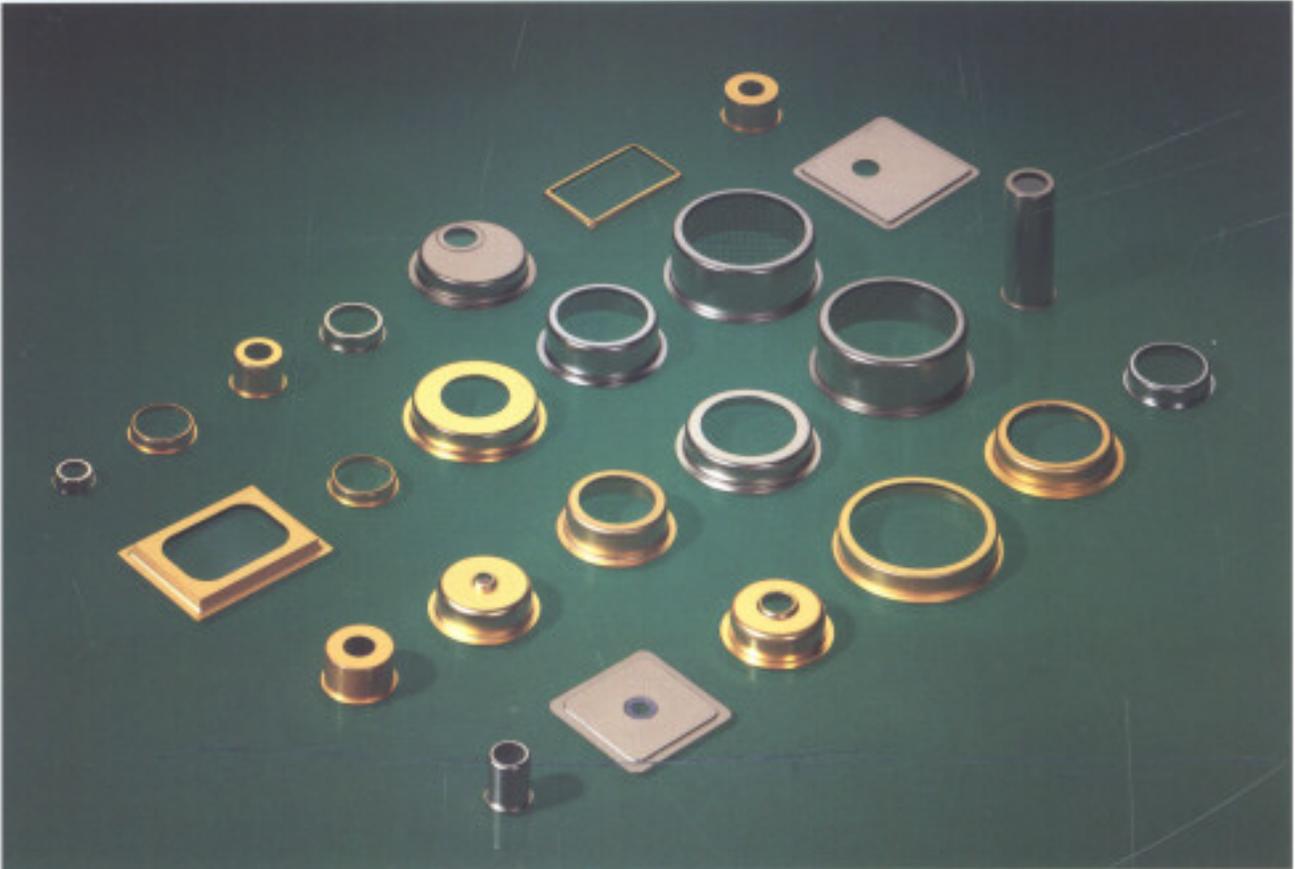


# Hermetic Windows



**Sinclair manufactured Hermetic Windows are produced to meet your requirements with optical quality in accordance with MIL-0-13830**

