

TEST REPORT

EN 60947-3

Low-voltage switchgear and controlgear

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

Report reference No. : **95.4316.56**
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All tests are observed by compiler

Applicant : **Socomec S.A.**
 Address : **1-4, Route de Westhouse, 67230 Benfeld, France**

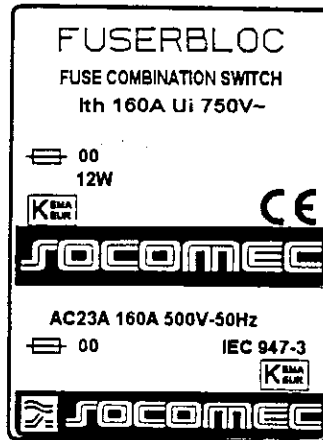
Standard : **IEC 947-3:1990**
 Test Report Form No. : **60947-3A**
 TRF date. : **93-07**
 TRF originator. : **N.V. KEMA**
 Copyright blank test report . . . : **TRF originator and N.V. KEMA. This report is based on a blank test report that was prepared by N.V. KEMA using information obtained from the TRF originator.**

Test procedure : **CCA-scheme**
 Procedure deviation : **N.A.**
 Non-standard test method : **IEC 695-2-1**

Type of test item : **switch-disconnector-fuse**
 Trademark : **SOCOMEK**
 Model/type reference : **FUSERBLOC 00 160A**
(description see page 23)
 Manufacturer : **Socomec S.A.**
 Rating : **AC-23A**
 500 V 160 A
 690 V 125 A

Ui 750 Vac , Ith 160 A

Copy of marking plate



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Test item particulars:

- method of operation : *independent manual operation*
- switching positions : *2 (on and off)*
- number of poles : *3-poles and 4-poles*
- kind of current : *AC*
- number of phases : *3*
- rated frequency (Hz) : *50 Hz*
- number of positions of the main contacts : *2 (on and off)*

Rated and limiting values, main circuit :

- rated operational voltage Ue (V) : *500 V and 690 V*
- rated insulation voltage Ui (V) : *750 V*
- rated impulse withstand voltage Uimp (kV) : *8 kV*
- conventional free air thermal current Ith (A) : *160 A*
- conventional enclosed thermal current Ithe (A) : -
- rated operational current Ie (A) : *AC-23A*

<i>500 V</i>	<i>160 A</i>
<i>690 V</i>	<i>125 A</i>
- rated uninterrupted current Iu (A) : *160 A*
- utilization category : *AC-23A*

Short-circuit characteristic :

- rated short-time withstand current Icw (kA) : -
- rated short-time making capacity Icm (kA) : -
- rated conditional short-circuit current : *50 kA (400 V)*

Rated and limiting values, auxiliary circuits : *N*

- rated operational voltage (V) :
- rated frequency (Hz) :
- number of circuits :
- number and kind of contact elements :

Co-ordination of short-circuit protective devices :

- kind of protective device : *fuse-link, 160 A gG/gI, 500 V, size 00*

Possible test case verdicts:

- test case does not apply to the test object . . . : N(.A.)
- test object does meet the requirement : P(ass)
- test object does not meet the requirement . . . : F(ail)

General remarks:

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

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

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

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

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

The tests mentioned hereafter, unless otherwise stated, have been carried out on a 3-poles switch-disconnector-fuse

