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实验室名称：国家电器产品质量监督检验中心
Lab Name: China National Center for Quality Supervision and Test of Electrical Apparatus Products

No 21Q2637-S

检验(试验)报告
Test Report

委托单位: 柳高电力科技集团有限公司

Client: Lugao Power Co., Ltd.

产品名称: 铠装移开式交流金属封闭开关设备

Name of Product: Armored Withdrawable AC Metal-enclosed Switchgear

产品型号:
Product Type: KYN61-40.5/2500-31.5

检验类别: 型式试验

Test Category: Type Test

本实验室对出具的检验(试验)结果负责，未经实验室书面同意，不得部分地复制本报告。

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Overview

Test Category	Type Test
Sample model and name	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear
Client	Lugao Power Co., Ltd.
Address of client	19# Keaisi Road, Xiangyang Industrial Park, Liushi Town, Yueqing City, Wenzhou of China.
Manufacturer	Lugao Power Co., Ltd.
Manufacturer address	19# Keaisi Road, Xiangyang Industrial Park, Liushi Town, Yueqing City, Wenzhou of China.
Manufacturing date and serial number	2021-08、21R1809

Main technical parameters of the sample				
	Rated voltage kV	40.5	Rated lightning impulse withstand voltage (break point) kV peak value	215
	Rated current A	2500	Closing operation voltage V (maximum/ rated/minimum)	DC242/220/187
	Rated frequency Hz	50	Tripping operation voltage V (maximum/ rated/minimum)	DC242/220/143
	Rated short-circuit breaking current kA	31.5		
	Rated short-circuit making current KA peak value	80		
	Rated short-time withstand current duration (s)	4		
	Rated short-time withstand current kA	31.5		
	Rated peak withstand current kA peak	80		
	Rated short-time power frequency withstand voltage (kV)	95		
	Rated lightning impulse withstand voltage (kV peak value)	185		
	Rated short-time power frequency withstand voltage (break) kV	118		
	Rated operating sequence	O-0.3s-CO-180s-CO		

Technical data provided by the client	HYKYN61.2304 KYN61-40.5/2500-31.5 technical specifications for armored withdrawable AC metal-enclosed switchgear
	HYKYN61.2305 KYN61-40.5/2500-31.5 outline for Trial Production and Evaluation of Armored Withdrawable AC Metal-Enclosed Switchgear
	HY.251.016 KYN61-40.5/2500-31.5 Armored withdrawable AC metal-enclosed switchgear assembly drawing
	HY251.017 KYN61-40.5/2500-31.5 Primary arrangement diagram of armored withdrawable AC metal-enclosed switchgear
Explanation	/

Client Representative: Zheng Bin

Sample arrival date: September 16, 2021

Trial period: September 16, 2021 to September 23, 2021

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Sample photos





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Test conclusions

Client	Lugao Power Co., Ltd.	
Sample model	KYN61-40.5/2500-31.5	
Sample name	rmored Withdrawable AC Metal-enclosed Switchgear	
Manufacturer	Lugao Power Co., Ltd.	
Test items and test conclusions	Power frequency voltage test [phase-to-phase, phase-to-ground/circuit breaker break, isolation break: 95kV/118kV 1min]	Passed
	Lightning impulse voltage test [phase-to-phase, phase-to-ground/circuit breaker break, isolation break: 185kV peak/215kV peak]	Passed
	Insulation test for auxiliary and control circuits [2000V 1min]	Passed
	Partial discharge test [partial discharge rate <250pc at 1.1Ur]	Passed
	Voltage test for condition checking: Power frequency voltage test [118 kV 1 min]	Passed
	Measurement of loop resistance [Main loop resistance < 120 μΩ, circuit breaker loop resistance < 45 μΩ]	Passed
	Temperature rise test [1.1×2500A] (The test current shall be 1.1 times the rated current as required by the client)	Passed
	Short-time withstand current and peak withstand current tests [Main circuit: 4s 31.5kA 80kA peak]	Passed
	[Grounding switch: 4s 31.5kA 80kA peak]	Passed
	[Grounding connection loop: 2s 27.4kA 69.6kA peak]	Passed
	Protection level verification (IP code verification) [Enclosure: IP4X; Circuit breaker compartment door open: IP2X; Compartment: IP2X]	Passed
	Verification of making and breaking capacity T100s [40.5kV 31.5kA 80kA peak]	Passed
	T100a [40.5kV 31.5kA DC:46%]	Passed
	Mechanical operation test	Passed
	Mechanical property measurement test	Passed
	Mechanical life test [Circuit breaker trolley/grounding switch: 3000 cycles/3000 cycles]	Passed
According to the standard	GB/T 3906-2020 ***3.6KV~40.5KVAC metal-enclosed switchgear and control equipment***、IEC 62271-200:2011	
	GB/T 1984-2014 ***High-voltage AC circuit breakers*** 、IEC 62271-100:2008	
	GB/T 1985-2014 ***High-voltage AC disconnect switches and grounding switches*** 、IEC 62271-102:2001	
Test conclusions	Type testing was conducted on the KYN61-40.5/2500315 armored withdrawable AC metal-enclosed switchgear manufactured by Lugao Power Co., Ltd. The test results comply with the aforementioned standards and product technical documents, and the test results are qualified. Note: This conclusion is only valid for the submitted sample.	

Compiled: 李嘉诚 Date: 2021-09-24 Proofread: [illegible] Date: 2021-09-24 Checked: 陆伟刚 Date: 2021-09-24 Approved: [illegible] Date: 2021-09-24

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Technical data of main components used in high-voltage switchgear

1-Circuit Breaker	
Model	ZN85-40.5/2500-31.5
Rated voltage kV	40.5
Rated current A	2500
Rated frequency Hz	50
Rated short-circuit breaking current kA	31.5
Rated short-circuit making current kA peak value	80
Rated short-time withstand current kA	31.5
Rated peak withstand current (kA) Peak value	80
Rated short-time withstand current duration (s)	4
Rated operating sequence	O-0.3-CO-180-CO
Product manufacturing date	2021-07
Product serial number	21007213
Manufacturer	Schneider (Shaanxi) Baoguang Electrical Appliance Co., Ltd.
2-Vacuum interrupter	
Model	TD□-40.5/2500-31.5
Rated voltage kV	40.5
Rated current A	2500
Rated frequency Hz	50
Rated short-circuit breaking current kA	31.5
Product manufacturing date	2021-06
Product serial number	A:2106018965 B:2106018966 C:2106018967
Manufacturer	Schneider (Shaanxi) Baoguang Electrical Appliance Co., Ltd.
3-Operating mechanism	
Model	Spring-operated energy storage mechanism (part of the overall circuit breaker structure)
Rated voltage/current of closing coil (V/A)	DC220/
Rated voltage/current of the trip coil (V/A)	DC220/
Product manufacturing date	/
Product serial number	/
Manufacturer	Schneider (Shaanxi) Baoguang Electrical Appliance Co., Ltd.

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Technical data of main components used in high-voltage switchgear

4-Grounding switch	
Model	JN22-40.5/31.5
Rated voltage kV	40.5
Rated frequency Hz	50
Rated short-time withstand current kA	31.5
Rated peak withstand current (kA) Peak value	80
Rated short-time withstand current duration (s)	4
Model and name of the operating mechanism	Hand-operated spring mechanism (part of the overall structure of the grounding switch)
Product manufacturing date	2021-06
Product serial number	06300235
Manufacturer	Lugao Power Co., Ltd.
5-Current transformer	
Model	LZZBJ9
Rated voltage kV	40.5
Rated current ratio A	2500/5
Rated frequency Hz	50
Rated short-time withstand current kA	31.5
Rated peak withstand current (kA) Peak value	80
Rated short-time withstand current duration (s)	4
Product manufacturing date	2021-06
Product serial number	216584、216585
Manufacturer	Lugao Power Co., Ltd.
6-Busbar	
Specifications and dimensions(mm×mm)	TMY: 2×(100×10)

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Protection level verification (IP code verification)

Test date：2021-09-16

1.Inspection status

No.	Inspection process	Implementation status
1	Whether the corresponding standard testing tools pass through the openings in the casing or partition.	No
2	When the testing tool can be inserted, check whether the insertion of the testing tool causes the dielectric strength of the live parts to drop below the rated insulation level.	/
3	When the inspection tool can be inserted, check whether it touches the moving parts inside the housing.	/

2. Inspection conclusions:

The enclosure meets IP4X protection requirements;

when the circuit breaker compartment door is open, it meets IP2X protection requirements;

the compartments between compartments meet IP2X protection requirements.

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Insulation test of auxiliary and control circuits

Test date：2021-09-16

Test requirements:

a) Voltage is applied between the connected auxiliary and control circuits and the base of the switching device;

Pressurized parts	Grounding part	Appropriate voltage (kVr.m.s)	Measured voltage (kVr.m.s)	Duration (s)	Number of pressurizations	Number of penetrations	Test conclusion
Secondary circuit terminals	F	2.0	2.0	60	1	0	Passed

Voltage is applied between each part of the auxiliary and control circuits (which are insulated from other parts during normal use) and the other parts connected together and to the base frame;

Pressurized parts	Grounding part	Appropriate voltage (kVr.m.s)	Measured voltage (kVr.m.s)	Duration (s)	Number of pressurizations	Number of penetrations	Test conclusion
Secondary circuit terminals	Other secondary circuit terminals and F	2.0	2.0	60	1	0	Passed

Post-test status: Passed.

Atmospheric conditions in the test area	P=101.4kPa;	Ambient temperature t=27.2℃; Relative humidity:65%
	Atmospheric correction factor Kt=/	Altitude correction factor Ka=/

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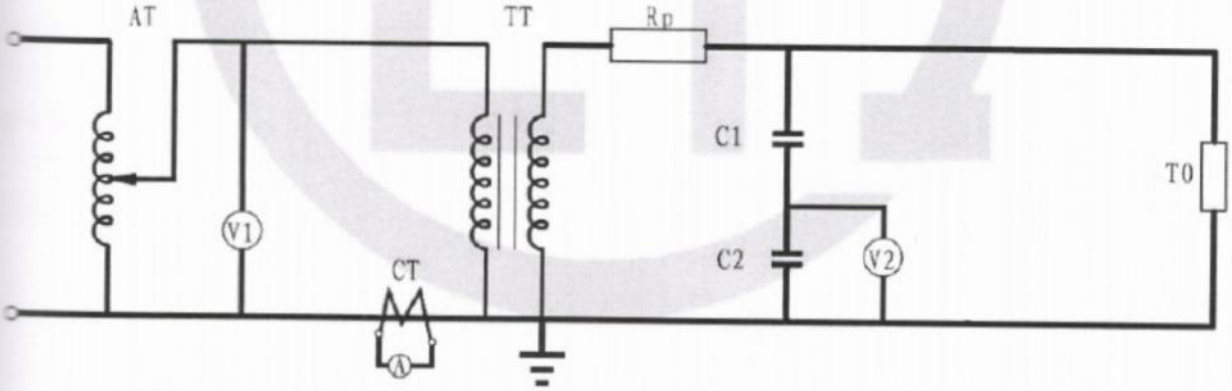
Power frequency voltage test

Test date：2021-09-16

Sample installation and testing requirements:

1. The test specimen is a fully assembled new sample;
2. The outer surface of the insulating components of the test specimen is clean before the test;
3. Phase-to-phase and phase-to-ground: 95kV 1min, circuit breaker break: 118kV 1min, isolation break: 118kV 1min.

Experimental principle diagram:



AT	Voltage regulator	Rp	Protective resistor
CT	Current Transformer	TT	Power frequency test transformer
T0	Sample	A	ammeter
C1	High voltage arm capacitor	C2	Low voltage arm capacitor
V2	Voltmeter		

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Power frequency voltage test

Test date：2021-09-16

Test conclusion:

Sample status	Pressurized parts	Grounding part	1min power frequency withstand voltage			
			Appropriate voltage (kVr.m.s)	Measured voltage (kVr.m.s)	Number of pressurizations	Number of penetrations
The removable part is in the working position The main switch is in the closed position (The grounding switch is in the open position)	Aa	BCbcF、Observation window	95±1%	95.3	1	0
	Bb	ACacF、Observation window		95.0	1	0
	Cc	ABabF、Observation window		95.3	1	0
The removable part is in the working position The circuit breaker is in the open position (The grounding switch is in the open position)	A	BCabcF	95±1%	95.4	1	0
	B	ACabcF		95.0	1	0
	C	ABabcF		95.2	1	0
	a	ABCbcF		95.0	1	0
	b	ABCacF		95.1	1	0
	c	ABCabF		95.0	1	0
Between the live parts and the accessible surfaces of the viewing window	ABC	Metal valve accessible surface		95.2	1	0
	abc	Metal valve accessible surface		95.4	1	0

Test result: Passed.

Note: A, B, C--Terminals on one side of the test site; a, b, c--Terminals on the other side of the test site; F--Housing and base.

Data in the table has been corrected to standard atmospheric conditions.

When testing the observation window, cover the accessible surface of the observation window with a metal foil and ground it.

Atmospheric conditions in the test area	P=101.4kPa; Ambient temperature t=27.2℃; Relative humidity:65%;
	Atmospheric correction factor Kt=0.9770 (Corrected to Kt=1.0000 during the experiment) Altitude correction factor Ka=/

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Power frequency voltage test

Test date：2021-09-16

Test conclusion:

Sample status	Pressurized parts	Grounding part	1min power frequency withstand voltage			
			Appropriate voltage (kVr.m.s)	Measured voltage (kVr.m.s)	Number of pressurizations	Number of penetrations
The removable part is in the working position The main switch is in the closed position (The grounding switch is in the open position)	A	a	118±1%	118.0	1	0
	B	b		118.3	1	0
	C	c		118.5	1	0
	a	A		118.0	1	0
	b	B		118.1	1	0
	c	C		118.5	1	0
The removable part is in the working position The circuit breaker is in the open position (The grounding switch is in the open position)	A	a	118±1%	118.3	1	0
	B	b		118.0	1	0
	C	c		118.2	1	0
	a	A		118.0	1	0
	b	B		118.2	1	0
	c	C		118.0	1	0

Test result: Passed.

Note: A, B, C--Terminals on one side of the test site; a, b, c--Terminals on the other side of the test site; F--Housing and base.

Data in the table has been corrected to standard atmospheric conditions.

Atmospheric conditions in the test area	P=101.4kPa; Ambient temperature t=27.2℃; Relative humidity:65%;
	Atmospheric correction factor Kt=0.9770 (Corrected to Kt=1.0000 during the experiment) Altitude correction factor Ka=/

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Lightning impulse voltage test

Test date：2021-09-16

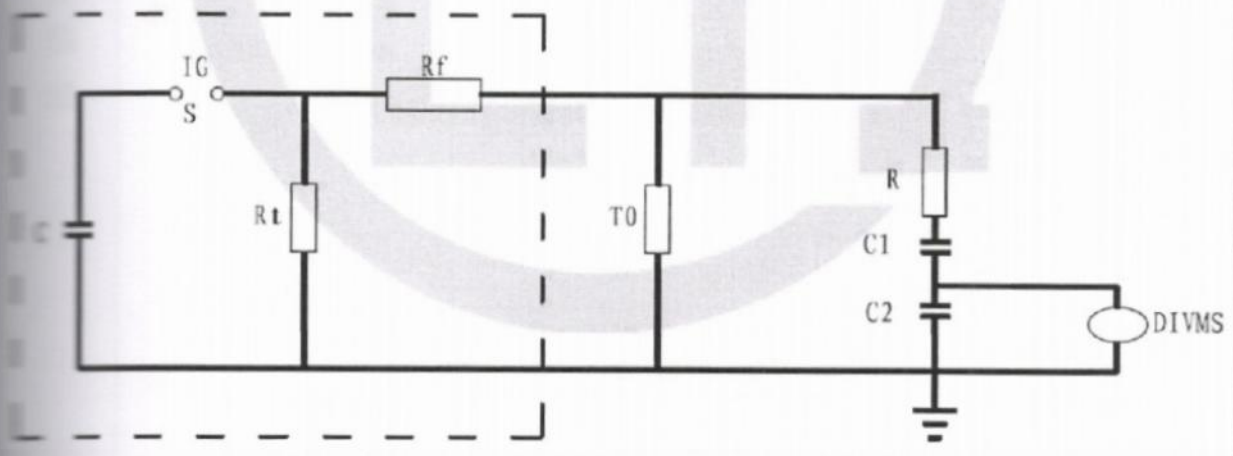
Sample installation and testing requirements:

1) The test specimen is a fully assembled new sample;

2) The outer surface of the insulation component of the test specimen is clean before the test;

3) Phase-to-phase and phase-to-ground: 185kV (peak value), circuit breaker break: 215kV (peak value), isolation break: 215kV (peak value).

Experimental principle diagram：



C	Impact generator main capacitor	Rf	Wavefront resistor	DIVMS	Oscilloscope
Rt	Wave tail resistor	S	Impact ignition ball gap		
R	Damping resistor	C1	High voltage arm capacitor		
T0	Sample	C2	Low voltage arm capacitor		

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Lightning impulse voltage test

Test date: 2021-09-16

Test conclusions:

Sample condition or test site	Pressurized parts	Grounding part	Appropriate voltage (kVr.m.s)	Measured voltage(kVr.m.s)															Number of pressurizations	Number of penetrations	Typical oscilloscope pattern
				Polarity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
The removable part is in the working position. The main switch is in the closed position. (The grounding switch is in the open position.)	Aa	BCbcF、Observation window	185±3%	+	185.7	185.6	184.8	185.5	185.9	185.0	185.6	184.2	185.2	185.4	185.8	185.0	185.0	185.6	185.5	15	0	LD01
				−	185.2	185.7	185.4	185.7	185.0	185.2	185.2	185.4	185.4	185.2	185.6	185.2	185.7	185.8	185.6	15	0	LD02
	Bb	ACacF、Observation window		+	185.6	185.3	185.9	185.8	185.2	185.4	185.8	185.9	185.4	185.1	185.4	185.0	185.5	185.9	185.9	15	0	LD03
				−	185.7	185.1	184.8	185.9	185.7	185.3	185.6	184.9	185.7	185.5	185.4	185.2	185.1	185.0	184.8	15	0	LD04
	Cc	ABabF、Observation window		+	185.7	185.3	185.9	184.9	185.7	185.3	185.9	185.5	185.2	185.0	185.9	185.9	185.9	185.2	185.1	15	0	LD05
				−	185.0	185.4	185.0	184.9	185.2	185.0	185.2	185.1	185.3	184.8	185.0	185.6	185.8	184.9	185.7	15	0	LD06
Between the live parts and the accessible surface of the metal valve	ABC	Metal valve accessible surface	185±3%	+	185.6	185.9	185.1	185.6	184.9	185.9	185.0	185.1	185.2	185.1	185.9	184.9	185.5	185.8	185.6	15	0	LD07
				−	185.0	185.7	185.3	185.9	185.4	185.2	185.6	185.4	186.2	185.8	185.2	185.3	185.4	185.4	185.9	15	0	LD08
Between the live parts and the accessible surface of the metal valve	abc	Metal valve accessible surface	185±3%	+	185.3	185.9	184.8	184.9	184.9	185.4	184.9	185.8	185.0	185.2	185.1	184.9	185.8	184.8	185.7	15	0	LD09
				−	185.4	185.1	185.4	184.8	185.1	185.9	186.0	184.9	185.9	184.9	185.6	185.6	185.0	184.8	185.2	15	0	LD10

Test results: Passed.

When testing the observation window, a metal box was placed over the accessible surface of the observation window and grounded.

Note: A, B, C – Terminals on one side of the test site; a, b, c – Terminals on the other side of the test site; F – Housing and base

Data in the table has been corrected to standard atmospheric conditions.

Atmospheric conditions in the test area	P=101.4kPa; Ambient temperature t = 27.2°C; Relative humidity: 65% Atmospheric correction factor Kt = 0.9770 (corrected to Kt = 1.0000 during the experiment) Altitude correction factor Ka=/

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Lightning impulse voltage test

Test date: 2021-09-16

Test conclusions:

Sample condition or test site	Pressurized parts	Grounding part	Appropriate voltage (kVr.m.s)	Polarity	Measured voltage(kVr.m.s) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Number of pressurizations	Number of penetrations	Typical oscilloscope pattern
The removable part is in the working position. The main switch is in the open position. (The grounding switch is in the open position.)	A	BCabcF	185±3%	+	184.8	185.5	185.9	185.2	185.7	185.0	185.2	185.0	185.7	184.9	185.6	185.7	185.6	185.8	185.5	15	0	LD11
				-	185.9	185.4	184.9	185.9	185.3	185.5	185.4	185.3	186.1	185.7	185.2	185.3	185.8	185.2	185.8	15	0	LD12
	B	ACabcF		+	185.2	185.3	185.2	184.8	185.2	184.9	184.8	185.8	185.5	185.5	185.8	184.8	184.9	185.1	185.9	15	0	LD13
				-	185.4	184.8	185.4	185.0	185.5	185.7	185.6	185.8	185.0	184.8	185.7	185.8	185.8	185.1	185.0	15	0	LD14
	c	ABabcF		+	185.7	184.8	185.0	185.3	185.7	184.9	185.8	185.7	184.8	185.7	185.9	185.1	185.9	184.9	185.9	15	0	LD15
				-	185.5	185.8	185.0	185.2	185.0	184.8	184.9	185.9	185.8	185.1	185.2	185.9	185.1	184.8	184.8	15	0	LD16
	a	ABCbcF		+	185.7	185.9	184.8	185.7	185.2	184.9	184.8	185.3	185.2	184.9	184.8	185.3	185.0	185.6	185.3	15	0	LD17
				-	184.9	185.5	185.7	185.1	185.1	185.9	185.3	184.9	185.0	184.8	185.8	185.8	184.9	184.8	185.3	15	0	LD18
	b	ABCacF		+	185.2	185.3	185.9	185.8	185.3	185.8	184.8	185.5	185.1	184.0	185.0	185.2	184.8	184.9	185.0	15	0	LD19
				-	185.9	185.4	185.3	185.2	185.1	184.9	185.1	185.2	185.7	185.4	184.9	184.9	185.7	184.8	185.5	15	0	LD20
	c	ABCabF		+	184.9	185.4	185.1	184.8	186.0	185.5	185.6	186.2	185.8	185.5	185.9	184.8	184.8	185.7	184.9	15	0	LD21
				-	185.6	185.9	185.8	185.7	186.2	185.4	185.3	187.2	185.1	185.7	186.9	185.5	185.0	185.7	185.3	15	0	LD22

Test results: Passed.

Note: A, B, C – Terminals on one side of the test site; a, b, c – Terminals on the other side of the test site; F – Housing and base

Data in the table has been corrected to standard atmospheric conditions.

Atmospheric conditions in the test area	P=101.4kPa; Ambient temperature t = 27.2°C; Relative humidity: 65%
	Atmospheric correction factor Kt = 0.9770 (corrected to Kt = 1.0000 during the experiment) Altitude correction factor Ka=/

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Test Report

KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Lightning impulse voltage test

Test date: 2021-09-16

Test conclusions:

Sample condition or test site	Pressurized parts	Grounding part	Appropriate voltage (kVr.m.s)	Polarity	Measured voltage(kVr.m.s) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Number of pressurizations	Number of penetrations	Typical oscilloscope pattern
The removable part is in the working position. The main switch is in the position. (The grounding switch is in the closed position.)	A	a	215±3%	+	214.9	214.9	214.9	215.1	215.1	215.4	215.6	215.9	215.4	215.2	215.0	215.8	215.3	215.0	215.6	15	0	LD23
				-	215.6	215.5	215.5	215.6	215.9	215.6	215.5	215.3	215.2	215.9	215.0	215.6	215.2	215.6	215.8	15	0	LD24
	B	b		+	215.3	214.9	215.8	215.3	214.8	215.5	215.8	215.3	215.3	215.9	215.2	215.7	214.9	215.6	215.7	15	0	LD25
				-	214.8	215.1	215.6	215.6	216.0	214.8	215.5	214.9	215.4	215.3	215.5	214.9	215.0	215.3	215.8	15	0	LD26
	C	c		+	215.3	215.2	215.7	215.5	215.3	215.0	215.0	215.4	215.3	214.8	215.8	215.0	215.1	214.9	215.0	15	0	LD27
				-	215.9	215.7	215.1	215.1	215.7	215.3	215.8	216.0	215.4	214.8	215.6	214.9	215.4	215.0	215.5	15	0	LD28
	a	A		+	215.8	215.7	215.6	215.4	215.6	215.2	215.6	215.4	215.6	215.5	215.4	215.4	214.9	215.5	215.7	15	0	LD29
				-	215.3	215.0	214.8	215.8	215.3	215.0	214.9	215.4	215.5	215.3	215.9	215.3	215.3	215.9	215.5	15	0	LD30
	b	B		+	215.5	215.7	215.2	215.5	215.2	215.2	215.8	215.3	215.8	215.3	215.9	215.2	215.7	215.7	215.9	15	0	LD31
				-	215.4	215.1	215.8	215.9	215.3	215.1	215.7	215.1	215.2	215.8	214.8	215.9	215.6	214.9	214.8	15	0	LD32
	c	C		+	214.9	215.3	215.9	215.6	215.8	215.7	215.0	215.0	215.7	215.9	215.4	214.9	215.2	215.7	215.7	15	0	LD33
				-	215.5	215.8	215.2	215.1	214.8	215.1	215.6	214.8	215.1	214.9	215.0	215.1	215.0	215.7	215.4	15	0	LD34

Test results: Passed.

Note: A, B, C – Terminals on one side of the test site; a, b, c – Terminals on the other side of the test site; F – Housing and base

Data in the table has been corrected to standard atmospheric conditions.

