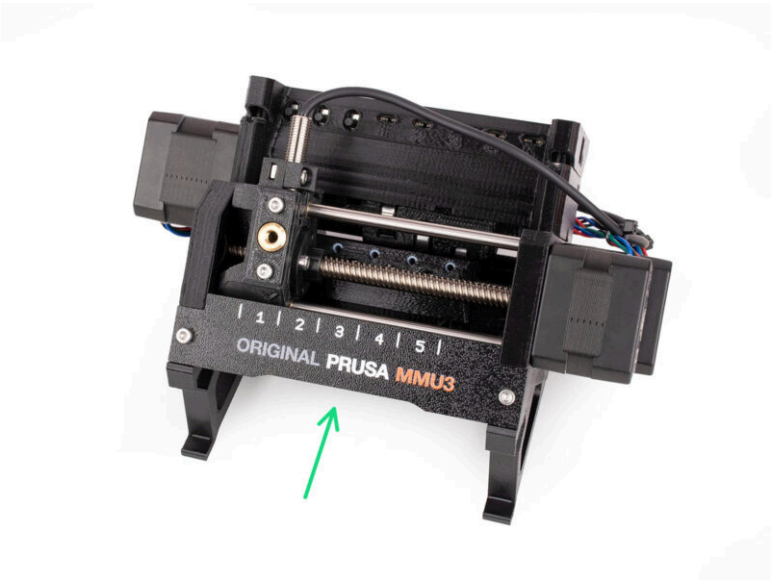
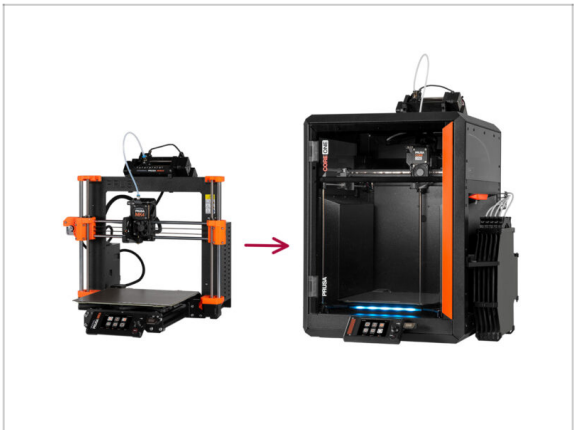
Tabla de Contenido

1. Conversion



PASO 1 Introduction



- In this guide, we will be upgrading the MK4S MMU3 setup into CORE One MMU3.
- La instalación de la MMU3 requiere modificaciones en el extrusor. Sin embargo, tenemos que hacer algunos otros ajustes antes de proceder con eso.
  - **Repasemos rápidamente los puntos clave que trataremos en esta guía:**

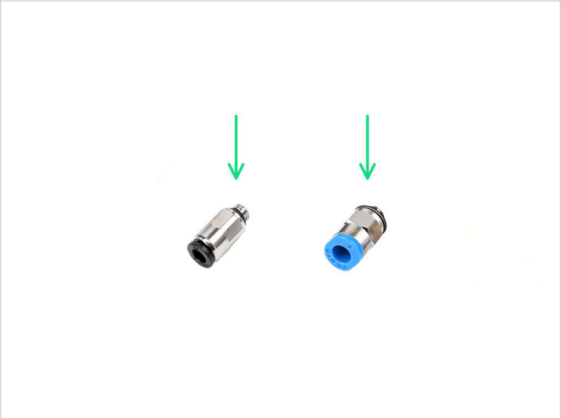
PASO 2 INFO Piezas imprimibles Buffer

⚠ You might need to print some parts, before proceeding with the upgrade, depending on the MMU3 version you are planning to build.

- Todas las piezas imprimibles de la MMU3 están disponibles en el perfil de Printables de Prusa3D.com

  Más información en: Prusa3D.com/prusa-i3-printable-parts/

PASO 3 MMU3 Version Check



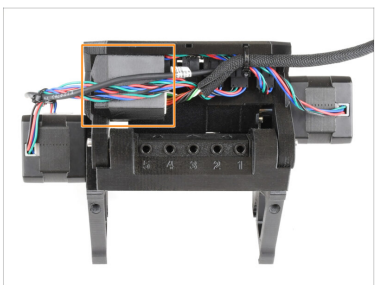
- Multiple hardware changes occurred during the MMU3 production.

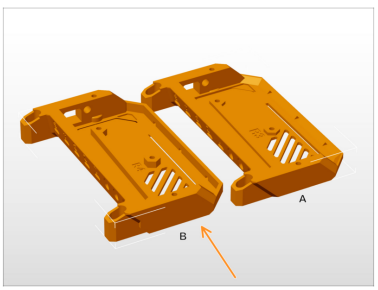
ⓘ **CORE One** is only compatible with the latest versions of the MMU3 units, specifically those used on the MK4/S. MMU units from other printer models may not be compatible with CORE One!

- Check the PTFE fittings. The black version is compatible, but not all blue fittings are.
  - Los racores azules compatibles son únicamente los que tienen un diámetro interior de 2.6mm, enviados a partir de abril de 2024. (enviados con la MK4/S MMU3)

📌 One fitting should be reused from your older MMU3 setup. If you have doubt, we recommend getting the black fitting from Prusa E-shop.

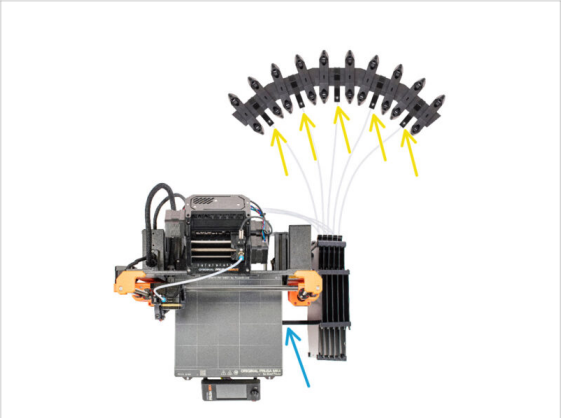
PASO 4 Buffer Check

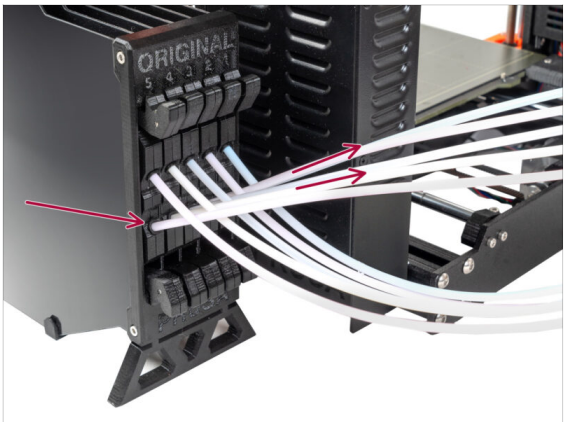




- The MK4S MMU3 should already use the **compatible** newer **buffer cartridges**, **version B**. Version A is not compatible but can be updated.
- Check the back of your MMU3 unit. If it has a cover over the PD board addon, your unit uses the latest revision of the plastic parts.
  - If you have an older revision, we recommend updating the electronics cover to the latest version and adding the PD-board cover.

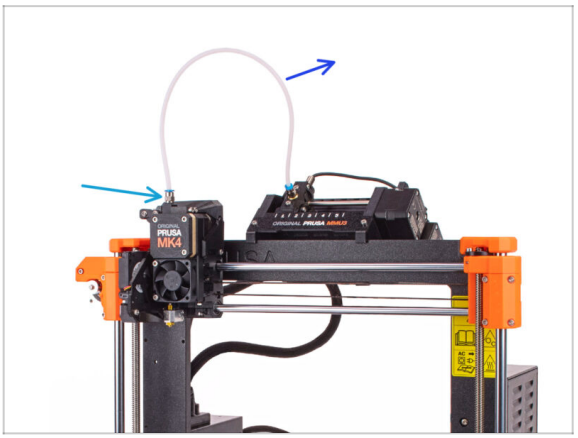
PASO 5 PTFE tubes disconnecting





- Disconnect the PTFE tubes from the spool holders.
- Disconnect the PTFE tubes that lead to the MMU3 unit, from the buffer cassettes.
- Remove the buffer from the printer.

PASO 6 PTFE tube disconnecting 2

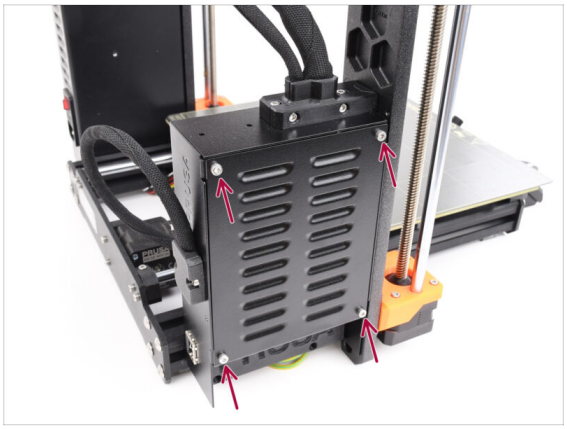


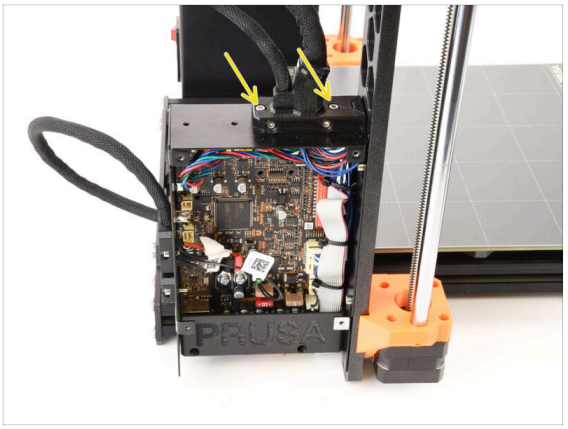
- Disconnect the PTFE tube between the MMU unit and the extruder.

  ⚠ Discard this 360mm PTFE tube. The MMU3 on CORE One requires a PTFE tube either 390mm or 450mm long, so the old one can't be reused!

- Remove the fitting from the extruder. Set it aside, as it will be replaced with a new one.

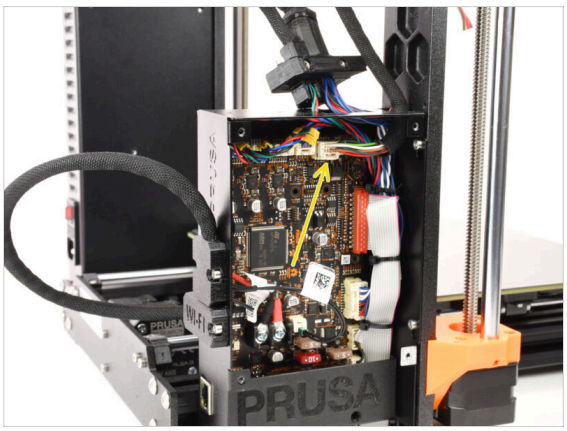
PASO 7 xBuddy box opening

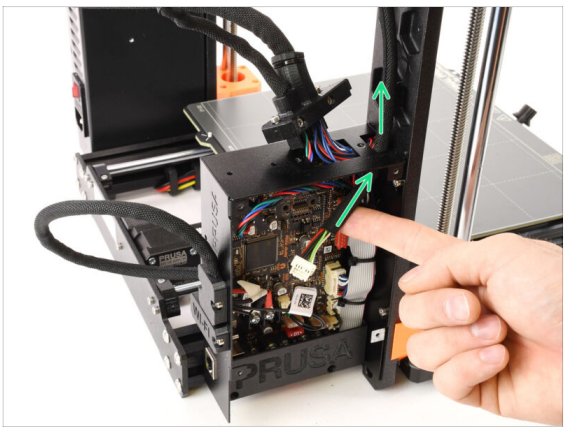




- On the left side of the printer, remove the four M3x6 screws holding the xBuddy box cover in place. Then, take off the cover.
- Remove the two M3x18 screws holding the ext-cable-holder.

