

16.2.1	Protection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects	N/A
	Accessories and their enclosures provide a degree of protection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects	N/A
	Fixed socket-outlets: mounted as in normal use on a vertical surface	N/A
	Flush-type and semi-flush type socket-outlets: mounted in an appropriate box according to the manufacturer's instructions	N/A
	Accessories with screwed glands or membranes fitted with flexible cables within the range specified in table 3:	N/A
	- largest cross-sectional area (mm ²); type of cable (table 17)	—
	- smallest cross-sectional area (mm ²); type of cable (table 17)	—
	Glands tightened with a torque equal to 2/3 of the torque applied during the test of 24.6 (Nm)	—
	Screws of the enclosure tightened with a torque equal to 2/3 of the torque given in table 6 (Nm) ...	—
16.2.1.1	Protection against access to hazardous parts	N/A
	Appropriate test performed as specified in IEC 60529 (see also clause 10)	N/A
16.2.1.2	Protection against harmful effects due to ingress of solid foreign objects	
	Appropriate test performed as specified in IEC 60529	N/A
	Test on accessories with IP5X (considered to be of category 2): dust not penetrated in a quantity to interfere with satisfactory operation or to impair safety	N/A
16.2.2	Protection against harmful effects due to ingress of water	
	Accessories and their enclosures provide a degree of protection against harmful effects due to ingress of water in accordance with their IP classification	N/A
	Appropriate test performed as specified in IEC 60529 under the following conditions:	
	Flush-type and semi-flush type socket-outlets: fixed in a vertical test wall using an appropriate box according to the manufacturer's instructions	N/A
	Accessory suitable to be installed on a rough wall: test wall according to figure 15 is used	N/A
	Surface-type socket-outlets mounted as for normal use in a vertical position and fitted with cables (having conductors of the largest and smallest nominal cross-sectional area given in table 3) or conduits or both in accordance with the manufacturer's instructions:	N/A
	- largest cross-sectional area (mm ²); type of cable (table 17)	—

	- smallest cross-sectional area (mm ²); type of cable (table 17)		—
	Portable socket-outlets tested on a plain, horizontal surface in a position as in normal use and fitted with flexible cables (having conductors of the largest and smallest nominal cross-sectional area given in table 3) according to table 17:		N/A
	- largest cross-sectional area (mm ²); type of cable (table 17)		—
	- smallest cross-sectional area (mm ²); type of cable (table 17)		—
	Screws of enclosure tightened with a torque equal to 2/3 of the torque given in table 6 (Nm)		—
	Glands tightened with a torque equal to 2/3 of the torque applied during the test of 24.6 (Nm)		—
	Accessory with drain holes opened during the test: any accumulation of water proved by inspection		N/A
	Socket-outlets tested without a plug in engagement		
	Plugs tested when in full engagement with:		N/A
	- a fixed socket-outlets		N/A
	- a portable socket-outlets		N/A
	of the same system and with the same degree of protection against harmful effects due to ingress of water		—
	Specimens withstand an electric strength test specified in 17.2 which is started within 5 min of completion of the IP test		N/A
16.3	Resistance to humidity		
	Accessories proof against humidity which may occur in normal use		P
	Compliance checked by a humidity treatment carried out in a humidity cabinet containing air with relative humidity maintained between 91 % and 95 %		P
	Specimens kept in the cabinet for:		
	- two days (48 h) for accessories having IPX0		P
	- seven days (168 h) for accessories having IP>X0		N/A
	After this treatment the specimens show no damage		P

17	INSULATION RESISTANCE AND ELECTRIC STRENGTH		
17.1	Insulation resistance measured 1 min after application of 500 V d.c.	See appended table 17.1	P
17.2	Electric strength: a.c. test voltage applied for 1 min	See appended table 17.2	P

18	OPERATION OF EARTHING CONTACTS		
	Earthing contacts provide adequate contact pressure and not deteriorate in normal use		P

	Compliance checked by the tests of clauses 19 and 21		P
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19	TEMPERATURE RISE		
	Temperature rise test	See appended table 19	P
	Socket-outlets tested using a test plug with brass pins having the minimum specified dimensions		N/A
	Plugs tested with clamping units having dimensions specified in Figure 44 fitted on each live pin and earthing pin, if any		N/A
	Plugs having lateral earthing contacts and resilient earthing contacts tested using a fixed socket-outlet complying with the standard and having as near to-average characteristics as can be selected, but with minimum size of the earthing pin, if any		N/A

20	BREAKING CAPACITY		
	Accessories have adequate breaking capacity		P
	Compliance checked by testing:		
	- socket-outlets;	See appended table 20	P
	- plugs with pins which are not solid	See appended table 20	N/A
	Multiple socket-outlets: test carried out on one socket-outlet of each type and current rating		P
	During the test: no sustained arcing occur		P
	After the test:		
	- specimens show no damage impairing their further use;		P
	- entry holes for the pins not show any damage which may impair the safety		P

21	NORMAL OPERATION		
	Accessories withstand without excessive wear or other harmful effect, the mechanical, electrical and thermal stresses occurring in normal use		P
	Compliance checked by testing:		
	- socket-outlets;	See appended table 21	P
	- plugs with resilient earthing socket-contacts;	See appended table 21	N/A
	- plugs with pins which are not solid	See appended table 21	N/A
	Test performed according to the procedure specified in Figure 43; point of Figure 43 at which the test program has begun (1, 2, 3) ...:		—
	Test current passed:		
	- during each insertion and withdrawal of the plug ($I_n \leq 16A$)		P



