



Test Report issued under the responsibility of:



L C I E

TEST REPORT
IEC 60898-1
Circuit-breakers for over current protection for household and similar installations
Part 1 - Circuit-breakers for a.c. operation

Report Number..... : B180069
Date of issue..... : 2018-11-20
Total number of pages 284 pages

Applicant's name : WENZHOU TONGOU ELECTRICAL CO.,LTD.
Address..... : Paidong Industrial Zone,Qiligang,Yueqing City,Zhejiang province,China.

Test specification:

Standard : IEC 60898-1 (Second Edition)
Test procedure : CB Scheme
Non-standard test method : N/A

Test Report Form No. : IEC60898_1D
Test Report Form(s) Originator : DEKRA Certification B.V.
Master TRF : Dated 2015-09

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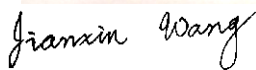
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Test item description :	MCB	
Trade Mark :		
Manufacturer	WENZHOU TONGOU ELECTRICAL CO.,LTD. Paidong Industrial Zone,Qiligang,Yueqing City,Zhejiang province,China.	
Model/Type reference	MC5 and MC3 Series(Model list see page 6 to 7)	
Ratings	See pages 9 to 11	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Technical center of Wenzhou Entry-Exit Inspection and Quarantine Bureau
	Testing location/ address :	Inspection and Quarantine Mansion, Jingang Avenue, Liushi, Yueqing, Wenzhou, Zhejiang, P.R. China
<input type="checkbox"/>	Associated CB Testing Laboratory:	
	Testing location/ address :	
	Tested by (name, function, signature) :	Gaoke Zheng - Testing engineer Wu Xiandong - Testing engineer (Reviewer)
		 
	Approved by (name, function, signature) :	Jianxin Wang - Technical manager
		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
	Testing location/ address :	
	Tested by (name, function, signature) :	
	Approved by (name, function, signature) :	
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
	Testing location/ address :	
	Tested by (name + signature)	
	Witnessed by (name, function, signature) . :	
	Approved by (name, function, signature) :	
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
	Testing location/ address :	
	Tested by (name, function, signature) :	
	Witnessed by (name, function, signature) . :	
	Approved by (name, function, signature) :	
	Supervised by (name, function, signature) :	

List of Attachments (including a total number of pages in each attachment):

Attachment for European group differences see Annex N° 1.

Summary of testing:

Standard used:

-IEC 60898-1:2015 (Edition 2.0)

-EN 60898-1:2003 + A1:2004 + A11:2005 + A12:2008 + A13:2012

- MC5 and MC3 Series have the same structure, materials and fundamental design except for the rivets.

-Rated voltage is declared 230V/400V,240V/415V for 1P and 400V,415V for 2P/3P/4P that tests have been performed on samples with rated voltage 240V/415V and 415V.

Tests performed (name of test and test clause):

Model		Test sequences									
In		A ₁	A ₂	B	C ₁	C ₂	D ₀ +D ₁	D ₀	E ₁	E ₂	E ₃
		A <i>Standard modified</i>									
1P Type C Icn=4500A MC3	63A	X	X	X	X	X	X	-	X	-	-
	50A	-	-	-	-	-	-	X	-	-	-
	40A	-	-	-	-	-	-	X	-	-	-
	32A	-	-	-	-	-	-	X	-	-	-
	25A	-	-	-	-	-	-	X	-	-	-
	20A	-	-	-	-	-	-	X	-	-	-
	16A	-	-	-	-	-	-	X	-	-	-
	10A	-	-	-	-	-	-	X	-	-	-
6A	-	-	-	-	-	-	X	X	-	-	
2P Type C Icn=4500A MC3	63A	-	-	-	-	X	-	-	X	-	-
	6A	-	-	-	-	-	-	-	X	-	-
4P Type C Icn=4500A MC3	63A	X	X	X	X	X	X	-	X	-	-
	6A	-	-	-	-	-	-	-	X	-	-
1P Type B Icn=4500A MC3	63A	-	-	X**	-	-	-	X*	-	-	-
	50A	-	-	-	-	-	-	X*	-	-	-
	40A	-	-	-	-	-	-	X*	-	-	-
	32A	-	-	-	-	-	-	X*	-	-	-
	25A	-	-	-	-	-	-	X*	-	-	-
	20A	-	-	-	-	-	-	X*	-	-	-
	16A	-	-	-	-	-	-	X*	-	-	-
	10A	-	-	-	-	-	-	X*	-	-	-
6A	-	-	-	-	-	-	X*	-	-	-	
4P Type B Icn=4500A MC3	63A	-	-	X**	-	-	-	X*	-	-	-

**only clause 9.8

*only clause 9.10.3 of IEC 60898-1:2015 (Edition 2.0)

only clause 9.10.2 of EN 60 898-1:2003 + A1:2004 + A11:2005 + A12:2008 + A13:2012

Tests performed (name of test and test clause):

Model		Test sequences									
In		A ₁	A ₂	B	C ₁	C ₂	D ₀ +D ₁	D ₀	E ₁	E ₂	E ₃
		A <i>Standard modified</i>									
1P Type C Icn=4500A MC5	63A	X	X	X **	-	-	-	-	X	-	-
	6A	-	-	-	-	-	-	-	X	-	-
2P Type C Icn=4500A MC5	63A	-	-	-	-	-	-	-	X	-	-
	6A	-	-	-	-	-	-	-	X	-	-
4P Type C Icn=4500A MC5	63A	X	X	X **	-	-	-	-	X	-	-
	6A	-	-	-	-	-	-	-	X	-	-
1P Type B Icn=4500A MC5	63A	-	-	X *	-	-	-	-	-	-	-
4P Type B Icn=4500A MC5	63A	-	-	X *	-	-	-	-	-	-	-

*Only clause 9.8

**Only clause 9.7 and 9.8

Product references list

MC3 Icn=4500A		1P	2P	3P	4P
63A	Type C	TOMC3-63/1/C63	TOMC3-63/2/C63	TOMC3-63/3/C63	TOMC3-63/4/C63
50A	Type C	TOMC3-63/1/C50	TOMC3-63/2/C50	TOMC3-63/3/C50	TOMC3-63/4/C50
40A	Type C	TOMC3-63/1/C40	TOMC3-63/2/C40	TOMC3-63/3/C40	TOMC3-63/4/C40
32A	Type C	TOMC3-63/1/C32	TOMC3-63/2/C32	TOMC3-63/3/C32	TOMC3-63/4/C32
25A	Type C	TOMC3-63/1/C25	TOMC3-63/2/C25	TOMC3-63/3/C25	TOMC3-63/4/C25
20A	Type C	TOMC3-63/1/C20	TOMC3-63/2/C20	TOMC3-63/3/C20	TOMC3-63/4/C20
16A	Type C	TOMC3-63/1/C16	TOMC3-63/2/C16	TOMC3-63/3/C16	TOMC3-63/4/C16
10A	Type C	TOMC3-63/1/C10	TOMC3-63/2/C10	TOMC3-63/3/C10	TOMC3-63/4/C10
6A	Type C	TOMC3-63/1/C6	TOMC3-63/2/C6	TOMC3-63/3/C6	TOMC3-63/4/C6
63A	Type B	TOMC3-63/1/B63	TOMC3-63/2/B63	TOMC3-63/3/B63	TOMC3-63/4/B63
50A	Type B	TOMC3-63/1/B50	TOMC3-63/2/B50	TOMC3-63/3/B50	TOMC3-63/4/B50
40A	Type B	TOMC3-63/1/B40	TOMC3-63/2/B40	TOMC3-63/3/B40	TOMC3-63/4/B40
32A	Type B	TOMC3-63/1/B32	TOMC3-63/2/B32	TOMC3-63/3/B32	TOMC3-63/4/B32
25A	Type B	TOMC3-63/1/B25	TOMC3-63/2/B25	TOMC3-63/3/B25	TOMC3-63/4/B25
20A	Type B	TOMC3-63/1/B20	TOMC3-63/2/B20	TOMC3-63/3/B20	TOMC3-63/4/B20
16A	Type B	TOMC3-63/1/B16	TOMC3-63/2/B16	TOMC3-63/3/B16	TOMC3-63/4/B16
10A	Type B	TOMC3-63/1/B10	TOMC3-63/2/B10	TOMC3-63/3/B10	TOMC3-63/4/B10
6A	Type B	TOMC3-63/1/B6	TOMC3-63/2/B6	TOMC3-63/3/B6	TOMC3-63/4/B6

Product references list

MC5 Icn=4500A		1P	2P	3P	4P
63A	Type C	TOMC5-63/1/C63	TOMC5-63/2/C63	TOMC5-63/3/C63	TOMC5-63/4/C63
50A	Type C	TOMC5-63/1/C50	TOMC5-63/2/C50	TOMC5-63/3/C50	TOMC5-63/4/C50
40A	Type C	TOMC5-63/1/C40	TOMC5-63/2/C40	TOMC5-63/3/C40	TOMC5-63/4/C40
32A	Type C	TOMC5-63/1/C32	TOMC5-63/2/C32	TOMC5-63/3/C32	TOMC5-63/4/C32
25A	Type C	TOMC5-63/1/C25	TOMC5-63/2/C25	TOMC5-63/3/C25	TOMC5-63/4/C25
20A	Type C	TOMC5-63/1/C20	TOMC5-63/2/C20	TOMC5-63/3/C20	TOMC5-63/4/C20
16A	Type C	TOMC5-63/1/C16	TOMC5-63/2/C16	TOMC5-63/3/C16	TOMC5-63/4/C16
10A	Type C	TOMC5-63/1/C10	TOMC5-63/2/C10	TOMC5-63/3/C10	TOMC5-63/4/C10
6A	Type C	TOMC5-63/1/C6	TOMC5-63/2/C6	TOMC5-63/3/C6	TOMC5-63/4/C6
63A	Type B	TOMC5-63/1/B63	TOMC5-63/2/B63	TOMC5-63/3/B63	TOMC5-63/4/B63
50A	Type B	TOMC5-63/1/B50	TOMC5-63/2/B50	TOMC5-63/3/B50	TOMC5-63/4/B50
40A	Type B	TOMC5-63/1/B40	TOMC5-63/2/B40	TOMC5-63/3/B40	TOMC5-63/4/B40
32A	Type B	TOMC5-63/1/B32	TOMC5-63/2/B32	TOMC5-63/3/B32	TOMC5-63/4/B32
25A	Type B	TOMC5-63/1/B25	TOMC5-63/2/B25	TOMC5-63/3/B25	TOMC5-63/4/B25
20A	Type B	TOMC5-63/1/B20	TOMC5-63/2/B20	TOMC5-63/3/B20	TOMC5-63/4/B20
16A	Type B	TOMC5-63/1/B16	TOMC5-63/2/B16	TOMC5-63/3/B16	TOMC5-63/4/B16
10A	Type B	TOMC5-63/1/B10	TOMC5-63/2/B10	TOMC5-63/3/B10	TOMC5-63/4/B10
6A	Type B	TOMC5-63/1/B6	TOMC5-63/2/B6	TOMC5-63/3/B6	TOMC5-63/4/B6

Testing location:

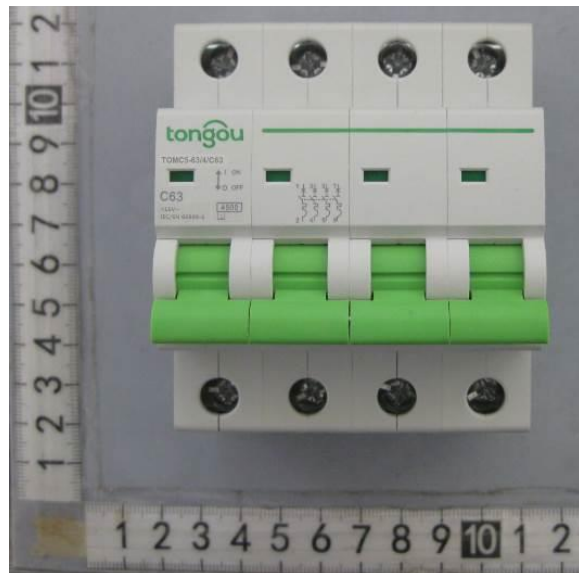
Technical center of Wenzhou Entry-Exit Inspection and Quarantine Bureau
Inspection and Quarantine Mansion, jingang Avenue, Liushi, Yueqing, Wenzhou, Zhejiang, P.R.China

Summary of compliance with National Differences (List of countries addressed):N/A

The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Classification of installation and use: On rail	
Supply Connection: Pillar terminals for copper conductors:	
Possible test case verdicts:	
- 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)	
Testing:	
Date of receipt of test item: 2018-09-30	
Date (s) of performance of tests: 2018-09-30 to 2018-11-15	
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 <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60068-2-1:	
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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies): WENZHOU TONGOU ELECTRICAL CO.,LTD. Paidong Industrial Zone,Qiligang,Yueqing City,Zhejiang province,China.	

General product information:

Type B and C

U_e=230V/400V,240V/415V ~(1P); 400V,415V ~(2P;3P;4P)

I_n=6A;10A;16A;20A;25A;32A;40A;50A;63A

I_{cs}=I_{cn}=4500A

Energy limit class: 1(according to EN 60898-1)

Grid distance: 45mm


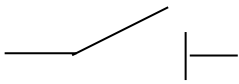
U_i=500V

U_{imp}=4kV

Screw diameter of load terminal =4,9mm

Test item particulars.....	MCB
Type of circuit-breaker	MC5 and MC3 Series (Model list see page 6 to 7)
Number of poles	<input checked="" type="checkbox"/> 1-P <input type="checkbox"/> 1-P+N <input checked="" type="checkbox"/> 2-P <input checked="" type="checkbox"/> 3-P <input type="checkbox"/> 3-P+N <input checked="" type="checkbox"/> 4-P
Protection against external influences	<input checked="" type="checkbox"/> enclosed <input type="checkbox"/> unenclosed
Method of mounting	<input type="checkbox"/> surface <input type="checkbox"/> flush <input type="checkbox"/> panel board <input checked="" type="checkbox"/> on rail
Method of connection	<input checked="" type="checkbox"/> .not associated with the mechanical mounting <input type="checkbox"/> associated with the mechanical mounting
Type of terminal	<input type="checkbox"/> screw ^{a) b)} <input checked="" type="checkbox"/> pillar ^{a) b)} <input type="checkbox"/> cage ^{a) b)} <input type="checkbox"/> lug <input type="checkbox"/> screw less ^{a)} <input type="checkbox"/> flat quick connect ^{a)} <input type="checkbox"/> plug-in <input type="checkbox"/> screw-in a) copper conductors b) aluminium conductors
Instantaneous tripping current	<input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D
I ² t characteristic	Class 1(according to EN 60898-1)
Value of rated operational voltage (Ue)	<input type="checkbox"/> 120 V <input type="checkbox"/> 230 V <input type="checkbox"/> 240 V <input type="checkbox"/> 120/240 V <input checked="" type="checkbox"/> 230/400 V(1P) <input checked="" type="checkbox"/> 400 V(2P,3P,4P) <input checked="" type="checkbox"/> 240/415 V(1P) <input checked="" type="checkbox"/> 415 V(2P,3P,4P)
Value of rated current (In)	6A;10A;16A;20A;25A;32A;40A;50A;63A
Value of rated frequency	<input checked="" type="checkbox"/> 50 Hz <input checked="" type="checkbox"/> 60 Hz
Ambient air temperature (°C)	<input checked="" type="checkbox"/> 30°C <input type="checkbox"/> 40°C <input type="checkbox"/> Other _____°C
Rated short-circuit capacity (Icn)	<input type="checkbox"/> 1,5 kA <input type="checkbox"/> 3 kA <input checked="" type="checkbox"/> 4,5 kA <input type="checkbox"/> 6 kA <input type="checkbox"/> 10 kA <input type="checkbox"/> 15 kA <input type="checkbox"/> 20 kA <input type="checkbox"/> 25 kA
Rated impulse withstand voltage (Uimp)	<input type="checkbox"/> 2,5 kV <input checked="" type="checkbox"/> 4 kV <input type="checkbox"/> declared ___kV

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict

	TESTS „A“ 1 SAMPLE (MC3 1P;C63;Icn=4500A)	A ₁₋₁	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark.....:		P
	b) Type designation, catalogue number or other serial number.....:	TOMC3-63/1/C63	P
	c) Rated voltage (V).....:	240/415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....:	C63	P
	e) Rated frequency (Hz).....:		N/A
	f) Rated short circuit capacity (A).....:	4500 with a rectangle	P
	g) Wiring diagram		P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 I _n see table 2)		N/A
	k) Rated impulse withstand voltage U _{imp} if it is 2,5 kV		N/A
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (I _{cn1}), if different from I _{cn}		N/A
	Marking d) shall be readily visible when the CB is installed		P
	If, for small devices, the available space is insufficient, markings a), b), c), e), f), h), j) and l) may be put on the side or on the back of the CB		P
	Marking g) may be on the inside of any cover which has to be removed in order to connect the supply wires but shall not be on a label loosely attached to the CB		P
	Any other information not marked shall be given in the manufacturer's documentation		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	I ² t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
	Circuit-breakers shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		N/A
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		P
	The minimum required clearances and creepage distances are based on the CB being designed for operating in an environment with pollution degree 2		P
	Compliance for item 1 in Table 4 is checked by measurement and by the test of 9.7.5.4.1 and 9.7.5.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		N/A
	In this case, after the humidity treatment in 9.7.1, compliance for item 2 and 4 and arrangements of 9.7.2 items b), c), d) and e) is checked:		N/A
	-Tests according to 9.7.2 to 9.7.4 as applicable		N/A
	-Test according to 9.7.5.2 with test voltages acc. Table 13 with test arrangements of 9.7.2 items b), c), d), e)		N/A
	If measurement does not show any reduced clearance, test 9.7.5.2 is not applied		N/A
	Compliance for item 3, checked by measurement		N/A
	The insulating materials are classified into Material Groups on the basis of their comparative tracking index (CTI) acc. to IEC 60664-1	IIIa	P
	Clearances [mm] U_{imp}		--

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	4 kV (see table 4) 2,5 kV (see table 4)	<input checked="" type="checkbox"/> <input type="checkbox"/>	--
	Minimum clearances (see table 4)		P
		minimum clearances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	4,4 mm	P
	2.between live parts of different polarity.....:		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type).....:		N/A
	Minimum creepage distances (see table 4)		P
	Material group	<input type="checkbox"/> III _b <input checked="" type="checkbox"/> III _a <input type="checkbox"/> II <input type="checkbox"/> I	--
		minimum creepage distances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	10,4 mm	P
	2.between live parts of different polarity.....:		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 11) Ø__mm__Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø4,9mm_2,0Nm (see table 11)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.16).		P
	The requirements of this subclause do not apply to contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		--
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		--

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Clause	Requirement + Test	Result - Remark	Verdict
	by tests of clause 9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on CBs included in the standard		N/A
	by the tests of Annexes J, K		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm).....:	1,33Nm, Ø4,9mm	--
	- torque (Nm); diameter (mm).....:		--
	- torque (Nm); diameter (mm).....:		--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
9.5.2	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	All types	--
	Min. cross-section solid / stranded / flexible (mm ²).....:	1mm ² /1,5 mm ² /1mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	6mm ² /25 mm ² /16mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Min. cross-section 50/50/50N Max. cross-section 60/100/90N	P
	During the test no noticeable move of conductor		P
9.5.3	Torque test:		P
	- torque ² / ₃ (Nm).....:	1,33Nm	--
	- min. cross-sectional area (mm ²).....:	1mm ²	--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.4	Terminals fitted with the largest cross-section area specified in Table 5, for stranded copper conductor.		P
	Max. cross-section stranded (mm ²).....:	25mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	After the test no strand of conductor escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P


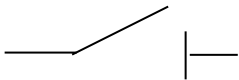
IEC 60898-1					
Clause	Requirement + Test		Result - Remark	Verdict	
	Rated current (A) sections	Range of nominal cross to be clamped* (mm ²) Rigid (solid or stranded) conductors	Flexible conductors	1—2,5mm ² /10—25mm ²	P
	≤ 13	1 to 2,5	1 to 2,5		
	> 13 ≤ 16	1 to 4	1 to 4		
	> 16 ≤ 25	1,5 to 6	1,5 to 6		
	> 25 ≤ 32	2,5 to 10	2,5 to 6		
	> 32 ≤ 50	4 to 16	4 to 10		
	> 50 ≤ 80	10 to 25	10 to 16		
	> 80 ≤ 100	16 to 35	16 to 25		
	> 100 ≤ 125	24 to 50	25 to 35		
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² be designed to clamp solid conductors only.				P
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.				N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)				P
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation				N/A
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.3)				P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.4)				P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)				P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.11	Pillar terminals shall allow full insertion and reliable clamping of the conductor		P
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non-interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Mechanical mounting of plug-in circuit-breakers		N/A
8.1.7.1	The mechanical mounting of plug-in circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.3	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		P
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		P
	Internal parts only	See above page 15	P
9.6	Test of protection against electric shock		P
	This verification is applicable to those parts of circuit breakers which are exposed to the operator when mounted as for normal use		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
8.10	Resistance to heat		P
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		P
9.14.1	Test:		P
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P

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Clause	Requirement + Test	Result - Remark	Verdict
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 9.8 Ø of impression ≤ 2 mm	70°C Impression: 0,8mm	P
8.12	Resistance to rusting		P
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		P
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

	TESTS „A2“ 3 samples (MC3 1P;C63;Icn=4500A)	A2-1	A2-2	A2-3	
8.11	Resistance to abnormal heat and to fire				P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions				P
9.15	Resistance to abnormal heat and to fire				P
	Test performed on a complete CB				P
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15)°C	960°C	960°C	960°C	P
	all other external parts (650 ± 10)°C	650°C	650°C	650°C	P
	No visible flames, no sustained glowing, or				P
	flames and glowing extinguish within 30 s after removal				P
	No ignition of tissue paper or scorching of the pinewood board				P

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC3 4P;C63;Icn=4500A)	A₁₋₂	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark.....:		P
	b) Type designation, catalogue number or other serial number.....:	TOMC3-63/4/C63	P
	c) Rated voltage (V).....:	415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....:	C63	P
	e) Rated frequency (Hz).....:		N/A
	f) Rated short circuit capacity (A).....:	4500 with a rectangle	P
	g) Wiring diagram		P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 I _n see table 2)		N/A
	k) Rated impulse withstand voltage U _{imp} if it is 2,5 kV		N/A
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (I _{cn1}), if different from I _{cn}		N/A
	Marking d) shall be readily visible when the CB is installed		P
	If, for small devices, the available space is insufficient, markings a), b), c), e), f), h), j) and l) may be put on the side or on the back of the CB		P
	Marking g) may be on the inside of any cover which has to be removed in order to connect the supply wires but shall not be on a label loosely attached to the CB		P
	Any other information not marked shall be given in the manufacturer's documentation		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	I ² t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
	Circuit-breakers shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		P
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P

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Clause	Requirement + Test	Result - Remark	Verdict
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		P
	The minimum required clearances and creepage distances are based on the CB being designed for operating in an environment with pollution degree 2		P
	Compliance for item 1 in Table 4 is checked by measurement and by the test of 9.7.5.4.1 and 9.7.5.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		N/A
	In this case, after the humidity treatment in 9.7.1, compliance for item 2 and 4 and arrangements of 9.7.2 items b), c), d) and e) is checked:		N/A
	-Tests according to 9.7.2 to 9.7.4 as applicable		N/A
	-Test according to 9.7.5.2 with test voltages acc. Table 13 with test arrangements of 9.7.2 items b), c), d), e)		N/A
	If measurement does not show any reduced clearance, test 9.7.5.2 is not applied		N/A
	Compliance for item 3, checked by measurement		N/A
	The insulating materials are classified into Material Groups on the basis of their comparative tracking index (CTI) acc. to IEC 60664-1	IIIa	P
	Clearances [mm] U_{imp}		--

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Clause	Requirement + Test	Result - Remark	Verdict
	4 kV (see table 4) 2,5 kV (see table 4)	<input checked="" type="checkbox"/> <input type="checkbox"/>	--
	Minimum clearances (see table 4)		P
		minimum clearances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	4,4 mm	P
	2.between live parts of different polarity.....:	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type).....:		N/A
	Minimum creepage distances (see table 4)		P
	Material group	<input type="checkbox"/> III _b <input checked="" type="checkbox"/> III _a <input type="checkbox"/> II <input type="checkbox"/> I	--
		minimum creepage distances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	12,4 mm	P
	2.between live parts of different polarity.....:	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type).....:		N/A

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 11) Ø__mm__Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø4,9mm_2,0Nm (see table 11)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.16).		P
	The requirements of this subclause do not apply to contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		--
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		--


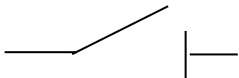
IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	by tests of clause 9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on CBs included in the standard		N/A
	by the tests of Annexes J, K		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm).....:	1,33Nm, Ø4,9mm	--
	- torque (Nm); diameter (mm).....:		--
	- torque (Nm); diameter (mm).....:		--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
9.5.2	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	All types	--
	Min. cross-section solid / stranded / flexible (mm ²).....:	1mm ² /1,5 mm ² /1mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	6mm ² /25 mm ² /16mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Min. cross-section 50/50/50N Max. cross-section 60/100/90N	P
	During the test no noticeable move of conductor		P
9.5.3	Torque test:		P
	- torque ² / ₃ (Nm).....:	1,33Nm	--
	- min. cross-sectional area (mm ²).....:	1mm ²	--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.4	Terminals fitted with the largest cross-section area specified in Table 5, for stranded copper conductor.		P
	Max. cross-section stranded (mm ²).....:	25mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	After the test no strand of conductor escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P

