Technical Datasheet 600

optoSiC+ XY100G

ultra-high performance 100mm aperture generic scanning mirrors

optoSiC® XY100G generic scanning mirrors are designed using optoSiC GmbH's protected spine and rib structure for post-objective laser scanning systems using a 100.0mm full beam aperture with focal lengths between 5 and 10 metres.

These mirrors are manufactured from optoSiC+ optical grade Silicon Carbide to give optimum stiffness, dynamic flatness and high resonant frequencies under high torque loadings while offering low Moment of Inertia for all scanning applications where processing speed and performance is paramount.

optoSiC® XY100G generic scanning mirrors are available polished to 1/4λ rms flatness @632.8nm and either coated with UltraMAX R for CO_2, or opto-1064 R for single Nd:YAG wavelengths. Please refer to optoSiC GmbH Technical Datasheets 402 and 404 for specific details of these coatings. Other coatings are available on request.

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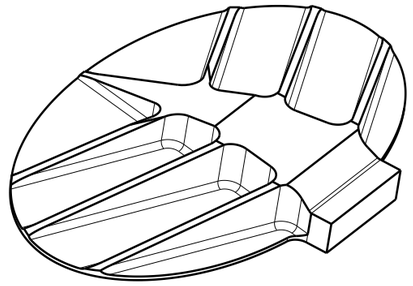
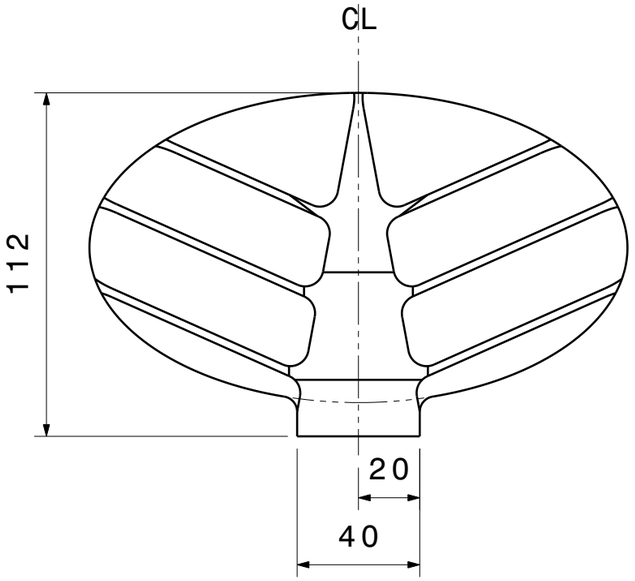
optoSiC+ XY100G Generic Scanning Mirror Specifications:

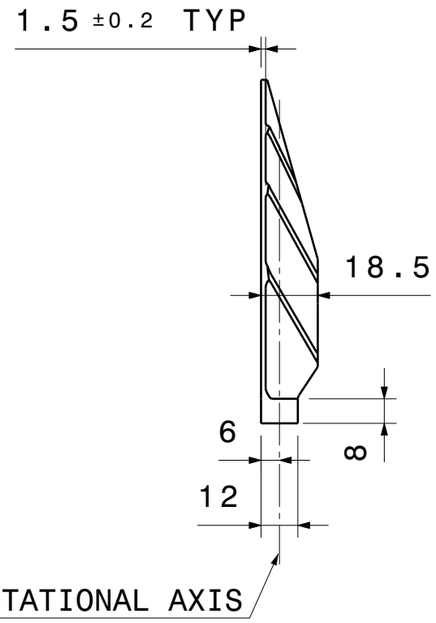
Density	>3.16g/cm^3		
Flexural Strength	510 Mpa (DIN EN 843-1)		
Compressive Strength	2200 MPa		
Young's Modulus [E]	420 Gpa (DIN EN 843-2)		
Poisson's Ratio	0.17 n		
Surface Roughness	Ra. ≥0.3273nm (pre-coated)		
CTE	4.1 α [10^{-6}/°K] 20-500°C (DIN EN 821-1)		
	X	Y	
Mass (g)*	216.09	495.42	
Moment of Inertia (g*cm.2)*	1,987	2,899	
Resonant Frequency (kHz)*	3.21	0.99	*(1st bending)*
	4.171	3.371	*(1st twisting)*
Dynamic Flatness (λ)*	1/4.032	1/3.962	
	(at λ = 632.8nm per 1,000 rad/sec^2)		
Central Angle of Incidence (°)	45	36.5	
X-Y Separation	126.5mm		
X-Tilt	-17°		
Mechanical Scan Angle	±10°		
Aperture	100.0mm full beam (see layout drawing)		