	- during alternate insertion and withdrawal, the other insertion and withdrawal being made without current flowing ($I_n > 16A$)		N/A
	Multiple socket-outlets: test carried out on one socket-outlet of each type and current rating		P
	During the test: no sustained arcing occur		P
	After the test the specimens do not show:		
	- wear impairing their further use;		P
	- deterioration of enclosures, insulating lining or barriers;		P
	- damage to the entry holes for the pins, that might impair proper working;		P
	- loosening of electrical or mechanical connections;		P
	- seepage of sealing compound		NA
	Shuttered socket-outlets: gauges of figure 9 and 10 applied to the entry holes corresponding to live contacts do not touch live parts when they remain under the relevant forces	See appended table 21	P
	Temperature-rise test (requirements of clause 19)	See appended table 21	P
	Electric strength (sub-clause 17.2)	See appended table 21	P
	Pins which are not solid: test according to 14.2		N/A

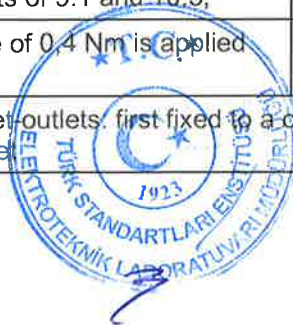
22	FORCE NECESSARY TO WITHDRAW THE PLUG		
	Construction of accessory does allow the easy insertion and withdrawal of the plug, and prevent the plug from working out of the socket-outlet in normal use		P
22.1	Verification of the maximum withdrawal force	See appended table 22	P
22.2	Verification of the minimum withdrawal force	See appended table 22	P

23	FLEXIBLE CABLES AND THEIR CONNECTIONS		
23.1	Rewirable plugs and rewirable portable socket-outlets are provided with a cord anchorage		P
	Sheath of flexible cable is clamped within the cord anchorage		P
	In non-rewirable plugs and non-rewirable portable socket-outlets the cable is maintained in position and the terminations are relieved from strain and twisting		N/A
	Sheath of flexible cable is maintained inside the accessory		N/A
23.2	Pull and torque test		
	Non-rewirable accessories:		
	After the test: displacement ≤ 2 mm	See appended table 23.2	N/A
	No break in the electrical connections		N/A
	Rewirable accessories:		
	After the test: displacement ≤ 2 mm	See appended table 23.2	P



	End of conductors not have moved noticeably in the terminals		P
	Rewirable accessories having rated current up to and including 16 A:		
	Suitable for fitting with the appropriate cable as shown in table 19		P
	Type of flexible cable; number of conductors and nominal cross-sectional area (mm ²) :	3x1,00 mm ²	—
23.3	Non-rewirable plugs and non-rewirable portable socket-outlets are provided with a flexible cable complying with IEC 60227 or IEC 60245		N/A
	Flexible cables have the same number of conductors as there are poles in the plug or socket-outlet		N/A
	Conductor connected to the earthing contact is identified by the colour combination green/yellow		N/A
23.4	Non-rewirable plugs and non-rewirable portable socket-outlets: designed that the flexible cable is protected against excessive bending		N/A
	Guards of insulating material and fixed in reliable manner		N/A
	Flexing test (10.000 flexings)		N/A
	During the test: no interruption of the test current and no short-circuit between conductors	See appended table 23.4	N/A
	After the test: guard no separated from the body, insulation shows no sign of abrasion or wear, broken strands become no accessible	See appended table 23.4	N/A

24	MECHANICAL STRENGTH		
	Accessories, surface mounting boxes, screwed glands and shrouds have adequate mechanical strength		P
24.1	Fixed socket-outlets, portable multiple socket-outlets and surface-type mounting boxes: impact test (apparatus shown in fig. 22, 23, 24 and 25)	See appended table 24.1	P
	After the test: no damage, live parts no become accessible		P
24.2	Portable single socket-outlets and plugs: subjected to test Ed: Free fall, procedure 2 of IEC 60068-2-32 (tumbling barrel); number of falls :		N/A
	After the test:		
	- no part become detached or loosened;		N/A
	- pins no become so deformed that the plug cannot be introduced into a socket-outlet and also fails to comply with the requirements of 9.1 and 10.3;		N/A
	- pins no turn when a torque of 0,4 Nm is applied for 1 min in each direction		N/A
24.3	Bases of surface-type socket-outlets: first fixed to a cylinder of rigid steel sheet and then fixed to a flat steel sheet		N/A

