

Spark Tester



High voltage detection of faults in the insulation or sheathing layers of electric cables

DIELECTRIC TESTING WITH THE SPARK-TEST METHOD _

In-line fault testing on single wires and cables during the extrusion or rewinding process has become standard procedure today. ZUMBACH Spark Testers can be used to test the most diverse range of cable products as per international standards, like IEC 62230, UL 1581, UL 2556 and other. Integrated ports allow communication for easy integration with quality control systems (e.g. USYS).

According to various applications, ZUMBACH offers Mains Frequency, Direct Current and High-Frequency spark testers. Typically they are installed at the end of the cooling trough in extrusion lines or in rewinding processes and detect the smallest defects and bare patches in the insulation or sheathing of electrical wires and cables.

Main features

- Wide choice of test voltages:
 4...15 kVac/3 kHz, 5...28 kVdc, 15/25/40 kVac
- Fault detection according to the requirements of UL 1581 and IEC 62230
- Wide range of electrode types: bead chain, ring electrodes made of bronze or carbon brushes for tubes, flat electrodes for flat/ribbon cables
- Electrodes for product diameters up to 250 mm (9.84 in.)
- Versions with one of the following interfaces (integrated within the electrode unit):
 - RS-232/-422/-485 for communication with USYS 200, USYS IPC 1e/2e or Host
 - Profibus DP
 - Ethernet TCP/IP
 - Profinet IO
 - EtherNet/IP
- Digital / analogue inputs / outputs as well as Ethernet service port are standard to all models
- Additional service interface (Ethernet) for configuration
- Encoder input to capture the fault position
- Emergency stop input
- Operating mode EXTRUSION or REWINDING: after a fault, the fault detection will be continued or the test voltage is stopped.
- Pinhole / bare patch determination

AST L – MAINS AND LOW FREQUENCY SPARK TESTER

AST L spark testers from ZUMBACH are available in three different design sizes for cable diameters up to 50, 90 or 250 mm (1.97, 3.54 or 9.84 in.). The test is carried out with sinusoidal alternating voltage and mains frequency or low frequency, adjustable from 50 up to 120 Hz. For smaller cable diameters, the test frequency can be increased, according to certain standards, in order to allow higher line speeds with the same electrode length.

All AST L models are equipped with bead chain electrodes according to UL 1581.

Max. line speeds at 50 Hz

Electro	Electrode length		52230	UL 1581, UL 2556		
mm	inch	m/min	ft/min	m/min	ft/min	
200	7.87	240	787	66.6	219	
300	11.81	360	1181	100.0	328	
400	15.75	480	1575	133.3	437	
1000	39.15	1200	3937	333.0	1092	

UL 1581, UL 2556: At a higher test frequency, the line speed increases proportionally.



Main data

Model	AST L 15A/25A.50	AST L 15A/25A.90	AST L 15A/25A/40A.250		
Max. product diameter	50 mm (1.97 in.)	90 mm (3.54 in.)	250 mm (9.84 in.)		
Output voltage	215 kV / 225 kV	215 kV / 225 kV	215 kV / 225 kV / 240 kV		
Test frequency	50120 Hz adjustable				
Power supply	100127 Vac, 200240 Vac, automatic switch over between ranges				

AST H15A - HIGH FREQUENCY SPARK TESTER _

AST H 15A spark testers detect insulation faults on cables of up to 30 mm (1.18 in.) outside diameter. These high frequency models are equipped with bead chain electrodes according to UL 1581 / UL 2556. A suitable floor stand, available as an option, allows for quick and easy installation in existing production lines.

Technical main data

Max. product diameter	30 mm (1.18 in.)
Output voltage	0.515 kVac
Frequency	3 kHz
Power supply	Universal input 100240 VAC, 4563 Hz

Maximum line speeds

Electrode length		IEC 62230		UL 1581 / 2556	
mm	inch	m/min	ft/min	m/min	ft/min
40	1.57	2400	7874	666	2185
125	4.92	7500	24606	2084	6837



DST 28A - DIRECT CURRENT SPARK TESTER _____

Thanks to the variety of electrodes such as bead chain, ring and flat electrodes made of bronze or carbon, the spark testers of the DST 28A series are universally usable. In addition to the testing of conventional cables, these DC voltage models are especially suitable for ribbon cables and for fault detection on plastic pipes of all kinds, including corrugated tubes. A suitable floor stand, available as an option, allows a quick and easy installation in existing production lines.



