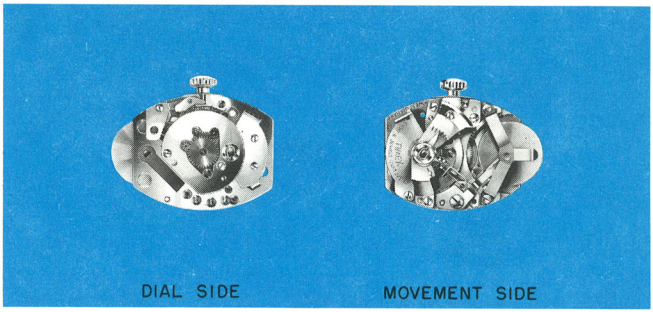
TIMEX model 82

SERVICE MANUAL
MODEL 82

6¾ by 8 lig.
15,3 by 18,0 mm
.602 by .709 in.

the TIMEX Model 82 Movement



The Timex Model 82 is the World's first Ladies' Electric Wrist Watch. The power to drive the movement is supplied by a miniature energy cell. Power from the energy cell drives the balance wheel, the balance wheel drives the time train which, in turn, rotates the hands.

The energy cell is guaranteed for 12 month and replacement cells are available from your local Timex dealer, repair station or the Timex Material Sales Division. It is important to use only genuine Timex Energy Cells, Type B. Other types, although they look the same, may not deliver the necessary voltage or life and, in addition, may leak, seriously damaging the movement.

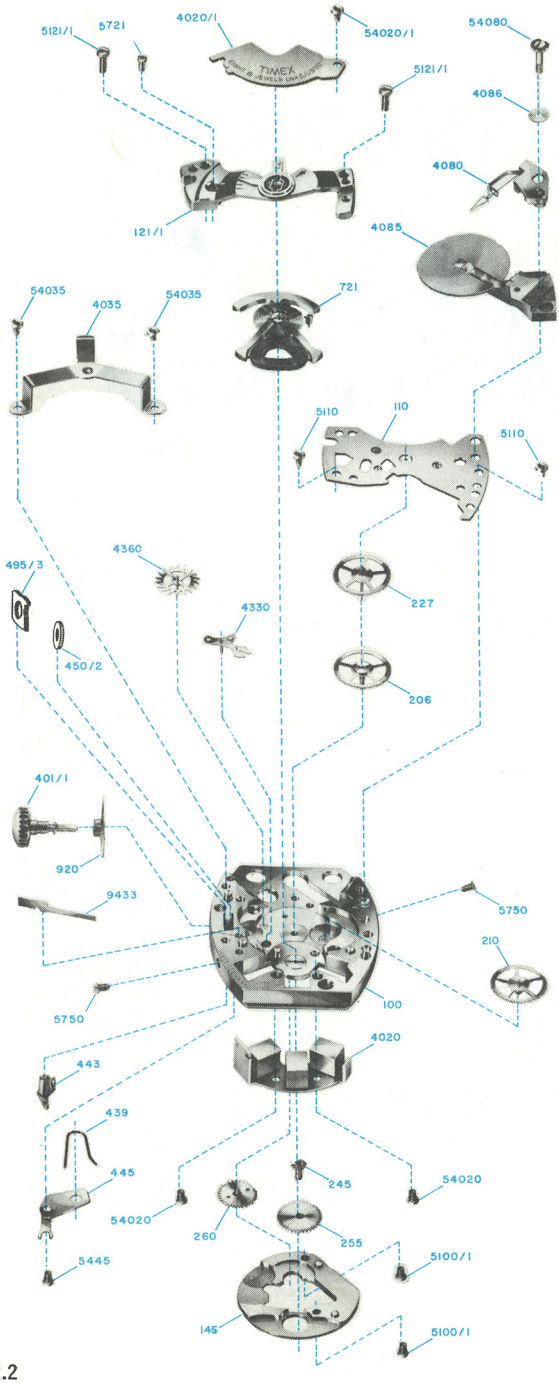
The hands are set by the normal method — that is, pulling out and rotating the crown. The Model 82 incorporates a drive which stops the movement when the crown is in the set position. In this position the flow of current from the energy cell is interrupted and the energy cell is not being discharged.

