

SM1EC2 - Oct 27, 2017

Item # SM1EC2 was discontinued on Oct 27, 2017. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

END CAPS AND PLUGS

- ▶ End Caps with SM05, SM1, SM2, SM3, C-Mount, or RMS Threading
- ▶ Plugs with SM05, SM1, or SM2 Threading
- ▶ Snap-On Plastic End Cap for Ø1" and Ø2" Lens Tubes



[Hide Overview](#)

OVERVIEW

Thorlabs offers a selection of anodized aluminum SM-threaded end caps and plugs for use with Ø1/2", Ø1", Ø2", and Ø3" lens tubes. We also offer plastic snap-on caps for Ø1" and Ø2" lens tubes, as well as anodized aluminum caps for use with C-mount and RMS threaded components.

The end caps are useful for sealing off the end of imaging components for safekeeping of the optics during transport or storage. The plugs can be threaded deep into a lens tube to produce a seal closer to the optic and feature two dimples that accept our spanner wrenches. Additionally, a selection of these caps and plugs are marked at their center with a dimple to facilitate custom-sized bores centered on the optical axis of the lens tube, making them useful for machining custom inserts.



Click to Enlarge
 SM1EC2 Lens Tube Cap Seals Off the End of a Ø1" Lens Tube

Selection Guide

SM05 Threaded	RMS Threaded	C-Mount Threaded	SM1 Threaded	Ø1" Snap-On	SM2 Threaded	Ø2" Snap-On	SM3 Threaded
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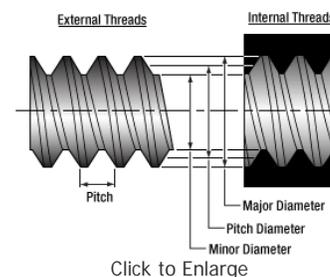
[Hide Threading Specs](#)

THREADING SPECS

Thorlabs' Threading Specifications

Thorlabs' lens tubes utilize a series of non-standard threadings. Threading specifications are given below for our SM threadings utilized in our lens tube and cage system components so that you can machine mating components to suit your application. We also offer products with C-Mount and RMS threadings, and the specifications for these threadings are also given below. Please note that other manufacturers may have different tolerances for these threads. For other

thread specifications that are not listed here, please contact Tech Support.



SM05 Threading: Ø1/2" Lens Tubes, 16 mm Cage Systems			
External Thread, 0.535"-40.0, UNS-2A		Internal Thread, 0.535"-40.0, UNS-2B	
Max Major Diameter	0.5340"	Min Major Diameter	0.5350"
Min Major Diameter	0.5289"	Min Pitch Diameter	0.5188"
Max Pitch Diameter	0.5178"	Max Pitch Diameter	0.5230"
Min Pitch Diameter	0.5146"	Min Minor Diameter (and 83.3% of thread)	0.508"
Max Minor Diameter	0.5069"	Max Minor Diameter (and 64.9% of thread)	0.514"

RMS Threading: Objective, Scan, and Tube Lenses			
External Thread, 0.800"-36.0, UNS-2A		Internal Thread, 0.800"-36.0, UNS-2B	
Max Major Diameter	0.7989"	Min Major Diameter	0.8000"
Min Major Diameter	0.7934"	Min Pitch Diameter	0.7820"
Max Pitch Diameter	0.7809"	Max Pitch Diameter	0.7866"
Min Pitch Diameter	0.7774"	Min Minor Diameter (and 83.3% of thread)	0.770"
Max Minor Diameter	0.7688"	Max Minor Diameter (and 64.9% of thread)	0.777"

C-Mount Threading: Machine Vision Lenses, CCD/CMOS Cameras			
External Thread, 1.000"-32.0, UN-2A		Internal Thread, 1.000"-32.0, UN-2B	
Max Major Diameter	0.9989"	Min Major Diameter	1.0000"
Min Major Diameter	0.9929"	Min Pitch Diameter	0.9797"
Max Pitch Diameter	0.9786"	Max Pitch Diameter	0.9846"
Min Pitch Diameter	0.9748"	Min Minor Diameter (and 83.3% of thread)	0.966"
Max Minor Diameter	0.9651"	Max Minor Diameter (and 64.9% of thread)	0.974"

