



DeoxIT® L27 Marine Grease

Tech Info Guide



**UNIQUE Marine Grease
for Improving and Protecting
Mechanical & Electrical
Performance!**

Why is it unique and different !

- Superior Lubrication
- Remove/Displace Corrosion
- Moveable/Flexible Protective Barrier
- Extreme Pressure/Waterproof
- Low Dropping & Oil Separation



CAIG
LABORATORIES, INC.

Performance Products,
Since 1956

BULLETIN: TB-L27-19
URL Link: caig.com/L27.html

• **Introduction:**

Manufactured in semi-solid form for use as a combination cleaning, deoxidizing, protecting and lubricating preparation. DeoxIT® Greases protect against oxidation (galvanic corrosion) and are free of mineral acids, sulphurs, alkalis and other noxious components aggressive to metals. DeoxIT® Greases improve performance and reliability of electrical contacts and mechanical components that require precise lubrication.

Why DeoxIT® L27 Grease is Unique:

The infusion of DeoxIT® D-Series Dx100L into the formulation provides an additional film on the metal surface to dissolve corrosion (without harming sensitive materials), improve conductivity and provide a moveable/flexible protective barrier. This is important when and if the grease is disturbed and separates from the metal surface. When the grease is first applied, the infused DeoxIT® Dx100L transfers to the metal and coats the entire surface; sealing and protecting the metal even if the grease is separated from the surface (vibration or mechanical movement). ***No other grease does this!***

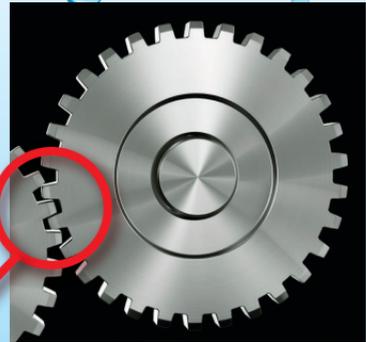
• **Things to Remember:**

- ✓ Greases are indispensable in providing good lubrication, wear resistance and protection from the environment.
- ✓ Greases can lose their effectiveness over time and separate from the surfaces,
 - ***Not DeoxIT® L27 Marine Grease***
- ✓ Infusion of the DeoxIT® D-Series (Dx100L) allows the fluid to mechanically bond to the metal surfaces. It coats and re-coats, even when surfaces are disturbed. It is a non-conductive fluid that enhances conductivity.
- ✓ DeoxIT® Grease L27 not only lubricates & protects, it dissolves (without harming metal and plastics) oxidation & corrosion.
- ✓ ***Mechanical applications;*** DeoxIT® D-Series (Dx100L) fills in the microscopic gaps on the metal surfaces providing additional lubrication and protection.
- ✓ ***Electrical applications;*** DeoxIT® D-Series (Dx100L) fills in the microscopic gaps on metal surfaces on electrical contacts, providing increase contact surface area (conductivity), reliability and lower temperatures.
- ✓ Refer to DeoxIT® D-Series D100L technical bulletins for additional information, <http://caig.com/DD-Series.html>

DeoxIT® L27-MM Marine Grease - Mechanical Application Example:

Standard Grease vs DeoxIT® L27-MM Marine Grease

- Grease applied to a Gear -



Standard grease applied

DeoxIT® Grease L27-MM Infused
with DeoxIT® D-Series Dx100L

#1: Grease - Just
applied.

Grease touches ALL
surfaces.

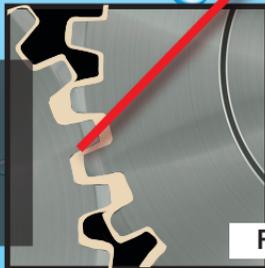


Figure 1

#1: L27-MM Grease -
Just applied.

Grease touches all surfaces.
Infused DeoxIT® Dx100L
mechanically bonds with
metal surfaces.



DeoxIT® L27-MM Marine Grease - Mechanical Application Example:

#2: Grease -
Over short period of time.

