

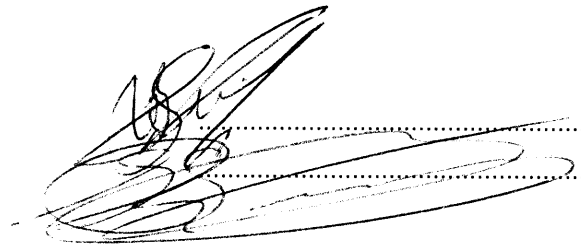
## TEST REPORT

IEC 60947-3

### Low-voltage switchgear and controlgear

#### Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

Report Reference No. .... : 2078425.50  
 Tested by (name and signature) ..... : H.G.M. Kormelink  
 Approved by (name and signature) .. : H.L. Schendstok  
 Date of issue ..... : 27-04-2005



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Applicant's Name ..... : SOCOMEC S.A.  
 Address ..... : 1-4, Route de Westhouse, 67230 Benfeld, France

#### Test specification

Standard ..... : IEC 60947-3 : 2001-05 (Consolidated Ed. 2.1)  
 Test procedure ..... : CB Scheme  
 Non-standard test method ..... :

Test Report Form No. .... : IEC60947\_3\_A/02-12

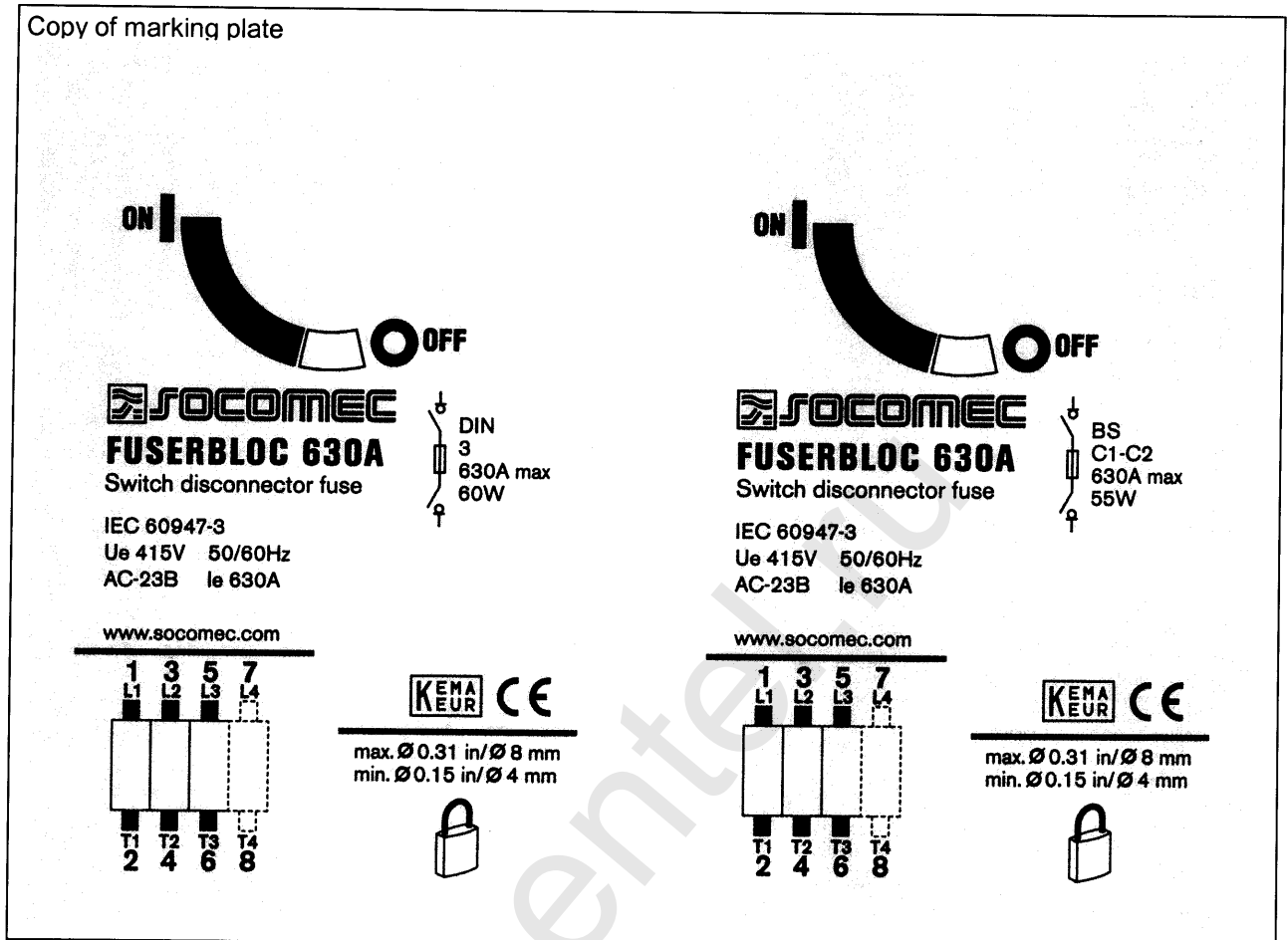
TRF Originator ..... : LCIE  
 Master TRF ..... : Dated 2002-12

