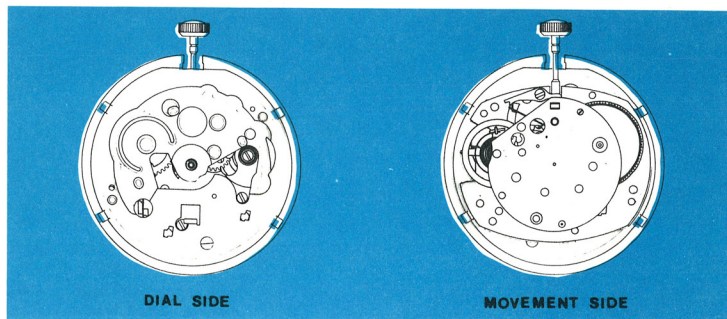


# TIMEX<sup>®</sup> Model 104

SERVICE MANUAL  
MODEL 104

13 lig.  
29.4 mm  
1.160 in.

# The **TIMEX®** Model 104 Movement



SHOWN ACTUAL SIZE

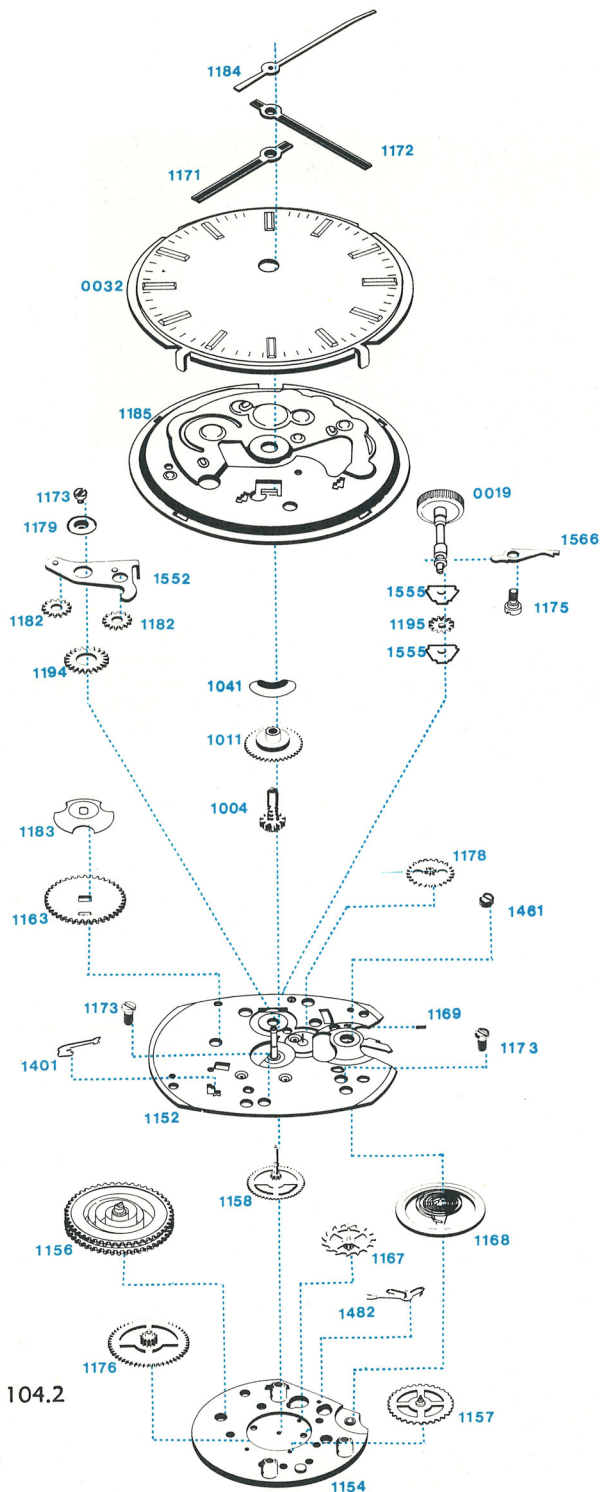
The TIMEX Model 104 is a 13 ligne movement featuring the "V-Conic®" bearing system and rugged plate design. The Model 104 movement can be distinguished from the similar TIMEX Model 24 movement by noting the ratchet wheel click. The Model 104 has a flat metal click in a rectangular hole while the Model 24 has a rotating click tensioned with a round wire spring.