Technical main data

Max. product diameter	ø 30 mm (1.18 in.) with bead chain electrodes ø 40 mm (1.57 in.) or 2075 mm (.79 x 2.95 in.) with ring electrodes 60 x 30 mm (2.36 x 1.18 in.) or 150 x 30 mm (5.9 x 1.18 in.) with flat electrode
Output voltage	128 kVdc
Polarity of high voltage output	Negative
Power supply	Universal input 100240 VAC, 4563 Hz

Maximum line speeds

Electrode length		IEC 62230		UL 1581 / 2556	
mm	inch	m/min	ft/min	m/min	ft/min
40	1.57	2400	7874	N/A	N/A
125	4.92	7500	24606	37000-3700*	121391–12139*

^{*} Depends on the load capacitance, values given are for 100 pF to 1 nF

DST 10 – DIRECT CURRENT SPARK TESTER _

ZUMBACH's new DST 10 serie is a direct current spark tester designed to detect faults in insulation or sheathing layers of electrical cables.

Technical main data

Output voltage	0.510 kVdc
Max. product	Bead chain electrodes: 30 mm (1.18 in.),
diameter	Flat electrode: 30 x 30 mm (1.18 x 1.18 in.)
Polarity of high	Negative
voltage output	
Accuracy of voltage calibration	Better than 4% at 5 and 10 kV, with 100 M Ω load resistance (accuracy limit +/- 5% of the indicated value given in IEC 62230)
Power supply	Universal input 100240 VAC, 4563 Hz
Dimensions (wxdxh)	300 x 350 x 190 mm (11.8 x 13.8 x 7.5 in.)



Maximum line speeds

Electrode length		IEC 62230		UL 1581 / 2556	
mm	inch	m/min	ft/min	m/min	ft/min
102	4	6120	20079	30192-3019*	99056-9905*

^{*} Depends on the load capacitance, values given are for 100 pF to 1 nF

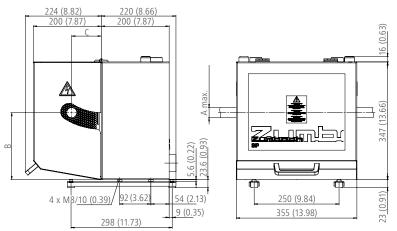
VISU-TOUCH - DISPLAY AND CONTROL UNIT (OPTION)

This unit allows the manual control of the electrode unit. The VISU-Touch can be affixed on the electrode unit or used separately. For applications where the spark tester is controlled via an interface, the VISU-Touch can be used as a local display.

- Graphic backlit display, signalization and keyboard
- Power supply from spark tester via Ethernet (PoE)
- Ethernet network cable cat. 6 S/FTP with RJ45 connectors



