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KARANDIKAR LABORATORIES PVT. LTD. BOISAR

Format: F#07 b.1 Rev 10

TYPE TEST REPORT

IS/IEC 60529:2001(RA 2019)

Degrees of Protection Provided by Enclosures (IP Code)

TC-4110

Report No. ..... **: KLPL/BTG/23/11-33**

ULR No. .....: TC631123000000285F

Discipline .....: Electrical Discipline

Group/Category .....: Environmental Test Facility

Sub-category .....: Ingress protection test

Date of issue..... **: 25.12.2023**

No. of pages ..... **:** 06 PAGES + Annexure

Compiled by (+ signature)..... : Bhavesh Rawate

Designation: Testing Engineer

Approved by (+ signature)..... : Javed Shaikh

Designation: Dy.Laboratory Manager

Item Received On ..... : 26.11.2023 in Good Condition

Test Completion Date ..... : 29.11.2023

Client

Name ..... : **M/s. Duncan Engineering Limited.**

: F-33, Ranjangaon MIDC, Karagaon, Taluka Shirur, Dist Pune - 412220, Maharashtra.

Test Specification

Standard ..... **: IS/IEC 60529:2001(RA 2019)**

Specified IP-Code .....: **IP67**

Equipment Under Test

Type of Test Object .....: **EXPLOSION PROOF TERMINAL BOX ASSEMBLY**

Model No. ..... : E50N

Sr. No..... : -----

Manufacturer .....: **M/s. Duncan Engineering Limited.**

Annexure :

Drawing No..... : DS114EX018, Rev No.02, Dated:21.11.2023 (Page01)

KARANDIKAR LABORATORIES PVT. LTD. BOISAR 401501.

NOTE : 1) This refers only to the particular item(s) submitted for testing.

2) If necessary, this report shall be reproduced ONLY in full.

Possible test case verdicts:

Test case does not apply to the test object ..... : N (Not Applicable)

Test object does meet the requirement..... : P (Pass)

Test item does not meet the requirement ..... : F (Fail)

Test case has not been checked ..... : _____

General remarks:

"(See remark #)" refers to a remark appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This test report shall not be reproduced except in full without the written approval of the testing Laboratory.

IP6X test conducted at Laboratory (Boisar).

IPX7 test conducted at Laboratory (Boisar).

Note: - MAJOR EQUIPMENTS USED

Tests	Required Instruments	Id. No.	Cal Due Date	Used Y/N
5X / 6X	Vacuum Meter	K&A 1108/1-17	31.01.2024	Y
	Rotameter	K&A 426	05.01.2024	Y
	Timer	K&A 047/2	05.01.2024	Y
	DTC with sensor	K&A 047/1	01.01.2024	Y
X7 /X8	Scale	K&A 430-13	17.03.2024	Y
	Stop watch	K&A 1127-18	11.02.2024	Y

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IS/IEC 60529:2001(RA 2019)

Clause	Requirement - Test	Result- Remark	Verdict
10	**Marking.**	--	N
11	**General requirement for tests.**		
11.1	Tests should be carried out under the standard atmospheric conditions described in IEC 60068-1	Followed	**P**
11.2	Test samples shall be in a clean and new condition.	Sample found clean	**P**
	The relevant product standard shall specify details such as: The number of samples to be tested;	One	N
	-conditions for mounting, assembling and positioning of the samples;	Vertical	**P**
	-the pre-conditioning, if any, which is to be used;	--	N
	-whether to be tested energized or not;	--	N
	-whether to be tested with its parts in motion or not;	Non-Operational	N
11.5	**Empty enclosures**		
	If the enclosure is tested without equipment inside, the manufacturer shall ensure that after the electrical equipment is enclosed the enclosure meets the declared degree of Protection of the final product.	--	N

12	**Tests for protection against access to hazardous parts indicated by the first characteristic numeral.**				
First, characteristic Numeral.	Test means (Access probes)	Test force	Test Conditions Refer IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	-	-	--	N
1	The access probe, sphere of 50 mm Ø shall not fully penetrate and adequate clearance shall be kept.	50N ±10%	Cl.12.2	--	N
2	The jointed test finger may penetrate up to 80 mm length but adequate clearance shall be kept.	30N ±10%	Cl.12.2	--	N
3	The access probe, sphere of 2.5 mm Ø shall not penetrate and adequate clearance shall be kept.	3N± 10%	Cl.12.2	--	N
4	The access probe of 1,0 mm Ø shall not penetrate and adequate clearance shall be kept.	1N± 10%	Cl.12.2	--	N
5	Test conditions for IP 5X: Same As Above	1N± 10%	Cl.12.2	--	N
6	Test conditions for IP 6X: Same As Above	1N± 10%	Cl.12.2	--	N

