

Horace Whitlock's Premium Quality Synthetic Clock Oil Kit

This kit was designed and put together to ensure that you have everything needed to clean and re-oil any type clock, including grandfather clocks, wall clocks, mantle clocks, cuckoo clocks, as well as music boxes. The oil in this kit has been used for over 12 years now and has been tested on over 3,000 clocks (as of this writing). Choosing the best clock oil possible for your clock is one of the most important decisions you can make in order to keep you family's heirloom or future heirloom up and running for future generations. Choosing an inexpensive oil or oils that are not specifically designed for oiling clocks could be a costly mistake. Not all oils are alike and there is no such thing as a "general -purpose oil" when it comes to mechanical clocks.

Horace Whitlock's Premium Quality Synthetic Clock Oil is hand mixed in small batches and designed to perform perfectly on all style, brands and makes of mechanical clocks, as well as music boxes. Horace Whitlock's Premium Quality Synthetic Clock Oil is designed not to gum up, dry out, evaporate or tarnish brass. This oil will not melt lacquers or varnishes and has an incredibly long shelf life.

Whether your clock is brand new or 200+ years old, they all have one thing in common, they all have to be cleaned and oiled on a regular schedule.

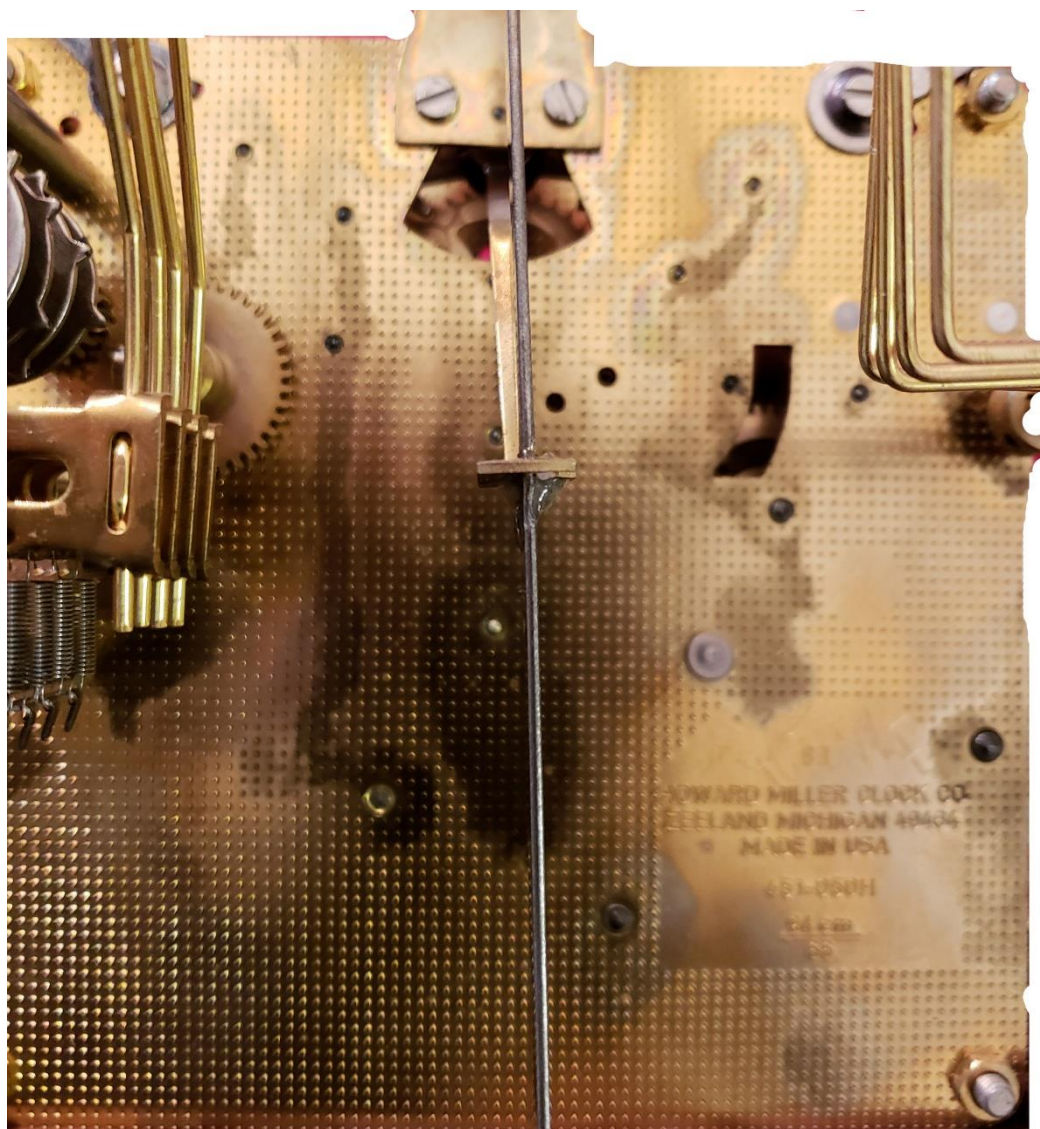
On the following pages, I will break down what is in the oil kit, as well as what each item is used for. We will have pictures explaining the process, as well as links to some videos that will help clarify the process.

Cleaning and oiling a clock movement is not a difficult task. Just like everything in life, there are tricks of the trade that will make the process go easier. This manual is the "tricks of the trade" to make cleaning and oiling a clock movement easier for you.

Thank You for purchasing the Horace Whitlock's Clock Oil Kit.