PASO 8 Cable Disconnecting



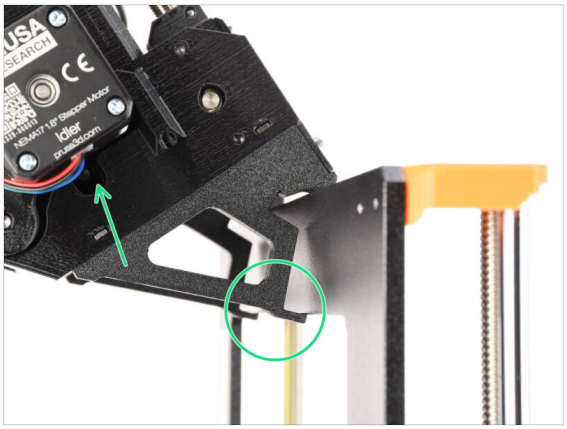


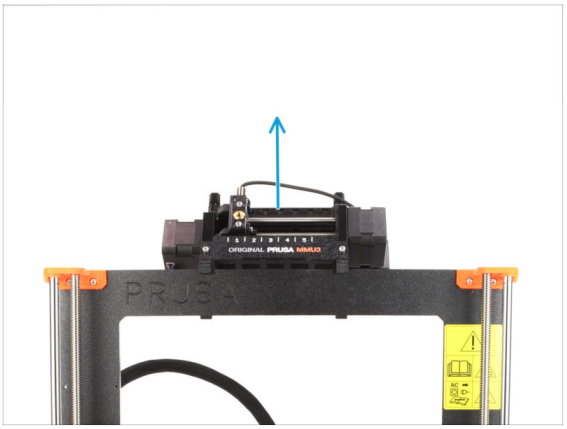
- Disconnect the MMU cable from the xBuddy board. Note that there is a safety latch that must be pressed, in order to disconnect the cable.

  ⚠ The connector has a safety latch. It is necessary to press the latch before disconnecting. Otherwise, the connector may get damaged.

- Remove the cable from the xBuddy box.

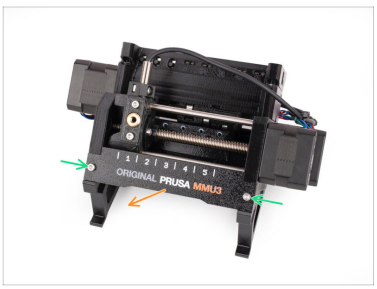
PASO 9 MMU Removal

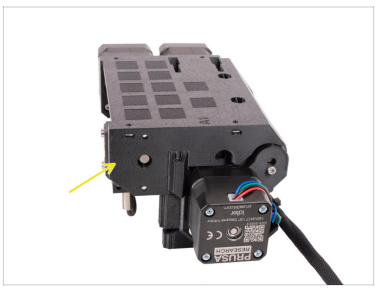




- Lift the back of the MMU unit to unclamp it from the printer's frame.
- Remove the MMU3 unit from the printer.

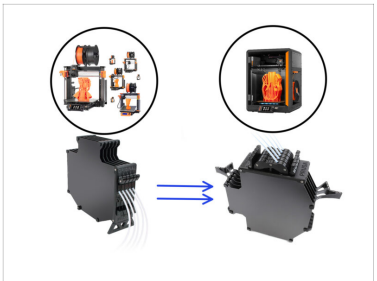
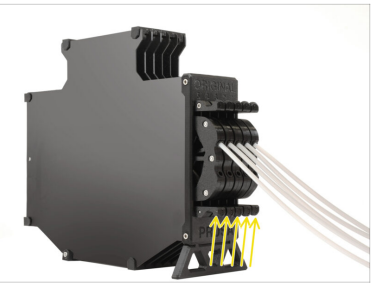
PASO 10 Frame Holders Removal





- Undo the two M3 screws holding the label plate.
- Remove the label plate and save it for possible later use.
- Remove the four M3x10 screws holding the Frame holders. Set the frame holders aside as they will not be used.
- Save the MMU unit with the PTFE tubes for later use.

PASO 11 Buffer Rebuild


- MMU3 on CORE One necessitates the use of a slightly different Buffer design, compared to the other printer models.

ⓘ In the upcoming steps, we will be upgrading it.

- Remove all the cassettes from your MK4S buffer and prepare the bare buffer body.

PASO 12 Plate Holders Preparation


- **Para los siguientes pasos, prepara:**
- Plate Holders (4x)
- Plate holder L (1x)
- Plate holder R (1x)
- Magnet 2x6x20 (12x)

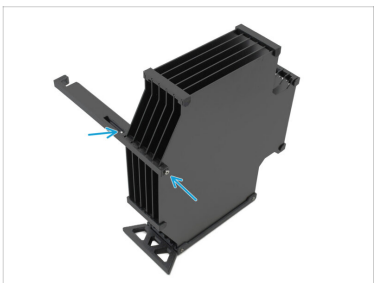
PASO 13 Magnet Installation

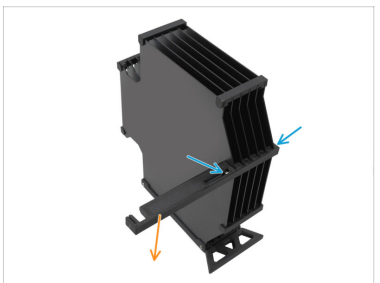
- Install all twelve magnets into the marked openings on both the Plate holder L and R parts.

  Make sure all the magnets are fully inserted.

  The orientation of the magnets is not important.

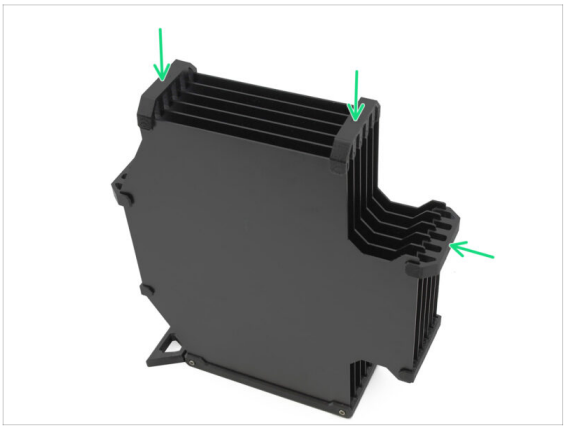
PASO 14 Buffer Rebuild 2





- Remove the M3x30 screws holding the Printer holder part.
  - Remove the Printer Holder and discard it.
- Install the new plate holder as indicated, so that it faces away from the buffer. Make sure it clicks in place and all the plates are properly aligned into the recesses.

PASO 15 Buffer Rebuild 3

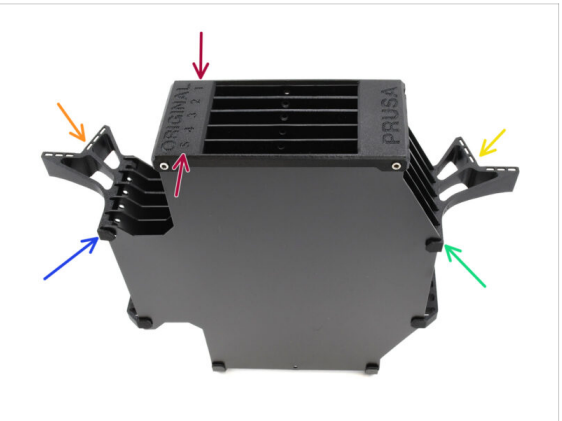


- Remove the marked three old-type plate holders.
- Replace the plate holders with the three remaining pieces of the new type.

PASO 16 Buffer Rebuild 4

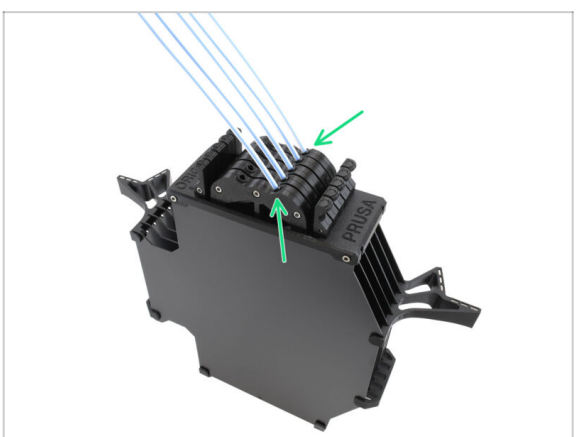
- Keep the buffer positioned as in the picture, with the cassetter part facing down. This will keep the N3nS nuts from falling out in this step.
- Remove the two M3x30 screws holding the Buffer Leg part.
- Remove the Buffer Leg.
- Reinstall the M3x30 screws back into place. Tightem them very lightly to prevent warping the plates.

PASO 17 Buffer Rebuild 5



- Remove the remaining two old-type plate holders.
- Orient the assembly so that the segmenter is on top, with the position labeled 1 facing away from you and position 5 toward you.
- Install the Plate Holder L onto the left side of the assembly.
- The magnets should face away from you, toward position 1.
- Install the Plate Holder R onto the right side of the assembly.
- The magnets should face away from you, toward position 1.

PASO 18 Buffer Ready To Roll



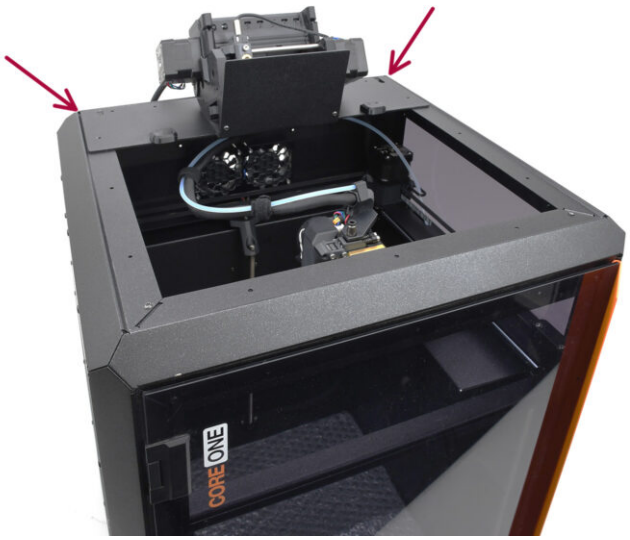
- Insert all the cartridges into the buffer body.

  Make sure the inserted PTFE tubes are on the right side, when the magnets are facing away from you.

PASO 19 MK4S to CORE One Conversion

- Update the printer according to the MK4S to CORE One Conversion guide.
  - **The only minor difference is that your Nextruder is still modified for MMU use.** You may need to bypass the filament sensor calibration during self-test by manually pushing the idler tension bolts instead of loading a filament when you reach that stage.
- After converting the printer to CORE One, continue to the chapter: 10D. CORE One Setup and Calibration

10D. CORE One Setup and Calibration



PASO 1 Top Cover

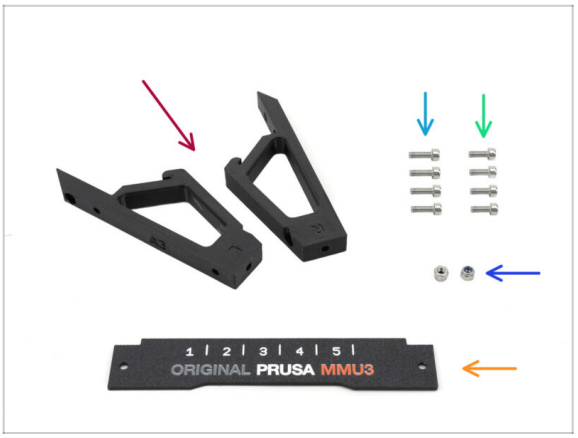
- Before installing the MMU unit, remove the printer's top cover if it hasn't been removed already.

PASO 2 Core One MMU3 Types

⚠ There are **two official versions** of the MMU3 for CORE One:

- the **Lite**
  - ⚠ Si tienes esta versión, continúa en el siguiente paso.
- the **Enclosed** *with the Blob on top.*
  - ⚠ If you have this version, continue to the Blob Preparation.

