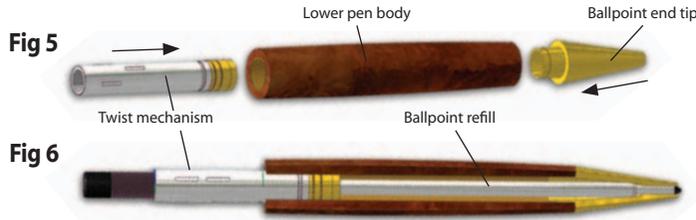


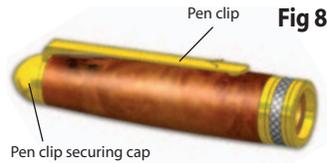
NOTE. We suggest that the initial insertion is made 'short'. Screw the pen refill into the mechanism, twist to fully extend and check how much further the pen tip needs to move to give optimum protrusion. See Fig 6. Remove the refill and carry out the required adjustment.



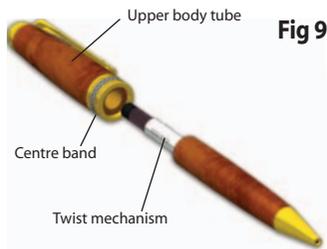
Line up the components for the Upper Pen Body. Ensure the Pen Clip Cap Threaded Anchor is correctly oriented (there is a small 'lead' on the 'insert' end), and aligned with the body. Gently but firmly press it home flush with the end of the body. (Force Fit) See Fig 7.



Insert the Pen Clip Securing Cap thread through the Pen Clip, introduce the thread into the threaded anchor and screw home tight. Check there is no excess glue in the recess of the Centre Band. See Fig 8.



Refit the pen refill, ensure the two bodies are aligned See Fig 9. Press the Upper Body Tube over the twist mechanism, and continue pressing until the upper edge of the Lower Pen Body is housed in the recess formed by the Centre Band. (Friction Fit)



Leave sufficient clearance between the pen bodies proper to allow a smooth twisting action without them rubbing together. See Fig 10.



Take extra care when fitting the Upper and Lower Bodies together, i.e. careful alignment etc., as replacement of the refill is carried out by separating the pen at the 'friction fit joint'. Bad alignment etc, could cause the friction fit to deteriorate over time with the subsequent loss of adhesion allowing the pen to separate randomly.

These mandrels are machined with either parallel or Morse taper mounting and have a shoulder to assist with removal. They are supplied with a number of spacers for locating the pen components. See our catalogue for details as to whether or not you will need to purchase additional bushings for the project that you have chosen.



More Information



If you are still a little unsure about getting into pen and project kit making, why not come on one of our one day courses here at Axminster.

This is a one day course for anyone who wants to learn the art of pen making and producing objet d'art from project kits. If you are thinking of buying a small lathe or have a lathe, this is the course for you. Gaining a real insight into what can be achieved, after one day you will be able to leave with the completed, professionally finished masterpieces and a multitude of ideas and skills.

For details visit: axminsterskillcentre.co.uk or call: Vicky Turner on 0800 9751905.



Pen Kits The Principles of Turning



10-24ct Euro Twist Pen

Code: 210097-310404



Pen Kit Instructions



AXMINSTER
TOOL CENTRE

axminster.co.uk/penmaking

Instructions for the Pen Kits

Kit No's. 210097 - 310404 Artisan European Style Twist Pen

Pictures of samples of the finished articles, in both timber and acrylic, can be found in our catalogue in the 'Woodturning Projects' Section.

Below is a list of the items required to make the finished items from the purchased kits (Not including the body blanks). If you do not possess these items we have offered our catalogue stock code numbers alongside the items as a quick guide. We have tried to include everything in the list, although we realise that many woodturners will already have most of them.



Required items

Alternatives are listed to cater for different lathe configurations.

Pen Mandrel (with 1MT Drive Centre)	340198
or Pen Mandrel (with 2MT Drive Centre)	340199
or Pen Mandrel (with Parallel Drive Centre)	800375
60° Live Tail Stock Centre 1MT	340202
or 60° Live Tail Stock Centre 2MT	340203
or 60° Live Tail Stock Centre 3MT	340204
Bushing Set (4 pieces)	310381
7mm Drill Bit (we recommend the Colt Pen Drill)	502103
Axminster Barrel Trimmer	310478
2 Part Rapid Epoxy Resin Adhesive	340282
or Zap-A-Gap Adhesive (Cyanoacrylate)	990095

Recommended Accessories

Quick Action Pen Blank Vice	600771
Axminster Pen Assembly Press	200205

European Style Twist Pen Kits

Kit No. 310404	10ct European Pen Kit (A logo)
Kit No. 700149	Artisan European Chrome Pen Kit
Kit No. 500290	Satin Gold European Pen Kit
Kit No. 610198	Nickel Satin European Pen Kit

