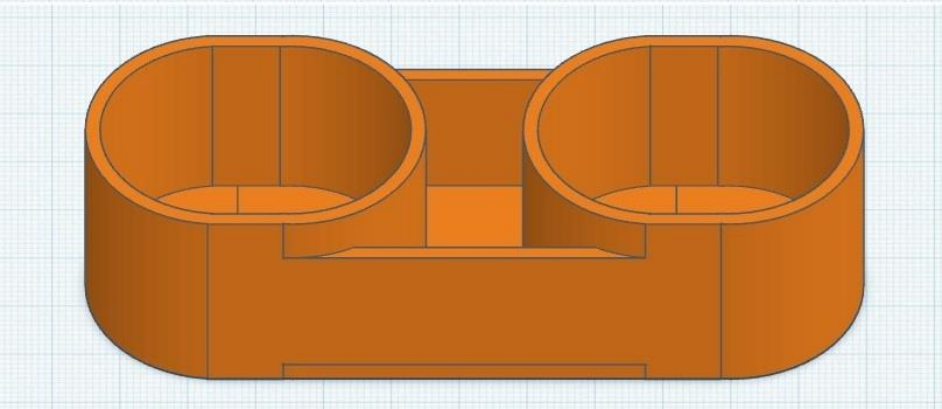
3D-Printed Dust Caps, Covers, and Plugs for Olympus BH-2 Microscopes

Revision 1



Revision History		
Revision	**Description of Changes**	**Date**
1	Initial Release	March 20, 2025

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Introduction

The microscopes in the Olympus BH-2 line have largely been replaced in the professional and clinical world, due to their advancing age and the subsequent lack of support and repair parts from Olympus. A great many of these microscopes were produced in their day, and because of this they are readily available on the used market for very reasonable prices. Thanks to their excellent build quality and solid optical performance, BH-2 microscopes (which are very popular with hobbyists) can usually be overhauled and/or repaired to allow them to provide many more years of faithful service to their lucky owners. The venerable Olympus BH-2 is an excellent choice for those seeking an affordable yet high-quality alternative to the Chinese-made educational-grade commodity scopes prevalent today. If you plan to use your BH-2 scope for many years, it is important to protect your investment from dust and physical damage. The protective caps, covers, and plugs contained within this document should help make that possible.

Scope of this Document

This document describes various protective caps, covers, and plugs which can be easily made by any BH-2 owner with 3D-printing experience, using just about any type of 3D printer available to them (FDM, resin, etc.). These components are intended to protect the optical elements of the BHS, BHSP, BHSU, BHT, BHTP, and BHTU microscopes in the Olympus BH-2 line.

3D-Printed Parts

The various 3D-printed parts for protecting the optics of BH-2 microscopes are described in the sections below.

Eyepiece Covers

Applicability: WK, WHK, SWK, and SWHK. **Figure 1** shows a single-piece cover for the two BH-2 eyepieces. This cover accommodates any inter-ocular-distance setting of the eyepieces and can be used to protect either 23mm or 30mm eyepieces from dust whenever the scope is not used.

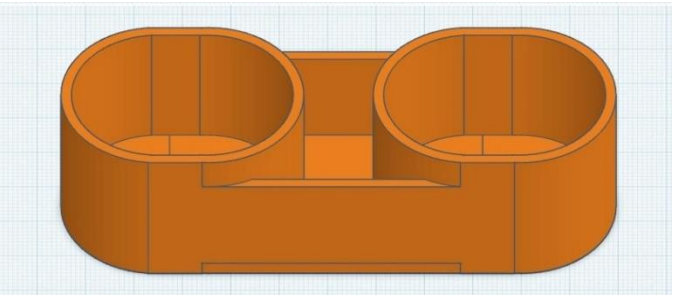

Figure 1 – Cover for BH-2 Eyepieces, Double

Applicability: WK, WHK, SWK, and SWHK. **Figure 2** shows a pair of covers for single BH-2 eyepieces. These covers can be used to protect 23mm or 30mm eyepieces from dust whenever the scope is not used.