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

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IEC 947-3			
Cl.	Requirement – Test	Result	Verdict
5.2	MARKING		
	Marking on equipment visible after mounting:		
	- indication of the open and closed position	<i>IO</i>	<i>P</i>
	- suitability for isolation		<i>P</i>
	- AC-20 and DC-20 only: marked "Do not open under load"		<i>N</i>
	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	<i>SOCOME</i>	<i>P</i>
	- type designation or serial number	<i>FUSERBLOC 00 160A</i>	<i>P</i>
	- rated operational current	<i>AC-23A</i> <i>500 V 160 A</i> <i>690 V 125 A</i>	<i>P</i>
	- rated operational voltage	<i>500 V and 690 V</i>	<i>P</i>
	- utilization category	<i>AC-23A</i>	<i>P</i>
	- rated frequency	<i>50 Hz</i>	<i>P</i>
	- manufacturer's claim for compliance with IEC 947-3	<i>IEC 947-3</i>	<i>P</i>
	- degree of protection		<i>N</i>
	Marking on fuse-combination units:		
	- fuse type	<i>00</i>	<i>P</i>
	- maximum rated current	<i>160 A</i>	<i>P</i>
	- power loss of the fuse-link	<i>12 W</i>	<i>P</i>
	Identification of terminals:		
	- line terminals	<i>immaterial</i>	<i>P</i>
	- load terminals	<i>immaterial</i>	<i>P</i>
	- neutral pole terminal		<i>N</i>
	- protective earth terminal		<i>N</i>
	Data in the manufacturer's published information:		
	- rated insulation voltage	<i>750 V</i>	<i>P</i>
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	<i>8 kV</i>	<i>P</i>
	- pollution degree, if different from 3	<i>3</i>	<i>P</i>
	- rated duty	<i>uninterrupted duty</i>	<i>P</i>

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Cl.	Requirement – Test	Result	Verdict
	- rated short-time withstand current and duration		<i>N</i>
	- rated short-circuit making capacity		<i>N</i>
	- rated conditional short-circuit current	50 kA	<i>P</i>

7.1	CONSTRUCTION		
7.1.2	Current-carrying parts and their connection	<i>no contact pressure through insulation material</i>	<i>P</i>
7.1.3	Clearances		
	Rated impulse withstand voltage	(see test sequence I)	<i>P</i>
	Creepage distances		
	Pollution degree	3	—
	Comparative tracking index (V)	600 V	—
	Material group	I	—
	Rated insulation voltage U_i (V)	750 V	—
	Minimum creepage distances (mm)	10 mm	—
	Measured creepage distances (mm)	10 mm	<i>P</i>
	In case U_{imp} is not indicated		<i>N</i>
7.1.4	Actuator		
7.1.4.1	Insulation	<i>thermoplastic material</i>	<i>P</i>
7.1.4.2	Direction of movement	<i>(IEC 447)</i>	<i>P</i>
7.1.5	Indication of contact position		
7.1.5.1	Indicating means	<i>by indication means</i>	<i>P</i>
7.1.5.2	Indication by the actuator		<i>N</i>
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 5.2b		<i>P</i>
	- indication of the position of the contacts		<i>P</i>
	- construction of the actuating mechanism		<i>P</i>
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm)	8 mm	—
	- measured clearances (mm)	4 x 4,5 mm	<i>P</i>
	- test U_{imp} across gap (kV)	12,1 kV (200 m)	<i>P</i>
7.1.7	Terminals		

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Cl.	Requirement – Test	Result	Verdict
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	(see 8.2.4 below)	P
	Terminal connections shall be such that necessary contact pressure is maintained	(see 8.2.4 below)	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	(see 8.2.4 below)	P
	Terminal shall 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 shall not be reduced below the rated value	(see 8.2.4 below)	P
8.2.4	Mechanical properties of terminals		P
	Mechanical strength of terminals		
	maximum cross-sectional area of conductor (mm ²) :	<i>cable lugs</i>	—
	diameter of thread (mm) :	M8	—
	torque (Nm) :	13 Nm x 110 % = 14,3 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 ²) :		—
	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 shall neither slip out of the terminal nor break near the clamping unit		N
	Pull-out test		
	force (N) :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	conductor of the largest cross-sectional area (mm ²) :		—
	number of conductor of the largest cross section :		—

