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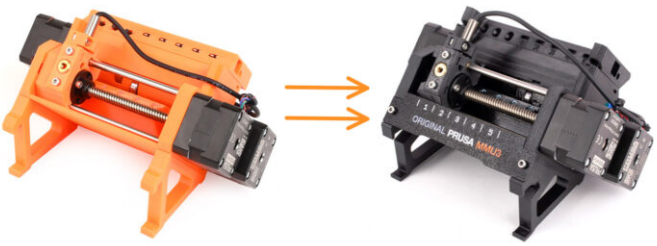
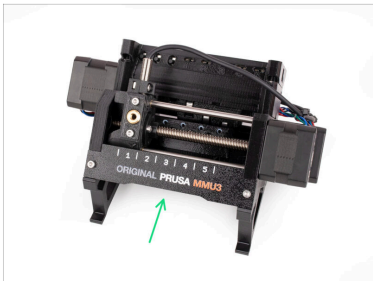
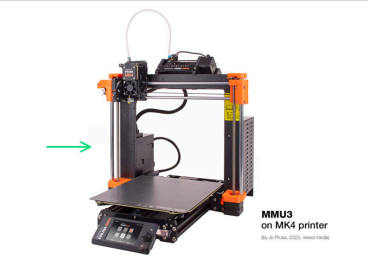
1. MMU Upgrade Intro



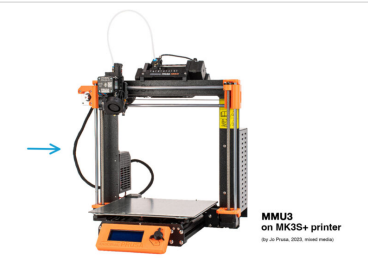
PASO 1 MMU History and Printer Compatibility





- **Welcome to the MMU3 guide!** There were several generations of the Original Prusa Multi-Material printing solution. Verify you are looking at the correct guide for your MMU unit and your printer.
  - MMU1 for MK2 and MK2S printers (introduced in 2016-2018)
    It used four separate extruders feeding one nozzle.
  - MMU2 for MK2.5 and MK3 (2018-2019) *Five filaments feeding one direct-drive extruder.*
  - MMU2S for MK2.5S, MK3S, MK3S+ (2019-2023)
    Introduced a chimney on the extruder with the IR-filament sensor.
    This is the version we are going to upgrade from.
  - **And finally, the current model:**
    MMU3 for MK3S+, MK3.5/S, MK3.9/S and MK4/S.
    This is the version we are going to upgrade to.

PASO 2 Supported printers



- La Original Prusa Multi-Material **MMU3** solo es compatible oficialmente en combinación con estos modelos de impresora:
  - Prusa **CORE One**
  - Original Prusa **MK4/S** and **MK3.9/S**
  - Original Prusa **MK3.5/S**
  - Original Prusa i3 **MK3S+**

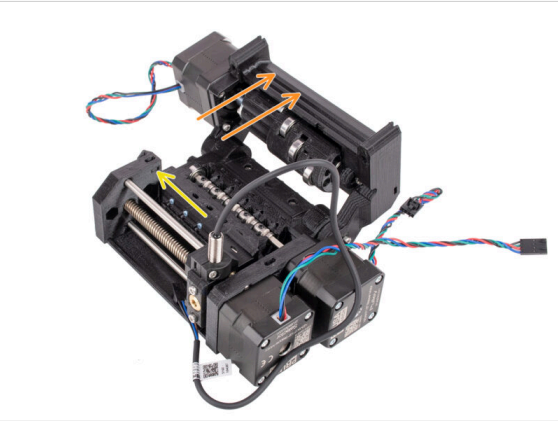
ⓘ Para más información, visita el artículo de Compatibilidad MMU3.

PASO 3 MMU3 + Enclosure

The MMU3 is also supported with the Original Prusa **Enclosure** for the classic printer models.

