

Test Report

Report No.: 03-020-MS/E

Copy No.: 0

Contents: 123 sheets

Equipment under test: Three-pole vacuum circuit-breaker 3AH5215-6 (17.5 kV, 31.5 kA, 2500 A) with vacuum interrupters VS 17005L.

Manufacturer: Siemens AG, PTD M C PB1, 13623 Berlin

Client: Siemens AG, PTD M C R&D VCB 13, 13623 Berlin

Testing station: Siemens AG, Prüffeld der Schaltwerke, Berlin

Date of test: January 31 till February 19-2003

Applied test specifications:

IEC Publication 60694, edition 2.2, 2002-01

DIN EN 60694 (VDE 0670, Teil 1000), 2002-09

IEC Publication 62271-100, 1st edition, 2001-05

IEC Publication 60056, 4th edition, 1987

Tests performed: Short-time and peak withstand current tests:

Peak current: 82.7.5 kA

Short-time current: 32.1 kA - 3 s

Short-circuit making and breaking tests in test duties:

TD 4a: 81.4 kA up to 83.5 kA at 17.8 kV

TD 4b: 32.0 kA at 17.1 kV up to 18.2 kV

T100a: 33.1 kA up to 33.7 kA at 17.6 kV up to 17.7 kV, 36% ≤ dc ≤ 37%

T60: 18.7 kA up to 19.0 kA at 17.8 kV up to 18.3 kV

T30: 9.5 kA up to 9.7 kA at 18.6 kV up to 19.6 kV

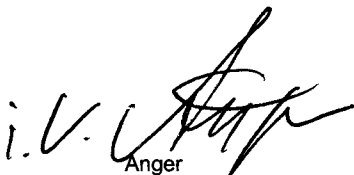
T10: 2.9 kA up to 3.2 kA at 17.6 kV up to 18.5 kV

Double-earth fault: 27.8 kA at 19.5 kV

Single-phase: 31.9 kA at 11.8 kV

Test results: The apparatus tested has passed the above indicated tests for a rated short-circuit current of 31.5 kA at a rated voltage of 17.5 kV without any objection. The results obtained and the proved performance comply with the requirements mentioned above.

Siemens Aktiengesellschaft
Prüffeld der Schaltwerke, Berlin


Anger

Manager of Prüffeld der Schaltwerke

Medium Voltage Division




Jäger

Manager of High-Power/High Voltage
Testing Department
Medium Voltage Division

Berlin, May 31-2003

The test results exclusively
relate to the items tested.



DAT-P-017/92-02

Technical Data of Test Object

Switching Device

Ratings assigned by the manufacturer

Test object: Three-pole vacuum circuit-breaker with vacuum interrupters VS 17005L
Type: 3AH5215-6
Manufacturer: Siemens AG, PTD M C PB1
Serial No.: 3AH5/00012907 **Year of manufacture:** 2003
Drawing No.: Drawings and part lists - see sheet 6

Rated voltage	17.5	kV
Rated lightning impulse withstand voltage	95	kV
Rated switching impulse withstand voltage	-	kV
Rated short-duration power-frequency withstand voltage	38	kV
Rated frequency	50	Hz
Rated normal current	2500	A
Rated peak withstand current	80	kA
Rated short-time withstand current	31.5	kA
Rated duration of short-circuit	3	s
Rated short-circuit breaking current		
Rated short-circuit current	31.5	kA
D.C. component	36	%
Rated short-circuit making current	80	kA
Rated transient recovery voltage		
Peak value	30	kV
Rate of rise	0.42	kV/ μ s
First-pole-to-clear-factor	1.5	
Rated operating sequence	O-0.3s-CO-3min-CO	
Arc extinguishing medium	vacuum	
Rated pressure (20 °C) (absolute)	< 0.01	Pa
Insulating medium	air	
Rated pressure / Minimum pressure (20 °C)	-	MPa
Driving mechanism		
Type of drive	spring/motor	
Rated voltage	110	V DC
Number of poles	3	
Number of units per pole	1	
Rated opening time	< 65	ms
Rated closing time	< 75	ms
Rated voltage of opening release	110	V DC
Rated voltage of closing release	110	V DC
Rated supply voltage	-	V DC
Rated frequency of supply voltage	-	Hz
Further specifications:		
Tube in pole R	S.-No.:	29
Tube in pole S	S.-No.:	32
Tube in pole T	S.-No.:	24