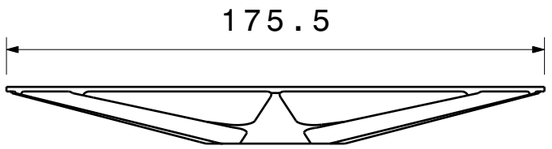
**Modelled using CATIA, Patran and ANSYS softwares*

ISOMETRIC VIEW



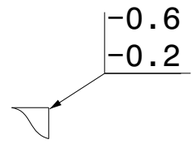






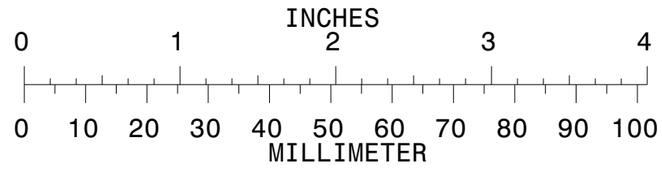
4. FILLET RADII R2 AND CORNER RADII R6 UNLESS OTHERWISE STATED/MODELLED

3. BREAK SHARP EDGES



2. TOLERANCES NOT STATED:
   LENGTHS <50mm = ±0.2mm
   LENGTHS >50mm AND <150mm = ±0.3mm

1. PART SYMMETRICAL AROUND CENTRE LINE

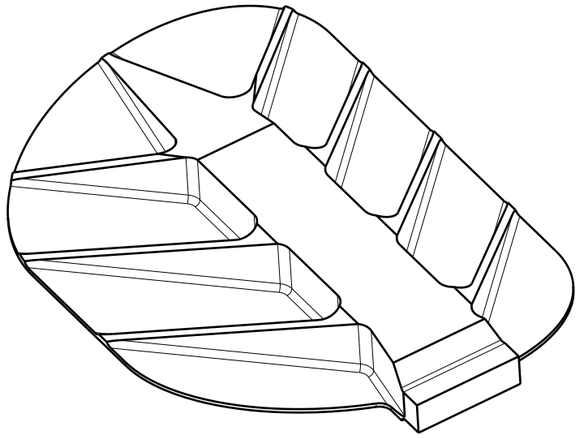


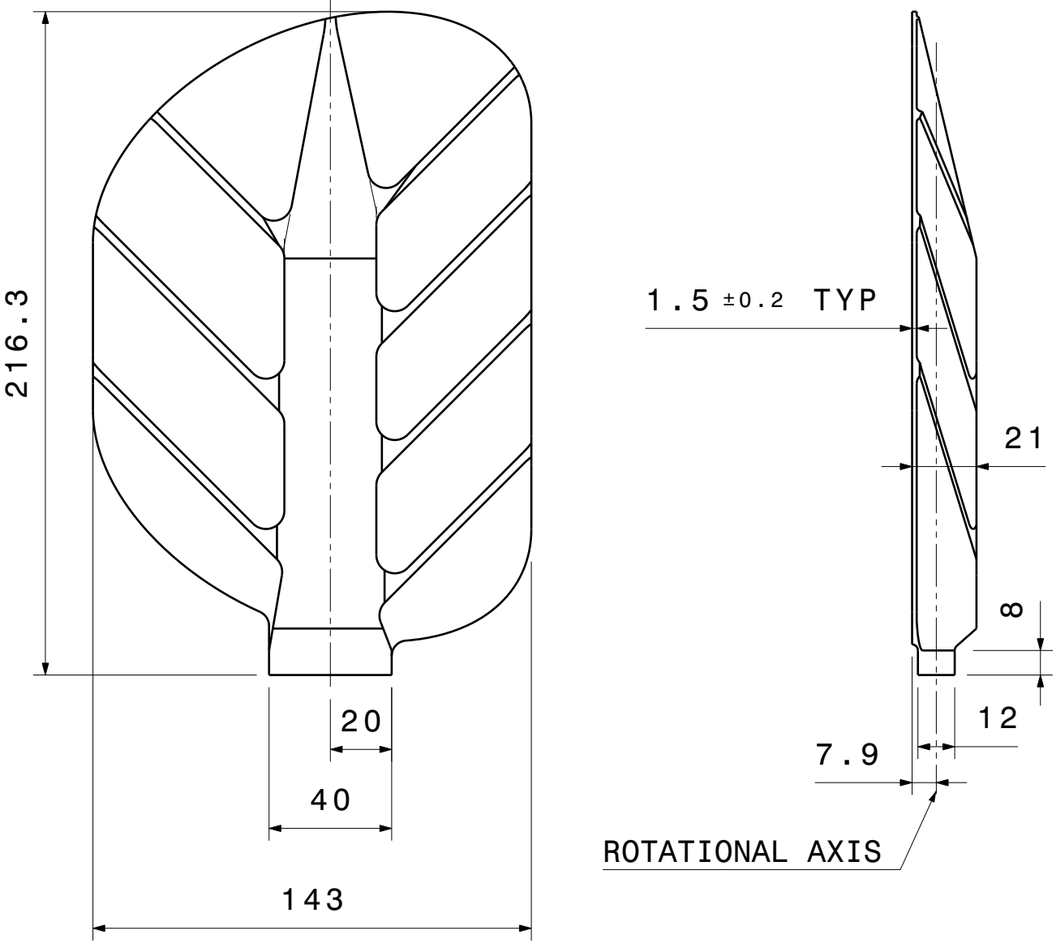
COMPUTER PRODUCED DRAWING USING CATIA V5. NO MANUAL ALTERATION

