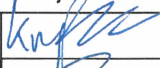





Test Report issued under the responsibility of:

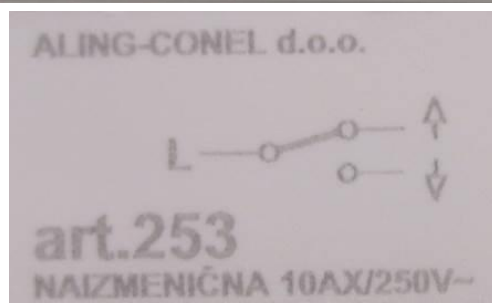


<b>TEST REPORT</b> <b>IEC 60669-1</b> <b>Switches for household and similar fixed-electrical installations</b> <b>Part 1: General requirements</b>	
<b>Report Number..... :</b>	<b>T211-1078/21</b>
<b>Date of issue .....</b>	<b>2021-12-27</b>
<b>Total number of pages .....</b>	<b>96</b>
<b>Name of Testing Laboratory preparing the Report .....</b>	<b>SIQ Ljubljana</b> SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing <b>Mašera-Spasičeva ulica 10, SI-1000 Ljubljana, Slovenia</b>
<b>Applicant's name .....</b>	<b>ALING – CONEL d.o.o.</b>
<b>Address.....</b>	<b>Železnička 10, 21432 Gajdobra, Serbia</b>
<b>Test specification:</b> Standard .....: IEC 60669-1:2017 Test procedure.....: CB Scheme Non-standard test method .....: N/A	
<b>Test Report Form No. .... :</b> IEC60669_1F Test Report Form(s) Originator .....: VDE Master TRF .....: Dated 2018-02-09	
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<b>Test item description..... :</b>	Surface mounted installation switches	
<b>Trade Mark..... :</b>	POWER	
<b>Manufacturer..... :</b>	ALING – CONEL d.o.o., Železnička 10, 21432 Gajdobra, Serbia	
<b>Model/Type reference..... :</b>	See general product information	
<b>Ratings..... :</b>	10 AX; 250 V~; IP44	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	
Testing location/ address..... :		<b>SIQ Ljubljana</b> SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing <b>Mašera-Spasičeva ulica 10, SI-1000 Ljubljana, Slovenia</b>
Tested by (name, function, signature)..... :		Nejc Krajnik 
Approved by (name, function, signature)..... :		Tibor Kokelj 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		
Approved by (name, function, signature)..... :		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
Testing location/ address..... :		
Tested by (name + signature)..... :		
Witnessed by (name, function, signature)..... :		
Approved by (name, function, signature)..... :		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		
Witnessed by (name, function, signature)..... :		
Approved by (name, function, signature)..... :		
Supervised by (name, function, signature)..... :		

<b>List of Attachments (including a total number of pages in each attachment):</b> 1. Enclosure No. 1 – National differences (9 pages) 2. Enclosure No. 2 – Technical documentation (31 pages) 3. Enclosure No. 3 – Photos (14 pages)	
<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b> All applicable tests were performed	<b>Testing location:</b> SIQ Ljubljana Mašera – Spasičeva ulica 10 SI-1000 Ljubljana Slovenia
<b>Summary of compliance with National Differences (List of countries addressed):</b> <b>All CENELEC countries</b>  <input checked="" type="checkbox"/> The product fulfils the requirements of IEC 60669-1:2017 <input checked="" type="checkbox"/> The product fulfils the requirements of EN 60669-1:2018	

Copy of marking plate (example):





<b>Test item particulars</b> .....	: Installation switches
Pattern number .....	: <b>1</b> (art.251.xx; art.2511.xx; art.255l.xx; art.256.xx; art.256l.xx; art.255.xx), <b>5</b> (art.252.xx; art.2521.xx), <b>6</b> (art.253.xx; art.2531.xx), <b>7</b> (art.254.xx; art.2541.xx), <b>6 + 1</b> (art.257.xx)
Contact opening (gap) .....	: <u>normal gap</u> / mini-gap / micro-gap / without contact gap (semiconductor switching device)
Degree of protection against access to hazardous parts and against harmful effects due to the ingress of solid foreign objects .....	: IP2X / <u>IP4X</u> / IP5X
Degree of protection against harmful effects due to the ingress of water .....	: IPX0 / <u>IPX4</u> / IPX5 / IPX6
Method of actuating .....	: rotary / tumbler / <u>rocker</u> (art.251.xx; art.252.xx; art.253.xx; art.254.xx; art.2511.xx; art.2521.xx; art.2531.xx; art.2541.xx) / push-button / cord-operated / <u>momentary contact</u> (art.255.xx; art.255l.xx; art.256.xx; art.256l.xx; art.257.xx)
Method of application .....	: <u>surface-type</u> / flush-type / semi flush-type / panel-type / architrave-type
Method of installation .....	: <u>design A</u> / design B
Type of terminals .....	: screw-type (rigid) / <u>screw-type (rigid and flexible)</u> / screwless (rigid) / screwless (rigid and flexible)
Flexible cable outlet .....	: <u>without</u> / with
Rated voltage (V) .....	: 250 V
Rated current (A) .....	: 10 AX
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....	: N/A
- test object does meet the requirement.....	: P (Pass)
- test object does not meet the requirement.....	: F (Fail)
<b>Testing</b> .....	
Date of receipt of test item .....	: 2021-09-23
Date (s) of performance of tests .....	: (2021-10-01) – (2021-12-24)

**General remarks:**

"(See Enclosure #)" refers to additional information appended to the report.

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

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

**Manufacturer's Declaration per sub-clause 4.2.5 of IEC60669-1:**

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....

☐ Yes

☒ Not applicable

**When differences exist; they shall be identified in the General product information section.**

Name and address of factory (ies)..... : ALING – CONEL d.o.o.,  
Železnička 10, 21432 Gajdobra,  
Serbia

**General product information and other remarks:**

Switches are part of POWER family of products. They are surface type mounted switches with 10 AX; 250 V; IP44

List of all models and description:

Model No. / Type reference	Description	Pattern number
art.251.xx	Single pole switch	1
art.252.xx	Two circuit switch with common incoming line	5
art.253.xx	Two-way switch	6
art.254.xx	Two-way reversing (intermediate) switch	7
art.2511.xx	Single pole switch with pilot light	1
art.2521.xx	Two circuit switch with common incoming line and pilot light	5
art.2531.xx	Two-way switch with pilot light	6
art.2541.xx	Two-way reversing (intermediate) switch with pilot light	7
art.255.xx	Momentary contact switch (for luminaries)	1
art.255l.xx	Momentary contact switch with pilot light (for luminaries)	1
art.256.xx	Momentary contact switch (for bell)	1
art.256l.xx	Momentary contact switch with pilot light (for bell)	1
art.257.xx	Momentary contact switch (for blinds); combination of pattern No. 6 and 1	6 + 1

Explanation of identical construction:

art.251.xx, art.2511.xx, art.255.xx, art.255l.xx, art.256.xx, art.256l.xx are all of the same construction/mechanism. Difference is in added indicator light and/or added spring for momentary contact.

art.252.xx, art.2521.xx are of the same construction/mechanism. Difference is in added indicator light.  
art.253.xx, art.2531.xx are of the same construction/mechanism. Difference is in added indicator light.

art.254.xx, art.2541.xx are of the same construction/mechanism. Difference is in added indicator light.

Explanation of color code .xx

00 - white

1A - gray with anthracite button

Following articles have been tested as they are representative for all other switches:


art.251.xx

art.252.xx

art.253.xx

art.254.xx

History sheet			
Report No.	Date	Change	Revision No.
T211-1078/21	2021-12-27	Initial Test Report issued.	--

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>8</b>	<b>MARKING</b>		<b>P</b>
<b>8.1</b>	<b>General</b>		<b>P</b>
	Switches are marked with:		<b>P</b>
	a) rated current(s) (A or AX).....:	10 AX	<b>P</b>
	b) rated voltage(s) (V) .....	250 V	<b>P</b>
	c) symbol for nature of supply .....	~	<b>P</b>
	d) manufacturer's or responsible vendor's name, trade mark or identification mark .....	ALING-CONEL	<b>P</b>
	e) type reference .....	Example: art.252	<b>P</b>
	f) symbol for mini-gap construction (m) .....		<b>N/A</b>
	g) symbol for micro-gap construction ( $\mu$ ) .....		<b>N/A</b>
	h) symbol for semiconductor switching device (without contact gap) ( $\epsilon$ ).....:		<b>N/A</b>
	i) first IP characteristic numeral, if declared higher than 4, in which case the second characteristic numeral is also marked .....	IP44	<b>P</b>
	j) second IP characteristic numeral, if declared higher than 2, in which case the first characteristic numeral is also marked .....	IP44	<b>P</b>
	i & j) suitable for smooth and even wall only (IPXX)		<b>P</b>
	i & j) suitable for smooth and even wall and for rough wall (test wall of figure 21) (  ) .....		<b>N/A</b>
	k) length of insulation to be removed before the insertion of the conductor into the screwless-type terminal .....	10 mm	<b>N/A</b>
	l) symbol for the suitability to accept rigid conductors only (r) .....		<b>N/A</b>
	In addition the following information shall be given in the manufacturer's documentation:		<b>N/A</b>
	m) for SBL loads: the rated power in watts and the type of load if the switch is tested according to 19.3.:	100 W	<b>P</b>
<b>8.2</b>	<b>Symbols</b>		<b>P</b>
	Symbols used: as required in the standard		<b>P</b>
	The symbol "" may be replaced by the symbol "X". For the marking with rated current and rated voltage the figures may be used alone		<b>N/A</b>
	The marking for the nature of supply shall be placed next to the marking for rated current and rated voltage		<b>P</b>
<b>8.3</b>	<b>Visibility of markings</b>		<b>P</b>
	Markings are clearly visible with normal or corrected vision, without additional magnification		<b>P</b>

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Markings as given in 8.1 a), b), c), d), e) and, if applicable, f), g), h), k), and l) shall be placed on the main part of the switch		P
	Parts such as cover plates, which are necessary for safety purposes and are intended to be sold separately, are marked with the manufacturer's or responsible vendor's name, trade mark or identification mark and type reference		N/A
	Markings as given in 8.1 i) and j), when applicable, are marked so as to be easily discernible when the switch is mounted and wired as in normal use		P
	Markings are placed on parts which cannot be removed without the use of a tool		P
8.4	<b>Marking on terminals for phase conductors</b>		P
	Terminals intended for the connection of phase conductors (supply conductors) are identified unless the method of connection is of no importance, is self-evident or is indicated on a wiring diagram	Marked	P
	Indications not placed on screws or other easily removable part		P
	Alternatively, the surface of such terminals shall be bare brass or copper, other terminals being covered with a metallic layer of another colour		N/A
	For switches of pattern numbers 2, 3, 03 and 6/2, terminals associated with any one pole have similar identification, if applicable, differing from that of the terminals associated with the other poles, unless the relationship is self-evident		P
8.5	<b>Marking on terminals for neutral and earth conductors</b>		P
	Neutral terminals: N .....		N/A
	Earthing terminals: [earth symbol (IEC 60417-5019:2006-08)] .....		P
	Markings not placed on screws or other easily removable parts		P
	Terminals for conductors not forming part of the main function of the switch:		P
	- clearly identified unless their purpose is self-evident, or		P
	- indicated in a wiring diagram fixed to the accessory		N/A
	Identification of switch terminals may be achieved by:		P
	- their marking with graphical symbols according to IEC 60417 or colours and/or alphanumeric system, or		P
	- their physical dimension or relative location		N/A
8.6	<b>Marking of the switch position</b>		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Switches marked to indicate the switch position: they are so marked that the direction of movement of the actuating member to its different positions or the actual position is clearly indicated .....		N/A
	Switches having more than one actuating member: marking indicates the effect achieved by the operation		N/A
	Marking clearly visible on the front of the switch		N/A
	Not possible to fix cover, cover plate, or removable actuating members in an incorrect position		N/A
	Symbols for "on" and "off" not used for indication of switch positions unless clearly indicate the direction of movement of the actuating members		N/A
8.7	<b>Additional requirements for marking</b>		P
	Special precautions necessary to take when installing the switch: details of these and clear information given in an instruction sheet which accompanies the switch		N/A
	Instruction sheets are written in the official language(s) of the country in which the switch is to be sold		P
8.8	<b>Durability</b>		P
	Marking durable and easily legible. Test: 15 s with water and 15 s with 95 % n-hexane.		P
9	<b>CHECKING OF DIMENSIONS</b>		N/A
	Switches and boxes comply with the appropriate standard sheets, if any		N/A
10	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		P
10.1	<b>Prevention of access to live parts</b>		P
	Switches: live parts not accessible		P
	Switches designed to be fitted with pilot lights supplied at voltage other than ELV have means to prevent direct contact with the lamp		P
	Specimen is mounted as in normal use and fitted with conductors as specified		P
	Test probe B of IEC 61032 is applied in every possible position, an electrical indicator with a voltage between 40 V and 50 V being used to show contact with the relevant part		P
	Switches having enclosures or covers in thermoplastic or elastomeric material: additional test carried out at 35 °C ± 2 °C. Switches are subjected for 1 min to a force of 75 N, applied through the tip of test probe 11 of IEC 61032		P
	Test finger applied to thin-walled knock-outs with a force of 10 N		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	During the test: switches not deform and no live parts accessible with test probe 11 of IEC 61032		P
10.2	<b>Requirements for operating parts</b>		P
	Knobs, operating levers, push buttons, rockers and the like: of insulating material, unless:		P
	- accessible metal parts separated from metal parts of mechanism by double or reinforced insulation, or		P
	- reliably connected to earth	No protective earth	N/A
	Requirement does not apply to removable keys or intermediate parts, such as chains or rods		N/A
10.3	<b>Requirements for accessible metal parts</b>		P
10.3.1	Accessible parts of switches when in normal use are made of insulating material as specified.	No accessible metal parts	P
10.3.2	Metal covers or cover plates are protected by supplementary insulation made by insulating linings or insulating barriers.		N/A
	Insulating linings or insulating barriers:		N/A
	- cannot be removed without being permanently damaged, or designed that		N/A
	- cannot be replaced in an incorrect position; if they are omitted, accessories are rendered inoperable or manifestly incomplete; there is no risk of accidental contact between live parts and metal covers or cover plates; precautions are taken to prevent creepage distances or clearances becoming less than the values specified in clause 23		N/A
	Linings or barrier comply with the tests of clauses 16 and 23		N/A
10.3.3	Earthing of metal covers or cover plates: connection of low resistance		N/A
10.4	<b>Requirements for insulation of the mechanism</b>		P
	Metal parts of the mechanism which are not insulated from live parts: not protrude from enclosure		P
	Switches operated by means of a removable key or similar device: metal parts of mechanism insulated from live parts		N/A
10.5	<b>Requirements for insulation of the mechanism with respect to the surrounding environment</b>		P
	Metal parts of mechanism not accessible and insulated from accessible metal parts, unless		P
	- separated from live parts (creepage distances and clearances have at least twice the value specified in clause 23), or		N/A
	- reliably connected to earth		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Unenclosed stack-type switches having a metal spindle pivoting in a metal base plate: creepage distances and clearances between live parts and the spindle, and between metal parts of the mechanism and base plate, have at least twice the values specified in clause 23		N/A
10.6	<b>Requirements for switches operated indirectly</b>		N/A
	Switches operated by means of a removable key or an intermediate part: key or an intermediate part can only touch parts which are insulated from live parts		N/A
	Key or intermediate part: insulated from metal parts of mechanism, unless		N/A
	Creepage distances and clearances between live parts and metal parts of mechanism have at least twice the values specified in clause 23		N/A
10.7	<b>Requirements for switches with replaceable pull cord</b>		N/A
	Cord-operated switches: impossible to touch live parts when fitting or replacing the pull cord		N/A
11	<b>PROVISION FOR EARTHING</b>		N/A
11.1	<b>General</b>		N/A
	Accessible metal parts: provided with, or permanently and reliably connected to, an earthing terminal (does not apply to the metal cover plates mentioned in 10.3.2)		N/A
	Small screws and the like, isolated from live parts, are not considered as accessible parts which can become live in the event of an insulation fault		N/A
11.2	<b>Earthing terminals</b>		N/A
	Earthing terminals: with screw clamping or screwless terminals and comply with clause 12		N/A
11.3	<b>Requirements for surface-type switches</b>		P
	Surface-type switches with an enclosure of insulating material, with IP > X0 and more than one cable inlet, are provided with:		P
	- an internal fixed earthing terminal, or		P
	- adequate space for a floating terminal allowing the connection of an incoming and outgoing conductor		N/A
11.4	<b>Test for earthing connection</b>		N/A
	Connection between earthing terminal and accessible metal parts: of low resistance		N/A
	Test current equal to 1,5 I <sub>n</sub> or 25 A (A) .....		N/A
	Resistance ≤ 0,05 Ω (Ω) .....		N/A
12	<b>TERMINALS</b>		P
12.1	<b>General</b>		P



IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Switches provided with screw-type terminals or with screwless terminals..... : Screw-type terminals		P
	Clamping means of terminals: not serve to fix any other components		P
	All the test on terminals, with the exception of the test of 12.3 11, made after the test of 15.1		P
	Rigid solid conductors shall be of class 1, rigid stranded conductors shall be of class 2 and flexible conductors shall be of class 5 according to IEC 60228		P
12.2	<b>Terminals with screw clamping for external copper conductors</b>		P
12.2.1	Terminals with screw clamping having cross-sectional areas as shown in Table 4		P
	- for rigid copper conductors only, or		P
	- for both rigid and flexible copper conductors (tests carried out with rigid and then repeated with flexible conductors)		N/A
	Rated current (A) ..... : 10		P
	Type of conductor (rigid / flexible) ..... : <u>Rigid / flexible</u>		P
	Smallest / largest cross-sectional area (mm <sup>2</sup> ) ..... : 1,0 mm <sup>2</sup> / 2,5 mm <sup>2</sup>		P
	Diameter of largest conductor (mm)..... : 2,13 mm		P
	Figure of terminal ..... : 1 / <u>2</u> / 3 / 4 / 5		P
	Minimum diameter D (minimum dimensions) of conductor space: required (mm); measured (mm) ... : 2,0 mm; 2,8 mm		P
12.2.2	Terminals allow the conductor to be connected without special preparation		P
12.2.3	Terminals with screw clamping have adequate mechanical strength		P
	Screws and nut for clamping the conductors have metric ISO thread or a comparable thread		P
	Screws not of soft metal such as zinc or aluminium		P
12.2.4	Terminals with screw clamping are resistant to corrosion		P
12.2.5	Terminals with screw clamping clamp the conductor(s) without undue damage to the conductor(s)	See appended table 12.2.5	P
	For screws having a hexagonal head with slot for tightening, test shall be made twice, first the torque applying to the hexagonal head and then applying the torque by means of a screwdriver		N/A
	During the test: conductor not slip out, no break near clamping unit and no damage		P
12.2.6	Terminals with screw clamping clamp the conductor reliably between metal surfaces	See appended table 12.2.6	P
	During the test: conductor not move noticeably		P

