3.3.3	Skimmers in outdoor pools		
	The positioning of skimmers should be opposite to the main wind direction.	No such design	N/A
4.3.3.4	Construction requirements		
	In case the skimmer lid can be walked on, the lid has to withstand the mechanical load. The skimmer lid shall be installed securely to prevent unintentional removal.	No such design	N/A
4.3.4	Main drain		
	The main drain shall be used in combination with surface water extraction for filtration purposes. One or more main drains can be installed in a pool. To use the main drain as pool drain it shall be installed on the deepest area of the basin.	Complied	P
4.4	Risk of suction entrapment		
4.4.1	General		
	Suction devices shall be designed and installed so as to minimize the potential for entrapment of the user. Water speed at fully submerged suction outlets should be ≤ 0.5 m/s. Hair entrapment tests shall be performed on suction devices according to 5.3. Safety requirements a) to c) are not applicable to: - skimmers, because they are vented (see 4.4.3) and partly above the water level; - Integrated swim jet systems, because the users are pushed away	Complied	P

Clause	Requirement	Result	Verdict
	from the outlet, as defined in 3.3 by the action of the inlet. Additionally at least one of the following requirements shall be met: a) multiple suction outlet system designed in such a way that: 1. a minimum of two balanced and functioning suction outlets; 2. the distance between the nearest points of the perimeters of the devices shall be as large as possible with respect to the size of the pool and the design of suction outlets, but with a minimum of 1 m to ensure the appropriate level of safety from entrapment; 3. if any one of the suction outlets becomes blocked, the flow through the remaining suction outlet/s shall accommodate 100 % of the flow rate. b) in case of suction outlet systems with only one grille, the grille shall be designed in such a way that, either, 1. one user can not cover more than 50 % of the opening; or 2. Raised grilles domed opposite to the flow direction, with prevalent peripheral suction. The height of the dome shall be at least 10 % of the main dimension; or 3. single grilles with a surface of the area circumscribed to the suction openings $\geq 1 \text{ m}^2$ c) Any suitable designed outlet suction grille(s) that complies with the obstruction tests according to 5.4. In addition to the requirements in a) to c), a vacuum release system may be provided. When retrofitting existing installations that have a single suction outlet which does not comply with the requirements of this clause, then the following actions are required: – the existing suction outlet shall be retrofitted with a grille conforming to b), or c); – one or more additional suction outlets shall be provided as in a); Vacuum release systems typically respond to a blockage of a single outlet by: – releasing the vacuum by turning the pump off and introducing air; – drawing out water present in a vent tube to allow air penetrates through this tube towards the suction system; – mechanically operating valves to reverse flow through the suction outlet(s); – opening a valve to atmosphere to cause a pump to lose prime.		
4.4.2	Suction chamber for floor and wall water outlets Manufactured or field built floor and wall water outlets shall have a suction chamber with dimensions as shown below:	Not involved such design	N/A

Clause	Requirement	Result	Verdict
	 Key a indicates suggested suction chamber configuration D inside diameter of the pipe D_{min} dimension ≥ D		
4.4.3	Skimmers Skimmers shall be effectively vented to atmosphere through openings in the lid, or through separate vent pipe.	No such design	N/A
4.5	Introduction of pool water		
4.5.1	General Water returning to the pool tank under pressure will assist the general movement of water in the pool. The number of inlets should be sufficient to take 100 % of the nominal flow rate of filtration system. The water speed at pool inlets shall be ≤15 m/s, except for vertical injection from the swimming pool floor in water depth <700 mm, where it shall be ≤2 m/s. The number and location of the inlets shall ensure an equal and efficient water distribution in order to avoid water stagnation taking into account the following: a) effective water volume of the pool and pool size; b) pool shape; c) outlet location; d) nominal flow rate of filtration system. To verify the water distribution the dye test according to 5.1 may be applied if necessary.	Complied	P
4.5.2	Introduction of pool water at reduced filtration flow rate In case of reduced filtration flow rate e. g. during night time when the pool is not used, the introduction of pool water into the pool still has to be sufficient to ensure the maximum turnover time in 4.2. The validation at reduced flow rate may be verified according to 5.1 if necessary.	No design this kind of situation	N/A
4.5.3	Air and water operated leisure feature		
4.5.3.1	Introduction of water and/or air from the floor		