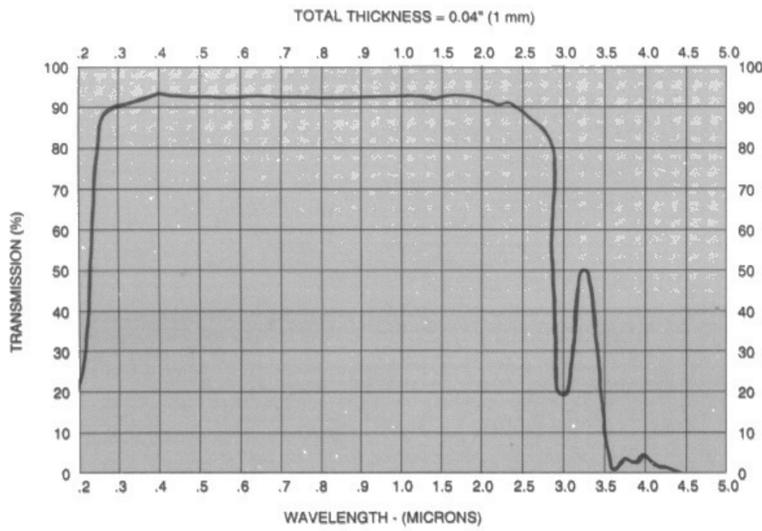
Glass materials available are Borosilicate, Soda Lime, Sapphire or Ultra Violet.

Sinclair Windows can be produced in almost any size or shape - round, square or rectangular to meet your custom requirements. By utilizing our "in house" proprietary sealing process, the surface of the window glass at the aperture retains a flatness criteria that is unsurpassed in the industry.

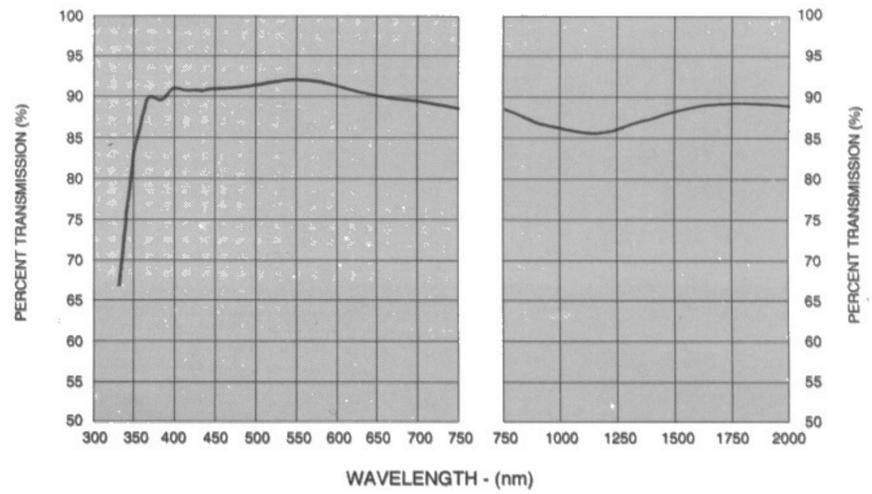
# Sinclair

# HERMETIC WINDOWS

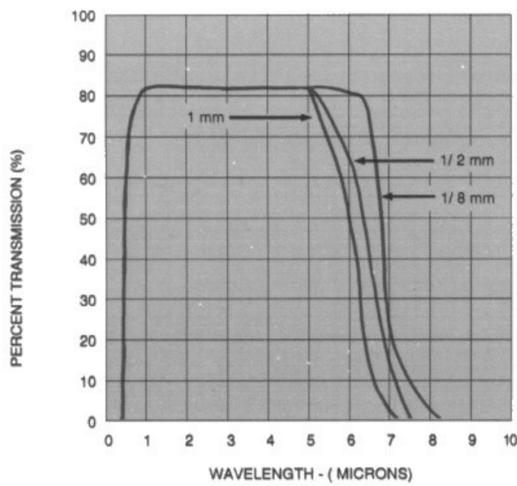
## TRANSMISSION CURVES FOR WINDOW MATERIALS



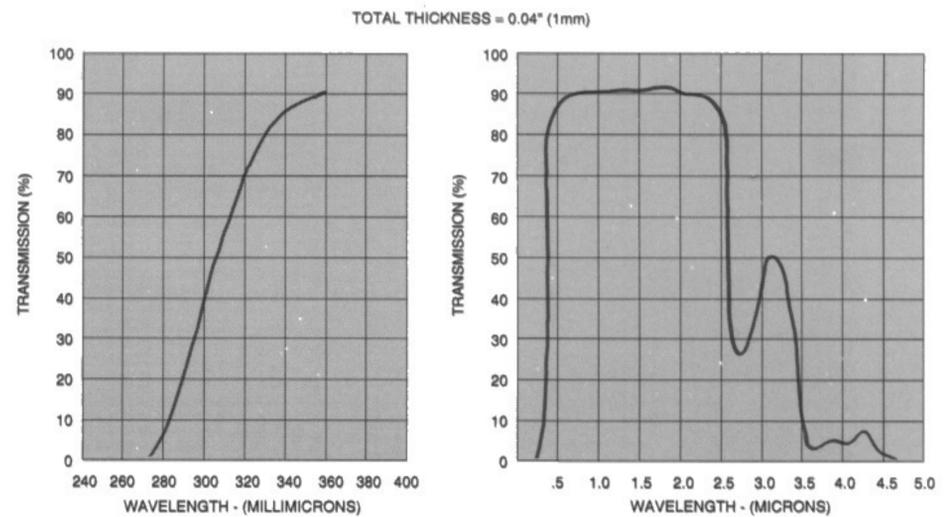
ULTRAVIOLET GLASS- UV 8337



SODA LIME GLASS



SAPPHIRE GLASS



BOROSILICATE #7052 / 7056

### PURPOSE:

This document defines glass quality on optical components per MIL-0-13830.