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
12.2.7	Terminals with screw clamping are designed or placed that the conductor cannot slip out while the clamping screws or nuts are tightened	See appended table 12.2.7	P
	After the test: no wire of the conductor escaped outside the clamping unit thus reducing creepage distances and clearances to values lower than those indicated in table 23		P
12.2.8	Terminals not work loose from their fixing to the switch		P
	Movement of the terminal is allowed as long as it is sufficiently limited so as to prevent noncompliance with this document		P
	Use of sealing compound or resin is considered to be sufficient, provided that:		N/A
	- the sealing compound or resin is not subject to stress during normal use, and		N/A
	- the effectiveness of the sealing compound or resin is not impaired by temperatures attained by the terminal		N/A
	Torque test:		P
	- rated current (A) .....: 10 A		P
	- solid rigid copper conductor of the largest cross-sectional area (mm <sup>2</sup> ) (table 4).....: 2,5 mm <sup>2</sup>		P
	- torque (Nm) (table 5 or appropriate figures 1, 2, 3, 4) .....: 0,8 Nm		P
	Screws and nuts tightened and loosened 5 times. During the test: terminals not work loose and show no damage		P
12.2.9	Clamping screws or nuts of earthing terminals: adequately locked against accidental loosening, not possible to loosen them without the aid of a tool		N/A
12.2.10	Earthing terminals: no risk of corrosion		N/A
	Body of brass or other metal no less resistant to corrosion		N/A
	If the body is a part of a frame or enclosure of aluminium alloy, precautions are taken to avoid the risk of corrosion		N/A
12.2.11	Pillar terminals: distance g no less than the value specified in figure 1: required (mm); measured (mm):		N/A
	Mantle terminals: distance g no less than the value specified in figure 5: required (mm); measured (mm):		N/A
12.2.12	Lug terminals:		N/A
	- used only for switches having rated current $\geq 40$ A		N/A
	- fitted with spring washers or equally effective locking means		N/A
12.3	<b>Screwless terminals for external copper conductors</b>		N/A
12.3.1	Screwless terminals of the type suitable for:		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- for rigid copper conductors only, or		N/A
	- for both rigid and flexible copper conductors (tests carried out with rigid and then repeated with flexible conductors)		N/A
	12.3 is not applicable to switches provided with		N/A
	- screwless terminals requiring the fixing of special devices to the conductors before clamping in the screwless terminal		N/A
	- screwless terminals requiring twisting of the conductors		N/A
	- screwless terminals providing direct contact to the conductors by means of edges or points penetrating the insulation		N/A
12.3.2	Screwless terminals provided with clamping units which allow the proper connection of rigid or of rigid and flexible conductors having nominal cross-sectional areas as shown in table 8		N/A
	Rated current (A) .....		N/A
	Type of conductor (rigid / flexible) .....		N/A
	Smallest / largest cross-sectional area (mm <sup>2</sup> ) .....		N/A
	Diameter of largest rigid conductor (mm).....		N/A
	Diameter of largest flexible conductor (mm) .....		N/A
12.3.3	Screwless terminals allow the conductor to be connected without special preparation		N/A
12.3.4	Parts of screwless terminals intended for carrying current of materials as specified in 22.5		N/A
12.3.5	Screwless terminals clamp specified conductors with sufficient contact pressure without undue damage to the conductor		N/A
	Conductor clamped between metal surfaces		N/A
12.3.6	It is clear how the connection and disconnection of the conductors is to be made		N/A
	Disconnection of a conductor require an operation, other than a pull, so that can be made manually with or without a general-purpose tool		N/A
	It is not possible to confuse the opening for the use of a tool with the opening intended for the conductor		N/A
12.3.7	Screwless terminals intended for the interconnection of two or more conductors:		N/A
	- the clamping of one of the conductors is independent of the clamping of the other conductor(s)		N/A
	- during the connection or disconnection the conductors can be connected or disconnected either at the same time or separately		N/A
	- each conductor introduced in a separate clamping unit		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	It is possible clamp securely any number of conductors up to the maximum as designed. Number of conductors; Nominal cross-sectional area (mm <sup>2</sup> ) .....		N/A
12.3.8	Screwless terminals: adequate insertion obvious and over-insertion prevented		N/A
	Screwless terminals of switches: undue insertion of the conductor prevented by a stop if further insertion is liable to reduce creepage distances and/or clearances required in table 23, or to influence the mechanism		N/A
12.3.9	Screwless terminals properly fixed to the switch		N/A
	Not work loose when conductors are connected or disconnected		N/A
	Self-hardening resins used to fix terminals which are not subject to mechanical stress		N/A
12.3.10	Screwless terminals withstand mechanical stresses occurring in normal use	See appended table 12.3.10	N/A
	During application of the pull, conductor not come out of the terminal		N/A
	Test with apparatus shown in figure 9	See appended table 12.3.10	N/A
	During the test conductors not move noticeably in the clamping unit		N/A
	After these tests: neither terminals nor clamping means have worked loose and conductors show no deterioration		N/A
12.3.11	Screwless terminals withstand electrical and thermal stresses occurring in normal use	See appended table 12.3.11	N/A
	After the test: inspection show no changes		N/A
	Repetition of test according to 12.3.10: screwless terminals withstand mechanical stresses occurring in normal use	See appended table 12.3.11	N/A
	During application of the pull conductor not come out of the terminal		N/A
	Test with apparatus shown in figure 10	See appended table 12.3.11	N/A
	- measured after 24 <sup>th</sup> and 192 <sup>th</sup> temperature cycle		N/A
	- measured after any three of 48 <sup>th</sup> , 72 <sup>th</sup> , 96 <sup>th</sup> , 120 <sup>th</sup> , 144 <sup>th</sup> or 168 <sup>th</sup> temperature cycle		N/A
	During the test conductors not move noticeably in the clamping unit		N/A
	After these tests: neither terminals nor clamping means have worked loose and conductors show no deterioration		N/A
12.3.12	Screwless terminals: connected rigid solid conductor remains clamped, even when deflected during normal installation	See appended table 12.3.12	N/A
13	CONSTRUCTIONAL REQUIREMENTS		P

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Clause	Requirement + Test	Result - Remark	Verdict
13.1	<b>Mechanical requirements for insulating means</b>		P
	Insulating lining, barriers and like: adequate mechanical strength and secured in a reliable manner		P
13.2	<b>Installation requirements</b>		P
	Switches constructed so as to permit:		P
	- easy introduction into the terminal and reliable connection of the conductors in the terminals, except for lead wires of pilot lights		P
	- correct positioning of the conductors		P
	- easy fixing of the switch to a wall or in a box		P
	- adequate space between the underside of the main part and the surface on which the main part is mounted or between the sides of the main part and the enclosure (cover or box)		P
	Surface-type switches: fixing means do not damage insulation of the cable		N/A
	Switches comprising screwless terminals: connecting and/or disconnecting means of the screwless terminals cannot be activated by the conductors during and after installation of the switch in a box or on a wall	Screw terminals	N/A
	Compliance is checked by inspection and in case of doubt by the following test		N/A
	The test is carried out with a solid copper conductor having the smallest cross-sectional area, as specified in 12.3.2 (mm <sup>2</sup> ) ..... :		N/A
	If it is not possible to exert a force onto the connecting / disconnecting means, the product is deemed to comply with the requirements of this sub clause without further tests		N/A
	During the application of the pull, the conductor do not come out of the screwless terminal		N/A
	Switches classified as design A: permit easy positioning and removal of the cover or cover plate, without displacing the conductors or activating the connecting and/or disconnecting means of screwless terminals		P
13.3	<b>Fixing of covers, cover plates and actuating members</b>		P
13.3.1	Covers, cover-plates and actuating members or parts of them intended to ensure protection against electric shock:		P
	- held in place at two or more points by effective fixings	Main part of switch held together by 4 snap fits	P
	- fixed by means of a single fixing, e.g. by a screw, provided that they are located by another means (e.g. by a shoulder)	Front cover plate fixed by 2 screws	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Where the fixing of covers, cover plates or actuating members of switches of design A serves to fix the main part there are means to maintain the main part in position, even after removal of the covers, cover plates or actuating members.		P
13.3.2	Covers, cover plates or actuating members whose fixing is of the screw-type:		P
	Compliance checked by inspection only	Front cover plate	P
13.3.3	Covers, cover plates or actuating members whose fixing is not dependent on screws and whose removal is obtained by applying a force in a direction approximately perpendicular to the mounting / supporting surface (see table 12):		N/A
	- when their removal may give access, with the test probe B of IEC 61032, to live parts:	Main part of the switch By the test of 20.5	P
	- when their removal may give access, with the test probe B of IEC 61032, to non-earthed metal parts separated from live parts in such a way that creepage distances and clearances have the values at least equal to those shown in table 23:	by the tests of 20.6	N/A
	- when their removal may give access, with the test probe B of IEC 61032, only to	Button by the tests of 20.7	P
	- insulating parts, or		P
	- earthed metal parts, or		N/A
	- metal parts separated from live parts in such a way that creepage distances and clearances have at least twice the values shown in table 23, or		N/A
	- live parts of SELV circuits not greater than 25 V AC and 60 V DC:		N/A
13.3.4	Covers, cover-plates or actuating members whose fixing is not dependent on screws and whose removal is obtained by using a tool, in accordance with the manufacturer's instructions given in an instruction sheet or catalogue:		P
	By the same tests of 13.3.3 except that the covers, cover plates, actuating members or parts of them need not come out when applying a force not exceeding 120 N in directions perpendicular to the mounting / supporting surface	See tests 20.5 and 20.7	P
13.4	<b>Openings in normal use</b>		P
	Switches: no free openings in their enclosures according to their IP classification	IP44	P
13.5	<b>Attachment of knobs</b>		N/A
	Knobs of rotary switches securely attached to the shaft or part operating the mechanism		N/A
	- axial pull be applied for 1 min to try to pull off the actuating member		N/A
	- axial pull is likely to be applied in normal use, the force is 30 N		N/A
	- axial pull is unlikely to be applied in normal use, the force is 15 N		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- knob of switches having only one direction of operation: turned 100 times in the reverse direction		N/A
	During the test: knob not become detached		N/A
13.6	<b>Mounting means</b>		P
	Screws or other means for mounting the switch on a surface or in a box or enclosure: easily accessible from the front		P
	Fixing means not serve any other fixing purpose		P
13.7	<b>Combination of switches</b>		N/A
	Combinations of switches, or of switches and socket-outlets, comprising separate bases: correct position of each main part is ensured		N/A
	Fixing of each main part be independent of the fixing of the combination to the mounting surface		N/A
13.8	<b>Accessories combined with switches</b>		N/A
	Accessories combined with switches: comply with their standard		N/A
13.9	<b>Surface-type switches having an IP code higher than IP20</b>		P
	Surface-type switches with IP > 20 are in according to their classification when fitted with conduits or with sheathed cables		P
	Surface-type switches with IPX4, IPX5 and IPX6 have provisions for opening a drain hole	IP44	P
	Switches provided with a drain hole: it is not less than 5 mm in diameter, or 20 mm <sup>2</sup> in area with a width and a length not less than 3 mm ..... : 5 x 6 mm = 30 mm <sup>2</sup>		P
	Drain hole: effective		P
	Lid springs (if any): of corrosion resistant material (bronze or stainless steel)		N/A
13.10	<b>Installation in a box</b>		N/A
	Switches to be installed in a box: conductor ends can be prepared after the box is mounted in position, but before the switch is fitted in the box		N/A
	Main part has adequate stability when mounted in the box		N/A
13.11	<b>Connection of a second current-carrying conductor</b>		P
	Surface-type switches with IP > IPX0, pattern numbers 1, 5 and 6, with more than one inlet opening, provided with:		N/A
	- fixed additional terminal complying with the requirements of clause 12, or		P
	- adequate space for a floating terminal		P
13.12	<b>Inlet openings</b>		P
	Inlet openings: allow the introduction of the conduit or the sheath of the cable		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Surface-type switches: intended conduit or the sheath of the cable can enter at least 1 mm into the enclosure		P
	Inlet openings for conduit entries of surface-type switches: capable of accepting conduit sizes of 16, 20, 25 or 32 or a combination of at least two of these sizes not excluding two of the same size .....		N/A
	Inlet openings for cable entries of surface-type switches: capable of accepting cables having the dimensions specified in table 13 or be as specified by the manufacturer: rated current (A); limits of external diameter of cables min/max (mm).....	8 - 11 mm marked in instructions	P
13.13	<b>Provision for back entry from a conduit</b>		N/A
	Surface-type switches: provision for back entry (if are intended)		N/A
13.14	<b>Switch provided with membranes or the like for inlet openings</b>		P
	Switch is provided with membranes or the like for inlet openings: replaceable		P
13.15	<b>Requirements for membranes in inlet openings</b>		P
13.15.1	Membranes are reliably fixed and not displaced by the mechanical and thermal stresses occurring in normal use		P
	Test on membranes subjected to the ageing treatment specified in 15.1 and fitted with the switches		P
	Switches placed at 40 °C for 2 h. Force of 30 N applied for 5 s by means of the tip of test probe 11 of IEC 61032. During the test: no deformation, live parts not accessible		P
	Membranes likely to be subjected to an axial pull: axial pull of 30 N applied for 5 s. During the test: membranes not come out		P
	Test repeated with membranes not subjected to any treatment		P
13.15.2	Membranes be so designed and made of such material that: Introduction of the cables into the switch is permitted when the ambient temperature is low.		P
	Test on membranes not subjected to the ageing treatment, those without opening being suitably pierced:		P
	Switches kept at a temperature of $(-15 \pm 2) ^\circ\text{C}$ for 2 h: possibility to introduce cables of the heaviest type through the membranes		P
	After the test: no harmful deformation, cracks or similar damage		P
13.16	<b>Pilot light units</b>		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Pilot light units comply with IEC 60669-2-1:2002, IEC 60669-2-1:2002/AMD1:2008 and IEC 60669-2-1:2002/AMD2:2015, 101.1.1.1 and Clause 102, as far as applicable		P
<b>14</b>	<b>MECHANISM</b>		<b>P</b>
<b>14.1</b>	<b>Indication of the position</b>		<b>P</b>
	Actuating member of a switch, when released, automatically take up the position corresponding to that of moving contacts		P
<b>14.2</b>	<b>Rest and intermediate position</b>		<b>P</b>
	Moving contact of switches can come to rest only in "on" and "off" positions		P
	Intermediate position permissible if:		N/A
	- it corresponds to the intermediate position of the actuating member, and		N/A
	- the insulation between fixed and moving contacts is adequate. Electric strength test as specified in 16.3: test voltage a.c. for 1 min (V) ..... : 500 V / 750 V / 1250 V / 2000 V		N/A
<b>14.3</b>	<b>Undue arcing</b>		<b>P</b>
	No undue arcing in slowly operation		P
	Test carried out at the end of the test of clause 19.1: breaking of the circuit 10 times, actuating member moved over a period of 2 s. During the test: no sustained arcing		P
<b>14.4</b>	<b>Making and breaking</b>		<b>P</b>
	Switches of pattern numbers 2, 3, 03 and 6/2 make and break all poles substantially simultaneously		P
	Neutral pole of switches of pattern number 03 not make after or break before the other poles		N/A
<b>14.5</b>	<b>Action of the mechanism without cover or cover plate</b>		<b>P</b>
	Action of the mechanism: independent of the presence of cover or cover plate. Test: no flicker		P
<b>14.6</b>	<b>Cord-operated switches: effecting a change by application and removal of a steady pull not exceeding:</b>		<b>N/A</b>
	- 45 N applied vertically, and		N/A
	- 65 N applied at 45° ± 5°		N/A
<b>15</b>	<b>RESISTANCE TO AGEING, PROTECTION PROVIDED BY ENCLOSURES OF SWITCHES, AND RESISTANCE TO HUMIDITY</b>		<b>P</b>
<b>15.1</b>	<b>Resistance to ageing</b>		<b>P</b>
	Switches are resistant to ageing		P
	Parts intended for decorative purposes only, such as certain lids, are removed		P
	Switches and boxes placed for 7 days (168 h) in a heating cabinet at 70 °C ± 2 °C		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- no crack visible after test with normal or corrected vision without additional magnification		P
	- no sticky or greasy material as a result of heat		P
	- no trace of cloth (forefinger pressed with 5 N)		P
	- no damage		P
15.2	<b>Protection provided by enclosures of switches</b>		P
15.2.1	General		P
	Enclosure of the switch provides protection against access to hazardous parts, against harmful effect due to ingress of solid foreign objects and against effects due to ingress of water in accordance with the IP classification of the switch	IP44	P
15.2.2	Protection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects		P
15.2.2.1	General		P
	Glands: torque (Nm) (2/3 of torque applied in 20.4) :		N/A
	Screws of the enclosure: torque (Nm) (2/3 table 5) .....		N/A
	Parts which can be removed without the aid of a tool are removed		N/A
	Glands are not filled with sealing compound or the like		N/A
15.2.2.2	Protection against access to hazardous parts		P
	Appropriate test according to IEC 60529 .....	IP44	P
15.2.2.3	Protection against harmful effects due to ingress of solid foreign objects		P
	Appropriate test according to IEC 60529 .....	IP44	P
	For the test of the first characteristic numeral 5, enclosures of switches are considered to be of category 2 (see IEC 60529:1989 and IEC 60529:1989/AMD1:1999, 13.4); dust not penetrate in a quantity to interfere with satisfactory operation or impair safety		N/A
	For the test of the first characteristic numeral 6, enclosures of switches are considered to be of category 1 (see IEC 60529:1989, 13.6); no dust penetrate		N/A
15.2.3	Protection against harmful effects due to ingress of water		P
	Enclosure of switches provide a degree of protection against harmful effects due to ingress of water in accordance with their IP classification		P
	Appropriate test according to IEC 60529 .....	IP44	P
	Flush-type and semi-flush-type switches fixed:		N/A
	- in a test wall using an appropriate box in accordance with the manufacturer's instructions		N/A
	- in a test wall according to figure 21		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Screws of the enclosure: torque (Nm) (2/3 table 5) .....		N/A
	Glands: torque (Nm) (2/3 of torque applied in table 22) .....		N/A
	Specimens withstand an electric strength test specified in 16.3 which is started within 5 min of completion of the test to 15.2		P
15.3	<b>Resistance to humidity</b>		P
	Switches proof against humidity which may occur in normal use		P
	Compliance checked by a humidity treatment described in 15.3, carried out in a humidity cabinet containing air with relative humidity maintained between 91 % and 95 %. Specimens kept in the cabinet for:		P
	- 2 days (48 h) for switches with IPX0		N/A
	- 7 days (168 h) for switches with IP>X0		P
	After this treatment: specimens show no damage		P
16	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		P
16.1	<b>General</b>		P
	One pole of any pilot lights (if available), are disconnected for this test		N/A
	Insulation resistance and electric strength of switches be adequate		P
16.2	<b>Test for measuring the insulation resistance</b>		P
	The insulation resistance measured 1 min after application of 500 V DC	See appended table 16.2	P
	In addition, if electrically independent pattern numbers are combined in a common base, additional tests for each combination performed		P
16.3	<b>Electric strength test</b>		P
	Electric strength: AC test voltage applied for 1 min	See appended table 16.3	P
	In addition, if electrically independent pattern numbers are combined in a common base, additional tests for each combination performed		P
17	<b>TEMPERATURE RISE</b>		P
17.1	<b>General</b>		P
	Switches so constructed that the temperature rise in normal use is not excessive	See appended table 17	P
	No oxidation or any other deterioration of contacts		P
17.2	<b>Switches incorporating pilot lights</b>		P
	Switches incorporating or intended to incorporate pilot lights are designed that in normal use temperature of the accessible surface is not excessive	See appended table 17	P
18	<b>MAKING AND BREAKING CAPACITY</b>		P
18.1	<b>General</b>		P

