DNV·GL

KEMA TYPE TEST CERTIFICATE OF BREAKING PERFORMANCE

Object	High-voltage expulsion fuse-cutout with homogenous series of the fuse links 6 to 100 A	**5064-19**
Type	HV2-15/200	**Serial No.** -

Rated voltage	15 kV	Rated current	100 A
Rated frequency	50 Hz	Rated breaking capacity	10 kA

Manufacturer	Zhejiang Haivo Electrical Co., Ltd., Chongshi Industrial Zone, Panshi, Beibaixiang, Yueqing, Zhejiang, P. R. China *)
Client	Zhejiang Haivo Electrical Co., Ltd., Chongshi Industrial Zone, Panshi, Beibaixiang, Yueqing, Zhejiang, P. R. China
Tested by	KEMA Laboratories Prague, Zkušebnictví, a.s., Podnikatelská 547, Prague 9, the Czech Republic
Date of tests	18 and 19 February 2019

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60282-2:2008 subclause 8.6 (Breaking tests)

This Certificate has been issued by DNV GL following exclusively the STL Guides.

The results are shown in the record of proving tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as listed on page 5.

Digitally signed by Poleacova Larisa
Date: 2025.02.03 23:19:23 EET
Reason: MoldSign Signature
Location: Moldova
MOLDOVA EUROPEANĂ

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same type references as that tested rests with the Manufacturer.
*) as declared by the manufacturer

This Certificate consists of 85 pages in total.

Zkušebnictví, a.s.

Robert Jech
Operational Manager

KEMA Laboratories

Prague, 21 June 2019

INFORMATION SHEET

1 KEMA Type Test Certificate

A KEMA Type Test Certificate contains a record of a series of (type) tests carried out in accordance with a recognized standard. The object tested has fulfilled the requirements of this standard and the relevant ratings assigned by the manufacturer are endorsed by DNV GL. In addition, the object's technical drawings have been verified and the condition of the object after the tests is assessed and recorded. The Certificate contains the essential drawings and a description of the object tested. A KEMA Type Test Certificate signifies that the object meets all the requirements of the named subclauses of the standard. It can be identified by gold-embossed lettering on the cover and a gold seal on its front sheet.
The Certificate is applicable to the object tested only. DNV GL is responsible for the validity and the contents of the Certificate. The responsibility for conformity of any object having the same type references as the one tested rests with the manufacturer.
Detailed rules on types of certification are given in DNV GL's Certification procedure applicable to KEMA Laboratories.

2 KEMA Report of Performance

A KEMA Report of Performance is issued when an object has successfully completed and passed a subset (but not all) of test programmes in accordance with a recognized standard. In addition, the object's technical drawings have been verified and the condition of the object after the tests is assessed and recorded. The report is applicable to the object tested only. A KEMA Report of Performance signifies that the object meets the requirements of the named subclauses of the standard. It can be identified by silver-embossed lettering on the cover and a silver seal on its front sheet.
The sentence on the front sheet of a KEMA Report of Performance will state that the tests have been carried out in accordance with …. The object has complied with the relevant requirements.

3 KEMA Test Report

A KEMA Test Report is issued in all other cases. Reasons for issuing a KEMA Test Report could be:

- Tests were performed according to the client's instructions.
- Tests were performed only partially according to the standard.
- No technical drawings were submitted for verification and/or no assessment of the condition of the object after the tests was performed.
- The object failed one or more of the performed tests.

The KEMA Test Report can be identified by the grey-embossed lettering on the cover and grey seal on its front sheet.
In case the number of tests, the test procedure and the test parameters are based on a recognized standard and related to the ratings assigned by the manufacturer, the following sentence will appear on the front sheet. The tests have been carried out in accordance with the client's instructions. Test procedure and test parameters were based on If the object does not pass the tests such behaviour will be mentioned on the front sheet. Verification of the drawings (if submitted) and assessment of the condition after the tests is only done on client's request.
When the tests, test procedure and/or test parameters are not in accordance with a recognized standard, the front sheet will state the tests have been carried out in accordance with client's instructions.

4 Official and uncontrolled test documents

The official test documents of DNV GL are issued in bound form. Uncontrolled copies may be provided as a digital file for convenience of reproduction by the client. The copyright has to be respected at all times.

5 Accreditation of KEMA Laboratories

The KEMA Laboratories of DNV GL are accredited in accordance with ISO/IEC 17025 by the respective national accreditation bodies. KEMA Laboratories Arnhem, the Netherlands, is accredited by RvA under nos. L020, L218, K006 and K009. KEMA Laboratories Chalfont, United States, is accredited by A2LA under no. 0553.01. KEMA Laboratories Prague, the Czech Republic, is accredited by CAI as testing laboratory no. 1035.

1 IDENTIFICATION OF THE OBJECT TESTED

1.1 Ratings/characteristics of the object tested

Fuse-cutout		
Voltage	15 kV	X
Year of the manufacture	2018	
Number of poles	1	
Frequency	50 Hz	
Current	200 A	
Breaking capacity (I_1)	10 kA	X
Lightning impulse withstand voltage:		
• To earth	110 kV	
• Across the isolating distance	121 kV	
Power frequency withstand voltage (dry):		
• To earth	50 kV	
• Across the isolating distance	55 kV	
Power frequency withstand voltage (wet):		
• To earth	45 kV	
Series	II	
Class	A	
Fuse-carrier		
Manufacturer	Zhejiang Haivo Electrical Co., Ltd., Yueqing, Zhejiang, P. R. China	
Current	100 A	
Fuse-links		
Manufacturer	Zhejiang Haivo Electrical Co., Ltd., Yueqing, Zhejiang, P. R. China	
Speed designation	K	
Current	6 A	
Resistance	17,8 mΩ	
Current	10 A	
Resistance	16,5 mΩ	
Current	15 A	
Resistance	8,2 mΩ	
Current	20 A	
Resistance	7,7 mΩ	
Current	50 A	
Resistance	2,4 mΩ	
Current	100 A	
Resistance	1,8 mΩ	

Insulator

Manufacturer	Hunan Liling Guolian Porcelain Insulator & Electrical Co.,Ltd., Liling, Hunan, P. R. China

X = This rating has been proved by the tests of this Certificate.

1.2 Description of the object tested

A high-voltage expulsion fuse-cutout with homogenous series of the fuse links 6 to 100 A for outdoor use.

1.3 List of drawings

The manufacturer has guaranteed that the test object submitted for tests has been manufactured in accordance with the following drawings and/or documents. KEMA Laboratories Prague has verified that these drawings and/or documents adequately represent the test object. The manufacturer is responsible for the correctness of these drawings and/or documents and the technical data presented.

The following drawings and/or documents have been included in this Certificate:

Drawing no./document no.	Revision
0HF.027.0007	-

The following drawings and/or documents are only listed for reference and are kept in KEMA Laboratories Prague's files:

Drawing no./document no.	Revision
5HF.027.0015	-
5HF.015.0005	-
8HF.015.0040	-
5HF.036.0016	-
8HF.015.0003	-
8HF.036.0003	-
8HF.0036.0040	-
8HF.036.0007	-
8HF.015.0005	-
8HF.015.0004	-
8HF.036.0026	-
8HF.036.0025	-
8HF.015.0007	-
8HF.036.0022	-
8HF.036.0002	-
8HF.015.0050	-
8HF.015.0051	-
8HV.015.0050	-

2 GENERAL INFORMATION

2.1 The tests were witnessed by

Name	Company
Limin Cai	Zhejiang Haivo Electrical Co., Ltd. Yueqing, Zhejiang, P. R. China

2.2 The tests were carried out by

Name	Company
Richard Abrahamčík	KEMA Laboratories Prague, Zkušebnictví, a.s., Prague, the Czech Republic

2.3 Accuracy of measurement

The guaranteed uncertainty in the figures mentioned, taking into account the total measuring system, is less than 5%, unless mentioned otherwise.
The reported expanded uncertainties of measurements are stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a probability of approximately 95 %. Determination is based on ENV 13005 (GUM).

3 LEGEND

Phase indications

If more than one phase is recorded on oscillogram, the phases are indicated by the digits 1, 2 and 3. These phases 1, 2 and 3 correspond to the phase values in the columns of the accompanying table, respectively from left to right.

Explanation of the letter symbols and abbreviations on the oscillograms

pu	Per unit (the reference length of one unit is represented by the black bar on the oscillogram)
ITO	Current through test object
UTO	Voltage across test object

4 SUMMARY OF TESTS

Breaking test - TD1 (6 A)							
Test no.		190218 1004	190218 1007	190218 1008	190218 1009	190218 1010	
Applied voltage, phase-to-ground	kV_{RMS}	-	-	15,5	15,5	15,5	
Prospective current, a.c. component	kA_{RMS}	-	-	8,31	8,31	8,31	
Making angle related to voltage zero	°	-	-	9	95	135	
Cut-off current	kA_{peak}	-	-	-9,30	-4,39	-3,31	
Melting time	ms	-	-	1,19	1,30	0,675	
Arcing time	ms	-	-	14,0	7,05	3,64	
Clearing time, total	ms	-	-	15,2	8,35	4,32	
Recovery voltage, phase-to-ground	kV_{RMS}	-	-	15,4	15,5	15,6	
Switching voltage	kV_{peak}	-	-	30,5	27,9	21,9	
Operating I^2t	10^3 A^2s	-	-	565	84,6	24,83	
Arc energy	kJ	-	-	169	58,7	21,74	
Phase		-	-	-	-	-	
Current	kA_{peak}	-21,4	-	-	-	-	
Current, a.c. component	kA_{RMS}	8,31	-	-	-	-	
Current, a.c. component, three-phase average	kA_{RMS}	-	-	-	-	-	
Duration, current	s	0,145	-	-	-	-	
Value of TRV	kV_{peak}	-	-32,8	-	-	-	
Time coordinate of TRV	µs	-	104	-	-	-	
Rated voltage	kV	-	-	15	15	15	
Duration of recovery voltage	s	-	-	0,5	0,5	0,5	
Manufacturer of fuse-link:		-	-	Zhejian g Haivo	Zhejian g Haivo	Zhejian g Haivo	
Rated current	A	-	-	6	6	6	
Ambient temperature	°C	-	-	-	-	-	
Type of fuse-link:		-	-	15/6/1	15/6/2	15/6/3	

Observations	
190218-1004	Checking of the prospective current.
190218-1007	Checking of the prospective TRV.
190218-1008	Fuse cleared.
190218-1009	Fuse cleared.
190218-1010	Fuse cleared.

Breaking test - TD1 (100 A)							
Test no.		190218 1011	190218 1012	190218 1013			
Applied voltage, phase-to-ground	kV_{RMS}	15,5	15,5	15,5			
Prospective current, a.c. component	kA_{RMS}	8,31	8,31	8,31			
Making angle related to voltage zero	°	12	98	135			
Cut-off current	kA_{peak}	-20,0	9,28	-18,0			
Melting time	ms	5,50	3,59	8,25			
Arcing time	ms	9,84	4,94	9,90			
Clearing time, total	ms	15,3	8,53	18,2			
Recovery voltage, phase-to-ground	kV_{RMS}	15,3	15,5	15,4			
Switching voltage	kV_{peak}	29,5	-29,6	30,0			
Operating I^2t	10^3 A^2s	2707	365,5	2028			
Arc energy	kJ	331,2	20,90	259,4			
Rated voltage	kV	15	15	15			
Duration of recovery voltage	s	0,5	0,5	0,5			
Manufacturer of fuse-link:		Zhejian g Haivo	Zhejian g Haivo	Zhejian g Haivo			
Rated current	A	100	100	100			
Ambient temperature	°C	-	-	-			
Type of fuse-link:		15/100/ 1	15/100/ 2	15/100/ 3			

Observations	
190218-1011	Fuse cleared.
190218-1012	Fuse cleared.
190218-1013	Fuse cleared.

Breaking test - TD2 (6 A)							
Test no.		190218 1016	190218 1019	190218 1020	190218 1021	190218 1022	
Applied voltage, phase-to-ground	kV_{RMS}	-	-	15,7	15,7	15,7	
Prospective current, a.c. component	kA_{RMS}	-	-	5,02	5,02	5,02	
Making angle related to voltage zero	°	-	-	14	96	136	
Cut-off current	kA_{peak}	-	-	11,6	5,28	2,22	
Melting time	ms	-	-	0,975	0,253	0,295	
Arcing time	ms	-	-	14,2	8,14	4,37	
Clearing time, total	ms	-	-	15,2	8,39	4,67	
Recovery voltage, phase-to-ground	kV_{RMS}	-	-	15,2	16,1	15,8	
Switching voltage	kV_{peak}	-	-	-25,4	-25,8	-21,9	
Operating I^2t	10^3 A^2s	-	-	879,9	124,9	11,66	
Arc energy	kJ	-	-	176,6	63,20	11,63	
Phase		-	-	-	-	-	
Current	kA_{peak}	13,4	-	-	-	-	
Current, a.c. component	kA_{RMS}	5,02	-	-	-	-	
Current, a.c. component, three-phase average	kA_{RMS}	-	-	-	-	-	
Duration, current	s	0,036	-	-	-	-	
Value of TRV	kV_{peak}	-	31,1	-	-	-	
Time coordinate of TRV	µs	-	127	-	-	-	
Rated voltage	kV	-	-	15	15	15	
Duration of recovery voltage	s	-	-	0,5	0,5	0,5	
Manufacturer of fuse-link:		-	-	Zhejian g Haivo	Zhejian g Haivo	Zhejian g Haivo	
Rated current	A	-	-	6	6	6	
Ambient temperature	°C	-	-	-	-	-	
Type of fuse-link:		-	-	15/6/4	15/6/5	15/6/6	

Observations	
190218-1016	Checking of the prospective current.
190218-1019	Checking of the prospective TRV
190218-1020	Fuse cleared.
190218-1021	Fuse cleared.
190218-1022	Fuse cleared.

Breaking test - TD2 (100 A)							
Test no.		190218 1023	190218 1024	190218 1025			
Applied voltage, phase-to-ground	kV_{RMS}	15,7	15,7	15,7			
Prospective current, a.c. component	kA_{RMS}	5,02	5,02	5,02			
Making angle related to voltage zero	°	9	96	131			
Cut-off current	kA_{peak}	13,1	-6,71	-11,0			
Melting time	ms	5,84	6,00	10,1			
Arcing time	ms	10,2	12,9	8,45			
Clearing time, total	ms	16,0	18,9	18,6			
Recovery voltage, phase-to-ground	kV_{RMS}	15,8	15,5	15,8			
Switching voltage	kV_{peak}	-28,2	26,8	25,9			
Operating I^2t	10^3 A^2s	1144	405,8	749,9			
Arc energy	kJ	148,3	102,1	106,7			
Rated voltage	kV	15	15	15			
Duration of recovery voltage	s	0,5	0,5	0,5			
Manufacturer of fuse-link:		Zhejian g Haivo	Zhejian g Haivo	Zhejian g Haivo			
Rated current	A	100	100	100			
Ambient temperature	°C	-	-	-			
Type of fuse-link:		15/100/ 4	15/100/ 5	15/100/ 6			

Observations	
190218-1023	Fuse cleared.
190218-1024	Fuse cleared.
190218-1025	Fuse cleared.

Breaking test - TD3 (6 A)							
Test no.		190218 1026	190218 1031	190218 1032			
Applied voltage, phase-to-ground	kV_{RMS}	-	-	15,7			
Prospective current, a.c. component	kA_{RMS}	-	-	2,07			
Making angle related to voltage zero	°	-	-	94			
Cut-off current	kA_{peak}	-	-	2,38			
Melting time	ms	-	-	0,650			
Arcing time	ms	-	-	7,88			
Clearing time, total	ms	-	-	8,53			
Recovery voltage, phase-to-ground	kV_{RMS}	-	-	15,8			
Switching voltage	kV_{peak}	-	-	-28,1			
Operating I^2t	10^3 A^2s	-	-	24,98			
Arc energy	kJ	-	-	29,42			
Phase		-	-	-			
Current	kA_{peak}	5,24	-	-			
Current, a.c. component	kA_{RMS}	2,07	-	-			
Current, a.c. component, three-phase average	kA_{RMS}	-	-	-			
Duration, current	s	0,144	-	-			
Value of TRV	kV_{peak}	-	31,3	-			
Time coordinate of TRV	µs	-	139	-			
Rated voltage	kV	-	-	15			
Duration of recovery voltage	s	-	-	0,5			
Manufacturer of fuse-link:		-	-	Zhejian g Haivo			
Rated current	A	-	-	6			
Ambient temperature	°C	-	-	-			
Type of fuse-link:		-	-	15/6/7			

Observations	
190218-1026	Checking of the prospective current.
190218-1031	Checking of the prospective TRV.
190218-1032	Fuse cleared.

Breaking test - TD3 (100 A)							
Test no.		190218 1033					
Applied voltage, phase-to-ground	kV_{RMS}	15,7					
Prospective current, a.c. component	kA_{RMS}	2,07					
Making angle related to voltage zero	°	92					
Cut-off current	kA_{peak}	-3,17					
Melting time	ms	53,6					
Arcing time	ms	6,00					
Clearing time, total	ms	59,6					
Recovery voltage, phase-to-ground	kV_{RMS}	15,8					
Switching voltage	kV_{peak}	28,5					
Operating I^2t	10^3 A^2s	247,7					
Arc energy	kJ	9,655					
Rated voltage	kV	15					
Duration of recovery voltage	s	0,5					
Manufacturer of fuse-link:		Zhejian g Haivo					
Rated current	A	100					
Ambient temperature	°C	-					
Type of fuse-link:		15/100/ 7					

Observations
190218-1033 Fuse cleared.

Breaking test - TD4 (6 A)							
Test no.		190219 1029	190219 1035	190219 1036	190219 1037		
Applied voltage, phase-to-ground	kV_{RMS}	-	-	15,3	15,3		
Prospective current, a.c. component	A_{RMS}	-	-	422	422		
Making angle related to voltage zero	°	-	-	-	87		
Cut-off current	kA_{peak}	-	-	-0,538	-0,541		
Melting time	ms	-	-	2,99	2,80		
Arcing time	ms	-	-	5,75	6,10		
Clearing time, total	ms	-	-	8,74	8,90		
Recovery voltage, phase-to-ground	kV_{RMS}	-	-	15,5	15,5		
Switching voltage	kV_{peak}	-	-	37,7	38,3		
Operating I^2t	10^3 A^2s	-	-	1,311	1,348		
Arc energy	kJ	-	-	5,693	4,050		
Phase		-	-	-	-		
Current	A_{peak}	935	-	-	-		
Current, a.c. component	A_{RMS}	422	-	-	-		
Current, a.c. component, three-phase average	A_{RMS}	-	-	-	-		
Duration, current	s	0,034	-	-	-		
Value of TRV	kV_{peak}	-	33,8	-	-		
Time coordinate of TRV	µs	-	23	-	-		
Rated voltage	kV	-	-	15	15		
Duration of recovery voltage	s	-	-	0,5	0,5		
Manufacturer of fuse-link:		-	-	Zhejian g Haivo	Zhejian g Haivo		
Rated current	A	-	-	6	6		
Ambient temperature	°C	-	-	-	-		
Type of fuse-link:		-	-	15/6/8	15/6/9		

Observations	
190219-1029	Checking of the prospective current.
190219-1035	Checking of the prospective TRV.
190219-1036	Fuse cleared.
190219-1037	Fuse cleared.

Breaking test - TD5 (6 A)							
Test no.		190219 1041	190219 1042	190219 1043			
Applied voltage, phase-to-ground	kV_{RMS}	-	15,3	15,3			
Breaking current, a.c. component	A_{RMS}	-	18,6	18,7			
Making angle related to voltage zero	°	-	-	-			
Cut-off current	A_{peak}	-	-27,4	-27,5			
Melting time	ms	-	138	148			
Arcing time	ms	-	49,8	49,2			
Clearing time, total	ms	-	188	197			
Recovery voltage, phase-to-ground	kV_{RMS}	-	15,7	15,7			
Switching voltage	kV_{peak}	-	-21,9	21,9			
Operating I^2t	A^2s	-	64,7	68,3			
Arc energy	kJ	-	1,049	1,036			
Phase		-	-	-			
Voltage open-circuit	kV_{RMS}	15,3	-	-			
Rated voltage	kV	-	15	15			
Duration of recovery voltage	s	-	0,5	0,5			
Manufacturer of fuse-link:		-	Zhejian g Haivo	Zhejian g Haivo			
Rated current	A	-	6	6			
Ambient temperature	°C	-	-	-			
Type of fuse-link:		-	15/6/10	15/6/11			

Observations	
190219-1041	Checking of the prospective TRV
190219-1042	Fuse cleared.
190219-1043	Fuse cleared.

