

		<b>Central Laser Facility</b> <b>Vulcan Laser System</b> <b>Glass Laser Cleanrooms</b>	
Specification written by	TB Winstone	Specification issued by	RJ Clarke
Date of issue	16 <sup>th</sup> Aug 18	Checklist complete	Yes
Description	<b>OFF AXIS F3.0 PARABOLA SPECIFICATION</b>		
Specification Number	<b>OFAP-320 dia-F3.0-18-1</b>		

### 1. SUBSTRATE MATERIAL

Low thermal expansion material such as Zerodur or equivalent.

### 2.SUBSTRATE FINISH

Edges	Fine ground
Surface finish	Better than 1 nm RMS polish with minimum scatter
Scratch/dig	better than 20/10 (or DIN or MIL equivalent)
Back surface	Fine ground, flat to +/- 1 mm, the back surface to be 90(+/- 0.25) degrees to the incoming optical axis

### 3.DIMENSIONS

Final parabola dimensions	
Size	320 (+0.0, -1.0) mm diameter
Thickness	50 mm at the thinnest point
Operational Aperture	290 mm dia centred on substrate. All specifications to apply over this area.
Off-Axis distance	5 (+2.0, -2.0) mm from true optic axis to inner edge of mirror
Optical axis of parabola	within 2 mm of the centre of the parabola substrate
OFAP edge	Edge closest to the focal point to have a small flat of 39 mm perpendicular to the equator of the optic, cut into the substrate. Closest edge to true optical axis should be 90° (+/- 0.5°) to the line through the true optical axis which bisects the inner edge of the OFAP. This flat defines the edge closest to the true optical axis.

All edges to be fine ground. All corners to have a chamfer 1 mm x 45 degrees which should be fine ground.

#### 4. OPTICAL PROPERTIES

Effective Parent Focal length	600 (+10.0, -10.0) mm.
Optic focal length	612 (+10.0, -10.0) mm (measured from optic centre to focal spot)
Reflected wavefront	< $\lambda/4$ P-V deviation from true spherical wavefront @ 633 nm
Reflected wavefront gradients	< $\lambda/10$ per cm deviation from true spherical wavefront @ 633 nm.

#### 5. COATING

The Parabola should be coated as per attached specification

#### 6. MARKING

Each substrate shall have the specification number (above) sandblasted around the ground edge. A line is to be drawn in 2B (very soft) pencil across the rear surface marking the equator of the optic and continued up both edges perpendicular to the rear surface (as per sketch below).

#### 7. DOCUMENTATION

Each optic will be supplied with interferograms showing the reflected wavefront deviation from a true spherical wavefront.

#### 8. PACKAGING

The parabola to be supplied in a custom made box suitable for storage and shipping purposes. The parabola should be wrapped in several layers of chemically inert paper that will not scratch, leave a residue or corrode the polished surface. Under no circumstances should any chemical protective coating be placed upon the polished surface. The outer packaging shall be marked clearly "FRAGILE TECHNICAL GLASS" and "ONLY TO BE OPENED IN A CLEAN ROOM BY PERSONNEL FAMILIAR WITH THE NATURE OF THE CONTENTS".

