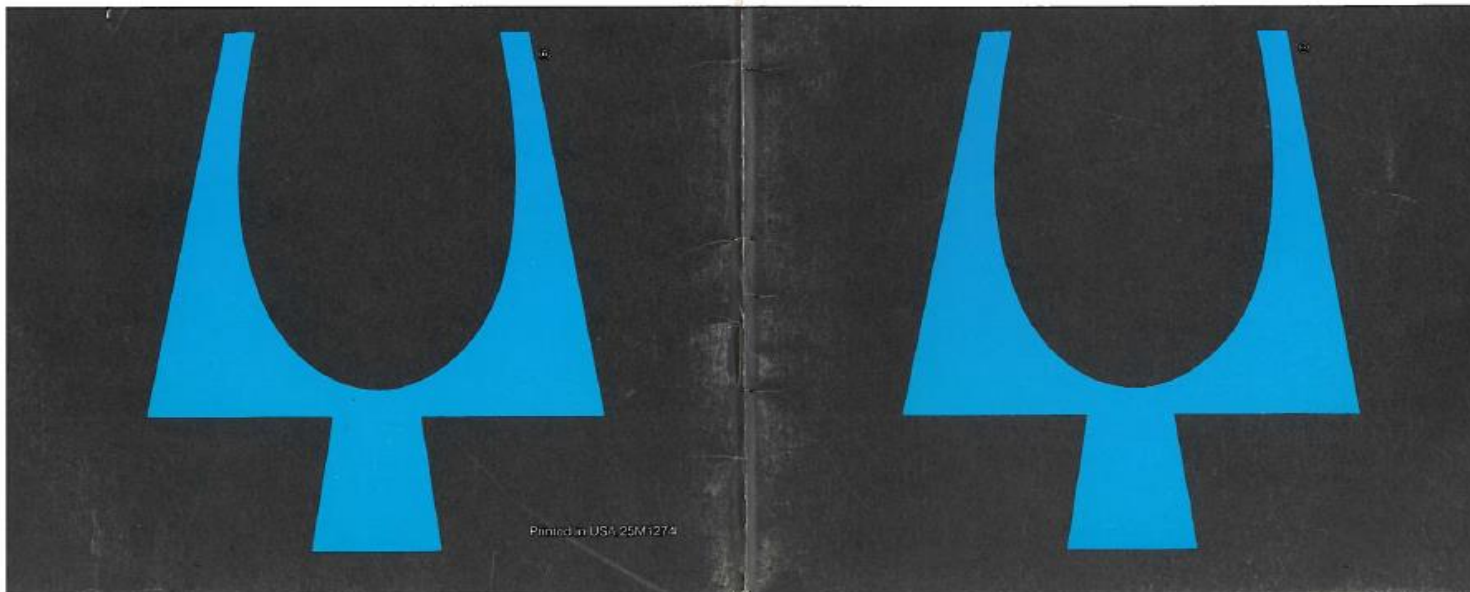


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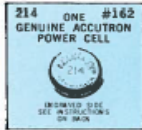
A guide to regulation
and power cell replacement

BULOVA®
ACCUTRON™
ACCUQUARTZ®
CARAVELLE®

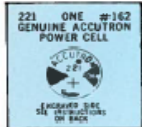


USE OF GENUINE ACCUTRON POWER CELLS

Fig. 1



For Series 214 only



For Series 221 only



For Series 218
For Series 230
For Series 224

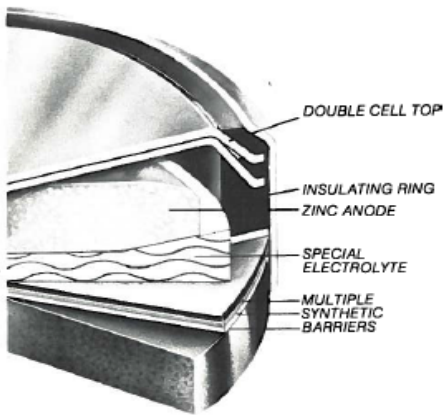


For Series 228 only

The only Power Cells made specifically for Accutron timepieces are the Accutron Power Cells, as illustrated on this page.

Genuine Bulova Accutron Power Cells are dimensionally correct, electrically efficient, quality controlled to provide maximum reliability, and are guaranteed against defects for one year. All Bulova Accutron Power Cells undergo a special aging process which detects and culls out leak-prone cells. Moreover, large samplings of Bulova cells are constantly subjected to sophisticated electronic equipment for test purposes. Tests of this type, in which advanced technology, engineering and costly electronic equipment is used, provide the greatest possible assurance that the genuine cells will perform properly.


Use of Power Cells which are *not* subject to Bulova Watch Company quality standards may be damaging to the timepiece.



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ACCUTRON Series 214

How to open the Case for Regulation

Tools required:

- Black plastic case wrench or metal "L" wrench
- Vibrograf rate recorder
- Pegwood stick
- Lint-free cloth
- Stiff bristle brush

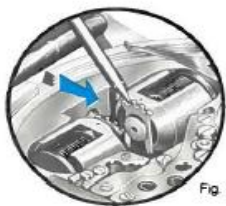
1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.
2. Unscrew and remove locking ring using case wrench.
3. Raise setting handle and use it as an aid in removing the back; being careful to lift straight up. Remove back (Fig. 2).

