

**IEC SYSTEM FOR CONFORMITY TESTING TO
STANDARDS FOR SAFETY OF ELECTRICAL
EQUIPMENT (IECEE)
CB SCHEME**

**SYSTEME CEI D'ESSAIS DE CONFORMITE AUX
NORMES DE SECURITE DE L'EQUIPEMENT
ELECTRIQUE (IECEE)
METHODE OC**

**CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC**

Product
Produit

Name and address of the applicant
Nom et adresse du demandeur

Name and address of the manufacturer
Nom et adresse du fabricant

Name and address of the factory
Nom et adresse de l'usine

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

Trade mark (if any)
Marque de fabrique (si elle existe)

Model/type Ref.
Ref. de type

Additional information (if necessary)
Information complémentaire (si nécessaire)

A sample of the product was tested and found
to be in conformity with
*Un échantillon de ce produit a été essayé et a été
considéré conforme à la*

as shown in the Test Report Ref. No.
which form part of this certificate
*comme indiqué dans le Rapport d'essais numéro
de référence
qui constitue une partie de ce certificat*

Auxiliary contact block

**Benedikt & Jäger
A-1061 Wien, Hofmühlgasse 4**

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A-1061 Wien, Hofmühlgasse 4**

**AC 440 V, 10 A
Utilization category AC 1**

Benedikt & Jäger

RH 11

**Auxiliary contact block to be coupled with
Contactors R 25-xx, R40-xx, R63-xx**

IEC-Publ. 947-5-1/1990

CTI-CB 359

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

sg/ma

**Austrian Electrotechnical Association
A-1190 Wien, Kahlenberger Str. 2b**



Österreichischer Verband für Elektrotechnik
Sektion
Prüfwesen & Zertifizierung



W. Martin



Date **1998 07 06**

**Dipl.-Ing. W. Martin
Head of Dept. Testing & Certification**

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Head of Dept. Testing & Certification**

TEST REPORT
IEC 947-5-1/EN 60947-5-1
Low-voltage switchgear and controlgear
Part 5-1: Control circuit devices and switching elements;
Electromechanical control circuit devices

Report reference No. : CTI-CB 359

Compiled by (+ signature) : H.Bachl, J.Wolf

Approved by (+ signature) : Dr.Biegelmeier

Date of issue : 4.6.1998



[Handwritten signatures]

Testing laboratory : CTI-Testing Institute

Address : A-1195 Vienna, Greinergasse 30

Testing location : see above

Applicant : Benedikt & Jäger

Address : A-1060 Vienna, Hofmühlgasse 4

Standard : IEC 947-5-1:1990

Test Report Form No. : 947-5-1A

TRF date : 95.09

TRF originator : ÖVE

Copyright blank test report : ÖVE

Test procedure : CB-scheme, CCA-scheme

Procedure deviation : none

Non-standard test method : none

Type of test item : Auxiliary contact block

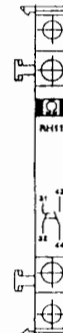
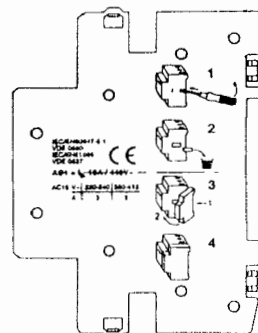
Trademark : Benedikt & Jäger

Model/type reference : RH 11

Manufacturer : Benedikt & Jäger

Rating : AC 1 440 V AC 10 A (IEC 947-4-1)

Copy of marking plate



Test item particular	:
- method of operation ...	: mechanically coupled with contactor
- switching positions ...	: ON - OFF
- number of circuits...	: 2
- kind of current ...	: AC
- number and kind of contact elements...	: 1 NO + 1 NC
- rated frequency (Hz) ...	: 50 - 60
- number of positions of main contacts ...	: 2
Rated and limiting values, main circuit	: for AC 1
- rated operational voltage U_e (V) ...	: 440 V
- rated insulation voltage U_i (V) ...	: 440 V
- rated impulse withstand voltage U_{imp} (kV) ...	: 4 kV
- conventional free air thermal current I_{th} (A) ...	: 10 A
- conventional enclosed thermal current I_{the} (A) ...	: 10 A
- rated operational current I_e (A) ...	: 10 A
- rated uninterrupted current I_u (A) ...	: 10 A
- utilization category ...	: AC 1
Short circuit characteristic	:
- rated conditional short-circuit current I_q (kA) ...	: 1 kA
Co-ordination of short-circuit protective devices	:
- kind of protective device ...	: fuse 10 AgL

Possible test case verdicts:

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

General remarks:

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

„(see appended table)“ refers to a table appended to the report.