5 BREAKING TEST - TD1 (6 A)

Standard and date

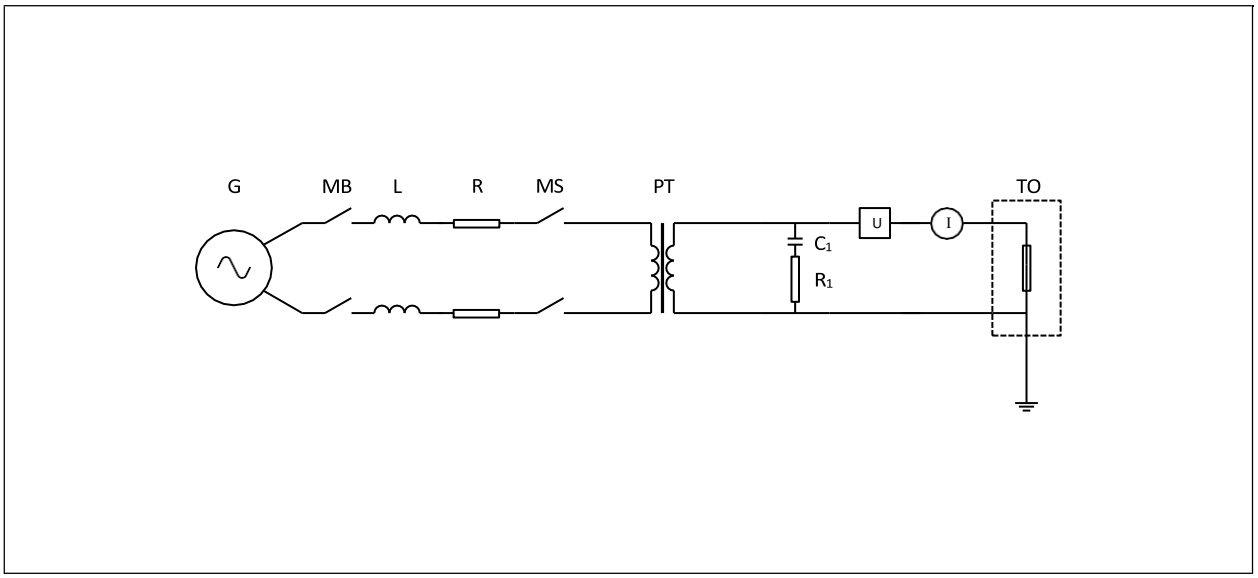
Standard	IEC 60282-2, subclause 8.6
Test date	18 February 2019

5.1 Condition before test

Fuse base new
Fuse carrier new
Fuse link new after each test

.

5.2 Test circuit S01



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	120
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	kA	8
Impedance	Ω	1,88
Power factor		0,07
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,515
R_1 (in parallel)	Ω	-
R_1 (in series)	Ω	260
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	32,8
t_3	µs	104
t_d	µs	-
RRRV	kV/µs	0,315

Load	
Short-circuit point	earthed

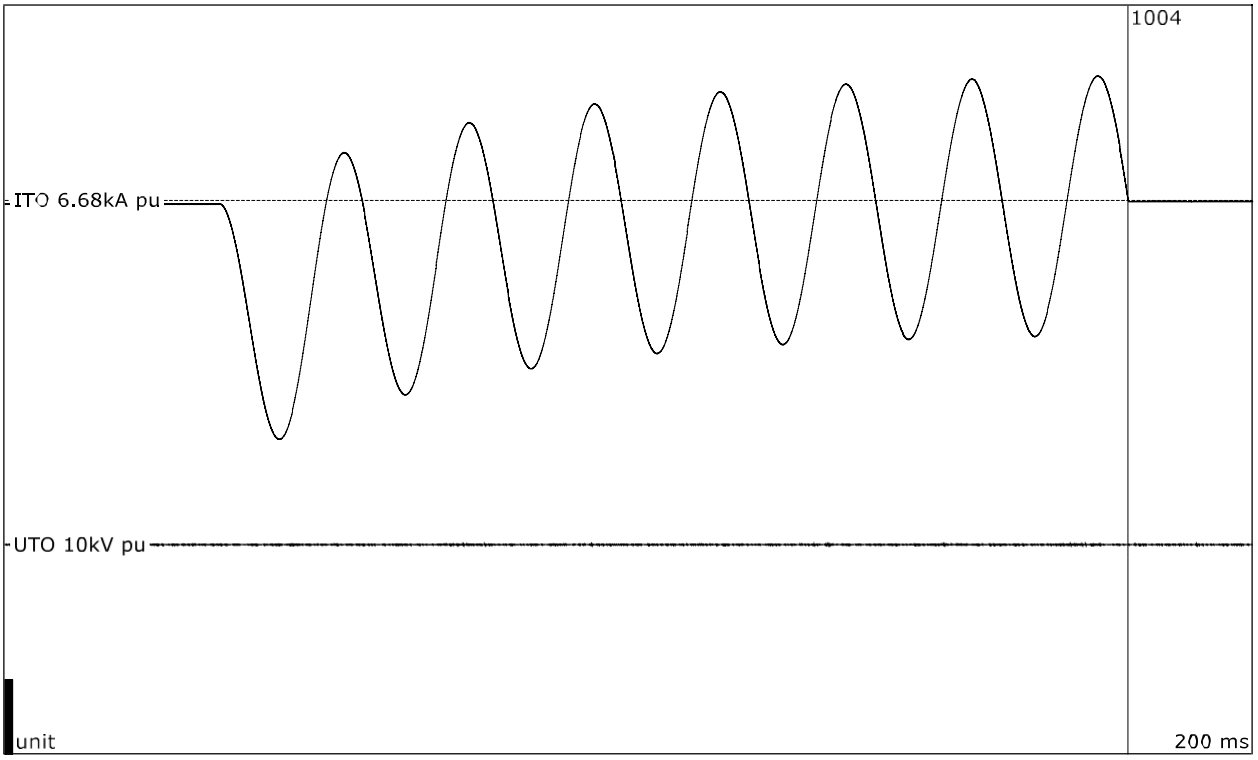
Remarks: -

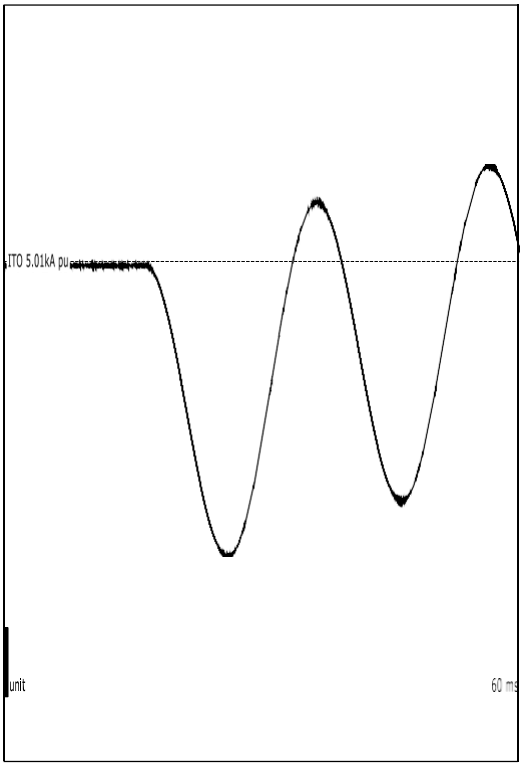
5.3 Test results and oscillograms

Overview of test numbers
190218-1004, 1007 to 1010

Remarks
-

Breaking test - TD1 (6 A)





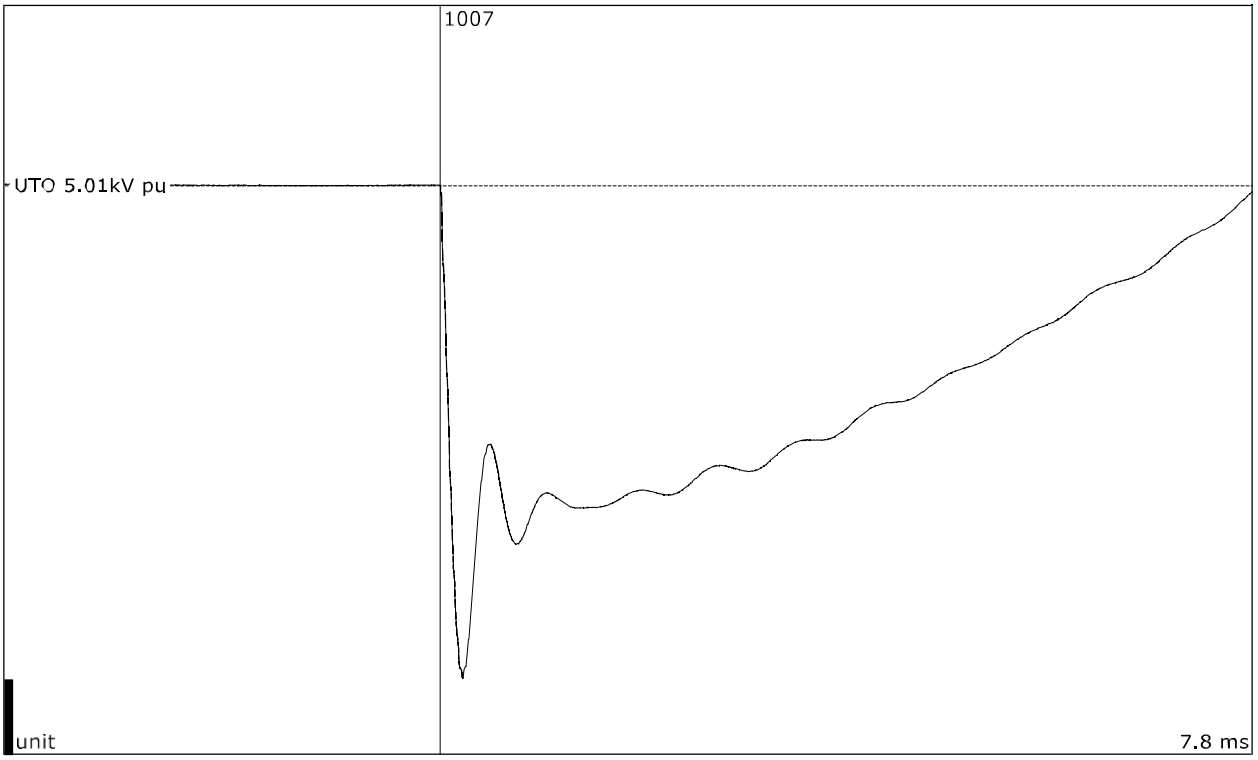
Test number: **190218-1004**

Phase		-
Current	kA_{peak}	-21,4
Current, a.c. component	kA_{RMS}	8,31
Current, a.c. component, three-phase average	kA_{RMS}	-
Duration, current	s	0,145

Gas pressure at 20 °C

Observations: Checking of the prospective current.

Breaking test - TD1 (6 A)



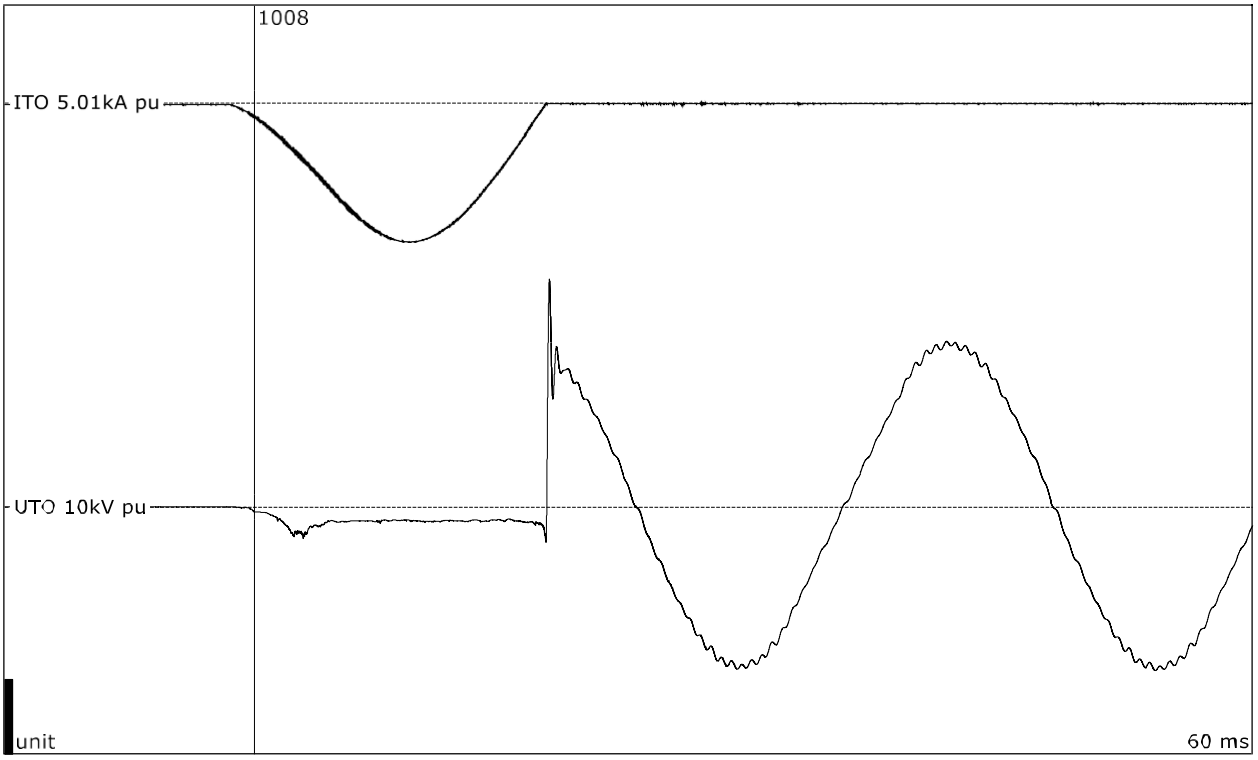
Test number: **190218-1007**

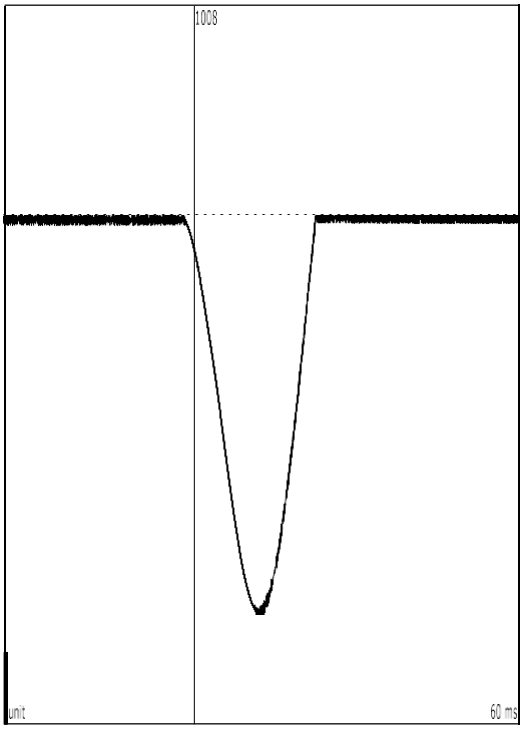
Phase		-
Value of TRV	kV_{peak}	-32,8
Time coordinate of TRV	µs	104

Gas pressure at 20 °C

Observations: Checking of the prospective TRV.

Breaking test - TD1 (6 A)





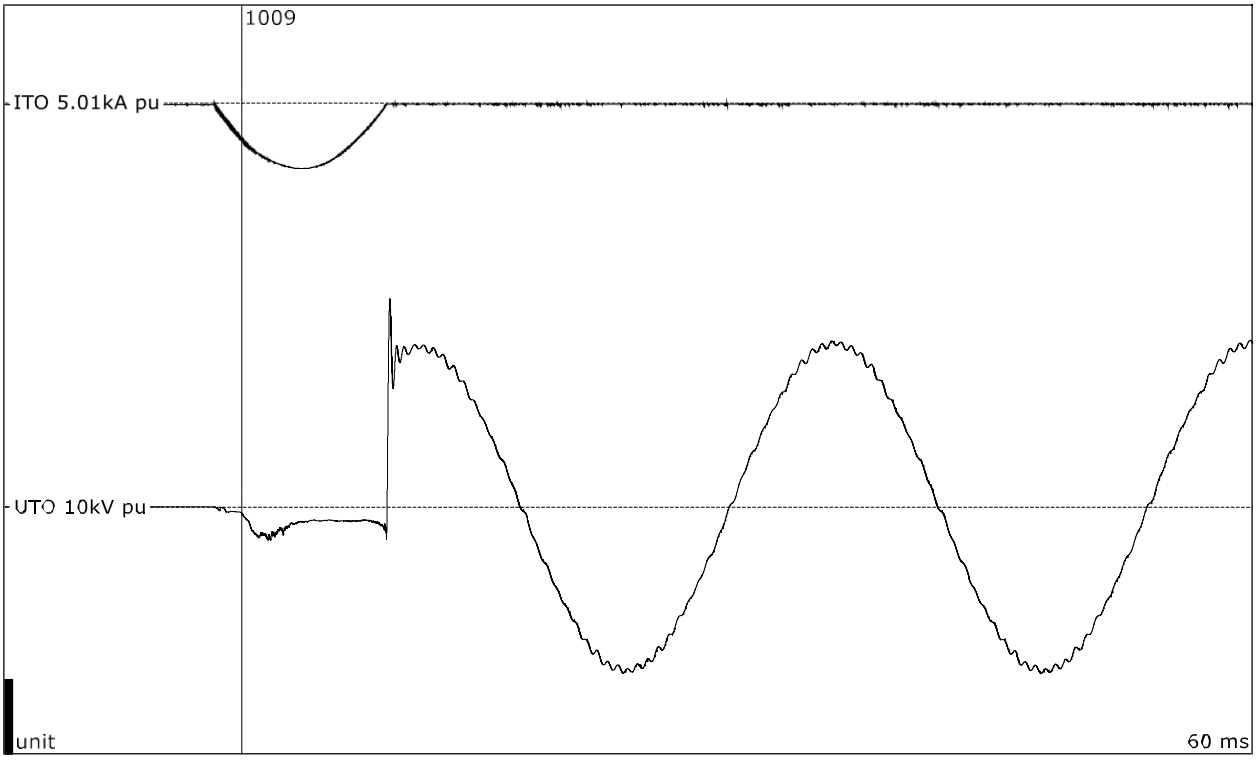
Test number: **190218-1008**

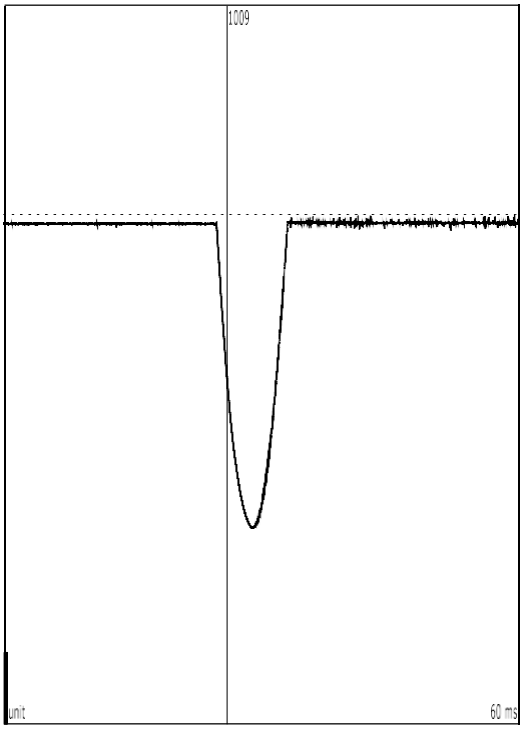
Applied voltage, phase-to-ground	kV_{RMS}	15,5
Prospective current, a.c. component	kA_{RMS}	8,31
Making angle related to voltage zero	°	9
Cut-off current	kA_{peak}	-9,30
Melting time	ms	1,19
Arcing time	ms	14,0
Clearing time, total	ms	15,2
Recovery voltage, phase-to-ground	kV_{RMS}	15,4
Switching voltage	kV_{peak}	30,5
Operating I^2t	10^3 A^2s	565
Arc energy	kJ	169

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/1

Observations: Fuse cleared.

