



## उत्पाद मैनुअल

भा. मा. 6595 (Part 2): 2024 के अनुसार

साफ़ और ठण्डे पानी के लिए क्षैतिज अपकेंद्री पम्प- भाग 2- सामान्य प्रयोजन (कृषि और ग्रामीण जल आपूर्ति को छोड़कर ) के लिए

दस्तावेज़ संख्या-पी एम/आई एस 6595 (भाग 2)/2/अक्टूबर 2024

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारिश्रिता की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

## PRODUCT MANUAL FOR HORIZONTAL CENTRIFUGAL PUMPS FOR CLEAR, COLD WATER PART 2- GENERAL PURPOSE (OTHER THAN AGRICULTURAL AND RURAL WATER SUPPLY) ACCORDING to IS 6595 (Part 2):2024

Document No.-PM/IS 6595 (Part 2)/2/ October 2024

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

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**PRODUCT MANUAL FOR  
HORIZONTAL CENTRIFUGAL PUMPS FOR CLEAR, COLD WATER Part 2 -  
GENERAL PURPOSE (OTHER THAN AGRICULTURAL AND RURAL WATER  
SUPPLY)  
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|    |                                             |   |                                                                                                                                                                                                                                                  |
|----|---------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <b>Product</b>                              | : | IS 6595 (Part 2) : 2024                                                                                                                                                                                                                          |
|    | <b>Title</b>                                | : | Horizontal centrifugal pumps for clear, cold water<br>Part 2- General Purpose (Other than agricultural and<br>rural water supply)                                                                                                                |
|    | <b>No. of Amendments</b>                    | : | Nil                                                                                                                                                                                                                                              |
| 2. | <b>Sampling Guidelines:</b>                 |   |                                                                                                                                                                                                                                                  |
| a) | <b>Raw material</b>                         | : | -                                                                                                                                                                                                                                                |
| b) | <b>Grouping guidelines</b>                  | : | Each Type of Horizontal centrifugal pumps shall be<br>tested for Grant of Licence/Change in Scope of<br>Licence. However, models with only aesthetic changes<br>need not be tested separately if the design technical<br>parameters remain same. |
| c) | <b>Sample Size</b>                          | : | One Pump                                                                                                                                                                                                                                         |
| 3. | <b>List of Test Equipment</b>               | : | Please refer <u>ANNEX – A</u>                                                                                                                                                                                                                    |
|    |                                             |   |                                                                                                                                                                                                                                                  |
| 4. | <b>Scheme of Inspection and<br/>Testing</b> | : | Please refer <u>ANNEX – B</u>                                                                                                                                                                                                                    |
|    |                                             |   |                                                                                                                                                                                                                                                  |
| 5. | <b>Possible tests in a day</b>              | : | All tests                                                                                                                                                                                                                                        |
|    |                                             |   |                                                                                                                                                                                                                                                  |
| 6. | <b>Scope of the Licence</b>                 | : | Please refer <u>ANNEX – C</u>                                                                                                                                                                                                                    |

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**ANNEX - A****List of Test Equipment*****Guidance list of major test equipment required to test as per the Indian Standard***

| <b>Sl. No.</b> | <b>Name of Equipment</b>                                                                                                                                       | <b>Test/Cl. for reference Remarks</b>                                                               |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1.             | Hydraulic Testing machine                                                                                                                                      | Hydrostatic testing arrangement with fixtures/blinds of casing as per clause 9.1 of IS 6595(Part 2) |
| 2.             | Impeller Balancing Machine                                                                                                                                     | For balancing impeller as per clause 9.2 of IS 6595(Part2)                                          |
| 3.             | Micrometer , Vernier caliper, Dial Bore Gauge, Snap gauge                                                                                                      | For various Dimensional measurements                                                                |
|                | <b><i>Various parameters to be measured and recorded while carrying out Performance testing as per 10 of IS 6595 (Part 2), in accordance with IS 11346</i></b> |                                                                                                     |
| 4.             | a) Volumetric tank method<br>b) Vee-notch method<br>c) Orifice plate method<br>d) Flow meters                                                                  | For discharge measurement                                                                           |
| 5.             | Pressure gauge , Barometer, Manometer                                                                                                                          | For discharge pressure                                                                              |
| 6.             | Vacuum gauge                                                                                                                                                   | For suction lift measurement                                                                        |
| 7.             | Tachometer                                                                                                                                                     | For measurement of RPM                                                                              |
| 8.             | KW meter                                                                                                                                                       | For wattage measurement                                                                             |
| 9.             | Volt meter                                                                                                                                                     | For voltage measurement                                                                             |
| 10.            | Frequency meter                                                                                                                                                | For frequency measurement                                                                           |
| 11.            | Ampere meter                                                                                                                                                   | For current measurement                                                                             |
| 12.            | Power factor meter                                                                                                                                             | For power factor measurement                                                                        |
| 13.            | Power stat                                                                                                                                                     | For measuring varying the current and voltage                                                       |
| 14.            | Test set up for vibration                                                                                                                                      | For measuring vibration level as per Cl. 12.2.5                                                     |

***The above list is indicative only and may not be treated as exhaustive.***

**ANNEX – B****Scheme of Inspection and Testing****1. QUALITY ASSURANCE PLAN**

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit i.e. Batch and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4 below.