IEC 60898-1					
Clause	Requirement + Test		Result - Remark	Verdict	
	Rated current (A) sections	Range of nominal cross to be clamped* (mm ²) Rigid (solid or stranded) conductors	Flexible conductors	1—2,5mm ² /10—25mm ²	P
	≤ 13	1 to 2,5	1 to 2,5		
	> 13 ≤ 16	1 to 4	1 to 4		
	> 16 ≤ 25	1,5 to 6	1,5 to 6		
	> 25 ≤ 32	2,5 to 10	2,5 to 6		
	> 32 ≤ 50	4 to 16	4 to 10		
	> 50 ≤ 80	10 to 25	10 to 16		
	> 80 ≤ 100	16 to 35	16 to 25		
	> 100 ≤ 125	24 to 50	25 to 35		
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² be designed to clamp solid conductors only.				P
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.				N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)				P
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation				N/A
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.3)				P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.4)				P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)				P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.11	Pillar terminals shall allow full insertion and reliable clamping of the conductor		P
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non-interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Mechanical mounting of plug-in circuit-breakers		N/A
8.1.7.1	The mechanical mounting of plug-in circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.3	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		P
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		P
	Internal parts only	See above page 25	P
9.6	Test of protection against electric shock		P
	This verification is applicable to those parts of circuit breakers which are exposed to the operator when mounted as for normal use		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
8.10	Resistance to heat		P
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		P
9.14.1	Test:		P
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P

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Clause	Requirement + Test	Result - Remark			Verdict
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 9.8 Ø of impression ≤ 2 mm	70°C Impression: 0,8mm			P
8.12	Resistance to rusting				P
	Ferrous parts adequately protected against rusting				P
9.16	Test of resistance to rusting:				P
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol				P
	- 10 min immersed in a 10% solution of chloride in water at 20°C				P
	- 10 min at 95% humidity at 20°C				P
	- 10 min at 100°C				P
	No sign of rust				P
	TESTS „A₂“ 3 samples (MC3 4P;C63;Icn=4500A)	A₂₋₄	A₂₋₅	A₂₋₆	
8.11	Resistance to abnormal heat and to fire				P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions				P
9.15	Resistance to abnormal heat and to fire				P
	Test performed on a complete CB				P
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15)°C	960°C	960°C	960°C	P
	all other external parts (650 ± 10)°C	650°C	650°C	650°C	P
	No visible flames, no sustained glowing, or				P
	flames and glowing extinguish within 30 s after removal				P
	No ignition of tissue paper or scorching of the pinewood board				P

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC5 1P;C63;Icn=4500A)	A₁₋₃	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark.....:		P
	b) Type designation, catalogue number or other serial number.....:	TOMC5-63/1/C63	P
	c) Rated voltage (V).....:	240/415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....:	C63	P
	e) Rated frequency (Hz).....:		N/A
	f) Rated short circuit capacity (A).....:	4500 with a rectangle	P
	g) Wiring diagram		P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 In see table 2)		N/A
	k) Rated impulse withstand voltage Uimp if it is 2,5 kV		N/A
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Marking d) shall be readily visible when the CB is installed		P
	If, for small devices, the available space is insufficient, markings a), b), c), e), f), h), j) and l) may be put on the side or on the back of the CB		P
	Marking g) may be on the inside of any cover which has to be removed in order to connect the supply wires but shall not be on a label loosely attached to the CB		P
	Any other information not marked shall be given in the manufacturer's documentation		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	I ² t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
	Circuit-breakers shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		N/A
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P

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Clause	Requirement + Test	Result - Remark	Verdict
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		P
	The minimum required clearances and creepage distances are based on the CB being designed for operating in an environment with pollution degree 2		P
	Compliance for item 1 in Table 4 is checked by measurement and by the test of 9.7.5.4.1 and 9.7.5.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		N/A
	In this case, after the humidity treatment in 9.7.1, compliance for item 2 and 4 and arrangements of 9.7.2 items b), c), d) and e) is checked:		N/A
	-Tests according to 9.7.2 to 9.7.4 as applicable		N/A
	-Test according to 9.7.5.2 with test voltages acc. Table 13 with test arrangements of 9.7.2 items b), c), d), e)		N/A
	If measurement does not show any reduced clearance, test 9.7.5.2 is not applied		N/A
	Compliance for item 3, checked by measurement		N/A
	The insulating materials are classified into Material Groups on the basis of their comparative tracking index (CTI) acc. to IEC 60664-1	IIIa	P
	Clearances [mm] U_{imp}		--

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	4 kV (see table 4) 2,5 kV (see table 4)	<input checked="" type="checkbox"/> <input type="checkbox"/>	--
	Minimum clearances (see table 4)		P
		minimum clearances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	4,4 mm	P
	2.between live parts of different polarity.....:		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type).....:		N/A
	Minimum creepage distances (see table 4)		P
	Material group	<input type="checkbox"/> III _b <input checked="" type="checkbox"/> III _a <input type="checkbox"/> II <input type="checkbox"/> I	--
		minimum creepage distances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	10,4 mm	P
	2.between live parts of different polarity.....:		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 11) Ø__mm__Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø4,9mm_2,0Nm (see table 11)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.16).		P
	The requirements of this subclause do not apply to contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		--
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		--


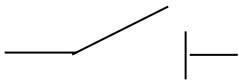
IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	by tests of clause 9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on CBs included in the standard		N/A
	by the tests of Annexes J, K		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm).....:	1,33Nm, Ø4,9mm	--
	- torque (Nm); diameter (mm).....:		--
	- torque (Nm); diameter (mm).....:		--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
9.5.2	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	All types	--
	Min. cross-section solid / stranded / flexible (mm ²).....:	1mm ² /1,5 mm ² /1mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	6mm ² /25 mm ² /16mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Min. cross-section 50/50/50N Max. cross-section 60/100/90N	P
	During the test no noticeable move of conductor		P
9.5.3	Torque test:		P
	- torque ² / ₃ (Nm).....:	1,33Nm	--
	- min. cross-sectional area (mm ²).....:	1mm ²	--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.4	Terminals fitted with the largest cross-section area specified in Table 5, for stranded copper conductor.		P
	Max. cross-section stranded (mm ²).....:	25mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	After the test no strand of conductor escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P

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Clause	Requirement + Test		Result - Remark	Verdict	
	Rated current (A) sections	Range of nominal cross to be clamped* (mm ²) Rigid (solid or stranded) conductors	Flexible conductors	1—2,5mm ² /10—25mm ²	P
	≤ 13	1 to 2,5	1 to 2,5		
	> 13 ≤ 16	1 to 4	1 to 4		
	> 16 ≤ 25	1,5 to 6	1,5 to 6		
	> 25 ≤ 32	2,5 to 10	2,5 to 6		
	> 32 ≤ 50	4 to 16	4 to 10		
	> 50 ≤ 80	10 to 25	10 to 16		
	> 80 ≤ 100	16 to 35	16 to 25		
	> 100 ≤ 125	24 to 50	25 to 35		
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² be designed to clamp solid conductors only.				P
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.				N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)				P
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation				N/A
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.3)				P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.4)				P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)				P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.11	Pillar terminals shall allow full insertion and reliable clamping of the conductor		P
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non-interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Mechanical mounting of plug-in circuit-breakers		N/A
8.1.7.1	The mechanical mounting of plug-in circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.3	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		P
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		P
	Internal parts only	See above page 35	P
9.6	Test of protection against electric shock		P
	This verification is applicable to those parts of circuit breakers which are exposed to the operator when mounted as for normal use		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
8.10	Resistance to heat		P
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		P
9.14.1	Test:		P
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P

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Clause	Requirement + Test	Result - Remark			Verdict
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 9.8 Ø of impression ≤ 2 mm	70°C Impression: 0,8mm			P
8.12	Resistance to rusting				P
	Ferrous parts adequately protected against rusting				P
9.16	Test of resistance to rusting:				P
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol				P
	- 10 min immersed in a 10% solution of chloride in water at 20°C				P
	- 10 min at 95% humidity at 20°C				P
	- 10 min at 100°C				P
	No sign of rust				P
	TESTS „A₂“ 3 samples (MC5 1P;C63;Icn=4500A)	A₂₋₇	A₂₋₈	A₂₋₉	
8.11	Resistance to abnormal heat and to fire				P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions				P
9.15	Resistance to abnormal heat and to fire				P
	Test performed on a complete CB				P
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15)°C	960°C	960°C	960°C	P
	all other external parts (650 ± 10)°C	650°C	650°C	650°C	P
	No visible flames, no sustained glowing, or				P
	flames and glowing extinguish within 30 s after removal				P
	No ignition of tissue paper or scorching of the pinewood board				P

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC5 4P;C63;Icn=4500A)	A₁₋₄	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark.....:		P
	b) Type designation, catalogue number or other serial number.....:	TOMC5-63/4/C63	P
	c) Rated voltage (V).....:	415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping.....:	C63	P
	e) Rated frequency (Hz)		N/A
	f) Rated short circuit capacity (A).....:	4500 with a rectangle	P
	g) Wiring diagram		P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 I _n see table 2)		N/A
	k) Rated impulse withstand voltage U _{imp} if it is 2,5 kV		N/A
	l) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (I _{cn1}), if different from I _{cn}		N/A
	Marking d) shall be readily visible when the CB is installed		P
	If, for small devices, the available space is insufficient, markings a), b), c), e), f), h), j) and l) may be put on the side or on the back of the CB		P
	Marking g) may be on the inside of any cover which has to be removed in order to connect the supply wires but shall not be on a label loosely attached to the CB		P
	Any other information not marked shall be given in the manufacturer's documentation		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	I ² t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 9.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
	Circuit-breakers shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		P
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P

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Clause	Requirement + Test	Result - Remark	Verdict
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		P
	The minimum required clearances and creepage distances are based on the CB being designed for operating in an environment with pollution degree 2		P
	Compliance for item 1 in Table 4 is checked by measurement and by the test of 9.7.5.4.1 and 9.7.5.4.2. The test is carried out with samples not submitted to the humidity treatment described in 9.7.1.		P
	The clearances of items 2 and 4 (except accessible surface after installation) may be reduced provided that the measured clearances are not shorter than the minimum allowed in IEC 60664-1 for homogenous field conditions.		N/A
	In this case, after the humidity treatment in 9.7.1, compliance for item 2 and 4 and arrangements of 9.7.2 items b), c), d) and e) is checked:		N/A
	-Tests according to 9.7.2 to 9.7.4 as applicable		N/A
	-Test according to 9.7.5.2 with test voltages acc. Table 13 with test arrangements of 9.7.2 items b), c), d), e)		N/A
	If measurement does not show any reduced clearance, test 9.7.5.2 is not applied		N/A
	Compliance for item 3, checked by measurement		N/A
	The insulating materials are classified into Material Groups on the basis of their comparative tracking index (CTI) acc. to IEC 60664-1	IIIa	P
	Clearances [mm] U_{imp}		--

IEC 60898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	4 kV (see table 4) 2,5 kV (see table 4)	<input checked="" type="checkbox"/> <input type="checkbox"/>	--
	Minimum clearances (see table 4)		P
		minimum clearances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	4,4 mm	P
	2.between live parts of different polarity.....:	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type)...		N/A
	Minimum creepage distances (see table 4)		P
	Material group	<input type="checkbox"/> III _b <input checked="" type="checkbox"/> III _a <input type="checkbox"/> II <input type="checkbox"/> I	--
		minimum creepage distances [mm]	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position.....:	12,4 mm	P
	2.between live parts of different polarity.....:	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type)...		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 11) Ø__mm__Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø4,9mm_2,0Nm (see table 11)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
8.1.4.4	Current-carrying parts including parts intended for protective conductors, if any, shall be made of a metal having, under the conditions occurring in the equipment, mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use. Examples below:		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
	In case of using ferrous alloys or suitably coated ferrous alloys, compliance to resistance to corrosion is checked by a test of resistance to rusting (see 9.16).		P
	The requirements of this subclause do not apply to contacts, magnetic circuits, heater elements, bimetals, shunts, parts of electronic devices or to screws, nuts, washers, clamping plates, similar parts of terminals and parts of the test circuit		P
8.1.5	Terminals for external conductors		--
	Compliance is checked by inspection and by the tests as relevant for the type of connection:		--

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Clause	Requirement + Test	Result - Remark	Verdict
	by tests of clause 9.5 for screw-type terminals		P
	by specific tests for plug-in or bolt-on CBs included in the standard		N/A
	by the tests of Annexes J, K		N/A
8.1.5.1	Terminals ensure the necessary contact pressure		P
9.5	Torque test:		P
	- torque (Nm); diameter (mm).....:	1,33Nm, Ø4,9mm	--
	- torque (Nm); diameter (mm).....:		--
	- torque (Nm); diameter (mm).....:		--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
9.5.2	Pull test:		P
	Terminal shall be suitable for all types of conductors: rigid (solid or stranded) and flexible, unless otherwise specified by the manufacturer.	All types	--
	Min. cross-section solid / stranded / flexible (mm ²).....:	1mm ² /1,5 mm ² /1mm ²	--
	Max. cross-section solid / stranded / flexible (mm ²).....:	6mm ² /25 mm ² /16mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	Pull for 1 min solid / stranded / flexible (N).....:	Min. cross-section 50/50/50N Max. cross-section 60/100/90N	P
	During the test no noticeable move of conductor		P
9.5.3	Torque test:		P
	- torque ² / ₃ (Nm).....:	1,33Nm	--
	- min. cross-sectional area (mm ²).....:	1mm ²	--
	- max. cross-sectional area (mm ²).....:	25mm ²	--
	The conductor shows no damage		P
	Terminals have not worked loose and no damage		P
9.5.4	Terminals fitted with the largest cross-section area specified in Table 5, for stranded copper conductor.		P
	Max. cross-section stranded (mm ²).....:	25mm ²	--
	Torque ² / ₃ (Nm)	1,33Nm	--
	After the test no strand of conductor escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P

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Clause	Requirement + Test		Result - Remark	Verdict	
	Rated current (A) sections	Range of nominal cross to be clamped* (mm ²) Rigid (solid or stranded) conductors	Flexible conductors	1—2,5mm ² /10—25mm ²	P
	≤ 13	1 to 2,5	1 to 2,5		
	> 13 ≤ 16	1 to 4	1 to 4		
	> 16 ≤ 25	1,5 to 6	1,5 to 6		
	> 25 ≤ 32	2,5 to 10	2,5 to 6		
	> 32 ≤ 50	4 to 16	4 to 10		
	> 50 ≤ 80	10 to 25	10 to 16		
	> 80 ≤ 100	16 to 35	16 to 25		
	> 100 ≤ 125	24 to 50	25 to 35		
	*It is required that, for current ratings up to and including 50 A, terminals be designed to clamp solid conductors as well as rigid stranded conductors. Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² be designed to clamp solid conductors only.				P
	- or terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors according to Annex L.				N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)				P
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation				N/A
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.3)				P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.2)				P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.4)				P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)				P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.11	Pillar terminals shall allow full insertion and reliable clamping of the conductor		P
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non-interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Mechanical mounting of plug-in circuit-breakers		N/A
8.1.7.1	The mechanical mounting of plug-in circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.3	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		P
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		P
	Internal parts only	See above page 45	P
9.6	Test of protection against electric shock		P
	This verification is applicable to those parts of circuit breakers which are exposed to the operator when mounted as for normal use		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
8.10	Resistance to heat		P
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		P
9.14.1	Test:		P
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P

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Clause	Requirement + Test	Result - Remark			Verdict
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 9.8 Ø of impression ≤ 2 mm	70°C Impression: 0,8mm			P
8.12	Resistance to rusting				P
	Ferrous parts adequately protected against rusting				P
9.16	Test of resistance to rusting:				P
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol				P
	- 10 min immersed in a 10% solution of chloride in water at 20°C				P
	- 10 min at 95% humidity at 20°C				P
	- 10 min at 100°C				P
	No sign of rust				P
	TESTS „A₂“ 3 samples (MC5 4P;C63;Icn=4500A)	A₂₋₁₀	A₂₋₁₁	A₂₋₁₂	
8.11	Resistance to abnormal heat and to fire				P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions				P
9.15	Resistance to abnormal heat and to fire				P
	Test performed on a complete CB				P
	external parts retaining current-carrying parts and parts of the protective circuit in position (960 ± 15)°C	960°C	960°C	960°C	P
	all other external parts (650 ± 10)°C	650°C	650°C	650°C	P
	No visible flames, no sustained glowing, or				P
	flames and glowing extinguish within 30 s after removal				P
	No ignition of tissue paper or scorching of the pinewood board				P

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC3 1P;C63;Icn=4500A)	B-1	B-2	B-3	
8.3	Dielectric properties and isolating capability				P
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:				P
8.3.2	Dielectric strength at power frequency				P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				P
8.3.3	Isolating capability				P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.				P
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)				P
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.				P
9.7	Test of dielectric properties and isolating capability				P
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions				P
	These tests are not preceded by the humidity treatment described in 9.7.1.				P
	The test is carried out on an CB fixed on a metal support				P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs				P
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.				P
	rated impulse withstand voltage [kV]:	4kV			--
	sea level of test laboratory [m]:	Sea level			--
	test voltage (acc. Table 15) [kV]:	6,2kV			--
9.7.5.4.2	CB in open position (contacts in open position)				P
	The impulses are applied between:				--
	the line terminals connected together and the load terminals connected together				P
9.7.5.4.3	CB in closed position				P

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Clause	Requirement + Test	Result - Remark			Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				P
	no disruptive discharges during the test				P
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				P
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				P
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				P
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2				P
9.7.2	Insulation resistance of the main circuit				P
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1160	1150	1210	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	-	-	-	N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$	1920	1840	1850	P

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		P
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		P
	a) 2000 V	2000 V	P
	b) 2000 V		N/A
	c) 2000 V	2000 V	P
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		P
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N = (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 24,0°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
		L1	≤43	≤52	≤48	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
		L3	-	-	-	
		N	-	-	-	
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-1	B-2	B-3	P	
	Power loss do not exceed the values stated in table 8	13W			P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current: $I_N = 63$ A (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,2 W	W	W	W	P
	L1	≤4,9	≤4,7	≤5,2	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				P
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				P
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	28 cycles - 21 h with current - 3 h without current Cross-sectional area. 16mm ²			P
	During the test no tripping during the last period, temperature rise shall be measured				P
	Ambient air temperature	T _{amb} = 23,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	P
	Terminals for external connections	≤45	≤51	≤51	P
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				P
	Test current 1,45 $I_N = 91,4$ A	91,4A			P
	- Tripping within	[s]	[s]	[s]	P
	- 1h (≤ 63 A)	183	185	197	P
	- 2h (> 63 A)	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B“ 3 samples (MC3 4P;C63;Icn=4500A)	B-4 B-5 B-6	
8.3	Dielectric properties and isolating capability		P
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		P
8.3.2	Dielectric strength at power frequency		P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		P
8.3.3	Isolating capability		P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		P
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)		P
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		P
9.7	Test of dielectric properties and isolating capability		P
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an CB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		P
	rated impulse withstand voltage [kV]:	4kV	--
	sea level of test laboratory [m]:	Sea level	--
	test voltage (acc. Table 15) [kV]:	6,2kV	--
9.7.5.4.2	CB in open position (contacts in open position)		P
	The impulses are applied between:		--
	the line terminals connected together and the load terminals connected together		P
9.7.5.4.3	CB in closed position		P

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Clause	Requirement + Test	Result - Remark			Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				P
	no disruptive discharges during the test				P
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				P
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				P
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				P
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2				P
9.7.2	Insulation resistance of the main circuit				P
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1190	1240	1220	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	1510	1480	1550	P
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$	1880	1820	1870	P

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		P
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		P
	a) 2000 V	2000 V	P
	b) 2000 V	2000 V	P
	c) 2000 V	2000 V	P
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		P
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N = (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 24,0°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
	L1	≤48	≤45	≤54	P	
	L2	≤54	≤52	≤54		
	L3	≤56	≤52	≤56		
	L4	≤55	≤52	≤49		
	L3	-	-	-		
	N	-	-	-		
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-4	B-5	B-6	P	
	Power loss do not exceed the values stated in table 8	13W			P	
	Test current: I _N = 63 A (reach the steady state value)				P	
	Loaded one pole after the other				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. power loss : 6,1 W	W	W	W	P
	L1	≤5,2	≤5,1	≤6,1	P
	L2	≤5,6	≤5,9	≤5,0	
	L3	≤6,1	≤6,0	≤5,8	
	L4	≤5,1	≤5,4	≤4,9	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				P
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				P
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	28 cycles - 21 h with current - 3 h without current Cross-sectional area. 16mm ²			P
	During the test no tripping during the last period, temperature rise shall be measured				P
	Ambient air temperature	Tamb= 23,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	P
	Terminals for external connections	≤59	≤55	≤59	P
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				P
	Test current 1,45 I _N =91,4A	91,4A			P
	- Tripping within	[s]	[s]	[s]	P
	- 1h (≤ 63 A)	205	217	193	P
	- 2h (> 63 A)	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B“ 3 samples (MC3 1P;B63;Icn=4500A)	B-7 B-8 B-9	
8.3	Dielectric properties and isolating capability		N/A
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		N/A
8.3.2	Dielectric strength at power frequency		N/A
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		N/A
8.3.3	Isolating capability		N/A
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		N/A
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)		N/A
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		N/A
9.7	Test of dielectric properties and isolating capability		N/A
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		N/A
	These tests are not preceded by the humidity treatment described in 9.7.1.		N/A
	The test is carried out on an CB fixed on a metal support		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:		--
	sea level of test laboratory [m]:		--
	test voltage (acc. Table 15) [kV]:		--
9.7.5.4.2	CB in open position (contacts in open position)		N/A
	The impulses are applied between:		--
	the line terminals connected together and the load terminals connected together		N/A
9.7.5.4.3	CB in closed position		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A
	no disruptive discharges during the test				N/A
9.7.1	Resistance to humidity				N/A
9.7.1.1	Preparation of the circuit-breaker for test				N/A
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				N/A
9.7.1.2	Test conditions				N/A
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = % T = °C			N/A
9.7.1.3	Test procedure.				N/A
	The sample is kept in the cabinet for 48 h.				N/A
9.7.1.4	Conditions of the circuit breaker after the tests.				N/A
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2				N/A
9.7.2	Insulation resistance of the main circuit				N/A
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		N/A
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		N/A
	a) 2000 V		N/A
	b) 2000 V		N/A
	c) 2000 V		N/A
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		N/A
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2 μ s, and a time to half-value of 50 μ s		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 23,4°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
	L1	≤47	≤50	≤47	P	
	L2	-	-	-		
	L3	-	-	-		
	L4	-	-	-		
	L3	-	-	-		
	N	-	-	-		
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-7	B-8	B-9	P	
	Power loss do not exceed the values stated in table 8	13W			P	
	Test current: I _N = 63 A (reach the steady state value)				P	
	Loaded one pole after the other				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. power loss : 5,8 W	W	W	W	P
	L1	≤5,2	≤5,8	≤5,5	P
	L2	-	-	-	
	L3	-	-	-	
	L4	-	-	-	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	I _N = A			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature	°C			N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				N/A
	Test current 1,45 I _N = A				N/A
	- Tripping within	[s]	[s]	[s]	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B“ 3 samples (MC3 4P;B63;Icn=4500A)	B-10 B-11 B-12	
8.3	Dielectric properties and isolating capability		N/A
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		N/A
8.3.2	Dielectric strength at power frequency		N/A
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		N/A
8.3.3	Isolating capability		N/A
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		N/A
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)		N/A
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		N/A
9.7	Test of dielectric properties and isolating capability		N/A
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		N/A
	These tests are not preceded by the humidity treatment described in 9.7.1.		N/A
	The test is carried out on an CB fixed on a metal support		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:		--
	sea level of test laboratory [m]:		--
	test voltage (acc. Table 15) [kV]:		--
9.7.5.4.2	CB in open position (contacts in open position)		N/A
	The impulses are applied between:		--
	the line terminals connected together and the load terminals connected together		N/A
9.7.5.4.3	CB in closed position		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.		N/A
	no disruptive discharges during the test		N/A
9.7.1	Resistance to humidity		N/A
9.7.1.1	Preparation of the circuit-breaker for test		N/A
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		N/A
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = % T = °C	N/A
9.7.1.3	Test procedure.		N/A
	The sample is kept in the cabinet for 48 h.		N/A
9.7.1.4	Conditions of the circuit breaker after the tests.		N/A
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2		N/A
9.7.2	Insulation resistance of the main circuit		N/A
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ] [MΩ] [MΩ]	N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$		N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$		N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		N/A
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		N/A
	a) 2000 V		N/A
	b) 2000 V		N/A
	c) 2000 V		N/A
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		N/A
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 24,3°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
		L1	≤56	≤46	≤46	P
		L2	≤53	≤51	≤50	
		L3	≤50	≤51	≤49	
		L4	≤52	≤46	≤45	
		L3	-	-	-	
		N	-	-	-	
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-10	B-11	B-12	P	
	Power loss do not exceed the values stated in table 8	13W			P	
	Test current: I _N = 63 A (reach the steady state value)				P	
	Loaded one pole after the other				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. power loss : 5,8 W	W	W	W	P
	L1	≤5,6	≤5,2	≤4,7	P
	L2	≤5,4	≤5,0	≤5,2	
	L3	≤4,9	≤5,8	≤5,4	
	L4	≤5,8	≤4,7	≤4,9	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	I _N = A			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature	°C			N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				N/A
	Test current 1,45 I _N = A				N/A
	- Tripping within	[s]	[s]	[s]	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B“ 3 samples (MC5 1P;C63;Icn=4500A)	B-13 B-14 B-15	
8.3	Dielectric properties and isolating capability		P
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		P
8.3.2	Dielectric strength at power frequency		P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		P
8.3.3	Isolating capability		P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		P
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)		P
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		P
9.7	Test of dielectric properties and isolating capability		P
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an CB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		P
	rated impulse withstand voltage [kV]:	4kV	--
	sea level of test laboratory [m]:	Sea level	--
	test voltage (acc. Table 15) [kV]:	6,2kV	--
9.7.5.4.2	CB in open position (contacts in open position)		P
	The impulses are applied between:		--
	the line terminals connected together and the load terminals connected together		P
9.7.5.4.3	CB in closed position		P

