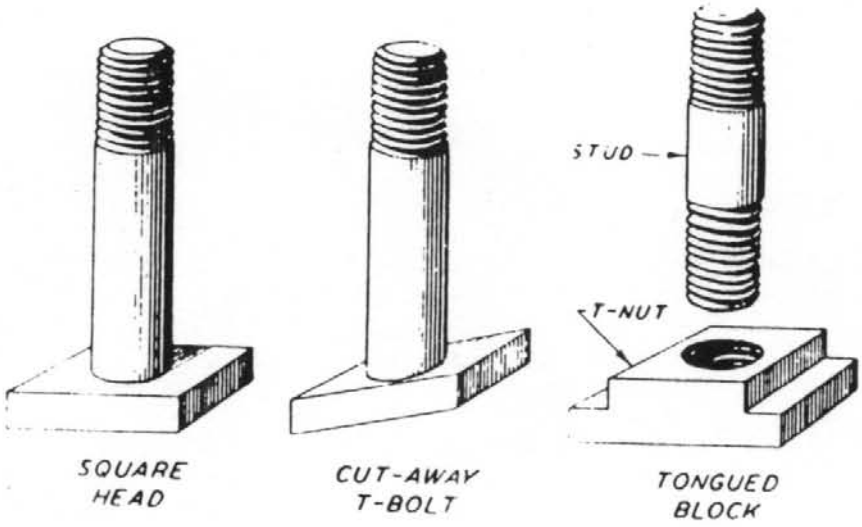
ANTIQUE WOODWORKING POWER TOOL ASSOCIATION

ISSUE # 13



August 1989 ?

JOURNAL #13

cause I'm going on vacation.
he next issue seems as if it
ill be fairly long. but there
ill be a lot of information
n it.

walt

A SCOTSMAN'S FLAT BELT PULLEY

by Dana Martin Batory

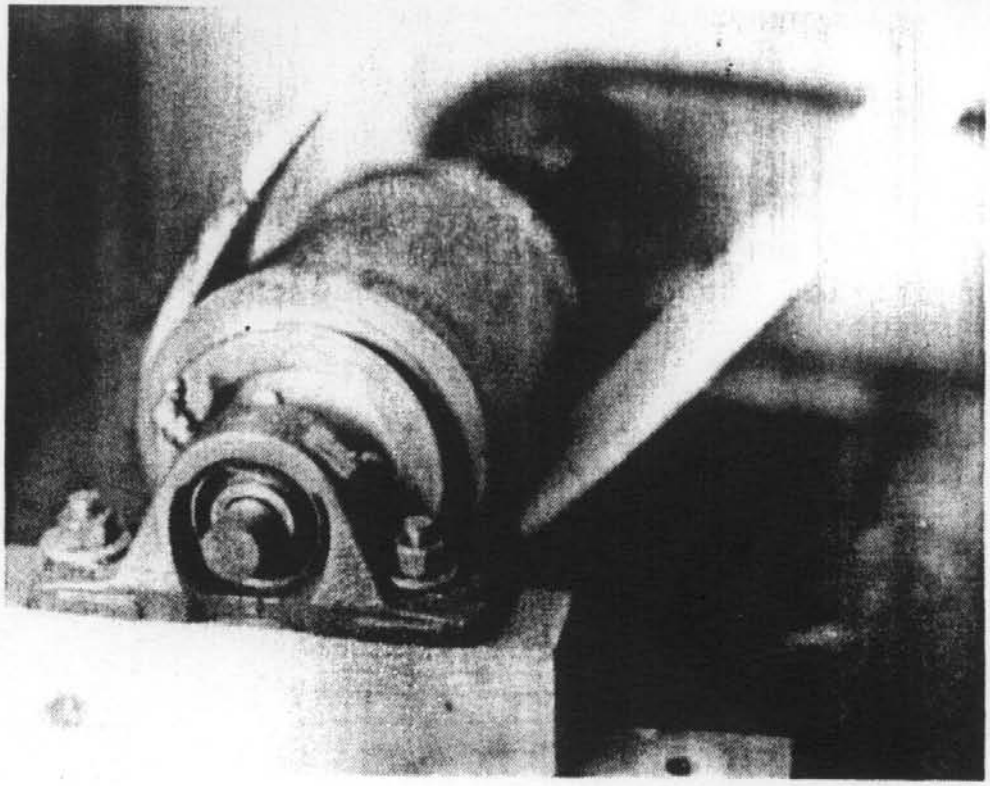
My friends call me cheap buy I prefer the word frugal. Usually long on time and short on cash I make whatever I need whenever I can.

One of my latest projects involved making a countershaft to turn the cutterhead of a 16-inch J. A. Fay & Egan jointer. The plans called for a flat belt pulley 4 inches in diameter 4 inches long with a 5/8 inch bore. I naively trotted off to a local power transmission supplier expecting to spec $10 or $15. The price staggered me--$60, excluding the bushing! I politely said thanks but no thanks and put my mind to work. I soon came up with the following answer.

First I selected a solid block of American (white) elm from my stock pile. I figured that if its interlacing fibers made it good for wheel hubs, saddle trees, boat timbers, and cooperage, it should also work for a pulley. I would assume any hardwood could be substituted for elm--maple, beech, osage orange, hornbeam, etc.

I mounted the rough block (5" D. x 6" L.) on my wood lathe and turned it to 1/4 inch oversize. I then separated it from the waste stock and drilled a 5/8 inch hole as dead center as possible all the way through on my drill press. I then drove the elm pulley over a section of 5/8 inch diameter cold rolled steel shafting about 12 inches long.

On each side the wooden pulley I fastened a 3-1/2 inch diameter 5/8 inch bore die cast aluminum V-belt pulley with three long metal screws. I spaced them at 120° intervals about the hub and made sure at least an 1-1/2 inch of the screw threads were in the elm. If the aluminum pulleys are first drilled on the drill press the holes will act as drill guides.



Replacement Flat Belt Pulley Made From American Elm.

I then temporarily mounted the whole unit between a pair of 5/8 inch pillow blocks bolted to the workbench and added a V-belt pulley to the shaft's end so I could rig up a motor to turn the shaft at about 3,000 RPMs. I then made a tool rest of scrap lumber and clamped it to the benchtop. Making sure everything was securely fastened I turned the elm pulley to the proper dimensions and true to the shaft, making sure to add the slight crown to the pulley's middle. I then sanded and varnished the pulley (three times) and transferred it to the countershaft. It could have been turned directly on a countershaft, but in my case it would have meant standing on my head!

Total cost of the flat belt pulley? About $6, one tenth the cost of the cast iron pulley. I admit it did call for some fussing about but I figured two hours work is worth a $54 savings anytime.

So far the elm pulley has performed well and should last until I locate an old piece of farm or milling machinery I can salvage a cast iron pulley from The principle will work for any size flat belt pulley.

HOMEMADE PLANER BOLTS

by Dana Martin Batory

Last year, Charles Poth and I bought an old 24 x 8 thickness planer (see Newsletter No. 4). Surprisingly, after nearly 90 years, most of the parts were still with it. The shavings hood (if it ever had one!) was gone and all the planer bolts that held the two knives against the square head. No problem we thought.

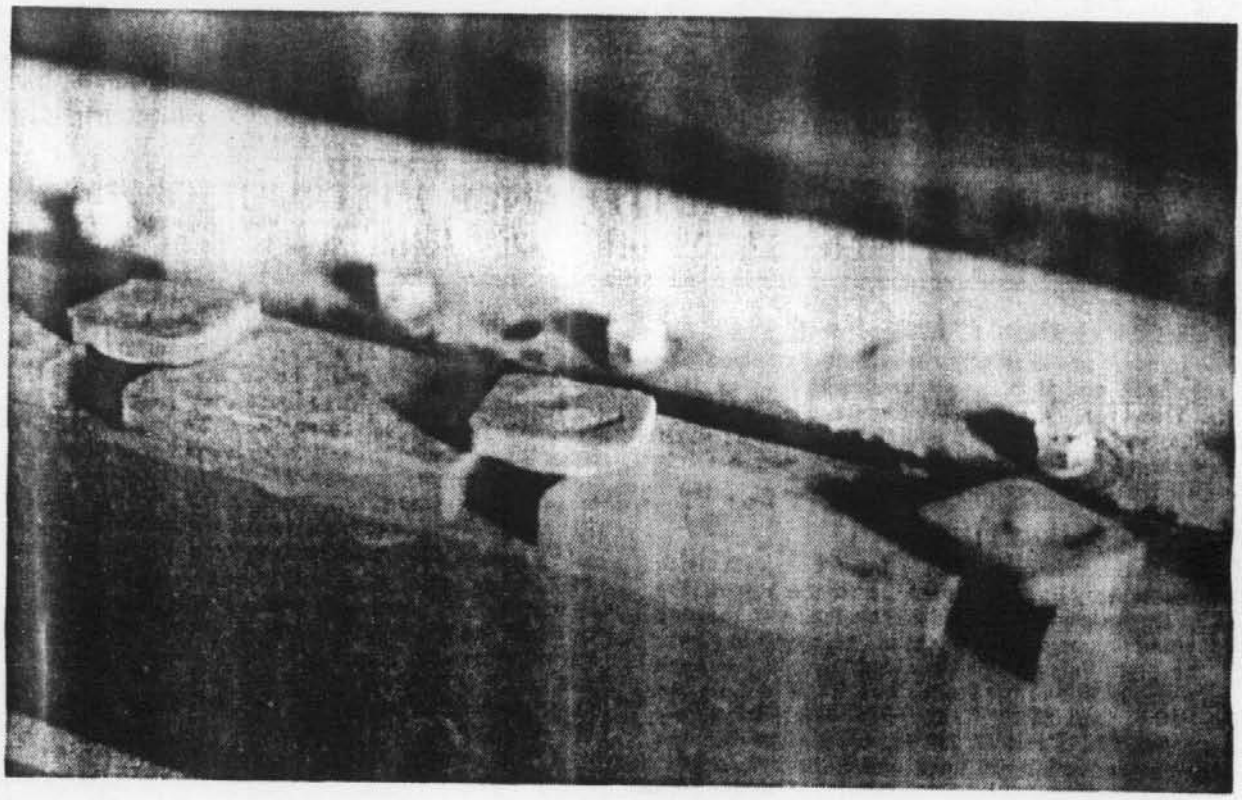
We had the knives sharpened, put them in the head, and fastened them down with 3/4 x 10 hex head bolts. We then tested it by turning the cutterhead/feed pulley by hand. The bolt heads cleared the machine's housing but left gouges on the board. The heads were too high.

Charlie decided to look into buying the proper bolts. He described the type needed to a local supplier. No, they didn't carry them in stock, but they could have them made up, if we would order them in lots of one thousand! That ended that. We considered grinding down the heads and using large washers but my brother Todd, who's a machinist, came up with an ides, and better yet, volunteered to do it.

He sawed 3/4 x 10 threaded rods into 1-1/2 inch long sections. He then cut 2 inch squares from 1/4 inch thick boiler plate. He drilled holes as dead center as possible and tapped them to fit the rods. The tops of the holes were slightly countersunk. Todd threaded the rods to within about 1/16 inch of the top. He then filled in the entire cavity above the threaded rod with weld. Meanwhile, Charlie found some large diameter washers.

