

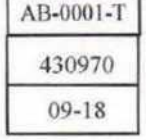


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INSPECTION AND TEST

REPORT

Customer

(Name, Address, City etc.)

ELEKTRAL ELEKTROMEKANİK SAN TİC .ŞTİ.

(Atatürk Organize Sanayi Bölgesi M.K. Atatürk Blv. 23

Çiğli-İzmir, Turkey

Order Date/No:

14.08.2018/223413

Sample Description

(No, Type, Brand, Style, Model etc.)

425048.DOOR TYPE METAL DETECTOR, THRUSCAN

Date of Test

14/08/2018

Test Item Receipt Date

14.08.2018- 19.09.2018

Applied Standard Method

TS 3033 EN 60529 :1997-03 Protection Level with Covers

(IP Code) (On Electrical Hardware)

+ TS 3033 EN 60529/T1 :1997-12

Number of pages of the report

21

Remarks

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Önder Volkan BALCI
Kıdemli Tekniker

Tacettin AKGÜN

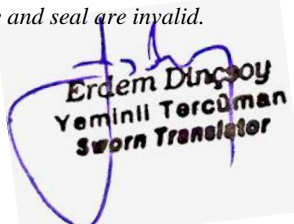
Technical Chief

(Deputy)

Şahap Gürler PAŞA

Laboratory Director

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TEST RESULTS

TEST REPORT
IEC 60529 / EN 60529
SAFETY LEVEL WITH COVERS (IP CODE)

Report No	430970
Test conductor (name + signature)	Ö.VOLKAN BALCI
Witness (name + signature)	TACETTİN AKGÜN
Auditor (name + signature)	TACETTİN AKGÜN
Publication date	19.09.2018
Experiment Laboratory Address	TSE EX LABORATORY TECHNICAL CHIEF 8780/1 Sokak No:5 Çiğli / İZMİR
Experiment place/procedure	8780 /1 Sokak No:5 Çiğli / İZMİR
Customer	ELEKTRAL ELEKTROMEKANİK SAN.VE TİC.A.Ş.
Address	A.O.S.B. M.Kemal Atatürk Blv. 23-25 Çiğli İzmir, Turkey
Experiment specifications Standard	IEC 60529: 1989-11 + A1:1999 EN 60529 :1991-10 (incl. Corrigendum: 1993-05) + A1: 2000-02
Experiment procedure	CB Scheme
Non-standard experiment methods	-
Experiment report form no.	IECEN60529A
TRF Originator	IMQ
sample TRF	Dated 2006-06

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Based on IECEE 02, this report cannot be used as CB test report unless signed and approved by accredited. CB test laboratory and has a document attachment published by national certification board

Experiment Sample Definition	WALK THROUGH METAL DETECTOR
Brand	Elektral
Producer	ELEKTRAL ELEKTROMEKANİK SAN.VE TİC.A.Ş.
Model/type reference	ThruScan
Model/type reference	220V


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TEST RESULTS

Copy of marking plate

Test summary:

Sample meets IP 65 protection requirements.

Test sample properties

Facility and usage class: Stationary

Cable connection: —

Showing test results:

This test cannot be applied to this sample -(NON-APPLICABLE)-

Test result appropriate..... P(PASSED)

Test result inappropriate..... F(FAILED)

Test

Sample received on 13/09/2018

Test evaluation dates 19/09/2018

General Explanations:

This report is only valid for tested sample.

This report cannot be partially copied without approve of TSE.

“Refer to explanation” statement refers to explanation presented in attachment section of this report.

“Refer to attached table” statement refers to table presented in attachment section of this report.

In this report, decimals are represented with comma.