### DEFINITIONS:

**Scratch:** any marking or tearing of the glass surface.

**Sleek Scratch:** a hairline scratch.

**Crush of Rub Scratch:** a series of small scratches.

**Dig:** a small rough spot on the glass surface similar to pits in appearance. A bubble is to be considered a dig.

### PROCEDURE:

Surface quality is to be specified by a number such as 60-40. The first digits relate to the max. width allowance of a scratch as measured in microns. The next digits indicate the max. diameter allowance for a dig in hundredth of a millimeter. Thus, as can be seen from the table below, a surface quality designation of 60-40 would permit a scratch width of .0024 in. and a dig diameter of .0158 in.

### SHELL/GLASS MATERIAL COMBINATIONS

SHELL MATERIAL	GLASS MATERIAL
Kovar (F-15)	Borosilicate
Stainless Steel Alloy	Soda Lime
Kovar (F-15)	Sapphire
Kovar (F-15)	UV

### SCRATCH - DIG CRITERIA:

Table of Scratch and Dig (Bubble) Standards

Scratch or Dig No.	Max. scratch width		Max. dig or bubble diameter		Dig or Bubble separation distance	
	mm	inch	mm	inch	mm	inch
120	0.12	0.0047	1.20	0.0473	20	0.787
80	0.08	0.0031	0.80	0.0315	20	0.787
60	0.06	0.0024	0.60	0.0236	20	0.787
40	0.04	0.0016	0.40	0.0158	20	0.787
30	0.03	0.0012	0.30	0.0118	20	0.787
20	0.02	0.0008	0.20	0.0079	20	0.787
15	0.015	0.0006	0.15	0.0059	20	0.787
10	0.010	0.0004	0.10	0.0039	1	0.040
5	0.005	0.0002	0.05	0.0020	1	0.040
3	0.003	0.00012	0.03	0.0012	1	0.040

The size of a defect is to be measured through the use of an optical comparator.

# Sinclair

MANUFACTURING COMPANY

P.O. Box 398, 12 South Worcester Street, Chartley, MA 02712 USA (508)222-7440 FAX(508)226-0517

E-mail: sales@;engineering@;quality@sinclairmfg.com www.sinclairmfg.com

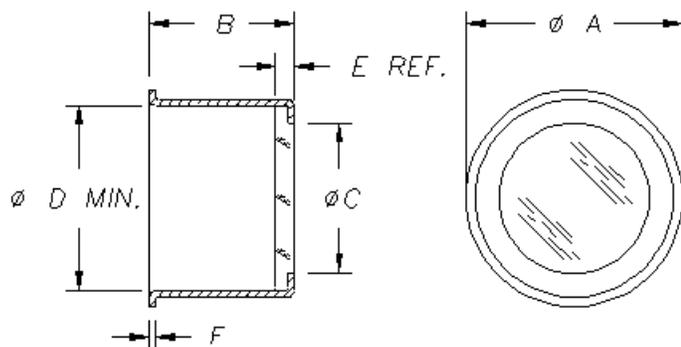


# Window Caps

Sinclair W350, W360 / JEDEC TO-5, TO-39 Series Window Caps

Outline - Glass Windows

Image



Notes:

- Parts subject to revision without notice.
- Call Sinclair to verify design, inventory counts and pricing.
- \$750 minimum order.
- For Sapphire Windows, "E" is the sapphire-only thickness.

