

The Triple-S Mainspring Winder

Safety Strength Simple design

A revolutionary new clock mainspring winder by Mervyn Passmore.

Instructions

Safety Notices

Mainsprings can be strong, sharp and dangerous.

- 1 Always wear strong leather or industrial gloves.
- 2 Always wear eye and face protection.
- 3 Always wear suitable clothing that covers all exposed skin.
- 4 Always make sure all parts of the winder are firmly assembled.
- 5 Never use the winder if it is not screwed, bolted or clamped to the workbench.
- 6 Never work with a spring when another person is in the vicinity and not wearing suitable safety equipment.

Depending on the model and options you purchased, you may or may not have all the items described in this document.

If you purchased a self-assembly model or kit, you should follow the appropriate instructions before using this document. All parts and optional items are available individually from the manufacturer.

Specification

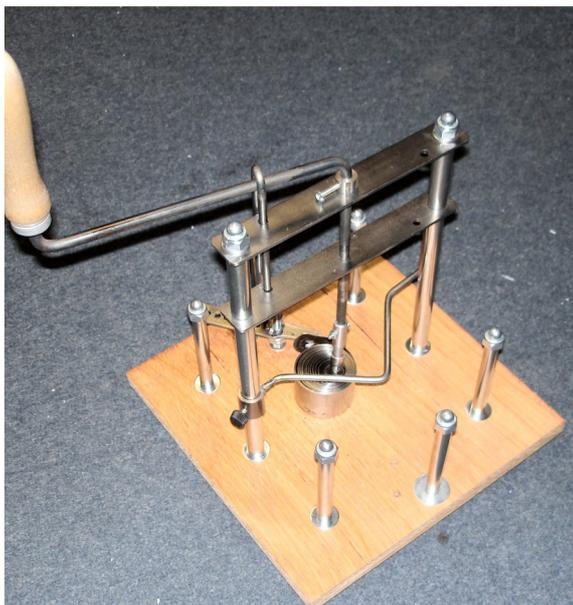
Winds and unwinds left and right handed hole end and loop end springs as well as gramophone springs with hub centres. Fits and removes springs from barrels up to 70mm in diameter, 55mm wide and up to 0.70mm thick. Over 20 sizes of optional retaining barrels are available.

Unlike more traditional designs, this winder operates vertically and the spring is enclosed within an open safety cage formed by carefully located pillars. All mainsprings, whether new or old, can fracture when wound. By enclosing the spring in a safety zone, risk of personal injury is significantly reduced. Most traditional winders operate with the spring coiled in front of the operator's face, and human error, component failure or spring fracture can result in serious injuries.

Constructed from heavy gauge steel on a thick plywood base, very powerful clock and gramophone springs can be wound with ease. No plastic handles, knobs or levers. No flimsy click springs to malfunction.

The winder has many capabilities:

- 1 Removal from a barrel
- 2 Insertion into a barrel
- 3 Coiling hole end springs
- 4 Coiling and uncoiling loop-end springs
- 5 Working with gramophone spring with hub and 90 degree inner ends



The winder, shown here with the extra-long handle.



The spring retained in a ring.



'Open' spring retainer



The barrel clamped in position.



The horizontal arm that prevents the spring from spiralling out.

The main components of the winder

Baseboard, constructed from 18mm timber. This MUST be screwed or clamped to the workbench for all operations.

Two Vertical pillars, bolted together with horizontal handle supports.

Three horizontal supports, one beneath the base and two above. The large holes are for the locking device. The small holes are for hanging wire loops on when coiling springs.

Central boss reset into the base

Horizontal arm that prevents the spring from spiralling out of control.

Two handles. Two sizes of handle are available. It is important not to use the extra long handle on small springs. Its leverage is so powerful it can tear the end of a small spring if misused. Only use it on large fusee and gramophone springs when the small handle may feel insufficient.

Handle height adjuster. This slides up and down the handle shaft and is set to match the height of the adjustable of the arbor.