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Test item description ..... : Switch-disconnector-fuse  
 Trade Mark ..... : SOCOMEC  
 Manufacturer ..... : SOCOMEC  
 Model/Type reference ..... : FUSERBLOC DIN & BS  
 Rating(s) ..... : 630 A

Copy of marking plate



### Summary of testing

- Verification of constructional requirements
- Test sequence I: General performance characteristics
- Test sequence II: Operational Performance characteristics
- Test sequence IV: Conditional short-circuit current
- Test sequence V: Overload performance capability

Connection: only with lugs or busbars.

Fuserbloc DIN is used for the test sequences (maximum temperature rise). Sequence IV is only applied to Fuserbloc DIN because the BS version has bolted connections.

<b>Test items particulars:</b>	
- method of operation .....	: Independent manual operation
- switching positions .....	: 2 (on and off)
- number of poles .....	: 3 poles, 4 poles and 3 poles +N
- kind of current .....	: three phase a.c.
- number of phases .....	: 3
- rated frequency (Hz) .....	: 50/60 Hz
- number of positions of the main contacts .....	: 2 (on and off)
Rated and limiting values, main circuit .....	
- rated operational voltage $U_e$ (V).....	: 415 V
- rated insulation voltage $U_i$ (V).....	: 1000 V
- rated impulse withstand voltage $U_{imp}$ (kV).....	: 12 kV
- conventional free air thermal current $I_{th}$ (A).....	: 630 A
- conventional enclosed thermal current $I_{the}$ (A) .....	: -
- rated operational current $I_e$ (A).....	: 630 A
- rated uninterrupted current $I_u$ (A) .....	: 630 A
- utilization category .....	: AC-23B
Short-circuit characteristic.....	
- rated short-time withstand current $I_{cw}$ (kA) .....	: -
- rated short-time making capacity $I_{cm}$ (kA) .....	: -
- rated conditional short-circuit current .....	: 100 kA / fuse-links DIN 3 630A 80 kA / fuse-links BS C2 630A
Rated and limiting values, auxiliary circuits .....	
- rated operational voltage (V) .....	: 230 V
- rated frequency (Hz) .....	: 50/60 Hz
- number of circuits .....	: 4
- number and kind of contact elements .....	: 4 NO + 4 NC
Co-ordination of short-circuit protective devices .....	
- kind of protective device .....	:
<b>Possible test case verdicts</b>	
Test case does not apply to the test object .....	: N/A
Test item does meet the requirement .....	: P(ass)
Test item does not meet the requirement .....	: F(ail)
<b>Testing</b>	
Date of receipt of test item .....	: 2004-11
Date(s) of performance of test.....	: 2004-11/12

**General remarks:**

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IEC 60947-2.

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

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

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

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

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

**The making and breaking test and short-circuit test are carried out with a metallic screen placed at 100 mm all around the switch disconnector fuse.**

**General product information: (optional)****Handles used:**

- External handle type S3
- Direct handle type H.

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Clause	Requirement – Test	Result - Remark	Verdict