Essential characteristics: -

Remarks: -

Test Document

Report No.: 03-024-MS/E

Copy No.: 0

Contents: 120 sheets

Equipment under test: Three-pole vacuum circuit-breaker 3AH5215-6 (17.5 kV, 31.5 kA, 2500 A) with vacuum interrupters VS 17005L.

Manufacturer: Siemens AG, PTD M C PB1, 13623 Berlin

Client: Siemens AG, PTD M C R&D VCB 13, 13623 Berlin

Testing station: Siemens AG, Prüffeld der Schaltwerke, Berlin

Date of test: March 10 till 25-2003

Applied test specifications:

IEC Publication 60694, edition 2.2, 2002-01

DIN EN 60694 (VDE 0670, Teil 1000), 2002-09

IEC Publication 62271-100, 1st edition, 2001-05

Tests performed: Test-duty T60: 17.5 kA up to 17.7 kA at 17.1 kV up to 17.3 kV

Cable-charging current switching tests in test-duties:

CC2: 31.5 A up to 31.8 A at 17.5 kV up to 17.8 kV

CC1: 7.7 A up to 7.9 A at 17.9 kV up to 18.2 kV

Single capacitor bank current switching tests in test-duties:

BC2: 412.6 A up to 422.4 A at 17.9 kV up to 18.4 kV

BC1: 94.8 A up to 95.7 A at 17.9 kV up to 18.1 kV

Test results: The apparatus tested has passed the above indicated tests for a rated voltage of 17.5 kV without any objection. The results obtained and the proved performance comply with the requirements mentioned above.

Siemens Aktiengesellschaft
Prüffeld der Schaltwerke, Berlin


Anger

Manager of Prüffeld der Schaltwerke
Medium Voltage Division




Jäger

Manager of High-Power/High Voltage
Testing Department
Medium Voltage Division

Berlin, June 13-2003

The test results exclusively
relate to the items tested.



DAT-P-017/92-02

Technical Data of Test Object

Switching Device

Ratings assigned by the manufacturer

Test object: Three-pole vacuum circuit-breaker with vacuum interrupters VS 17005L
Type: 3AH5215-6
Manufacturer: Siemens AG, PTD M C PB1
Serial No.: 3AH5/00012907 **Year of manufacture:** 2003
Drawing No.: Drawings and part lists - see sheet 6

Rated voltage	17.5	kV
Rated lightning impulse withstand voltage	95	kV
Rated switching impulse withstand voltage	-	kV
Rated short-duration power-frequency withstand voltage	38	kV
Rated frequency	50	Hz
Rated normal current	2500	A
Rated peak withstand current	80	kA
Rated short-time withstand current	31.5	kA
Rated duration of short-circuit	3	s
Rated short-circuit breaking current		
Rated short-circuit current	31.5	kA
D.C. component	36	%
Rated short-circuit making current	80	kA
Rated transient recovery voltage		
Peak value	30	kV
Rate of rise	0.42	kV/μs
First-pole-to-clear-factor	1.5	
Rated operating sequence	O-0.3s-CO-3min-CO	
Arc extinguishing medium	vacuum	
Rated pressure (20 °C) (absolute)	< 0.01	Pa
Insulating medium	air	
Rated pressure / Minimum pressure (20 °C)	-	MPa
Driving mechanism		
Type of drive	spring/motor	
Rated voltage	110	V DC
Number of poles	3	
Number of units per pole	1	
Rated opening time	< 65	ms
Rated closing time	< 75	ms
Rated voltage of opening release	110	V DC
Rated voltage of closing release	110	V DC
Rated supply voltage	-	V DC
Rated frequency of supply voltage	-	Hz
Further specifications:		
Tube in pole R	S.-No.:	104
Tube in pole S	S.-No.:	28
Tube in pole T	S.-No.:	35

