

# OTD Oil Tan Delta Oil Tester



- **NEW OTD - Oil Tan Delta tester measures Tan Delta, Relative Permittivity and Resistivity of insulating oils**
- **Calibration certified to ISO 17025**
- **Fully automated standard and user defined tests - Supports all international standards**
- **Integrated test cell heating and cooling systems**
- **Efficient oil fill and integrated automated oil drain facility**
- **IEC 60247 Innovative Test Cell - easy to assemble and clean**
- **Stores up to 50 records on-board and download to PC**
- **Compact and lightweight (22 kg / 48 lbs 8 oz)**

## DESCRIPTION

A new addition to the comprehensive range of Megger Oil Test Sets, the OTD measures Tan Delta, resistivity and relative permittivity of insulating oils.

The OTD is a fully automated tester and comes loaded with a set of international test standards:

- IEC 60247:2004
- IEC 61620:1998
- ASTM D924-08
- ASTM D1169:2002
- BS 5737:1979
- JIS C2101:1999
- VDE 0380-2:2005\_01
- IS 6262:1971
- IS 6103:1971

As well as the international set of standards, the OTD supports up to six customer configurable test sequences.

Productivity in the laboratory is maximised, with the focus on reducing the test cycle time by fan cooling and inductive heating, together with an oil drain facility, negating the need to move the oil vessel.

The OTD has a 12 key alpha-numeric keypad to facilitate entry of test ID, filenames, notes, etc.

Test results are identified by a test ID and are time and date stamped. Megger's asset and data management software, PowerDB Lite, included at no extra cost, provides a tool for downloading results via the USB interface, while an internal printer provides hard copy results. Ink based printout ensures durability at all temperatures.

User safety is paramount and Megger have designed independent, dual redundant high voltage cut-off circuitry to ensure safety. During a test, press any button on the keypad to remove the high voltage immediately and abort the test.

The transparent lid provides ample visibility within the chamber.

## APPLICATION

Monitoring and maintenance of oil quality is essential to ensure the reliable operation of oil filled electrical equipment. Codes of practice have been established in many countries that include tests for Tan Delta, Relative Permittivity and Resistivity.

Typical applications :

- New oil reception - quality test
- Regeneration of oil - quality test
- Monitoring and maintenance of oil quality in oil filled electrical equipment
  - Transformers
  - Switch Gear
  - HV Cables

**FEATURES AND BENEFITS**

- Keypad and a tabular designed user interface for efficient navigation and control
- Bright 3.5" colour display for ease of use
- Fully automated test sequences
  - 16 pre-installed international standards
  - 6 user programmable sequences
- 14 supported languages on the display
- Test Cell heating up to 110 °C with uniformity across the cell - IEC 60247
- Oil drain facility - manual and fully automated micro processor controlled
- Minimal Test Cell components - easy to assemble and disassemble
- Safe operation with dual redundant micro switches
- Internal impact printer - automatically prints at the end of a test or manually if preferred
- USB download of stored results to PowerDB

**ACCESSORIES**

- Test Cell
- OTD-CC (Calibration Checker)

**SPECIFICATIONS**

**Tan Delta**

<b>Measurement range</b>	1x10 <sup>-6</sup> to 4
<b>Resolution</b>	1x10 <sup>-6</sup>
<b>Accuracy</b>	± 1% reading ± 1 x 10 <sup>-5</sup>

**Relative Permittivity**

<b>Measurement Range</b>	1 to 30
<b>Resolution</b>	0.01
<b>Accuracy</b>	± 0.5%

**Resistivity Measurement**

<b>Range</b>	2.5 MΩm to 100 TΩm
<b>Resolution</b>	0.01

**Test Temperature**

<b>Range</b>	10 °C to 110 °C
<b>Resolution</b>	0.1 °C
<b>Accuracy</b>	± 1 °C

**Test Voltage**

<b>AC Range</b>	500 V to 2000 V 55 Hz
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<b>DC Range</b>	125 V to 500 V
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**Quasi Rectangular Square Wave**

	100 V 0.3 Hz
<b>Resolution</b>	1 V
<b>Accuracy</b>	±2% ±1 V
<b>Power Supply</b>	100 V to 240 V 50 Hz to 60 Hz 300 VA

<b>Results Frequency</b>	tan δ (Sin) 40 Hz - 65 Hz Quasi 100 V 0.3 Hz
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**Environmental Specifications**