The picture bellow shows the results when using cheap oil on a movement. All the darker spots are where the cheap oil has melted the liquor on this movement. The melted lacquer has run down into the bushings, turning into a gum like substance and stopping the clock from running. Although difficult, we have been able to clean and re-oil movements like this and have extended their life using the method and equipment listed in this article.

Using good quality oil, specifically designed for clock movements is the most important decision you will make when re-oiling a clock movement.



Un-packing the oil kit:



Figure 1

In the later chapters, I will breakdown each item and have a detailed explanation of each item included in the kit. This kit was put together to help our customers clean and re-oil their own clocks without expensive equipment or without the skill set required for you to disassemble and re-assemble a clock after cleaning in an ultrasonic cleaner. When re-oiling a clock, very little oil is used. With the oil provided in this kit, you should have enough clock oil to re-oil one clock 100's of times or several clocks multiple times.

The Horace Whitlock Oil Kit includes the following items:

- 1 .20oz bottle of Horace Whitlock's Premium Quality Synthetic clock oil
- 1 Set of 5 oil pins
- 1 3 Hole oil cup
- 1 Cleaning cloth
- 1 Pith wood cleaning stick
- 1 3 ml jar of high quality clock grease
- 1 10X Loupe

Later in another chapter we will discuss each item and their functions. But before I do that, I would like to give you just the basics of how a clock works and a few technical terms to help you understand why you are doing what you are doing to your clocks movement and why a clock movement needs to be cleaned and re-oiled on a regular basis.

The Anatomy of a clock movement:

Before we get started on the actual cleaning and re-oiling of a clock movement, I would like to give you some information on the anatomy of a clock and briefly how a clock movement works. I won't get into great details in this chapter. There are several good books and information available if you want to get deep into the workings of a clock.

A clock movement is typically made of 2 brass plates with several gears (actually called wheels in the clock world) between the 2 plates. The gears sit on an arbor (see figure 4). At the end of the arbor are the tips of the arbor called "pivots". The pivots stick into a hole in each side of the clocks brass plate. These holes

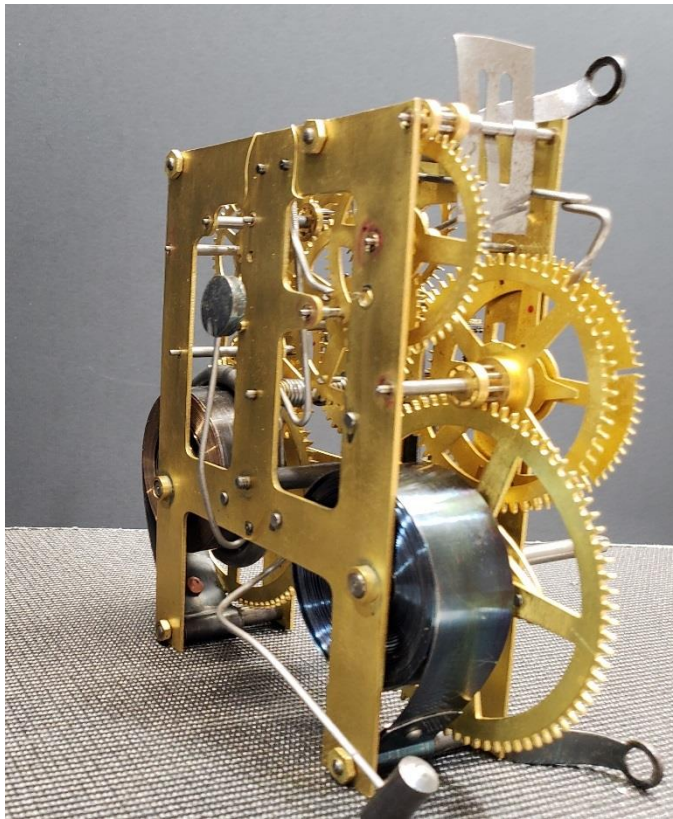


Figure 2

in the brass plates are called "bushings". On the front side of the bushings are small indentations called an "oil sink", (see figure 6 and 7). The oil sink is where the oil goes and is also where all the dirt builds up that we need to remove prior to re-oiling.

Over time, the oil in the oil sinks will eventually evaporate, collect dirt or just dry out and possibly wear the bushing out. Many people will just add oil to their clock movements without removing as much dirty oil as possible. When you just add new oil without cleaning out the old dirty oil, you are just adding clean fresh oil to the dirty oil and turning the dirty oil into a sludge that accelerates the wear of your clock bushings. This would be like never changing the oil in your car and just adding fresh oil to the old dirty oil. Pictured in figure 2, is an older American made time and strike clock movement and is typical of what an antique clock looks like. It is called a time and strike due to the fact that it keeps time and strikes the hour. Some other clocks are just

time only and others will keep time, chime a melody on the ¼ hour like Westminster, as well as strike the hour. Several grandfather clocks are what is called a triple chime, which just means they have the capability to play 3 different songs with the flip of a lever.

Figure 3a shows a modern day Hermle mantle clock. This is a typical movement that you will find in a modern style mantle or wall clock. There are other brands out there; however, Hermle made the majority of movements like this. You will find movements like this that will have other companies' names on them, such as Seth Thomas and Hamilton, along with others. This particular movement has a "balance wheel" instead of a pendulum. Whereas the movement pictured in fig 3b shows the same movement set up to take a pendulum (not pictured). They both are basically the same movement; they are just used in different clock styles. 3b would typically be used inside a larger wall clock that would have a pendulum that swings.

