

LOWER ALBANY **WOODWORKERS GUILD**

NEWSLETTER

Sept & October 2006

Committee Members:

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FROM THE PRESIDENT'S PERSPECTIVE

I am indebted to Brian who has written the resume for me. As this will be the last "address" from me before Brian takes over, I want you all to know what a pleasure it has been to enjoy the exchange of ideas and camaraderie which you have all so amply provided. You have collectively proved the adage that "no man is an island"

I will enjoy just being an ordinary member again and heckling a la Dave McNeill, but will assist wherever requested, and continue to visit members' workshops with Brian.

Please give Brian all the support and encouragement you have afforded me, and so make his task as fulfilling as mine has been over the past two years.

Bayete!

BATHURST SHOW

Entry Classes for the next Bathurst Show as previously promised

CLASS CODE	DESCRIPTION
Q9	Piece of restored furniture- with a "before" photo.
Q10	A wooden model using a kit.

Q11	Original woodwork creation model.
Q12	A wood carving.
Q13	Bowl turned from exotic wood.
Q14	Bowl turned from indigenous wood.
Q15	Table lamp turned from exotic wood.
Q16	Table lamp turned from indigenous wood.
Q17	Any other small item turned from exotic wood.
Q18	Any other item turned from indigenous wood.
Q19	Coffee table from exotic wood.
Q20	Coffee table from indigenous wood.
Q21	Any small item from exotic wood. (eg. chopping board).
Q22	Any small item from indigenous wood.
Q23	Large item from exotic wood.
Q24	Large item from indigenous wood.

"Brian's Update"

The last meeting, held at Brian Edwards workshop on 3rd. Oct. was well attended by 22 members in spite of the rain. A big "thank you" to all those who attended, and to all those who sent apologies.

A few problems were solved, and the wealth of knowledge that the group has, is amazing. Remember, we are here to help each other, so if you have a problem, please ASK.

The Christmas braai is to be held on 5th Dec at 13 Hove St. and the names of those members, who wish to attend, must be in by 17th Nov. along with the monies (R25 per person.) Please make sure that you obtain a receipt, as the collective memories of the two "old toppies" who take the money, leave a lot to be desired.

Remember that this meeting will also be the A.G.M. where you get a chance to "have your say" so please try to be there

The Nov. meeting will be held on the 7th. at TOWN & COUNTRY CABINETS, which is situated at the old Rankin building in Bathurst. Once again, can those members with space in their cars, please meet at the Police Station in order to give others a lift. If we leave at 17h45, it will allow time to get to the meeting for 18h00.

We have already received some toys which have been made for underprivileged children, but the more we can get, the better. We need toys for children aged between 6 months and 8 years, both boys and girls. The closing date for donations is Dec. 1st to either Arnold Rudolph or Brian Edwards.

A.G.M. AGENDA

President's report and Financial Statement

Elections

Setting of subs for 2007

Any other business (Please note. Items for discussion under this heading must be submitted in writing to the President by 30th Nov. 2006, unless warranted by special circumstances.

BIRTHDAYS

The following members have birthdays during November/December and we wish all of you

A VERY HAPPY BIRTHDAY

November

18th Des Spencely
21st Angus Barnard
24th Arnold Rudolph
25th Noel Gripper
27th Rob Speedie..

December

9th Peter Wynne
13th Roy Leeming
16th Quentin Laughton

TOOLS/TRICKS OF THE TRADE

Extracts from 'The Woodworker's Pocket Book' AND 'Popular Woodworking'

Note, items D, E, F and G continue from July/August's newsletter tools/tricks of the trade.

Transmission

D. Rip-saw teeth for softwood. Note the pronounced hook formed by the angle of the front.

E. Rip-saw teeth for hardwood. Similar to D but with less hook, making a stronger tooth.

F. Combination teeth. With mostly cross-cut teeth, but with raker teeth at every fifth or seventh position.

G. Tungsten toothed saw. Widely used today. Made in a wide variety of types and sizes and of particular value for abrasive materials such as chipboard.

Pitch of saw is distance between each point.

Transmission

The methods most suitable for small machines are the flat belt and the V belt. The former should have the driving side of the belt below so that the sag occurs at the top, thus increasing the arc of contact and lessening any liability to slip. The leather should be dressed monthly to keep it in good condition. Single ply flat belting will transmit the following loads approximately:

25 mm. wide, up to 1 h.p.	65 mm. wide, up to 3 h.p.
45 mm. wide, up to 1.5 h.p.	90 mm. wide, up to 6 h.p.

V belts are specially useful when pulley centres are close. Arc of contact should be not less than 120 degrees to avoid slip. This generally means that ratio between pulleys should not be greater than 1:7. If a greater ratio is essential, a countershaft should be installed. A V belt should never need any dressing. A point to realize is that a belt at low speed will not transmit as much power as when at high speed. Fortunately, most woodworking machines run at fair speed.

Pulley calculations. When making any calculations it is useful to remember that:

When the motor (driving) pulley is larger than the machine (driven) pulley the machine will run faster than the motor, and vice versa. Equal pulleys give same speed in both.