Note: If the back does not lift up easily, insert a screwdriver blade between the case back locating tab and case bezel and twist screwdriver.

Regulation

Note: The basic accuracy of the Accutron movement is such that excessive error (minutes per week) is an indication of malfunction. Repair rather than regulation is needed.

1. Determine the daily error to be corrected. To regulate 2 seconds per day slower, move either regulator one division outward. To regulate 2 seconds per day faster, move either regulator one division inward, using a pegwood stick (Fig. 3).
2. If adjustment is more than 2 seconds per day, it is good practice to divide the adjustment equally between the two regulators.
3. See page 20 for information regarding use of the Vibrograf for checking accuracy.



To regulate 2 seconds per day faster, move either regulator one division inward as shown.



To regulate 2 seconds per day slower, move either regulator one division outward as shown.

Fig. 3

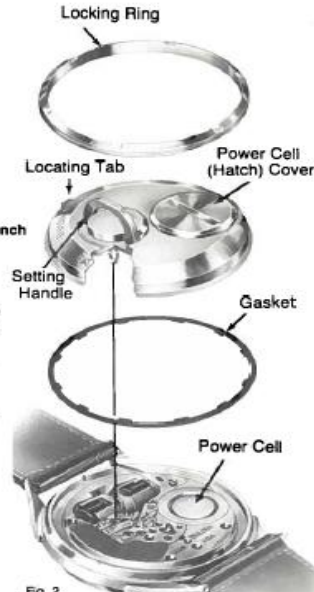


Fig. 2

How to close the Case after Regulation

Note: It is preferable to replace the back of the case without having the battery in place.

1. To reassemble, check to make certain movement and gasket are properly seated.
2. Replace case back, being sure locating tab is properly positioned (Fig. 2).

Important: The square at the end of the setting stem must engage with the hole in the setting wheel (Fig. 2). Rotate the setting handle at least half a turn to insure this action before proceeding.

3. Put setting handle down.
4. Screw locking ring firmly in place using case wrench.

Note: If watch does not start after setting to correct time, tap gently at "3 o'clock".



Fig. 4

Power Cell Replacement

Power Cell required: • Accutron 214

- Tools required:**
- Power Cell tester
 - U.S. Dime
 - Lint-free cloth
 - Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material near cell hatch to prevent dirt from entering movement when hatch is removed.
2. Unscrew and remove the Power Cell hatch cover using a U.S. Dime or an appropriate tool (Fig. 4).
3. Turn watch "dial up" and old Power Cell will fall out.
4. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.35 volts.
5. Install Power Cell with words "Accutron 214" facing down.
6. Before replacing Power Cell hatch cover:
 - A. Make certain its gasket is properly seated to assure a water resistant seal.
 - B. Make certain hatch spring has not been flattened. Replace spring if flattened (Fig. 5).

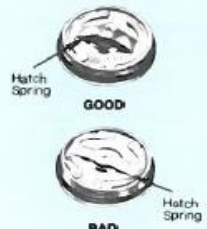


Fig. 5

ACCUTRON Series 218

How to open Screw Back Cases

- Tools required:**
- Black plastic wrench or metal "L" wrench
 - Lint-free cloth
 - Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.

2. Unscrew and remove locking ring and case back using case wrench (Fig. 6).
Note: If back does not lift up easily, insert a screwdriver blade between case back locating tab and case bezel and twist screwdriver.

How to close Screw Back Cases

1. To reassemble, check to make certain movement and gasket are properly seated. Replace back being sure locating tab is properly positioned (Fig. 6).

2. Screw locking ring firmly in place using case wrench.

Note: If watch does not start after setting to correct time, tap gently at "9 o'clock".

How to open Snap Back Cases

- Tools required:**
- Case knife
 - Plastic bag
 - Lint-free cloth

1. Clean the back of the case to prevent dirt from entering when back is removed.
2. Locate case lip or knife slot usually found on side of case opposite crown.
3. Fold a small plastic bag over a case knife and, with the plastic between the blade and the back, press the knife in the slot or under lip.
4. Press and rock carefully until the back snaps off.

How to close Snap Back Cases

- Tools required:**
- Watchmaker's bench block
 - Lint-free cloth

1. Position the case gasket in case bezel, not in case back.
2. With the watch in hand, position case back so that locating notch on the edge of the back is in line with the crown (Fig. 7).

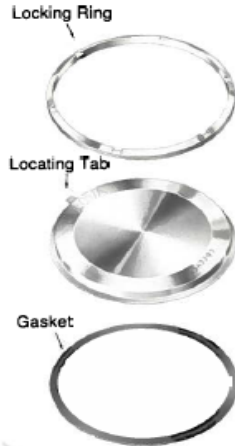


Fig. 6

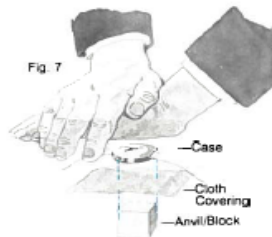


Fig. 7

3. Lay a lint-free cloth over a watchmaker's bench block or similar object. The block must be high enough and narrow enough to provide a firm support for the back and not touch the case lugs.
4. Holding the case and back firmly together, place timepiece on the block dial side up. Be sure to maintain pressure on the crystal so that the bezel does not lift away from case back.
5. Place the palm of one hand over the timepiece to serve as a pad and press down firmly with the other hand until the bezel and back snap together (Fig. 7).

