The background is a vibrant blue color, overlaid with numerous white technical drawings of watch components. These include gears of various sizes, bearings, screws, and other mechanical parts, arranged in a scattered pattern. A large, dark brown rectangular area is tilted across the upper half of the page, serving as a backdrop for the main text.

Bulova
SELF-WINDING
Watches

BULOVA
WATCH COMPANY, INC.



BULOVA SELF-WINDING WATCHES



*The Functioning, Disassembly
and Assembly of
Bulova Self-Winding Watches
with Self-Winding
Parts Index and Illustrations*

BULOVA WATCH COMPANY, INC.

Contents

	<i>Page</i>
How the Bulova 11 AAC Self-Winder Functions . . .	1
Disassembling the Bulova 11AAC Self-Winder . . .	6
Assembling the Bulova 11AAC Self-Winder . . .	10
How the Bulova 9AB, 10AU and 10AUC Self-Winders Function	12
Disassembling the Bulova 9AB, 10AU and 10AUC Self-Winders	15
Assembling the Bulova 9AB, 10AU and 10AUC Self-Winders	16
How the Bulova 9AS, 9ASC and 10BRC Self-Winders Function	18
Disassembling the Bulova 9AS, 9ASC and 10BRC Self-Winders	23
Assembling the Bulova 9AS, 9ASC and 10BRC Self-Winders	24
How to Order Bulova Self-Winding Parts . . .	25
Self-Winding Parts Index — Model 11AAC. . .	26
Self-Winding Parts Index — Models 9AB, 10AU, 10AUC	28
Self-Winding Parts Index — Models 9AS, 9ASC, 10BRC	30

Introduction

To the Watchmakers of America

This booklet has been compiled to explain to you in detail the principles of operation and methods for disassembling and reassembling the various types of Bulova self-winding watches.

The Bulova Watch Company has always tried to make available the most advanced developments and improvements in watch construction. It has followed this policy in developing its self-winding watch movements and is making available simpler construction as rapidly as new principles are developed.

All the movements described in this booklet are completely automatic. Simplification for repair purposes is our constant goal as each new type is introduced. We hope you will find this booklet helpful.



How the BULOVA 11AAC SELF-WINDER functions

The oscillating weight is mounted on a stationary arbor and is free to swing on its jewelled bearing in either direction 360° or more. The weight rotates on a slotted portion

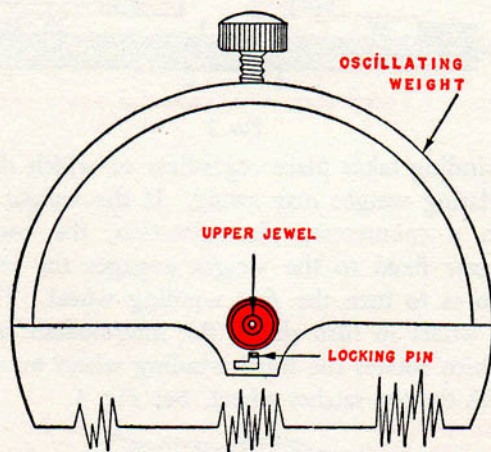


FIG. 1

of the arbor and is prevented from becoming disengaged from the arbor by a locking pin and spring. See Fig 1.

If the weight should move in a clockwise direction, then the oscillating weight gear engages the reversing pinion directly against the *intermediate* winding wheel. The winding action from this point is exactly the same as in the counterclockwise swing of the oscillating weight. See Fig. 4.

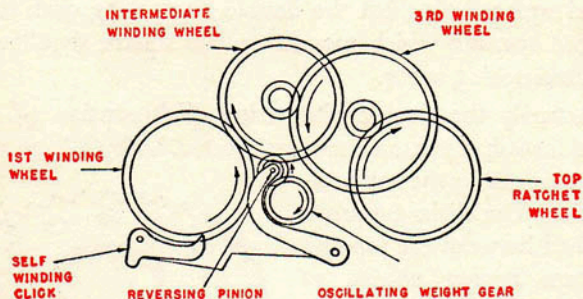


FIG. 4

The watch may also be wound by using the crown and stem which links through a crown wheel, intermediate crown wheel, and intermediate ratchet wheel (located under the bridge) to the bottom ratchet wheel just below the top ratchet wheel. See Fig. 5.

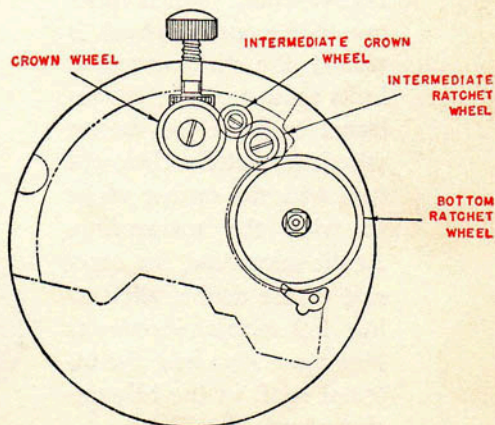


FIG. 5

The top and bottom ratchet wheels are separated by a double alternating click which makes it possible for either of the ratchet wheels to wind the mainspring arbor independently of the other. To secure separate winding of the mainspring arbor (self-winding or manual), the ratchet wheels are constructed with round holes instead of the usual square holes, but the double alternating click has a square opening which mounts on the square shoulder of the mainspring arbor.