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Cl.	Requirement – Test	Result	Verdict
	diameter of bushing hole (mm) :		—
	height between the equipment and the platen :		—
	mass at the conductor(s) (kg) :		—
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	Pull-out test		
	force (N) :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	conductor of the largest and smallest cross-sectional area (mm ²) :		—
	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 shall neither slip out of the terminal nor break near the clamping unit		N
	Pull-out test		
	force (N) :		—
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		N
7.1.7.2	Connection capacity		
	type of conductors :	<i>cable lugs</i>	—
	minimum cross-sectional area of conductor (mm ²) :		—
	maximum cross-sectional area of conductor (mm ²) :		—
	number of conductors simultaneously connectable to the terminal :		—
7.1.7.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation		P
	clamping screws and nuts shall not serve to fix any other component		P

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Cl.	Requirement – Test	Result	Verdict
7.1.7.4	Terminal identification and marking		
	terminal intended exclusively for the neutral conductor		<i>N</i>
	protective earth terminal		<i>N</i>
	other terminals	<i>immaterial</i>	<i>P</i>
7.1.8	Additional requirements for equipment provided with a neutral pole		
	Marking of neutral pole		<i>N</i>
	The switched neutral pole shall not break before and shall not make after the other poles		<i>N</i>
	Conventional thermal current of neutral pole		<i>N</i>
7.1.9	Provisions for protective earthing		<i>N</i>
7.1.9.1	The exposed conductive parts shall be electrically interconnected and connected to a protective earth terminal		<i>N</i>
7.1.9.2	The protective earth terminal shall be readily accessible		<i>N</i>
	The protective earth terminal shall be suitably protected against corrosion		<i>N</i>
	The electrical continuity between the exposed conductive parts of the protective earth terminal and the metal sheathing of connecting conductors		<i>N</i>
	The protective earth terminal shall have no other functions		<i>N</i>
7.1.9.3	Protective earth terminal marking and identification		<i>N</i>
7.1.10	Enclosure for equipment		
7.1.10.1	Design		
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible		<i>N</i>
	Sufficient space shall be provided inside the enclosure		<i>N</i>
	The fixed parts of a metal enclosure shall be 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		<i>N</i>

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Cl.	Requirement – Test	Result	Verdict
	Under no circumstances shall a removable metal part of the enclosure be insulated from the part carrying the earth terminal when the removable part is in place		<i>N</i>
	The removable parts of the enclosure shall be 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		<i>N</i>
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means shall be provided to prevent loss of the fastening devices		<i>N</i>
	If the enclosure is used for mounting push-buttons, it shall not be possible to remove the buttons from the outside of the enclosure		<i>N</i>
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 shall be securely fixed to the enclosure		<i>N</i>
7.1.11	Degree of protection of enclosed equipment		<i>N</i>
	Degree of protection : IP		<i>N</i>

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Cl.	Requirement – Test	Result	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		
8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C	23 °C	—
	test enclosure W x H x D (mm x mm x mm)	-	—
	material of enclosure		—
	Main circuits, test conditions:		
	- conventional thermal current I _{th} (A)	160 A	—
	- conventional enclosed thermal current I _{the} (A)		—
	- cable/busbar cross-section (mm ²) / (mm)	70 mm²	—
	Fuse-link details (fuse-combination units only):		N
	- manufacturer's name, trademark or identification mark	SOCOMEC	—
	- manufacturer's model or type reference	T. 00	—
	- rated current (A)	160 A	—
	- power loss	12 W	—
	- rated breaking capacity (kA)	120 kA	—
	Temperature-rise	(see appended table)	P
	Auxiliary circuits: temperature rise of connecting terminals (K)		
	idem, requirement (K)	≤	—
	rated operation current (A)		—
	cross-section (mm ²)		—
8.3.3.2	Test of dielectric properties, impulse withstand voltage (U _{imp} indicated):		
	- rated impulse withstand voltage (V)	8 kV	—
	- test U _{imp} main circuits (kV)	9,6 kV (200 m)	P
	- test U _{imp} auxiliary circuits (kV)		N
	- test U _{imp} on open main contacts (equipment suitable for isolating) (kV)	12,1 kV (200 m)	P
	Test of dielectric properties, dielectric withstand voltage (U _{imp} not indicated):		
	- rated insulation voltage (V)		—
	- main circuits, test voltage for 1 min (V)		N
	- control and auxiliary circuits, test voltage for 1 min (V)		N