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Clause	Requirement + Test	Result - Remark	Verdict
	For the purpose of this test, pilot lights are disconnected		P
	Switches have adequate making and breaking capacity		P
	- model / type reference .....	art.251; art.252; art.253; art.254	P
	- pattern number .....	1; 5; 6; 7	P
	- rated voltage (V) .....	250 V	P
	- rated current (A) .....	10 A	P
	- nominal cross-sectional area as for the test of clause 17 (mm <sup>2</sup> ) .....	2,5 mm <sup>2</sup>	P
18.2	<b>Overload</b>		P
	Test with cos $\phi$ 0,3 alternating current		P
	- test voltage (1,1 V <sub>n</sub> ) (V) .....	275 V	P
	- test current (1,25 I <sub>n</sub> ) (cos $\phi$ 0,3) (A) .....	12,5 A	P
	- 200 operations; rate (operations per minute) .....	30	P
	- samples number .....	a,b,c	P
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	After the test: specimens show no damage		P
	During the test: specimens are not lubricated		P
18.3	<b>Overload test with filament lamps</b>		P
	Test with a number of tungsten filament lamps or a number of halogen filament lamps (switches with I <sub>n</sub> ≤ 16 A / V <sub>n</sub> ≤ 250 V and switches of pattern numbers 3 and 03 with V <sub>n</sub> > 250 V)		P
	- test voltage (V <sub>n</sub> ) (V) .....	250 V	P
	- test current (≥ 1,2 I <sub>n</sub> ) (A) .....	≥ 12 A	P
	- number of 200 W tungsten filament lamps .....	15	P
	- 200 operations; rate (operations per minute) .....	30	P
	- samples number .....	a,b,c	P
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	After the test: specimens show no damage		P
19	<b>NORMAL OPERATION</b>		P
19.1	<b>Test for switches intended for inductive loads</b>		P
	For the purpose of this test, pilot lights are disconnected		P
	Switches withstand, without excessive wear or other harmful effect, the mechanical, electrical and thermal stresses occurring in normal use		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- model / type reference .....	art.251; art.252; art.253; art.254	P
	- pattern number .....	1; 5; 6; 7	P
	- nominal cross-sectional area per clause 18 (mm <sup>2</sup> ):	2,5 mm <sup>2</sup>	P
	- test voltage (Vn) (V) .....	250 V	P
	- test current (In) (cos φ 0,6) (A) .....	10 A	P
	- number of operations per table 18 .....	40000	P
	- rate (operations per minute) .....	30	P
	- samples number .....	a,b,c	P
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	Reduced electric strength per clause 16	See appended table 19.1	P
	Reduced temperature rise test per clause 17	See appended table 19.1	P
	After the tests the specimens not show:		P
	- wear impairing their further use		P
	- discrepancy between the position of the actuating member (if indicated) and that of the moving contacts		P
	- deterioration of enclosures, insulating lining or barriers		P
	- seepage of sealing compound		N/A
	- loosening of electrical or mechanical connections		P
	- displacement of moving contacts of switches pattern number 2, 3, 03 or 6/2		P
	During the test, specimens are not lubricated		P
	No sustained arcing in slowly operation (sub clause 14.3)		P
19.2	<b>Test for switches intended for externally ballasted lamp loads</b>		P
	Switches intended for externally ballasted lamp loads withstand, without excessive wear or other harmful effect, the electrical and thermal stresses occurring when controlling externally ballasted lamp circuits		P
	- model / type reference .....	art.251; art.252; art.253; art.254	P
	- pattern number .....	1; 5; 6; 7	P
	- nominal cross-sectional area per clause 18 (mm <sup>2</sup> ):	2,5 mm <sup>2</sup>	P
	- rate (operations per minute) .....	30	P
	- test voltage (Vn); test current (In) (cos φ 0,9); number of operations with load A .....	250 V; 10 A; 10000	P
	- test voltage (Vn); 100 operations with load B .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- samples number.....:	d,e,f	P
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	Reduced electric strength per clause 16	See appended table 19.2	P
	Reduced temperature rise test per clause 17	See appended table 19.2	P
	After the tests it is possible to make and break the switch by hand, and specimen not show:		P
	- wear impairing their further use		P
	- discrepancy between the position of the actuating member (if indicated) and that of the moving contacts		P
	- deterioration of enclosures, insulating lining or barriers		P
	- loosening of electrical or mechanical connections		P
	- seepage of sealing compound		N/A
	- displacement of moving contacts of switches pattern number 2, 3 or 6/2		P
19.3	<b>Test for switches intended for self-ballasted lamp loads</b>		P
	Switches intended for self-ballasted lamp (SBL) loads withstand, without excessive wear or other harmful effect, the electrical and thermal stresses occurring when controlling self-ballasted lamp circuits		P
	- model / type reference .....	art.251; art,252; art.253; art.254	P
	- pattern number .....	1; 5; 6; 7	P
	- nominal cross-sectional area per clause 18 (mm <sup>2</sup> ):	2,5 mm <sup>2</sup>	P
	- test voltage (Vn) (V).....	250 V	P
	- test current (In) (A) .....	0,4 A	P
	- number of operations per table 18.....	40000	P
	- rate (operations per minute) .....	30	P
	- samples number.....	g,h,i	P
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	Reduced electric strength per clause 16	See appended table 19.3	P
	Reduced temperature rise test per clause 17	See appended table 19.3	P
	After these tests, it is possible to make and break the switch by hand in the test circuit and the specimen not show:		P
	- wear impairing further use		P
	- discrepancy between the position of the actuating member and that of the moving contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- deterioration of the enclosures, insulating lining or barriers		P
	- loosening of electrical or mechanical connections		P
	- seepage of sealing compound		N/A
	- displacement of the moving contacts of switches of pattern numbers 2, 3 or 6/2		P
<b>20</b>	<b>MECHANICAL STRENGTH</b>		<b>P</b>
20.1	<b>General</b>		<b>P</b>
	Accessories, surface mounting boxes, screwed glands and shrouds have adequate mechanical strength so as to withstand the stresses imposed during installation and use		P
20.2	<b>Pendulum hammer test</b>		<b>P</b>
	For all types of switches and for boxes: impact test (9 blows)	See appended table 20.2	P
	After the test: no damage, live parts no become accessible		P
20.3	<b>Test on the main parts of surface-type switches</b>		<b>P</b>
	Main parts of surface-type switches are first fixed to a cylinder of rigid steel sheet of radius equal to 4,5 times the distance between fixing holes (mm) .. : 346 mm		P
	Main parts are then fixed in a similar manner to a flat steel sheet		P
	Torque applied to fixing screws (Nm) ..... : 1,2 Nm		P
	During and after the test: main parts show no damage	No damage	P
20.4	<b>Screwed glands</b>		<b>N/A</b>
	Screwed glands of switches with that have IP code higher than IP20: torque test		N/A
	- diameter of cylindrical metal test rod (mm) ..... :		N/A
	- type of material..... : metal / moulded material		N/A
	- torque for 1 min (table 22) (Nm)..... :		N/A
	After the test: no damage of glands and enclosure of the specimens		N/A
20.5	<b>Covers, cover plates or actuating members – accessibility to live parts</b>		<b>P</b>
20.5.1	<b>General</b>		<b>P</b>
	Force necessary for covers, cover-plates or actuating members to come off or not to come off (accessibility with the test finger to live parts)		P
20.5.2	<b>Verification of the non-removal of covers, cover-plates or actuating member</b>		<b>P</b>
	Force applied for 1 min in direction perpendicular to the mounting surface ..... : 40 N / <u>80 N</u>		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Covers, cover-plates or actuating members not come off	Front cover plate secured by 2 screws Main part of switch secured by 4 snap fits	P
	Test repeated on new specimens with a sheet of hard material, 1 mm ± 0,1 mm thick, fitted around the supporting frame (fig. 13)		P
	Covers, cover-plates or actuating members not come off		P
	After the test: no damage		P
20.5.3	Verification of the removal of covers, cover plates or actuating members		N/A
	Force not exceeding 120 N applied 10 times in direction perpendicular to the mounting / supporting surface: covers, cover-plates or actuating members come off	Main part removable by use of a tool Front cover plate secured with screws	N/A
	Test repeated on new specimens with a sheet of hard material, 1 mm ± 0,1 mm thick, fitted around the supporting frame (fig. 13)		N/A
	Covers, cover-plates or actuating members come off		N/A
	After the test: no damage		N/A
20.6	<b>Covers, cover plates or actuating members – accessibility to non-earthed metal parts separated from live parts</b>		N/A
	Test is made as described in 20.5, but applying, for 20.5.2, the following forces:	10 N / 20 N	N/A
20.7	<b>Covers, cover plates or actuating members – accessibility to insulating parts, earthed metal parts, the live parts of SELV ≤ 25 V AC or metal parts separated from live parts</b>		P
	Test is made as described in 20.5, but applying, for 20.5.2, the force of 10 N for all covers, cover plates, or actuating members	Button	P
20.8	<b>Covers, cover plates or actuating members – application of gauges</b>		P
	Test with gauge of figure 14 applied according to figure 15 for verification of the outline of covers, cover-plates or actuating members: distances between face C of gauge and outline of side under test, not decrease .....	complying / <u>not complying</u>	P
20.9	<b>Grooves, holes and reverse tapers</b>		P
	Test with gauge according to figure 17 applied as shown in figure 18 (1 N): gauge not enter more than 1 mm .....	<u>complying</u> / not complying	P
20.10	<b>Additional test for cord-operated switch</b>		N/A
	Operating members of cord-operated switch have adequate strength		N/A
	Pull test: pull 100 N for 1 min (normal use); pull of 50 N for 1 min (unfavourable direction). After the test:		N/A
	- switch show no damage		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- operating member not broken and cord-operated switch still operate		N/A
<b>21</b>	<b>RESISTANCE TO HEAT</b>		<b>P</b>
<b>21.1</b>	<b>General</b>		<b>P</b>
	Switches and boxes are sufficiently resistant to heat		P
	Decorative parts are not subjected to the test		P
<b>21.2</b>	<b>Basic heating test</b>		<b>P</b>
	Switches kept for 1 h in a heating cabinet at a temperature of 100 °C ± 2 °C		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, markings still legible		P
<b>21.3</b>	<b>Ball-pressure test on parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position</b>		<b>P</b>
	Parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position: ball-pressure test (1 h, 125 °C)	See appended table 21.3	P
<b>21.4</b>	<b>Ball-pressure test on parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position</b>		<b>P</b>
	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 21.4	P
<b>22</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		<b>P</b>
<b>22.1</b>	<b>General</b>		<b>P</b>
	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		N/A
	Thread-cutting screws intended to be used during installation are captive with the relevant part of the accessory		N/A
	Screws and nuts which transmit contact pressure are of metal and are in engagement with a metal thread		P
	Threaded part torque test	See appended table 22.1	P
<b>22.2</b>	<b>Correct insertion of screws</b>		<b>N/A</b>
	Screws in engagement with a thread of insulating material: correct introduction into the screw hole or nut ensured		N/A
<b>22.3</b>	<b>Contact pressure of electrical connections</b>		<b>P</b>
	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	Terminals	P

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Clause	Requirement + Test	Result - Remark	Verdict
22.4	<b>Screws and rivets, used both as electrical and mechanical connections</b>		P
	Screws and rivets which serve as electrical as well as mechanical connections shall be locked against loosening and/or turning		P
22.5	<b>Material of current-carrying parts</b>		P
	Current-carrying parts of metal having mechanical strength, electrical conductivity and resistance to corrosion adequate:		P
	Requirement of 22.5 does not apply to screws, nuts, washers, clamping plates and similar parts of terminals		P
	- copper		N/A
	- 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/X6); 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/X6); thickness (µm) .....		N/A
	- steel with electroplated coating of tin (ISO 2093): service condition ISO no. (2/3/4); IP (X0/X4/X5/X6); 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
22.6	<b>Contacts subjected to sliding actions</b>		N/A
	Contacts subjected to sliding action: of metal resistant to corrosion		N/A
22.7	<b>Thread-forming and thread-cutting screws</b>		N/A
	Thread-forming screws and thread-cutting screws not used for the connection of current-carrying parts		N/A
	Thread-forming screws and thread-cutting screws used to provide earthing continuity: not necessary to disturb the connection and at least two screws are used for each connection		N/A
23	<b>CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND</b>		P
23.1	<b>General</b>		P
	Creepage distances, clearances and distances through sealing compound no less than the values shown in table 23	See appended table 23.1	P
	Sub clause 23.1 does not apply to pilot light units. Requirements for pilot light units are given in 13.16		P

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Clause	Requirement + Test	Result - Remark	Verdict
23.2	<b>Insulating compound</b>		N/A
	Insulating compound: not protrude above the edge of the cavity in which it is contained		N/A
<b>24</b>	<b>RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT, TO FIRE AND TO TRACKING</b>		P
24.1	<b>Resistance to abnormal heat and to fire</b>		P
	Parts of insulating material which might be exposed to thermal stresses due to electric effects and the deterioration of which might impair the safety are not unduly affected by abnormal heat and fire		P
	Glow-wire test according to IEC 60695-2-10 and IEC 60695-2-11	See appended table 24.1	P
24.2	<b>Resistance to abnormal heat and to fire</b>		P
	Parts of insulating material retaining live parts in position of switches with IP>X0: of material resistant to tracking		P
	Tracking test with solution A of IEC 60112	See appended table 24.2	P
<b>25</b>	<b>RESISTANCE TO RUSTING</b>		P
	Ferrous parts protected against rusting		P
	Test: 10 min in a 10 % solution of ammonium chloride in water at a temperature of (+20 ± 5) °C., 10 min in a box containing air saturated with moisture at a temperature of (+20 ± 5) °C., 10 min in a heating cabinet at a temperature of (+100 ± 5) °C		P
	No signs of rust		P
<b>26</b>	<b>EMC REQUIREMENTS</b>		N/A
26.1	<b>Immunity</b>		N/A
	No immunity tests necessary		N/A
26.2	<b>Emission</b>		N/A
	No emission tests necessary		N/A

IEC 60669-1				
Clause	Requirement + Test		Result - Remark	Verdict
12.2.5	<b>TABLE: Test with apparatus shown in figure 10 (screw terminals)</b>			P
	Rated current (A) .....		10 A	
	Type of conductors .....		<u>rigid solid</u> / <u>rigid stranded</u> / <u>flexible</u>	
	Smallest/largest cross-sectional area per table 4 (mm <sup>2</sup> ) .....		1,0 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	
	Number of conductors .....		2	
	Nominal diameter of thread (mm); torque per table 5 (Nm) .....		3,4 mm / 0,8 Nm	
Cross-sectional area (mm <sup>2</sup> )	Diameter of bushing hole per table 6 (mm)	Height H per table 6 (mm)	Mass (kg)	Remarks
1,0 mm <sup>2</sup>	6,5 mm	260 mm	0,4 kg	P
2,5 mm <sup>2</sup>	9,5 mm	280 mm	0,7 kg	P
Supplementary information: Same result for all types of conductors				

12.2.6	<b>TABLE: Pull test (screw terminals)</b>			P
	Rated current (A) .....		10 A	
	Smallest/largest cross-sectional area per table 4 (mm <sup>2</sup> ) .....		1,0 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	
	Nominal diameter of thread (mm); torque 2/3 per table 5 (Nm) .....		3,4 mm / 0,53 Nm	
Cross-sectional area (mm <sup>2</sup> )	Number of conductors	Type of conductors (rigid solid / rigid stranded / flexible)	Pull per table 7 applied for 1 min (N)	Remarks
1,0 mm <sup>2</sup>	2	Rigid solid	35 N	P
2,5 mm <sup>2</sup>	2	Rigid solid	50 N	P
1,0 mm <sup>2</sup>	2	Rigid stranded	35 N	P
2,5 mm <sup>2</sup>	2	Rigid stranded	50 N	P
1,0 mm <sup>2</sup>	2	Flexible	35 N	P
2,5 mm <sup>2</sup>	2	Flexible	50 N	P
Supplementary information:				

IEC 60669-1				
Clause	Requirement + Test		Result - Remark	Verdict
12.2.7	<b>TABLE: Tightening test (screw terminals)</b>			P
	Rated current (A).....:		10 A	
	Nominal diameter of thread (mm); torque 2/3 per table 5 (Nm) .....		3,4 mm / 0,53 Nm	
Largest cross-sectional area per table 4 (mm <sup>2</sup> )	Permissible number of conductors	Type of conductors (rigid solid / rigid stranded / flexible)	Number of wires and nominal diameter of wires	Remarks
2,5 mm <sup>2</sup>	2	Rigid solid	1 x 1,78	P
2,5 mm <sup>2</sup>	2	Rigid stranded	7 x 0,67	P
2,5 mm <sup>2</sup>	2	Flexible	50 x 0,25	P
Supplementary information:				

IEC 60669-1				
Clause	Requirement + Test		Result - Remark	Verdict
12.3.10	<b>TABLE: Mechanical stresses occurring in normal use (screwless terminals)</b>			N/A
	Rated current (A) .....			
	Largest/smallest cross-sectional area per table 8 (mm <sup>2</sup> ) .....			
	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 <sup>2</sup> )	Remarks
	TABLE: Test with apparatus shown in figure 9			
	Rated current (A) .....			
	Type of conductors .....	rigid solid / rigid stranded / flexible		
	Smallest/largest cross-sectional area per table 8 (mm <sup>2</sup> ) .....			
	number of conductors .....			
	Cross-sectional area (mm <sup>2</sup> )	Diameter of bushing hole per table 6 (mm)	Height H per table 6 (mm)	Mass (kg)
				Remarks
Supplementary information:				

IEC 60669-1							
Clause	Requirement + Test				Result - Remark		Verdict
12.3.11	TABLE: Electrical and thermal stresses occurring in normal use						N/A
Test a)	Test carried out for 1 h connecting rigid solid conductors:						
	test current per table 9 (A) .....						
	nominal cross-sectional area (mm <sup>2</sup> ) .....						
Screwless terminal number		Voltage drop (mV)			Required voltage drop		
1					≤ 15 mV		
2					≤ 15 mV		
3					≤ 15 mV		
4					≤ 15 mV		
5					≤ 15 mV		
Test b)	Temperature cycles test) carried out on terminals subjected to Test a):						
	test current per table 9 (A) .....						
	nominal cross-sectional area (mm <sup>2</sup> ) .....						
	allowed voltage drop (mV) .....				≤ 22,5 mV or 2 times 24 <sup>th</sup> cycle value (mV)		
Screwless terminal number		1	2	3	4	5	Remarks
voltage drop after 24 <sup>th</sup> cycle							
voltage drop after 48 <sup>th</sup> cycle							
voltage drop after 72 <sup>th</sup> cycle							
voltage drop after 96 <sup>th</sup> cycle							
voltage drop after 120 <sup>th</sup> cycle							
voltage drop after 144 <sup>th</sup> cycle							
voltage drop after 168 <sup>th</sup> cycle							
voltage drop after 192 <sup>th</sup> cycle							
12.3.10	TABLE: mechanical stresses occurring in normal use						N/A
	Rated current (A) .....						
	Largest/smallest cross-sectional area per table 8 (mm <sup>2</sup> ) .....						
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 <sup>2</sup> )		Remarks	
	TABLE: Test with apparatus shown in figure 9						N/A
	Rated current (A) .....						
	Type of conductors .....				rigid solid / rigid stranded / flexible		
	Smallest/largest cross-sectional area per table 8						

IEC 60669-1				
Clause	Requirement + Test		Result - Remark	Verdict
	(mm <sup>2</sup> ).....:			
	Number of conductors .....			
Cross-sectional area (mm <sup>2</sup> )	Diameter of bushing hole per table 6 (mm)	Height H per table 6 (mm)	Mass (kg)	Remarks
Supplementary information:				

12.3.12	<b>TABLE: Deflection test (principle of test apparatus shown in figure 10a)</b>						N/A
	Test carried out for 1 h connecting rigid solid conductors:						
	test current (A) (equal rated current) .....						
	required voltage drop (mV) ..... ≤ 25 mV						
Type of conductor		Smallest			Largest		Remarks
cross-sectional area per table 10 (mm <sup>2</sup> )							
force per table 11 (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 <sup>st</sup> deflection (mV)							
voltage drop 2 <sup>nd</sup> deflection (mV)							
voltage drop 3 <sup>rd</sup> deflection (mV)							
voltage drop 4 <sup>th</sup> deflection (mV)							
voltage drop 5 <sup>th</sup> deflection (mV)							
voltage drop 6 <sup>th</sup> deflection (mV)							
voltage drop 7 <sup>th</sup> deflection (mV)							
voltage drop 8 <sup>th</sup> deflection (mV)							
voltage drop 9 <sup>th</sup> deflection (mV)							
voltage drop 10 <sup>th</sup> deflection (mV)							
voltage drop 11 <sup>th</sup> deflection (mV)							
voltage drop 12 <sup>th</sup> deflection (mV)							
Supplementary information:							



IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
16.2	<b>TABLE: Insulation resistance</b>		P
Item per table 15	test voltage applied between:	measured (MΩ)	required (MΩ)
1	Between all poles together and the body – switch in “on” position	> 100 MΩ	5 MΩ
2	Each pole and other poles together connected to body – switch in “on” position	> 100 MΩ	2 MΩ
3	Between the terminals – switch in “off” position	> 100 MΩ	2 MΩ
Supplementary information: Same result for all types			

16.3	<b>TABLE: Dielectric strength</b>		P
	Rated voltage (V) .....	250 V	
item per table 15	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	Between all poles together and the body – switch in “on” position	2000 V	No
2	Each pole and other poles together connected to body – switch in “on” position	2000 V	No
3	Between the terminals – switch in “off” position	2000 V	No
Supplementary information: Same result for all types			

17	<b>TABLE: Temperature rise measurements</b>		P
	Rated current (A) .....	10 A	
	Nominal cross-sectional area (mm <sup>2</sup> ) .....	2,5 mm <sup>2</sup>	
	Terminal screws: torque (Nm) (2/3 table 5).....	0,53 Nm	
	Test current per table 16 passed for 1 h (A) .....	13,5 A	
	Rated voltage of pilot light (V).....	/	
	Samples number .....	a, b, c	
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
art.251		23	≤ 45
art.252		24	≤ 45
art.253		22	≤ 45
art.254		26	≤ 45
Supplementary information: Only max. measurements stated			

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
19.1	<b>TABLE: Test for switches intended for inductive loads (clause 19.1)</b>		<b>P</b>
	Reduced electric strength per clause 16		
item per table 15	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	Between all poles together and the body – switch in “on” position	1500	No
2	Each pole and other poles together connected to body – switch in “on” position	1500	No
3	Between the terminals – switch in “off” position	1500	No
4	Between metal parts of the mechanism and metal foil in contact with button	1500	No
	Reduced temperature rise test per clause 17		
	Rated current passed for 1 h (A).....:	10 A	
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
art.251		18	≤ 45
art.252		22	≤ 45
art.253		25	≤ 45
art.254		21	≤ 45
Supplementary information: Only max. measurements stated			

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
19.2	<b>TABLE: Test for switches intended for externally ballasted lamp loads (clause 19.2)</b>		P
	Reduced electric strength per clause 16		
item per table 23	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	Between all poles together and the body – switch in “on” position	1500	No
2	Each pole and other poles together connected to body – switch in “on” position	1500	No
3	Between the terminals – switch in “off” position	1500	No
4	Between metal parts of the mechanism and metal foil in contact with button	1500	No
	Reduced temperature rise test per clause 17		
	Rated current passed for 1 h (A) .....	10 A	
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
art.251		16	≤ 45
art.252		15	≤ 45
art.253		12	≤ 45
art.254		13	≤ 45
Supplementary information:			