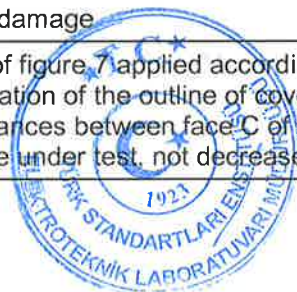


	During and after the tests: no damage		N/A
24.4	Portable single socket-outlets, multiple socket-outlets and plugs (elastomeric or thermoplastic material): impact test, weight (1000 ± 2) g, height 100 mm (apparatus shown in fig. 27)		P
	Specimens placed in a freezer at (-15 °C ± 2) °C for at least 16 h. After the test: no damage		P
24.5	Portable single socket-outlets and plugs (elastomeric or thermoplastic material): compression test, 300 N for 1 min, position a) and b) (apparatus shown in fig. 8)		N/A
	After the test: no damage		N/A
24.6	Screwed glands of accessories having IP>20: torque test (1 min)		
	- diameter of test rod (mm)		—
	- type of material (metal / moulded)		—
	- torque (Nm)		—
	After the test: no damage of glands and enclosures of the specimens		N/A
24.7	Plug pins provided with insulating sleeves: 20000 movements, 4 N (apparatus shown in fig. 28)		N/A
	After the test: no damage of pins, insulating sleeve not have punctured or rucked up		N/A
24.8	Shuttered socket-outlets: mechanical test carried out on specimens submitted to the normal operation test according to clause 21		N/A
	Force (40 N / 75 N) applied for 1 min against the shutter of an entry hole by means of one pin (N) :		
	Pin did not come in contact with live parts		N/A
	After the test: no damage		N/A
24.9	Mechanical test for multiple portable socket-outlet: 8 falls on concrete floor with the specimens arranged as shown in figure 29		P
	Rewirable multiple socket-outlets: flexible cable of the smallest cross-sectional area specified in table 3		—
	After the test: no damage, no part have become detached or loosened		P
	Accessories having IP>X0 submitted again to the tests as specified in 16.2		N/A
24.10	Plugs: pull test to verify the fixation of pins in the body of the plug (new specimens)		
	Maximum withdrawal force (table 16) applied for 1 min on each pin in turn, after the specimen has been placed at (70 ± 2) °C for 1 h (N)		—
	After the test: displacement of pins in the body of the plug ≤ 1 mm (mm)		N/A
24.11	Barriers of portable socket-outlets having means for suspension on a mounting surface:		
	Force applied for 10 s against the barrier by means of a cylindrical steel rod (1.5 times the maximum plug withdrawal force in 22.1, table 16) (N)		—
	Rod did not pierce the barrier		N/A

24.12	Portable socket-outlets having means for suspension on a mounting surface (pull test):		
	Pull applied to the supply flexible cable for 10 s (force prescribed in 23.2 for checking the flexible cable anchorage) (N)		—
	During the test: no break of the means for suspension on a mounting surface		N/A
24.13	Portable socket-outlets having means for suspension on a mounting surface (pull test):		
	Pull applied to the engagement face of the socket-outlet for 10 s (maximum withdrawal force specified, for the corresponding plug, in table 16) (N)		—
	During the test: no break of the means for suspension on a mounting surface		N/A
24.14	Forces necessary to retain or remove covers, cover-plates or parts of them (accessibility with the test finger to live parts)		
24.14.1	Verification of the retention of covers or cover-plates (fixed socket-outlets)		
	Force (40 N / 80 N) applied for 1 min perpendicular to the mounting surface (N)		—
	Covers or cover-plates did not come off		N/A
	Test repeated on new specimens with a sheet of hard material, (1 ± 0,1) mm thick, fitted around the supporting frame (fig. 31): covers or cover-plates did not come off		N/A
	After the test: no damage		N/A
24.14.2	Verification of the removal of covers or cover-plates (fixed socket-outlets)		N/A
	Force not exceeding 120 N applied 10 times perpendicular to the mounting / supporting surface: covers or cover-plates came off		N/A
	Test repeated on new specimens with a sheet of hard material, (1 ± 0,1) mm thick, fitted around the supporting frame (fig. 31): covers or cover-plates came off		N/A
	After the test: no damage		N/A
24.14.3	Verification of the retention of covers or cover-plates (plugs and portable socket-outlets)		
	Force 80 N applied for 1 min perpendicular to the mounting surface: covers, cover-plates or parts of them did not come off		N/A
	Test repeated with a force of 120 N:		N/A
	Rewirable plugs and rewirable portable socket-outlets: covers, cover-plates or parts of them came off but the specimen showed no damage		N/A
	Non-rewirable, non moulded on accessories: covers, cover-plates or parts of them came off but the accessories were permanently useless according to 14.1		N/A



24.15	Force necessary for covers or cover-plates to come off or not to come off (accessibility with the test finger to non-earthed metal parts separated from live parts by creepage distances and clearances according to table 23)	N/A
24.14.1	Verification of the non-removal of covers or cover-plates	
	Force (10 N / 20 N) applied for 1 min in direction perpendicular to the mounting surface (N):	—
	Covers or cover-plates did not come off	N/A
	Test repeated on new specimens with a sheet of hard material, 1 mm \pm 0,1 mm thick, fitted around the supporting frame (fig. 31): covers or cover-plates did not come off	N/A
	After the test: no damage	N/A
24.14.2	Verification of the removal of covers or cover-plates	N/A
	Force not exceeding 120 N applied 10 times in direction perpendicular to the mounting / supporting surface: covers or cover-plates came off	N/A
	Test repeated on new specimens with a sheet of hard material, 1 mm \pm 0,1 mm thick, fitted around the supporting frame (fig. 31): covers or cover-plates came off	N/A
	After the test: no damage	N/A
24.16	Force necessary for covers or cover-plates to come off or not to come off (accessibility to insulating parts, earthed metal parts, live parts of SELV \leq 25 V a.c. or metal parts separated from live parts by creepage distances twice those according to table 23)	N/A
24.14.1	Verification of the non-removal of covers or cover-plates	N/A
	Force 10 N applied for 1 min in direction perpendicular to the mounting surface: covers or cover-plates did not come off	N/A
	Test repeated on new specimens with a sheet of hard material, 1 mm \pm 0,1 mm thick, fitted around the supporting frame (fig. 31): covers or cover-plates did not come off	N/A
	After the test: no damage	N/A
24.14.2	Verification of the removal of covers or cover-plates	
	Force not exceeding 120 N applied 10 times in direction perpendicular to the mounting / supporting surface: covers or cover-plates came off	N/A
	Test repeated on new specimens with a sheet of hard material, 1 mm \pm 0,1 mm thick, fitted around the supporting frame (fig. 31): covers or cover-plates came off	N/A
	After the test: no damage	
24.17	Test with gauge of figure 7 applied according to figure 9 for verification of the outline of covers or cover-plates: distances between face C of gauge and outline of side under test, not decrease:	complying / not complying —



