

Abstract

The purpose of the present invention is to improve heat exchange efficiency. This turbo freezer includes a compressor that compresses a refrigerant, a condenser that condenses the refrigerant compressed by the compressor, an expansion valve that expands the refrigerant condensed by the condenser, an evaporator (5) that evaporates the refrigerant expanded by the expansion valve, and an expansion valve control unit that controls the opening degree of the expansion valve. The evaporator (5) includes: a pressure vessel (11) forming an outer shell; a heat transfer tube group (16) accommodated inside the pressure vessel (11) and including a plurality of heat transfer tubes (16a) arranged in the vertical direction; a refrigerant tray (13) that supplies the refrigerant to the heat transfer tube group (16) from above; and an eductor (10) that guides the refrigerant accumulated at a lower portion of the pressure vessel (11) without being evaporated by the heat transfer tube group (16) to the refrigerant tray (13). The expansion valve control unit controls the opening degree of the expansion valve to bring a level of the refrigerant accumulated at the lower portion of a case to a level corresponding to an amount of the refrigerant circulated by the eductor (10), the amount varying depending on operation conditions of a turbo refrigeration device.

FIG.2.