TECHNICAL LETTER

NEW UPDATE OF LISTING BY POWER CELL NUMBER

BULOVA POWER CELL	BULOVA MODEL	BULOVA SERIES	MENS & LADIES	TYPE	NO. OF CELLS
214		214 Series	M	Accutron Analog	1
218		218 Series	M	Accutron Analog	1
	2191.10	219 Series	M	Accutron Analog	1
	2240.10	224 Series	M	Accuquartz Analog	1
	2300.10	230 Series	L	Accutron Analog	1
	2313.10	231 Series	M	Accutron Analog	1
221	2210		L/M	Accutron Analog	1
226	(See 12OTC)				
228	2281		M	Bulova LED	2
	2293.10	229 Series	M	Bulova LED	2
	2403.10		M	Bulova LED	2
	2404.10		M	Bulova LED	2
	2544.10		M	Bulova LED	2
242	2421.10	242 Series	M	Bulova SMQ Analog	1
	2522.10		M	Bulova SMQ Analog	1
	2576.10		M	Bulova SMQ/LCD	1
	2577.10*		M	Bulova SMQ/LCD	1
247	2431.10		L/M	Bulova SMQ Analog	1
	2440.50		L	Caravelle SMQ	1
	2451.10	245 Series	M	Bulova SMQ Analog	1
	2461.10	246 Series	L/M	Bulova SMQ Analog	1
	2470.10		L	Bulova SMQ Analog	1
	2650.10		L	Bulova SMQ Analog	1
	2661.10	266 Series	L	Bulova SMQ Analog	1
	3011.10		L	Bulova LCD	1
	3085.10		M	Bul/Car LCD Perma	2**
	3086.10		M	Bul/Car LCD Perma	2
	3184.10		M	Bul/Car LCD Perma	1
247B	3006.10		M	Bulova LCD w/bulb	2
	3034.10		M	Bulova LCD w/bulb	2
	3035.10		M	Bulova LCD w/bulb	2
	3036.10		M	Bulova LCD w/bulb	2
	3036.11		M	Bulova LCD w/bulb	2
	3226.10		M	Bulova LCD Alarm w/bulb	2
	3227.10		M	Bulova LCD Chrono w/bulb	2
	3236.10		M	Bulova LCD Chrono Alarm w/bulb	2
255	2553.10		M	Bulova LED	2

*Power Cell 604 same as 242 cell

**Originally used one cell. Now improved with 2 cells. Converted merely by replacing a single-contact power cell strap with a double-contact strap-available on request.

TECHNICAL INFORMATION SERVICES
BULOVA WATCH COMPANY INC., 75-20 ASTORIA BLVD., JACKSON HEIGHTS, N.Y. 11370 / 335-6000

BULOVA POWER CELL	BULOVA MODEL	BULOVA SERIES	MENS & LADIES	TYPE	NO. OF CELLS
260	2534.10	253 Series	L	Bulova LED	2
	2604.10		M	Bulova LED	2
	2604.50		M	Caravelle LED	1
	3044.10		M	Bulova LCD w/bulb	1
317	3174.10		L	Bulova LCD Perma	1
	2562.10		M	Bulova SMQ Analog	1
	2633.10*	263 Series	M	Bulova SMQ Analog	1
	3204.10		M	Bulova LCD/Alarm Chrono	1
	3247.10		M	Bulova LCD Chrono Alarm w/bulb	1
601	2480.10		L	Bulova SMQ Analog	1
	2640.10		L	Bulova SMQ Analog	1
602	2500.10		L	Bulova SMQ Analog	1
	2500.50		L	Caravelle SMQ Analog	1
603	2492.10		M	Bulova SMQ Analog	1
	2703.10		L	Bul/Car SMQ Analog	1
	2633.10	(see 317)*	M	Bulova SMQ Analog	1
604 use 242	2576.10		M	Bulova SMQ/LCD	1
	2577.10		M	Bulova SMQ/LCD	1
605	2623.10	262 Series	M	Bulova SMQ Analog	1
	2682.10		M	Bulova SMQ Analog	1
607	2710.10		L	Bulova SMQ Analog	1
608	3250.10		L	Bulova LCD ELEC/Analog	1

SPECIAL POWER CELL FOR PHANTOM WATCHES				
Renata 33	3216.10	M	Bulova LCD	1

CARAVELLE POWER CELL	CARAVELLE MODEL	MENS & LADIES	TYPE	NO. OF CELLS
6UDC	6UDC	L	Analog	1
70T	70T	L	Analog	1
120TC	120TC	M	Analog	1
	120UC	M	Analog	1
	120UCD	M	Analog	1
	2260 (Bulova)	M	Bulova LCD	1
12UECD	12UECD	M	Analog	1
	13UKCB	M	Analog	1
	13UKCD	M	Analog	1

*2633.10 Uses Power Cell #603 in depthometer case #8459. In other cases power cell 317 is used.

It's Bulova Watch Time LETTER # 48M

DECEMBER 1980

Technical Letter

Subject: Power Cell Listing By Model And Series Numbers

MODEL	SERIES	BULOVA POWER CELL	MEN LADIES	TYPE	NO. OF CELLS
	214	214	M	Accutron Analog	1
	218	218	M	Accutron Analog	1
2191.10	219	218	M	Accutron Analog	1
2210		221	L/M	Accutron Analog	1
2240.10	224	218	M	Accuquartz Analog	1
2260		120TC(Caravelle)	M	Bulova LCD	1
2281		228	M	Bulova LED	2
2293.10	229	228	M	Bulova LED	2
2300.10	230	218	L	Accutron Analog	1
2313.10	231	218	M	Accutron Analog	1
2403.10		228	M	Bulova LED	2
2404.10		228	M	Bulova LED	2
2421.10	242	242	M	Bulova SMQ Analog	1
2431.10		247	L/M	Bulova SMQ Analog	1
2440.50		247	L	Caravelle SMQ	1
2451.10	245	247	M	Bulova SMQ Analog	1
2461.10	246	247	L/M	Bulova SMQ Analog	1
2470.10		247	L	Bulova SMQ Analog	1
2480.10		601	L	Bulova SMQ Analog	1
2492.10		603	M	Bulova SMQ Analog	1
2500.10		602	L	Bulova SMQ Analog	1
2500.50		602	L	Caravelle SMQ Analog	1
2522.10		242	M	Bulova SMQ Analog	1
2534.10	253	260	L	Bulova LED	2
2544.10		228	M	Bulova LED	2
255[illegible].10		255	M	Bulova LED	2
2[illegible]2.10		317	M	Bulova SMQ Analog	1
[illegible]76.10		242 *	M	Bulova SMQ/LCD	1
2577.10		242 *	M	Bulova SMQ/LCD	1
2604.10		260	M	Bulova LED	2
2604.50		260	M	Caravelle LED	1
2623.10	262	605	M	Bulova SMQ Analog	1
2633.10	263	317 **	M	Bulova SMQ Analog	1
2640.10		601	L	Bulova SMQ Analog	1
2650.10		247	L	Bulova SMQ Analog	1
2661.10	266	247	L	Bulova SMQ Analog	1
2682.10		605	M	Bulova SMQ Analog	1
2703.10		603	L	Bul/Car SMQ Analog	1
2710.10		607	L	Bulova SMQ Analog	1

*For Power Cell 604 use 242 cell

**Except in depthometer case 8459 which uses power cell #603

TECHNICAL INFORMATION SERVICES
BULOVA WATCH COMPANY, INC., 75-20 ASTORIA BLVD., JACKSON HEIGHTS, NEW YORK 11370 / (212) 335-6000
A Subsidiary of Loews Corporation

MODEL	SERIES	BULOVA POWER CELL	MEN LADIES	TYPE	NO. OF CELLS
3006.10		247B	M	Bulova LCD W/Bulb	2
3011.10		247	L	Bulova LCD	1
3034.10		247B	M	Bulova LCD W/Bulb	2
3035.10		247B	M	Bulova LCD W/Bulb	2
3036.10		247B	M	Bulova LCD W/Bulb	2
3036.11		247B	M	Bulova LCD W/Bulb	2
3044.10		260	M	Bulova LCD W/Bulb	1
3085.10		247	M	Bul/Car LCD Perma	2*
3086.10		247	M	Bul/Car LCD Perma	2
3174.10		317	L	Bulova LCD Perma	1
3184.10		247	M	Bul/Car LCD Perma	1
3204.10		317	M	Bulova LCD/Alarm Chrono	1
3216.10		Renata 33	M	Bulova LCD/Phantom	1
3226.10		247B	M	Bulova LCD Alarm W/Bulb	2
3227.10		247B	M	Bulova LCD Chrono W/Bulb	2
3236.10		247B	M	Bulova LCD Chrono	2
3247.10		317	M	Bulova LCD Chrono W/Bulb	1
3250.10		608	L	Bulova LCD ELEC/ Analog	1

MODEL	SERIES	CARAVELLE POWER CELL	MEN LADIES	TYPE	No. OF CELLS
6UDC		6UDC	L	Analog	1
70T		70T	L	Analog	1
120TC		120TC	M	Analog	1
120UC		120TC	M	Analog	1
120UCD		120TC	M	Analog	1
12UECD		12UECD	M	Analog	1
13UKCB		12UECD	M	Analog	1
13UKCD		12UECD	M	Analog	1

*Originally used one cell. Now improved with 2 cells. Converted merely by replacing a single-contact power cell strap with a double-contact strap-available on request.

BULOVA LETTER # 16

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.

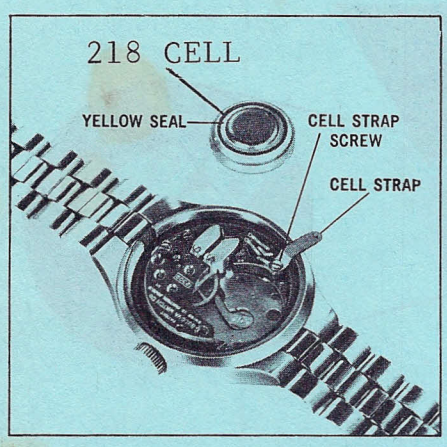
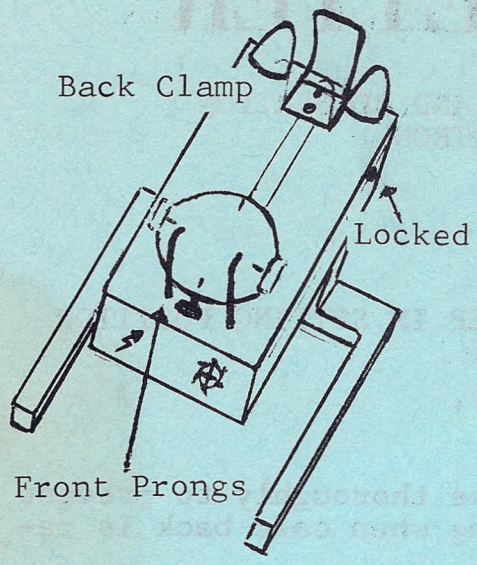


Figure 1

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.
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.

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.

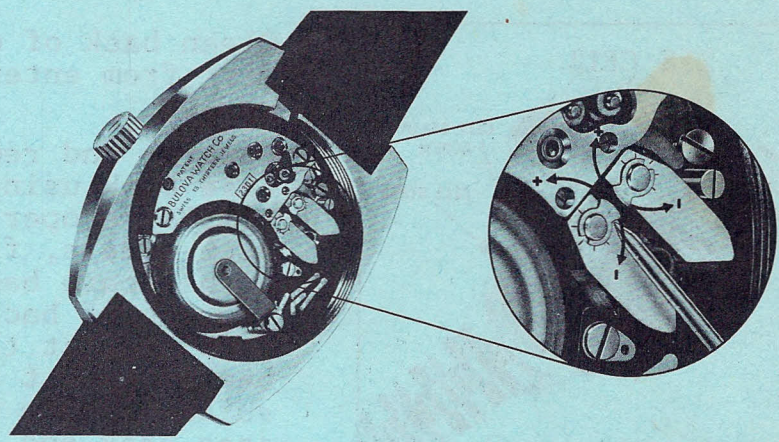


Figure 3

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.

BULOVA LETTER # 7

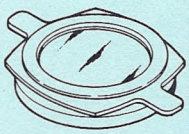
November 1971

TECHNICAL LETTER

CARAVELLE SHOCK RESISTANT DEVICE

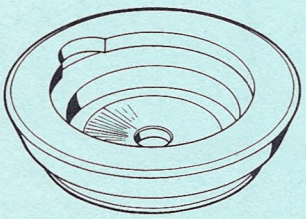
(used in RJ, RO, RR, RS, 2 SO, 11 DO, 11 DOD, 11 DP, 11 DPD, 12 OTC, 12 OUC and 12 OUCD Movements)

When placing an order for these component parts, specify movement model, part name and upper or lower setting (or preferably refer to interchangeability catalog for specific part number and basic model).



Balance Cap Jewel & Setting

Balance Hole Jewel & Spring



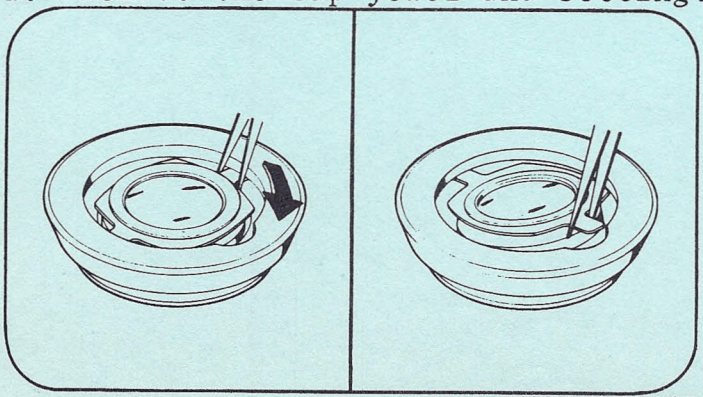
Setting

*Separate cap jewels and springs are used in the following movements:

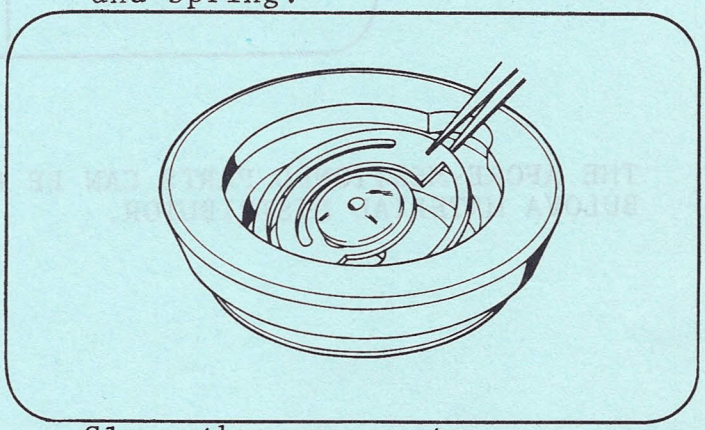
2 SO, 11 DO, 11 DOD, 11 DP, 11 DPD and 12 OTC

DISASSEMBLY

a. Remove the cap jewel and setting.



b. Remove the balance hole jewel and spring.