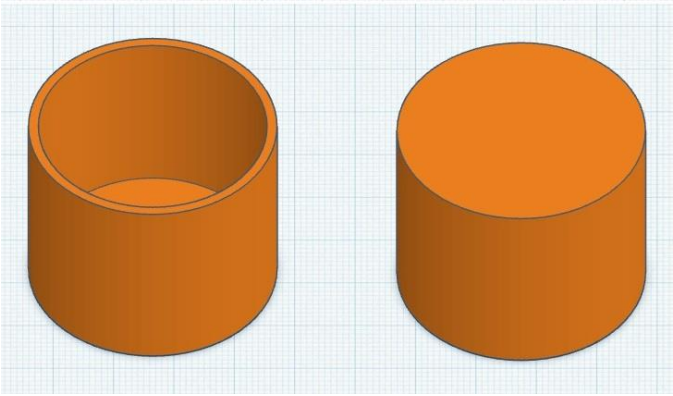

Figure 2 – Covers for BH-2 Eyepieces, Single

STL File for the Dual Eyepiece Cover

The STL file for the *Double Eyepiece Cover* is listed as Item 1 in **Table 1**.

STL File for the Single Eyepiece Cover

The STL file for the *Single Eyepiece Cover* is listed as Item 2 in **Table 1**.

Ocular Tube Caps

Applicability: BH2-BI30 and BH2-TR30. **Figure 3** shows a set of plugs for the 23mm ocular tubes of the standard BH2-BI30 and BH2-TR30 viewing heads for the BH-2. These plugs are intended to protect the ocular tubes from dust or damage whenever eyepieces are not present in the viewing head. Note that these caps are intended for benchtop use only, since (for convenience) they are a slip fit in the ocular tubes and therefore may not stay in place if the stand is inverted for whatever reason, such as may happen during storage or shipping.

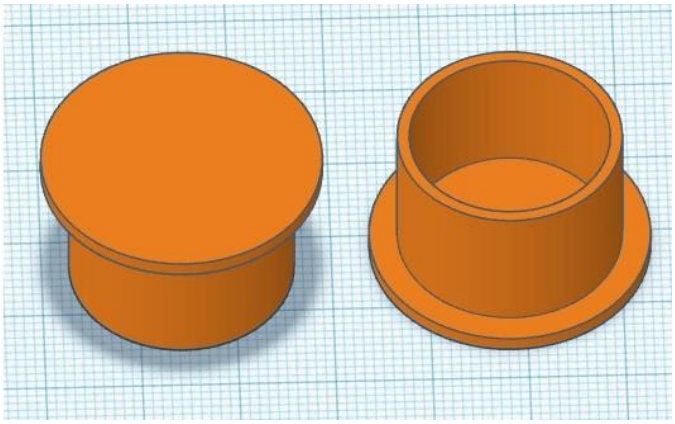

Figure 3 – Ocular Tube Plugs, 23mm, Benchtop

STL File for the 23mm Benchtop Ocular Tube Plugs

The STL filename for the *23mm Benchtop Ocular Tube Plug* is listed as Item 3 in **Table 1**.

Applicability: BH2-BI30 and BH2-TR30. **Figure 4** shows a set of plugs for the 23mm ocular tubes of the standard BH2-BI30 and BH2-TR30 BH-2 viewing heads for the BH-2. These are friction-fit plugs intended to protect the ocular tubes from dust and damage whenever eyepieces are not present in the viewing head. Note that these caps are not intended for benchtop use, but instead for protecting the ocular tubes during storage or shipping, where there is a risk that the benchtop style slip-fit plugs may not stay in place.

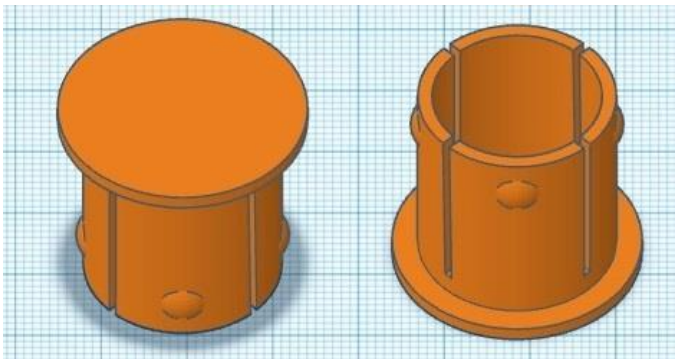

Figure 4 – Ocular Tube Plugs, 23mm, Storage/Shipping

STL File for the 23mm Shipping Ocular Tube Plug

The STL file for the *23mm Shipping Ocular Tube Plug* is listed as Item 4 in **Table 1**.

Applicability: BH2-SWBI30 and BH2-SWTR30. **Figure 5** shows a set of plugs for the 30mm ocular tubes of the super-wide BH2-SWBI30 and BH2-SWTR30 viewing heads for the BH-2. These plugs are intended to protect the ocular tubes from dust or damage whenever eyepieces are not present in the viewing head. Note that these caps are intended for benchtop use only, since they are a slip fit in the tubes and therefore may not stay in place if the stand is inverted for whatever reason, such as may occur during storage or shipping.

