

# Calculating CFM Output Of An Air Compressor

Air compressors for residential and most commercial uses have notoriously inflated horsepower ratings. The specs and stickers on the unit are not always accurate, and add confusion instead of critical information to buying decisions.

The way to measure true power is to measure the time it takes to pump the reservoir tank of known volume from a known starting pressure to a known ending pressure. Then you can figure the true CFM from the difference in starting and final pressures, times the volume of the tank, divided by the time it took to pump up. You can also time the pump-up cycle from the cut-in to the cut-out pressure, since that's how one usually runs a compressor. These true performance measurements are impossible to fake.

1. Determine the volume of your air compressor tank in gallons. This should be clearly marked on the tank itself by the manufacturer.

2. Divide the tank volume by 7.48 (7.48 equals the number of gallons in one cubic foot.) The number that you get after the division is the tank volume expressed in cubic feet.

3. Release the air from your compressor.

4. Begin refilling the compressor with air. Record the amount of time that it takes to refill the tank while paying close attention to the compressor's tank gauge. You will need to record the psig (pounds per square inch) at two separate times in the refill process: once at the moment the compressor kicks in and once at the moment the compressor kicks out.

5. Take the psig indicated on the compressor's tank gauge when the compressor kicked in and subtract it from the psig indicated when the compressor kicked out. For example, if the compressor kicks in at 75 psig and kicks out at 100 psig then the difference would be 25 psig.

6. Divide the difference between the two recorded psigs by 14.7. The result will give you the amount of pressure added during the tank's filling cycle in terms of atm (atmospheric pressure).

7. Take the volume of the tank expressed in cubic feet (calculated in Step 2) and multiply it by the amount of pressure added during the tanks filling cycle in terms of atmospheric pressure (calculated in Step 6). This is the number of cubic feet that your compressor pumps in the time it took for your tank to fill (recorded in Step 4).

8. Convert this number to minutes. To do this, take the number of cubic feet found in Step 7 and divide it by the number of seconds it took to pump this amount. Multiply the result by 60 and you have the CFM of your air compressor.

**Note:** Any motorized device that takes power from a 120 VAC outlet, surely delivers less than about 2 HP, and likely far less. Why? Standard AC cords are limited to 15 amps of current, or about 1800 watts. At 746 watts/horsepower, and considering efficiency losses, 2 HP is all you can get, and even then the starting currents might be tripping circuit breakers.

**Note:** CFM ratings are meaningless without an associated delivery pressure. Thus, a compressor delivering 600 CFM is impressive, but if it uses a 1/3 HP motor then it only delivers 0.1 PSI.