5.2	MARKING		
	Marking on equipment itself or on nameplate or nameplates attached to the equipment and legible from the front after mounting		
	- indication of the open and closed position	0 I	P
	- suitability for isolation		P
	- disconnectors AC-20 and DC-20 only: marked "Do not operate under load"		N/A
	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	SOCOMECC	P
	- type designation or serial number	FUSERBLOC	P
	- rated operational current	630 A	P
	- rated operational voltage	415 V	P
	- utilization category	AC-23B	P
	- rated frequency	50/60 Hz	P
	- manufacturer's claim for compliance with IEC 60947-3	IEC 60947-3	P
	- degree of protection		N/A
	Marking on fuse-combination units:		
	- fuse type	DIN 3 or BS C1-C2	P
	- maximum rated current	630 A max	P
	- power loss of the fuse-link	60 W (DIN) or 55 W (BS)	P
	Identification of terminals:		
	- line terminals	Immaterial	P
	- load terminals	Immaterial	P
	- neutral pole terminal	N	P
	- protective earth terminal		N/A
	Data in the manufacturer's published information:		
	- rated insulation voltage	1000 V	P
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	12 kV	P
	- pollution degree, if different from 3		P
	- rated duty	Uninterrupted duty	P
	- rated short-time withstand current and duration		N/A
	- rated short-circuit making capacity		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	- rated conditional short-circuit current	100kA (DIN) 80kA (BS)	P
7.1	CONSTRUCTION		
7.1.1	Materials		
	Resistance to abnormal heat and fire (according to 7.1.1.1 of IEC 60947-1) of insulating current-carrying parts		P
7.1.2	Current-carrying parts and their connection	No contact pressure through insulation material	P
7.1.3	Clearances		
	Rated impulse withstand voltage	(see test sequence I)	P
	Creepage distances		
	Pollution degree .....	3	—
	Comparative tracking index (V) .....	$400 \leq IRC < 600$ V	—
	Material group .....	II	—
	Rated insulation voltage $U_i$ (V) .....	1000 V	—
	Minimum creepage distances (mm) .....	14 mm	—
	Measured creepage distances (mm) .....	18 mm	P
	In case $U_{imp}$ is not indicated		N/A
7.1.4	Actuator		
7.1.4.1	Insulation		P
7.1.4.2	Direction of movement	(IEC 604417)	P
7.1.5 of Part 1	Indication of contact position		
7.1.5.1	Indicating means		P
7.1.5.2	Indication by the actuator		P
7.1.6	Additional safety requirements for equipment suitable for isolation		
7.1.6.1	Additional constructional requirements for equipment suitable for isolation ( $U_e > 50$ V):		
	- marking according to 5.2.1b		P
	- indication of the position of the contacts		P
	- construction of the actuating mechanism		P
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm) .....	14 mm	—
	- measured clearances (mm) .....	$4 \times 7.4$ mm = 29.6 mm	P
	- test $U_{imp}$ across gap (kV) .....	18.1 kV (200m)	P

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Clause	Requirement – Test	Result - Remark	Verdict
7.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		
	Auxiliary switch is rated according to IEC 60947-5-1 (unless the equipment is rated AC-23)		P
	Time interval between opening of the contacts of the auxiliary contact and the contacts of the main poles: $\geq 20$ ms .....		—
	Measured time interval (ms) .....		N/A
	During the closing operation the contacts of the auxiliary switch closes after or simultaneously with the contacts of the main poles		N/A
7.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		
	The locking means is so designed that it cannot be removed with the appropriate padlock(s) installed		P
	Test force F applied to the actuator in an attempt to operate to the closed position (N) .....	270 N	—
	Rated impulse withstand voltage (kV) .....	12 kV	—
	Test Uimp on open main contacts at the test force	18.1 kV (200 m)	P
7.1.7 of Part 1	Terminals		
7.1.7.1	All parts of terminals which maintain contact and carry current are of metal having adequate mechanical strength	(see 8.2.4 below)	P
	Terminal connections are such that necessary contact pressure is maintained	(see 8.2.4 below)	P
	Terminals are so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	(see 8.2.4 below)	P
	Terminals do not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operator of equipment and the insulation voltage is not reduced below the rated value	(see 8.2.4 below)	P

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Clause	Requirement – Test	Result - Remark	Verdict

8.2.4	Mechanical properties of terminals		
	Mechanical strength of terminals		
	Maximum cross-sectional area of conductor (mm <sup>2</sup> ) ..... :	Cable lugs	—
	Diameter of thread (mm) ..... :	M12	—
	Torque (Nm) ..... :	45 x 110 % = 49.5 Nm	—
	5 times on 2 separate clamping units		P
	Testing for damage to and accidental loosening of conductor (flexion test)		
	Conductor of the smallest cross-sectional area (mm <sup>2</sup> ) ..... :		—
	Number of conductor of the smallest cross section ..... :		—
	Diameter of bushing hole (mm) ..... :		—
	Height between the equipment and the platen .... :		—
	Mass at the conductor(s) (kg) ..... :		—
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
	Pull-out test		
	Force (N), applied for 1 min. .... :		—
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
	Conductor of the largest cross-sectional area (mm <sup>2</sup> ) ..... :		—
	Number of conductor of the largest cross section :		—
	Diameter of bushing hole (mm) ..... :		—
	Height between the equipment and the platen .... :		—
	Mass at the conductor(s) (kg) ..... :		—
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
	Pull-out test		
	Force (N), applied for 1 min. .... :		—
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A