Details

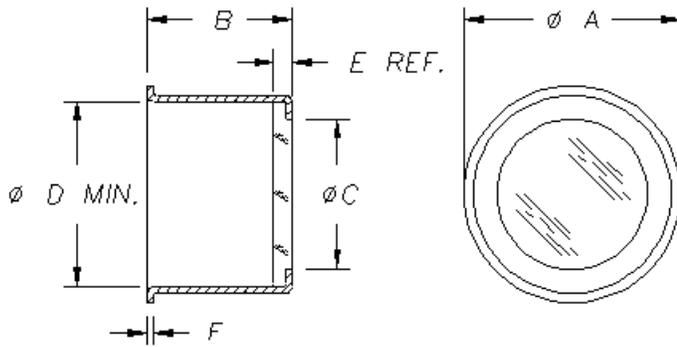
Part Number	A	B	C	D	E	F	WR	10° Flg	Glass / Lens Mat'l	Polish	Stock
WUV350-145-240	.350	.148	.240	.302	.040	.012			UV	80/50	0
W350-240-250PL	.350	.240	.250	.302	.030	.010			BOROSILICATE	60/40	208
WUV350-240-250	.350	.240	.250	.304	.040	.010			UV	80/50	5
W350-360-240	.350	.360	.240	.302	.040	.010	Y		BOROSILICATE	80/50	55
WSA350-360-262-010	.350	.360	.263	.304	.011	.010	Y		SAPPHIRE	50/20	0
W350-405-240	.350	.405	.240								384
W350-405-240PL	.350	.405	.240	.304	.040	.010	Y		BOROSILICATE		215
WSA350-437-247	.350	.437	.247	.304	.011	.010			SAPPHIRE	50/20	29
W350-437-247PL	.350	.437	.250	.304	.030	.010			BOROSILICATE		194
W350-410-262PL	.353	.405	.304	.262	.030	.010			BOROSILICATE		0
W360-233-240PL	.355	.233	.240	.304 MIN.	.030	.010			BOROSILICATE		32
W360-110-250	.357	.110	.250	.304 MIN.	.030	.010			BOROSILICATE		2,910
W360-110-250PL	.357	.110	.250	.304 MIN.	.030	.010			BOROSILICATE	60/40	0
W355-240-250PL	.357	.240	.250	.304	.030	.010			BOROSILICATE		0
W360-147-262-010PL	.358	.147	.262	.304 MIN.	.010	.010			BOROSILICATE		168
W360-145-240PL	.358	.150	.240	.304 MIN.	.030	.012			BOROSILICATE		1,306
W360-147-262-005PL	.358	.150	.260	.304 MIN.	.030	.005			BOROSILICATE		0
W360-147-262PL	.358	.150	.260	.304 MIN.	.030	.010			BOROSILICATE		100
W360-240-240PL	.358	.240	.240	.304 MIN.	.030	.010			BOROSILICATE		431
W360-235-250PL	.358	.240	.250	.304 MIN.	.030	.010			BOROSILICATE		5,730
W360-235-250-40/20PL	.358	.240	.250	.304 MIN.	.030	.010			BOROSILICATE	40/20	89
W357-240-262PL	.358	.240	.260	.304	.030	.010			BOROSILICATE		0
W360-240-262-005PL	.358	.240	.260	.304 MIN.	.030	.005			BOROSILICATE		135
W360-240-262PL	.358	.240	.260	.304 MIN.	.030	.010			BOROSILICATE		1,550
W360-235-281PL	.358	.240	.281	.304	.030	.010			BOROSILICATE		4,416
W360-110-232PL	.360	.110	.232	.304	.030	.010			BOROSILICATE		540
W360-116-232	.360	.116	.232								4,527
W360-116-232PL	.360	.116	.232	.304	.030	.010			BOROSILICATE		50
W360-133-250PL	.360	.133	.250	.304	.030	.010			BOROSILICATE		0
W360-145-250	.360	.145	.250								5,457
W360-147-240PL	.360	.147	.240								5,714
WSA360-150-125	.360	.150	.125	.304	.011	.010			SAPPHIRE	40/20	0
WUV360-145-240	.360	.150	.240	.302	.040	.010			UV	80/50	0
WUV360-150-240-60/30	.360	.150	.240	.303	.040	.012			UV	60/30	0
WUV360-150-240	.360	.150	.240	.303	.040	.012			UV	80/50	0
WSA360-147-240	.360	.150	.240	.304	.011	.010			SAPPHIRE	50/20	2
WSA360-150-240-40/20	.360	.150	.240	.304	.020	.010	Y		SAPPHIRE	40/20	0
W360-150-240-60/30PL	.360	.150	.240	.304	.030	.012			BOROSILICATE	60/30	0

# Window Caps

Sinclair W350, W360 / JEDEC TO-5, TO-39 Series Window Caps

Outline - Glass Windows

Image



Notes:

- Parts subject to revision without notice.
- Call Sinclair to verify design, inventory counts and pricing.
- \$750 minimum order.
- For Sapphire Windows, "E" is the sapphire-only thickness.