24.18	Test with gauge according to figure 5 applied as shown in figure 11 (1 N): gauge not enter more than 1mm	complying / not complying	—
24.19	Shroud of portable socket-outlets: compression test (20 ± 2) N at (25 ± 5) °C by means of the apparatus shown in figure 38		N/A
	After 1 min and while the shrouds are still under pressure the dimensions did comply with the appropriate standard sheet		N/A
	Test repeated with the specimen rotated 90 °		N/A

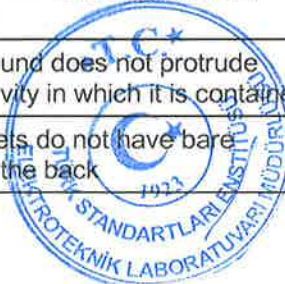
25	RESISTANCE TO HEAT		
25.1	Specimens kept for 1 h in a heating cabinet at (100 ± 2) °C for 1 h		P
	During the test: no change impairing their further use and sealing compound, if any, not flow		P
	After the test:		
	- no access to live parts with probe B of IEC 61032 applied with a force not exceeding 5 N		P
	- markings still legible		P
25.2	Parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position, as well as parts of the front surface zone, 2 mm wide, surrounding the phase and neutral pin entry holes: ball-pressure test at (125 ± 2)°C for 1 h	See appended table 25.2	P
25.3	Parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though in contact with them: ball-pressure test (1 h)	See appended table 25.3	P
25.4	Portable accessories: compression test (20 N) at (80 ± 2)°C for 1 h by means of the apparatus shown in figure 38		
	After the test: no damage		P

26	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		
26.1	Connections withstand mechanical stresses		P
	Thread-forming or thread-cutting screws used only if supplied together with the piece in which they are intended to be inserted		P
	Thread-cutting screws intended to be used during installation: captive		P
	Screws and nuts which transmit contact pressure: in engagement with a metal thread		P
	Threaded part torque test	See appended table 26.1	
26.2	Screws in engagement with a thread of insulating material: correct introduction into the screw hole or nut ensured		P



26.3	Contact pressure: not transmitted through insulating material other than ceramic, pure mica or other material no less suitable unless there is sufficient resiliency in metallic parts		P
	Connections made by insulation piercing of tinsel cord reliable		N/A
26.4	Screws and rivets locked against loosening and/or turning		P
26.5	Current-carrying parts (including earthing terminals) have mechanical strength, electrical conductivity and resistance to corrosion adequate:		
	- copper;		
	- alloy with at least 58 % copper for parts made from cold-rolled sheet or with at least 50 % copper for other parts;		P
	- stainless steel with at least 13 % chromium and not more than 0,09 % carbon		N/A
	- steel with electroplated coating of zinc (ISO 2081); service condition ISO no. (1/2/3); IP (X0/X4/X5); thickness (µm)		N/A
	- steel with electroplated coating of nickel and chromium (ISO 1456); service condition ISO no. (2/3/4); IP (X0/X4/X5); thickness (µm)		N/A
	- steel with electroplated coating of tin (ISO 2093); service condition ISO no. (2/3/4); IP (X0/X4/X5); thickness (µm)		N/A
	Current-carrying parts subjected to mechanical wear: not of steel with electroplated coating		P
	Metals having a great difference of electrochemical potential: not used in contact with each other		N/A
26.6	Contacts subjected to a sliding action are of metal resistant to corrosion		P
26.7	Thread-forming screws and thread-cutting screws are not used for the connection of current-carrying parts		P
	Thread-forming screws and thread-cutting screws used to provide earthing connection: it is not necessary to disturb the connection and at least two screws are used for each connection		N/A

27	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND		
27.1	Creepage distances, clearances and distances through sealing compound are not less than the values shown in table 23	See appended table 27.1	P
27.2	Insulating sealing compound does not protrude above the edge of the cavity in which it is contained		N/A
27.3	Surface-type socket-outlets do not have bare current-carrying strips at the back		N/A



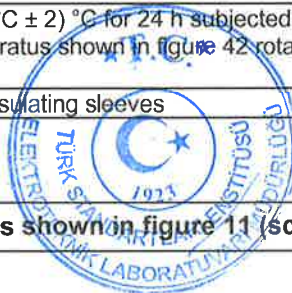
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28	RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT, TO FIRE AND TO TRACKING		
28.1	Resistance to abnormal heat and to fire		P
28.1.1	Glow-wire test according to IEC 60695-2-10 and IEC 60695-2-11	See appended table 28.1.1	P
28.1.2	Plugs with pins provided with insulating sleeves:		
	Test temperature maintained for 3 h by means of the apparatus shown in figure 40 at $(120 \pm 5) ^\circ\text{C}$ / $(180 \pm 5) ^\circ\text{C}$		—
	Impact test according to sub-clause 30.4 (mass 100 g, height 100 mm, 4 impacts): no cracks of the insulating sleeves		N/A
28.2	Resistance to tracking		
	Parts of insulating material retaining live parts in position of accessories having IP>X0: of material resistant to tracking		N/A
	Tracking test at 175 V with solution A of IEC 60112	See appended table 28.2	N/A

29	RESISTANCE TO RUSTING		
	Ferrous parts protected against rusting		P
	Test made after having removed all grease using a suitable degreasing agent: 10 min 10 % solution of ammonium chloride, 10 min in a box with air saturated with moisture and 10 min at $(100 \pm 5) ^\circ\text{C}$:		P
	No signs of rust		P