To clean the Model 104 it is necessary to disassemble the movement as described on pages 104.3, 104.4 and 104.5. Timex has found that the best method for cleaning is to limit disassembly to the described.

The cleaning solutions will remove the fluid lubricants from the movement while the contaminants are being removed. Instructions for lubricating the Model 104 movement are given on page 104.6.

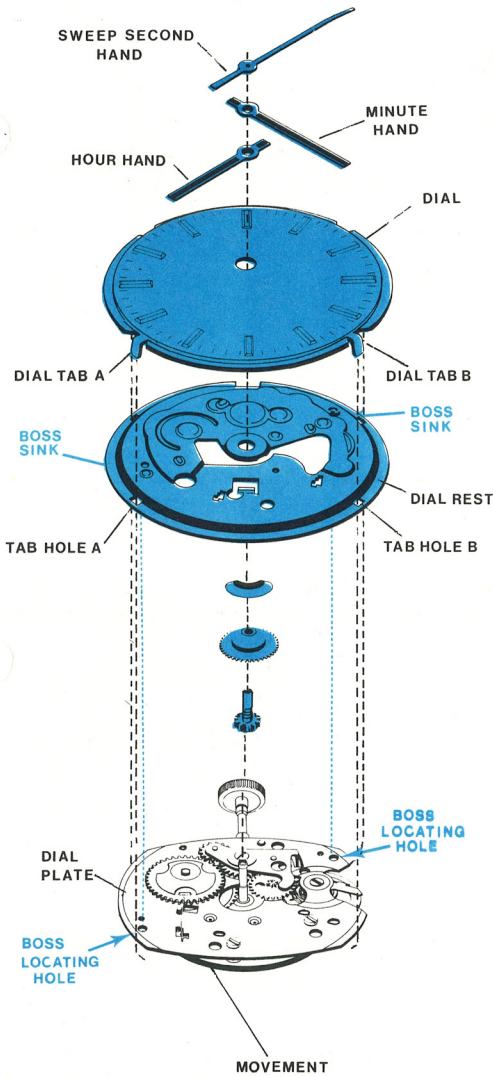
The Timex code number appears on the edge of the dial. The code number shows the catalog number, movement number and year of manufacture for the watch (see page 1.1 of the Timex Service Manual for explanation).

# The **TIMEX**® Model 104 Movement (exploded view)



- 0019 CROWN & STEM ASS'Y.
- 0032 DIAL
- 1004 CANNON PINION ASS'Y.
- 1011 HOUR WHEEL ASS'Y.
- 1041 HOUR WHEEL WASHER
- 1182 DIAL PLATE
- 1185 MOVEMENT PLATE ASS'Y.
- 1156 BARREL COMPLETE
- 1187 3 RD. WHEEL ASS'Y.
- 1188 4 TH. WHEEL ASS'Y.
- 1183 RATCHET WHEEL
- 1187 ESCAPE WHEEL ASS'Y.
- 1188 BALANCE WHEEL ASS'Y.
- 1189 HAIRSPRING WEDGE PIN
- 1171 HOUR HAND
- 1172 MINUTE HAND
- 1173 PILLAR SCREW (3)
- 1175 SET LEVER SCREW
- 1178 2 ND. WHEEL ASS'Y.
- 1178 MINUTE WHEEL ASS'Y.
- 1179 ROCKING BAR BUSHING
- 1182 WIND & SET PINION (2)
- 1183 RATCHET WHEEL WASHER
- 1184 SWEEP SECOND HAND
- 1185 DIAL REST
- 1194 INTERMEDIATE WIND PINION
- 1195 WINDING STEM PINION
- 1401 CLICK
- 1461 BALANCE SCREW ASS'Y.
- 1482 PALLET LEVER ASS'Y.
- 1552 ROCKING BAR ASS'Y.
- 1555 WINDING BRIDGE (2)
- 1566 SET LEVER