General information/additional information about product:




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TEST RESULTS

5	PROTECTION LEVELS REPRESENTED WITH FIRST CHARACTERISTIC NUMBER AGAINST MELTING IN DANGEROUS COMPARTMENTS AND AGAINST FOREIGN SOLID		—
5	Representation with first characteristic number reflects that conditions in both Article 5.1 and Article 5.2 are met.		
	First characteristic number has following meanings:		
	Cover provides protection by preventing entry of certain part of human body or an object held by an individual or limiting access to dangerous sections,		
	Cover provides protection by preventing entry of certain part of human body or an object held by an individual or limiting access to dangerous sections,		
	Additionally, cover should be represented only with first characteristic number with declared protection level if this cover is suitable for all low level protection.		
	Additionally, it is not mandatory for these tests to openly meet when one of the low level protection compliance tests are applied.		
5.1	Protection Against Access to Dangerous Sections		
	Table 1 presents short definitions and explanations of protection levels against access to dangerous sections.		
	Protection levels listed in this table should be represented without reference to special definition or explanation and with first characteristic number.		
	To provide compliance with first characteristic number conditions, adequate insulation gap between access prob and dangerous sections should be kept.		
	Tests are given in Article 12.		
	Table-1 Protection Levels Represented By First Characteristic Number Against Access To Dangerous Sections		
	<i>First characteristic number</i>	<i>Test conditions (Article)</i>	
	0	—	
	1	12.2	
	2	12.2	
	3	12.2	


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TEST RESULTS

IEC/EN 60529				
Article	Requirement-Test		Results	Decision
4		12.2		
5		12.2		
6		12.2		
	When first characteristic numbers are 3, 4, 5, and 6, if adequate gaps are preserved, necessary protection against accessing dangerous sections is provided. Adequate insulation gap is determined by related technical committee based on Article 12.3		(EN 60529/A1)	
	Due to same rule given in Table-2, "non-entrance" description is given in Table 1.		(EN 60529/A1)	
5.2	Protection Against Foreign Solid Objects			
	Table 2 presents short definitions and explanations of protection levels against foreign objects including dust.			
	Protection levels listed in this Table 2 should be represented without reference to special definition or explanation and with first characteristic number.			
	Until number 2 in Table 2, protection against foreign solid objects means preventing object probe to completely enter to cover. This means that complete diameter of sphere should not pass from a hole in the cover.			
	For number 3 and 4, object probe should not enter to cover under no condition.			
	Dust protection covers with number 5 permits certain level of dust under certain conditions.			
	Dust-proof covers with number 6 prevents all type of dust entry.			
	NOTE - Generally, covers with first characteristic number assigned between 1-4 can keep both regular and irregular foreign solid objects outside if appropriate shape in 3rd column of Table 2 is exceeded by three perpendicular dimensions of the object.			
	Tests are given in Article 13.			
	Table 2 Protection Levels Represented By First Characteristic Number Against Access To Foreign Solid Objects			
	<i>First characteristic number</i>	<i>Test conditions (Article)</i>		
	0	—		
	1	13.2		
	2	13.2		



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TEST RESULTS

IEC/EN 60529				
Article	Requirement-Test		Results	Decision
	3	13.2		
	4	13.2		
	5	13.4 13.5		
	6	13.4 13.6	(EN 60529/A1)	
6	PROTECTION LEVEL SHOWED WITH SECOND CHARACTERISTIC NUMBER AGAINST WATER INPUT			
	Second characteristic number shows the protection level provided by covers on the equipment against damages caused by water input.			
	Test for second characteristic number are made with fresh water. If high pressure cleaning processes and/or solvents are used, real protection may not be adequate.			
	Table 3 shows summary and descriptions for protection level indicated by second characteristic number.			
	Protection levels listed in this Table 3 should be represented without reference to special definition or explanation and with second characteristic number.			
	Tests are given in Article 14.			
	Second characteristic number of 6, including 6, reflects compliance with all rules.			
	Additionally, it is not mandatory for these tests to openly meet when one of the lower level protection compliance tests are applied.			
	A cover only with second characteristic number of 7 and 8 indicates that this cover can be subjected to flushes (5 or 6 as second characteristic number) and unless there is binary coding as given below, there is no need for compliance with rules for number 5 or 6.			
	For "multi-directional" application indicated on the last column, flush and transient or permanent sinking of covers should meet both exposure conditions.			
	For "restricted" application indicated on the last column, it is accepted that used cover is only suitable for transient or permanent sinking and unsuitable for flushes.			



