

MIL-STD- 1450 (MU)  
2 August 1968

MILITARY STANDARD  
LUBRICATION OF FIRE CONTROL INSTRUMENTS



FSC 12GP

**MIL-STD-1450(MU)**  
**2 August 1968**

**DEPARTMENT OF DEFENSE**  
**Washington, D. C. 20301**

**Lubrication of Fire Control Instruments**  
**MIL-STD-1450(MU)**

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- 1. This Military Standard is mandatory for use by the Munitions Command.**
- 2. Recommended corrections, additions or deletions should be addressed to:  
Commanding Officer, Frankford Arsenal, ATTN: SMUFA-N1100, Philadelphia,  
Pennsylvania 19137.**

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## 1. scope

**1.1 Purpose.-** This standard describes the methods of lubricating fire control instruments during final assembly or component sub-assembly.

**1.2 Classification.-** Lubrication shall be in accordance with Method 1 or 2 as designated on the applicable drawing or design document. The selection of the lubrication method is determined by the nature of the Parts, their location and the materials, as follows:

Use Method 1 for - Lubrication of bearing and mating surfaces where degradation of optical, electrical or physical properties of the system may result from contact with the lubricant or its volatile products, or incompatible plastic parts; for lubrication of certain rubber parts such as O-rings or other seals.

Use Method 2 for - Normal lubrication purposes as applied to gears, bearings and other moving parts, where contamination of a critical optical surface, or an incompatible plastic or rubber material is considered remote.

**1.3 Application.-** Lubrication of fire control instruments and equipment in accordance with this standard is intended to insure their proper operation under adverse environmental conditions for the maximum possible maintenance-free duration. This standard is intended to cover only general lubrication method applicable to sliding, rolling, or rotating movements, and rubber seals normally encountered in precision fire control instrument design. It does not cover extremely delicate applications such as watches and clocks; heavy duty mechanisms such as generating units, trailers, etc.; self-lubricated bearings and special systems utilizing "dry-film" or powder lubricants.

## 2. REFERENCE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this standard to the extent specified herein.

**SPECIFICATIONS**

. Military

MIL-G-4343  
**MIL-G-23827**

Grease, Pneumatic System  
 Grease, Aircraft and Instrument, Gear  
 and. Actuator Screw ..

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(Copies of specifications standards and drawings required by suppliers in connection with procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

### 3. DEFINITIONS

3.1 Lubricant-. The term lubricant as stated herein applies to " specified material used to reduce friction ok to aid in assembly.

### 4. GENERAL REQUIREMENTS

This section is not applicable.

### 5. DETAILED REQUIREMENTS

5.1 Materials.- 'Lubricants used in fire control instruments and equipment shall be in conformance with MIL-G-4343 or MIL-G-23827 unless otherwise specified on the applicable drawing or design document.

#### 5.2 Lubrication procedure.

##### 5.2.1 Examination and Preparation of mating surfaces.

5.2.1.1 Mating surfaces shall have been examined and determined to be in conformance with the mechanical finish on the applicable drawings and free from surface defects, burrs, ridges, etc. Grease, dirt, corrosion and other foreign substances shall be removed using a suitable cleaning procedure. The use of aluminum oxide abrasive cloth is prohibited on bearing surfaces. Metal parts to be used in optical assemblies shall be cleaned by vapor-phase decreasing wherever possible; where impracticable, solvent soaking, scrubbing and wiping is permissible. Parts received packaged with a preservative or grease other than the lubricants specified in this standard or on the applicable drawing shall be rough cleaned in a separate unit in order to prevent excessive contamination of the cleaning bath. Parts shall be thoroughly dried before lubricating using blasts of filtered, clean, dry air, or if available, by heating in a suitably ventilated, circulating air oven at a temperature not exceeding 100 F. Contact with mating surfaces by the bare hand shall be avoided.

5.2.1.1.1 Rubber parts shall have been examined and determined to be free from surface defects, flash, etc. Mold release agents, talc or other foreign substances shall be removed from the rubber surface prior to lubrication

5.2.2 Application of lubricant.- Surfaces shall be lubricated in accordance with one of the following methods:

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Method 1 - After cleaning, surfaces to be lubricated shall be wiped with a clear, lint-free cloth which has been lightly impregnated with the specified lubricant. The cloth may be wrapped around a suitable applicator such as an orange stick, or wooden spatula to properly coat difficult areas. The quantity of lubricant applied shall be such that after working the mating parts together by hand through their full excursion, a uniform residual film barely visible to the unaided eye on each mating surface, shall remain. All excess lubricant beyond the mating surfaces shall be removed. Where lubrication of only seals (o-rings, etc.) is involved, only the rubber surface shall be lubricated; where seals with bearing surfaces are involved, all mating surfaces shall be lubricated. The "barely visible" uniform film of lubricant is defined by weight as between 0.5 and 0.8 milligrams per square inch per surface.

Method 2 - After cleaning, apply specified lubricant with a suitable applicator such as a hypodermic syringe, toothpick, wooden or rubber spatula. All such applicators shall be thoroughly cleaned or discarded immediately after use. The amount of lubricant to be used is governed by the size and geometry of the parts involved. The quantity applied shall be such that, after working the mating parts together by hand through their full excursion, a uniform residual film clearly visible on each mating surface shall remain. All excess lubricant beyond the mating surfaces shall be removed. The "clearly visible" uniform film of lubricant is defined by weight as between 1 and 2 milligrams per square inch per surface.

**CAUTION.** When parts are lubricated prior to immediate assembly, extreme care must be exercised to insure that contaminants are not permitted to contact lubricated surfaces.

**5.2.3 Film thickness guide.** The utilization of visual comparison standard<sup>s</sup> is recommended in order to provide a reference for comparison of the lubricant film thickness defined in this document, and the thickness of lubricant applied to production parts. The comparison standards can be prepared by scribing a one square inch area on metal discs and uniformly spreading the required weight\* of lubricant over the one square inch area. An instrument assembler, utilizing the film thickness standards, can obtain a visual degree of consistency between the specified film thickness and film thickness on lubricated parts. The comparison standards should be protected from contamination or smearing during use and when being stored.

tenth milligram.

\*NOTE: Balance scale should measure to an accuracy within one

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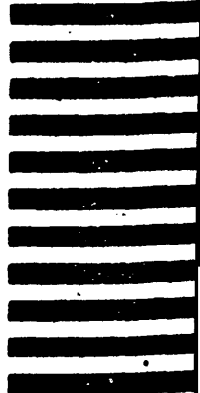


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