Power Cell Replacement

- Power Cell required:**
- Accutron 218
- Tools required:**
- Power Cell tester
 - Screwdriver
 - Lint-free cloth
 - Pegwood stick

1. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.35 volts.
2. Loosen the coil form screw 1/4 turn and the cell strap screw 1 turn. Swing the cell strap outward (Fig. 8). Turn the timepiece over and the Power Cell will drop out.
3. Before inserting the new cell, inspect cell compartment and underside of strap for foreign material. Clean if necessary, using pegwood stick, to assure good electrical contact.
4. Insert Power Cell with words "Accutron 218" facing down in the movement.
5. Reposition the cell strap and tighten the two screws.

Fig. 8

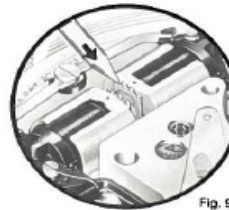


Regulation

- Tools required:**
- Vibrograf rate recorder
 - Pegwood stick

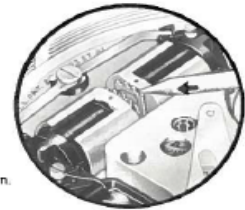
Note: The basic accuracy of the Accutron movement is such that excessive error (minutes per week) is an indication of malfunction. Repair rather than regulation is needed.

1. Determine the daily error to be corrected. To regulate 2 seconds per day slower, move either regulator one division outward. To regulate 2 seconds per day faster, move either regulator one division inward, using a pegwood stick (Fig. 9).
2. If adjustment is more than 2 seconds per day, it is good practice to divide the adjustment equally between the two regulators.
3. See page 20 for information regarding the use of the Vibrograf for checking accuracy.



To regulate 2 seconds per day faster, move either regulator one division inward as shown.

Fig. 9



To regulate 2 seconds per day slower, move either regulator one division outward as shown.

ACCUTRON Series 221

How to open Snap Back Cases

Tools required:

- Case knife
- Plastic bag
- Lint-free cloth

1. Clean the back of the case and wipe away any accumulated material to prevent dirt from entering when back is removed.
2. Fold a small plastic bag over a case knife and, with the plastic between the blade and the back, press knife under opening lip.
3. Rock carefully until the back snaps off.
4. Remove the movement from the case and place in the bezel (Fig. 10).

How to close Snap Back Cases

1. Remove movement from bezel and place in case back.
 2. Pull crown to setting position.
 3. Snap bezel and case together by applying pressure first on the 12 o'clock side, then on the 6 o'clock side. Case will snap closed.
- Note: After setting, push crown in. Listen for the tuning fork hum to make certain the watch is running. If no hum is heard, tap the case lightly at "9 o'clock" to start the tuning fork vibrating.*

How to open Screw Back Cases

Tools required:

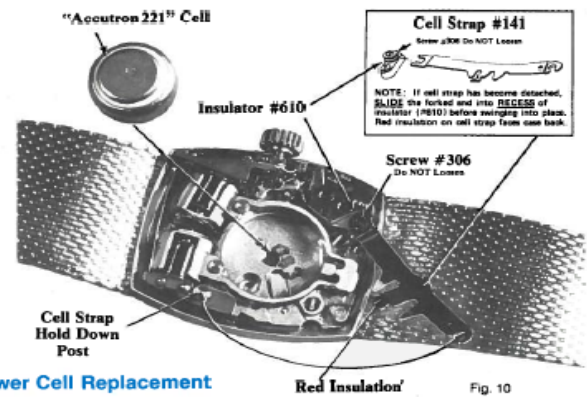
- Black plastic case wrench or metal "L" wrench
- Lint-free cloth
- Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.
2. Unscrew and remove locking ring and case back using case wrench.
3. *Note: If back does not lift up easily, insert a screwdriver blade between case back locating tab and case bezel and twist screwdriver.*
3. Leave movement in bezel. Do not remove.

How to close Screw Back Cases

1. To reassemble, check to make certain movement and gasket are properly seated and locating tab of case back is properly positioned.
 2. Pull crown to setting position.
 3. Screw locking ring firmly in place with use of the case wrench.
- Note: After setting, push crown in. Listen for the tuning fork hum to make certain the watch is running. If no hum is heard, tap the case lightly at "9 o'clock" to start the tuning fork vibrating.*

6



Power Cell Replacement

Power Cell required:

- Accutron 221

Tools required:

- Power Cell tester
- Lint-free cloth
- Pointed tool

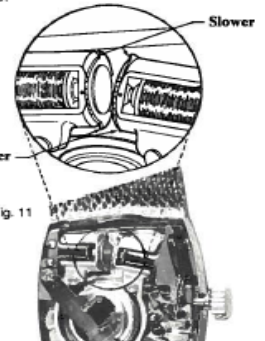
1. Before installing, check the new cell with Power Cell tester. Reading should be approximately 1.35 volts.
2. Insert a pointed tool in the hole near the end of the cell strap. Applying a downward pressure, swing cell strap away from hold down post. Do not loosen any screws. Invert the timepiece and the cell will fall out (Fig. 10).
3. Inspect the cell compartment and the underside of the strap for foreign material. Clean if necessary to assure a good electrical contact. Do not scrape away any of the red insulation.
4. Insert Power Cell with words "Accutron 221" facing down.
5. Reposition strap into slot of Insulator #610. With a downward pressure from the pointed tool, inserted in the hole near end of strap, swing strap into position on the hold down post. Make sure the strap is fully engaged.