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TEST RESULTS

<i>Table3</i> Protection Level Showed With Second Characteristic Number Against Water			
	<i>Second characteristic number</i>	<i>Test conditions (Article)</i>	
	0	-	
	1	14.2.1	
	2	14.2.2	
	3	14.2.3	
	4	14.2.4	
	5	14.2.5	
	6	14.2.6	
	7	14.2.7	
	8	14.2.8	
7	PROTECTION LEVELS REPRESENTED BY ADDITIONAL LETTERS AGAINST ACCESS TO DANGEROUS SECTIONS		
	Additional letter shows protection level against accessing to dangerous sections.		
	Additional letters are only used for following purposes:		
	If real protection level against access of dangerous section is higher than value indicated in first characteristic number,		
	Or if protection level against access of dangerous section is separately indicated, by writing X letter instead of first characteristic number,		
	for example, such higher protection level can be obtained for obstacles, appropriately shaped holes or distances inside covers.		
	Table 4 described protection level indicated with additional letters regarding access to regular access probe represented by objects hold by individuals or human organs as well as dangerous sections.		
	Additionally, cover should be represented only with first characteristic number with declared protection level if this cover is suitable for all low level protection.		
	Additionally, it is not mandatory for these tests to openly meet when one of the low level protection compliance tests are applied.		
	Tests are given in Article 15.		



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TEST RESULTS

IEC/EN 60529				
Article	Requirement-Test		Results	Decision
	Refer to Appendix A for IP Coding examples.			
	Table 4			
	Protection Levels Represented By Additional			
	<i>Additional Letter</i>	<i>Test conditions (Article)</i>		
	A	15.2		
	B	15.2		
	C	15.2		
	D	15.2		
8	COMPLIMENTAR Y LETTERS			
	In related product standards, complementary information can be indicated with second characteristic number or a complementary			
	In such exceptions, this must comply with basic safety standard rules and product standard should be clearly declared in additional operation for testing this type of classification.			
	Below, meanin			
	<i>Letter</i>	<i>Meaning</i>		
	H	<i>High voltage tool</i>		
	M	<i>When mobile sections of the hardware (for example rotor of a rotating machinery) is moving. test for damaging effects of water input.</i>		
	S	<i>When mobile sections of the hardware (for example rotor of a rotating machinery) is stationary test for damaging effects of water</i>		
	w	<i>Compliant for determined weather conditions and additional protective properties or processes are</i>		
	Other letters can be used in product standards.			
	Having S and M letters indicates whether protection level is connected with mobility of hardware sections.			
	This operation may require tests to be made under two conditions.			
	However, when test is applied under other conditions, with the condition for offset, generally determining compliance with one of these conditions is sufficient.			

EXAMPLES FOR IP PROTOCOLE REPRESENTATION

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TEST RESULTS

IEC/EN 60529			
Article	Requirement-Test	Results	Decision
10	MARKING		
	Product standards regarding marking rules should be signified.		
	Where appropriate, marking methods used in these types of standards should be additionally stated.		
	When one section of the cover has different protection level that other section of the same cover,		
	When mounting position has an effect on protection level,		
	When maximum dipping depth and duration are indicated.		

11	GENERAL CONDITIONS FOR TESTS		
11.1	Atmospheric Conditions for Water or Dust Tests		
	Unless stated otherwise in related product standard, tests are applied under standard atmospheric conditions indicated in IEC 68-1.		
	Atmospheric pressure conditions recommended during test are given below:		—
	Temperature range: 15 to 35 °C Relative humidity 25 to 75% Air pressure: 86 to 106 kPa (860 to 1060 mbar)	Ambient temperature: 25°C Relative Humidity: % 55 RH Air pressure :1000mbar	P
	Tests given in these standards are type experiments.		-
	Unless otherwise stated in related product standards, test samples for each test should be mounted as declared by manufacturer and all sections should be clear and new.	Mounted new products	P
	If it is practically impossible to test the entire equipment, samples sizes or smaller equipment with exact full-scale design should be tested.	Real-size product	P
	Related product standard should provide following details:		
	Number of tested samples;		
	Artificial surface (ceiling, flooring, or wall) to mount, install, and position samples;		
	If exist, pre-conditioning;		
	Energized or non-energized test status.		

