Instructions for Reassembling Self Winding Clocks

Mechanical

Unwrap and separate the entire kit before starting. Exercise care when removing the bubble wrap. We do not believe in wrapping things in tape. Therefore all tape is short and can be easily removed so the bubble wrap can come apart readily.

Ken's Clock Clinic recommends you wear latex gloves when handling pendulums or movements. This will prevent tarnish from cropping up later, discoloring the metal and leaving unsightly fingerprints.

It is helpful to start by removing any retaining rubber bands that are shipped with the movement now, as they may be difficult to access later.

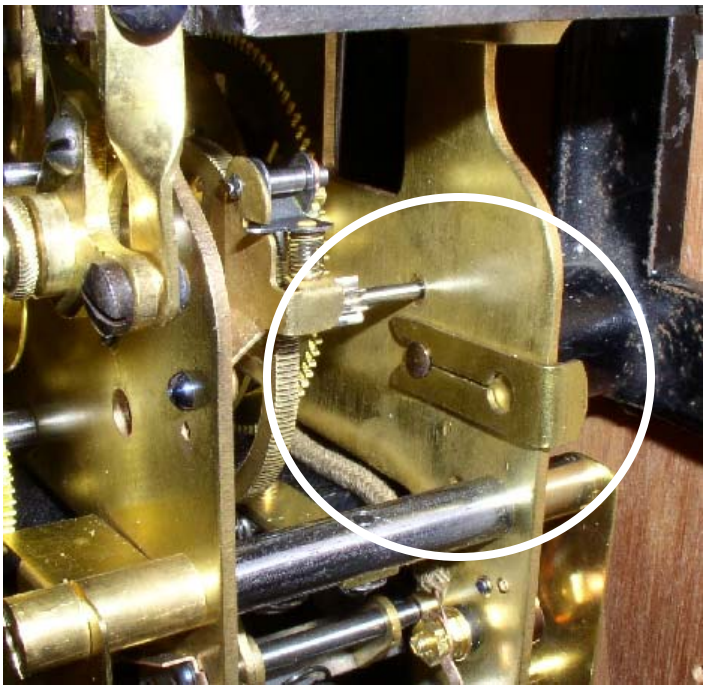
1. Mount the movement base into the case. Be sure to install the four rubber washers behind the four mounting holes of the base while installing the movement base. We like to supply these with the movement since the originals are usually dried out, dry rotted or cracked.

2. Hang the pendulum onto the suspension spring. The hook points towards the back of the clock. The finished side of the bob is out. With mercurial pendulums, the same applies. The hook points towards the back of the clock.

WARNING: KEEP IN MIND THAT MERCURY IS A VERY TOXIC METAL! Ken's Clock Clinic does not recommend keeping mercury pendulums in a residence. The best thing to do is to replace these vials with tubes filled with lead. If the mercury vials are dropped and the mercury scatters, it is nearly impossible to remove the mercury without the assistance of a HAZMAT removal team. Mercury left after a spill can and has caused extreme illnesses and even death, especially with children, due to the vapors and minute particles that remain present.

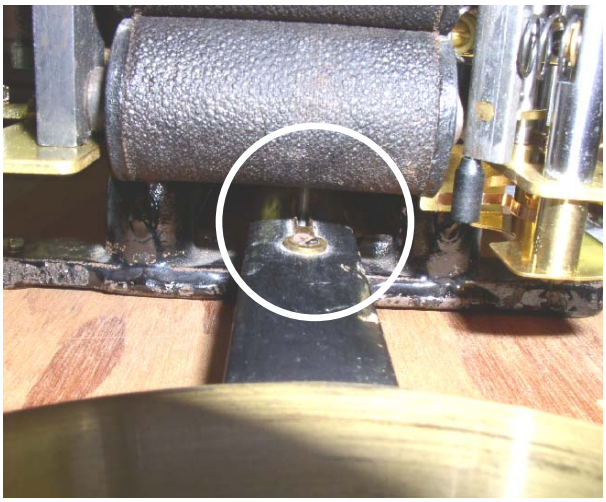
3. Mercurial pendulums only: Install the mercury vials. These are supported between the two brass plates and held between the two conical supports. The upper support is hand tightened. **But be sure the conical end of the screw is in the center recess of the vial, or the vial will work its way loose. This could be disastrous as previously indicated.**

