

July 1971

TECHNICAL LETTER

ACCUTRON 218 Series - CASING SPRINGS #319A

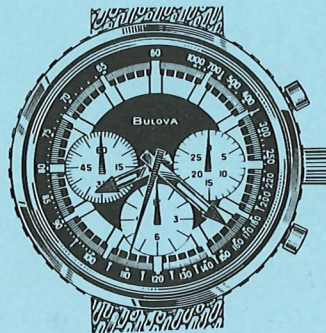
Due to a new development, most 218 ACCUTRONS no longer need a casing spring to hold the movement in place. If the models in your stock, or those in for repair, do not contain one, it was not because of an oversight but rather because it is not required.

BULOVA CHRONOGRAPH "C" - Style #31004 - Case #896

The above Chronograph has recently been introduced into the Bulova Line. It employs a tachometer scale, sweep second hand, minute and hour recorders, along with a continuously turning offset second hand. The case used to house this movement is of a one-piece construction.

TO OPEN AND CLOSE THIS CASE:

Support the case in a standard case vise and unscrew the bezel with the use of the special case wrench #896, which can be obtained through your Authorized Bulova Material Distributor. Replace the bezel in the same manner.



TECHNICAL INFORMATION SERVICES

November 1971

TECHNICAL LETTER

CARAVELLE 7 OT CASES
CASE NUMBERS 7037 & 7037-1

The above-mentioned cases are of a water-resistant construction, snap closing, with a flat gasket.

TO OPEN CASE

- 1. Insert the hook of Caravelle case opener #7037 into the opening slot at the 12 o'clock end of the case.
- 2. Rock the case opener away from the case and pry the back off.

NOTE: Since the case back's opening lip does not extend beyond the bezel, an ordinary case opener will not engage it.

If case opener #7037 is not available, proceed as follows: Remove the spring bar at the 12 o'clock end of the case where the opening slot is located. Select a screwdriver with a blade between 2 mm. and 3 mm. wide. Push it against the underside of the lip and pry the back off.

If the case cannot be opened by either of the above means, the case should be returned to our Service Department in Jackson Heights, N.Y.

TO RECLOSE CASE

- 1. Position the gasket on the case back (NOT IN THE RECESS IN THE BEZEL).
- 2. Position the case back on the case with the notch at the 12 o'clock position.
- 3. Snap the back into place with finger pressure.

The following case parts can be purchased through your Authorized Bulova Material Distributor:

<u>Case No.</u>	<u>Crown</u>	<u>Crystal</u>	<u>Gasket</u>	<u>Spring Bar</u>
7037	7037W	7037AW	G 829	7037
7037-1	7037-1Y	7037-1AY	G 829	7037