Actually the double alternating click consists of two combination clicks and springs riveted back to back with the tongues in the same direction. The clicks are sandwiched between the top and bottom ratchet wheels so that each side of the double click fits into a shallow recess of its corresponding ratchet wheel. When either one of the ratchet wheels is turned, the click next to it locks against one of the internal teeth in the ratchet wheel, so that the click will turn with the ratchet wheel to wind the mainspring. At the same time, the other side of the double alternating click remains inactive as its tongue slips past the internal teeth in the idle ratchet wheel. See Fig. 6.

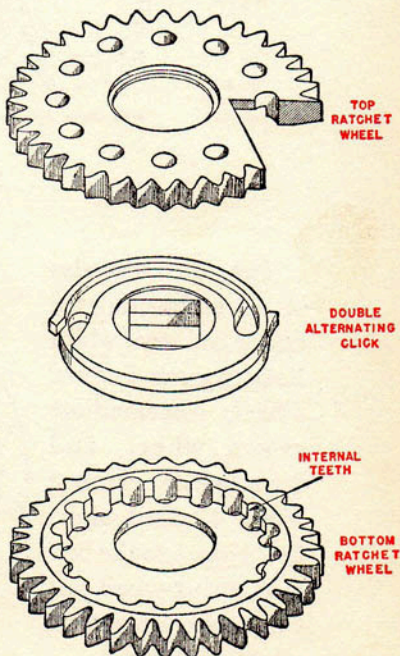


FIG. 6

The mainspring assembly is similar to that of other self-winding watches; that is, the barrel contains a short heavy spring slightly longer than the circumference of the main-spring barrel. This safety spring fits snugly against the inside of the barrel wall and carries a stop for the main-spring tongue. When the mainspring becomes fully wound, any additional torque on the barrel arbor will cause the safety-for-mainspring to slip in the barrel. This will prevent overwinding. See Fig. 7.

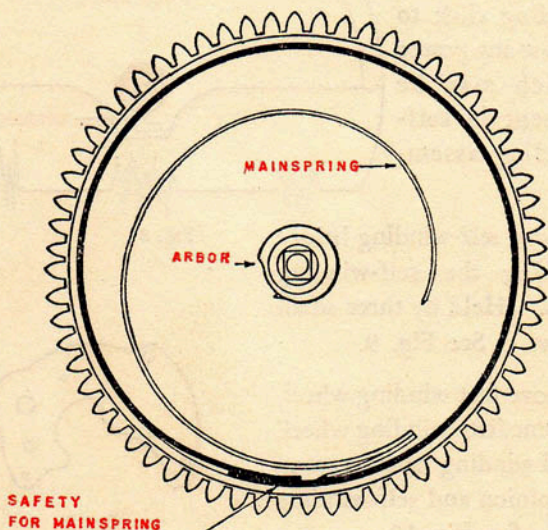


FIG. 7

Disassembling the BULOVA 11AAC SELF-WINDER

1. Pull locking pin all the way back in its L shaped slot to slip off the oscillating weight from the arbor. See Fig. 8. Do not remove locking pin and spring assembly.
2. Remove hands, dial, hour wheel and cannon pinion.

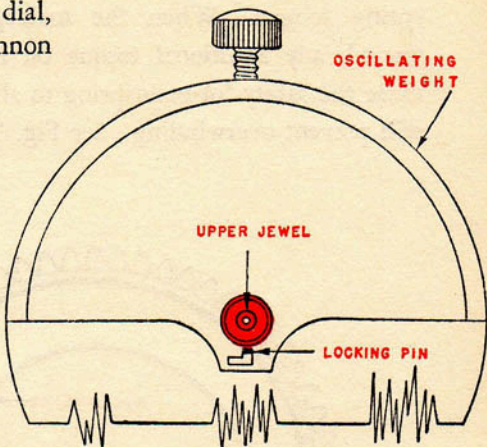


FIG. 8

3. Remove balance assembly.
4. Pull back self-winding click to release any power which may be present in self-winding assembly.
5. Remove self-winding bridge covering the self-winding parts. (Held by three small screws.) See Fig. 9.
6. Remove first winding wheel, intermediate winding wheel, third winding wheel, reversing pinion and self-winding click. See Fig. 10.
7. Remove oscillating weight arbor. (Held by three short screws.) See Fig. 11.

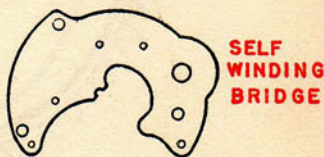
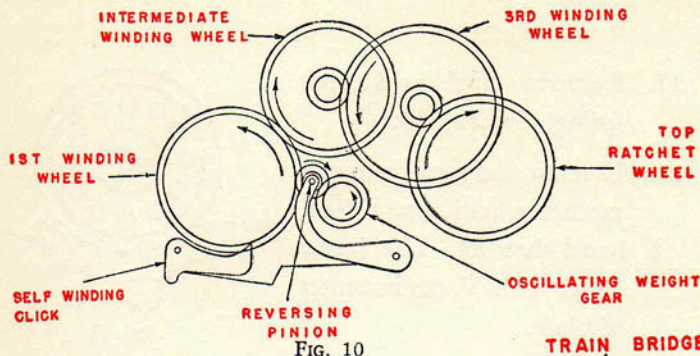
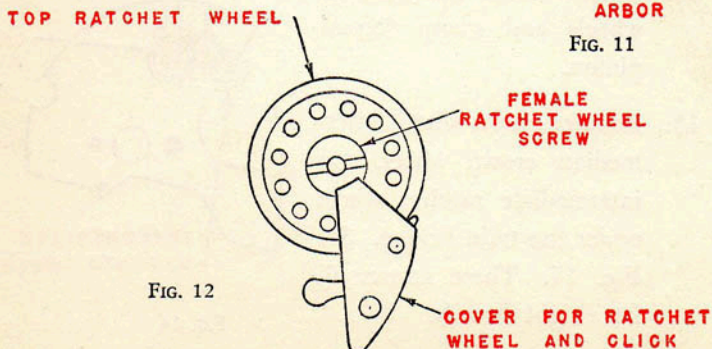
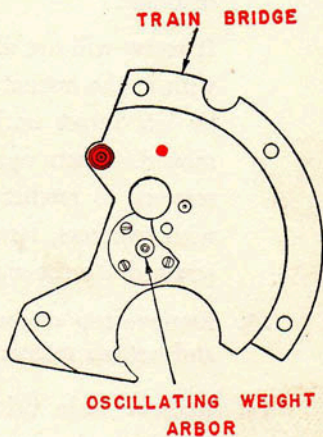