4. Install movement to the base. You'll notice that there are 3 captive pillar screws in the movement which line up with the 3 threaded bosses in the movement base. Hold movement in place while these screws are tightened. Sometimes the movement will have a small brass clip



which is installed on the lower right boss of the movement base, once the movement is mounted. The purpose of this clip was to prevent movements from accidentally tumbling out of the base if the three screws were removed without being conscious of the movement weight. It is not essential to the installation; but if the clip is present, it is good to keep the clock whole. Note that earlier movements had 4 pillar screws and no clip.

Before or after movement is mounted, make sure the small wire in the back of the movement (this is called the crutch wire) is fitted into the brass slot on the pendulum rod. With mercurial pendulums, the crutch wire is terminated with a C clip which clamps around the 0.300" diameter pendulum rod. Whether the wire or clip, these should be free to move in the slot or around the pendulum rod. They should not bind. If they do, the clock will run with little power or will stop. Also, no other part of the crutch wire, other than what is shown, should come anywhere near the pendulum rod.

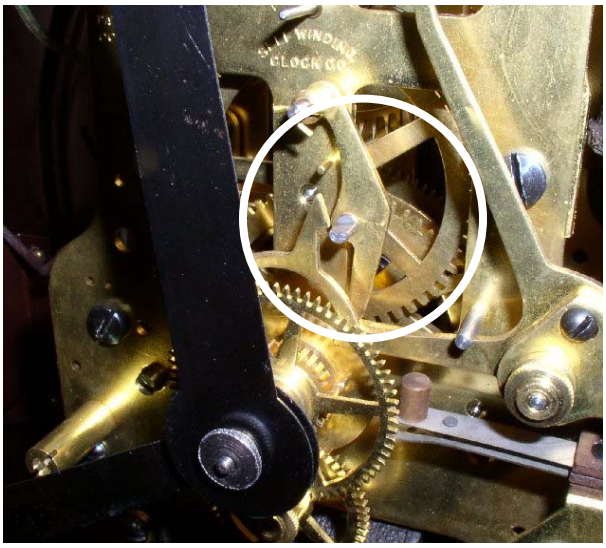


The crutch wire must be fitted into the pendulum slot. This is very difficult to see, and just about as difficult to photograph. At the left is a view looking up from under the movement. In the foreground is the rear coil on the bottom of the movement, and behind it is the pendulum and the pendulum slot with the crutch wire going through it.

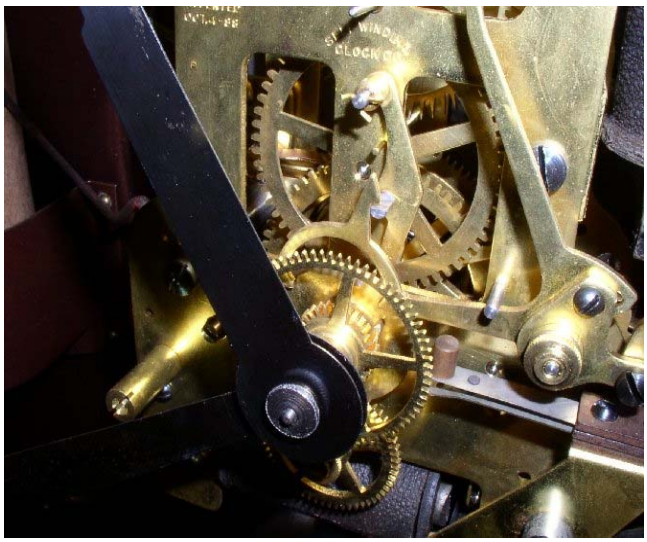
5. Install dial. Four screws will hold the dial in place. These are 4-40 thread ¼" screws if they should be lost. The originals were nickel plated steel screws but they can be replaced with zinc screws which are readily available, in a pinch.

