



LOCTITE® THREADLOCKER APPLICATION GUIDELINES

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PURPOSE & SCOPE

This Work Instruction (WI) provides detailed instruction and guidelines for proper application and use of anaerobic adhesives (e.g. Loctite®) and other threadlocking material. Unless otherwise specified on the engineering drawing or work instructions, an approved threadlocking compound may be added to threaded devices within assemblies when a locking feature is required and none is provided (see IS-001 & 60083166).

WORK INSTRUCTION

1. MATERIAL INFORMATION

Anaerobic adhesives (e.g. Loctite®) are single component threadlocking compounds that cure in the absence of air. They are typically applied to the threads of a fastener just prior to installation and then cure in place between the mating threads. Low viscosity wicking-type threadlockers can be applied after assembly. In both cases, the locking feature results from filling the clearance between mating threads and preventing relative slip.

NOTE 1: Anaerobic adhesives (e.g. Loctite®) should not be used on circuit card assemblies (CCAs) unless explicitly specified on the engineering drawing and EBOM. They are corrosive to PCB finishes and are contaminants in the conformal coating area.

NOTE 2: Anaerobic adhesives (e.g. Loctite®) should not be used in conjunction with anti-seize compounds.

NOTE 3: Anaerobic adhesives (e.g. Loctite®) should not be used on fasteners providing EMI connections (grounds).

2. MATERIALS/COMPOUNDS

Table 1: Materials/Compounds

Name	L-3 Part Number	Type
Loctite® 609	7914043-009	Adhesive (High Strength)
Loctite® 262	7914043-005	Adhesive (High Strength)
Loctite® 263	40014024-001	Adhesive (High Strength, Primerless)
Loctite® 268	40007404-002	Adhesive (High Strength, Semisolid)
Loctite® 242	7914043-004	Adhesive (Medium Strength)
Loctite® 243	40014024-000	Adhesive (Medium Strength, Primerless)
Loctite® 248	40007404-001	Adhesive (Medium Strength, Semisolid)
Loctite® 222MS	7914043-003	Adhesive (Low Strength)
Loctite® 220	7914043-007	Adhesive (Medium Strength, Wicking)
Loctite® 290	7914043-008	Adhesive (Medium to High Strength, Wicking)
Loctite® SF768	7182196-000	Solvent
Loctite® 7471	7183853-000	Primer/Activator
Loctite® 7452	7919206-001	Accelerator
Pacer® ISL-22	7918401-000	Adhesive (Low Strength, Primerless)
Pacer® ISL-42	7918401-001	Adhesive (Medium Strength, Primerless)
Vibra-TITE® VC-3	40014169-000	Pre-applied compound (Medium Strength)

NOTE: See manufacturer for Technical Data Sheets (TDS). Reference W-391, Safety Data Sheet Search.

3. ASSEMBLY

- 3.1 For best result clean all surfaces (external and internal).
- 3.2 If the material is an inactive metal (see [Table 2](#)) apply an activator/primer such as Loctite® 7471 (PN 7183853-000) to all threads and allow to dry.

Table 2: Primer/activator is recommended on inactive materials.

Inactive Metals	Active Metals
Anodized Aluminum (Alodine)	Iron
Pure Aluminum	Plain Steel
Stainless/Galvanized Steel	Copper
Silver	Brass
Gold	Bronze
Zinc	Nickel

- 3.3 If curing time must be reduced, apply an accelerator such as Loctite® 7452 (PN 7919206-001) to all threads and allow to dry.
NOTE: Accelerators may be applied before or after anaerobic adhesive is applied.
- 3.3 Shake the product thoroughly before use.
- 3.4 To prevent the product from clogging in the nozzle, do not allow the tip to touch metal surfaces during application. (See [Figure 1](#) & [Figure 2](#))
- 3.5 For through holes, apply the product onto the bolt at the nut engagement area. Apply enough to fill one to two threads 75-100% full. (See [Figure 1](#) & [Figure 3](#))
- 3.6 For blind holes, apply the product down the internal threads to the bottom of the hole. Apply enough to fill one to two threads 75-100% full.