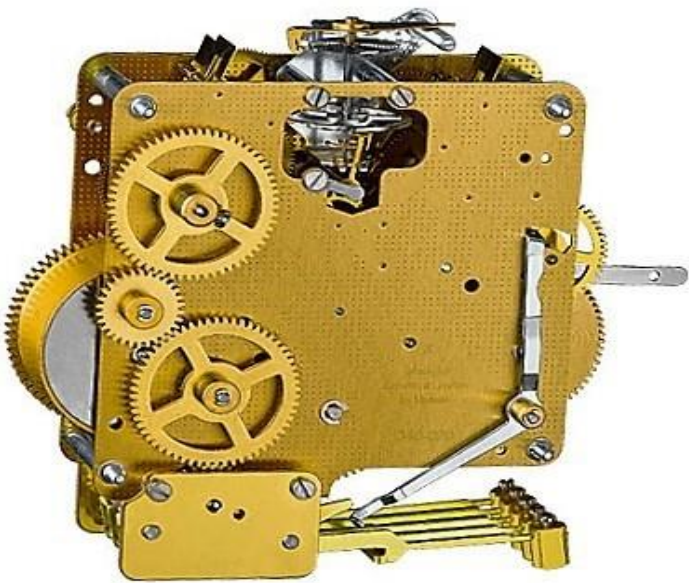


Figure 3a

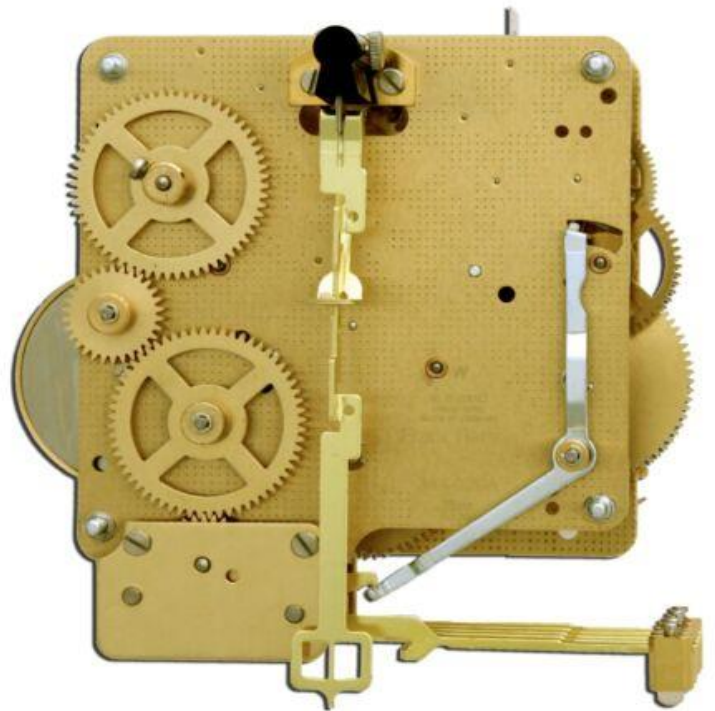


fig 3b

Pictured below in figure 4 is an example of a gear. The pivot on the end of the shaft or arbor, is slightly smaller than the shaft, allowing the pivot to penetrate through the bushing at each end plate.

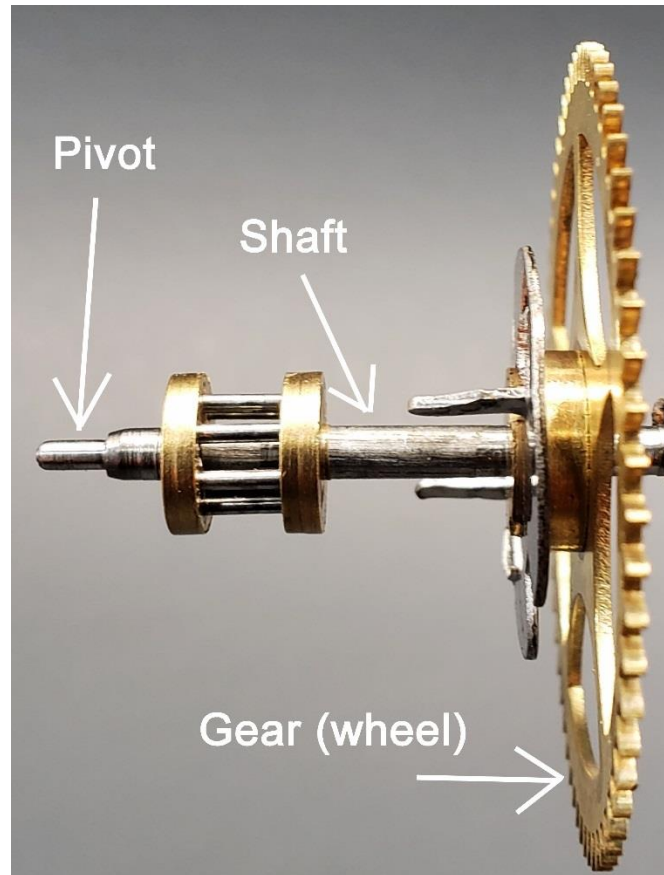


Figure 4

The picture below in figure 5 shows the pivot penetrating through the bushing on one side of the end plate. There is a small indentation inside the bushing. This indentation is called the oil sink and that is where the cleaning and re-oiling will take place.