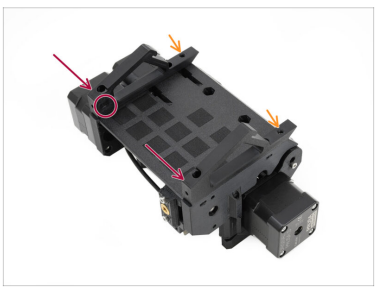
PASO 3 (LITE) MMU Holder Preparation



⚠ These steps are valid for the Lite version.

- **Para los siguientes pasos, prepara:**
- CO_MMU_Holder (2x)
- M3x10 screw (4x)
- M3x8 screw (2x)
- M3nN nut (2x)
- Label Plate (1x)

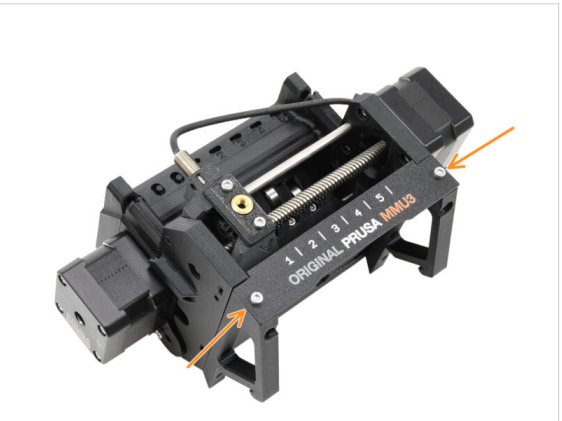
PASO 4 (LITE) MMU Holder Installation 1



- Insert the M3nN nuts into the hexagonal openings in the Holders. Make sure the flat part goes in first!
- Take the MMU unit and orient it upside down.
- Add the Holders onto the unit and align them with the assembly.
  - Ensure the holder marked R is on the unit's right side (sides are reversed when the unit is upside down).
  - Ensure the part with the M3nN nuts faces the back.

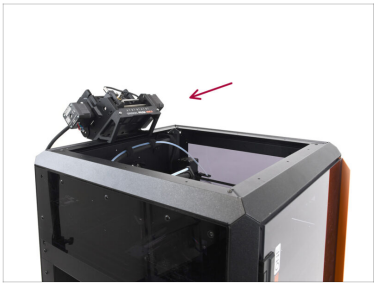
⚠ Watch out! the nuts might keep falling out.

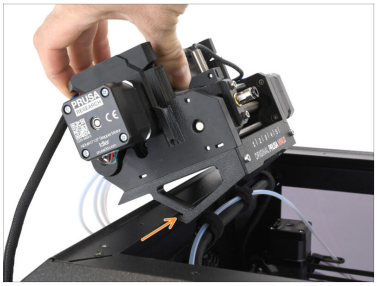
PASO 5 (LITE) MMU Holder Installation 2

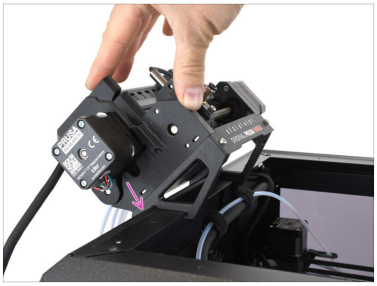


- Fix the holders to the unit using four M3x10 screws.
- Align the Label plate with the front part of the MMU unit. Fix it to the holders using two M3x8 screws.

PASO 6 (LITE) MMU Placement 1

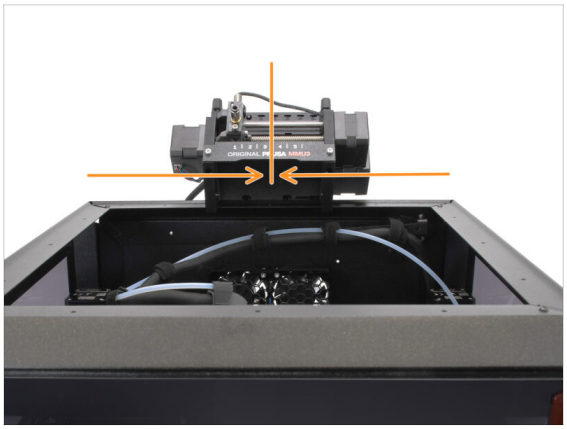






- Now, we will place the MMU assembly onto the top back part of the printer.
- Hook the notch on the MMU holders to the front part of the metal profile.
- Lean the MMU against the profile.

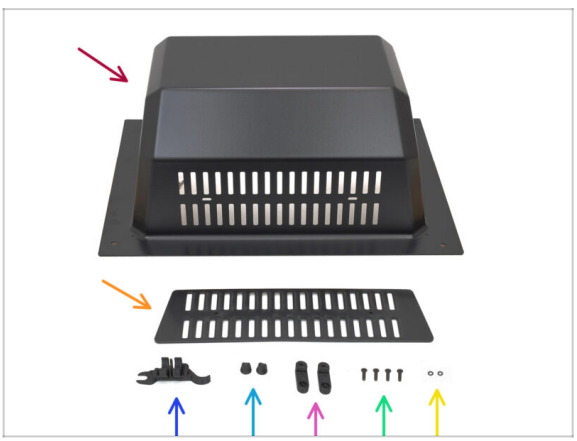
PASO 7 (LITE) MMU Placement 2



- Center the unit on the printer to align the screw holes.
- Reach inside the printer to secure the unit with the two M3x8 screws.

⚠ Your MMU3 Lite is now securely attached.
Continue to the Back Cover Removal step.

PASO 8 (ENC) Blob Preparation

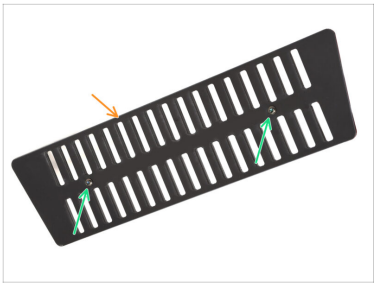


⚠ These steps are valid for the Enclosed version.

Skip if you use the Lite.

- For the following steps, prepare:
  - Top Cover (1x) *or 'Blob' as users commonly call it.*
  - Vent (1x)
  - CORE ONE ASSEMBLY MULTI TOOL (1x) *version E2 or newer*
  - Vent Nut (2x)
  - BlobLock (2x)
  - M3x10rT (4x)
  - O-ring (2x)

PASO 9 (ENC) Blob Assembly 1



- Take the Vent part.
  - Push the two M3x10rT screws through the openings.
- Install the Vent to the inside of the Top Cover, making sure the screws go all the way through.
  - From the other side, attach the o-rings onto the screws.

PASO 10 (ENC) Blob Assembly 2

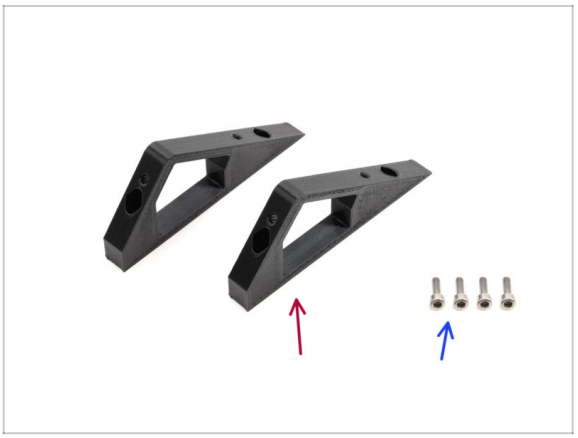


- Tighten the screws against the Vent Nuts
  - Use the Assembly Multi Tool to hold the nuts while tightening.
  - Tighten the screws just so that the vent holds in place when moved to a side. Make sure vent is still easy to slide.

PASO 11 (ENC) Blob Assembly 3

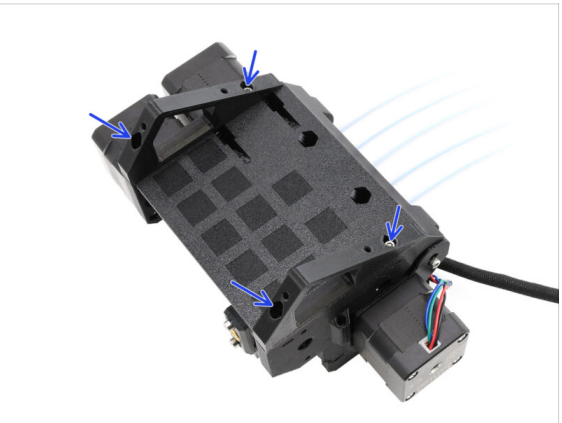
- Attach the Blob Locks onto the bottom part of the Top Cover.
  - Make sure the Locks are oriented as seen in the picture. Then, fix them in place using two M3x10rT screws.
  - Tighten the locks just until snug. It should be able to move the locks using a reasonable force.

PASO 12 (ENC) MMU Holder Preparation



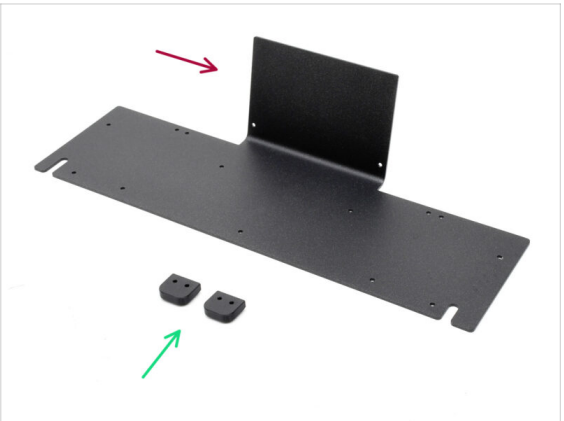
- **For the following steps, prepare:**
- CO_MMU_Holder (2x)
- M3x10 screw (4x)

PASO 13 (ENC) MMU Holders Installation



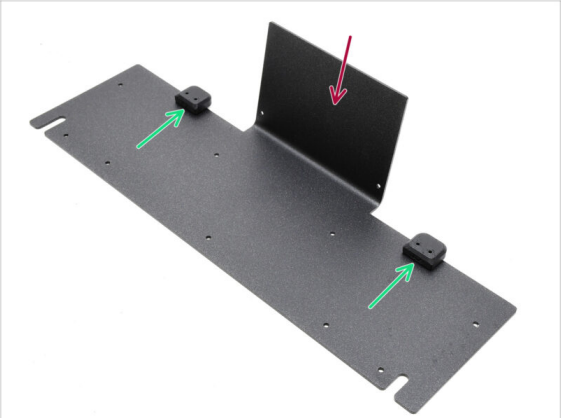
- Take the MMU unit and flip it upside down.
- Add the holders onto the bottom part.
- Align the flat front of the holders with the unit.
- Attach the holders using four M3x10 screws.

