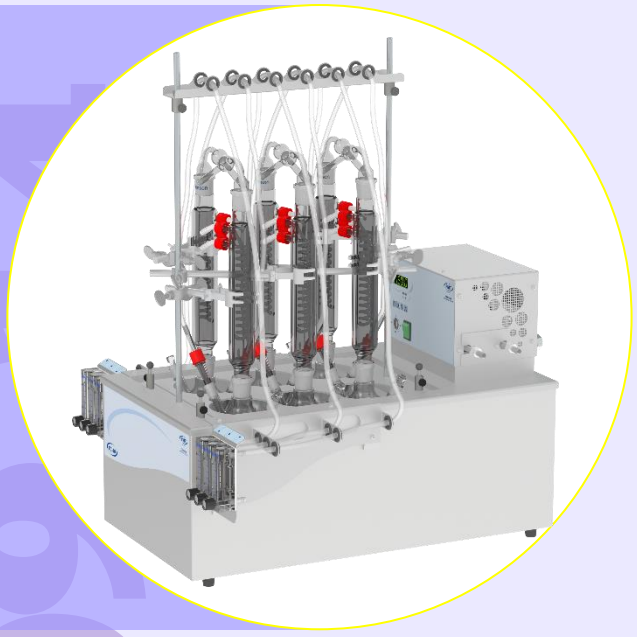
Tamson Instruments
Specification sheet

Oxidation Test for Engine Oils Operating in the Presence of Biodiesel Fuels

CEC L-109-14



Item	Unit	TC40
P/N apparatus CEC L-109-14 230V/50-60Hz		00T2020
P/N apparatus CEC L-109-14 115V/60Hz		00T2021
Power	[kW]	3.0
Range	°C °F	Ambient .. 250 Ambient ..482
Reading		°C or °F
Setting	[°]	0.1
Stability	[°C]	0.02
Heating	[kW]	2.8
Bath volume	[L]	40
Bath openings	[mm]	6
Bath depth	[mm]	200
Length	[mm]	705
Width	[mm]	375
Height	[mm]	440
Materials	Used inside bath: stainless steel 304, brass	
CE	Conforms to CE regulation	

- **Stainless steel bath**
- **Bath drain**
- **Easy to operate**
- **Six positions**
- **Complete apparatus for six tests**

General
The CEC L-109-14 test method covers the oxidation test for engine oils operating in the presence of biodiesel fuels. As it is expected that more biodiesel will be blended with diesel in the future, the objective of this oxidation test is to provide preventive protection against the consequences of biodiesel induced engine oil oxidation. The selected test conditions should take the different usage patterns and engine hardware of passenger cars and commercial vehicles into account.

Construction
The apparatus consists of a six position TC40 circulator bath and it is standard delivered with six sets of glassware. The cover of the bath has six openings with lids. Stand-rods with clamps to hold the glassware in the same position, flowmeters and tubing are standard included. Please see table 1 for more information. The temperature range of the bath is from ambient +5°C to 250°C. Other accessories for this test method are supplied by Tamson, please see table 2.

Accuracy
The insulation of the bath and electronic design result in a very stable working temperature of ± 0.02°C The set point can be set in steps of 0.1°C in the range of 0°C up to 250°C (148..482°F). The readout is displayed in 0.1°C. The controller has an internal accuracy of 0.01°C.

Temperature readout
Standard available in °C, on request in °F.

Pump
When not used for oxidation tests, the pump can be used to circulate the bath content to an external application.

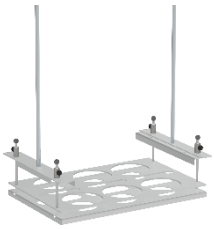
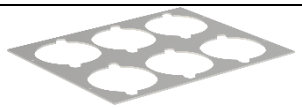
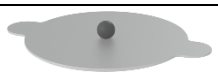
Safety
The bath conforms to CE regulation. It is further equipped with a mechanical resettable safety thermostat. A low liquid float (P/N 07T0080) is included and will switch-off the apparatus when the bath fluid is too low.

The apparatus should be placed in a fume hood to avoid oil vapours spreading into the laboratory.

Test evaluation
For the test evaluation, two additional instruments are needed. One instrument to determine the kinematic viscosity of the sample, which is also manufactured by Tamson. Another instrument to determine the oxidation level by peak height of the sample. For further information, please contact us.

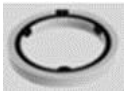
Oxidation Test for Engine Oils Operating in the Presence of Biodiesel Fuels

CEC L-109-14

Table 1: Apparatus CEC L-109-14 P/N 00T2020 or P/N 00T2021 consists of the following parts:			
P/N	**Picture**	**Quantity**	**Description**
00T0681		1	TC40 circulator bath, 230V/50-60Hz.
00T0851			TC40 circulator bath, 115V/60Hz
07T0171		1	Levelling platform for CEC L-109-14 tests
03T2013		1	Top cover CEC L-109-14 with six openings
03T2023		6	Small lid for top cover (P/N 03T2013)
31T2030		6	Condenser with cooling coil and jacket for CEC L-109-14, 250 mm height, with standard grounded joints NS29
31T2031		6	Flask (500 mL) with flat bottom, with three necks and standard grounded joints, centre neck with NS29 connection, side necks with NS14 connection.
31T2032		6	Drying tube angled with NS29 connection
31T2033		6	Air inlet glass tube, length 250 mm, external diameter 8 mm
31T2034		6	Air inlet adapter NS14 > GL18
31T2035		6	Plastic screw cap with opening GL14
31T2036		6	Ring GL16 x 8

Oxidation Test for Engine Oils Operating in the Presence of Biodiesel Fuels

CEC L-109-14

Continued Table 1: Apparatus CEC L-109-14 P/N 00T2020 or P/N 00T2021 consists of the following parts:			
P/N	**Picture**	**Quantity**	**Description**
31T2037		6	Glass stopper NS14
24T0072		6	Double boss head cross with brass clamping screws
24T0078		6	Cooler clamp for stand-rod
24T0068		2	Stand-rod
24T0046		10	Tubing silicon rubber 6 mm, 1 meter
31T2070		6	Airflow meters suitable for a flow rate of 10L/h
34T0000		1	Blue PU tubing 6 mm, 50 meter
34T0030		6	Hose barb fitting G 1/8” to I.D. 8 mm
34T0010		12	O-ring G 1/8”
34T0051		6	Hose adapter 6mm O.D. to G 1/8” quick fit

Oxidation Test for Engine Oils Operating in the Presence of Biodiesel Fuels

CEC L-109-14

Table 2: Accessories for CEC L-109-14			
Item	**Picture**	**Suggested quantity**	**Description**
00T0238		2	Bath fluid silicon oil 550 - 20 litres transparent, 80..250°C
31T2038		1	Thermocouple device to measure the sample temperature
00T0782		1	TV2000MKII viscosity bath. For more information, please see specification sheet ‘tv series’
31T2060		1	Air compressor 230V/50-60Hz
31T2061			Air compressor 115V/60Hz
31T2042		1	Dryer with 2 x 8 mm Hose Barbs
31T2041		1	Refilling for dryer (P/N 31T2042), 5 lbs, 8 mesh

Oxidation Test for Engine Oils Operating in the Presence of Biodiesel Fuels

CEC L-109-14

Table 3: Spare parts for air compressor after one year or 2000 hours of use			
Item	**Picture**	**Suggested quantity**	**Description**
31T2065		1	Intake filter
31T2066		1	Non return valve
31T2067		1	5 micron filter
31T2068		1	SJ27 Oil bottle 0,5ltr