

Quieting a New Generation Medical Transfusion Machine Enidine Shock Absorber Application

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Situation Overview

A leading medical products manufacturer was developing a new, high efficiency blood platelet transfusion machine. The machine uses a series of solenoid valves to precisely control the flow. The selected valve met all of the electromechanical performance requirements of the new machine; however, the speed and repetitive motion of the machine created noise that would potentially disturb medical patients.

The manufacturer tried several methods to reduce the noise by shifting the valve spool to change internal pressures, but they were unable to maintain the performance of the valve with the reduced force.

Product Solution

In a similar application, ITT Enidine Inc. had successfully incorporated hydraulic shock absorbers to control the deceleration of air cylinder piston rods. This experience led ITT Enidine Inc. to recommend damping the movement of the spool with a small shock absorber.

This approach would allow the spool to shift at the required speed, yet safely decelerate the movement at the last possible moment, reducing the level of transmitted noise.



Project Results

ITT Enidine Inc. developed a modified TK 21 Series Shock Absorber that would perform within a narrow performance range, according to the solenoid manufacturer's requirements. This solution enabled the solenoid manufacturer to provide a valve that met both the functional and acoustic challenge of the medical product manufacturer. Approximately six solenoid valves are installed on each machine. The company is building more than 2,500 machines per year, resulting in a demand for 15,000 shock absorbers annually.

This unique application married two key technologies: self-contained shock absorbers with standard solenoid products. ITT Enidine Inc. has demonstrated its ability to work within stringent tolerance requirements and has provided proven solutions to the market. The high speed/high performance valves (SIC 3491) need reliable damping systems to extend valve life and ensure customer satisfaction in critical applications.