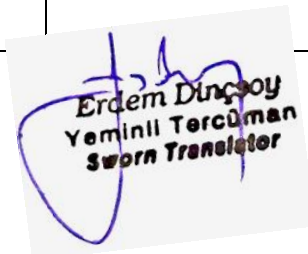
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TEST RESULTS

IEC/EN 60529			
Article	Requirement-Test	Results	Decision
	Regardless of mobility, these details should be provided as all parts will be tested		
	If some of these conditions are present, instruction of manufacturer should be		
11.3	Application of Experiment Rules and Evaluation of Experiment Results		
	Application of general rules during tests and acceptance level for hardware containing discharge holes or ventilation grills are under the responsibility of technical committee.		
	If some of these conditions are missing, standard rules should be followed.		
	Evaluation of test results is under the responsibility of technical committee. If conditions are not present, at least accepted conditions of this standard must be applied.		
11.4	Test Condition Combination for First Characteristic Number		
	Representation with first characteristic number stated that all test conditions are met for this number:		
	Table5 Test Conditions for Protection Levels Indicated with First Characteristic Number		
	<i>First characteristic number</i>	<i>Protection test</i>	
		<i>Against Access to Dangerous Sections</i>	<i>Against Foreign Solid Objects</i>
	0	No need for test	No need for test
	1	Sphere with 50 mm diameter should not completely fit and sufficient gap must be preserved.	
	2	Jointed test rod can enter until 80 mm of length; however, sufficient gap must be preserved.	Sphere with 12.5 mm diameters should not completely fit.
	3	Test rod with 2.5 mm diameter should not completely fit and sufficient gap must be preserved.	
	4	Test wire with 1.0 mm diameter should not completely fit and sufficient gap must be preserved.	
	5	Test wire with 1.0 mm diameter should not completely fit and sufficient gap must be preserved.	As given in Table 2, protection against dust must be preserved.
	6	Test wire with 1.0 mm diameter should not completely fit and sufficient gap must be preserved.	As given in Table 2, protection against dust must be preserved.
11.5	Empty Covers		
	If the cover is tested without any hardware inside, detailed rules regarding dangerous sections that can be effected from foreign objects or water should be provided in the instruction by cover manufacturer.		


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TEST RESULTS

IEC/EN 60529			
Article	Requirement-Test	Results	Decision
12	PROTECTION LEVELS REPRESENTED BY FIRST CHARACTERISTIC NUMBER AGAINST ACCESS TO DANGEROUS SECTIONS		
12.1	Access Probe		
	Access probe for protection test to access dangerous sections by individuals is given in Table 6.		
12.2	Test Conditions		
	Access probe is pressed against covers with the force indicated in Table 6 or (in case of test condition for first characteristic number 2), pushed inside the cover from any hole on the cover.	<i>Test wire with diameter more than 1.0 mm was not fit in the cover.</i>	P
	In low voltage hardware test, low voltage power source prob (higher than 40 V and lower than 50 v) should be connected in series with a proper lamp between dangerous sections inside the cover. Dangerous voltage areas only protected with varnish or paint or oxidisation or any similar operation are wrapped to sections under normal voltage during operation with an electrically connected thing metal sheet.		P
	Signal circuit method must be applied to dangerous sections where high voltage hardware moves.		-
	Mobile internal sections can be operated at lowest speed possible.		-
12.3	Accepted Conditions		
	If sufficient gap is preserved between access probe and dangerous sections, protection is at desired level.	Ref. Article 12.2	P
	In the test with first characteristic number of 1, access prob with 50 mm diameter should not completely pass from the hole.		
	In the test with first characteristic number of 2, 80 mm length of jointed test rod can be inside the section, however, retainage surface (diameter 50 mm x 20 mm) should not pass from the hole. Starting from straight position, both joints of test rod should be bent with 90° angle for adjacent rod section respectively and must be positioned to all possible locations.		
	Refer to Appendix A for detailed information. Sufficient gap order		

