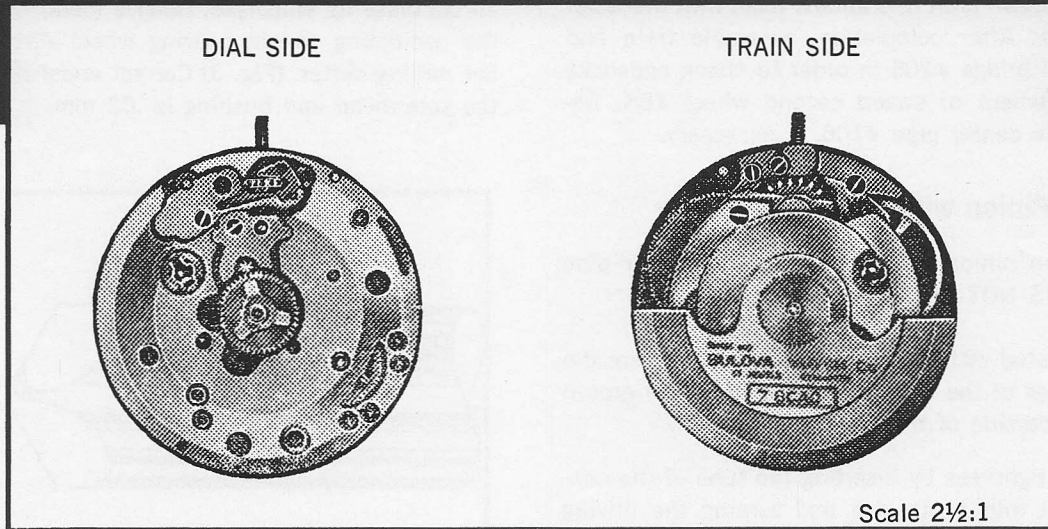


BULOVA WATCH COMPANY, Inc.

TECHNICAL BULLETIN

BULOVA MODEL 7 BCAC
AUTOMATIC, SWEEP SECOND



Specifications

7¾ ligne, lever escapement
Diameter of plate 17.20 mm.
Total running time: 47 hours
Screwless beryllium balance
21,600 beats per hour
Adjustable stud holder
KIF Ultraflex shock resistant device
Angle of Lift (pallet contact) 51°

Special Points

The Automatic Mechanism

The pawl winding wheel bolt #363 is not to be turned while the automatic device framework #342 is secured to the movement or damage will occur to both the train bridge and to the lower "D" shaped portion of the bolt.

Center Pipe Assembly

The center pipe assembly #106 is friction fit into the lower plate #201 and should not be removed. However, if it is damaged and must be replaced, be sure

DESIGNATION OF TYPE

Caliber	Description	Height
7 BCAC	Automatic with center sweep second	4.55 mm.

to position it properly since it determines the endshake of the sweep second wheel #6K which engages with the third and escape wheels.

Center pipe #106 is slightly tapered and has ridges at its base. Insert the thinner, smoother portion into its hole from the train side of the lower plate #201.

The correct position for the center pipe is attained by pushing it down until it is **almost** flush with the lower plate #201. After completion, assemble train and train wheel bridge #205 in order to check endshake and engagement of sweep second wheel #6K. Reposition the center pipe #106, if necessary.

Cannon Pinion with Drive Wheel

The cannon pinion turns freely on the center pipe #106. IT IS NOT FRICTION FIT.

It is lubricated with **heavy oil** at the points where the three prongs of the driving wheel contact the groove on the underside of the cannon pinion.

Check for tightness by inserting the tube of the cannon pinion into a pin vise and turning the driving wheel while keeping the cannon pinion from turning. If loose, tighten as follows:

1. With cannon pinion and driving wheel #94X facing down, place it in the hole in a bench anvil that is slightly larger than the gear teeth of the cannon pinion.
2. Press out the cannon pinion with the back of a pair of tweezers.
3. With a screw driver, carefully stress the prongs toward the center of the wheel. (Fig. 1)
4. Reassemble and check tension.