Breaking test - TD1 (6 A)





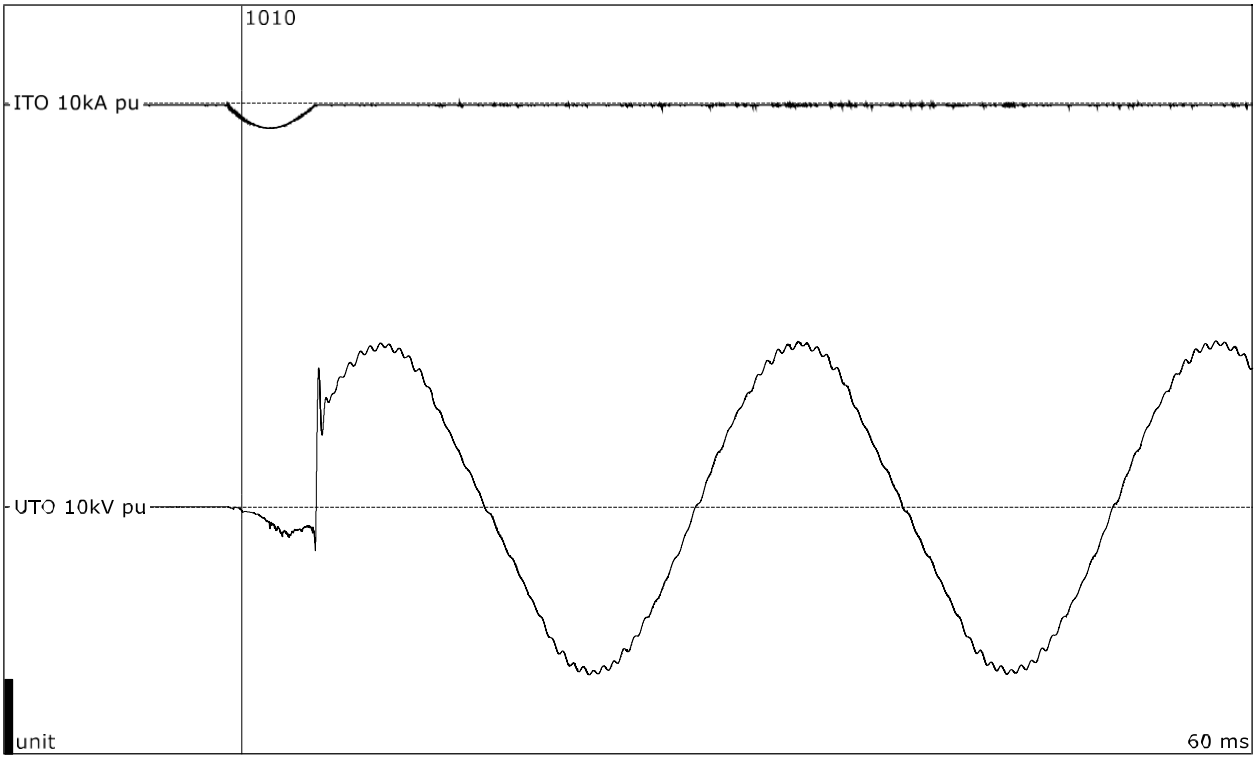
Test number: **190218-1009**

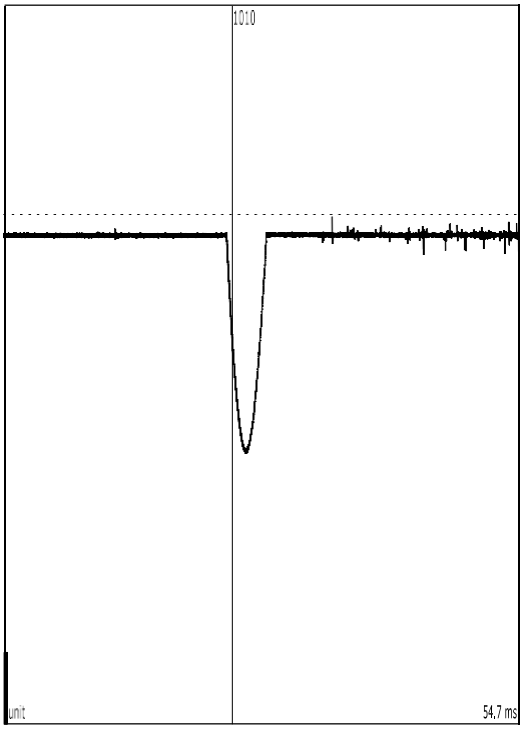
Applied voltage, phase-to-ground	kV_{RMS}	15,5
Prospective current, a.c. component	kA_{RMS}	8,31
Making angle related to voltage zero	°	95
Cut-off current	kA_{peak}	-4,39
Melting time	ms	1,30
Arcing time	ms	7,05
Clearing time, total	ms	8,35
Recovery voltage, phase-to-ground	kV_{RMS}	15,5
Switching voltage	kV_{peak}	27,9
Operating I^2t	10^3 A^2s	84,6
Arc energy	kJ	58,7

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/2

Observations: Fuse cleared.

Breaking test - TD1 (6 A)





Test number: **190218-1010**

Applied voltage, phase-to-ground	kV_{RMS}	15,5
Prospective current, a.c. component	kA_{RMS}	8,31
Making angle related to voltage zero	°	135
Cut-off current	kA_{peak}	-3,31
Melting time	ms	0,675
Arcing time	ms	3,64
Clearing time, total	ms	4,32
Recovery voltage, phase-to-ground	kV_{RMS}	15,6
Switching voltage	kV_{peak}	21,9
Operating I^2t	10^3 A^2s	24,83
Arc energy	kJ	21,74

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/3

Observations: Fuse cleared.

5.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

6 BREAKING TEST - TD1 (100 A)

Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	18 February 2019

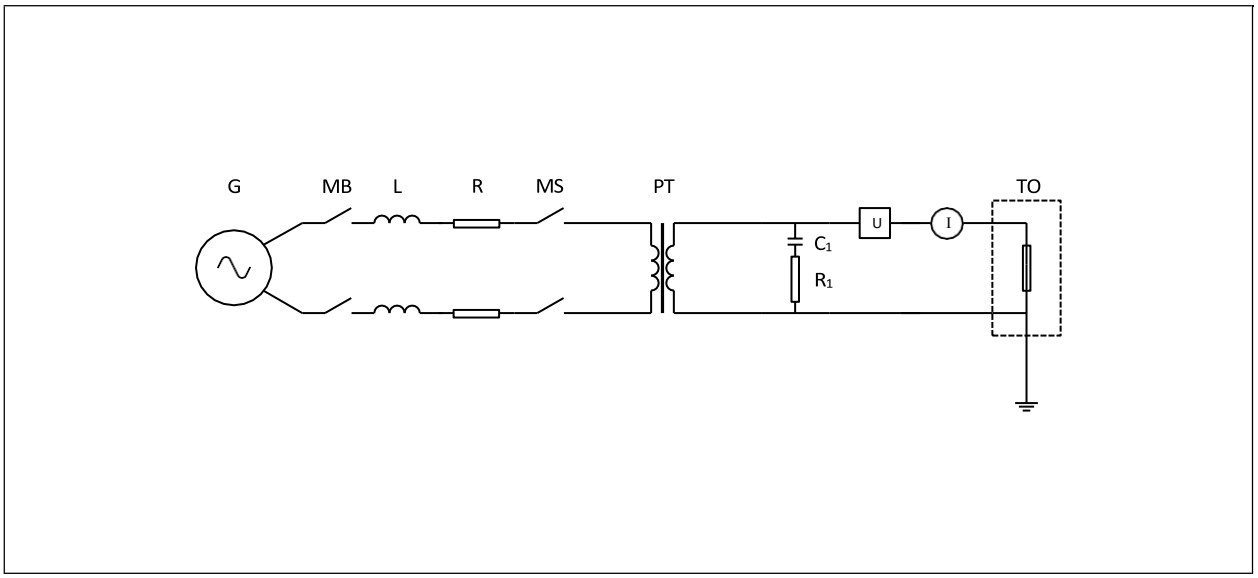
6.1 Condition before test

Fuse base in same condition

Fuse carrier new

Fuse link new after each test

6.2 Test circuit S02



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	120
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	kA	8
Impedance	Ω	1,88
Power factor		0,07
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,515
R_1 (in parallel)	Ω	-
R_1 (in series)	Ω	260
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	32,8
t_3	µs	104
t_d	µs	-
RRRV	kV/µs	0,315

Load	
Short-circuit point	earthed

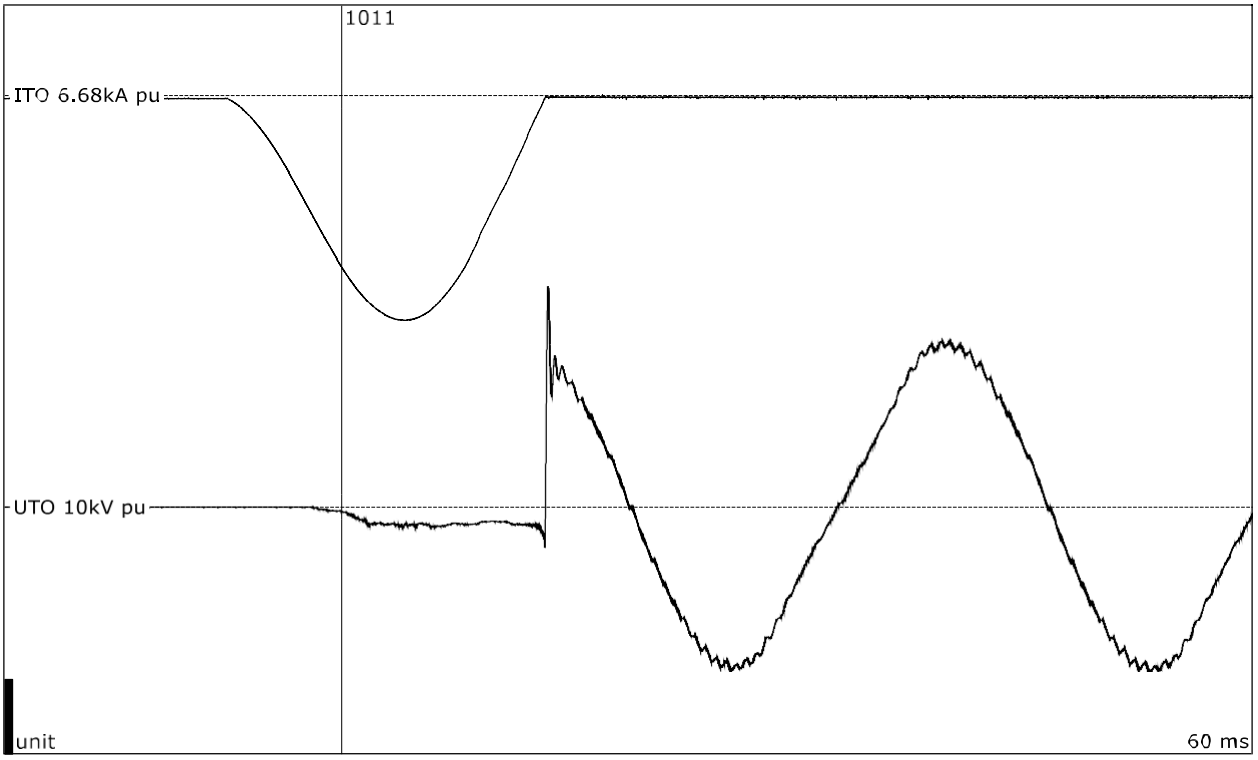
Remarks: -

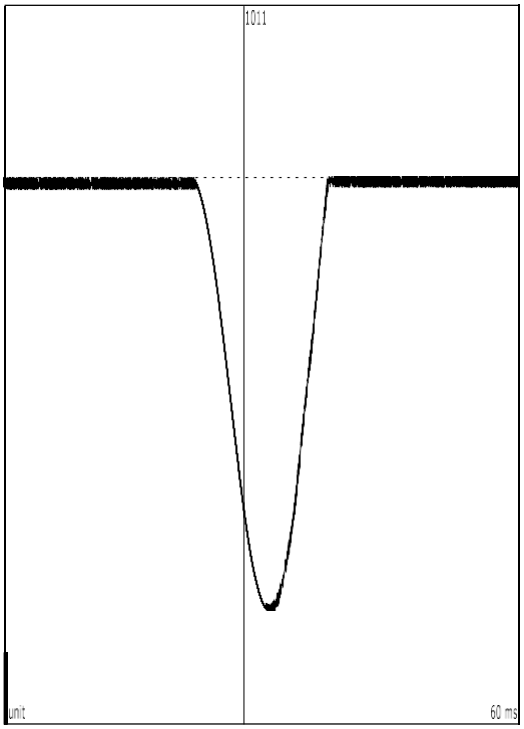
6.3 Test results and oscillograms

Overview of test numbers
190218-1011 to 1013

Remarks
-

Breaking test - TD1 (100 A)





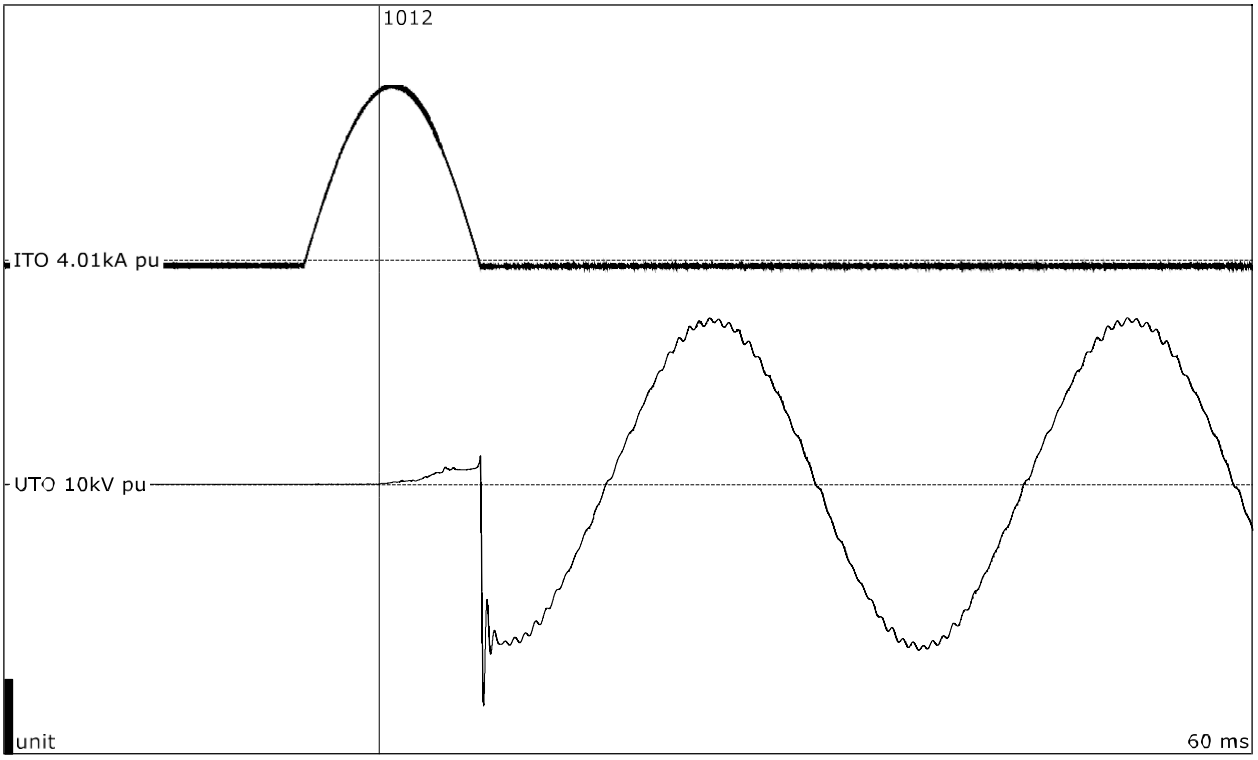
Test number: **190218-1011**

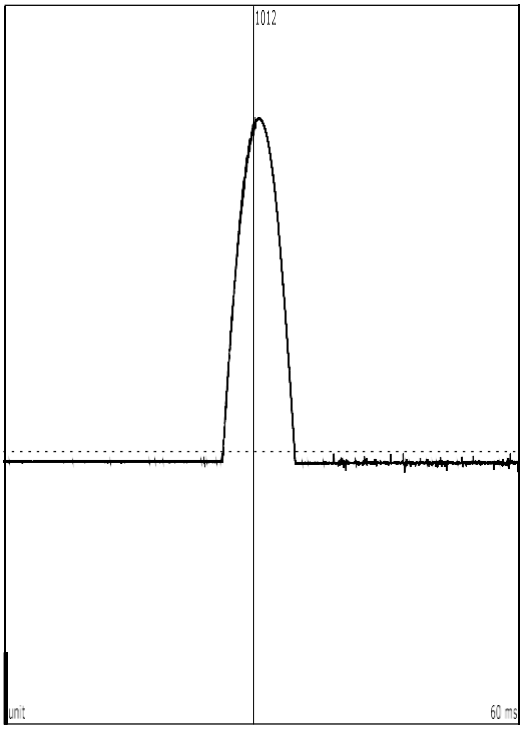
Applied voltage, phase-to-ground	kV_{RMS}	15,5
Prospective current, a.c. component	kA_{RMS}	8,31
Making angle related to voltage zero	°	12
Cut-off current	kA_{peak}	-20,0
Melting time	ms	5,50
Arcing time	ms	9,84
Clearing time, total	ms	15,3
Recovery voltage, phase-to-ground	kV_{RMS}	15,3
Switching voltage	kV_{peak}	29,5
Operating I^2t	10^3 A^2s	2707
Arc energy	kJ	331,2

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/1

Observations: Fuse cleared.

Breaking test - TD1 (100 A)





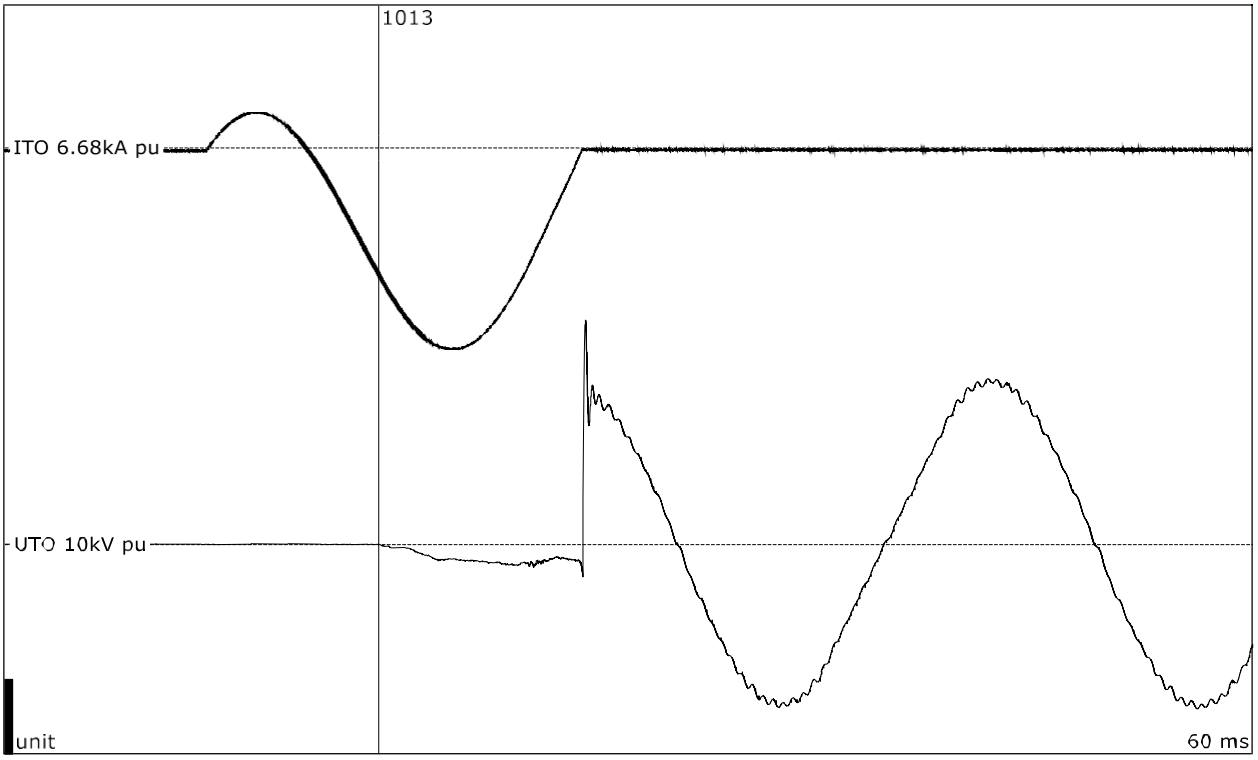
Test number: 190218-1012

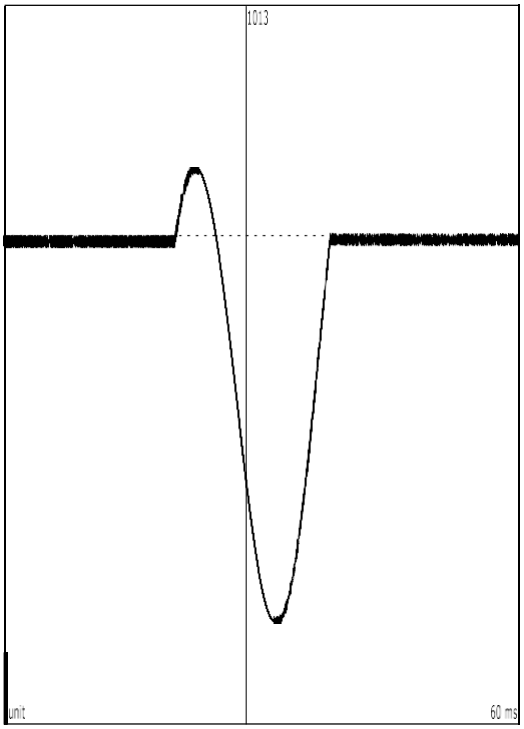
Applied voltage, phase-to-ground	kV_{RMS}	15,5
Prospective current, a.c. component	kA_{RMS}	8,31
Making angle related to voltage zero	°	98
Cut-off current	kA_{peak}	9,28
Melting time	ms	3,59
Arcing time	ms	4,94
Clearing time, total	ms	8,53
Recovery voltage, phase-to-ground	kV_{RMS}	15,5
Switching voltage	kV_{peak}	-29,6
Operating I^2t	10^3 A^2s	365,5
Arc energy	kJ	20,90

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/2

Observations: Fuse cleared.