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

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

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

IEC 947-5-1 / EN 60947-5-1

Cl.	Requirement - Test	Result	Verdict
5.2	MARKING		
	Data shall be preferably marked on the equipment:		
a	- manufacturer's name or trade mark	BLI Ω	P
b	- type designation or serial number	RH11	P
	Data shall be included on the nameplate, or on the equipment, or in the manufacturer's published literature:		
c	- number of this standard	IEC 60947-5-1	P
d	- rated operational voltages	440V	P
e	- utilization category and rated operational currents at the rated operational voltages of the control circuit device	AC1 10A 440V	P
f	- rated insulation voltage	440V	P
g	- rated impulse withstand voltage	4kV	P
h	- switching overvoltages, if applicable	≤ 4kV	P
i	- IP code, in case of enclosed control circuit device	IP20	P
j	- pollution degree	3	P
k	- type and maximum ratings of short-circuit protective device	FUSE 10 AgL	P
l	- conditional short-circuit current if less than 1000A		N
m	- suitability for isolation, where applicable		N

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
7.1	CONSTRUCTION		
7.1.1	Materials		
7.1.2	Current-carrying parts and their connection		
7.1.3	CLEARANCES		
	U_{imp} is given as:	4kV	P
	- Max. value of rated operational voltage to earth	300 V / 600V	-
	- Nominal voltage of supply system	230/400V / 400/690V	-
	- overvoltage category	IV / III	-
	- Pollution degree	3	-
	- Field in- or homogeneous	INHOMOGENOUS	-
	- Minimum clearances (mm)	3	-
	- Measured clearances (mm)	≥ 3	P
	U_{imp} isn't given		N
	- Rated insulation voltage U _i (V)		-
	- I _e		-
	- Minimum clearances L-L / L-A (mm)		-
	- Measured clearances L-L / L-A (mm)		-
	CREEPAGE DISTANCES		
	U_{imp} is given as:		
	- Material group / CTI	Min. III (6)	-
	- Minimum creepage distances (mm)	6,3	-
	- Measured creepage distances (mm)	≥ 6,9	P
	U_{imp} isn't given		N
	- Material Column a or b		-
	- Minimum creepage distances (mm)		-
	- Measured creepage distances (mm)		-
7.1.4	Actuator		
7.1.4.1	Insulation		
7.1.4.2	Direction		
7.1.4.3	Actuating force (or moment)		
7.1.4.4	Limitation of rotation (of rotary switch)		
7.1.4.5	Emergency stop		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
8.3.1.a	Test sequence I <i>MEASURED WITH CONTACTOR R63</i>		
8.3.3.3	Temperature-rise		
	ambient temperature 10-40°C	<i>24°C</i>	-
	test enclosure W x H x D (mm x mm x mm)	<i>115 x 115 x 175</i>	-
	material of enclosure	<i>Steel</i>	-
	NO-contacts, test conditions:		
	- rated operational current I _e (A) <i>(63A for contactor)</i>	<i>10</i>	-
	- cable cross-section (mm ²) <i>(16mm² for contactor)</i>	<i>1,5</i>	-
	temperature-rise of NO terminals ≤.....K <i>65</i>	<i>see table (page)</i>	<i>P</i>
	NC-contacts, test conditions: <i>construction identical with No-contact</i>		
	- rated operational current I _e (A)		-
	- cable cross-section (mm ²)		-
	temperature-rise of NC terminals ≤.....K		
	coils and electromagnets, test conditions: <i>CONTACTOR R63</i>		
	- rated control supply voltage U _s (V)	<i>220</i>	-
	- Class of insulating material	<i>F</i>	-
	temperature-rise of coil and electromagnets ≤.....K		<i>N</i>
8.3.3.2	Operating limits		<i>N</i>
8.3.3.2.1	Power-operated equipment		<i>N</i>
	Ambient temperature		-
	rated control supply voltage U _s (V)		-
	Frequency (Hz)		-
	limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage U _s		
	limits of drop out and open fully are 75% to 20% for a.c. and 75% to 10% for d.c.		
8.3.3.4	Test of dielectric properties, impulse withstand voltage (U _{imp} indicated):		
	- verification by measurement of Clearances instead of testing		<i>N</i>
	- rated impulse withstand voltage (V)	<i>4000</i>	-
	- test U _{imp} auxiliary circuits (kV)	<i>4,3</i>	<i>P</i>