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TEST RESULTS

IEC/EN 60529					
Article	Requirement-Test		Results		Decision
12.3.1	For Low Voltage Hardware (rated voltage below 1000 V AC and 1500 V DC)				
	Access probe must not contact with dangerous voltage sections.		Ref. Article 12.2		P
	If the sufficient gap between probe and dangerous sections are confirmed with signal circuit, the lamp should not turn on.		Ref. Article 12.2		P
12.3.2	For High Voltage Hardware (rated voltage above 1000 V AC and 1500 V DC)				
	When access probe is positioned to unsuitable locations, hardware should resist to all applicable dielectric test as stated in related product standard.		Not high voltage hardware		
	Visual inspection can be conducted on determined weather conditions of test on dielectric test or the most unsuitable electric field structure when there is compliance with this rule (IEC 71-2).		Ref. Article 12.2		
	If a cover has different voltage levels, appropriate accepted conditions should be applied for sufficient insulation gap of each section.		Ref. Article 12.2		
12.3.3	For Hardware in Dangerous Mechanical Sections				
	Access probe must not contact with dangerous mechanical sections.		There is no dangerous mechanical section		-
	If the sufficient insulation gap between probe and dangerous sections are confirmed with signal circuit, the lamp should not turn on.		There is no dangerous mechanical section		
13	PROTECTION LEVELS REPRESENTED BY FIRST CHARACTERISTIC NUMBER AGAINST ACCESS TO FOREIGN SOLID OBJECTS				
13.1	Test Setup				
	Test setup and basic test conditions are given in Table 7.				
	Table 7 Test Setup for Protection Tests Against Foreign Solid Objects				
	<i>First characteristic number</i>	<i>Test Setup</i>	<i>Test Setup</i>	<i>Test Setup</i>	
	0	No need for test	—	—	
	1	50 mm diameter, handle-free or unprotected rigid sphere	50 N ±10%	13.2	
	2	12.5 mm diameter, handle-free or unprotected rigid sphere	30N ±10%	13.2	
	3	Smooth edged, 2.5 mm diameter rigid steel rod	3 N ±10%	13.2	
	4	Smooth edged, 1 mm diameter rigid steel wire	1 N ±10%	13.2	

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TEST RESULTS

IEC/EN 60529					
Article	Requirement-Test		Results		Decision
	5	Dust cell Figure 2, under pressure or under pressure	—	13.4 and 13.5	
	6	Dust cell Figure 2, under pressure	—	13.4 and 13.6	
13.2	Test Conditions for First Characteristic Number 1, 2, 3, 4				
	Object probe is pressed to all holes on cover with the force indicated on Table 7.		IP6X		-
13.3	Acceptance Conditions for First Characteristic Number 1.2, 3.4, 3, 4				
	If complete diameter of the prob stated in Table 4 cannot fit any holes, the protection level is sufficient.		(EN 60529/A1)		-
13.4	Dust Test for First Characteristic Number 5 and 6				
	This test is conducted by using changeable dust cell with main principle given in Figure 2 that has changeable dust circulation pump that holds talc inside a closed test cell. Talc in this test must pass from strainer braided in square shape with nominal width of 75 µm between wires and nominal wire diameter of 50 µm. Talc that should be used in test cell is 2 kg per cubic meter. Talc should not be used in		(EN 60529/A1)		P
	Cover should be in one of the two categories stated below:				
	Category 1: Covers in normal cycle of hardware for example that decrease surrounding air pressure inside the cover due to thermal cycle effects				P
	Category 2: Covers that has no pressure difference due to surrounding air				-
	Category 1 covers:				
	Cover that has been tested is positioned inside experiment cell and pressure inside the cover is kept below surrounding atmospheric pressure with a vacuum pump.				P
	Suction connection should be applied to a special hole provided for this experiment.		Vacuum is applied inside 10mm diameter hole.		P
	Unless otherwise stated in related product standard, this hole should be around easily accessible sections.				P
	If opening a special holes is impractical, suction connection should be applied to cable input hole.				-