NOTE 1: Compound may spread into more threads after application.

NOTE 2: Entrapment of air in the hole and threads may prevent proper cure or push the adhesive out of the threads, leaving insufficient adhesive for locking.

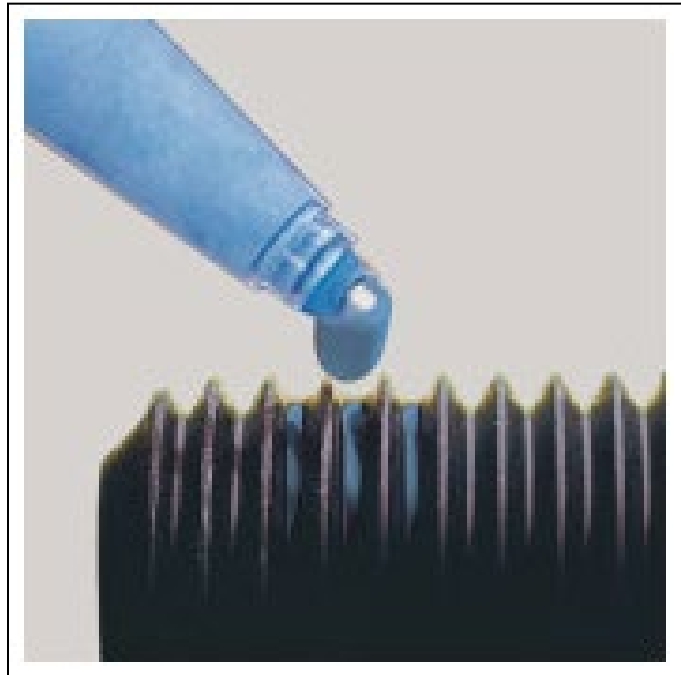


Figure 1: Proper Application Method

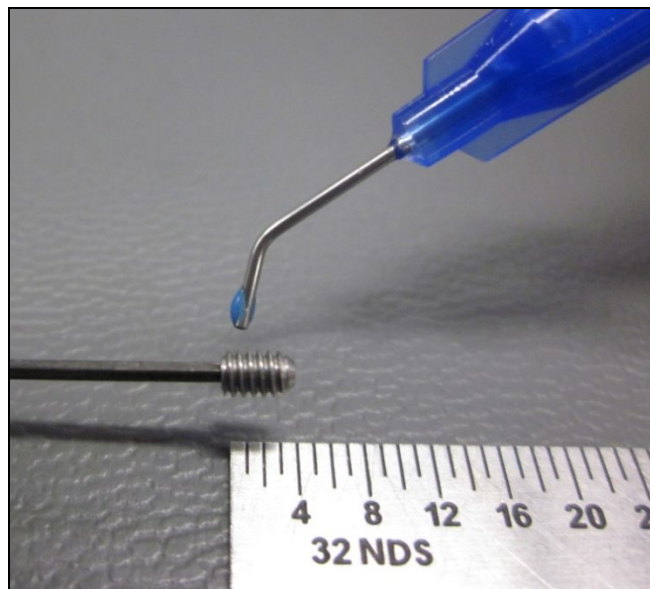


Figure 2: Tip does not touch metal surface

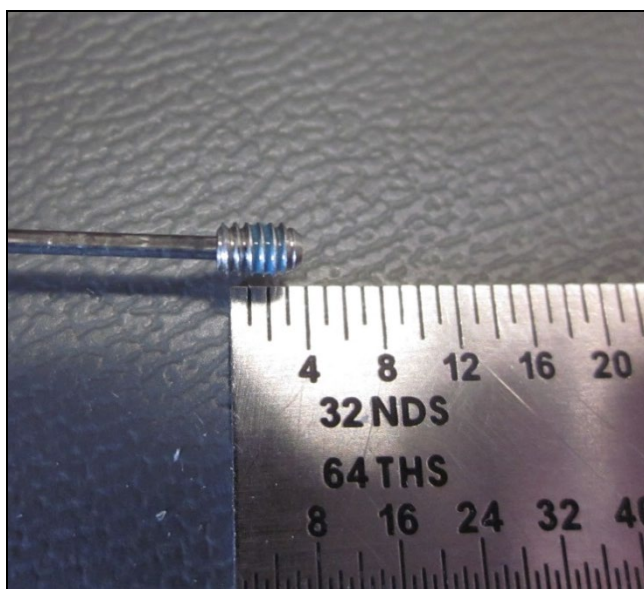


Figure 3: 1-2 threads filled 75-100% full



Figure 4: Too much adhesive applied

3.7 Assemble and tighten as required.

3.8 For sealing applications, apply a 360° bead of product to the leading threads of the male fitting, leaving the first thread free. Force the material into the threads to thoroughly fill the voids. For bigger threads and voids, adjust product amount accordingly and apply a 360° bead of product on the female threads also.

NOTE: Anaerobic adhesives (e.g. Loctite®) must be reapplied if the fastener is adjusted after cure.

4. DISASSEMBLY

4.1. Remove with standard hand tools.

- 4.2. In rare instances where hand tools do not work because of excessive engagement length or because a high strength product was used, apply localized heat to nut or bolt to approximately 250°C. Disassemble while hot.
- 4.3. Threaded fasteners that have been retained by the use of locking compounds shall be cleaned and verified of cleanliness before reuse.

5. POST-ASSEMBLY COMPOUND APPLICATION

- 5.1. Wicking thread locking compound, such as Loctite® 220 (PN 7914043-007) is applied after assembly. It will wick into the threaded joint and fill up any open space, regardless of where it was applied along the threads.

NOTE 1: Because it is applied after assembly, it does not disrupt the connector ground path since it has already been torqued down tightly with the threads in contact.

NOTE 2: In the case of jam nut connectors, one drop of wicking thread locking compound is used if the connector is less than one inch in diameter. For connectors larger than one inch in diameter, two drops are used.

NOTE 3: Primer is often required. (See [Table 2](#))

