

Repairing

the Hydraulic System

of the

LEAR

**VARI-MATIC WATCH
CLEANING MACHINE**

and

**AUTOMATIC WATCH
CLEANING MACHINE**

having serial numbers starting
with letter B

REPLACING THE HYDRAULIC PRIMARY SEAL

1. Operate the machine without a basket until the motor is in its lowest position.
2. Disconnect the machine from its electrical source and remove the front and back covers.
3. Remove the filler pipe plug and by up-ending the machine drain as much oil out of the reservoir as possible.
4. Remove the hex cap found at the front of the cylinder. This should be done with caution since a strong spring is directly behind this cap.
5. Withdraw the spring and spring pad, then push the piston through to the front until the primary seal can be removed.
6. Moisten the primary seal with hydraulic oil and replace it into the cylinder against the piston with the lip of the seal facing forward. Be especially careful to keep all parts scrupulously clean during assembly.
7. Replace the spring pad and spring.
8. Replace the "O" Ring on the hex cap and reinstall the cap. Make sure it seats properly.
9. Turn the basket height adjusting screw at the rear of the piston inward as far as it will go and refill the reservoir with hydraulic oil.
10. Bleed the hydraulic system to evacuate all air and reset the machine to the proper basket height (See instruction manual furnished with machine.)

Before reassembling the covers it is wise to operate the machine to make sure that everything is working properly and that the basket height is satisfactory.

A Few Helpful Hints: —

A small dab of grease or vaseline placed on the threaded portion of the bleeder cup before screwing it into the inner column piston will prevent the re-entry of air at this point.

When the bleeder cup becomes approximately half filled with oil and air bubbles still have not stopped, deflect the small ball in the bleeder cup using the wire indicator of the filler pipe plug. This will cause the oil level in the cup to rise and fall and eliminate the necessity of emptying the bleeder cup when it becomes full. Remove this wire deflector before removing the bleeder cup.

Bleeding the system with the basket height adjustment screw all the way in on the piston will make the bleeding operation a little bit simpler.

When the system has been bled, pull the inner column piston up slightly or just enough to engage the bushing nut — tighten the bushing nut down and secure with the locking nut.

SYNCHRONIZING THE VARI-MATIC MACHINE

If the rise and fall of the basket motor does not coincide properly with the indexing of the turntable, the machine is out of synchronization. This is usually the result of the basket motor failing to clear the jar while the turntable is indexing. This failure is due to worn seals in the hydraulic system. (See "Replacing the Hydraulic Primary Seal").

After the seal has been replaced and the system successfully bled the machine must be synchronized.

While the back cover of the machine is off, the index arm must be repositioned. To do this proceed as follows:

- 1.** Remove the hex nut at the top of the secondary shaft.
- 2.** Lift the index arm off the secondary shaft.
- 3.** Remove the pin that is placed vertically between the index arm and the shaft. Do not replace this pin.
- 4.** Reassemble the index arm onto the secondary shaft approximately lining up the grooves left by the absence of the pin. Tighten down the hex nut to hold the index arm.
- 5.** Operate the machine to observe its action. If the turntable indexes too late for proper synchronization, loosen the hex nut and rotate the index arm counterclockwise slightly and tighten the nut.
- 6.** Observe the machine's operation and make the necessary adjustments until the machine is perfectly synchronized, then tighten the hex nut firmly.

INSTRUCTIONS FOR REPLACING THE "U" SEAL IN THE INNER COLUMN OF THE L & R VARI-MATIC MACHINE

Caution

Replacing the "U" seal is at best a very difficult matter. It is recommended that you purchase a complete new Inner Column Assembly and then return your present column to the factory for this repair. You would then have a spare column for use against the next time that this same difficulty might occur. These instructions are included, however because we know that many watchmakers have been successful in making this replacement.

1. Unplug the motor from the base and remove the outer column and motor assembly from the machine.
2. Pull the inner column piston up very carefully until the exposed spring end is visible.
3. Attach a wire to the spring loop and remove the inner column piston from the spring. This wire is used so that the spring may be withdrawn again for reassembly of the piston. Allow the spring to retract, with the wire.
4. Remove the retaining ring from the top of the inner column.
5. Withdraw the bushing from the inner column.
6. Remove the "U" Seal.
7. Install the new seal moistening it slightly with oil.
8. Replace the bushing and the retaining ring.
9. Withdraw the spring with the wire and re-attach the inner column piston.
10. Allow the piston to go into the inner column after removing the wire.
11. Bleed the hydraulic system to evacuate all air.
12. Reassemble the outer column so that normal operation can be resumed.

Helpful Hints: —

1. Care should be taken to prevent damage to the seal during its installation and to keep all parts as scrupulously clean as possible.
2. In some cases it might be found that complete disassembly of the Inner Column might be an easier method to replace this seal. To do this proceed as follows, after step 4 above.
 - (a) Insert a screw $\frac{1}{4}/20$ into the bottom plug of the machine and withdraw this plug after removing the retaining ring.
 - (b) With a long slender rod through the bottom of the Inner Column tap the upper bushing out and then proceed with step 7 above.

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