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):	/	N
	- rated insulation voltage (V)		-
	- control and auxiliary circuits, test voltage for 1 min (V)		
8.2.4	Mechanical properties of terminals	<i>identical with coil terminals</i>	
8.2.4.2	Mechanical strength of terminals	<i>of contactors R25/R40/R63</i>	
	maximum cross-sectional area of conductor (mm ²)		-
	diameter of thread (mm)		-
	torque (Nm)		-
	5 times on 2 separate clamping units		
3.2.4.3	Testing for damage to and accidental loosening of conductor (flexion test)		
	conductor of the smallest cross-sectional area (mm ²)		-
	number of conductor of the smallest cross section		-
	diameter of bushing hole (mm)		-
	height between the equipment and the platen (mm)		-
	mass at the conductor(s) (kg)		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		
3.2.4.4	Pull-out test		
	force (N)		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		
	Flexion test		
	conductor of the largest cross-sectional area (mm ²)		-
	number of conductor of the largest cross section		-
	diameter of bushing hole (mm)		-
	height between the equipment and the platen (mm)		-
	mass at the conductor(s) (kg)		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Pull-out test		
	force (N)		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		
	flexion test		
	conductor of the largest and smallest cross sectional area (mm ²)		-
	number of conductor of the smallest cross sectional, number of conductor of the largest cross sectional		-
	diameter of bushing hole (mm)		-
	height between the equipment and the platen (mm)		-
	mass at the conductor(s) (kg)		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		
	Pull-out test		
	force (N)		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test sequence II		
8.3.3.5	Making and breaking capacity		P
	utilization category	AC1 IEC 947-4-1	-
	rated operational voltage Ue (V)	440	-
	rated operational current Ie (A) or power (kW)	10	-
	Conditions, make/break operations AC1 only:		P
	- test voltage U/Ue = 1,05 (V)	L1: 462 L2: L3:	-
	- test current I/Ie = (A) 1,5 · Ie	L1: 16 L2: L3:	-
	power factor / time constant	L1: 0,82 L2: L3:	-
	on-time (ms)	200	-
	off-time (s)	9,8	-
	number of make/break operations	50	P
	Behaviour and condition during and after the test		
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P
	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
8.3.3.6	Operational performance capability		P
	utilization category	AC1 IEC 947-5-1	-
	rated operational voltage Ue (V)	440	-
	rated operational current Ie (A) or power (kW)	10	-
	Conditions, make/break operations AC1 only:		P
	- test voltage U/Ue = 1,05 (V)	L1: 462 L2: L3:	-
	- test current I/Ie = (A)	L1: 10 L2: L3:	-
	power factor / time constant	L1: 0,76 L2: L3:	-
	on-time (ms)	200	-
	off-time (s)	2,3	-
	number of make/break operations	6000	P
8.3.3.6.6	Behaviour and condition during and after the test		
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P
	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P
	dielectric verification		
	test voltage (2xUe + 1000V) for 1min (V)	1880	P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
8.3.3.5.3	Making and breaking capacities of switching elements under abnormal conditions		
	utilization category		-
	rated operational voltage U_e (V)		-
	rated operational current I_e (A) or power (kW)		-
	Conditions, make/break operations:		
	- test voltage $U/U_e = 1,1$ (V)	L1: L2: L3:	-
	power factor / time constant	L1: L2: L3:	-
	- make operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	- break operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	on-time (ms)		-
	operating cycles per minute		-
	number of operating cycles		
	Behaviour and condition during and after the test		
	- no electrical or mechanical failures		
	- no contact welding or prolonged arcing		
	- no blowing of the fusible element in the earth circuit		
	dielectric verification		
	dielectric test voltage (V)		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	utilization category		-
	rated operational voltage U_e (V)		-
	rated operational current I_e (A) or power (kW)		-
