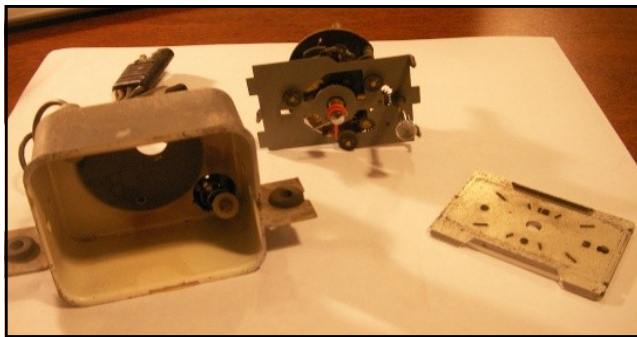


An inoperative clock in a Flairbird is a common occurrence. Yet, it is not that hard to get it running again and keep it running. It may only take a few hours and some tools that you all ready have to bring it back to life.

Troubleshooting

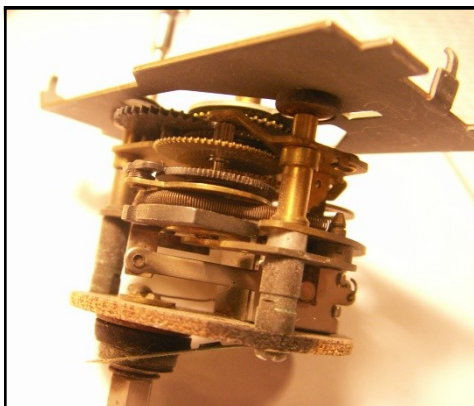
First check is to see if the fuse is good. If it is then you will have to check to see if power is reaching the clock. Remove the screws holding the console. There are vacuum lines to the door locks and electrical lines for lighting that will prevent you from pulling out the console completely but you should be able to pull the console out enough to allow access to the clock. Second, check to make sure you have power to the clock. If there is no power the problem is in the wiring between the fuse and the clock. If the power is good the problem is internal to the clock. You will have to remove the clock to troubleshoot further. To remove the clock assembly, first remove the knob from the set stem. When the knob is not pulled out it turns freely so pull out on the knob and then, using small pliers to hold the set stem, unscrew the knob. Then disconnect the power and ground connectors, remove the two screws on the clock case side tabs and pull out the clock case. The third check, with the clock now out, would be to use an ohmmeter on the power and ground connectors. You will find out one of two things here. If the circuit is open or closed. Either way you will have to get into the clock to fix the problem. To get inside the case remove the nut on the back of the case. The clock assembly should pull free from the case.



Picture 1. The disassembled clock. The set knob and hands have been replaced after the clock face came off. I lose small parts easily.

How It Works

Let's take a look at the clock on your workspace. The inside looks like many mechanical wind up clocks (Picture 2). It uses a wound spring, a flywheel and precision gears to run the clock. What is different from your old bedside clock is that this one only runs a minute or two before it needs re-winding. Rather than you having to rewind the clock, rewinding is done



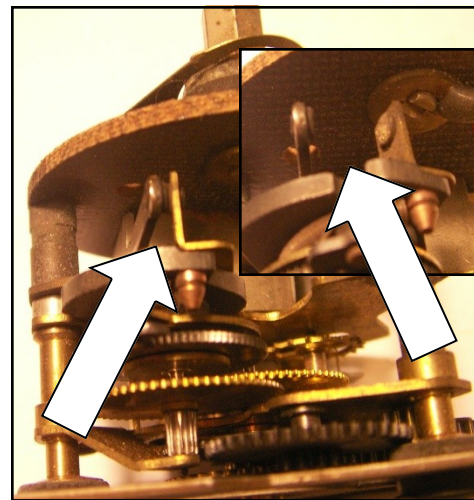
Picture 2. The internal workings look much like clocks in the 1700's.

automatically through a 12 volt solenoid activated winding system. There are two arms on this solenoid. Each arm has a contact point. A spring pulls the arms towards each other as the wound spring winds down. Before the wound spring runs down though the two points come into contact and the solenoid receives 12 volts. This makes one arm on the solenoid kick back the other arm (which is attached to the wound spring) rewinding the spring for another cycle. This kick makes a small clicking sound every few minutes that you can hear when the engine is off. Or at least it should if it was working properly!

Back to Those Checks

So the last check you did was to see if the circuit was closed or open. This will tell you which items need to be checked out.

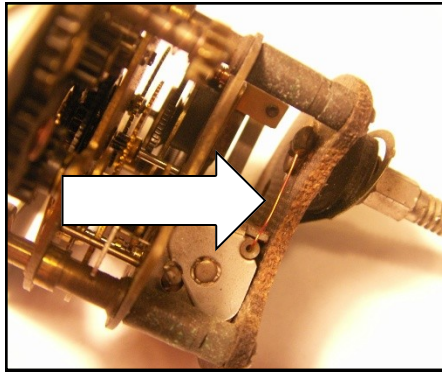
If the ohmmeter showed that the circuit was closed that means that the spring wound down, the contacts closed but the solenoid did not kick the arms apart and rewind the spring (Picture 3). This tells you that the electrical wiring and solenoid are good and all that is wrong is that the clock didn't rewind. This is what was wrong with my clock. What had happened was that over the years dust and dirt had accumulated on the gearing. This caused too much friction that the lightweight gearing could not overcome. I used some contact cleaner on the moving parts and a can of compressed air that I use to clean my computers. Then I applied some lubricant with a cotton swab to those parts. Use a light touch since these are precision parts and not much lube since this will attract dust and may cause the clock to fail again. I then spread the arms on the solenoid apart and gently gave the flywheel a flip to start it moving. The flywheel kept moving, the wound spring unwound and the arms of the solenoid moved together just like they should.