Regulation

Tools required:

- Vibrograf rate recorder
- Pegwood stick

- Note: The basic accuracy of the Accutron movement is such that excessive error (minutes per week) is an indication of malfunction. Repair rather than regulation is needed.*
1. Determine the daily error to be corrected. To regulate 2 seconds per day slower, move either regulator one division outward. To regulate 2 seconds per day faster, move either regulator one division inward. Using a pegwood stick, rotate regulators by applying pressure on the "ears" of the regulator (Fig. 11).
 2. If adjustment is more than 2 seconds per day, it is good practice to divide the adjustment equally between the two regulators.
 3. See page 20 for information regarding the use of the Vibrograf for checking accuracy.



7

ACCUTRON

Series 230

How to open Screw Back Cases

Tools required:

- Black plastic wrench or metal tubular wrench
- Lint-free cloth
- Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material to prevent dirt from entering when back is removed.
2. Unscrew and remove back using case wrench.

How to close Screw Back Cases

1. To reassemble, check to make certain gasket is properly seated and tab of case back is properly located for models employing a locking ring.
Note: On non-water resistant models employing screw back cases, there is usually no gasket present.
2. Screw back firmly in place.
Note: After setting the watch, be sure to push the stem "in" to its normal position. Listen for the tuning fork hum to make certain the watch is running. If no hum is heard, tap the case lightly at "11 o'clock" to start the tuning fork vibrating. Do not keep crown in setting position because this rapidly drains the Power Cell.

How to open Snap Back Cases

Tools required:

- Case knife
- Plastic bag
- Lint-free cloth

1. Clean the back of the case and wipe away any accumulated material to prevent dirt from entering when back is removed.
2. Locate case lip or knife slot usually found on side of case opposite crown.
3. Fold a plastic bag over case knife and, with plastic between the blade and the case back, press knife into slot.
4. Press and rock carefully until back snaps off.

How to close Snap Back Cases

1. Align the lip or slot properly. It is usually on side of case opposite crown.
2. Snap the back into place with finger pressure.
Note: After setting the watch, be sure to push the stem "in" to its normal position. Listen for the tuning fork hum to make certain the watch is running. If no hum is heard, tap the case lightly at "11 o'clock" to start the tuning fork vibrating. Do not keep crown in setting position because this rapidly drains the Power Cell.

8

Power Cell Replacement

Power Cell required:

- Accutron 218

Tools required:

- Power Cell tester
- Screwdriver
- Lint-free cloth
- Pegwood stick

1. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.35 volts.
2. Loosen Power Cell strap screw at least 1½ to 2 full turns and swing cell strap away from cell as shown in Fig. 12. Turn timepiece over and cell will drop out.
3. Before inserting the new cell, inspect cell compartment and the underside of the strap for foreign material. Clean if necessary to assure good electrical contact.
4. Insert the Power Cell with the words "Accutron 218" facing down in the movement.
5. Reposition cell strap and tighten screw.



Fig. 12

Regulation

Tools required:

- Vibrograf rate recorder
- Regulating key #22007 (see page 19)

- Note: The basic accuracy of the Accutron movement is such that excessive error (minutes per week) is an indication of malfunction. Repair rather than regulation is needed.*
1. Determine the daily error to be corrected.
 2. Each regulator has five lines for reference points. Rotating a regulator from one division to the next will adjust the timepiece by 4 seconds per day. If the required correction is more than 4 seconds, it is recommended that the adjustment be divided between the two regulators as equally as possible.
 3. To move the regulators, use the regulating key #22007. To regulate faster, move the regulator toward the tuning fork base. To regulate slower, move the regulator away from the tuning fork base (Fig. 13).

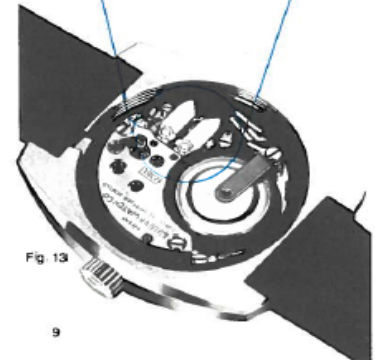
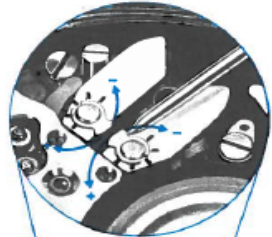


Fig. 13

9

BULOVA ACCUQUARTZ DIGITAL Series 228

How to open the Case and replace Power Cells

Power Cells required: • Two (2) Bulova 228

Tools required:

- Black plastic case wrench
- Lint-free cloth
- Stiff bristle brush
- Pegwood stick

1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.
2. Unscrew and remove locking ring and case back using case wrench. If back does not lift off easily, insert a screwdriver blade between case back locating tab and case bezel and twist screwdriver.