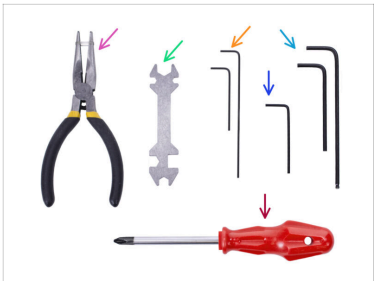
- If you plan to use this combination, **install the MMU3.** Then, continue to the Enclosure assembly guide.

PASO 4 Disclaimer



- **Asegúrate de que tu impresora** está completamente montada y **funciona perfectamente** antes de proceder a acoplarle la MMU3. Realiza algunas impresiones de un solo material. Si tienes algún problema, soluciónalo primero. Diagnosticar los problemas de la impresora puede ser más difícil con la MMU acoplada.
- A medida que te embarques en el proceso de montaje, no podemos insistir lo suficiente en la importancia de seguir cuidadosamente todos y cada uno de los pasos.

PASO 5 Tools required



- Las **herramientas necesarias** para el montaje del Kit MMU3 están disponibles como un **paquete opcional.**
  - Needle-nose pliers (1x)
  - Universal wrench (1x)
  - Philips PH2 screwdriver (1x)
  - Allen key 1.5mm (2x) *the short and long one*
  - Allen key 2mm (1x)
  - Allen key 2.5mm (1x) *the short and ball-end long one.*

For some steps, we recommend having the following extras:
- A measurement tool, preferably a caliper or digital caliper Or - you can print one.
- Flush cutters, which can be useful during assembly.

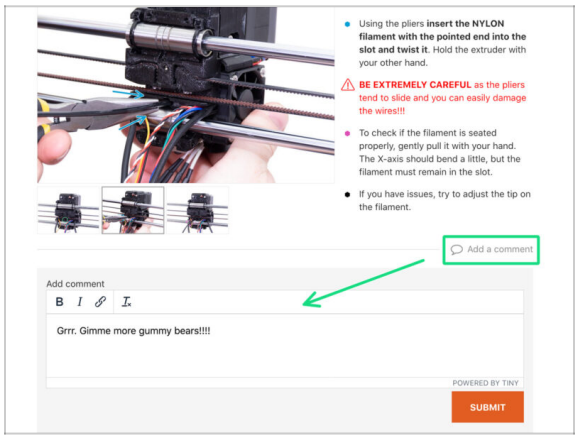
PASO 6 Ver imágenes de alta resolución

- Cuando utilizes el manual en la web help.prusa3d.com, puedes ver las imágenes originales en mayor resolución para mejor claridad.
- Just hover your cursor over the image and click the Magnifier icon ("View original") in the top left corner.

PASO 7 Labels guide

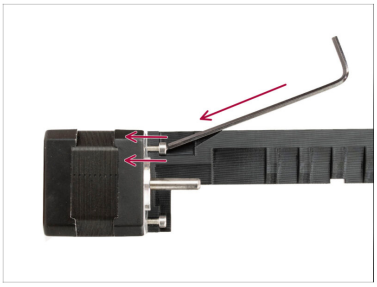
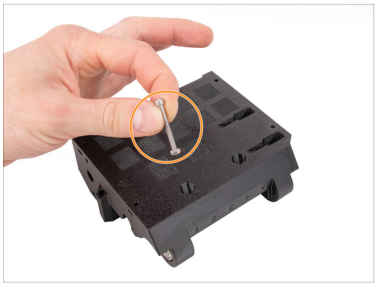
- All the boxes and bags containing the parts for the build are labeled.
- Most of the part drawings on the labels are scaled 1:1 and can be used to identify a part.
- You can download and 2D print a Prusa Cheatsheet with the 1:1 scaled fastener drawings. help.prusa3d.com/cheatsheet. Print it at 100 %, don't rescale it, otherwise, it won't work.

PASO 8 ¡Estamos aquí para atenderte!