Thus, keep the following in mind:

Large motor pulley and Small machine pulley	} Machine runs = faster than motor
Small motor pulley and Large machine pulley	

1,000 r.p.m. 1,500 r.p.m.

1,000 r.p.m. driving 666.6 r.p.m. driven

When no pulleys are fitted. Find the ratio between the motor r.p.m. and the required machine r.p.m.

Example—Motor r.p.m. 1,500; Machine r.p.m. 2,000

80 1,500:2,000 = 3:4

Transmission

As machine must run faster than motor it must have the smaller pulley,

∴ pulleys are in ratio, motor 4; machine 3

Note that any sizes giving same ratio could be used, as 80 mm. : 60 mm., 120 mm. : 90 mm., 160 mm. : 120 mm., 240 mm. : 180 mm., etc.

To find motor pulley size

$$\frac{\text{Required machine r.p.m.} \times \text{Diameter machine pulley}}{\text{R.p.m. motor}}$$

Example – Motor r.p.m. 1,500; required machine r.p.m. 4,000; machine pulley 50 mm.

$$\frac{4,000 \times 50}{1,500}$$

133.3, say 130 mm. motor pulley.

To find machine pulley size

$$\frac{\text{R.p.m. motor} \times \text{Diameter motor pulley}}{\text{Required r.p.m. machine}}$$

Example – Motor r.p.m. 3,000; required machine r.p.m. 2,000; motor pulley 100 mm.

$$\frac{3,000 \times 100}{2,000}$$

150 mm. = machine pulley.

V belt pulley calculations. As the speeds of woodworking machines are not usually critical it is usual to take the outside diameter of V pulleys when calculating speeds. This, however, does not give exact speeds, and when this is required it is necessary to ascertain the *Pitch Circle Diameter* of both pulleys to be used. This (known as P.C.D.) is found as follows:

P.C.D. = Outside diameter of V belt pulley, minus thickness of belt, plus 1.6 mm.

Example – 100 mm. diam. V belt pulley 1,500 r.p.m. driving 200 mm. diam. V belt pulley. Thickness of belt 9.5 mm.

$$\begin{aligned} 100 \text{ mm.} - 9.5 \text{ mm.} + 1.6 \text{ mm.} &= 92.1 \text{ mm. P.C.D. of 100 mm. pulley} \\ 200 \text{ mm.} - 9.5 \text{ mm.} + 1.6 \text{ mm.} &= 192.1 \text{ mm. P.C.D. of 200 mm. pulley} \end{aligned}$$

Now apply normal calculation:

$$\frac{1,500 \times 92.1}{192.1}$$

= 719.15 approx., say 720 r.p.m.

If the outside diameter of the pulleys had been used the answer would have been 750 r.p.m.

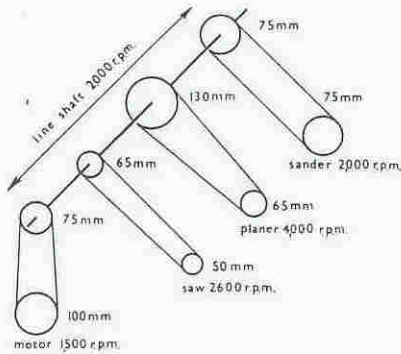
Line and counter-shafts. These are often used as a matter of practical convenience, where more than one machine is driven from one motor, or when the ratio between driving and driven pulleys is very great.

When one line shaft has to drive several machines, the individual speeds of which vary, it is sometimes convenient to fit pulleys of equal size to both motor and line shaft. In this case, since line shaft and motor revolve at equal speeds, all calculations for other pulleys can be made as for directly from motor to machine, each being calculated according to 81

Transmission

the speed required. If, however, all machines have to revolve at a speed well in excess of the motor, it is often convenient to step up the line shaft r.p.m. by fitting to it a smaller pulley than to the motor. A simple calculation gives the resulting line shaft r.p.m., and all pulley sizes for individual machines are worked out from this.

Example—A motor r.p.m. of 1,500 is required to drive a saw with 50 mm. pulley at 2,500 r.p.m.; a planer with 65 mm. pulley at 4,000 r.p.m.; and a sander with 75 mm. pulley at 2,000 r.p.m.



The slowest machine is the sander and the line shaft might be stepped up to this speed. The ratio is:

$$\begin{array}{l} \text{Motor } 1,500 = 3 \\ \text{Line shaft } 2,000 = 4 \end{array}$$

As the line shaft has to turn the faster it has the smaller pulley

therefore motor pulley 100 mm.
line shaft pulley 75 mm.

$$\frac{1,500 \times 100}{75} = 2,000 \text{ r.p.m. line shaft}$$

Saw with 50 mm. pulley to revolve at 2,500 r.p.m.

$$\frac{\text{Saw r.p.m.} \times \text{diameter saw pulley}}{\text{R.p.m. line shaft}}$$

$$\frac{2,500 \times 50}{2,000} = 62.5 \text{ mm., say } 65.0 \text{ mm.}$$

say 65 mm. diam. line shaft pulley to connect with saw, giving 2,600 r.p.m.