We then fastened the knives down again and tested it by hand. The bolts and washers worked. The planer has seen some heavy use since then and the bolts have performed beautifully. However, if the opportunity ever presents itself we intend to replace the homemade bolts with original ones--both for safety and accuracy in restoration.

Try the method at your OWN RISK. If anyone knows where such planer bolts can be purchased drop a line to the Association.



Planer Bolts Made From Welded Boiler Plate And 3/4" x 10 T.P.I Threaded Rod.

P.M. N. 1535
DATE 9-15-43
REPLA CES NONE
INDEX 120-9-A

THE DELTA MFG. CO., MILWAUKEE, WIS.

OPERATING AND MAINTENANCE INSTRUCTIONS
For No. 37-205 and 37-207 Jointers

IMPORTANT

Our Jointers are carefully tested and inspected before shipment, and if properly used will give perfect results. However, certain adjustments are necessary in service, and if you are to receive the utmost from your machine, it is imperative that you read the following instructions carefully.

SETTING UP

If you have purchased the jointer complete with stand and motor, bolt the machine to the top of the stand, with the graduated end of the fence at the end of the stand opposite to the chute, so that the chute faces the rear. Screws are provided for bolting both machine and motor to the stand. The stand is designed so that either the No. 62 110 or No. 66 320 motors may be used. No. 62 110 and 66 320 motors come with two wooden blocks, which are used under the base of the motor to shim it up to the correct height for the belt.

Bolt the motor in place, then attach the clamp for the switch rod to the right-hand side of the stand, near the front, with the setscrew inside and the hole in alignment with the switch lever on the motor, if motor with built-in switch is used (No. 62 110). Slip the rod through the rubber bushing and attach lower end to switch lever with cotter pin.

If mounted on the bench, any ⅓ H.P. repulsion induction motor may be used to drive the machine, and it may be mounted either below or behind the jointer. The cutter head should run at 4200 r.p.m., and to attain this speed with a standard 1725 r.p.m. motor a 7 inch pulley should be used on the motor shaft. The cutter head should revolve toward the front of the machine; if the motor turns the wrong way it should either be turned around on the stand or bench, or reversed in accordance with the maker's instructions.

If the jointer is mounted on a bench with other machinery, care should be taken that there is nothing in line with the rear table that will interfere with the jointing of long pieces.

ADJUSTMENTS

Drawing shows a side and end view of the cutter head, NJ-253 being the high-speed steel knife, 254 the knife lock bar and J-23 the lock-bar screws. The knives are adjusted at the factory so that they all project equally from the head, and also so that they are parallel with the table, and they will need no further adjustments for a long period.

Crank handle BM-4 at the front of the machine, shown in the detail drawing, is used to regulate the thickness of the cut, and is the only table adjustment that is used when the machine is in operation. The rear crank handle is used to adjust the height of the rear table, and, once set, should not be touched again until further adjustment may be necessary after long wear. Tables are clamped after adjustment by means of clamp knobs NJ-220.

To adjust the fence across the table, the dual-control handle NJ-237 is slid out (toward the operator) until it engages with the acorn nut NJ-244. The nut is then loosened, and the fence may be moved across the table to any desired position. To loosen the fence for tilting, the control handle is slid in (toward the machine) to engage nut NJ-238, and when this is loosened the fence may be tilted in either direction. When the fence is to be tilted to the left, the stop link NJ-231 is flipped out of the way past the stop screw.

Although the fence is set square at the factory, it is advisable to check this setting before using the machine, in case it may have become out of adjustment during shipment. Run a piece of wood over the jointer and check with a try square. If the fence needs adjustment, loosen setscrew SP-253, screw the stop screw NJ-233 in or out against the stop link, test again, then, when the piece is square, lock the stop screw with the setscrew SP-253 to preserve the adjustment. See that the fence is always brought solidly against the stop link when setting. Set the stop screws for both 45 degree positions in the same way, and the jointer is then ready for service.

WHETTING KNIVES

After long use the knives will become dull. They may then be whetted with a fine Carborundum stone. Partly cover the stone with paper so it will not mark the table as shown in Fig. 6, and lay it on the front table as shown.

FIG. 6

Turn the cutter head and lower the table until stone lies flat on the bevel of the knife, then move it back and forth lengthwise of the knife. Do the same amount of whetting on each knife.

FIG. 7

Knives may also be sharpened and brought to a true cutting circle by "jointing" their edges while the head is revolving. To joint the knives, place the Carborundum stone on the rear table, and start the machine. Move the stone forward until it projects over the knives as shown, then move it sidewise so that the knives are jointed their entire length. See Fig. 7.

The stone must be held flat on the table.

If the stone does not touch the knives at all points lower the rear table a few thousandths of an inch and repeat. If this operation is carefully done the knives will cut very smoothly.

When knives require grinding, the whole head, with its bearings, should be removed and returned to the factory. The head is removed by removing bearing-housing screws SP-666.

SETTING KNIVES

If the knives are removed from the head for any reason care must be used in resetting them. Place a knife in its groove so that the rear edge of the bevel is $\frac{1}{32}$" from the surface of the cutter head, slip the lock bar into place and tighten the lock screws lightly. Place a knife-setting bar, made of a piece of hardwood jointed perfectly straight on one edge, on the rear table as shown in Fig. 8. The knife is then set so that

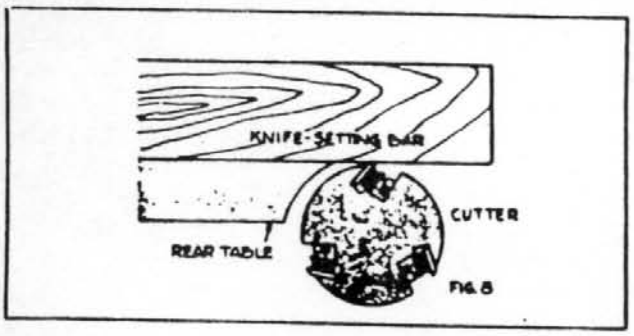


FIG. 8

when the head is revolved carefully backward, it will just touch the bar without moving it. This should be checked at each end of the knife. Tighten the screws, then set the other knives in turn. Go over the lock screws again to make sure they are tight, then joint the knives lightly as previously described. Do not hurry these operations, for upon their accuracy depends the quality of the work the machine will do.

SETTING REAR TABLE

For ordinary jointing the rear or out-feed table must be set level with the knives at their highest point of revolution. Once set, this position should not be changed, except for some special operations.

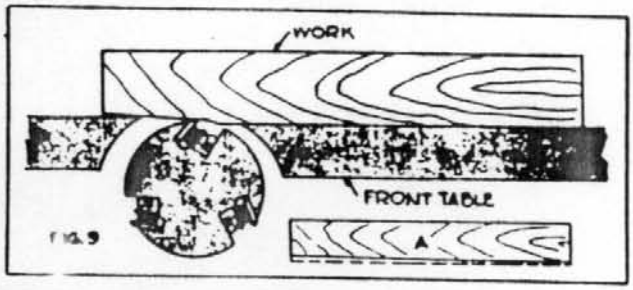


FIG. 9

To test the alignment of the rear table with the knives, run a piece of stock over the knives for a few inches, then check the position of the newly cut surface with respect to the rear table; there should be no space showing under the work.

If the rear table is too high the result will be as shown in Fig. 9.

If the rear table is too low the result will be as shown in Fig. 10. For good work the stock must rest equally on both tables. A hundredth of an inch out of adjustment will cause poor work.

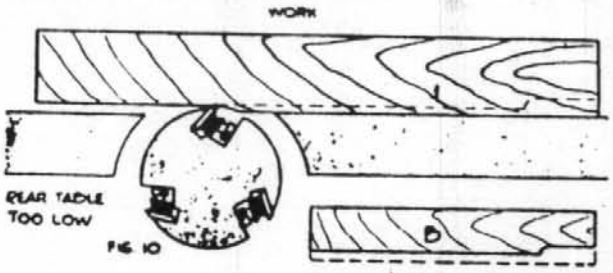


FIG. 10

OPERATION

As the work is passed over the knives, a new surface is formed, which rests on the rear table. As soon as part of the stock rests solidly on the rear table, the left hand of the operator should press down on this part, at the same time pushing the work forward with both hands. The right hand should push only at this stage of the operation, while the left hand supplies the downward pressure. As the longer portion of the work passes over to the rear table, the right hand should be transferred to this part of the stock also. Remember, keep the pressure on the part of the stock over the rear table, and do not allow the hands to pass directly over the revolving knives.

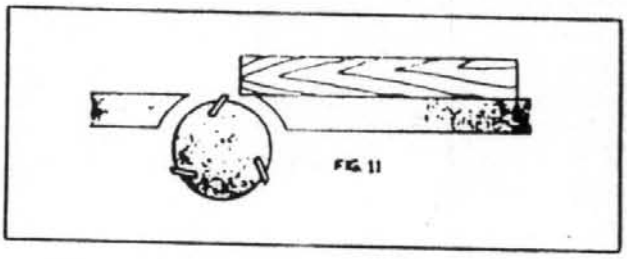


FIG. 11

Work should always be fed to the jointer with the grain, as shown in Fig. 11, and not against the grain as in Fig. 12. Failure to observe this will often result in chipped or splintered edges of the work.

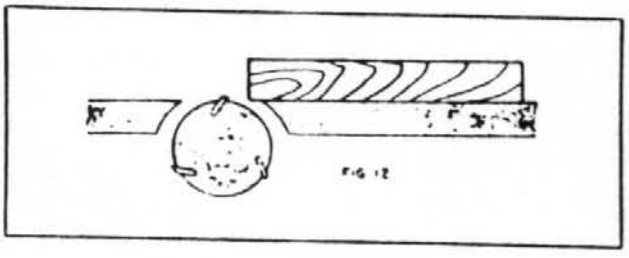
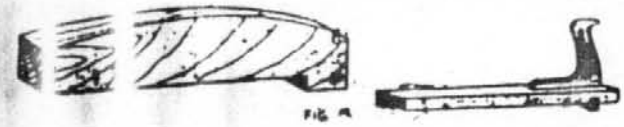


FIG. 12

If work is twisted or dished, do not force it down on the table so tightly as to force out any spring it may have. If this is done the wood will spring back after the cut and the work will not be straight. Take light cuts, without undue pressure, until the stock is jointed straight.



When jointing short pieces, always use a push block, made as shown in Fig. 13, which shows two forms, a simple and a more elaborate one. Never joint short pieces with the fingers alone; it is dangerous.

RABBETING

The jointer is provided with a rabbeting arm and ledge by means of which rabbets can be cut up to ½ deep and 6" wide. Slide the fence across the table to the width of rabbet desired, and drop the front table to the proper depth. When taking deep cuts like this, feed the work slowly to avoid tearing and splitting of the wood. When making rabbets of a size near the maximum capacity of the machine it is well to take two cuts, although they may be cut in one pass when necessary.