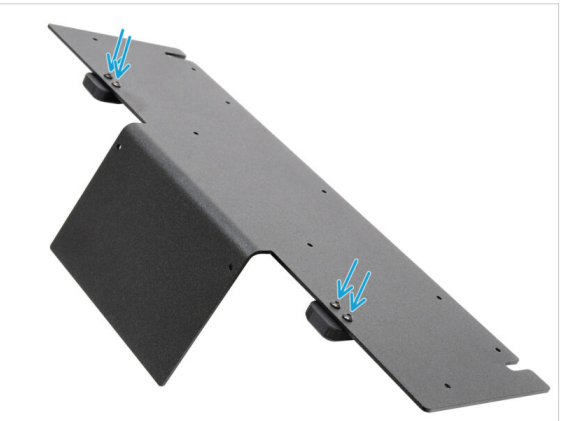
PASO 14 (ENC) Blob Holder Preparation



- **Para los siguientes pasos, prepara:**
- Top Sheet Metal (1x)
- Blob_Holder (2x)
- M3x10rT screws (8x)

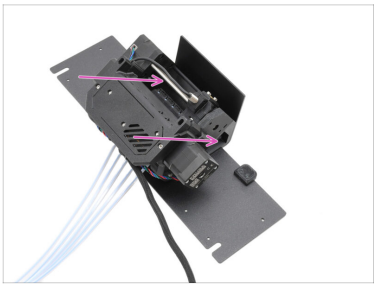
PASO 15 (ENC) Blob Holder Assembly

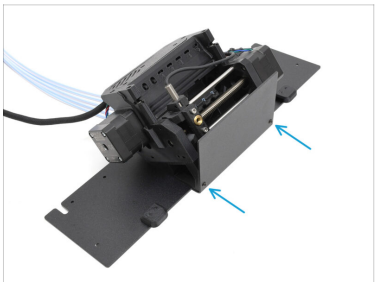


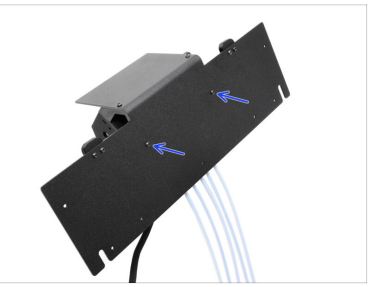


- Orient the sheet metal with the bent part facing up as shown.
- Instal the Blob Holders onto the Blob Sheet Metal using the four M3x10 screws.
  - Ensure the holes align with the sheet metal and the rounded part overhangs.
- Fix the holders in place using four M3x10rT screws.

PASO 16 (ENC) Sheet Metal Assembly

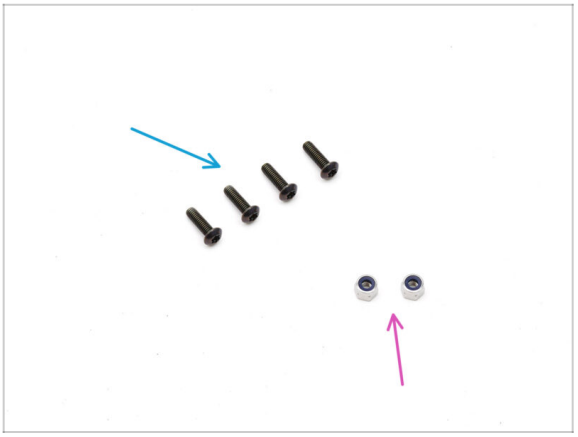






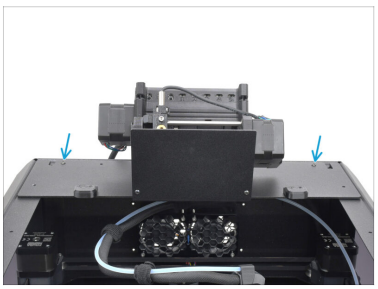
- Move the MMU unit onto the Sheet metal, aligning its holders with the bent part.
- Attach the MMU unit to the sheet metal with two M3x10rT screws at the front.
  - Tighten the screws with reasonable force to avoid stripping the self-tapped plastic thread.
- Fix the unit using the other two M3x10rT screws at the bottom.

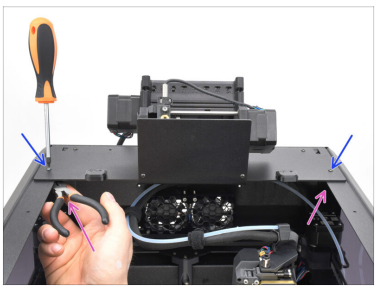
PASO 17 (ENC) MMU Placement Preparation



- **Para los siguientes pasos, prepara:**
- M3x10rT screws (4x)
- M3nN nuts (2x)

PASO 18 (ENC) MMU Assembly Placement





- Place the MMU assembly with the sheet metal onto the printer. Make sure it sits in the back of the top recess, while the MMU faces the front of the printer.
  - Fix it to the metal profiles in the back using two M3x10rT screws.
  - Tighten two M3x10rT screws on sides against the M3nN nuts held with needle-nose pliers.

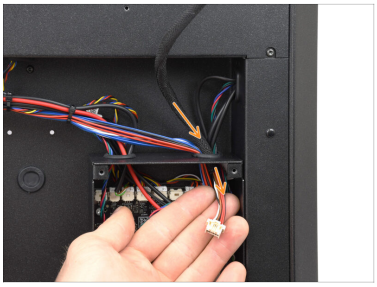
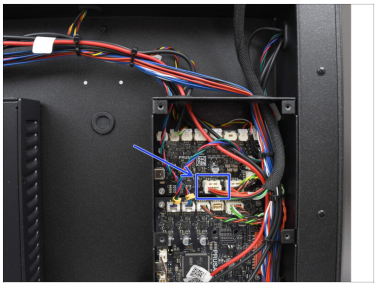
PASO 19 Back Cover Removal 1

- En el interior de la impresora, retira los dos tornillos que sujetan la cubierta posterior.
- En la parte posterior de la impresora, desliza la cubierta central hacia abajo.
- Pull the bottom part of the cover outward while tilting the top toward the printer. This will unhook it from the cable bundle behind. Remove the cover.

PASO 20 Back Cover Removal 2

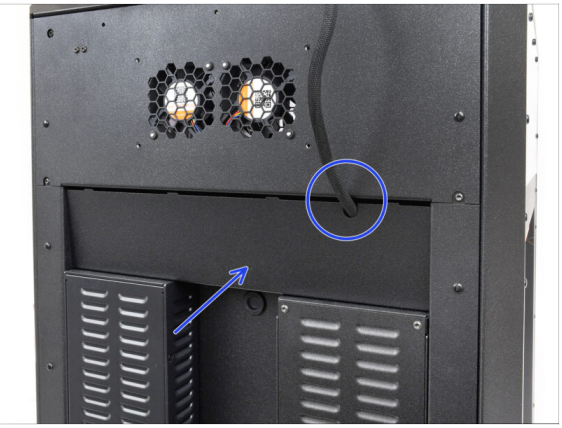
- Retira los seis tornillos que sujetan la cubierta de la xBuddy.
- Retira la tapa deslizándola hacia fuera.

PASO 21 MMU Cable Connection

- Guide the MMU cable towards the electronics box.
- Pull the cable through the top cable opening into the xBuddy box.
- Connect the cable to the dedicated MMU port on the xBuddy Extension board.

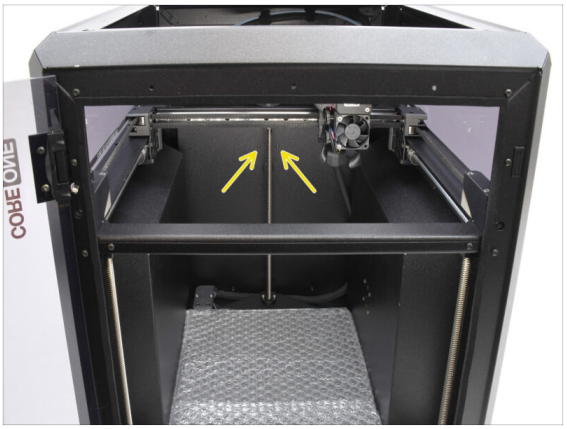
PASO 22 Back Cover Installation 1

- Attach the xBuddy box cover using the 6 M3x4rT screws.

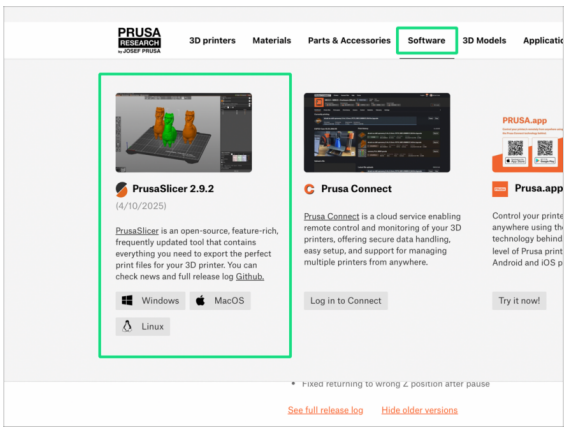
  ⓘ Make sure no cable is getting pinched.
- Re-install the back cover, making sure the MMU cable fits through the mousehole opening on top.

PASO 23 Back Cover Installation 2



- Push the cover up, so that the four tabs on top engage into the recesses.
- Mientras empujas la cubierta hacia arriba, fíjala en su sitio utilizando dos tornillos M3x4bT desde el interior de la impresora.

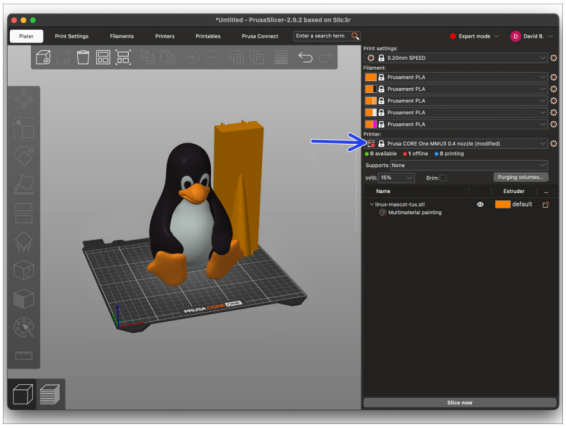
PASO 24 Software Download



- Visit Prusa3D.com
- Download the latest **Drivers & Apps** package from the Software tab.

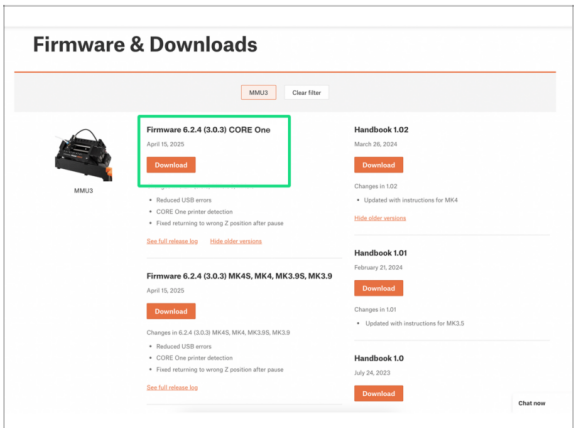
  ⚠ **MMU3 on CORE One** requires PrusaSlicer version 2.9.2 or newer.
- Install the latest **PrusaSlicer** and open it.

PASO 25 PrusaSlicer setup for MMU3



- Open the PrusaSlicer Wizard/Assistant. (from the menu **Configuration > Configuration Wizard/Assistant > Prusa Research)**
- Open the **Prusa Research** printer list and select **MMU version** of your printer.
  - **Select the nozzle** type and size in the list below.
- Click Finish to save the settings.
- In **Printer:** menu, select the **MMU3** printer profile for future slicing.

PASO 26 Firmware files download

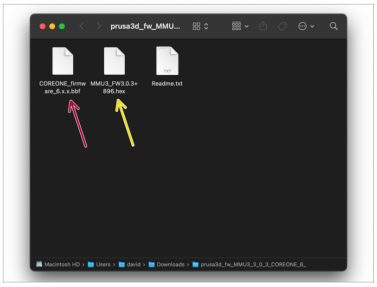


⚠ You will need to update the **firmware** for both the **printer** and the **MMU** unit. Each device has a **separate firmware file** that needs to be flashed. Always use only the newest compatible firmware versions together.

⚠ For more info, see the MMU3 Firmware Compatibility article.

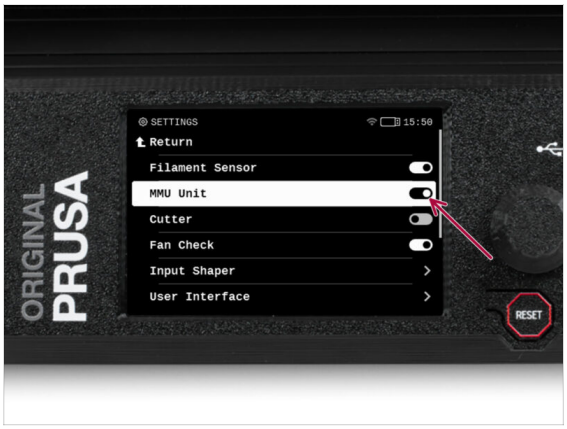
- Visita la página de Descargas del MMU3 en Help.Prusa3D.com
- Descarga el **último pack de Firmware** para **tu modelo de impresora**.