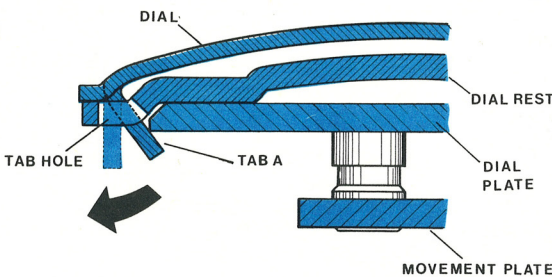
# Disassembly of the Model 104 Movement



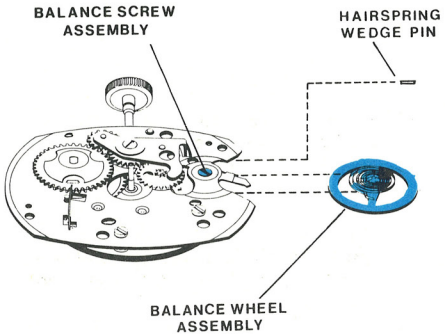
To disassemble the Model 104 for cleaning, this procedure should be followed:

- A. Remove the case back and support ring (this is not always used).
- B. Loosen the screw on the set lever (beside the stem) to release the crown and stem assembly.
- C. Pull the crown and stem assembly out and the movement assembly can then be lifted out of the case. (Some case designs require that the crystal be removed with a crystal removing tool and then the reflector ring and movement are removed through the front of the case.)
- D. Remove all hands.
- E. Straighten the dial tabs so they will pass through the holes in the Dial Rest. Turn the assembly over and lift off the dial, and the dial Rest.
- F. Remove the hour wheel washer, hour wheel assembly, and cannon pinion assembly.

With the above parts removed, the basic movement may be replaced with a Timex reconditioned movement. The parts removed above are assembled to the reconditioned movement as described starting on page 104.10.

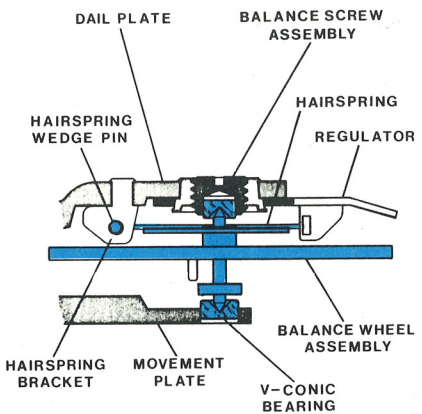


# Disassembly of Movement Cont'd.



G. Remove the Balance Wheel Assembly as follows:

- 1) Remove the Hairspring Wedge Pin, being careful not to distort either the Pin or the Hairspring (see illustration at left).
- 2) Rotate the Balance Wheel carefully (turn the Wheel, do not touch the Hairspring) until the Hairspring tail is free of the Hairspring bracket and the Regulator.
- 3) Loosen the Balance Screw Assembly (turn counterclockwise) until the end of the Balance Staff is free of the "V-Conic" bearing. Care must be exercised while loosening the Balance Screw to be sure that only minimum downward pressure is applied with the screwdriver. Excessive downward pressure on the Balance Screw can seriously damage the Balance Staff Points.



- 4) Carefully lift the Balance Wheel Assembly out of the movement.
- 5) Tighten Balance Screw Assembly several turns to prevent loss during cleaning and handling.

# Cleaning the Model 104 Movement

The movement with only the Balance Wheel Assembly and loose parts removed can be cleaned satisfactorily in standard watch cleaning machines (including ultrasonic baths). The movement should be placed in the machine with the Dial Plate down to insure proper drainage of the fluid from the mainspring barrel. The movement must be immersed in two sets of rinsing fluid. The final solution must be absolutely clean. After cleaning is completed, the movement must be thoroughly dried.

The Balance Wheel Assembly must be cleaned separately in order to prevent damage to the Balance Staff Points and the Hairspring. The cleaning procedure is as described above.

Other metal parts may be cleaned as described above for the movement.

Only standard watch cleaning solutions should be used in the cleaning procedures described above.

Caution must be exercised when cleaning Cases, Dials, Hands, Special Rings, etc. which may contain materials other than metal because paint, lacquer and plastic finishes can be damaged by some standard watch cleaning solutions.