Atmospheric conditions in the test area	P=101.4kPa; Ambient temperature t = 27.2°C; Relative humidity: 65%
	Atmospheric correction factor Kt = 0.9770 (corrected to Kt = 1.0000 during the experiment) Altitude correction factor Ka=/

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Lightning impulse voltage test

Test date: 2021-09-16

Test conclusions:

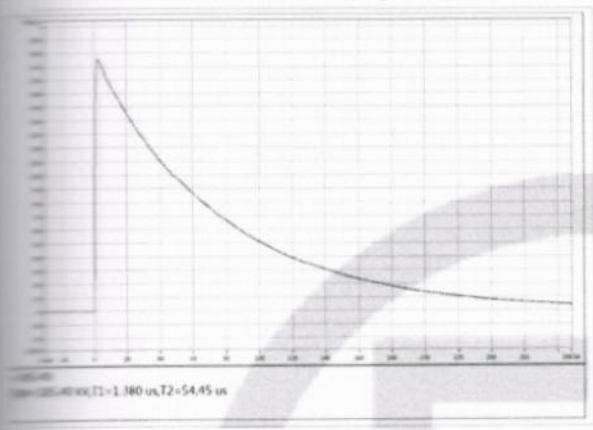
Sample condition or test site	Pressurized parts	Grounding part	Appropriate voltage (kVr.m.s)	Polarity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Number of pressurizations	Number of penetrations	Typical oscilloscope pattern
The removable part is in the working position. The main switch is in the open position. (The grounding switch is in the open position.)	A	a	215±3%	+	215.7	214.9	215.9	215.7	215.6	215.5	215.3	215.0	215.4	215.9	215.7	215.2	215.1	214.9	215.6	15	0	LD35
				-	215.5	215.8	215.2	215.7	215.7	215.0	215.0	215.5	215.4	215.0	215.7	215.2	215.6	214.8	214.9	15	0	LD36
	B	b		+	214.9	215.2	215.3	215.8	214.9	215.5	215.8	214.9	215.0	214.9	215.4	215.9	215.3	215.0	214.9	15	0	LD37
				-	215.7	215.1	215.3	215.5	215.1	214.9	215.0	214.9	215.8	215.7	215.4	215.0	215.0	214.8	214.8	15	0	LD38
	c	c		+	215.5	215.6	214.9	215.0	215.9	215.2	215.5	215.2	214.9	215.2	215.5	215.5	214.9	215.0	215.6	15	0	LD39
				-	215.0	214.8	215.1	214.9	215.8	215.5	215.7	215.5	215.8	214.9	215.9	215.9	215.8	215.1	215.7	15	0	LD40
	a	A		+	215.5	215.2	215.2	215.1	215.8	214.7	215.1	215.1	214.9	215.6	215.3	215.3	215.8	215.0	215.8	15	0	LD41
				-	215.5	215.8	215.1	215.2	215.6	214.9	215.1	215.4	215.0	215.3	215.0	215.6	215.4	215.7	215.9	15	0	LD42
	b	B		+	215.9	215.2	215.8	214.9	215.4	214.7	214.9	215.6	215.7	214.8	214.8	215.8	215.2	215.3	215.7	15	0	LD43
				-	215.6	215.3	215.4	215.2	215.0	215.0	215.6	215.8	214.5	215.7	215.4	215.3	215.7	215.6	215.9	15	0	LD44
	c	c		+	215.3	215.6	215.1	215.8	215.6	215.0	214.8	215.0	215.5	215.8	214.8	215.4	215.0	214.8	215.8	15	0	LD45
				-	215.5	215.1	215.3	215.3	215.4	215.0	215.7	214.9	214.8	215.0	215.4	215.2	215.2	215.3	215.3	15	0	LD46

Test results: Passed.
Note: A, B, C – Terminals on one side of the test site; a, b, c – Terminals on the other side of the test site; F – Housing and base
Data in the table has been corrected to standard atmospheric conditions.

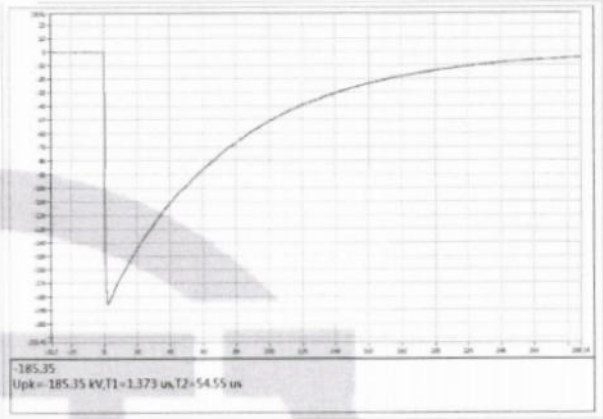
Atmospheric conditions in the test area	P=101.4kPa; Ambient temperature t = 27.2°C; Relative humidity: 65% Atmospheric correction factor Kt = / Altitude correction factor Ka=/

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

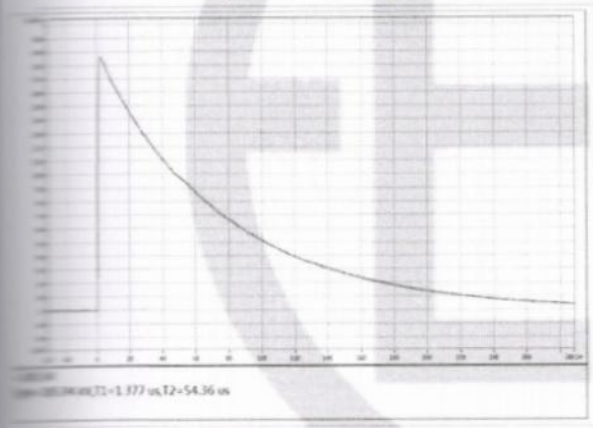
Lightning impulse voltage test oscilloscope



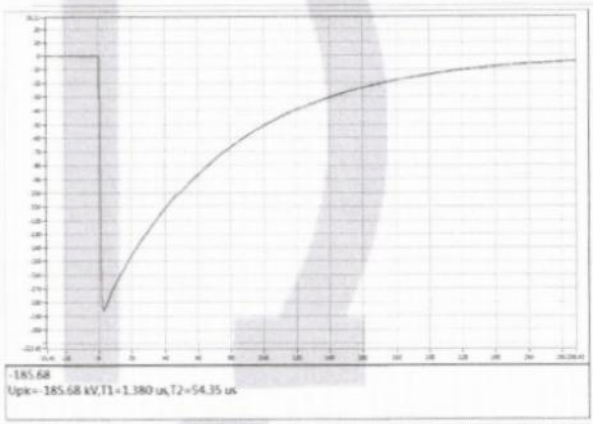
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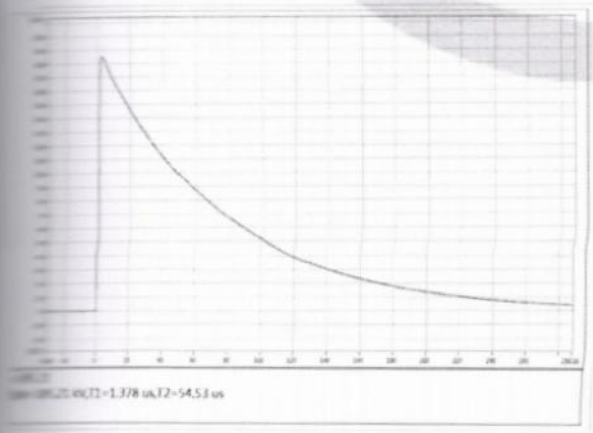
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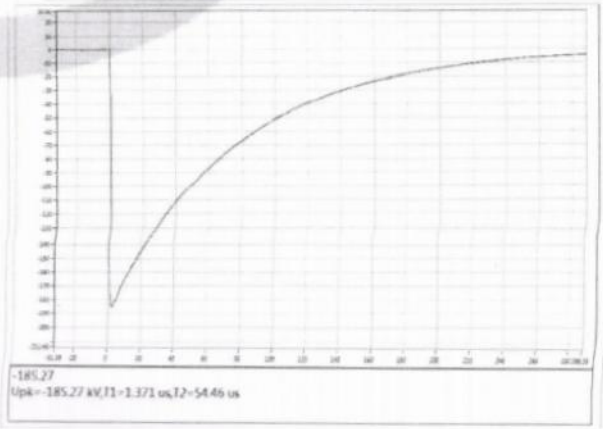
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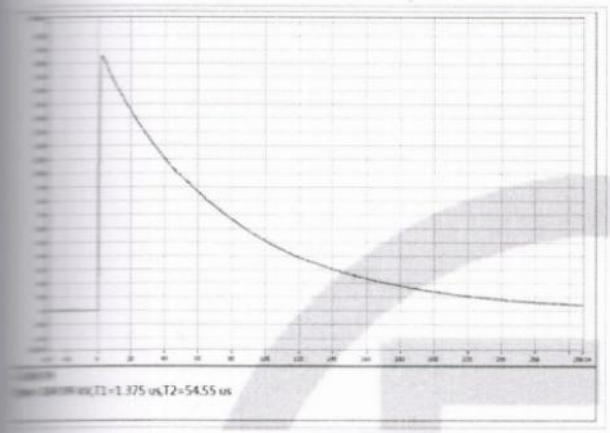
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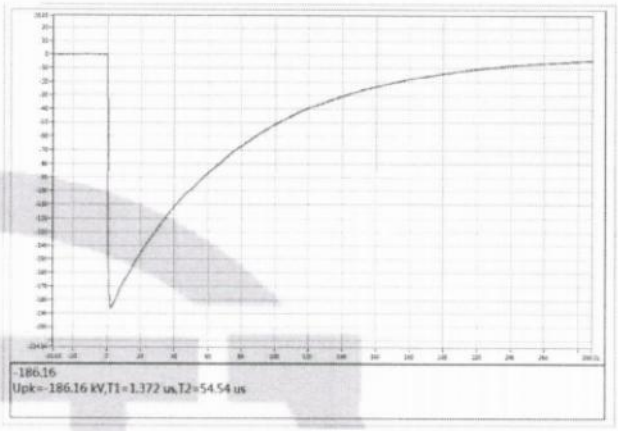
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China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

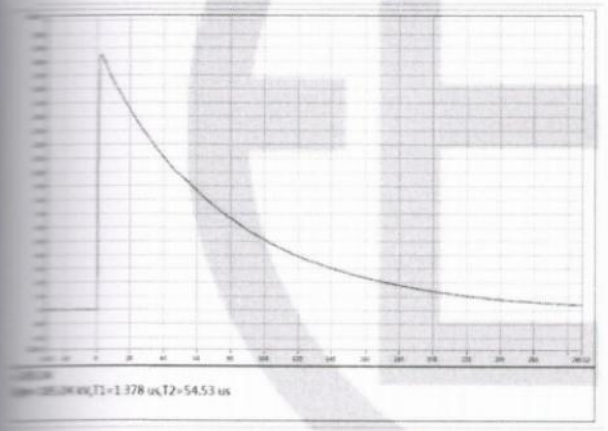
Lightning impulse voltage test oscilloscope



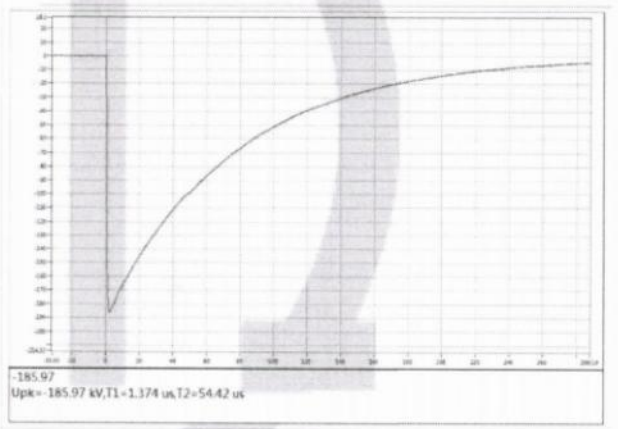
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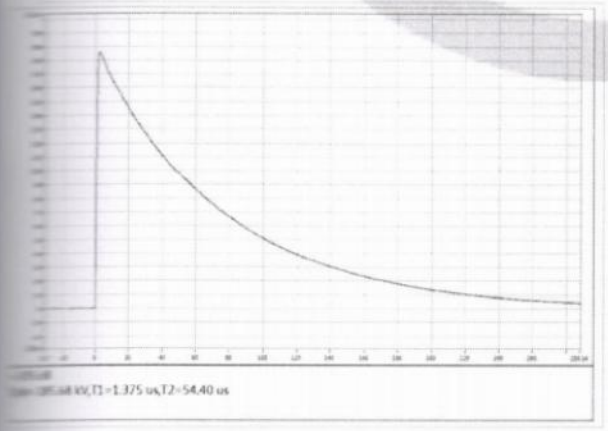
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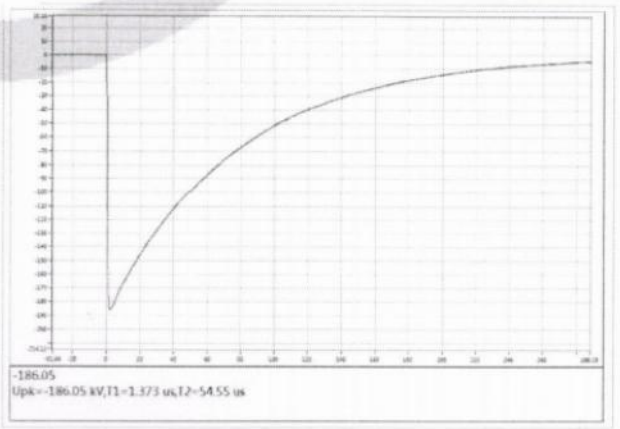
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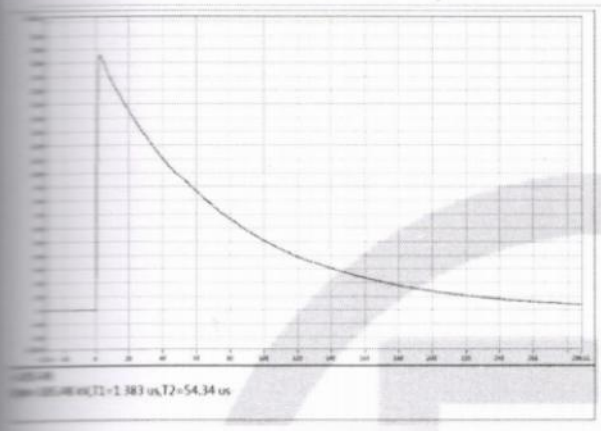
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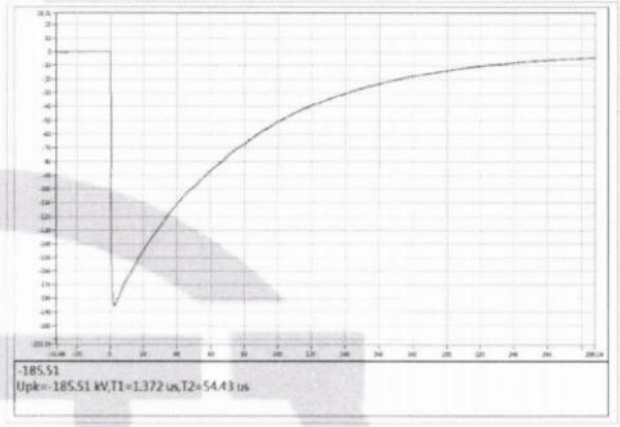
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China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

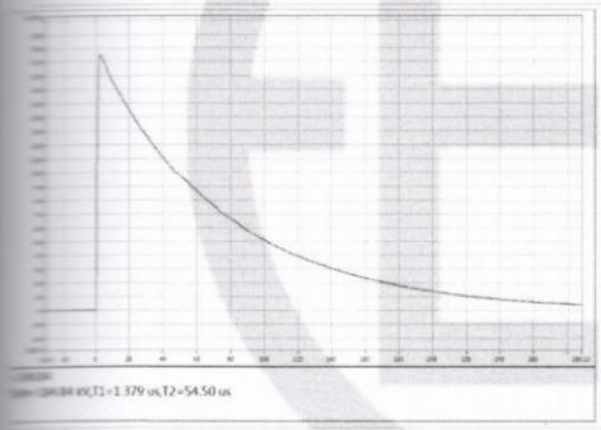
Lightning impulse voltage test oscilloscope



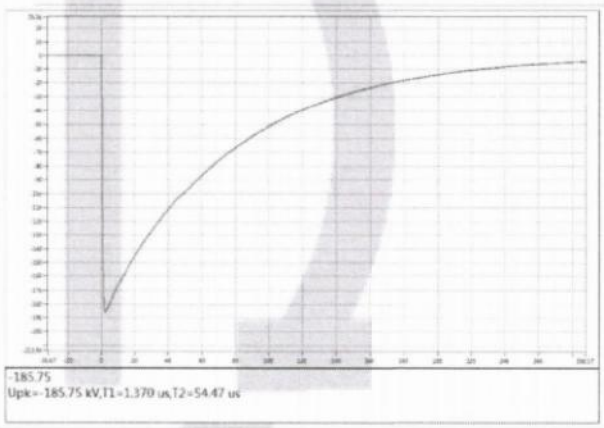
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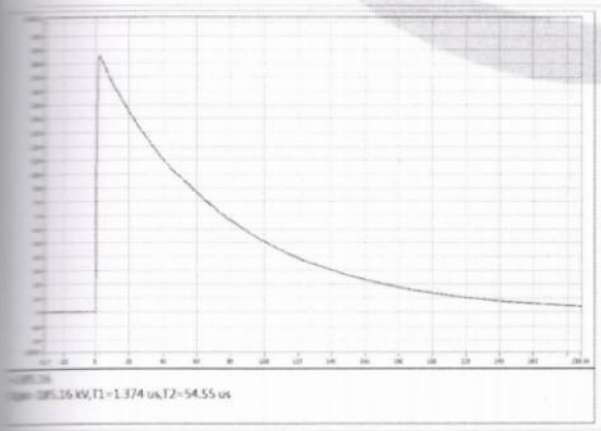
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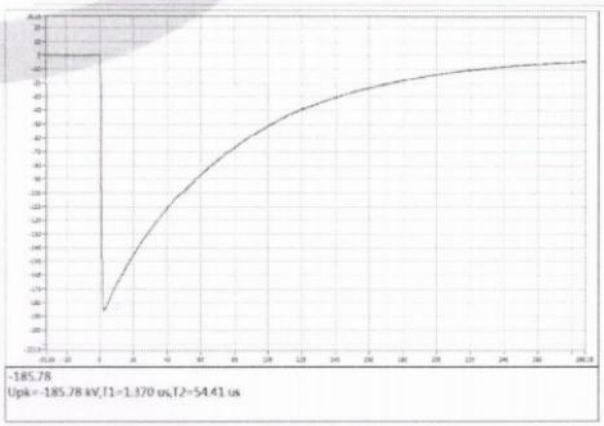
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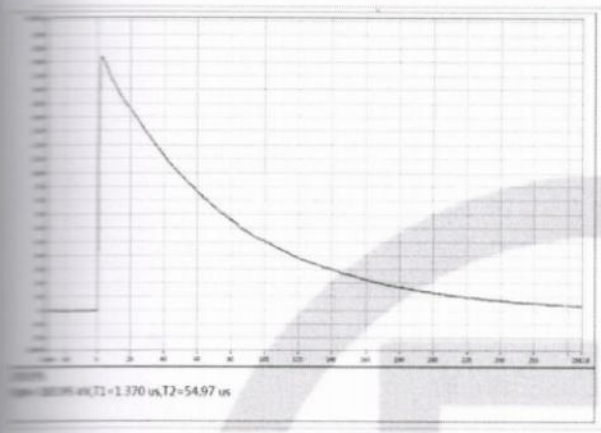
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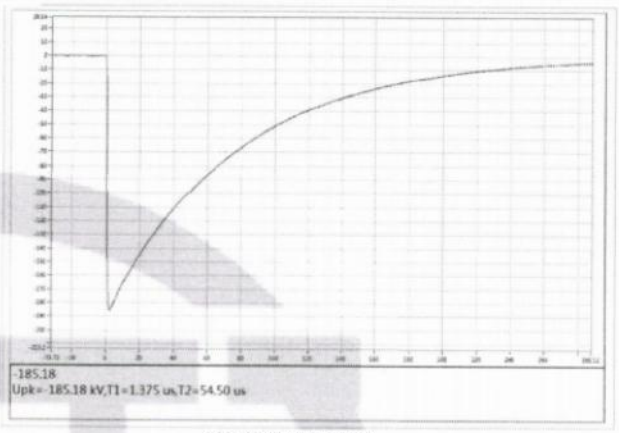
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China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

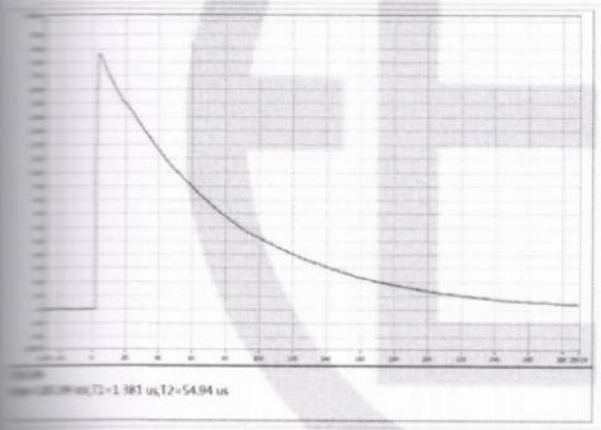
Lightning impulse voltage test oscilloscope



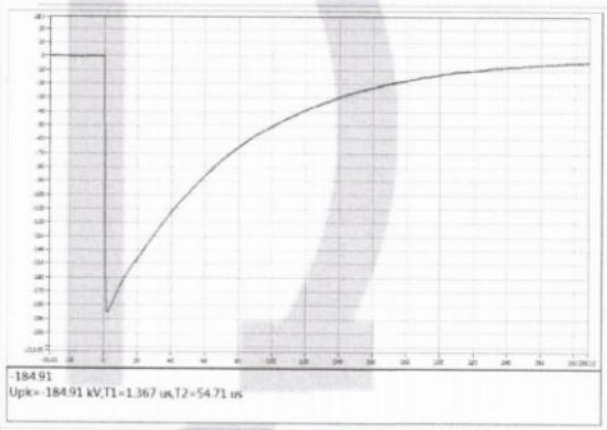
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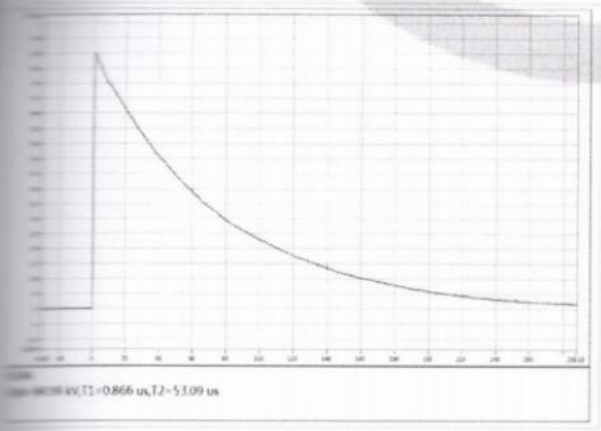
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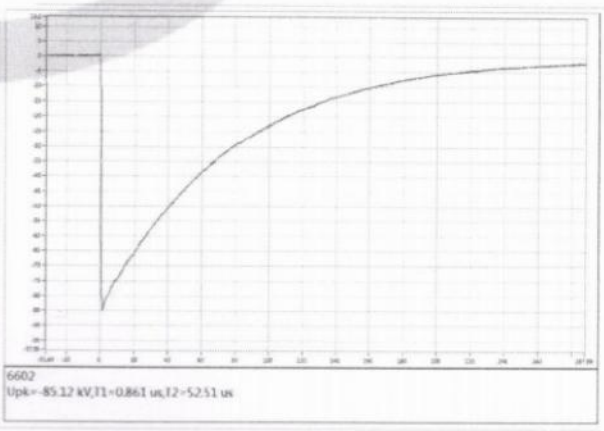


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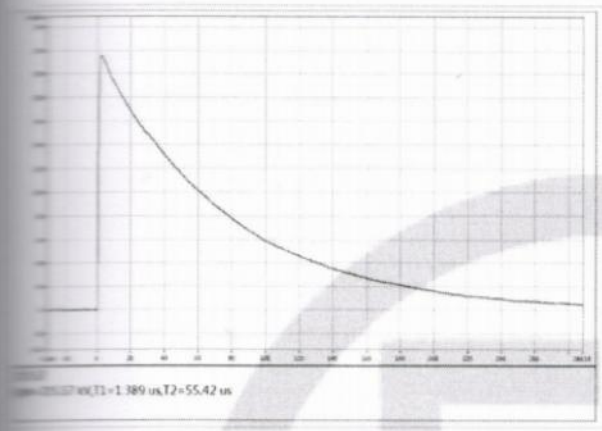
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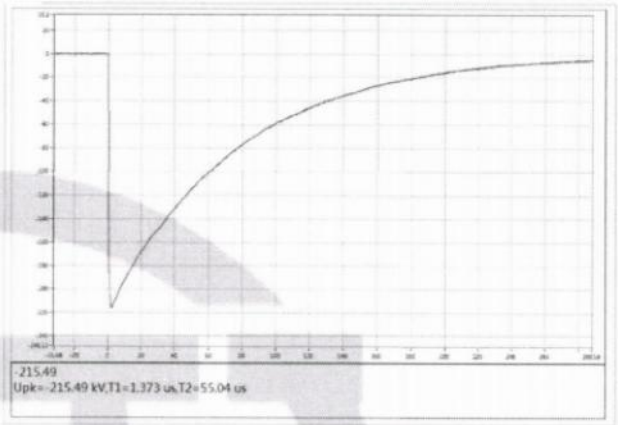


