HVAC Engineering Book ©

FAN SIZING

SUPPLY FANS	S-1	S-2	S-3
Design airflow SA, ft^3/min	11,557	0	0
Air-handler pressure losses, in. w.c.:			
Air-intake louver	0.1		
Motorized damper	0.4		
Fan inlet	0.1		
Filter (ΔP_F)	1.2		
Heating coil	0.3		
Cooling coil	0.9		
Other			
Total air-handler pressure losses, in. w.c.	2.9	0.0	0.0
Duct pressure loss, in. w.c.	1.4		
Total static pressure P_{SF}, in. w.c.	4.3	0.0	0.0
Effective HP=RA x Static Pressure/6344, hp	7.8	0.0	0.0
Motor power HP_{SF}, hp	15.0	0.0	0.0
Temperature rise ΔT_{SF}= k x HP_{SF}/SA, ^oF	3.1	0.0	0.0
EXHAUST FANS			
Exhaust airflow rate EA, ft^3/min	1,188	850	
RETURN FANS	RF-1	RF-2	RF-3
Return airflow rate: SA-EA, ft^3/min	10,369	-850	0
Total static pressure, in. w.c.	1.1	0.0	0.0
Effective HP=RA x Static Pressure/6344, hp	1.8	0.0	0.0
Motor power HP_R, hp	3.0	0.0	0.0
Temperature rise ΔT_{RF}= k x HP_{RF}/RA, ^oF	0.7	0.0	0.0
COMPLIANCE WITH ASHRAE 90.1-2007			
The maximum combined supply fan motor nameplate hp	15.0	0.0	0.0
The maximum combined return fan motor nameplate hp	3.0	0.0	0.0
The maximum combined exhaust fan motor nameplate hp	0.8		
The maximum combined other fan motor nameplate hp			
The maximum combined total fan motor nameplate hp	18.8	0.0	0.0
Fan Power Limitation=SA x K, hp	12.7	0.0	0.0

K = 0.0011 for CAV systems and 0.0015 for VAV systems

Exhaust fan tag	Airflow, ft^3/min	Motor hp
EF-1	208	0.10
EF-2	850	0.30
EF-3	420	0.20
EF-4	350	0.10
EF-5	210	0.10
Total:	2,038	0.80