Breaking test - TD1 (100 A)





Test number: 190218-1013

Applied voltage, phase-to-ground	kV_{RMS}	15,5
Prospective current, a.c. component	kA_{RMS}	8,31
Making angle related to voltage zero	°	135
Cut-off current	kA_{peak}	-18,0
Melting time	ms	8,25
Arcing time	ms	9,90
Clearing time, total	ms	18,2
Recovery voltage, phase-to-ground	kV_{RMS}	15,4
Switching voltage	kV_{peak}	30,0
Operating I^2t	10^3 A^2s	2028
Arc energy	kJ	259,4

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/3

Observations: Fuse cleared.

6.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

7 BREAKING TEST - TD2 (6 A)

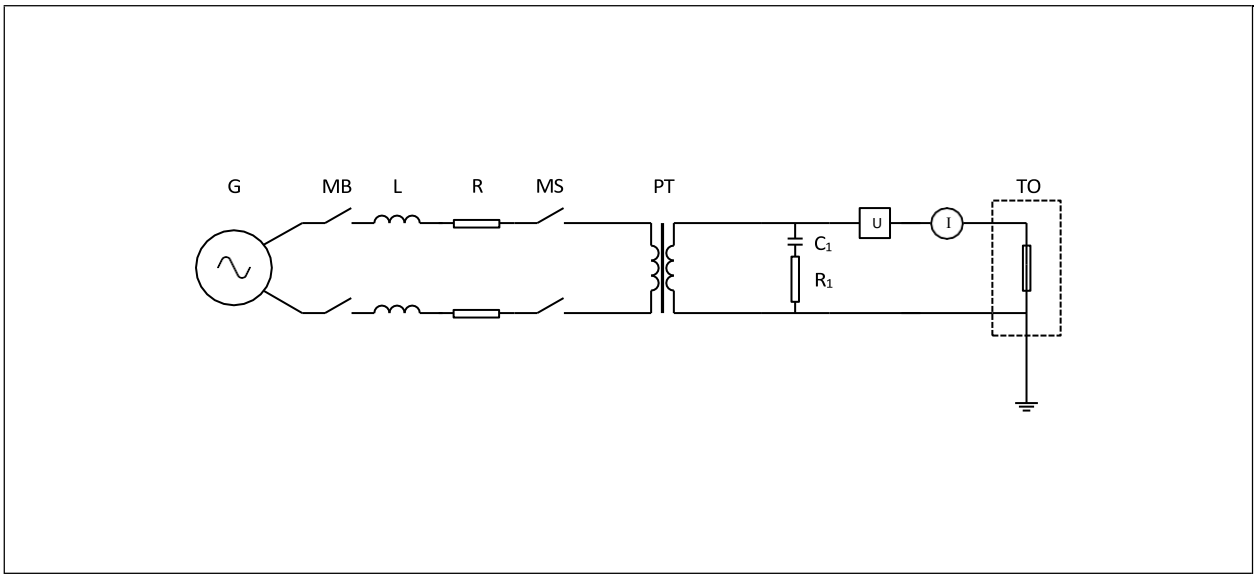
Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	18 February 2019

7.1 Condition before test

Fuse base in same condition
Fuse carrier new
Fuse link new after each test

7.2 Test circuit S03



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	75
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	kA	5
Impedance	Ω	3
Power factor		0,05
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,356
R_1 (in parallel)	Ω	-
R_1 (in series)	Ω	50
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	31,1
t_3	µs	127
t_d	µs	-
RRRV	kV/µs	0,245

Load	
Short-circuit point	earthed

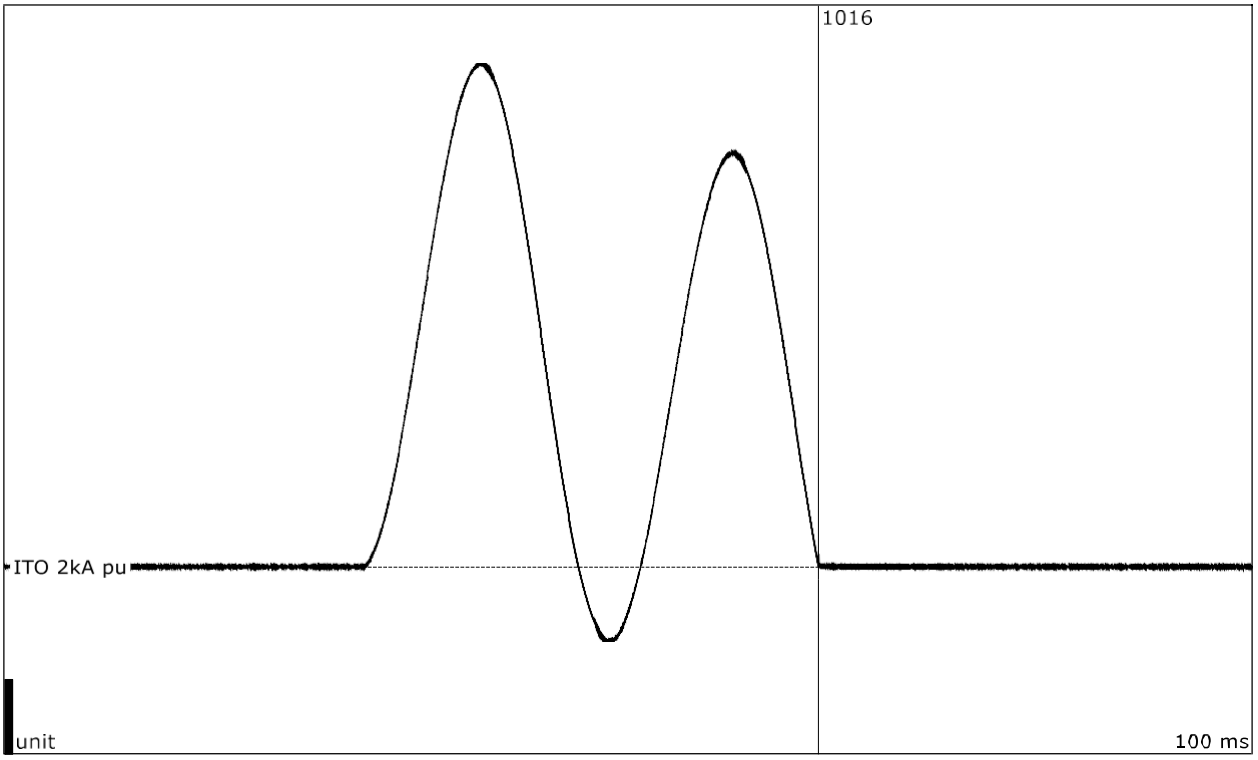
Remarks: -

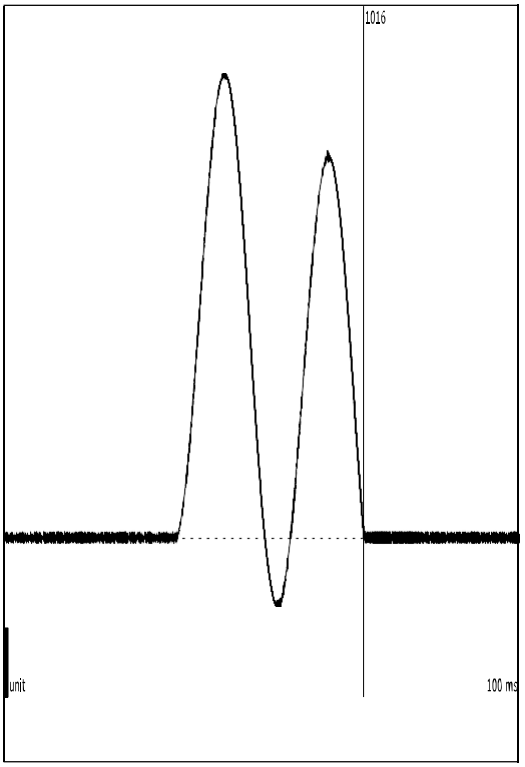
7.3 Test results and oscillograms

Overview of test numbers
190218-1016, 1019 to 1022

Remarks
-

Breaking test - TD2 (6 A)





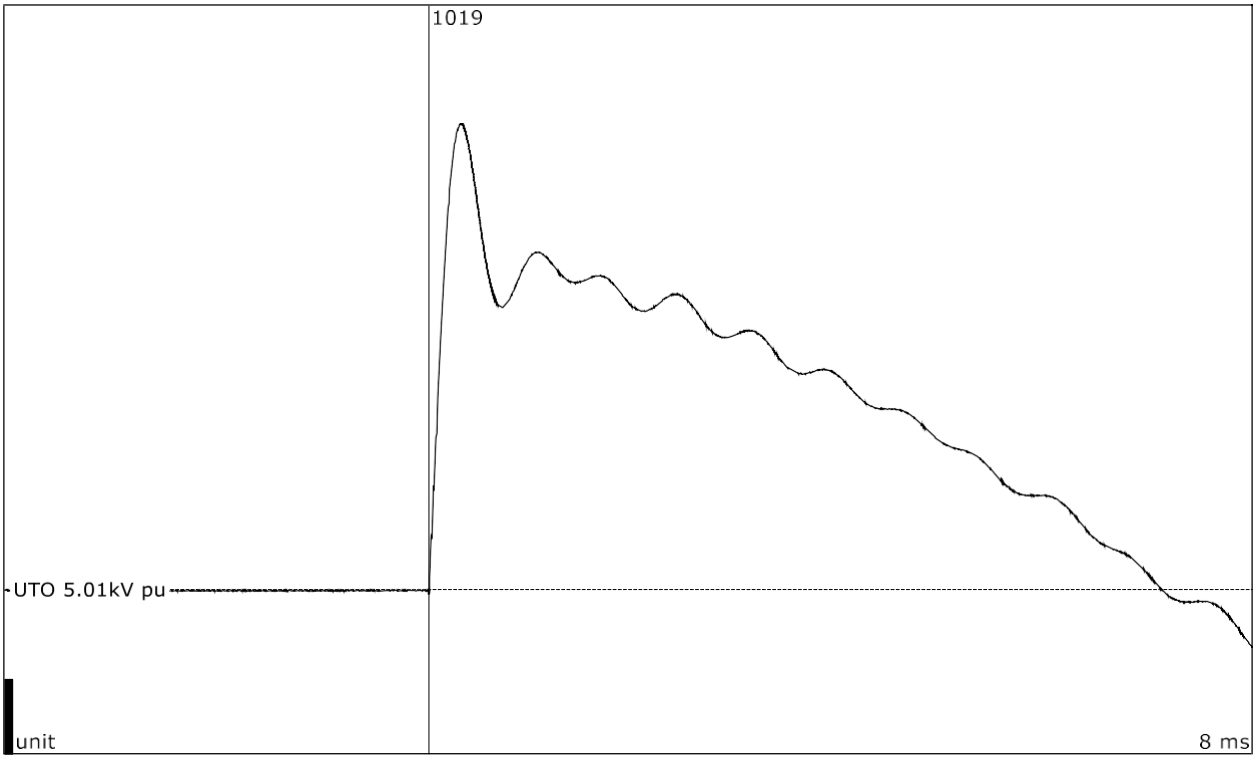
Test number: **190218-1016**

Phase		-
Current	kA_{peak}	13,4
Current, a.c. component	kA_{RMS}	5,02
Current, a.c. component, three-phase average	kA_{RMS}	-
Duration, current	s	0,036

Gas pressure at 20 °C

Observations: Checking of the prospective current.

Breaking test - TD2 (6 A)



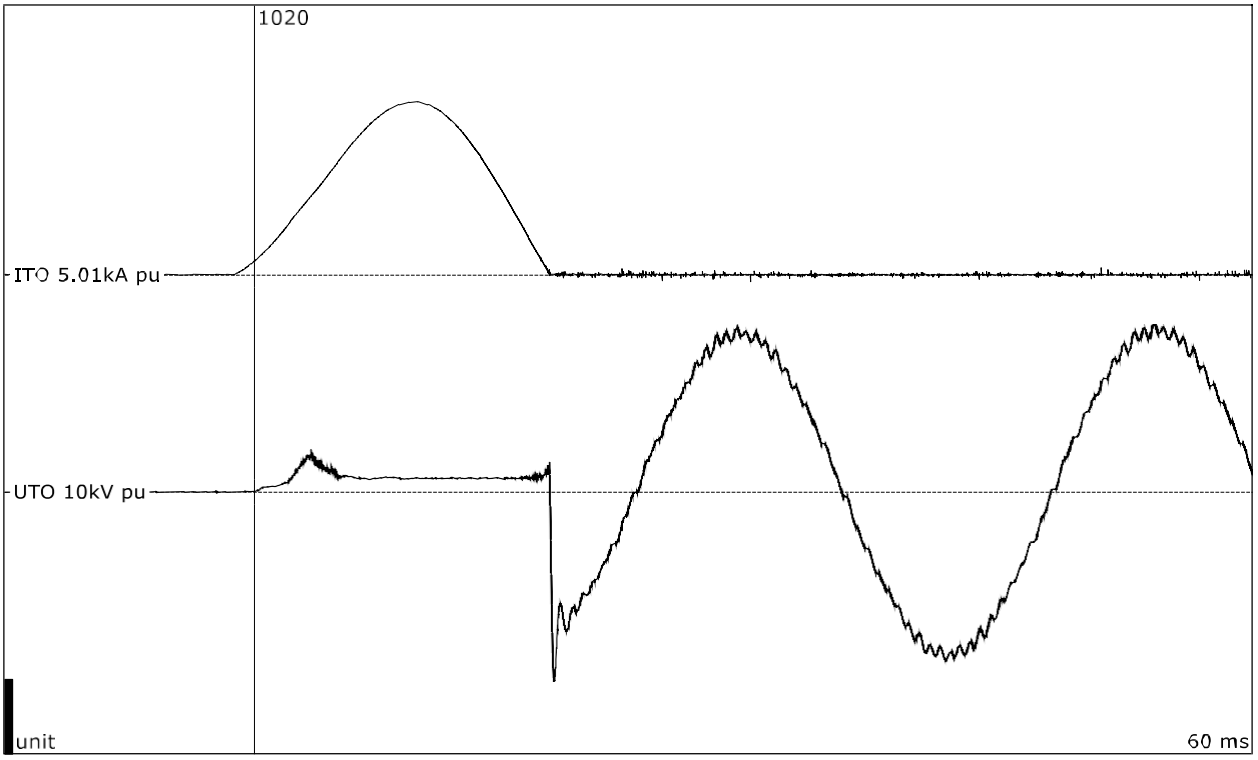
Test number: **190218-1019**

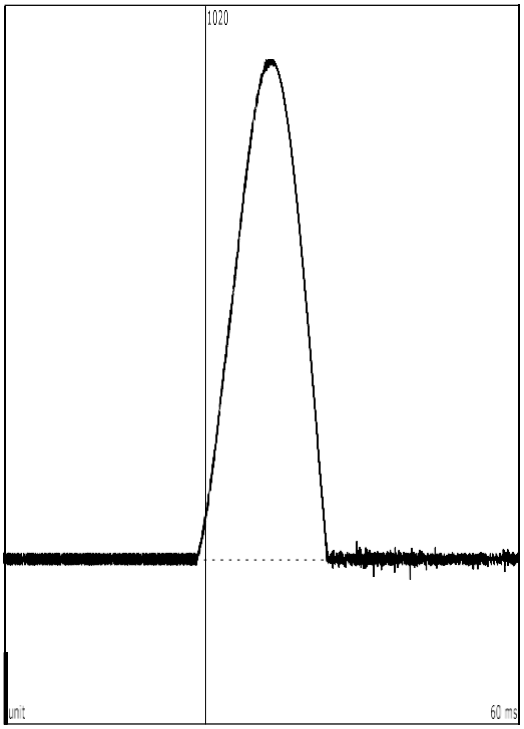
Phase		-
Value of TRV	kV_{peak}	31,1
Time coordinate of TRV	µs	127

Gas pressure at 20 °C

Observations: Checking of the prospective TRV

Breaking test - TD2 (6 A)





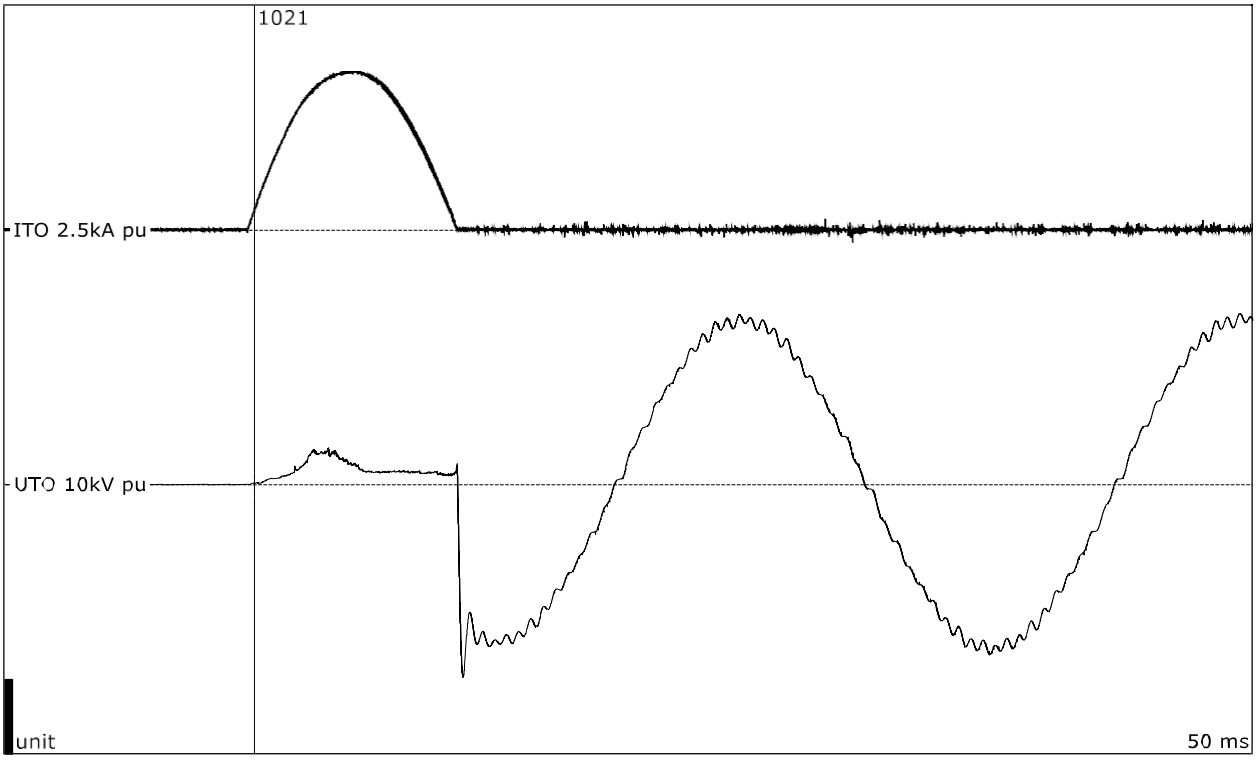
Test number: 190218-1020

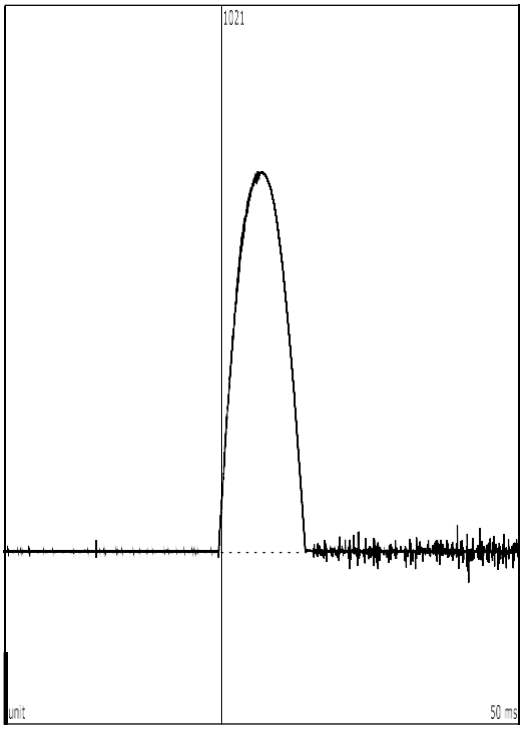
Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	5,02
Making angle related to voltage zero	°	14
Cut-off current	kA_{peak}	11,6
Melting time	ms	0,975
Arcing time	ms	14,2
Clearing time, total	ms	15,2
Recovery voltage, phase-to-ground	kV_{RMS}	15,2
Switching voltage	kV_{peak}	-25,4
Operating I^2t	10^3 A^2s	879,9
Arc energy	kJ	176,6

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/4

Observations: Fuse cleared.