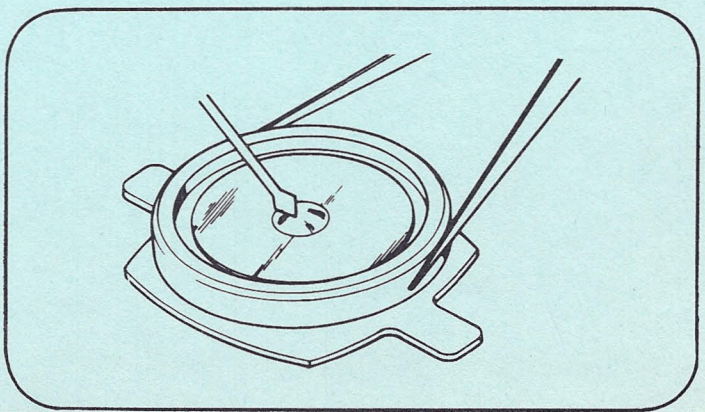


c. Clean the components.

ASSEMBLY & OILING

a. Insert the balance hole jewel and spring. Make sure it is positioned with the domed side of the jewel up.

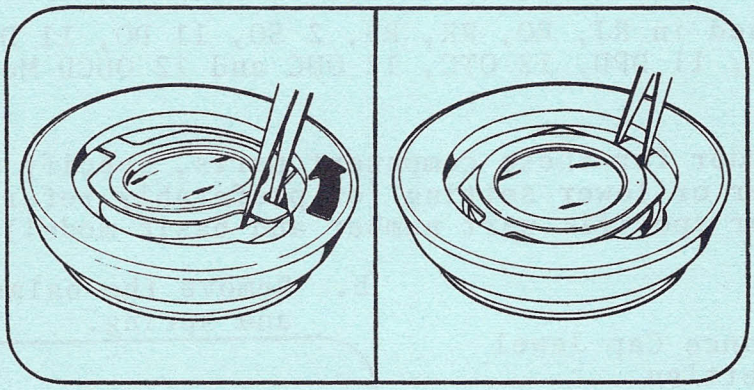
b. Oil the cap jewel. Make sure that there is no dirt or stain on the jewel surface.



TECHNICAL INFORMATION SERVICES

BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000

c. Insert the balance cap jewel and spring. Rotate the spring 90° from its place of insertion..



THE AFORE-MENTIONED PARTS CAN BE PURCHASED THROUGH YOUR AUTHORIZED BULOVA MATERIAL DISTRIBUTOR.

BULOVA

LETTER # 6

November 1971

TECHNICAL LETTER

CARAVELLE SHOCK RESISTANT DEVICE

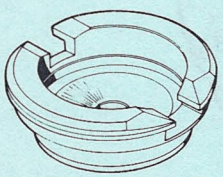
(used in 5AW, 5BW, RP and RK Movements)

When placing an order for these component parts, specify movement model, part name, and upper or lower setting (or preferably refer to interchangeability catalog for specific part number and basic model).

Shock Spring

Balance Cap Jewel and Setting

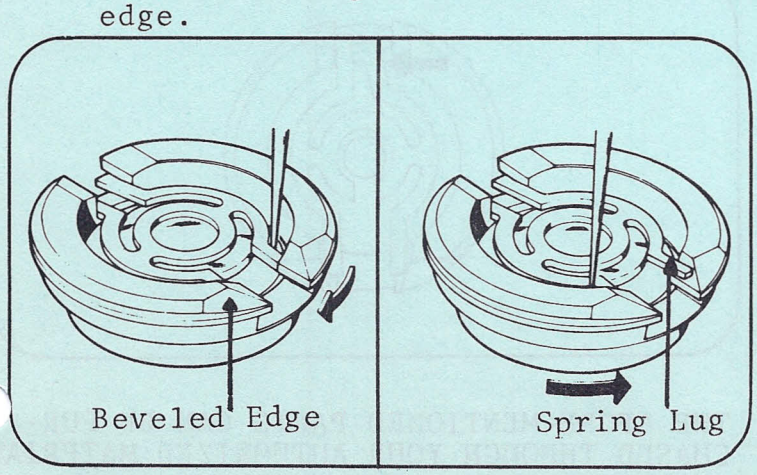
Balance Hole Jewel and Spring



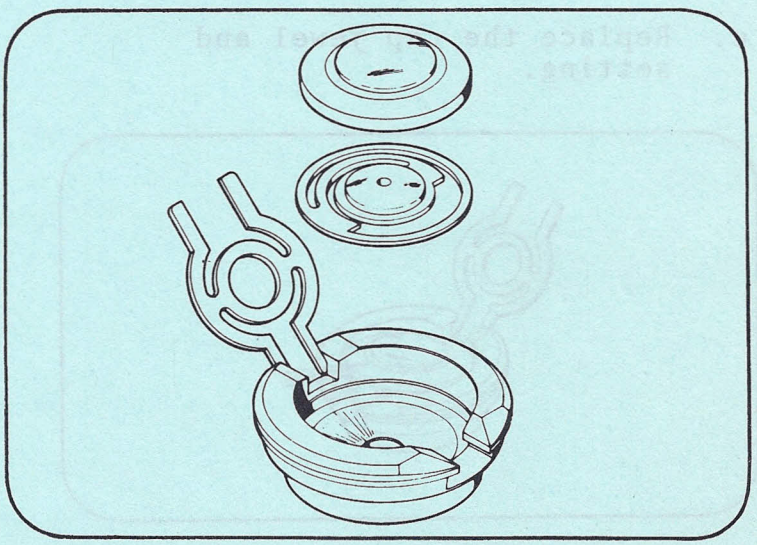
Setting

DISASSEMBLY

a. Disengage the lugs of the shock spring one at a time, on the side of the setting with the beveled edge.



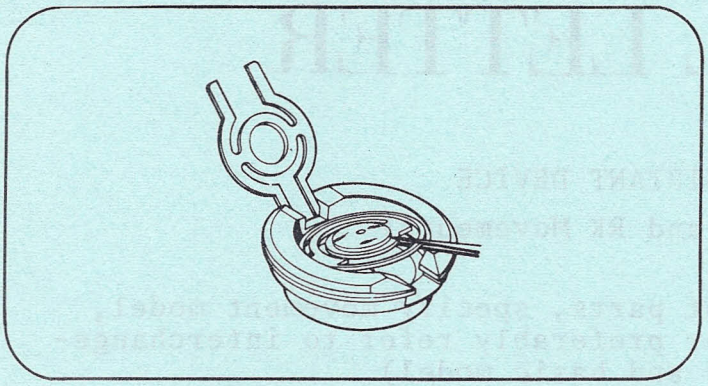
b. Remove the cap jewel and setting and the balance hole jewel and spring.



c. Clean the components.

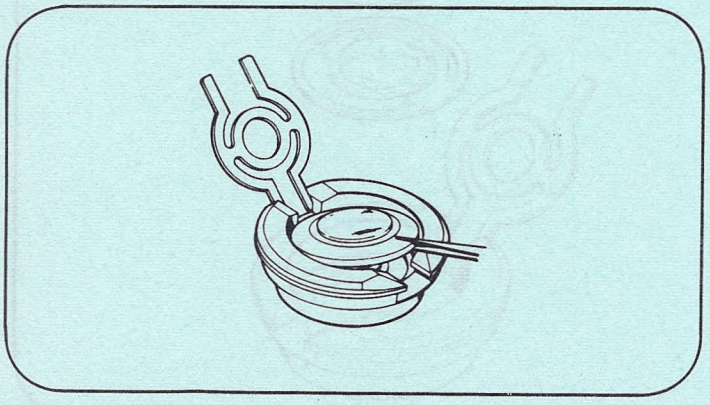
ASSEMBLY AND OILING

a. Insert the balance hole jewel and spring. Make sure it is positioned with the domes side of the jewel up.

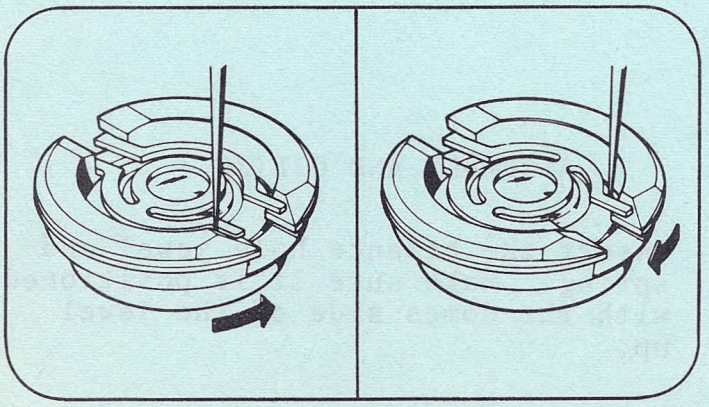


b. Oil the cap jewel. Make sure that there is no dirt or stain on the jewel surface.

c. Replace the cap jewel and setting.

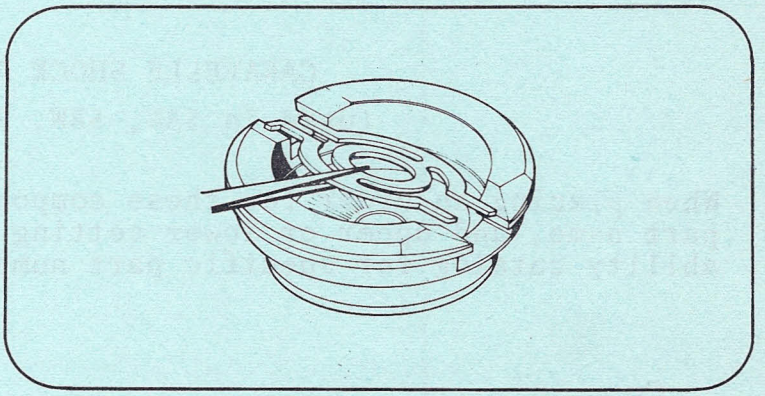


d. Replace the lugs of the shock spring one at a time.

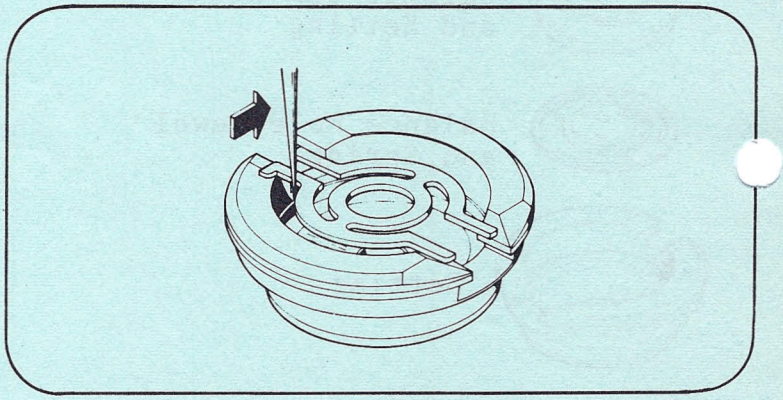


CHANGING THE SHOCK SPRING

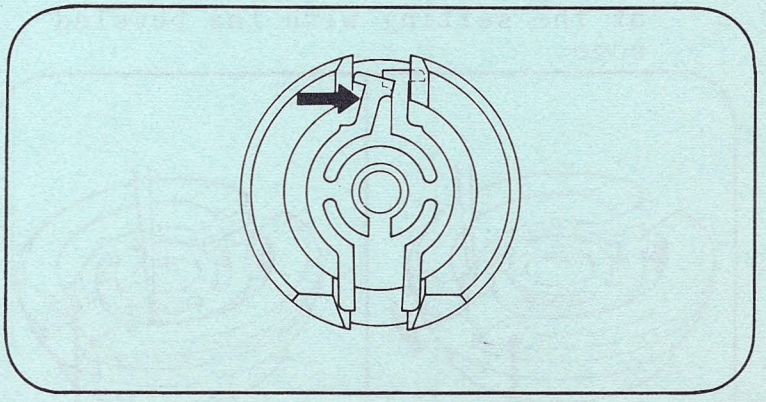
a. Remove the old shock spring. Remove cap jewel and setting and hole jewel and spring.



b. Insert one leg of a new shock spring into the groove under the frame.



c. Insert the other leg of the cap jewel spring into the groove by bending it inwards.



THE AFORE-MENTIONED PARTS CAN BE PURCHASED THROUGH YOUR AUTHORIZED MATERIAL DISTRIBUTOR.

BULOVA LETTER # 6

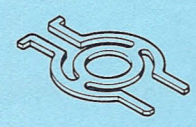
November 1971

TECHNICAL LETTER

CARAVELLE SHOCK RESISTANT DEVICE

(used in 5AW, 5BW, RP and RK Movements)

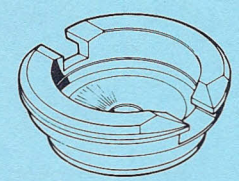
When placing an order for these component parts, specify movement model, part name, and upper or lower setting (or preferably refer to interchangeability catalog for specific part number and basic model).



Shock Spring

Balance Cap Jewel and Setting

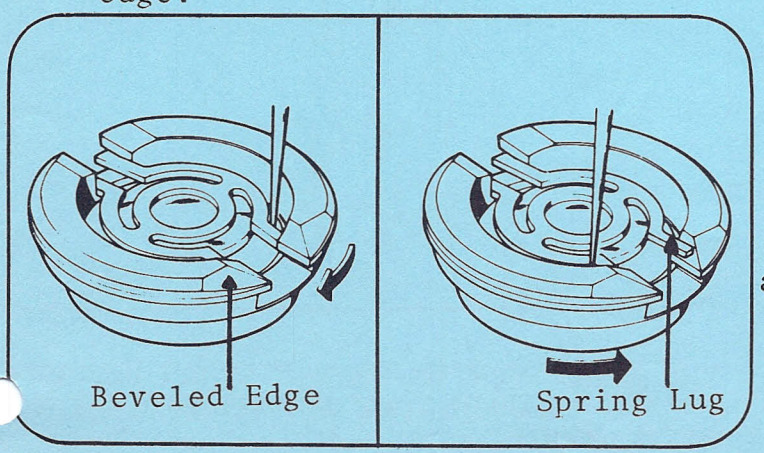
Balance Hole Jewel and Spring



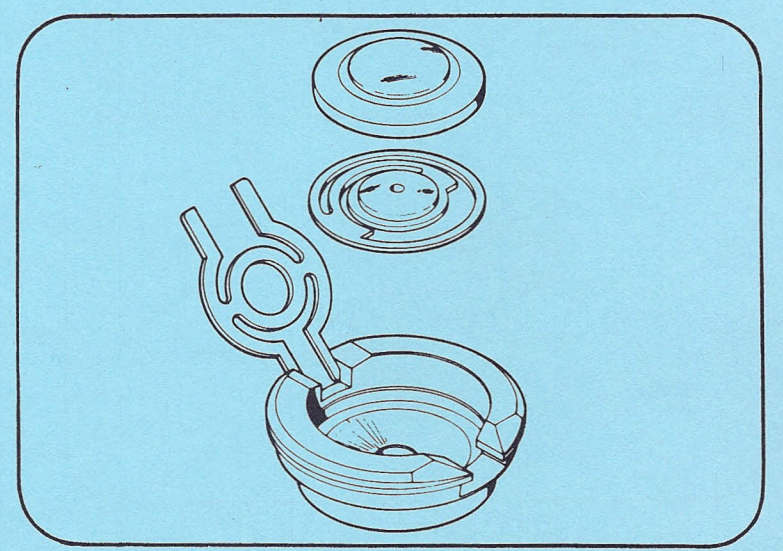
Setting

DISASSEMBLY

a. Disengage the lugs of the shock spring one at a time, on the side of the setting with the beveled edge.