China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

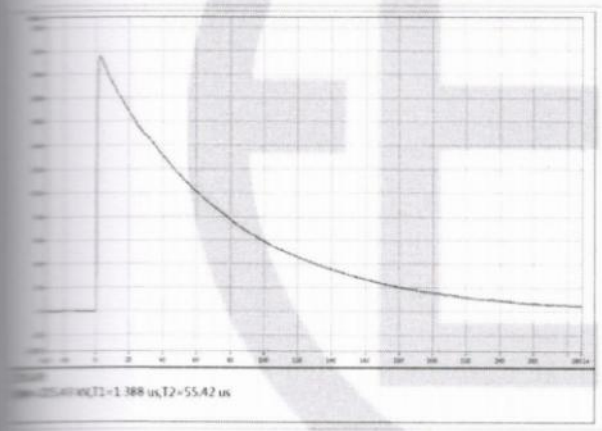
Lightning impulse voltage test oscilloscope



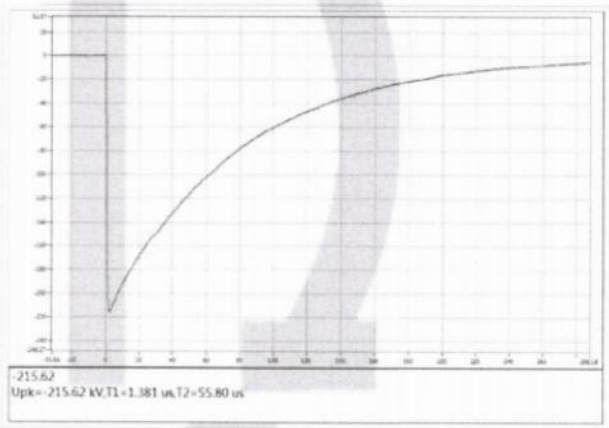
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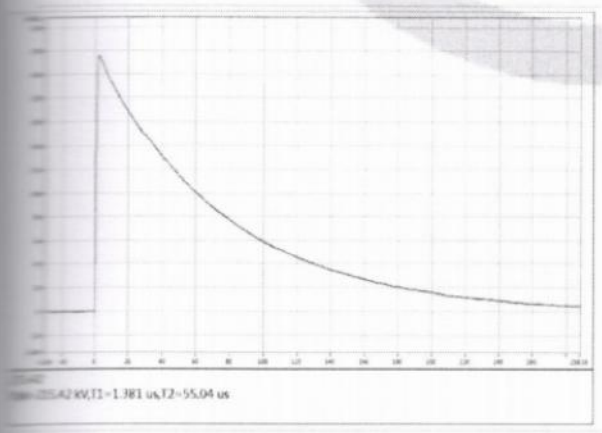
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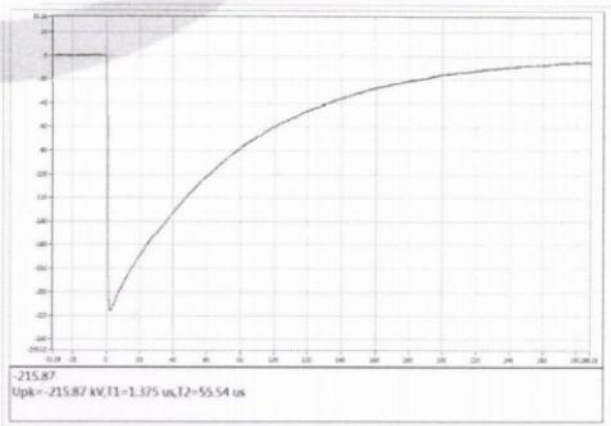
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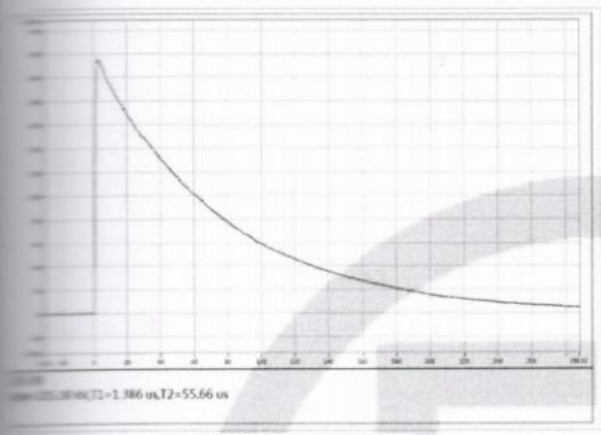
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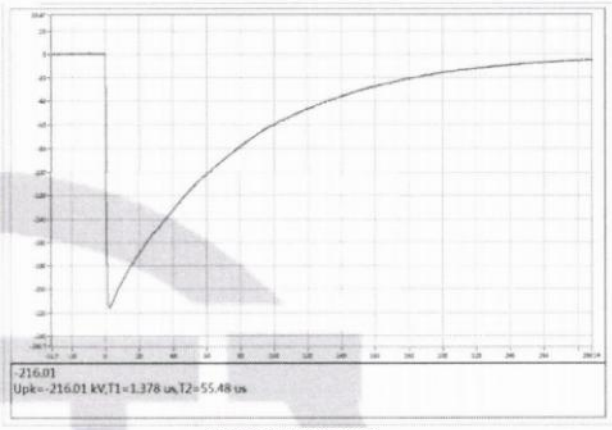
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China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

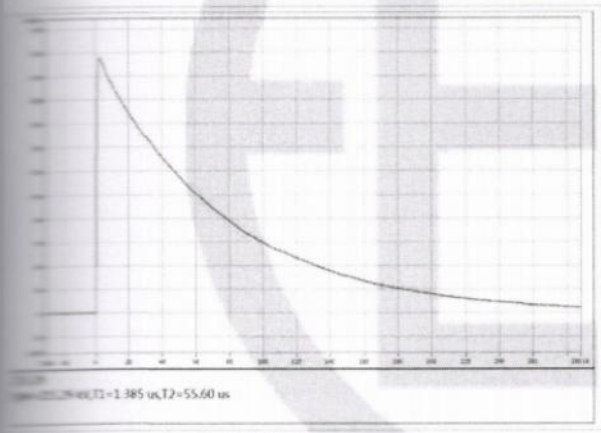
Lightning impulse voltage test oscilloscope



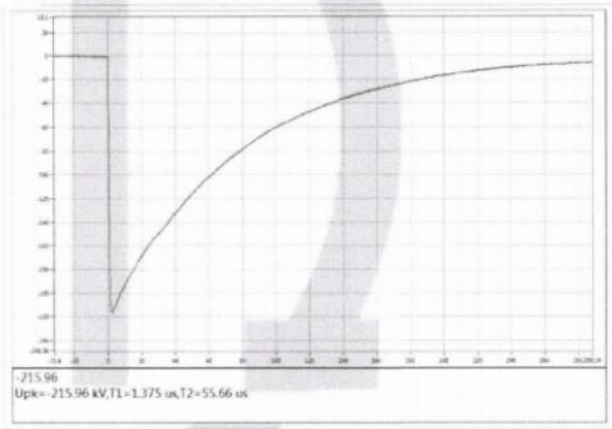
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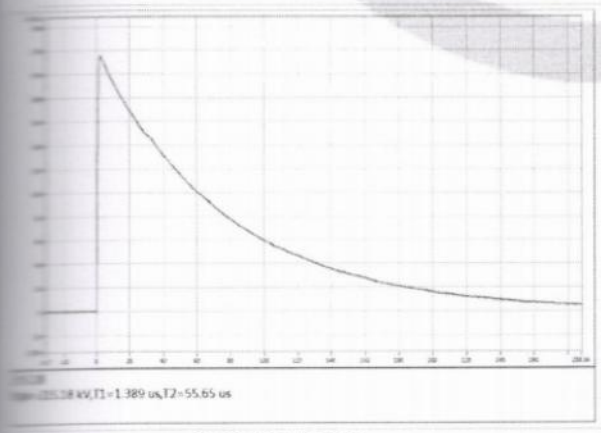
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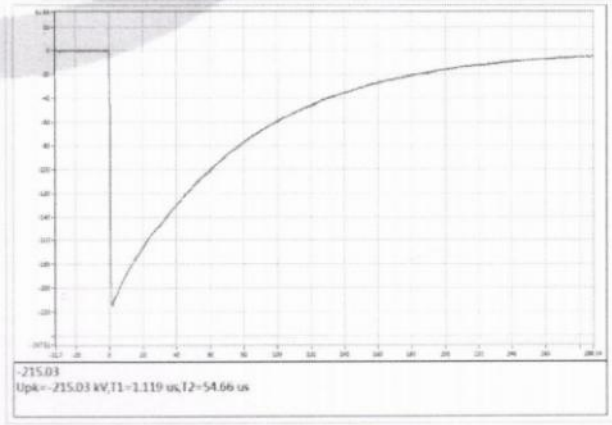
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21Q2637-S-LD32



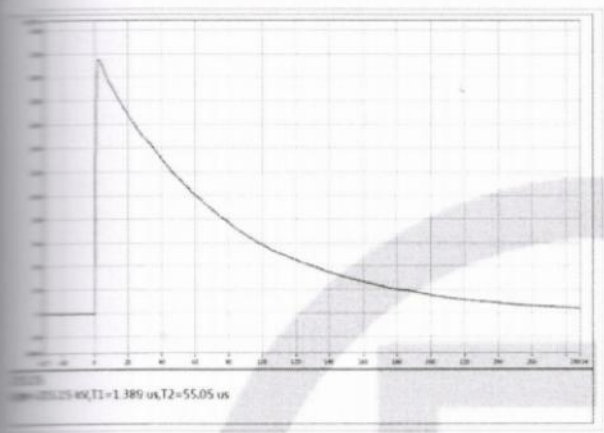
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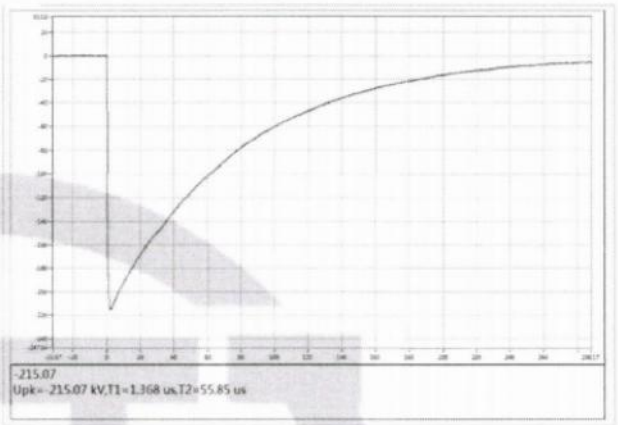
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China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

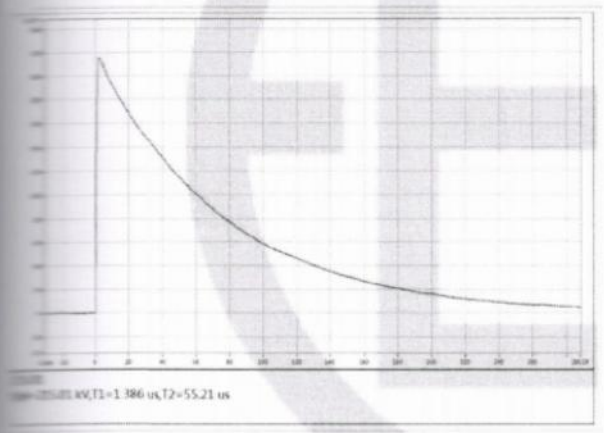
Lightning impulse voltage test oscilloscope



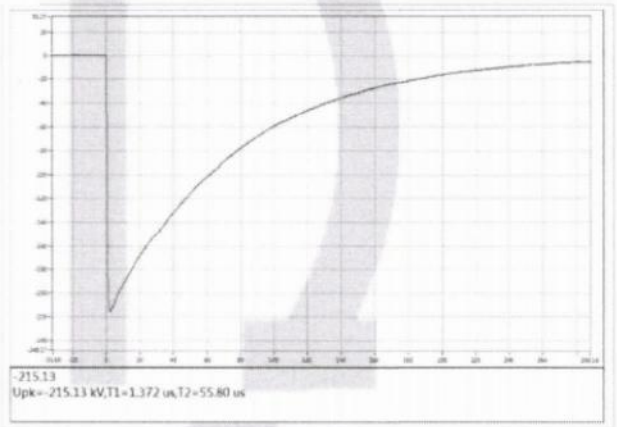
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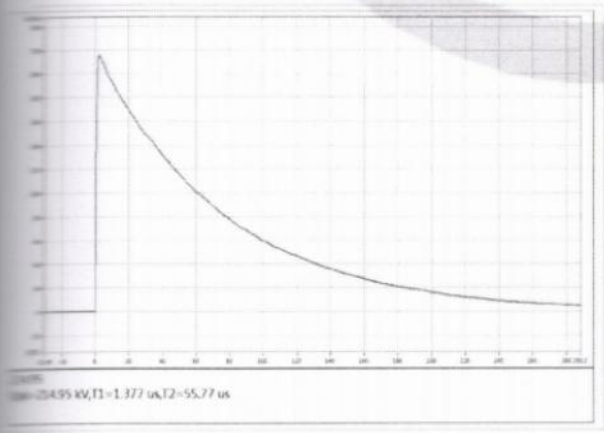
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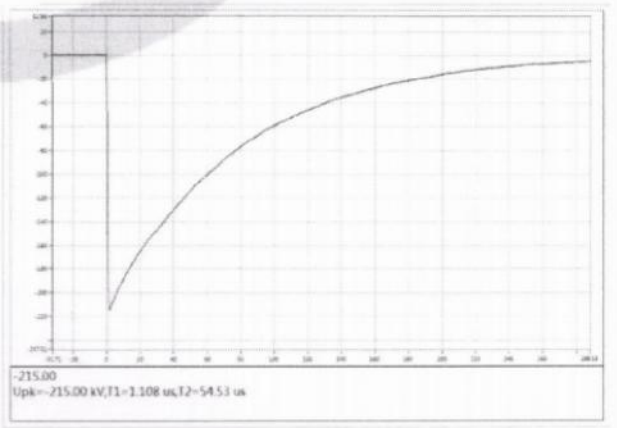
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21Q2637-S-LD38



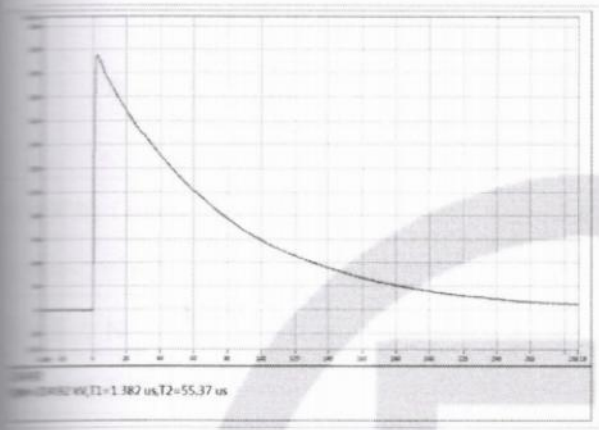
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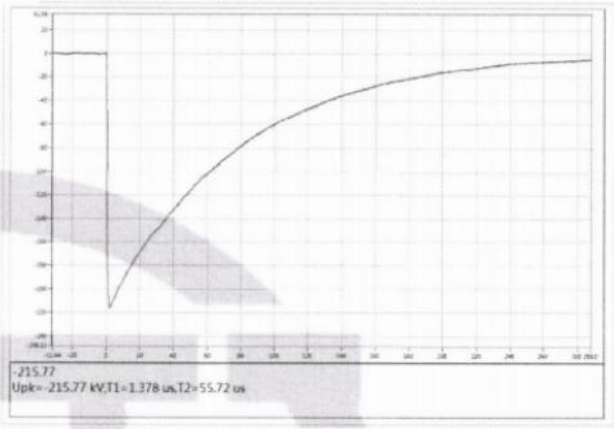
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China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

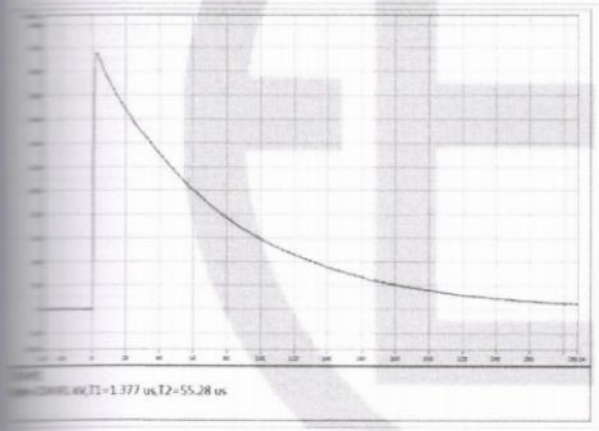
Lightning impulse voltage test oscilloscope



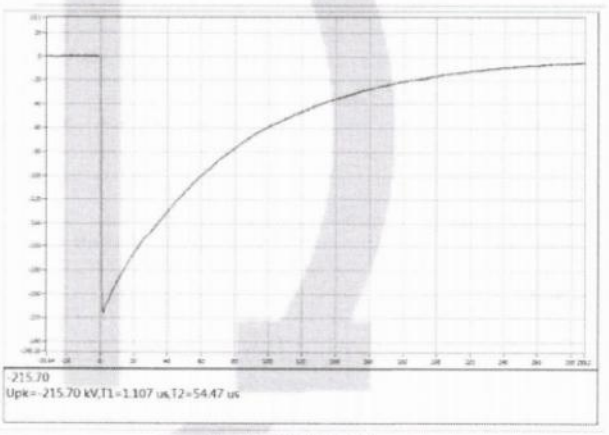
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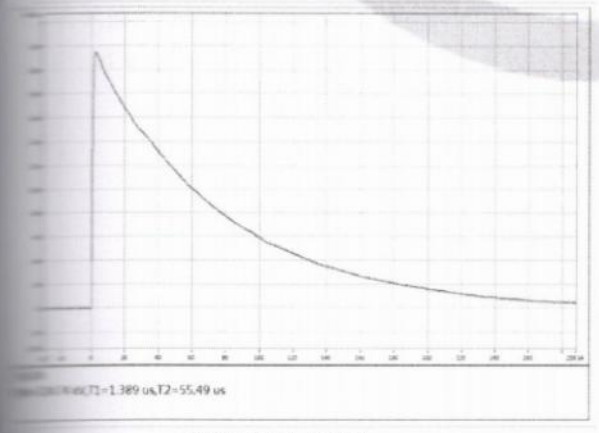
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21Q2637-S-LD43



21Q2637-S-LD44



21Q2637-S-LD45



21Q2637-S-LD46

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Grounding switch mechanical characteristic measurement and mechanical operation test

Test date：2021-09-17/2021-09-18

1. Mechanical property measurement test

Project name	Technical requirements	Measured data					
		Before mechanmrical life test			After echanical life test		
		A	B	C	A	B	C
Contact opening distance mm	≥305	310	310	311	311	312	312
Contact Center distance mm	300±1.5	AB: 300		BC: 300	AB: 301		BC: 301
Contact pressure N	600±60	635	634	636	637	637	638
3-phase closing asynchrony ms	≤2	1.1			1.2		
Opening operating force N	≤200	176			177		
Closing operating force N	≤200	165			167		
Trip length m	/	0.467					

2. Mechanical operation test:

Before and after the mechanical life test, the grounding switch was manually opened and closed 5 times each, and the operation was normal.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Grounding switch mechanical life test

Test date：2021-09-17~2021-09-18

1. Sample status

1	Sample installation method	Cabinet installation
2	Sample operation linkage pole number	3 poles
3	The sample is not adjusted or tightened during each test cycle.	Satisfied
4	The switch is operated manually.	Satisfied
5	Test operation frequency	4 times / min

2.Mechanical operation test

Total number of operations required: 3000 times

Total number of operations divided into 3 loops

				Grounding switch		Test conditions
First cycle	Number of consecutive operations in a loop			1000 times		
	Number of operations	Operated manually		1000 times		Normal
		Power operating mechanism	Under rated electrical (pneumatic, hydraulic) pressure			
			At the lowest electrical (pneumatic, hydraulic) voltage			
			At the highest electrical (pneumatic, hydraulic) voltage			
Second cycle	Number of consecutive operations in a loop			1000 times		
	Number of operations	Operated manually		1000 times		Normal
		Power operating mechanism	Under rated electrical (pneumatic, hydraulic) pressure			
			At the lowest electrical (pneumatic, hydraulic) voltage			
			At the highest electrical (pneumatic, hydraulic) voltage			
Third cycle	Number of consecutive operations in a loop			1000 times		
	Number of operations	Operated manually		1000 times		Normal
		Power operating mechanism	Under rated electrical (pneumatic, hydraulic) pressure			
			At the lowest electrical (pneumatic, hydraulic) voltage			
			At the highest electrical (pneumatic, hydraulic) voltage			

Condition of the test specimen during and after the test

1	For each operating cycle, the switch should be fully closed and open.	Satisfied
2	During the test, check whether the operating mechanism exhibits any phenomena such as refusal to separate, refusal to close, incorrect separation, incorrect closing, or any abnormal phenomena or malfunctions that affect the normal movement of the product.	No
3	Check whether there are any adverse effects on the operation of all components.	No

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical characteristic measurement test

Opening characteristic curve

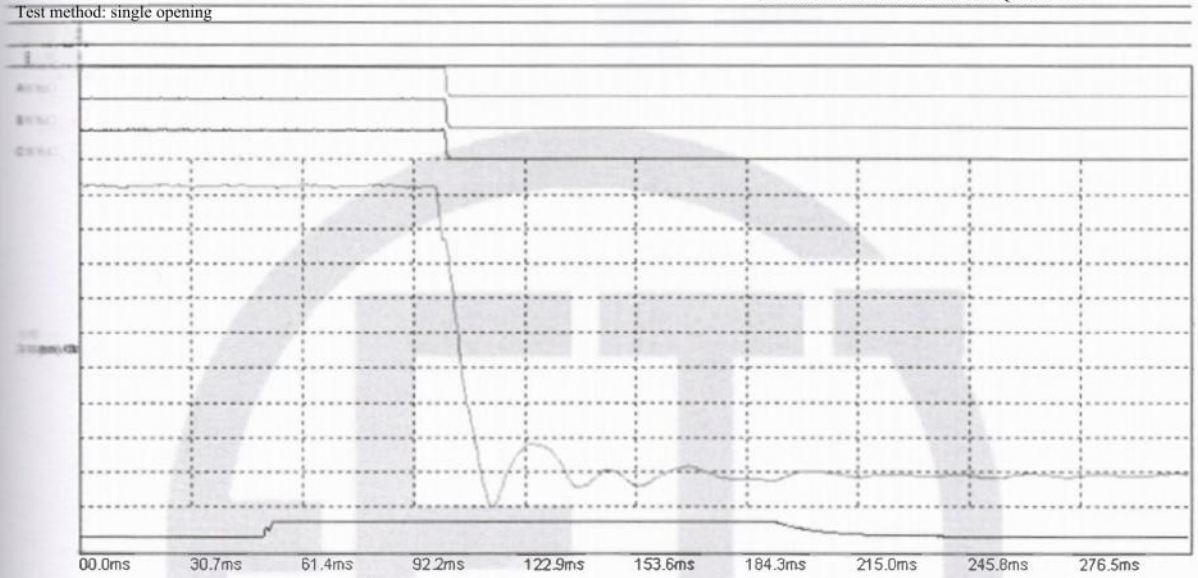
Test date：2021-09-18

Test operating voltage: minimum operating voltage

Experimental oscilloscope

Commissioned Examination Number：21Q2637-S-001

Test method: single opening



Project	Operating voltage	Technical specifications	Circuit breaker mechanical characteristic measurement test		
			A	B	C
Opening time ms	Minimum	25~50	49		
Average opening speed m/s	Minimum	1.7±0.3	1.92		
Asynchronous opening of 3-phases ms	Minimum	≤3	0.1		

Note：

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical characteristic measurement test

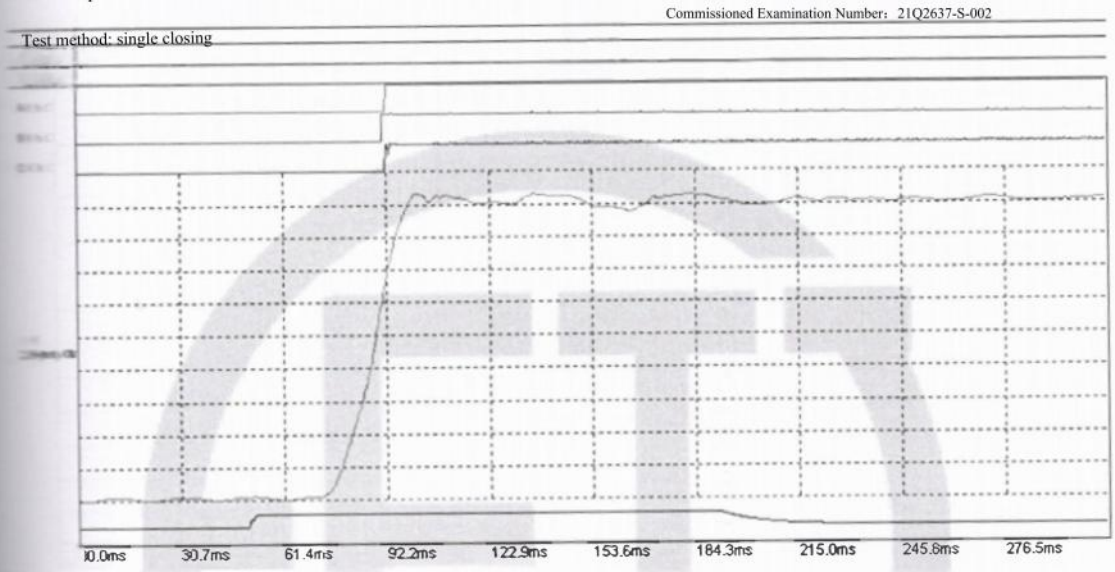
Closing characteristic curve Test date：2021-09-18