TECHNICAL INFORMATION SERVICES

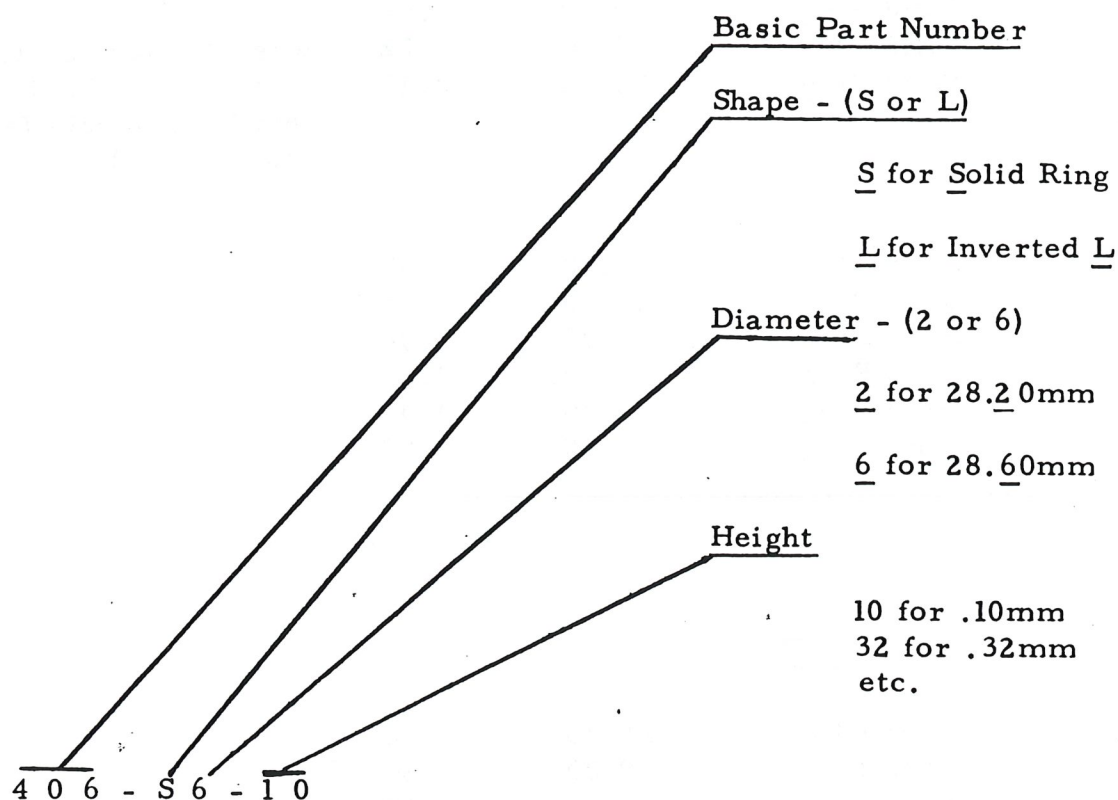
OCTOBER 1975

TECHNICAL LETTER

218 SERIES DIAL SUPPORT # 406

In some instances, dial supports #406, are used in models 2180-2181-2182 * 2185 and 2186. Whether they are used - and which specific dial support is required - is determined by both case and dial - in combination. If replacements are needed, refer to the DIAL SUPPORT CHART on back of page, match the sample dial support with shape, diameter and height shown on the CHART. Then please order by Part Number, which appears in the first column.

An explanation of how the part number is derived follows:



*Dial Supports are not used in model 2183.

(Please turn page)

TECHNICAL INFORMATION SERVICES

Chart for 218 Series Dial Supports #406
(All measurements are in millimeters)

Part#	Shape (Cross Section)	Diameter	Height	Comments
				
406-S6-10	Solid Ring	28.60	.10	was *406 brass -.10mm
406-S6-32	Solid Ring	28.60	.32	
406-S6-40	Solid Ring	28.60	.40	was *406 nickel-.40mm
406-S6-49	Solid Ring	28.60	.49	was *406 gold - .49mm
406-S6-54	Solid Ring	28.60	.54	
406-S6-86	Solid Ring	28.60	.86	
406-S6-90	Solid Ring	28.60	.90	
406-S6-122	Solid Ring	28.60	1.22	was *406 nickel -1.22mm
406-S6-227	Solid Ring	28.60	2.27	← At the time of printing, this is used only for 2186 (digital).
406-S2-32	Solid Ring	28.20	.32	
406-S2-86	Solid Ring	28.20	.86	
406-S2-90	Solid Ring	28.20	.90	
406-S2-122	Solid Ring	28.20	1.22	
406-S2-145	Solid Ring	28.20	1.45	
406-S2-183	Solid Ring	28.20	1.83	
				
406-L2-40	Inverted L	28.20	.40	
406-L2-50	Inverted L	28.20	.50	
406-L2-58	Inverted L	28.20	.58	
406-L2-90	Inverted L	28.20	.90	
406-L2-104	Inverted L	28.20	1.04	
406-L2-140	Inverted L	28.20	1.40	

* Former Description

TECHNICAL LETTER

ACCUTRON
Model 214

Accutron Stems

Models employing stem setting spring #9873



(Push in Crown)
(Used prior to 1964)

			Overall Length	(Example 5 Rings)
176A	1 Ring		6.96 mm	
" B	2 "		7.04	
" C	3 "		7.12	
" D	4 "		7.20	
" E	5 "		7.28	
" F	6 "		7.36	
" G	7 "		7.44	
" H	No Rings		7.52	
			7.60	
" J	1 Ring on hub of stem - near thread			