PASO 27 Firmware Upgrade: Printer



- **Printer's firmware - .bbf file**
  for the CORE One control board:
  (e.g. COREONE_firmware_6.x.x.bbf)
- **Firmware de la placa controladora de la MMU3**:
  (por ej. MMU3_FW3.0.3+896.hex)
  - This firmware update must be applied directly to the MMU unit using a computer. **We will flash the MMU unit firmware in the upcoming steps.**
- Update the printer's firmware. First, transfer the firmware file onto a USB drive.
- Turn on the printer and connect the USB drive into it. Press the RESET button to restart it. Then, select the FLASH option on the screen to begin the update.

PASO 28 Encendido de la MMU



⚠ After finishing the firmware update, **make sure there are no filaments loaded** neither in the extruder, or in the MMU unit.

- Navigate to the **LCD menu > Settings > MMU**

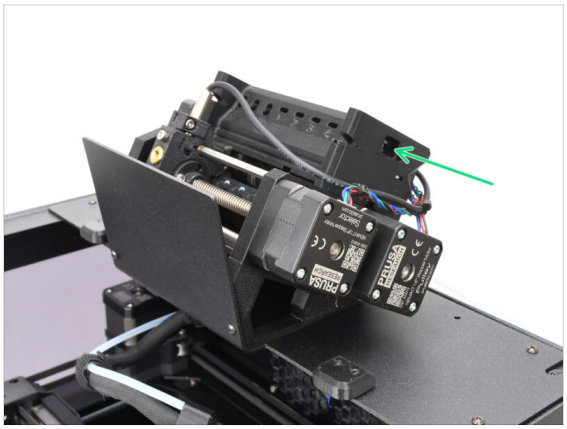
  and make sure the **MMU** is turned **on**.

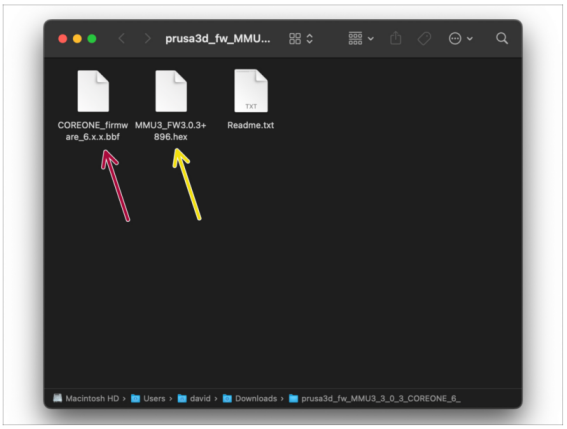
  This option enables the MMU functionality in the firmware and turns on the power for the MMU unit, which is needed for a firmware update.

  The MMU unit will now perform a self-test (flashing LEDs). **Wait until it boots up completely** before issuing any commands. By the way, from now on, the printer's reset button will also reset the MMU unit.

- Since you've converted the extruder to the MMU version, when prompted to reconfigure the filament sensor's behavior, which should appear immediately, choose '**Continue**'.

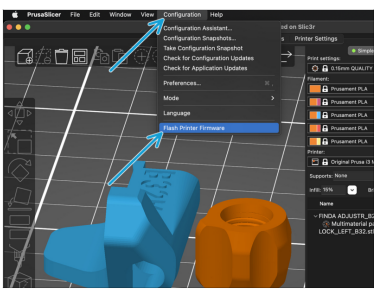
PASO 29 MMU3 Firmware flashing (part 1)

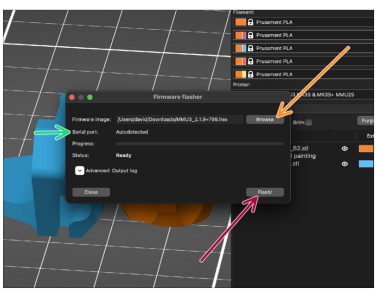


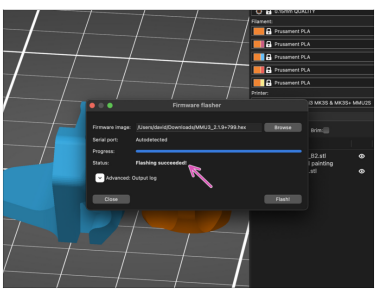


- The MMU3 firmware file needs to be flashed into the MMU unit itself. Find the **microUSB** connector on the right side of the MMU3 unit.
- Connect the unit to your computer using the bundled microUSB cable.
- On your computer, select the appropriate **MMU firmware file** compatible with your printer model.

PASO 30 MMU3 Firmware flashing (part 2)







- Open PrusaSlicer and select **Configuration ->Flash Printer Firmware** from the top menu.
- Hit **Browse** and select the MMU3 firmware image file on your computer. (e.g. MMU3_FW3.0.3+895.hex)
- El puerto serie debería detectarse automáticamente.

  Hit **Rescan** if your printer is not listed in the Serial port: column
- Presiona el botón de **Flashear**.
- Espera hasta que aparezca el mensaje **¡Exito al flashear!**.
- Una vez finalizado el flasheo, desconecta el cable USB.
- En caso de que tengas problemas al instalar el firmware, por favor visita el artículo para solucionar problemas.

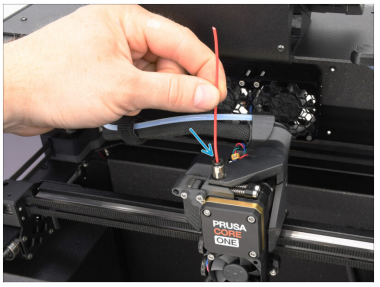
PASO 31 Gears calibration

- Now, we need to calibrate the planetary gearbox in the Nextruder.
- Go to the Home screen and navigate to *Control -> Calibrations & Tests,* scroll down and select **Gears Calibration**.
  - Una vez que llegues a la parte de Alineación de la caja de engranajes, selecciona **Continuar** y sigue las instrucciones que aparecen en pantalla.

PASO 32 Gearbox Alignment

- During the **Gear calibration** process, you will be prompted to:
  - Make sure the **Idler lock** (swivel) is in the open position - lifted up.
  - Afloja 1,5 vueltas los tres tornillos de la parte delantera de la caja de engranajes.
  - ⓘ La impresora realizará el alineamiento automático de los engranajes. Este proceso no es visible desde el exterior.
  - Cuando se te indique, aprieta los tornillos siguiendo el patrón indicado en la pantalla.

PASO 33 MMU Filament sensor calibration

- After completing the Gearbox Alignment, you should be prompted to continue to the **filament sensor calibration**.

  ⓘ Start with no filament in the extruder.

- Close the **Idler lock** (swivel).
- For the calibration, prepare a filament and hit **Continue**.

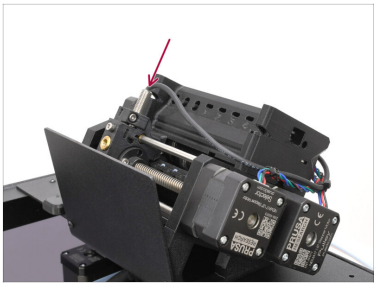
  ⚠ Don't insert the filament before being prompted to do so!

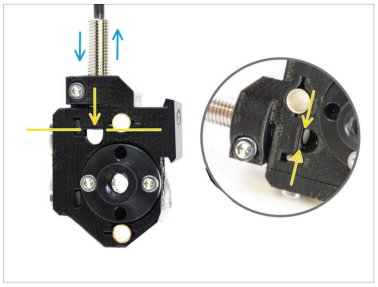
- Once prompted to, insert the filament.
- After successful calibration, remove the filament.

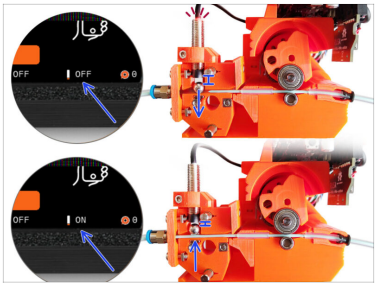
PASO 34 Footer Status Bar

- Turning on the MMU unit automatically displays the filament sensor and Finda sensor information on the footer status bar.
  - To change the settings, visit **Settings > User Interface > Footer** menu.
- Los valores de los sensores también se muestran en el menú **Info > Info Sensor**.

PASO 35 SuperFINDA sensor calibration info







- If you built the MMU3, the **SuperFINDA sensor** inside the selector must be calibrated.

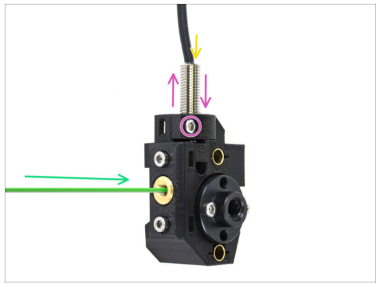
  ⓘ For **factory-assembled MMU3** units, you can skip the calibration steps.

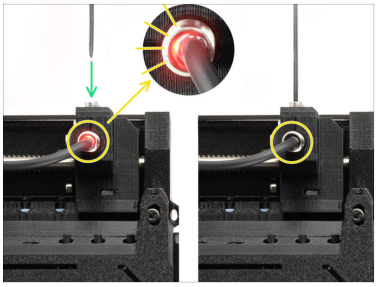
- In the next step, we'll calibrate the sensor's position.

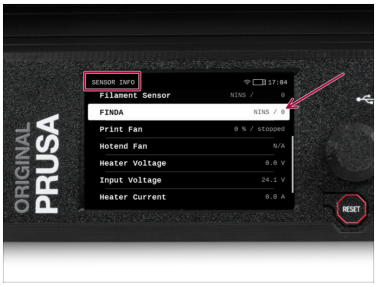
⚠ **It is CRITICAL** that both the **filament sensor in the extruder and the SuperFINDA sensor function accurately**. Otherwise, you will have trouble with the device.

- Use the inspection window on the selector to align the bottom of the sensor with the top of the window, as a starting point.
- When filament is in the selector, the steel ball rises and should be detected by the SuperFINDA sensor. Ensure the distance between the ball and the sensor is perfectly calibrated.

PASO 36 SuperFINDA calibration







- Insert filament with a sharp tip into the brass opening at the front.
- Echa un vistazo a SuperFINDA desde arriba y fíjate en la lucecita roja del interior del sensor que se apaga cuando el filamento levanta la bola de acero de su interior.
  - **Red light** = no filament detected = **FINDA 0 / OFF**

    No light = filament detected = **FINDA 1 / ON**
- If the light is still on, lower the SuperFINDA slightly.

  If the light doesn't ever go on, raise the SuperFINDA probe by releasing the screw by its side, moving the probe, and tightening the screw back up.
- Observa las **lecturas del sensor en la pantalla LCD** (Info -> Info Sensor -> FINDA) Ten en cuenta que hay un ligero retraso en las lecturas del sensor en la pantalla LCD; proceda lentamente.

⚠ Repeat the test, adjusting SuperFINDA height **until consistent readings occur when inserting and removing filament.**

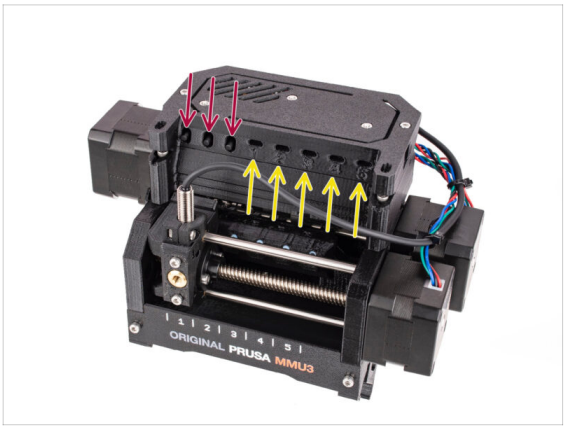
PASO 37 Error code details (Part 1)

- Later on, an **MMU error screen** will show up if something goes wrong during the operation. See the example image; the first line describes briefly, what's the error about.
  - prusa.io/04101 is a web address, where you can view a detailed article about the exact issue, and how to fix it.