<b>Operating Temperature Range</b>	0 °C to +50 °C (32 °F to 122 °F)
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<b>Storage Temperature Range</b>	-20 °C to +55 °C (4 °F to 131 °F)
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<b>Humidity</b>	90% non-condensing
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<b>Dimensions</b>	580 x 420 x 290 mm (22.8 x 16.5 x 11.5 inch)
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<b>Weight</b>	Instrument 22 kg (48 lb 8 oz)
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<b>Interface</b>	USB Type B
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<b>IP Rating</b>	IP30
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<b>EMC</b>	IEC 61326
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<b>Maximum Altitude</b>	2000 m (6560 ft)
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**Test Cell**

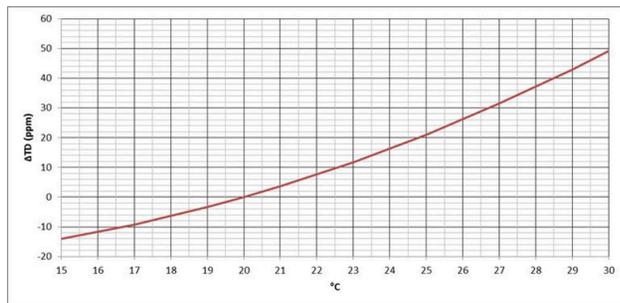
**Capacitance Range** 70 pf ( $\pm 3$  pf)  
**Weight** 2.7 kg (5 lb 14 oz)  
**Material** 316L Stainless Steel / Quartz Glass

For detailed measurement range and environmental conditions for accuracy values see the user guide.