LIMITS NOT STATED: ISO 8015		SURFACE FINISH:		FIRST ANGLE PROJECTION	
		NAME	DATE	MATERIAL NUMBER:	
	DRAWN	ASPINDLE	07.07.2009		
	STRESS	RATCLIFFE	07.07.2009	SCALE: 1:2	SIZE A3
	APPROVED	S.HASTINGS	07.07.2009	SHEET: 01 / 01	

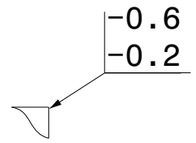
TITLE	DRAWING NUMBER	
MIRROR X100	X100G	A
		ISSUE

ISOMETRIC VIEW





3. FILLET RADII R2 AND CORNER RADII R6
   UNLESS OTHERWISE STATED/MODELLED

2. BREAK SHARP EDGES 

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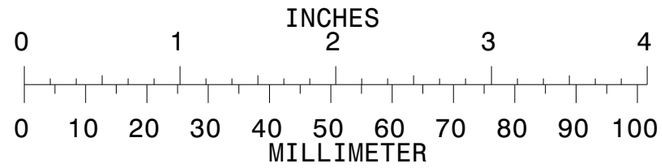
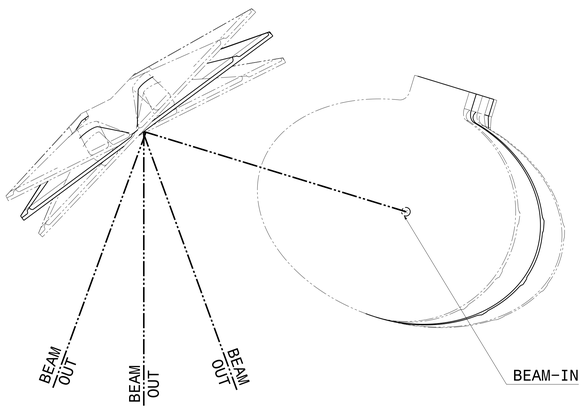