  The QR Code gets you the detailed description.
- The status of the filament sensor is always displayed in the Footer section of the error screen to assist in diagnosis.
- Adjacent to it, you will find the status of the Finda sensor.

  (Note the FINDA status reading on the LCD has a slight delay.)

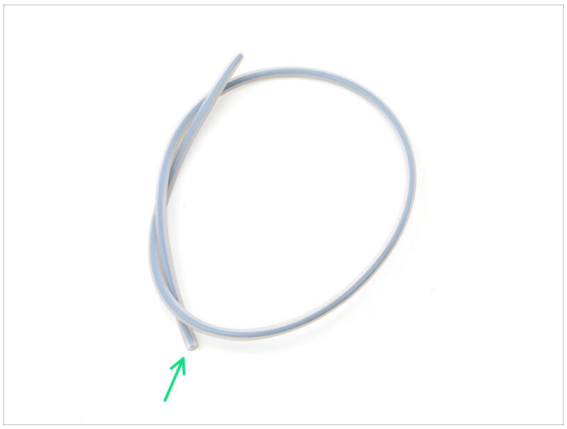
PASO 38 Detalles del código de error (Parte 2)



- The bottom line are the **solution buttons**. Some errors have multiple solutions.
- You can also visit a detailed error description page via the QR code.
- MMU unit being in an **error state** is also indicated by its LED lights flashing.
- While in an ERROR state, the buttons on the MMU unit can be used to resolve the error too.
  - The **middle button** usually replicates the LCD solution buttons function.

⚠ Note, if the MMU unit is in **IDLE state**, the buttons **have a different functions**; For example; If there is no filament loaded, the side buttons can be used to move the selector right and left. But more on that later.

PASO 39 MMU-to-Extruder PTFE tube parts preparation

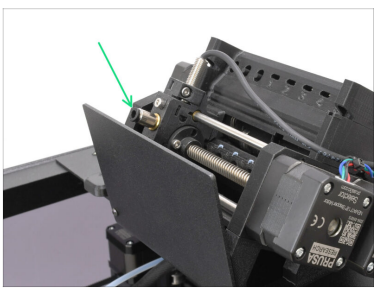


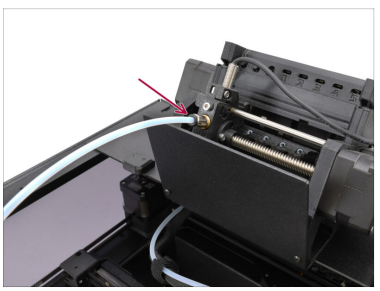
- **Para los siguientes pasos, por favor prepara:**
  - MMU-Extruder PTFE tube (1x)

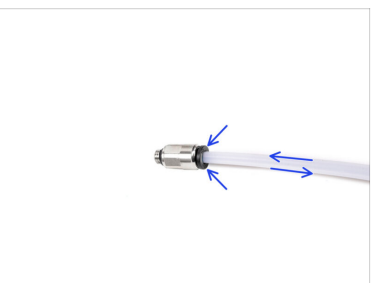
    ⚠ Use only the supplied PTFE tube.
    Enclosed version: **390mm.**
    Lite version: **450mm.**
    Do not reuse the shorter 360mm tube from MK4/S or other printers!
  - M5-4 fitting (1x)

    ⓘ The fitting might look slightly different if you are reusing the one from the MK4S.
  - Fitting Cover (1x) *required for the Enclosed version only.*
  - Collet (1x) *required for the Enclosed version only.*

PASO 40 MMU-to-Extruder PTFE tube 1

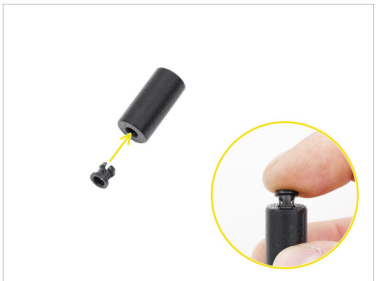


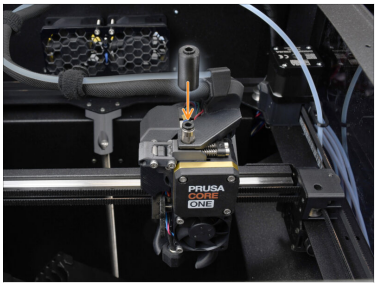


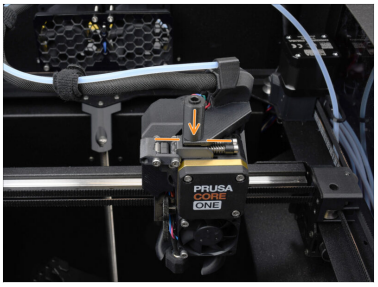


- Attach the M5-4 fitting onto the Selector and tighten it up using the Uniwrench.
- Connect the MMU and the extruder together with the PTFE tube. Make sure to push the tube all the way into both the fittings.
  - Quick tip: **If you need to remove the PTFE tube** from the fitting, press the collet in. While the collet is pressed, first press the PTFE tube in, then pull it out entirely.

PASO 41 Fitting Cover. (ENC)



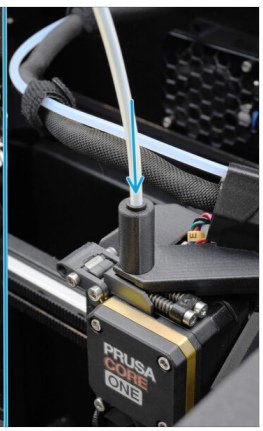


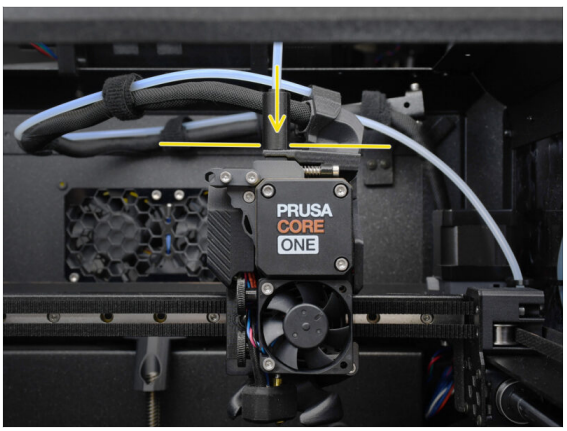


⚠ This step is required for the Enclosed version only.

- Insert the collet into the smaller opening on the Fitting cover.
  - ⓘ The individual fins on the collet must be pressed together in order to fit into the fitting cover.
- Attach the fitting cover onto the fitting on the extruder.

PASO 42 MMU-to-Extruder PTFE tube 2





- Attach the end of the tube into the extruder.
  - Make sure it is pushed all the way in.

PASO 43 PTFE Length Calibration

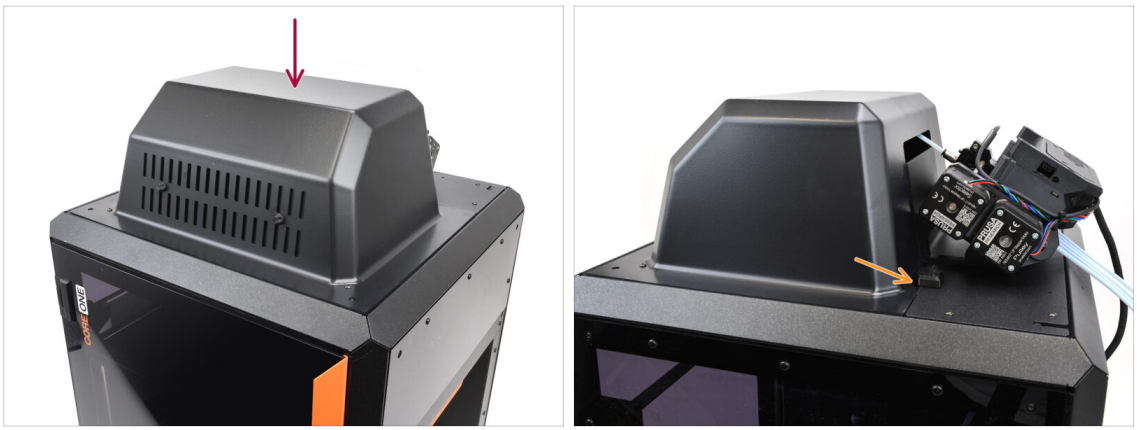
⚠ The MMU-to-Extruder PTFE tube length needs to be set in the firmware.

- Visit the menu **Settings>Hardware>MMU**
- Set the length:

  Enclosed version: **390mm**.

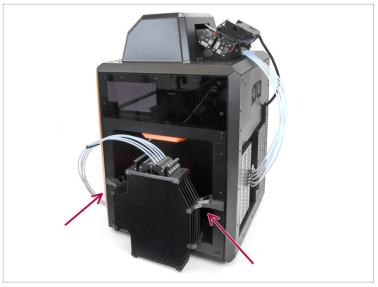
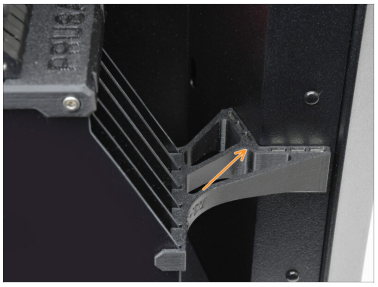
  Lite version: **450mm**.

PASO 44 (ENC) Blob Installation



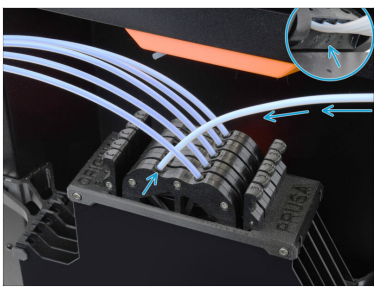
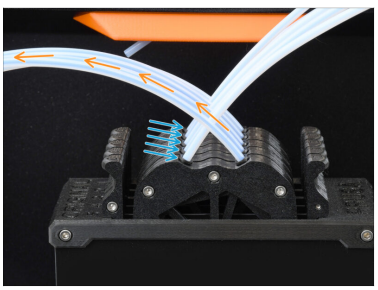
- If you use the Enclosed version, cover the printer with the Blob.
  - First, hook it at the back, then lean it onto the printer.

PASO 45 Buffer Attachment


- Attach the buffer assembly onto the right side of the printer.
  - Make sure the magnets are attached properly into the recessed side panel on the printer.

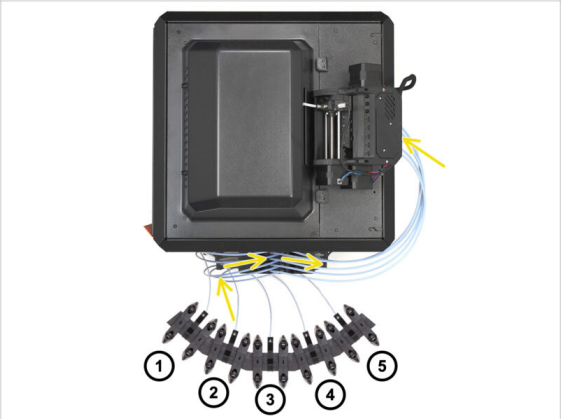
PASO 46 PTFE tubes connection


- Connect the five PTFE tubes **from the MMU** unit to the **free row of collets** on the buffer, ensuring you match the numbering on both the buffer and the MMU unit.
- The other PTFE tubes from the Buffer go to the Spool holders.

ⓘ We will attach the spool holders in the upcoming step.

PASO 47 Spoolholders setup



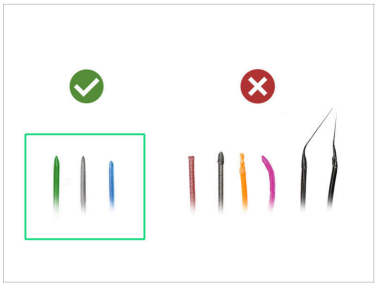
Congratulations! The hardest part is over.