Test operating voltage: minimum operating voltage

Experimental oscilloscope

Commissioned Examination Number：21Q2637-S-002

Test method: single closing



Project	Operating voltage	Technical specifications	Circuit breaker mechanical characteristic measurement test		
			A	B	C
Closing time ms	Minimum	35~70	42		
Average closing speed m/s	Minimum	1±0.2	1.02		
Asynchronous closing of 3-phases ms	Minimum	≤3	1.0		
Contact closing bounce time ms	Minimum	≤3	0.9	0.1	1.0

Note：

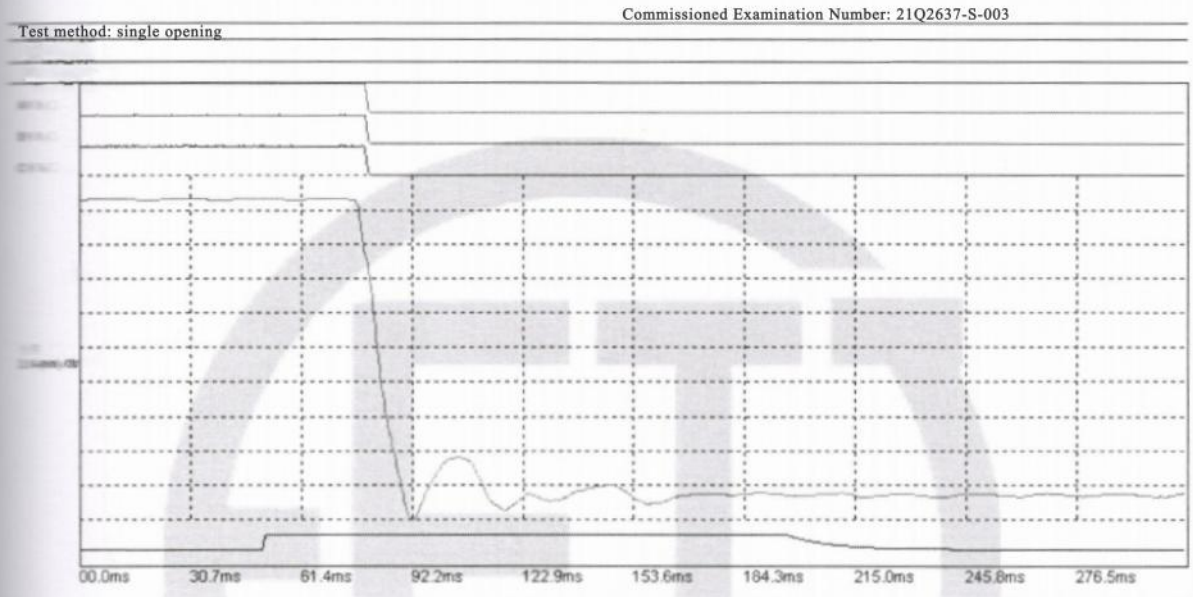
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical characteristic measurement test

Opening characteristic curve Test date：2021-09-18

Operating voltage: rated operating voltage

Experimental oscilloscope



Project	Operating voltage	Technical specifications	Circuit breaker mechanical characteristic measurement test		
			A	B	C
Opening time ms	Rated value	25~50	28		
Average opening speed m/s	Rated value	1.7±0.3	1.95		
Asynchronous opening of 3-phases ms	Rated value	≤3	0.1		

Note：

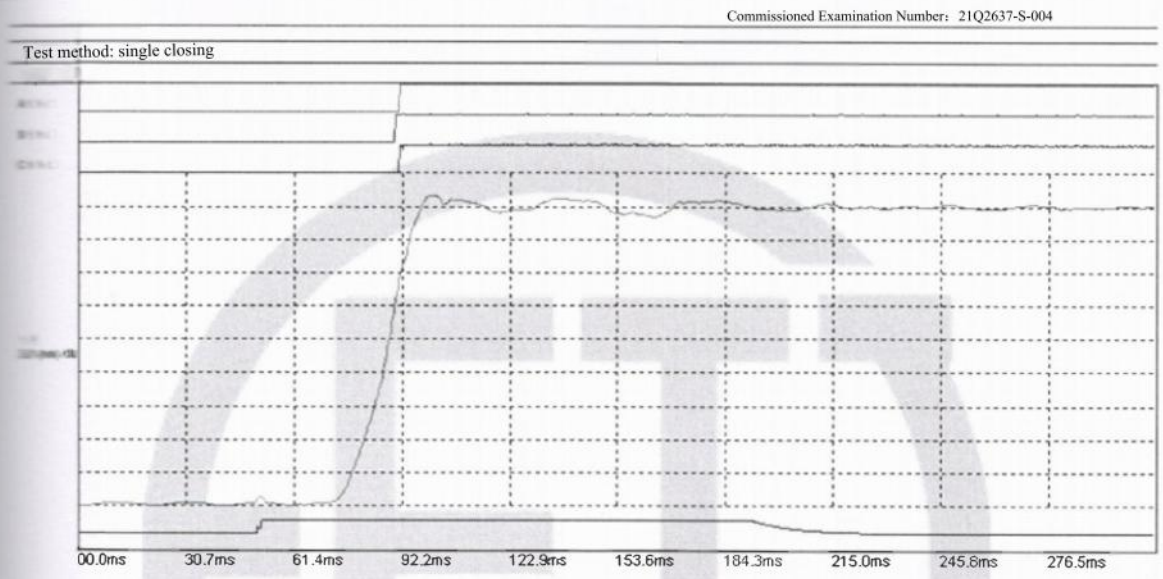
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical characteristic measurement test

Closing characteristic curve Test date：2021-09-18

Operating voltage: rated operating voltage

Experimental oscilloscope



Project	Operating voltage	Technical specifications	Circuit breaker mechanical characteristic measurement test		
			A	B	C
Contact opening distance mm	Rated value	19±2.0	20.3	20.0	20.4
Contact compression stroke mm	Rated value	6±2	6.7	7.0	6.6
Center distance between phases mm	Rated value	300±1.5	AB:300		BC:300
Closing time ms	Rated value	35~70	41		
Average opening speed m/s	Rated value	1±0.2	1.05		
Asynchronous ms	Rated value	≤3	1.0		
Contact closing bounce time ms	Rated value	≤3	1.0	1.0	1.0

Note：

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical characteristic measurement test

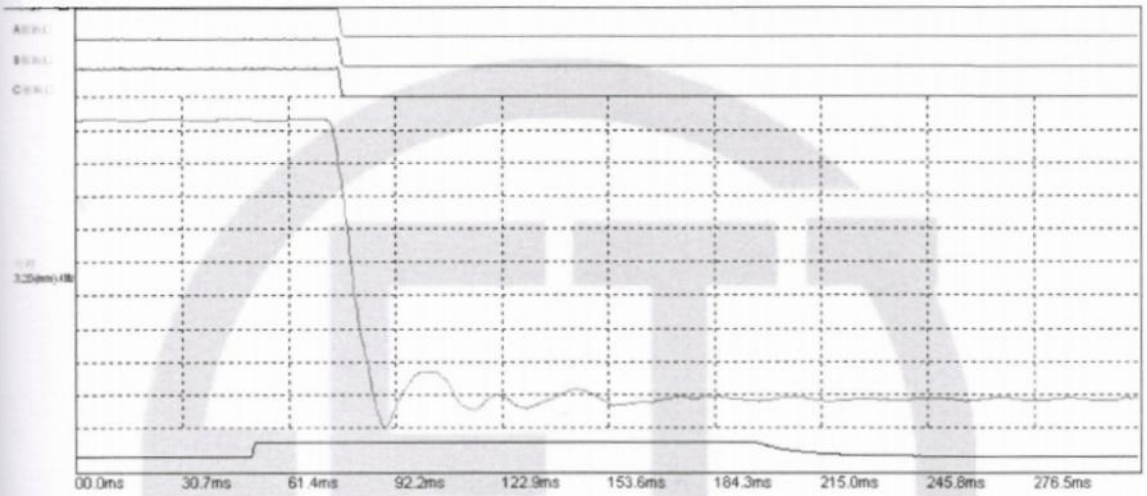
Opening characteristic curve Test date：2021-09-18

Operating voltage: maximum operating voltage

Experimental oscilloscope

Commissioned Examination Number: 21Q2637-S-005

Test method: single opening



Project	Operating voltage	Technical specifications	Circuit breaker mechanical characteristic measurement test		
			A	B	C
Opening time ms	Maximum	25~50	25		
Average opening speed m/s	Maximum	1.7±0.3	1.96		
Asynchronous opening of 3-phases ms	Maximum	≤3	0.1		

Note：

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical characteristic measurement test

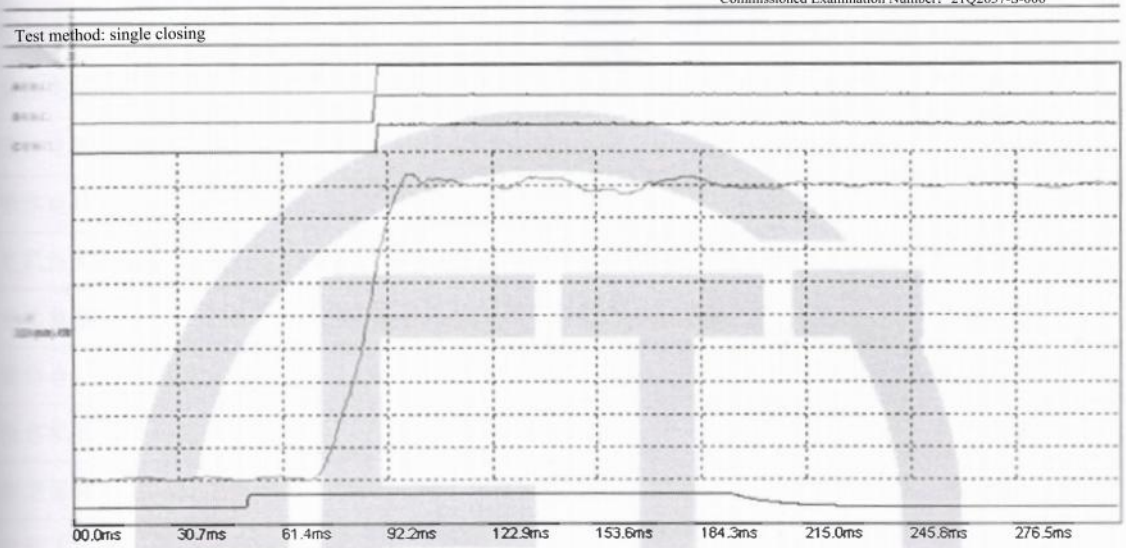
Closing characteristic curve Test date：2021-09-18

Operating voltage: maximum operating voltage

Experimental oscilloscope

Commissioned Examination Number：21Q2637-S-006

Test method: single closing



Project	Operating voltage	Technical specifications	Circuit breaker mechanical characteristic measurement test		
			A	B	C
Closing time ms	Maximum	35~70	39		
Average opening speed m/s	Maximum	1±0.2	1.07		
3-phase closing asynchrony ms	Maximum	≤3	1.0		
Contact closing bounce time ms	Maximum	≤3	1.0	1.0	1.0

Note：

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker mechanical operation test

Test date：2021-09-18

Before Mechanical life test

Test contents	Test conclusions
At the highest operating voltage, the operation was performed 5 times, switching on and off.	Normal movement
At the lowest operating voltage, perform 5 opening and closing operations.	Normal movement
Under rated operating voltage, operate 30 times by opening and closing.	Normal movement
Perform the "open-0.3s-open and closed" operation 5 times at the rated operating voltage.	Normal movement
The energy storage motor is subjected to 85% of its rated voltage, and five energy storage operations are performed each time while the circuit breaker is closed.	Energy storage is normal
The energy storage motor is subjected to 110% of its rated voltage, and five energy storage operations are performed each time while the circuit breaker is closed.	Energy storage is normal
Perform the hand movements 5 times each, opening and closing the fist.	Normal movement
Spring operating mechanism, 3 times of open/close operation	Normal movement
Tripping 3 times at 30% of rated operating voltage	Unopened
Under the rated operating voltage, the test sample with automatic reclosing was operated 5 times in a cycle of "open - 0.3S - closed and open".	Normal movement

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Measurement of loop resistance

Test date: 2021-09-18/2021-09-19

Main circuit resistance (μΩ)

A. Before and after the mechanical life test of the circuit breaker trolley

Before the mechanical life test of the circuit breaker trolley			Technical requirements	After the mechanical life test of the circuit breaker trolley			Technical requirements	Resistance difference (%)			Standard requirements
Ambient temperature: 30.2℃				Ambient temperature: 30.2℃							
A	B	C		A	B	C		A	B	C	
65.1	66.0	66.4	≤120	66.3	67.4	68.1	/	1.9	2.1	2.4	The change in resistance value after the mechanical life test of the circuit breaker trolley should not exceed 20 % of the value before the mechanical life test.

Note:

1. The DC voltage drop method is used for the test, with a test current of 100A;

2. The main circuit resistance is measured between the input and output terminals;

3. The resistance value after the test has been corrected to the ambient temperature before the test.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Circuit breaker trolley mechanical life test

Test date:2021-09-18~2021-09-19

1. Test contents:

a. Push the isolating plug from the isolating position to the working position and then move it back to the isolating position, repeating each operation 3000 times. The operation should be normal. After the test, the test piece should be able to operate normally, and the silver plating at the contact point of the isolating contact should be intact.

b. The force required to insert and remove the circuit breaker trolley before and after the test should be almost the same, and should be less than 150% of the force required for the first operation.

2. Test conclusions:

Normal.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical operation test (interlock)

Interlock

Test date:2021-09-19

1. Normal power supply and power outage procedures:

Power-on procedure: Close cabinet door → Open grounding switch → Insert circuit breaker trolley from test position to working position → Close circuit breaker;
Power-off procedure: Open circuit breaker → Return circuit breaker trolley from working position to test position → Close grounding switch → Open cabinet door;

2. Interlocking Content

1) During testing, the circuit breaker can only be opened or closed when the removable parts are in the working, testing, or removable positions;

2) When the circuit breaker is in the closed position, the handcart operating handle cannot be pushed or pulled;

3) During testing, when the grounding switch is in the closed position, the removable parts cannot be moved into the working position;

4) During testing, when the removable parts are within the testing position, the grounding switch operating handle cannot be inserted into the operating hole;

5) When the grounding switch is in the open position, the rear cover cannot be opened.

3. Verify if the interlock has failed.

No.	Verify interlock	Whether it's invalid
1	Test operation by opening and closing all interlocked doors and covers 25 times.	No.
2	If the interlocking device restricts access to or use of the operating interface, perform 50 trial operations of accessing or using the operating interface.	No.
3	If the operating interface is accessible, manually perform 50 trial operations on the switching device.	/
4	Perform 10 trial operations on the manually operated switch device in the wrong direction, but not limited to the same wrong direction.	/
5	Perform 25 insertion and withdrawal tests on the removable component.	No.

Note:

1. The test was conducted using a standard manual operating handle;

2. Twice the normal operating force was applied during the test;

3. When the interlock prevented the operation of the operating shaft, a expected force of 750 N was applied at half the length of the gripping portion of the operating handle;

4. The integrity of other components and slides of the operating interface was verified (IK07).

The test sample, after verification, meets the following conditions:

a. The switching device cannot be operated in the locked state;

b. It prevents access to the interlocked compartment;

c. It prevents the insertion and removal of removable parts;

d. The switching device, removable parts, and interlocking device are functioning well, and the maximum manual operating force required to operate these devices does not deviate by more than 50% before and after the test.

The interlocking verification of the test sample is qualified.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Measurement of loop resistance

Test date：2021-09-20

1. Main circuit resistance(μΩ)

A. Before and after the temperature rise test

Before the temperature rise test			Technical requirements	After the temperature rise test			Technical requirements	Resistance difference(%)			Standard requirements
Ambient temperature: 26.9℃				Ambient temperature: 27.4℃							
A	B	C		A	B	C		A	B	C	
67.1	68.1	68.4	≤120	67.4	68.7	68.8	/	0.4	1.0	0.5	The change in resistance value after the temperature rise test should not exceed 20% of the value before the temperature rise test.

2. Circuit breaker circuit resistance(μQ)

A. Before and after the temperature rise test

Before the temperature rise test			Technical requirements	After the temperature rise test			Technical requirements	Resistance difference(%)			Standard requirements
Ambient temperature: 26.9℃				Ambient temperature: 27.4℃							
A	B	C		A	B	C		A	B	C	
17.9	18.2	18.4	≤45	18.1	18.3	19.0	/	1.1	1.0	2.8	The change in resistance value after the temperature rise test should not exceed 20% of the value before the temperature rise test.

Note:

1. The DC voltage drop method is used for testing, with a test current of 100A;
2. The main circuit resistance is measured between the incoming and outgoing terminals;
3. The circuit breaker circuit resistance is measured between the two contacts of the circuit breaker;
4. The resistance value after the test has been corrected to the ambient temperature before the test.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Temperature rise test

Test date: 2021-09-20

Test current (A):	1.1×2500	Experimental pole number:	3 poles	Current frequency:	50Hz
Connecting conductors (mm²×m):	(100×10)×2	Ambient wind speed:	0.15m/s		

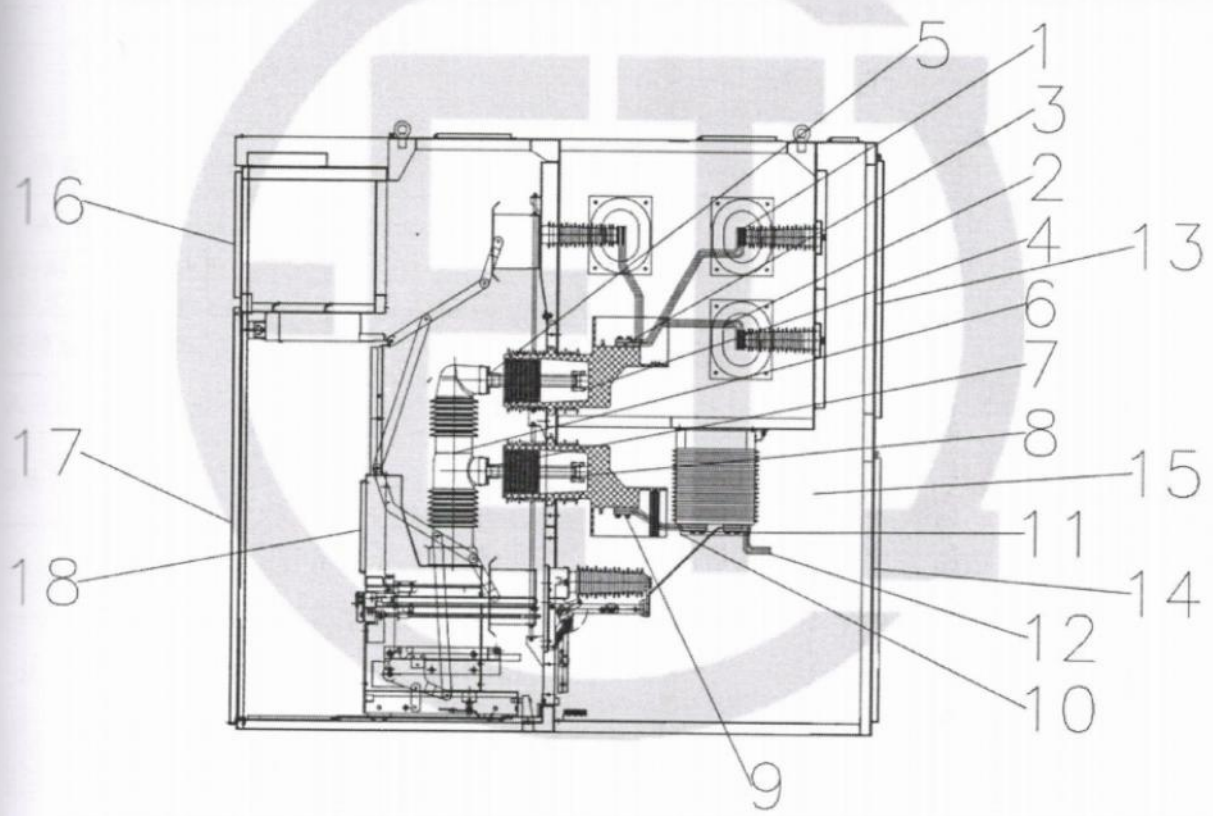
Measured temperature rise data (K)

Measurement location number or name	Temperature rise test (ambient temperature 27°C)			Allowable temperature rise (K)	Remarks
	A	B	C		
Connecting conductor 1m from the incoming terminal	40	41	42	/	Reference point
1	42	44	44	30	
2	51	52	53	65	
3	55	56	56	65	
4	58	59	60	75	
5	60	62	62	65	
6	70	70	71	/	Reference point
7	59	59	60	65	
8	56	57	57	75	
9	52	52	53	65	
10	53	54	53	65	
11	51	52	51	65	
12	45	46	46	65	
13	10			30	
14	10			30	
15	16			40	
16	10			30	
17	10			30	
18	10			/	Reference point
Connect the conductor 1m away from the outgoing terminal	42	43	42	/	Reference point

Note:
1. See the schematic diagram for measurement part numbers and thermocouple measurement parts.
2. The test current should be 1.1 times the rated current as requested by the client.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Schematic diagram of temperature rise measurement points



China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Measurement of loop resistance

Test date:2021-09-23

1. Main circuit resistance(μΩ)

A. Before and after short-time withstand current and peak withstand current tests

Before short-time withstand current and peak withstand current tests			Technical requirements	After short-time withstand current and peak withstand current tests			Technical requirements	Resistance difference(%)			Standard requirements
Ambient temperature: 30.5℃				Ambient temperature: 30.5℃							
A	B	C		A	B	C		A	B	C	
58.3	69.1	69.5	≤120	71.8	71.7	72.9	/	5.2	3.7	5.0	The change in resistance value after the short-time withstand current and peak withstand current tests shall not exceed 20% of the value before the short-time withstand current and peak withstand current tests.

2. Circuit breaker circuit resistance (μΩ)

A. Before and after short-time withstand current and peak withstand current tests

Before short-time withstand current and peak withstand current tests			Technical requirements	After short-time withstand current and peak withstand current tests			Technical requirements	Resistance difference(%)			Standard requirements
Ambient temperature: 30.5℃				Ambient temperature: 30.5℃							
A	B	C		A	B	C		A	B	C	
18.8	19.4	20.0	≤45	20.0	20.3	21.5	/	6.8	4.2	7.3	The change in resistance value after the short-time withstand current and peak withstand current tests shall not exceed 20% of the value before the short-time withstand current and peak withstand current tests.

Note:

1. The DC voltage drop method is used for testing, with a test current of 100A;

2. The main circuit resistance is measured between the incoming and outgoing terminals;

3. The circuit breaker circuit resistance is measured between the two contacts of the circuit breaker;

4. The resistance value after the test has been corrected to the ambient temperature before the test.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Short-time withstand current and peak withstand current tests

Test date:2021-09-23

Pre-test status:

Not inspected;

During the main circuit test, the test power supply enters from the cable compartment, passes through the circuit breaker, and is short-circuited in three phases at the busbar compartment outlet;

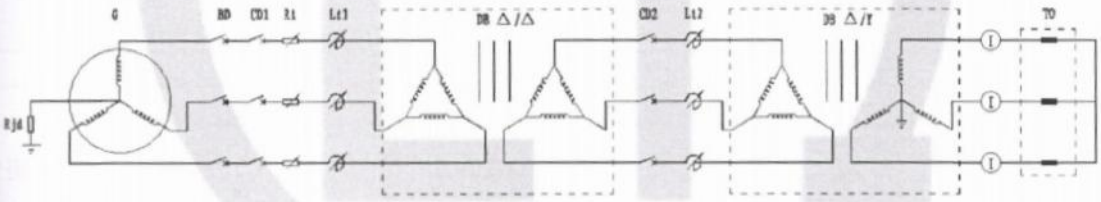
During the grounding switch test, the test power supply enters from the cable compartment, passes through the grounding switch, and the grounding switch is closed (the interlock is temporarily released if necessary);

The three phases A, B, and C of the test circuit correspond to the three phases A, B, and C of the test object.