SM1 Threading: Ø1" Lens Tubes, 30 mm Cage Systems			
External Thread, 1.035"-40.0, UNS-2A		Internal Thread, 1.035"-40.0, UNS-2B	
Max Major Diameter	1.0339"	Min Major Diameter	1.0350"
Min Major Diameter	1.0288"	Min Pitch Diameter	1.0188"
Max Pitch Diameter	1.0177"	Max Pitch Diameter	1.0234"
Min Pitch Diameter	1.0142"	Min Minor Diameter (and 83.3% of thread)	1.008"
Max Minor Diameter	1.0068"	Max Minor Diameter (and 64.9% of thread)	1.014"

SM30 Threading: Ø30 mm Lens Tubes			
External Thread, M30.5x0.5		Internal Thread, M30.5x0.5	
Max Major Diameter	30.480 mm	Min Major Diameter	30.500 mm
Min Major Diameter	30.371 mm	Min Pitch Diameter	30.175 mm
Max Pitch Diameter	30.155 mm	Max Pitch Diameter	30.302 mm
Min Pitch Diameter	30.059 mm	Min Minor Diameter (and 83.3% of thread)	29.959 mm
Max Minor Diameter	29.938 mm	Max Minor Diameter (and 64.9% of thread)	30.094 mm

SM2 Threading: Ø2" Lens Tubes, 60 mm Cage Systems			
External Thread, 2.035"-40.0, UNS-2A		Internal Thread, 2.035"-40.0, UNS-2B	

Max Major Diameter	2.0338"	Min Major Diameter	2.0350"
Min Major Diameter	2.0287"	Min Pitch Diameter	2.0188"
Max Pitch Diameter	2.0176"	Max Pitch Diameter	2.0239"
Min Pitch Diameter	2.0137"	Min Minor Diameter (and 83.3% of thread)	2.008"
Max Minor Diameter	2.0067"	Max Minor Diameter (and 64.9% of thread)	2.014"

SM3 Threading: Ø3" Lens Tubes			
External Thread, 3.035"-40.0, UNS-2A		Internal Thread, 3.035"-40.0, UNS-2B	
Max Major Diameter	3.0337"	Min Major Diameter	3.0350"
Min Major Diameter	3.0286"	Min Pitch Diameter	3.0188"
Max Pitch Diameter	3.0175"	Max Pitch Diameter	3.0242"
Min Pitch Diameter	3.0133"	Min Minor Diameter (and 83.3% of thread)	3.008"
Max Minor Diameter	3.0066"	Max Minor Diameter (and 64.9% of thread)	3.014"

[Hide Ø1/2" Lens Tube End Caps and Plugs](#)

Ø1/2" Lens Tube End Caps and Plugs

- ▶ **SM05CP1**: Internally SM05-Threaded End Cap
- ▶ **SM05CP2**: Externally SM05-Threaded End Cap
- ▶ **SM05PL**: Externally SM05-Threaded Plug

The SM05CP1 and SM05CP2 are black-anodized aluminum end caps used to seal off a Ø1/2" lens tube. The SM05CP1 has internal SM05 (0.535"-40) threads while the SM05CP2 has external SM05 threads to seal the end of the lens tube with external or internal SM05 threading, respectively. Both caps have a knurled edge to allow them to be securely hand tightened.

The SM05PL lens tube plug has external SM05 (0.535"-40) threads along its entire length and is designed to seal off our Ø1/2" lens tubes. It can be threaded into an SM05 lens tube using an SPW801 spanner wrench that can be adjusted so that the tips of the prongs on the SPW801 fit into the two shallow holes, each of which is located 0.20" from the center dimple. The center dimple of the SM05PL allows it to be customized in a machine shop with excellent centration.

Part Number	Description	Price	Availability
SM05CP1	Internally SM05-Threaded End Cap	\$14.30	Today
SM05CP2	Externally SM05-Threaded End Cap	\$14.30	Today
SM05PL	Externally SM05-Threaded Plug	\$12.30	Today

[Hide RMS Caps](#)

RMS Caps

- ▶ **RMSCP1**: Internally RMS-Threaded Cap
- ▶ **RMSCP2**: Externally RMS-Threaded Cap

These RMS-Threaded Caps are designed to protect microscope objective lenses, objective lens ports, and other RMS (0.800"-36) threaded components. The RMSCP1 features internal RMS threading, which enables them to be used with standard RMS-threaded microscope objectives. The RMSCP2 features external RMS threading to cover unused objective lens ports (see image on the far right). Each of these caps is made from anodized aluminum and has a knurled edge for secure hand tightening.