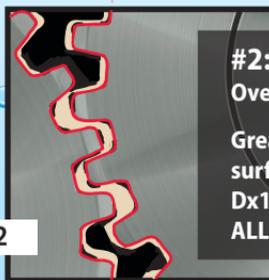
Grease touches
MOST surfaces.



Figure 2

#2: L27-MM Grease -
Over short period of time.

Grease touches most
surfaces. Infused DeoxIT®
Dx100L still protecting
ALL metal surfaces.



#3: Grease -
Over long periods of time.

Eventually grease is not
lubricating and protect-
ing surfaces.

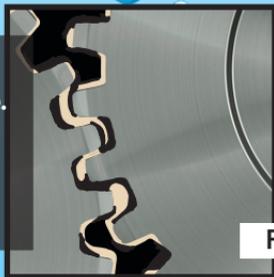
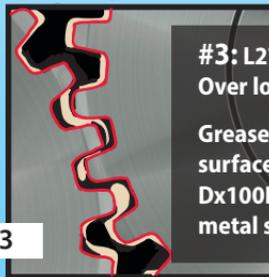


Figure 3

#3: L27-MM Grease -
Over long period of time.

Grease touches some
surfaces. Infused DeoxIT®
Dx100L still protecting **ALL**
metal surfaces.



DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Heavy Duty Power Switch
(no grease applied)

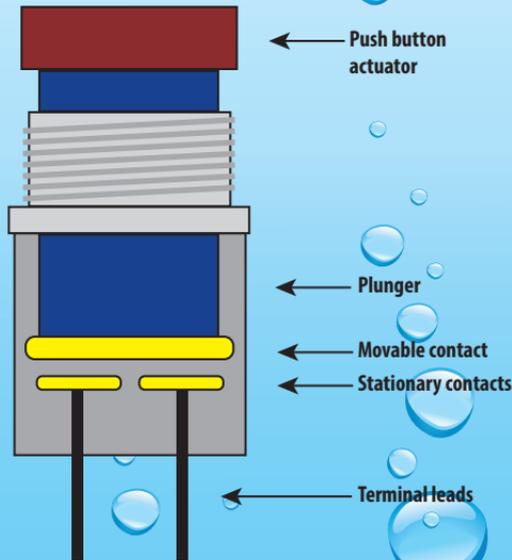


Figure 4

ELECTRICAL **APPLICATION EXAMPLE:**

Standard Grease

vs

DeoxIT® L27-ME Marine Grease

**- Grease applied to a Heavy Duty
Push Button Switch -**

DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Standard grease applied

Heavy Duty Power Switch
(lithium grease applied)

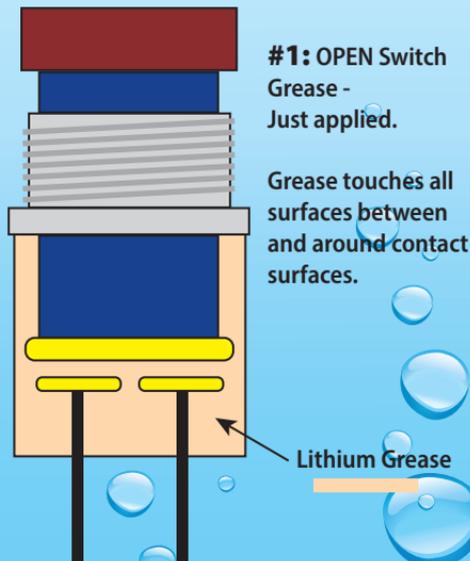


Figure 5

DeoxIT® Grease L27-ME

Heavy Duty Power Switch
(DeoxIT® L27-ME lithium grease *infused* with DeoxIT® D-Series Dx100L applied)

