



Lubnotes:

Design Engineer's Guide to Selecting a Lubricant

Lubricants for Stationary Separable Electrical Connectors



The advantages of lubricating electrical connectors. Reduces friction, eases mating. A thin film of lubricant can reduce mating force by as much as 80 percent, an important factor in connector assembly. For electronic connectors with dozens or even hundreds of pins, or for automotive connectors that are in hard-to-reach places, a low insertion force makes assembly more efficient and ensures solid connections. For gold-plated connectors, an effective lubricant reduces the potential for noble metal wear during mating and separation.

Guards against corrosion. Lubricants guard against oxidation and the effects of harsh environments. With gold-plated connectors, this means protection against substrate corrosion. Thin gold plating can be microscopically porous; and a thin film of lubricant can seal the pores, prevent substrate attack and assure low contact resistance.

Prevents fretting corrosion. In addition to atmospheric corrosion, tin/lead connectors are also subject to "fretting corrosion," the result of low amplitude vibration caused by thermal expansion and contraction or nearby motion, as from fans, motors or merely opening and closing a cabinet door. Fretting corrosion continually exposes fresh layers of metal surface to oxidation. A lubricant film minimizes metal-to-metal contact during vibration, protecting the connector from metal wear.

Applying connector lubricants. Neat lubricants vs. solvent dispersions. Nye manufactures connector lubricants neat and in solvent dispersions. Neat lubricants tend to be used in larger connectors, where the larger volume of lubricant acts as an environmental seal. Solvent dispersions are recommended where only a thin film of lubricant is desired.

Types of synthetic connector lubricants. Nye's connector lubricants can be divided into two general classes: lubricants for noble metal connectors and tin/lead connectors. For noble metals, fluoroethers are the lubricants of choice. They withstand extreme temperatures and resist aggressive chemicals and solvents. Five and six-ring polyphenyl ethers are also extremely stable in thin film, and offer an excellent track record on gold-plated connectors. For tin/lead connectors, synthetic hydrocarbons provide excellent film strength, broad temperature serviceability, and protection against fretting corrosion.

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TECHNOLOGY IN MOTION™

Selecting the right lubricant for your application. Following is a partial list of popular Nye lubricants for stationary separable electrical connectors. Additional oils and greases are available to meet a wide range of application requirements. For technical specifications, evaluation samples, questions about Nye products, or to discuss a lubricant *custom-designed* for your application – call us at +1.508.996.6721 or visit our website at nyelubricants.com.

Lubricants for Stationary Separable Electrical Connectors	Temp. Range (°C)	Tin	Noble Metal	Low Current	High Current	Plastic compatible	UV Tracer ^(a)
NyoGel® 760G	-40 to 135	•	•	•	•	•	•
Rheotemp™ 768G	-40 to 175	•	•	•	•	•	•
UniFlor™ 8511	-50 to 225	•	•	•	•	•	
UniFlor™ 8917^(b)	-70 to 225	•	•	•	•	•	

(a) A UV tracer allows easy identification of lubrication on contact surfaces. UV tracers are also available on request for most lubricants listed above.

(b) Reduces insertion and withdrawal forces exceptionally well.