DISTRIBUTION EFFICIENCY LOOK-UP TABLE

Distribution Efficiency Table

System Charateristics (there are 3 questions you need to answer about the distribution system)

1. What percentage of the ducts are located within the conditioned space
2. How well are the connections on the duct system sealed
3. What is the insulation value on the ducts for the portion outside the conditioned space

	1. % within conditioned space			2. Duct leakage Charateristics					3. Duct insulation value		
Distribution Efficiency	90% or more **inside** envelope	50% or more **inside** envelope	less than 50% **inside** envelope	Connections sealed w/mastic	No observable leaks	Some observable leaks	Significant leaks	Catastrophic leaks	Ducts outside envelope R-8 or greater	Ducts outside envelope R-4 - R-7	Ducts outside envelope < R-4
95%	XXX			XXX					XXX		
94%	XXX			XXX						XXX	
93%	XXX			XXX							XXX
94%	XXX				XXX				XXX		
93%	XXX				XXX					XXX	
92%	XXX				XXX						XXX
90%	XXX					XXX			XXX		
89%	XXX					XXX				XXX	
88%	XXX					XXX					XXX
85%	XXX						XXX		XXX		
84%	XXX						XXX			XXX	
83%	XXX						XXX				XXX
80%	XXX							XXX	XXX		
79%	XXX							XXX		XXX	
78%	XXX							XXX			XXX
90%		XXX		XXX					XXX		
89%		XXX		XXX						XXX	
88%		XXX		XXX							XXX
84%		XXX			XXX				XXX		
83%		XXX			XXX					XXX	
82%		XXX			XXX						XXX
80%		XXX				XXX			XXX		
79%		XXX				XXX				XXX	
78%		XXX				XXX					XXX
75%		XXX					XXX		XXX		
74%		XXX					XXX			XXX	
73%		XXX					XXX				XXX
70%		XXX						XXX	XXX		
69%		XXX						XXX		XXX	
68%		XXX						XXX			XXX
80%			XXX	XXX					XXX		
79%			XXX	XXX						XXX	
78%			XXX	XXX							XXX
74%			XXX		XXX				XXX		
73%			XXX		XXX					XXX	
72%			XXX		XXX						XXX
70%			XXX			XXX			XXX		
69%			XXX			XXX				XXX	
68%			XXX			XXX					XXX
65%			XXX				XXX		XXX		
64%			XXX				XXX			XXX	
63%			XXX				XXX				XXX
60%			XXX					XXX	XXX		
59%			XXX					XXX		XXX	
58%			XXX					XXX			XXX

Example: If you have a system with more than 90% inside the conditioned space (i.e. in a heated basement) and the system is sealed with mastic and the portion of the duct system that is not in the heated space has an R-value of R-4, the distribution efficiency of the system is 94%.

DEFAULT MULTIPLIERS FOR HEATING SYSTEM EFFICIENCIES

If you have manufacturers rated AFUE for the system, use it to calculate the system efficiency.

If you do not have the manufacturers rated AFUE, for forced air furnaces, use the furnace efficiency test procedure. The efficiency of the forced air system equals the efficiency determined in the forced air efficiency test multiplied by the distribution efficiency.

For the following types of heating systems use the measured Steady State Efficiency multiplied by the default from the table below multiplied by the distribution efficiency to get the system efficiency.

	System Type	Default Multipliers
Air	Forced Air	Use test value
	Gravity Feed	0.8
	Freestanding Heater	0.95
	Floor Furnace	0.9
	Wall Furnace	0.85
Water	Forced Circulation (high mass)	0.85
	Forced Circulation (low mass)	0.9
	Gravity Feed	0.85
	Steam	0.75

For use in savings calculations and system sizing, seasonal efficiency must be calculated and applied. To determine the seasonal efficiency, first obtain the rated AFUE for the system. **AFUE is assigned efficiency of an appliance. A standard efficiency forced air furnace will have an AFUE of approximately 65%, while a newer non-condensing furnace will have a nominal AFUE of 80%. A condensing furnace will have an AFUE of 90% or greater. (Actual AFUE ratings may be found in the GAMA listing.)**

Associate an efficiency to the distribution system using the chart below, or use accepted modeling tools that take distribution losses into account. The seasonal efficiency is equal to the AFUE multiplied by the distribution efficiency.