Clause	Requirement	Result	Verdict
	Features incorporating the introduction of water and/or air under pressure from the swimming pool floor shall not be installed in depths of less than 700 mm unless: a) the vertical water speed is ≤ 2 m/s (see 4.5.1); b) the total dynamic head in the system before the inlet is ≤ 30 kPa ($\leq 0,3$ bar) (≤ 3 m H ₂ O).	No design this kind of situation	N/A
4.5.3.2	Positioning of water features Fountains shall not be an obstruction hazard. Special attention shall be paid to interferences between the possible paths of the users in and around the pool and the design and position of the fountains. Wherever the risk of impact is foreseeable, the water effect shall not hide the fountain structure, or it shall be made obvious (as below). Dimensions in millimeter:  Key 1 walkable floor Generally, protruding jets should be avoided on the swimming pool wall, however in the case of overhanging counter-current or filtration units, protruding jets are allowed as long as they are part of a visible obstacle in the pool.	No design this kind of situation	N/A
4.5.4	Other dangers The manufacturer shall provide recommendations for maintenance and cleaning of the air and water operated leisure features.	No leisure features	N/A
4.6	Pipe work The pipework and fittings used in any circulation system should be sized to take the nominal flow rate of filtration system and to minimize frictional head losses. The material should be non-corroding and in general terms suitable for the head pressure in the system and the water speed should not exceed 3 m/s with in the circulation pipe work at the pressure side. This is a maximum water speed at the pressure side, lower speeds are encouraged and will result in added energy savings. To avoid a potential cavitation risk it is recommended that water speed at the suction side of	The water speed is 0.691m/s at the pressure side. Complied with all requirements.	P



ORIGINAL

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	the pump shall be lower than the water speed at the pressure side taking into account pump suction behavior and manufacturer's recommendations. The maximum water speed does not apply to: – water inlet connections; – water based attraction connections; – pipework and connections for water leisure features (unless specified by the manufacturer). Pipework and fittings used in swimming pools are generally used in other fluid applications; they shall be suitable for the application and be covered by national standards. When used underground, the pipework shall be compatible with its environment. Pipework should be installed at a certain depth below ground level depending on climatic conditions (soil freezing) and national Standards / regulations. The pipes (whether rigid or flexible) shall be fully supported and shall be surrounded by non-compactable protective material to prevent any damage. All above-ground pipe runs shall be adequately supported. It is not acceptable to rely on items of equipment for support. All underground pipework shall be pressure tested (if applicable) for soundness before backfilling and a test report issued as proof. Annex A provides a possible pressure test procedure, which however does not supersede any national regulations. A second test shall be carried out after backfilling and before any concrete and/or finishes are installed to make sure there has been no damage to the pipework during compaction. The pressure tests shall be carried out for all swimming pools during construction and/or renovation of the hydraulic system or fittings (inlet/outlet). Where pipes are split into branches, in particular with multiple skimmer outlets and returns, the branch pipes shall be sized so that they can take the full proportion of their part of the flow. Valves shall be fitted within the circulation pipe design to isolate various items of equipment within the system so that they can easily be removed for maintenance or repair. Moreover some valves can be fitted for changing the direction of water flow (e. g. multiport valves). They shall be suitable for their application and be in accordance with national standards.		
4.7	Pumps		
4.7.1	Principle		
	This section contains requirements for pumps intended for filtration and/or circulation and/or water leisure features in domestic swimming pools. Pumps are elements subjected to CE marking, therefore this section shall be read and interpreted in conjunction with the current regulation.	Noted	-
4.7.2	General		
	If appropriate, a balancing valve on the immediate pressure side of the pump should be fitted so that the correct flow rate can be achieved either by using the in-line flow meter or the pump performance curve. Filtration system should be fitted with a means of preventing objects from	Complied	P