TEST RESULTS

IEC/EN 60529			
Article	Requirement-Test	Results	Decision
	If there are other holes (for example, multiple cable input holes or discharge holes), these holes should be processed for normal usage area.		-
	The purpose of this test is to draw x80 air volume of sample cover volume inside the cover with pressure without exceeding 60 volume discharge speed per hour.	Volume is approximately 20litres	P
	In any case, pressure on manometer given in Figure 2 should exceed 2 kPa (20 mbar).	Maximum pressure 20mbar	P
	If discharge speed of 40-60 volume per hour is achieved, test duration must be 2 hours.		-
	Test is applied until 80 volume air is pulled, or 8 hours has passed if discharge speed in less than 40 volume per hour with maximum 2 kPa (20 mbar) pressure,		—
		Vacuum is applied for 8 hours.	P
	Category 2 covers:		—
	Tested cover is places inside a normally operating experiment cell without being connected to vacuum pump.		-
	Any normally open discharge holes should not be open during test period.		
	Test should be applied for 8 hours.		
	Category 1 and Category 2 covers:		—
	If it is impractical to test complete cover inside the test cell, one of the following steps should be applied:		
	Testing closed sections of the cover separately;		
	Sample sections of covers with doors, ventilation vents, joints, shaft gaskets should be tested according to position in test sequence;	Real sized sample	-
	Testing relatively smaller cover with full-scale real design details.	Real sized sample	-
	In the last two states, air volume pulls inside the tested cover should be the same for all full-scale cover.		-
13.5	Special Conditions for First Characteristic Number 5		
13.5.1	Test Conditions for First Characteristic Number 5		
	For related product standard, unless category of the cover is not stated as 2, cover category is accepted as 1.		
13.5.2	Acceptance Conditions for First Characteristic Number 5		



TEST RESULTS

IEC/EN 60529						
Article	Requirement-Test			Results	Decision	
	After visual test, if any type of dust, talc are not accumulated to prevent fault-free operation of hardware or positioned to prevent hardware operation, protection is at desired level.					
	Unless there is special cases explicitly stated in related product standards, there should be no dust accumulation across surface leakage path that may cause any leakage.					
13.6	Special Conditions for First Characteristic Number 6					
13.6.1	Test Conditions for First Characteristic Number 6					
	Whether the pressure is under or above atmospheric pressure, cover category should be accepted 1.				P	
13.6.2	Acceptance Conditions for First Characteristic Number 6					
	If there no dust accumulation is observed inside the cover, protection is at desired			It was observed that there was no dust inside the cover.	P	
14	PROTECTION LEVEL SHOWED WITH SECOND CHARACTERISTIC NUMBER AGAINST WATER					
14.1	Test Setup					—
	Test setup and basic test conditions are given in Table 8.					
	<i>Table 8</i> Test Setup and Basic Test Conditions for Protection Tests Against Water					
	Second Characteristic number	Test Setup	Water flow speed	Test duration	Test conditions	
	0	No need for test	—	—	—	
	1	Dripping box Figure 3 Cover on rotating table	1 mm/min	10 min	14.2.1	-
	2	Dripping box Figure 3 4 position cover fixed with 15°	3 mm/min	2.5 min for each position of angle	14.2.2	-
	3	Oscillating tube Figure 4 maximum 200 mm away ±60° vertical spraying or spray nozzle Figure 5 ±60° vertical spray	Hole number x, 07 liter/min per hole ± 5% 10 litre/minute ±5;	10 min 1 min/m ² At least 5 min	14.2.3 a) 14.2.3 b)	





TEST RESULTS

	4	As in number 3 $\pm 180^\circ$ vertical spray	As in number 3		14.2.4	-	
	5	Hydro blasting hose nozzle Figure 6 Length 2,5 m - 3 m Nozzle diameter 6.3 mm	12.5 liter/minute $\pm 5\%$;	1 min/m ² At least 3 min	14.2.5	P	
	6	Hydro blasting hose nozzle Hydro blasting hose nozzle Length 2,5 m - 3 m nozzle diameter 12,5 mm	100 liter/minute $\pm 5\%$;	1 min/m ² At least 3 min	14.2.6		
	7	Dip tank Water level on cover: 0.15 m from top to up 1 m from bottom to top		30 min	14.2.7		
	8	Dip tank Water level: with agreement	—	with agreement	14.2.8	-	
14.2	Test Conditions						
	Test setup and basic test conditions are given in Table 8.						
	For second characteristic numbers 5/6 (hydro blasting) and 7/8 (dipping), details about compliance with protection levels are given in Article 6.						
	Test should be conducted with fresh water.						P
	During tests in IPX1 - IPX6, temperature difference between water and sample should not exceed 5 K.						
	If temperature difference between water and sample is below 5 K, cover pressure balance should be provided. Water temperature details for IPX7 are given in Article 14.2.7.						
	Water temperature details for IPX7 are given in Article 14.2.7.						
	During test, humidity inside the cover can partially condense. Such accumulated dew should not be considered as water.						
	According to these tests, cover surface area is calculated with 10% tolerance.						
	When hardware is energised and tested, adequate safety precautions should be taken.						
14.2.1	Test with Dripping Box for Second Characteristic Number 1						
	Test is applied to provide homogenous flow for water drops on all cover surfaces.						-
	Rotating table places on the cover has 1 rpm speed and radial runout (distance between rotating table and sample axis) is approximately 100 mm.						



