

# TECHNICAL BULLETIN ON MILITEC-1® IN A SEALED VALVE

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A manufacturer of hermetically sealed valves designed to accurately regulate the flow of steam, hot water or chilled water through coils or heat exchangers reported excessive friction despite the use of Teflon grease. The valve turns at a very low speed and the wear has been minimal but the friction reduces energy efficiency. The friction was stainless steel rubbing against carbon steel. The critical metal components (armature, canister and pole pieces) were wiped with a cloth saturated with Militec-1. They were put into a standard oven and baked at 180oF for 20 minutes, then cooled and installed. Friction force was measured by precision scales as a response to a pneumatic signal. **The reduction of friction force was between 30% and 33%.** Militec EP-2 grease has replaced the Teflon grease to provide continuous metal conditioning over time

## PROBLEM

The valve is designed to accurately regulate the flow of steam, hot water or chilled water through coils or heat exchangers of all types, in a wide range of HVAC applications. The body pressure rating is 400 PSIG water and 200 PSIG steam. The valve is hermetically sealed to prevent water leakage into the interior of the valve. The lubrication had been provided by a Teflon grease but there was still significant friction between the metal surfaces. The valve turns at very low speed and the wear has been minimal. The problem has been that the friction affected the energy efficiency of the valve. Some of the critical metal components of the valve are made of stainless steel while others are made of carbon steel. The friction was stainless steel against carbon steel.

## TREATMENT

The critical metal components (armature, canister and pole pieces) were wiped with a cloth saturated with Militec-1. They were put into a standard oven a baked at 180°F for 20 minutes. They were then withdrawn from the oven, cooled and installed.

## RESULTS

Friction force was measured by precision scales as a response to a pneumatic signal. The reduction of friction force was between 30% and 33%.

## LONG-TERM TREATMENT

The Teflon grease was replaced by Militec EP-2 grease with the intent that the Militec that is in the grease will, over time, provide continuing metal conditioning of the critical surfaces.