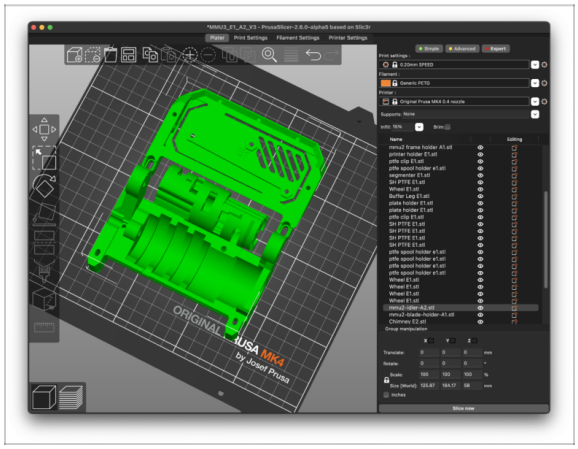
- ¿Estás perdido en las instrucciones, falta el tornillo o la pieza impresa está rota? **¡Háznoslo saber!**
- Puedes contactar con nosotros empleando los siguientes medios:
  - Using our 24/7 live chat
  - Or by writing an email to info@prusa3d.com
  - Or, you can use the comments under each step.

PASO 9 Consejo pro: introduciendo las tuercas

- Durante el montaje del kit MMU3, algunos tornillos deben apretarse con una llave Allen acodada. Asegúrate de que el tornillo quede perfectamente perpendicular a la rosca. Si te resulta difícil girarlo, suéltalo por completo, vuelve a alinearlo y comienza de nuevo para evitar roscas cruzadas.
- Para aberturas profundas, utiliza un tornillo largo como el M3x30 como asa para ayudar a colocar la tuerca.
- If a hex nut won't fit, use a fully threaded screw (e.g., M3x10, M3x18) and insert it from the opposite side to drive the nut into place.

PASO 10 Piezas impresas



- If you ordered the MMU3 Kit without plastic parts, you will need to print them using the pre-sliced G-codes before you can proceed with the assembly.

  ⚠ Las piezas **deben estar impresas perfectamente** para que la MMU3 funcione correctamente: sin deformaciones ni esquinas levantadas, hilos u otras irregularidades.
  Si no puedes garantizar que las piezas estén impecables, adquiere en su lugar el kit MMU3 con las piezas de plástico impresas en fábrica.

- En caso de que algunas piezas se rompan durante el montaje, puede volver a imprimirlas. Verifica todas las piezas de plástico antes de comenzar su construcción para asegurarse de que no haya problemas.
- The MMU3 printable parts are available at Prusa3D.com Printables profile
  More info is available at: Prusa3D.com/prusa-i3-printable-parts/

PASO 11 Prepare your desk

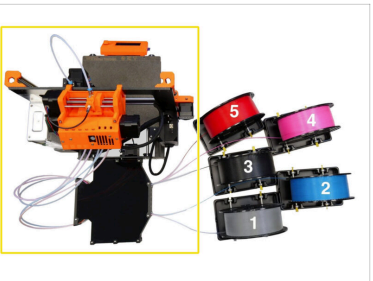
- ¡Ordena tu escritorio! Ordenar disminuye la probabilidad de perder piezas pequeñas.
- **Clear your workspace.** Make sure you have enough room. A nice clear flat workbench will get you the results you are aiming for.
- **¡Que haya luz**! Asegúrate de que estás en un entorno bien iluminado. Otra lámpara o incluso una linterna adicional probablemente te resulten útiles.
- Prepara algo para guardar las bolsas de plástico y los materiales de embalaje retirados para poder reciclarlos después. Asegúrate de que no se desecha ninguna pieza importante.
- OK, we are ready. Let's start!

PASO 12 Continue

- Para la **actualización MMU2S a MMU3**, continua con el capítulo:
  - 2. MMU2S Disassembly (UPG)

2. Desmontaje MMU2S (UPG)

PASO 1 Introduction



- En este capítulo, tendremos que **desmontar la unidad MMU2S** parcialmente y coger algunas piezas clave que se utilizarán para el montaje de la **MMU3**.