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Clause	Requirement + Test	Result - Remark			Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				P
	no disruptive discharges during the test				P
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				P
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				P
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				P
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2				P
9.7.2	Insulation resistance of the main circuit				P
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1260	1210	1190	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	-	-	-	N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$	1890	1800	1850	P

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		P
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		P
	a) 2000 V	2000 V	P
	b) 2000 V		N/A
	c) 2000 V	2000 V	P
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		P
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2 μ s, and a time to half-value of 50 μ s		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N = (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 23,8°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
	L1	≤42	≤45	≤40	P	
	L2	-	-	-		
	L3	-	-	-		
	L4(N)	-	-	-		
	L3	-	-	-		
	N	-	-	-		
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-13	B-14	B-15	P	
	Power loss do not exceed the values stated in table 8	13W			P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current: $I_N = 63$ A (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,1 W	W	W	W	P
	L1	≤4,7	≤5,1	≤4,9	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	28 cycles - 21 h with current - 3 h without current Cross-sectional area. 16mm ²			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature	Tamb=			N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				N/A
	Test current 1,45 $I_N = 91,4$ A				N/A
	- Tripping within	[s]	[s]	[s]	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B“ 3 samples (MC5 4P;C63;Icn=4500A)	B-16 B-17 B-18	
8.3	Dielectric properties and isolating capability		P
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		P
8.3.2	Dielectric strength at power frequency		P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		P
8.3.3	Isolating capability		P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		P
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)		P
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		P
9.7	Test of dielectric properties and isolating capability		P
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		P
	These tests are not preceded by the humidity treatment described in 9.7.1.		P
	The test is carried out on an CB fixed on a metal support		P
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		P
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		P
	rated impulse withstand voltage [kV]:	4kV	--
	sea level of test laboratory [m]:	Sea level	--
	test voltage (acc. Table 15) [kV]:	6,2kV	--
9.7.5.4.2	CB in open position (contacts in open position)		P
	The impulses are applied between:		--
	the line terminals connected together and the load terminals connected together		P
9.7.5.4.3	CB in closed position		P

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Clause	Requirement + Test	Result - Remark			Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				P
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				P
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				P
	no disruptive discharges during the test				P
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				P
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				P
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				P
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2				P
9.7.2	Insulation resistance of the main circuit				P
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1150	1220	1200	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	1570	1510	1480	P
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$	1790	1810	1850	P

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		P
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		P
	a) 2000 V	2000 V	P
	b) 2000 V	2000 V	P
	c) 2000 V	2000 V	P
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		P
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N = (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 24,1°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
		L1	≤46	≤47	≤47	P
		L2	≤51	≤50	≤51	
		L3	≤51	≤52	≤50	
		L4	≤45	≤49	≤49	
		L3	-	-	-	
		N	-	-	-	
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-16	B-17	B-18	P	
	Power loss do not exceed the values stated in table 8	13W			P	
	Test current: I _N = 63 A (reach the steady state value)				P	
	Loaded one pole after the other				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. power loss : 5,7 W	W	W	W	P
	L1	≤4,6	≤5,4	≤4,9	P
	L2	≤5,4	≤5,6	≤5,6	
	L3	≤5,1	≤5,7	≤5,2	
	L4	≤4,7	≤4,9	≤5,4	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	28 cycles - 21 h with current - 3 h without current Cross-sectional area. 16mm ²			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature	Tamb=			N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections				
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				N/A
	Test current 1,45 I _N =91,4A				N/A
	- Tripping within	[s]	[s]	[s]	N/A
	- 1h (≤ 63 A)				
	- 2h (> 63 A)	-	-	-	-

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC5 1P;B63;Icn=4500A)	B-19	B-20	B-21	
8.3	Dielectric properties and isolating capability				N/A
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:				N/A
8.3.2	Dielectric strength at power frequency				N/A
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				N/A
8.3.3	Isolating capability				N/A
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.				N/A
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)				N/A
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.				N/A
9.7	Test of dielectric properties and isolating capability				N/A
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions				N/A
	These tests are not preceded by the humidity treatment described in 9.7.1.				N/A
	The test is carried out on an CB fixed on a metal support				N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs				N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.				N/A
	rated impulse withstand voltage [kV]:				--
	sea level of test laboratory [m]:				--
	test voltage (acc. Table 15) [kV]:				--
9.7.5.4.2	CB in open position (contacts in open position)				N/A
	The impulses are applied between:				--
	the line terminals connected together and the load terminals connected together				N/A
9.7.5.4.3	CB in closed position				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any				N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB				N/A
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A
	no disruptive discharges during the test				N/A
9.7.1	Resistance to humidity				N/A
9.7.1.1	Preparation of the circuit-breaker for test				N/A
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				N/A
9.7.1.2	Test conditions				N/A
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = % T = °C			N/A
9.7.1.3	Test procedure.				N/A
	The sample is kept in the cabinet for 48 h.				N/A
9.7.1.4	Conditions of the circuit breaker after the tests.				N/A
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2				N/A
9.7.2	Insulation resistance of the main circuit				N/A
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		N/A
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		N/A
	a) 2000 V		N/A
	b) 2000 V		N/A
	c) 2000 V		N/A
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		N/A
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 23,7°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
	L1	≤43	≤42	≤45	P	
	L2	-	-	-		
	L3	-	-	-		
	L4	-	-	-		
	L3	-	-	-		
	N	-	-	-		
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-19	B-20	B-21	P	
	Power loss do not exceed the values stated in table 8	13W			P	
	Test current: I _N = 63 A (reach the steady state value)				P	
	Loaded one pole after the other				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. power loss : 5,0 W	W	W	W	P
	L1	≤4,6	≤5,0	≤4,7	P
	L2	-	-	-	
	L3	-	-	-	
	L4	-	-	-	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	I _N = A			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature	°C			N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				N/A
	Test current 1,45 I _N = A				N/A
	- Tripping within	[s]	[s]	[s]	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B“ 3 samples (MC5 4P;B63;Icn=4500A)	B-22 B-23 B-24	
8.3	Dielectric properties and isolating capability		N/A
8.3.1	CB shall have adequate dielectric properties and shall ensure isolation:		N/A
8.3.2	Dielectric strength at power frequency		N/A
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		N/A
8.3.3	Isolating capability		N/A
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.5.1 and 9.7.5.3.		N/A
8.3.4	Dielectric strength at rated impulse withstand voltage (Uimp)		N/A
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.5.2.		N/A
9.7	Test of dielectric properties and isolating capability		N/A
9.7.5.4	Verification of resistance of the insulation of open contact and basic insulation against an impulse voltage in normal conditions		N/A
	These tests are not preceded by the humidity treatment described in 9.7.1.		N/A
	The test is carried out on an CB fixed on a metal support		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	rated impulse withstand voltage [kV]:		--
	sea level of test laboratory [m]:		--
	test voltage (acc. Table 15) [kV]:		--
9.7.5.4.2	CB in open position (contacts in open position)		N/A
	The impulses are applied between:		--
	the line terminals connected together and the load terminals connected together		N/A
9.7.5.4.3	CB in closed position		N/A

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Clause	Requirement + Test	Result - Remark		Verdict	
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any			N/A	
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB			N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.			N/A	
	no disruptive discharges during the test			N/A	
9.7.1	Resistance to humidity			N/A	
9.7.1.1	Preparation of the circuit-breaker for test			N/A	
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.			N/A	
9.7.1.2	Test conditions			N/A	
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = % T = °C			N/A
9.7.1.3	Test procedure.			N/A	
	The sample is kept in the cabinet for 48 h.			N/A	
9.7.1.4	Conditions of the circuit breaker after the tests.			N/A	
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3, 9.7.4 and 9.7.5.2			N/A	
9.7.2	Insulation resistance of the main circuit			N/A	
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]	[MΩ]	[MΩ]	N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) in on-position, between all poles connected together and the frame $\geq 5 \text{ M}\Omega$				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) between metal parts of mechanism and the frame $\geq 5 \text{ M}\Omega$		N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$		N/A
9.7.3	Dielectric strength of the main circuit		N/A
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified is applied for 1 min between the parts indicated in 9.7.2		N/A
	a) 2000 V		N/A
	b) 2000 V		N/A
	c) 2000 V		N/A
	d) 2000 V		N/A
	e) 2500 V		N/A
	No flashover or breakdown		N/A
9.7.4	Insulation resistance and dielectric strength of the auxiliary circuits		N/A
	Insulation resistance of auxiliary circuits measured with 500 V DC after 1 min:		--
	1) between all auxiliary circuits and the frame ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together ($\text{M}\Omega$) $\geq 2 \text{ M}\Omega$		N/A
	Dielectric strength of auxiliary circuits measured with an AC voltage at rated frequency for 1 min:		--
	Rated voltage of auxiliary circuits (a.c. or d.c.)	Test voltage (V)	V
	≤ 30	600	
	$> 30 \leq 50$	1000	
	$> 50 \leq 110$	1500	
	$> 110 \leq 250$	2000	
	$> 250 \leq 500$	2500	
	1) between all auxiliary circuits and the frame		N/A
	2) between each part of the auxiliary circuits which might be isolated from the other parts and the whole of the other parts connected together		N/A
	No flashover or perforation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.5.2	Verification of clearances with the impulse withstand voltage		N/A
	If the measurement of clearances of items 2 and 4 in Table 4 shows a reduction of the required length, this test applies.		N/A
	The test is carried out on an CB fixed on a metal support and being in the closed position		N/A
	The impulses are given by a generator producing positive and negative impulses having a front time of 1,2µs, and a time to half-value of 50µs		N/A
	The shape of the impulses is adjusted with the CB under test connected to the impulse generator.		N/A
	test performed with:		--
	-surge impedance of the test apparatus $\leq 500\Omega$ and surge protective devices disconnected before testing or		N/A
	-hybrid generator with an surge impedance of 2 Ω and surge protective devices not disconnected before testing		N/A
	rated impulse withstand voltage [kV]:	kV	--
	see level of test laboratory [m]:	m	--
	test voltage (acc. Table 14) [kV]:	kV	--
	A first series of tests is made applying the impulse voltage between the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminal(s) intended for the protective conductor(s), if any		N/A
	A second series of tests is made applying the impulse voltage between the phase pole(s), connected together, and the neutral pole (or path) of the CB		N/A
	A third series of tests is made applying the impulse voltage between (and not tested during the two first sequences described here above):		--
	b) between each pole and the others connected together		N/A
	c) between all poles connected together and the frame		N/A
	d) between metal parts of the mechanism and the frame		N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	e) between the frame and a metal foil in contact with the inner surface of the lining of insulating material				N/A	
	Five positive impulses and five negative impulses are applied, the interval between consecutive impulses being at least 1 s for impulses of the same polarity and being at least 10 s for impulses of the opposite polarity.				N/A	
	no disruptive discharges during the test				N/A	
8.4	Temperature rise				P	
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16mm ²			P	
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P	
	Ambient air temperature	T _{amb} = 24,3°C			P	
	Parts	Temperature rise [K]	[K]	[K]	[K]	P
		L1	≤48	≤46	≤50	P
		L2	≤53	≤50	≤52	
		L3	≤50	≤51	≤55	
		L4	≤47	≤47	≤48	
		L3	-	-	-	
		N	-	-	-	
	Terminals for external connections	60 K			P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles	40 K			P	
	External metallic parts of operating means ..	25 K			N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface	60 K			P	
9.8.5	Measurement of power losses	B-22	B-23	B-24	P	
	Power loss do not exceed the values stated in table 8	13W			P	
	Test current: I _N = 63 A (reach the steady state value)				P	
	Loaded one pole after the other				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. power loss : 6,0 W	W	W	W	P
	L1	≤5,1	≤5,1	≤5,2	P
	L2	≤6,0	≤5,4	≤5,7	
	L3	≤5,6	≤5,9	≤6,0	
	L4	≤4,9	≤5,0	≤5,4	
	L3	-	-	-	
	N	-	-	-	
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current Cross-sectional area. mm ²	I _N =A			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature	°C			N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (sub-clause 9.8) by more than 15 K				N/A
	Test current 1,45 I _N =A				N/A
	- Tripping within	[s]	[s]	[s]	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „C“ 3 +3 samples (MC3 1P;C63;Icn=4500A)				
8.7	Test „C1“ Mechanical and electrical endurance	C₁₋₁	C₁₋₂	C₁₋₃	P
	Circuit-breaker shall be capable to perform an adequate number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage 247V (rated voltage 240V) Test Current 63,9A (rated current 63A) Power factor 0,87(0,85-0,9) Cross sect. area 16mm ²				P
9.11.2	Test procedure				P
	The circuit-breaker is submitted to 4000 operating cycles with rated current.				P
	- I _N ≤ 32 A: 2 s on - 13 s off				N/A
	- I _N > 32 A: 2 s on - 28 s off				P
	During the test the circuit-breaker shall be operated as in normal use.				P
9.11.3	Conditions of the circuit breaker after the tests.				P
	Following the test 9.11.2 the sample shall not show:				P
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the Indicating device				P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6)				P
	- loosening of electrical or mechanical connections				P
	- seepage of sealing compound				N/A
	Moreover test current2,55 I _N _____A	160,7A			P
	Opening time not less 1 s or more than	[s]	[s]	[s]	P
	- 60 s (≤ 32 A)	-	-	-	N/A
	- 120 s (> 32 A)	15	29	27	P
	Dielectric strength reduced to 1500 V				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.11.2	Test at reduced short-circuit currents				P
9.12.11.2.1	Test on all circuit-breakers				P
9.12.11.2.1	Test at reduced short-circuit currents: Fig. 3				P
	Test current:	Obtained			--
	- 500 A or 10 In	I test= 644A			--
	Test voltage 1,05 Un	Un = 251V			--
	Power factor 0,93-0,98	0,96			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35mm			P
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I _{Peak} (A) max. value	860A	861A	861A	--
	Sequence: 6 x "O" and 3 x "CO"	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤ 3,56kA ² s	2,84	3,12	3,56	P
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12	Verification of the circuit-breaker after short-circuit tests				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.= 457V. The circuit – breaker is in the open position	C₁₋₁ [mA]	C₁₋₂ [mA]	C₁₋₃ [mA]	P
	The leakage current shall not exceed 2 mA	L1	L2	L3	P
		0,001	0,003	0,002	
		-	-	-	
		L3	-	-	
		L4(N)	-	-	-
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P

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Clause	Requirement + Test	Result - Remark	Verdict
	a)	1500 V	P
	b)		N/A
	c)	1500 V	P
	d)		N/A
	e) 2000 V		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „C“ 3 +3 samples (MC3 4P;C63;Icn=4500A)				
8.7	Test „C1“ Mechanical and electrical endurance	C₁₋₄	C₁₋₅	C₁₋₆	P
	Circuit-breaker shall be capable to perform an adequate number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage 425V (rated voltage 415V) Test Current 63,9A (rated current 63A) Power factor 0,87(0,85-0,9) Cross sect. area 16mm ²				P
9.11.2	Test procedure				P
	The circuit-breaker is submitted to 4000 operating cycles with rated current.				P
	- I _N ≤ 32 A: 2 s on - 13 s off				N/A
	- I _N > 32 A: 2 s on - 28 s off				P
	During the test the circuit-breaker shall be operated as in normal use.				P
9.11.3	Conditions of the circuit breaker after the tests.				P
	Following the test 9.11.2 the sample shall not show:				P
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the Indicating device				P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6)				P
	- loosening of electrical or mechanical connections				P
	- seepage of sealing compound				N/A
	Moreover test current2,55 I _N _____A	160,7A			P
	Opening time not less 1 s or more than	[s]	[s]	[s]	P
	- 60 s (≤ 32 A)	-	-	-	N/A
	- 120 s (> 32 A)	31	16	24	P
	Dielectric strength reduced to 1500 V				P

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Clause	Requirement + Test	Result - Remark			Verdict	
9.12.11.2	Test at reduced short-circuit currents				P	
9.12.11.2.1	Test on all circuit-breakers				P	
9.12.11.2.1	Test at reduced short-circuit currents: Fig. 3				P	
	Test current:	Obtained			--	
	- 500 A or 10 In	I test= 644A			--	
	Test voltage 1,05 Un	Un = 251V			--	
	Power factor 0,93-0,98	0,96			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35mm			P	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A	
	I _{Peak} (A) max. value	862A	868A	883A	--	
	Sequence: 6 x "O" and 3 x "CO"	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤ 5,83kA ² s	5,83	3,22	3,82	P	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12	Verification of the circuit-breaker after short-circuit tests				P	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.= 457V. The circuit – breaker is in the open position	C₁₋₄ [mA]	C₁₋₅ [mA]	C₁₋₆ [mA]	P	
	The leakage current shall not exceed 2 mA	L1	0,002	0,001	0,001	P
		L2	0,001	0,001	0,001	
		L3	0,002	0,001	0,001	
		L4(N)	0,002	0,002	0,001	
	Electric strength test:				P	
	Test voltage 1500 V (see 9.7.2)				P	

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Clause	Requirement + Test	Result - Remark			Verdict	
	a)	1500V			P	
	b)	1500V			P	
	c)	1500V			P	
	d)				N/A	
	e) 2000 V				N/A	
9.12.11.2.2	Test „C₂“ Short-circuit test on circuit-breakers for use in IT systems (MC3 1P;C63;Icn=4500A)				P	
	Test current:				--	
	- 500 A or 1,2 times the upper limit of the standard range of instantaneous tripping (see table 2) whichever is the higher, but < 2500 A. When tripping exceed 20 In the current adjusted at 1,2 times the upper limit even when higher 2500 A	I test= 762A			--	
	Test voltage 1,05 Un	Un = 438V			--	
	Power factor 0,93-0,98	0,95			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			--	
	I _{Peak} (A) max. value	1,04A	1,05A	1,02A	--	
	Sequence: "O" + "CO" on each protected pole	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Shifted point 30 ° on the other protected pole	C₂₋₁	C₂₋₂	C₂₋₃	--	
	Max. I ² t ≤ 5,22kA ² s	L1	5,22	5,20	4,18	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	

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Clause	Requirement + Test	Result - Remark			Verdict
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n=457$ V. The circuit – breaker is in the open position	C₂₋₁ [mA]	C₂₋₂ [mA]	C₂₋₃ [mA]	--
	The leakage current shall not exceed 2 mA L1	0,001	0,001	0,002	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)				N/A
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A

9.12.11.2.2	Test „C₂“ Short-circuit test on circuit-breakers for use in IT systems (MC3 2P;C63;Icn=4500A)				P
	Test current:				--
	- 500 A or 1,2 times the upper limit of the standard range of instantaneous tripping (see table 2) whichever is the higher, but < 2500 A. When tripping exceed 20 In the current adjusted at 1,2 times the upper limit even when higher 2500 A	I test= 762A			--
	Test voltage 1,05 U_n	$U_n = 438V$			--
	Power factor 0,93-0,98	0,95			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			--
	I_{Peak} (A) max. value	1,06kA	1,05kA	-	--
	Sequence: "O" + "CO" on each protected pole	[kA ² s]	[kA ² s]	-	--
	Shifted point 30 ° on the other protected pole	C₂₋₄	C₂₋₅	-	--
	Max. $I^2t \leq 6,17kA^2s$	L1	L2	L3	P
		5,87	5,69	-	
		6,17	4,33	-	
		L3	-	-	

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Clause	Requirement + Test	Result - Remark			Verdict
	L4(N)	-	-	-	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n=457V$. The circuit – breaker is in the open position	C_{2-4} [mA]	C_{2-5} [mA]	- [mA]	--
	The leakage current shall not exceed 2 mA L1	0,001	0,001	-	P
	L2	0,001	0,002	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
9.12.11.2.2	Test „C₂“ Short-circuit test on circuit-breakers for use in IT systems (MC3 4P;C63;Icn=4500A)				P
	Test current:				--
	- 500 A or 1,2 times the upper limit of the standard range of instantaneous tripping (see table 2) whichever is the higher, but < 2500 A. When tripping exceed 20 In the current adjusted at 1,2 times the upper limit even when higher 2500 A	I test= 762A			--
	Test voltage 1,05 U_n	$U_n = 438V$			--
	Power factor 0,93-0,98	0,95			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" = 35mm			--

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Clause	Requirement + Test	Result - Remark			Verdict	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____ x _____ x _____ mm			--	
	I_{Peak} (A) max. value	1,05kA	-	-	--	
	Sequence: "O" + "CO" on each protected pole	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Shifted point 30 ° on the other protected pole	C₂₋₆	-	-	--	
	Max. $I^2t \leq 5,53kA^2s$	L1	5,53	-	-	P
		L2	4,56	-	-	
		L3	4,58	-	-	
		L4(N)	3,26	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n=457$ V. The circuit – breaker is in the open position	C₂₋₆ [mA]	- [mA]	- [mA]	--	
	The leakage current shall not exceed 2 mA	L1	0,002	-	-	P
		L2	0,001	-	-	
		L3	0,002	-	-	
		L4(N)	0,001	-	-	
	Electric strength test:				P	
	Test voltage 1500 V (see 9.7.2)				P	
	a)	1500V			P	
	b)	1500V			P	
	c)	1500V			P	
	d)				N/A	
	e) 2000 V				N/A	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 3 samples (MC3 1P;C63;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₊D₁₋₁	D₀₊D₁₋₂	D₀₊D₁₋₃	P
	I _N (A)	63A			--
	Sect. (mm ²)	16mm ²			--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			--
9.10.2	Test of time-current characteristic				P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	71,2A			P
	- 1 h (I _N ≤ 63 A)				P
	- 2 h (I _N > 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I _N (A)	91,4A			P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	92	81	114	P
	- 2h (> 63 A)	-	-	-	P
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	160,7A			P
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)	-	-	-	N/A
	- 120 s (> 32 A)	26	21	28	P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____A			--
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $5 I_N$ (A), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	315A			P
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s	1	1	1	P
	Test current $10 I_N$ (A), starting from cold	641A			P
	Tripping less than 0,1 s	11ms	11ms	10ms	P
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C			P
	Test current $1,13 I_N$ (A)	71,2A			P

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s	119,7A			P
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	70	64	92	P
	- 2h (> 63 A)	-	-	-	N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			P
	Test current I_N (A)	63A			P
	No tripping within				--
	- 1h (≤ 63 A)				P
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Tests „D1“	D_{0+D1-1} D_{0+D1-2} D_{0+D1-3}	
8.9	Resistance to mechanical shock and impact		P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.13.1	Mechanical shock		P
	- 50 falls on two sides of vertical board C		P
	- Vertical board turned 90°		P
	- 50 falls on two sides of vertical board C		P
	During the test the circuit-breakers shall not open		P
9.13.2	Mechanical impact		P
9.13.2.2	All types:		P
	- Impact test: 10 blows-height 10 cm, no damage		P
9.13.2.3	Screw-in types:		N/A
	- Torque 2,5 Nm for 1 min, no damage		N/A
9.13.2.4	CB intended to be mounted on a rail		P
	- downward vertical 50 N for 1 min		P
	- upward vertical 50 N for 1 min, no damage		P
9.13.2.5	Plug-in types		N/A
	The circuit-breaker are mounted in their normal position, complete with plug-in base but without cables and any cover plate		N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 16).		N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.		N/A
9.12.11.3	Test at 1500 A:		P
	Prospective current of 1500 A - power factor 0,93 to 0,98		P
	Prospective current obtained (A)	1,55kA	--
	Power factor	0,96	--
	Test voltage 1,05 Un	252V	--
	Test circuit: figure	3	--
	T (min)	3min	--

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Clause	Requirement + Test	Result - Remark			Verdict	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =35mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			--	
	Sequence	6O-2CO			--	
	I_{Peak} (A) max. value	1,93kA	1,95kA	2,00kA	--	
	$I^2t \leq$ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. $I^2t \leq 11,9kA^2s$	L1	11,5	11,9	10,9	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
		1O in test circuit specified for three-pole circuit-breakers Test voltage:438V Prospective current obtained:1540A Power factor:0,96				
	I_{Peak} (A) max. value	1,76kA				
		L1	7,02kA ² s			
		L2	3,26kA ² s			
		L3	7,05kA ² s			
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = 457V$. The circuit – breaker is in the open position	$D_{0+D_{1-1}}$ [mA]	$D_{0+D_{1-2}}$ [mA]	$D_{0+D_{1-3}}$ [mA]	--	
	The leakage current shall not exceed 2 mA	L1	0,001	0,001	0,001	P
		L2	-	-	-	
		L3	-	-	-	

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Clause	Requirement + Test	Result - Remark			Verdict
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)				N/A
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		D ₀₊ D ₁₋₁ [s]	D ₀₊ D ₁₋₂ [s]	D ₀₊ D ₁₋₃ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	117	64	44	P

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 3 samples (MC3 4P;C63;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₊D₁₋₄	D₀₊D₁₋₅	D₀₊D₁₋₆	P
	I _N (A)	63A			--
	Sect. (mm ²)	16mm ²			--
	Instantaneous tripping current	<input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			--
9.10.2	Test of time-current characteristic				P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	71,2A			P
	- 1 h (I _N ≤ 63 A)				P
	- 2 h (I _N > 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I _N (A)	91,4A			P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	121	94	111	P
	- 2h (> 63 A)	-	-	-	P
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	160,7A			P
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)	-	-	-	N/A
	- 120 s (> 32 A)	30	24	27	P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current $3I_N$ (A), starting from cold	_____A			--
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $5 I_N$ (A), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	315A			P
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s	1	1	1	P
	Test current $10 I_N$ (A), starting from cold	644A			P
	Tripping less than 0,1 s	10ms	12ms	13ms	P
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				P
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	109,6A			P
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	102	84	98	P
	- 2h (> 63 A)	-	-	-	N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C			P
	Test current $1,13 I_N$ (A)	71,2A			P
	- Passed for 1h				P