Picture 3. The two arms of the solenoid; closed and opened (inset).

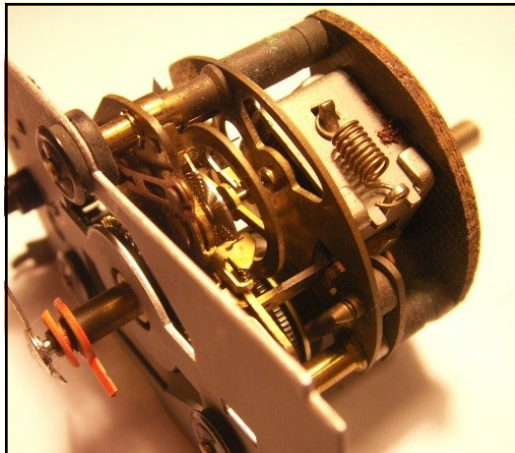
If the check shows an open circuit you'll have to look deeper. Three things could be happening here. First, if the points are closed with an open circuit the usual suspect (I've been told) is a burned wire to the solenoid (Picture 4). This happens when the car sits for long periods of time. As the battery voltage drops below 12 volts the solenoid will not have enough energy to kick the arms away from each other. The contacts stay closed and some current keeps running through the small solenoid wire. Eventually this heats and burns the wire through and the clock stops running. This fault can be fixed by unwrapping a winding or two on the solenoid and soldering it to the old connection point. Secondly, if the points are closed and the circuit shows open, are dirty points. Enough dust can accumulate on the points so that they can't really close. Gently filing the points may cure this problem.

And lastly, if the points are open and the wire looks good then it is probably back to just cleaning and lubing the gears. The gears have gotten so dusty that the spring can't overcome the friction and it stops moving prior to closing the contacts.



Picture 4. This is the small wire that may be burned when the contacts stay closed with a weak battery. You will have to disassemble the layers of the clock and get to the solenoid wiring to unwind a wrap or two for the repair.

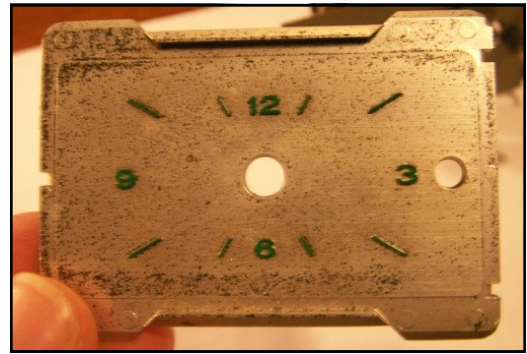
Once you have repaired, cleaned and lubed the clock, gently push the arms apart and gently give the flywheel a little push. If everything is working the flywheel should keep oscillating as the spring pulls the arms together until they touch. The arms won't kick back until you have power applied to the solenoid. Attaching the clock to a 12v power supply or putting it back into the car to test it would be good before buttoning it all back up.



Picture 5. This flywheel may need a gentle flick to get the clock running.

Other Considerations

Now that the clock's internals are working, it may be time to tackle the parts everyone sees. The clear plastic outer face on my clock had seen too many harsh cleanings and the face and hands of the clock had flaking paint and looked bad (Picture 6). Rather than trying to recondition the clear plastic, I bought a sheet of new plastic and using the old face as a template cut out a new piece. For the hands, I gently pulled them off their stem and repainted them with a similar orange color that I found in a hobby shop. To release the face of the clock gently bend back the three tabs on its side that hold it down, then take the face off. For the face, I sprayed a silver paint over the entire face, let it dry thoroughly and then lightly sanded the raised numbers, lines and points. I laid out a fine grain sand paper on a hard flat surface and then lightly ran the face over the



Picture 6. Fix the parts people will see also. This clock face needs paint. You get extra points if you noticed that this face did not belong in my 1964 T-bird.

sandpaper. Don't go too fast and look at the face often so you don't take off too much. You just want the paint to come off to a crisp line on the raised portions. Reassemble the face, hands and outer face and attach the power and ground connectors to test your handiwork. The clock may run fast or slow when you test it, but there is an auto calibration in the clock. This works by your adjustment over time. Say you adjust your clock to the correct time. Over an hour you notice that the clock is running slow. You adjust the time by pulling out the setting knob. After the next hour the clock is still slow but not as much as before. You adjust it again. By adjusting the time back or forward you move a speed adjuster on the winding spring, either tightening it or loosening it, so the clock will run faster or slower. It may take a few adjustments to get the correct timing. Remember that the clock can be affected by temperature also, so you may see seasonal changes.

The Quartz Option

If you are not that mechanically inclined or if originality does not matter, there are options to replace all the internal workings with a quartz movement so these problems won't happen. The guys at the Bird Nest can help you out with that option.

The End Product

When your clock isn't working this can be a simple job that you can cover in one afternoon. It may also take some investigation and some work but I don't believe it is beyond anyone's skill. And it is another item on your T-bird that will keep running with just a little help.



Picture 7. The completed project. Since I had the whole thing apart I repainted the black accessory cover and white reflectors behind wipers/washers/air, polished the chrome and replaced the other two clear plastic faces. It is all ready to go back in the T-bird!