Breaking test - TD2 (6 A)





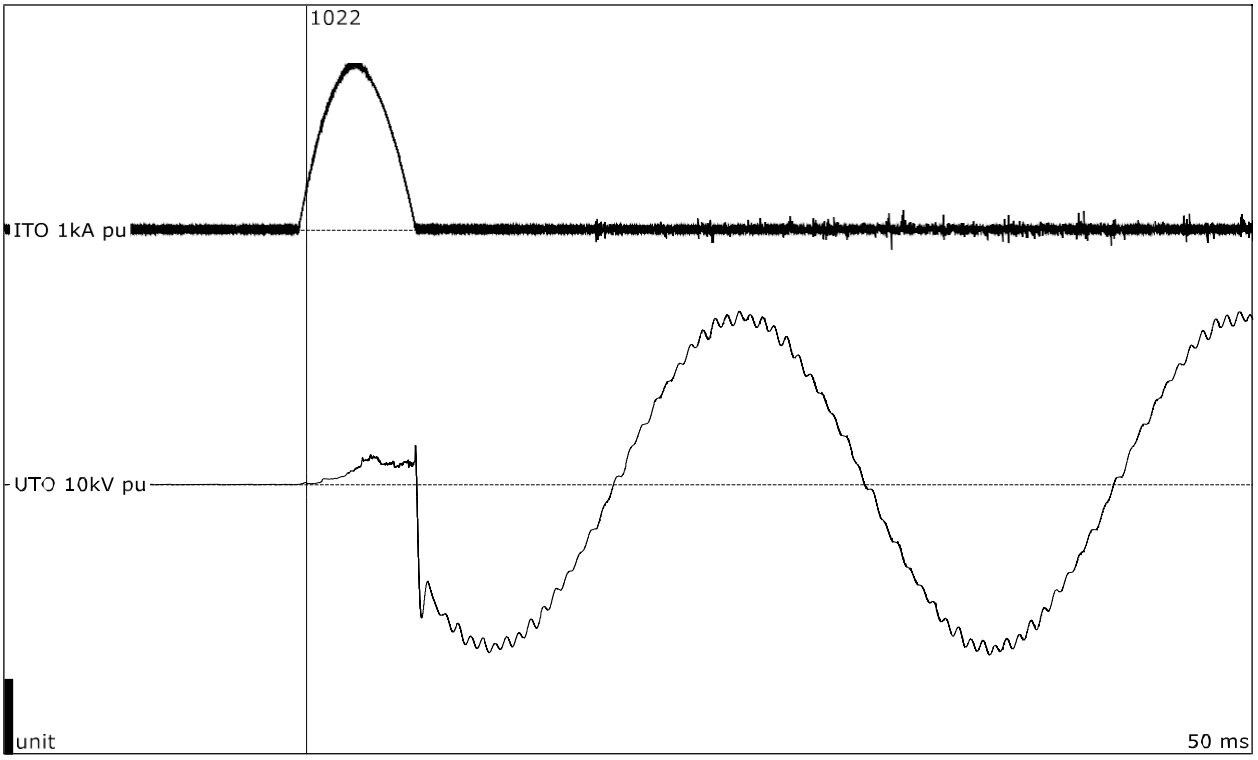
Test number: 190218-1021

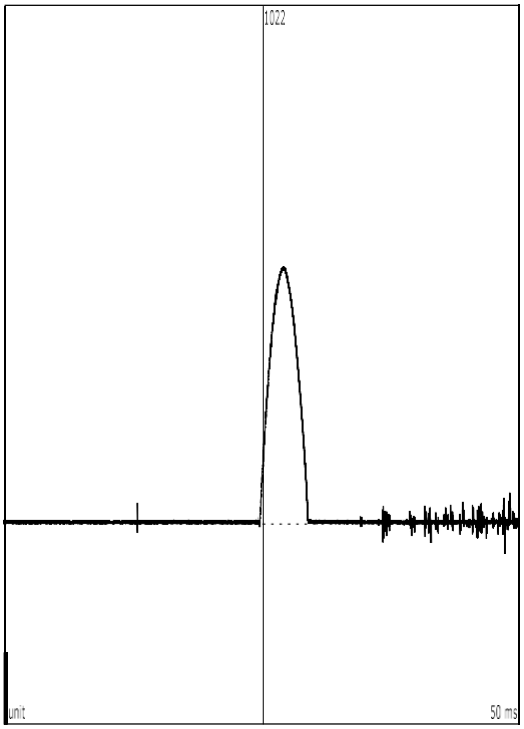
Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	5,02
Making angle related to voltage zero	°	96
Cut-off current	kA_{peak}	5,28
Melting time	ms	0,253
Arcing time	ms	8,14
Clearing time, total	ms	8,39
Recovery voltage, phase-to-ground	kV_{RMS}	16,1
Switching voltage	kV_{peak}	-25,8
Operating I^2t	10^3 A^2s	124,9
Arc energy	kJ	63,20

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/5

Observations: Fuse cleared.

Breaking test - TD2 (6 A)





Test number: **190218-1022**

Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	5,02
Making angle related to voltage zero	°	136
Cut-off current	kA_{peak}	2,22
Melting time	ms	0,295
Arcing time	ms	4,37
Clearing time, total	ms	4,67
Recovery voltage, phase-to-ground	kV_{RMS}	15,8
Switching voltage	kV_{peak}	-21,9
Operating I^2t	10^3 A^2s	11,66
Arc energy	kJ	11,63

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/6

Observations: Fuse cleared.

7.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

8 BREAKING TEST - TD2 (100 A)

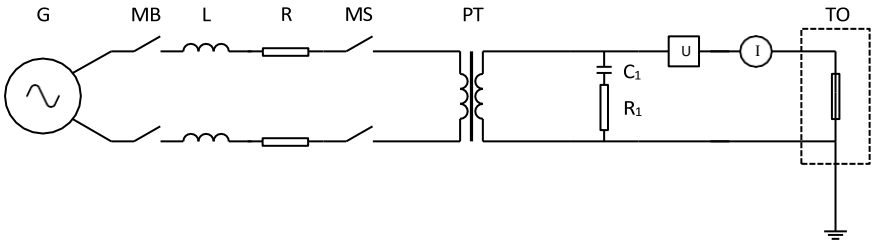
Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	18 February 2019

8.1 Condition before test

Fuse base in same condition
Fuse carrier new
Fuse link new after each test

8.2 Test circuit S04



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	75
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	kA	5
Impedance	Ω	3
Power factor		0,05
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,356
R_1 (in parallel)	Ω	-
R_1 (in series)	Ω	50
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	31,1
t_3	µs	127
t_d	µs	-
RRRV	kV/µs	0,245

Load	
Short-circuit point	earthed

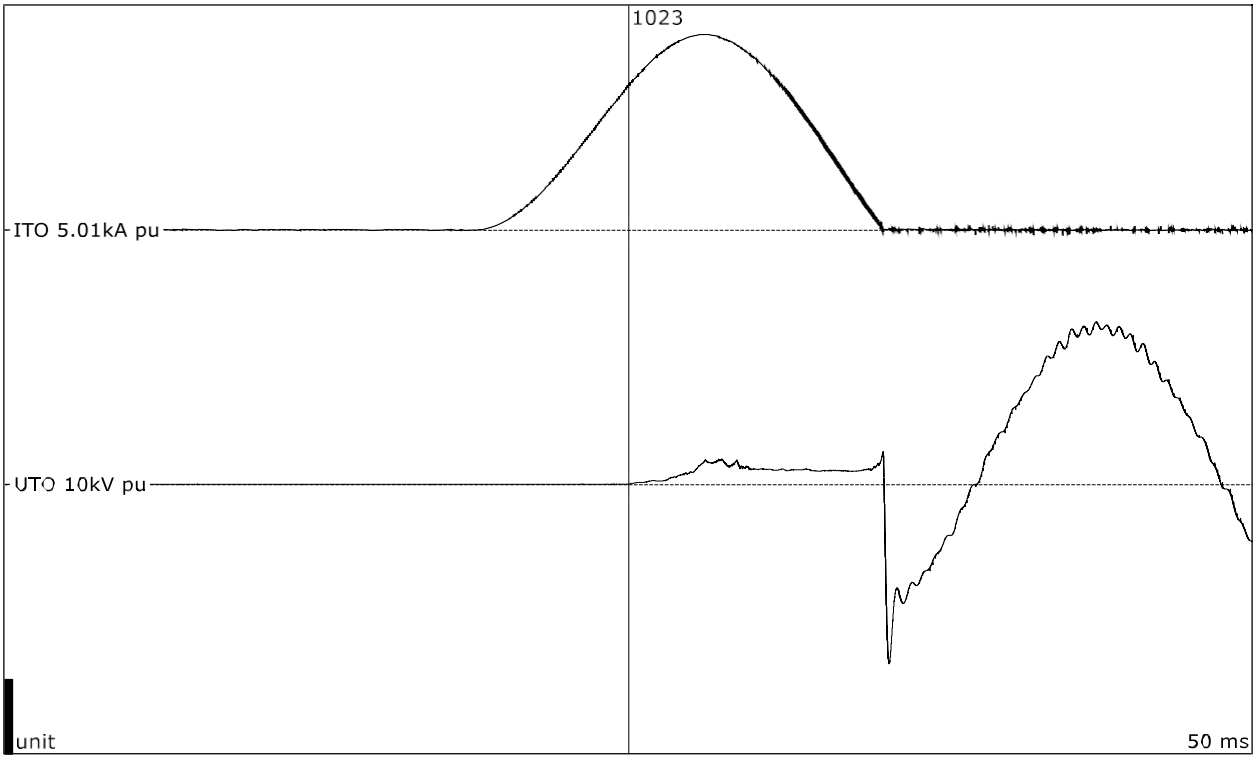
Remarks: -

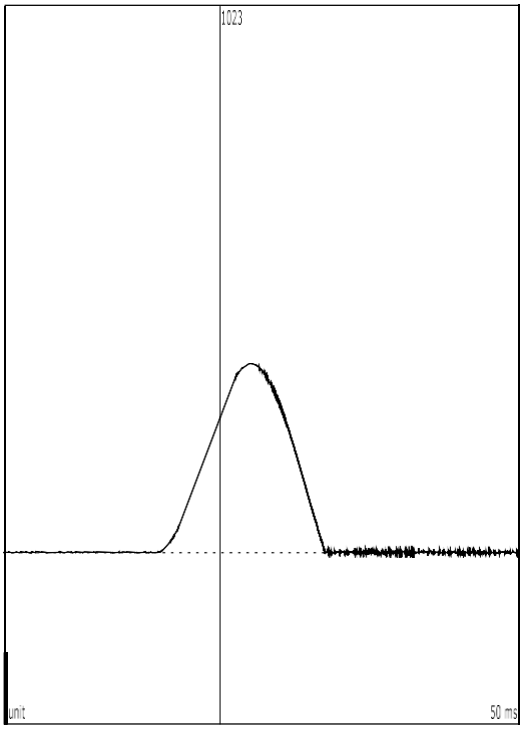
8.3 Test results and oscillograms

Overview of test numbers
190218-1023 to 1025

Remarks
-

Breaking test - TD2 (100 A)





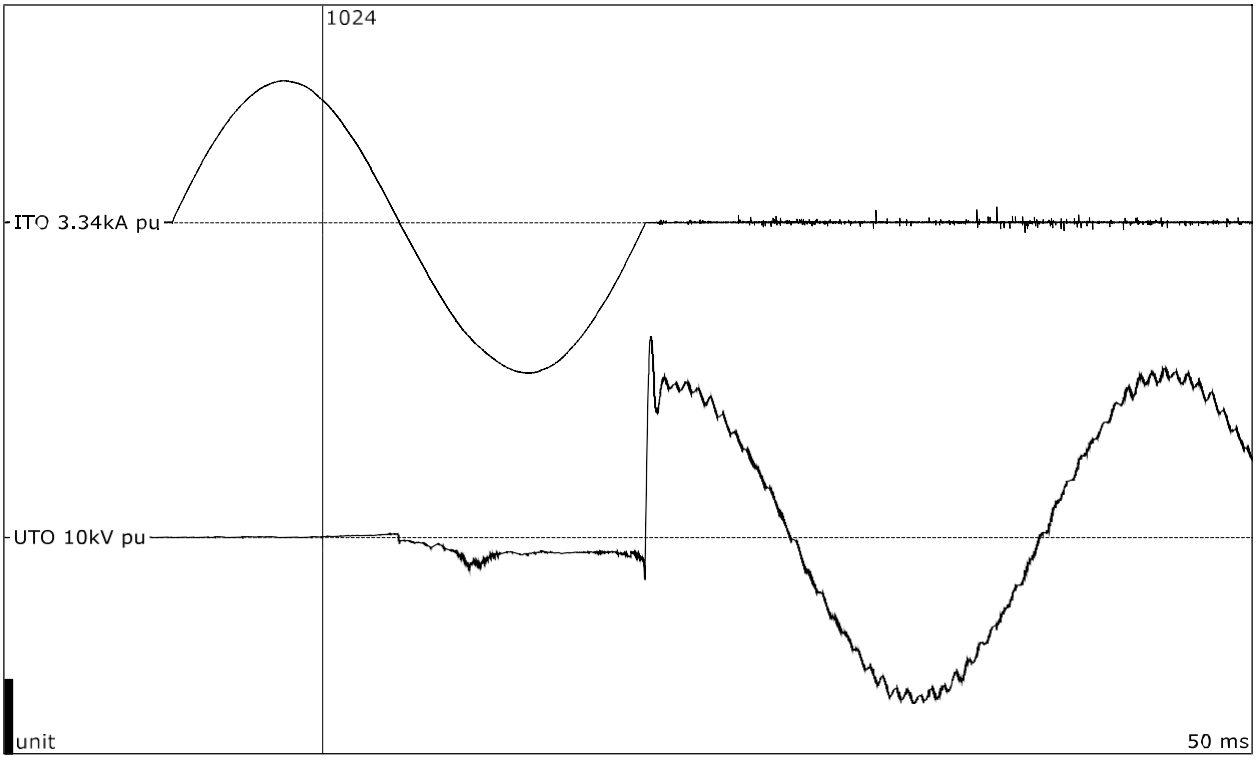
Test number: 190218-1023

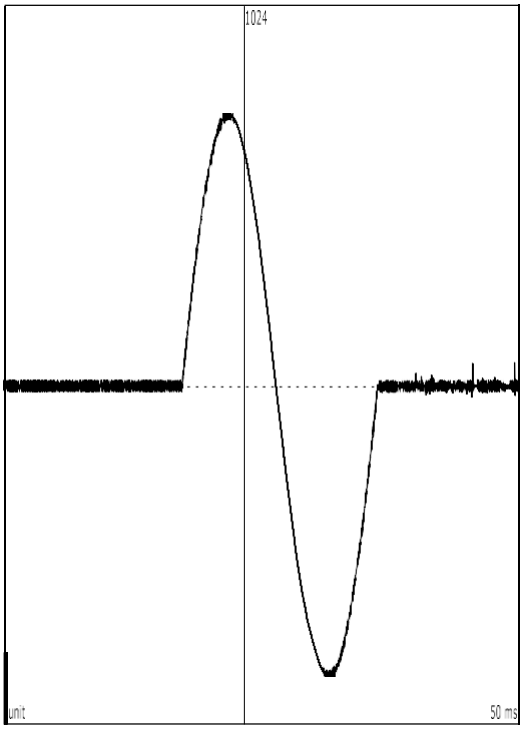
Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	5,02
Making angle related to voltage zero	°	9
Cut-off current	kA_{peak}	13,1
Melting time	ms	5,84
Arcing time	ms	10,2
Clearing time, total	ms	16,0
Recovery voltage, phase-to-ground	kV_{RMS}	15,8
Switching voltage	kV_{peak}	-28,2
Operating I^2t	10^3 A^2s	1144
Arc energy	kJ	148,3

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/4

Observations: Fuse cleared.

Breaking test - TD2 (100 A)





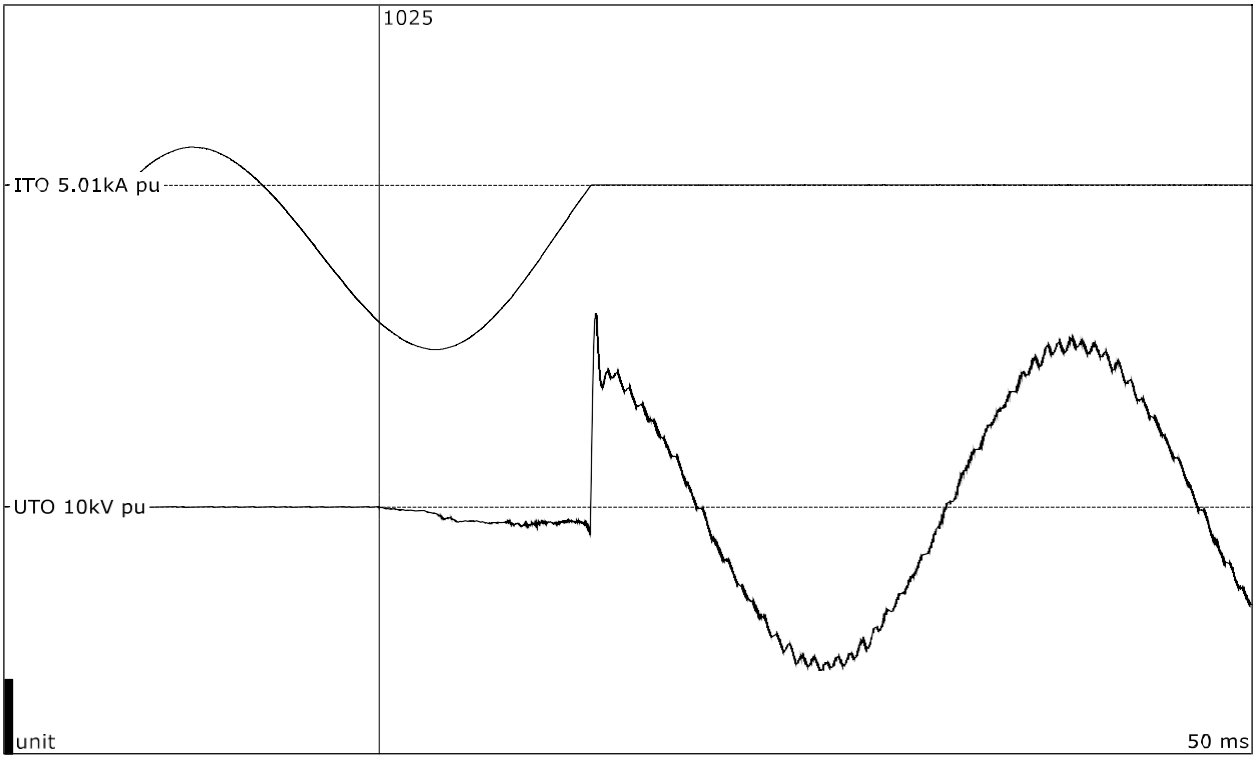
Test number: **190218-1024**

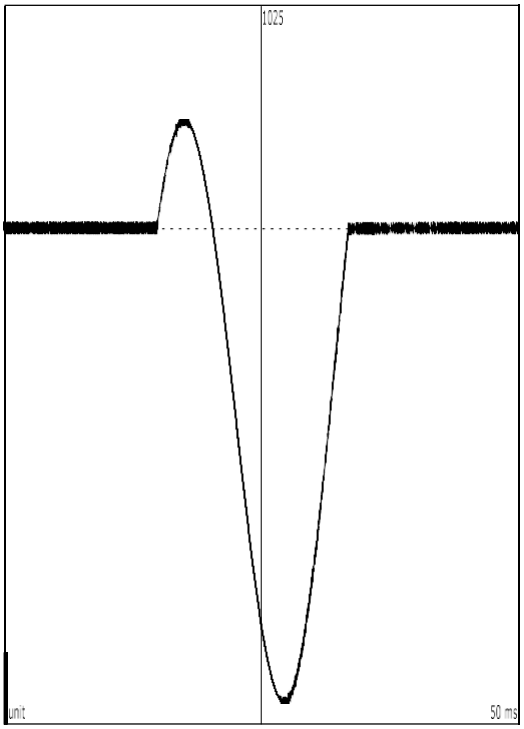
Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	5,02
Making angle related to voltage zero	°	96
Cut-off current	kA_{peak}	-6,71
Melting time	ms	6,00
Arcing time	ms	12,9
Clearing time, total	ms	18,9
Recovery voltage, phase-to-ground	kV_{RMS}	15,5
Switching voltage	kV_{peak}	26,8
Operating I^2t	10^3 A^2s	405,8
Arc energy	kJ	102,1

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/5

Observations: Fuse cleared.

