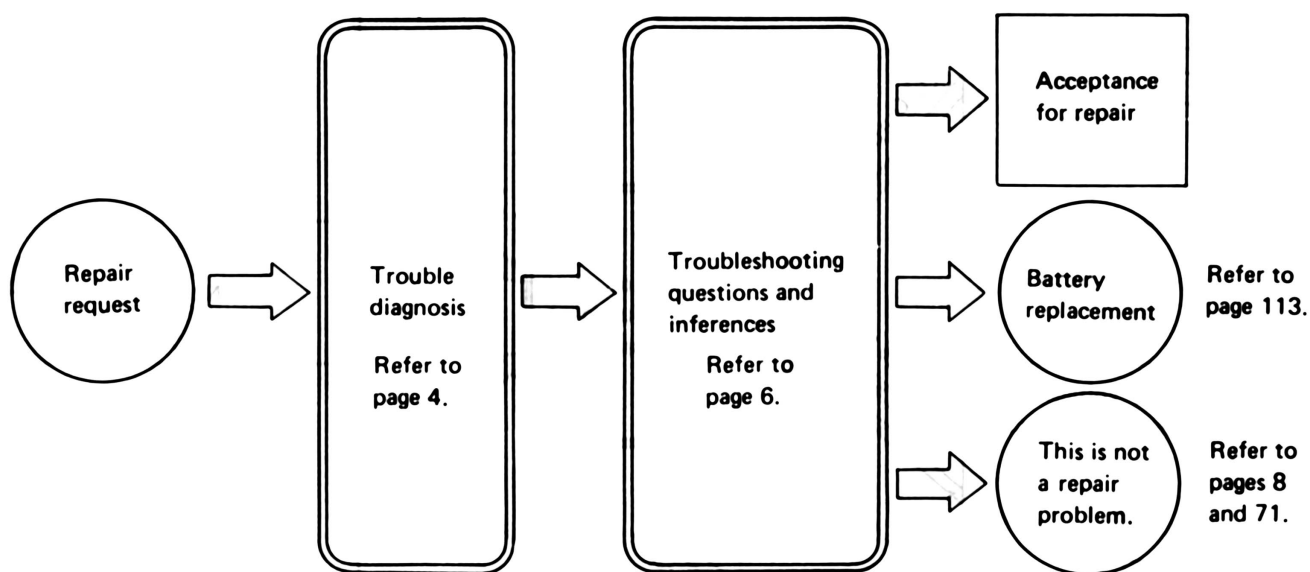

CHAPTER 1
TROUBLESHOOTING QUESTIONS

I. BEFORE RECEIVING WATCHES FOR REPAIR

It is very important to obtain accurate information from customers by questioning them on the condition of the watch in question when they make repair requests to you.

Which of the following cases applies depends on the information received from the customers.