Note: Under certain circumstances, static electricity can damage the movement. As a precaution, never remove the movement from its case. When replacing Power Cells, always hold the case in one hand while inserting the Power Cells with the other. This "grounds" the unit and prevents accidental damage.

3. Remove battery contact strap.
4. Invert the movement and one or both Power Cells will fall out. On some movements it may be necessary to tap the case near the stem in order to dislodge the remaining cell. One cell is held in place by tension from a contact spring (Fig. 14).

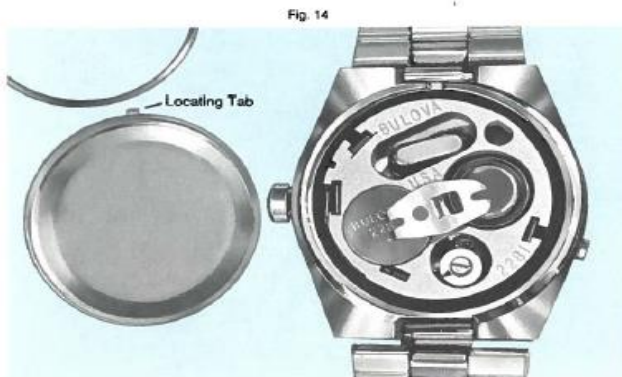


Fig. 14

10

5. Inspect the cell compartment and the underside of the battery strap for foreign material. Dry-wipe surface only as necessary to assure good electrical contact. Use pegwood stick if necessary.
6. Before installing, check new cells with Power Cell tester. Reading should be approximately 1.5 volts for each cell.

Note: Always replace both Power Cells, never replace just one.

7. Insert one cell printed side up in negative (-) well. Insert the other cell printed side down in positive (+) well (Fig. 15).
8. Reinstall battery strap. Be sure that tongue of strap has entered slot provided for it in gold colored movement block.

How to close the Case

1. To reassemble, check to make certain gasket is properly seated. Replace back, being sure locating tab is properly positioned (Fig. 15).
2. Screw locking ring firmly in place using case wrench.
3. Press "set button" to start movement and set to correct time.

Fig. 15

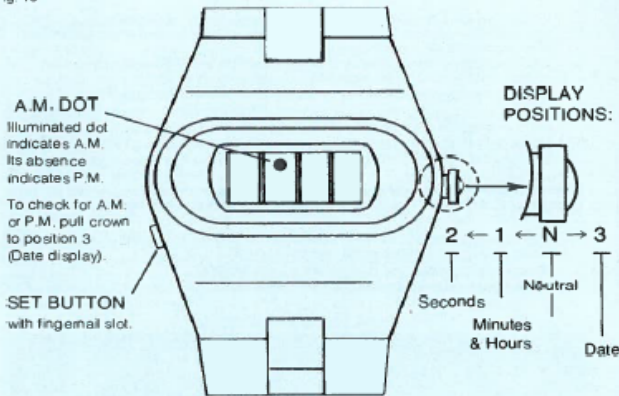


11

BULOVA ACCUQUARTZ DIGITAL Series 228

Setting Instructions

Fig. 16



Display Positions

1. **Time:** Momentarily push crown to position 1. Display will remain on for about two seconds after crown is released.
2. **Seconds:** Push crown in all the way to position 2 and hold.
3. **Date:** Pull crown out and hold to position 3.
4. **Neutral:** Normal wearing or non-display position.

Regulation

The rate of the Accuquartz 228 watch is controlled by a quartz crystal. It is not possible to regulate the watch without special factory equipment.

1. Minutes

- A) Display the time, by pushing crown to position 1. If no display is shown, press, then release the set button.
- B) Continue to depress crown in position 1 to display the minutes and hours. Wait until the time standard you are using as a reference reaches the 60th second. At that moment, depress the set button while you continue to hold the crown in position 1.
- C) Minutes will advance at the rate of one per second. When the proper minute is reached, release set button, then release crown.

Note: When the set button is pressed for the minutes adjustment, the seconds reset to zero and begin counting. You have, therefore, synchronized the seconds. Should you interrupt the count by releasing the set button prematurely, start the process over again, commencing at the next 60th second mark.

Example: If you want to set your watch to exactly 5:15, start advancing the Minutes exactly on the 60th second of the time reference you are using to set your Accuquartz Digital watch. When the Minutes read "15", release the set button. The Seconds will now be synchronized to the exact time along with the Minutes. Then set the Hour as follows:

2. Hours

- A) Do not push crown.
- B) Push and hold set button only.
- C) Hours will advance at the rate of one per second. When proper Hour is shown, release set button.

To check for a.m. or p.m., pull crown to position 3. Make sure that the illuminated dot appears in the proper 12-hour period, otherwise the date will change at noon instead of midnight. If time of day is after 12 noon, advance hours until illuminated dot disappears (Fig. 16).