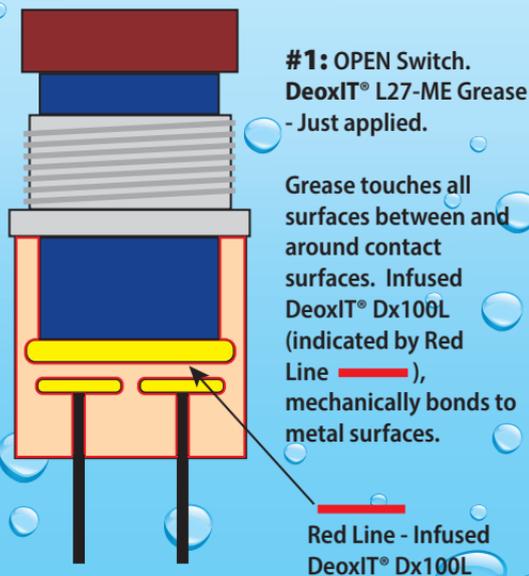
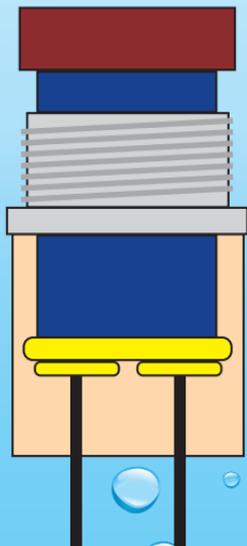


Figure 6

DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Heavy Duty Power Switch (lithium grease applied)

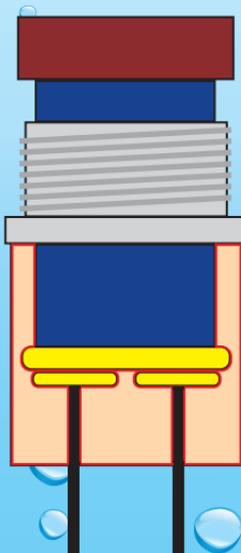


#1: CLOSED Switch
Grease -
Just applied.

Grease touches all
surfaces between
and around contact
surfaces.

Figure 7

Heavy Duty Power Switch (DeoxIT® L27-ME lithium grease *infused* with DeoxIT® D-Series Dx100L applied)



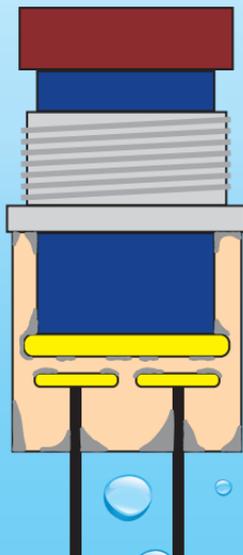
#1: CLOSED Switch.
DeoxIT® L27-ME Grease -
Just applied.

Grease touches all surfaces
between and around contact
surfaces. Notice, infused
DeoxIT® Dx100L (indicated by
Red Line —),
mechanically bonds to metal
surfaces, except where
stationary and moving
contacts connect. DeoxIT®
D-Series Dx100L, moves away
from metal-to-metal contact,
then once switch **OPENS**,
DeoxIT® Dx100L re-coats
surfaces. DeoxIT® Dx100L also
fills in any gaps between the
irregular microscopic surfaces.

Figure 8

DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Heavy Duty Power Switch (lithium grease applied)

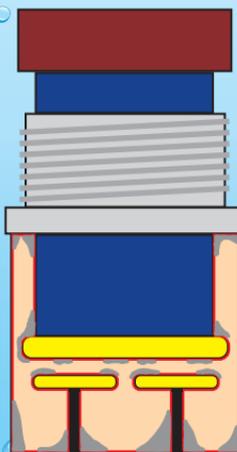


#2: OPEN Switch Grease -
Over short period of time.

Grease touches most
surfaces. Over time gets
pushed away from
contact surfaces.

Figure 9

Heavy Duty Power Switch (DeoxIT® L27-ME lithium grease *infused* with DeoxIT® D-Series Dx100L applied)



#2: OPEN Switch.
DeoxIT® L27-ME Grease -
Over short period of time.

Grease touches most
surfaces. Over time gets
pushed away from contact
surfaces. Infused DeoxIT®
Dx100L still protecting
ALL metal surfaces.

