

TABLE 1. SIZE OF CONNECTIONS FOR WOOD-WORKING MACHINERY

TYPE OF MACHINE	DIAMETER OF CONNECTIONS IN INCHES
Circular Saws, 12-in. diam.	4
Circular Saws, 12-24-in. diam.	5
Circular Saws, 24-40-in. diam.	6
Band Saws, Blade under 2 in. wide	4
Band Saws, Blade 2-3 in. wide	5
Band Saws, Blade 3-4 in. wide	6
Band Saws, Blade 4-5 in. wide	7
Band Saws, Blade 5-6 in. wide	8
Small Mortisers	6
Single End Tenoners	6
Double End Tenoners	7
Double End, Double Head Tenoners	10
Planers, Matchers, Moulders, Stickers, Jointers, etc.—	
With Knives, 6-10 in.	5-6
With Knives, 10-20 in.	6-8
With Knives, 20-30 in.	6-10
Shapers, Light Work	4-5
Shapers, Heavy Work	8
Belt Sander, Belt less than 6 in. wide	5
Belt Sander, Belt 6-10 in. wide	6
Belt Sander, Belt 10-14 in. wide	7
Drum Sander, 24 in.	5
Drum Sander, 30 in.	6
Drum Sander, 36 in.	7
Drum Sander, 48 in.	8
Drum Sander, over 48 in.	10
Disc Sander, 24 in. diam.	5
Disc Sander, 26-36 in. diam.	6
Disc Sander, 36-48 in. diam.	7
Arm Sander	4

TABLE 2. SIZE OF CONNECTIONS FOR GRINDING AND BUFFING WHEELS

DIAMETER OF WHEELS	MAX. GRINDING SURFACE SQ. IN.	MIN. DIAM. OF BRANCH PIPES IN INCHES
Grinding—		
6 in. or less, not over 1 in. thick	19	3
7 in. to 9 in., inclusive, not over 1½ in. thick	43	3½
10 in. to 16 in., " " " 2 in. " "	101	4
17 in. to 19 in., " " " 3 in. " "	180	4½
20 in. to 24 in., " " " 4 in. " "	302	5
25 in. to 30 in., " " " 5 in. " "	472	6
Buffing—		
6 in. or less, not over 1 in. thick	19	3½
7 in. to 12 in., inclusive, not over 1½ in. thick	57	4
13 in. to 16 in., " " " 2 in. " "	101	4½
17 in. to 20 in., " " " 3 in. " "	189	5
21 in. to 27 in., " " " 4 in. " "	338	6
27 in. to 33 in., " " " 5 in. " "	518	7

Certain materials such as grease wools, silk waste, salt, and other hydroscopic substances are difficult to handle due to the tendency to deposit in the conveyor pipes.

While the velocity in the system should be sufficiently high to insure the removal of the material, it should be kept as low as practicable since any higher velocity requires the use of unnecessary power. With a fixed system or orifice the power increases as the cube of the increase in velocity; or for the same quantity of air and material handled, inversely as the fifth power of the diameter of round ducts.

Velocities commonly employed are: 2,500 to 3,000 fpm for light dusts, cotton, shavings and sawdust from dry wood, and similar substances. Heavy dusts, wool, shavings and sawdust from wet wood, rags, waste

TABLE 3. SUCTION PRESSURES REQUIRED AT HOODS FOR CONNECTIONS OF USUAL PROPORTIONS

	STATIC SUCTION IN INCHES OF WATER
Exhausting from grinding and buffing wheels	2
Exhausting from tumbling barrels	2
Exhausting from wood-working machinery—light duty	2
Exhausting from wood-working machinery—heavy duty	2-4
Shoe machinery exhaust	2-3
Exhausting from rubber manufacturing processes	2
Flint grinding exhaust	2
Exhausting from pottery processes	2
Lead dust and fume exhaust	2-4
Fur and felt machinery exhaust	2-3
Exhausting from textile machinery	2-3
Exhausting from elevating and crushing machinery	2
Conveying bulky and heavy materials	3-5

paper and similar materials, 3,000 to 4,000 fpm. Lead dust, hog waste, pulp chips, etc., 4,000 to 6,000 fpm.

In choosing the pipe sizes consideration must be given to the manner in which the machines will be operated, as in case a considerable number of machines, all discharging into one main, should be shut off at the same time, the velocity in the main might easily be lowered to the point where it would not be sufficient to carry the material from the machines still in operation, and thus result in clogging the pipes. Accordingly, it is sometimes desirable to use velocities higher than the minimum to allow a factor of safety to cover this contingency.

In some states codes have been issued specifying suctions to be maintained for the more common dusts. A suction standard should always be considered in conjunction with the shape of hood, and size connection, as these factors together determine the volume of air exhausted and its velocity, which in turn are a measure of the effectiveness of the exhaust system.