
Prevention of Accidental Rotation of Arterial Pump

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Introduction

Since the advent of the pump-oxygenator system in cardiac surgery, there has existed the danger of air embolism from several sources.¹ With the use of the Sarns Modular* pump and a hard shell oxygenator, there exists a danger of such an air embolism from an unwanted change in pump speed due to accidental rotation of the speed control knob. The control knob regulating pump speed located on the front portion of the panel is unprotected and quite sensitive (this can be somewhat adjusted by a Sarns service representative). Very little rotation of the knob causes the pump to start. It is, therefore, very easy to unknowingly start rotating the pump or change speed by bumping the control knob while the perfusionist is sitting in the usual operating position. With a hard shell oxygenator this presents an obvious danger of pumping air to the patient before initiation or after termination of bypass while the aortic cannula is still in the patient's aorta.

Methods

Two things can be done to reduce this danger. First we designed and installed a shield on the front of the pump (Figures 1 and 2). This shield extends one inch above the control surface making it difficult to acci-

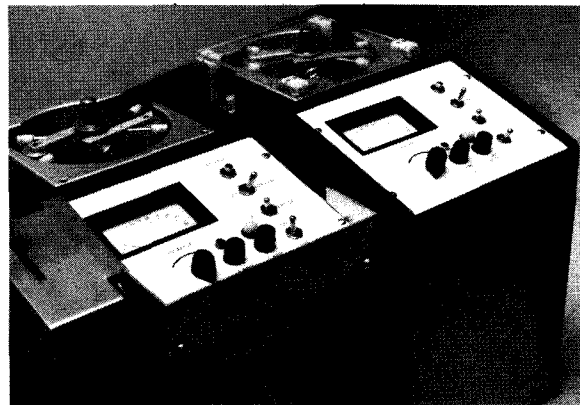


FIGURE 1. Front View of Protective Pump Shield

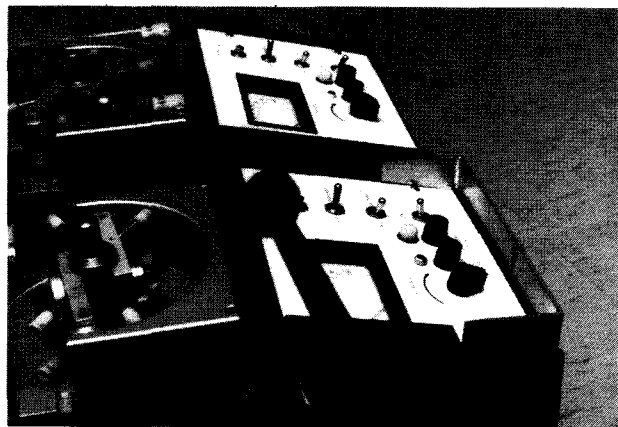


FIGURE 2. Side View of Protective Pump Shield

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* Model 5M6002, Sarns, Inc., Ann Arbor, Michigan 48103

dentally hit the knob and activate the pump. The second thing that can be done is to turn off the power switch on the pump whenever an arterial cannula is in place in the aorta, but bypass has not yet been initiated.

Results

After using this shield for approximately one year, we have found that it does not hamper the operation of the pump and has not proved inconvenient. The construction and installation of the shield was easily handled by our hospital machinist.

Conclusion

This shield has worked well for us and it eliminates one more possible cause of a very serious or fatal accident. Devices and procedures such as this have served to reduce the incidence of air embolism, but it should be remembered that nothing can replace the diligent attention of the perfusionist to the pump circuit.

Reference

1. Stoney William S., "Air Embolism and Other Accidents Using Pump Oxygenators," *The Annals of Thoracic Surgery*, Vol 29 No 4 April 1980