

TABLE 1. RATES OF FLOW THROUGH BRANCH PIPES OF WOODWORKING MACHINES

PIPE DIAMETER, IN.	AIR VOLUME, CFM	PIPE DIAMETER, IN.	AIR VOLUME, CFM
3	200	6	800
4	350	7	1100
5	550	8	1400

TABLE 2. BRANCH PIPE SIZE FOR WOODWORKING MACHINE HOODS

TYPE OF MACHINE	SIZE, IN.		NO. OF BRANCHES	MINIMUM DIAMETER, IN.		
	Min.	Max.		BOTTOM BRANCH	TOP BRANCH	OTHERS
Self feed table saw			2	5	4	
Other single saws	18	18	1		4	
			1		5	
Saws with Dado Head			1		5	
Band saws	2	2	2	4	4	
	3	6	2	5	5	
Disc sanders	18	18	1	4		
	26	28	1	5		
	32	32	2	4	4	
	38	38	2	5	4	
		48	3	5	4	4
Triple drum sanders	30	30	1	7		
	36	36	1	8		
	42	42	1	9		
		48	1	10		
Single drum sanders: (area in sq. in.)	350	350	1	4 ^a		
	700	700		5		
	1400	1400		6		
		2800		7		
Horizontal belt sanders	9	9	2	5	4	
		14	2	6	4	
Vertical belt sanders	6	6	1	4		
	9	9	1	5		
		14	1	6		
Jointers	8	8	1	4		
		20	1	5		
Single planers	20	20	1	5		
	26	26	1	6		
		36	1	7		
Tenoner			2	5	5	

^aNot over 10 in. diameter.

TABLE 3. RATES OF FLOW THROUGH BRANCH PIPES, GRINDING AND BUFFING WHEELS

PIPE DIAMETER, IN.	AIR VOLUME, CFM	PIPE DIAMETER, IN.	AIR VOLUME, CFM
3	225	6	900
4	400	7	1200
5	600		

TABLE 4. BRANCH PIPE SIZES FOR GRINDING AND BUFFING HOODS

TYPE OF WHEEL	WHEEL SIZE DIAMETER, IN.		MAXIMUM		BRANCH PIPE MINIMUM DIAMETER, IN.
	Min.	Max.	Width, In.	Area Sq. In.	
Grinding	9	9	1	30	3
	18	18	3	175	4
	24	24	4	300	5
	30	30	5	500	6
	30	36	6	700	7
Disc Grinding	20	20	—	300	4
		30	—		5
Buffing, Polishing and Scratch Brushing	8	8	2	50	3½
	16	16	3	150	4
	24	24	4	300	5
	24	30	6	600	6

enclosure of an operation. This procedure is strongly urged where dusts are directed beyond the zone of influence of the hood.

Axial Velocity Formula for Hoods

When the normal flow of air into a hood is unobstructed, Equation 3 may be used to determine the air velocity at any point along the axis^a:

$$V = \frac{0.1 Q}{x^2 + 0.1 A} \quad (3)$$

where V = velocity at point, feet per minute.

Q = volume of air handled, cubic feet per minute.

x = distance along axis, feet.

A = area of opening, square feet.

Velocity Contours

It is possible by use of a specially constructed Pitot tube⁷ to map contours of equal velocity in any axial plane located in the field of influence. It has been found that the positions of these contours for any hood can be expressed as percentages of the velocity at the hood opening and are purely functions of the shape of the hood⁸.

TABLE 5. RECOMMENDED AIR VELOCITIES THROUGH OPENINGS IN HOODS ENCLOSING OPERATIONS OR LOCATED OVER ZONES OF GENERATION OF DUSTS, FUMES, VAPORS AND GASES RELEASED IN CERTAIN MANUFACTURING PROCESSES

CONDITION OF GENERATION OF CONTAMINANT	MINIMUM AIR VELOCITY, FPM	PROCESS
Released without noticeable movement	50-100	Evaporation of vapors, exhaust from pickling, washing, degreasing, plating, welding, etc.
Released with low velocity	100-200	Paint spraying in booth; inspection, sorting, weighing, packaging, low speed conveyor transfer points, rotating mixtures, barrel filling.
Active generation	200-500	Foundry shakeout, high speed conveyor transfer points, crushers, screens.
Released with great force	500-2000	Grinding, tumbling mills, abrasive cleaning.