3. Date

- A) Pull out and hold crown.
- B) Push and hold set button.
- C) Date advances at the rate of one per second. When proper Date is shown, release set button.
- D) On the first day of each month, following a month with less than 31 days, advance the Date by following steps (A) and (B) under Date.

Important:

Displaying Seconds by pressing the crown in all the way and pressing the set button at the same time may cause the unit to stop or reset to zero. No damage has been done to the movement but the watch is no longer displaying the correct time. Reset watch in accordance with instructions.

Special Points

1. The frequency of Power Cell replacement is dependent upon how often and how long the display is activated.
2. As with any Power Cell that is exhausted, remove it from the watch at the earliest convenience to diminish the possibility of leakage. In the Accuquartz Digital Watch, always replace both Power Cells.
3. On some models the set button must be depressed after replacing Power Cells. This starts the watch.
4. The set button has a slotted portion to enable you to depress it with your fingemall.
5. When resetting Hour, Date is not affected.
6. When resetting Date, Time is not affected.
7. The crown does not rotate as in conventional watches.

ACQUQUARTZ Series 224

How to open the Case

Tools required:

- Black plastic case wrench or metal "L" wrench
- Lint-free cloth
- Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.
2. Unscrew and remove locking ring and case back using case wrench.

Note: If back does not lift off easily, insert a screwdriver blade between case back locating tab and case bezel and twist screwdriver.

How to close the Case

1. To reassemble, check to make certain movement and gasket are properly seated. Replace back being sure locating tab is properly positioned.
2. Screw locking ring firmly in place using case wrench.

Power Cell Replacement

Power Cell required:

- Accutron 218

Tools required:

- Power Cell tester
- Lint-free cloth
- Pointed tool

1. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.35 volts.
2. Insert a pointed tool in the hole at the end of the cell strap and swing the cell strap clear. Invert the movement and the cell will drop out (Fig. 17).
3. Inspect the cell compartment and the underside of the cell strap for foreign material. If necessary, wipe clean to assure good electrical contact.
4. Insert new Power Cell with the words "Accutron 218" facing down.
5. Reposition cell strap and swing back into place (Fig. 18).



Fig. 17



Fig. 18

Regulation

The rate of the tuning fork in the Accuquartz 224 watch is controlled by a quartz crystal. It is not possible to regulate the watch without special factory equipment. Do not move the "Regulators". Movement of these "Regulators" does not cause a change in rate.

14

CARAVELLE MODELS 12 OTC 12 OUC 12 OUCD

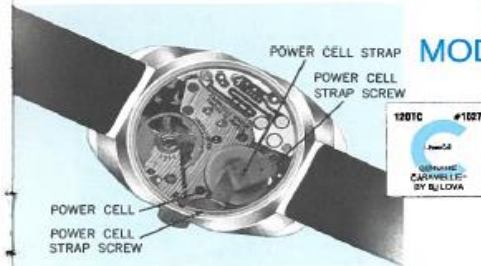


Fig. 19

How to open the Case

Tools required:

- Metal "L" wrench
- Lint-free cloth
- Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.
2. Unscrew and remove locking ring and case back using case wrench. *Note: If back does not lift off easily, insert screwdriver blade between case back locating tab and case bezel and twist screwdriver.*

How to close the Case

1. To reassemble, check to make certain movement and gasket are properly seated. Replace back, being sure locating tab is properly positioned.
2. Screw locking ring firmly in place using case wrench.

Power Cell Replacement

Power Cell required:

- Caravelle 12 OTC

Tools required:

- Power Cell tester
- Screwdriver
- Tweezer
- Lint-free cloth

1. Pull stem to "Setting Position".
2. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.5 volts.
3. Unscrew both cell strap screws and remove cell strap (Fig. 19).
4. Turn watch to vertical position with the setting crown down. Power Cell will drop out.
5. Inspect Power Cell compartment and underside of cell strap for foreign material. Wipe clean if necessary to assure good electrical contact.
6. Install the Power Cell with *printed side up*.
7. Replace the cell strap, tightening screws firmly in place.

Regulation

Regulation is accomplished in the conventional manner.

Note:

12 OTC	18,000 beats per hour
12 OUC	21,600 beats per hour
12 OUCD	21,600 beats per hour

15

CARAVELLE

Ladies Model 7 OT



Fig. 20

How to open Snap Back Cases

Tools required:

- Case opener #7037
- Lint-free cloth
- Stiff bristle brush

1. Clean the case and wipe away any accumulated material to prevent dirt from entering when back is removed.
2. Insert finger of case opener #7037 under lip located at 12 o'clock side of case and snap back off.

How to close Snap Back Cases

1. To reassemble, first position gasket in case back (not in recess in bezel).
2. Snap the back into place with finger pressure.

How to open Screw Back Cases

Tools required:

- Metal "D" wrench
- Lint-free cloth
- Stiff bristle brush

1. Clean the case and wipe away any accumulated material to prevent dirt from entering when back is removed.
2. Unscrew and remove case back.

How to close Screw Back Cases

1. To reassemble, check to make certain movement and gasket are properly seated.
2. Screw back firmly in place using case wrench.