# Lubricating the Model 104 Movement

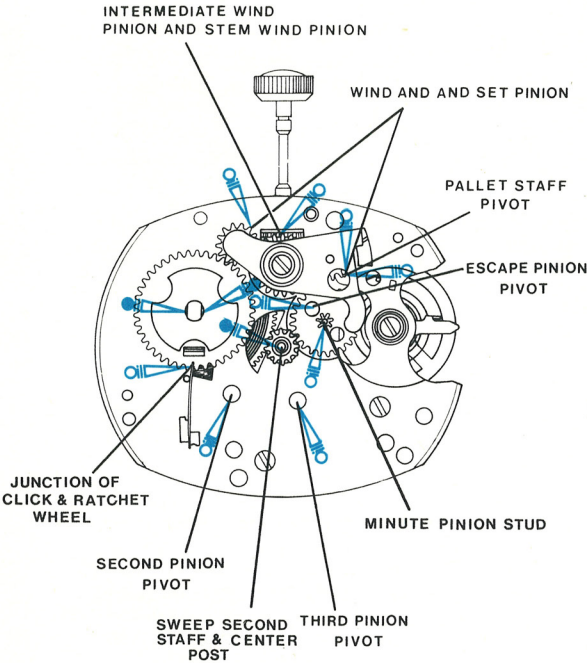


FIGURE A

The Timex Model 104 movement should be lubricated using only High Grade Watch Lubricants. The Mainspring is permanently lubricated with a dry film lubricant which is not affected by normal watch cleaning solutions, therefore the Mainspring requires no lubrication.

Spreading Type Watch Oil (Woods AAAA Oil is used in the factory) is put at two points at the side of the main arbor having the greater gap between the ratchet wheel washer and the main arbor. Put spreading type oil on the main arbor on the movement plate side and on the sweep second staff where it passes through the post at the center of the Dial Plate.

Lubricate junction of ratchet wheel teeth and click with non-spreading watch oil. (Moebius Synt-A-Lube is used in the factory as a non-spreading type lubricant.)

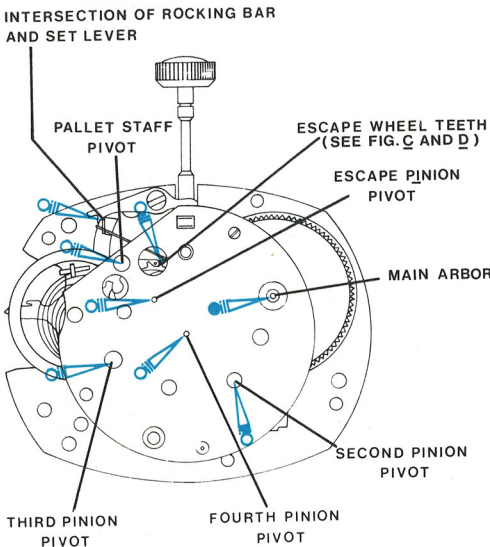


FIGURE B

Lubricate the movement with watch oils as noted by symbols on Figure A (front view) and Figure B (rear view).