FIG. 9



8. Release remaining power by pulling back click against the bottom ratchet wheel. Let the mainspring down slowly by holding on to the stem and crown.
9. Remove pallet bridge and pallet.
10. Remove cover for ratchet wheel and click. See Fig. 12.



11. Remove click and click spring. See Fig. 13.
12. Unscrew and remove female ratchet wheel screw (left hand thread). Use screw driver with V cut in center of blade.

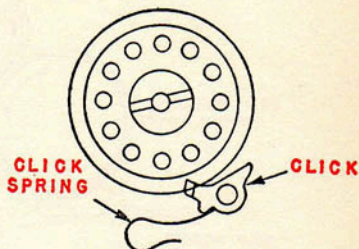


FIG. 13

If screw will not disengage because barrel arbor turns with it, the ratchet wheel and barrel assembly should be left intact until remaining parts have been removed. Then open barrel and remove arbor still screwed to ratchet wheels. By holding barrel arbor with tweezers, female ratchet screw can now be unscrewed (to the right).

13. Remove top ratchet wheel, double alternating click, and bottom ratchet wheel.
14. Remove train bridge, train wheels and sweep second pinion.
15. Remove crown wheel, intermediate crown wheel, and intermediate ratchet wheel under the train bridge. See Fig. 14. These screws all have right threads.

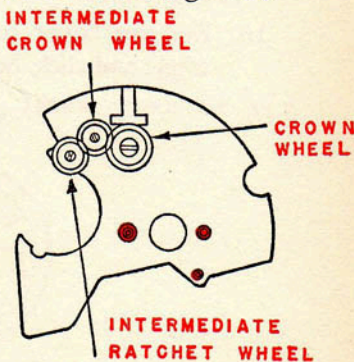


FIG. 14

16. Remove bearing plate for sweep second pinion. See Fig. 15.

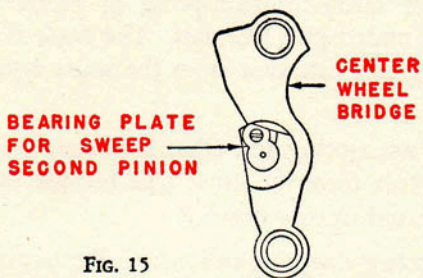


FIG. 15

17. Remove center wheel bridge.
18. Remove mainspring barrel.
19. Remove center wheel.
20. Remove barrel arbor post screw (under pillar plate) and barrel arbor post.
21. Remove winding and setting parts.
22. Open barrel.
23. Remove mainspring arbor and mainspring.
24. Remove safety-for-mainspring.
25. Remove balance from balance cock.
26. Remove Incabloc jewels.

Assembling the BULOVA 11AAC SELF-WINDER

1. Replace safety-for-mainspring in barrel so hooked end is underneath free end. The hook is positioned in a reverse direction from the usual type of barrel stop.
2. Insert mainspring and arbor in barrel. Spring winds backwards from the usual type because the barrel is positioned upside down.*
3. Lubricate mainspring and safety. Replace cover. Also lubricate bearings of the mainspring barrel.
4. Assemble regular winding and setting parts and lubricate.
5. Screw barrel arbor post to plate and lubricate.
6. Replace center wheel.
7. Replace barrel so that teeth are at bottom.
8. Replace center wheel bridge and oil center wheel bearings.
9. Replace bearing plate for sweep second pinion so that notched part lines up with recess.
10. Replace crown wheel, intermediate crown wheel, and intermediate ratchet wheel under the train bridge and lubricate.
11. Replace remaining train wheels, sweep second pinion.
12. Replace train wheel bridge and oil train wheel pivots.

* If you do not have a mainspring winder that winds *counter* clockwise you can get the counter clockwise effect by using 2 mainspring winders. Just slip the wound-up spring from one winder into the other and then eject the spring from the 2nd winder into the barrel.