30	ADDITIONAL TESTS ON PINS PROVIDED WITH INSULATING SLEEVES		
30.1	Pressure test at high temperature		N/A
	Apparatus shown in figure 41, with the test specimen in position, maintained for 2 h at $(200 \pm 5) ^\circ\text{C}$. Force applied through the blade: 2,5 N		N/A
	Thickness of the insulation measured: before the test (mm); after the test (mm)		—
	Thickness remaining at the point of impression is not reduced by more than 50 % of its original value measured at the start of the test: percentage value (%)		N/A
30.2	Static damp heat test		
	Set of 3 specimens submitted to two damp heat cycles in accordance with IEC 60068-2-30		N/A
	After the test:		
	- insulation resistance and electric strength test (clause 17)		N/A
	- abrasion test (sub-clause 24.7)		N/A
30.3	Test at low temperature		
	Set of 3 specimens maintained at $(-15 ^\circ\text{C} \pm 2) ^\circ\text{C}$ for 24 h		N/A
	After the test:		
	- insulation resistance and electric strength test (clause 17)		N/A
	- abrasion test (sub-clause 24.7)		N/A
30.4	Impact test at low temperature		
	Specimens maintained at $(-15 ^\circ\text{C} \pm 2) ^\circ\text{C}$ for 24 h subjected to 4 impacts (mass 100 g, height 100 mm) by means of the apparatus shown in figure 42 rotating the specimen through 90° between impacts		N/A
	After the test: no crack of the insulating sleeves		N/A

12.2.5	TABLE: test with apparatus shown in figure 11 (screw-type terminals)	
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	rated current (A)	16 A		
	type of conductors	Flexible		
	smallest/largest cross-sectional area per table 3 (mm²)	0,75 mm²/1,5 mm²		
	number of conductors	1		
	nominal diameter of thread (mm); torque per table 6 (Nm)	2,90 mm :0,50 Nm		
Cross-sectional area (mm²)	Diameter of bushing hole per table 9 (mm)	Height H per table 9 (mm)	Mass (kg)	Remarks
0,75 mm²	6,5 mm	260 mm	0,4 kg	P
1,5 mm²	6,5 mm	260 mm	0,4 kg	P
supplementary information:				

12.2.6	TABLE: pull test (screw-type terminals)			
	rated current (A)	16 A		
	smallest/largest cross-sectional area per table 3 (mm²)	0,75 mm²/1,5 mm²		
	nominal diameter of thread (mm); torque 2/3 per table 6 (Nm)	2,90mm :0,33Nm		
Cross-sectional area (mm²)	Number of conductors	Type of conductors (rigid solid / rigid stranded / flexible)	Pull per table 4 applied for 1 min (N)	Remarks
0,75 mm²	1	Flexible	40 N	P
1,5 mm²	1	Flexible	40 N	P
supplementary information:				

12.2.7	TABLE: tightening test (screw-type terminals)				
	rated current (A)		16 A		
	nominal diameter of thread (mm); torque 2/3 per table 6 (Nm)		2,90mm :0,33Nm		
Largest cross-sectional area per table 3 (mm ²)	Permissible number of conductors ⁽¹⁾	Type of conductors (rigid solid / rigid stranded / flexible)	Number of wires and nominal diameter of wires per table 5	Remarks	
1,5 mm ²	1	Flexible	30x0,25 mm	P	
supplementary information:					
⁽¹⁾ terminals intended for looping-in 2 or 3 conductors					

12.3.10	TABLE: mechanical strength test (screwless-type terminals)		
	rated current (A)		



	largest/smallest cross-sectional area per table 7 (mm ²)				
Number of connection (after that conductor subjected to a pull of 30 N for 1 min) / disconnection	Type of conductor (solid / rigid stranded / flexible		Cross-sectional area (mm ²)	Remarks	
TABLE: test with apparatus shown in figure 11					
Cross-sectional area (mm ²)	Type of conductor (solid / rigid stranded / flexible	Diameter of bushing hole per table 9 (mm)	Height H per table 9 (mm)	Mass (kg)	Remarks
supplementary information:					

12.3.11	TABLE: electrical and thermal strength test (screwless-type terminals)						
Test a)	Test carried out for 1 h connecting rigid solid conductors:						
	test current per table 10 (A)						
	nominal cross-sectional area (mm ²)						
Screwless terminal number		Voltage drop (mV)			Required voltage drop (mV)		
1					≤ 15		
2					≤ 15		
3					≤ 15		
4					≤ 15		
5					≤ 15		
Test b)	Temperature cycles test carried out on terminals subjected to Test a):						
	test current per table 10 (A)						
	nominal cross-sectional area (mm ²)						
	allowed voltage drop (mV)			≤ 22,5 mV or 2 times 24 th cycle value (mV)			
Screwless terminal number		1	2	3	4	5	Remarks
voltage drop after 24 th cycle							
voltage drop after 48 th cycle							
voltage drop after 72 nd cycle							
voltage drop after 96 th cycle							
voltage drop after 120 th cycle							
voltage drop after 144 th cycle							
voltage drop after 168 th cycle							
voltage drop after 192 nd cycle							
12.3.10	TABLE: mechanical strength test (screwless-type terminals)						



	rated current (A)		
	largest/smallest cross-sectional area per table 7 (mm ²)		
Number of connection (after that conductor subjected to a pull of 30 N for 1 min) / disconnection	Type of conductor (solid / rigid stranded / flexible)	Cross-sectional area (mm ²)	Remarks
TABLE: test with apparatus shown in figure 11			
Cross-sectional area (mm ²)	Type of conductor (solid / rigid stranded / flexible)	Diameter of bushing hole per table 9 (mm)	Height H per table 9 (mm)
Mass (kg)			
Remarks			
supplementary information:			