WOODS AAAA OIL ——— ●  
 MOEBIUS SYNT-A-LUBE ——— ○

# Lubricating the Model 104 Movement

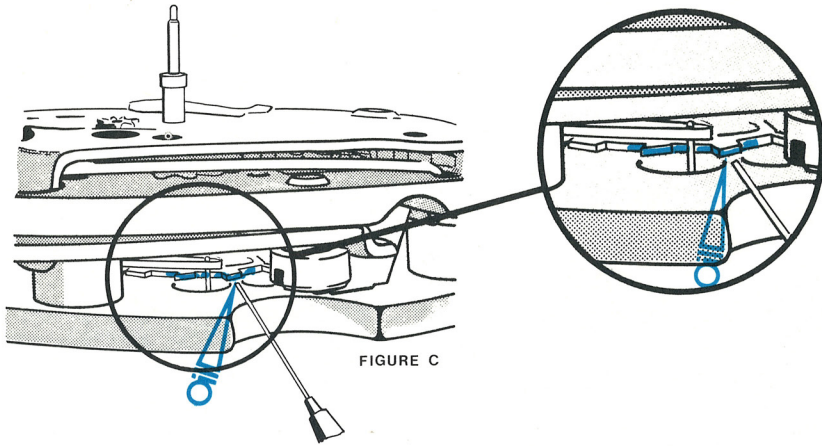


FIGURE C

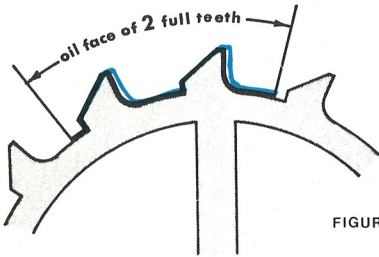


FIGURE D

In addition to the lubricant applied as outlined on Page 104.6, also apply the non-spreading watch oil to the full working surfaces of two escape wheel teeth as shown in Figures C and D.

Apply the non-spreading watch oil to the end of the Cannon Pinion Assembly as shown in Figure E.

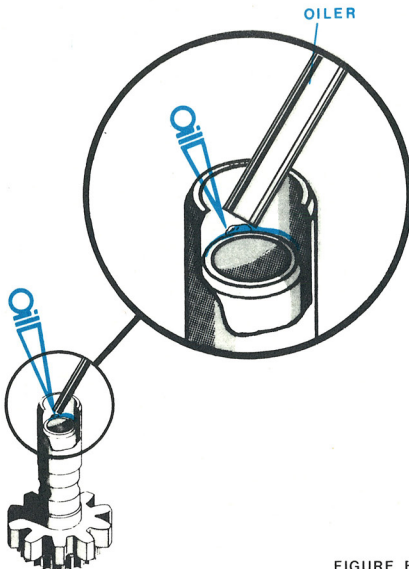


FIGURE E



# Lubricating the Model 104 Movement

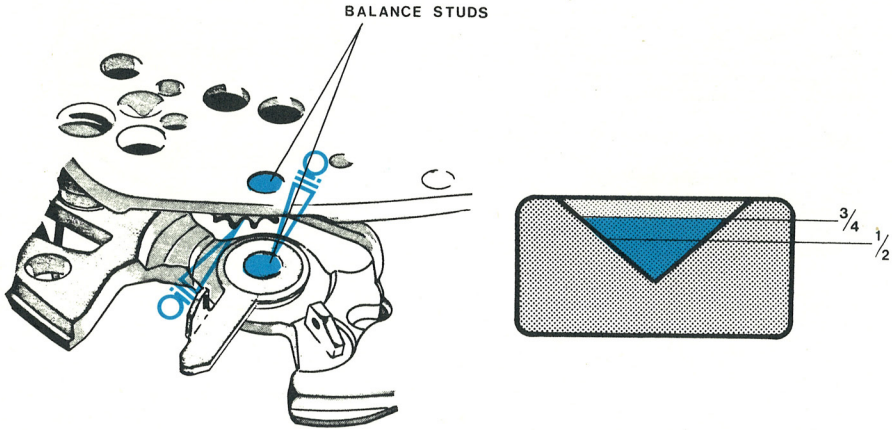
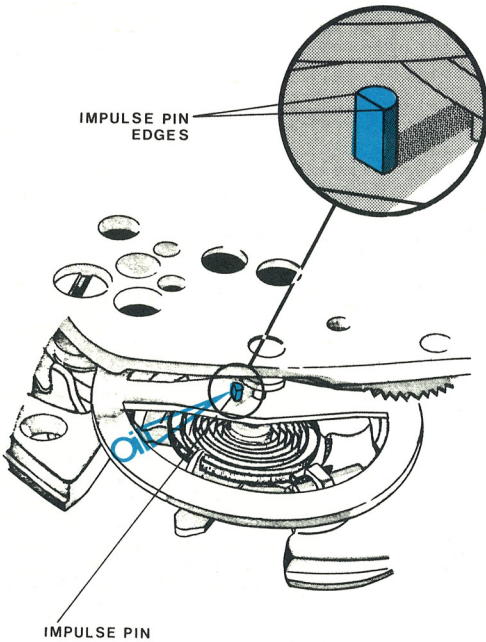


FIGURE F

Use non-spreading oil to fill both "V-Conic" bearings  $\frac{1}{2}$  to  $\frac{3}{4}$  deep as shown in Figure F.



