HYDRO-AEROBICS, INC.

Hydro-Ceal™
Coarse Bubble Air Diffuser

General

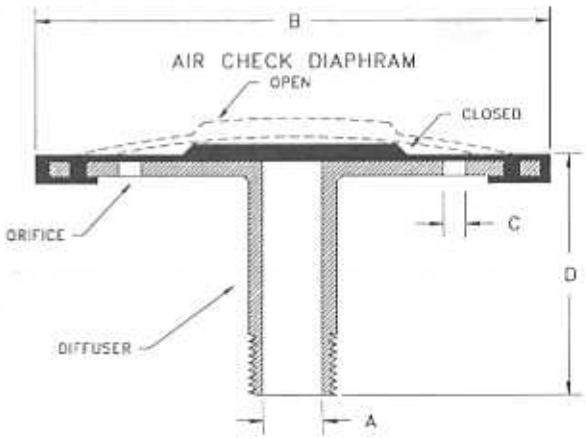
Since the development of the activated sludge process in the early 1900's, several types of diffused air devices have been designed and developed to introduce air into liquids. These devices have ranged from individual holes and slots drilled into sections of pipe to more elaborate devices made of small particles fused together. Today, although the same types of generic devices exist, diffusers are commonly classified as fine or coarse bubble.

The demarcation between fine and coarse bubbles is not well differentiated. Coarse bubble diffusers will typically produce a bubble diameter of 10 to 20 mm in clean water. Fine bubble diffusers will produce bubbles with a diameter of 2 to 4 mm in clean water.

The *SIMON HYDRO-AEROBICS* MODEL *HYDRO-CEAL AIR DIFFUSER* is a result of years of extensive research and development to produce a coarse bubble diffuser with excellent oxygen transfer clean-out. The *Hydro-Ceal* air diffuser has two functions, mixing and oxygen transfer. The mixing function allows tremendous surface contact of the liquid being aerated. The oxygen transfer occurs from the contact of the large and small bubbles released in the liquid being aerated. With our unique design, a double shear of air is released. The air is sheared as it discharges the air orifice of the air diffuser body and again as it crosses over the diaphragm baffle. If it is not sheared at this point, it will then shear along the diaphragm edge. Several diffusers have been developed using this principle, but none have been designed and manufactured with the diaphragm built as an integral part of the disk body. The *Hydro-Ceal* air diffuser check diaphragm will not blow off because it is molded directly onto the diffuser disk body . . . a unique feature in the industry!

Principle

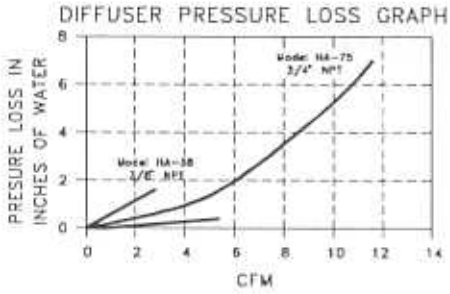
The *Hydro-Ceal* air diffuser consists of two simple parts, the diffuser body assembly and the flexible check diaphragm. Both parts are molded together so no separation can occur. During aeration, the diaphragm rises allowing the air to exit through the orifice of the disk body. When the air stops, the diaphragm is instantly seated against the diffuser body by the pressure of the liquid, preventing back-flow and clogging. The unique formation of the air check diaphragm will allow double shear of the discharged air from the air orifice, along with assistance in reducing the requirements of maintaining each diffuser level for proper air distribution.



MODEL	NPT	A	B	C SIZE	C NO.	D	CFM
HA-38	3/8"	7/16"	3-1/2"	3/16"	20	1-15/16"	5
HA-75	3/4"	3/4"	3-1/2"	3/16"	20	1-15/16"	12

Materials

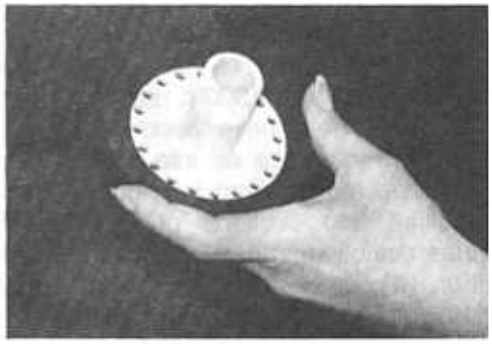
The *Hydro-Ceal* air diffuser is designed with specialized materials to prevent plugging and resist brittleness or growing of the diaphragm through absorption of chemical components in the liquids.

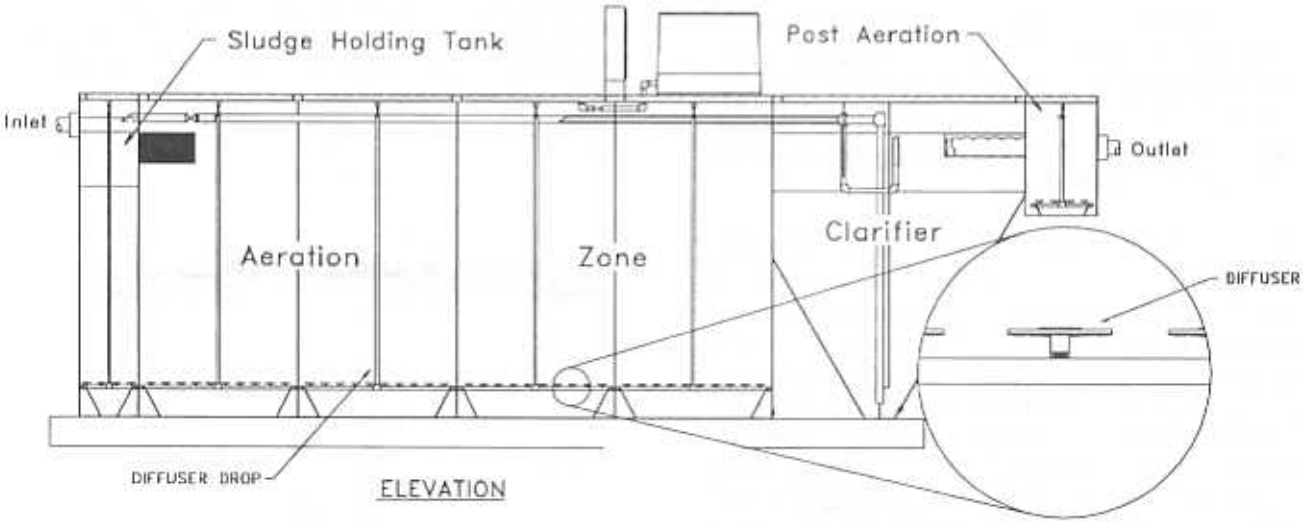


HYDRO-AEROBICS air diffusers are available in two sizes. Model HA-38 fits standard 3/8" NPT fittings and provide optimum bubble patterns and tank turbulence at low air flows up to 3 CFM. Model HA-75 fits 3/4" NPT fittings and are designed for use at air flows up to 12 CFM.

Applications

The *Hydro-Ceal* air diffuser, with its unique design, can operate efficiently and effectively over a wide range of air flows so when used in aeration systems, it is ideal for various applications. Typical applications are aeration chambers, aerobic digestors, aerated channels, post-aeration chambers and dechlorination systems.





Typical package wastewater treatment plant installation with coarse bubble air diffusers mounted in the aeration chamber on 6" centers.

"Engineering a Better Environment"