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 2h				N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	119,7A			P
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	94	76	88	P
	- 2h (> 63 A)	-	-	-	N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			P
	Test current I _N (A)	63A			P
	No tripping within				--
	- 1h (≤ 63 A)				P
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Tests „D1“	D₀₊D₁₋₄ D₀₊D₁₋₅ D₀₊D₁₋₆	
8.9	Resistance to mechanical shock and impact		P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.13.1	Mechanical shock		P
	- 50 falls on two sides of vertical board C		P
	- Vertical board turned 90°		P
	- 50 falls on two sides of vertical board C		P
	During the test the circuit-breakers shall not open		P
9.13.2	Mechanical impact		P
9.13.2.2	All types:		P
	- Impact test: 10 blows-height 10 cm, no damage		P
9.13.2.3	Screw-in types:		N/A
	- Torque 2,5 Nm for 1 min, no damage		N/A
9.13.2.4	CB intended to be mounted on a rail		P
	- downward vertical 50 N for 1 min		P
	- upward vertical 50 N for 1 min, no damage		P
9.13.2.5	Plug-in types		N/A
	The circuit-breaker are mounted in their normal position, complete with plug-in base but without cables and any cover plate		N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 16).		N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.		N/A
9.12.11.3	Test at 1500 A:		P
	Prospective current of 1500 A - power factor 0,93 to 0,98		P
	Prospective current obtained (A)	1,54kA	--
	Power factor	0,96	--
	Test voltage 1,05 Un	438V	--
	Test circuit: figure	3	--
	T (min)	3min	--

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =35mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			--	
	Sequence	6O-3CO			--	
	I_{Peak} (A) max. value	1,99kA	2,00kA	1,98kA	--	
	$I^2t \leq$ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. $I^2t \leq 17,5kA^2s$	L1	10,3	11,6	17,5	P
		L2	3,83	3,13	4,17	
		L3	10,8	11,5	11,1	
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times $U_n = 457V$. The circuit – breaker is in the open position	$D_{O+D_{1-4}}$ [mA]	$D_{O+D_{1-5}}$ [mA]	$D_{O+D_{1-6}}$ [mA]	--	
	The leakage current shall not exceed 2 mA	L1	0,001	0,002	0,001	P
		L2	0,001	0,002	0,001	
		L3	0,003	0,001	0,001	
		L4(N)	0,002	0,001	0,001	
	Electric strength test:				P	
	Test voltage 1500 V (see 9.7.2)				P	
	a)	1500V			P	
	b)	1500V			P	
	c)	1500V			P	
	d)				N/A	
	e) 2000 V				N/A	
	Test current 0.85x non-tripping current (1,13 I_n)	60,5A			P	

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		D ₀₊ D ₁₋₄ [s]	D ₀₊ D ₁₋₅ [s]	D ₀₊ D ₁₋₆ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	21	331	411	P

For the neutral of a four-pole circuit-breaker is not marked by the manufacturer, the tests are repeated with three new samples, using successively each pole as neutral in turn					
	Tests „D ₁ “	D ₀₊ D ₁₋₇	D ₀₊ D ₁₋₈	D ₀₊ D ₁₋₉	
8.9	Resistance to mechanical shock and impact				P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use				P
9.13.1	Mechanical shock				P
	- 50 falls on two sides of vertical board C				P
	- Vertical board turned 90°				P
	- 50 falls on two sides of vertical board C				P
	During the test the circuit-breakers shall not open				P
9.13.2	Mechanical impact				P
9.13.2.2	All types:				P
	- Impact test: 10 blows-height 10 cm, no damage				P
9.13.2.3	Screw-in types:				N/A
	- Torque 2,5 Nm for 1 min, no damage				N/A
9.13.2.4	CB intended to be mounted on a rail				P
	- downward vertical 50 N for 1 min				P
	- upward vertical 50 N for 1 min, no damage				P
9.13.2.5	Plug-in types				N/A
	The circuit-breaker are mounted in their normal position, complete with plug-in base but without cables and any cover plate				N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 16).				N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.11.3	Test at 1500 A:				P
	Prospective current of 1500 A - power factor 0,93 to 0,98				P
	Prospective current obtained (A)	1,54kA			--
	Power factor	0,96			--
	Test voltage 1,05 Un	438V			--
	Test circuit: figure	3			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =35mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			--
	Sequenece	6O-3CO			--
	I_{Peak} (A) max. value	1,95kA	1,98kA	2,01kA	--
	$I^2t \leq$ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. $I^2t \leq 14,6kA^2s$	L1 8,90	9,33	10,3	P
		L2 3,68	3,28	2,96	
		L3 12,5	14,6	14,2	
		L4(N) -	-	-	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.= 457V. The circuit – breaker is in the open position	$D_{0+D_{1-7}}$ [mA]	$D_{0+D_{1-8}}$ [mA]	$D_{0+D_{1-9}}$ [mA]	--
	The leakage current shall not exceed 2 mA	L1 0,002	0,001	0,001	P
		L2 0,002	0,003	0,002	
		L3 0,001	0,002	0,002	
		L4(N) 0,001	0,002	0,001	

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Clause	Requirement + Test	Result - Remark			Verdict
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		D₀₊D₁₋₇ [s]	D₀₊D₁₋₈ [s]	D₀₊D₁₋₉ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	49	41	111	P

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 1 samples (MC3 1P;C50;Icn=4500A) (MC3 1P;C40;Icn=4500A) (MC3 1P;C32;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₁	D₀₋₂	D₀₋₃	P
	I _N (A)	50A	40A	32A	--
	Sect. (mm ²)	10mm ²	10mm ²	6mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	56,5A	45,2A	36,2A	P
	- 1 h (I _N ≤ 63 A)				P
	- 2 h (I _N > 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I _N (A)	72,5A	58,0A	46,4A	P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	66	81	114	P
	- 2h (> 63 A)	-	-	-	P
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	127,5A	102A	81,6A	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)	-	-	31	P
	- 120 s (> 32 A)	19	23	-	P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____A			--
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $5 I_N$ (A), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	250A	200A	160A	P
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s	1	1	1	P
	Test current $10 I_N$ (A), starting from cold	503A	403A	330A	P
	Tripping less than 0,1 s	11ms	12ms	12ms	P
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T =-5°C			P
	Test current $1,13 I_N$ (A)	56,5A	45,2A	36,2A	P

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s	95,0A	76,0A	60,8A	P
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	42	60	84	P
	- 2h (> 63 A)	-	-	-	N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			P
	Test current I_N (A)	50A	40A	32A	P
	No tripping within				--
	- 1h (≤ 63 A)				P
	- 2h (> 63 A)				N/A

	TESTS „D“ 1 samples (MC3 1P;C25;Icn=4500A) (MC3 1P;C20;Icn=4500A) (MC3 1P;C16;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₄	D₀₋₅	D₀₋₆	P
	I_N (A)	25A	20A	16A	--
	Sect. (mm ²)	4mm ²	2,5mm ²	2,5mm ²	--
	Instantaneous tripping current	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				P
9.10.2.1	Test current $1,13 I_N$ (A) starting from cold for:	28,3A	22,6A	18,1A	P
	- 1 h ($I_N \leq 63$ A)				P
	- 2 h ($I_N > 63$ A)				N/A
	No tripping				P
	Then steadily increased within 5 s to $1,45 I_N$ (A)	36,3A	29,0A	23,2A	P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	97	71	77	P
	- 2h (> 63 A)	-	-	-	P
9.10.2.2	Test current $2,55 I_N$ (A) starting from cold for:	63,8A	51,0A	40,8A	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	--

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Clause	Requirement + Test	Result - Remark			Verdict
	- 60 s (≤ 32 A)	28	17	24	P
	- 120 s (> 32 A)	-	-	-	P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U_n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____A			--
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $5 I_N$ (A), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	125A	100A	80A	P
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s	1	1	1	P
	Test current $10 I_N$ (A), starting from cold	253A	206A	162A	P
	Tripping less than 0,1 s	12ms	7ms	7ms	P
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Tripping within	[min]	[min]	[min]	--
	- 1h (\leq 63 A)				N/A
	- 2h ($>$ 63 A)				N/A
	Test current 1,2 I _t (A), (three pole or four pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (\leq 63 A)				N/A
	- 2h ($>$ 63 A)				N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C			P
	Test current 1,13 I _N (A)	28,3A	22,6A	18,1A	P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s	47,5A	38,0A	30,4A	P
	Tripping within	[s]	[s]	[s]	--
	- 1h (\leq 63 A)	74	56	62	P
	- 2h ($>$ 63 A)	-	-	-	N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			P
	Test current I _N (A)	25A	20A	16A	P
	No tripping within				--
	- 1h (\leq 63 A)				P
	- 2h ($>$ 63 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 1 samples (MC3 1P;C10;Icn=4500A) (MC3 1P;C6;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₇	D₀₋₈	-	P
	I _N (A)	10A	6A	-	--
	Sect. (mm ²)	1,5mm ²	1,0mm ²	-	--
	Instantaneous tripping current	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				P
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:	11,3A	6,80A	-	P
	- 1 h (I _N ≤ 63 A)				P
	- 2 h (I _N > 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I _N (A)	14,5A	8,7A	-	P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	86	69	-	P
	- 2h (> 63 A)	-	-	-	P
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:	25,5A	15,3A	-	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)	26	21	-	P
	- 120 s (> 32 A)	-	-	-	P
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current $3I_N$ (A), starting from cold	_____A			--
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $5 I_N$ (A), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.3.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	50A	30A	-	P
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s	1	1	-	P
	Test current $10 I_N$ (A), starting from cold	101A	61A	-	P
	Tripping less than 0,1 s	9ms	9ms	-	P
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C			P
	Test current $1,13 I_N$ (A)	11,3A	6,80A	-	P
	- Passed for 1h				P

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 2h				N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s	19,0A	11,4A	-	P
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	71	54	-	P
	- 2h (> 63 A)	-	-	-	N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			P
	Test current I_N (A)	10A	6A	-	P
	No tripping within				--
	- 1h (≤ 63 A)				P
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 1 samples (MC3 1P;B63;Icn=4500A) (MC3 4P;B63;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₉	D₀₋₁₀	-	P
	I _N (A)	63A	63A	-	--
	Sect. (mm ²)	16mm ²	16mm ²	-	--
	Instantaneous tripping current	<input checked="" type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:				N/A
	- 1 h (I _N ≤ 63 A)				N/A
	- 2 h (I _N > 63 A)				N/A
	No tripping				N/A
	Then steadily increased within 5 s to 1,45 I _N (A)				N/A
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:				N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current $3I_N$ (A), starting from cold	189A	189A	-	--
	Opening time:	[s]	[s]	[s]	P
	$\geq 0,1$ s	4	6	-	P
	Test current $5 I_N$ (A), starting from cold	318A	329A	-	P
	Tripping less than 0,1 s	13ms	13ms	-	P
9.10.3.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold				N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $10 I_N$ (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C			N/A
	Test current $1,13 I_N$ (A)				N/A
	- Passed for 1h				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 2h				N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s				N/A
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			N/A
	Test current I_N (A)				N/A
	No tripping within				--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

	TESTS „D“ 1 samples (MC3 1P;B50;Icn=4500A) (MC3 1P;B40;Icn=4500A) (MC3 1P;B32;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₁₁	D₀₋₁₂	D₀₋₁₃	P
	I_N (A)	50A	40A	32A	--
	Sect. (mm ²)	10mm ²	10mm ²	6mm ²	--
	Instantaneous tripping current	<input checked="" type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				N/A
9.10.2.1	Test current $1,13 I_N$ (A) starting from cold for:				N/A
	- 1 h ($I_N \leq 63$ A)				N/A
	- 2 h ($I_N > 63$ A)				N/A
	No tripping				N/A
	Then steadily increased within 5 s to $1,45 I_N$ (A)				N/A
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.2.2	Test current $2,55 I_N$ (A) starting from cold for:				N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- 120 s (> 32 A)				N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U_n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	150A	120A	96A	--
	Opening time:	[s]	[s]	[s]	P
	$\geq 0,1$ s	5	6	5	P
	Test current $5 I_N$ (A), starting from cold	253A	206A	162A	P
	Tripping less than 0,1 s	12ms	8ms	68ms	P
9.10.3.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold				N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $10 I_N$ (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--

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Clause	Requirement + Test	Result - Remark	Verdict
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
	Test current 1,2 I _t (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C	N/A
	Test current 1,13 I _N (A)		N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s		N/A
	Tripping within	[s] [s] [s]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C	N/A
	Test current I _N (A)		N/A
	No tripping within		--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 1 samples (MC3 1P;B25;Icn=4500A) (MC3 1P;B20;Icn=4500A) (MC3 1P;B16;Icn=4500A)				
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₁₄	D₀₋₁₅	D₀₋₁₆	P
	I _N (A)	25A	20A	16A	--
	Sect. (mm ²)	4mm ²	2,5mm ²	2,5mm ²	--
	Instantaneous tripping current	<input checked="" type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				N/A
9.10.2.1	Test current 1,13 I _N (A) starting from cold for:				N/A
	- 1 h (I _N ≤ 63 A)				N/A
	- 2 h (I _N > 63 A)				N/A
	No tripping				N/A
	Then steadily increased within 5 s to 1,45 I _N (A)				N/A
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.2.2	Test current 2,55 I _N (A) starting from cold for:				N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U _n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current $3I_N$ (A), starting from cold	75A	60A	48A	--
	Opening time:	[s]	[s]	[s]	P
	$\geq 0,1$ s	4	7	8	P
	Test current $5 I_N$ (A), starting from cold	125A	101A	81A	P
	Tripping less than 0,1 s	9ms	9ms	16ms	P
9.10.3.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold				N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $10 I_N$ (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	Test current $1,2 I_t$ (A), (three pole or four pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics				N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C			N/A
	Test current $1,13 I_N$ (A)				N/A
	- Passed for 1h				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- Passed for 2h				N/A
	Current is then steadily increased to $1,9 I_N$ (A) within 5s				N/A
	Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C			N/A
	Test current I_N (A)				N/A
	No tripping within				--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

TESTS „D“ 1 samples (MC3 1P;B10;Icn=4500A) (MC3 1P;B6;Icn=4500A)					
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests „D₀“	D₀₋₁₇	D₀₋₁₈	-	P
	I_N (A)	10A	6A	-	--
	Sect. (mm ²)	1,5mm ²	1,0mm ²	-	--
	Instantaneous tripping current	<input checked="" type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	--
9.10.2	Test of time-current characteristic				N/A
9.10.2.1	Test current $1,13 I_N$ (A) starting from cold for:				N/A
	- 1 h ($I_N \leq 63$ A)				N/A
	- 2 h ($I_N > 63$ A)				N/A
	No tripping				N/A
	Then steadily increased within 5 s to $1,45 I_N$ (A)				N/A
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A
9.10.2.2	Test current $2,55 I_N$ (A) starting from cold for:				N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- 120 s (> 32 A)				N/A
9.10.3	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.3.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage U_n (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.3.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	30A	18A	-	--
	Opening time:	[s]	[s]	[s]	P
	$\geq 0,1$ s	4	6	-	P
	Test current $5 I_N$ (A), starting from cold	51A	30A	-	P
	Tripping less than 0,1 s	14ms	14ms	-	P
9.10.3.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold				N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $10 I_N$ (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.3.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____A			N/A
	Opening time:	[s]	[s]	[s]	--
	$\geq 0,1$ s				N/A
	Test current $20 I_N$ (A) or to the maximum instantaneous tripping current(see cl. 6, item j), starting from cold	_____A			N/A
	Tripping less than 0,1 s				N/A
9.10.4	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers:				N/A
	Test current $1,1 I_t$ (A), (two pole) starting from cold	_____A			N/A
	Tripping within	[min]	[min]	[min]	--

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Clause	Requirement + Test	Result - Remark	Verdict
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
	Test current 1,2 I _t (A), (three pole or four pole) starting from cold	_____A	N/A
	Tripping within	[min] [min] [min]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
9.10.5	Test of effect of ambient temperature on the tripping characteristics		N/A
	a) Ambient temperature of (35 ± 2) K below the ambient air reference temperature	T = -5°C	N/A
	Test current 1,13 I _N (A)		N/A
	- Passed for 1h		N/A
	- Passed for 2h		N/A
	Current is then steadily increased to 1,9 I _N (A) within 5s		N/A
	Tripping within	[s] [s] [s]	--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A
	b) Ambient temperature of (10 ± 2) K above the ambient air reference temperature	40°C	N/A
	Test current I _N (A)		N/A
	No tripping within		--
	- 1h (\leq 63 A)		N/A
	- 2h ($>$ 63 A)		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1“ 3 + 4 samples (MC3 1P;C63;Icn=4500A)				
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E₁₋₁	E₁₋₂	E₁₋₃	P
	Service short-circuit capacity (Ics).....:	4500A			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	252V			--
	Prospective current.....:	4500A			--
	Prospective current obtained.....:	4580A			--
	Power factor	0,75~0,80			--
	Power factor obtained	0,77			--
	Sequence	O-t-O-t-CO			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--
	I _{Peak} (A) max. value	2,89kA	3,07kA	3,00kA	--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤28,9kA ² s	L1	L2	L3	P
		27,0	25,6	28,9	
		-	-	-	
		L4(N)	-	-	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₁ [mA]	E₁₋₂ [mA]	E₁₋₃ [mA]	--

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Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,002	0,002	0,002	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)				N/A
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		E₁₋₁ [s]	E₁₋₂ [s]	E₁₋₃ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	45	82	75	P

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Clause	Requirement + Test	Result - Remark			Verdict	
9.12.11.4.2	Test „E1“(Test at service short-circuit capacity) three phase tests for single circuit-breakers (MC3 1P;C63;Icn=4500A)	E ₁₋₄	E ₁₋₅	E ₁₋₆	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	438V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4580A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained.....:	0,78			--	
	Sequence	See table 21			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			N/A	
	I _{Peak} (A) max. value	2,95kA			--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	P	
	Max. I ² t ≤24,4kA ² s	Operation 1	24,4	3,46	15,7	
		Operation 2	-	22,5	22,4	
		Operation 3	17,4	-	18,9	
		Operation 4	20,3	21,4	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E ₁₋₄ [mA]	E ₁₋₅ [mA]	E ₁₋₆ [mA]	--	

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Clause	Requirement + Test	Result - Remark			Verdict	
	The leakage current shall not exceed 2 mA	L1	0,001	0,002	0,001	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
	Electric strength test:					P
	Test voltage 1500 V (see 9.7.2)					P
	a)	1500V				P
	b)					N/A
	c)	1500V				P
	d)					N/A
	e) 2000 V					N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A				P
	- Passed for 1h					P
	- Passed for 2h					N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A				P
		E ₁₋₄ [s]	E ₁₋₅ [s]	E ₁₋₆ [s]	--	
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	67	59	64	P	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1“ 3 + 4 samples (MC3 1P;C6;Icn=4500A)				
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-7	E1-8	E1-9	P
	Service short-circuit capacity (Ics).....:	4500A			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	252V			--
	Prospective current.....:	4500A			--
	Prospective current obtained.....:	4580A			--
	Power factor	0,75~0,80			--
	Power factor obtained	0,77			--
	Sequence	O-t-O-t-CO			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--
	I _{Peak} (A) max. value	2,40kA	2,40kA	2,27kA	--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤16,1kA ² s	L1	L2	L3	P
		16,1	13,8	12,0	
		-	-	-	
		L4(N)	-	-	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-7 [mA]	E1-8 [mA]	E1-9 [mA]	--

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,002	0,001	0,001	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)				N/A
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A			P
		E₁₋₇ [s]	E₁₋₈ [s]	E₁₋₉ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	61	52	74	P

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.11.4.2	Test „E1“ (Test at service short-circuit capacity) three phase tests for single circuit-breakers (MC3 1P;C6;Icn=4500A)	E₁₋₁₀	E₁₋₁₁	E₁₋₁₂	P
	Service short-circuit capacity (Ics).....:	4500A			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	438V			--
	Prospective current.....:	4500A			--
	Prospective current obtained.....:	4580A			--
	Power factor	0,75~0,80			--
	Power factor obtained.....:	0,78			--
	Sequence	See table 21			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			N/A
	I _{Peak} (A) max. value	2,23kA			--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	P
	Max. I ² t ≤18,4kA ² s	18,4	5,56	10,2	
	Operation 1	-	0,09	0,10	
	Operation 2	1,31	-	1,42	
	Operation 3	11,1	11,7	-	
	Operation 4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₁₀ [mA]	E₁₋₁₁ [mA]	E₁₋₁₂ [mA]	--

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	The leakage current shall not exceed 2 mA	L1	0,002	0,001	0,001	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
	Electric strength test:					P
	Test voltage 1500 V (see 9.7.2)					P
	a)	1500V				P
	b)					N/A
	c)	1500V				P
	d)					N/A
	e) 2000 V					N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A				P
	- Passed for 1h					P
	- Passed for 2h					N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A				P
		E₁₋₁₀ [s]	E₁₋₁₁ [s]	E₁₋₁₂ [s]	--	
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	77	51	58	P	

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC3 2P;C63;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-13	E1-14	E1-15	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	434V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4602A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,76			--	
	Sequence	O-t-O-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	3,06kA	3,10kA	3,15kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤31,1kA ² s	L1	L2	L3	P	
		28,8	27,3	30,3		
		L2	29,8	28,5		31,1
		L3	-	-		-
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-13 [mA]	E1-14 [mA]	E1-15 [mA]	--	

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,001	0,001	0,002	P
	L2	0,001	0,001	0,002	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		E₁₋₁₃ [s]	E₁₋₁₄ [s]	E₁₋₁₅ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	60	79	78	P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC3 2P;C6;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E₁₋₁₆	E₁₋₁₇	E₁₋₁₈	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	434V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4602A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,76			--	
	Sequence	O-t-O-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	2,33kA	2,51kA	2,47kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤22,8kA ² s	L1	18,2	19,7	22,6	P
		L2	18,3	20,3	22,8	
		L3	-	-	-	
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₁₆ [mA]	E₁₋₁₇ [mA]	E₁₋₁₈ [mA]	--	

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,002	0,001	0,001	P
	L2	0,002	0,001	0,001	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A			P
		E₁₋₁₆ [s]	E₁₋₁₇ [s]	E₁₋₁₈ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	55	68	47	P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC3 4P;C63;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-19	E1-20	E1-21	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	438V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4580A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,78			--	
	Sequence	O-t-CO-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			--	
	I _{Peak} (A) max. value	2,97kA	3,20kA	3,06kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤64,6kA ² s	L1	L2	L3	P	
		28,8	40,8	21,8		
		L2	40,5	47,4		64,6
		L3	29,2	25,8		34,6
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-19 [mA]	E1-20 [mA]	E1-21 [mA]	--	

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,001	0,002	0,001	P
	L2	0,001	0,002	0,002	
	L3	0,002	0,001	0,001	
	L4(N)	0,002	0,001	0,001	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		E₁₋₁₉ [s]	E₁₋₂₀ [s]	E₁₋₂₁ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	56	62	54	P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC3 4P;C6;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-22	E1-23	E1-24	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	438V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4580A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,78			--	
	Sequence	O-t-CO-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	2,32kA	3,01kA	2,85kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤39,6kA ² s	L1	L2	L3	P	
		6,75	34,3	8,94		
		L2	13,5	21,4		33,3
		L3	12,2	21,8		39,6
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-22 [mA]	E1-23 [mA]	E1-24 [mA]	--	

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,002	0,001	0,001	P
	L2	0,002	0,001	0,002	
	L3	0,001	0,001	0,001	
	L4(N)	0,001	0,001	0,001	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A			P
		E₁₋₂₂ [s]	E₁₋₂₃ [s]	E₁₋₂₄ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	76	41	53	P

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1“ 3 + 4 samples (MC5 1P;C63;Icn=4500A)				
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-25	E1-26	E1-27	P
	Service short-circuit capacity (Ics).....:	4500A			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	252V			--
	Prospective current.....:	4500A			--
	Prospective current obtained.....:	4580A			--
	Power factor	0,75~0,80			--
	Power factor obtained	0,77			--
	Sequence	O-t-O-t-CO			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			--
	I _{Peak} (A) max. value	3,33kA	3,08kA	2,94kA	--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤34,2kA ² s	L1 34,2	28,9	30,6	P
		L2 -	-	-	
		L3 -	-	-	
		L4(N) -	-	-	
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-25 [mA]	E1-26 [mA]	E1-27 [mA]	--

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,001	0,002	0,001	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)				N/A
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		E₁₋₂₅ [s]	E₁₋₂₆ [s]	E₁₋₂₇ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	63	72	66	P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
9.12.11.4.2	Test „E1“(Test at service short-circuit capacity) three phase tests for single circuit-breakers (MC5 1P;C63;Icn=4500A)	E₁₋₂₈	E₁₋₂₉	E₁₋₃₀	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	438V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4580A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained.....:	0,78			--	
	Sequence	See table 21			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			N/A	
	I _{Peak} (A) max. value	3,26kA			--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	P	
	Max. I ² t ≤33,9kA ² s	33,9	6,21	19,3		
	Operation 1	-	24,0	24,2		
	Operation 2	22,7	-	23,2		
	Operation 3	24,3	7,04	-		
	Operation 4					
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P	
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₂₈ [mA]	E₁₋₂₉ [mA]	E₁₋₃₀ [mA]	--	