Test parameters:

Test site	Test current		Current duration s	Joule integral GA²s
	Effective value kA	Peak value kA		
Main circuit, grounding switch	31.5	80	4	3.969

Experimental principle diagram:

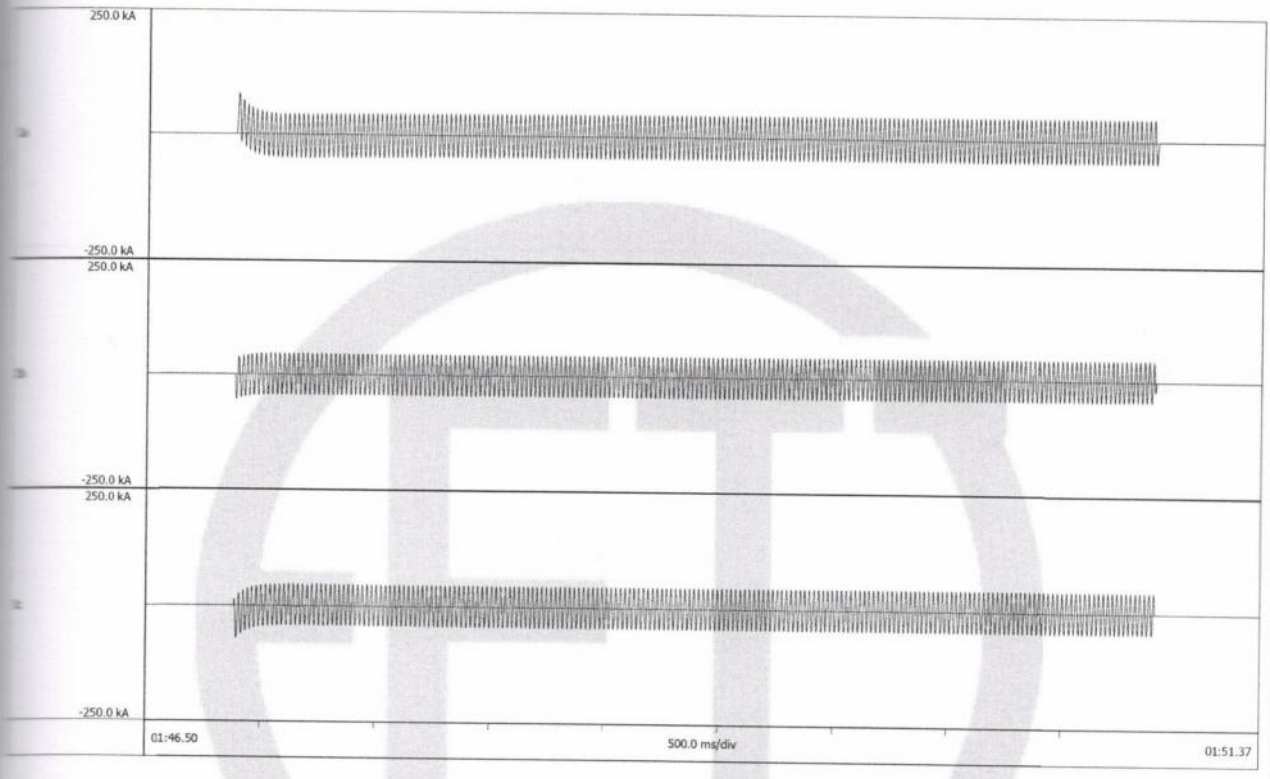


G: Short-circuit generator Rjd: Grounding resistor Lt1、Lt2: Reactor
Rt1：Resistor T0: Test object DB: Transformer
BD: Generator breaker CD1、CD2: Master breaker I: Current measurement

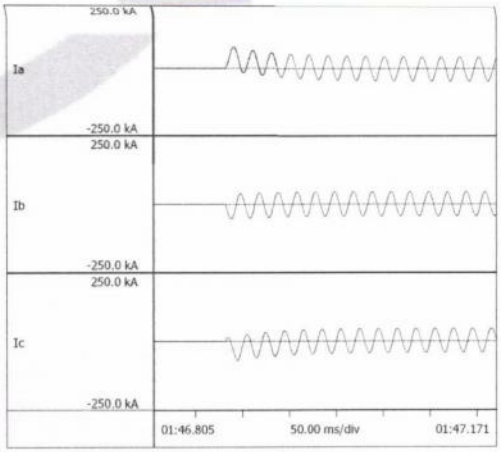
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Short-time withstand current and peak withstand current tests (Main circuit)

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T001		
Phase		A	B	C
Peak current	kA	80.8	55.3	71.2
RMS value of current	kA	31.8	32.0	32.0
Average RMS value of current	kA	31.9		
Current duration	s	4.03	4.03	4.03
Joule integral	GA^2s	4.06	4.10	4.06



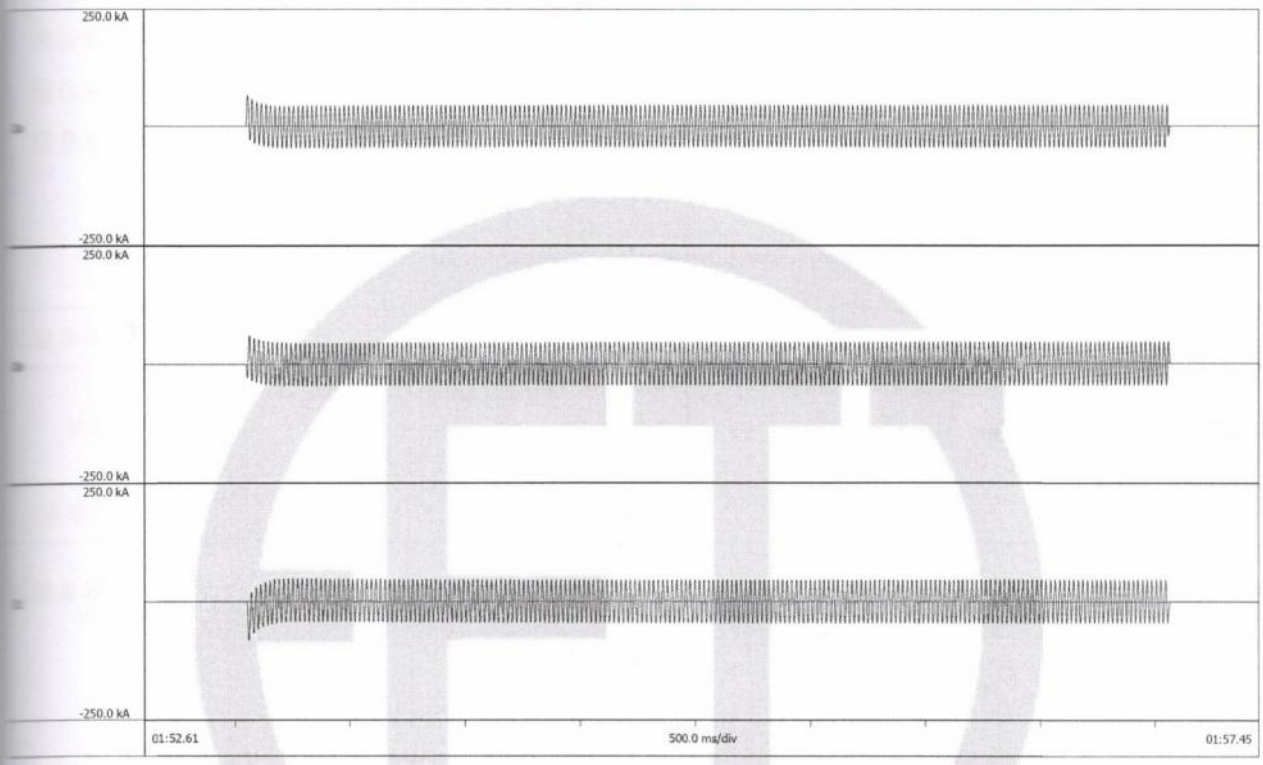
Post-test status:

No obvious damage was observed to the test sample. The switch opened normally during the first no-load operation, and the change in circuit resistance before and after the test was less than 20%. The test was valid.

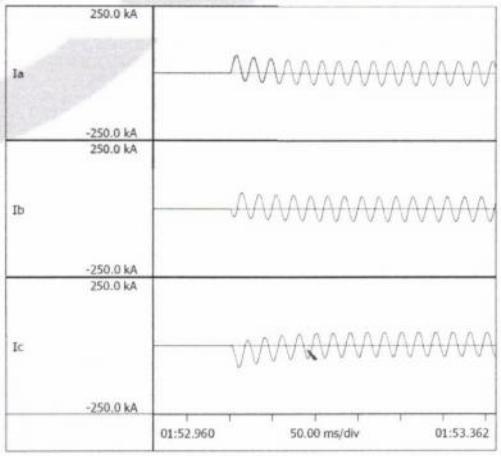
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Short-time withstand current and peak withstand current tests (Grounding switch)

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T002		
Phase		A	B	C
Peak current	kA	67.5	60.4	81.7
RMS value of current	kA	32.1	32.3	32.0
Average RMS value of current	kA	32.1		
Current duration	s	4.02	4.02	4.02
Joule integral	GA^2s	4.18	4.20	4.17



Post-test status:

No obvious damage was observed in the test sample, and the switch opened normally during the first no-load operation, indicating the test was valid.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Short-time withstand current and peak withstand current tests

Test date:2021-09-23

Pre-test status:

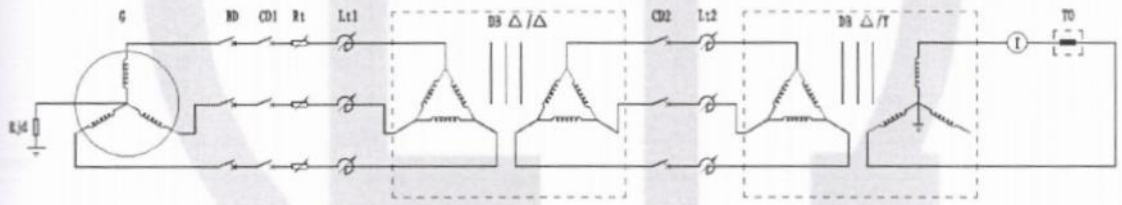
Not under maintenance;

Push-wire method: The test power supply phase A is connected to the cable compartment terminal, passes through the grounding circuit busbar and grounding point, and returns to the test power supply phase C. The current flows through the entire grounding conductor.

Test parameters:

Test site	Test current		Current duration s	Joule integral GA^2s
	Effective value kA	Peak value kA		
Grounding connection circuit	27.4	69.6	2	1.501

Experimental principle diagram:

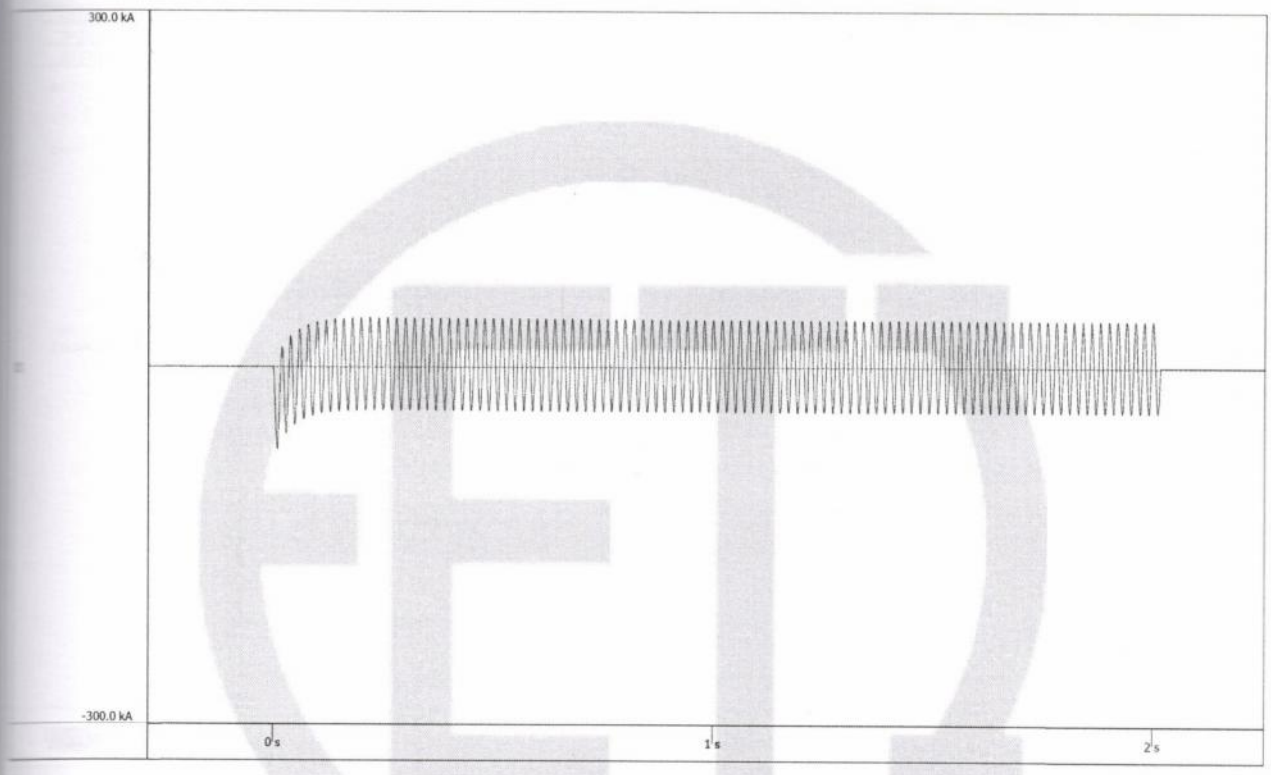


G: Short-circuit generator Rjd: Grounding resistor Lt1、Lt2: Reactor
Rt1：Resistor T0: Test object DB: Transformer
BD: Generator breaker CD1、CD2: Master breaker I: Current measurement

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Short-time withstand current and peak withstand current tests

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T003	
Peak current kA	RMS current kA	Current duration s	Joule integral GA²s
70.6	27.5	2.02	1.57

Post-test status:

No obvious damage was observed in the sample; the test was valid.

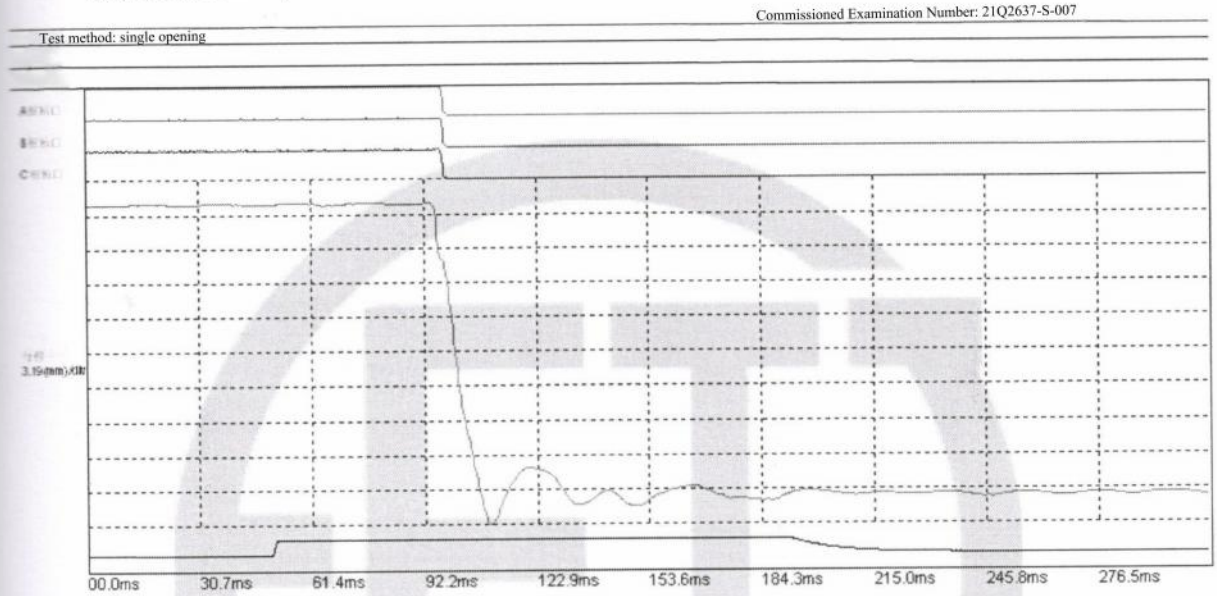
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (minimum value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-007	Specified value
Operation sequence	O	
Opening time ms	41	25~50

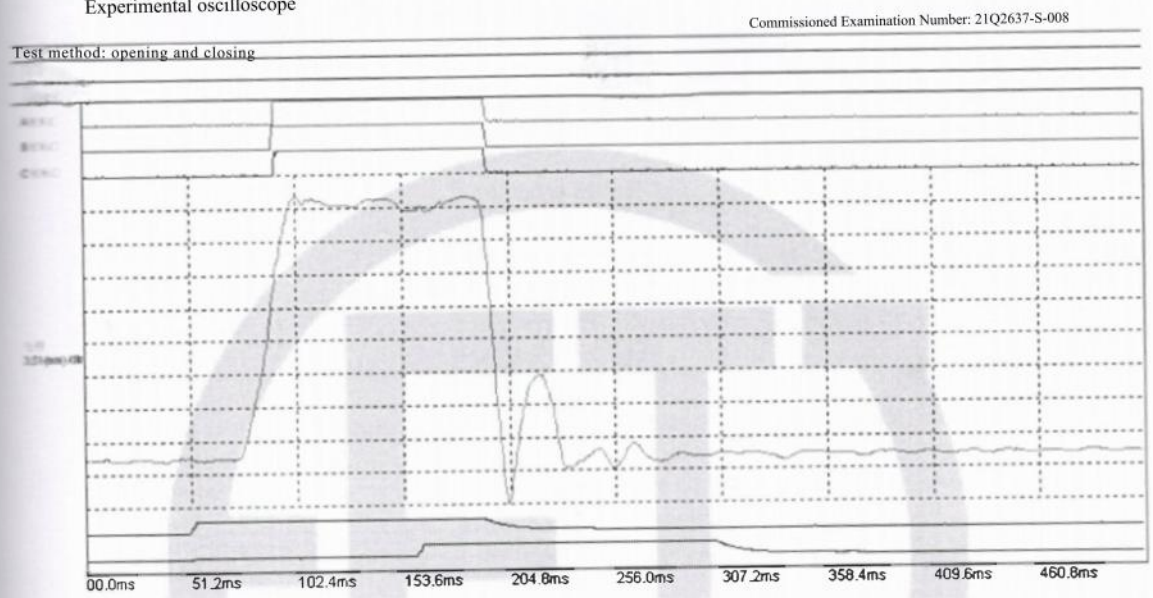
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (minimum value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-008	Specified value
Operation sequence	CO	
Closing time ms	41	35~70
Opening time ms	35	25~50

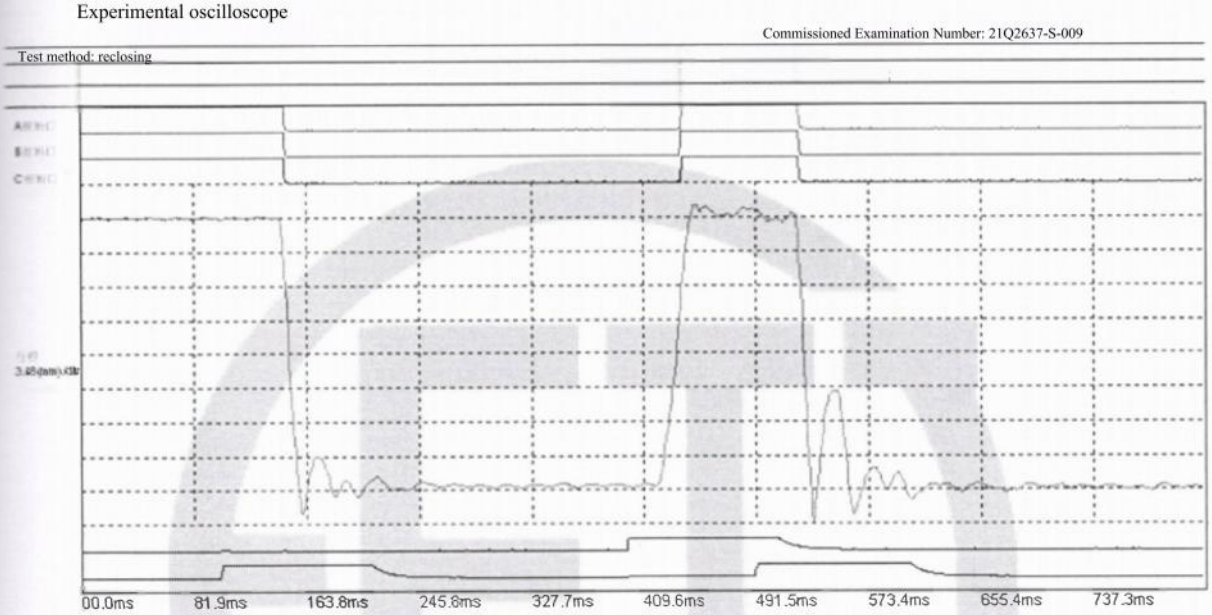
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (minimum value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-009		Specified value
Operation sequence	O	-0.3 s-CO	
Closing time ms	/	42	35~70
Opening time ms	41	33	25~50

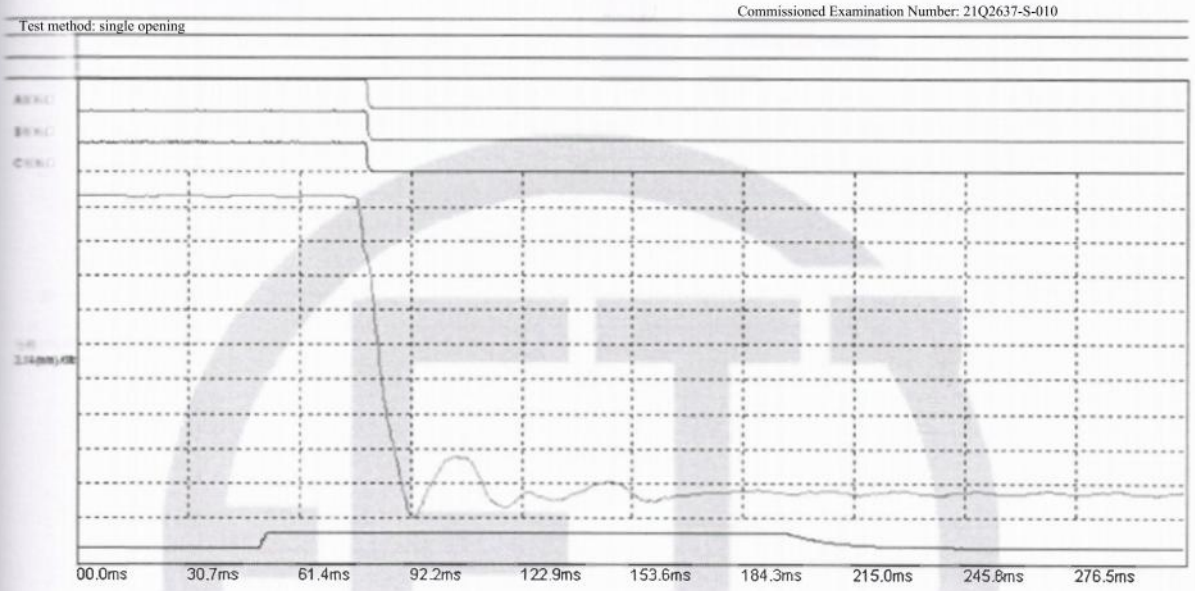
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (rated value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-010	Specified value
Operation sequence	O	
Opening time ms	29	25~50

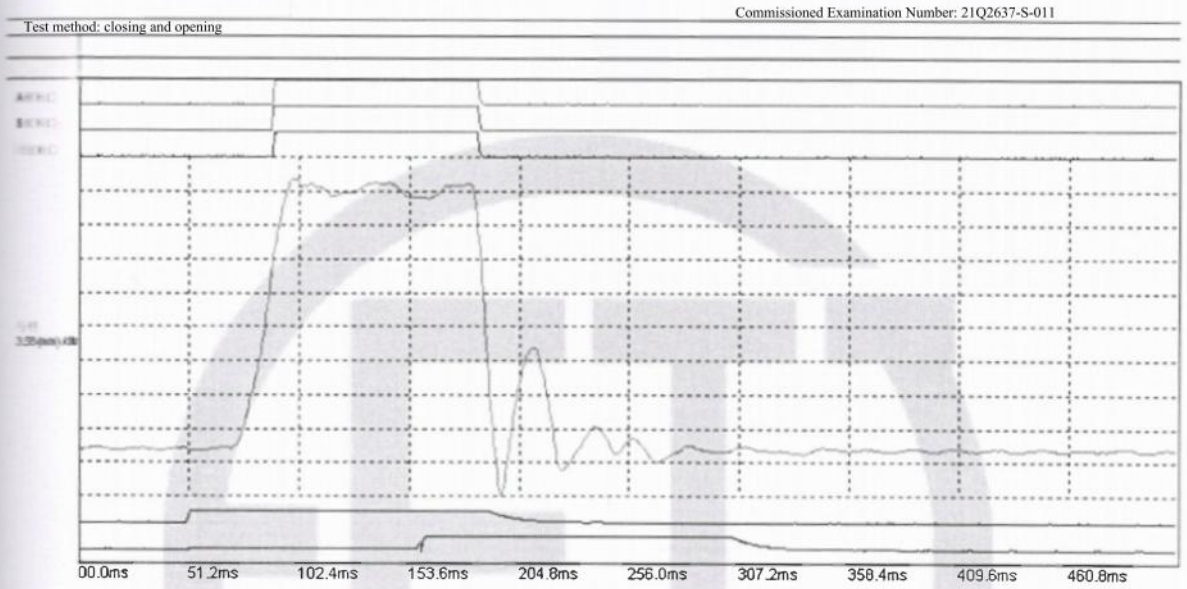
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (rated value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-011	Specified value
Operation sequence	CO	
Closing time ms	40	35~70
Opening time ms	28	25~50

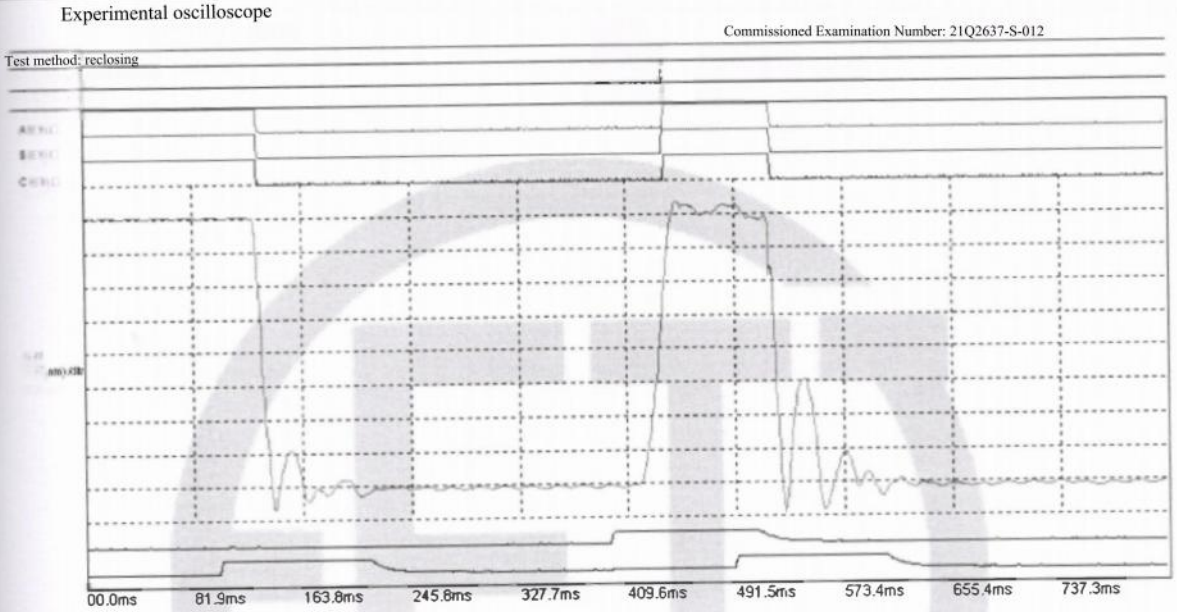
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (rated value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-012		Specified value
Operation sequence	O	-0.3 s-CO	
Closing time ms	/	44	35~70
Opening time ms	28	28	25~50

