

JDEVS

HIGH VOLTAGE ENGINEERING CENTER

**TECHNICAL
DOCUMENTS**

Date of issue: 4/2/2020

Report Number: 98-HV-20/22

Test Report

Assigned sample number	98-HV-20/22
Object/product name	Isolating spark gap
Object/product serial number	-
Manufacturer	Tajhizat-e System-e Zamin Co.
Test date	6/10/2019
Client	Tajhizat-e System-e Zamin Co.
Client address & phone number	Apt. 4, 581, Ayat Int., Damavand Ave., Tehran Phone No.: 021-77959032

Requested Test	1- Isolation resistance 2- Withstand voltage: 1. Power frequency withstand voltage 2. DC withstand voltage 3- Rated impulse sparkover voltage
Test Conforming Standards	IEC 62561-3 clauses 6.2.1, 6.2.2, & 6.2.3
Test Procedure	This test report is issued by JDEVS following client guidelines. The results are shown in the report of proving tests attached. The values obtained and the general performances are considered to comply with the above mentioned Standard and to justify the ratings assigned by the manufacturer.

NOTE:

- The report applies only to the tested sample object. The responsibility for conformity of any object having the same design as the tested one, rests with the manufacturer.
- The certainty level of this test considering $K=2$ as coverage factor for normal distribution function will be 95%.
- Only integral reproduction of this report or reproductions of this page accompanied by any paper(s) on which are stated the endorsed rating of the object tested, are permitted without written permission from JDEVS.
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Prepared (Technical manager):

Approved (Lab seal):



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Laboratory environmental factors during test according to reference standards/test procedure are:
 Temperature: 23.3 °C Humidity: 20.5% Pressure: 851 mbar

Results and observations report**Spark gap technical characteristics**

Table 1 – Technical characteristics of the specimen

Sparkover voltage	1.4 kV	Rated power frequency withstand voltage (U_{WAC})	500 Vac
Rated impulse sparkover ($U_{r imp}$)	2.5 kV	Rated DC withstand voltage	700 Vdc
Lightning impulse current (I_{imp})	100 kA	Ingress Protection code	IP66

The tested isolating spark gap lacks documentations and serial number; hence, the above technical characteristics are mentioned as claimed by the manufacturer.

1. Isolation resistance

The test is conducted with a d.c. voltage of 0,5 times the rated withstand voltage up to a maximum of 500 V.

The resistance shall be measured after 30 s of applying the test voltage.

The specimen is deemed to have passed the test if the resistance is equal or greater than 100 M Ω .

Table 2 - Result of isolation resistance measurement

Test specimen	Applied voltage (v)	Isolation resistance (G Ω)	Result
98-HV-20/22	500	>10	Passed

2. Withstand voltage

The rated withstand voltage shall be tested according to the value declared by the manufacturer.

2.1 Power frequency withstand voltage

The rated power frequency withstand voltage is tested by applying an a.c. voltage at the terminals of the ISG. The voltage is increased continuously at a rate of 100 V/s with a nominal frequency of 50 Hz or 60 Hz until the r.m.s. value as declared by the manufacturer is reached and this is maintained for a time of 60 s \pm 1 s.

During the application of the test voltage the ISG shall not spark over, or conduct a leakage current

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exceeding 1 mA.

The specimens are deemed to have passed the test if no signs of cracks or punctures appear on the enclosures.

Table 3 – Result of power frequency withstand test

Test specimen	Test voltage (V r.m.s)	Duration (s)	Leakage current (mA)	Result
98-HV-20/22	500	60	0.12	Passed

2.2 DC withstand voltage

The rated d.c. withstand voltage shall be tested by applying a d.c. voltage at the terminals of the ISG. The voltage shall be increased continuously at a rate of 100 V/s until the value as declared by the manufacturer is reached and this is maintained for a time of $60 \text{ s} \pm 1 \text{ s}$.

During the application of the test voltage the ISG shall not spark over, or conduct a leakage current exceeding 1 mA.

The specimens are deemed to have passed the test if no signs of cracks or punctures appear on the enclosures.

Table 4 – Result of DC withstand voltage test

Test specimen	Test voltage (V dc)	Duration (s)	Leakage current (μA)	Result
98-HV-20/22	700	60	< 10	Passed

3. Rated impulse sparkover voltage

An impulse voltage 1.2/50 μs with a peak value of the declared impulse sparkover voltage shall be applied at the terminals of the ISG. The test is performed with five surges of positive and negative polarity and the ISG has to spark over at each test impulse.

The specimens are deemed to have passed the test if they have operated at each test impulse and no signs of cracks or punctures appear on the enclosures.