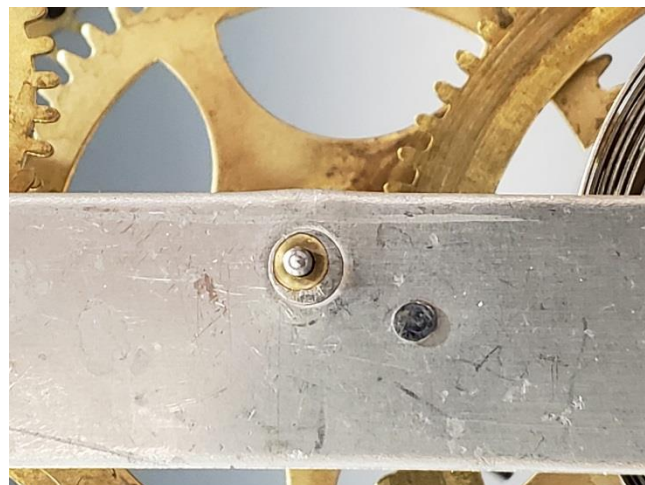


Figure 5

Figure 7 is a close up of the clean non-worn-out bushing. Notice the indentation in the bushing. Again, this is the oil sink. Old dirty oil will build up inside this oil sink as shown in figure 6a. This is what needs to be cleaned out. This dirty oil will eventually destroy the pivot, making the hole oblong and not allowing for the gears to line up correctly and/or get wedged, stopping the clock from running, chiming or striking. Figure 6 is a sideview drawing of the clock, pivot and bushing so you get an idea where the oil will be deposited onto the bushings.

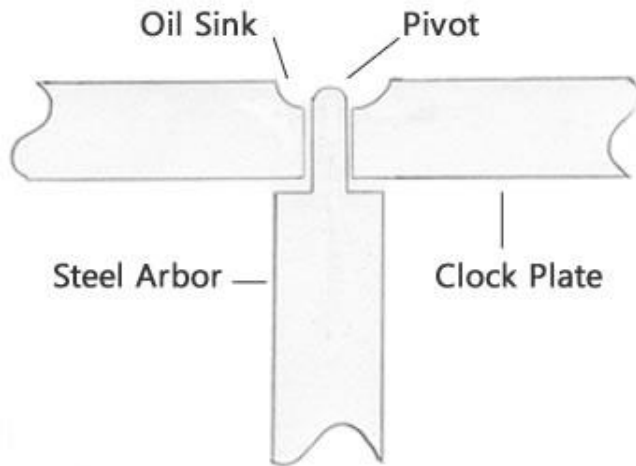


Figure 6



Figure 7



Figure 6a

The picture labeled Figure 6a is a close up of the dirty, dried out oil you will encounter on your movements. The black oil has built up in and around the bushing. This is typical of a movement that has not been cleaned and / or oiled properly. Once you are able to remove the dirty oil out of this bushing, you will use the loupe supplied with this kit to get a good look at any wear on the bushings also to see if there is any addition dirty oil deep inside the bushing.

The picture below in figure 8 shows a close up of dried out dirty oil in the bushing. The oil used in this movement was a natural oil that has turned green. The gear was removed in this picture so the pivot would not be in the way of this photograph. Getting this old dirty oil out is so important. All the books and instructions I have read and seen both in print and online, never address the importance of removing this old oil. However, if you just add new fresh oil to this mess, you will create a slug like product that will have dirty gritty particles in it acting like an abrasive material. Sanding the bushing as the pivot goes around, eventually wearing the bushing out so badly, the movement will have to be rebuilt or replaced. We have seen in the past when the natural oils turn green like this that they will start to pit the pivot and



create a rough surface on the pivot allowing the pivot to grab hold of a rough worn out bushing. You will eliminate all possibilities of this happening when using good quality synthetic oils like Horace Whitlock oil. This is why it is so important to use the best quality oil on your family's heirlooms or future heirlooms.

Figure 8

The other point I want to discuss is the pendulum. The pendulum is the part of the clock that swings back and forth. If your clock does not have a pendulum, you can skip this part of the tutorial; however, this is an important part of oiling your clock.

The pendulum is made up of a "pendulum bob" a pendulum body (this body could be made of wood or metal) and the pendulum hanger at the top.

The pendulum hanger will hang on a piece called the pendulum leader. The pendulum leader is attached to the clocks "crutch". (see figure 11). For the purpose of this tutorial, we will stop here at the crutch.

Where the pendulum leader attaches to the pendulums crutch, you will add a small bit of grease. We will go into more detail as we get to that section.



Figure 8



Figure 9

The above pictures show a typical pendulum. The pendulum in figure 8 would be used in a larger wall clock and the pendulum in figure 9 is used on cuckoo clocks. They both have a "bob" (the cuckoos is the wooden leaf), a body and a hook.

Pictured below are several different types of pendulum leaders for both grandfather clocks, as well as wall and mantle clocks. Do not concern yourself with which type is which, for the purpose of this tutorial, the brand names, styles or size does not matter. I just wanted to show several styles and sizes.