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Clause	Requirement – Test	Result - Remark	Verdict
	Conductor of the largest and smallest cross-sectional area (mm <sup>2</sup> ) .....		—
	Number of conductor of the smallest cross section, number of conductor of the largest cross section :		—
	Diameter of bushing hole (mm) .....		—
	Height between the equipment and the platen .... :		—
	Mass at the conductor(s) (kg) .....		—
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
	Pull-out test		
	Force (N), applied for 1 min. .... :		—
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
7.1.7.2	Connection capacity		
	Type of conductors .....	cables	—
	Minimum cross-sectional area of conductor (mm <sup>2</sup> ) :	2x150 mm <sup>2</sup>	—
	Maximum cross-sectional area of conductor (mm <sup>2</sup> ) .....	2x300 mm <sup>2</sup>	—
	Number of conductors simultaneously connectable to the terminal .....	2	—
7.1.7.3	Connection		
	Terminals for connection to external conductors are readily accessible during installation		P
	Clamping screws and nuts do not serve to fix any other component		P
7.1.7.4	Terminal identification and marking		
	Terminal intended exclusively for the neutral conductor		P
	Protective earth terminal		N/A
	Other terminals	immaterial	P
7.1.8	Additional requirements for equipment provided with a neutral pole		
	Marking of neutral pole	N	P
	The switched neutral pole does not break before and does not make after the other poles		P
	Conventional thermal current of neutral pole	630 A	P
7.1.9	Provisions for protective earthing		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
7.1.9.1	The exposed conductive parts are electrically interconnected and connected to a protective earth terminal		
7.1.9.2	Protective earth terminal is readily accessible		
	Protective earth terminal is suitably protected against corrosion		
	Electrical continuity between the exposed conductive parts of the protective earth terminal and the metal sheathing of connecting conductors		
	Protective earth terminal has no other functions		
7.1.9.3	Protective earth terminal marking and identification		
7.1.10	Enclosure for equipment		N/A
7.1.10.1	Design		
	When the enclosure is opened, all parts requiring access for installation and maintenance are readily accessible		
	Sufficient space is provided inside the enclosure		
	The fixed parts of a metal enclosure are electrically connected to the other exposed conductive parts of the equipment and connected to a terminal which enables them to be earthed or connected to a protective conductor		
	Under no circumstances a removable metal part of the enclosure is insulated from the part carrying the earth terminal when the removable part is in place		
	The removable parts of the enclosure are firmly secured to the fixed parts by a device such that they cannot be accidentally loosened or detached owing to the effects of operation of the equipment or vibrations		
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means is provided to prevent loss of the fastening devices		
	If the enclosure is used for mounting push-buttons, it is not possible to remove the buttons from the outside of the enclosure		
7.1.10.2	Insulation		
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining is securely fixed to the enclosure		

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Clause	Requirement – Test	Result - Remark	Verdict
7.1.11	Degree of protection of enclosed equipment		
	Degree of protection .....	IP	N/A
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		
8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C .....	27 °C	—
	test enclosure W x H x D (mm x mm x mm) .....		—
	material of enclosure .....		—
	Main circuits, test conditions:		
	- conventional thermal current I <sub>th</sub> (A) .....	630 A	—
	- conventional enclosed thermal current I <sub>the</sub> (A) ...		—
	- cable/busbar cross-section (mm <sup>2</sup> ) / length (mm) ..	2 x 185 mm <sup>2</sup> / 2000 mm	—
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark .....	dummy-fuses	—
	- manufacturer's model or type reference .....	DIN 3	—
	- rated current (A) .....	630 A	—
	- power loss (W) .....	61 W	—
	- rated breaking capacity (kA) .....		—
	Temperature-rise of phase poles	(see appended table 1)	
	Temperature-rise of neutral pole (if applicable)	(see appended table 1)	
	Temperature-rise of accessible parts	(see appended table 1)	
	Auxiliary circuits, test conditions:		
	- rated operation current (A) .....	Type S: 20 A	—
	- cable cross-section (mm <sup>2</sup> ) .....	2.5 mm <sup>2</sup>	—
	Temperature-rise of terminals	(see appended table 1)	P
	Temperature-rise of accessible parts	(see appended table 1)	P

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Clause	Requirement – Test	Result - Remark	Verdict

8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C .....	26°C	—
	test enclosure W x H x D (mm x mm x mm) .....		—
	material of enclosure .....		—
	Main circuits, test conditions:		
	- conventional thermal current I <sub>th</sub> (A) .....	630 A	—
	- conventional enclosed thermal current I <sub>the</sub> (A) ... :		—
	- cable/busbar cross-section (mm <sup>2</sup> ) / length (mm) . :	2 x 185 mm <sup>2</sup> / 2000 mm	—
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark .....	dummy-fuses	—
	- manufacturer's model or type reference .....	BS C2	—
	- rated current (A) .....	630 A	—
	- power loss (W) .....	54 W	—
	- rated breaking capacity (kA) .....		—
	Temperature-rise of phase poles	(see appended table 2)	
	Temperature-rise of neutral pole (if applicable)	(see appended table 2)	
	Temperature-rise of accessible parts	(see appended table 2)	
	Auxiliary circuits, test conditions:		
	- rated operation current (A) .....	Type S: 20 A	—
	- cable cross-section (mm <sup>2</sup> ) .....	2.5 mm <sup>2</sup>	—
	Temperature-rise of terminals	(see appended table 2)	P
	Temperature-rise of accessible parts	(see appended table 2)	P

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Clause	Requirement – Test	Result - Remark	Verdict