⚠ Asegúrate de que la impresora MMU está apagada y desconectada. Descarga todos los filamentos tanto de la impresora como de la unidad MMU.

  - If there is a filament loaded in the extruder, use the **Unload filament** function in the menu.

- In the upcoming steps, we'll start by detaching the MMU unit from the printer and disconnecting the buffer from it.

Presta mucha atención a la descripción. Cuando se te indique, aparta los componentes de la MMU2S. Las piezas específicas se volverán a utilizar en un paso posterior.

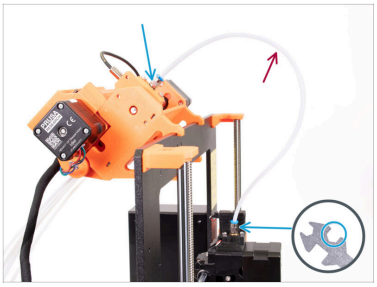
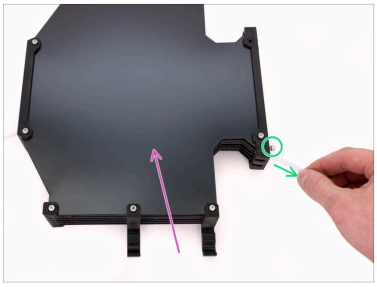
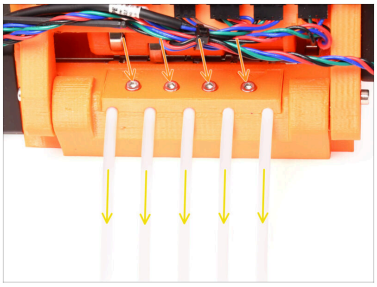
ⓘ Mantén un espacio de trabajo bien organizado para evitar mezclar las piezas antiguas con las nuevas. **Aunque algunos componentes nuevos puedan parecerse a los antiguos, en realidad son distintos.** Ten en cuenta que algunos componentes no deben reutilizarse para el MMU3, mientras que otros son necesarios para la actualización.

PASO 2 Herramientas necesarias para este capítulo

- **Por favor prepara las herramientas para este capítulo:**
  - Needle-nose pliers
  - Unikey to loosen the Festo fittings
  - Llave(s) Allen de 2.5mm para tornillos M3
  - Phillips screwdriver for power cable terminals

ⓘ Puedes usar tus propias herramientas si las encuentras más adecuadas.

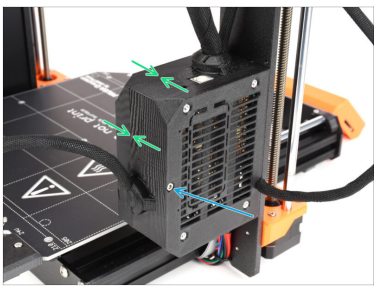
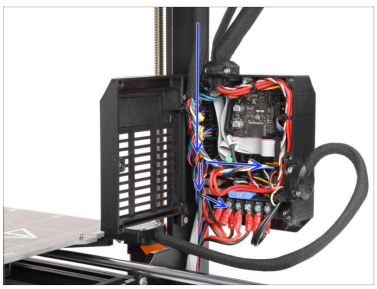
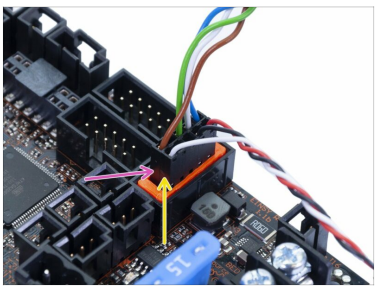
PASO 3 Disconnecting the PTFE tubes

