TABLE 5. EXHAUST REQUIREMENTS FOR WOODWORKING OPERATIONS[36]

(Air Velocity: 4000 fpm in all branches unless noted otherwise)

Self Feed Table Rip Saw	
Use 1–5 in. branch at bottom pulley; 1–4 in. branch at saw head.	
Large Self Feed Rip Saws Other Than Table Saws	
Use 1–6 in. branch at bottom; 1–5 in branch at top.	
Swing Saws	
Up to 20 in. use 1–4 in. branch; over 20 in. use 1–4½ in. branch.	
Circular Saws	
Up to 12 in. diam.	1–4 in. branch
Over 12 in. diam.	1–5 in. branch
Dado head saws	1–5 in. branch
Gang Circular Saws	
Ventilation rate depends on effectiveness of hood and maximum number and diameter of saws.	
Disc Sanders	
Up to 12 in. diam.	1–4 in. branch
12 in. to 18 in. diam.	1–4½ in. branch
18 in. to 26 in. diam.	1–5 in. branch
26 in. to 32 in. diam.	2–4 in. branch
32 in. to 38 in. diam.	1–4 in. branch and 1–5 in. branch
38 in. to 48 in. diam.	1–5 in. branch and 2–4 in. branch
Multiple Drum Sanders (over the table)	
Up to 31 in. wide	5 in. branch (see note)
31 in. to 49 in. wide	6 in. branch (see note)
49 in. to 67 in. wide	7 in. branch (see note)
Over 67 in. wide	8 in. branch (see note)
Note: One branch of size indicated required for each drum. Fewer branch pipes may be used as long as total branch pipe cross sectional area is not reduced. Some manufacturers use 1 extra branch of equal size on feed side. 1–4 in. branch may be required for exhausting bed rubber cushions or mechanically operated brush.	
Single Drum and Spindle Type Sanders	
Up to 50 sq in. sanding surface	1–3 in. branch
50 to 200 sq in. sanding surface	1–4 in. branch
200 to 400 sq in. sanding surface	1–5 in. branch
400 to 700 sq in. sanding surface	1–6 in. branch
700 to 1400 sq in. sanding surface	1–7 in. branch
1400 to 2400 sq in. sanding surface	1–8 in. branch

Horizontal Belt Sander or Edge Sander (see note)

	Drive Pulley	Idler Pulley
Up to 6 in. wide	1–4½ in. branch	1–4 in. branch
6 in. to 9 in. wide	1–5 in. branch	1–4 in. branch
9 in. to 14 in. wide	1–6 in. branch	1–4 in. branch
Over 14 in. wide	1–7 in. branch	1–5 in. branch

Note: Where more than one belt is used, the pipe sizes specified shall be required for each belt. Where a common hood is used for more than one belt, a single pipe of an area not less than the sum of the areas of the pipes specified may be used.

Where belt is reversible, pipe at idler pulley shall be the size specified for the drive pulley.

Vertical Belt Sanders (rear belt and both pulleys enclosed)	
Up to 6 in. wide	4½ in. branch on bottom
6 in. to 9 in. wide	5 in. branch on bottom
9 in. to 14 in. wide	6 in. branch on bottom
Over 14 in. wide	7 in. branch on bottom

Band Saws and Resaws

	Bottom	Top
Up to 2 in. wide	1–4 in. branch	1–4 in. branch
2 in. to 3 in. wide	1–5 in. branch	1–4 in. branch
3 in. to 4 in. wide	1–6 in. branch	1–5 in. branch
4 in. to 5 in. wide	1–7 in. branch	1–5 in. branch
Over 5 in. wide	1–8 in. branch	1–5 in. branch

Jointers	
Up to 6 in. knives	1–4 in. branch
6 in. to 12 in. knives	1–5 in. branch
12 in. to 20 in. knives	1–6 in. branch
Over 20 in. knives	1–7 in. branch

TABLE 5. EXHAUST REQUIREMENTS FOR WOODWORKING OPERATIONS (Concluded)

(Air Velocity: 4000 fpm in all branches unless noted otherwise)

Single Planers or Surfacers	
Up to 20 in. max. working width	1–6 in. branch
20 in. to 26 in. max. working width	1–7 in. branch
26 in. to 32 in. max. working width	1–8 in. branch
32 in. to 38 in. max. working width	1–9 in. branch
Over 38 in. max. working width	1–10 in. branch

Double Planers or Surfacers

	Upper head	Lower
Up to 20 in. max. working width	1–6 in. branch	1–5 in. branch
20 in. to 26 in. max. working width	1–7 in. branch	1–6 in. branch
26 in. to 32 in. max. working width	1–8 in. branch	1–7 in. branch
32 in. to 38 in. max. working width	1–9 in. branch	1–8 in. branch
Over 38 in. max. working width	1–10 in. branch	1–8 in. branch

Moulders, Matchers, Sizers (see Note)

	Matcher head	Top	Bottom
Up to 4 in.	2–4 in. branch	1–5 in. branch	1–6 in. branch
4 to 6 in.	2–5½ in. branch	1–6 in. branch	1–6 in. branch
6 to 8 in.	2–6 in. branch	1–7 in. branch	1–6 in. branch
8 to 18 in.	2–6 in. branch	1–8 in. branch	1–8 in. branch

Note: Where profiler is used, provide additional pipe not less than that specified for top head.

Wood Shapers	
1–4½ to 10 in. branch for each spindle according to size and character of work.	
Tenoner	
For cutoff saws: Up to 12 in. diam	1–4 in. branch
Over 12 in. diam.	1–5 in. branch
Use 1–5 in. branch minimum for each top and bottom tenon, cope and dado head.	
Automatic Lathes	
Use 1–3 in. to 1–10 in. branch according to work length.	
Hogs	
Air volume based on 50 cu ft per lb of refuse conveyed. Use 4500 fpm minimum conveying velocity.	
Floor Sweeps	
Use 6 in. branch for fine dust to 8 in. branch for coarse material.	
Mouth at floor, 10 × 4 in. to 12 × 5 in.	
Note: Area of floor sweep pipe need not be included in computing main pipe area.	
Miscellaneous Equipment	
Pulley pockets and chain mortises-3 in. branch; dovetail and lock corner machines, dowel machines, duplex molding sanders, forming lathes, panel raisers (each head), ploughs, rail shears, routers, sash stickers (each head) 4 in. branch; pulley stiles-5 in. branch; glue jointer-6 in. branch.	

can be adjusted to required air flow rate, cfm, by use of a blast gate or orifice plate in such stub branch.

2. Arranging system layout so future points can be picked up by a separate main which will run directly to the fan or air cleaning equipment inlet.

CALCULATION OF SYSTEM PRESSURE LOSS

The pressure loss of the system includes entrance loss[37] as air is accelerated through the hood to a branch duct connection, resistance loss of ducts,[38] elbows, and junctions, and acceleration or deceleration losses from velocity changes within the system. Chapter 32 includes data on duct resistance and on resistance of elbows, and provides sample calculations. In exhaust systems, either the equal friction method (illustrated in Chapter 32) or the use of blast gates in the branches to equalize pressure loss of all runs is employed.[8, 11, 13, 18]

Data on losses for hood entrance and branch entry, transitions and weather hoods are given in Fig. 2. The static pressure in branch ducts close to the hood connection is frequently referred to as *hood suction*. It is the sum of the velocity pressure in the branch and the hood entrance loss.