

§33. Gate Valve Control System for LHD Vacuum Vesel Ports

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On the flange of the LHD plasma vacuum vessel, about 300 of ports are planed. Many of these ports has gate valve on it. These gate valves are important to keep LHD vacuum. They are required to move correctly under strong magnetic field, and to protected by exact interlock system.

Figure 1 shows the system diagram of the gate valve control system. A gate valve is set on the flange of vacuum vessel which located on the cryostat vessel. The air valves with magnetic switch for open/close are separated from gate valve, they are get together in the unit box which located near wall side of LHD experimental room. it is about 20 m form center of LHD. Two air pipes for open and

close the one gate valve are connected between gate valve and air valve. The status signal of gate open/close are connected to control system.

The remote control unit is located on LHD control room in control building. All gates are operated from the control unit. The unit has interlock system between LHD central control system. If the pressure of LHD plasma vacuum vessel increase without clear cause, all gate valves were closed by interlock system. Then, some gate valves which has such as probe through the gate, the interlock system wait to close the gate until the probe is move to own side of gate. For gas puffing system, the interlock system keep open the gas puffing gate when the quenching of super conductor is detected. The open/close status of these gate valves are shown in lamp of each control panel.

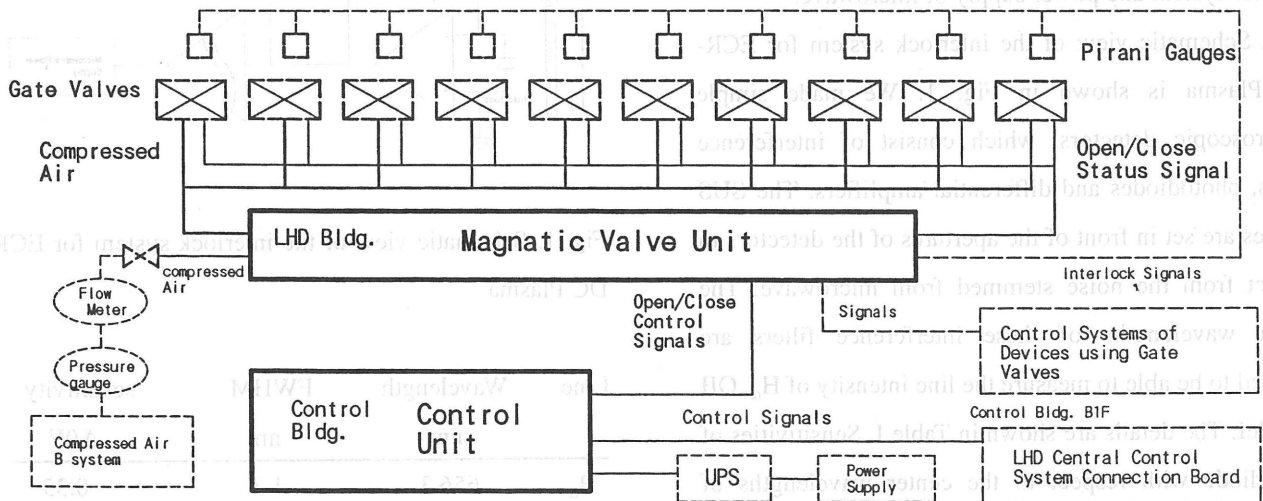


Figure 1. Gate Valve Control System for LHD.