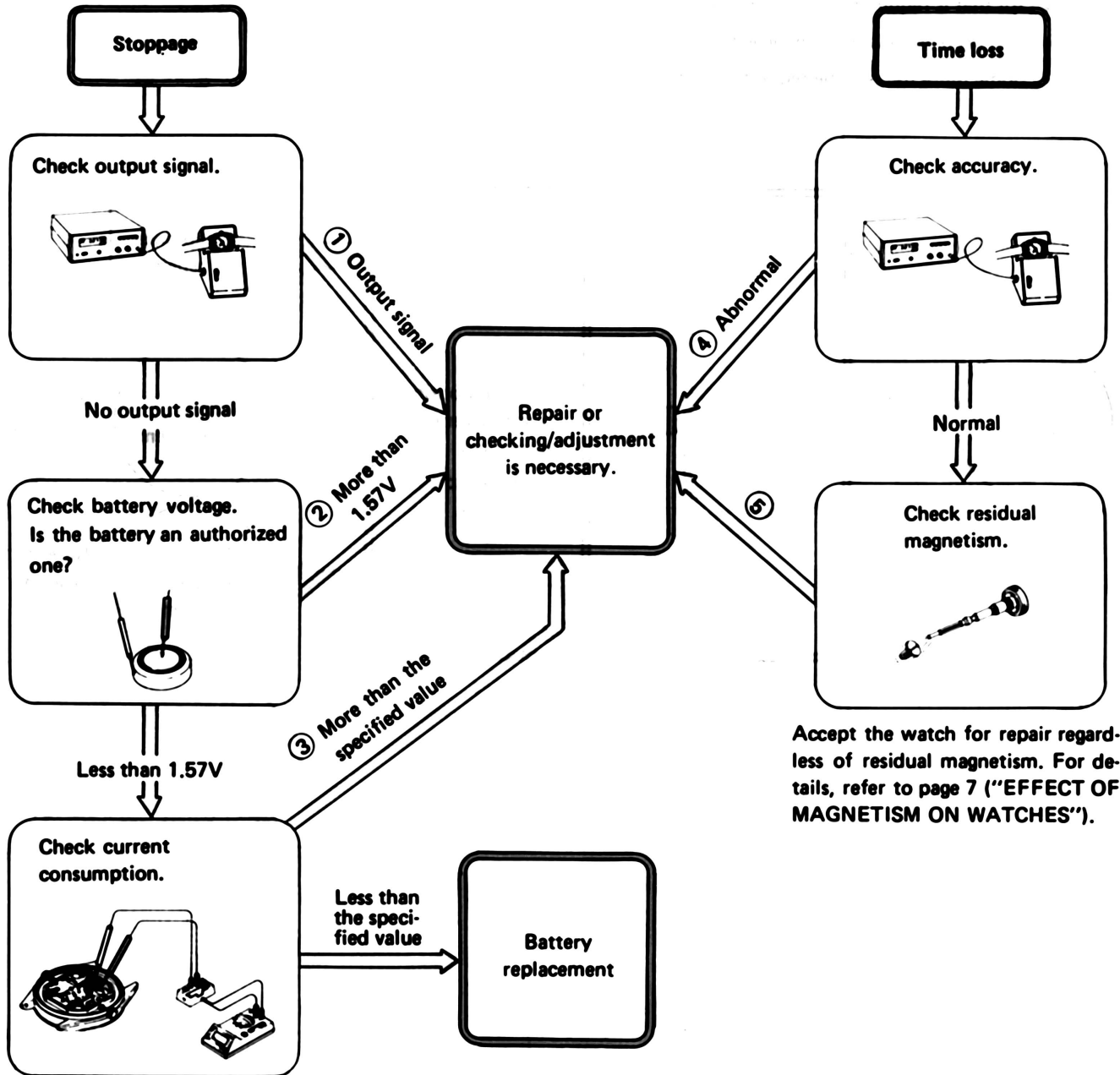
- All that is required is battery replacement.
- The problem relates to incorrect use and is not a repair problem.
- Some more use is to be requested to determine whether there really is a problem.



1. TROUBLE DIAGNOSIS

Determine at the store or service center whether it is necessary to accept the watch for repair or checking/adjustment.