Figure 10

DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Heavy Duty Power Switch (lithium grease applied)

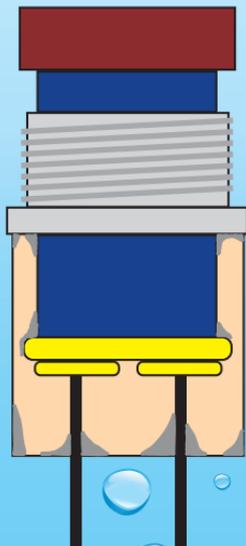


Figure 11

#2a: CLOSED Switch
Grease -
Over short period of
time.

Grease touches most
surfaces. Over time
gets pushed away from
contact surfaces.

Heavy Duty Power Switch (DeoxIT® L27-ME lithium grease *infused* with DeoxIT® D-Series Dx100L applied)

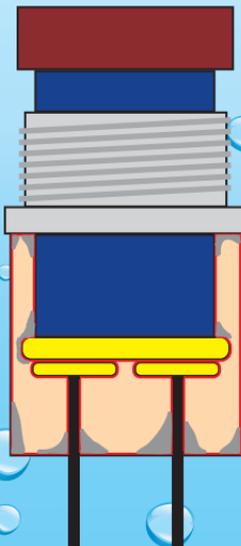


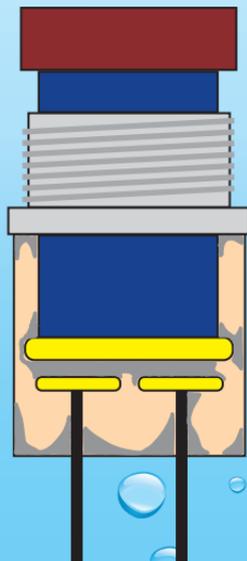
Figure 12

#2a: CLOSED Switch.
DeoxIT® L27-ME Grease
- Over short period of
time.

Grease touches most
surfaces. Over time gets
pushed away from
contact surfaces.
Infused DeoxIT® Dx100L
still protecting ALL
metal surfaces.

DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Heavy Duty Power Switch (lithium grease applied)

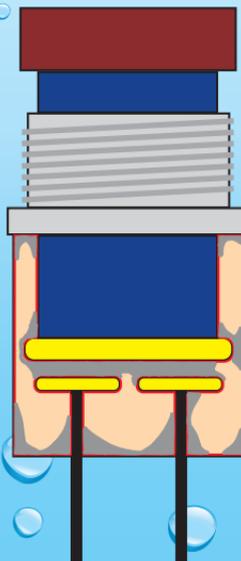


#3: OPEN Switch Grease -
Over long period of time.

Eventually grease is not
lubricating and protecting
surfaces.

Figure 13

Heavy Duty Power Switch (DeoxIT® L27-ME lithium grease *infused* with DeoxIT® D-Series Dx100L applied)



#3: OPEN Switch.
DeoxIT® L27-ME Grease -
Over long period of time.

Eventually grease is not
lubricating and
protecting surfaces.
However, infused
DeoxIT® Dx100L still
protecting ALL metal
surfaces.

Figure 14

DeoxIT® L27-ME Marine Grease - Electrical Application Example:

Heavy Duty Power Switch (lithium grease applied)

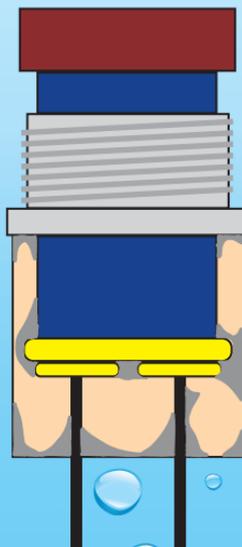


Figure 15

#3a: CLOSED
Switch Grease -
Over long period of
time.

Eventually grease is
not lubricating and
protecting surfaces.