13. Assemble bottom ratchet wheel (without counterbore), double alternating click (shallow counterbore on top) and top ratchet wheel (with screwhead counterbore on top) on barrel arbor. Both sides of double alternating click should be lightly lubricated.
14. Screw down female ratchet wheel screw (left hand thread). Apply lubricant under screw head.
15. Insert click and click spring.
16. Screw down cover for ratchet wheel and click.
17. Insert pallet and screw down bridge, oil pallets.
18. Oil center wheel post lightly. Replace cannon pinion, minute wheel, hour wheel, dial, hour, minute and second hands now while it is still possible to support center wheel on staking block.
19. Screw oscillating weight arbor in place. (Line up crescent with recess.)
20. Oil lower bearings and insert first winding wheel (hub up), intermediate winding wheel (pinion up), third winding wheel (pinion down), reversing pinion and self-winding click.
21. Screw down self-winding bridge. Oil top pivots.
22. Assemble balance jewels and oil.
23. Replace balance assembly.
24. Slip on oscillating weight by pulling back locking pin. Oil jewels.
25. Check self-winding and stem winding.

How the BULOVA 9AB, 10AU and 10AUC SELF-WINDERS function

In the Bulova 9AB, 10AU and 10AUC self-winding watches, the oscillating weight functions as in the 11AAC and is held in place in exactly the same way.

Here also, a reversing pinion enables the gear of the oscillating weight to link with either the first or intermediate winding wheel, depending on whether the weight is rotating counterclockwise or clockwise. However, the

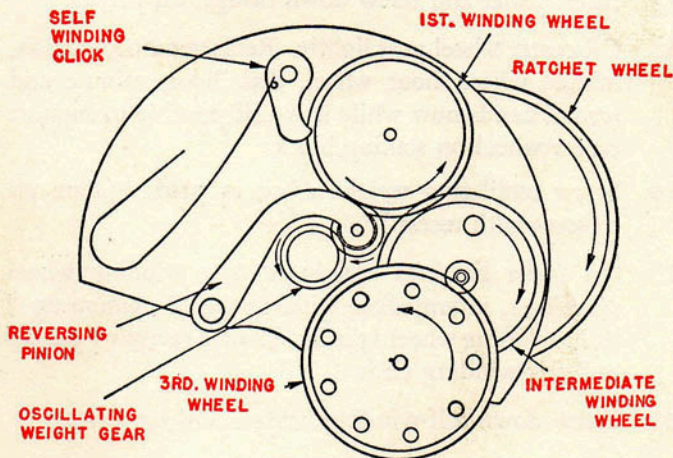


FIG. 16

third winding wheel in this model is the key device which by its novel construction permits self-winding or manual winding of the ratchet wheel independently of each other. See Fig. 16.

The third winding wheel consists of a brass wheel with nine equally spaced internal teeth and a pinion fixed to a click which can turn in a recess of the wheel. Actually, if the wheel rotates in a counterclockwise direction (dial down), as it must during self-winding, the tongue of the click locks against an internal tooth of the wheel and causes the pinion to turn with the brass wheel. If the

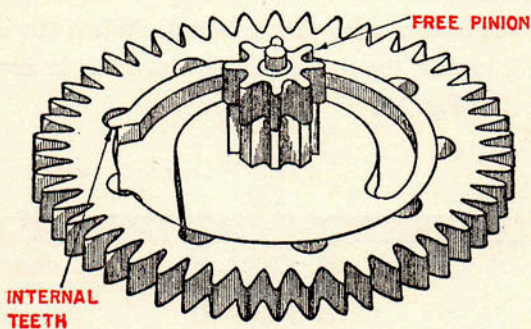


FIG. 17

pinion is rotated by the ratchet wheel, which will occur when the watch is wound manually by stem and crown, the tongue of the click will slip past the internal teeth in the wheel without disturbing the brass wheel. See Fig. 17.

Thus, if the oscillating weight moves in either direction, the 3rd winding wheel will lock and drive its pinion so that it will wind the ratchet wheel engaged with the free pinion.

If the watch is wound with the stem and crown, the ratchet wheel will be turned by the crown wheel under the train bridge, but now the free pinion of the third winding wheel being meshed with the ratchet wheel will merely rotate idly without interfering with the third winding wheel itself.

The ratchet wheel is fixed solidly to the barrel arbor which fits over a tube in the barrel. When the ratchet wheel is turned, the mainspring is wound as in any other watch. See Fig. 18.

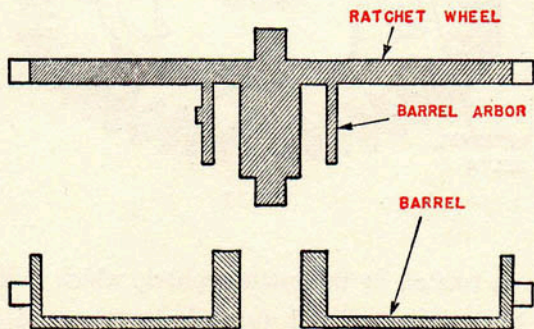


FIG. 18

Also in place of a separate safety-for-mainspring and a mainspring, a safety-for-mainspring is riveted directly to the end of the mainspring to prevent overwinding.

Disassembling the BULOVA 9AB, 10AU and 10AUC SELF-WINDERS

1. Remove case screws and stem — remove movement from its case.
2. Remove hands and dial, dial washers and hour wheel.
3. Pull back locking pin and slip off oscillating weight.
4. Release self-winding click.
5. Loosen four screws on self-winding bridge and remove bridge.
6. Remove first winding wheel, intermediate winding wheel, third winding wheel, self-winding click, click spring, and reversing pinion.
7. Remove and disassemble balance assembly. (Remove both cap jewels.)
8. Remove cannon pinion.
9. Release mainspring power by pulling back main click. Let mainspring down slowly by holding on to the stem and crown.
10. Remove pallet bridge and pallet.
11. Loosen four screws on train bridge and remove bridge.
12. Loosen three screws under the bridge which hold the oscillating weight arbor and remove arbor from the bridge.
13. Remove crown wheel screw and crown wheel under the bridge.
14. Remove wheel train. (In 10 AUC, remove sweep second pinion, bearing plate and center wheel bridge.)
15. Remove mainspring assembly.
16. Remove all winding and setting parts.
17. Remove click and click screw.
18. Remove ratchet wheel from barrel and carefully remove mainspring with its safety.