BEVELING

When the edges of work are to be beveled, tilt the fence to the angle desired and lock it at that angle, then run the stock across the knives, taking care to keep it pressed firmly against the fence and table so that it does not slip.

For most slight angles cut on the edges of the stock, it makes little difference which way the fence is tilted. As the bevels become greater, however, and approach 45 degrees, it will be found increasingly difficult to hold the work firmly to the fence and the table at the same time. This is where the advantage of the double-tilting fence is appreciated.

With the fence tilted in, the fence and the tables form a sort of V-shape, into which it is only necessary for the operator to press the work in one direction. The fence being inclined inward, holds the work down onto the knives, and all that is left for the operator to do is to guide the work.

Sometimes circumstances require that a bevel be laid out on the edge of the stock so that it would be impossible, with the fence tilted outward, to run the work with the grain. With the double-tilting fence, all that is necessary when a piece of work like this is encountered is to tilt the fence either in or out, depending upon which way the grain of the piece runs, and the work can then be done with perfect ease.

TAPER CUTS

One of the special operations that can be done on the jointer is tapering. One method of cutting a long taper on a piece of stock — a table leg, for example — is as follows:

The front table is lowered with the adjusting screw to the proper point for the taper to be cut (it is advisable for the amateur to experiment with some scrap pieces of wood before undertaking to taper a good piece, so he will learn the proper methods).

Now the front end of the work, instead of being laid on the front table and pushed into the knives, is laid on the rear table. It must be lowered carefully onto the rear table, as the revolving knives will take a slight "bite" from it just before it touches the table, and this will cause the stock to be kicked back unless the operation is carefully done.

With the extreme front end of the stock resting on the rear table the work is now pushed forward just as in ordinary jointing. The effect of this is to plane off all that part of the stock lying in front of the plane of the knives, leaving a tapered surface. The other three sides are similarly treated.

As mentioned above, the knives dig in slightly at the point where the stock first meets them, leaving a slight depression in the wood at this point. To remove this, raise the front table after all the tapering has been done and set the jointer for a light cut. Now joint all four sides of the legs in the ordinary manner, and this will remove the depressions in the surfaces.

Sometimes it is necessary to taper a piece for only part of its length, as, for example, a leg on a footstool or piano bench, which is often straight for a portion of its length, and tapered for the remainder. To do this work it is necessary to clamp a stop block to the fence of the jointer. The stop block is clamped to the fence in such a position that, when the end of the stock is butted against the block, and the front end let slowly down against the knives, the cut will start right at the point where the taper is to begin. The stop block clamped to the fence prevents all danger of a kick-back from the stock but the work should be let down slowly and carefully onto the knives, and pushed carefully forward to complete the cut.

It is quite evident that there will be a depression cut in the stock by the knives when using this method, but this can be removed by re-running the work with a light jointing cut as described previously.

CHAMFERING

Chamfering is nothing more than the beveling of the edges or corners of parts. Chamfers are usually cut at an angle of 45 degrees, although this is not essential. Set the fence at the angle required, then move the stock steadily over the cutter head, keeping it firmly pressed against the fence. Repeat the cuts until the chamfer is of the required width. Count the number of cuts taken on the first edge of a piece so as to get all of the remaining edges the same as the first edge.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

NOTICE

Some or all prices on this list subject to 20% increase May 1, 1951, by OPA approval.

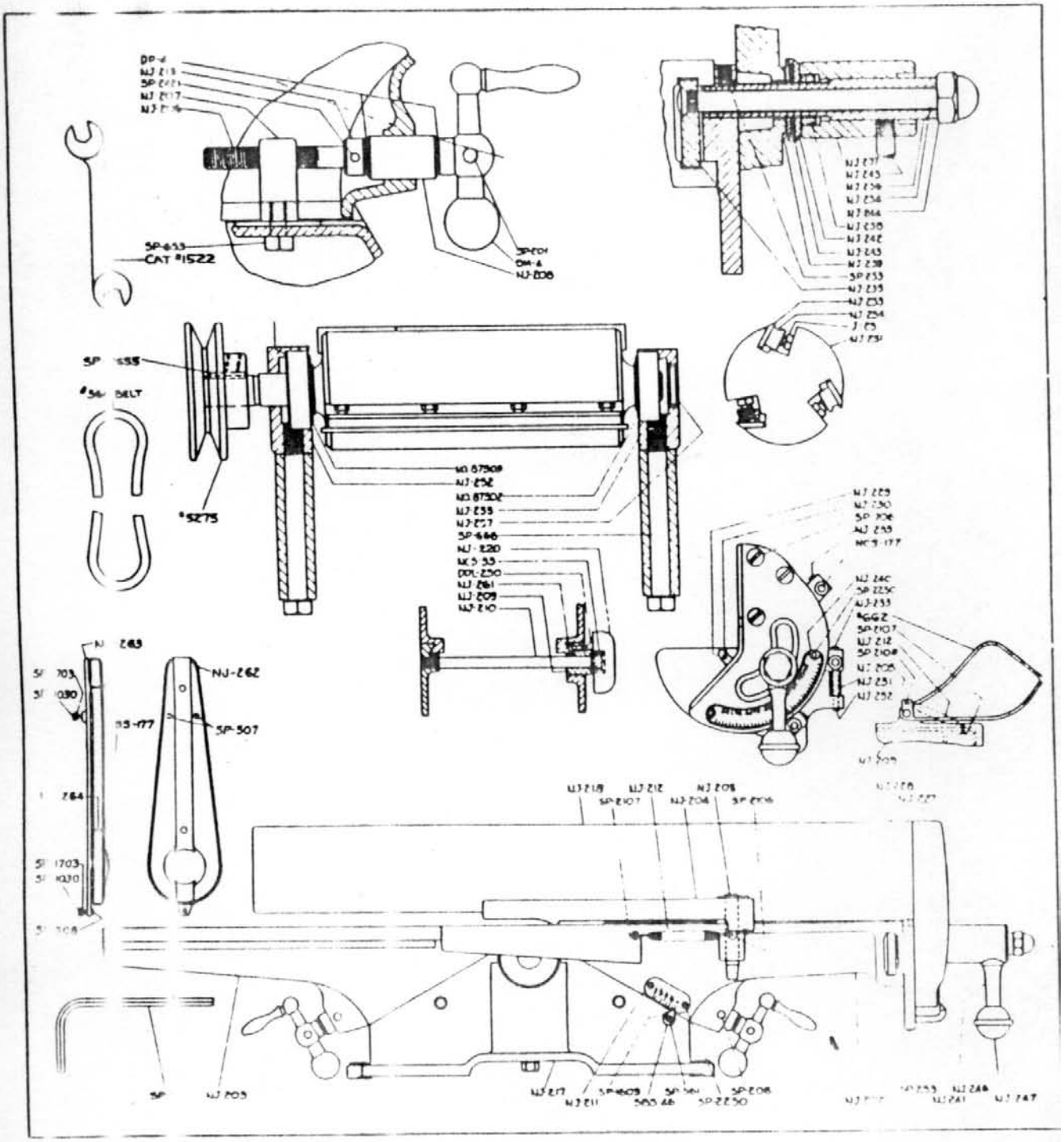
Part No.	Description	No. Req.	Price Each
	MAIN BODY PARTS		
NJ-202	Front Table, only	1	$8.00
NJ-203	Rear Table, only	1	6.80
NJ-205	Guard Pivot Pin	1	.15
NJ-207	Adjustment Screw Nut	2	.30
NJ-208	Adjustment Screw Sleeve	2	.35
NJ-209	Table Clamp Collar	2	.15
NJ-210	Table Clamp Stud	2	.20
NJ-211	Depth of Cut Scale	1	.10
NJ-212	Guard Spring	1	.20
NJ-215-S	Table Adjustment Screw with Collar	2	.25
NJ-217	Jointer Base	1	5.05
NJ-220	Hand Knob	2	.20
NJ-261	Gib	2	.20
BM-1	Crank Handle	2	.55
DDL-250	Gib Adjustment Screw	8	.10
DP-41	Fiber Washer	4	.10
NCS-33	Coil Spring	2	.10
SBS-46	Indicator Pointer	1	.10
SP-201	5/16-18 x 5/16 Allen Setscrew	2	.10
SP-206	5/16-18 x 5/16 Cup Pt. Allen Setscrew	2	.10
SP-561	#10-32 x 3/16 R. H. Machine Screw	1	.10
SP-653	3/16-24 x 3/16 Hex. Hd. Capscrew	4	.10
SP-1609	13/32 Washer	1	.10
SP-2106	1/16 x 1 1/4 Cotter Pin	1	.10
SP-2107	1/16 x 3/4 Cotter Pin	1	.10
SP-2108	1/16 x 1 Cotter Pin	1	.10
SP-2250	Parker Rivet (No. 4 x 5/16)	2	.10
SP-2655	5/16" Sq. x 5/16" Long Key	1	.10
#657	Front Safety Guard, complete	1	
	FENCE PARTS		
NJ-218	Fence for 6" Jointer	1	4.30
NJ-218-S	Fence and Clamp Assembly	1	14.45
NJ-227-S	Fence Segment Assembly, with Scale and Stop Screws	1	3.45
NJ-228-S	Fence Socket Assembly, with Guide, Pointer and Stop Link	1	2.60
NJ-229	Fence Segment Guide	1	.20
NJ-230	Segment-Guide Dowel	2	.10
NJ-231	Stop Link	1	.40
NJ-232	Stop-Link Pin	1	.10
NJ-233	Stop Screw	3	.10
NJ-234-S	Segment Clamp Bolt with NJ-235 Plate	1	.45
NJ-236	Segment Clamp Sleeve	1	$ .60
NJ-237-S	Segment Clamp Handle, complete	1	1.50
NJ-238	Segment Clamp Nut	1	.15
NJ-239	Segment Clamp Washer	1	.10
NJ-240	Segment Tilt Scale	1	.15
NJ-241	Segment Tilt Pointer	1	.10
NJ-242	Segment Clamp Collar	1	.20
NJ-243	Segment Clamp Spring Washer	1	.10
NJ-244	Socket Clamp Nut	1	.20
NJ-245	Fence Segment Handle Stud	1	.10
NJ-246	Fence Segment Handle Spacer	1	.25
NJ-247	Clamp Handle Ball Knob	1	.20
NCS-177	1/4-28 x 1/4 Headless Setscrew	3	.10
SP-253	1/4-28 x 1/4 Allen Setscrew	3	.10
SP-706	3/8-16 x 1 1/4 Fill. Hd. Screw	3	.10
SP-2250	No. 4 x 5/16 Rivet	3	.10
	CUTTER-HEAD PARTS		
NJ-252	Rear Bearing Housing	1	.70
NJ-254	Knife Lock Bar	3	.45
NJ-255-S	Front Bearing Housing Assembly	1	.90
J-23	Knife-Bar Lock Screws	12	.10
SP-666	Bearing Housing Clamp Screw	2	.10
#663	Cutter Head Assembly, complete with Bearings and Housings	1	
#5275	V-Pulley (5/8 bore)	1	
	MISCELLANEOUS		
NJ-262	Front Belt Guard	1	4.45
NJ-263	Rear Belt Guard	1	3.55
NJ-264	Stud	2	.25
LBS-177	Knurled Thumb Nut	2	.15
SP-507	5/16-18 x 1/4 Rd. Hd. Mach. Screw	3	.10
SP-508	5/16-18 x 1 Rd. Hd. Mach. Screw	1	.10
SP-1030	5/16 Hex. Nut	3	.10
SP-1703	5/16 Std. Washer	2	.10
#194	5/16 Allen Wrench (old SP-2)	1	
#560	V-Belt	1	
#659	Set of Three High-Speed Knives	1	
#661	Belt Guard Complete	1	
#662	Rear Knife Guard, with Spring	1	
#1522	Special Lock Box Screw Wrench	1	
#5700	Pulley	1	
#656	Steel Stand	1	
#667	Cast Iron Stand	1	

NOTE: Special tools are required to remove and replace each one of the two ball bearings used on the shaft of the cutter-head of this machine. If either the bearings or the shaft of your machine should ever need replacement, send us the cutter-head complete with bearings for repair. Charges for this work will be based on prices of $1.50 for the rear bearing, $1.90 for the front bearing, $4.85 for the cutter-head only, and a $.50 labor charge for each bearing changed. We are equipped to regrind and reset knives properly and make a nominal charge of $2.00 for this service. Be sure to send us the complete cutter-head assembly, prepaid, and insured for $14.00, for either bearing or knife grinding and setting service.

