

Portable DVT Prevention Device

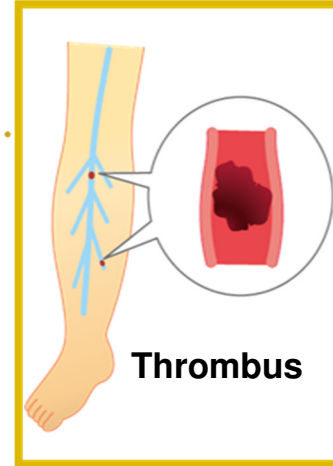
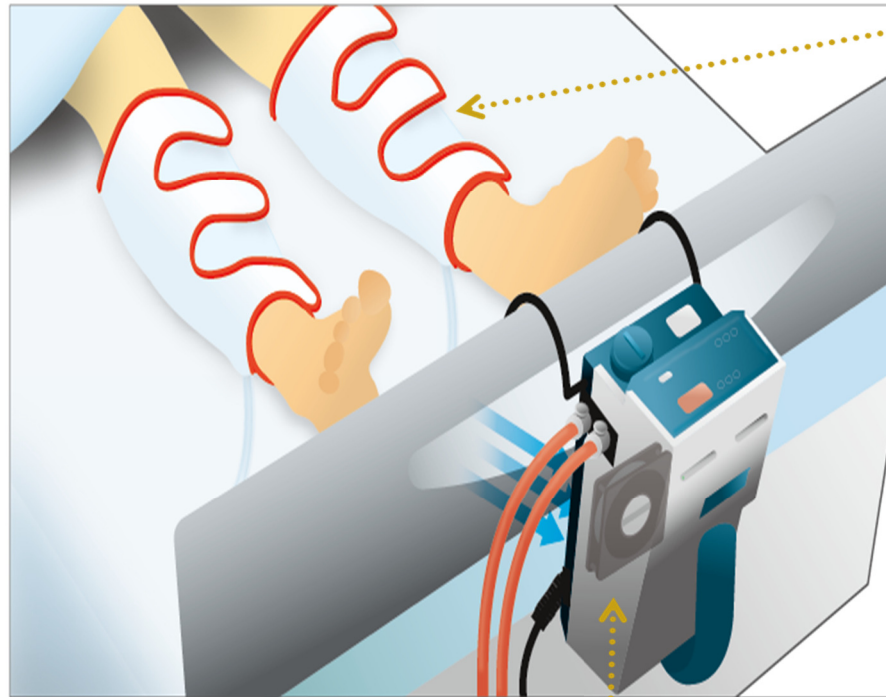
SANYO DENKI

Description

A portable DVT prevention device is a medical instrument that prevents DVT (deep vein thrombosis) by applying pressure to the sole of foot and lower leg. DVT typically occurs when legs remain stationary for prolonged periods. This device used a compression system to increase blood flow and help prevent thrombosis.

Recently, with the growing trend towards miniaturization, mounting density of PCBs has increased, leading to greater heat generation and, in turn, greater demand for compact, high-performance fans. In addition, low noise and low vibration are required because the device is used within hospitals and for home health care.

(Application image)



SANYO DENKI Proposal

Products and solutions proposed for installation in different environments:

- 9S06124H01 / 60 x 60 x 25 / 12 V / PWM control function / 40,000 h @ 60°C / 1 unit
Purpose: Cooling the internal control boards.

Features

■ Silent Fan

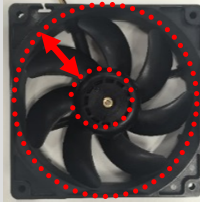
1. Reduced wind noise

A low rated speed along with a unique blade shape reduced wind noise and turbulence. By reducing the size of the motor section, the opening area (donut-shaped portion) was increased to maintain airflow even with its lower speed. The frame was also modified to reduce wind noise.

Conventional fan



Silent Fan



2. Reduced electromagnetic noise

Using a soft-switching method improved the motor performance and reduced electromagnetic noise.

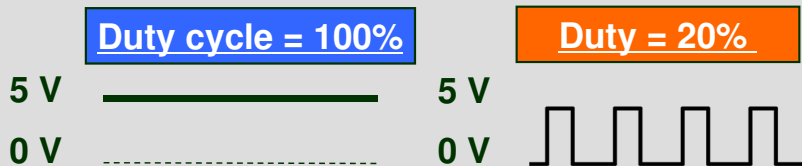
3. Reduced vibration

By increasing the number of spokes, we were able to enhance frame rigidity while decreasing secondary noise caused by vibration.

■ PWM control function (duty - ratio modulation control)

PWM control function is a method of changing the duty width using the input pulse signal.

Regulates optimum airflow for efficient cooling when necessary.



Enables rotational speed control with a constant voltage.
Enables stable operation even at low speeds.

Merits

■ Secures a quiet environment

By adopting a Silent Fan, the customer made their device quieter while improving cooling performance.

Type	Part number	Max. airflow [m ³ /min]	SPL [dB(A)]
Conventional fan	9A0612H401	0.53	28
Silent Fan	9S0612H401	0.58	24

Annotations: 9% Up (airflow), 4 dB(A) Down (SPL)

Low vibration type fans aid in the reduction of resonance noise. As this device is often used in quiet environments such as in homes or medical institutions, the fans greatly contributed to suppressing operational noise.

Using the PWM control function allows fans to respond to the device's heat level for more efficient operation. It is also effective for further reducing equipment noise levels during normal operation.

Even in the quiet environment of an hospital or bedroom, noise will not be disruptive.

■ Reduced labor hours and materials

In the high density component mounting design phase, investigating additional measures such as installing isolators or other controllers was unnecessary. As a result, component number and installation labor hours could be reduced.