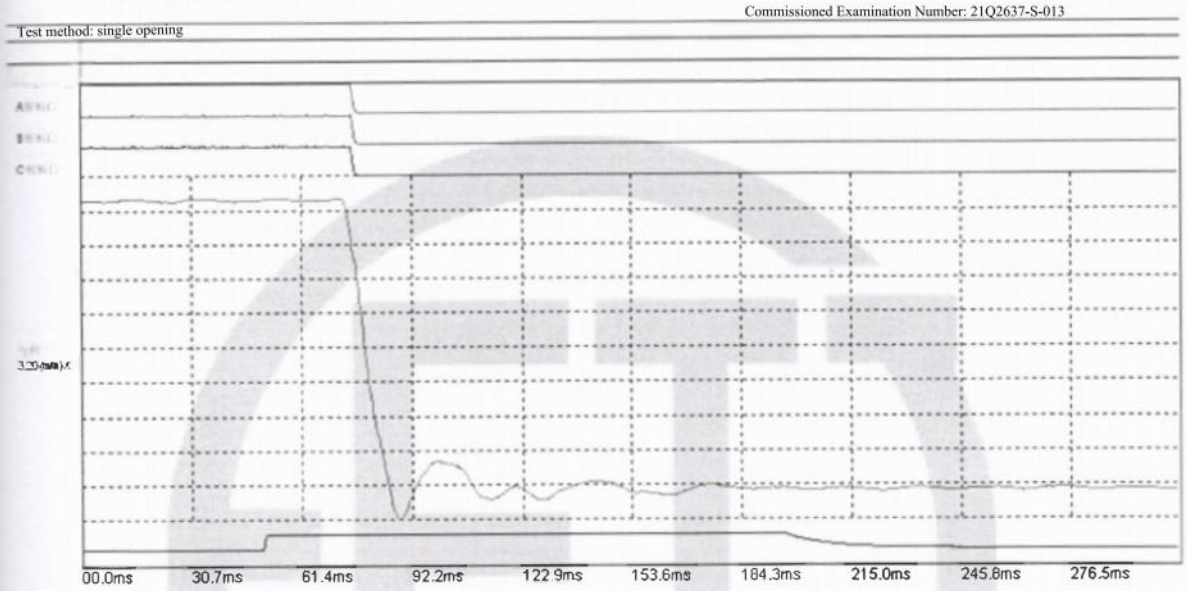
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (maximum value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-013	Specified value
Operation sequence	O	
Opening time ms	25	25~50

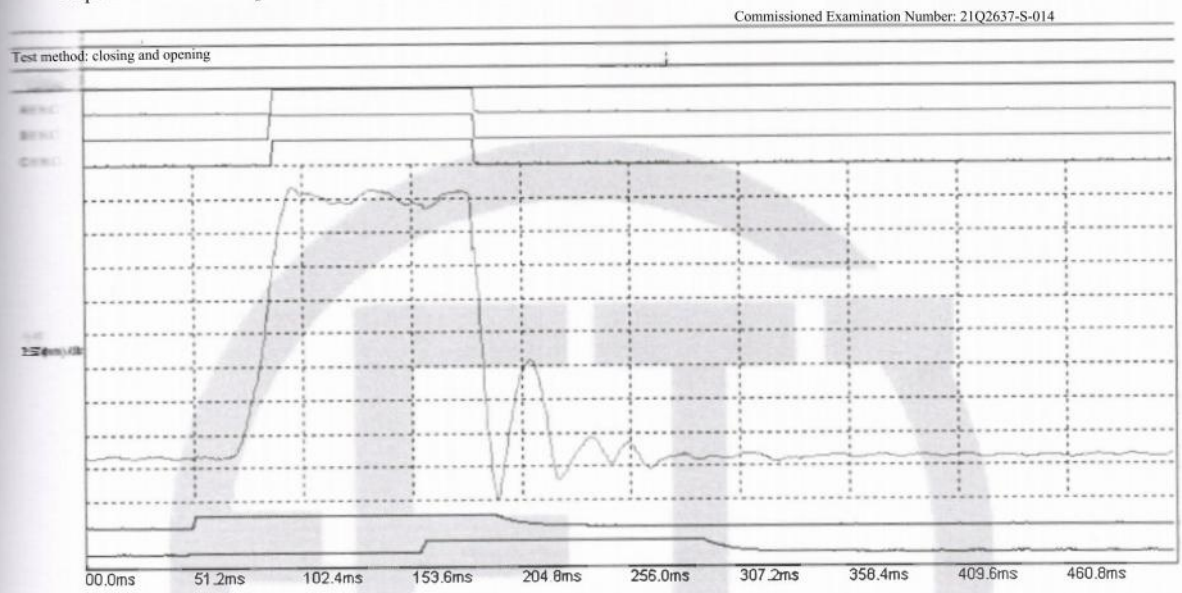
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (maximum value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-014	Specified value
Operation sequence	CO	
Closing time ms	38	35~70
Opening time ms	25	25~50

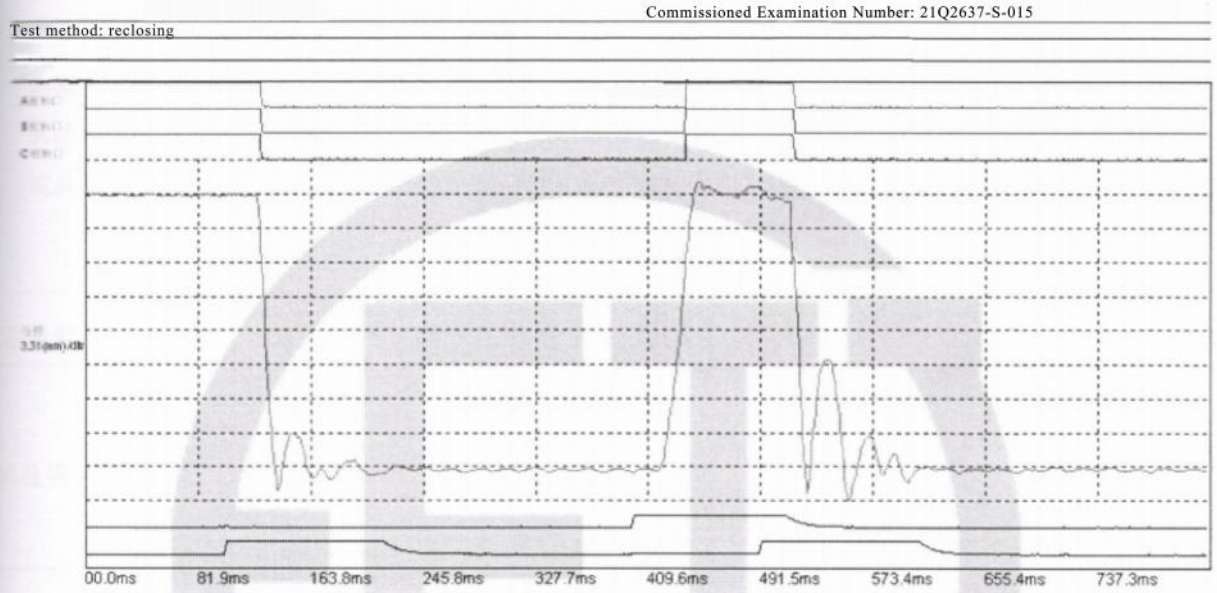
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test before closing and breaking tests

Ambient air temperature: 26.9℃ Test date:2021-09-23

Power supply voltage for closing and opening the circuit breaker: (maximum value)

Experimental oscilloscope



Oscilloscope number	21Q2637-S-015		Specified value
Operation sequence	O	-0.3s-CO	
Closing time ms	/	38	35~70
Opening time ms	25	25	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities of T100s

Test date:2021-09-23

Pre-test status:

Not inspected;

Test power supply circuits A, B, and C correspond to test sample circuits A, B, and C;

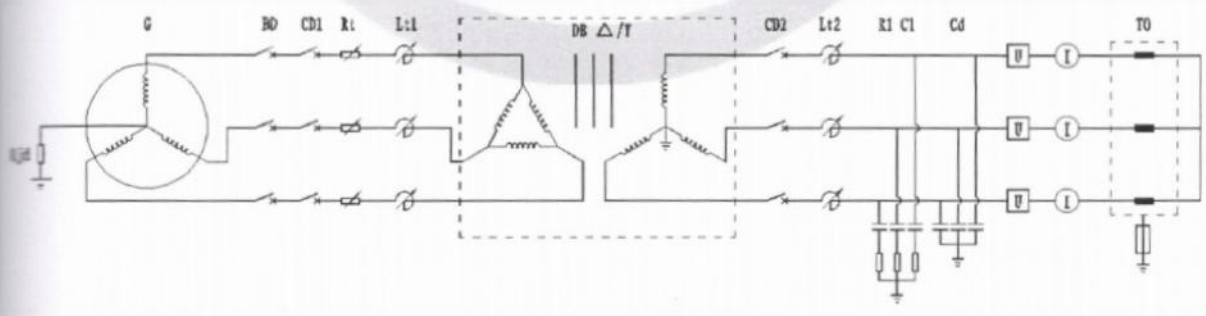
The test power supply is connected to the busbar compartment inlet, and the three-phase short-circuit point is at the cable compartment outlet;

The test sample casing is insulated from ground and grounded through a fuse made of copper wire with a diameter of 0.1 mm and a length of 5 cm.

Test parameters:

Test operation sequence	Number of trials	Number of experimental phases	Test line voltage kV	Breaking current		Peak current kA	Power factor	Power frequency recovery voltage kV	The test circuit is expected to have TRV				
				I_k kA	DC component %				K_{af}	f_0 KHz	U_c kV	t_3 μs	t_d μs
O-0.3s-CO-180s -CO	1	3	40.5	31.5	≤20	80	≤0.15	40.5			69.5	114	17

Experimental principle diagram:

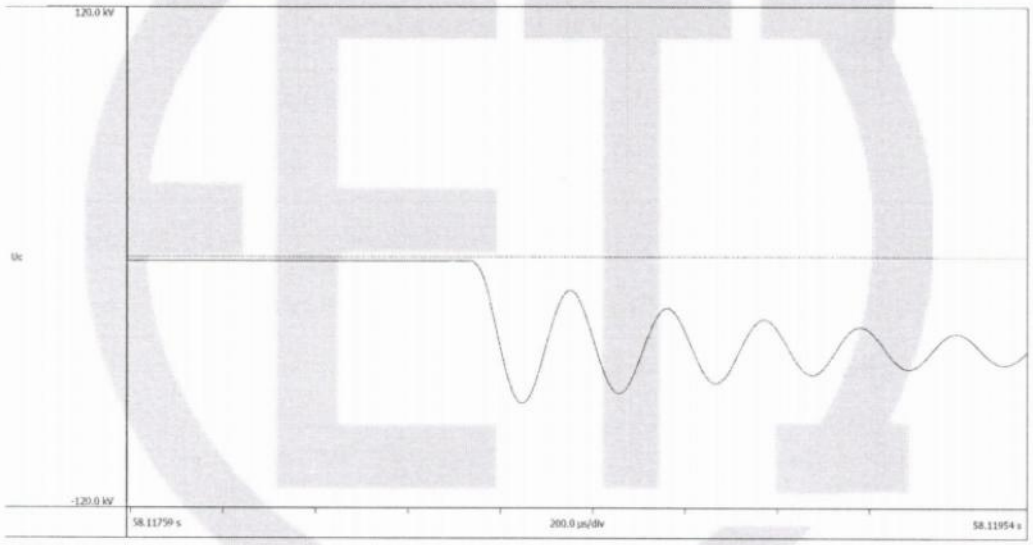


G：Generator Rjd：Earthing resistor Lt1、Lt2: Reactor Rt1: Resistor
DB:Transformer BD: Generator breaker CD1、CD2: Master breaker U:Voltage measurement
I: Current measurement R1、C1: TRV Device Cd：Time-delay capacitor T0:Test object

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities of T100s

Test date:2021-09-23

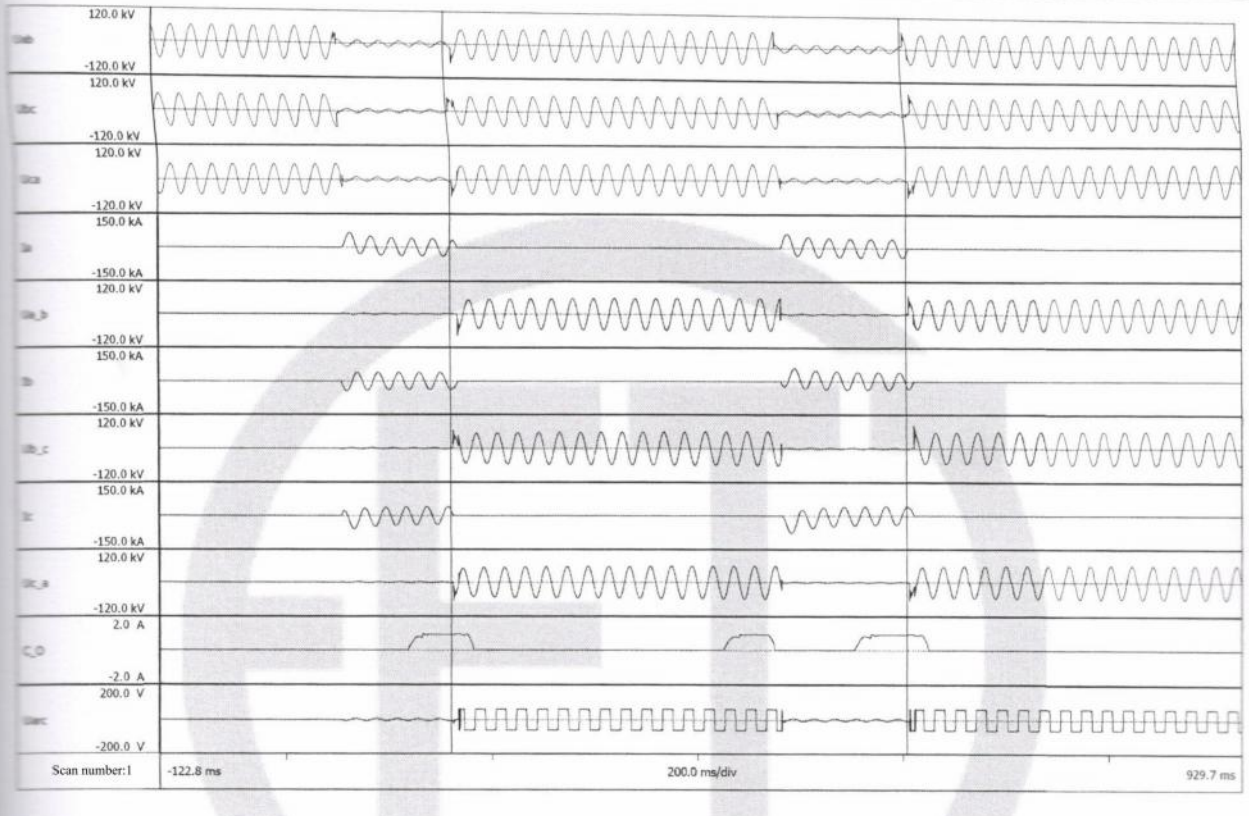


Expected TRV oscilloscope number		21Q2637-S-T100sTRV
U_c	kV	70.4
t_3	µs	113
t_d	µs	---
Note:		

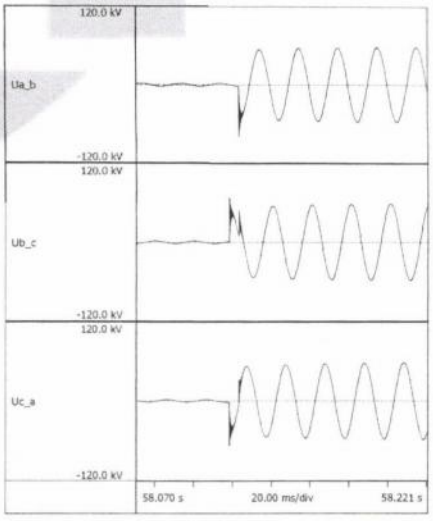
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities of T100s

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T100s-01		
Test interval (since last operation) s		---	Closing voltage V	---
Operation method		O	Opening voltage V	DC143
Phase/Line		A/AB	B/BC	C/CA
Test voltage kV		---	---	---
Closing current kA		---	---	---
Breaking current	Phase value kA	32.1	32.3	31.7
	Average value	32.0		
	DC component %	10	2	1
Arc time ms		7.2	7.2	2.2
Opening time ms		41.0		
Breaking time ms		48.2	48.2	43.2
Closing time		---	---	---
Power frequency recovery voltage kV		40.1	40.0	40.1
TRV peak value kV		83.9	70.3	70.4

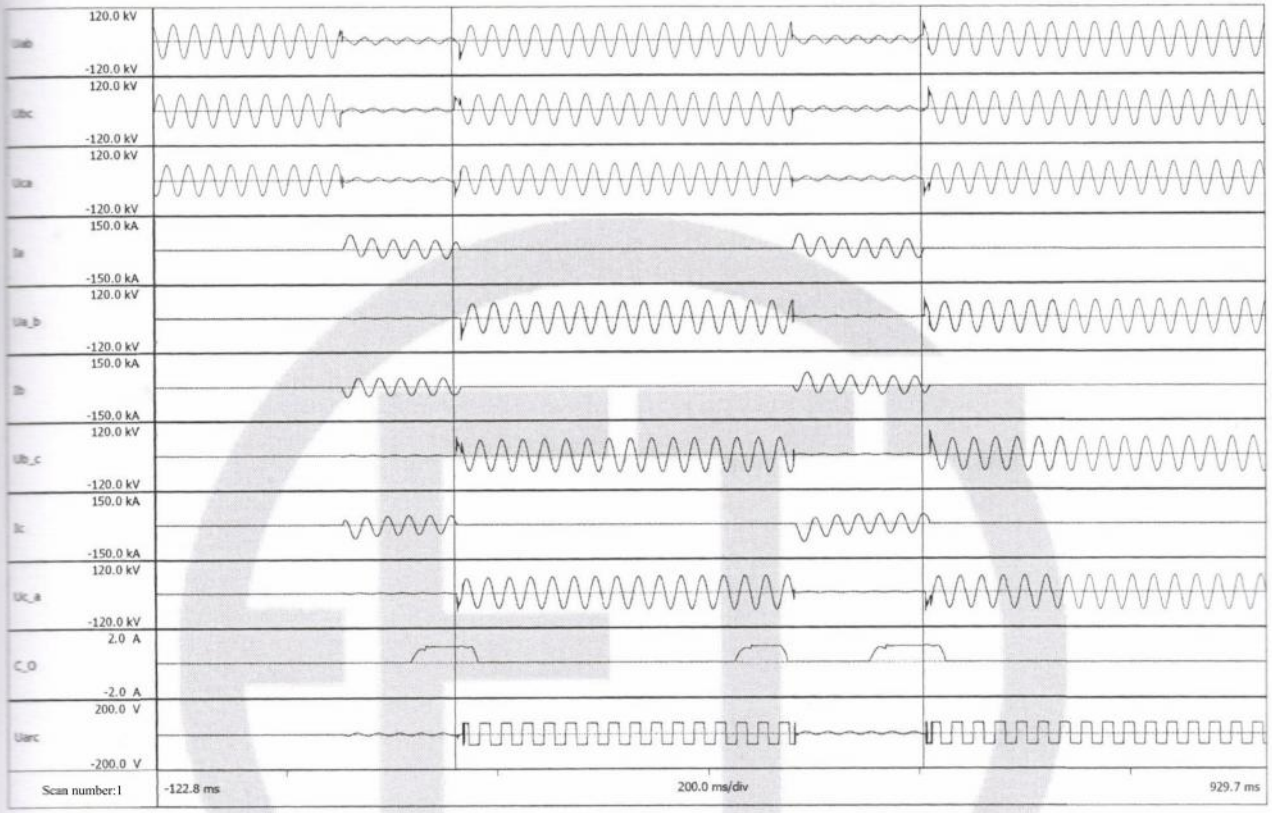


Post-test status:
The sample broke normally, with no abnormalities.

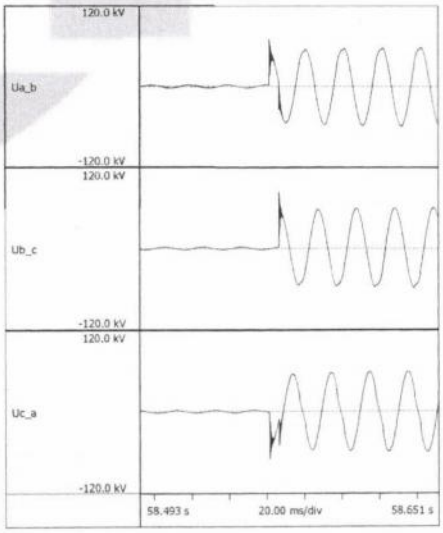
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities of T100s

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T100s-01		
Test interval (since last operation) s		0.3	Closing voltage V	DC187
Operation method		CO	Opening voltage V	DC143
Phase/Line		A/AB	B/BC	C/CA
Test voltage kV		40.8	40.8	40.6
Closing current kA		65.5	61.2	81.0
Breaking current	Phase value kA	32.0	32.3	32.4
	Average value	32.2		
	DC component %	3	6	2
Arc time ms		2.4	7.4	7.4
Opening time ms		41.0		
Breaking time ms		43.4	48.4	48.4
Closing time		---	---	---
Power frequency recovery voltage kV		40.0	40.1	40.0
TRV peak value kV		70.3	84.8	69.9

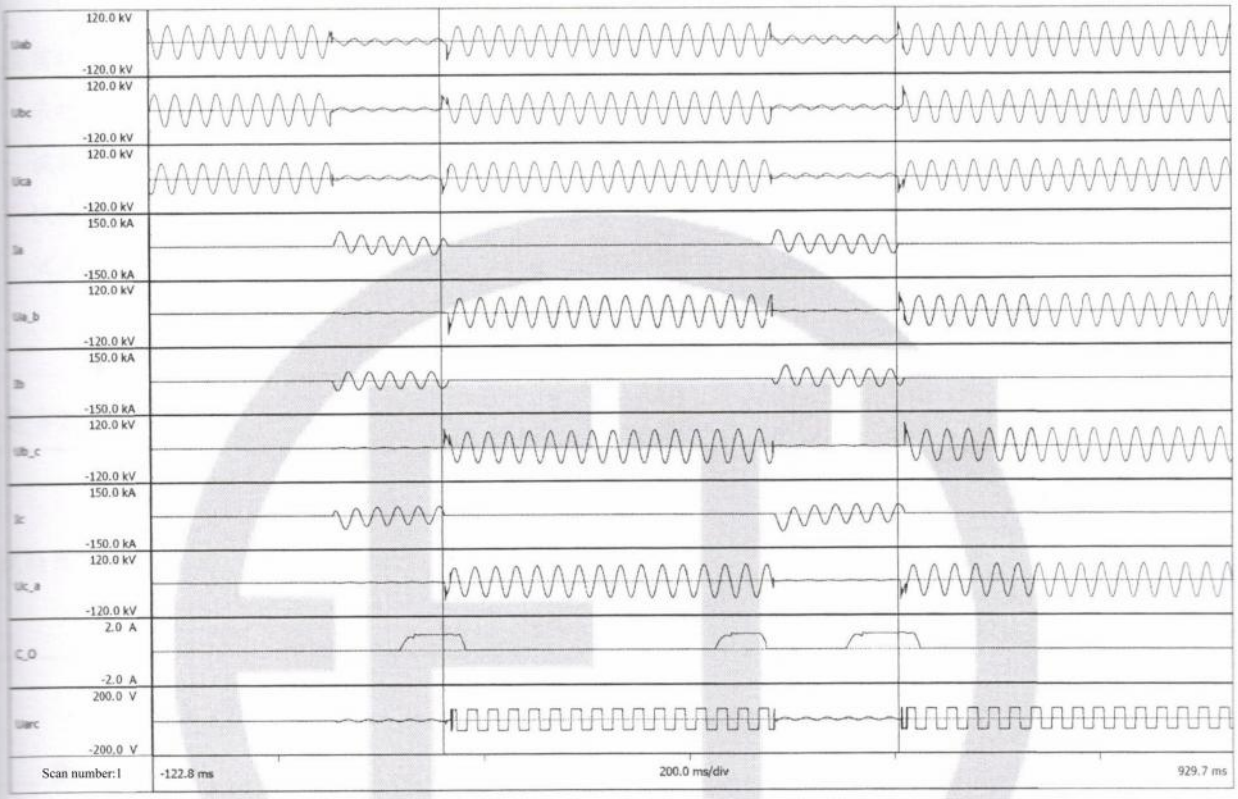


Post-test status:
The sample broke normally, with no abnormalities.