Models employing stem setting spring #9937



(Fly Back)

Now being used on all Mvts
214-214H-214HN

			Overall Length	(Example 5 Rings)
176C-s	3 Rings		7.13 mm	
" D-s	4 "		7.21	
" E-s	5 "		7.29	
" F-s	6 "		7.37	
" G-s	7 "		7.45	
" H-s	No Rings		7.53	
			7.61	
" J-s	1 Ring on hub of stem - near thread			

TECHNICAL INFORMATION SERVICES

April 1972

TECHNICAL LETTER

TEN POINT CHECK LIST

Preferred Repair Procedure
Series 214 ACCUTRON Timepiece

Whenever possible, obtain performance information from wearer (page 6*). Without knowing the exact problem your customer is experiencing, it is frequently difficult to satisfy him. Where such information is lacking, the following procedure is recommended.

1. Check power cell voltage (page 9*).
2. Inspect timepiece for adequate hand clearance.
3. Gradually raise setting handle and turn the crown back and forth until minute hand moves, meanwhile observing the distance the crown lifts. Crown (not setting handle) should lift at least 1/4 mm. before setting wheel engages minute wheel and hands turn. If necessary, change to longer stem to correct inadequate clearance between setting wheel and minute wheel.
4. Remove back (page 10*) and take movement from case.
5. Check for obvious blockage of the mechanism by foreign matter (page 17*).
6. Check electronic circuit. (page 13*).
7. Inspect movement for rust or accumulated dirt; clean only when necessary. Cleaning will not usually be required to restore an ACCUTRON timepiece to proper operating condition (page 30*).
8. Inspect indexing mechanism and adjust if necessary (pages 14 to 17*)
DIAL AND ALL HANDS MUST BE IN PLACE FOR THIS PROCEDURE.
9. Recase (page 27*) and after one hour of operation determine rate on an ACCUTRON Rate-recorder or observe timekeeping at dial up for at least three days. Regulate if necessary. Dial up rate should be -2 seconds per day for outside of the wrist wearing. When worn on the inside of the wrist the rate should be +2 seconds per day (page 28*).
10. Set timepiece to correct time and suggest that customer return for comparison with your time standard after using his ACCUTRON for thirty days.

*ACCUTRON Service Manual 214 Series

TECHNICAL INFORMATION SERVICES

Technical Letter

JULY, 1994

MERCURY WATCH CELL SUBSTITUTES

The availability of mercury based, button cells, for the original tuning fork Accutron watches, have become very limited.

The sale of mercury cells have been banned in some states and strictly limited in others. At least one major battery manufacturer has discontinued the manufacture of batteries containing mercury. As a result these cells are becoming extremely difficult or impossible to obtain.

Fortunately there is an option. Silver oxide based watch cells, the type used in most of today's quartz watches, are available in sizes which can be used as substitutes for the most popular sizes of Accutron mercury cells.

There are, however, several important points which must be taken into consideration:

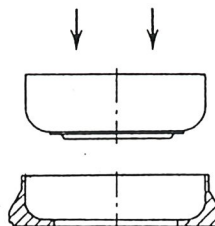
- Silver oxide cells are 1.55 volts, compared to mercury's 1.35 volts. The use of this slightly higher voltage cell will not affect the performance of a correctly adjusted Accutron. If the watch does not operate properly with a 1.55 volt substitute, the fault is either an incorrect adjustment of the movement, or worn parts in the movement.

USING A 1.55V CELL WILL NOT CAUSE ANY DAMAGE TO THE MOVEMENT.

- **FOR ACCUTRON 214**

The cell for the model 214 Accutron has a plastic ring or grommet around it. (The original 214 cell was larger.) **This grommet must be saved and used with the substitute silver cell.** The silver oxide replacement cell is 394 or SR936SW.

**SIMPLY PUSH THE OLD CELL
OUT OF THE GROMMET.
INSERT THE NEW CELL INTO THE GROMMET
NEGATIVE SIDE FIRST
AS ILLUSTRATED**



If additional grommets are needed, they can be ordered from your material distributor using the part # BULOVA NR214.

