



**PRODUCT MANUAL FOR
CENTRIFUGAL REGENERATIVE PUMP FOR CLEAR, COLD WATER
ACCORDING to IS 8472:1998**

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 8472:1998
	Title	:	Centrifugal Regenerative Pumps for Clear, Cold Water
	No. of Amendments	:	3
2.	Sampling Guidelines:		
a)	Raw material	:	As per clause 8 of IS 8472:1998
b)	Grouping guidelines	:	Each Type of Centrifugal Regenerative Pumps shall be tested for GoL/CSoL
c)	Sample Size	:	One pumpset
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
6.	Scope of the Licence	:	Please refer ANNEX – C

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ANNEX - A**List of Test Equipments****Major test equipment required to test as per the Indian Standard**

Sl. No.	Name of the equipments	Test used in with clause reference IS 8472
1	Voltmeter	Clause 14.1, Clause 14.2, Clause 13.5
2	Ammeter	
3	Wattmeter	
4	Frequency meter	
5	Current transformer	
6	Digital ohm meter	Clause 14.1, Clause 14.2, Clause 13.5
7	Tacho meter	Clause 14.1, Clause 14.2, Clause 13
8	H.V. Tester	Clause 14.1, Clause 14.2
9	Insulation tester	Clause 14.1, Clause 14.2
10	Digital pressure transducer with indicator/ Pressure Gauge	Clause 14.1, Clause 14.2, Clause 13.1, Clause 16.2
11	Digital vacuum transducer with indicator/ vacuum gauge	Clause 14.1, Clause 14.2, Clause 13.1
12	Magnetic flow meter/ volumetric tank	Clause 14.1, Clause 14.2, Clause 13.1
13	Sump	Clause 14.1, Clause 14.2, Clause 13.1, Clause 16.2
14	Pipe set-up	Clause 14.1, Clause 14.2, Clause 13.1, Clause 16.2
15	Self-prime test set-up with 3m static suction pipe	Clause 13.5
16	Stop watch	Clause 13.5, 16.2
17	Thermometer	Clause 14.1, Clause 14.2
18	Torque bench with Flat belt, Break Drum/ Arm	Clause 14.1, Clause 14.2
19	Spring Balances	Clause 14.1, Clause 14.2
20	Auto transformer	Clause 14.1, Clause 14.2, Clause 13.5

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

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 8472: 1998.

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. CONTROL UNIT - Pumps of same rating, type and size manufactured in a fortnight from same consignment of raw materials shall constitute a control unit.

6. 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
		Clause	Reference			
8	Materials of Construction	8	IS 8742	Conformity to the relevant Indian Standard may be established.		
9	Direction of rotation	9	IS 8742	-	All	
13 , 16	PUMP TESTS, GUARANTEE ON PUMP PERFORMANCE AND TOLERANCE					
13.3	Hydrostatic Test	13.3	IS 8742	R	Every Pump Casing	
13.5	Self –Priming Test	13.5	IS 8742	R	As per Table 2	Each Control Unit
13.4, 16	Performance Test	13.4 16	IS 8742	R		
14	TEST FOR ELECTRICAL PERFORMANCE					
14.1	Single Phase Monoset					
14.1.1	Test for no load current, power input and speed at rated voltage & frequency	17.3 (a)	IS 996	R	Every Motor	
	Insulation resistance Test	17.3 (g)	IS 996			
	High Voltage Test	17.3 (h)	IS 996			

14.1.2	Insulation resistance test	17.3 (g)	IS 996	R	One sample of each identical type and design (Out of every 50 Pumpsets or every month whichever is earlier)
	High Voltage Test	17.3 (h)	IS 996		
	Minimum Break away torque and pull-up torque ate rated voltage and supply frequency	14.1.2	IS 8472		
	Temperature Rise Test	14.1.2.1	IS 8472		
14.2	Three Phase Monoset				
14.2.1	No-load Test	22.3.2(a)	IS 7538	R	Every Motor
	Reduced Voltage Running- up Test at no load	22.3.2(c)			
	Insulation Resistance Test (Before high voltage test)	22.3.2(e)			
	High-Voltage Test	22.3.2(f)			
14.2.2	Measurement of stator resistance	22.3.1(b)	IS 7538	R	One sample of each identical type and design (Out of every 50 Pumpsets or every month whichever is earlier)
	No-load running of motor and reading of voltage, current, power input and speed	22.3.1(c)			
	Reduced voltage running up test at no load	22.3.1(d)			
	Locked rotor test	22.3.1(e)			
	Insulation resistance Test (Both before and after the high voltage test)	22.3.1(m)			
	High Voltage Test	22.3.1(n)			
	Temperature - rise Test	14.2.2.1	IS 8472		

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.

Table 2

No. of Pumps produced in a fortnight of same size and type and rating	No. of pumps to be tested	Acceptance No.
Upto 90	5	0
91 to 150	8	0
151 to 280	13	0
281 to 500	20	0
501 to 1200	32	0
1201 & above	50	2

ANNEX-C**SCOPE OF LICENCE**

	Name of the Product : Centrifugal Regenerative Pumps for Clear, Cold Water														
Model	Size (mm)	No. of Stages	Type	Category	Self- Priming Time	Range of Head	Guaranteed Duty Point			Classification	Power Input (kW)	Rated Frequency: No. of Phases: Winding Connection:			Motor rating (kW)/ Prime mover Rating
							Total Head	Discharge	Rated Speed			Rated Voltage	Max. Current (A)	Class of Insulation	