Heavy Duty Power Switch (DeoxIT® L27-ME lithium grease *infused* with DeoxIT® D-Series Dx100L applied)

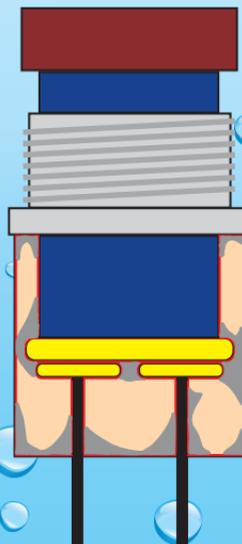


Figure 16

#3a: CLOSED Switch.
DeoxIT® L27-ME Grease
- Over long period of
time.

Eventually grease is **not**
lubricating and
protecting surfaces.
However, infused
DeoxIT® Dx100L still
protecting ALL metal
surfaces.

• **Mechanical Applications:**

Bearings (all types),
Doors (closures),
Drives (chain/sprockets),
Hatch closures,
O-rings and seals,
Linear motion systems,
Plugs (threaded holes),
Rack & pinion assemblies,
Screw devices (jacks, rails),
Slide bushings,
Sliding parts,
Tracks/guides/rails,
Threaded closures,
Worm gears, etc.

• **Electrical Applications:**

Antenna connections,
Battery terminals,
Bus bars, conductors,
Commutators,
Conductor rails,
Contactors,
Drying & processing
equipment,
Disconnects,
High amperage/high
voltage applications,
Industrial equipment
(lifts, cranes, robotics, etc.),
Power tools, relays &
switches (heavy duty,
knife, step, rotary), etc.

COMPARISON CHART

Product	Heat Resistance	Wear Resistance	Water Resistance	Oxidation Resistance*	Oxidation Dissolving
DeoxIT® L27	Excellent	Very Good	Excellent	Excellent	Very Good
Lithium	Good	Good	Good	Fair	Poor
Lithium Complex	Very Good	Good	Excellent	Fair	Poor
Complex	Very Good	Good	Excellent	Fair	Poor
Bentone Clay	Very Good	Very Good	Good	Good	Poor
Polyurea	Very Good	Good	Excellent	Good	Poor
Polyrex™	Excellent	Very Good	Good	Good	Poor

* Oxidation of lubricants can produce sludge, varnish, gum and acid.

Polyrex™ is a trademark of Exxon/Mobil Corporation

DeoxIT® L27 Marine Grease - Available with or without particles:

Grease with & without particles.

DeoxIT® Type L27-MM, Mechanical, *No particles*

DeoxIT® Type L27-MM-Q, Mechanical, *Quartz particles*

DeoxIT® Type L27-ME, Electrical, *No particles*

DeoxIT® Type L27-ME-Q, Electrical, *Quartz particles*

GREASE PARTICLE DESCRIPTIONS:

No particles: Maximum lubrication for relatively clean surfaces.

Quartz particles: Quartz particles assist in breaking up oxidation and corrosion. Quartz is nonconductive.

CUSTOM Formulations Available:

DeoxIT® L27E-MM and L27E-ME - Heavy Duty, Extreme Environment grease formula.

Copper particles: Copper particles assist in breaking up oxidation and corrosion. Copper is conductive.

Aluminum particles: Use when aluminum metals are involved. Aluminum is conductive.

Graphite particles: Graphite particles assist in heat stability and lubrication.

Teflon: For superior lubrication and protection of parts.

Custom formulation: Contact CAIG Team Member at info@caig.com

DeoxIT® Grease L27 Sizes:

- ✓ **Squeeze Tubes (sample/kit size), 2 grams**
- ✓ **Small Jar, 28 grams**
- ✓ **Cartridge with Nozzle Tip, 226 grams**
- ✓ **Grease Gun Cartridge, 396 grams**
- ✓ **Jar, 453 grams**
- ✓ **Pail, 15.9 Kg**

MANUFACTURER DISCLAIMER:

To the best of our knowledge, the information contained herein is accurate. However, neither CAIG Laboratories, Inc., or any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. All materials may present unknown hazards and should be used with caution. In particular, improper use of our products and their inappropriate combination with other products and substances may produce harmful results which cannot be anticipated. Final determination of the suitability of any material is the sole responsibility of the user. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that may exist. All service performed on internal parts and equipment should be provided by qualified technicians.