- **FOR ACCUTRON 218, 224, or 230**

The substitute for the Accutron tuning fork model 218, 224, and 230 is cell #344. This is an exact size equivalent, with no complications. Simply insert the new cell into the movement.

SUBJECT:

ACCUTRON POWER CELLS

SERIES 214, 218, 221, 224, and 230

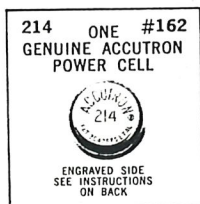
In recent months, you, the Jeweler/Watchmaker, have been deluged with all kinds of information concerning power cells. Equivalency charts have been distributed that show interchangeability between the cells of different manufacturers for various movements. Hearing aid cells have been offered as legitimate replacements for watch cells. Much of this information is very misleading. See reverse side of this letter for "The inside story to outside look-a-likes."

Substitute cells, those without the 214/218/221 imprint, vary greatly in quality and performance. At best, they are similar in construction to genuine cells, but are not subjected to the elaborate testing and quality control checks which Bulova cells undergo. At worst, they are designed for hearing aids and are fundamentally different in quality, construction and longevity. These cells will not last as long, or, far worse, they tend to leak in watch movements. When this occurs, the thinner viscosity and lower surface tension of their electrolyte cause the leakage to spread further. The leakage is extremely corrosive and can destroy part or all of the movement. If this happens, Bulova will not be responsible for the damage that results.

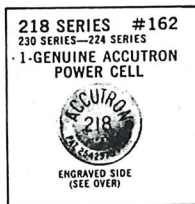
Genuine Bulova Accutron Power Cells are dimensionally correct, electrically efficient, quality controlled to provide maximum reliability and are guaranteed against defects for one year. All Bulova Accutron Power Cells undergo a special aging process which detects and culls out leak-prone cells. Moreover, 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 approved cells will perform properly.

The facts are simple. It is to your benefit to use only power cells stamped "ACCUTRON" since only ACCUTRON stamped cells are genuine and completely guaranteed for twelve months of trouble-free service.

ACCUTRON POWER CELLS



For Series 214 only

For Series 218
For Series 230
For Series 224

For Series 221 only

THE INSIDE STORY to outside look-a-likes...

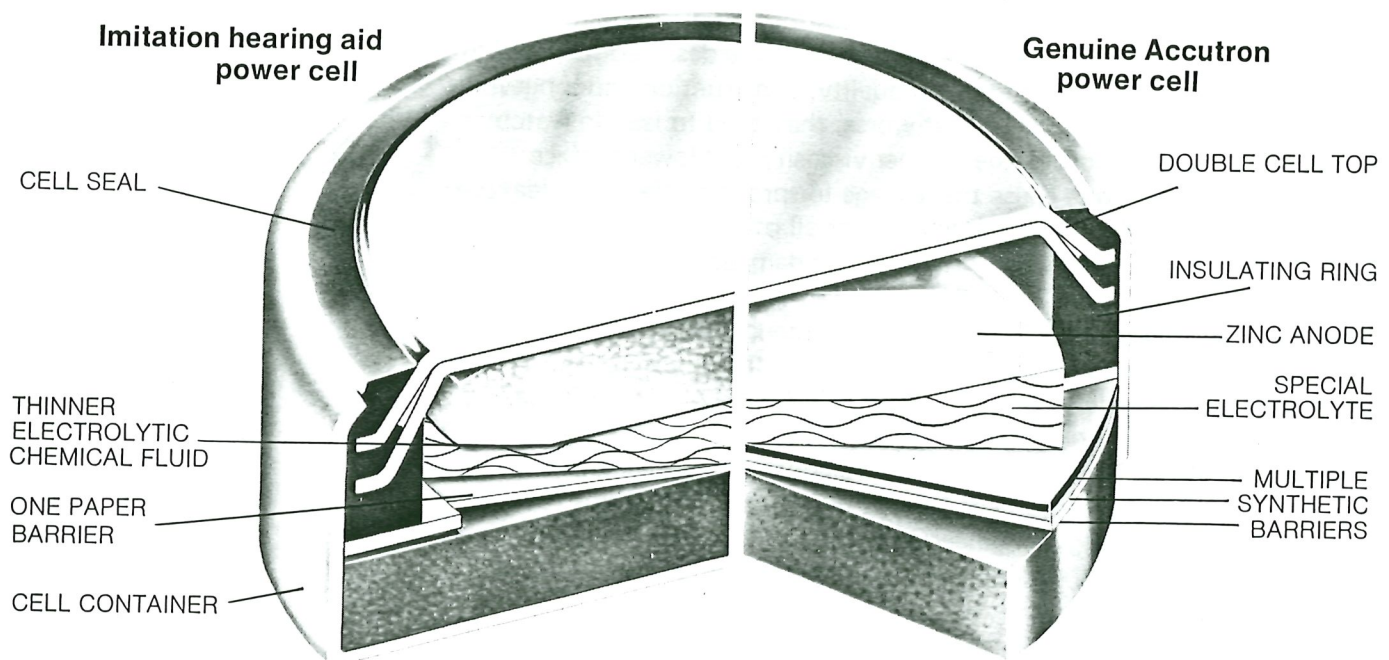
There are some jewelers who put a hearing aid power cell (or some other cheap substitute) in an Accutron watch because they make a few pennies more than if they used a genuine Accutron power cell. Others do the same thing because they don't realize that nothing destroys an Accutron watch faster than a hearing aid cell.