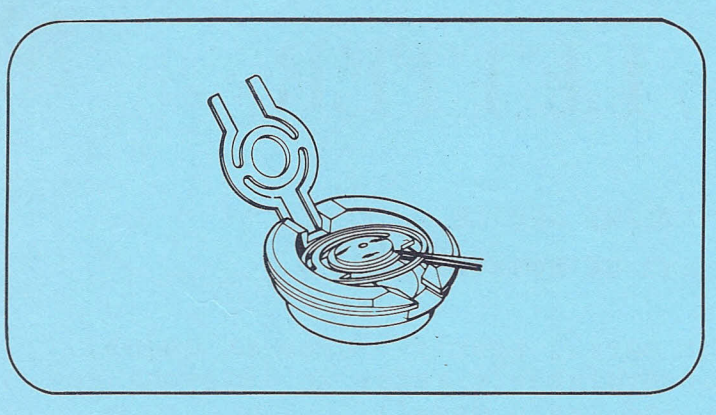
b. Remove the cap jewel and setting and the balance hole jewel and spring.



c. Clean the components.

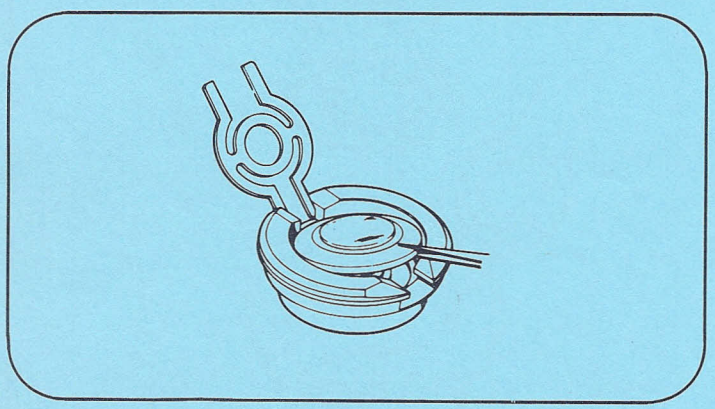
ASSEMBLY AND OILING

a. Insert the balance hole jewel and spring. Make sure it is positioned with the domes side of the jewel up.

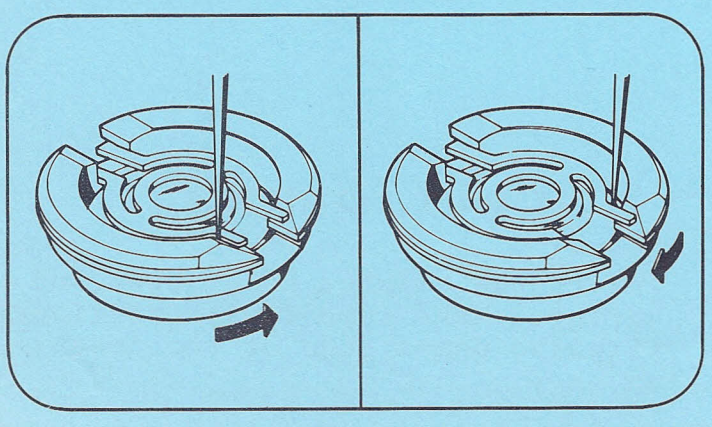


b. Oil the cap jewel. Make sure that there is no dirt or stain on the jewel surface.

c. Replace the cap jewel and setting.

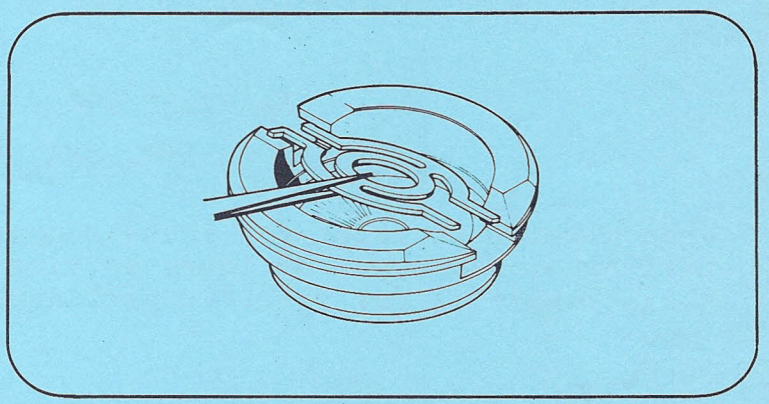


d. Replace the lugs of the shock spring one at a time.

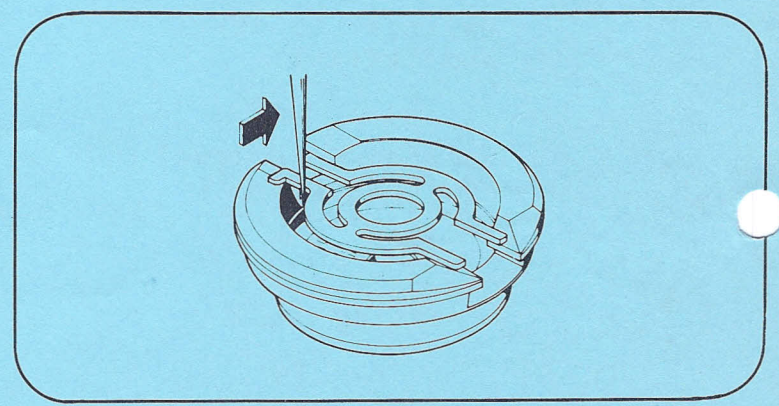


CHANGING THE SHOCK SPRING

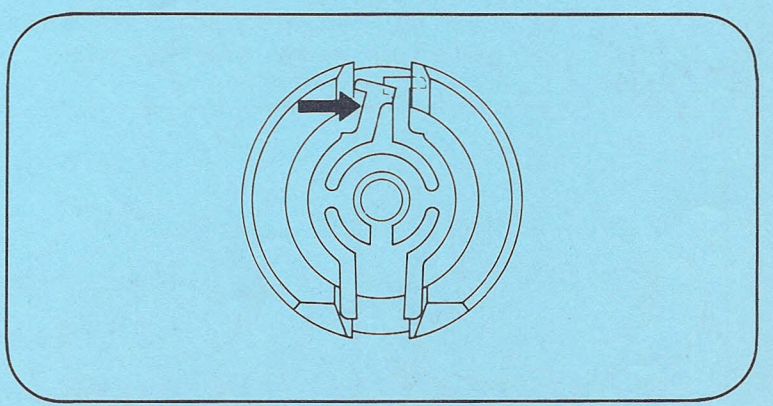
a. Remove the old shock spring. Remove cap jewel and setting and hole jewel and spring.



b. Insert one leg of a new shock spring into the groove under the frame.



c. Insert the other leg of the cap jewel spring into the groove by bending it inwards.



THE AFORE-MENTIONED PARTS CAN BE PURCHASED THROUGH YOUR AUTHORIZED MATERIAL DISTRIBUTOR.

BULOVA

LETTER # 3

October 1971

TECHNICAL LETTER

CARAVELLE Fiber Glass Cases
Case Numbers 7089 & 7090

The above-mentioned CARAVELLE fiber glass cases are of a one-piece construction, with a separate metal bezel ring.

TO OPEN CASE

1. If removal of the movement is necessary, remove the crown and female post by pulling the crown outward in the usual manner until the female post pulls free from the male stem. If removal of the movement is not necessary, the crown may remain.

2. Press the blade of a knife under the opening lip of the bezel ring and tilt the knife toward the crystal until the bezel comes off.

3. Remove the crystal and the crystal gasket by hand. A crystal pump may be used if the crown has been removed in Step 1.

4. Separate the gasket from its crystal. (If the gasket remained in its case, remove it.)

5. If the crown was removed in Step 1, the movement may now be removed from its case, if necessary.

TO RECLOSE CASE

1. If the movement has been removed, replace it in its case with the male stem placed into the case tube.

2. Place the crystal gasket into its bed in the case.

3. Place the crystal into its gasket, first at the 12 o'clock and then at the 6 o'clock position, by pressing down on the crystal using finger pressure. Care must be taken not to damage the gasket.

4. If the crown has been removed, place it on the case tube; press and turn it until the female post attached to the crown and male stem in the movement snap together.

5. Press the metal bezel ring on the case with finger pressure.

BULOVA

LETTER # 1

July 1971

TECHNICAL LETTER

ACCUTRON 218 Series - CASING SPRINGS #319A

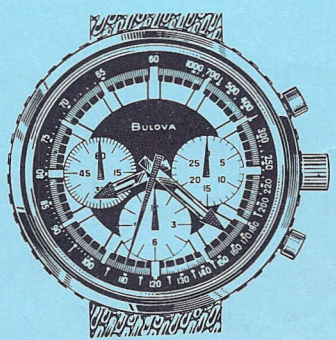
Due to a new development, most 218 ACCUTRONS no longer need a casing spring to hold the movement in place. If the models in your stock, or those in for repair, do not contain one, it was not because of an oversight but rather because it is not required.

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

BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000

BULOVA

LETTER # 5

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:

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

BULOVA LETTER #48

MAY 1979

TECHNICAL LETTER

UPDATE OF LISTING BY POWER CELL NUMBER
PAGE 7 OF BULOVA POWER CELL CATALOG

BULOVA POWER CELL	BULOVA MOVEMENT/ MODULE	MENS & LADIES	TYPE	NO. OF CELLS
214	Series: 214	M	Accutron Analog	1
218	Series: 218	M	Accutron Analog	1
	" 219	M	Accutron Analog	1
	" 224	M	Accuquartz Analog	1
	" 230	L	Accutron Analog	1
	" 231	M	Accutron Analog	1
221	Model: 2210	L/M	Accutron Analog	1
228	Series: 228	M	Bulova LED	2
	" 229	M	Bulova LED	2
	" 240	M	Bulova LED	2
	" 254	M	Bulova LED	2
242	Series: 242	M	Bulova SMQ Analog	1
	Model: 252	M	Bulova SMQ Analog	1
	" 2576	M	Bulova SMQ/LCD	1
247	Series: 243	L/M	Bulova SMQ Analog	1
	" 244	L	Bulova SMQ Analog	1
	" 245	M	Bulova SMQ Analog	1
	" 246	L/M	Bulova SMQ Analog	1
	" 2470	L	Bulova SMQ Analog	1
	" 265	L	Bulova SMQ Analog	1
	" 266	L	Bulova SMQ Analog	1
	Model: 3011	L	Bulova LCD	1
	" 3085.10	M	Bulova LCD	*1
	" 3085.11	M	Bulova LCD	2
	" 3086.10	M	Bulova LCD	2
247B	Model: 3006	M	Bulova LCD w/bulb	2
	" 3034	M	Bulova LCD w/bulb	2
	" 3035	M	Bulova LCD w/bulb	2
	" 3036	M	Bulova LCD w/bulb	2
255	Series: 255	M	Bulova LED	2

* This will be changed to 2 by retrofit instructions to follow.

TECHNICAL INFORMATION SERVICES

BULOVA WATCH COMPANY INC., 75-20 ASTORIA BLVD., JACKSON HEIGHTS, N.Y. 11370 / 335-6000

BULOVA POWER CELL	BULOVA MOVEMENT/ MODULE	MENS & LADIES	TYPE	NO. OF CELLS
260	Series: 253	L	Bulova LED	2
	Model: 2604	M	Bulova LED	2
	" 3044	M	Bulova LCD w/bulb	1
317	Model: 3174	L	Bulova LCD	1
	" 2562	M	Bulova SMQ Analog	1
601	Model: 2480	L	Bulova SMQ Analog	1
	" 2640	L	Bulova SMQ Analog	1
602	Model: 2500	L	Bulova SMQ Analog	1
	" 2510	L	Bulova SMQ Analog	1
603	Model: 2492	M	Bulova SMQ Analog	1
604 or 242	Model: 2577	M	Bulova SMQ/LCD	1
120TC Used also for Caravelle Movements	Model: 2260	M	Bulova LCD	1

CARAVELLE POWER CELL	CARAVELLE MOVEMENT/ MODULE	MENS & LADIES	TYPE	NO. OF CELLS
6UDC	6UDC	L	Analog	1
7OT	7OT	L	Analog	1
12OTC	12OTC	M	Analog	1
	12OUC	M	Analog	1
	12OUCD	M	Analog	1
12UECD	12UECD	M	Analog	1
	13UKCB	M	Analog	1
	13UKCD	M	Analog	1
260	2604.50	M	Caravelle LED	2
247	3085.10	M	Caravelle LCD	*1
	3085.11	M	Caravelle LCD	2
	3086.10	M	Caravelle LCD	2
317	3174.10	L	Caravelle LCD	1
	3184.10	M	Caravelle LCD	2

* This will be changed to 2 by retrofit instructions to follow.

SUBJECT: **POWER CELL INFORMATION** (continued)

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
3849	92941	2470.10	247
3850	92942	2470.10	247
3850	92943	2470.10	247
3892	92858	2421.10	242
3907	92930	2470.10	247
3908	92931	2470.10	247
7970	92800	2421.10	242
7970	92801	2421.10	242
8012	92809	2423.10	242
8012-1	91800	2423.10	242
8089	92822	2423.10	242
8112	91809	2423.10	242
8112	91810	2423.10	242
8162	90903	2470.10	247
8162-1	92922	2470.10	247
8162-2	92923	2470.10	247
8179	91807	2426.10	242
8179-1	92826	2426.10	242
8179-1	92862	2426.10	242
8180	91816	2423.10	242
8181	92827	2423.10	242
8181	92863	2423.10	242
8184	92924	2470.10	247
8184-1	90904	2470.10	247
8185	92925	2470.10	247
8186	92926	2470.10	247
8187	90905	2470.10	247
8188	92927	2470.10	247
8189	92928	2470.10	247
8189-1	90906	2470.10	247

SOLID STATE DIGITALS

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
F 51	82200	3006.10	247
F 51	82201	3006.10	247
F 52	82202	3006.10	247
F 52	82203	3006.10	247
F 53	81200	3006.10	247
F 53	81201	3006.10	247
N 106	81700	2604.10	260
N 107	81701	2604.10	260
N 108	81702	2604.10	260
N 108	81707	2604.10	260
N 109	82700	2604.10	260
N 110	82701	2604.10	260
N 111	82702	2604.10	260
N 111	82710	2604.10	260
N 112	82703	2604.10	260
N 112	82711	2604.10	260
N 121	81370	3011.10	247
N 122	81371	3011.10	247
N 123	82370	3011.10	247
N 124	82371	3011.10	247
N 125	82372	3011.10	247
N 130	81300	3044.10	260
N 131	81301	3044.10	260
N 132	81302	3044.10	260
N 133	82300	3044.10	260
N 134	82301	3044.10	260
N 135	81706	2604.10	260
N 137	82709	2604.10	260
N 151	81307	3034.10	247
N 151	81308	3034.10	247
N 152	81309	3034.10	247
N 153	82311	3034.10	247
N 153	82312	3034.10	247
N 154	82313	3034.10	247
N 155	81312	3036.10	247
N 157	81314	3036.10	247
N 158	82314	3036.10	247
N 159	82315	3036.10	247
N 159	82316	3036.10	247
N 160	82317	3036.10	247
N 167	82377	3011.10	247
N 168	82373	3011.10	247
N 168	82374	3011.10	247
N 169	82375	3011.10	247
N 170	82376	3011.10	247
N 175	82322	3035.10	247
N 175	82335	3034.10	247
N 176	81316	3035.10	247