Click to Enlarge
RMSCP1 Covering an
Objective



Click to Enlarge
RMSCP2 Protecting
Turret Ports

Part Number	Description	Price	Availability
RMSCP1	Internally RMS-Threaded Cap for Microscope Objective Lenses	\$15.90	Today
RMSCP2	Externally RMS-Threaded Cap for Objective Lens Ports	\$15.90	Today

[Hide C-Mount Caps](#)

C-Mount Caps

- ▶ **CMCP1**: Internally C-Mount-Threaded Cap
- ▶ **CMCP2**: Externally C-Mount-Threaded Cap

These C-Mount Caps are designed to be used with our CCD/CMOS cameras, C-mount extension tubes, camera lenses, and other C-mount-threaded (1.00" -32) components. The CMCP1 features internal C-mount threading while the CMCP2 features external C-mount threading. Each of these caps is made from black-anodized aluminum and has a knurled edge for secure hand tightening.

To use one of these caps with a C-mount-threaded CCD or CMOS camera, please choose the externally threaded CMCP2 cap.



Click to Enlarge
Each Cap is
Engraved with
Part Number

Part Number	Description	Price	Availability
CMCP1	Customer Inspired!Internally C-Mount-Threaded Cap	\$17.40	Today
CMCP2	Customer Inspired!Externally C-Mount-Threaded Cap	\$17.40	Today

[Hide Ø1" Lens Tube End Caps and Plugs](#)

Ø1" Lens Tube End Caps and Plugs

- ▶ **SM1CP1**: Internally SM1-Threaded End Cap
- ▶ **SM1CP2**: Externally SM1-Threaded End Cap
- ▶ **SM1CP2M**: Externally SM1-Threaded End Cap for Machining
- ▶ **SM1PL**: Externally SM1-Threaded Plug

The SM1CP1 and SM1CP2 are black-anodized aluminum end caps used to seal off a Ø1" lens tube. The SM1CP1 has internal SM1 (1.035"-40) threads while the SM1CP2 has external SM1 threads to seal the end of the lens tube with external or internal SM1 threading, respectively. Both caps have a knurled edge to allow them to be securely hand tightened.

The SM1CP2M is an end cap with external SM1 threading and a knurled lip, while the SM1PL is a plug (no lip) with external SM1 threading. The SM1PL plug can be threaded into an SM1 lens tube using an SPW801 or SPW909 spanner wrench, both of which will fit into the two shallow holes located 10 mm from the center. The SM1CP2M and SM1PL both have a center drilled dimple located on the optical axis to allow them to be customized in a machine shop with excellent centration.

Part Number	Description	Price	Availability
SM1CP1	Internally SM1-Threaded End Cap	\$17.40	Today
SM1CP2	Externally SM1-Threaded End Cap	\$17.40	Today
SM1CP2M	Externally SM1-Threaded End Cap for Machining	\$18.40	Today
SM1PL	Externally SM1-Threaded Plug	\$14.30	Today

[Hide Ø1" Snap-On Lens Tube Dust Cap](#)

Ø1" Snap-On Lens Tube Dust Cap

- ▶ **SM1EC2**: Plastic Snap-On Dust Caps for Ø1" Lens Tubes
- ▶ Ideal for Temporary Protection of Components
- ▶ Sold in Packs of Five

The SM1EC2 plastic dust cap snaps onto internally SM1-threaded (1.035"-40) components, such as 30 mm cage plates and cubes or the internally threaded end of a Ø1" lens tube (see photo in the *Overview* tab). By sealing off the end of a lens tube or cage cube, this cap helps to protect optics against dust and debris while not in active use. The SM1EC2 cap has an outer diameter of 1.20" (30.6 mm). It is not compatible with C-mount threads.

