Tamson Instruments
Specification sheet

Phosphorus in Gasoline

ASTM D3231 – IP 454

Item	Unit	TC20B
Apparatus D3231 TC20B 230V/50-60Hz		**00T2030**
Apparatus D3231 TC20B 115V/60Hz		**00T2031**
Power	[kW]	1.45
Range	°C °F	Ambient .. 200 Ambient ..392
Reading		°C or °F
Setting	[°]	0.1
Stability ±	[°C]	0.02
Heating	[kW]	1.4
Bath volume	[L]	20
Bath openings		8
Bath depth	[mm]	150 (140 effective)
Length	[mm]	555
Width	[mm]	375
Height	[mm]	425
Materials	Used inside bath: stainless steel 304, brass	
CE	Conforms to CE regulation	

- **Stainless steel bath**
- **Delivered as complete D3231 apparatus**
- **Bath drain**
- **Easy to operate**
- **Eight positions**

D3231

General
The ASTM D3231 test method covers the determination of phosphorus generally present as pentavalent phosphate esters or salts, or both, in gasoline. Organic matter in the sample is decomposed by ignition in the presence of zinc oxide. The residue is dissolved in sulfuric acid and reacted with ammonium molybdate and hydrazine sulfate. The absorbance of the Molybdenum Blue complex is proportional to the phosphorus concentration in the sample and is read at approximately 820 nm in a 5 cm cell.

Phosphorus in gasoline will damage catalytic convertors used in automotive emission control systems, and its level therefore is kept low.

Apparatus
For this test method, Tamson supplies a constant temperature bath, equipped with a levelling platform to hold up to eight 100 mL volumetric flasks submerged to the mark to keep the temperature at 82.2 °C to 87.8 °C (180 °F to 190 °F) during the entire period of sample heating. The apparatus consists of an eight position TC20B circulator bath. The cover of the bath has eight openings, each with a lid to hold the volumetric flask in the same position. The temperature range of the apparatus is from ambient +5°C to 200°C.

Accuracy
The insulation of the bath and electronic design result in a very stable working temperature of ± 0.02° The set point can be set in steps of 0.1° in the range of 0°C up to 200°C (-148..392°F). The accuracy on the display is displayed in 0.1°C. However the controller has an internal accuracy of 0.01°C.

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

Pump
When not used as a constant temperature bath, the pump can be used to circulate the bath content to an external application. The pump pressure is 300 mBar and the maximum flow is 7.5 litres per minute with no counter pressure.

Safety
The bath conforms to CE regulation. It is further equipped with a mechanical resettable safety thermostat.

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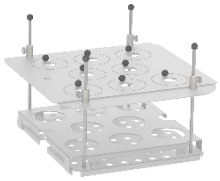
Table 1: Apparatus ASTM D3231 TC20B P/N 00T2030 or P/N 00T2031 consists of the following parts:			
P/N	**Picture**	**Quantity**	**Description**
00T0160		1	TC20B circulator bath, 230V/50-60Hz.
00T0165			TC20B circulator bath, 115V/60Hz
03T0032		1	Levelling platform for TC20B with rack to hold up to eight volumetric flaks. A cover with eight lids is included.

Table 2: Accessories for ASTM D3231			
Item	**Picture**	**Suggested quantity**	**Description**
31T0044		4	Volumetric flasks with glass stopper, class A clear glass (pack of two pieces)
25T0928BW		1	ASTM thermometer similar to 34C with blue filling (low-hazardous to ship). Temp. range +25°C-105°C:0.2°C. Supplied with works certificate.
25T2154		1	Thermometer holder, 425 x 10 mm.

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