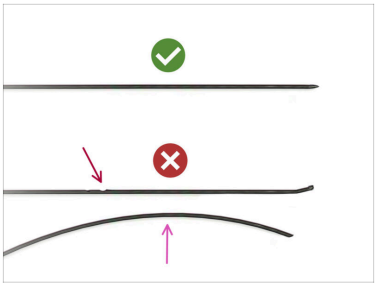
- The Buffer and spools setup in the picture is the one we will be trying to achieve. Arrange the **spool holders** and the **buffer** as seen in the picture.
  - The PTFE tubes should go from the spoolholders to the buffer. Then, from the buffer to the back of the MMU.
  - Connect the PTFE tubes from the buffer onto each of the spool holder.

Note the spool holder positioning. It is important that filament has **as straight path as possible** and that nothing interferes. PTFE tubes should **not be bent too much**. Otherwise, the filaments will jam.

11. Primer comienzo

PASO 1 Filament preparation



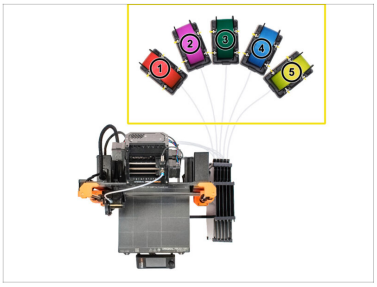


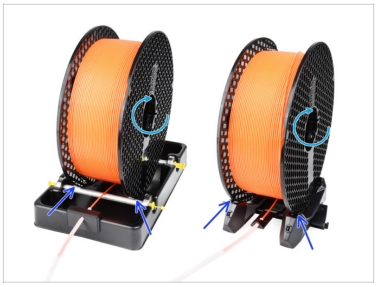
¡Ahora podemos cargar los filamentos e imprimir el objeto de prueba! Pero antes;

- Prepara al menos **cinco filamentos de PLA diferentes** y **corta los extremos** para formar una **punta afilada** en cada uno - como se ve en la imagen.
- Los filamentos deben tener una **punta afilada** para poder cargarse correctamente tanto en la MMU como en la impresora. Si la punta está deformada, doblada o tiene un diámetro mayor, no se cargará correctamente.
- Inspecciona los últimos **40cm** (15") de cada filamento. Asegúrate de que no está **sin deformaciones** en ella. A veces, si el filamento se atascó antes, la rueda de la polea hace una hendidura en él. Esta parte del filamento ya no puede ser agarrada y movida por la unidad MMU y debe ser cortada.
- Si el extremo del filamento está doblado, enderézalo. **Debe estar perfectamente recto.**

Utiliza únicamente filamento de alta calidad con una desviación de diámetro baja garantizada. En caso de que tenga problemas de carga/descarga de filamento en el futuro, vuelve a revisar este paso también. Asegúrate de que el filamento está seco. Los filamentos sensibles a la humedad pueden ser problemáticos durante el funcionamiento de la MMU.

PASO 2 Suggested filament layout

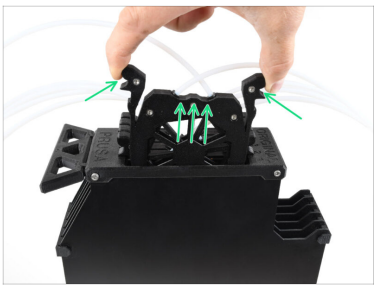
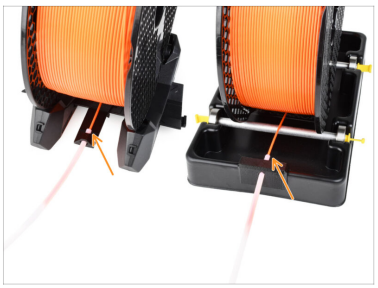
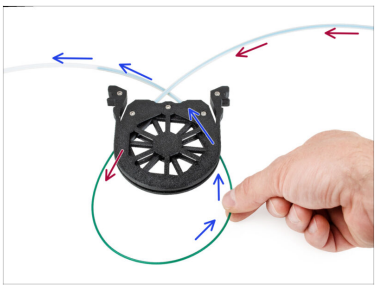




- Coloca los cinco filamentos en los portabobinas. Asegúrate de que las bobinas no interfieran entre sí.
- Ajusta cada portabobina de forma que la bobina encaja correctamente en los rodillos.
- Verifica que el bobina **puede girar libremente** y que nada interfiere.

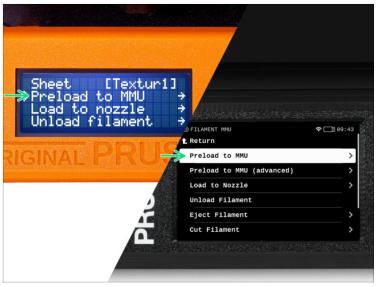
ⓘ Ten en cuenta que la MMU3 funciona con varios modelos de impresoras, por lo que las piezas de las imágenes pueden parecer ligeramente diferentes de las suyas. Sin embargo, los pasos generales son los mismos.

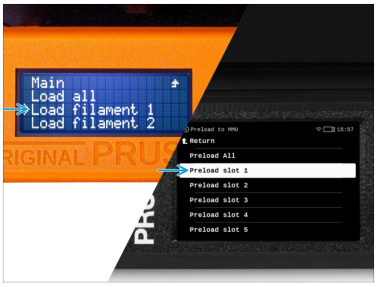
PASO 3 Loading a filament through the buffer

- Take the cassette for **filament 1** out of the buffer.
- Insert the **tip of the filament** into the bottom PTFE tube attached to the spoolholder.
- Keep pushing the filament into the PTFE tube until it appears in the corresponding buffer cassette.
- Take the tip and insert it through the cassette into the other PTFE tube, which goes into the MMU unit. Don’t push it all the way into the MMU yet.

PASO 4 Preloading a filament to MMU

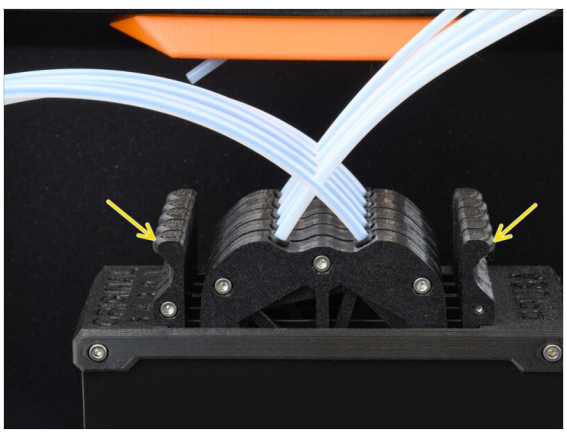




- On the printer, go to the **Filament -> Preload to MMU** (Menu -> Preload to MMU on MK3S/+)
- Select **Filament slot 1**. The MMU unit will engage the idler into the first position and start rotating the pulley until the filament is loaded in.
- Keep pushing the corresponding filament end into the PTFE tube from the buffer into the MMU, until you feel the filament being pulled in.

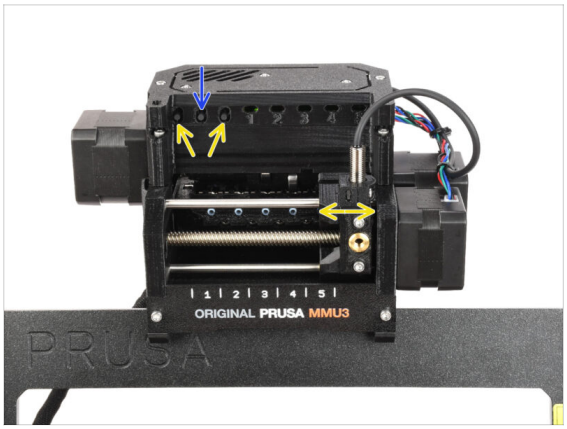
⚠ Remember, the filament tip must be straight and sharp in order to load it properly.

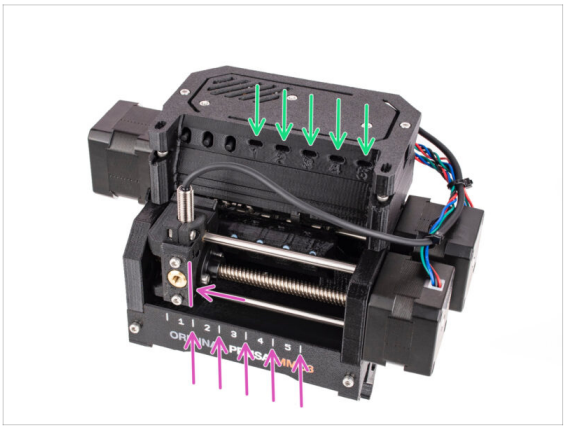
PASO 5 Closing the buffer



- After a given filament is successfully loaded into the MMU, return its cassette back into the buffer.
- Repeat the same process for the other filament positions, until you successfully load **all five filaments** into the MMU.

PASO 6 Pro tip: Loading using the buttons.



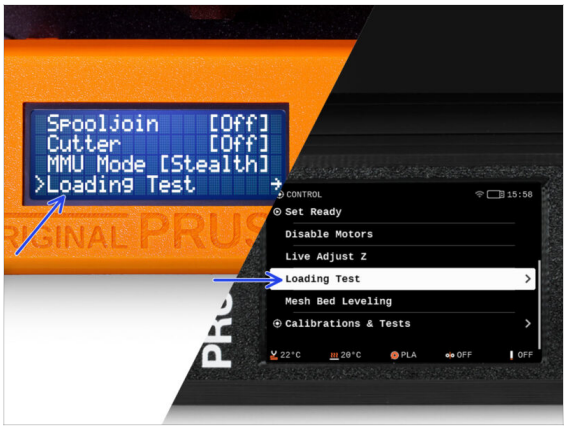


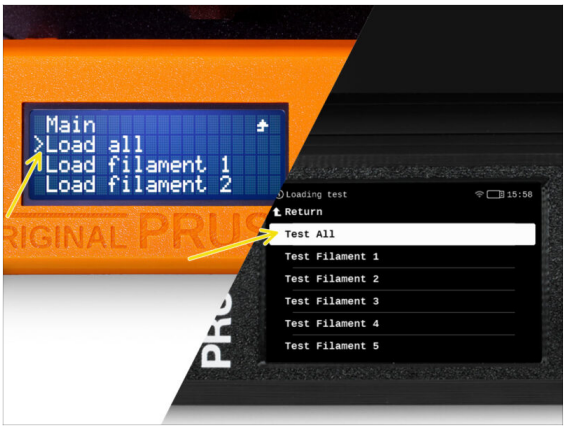
- También puedes cargar un filamento en la MMU utilizando los botones de la unidad. La próxima vez que cargues un filamento, utiliza el método que prefieras. Ya sea desde el menú LCD, o utilizando los botones físicos.
  - **Mientras la MMU está inactiva**; (indicado por TODAS las luces LED APAGADAS)
  - **El botón central** inicia o aborta la carga de filamento en la MMU.
  - Los **botones laterales** mueven el selector a izquierda y derecha para cambiar las posiciones del filamento.
- Utiliza los botones laterales para desplazar el selector a la posición de filamento deseada, indicada por la alineación del selector con una de las líneas de la placa de identificación.
- The ongoing **loading** process is indicated by a **blinking green LED** light for the respective filament position.

ⓘ **Stable green LED** light means the given filament is loaded to extruder.