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Cl.	Requirement – Test	Result	Verdict
8.3.3.3	Making and breaking capacity		
	utilization category	AC-23A	—
	rated operational voltage U_e (V)	690 V	—
	rated operational current I_e (A) or power (kW) : 125 A		—
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage $U/U_e = 1,05$ (V)	L1: 730 V L2: 726 V L3: 726 V	—
	- test current $I/I_e =$ (A)	L1: 1262 A L2: 1261 A L3: 1257 A	—
	- power factor/time constant	L1: 0,31 L2: 0,31 L3: 0,31	—
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage $U/U_e = 1,05$ (V)	L1: 734 V L2: 732 V L3: 731 V	—
	- test current $I/I_e =$ (A)	L1: 1040 A L2: 1032 A L3: 1032 A	—
	- power factor	L1: 0,32 L2: 0,32 L3: 0,32	—
	transient recovery voltage (V)	L1: 734 V L2: 732 V L3: 731 V	—
	current duration (ms)	100 ms	—
	time interval between operations	30 s	—
	Number of make/break or make and break operations	3 x make/break operation	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz)	42,65 kHz	—
	Measured oscillatory frequency (kHz)	L1: 40,9 kHz L2: 40,2 kHz L3: 41,1 kHz	P
	Factor γ	L1: 1,12 L2: 1,11 L3: 1,11	P

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Cl.	Requirement – Test	Result	Verdict
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		<i>P</i>
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		<i>P</i>
8.3.3.4	Dielectric verification		
	test voltage (2 U _i) for 1 min (V) :	1500 V	—
	No flashover or breakdown		<i>P</i>
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA :		<i>N</i>
	Leakage current (other utilization categories) ≤ 2 mA) :	< 5 μA	<i>P</i>
	test voltage (1,1 U _e) (V) :	759 V	—
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K :	33 K - 44 K	<i>P</i>
	conductor cross-sectional area (mm ²) :	50 mm²	—
	test current I _e (A) :	125 A	—
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and U _e > 50 V only)		
	actuator type (fig.) :	d	—
	actuating force for opening (N) :	81 N	—
	test force with blocked main contacts (N) . . . :	243 N	—
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts :		<i>P</i>
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		<i>P</i>

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Cl.	Requirement – Test	Result	Verdict

8.3.3.3	Making and breaking capacity		
	utilization category	AC-23A	—
	rated operational voltage Ue (V)	500 V	—
	rated operational current Ie (A) or power (kW) :	160 A	—
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: 539 V L2: 536 V L3: 536 V	—
	- test current I/Ie = (A)	L1: 1631 A L2: 1652 A L3: 1637 A	—
	- power factor/time constant	L1: 0,34 L2: 0,34 L3: 0,34	—
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: 537 V L2: 535 V L3: 535 V	—
	- test current I/Ie = (A)	L1: 1276 A L2: 1286 A L3: 1282 A	—
	- power factor	L1: 0,36 L2: 0,36 L3: 0,36	—
	transient recovery voltage (V)	L1: 537 V L2: 535 V L3: 535 V	—
	current duration (ms)	95 ms	—
	time interval between operations	30 s	—
	Number of make/break or make and break operations	3 x make/break operation	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz)	57,98 kHz	—
	Measured oscillatory frequency (kHz)	L1: 56,9 kHz L2: 57,0 kHz L3: 54,9 kHz	P
	Factor γ	L1: 1,15 L2: 1,14 L3: 1,13	P

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Cl.	Requirement – Test	Result	Verdict
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		<i>P</i>
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		<i>P</i>
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) :	1500 V	—
	No flashover or breakdown		<i>P</i>
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA :		<i>N</i>
	Leakage current (other utilization categories) ≤ 2 mA) :	< 5 μA	<i>P</i>
	test voltage (1,1 Ue) (V) :	550 V	—
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K :	43 K - 56 K	<i>P</i>
	conductor cross-sectional area (mm ²) :	70 mm²	—
	test current Ie (A) :	160 A	—
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.) :	d	—
	actuating force for opening (N) :	82 N	—
	test force with blocked main contacts (N) . . . :	246 N	—
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts :		<i>P</i>
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		<i>P</i>