- Unscrew the M5-4 fittings from both the printer and the MMU unit. If the fittings are tight, you can use the Unikey or an 8mm wrench.
- Keep the PTFE tube with the fittings aside for disassembly later.
- We will have to disconnect the buffer from the MMU unit.
  - Loosen all the screws on the buffer securing the PTFE tubes connected to the MMU unit. Remove all five tubes by pulling them out.
  - **Keep the buffer** for a later disassembly in the next chapter.
- On the back of the MMU unit, slightly loosen the four screws holding the rear-PTFE holder.
- Remove all five PTFE tubes and **dispose of them immediately. These tubes will not be used again for MMU3.**

⚠ **MMU3 is designed to work with differently-sized PTFE tubes.** Reusing MMU2S tubes during the assembly of MMU3 will result in incorrect operation.

PASO 4 Disconnecting the MMU2S (part 1)

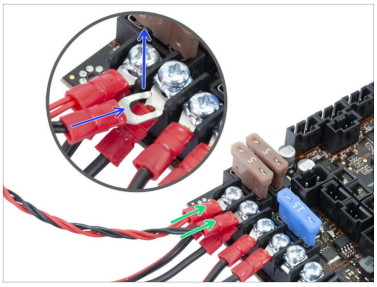




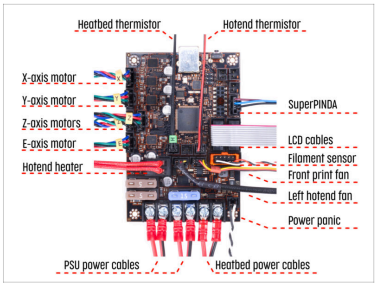
- Loosen the M3x40 screw on the printer's electronics box.
- Open up the electronics box.
- From the MMU, you'll see a **data cable** along with two **power cables**, all connected to the Einsy control board of the printer.

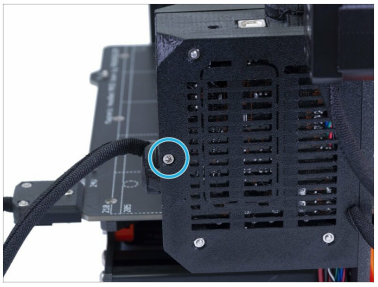
⚠ Never move, connect, or disconnect cables while the printer is powered on. Doing so can cause damage to the electronics.

- Begin by disconnecting the MMU data cable.
  - Be careful not to disconnect the Filament sensor cable located just below the MMU data cable.

PASO 5 Disconnecting the MMU2S (part 2)