DeoxIT[®] L27 Marine Grease - SPECS

SPEC*	DeoxIT [®] L27 Marine Grease	Comparison SPEC*	Standard Lithium Complex	DeoxIT [®] L27 Marine Grease
SDS Number(s)	SDS-E-L27-M SDS-E-L27-MQ SDS-E-L27-E SDS-E-L27-EQ	Extreme pressure	4**	4**
DeoxIT [®] Dx100L	>2%	Water resistant	4	5
Operating Temp, °C(°F)		Clean/deoxidize surfaces	1	5
Minimum (conservative)	-34(-29)	Improves conductivity	1	5
Maximum (conservative)	220(428)	Surfaces under vibration	1	5
Penetration, at 25°C (worked, 60 strokes)	290	(¹) LOW amps/voltage connections	1	5
Dropping Point, °C(°F)	190(374)	(¹) HIGH amps/voltage connections	1	4
Timken OK Load, lb	40	Reduces Fretting Corrosion	1	4
Thickener, % (Type)	12 (Lithium Complex)	Effective in severe environments	3	4
ISO Viscosity Grade, Base Oil Equiv.	220	Plastics compatibility	4	4
Viscosity, Kinematic		(¹) Electrical conductivity		
cSt at 40°C	175	(27°C) (10 ¹² ohm ⁻¹ cm ⁻¹)		0.15
cSt at 100°C	16	(¹) Dielectric Constant (Er)		3.5
Viscosity, Saybolt		(¹) Dielectric Strength (Ed)(kV/cm)		45.9
SUS at 100°C	915	(¹) Specific Insulation Resistance D		
SUS at 210°C	85	(10 ¹² ohm-cm)(+0.30/-0.02)		6.0
Viscosity Index	90	* Conservative values. On critical applications, independent testing recommended.		
Oil Separation, wt %	3.5	** (1-Poor, 5-Excellent)		
Flash Point, °C(°F)	250(482)	(¹) DeoxIT [®] L27-E Products		

• **What the Industry Experts Say!**

PROFESSIONAL EXPECTATIONS EXCEEDED WITH DeoxIT®

I just built a recording rack for Paul McCartney and it had a problem at the time of the first show. I had tested the system before it left the shop, and the two Tascam MX-2424's, a Berhinger DDX-3612, a Rosendahl Time word clock generator, and 72 Glyph Hard Drives all worked at the shop. Two hours before the show, I found myself trying to get the system up and going.

One of the Tascam units had stopped working, and I could not understand why! I was in panic. It was a sold out show, and people started getting seated. The unit had a flash memory card in it, and I figured that since it was locking up on start, there had to be a problem with the card. It was not loading the data, so I used some DeoxIT® D-Series contact cleaner on the contacts, wiped it off, then use the DeoxIT® Gold solution. I then tried it again, and IT WORKED! The memory was reloaded, and the show was recorded as planned.

I am an avid DeoxIT® customer and always will be. I use it along with the DeoxIT® Gold and DeoxIT® Fader (FaderLube) on controls and switches on outboard gear, as well as audio consoles worth well over \$250,000. I will always use DeoxIT®, and now our whole company uses it as well. We use it for tours like the Rolling Stones, Paul McCartney, Incubus, and AC/DC, to name a few. We also use it on the equipment for theater shows like Riverdance and Barney.

DeoxIT® can be trusted around the world, and let me tell you it! Thanks CAIG for such a great product. You saved us more than once!

D. Ranshaw, Service Manager, db Sound

SUPPLIER CLEANING ISSUE SOLVED with DeoxIT®!

We identified that we were having significant supplier cleaning issues on many of our component interconnects that were leading to higher rates of failures for our customers in some cases. An investigation was launched to improve the quality of our interconnects. We performed environment testing, system testing, and field testing on our most problematic systems. We determined that applying the DeoxIT® D-Series dramatically improved the performance and reliability of our interconnects on our servers. The two year investigation included a full blown qualification of the DeoxIT® D-Series product on

our assemblies, memory dimms, and memory connectors and the results passed all of our testing with flying colors!