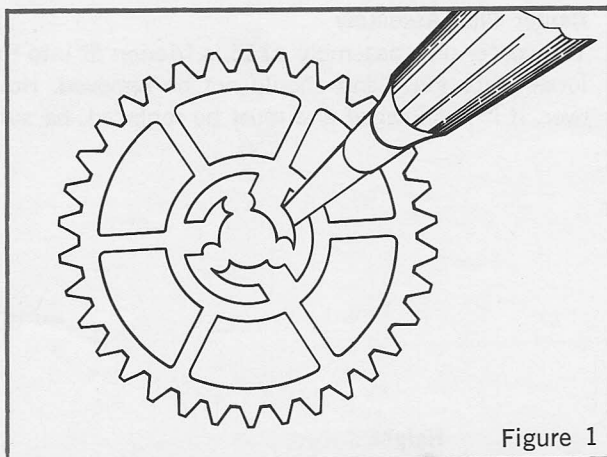


Figure 1

Oscillating Weight Endshake

To **increase** the endshake of the oscillating weight #344, remove metal from the bottom of the oscillating weight bushing #345B using a 120° milling cutter. (Figs. 2 and 3) The 120° angle of the cutter coincides with the angle of the oscillating weight bearing wheel screw head #364.

To **decrease** its endshake, remove metal from hub of the oscillating weight bearing wheel #315 using a flat milling cutter. (Fig. 3) Correct endshake between the screwhead and bushing is .02 mm.

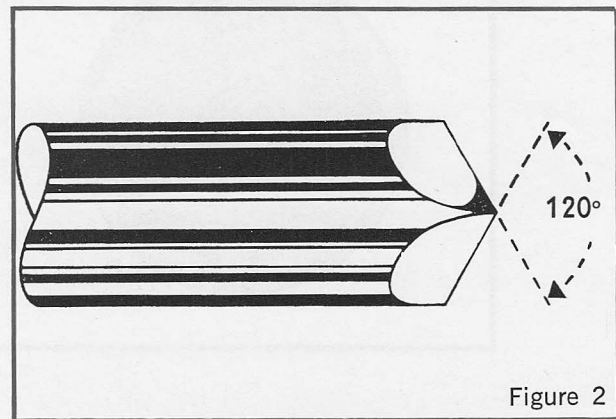


Figure 2

Replacement of Oscillating Weight Bushing

The oscillating weight bushing #345B is friction fit into the automatic device framework #342 and should not be removed unless replacement is required. If replacement is necessary, remove the old bushing and stake the new bushing from the underside of the framework so that the top of the bushing is slightly above-flush with the top of the hole in the framework. If the bushing is fitted too high, it will cause the oscillating weight #344 to ride too far above the movement and the oscillating weight may rub the case back. If the bushing is fitted too low, it will cause the oscillating weight #344 to ride too close to the movement and it will rub against the plates and bridges. When replacement is completed, check endshake of oscillating weight.

TOOLS AND EQUIPMENT

Although no special tools are required for servicing this model, we highly recommend the use of the Watchmaster Ultrasonic Cleaner and Vibrograf B200 for cleaning and timing purposes.

ASSEMBLY

The Basic Movement

Assemble and lubricate train, pallet and balance in the conventional manner.

The Lower Wind-Up Mechanism (Barrel, etc.)

1. Position barrel in its recess.
2. Replace barrel bridge #203 and fasten it with its two screws #37.
3. Check endshake of barrel arbor #2 and then lubricate at its plate and bridge contact points with **heavy** oil.
4. Position the click spring #31 into its recess so that the tip of its longer arm presses against the **inside** of the click finger. This engages the click with the crown wheel.
5. Replace the ratchet wheel #13 and its screw #41.
6. Check the click action.
 - a. In manual wind, the crown should immediately drive the ratchet wheel.
 - b. In automatic wind, the turning ratchet wheel should unclick the crown wheel and force it out of its path. To check, turn the ratchet wheel with a screw driver and observe the action.

The Automatic Device

1. See Fig. 3. Lubricate with **thin** oil the bearings and the two arbors of the inner clicks of both pawl wheels (parts #316U and #317U). (These arbors can be seen by looking down at the top of the wheels into its holes. The arbors look like the tops of metal pins. There are four in all.)
2. Lubricate both pawl winding wheel posts with

thin oil; then replace and lock the two wheels in place.