IMPORTANT: Base, front and rear tables cannot be supplied separately. In order to insure accurate alignment, both tables are finish ground while in place on the base, and a new table, or new base supplied separately, could not be guaranteed to be accurate. If a new table or base is ever required, ship the machine to us and we will fit it, charging the list price, plus $3.00 for re-grinding and assembling.

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts. Quotations on such machines will be furnished upon request.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE


SP-633
CAT #1522
BELT
NJ-262
SP-507
NJ-203

by walt vinoski

As an avid woodworker, I always assumed that sawdust would be around as long as there were woodworkers. Sometimes I believe that I mostly produce sawdust. I have gotten just as comfortable working around sawdust as I have with wearing underwear.

Then a friend gave me a dust collector to try out. It seems he was using these blowers for some other purpose (of which I did not ask), then he received an order for a few, then a few more. It seemed that there was a demand for these as dust collectors. So Dana Savorelli repackaged them with a dust bag and some ductwork and began selling them. Business was going fairly well, when Dana asked his brother Sam to sell them and me to test one.

Well, I got this little 1-1/2 hp machine in my shop. I connected one end to the bag and a drum and the other to a 24" thickness planer. I plugged it in and started to plan lumber and to my surprise the daggone thing worked.

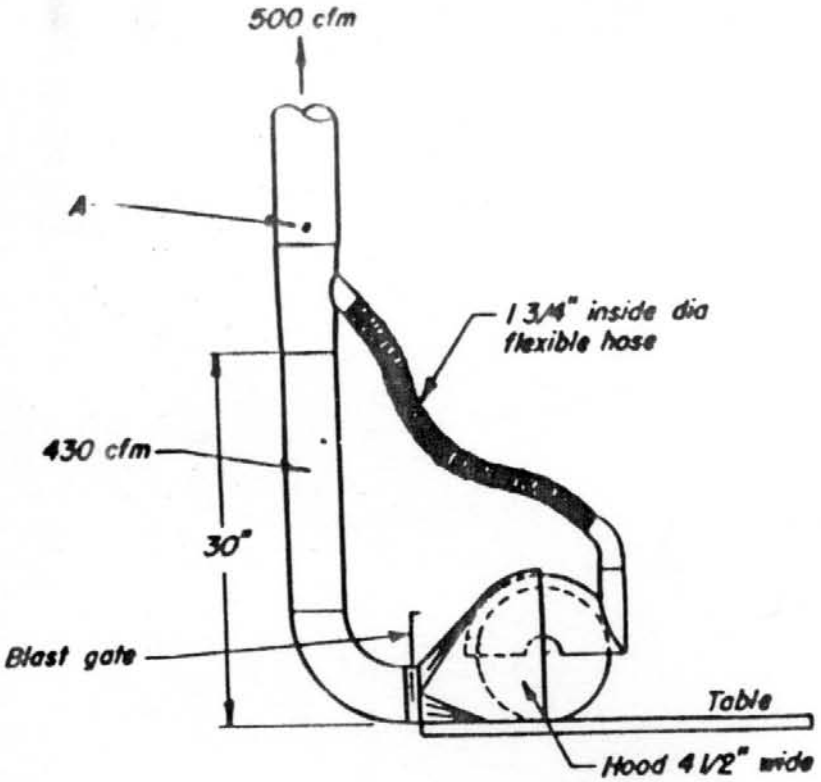
Now naturally, this small blower could only cover one machine at a time, but then again it only sells for few hundred dollars.

After playing around all day, I decided to go out to dinner with some friends. I tried explaining what I was doing all day, and how impressed I was that there wasn't any dust floating around in my shop. My buddy Dave Garret said why don't you stop out at my shop. So I eventually did and Dave showed my this high "sandblaster." Dave restores older cars, mostly GTO's. Well, I thought it was a sandblaster it looked like one although there wasn't any air-lines or ductwork connected to it. Yes it was a big Murphy-Rodgers dust collector. It stands about 10'-4" tall, I know because my shop ceiling is 10'-2", (with one exception: a 12"x 12" hole where the motor protrudes up through). Its a nice size for a small shop like mine. Its 3 hp 3Ø, has 12 air bags, and a hopper that empties directly into two 55 gallon drums.

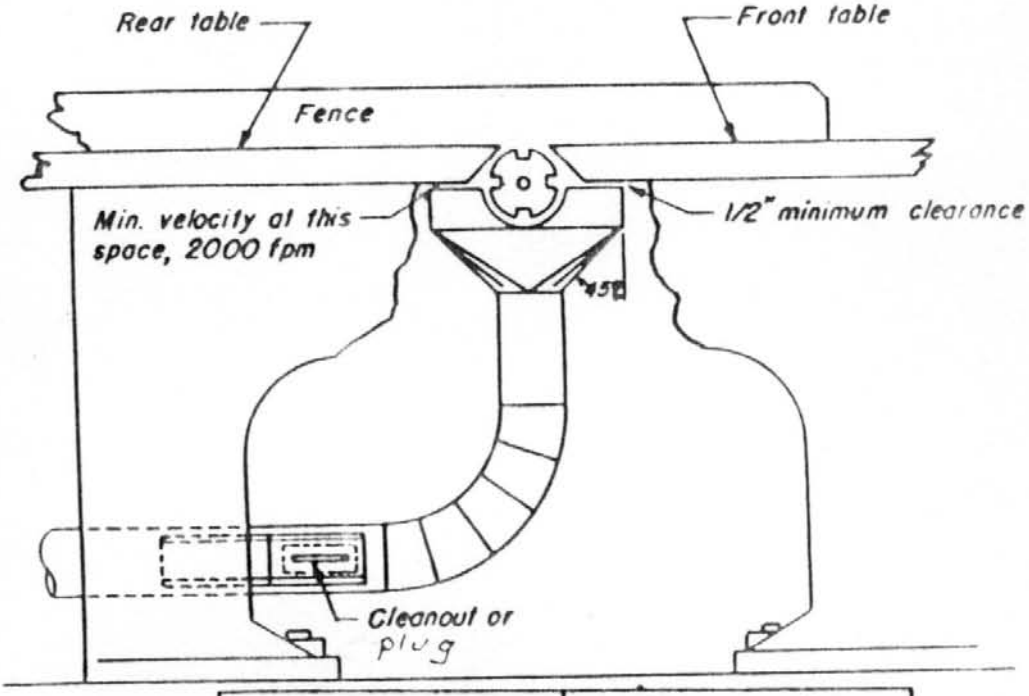
I connected a 7" diameter trunk-line (not a tree-trunk) that extended about 20 feet down the shop and up to the ceiling. I go across the ceiling and split off about 10 more feet with 6" line. From there I drop down to my 16" tablesaw, 12 radial arm and 12' bandsaw with 4" line. I also drop down from the ceiling (on a 45°) into a 24" planner. Along the initial 7" trunk-line I drop out (on a 45°) with two 4" lines one for a 36" bandsaw and the other for a 12" jointer.

Eventually you will have a dust collector. Whether you

RADIAL SAW

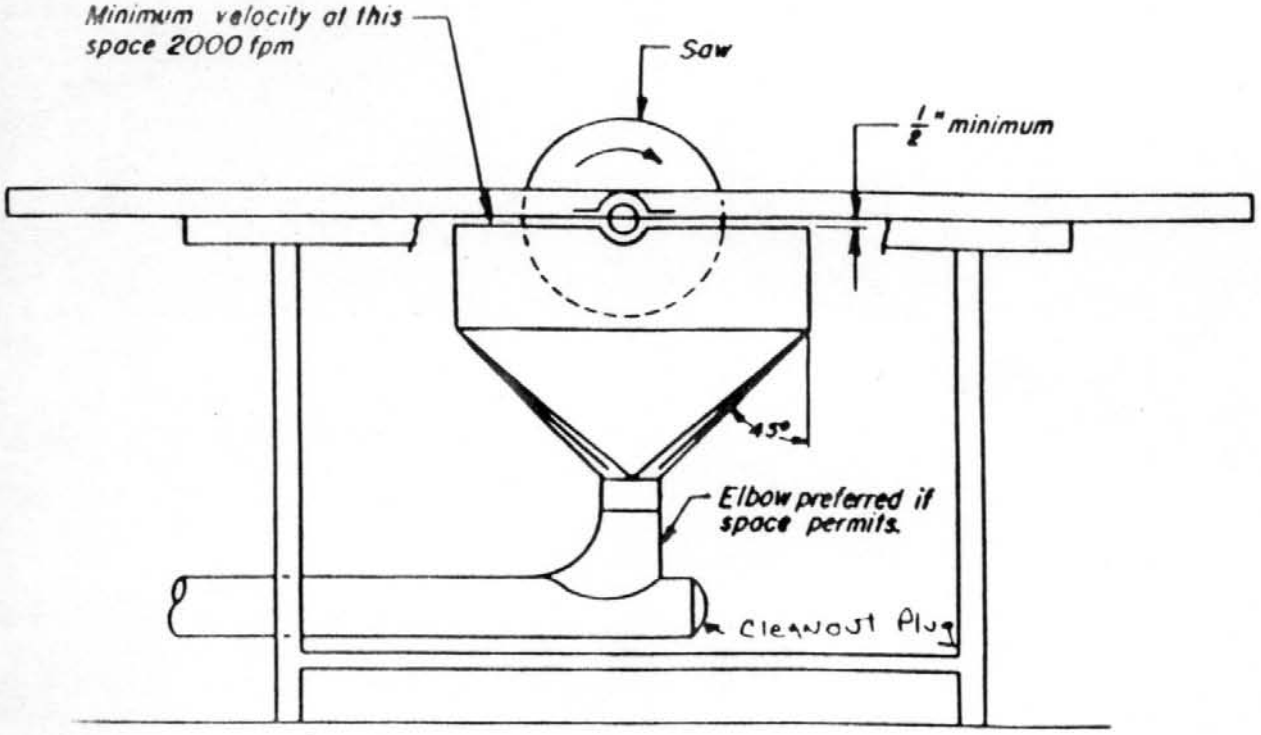


JOINTERS



Knife length, inches	Exhaust volume, cfm
Up to 6 incl.	350
over 6 to 12 incl.	440
over 12 to 20 incl.	550
over 20	800