12.3.12	TABLE: deflection test (principle of test apparatus shown in figure 12a)						
	Test carried out connecting rigid solid copper conductors:						
	test current (A) (equal rated current)						
	required voltage drop (mV)						≤ 25 mV
Type of conductor	Smallest			Largest			Remarks
cross-sectional area per table 11 (mm ²)							
force per table 12 (N)							
screwless terminal number	1	2	3	1	2	3	
starting point (X = deflection original point)	X	X+10°	X+20°	X	X+10°	X+20°	
voltage drop 1 st deflection (mV)							
voltage drop 2 nd deflection (mV)							
voltage drop 3 rd deflection (mV)							
voltage drop 4 th deflection (mV)							
voltage drop 5 th deflection (mV)							
voltage drop 6 th deflection (mV)							
voltage drop 7 th deflection (mV)							
voltage drop 8 th deflection (mV)							
voltage drop 9 th deflection (mV)							
voltage drop 10 th deflection (mV)							
voltage drop 11 th deflection (mV)							
voltage drop 12 th deflection (mV)							
supplementary information:							



17.1	TABLE: insulation resistance		
Item per 17.1	test voltage applied between:	measured (MΩ)	required (MΩ)
a)	All poles connected together and body	>5 MΩ	≥5 MΩ
b)	Between each pole in turn and all other poles connected to the body	>5 MΩ	≥5 MΩ
d)	between any metal part of the cord anchorage, including clamping screws, and earthing terminal(s) or earthing contact(s), if any, of portable socket-outlets	>5 MΩ	≥5 MΩ
supplementary information:			

17.2	TABLE: electric strength		
	rated voltage (V)	250 V	
item per 17.1	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
a)	All poles connected together and body	2000 V	No
b)	Between each pole in turn and all other poles connected to the body	2000 V	No
d)	between any metal part of the cord anchorage, including clamping screws, and earthing terminal(s) or earthing contact(s), if any, of portable socket-outlets	2000 V	No
supplementary information:			

19	TABLE: temperature rise test						
	rated current of accessory (A)		16A				
	type of accessory (non-rewirable / rewirable)		rewirable				
	nominal cross-sectional area per table 15 (mm ²) (rewirable accessories) / type of conductor		1,5 mm ²				
	type of conductors (rigid solid / rigid stranded / flexible) (rewirable accessories)		flexible				
	nominal diameter of thread (mm); torque 2/3 of that specified in 12.2.8 (Nm) (rewirable accessories) ..		2,90 mm : 0,33 Nm				
specimen	type of flexible cable ⁽¹⁾	number of conductors and nominal cross-sectional area (mm ²) ⁽¹⁾	test circuit (L-L/L-N/L-E) ⁽¹⁾	test current (table 20) for 1 s (A)	measured dT (K)	allowed dT (K)	temperature rise of external parts of insulating material (25.3)
No.1 (9201XX)	--	--	N-L / L-E	20 A	36K / 39 K	45K	11K

No.2	---	---	N-L / L-E	20 A	38K / 40K	45K	13K
No.3	---	---	N-L / L-E	20 A	35K / 40 K	45K	12K
No.1 (9211XX)	---	---	N-L / L-E	20 A	33K / 42 K	45K	14K
No.2	---	---	N-L / L-E	20 A	37K / 42K	45K	12K
No.3	---	---	N-L / L-E	20 A	37K / 41 K	45K	11K
No.1 (9301XX)	---	---	N-L / L-E	20 A	37K / 41 K	45K	16K
No.2	---	---	N-L / L-E	20 A	33K / 40K	45K	12K
No.3	---	---	N-L / L-E	20 A	35K / 40 K	45K	11K
No.1 (9311XX)	---	---	N-L / L-E	20 A	35K / 41 K	45K	18K
No.2	---	---	N-L / L-E	20 A	36K / 42K	45K	13K
No.3	---	---	N-L / L-E	20 A	36K / 41 K	45K	14K
No.1 (9401XX)	---	---	N-L / L-E	20 A	38K / 42 K	45K	16K
No.2	---	---	N-L / L-E	20 A	37K / 42K	45K	12K
No.3	---	---	N-L / L-E	20 A	35K / 40 K	45K	11K
No.1 (9411XX)	---	---	N-L / L-E	20 A	39K / 39 K	45K	10K
No.2	---	---	N-L / L-E	20 A	39K / 42K	45K	12K
No.3	---	---	N-L / L-E	20 A	37K / 42 K	45K	9K
No.1 (9601XX)	---	---	N-L / L-E	20 A	31K / 35 K	45K	13K
No.2	---	---	N-L / L-E	20 A	29K / 36K	45K	14K
No.3	---	---	N-L / L-E	20 A	30K / 36 K	45K	11K
No.1 (9611XX)	---	---	N-L / L-E	20 A	30K / 35 K	45K	9K
No.2	---	---	N-L / L-E	20 A	29K / 35K	45K	16K
No.3	---	---	N-L / L-E	20 A	32K / 36 K	45K	13K

supplementary information: ⁽¹⁾ Non-rewirable accessories

20	TABLE: breaking capacity						
	rating of accessory (A/V)			16A / 250V			
	type of accessory (non-rewirable / rewirable)			rewirable			
	type of flexible cable (non-rewirable accessories) :			--			
	number of conductors and nominal cross-sectional area (mm ²) (non-rewirable accessories) ..			--			
	nominal cross-sectional area per table 15 (mm ²) (rewirable accessories) / type of conductor			1,5 mm ²			
	type of conductors (rigid solid / rigid stranded / flexible) (rewirable accessories)			flexible			
	nominal diameter of thread (mm); torque 2/3 of that specified in 12.2.8 (Nm) (rewirable accessories) ..			2,90 mm :0,33Nm			
	rate of operation (strokes per minute)			30 strok			
specimen	test plug (for each type and current rating of socket-outlet)	test voltage (1,1 Vn)	test current (1,25 In) cos φ 0,6	number of strokes (plugs)	number of strokes, with	number of strokes,	remarks