Breaking test - TD2 (100 A)





Test number: 190218-1025

Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	5,02
Making angle related to voltage zero	°	131
Cut-off current	kA_{peak}	-11,0
Melting time	ms	10,1
Arcing time	ms	8,45
Clearing time, total	ms	18,6
Recovery voltage, phase-to-ground	kV_{RMS}	15,8
Switching voltage	kV_{peak}	25,9
Operating I^2t	10^3 A^2s	749,9
Arc energy	kJ	106,7

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/6

Observations: Fuse cleared.

8.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

9 BREAKING TEST - TD3 (6 A)

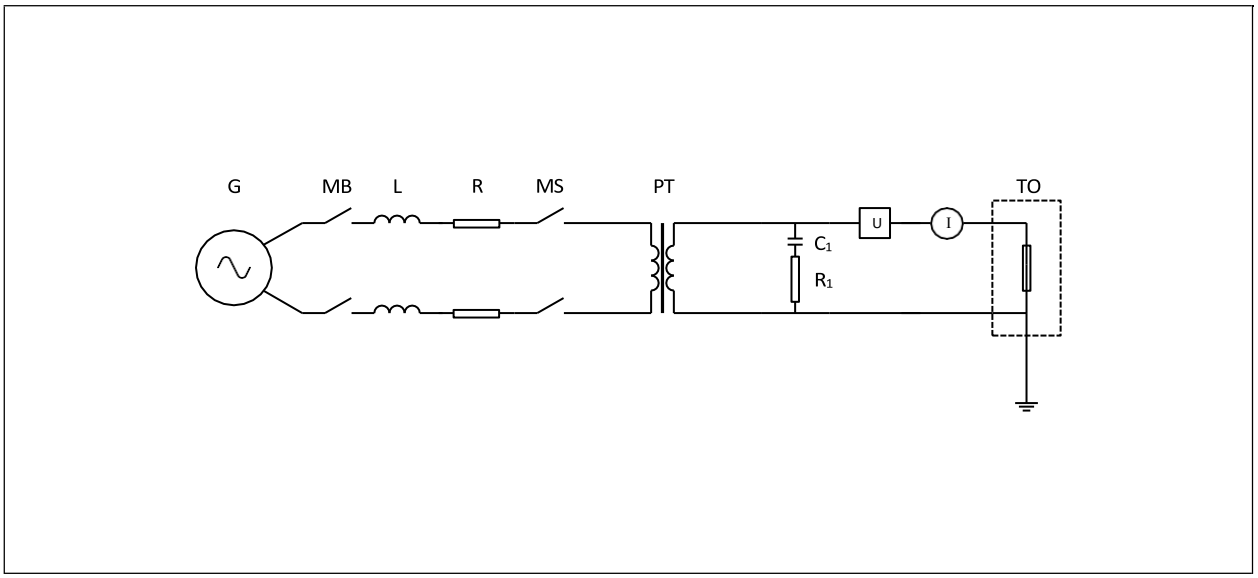
Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	18 February 2019

9.1 Condition before test

Fuse base in same condition
Fuse carrier new
Fuse link new

9.2 Test circuit S05



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	30
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	kA	2
Impedance	Ω	7,5
Power factor		0,08
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,864
R_1 (in parallel)	Ω	40
R_1 (in series)	Ω	-
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	31,3
t_3	µs	139
t_d	µs	-
RRRV	kV/µs	0,225

Load	
Short-circuit point	earthed

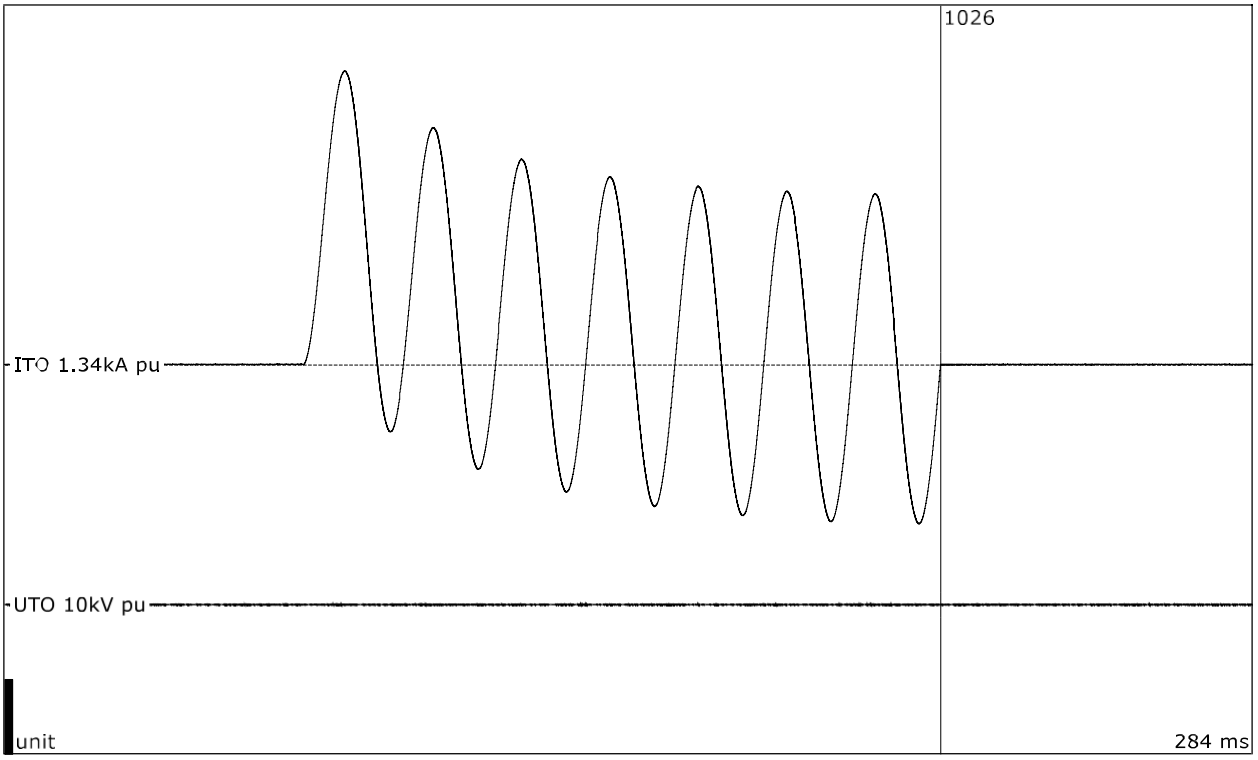
Remarks: -

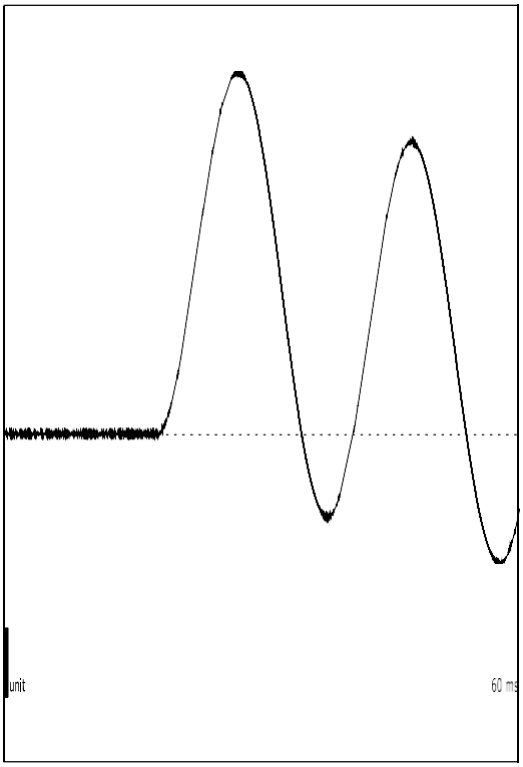
9.3 Test results and oscillograms

Overview of test numbers
190218-1026, 1031 to 1032

Remarks
-

Breaking test - TD3 (6 A)





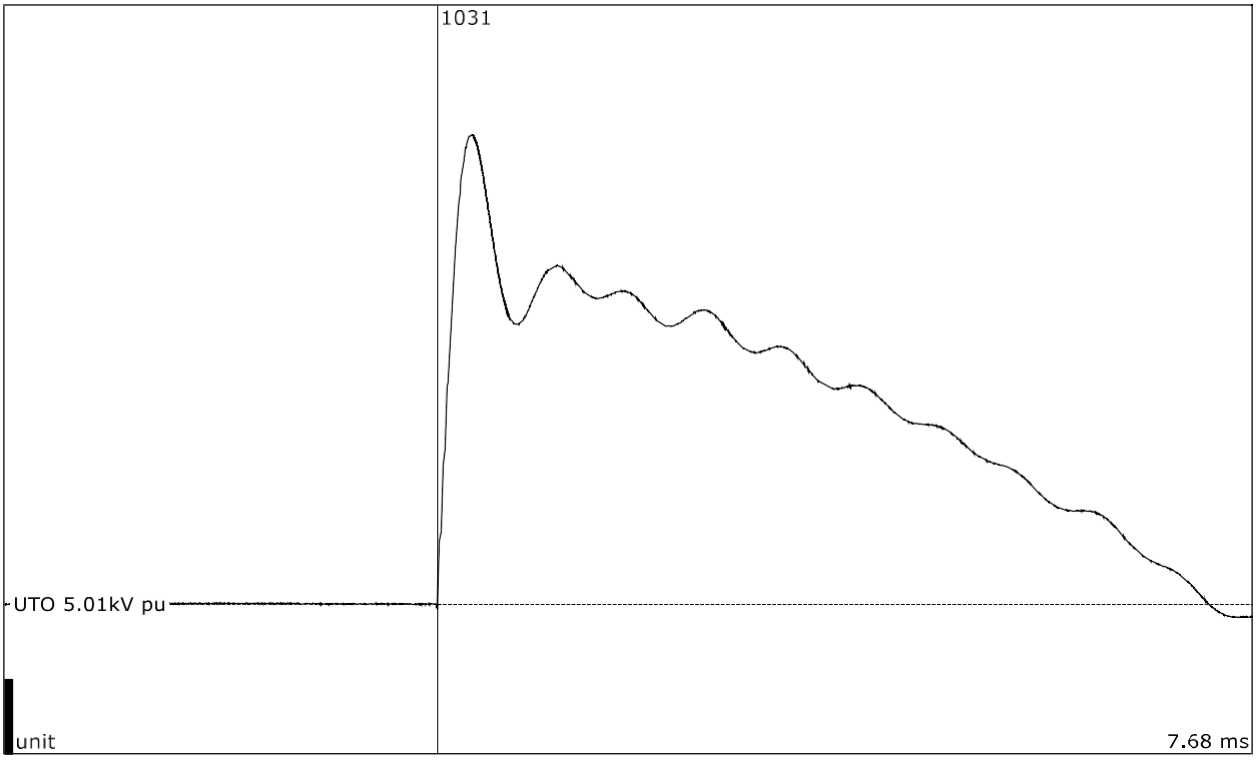
Test number: **190218-1026**

Phase		**-**
Current	kA_{peak}	5,24
Current, a.c. component	kA_{RMS}	2,07
Current, a.c. component, three-phase average	kA_{RMS}	-
Duration, current	s	0,144

Gas pressure at 20 °C

Observations: Checking of the prospective current.

Breaking test - TD3 (6 A)



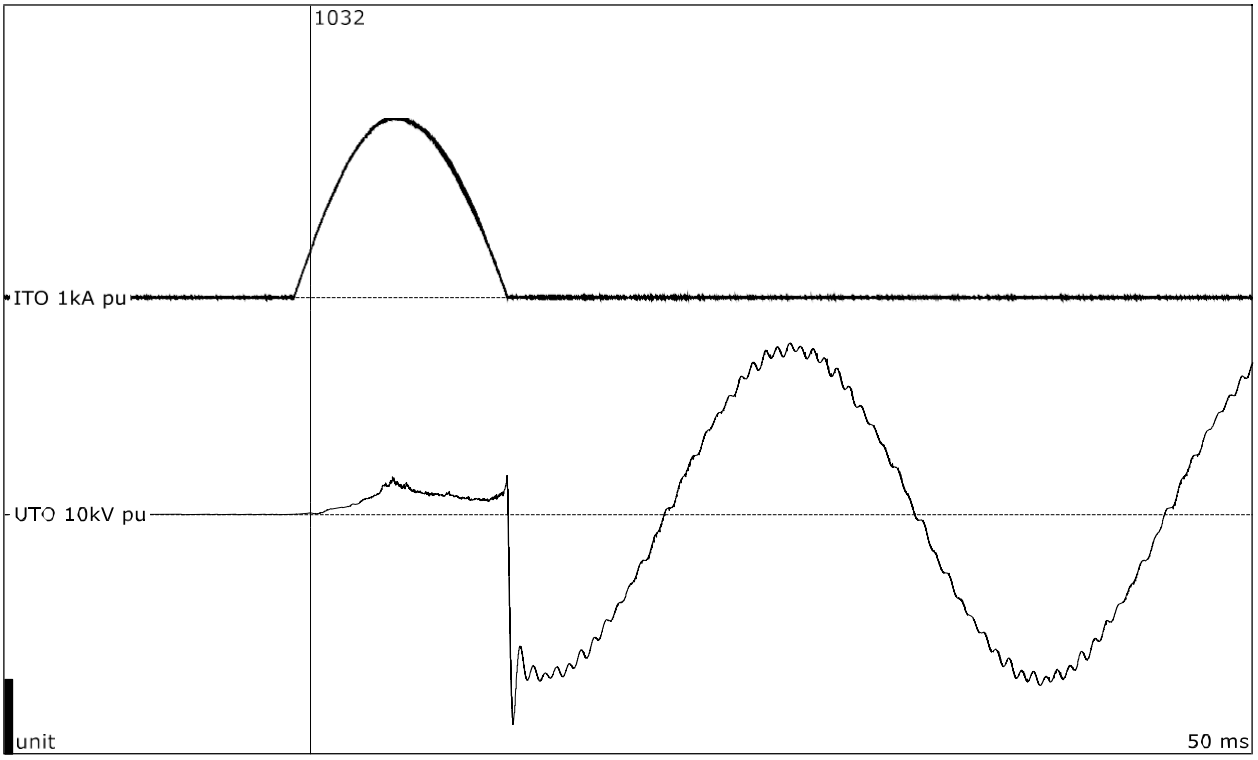
Test number: **190218-1031**

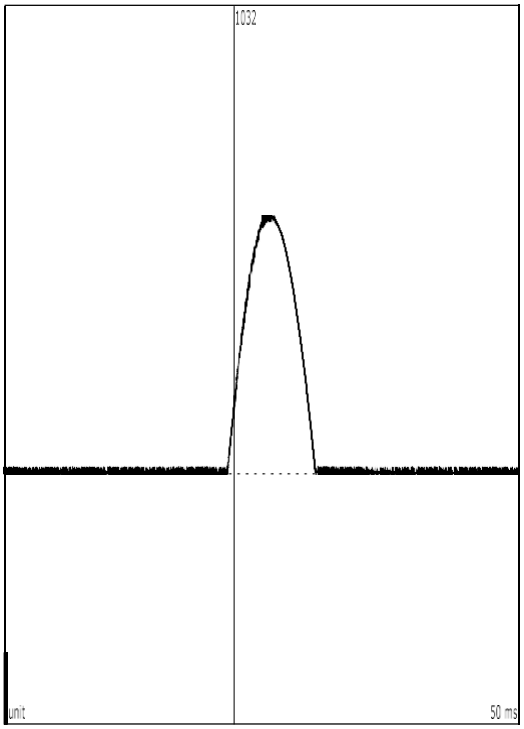
Phase		-
Value of TRV	kV_{peak}	31,3
Time coordinate of TRV	µs	139

Gas pressure at 20 °C

Observations: Checking of the prospective TRV.

Breaking test - TD3 (6 A)





Test number: 190218-1032

Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	2,07
Making angle related to voltage zero	°	94
Cut-off current	kA_{peak}	2,38
Melting time	ms	0,650
Arcing time	ms	7,88
Clearing time, total	ms	8,53
Recovery voltage, phase-to-ground	kV_{RMS}	15,8
Switching voltage	kV_{peak}	-28,1
Operating I^2t	10^3 A^2s	24,98
Arc energy	kJ	29,42

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/7

Observations: Fuse cleared.

9.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

10 BREAKING TEST - TD3 (100 A)

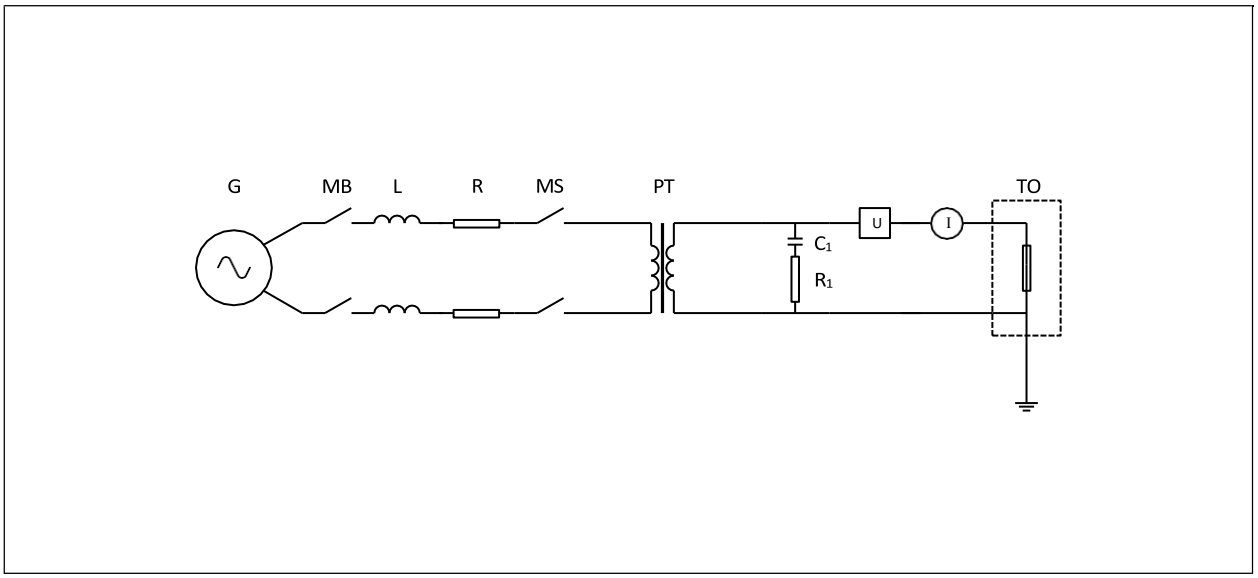
Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	18 February 2019

10.1 Condition before test

Fuse base in same condition
Fuse carrier in same condition
Fuse link new

10.2 Test circuit S06



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	30
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	kA	2
Impedance	Ω	7,5
Power factor		0,08
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,864
R_1 (in parallel)	Ω	40
R_1 (in series)	Ω	-
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	31,3
t_3	µs	139
t_d	µs	-
RRRV	kV/µs	0,225