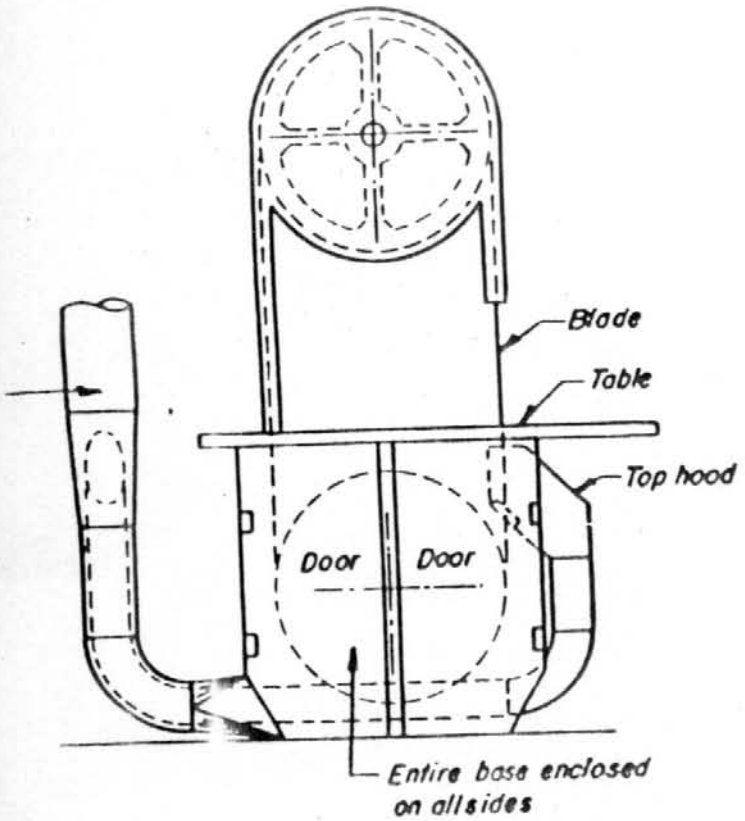
TABLE SAW

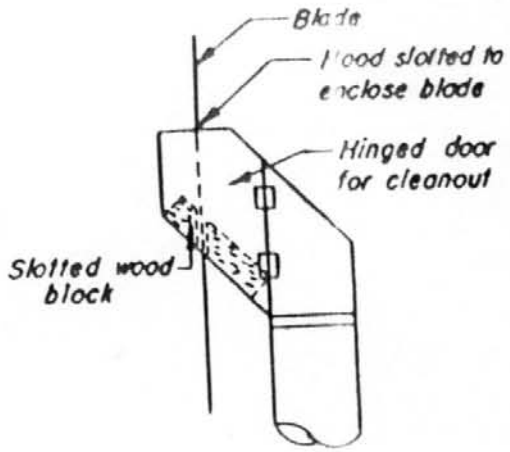


Table, rip, mitre and variety saws.

Saw diameter, inches	Exhaust volume, cfm
Up to 16 incl.	350
over 16 to 24 incl.	440
over 24	550
variety with dado	550

BAND SAW

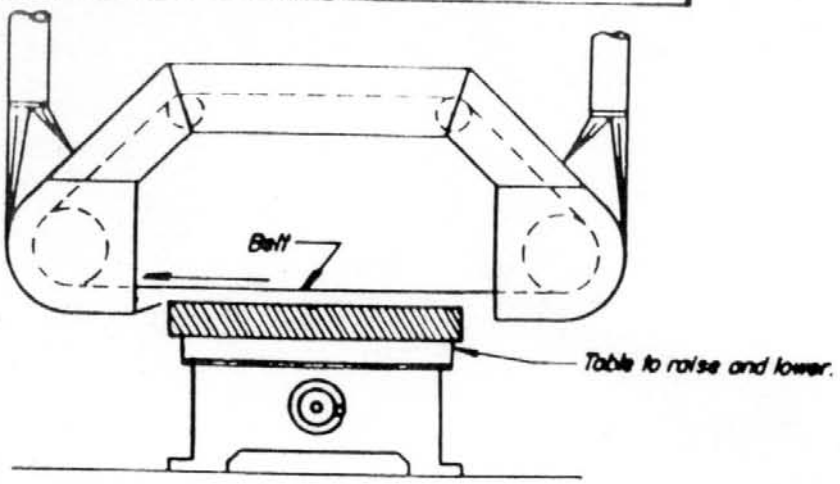


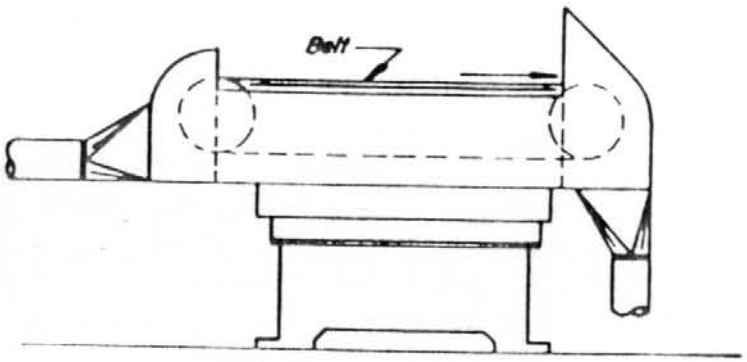


TOP HOOD DETAIL

Blade width, inches	Exhaust volume, cfm		
	Bottom	Top	Total
Up to 2	350	350	700
over 2 to 3	350	550	900
over 3 to 4	550	800	1350
over 4 to 6	550	1100	1650
over 6 to 8	550	1400	1950

HORIZONTAL BELT SANDERS

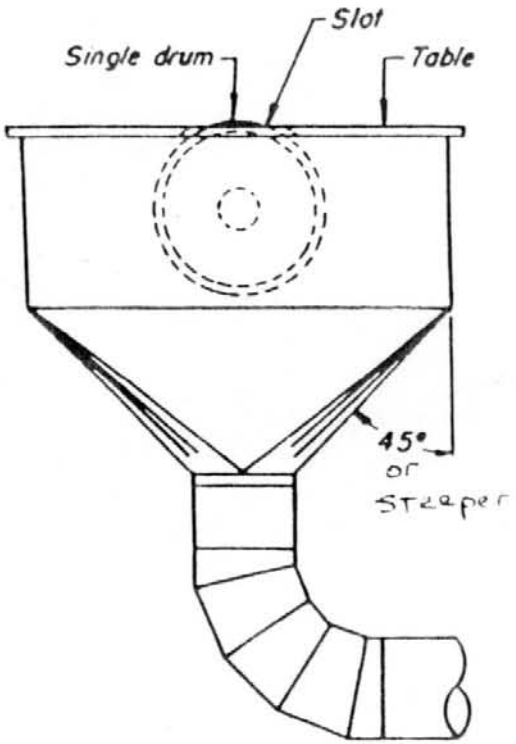




HORIZONTAL BELT SANDERS

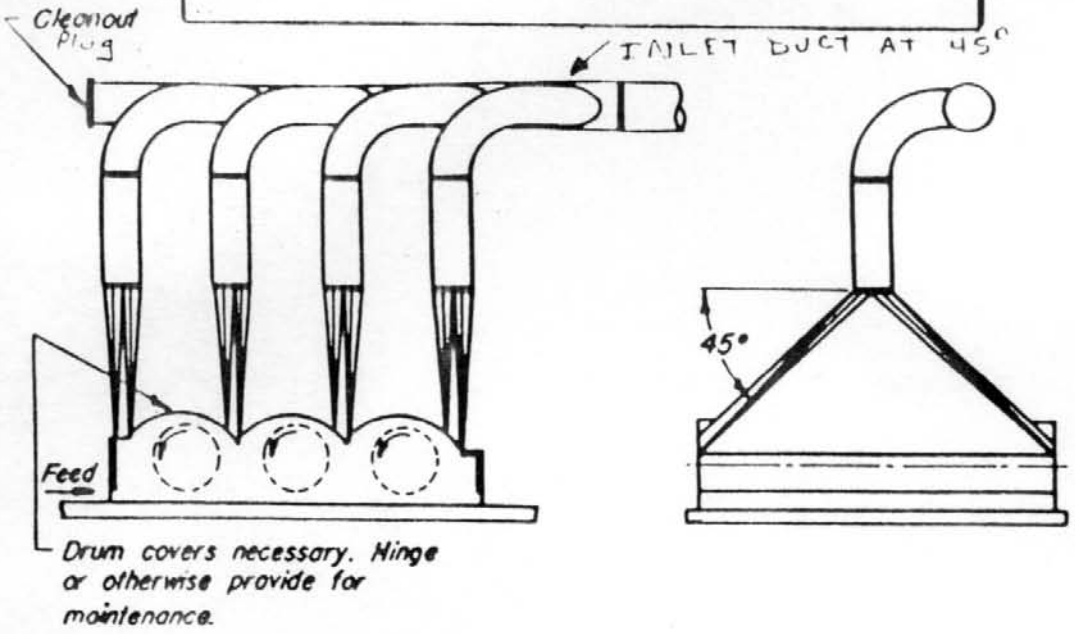
Belt width, inches	Exhoust volume, cfm		
	Head end	Tail end	Total
Up to 6 incl.	440	350	790
over 6 to 9 incl.	550	350	900
over 9 to 14 incl.	800	440	1240
over 14	1100	550	1650

SINGLE DRUM SANDER



Drum surface, sq inches	Exhaust volume, cfm
Up to 200 incl. (and less than 10" dia.)	350
over 200 to 400 incl.	550
over 400 to 700 incl.	785
over 700 to 1400 incl.	1100
over 1400 to 2400 incl.	1400

