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ARROW “Double-Sealed” BEARINGS

-- A Substantial Improvement in Damper Design

Since one of the prime functions of any damper is to modulate as and when required, bearing operation is a prime factor in damper efficiency.

When the bearings permit metal-to-metal or metal-to-plastic riding surfaces, normal wear will cause deterioration of bearing efficiency.

When a bearing absorbs moisture (as Nylon does), the “swelling” may result in binding.

When an Oilite bearing dries out or attracts dirt particles, the wear caused by the metal contact reduces modulation efficiency.

When a bearing does not have adequate tensile or flexural strength, its breaking generally causes problems in modulation.

The ARROW “Double-Sealed” Bearings, due to their design, material composition and function, provide a practical means to secure smooth, trouble-free damper operation. They require less torque for blade movement.

The reason is that the design eliminates all metal-to-metal or metal-to-plastic riding surfaces. All motion is between two dissimilar, self-lubricating, non-absorbent polymers. Thus, binding or malfunction is practically eliminated.

The inner bearing – of an Acetal Copolymer (Celcon) is fixed on the pivot rod so that it cannot rotate.

The outer bearing – of Polycarbonate is fixed in the frame so that it cannot rotate.

Thus, the only riding surfaces consist of a self-lubricating polymer rotating within a dissimilar self-lubricating polymer.

This eliminates interference with blade movements due to “sticking”, wear, or dirt clogging.

Both polymers are strong. The Polycarbonate bearing has a tensile strength of 10,000 psi, flexural strength of 12,000 psi, and impact strength of 165 ft. lb./sq. in. Celcon has a tensile strength of 8,800 (at 73°F) to 13,700 psi (at -40°F). Flexural strength is 13,000 psi, with tensile impact strength of 70 ft. lb./sq. in. Melting point of Polycarbonate is 440°F, and Celcon is 329°F. Water absorption of both polymers is nominal.