

S744 Sulfur Determinator

Specification Sheet



Instrument Range*	0.002** to 17.5 mg
Precision†	0.001 mg or 1.5% RSD, whichever is greater when converted to absolute units (mg)
Calibration	Standards (single or multipoint); manual
Analysis Time	40 seconds (nominal)
Cycle Time	130 seconds (nominal)
Throughput	27 samples per hour (nominal)
Sample Size	1 gram (nominal)
Detection Method	Non-Dispersive Infrared Absorption
Chemical Reagents	Anhydrous Magnesium Perchlorate (MgClO ₄)
Gas Requirements	Carrier: Oxygen, 99.5% pure, 35 psi (2.41 bar) ±10% Pneumatic: Compressed Air (oil, water free), 40 psi (2.76 bar) ±10%
Gas Flow Rates	Carrier: 3 L/min Pneumatic: 1 L/min
Furnace	2.2 kW Induction
Operating Conditions	Operating Temp: 15 to 35°C (59 to 95°F) Rel. Humidity: 20 to 80% (non-condensing)
Physical Dimensions**	33 in. H x 25.25 in. W x 29.5 in. D (84 x 64 x 75 cm) with touch-screen monitor
Electrical Power Requirements	230 V~ (+10/-15% at Max Load); 50/60 Hz, single phase, 25 A; 5,500 BTU/hr**
Weight (approx.)	308 lb. (140 kg) with monitor 292 lb. (132 kg) without monitor

Part Numbers

S744-C Sulfur Determinator with Windows®-based software and external PC

Options

NOTE: Multiple configurations of options are available. Please contact your local LECO Sales Engineer for more details.

- Optional mounted touch-screen monitor package (M)
- Optional automatic cleaner and tube removal package (H)
- Optional sulfur performance package (PS)

*Use the following formula to calculate element concentration:

$$\% \text{ element concentration} = ((\text{absolute element mass in mg}) / (\text{sample mass in mg})) * 100$$

**Lower range is calculated as 2 σ instrument blank deviation. Method range may differ due to factors such as sample type and method parameters.

†Calculated as 1 σ instrument blank deviation. Method precision may differ due to sample inhomogeneity or other external factors.

**Allow for a 6 in. (15 cm) minimum access area around all sides.

**Average output based on nominal operating parameters.

V~ denotes VAC.



Delivering the Right Results

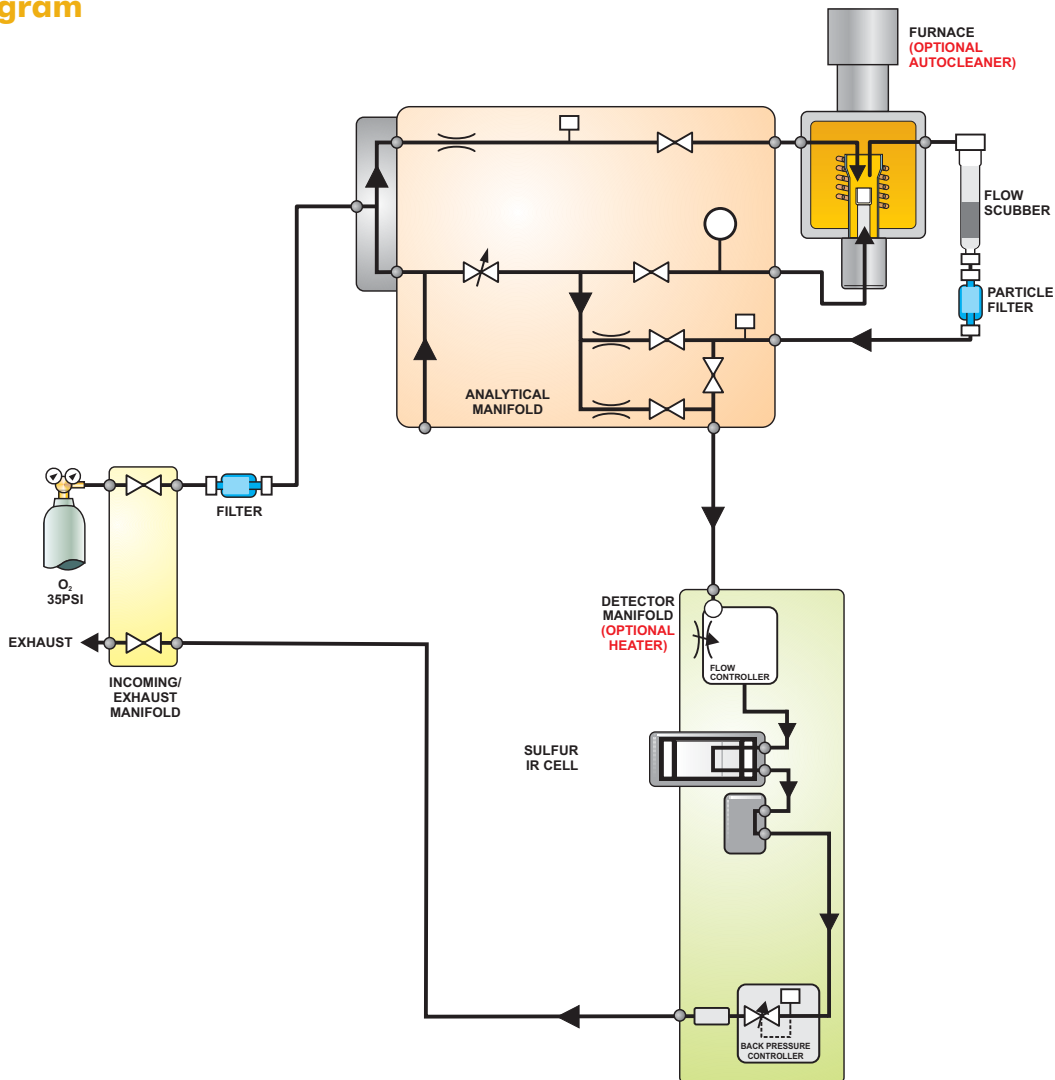
Theory of Operation

The S744 sulfur system is designed for wide-range measurement of sulfur content of metals, ores, ceramics, and other inorganic materials. The instrument features custom MS Windows®-based software designed specifically for touch operation.

A pre-weighed sample of approximately 1 gram is combusted in a stream of oxygen using RF induction to heat the sample. Sulfur present in the sample is oxidized to sulfur dioxide (SO_2), and swept by the oxygen carrier through a drying reagent and then through a non-dispersive infrared (NDIR) cell, where sulfur is detected as SO_2 . A pressure controller is used to maintain constant pressure in the NDIR cells so as to reduce interference from natural variations in atmospheric pressure. The final component in the flow stream is an electronic flow sensor, which is used for diagnostic purposes to monitor the carrier flow.

Non-dispersive infrared cells are based on the principle that SO_2 absorbs infrared (IR) energy at unique wavelengths within the IR spectrum. Incident IR energy at these wavelengths is absorbed as the gases pass through IR absorption cell. The concentration of unknown samples is determined relative to calibration standards. To reduce interferences from instrument drift, reference measurements of pure carrier gas are made prior to each analysis.

Flow Diagram



Specifications and part numbers may change.
Consult LECO for latest information.

3000 Lakeview Avenue • St. Joseph, MI 49085 • Phone: 800-292-6141 • Fax: 269-982-8977
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