That's a fact.

In fact, there's even a law against claiming that a hearing aid cell can be used in an Accutron watch. A federal court issued a permanent injunction against a battery distributor enjoining him from claiming or advertising that hearing aid cells are fit for use in Bulova's electronic watches.

Only Accutron power cells are made especially for Accutron watches.

And they're guaranteed against defects for 12 months. Here's why.



Imitation hearing aid power cell. One paper barrier, designed for the relatively short active life in a hearing aid. Frequent electrolytic discharge. Thinner electrolytic chemical fluid, designed for a relatively fast discharge. Ideal for a hearing aid but murder in an Accutron watch. Active life 6 months or less in an Accutron watch. Can leak, corrode, destroy an Accutron timepiece. *Not guaranteed by Bulova.*

Genuine Accutron power cell. Multiple synthetic barriers protect the Accutron cell for longer life. Manufactured to close tolerances with many factory inspections. High internal impedance especially designed for long use low power Accutron service. Different thicker electrolytic chemical fluid. Active life one year.

Guaranteed by Bulova against defects for 12 months.



Look for the Accutron inscription
on all genuine Accutron Power Cells.

Genuine Accutron Power Cells available at all authorized Bulova material distributors.

ACCUTRON®/BULOVA® Material Sales Division, 62-10 Woodside Avenue, Woodside, New York

January 1973

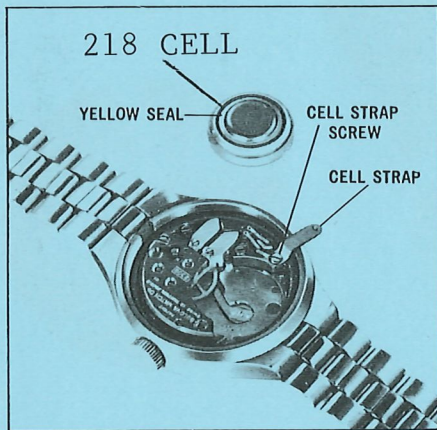
TECHNICAL LETTER

REPLACING THE POWER CELL, TIMING AND REGULATION IN THE 230 SERIES ACCUTRON

REPLACING THE POWER CELL

Important Notes:

- a) With the Cell installed DO NOT KEEP IN SETTING POSITION AS THIS RAPIDLY DRAINS POWER CELL.
- b) The 230 series uses 218 Power Cell.



1. Clean back of case thoroughly to prevent dirt from entering when case back is removed.
2. Unscrew and remove the locking-ring and case back using case wrench #2300 or similar proper fitting tool. For snap-back models, first lay a plastic bag across case back so that it covers opening lip of back. (This precaution will help protect the back and underside of bezel against scratches.) Then insert a suitable case knife under opening lip of case back and open case.