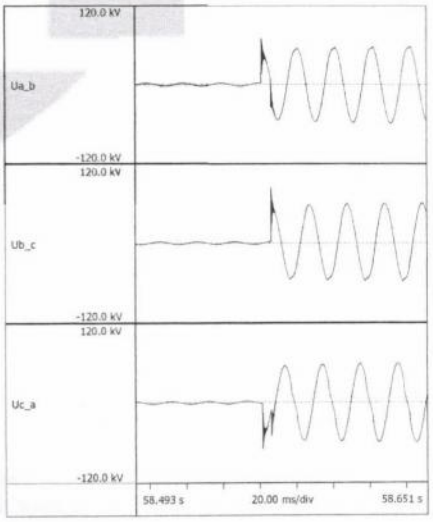
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities of T100s

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T100s-01		
Test interval (since last operation) s		0.3	Closing voltage V	DC187
Operation method		CO	Opening voltage V	DC143
Phase/Line		A/AB	B/BC	C/CA
Test voltage kV		40.8	40.8	40.6
Closing current kA		65.5	61.2	81.0
Breaking current	Phase value kA	32.0	32.3	32.4
	Average value	32.2		
	DC component %	3	6	2
Arc time ms		2.4	7.4	7.4
Opening time ms		41.0		
Breaking time ms		43.4	48.4	48.4
Closing time		---	---	---
Power frequency recovery voltage kV		40.0	40.1	40.0
TRV peak value kV		70.3	84.8	69.9



Post-test status:
The sample broke normally, with no abnormalities.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities T100a

Test date:2021-09-23

Pre-test status:

Uninspected;

Test power supply connected to the busbar compartment inlet, three-phase short-circuit point at the cable compartment outlet;

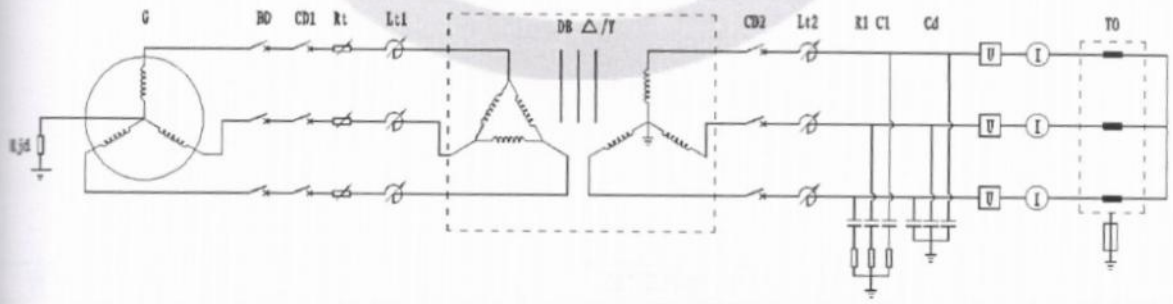
Test power supply circuits A, B, and C correspond to test sample circuits A, B, and C;

Test sample casing insulated from ground, grounded via a fuse made of copper wire with a diameter of 0.1mm and a length of 5cm.

Test parameters:

Test operation sequence	Number of trials	Number of experimental phases	Test line voltage kV	Breaking current		Peak current kA	Power factor	Power frequency recovery voltage kV	Test circuit expected TRV				
				I_k kA	DC component %				K_{af}	f_0 kHz	U_c kV	t_3 μs	t_d μs
O	3	3		31.5	46		≤0.15	40.5			69.5	114	17

Experimental principle diagram：

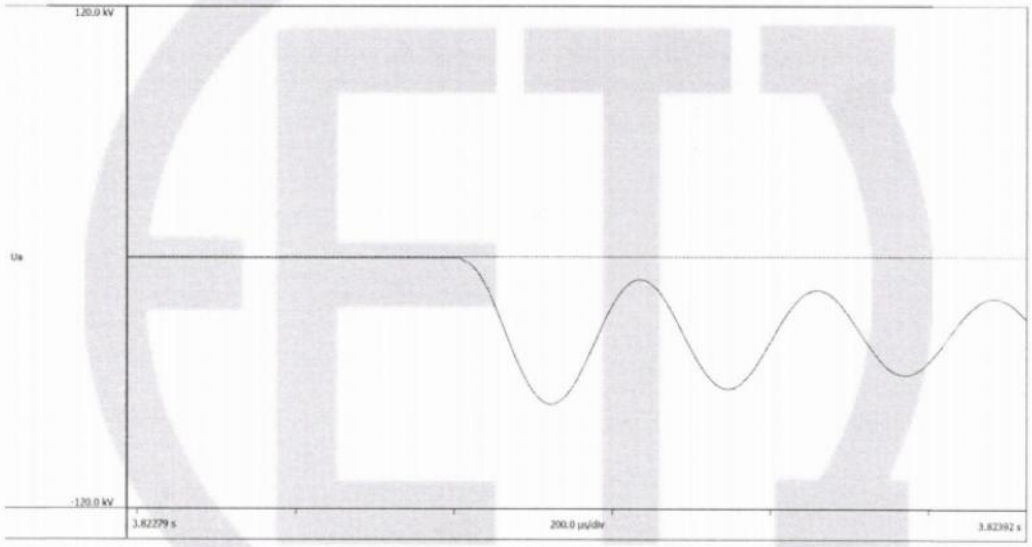


G：Generator　Rjd：Earthing resistor　Lt1、Lt2:Reactor　Rt1: Resistor
DB:Transformer　BD: Generator breaker　CD1、CD2: Master breaker　U:Voltage measurement
I: Current measurement　R1、C1: TRV Device　Cd：Time-delay capacitor　T0:Test object

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities T100a

Test date:2021-09-23

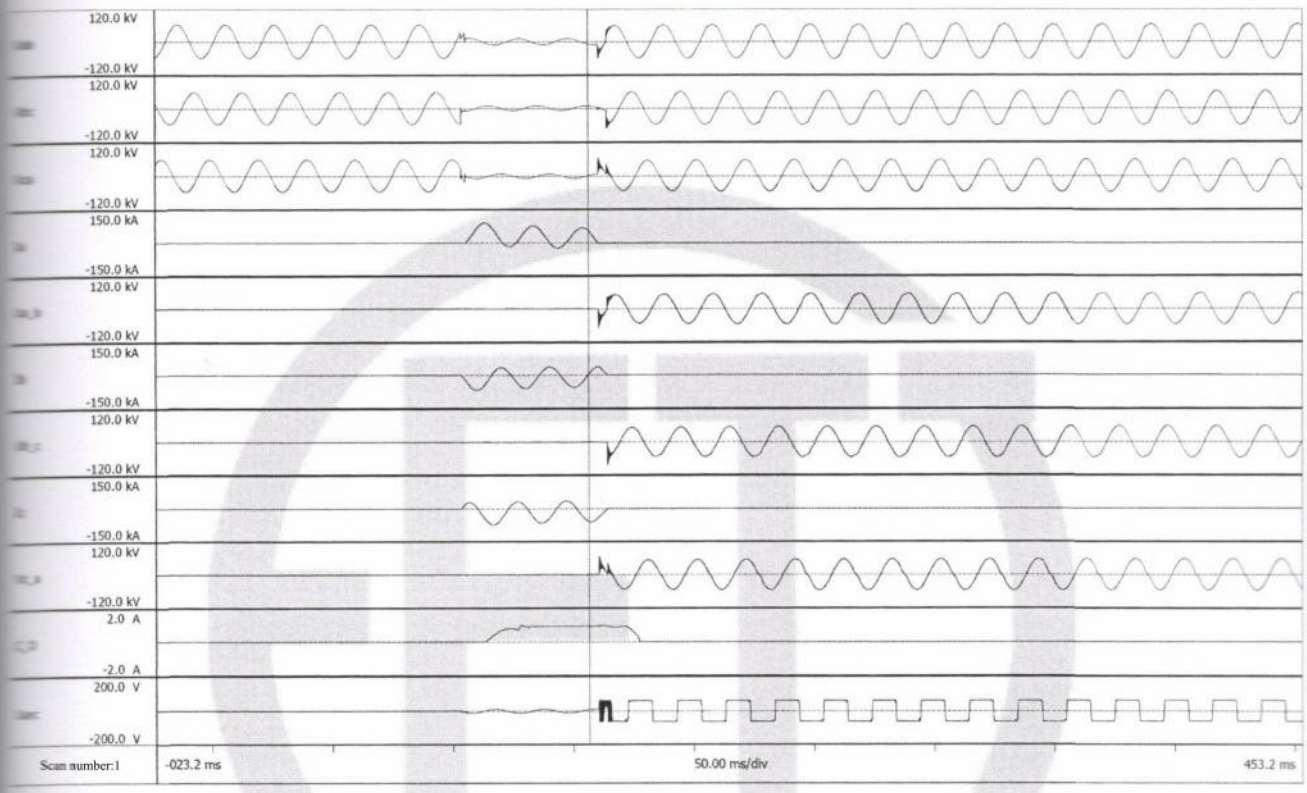


Expected TRV oscilloscope number		21Q2637-S-T100aTRV
U_c	kV	70.1
t_3	µs	113
t_d	µs	---

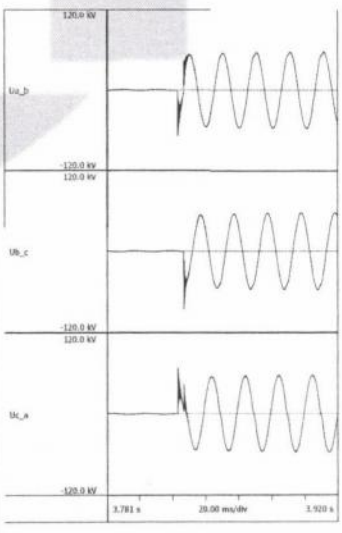
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities T100a

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T100a-01		
Test interval (since last operation) s		---	Opening voltage V	DC242
Operation method		O		
Phase/Line		A/AB	B/BC	C/CA
Breaking current	Phase value kA	31.9	32.4	32.1
	Average value		32.1	81.0
	DC component %	53	18	26
Peak value of the last half-wave current (kA)		65.2	28.9	55.6
Duration of the last half wave ms		12.5	7.7	11.4
Arc time ms		2.5	7.6	7.6
Opening time ms		26.0		
Breaking time ms		26.5	33.6	33.6
Power frequency recovery voltage kV		39.9	39.6	39.8
TRV peak value kV		70.4	85.1	70.2



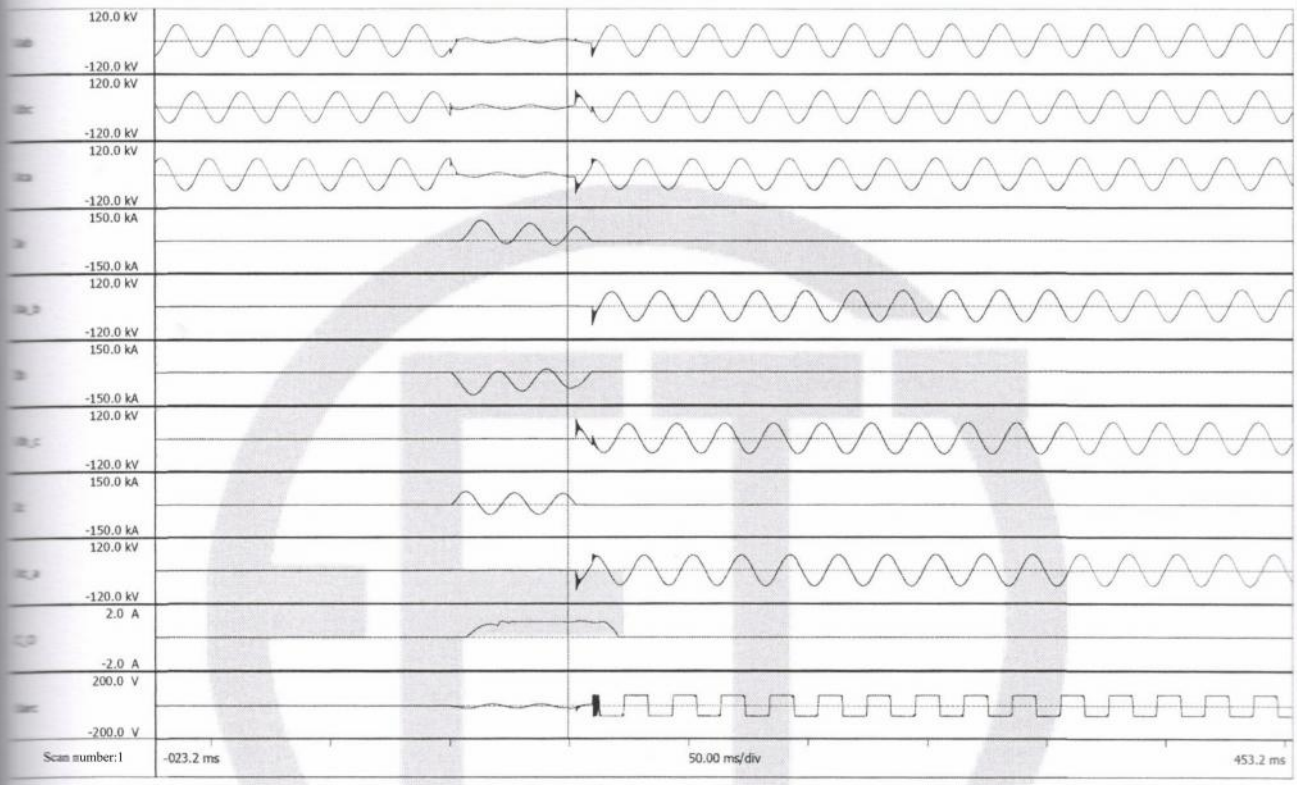
Post-test status:

The sample broke normally, with no abnormalities.

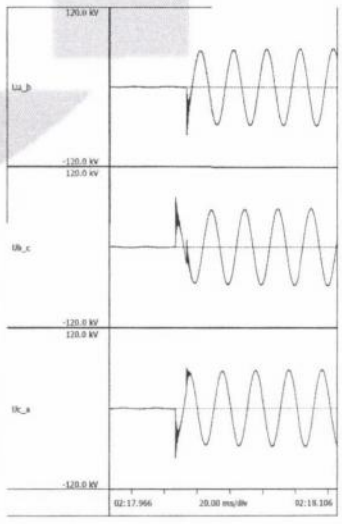
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities T100a

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T100a-02		
Test interval (since last operation) s		---	Opening voltage V	DC242
Operation method		O		
Phase/Line		A/AB	B/BC	C/CA
Breaking current	Phase value kA	32.3	32.0	31.8
	Average value	32.0		
	DC component %	45	54	14
Peak value of the last half-wave current (kA)		54.8	66.2	36.5
Duration of the last half wave ms		11.5	13.8	9.3
Arc time ms		8.3	8.3	3.2
Opening time ms		26.0		
Breaking time ms		34.3	34.3	29.2
Power frequency recovery voltage kV		40.4	40.3	40.4
TRV peak value kV		79.3	70.6	70.8



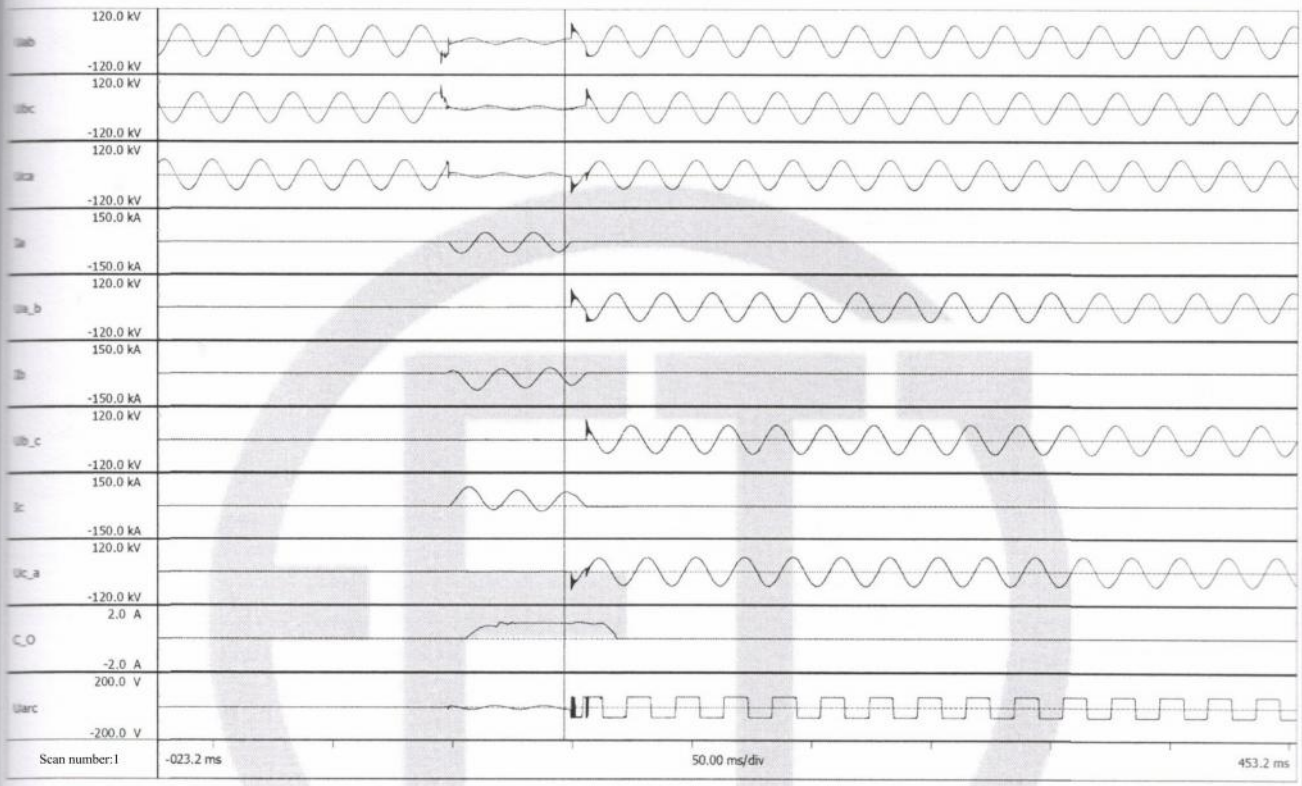
Post-test status:

The sample broke normally, with no abnormalities.

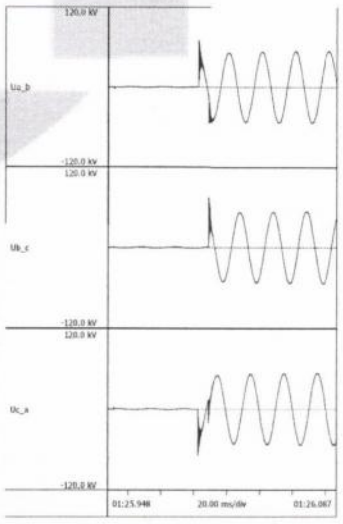
China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Verification of closing and breaking capabilities T100a

Test date:2021-09-23



Oscilloscope diagram number		21Q2637-S-T100a-03		
Test interval (since last operation) s		---	Opening voltage V	DC242
Operation method		O		
Phase/Line		A/AB	B/BC	C/CA
Breaking current	Phase value kA	31.9	32.5	32.2
	Average value	32.2		
	DC component %	16	39	53
Peak value of the last half-wave current (kA)		30.6	50.5	65.8
Duration of the last half wave ms		9.6	11.7	13.7
Arc time ms		2.5	7.7	7.7
Opening time ms		26.0		
Breaking time ms		28.5	33.7	33.7
Power frequency recovery voltage kV		39.8	39.6	39.9
TRV peak value kV		70.4	79.1	70.5



Post-test status:

The sample broke normally, with no abnormalities.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Measurement of loop resistance

Test date:2021-09-19/2021-09-23

1. Main circuit resistance (μΩ)

After short-time withstand current and peak withstand current tests			Technical requirements	After verification of closing and breaking capabilities		
Ambient temperature: 30.5℃				Ambient temperature: 27.5℃		
A	B	C		A	B	C
71.8	71.7	72.9	≤120	67.8	69.1	69.5

2. Circuit breaker circuit resistance (μΩ)

After short-time withstand current and peak withstand current tests			Technical requirements	After verification of closing and breaking capabilities		
Ambient temperature: 30.5℃				Ambient temperature: 27.5℃		
A	B	C		A	B	C
20.0	20.3	21.5	≤45	18.4	18.8	19.4

Note:

1. The DC voltage drop method is used for testing, with a test current of 100A;

2. The main circuit resistance is measured between the input and output terminals;

3. The circuit breaker circuit resistance is measured between the two contacts of the circuit breaker;

4. The measurement results show that the test specimen is capable of carrying the rated operating current without exceeding the required temperature rise limit.

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

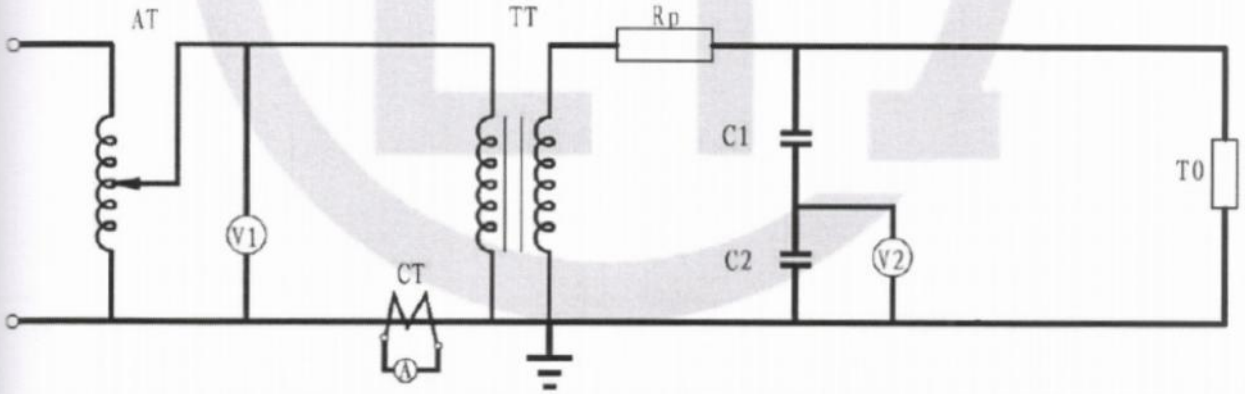
Power frequency voltage test

Test date: 2021-09-23

Sample installation and testing requirements:

1. This test is a power frequency voltage test to verify the closing and breaking capacity;
2. Circuit breaker breaking point: 118KV 1min.

Experimental principle diagram:



AT	Voltage regulator	Rp	Protective resistor
CT	Current transformer	TT	Power frequency test transformer
T0	Test object	A	Ammeter
C1	High voltage arm capacitor	C2	Low voltage arm capacitor
V2	Voltmeter		

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Power frequency voltage test

Test date: 2021-09-23

Test results:

Sample status	Pressurized parts	Grounding part	1min power frequency withstand voltage			
			Appropriate voltage kV	Measured voltage kV	Number of pressurizations	Number of penetrations
The removable part is in the working position. The main switch is in the open position. (The grounding switch is in the open position.)	A	a	118±1%	118.0	1	0
	B	b		118.1	1	0
	C	c		118.1	1	0
	a	A		118.0	1	0
	b	B		118.1	1	0
	c	C		118.0	1	0

Test result: Pass.

Note: A, B, C--Terminals on one side of the test site; a, b, c--Terminals on the other side of the test site;

F--Outer shell and base.