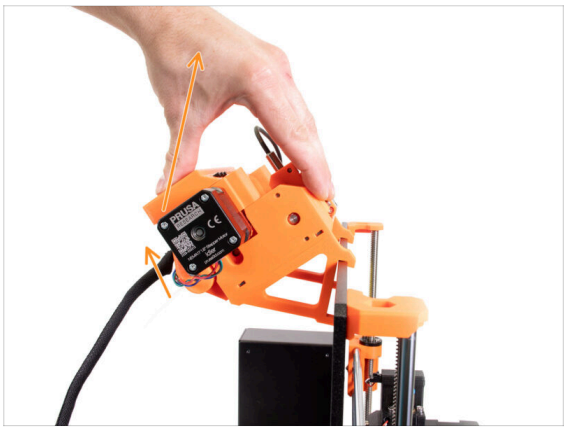


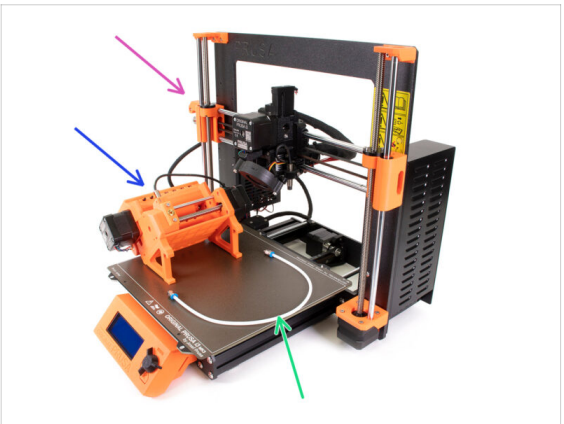




- With a Philips screwdriver, gently loosen the two power terminals located on the bottom left side of the Einsy board.
- The MMU power cable fork connectors are stacked over the main power supply connectors for the Einsy. Remove only the MMU's fork connectors individually, leaving the main supply connectors in place.
- Using the Philips screwdriver, thoroughly **secure the power terminals** with the MMU disconnected. Confirm that all connections match the picture.
- Take out the MMU cable bundle from the electronics box. Close the box and secure it using the M3x40 screw for now.

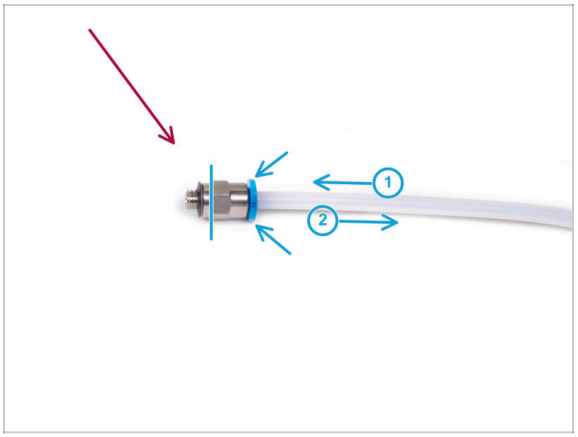
PASO 6 Removing MMU2S from the printer





- The MMU2S unit has been successfully disconnected.
- Raise the rear of the unit to detach the holders from the printer's frame. Then, remove the MMU from the printer.
- You can set the printer aside for now.
- We can move onto disassembling the MMU2S unit itself.
- For the following step, please prepare the **MMU-to-Extruder PTFE tube with the Festo fittings QSM-M5** attached.

PASO 7 MMU-to-Extruder PTFE tube disassembly



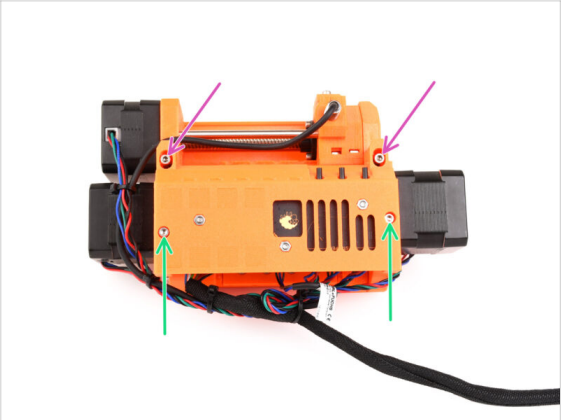
- Take the MMU-to-Extruder PTFE tube with the M5-4 fittings.
- Remove both fittings from the old PTFE tube.
  - Hold the fitting by the metal part and press the collet in. While the collet is pressed, first press the PTFE tube in, then pull it out entirely.

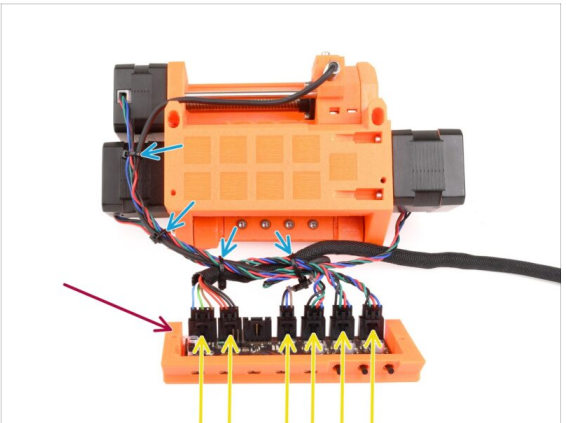
⚠ **MK3S+ & MK3.5/S owners: Save the fittings** for later use. **Discard the PTFE** tube so you don't confuse it with a new one later on!

