

FanCycler.com FAQ:

Q. How do you test to know or estimate how much outside air (OA) is coming into a home with a Central Fan Integrated Supply (CFIS) ventilation system?

- A.** The most accurate way to measure OA flow is the following:
1. Turn the central system fan (the air handler) on, making sure that any motorized damper in the outside air duct is open.
 2. Measure and record the operating pressure in the OA duct (using a digital manometer/pressure gauge) upstream of any manual or motorized dampers. This should be the intended pressure usually specified by the ventilation system designer; if it is not at spec, adjust any manual damper to increase or decrease air flow restriction until the intended pressure is achieved or is as close as possible.
 3. Disconnect the OA duct where it connects to the return plenum.
 4. Connect the OA duct to a calibrated fan (Ductblaster™). Use the ductblaster to take the OA duct back to the same pressure measured in Step 2.
 5. Record the measured flow from the ductblaster.

While this level of testing accuracy can be laborious, after you have performed enough tests of this nature to establish a good relationship between duct pressure measurements and duct air flow, and you have gained confidence over your range of systems and applications, you can simply take pressure measurements and correlate them to air flow based on the chart below and/or your own field experience.

| | | Flow rate in outside air duct (cfm) (with 25 ft of flex and 6" wall cap) | | | | |
|------------------------------|-----------------------------------|---|----------|----------|----------|----------|
| OA duct pressure (Pa) | OA duct pressure (inch wc) | Flex Duct Diameter (Inch) | | | | |
| | | 5 | 6 | 7 | 8 | 9 |
| -5.0 | -0.0201 | 32 | 37 | 53 | 63 | 66 |
| -7.5 | -0.0301 | 39 | 45 | 65 | 76 | 80 |
| -10.0 | -0.0402 | 45 | 52 | 75 | 87 | 91 |
| -12.5 | -0.0502 | 50 | 59 | 83 | 97 | 101 |
| -15.0 | -0.0603 | 55 | 64 | 91 | 105 | 110 |
| -17.5 | -0.0703 | 59 | 69 | 99 | 113 | 119 |
| -20.0 | -0.0804 | 63 | 74 | 105 | 121 | 126 |
| -22.5 | -0.0904 | 67 | 79 | 112 | 127 | 133 |
| -25.0 | -0.1005 | 71 | 83 | 118 | 134 | 140 |
| -27.5 | -0.1105 | 74 | 87 | 123 | 140 | 146 |
| -30.0 | -0.1206 | 78 | 91 | 129 | 146 | 152 |
| -35.0 | -0.1407 | 84 | 98 | 139 | 157 | 164 |
| -40.0 | -0.1607 | 89 | 105 | 149 | 167 | 174 |

Note that these are all tests that an HVAC technician would perform. FanCycler.com recommends a testing regimen similar to the one used by the EPA Energy Star® program: test all of the first models of any product line, and then test at least every 1 in 7 homes after that.