Assembling the BULOVA

9AB, 10AU and 10AUC SELF-WINDERS

1. Assemble winding and setting parts and lubricate.
2. Insert center wheel. (In 10 AUC, screw down center wheel bridge.)
3. Select a mainspring winder with barrel somewhat smaller than the mainspring barrel of the watch. Wind up the spring in a counterclockwise direction (backwards from the usual type), so that only the safety-for-mainspring extends from the barrel of the winder.

Beginning at the riveted end, roll the safety-for-mainspring into the mainspring barrel by winding it around the outside of the winder as the winder and the safety are slipped into the mainspring barrel.

With the entire mainspring assembly held in the mainspring barrel, eject the mainspring from the winder.

Lubricate mainspring and its safety.

4. Assemble ratchet wheel and arbor to barrel and insert in watch. (Ratchet wheel on top.)
5. Screw down click spring and insert click. (Raised part of click up.)
6. Insert remaining train wheels in watch. (In 10 AUC, add bearing plate and sweep second pinion.)
7. Screw oscillating weight arbor to train bridge. (Three screws.)
8. Screw crown wheel to train bridge. Lubricate crown wheel center and oil upper center wheel jewel.
9. Position train bridge carefully and screw down four screws.

10. Oil pallets and insert pallet and pallet bridge.
11. Oil all train wheel pivots. (Top and bottom.)
12. Assemble balance jewels and oil. Insert balance unit in watch.
13. Lubricate lightly recess in third winding wheel and fit free pinion into recess.
14. Oil pivot holes for self-winding parts in train bridge and insert first winding wheel (hub up), intermediate winding wheel (pinion up), third winding wheel (pinion down), reversing pinion (pinion down and between first and intermediate winding wheels), self-winding click (pin up), and click spring (short end of spring towards edge of watch). Be sure long end of spring rests against the pin on the click.
15. Screw down self-winding bridge and oil top pivots of self-winding parts.
16. Moisten center post with oil and replace cannon pinion.
17. Pull back locking pin and slip on oscillating weight. Oil jewels.
18. Check self-winding and stem winding.
19. Insert hour wheel and dial washers. Put on dial.
20. Position movement in case and screw down case screws and stem. Snap on back of case and put on hands.

How the BULOVA

9AS, 9ASC and 10BRC SELF-WINDERS function

In the Bulova 9AS, 9ASC and 10BRC self-winding watches, the oscillating weight also turns 360° or more in either direction, winding with every movement of the wrist. The weight is held on its arbor by means of the locking plate and can be disassembled by removing the locking plate screw. See Fig. 19.

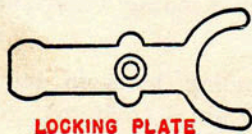


FIG. 19

The self-winding mechanism is kept in position by three long screws. See Fig. 20. When these are removed, the entire self-winding unit may be lifted from the watch movement, so that the regular watch mechanism remains intact.

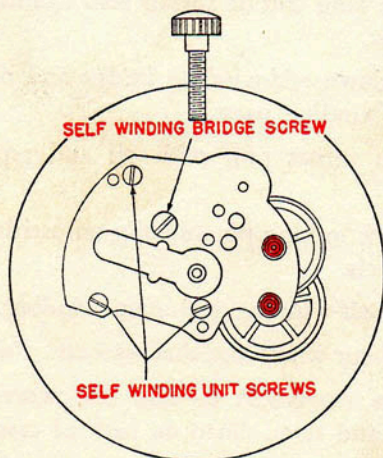


FIG. 20

The self-winding parts are held in position by the self-winding bridge and may be disassembled by removing

the single short screw which keeps the bridge in place.

In order to accomplish self-winding in either a clockwise or counterclockwise direction, a device called the alternating disc is used, and on this swiveling disc are mounted the 1st and 2nd alternating gears.

If the direction of the oscillating weight's rotation is *clockwise*, the oscillating weight gear meshes with the 1st alternating gear which, because of the swivel action of the alternating disc, is kicked directly against the intermediate winding wheel, also going clockwise. (In this case, the 2nd alternating gear merely idles.) See Fig. 21.

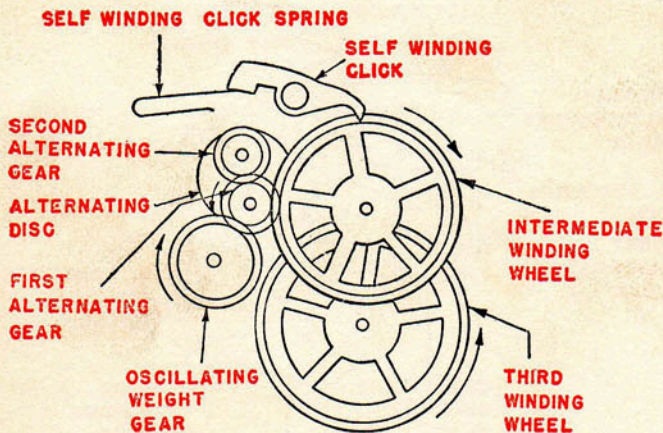


FIG. 21

If the oscillating weight should rotate *counterclockwise*, the oscillating weight gear is still in contact with the 1st alternating gear mounted on the alternating disc. How-

ever, with the reversing of direction, the alternating disc is kicked over so that now the 1st alternating gear engages the 2nd alternating gear, also mounted on the disc, and this 2nd alternating gear meshes with the intermediate winding wheel.