Note, after you issue a command to the MMU unit, wait and let it finish the operation. Don't rush. Don't play around with the printer in the meanwhile. **Let it finish first if the MMU unit does something (homing, loading, unloading).**

PASO 7 Test de Carga (parte 1)





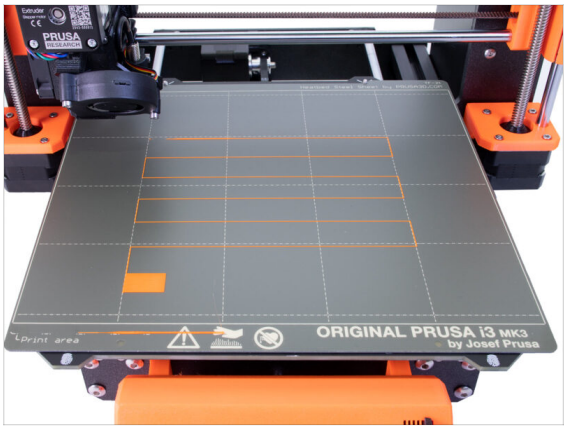
- Go to the **Control > Loading test**
  (Menu > Settings > Loading Test on MK3S/+)
- Select the filament type to preheat (PLA)
- Select **Test All** / Load all
  Or test all the filaments from 1 to 5 manually

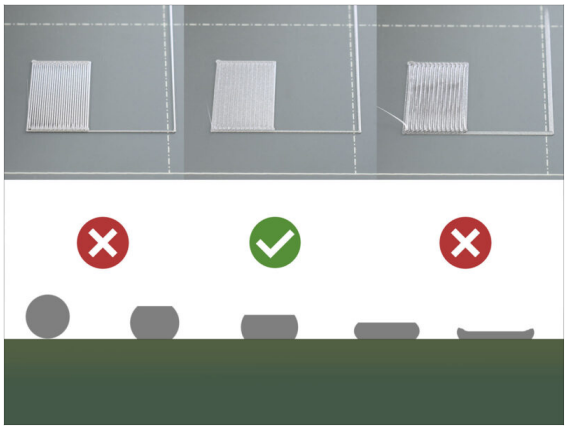
The MMU unit will now load and then unload all five filaments to see if all work correctly.

PASO 8 Test de Carga (parte 2)

- You can check the **filament sensor** status in the "**footer**" area of the LCD screen to see if it's detecting the filament correctly.
- On **MK3S+,** while loading a filament into the extruder, the loading check displays **solid blocks** at the bottom of the LCD if the IR filament sensor detects filament.
  - If **lines** appear instead of solid blocks, the filament sensor in the extruder is providing an intermittent reading and **may require additional tuning.**
  - En caso de que fallen varios reintentos de carga, aparecerá una pantalla del error correspondiente.

PASO 9 Calibración del eje Z y de la primera capa (opcional)

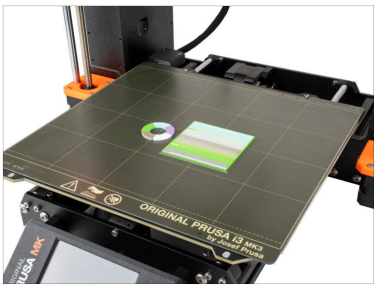


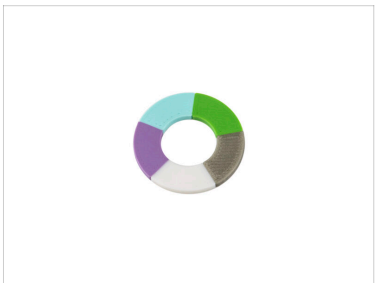


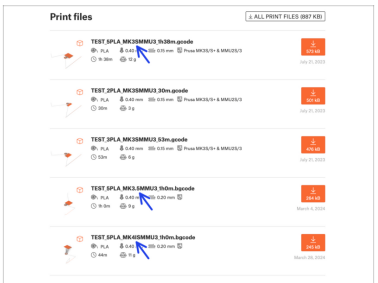
⚠ **IMPORTANT:** This step is necessary for the **MK3S+ / MK3.5** if you worked on the extruder head previously. If you only upgraded the old chimney to the new one, you can skip to the next step and use the **Live Adjust Z** function as usual to fine-tune the first layer.

- Go to **LCD Menu - Calibration - Calibrate Z.**
- A continuación, ejecuta la Calibración de la primera capa.

PASO 10 Printing a test object



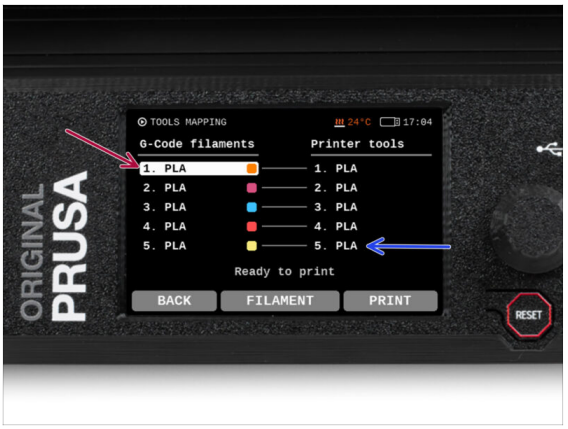




ⓘ We need to print a test object to verify that everything works correctly. Don't worry, it will be a quick print.

- Visit MMU3 Test objects on Printables.com
  - In the Print files section, download a G-code file pre-sliced for your **printer model.**
  - Save the **.gcode** or **.bgcode** file onto a storage media and print the test object.

PASO 11 Mapeado de cabezales (CORE/ MK3.5 / MK4S)



- When you start a print, the **Tools Mapping** screen appears. This allows you to reassign the extruders with the specified color to another one as needed.
  - On the left side, you'll see a list of the required materials and their colors, as specified in the G-code file.
  - On the right side, you'll find a list of materials currently available on the printer, that will be used to print the object.

  For example, if the G-code requires orange filament in the first position, but you have orange loaded in the fifth position, select the first position on the left menu and then assign it to the fifth position on the right.

  Toca dos veces las posiciones de filamento o utiliza el codificador para seleccionar el número del filamento.

PASO 12 Printable 3D models

- To further test your new MMU3, have a look at MMU3 Test Objects Collection on Printables.

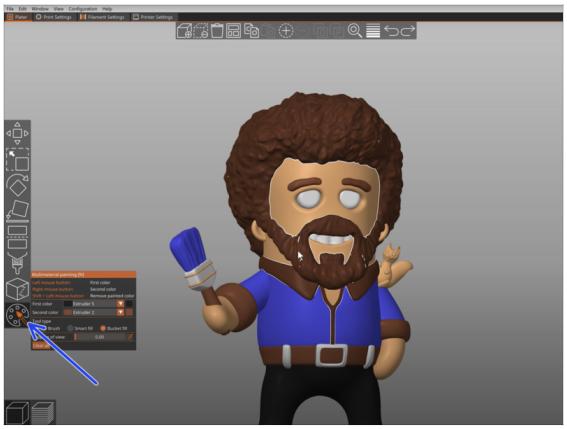
  We recommend printing the cute sheep, which has been the MMU mascot since the beginning.

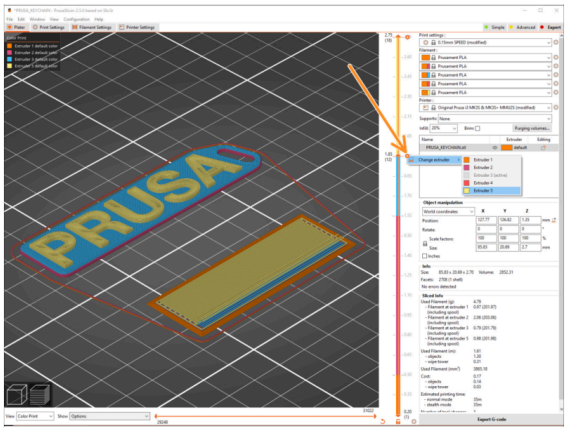
PASO 13 Print & Follow the Handbook.

- Start the print and wait until it finishes. In the meantime you can take a look at the **printed Handbook**.
- All the information regarding calibration, how to organise the printer, buffer, spools, or troubleshooting tips are all in the printed or online Handbook.

  To download the **Handbook** or if you encounter any issues, please visit our knowledge base at: http://help.prusa3d.com/en/tag/mmu3/
- If you are having any issues while printing, follow the on-screen instructions or visit the link from the LCD screen.

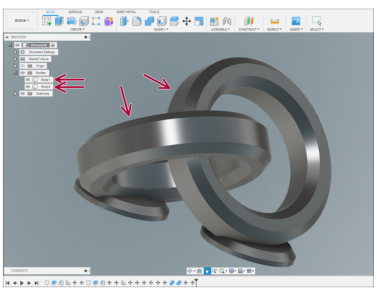
PASO 14 Preparación del código G / preparación de modelos personalizados.

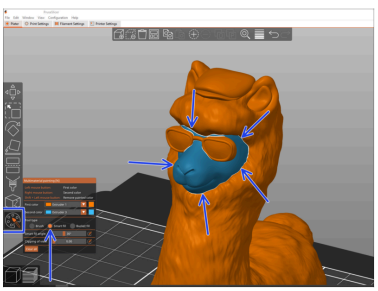


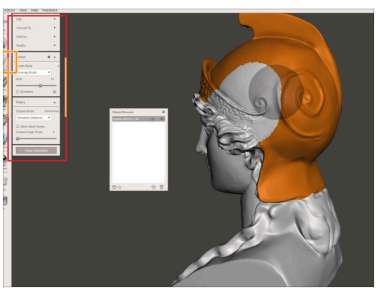


- Already printed all the bundled multi-material models from us as well as those seen at http://Printables.com? **Time to print your own designs!**
- The simpliest way of making a single-body object colorful is the MMU Painting function in PrusaSlicer.
- Basic steps for the manual method are described in our G-code preparation for multi material print section.
- For printing logos or text labels, you might also find the automatic color change at a given layer height useful. Simply, slice an object, select a certain layer height, click the small orange "+" icon next to the height marker and select the desired MMU filament position (Extruder number).

PASO 15 Creando tus propios modelos 3D Multi material

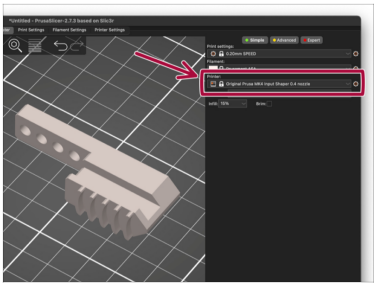
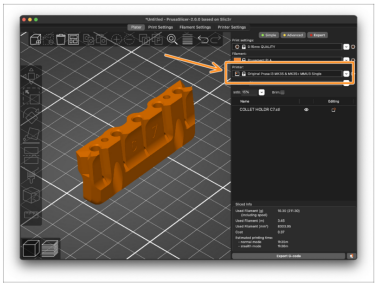
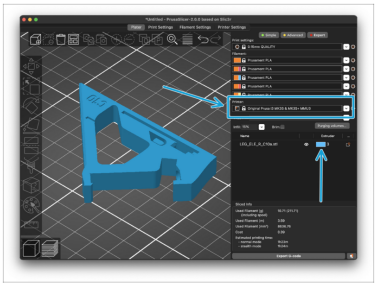






- If you have designed a model with multiple bodies, you may find the Exporting model from Fusion 360 guide useful.
- If you are designing a single-body model, part of which should be MMU-Painted, make sure there is a sharp line surrounding each distinct part so that you can use the **MMU Painting**'s **Smart-fill** function later on in **PrusaSlicer**.
- If you have an intricate STL file that can't be MMU-Painted easily, you can try the more sophisticated way of Splitting STL with single compact part or Splitting STL into multiple parts using MeshMixer.

PASO 16 MMU Single material operation

Did you know that MMU3 unit can also be used to make **single-material printing** more convenient too?

- Puedes dejar hasta cinco de tus materiales favoritos cargados en la unidad MMU.
  - En la **CORE**/MK3.5/MK4S, utiliza el perfil normal **CORE**/MK3.5/MK4S, al laminar. La impresora te permitirá elegir qué filamento utilizar.
  - En la **MK3S+**, lamina un objeto con el perfil MMU3 Single y comienza la impresión. Luego, elige qué filamento usar desde el LCD.
- If you know which of the five materials to use already while slicing, you can use the **MMU3 profile** and assign a single color (Extruder number) to the object.
- If a filament runs out, your print can continue automatically using the **SpoolJoin** function. For more information, refer to the SpoolJoin article.

PASO 17 Date un capricho

We know you've been waiting for this! Sounds like a well-deserved break! Enjoy those Haribos and watching your printer in action. By the way, what are you printing?

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