Handle locking device. An inverted 'U' that passes over the handle shaft and into one pair of holes in the two upper horizontal supports.

Tail hook. The hook locates over the two vertical hook bolts. The multiple holes allow the distance from the hook to the spring to be adjusted. Similarly the height of the hook can be adjusted using spacers. The hook must always be aligned with the hole in the spring.

Tail hook auto-engage arm. This aids the tail of the spring to engage on the tail hook. Very experienced users may find it quicker to use a gloved hand, but this is not recommended for new users.

Loop end hook. This engages in the tail hook to hold loop end springs.

Wire loop hook. This fits into the holes on the lower handle support. Use it to hang a wire loop out of your way.

Two adjustable arbors. These fit onto the end of the handle and hook onto the inner end of the spring.

Gramophone arbor. This is used to wind springs with hub or 90 degree hub centres.

Six safety pillars. New and old springs can fracture at any time. These pillars are designed to prevent injury in the event of an incident by controlling rapid expansion. *Remember that there is no guarantee that every spring that fractures or escapes will be fully contained by the safety pillars. They are not a substitute for proper safety equipment and care.*

Barrel supports. These bolt together to hold the barrel firmly and centrally. Don't clamp the toothed part.

Handles

Handle locking device

Horizontal supports

Adjustable arbors

Horizontal arm

Six safety pillars.



Handle height adjuster



Two Vertical pillars



Barrel supports.

Tail hook

To remove a spring from a barrel

Measure the width of the mainspring.

If you have more than one adjustable arbor, select the most appropriate. As the centre of most springs has been softened or forcibly pre-curved (stainless springs), there is no need for a wide range of arbors. However large thick springs will be difficult to engage on a small arbor and small French springs will not be easy to engage on a large arbor.

Slacken the adjuster set screw on the adjustable arbor and slide the outer sheath along the shaft so that the distance between the far end of the outer sheath and the hook screw is half the width of the spring. Tighten the set screw.

Tighten the hook screw and then slacken it off by up to one turn from being tight. This should be sufficient for most springs. The further out the screw protrudes the easier it will be to engage spring. However if you slacken this more than necessary, there will be a chance that the head of the screw will make an indent on the second coil of the spring. *On no account should the hook screw be slackened more than one and one half full turns.*

Select a spring retaining ring that fits the barrel. Choose one that is a comfortable fit. It will be easier to refit a spring if the ring diameter is several millimetres less than the barrel diameter.

Clamp the barrel in the barrel clamps and locate it within the main pillars. Most springs wind clockwise. Make sure you fit the clamps the correct way up so that the hooked ends wrap around the pillars in the correct direction. Do not clamp the toothed area. Make sure the outer surface of the barrel and the clamps are not oily or slippery.

Lower the handle.

Slacken the handle height adjuster screw and engage the arbor hook screw.

Wind the spring until it no longer touches the barrel and leaves room for the retaining ring.

Fit the handle locking device ensuring that one leg of the loop fits through **both** handle supports.

Slip a retaining ring over the spring.

Take up the tension with the handle, remove the locking device and allow the spring to expand into the ring. Raise the handle and lock it up using the handle adjuster screw.

Disengage spring from the barrel hook. Remove the ring with the spring inside.

To replace the spring from the ring, reverse the sequence as follows:

Measure the width of the mainspring.

If you have more than one adjustable arbor, select the most appropriate. As the centre of most springs has been softened or forcibly pre-curved (stainless springs), there is no need for a wide range of arbors. However large thick springs will be difficult to engage on a small arbor and small French springs will not be easy to engage on a large arbor.

Slacken the adjuster set screw on the adjustable arbor and slide the outer sheath along the shaft so that the distance between the far end of the outer sheath and the hook screw is half the width of the spring. Tighten the set screw.