	pin dimensions (mm)	pin spacing (mm)	(V)	(A)	only)	shutters – with current ⁽¹⁾	without shutters – with current ⁽²⁾			
No 1	Ø4,8±0,06	19±0,2	275	20A	---	---	100	---	P	
No 2	Ø4,8±0,06	19±0,2	275	20A	---	---	100	---	P	
No 3	Ø4,8±0,06	19±0,2	275	20A	---	---	100	---	P	
supplementary information: ⁽¹⁾ starting point 1 or 3 of Figure 43 ⁽²⁾ starting point 2 of Figure 43										
21	TABLE: normal operation									
	rating of accessory (A/V)					16A/ 250V				
	type of accessory (non-rewirable / rewirable)					rewirable				
	type of flexible cable (non-rewirable accessories) :					--				
	number of conductors and nominal cross-sectional area (mm ²) (non-rewirable accessories) ..					--				
	nominal cross-sectional area per table 15 (mm ²) (rewirable accessories) / type of conductor					1,5 mm ²				
	type of conductors (rigid solid / rigid stranded / flexible) (rewirable accessories)					flexible				
	nominal diameter of thread (mm); torque 2/3 of that specified in 12.2.8 (Nm) (rewirable accessories) ..					2,90mm :0,33Nm				
	rate of operation (strokes per minute)					30 strok				
specimen	test plug (for each type and current rating of socket-outlet)		test voltage (Vn) (V)	test current (table 20), cos φ 0,8 (A)	number of strokes (plugs only)	number of strokes, with shutters – with current ⁽¹⁾	number of strokes, without shutters – with current ⁽²⁾	number of strokes, with shutters – without current ⁽³⁾		
	pin dimensions (mm)	pin spacing (mm)								
No 1	Ø4,8±0,06	19±0,2	250V	16A	---	---	10000	---	P	
No 2	Ø4,8±0,06	19±0,2	250V	16A	---	---	10000	---	P	
No 3	Ø4,8±0,06	19±0,2	250V	16A	---	---	10000	---	P	
TABLE: test for shuttered socket-outlets										
specimen	Gauge of figure 9, applied with a force of 20 N, for approximately 5 s, successively in three directions					Steel gauge of figure 10, applied with a force of 1 N for approximately 5 s, in three directions				
No 1										
No 2										
No 3										
19	TABLE: temperature rise test									
specimen	test circuit (L-L/L-N/L-E)		test current (table 20 for clause 21) for 1 h (A)		measured dT (K)		allowed dT (K)			
No 1	N-L / L-E		16A		28K / 32 K		45K		P	
No 2	N-L / L-E		16A		27K / 35 K		45K		P	
No 3	N-L / L-E		16A		27K / 32 K		45K		P	
17.2	TABLE: electric strength									



specimen	item per 17.1	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
No 1	a), b), d)		1500 V	No
No 2	a), b), d)		1500 V	No
No 3	a), b), d)		1500 V	No

supplementary information: ⁽¹⁾ starting point 1 or 3 of Figure 43

⁽²⁾ starting point 2 of Figure 43

⁽³⁾ starting point 1 or 2 of Figure 43

22	TABLE: force necessary to withdraw the plug				
	Rated current (A)		16 A		
	Number of poles		3		
22.1	Verification of the maximum withdrawal force				
specimen	socket-outlets (multi-pin gauge)		plugs with resilient earthing contact assemblies (single-pin gauge)		
	maximum withdrawal force (N)	the test plug did not remain in the socket-outlet (Y/N)	maximum withdrawal force (N)	the test pin gauge did not remain in the contact assembly	
No 1	54N	Y	---	---	P
No 2	54N	Y	---	---	P
No 3	54N	Y	---	---	P
22.2	Verification of the minimum withdrawal force				
specimen	socket-outlets (single-pin gauge)		plugs with resilient earthing contact assemblies (single-pin gauge)		
	minimum withdrawal force (N)	the test pin gauge did not fall from each individual contact-assembly within 30 s (Y/N)	minimum withdrawal force (N)	the test pin gauge did not fall from each individual earthing contact-assembly within 30 s (Y/N)	
No 1	2 N	Y	---	---	P
No 2	2 N	Y	---	---	P
No 3	2 N	Y	---	---	P
supplementary information:					

23.2	TABLE: pull and torque test			
	rating of accessory (A)	16A		
	type of accessory (non-rewirable / rewirable)	rewirable		
	smallest/largest cross-sectional area per table 17 (mm ²) (rewirable accessories)	3x0,75 mm ² , 3x1,5 mm ²		
	nominal diameter of thread (mm); torque 2/3 per table 6 (Nm) (rewirable accessories)	2,90 mm ; 0,33 Nm		



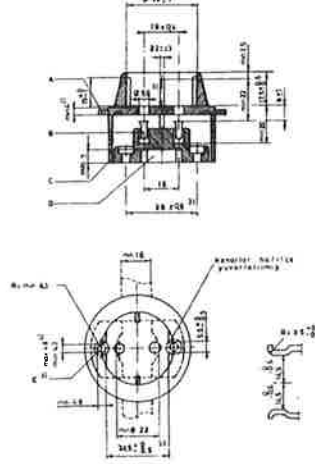
List of test equipment used:

