

General Optics Cleaning Procedure

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1 Scope

There are many different optics that make up the LIGO interferometer. All of them require different degrees of cleaning and care depending on their purpose in the system. This document defines each optic by subsystem and optic type, and provides the correct procedures for handling and cleaning them.

The cleaning procedures were selected as the result of extensive testing on how to control the level of contamination in the system, and how to ensure the best possible optical performance of the different aLIGO optics.

NOTE: This document defines **how** to clean each kind of optic, but not necessarily **when** it should be cleaned. This is most important for the suspended optics, refer to [Guidelines on Protecting the Optics in Chamber](#) and [Chamber Entry & Exit Guidelines](#) for recommendations on when to clean the suspended optics.

2 Terminology

Beamline: Any optic that transports the main beam into a resonate cavity, or any optic that is designed to have losses at the ppm level.
 All Core Optics are considered beamline optics, as are most Input Optics and most PSL optics.

Diagnostic: Any optic that monitors measures or characterizes the main beam, or that supports an auxiliary system like the CO2 laser.
 Most ISC and AOS (SLC, TMS, TCS, and OpLev) optics are considered diagnostic optics.

3 Categories of Optics

A LIGO optic can be put into one of four different categories:

1. Beamline Optics in Vacuum
2. Beamline Optics out of Vacuum
3. Diagnostic Optics in Vacuum
4. Diagnostic Optics out of Vacuum

To locate where an optic belongs in the following Beamline and Diagnostic flow charts, see the Related Documents tab for this procedure. The lists of all the subsystem optics broken down into the above categories are there.

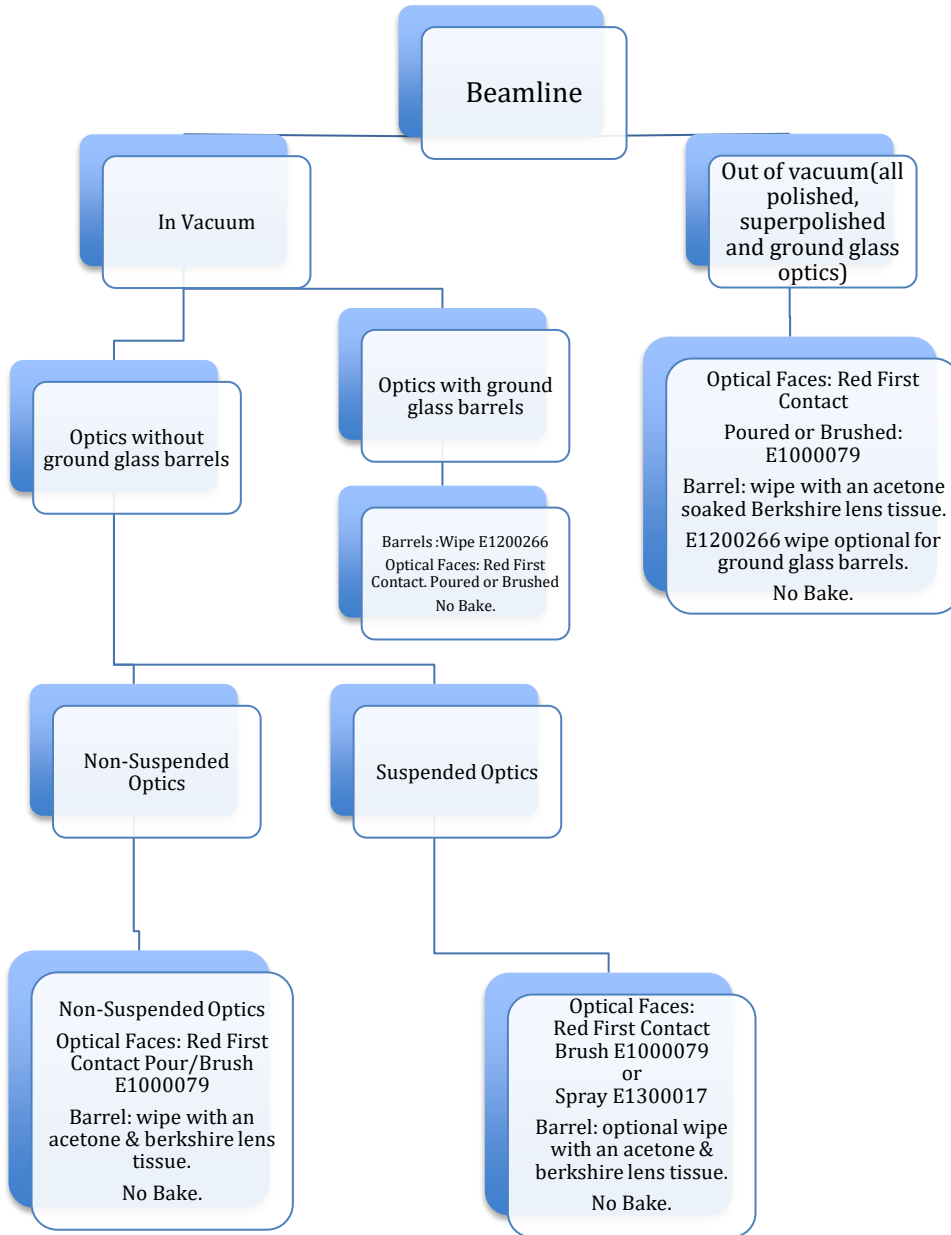
4 Applicable Documents

- LIGO-E1300017: [First Contact Spray Application Procedure](#)
- LIGO-E1000079: [First Contact Brush and Pour Application Procedure](#)
- LIGO-E1200266: [Ground Glass Cleaning Procedure](#)
- LIGO-T1100286: [Methanol Soak/Rinse Cleaning Procedure](#)
- LIGO-T1200321: [Guidelines on Protecting the Optics in Chamber](#)
- LIGO-E1201035: [Chamber Entry & Exit Guidelines](#)



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5 Cleaning Beamline Optics





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6 Cleaning Diagnostic Optics