Tighten the hook screw and then slacken it off by up to one turn from being tight. This should be sufficient for most springs. The further out the screw protrudes the easier it will be to engage spring. However if you slacken this more than necessary, there will be a chance that the head of the screw will make an indent on the second coil of the spring. *On no account should the hook screw be slackened more than one and one half full turns.*

Clamp the empty barrel in the barrel clamps and locate it within the main pillars. Most springs wind clockwise. Make sure you fit the clamps the correct way up so that the hooked ends wrap around the pillars in the correct direction. Do not clamp the toothed area. Make sure the outer surface of the barrel and the clamps are not oily or slippery.

Insert the ring and spring in the barrel and engage the tail hole on the barrel hook.

Lower the handle.

Slacken the handle height adjuster screw and engage the arbor hook screw.

Wind the spring until it no longer touches the retaining ring.

Fit the handle locking device ensuring that one leg of the loop fits through **both** handle supports.

Remove the retaining ring.

Take up the tension with the handle, remove the locking device and allow the spring to expand into the barrel. Raise the handle and lock it up using the handle adjuster screw.

To remove a spring from a retaining ring

If you have more than one adjustable arbor, select the most appropriate. As the centre of most springs has been softened or forcibly pre-curved (stainless springs), there is no need for a wide range of arbors. However large thick springs will be difficult to engage on a small arbor and small French springs will not be easy to engage on a large arbor.

Slacken the adjuster set screw on the adjustable arbor and slide the outer sheath along the shaft so that the distance between the far end of the outer sheath and the hook screw is half the width of the spring. Tighten the set screw.

Place the spring retaining ring over the centre boss in the base board,

Locate the tail hook on the upright bolts to match the tail of the spring.

Adjust the tail hook height with spacers to align with the centre of the tail hole.

Engage the centre hole of the spring on the arbor. Wind the handle until the retaining ring could be removed. Fit the handle locking device ensuring that one leg of the loop fits through *both* handle supports. Carefully remove the ring.

Lower the horizontal arm. The gap between the spring and arm must be less than 1/2 the spring width.

Take up the tension with the handle. Remove the handle locking device and unwind the spring.

To coil a spring in a wire loop

Prepare a wire ring of the diameter required using appropriate gauge wire. Pass it up and over the arbor and hang it on one or both of the wire holders. These are simple hooks that fit in the small holes on the lower handle cross-support.

If you have more than one adjustable arbor, select the most appropriate. As the centre of most springs has been softened or forcibly pre-curved (stainless springs), there is no need for a wide range of arbors. However large thick springs will be difficult to engage on a small arbor and small French springs will not be easy to engage on a large arbor.

Slacken the adjuster set screw on the adjustable arbor and slide the outer sheath along the shaft so that the distance between the far end of the outer sheath and the hook screw is half the width of the spring. Tighten the set screw.

Tighten the hook screw and then slacken it off by up to one turn from being tight. This should be sufficient for most springs. The further out the screw protrudes the easier it will be to engage spring. However if you slacken this more than necessary, there will be a chance that the head of the screw will make an indent on the second coil of the spring. *On no account should the hook screw be slackened more than one and one half full turns.*

Locate the tail hook to match the diameter of the wire loop.

Adjust the tail hook height to align with the spring tail hole using spacers and the wing nuts.

Engage the centre hole of the spring on the arbor.

Lower the horizontal arm. The gap between the top of the spring and arm must be less than 1/2 the spring width.

If required, fit the 'auto engage' hook on the tail hook using the small holes near the hook.

Loosely wind the spring. As the tail end approaches the hook, guide the hole in the end hooks over the tail hook.

When engaged, fully wind the spring.

When almost fully wound, Fit the handle locking device ensuring that one leg of the loop fits through *both* handle supports. Carefully remove the ring.

Fit the wire loop over the spring. The loop can be distorted to fit it because it will revert to a circle when the spring is unwound.

Take up the tension with the handle. Remove the handle locking device and gradually unwind the spring making sure the whole circumference of the loop is in the centre of the spring.

The winder can also be used with loop end springs and gramophone hub springs.

For loop ended springs simply replace the tail hook with the loop hook.

For hub springs, use the cross-section arbor.