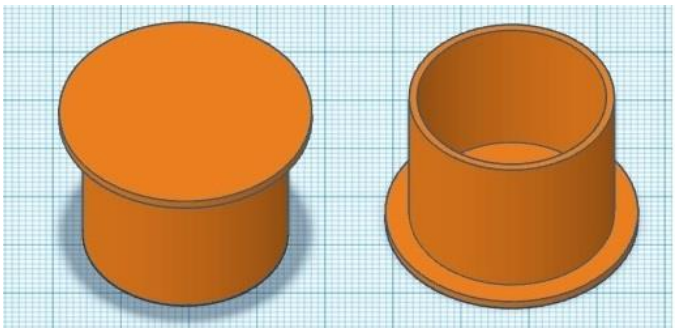

Figure 5 – Ocular Tube Plugs, 30mm, Benchtop

STL File for the 30mm Benchtop Ocular Tube Plug

The STL file for the *30mm Benchtop Ocular Plug* is listed as Item 5 in **Table 1**.

Applicability: BH2-SWBI30 and BH2-SWTR30. **Figure 6** shows a set of plugs for the 30mm ocular tubes of the super-wide BH2-SWBI30 and BH2-SWTR30 viewing heads for the BH-2. These plugs are intended to protect the ocular tubes from dust and damage whenever eyepieces are not present in the viewing head. Note that these caps are not intended for benchtop use, but instead for protecting the ocular tubes during storage or shipping, where there is a risk that the benchtop style slip-fit plugs may not stay in place.

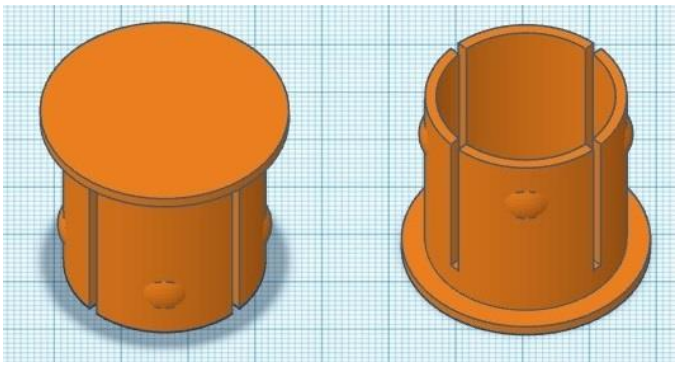

Figure 6 – Ocular Tube Plugs, 30mm, Storage/Shipping

STL File for the 30mm Shipping Ocular Tube Plugs

The STL file for the *30mm Shipping Ocular Tube Plug* is listed as Item 6 in **Table 1**.

Field Lens Cap

Applicability: BHS, BHSP, BHSU, BHT, BHTP, and BHTU. **Figure 7** shows a pair of dust caps that can be used to protect the field lens of the BHS, BHSP, BHSU, BHT, BHTP, or BHTU from dust or damage, whenever the microscope is not used. The cap shown on the left simply fits over the filter receptacle in the field lens assembly (which is located under the condenser) and is held in place by gravity. This cap is intended for benchtop use only, and not for storage or shipping. The cap shown on the right has a friction fit, and is therefore suitable for storage or shipping, but may be less convenient for benchtop use.

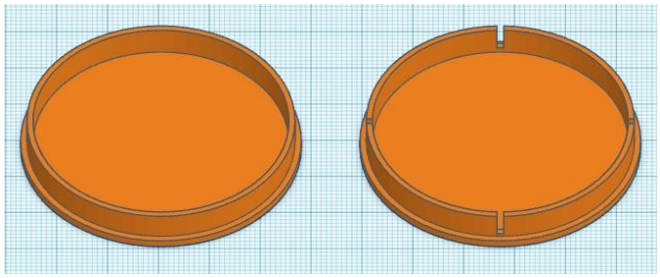

Figure 7 – Field Lens Dust Caps

STL File for Field Lens Cap with Slip Fit

The STL file for the *Field Lens Cap for Benchtop* is listed as Item 7 in **Table 1**.

STL File for Field Lens Cap with Friction Fit

The STL file for the *Field Lens Cap for Shipping* is listed as Item 8 in **Table 1**.

Cover for the Viewing Head Mounting Recess

Applicability: BHS, BHSP, BHSU, BHT, BHTP, and BHTU. **Figure 8** shows a cover for the viewing head mounting recess of the BHS, BHSP, BHSU, BHT, BHTP, or BHTU stands, which can be used to protect the mounting recess from dust or damage whenever a viewing head is not installed on the stand.