⚠ **MK4/S & MK3.9/S owners:** Throw the fittings and the PTFE tube away now! Your package includes new ones! Mixing them may lead to issues!

⚠ **MMU3 is designed to work with differently-sized PTFE tubes.** Reusing MMU2S tubes during the assembly of MMU3 will result in incorrect operation.

PASO 8 MMU2S Unit disassembly





- Retira los dos tornillos M3x18 que sujetan la electrónica en la parte superior de la unidad.
- Retira los dos tornillos M3x30 del tensor con los muelles.
- Retira el conjunto de la placa electrónica de la unidad.
- Desconecte todos los cables de la placa electrónica. Recuerda que cada conector tiene una pestaña de seguridad que hay que empujar para poder desconectar un conector. Aparta el conjunto de la placa.
- Corta con cuidado la brida que sujetan los cables juntos.

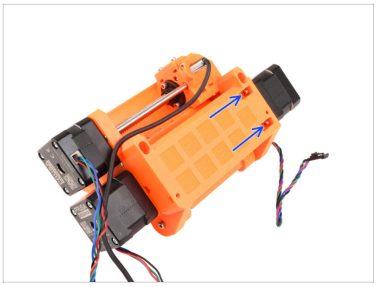
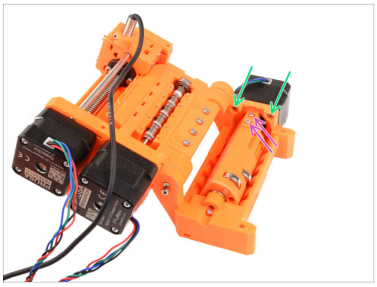
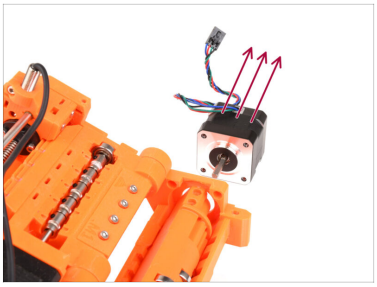
⚠ ¡Ten cuidado de no dañar los cables!

PASO 9 Textile wrap removal

- Separate the power and data cable bundle from the rest of the cables.
- Remove the textile wrap off the cables and **save the textile wrap for later use**.

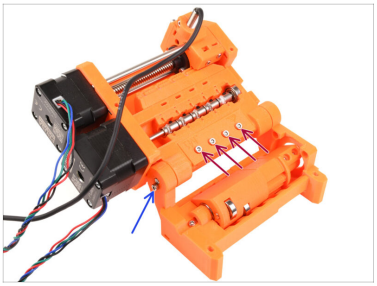
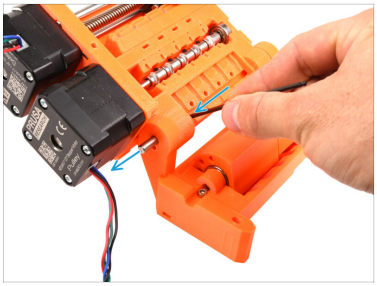
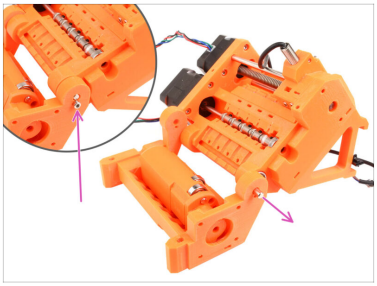
ⓘ The MMU2S power and data cables won't be used in MMU3.

