PRODUCT MANUAL FOR MOTORS FOR SUBMERSIBLE PUMPSETS ACCORDING TO IS 9283:2013

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 9283:2013
	Title	:	Motors for Submersible Pumpsets
	No. of Amendments	:	Nil
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	Guidance may be taken from Table 1 of IS 9283:2013. Whenever the materials/ components used is under mandatory certification, they shall necessarily be ISI marked and no further testing is required. In all other cases also, no further testing is required if accompanied with the Test Certificate or ISI marked.
b)	**Grouping guidelines**	:	Each and every motor rating is to be tested for GOL and Inclusion.
c)	**Sample Size**	:	One motor
3.	**List of Test Equipment**	:	Please refer ANNEX – A.
4.	**Scheme of Inspection and Testing**	:	Please refer ANNEX – B.
5.	**Possible tests in a day :** All tests as per IS 9283:2013.		
6.	**Scope of the Licence :**		
	"Licence is granted to use Standard Mark as per IS 9283:2013 with the following scope:		
	Name of the product : Motors for Submersible Pumpsets		
	Rating: Rated Voltage —V, 50 Hz, — kW		
	Nominal Efficiency (%):		
	No. of Phases:		
	Bore size (mm):		

ANNEX A

List Of Test Equipment

Major test equipment essentially required to test as per the Indian Standard

Sl. No	Test Equipment	Tests Used in with Clause reference
1	Dynamic Balancing Machine	Cl. 5.6
2	Insulation Tester	Cl. 16.1 a, 16.2 a
3	High voltage tester	Cl. 16.1 b, 16.2 b
4	Auto transformer	Cl. 16.2 c, 16.2 d,16.2 a, 16.1 g, 16.1 h, 16.1 f, 16.1 j, 16.1 k.
5	Current transformer	Cl. 16.2 c, 16.2 d, 16.1 g, 16.1 h, 16.1 f, 16.1 j, 16.1 k.
6	Frequency Meter	Cl. 16.2 c, 16.2 d,16.2 a, 16.1 g, 16.1 h, 16.1 f, 16.1 j, 16.1 k., 18.1
7	Voltmeter	Cl. 16.2 c, 16.2 d,16.2 a, 16.1 g, 16.1 h, 16.1 f, 16.1 j, 16.1 k., 18.1
8	Ammeter	Cl. 16.2 c, 16.2 d, 16.1 g, 16.1 h, 16.1 f, 16.1 j, 16.1 k., 18.1
9	Wattmeter	Cl. 16.2 c, 16.2 d, 16.1 g, 16.1 h., 18.1
10	Tacho meter	Cl. 16.2 c, 16.2 a
11	Digital Slip speed Meter with Slip coil	Cl. 16.2 c, 16.1 g, 16.1 h
12	Milli Ohm meter	Cl. 16.1 c, 16.1 j, 16.1 k.
13	Thermo meter	Cl. 16.1 c, 16.1 j, 16.1 k
14	Motor load testing bed & Spring balance/ Torque bench brake drum	Cl. 16.1 g, 16.1 h, 16.2 d, 18.1
15	Surface Comparator	Cl. 5.5
16	Milli Ammeter	Cl. 23

Sl. No	Test Equipment	Tests Used in with Clause reference
17	Sump	Cl. 16.1 & 16.2
18	Magnetic Stand with dial indicator for Shaft extension Runout, Concentricity, Perpendicularity.	Cl. 7.1
19	Micrometer	
20	Vernier Caliper	
21	Steel Ruler	

ANNEX B

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 9283:2013.

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

(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				
5.1	Construction a) Type of cable b) Size of conductor of cable c) Length of cable d) Joint in Cable	5.1 5.1.1 5.1.1,5.1.4 5.1.2,5.1.4 5.1.3	IS 9283	R	Each Motor	—	—
5.2	Earthing	5.2	IS 9283	R			
5.3	Foreign Matter	5.3	IS 9283	R			
5.5	Finish of journal Bearings	5.5	IS 9283& IS 3073	R	Each Rotor shaft/sleeve		
5.6	Balancing of Rotor	6.3	IS/ISO 21940-11: 2016	R	Each Rotor		
7.1	Dimensions	7.1	IS 9283	R	Each Motor		
7.2	a) For motors with anti-friction bearing	7.2.1	IS 9283	R	Each Rotor Shaft		
		Table 6,7	IS 2223				
	b) For motors with journal bearing	7.2.2	IS 9283				
13	Terminal Marking	13	IS 9283	R	Each Motor		
16.2(a)	Insulation resistance before HV test	21	IS 9283	R			
16.2(b)	High Voltage Test	20	IS 9283	R			
16.2(c)	No-load running of Motor and reading of Current, Voltage, Power & Speed	8.1	IS 4029	R			
		8.1	IS 7572				

(1)				(2)	(3)		
Test Details				**Test equipment requirement** R: required (or) S: Sub-contracting permitted	**Levels of Control**		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
16.2(d)	Locked rotor reading of voltage, current and power input	8.3	IS 4029	R	Each Motor	—	
		8.2	IS 7572				
16.2(e)	Reduced voltage running up test at no-load	16.2(e)	IS 9283	R			
16.1(a)	Insulation resistance Test after HV Test	21	IS 9283	R	One Motor	Every 5 motors of each type & design	
16.1(n)	Leakage Current Test at rated voltage at no load	23	IS 9283	R			
16.1(c)	Measurement of Stator Resistance	7	IS 4029	R			
		7	IS 7572				
16.1(g)	Full Load Reading of voltage, current, power input & slip	8.8	IS 4029	R			
		8.4	IS 7572				
16.1(h)	Performance characteristics	17.1	IS 9283	R	One Motor	Every 20 motors of each type & design	
16.1(f)	Locked rotor torque	8.3	IS 4029	R			
		8.2	IS 7572				
16.1(j)	Temperature rise test at rated voltage	19	IS 9283	R			
16.1(k)	Temperature rise test at reduced voltage	19	IS 9283	R			
16.1(m)	Momentary Overload Test	18	IS 9283	R	As per agreement between manufacturer & purchaser		

Note -1: While carrying out temperature rise and performance tests, no load and locked rotor tests shall be repeated and readings as required under Cl. 16.1(d) & Cl. 16.1(f) of IS 9283:2013 shall be noted.

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.