Essential characteristics: -

Remarks: -

Test Document

Report No.: 03-039-MS/E

Copy No.: 0

Contents: 38 sheets

Equipment under test: Three-pole vacuum circuit-breaker 3AH5215-6 (17.5 kV, 31.5 kA, 2500 A) with vacuum interrupters VS 17005L

Manufacturer: Siemens AG, PTD M C PB1, 13623 Berlin

Client: Siemens AG, PTD M C R&D VCB 13, 13623 Berlin

Testing station: Siemens AG, Prüffeld der Schaltwerke, Berlin

Date of test: June 10 till 13 -2003

Applied test specifications:

IEC Publication 60694, edition 2.2, 2002-01

DIN EN 60694 (VDE 0670, Teil 1000), 2002-09

IEC Publication 62271-100, 1st edition, 2001-05

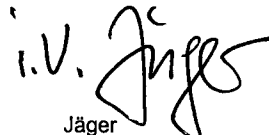
Tests performed: Out-of-phase making and breaking tests:
Test-duty OP1 : 2.4 kA at 26.1 kV up to 26.3 kV,
Test-duty OP2 : 8.4 kA up to 8.6 kA at 25.7 kV up to 29.3 kV

Test results: The apparatus tested has passed the above indicated tests without any objection. The results obtained and the proved performance comply with the requirements mentioned above.

Siemens Aktiengesellschaft
Prüffeld der Schaltwerke, Berlin


Anger
Manager of Prüffeld der Schaltwerke
Medium Voltage Division




Jäger
Manager of High-Power/High Voltage
Testing Department
Medium Voltage Division

Berlin, August 18-2003

The test results exclusively
relate to the items tested.



DAT-P-017/92-02

Technical Data of Test Object

Switching Device

Ratings assigned by the manufacturer

Test object: Three-pole vacuum circuit-breaker with vacuum interrupters VS 17005L
Type: 3AH5215-6
Manufacturer: Siemens AG, PTD M C PB1
Serial No.: 3AH5/00012907 **Year of manufacture:** 2003
Drawing No.: Drawings and part lists - see sheet 6

Rated voltage	17.5	kV
Rated lightning impulse withstand voltage	95	kV
Rated switching impulse withstand voltage	-	kV
Rated short-duration power-frequency withstand voltage	38	kV
Rated frequency	50	Hz
Rated normal current	2500	A
Rated peak withstand current	80	kA
Rated short-time withstand current	31.5	kA
Rated duration of short-circuit	3	s
Rated short-circuit breaking current		
Rated short-circuit current	31.5	kA
D.C. component	36	%
Rated short-circuit making current	80	kA
Rated transient recovery voltage		
Peak value	30	kV
Rate of rise	0.42	kV/ μ s
First-pole-to-clear-factor	1.5	
Rated operating sequence	O-0.3s-CO-3min-CO	
Arc extinguishing medium	vacuum	
Rated pressure (20 °C) (absolute)	< 0.01	Pa
Insulating medium	air	
Rated pressure / Minimum pressure (20 °C)	-	MPa
Driving mechanism		
Type of drive	spring/motor	
Rated voltage	110	V DC
Number of poles	3	
Number of units per pole	1	
Rated opening time	< 65	ms
Rated closing time	< 75	ms
Rated voltage of opening release	110	V DC
Rated voltage of closing release	110	V DC
Rated supply voltage	-	V DC
Rated frequency of supply voltage	-	Hz
Further specifications:		
Tube in pole L1	S.-No.:	104
Tube in pole L2	S.-No.:	28
Tube in pole L3	S.-No.:	35

Essential characteristics: -

Remarks: -