8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C .....	27°C	—
	test enclosure W x H x D (mm x mm x mm) .....		—
	material of enclosure .....		—
	Main circuits, test conditions:		
	- conventional thermal current I <sub>th</sub> (A) .....	630 A	—
	- conventional enclosed thermal current I <sub>the</sub> (A) ...		—
	- cable/busbar cross-section (mm <sup>2</sup> ) / length (mm) .	2 x 185 mm <sup>2</sup> / 2000 mm	—
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark .....	dummy-fuses	—
	- manufacturer's model or type reference .....	DIN 3	—
	- rated current (A) .....	630 A	—
	- power loss (W) .....	61 W	—
	- rated breaking capacity (kA) .....		—
	Temperature-rise of phase poles	(see appended table 3)	
	Temperature-rise of neutral pole (if applicable)	(see appended table 3)	
	Temperature-rise of accessible parts	(see appended table 3)	
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) .....		—
	- cable cross-section (mm <sup>2</sup> ) .....		—
	Temperature-rise of terminals		
	Temperature-rise of accessible parts		

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Clause	Requirement – Test	Result - Remark	Verdict
8.3.3.2	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		
	- rated impulse withstand voltage (kV) .....	12 kV	—
	- test Uimp main circuits (kV) .....	14.5 kV (200m)	P
	- test Uimp auxiliary circuits (kV) .....	14.5 kV (200m)	P
	- test Uimp on open main contacts (equipment suitable for isolating) (kV) .....	18.1 kV (200m)	P
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):		
	- rated insulation voltage (V) .....		—
	- main circuits, test voltage for 1 min. (V) .....		N/A
	- control and auxiliary circuits, test voltage for 1 min. (V) .....		N/A
8.3.3.3	Making and breaking capacity		
	- utilization category .....	AC-23B	—
	- rated operational voltage Ue (V) .....	415 V	—
	- rated operational current Ie (A) or power (kW) ..	630 A	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		
	- test voltage, U = 1,05 Ue.....(V):	L1: 442V L2: 441V L3: 442 V	—
	- test current, I = .....x Ie (A):	L1: 6.372 kA L2: 6.464 kA L3: 6.388 kA	—
	- power factor.....	L1: 0.33 L2: 0.33 L3: 0.33	—
	Conditions for break operation, AC-23A and AC-23B only:		
	- test voltage, U = 1,05 Ue.....(V):	L1: 447 V L2: 447 V L3: 448 V	—
	- test current, I = .....x Ie (A):	L1: 5.127 kA L2: 5.073 kA L3: 5.068 kA	—
	- power factor .....	L1: 0.32 L2: 0.32 L3: 0.32	—

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Clause	Requirement – Test	Result - Remark	Verdict

	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, $U = 1,05 U_e$ .....(V):	L1: L2: L3:	—
	- test current, $I =$ .....x $I_e$ (A):	L1: L2: L3:	—
	- power factor/ time constant .....	L1: L2: L3:	—
	Number of make/break or make and break operations .....	3 x make operations 3 x break operations	P
	- transient recovery voltage (V) .....	L1: 441 V L2: 441 V L3: 442 V	P
	- recovery voltage duration ( $\geq 50$ ms)	> 50 ms	P
	- current duration (ms) .....	> 94 ms	—
	- time interval between operations .....	52 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	- oscillatory frequency (kHz) .....	88.63 kHz	—
	- measured oscillatory frequency (kHz) .....	L1: 88 kHz L2: 88 kHz L3: 88 kHz	P
	- factor $\gamma$ .....	L1: 1.1 L2: 1.1 L3: 1.1	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		
	test voltage ( $2 U_i$ ) for 1 min. (V) .....	1000 V (5s)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	test voltage ( $1,1 U_e$ ) (V) .....	457 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole ... :		N/A
	Leakage current (other utilization categories): $\leq 2$ mA/pole) .....		P

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Clause	Requirement – Test	Result - Remark	Verdict
8.3.3.6	Temperature-rise verification		
	- conductor cross-section (mm <sup>2</sup> ) .....	2 x 185 mm <sup>2</sup>	—
	- test current I <sub>e</sub> (A) .....	630 A	—
	Temperature-rise of main circuit terminals (≤ 80 K) .....	55 K – 68 K	P
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and U <sub>e</sub> > 50 V only)		
	- actuator type (fig.) .....	1d (direct front operation)	—
	- actuating force for opening (N) .....	251.8 N	—
	- test force with blocked main contacts (N) .....	400 N	—
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts .....		P
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and U <sub>e</sub> > 50 V only)		
	- actuator type (fig.) .....	1d (external front operation)	—
	- actuating force for opening (N) .....	229 N	—
	- test force with blocked main contacts (N) .....	400 N	—
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts .....		P
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY		
8.3.4.1	Operational performance test		
	- utilization category .....	AC-23B	—
	- rated operational voltage (V) .....	415 V	—
	- rated operational current (A) .....	630 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) .....	L1: 430 V L2: 421 V L3: 429 V	—
	- test current (A) .....	L1: 643.0 A L2: 635.3 A L3: 631.1 A	—
	- power factor/time constant .....	L1: 0.63 L2: 0.63 L3: 0.63	—