The Timex Model 82 has an hourly beat of 21,600. The large balance has a temperature compensated hairspring and the rate can be adjusted in the usual way by moving the regulator. The Timex Model 82 can be checked in all positions on a normal watch rate recorder.

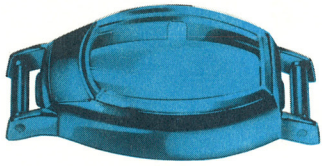
The Timex Model 82 can be dismantled and serviced with conventional tools. There is no need for special knowledge of electricity or electronics, or any need for complicated electrical measuring or inspection devices, new tools or microscopes. For checking the energy cell voltage, a high ohm volt meter (about 20,000 ohms per volt), which is now in use in most repair stations, is sufficient.

Since watch contains permanent magnets, no attempt should be made to demagnetize the watch.

the TIMEX model 82 movement (exploded view)



100	PLATE ASS'Y.
110	TRAIN WHEEL BRIDGE ASS'Y.
121/1	BALANCE BRIDGE ASS'Y.
145	DIAL REST
206	CENTER WHEEL ASS'Y.
210	THIRD WHEEL ASS'Y.
227	SECONDS WHEEL ASS'Y.
245	CANNON PINION
255	HOUR WHEEL
260	MINUTE WHEEL ASS'Y.
401/1	SETTING STEM WITH CROWN
439	ROCKING BAR SPRING
443	SETTING LEVER
445	SETTING LEVER SPRING
450/2	STEM PINION
495/3	STEM BRIDGE
721	BALANCE ASS'Y.
920	DUST SEAL
4020	MAGNET ASS'Y. COMPLETE
4020/1	SHUNT BRIDGE
4035	ENERGY CELL SPRING
4080	CONTACT SPRING ASS'Y.
4085	CONTACT SPRING BASE PLATE
4086	INSULATING WASHER
4330	INDEX LEVER ASS'Y.
4360	INDEX WHEEL ASS'Y.
5100/1	DIAL PLATE SCREW
5110/1	TRAIN WHEEL BRIDGE SCREW
5121/1	BALANCE BRIDGE SCREW
5721	BALANCE BRIDGE ADJUSTING SCREW
5445	SETTING LEVER SCREW
5750	DIAL SCREW
9433	SET SPRING
54020	MAGNET ASS'Y. SCREW
54020/1	SHUNT BRIDGE SCREW
54035	ENERGY CELL SPRING SCREW
54080	CONTACT SPRING SCREW



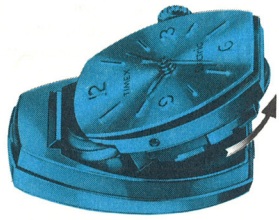


FIG. 1

Removing the Movement from the Case

Pull crown into set position.

Separate bezel and caseback—movement will remain with caseback. The movement is held captive at the 12:00 end by a projection of the caseback. To remove the movement from the caseback, lift the movement at the 6:00 end, exercising caution to avoid striking or damaging the balance coil which is located at this end.

When the 6:00 end of the movement is completely free of the caseback, slide the movement out, again taking care so as not to damage the balance coil.

Remove the energy cell by sliding it out in the direction of the arrow (fig. 2). Check the voltage of the energy cell, any cell with a voltage of less than 1.30V, or one which has been in service in excess of one year should be replaced*. Avoid short circuiting of the cell by metallic connection between the outer case and the negative pole as this could shorten the life of the cell.

*Do not dispose of energy cell in fire.

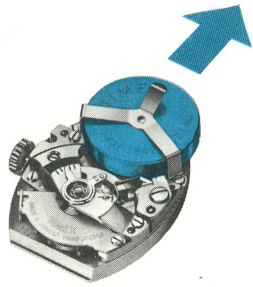


FIG. 2

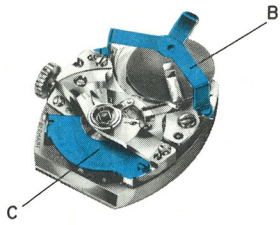


FIG. 3

To examine the function of the movement, place the movement in a suitable movement ring. (Special movement rings, made expressly for the Model 82 may be obtained free of charge from the Timex Material Sales Division.)

Proceed as follows:

1) Remove the dial plate (A) and energy cell spring (B).

