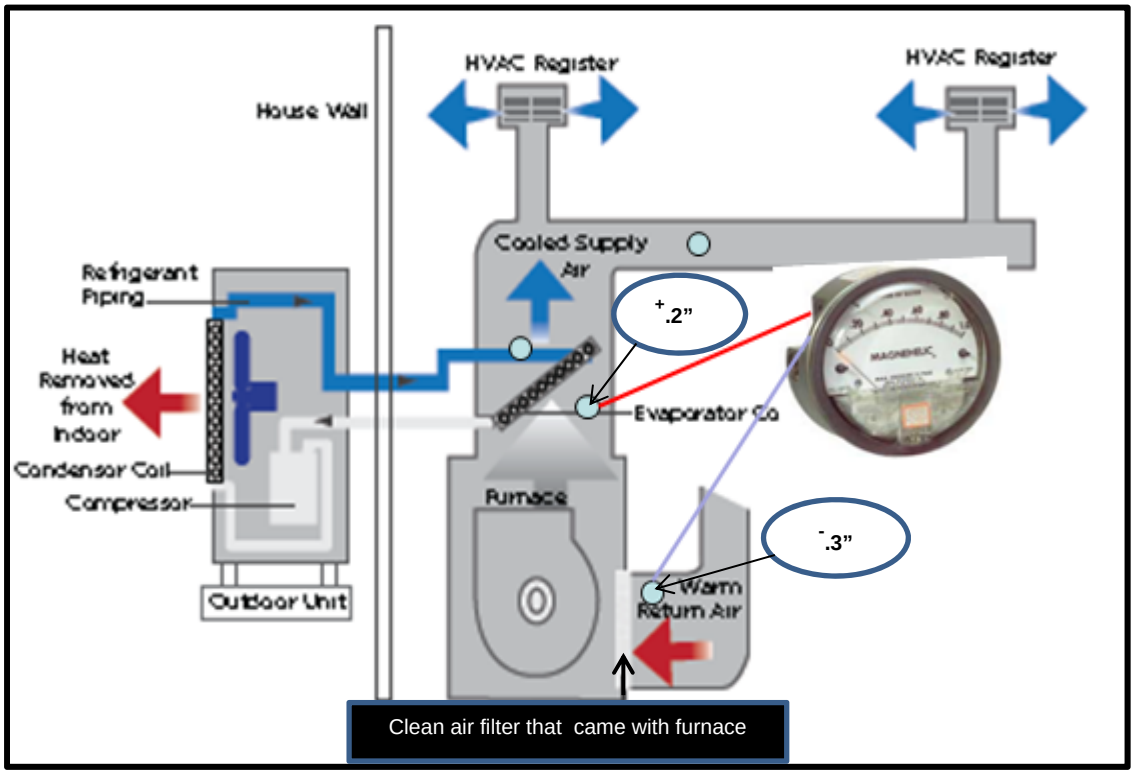
Finding system CFM using External static pressure and Fan Performance Data Tables

Finding airflow from manufacturer's fan performance curves and tables is one of the easiest and straightforward methods to determine airflow. Check the blower motor speed tap and measure total external static pressure. Total external static pressure is the sum of the absolute values of supply static pressure and return static pressure. Some manufacturers provide a suggested point that these two readings should be taken. Done correctly, you get fairly accurate CFM flow of the system. Be sure to follow the manufacturer's recommendations as close as possible. First step: Check to make sure that the blower wheel and filter are clean. Check and make sure the blower wheel is secure to the drive shaft and there is new clean air filters installed. If the blower is belt driven, make sure all the pulleys and belt are in good shape and the belt is properly tightened. Check and adjust if needed the alignment of the pulleys. When all this completed, start the fan and measure the total external static pressure in the appropriate mode of operation. See diagram blow.



Using the correct manufactures Fan Performance Data Tables (see example below) you will notice that the total static pressure is listed along the top. The model numbers of the different units are listed on the vertical axis on the left. Also listed on the left is the tap speed of the motor for each unit model. After locating your model number, go to the line that indicates your tap speed and follow it across until you are directly under your static pressure reading column. Be sure to read the notes that always accompany every fan performance data table to prevent getting a false reading. In this example we have an External Static Pressure reading of (+.2") + (-.3") = .5". The furnace is a model # 58PAV 045-12 and

the blower is set for Med-low speed, using the Fan Performance Data table for this unit we would estimate the system airflow at 1030 cfm.

58PAV

AIR DELIVERY—CFM (With Filter)*

Form No. 58PAV-9PD

UNIT SIZE	RETURN-AIR SUPPLY	SPEED	EXTERNAL STATIC PRESSURE (In. wc)							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
045-08	Bottom or 1 Side	High	1030	1005	970	925	880	815	745	615
		Med-High	855	830	800	765	720	670	595	485
		Med-Low	755	725	695	650	605	555	475	400
045-12	Bottom or 1 Side	High	1490	1430	1385	1325	1250	1175	1085	975
		Med-High	1335	1305	1270	1230	[illegible]	1090	1005	915
		Med-Low	1140	1130	1105	1075	1030	975	900	830
		Low	980	975	965	915	875	840	785	715
070-08	Bottom or 1 Side	High	1040	1010	975	935	880	810	735	640
		Med-High	855	830	800	765	715	660	600	490
		Med-Low	745	715	690	650	605	550	475	385
070-12	Bottom or 1 Side	High	1430	1380	1325	1265	1195	1125	1045	945
		Med-High	1310	1275	1235	1190	1135	1065	990	900
		Med-Low	1140	1130	1100	1065	1000	965	910	815
		Low	990	965	960	935	905	855	800	710