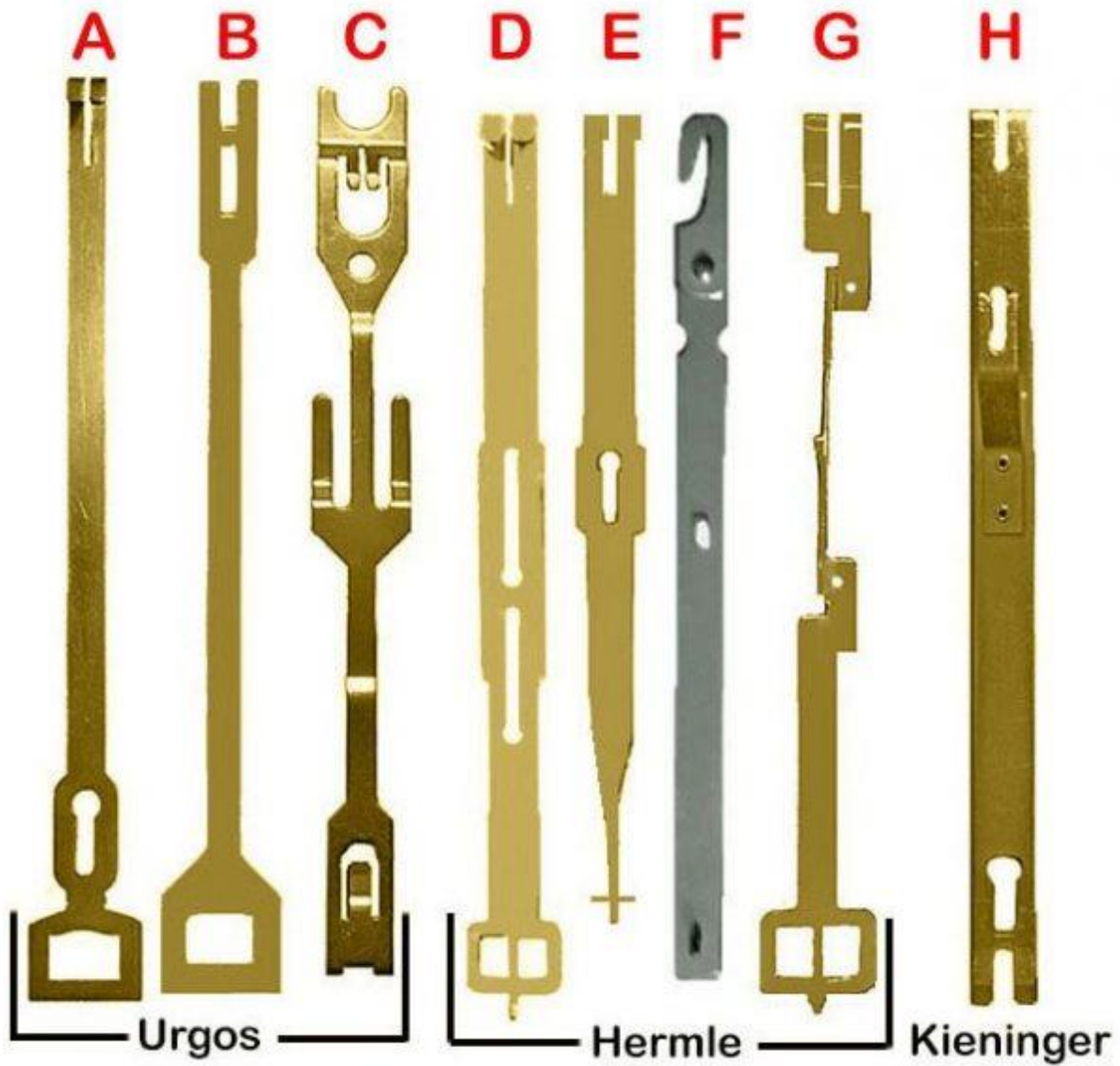


Figure 10

There are several other brands, styles and sizes. however, these are a few of more common ones available.

The picture below shows how a pendulum attaches to the clock itself, through the pendulum leader and on to the crutch. This picture will help you understand later where to put the grease on to the proper section of the pendulum.

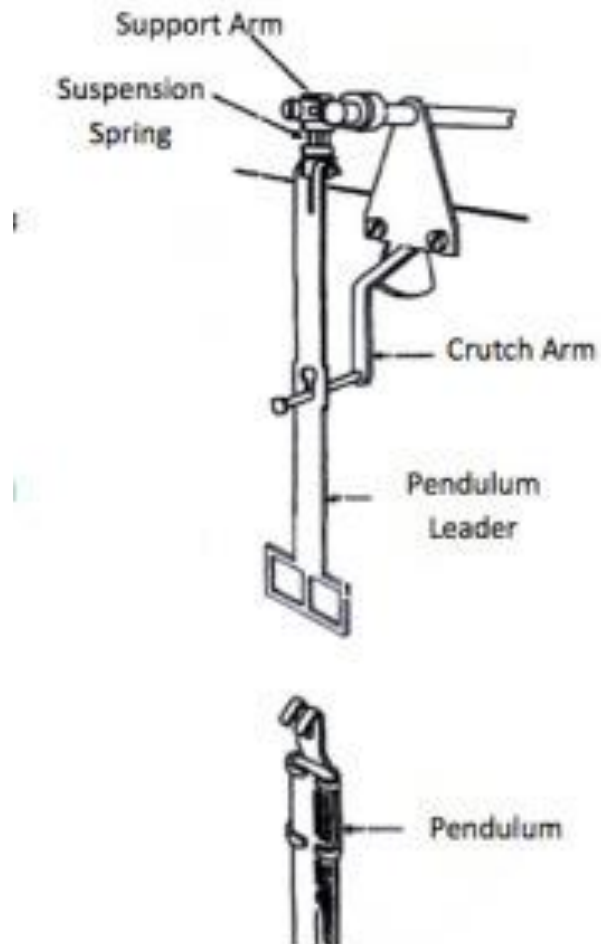


Figure 11

Now that we have discussed the anatomy of the clock movement, we will move on to discuss each part of the kit and its use.