(continued)

SUBJECT: **POWER CELL INFORMATION** (continued)

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
N 176	81321	3034.10	247
N 183	81711	2604.50 (Caravelle)	260
N 184	81710	2604.50 (Caravelle)	260
N 185	81709	2604.50 (Caravelle)	260
N 186	81708	2604.50 (Caravelle)	260
N 219	82333	3085.10	247
N 220	82334	3085.10	247
N 221	82378	3174.10	317
N 222	80370	3174.10	317
N 223	82379	3174.10	317
N 224	82380	3174.10	317
N 225	82381	3174.10	317
N 226	80371	3174.10	317
3548	82600	2293.10/2294.10	228
3548	82613	2293.10/2294.10	228
3601	82605	2403.10/2404.10	228
3601	82606	2403.10/2404.10	228
T3602	81600	2403.10/2404.10	228
T3602	81601	2403.10/2404.10	228
3611	82601	2293.10/2294.10	228
3611	82602	2293.10/2294.10	228
3612	82603	2293.10/2294.10	228
3612	82608	2293.10/2294.10	228
3613	82604	2293.10/2294.10	228
3649	82607	2403.10/2404.10	228
3650	82670	2534.10/2535.10	260
3650	82678	2534.10/2535.10	260
3650	82680	2534.10/2535.10	260

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
3651	82673	2534.10/2535.10	260
3652	82674	2534.10/2535.10	260
3652	82675	2534.10/2535.10	260
3653	82671	2534.10/2535.10	260
3653	82672	2534.10/2535.10	260
3687	82640	2553.10	255
3687	82641	2553.10	255
3688	82643	2553.10	255
3689	82642	2553.10	255
3690	82644	2553.10	255
3690	82645	2553.10	255
3697	82614	2544.10	228
3697	82615	2544.10	228
3697	82616	2544.10	228
3697	82617	2544.10	228
3697	82646	2544.10	228
3697	82647	2544.10	228
3698	81640	2544.10	228
3699	82648	2544.10	228
3708	82609	2544.10	228
3709	82610	2544.10	228
3709	82618	2544.10	228
3710	82611	2544.10	228
3710	82612	2544.10	228
8005	80670	2553.10	255
8005-1	82676	2553.10	255
8005-2	82679	2553.10	255
8005-3	80671	2553.10	255

BULOVA

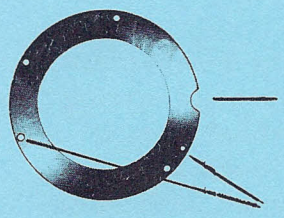
LETTER # 18
December 1973

TECHNICAL LETTER

BENCH TIPS ON THE DIGITAL READ-OUT

CARAVELLE MODEL 11OWU

1. After fitting the cannon pinion, position the hour ring rest #64T. Its cut-out aligns with the stem and two locating pins hold it in position.



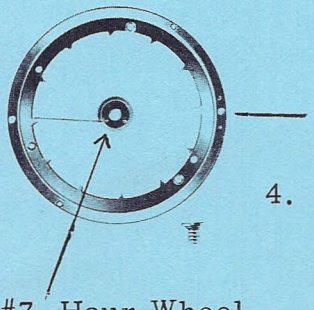
#9 

2. Replace the minute wheel bridge #9, the hour wheel #7 and the hour wheel guard #101 and fasten them all into place with minute wheel bridge screws #44A.

#7 

#101 

3. Replace the toothed hour ring #64R carefully avoiding damage to the hour wheel spring. The hole between two dots aligns with the stem; the same two locating pins used for hour ring rest #64T, hold the ring #64R in position. Its screws #159 fasten both the ring and its rest.



4. Check the jump action of the hour wheel. Turn it with the stem, until its spring rests against a tooth of the toothed hour ring #64T. Then continue turning and observe the hour wheel and spring. The hour wheel should move freely. The spring should be slightly flexed at contact point with a tooth, should arch more sharply as the hour wheel turns and then spring briskly to the next tooth at let-off.

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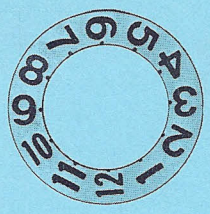
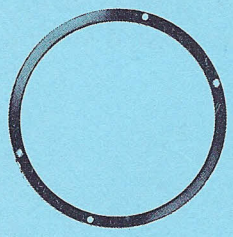
TECHNICAL INFORMATION SERVICES

BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000, Ext. 775, 777



5. Look at the under side of the hour disc #64D. Observe the V shaped recess that ends in a thin slot. Place the disc in position and be sure that the hour wheel spring enters the slot.



6. Position dial rest #148 and screw into position with dial rest screws #159.
Recheck the functioning of the hour jumping mechanism. Using the crown, turn the hour wheel. When its spring is freed from a tooth of the toothed hour wheel ring it should propel the disc to the next hour. Check that the line next to the numeral on the disc is aligned with stem.

7. Preposition the minute disc. Align the zero mark of the minute disc with the line of any hour numeral. Hold in position and press on to the cannon pinion. Recheck.

8. Align zero mark of the second disc with the zero mark of the minute disc and press into place.

BULOVA

LETTER #18 R

Revised May 1975

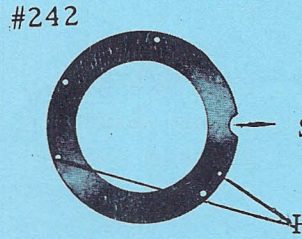
TECHNICAL LETTER

BENCH TIPS ON THE DIGITAL READ-OUT

CARAVELLE MODEL 11 OWU

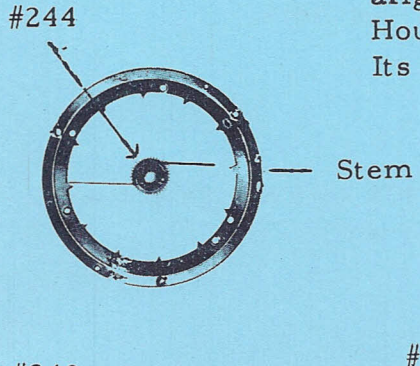
Note: New digital part numbers

1. After fitting the Cannon Pinion, position the Hour Indicator Support Seat #242. Its cut-out aligns with the stem and two locating pins hold it in position.



2. Replace the Minute Wheel Bridge #9, the Hour Indicator Drive Wheel #244 and the Hour Indicator Drive Wheel Cover #243 and fasten them all into place with Minute Wheel Bridge Screws #44A.

3. Replace the Toothed Hour Indicator Support #240, carefully avoiding damage to the Hour Drive Wheel Spring, (see #244). As a guide in repositioning, note the two struck dots on ring #240, which are aligned with the stem; the same two locating pins used for the Hour Indicator Support Seat #242, hold the Support #240 in position. Its screws #245 fasten both the Support and its Seat.



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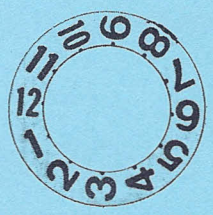
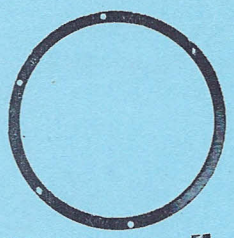
4. Check the jump action of the Hour Indicator Drive Wheel #244 by turning it with the stem until its longer spring rests against a tooth of the Toothed Hour Indicator Support #240. Then continue turning and observing the Hour Indicator Drive Wheel #244. The Hour Indicator should move freely. The longer spring should be slightly flexed at contact point with a tooth, should arch more sharply as the Hour Drive Wheel turns and then spring briskly to the next tooth at let-off.



#237

5. Look at the underside of the Hour Indicator #237. Observe the V shaped recess that ends in a thin slot, which is located at the underside of the 11 o'clock on the Indicator. (At the opposite side between 3 and 5 there is a wide cut-out to accomodate the short safety spring.) Place the Indicator in position, so that the longer spring enters the thin slot located under 11 o'clock.


#241


#245

6. Position Hour Indicator Support Cover #241 and screw into position with its screws #246.
Recheck the functioning of the hour jumping mechanism. Using the crown, turn the Hour Drive Wheel #244. When its spring is freed from a tooth of the Toothed Hour Indicator Support #240, it should propel the Hour Indicator to the next hour. Check that the hour line next to the numeral on the Hour Indicator is aligned with the stem.


#238

7. Pre-position the Minute Indicator #238. Align the zero mark of the Minute Indicator with the line of any hour numeral. Hold in position and press onto the cannon pinion. Recheck.


#239

8. Align zero mark of the Second Indicator #239 with the zero mark of the Minute Indicator #238 and press into place.

BULOVA

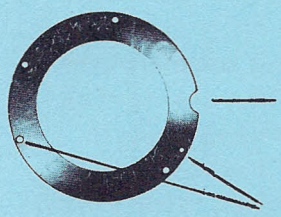
LETTER # 18
December 1973

TECHNICAL LETTER

BENCH TIPS ON THE DIGITAL READ-OUT

CARAVELLE MODEL 11OWU

1. After fitting the cannon pinion, position the hour ring rest #64T. Its cut-out aligns with the stem and two locating pins hold it in position.



Stem

Holes for Locating Pins

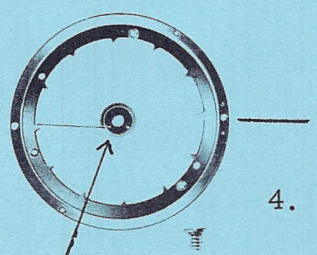
#9 

#7 

#101 

2. Replace the minute wheel bridge #9, the hour wheel #7 and the hour wheel guard #101 and fasten them all into place with minute wheel bridge screws #44A.

3. Replace the toothed hour ring #64R carefully avoiding damage to the hour wheel spring. The hole between two dots aligns with the stem; the same two locating pins used for hour ring rest #64T, hold the ring #64R in position. Its screws #159 fasten both the ring and its rest.



Stem

#7 Hour Wheel and Spring

4. Check the jump action of the hour wheel. Turn it with the stem, until its spring rests against a tooth of the toothed hour ring #64T. Then continue turning and observe the hour wheel and spring. The hour wheel should move freely. The spring should be slightly flexed at contact point with a tooth, should arch more sharply as the hour wheel turns and then spring briskly to the next tooth at let-off.

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TECHNICAL INFORMATION SERVICES

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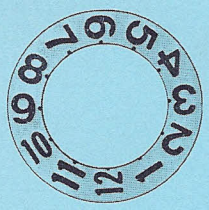
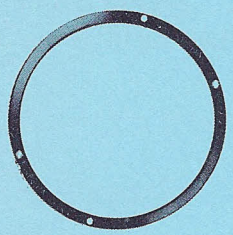


5. Look at the under side of the hour disc #64D. Observe the V shaped recess that ends in a thin slot. Place the disc in position and be sure that the hour wheel spring enters the slot.



6. Position dial rest #148 and screw into position with dial rest screws #159.
Recheck the functioning of the hour jumping mechanism. Using the crown, turn the hour wheel. When its spring is freed from a tooth of the toothed hour wheel ring it should propel the disc to the next hour. Check that the line next to the numeral on the disc is aligned with stem.

7. Preposition the minute disc. Align the zero mark of the minute disc with the line of any hour numeral. Hold in position and press on to the cannon pinion. Recheck.

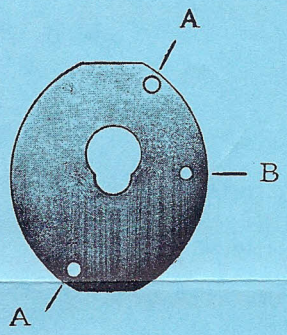
8. Align zero mark of the second disc with the zero mark of the minute disc and press into place.

BULOVA LETTER # 23

MAY 1975

TECHNICAL LETTER

BENCH TIPS ON CARAVELLE DIGITAL MODEL 5 UCU

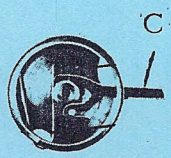


Hour Indicator Driving Wheel Cover #243

After fitting the cannon pinion, assemble the digital parts in the following order:

1. Form a sub-assembly of the Hour Indicator Drive Wheel Cover #243 and the Hour Indicator Drive Wheel #244. Proceed as follows:

1A Establish the correct position of Cover #243 on the movement. Its two end holes (see A in illustration) are over the threaded bushings in the movement and its third hole is over the winding pinion (see B in illustration). Note that the smaller cut-out in the key-hole opening is over the cannon pinion.

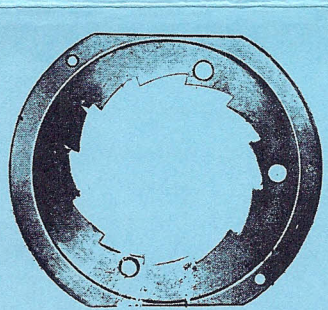


Hour Indicator Drive Wheel #244

1B Place the Cover #243 on the bench, grasp the head of the Hour Indicator Drive Wheel #244 and drop it into the large opening of the key-hole.

1C To center the Drive Wheel #244, slide it into the smaller cut-out of the key-hole.

2. Place the assembled parts, Cover #243 and Wheel #244, onto the movement.



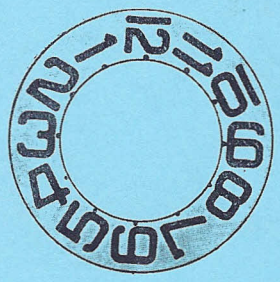
Toothed Hour Indicator Support #240

3. Position the Toothed Hour Indicator Support #240 on the movement with its flat side down and its counter-sunk holes over the threaded bushings in the plate. Be sure that the finger, (C in illustration, Hour Indicator Drive Wheel #244) is free. If it is caught beneath a tooth of the Support #240, nudge it counter-clockwise until it is free.

4. Fasten the Support #240 in place with screws #245.

TECHNICAL INFORMATION SERVICES

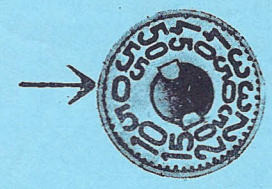
BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000



Hour Indicator #237

5. Observe the back of the Hour Indicator #237 and note the slot on its inner edge. Position the Indicator so that the finger (C in illustration, Hour Indicator Drive Wheel #244) enters the slot. Then check jump action by holding the Indicator down with light pressure and rotating the crown.

6. Turn the crown very slowly. At the exact instant when the Indicator jumps to the next hour, push in the crown.



Minute Indicator #238

7. (Before replacing the Minute Indicator, #238, please note that its zero line is aligned at the 9 o'clock position of a conventional watch. See illustration)

Align the zero mark of the Minute Indicator with an hour line on the Hour Indicator. When it is exactly aligned, steady it and press it onto the cannon pinion. Pull the stem into the setting position again and check the synchronization of the two Indicators.

The digital parts are now completely assembled.