Power Cell Replacement

Power Cell required:

- Caravelle 7 OT
- Power Cell tester

Tools required:

- Screwdriver
- Tweezer
- Lint-free cloth

1. Pull stem to "Setting Position".
2. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.5 volts.
3. Unscrew cell strap screw and remove cell strap (Fig. 20).
4. Turn watch to vertical position with the setting crown down. Power Cell will drop out.
5. Inspect Power Cell compartment and underside of cell strap for foreign material. Wipe clean if necessary to assure good electrical contact.
6. Install the Power Cell with the *printed side up*.
7. Replace cell strap, tightening screw firmly in place.

Regulation is accomplished in the conventional manner.

Note: 21,600 beats per hour

CARAVELLE Model 12 UECD



Fig. 21

How to open the Case

Tools required:

- Metal "L" wrench
- Lint-free cloth
- Stiff bristle brush

1. Clean the back of the case and wipe away any accumulated material from around locking ring to prevent dirt from entering when back is removed.
2. Unscrew and remove locking ring and case back using case wrench.
Note: If back does not lift off easily, insert a screwdriver blade between case back locating tab and case bezel and twist screwdriver.

How to close the Case

1. To reassemble, check to make certain movement and gasket are properly seated. Replace back, being sure locating tab is properly positioned.
2. Screw locking ring firmly in place using case wrench.

Power Cell Replacement

Power Cell required:

- Caravelle 12 UECD

Tools required:

- Power Cell tester
- Tweezer
- Screwdriver
- Lint-free cloth

1. Pull stem to "Setting Position".
2. Before installing, check new cell with Power Cell tester. Reading should be approximately 1.35 volts.
3. Unscrew both cell strap screws and remove cell strap (Fig. 21).
4. Turn watch to vertical position with the setting crown down. Power Cell will drop out.
5. Inspect Power Cell compartment and underside of cell strap for foreign material. Wipe clean if necessary to assure good electrical contact.
6. Install the Power Cell with the *printed side up*.
7. Replace cell strap, tightening screws firmly in place.

Regulation

Regulation is accomplished in the conventional manner by rotating the micrometer screw (Fig. 21).

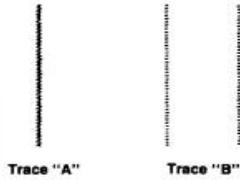
Note: 28,800 beats per hour

CHECKING ACCUTRON ACCURACY

A quick and reliable way to check the tuning fork accuracy of an Accutron watch is afforded by the Vibrograf equipment available from your local Watchmaster representative. The data below will help you determine whether or not regulation is needed. Regulation is a simple matter. Use the chart below as a guide to adjust any Accutron to within the one-minute-a-month tolerance.

Series	Timing Dial Position Sec/Day	Beat Selector Button	
214	-2	B100A	B200A
		21,600 Trace "A"	21,600 Trace "A"
218	-2	21,600 Trace "A"	21,600 Trace "A"
		19,800 Trace "B"	19,800 Trace "B"
230	±1	18,000 Trace "B"	17,280 Trace "A"
		18,000 Trace "B"	17,280 Trace "A"

Fig. 24



Note: When worn on the inside of the wrist, the dial up or down rate should be + 2 for Series 214 or 218, and -2 for Series 221 movements. The Series 230 does not require re-regulation if worn on the inside of the wrist, and, therefore, should be regulated to the "normal" ±1 rate.

For the 221 and 230 Series it is vital that the crown on the movement be placed between the two front stationary prongs of the watchholder, as illustrated. This assures proper positioning. It may also be necessary to move the movement either left or right of center to assure maximum pickup (Fig. 25).

Note: The Bulova Accuquartz watch, Series 224, and the Bulova Accuquartz Digital watch, Series 228, are not field regulated. Their rate is controlled by a quartz crystal and can only be adjusted with special factory equipment.

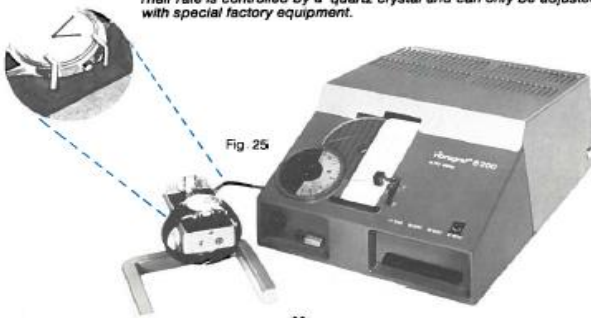


Fig. 25

ACCUTRON FACTS

Shock

The Accutron mechanism is ruggedly constructed to take the normal shocks of every-day use. It is practically immune to the effects of playing golf, gardening, hammering nails, etc. when worn on the wrist.

Vibration

When worn, the user's wrist cushions any direct vibrations to the movement. The use of power hedge trimmers, power mowers, Sanders and other such vibrating equipment will have no significant effect on an Accutron timepiece worn on the wrist.

Magnetism

Accutron timepieces meet the Federal Trade Commission requirements to be labeled "Anti-Magnetic".

The Sound of Accutron

When the Accutron timepiece is placed to the ear, a continuous tone can be heard. Whether it is a high pitched or low pitched sound depends primarily on the characteristics of the listener's hearing. The sound is actually the hum of the tuning fork, upon which is superimposed the high frequency impulses of the tiny indexing mechanism. The high frequency is a result of the operation of the indexing mechanism by which the tuning fork turns the hands to indicate the time. This high frequency is inaudible to some owners; others may find it barely audible or quite noticeable, depending upon their auditory acuity.