Details

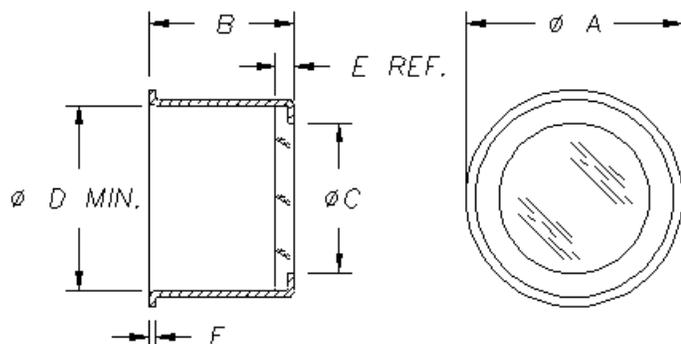
Part Number	A	B	C	D	E	F	WR	10° Flg	Glass / Lens Mat'l	Polish	Stock
WUV360-147-262	.360	.150	.260	.302	.040	.010			UV	80/50	105
WSA360-147-262	.360	.150	.260	.304	.011	.010			SAPPHIRE	50/20	39
WSA360-147-262-018	.360	.150	.260	.304	.018	.010			SAPPHIRE	50/20	7
WKV360-168-240	.360	.168	.240	.302	.050	.012	Y		BOROSILICATE		0
WSA360-168-240	.360	.168	.240	.304	.011	.010	Y		SAPPHIRE	50/20	0
W360-168-240-60/40PL	.360	.168	.240	.304	.030	.012	Y		BOROSILICATE	60/40	0
W360-168-240-80/50PL	.360	.168	.240	.304	.030	.012	Y		BOROSILICATE	80/50	0
W360-168-240-RG665	.360	.168	.240	.304 MIN.	.050	.010			RG665	FILTER	0
WUV360-200-265	.360	.198	.265	.303	.040	.012			UV	80/50	19
W360-200-265PL	.360	.198	.265	.304	.030	.010			BOROSILICATE		1,504
W360-200-265PLAR	.360	.198	.265	.304	.030	.010			BOROSILICATE		0
W360-200-281	.360	.200	.281								175
W360-235-250-027	.360	.235	.250		.027 ?						754
WWRSA360-240-157-60/20	.360	.240	.157	.302	.030	.005		Y	SAPPHIRE	60/20	0
WWRSA360-240-157MMSP	.360	.240	.157	.302	.030	.010		Y	SAPPHIRE	80/50	26
WUV360-235-250	.360	.240	.250	.302	.040	.010			UV	80/50	316
WWRSA360-240-250	.360	.240	.250	.304	.011	.005		Y	SAPPHIRE	50/20	0
WSA360-240-250	.360	.240	.250	.304	.011	.010			SAPPHIRE	50/20	56
WUV360-240-262	.360	.240	.260	.302	.040	.010			UV	80/50	50
WWRSA360-240-260	.360	.240	.260	.304	.011	.010		Y	SAPPHIRE	50/20	1
WSA360-240-262-005	.360	.240	.262	.304	.011	.005			SAPPHIRE	50/20	0
WSA360-240-262	.360	.240	.262	.304	.011	.010			SAPPHIRE	50/20	2
W360-250-250-012PL	.360	.250	.250	.304	.012	.010			BOROSILICATE		372
W360-255-250-010PL	.360	.252	.250	.304 MIN.	.011	.010			BOROSILICATE		526
W360-260-260PL	.360	.260	.260	.305 MIN.	.030	.010			BOROSILICATE		155
W360-280-250-60/40PL	.360	.278	.250	.304 MIN.	.030	.008			BOROSILICATE	60/40	496
WSA360-360-250	.360	.360	.250	.304	.011	.010			SAPPHIRE	50/20	0
W360-360-262-60/40PL	.360	.360	.260	.304 MIN.	.030	.010			BOROSILICATE	60/40	100
WSA360-360-262-005	.360	.360	.262	.304	.011	.005			SAPPHIRE	50/20	0
WSA360-360-262AR	.360	.360	.262	.304	.011	.005			SAPPHIRE	50/20 AR	2
WSA360-360-262	.360	.360	.262	.304	.011	.010			SAPPHIRE	50/20	18
W360-360-262	.360	.360	.262	.304 MIN.	.030	.010					16
W360-405-240	.360	.405	.240								1,070
W360-405-240PL	.360	.405	.240	.304	.030	.010			BOROSILICATE		158
WUV360-405-240	.360	.405	.265	.302	.040	.010			UV	80/50	1,333

# Window Caps

## Sinclair W500 / JEDEC TO-8 (.500) Series Window Caps

Outline - Glass Windows

Image



### Notes:

- Parts subject to revision without notice.
- Call Sinclair to verify design, inventory counts and pricing.
- \$750 minimum order.
- For Sapphire Windows, "E" is the sapphire-only thickness.

