

SECTION 6 TROUBLESHOOTING

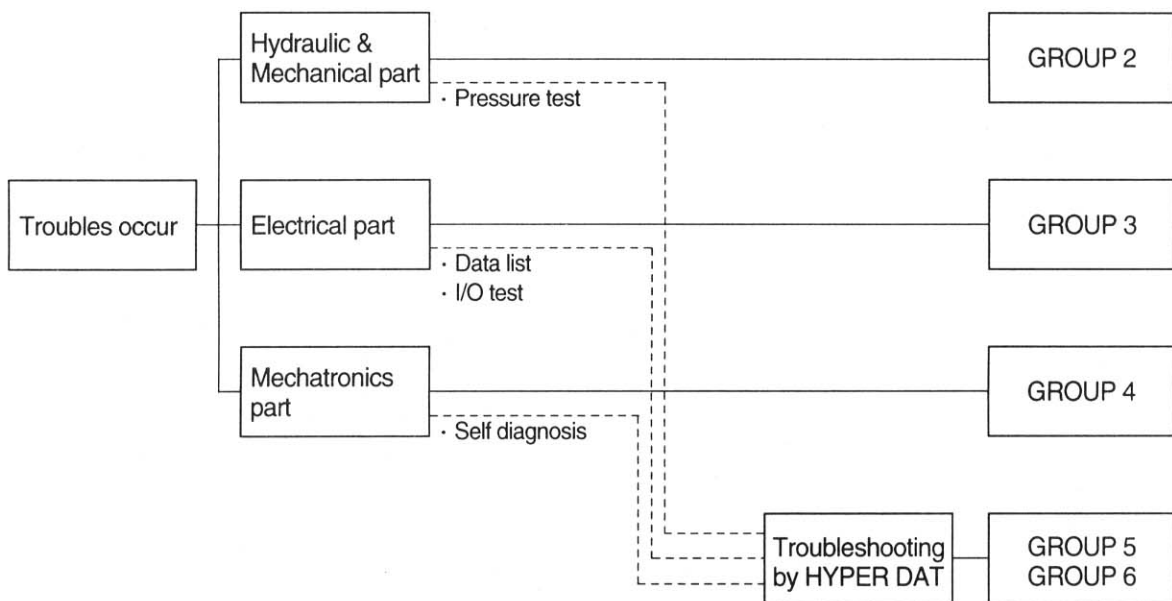
GROUP 1 BEFORE TROUBLESHOOTING

1. INTRODUCTION

When a trouble is occurred in the machine, this section will help an operator to maintain the machine with easy.

The trouble of machine is parted Hydraulic & Mechanical system, Electrical system and Mechatronics system. At each system part, an operator can check the machine according to the troubleshooting process diagram.

Especially in the troubleshooting by HYPER DAT part, usable functions of HYPER DAT related to the upper 3 system parts are introduced and how to use the relate function, if the abnormal items are displayed on the main body, is explained with easy.



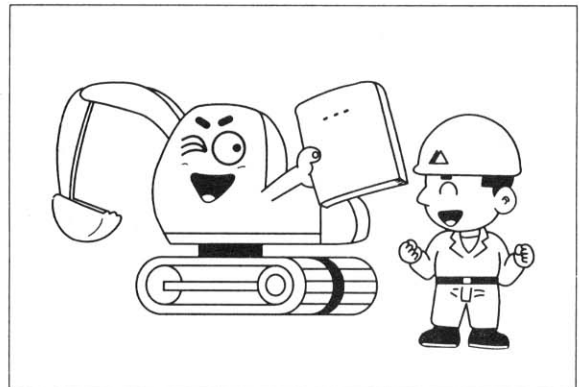
2. DIAGNOSING PROCEDURE

To carry out troubleshooting efficiently, the following steps must be observed.

STEP 1. Study the machine system

Study and know how the machine is operating, how the system is composing, what kinds of function are installed in the machine and what are specifications of the system components by the machine service manual.

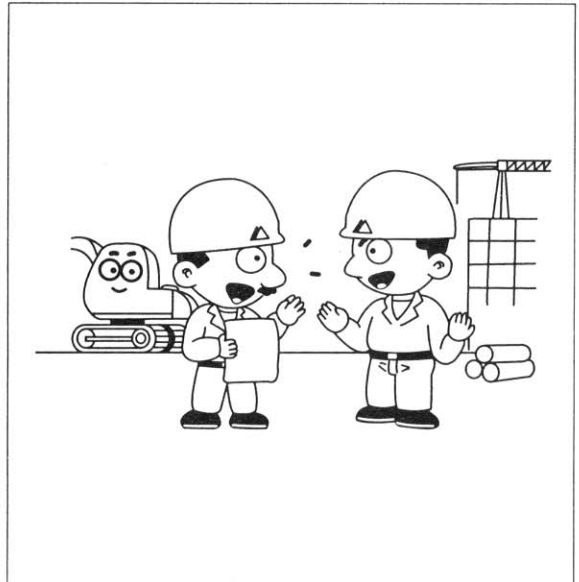
Especially, deepen the knowledge for the related parts of the trouble.



STEP 2. Ask the operator

Before inspecting, get the full story of malfunctions from a witness --- the operator.