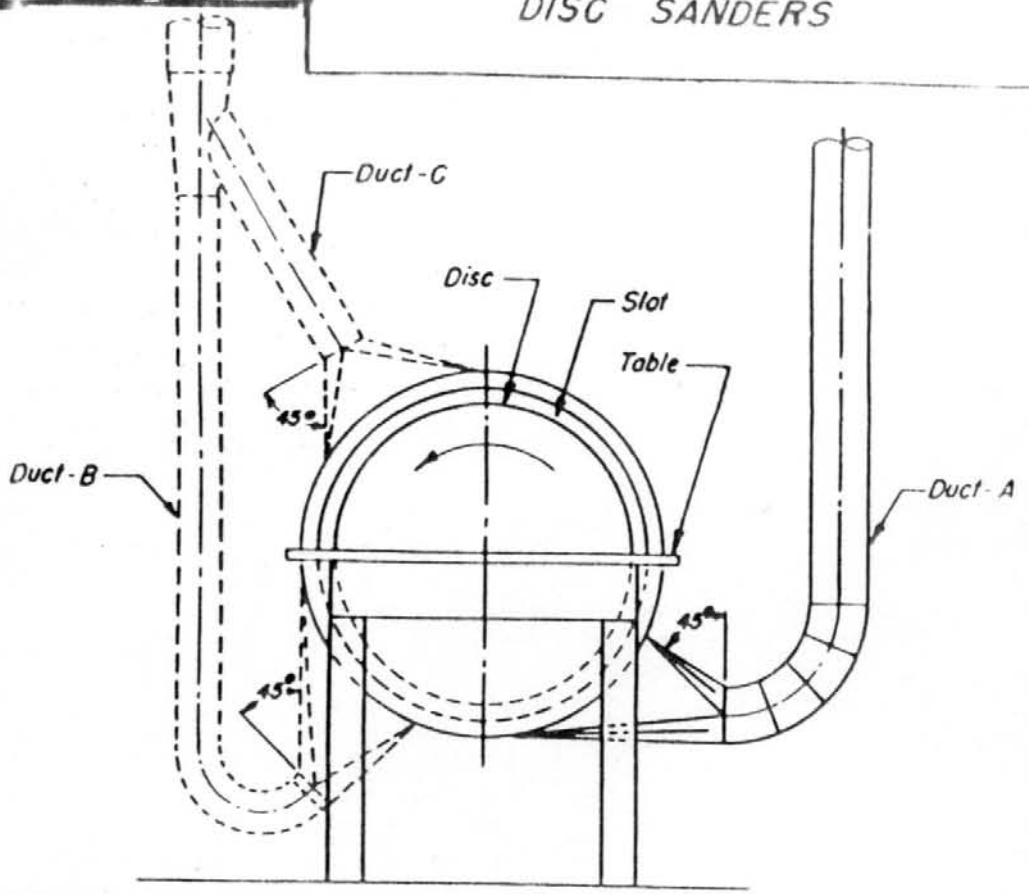
MULTIPLE DRUM SANDER



Exhaust Volumes

Drum length, inches	Total exhaust for machine cfm/drum*
Up to 31"	550
31" to 49"	785
49" to 67"	1100
over 67"	1400
Brush rolls	350 cfm at brush
*One hood per drum is minimum Additional hood at feed side is desirable	

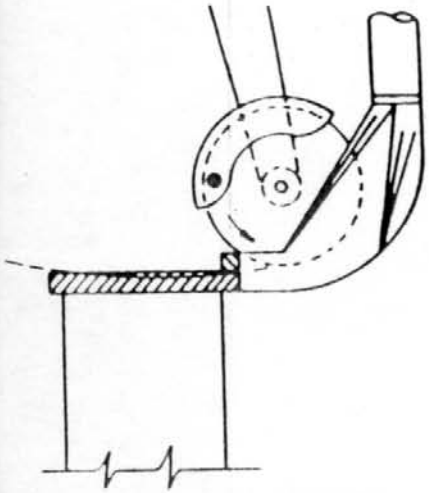
DISC SANDERS



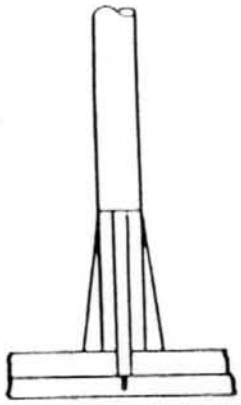
Disc diameter, inches	Total exhaust volume cfm	Applies to duct
Up to 12 incl.	350	A
over 12 to 18 incl.	440	A
over 18 to 26 incl.	550	A
over 26 to 32 incl.	700 *	A-B
over 32 to 38 incl.	900 *	A-B
over 38 to 48 incl.	1250 **	A-B-C

* Two bottom branches.
** One top and two bottom branches.

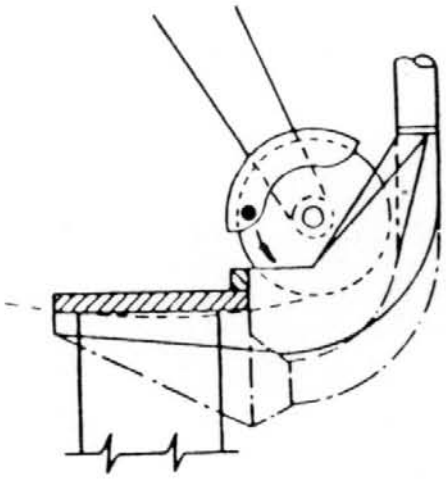
SWING SAWS



TYPE HOOD WHERE TABLE IS NOT CUT THRU



FRONT VIEW OF HOOD



TYPE HOOD WHERE TABLE IS CUT THRU

Saw diameter, inches	Exhaust volume, cfm
Up to 20 incl.	350
over 20	440

B ow r t unks and branches. The main line or trunk line i d rectly connected to the dust collector. It is a good i ea to lay it out so there are a very limited amount of 9 ngl s, bends, or curves. If the trunk line is longer t an a h ndred feet your may also want to enlarge the area b 1 ⅛-2 ⅛ (note: that the area of a circle is $3.1416R^2$). I you m ke the pipe too large, the same amount of air can b moved but at a slower velocity. This slow speed can a low th heavier particles to drop out and restrict a rflow.

I you m ke the pipe to small, you weaken the amount of p wer ob ainable causing clogging of the arteries (of the d ct work, not yours).

Y u can now branch out with other lines to independent m chines. When breaking into the trunk line or any other b anch line do it at a 30° or 45° angle. These "Y-pipes" a e readily available, and cause less drag. If you tap in a a right angle (using a T) you probably will lose s ction on that branch line. It is also a good idea to u e cut-off gates or blast-gates at each machine, so that s ction isn't lost at a machine not in use.

T e area of the trunk line should be approximately the s me size as the sum of all areas of the branches.

D you need to buy a dust collector? No saw mill owners m ke their own, all you need is a simple squirrel cage l ow r, or a blower with radial (straight) blades, and a m to .

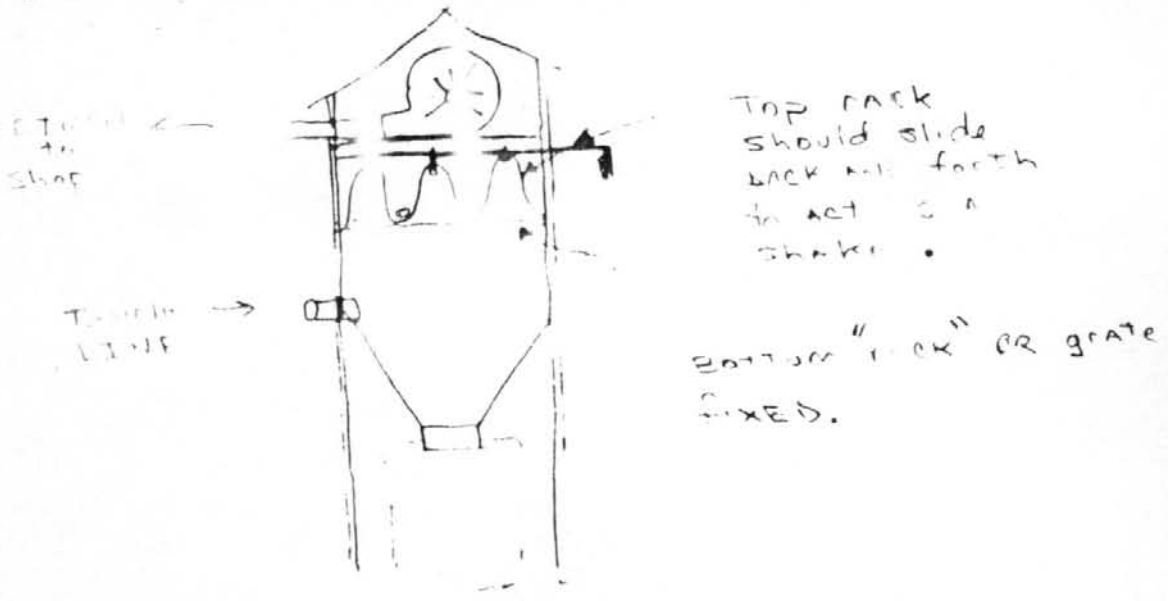
F re out how many machines you usually run at one time a thr total cfm exhaust volume from the ma hiner table. Y don't have to go hog wild if you typical y use your r d l arm saw and pe iodically use your joi ter; pick up a wer that will be strong enough to handl the biggest ma ne and use blast gates to turn off all the rest, when th y re not in use. How often do you have two machines running simultaneously? On the other hand if you run all your machinery all the time you will need a fair sized blower.

You'll need a dust hopper (they have six legs, and are brown, sortof a cross between a grass hopper and walking stick). You may use a 55 gallon drum, a big bass drum or build a small building or even use an old grain silo or hopper. If you get excited you could exhaust to the outside. But, you may want to think about recycling the air back into your shop. Otherwise incoming air will have to be reconditioned (heated/cooled).

The inlet of your hopper or dust bin should be about midway up a side. This allows the heavy dust particles to drop out quickly. Another thing that needs to be accomplished is that the air velocity needs to be slowed down so that the small light weight particles may drop out (The quickest way to achieve this is to blow all the exhaust out of your shop and onto your neighbors lawn.) The happy medium is to have a large container, as compared to trunk line. (e.g. the cross-sectional area of an 8" trunk line is 50 sq. in. and the area of a 55 gal. drum is 397 sq. in.; therefore the air velocity in the drum will be about 1/8 of that in the trunk line.) Now, you need a canvas bag to fit over the barrel, keep in mind the smaller the pores the cleaner the exhaust air especially if the return is within the shop. If you build a hopper the bagger assembly could be built from one long and wide strip of canvas that zigzags up and down a dozen or so times, increasing the filter area. It is also convenient to add some mechanism that shakes the bags clean.

If you want to you may want to use a double stage filter but I recommend a single stage filter. There are too many other things to worry about with two stage filter.

The hopper needs to be air tight otherwise you'll lose suction. The return air should exit the top (obviously) and return to the shop. From here on out all you need to do is empty your hopper. (When you get the time, add a sight glass (or plexiglass to your hopper. This will allow you to see when the hopper is becomming full.)



Now, if the unit is assembled, wired, and turned on, you will notice a lot of air being drawn into the suction line. This will always happen because of the blowers head pressure. Now if you start to mill wood and you notice that the dust isn't being pulled away fast enough - you most likely have the motor/blower running backwards.

The tables on pages 12 and 13 will help you size your requirements. Most all of the data is for industrial wood working equipment, because we don't buy that small stuff. In either case you will see that the exhaust volumes are close to what you have. If your cutting at high speeds and high volumes you may want to go to the next size up.

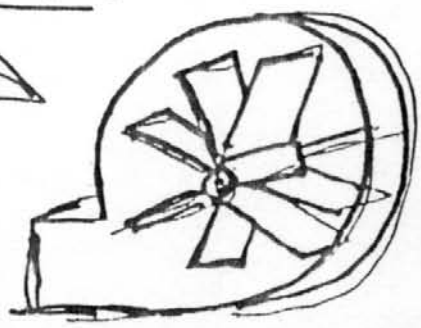
Figures on pages through 21 will help you layout and make your own dust shoots. The figures also provide the typical placement of the dust collectors intakes.

the following pages (25 through 27)* give typical blower* sizes and prices, from the 1988 W.W. Grainger catolog. This will help you find the standard blower sizes and motor combinations.

