



**PRODUCT MANUAL FOR
SUBMERSIBLE PUMPSETS
ACCORDING to IS 8034:2018**

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.

1.	Product	:	IS 8034:2018
	Title	:	Submersible Pumpsets
	No. of Amendments	:	One
2.	Sampling Guidelines:		
a)	Raw material	:	Materials for Components – <i>Clause. 6.2</i> of IS 8034 Gaskets, Seals and Packings – <i>Clause. 5.2</i> of IS 5120
b)	Grouping guidelines	:	Please refer ANNEX – A.
c)	Sample Size	:	One Pump set
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Possible tests in a day	:	All tests
6.	Scope of the Licence	:	Please refer ANNEX – D

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ANNEX - A

Grouping Guidelines

1. The following guidelines shall be followed for grouping of Submersible Pumpsets as per IS 8034:2018 for GoL/CSoL:
 - (a) A 'series' may be defined as a group of pump sets having the same Head per Stage, Discharge, Bore Size, Delivery Size, Category, Type of Duty, No. of Phases, Rated Voltage, No. of Poles, Type of Cooling. Any change in these parameters will be treated as a different series.
 - (b) For assessing conformity of a particular series, pump set having the highest number of stages for every motor rating in a particular series shall be tested for all the requirements.
 - (c) In case the motors for submersible pump sets are ISI Marked, even then the same shall be tested since IS 8034 stipulates more stringent conditions with respect to temperature rise test.
 - (d) In case of extension of a particular series of pump sets already covered in the licence, samples shall be tested for all the requirements as per the above plan.
2. The Firm shall declare the varieties of submersible pump sets intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
3. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX - B**List of Test Equipments**

Major test equipment required to test as per the Indian Standard

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	Dial Vernier Calliper	<i>Clause. 7 of IS 9283</i>
2	Outside Micrometer 0 – 25 mm	
3	Outside Micrometer 25 – 50 mm	
4	Bore Gauge With Dial Gauge.	
5	Fixture for run-out concentricity & face run-out	
6	Dial Indicator (Lever Type Dial)	
7	Dynamic Balance Machine	<i>Clause. 8.5</i>
8	Auto Transformer	<i>Clause. 16.1 (d, f, g, h, j, k) of IS 9283 & 11 of IS 8034</i>
9	High Voltage Tester	<i>Clause. 16.1 (b) of IS 9283</i>
10	Thermocouple/Thermometer	<i>Clause. 9.5</i>
11	Insulation Tester	<i>Clause. 16.1 (a) of IS 9283</i>
12	Torque Testing Set up with Spring Balance	<i>Clause. 16.2 (d) of IS 9283</i>
13	Hydrostatic Test unit	<i>Clause. 9.1 & 9.2 of IS 11346</i>
14	Pressure Gauge	
15	Digital Flow Meter	<i>Clause. 11</i>
16	Digital Flow Meter	
17	Multi Meter	
18	Tachometer	
19	Digital Power Panel	
20	Surface Roughness Comparator	<i>Clause. 5.5 of IS 9283 & Clause 8.4 of IS 8034</i>
21	Measuring tape	<i>Clause 11 of IS 8034</i>
22	Water Sump	

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

ANNEX C

Scheme of Inspection and Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipment.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirements of IS 8034: 2018.

4. LEVELS OF CONTROL - The tests as indicated in column 1 of [Table 1](#) and the levels of control in column 3 of [Table 1](#), shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

4.1 All the production which conforms to the Indian Standard and covered by the licence should be marked with Standard Mark.

5. REJECTIONS – 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	Levels of Control			
Cl.	Requirement	Test Methods		R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
		Clause	Reference				
6	Material of Construction	6.2	IS 8034	S	One	Each consignment	Material indicated is for guidance only. No further testing is required, if accompanied with test certificate or ISI marked
	Gaskets, Seals and Packings	5.2	IS 5120				
8	GENERAL REQUIREMENTS						
8.1	General Requirements	17	IS 5120	R	Every Pumpset		
8.2	Casing	10.3	IS 8034	R	Every Pump Casing		
8.4	Shaft	8.4.2	IS 8034	S	One shaft from each consignment for each size, subject to number of shafts not exceeding 100		If more than 100 shafts are received in one consignment then one more sample per each 100 shafts to be tested

8.5	Balancing	8.5	IS 8034	S	One Rotor/ Impeller from each consignment for each size, subject to number of Rotors/ Impellers not exceeding 100	If more than 100 Rotor/ Impeller are received in one consignment then one more sample per each 100 Rotors/ Impellers to be tested
8.6	Cable	8.6	IS 8034 IS 694	S	Cable shall be ISI Marked.	
8.7	Direction of Rotation	8.7	IS 8034	R	Every Pump set	
8.8	Terminal Marking	8.8	IS 8034	R	Every Pump set	
8.9.4	Provision for Earthing	8.9.4	IS 8034	R	Every motor	
9	TEST FOR ELECTRICAL PERFORMANCE ON SUBMERSIBLE MOTOR					
9.9	ROUTINE TEST					
	Insulation resistance Test (Before high voltage test only)	9.2	IS 8034	R	Every Motor	No further testing is required, if motor is ISI marked.
	High Voltage Test	9.3	IS 8034			
	No load running of motor and reading of current, voltage, power and speed		IS 9283			

	Locked rotor reading of voltage, current and power		IS 9283	R	Every Motor	No further testing is required, if motor is ISI marked.
9.10	TYPE TEST					
	Insulation resistance Test (Both before and after the high voltage test)	9.2	IS 8034	R	One sample of each identical type and design (Out of every 100 Pumpsets or every month whichever is earlier)	
	High Voltage Test	9.3	IS 8034			
	Measurement of stator resistance		IS 9283			
	Reduced Voltage Test					
	Locked rotor reading of voltage, current and power and torque of motors					
	Breakaway (starting) torque	9.7	IS 8034			

	Leakage Current Test at rated voltage at no load	9.4	IS 8034	R	One sample of each identical type and design (Out of every 100 Pumpsets or every month whichever is earlier)	
	Temperature rise test at rated voltage	9.5	IS 8034	R		
	Temperature rise test at reduced voltage	9.5	IS 8034	R		
	Momentary over-load Test		IS 9283	As per agreement between the manufacturer and purchaser.		
7	Design Features	7	IS 8034	R	One sample of each identical type and design (Out of every 100 Pumpsets or every month whichever is earlier)	
10	Testing for Hydraulic Performance on Pump for Monoset	10.2	IS 8034			
11	Guarantee and Tolerance on Pumpset Performance	11	IS 8034	R	One sample of each identical type and design (Out of every 100 Pumpsets or every month whichever is earlier)	

NOTE-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

NOTE-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

ANNEX-D

SCOPE OF LICENCE

Name of the product : Submersible Pump sets													
Model	Size (mm)		No. of Stages	Nominal Duty Point			Type of Motor: Category of Motor: Type of Duty: Rated Frequency:						Head Range (m)
	Bore	Delivery		Head (m)	Discharge (lps)	Overall Efficiency (%)	Rated Speed (rpm)	Rating (kW)	Maximum Current (A)	Winding Connection	No. of Phases	Rated Voltage (V)	