The CAIG Team has and continues to be a tremendous asset, working with our team to develop tools and a process of implementing the cleaning process to our manufacturing facilities worldwide. It has been very clear that CAIG has our customers and our companies best interest in mind in creating a method of improving the reliability of our products in a very cost effective manner. Personally, their customer service and technical expertise is second to none – it continues to be a pleasure working with them!

Chuck C. - Master Quality Engineer, HPE Servers

"CONTACT CLEANERS KEEP TRYING"

Recently, a rep from another chemical company sent me a sample can of their new contact cleaner, promising to "blow away DeoxIT® D5, at a cheaper price". I moistened a swab with THEIR cleaner, and took it to one-half of the dirty edge connector pads on a nasty looking PCB. It barely touched it. I repeated the process with DeoxIT® D5. It removed the oxidation immediately and the device has worked perfectly ever since.

John R. Frondelli, Tech Services Director, dBm Services

"FOR SERVICING OF ELECTRONICS THESE PRODUCTS ARE INDISPENSABLE!"

I have used CAIG products over the last 30 some years. DeoxIT® D5 Contact Cleaner, DeoxIT® F5 Fader, and DeoxIT® Gold Pro Gx3 are all indispensable when servicing older units with dirty or intermittent mechanical switches and controls. DeoxIT® Gold Pro Gx3 is the only solution for cleaning dirty tube pins that I have found and it will not turn to gunk under the high temperature of the vacuum tube pins. For servicing of electronics these products are indispensable.

... Thanks, CAIG Labs!

Ron Cornelius, McIntosh

• **Our Customers are Our Best Advocates!**

Bose Corporation

DeoxIT® D-Series is an excellent product for removing oxidation and contamination from dirty switches & controls and reducing intermittent contact problems. We have been using CAIG products with great success for over 40 years.

Diebold, Incorporated

We have been using CAIG products since 1980 on our automated teller machines to help ensure reliable performance.

General Electric

We were having trouble with edge connectors in our manufacturing environment until we tried DeoxIT® Gold Wipes great product.

Honeywell Inc.

CAIG's DeoxIT® D-Series is great stuff. We use it on feedback slidewires, edge connectors, & relay contacts in industrial process controls.

Rane Corporation

People call me daily asking for recommendations for cleaners and lubricants. Most everyone has tried something less than DeoxIT®, and after using what we authorize, the results are always positive, sometimes bordering on miraculous.

Tektronix

We use DeoxIT® Gold Wipes to protect virgin edge connectors, DeoxIT® D-Series contact cleaner to eliminate intermittent problems on primitive tin-to-tin connectors (which tend to vibrate) and will be using DeoxIT® Gold in the field for gold connectors excellent products.

Xerox Corporation

Corrosion problems on very sensitive connectors have been an annoying problem for us. We have tried many products without success until we tried CAIG's DeoxIT® D-Series and DeoxIT® Gold. They are the only products that have worked perfectly. We highly recommend them.

American Airlines

Amtrak

Black & Decker

BMW

Boeing

Bombardier

Bose

Caterpillar

Crown Lift Trucks

Daktronics

Defense General

Delta Airlines

Diebold

Emerson Electric

FAA

Federal Express

Ford

Foxconn

General Dynamics

General Atomics

Google

Harley Davidson

Harman Kardon

Hewlett-Packard

Honda

Honeywell

IDI Interconnect

Ingersoll Rand

Intel

Inventec Corp.

Jet Propulsion Labs

John Deere

Johnson Controls

L-3 Communications

Logitech

McIntosh Labs

Microsoft

NASA

Northrop Grumman

Peavey Electronics

Philips Medical

Pratt & Whitney

Rane Corporation

Raytheon

Roland

Schindler Elevator

Switchcraft

Tektronics

Tyco Electronics

Union Pacific Railroad

UPS

Xerox

Zero Motorcycles

And thousands more



CAIG Laboratories, Inc.

12200 Thatcher Court, Poway, CA 92064 U.S.A.

P: 800/224-4123, 858/486-8388 | **E:** info@caig.com

W: www.caig.com | www.deoxit.com

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