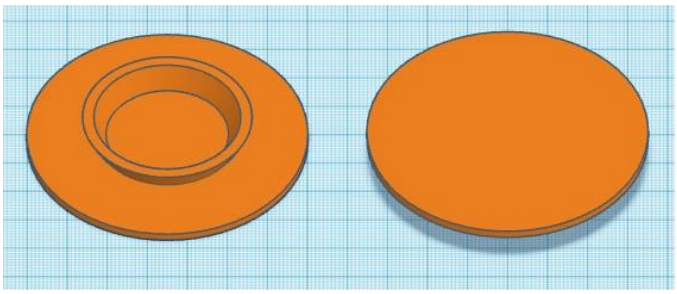

Figure 8 – Viewing Head Mounting Recess Cover

STL File for the Viewing Head Mounting Recess Cap

The STL file for the *Viewing Head Mounting Recess Cover* is listed as Item 9 in **Table 1**.

Trinocular Tube Cap

Applicability: BH2-TR30 and BH2-SWTR30. **Figure 9** shows a dust cap for the camera port on the BH2-TR30 and BH2-SWTR30 trinocular viewing heads of the BH-2. This cap can be used to protect the open camera port from dust or damage whenever an NFK projection lens is not present in the port.

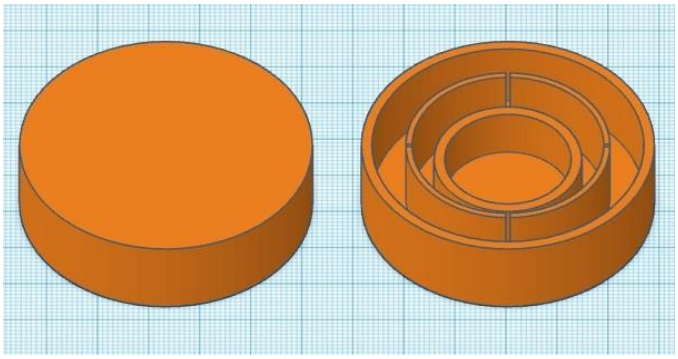

Figure 9 – Trinocular Tube Cap

STL File for the Trinocular Tube Cap

The STL file for the *Trinocular Tube Cap* is listed as Item 10 in **Table 1**.

Viewing Heat Mounting Dovetail Cap

Applicability: BH2-BI30, BH2-SWBI30, BH2-TR30, and BH2-SWTR30. **Figure 8** shows a cap for the circular mounting dovetail on the bottom of the BH2-BI30, BH2-SWBI30, BH2-TR30, or BH2-SWTR30 viewing heads for the BH-2. This cap can be used to protect the mounting dovetails on the bottom of viewing heads from dust or damage, whenever they are not installed on the stand.

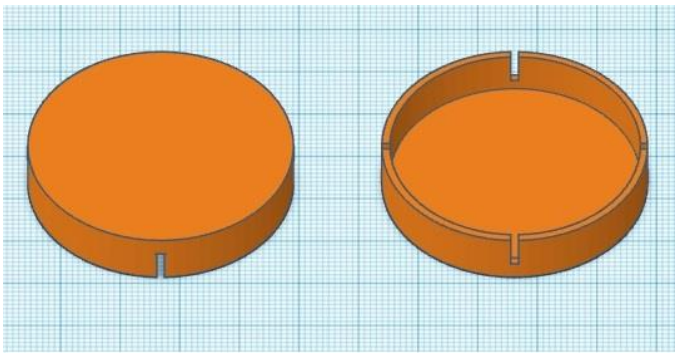

Figure 10 – Cap for the Viewing Head Mounting Dovetail

STL File for the Viewing Head Mounting Dovetail Cap

The STL file for the *Viewing Head Mounting Dovetail Cap* is listed as Item 11 in **Table 1**.

Condenser Bore Plug

Applicability: BH2-CD and BH2-AAC. **Figure 8** shows a plug for the bottom bore of the BH2-CD and BH2-AAC condensers. This cap can be used to protect these condensers from dust or damage whenever they are not installed on the stand.

