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The EcoShell Inflator

by Kris Garrison

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The Monolithic
Dome

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Inflating an [EcoShell I](#) is a little more complex than inflating a Monolithic Dome. The EcoShell I should be inflated to 6 to 8 inches of water column pressure and does not require a large blower if the Airform is sealed tight. If not sealed tight, it will not work properly (see suggestions listed below for sealing the Airforms).

The EcoShell I is inflated using an industrial line vacuum blower. The blower is an AMETEK, purchased through Grainger (part number 2M178). It weighs only 9.5 pounds, but is capable of pushing over 100 inches of water column. **Great care must be taken not to "over inflate" an Airform.** If a sealed Airform is pushed to 100 inches, it would either totally destroy the floor, rip up the Airform or do other serious damage.

The way to use this inflator, is to utilize the speed control. The speed control unit can also be purchased from Grainger (stock #4X797). The total unit should be put on a 15 amp breaker. The maximum amperage of the motor is 12.7. The maximum amperage of the controller is 10. (We are slightly overloading the speed controller). The motor controller is actually not rated to carry as much current as the motor. But as we only use the motor at slower speeds the controller is fine. The warranty for this unit is handled by the manufacturer. We will assemble it for your ease of use (see below).

We have been using our unit for several years. It works very well because we never run it at full power. Those of you purchasing an EcoShell Airform should seriously consider buying this inflator unit and controller, possibly even a second one for backup. A little electrical work will need to be performed and we suggest putting it on a panel to make it easier to handle.

For those that don't want to set it up yourself, we will do it for you. Our price for a single inflator on a panel with fuse and controller is \$515.00 and a double inflator is \$1015.00. The double inflator has a one way valve in the air lines to prevent deflation if one of the blowers shuts off.

Safety Tips for EcoShell Inflation:

1. Be sure that you have secure electrical connections. Someone stumbling over a plug or kicking a cord loose at an inopportune time causes unneeded distress.
2. Make sure the inflator is on its own circuit. You do not want someone shorting out some other electrical appliance and knocking your inflator off.

3. If redundancy is desired, two inflators can and should be used. One should be run by a separate power source (i.e. a generator).
4. Once again, the **Ametek is capable of pushing one hundred inches of water column. One hundred inches of water column in most cases will destroy an EcoShell I Airform or the slab it is attached to. This is a warning that the Airform and the air pressure must be monitored.** The reason the speed control is on this unit is to slow down the motor so that you do not overload the system.
5. After the Airform is in place it must be totally sealed (sealing the Airform is extremely important -- see below). If the Airform is not totally sealed this little motor may not have enough volume to inflate the Airform. Another side effect of not having it properly sealed is it can blow the concrete off the Airform as fast as you can spray it on.

The EcoShell Airform must be air tight so the connection of the Airform with the concrete needs to be sealed. This can be done several ways. One way is to use inexpensive caulking. Another way is to use a roll of plastic wrap laid around the circumference -- gently work it into the joint and hold it in place with sand. There are probably other ways not yet listed here.

6. Attach the inflator tube to the blower and turn it on. Be sure to adjust the motor speed to the desired air pressure.

Hint: We often use a lower pressure, higher volume blower to do the initial inflation and then move the inflator tube to the small EcoShell I inflator.

Obviously you are not going to get air pressure until it is totally inflated, which may take some time. It is most important that the airflow be monitored at all times, especially as inflation nears completion. When the desired air pressure is obtained, turn the speed control down.

Suggested Equipment List for Building an EcoShell. All items are needed for machine construction.

- [Concrete Pump](#)
- [Concrete Hoses](#)
- [Concrete Spray Nozzle](#)
- [Mixing Equipment*](#)
- Air Comp. 185 CFM
- [Scaffolding*](#)
- [Inflator*](#)
- Hammer Drill Bits*
- [Manometer*](#)
- Rebar Cutter*
- [Rebar tying tools*](#)

* Needed for hand construction.

To purchase an EcoShell Inflator, visit [Monolithic Marketplace](#) today!

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- [Surf City Cabins - Costa Rica](#)
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