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Cl.	Requirement – Test	Result	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY		
8.3.4.1	Operational performance test		
	utilization category :	AC-23A	—
	rated operational voltage (V) :	690 V	—
	rated operational current (A) :	125 A	—
	Test conditions electrical operation cycles:		
	test voltage (V) :	L1: 685 V L2: 698 V L3: 699 V	—
	test current (A) :	L1: 127 A L2: 127 A L3: 127 A	—
	power factor/time constant :	L1: 0,64 L2: 0,64 L3: 0,64	—
	Number of cycles with current :	1000	P
	Number of cycles without current :	7000	P
	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	—
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) :	1500 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA :		N
	Leakage current (other utilization categories) ≤ 2 mA :	< 5 μA	P
	test voltage (1,1 Ue) (V) :	759 V	—
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K :	48 K - 66 K	P
	conductor cross-sectional area (mm ²) :	50 mm²	—
	test current Ie (A) :	125 A	—

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Cl.	Requirement – Test	Result	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY		
8.3.4.1	Operational performance test		
	utilization category	AC-23A	—
	rated operational voltage (V)	500 V	—
	rated operational current (A)	160 A	—
	Test conditions electrical operation cycles:		
	test voltage (V)	L1: 506 V L2: 508 V L3: 512 V	—
	test current (A)	L1: 167 A L2: 168 A L3: 168 A	—
	power factor/time constant	L1: 0,60 L2: 0,60 L3: 0,60	—
	Number of cycles with current	1000	P
	Number of cycles without current	7000	P
	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	—
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	1500 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		N
	Leakage current (other utilization categories) ≤ 2 mA	< 5 μA	P
	test voltage (1,1 Ue) (V)	759 V	—
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	60 K - 74 K	P
	conductor cross-sectional area (mm ²)	70 mm²	—
	test current I _e (A)	160 A	—

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Cl.	Requirement – Test	Result	Verdict
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		
8.3.5.1	Short-time withstand current test		
	Rated short-time withstand current I _{cw} (A)		
	test voltage (V)	L1: L2: L3:	—
	r.m.s. test current (A)	L1: L2: L3:	—
	peak test current (A)	L1: L2: L3:	—
	power factor/time constant	L1: L2: L3:	—
	test duration (s)		—
	Equivalent with		
8.3.5.1.5	Behaviour of the equipment during the test		
8.3.5.1.6	Conditions of the equipment after the test		
8.3.5.2	Short-circuit making capacity		
	Rated short-circuit making capacity I _{cm} (A)		
	test voltage (V)	L1: L2: L3:	—
	r.m.s. test current (A)	L1: L2: L3:	—
	peak test current (A)	L1: L2: L3:	—
	power factor/time constant	L1: L2: L3:	—
	current duration (s)		—
	number of making cycles		—
8.3.5.2.5	Behaviour of the equipment during the test		
8.3.5.2.6	Conditions of the equipment after the test		
8.3.5.3	Dielectric verification		
	test voltage (2 U _i) for 1 min (V)		—

IEC 947-3			
Cl.	Requirement – Test	Result	Verdict
	No flashover or breakdown		
8.3.5.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA :		
	Leakage current (other utilization categories) $\leq 2,0$ mA :		
	test voltage (1,1 Ue) (V) :		—
8.3.5.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K :		
	cross-sectional area (mm ²) :		—
	test current Ie (A) :		—

