

Temco, Inc.

Design Excellence in Core Analysis Instrumentation

Core Cleaning CO₂ System CCS-970



Model 970

The Model 970 CO₂-Toluene Core Plug Cleaner is a device for cleaning crude oil, drilling mud liquids, and water from a single piece of whole core or from a batch of core plug samples. The system is faster than soxhlet extraction, does not coke crude oil in the sample as does retorting, and uses the proven core cleaning method utilizing CO₂-saturated toluene. The same process that is used for whole core cleaning is used here in an "in the lab hood size device".

The core plug cleaner fits into a standard size floor hood. The cleaning chamber is a pressure vessel 12 cm (4.75 inches) diameter by 25cm (10 inches) deep. The vessel is heated electrically with a two-kilowatt, 220-volt heater enclosed in an explosion proof housing.

The solvent is pumped from an onboard supply tank to the cleaning vessel with an electrically driven high pressure pump. The pump motor is explosion proof. A cyclone separator with a stainless steel-packed, water-cooled after-cooler is provided to separate the CO₂ and the used hot solvent when the vessel is drained. The used toluene drains into an explosion proof electric still where it is recovered and delivered back to the clean solvent supply.

The still operation is automatic. The process controls are housed in a non-explosion proof box intended to be mounted outside of the hood.

Cleaning

To clean core plugs, load the samples into the vessel and close the lid. Select AUTOMATIC control, the time duration of the cleaning process (SHORT-4 hours or LONG- 12 hours), and START the process. The process controller operates the machine in the following manner. The air is purged from the cell with CO₂ and then the chamber is filled with CO₂ to a pressure of about 1400 kPa (200 psi). The cell heater is turned on. Solvent is pumped into the CO₂-charged vessel. A second and third filling cycle is required until all of the CO₂ is forced into solution.

After a suitable soak time the solvent is drained at a slow rate to prevent fracturing of the samples, and the process is repeated.

Moderately permeable sandstone samples with light oils will require only one SHORT cleaning cycle. Low permeability rocks with heavy crude oil present may require several LONG cleaning cycles. The cleaned samples will contain some residual solvent and will require oven drying. The user supplies CO₂ regulated to 1400 kPa (200 psi), toluene, cooling water 8 l/m @ 14 kPa (2 gpm @ 20 psi), and 220 volt-35amp/50-60 Hz electrical service. A floor length hood and floor drain with an oil trap are recommended.

Water from the plug samples is trapped in the solvent tank. A drain valve is provided

Ordering Information

Model Type	Chamber	Electrical
970	4- ³ / ₄ " diameter by 10" length (12 cm diameter by 25 cm length)	220/240 VAC 50/60 HZ
971	5- ¹ / ₄ " diameter by 10" length (13.3 cm diameter by 25 cm length)	220/240 VAC 50/60 HZ
972	5- ¹ / ₄ " diameter by 25" length (14.6 cm diameter by 63.5 cm length)	220/240 VAC 50/60 HZ