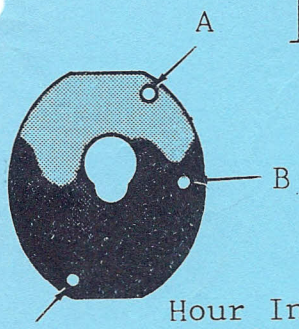
BULOVA

Illustrations Larger, Than Actual Size

LETTER # 23

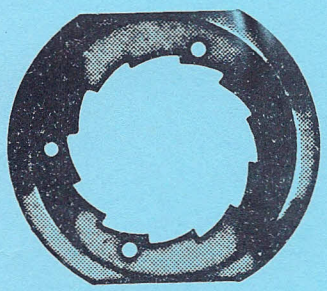
May 1975

TECHNICAL LETTER

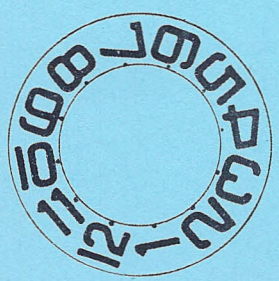


Hour Indicator Driving Wheel Cover #243

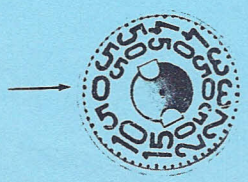
Hour Indicator Drive Wheel #244



#240 Toothed Hour Indicator Support



Hour Indicator #237



Minute Indicator #238

BENCH TIPS ON CARAVELLE DIGITAL MODEL 5 UCU

After fitting the cannon pinion, assemble the digital parts in the following order:

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   Align the zero mark of the Minute Indicator with an hour line on the Hour Indicator. When it is exactly aligned, steady it and press it onto the cannon pinion. Pull the stem into the setting position again and check the synchronization of the two Indicators.

The digital parts are now completely assembled.

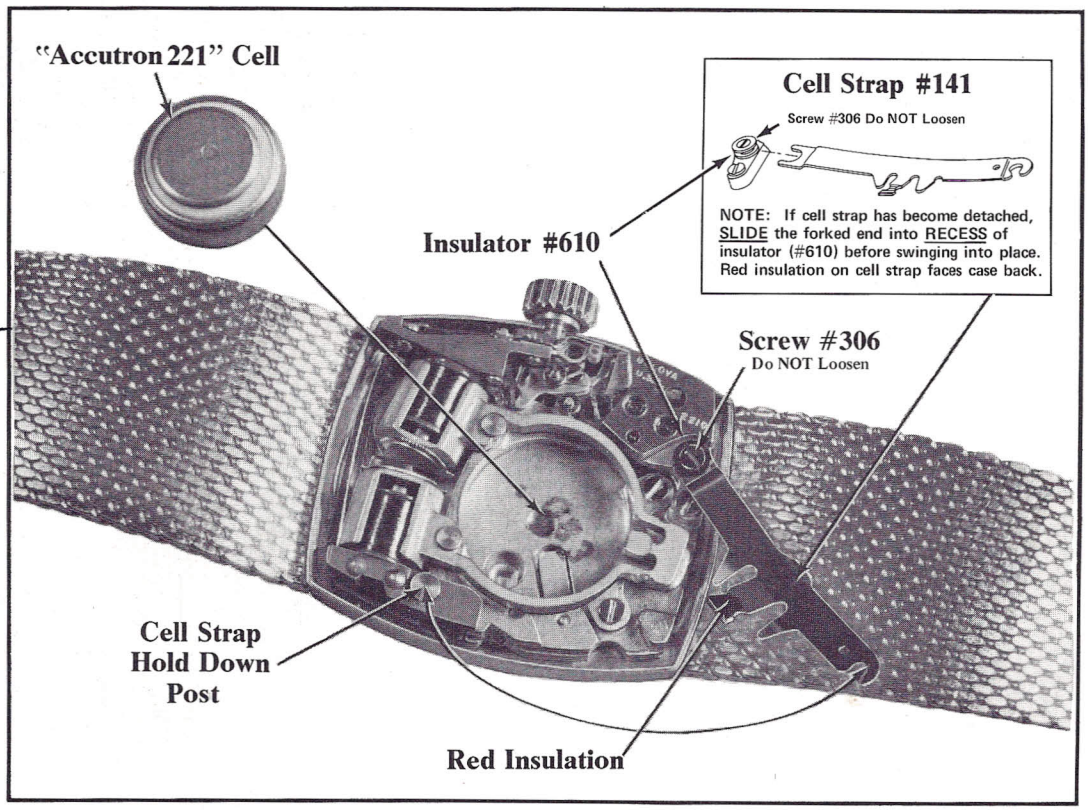
TECHNICAL INFORMATION SERVICES

BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000

ACCUTRON® — SERIES 221

REPLACING THE POWER CELL

1. Clean and wipe away any accumulated material from exterior of case (to prevent dirt from entering movement when case is opened).
2. Open the case. Apply a case knife at the groove provided. For water-resistant models, use a suitable case wrench.
3. **Remove movement from the case back and place in bezel.** This is not necessary on water-resistant models.
4. Insert a pointed tool in the hole near the end of cell strap (#141). Apply downward pressure and swing strap away from cell. Do **NOT** loosen any screws for this operation.



5. Invert movement and power cell will fall out.
6. Inspect for foreign material in cell compartment or on underside of cell strap. Wipe suface, as necessary, to assure good electrical contact. Do **NOT** scrape away red insulation on cell strap.
7. Check new power cell (Approximately 1.35 volts).
8. Insert power cell *with imprinted side facing down.*
9. Reposition cell strap into insulator No. 610. Swing strap into hold down post, applying downward pressure with a pointed tool in the hole near the end of the strap. Make sure the strap is **FULLY ENGAGED** into the hold down post.
10. Snap-back models: Remove movement from bezel, **PLACE IN CASE BACK**, pull crown to setting position, snap bezel and case together by applying pressure first on the 12 o'clock side and **THEN SNAP 6 O'CLOCK SIDE INTO PLACE.**
    Water-resistant models: Retighten case back with a suitable case wrench, making sure case gasket is properly positioned.

MOVEMENT CHARACTERISTICS

Tuning Fork	— 17½ mm.
Frequency	— 440 Hz. (cycles per second). This is the tone of of "A".
Movement Dimensions	— Tonneau Shape — 7½ x 8½ ligne — 19.4 mm. (.763") long x 17.4 (.685") wide — 4 mm. thick without battery
Index Wheel	— Diameter 2.15 mm , 270 teeth
Electromagnetic Coils	— two, with approximately 8,100 turns of insulated copper wire on each.
Transistor	— Hybrid integrated circuit
Electrical Disconnect System	— When the stem is pulled out, the watch stops due to a unique electrical disconnect system, thereby, allowing for storage in this position. The same cell will operate the watch for a full year after this storage period.
Jewels	— 14
Accuracy	— Guaranteed to keep time within one minute per month.
Power Source	— A special mercury oxide power cell — approximately 1.35 volts. Identified as "ACCUTRON 221".

FEATURES

- This is the first American made Tuning Fork Watch to be marketed in Ladies Conventional Size Cases, Pendant Styles and Selected Mens Styles.
- There is but one caliber: Model 2210 — Equipped with hour and minute hand only. (As of printing date.)

SETTING INSTRUCTIONS

1. Pull crown "out".
2. Turn hands (either direction) until minute hand is slightly ahead of desired minute marker; then turn hand backward to this marker. Push crown "in" without turning.
3. **As with any lady's watch without a second hand, it is good practice to listen to make certain that the movement is running. If necessary, tap the case lightly at the "3" or "9" to start the tuning fork vibrating.**

SERVICING (See note)

- Series 221 has been designed for easy serviceability.
- The coil assemblies of the Series 221 may be removed without the necessity for disassembling any other part of the movement.
- Parts and technical information will be released to the jeweler at a future date.
- With the exception of power cell replacement and regulation, it will be required that all Model 2210 be returned to our New York Service Facility for repair until the early part of 1974. This will allow very close quality control.

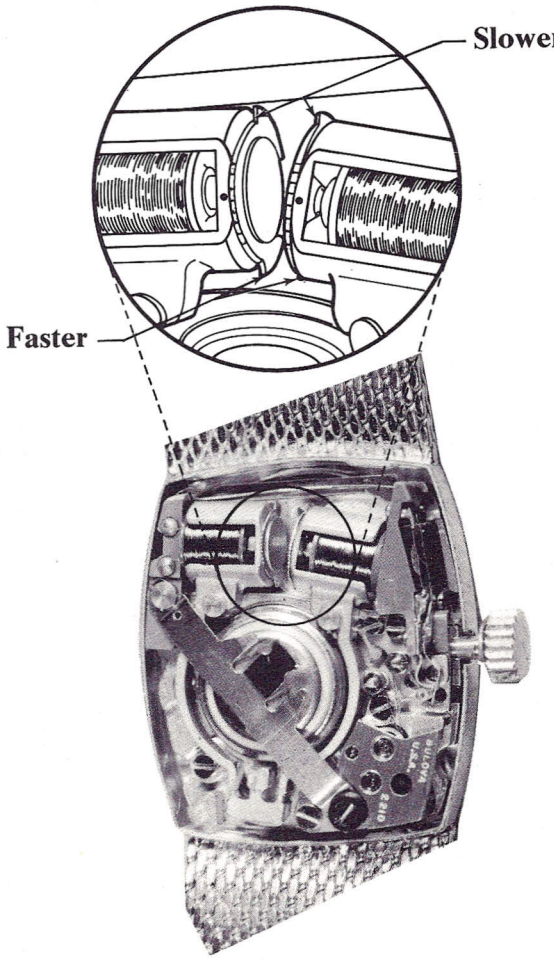
REGULATION

The 221 Accutron regulators are calibrated with eight divisions to provide for easy reference during regulation. Their appearance is similar to the 214/218 Series. Each division represents two seconds per day change in rate of the tuning fork.

To regulate two seconds per day ***slower,*** move either regulator one division away from the center of the movement. (See Illustration)

To regulate two seconds per day ***faster,*** move either regulator one division towards the center of the movement. (See Illustration)

Rotate the regulators with a pegwood stick, applying pressure on the "ears" of the regulators. If desired correction is more than four seconds a day, it is recommended that both regulators be moved equal amounts.



Maximum regulation is 32 seconds per 24 hours.

The Series 221 Accutron is factory regulated in the dial-up position to plus (+) 2 seconds per day, and will produce a double trace line on a Vibrograf B-200A using beat selector 19,800, and a double trace line using beat selector 19,800 on a Vibrograf B-100A.

Note: *Some Important Reminders When returning Watch to Bulova for Service*

Address package exactly like this:
Service Department
75-20 Astoria Boulevard
Jackson Heights, N.Y. 11370

Do **NOT** *add the name Bulova Watch Co. to the address.*

- *Insure package. If possible, send by registered mail.*
- *Do* **NOT** *send watch in its display box. Box cannot be returned.*

PRINTED IN U.S.A.

20M274

Bulova®

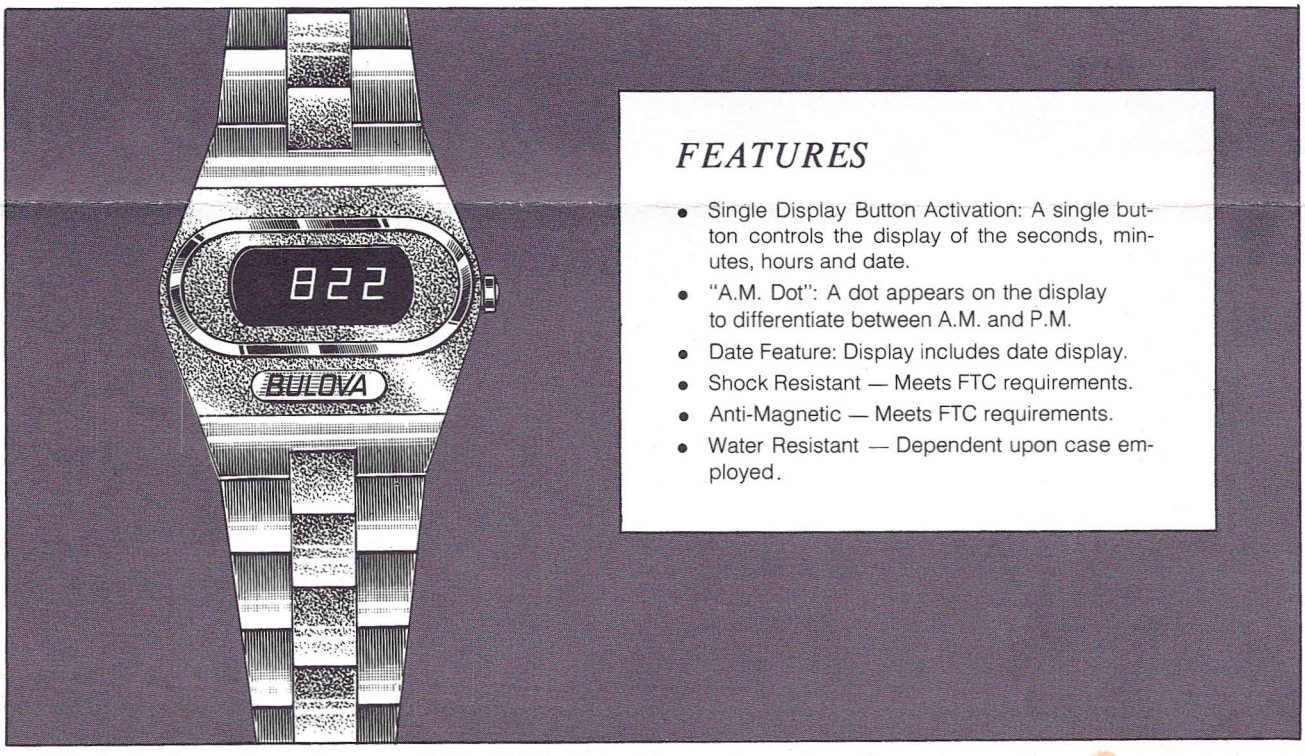
TECHNICAL INFORMATION SERVICES
November 1974

Technical Letter No. 20

BULOVA ACCUQUARTZ® DIGITAL WATCH SERIES 228 (Light Emitting Diode — L.E.D.)

MOVEMENT CHARACTERISTICS

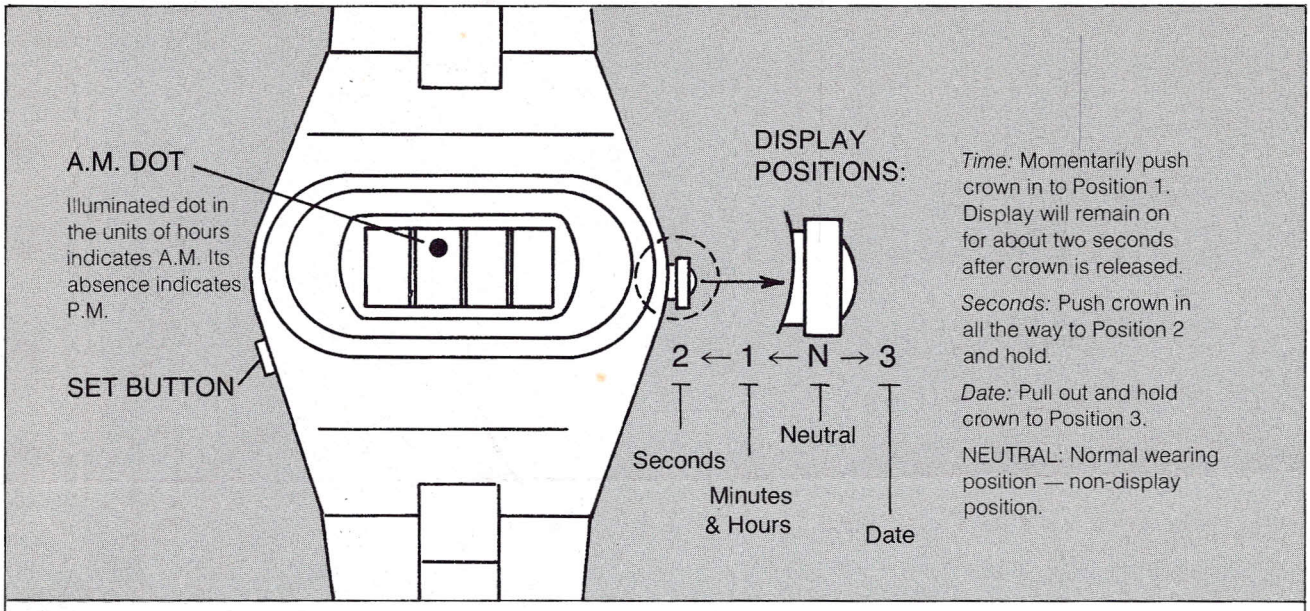
Quartz Frequency:	786,432 Hz. (cycles per second)
Movement Dimensions:	13 Ligne Diameter: 29.34 mm. (1-1/8″) Height: 7.98 mm. excluding battery contact strap (5/16″)
Elements:	Over 1,500 transistors contained in a C-MOS IC chip, (Complementary-Metal Oxide Silicon Integrated Circuit) plus: 2 Bi-Polar Display Drivers, plus: 1 Quartz Crystal
Power Source:	Two Silver Oxide Power Cells — "Bulova 228" Each rated at approximately 1.5 volts
Accuracy:	Laboratory tested to one minute a year
Guarantee:	One year, excluding power cells



FEATURES

- Single Display Button Activation: A single button controls the display of the seconds, minutes, hours and date.
- "A.M. Dot": A dot appears on the display to differentiate between A.M. and P.M.
- Date Feature: Display includes date display.
- Shock Resistant — Meets FTC requirements.
- Anti-Magnetic — Meets FTC requirements.
- Water Resistant — Dependent upon case employed.