**1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:**

**1.3.1 Levels of Control:** For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.2 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

**2. ENSURING COMPLIANCE THROUGH TESTING-** It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in-house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer, and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in-house as “R” or other tests which can be sub-contracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

**2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) also is optional.**

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

**2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1),** where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website [www.bis.gov.in](http://www.bis.gov.in). (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

**2.4 TEST RECORDS-** The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

**3. LABELLING AND MARKING** – As per the requirement of IS 6595 (Part 2):2024. The Standard Mark, as given in the Schedule of the licence, shall be marked on each Pump provided always that the product thus marked conforms to all the requirement of the specification. In addition, the licence no. CM/L-\_\_\_\_\_ and details of BIS website shall be marked at an appropriate place on product or package as follows: “For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”.

**4. REJECTION** – All the production which conforms to the Indian Standard and covered under scope of the licence shall be marked with Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016

Table 1 .....

**TABLE 1**

| (1)                          |                                             |                                  |                                 | (2)                                                                           | (3)                                                                                                                                                                                              |           |         |
|------------------------------|---------------------------------------------|----------------------------------|---------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|
| Test Details                 |                                             |                                  |                                 | Test equipment requirement<br>R: required<br>(or)S: Sub-contracting permitted | Recommended Levels of Control                                                                                                                                                                    |           |         |
| Cl.                          | Requirement                                 | Test Methods<br>Clause Reference |                                 |                                                                               | No. of Sample                                                                                                                                                                                    | Frequency | Remarks |
| 6                            | Material of Construction                    | 6                                | IS 6595 (Part 2)                | S                                                                             | Conformity to the relevant Indian Standard may be established.                                                                                                                                   |           |         |
| 7                            | Direction of Rotation                       | 6                                | IS 6595 (Part 2)                | R                                                                             | Manufacturer shall exercise adequate levels of control to ensure that entire production should conform to the Standard. Appropriate records of testing indicating conformity shall be maintained |           |         |
| 8                            | Design limitations                          | 8                                | IS 6595 (Part 2)                | R                                                                             | Once in a month for each type and design                                                                                                                                                         |           |         |
| 9                            | General Requirement                         |                                  |                                 |                                                                               |                                                                                                                                                                                                  |           |         |
| 9.1                          | Hydrostatic test of Volute Casing           | 9.1                              | IS 6595 (Part 2)                | R                                                                             | Each casing                                                                                                                                                                                      |           |         |
| 9.2                          | Balancing of impeller                       | 9.2                              | IS 6595 (Part 2)                | R                                                                             | Each impeller                                                                                                                                                                                    |           |         |
| 12                           | Guarantee and Tolerance on Pump Performance |                                  |                                 |                                                                               |                                                                                                                                                                                                  |           |         |
| 12.1, 12.2.1, 12.2.2, 12.2.3 | Guarantee and Tolerance on Pump Performance | 10,12                            | IS 6595 (Part 2)<br>IS 11346    | S                                                                             | Once in a month for each type and design                                                                                                                                                         |           |         |
| 12.2.5,                      | Vibrations                                  | 10,12                            | IS 6595 (Part 2)<br>IS/ISO 5199 | S                                                                             |                                                                                                                                                                                                  |           |         |

ANNEX-CSCOPE OF LICENCE

Licence is granted to use Standard Mark on “**Horizontal centrifugal pumps for clear, cold water Part 2- General Purpose (Other than agricultural and rural water supply)**” as per IS 6595 (Part 2): 2024 with following scope:

| Model | Suction Size (mm) | Delivery Size (mm) | Nominal Duty Point |                 |                     | Rated Speed (rpm) | Rating (kW) | Discharge range (lps) | Head Range (m) |
|-------|-------------------|--------------------|--------------------|-----------------|---------------------|-------------------|-------------|-----------------------|----------------|
|       |                   |                    | Head (m)           | Discharge (lps) | Pump Efficiency (%) |                   |             |                       |                |
|       |                   |                    |                    |                 |                     |                   |             |                       |                |