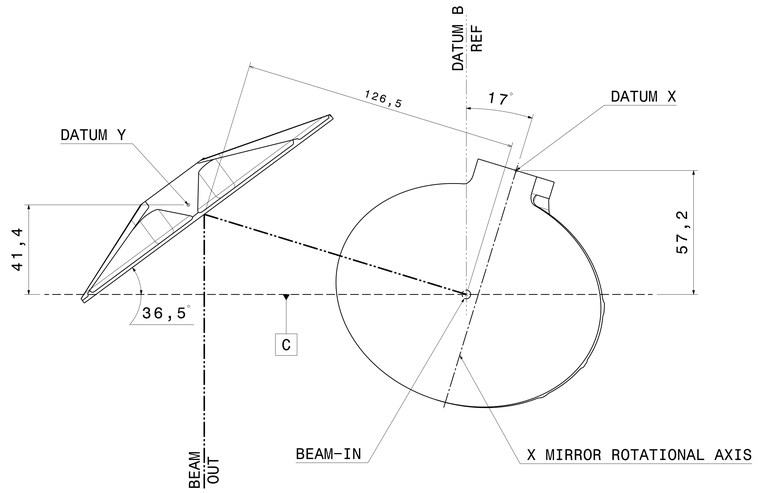
COMPUTER PRODUCED DRAWING USING CATIA V5. NO MANUAL ALTERATION

LIMITS NOT STATED: ISO 8015	SURFACE FINISH: √			FIRST ANGLE PROJECTION	
		NAME	DATE	MATERIAL NUMBER:	
	DRAWN	ASPINDLE	07.07.2009		
	STRESS	RATCLIFFE	07.07.2009	SCALE: 1:2	SIZE A3
	APPROVED	S.HASTINGS	07.07.2009	SHEET: 01 / 01	