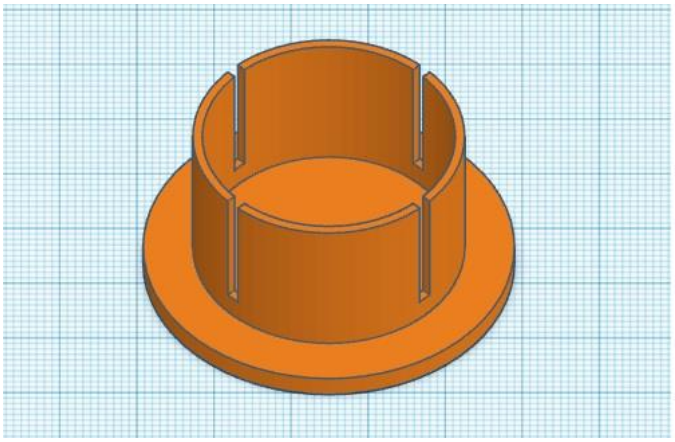

Figure 11 – Condenser Bore Plug

STL File for the Condenser Bore Plug

The STL file for the *Condenser Bore Plug* is listed as Item 12 in **Table 1**.

Printing the Parts

Refer to the following sections to print the various dust caps, covers, and plugs.

Download the STL Files

Refer to **Table 1** to determine the necessary STL files needed to print the desired parts(s). Download the ZIP file referenced in **Table 1**, and extract the necessary STL files.

Slice the STL Files

With the necessary STL files in hand, the next step is to use *slicer* software to process the STL files, to produce GCODE files which are compatible with your specific model of 3D printer. While the exact procedure for using the slicer software is beyond the scope of this document, there are some specific slicing parameters which are recommended. Configure the slicer to create GCODE for a standard 0.4mm nozzle size and 0.2mm layer height, using a 3-layer shell thickness with 20% or greater infill. The various parts were designed such that neither supports, rafts, nor brims are needed for successful printing.

Print the Component Parts

Once you have created the necessary GCODE files from the STL files, the parts can then be printed on your 3D printer. Before printing, make sure you have a standard 0.4mm nozzle installed on your printer and that the printer has been properly configured to use this nozzle. Unless stated otherwise, the parts may be printed using standard PLA filament, which is acceptable for most applications. Once you have printed the necessary parts, use an X-Acto knife (or similar) with a sharp blade to trim away any bumps, ridges, burrs, or stringing.

How to Contact the Author

Please feel free to direct any questions or comments regarding this document (or BH-2 microscopes in general) to the author at the email address included on the cover page of this document.

STL Files Referenced in this Document

Table 1 lists the STL files needed to print the various BH-2 caps, plugs, and covers described in this document. A ZIP file containing all of these STLs can be downloaded here:

https://drive.google.com/file/d/1DdM8eKXPdQ7hkKG0UaSpDed6qD6lk_ZQ/view?usp=drive_link

Table 1 – STL Files Needed to Print BH-2 Caps, Covers, and Plugs			
Filename: "BH2_Caps_Covers_and_Plugs.zip"			
Ref	**Part Name**	**Description**	**Filename**
Item 1	Double Eyepiece Cover	Cover for both eyepieces	Double_Eyepiece_Cover.stl
Item 2	Single Eyepiece Cover	Cover for a single eyepiece	Single_Eyepiece_Cover.stl
Item 3	23mm Ocular Tube Plug for Benchtop	Benchtop plug for 23mm ocular tubes	23mm_Ocular_Tube_Cap_Benchtop.stl
Item 4	23mm Ocular Tube Plug for Shipping	Shipping plug for 23mm ocular tubes	23mm_Ocular_Tube_Cap_Shipping.stl
Item 5	30mm Ocular Tube Plug for Benchtop	Benchtop plug for 30mm ocular tubes	30mm_Ocular_Tube_Cap_Benchtop.stl
Item 6	30mm Ocular Tube Plug for Shipping	Shipping plug for 30mm ocular tubes	30mm_Ocular_Tube_Cap_Shipping.stl
Item 7	Field Lens Cap for Benchtop	Slip-Fit cap for the field lens	Field_Lens_Cover_Benchtop.stl
Item 8	Field Lens Cap for Shipping	Friction-Fit cap for the field lens	Field_Lens_Cover_Shipping.stl
Item 9	Viewing Head Mounting Recess Cover	Cover for the viewing head mounting recess	Head_Mounting_Recess_Cover.stl
Item 10	Trinocular Tube Cap	Cap for the trinocular tube	Trinocular_Cap.stl
Item 11	Viewing Head Mounting Dovetail Cap	Cap for the viewing head bottom mounting dovetail	Head_Bottom_Mount_Cap.stl
Item 12	Condenser Bore Plug	Plug for the lower hole in BH2-CD and BH2-AAC condensers	CD_AAC_Condenser_Plug.stl