Optical Standards – US & Canada

EYEWEAR INSPECTION JOB AID

SPHERE POWER			
SINGLE VISION & MULTI FOCAL		PROGRESSIVE	
Power	Tolerance	Power	Tolerance
≤ ± 6.50 D	± 0.13 D	≤ ± 8.00 D	± 0.16 D
> ± 6.50 D	± 2%	> ± 8.00 D	± 2%

CYLINDER POWER			
SINGLE VISION & MULTI FOCAL		PROGRESSIVE	
Power	Tolerance	Power	Tolerance
≤ ± 2.00 D	± 0.13 D	≤ ± 2.00 D	± 0.16 D
> ± 2.00 D - ± 4.50 D	± 0.15 D	> ± 2.00 D - ± 3.50 D	± 0.18 D
> ± 4.50 D	± 4%	> ± 3.50 D	± 5%

CYLINDER AXIS	
Power	Tolerance
≤ 0.11	N/A
0.12 to ≤ 0.25	14°
> 0.25 - ≤ 0.50	7°
>0.50 - ≤ 0.75	5°
> 0.75 - ≤ 1.50	3°
> 1.50	2°
Polar Axis ± 3° vs. frame datum line	

SEGMENT POWER	
Power	Tolerance
≤ +4.00 D	± 0.12 D
> +4.00 D	± 0.18 D

NEAR PD	
	Tolerance
Multi Focals	± 2.5 mm of specified PD Each lens within 1.5mm of specified PD

VERTICAL IMBALANCE (See Optical Inspection Notes 1,2)	
Power (at 90°)	Tolerance
≤ ± 3.75 D	0.33D
> ± 3.75D	± 1 mm of difference between specified per pair

OPTICAL INSPECTION NOTES	
1	When dissimilar heights are requested, the relationship between the two must be maintained within 1mm. In the case of dissimilar fit heights, vertical prism tolerances must be applied. (see Vertical Imbalance Chart in the Optical Standards section)
2	On Rx's where prism is prescribed, the prism must meet documented tolerances. Prism used for prismatic thinning is inspected in the same manner as prescribed prism. When verifying fit height, use Vertical Imbalance tolerances. (see Vertical Imbalance Chart in the Optical Standards section)
3	Center thickness shall be measured at the prism reference point. Edge thickness at the thinnest edge.
4	Progressives: If the sum of the distance power and add power is a positive number, the lens should be considered a (+) lens for thickness purposes.
5	For powers between +4.00 D and +7.87, minimum ET is 1.5, +8.00 and higher minimum ET is 1.2.
6	Surfaced lenses with powers between +2.00 and -2.00 may have a minimum Center Thickness of up to 2.6mm. For Oakley frames, Plus ET and Minus CT may be as high as 2.5mm, regardless of Rx power.
7	For groove mounted frames: use the material thickness standards for Minus lenses, ensure that the edge thickness is not less than 1.6mm. For Plus lenses follow the specified edge thickness tolerance for Grooved Rimless Mounts.
8	For In-line metal frames or grooved rimless frames using metal wire mountings: use the material thickness standards for minus lenses, edge thickness must not be less than 2.1mm. For Plus lenses follow the specified edge thickness tolerances for In-line Groove Mounts.
9	For drilled rimless mounted frames: use the material thickness standards for minus lenses, edge thickness must not be less than 1.8mm. Plus lenses follow the specified edge thickness for Drilled Rimless Mounts
10	Sport eyewear may only be produced in Polycarbonate lens material. Sport eyewear are not to be monogrammed as the frames are not Z-87 approved.
11	High impact safety eyewear (Z-87+) may only be produced in Polycarbonate material. The lenses must be mounted in a Z-87+ frame. If either of these items are not met, the lenses cannot be monogrammed with the high impact "+" logo.
12	In minus power/ high add combinations, additional center thickness is necessary to compensate for segment thickness. In these cases, the tolerance is ±.2 mm from manufacturer's specifications.
13 Impact Resistance	Basic Impact safety lenses - Minimum thickness at any point in the lens must be 3.0mm. Glass lenses (available in US stores only) must be individually impact tested by the processing lab. Plastic, High Index and Poly safety lenses are batch tested and don't require in-store drop ball testing.

SEG HEIGHT FIT POINT & FITTING CROSS HEIGHT (see Optical Inspection notes 1,2)	
Power	Tolerance
Per Lens	± 1 mm of specified height
Per Pair	± 1 mm of difference between specified height per pair

HORIZONTAL PRISM & DISTANCE PD			
SPHERICAL SINGLE VISION & MULTI FOCAL		PROGRESSIVE & ASPHERIC SV(See Optical Inspection Notes1,2)	
Power (at 180°)	Tolerance	Power (at 180°)	Tolerance
≤ ± 2.75 D	0.33D per lens, 0.67 D per pair of lenses	≤ ± 3.37 D	0.33D per lens, 0.67 DD per pair of lenses
> ± 2.75 D	± 2.5 mm of specified PD, each lens no more than 1.5mm from specified PD	> ± 3.37D	± 1 mm from prism reference point
		PER LENS	Fitting cross within 1mm of mono. PD ordered

DESIGN DESCRIPTION	LAYOUT FOR INSPECTION
Single Vision	
Optimized Single Vision	0 mm
Eyezen Start, Eyezen+1, Eyezen+2, Eyezen+3	4 mm
Progressives	
AVP, ComfortLight, Elite, EVP, HD, MVC, PearleTHIN, Premier, Premium, Prog Wrap, Superior & XVP	4 mm
Accolade, Varilux	4 mm
BIQ Workspace (Ideal Computer)	Use designated layout chart
Workspace (not Ideal Computer)	0 mm
RayBan, Oakley, Costa, Maui Jim	4 mm

THICKNESS TOLERANCE NOTES 3, 4 & 6 Apply to all Lens Materials						
MATERIAL / LAB		NOTE	PI or Minus CT		PI or Plus ET	
			MIN	MAX	MIN	MAX
Plastic (1.50)	FSV Clear & A/R	5	1.8	2.4	1.7	2.5
	Surfaced Clear, A/R, Transitions SV & Prog.	5	2.0	2.7	1.7	2.5
	Polarized	5	1.8	2.5	1.7	2.5
	Transitions Bifocal & Blue Filter	5	2.3	3.0	1.7	2.5
Poly & Trivex	Clear FSV Transitions FSV Surfaced RxO Labs		1.1	2.2	1.0	2.5
	Clear LC Labs		1.4	2.3	1.3	2.5
	Polarized (all Labs)	6	1.5	2.2	1.5	2.5
	Surfaced Transitions (All Labs)	6	1.6	2.3	1.5	2.5
	Oakley, Costa		1.7	2.5	1.7	2.5
Hi-Index 1.60, 1.67	Clear FSV		1.1	2.2	1.2	2.2
	Clear RxO Labs Transitions / Blue Filter / Polarized	6	1.5	2.2	1.5	2.2
Hi-Index 1.74	All Lens Types	6	1.5	2.2	1.3	2.2
GROOVE RIMLESS MOUNTS		7			1.6	2.5
IN-LINE GROOVE MOUNTS		8			2.1	2.7
DRILLED RIMLESS MOUNTS		9			1.8	2.5
BASIC SAFETY		13	3.0	3.7	3.0	3.7
SPORT / HIGH IMPACT SAFETY / GLASS / Hi INDEX GLASS		10-13	2.0	2.7	2.0	2.7

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