



GlobeCore

CATALOG

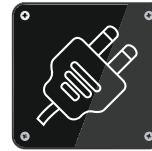
INSTRUMENTS AND
EQUIPMENT FOR DIAGNOSTIC
EVALUATION OF TRANSFORMER
OIL

Poltava 2025

Monitoring the transformer oil quality plays a vital role in overall evaluation of transformer status. In addition to its role as an insulation and a coolant, oil also serves as an information medium. This information may be related to the condition of another critical component — cellulose which influences the transformer operability and service life.

GlobeCore diagnostic evaluation equipment provides important and timely information needed to maintain the reliable and safe operation of the entire transformer fleet.

MAIN ADVANTAGES OF EQUIPMENT



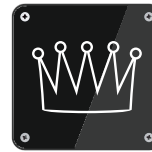
Low power consumption



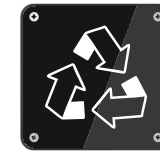
Semi-automatic and automatic



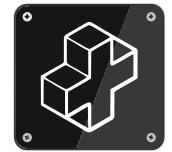
Fast and accurate diagnostic evaluation



Exclusiveness



Continuous monitoring



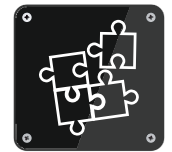
Transformer care



Competitive price



Reliability



Ease of operation

GlobeCore, Sadovskogo, 14
Poltava, Ukraine, 36034
Tel: +380934869440
www.globecore.com

TOR-1

TOR-1 is an express tester designed to determine the moisture content and the temperature of transformer oil. In a best-case scenario, standard laboratory tests take a day, consume a great deal of human and financial resources in terms of time, and involve the high cost of services. The use of TOR-1 allows testing and analyzing the transformer oil within the shortest possible time and making a quick decision in the field near the transformer.



Parameter

Value

The number of oil moisture measurement and indication systems	1
Operating range, aw (water activity (aw))	0...1
Operating range of dissolved water content measurement, ppm	0...100
Accuracy (water activity)	±3 %
Accuracy (moisture content)	±10 % or ±10 ppm
Temperature measurement	yes
Operating medium temperature, °C	0...55
Power requirement, W	10
Single phase 50 - 60 Hz AC power supply voltage, V	100-260
Dimensions, mm, not more than	
-length	190
-width	255
-height	365
Weight, kg, not more than	5.9

TOR-2

TOR-2 transformer oil express tester is designed to determine the moisture content, the temperature, and the hydrogen content in insulating oils. TOR-2 is an express tester. In a best-case scenario, standard laboratory tests take a day, consume a great deal of human and financial resources in terms of time, and involve the high cost of services. The use of TOR-2 allows testing and analyzing the transformer oil within the shortest possible time and making a quick decision in the field near the transformer



Parameter	Value
Moisture measurement data	
Operating range, aw (water activity (aw))	0...1
Accuracy (water activity)	±3 %
Accuracy (moisture content)	±10 % or ±10 ppm
Temperature measurement	yes
Operating medium temperature, °C	0...55
Hydrogen measurement data	
Measurement range, ppm	25-5000
Precision	20% of indication, or 25 ppm
Repeatability	10% of indication, or 15 ppm
Response time	<60 min (90% of step change)
Cross-sensitivity:	Less than 2% of crosssensitivity to other gases (CO,CO ₂ , hydrocarbons)
Operating medium temperature, °C	0...55
Power requirement, W	60
Single phase 50 - 60 Hz AC power supply voltage, V	100 - 260
Dimensions, mm, not more than:	
-length	190
-width	255
-height	365
Weight, kg, not more than	5.5

TOR-3

TOR-3 instrument is designed for determining the dielectric loss tangent, electrical resistivity, and dielectric permittivity of transformer oils and other dielectric fluids according to IEC 60247-2004-02 (VDE-0380-2:2005_01), ASTM D924-08, and ASTM D1169-02.

It constitutes a fully automatic device that ensures testing in accordance with the procedures defined in these standards, as well as in accordance with the user procedures specified in the appropriate section of the instrument menu.