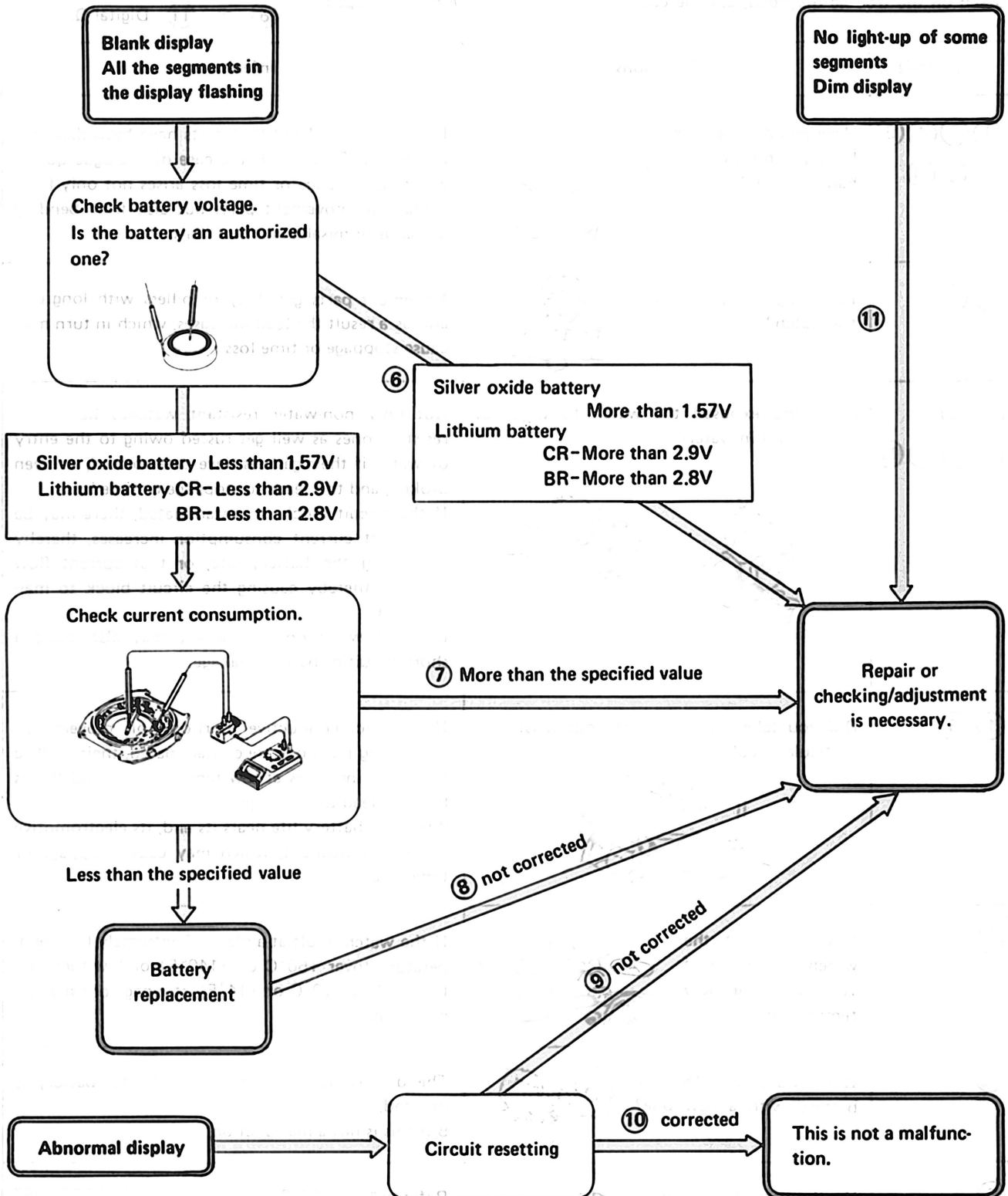
(1) Stoppage or time loss (Analogue Quartz)



Note:

The above is an outline flowchart of trouble diagnosis. For details, refer to "ANALOGUE QUARTZ CHECKING/REPAIRING PROCEDURE" on page 12 and "DIGITAL QUARTZ CHECKING/REPAIRING PROCEDURE" on pages 36-37.

(2) Display failure (Digital Quartz)










For information on how to reset the circuit, refer to "Remarks on battery replacement (circuit resetting)" in each caliber's "PARTS CATALOGUE/TECHNICAL GUIDE".

2. TROUBLESHOOTING QUESTIONS AND INFERENCEs

① ~ ⑤ Analogue Quartz

Based on the trouble diagnosis, ask the customer how the trouble has developed.