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
19.3	<b>TABLE: Test for switches intended for self-ballasted lamp loads (clause 19.3)</b>		<b>P</b>
	Reduced electric strength per clause 16		
item per table 23	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	Between all poles together and the body – switch in “on” position	1500 V	No
2	Each pole and other poles together connected to body – switch in “on” position	1500 V	No
3	Between the terminals – switch in “off” position	1500 V	No
4	Between metal parts of the mechanism and metal foil in contact with button	1500 V	No
	Reduced temperature rise test per clause 17		
	Rated current passed for 1 h (A) .....	10 A	
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
art.251		17	≤ 45
art.252		18	≤ 45
art.253		13	≤ 45
art.254		13	≤ 45
Supplementary information: Only max. measurements stated			

20.2	TABLE: Impact resistance			P
part of enclosure tested per table 21 (A, B, C, D)	blows per part	height of fall (mm)	comments	
A	5	120	No damage	
d	5	200	No damage	
Supplementary information:				

21.3	TABLE: Ball pressure test of thermoplastic materials			P
	Allowed impression diameter (mm) .....	≤ 2 mm		
part under test		material designation	test temperature (°C)	impression diameter (mm)
Main part front		PC Lexan 223R	125°C	< 1,0 mm
Main part rear		PC Lexan 223R	125°C	< 1,0 mm
Actuator		PBT GF20 Tarolox 10 G4 DX03	125°C	< 1,0 mm
Supplementary information:				

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
21.4	<b>TABLE: Ball pressure test of thermoplastic materials</b>		P
	Allowed impression diameter (mm).....	≤ 2 mm	
part under test	material designation	test temperature (°C) <sup>(1)</sup>	impression diameter (mm)
Rear cover plate	ELIX ABS P2H-AT	70°C	< 1,0 mm
Button	ELIX ABS P2H-AT	70°C	< 1,0 mm
Front cover plate	ELIX ABS P2H-AT	70°C	< 1,0 mm
Supplementary information:			
<sup>(1)</sup> 70 °C / 40 °C + highest temperature rise determined during the test of clause 17			

22.1	TABLE: Threaded part torque test					P
threaded part identification	diameter of thread (mm)	column number (I, II, or III)	applied torque (Nm)	times (5/10)	no damage	
Terminal screw	3,4	III	0,8	5	No damage	
Supplementary information:						

23.1	TABLE: Creepage distances, clearances and distances through sealing compound							P
	Rated voltage (V).....					250 V		
item per table 23	creepage distance dcr, clearance cl and distance through sealing compound dtsc at/of:	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)	required dtsc (mm)	dtsc (mm)	
1 / 6	Between live parts separated when contacts are opened	≥ 3	3,0	≥ 3	4,0	≥ /	/	
2 / 7	Live parts of different polarity	≥ 3	3,1	≥ 3	3,1	≥ /	/	
3 / 8	Live parts and accessible surfaces	≥ 3	> 10	≥ 3	> 10	≥ /	/	
Supplementary information:								

24.1	TABLE: Glow-wire test			P
part under test		material designation	test temperature (°C)	remarks
Main part front		PC Lexan 223R	850°C	P
Main part rear		PC Lexan 223R	850°C	P
Actuator		PBT GF20 Tarolox 10 G4 DX03	850°C	P
Front cover plate		ELIX ABS P2H-AT	650°C	P
Rear cover plate		ELIX ABS P2H-AT	650°C	P
Button		ELIX ABS P2H-AT	650°C	P
Supplementary information:				

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
24.2	<b>TABLE: Resistance to tracking</b>		P
	Number of drops .....	50	
part under test	material designation	test voltage (V)	flashover / breakdown (Yes/No)
Main part rear	PC Lexan 223R	175 V	No
Supplementary information:			

# Enclosure No. 1 (National differences)

IEC60669_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 60669-1 (ED. 4)</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> <b>SWITCHES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS</b> <b>PART 1: GENERAL REQUIREMENTS</b>			
Differences according to.....: EN 60669-1:2018			
Attachment Form No.....: EU_GD_ IEC60669_1F			
Attachment Originator .....: IMQ S.p.A.			
Master Attachment .....: 2018-09-20			
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>		<b>P</b>
8.1	Replace Note 4 and note 5:		<b>P</b>
	Note 4 see annex ZB for special national conditions		<b>P</b>
<b>10</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		<b>P</b>
10.3.2	Replaced by :		<b>P</b>
	“cover or cover plates” replaced by “cover, cover plates and other parts of the enclosure”		<b>P</b>
10.3.3	Replaced by:		<b>P</b>
	“cover or cover plates” replaced by “cover, cover plates and other parts of the enclosure”		<b>P</b>
<b>12</b>	<b>TERMINALS</b>		<b>P</b>
12.2.5	Replace the text of index a in Table 6 by “Void”		<b>P</b>
<b>15</b>	<b>RESISTANCE TO AGEING, PROTECTION PROVIDED BY ENCLOSURES OF SWITCHES, AND RESISTANCE TO HUMIDITY</b>		<b>P</b>
15.1	Replace the value 55 % by 75 %		<b>P</b>
<b>20</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		<b>P</b>
20.1	Replace the first dash by:		<b>P</b>
	- for all type of switches and their dedicated boxes, where applicable		<b>P</b>
<b>22</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		<b>P</b>
22.1	Second sentence of the second paragraph deleted		<b>P</b>
<b>23</b>	<b>CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND</b>		<b>P</b>
23.Z1	Subclause added:		<b>P</b>
	Surface-type switches do not have bare current-carrying strips at the back	No current carrying strips at the back	<b>P</b>



IEC60669_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Z1</b>	<b>ELECTROMAGNETIC FIELDS (EMF) REQUIREMENTS</b>		<b>P</b>
	Electromagnetic field generated by switches covered by this part of the standard are considered negligible. Therefore, these requirements are deemed to be met without performing any test.		P
<b>ANNEX A</b>	<b>ADDITIONAL REQUIREMENTS FOR SWITCHES HAVING FACILITIES FOR THE OUTLET AND RETENTION OF FLEXIBLE CABLES</b>		<b>N/A</b>
8.1	then the minimum and maximum size for which the anchorage is provided may be marked in an area adjacent to the anchorage, e.g. "6 mm – 16 mm" or "6 – 16". This information shall be put on the switch and/or the packaging unit.		N/A
13.Z1	Subclause added at the end:		N/A
	Flexible cable outlet switches:		N/A
	- clear how relief from strain and prevention of twisting is intended to be effected		N/A
	- cord anchorage, or at least part of it, integral with or permanently fixed to one of the component parts of the switch		N/A
	- makeshift methods not used		N/A
	- cord anchorages suitable for different type of flexible cables		N/A
	Rewirable switches with earthing connection are designed with ample space for slack of the earthing conductor		N/A
<b>ANNEX D</b>	<b>ADDITIONAL REQUIREMENTS FOR INSULATING REQUIREMENTS FOR INSULATION-PIERCING TERMINALS</b>		<b>N/A</b>
<b>8</b>	<b>MARKING</b>		<b>N/A</b>
8.1	<b>General</b>	No insulation-piercing terminals	N/A
	Add new list item after m)		N/A
	n) length of the conductor to be inserted into the IPT, if applicable		N/A
8.9	<b>Manufacturer information</b>		N/A
	Marking indicated on the manufacture's documentation for IPTs:		N/A
	Connection and disconnection procedure, if necessary		N/A
	Method of connection according to 7.1.10, if necessary		N/A
	An indication that the switch is equipped with non-reusable IPTs, if necessary		N/A
	Clear information that the conductor shall not be stripped before connecting		N/A
<b>12</b>	<b>TERMINALS</b>		<b>N/A</b>

## IEC60669\_1F ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
12.1	<b>General</b>		N/A
	Switches provided with screw-type terminals, with screwless terminals or insulating-piercing terminals(IPTs).....:		N/A
	The test 12.2.8, 12.3.9, 12.3.10,12.4.9 and 12.4.10 on terminals, made after the test of 15.1		N/A
12.4	<b>IPTs for external copper conductors</b>		N/A
12.4.1	IPTs terminals of the type suitable for:		N/A
	- for rigid copper conductors only, or		N/A
	- for both rigid and flexible copper conductors (tests carried out with rigid and then repeated with flexible conductors)		N/A
12.4.2	IPTs terminals provided with clamping units which allow the proper connection of rigid or of rigid and flexible conductors having nominal cross-sectional areas as shown in table D2:		N/A
	Rated current (A) .....		N/A
	Rated connecting capacity (mm <sup>2</sup> ) .....		N/A
	Diameter of largest rigid conductor (mm)..... :		N/A
	Diameter of largest flexible conductor (mm) .....		N/A
	Diameter of largest rigid isolated conductor (mm) .... :		N/A
	Diameter of largest flexible isolated conductor (mm) :		N/A
	IPTs terminals allow the conductor to be connected without special preparation		N/A
	Conductor clamped between metal surfaces		N/A
12.4.3	Reusable IPTs: designed in such a way that no insulating material remains inside the terminal		N/A
	Compliance verified as follows:		N/A
	Type(s) of conductors:	Flexible / rigid / stranded	N/A
	Largest / smallest cross-sectional area:		N/A
	Conductor connected and disconnected five times rotating it in such a way that is not connected twice at the same place		N/A
	No insulating material remains inside the switch, or		N/A
	It is possible to withdraw the insulating material from the switch		N/A
12.4.4	Parts of screwless terminals intended for carrying current of materials as specified in 22.5		N/A
12.4.5	IPTs transmitting sufficient contact pressure and without undue damage to the conductor		N/A
	Contact pressure between metal surfaces		N/A

IEC60669_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
12.4.6	Disconnection of a conductor from the reusable IPT: requires and operation other than a pull on the conductor only		N/A
12.4.7	IPTs intended to be used for the interconnections of two or more conductors, so designed that:		N/A
	- each conductor is clamped individually		N/A
	- the conductors can be connected or disconnected either at the same time or separately		N/A
	- each conductor is introduced in a separate clamping unit		N/A
	It is possible to clamp securely any number of conductors up the maximum as designed		N/A
12.4.8	IPTs designed so that adequate insertion of the conductor is obvious		N/A
	Over-insertion is prevented if further insertion is liable to reduce the creepage distances and/or clearances required, or to influence the operation of the accessory		N/A
12.4.9	IPTs properly fixed to the switch		N/A
12.4.10	IPTs terminals withstand mechanical stresses occurring in normal use	See appended table 12.4.10	N/A
	During application of the pull, conductor not come out of the terminal	See appended table 12.4.10	N/A
	During the test conductors not move noticeably in the clamping unit		N/A
	After these tests: neither terminals nor clamping means have worked loose and conductors show no deterioration		N/A
	Flexible conductor, the break of individual wires of the conductor shall not considered		N/A
	No lack of the insulating material		N/A
12.4.11	IPTs terminals withstand electrical and thermal stresses occurring in normal use		N/A
	Test A: 192 temperature cycles test, each cycle with a duration of 1 h, with the test current as defined in Table 2 of Part I	See appended table 12.4.11	N/A
	- measured after 24 <sup>th</sup> and 192 <sup>th</sup> temperature cycle	See appended table 12.4.11	N/A
	Maximum voltage drop did not exceed 22,5 mV or 1,5 times 24 <sup>th</sup> cycle value	See appended table 12.4.11	N/A
	During the test conductors not move noticeably in the clamping unit		N/A
	After these tests: neither terminals nor clamping means have worked loose and conductors show no deterioration		N/A
12.4.12	Non-reusable IPT not possible to disconnect the product without destroying		N/A

IEC60669_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
12.4.13	IPTs that uses screws wire connections tested as follows (before each test of 12.4):		N/A
	Toque (stated in table 5 or by the manufacturer):		N/A
	Screws tightened and loosened 5 times. IPT not be damaged so as to impair its further use.		N/A
12.4.14	Screws for making the contact- pressure: not serve to fix any other component		N/A
	Screws not of soft metal		N/A
	The use of aluminium requires additional tests, according to EN 61545.		N/A
<b>ANNEX E</b>	<b>ADDITIONAL REQUIREMENTS AND TESTS FOR SWITCHES INTENDED TO BE USED AT A TEMPERATURE LOWER THAN – 5 °C</b>		N/A
<b>8</b>	<b>MARKING</b>		N/A
8.1	<b>General</b>	Not intended for less than -5°C	N/A
	Add new list item after m)		N/A
	n) Symbols for products declared as suitable for use at a temperature below the normal range		N/A
13.15.2	The tests of 13.15.2 are performed at a temperature of – 25 °C		N/A
<b>19</b>	<b>NORMAL OPERATION</b>		N/A
	Add the following new subclause		N/A
19.4	Switches intended to be used in ambient temperature below – 5°C		N/A
	Switches kept for 16 h in a freezer at a temperature – 25 °C ± 2 °C		N/A
	- rate (operations per minute).....	30	N/A
	number of operations without load every 4 h .....	20	N/A
	During and after the test: specimens function correctly, no visible harmful deformation, cracks or similar damage		N/A
	Reduced electric strength per clause 16		N/A
<b>20</b>	<b>MECHANICAL STRENGTH</b>		N/A
	Add the following new subclause		N/A
20.11	Impact test at low temperatures		N/A
	Switches kept for 16 h in a freezer at a temperature – 25 °C ± 2 °C		N/A
	The specimens are subjected to the impact test in according to 20.2		N/A
<b>ANNEX ZB</b>	<b>SPECIAL NATIONAL CONDITIONS (EN)</b>		P
7.7	BELGIUM, FINLAND, GERMANY, NETHERLANDS, NORWAY, SWEDEN: design B not used due to installation practice		N/A
8.1	UNITED KINGDOM: marking of type reference not used		N/A

IEC60669_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	GERMANY Add at the index n: n) The symbol that electrotechnical expertise is required		P
8.3	UNITED KINGDOM: marking of type reference not used		N/A
10.2	NORWAY: accessories requiring earth connection cannot normally be used due to the lack of an earthing conductor in many existing old buildings		N/A
10.3.3	NORWAY: accessories requiring earth connection cannot normally be used due to the lack of an earthing conductor in many existing old buildings		N/A
10.5	NORWAY: accessories requiring earth connection cannot normally be used due to the lack of an earthing conductor in many existing old buildings		N/A
12.2.5	FINLAND, NORWAY, SWEDEN: - additional test with rigid solid conductors (if exist in relevant IEC standard), if the first test has been made with rigid stranded conductors	Performed on both types. See 12.2.5	P
	- in the case rigid stranded conductors do not exist, the test may be made with rigid solid conductors only		P
12.2.6	FINLAND, NORWAY, SWEDEN: additional test with one rigid solid conductor and one rigid stranded conductor with same cross-sectional areas connected at same time is required for terminals allowing the connection of two conductors		P
13.15.2	DENMARK, FINLAND, NORWAY, SWEDEN, SWITZERLAND: sub-clause mandatory		P
Annex E	FINLAND, NORWAY, SWEDEN: This annex is normative		N/A
ANNEX ZC	A- DEVIATIONS (EN)		N/A
11.2	BELGIUM: earthing terminals have a capacity not less than that of corresponding terminals for the supply conductors except that any additional external earthing terminal shall be of a size suitable for conductors of at least 4 mm <sup>2</sup>		N/A

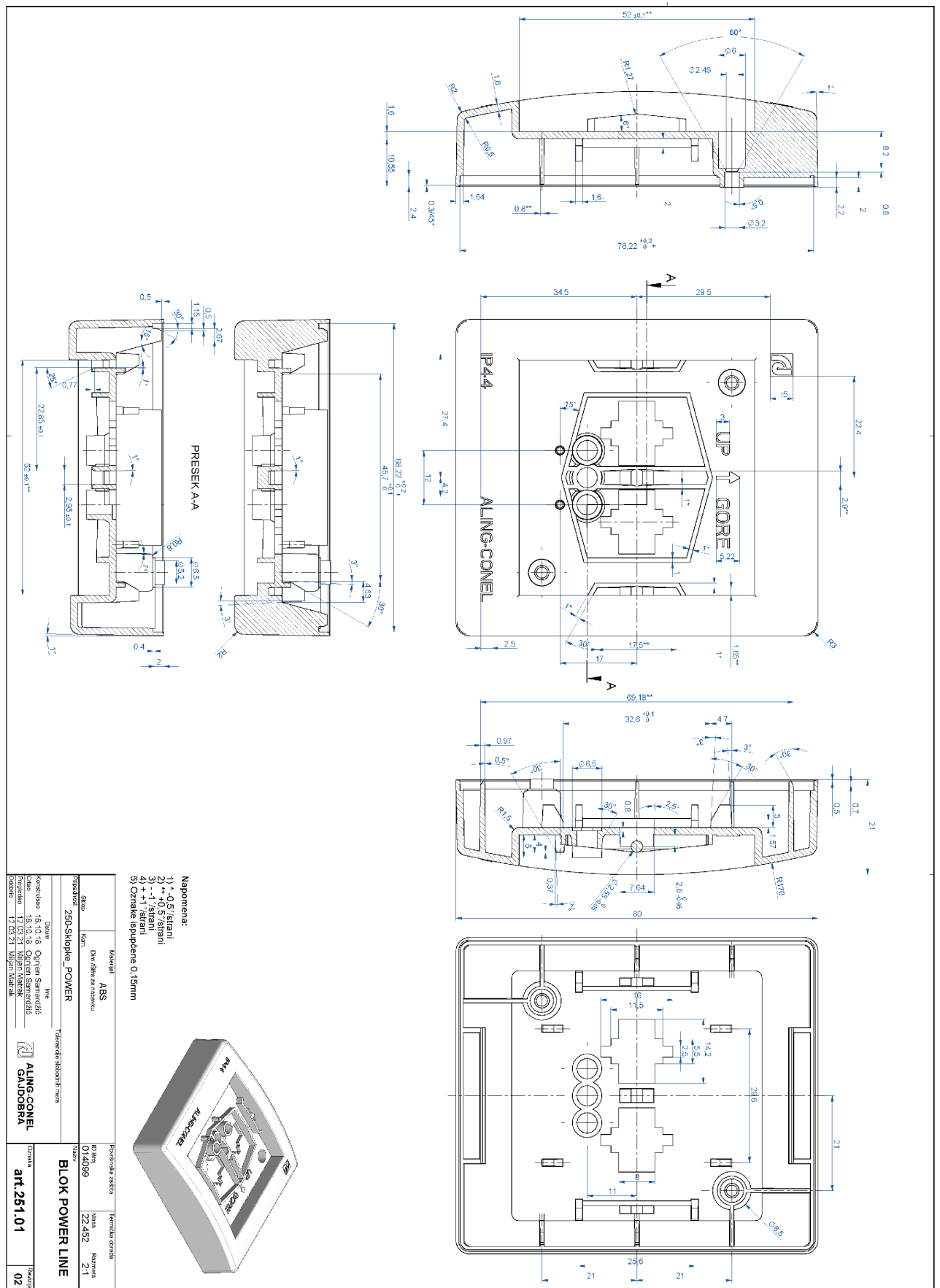
12.4.10	<b>TABLE: Test with apparatus shown in figure 9</b>			N/A
	Rated current (A) .....			
	Type of conductors .....			
	Smallest/largest cross-sectional area per table D.2 (mm <sup>2</sup> ) .....			
	Number of conductors .....			
	Nominal diameter of thread (mm); torque per table 5 (Nm) .....			
Cross-sectional area (mm <sup>2</sup> )	Diameter of bushing hole per table 6 (mm)	Height H per table 6 (mm)	Mass (kg)	Remarks
<i>Supplementary information:</i>				

