

Portable DGA Chromatograph  
 Technical Specifications

## PERFORMANCE

Measurement technology	4th generation product Dual-channel gas chromatograph		Micro-machined injectors and TCD detectors Shake Test® sampling and gas extraction <sup>1</sup>	
Gases measured	H <sub>2</sub> (hydrogen) CH <sub>4</sub> (methane) C <sub>2</sub> H <sub>6</sub> (ethane)	CO (carbon monoxide) C <sub>2</sub> H <sub>2</sub> (acetylene) O <sub>2</sub> (oxygen)	CO <sub>2</sub> (carbon dioxide) C <sub>2</sub> H <sub>4</sub> (ethylene) N <sub>2</sub> (nitrogen)	
Measurement Range	Dissolved gas in mineral oil		In gas phase (e.g. Bucholz relay)	
	LDL (ppm)	TOR (ppm)	LDL (ppm)	TOR <sup>4</sup> (ppm)
H <sub>2</sub>	5	60,000	33	4,000
CO	1	60,000	4	10,000
CO <sub>2</sub>	10	60,000	8	12,000
CH <sub>4</sub>	1	60,000	2	126,000
C <sub>2</sub> H <sub>2</sub>	1	60,000	1	12,000
C <sub>2</sub> H <sub>4</sub>	1	60,000	1	10,000
C <sub>2</sub> H <sub>6</sub>	1	60,000	1	11,000
O <sub>2</sub>	60	100,000	-	-
N <sub>2</sub>	500	100,000	-	-
Repeatability <sup>2</sup>	Dissolved gas in mineral oil		In gas phase (e.g. Bucholz relay)	
	greater of	or	greater of	or
H <sub>2</sub>	±2 ppm	±2%	±13 ppm	±2%
CO	±2 ppm	±2%	±9 ppm	±2%
CO <sub>2</sub>	±10 ppm	±2%	±8 ppm	±2%
CH <sub>4</sub>	±2 ppm	±2%	±4 ppm	±2%
C <sub>2</sub> H <sub>2</sub>	±2 ppm	±2%	±2 ppm	±2%
C <sub>2</sub> H <sub>4</sub>	±2 ppm	±2%	±1 ppm	±2%
C <sub>2</sub> H <sub>6</sub>	±2 ppm	±2%	±1 ppm	±2%
O <sub>2</sub>	±60 ppm	±2%	-	-
N <sub>2</sub>	±500 ppm	±2%	-	-
Accuracy <sup>3</sup>	Dissolved gas in mineral oil		In gas phase (e.g. Bucholz relay)	
	greater of	or	greater of	or
H <sub>2</sub>	±5 ppm	±6%	±33 ppm	±6%
CO	±1 ppm	±6%	±4 ppm	±6%
CO <sub>2</sub>	±10 ppm	±6%	±8 ppm	±6%
CH <sub>4</sub>	±1 ppm	±6%	±2 ppm	±6%
C <sub>2</sub> H <sub>2</sub>	±1 ppm	±6%	±1 ppm	±6%
C <sub>2</sub> H <sub>4</sub>	±1 ppm	±6%	±1 ppm	±6%
C <sub>2</sub> H <sub>6</sub>	±1 ppm	±6%	±1 ppm	±6%
O <sub>2</sub>	±60 ppm	±6%	-	-
N <sub>2</sub>	±500 ppm	±6%	-	-
Gas-in-oil specifications encompass instrument-to-instrument, syringe-to-syringe and gas extraction method uncertainties in field operating conditions.				
Resolution	All gases: 1 ppm			
Measurement time	2 minutes			
Calibration	Morgan Schaffer CALGAS with NIST traceability			
Sampling	Mineral oil, silicone liquid, natural and synthetic ester fluids 100 ml Shake Test® syringe for oil samples 10 ml glass syringe for gas samples from relay, tank or PTFE membrane			
Sample integrity	Used as directed, individual syringes ensure no gas loss and no cross-contamination Automatic line purging with internal sampling pump			
Gas filtering	Disposable oil traps (5 µm) Replaceable particle trap (10 µm)			

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## COMMUNICATION AND DATA

Connectivity	Direct or networked TCP/IP Ethernet
Interface software	Morgan Schaffer PPMreport™ (Windows® 7 / Windows® 8 / Windows® 10) provides instrument control, data acquisition, data management, DGA diagnostic tools and customizable PDF reports.
DGA data management and diagnostics	Inside View diagnostic software integrates DGA data from monitors and portable analyzers with laboratory oil quality data. Diagnostic tools for fleetwide transformer health management (sold separately).

## OPERATION

Power supply	In-line power adaptor with IEC 60320/C1 4 receptacle / Power supply Input: 100 - 240 VAC, 50/60 Hz, 100 W, 1Ø / Output: 24 VDC, 6.2 A 8 ft power cord with IEC 60320/C1 3 to NEMA 5-1 5P
Gas requirements	99.999% He, 80 psig
Operating temperature range (standard)	0 to 50 °C
Storage temperature range	0 to 75 °C
Humidity range	5 - 95% RH non-condensing
Elevation range	Up to 4,500 m (15,000 ft)
Cooling	Forced air convection
Maintenance	Annual visual inspection
Expected operating life	10 years

## CONSTRUCTION

Width x Height x Depth	250 x 155 x 420 mm (9.8 x 6.1 x 16.5 in.)
Weight	10 kg / 22 lbs
Enclosure	Cast aluminum frame, aluminum covers, powder coat paint, carrying handle
Ruggedness	Drop-tested to 1 m

## CONFORMITIES

Directives	Low Voltage Directive 2006/95/EC Directives EMC Directive 2004/108/EC CE Marking
Safety	IEC / EN 61010-1: 2001
EMC rating	IEC 61326-1: 2005 / EN 61326-1: 2006 CISPR 11: 2003 / EN 55011: 1998 + A1: 1999 + A2: 2002

## STANDARD PACKAGE

Myrkos Portable DGA Chromatograph	Myrkos Portable DGA Chromatograph PPMreport™ interface software, certificate, user manual
Myrkos Calibration Kit	Gas-tight glass syringe (10 cc) NIST traceable CALGAS cylinder (500 cc) Micro-flow regulator with dial gauge CO <sub>2</sub> trap for air run
Myrkos Oil Sampling Kit	Shake Test® syringe (100 cc) Myrkos Oil Sampling Kit bag of oil traps (25/bag) CO <sub>2</sub> trap for Shake Test®
Myrkos Squirt Method Kit	Squirt stopper Squirt tube
Other Accessories	Shake Test® syringe holder Tool and connection kits

## WARRANTY

Morgan Schaffer's Myrkos Portable DGA Chromatograph is backed by a 30-month standard warranty. 1, 2 and 3 year extended warranty available.

## SERVICE AND SUPPORT

On-site commissioning assistance and on-site maintenance program available upon request.

## NOTES

- 1 - The Shake Test® Method is a variation of ASTM D3612-02 Method C and is also described in the international standard IEC 60567.
- 2 - 95% confidence interval
- 3 - 95% confidence interval in comparison with Morgan Schaffer's ISO/IEC 17025 accredited laboratory.
- 4 - Gas Phase TOR can be extended by diluting the sample in the gas syringe.

Product improvements since the writing of IEC 60567: 2005 have led to the improved accuracy specifications provided here. Continuing research and improvements may result in specification or appearance changes at any time.



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