What's in the Kit

Horace Whitlock's Premium Quality Synthetic Clock Oil *

The first and most important item in the kit is the oil. Oil is rated using a scale measured in viscosity. The viscosity scale basically ranges from thin as water to as thick as molasses. Having the correct viscosity for the operation of a clock is of utmost importance. Too thin and the pivot will not float in the bushing correctly, allowing for faster wear of the bushings. Too thick of an oil and the resistance and drag on the pivot will slow the gear down, eventually stopping the gear from moving. Oil comes in both natural oils and synthetic oils. Natural oils will break down and collect dirt and dust faster than synthetic oils. Some natural oils also will eat into the soft brass metals along with dissolving the lacquers used on the clock's movement plates.



Figure 12

Horace Whitlock clock oil is a fully synthetic clock oil, hand blended in small batches using several different oil properties especially formulated for all clocks.

Horace Whitlock synthetic clock oil also has several properties that allows this oil not to evaporate or gum up as fast as natural oils will. Horace Whitlock's synthetic clock oil is designed not to eat through lacquers and is perfectly safe on plastics parts.

3 Hole Oil Cup



Figure 13

The next item is the oil cup. This oil cup has 3 different size holes in it. Each hole can be used to hold different oils or the oil and the grease. Because oiling a clock movement requires so little oil, most oil cups are filled with the oil and will sit on the work bench with the cover on between oiling's. This cup is very durable and will last for many years.

Lint Free Cleaning Cloth

There is a lint free cloth provided, allowing for the first step in removing the surface dirt and oil on the clocks face, as well as on the top surface of the pivots and bushings. We use a lint free cloth in order to keep fine dust out of the clocks bushings. This cloth can be cleaned and reused for additional clock cleaning.



Figure 14

Synthetic Grease

Each kit includes a small amount of synthetic grease. This grease is used on the clock's pendulum leader where the crutch attaches through the pendulum leader. This grease will help to provide a smooth swing on the pendulum. This grease will also help on many clocks that will have what sounds like a double tick or double tock. This sound is actually the vibration of the pendulum bob amplified. When the grease is used, the grease cushions the pendulum leader and will stop the sound from transferring down the pendulum onto the bob.



Figure 15

Set of 5 Oil



Figure 16

Pins

The picture above in figure 16 shows the set of 5 oil pins included in the oil kit. The oil pin is used to transfer the clock oil from the oil cup onto the clock's pivots and bushings. Each pin varies in size. You will use various sizes depending on the size of the movement, as well as the size of the bushing. Below

in figure 17 is a close up of one of the 5 oil pins. The flat surface is where the oil will collect to be deposited onto the clocks bushings.



Figure 17



Figure 18

Pictured above in figure 18 is the pith wood cleaning stick. These cleaning sticks come pre-sharpened and ready to start cleaning the old dirty oil from the pivots in the clock movement.

Included in this kit is a 10X loupe as pictured in 18a. This loupe is used to get a better look at the bushings and the dried dirty oil that might be imbedded deep into the bushings.

*This is the complete Horace Whitlock's Premium quality clock oil kit for cleaning mantle clocks, wall clocks, cuckoo clocks and music boxes. If you plan on cleaning and servicing Grandfather clocks, we sell a complete kit that includes all the items in this kit, along with additional items in order to get into the hard to reach gears and movable parts. You will be able to purchase the grandfather clock oil kit as a whole or you can purchase the additional items separately.



Figure 18a

Step By Step Instructions to Cleaning And Oiling Your Clock

Please note: the purpose of these instructions are to help get your clock up and running again without expensive cleaning equipment nor the skillset to disassemble, clean in an ultrasonic cleaner then re-assemble, re-adjust and calibrate your clock movement. By performing the following instructions, you will remove most dried dirty oil and re-oil your clock's movement and short of the movement being completely worn out, getting your clock up and running. There will however come a point that it would be advised that you have your clock movement cleaned professionally.

Step 1:

The first step in cleaning your clocks movement is to remove the movement from your clock. Typically, there are 4 screws that hold the movement in place. Each clock is a bit different; however, if you look at your clock it should be obvious how the movement comes out of its case. Make sure you set the clock's hands to 12 o'clock prior to removing the clocks movement, this will help you when re-installing the movement and setting the clock up.

Step 2:

Once the movement is removed, you will use the cleaning cloth to wipe down the outside of the brass movement plates, as shown in figure 19. Try to get into the pivots as much as you can at this point.

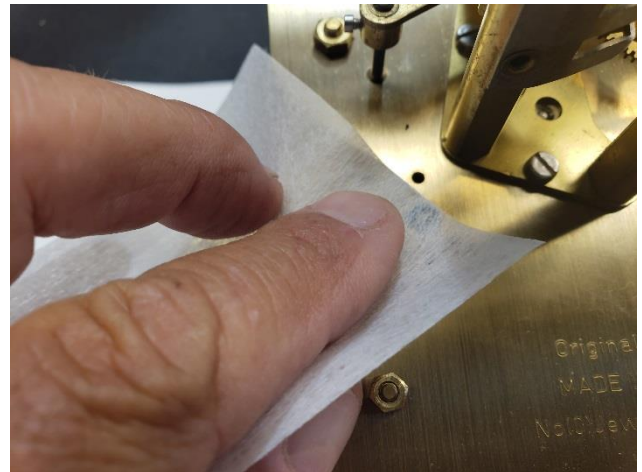


Figure 19

Step 3:

Once you have wiped down the plates with the cleaning cloth, you will remove the dirty dried oil from the pivots. Using the pointed end of the pith wood cleaning tool, simply set the pointed end into one of the pivots and turn following the curvature of the bushing. This will loosen and remove the dirty dried oil. After each pass of the cleaning tool, wipe the tip down with the cleaning cloth. Using the loupe (figure 18a) you can look into the bushings to see if any remaining dirty oil exists. Continue using the pith wood cleaning stick to remove as much dirty dried oil as you can.