It is apparent that since another gear has been inserted between the oscillating weight gear and the intermediate winding wheel, the direction of rotation of the intermediate winding wheel will still be exactly as before, clockwise. See Fig. 22.

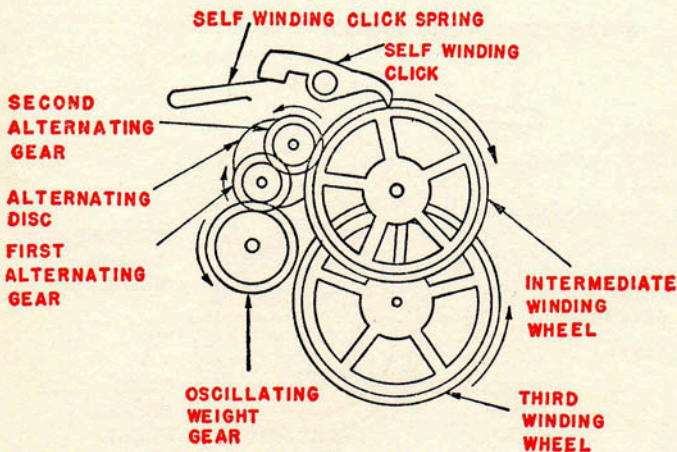


FIG. 22

The clockwise intermediate winding wheel engages the 3rd winding wheel. The 3rd winding wheel fits into the

barrel bridge so that its pinion meshes with the ratchet wheel. The third winding wheel is therefore the connecting link between the self-winding assembly and the regular watch mechanism. See Fig. 23.

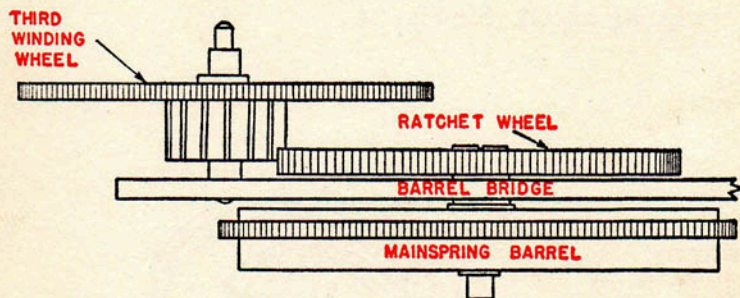


FIG. 23

When the drive originates in the self-winding assembly, the 3rd winding wheel will drive the regular ratchet wheel in the watch. Of course, winding the ratchet wheel, which is seated on the square of the barrel arbor, results in winding up the mainspring.

If the watch is wound with the stem and crown, the ratchet wheel is caused to turn by the crown wheel as in any regular type of watch. However, since the pinion of the third winding wheel is still engaged with the ratchet wheel, the third and intermediate winding wheels will

also turn. Here again, the swiveling action of the alternating disc serves another important function by disengaging the first and second alternating gears from contact with the intermediate winding wheel. In this way, the oscillating weight gear is disconnected and therefore will not interfere with the free rotation of the self-winding wheels. See Fig. 24.

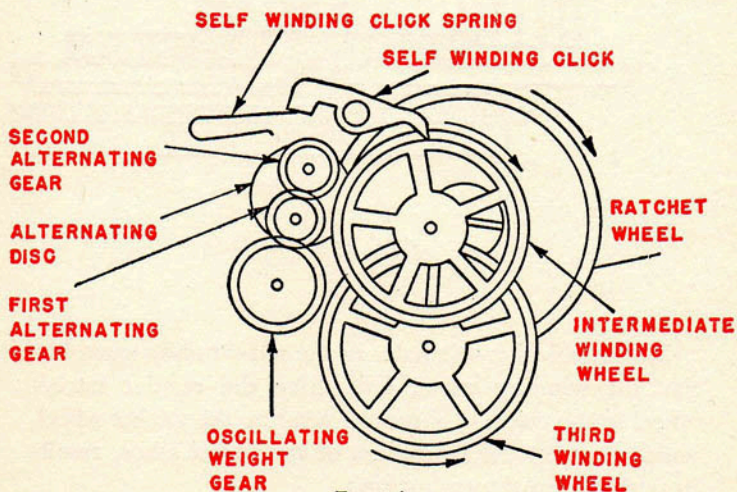


FIG. 24

Other than the inclusion of a safety-for-mainspring in the barrel, the remaining parts of the watch are assembled and function as in any other time piece.

Disassembling the BULOVA

9AS, 9ASC and 10BRC SELF-WINDERS

The entire self-winding assembly can be removed intact by merely unscrewing the three screws shown in Fig. 20.

For complete disassembly:

1. Remove the locking plate and screw. Oscillating weight comes off.
2. Pull back self-winding click to free any tension on intermediate winding wheel.
3. Remove single winding bridge screw and three long self-winding unit screws. The self-winding bridge will lift off.
4. Remove intermediate winding wheel, 3rd winding wheel, self-winding click and spring, alternating disc, 1st and 2nd alternating gears. See Fig. 25.