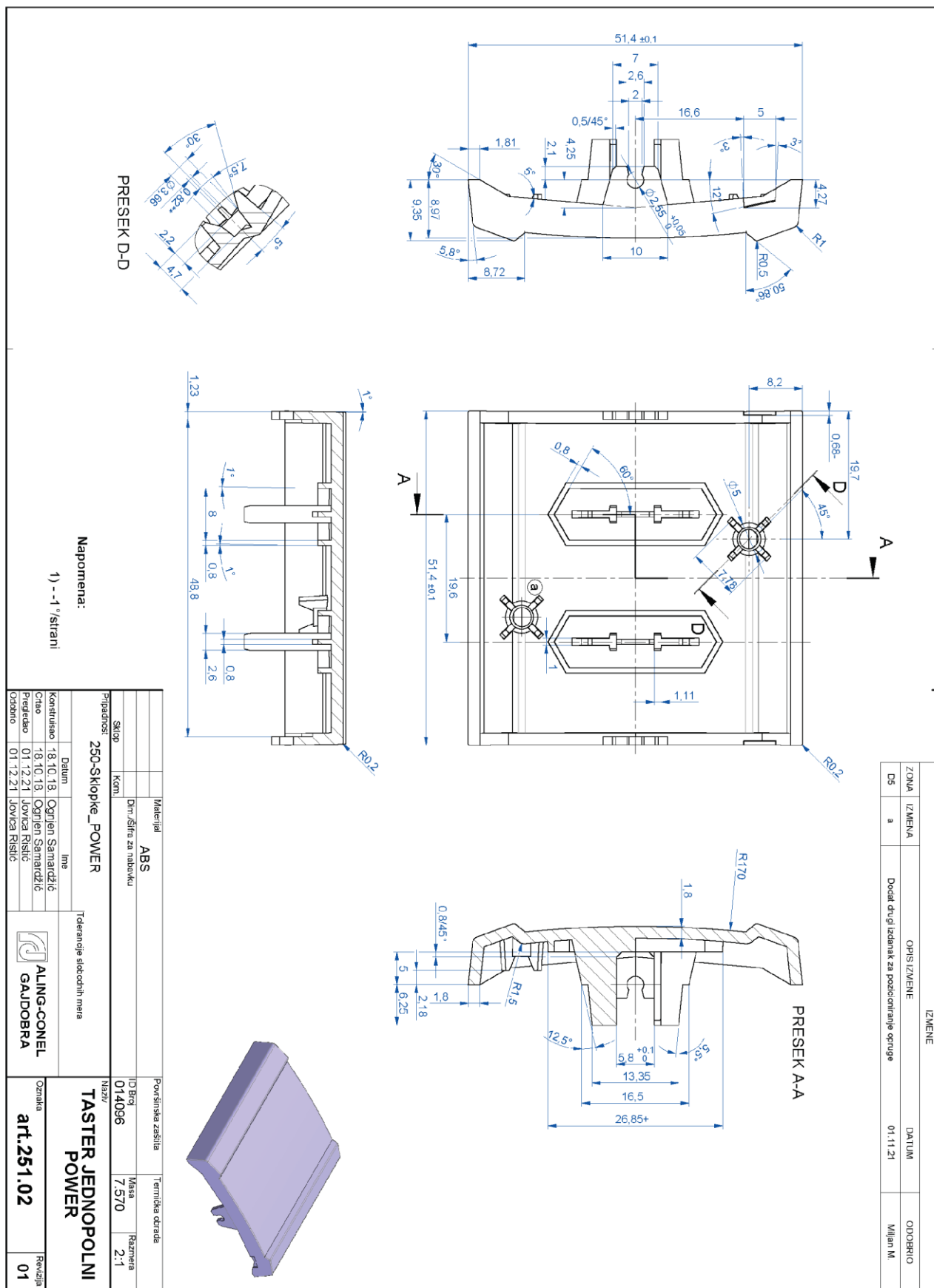
12.4.10	<b>TABLE: Pull test</b>			N/A
	Rated current (A) :			
	Smallest/largest cross-sectional area per table D.2 (mm <sup>2</sup> ) :			
	Nominal diameter of thread (mm); torque per table 5 (Nm) :			
Cross-sectional area (mm <sup>2</sup> )	Number of conductors	Type of conductors (rigid solid / rigid stranded / flexible)	Pull per table 7 applied for 1 min (N)	Remarks
		rigid solid / rigid stranded / flexible		
		rigid solid / rigid stranded / flexible		
		rigid solid / rigid stranded / flexible		
		rigid solid + rigid stranded		
<i>Supplementary information:</i>				

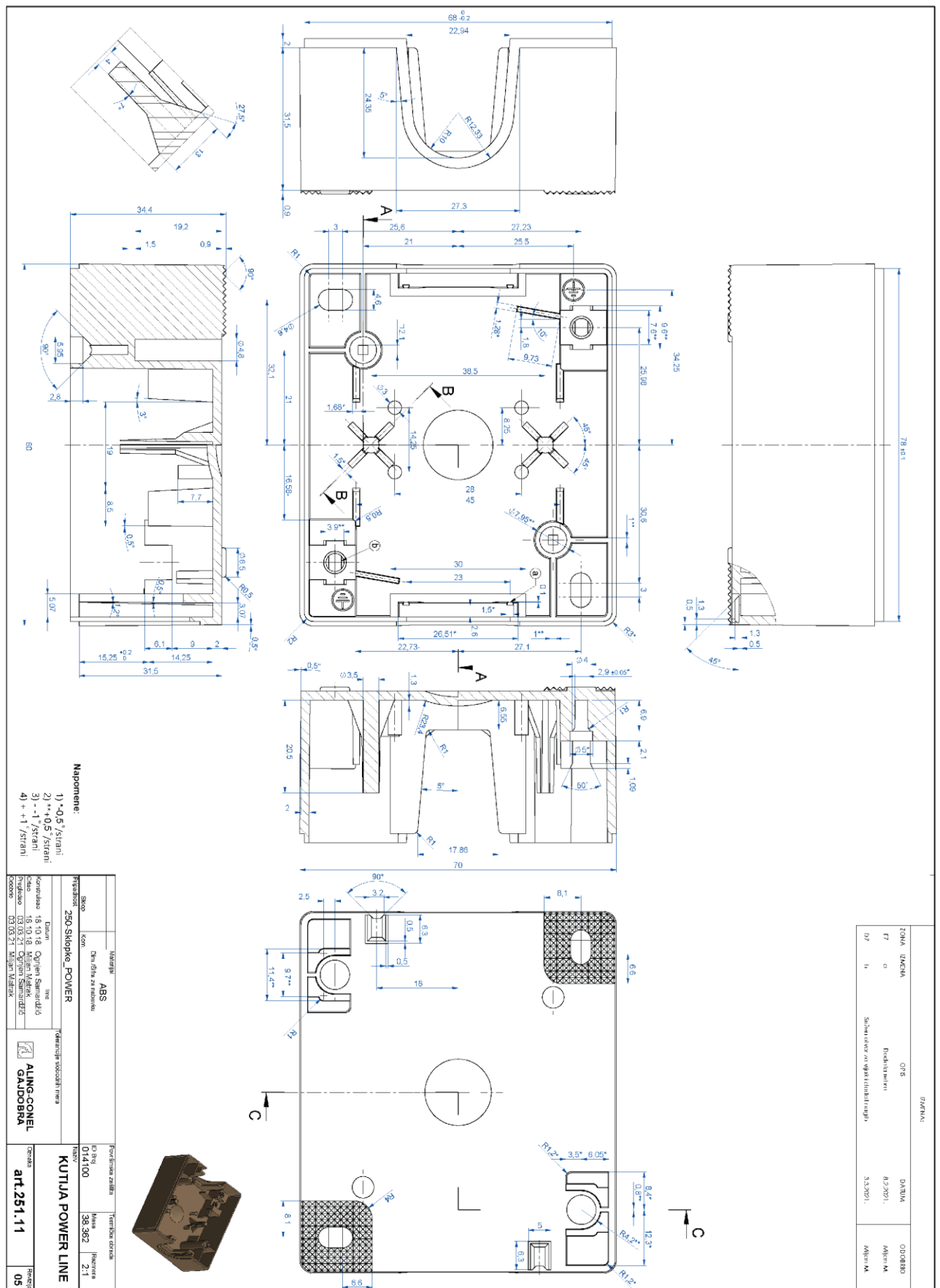
12.4.11	<b>TABLE: Temperature-cycling test</b>			N/A
	Model/type reference .....			
	Test torque for screws, if any (Table 5) (Nm) .....			
	Smallest cross-sectional area (mm <sup>2</sup> ) .....			
	Test current (Table D.3) (A) .....			
Measured voltage drop of:		Measured voltage drop (mV)		
		Sample 1	Sample 2	Sample 3
Solid conductors	(after 24 cycles)			
Stranded conductors	(after 24 cycles)			
Flexible conductors	(after 24 cycles)			
Solid conductors	(1,5 times 24 <sup>th</sup> cycle value)			
Stranded conductors	(1,5 times 24 <sup>th</sup> cycle value)			
Flexible conductors	(1,5 times 24 <sup>th</sup> cycle value)			
Solid conductors	(after 192 cycles)			
Stranded conductors	(after 192 cycles)			
Flexible conductors	(after 192 cycles)			
	Largest cross-sectional area (mm <sup>2</sup> ) .....			
	Test current (Table D.3) (A) .....			
Measured voltage drop of:		Measured voltage drop (mV)		
		Sample 4	Sample 5	Sample 6
Solid conductors	(after 24 cycles)			
Stranded conductors	(after 24 cycles)			
Flexible conductors	(after 24 cycles)			
Solid conductors	(1,5 times 24 <sup>th</sup> cycle value)			
Stranded conductors	(1,5 times 24 <sup>th</sup> cycle value)			
Flexible conductors	(1,5 times 24 <sup>th</sup> cycle value)			
Solid conductors	(after 192 cycles)			
Stranded conductors	(after 192 cycles)			
Flexible conductors	(after 192 cycles)			
Supplementary information:				

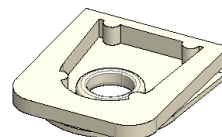
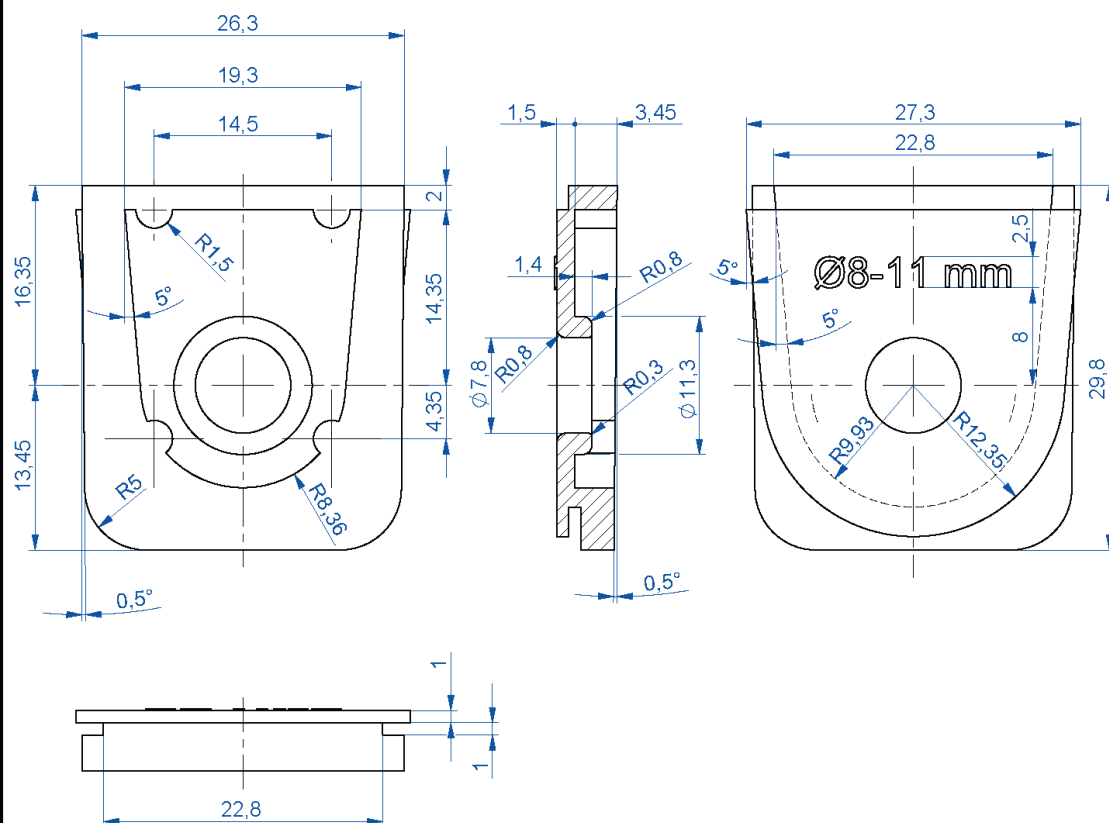
## Enclosure No. 2 (Technical documentation)



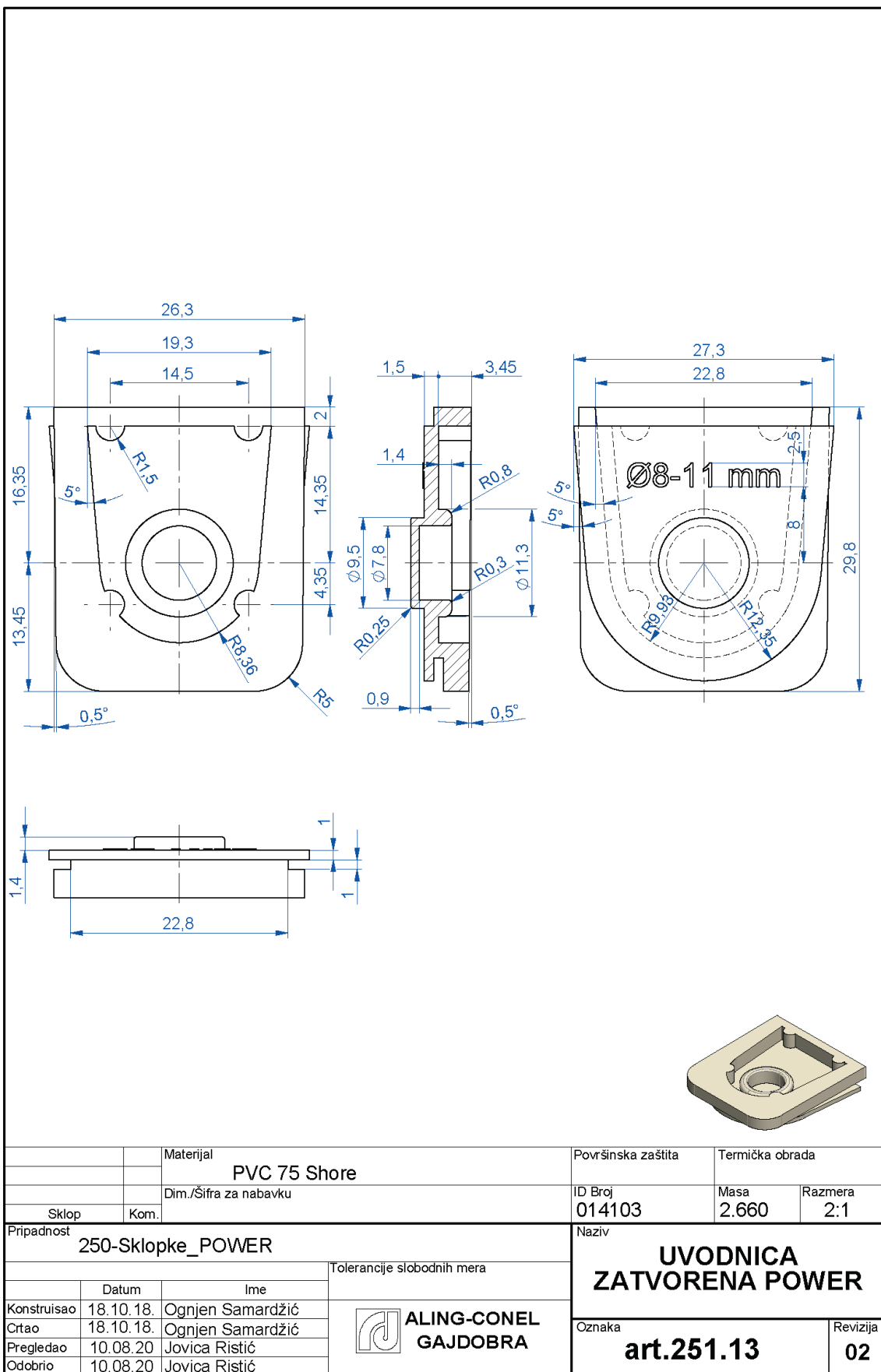


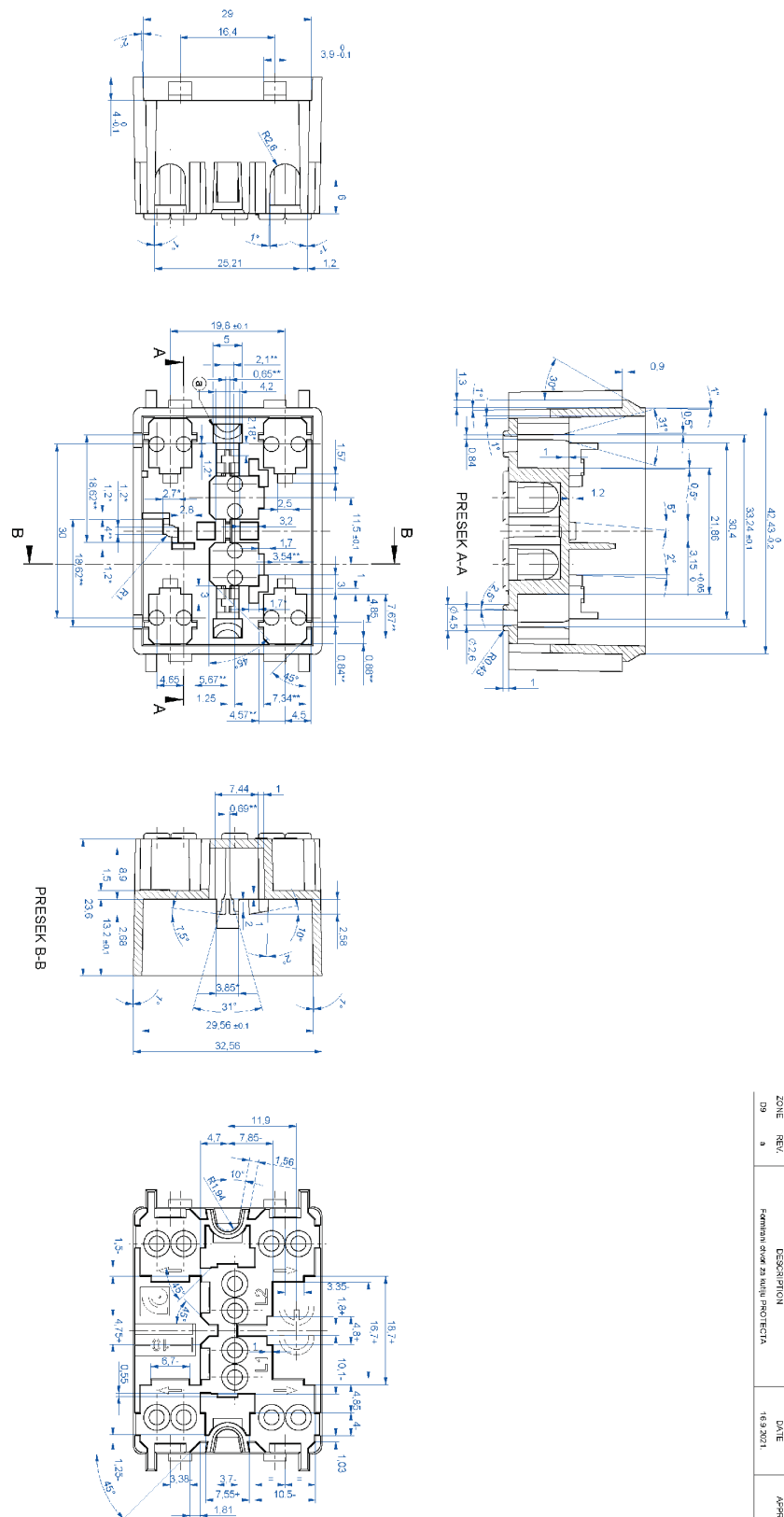






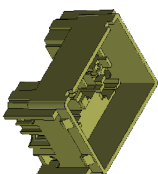
		Materijal	Površinska zaštita		Termička obrada	
		PVC 75 Shore				
		Dim./Šifra za nabavku	ID Broj	Masa	Razmera	
	Sklop	Kom.	014102	2.564	2:1	
Pripadnost			Naziv			
250-Sklopke_POWER			UVODNICA OTVORENA POWER			
		Tolerancije slobodnih mera				
	Datum	Ime				
Konstruisao	18.10.18.	Ognjen Samardžić				
Crtao	10.8.20.	Ognjen Samardžić				
Pregledao		Jovica Ristić				
Odobrio	10.08.20	Jovica Ristić				
			Oznaka		Revizija	
			art.251.12		02	