What's Included

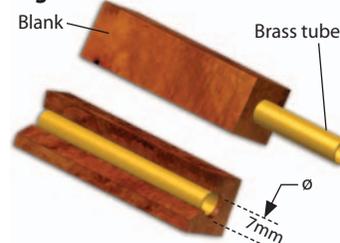
1 off	Brass Tube (53mm Long)	(a)
1 off	Brass Tube (60mm Long)	(b)
1 off	Centre Band	(c)
1 off	Pen Clip	(d)
1 off	Pen Clip Securing Cap	(e)
1 off	Pen Clip Cap Threaded Anchor	(f)
1 off	Ballpoint End Tip	(g)
1 off	Ballpoint Refill	(h)
1 off	Twist Mechanism	(i)



Preparing the Bodies

Using 16mm (5/8") Square stock; cut the blanks to the length of the brass tubes adding 2-3mm to allow for trimming. The Pen Blank Sizing and Cutting Jig makes this process very much easier. Drill a 7mm diameter hole through the centre of the blank. Care must be taken not to force the drill bit, (this may cause it to 'wander' from the centre line), and remember to back out the drill frequently to clear the debris from the hole. If you are using a pillar drill the Quick Action Pen Blank Vice is a very useful accessory for this task, it ensures that the blank is held upright and firmly in position. Moreover, if the vice is clamped to the table of the drill, it will provide accurate repeatability for all the blanks that require drilling. When the hole is drilled, spread the adhesive randomly over the brass tube and insert the tube into the blank using a

Fig 1



twisting motion to ensure the glue is spread evenly between the two surfaces. Over insert the tube into the blank by approximately 1mm giving an allowance for the blank to be trimmed to size and the excess glue to be removed. See Fig 1.

Warning. If you are using cyanoacrylate adhesive, exercise extreme caution and do not allow the adhesive to come into contact with the skin. If this happens keep the affected area from contact with any other surface, until the glue has hardened or you can treat the area with a softening agent similar to Zap Z-7 Debonder (code no. 990099), and you can remove the glue.



Allow the adhesive to dry thoroughly. Using the Barrel Trimmer trim the ends of the blanks squarely and neatly to the ends of the brass tubes; this will also remove any excess glue that may have exuded from the joint. Take care not to undercut the brass tubes.

Turning the Bodies

Slide a mandrel spacers onto the shaft, add the Bushing from the Bushing Kit. Mount the Upper Pen Body next, then the Centre Bushing, (mount the centre bushing so that the smaller diameter mates against the

Turning the Bodies

Upper Pen Body. You may wish to mount the Dummy Centre Band Bushing onto the smaller diameter at the same time. (See Note below). Mount the Lower Pen Body next, then the Tip Bushing. Add mandrel bushings so that the near end of the mandrel thread is covered, (this will ensure that the locking nut

will tighten the assembly). Thread on the lock nut and do up finger tight. Check that the arrangement on the shaft allows sufficient space/clearance to turn each end of the body; if this is not the case, rearrange the layout of the assembly until you are satisfied. See Fig 2.



Note. The Bushing kit is supplied with a Dummy Centre Band Bushing. This is the approximate size of the outer diameter to which the lower end of the Upper Pen Body has to be turned, prior to cutting the shoulder. It can be slid along the smaller diameter of the Centre Bushing to gauge a comparison diameter; it is also narrower than the actual Centre Band, and

Tighten the lock nut to allow the assembly to be turned without moving. Do not overtighten, this may cause the assembly to distort? the bodies to split? strip the thread on the lock nut? etc. Similarly do not advance the tailstock centre with too much force. The current bulk of the blanks may be adding

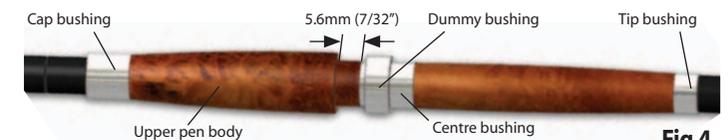
can therefore be moved away from the turning to enable the shoulder to be cut unimpeded. The internal diameter of the dummy centre band is the same internal diameter as the actual Centre Band so it may be used to establish the required diameter of the reduced journal of the Upper Pen Body. (See also Fig 4)

strength to the assembly but as the body diameters are reduced, too much force on the mandrel may cause it to distort/ bow? Turn the main body dimensions down to diameter of the pen bushings. (and the dummy Centre Band). See Fig 3.



Move the dummy bushing away and reduce the diameter of the lower end of the upper pen body over a distance of 5.6mm (7/32") to produce a 'snug fit' for the internal diameter

of the dummy centre band. ENSURE that the corner is SHARP. See Fig. 4 Carry out the finishing work on the bodies. Remove the finished bodies from the pen mandrel.



General Assembly

Note. The Axminster Pen Assembly Press (code no. 200205) is a very useful accessory for these operations, as it gives greater control over the applied force and keeps the components in line. Put a couple of drops of glue (added security) on the Centre Band and press it on to the prepared journal at the lower end of the Upper Pen Body. Put aside to dry. Line up the Lower Pen Body components as shown in Fig 5. Make sure

the body and the tip are aligned and gently but firmly, press the Ballpoint End Tip home. (Force Fit) Ensure the twist mechanism is correctly oriented and put a guide mark (fine felt tip?) 21mm (13/16") from the end as shown. (See Fig 6) Make sure the body and the mechanism are aligned and gently but firmly press the twist mechanism into the body as far as the marked distance. (Force Fit)