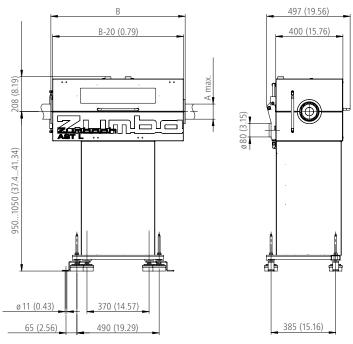
AST H15A - DST 28A



Order number	Αø	В	C	
AST.270.03	30 (1.18)	197 (7.76)	87 (3.43)	
DST.280.03041_	30 (1.18)	197 (7.76)	87 (3.43)	
DST.280.03121_	30 (1.18)	197 (7.76)	87 (3.43)	
DST.280.04022_	40 (1.57)	200 (7.87)	95 (3.74)	
DST.280.04023_	40 (1.57)	200 (7.87)	95 (3.74)	
DST.280.07022_	75* (2.95)	200 (7.87)	95 (3.74)	
DST.280.07023_	75* (2.95)	200 (7.87)	95 (3.74)	
DST.280.03044_	30x60	200 (7 07)	02 /2 (2)	
	(1.18x2.36)	200 (7.87)	92 (3.62)	
DCT 200 02045	30x60	200 (7 07)	02/2(2)	
DS1.280.03045_	(1.18x2.36)	200 (7.87)	92 (3.62)	
	AST.270.03 DST.280.03041 DST.280.03121 DST.280.04022 DST.280.04023 DST.280.07022 DST.280.07022	AST.270.03	AST.270.03	

min. 20 (0.79)

AST 15A.50 - AST 15A.90 / AST 25A.50 - AST 25A.90 / AST 40A.250



Model	Order number	A max. ø	В
AST.15A.50.200UL	AST.261.05201_	50 (1.97)	600 (23.62)
AST.15A.50.400UL	AST.261.05401_	50 (1.97)	800 (31.50)
AST.15A.50.1000UL	AST.261.05991_	50 (1.97)	1400 (55.12)
AST.15A.90.200UL	AST.261.09201_	90 (3.54)	800 (31.50)
AST.15A.90.300UL	AST.261.09301_	90 (3.54)	800 (31.50)
AST.25A.50.200UL	AST.262.05201_	50 (1.97)	600 (23.62)
AST.25A.50.400UL	AST.262.05401_	50 (1.97)	800 (31.50)
AST.25A.50.1000UL	AST.262.05991_	50 (1.97)	1400 (55.12)
AST.25A.90.200UL	AST.262.09201_	90 (3.54)	800 (31.50)
AST.25A.90.300UL	AST.262.09301_	90 (3.54)	800 (31.50)
AST.15A.250.200UL	AST.261.25201_	250 (9.84)	Separate drwg.
AST.25A.250.200UL	AST.262.25201_	250 (9.84)	Separate drwg.
AST.40A.250.200UL	AST.263.25201_	250 (9.84)	Separate drwg.

The housings for AST.15A/25A/40A.250.200UL have different dimensions.

Please ask for detailed dimensional drawings.

• Dimensions in mm (inch)
• Technical specifications are subject to change without notice

CALIBRATOR SP 40A

The CALIBRATOR serves to calibrate and test Spark Testers up to 40 kV used for electrical testing of cable jackets and conductor insulations or tubes.

The following parameters of the Spark Tester can be tested:

- Test Voltage characteristics: DC voltage up to 40 kV, AC voltage (50/60 Hz) up to 40 kV, AC voltage high frequency (up to 4 kHz)
- Short-circuit current: up to 15 mArms DC, AC and impulse
- Fault detection: with an artificial fault simulator, the CALIBRATOR SP 40A generates an artificial fault according to the standard IEC 62230 for checking the function of the fault detector.



_ ACCESSORIES _

Floor stand ST 1 For AST H15A and DST 10/28A.



WORLDWIDE CUSTOMER SERVICE AND SALES OFFICES



Headquarter: Zumbach Electronic AG P.O. Box CH-2552 Orpund SWITZERLAND Tel.: +41 (0)32 356 04 00 sales@zumbach.ch

BENELUX, sales@zumbach.be CHINA P.R., sales@zumbach.com.cn CZECH REPUBLIC, jvorlicek@zumbach.cz FRANCE, ventes@zumbach.com.fr GERMANY, verkauf@zumbach.de INDIA, sales@zumbachindia.com ITALY, zumit@zumbach.it SPAIN, gestion@zumbach.es TAIWAN, info@zumbach.tw UNITED KINGDOM, sales@zumbach.co.uk North American Headquarter: Zumbach Electronics Corp. 140 Kisco Avenue Mount Kisco, NY 10549-1407 Phone +1 914 241 7080 USA

sales@zumbach.com



[►] The housing for the DST 28A.FB30.150KEBB have different dimensions. Please ask for detailed dimensional drawings.