3. Turn over automatic device framework #342. Lubricate both reduction gear and ratchet wheel driving gear posts with **thick oil** or **grease**. With the reduction gear bolt #361 swung open, replace the ratchet wheel driving gear #309 (pinion up). Now, replace reduction gear #308 (pinion down). (Fig. 3)
4. Close the bolt #361.
5. With tweezers, grasp a section of the reduction gear #308 between the holes and move back and forth to check whether all the wheels are free. The automatic train must run freely in both directions.
6. Clean the top and bottom surfaces of the oscillating weight bushing #345B in the framework (Fig. 3) with sharpened peg wood and lubricate with **thick oil**.
7. Position complete framework onto oscillating weight #344 (Fig. 3) and fasten with oscillating weight bearing wheel screw #364, using a screw driver with a blade width of $\frac{3}{4}$ the diameter of the screw slot.
8. Check endshake (.02 mm.). If correction is required, see "Oscillating Weight Endshake" under "Special Points."
9. Position the automatic mechanism on the basic movement. Turn the winding crown in a winding direction to engage the ratchet wheel driving gear with the ratchet wheel.
10. Replace the two (self-winding unit) screws #335.
11. To check the freedom of the automatic mechanism, first partially wind the mainspring by turning the crown a few turns. With the movement on its side, turn it slowly in a rolling manner. Repeat the process in various positions and in both directions to make sure the oscillating weight is moving freely.

