



REDUCING NOISE IN POTENTIOMETERS

INDUSTRY:
Consumer Electronics

APPLICATION:
Quality Test Gear

COMPONENT:
Potentiometer

LOCATION:
United Kingdom



BACKGROUND

As potentiometers age, oxides can form on the metallic contacts of the wiper or slip ring and contaminants can gather between the wiper and the resistive track. Debris causes the potentiometer's signal to "jitter" and emit a crackling noise in audio circuits. Inventors Emporium, a research and development group that also offers repair and maintenance services, decided to test the effect of lubrication on two potentiometers from the mid 1980's that had begun to emit noise. This potentiometer featured an open design which exposed the component to additional debris. They approached one of Nye's affiliates, to see if our lubricant could restore the potentiometer and minimize future wear, protect against contamination, and preserve the correct mechanical feel of the control for future use.

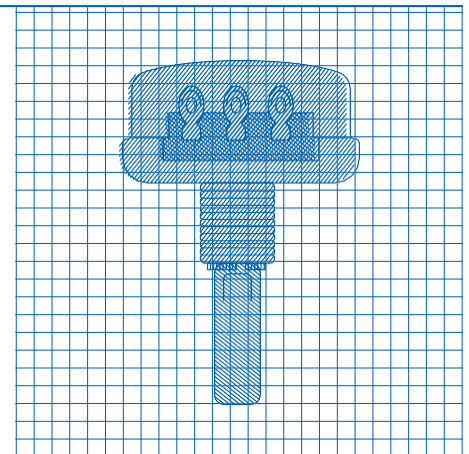
CHALLENGE

- Can the lubricant eliminate noise emissions and improve electrical contact performance?

SOLUTION

RHEOTEMP™ 763G & RHEOLUBE® 716A

- Wide operating temperature
- Excellent high-speed performance to prevent wear
- Seals the component to protect against dirt and other contaminants
- Compatible with most plastics and elastomers
- Grease selection determined by potentiometer speed of rotation and operation frequency



RESULTS

Inventors Emporium obtained voltage readings from their potentiometers before and after lubrication. Without lubrication, the potentiometers lost contact with the resistive track and created electrical noise. Both potentiometers were then cleaned and lubricated, one coated with Rheotemp™ 763G and the other with Rheolube® 716A. After lubrication, neither potentiometer emitted noise. Additionally, the grease improved the electrical performance of the devices and imparted a smooth quality feel.

Typical Properties

Base Oil Properties	Conditions	Rheolube® 716A	Rheotemp™ 763G	Test Method
Chemistry	–	Ester/Lithium Soap	PAO-Alkylated Naphthalene /Polyurea	–
Temperature Range	–	-54 to 150 °C	-54 to 175 °C	–
Kinematic Viscosity	40 °C	18.5 cSt	43 cSt	ASTM D445
Viscosity Index	–	125	138	ASTM D2270
Grease Properties				
NLGI Grade	–	2	2	ASTM D217
Oil Separation	24 h, 100 °C	4.6%	0.5%	FTM 791, Method 321.2 & ASTM D6184
Evaporation	24 h, 100 °C	0.3%	0.1%	CTM*
Water Washout	1 h, 40 °C	–	0.65%	ASTM D1264
Copper Corrosion	24 h, 100 °C	1B, No Corrosion	1A, Slight Tarnish	ASTM D4048

*CTM: Nye Company Test Method

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