Atmospheric conditions in the test area	P=100.4kPa; The ambient temperature t = 27.3℃; Relative humidity: 72% Atmospheric correction factor Kt=/ Altitude correction factor Ka=/

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

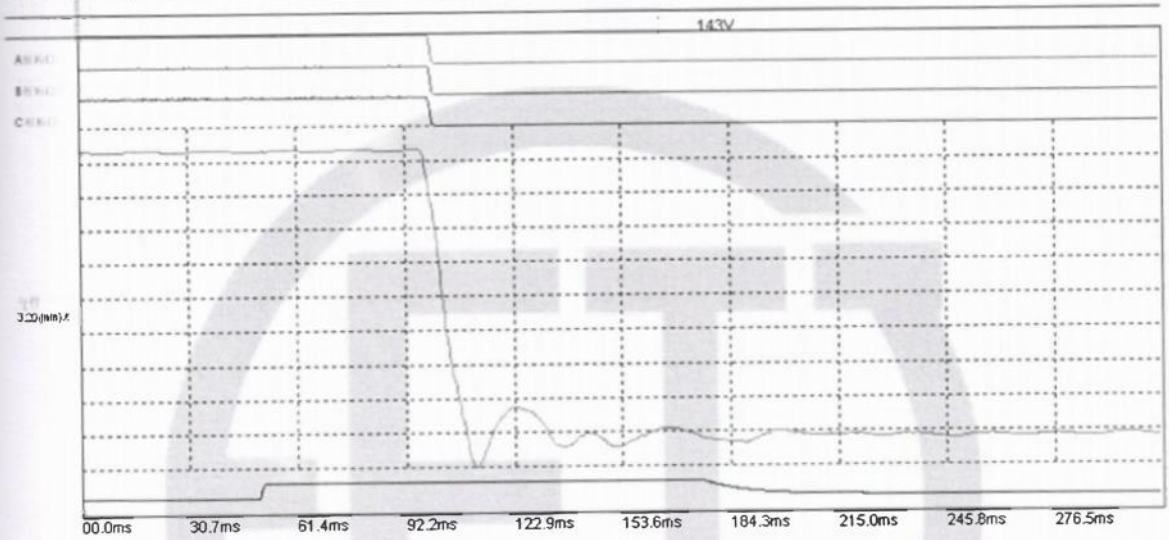
Ambient air temperature: 27.3°C Test date: 2021-09-23

Power supply voltage for closing and opening operations: (minimum value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S016

Test method: single opening



Oscilloscope number	2102637-S-016	Specified value
Operation sequence	O	
Opening time ms	40	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

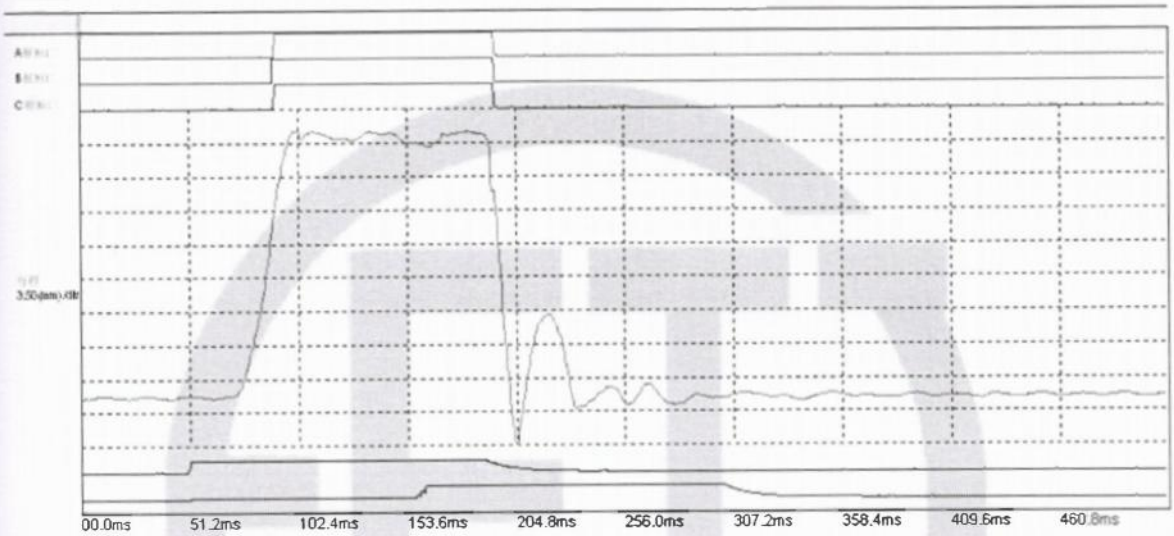
Ambient air temperature: 27.3℃ Test date: 2021-09-23

Power supply voltage for closing and opening operations: (minimum value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S017

Test method: closing and opening



Oscilloscope number	2102637-S-017	Specified value
Operation sequence	CO	
Closing time ms	41	35~70
Opening time ms	34	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

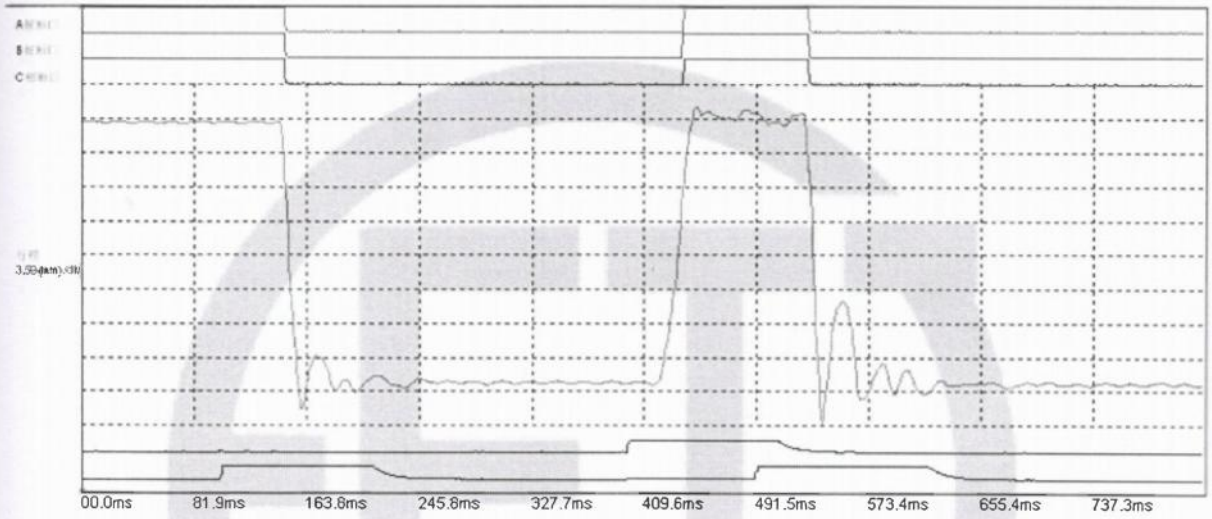
Ambient air temperature: 27.3℃ Test date: 2021-09-23

Power supply voltage for closing and opening operations: (minimum value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S018

Test method: reclosing



Oscilloscope number	21Q2637-S-018		Specified value
Operation sequence	O	-0.3 s-CO	
Closing time ms	/	41	35~70
Opening time ms	41	34	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

Ambient air temperature: 27.3°C

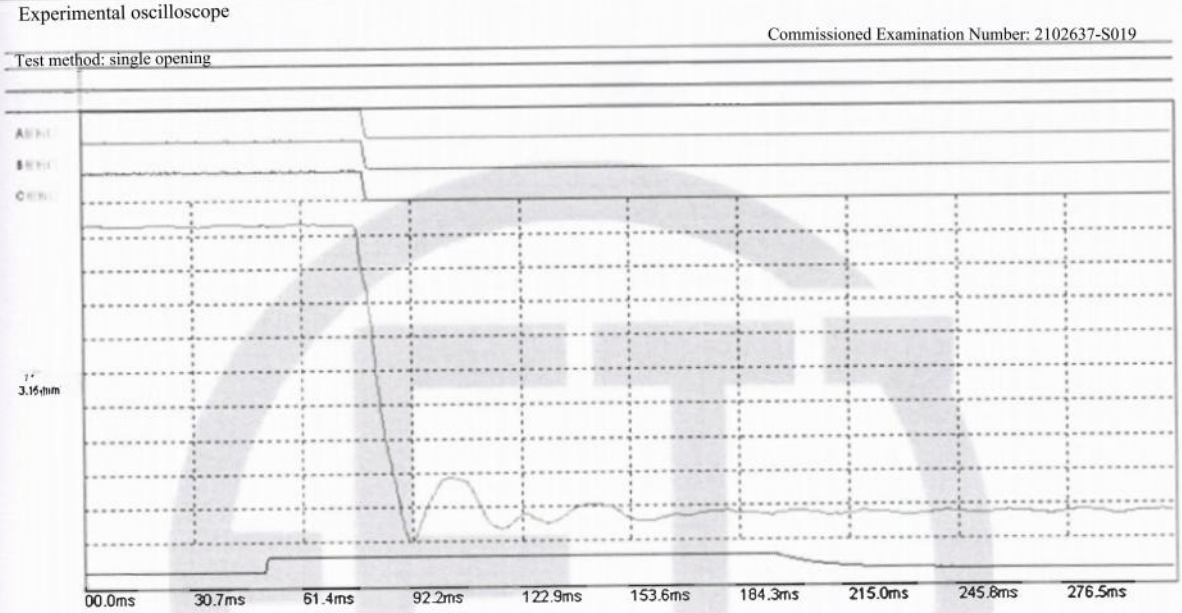
Test date: 2021-09-23

Power supply voltage for closing and opening operations: (rated value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S019

Test method: single opening



Oscilloscope number	21Q2637-S-019	Specified value
Operation sequence	O	
Opening time ms	30	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

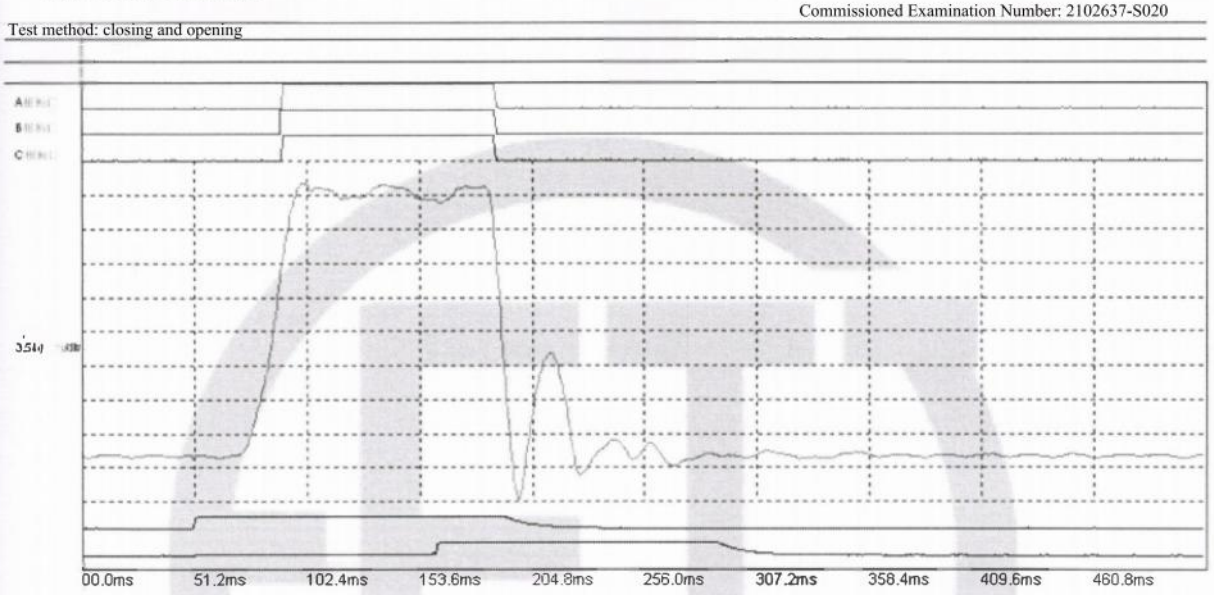
Ambient air temperature: 27.3°C Test date: 2021-09-23

Power supply voltage for closing and opening operations: (rated value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S020

Test method: closing and opening



Oscilloscope number	21Q2637-S-020	Specified value
Operation sequence	CO	
Closing time ms	41	35~70
Opening time ms	28	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

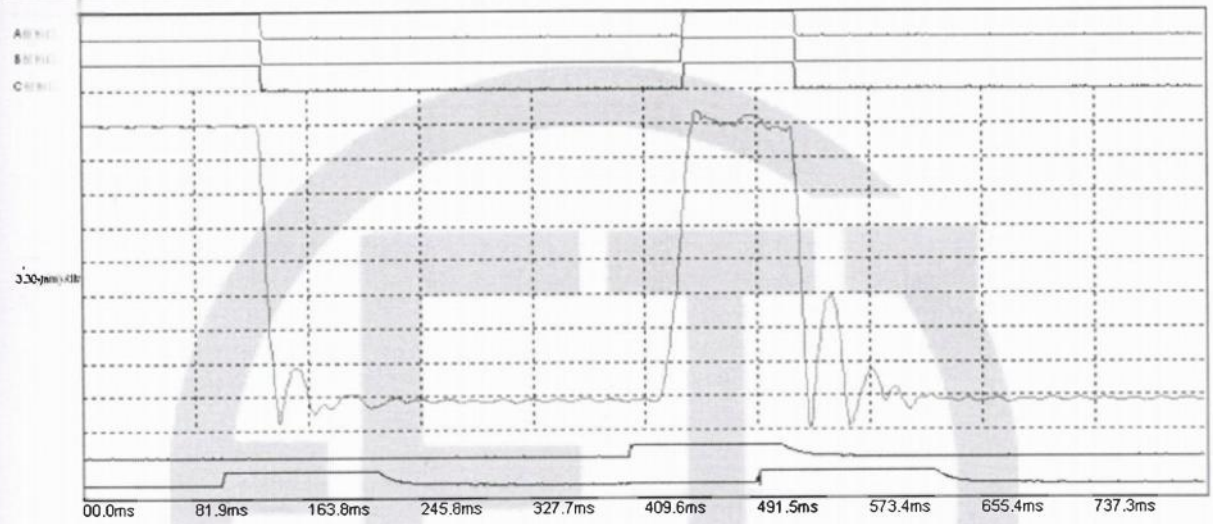
Ambient air temperature: 27.3°C Test date: 2021-09-23

Power supply voltage for closing and opening operations: (rated value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S021

Test method: reclosing



Oscilloscope number	21Q2637-S-021		Specified value
Operation sequence	O	-0.3 s-CO	
Closing time ms	/	42	35~70
Opening time ms	28	28	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

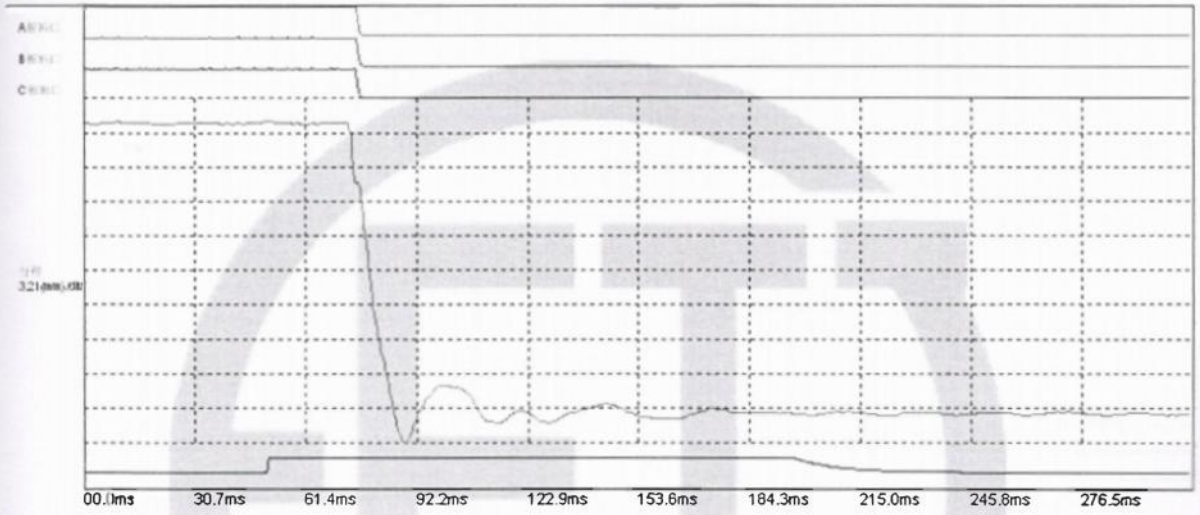
Ambient air temperature: 27.3℃ Test date: 2021-09-23

Power supply voltage for closing and opening operations: (maximum value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S022

Test method: single opening



Oscilloscope number	21Q2637-S-022	Specified value
Operation sequence	O	
Opening time ms	26	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

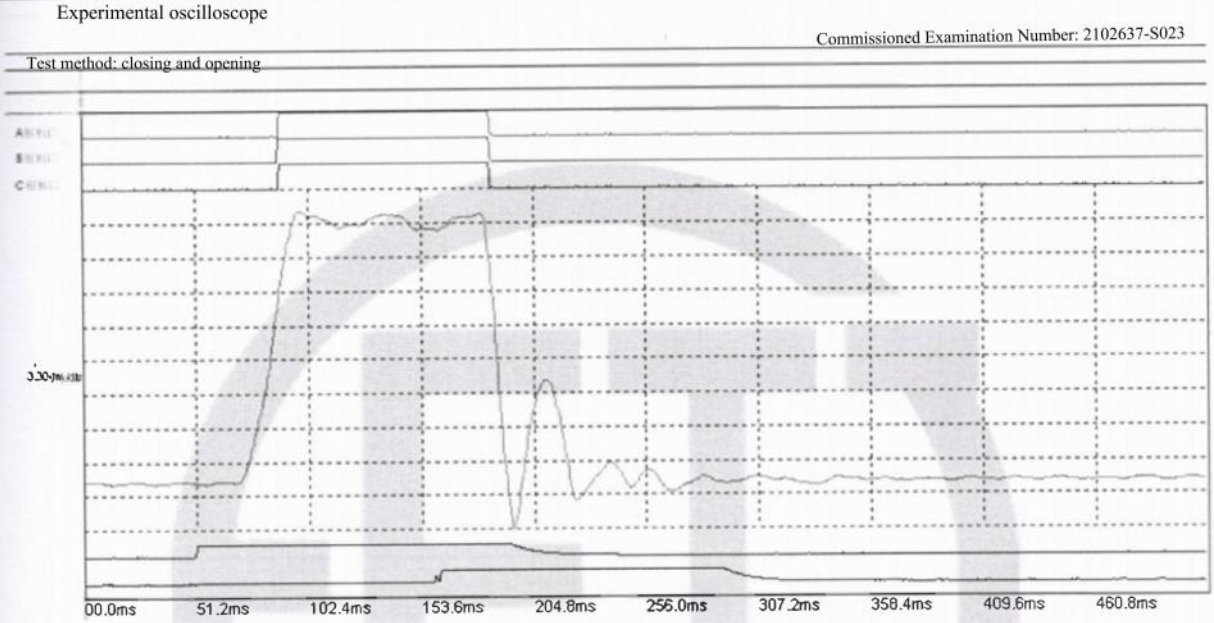
Ambient air temperature: 27.3℃ Test date: 2021-09-23

Power supply voltage for closing and opening operations: (maximum value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S023

Test method: closing and opening



Oscilloscope number	21Q2637-S-023	Specified value
Operation sequence	CO	
Closing time ms	39	35~70
Opening time ms	26	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

Mechanical property measurement test after closing and breaking tests

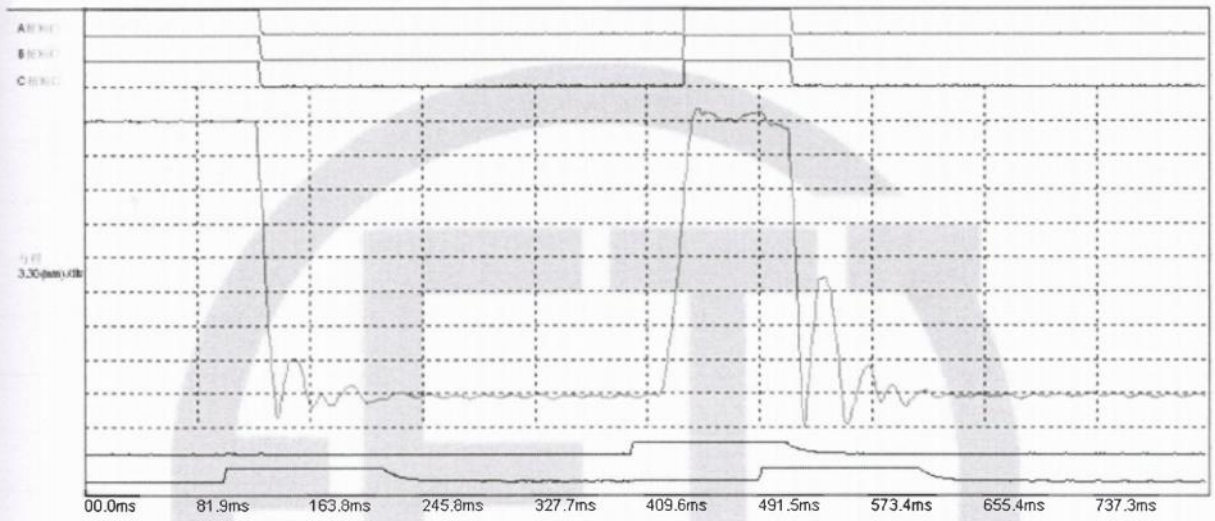
Ambient air temperature: 27.3℃ Test date: 2021-09-23

Power supply voltage for closing and opening operations: (maximum value)

Experimental oscilloscope

Commissioned Examination Number: 2102637-S024

Test method: reclosing



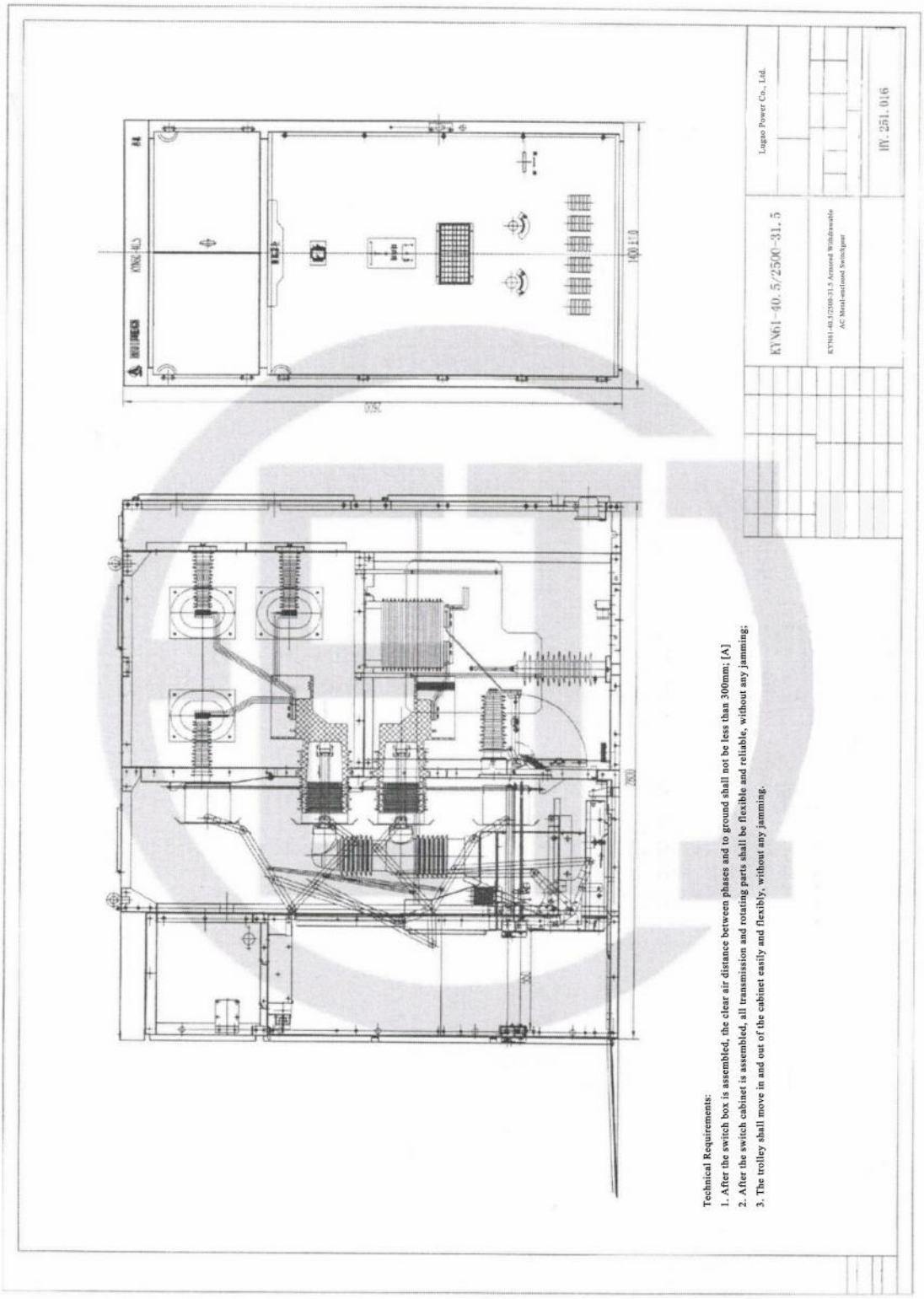
Oscilloscope number	21Q2637-S-024		Specified value
Operation sequence	O	-0.3 s-CO	
Closing time ms	/	38	35~70
Opening time ms	25	25	25~50

China National Center for Quality Supervision and Test of Electrical Apparatus Products	Test Report	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear

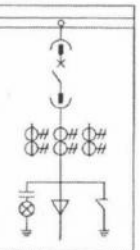
Appendix

No.	Contents	Serial number
1	Assembly drawing	HY.251.016
2	One-way permutation diagram	HY251.017

Assembly drawing	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear
	No.: HY251.016



One-way permutation diagram	KYN61-40.5/2500-31.5 Armored Withdrawable AC Metal-enclosed Switchgear
	No.: HY251.017

Main busbar TMY-2 (80*10) Rated voltage 40.5kV Rated current 2500A Operating voltage DC220V		
Factory serial number	G035	
Interval number		
Switchgear scheme number KYN60-40.5	006	
Branch bus TMY	2(80*10)	
Username	Prototype	
Switch cabinet dimensions (W * D * H)	1400*2800*2600	
Primary component model	Specification	Quantity
Circuit breaker ZN□-40.5/T2500-31.5(SEAC4)		1
Current transformer LZZBJ9-40.5 0.5/10P10	2500/5	3
Grounding switch JN22B-40.5/31.5-350(With sensor)		1
Contact box CTH-40.5/260*260*720/2500A		6
Insulating sleeve TG-40.5/220×290-525(Φ92×42)		6

Technical Requirements

1. Production Number: HYAC202103
2. Cabinet Color: RAL6033
3. Configuration includes main and branch busbars and grounding busbars
4. Total 1 unit

KYN61-40.5/2500-31.5	Lugao Power Co., Ltd.
Armored Withdrawable AC Metal-enclosed Switchgear	
One-way permutation diagram	HY251.017

The following is not part of the main text.

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3.The reportis invalid without signatures of persons for drawing up, proof-reading, reviewing and approval;
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2.In case there is no objection, please take back the samples within one month staring from the date of receiving the report, when the manufacturer is going to take back the samples, certificate for sample taking and along with the written approval for the report should be brought in presence, only then the samples could be taken back. On time due, the samples will be in the laboratory' s own disposal

本试验报告共　79　页	其中图　10　幅	照片　1　张
The test report is in total　79　pages	including　10　figures	and　1　photo

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