Add your total cfm, volume, and find a blower that will meet your needs. Find it at an auction or junk yard. Then buy the next bigger size. this will allow for growth and keep your blower from being overworked. Also keep in mind that blowers with skewed (curved) blades like those on a typical fan or motor boat will clog up. Do Not BUY!

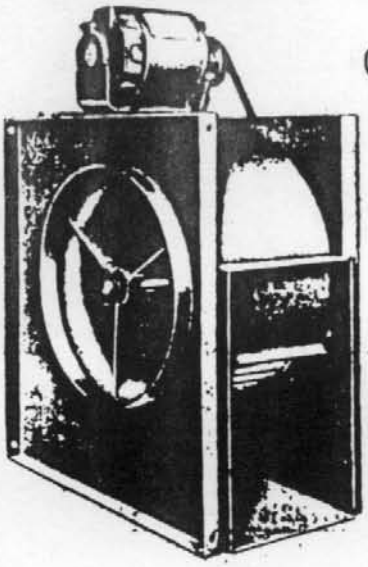
AND, if your system is not pulling the dust from your machines you have the blower turning backwards. It will still pull air , but not the dust when the blower is running in reverse. The only other thing that would stop it is a vacuum leak at the hopper.

* pages 25 through 27 show squirrel cage motors these will work, But the BEST IS The STRAIGHT RADIAL BLADED FAN.



SINGLE-INLET BLOWERS

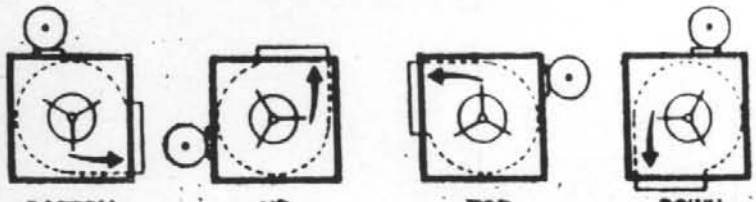
9½ to 18⅛" Diameter Single-Width Wheels



Dayton

Designed and built for general duct ventilation, exhausting, air conditioning, and industrial air moving applications. Single-inlet type for quiet, efficient performance. Adaptable to any of 4 standard discharges on the job by merely re-locating adjustable motor mount and motor on frame—see diagrams. Belt length remains same for each discharge position. Precision, balanced, single-width wheels on ball bearings. Heavy gauge, die-stamped steel housings. Gray finish. Resilient-mounted, automatic-reset thermally protected Dayton motor and drive packed separately when blower is ordered complete. Maximum operating temperature 250 F (121 1 C). Dayton literature is available, ask for Bulletin 706.

4 BASIC DISCHARGES SERVED

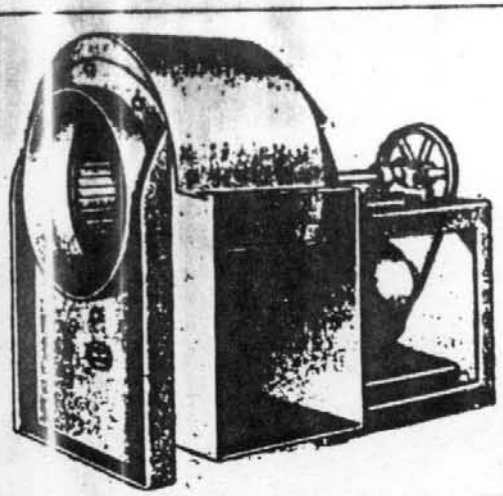


Wheel Dia.	Wheel Width	Shaft Dia.	Inlet Dia.	Outlet H	Outlet W	Overall Size H	Overall Size W	Overall Size D	BLOWER ONLY Less Motor and Drive Stock No.	List	Each	Shpg. Wt. Less Mtr. and Drive
9½"	4½"	¾"	10"	10¼"	6½"	16⅛"	10¾"	14⅜"	2C986	$156.90	$93.94	22 0
10⅝	6	¾	11	11⅜	8¼	18	12½	16⅜	2C987	185.00	110.76	29 0
12⅝	6	¾	13¼	13 7/16	8¼	21⅛	12½	19¼	2C988	248.50	148.78	36 0
15	6	1	15⅞	15⅞	8¼	25	12½	22½	2C989	380.70	227.94	47 0
18⅛	9	1	19 5/16	18⅞	12¼	30	17⅞	26⅞	4C218	511.70	306.41	82.0

SINGLE-INLET BLOWERS WITH MOTOR AND DRIVE

Wheel Dia.	CFM AIR DELIVERY AT RPM SHOWN ⅛" SP	¼" SP	½" SP	¾" SP	1" SP	1¼" SP	Blower RPM	HP	BLOWER WITH MOTOR AND DRIVE — Dripproof Single Phase Motor 115/230V, 60 Hz Stock No.	List	Each	Dripproof 3-Phase Motor 230/460V, 60 Hz Stock No.	List	Each
9½"	915	815	630	—	—	—	925	1/4	7C808	$284.40	$158.30	7C425	$331.60	$198.54
	1040	950	780	590	—	—	1030	1/3	7C810	279.55	167.30	7C426	334.10	200.05
	1155	1090	930	780	610	—	1150	1/2	7C406	345.85	207.08	7C427	380.85	228.03
	1390	1330	1205	1065	940	800	1350	3/4	7C407	390.70	233.94	7C428	402.95	241.28
	1500	1440	1330	1200	1090	955	1450	1	7C413	453.35	271.45	7C429	404.75	242.36
10⅝	1140	990	—	—	—	—	705	1/4	7C814	306.95	183.80	7C430	374.15	224.04
	1255	1125	775	—	—	—	765	1/3	7C816	317.80	190.29	7C431	372.35	222.96
	1420	1305	1030	—	—	—	850	1/2	7C818	356.65	213.60	7C432	391.85	234.63
	1800	1710	1495	1235	920	—	1050	3/4	7C414	415.65	248.89	7C433	427.90	256.23
	2040	1960	1795	1600	1380	1085	1175	1	7C411	479.80	287.31	7C434	431.25	258.22
	2360	2300	2160	2005	1820	1610	1350	1½	7C415	523.60	313.51	7C435	466.60	279.38
12⅝	1460	1195	—	—	—	—	560	1/3	7C822	368.75	220.78	7C436	438.30	262.45
	1775	1550	1095	—	—	—	650	1/2	7C820	419.35	251.11	7C437	454.35	272.08
	2100	1910	1520	1020	—	—	750	3/4	7C417	466.00	281.81	7C438	496.25	296.35
	2395	2260	1930	1550	1100	—	850	1	7C410	550.20	329.49	7C439	601.65	360.37
	2890	2660	2410	2115	1790	1410	970	1½	7C419	594.45	355.96	7C440	537.45	321.83
	—	—	2670	2430	2140	1830	1060	1½		537.45	—	7C444	533.20	319.28
15	2070	1755	1015	—	—	—	500	1/2	7C832	548.75	328.50	7C445	583.75	349.53
	2605	2370	1835	1160	—	—	605	3/4	7C420	623.35	373.25	7C450	635.60	380.58
	2840	2630	2140	1555	—	—	650	1	7C421	697.70	417.79	7C837	649.15	388.70
	3280	3115	2730	2300	1830	—	750	1½	7C422	723.90	433.47	7C456	666.90	399.34
	3530	3380	3040	2650	2210	1720	800	2		666.90	—	7C457	645.80	386.69
	4030	3920	3630	3290	2940	2560	910	3	—	645.80	—	7C458	676.00	404.78
18⅛	3800	3560	2990	—	—	—	500	1	7C423	823.30	492.99	7C462	774.75	463.90
	4340	4135	3700	2995	2350	—	570	1½	7C424	877.55	525.48	7C463	820.55	491.35
	4830	4650	4230	3730	3200	—	625	2		820.55	—	7C464	817.80	489.69
	5080	4905	4540	4090	3510	2700	650	3		817.80	—	7C340	822.70	492.62
	5645	5540	5250	4860	4430	3900	720	3		822.70	—	7C465	818.90	490.35

The single inlet, 4-way discharge blowers listed above have 4 mounting points, and we recommend 4 No. 4C875 floor mount vibration isolators. For detailed description of isolators see Index under Isolators.



Dayton

Used for ventilating, air conditioning, processing, and drying exhaust systems, etc. High-volume, extra-quiet performance. Economical, rugged construction, V-belt-drive. Blower comes less motor and drive. Sturdy arc-welded housing and frame. Standard construction includes rubber mounted, dynamically-balanced, clockwise rotation, steel wheel and bottom horizontal discharge, as illustrated. Ball bearing drive. Discharge easily changed to any one of 7 standard discharge positions. Gray baked enamel finish. 1725 RPM rigid mounted motor and drive packed separately when blower is ordered complete. Air deliveries are based on standard test codes of AMCA. CFM and velocity can be varied by changing drive and motor HP. Dayton literature is available, ask for Bulletin No. 703.

Wheel Dia.	BLOWER DIMENSIONS Shaft Dia.	Inlet Dia.	Outlet H	Outlet W	Overall H	Overall W	Overall D	Maximum Operating Temperature	LESS MOTOR & DRIVE Stock No.	List	Each	Shpg. Wt. Less Motor
12¼"	1"	13¼"	13¼"	9⅝"	27"	30"	22"	180°F/82.2°C	2C797	$481.05	$288.96	90.0
15	1	16⅛	16¼	11¾	30	34	27	180°F/82.2°C	2C798	614.60	368.88	118.0
18¼	1⅜16	19⅜	19⅜	14¼	37	40	32	180°F/82.2°C	2C799	729.70	438.94	175.0
22¼	1⅜16	23⅞	24	17⅜	44	44	38	180°F/82.2°C	3C009	1046.40	628.57	355.0
24½	1⅞16	26⅜	26¼	19¼	48	46	43	250°F/121.1°C	3C010	1441.37	863.00	456.0