6. Install hands. The retaining nut is screwed onto the handshaft and must be removed before hands can be installed. Hour hand first, pressed firmly into place. The minute hand goes on next, then the retaining nut. Align hands so that when the minute hand points to the hour (12), the hour hand is pointing exactly at an hour.

If your clock movement has a synchronizer, you must (if only by trial and error) align the hands so that the synchronizer stop piece is out of the way at the top of the hour. The hands can go on 4 ways. When installed the correct way, test by gently turning the hands counterclockwise. You will not be able to turn the minute hand past 11. If the hands stop at any other place, say 8 or 5, you will have to remove the minute hand and re-orient it until this condition is satisfied.



Synchronization Enabled



Synchronization Disabled

Note: On seconds synchronized self winding clocks, NEVER remove the small seconds bit screw! These are difficult to replace due to the obsolete thread. Spares are difficult to find and they must be fabricated in our shop, and fitted to the movement which must be present. In other words it is a big deal to replace them. There is also NO reason to ever remove them!

Here you can see the position of the second hand. When I push the synchronizing lever as if the synchronizer has energized, the second hand is moved to point straight up. This is how I know it is installed correctly. If you do this before installing the dial, then remove the second hand, you can reinstall the hand after the dial is installed and be sure it is in the proper position. However, you MUST NOT run the clock during this procedure or the seconds assembly will move and you will lose this position. Note it is only possible to move the lever to this position if synchronization is enabled as described above.

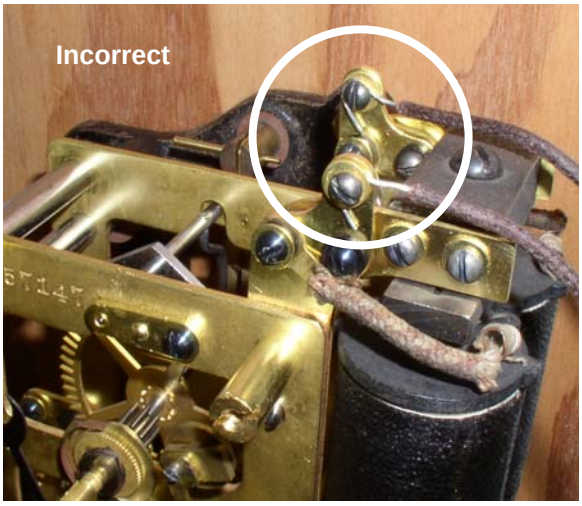
Electrical Connections

Your kit includes a KCC Scientific battery kit such as a 1900, 1900R, or 1900G and possibly 1900S synchronizer, depending on the type of movement you have. Your synchronizer is so accurate that it will keep your clock running with better precision than any other mechanical clock you own, and more accurate than your quartz watch.

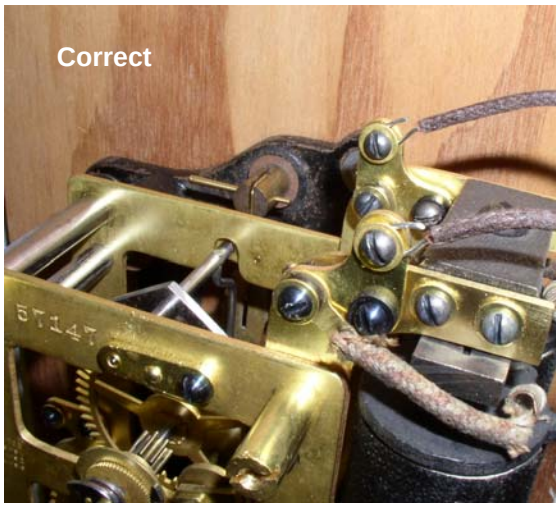
1. Open the kit and separate out the individual No.6 units and wire if applicable.