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	The leakage current shall not exceed 2 mA	L1	0,002	0,002	0,001	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
	Electric strength test:					P
	Test voltage 1500 V (see 9.7.2)					P
	a)	1500V				P
	b)					N/A
	c)	1500V				P
	d)					N/A
	e) 2000 V					N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A				P
	- Passed for 1h					P
	- Passed for 2h					N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A				P
		E₁₋₂₈ [s]	E₁₋₂₉ [s]	E₁₋₃₀ [s]	--	
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	46	73	69	P	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1“ 3 + 4 samples (MC5 1P;C6;Icn=4500A)				
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E₁₋₃₁	E₁₋₃₂	E₁₋₃₃	P
	Service short-circuit capacity (Ics).....:	4500A			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	252V			--
	Prospective current.....:	4500A			--
	Prospective current obtained.....:	4580A			--
	Power factor	0,75~0,80			--
	Power factor obtained	0,77			--
	Sequence	O-t-O-t-CO			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--
	I _{Peak} (A) max. value	2,97kA	2,55kA	2,72kA	--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--
	Max. I ² t ≤33,0kA ² s	L1 33,0	L2 14,8	L3 23,5	P
		L2 -	L3 -	L4(N) -	
		L3 -			
		L4(N) -			
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₃₁ [mA]	E₁₋₃₂ [mA]	E₁₋₃₃ [mA]	--

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Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,001	0,001	0,002	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)				N/A
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A			P
		E₁₋₃₁ [s]	E₁₋₃₂ [s]	E₁₋₃₃ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	70	48	57	P

IEC 60898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.11.4.2	Test „E1“(Test at service short-circuit capacity) three phase tests for single circuit-breakers (MC5 1P;C6;Icn=4500A)	E₁₋₃₄	E₁₋₃₅	E₁₋₃₆	P
	Service short-circuit capacity (Ics).....:	4500A			--
	Test circuit: figure	3			--
	Test voltage 1,05 Un	438V			--
	Prospective current.....:	4500A			--
	Prospective current obtained.....:	4580A			--
	Power factor	0,75~0,80			--
	Power factor obtained.....:	0,78			--
	Sequence	See table 21			--
	T (min)	3min			--
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			N/A
	I _{Peak} (A) max. value	2,13kA			--
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	P
	Max. I ² t ≤11,4kA ² s	12,5	1,18	7,92	
	Operation 1	-	4,54	4,40	
	Operation 2	11,1	-	11,4	
	Operation 3	8,22	8,40	-	
	Operation 4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				--
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₃₄ [mA]	E₁₋₃₅ [mA]	E₁₋₃₆ [mA]	--

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Clause	Requirement + Test	Result - Remark			Verdict	
	The leakage current shall not exceed 2 mA	L1	0,001	0,002	0,001	P
		L2	-	-	-	
		L3	-	-	-	
		L4(N)	-	-	-	
	Electric strength test:					P
	Test voltage 1500 V (see 9.7.2)					P
	a)	1500V				P
	b)					N/A
	c)	1500V				P
	d)					N/A
	e) 2000 V					N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A				P
	- Passed for 1h					P
	- Passed for 2h					N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A				P
		E₁₋₃₄ [s]	E₁₋₃₅ [s]	E₁₋₃₆ [s]	--	
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	65	77	49	P	

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC5 2P;C63;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-37	E1-38	E1-39	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	434V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4602A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,76			--	
	Sequence	O-t-O-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	3,18kA	3,18kA	3,03kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤30,9kA ² s	L1	L2	L3	P	
		26,8	30,5	24,3		
		L2	27,2	30,9		24,7
		L3	-	-		-
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-37 [mA]	E1-38 [mA]	E1-39 [mA]	--	

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Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,001	0,002	0,002	P
	L2	0,001	0,001	0,001	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		E₁₋₃₇ [s]	E₁₋₃₈ [s]	E₁₋₃₉ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	61	74	43	P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC5 2P;C6;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-40	E1-41	E1-42	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	434V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4602A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,76			--	
	Sequence	O-t-O-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	2,25kA	2,06kA	2,01kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤19,2kA ² s	L1	L2	L3	P	
		18,8	11,8	10,1		
		L2	19,2	12,1		10,4
		L3	-	-		-
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-40 [mA]	E1-41 [mA]	E1-42 [mA]	--	

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Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,002	0,001	0,001	P
	L2	0,001	0,001	0,001	
	L3	-	-	-	
	L4(N)	-	-	-	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A			P
		E₁₋₄₀ [s]	E₁₋₄₁ [s]	E₁₋₄₂ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	71	50	69	P

IEC 60898-1						
Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC5 4P;C63;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E1-43	E1-44	E1-45	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	438V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4580A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,78			--	
	Sequence	O-t-CO-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	3,23kA	3,30kA	3,35kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤32,8kA ² s	L1	L2	L3	P	
		28,3	32,8	24,2		
		L2	29,1	16,0		32,5
		L3	26,1	25,1		27,9
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E1-43 [mA]	E1-44 [mA]	E1-45 [mA]	--	

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Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,001	0,002	0,001	P
	L2	0,001	0,001	0,001	
	L3	0,001	0,001	0,001	
	L4(N)	0,001	0,002	0,002	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	60,5A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	100,5A			P
		E₁₋₄₃ [s]	E₁₋₄₄ [s]	E₁₋₄₅ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	85	64	77	P

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Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „E1“ 3 + 4 samples (MC5 4P;C6;Icn=4500A)					
9.12.11.4.2	Test E1: Test at service short-circuit capacity	E₁₋₄₆	E₁₋₄₇	E₁₋₄₈	P	
	Service short-circuit capacity (Ics).....:	4500A			--	
	Test circuit: figure	3			--	
	Test voltage 1,05 Un	438V			--	
	Prospective current.....:	4500A			--	
	Prospective current obtained.....:	4580A			--	
	Power factor	0,75~0,80			--	
	Power factor obtained	0,78			--	
	Sequence	O-t-CO-t-CO			--	
	T (min)	3min			--	
9.12.9.2	Test in free air copper wire F': <input type="checkbox"/> 0,12 mm / <input checked="" type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input checked="" type="checkbox"/> 1,5 Ohm	"a" =45mm			--	
9.12.9.3	Test in enclosures copper wire F': <input type="checkbox"/> 0,12 mm / <input type="checkbox"/> 0,16 mm resistor R' : <input type="checkbox"/> 0,75 Ohm / <input type="checkbox"/> 1,5 Ohm	dimensions of enclosure: _____ x _____ x _____ mm			--	
	I _{Peak} (A) max. value	2,10kA	2,07kA	2,08kA	--	
	I ² t ≤ _____ kA ² s	[kA ² s]	[kA ² s]	[kA ² s]	--	
	Max. I ² t ≤14,5kA ² s	L1	L2	L3	P	
		8,28	11,5	14,3		
		L2	14,5	11,6		7,33
		L3	9,27	8,09		12,1
		L4(N)	-	-	-	
	- No permanent arcing				P	
	- No flash-over between poles or between poles and frame				P	
	- No blowing of the fuses F and F'				P	
	- Polyethylene foil shows no holes				P	
	After the test:				--	
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					
	a) leakage current across open contacts, according to 9.7.5.3, each pole is supplied at a voltage 1,1 times Un.=457V. The circuit – breaker is in the open position	E₁₋₄₆ [mA]	E₁₋₄₇ [mA]	E₁₋₄₈ [mA]	--	

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Clause	Requirement + Test	Result - Remark			Verdict
	The leakage current shall not exceed 2 mA L1	0,002	0,001	0,001	P
	L2	0,002	0,001	0,002	
	L3	0,001	0,001	0,001	
	L4(N)	0,001	0,001	0,001	
	Electric strength test:				P
	Test voltage 1500 V (see 9.7.2)				P
	a)	1500V			P
	b)	1500V			P
	c)	1500V			P
	d)				N/A
	e) 2000 V				N/A
	Test current 0.85x non-tripping current (1,13 I _N)	5,80A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I _N) within 5s	9,60A			P
		E₁₋₄₆ [s]	E₁₋₄₇ [s]	E₁₋₄₈ [s]	--
	Tripping within <input checked="" type="checkbox"/> 1 hour / <input type="checkbox"/> 2 hour	76	41	53	P

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „E₂“ 3 + 4 samples		
9.12.11.4. 3	Test „E₂“(Test at rated short-circuit capacity) three phase tests for single circuit-breakers		N/A
	TESTS „E₃“ 3 samples		
	Annex E		
	Annex J		
	Annex K		
	Annex L		

TABLE: Heating Test(MC3 1P;C63;Icn=4500A)				P
Test voltage (V)		--		—
Ambient (°C)		24,0°C		—
Thermocouple Locations	max. temperature measured, (K)			max. temperature limit, (K)
Temperature	B-1	B-2	B-3	--
Terminal	43	52	48	60
Handle	7	8	7	40
Enclosure	38	42	32	60
Supplementary information:N/A				

TABLE: Heating Test(MC3 4P;C63;Icn=4500A)				P
Test voltage (V)		--		—
Ambient (°C)		24,0°C		—
Thermocouple Locations	max. temperature measured, (K)			max. temperature limit, (K)
Temperature	B-4	B-5	B-6	--
Terminal L1	48	45	54	60
Terminal L2	54	52	54	60
Terminal L3	56	52	56	60
Terminal L4	55	52	49	60
Handle	26	20	27	40
Enclosure	50	42	53	60
Supplementary information:N/A				

TABLE: Heating Test(MC3 1P;B63;Icn=4500A)				P
Test voltage (V)		--		—
Ambient (°C)		23,4°C		—
Thermocouple Locations	max. temperature measured, (K)			max. temperature limit, (K)
Temperature	B-7	B-8	B-9	--
Terminal	47	50	47	60
Handle	9	10	8	40
Enclosure	32	33	41	60
Supplementary information:N/A				

TABLE: Heating Test(MC3 4P;B63;Icn=4500A)					P
Test voltage (V)		--			—
Ambient (°C)		24,3°C			—
Thermocouple Locations		max. temperature measured, (K)			max. temperature limit, (K)
Temperature		B-10	B-11	B-12	--
Terminal	L1	56	46	46	60
Terminal	L2	53	51	50	60
Terminal	L3	50	51	49	60
Terminal	L4	52	46	45	60
Handle		19	22	20	40
Enclosure		44	50	45	60
Supplementary information:N/A					

TABLE: Heating Test(MC5 1P;C63;Icn=4500A)					P
Test voltage (V)		--			—
Ambient (°C)		23,8°C			—
Thermocouple Locations		max. temperature measured, (K)			max. temperature limit, (K)
Temperature		B-13	B-14	B-15	--
Terminal		42	45	40	60
Handle		9	8	8	40
Enclosure		36	38	36	60
Supplementary information:N/A					

TABLE: Heating Test(MC5 4P;C63;Icn=4500A)					P
Test voltage (V)		--			—
Ambient (°C)		24,1°C			—
Thermocouple Locations		max. temperature measured, (K)			max. temperature limit, (K)
Temperature		B-16	B-17	B-18	--
Terminal	L1	46	47	47	60
Terminal	L2	51	50	51	60
Terminal	L3	51	52	50	60
Terminal	L4	45	49	49	60
Handle		20	20	23	40
Enclosure		42	44	45	60
Supplementary information:N/A					

TABLE: Heating Test(MC5 1P;B63;Icn=4500A)					P
Test voltage (V)		--			—
Ambient (°C)		23,7°C			—
Thermocouple Locations		max. temperature measured, (K)			max. temperature limit, (K)
Temperature		B-19	B-20	B-21	--
Terminal		43	42	45	60
Handle		9	8	9	40
Enclosure		34	36	36	60
Supplementary information:N/A					

TABLE: Heating Test(MC5 4P;B63;Icn=4500A)					P
Test voltage (V)		--			—
Ambient (°C)		24,3°C			—
Thermocouple Locations		max. temperature measured, (K)			max. temperature limit, (K)
Temperature		B-22	B-23	B-24	--
Terminal	L1	48	46	50	60
Terminal	L2	53	50	52	60
Terminal	L3	50	51	55	60
Terminal	L4	47	47	48	60
Handle		21	20	22	40
Enclosure		47	46	48	60
Supplementary information:N/A					

TABLE: Dielectric Strength (MC3 1P;C63;Icn=4500A)			P
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)	
In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position.	2000V	No	
In off-position, between each pole in turn and the others connected together.	-	-	
In on-position, between all poles connected together and the frame.	2000V	No	
Supplementary information:N/A			

TABLE: Dielectric Strength (MC3 4P;C63;Icn=4500A)			P
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)	
In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position.	2000V	No	
In off-position, between each pole in turn and the others connected together.	2000V	No	
In on-position, between all poles connected together and the frame.	2000V	No	
Supplementary information:N/A			

TABLE: Dielectric Strength (MC5 1P;C63;Icn=4500A)			P
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)	
In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position.	2000V	No	
In off-position, between each pole in turn and the others connected together.	-	-	
In on-position, between all poles connected together and the frame.	2000V	No	
Supplementary information:N/A			

TABLE: Dielectric Strength (MC5 4P;C63;Icn=4500A)			P
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)	
In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position.	2000V	No	
In off-position, between each pole in turn and the others connected together.	2000V	No	
In on-position, between all poles connected together and the frame.	2000V	No	
Supplementary information:N/A			

TABLE: insulation resistance measurements (MC3 1P;C63;Icn=4500A)				P
Insulation resistance R between:	R (MΩ)			Required R (MΩ)
	B-1	B-2	B-3	
a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position	1160	1150	1210	≥ 2 MΩ
b) in off-position, between each pole in turn and the others connected together	-	-	-	-
c) in on-position, between all poles connected together and the frame	1920	1840	1850	≥ 5 MΩ
Supplementary information:N/A				

TABLE: insulation resistance measurements (MC3 4P;C63;Icn=4500A)				P
Insulation resistance R between:	R (MΩ)			Required R (MΩ)
	B-4	B-5	B-6	
a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position	1190	1240	1220	≥ 2 MΩ
b) in off-position, between each pole in turn and the others connected together	1510	1480	1550	≥ 2 MΩ
c) in on-position, between all poles connected together and the frame	1880	1820	1870	≥ 5 MΩ
Supplementary information:N/A				

TABLE: insulation resistance measurements (MC5 1P;C63;Icn=4500A)				P
Insulation resistance R between:	R (MΩ)			Required R (MΩ)
	B-13	B-14	B-15	
a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position	1260	1210	1190	≥ 2 MΩ
b) in off-position, between each pole in turn and the others connected together	-	-	-	-
c) in on-position, between all poles connected together and the frame	1890	1800	1850	≥ 5 MΩ
Supplementary information:N/A				

TABLE: insulation resistance measurements (MC5 4P;C63;Icn=4500A)				P
Insulation resistance R between:	R (MΩ)			Required R (MΩ)
	B-16	B-17	B-18	
a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position	1150	1220	1200	≥ 2 MΩ
b) in off-position, between each pole in turn and the others connected together	1570	1510	1480	≥ 2 MΩ
c) in on-position, between all poles connected together and the frame	1790	1810	1850	≥ 5 MΩ
Supplementary information:N/A				

TABLE: Impact Resistance(MC3 1P;C63;Icn=4500A)			P
Impacts per surface	Surface tested	Impact energy (Nm)	Comments
2 blows	Operating means	150g*9,8N/kg*10cm	No damage
4 blows	Lateral side of the sample	150g*9,8N/kg*10cm	No damage
4 blows	Between lateral side and operating means	150g*9,8N/kg*10cm	No damage
Supplementary information:N/A			

TABLE: Impact Resistance(MC3 4P;C63;Icn=4500A)			P
Impacts per surface	Surface tested	Impact energy (Nm)	Comments
2 blows	Operating means	150g*9,8N/kg*10cm	No damage
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4 blows	Between lateral side and operating means	150g*9,8N/kg*10cm	No damage
Supplementary information:N/A			

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Impacts per surface	Surface tested	Impact energy (Nm)	Comments
2 blows	Operating means	150g*9,8N/kg*10cm	No damage
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Supplementary information:N/A			

TABLE: Impact Resistance(MC5 4P;C63;Icn=4500A)			P
Impacts per surface	Surface tested	Impact energy (Nm)	Comments
2 blows	Operating means	150g*9,8N/kg*10cm	No damage
4 blows	Lateral side of the sample	150g*9,8N/kg*10cm	No damage
4 blows	Between lateral side and operating means	150g*9,8N/kg*10cm	No damage
Supplementary information:N/A			

TABLE: Clearance And Creepage Distance Measurements (MC3 1P;C63;Icn=4500A)						P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
between live parts (of the main circuits) which are separated when the CB is in off position	4000V	500V	4	4,4	4	10,4
between live parts of different polarity	4000V	500V	3	-	4	-
between live parts and accessible surfaces of operating means	4000V	500V	3	8,5	4	12,2
between live parts and surface on which the base is mounted	4000V	500V	3	5,1	4	5,1
between live parts and screws or other means for fixing the circuit breaker	4000V	500V	3	5,1	4	5,1
between live parts and other accessible metal parts	4000V	500V	3	8,5	4	12,2
Supplementary information:N/A						

TABLE: Clearance And Creepage Distance Measurements (MC3 4P;C63;Icn=4500A)						P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
between live parts (of the main circuits) which are separated when the CB is in off position	4000V	500V	4	4,4	4	12,4
between live parts of different polarity	4000V	500V	3	8,8	4	8,8
between live parts and accessible surfaces of operating means	4000V	500V	3	8,5	4	12,2
between live parts and surface on which the base is mounted	4000V	500V	3	5,1	4	5,1
between live parts and screws or other means for fixing the circuit breaker	4000V	500V	3	5,1	4	5,1
between live parts and other accessible metal parts	4000V	500V	3	8,5	4	12,2
Supplementary information:N/A						

TABLE: Clearance And Creepage Distance Measurements (MC5 1P;C63;Icn=4500A)						P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
between live parts (of the main circuits) which are separated when the CB is in off position	4000V	500V	4	4,4	4	10,4
between live parts of different polarity	4000V	500V	3	-	4	-
between live parts and accessible surfaces of operating means	4000V	500V	3	8,5	4	12,2
between live parts and surface on which the base is mounted	4000V	500V	3	5,1	4	5,1
between live parts and screws or other means for fixing the circuit breaker	4000V	500V	3	5,1	4	5,1
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Supplementary information:N/A						

TABLE: Clearance And Creepage Distance Measurements (MC5 4P;C63;Icn=4500A)						P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
between live parts (of the main circuits) which are separated when the CB is in off position	4000V	500V	4	4,4	4	12,4
between live parts of different polarity	4000V	500V	3	8,8	4	8,8
between live parts and accessible surfaces of operating means	4000V	500V	3	8,5	4	12,2
between live parts and surface on which the base is mounted	4000V	500V	3	5,1	4	5,1
between live parts and screws or other means for fixing the circuit breaker	4000V	500V	3	5,1	4	5,1
between live parts and other accessible metal parts	4000V	500V	3	8,5	4	12,2
Supplementary information:N/A						

TABLE: Ball Pressure Test of Thermoplastics(MC3 1P;C63;Icn=4500A)				P
Allowed impression diameter (mm) : ≤ 2 mm				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	-	125	1,0	
Current-carrying	-	125	1,0	
Operating meanings	-	70	0,8	
Fixing meanings	-	70	0,8	
Supplementary information:N/A				

TABLE: Ball Pressure Test of Thermoplastics(MC3 4P;C63;Icn=4500A)				P
Allowed impression diameter (mm) : ≤ 2 mm				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	-	125	1,0	
Current-carrying	-	125	1,0	
Operating meanings	-	70	0,8	
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Supplementary information:N/A				

TABLE: Ball Pressure Test of Thermoplastics(MC5 1P;C63;Icn=4500A)				P
Allowed impression diameter (mm) : ≤ 2 mm				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	-	125	1,0	
Current-carrying	-	125	1,0	
Operating meanings	-	70	0,8	
Fixing meanings	-	70	0,8	
Supplementary information:N/A				

TABLE: Ball Pressure Test of Thermoplastics(MC5 4P;C63;Icn=4500A)				P
Allowed impression diameter (mm) : ≤ 2 mm				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	-	125	1,0	
Current-carrying	-	125	1,0	
Operating meanings	-	70	0,8	
Fixing meanings	-	70	0,8	
Supplementary information:N/A				

	TABLE: Needle- flame test (NFT)	N/A
--	--	------------

	TABLE: Resistance to heat and fire - Glow wire tests	N/A
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	TABLE: Threaded Part Torque Test(MC3 1P;C63;Icn=4500A)			P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)	
Screw	4,9	II	2,0	
Supplementary information:N/A				

	TABLE: Threaded Part Torque Test(MC3 4P;C63;Icn=4500A)			P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)	
Screw	4,9	II	2,0	
Supplementary information:N/A				

	TABLE: Threaded Part Torque Test(MC5 1P;C63;Icn=4500A)			P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)	
Screw	4,9	II	2,0	
Supplementary information:N/A				

	TABLE: Threaded Part Torque Test(MC5 4P;C63;Icn=4500A)			P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)	
Screw	4,9	II	2,0	
Supplementary information:N/A				

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict


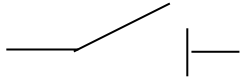
Annex n° 1

<p>ATTACHMENT TO TEST REPORT IEC 60898-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Circuit-breakers for over current protection for household and similar installations Part 1 - Circuit-breakers for a.c. operation</p>
<p>Differences according to.....: EN 60898-1:2003+A1:2004+A11:2006+A12:2008+A13:2012</p>

CENELEC COMMON MODIFICATIONS (EN)	
Test item particulars	MCB
Type of circuit-breaker	MC3 and MC5 Series
Energy limiting class	<input checked="" type="checkbox"/> Class 1 <input type="checkbox"/> Class 3
Value of rated operational voltage (Ue).....:	<input type="checkbox"/> 230 V <input type="checkbox"/> 240 V <input checked="" type="checkbox"/> 230/400 V (1P) <input checked="" type="checkbox"/> 400 V(2P,3P,4P) <input checked="" type="checkbox"/> 240/415 V(1P) <input checked="" type="checkbox"/> 415 V(2P,3P,4P)
Rated impulse withstand voltage (Uimp)	4 kV

Requirements for construction and operation		
9.6	Test of protection against electric shock	--
	In case of knock-outs the test finger is applied with a force of 10 N	P

GENERAL		
9.12	Short-circuit tests	--
9.12.2	Value of the power frequency recovery voltage shall be equal to 110 % of the rated voltage.	P
9.12.3	Tolerances on test quantities	--
	voltage (including recovery voltage) : 0, -5%	P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC3 4P;C63; Icn=4500A)	A-1	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark		P
	b) Type designation, catalogue number or other serial number	TOMC3-63/1/C63	P
	c) Rated voltage (V)	240/415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping	C63	P
	e) Rated frequency (Hz)		N/A
	f) Rated short circuit capacity in A within a rectangle, without symbol "A"		P
	g) Wiring diagram	4500 with a rectangle	P
	h) calibration temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) Energy limiting class in a square in accordance with annex ZA	1 with a rectangle	P
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Symbol for instantaneous tripping current	C	P
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed	C63	P
	Other marking shall be easily discernible		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	The manufacturer shall publish in his literature the I2t characteristic(see 3.5.13)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 8.3)		P
6.2	Additional marking		--
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:		--
	- the circuit-breaker shall comply with all the requirements of the additional standard;		--
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		--
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A
6.3	Guidance table for marking		--
	Each MCB shall be marked in a durable manner with all or, for small apparatus, according table for marking		P

8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		--
8.1.2	Mechanism		--
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		N/A
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		--
8.1.3	Clearances [mm] see table 4		--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	4,4 mm	P
	2.between live parts of different polarity		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		--
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type)...		N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.3	Creepage distances [mm] (see table 4)		--
	Material group	<input checked="" type="checkbox"/> IIIa <input type="checkbox"/> II <input type="checkbox"/> I	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	10,4 mm	P
	2.between live parts of different polarity		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type)..:		N/A
8.1.4	Screws, current-carrying parts and connections		--
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 10) Ø__mm__Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø 4,9 mm 2,0Nm (see table 10)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P



IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	Terminals for external conductors		--
8.1.5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9.5 or annex J or K)		P
9.5	Torque Ø4,9 mm 2,0 Nm max. sect. 25 mm ²		P
9.5.1	Pull test: min sect. 1,0 mm ² max sect. 25 mm ² Pull 50N for 1 min for 1,0 mm ² Pull 100N for 1 min for 25 mm ² During the test conductor does not move noticeably		P
9.5.2	min sect. 1,0 mm ² Torque (2/3) = 1,33 Nm max sect. 25 mm ² Torque (2/3) = 1,33 Nm The conductor shows no damage		P
9.5.3	Nominal cross-section from 1,0 mm ² to 25 mm ² For 1,0 mm ² No. of wires 7 Ø of wires 0,67 mm Torque (2/3) = 1,33 Nm For 25 mm ² No. of wires 7 Ø of wires 2,14 mm Torque (2/3) = 1,33 Nm After the test no wire escaped outside		P