6. PRE-ASSEMBLY COMPOUND APPLICATION

Vibra-TITE® VC-3 (PN 40014169-000) is a thread locking compound that is pre-applied and dried before installation.

NOTE: Because it never hardens or bonds between mating threads like traditional thread lockers, it is not considered an adhesive. It serves to dampen and absorb vibration, as well as prevent fastener rotation and loss of clamp force. It is applied like Loctite®, and behaves like a self-locking patch screw.

7. INSPECTION

Per 60083155, the torque on threaded joints that include threadlocking adhesive in the stackup shall not be checked after the adhesive has cured. Such verification risks breaking the adhesive bond that has formed between the mated threads, thus negating the locking effectiveness of the adhesive.

RECORDS

There are no records associated with this work instruction.

END OF DOCUMENT

DOCUMENT INFORMATION

Responsible Organization:	Operations
Function/Sub-function:	Manufacturing
Governing Document(s):	Y-001, L3 Technologies CSW Quality Manual 60083155, Specification of Torque and Retention Requirements for Threaded Hardware IPC-A-610, Acceptability of Electronic Assemblies IS-001, Use of Non-Specified Hardware/Material and Drawing Notes
Subordinate Document(s):	N/A
Related Document(s):	WS-000, Workmanship Standards Introduction P-133, Training, Qualification, & Certification of Manufacturing Production Personnel W-391, Safety Date Sheet Search

Related Training: N/A
Approval Requirements: Sr. Specialist Manufacturing Engineer
Review Requirements: N/A

Revision History Summary

Revision #	Description of Change	Date
00	Initial Release	05/15/2017
NA	Updated point of contact. No revision upgrade necessary.	05/17/2018
01	Updated table 1 in section 2. Added reference to Engineering Specification 60083155 in section 7.	2/13/2019
02	Removed column containing links to Safety Data Sheets from Table 1. Added W-391 as a related document and in the note in section 2.	8/19/2019
NA	Updated point of contact. Updated logo and proprietary in footer. No revision upgrade necessary.	8/30/2023