2. Install the battery unit on the left side of the clock per the instructions in the battery kit. If the clock has no synchronizer, and you ordered a 1900 or 1900L, you will have two batteries in the kit. Place one on each side of the clock and connect them per the instructions in the kit.

3. If equipped with a synchronizer, and if you ordered a 1900S (very likely), install the 1900S on the right side of the clock. The SMALL terminals of the 1900S will connect to the synchronizer terminals of the movement with the brown wires included in the kit.



Left: Improper way to connect wires on Style F.



Right: Proper way to connect wires

Note that when connecting the wires to the clock's synchronizer terminals, you should ONLY connect to the top screws with the brass washer behind them as shown above. NEVER loosen any other screws on these terminals or attempt to squeeze wires behind insulated washers. The wire provided is pre-stripped and cut to length and will work as is for most installations. This solid #20 gauge wire can be looped and threaded behind the brass washers as shown in the picture to the right.

On the left there are two mistakes shown. First the loop is counterclockwise, which will cause it to loosen as the screw is tightened clockwise. Second, the rear terminal is not connected behind the brass washer but instead is held in place by only the screw head. This installation will loosen eventually if not right away and the wire will come undone. On the right, the wires are looped clockwise and are fastened behind the washers. The screws can be tightened and will solidly and reliably hold the wires in place. In fact this goes for all screw connections.

The kit instructions are well diagrammed and will guide you with installation and setting up the synchronizer. In a nutshell, turn the minute hand clockwise till the minute hand is pointing to the hour. Wait until it is the top of the hour, then press and release the button on top of the synchronizer. This will set the time on the synchronizer and it will send out the synchronizing pulse every hour thereafter.

Putting Clock in Beat

One of the most important aspects of the clock setup is putting the clock in beat. If it is not in beat, it will not run. When the clock is in beat, the tick will be exactly even. If it is unbalanced at all, it must be put in beat. This is most easily achieved by slightly moving the bottom of the clock until the beat is even. If the clock ends up noticeably out of level, then the crutch wire can be carefully and very slightly bent until it is in beat ***and*** the clock level.

Bending the crutch wire is an iterative and delicate process. Pushing on the wire with a finger from either the left or right side of the movement, a few inches above the slot in the pendulum strip, is the most effective way to make this fine adjustment. Unfortunately it must be done by "feel" and is impossible to photograph. For this reason we set the beat here in the shop to be as close as possible to perfect with the movement level. However sometimes movements are not mounted level in the case and some adjustment may be necessary.

If the pendulum spends too much time dwelling on the right side eg the tick is long on the right side, then you must bend the wire to the left. If the pendulum spends too much time dwelling on the left side eg the tick is long on the left, then you must bend the wire towards the right.

Words of Advice

If there is anything wrong with your clock after the installation, **PLEASE DO NOT TRY TO REPAIR IT YOURSELF.** For example, contacts are painstakingly adjusted. There is nothing you can do to improve on these adjustments which are set with precision instruments. You can only damage something making haphazard adjustments. If there is something wrong, contact us. At best we can guide you through to finding out what's wrong in a few minutes. At worst the movement will have to come back, where it will receive our immediate attention and care. And since it is warrantied, it won't cost to repair it. On the other hand if you bend up and damage contacts or anything else, it might not be covered under the warranty.

If the clock will not run, check the hands first. Mis-installed hands are a very common source of clock problems. Seconds bits might be running into hour hands, or the minute hand might be running into the hour hand. Make sure that the hour hand is FIRMLY pressed into position since the minute and hour center bosses, if they rub against each other, will stop the clock as well.

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