Step 4:

Once you have removed the dirty oil from the pivots using the pith wood, use the clean side of the cleaning cloth to wipe down the movement again, just to catch any loose dried oil that has remained on the brass movement. Be careful here and make sure you do not wipe any dirty particles back into the pivot holes. If you do, just repeat the first 3 steps in that area. As in figure 20

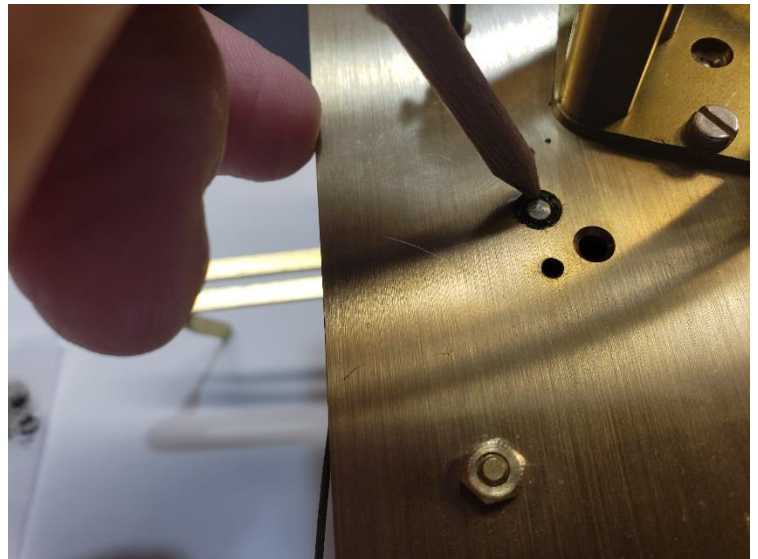


Figure 20

Figure 21 shows the dirty, dried out oil on the end of the pith wood cleaning stick that was removed from this pivot. Although this doesn't look like much, this dried, dirty oil is an abrasive material very much like sandpaper. If left, eventually this abrasive material will wear the bushing into an oblong shaped hole which will allow the pivot to flop around inside the bushing stopping the gears from aligning correctly and eventually stopping the clock from working. Once the bushings are worn and oblong shape, the clock movement will need to be rebuilt or replaced

Once you are confident that the movement and pivots are cleaned, you will begin to re-oil the movement.



Figure 21

Step 5:

Fill the oil cup with a small amount of Horace Whitlock's premium clock oil. (Figure 22). Remember that a tiny little bit goes a long way in oiling a clock. Filling 1 or all 3 holes is a personal preference. Some clock repair folks use 3 hole cups with different grades of oil, oiling different parts of the clock. With Horace Whitlock's clock oil this is not necessary. This clock oil is designed to perform at peak performance on all parts of a clock in most circumstances.



Figure 22

Step 6:

With the oil cup full, remove one of the five oil pins from the pouch. Determine which size you are going to use. At this point don't over think this process. Any of the oilers will be fine, each oiler is slightly smaller or larger than the others. The oilers are used to deposit the correct amount of oil onto the pivots of the clock movement and there is such a slight difference between each one. For the purpose of oiling your movement, any one of them will be fine.



Figure 23

Dip the end of the oiling pin into the filled oil cup (figure 23). You don't want a large amount of oil on the end of the oiling pin; however, you should be able to see just a small bead of oil at the end of the oiling pin as seen in figure 24. This bead of oil is what you want to transfer and deposit onto the pivot hole on the clock movement. If you touch anything with this oil pin, the oil bead will be deposited onto what ever it is you touched, so use a steady hand and work your way to your first pivot hole and deposit a small

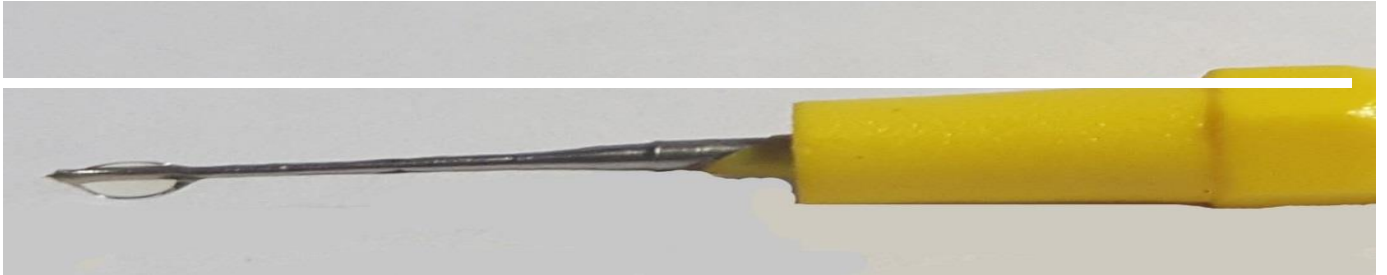


Figure 24

amount of oil onto each pivot. Once you have deposited the oil onto your first pivot, dip the oiler back into the oil cup and move on to the next pivot. There is no order in this process, the pivots are not numbered and none of them needs to be oiled in any order at all. However, to make things easy, you might want to work your way from top to bottom, or bottom to top, or any other order you are comfortable with. This way you will make sure you are able to deposit oil on each pivot. If you feel like you might have missed one, it is best just to go ahead and deposit a little oil on to the pivot and move on. Some oil is better than no oil. Make sure you have deposited oil on all the pivots, including all in the front, as well as the back of the movement. The front of the movement has several levers and additional items mounted and sometimes you might miss a pivot. Look at the front of the movement from all angles to make sure you have deposited oil on all of them.

