



Construction of Under Gravel Jets

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Cichlid-forum.com

When I first started keeping fish, I was concerned about "dead spots" in my aquarium. I then had this crazy idea: what if I hooked up a submersible pump (power head) to some PVC pipe that ran along the bottom of the aquarium? It's been several years now and I have been extremely pleased with the results. The water movement in the aquarium is superb; there are no dead spots. And by adding a sponge filter to the submersible pump(s) I have been able to keep the bottom of the aquarium spotless. The need for vacuuming the substrate has been completely eliminated. In fact, after 6 months of not vacuuming, I decided to test the effectiveness of my undergravel jets (ugj). Literally, nothing came up; it was perfectly clean.

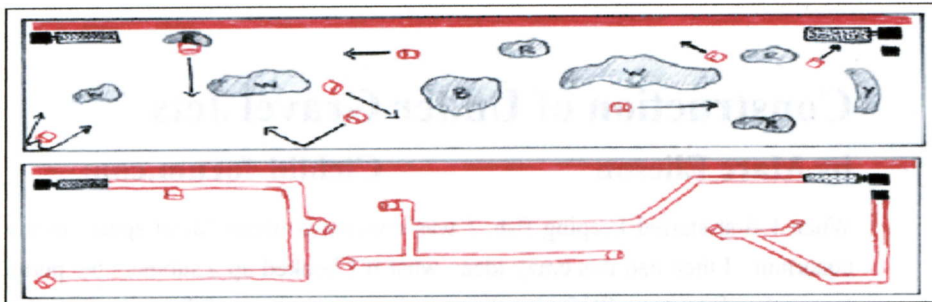
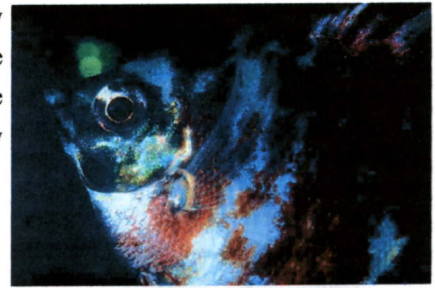
The concept behind this setup quite the opposite of an undergravel filter; I try to keep waste products off the bottom and out of the gravel. Wastes and debris get caught on the sponge prefilters (attached to the submersible pumps). As I have already mentioned, this makes maintenance much less a chore. Instead of having to tediously clean the gravel, I just remove and rinse the sponges and then return them.



UGJ are easy and inexpensive to make. What you need to do first is figure out where you want the jets pointing, and where you want to place the submersible pumps. I like the pumps in the back corners, so they aren't very visible. And I like to have at least two, if not three, jets (i.e., exits) for each pump, that way you don't get a big blast coming out. Choosing how many pumps to have is a function of the size of your tank. One pump with three "jets" is sufficient for a 55-gallon tank. I have three pumps with 8 "jets" in my 135-gallon. If your tank is only 20 or 30 gallons, I recommend a smaller pump with just two "jets."

Once you have your pump and jet locations set, draw out how you want the pipes to run from beginning to end. It is important to have a branching network so that they will be stable. If you have a single pipe with out bending or branching, with only one exit, it won't stand up properly. (continued on next page)

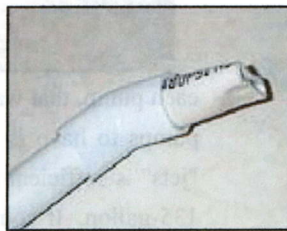
Below is a sketch I made when setting up one of my tanks. I decided how I wanted my tank to look first, with the rocks and other decorations. Then, I decided where I wanted the current to flow and where I was going to put the pumps to the "jet" locations. Your pipe network does not need to be as complex as my first design, but do you think about stability when creating yours.



Assembling the PVC is relatively easy. Measure and cut the PVC pipes, and then lay them out like you want them to appear in your tank. You want to be sure and give yourself at least a couple of inches away from the glass, and if your jets are angled towards the glass, you don't want them touching right up against it. So be sure and measure the pieces before you glue them.

To glue the PVC you will need the primer and glue. Both are cheap and can be bought at any hardware store. PVC is also really cheap, although the adapters and attachments are as much as an 8-ft. piece of pipe (~\$1.25). Rub the primer inside the adapter and on the outside of the pipe, then run the glue over the primer and immediately fit the pieces together. It will cure in about 10 seconds, after which time you will not be able to move the pieces again.