IEC 60898-1 AMENDMENT																														
Clause	Requirement + Test	Result - Remark	Verdict																											
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P																											
	<table border="0"> <tr> <td>Rated current</td> <td colspan="2">Range of nominal cross (A) sections to be clamped (mm²)</td> </tr> <tr> <td>≤ 13</td> <td>1</td> <td>to 2,5</td> </tr> <tr> <td>> 13 ≤ 16</td> <td>1</td> <td>to 4</td> </tr> <tr> <td>> 16 ≤ 25</td> <td>1,5</td> <td>to 6</td> </tr> <tr> <td>> 25 ≤ 32</td> <td>2,5</td> <td>to 10</td> </tr> <tr> <td>> 32 ≤ 50</td> <td>4</td> <td>to 16</td> </tr> <tr> <td>> 50 ≤ 80</td> <td>10</td> <td>to 25</td> </tr> <tr> <td>> 80 ≤ 100</td> <td>16</td> <td>to 35</td> </tr> <tr> <td>> 100 ≤ 125</td> <td>25</td> <td>to 50</td> </tr> </table>	Rated current	Range of nominal cross (A) sections to be clamped (mm ²)		≤ 13	1	to 2,5	> 13 ≤ 16	1	to 4	> 16 ≤ 25	1,5	to 6	> 25 ≤ 32	2,5	to 10	> 32 ≤ 50	4	to 16	> 50 ≤ 80	10	to 25	> 80 ≤ 100	16	to 35	> 100 ≤ 125	25	to 50	1—2,5 mm ² /10—25 mm ²	P
Rated current	Range of nominal cross (A) sections to be clamped (mm ²)																													
≤ 13	1	to 2,5																												
> 13 ≤ 16	1	to 4																												
> 16 ≤ 25	1,5	to 6																												
> 25 ≤ 32	2,5	to 10																												
> 32 ≤ 50	4	to 16																												
> 50 ≤ 80	10	to 25																												
> 80 ≤ 100	16	to 35																												
> 100 ≤ 125	25	to 50																												
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted		P																											
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² are designed to clamp solid conductors only.	_____ to _____ mm ²	N/A																											
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)		P																											
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation		N/A																											
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.1)		P																											
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)		P																											
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.1)		P																											
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.3)		P																											
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)		P																											
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening		N/A																											

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non-interchangeability		--
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Plug-in type circuit-breakers, shall be reliable and have adequate stability		N/A
8.1.7.1	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		--
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		--
	Internal parts only	See above page 188	P
9.6	Test of protection against electric shock		--
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
7.10	Resistance to heat		--
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		--
9.14.1	Test:		--
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position) T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 8.8 Ø of impression ≤ 2 mm	70 °C Impression: 0,8mm	P
8.11	Resistance to abnormal heat and to fire		--
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.15	Resistance to abnormal heat and to fire		--
	Glow wire test: No visible flame, no sustained glowing or flames and glowing extinguish within 30 s	960°C:flames extinguish within 30 s 650°C:no flames	P
	external parts retaining current-carrying parts and parts of the protective circuit in position.....(960 ± 15)°C	960°C on current-carrying part 960°C on enclosure	P
	all other external parts(650 ± 10)°C	650°C on operating meanings 650°C on fixing meanings	P
8.12	Resistance to rusting		--
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC3 4P;C63;Icn=4500A)	A-2	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark		P
	b) Type designation, catalogue number or other serial number	TOMC3-63/4/C63	P
	c) Rated voltage (V)	415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping	C63	P
	e) Rated frequency (Hz)		N/A
	f) Rated short circuit capacity in A within a rectangle, without symbol "A"	4500 with a rectangle	P
	g) Wiring diagram		P
	h) calibration temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) Energy limiting class in a square in accordance with annex ZA	1 with a rectangle	P
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Symbol for instantaneous tripping current	C	P
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed	C63	P
	Other marking shall be easily discernible		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	The manufacturer shall publish in his literature the I2t characteristic(see 3.5.13)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 8.3)		P
6.2	Additional marking		--
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:		--
	- the circuit-breaker shall comply with all the requirements of the additional standard;		--
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		--
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A
6.3	Guidance table for marking		--
	Each MCB shall be marked in a durable manner with all or, for small apparatus, according table for marking		P

8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		--
8.1.2	Mechanism		--
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		P
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P

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Clause	Requirement + Test	Result - Remark	Verdict
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		--
8.1.3	Clearances [mm] see table 4		--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	4,4 mm	P
	2.between live parts of different polarity	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type)..:		N/A
8.1.3	Creepage distances [mm] (see table 4)		--
	Material group	<input checked="" type="checkbox"/> IIIa <input type="checkbox"/> II <input type="checkbox"/> I	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	12,4 mm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	2.between live parts of different polarity.....:	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV.....:		N/A
	4. between live parts and		P
	- accessible surfaces of operating means.....:	12,2 mm	P
	- screws or other means for fixing covers.....:		N/A
	- surface on which the base is mounted.....:	5,1 mm	P
	- screws or other means for fixing the circuit breaker.....:	5,1 mm	P
	- metal covers or boxes.....:		N/A
	- other accessible metal parts.....:	12,2 mm	P
	- metal frames supporting the base (flush-type).....:		N/A
8.1.4	Screws, current-carrying parts and connections		--
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø ___mm___Nm (see table 10) Ø ___mm___Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø 4,9 mm 2,0Nm (see table 10)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	Terminals for external conductors		--
8.1.5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9.5 or annex J or K)		P


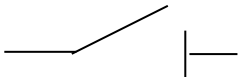
IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.5	Torque Ø4,9 mm ² , 0 Nm max. sect. 25 mm ²		P
9.5.1	Pull test: min sect. 1,0mm ² max sect. 25mm ² Pull 50N for 1 min for 1,0 mm ² Pull 100N for 1 min for 25 mm ² During the test conductor does not move noticeably		P
9.5.2	min sect. 1,0 mm ² Torque (2/3)= 1,33 Nm max sect. 25 mm ² Torque (2/3)= 1,33 Nm The conductor shows no damage		P
9.5.3	Nominal cross-section from 1,0 mm ² to 25 mm ² For 1,0mm ² No. of wires 7 Ø of wires 0,67 mm Torque (2/3) =1,33Nm For 25mm ² No. of wires 7 Ø of wires 2,14 mm Torque (2/3) =1,33Nm After the test no wire escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P

IEC 60898-1 AMENDMENT																														
Clause	Requirement + Test	Result - Remark	Verdict																											
	<table border="0"> <tr> <td>Rated current</td> <td>Range of nominal cross (A) sections to be clamped (mm²)</td> <td></td> </tr> <tr> <td>≤ 13</td> <td>1 to 2,5</td> <td></td> </tr> <tr> <td>> 13 ≤ 16</td> <td>1 to 4</td> <td></td> </tr> <tr> <td>> 16 ≤ 25</td> <td>1,5 to 6</td> <td></td> </tr> <tr> <td>> 25 ≤ 32</td> <td>2,5 to 10</td> <td></td> </tr> <tr> <td>> 32 ≤ 50</td> <td>4 to 16</td> <td></td> </tr> <tr> <td>> 50 ≤ 80</td> <td>10 to 25</td> <td></td> </tr> <tr> <td>> 80 ≤ 100</td> <td>16 to 35</td> <td></td> </tr> <tr> <td>> 100 ≤ 125</td> <td>25 to 50</td> <td></td> </tr> </table>	Rated current	Range of nominal cross (A) sections to be clamped (mm ²)		≤ 13	1 to 2,5		> 13 ≤ 16	1 to 4		> 16 ≤ 25	1,5 to 6		> 25 ≤ 32	2,5 to 10		> 32 ≤ 50	4 to 16		> 50 ≤ 80	10 to 25		> 80 ≤ 100	16 to 35		> 100 ≤ 125	25 to 50		1—2,5 mm ² /10—25 mm ²	P
Rated current	Range of nominal cross (A) sections to be clamped (mm ²)																													
≤ 13	1 to 2,5																													
> 13 ≤ 16	1 to 4																													
> 16 ≤ 25	1,5 to 6																													
> 25 ≤ 32	2,5 to 10																													
> 32 ≤ 50	4 to 16																													
> 50 ≤ 80	10 to 25																													
> 80 ≤ 100	16 to 35																													
> 100 ≤ 125	25 to 50																													
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted		P																											
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² are designed to clamp solid conductors only.	_____ to _____ mm ²	N/A																											
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)		P																											
8.1.5.4	Terminals for $I_N \leq 32$ A allow the connection of conductors without special preparation		N/A																											
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.1)		P																											
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)		P																											
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.1)		P																											
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.3)		P																											
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)		P																											
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening		N/A																											
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P																											

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.6	Non-interchangeability		--
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Plug-in type circuit-breakers, shall be reliable and have adequate stability		N/A
8.1.7.1	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		--
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		--
	Internal parts only	See above page 197	P
9.6	Test of protection against electric shock		--
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
7.10	Resistance to heat		--
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		--
9.14.1	Test:		--
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position) T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 8.8 Ø of impression ≤ 2 mm	70 °C Impression: 0,8mm	P
8.11	Resistance to abnormal heat and to fire		--
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.15	Resistance to abnormal heat and to fire		--
	Glow wire test: No visible flame, no sustained glowing or flames and glowing extinguish within 30 s	960°C:flames extinguish within 30 s 650°C:no flames	P
	external parts retaining current-carrying parts and parts of the protective circuit in position(960 ± 15)°C	960°C on current-carrying part 960°C on enclosure	P
	all other external parts(650 ± 10)°C	650°C on operating meanings 650°C on fixing meanings	P
8.12	Resistance to rusting		--
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC5 4P;C63; Icn=4500A)	A-3	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark		P
	b) Type designation, catalogue number or other serial number	TOMC5-63/1/C63	P
	c) Rated voltage (V)	240/415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping	C63	P
	e) Rated frequency (Hz)		N/A
	f) Rated short circuit capacity in A within a rectangle, without symbol "A"		P
	g) Wiring diagram	4500 with a rectangle	P
	h) calibration temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) Energy limiting class in a square in accordance with annex ZA	1 with a rectangle	P
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Symbol for instantaneous tripping current	C	P
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed	C63	P
	Other marking shall be easily discernible		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	The manufacturer shall publish in his literature the I2t characteristic(see 3.5.13)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 8.3)		P
6.2	Additional marking		--
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:		--
	- the circuit-breaker shall comply with all the requirements of the additional standard;		--
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		--
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A
6.3	Guidance table for marking		--
	Each MCB shall be marked in a durable manner with all or, for small apparatus, according table for marking		P

8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		--
8.1.2	Mechanism		--
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		N/A
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Indication visible from the outside		P
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		--
8.1.3	Clearances [mm] see table 4		--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	4,4 mm	P
	2.between live parts of different polarity		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		--
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type)...		N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.3	Creepage distances [mm] (see table 4)		--
	Material group	<input checked="" type="checkbox"/> IIIa <input type="checkbox"/> II <input type="checkbox"/> I	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	10,4 mm	P
	2.between live parts of different polarity.....		N/A
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type)..:		N/A
8.1.4	Screws, current-carrying parts and connections		--
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø__mm__Nm (see table 10) Ø__mm__Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø 4,9 mm 2,0Nm (see table 10)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P



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Clause	Requirement + Test	Result - Remark	Verdict
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	Terminals for external conductors		--
8.1.5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9.5 or annex J or K)		P
9.5	Torque Ø4,9 mm 2,0 Nm max. sect. 25 mm ²		P
9.5.1	Pull test: min sect. 1,0 mm ² max sect. 25 mm ² Pull 50N for 1 min for 1,0 mm ² Pull 100N for 1 min for 25 mm ² During the test conductor does not move noticeably		P
9.5.2	min sect. 1,0 mm ² Torque (2/3) = 1,33 Nm max sect. 25 mm ² Torque (2/3) = 1,33 Nm The conductor shows no damage		P
9.5.3	Nominal cross-section from 1,0 mm ² to 25 mm ² For 1,0 mm ² No. of wires 7 Ø of wires 0,67 mm Torque (2/3) = 1,33 Nm For 25 mm ² No. of wires 7 Ø of wires 2,14 mm Torque (2/3) = 1,33 Nm After the test no wire escaped outside		P

IEC 60898-1 AMENDMENT																														
Clause	Requirement + Test	Result - Remark	Verdict																											
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P																											
	<table border="0"> <tr> <td>Rated current</td> <td>Range of nominal cross (A) sections to be clamped (mm²)</td> <td></td> </tr> <tr> <td>≤ 13</td> <td>1 to 2,5</td> <td></td> </tr> <tr> <td>> 13 ≤ 16</td> <td>1 to 4</td> <td></td> </tr> <tr> <td>> 16 ≤ 25</td> <td>1,5 to 6</td> <td></td> </tr> <tr> <td>> 25 ≤ 32</td> <td>2,5 to 10</td> <td></td> </tr> <tr> <td>> 32 ≤ 50</td> <td>4 to 16</td> <td></td> </tr> <tr> <td>> 50 ≤ 80</td> <td>10 to 25</td> <td></td> </tr> <tr> <td>> 80 ≤ 100</td> <td>16 to 35</td> <td></td> </tr> <tr> <td>> 100 ≤ 125</td> <td>25 to 50</td> <td></td> </tr> </table>	Rated current	Range of nominal cross (A) sections to be clamped (mm ²)		≤ 13	1 to 2,5		> 13 ≤ 16	1 to 4		> 16 ≤ 25	1,5 to 6		> 25 ≤ 32	2,5 to 10		> 32 ≤ 50	4 to 16		> 50 ≤ 80	10 to 25		> 80 ≤ 100	16 to 35		> 100 ≤ 125	25 to 50		1—2,5 mm ² /10—25 mm ²	P
Rated current	Range of nominal cross (A) sections to be clamped (mm ²)																													
≤ 13	1 to 2,5																													
> 13 ≤ 16	1 to 4																													
> 16 ≤ 25	1,5 to 6																													
> 25 ≤ 32	2,5 to 10																													
> 32 ≤ 50	4 to 16																													
> 50 ≤ 80	10 to 25																													
> 80 ≤ 100	16 to 35																													
> 100 ≤ 125	25 to 50																													
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted		P																											
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² are designed to clamp solid conductors only.	_____ to _____ mm ²	N/A																											
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)		P																											
8.1.5.4	Terminals for I _N ≤ 32 A allow the connection of conductors without special preparation		N/A																											
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.1)		P																											
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)		P																											
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.1)		P																											
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.3)		P																											
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)		P																											
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening		N/A																											

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non-interchangeability		--
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Plug-in type circuit-breakers, shall be reliable and have adequate stability		N/A
8.1.7.1	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		--
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		--
	Internal parts only	See above page 206	P
9.6	Test of protection against electric shock		--
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
7.10	Resistance to heat		--
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		--
9.14.1	Test:		--
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position) T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 8.8 Ø of impression ≤ 2 mm	70 °C Impression: 0,8mm	P
8.11	Resistance to abnormal heat and to fire		--
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.15	Resistance to abnormal heat and to fire		--
	Glow wire test: No visible flame, no sustained glowing or flames and glowing extinguish within 30 s	960°C:flames extinguish within 30 s 650°C:no flames	P
	external parts retaining current-carrying parts and parts of the protective circuit in position.....(960 ± 15)°C	960°C on current-carrying part 960°C on enclosure	P
	all other external parts(650 ± 10)°C	650°C on operating meanings 650°C on fixing meanings	P
8.12	Resistance to rusting		--
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A“ 1 SAMPLE (MC5 4P;C63;Icn=4500A)	A-4	
6	MARKING AND OTHER INFORMATION		
	Circuit-breaker marked with:		--
	a) Manufacturer's name or trade mark		P
	b) Type designation, catalogue number or other serial number	TOMC5-63/4/C63	P
	c) Rated voltage (V)	415V~	P
	d) Rated current without symbol "A", preceded by the symbol of instantaneous tripping	C63	P
	e) Rated frequency (Hz)		N/A
	f) Rated short circuit capacity in A within a rectangle, without symbol "A"	4500 with a rectangle	P
	g) Wiring diagram		P
	h) calibration temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) Energy limiting class in a square in accordance with annex ZA	1 with a rectangle	P
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (Icn1), if different from Icn		N/A
	Symbol for instantaneous tripping current	C	P
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed	C63	P
	Other marking shall be easily discernible		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	The manufacturer shall publish in his literature the I2t characteristic(see 3.5.13)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 -	I O	P
	For push-button CB the off push-button shall either be red or be marked with the symbol '0'		N/A
	Red not used for other push-button		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts), 15 s with water, 15 s with hexane (see cl. 8.3)		P
6.2	Additional marking		--
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:		--
	- the circuit-breaker shall comply with all the requirements of the additional standard;		--
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		--
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A
6.3	Guidance table for marking		--
	Each MCB shall be marked in a durable manner with all or, for small apparatus, according table for marking		P

8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		--
8.1.2	Mechanism		--
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		P
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts; operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position.		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		--
8.1.3	Clearances [mm] see table 4		--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	4,4 mm	P
	2.between live parts of different polarity	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	8,5 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	8,5 mm	P
	- metal frames supporting the base (flush-type)..:		N/A
8.1.3	Creepage distances [mm] (see table 4)		--
	Material group	<input checked="" type="checkbox"/> IIIa <input type="checkbox"/> II <input type="checkbox"/> I	--
	1.between live parts (of the main circuits) which are separated when the CB is in off position	12,4 mm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	2.between live parts of different polarity	8,8 mm	P
	3.between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	12,2 mm	P
	- screws or other means for fixing covers.....		N/A
	- surface on which the base is mounted.....	5,1 mm	P
	- screws or other means for fixing the circuit breaker	5,1 mm	P
	- metal covers or boxes		N/A
	- other accessible metal parts	12,2 mm	P
	- metal frames supporting the base (flush-type)...		N/A
8.1.4	Screws, current-carrying parts and connections		--
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		P
	Test according to cl. 9.4:		P
	- 10 times (screw Ø / torque Nm)	Ø ___mm___Nm (see table 10) Ø ___mm___Nm	N/A
	- 5 times (screw Ø / torque Nm)	Ø 4,9 mm 2,0Nm (see table 10)	P
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		P
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection: contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
	- copper		N/A
	- alloy 58% copper for worked cold parts		P
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	Terminals for external conductors		--
8.1.5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9.5 or annex J or K)		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.5	Torque Ø4,9 mm ² , 0 Nm max. sect. 25 mm ²		P
9.5.1	Pull test: min sect. 1,0mm ² max sect. 25mm ² Pull 50N for 1 min for 1,0 mm ² Pull 100N for 1 min for 25 mm ² During the test conductor does not move noticeably		P
9.5.2	min sect. 1,0 mm ² Torque (2/3)= 1,33 Nm max sect. 25 mm ² Torque (2/3)= 1,33 Nm The conductor shows no damage		P
9.5.3	Nominal cross-section from 1,0 mm ² to 25 mm ² For 1,0mm ² No. of wires 7 Ø of wires 0,67 mm Torque (2/3) =1,33Nm For 25mm ² No. of wires 7 Ø of wires 2,14 mm Torque (2/3) =1,33Nm After the test no wire escaped outside		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P

IEC 60898-1 AMENDMENT				
Clause	Requirement + Test		Result - Remark	Verdict
	Rated current	Range of nominal cross (A) sections to be clamped (mm ²)	1—2,5 mm ² /10—25 mm ²	P
	≤ 13	1 to 2,5		
	> 13 ≤ 16	1 to 4		
	> 16 ≤ 25	1,5 to 6		
	> 25 ≤ 32	2,5 to 10		
	> 32 ≤ 50	4 to 16		
	> 50 ≤ 80	10 to 25		
	> 80 ≤ 100	16 to 35		
	> 100 ≤ 125	25 to 50		
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted			P
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm ² up to 6 mm ² are designed to clamp solid conductors only.		_____ to _____ mm ²	N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)			P
8.1.5.4	Terminals for $I_N \leq 32$ A allow the connection of conductors without special preparation			N/A
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.1)			P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)			P
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.1)			P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.3)			P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)			P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening			N/A
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type			P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.6	Non-interchangeability		--
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Plug-in type circuit-breakers, shall be reliable and have adequate stability		N/A
8.1.7.1	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	Protection against electric shock		--
	Live parts not accessible in normal use		P
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type), screws or other means for fixing the base		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
8.1.3	Creepage distances [mm] (see table 4)		--
	Internal parts only	See above page 215	P
9.6	Test of protection against electric shock		--
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N	35 °C; 1min; 75 N	P
7.10	Resistance to heat		--
	CB sufficiently resistant to heat		P
9.14	Test of resistance to heat		--
9.14.1	Test:		--
	- without removable covers 1 h (100 ± 2) °C	100°C	P
	- removable covers 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	125°C Impression: 1,0mm	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position) T = (70 ± 2)°C or T = ___ °C = (40 ± 2)°C + max. temperature rise of sub-clause 8.8 Ø of impression ≤ 2 mm	70 °C Impression: 0,8mm	P
8.11	Resistance to abnormal heat and to fire		--
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.15	Resistance to abnormal heat and to fire		--
	Glow wire test: No visible flame, no sustained glowing or flames and glowing extinguish within 30 s	960°C:flames extinguish within 30 s 650°C:no flames	P
	external parts retaining current-carrying parts and parts of the protective circuit in position(960 ± 15)°C	960°C on current-carrying part 960°C on enclosure	P
	all other external parts(650 ± 10)°C	650°C on operating meanings 650°C on fixing meanings	P
8.12	Resistance to rusting		--
	Ferrous parts adequately protected against rusting		P
9.16	Test of resistance to rusting:		--
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC3 1P;C63;Icn=4500A)	B-1	B-2	B-3	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				P
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				P
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.	4kV			P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				P
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1160	1150	1210	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	-	-	-	N/A
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$	1920	1840	1850	P
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				P
	a) 2000 V	2000 V			P
	b) 2000 V				N/A
	c) 2000 V	2000 V			P
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{___} \text{ V}$	$U = \text{___} \text{ V}$			N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = [1000 V if $U_i \leq 60$ V or 2 U_i + 1000 V if $U_i > 60$ V]	U = ____ V	N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50 μ s impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test U_{imp} on open main contacts (equipment suitable for isolating) (see table 13)	$U_{test} = 6,2kV$	P
	- no unintentional disruptive discharge during the test's		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50 μ s impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test U_{imp} main circuits (see table 14) :	$U_{test} = 4,9kV$	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		P
	- no unintentional disruptive discharge during the test's		P
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		P

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Clause	Requirement + Test	Result - Remark			Verdict
8.4	Temperature rise				--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²			P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P
	Ambient air temperature.....:	T _{amb} = 24,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	--
	L1	≤43	≤52	≤48	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Terminals for external connections 60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤7	≤8	≤7	P
	External metallic parts of operating means .. 25 K	-	-	-	N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤38	≤42	≤32	P
9.8.5	Measurement of power losses	B-1	B-2	B-3	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: I _N =63A (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,2 W	W	W	W	--
	L1	≤4,9	≤4,7	≤5,2	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	

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Clause	Requirement + Test	Result - Remark			Verdict
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²	I _N =63A			P
	During the test no tripping during the last period, temperature rise shall be measured				P
	Ambient air temperature	23,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	P
	Terminals for external connections 60 K	≤45	≤51	≤51	P
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K				P
	Test current 1,45 I _N =91,4A				P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	183	185	197	P
	- 2h (> 63 A)	-	-	-	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC3 4P;C63;Icn=4500A)	B-4	B-5	B-6	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				P
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				P
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.	4kV			P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				P
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				P
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			P

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Clause	Requirement + Test	Result - Remark			Verdict
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1190	1240	1220	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	1510	1480	1550	P
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$	1880	1820	1870	P
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				P
	a) 2000 V	2000 V			P
	b) 2000 V	2000 V			P
	c) 2000 V	2000 V			P
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{---} \text{ V}$	$U = \text{---} \text{ V}$			N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together $U = \text{---} \text{ V}$ $U = \text{---} \text{ V}$ [1000 V if $U_i \leq 60 \text{ V}$ or $2U_i + 1000 \text{ V}$ if $U_i > 60 \text{ V}$]	$U = \text{---} \text{ V}$			N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13)	Utest =6,2kV	P
	- no unintentional disruptive discharge during the test's		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp main circuits (see table 14) :	Utest =4,9kV	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		P
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		P
	- no unintentional disruptive discharge during the test's		P
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		P
8.4	Temperature rise		--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²	P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A	P
	Ambient air temperature	Tamb= 24,0°C	P
	Parts Temperature rise [K]	[K] [K] [K]	--
	L1	≤48 ≤45 ≤54	P

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Clause	Requirement + Test	Result - Remark			Verdict
	L2	≤54	≤52	≤54	
	L3	≤56	≤52	≤56	
	L4(N)	≤55	≤52	≤49	
	Terminals for external connections 60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤26	≤20	≤27	P
	External metallic parts of operating means .. 25 K	-	-	-	N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤50	≤42	≤53	P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.8.5	Measurement of power losses	B-4	B-5	B-6	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: $I_N = 63A$ (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 6,1 W	W	W	W	--
	L1	≤5,2	≤5,1	≤6,1	P
	L2	≤5,6	≤5,9	≤5,0	
	L3	≤6,1	≤6,0	≤5,8	
	L4(N)	≤5,1	≤5,4	≤4,9	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²	$I_N = 63A$			P
	During the test no tripping during the last period, temperature rise shall be measured				P
	Ambient air temperature	23,0°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	P
	Terminals for external connections 60 K	≤59	≤55	≤59	P
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K				P
	Test current 1,45 $I_N = 91,4A$				P
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)	205	217	193	P
	- 2h (> 63 A)	-	-	-	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC3 1P;B63;Icn=4500A)	B-7	B-8	B-9	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				N/A
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				N/A
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.	4kV			N/A
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				N/A
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				N/A
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				N/A
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			N/A
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				N/A
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				N/A
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$				N/A
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				N/A
	a) 2000 V				N/A
	b) 2000 V				N/A
	c) 2000 V				N/A
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{___} \text{ V}$	$U = \text{___} \text{ V}$			N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together $U = \text{___} \text{ V}$ $U = \text{___} \text{ V}$ [1000 V if $U_i \leq 60 \text{ V}$ or $2U_i + 1000 \text{ V}$ if $U_i > 60 \text{ V}$]	$U = \text{___} \text{ V}$			N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13) :		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp main circuits (see table 14) :		N/A
	Application of test voltage		N/A
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		N/A
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		N/A

8.4	Temperature rise		--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²	P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A	P
	Ambient air temperature	T _{amb} = 23,4°C	P
	Parts Temperature rise [K]	[K] [K] [K]	--
	L1	≤47 ≤50 ≤47	P