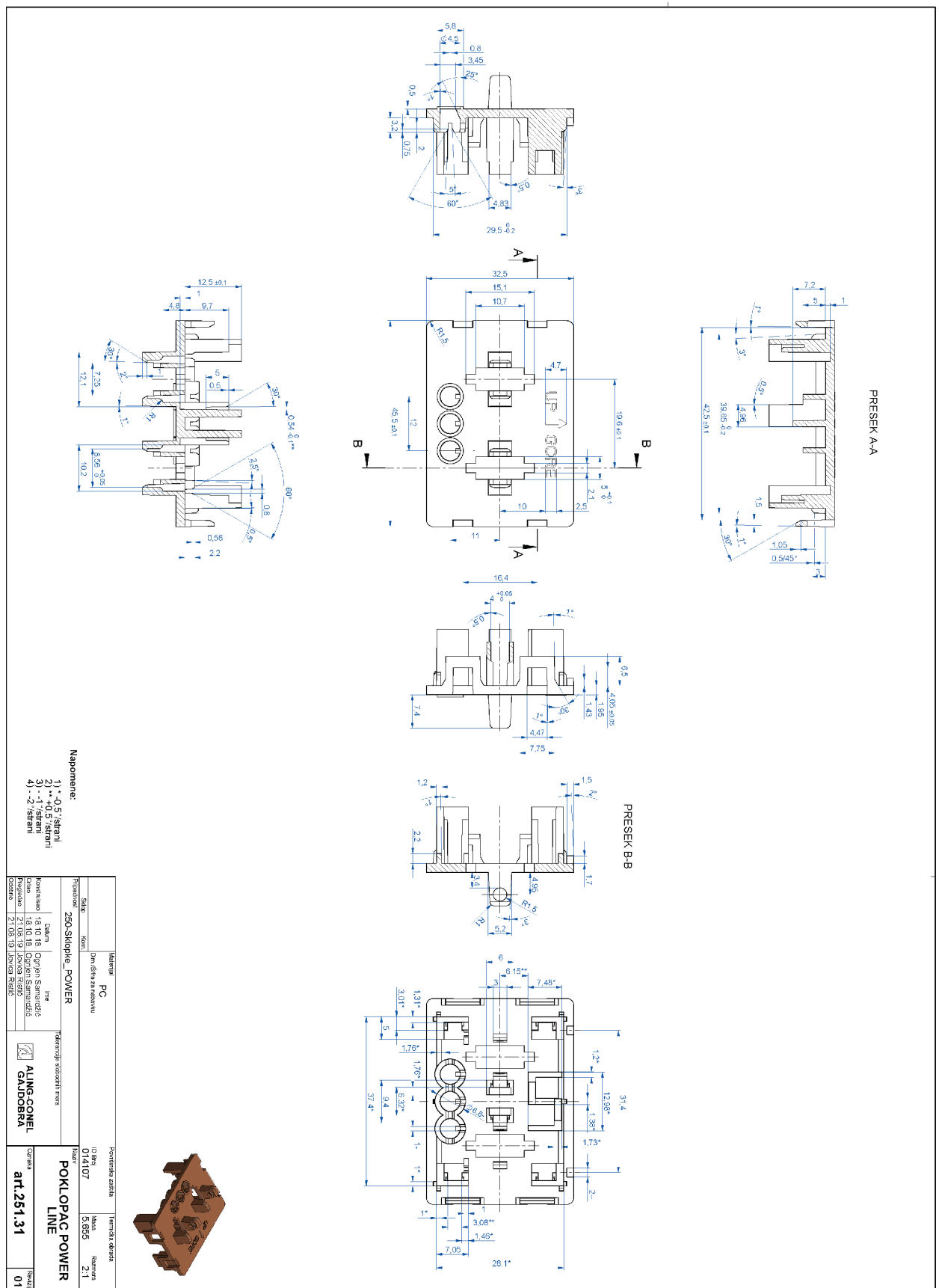


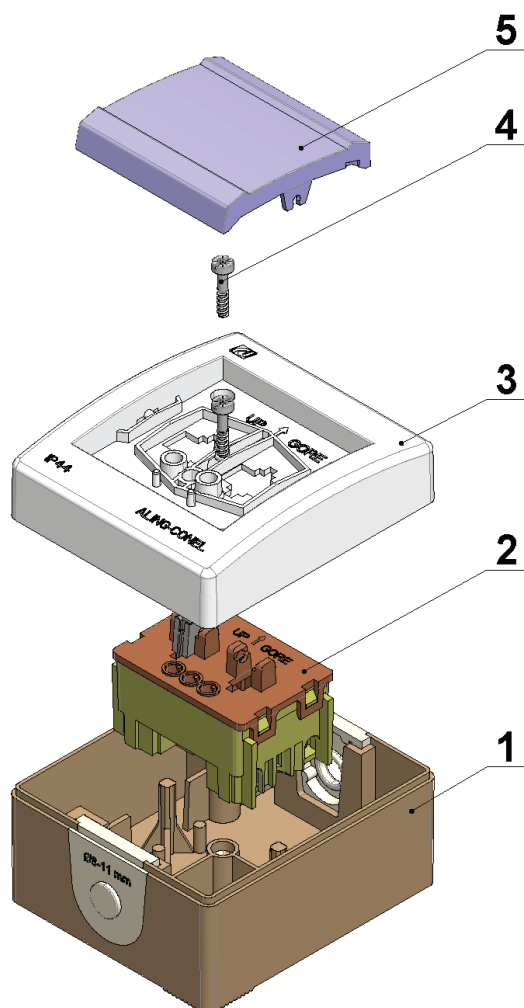


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D9	a	Farmstead drive 23 mile PROTECTA	16.9.2021.	

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		Tiskovna črta št.	
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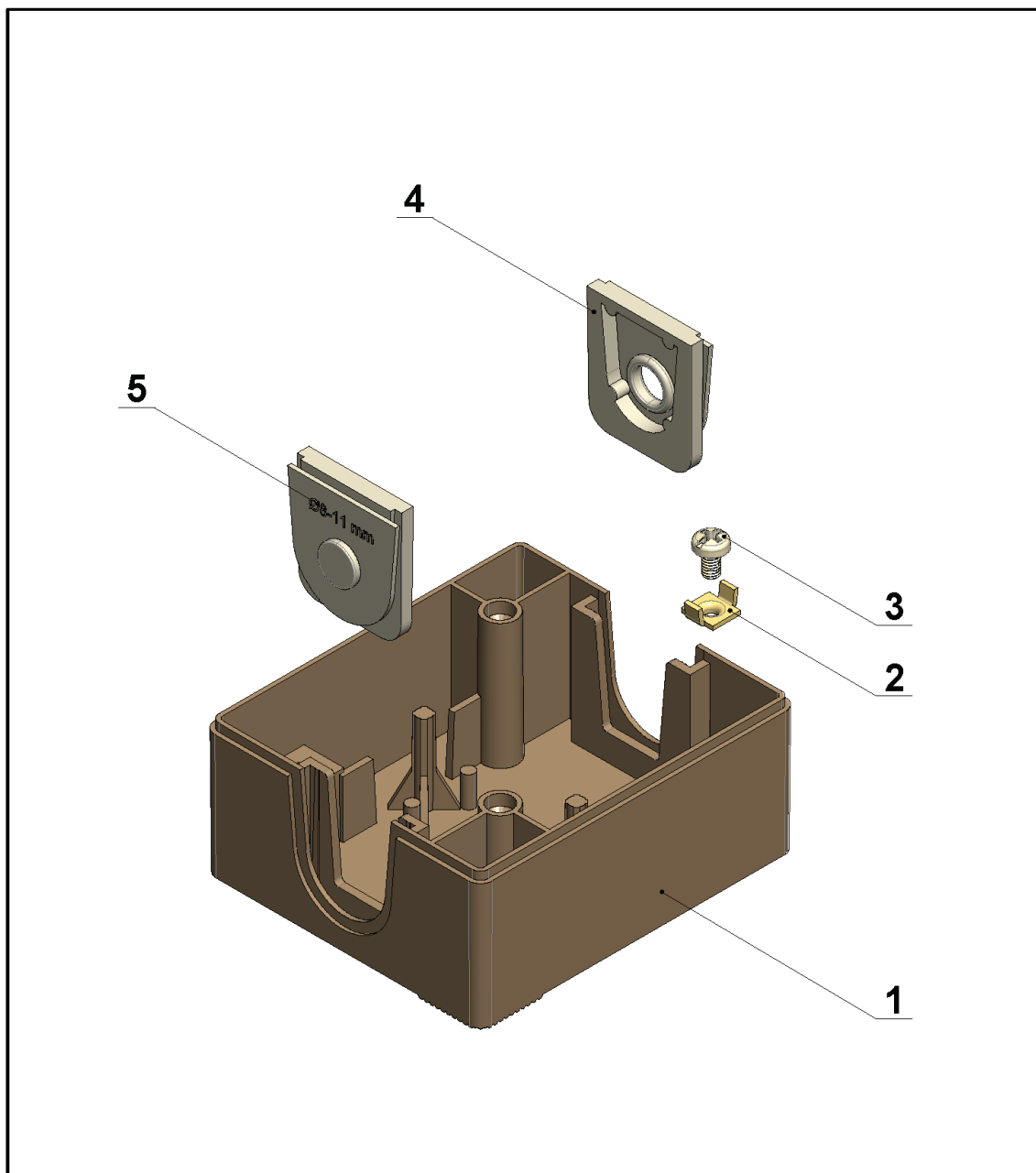




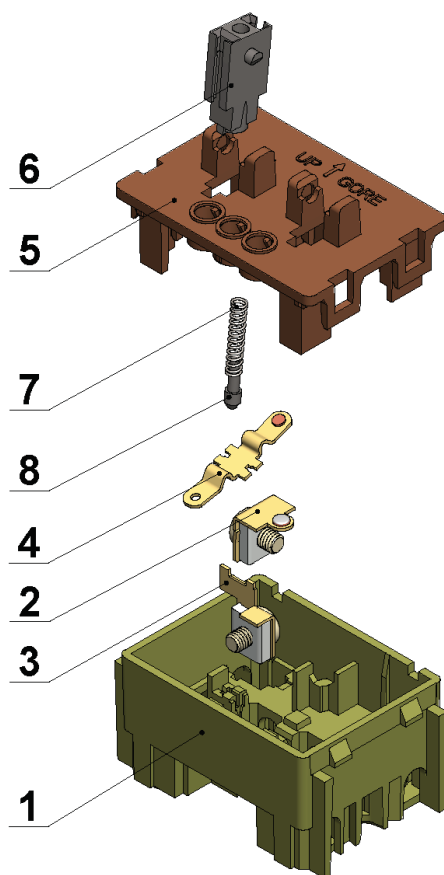


5	Taster jednopolni POWER		art.251.02	1	ABS		
4	Vijak za plastiku B3x14		1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line		art.251.01	1	ABS		
2	Telo jednopolno sklop		PSK.251.2	1			
1	Kutija POWER sklop		PSK.251.1	1			
Poz.	Naziv		Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
		Materijal				Površinska zaštita	Termička obrada
						ID Broj	Masa
		Dim./Šifra za nabavku				014451	98.746
	Sklop	Kom.					Razmera
							1:1.5
Pripadnost					Naziv		
250-Sklopke_POWER					SKLOPKA		
					JEDNOPOLNA		
					POWER10A 250V~ IP44		
Tolerancije slobodnih mera							
	Datum	Ime					
Konstruisao	06.11.18.	Ognjen Samardžić					
Crtao	06.11.18.	Ognjen Samardžić					
Pregledao	03.12.21	Jovica Ristić					
Odobrio	03.12.21	Jovica Ristić					
					ALING-CONEL		
			GAJDOBRA		Oznaka		
					art.251		
					Revizija		
					01		





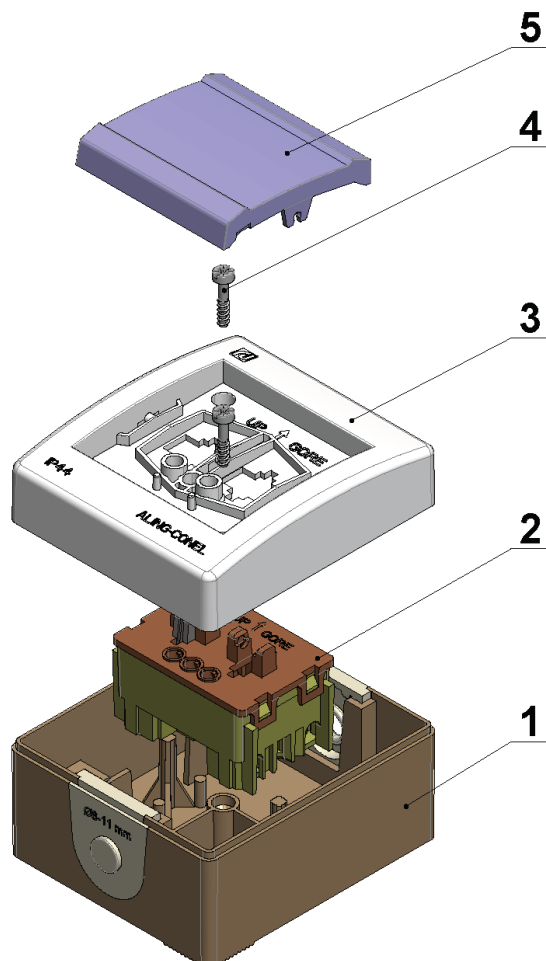
5	Uvodnica zatvorena POWER		art.251.13	1	PVC 75 Shore		
4	Uvodnica otvorena POWER		art.251.12	1	PVC 75 Shore		
3	Vijak M3,5x6 ISO 7045 cementiran		1000225	1	5.8	1000225	gal Zn 5 žuto
2	Kontakt uzemljenja		art.251.14	1	CuZn37 R410	1 x 65	
1	Kutija POWER line		art.251.11	1	ABS		
Poz.	Naziv		Oznaka	Kom.	Materijal	Dim. / Šifra za nabavku	Napomena
		Materijal				Površinska zaštita	Termička obrada
		Dim./Šifra za nabavku				ID Broj	Masa
	Sklop	Kom.				014205	45.209
Pripadnost					Naziv		
250-Sklopke_POWER					KUTIJA POWER SKLOP		
			Tolerancije slobodnih mera		<div><div></div><div>ALING-CONEL GAJDOBRA</div></div> <div>Oznaka</div> <div>PSK.251.1</div> <div>Revizija</div> <div>03</div>		
	Datum	Ime					
Konstruisao	22.10.18.	Ognjen Samardžić					
Crtao	22.10.18.	Ognjen Samardžić					
Pregledao	26.03.21	Miljan Matrak					
Odobrio	26.03.21	Miljan Matrak					



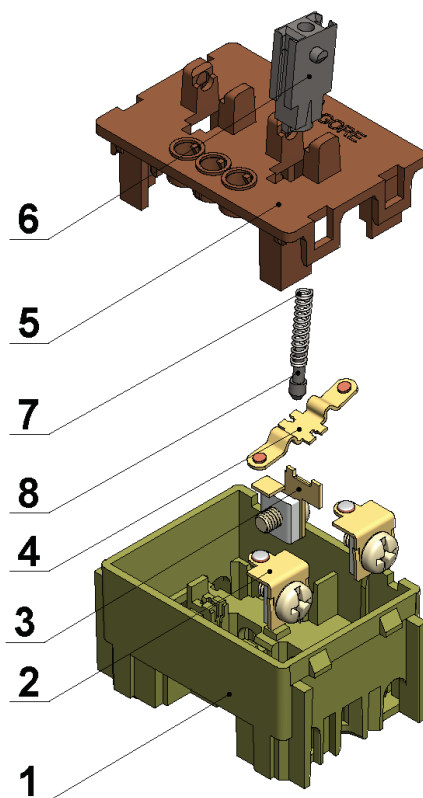
8	Klizač PRESTIGE	art.605.34	1	PBT GF20		
7	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano
6	Tipkalo PRESTIGE	art.605.32	1	PBT GF20		
5	Poklopac POWER line	art.251.31	1	PC		
4	Klackalica jednopolna sklop	PSK.605.4	1			
3	Nosač klackalice levi sklop	PSK.605.5	1			
2	Nepokretni kontakt sklop	PSK.605.6	1			
1	Telo sklopke POWER line	art.251.21	1	PC		
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
				Materijal	Površinska zaštita	Termička obrada
					ID Broj	Masa
					014201	21.916
	Sklop	Kom.				Razmera
						1:1
Pripadnost				Naziv		
250-Sklopke_POWER				TELO JEDNOPOLNO SKLOP		
			Tolerancije slobodnih mera			
	Datum	Ime				
Konstruisao	22.10.18.	Ognjen Samardžić				
Crtao	22.10.18.	Ognjen Samardžić				
Pregledao	02.12.21	Jovica Ristić				
Odobrio	02.12.21	Jovica Ristić				
			Oznaka			
			PSK.251.2			
			Revizija			
			01			



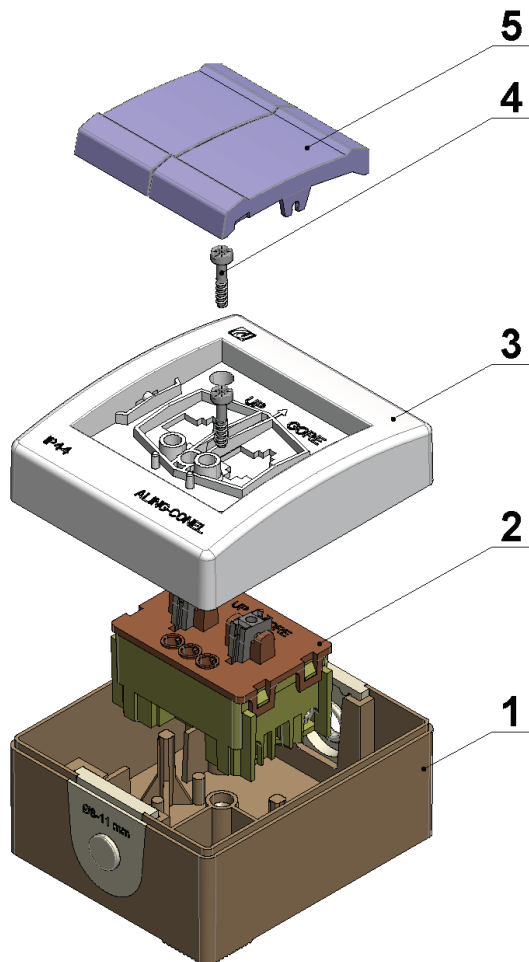
ALING-CONEL  
GAJDOBRA




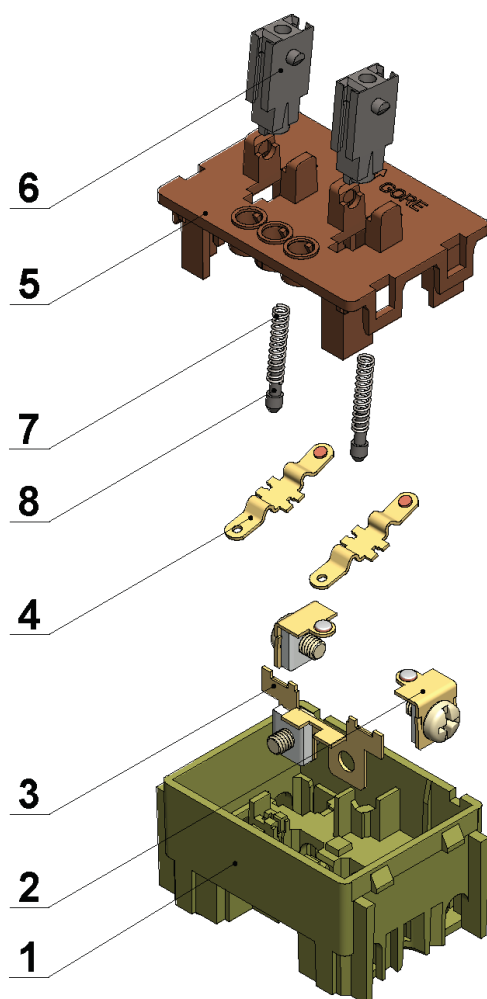
5	Taster jednopolni POWER		art.251.02		1	ABS			
4	Vijak za plastiku B3x14		1000128		2	5.8	1000128	gal Zn 5	
3	Blok POWER line		art.251.01		1	ABS			
2	Telo naizmjenično sklop		PSK.253.2		1				
1	Kutija POWER sklop		PSK.251.1		1				
Poz.	Naziv		Oznaka		Kom.	Materijal	Dim./ Šifra za nabavku		Napomena
		Materijal					Površinska zaštita	Termička obrada	
		Dim./Šifra za nabavku					ID Broj	Masa	Razmera
	Sklop	Kom.					014457	101.106	1:1.5
Pripadnost							Naziv		
250-Sklopke_POWER							SKLOPKA NEIZMENIČNA POWER10A 250V~ IP44		
							Oznaka		
							art.253		
							Revizija		
							01		