You don't necessarily need to glue the PVC because they won't come apart and who cares if you get a little leakage if it's under your gravel? Besides, they won't leak. Plus, there's an advantage to not gluing the PVC (besides not having to buy the glue): you won't have to throw away your attachments if you made a mistake measuring. And you can use the PVC again in another tank, or you can change up your design if you don't like it. If you glue your project and decide to change your setup, you'll have to start over.



To make the "jets", I cut 2-inch pieces and connect them using a 30-degree attachment so that they angle upwards. To pinch them, you need to heat these 2-inch pieces in a pot of water. When the water begins to boil, the pieces will be hot enough to pinch with pliers. I first pinch it straight on, and then clamp the whole opening from the side. Hold it pinched for about 20 seconds, allowing it to cool in the air, and then you can release it. You now have a focused "jet". If you didn't like the way it looks, you can reboil it and try again.

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In their December 2004 issue, Practical Fishkeeping release the result of the survey of their readers Top 100 favorite fishes.

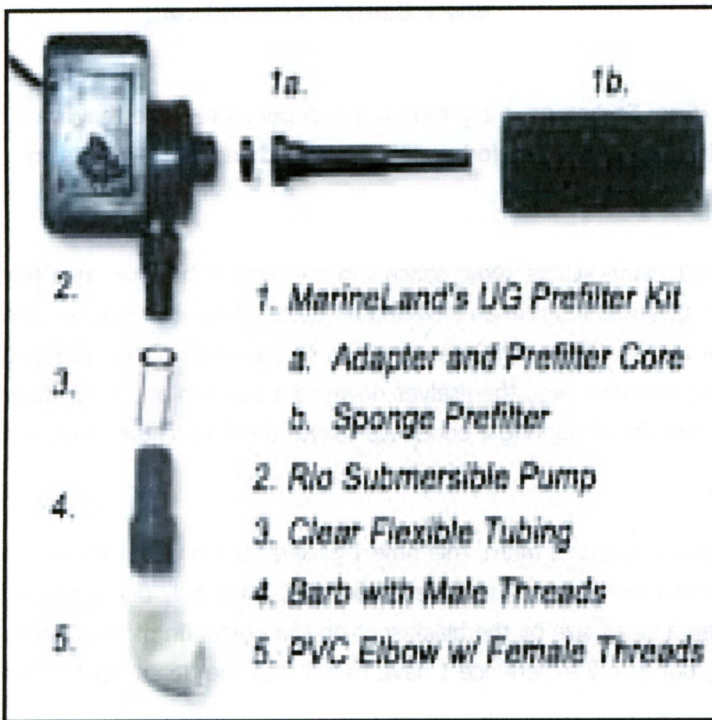
Here is their Top 20:

20. Tiger Barb
19. Scarlet Hawkfish
18. Neon Tetra
17. Silver Arowana
16. Goldfish
15. Bristlenose pleco
14. Guppy
13. Yellow Lab
12. Bala Shark
11. Platy
10. Zebra Pleco
9. Cardinal Tetra
8. Rams
7. Yellow Tang
6. Discus
5. Oscar
4. Siamese Fighting Fish
3. Angel
2. Panda Corydoras
1. Clown Loach

Believe it or not, the calvus did not even make it in their Top 100 list. Makes you wonder what they are putting in their pipes on the other side of the ocean.

If you do glue your project, wait 12-24 hours before you put it in your tank. The best advice I can give you is to remove your gravel completely to get the PVC down under and close to the tank. Otherwise, you Cichlids will dig it up, exposing it. You may even want to put rocks on the pipes to keep it down under the gravel.

The most frequently asked question I get is how to hook the pumps to the pipes. The diagram to the right documents the hardware I use. I use Rio 2100 pumps. Other pumps may or may not fit the Marineland prefilter kit. Rio 1700-2500 models will fit the prefilter. Smaller Rio pumps can still be used; however, attaching them to a prefilter is not practical. You will still get the great water movement, but without the prefilter you won't get the cleaning effect that you would otherwise.



Dozens of people have used UGJ in their aquariums with great results. What's so neat about UGJ is that they are highly customizable. People have used them with gravel and sand. Some creative adaptations that I have seen are first gluing the PVC to the bottom of the aquarium with silicone to prevent them from being dislodged by diggers. Others, in an attempt to disguise the white PVC, have covered the PVC with epoxy and then glued their substrate to the top of the pipes.

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