IEC 947-3			
Cl.	Requirement – Test	Result	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT		
	Protective device details:		<i>fuse-links</i>
	- manufacturer's name, trademark or identification mark :	<i>Socomec</i>	—
	- manufacturer's model or type reference :	<i>T. 00</i>	—
	- rated voltage (V) :	<i>500 V</i>	—
	- rated current (A) :	<i>160 A gG/gl</i>	—
	- rated breaking capacity (kA) :	<i>120 kA</i>	—
8.3.6.2	Fuse protected short-circuit withstand		
	test voltage (1,05 Ue) (V) :	L1: <i>425 V</i> L2: <i>426 V</i> L3: <i>426 V</i>	—
	test current (kA) :	L1: <i>49,72 kA</i> L2: <i>52,67 kA</i> L3: <i>50,37 kA</i>	—
	rated frequency (Hz) :	<i>50 Hz</i>	—
	power factor :	<i>0,22</i>	—
	Fuse protected short-circuit withstand		<i>P</i>
	- max. let-through current (kA) :	L1: - L2: <i>18,95 kA</i> L3: <i>17,38 kA</i>	—
	- Joule integral I ² dt (A ² s) :	L1: - L2: <i>180 kA²s</i> L3: <i>151 kA²s</i>	—
	Fuse protected short-circuit making		
	- max. let-through current (kA) :	L1: <i>9,37 kA</i> L2: <i>17,48 kA</i> L3: <i>11,43 kA</i>	—
	- Joule integral I ² dt (A ² s) :	L1: <i>75 kA²s</i> L2: <i>182 kA²s</i> L3: <i>163 kA²s</i>	—
8.3.6.2.5	Behaviour of the equipment during the test		<i>P</i>
8.3.6.2.6	Conditions of the equipment after the test		<i>P</i>
8.3.6.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) :	<i>1500 V</i>	—
	No flashover or breakdown		<i>P</i>
8.3.6.4	Leakage current		

IEC 947-3			
Cl.	Requirement - Test	Result	Verdict
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5 \text{ mA}$:		<i>N</i>
	Leakage current (other utilization categories) $\leq 2,0 \text{ mA}$:	$< 5 \mu\text{A}$	<i>P</i>
	test voltage (1,1 Ue) (V) :	440 V	—
8.3.6.5	Temperature-rise verification		
	Temperature rise of main circuit terminals $\leq 80 \text{ K}$:	37 K - 49 K	<i>P</i>
	cross-sectional area (mm ²) :	70 mm²	—
	test current Ie (A) :	160 A	—

IEC 947-3			
Cl.	Requirement – Test	Result	Verdict

TABLE: temperature rise measurements			
temperature rise dT of part:	phase	dT (K)	required dT (K)
<i>upper terminal</i>	<i>L1</i>	<i>45</i>	<i>65</i>
	<i>L2</i>	<i>55</i>	<i>65</i>
	<i>L3</i>	<i>48</i>	<i>65</i>
<i>lower terminal</i>	<i>L1</i>	<i>40</i>	<i>65</i>
	<i>L2</i>	<i>46</i>	<i>65</i>
	<i>L3</i>	<i>42</i>	<i>65</i>
<i>upper knife-contact</i>	<i>L1</i>	<i>87</i>	<i>120</i>
	<i>L2</i>	<i>97</i>	<i>120</i>
	<i>L3</i>	<i>93</i>	<i>120</i>
<i>lower knife-contact</i>	<i>L1</i>	<i>87</i>	<i>120</i>
	<i>L2</i>	<i>97</i>	<i>120</i>
	<i>L3</i>	<i>92</i>	<i>120</i>

Remarks

Description of the types:

type: FUSERBLOC 00 160A S ; switch-disconnector-fuse, close and open position, 3 and 4-poles.

type: FUSERBLOC 00 160A ST; switch-disconnector-fuse, close, open and test position, 3 and 4-poles.

Additional test:

- Parts of insulation material necessary to retain current carrying parts were subjected to a glow-wire test according IEC 695-2-1, at 960 °C. Other insulation materials were subjected to a glow-wire test at 650 °C.

These test withstood well.