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Clause	Requirement – Test	Result - Remark	Verdict
	Number of cycles with current .....	200	
	Number of cycles without current .....	800	
	First test sequence (with/without current) .....	With current	—
	Second test sequence (with/without current) .....	Without current	—
	- time interval between first and second test sequence .....	1 hour	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
8.3.1.1.6	Condition of the equipment after the operational performance test	Opening force: 267.5 N	P
8.3.4.2	Dielectric verification		
	test voltage (2 U <sub>i</sub> ) for 1 min. (V) .....	1000 V (5s)	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		
	test voltage (1,1 U <sub>e</sub> ) (V) .....	457 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....	< 0.2 mA	P
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K :	57 K – 70 K	P
	- conductor cross-section (mm <sup>2</sup> ) .....	2 x 185 mm <sup>2</sup>	—
	- test current I <sub>e</sub> (A) .....	630 A	—
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		N/A
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT		
	Protective device details:		
	- manufacturer's name, trademark or identification mark .....	SOCOMEK	—
	- manufacturer's model or type reference .....	gG 3	—
	- rated voltage (V) .....	500 V	—
	- rated current (A) .....	630 A	—
	- rated breaking capacity (kA) .....	120 kA	—
8.3.6.2	Fuse protected short-circuit withstand		

IEC 60947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	test voltage (1,05 Ue) (V) .....	L1: 451 V L2: 451 V L3: 451 V	—
	test current (kA) .....	L1: 99.12 kA L2: 102.41 kA L3: 99.69 kA	—
	rated frequency (Hz) .....	50 Hz	—
	power factor .....	0.19	—
	Time constant (ms) .....		—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA) .....	L1: 46.46 kA L2: 47.30 kA L3: 59.12 kA	—
	- Joule integral I <sup>2</sup> dt (A <sup>2</sup> s) .....	L1: 3.41 MA <sup>2</sup> s L2: 2.39 MA <sup>2</sup> s L3: 3.30 MA <sup>2</sup> s	—
	Fuse protected short-circuit making		
	- mean velocity of 15 manually under no-load conditions operations (m/s) .....		—
	- point at which the measurement is made .....		—
	- test speed during the fuse protected short-circuit making (m/s) .....		—
	- max. let-through current (kA) .....	L1: 44.58 kA L2: 44.20 kA L3: 37.84 kA	—
	- Joule integral I <sup>2</sup> dt (A <sup>2</sup> s) .....	L1: 3.03 MA <sup>2</sup> s L2: 3.39 MA <sup>2</sup> s L3: 2.59 MA <sup>2</sup> s	—
8.3.6.2.5	Behaviour of the equipment during the test		P
8.3.6.2.6	Conditions of the equipment after the test	Opening force: 289 N	P
8.3.6.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....	1000 V (5s)	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		
	test voltage (1,1 Ue) (V) .....	457 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....		
	Leakage current (other utilization categories) ≤ 2,0 mA/pole .....	< 0.2 mA	P

IEC 60947-3			
Clause	Requirement – Test	Result - Remark	Verdict
8.3.6.5	Temperature-rise verification		
	Temperature-rise of main circuit terminals $\leq 80$ K :	51 K – 74 K	P
	- conductor cross-section (mm <sup>2</sup> ) .....	2 x 185 mm <sup>2</sup>	—
	- test current I <sub>e</sub> (A) .....	630 A	—
8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY		
8.3.7.1	Overload test		
	ambient temperature 10-40 °C .....	26°C	—
	test enclosure W x H x D (mm x mm x mm) .....		—
	material of enclosure .....		—
	test current 1,6xI <sub>th</sub> e or 1,6xI <sub>th</sub> (A) .....	1008 A	—
	cable/busbar cross-section (mm <sup>2</sup> ) / length (mm) ... :	2 x 185 mm <sup>2</sup> / 2000 mm	—
	Fuse-link details:		
	- manufacturer's name, trademark or identification mark .....	SOCOMEK	—
	- rated current (A) .....	630 A	—
	- power loss (W) .....	45 W	—
	- rated breaking capacity (kA) .....	120 kA	—
	- time duration of the overload test (s) .....	2400 s	—
	Within 3 min after the fuse(s) has(have) operated (or 1 h), the equipment has been operated once, i.e. opened and closed		P
	The equipment has not undergone any impairment hindering such operation		P
8.3.7.2	Dielectric verification		
	test voltage (2 U <sub>i</sub> ) for 1 min. (V) .....	1000 V (5s)	—
	No flashover or breakdown		P
8.3.7.3	Leakage current		
	test voltage (1,1 U <sub>e</sub> ) (V) .....		—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole .....		
	Leakage current (other utilization categories) $\leq 2$ mA/pole .....	< 0.2 mA	P
8.3.7.4	Temperature-rise verification		
	Temperature-rise of main circuit terminals $\leq 80$ K (K) .....	53 K – 62 K	P