### Details

Part Number	A	B	C	D	E	F	WR	10° Flg	Glass / Lens Mat'l	Polish	Stock
WWR500-125	.500	.125	.375	.429	.040	.010		Y	SODA LIME		0
W500-125	.500	.125	.375	.431	.040	.010			SODA LIME		0
WSA500-153-310	.500	.153	.310	.429	.020	.010			SAPPHIRE		22
WWR500-157-375PL	.500	.155	.375		.429	.010		Y	BOROSILICATE		81
WWRSA500-155-375	.500	.155	.375	.430	.020	.010		Y	SAPPHIRE		21
W500-157-375	.500	.155	.375	.430 REF.	.040	.010			SODA LIME		0
W500-187-375PL	.500	.187	.375	.429	.040	.010			BOROSILICATE		55
W500-187	.500	.187	.375	.429	.040	.010	Y		SODA LIME		0
WSA500-250-305	.500	.250	.308	.430	.040	.010			SAPPHIRE		92
W500-250-305	.500	.250	.308	.430 REF.	.040	.010			SODA LIME		30
WWRSA500-250-310-2	.500	.250	.310	.429	.020	.010		Y	SAPPHIRE	80/50	0
WSA500-250-310	.500	.250	.310	.429	.040	.010			SAPPHIRE	80/50	0
WWRSA500-250-310	.500	.250	.310	.429	.040	.010		Y	SAPPHIRE	80/50	0
WWRSA500-250-310-1	.500	.250	.310	.429	.050	.010		Y	SAPPHIRE	80/50	0
WWR500-250-375	.500	.250	.375	.429	.040	.010		Y	SODA LIME		0
W500-250-375	.500	.250	.375	.429	.040	.010	Y		SODA LIME		76
WWR500-330-250PL	.500	.330	.250	.430	.040	.010		Y	SODA LIME		58
WWRSA500-330-310	.500	.330	.310	.430	.040	.010		Y	SAPPHIRE		13
WWR500-330-375-80/50PL	.500	.330	.375	.430	.040	.010		Y	BOROSILICATE	80/50	60
W500-410-200	.500	.410	.200	.429	.040	.010			SODA LIME		240
W500-410-250PL	.500	.410	.250	.429	.030	.010			BOROSILICATE		0
WWR500-410-250PL	.500	.410	.250	.429	.030	.010		Y	BOROSILICATE		0
WSA500-1250-310	.500	1.250	.310	.429	.020	.020			SAPPHIRE	80/50	0
W540-157	.543	.157	.400	.465	.040	.010			SODA LIME		6,010
W540-157-410-005PL	.543	.157	.408	.465	.040	.005			SODA LIME		0
W540-157-410	.543	.157	.408	.465	.040	.010			SODA LIME		794
W543-157-408-80/50PL	.543	.157	.408	.465	.040	.010			BOROSILICATE	80/50	61
W540-157-430PL	.543	.157	.430	.465	.040	.010			BOROSILICATE		0
W540-157-430PLSP	.543	.157	.430	.465	.040	.010			BOROSILICATE		0
W540-157-430	.543	.157	.430	.465	.040	.010			SODA LIME		125
WUV540-157-430	.543	.160	.430	.465	.040	.010			UV		571
W540-167-430	.543	.167	.430	.465	.040	.010			SODA LIME		986
W540-197	.543	.197	.410	.465	.125 MIN.	.010			SODA LIME		0
W540-157PL	.543*	.157*	.430*	.465*		.010*			BOROSILICATE		146
W552-103	.552	.105	.408	.502	.030	.010			SODA LIME		118
W570-085	.569	.085	.405	.504	.030	.015			SODA LIME		0
W569-165-400	.569	.165	.400	.465	.040	.015			SODA LIME		0
W575-125	.575	.120	.375	.465	.040	.015			SODA LIME		180

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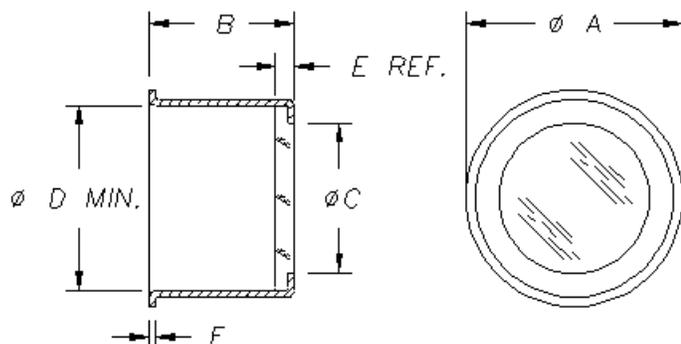


# Window Caps

## Sinclair W600 / JEDEC TO-8 (.600) Series Window Caps

Outline - Glass Windows

Image



### Notes:

- Parts subject to revision without notice.
- Call Sinclair to verify design, inventory counts and pricing.
- \$750 minimum order.
- For Sapphire Windows, "E" is the sapphire-only thickness.

