

BUILDING A GAS POWERED VACUUM

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This faq describes the construction of a small gas engine powered vacuum cleaner for moss mining, bed rock cleaning or crevicing -- it is probably the best (if not only) method for thoroughly cleaning out a dry crack or crevice. Commerically made units are available using the Echo and the Mac blowers for roughly twice the price!!!

This description utilizes a Homelite HB-290 leaf blower (a model HB-180 can also be used) and a five gallon bucket. Echo and McCulloch blowers can also be used but construction using these two brands is a bit more complex. The Homelite has about the same efficiency as the Mac and the Echo. I estimate that the Echo is the highest quality motor of the three and the Mac the lowest -- Echo is the most expensive, and the Mac the cheapest. The Homelite has a clearly marked idle speed adjustment screw, a good high speed lock (which is also the shutoff button), and the largest fuel tank of the three. Homelites use a 40:1 gas oil mixture rather than a 32:1 mix.

This project shouldn't take more than a couple hours once all the parts are in hand.
PARTS LIST

Qty	Description	Estimated Price
1	Homelite HB-290 leaf blower	\$110-\$120
1	2 1/2" ShopVac brand 6 foot vacuum hose	\$15-\$20
1	2 1/2" crevice nozzle attachment for hose	\$5-\$7
6	#8 X 3/4" pan head sheet metal sheet metal screws (to attach blower)	
1	5 gallon plastic bucket	\$3-\$5
1	lid for bucket	\$1-\$2
1	ShopVac hose adapter for bucket	\$6-\$7
3	#8 X 5/8" sheet metal screws (to attach hose adapter)	

Editors note: See note below for hose adapter source

OPTIONAL PARTS AND ACCESSORIES

- 1 pair ear protectors
- 1 plastic 1 gal gas can
- 1 2 1/2" to 1 1/4" vacuum hose adapter
- 1 1 1/4" crevice nozzle attachment (for smaller crevices & holes)
- 1 two prong garden weeder (crevicing tool)
- 1 ice pick (crevicing tool)
- 1 1 foot crow bar (for splitting open fractured rock)
- 1 wire bristled paint removal brush (for loosening dirt on rocks)
- 1 sharp pointed treasure hunter type small trowel (Gator Digger)
- 1 backpacking frame and 3 bungee cords (the unit can be carried easily on your back)
- 1 shovel with rounded tip (not a digging tip) with full handle and medium size blade (good for scraping large patches of moss off of rocks and as a walking stick)
- 1 one liter aluminum fuel bottle (beats carrying a one gal can to mining site if you anticipate being on site for six hours or less -- you

won't be running the vac continuously)

Virtually all of the above except the gas can will fit into the 5 gal bucket when transporting the unit to a mining site. The balance can be carried in a second bucket along with food and water.

CONSTRUCTION TOOLS

electric drill

5/32" drill for #8 sheet metal screws -- for hose adapter

3/16" drill for holes in bucket lid

2 1/2" hole saw for ShopVac hose adapter

standard and phillips screwdrivers

utility knife with sharp (new) blade

PURCHASING

1. The leaf blower unit can be purchased at any Homelite dealer. The model HB-180 will probably work as well but do not use the Bandit model because the bottom fan guard is molded into the lower housing of the Bandit model and thus cannot be adapted.

2. The ShopVac hose/bucket adapter can be ordered through a ShopVac authorized service center. The ShopVac part number is catalog # 21720016, Inlet fitting-Black Styrene. Call ShopVac customer service to either order the part or find the nearest authorized service center. The number is 717-321-7050. (Many thanx to Brian Benn for updating this info)

3. Everything else can be had at any well stocked hardware store.

Since plastic five gallon buckets and lids get brittle with age and exposure to sunlight, try to use newer ones if possible.