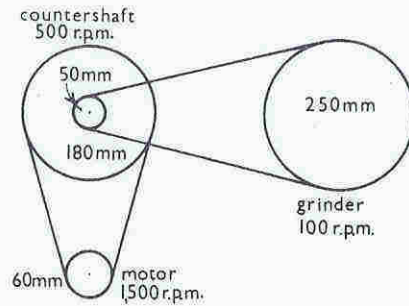
Planer with 65 mm. pulley to revolve at 4,000 r.p.m.

$$\frac{4,000 \times 65}{2,000} = 130 \text{ mm. diam. shaft pulley to connect with planer.}$$

Sander with 75 mm. pulley to revolve at 2,000 r.p.m.

Since both line shaft and sander have same r.p.m., no calculation is necessary. They have pulleys of equal size.

Machine speeds



Example—Motor of 1,500 r.p.m. with 60 mm. pulley to drive grindstone at 100 r.p.m. Ratio is 1:15.

As this would give too small an arc of contact in the driving pulley a counter-shaft is used. The 15 can be substituted by any two numbers which, multiplied together, equal it. Thus 3 and 5.

As motor has 60 mm. pulley it should connect with 180 mm. counter-shaft driven pulley. Counter-shaft driving pulley can be 50 mm. connecting with 250 mm. grinder pulley, or any other sizes which have a ratio of 1:5. Resulting grinder speed is 100 r.p.m.

Machine speeds

Although optimum speeds have been found by experience and calculation, a wide variation is practicable for woodworking machines, providing they are sharp. The following are a guide showing the speeds at which to aim:

Circular saw. See notes under circular saw.

<i>Band saw.</i>	Diam. of wheel	R.p.m.
	300 mm.	950
	450 mm.	950
	600 mm.	800
	750 mm.	750

Many small band saws run at considerably lower speed than the optimum.

Jig saw. 600–1,700 r.p.m. (one stroke per revolution).

Planer. Cutter block of 75 mm. and less, 4,000–6,000 r.p.m.

<i>Lathe.</i>	Diameter of wood being turned	R.p.m. of work	Diameter of wood being turned	R.p.m. of work
	25 mm.	3,000	200 mm.	650
	50 mm.	2,500	300 mm.	570
	75 mm.	1,500	450 mm.	300
	125 mm.	1,000	600 mm.	250

Spindle. 4,000–8,000 r.p.m. High speed gives best results, but small machines seldom achieve this.

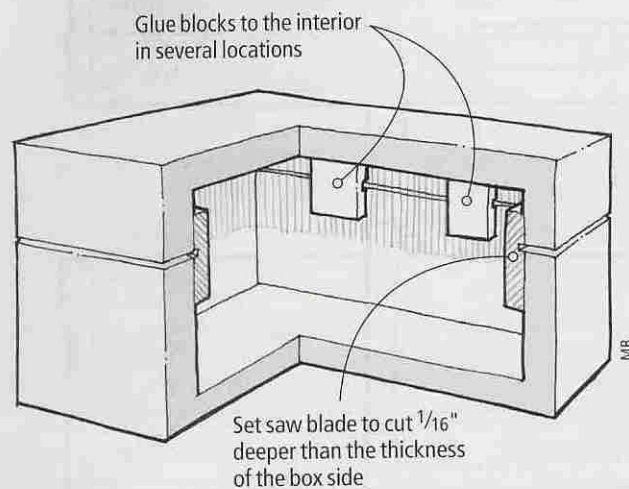
Non-binding Box Lids

Lots of woodworkers who enjoy making boxes prefer to build the box and lid in one piece and then cut the lid off on the table saw after the glue has cured. This offers a good grain match and eliminates any alignment problems.

Unfortunately, when the box is separated from the lid, the blade will sometimes bind on the last cut. Wedges can be placed in the saw kerf, but this is often awkward and possibly dangerous.

A better idea is to use dabs of hot-melt glue to attach blocks to the inside surface of the box over the location of the lid joint during assembly. When the box is cut apart, set the saw blade to cut about $\frac{1}{16}$ " deeper than the thickness of the box side. The box itself will be parted, but the blocks will hold the kerf open. The blocks can then be knocked off and the inside surface sanded.

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A Square for Sheet Goods

Counting on the squareness of a framing square while laying out a cabinet can be an exercise in futility. And if you have a square engineer's square, it might be only 18" long.

You can make your own accurate and adequately sized layout square from a piece of $\frac{1}{4}$ "-thick hardwood plywood. Simply cut a triangle with one edge 49" long, and the adjoining right-angle edge at 24" long. Next make the stop by cutting a $\frac{1}{4}$ " x $\frac{3}{4}$ "-deep groove down the center of the 1" edge of a 1" x 3" x 24" piece of solid wood.

Drill four clearance holes through one leg of the groove, $\frac{1}{2}$ " in from the grooved edge. Then slip the $\frac{1}{4}$ " plywood blade into the groove and put a flathead screw through the hole nearest the right angle corner, through the blade and into the opposite side of the stop.

Next square up the blade to the stop by drawing a line using the square on a flat piece of plywood. Flip the square over and check your line. By moving the loose edge of the blade in and out of the stop you can achieve a square angle, then fasten the other screws in place.

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