### Details

Part Number	A	B	C	D	E	F	WR	10° Flg	Glass / Lens Mat'l	Polish	Stock
W593-125-475	.593	.125	.475	.530	.040	.010	Y		SODA LIME		0
WWR600-148-437	.595	.148	.437	.530	.040	.010		Y	SODA LIME		0
WWRSA600-125-375	.600	.125	.375	.530	.030	.010		Y	SAPPHIRE	80/50	5
WSA600-125-437	.600	.125	.437	.530	.030	.010			SAPPHIRE		79
WWRSA600-125-437	.600	.125	.437	.530	.030	.010		Y	SAPPHIRE		46
W600-125	.600	.125	.437	.530	.040	.010			SODA LIME		814
WWR600-125	.600	.125	.437	.530	.040	.010		Y	SODA LIME		0
W600-125-475	.600	.125	.475	.530	.040	.010			SODA LIME		0
WWR600-127-437PL	.600	.127	.437	.530	.040	.010		Y	BOROSILICATE		14
W600-148-437	.600	.148	.437	.530	.040	.010			SODA LIME		1,365
W600-148-437PL	.600	.148	.437	.530	.040	.010			BOROSILICATE	60/40	147
W600-148-437-60/40PLS	.600	.148	.437	.530	.040	.010			BOROSILICATE	60/40	0
WWR600-148-437-80/50PL	.600	.148	.437	.530	.040	.010		Y	BOROSILICATE		45
W600-148	.600	.148	.475	.530	.050	.010			SODA LIME	RAISED	0
WSA600-160-437	.600	.160	.437	.528	.030	.010			SAPPHIRE		135
WSA600-160-437-418	.600	.160	.437	.528	.030	.010			SAPPHIRE		7
W600-160-475	.600	.160	.475	.530	.040	.010			SODA LIME		1,251
W600-160-475PL	.600	.160	.475	.530	.060	.010			BOROSILICATE		0
W600-187	.600	.187	.437	.530	.040	.010			SODA LIME		625
WSA600-202-437	.600	.202	.437	.529	.030	.010			SAPPHIRE		7
W600-202-437PL	.600	.202	.437	.530	.040	.010			BOROSILICATE		0
W600-202	.600	.202	.437	.530	.040	.010			SODA LIME		11,872
WUV600-202-437	.600	.202	.437	.530	.040	.010			UV		0
W600-202-437-40/05	.600	.202	.437	.530	.040	.010			SODA LIME	40/05	448
W600-225-437PL	.600	.220	.437	.530	.040	.010			BOROSILICATE		0
WWRSA600-245-375	.600	.245	.375	.530	.030	.010		Y	SAPPHIRE	60/40	0
WSA600-250-437	.600	.250	.437	.530	.030	.010			SAPPHIRE		56
WWRSA600035-250	.600	.250	.437	.530	.035	.010		Y	SAPPHIRE		13
W600-250-437PL	.600	.250	.437	.530	.040	.010			BOROSILICATE		0
WUV600-250-437	.600	.250	.437	.530	.040	.010			UV		20
W600-250-437-40/05	.600	.250	.437	.530	.040	.010			SODA LIME	40/05	0
W600-250-437-60/40PLS	.600	.250	.437	.530	.040	.010			BOROSILICATE	60/40	0
WWR600-250-437PL	.600	.250	.437	.530	.040	.010		Y	BOROSILICATE		14
WWR600-250	.600	.250	.437	.530	.040	.010		Y	SODA LIME		747
W600-250-10	.600	.250	.437	.530	.040	.010	Y		SODA LIME		0
WSA600-260-310-60/40	.600	.260	.310	.430	.040	.010			SAPPHIRE	60/40	74
WSA600-260-310	.600	.260	.310	.430	.040	.010			SAPPHIRE	80/50	12
WWRSA600-265-375	.600	.265	.375	.530	.020	.010		Y	SAPPHIRE	60/40	0