Notes

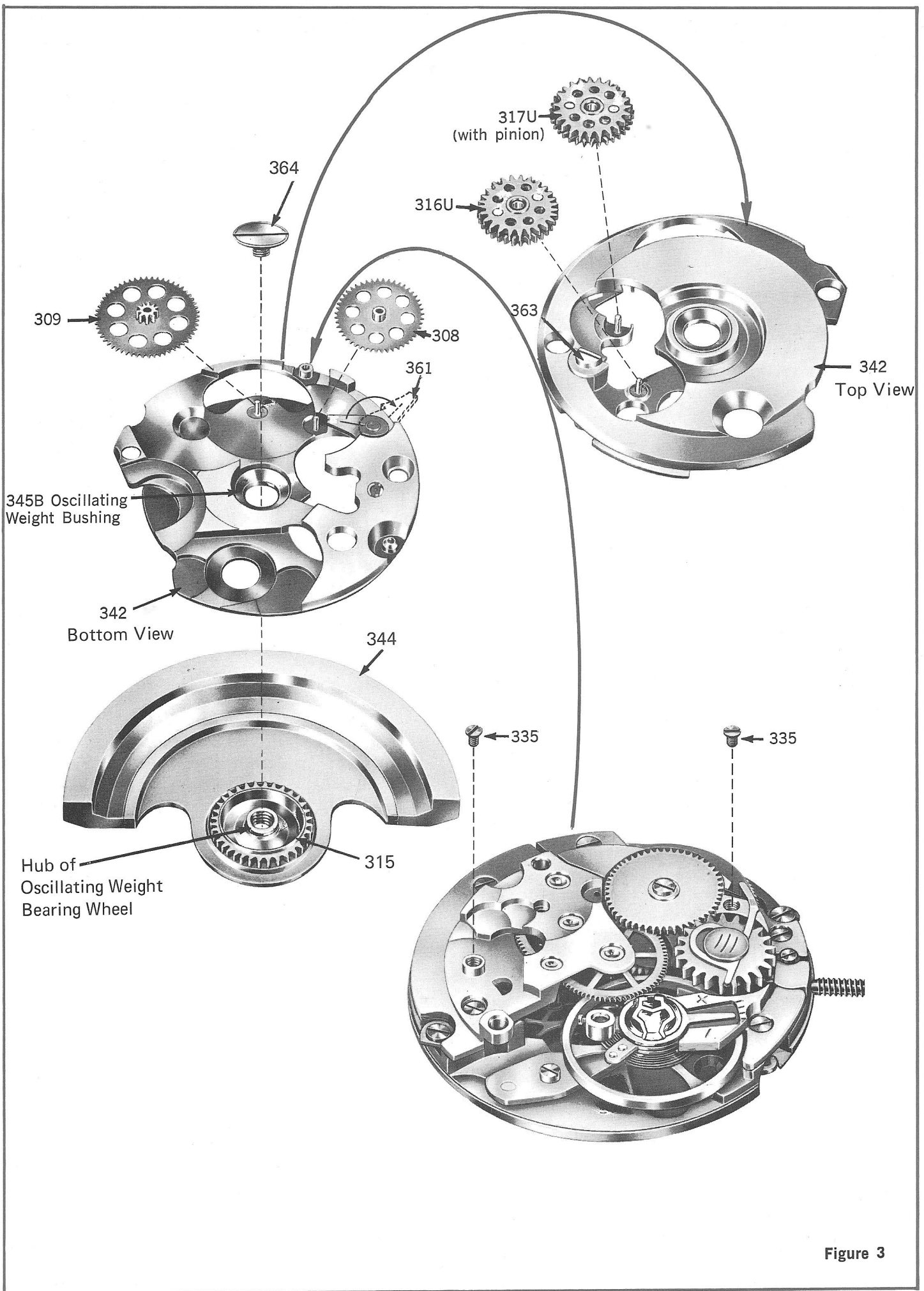


Figure 3



DISASSEMBLY

The Automatic Mechanism

After removing the two blue automatic device framework screws #335, remove the automatic mechanism from the movement.

If the automatic mechanism requires dismantling, follow the instructions listed below: (Fig. 3)

1. Remove oscillating weight bearing wheel screw #364.
2. Separate entire automatic device framework #342 with its attached wheels from oscillating weight #344.
3. With a screw driver, swing open reduction gear bolt #361.
4. Remove reduction gear #308 and ratchet wheel driving gear #309.

5. Turn over automatic device framework #342.
6. Turn the pawl winding wheel bolt #363 so that it faces one of the pawl winding wheels and remove that wheel from its post. Turn the bolt again so that it faces the other pawl winding wheel and remove it in the same manner.

Releasing the Mainspring

With the movement in the movement holder and the stem in the winding position, turn the crown in a winding (clockwise) direction and with the aid of a pointed tool, hold the click #32 in a disengaged position from the crown wheel #14. Let the mainspring run down by turning the winding crown SLOWLY backwards (counterclockwise).

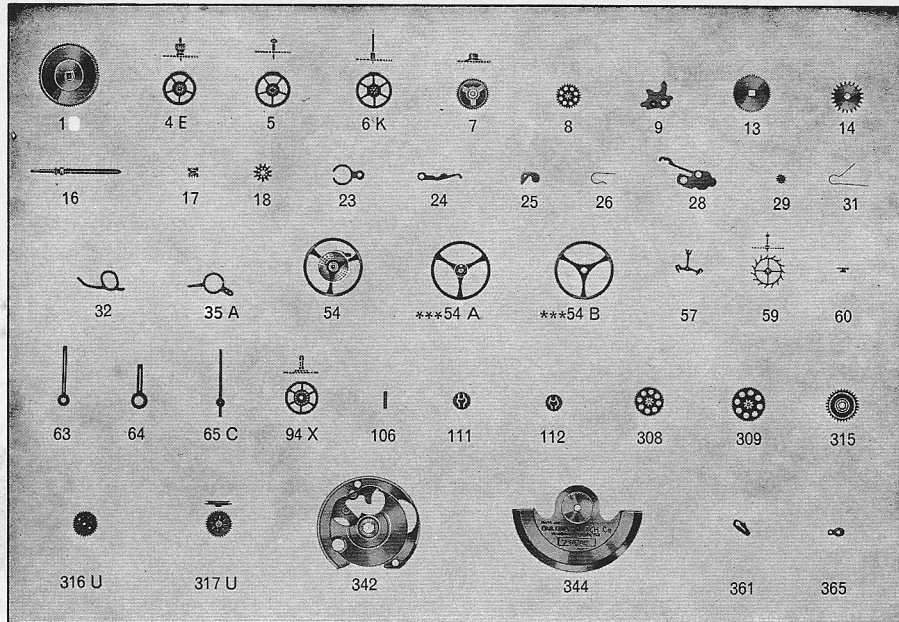
Note: The teeth of the crown wheel #14 are larger than those of the ratchet wheel #13, therefore, two teeth of the ratchet wheel will fit into each space between the teeth of the crown wheel.