FORWARD CURVE BLOWERS WITH MOTOR AND DRIVE

Wheel Dia.	CFM AIR DELIVERY AT RPM SHOWN 1/8" SP	3/8" SP	1/2" SP	3/4" SP	1" SP	1¼" SP	1½" SP	BLOWER RPM	HP	BLOWER WITH MOTOR AND DRIVE With Capacitor Motor 115/230V, 60 Hz Stock No.	Each	With 3-Phase Motor Ball Bearing 230/460V, 60 Hz Stock No.	Each
12¼"	1735	1580	1490	—	—	—	—	690	1/3	7C488	$380.86	7C491	$405.96
	2045	1910	1770	1400	—	—	—	783	1/2	7C489	398.61	7C492	418.68
	#	#	2260	2015	1700	—	—	920	3/4	7C490	417.78	7C493	433.95
	#	#	#	2420	2190	1900	1375	1029	1	7C888	457.98	7C889	439.91
15	2615	2440	2200	—	—	—	—	557	1/2	7C494	478.70	7C497	499.78
	#	3015	2830	2370	—	—	—	645	3/4	7C496	501.53	7C508	517.60
	#	#	3460	3145	2720	1870	—	743	1	7C496	541.84	7C508	523.57
	#	#	#	3630	3300	2875	2050	814	1½	7C890	589.04	7C891	538.78
18¼	3780	3530	3255	2090	—	—	—	477	3/4	7C507	573.00	7C510	589.07
	#	4180	3980	3430	2880	—	—	542	1	7C892	687.54	7C894	656.41
	#	#	4665	4260	3690	—	—	608	1½	7C508	740.61	7C511	681.37
	#	#	#	5250	4890	4410	3635	699	2	7C509	771.47	7C512	688.14
	#	#	#	5700	5420	5050	4560	745	3	7C893	789.30	7C895	870.50
22¼	5900	5220	4410	—	—	—	—	356	1	7C708	800.04	7C711	852.17
	#	6650	6030	4630	—	—	—	412	1½	7C898	922.74	7C899	963.35
	#	#	7235	5940	5290	—	—	458	2	7C709	958.13	7C712	874.80
	#	#	#	#	7720	6660	4800	553	3	7C710	978.77	7C713	961.09
	#	#	#	#	9050	8100	7350	602	5	—	—	7C899	881.23
24½	7020	6945	6623	3795	—	—	—	349	1½	7C714	1102.84	7C717	1102.84
	#	#	8210	7075	4485	—	—	398	2	7C900	1107.82	7C901	1114.29
	#	#	#	9245	8280	6555	—	462	3	7C715	1213.77	7C718	1095.97
	#	#	#	#	11050	9800	9300	544	5	—	—	7C719	1117.96
	#	#	#	#	12500	11730	11000	590	7½	—	—	7C902	1193.40

(#) Overloaded—not recommended for operation at this SP with specified HP.

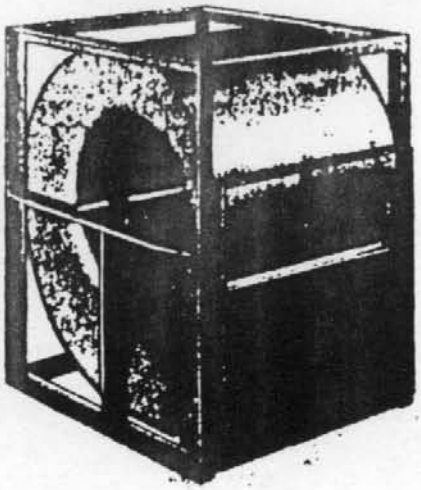
For Appropriate Integral HP Motor Control, See Index Under Controls

MATCHING WEATHERPROOF DRIVE COVERS For weather covers for forward curve blowers, see index under Blowers, Weather Covers.

OUTLET VELOCITY for any given static pressure can be determined by: $\frac{\text{CFM}}{\text{sq ft outlet area}} = \text{O.V.}$

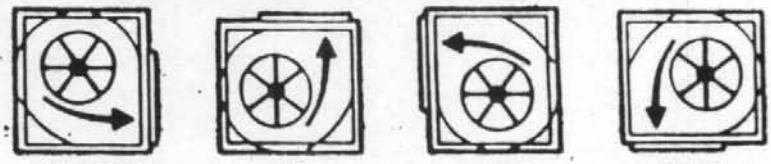
The forward curve blowers listed above have 6 mounting points. We recommend 6 floor mounted vibration isolators *only* if the blower wheel speed is higher than 600 RPM. No. 2C797 and 2C798 require No. 4C950 or 4C954 isolators. Blower No. 2C799 requires No. 4C952 or 4C955 isolators. Blower No. 3C010 may not require isolators. For detailed description of isolators see Index under Isolators.

HIGH-VOLUME INDUSTRIAL BLOWERS



These Dayton double width, double inlet industrial blowers are built to meet full Class 1 performance and provide efficient air movement for heating, ventilation, exhausting, cooling, humidifying, drying, and similar industrial applications. Heavy gauge steel housing with steel corner angles provide rigid support for mounting the blower in any of the four standard discharge positions pictured below. Blowers are double inlet, double width, high volume, low-velocity type. All models have dynamically balanced forward curve galvanized steel wheels and permanently lubricated, cast iron pillow block ball bearings. Motor, appropriate drive and motor mounting rails, are packed separately when blower is ordered complete. Maximum operating temperature 200°F (93.3°C). Gray enamel finish. Dayton brand.

USE BLOWER FOR ANY OF THESE DISCHARGES



BOTTOM HORIZONTAL | UP BLAST | TOP HORIZONTAL | DOWN BLAST

Wheel Diameter	Width	Shaft Dia.	Overall Dimensions Less Motor H	W	D	Outlet H	W	Blower Only Less Motor and Drive Stock No.	List	Each	Shpg. Wt. Less Motor & Drive
20"	20"	1 7/16"	38"	36¾"	32¾"	24¾	24¾	3C428	$1078.20	$644.41	255 0
22	22	1 7/16	41½	39¼	35¾	27¼	27¼	3C429	1191.60	713.52	279 0
25	25	1 7/16	46¾	43¼	40	31¼	31¼	3C430	1404.54	841.84	325 0

HIGH VOLUME BLOWERS WITH MOTOR AND DRIVE

Wheel Dia.	CFM Air Delivery at RPM Shown ¼ SP	⅜ SP	½ SP	¾ SP	1 SP	1¼ SP	1½ SP	2 SP	Blower RPM	With 1725 RPM Motor; 115/230V, 1 Ph or 200-230/460V, 3 Ph Motor HP	Type	Stock No.	List	Each Frt. Ppd.
	6350	3770	*	*	*	*	*	*	310	1	Cap.	7F889	$1572.60	941.81
20"	6350	3770	*	*	*	*	*	*	310	1	3 ph	7F890	1471.60	881.19
	8940	8420	7570	*	*	*	*	*	400	2	Cap.	7F891	1712.65	1025.54
	8940	8420	7570	*	*	*	*	*	400	2	3 ph	7F892	1518.85	909.17
	#	9860	9360	6970	*	*	*	*	450	3	3 ph	7F893	1516.70	908.18
	#	11870	11540	10600	8490	*	*	*	525	5	3 ph	7F894	1582.20	828.78
	#	#	#	13200	12370	10920	*	*	610	7½	3 ph	7F895	1677.60	1004.54
	#	#	#	#	15900	14500	13850	10000	760	15	3 ph	7F896	1970.30	1182.81
	#	#	#	#	17200	16300	15400	12700	800	20	3 ph	7F897	2194.45	1314.04
	#	#	#	#	18700	17900	17000	14850	850	25	3 ph	7F898	2288.00	1370.05
	8760	6980	*	*	*	*	*	*	310	1½	3 ph	7F899	1614.15	966.55
22"	12560	11640	10530	*	*	*	*	*	400	3	3 ph	7F900	1648.35	987.19
	#	13770	12920	10610	*	*	*	*	450	5	3 ph	7F901	1688.90	1010.12
	#	#	#	15310	13500	10410	*	*	540	7½	3 ph	7F902	1790.40	1072.10
	#	#	#	17310	15880	13990	*	*	585	10	3 ph	7F903	1903.35	1193.62
	#	#	#	19000	18000	16900	15700	11900	730	15	3 ph	7F904	2092.25	1252.86
	#	#	#	20050	19100	18100	16950	13650	760	20	3 ph	7F905	2301.80	1378.39
	#	#	#	21300	20450	19500	18550	16000	800	20	3 ph	7F906	2309.90	1383.15
	#	#	#	23300	22500	21700	20800	18750	860	25	3 ph	7F907	2468.15	1477.93
	12700	10460	*	*	*	*	*	*	270	2	3 ph	7F908	1833.10	1097.66
25"	15590	13950	11900	*	*	*	*	*	310	3	3 ph	7F909	1855.35	1110.99
	#	19110	17830	14600	*	*	*	*	380	5	3 ph	7F910	1906.90	1106.93
	#	22300	21800	19470	16480	*	*	*	435	10	3 ph	7F911	2202.70	1318.96
	#	#	#	22180	19790	16560	*	*	470	10	3 ph	7F912	2204.30	1319.93
	#	#	#	#	24350	21920	18000	*	535	15	3 ph	7F913	2304.90	1380.18
	#	#	#	28000	26250	24300	21300	*	560	20	3 ph	7F914	2542.85	1522.66
	#	#	#	30700	29100	27400	25400	16700	600	25	3 ph	7F915	2821.35	1689.37
	#	#	#	#	#	#	28300	23000	635	25	3 ph	7F916	2821.95	1689.77

* Motor overloaded – not recommended for operation at this static pressure, with this HP.
\# Unstable air delivery – not recommended for operation at this static pressure, at this RPM.

AIR MOVING EQUIPMENT FUNDAMENTALS

Included are equipment descriptions, characteristics, and glossary of terminology
See Technical Information Pages in rear of Catalog

The four things to consider when one is grinding a drill are as follows:

1. C ntralize the point, since a point ground off center will cause n oversi e hole. The point should be carefully checked with a drill oint ga , Fig. 22.

2. T e angle of the cutting lips should be 59° see Fig. 23. This ngle also can be tested with the drill point gage.

3. The heel or lip clearance angle for best drilling results should e about 12°, as in Fig. 24. This angle is sufficient for clearance and t still provides plenty of metal to give support to the cutting edge.

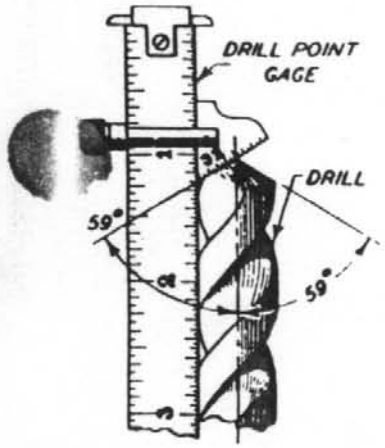


Fig. 22. Using Drill Point Gage

Fig. 23. Lips Ground Correctly

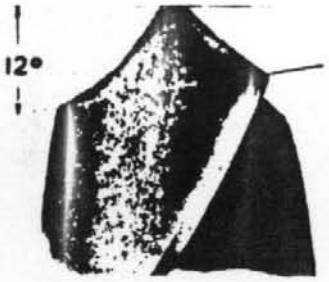


Fig. 24. Correct Lip Clearance Angle

Fig. 25. Another Way to Gage Lip Clearance

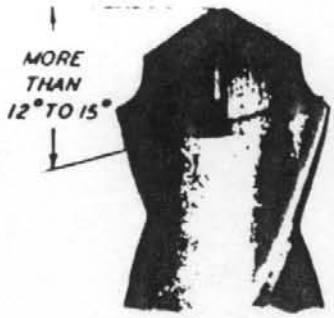


Fig. 26. Result of Too Much Lip Clearance

4. Lastly, the edge or web must be ground slightly to the right as indicated in Fig. 25. This provides the correct lip angle clearance and

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