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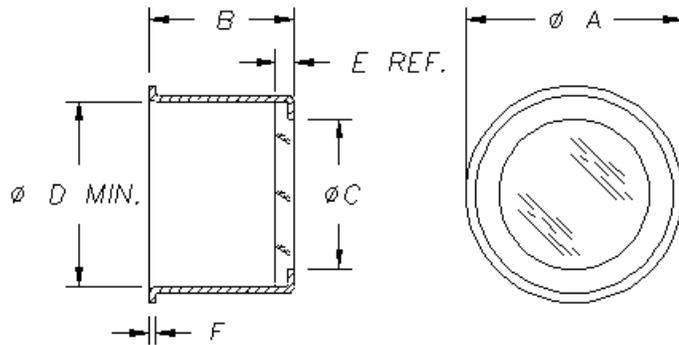


# Window Caps

## Sinclair Non-Standard Size Window Caps

Outline - Glass Windows

Image



### Notes:

- Parts subject to revision without notice.
- Call Sinclair to verify design, inventory counts and pricing.
- \$750 minimum order.
- For Sapphire Windows, "E" is the sapphire-only thickness.

### Details

Part Number	A	B	C	D	E	F	10° Flg	WR	Glass / Lens Mat'l	Polish	Stock
WWR400-800-260PL	.400	.800	.260	.304	.030	.010		Y	BOROSILICATE		2
W745-165-577	.745*	.165*	.577*						SODA LIME		36
W791-192-605	.791	.192	.605	.693	.040	.020			SODA LIME		177
WWSA832-410-510	.832	.410	.510	.720	.030	.010		Y	SAPPHIRE		0
W910-262-110PL	.910	.260	.110	.736	.030	.015			BOROSILICATE		0
W910-330-250PL	.910	.260	.250	.736	.030	.015			BOROSILICATE		23
WSA910-262-080	.910	.262	.140	.736	.011	.015			SAPPHIRE	50/20	56
WWSA910-262-080	.910	.262	.140	.736	.011	.015		Y	SAPPHIRE	50/20	52
WWSA910-270-120AR	.910	.270	.120	.730	.006	.008		Y	SAPPHIRE		0
WWRK910-739-350	.910	.739	.350	.730	.040	.050		Y	BOROSILICATE		5
W950-887-500-062	.950	.893	.500	.908	.062	N/A			SODA LIME		0
W1000-169	.998	.169	.800	.932	.040	.020			SODA LIME		0
W1000-205	.998	.205	.720	.807	.040	.020			SODA LIME		0
WSA1000-205	.998	.205	.735	.807	.030	.020			SAPPHIRE		0
W995-245-718	.998	.245	.718	.906	.062	.020			SODA LIME		287
W1000-310	.998	.310	.628	.807	.040	.020			SODA LIME		5,073
W1000-169PL-40/05	1.000	.169	.800	.932	.040	.020			BOROSILICATE	40/05	0
W1000-169-800PL	1.000	.169	.800	.932	.060	.020			BOROSILICATE		0
W1000-310-640	1.000	.310	.640	.805	.040	.020			SODA LIME		55
WWR1000-320-732PL	1.000	.320	.732	.931	.040	.020			STAINLESS STEEL		86
W1032-169-60/40PL-AR	1.032	.169	.800	.932	.040	.020			BOROSILICATE	60/40 (AR)	34
W1032-169-800	1.032	.169	.800	.932	.040	.020			SODA LIME		187
W1032-169-800PL	1.032	.169	.800	.932	.040	.020			BOROSILICATE		34
W1032-169-60/40PL	1.032	.169	.800	.932	.040	.020			BOROSILICATE	60/40	20
W1032-169-20/20PL	1.032	.169	.800	.932	.040	.020			BOROSILICATE	20/20	23
W1032-169PL-60/40	1.032	.169	.800	.932	.044	.020			BOROSILICATE	60/40	4
W1032-210-800-40/05PL	1.032	.210	.800	.932	.040	.020			BOROSILICATE	40/05	84
W1125-145	1.123	.145	.850	.960	.040	.020			SODA LIME		0
W1125-205	1.123	.205	.855	.960	.040	.020			SODA LIME		671
W1140-887-562-062	1.140	.893	.562	1.098	.062	N/A			SODA LIME		125
W1140-887-562-093	1.140	.893	.562	1.098	.093	N/A			SODA LIME		0
W1140-887	1.140	.893	.902	1.098	.062	N/A			SODA LIME		0
W1140-887-062	1.140	.950*	.562	1.098	.062	N/A			SODA LIME		0
W1140-1375	1.140	1.375	.902	1.098	.062	N/A			SODA LIME		0
W1167-374-800	1.167	.374	.800	.968	.040	.020			SODA LIME		0
WSA1180-235-310	1.180	.235	.310	.968	.040	.020			SAPPHIRE		0
WSA1180-235-800	1.180	.235	.800	.968	.030	.020			SAPPHIRE	60/40	64
W1180-235-800	1.180	.235	.800	.968	.040	.020			SODA LIME		136

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