



SPECIFICATION

SPECIFICATION FOR VITON O-RINGS – ADVANCED LIGO

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
AUTHOR:							
CHECKED:							
APPROVED:							
DCC RELEASE							

1. SCOPE:

The specification covers the procurement of Viton Orings for the Advanced LIGO Modification. These O-rings will be used in Ultra-High Vacuum Systems and must be of the highest quality.

The specified components as shown in this specification are part of the Advanced LIGO upgrade of the Laser Interferometer Gravitational-Wave Observatory (LIGO). LIGO is operated by Caltech and the Massachusetts Institute of Technology (MIT) under an NSF grant and includes observatories located in the Hanford Reservation (near Richland, WA) and second facility in Livingston, LA.

The California Institute of Technology (Caltech) will be the Buyer for these components. The Seller is the successful bidder who is awarded this contact.

The O-rings will be baked, RGA Tested and cleaned by LIGO personnel after purchase.

2. O-RING REQUIREMENTS:

- Service: Ultra High Vacuum
- Material: Certified DuPont A-500 Viton. The o-ring compound shall have minimum wax added for extrusion lubrication (Wax shall be 0.7 % by Wt. maximum)
- Material Type: Extruded Cord Stock with Splice
- Splice: Vulcanized Splice without Diameter change
- Durometer: 70 to 75
- Cross Section Diameter: 0.275 inches +/- 0.006 inches
- Temperature Rating: 200 ° C
- Testing: Splices to be tested per ASTM standards (ASTM 2527-83 (2006)) – Joint Classification is Class 2
- Cleaning: The finished O-rings must be cleaned by DI water wiping and dried with Class 100 Cleanroom wipes. O-rings shall be protected from other contamination (oil, grease, dirt, lint, fingerprints, etc.). All personnel shall wear clean gloves when cleaning and packaging the O-rings.



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Packaging: The Cleaned O-ring shall be immediately packaged in clean individual tear-resistant plastic bags. The Buyers Part Number, Flange Size and Cord Length shall be Permanently Marked on each bag.

O-ring Sizes: Per Table 1

Documentation: The Vendor shall submit a Manufacturing Plan for O-ring manufacture covering O-ring extrusion, splicing and post treatment including any chemicals used. The vendor shall also submit a cleaning and packaging procedure for the buyer’s approval.

3. Buyers Bakeout: O-rings will be baked by Buyer at 200 ‘ C for 24 Hours. The Bakeout will be done under a vacuum of 1 Torr with a small pure Nitrogen purge.

4. Inspection and Quality Requirements

The Seller shall have a Quality Assurance Plan in affect at all times specifying inspection, testing and documentation procedures that will ensure that the equipment furnished under the specification will meet in all respects the requirements of this specification. The responsibility for inspection rests with Q.A. Department.

Non-escort privileges for LIGO, Government and LIGO representatives to all areas of the facilities where the work is being performed shall be arranged. This will include access to all areas where material is being stored or fabricated.

5. Table 1

O-RING PART # FLANGE SIZE (IN.) CROSS SECTION (IN.) CORD LENGTH (IN.) QTY.

Supply O-Rings per attached Table 1 – last column “ Quantity To Purchase”

TABLE 1 - ORING INVENTORY ANALYSIS - ADVANCED LIGO

ORING PART #	FLANGE SIZE (IN.)	CORD LENGTH (IN.)	QTY TO PURCHASE
V049-M016A	104	337.5	4
V049-M017A	104	328.125	0
V049-M018A	84	274.375	26
V049-M019A	84	265.125	28
V049-M020A	72	237.125	0
V049-M021A	72	227.75	0
V049-M022A	60	200.625	65
V049-M023A	60	191.25	48
V049-M024A	48	162.5	0
V049-M025A	48	153.125	0
V049-M026A	44.25	150.0	7
V049-M027A	44.25	140.75	9
V049-M030A	60 (BE-3A ONLY)	213.0	0
V049-M031A	60 (BE-3A ONLY)	203.75	0
V049-M032A	44.625	151.25	0
V049-M033A	44.625	141.93	0
TOTALS			187