2) Remove the shunt bridge (C).

3) Remove the permanent magnet system (D) by removing screws (E).

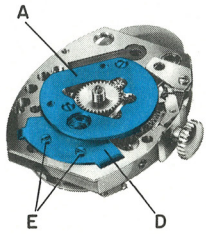


FIG. 4

Disassembly of Movement Cont'd.

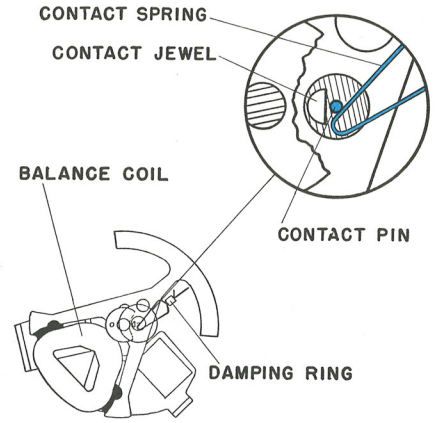


ILLUSTRATION NO. I

With the dial plate, energy cell spring and magnet system removed, the function of the contact spring can be examined.

Rotate the balance wheel slowly from its rest position with a clean brush. See illustration 1. The instant the contact spring touches the contact pin fixed on the balance, current flows through the balance drive coil. The current induces a magnetic field around the coil which inter-acts with the field of the permanent magnet. This inter-acting of magnetic fields imparts an impulse to the balance when the magnet is in place.

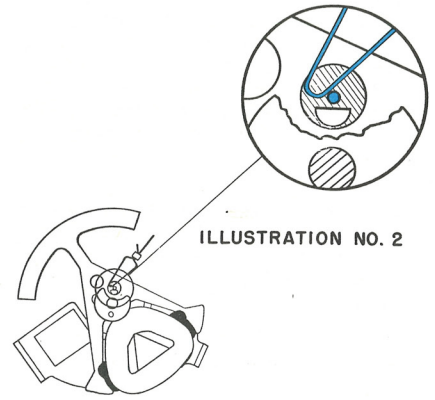


ILLUSTRATION NO. 2

The purpose of the contact jewel is to limit the physical contact between the contact pin and contact spring so that the flow of electrical energy occurs at a precise position during the rotation of the balance.

After the balance returns to its neutral position, the same process is repeated in the opposite direction. See illustration 2. Repeat this test several times until the drive action is fully understood.

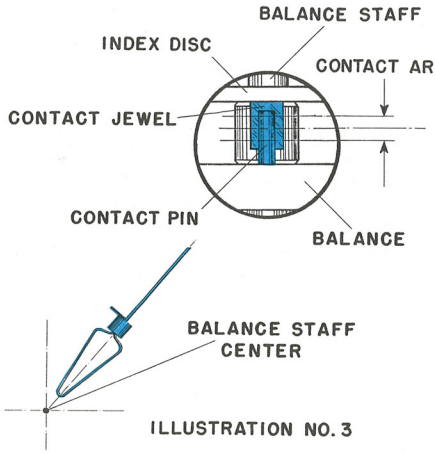


ILLUSTRATION NO. 3

The contact spring must be pointing exactly to the center of the balance staff. It should be centered horizontally between the index disc and the balance. The contact spring requires very careful treatment. Protect it from scratches and deforming and avoid excessive bending while adjusting. Do not touch the contact area at the end of the spring. Do no rubbing, grinding, polishing, etc., in this area. In short, handle it with the same care as is used in handling a hairspring.

The contact pin, contact jewel and contact spring must be oiled. The presence of oil on these parts would interrupt the flow of current to the drive coil.

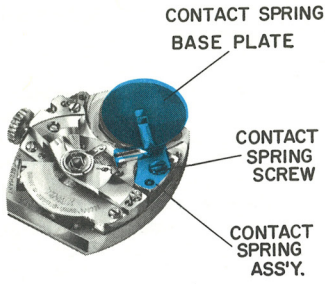


FIG. 5

After the function of the contact and balance has been observed, the movement may be further dismantled to check the gear train and indexing action.

Remove the contact spring screw and the insulating washer beneath it. Note: It is important to replace this insulating washer when re-assembling the movement, otherwise a short circuit in the energy cell can occur. The contact spring assembly and contact spring base plate can now be removed.