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	fouling the impeller. Parts of the pump that needs further operation or servicing shall be easily accessible. Whenever the strainer is not an integral part of the pump, the qualification and characterization of the product shall include it as far as it is sold together with the pump. If required, pumps should have at least a drain hole with a plug or equivalent means to drain the housing for servicing and/or winterizing, without disconnecting the pump from the pipe work. Whenever the strainer is not an integral part of the pump, it should also have a drain hole with a plug or equivalent means.		
4.7.3	Hydrostatic pressure test		
	The pump and parts of it that contain water under pressure shall be capable of withstanding a hydrostatic pressure test at 150 % of the maximum gauge pressure by the pump. Whenever the strainer is not an integral part of the pump, the requisites for the hydrostatic pressure test will also apply.	Complied	P
4.7.4	Resistance of materials		
	The pump materials used shall be suitable for the chemical and mechanical influence within swimming pool water treatment. Any pump materials affected by corrosion shall meet the requirement stated in the corrosion resistance clause in EN 16582-1.	It's manufacturer's responsibility to assure the material compliance according to this requirement	-
4.7.5	Performance characterization		
4.7.5.1	Head vs. flow rate curve		
	If not otherwise agreed upon between the manufacturer and purchaser, the tolerance factors shall be the following: - rate of flow $rQ = \pm 10 \%$; - pump total head $rH = \pm 8 \%$.	Complied	P
4.7.5.2	Power drawn vs. flow rate curve		
	For each pump and model, the manufacturer shall provide, on demand, the active power drawn from the electrical supply for its operation during the whole working range as defined in its head-flow curve. This data shall be presented drawing active power against flow rate. Testing procedure and representation shall be carried out according to EN ISO 9906:2013, 4.2.	See appendix A	P
4.7.5.3	Total efficiency vs. flow rate curve		
	For each pump and model, the manufacturer shall provide, on demand, the total efficiency (hydraulic power discharged by the pump vs. electrical power) during the whole working range as defined in its head-flow curve. This data shall be presented drawing total efficiency against flow rate.	See appendix A	P
4.7.6	Self-priming performance		
	A pump designated as self-priming shall be capable to re-prime itself during its normal operation. Whenever a self-priming performance is claimed, self-priming performance shall be verified in accordance to 5.5.3.	Not self-priming pump	N/A
4.7.7	Endurance running test		
	Pump and parts of it shall withstand a continuous running test according to 5.6.5.	manufacturer provide	P



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Clause	Requirement	Result	Verdict
		compliance reports	
4.7.8	Cyclical endurance test		
	Pump and parts of it shall withstand a cyclical test according to 5.6.6.	manufacturer provide compliance reports	P
4.7.9	Installation requirements		
4.7.9.1	General		
	The installation of the pump shall be done according to the manufacturer's instructions provided in, either the installation manual or user's manual. Pumps can cause vibrations and/or shock waves during stopping and starting phases. If required pumps may be connected with flexible joints to the pipe work at suction and pressure side in order to minimize the mechanical stress. It is recommended to mount pumps on an anti-vibration plinth to avoid sound transmission. Where practical, the pumps should be installed below water level.	Complied	P
4.7.9.2	Electrical Installation		
	Implemented in accordance with the manufacturer's instructions, the electrical installation of the pump or any electrical circulation devices related to the pool, shall comply with the requirements of HD 60364-7-702 (excluding mobile equipment) or valid national requirements. These devices shall also comply with electrical product standards or valid national requirements.	Complied	P
4.8	Information to the user and to the installer		
	The manufacturer shall provide with each pump a manual. The manual shall include written information and at least one drawing for the proper installation, use and safety of the product. Instructions for the consumer shall contain information, including, but not limited to, the following: - Mind all the safety requirements and recommendations described in the manual; - In case of doubt on the pump or any circulation devices, contact a qualified installer, or the manufacturer/importer/distributor. - The water circulation installation shall comply with the European as well as national/local regulations, especially when dealing with electrical issues; - In case a massage hose can be connected to the water inlet, the manufacturer shall warn the consumer of the potential danger of the jet when aimed at somebody above water level. He shall especially mention the risk for injury to the eyes. - Any change of valve position, pump size, grille size can cause a change of the flow and the suction velocity can be increased; - the name and contact information of the person responsible for placing the product on the market (manufacturer, distributor or importer).	Complied	P

Abbreviation: P = Pass; N/A = Not Applicable.