SETTING INSTRUCTIONS



Setting Sequence

The sequence for setting the Accuquartz watch must be followed in the proper order. First set the exact *Minutes*, then the *Hour*, then the *Date*. The procedure is not difficult but please read all the way through at least the directions for setting the minutes before beginning.

1. MINUTES

a) Push crown in to Position 1; display time and hold crown. If no display is shown, press then release the set button.

b) Continue to depress crown in Position 1 to display minutes and hours. Wait until the time standard you are using as the reference to which you are setting the Accuquartz watch reaches the 60th second marker. At that moment depress the set button and hold both it and the crown (crown in Position 1).

c) Minutes will advance at the rate of one per second. When proper minute is reached, release set button, then crown.

NOTE: When the set button is pressed for the minute adjustment, the seconds reset to zero and begin counting and you have, therefore, synchronized the seconds. If you interrupt the seconds counting by releasing the set button prematurely, start the process over again, commencing at the next 60th second marker.

EXAMPLE: If you want to set your watch to exactly 5:15, *start* advancing the minutes exactly on the 60th second marker of the time by which you are setting the Accuquartz. When the minutes read "15", let go of the set button. The seconds will now be synchronized to the exact time standard along with the minutes. Then proceed to set the hour as follows:

2. HOUR

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.

NOTE:
To check for a.m. or p.m. pull crown to Position 3, to make sure that the illuminated dot appears in the proper twelve-hour period, otherwise the date will change at noon instead of midnight. When on, it indicates a.m. Its absence indicates p.m. If time of day is after 12 noon, advance hours until illuminated dot disappears.

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 NOTE: 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 correct time. Reset watch in accordance with instructions.

Printed in U.S.A.
25M 1174

ACCUTRON® — SERIES 221

REPLACING THE POWER CELL

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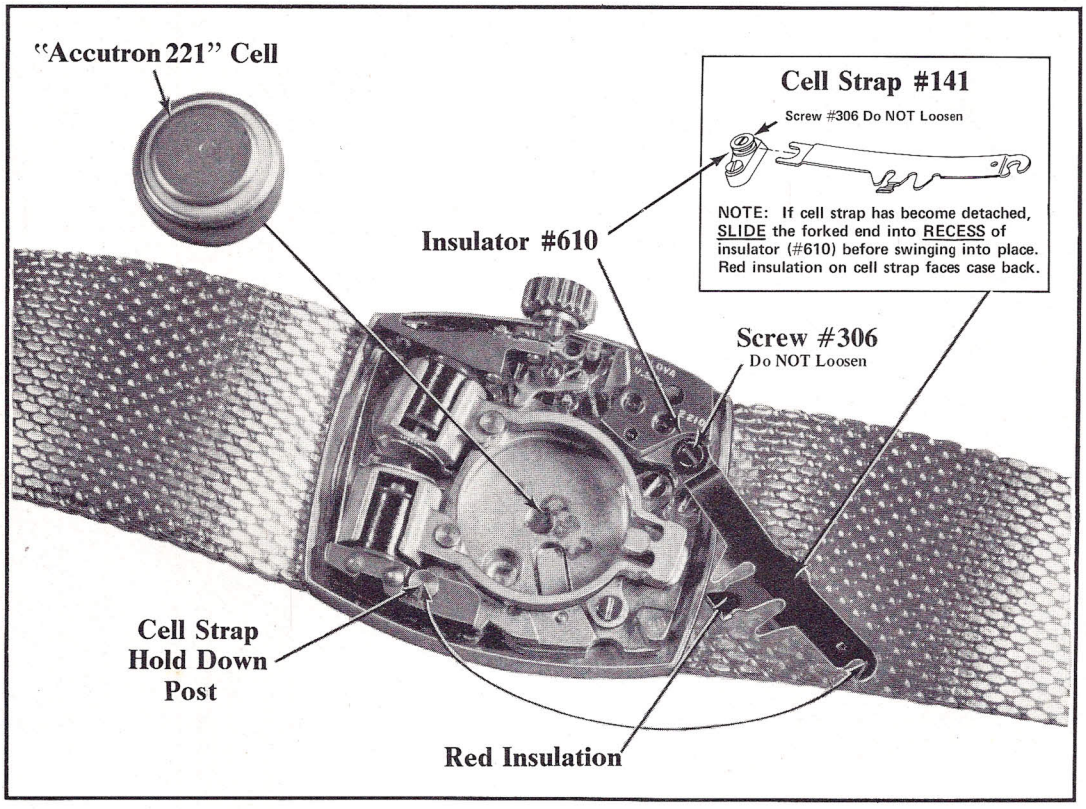

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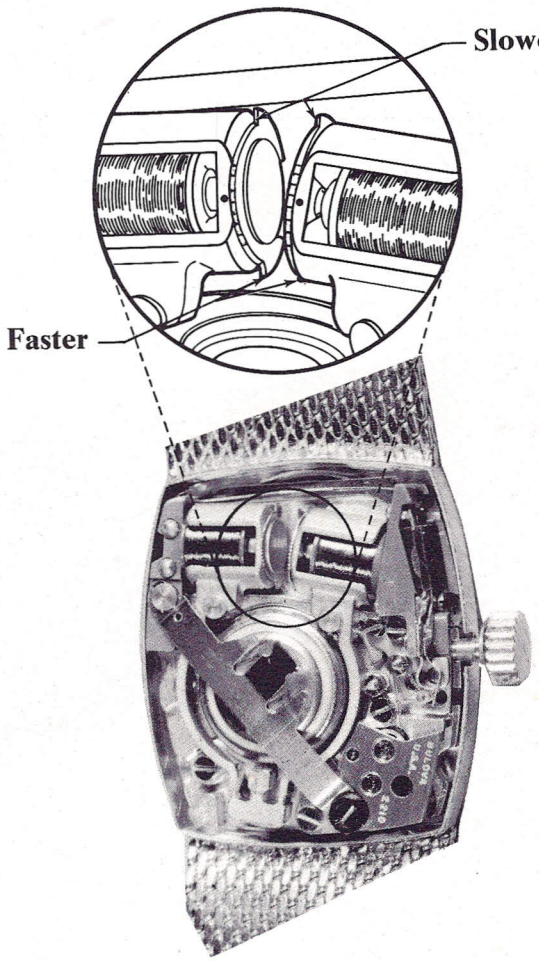

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PRINTED IN U.S.A.

20M574

BULOVA

LETTER # 40

June 1978 Rev. 1

TECHNICAL LETTER

SUBJECT: POWER CELL INFORMATION

BY MOVEMENT CALIBER

MOVEMENT SERIES	BULOVA POWER CELL
214	214
218	218
219	218
221	221
224	218
226	226
228	228
229	228
230	218
2403	228
2404	228
2421	242
2423	242
2426	242
2431	247
2470	247
2534	260
2535	260
2544	228

MOVEMENT SERIES	BULOVA POWER CELL
2553	255
2604	260
3006	247
3011	247
3034/3035	247
3036	247
3044	260
3085	247
3174	317

	CARAVELLE POWER CELL
6 UDC	6 UDC
7 OT	7 OT
12 OTC	12 OTC
12 OUC	12 OTC
12 OUCD	12 OTC
12 UECD	12 UECD
13 UKCB	12 UECD
13 UKCD	12 UECD

BY CASE REFERENCE NUMBER

ACCUTRON QUARTZ - STEPPING MOTOR QUARTZ

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
B 789	95902	2470.10	247
B 790	95903	2470.10	247
G 316	92929	2470.10	247
L 259	92820	2431.10	247
L 259	92821	2431.10	247
L 260	92818	2431.10	247
L 261	92819	2431.10	247
L 262	91802	2431.10	247

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
M 303	95910	2470.10	247
M 304	95911	2470.10	247
M 305	95912	2470.10	247
N 177	91805	2431.10	247
N 177	91806	2431.10	247
N 177	91824	2431.10	247
N 178	92824	2431.10	247
N 178	92825	2431.10	247

(continued)

SUBJECT: **POWER CELL INFORMATION** (continued)

CASE #	STYLE #	MOVEMENT	BULOVA POWER CELL
N 178	92857	2431.10	247
N 210	95804	2431.10	247
N 239	92896	2431.10	247
N 240	92897	2431.10	247
N 241	92898	2431.10	247
N 242	92899	2431.10	247
N 243	92864	2431.10	247
N 244	92865	2431.10	247
W 13	92930	2470.10	247
W 14	92931	2470.10	247
3669	92802	2423.10	242
T3670	91851	2423.10	242
3671	92804	2423.10	242
3672	92805	2423.10	242
3673	92803	2423.10	242
T3674	91850	2423.10	242
3691	92806	2423.10	242
T3692	91852	2423.10	242
3693	92808	2423.10	242
3694	92807	2423.10	242
3711	92810	2423.10	242
T3714	91801	2423.10	242
3726	92811	2423.10	242
3728	92907	2470.10	247
3728	92908	2470.10	247
3729	92909	2470.10	247
3729	92910	2470.10	247
3730	95802	2423.10	242
3730	95803	2423.10	242
3730	95807	2423.10	242
3730	95808	2423.10	242
3731	95800	2423.10	242
3731	95801	2423.10	242
3731	95805	2423.10	242
3731	95806	2423.10	242
3732	92817	2423.10	242
3734	92848	2470.10	247
3734	92913	2470.10	247
3735	95809	2470.10	247
3735	95901	2470.10	247
3738	95900	2470.10	247
3739	92911	2470.10	247
3739	92912	2470.10	247
3740	92823	2423.10	242
3740	92842	2423.10	242
3741	92917	2470.10	247
T3744	91803	2423.10	242
T3745	91804	2423.10	242
3750	92828	2423.10	242
3750	92838	2423.10	242
3750	92841	2423.10	242
3750	92843	2423.10	242
T3751	91808	2423.10	242
T3751	91815	2423.10	242
T3751	91817	2423.10	242
3763	92918	2470.10	247
3764	92919	2470.10	247
3764	92920	2470.10	247
3765	92916	2470.10	247
3766	92921	2470.10	247
3767	92832	2421.10	242
3767	92859	2421.10	242
3769	92835	2426.10	242
T3770	91813	2426.10	242
3771	92836	2426.10	242
3771	92860	2426.10	242
T3772	91811	2421.10	242
3773	92833	2421.10	242
3773	92834	2421.10	242
3773	92845	2421.10	242
3774	92831	2421.10	242
T3775	91812	2421.10	242
T3776	91814	2426.10	242
3777	92837	2426.10	242
3777	92861	2426.10	242
3778	92839	2423.10	242
3778	92840	2423.10	242
3779	92829	2423.10	242
3780	92830	2426.10	242
3788	92933	2470.10	247
3791	92934	2470.10	247
3792	92935	2470.10	247
3793	92936	2470.10	247
3794	92937	2470.10	247
3794	92938	2470.10	247
3795	92939	2470.10	247
3840	92849	2423.10	242
3841	91820	2423.10	242
3848	92940	2470.10	247

(continued) 2

BULOVA

LETTER # 5

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:

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

BULOVA

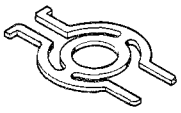
LETTER # 6

November 1971

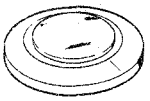
TECHNICAL LETTER

CARAVELLE SHOCK RESISTANT DEVICE
(used in 5AW, 5BW, RP and RK Movements)

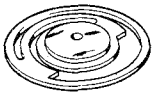
When placing an order for these component parts, specify movement model, part name, and upper or lower setting (or preferably refer to interchangeability catalog for specific part number and basic model).



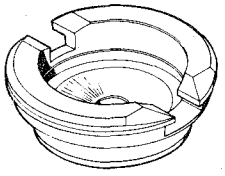
Shock Spring



Balance Cap Jewel and Setting



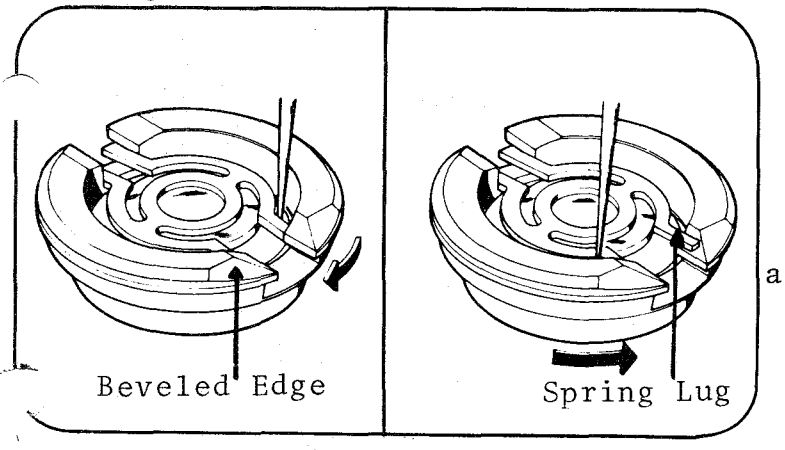
Balance Hole Jewel and Spring



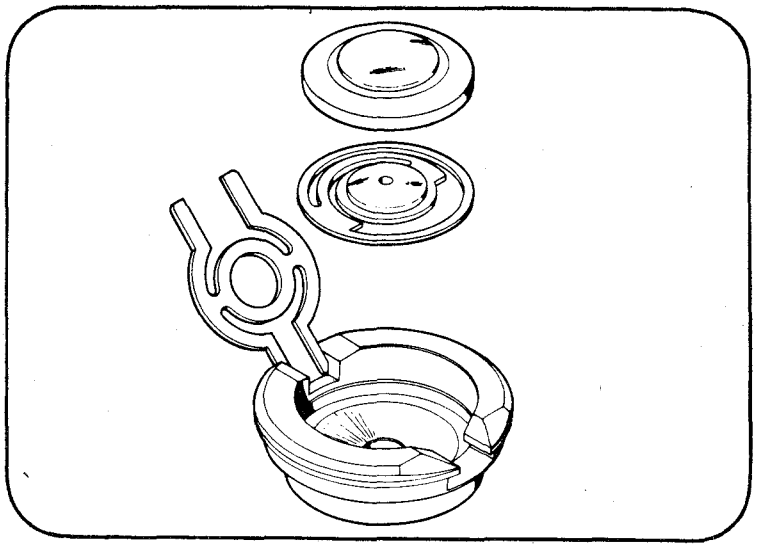
Setting

DISASSEMBLY

a. Disengage the lugs of the shock spring one at a time, on the side of the setting with the beveled edge.



b. Remove the cap jewel and setting and the balance hole jewel and spring.