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used
9	Boyutların kontrolü Dimensional measurement	Dijital Kumpas, mastar Digital Caliper, gauge S.N.:03005495 S.N.:16400103015	0 - 150 mm
10	Elektrik Çarpmasına Karşı Koruma Protection against electric shock	Deney Parmakları ve Şekil 13'de ki Deney Pini, Etüv Test finger and in test pin figure 13, Heating cabinet S.N: F-110-7 S.N: F-102-7, S.N.: 01-2436	1N - 100N, 0 °C - 250 °C
11	Topraklama düzeni Provision for earthing	Friborg A217 970013-22	0-250 mΩ 0-25 A
12	Bağlantı uçları Terminals	Friborg 37020 Y60 Friborg 37020 Y61	0.2-1.2 Nm 0.6-2.6 Nm
12.3.2	Vidasız Bağlantı uçları Conductor deflecting test	APS081205,APS081204	-
13	Yapılış kuralları Constructional requirements	Etüv S.N.: 01-2436 Heating cabinet	0 °C - 250 °C
15	Yaşlanmaya, zararlı su girişine ve neme karşı dayanıklılık Resistance to ageing, to harmful ingress of water and to humidity	Etüv NÜVE FN 400 S.N.: 01-2436 Heating cabinet İklimlendirme kabini Angelantoni CH340 E 10406 Climate cabinet WEISS TECHNIK FRIBORG 6500	0 °C - 250 °C -20 °C / +180 °C 10% / 9510% Rh 300 °C Max load 50 Kg 20 mbar 0-10 bar 100 lt 1/6.3 mm-2/12.5 mm
16	Yalıtım direnci ve elektriksel dayanım Insulation resistance and electric strength	MEGGER MIT520 EU/071007/1497 GW Instek GPT -815 LB	100-500-1000V 10KOhm – 1TOhm 0 - 5500 V 0 - 200 mA (A.C.)
17	Sıcaklık artışı deneyi Temperature-rise test	MATEŞ DPM-45 081104 CIE 305 37020 H13	0 - 80A -50 °C / 1300 °C
18	Açma kapama yeteneği Making and breaking capacity tests specified according to the ratings	EMS ULS-2008 2008-01 APS 081128	0-30 A, 200V – 275V 0.30 – 0.95 cosφ 0 °C - 250 °C
19	Normal çalışma Normal operation, tests specified according to the ratings	EMS ULS-2008 2008-01 APS 081128	0-30 A, 200V – 275V 0.30 – 0.95 cosφ 0 °C - 250 °C
20	Mekanik dayanım Mechanical strength	Döner tambur Tumbling barrel Friborg 5100 37020 Y55 Darbe çekici Pendulum Impact Hammer Friborg 5950 970013-08 Torkmetre, Friborg 37020 Y60 Friborg 37020 Y61 Torquemeter	-- 0.2-1.2 Nm 0.6-2.6 Nm
21	Isıya dayanıklılık Resistance to heat, treatments according to test specifications	Etüv NÜVE FN 400 S.N.: 01-2436 Heating cabinet Friborg	0 °C - 250 °C Diameter : 5 mm / 20 N
22	Vidalar akım taşıyan bölümler ve bağlantılar Screws, current carrying parts and connections	Torkmetre Friborg 37020 Y60 Torquemeter Friborg 37020 Y61	0.2-1.2 Nm 0.6-2.6 Nm
23	Yüzeysel kaçak yolu uzunlukları ve yalıtma aralıkları Creepage distances, clearances	Friborg 37020 Z30	1 - 1.5 - 2 - 2.5 - 3 - 3.5 - 4 - 4.5 - 5 - 5.5 - 6 - 6.5 - 7 - 7.5 - 8 - 8.5 - 9 - 9.5 - 10 mm
24	Yalıtkan malzemenin olağan dışı	Friborg 4100	0 - 960 °C K Type



	ısıya,yanmaya ve yüzeysel kaçaklara dayanıklılığı Resistance of insulating material to abnormal heat, to fire and to tracking	Friborg 4200	Thermocouple 0-1000V tracking test
25	Paslanmaya karşı dayanıklılık Resistance to rusting, treatment	Etöv NUVE FN 400 S.N.: 01-2436 Heating cabinet İklimlendirme kabini Angelantoni CH340 E 10406 Climate cabinet	20°C / +180°C 10% / 9510% Rh 300 °C

(TS 40 / Sheet 7 = CEE 7: Sheet III)



	9201XX	9211XX	9301XX	9311XX	9401XX	9411XX	9601XX	9611XX
19 ± 0,4	18,94	18,96	18,95	18,94	18,94	18,94	18,94	18,94
φ 5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5
17,5 + 0,5 ; - 0	17,54	17,52	17,56	17,54	17,54	17,54	17,54	17,54
15 + 0 ; - 1	14,05	14,07	14,07	14,05	14,05	14,05	14,05	14,05
39 ± 1	38,90	38,88	38,91	38,90	38,90	38,90	38,90	38,90
8 ± 1	8,92	8,91	8,91	8,92	8,92	8,92	8,92	8,92
Min 22	24,02	24,05	24,03	24,02	24,02	24,02	24,02	24,02
Min 1,5	3,04	3,06	3,04	3,04	3,04	3,04	3,04	3,04
2,2 ± 0,3	2,24	2,26	2,26	2,24	2,24	2,24	2,24	2,24
Min 20	23,08	23,07	23,08	23,08	23,08	23,08	23,08	23,08
Min 4	8,67	8,65	8,66	8,67	8,67	8,67	8,67	8,67
33,5 + 0 ; - 0,5	33,02	33,05	33,0	33,02	33,02	33,02	33,02	33,02
5,5 + 0 ; - 0,5	5,44	5,41	5,44	5,44	5,44	5,44	5,44	5,44
14,5 + 0 , - 0,5	14,06	14,08	14,05	14,06	14,06	14,06	14,06	14,06
R=3,5+0,3	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50