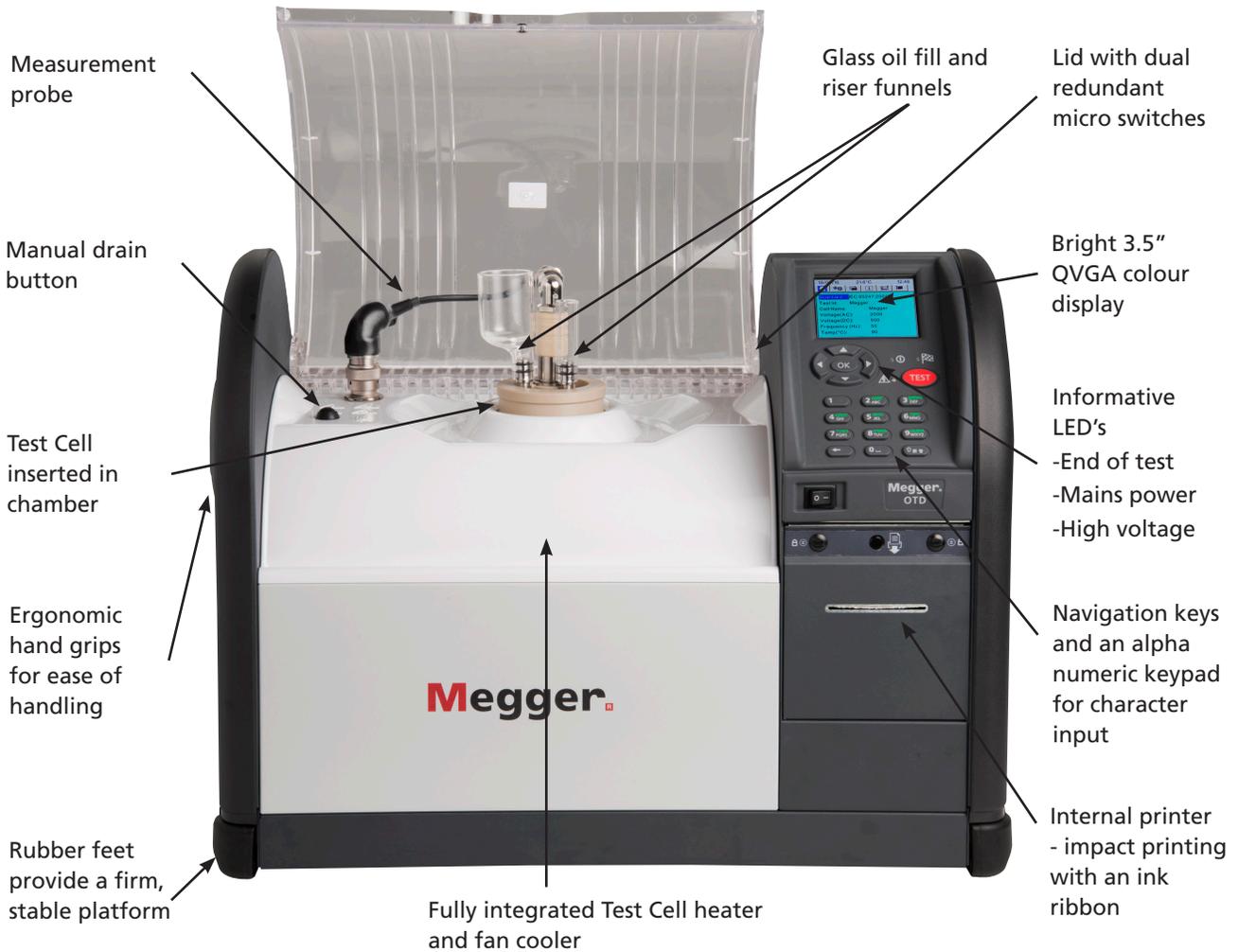
**Calibration Checker**

Resistor	Resistivity C0= 70 pF	Nominal Tan Delta (T.D.) $\epsilon_r$ (70pf) = 2.86		
		50 Hz	55 Hz	60 Hz
5 G $\Omega$	39.55 G $\Omega$ m	0.003183	0.002894	0.002653
500 M $\Omega$	3.955 G $\Omega$ m	0.031831	0.028937	0.026526
50 M $\Omega$	395.5 M $\Omega$ m	0.318310	0.289373	0.265258
5 M $\Omega$	39.55 M $\Omega$ m	3.183099	2.893726	2.652582

**Capacitance** 200 pF  $\pm 1\%$   
**Tan Delta Accuracy**  $\pm 2\%$  from calibrated value



**Resistivity Accuracy**  $\pm 1\%$  from calibrated value  
**Operating Temperature Range** +15 °C - +30 °C (+59 °F to +86 °F)  
**Storage Temperature Range** -20 °C - +50 °C (-4 °F to +122 °F)  
**Humidity** < 60% RH  
**Dimensions** 190 x 120 x 250 (mm)  
 (7.5 x 4.75 x 9.8 inch)  
**Weight** 1.5 kg (3 lb 5 oz)  
**Maximum altitude** 2000 m (6560 ft)  
**Safety** IEC61010



Fully assembled Test Cell in the assembly stand with glass fill and riser funnels.

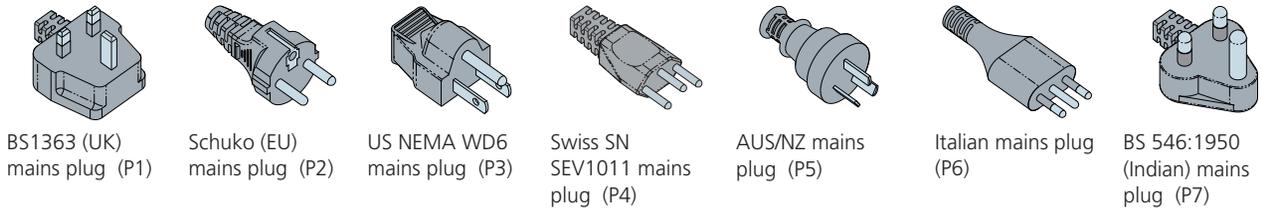


Tabular designed user interface for efficient navigation and control. Easy text input and concise display of test and configuration information.



OTD CC Calibration Checker enables accurate customer verification of Tan Delta and Resistivity values.

OTD CC provided in a toughened transport case. Available as an optional accessory.



BS1363 (UK) mains plug (P1)

Schuko (EU) mains plug (P2)

US NEMA WD6 mains plug (P3)

Swiss SN SEV1011 mains plug (P4)

AUS/NZ mains plug (P5)

Italian mains plug (P6)

BS 546:1950 (Indian) mains plug (P7)

**ORDERING INFORMATION**

Description	Order Code	Description	Order Code
<b>Language group 1 - English - French - German - Dutch</b>		<b>Language group 5 - English - Chinese - Japanese - Korean</b>	
OTD-LG1-P1 - BS1363 (UK) mains plug	1006-346	OTD-LG5-P1 - BS1363 (UK) mains plug	1006-360
OTD-LG1-P2 - Schuko (EU) mains plug	1006-347	OTD-LG5-P2 - Schuko (EU) mains plug	1006-361
OTD-LG1-P4 - Swiss SN SEV1011 mains plug	1006-348	OTD-LG5-P3 - US NEMA WD6 mains plug	1006-362
OTD-LG1-P5 - AUS/NZ mains plug	1006-349	OTD-LG5-P8 - BS1363 (UK) mains plug and US NEMA WD6 mains plug	1006-363
<b>Language group 2 - English - Spanish - Italian - Portuguese</b>		<b>Language group 6 - English - Hungarian - Romanian - Russian</b>	
OTD-LG2-P1 - BS1363 (UK) mains plug	1006-350	OTD-LG6-P2 - Schuko (EU) mains plug	1006-364
OTD-LG2-P2 - Schuko (EU) mains plug	1006-351		
OTD-LG2-P3 - US NEMA WD6 mains plug	1006-352	<b>Language group 7 - English - Finnish - Norwegian - Swedish</b>	
OTD-LG2-P6 - Italian mains plug	1006-353	OTD-LG7-P2 - Schuko (EU) mains plug	1006-365
<b>Language group 3 - English - Arabic - Turkish - French</b>		<b>Included items</b>	
OTD-LG3-P1 - BS1363 (UK) mains plug	1006-354	OTD test cell with carry case	
OTD-LG3-P2 - Schuko (EU) mains plug	1006-355	Product CD	
OTD-LG3-P3 - US NEMA WD6 mains plug	1006-356	Mains lead	
OTD-LG3-P7 - BS 546:1950 (Indian) mains plug	1006-357	USB cable	
<b>Language group 4 - English - Czech - Slovak - Polish</b>		Test cell probe	
OTD-LG4-P1 - BS1363 (UK) mains plug	1006-358	Drain hose	
OTD-LG4-P2 - Schuko (EU) mains plug	1006-359	Printer paper	
		Printer Ribbon	