Table 5 – Result of rated impulse sparkover voltage test

Test specimen	Test voltage (kV peak)	Polarity of the impulse	Number of impulses	Result
98-HV-20/22	2.5	Positive	5	Passed
		Negative	5	Passed

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Fig. 1 – Test specimen

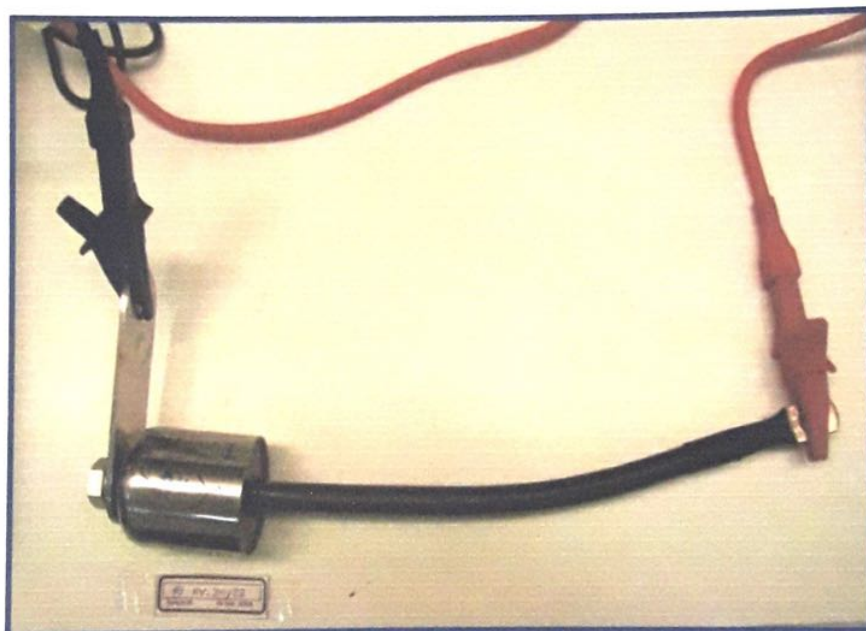


Fig. 2 – The Megger test



Fig. 3 – The circuit of DC withstand voltage test



Fig. 4 - The circuit of Rated impulse sparkover voltage



Fig. 5.1 – The specimen after the tests were carried out

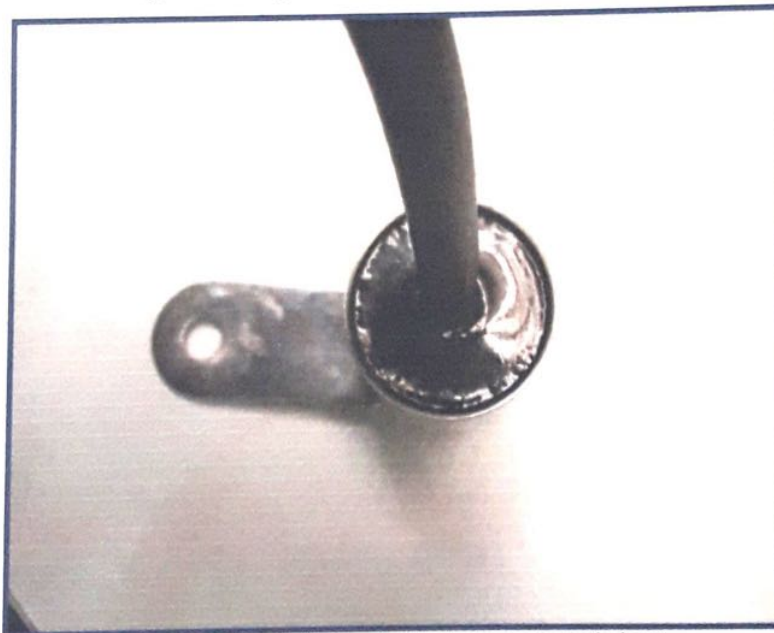


Fig. 5.2 - The specimen after the tests were carried out

This test has been implemented using the mentioned test standard and conform to all the client requirements.
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Client supervisors: Partoyi (Eng.), Parsayi (Eng.)

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پیوست: دارد



جمهوری اسلامی ایران

برق



۱۳۵۱
واحد علم و صنعت
مرکز مهندسی فشارقوی

جناب آقای ناصر پارسایی
مدیر عامل محترم شرکت تجهیزات سیستم زمین
موضوع: ارسال گزارش آزمون

با سلام و احترام

به پیوست یک نسخه گزارش آزمون انجام گرفته توسط آزمایشگاه فشارقوی جهاد دانشگاهی علم و صنعت مطابق با جدول زیر خدمتتان ارسال می گردد.

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۱	98-HV-20/22	اسپارک گپ	4/2/2020

جعفر جعفری بهنام
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