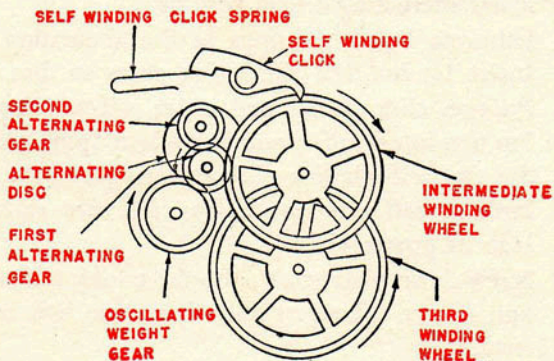


FIG. 25

5. Lift off main self-winding plate.
6. Remove oscillating weight arbor from plate (held by two small screws).

The remaining watch assembly is disassembled like any regular watch mechanism.

Assembling the BULOVA

9AS, 9ASC and 10BRC SELF-WINDERS

1. Assemble and oil the regular watch mechanism in the usual manner. (The mainspring assembly is put together as explained under 9AB assembling, but in this case, the main spring is wound up clockwise in the winder.)
2. Screw down oscillating weight arbor to the main self-winding plate.
3. Oil bearings in the self-winding plate and lower 3rd winding wheel bushing.
4. Position main self-winding plate on watch movement.
5. Insert 3rd winding wheel in place (pinion down).
6. Insert alternating disc in position.
7. Lubricate lightly bearings in the alternating gears. Insert 1st and 2nd alternating gears on disc.
8. Position click spring and insert self-winding click.
9. Position intermediate winding wheel (pinion down). See that self-winding click comes against the wheel.
10. Position self-winding bridge. Be sure each pivot is in its proper place.
11. Screw down plate screw, also three long self-winding unit screws. (Longest screw is used in hole near the stem.)
12. Oil intermediate winding wheel and 3rd winding wheel jewels.
13. Position oscillating weight and locking plate. Oil bearing.
14. Screw down locking plate (countersink on top).
15. Check self-winding and stem winding before casing.



How to Order

BULOVA

SELF-WINDING PARTS

From Your Material Jobber

For your convenience we list and illustrate the names and numbers of each part for the various models of Bulova Self-Winding Watches.

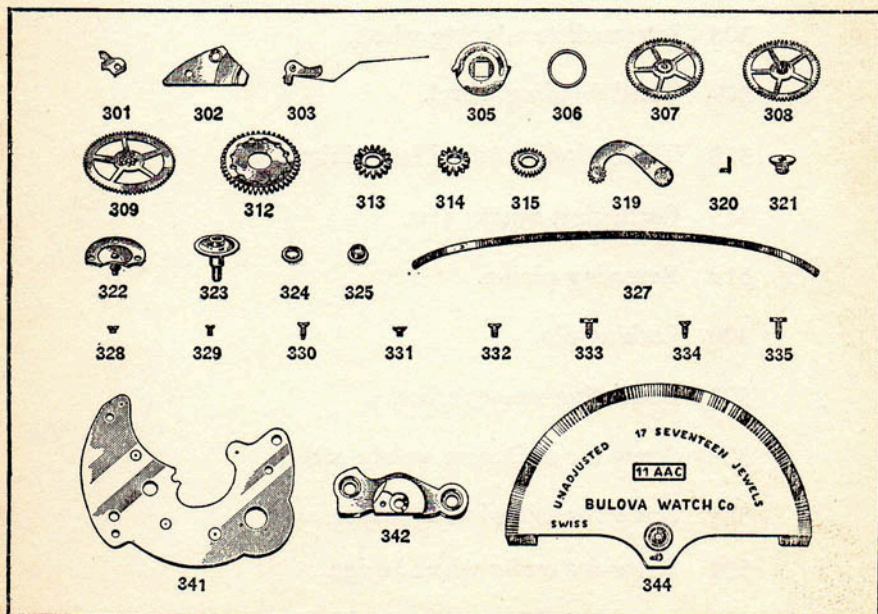
When you require any of this material, be sure to order the parts by number and model as well as by material description in order to insure proper filling of your order.

SELF-WINDING PARTS INDEX

Model 11AAC

<i>Part #</i>	<i>Description</i>
301	Bearing plate for sweep second pinion.
302	Cover for ratchet wheel and click.
303	Self-winding click.
305	Double alternating click.
306	Locking pin spring.
307	First winding wheel.
308	Intermediate winding wheel.
309	Third winding wheel.
312	Top ratchet wheel.
313	Intermediate ratchet wheel.
314	Intermediate crown wheel.
315	Oscillating weight gear.
319	Reversing pinion.
320	Locking pin.
321	Female ratchet wheel screw.
322	Oscillating weight arbor.
323	Barrel arbor post.
324	Center for intermediate ratchet wheel.
325	Center for intermediate crown wheel.
327	Safety-for-mainspring.
328	Screw for oscillating weight arbor.
329	Screw for bearing plate for sweep second.
330	Screw for ratchet wheel and click cover.
331	Screw for intermediate ratchet wheel.
332	Screw for intermediate crown wheel.
333	Screw for barrel arbor post.