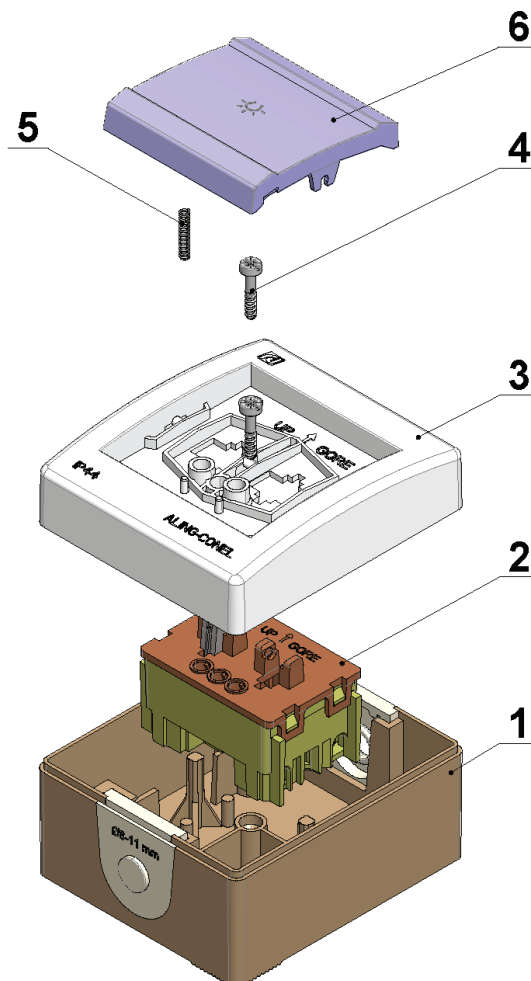
8	Klizač PRESTIGE	art.605.34	1	PBT GF20				
7	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano		
6	Tipkalo PRESTIGE	art.605.32	1	PBT GF20				
5	Poklopac POWER line	art.251.31	1	PC				
4	Klackalica naizmenična sklop	PSK.607.4	1					
3	Nosač klackalice desni sklop	PSK.608.5	1					
2	Nepokretni kontakt sklop	PSK.605.6	2					
1	Telo sklopke POWER line	art.251.21	1	PC				
Poz.	Naziv		Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena	
		Materijal				Površinska zaštita	Termička obrada	
		Dim./Šifra za nabavku				ID Broj	Masa	Razmera
	Sklop	Kom.				014323	24.276	1:1
Pripadnost						Naziv		
250-Sklopke_POWER						TELO NAIZMENIČNO SKLOP		
						Tolerancije slobodnih mera		
	Datum	Ime						
Konstruisao	21.08.19	Jovica Ristić						
Crtao	21.08.19	Jovica Ristić						
Pregledao	03.12.21	Jovica Ristić						
Odobrio	03.12.21	Jovica Ristić						
					ALING-CONEL			
				GAJDOBRA				
						Oznaka	Revizija	
						PSK.253.2		02



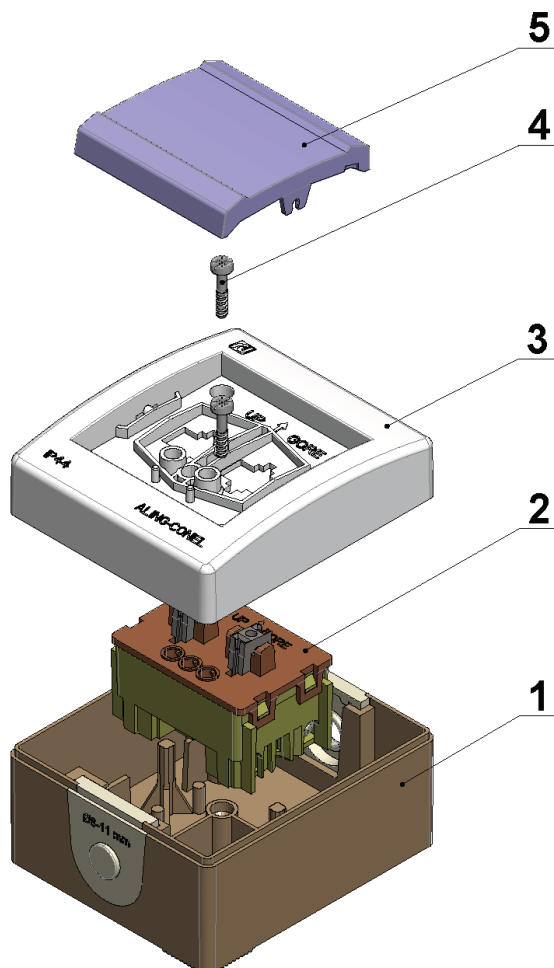
5	Taster serijski POWER	art.252.02	2	ABS			
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5	
3	Blok POWER line	art.251.01	1	ABS			
2	Telo serijsko sklop	PSK.252.2	1				
1	Kutija POWER sklop	PSK.251.1	1				
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena	
	Materijal				Površinska zaštita	Termička obrada	
	Dim./Šifra za nabavku				ID Broj	Masa	Razmera
Sklop	Kom.				014454	104.118	1:1.5
Pripadnost					Naziv		
250-Sklopke_POWER					SKLOPKA SERIJSKA POWER10A 250V~ IP44		
					Tolerancije slobodnih mera		
	Datum	Ime		<div> <b>ALING-CONEL GAJDOBRA</b></div>			
Konstruisao	06.11.18.	Ognjen Samardžić					
Crtao	06.11.18.	Ognjen Samardžić					
Pregledao	03.12.21	Jovica Ristić					
Odobrio	03.12.21	Jovica Ristić		Oznaka			Revizija
				art.252			01




8	Klizač PRESTIGE	art.605.34	2	PBT GF20					
7	Opruga tipkala 16A	art.619.33	2	1.1200 DIN 2076-C	1000471	brunirano			
6	Tipkalo PRESTIGE	art.605.32	2	PBT GF20					
5	Poklopac POWER line	art.251.31	1	PC					
4	Klackalica jednopolna sklop	PSK.605.4	2						
3	Nosač klackalice dupli sklop	PSK.606.5	1						
2	Nepokretni kontakt sklop	PSK.605.6	2						
1	Telo sklopke POWER line	art.251.21	1	PC					
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena			
	Materijal				Površinska zaštita	Termička obrada			
	Dim./Šifra za nabavku				ID Broj	Masa			
Sklop	Kom.				014217	26.483			
Pripadnost				Naziv					
250-Sklopke_POWER				TELO SERIJSKO SKLOP					
				Tolerancije slobodnih mera					
	Datum	Ime							
Konstruisao	22.10.18.	Ognjen Samardžić							
Crtao	22.10.18.	Ognjen Samardžić							
Pregledao	02.12.21	Jovica Ristić							
Odobrio	02.12.21	Jovica Ristić							
				Oznaka					
				PSK.252.2					
				Revizija					
				01					

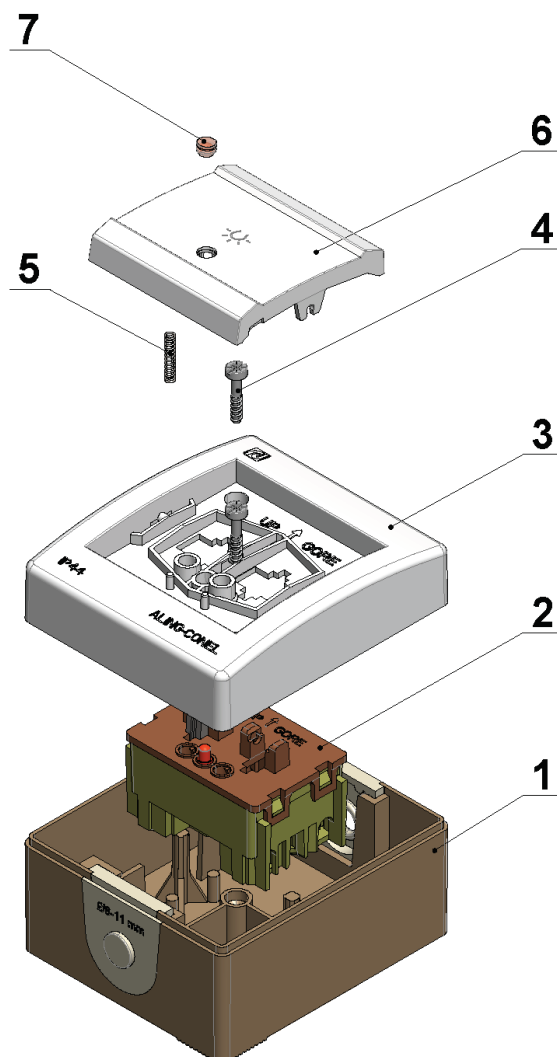


6	Taster jednopolni POWER	art.251.02	1	ABS		
5	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo jednopolno sklop	PSK.251.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
	Materijal				Površinska za štita	Termička obrada
	Dim./Šifra za nabavku				ID Broj	Masa
Sklop	Kom.				020486	98.846
						Razmera
						1:1.5
Pripadnost					Naziv	
250-Sklopke_POWER					TASTER SKLOPKA ZA SVETLO POWER 10A 250V~ IP44	
			Tolerancije slobodnih mera			
	Datum	Ime				
Konstruisao	5.8.2019.	Tamara Iličić				
Crtao	5.8.2019.	Tamara Iličić				
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić				
			 ALING-CONEL GAJDOBRA		Oznaka	Revizija
					art.255	01

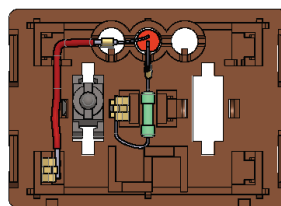
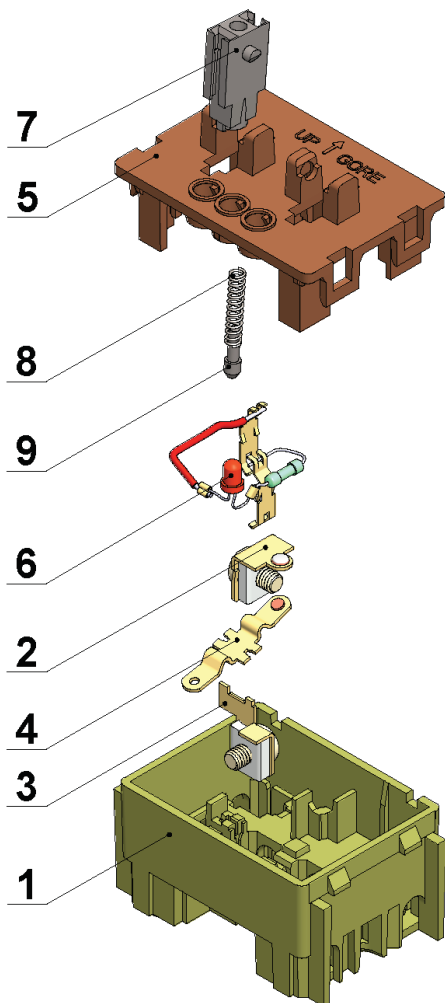


5	Taster jednopolni POWER		art.251.02		1	ABS		
4	Vijak za plastiku B3x14		1000128		2	5.8	1000128	gal Zn 5
3	Blok POWER line		art.251.01		1	ABS		
2	Telo ukrsko sklop		PSK.254.2		1			
1	Kutija POWER sklop		PSK.251.1		1			
Poz.	Naziv		Oznaka		Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
		Materijal					Površinska zaštita	Termička obrada
							ID Broj	Masa
		Dim./Šifra za nabavku					014458	105.945
	Sklop	Kom.						1:1.5
Pripadnost						Naziv		
250-Sklopke_POWER						SKLOPKA UKRSNA POWER 10A 250V~ IP44		
			Tolerancije slobodnih mera					
	Datum	Ime						
Konstruisao	07.11.18.	Ognjen Samardžić						
Crtao	07.11.18.	Ognjen Samardžić						
Pregledao	03.12.21	Jovica Ristić						
Odobrio	03.12.21	Jovica Ristić						
			 ALING-CONEL GAJDOBRA			Oznaka		Revizija
						art.254		01



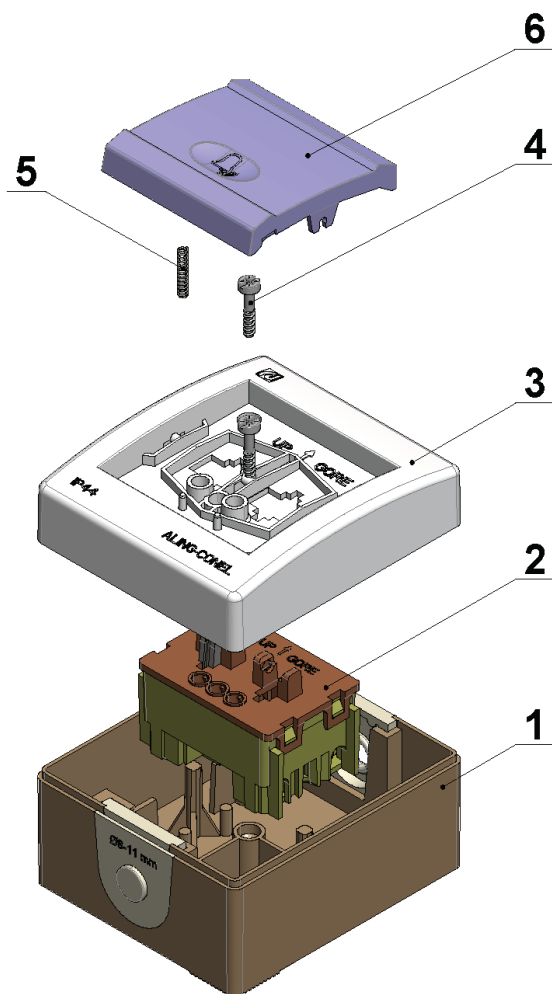


7	Poklopac tinjalice	art.522.08	1	PC transp		
6	Taster svetlo POWER	art.255I.71	1	ABS		
5	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo jednopolne sa indikacijom sklop	PSK.255I.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
		Materijal			Površinska zaštita	Termička obrada
		Dim./Šifra za nabavku			ID Broj	Masa
	Sklop	Kom.			014459	99.824
Pripadnost					Naziv	
250-Sklopke_POWER					TASTER SKLOPKA ZA SVETLO POWER SA INDIK. 10A 250V~ IP44	
		Tolerancije slobodnih mera				
	Datum	Ime				
Konstruisao	07.11.18.	Ognjen Samardžić				
Crtao	07.11.18.	Ognjen Samardžić				
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić				
					Oznaka	Revizija
					art.255I	02

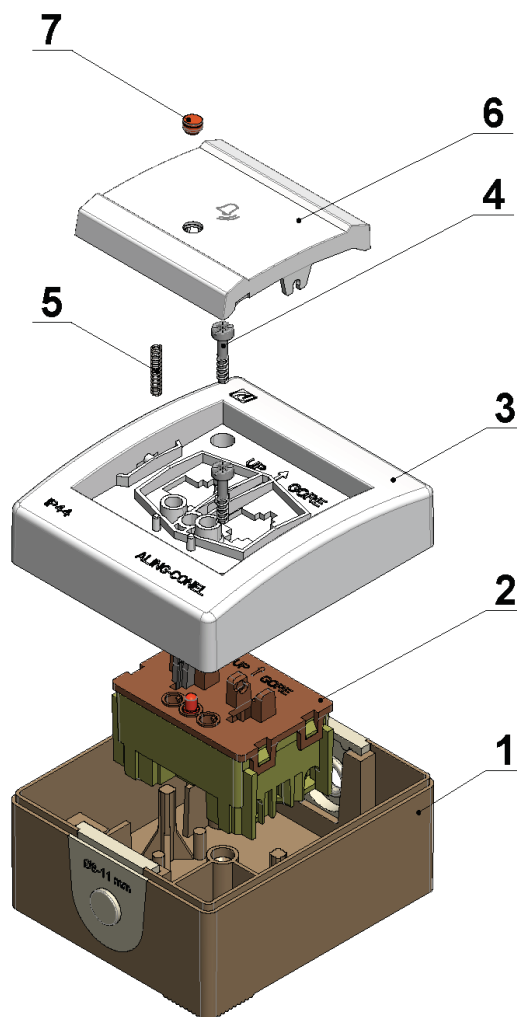



9	Klizač PRESTIGE	art.605.34	1	PBT GF20		
8	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano
7	Tipkalo PRESTIGE	art.605.32	1	PBT GF20		
6	LED PRESTIGE sklop	PSK.609I.8	1			
5	Poklopac POWER line	art.251.31	1	PC		
4	Klackalica jednopolna sklop	PSK.605.4	1			
3	Nosač klackalice levi sklop	PSK.605.5	1			
2	Nepokretni kontakt sklop	PSK.605.6	1			
1	Telo sklopke POWER line	art.251.21	1	PC		
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
		Materijal			Površinska zaštita	Termička obrada
		Dim./Šifra za nabavku			ID Broj	Masa
Sklop	Kom.				014380	22.936
						Razmera
						1:1
Pripadnost				Naziv		
250-Sklopke_POWER				TELO JEDNOPOLNE SA		
				INDIKACIJOM SKLOP		
				Oznaka		
				PSK.255I.2		
				Revizija		
				01		

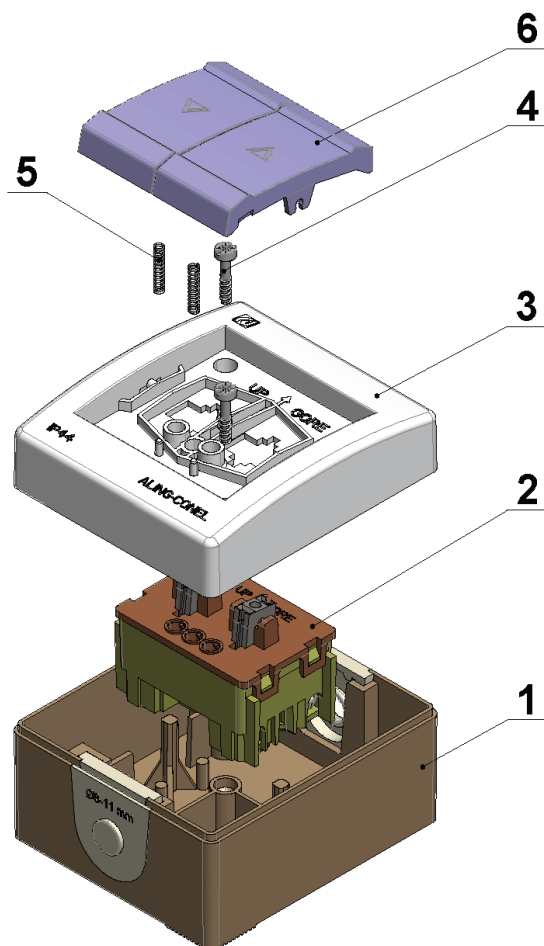




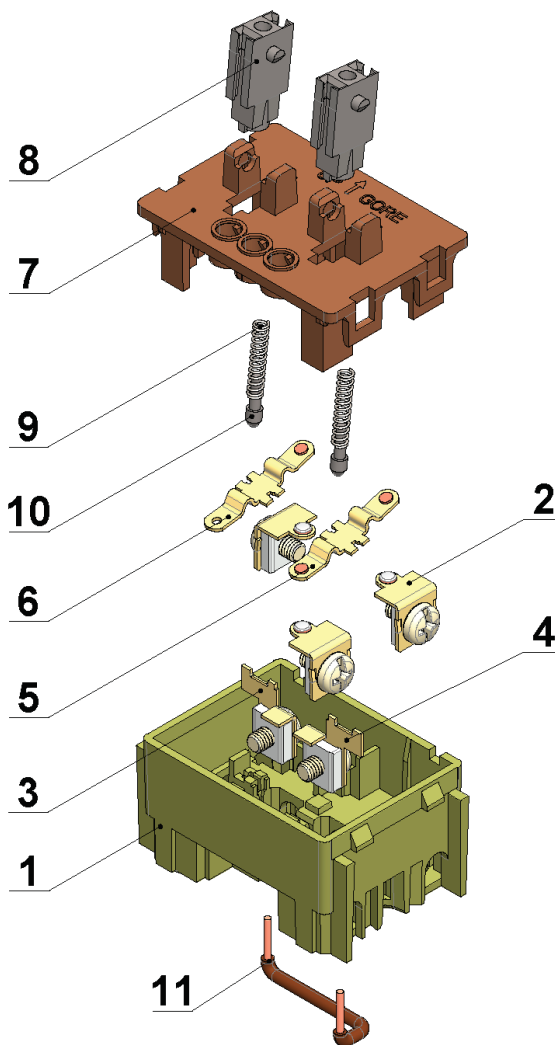
6	Taster zvono POWER	art.256.02	1	ABS		
5	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo jednopolno sklop	PSK.251.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
	Materijal				Površinska zaštita	Termička obrada
					ID Broj	Masa
					014461	98.794
						Razmera
	Sklop	Kom.				1:1.5
Pripadnost				Naziv		
250-Sklopke_POWER				TASTER SKLOPKA ZA ZVONO POWER 10A 250V~IP44		
				Tolerancije slobodnih mera		
	Datum	Ime				
Konstruisao	07.11.18.	Ognjen Samardžić				
Crtao	07.11.18.	Ognjen Samardžić				
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić				
				Oznaka		Revizija
				art.256		01