OTD Test Cell in a toughened transport case. Provided as standard with the OTD instrument. This test cell contains 32 components making it easy to clean and assemble.

### ORDERING INFORMATION

#### Optional accessories

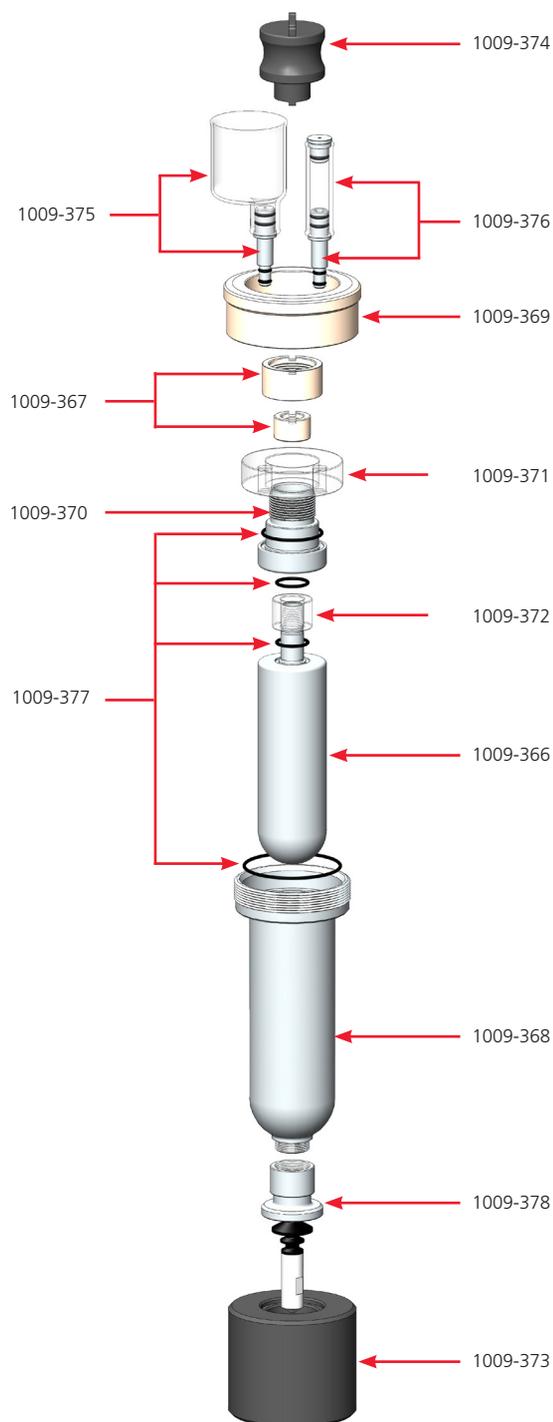
OTD test cell with carry case	1008-293
OTD-CC (Calibration Checker)	1008-291
Printer paper (20 rolls)	1008-030
Printer Ribbon Cassette	25995-002
OTD ISO17025 (UKAS) Calibration Certificate	1010-991

#### OTD instrument accessories

Oil drain hose	1009-363
Test cell probe	1009-364

#### OTD test cell accessories

Test cell carry case	1009-365
Inner electrode	1009-366
Outer electrode	1009-368
Guard electrode	1009-370
Guard insulator (glass)	1009-371
Measure insulator (glass)	1009-372
Sight (glass) and riser pipe	1009-376
Funnel (glass) and filler pipe	1009-375
O-ring kit	1009-377
Drain valve	1009-378
Captive nut	1009-369
Inner nut and Guard nut	1009-367
Test Cell Stand	1009-373
Test Cell Key	1009-374



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