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Clause	Requirement + Test	Result - Remark			Verdict
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Terminals for external connections 60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤9	≤10	≤8	P
	External metallic parts of operating means .. 25 K	-	-	-	N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤32	≤33	≤41	P
9.8.5	Measurement of power losses	B-7	B-8	B-9	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: $I_N = 63A$ (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,8 W	W	W	W	--
	L1	≤5,2	≤5,8	≤5,5	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²				N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature				N/A
	Parts Temperature rise [K]				N/A
	Terminals for external connections 60 K				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K		N/A
	Test current 1,45 I _N =91,4A		N/A
	- Tripping within		--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)	- - -	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC3 4P;B63;Icn=4500A)	B-10	B-11	B-12	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				N/A
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				N/A
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.				N/A
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				N/A
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				N/A
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				N/A
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C				N/A
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				N/A
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				N/A
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:			[MΩ]	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$				N/A
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				N/A
	a) 2000 V				N/A
	b) 2000 V				N/A
	c) 2000 V				N/A
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{___} \text{ V}$	$U = \text{___} \text{ V}$			N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together $U = [1000 \text{ V if } U_i \leq 60 \text{ V or } 2U_i + 1000 \text{ V if } U_i > 60 \text{ V}]$	$U = \text{___} \text{ V}$			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13) :		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp main circuits (see table 14) :		N/A
	Application of test voltage		N/A
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		N/A
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		N/A

8.4	Temperature rise		--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²	P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A	P
	Ambient air temperature	T _{amb} = 24,3°C	P
	Parts Temperature rise [K]	[K] [K] [K]	--
	L1	≤56 ≤46 ≤46	P

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Clause	Requirement + Test	Result - Remark			Verdict	
	L2	≤53	≤51	≤50		
	L3	≤50	≤51	≤49		
	L4	≤52	≤46	≤45		
	Terminals for external connections 60 K				P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤19	≤22	≤20	P	
	External metallic parts of operating means .. 25 K	-	-	-	N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤44	≤50	≤45	P	

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.8.5	Measurement of power losses	B-10	B-11	B-12	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: $I_N = 63A$ (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,8 W	W	W	W	--
	L1	≤5,6	≤5,2	≤4,7	P
	L2	≤5,4	≤5,0	≤5,2	
	L3	≤4,9	≤5,8	≤5,4	
	L4	≤5,8	≤4,7	≤4,9	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²				N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature				N/A
	Parts Temperature rise [K]				N/A
	Terminals for external connections 60 K				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K				N/A
	Test current 1,45 $I_N = 91,4A$				N/A
	- Tripping within				--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)	-	-	-	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC5 1P;C63;Icn=4500A)	B-13	B-14	B-15	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				P
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				P
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.	4kV			P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				P
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1260	1210	1190	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	-	-	-	N/A
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$	1890	1800	1850	P
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				P
	a) 2000 V	2000 V			P
	b) 2000 V				N/A
	c) 2000 V	2000 V			P
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{___} \text{ V}$	$U = \text{___} \text{ V}$			N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = [1000 V if $U_i \leq 60$ V or 2 U_i + 1000 V if $U_i > 60$ V]	U = ____ V	N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50 μ s impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test U_{imp} on open main contacts (equipment suitable for isolating) (see table 13)	$U_{test} = 6,2kV$	P
	- no unintentional disruptive discharge during the test's		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50 μ s impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test U_{imp} main circuits (see table 14) :	$U_{test} = 4,9kV$	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		P
	- no unintentional disruptive discharge during the test's		P
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
8.4	Temperature rise				--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²			P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input type="checkbox"/> 1) Four-poles loaded	I _N = 63A			P
	Ambient air temperature.....:	T _{amb} = 23,8°C			P
	Parts Temperature rise [K]	[K]	[K]	[K]	--
	L1	≤42	≤45	≤40	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Terminals for external connections 60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤9	≤8	≤8	P
	External metallic parts of operating means .. 25 K	-	-	-	N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤36	≤38	≤36	P
9.8.5	Measurement of power losses	B-13	B-14	B-15	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: I _N =63A (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,1 W	W	W	W	--
	L1	≤4,7	≤5,1	≤4,9	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark		Verdict	
8.5	Uninterrupted duty			--	
	Circuit-breakers operate reliable even after long service			N/A	
9.9	28 day test			N/A	
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²	I _N =A		N/A	
	During the test no tripping during the last period, temperature rise shall be measured			N/A	
	Ambient air temperature			N/A	
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections 60 K				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K			N/A	
	Test current 1,45 I _N =91,4A			N/A	
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)			N/A	
	- 2h (> 63 A)	-	-	-	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC5 4P;C63;Icn=4500A)	B-16	B-17	B-17	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				P
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				P
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.	4kV			P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				P
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				P
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				P
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			P
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				P
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				P
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$	1150	1220	1200	P
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$	1570	1510	1480	P
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$	1790	1810	1850	P
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				P
	a) 2000 V	2000 V			P
	b) 2000 V	2000 V			P
	c) 2000 V	2000 V			P
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{___ V}$	$U = \text{___ V}$			N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together $U = \text{___ V}$ $U = \text{ [1000 V if } U_i \leq 60 \text{ V or } 2U_i + 1000 \text{ V if } U_i > 60 \text{ V]}$	$U = \text{___ V}$			N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13)	Utest =6,2kV	P
	- no unintentional disruptive discharge during the test's		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :	4kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp main circuits (see table 14) :	Utest =4,9kV	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		P
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		P
	- no unintentional disruptive discharge during the test's		P
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		P
8.4	Temperature rise		--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²	P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A	P
	Ambient air temperature	Tamb= 24,0°C	P
	Parts	[K] [K] [K]	--
	L1	≤46 ≤47 ≤47	P

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Clause	Requirement + Test	Result - Remark			Verdict
	L2	≤51	≤50	≤51	
	L3	≤51	≤52	≤50	
	L4(N)	≤45	≤49	≤49	
	Terminals for external connections 60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤20	≤20	≤23	P
	External metallic parts of operating means .. 25 K	-	-	-	N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤42	≤44	≤45	P

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.8.5	Measurement of power losses	B-16	B-17	B-18	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: $I_N = 63A$ (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,7 W	W	W	W	--
	L1	≤4,6	≤5,4	≤4,9	P
	L2	≤5,4	≤5,6	≤5,6	
	L3	≤5,1	≤5,7	≤5,2	
	L4(N)	≤4,7	≤4,9	≤5,4	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²	$I_N = A$			N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature				N/A
	Parts Temperature rise [K]	[K]	[K]	[K]	N/A
	Terminals for external connections 60 K				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K				N/A
	Test current 1,45 $I_N = 91,4A$				N/A
	- Tripping within	[s]	[s]	[s]	--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)	-	-	-	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC5 1P;B63;Icn=4500A)	B-19	B-20	B-21	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				N/A
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				N/A
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.	4kV			N/A
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				N/A
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				N/A
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				N/A
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	Rf = 93 % T = 25°C			N/A
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				N/A
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				N/A
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$				N/A
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				N/A
	a) 2000 V				N/A
	b) 2000 V				N/A
	c) 2000 V				N/A
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{---} \text{ V}$	$U = \text{---} \text{ V}$			N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together $U = \text{---} \text{ V}$ $U = \text{---} \text{ V}$ [1000 V if $U_i \leq 60 \text{ V}$ or $2U_i + 1000 \text{ V}$ if $U_i > 60 \text{ V}$]	$U = \text{---} \text{ V}$			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13) :		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp main circuits (see table 14) :		N/A
	Application of test voltage		N/A
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		N/A
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		N/A
8.4	Temperature rise		--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²	P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A	P
	Ambient air temperature	T _{amb} =23,7°C	P
	Parts Temperature rise [K]	[K] [K] [K]	--
	L1	≤43 ≤42 ≤45	P

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Clause	Requirement + Test	Result - Remark			Verdict
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
	Terminals for external connections 60 K				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤9	≤8	≤9	P
	External metallic parts of operating means .. 25 K	-	-	-	N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤34	≤36	≤36	P
9.8.5	Measurement of power losses	B-19	B-20	B-21	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: $I_N = 63A$ (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 5,0 W	W	W	W	--
	L1	≤4,6	≤5,0	≤4,7	P
	L2	-	-	-	
	L3	-	-	-	
	L4(N)	-	-	-	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²				N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature				N/A
	Parts Temperature rise [K]				N/A
	Terminals for external connections 60 K				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K		N/A
	Test current 1,45 I _N =91,4A		N/A
	- Tripping within		--
	- 1h (≤ 63 A)		N/A
	- 2h (> 63 A)	- - -	N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „B“ 3 samples (MC5 4P;B63;Icn=4500A)	B-22	B-23	B-24	
8.3	Dielectric properties and isolating capability				--
	CB shall have adequate dielectric properties and shall ensure isolation:				N/A
8.3.1	Dielectric strength at power frequency				--
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition				N/A
8.3.2	Isolating capability				--
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.				N/A
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)				--
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2.				N/A
9.7	Test of dielectric properties and isolating capability				--
9.7.1	Resistance to humidity				N/A
9.7.1.1	Preparation of the circuit-breaker for test				--
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.				N/A
9.7.1.2	Test conditions				--
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C				N/A
9.7.1.3	Test procedure.				--
	The sample is kept in the cabinet for 48 h.				N/A
9.7.1.4	Conditions of the circuit breaker after the tests.				--
	The sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3				N/A
9.7.2	Insulation resistance of the main circuit				--
9.7.2	Following this treatment, and after a delay period under normal conditions of temperature and humidity of between 30min and 60 min, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:	[MΩ]			N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position $\geq 2 \text{ M}\Omega$				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	b) in off-position, between each pole in turn and the others connected together $\geq 2 \text{ M}\Omega$				N/A
	c) with the circuit-breaker in the closed position, between all poles connected together and the frame including a metal foil or part in contact with the outer surface of the housing of insulating material but with the terminal areas kept completely free to avoid flashover between terminals and the metal foil $\geq 5 \text{ M}\Omega$				N/A
	d) for circuit-breaker with a metal enclosure having an internal lining of insulating material, between the frame and a metal foil in contact with the inner surface of the lining of insulating material including bushings and similar devices $\geq 5 \text{ M}\Omega$				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material $\geq 5 \text{ M}\Omega$				N/A
9.7.3	Dielectric strength of the main circuit				--
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				N/A
	a) 2000 V				N/A
	b) 2000 V				N/A
	c) 2000 V				N/A
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame $U = \text{___} \text{ V}$	$U = \text{___} \text{ V}$			N/A
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together $U = [1000 \text{ V if } U_i \leq 60 \text{ V or } 2U_i + 1000 \text{ V if } U_i > 60 \text{ V}]$	$U = \text{___} \text{ V}$			N/A

IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		--
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13) :		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		--
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		--
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp main circuits (see table 14) :		N/A
	Application of test voltage		N/A
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		--
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		N/A
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		N/A

8.4	Temperature rise		--
	Temperature rise does not exceed the limiting values stated in table 6:	sect. 16 mm ²	P
9.8.2	Test current: I _N =63A (reach the steady-state value) Four-pole CB's: <input type="checkbox"/> 1) Three poles loaded 2) One pole and neutral pole loaded <input checked="" type="checkbox"/> 1) Four-poles loaded	I _N = 63A	P
	Ambient air temperature	T _{amb} = 24,3°C	P
	Parts Temperature rise [K]	[K] [K] [K]	--
	L1	≤48 ≤46 ≤50	P

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Clause	Requirement + Test	Result - Remark			Verdict	
	L2	≤53	≤50	≤52		
	L3	≤50	≤51	≤55		
	L4	≤47	≤47	≤48		
	Terminals for external connections 60 K				P	
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40 K	≤21	≤20	≤22	P	
	External metallic parts of operating means .. 25 K	-	-	-	N/A	
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60 K	≤47	≤46	≤48	P	

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
9.8.5	Measurement of power losses	B-22	B-23	B-24	--
	Power loss do not exceed the values stated in table 15	13W			P
	Test current: $I_N = 63A$ (reach the steady state value)				P
	Loaded one pole after the other				P
	Max. power loss : 6,0 W	W	W	W	--
	L1	≤5,1	≤5,1	≤5,2	P
	L2	≤6,0	≤5,4	≤5,7	
	L3	≤5,6	≤5,9	≤6,0	
	L4	≤4,9	≤5,0	≤5,4	
8.5	Uninterrupted duty				--
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				--
	28 cycles - 21 h with current - 3 h without current cross sectional area. 16mm ²				N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature				N/A
	Parts Temperature rise [K]				N/A
	Terminals for external connections 60 K				N/A
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 8.8) by more than 15 K				N/A
	Test current 1,45 $I_N = 91,4A$				N/A
	- Tripping within				--
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)	-	-	-	N/A

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Clause	Requirement + Test	Result - Remark			Verdict	
	TESTS „C“ 3 + 3 samples (MC3 1P;C63;ICN=4500A)					
9.11.3	Dielectric strength reduced to 900 V	C1-1	C1-2	C1-3	P	
		1500V				
	TESTS „C“ 3 + 3 samples (MC3 4P;C63;ICN=4500A)					
9.11.3	Dielectric strength reduced to 900 V	C1-4	C1-5	C1-6	P	
		1500V				
9.12.11.2.2	Test C₂ : Short-circuit test on circuit-breakers for use in IT systems (MC3 1P;C63;ICN=4500A)				--	
	Test voltage 105 % of 400 V	438V			P	
9.12.11.2.2	Test C₂ : Short-circuit test on circuit-breakers for use in IT systems (2P;C63;Icn=4500A)				--	
	Test voltage 105 % of 400 V	438V			P	
9.12.11.2.2	Test C₂ : Short-circuit test on circuit-breakers for use in IT systems (MC3 4P;C63; Icn=4500A)				--	
	Test voltage 105 % of 400 V	438V			P	
	TESTS „D“ 3 samples(MC3 1P;C63; Icn=4500A)					
9.10	Tests: D₀	D₀+D₁₋₁	D₀+D₁₋₂	D₀+D₁₋₃	P	
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P	
9.10.2.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A	
	Test current 3I _N (A), starting from cold	_____ A			N/A	
	Opening time:	[s]	[s]	[s]	N/A	
	- 0,1s ≤ t ≤ 45s (≤ 32A)				N/A	
	- 0,1s ≤ t ≤ 90s (> 32A)				N/A	
	Moreover the CB shall perform following test:				N/A	
9.10.1.2	Test current 2,55 I _N (A) starting from cold for:	_____ A			N/A	
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A	
	- 60 s (≤ 32 A)				N/A	
	- 120 s (> 32 A)				N/A	

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Clause	Requirement + Test	Result - Remark			Verdict
9.10.2.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	315A			--
	Opening time:	[s]	[s]	[s]	--
	- $0,1s \leq t \leq 15 s (\leq 32A)$	-	-	-	N/A
	- $0,1s \leq t \leq 30 s (> 32A)$	1	1	1	P
	Moreover the CB shall perform following test:				P
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	160,7A			--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s ($\leq 32 A$)	-	-	-	N/A
	- 120 s ($> 32 A$)	25	20	29	P
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 4s (10 A < I_N \leq 32 A)$				N/A
	- $0,1s \leq t \leq 10s (10 A \geq I_N > 32A)$				N/A
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s ($\leq 32 A$)				N/A
	- 120 s ($> 32 A$)				N/A

TESTS „D“ 3 samples(MC3 4P;C63;Icn=4500A)					
9.10	Tests: D ₀	D ₀ +D ₁₋₄	D ₀ +D ₁₋₅	D ₀ +D ₁₋₆	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 45s (\leq 32A)$				N/A
	- $0,1s \leq t \leq 90s (> 32A)$				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.2.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	315A			--
	Opening time:	[s]	[s]	[s]	--
	- 0,1s $\leq t \leq 15$ s (≤ 32 A)	-	-	-	N/A
	- 0,1s $\leq t \leq 30$ s (> 32 A)	1	1	1	P
	Moreover the CB shall perform following test:				P
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	160,7A			--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)	-	-	-	N/A
	- 120 s (> 32 A)	31	23	26	P
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- 0,1s $\leq t \leq 4$ s (10 A $< I_N \leq 32$ A)				N/A
	- 0,1s $\leq t \leq 10$ s (10 A $\geq I_N > 32$ A)				N/A
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A

	TESTS „D“ 1 samples (MC3 1P;C50;Icn=4500A) (MC3 1P;C40;Icn=4500A) (MC3 1P;C32;Icn=4500A)				
9.10	Tests: D_o	D_{o-1}	D_{o-2}	D_{o-3}	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- 0,1s $\leq t \leq 45$ s (≤ 32 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- 0,1s ≤ t ≤ 90s (> 32A)				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current 2,55 I _N (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.2.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current 5I _N (A), starting from cold	250A	200A	160A	--
	Opening time:	[s]	[s]	[s]	--
	- 0,1s ≤ t ≤ 15 s (≤ 32A)	-	-	1	P
	- 0,1s ≤ t ≤ 30 s (> 32A)	1	1	-	P
	Moreover the CB shall perform following test:				P
9.10.1.2	Test current 2,55 I _N (A) starting from cold for:	127,5A	102A	81,6A	--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)	-	-	29	P
	- 120 s (> 32 A)	21	22	-	P
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current 10I _N (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- 0,1s ≤ t ≤ 4s (10 A < I _n ≤ 32 A)				N/A
	- 0,1s ≤ t ≤ 10s (10 A ≥ I _n > 32A)				N/A
	Test current 20 I _N (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current 2,55 I _N (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
	TESTS „D“ 1 samples (MC3 1P;C25;Icn=4500A) (MC3 1P;C20;Icn=4500A) (MC3 1P;C16;Icn=4500A)				
9.10	Tests: D₀	D₀₋₄	D₀₋₅	D₀₋₆	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.10.2.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 45s$ ($\leq 32A$)				N/A
	- $0,1s \leq t \leq 90s$ ($> 32A$)				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s ($\leq 32 A$)				N/A
	- 120 s ($> 32 A$)				N/A
9.10.2.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	125A	100A	80A	--
	Opening time:	[s]	[s]	[s]	--
	- $0,1s \leq t \leq 15 s$ ($\leq 32A$)	1	1	1	P
	- $0,1s \leq t \leq 30 s$ ($> 32A$)	-	-	-	P
	Moreover the CB shall perform following test:				P
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	63,8A	51,0A	40,8A	--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s ($\leq 32 A$)	29	18	23	P
	- 120 s ($> 32 A$)	-	-	-	P
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 4s$ ($10 A < I_N \leq 32 A$)				N/A
	- $0,1s \leq t \leq 10s$ ($10 A \geq I_N > 32A$)				N/A
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s ($\leq 32 A$)				N/A
	- 120 s ($> 32 A$)				N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D“ 1 samples (MC3 1P;C10;Icn=4500A) (MC3 1P;C6;Icn=4500A)				
9.10	Tests: D₀	D₀₋₇	D₀₋₈	-	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input type="checkbox"/> For circuit-breakers of the B – Type				N/A
	Test current $3I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 45s$ ($\leq 32A$)				N/A
	- $0,1s \leq t \leq 90s$ ($> 32A$)				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s ($\leq 32 A$)				N/A
	- 120 s ($> 32 A$)				N/A
9.10.2.3	<input checked="" type="checkbox"/> For circuit-breakers of the C – Type				P
	Test current $5I_N$ (A), starting from cold	50A	30A	-	--
	Opening time:	[s]	[s]	[s]	--
	- $0,1s \leq t \leq 15 s$ ($\leq 32A$)	1	1	-	P
	- $0,1s \leq t \leq 30 s$ ($> 32A$)	-	-	-	P
	Moreover the CB shall perform following test:				P
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	25,5A	15,3A	-	--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s ($\leq 32 A$)	25	19	-	P
	- 120 s ($> 32 A$)	-	-	-	P
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 4s$ ($10 A < I_N \leq 32 A$)				N/A
	- $0,1s \leq t \leq 10s$ ($10 A \geq I_N > 32A$)				N/A
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A

TESTS „D“ 1 samples (MC3 1P;B63;Icn=4500A) (MC3 4P;B63;Icn=4500A)					
9.10	Tests: D₀	D₀₋₉	D₀₋₁₀	-	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	189A	189A	-	P
	Opening time:	[s]	[s]	[s]	
	- 0,1s $\leq t \leq 45$ s (≤ 32 A)	-	-	-	N/A
	- 0,1s $\leq t \leq 90$ s (> 32 A)	4	6	-	P
	Moreover the CB shall perform following test:				
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	160,7A	160,7A	-	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	
	- 60 s (≤ 32 A)	-	-	-	N/A
	- 120 s (> 32 A)	15	21	-	P
9.10.2.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold	_____ A			--
	Opening time:	[s]	[s]	[s]	--
	- 0,1s $\leq t \leq 15$ s (≤ 32 A)				N/A
	- 0,1s $\leq t \leq 30$ s (> 32 A)				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- 0,1s $\leq t \leq 4$ s (10 A $< I_N \leq 32$ A)				N/A
	- 0,1s $\leq t \leq 10$ s (10 A $\geq I_N > 32$ A)				N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
	TESTS „D“ 1 samples (MC3 1P;B50;Icn=4500A) (MC3 1P;B40;Icn=4500A) (MC3 1P;B32;Icn=4500A)				
9.10	Tests: Do	Do-11	Do-12	Do-13	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	150A	120A	96A	P
	Opening time:	[s]	[s]	[s]	
	- $0,1s \leq t \leq 45s$ ($\leq 32A$)	-	-	5	P
	- $0,1s \leq t \leq 90s$ ($> 32A$)	5	6	-	P
	Moreover the CB shall perform following test:				
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	127,5A	102A	81,6A	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	
	- 60 s (≤ 32 A)	-	-	12	P
	- 120 s (> 32 A)	14	17	-	P
9.10.2.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold	_____ A			--
	Opening time:	[s]	[s]	[s]	--
	- $0,1s \leq t \leq 15 s$ ($\leq 32A$)				N/A
	- $0,1s \leq t \leq 30 s$ ($> 32A$)				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			--
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 4s$ ($10 A < I_N \leq 32 A$)				N/A
	- $0,1s \leq t \leq 10s$ ($10 A \geq I_N > 32A$)				N/A
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s ($\leq 32 A$)				N/A
	- 120 s ($> 32 A$)				N/A
	TESTS „D“ 1 samples (MC3 1P;B25;Icn=4500A) (MC3 1P;B20;Icn=4500A) (MC3 1P;B16;Icn=4500A)				
9.10	Tests: D₀	D₀₋₁₄	D₀₋₁₅	D₀₋₁₆	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	75A	60A	48A	P
	Opening time:	[s]	[s]	[s]	
	- $0,1s \leq t \leq 45s$ ($\leq 32A$)	4	7	8	P
	- $0,1s \leq t \leq 90s$ ($> 32A$)	-	-	-	N/A
	Moreover the CB shall perform following test:				
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	63,8A	51,0A	40,8A	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	
	- 60 s ($\leq 32 A$)	15	21	18	P
	- 120 s ($> 32 A$)	-	-	-	N/A
9.10.2.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold	_____ A			--
	Opening time:	[s]	[s]	[s]	--
	- $0,1s \leq t \leq 15 s$ ($\leq 32A$)				N/A
	- $0,1s \leq t \leq 30 s$ ($> 32A$)				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			--

IEC 60898-1 AMENDMENT					
Clause	Requirement + Test	Result - Remark			Verdict
	opening time not less than 1 s or more than	[s]	[s]	[s]	--
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type				N/A
	Test current $10I_N$ (A), starting from cold	_____ A			N/A
	Opening time:	[s]	[s]	[s]	N/A
	- $0,1s \leq t \leq 4s$ ($10 A < I_N \leq 32 A$)				N/A
	- $0,1s \leq t \leq 10s$ ($10 A \geq I_N > 32A$)				N/A
	Test current $20 I_N$ (A) starting from cold				N/A
	Tripping less than 0,1 s				N/A
	Moreover the CB shall perform following test:				N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)				N/A

TESTS „D“ 1 samples (MC3 1P;B10;Icn=4500A) (MC3 1P;B6;Icn=4500A)					
9.10	Tests: D_o	D_{o-17}	D_{o-18}	-	P
	If the tests are made in a test chamber, it shall be made in still air; the volume of the chamber shall not affect the test results.				P
9.10.2.2	<input checked="" type="checkbox"/> For circuit-breakers of the B – Type				P
	Test current $3I_N$ (A), starting from cold	30A	18A	-	P
	Opening time:	[s]	[s]	[s]	
	- $0,1s \leq t \leq 45s$ ($\leq 32A$)	4	6	-	P
	- $0,1s \leq t \leq 90s$ ($> 32A$)	-	-	-	N/A
	Moreover the CB shall perform following test:				
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	25,5A	15,3A	-	P
	opening time not less than 1 s or more than	[s]	[s]	[s]	
	- 60 s (≤ 32 A)	13	15	-	P
	- 120 s (> 32 A)	-	-	-	N/A
9.10.2.3	<input type="checkbox"/> For circuit-breakers of the C – Type				N/A
	Test current $5I_N$ (A), starting from cold	_____ A			--
	Opening time:	[s]	[s]	[s]	--

