

**SECTION C  
WORKSHEET MA-1**

**PROCEDURE TO DETERMINE MAKEUP AIR QUANTITY FOR EXHAUST APPLIANCES IN DWELLING UNITS**

<b>Table 501.4.1</b>	<b>ONE OR MULTIPLE POWER VENT OR DIRECT VENT APPLIANCES OR NO COMBUSTION APPLIANCES<sup>A</sup></b>	<b>ONE OR MULTIPLE FAN-ASSISTED APPLIANCES AND POWER VENT OR DIRECT VENT APPLIANCES<sup>B</sup></b>	<b>ONE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCE OR ONE SOLID FUEL APPLIANCE<sup>C</sup></b>	<b>MULTIPLE APPLIANCES THAT ARE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCES OR SOLID FUEL APPLIANCES<sup>D</sup></b>
<b>1. Use the Appropriate Column to Estimate House Infiltration</b>				
a) Pressure factor (cfm/sf)	0.15	0.09	0.06	0.03
b) Conditioned floor area (sf) including unfinished basements				
Estimated House Infiltration (cfm): <b>[1a × 1b]</b>				
<b>2. Exhaust Capacity</b>				
a) Clothes dryer (cfm)	135	135	135	135
b) 80% of largest exhaust rating (cfm): (Not applicable if recirculating system or if powered makeup air is electronically interlocked and matched to exhaust)				
c) 80% of largest exhaust rating (cfm): (Not applicable if recirculating system or if powered makeup air is electronically interlocked and matched to exhaust)	NA			
Total Exhaust Capacity (cfm): <b>[2a+2b+2c]</b>				
<b>3. Makeup Air Requirement</b>				
a) Total Exhaust Capacity (from above)				
b) Estimated House Infiltration (from above)				
Makeup Air Quality (cfm): <b>[3a - 3b]</b> Makeup air not required if negative				
<b>4. For Makeup Air Opening Sizing, refer to attached sheet - Table 501.4.2.</b>				

**A.** Use this column if there are other than fan-assisted or atmospherically vented gas or oil appliances or if there are no combustion appliances.

**B.** Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.

**C.** Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.

**D.** Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliances.

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**TABLE 501.4.2 - MAKEUP AIR OPENING SIZING TABLE FOR NEW AND EXISTING DWELLING UNITS**

TYPE OF OPENING OR SYSTEM	ONE OR MULTIPLE POWER VENT OR DIRECT VENT APPLIANCES OR NO COMBUSTION APPLIANCES <sup>A</sup>	ONE OR MULTIPLE FAN-ASSISTED APPLIANCES AND POWER VENT OR DIRECT VENT APPLIANCES <sup>B</sup>	ONE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCE OR ONE SOLID FUEL APPLIANCE <sup>C</sup>	MULTIPLE APPLIANCES THAT ARE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCES OR SOLID FUEL APPLIANCES <sup>D</sup>	PASSIVE MAKEUP AIR OPENING DUCT DIAMETER <sup>E, F, G</sup>
	(cfm)	(cfm)	(cfm)	(cfm)	(inches)
Passive opening	1-36	1-22	1-15	1-9	3
Passive opening	37-66	23-41	16-28	10-17	4
Passive opening	67-109	42-66	29-46	18-28	5
Passive opening	110-163	67-100	47-69	29-42	6
Passive opening	164-232	101-143	70-99	43-61	7
Passive opening	233-317	144-195	100-135	62-83	8
Passive opening with motorized damper	318-419	196-258	136-179	84-110	9
Passive opening with motorized damper	420-539	259-332	180-230	111-142	10
Passive opening with motorized damper	540-679	333-419	231-290	143-179	11
Powered makeup air <sup>H</sup>	> 679	> 419	> 290	> 179	Not applicable

A. Use this column if there are other than fan-assisted or atmospherically vented gas or oil *appliances* or if there are no *combustion appliances*.

B. Use this column if there is one fan-assisted *appliance* per venting system. Other than atmospherically vented *appliances* may also be included.

C. Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil *appliance* per venting system or one solid fuel *appliance*.

D. Use this column if there are multiple atmospherically vented gas or oil *appliances* using a common vent or if there are atmospherically vented gas or oil *appliances* and solid fuel *appliances*.

E. An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 feet for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowable.

F. If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.

G. Barometric dampers are prohibited in passive *makeup air* openings when any atmospherically vented *appliance* is installed.

H. Powered *makeup air* shall be electrically interlocked with the largest exhaust system.