Parameter	Value
Operating AC voltage, V	100-260
Power frequency, Hz	48 – 63
Power requirement, VA	Not more than 250
Applied measuring voltage AC, kV	Sinusoidal, 500 - 2000 V RMS
Measurement range, Tan δ	0.00001 – 4
Measurement resolution, Tan δ	1×10^{-6}
Measurement tolerance, Tan δ	+/- 1% of measurement + 0.00008
Measurement range of dielectric constant, ϵ	1.0 – 15.0
Measurement range of electrical capacitance, μF	20 – 1000 pF
Measurement range of oil temperature, $^{\circ}\text{C}$	20 – 110
Measuring cell volume, cm^3	42
Electrical capacitance of empty cell	65 – 85 pF
One measurement duration, not more than, min	20
AC frequency setting range, Hz	45 – 65
Temperature measurement resolution, $^{\circ}\text{C}$	0,5
Integrated printer	no
Operating temperature, $^{\circ}\text{C}$	0 - 50
Storage temperature, $^{\circ}\text{C}$	From – 20 to + 60
Relative humidity, %	Up to 90 without condensation
Dimensions, mm, not more than	400x450x300*
Weight, kg, not more than	5.3**

*With installed and connected cell
**With installed and connected cell

TOR-6

TOR-6 transformer oil express tester performs a high-precision test for moisture content and purity or contamination levels in both mineral and ester-based oils.



Parameter

Value

Parameter	Value
Moisture measurement characteristics	
Operating range, aw (active water)	0...1
Operating range for dissolved moisture content measuring, ppm	0... 100
Dissolved moisture precision measurement (at 20 °C)	±10 % or ±10 ppm
Temperature measurement	yes
Purity or contamination level characteristics	
Permissible viscosity range, mm ² /sec	1 to 1,000
Standards maintained in determining the purity class	ISO 99 (ISO 4406:1999) SAE (SAE AS 4059) or ISO 87 (ISO 4406:1987) NAS (NAS 1638)
Measuring range	Measuring from ISO 9/8/7 (min) to ISO 25/24/23 (max) Calibrated within the ISO range from 13/11/10 to 23/21/18
Precision	ISO class ± 1/2 in calibrated range
Required power, W	3
Single phase 50 Hz AC power supply voltage, V	220
Dimensions, mm, not more than:	
-length	235
-width	275
-height	370
Weight, kg, not more than	10

TOR-7

TOR-7 transformer oil tester is designed to determine the volumetric gas content, moisture, contamination by solid particles, and hydrogen content in oil.

Measurements are based on tracking the pressure change of gas within a vacuumed cylinder during the pouring of an oil portion. Considering the volumes of the cylinder and the poured oil, as well as the pressure inside the cylinder before and after pouring, one can determine the volumetric gas content. With the help of sensors and a control board, the moisture content, oil temperature, hydrogen content, and the number of solid particles in the oil are calculated and displayed on the screen.



Parameter	Value
Measuring cell volume, l	1,2
Oil sample volume, l	0,5 – 0,7
Maximum pressure in the instrument, Pa	0,3
Maximum leakage in the instrument, Pa	26
Inlet oil pressure, bar	0,3 – 3
Temperature of measured oil, °C	20 – 90
Maximum power consumption, kW, not more than	1
Operating range of dissolved water content measurement, ppm	0...100
Accuracy of moisture content measurement (at 20 °C)	± 10 % or ± 10 ppm
Operating range of hydrogen content measurement, ppm	25-5000
Accuracy of hydrogen content measurement	20% of the value or 25 ppm
Operating range of solid particles content measurement, ppm	25-5000
Accuracy of solid particles content measurement	20% of the value or 25 ppm
Standards supported in determining the purity class	ISO 99 (ISO 4406:1999) SAE (SAE AS 4059) or ISO 87 (ISO4406:1987) NAS (NAS 1638)
The power supply parameters	Any options on customer's request
Dimensions, mm, not more than: – length – height – width	465 530 375
Weight, kg, not more than	40

TOR-8

TOR-8 is used in the process of insulating oils purification from dissolved gases in degassing plants. The main purpose of the instrument is to help determine the effectiveness of degassing procedures carried out by these plants. Its use allows for an accurate assessment of the degree of gas removal from the oil, easy and efficient control of the degassing process, which is an important part of transformer maintenance and operation.



Parameter	Value
Measuring cell volume, l	1.2
Oil sample volume, l	0.5 – 0.7
Maximum pressure inside the instrument, Pa	0.3
Maximum leakage inside the instrument, Pa	26
Inlet oil pressure, bar	0.3 – 10
Temperature of measured oil, °C	20 – 90
Maximum power consumption, kW, not more than	1
The power supply parameters	Any options on customer's request
Dimensions, mm, not more than: – length – height – width	330 300 275
Weight, kg, not more than	25

TOR - 60

TOR-60 instrument is designed to measure the dielectric strength of transformer oil and other dielectric fluids according to IEC 60156, VDE 0370, ASTM D877, ASTM D1816, IRAM 2341.