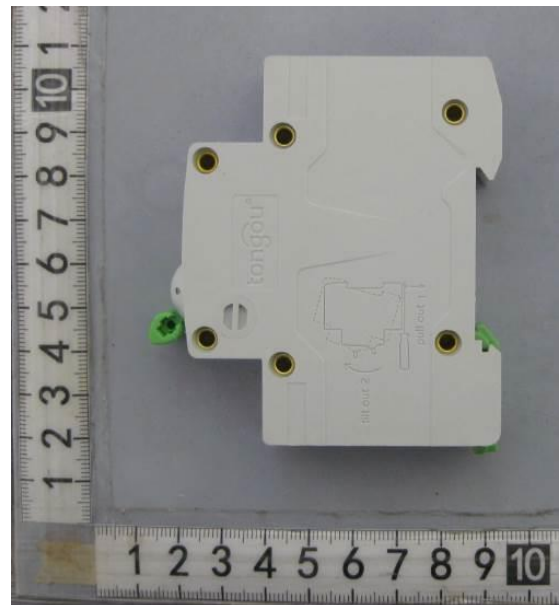
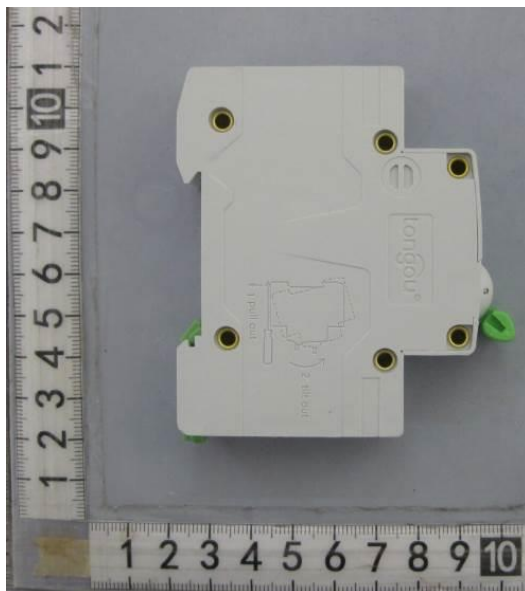
IEC 60898-1 AMENDMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	- $0,1s \leq t \leq 15 s (\leq 32A)$		N/A
	- $0,1s \leq t \leq 30 s (> 32A)$		N/A
	Moreover the CB shall perform following test:		N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A	--
	opening time not less than 1 s or more than	[s] [s] [s]	--
	- $60 s (\leq 32 A)$		N/A
	- $120 s (> 32 A)$		N/A
9.10.2.4	<input type="checkbox"/> For circuit-breakers of the D – Type		N/A
	Test current $10I_N$ (A), starting from cold	_____ A	N/A
	Opening time:	[s] [s] [s]	N/A
	- $0,1s \leq t \leq 4s (10 A < I_N \leq 32 A)$		N/A
	- $0,1s \leq t \leq 10s (10 A \geq I_N > 32A)$		N/A
	Test current $20 I_N$ (A) starting from cold		N/A
	Tripping less than 0,1 s		N/A
	Moreover the CB shall perform following test:		N/A
9.10.1.2	Test current $2,55 I_N$ (A) starting from cold for:	_____ A	N/A
	opening time not less than 1 s or more than	[s] [s] [s]	N/A
	- $60 s (\leq 32 A)$		N/A
	- $120 s (> 32 A)$		N/A

Photographs

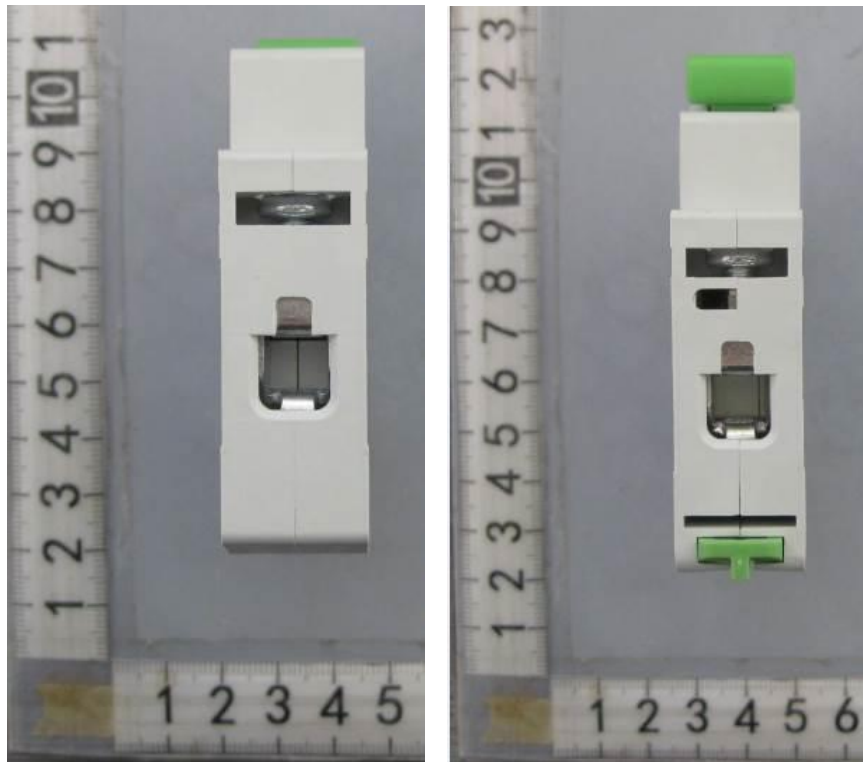
TOMC3-63/1/C63
Over View



Side View



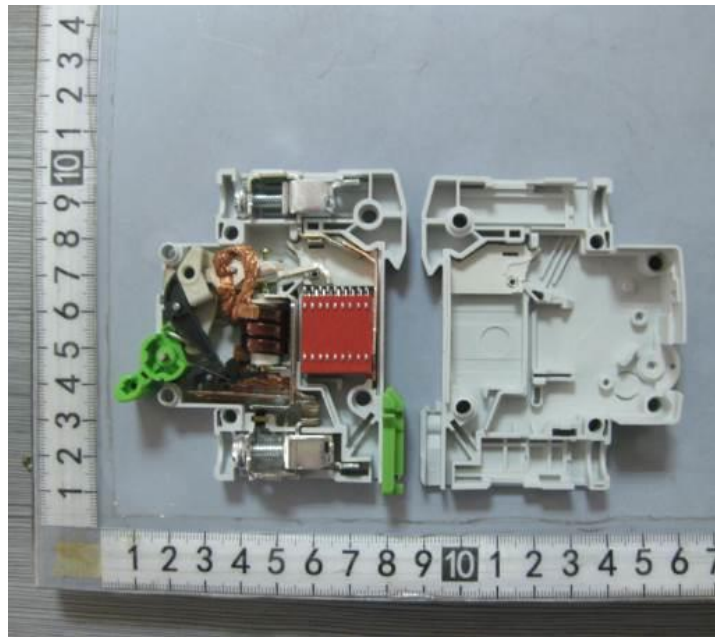
Side View



Bottom View

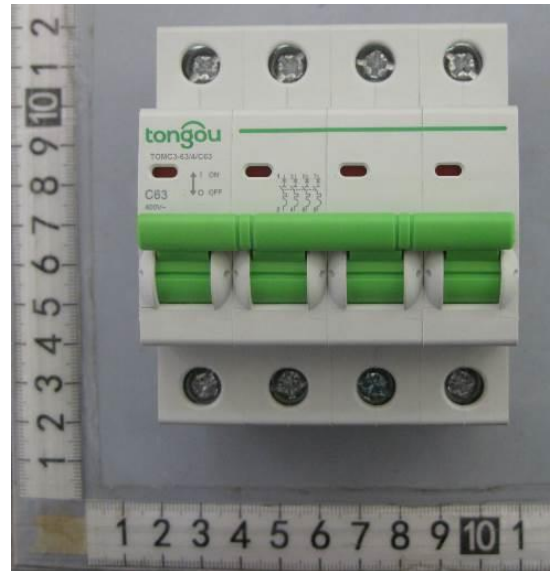


Inside View

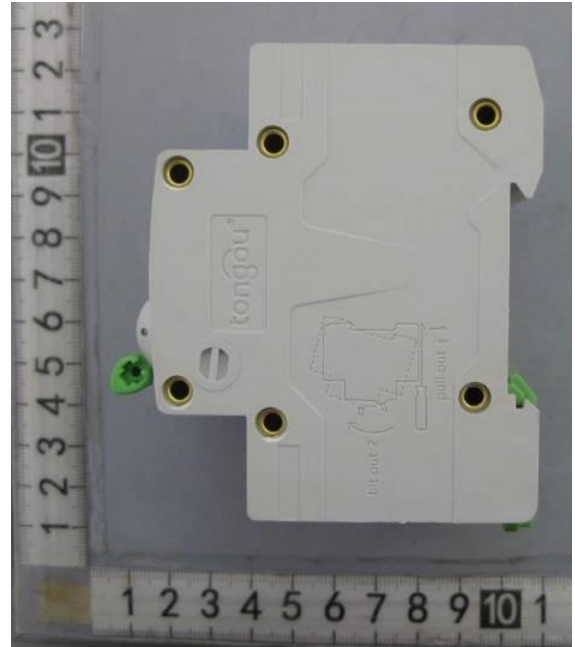
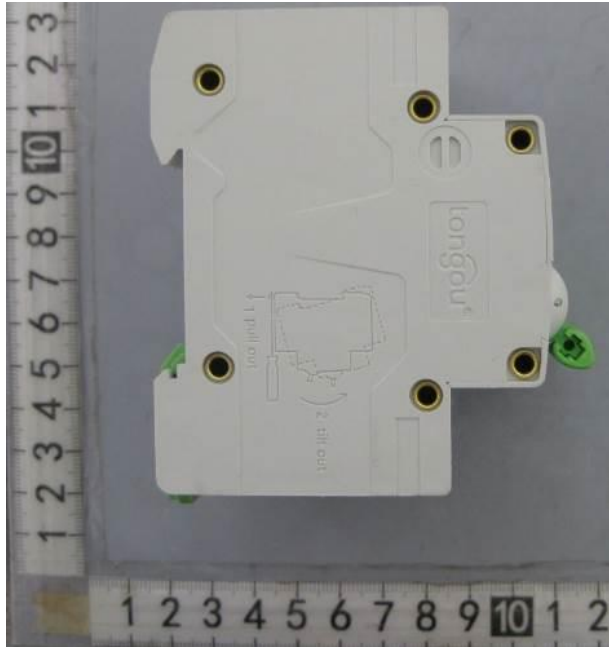


Photographs

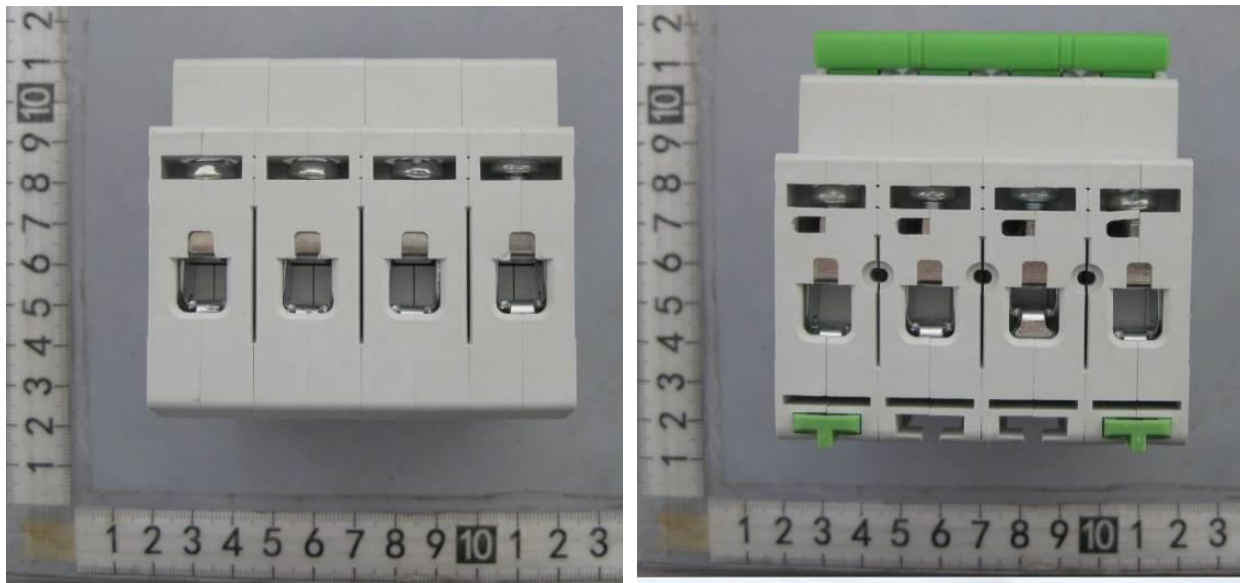
TOMC3-63/4/C63
Over View



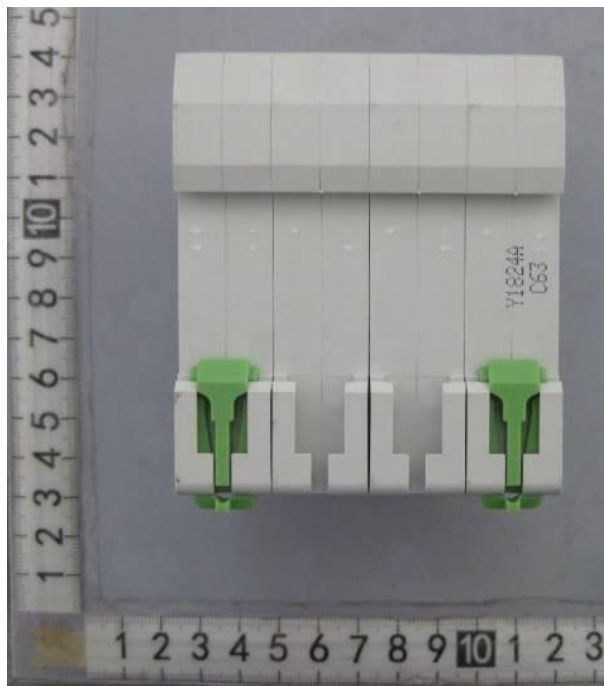
Side View



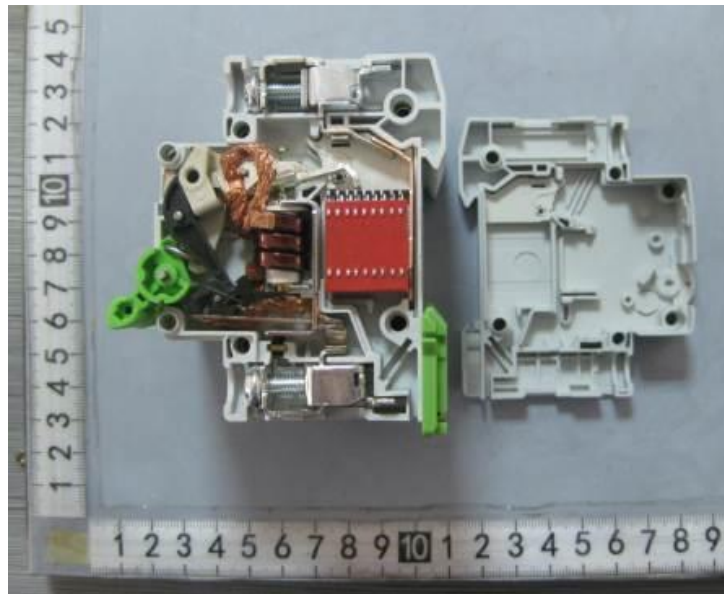
Side View



Bottom View



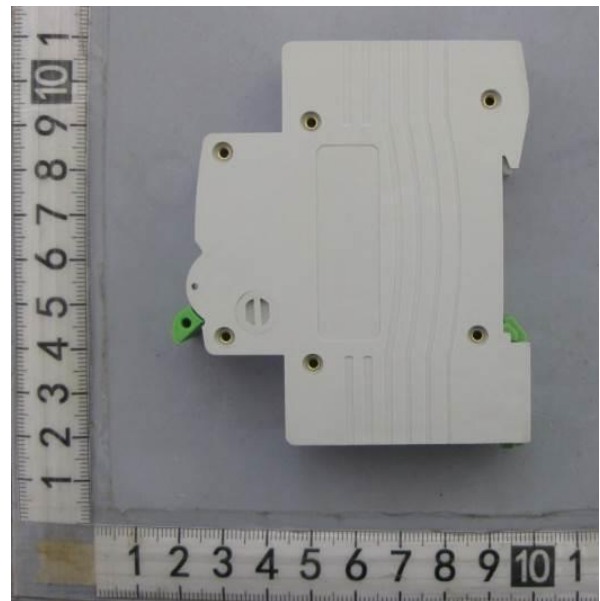
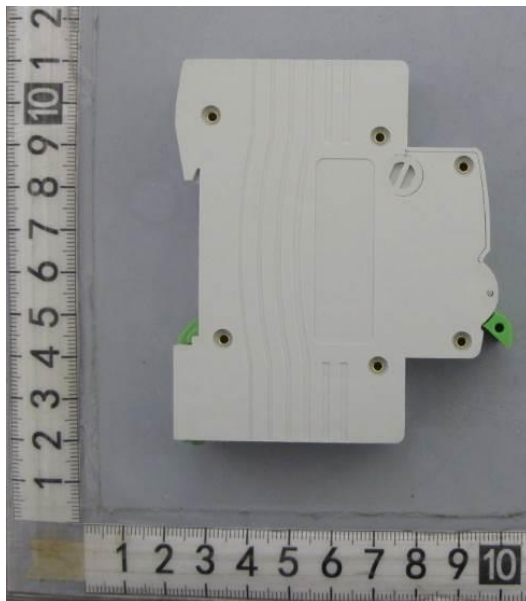
Inside View



TOMC5-63/1/C63
Over View



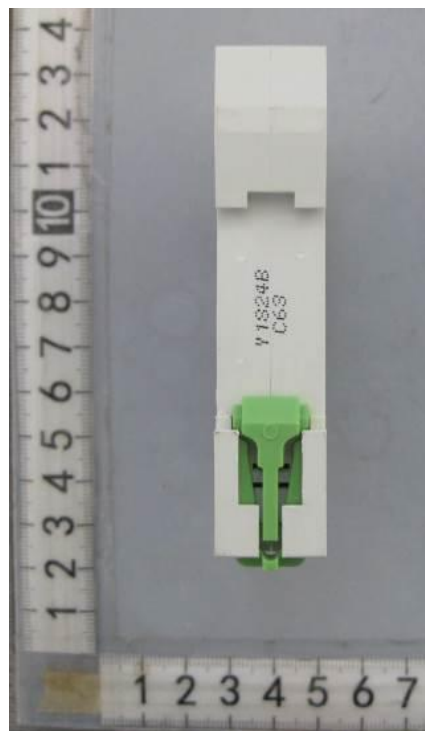
Side View



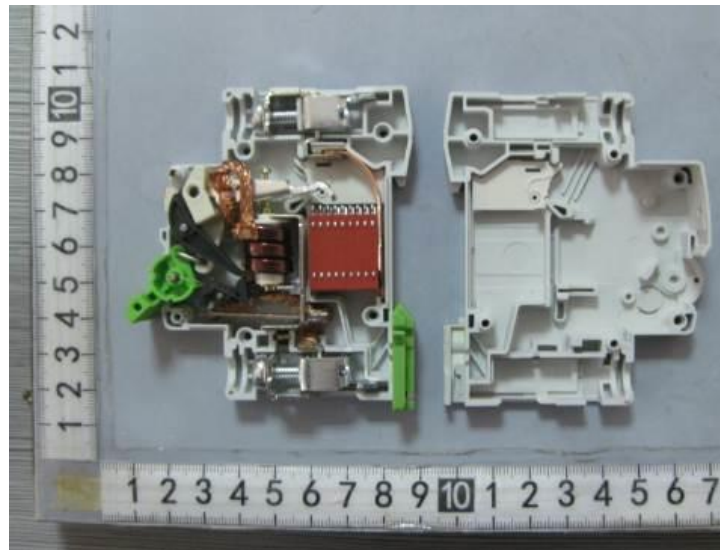
Side View



Bottom View



Inside View

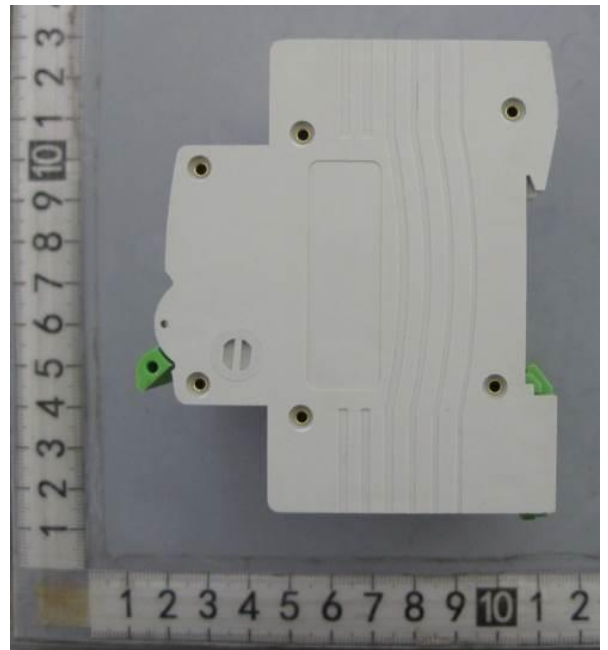
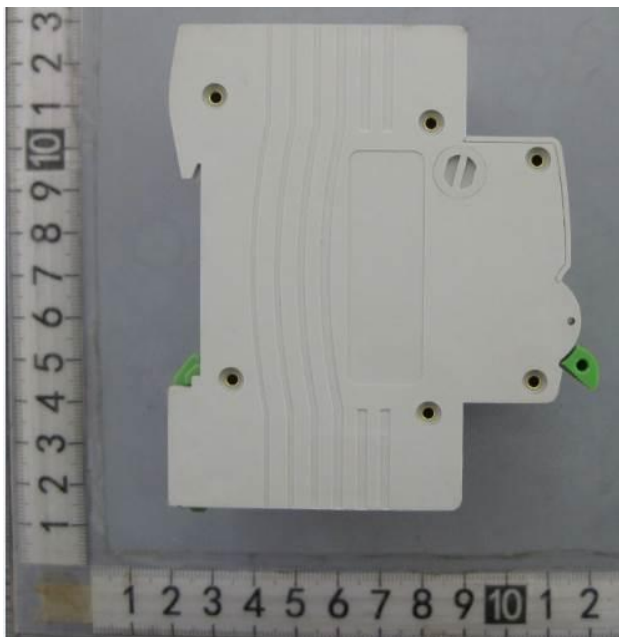


Photographs

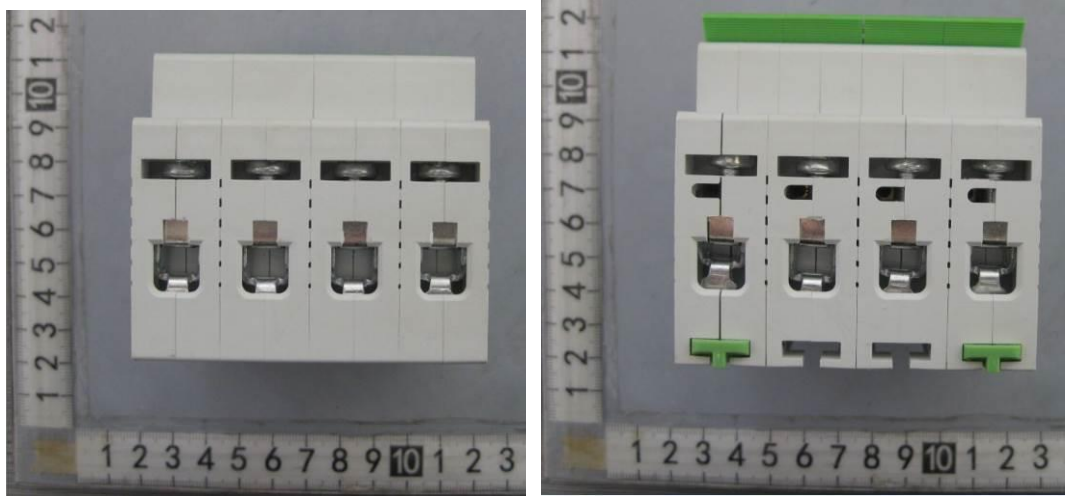
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Over View



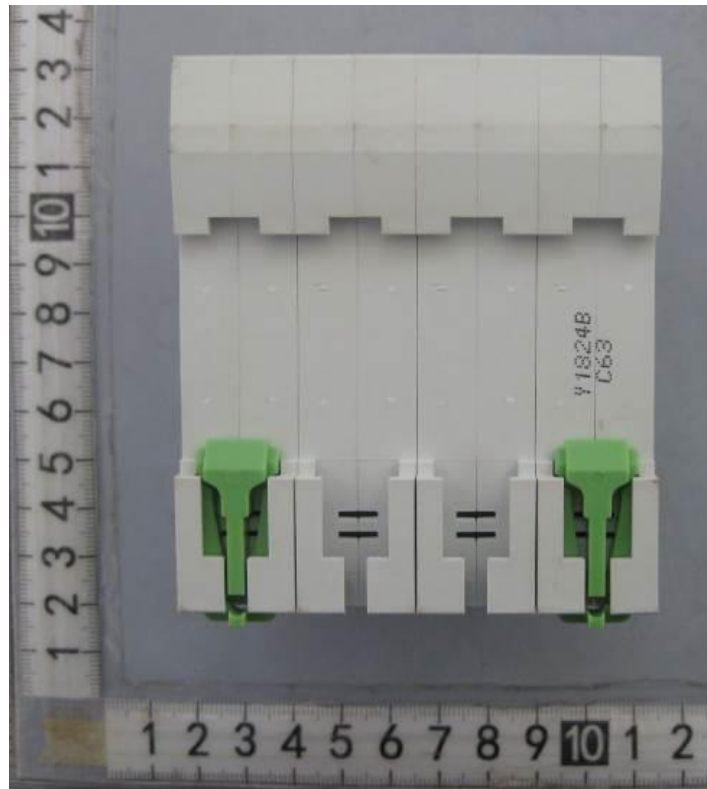
Side View



Side View



Bottom View



Inside View