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TEST RESULTS

	Tested cover is placed to normal operating position under dripping box that has larger base area than cover.		
	Other than covers designed for wall or ceiling mounting, tested cover support should be smaller than cover base.		
	A cover that is normally mounted to wall or ceiling is positioned to normal operating position with a wood plate that has the same dimensions as cover surface contacting with mounted wall or ceiling.		
	Test duration is 10 minutes.		-
14.2.2	Test with Dripping Box for Second Characteristic Number 2		
	Dripping setup is same as setup adjusted for water flow speed given in Table 8 and Article 14.2.1.		
	Table where the cover is places is same as the test condition for second characteristic number 1. However, this table is not rotating.		-
	Cover is tested for 2.5 minutes at each four positions with related angle. These positions are 15° on both sides of vertical line of perpendicular two surfaces (Figure 3b).		
	Test duration is 10 minutes.		
14.2.3	Test with Oscillating Tube or Spray Nozzle for Second Characteristic Number 3		
	Test is conducted based on related product standard used in one of the two tests given in Figure 4 and Figure 5.		
	a) Conditions for test setup given in Figure 4 (oscillating tube)		-
	b) Conditions for test setup given in Figure 5 (spray nozzle)		-
14.2.4	Test with Oscillating Tube or Spray Nozzle for Second Characteristic Number 4		
	Test is conducted based on related product standard used in one of the two tests given in Figure 4 and Figure 5.		
	a) Conditions for test setup given in Figure 4 (oscillating tube)		-
	b) Conditions for test setup given in Figure 5 (spray tube)		-
	Table 9 qV Total Water Flow Speed for IPX3 and IPX4 Test Conditions, Average Flow Speed in Each Holes		



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TEST RESULTS

	Tube radius R mm	Number of open holes N{1}	Total water flow Qv litre /minute	Number of open holes D	Total water flow Qv litre /minute	
	200	8	0.56	12	0.84	
	400	16	1.1	25	1.8	
	600	25	1.8	37	2.6	
	800	33	2.3	50	3.5	
	1000	41	2.9	62	4.3	
	1200	50	3.5	75	5.3	
	1400	58	4.1	87	6.1	
	1600	67	4.7	100	7.0	
	d) 1 hole can be added to open hole number N based on real setup of hole centers in given distance.					
14.2.5	Test with 6.3 mm Nozzle for Second Characteristic Number 5					
	Test is conducted by spraying water beam to a cover from all directions from a standard test nozzle given in Figure 6.					P
	Test conditions are given below:					
	Nozzle inner radius: 6.3 mm					P
	Flow speed: 12,5 litre/minute $\pm 5\%$;					P
	Water pressure: is set to achieve indicated flow speed.					P
	Main water beam: circle with 40 mm diameter that is					P
	Probable test period for spraying per m2 on cover surface area: 1 minute					P
	Minimum test duration: 3 minutes			5 minutes		P
	Distance of nozzle from cover surface: Between 2,5 m and 3 m.					P
14.2.6	Test with 12.5 mm Nozzle for Second Characteristic Number 6					—
	Test is conducted by spraying water beam to a cover from all directions from a standard test nozzle given in Figure 6.					
	Test conditions are given below:					
	Nozzle inner radius: 12.5 mm					
	Flow speed: 100 liter/minute $\pm 5\%$;					
	Water pressure: is set to achieve indicated flow speed.					