To the right, in figure 25, is an example on a Hermle movement where a pivot is hidden under a small metal protection piece. You will need a small screwdriver to loosen the screw and slide the protective sleeve over in order to deposit a small amount of oil onto the hidden pivot. Once the oil has been deposited, simply slide the protective sleeve back in place and tighten down the screw. This style movement is the only one that does this and although common on Hermle movements, it is not common on most clock movements. The front side of the movement should have a protective sleeve as well.

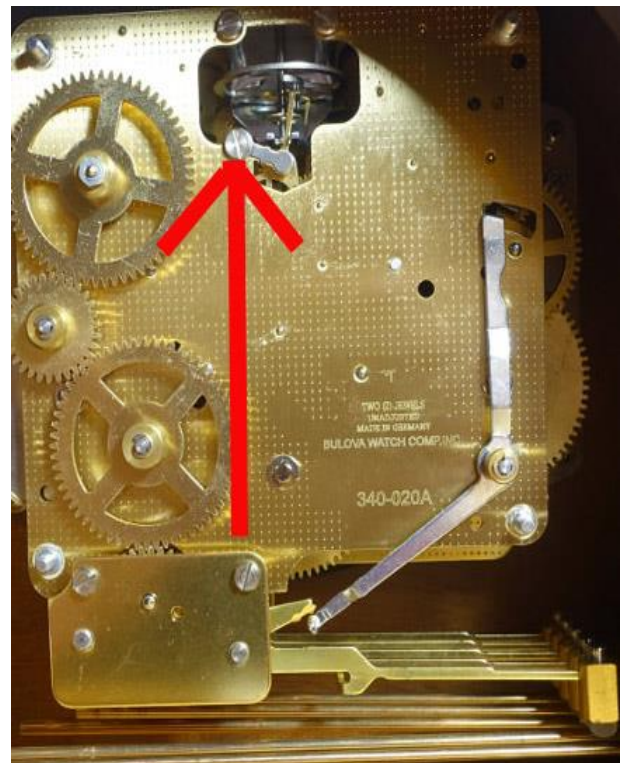


Figure 25

Step 7:

If your clock movement has a pendulum, you will see where the pendulum leader will attach at the top to a suspension spring. Midway down on the pendulum leader there is a slotted hole in it. The clock's crutch sticks through that hole and in turn pushes the pendulum leader and in turn pushes the pendulum (see figure 11). Using the blunt end of the cleaning stick, you will need to deposit a small amount of grease onto the crutch where it protrudes through the leader hole as shown in figure 26. Just a small amount will be fine. This grease will not only help the crutch and leader swing smoother, it will also help cut down on the amplification of the pendulum stopping you from hearing a double tick or a double tock coming from the pendulum.

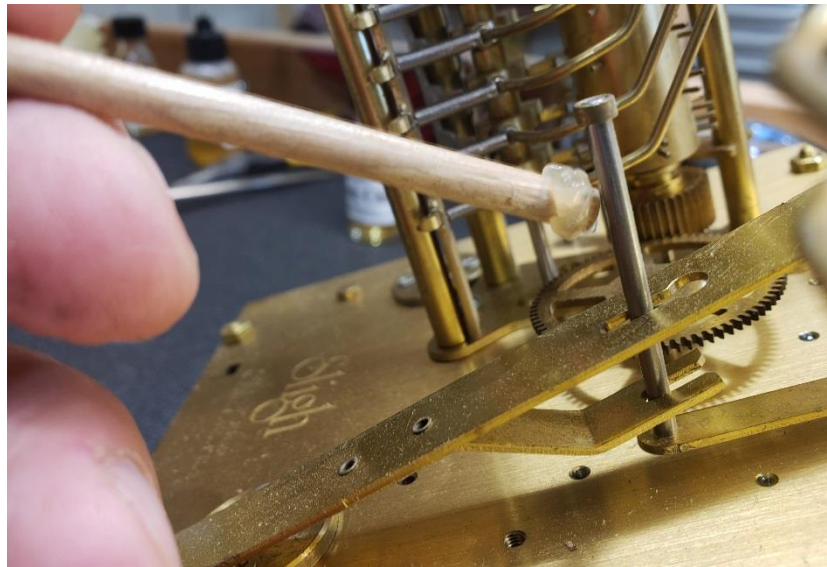


Figure 26

Your clock is now cleaned and re-oiled. Carefully re-install the movement back into the clock. Make any final adjustments and then wind and start your clock. Cleaning and oiling your own clock has not only saved you money, it is quite gratifying knowing that you are keeping a part of your family's history going. Just keep in mind that not every clock will start running again after this process; however, it is the first place to start and the least expensive way to get started. Clock repair is a dying art, and less people are getting into the trade. The few that are around are getting harder and harder to find and when you do, most are several months behind with plenty of work to be had. Even if your clock is brand new or several hundreds of years old, they all have one thing in common. They all have to be cleaned and re-oiled on a regular basis. Both Hermle and Keininger movement companies recommend cleaning and re-oiling your clock's movement every 2 years. If you were to pay someone to perform the cleaning and re-oiling, this could become an expensive clock to maintain. However, cleaning and re-oiling your clock yourself can be performed at any time with a minimum amount of cost. Each time you perform this service, you will become quicker and more confident than the last time.