	Conditions, make/break operations:		
	- test voltage $U/U_e = 1,1$ (V)	L1: L2: L3:	-
	power factor / time constant	L1: L2: L3:	-
	- make operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	- break operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	on-time (ms)		-
	operating cycles per minute		-
	number of operating cycles		
	Behaviour and condition during and after the test		
	- no electrical or mechanical failures		
	- no contact welding or prolonged arcing		
	- no blowing of the fusible element in the earth circuit		
	dielectric verification		
	dielectric test voltage (V)		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test sequence III		
8.3.3.5.2	Making and breaking capacities of switching elements under normal conditions		
	utilization category		-
	rated operational voltage U_e (V)		-
	rated operational current I_e (A) or power (kW)		-
	Conditions, make/break operations:		
	- test voltage $U/U_e = 1,1$ (V)	L1: L2: L3:	-
	power factor / time constant	L1: L2: L3:	-
	- make operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	- break operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	on-time (ms)		-
	operating cycles per minute		-
	number of operating cycles		
	Behaviour and condition during and after the test		
	- no electrical or mechanical failures		
	- no contact welding or prolonged arcing		
	- no blowing of the fusible element in the earth circuit		
	dielectric verification		
	dielectric test voltage (V)		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	utilization category		-
	rated operational voltage U_e (V)		-
	rated operational current I_e (A) or power (kW)		-
	Conditions, make/break operations:		
	- test voltage $U/U_e = 1,1$ (V)	L1: L2: L3:	-
	power factor / time constant	L1: L2: L3:	-
	- make operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	- break operations test current $I/I_e = \dots\dots\dots$ (A)	L1: L2: L3:	-
	on-time (ms)		-
	operating cycles per minute		-
	number of operating cycles		
	Behaviour and condition during and after the test		
	- no electrical or mechanical failures		
	- no contact welding or prolonged arcing		
	- no blowing of the fusible element in the earth circuit		
	dielectric verification		
	dielectric test voltage (V)		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test sequence IV		P
8.3.4	Performance under conditional short-circuit current		P
	type of SCPD	DIAZED	P
	ratings of SCPD	10 A 9L	-
	prospective current (kA)	1000	-
	test voltage U/Ue = 1,1 (V)	L1: 250 L2: 250 L3: 250	-
	r.m.s. test current (A)	L1: 1022 L2: 1030 L3: 1016	-
	power factor (max. 0,7)	0,65	-
	first making operation to closed switching elements	I_p [A] I^2t_p [A ² s]	P
	L1:		
	L2: ≤ 414	≤ 199	
	L3:		
	time intervall between test (min. 3min)	3 min	-
	second making operation to closed switching elements	I_p [A] I^2t_p [A ² s]	P
	L1:		
	L2: ≤ 414	≤ 199	
	L3:		
	time intervall between test (min. 3min)	3 min	-
	third making operation to closed switching elements	I_p [A] I^2t_p [A ² s]	P
	L1:		
	L2: ≤ 414	≤ 199	
	L3:		
	Behaviour of the equipment during the test		P
	switching elements open by the normal actuating system		P
	dielectric verification		P
	dielectric test voltage (V)	4900 / 1,2/50μs	P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
7.1.11	Degree of protection of enclosed equipment		
	Degree of protection	IP 20	
	Test for first characteristic		P
	Test for first numeral 1		N
	Test for first numeral 2	jointed test finger	P
		∅ 12,5mm sphere	P
	Test for first numeral 3		N
	Test for first numeral 4		
	Test for first numeral 5		
	Test for first numeral 6		

IEC 947-5-1 / EN 60947-5-1

Cl.	Requirement - Test	Result	Verdict
	Test for second characteristic		N
	Test for second numeral 1		
	Test for second numeral 2		
	Test for second numeral 3		
	Test for second numeral 4		
	Test for second numeral 5		
	Test for second numeral 6		
	Test for second numeral 7		
	Test for second numeral 8		

Remarks

The auxiliary contact block RH 11 is designed to be coupled with following types of contactors :

R 25 - x x	(covered	CB/AT	1111)
R 40 - x x	(covered	CB/AT	1057)
R 63 - x x	(covered	CB/AT	1057)