INTER PLANT STANDARD - STEEL INDUSTRY

IPSS	SPECIFICATION FOR dc CABIN FAN FOR EOT CRANES (First Revision)	IPSS:1-03-012-92
	NO CORRESPONDING INDIAN STANDARD	Formerly IPSS:1-03-012-87

0. FOREWORD

0.1 This Interplant Standard (First Revision) prepared by the Standards Committee on Rotating Electrical Machinery, IPSS 1:3 with the active participation of representatives of all the steel plants and other associated organizations, was adopted by the Approval Committee on Consumable Stores and General Equipment, IPSS 1 on 13 February 1992.

0.2 Interplant Standards for steel industry primarily aim at achieving rationalization and unification of parts and assemblies used in steel plant equipment and accessories, and provide guidance in Indenting stores or equipment (or while placing orders for additional requirements) by individual steel plants. For exercising effective control on inventories, it is advisable to select a fewer number of sizes (or types) from among those mentioned in this standard, for the purpose of company standards of individual steel plants. It is not desirable to make deviations in technical requirements.

0.3 This Interplant Standard was first published in 1987. This revision has been carried out to update the standard based on the requirements of the steel plants.

0.4 In this standard, frequent references have been made to the following Indian Standards:

IS:555-1979	Specification for electric table type fans and regulators (third revision)
IS:4691-1985	Degrees of protections provided by enclosures for rotating electrical machinery (first revision)
IS:6362-1971	Designation of methods of cooling for rotating electrical machines
IS:6680-1972	Specification for railway carriage fans
IS:8354-1977	Code of practice for packing of electric fans
IPSS:1-09-006-86	Specification for multipurpose grease, lithium base (first revision)

Amendment issued (*to be filled by the user department*)

No.	Date of issue	No.	Date of issue
1		3	
2		4	

UDC 621.63:621.3.024:621.874.2 - 83

1. SCOPE

This Interplant Standard specifies the requirements of dc cabin fans suitable for operation on 250 V dc for use in operators' cabin of EOT cranes.

2. SITE CONDITIONS

The following shall constitute normal site conditions for the purpose of this standard:

a) **Ambient Temperature** - The ambient temperature or the cooling medium temperature not exceeding 50 deg C.

b) **Relative Humidity** - The relative humidity may be up to the maximum of 100 percent. Maximum ambient temperature and 100 percent relative humidity may not occur simultaneously.

c) **Ambient air** - It may contain fair amount of conductive dust.

d) **Altitude** - Not exceeding 1000 m.

3. RATING

3.1 **Air Delivery** - 30 m^3/min.

3.2 **Speed** - 900 rpm.

4. GENERAL REQUIREMENTS

4.1 The cabin fan shall have a sweep of 400 mm and shall be of tilting type, but non-oscillating. Provision shall be made for locking it in any desired position.

4.2 The fan shall be suitable for operation on 250 V dc $\pm$ 10 %.

4.3 The fan shall conform to IS:555-1979 with regard to general and safety requirements, air delivery, service value, testing, etc, unless otherwise specified in this standard.

4.4 There shall be minimum of 3 numbers of holes on the base, to accommodate bolts of 9 mm for mounting.

4.5 It shall be possible to mount the fan on a vertical plane or in an inverted position and the fan shall be capable of working efficiently in any position of mounting.

4.6 Foundation details as specified by the user.

5. TECHNICAL REQUIREMENTS

5.1 **Motor**

5.1.1 The motor shall be provided with insulation not inferior to class 'B'.

5.1.2 The enclosure of motor shall conform to IP 54 degree of protection according to IS:4691-1985 and IC 0141 cooling designation according to IS:6362-1971. The yoke and the poles shall be composed of stampings

conforming to clause 6.2 of IS:555-1979 and not of cast iron construction. The laminations shall be true in regard to dimensions and provide equal gaps between the pole faces and the armature.

5.1.3 The motor shall be of sturdy construction and the armature and field winding shall be unaffected by vibrations and jerks normally encountered on EOT cranes.

5.1.4 The armature shall be mounted on sealed antifriction bearings of size 10 x 30 x 9 (SKF Brg No 6200 ZZ, NBC Brg No 110 ZZ or equivalent) packed with lithium base grease (for details of grease refer IPSS:1-09-006-86).

5.1.5 The armature coils shall be placed in slots of the armature such that there is no relative play. The coils and the overhang portions shall be securely fixed. Field coils shall be securely fixed to the pole pieces to prevent relative movement.

5.1.6 The armature coils and the field windings shall be of Copper. The carbon brush holders shall be fixed in such a way that they can be easily changed, if necessary, without dismantling any part.

5.1.7 The carbon brushes shall preferably be of EGO grade of MCC or equivalent; and shall be capable of carrying the rated current without getting heated. The carbon brush spring shall be of phosphor bronze. The spring shall be so secured with the caps that they do not fly off when the caps are removed for maintenance purposes. The complete carbon brush and spring assemblies shall be fixed in the brush holders and secured by insulated caps with knurled surfaces suitably screwed on the brush holders. The brush holders shall be covered by sheet metal secured by screws.

5.1.8 The maximum allowable voltage between any two adjacent commutator segments shall be limited to 14 V.

5.2 Blades - The fan shall be fitted with four well balanced blades made from mild steel sheet of thickness not less than 0.9 mm. The blades shall conform to clause 7.3 of IS:6680-1972 and shall be securely fixed so that they do not get loose in operation and vibration normally encountered in an EOT crane. The blade carrier shall have a provision to lock it on the motor shaft extension.

5.3 Guard

5.3.1 The fan guard shall conform to clause 7.7 and 7.7.1 of IS:6680-1972.

5.3.2 A knob shall be provided at the centre of the guard for the purpose of tilting the fan.

5.4 Base - The base shall be even and large enough so that the fan does not topple in any position of the tilt and with the fan running.

5.5 Resilient Pad - For damping the vibration normally encountered on EOT cranes, a resilient pad of at least 12 mm thickness shall be secured firmly to the bottom of the base by a suitable adhesive with holes drilled to accommodate bolts of the required size.

5.6 Noise Level - When measured at a distance of one metre from the plane of the blades along the axis, the noise level of the sound coming from the fan shall not exceed 50 dB at a reference of 20 micro-pascal.

6. MARKING

Each fan shall be provided with a name plate indelibly marked with the following information:

a) Manufacturer's name, trade-mark (if any),
b) Type designation or serial number,
c) Voltage range: 250 V dc ± 10%
d) Input in Watts,
e) Size of fan: 400 mm,
f) Class of insulation, and
g) Details of bearing.

7. PACKING

The assembled fan shall be packed in strong wooden case in accordance with IS:8354-1977. Paste board fillers shall be provided to prevent damage during transit.

8. SPARES

The manufacturer shall supply full information of the recommended spares.

9. TESTS

9.1 Type Tests - The following type tests shall be conducted:

a) Air delivery tests (clause 18.2 of IS:6680-1972), and
b) Temperature rise test (clause 15.3 of IS:555-1979 except that the temperature rise test for insulated winding of the motor shall be suitable for class B insulation, the other values remaining the same).

9.2 Routine Tests - The following routine tests shall be conducted:

a) Flash test (clause 15.13 of IS:555-1979),
b) Insulation resistance test (clause 15.14 of IS:555-1979), and
c) Running test to determine that the fan is in working order.

1:3:7