Load	
Short-circuit point	earthed

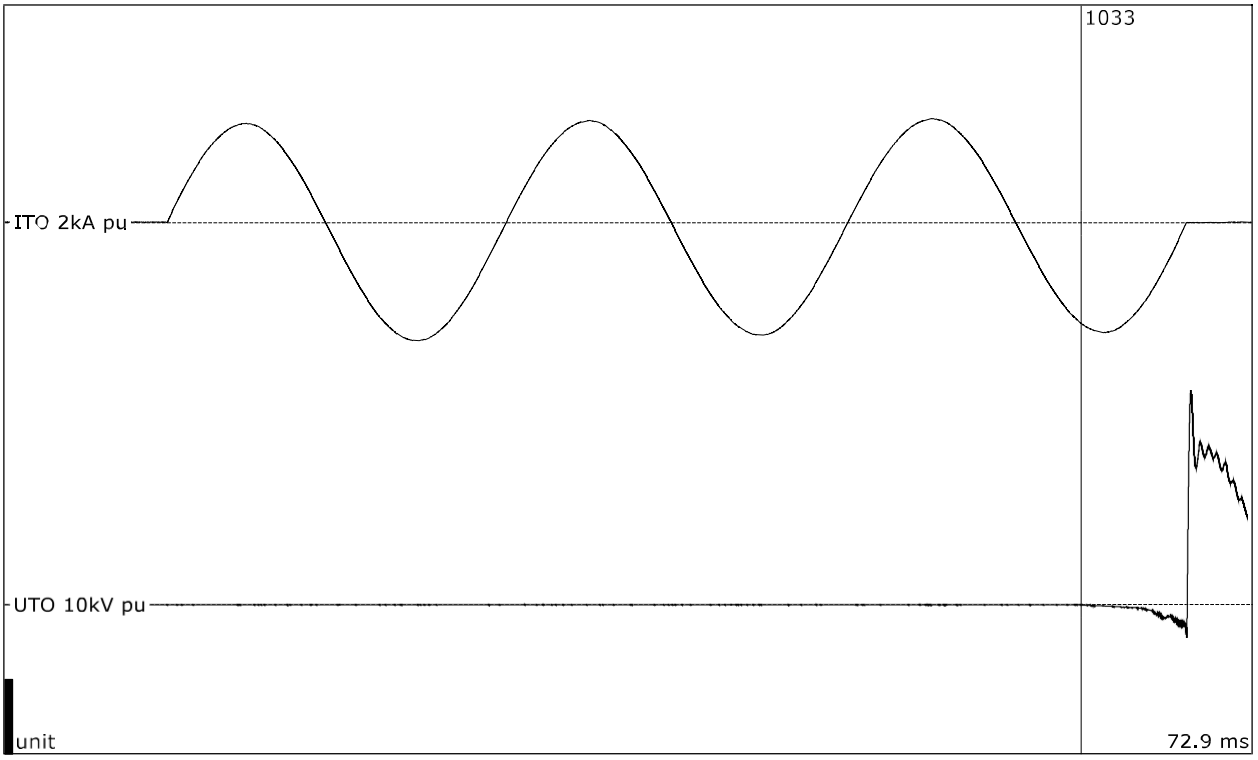
Remarks: -

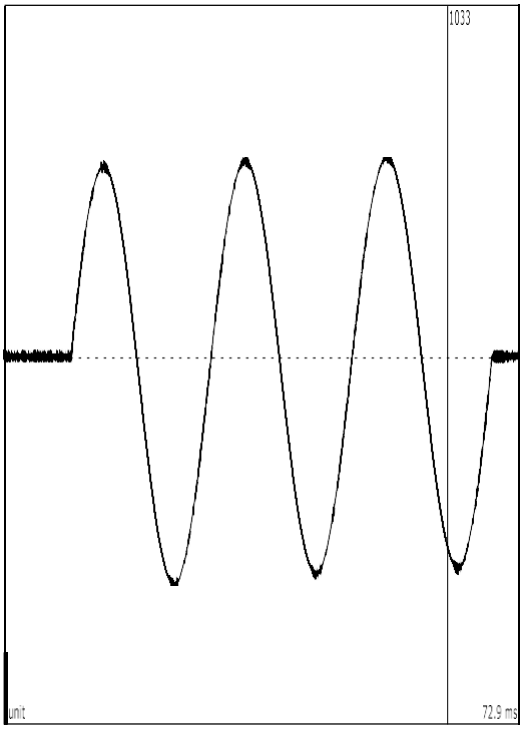
10.3 Test results and oscillograms

Overview of test numbers
190218-1033

Remarks
-

Breaking test - TD3 (100 A)





Test number: **190218-1033**

Applied voltage, phase-to-ground	kV_{RMS}	15,7
Prospective current, a.c. component	kA_{RMS}	2,07
Making angle related to voltage zero	°	92
Cut-off current	kA_{peak}	-3,17
Melting time	ms	53,6
Arcing time	ms	6,00
Clearing time, total	ms	59,6
Recovery voltage, phase-to-ground	kV_{RMS}	15,8
Switching voltage	kV_{peak}	28,5
Operating I^2t	10^3 A^2s	247,7
Arc energy	kJ	9,655

Rated voltage	15 kV	Rated current	100 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/100/7

Observations: Fuse cleared.

10.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

11 BREAKING TEST - TD4 (6 A)

Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	19 February 2019

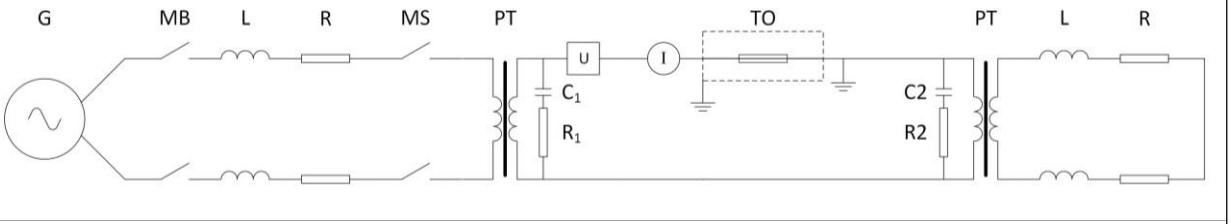
11.1 Condition before test

Fuse base in same condition

Fuse carrier new

Fuse link new after each test

11.2 Test circuit S07



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
		C	= Capacitor		

Supply		
Power	MVA	350
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15,1
Current	kA	23,2
Impedance	Ω	0,651
Power factor		0,1
Neutral		not earthed

Load		
Impedance	Ω	35,1
Power factor		0,1
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,01
R_1 (in parallel)	Ω	3000
R_1 (in series)	Ω	-
L_1	mH	-
C_d	nF	-
Neutral		not earthed

TRV control elements added (load)		
C_2	µF	0,862
R_2 (in parallel)	Ω	
R2 (in series)	Ω	50
L_2	mH	-
C_d	nF	-

Prospective TRV acros TO		
u_C	kV	33,8
t_3	µs	23,0
t_d	µs	-
RRRV	kV/µs	1,47

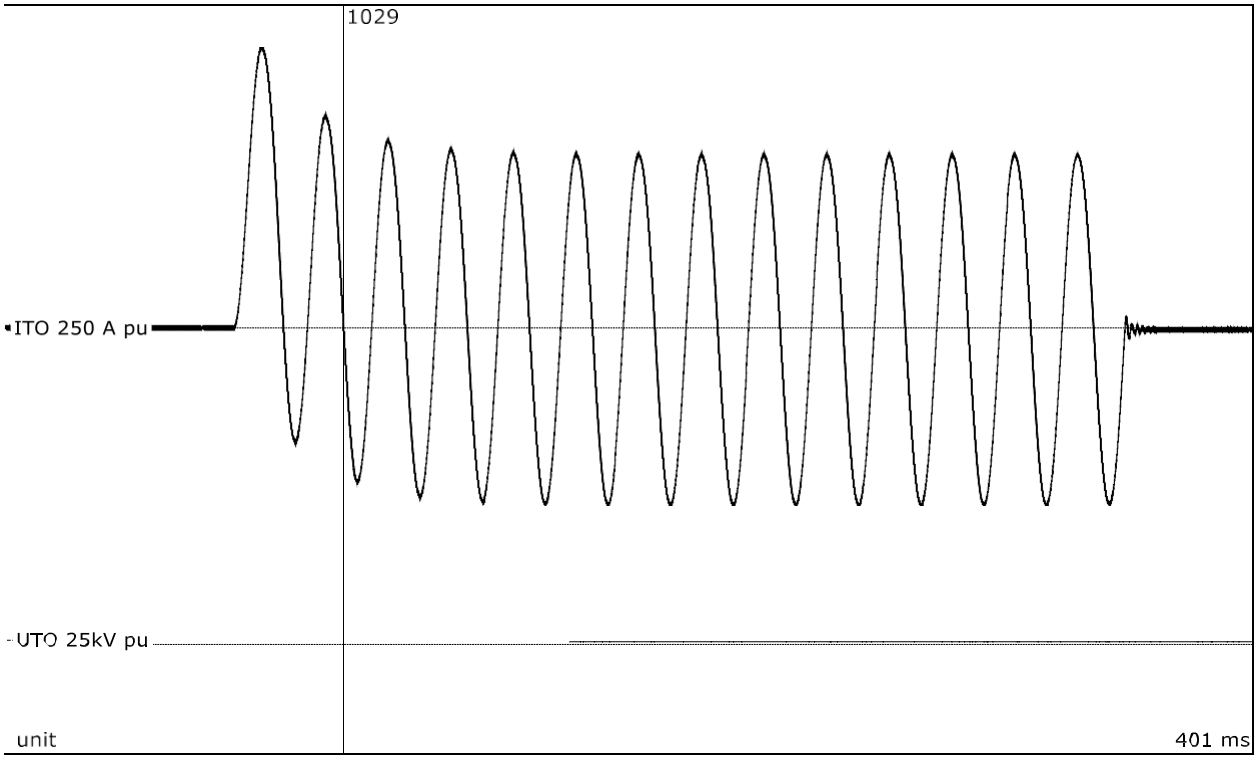
Remarks: -

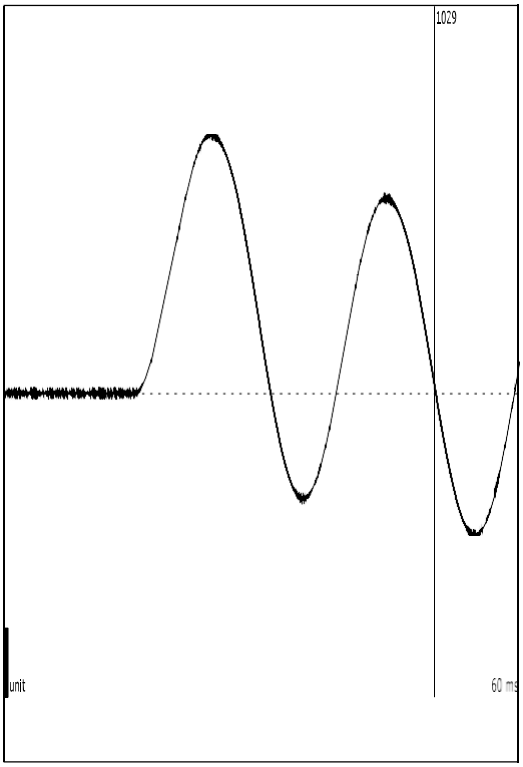
11.3 Test results and oscillograms

Overview of test numbers
190219-1029, 1035 to 1037

Remarks
-

Breaking test - TD4 (6 A)





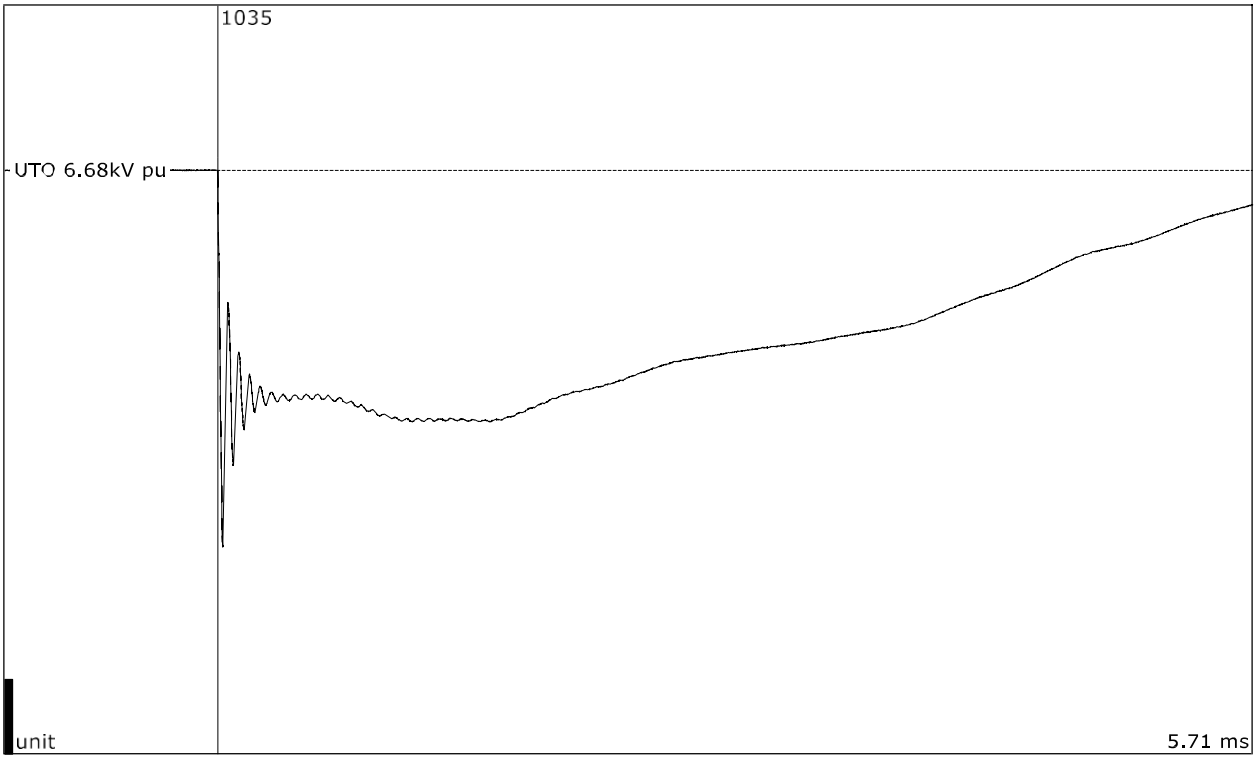
Test number: **190219-1029**

Phase		**-**
Current	A_{peak}	935
Current, a.c. component	A_{RMS}	422
Current, a.c. component, three-phase average	A_{RMS}	-
Duration, current	s	0,034

Gas pressure at 20 °C

Observations: Checking of the prospective current.

Breaking test - TD4 (6 A)



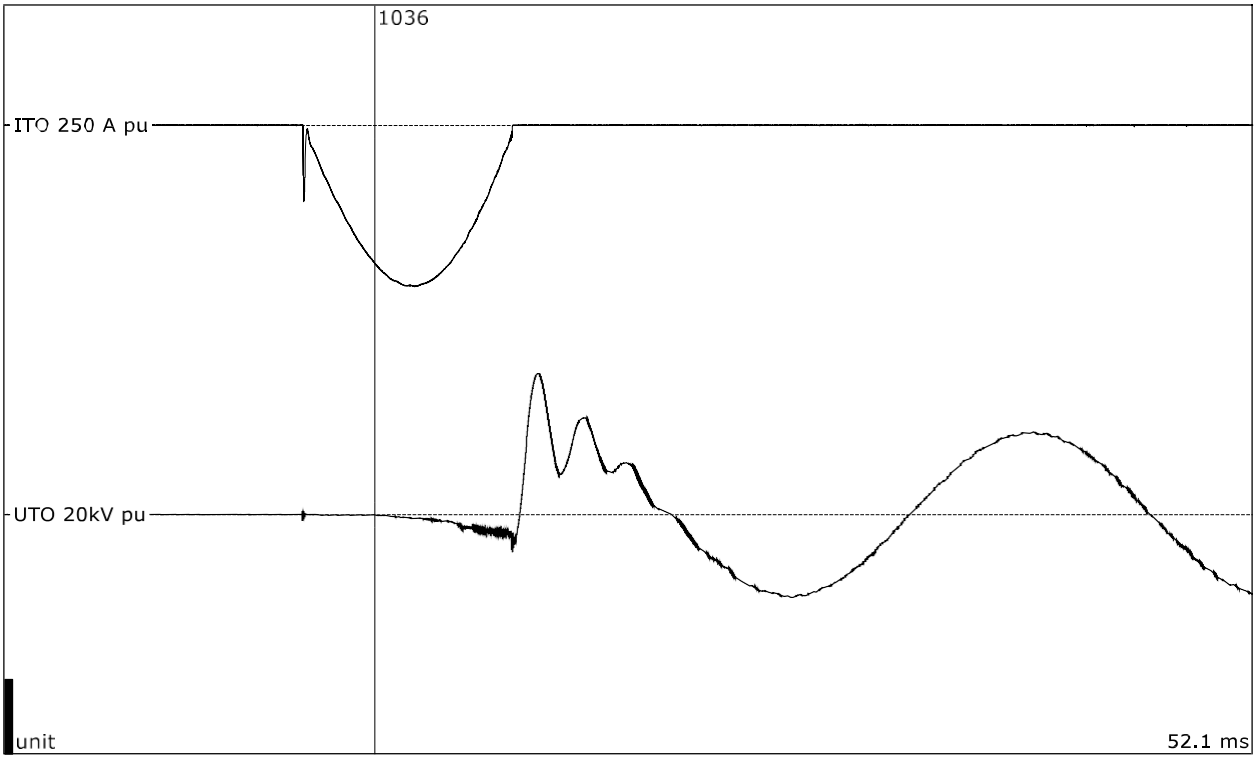
Test number: **190219-1035**

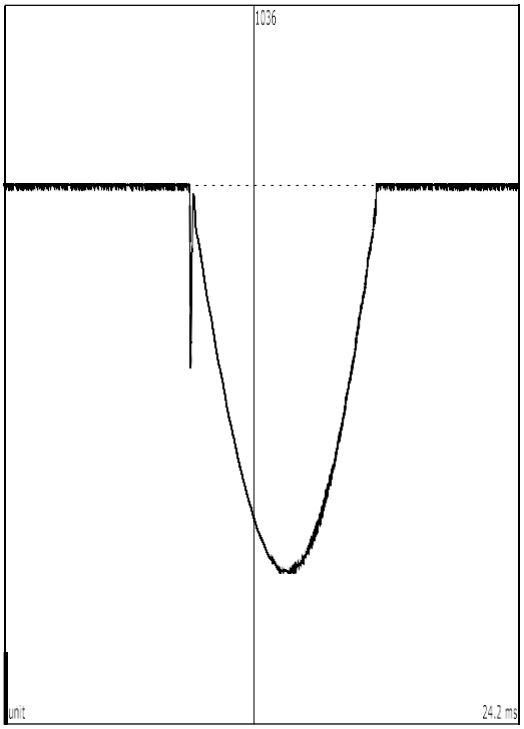
Phase		-
Value of TRV	kV_{peak}	33,8
Time coordinate of TRV	µs	23

Gas pressure at 20 °C

Observations: Checking of the prospective TRV.