CONSTRUCTION

1. With the utility knife, cut a seven inch diameter round hole in the center of the bucket lid.

2. Remove the six screws and the fan guard from the blower.

3. Center the fan guard on the bottom side of the lid and mark the six holes. Then drill a 3/16 hole at each mark. Now push the lid onto each of 6 mounting posts on the bottom of the blower unit (the mounting post must extend through the lid from the top side of the lid). Position the fan guard over the six holes from the bottom of the lid. Start one screw through a guard screw hole, then through the plastic lid and then into one of the mounting posts. Next, do the same thing with a hole on the opposite side. The lid should now be aligned with all six holes and posts. Tighten the two screws. Install the remaining four screws and tighten them. Then install the other four screws. **THE LID IS SELF SEALING IN THIS INSTALLATION.** No sealants or tapes are necessary. If you have not pushed the mounting posts into the lid, you may get air leakage and thus decreased suction through the bucket.

4. Mark the edge (lip) of the lid so that you have six equal sections. With the utility knife, remove about two-third's (2/3's) of three alternating sections from the lip. You

should have three full sections of lip left which alternate with the cut portions. On the cut sections of lip, do not cut all the way back to the lid top. By removing this material you will make it much easier to remove the lid and blower from the bucket!!! If you cut all the way back to the top, you may lose sealing between the lid and the bucket when the blower is running.

5. With the hole saw, make a 2 1/2" diameter hole about half way up from the bottom of the bucket in the side of the bucket. You can also trace a 2 1/2" diameter hole in the bucket and cut it out with the utility knife.

6. Insert the bucket/hose adapter in the hole orienting the adapter to match up with the curvature of the bucket side wall and so that the exit hole of the adapter points mostly downward (for some reason ShopVac chose not to have the hole point absolutely straight downward).

7. You will need to estimate where the three small holes will go which will be used to affix the adapter to the bucket -- mark the three holes and drill holes through the bucket. Now use the three sheet metal screws to affix the adapter to the bucket.

8. Snap the lid and blower onto the bucket.

9. DONE, DONE, DONE.

TIPS

1. The hose can be coiled up for storage in the inside bottom of bucket. All of the other items can be stored inside the bucket. The small trowel or the weed picker can be fitted inside the nozzle to save space.

2. Wear the ear protectors -- you will be working over bedrock so you will be hit with the sound twice -- once directly from the blower, and again with the echo from the rocks.

3. Point the exhaust away from you and heading downwind. Rock dust is not good for your lungs. In extremely dusty conditions, wear a dust mask.

4. Don't let the bucket get more than half full or you may find heavier materials blowing out.

5. Feed material steadily into the vacuum, or you may find the hose clogging. If the hose does clog, run the throttle at high and bang on the hose with the handle of weeder. It also helps if you can put the vacuum lower than the area you are cleaning.

6. With several passes of scraping and vacuuming you should find that you are leaving the rocks and crevices quite clean -- but it does take more than one round of scraping and vacuuming. Don't be bashful about going into crevices that others have worked before you -- without a suction device, particularly one as powerful as the one you have just built, previous miners could not possibly have cleaned the crevice out.

7. This gadget makes an excellent outside vacuum cleaner around the home.

8. You can vacuum up water and wet materials with the unit, but the corrugations in the hose will fill up, blocking the hose and making it very heavy. Banging on the hose and running dry materials through it should solve the problem -- or if you don't care about losing the materials, you can wash the hose out in a river (use a wash tub if you want to keep the material).

9. If you find the unit tipping over when empty (it is top heavy) on uneven ground, put a heavy rock in the bottom of the bucket for stability. The rock will reduce capacity but won't interfere with its efficiency.

10. Be sure to bring lots of water along -- you can keep it cool in the river. On a hot day you can dehydrate quickly, especially as the rocks you are working over accumulate the day's heat.

Comments and suggestions are welcome and can be addressed to me at Steve-k@holonet.net.

Remember, gold is where you find it!!!

Good Luck.
Steve Katz