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IS/IEC 60529:2001(RA 2019)

Clause	Requirement – Test	Result-Remark	Verdict

13	**Tests for protection against solid foreign objects indicated by the First characteristic numeral.**				
First, characteristic Numeral.	Test means (object probes and dust chamber)	Test force	Test Conditions Refer IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	-	-	--	N
1	Rigid sphere without handle or guard 50 mm diameter.	50N ±10%	Cl.13.2	--	N
2	Rigid sphere without or guard 12, 5 mm diameter.	30N ±10%	Cl.13.2	--	N
3	Rigid steel rod 2,5mm diameter with edges free from burrs	3N± 10%	Cl.13.2	--	N
4	Rigid steel wire 1, mm diameter with edges free from burrs.	1N± 10%	Cl.13.2	--	N
5	Dust chamber, with under pressure	NA	Cl.13.4+13.5	--	N
6	Dust chamber, The enclosure is maintained below the Surrounding atmospheric pressure by a vacuum pump.	NA	Cl.13.4+13.6	For 8 Hrs, As extraction rate is less than 40 volumes per hour and max depression of 20 mbar.	**P**
13.6.2	**Acceptance conditions for the first characteristic numeral 6X.** The protection is satisfactory if no hazardous deposit of dust is observable inside the UUT at the end of test.			No ingress of powder found inside the UUT.	**P**

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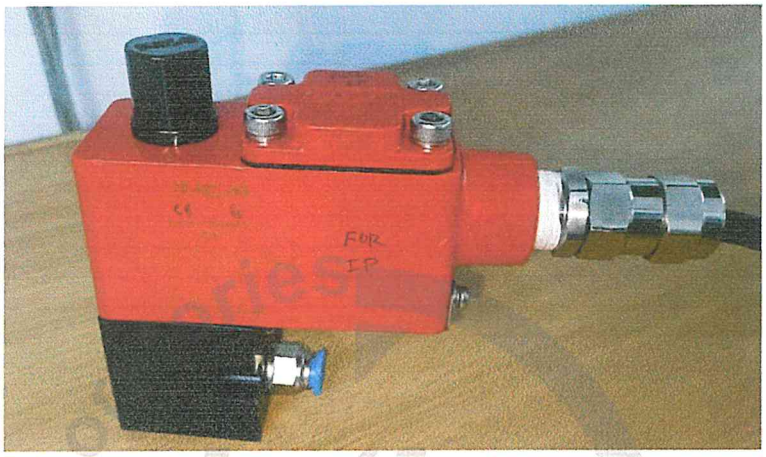
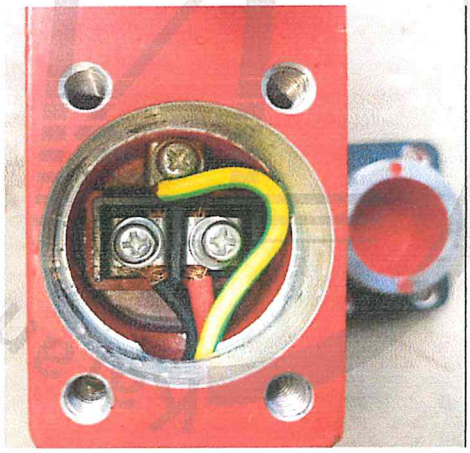
IS/IEC 60529:2001(RA 2019)				
Clause	**Requirement – Test**		**Result-Remark**	**Verdict**
14	**Tests for protection against water indicated by the second characteristic numeral.**			
Second, characteristic Numeral.	Test means	Test Conditions Refer IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	Cl.14.2.0	--	N
1	Drip box, Enclosure on turntable	Cl.14.2.1	--	N
2	Drip box, Enclosure in 4 fixed positions of 15 ° tilt	Cl.14.2.2	--	N
3	oscillating tube or spray nozzle, 60° from vertical	Cl.14.2.3	--	N
4	oscillating tube or spray nozzle, 180° from vertical	Cl.14.2.4	--	N
5	6.3-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 12.5 l/min	Cl.14.2.5	--	N
6	12.5-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 100 l/min	Cl.14.2.6	--	N
7	Immersion tank, Temporary immersion in water in service position, Water temperature does not differ from that of equipment by more than 5K. **Test Duration:** 30 minutes.	Cl.14.2.7	The lowest point of UUT with height less than 850mm is located 1000mm below surface of UUT.	**P**
8	Immersion tank, Continuous immersion subject to agreement. Water temperature does not differ from that of equipment by more than 5K. **Test Duration:** --	Cl.14.2.8	--	N
-	**Acceptance conditions for IPX7:** The protection is satisfactory if no water has accumulated near the insulation, cable end or entered cables or interferes with the correct operation of the equipment.	Cl.14.3	No ingress of water observed inside the UUT.	**P**
-	Tests for protection against access to hazardous parts indicated by the additional letter.	Cl.15	--	N

SUMMARY OF INGRESS PROTECTION TESTS ACCORDING TO IS/IEC 60529:2001(RA 2019)
Conclusion of the IP67 test: PASS.
The results of the tests were in compliance with the requirements in the standard IS/IEC 60529:2001(RA 2019)
UUT=Unit Under Test



Picture1: EXPLOSION PROOF TERMINAL BOX ASSEMBLY.