TEST RESULTS

	Main water beam: circle with 120 mm diameter that is 2.5 m away from nozzle		-
	Probable test period for spraying per m ² on cover surface area: 1 minute		-
	Minimum test duration: 3 minute		-
	Distance of nozzle to cover: Between 2.5 m and 3 m.		-
14.2.7	Test Conditions for Second Characteristic Number 7 Transient Dipping Between 0.15 m and 1 m		
	Test is conducted for given conditions below by dipping the cover inside water according to operating position given by manufacturer.		
	a) Bottom point of cover less than 850 mm height is 1000 mm below water surface.		—
	a) Bottom point of cover equal to or more than 850 mm height is 150 mm below water surface.		—
	c) Test duration is 30 minutes.		-
	d) Temperature difference between water and hardware should not exceed 5 K.		-
	Additionally, when hardware is energised and/or if test is conducted when hardware sections are mobile, changed rules can be designated in related product standard.		
14.2.8	Test Conditions for Second Characteristic Number 8 Constant Dipping for Agreement		
	If related product standard is not present, test conditions are set based on agreement between manufacturer and		
	However, these conditions must be harder that conditions given in Article 14.2.7		
	Both manufacturer and user should consider constant water dipping during real use.		
14.3	Accepted Conditions		
	After tests are applied based on related rules in Articles 14.2.1 to 14.2.8 water inside cover should be visually inspected.		
	Level of permitted water inside cover and if any, dielectric resistance test details are under the responsibility of Technical Committee.		
	Generally, if there is water:		
	Water should have a level not to prevent fault-free operating of hardware or create any danger;	It was observed that there is no water inside the cover.	P



TEST RESULTS

IEC/EN 60529			
Article	Requirement-Test	Results	Decision
	There should be no accumulation that can cause superficial leakage along insulation sections of superficial leakage path;		P
	There should be no access to voltage sections or coils that are designed to work under wet conditions		P
	Cable leads should not be collected nearby or if any, there should not be any cables.		P
	If cover has discharge holes, water input and output without any accumulation inside or without any harm to hardware should be visually inspected.		
	For covers without discharge holes, acceptance conditions if water will be accumulated to access voltage areas of related product standard.		
15	PROTECTION LEVEL TESTS REPRESENTED BY ADDITIONAL LETTERS AGAINST ACCESS TO DANGEROUS SECTIONS		
15.1	Access Probes		
	Access probes for protection test to access dangerous sections by individuals is given in Table 6.		
15.2	Test Conditions		
15.	Access probes for protection test to access dangerous sections by individuals is given in Table 6.		
	Access probe is pressed to one of the holes on cover with the force indicated on Table 6. If access probe enters completely or partially, it is placed in all possible positions. However, access probe should not completely enter inside retain age surface.		
	Internal obstacles are accepted as cover sections as described in Article 3.1.		
	In low voltage hardware test, low voltage power source probe (higher than 40 V and lower than 50 v) should be connected in series with a proper lamp between dangerous sections inside the cover.		
	Dangerous voltage areas only protected with varnish or paint or oxidization or any similar operation are wrapped to sections under normal voltage during operation with an electrically connected thing metal sheet.		
	Signal circuit method must be applied to dangerous sections where high voltage hardware moves.		-
	Mobile internal sections can be operated at lowest speed possible.		
15.3	Acceptance Conditions		



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TEST RESULTS

IEC/EN 60529			
Article	Requirement-Test	Results	Decision
	If there are sufficient gaps between access probe and dangerous sections, it should be accepted that protection is provided at desired level.		-
	In the test with additional level B, 80 mm length of jointed test rod can be inside the section, however, retain surface (diameter 50 mm x 20 mm) should not pass from the hole.		---
	Starting from straight position, both joints of test rod should be bent with 90° angle for		
	In tests with additional letters C and D, access probe can entirely fit, however, complete retain surface must not fit from		
	Refer to Appendix A for detailed information.		
	Authentication of sufficient gap conditions are the same as data given in Article 12.3.1, Article 12.3.2, and Article 12.3.3.		
ZA	APPENDIX ZA (ENURE) Other international standards referred to this standard with related European standard resources.		
	In an international standard, when common changes indicated with CENELEC (mod) are applied, related EN/HD is applied.	(EN 60529)	


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