- 334 Screw for self-winding bridge.
 335 Screw for center wheel bridge.
 341 Self-winding bridge.
 342 Center wheel bridge.
 344 Oscillating weight.
 *345 Jewel — upper for oscillating weight.
 *346 Jewel — lower for oscillating weight.
 *349 Bushing — upper for first and intermediate winding wheels.
 *350 Bushing — lower for first and intermediate winding wheels.
 *351 Bushing — upper for third winding wheel.

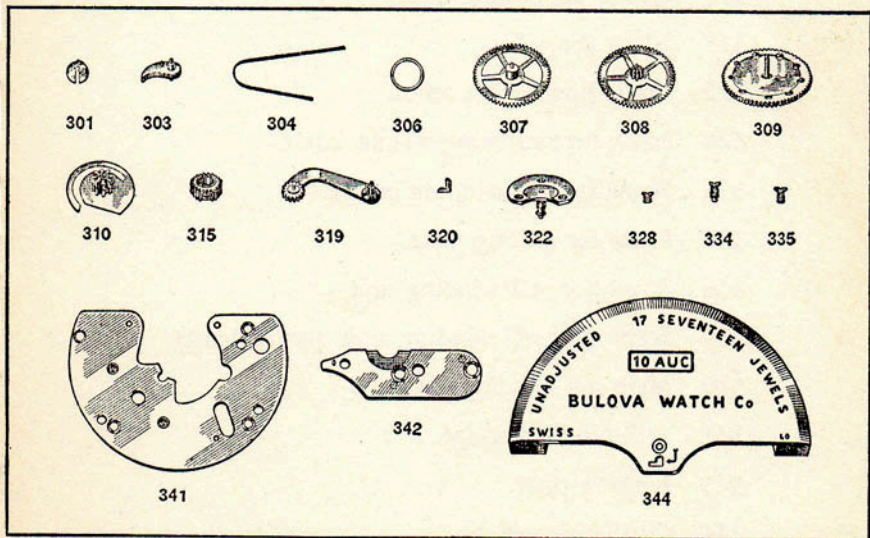


* — Not shown in illustration.

Models 9AB, 10AU and 10AUC

<i>Part #</i>	<i>Description</i>
301	Bearing plate for sweep second pinion.
303	Self-winding click.
304	Self-winding click spring.
306	Locking pin spring.
307	First winding wheel.
308	Intermediate winding wheel.
309	Third winding wheel.
310	Third winding wheel free pinion.
315	Oscillating weight gear.
319	Reversing pinion.
320	Locking pin.
322	Oscillating weight arbor.
328	Screw for oscillating weight arbor.
334	Screw for self-winding bridge.
335	Screw for center wheel bridge.
341	Self-winding bridge.

- 342 Center wheel bridge.
- 344 Oscillating weight.
- *345 Jewel — upper for oscillating weight.
- *346 Jewel — lower for oscillating weight.
- *349 Bushing — upper for first and intermediate winding wheels.
- *350 Bushing — lower for first and intermediate winding wheels.

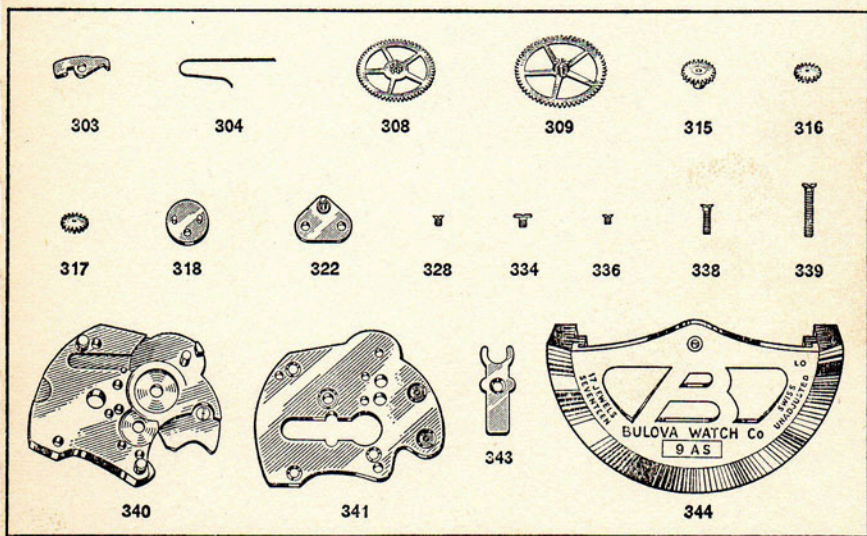


* — Not shown in illustration.

Models 9AS, 9ASC and 10BRC

<i>Part #</i>	<i>Description</i>
303	Self-winding click.
304	Self-winding click spring.
308	Intermediate winding wheel.
309	Third winding wheel.
315	Oscillating weight gear.
316	First alternating gear.
317	Second alternating gear.
318	Alternating disc.
322	Oscillating weight arbor.
328	Screw for oscillating weight arbor.
334	Screw for self-winding bridge.
336	Screw for locking plate.
338	Screw for self-winding unit.
339	Screw for self-winding unit (extra long).
340	Main self-winding plate.
341	Self-winding bridge.
343	Locking plate.
344	Oscillating weight.
*347	Jewel — upper for intermediate winding wheel.

- *348 Jewel — upper for third winding wheel.
- *350 Bushing — lower for intermediate winding wheel.
- *352 Bushing — upper for oscillating weight.
- *353 Bushing — lower for third winding wheel.



* — *Not* shown in illustration.