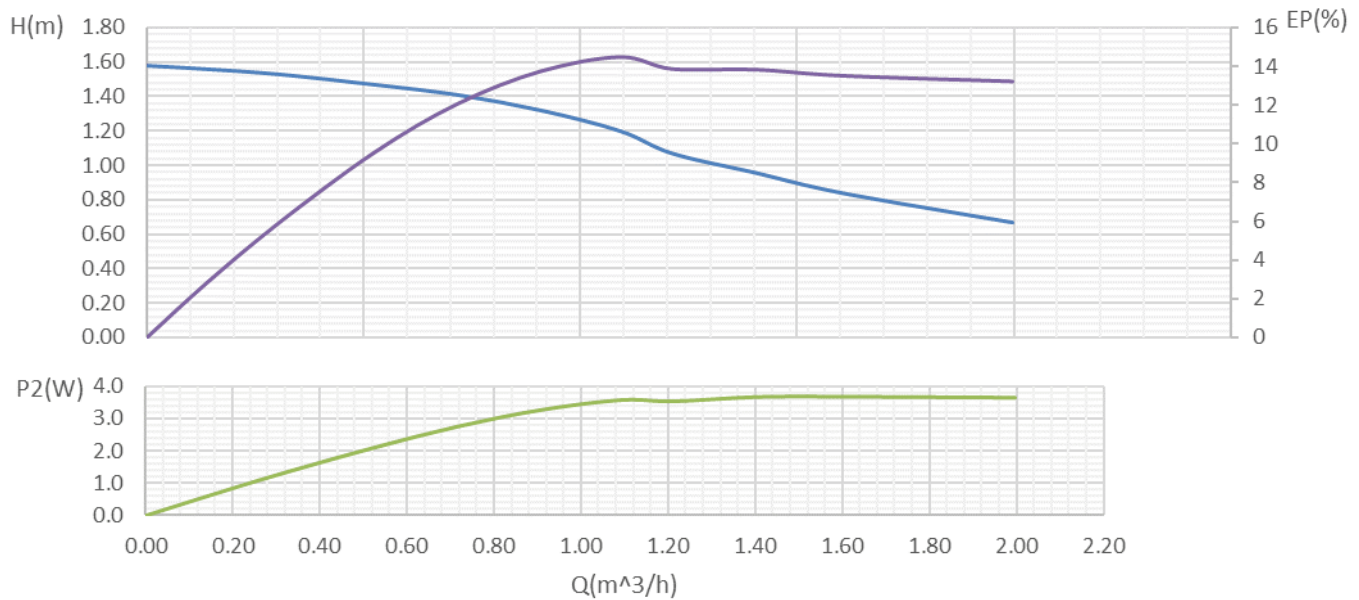
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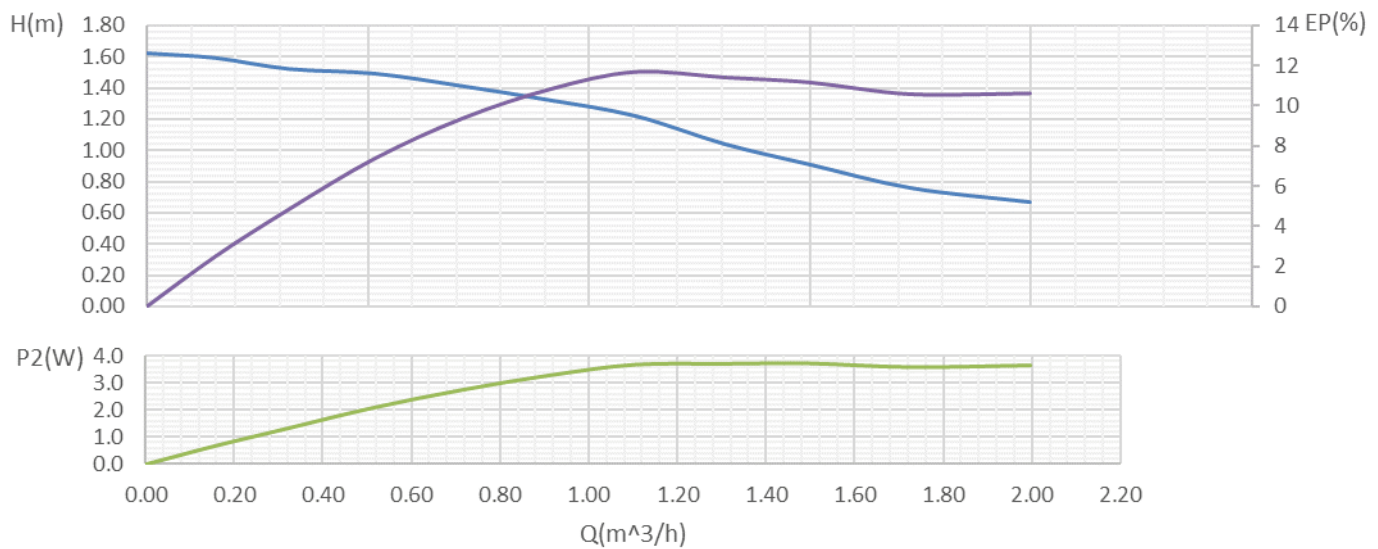


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Appendix A: Head vs. flow rate curve, Power drawn vs. flow rate curve and Total efficiency vs. flow rate curve



#58386 (EU)



#58386 (GS)

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Appendix B: The collocation of the pools and Pipe information during testing.

Pool Item No.	Overall size (diameter x height) (length x width x height) (cm)	Maximum water depth (cm)	Water Capacity (L)	Pipe diameter (mm)	Height of outlet (cm)	Height of inlet (cm)
#56950	427 x 107	96	13030	32	53	72
#56993	427 x 122	110	15232	32	74	86
#56996	488 x 244 x 122	110	11532	32	75	86

- End of Test Report -