The Barrel Bridge

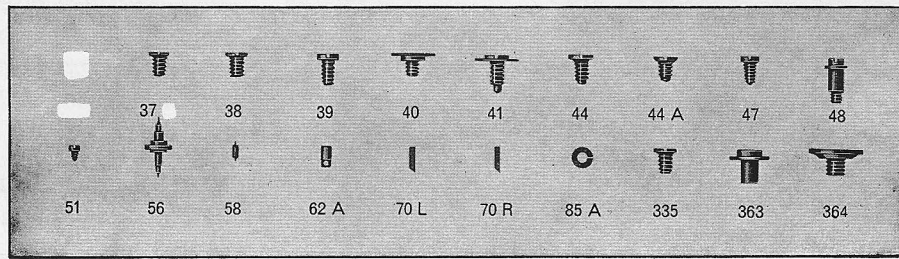
1. Remove the ratchet wheel #13 and its screw #41.
2. Remove the click spring #31.
3. In ordinary servicing, crown wheel #14, its screw #40, click #32, and crown wheel rocker #365 should not be removed. However, if replacements are necessary, remove the left handed crown wheel screw #40 and all the parts in the order listed above.
4. Remove barrel bridge #203 and its two screws #37.
5. Remove barrel.

The Basic Movement

Disassemble the remainder of the movement in the conventional manner.



Scale 1:1



Scale 3:1

Part No.	Part Name	Part No.	Part Name	Part No.	Part Name
1	Barrel & Cover	39	Pallet Bridge Screw	*99	Upper Hole Jewel for S.S. Wheel (Use 72)
*2	Barrel Arbor	40	Crown Wheel Screw	106	Center Pipe
4E	Intermediate Wheel & Pinion	41	Ratchet Wheel Screw	111	Upper Shock Set Complete
5	Third Wheel	44	Set Bridge Screw	112	Lower Shock Set Complete
6K	Sweep Second Wheel & Pinion	44A	Minute Wheel Bridge Screw	*176	Upper Set Wheel Jewel
7	Hour Wheel	47	Dial Screw	*177B	Lower Set Wheel Bushing
8	Minute Wheel	48	Set Lever Screw	308	Reduction Gear
9	Minute Wheel Bridge	51	Hairspring Stud Screw	309	Ratchet Wheel Driving Gear
10	Upper Inter-Wheel Jewel	*53AS	Mainspring w/Bridle Alloy	315	Oscillating Weight Bearing Wheel
13	Ratchet Wheel	54	Balance Complete — Flat	316U	Additional Pawl Winding Wheel
14	Crown Wheel	56	Balance Staff	317U	Pawl Winding Wheel Complete
16A	Stem — Long	57	Pallet S/S Pivot	335	Automatic Device Framework Screw
17	Clutch Wheel	58	Pallet Arbor S/S Pivot	342	Automatic Device Framework
18	Winding Pinion	59	Escape Wheel S/S Pivot	344	Oscillating Weight
23	Stud Holder	**60	Roller	345B	Oscillating Weight Bushing
24	Clutch Lever	63-64	Minute & Hour Hands	361	Reduction Gear Bolt
25	Set Lever	65C	Sweep Second Hand	363	Pawl Winding Wheel Bolt
26	Set Spring	70L	Pallet Stone — Let-off	364	Oscillating Weight Bearing Wheel Screw
27	Lower Pallet Hole Jewel	70R	Pallet Stone — Receiving	365	Crown Wheel Rocker
28	Set Bridge	*72	Upper Third Hole Jewel		
29	Set Wheel	*73	Upper Escape Hole Jewel (Use 27)		
31	Click Spring	*74	Upper Pallet Hole Jewel (Use 27)		
32	Click	*75	Lower Escape Hole Jewel (Use 27)		
35A	2 Piece Regulator — Flat	*77	Lower Third Hole Jewel		
37	Barrel & Train Bridge Screw	94X	Cannon Pinion & Driving Wheel		
38	Balance Bridge Screw (Use 37)	*95	Lower Inter-Wheel Jewel		

* Not Illustrated

** With Friction Fit Non Replaceable Roller Jewel

*** Not available separately

All information contained in this booklet is based on the latest product information available at the time of printing.

Printed 1971

Printed in U.S.A. Technical Information Services, Bulova Watch Company, Inc., 62-10 Woodside Avenue, Woodside, N. Y. 11377.