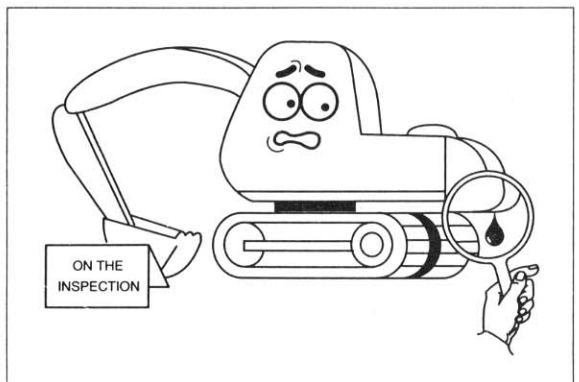
- 1) How the machine is used and when it is serviced?
- 2) When the trouble was noticed and what work the machine was doing at that time?
- 3) What is the phenomenon of the trouble?
Was the trouble getting worse, or did it come out suddenly for the first time?
- 4) Did the machine have any troubles previously? If so, which parts were repaired before.



STEP 3. Inspect the machine

Before starting troubleshooting, check the machine for the daily maintenance points as shown in the operator's manual.

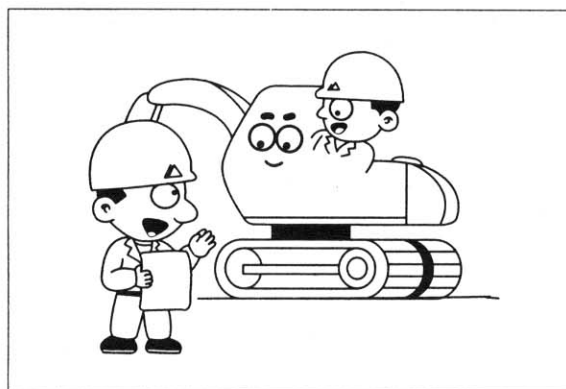
And also check the electrical system including batteries, as the troubles in the electrical system such as low battery voltage, loose connections and blown out fuses will result in malfunction of the controllers causing total operational failures of the machine.



STEP 4. Inspect the trouble actually on the machine

In case that some trouble cannot be confirmed, obtain the details of the malfunction from the operator.

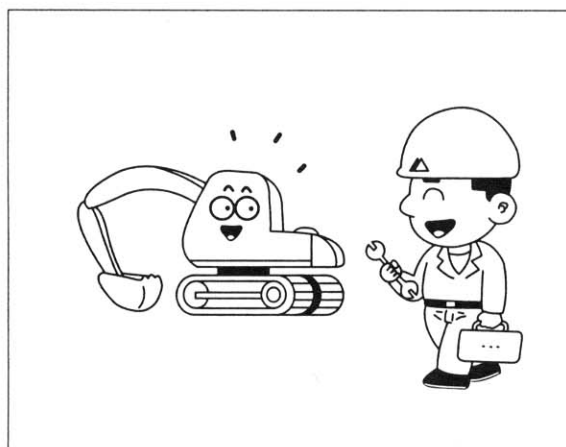
Also, check if there are any incomplete connections of the wire harnesses are or not.



STEP 5. Perform troubleshooting

According to where the trouble parts are located, hydraulic & mechanical system part or electrical system part or mechatronics system part, perform troubleshooting the machine refer to the each system part's troubleshooting process diagram.

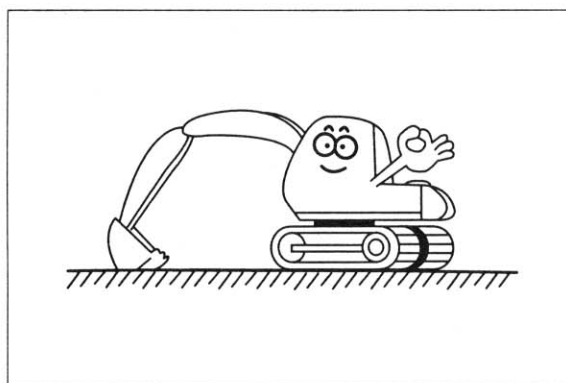
When HYPER DAT is used in troubleshooting, perform troubleshooting with the user's manual of HYPER DAT or the troubleshooting by HYPER DAT part of in this manual.



STEP 6. Trace a cause

Before reaching a conclusion, check the most suspectible causes again. Try to trace what the real cause of the trouble is.

Make a plan of the appropriate repairing procedure to avoid consequential malfunctions.



GROUP 2 HYDRAULIC AND MECHANICAL SYSTEM

1. INTRODUCTION

1) MACHINE IN GENERAL

- (1) If even a minor fault is left intact and operation is continued, a fatal failure may be caused, entailing a large sum of expenses and long hours of restoration.
Therefore when even a small trouble occurs, do not rely on your intuition and experience, but look for the cause based on the troubleshooting principle and perform maintenance and adjustment to prevent major failure from occurring. Keep in mind that a fault results from a combination of different causes.
- (2) The following lists up commonly occurring faults and possible causes with this machine. For the troubleshooting of the engine, refer to the cummins troubleshooting and repair.
- (3) When carrying out troubleshooting, do not hurry to disassemble the components.
It will become impossible to find the cause of the problem.
- (4) Ask user or operator the following.
 - ① Was there any strange thing about machine before failure occurred?
 - ② Under what conditions did the failure occur?
 - ③ Have any repairs been carried out before the failure?
- (5) Check before troubleshooting.
 - ① Check oil and fuel level.
 - ② Check for any external leakage of oil from components.
 - ③ Check for loose or damage of wiring and connections.