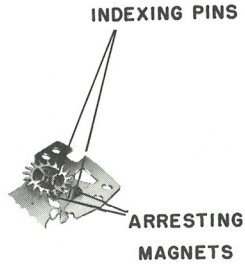


FIG. 6

Next remove the balance bridge and balance. Note: The hairspring stud may be pressed out of the Balance Bridge to separate balance and bridge.

Index Mechanism

The operation of the index mechanism is both mechanical and magnetic —figures 6 and 7 show the index lever in both the entry and exit positions. The index jewel on the balance moves the lever. The indexing pins on the lever move the index wheel to a position whereby the arresting magnet on the lever will attract and hold a tooth on the index wheel. Every half cycle of the balance will move the index wheel forward one tooth.

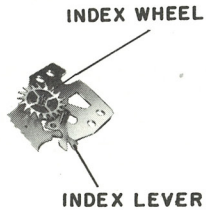


FIG. 7

Disassembly of Movement Cont'd.

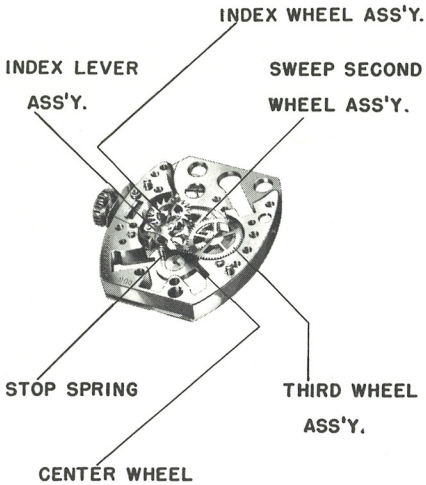


FIG. 8

The remainder of the gear train is purely mechanical. Figure 8 shows the movement with the train bridge removed. The index wheel pinion drives the sweep second wheel. The sweep second pinion drives the third wheel and the third wheel pinion, in turn, drives the center wheel.

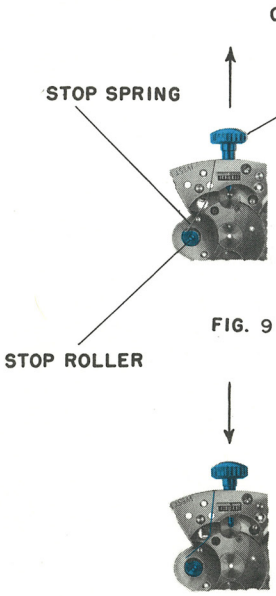


FIG. 9

Figures 9 and 10 show the stopping mechanism. When the crown is pulled out to its set position, the stop spring engages with the stop roller on the balance (Fig. 9).

When the crown is in its normal position (fig. 10) the stop spring is free of the roller and the balance is free to oscillate.

Cleaning, Lubricating and Timing
The TIMEX Electric

1. The movement may be cleaned in the usual method using normal watch cleaning and rinsing solutions. The balance and contacts must be cleaned separately to prevent damage to the coil and contact spring. Do not clean the energy cell with any liquid. If necessary, it should be wiped with a dry cloth only.

2. After cleaning, any particles adhering to the magnet should be carefully removed before assembly. A piece of scotch tape rolled to a point will be found useful in removing particles (This process should not be used when the movement is assembled as there is danger of severing the lead wires of the balance coil). The other parts of the movement must be free of particles, especially steel or nickel which would be attracted by the magnet. Needless to say, the watch should not be demagnitized.

3. The movement should be re-oiled in the normal manner using only high grade watch oils (oil used in factory assembly is Hamilton PML 79). Under no circumstances should oil or grease containing silicone be used.

The particular points requiring lubrication are as follows:

a) The jewel bearings and pivots of the train wheels and balance.

b) Stem bearing surface

c) Set lever and set pinion

d) The contact face on two teeth of the index wheel

e) Minute pinion bearing surface

f) The bearing surface between the stem pinion and stem pinion washer

Never lubricate the contact pin on the balance or any part of the contact spring assembly.

4. The best performance of the Timex electric is achieved if the hairspring does not vibrate between the pin and key of the regulator. Th outside edge of the hairspring should be in light permanent contact with the inside edge of the regulator key.