

THREAD CHASING - TROUBLESHOOTING

Ernie Newman

Thread won't start

A series of grooves form, not a thread.

Try less forward pressure when feeding the chaser across the surface of the wood. The chaser should just graze the surface. If the chaser is held lightly then the second tooth falls into the almost invisible groove cut by the first tooth. This allows the chaser to find its own speed automatically. We don't know the correct rate that the chaser should move across the surface so we need to let the chaser slow or accelerate as its trailing teeth slip into the groove. A firm grip is a disadvantage as it over-rules this process. "We are chasing threads, we are not going to catch them by getting tough." Bill Jones.

Threads break up – wood selection

The wood may be the problem. It needs to be very hard and fully seasoned with straight, fine, even grain. It should be free of splits, knots, voids, wavy grain and interlocked grain. The grain usually runs between centres.

Good Australian species include: Mulga [*Acacia aneura*], Gidgee [*Acacia cambagei*], Bullock Bush [Queensland Inland Rosewood], NT Ironwood, Cooktown Ironwood [*Erythrophleum chlorostachys*], Sandalwood [*Santalum spicatum*], False Sandalwood [Plum Bush or Goldenwood], Western Myall [*Acacia paprocarpa*], WA Quandong [*Santalum accuminata*], WA Native Currant [*Cantheum latifolia*], Red Ironbark, Red Morrell [*Euc. longicornis*], Cypress pine [*Callitris glauca*]. Some Eucalypts will take a thread.

Good overseas species include: Pink ivory, African Blackwood, Ebony, European Boxwood, Lignum Vitae, African Olive, Osage Orange, Desert Ironwood, Cocobolo and some fine Rosewoods.

Medium density fibreboard [MDF] is an excellent material for practice as it has no grain and takes a thread well. MDF inserts can be threaded, stained and then glued into a box made from wood that won't take a thread. Use dust protection when working MDF. Inserts may also be made from good chasing species.

Poor wood will sometimes take a thread if strengthened by glue [CA glue dries quickly].

Another reason that threads break is that too much pressure is applied, especially when threads reach their full depth. Rather than taking heavy cuts with a chaser it is better to remove wood by turning off the crowns, leaving the bottom of the threads, then chasing again. Threads may also break if the chaser is blunt. Hone or grind the top of the chaser.

Chaser jerks

File, sand and wax the toolrest.

Smooth and wax the underneath of the chaser.

There may be a defect in the wood – see thread breaks up above
Double threads

If the threads are too close together just keep going, usually one thread will eventually dominate. If this fails then turn off the double thread and start again.

Sometimes double-start threads appear. Here the threads are the right distance apart but there are two separate threads. These threads slope much more steeply than normal threads when viewed from the side. They form when the chaser traverses twice as fast as normal. Turn them off and start again.

Tool moves sideways too quickly

Slow the lathe or use a finer chaser. Speeds between 100 and 500 rpm are ideal.

Check for double-start threads – see above.

Lid won't screw fully on

Check if threads are tapered. Place a steel rule on the thread and visually line it up with the lathe bed. Re-cut threads till they are parallel to the lathe bed. If the female chaser isn't held parallel to the floor then the thread will be tapered.

If the threads are parallel then one of them may need to be deepened. A sloppy fit is better than a tight one.

Fit tightens overnight

The wood may not have been fully seasoned. Sometimes even seasoned wood will move after turning as stresses are released. In this case it is often possible to remount the box on the lathe and cut the threads a little deeper. They may even be deepened by holding the box in your hand and running the chaser around the thread by hand.

Beginning of the thread is damaged

This is often caused by a stationary start. Take a running start by positioning the chaser a few millimetres away from the rounded shoulder so that it hits the shoulder on the move. The beginning of the thread is usually removed later so damage here doesn't matter much.

Fit is too loose

Make two boxes. Turn a new lid for the base and a new base for the lid.

MORE ON CHASING

Using chasers to add decorative grooves

It is easy to cut parallel decorative grooves in the rim of a platter, around a spindle or all over a turning using a chaser. The chaser is presented to the wood without moving sideways. This technique works on most species if the cut is light and gradual. If the wood is painted before the grooves are cut then sharp bands of colour will emerge.

Decorative spirals may be chased into the end grain of many species. This can be a striking feature on spinning tops.

What size chaser is best?

Fine chasers [16-24 TPI - teeth per inch] are easier when starting out. Coarser threads are easier to see but take more skill, especially if the lathe won't run slowly. Very fine threads tend to cross thread in use.

What is the best shape for a box?

It is a good idea to enlarge the box inside the opening as this provides clearance when cutting the female thread.

How are the diameters of the two parts of a box calculated?

This depends on the chaser size. Lets assume that the male thread is chased first and that the chasers are 16 TPI. The outside of the male thread should be about 1.5 mm [1/16"] larger in diameter than the diameter of the recess for the female thread. This way, if the first attempt to chase the female thread is unsuccessful there is enough wood for a second or third attempt. If the chasers are finer than 16TPI then the difference between the two diameters can be a little less than 1.5 mm [1/16"]. For example the difference could be 1mm [1/25"] for 24 TPI chasers. If the chasers are coarser than 16TPI then the difference between the two diameters could be greater. For example the difference could be 2mm [1/12"] for 10 TPI chasers.

Making and buying chasers

Commercial chasers are expensive. Workable chasers can be made from bolts but it is better to use die head chasers. Email me ernienewman@hotmail.com re die heads.

A low-tech way to slow the lathe

An old motor may be used to create low speeds to make chasing easier. Turn a wooden pulley about 300 mm [12"] in diameter and attach it securely to the left-hand side of the headstock spindle. Turn a second pulley about 38 mm [1 1/2"] in diameter, attach it to a motor mounted behind the lathe and connect the pulleys with a belt. Disengage the regular motor belt and run the lathe with the second motor. The suggested pulley sizes will run a 1400 rpm motor at about 150 rpm and a 1700 rpm motor at about 190 rpm. Chasing is a gentle process so the motor can be low powered.

Chasing with the motor reversed

When chasing the male [outside] thread it can be tricky to remove the chaser just before it hits the shoulder to the left of the thread. If the chaser hits the shoulder it may damage the thread. If you can reverse the direction of the lathe and stand at the back of the lathe then it is possible to cut the male thread away from the shoulder rather than towards it. This may prove easier than the standard method.

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