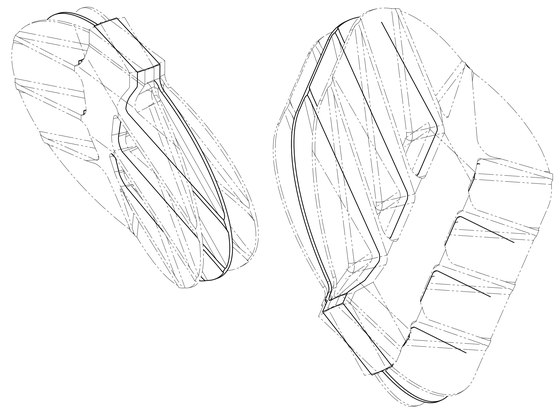
TITLE	DRAWING NUMBER	
MIRROR Y100	Y100G	A
		ISSUE

FRONT VIEW
SHOWING MIRRORS AT 0°,+10° AND -10°

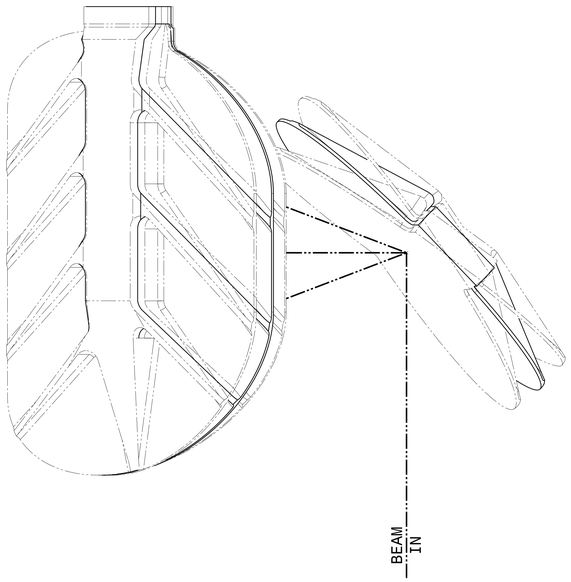


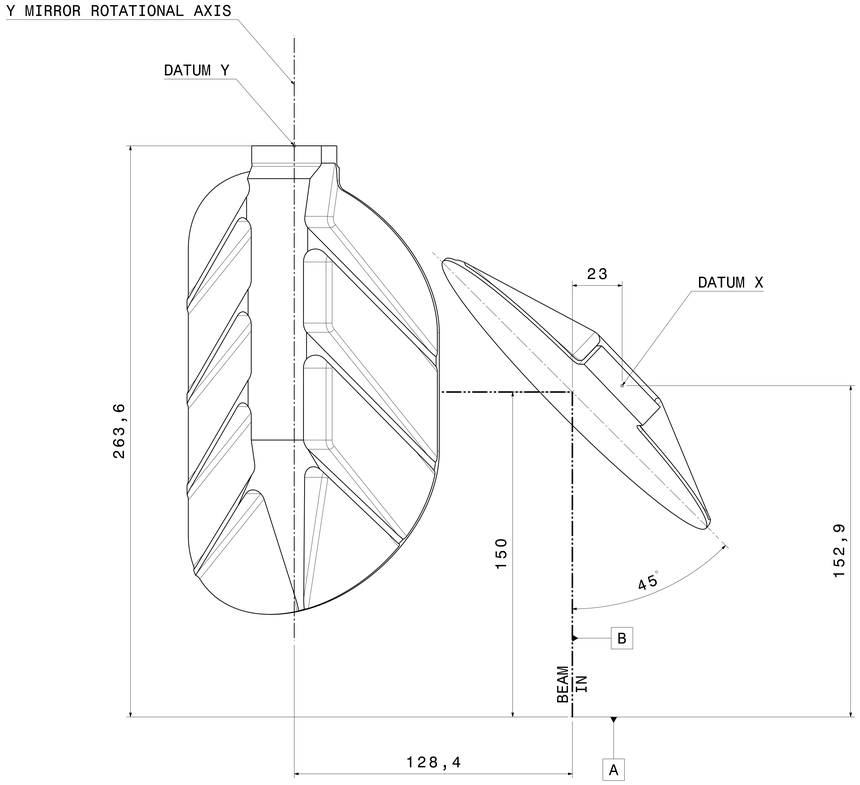


ISOMETRIC VIEW
SHOWING MIRRORS AT 0°,+10° AND -10°



PLAN VIEW
SHOWING MIRRORS AT 0°,+10° AND -10°





5. USE ±15° MECHANICAL GALVO BUMPERS

4. FULL BEAM DIAMETER AT OUTPUT SURFACE OF FINAL OBJECTIVE=100.00mm. FOCAL LENGTH f5,000mm TO f10,000mm

3. DATUM SYSTEM:

A= = PLANE NORMAL TO "BEAM-IN" AXIS AT OUTPUT SURFACE OF FINAL OBJECTIVE LENS 150mm FROM X MIRROR.

B= = PLANE NORMAL TO DATUM A THROUGH "BEAM-IN" AXIS AND PARALLEL TO "BEAM-OUT" AXIS.

C= = PLANE NORMAL TO DATUMS A & B, THROUGH INTERSECT POINT OF "BEAM-IN" AXIS AND X MIRROR OPTICAL FACE.

X= ∘ = INTERSECT POINT OF X MIRROR ROTATIONAL AXIS AND MOUNT REAR FACE.

Y= ∘ = INTERSECT POINT OF Y MIRROR ROTATIONAL AXIS AND MOUNT REAR FACE.

2. TOLERANCES NOT STATED:
LENGTHS <50mm = ±0,2mm
LENGTHS >50mm AND <150mm = ±0,3mm

1. ALL DATA EXCEPT TOLERANCED DIMENSIONS, DATUM AND SYSTEM INFORMATION SHOWN IN THIS DRAWING IS REF.ONLY. SEE SOLID MODEL FOR MASTER GEOMETRY.

INCHES
0 1 2 3 4
0 10 20 30 40 50 60 70 80 90 100
MILLIMETER

COMPUTER PRODUCED DRAWING USING CATIA V5. NO MANUAL ALTERATION

LIMITS NOT STATED: ISO 8015	SURFACE FINISH: √		FIRST ANGLE PROJECTION	
		NAME	DATE	MATERIAL NUMBER:
	DRAWN	ASPINDLE	20.07.2009	
	STRESS			SCALE: 1:1 / SIZE A0
	APPROVED	S.HASTINGS	20.07.2009	SHEET: 01 / 01

TITLE	DRAWING NUMBER	
XY100G LAYOUT	XY100G LAYOUT	A
		ISSUE