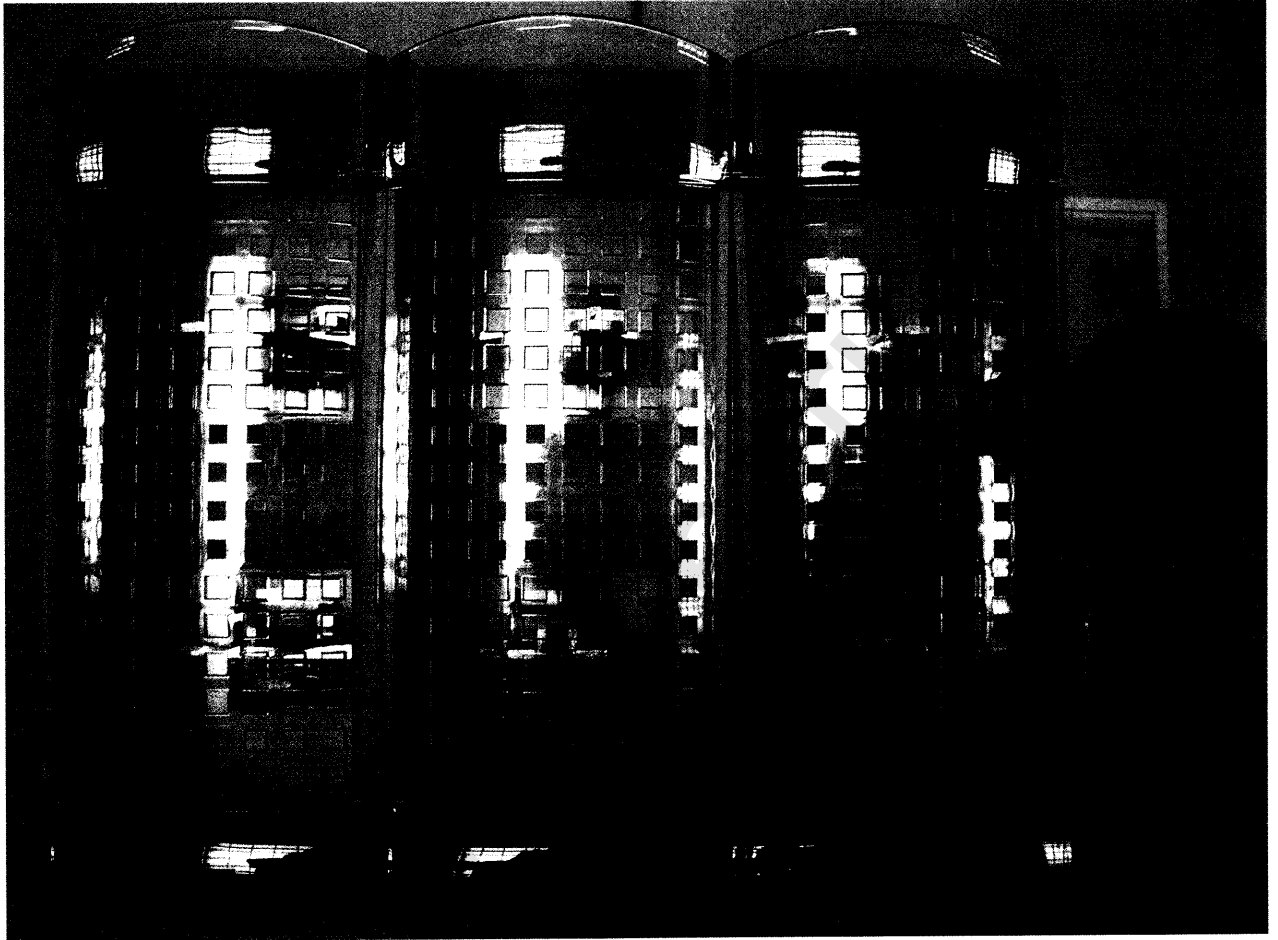
IEC 60947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- conductor cross-section (mm <sup>2</sup> ) .....	2 x 185 mm <sup>2</sup>	—
	- test current I <sub>e</sub> (A) .....	630 A	—
8.4	ELECTROMAGNETIC COMPATIBILITY TESTS		N/A
8.4.1	Immunity (for equipment incorporating electronic circuits)		
7.3.2.2	Tests of table 6 .....	(see appended tables)	
	No unintentional separation or closing of contacts has occurred during these tests .....		
8.4.2	Emission (for equipment incorporating electronic circuits)		
7.3.3.2	Tests of table 7 .....	(see appended tables)	
	No unintentional separation or closing of contacts has occurred during these tests .....		