Breaking test - TD4 (6 A)





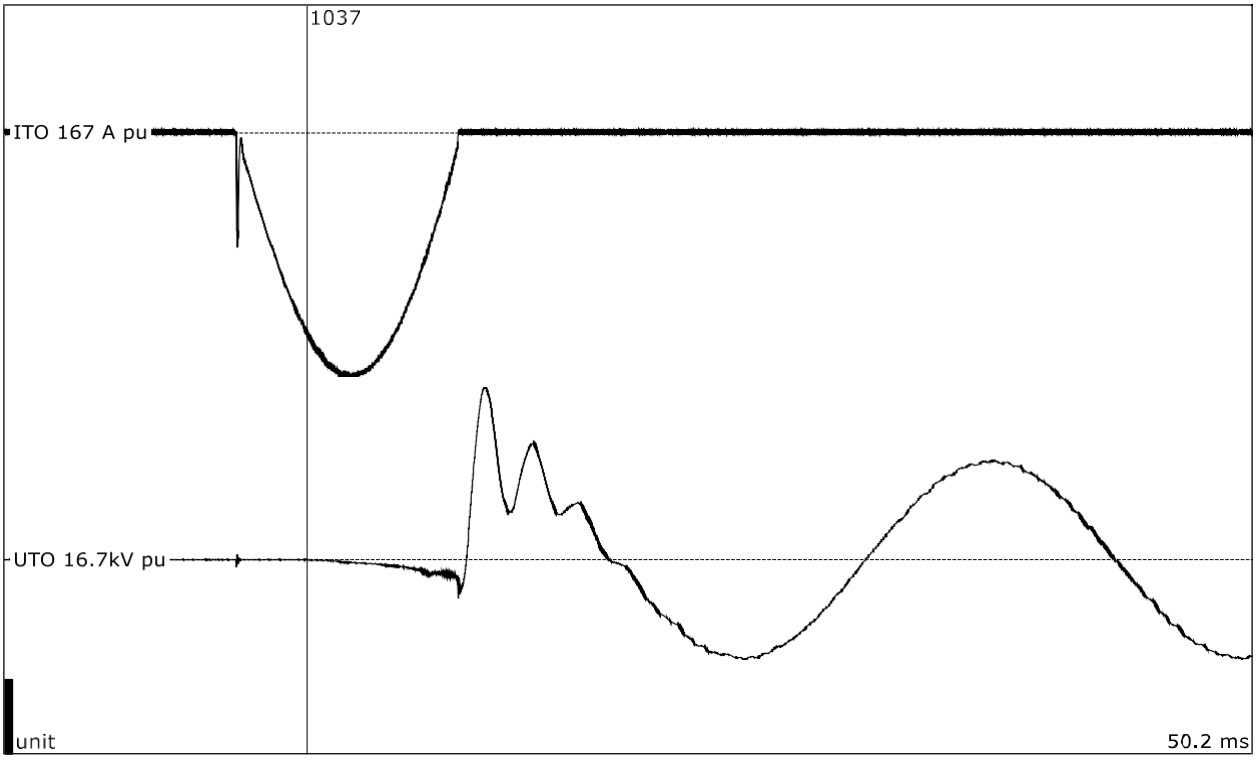
Test number: **190219-1036**

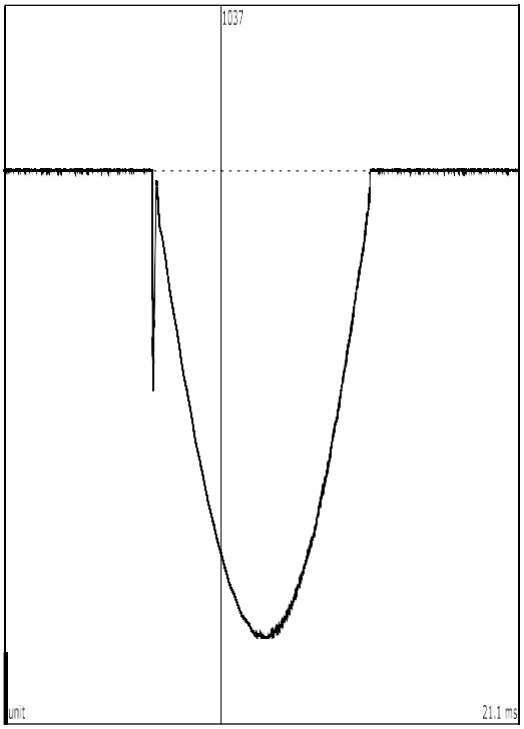
Applied voltage, phase-to-ground	kV_{RMS}	15,3
Prospective current, a.c. component	A_{RMS}	422
Making angle related to voltage zero	°	-
Cut-off current	kA_{peak}	-0,538
Melting time	ms	2,99
Arcing time	ms	5,75
Clearing time, total	ms	8,74
Recovery voltage, phase-to-ground	kV_{RMS}	15,5
Switching voltage	kV_{peak}	37,7
Operating I^2t	10^3 A^2s	1,311
Arc energy	kJ	5,693

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/8

Observations: Fuse cleared.

Breaking test - TD4 (6 A)





Test number: 190219-1037

Applied voltage, phase-to-ground	kV_{RMS}	15,3
Prospective current, a.c. component	A_{RMS}	422
Making angle related to voltage zero	°	87
Cut-off current	kA_{peak}	-0,541
Melting time	ms	2,80
Arcing time	ms	6,10
Clearing time, total	ms	8,90
Recovery voltage, phase-to-ground	kV_{RMS}	15,5
Switching voltage	kV_{peak}	38,3
Operating I^2t	10^3 A^2s	1,348
Arc energy	kJ	4,050

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/9

Observations: Fuse cleared.

11.4 Condition/inspection after test

Externally no visible change.
Fuse intact.

12 BREAKING TEST - TD5 (6 A)

Standard and date

Standard	IEC 60282-2, subclause 8.6
Test date	19 February 2019

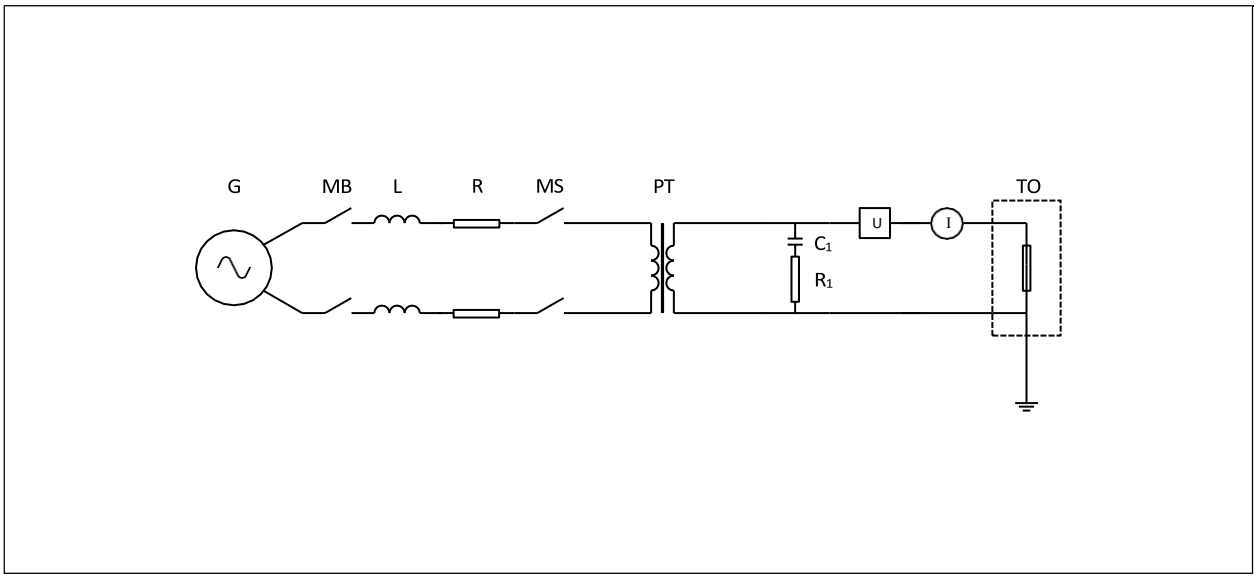
12.1 Condition before test

Fuse base in same condition

Fuse carrier in same condition

Fuse link new after each test

12.2 Test circuit S08



G	= Generator	TO	= Test Object	U	= Voltage Measurement to earth
MB	= Master Breaker	L	= Reactor	I	= Current Measurement
MS	= Make Switch	R	= Resistor		
PT	= Power Transformer	C	= Capacitor		

Supply		
Power	MVA	0,27
Frequency	Hz	50
Phase(s)		1
Voltage	kV	15
Current	A	18
Impedance	Ω	833
Power factor		0,7
Neutral		not earthed

TRV control elements added (supply)		
C_1	µF	0,289
R_1 (in parallel)	Ω	2000
R_1 (in series)	Ω	-
L_1	mH	-
C_d	nF	-
Neutral		not earthed

Prospective TRV of supply		
u_c	kV	-
t_3	µs	-
t_d	µs	-
RRRV	kV/µs	-

Load	
Short-circuit point	earthed

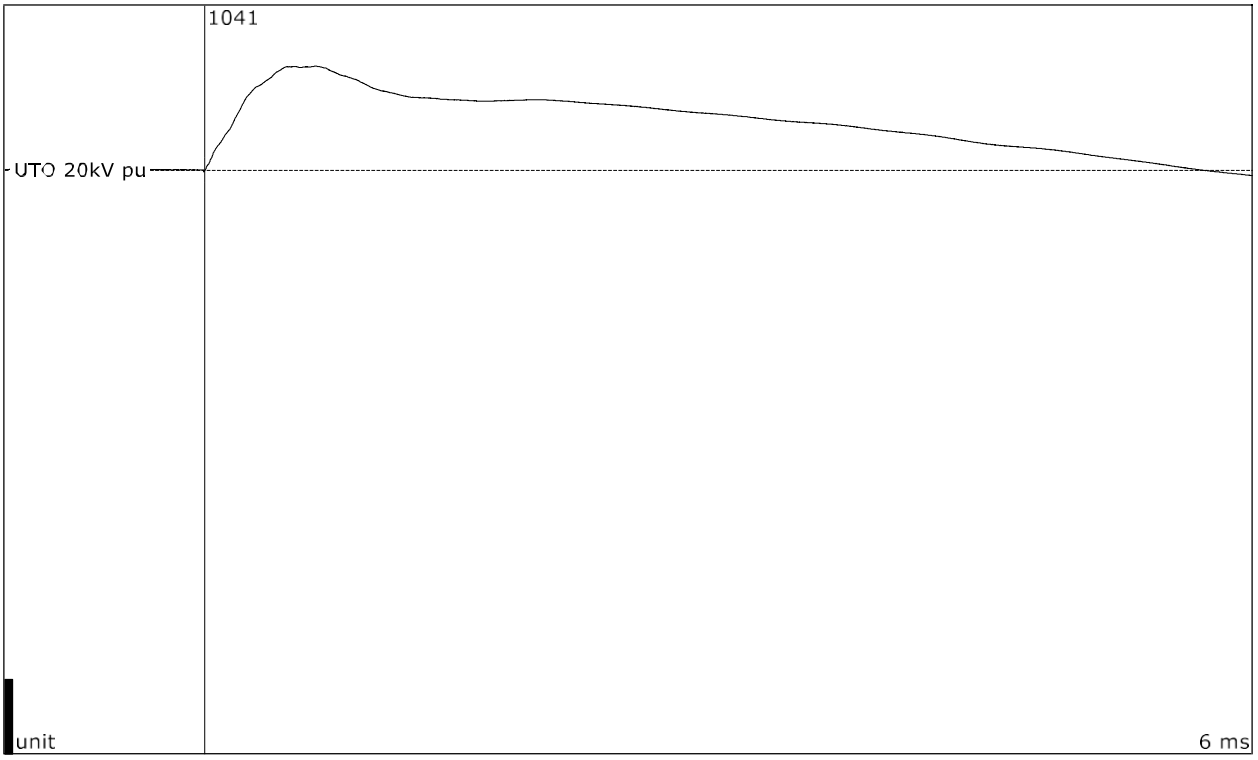
Remarks: -

12.3 Test results and oscillograms

Overview of test numbers
190219-1041 to 1043

Remarks
-

Breaking test - TD5 (6 A)



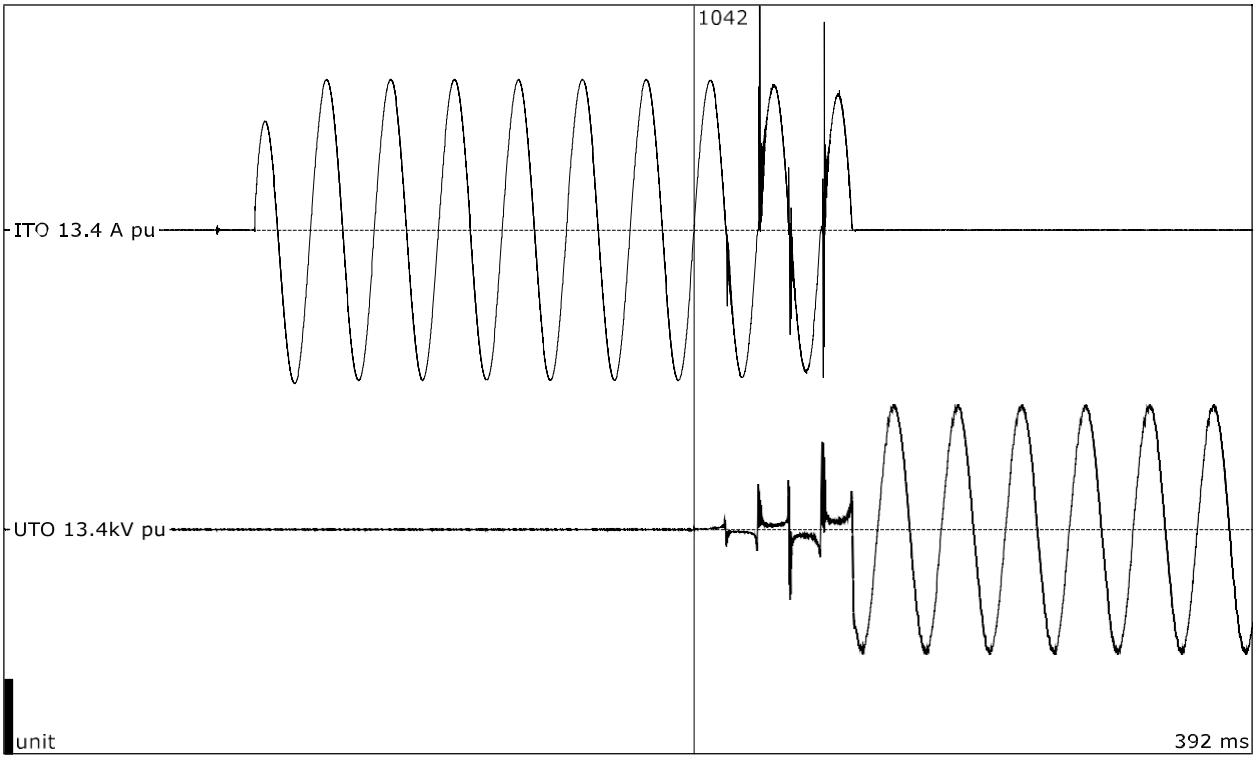
Test number: **190219-1041**

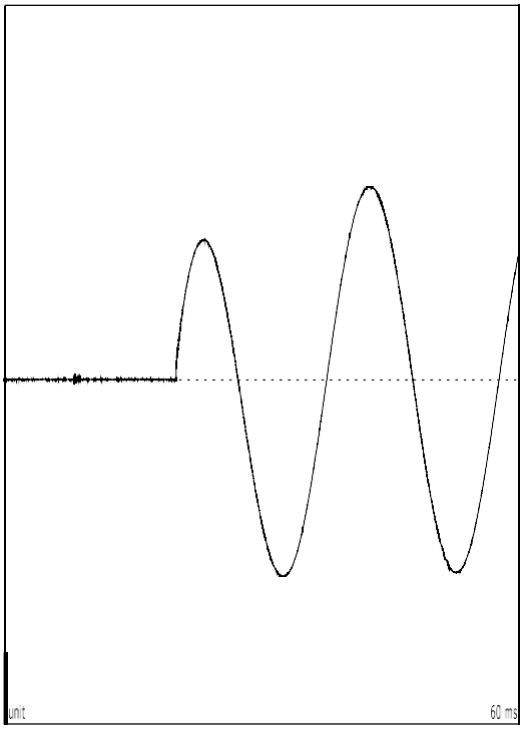
Phase		-
Voltage open-circuit	kV_{RMS}	15,3

Gas pressure at 20 °C

Observations: Checking of the prospective TRV

Breaking test - TD5 (6 A)





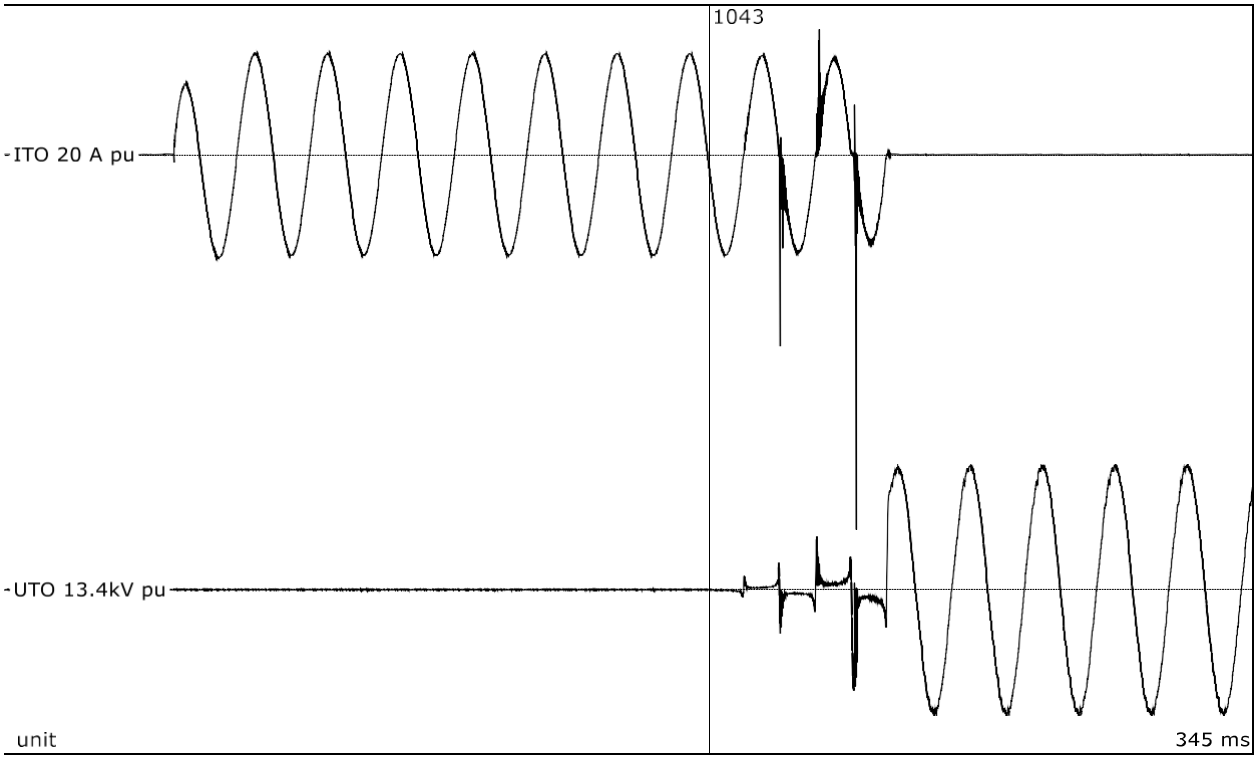
Test number: **190219-1042**

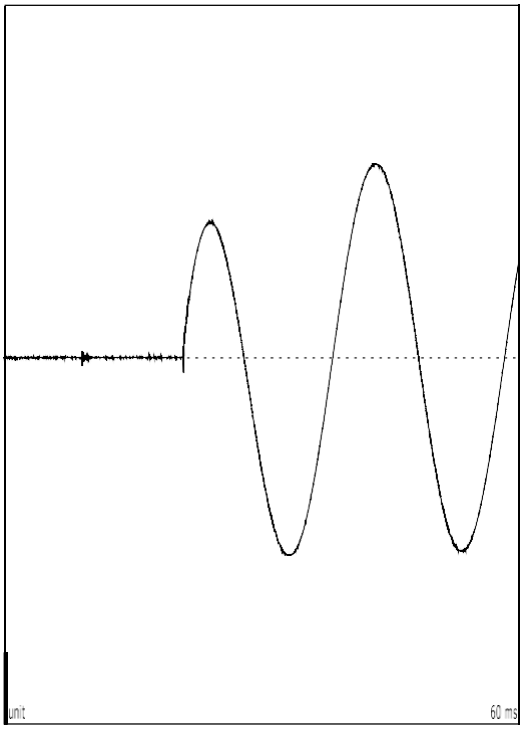
Applied voltage, phase-to-ground	kV_{RMS}	15,3
Breaking current, a.c. component	A_{RMS}	18,6
Making angle related to voltage zero	°	-
Cut-off current	A_{peak}	-27,4
Melting time	ms	138
Arcing time	ms	49,8
Clearing time, total	ms	188
Recovery voltage, phase-to-ground	kV_{RMS}	15,7
Switching voltage	kV_{peak}	-21,9
Operating I^2t	A^2s	64,7
Arc energy	kJ	1,049

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/10

Observations: Fuse cleared.

Breaking test - TD5 (6 A)





Test number: **190219-1043**

Applied voltage, phase-to-ground	kV_{RMS}	15,3
Breaking current, a.c. component	A_{RMS}	18,7
Making angle related to voltage zero	°	-
Cut-off current	A_{peak}	-27,5
Melting time	ms	148
Arcing time	ms	49,2
Clearing time, total	ms	197
Recovery voltage, phase-to-ground	kV_{RMS}	15,7
Switching voltage	kV_{peak}	21,9
Operating I^2t	A^2s	68,3
Arc energy	kJ	1,036

Rated voltage	15 kV	Rated current	6 A
Duration of recovery voltage	0,5 s	Ambient temperature	- °C
Manufacturer of fuse-link:	Zhejiang Haivo	Type of fuse-link:	15/6/11

Observations: Fuse cleared.

12.4 Condition/inspection after test

Externally no visible change.
Fuse intact.