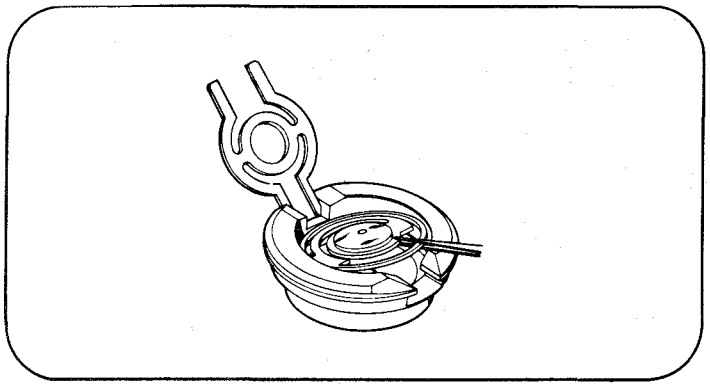
c. Clean the components.

ASSEMBLY AND OILING

a. Insert the balance hole jewel and spring. Make sure it is positioned with the domes side of the jewel up.

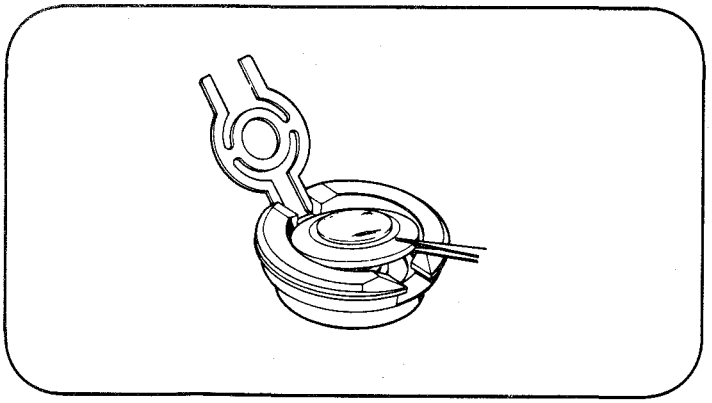
TECHNICAL INFORMATION SERVICES

BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000

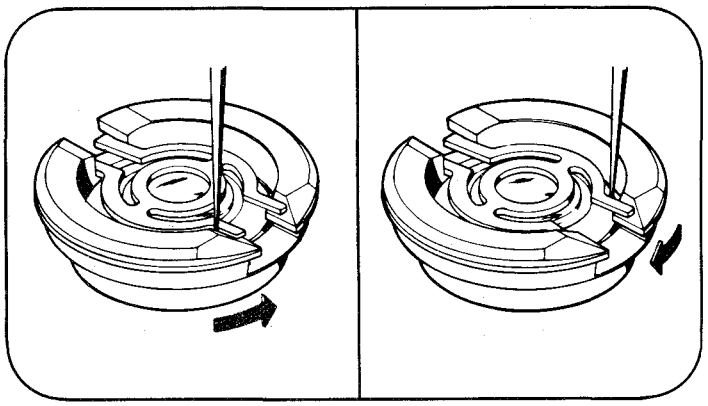


b. Oil the cap jewel. Make sure that there is no dirt or stain on the jewel surface.

c. Replace the cap jewel and setting.

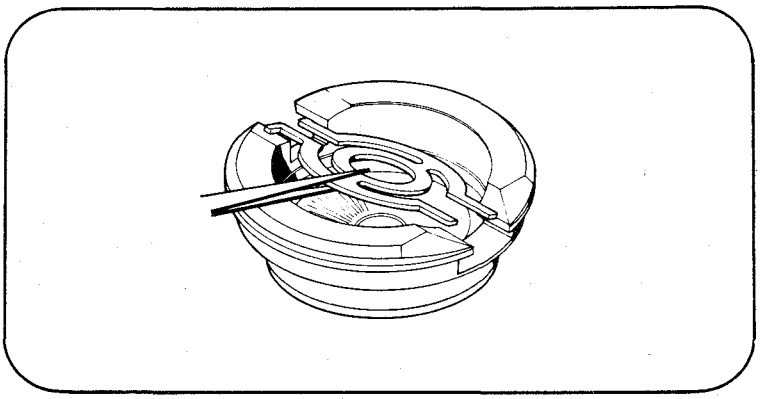


d. Replace the lugs of the shock spring one at a time.

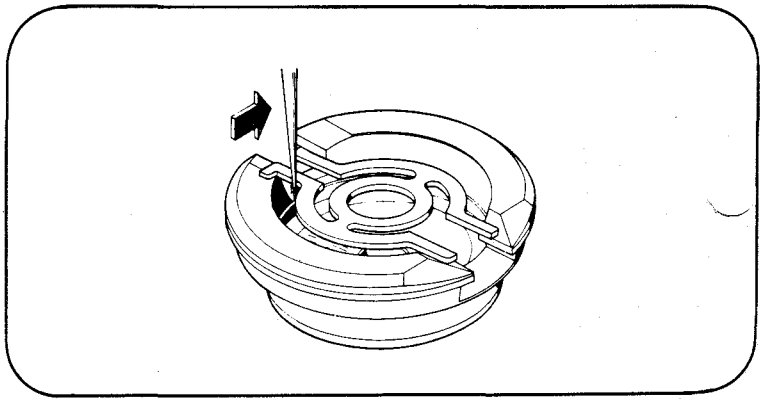


CHANGING THE SHOCK SPRING

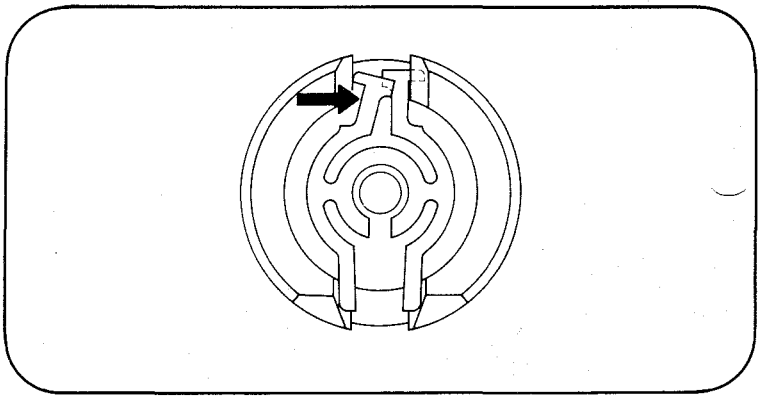
a. Remove the old shock spring. Remove cap jewel and setting and hole jewel and spring.



b. Insert one leg of a new shock spring into the groove under the frame.



c. Insert the other leg of the cap jewel spring into the groove by bending it inwards.



THE AFORE-MENTIONED PARTS CAN BE PURCHASED THROUGH YOUR AUTHORIZED MATERIAL DISTRIBUTOR.

BULOVA

LETTER # 8

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

BULOVA WATCH COMPANY, INC., 62-10 WOODSIDE AVENUE, WOODSIDE, NEW YORK 11377 | 335-6000

BULOVA

LETTER # 1

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.

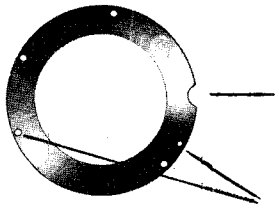
BULOVA

LETTER # 18
December 1973

TECHNICAL LETTER

BENCH TIPS ON THE DIGITAL READ-OUT

CARAVELLE MODEL 11OWU



1. After fitting the cannon pinion, position the hour ring rest #64T. Its cut-out aligns with the stem and two locating pins hold it in position.

Stem

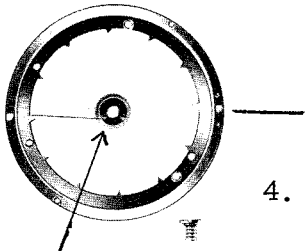
Holes for Locating Pins

#9 

#7 

#101 

2. Replace the minute wheel bridge #9, the hour wheel #7 and the hour wheel guard #101 and fasten them all into place with minute wheel bridge screws #44A.



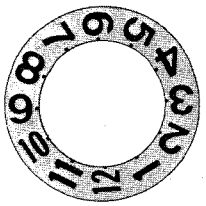
#7 Hour Wheel and Spring

3. Replace the toothed hour ring #64R carefully avoiding damage to the hour wheel spring. The hole between two dots aligns with the stem; the same two locating pins used for hour ring rest #64T, hold the ring #64R in position. Its screws #159 fasten both the ring and its rest.

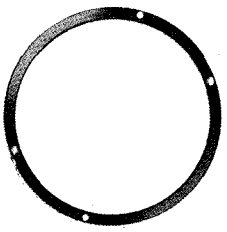
Stem

4. Check the jump action of the hour wheel. Turn it with the stem, until its spring rests against a tooth of the toothed hour ring #64T. Then continue turning and observe the hour wheel and spring. The hour wheel should move freely. The spring should be slightly flexed at contact point with a tooth, should arch more sharply as the hour wheel turns and then spring briskly to the next tooth at let-off.

(please turn the page)



5. Look at the under side of the hour disc #64D. Observe the V shaped recess that ends in a thin slot. Place the disc in position and be sure that the hour wheel spring enters the slot.



6. Position dial rest #148 and screw into position with dial rest screws #159.
Recheck the functioning of the hour jumping mechanism. Using the crown, turn the hour wheel. When its spring is freed from a tooth of the toothed hour wheel ring it should propel the disc to the next hour. Check that the line next to the numeral on the disc is aligned with stem.

7. Preposition the minute disc. Align the zero mark of the minute disc with the line of any hour numeral. Hold in position and press on to the cannon pinion. Recheck.

8. Align zero mark of the second disc with the zero mark of the minute disc and press into place.

BULOVA

LETTER # 17

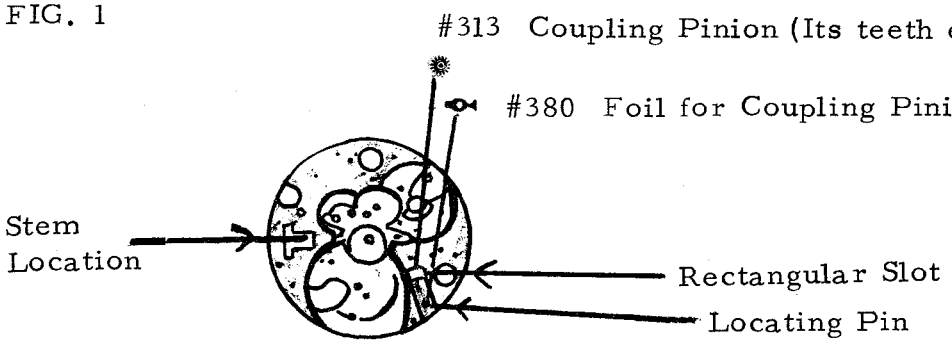
December 1973

TECHNICAL LETTER

BENCH TIPS ON ASSEMBLING CARAVELLE CALIBER 11 OWACD

THE COUPLING PINION AND ITS FOIL

FIG. 1



When the train has been assembled be sure to position the foil for coupling pinion #380 and the coupling pinion #313 before replacing the train bridge. (See fig. #1 - above for the proper location of these parts.)

ASSEMBLING THE AUTOMATIC DEVICE

NOTE: All the pinions face downward

1. Replace the automatic train in the following sequence: ratchet wheel drive gear #309, wind up wheel #307, reduction gear (pinion without leaves) #308, the wig-wag pinion #312 (place on the oval shaped post) and finally the stop click #303. Its beak should lie between the teeth of the reduction gear #308.

2. Check that the stop click spring #304 is in its recess in the upper automatic device bridge #341.

3. Replace the bridge #341. Check for wheel freedom and the proper functioning of the stop click. If necessary, use the peep hole in the bridge to position the stop click spring #304 against the stop click #303.

SEE CALENDAR MECHANISM - PLEASE TURN THE PAGE

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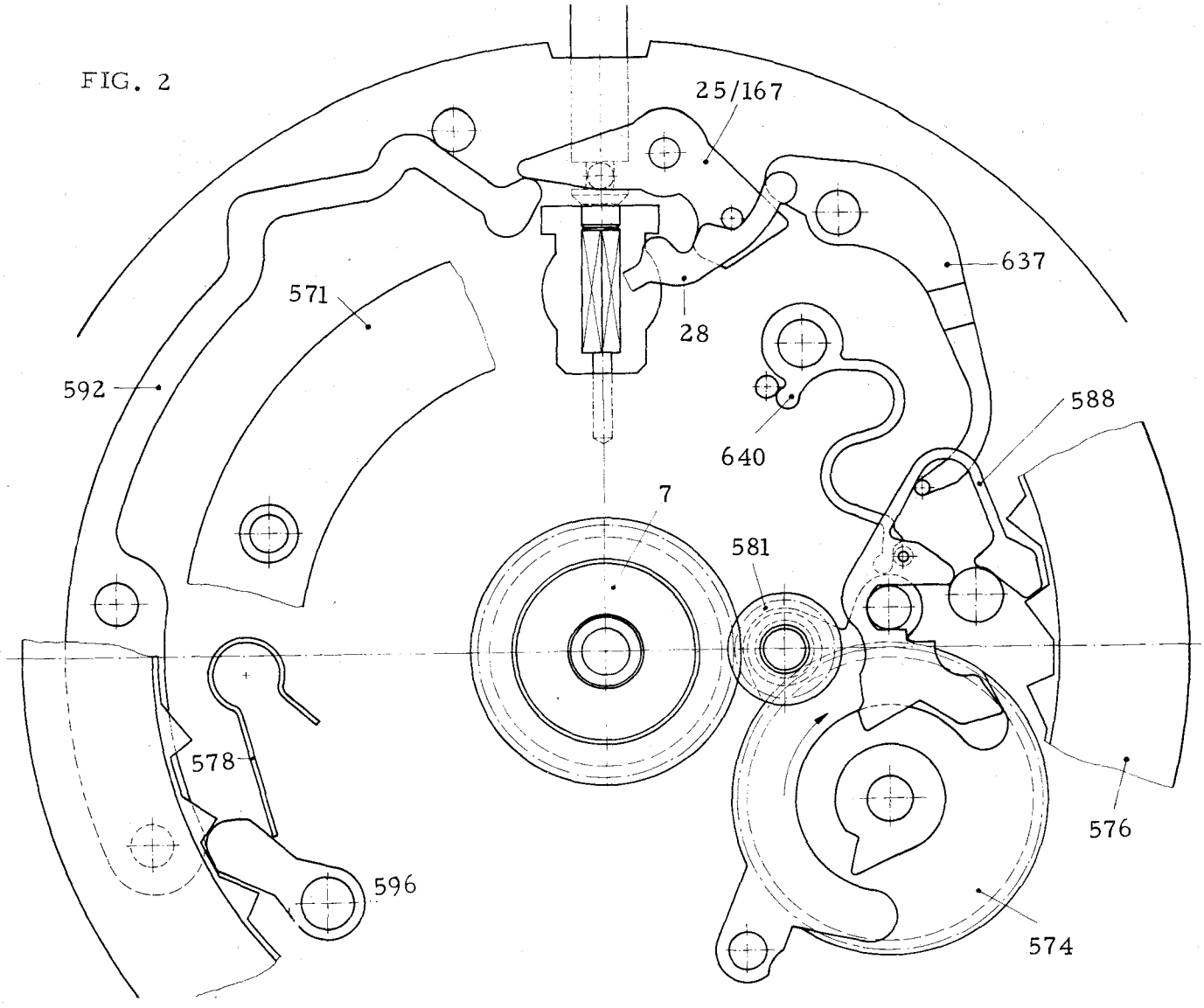
FIG. 2



7	Hour Wheel	581	Intermediate Date Wheel
25/167	Set Lever & Set Lever Axle	588	Date Corrector
28	Set Bridge	592	2nd Date Corrector (Push) Spring
571	Date Indicator Guard	596	Date Jumper
574	Date Indicator Drive Wheel - Mtd.	640	1st Date Corrector Spring
576	Date Indicator	637	Guide Lever for Date Corrector
578	Date Jumper Spring		

ASSEMBLING THE DATE CORRECTOR

1. With its affixed pin facing down, position the date corrector #588 and swivel its head toward the outside of the movement. The pin of guide lever date corrector #637 should be within the loop of #588 as shown in Fig. 2.
2. Although the tail of the 1st date corrector spring #640 lies beneath the date corrector #588, preposition the date corrector spring #640 with its tail above #588.
3. Hold down the date corrector #588 with peg wood, grasp the tail of date corrector spring #640 with tweezers and hook it under the date corrector #588.
4. Gently place date disc #576 into position. Position the jumper head between the teeth of the disc. The jumper #596 will now be out of position.
5. Hold down date disc #576 with buff stick and position jumper #596.
6. Replace date guard #571 with its holding screws #577.