It is a fully automatic device that allows testing according to the procedures defined in these standards, as well as according to the user procedures specified in the appropriate section of the setup menu.

The instrument can be manufactured with a magnetic or an impeller stirrer.



Parameter

Value

Operating AC voltage (internal rechargeable battery), V	85 – 264
Power frequency, Hz	48 – 63
Power requirement, VA	70 max
Max voltage output, kV	Sinusoidal, up to 60 kV RMS
Output voltage measurement accuracy, kV	±1
Voltage increase rate, kV/sec	From 0.5 to 10*
Resolution of output voltage indication, V	100
High voltage timeout after breakthrough, μs	10 max, 4 typical
Measuring cell volume, cm^3	500
Ambient temperature measurement range, $^{\circ}C$	0 – 100
Temperature measurement resolution, $^{\circ}C$	0.1
Inbuilt printer	Yes
Operating temperature, $^{\circ}C$	0 – 50
Storage temperature, $^{\circ}C$	From – 20 to + 60
Relative humidity, %	Up to 90 without condensation
Dimensions, mm, not more than	510x300x334
Weight, kg, not more than	30

*Adjustable

TOR - 80A

TOR-80A instrument is designed for assay transformer oil and other liquid dielectrics by measuring the electrical breakthrough voltage. The electrical breakthrough voltage is measured in accordance with IEC 60156, VDE 0370, ASTM D877, ASTM D1816, IRAM 2341. This list of standards can be modified and expanded according to the customers' wishes and to the development of standards' new versions.

The TOR-80A instrument feature is an internal rechargeable battery that provides the possibility of autonomous operation in the field at the place of the transformer functioning.

The instrument can be manufactured with a magnetic or an impeller stirrer.



Parameter

Value

Operating AC voltage, V	100 – 260
AC frequency of the power network, Hz	48 – 63
Power requirement, VA	100 max
Max. output voltage, kV	Sinusoidal, up to 80 kV RMS
Output voltage measurement accuracy, kV	± 1
Voltage increase rate, kV/sec	0.5 – 10.0*
Measurement limit when displaying the output voltage, V	100
High voltage timeout after breakthrough, µs	10 max, 4 typical
Measuring cell roominess, cm ³	500
Temperature measurement range, °C	0 – 100
Temperature measurement resolution, °C	0.1
Built-in printer	yes
Rechargeable battery pack	yes
Time of continuous autonomous operation (from battery), h	8
Battery charging time, h	8
Operating temperature, °C	0 – 50
Storage temperature, °C	From - 20 to +40
Relative humidity, %	Up to 90 without condensing
Atmospheric pressure, mmHg	630 – 800
Dimensions, mm, not more than	510x300x413
Weight, kg, not more than	38.1

*Adjustable

TOR-80/TOR-100

TOR-80/TOR100 instrument is designed to determine the electric breakdown voltage of transformer oil and other liquid dielectrics in accordance with IEC 60156, VDE 0370, ASTM D877,ASTMD1816,IRAM2341.

It constitutes a fully automatic device that ensures testing in accordance with the procedures defined in these standards, as well as in accordance with the user procedures specified in the appropriate section of the instrument menu.

The instrument can be manufactured with a magnetic or an impeller stirrer.



Parameter	Value
Operating AC voltage, V	100 - 260
Power frequency, Hz	48 – 63
Power requirement, VA	80 max
Maximum output voltage, kV	Sinusoidal, up to 80 kV (TOR-80) or 100 kV (TOR-100) RMS
Output voltage measurement tolerance, kV	±1
Voltage increase rate, kV/s	From 0.5 to 10*
Resolution of output voltage indication, V	100
High voltage shutoff time after breakdown, μs	10 max, 4 typical
Measuring cell volume, cm ³	500
Measurement range of ambient temperature, °C	0 – 100
Temperature measurement resolution, °C	0.1
Integrated printer	yes
Operating temperature, °C	0 – 50
Storage temperature, °C	From – 20 to + 60
Relative humidity, %	Up to 90 without condensation
Dimensions, mm, not more than	510x300x334 (TOR-80) 510x300x350 (TOR-100)
Weight, kg, not more than	30

*Adjustable