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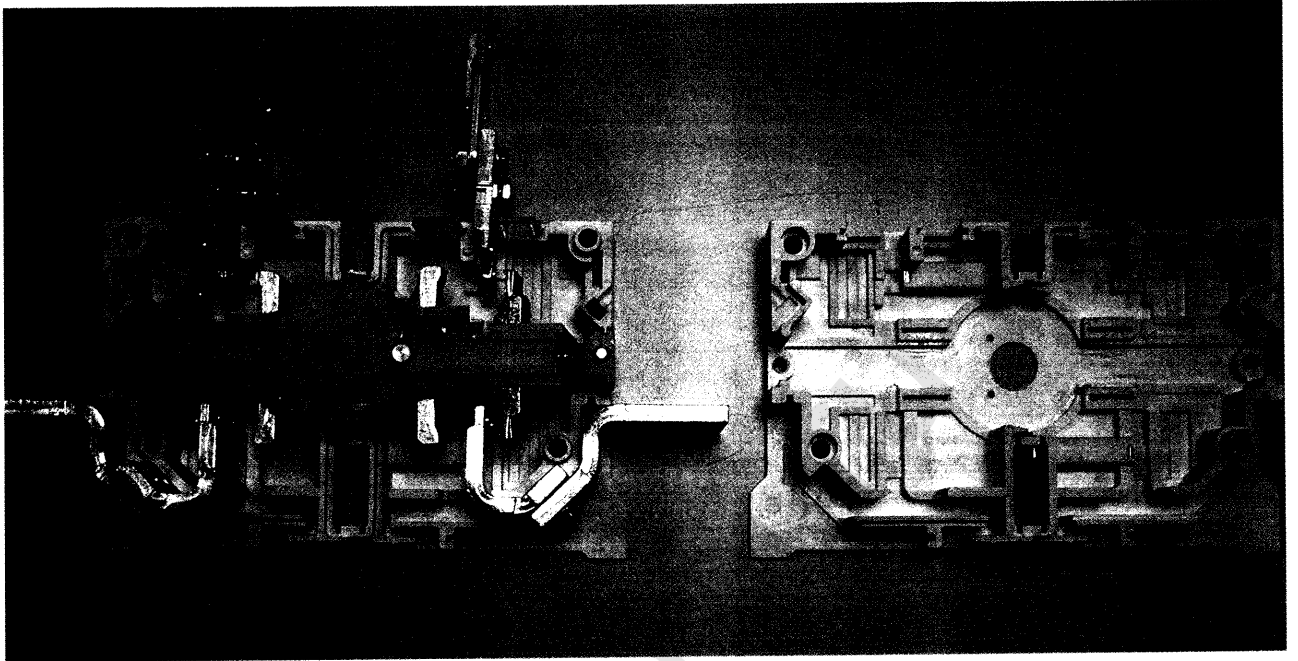
<b>Table 1: Temperature-rise measurements</b>			
FUSERBLOC DIN 630 A			
temperature rise $\Delta T$ of part:	phase	$\Delta T$ (K)	required $\Delta T$ (K)
Upper terminal	L1	56	65
	L2	62	65
	L3	56	65
	CA 4	32	70
Lower terminal	L1	56	65
	L2	54	65
	L3	54	65
	CA 4	33	70
Actuator (non metallic)		2	25
Part which need not to be touched (non metallic)		40	50
Measured temperature of part:	phase	T (°C)	Required T (°C)
Part near fuse clip		139	150

<b>Table 2: Temperature-rise measurements</b> FUSERBLOC BS 630 A			
temperature rise $\Delta T$ of part:	phase	$\Delta T$ (K)	required $\Delta T$ (K)
Upper terminal	L1	45	65
	L2	49	65
	L3	45	65
	CA 4	28	70
Lower terminal	L1	43	65
	L2	47	65
	L3	39	65
	CA 4	28	70
Actuator (non metallic)		2	25
Part which need not to be touched (non metallic)		36	50
Measured temperature of part:	phase	T (°C)	Required T (°C)
Part near fuse clip		93	150

<b>Table 3: Temperature-rise measurements</b> FUSERBLOC DIN 630 A, both neutrals tested with nearest phase				
temperature rise $\Delta T$ of part:	phase	$\Delta T$ (K)	required $\Delta T$ (K)	
Upper terminal	integrated solid neutral link	N	26	65
	solid neutral module	N	55	65
Lower terminal	integrated solid neutral link	N	24	65
	solid neutral module	N	49	65
Parts which need not to be touched (non metallic)		24	50	



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