Picture2: No ingress of powder & water observed.

END OF REPORT

BOISAR 401501. KARANDIKAR LABORATORIES PVT. LTD.

DO NOT SCALE THE DRAWING | IF IN DOUBT PLEASE ASK | ALL DIMENSIONS ARE IN MM; UNLESS OTHERWISE SPECIFIED

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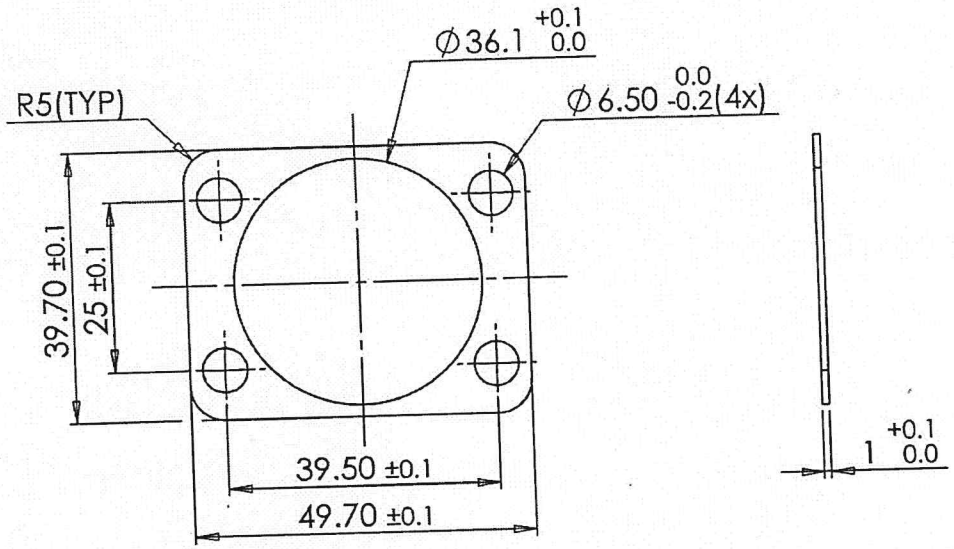

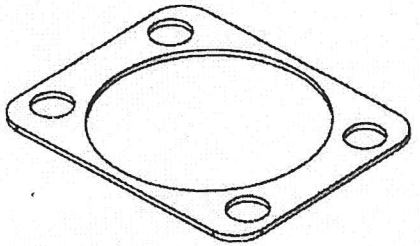

Duncan Engineering Ltd. Pune Ranjangaon

1 2

ITEM CODE	MATARIAL	TEMPERATURE	HARDNESS	WEIGHT IN, gms
DS114EX018	LOW TEMPERATURE NBR	-40°C TO 100°C	75-80	1.0 gms

KARANDIKAR LABORATORIES PVT. LTD. BOISAR 401501.

SR	REVISION	DATE	SIGN
02	DS114EX019 REMOVED	21/11/23	KPP
01	TEMPRATURE CHANGE 100°C WAS 90°C	09/11/23	KPP
00	RELEASED	06/10/23	KPP

Unspecified machining Deviations

Linear Dimensions

Above	Upto	Deviation
0.5	6	±0.1
6	30	±0.2
30	120	±0.3
120	315	±0.5
315	1000	±0.8
1000	2000	±1.2

Angular Dimensions

Length of Shorter side Of Angle		Deviation in mm	Deviation in Deg. Or Minutes
--	10	±0.1	±0.1°
10	50	±0.2	±30'
50	120	±0.6	±20'
120	--	±0.8	±10'

DUNCAN ENGINEERING LIMITED

F-33, RANJANGAON MIDC, PUNE-412 209

TITLE: FLAT GASKET, W50N AND E50N ENCLOSURE

MATERIAL	SEE ITEM TABLE	DRAWN	KPP		06-10-2023
FINISH	SEE ITEM TABLE	CHECKED	YRW		06-10-2023
WEIGHT	SEE ITEM TABLE	APPROVED	AAK		06-10-2023
SCALE	1:1	ITEM CODE	DS114EX018		
PROJECTION		DWG NO.	DS114EX018		REV 02
		A4			

SHEET 1 OF 1

Annexure

Report No: KLPL/BTG/23/11-33