The lens cap is placed on the lens tube by squeezing the protruding edge of the cap, inserting the back of the cap into the lens tube, and then releasing the cap. To avoid deforming the cap, be sure to squeeze the protruding edge when removing it. Avoid using these caps in high heat environments as the cap can deform; use at temperatures between 0 °C to 40 °C for best results.



Back View
Click to Enlarge
Back View of SM1EC2
Snap-On End Cap

Part Number	Description	Price	Availability
SM1EC2	Snap-On Plastic Dust Cap for SM1 Lens Tubes, 5 Pack	\$10.20	Lead Time

[Hide Ø2" Lens Tube End Caps and Plugs](#)**Ø2" Lens Tube End Caps and Plugs**

- ▶ **SM2CP1**: Internally SM2-Threaded End Cap
- ▶ **SM2CP2**: Externally SM2-Threaded End Cap
- ▶ **SM2PL**: Externally SM2-Threaded Plug

The SM2CP1 and SM2CP2 are black-anodized aluminum end caps that allow a Ø2" lens tube to be sealed off. The SM2CP1 has internal SM2 (2.035"-40) threads while the SM2CP2 has external SM2 threads to seal the end of the lens tube with external or internal SM2 threading, respectively. Both caps have a knurled edge to allow them to be securely hand tightened.

The SM2PL is a blank plug with external SM2 threading. It can be threaded into a lens tube using an SPW801 spanner wrench that can be adjusted so that the tips of the prongs on the SPW801 fit into the two shallow holes machined near the edge of the plug. The center of the SM2PL plug is dimpled to allow it to be customized in a machine shop with excellent centration.

Part Number	Description	Price	Availability
SM2CP1	Internally SM2-Threaded End Cap	\$18.40	Today
SM2CP2	Externally SM2-Threaded End Cap	\$18.40	Today
SM2PL	Externally SM2-Threaded Plug	\$15.30	Today

[Hide Ø2" Snap-On Lens Tube Dust Cap](#)**Ø2" Snap-On Lens Tube Dust Cap**

- ▶ **SM2EC2**: Plastic Snap-On Dust Caps for Ø2" Lens Tubes
- ▶ Ideal for Temporary Protection of Components
- ▶ Sold in Packs of Five

The SM2EC2 plastic dust cap snaps onto internally SM2-threaded (2.035"-40) components, such as 60 mm cage plates and cubes or the internally threaded end of a Ø2" lens tube. By sealing off the end of a lens tube or cage cube, this cap helps to protect optics against dust and debris while not in active use. The SM2EC2 cap has an outer diameter of 2.20" (55.8 mm).

The lens cap is placed on the lens tube by squeezing the protruding edges of the cap, inserting the back of the cap into the lens tube, and then releasing the cap. To avoid deforming the cap, be sure to squeeze the protruding edge when removing it. Avoid using these caps in high heat environments as the cap can deform; use at temperatures between 0 °C to 40 °C for best results.



Back View
Click to Enlarge
Back View of SM2EC2
Snap-On End Cap

Part Number	Description	Price	Availability
SM2EC2	Snap-On Plastic Dust Cap for SM2 Lens Tubes, 5 Pack	\$20.00	Today

[Hide Ø3" Lens Tube End Cap](#)**Ø3" Lens Tube End Cap**

- ▶ **SM3CP1**: Internally SM3-Threaded End Cap
- ▶ **SM3CP2**: Externally SM3-Threaded End Cap

The SM3CP1 and SM3CP2 are black-anodized aluminum end caps that allow SM3-threaded (3.035"-40) lens tubes to be sealed off. The SM3CP1 has internal SM3 (3.035"-40) threads while the SM3CP2 has external SM3 threads to seal the end of the lens tube with external or internal SM3 threading, respectively.

Both caps have a knurled edge which allows them to be securely hand tightened. Each cap also features engraved alignment crosshairs on one side, as shown in the image to the right.



Click to Enlarge
Each SM3 end cap is engraved with its part number and a centered crosshairs for alignment.

Part Number	Description	Price	Availability
SM3CP1	Customer Inspired! Internally SM3-Threaded End Cap	\$29.75	Today
SM3CP2	Externally SM3-Threaded End Cap	\$29.75	Today

Visit the *End Caps and Plugs* page for pricing and availability information:
https://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=3519