Differences in the nature of the sound from timepiece to timepiece may be noticed. The nature of the sound or tone gives little or no indication of the condition, reliability or performance characteristics of a particular Accutron timepiece.

Maintenance and Repair of Accutron

It is well known that the performance of conventional watches gradually deteriorates as the parts wear and as lubrication fails. For this reason watch manufacturers recommend periodic cleaning and re-oiling. In the Accutron movement the pressure on pivots and jewels is negligible and the possibility of worn parts as the oil deteriorates is largely eliminated. Also, unlike conventional watches, lubrication and friction play no significant part in the timekeeping accuracy of the Accutron movement.

The above facts prompted Bulova, in 1960, to recommend servicing only "as required", rather than periodically. This has been confirmed "in the field" since that time. Exceptions are, of course, annual replacement of the Power Cell and occasional regulation, if required.

OFF-THE-WRIST REGULATION

SERIES 214 AND 218 ACCUTRON WATCHES

Regulation Concept

The Bulova Accutron tuning fork watch — which started the "Watch Revolution" by offering the consumer the first guarantee of in-use accuracy — can be more accurate in actual use than any other wrist watch. The Accutron watch has a regulation feature that allows its owner to eliminate accumulated dial error. In fact, this unique feature permits the Accutron watch to maintain an in-use dial accuracy to within two seconds of the right time all year long, provided, of course, that the watch owner has access to a correct time source against which to check it.

The key distinction to be kept in mind is that the Bulova Accutron watch can be much more accurate in actual use than its guaranteed accuracy, which is plus or minus one

minute a month. The Accutron guarantee, in short, defines the maximum in-use error per month, not the attainable in-use accuracy.

The following is a guide for those who wish to obtain closer timekeeping than the plus or minus one minute a month guarantee, by positioning their Accutron watches overnight. The Accutron watch runs slightly slower when it is positioned on its edge, with the 12 o'clock on the dial up, as opposed to when the watch is in the flat positions. Vice-versa, when the watch is positioned on its edge with the 12 o'clock on the dial down, it runs slightly faster than when it is in the flat positions. It is this slight change in rate between the two vertical positions that permits the Accutron watch owner to regulate his own watch.



Fig. 26

When it gains

Let's say that an Accutron watch has been gaining at an average rate of one second a day. Such performance is well within the Accutron guarantee, but to remain within two seconds of the right time all year long, it is necessary to slow down or eliminate the rate of gain. Because of the slower rate of the tuning fork in the 12 o'clock up position, the owner can do this merely by placing the watch in 12 o'clock up when he takes it off at night. Checks with an accurate time source will reveal to the owner how frequently he will have to do this: every other day, for example, or four nights a week so that day in and day out, it is within two seconds of the right time. The maximum correction for an eight hour period is approximately 1.5 seconds.

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Fig. 27

When it loses

Let's say that an Accutron watch has been losing an average of one second a day. Such performance is well within the Accutron accuracy guarantee. In this case, to achieve accuracy to within two seconds of the right time all year long, it is necessary for the owner to speed up the timekeeping rate of the watch. He does this by placing the watch on its edge with the 12 o'clock indicator down, after taking it off at night. Checks with an accurate time source will reveal to him how frequently he must follow this procedure. The maximum correction for an eight hour period is approximately 1.5 seconds.

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SERVICE FACILITIES

To provide dealers with maximum efficiency in watch servicing, the Bulova Watch Company has established, in addition to the New York service facility, a network of regional factory service centers, presently incorporating four (4) area offices.

Each office has been selected and staffed to supply personalized and complete warranty and post warranty watch repair service. Should you require our service please forward all repairs directly to your service office at the mailing address given below, choosing the one geographically situated to best serve your marketing area.

New York Service Department

Service Department
75-20 Astoria Boulevard
Jackson Heights, N.Y. 11370

Regional Service Centers

Service Department
2821 West Olympic Blvd.
Los Angeles, Ca. 90006 **Far West**

Service Department
1940 West Roosevelt Road
Broadview, Il. 60153 **Upper Midwest**

Service Department
P.O. Box 20798
Dallas, Tx. 75220 **Lower Midwest**

Service Department
788 Main Street
Forest Park, Ga. 30050 **South Atlantic States**

Note: In order to avoid pilferage of watches being returned for repair, we request that you address your packages exactly as shown. Do not indicate the name "Bulova" or "Bulova Watch Company" on the package.

Mailing Instructions

- Send first class insured or by registered mail, whenever possible.
- Enclose complete return address, including zip code.
- Include bill of sale or proof of date of sale on warranty watches.
- Do not send original job envelope. This cannot be returned.
- Do not send watch box. It cannot be returned.
- If shipping more than one watch in a carton, pack each in a separate envelope.

and for each watch

- State the nature of the problem.
- Remove bracelet or strap, whenever possible.
- Check Power Cell before sending watch for repair.
- Do not disassemble movement.
- For repairs to case only, remove movement and send bezel and back.