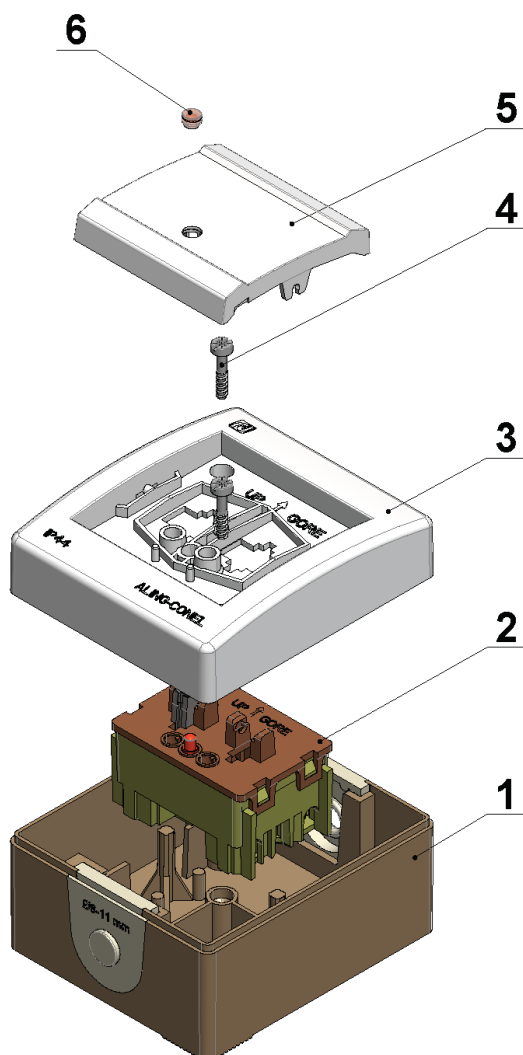
7	Poklopac tinjalice	art.522.08	1	PC transp		
6	Taster sveto POWER	art.255l.71	1	ABS		
5	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo jednopolne sa indikacijom sklop	PSK.255l.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
	Materijal				Površinska zaštita	Termička obrada
	Dim./Šifra za nabavku				ID Broj	Masa
Sklop	Kom.				014460	99.824
						Razmera
						1:1.5
Pripadnost	250-Sklopke_POWER			Naziv		
				Tolerancije slobodnih mera		
	Datum	Ime		 <b>ALING-CONEL</b> GAJDOBRA		
Konstruisao	07.11.18.	Ognjen Samardžić				
Crtao	07.11.18.	Ognjen Samardžić				
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić		Oznaka		
				art.256l		
				Revizija		
				02		



6	Taster serijski POWER	art.252.02	2	ABS		
5	Opruga tipkala 16A	art.619.33	2	1.1200 DIN 2076-C	1000471	brunirano
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo tastera za roletne sklop	PSK.257.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
	Materijal				Površinska zaštita	Termička obrada
	Dim./Šifra za nabavku				ID Broj	Masa
Sklop	Kom.				014462	109.472
Pripadnost	250-Sklopke_POWER			Naziv		
	Tolerancije slobodnih mera			TASTER SKLOPKA ZA ROLETNE POWER 10A 250V~ IP44		
Konstruisao	Datum	Ime	 <b>ALING-CONEL GAJDOBRA</b>	Oznaka		Revizija
Crtao	07.11.18.	Ognjen Samardžić		art.257		01
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić				



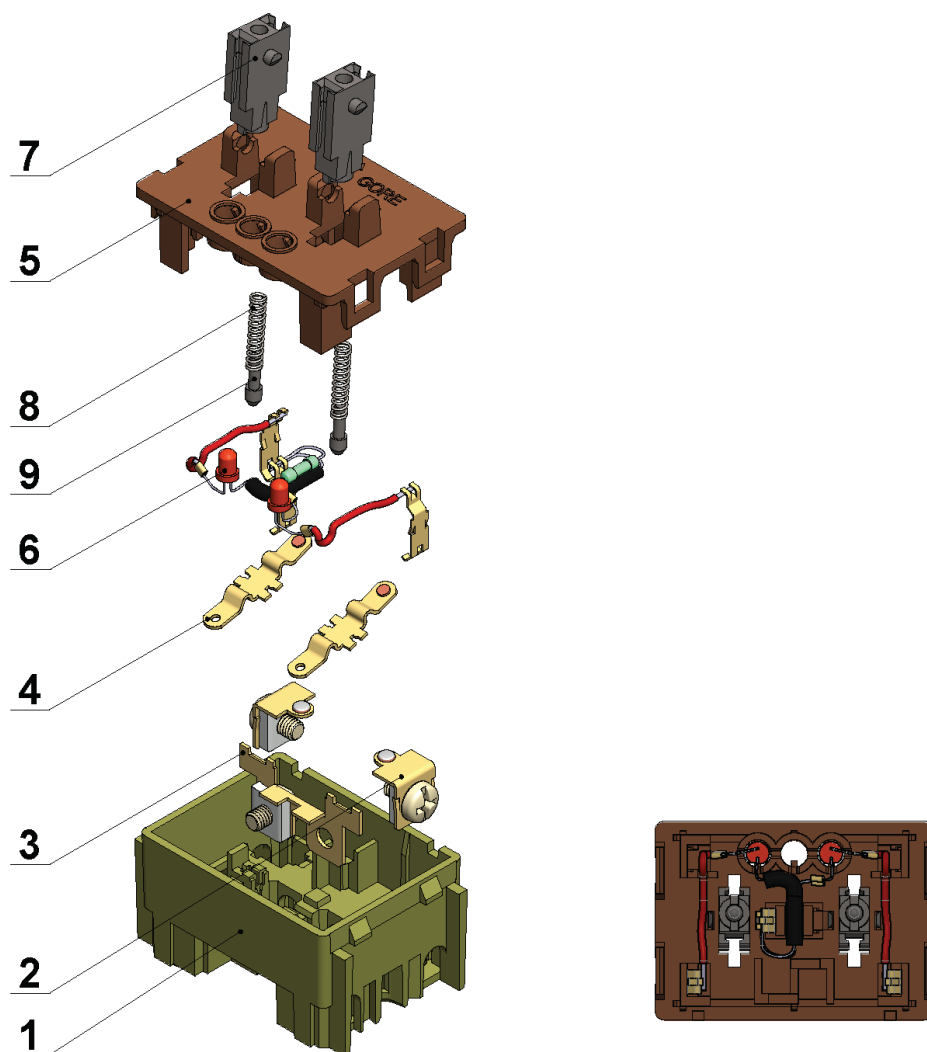
11	Žica za ukrštanje - donja	art.658.02	1	P 1,5mm2			
10	Klizač PRESTIGE	art.605.34	2	PBT GF20			
9	Opruga tipkala 16A	art.619.33	2	1.1200 DIN 2076-C	1000471	brunirano	
8	Tipkalo PRESTIGE	art.605.32	2	PBT GF20			
7	Poklopac POWER line	art.251.31	1	PC			
6	Klackalica jednopolna sklop	PSK.605.4	1				
5	Klackalica naizmenična sklop	PSK.607.4	1				
4	Nosač klackalice desni sklop	PSK.608.5	1				
3	Nosač klackalice levi sklop	PSK.605.5	1				
2	Nepokretni kontakt sklop	PSK.605.6	3				
1	Telo sklopke POWER line	art.251.21	1	PC			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena	
		Materijal	Površinska za štita			Termička obrada	
		Dim./Šifra za nabavku	ID Broj			Masa	Razmera
Sklop	Kom.		014381			31.636	1:1
Pripadnost				Naziv			
250-Sklopke_POWER				TELO TASTERA ZA ROLETNE SKLOP			
Tolerancije slobodnih mera				Oznaka			
Datum				Revizija			
Ime				01			
Konstruisao	30.10.18.	Ognjen Samardžić	<div>ALING-CONEL GAJDOBRA</div>				
Crtao	30.10.18.	Ognjen Samardžić					
Pregledao	02.12.21	Jovica Ristić					
Odobrio	02.12.21	Jovica Ristić					



6	Poklopac tinjalice	art.522.08	1	PC transp		
5	Taster svetlo POWER	art.255I.71	1	ABS		
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo jednopolne sa indikacijom sklop	PSK.255I.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
	Materijal				Površinska zaštita	Termička obrada
	Dim./Šifra za nabavku				ID Broj	Masa
Sklop	Kom.				014464	99.724
						Razmera
						1:1.5
Pripadnost	250-Sklopke_POWER			SKLOPKA JEDNOPOLNA POWER SA INDIKACIJOM 10A 250V~ IP44		
			Tolerancije slobodnih mera			
	Datum	Ime				
Konstruisao	07.11.18.	Ognjen Samardžić				
Crtao	07.11.18.	Ognjen Samardžić				
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić				
			ALING-CONEL GAJDOBRA			
			Oznaka			Revizija
			art.2511			01

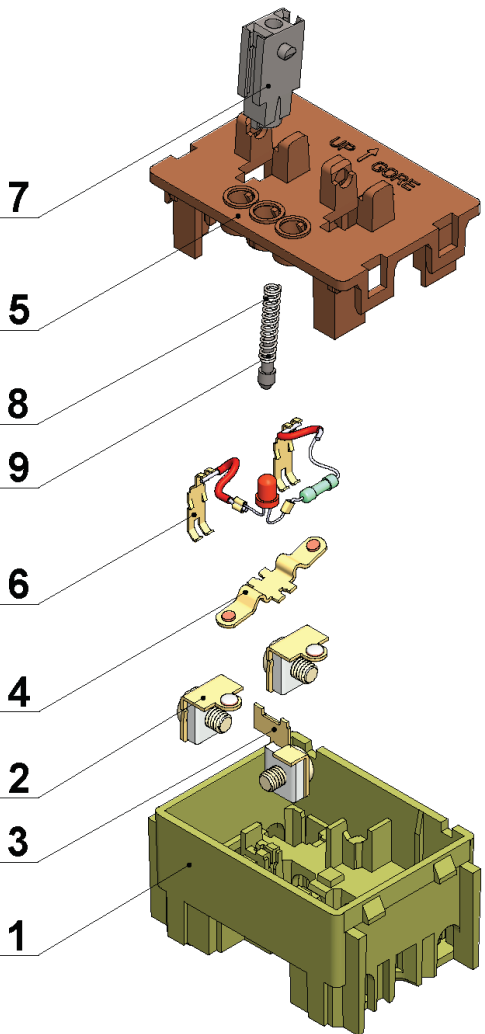
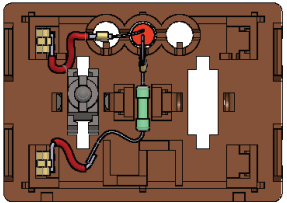




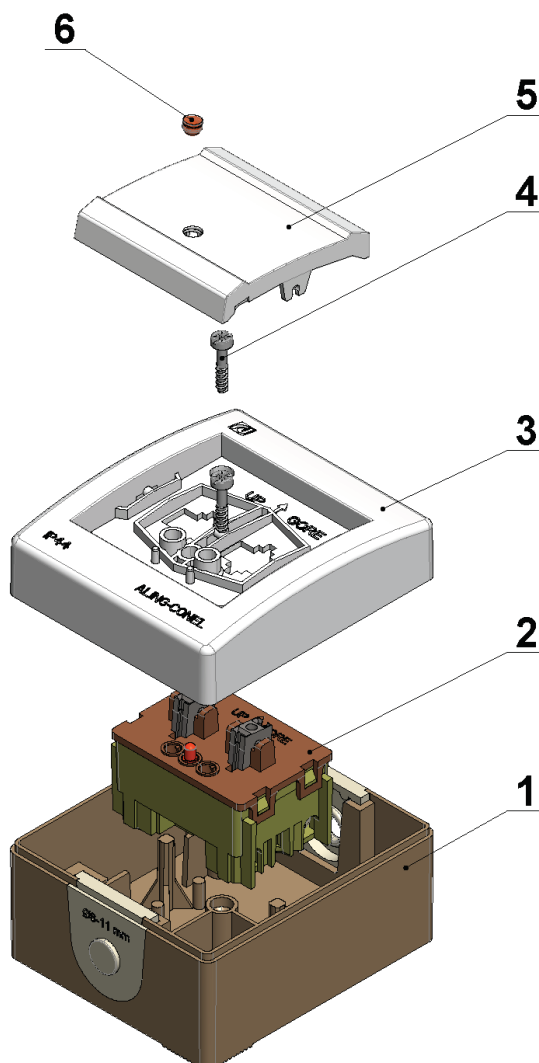


9	Klizač PRESTIGE	art.605.34	2	PBT GF20		
8	Opruga tipkala 16A	art.619.33	2	1.1200 DIN 2076-C	1000471	brunirano
7	Tipkalo PRESTIGE	art.605.32	2	PBT GF20		
6	LED serijska sklop	PSK.626.8	1			
5	Poklopac POWER line	art.251.31	1	PC		
4	Klackalica jednopolna sklop	PSK.605.4	2			
3	Nosač klackalice dupli sklop	PSK.606.5	1			
2	Nepokretni kontakt sklop	PSK.605.6	2			
1	Telo sklopke POWER line	art.251.21	1	PC		
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
		Materijal			Površinska zaštita	Termička obrada
		Dim./Šifra za nabavku			ID Broj	Masa
	Sklop	Kom.			014425	28.522
Pripadnost					Naziv	
250-Sklopke_POWER					TELO SERIJSKO SA INDIKACIJOM SKLOP	
			Tolerancije slobodnih mera			
	Datum	Ime				
Konstruisao	02. 11. 18.	Ognjen Samardžić				
Crtao	02. 11. 18.	Ognjen Samardžić				
Pregledao	02. 12. 21	Jovica Ristić				
Odobrio	02. 12. 21	Jovica Ristić				
			 ALING-CONEL GAJDOBRA		Oznaka	
					PSK.2521.2	
					Revizija	
					01	

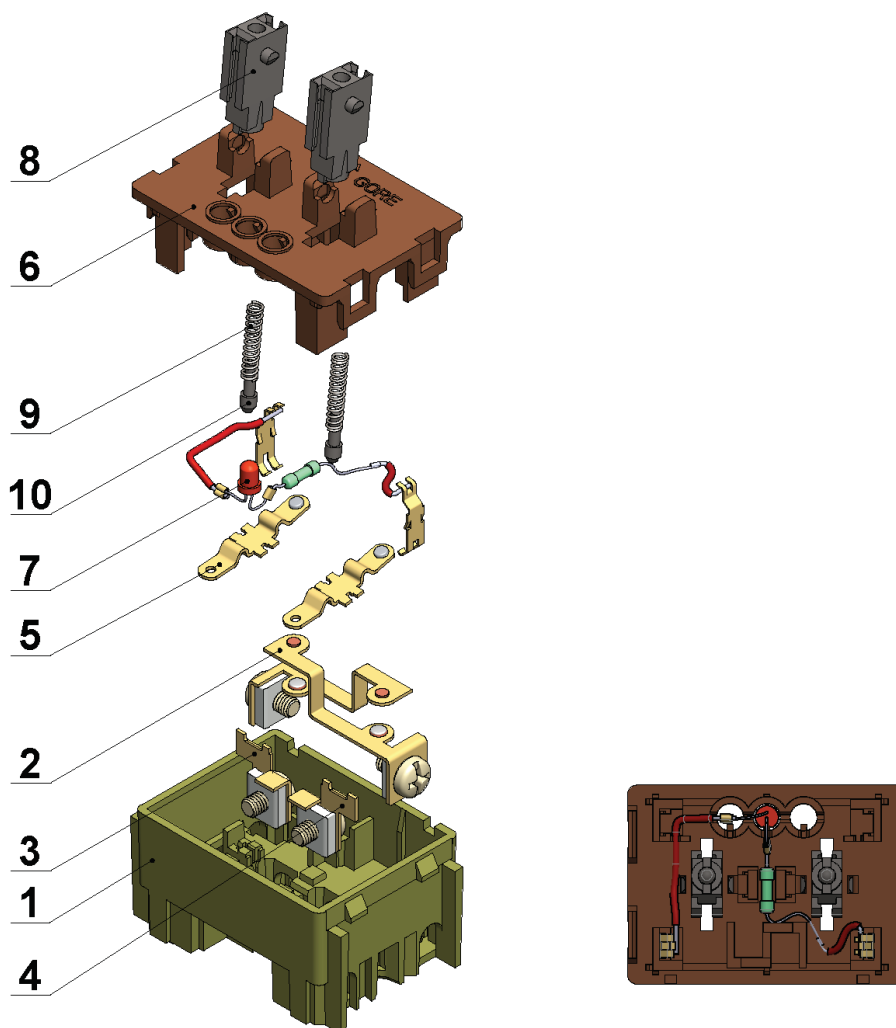


9	Klizač PRESTIGE	art.605.34	1	PBT GF20					
8	Opruga tipkala 16A	art.619.33	1	1.1200 DIN 2076-C	1000471	brunirano			
7	Tipkalo PRESTIGE	art.605.32	1	PBT GF20					
6	LED naizmenična sklop	PSK.627.8	1						
5	Poklopac POWER line	art.251.31	1	PC					
4	Klackalica naizmenična sklop	PSK.607.4	1						
3	Nosač klackalice levi sklop	PSK.605.5	1						
2	Nepokretni kontakt sklop	PSK.605.6	2						
1	Telo sklopke POWER line	art.251.21	1	PC					
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena			
	Materijal				Površinska zaštita	Termička obrada			
	Dim./Šifra za nabavku				ID Broj	Masa			
Sklop	Kom.				014433	25.295			
						Razmera			
						1:1			
Pripadnost				Naziv					
250-Sklopke_POWER				TELO NAIZMENICNO SA INDIKACIJOM SKLOP					
				Tolerancije slobodnih mera					
	Datum	Ime							
Konstruisao	03.11.18.	Ognjen Samardžić							
Crtao	03.11.18.	Ognjen Samardžić							
Pregledao	02.12.21	Jovica Ristić							
Odobrio	02.12.21	Jovica Ristić							
				Oznaka		Revizija			
				PSK.2531.2		01			



6	Poklopac tinjalice	art.522.08	1	PC transp		
5	Taster svetlo POWER	art.255l.71	1	ABS		
4	Vijak za plastiku B3x14	1000128	2	5.8	1000128	gal Zn 5
3	Blok POWER line	art.251.01	1	ABS		
2	Telo ukrсно sa indikacijom sklop	PSK.2541.2	1			
1	Kutija POWER sklop	PSK.251.1	1			
Poz.	Naziv	Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena
	Materijal				Površinska zaštita	Termička obrada
					ID Broj	Masa
					014478	107.009
	Sklop	Kom.				Razmera
						1:1.5
Pripadnost	250-Sklopke_POWER			Naziv	SKLOPKA UKRSNA POWER SA INDIKACIJOM 10A 250V~ IP44	
			Tolerancije slobodnih mera			
	Datum	Ime				
Konstruisao	08.11.18.	Ognjen Samardžić				
Crtao	08.11.18.	Ognjen Samardžić				
Pregledao	03.12.21	Jovica Ristić				
Odobrio	03.12.21	Jovica Ristić				
					Oznaka	Revizija
					art.2541	01



10	Klizač PRESTIGE	art.605.34	2	PBT GF20						
9	Opruga tipkala 16A	art.619.33	2	1.1200 DIN 2076-C	1000471	brunirano				
8	Tipkalo PRESTIGE	art.605.32	2	PBT GF20						
7	LED ukrсна sklop	PSK.628.8	1							
6	Poklopac POWER line	art.251.31	1	PC						
5	Klackalica ukrсна sklop	PSK.608.4	2							
4	Nosač klackalice desni sklop	PSK.608.5	1							
3	Nosač klackalice levi sklop	PSK.605.5	1							
2	Ukrсни kontakt sklop	PSK.608.6	2							
1	Telo sklopke POWER line	art.251.21	1	PC						
Poz.	Naziv		Oznaka	Kom.	Materijal	Dim./ Šifra za nabavku	Napomena			
		Materijal				Površinska zaštita	Termička obrada			
		Dim./Šifra za nabavku				ID Broj	Masa	Razmera		
	Sklop	Kom.				014434	30.221	1:1		
Pripadnost						Naziv				
250-Sklopke_POWER						TELO UKRSNO SA INDIKACIJOM SKLOP				
		Tolerancije slobodnih mera								
	Datum	Ime								
Konstruisao	03. 11. 18.	Ognjen Samardžić								
Crtao	03. 11. 18.	Ognjen Samardžić								
Pregledao	02. 12. 21	Jovica Ristić								
Odobrio	02. 12. 21	Jovica Ristić								
						Oznaka		Revizija		
						PSK.2541.2		01		

## Enclosure No. 3 (Photos)





