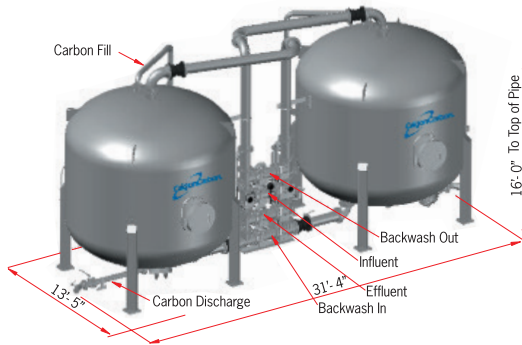


MODEL 12

Modular Carbon Adsorption System



Description

The Calgon Carbon MODEL 12 is an adsorption system designed for the removal of dissolved organic contaminants from liquids using granular activated carbon. The modular design concept allows the selection of options, additional accessories or alternate materials to best meet the requirements of the site and treatment application.

The MODEL 12 system is delivered as two adsorbers and a separate compact center piping network and interconnecting piping requiring minimal space and field assembly. The preengineered MODEL 12 design assures that adsorption system functions can be performed with the system as provided. The design has the benefit of Calgon Carbon's extensive expertise and has been proven in numerous applications. The engineering package can be provided quickly and the system expedited through Calgon Carbon's production capabilities.

The process piping network for the MODEL 12 accommodates operation of the adsorbers in parallel or series (with either adsorber placed in first stage). The piping can also isolate either adsorber from the flow. This permits carbon exchange or backwash operations to be performed on one adsorber without interrupting treatment. All valves and accessories are located at low elevations for ease of operation and maintenance.

The unique internal cone under-drain design provides for the efficient collection of treated water and the distribution of backwash water. The internal cone also insures efficient and complete discharge of spent carbon from the adsorber.

The MODEL 12 system is designed for use with Calgon Carbon's closed loop carbon exchange service. Using specially designed carbon transport trailers, the spent carbon can be removed from the adsorber via a pressurized carbon-water slurry, and fresh carbon refilled in the same manner. This closed loop transfer is accomplished without exposure of personnel to either spent or fresh carbon. Calgon Carbon can also manage the disposition of the spent carbon. It can be returned to Calgon Carbon for reactivation, avoiding the need for the site to arrange for disposal.

Carbon Adsorbers

MODEL 12

Carbon steel ASME code pressure vessels

Internal vinyl ester lining (nominal 35-45 mil dft) where GAC contacts steel for potable water and most liquid applications

Polypropylene slotted nozzles for water collection and backwash distribution

Standard Adsorption System Piping

Schedule 40 carbon steel process piping with cast iron fittings

Cast iron butterfly valves for process piping

Full bore stainless steel ball valves for GAC fill and discharge

PPL lined steel pipe for GAC discharge

Pressure relief using graphite rupture discs

Pressure gauges to measure pressure drop across system and each adsorber

Rupture discs open to each vessel for emergency pressure relief

System External Coating

High solids epoxy paint system

Available Options

System skid, shipped separately, upon which system components can be assembled

In-bed water sample collection probes

Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

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Dimensions and Field Conditions MODEL 12

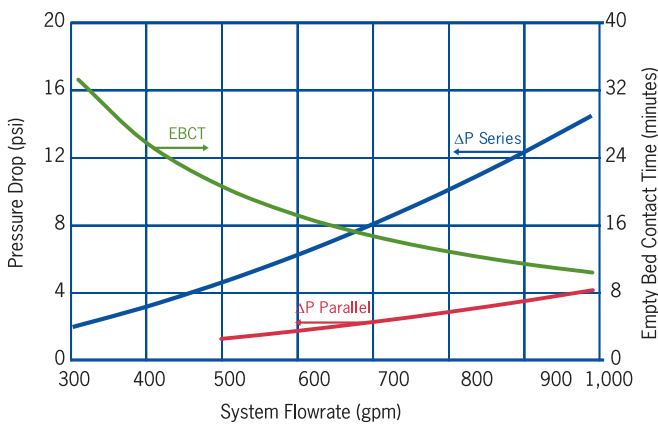
Adsorber Vessel Diameter	12' (3,660 mm)
Process and Backwash Pipe	8"
Process Pipe Connection	125# ANSI flange
Utility Water Connection	3/4" hose connection
Utility Air Connection	3/4" hose connection
Carbon Hose Connection	4" Kamlock type
Backwash Connections	8" flange
Drain/Vent Connection	8" flange
Adsorber Maintenance Access	20" round flanged man-way, 14" x 18" man-way below cone
Adsorber Shipping Weight	19,500 lbs. empty (8,850 kg)
System Operating Weight	265,000 lbs. (123,250 kg)

Operating Conditions MODEL 12

Carbon per Adsorber	20,000 lbs. (9,080 kg)
Pressure Rating	125 psig (862 kPa) @ 140°F
Pressure Relief	Graphite rupture disk (100 psig)
Temperature Rating	140°F maximum (60°C)
Backwash Rate	Typical 1,700 gpm (25% expansion)
Carbon Transfer	Air pressure slurry transfer
Utility Air	100 scfm at 30 psig (reduce to 15 psig for trailer)
Utility Water	100 gpm at 30 psig
Freeze Protection	None provided; enclosure or protection recommended

Model 12 System

20,000 lbs 8x30 Mesh GAC per Vessel 8" Schedule 40 Pipe, 60F



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