⑥ ~ ⑪ Digital Quartz

Diagnosis	Questions	Inferences
① ② ④ ⑤ ⑥ ⑨ ⑪	Have you dropped the watch? Have you hit it against hard surfaces? 	It can be considered that parts have been damaged by shocks. Further, in the case of analogue quartz watches, stoppage or time loss arises not only from damage of movement parts but also from bending of hands or misalignment of dials.
① ⑤	How long have you used the watch? 	Movement parts get dirty or oilless with long use, and as a result the load increases, which in turn may cause stoppage or time loss.
② ③ ⑥ ⑦ ⑧ ⑪	Have you exposed the watch to water or immersed it in water? 	Not only non-water resistant watches but water resistant ones as well get rusted owing to the entry of water if their gaskets have deteriorated, or been broken, and this leads to stoppage or time loss. If the circuit block is contaminated, there may be cases that current consumption increases, thereby shortening the battery life, or that current flow reduces, thereby causing the circuit block to malfunction. Drips of water on the battery may also cause a short-circuit or battery leakage.
① ⑤	Did you take the watch off your wrist on a particularly cold day? 	If electric conductive portions or movement's lubricating positions are contaminated, their electric resistance increases at low temperatures, and this is liable to lead to stoppage. When the battery life nears its end, its electromotive force also weakens, which may cause stoppage or time loss.
⑤	Have you put the watch at a place of very high or low temperature? 	If the watch is left at a place of extremely high temperature (over +60°C or +140°F) or low temperature (below -10°C or +14°F), stoppage or time loss may be caused.
⑩	When did you replace the battery with a new one? 	The display may appear abnormal after battery is inserted. But this is not a malfunction.
⑤	Has the watch been near magnetic substances? 	Refer to "EFFECT OF MAGNETISM ON WATCHES" on page 7.

EFFECT OF MAGNETISM ON WATCHES

The cause of time loss (sometimes stoppage) can be ascribed not only to problem with the watch itself but also to the effect of magnetism. The analogue quartz watch uses a permanent magnet for its step rotor. If the customer brings the watch near a strong magnetic source, the step rotor's normal rotation is interrupted. It resumes its normal operation when the watch is taken away beyond the reach of magnetism. As a result, the magnetic effect results in time loss or sometimes in time gain.



There are two types of magnetism: D.C. magnetic field and A.C. magnetic field. They cause defective phenomena respectively as follows:

Magnetic field	Defective phenomenon	Are parts magnetized?
D.C. magnetic field	Time loss	Yes
A.C. magnetic field	Time loss or time gain	Usually not magnetized

These defective phenomena, however, do not reflect trouble with the watch itself. It is necessary to ask the customer to have an understanding of the magnetic effect on watches and to take care to keep their watches away from magnetic sources.

(1) When residual magnetism is detected

When residual magnetism is detected on the winding stem, it is because the watch has been brought close to a strong magnetic source. The detection of residual magnetism, however, does not necessarily mean that magnetism has adversely affected the watch. It is necessary to check whether the watch itself has been damaged, and receiving the watch for possible repair is recommended. At the time, ask the customer about whether there is any strong magnetic substance around him.

(2) When residual magnetism is not detected

The watch can be considered to have been affected by an A.C. magnetic field. There is, however, a greater possibility that the watch itself has got out of order. Therefore, receive the watch for repair.

II. THE FOLLOWING ARE NOT SYMPTOMS OF WATCH TROUBLE

EFFECT OF MAGNETISM ON WATCHES

- ① The date shifts to the next date in the daytime.



The watch is so designed that the date changes once every 24 hours. Check that A.M./P.M. is properly set.

- ② The minute hand is slightly out of alignment.



To set the time accurately, advance the minute hand 4 to 5 minutes ahead and then return it to the correct time.

- ③ The chronograph hand is not reset to the "0" position in the stopwatch function.



Some calibers may have an incorrect memory of the "0" position after the counter function is used or battery is installed. Reset the hands to the correct "0" position by referring to the Instruction Booklets.

- ④ A watch that has an accuracy of 10 seconds in annual rate gains approximately one second a month. This may amount to 12 seconds a year.



Their monthly rate of time loss/gain does not necessarily show 1/12 of the annual rate. Those watches with their accuracy expressed as an annual rate are designed to be less susceptible to temperature changes. However, the monthly rate will change depending on the wearing conditions such as leaving it in extremely high/low temperature.