BULOVA LETTER # 7

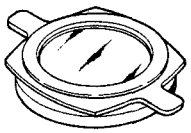
November 1971

TECHNICAL LETTER

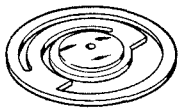
CARAVELLE SHOCK RESISTANT DEVICE

(used in RJ, RO, RR, RS, 2 SO, 11 DO, 11 DOD, 11 DP, 11 DPD, 12 OTC, 12 OUC and 12 OUCD Movements)

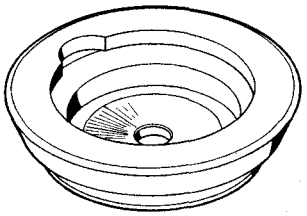
When placing an order for these component parts, specify movement model, part name and upper or lower setting (or preferably refer to interchangeability catalog for specific part number and basic model).



Balance Cap Jewel & Setting



Balance Hole Jewel & Spring



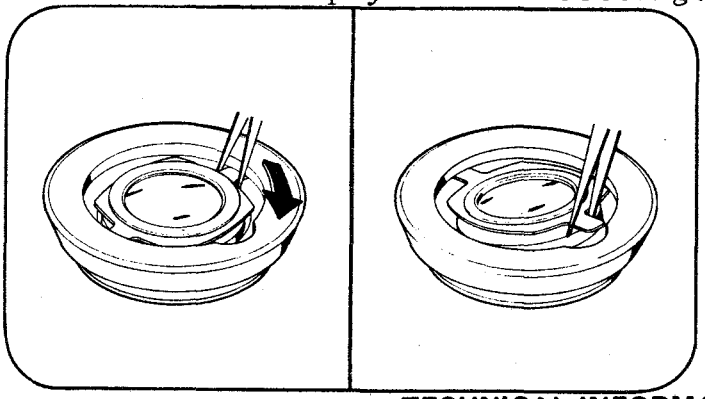
Setting

*Separate cap jewels and springs are used in the following movements:

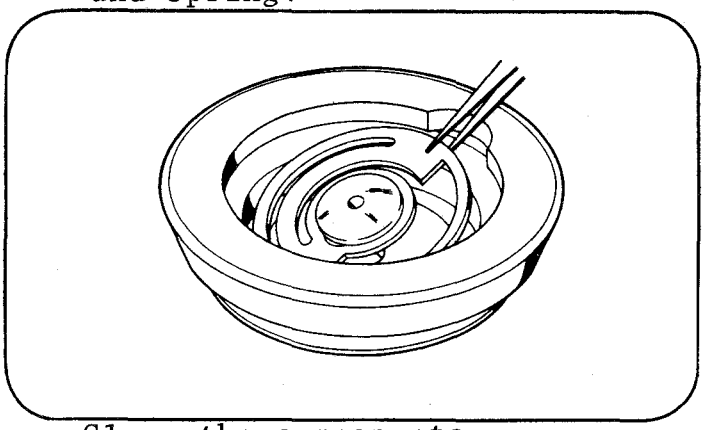
2 SO, 11 DO, 11 DOD, 11 DP, 11 DPD and 12 OTC

DISASSEMBLY

a. Remove the cap jewel and setting.



b. Remove the balance hole jewel and spring.

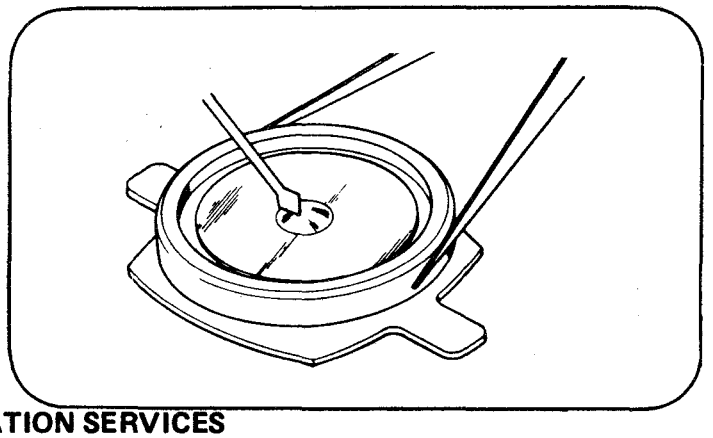


c. Clean the components.

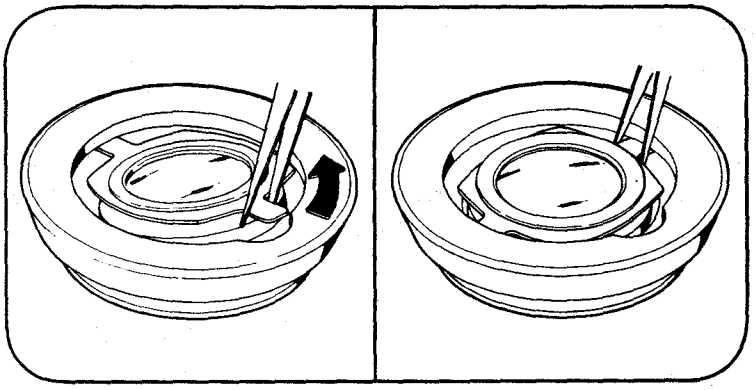
ASSEMBLY & OILING

a. Insert the balance hole jewel and spring. Make sure it is positioned with the domed side of the jewel up.

b. Oil the cap jewel. Make sure that there is no dirt or stain on the jewel surface.



c. Insert the balance cap jewel and spring. Rotate the spring 90° from its place of insertion..



THE AFORE-MENTIONED PARTS CAN BE PURCHASED THROUGH YOUR AUTHORIZED BULOVA MATERIAL DISTRIBUTOR.

BULOVA

LETTER # 1

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.

BULOVA

LETTER # 5

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:

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

BULOVA LETTER # 17

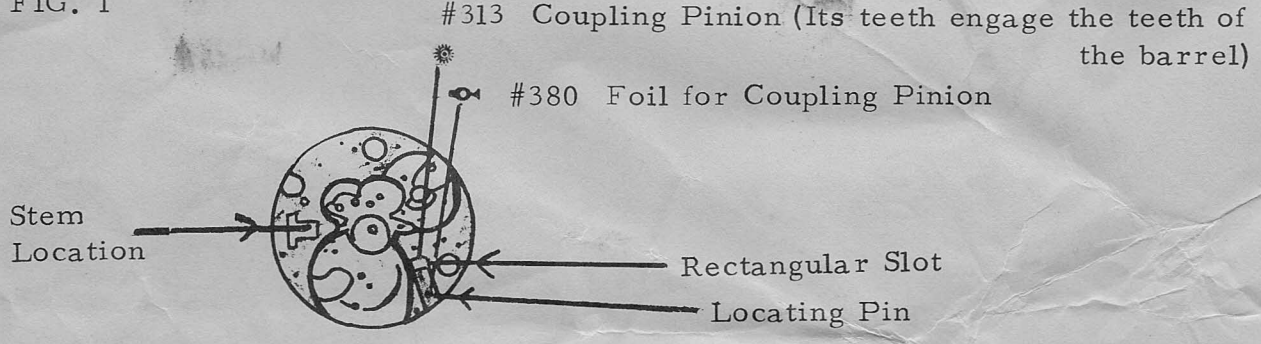
December 1973

TECHNICAL LETTER

BENCH TIPS ON ASSEMBLING CARAVELLE CALIBER 11 OWACD

THE COUPLING PINION AND ITS FOIL

FIG. 1



When the train has been assembled be sure to position the foil for coupling pinion #380 and the coupling pinion #313 before replacing the train bridge. (See fig. #1 - above for the proper location of these parts.)

ASSEMBLING THE AUTOMATIC DEVICE

NOTE: All the pinions face downward

1. Replace the automatic train in the following sequence: ratchet wheel drive gear #309, wind up wheel #307, reduction gear (pinion without leaves) #308, the wig-wag pinion #312 (place on the oval shaped post) and finally the stop click #303. Its beak should lie between the teeth of the reduction gear #308.

2. Check that the stop click spring #304 is in its recess in the upper automatic device bridge #341.

3. Replace the bridge #341. Check for wheel freedom and the proper functioning of the stop click. If necessary, use the peep hole in the bridge to position the stop click spring #304 against the stop click #303.

SEE CALENDAR MECHANISM - PLEASE TURN THE PAGE

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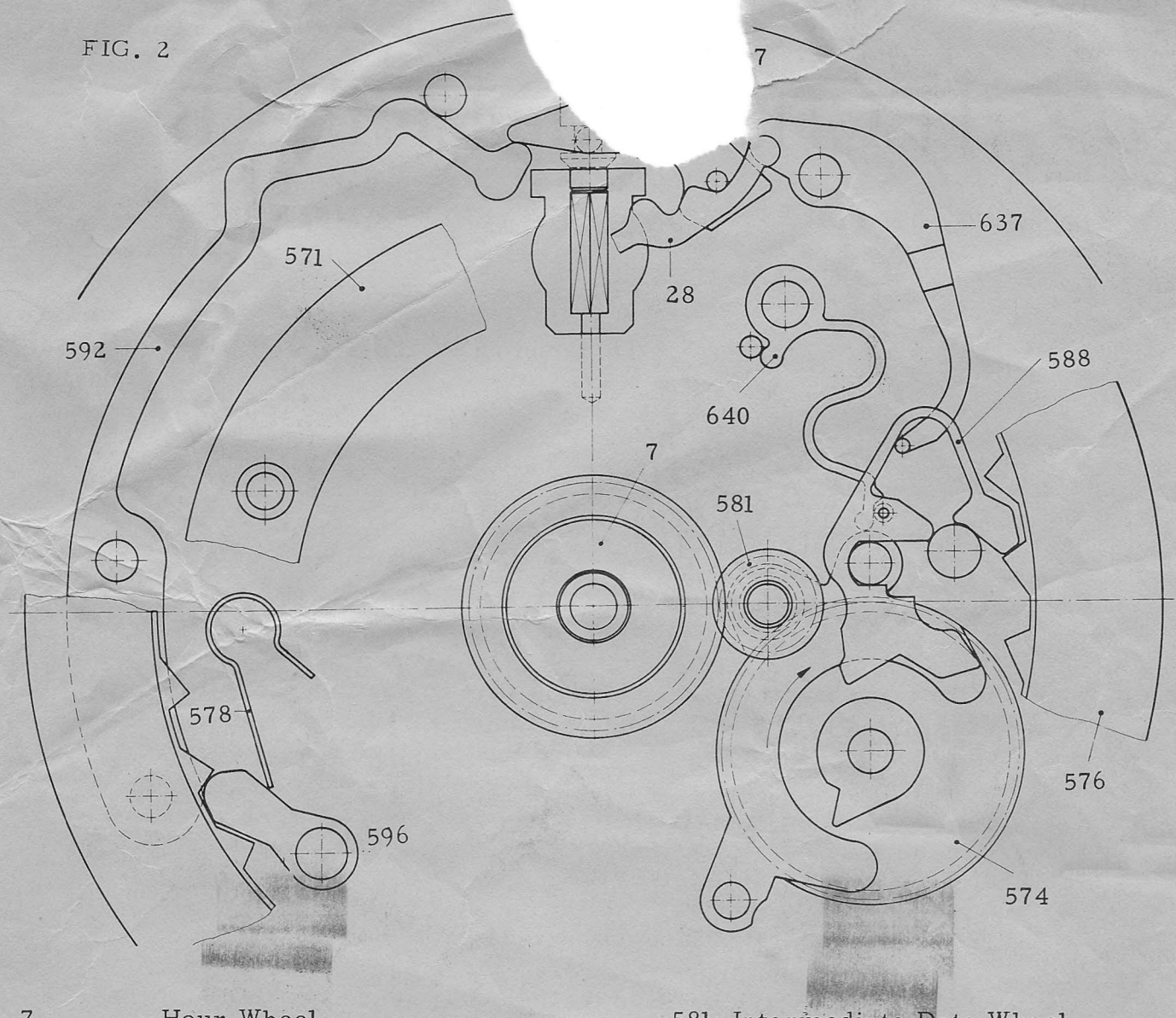
FIG. 2



7	Hour Wheel	581	Intermediate Date Wheel
25/167	Set Lever & Set Lever Axle	588	Date Corrector
28	Set Bridge	592	2nd Date Corrector (Push) Spring
571	Date Indicator Guard	596	Date Jumper
574	Date Indicator Drive Wheel - Mtd.	640	1st Date Corrector Spring
576	Date Indicator	637	Guide Lever for Date Corrector
578	Date Jumper Spring		

ASSEMBLING THE DATE CORRECTOR

1. With its affixed pin facing down, position the date corrector #588 and swivel its head toward the outside of the movement. The pin of guide lever date corrector #637 should be within the loop of #588 as shown in Fig. 2.
2. Although the tail of the 1st date corrector spring #640 lies <u>beneath</u> the date corrector #588, preposition the date corrector spring #640 with its tail <u>above</u> #588.
3. Hold down the date corrector #588 with peg wood, grasp the tail of date corrector spring #640 with tweezers and hook it under the date corrector #588.
4. Gently place date disc #576 into position. Position the jumper head between the teeth of the disc. The jumper #596 will now be out of position.
5. Hold down date disc #576 with buff stick and position jumper #596.
6. Replace date guard #571 with its holding screws #577.