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NOTIFICATION OF TEST RESULTS

Product switch-disconnector-fuse

Tested by request of SOCOMEK S.A., 1-4 Route de Westhouse, 67230 Benfeld, France

Manufactured at (name and place) SOCOMEK S.A., 1-4 Route de Westhouse, 67230 Benfeld, France

Rating and principal characteristics see Test Report ref. nos. 95.4316.56 and 2006101.56

Pre-licence factory inspection carried out by UTE

Trade mark (if any) SOCOMEK

Model/Type Ref. FUSERBLOC OO 160A

Additional information (if any) This NTR has to be read in conjunction with NTR 3244

A sample of product has been tested and found to be in conformity with the current HD/EN and equivalent national standard, (number and edition) EN 60947-3:1999

as shown in the Test Report (ref.No.) 2006101.56 (4 pages)

This Notification of Test Results is the result of testing a sample of the product submitted, in accordance with the provisions of the relevant specific standard.

This Notification of Test Results has been established by a body which participates in the CENELEC Certification Agreement (CCA) of 11th September 1973 as amended on 29th March 1983. Any other body participating in the CCA will take this Notification as a basis for granting a national mark of conformity or a national approval as specified in the CCA, as long as the standard referred to above is still in force in the country of that body.

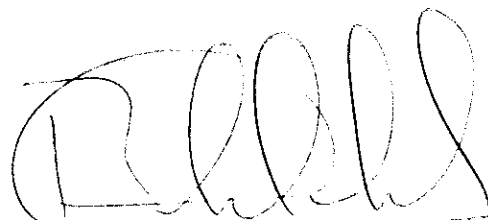
N.V. KEMA

Arnhem

Date: September 28, 2000

Internal ref: HLS/Sco/CDO

Signature:



B.T.M. Holtus

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Rating(s)	AC-23A
	500 V 160 A
	690V 125 A
	Ui 750 Vac , Ith 160 A
Particulars: test item vs. test requirements	
- method of operation	Independent manual operation
- switching positions	2 (On and Off)
- number of poles	3-poles and 4-poles
- kind of current	AC
- 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 Ue (V)	500 V and 690 V
- rated insulation voltage Ui (V)	750 V
- rated impulse withstand voltage Uimp (kV)	8 kV
- conventional free air thermal current Ith (A)	160 A
- conventional enclosed thermal current Ithe (A)	-
- rated operational current Ie (A)	AC-23A
	500 V 160 A
	690 V 125 A
- rated uninterrupted current Iu (A)	160 A
- utilization category	AC-23A
Short-circuit characteristic	
- rated short-time withstand current Icw (kA)	-
- rated short-time making capacity Icm (kA)	-
- rated conditional short-circuit current	50 kA at 400 V
Rated and limiting values, auxiliary circuits	
- rated operational voltage (V)	N
- rated frequency (Hz)	
- number of circuits	
- number and kind of contact elements	
Co-ordination of short-circuit protective devices	
- kind of protective device	Fuse-links, 160A gG / gl, 500V, size 00
Test case verdicts	
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) :
Testing
Date of receipt of test item : 98-07
Date(s) of performance of test : 98-07 :

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EN 60 947-3			
Clause	Requirement – Test	Result – Remark	Verdict
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 1,6 Ithe or 1,6 Ith (A)	256 A	—
	cable/busbar cross-section (mm ²) / (mm)	70 mm ²	—
	Fuse-link details:		
	- manufacturer's name, trademark or identification mark	SOCOMEK	—
	- rated current (A)	160 A – gG / gI – size 00	—
	- power loss (W)	12 W	—
	- rated breaking capacity (kA)	120 kA	—
	- time duration of the overload test (s)	1 260 s	—
	Within 3 min after the fuse(s) has(have) operated (or 1 h), the equipment shall be operated once, i.e. opened and closed		P
	The equipment shall not have undergone any impairment hindering such operation		P
8.3.7.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	1 500 V	—
	No flashover or breakdown		P
8.3.7.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	< 0,2 mA	P
	test voltage (1,1 Ue) (V)	759 V	—
8.3.7.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K (K)	41 K – 51 K	P
	cross-sectional area (mm ²)	70 mm ²	—
	test current Ie (A)	160 A	—