After the Balance Wheel Assembly is replaced in the movement, apply non-spreading watch oil to both edges of the impulse pin (see Figure G) where contact is made with the Pallet Lever Fork.

# Reassembly of the Model 104 Movement

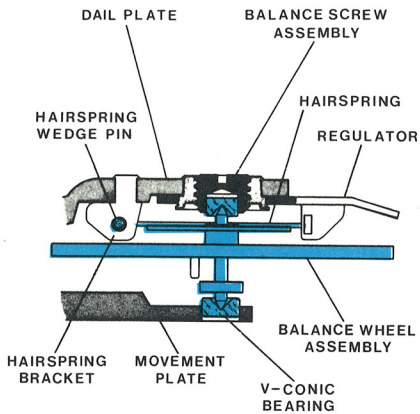


FIGURE H

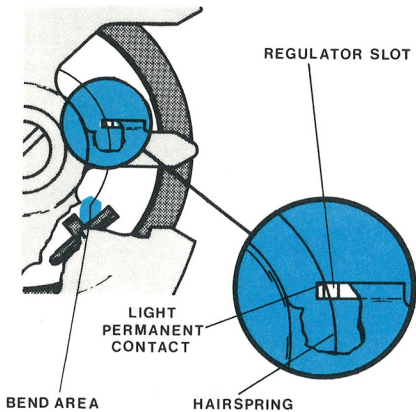


FIGURE J

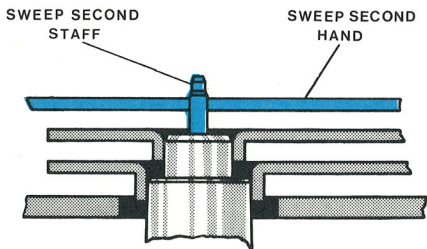


FIGURE K

## A) Replace Balance Wheel Assembly.

- 1) Loosen the Balance Screw Assembly several turns.
- 2) Tilt the Balance Wheel Assembly and carefully insert the Dial side pivot (Hair-spring end) and then the other pivot into the "V-conic" bearings, tighten the Balance Screw Assembly enough to hold the Balance Wheel Assembly in place (See Figure H).
- 3) Insert the end of the Hair-spring into the slot in the regulator and then into the hole in the Hairspring bracket by rotating the Balance Wheel and guiding the end of the spring. Check that the impulse pin is in the slot of the Pallet Lever and then secure the Hairspring in the bracket with the Wedge Pin (see Figure J).
- 4) Adjust the Balance Wheel end shake using caution to apply minimum downward pressure on the Balance Screw. Excessive pressure can damage the points of the Balance Staff.
- 5) Check for proper functioning of the Balance Wheel Assembly which requires that the Hairspring be in light, permanent contact with the inside edge of the regulator slot as shown in Figure J. Adjust the Hairspring by bending within the area noted in Figure J. The Hairspring should not leave the inside edge of the regulator slot at any time during the complete maximum oscillation of the Balance Wheel Assembly.

# Reassembly of the Model 104 Movement

## B) Reassemble the Watch.

- 1) Replace parts on the movement in the following order:  
Cannon Pinion Assembly  
Hour Wheel Assembly  
Hour Wheel Washer  
Dial Rest Assembly—Orient the dial rest on the movement as shown on Page 104.3 being sure the two bosses are seated in the dial plate.  
Dial—Orient the dial as shown on Page 104.3 and insert the tabs through the holes in the dial rest and into the dial plate.
- 2) Hold the dial securely in place on the movement, carefully turn the Assembly over and bend the A tabs and the B tabs under the Dial plate to secure the dial firmly in place.
- 3) Turn the assembly over and assemble the hands as shown in Figure K. Be certain the sweep second hand is set below the chamfer on the top of the Staff.

## C) Replace the Dial and Movement Assembly in the Case.

## D) Water Resistant Models—Special Gasket Lubrication is required to maintain proper sealing.

- 1) Apply Silicon Fluid (Dow Corning 200 Silicon Fluid 200 CS Viscosity is used in the factory) to at least one half (1/2) of the exposed gasket surface inside the Crown Assembly (before assembling the Crown and Stem through the Case into the movement).

## E) Tighten set lever screw to secure crown and stem assembly.

## F) Replace caseback.