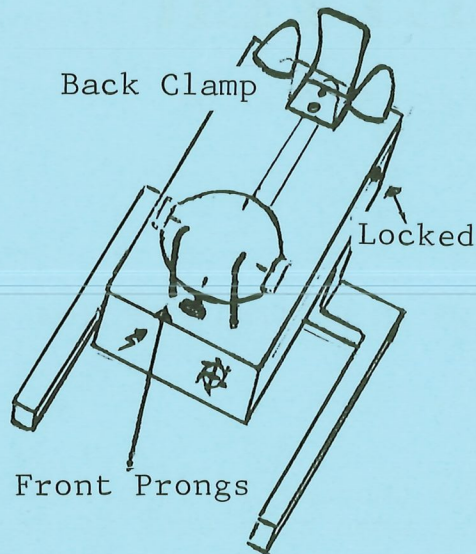
Figure 1

3. Loosen cell strap screw slightly, Figure 1.
4. Swing cell strap away from cell; turn timepiece upside down and power cell will fall out.
5. Before replacing cell (218), always clean away any foreign material in cell compartment and check all points of electrical contact---clean if necessary.
6. Insert power cell with imprinted side facing down into the movement. (Yellow seal up.)
7. Reposition cell strap and tighten screw.
8. In water resistant models, make sure gasket is properly positioned before replacing back.

NOTE: After setting the watch, be sure to push the stem "in" to its normal position. If the sweep second hand does not turn tap the case lightly at "11" to start the tuning fork vibrating.

TECHNICAL INFORMATION SERVICES

TIMING



Vibrograf B200-A
set Beat Selector
at 17280 (one line
trace)



Vibrograf B100-A
set Beat Selector
at 18000 (two line
trace)

Figure 2

To check the rate of this movement using the Vibrograf B200-A or B100-A, it is most important that the crown be placed between the two front stationary prongs of the watchholder. See Figure 2. It may also be necessary to move the movement slightly left or right to locate the position of maximum sensitivity of the pickup coil.

Set the Beat Selector as indicated in Figure 2.

REGULATION

The regulators on the 230 series Accutron are attached to the top of the magnet yoke. See Figure 3.

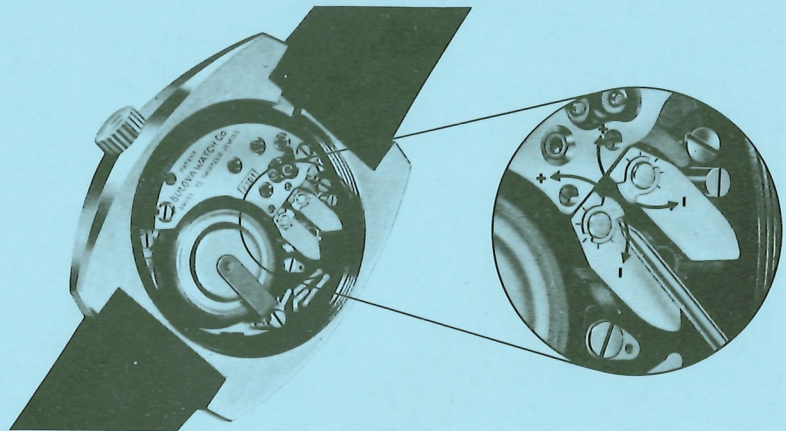


Figure 3

Each side has five (5) lines or reference points. The distance between each point is equal to 4 seconds per day correction. In other words, rotating one of these regulators a distance equal to that between two reference points will change the fork rate 4 seconds per day.

By moving the regulator(s) away from the base of the tuning fork, the watch will go slower; conversely, rotating the regulator(s) toward the base will make the watch go faster. If the required correction is more than 4 seconds a day, it is recommended that both regulators be moved equal amounts. Maximum regulation is 32 seconds per 24 hours.

All models of this series are factory regulated between -1 and +1 seconds per 24 hours in the dial position.