PASO 10 Idler motor removal

- Usando el final en bola de la llave Allen en ángulo, retira los dos tornillos M3x10 de la parte superior que sujetan el motor tensor.
- Abre el cuerpo del tensor y retira los dos tornillos M3x10 que aseguran el motor por el otro lado.
- Retira los dos tornillos M3x10 que sujetan el eje del motor a la polea tensora.
- Saca el **motor tensor** de la unidad. **Guárdalo para un uso futuro.**

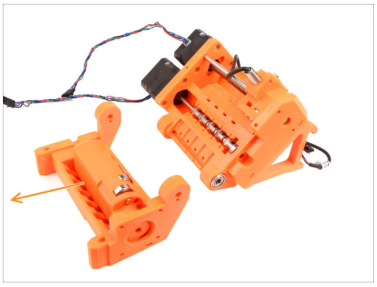
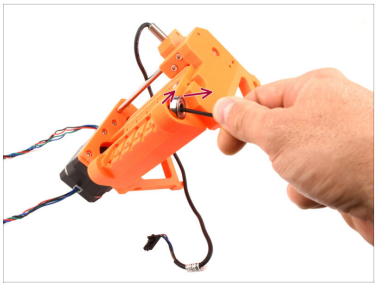
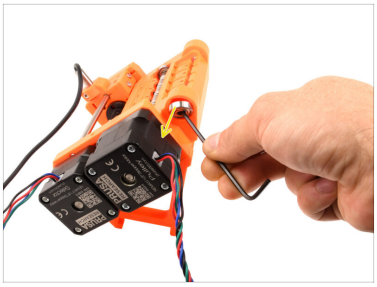
PASO 11 5x16sh shafts removal

- Remove the four M3x18 screws holding the Rear-PTFE holder. Remove the holder as well as all the PTFE tubes underneath.
- Remove the M3x10 screw on the side securing the 5x16sh shaft.
- Using the shorter side of the 2.5mm Allen key, push the **5x16sh shaft** from the inside out.
- Repeat the same process on the other side. Remove the M3x10 screw and push the 5x16sh shaft outward.

ⓘ **Save the 5x16sh shafts for later use.**

PASO 12 Bearings removal

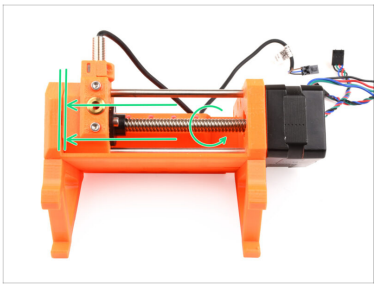
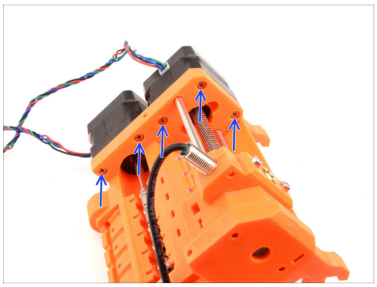
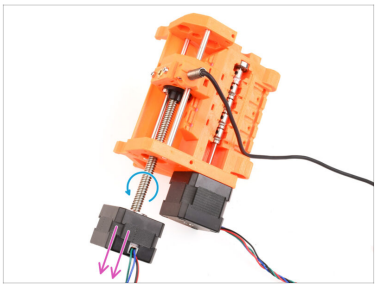
- Remove the Idler body with the Idler.

  These components are no longer needed. However, they contain valuable spare parts inside. Disassembling them can be challenging, so we won't do it at this point.

- Using the Allen key, tilt the **625ZZ bearing** on the right side of the Pulley body in order to remove it.
- Using the same technique, remove the bearing on the other side too.

Save both the 625ZZ bearings for later use.

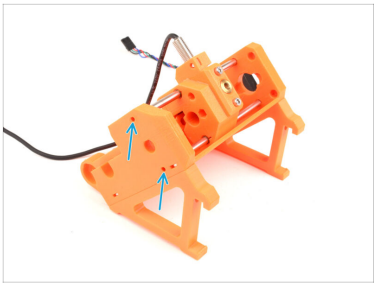
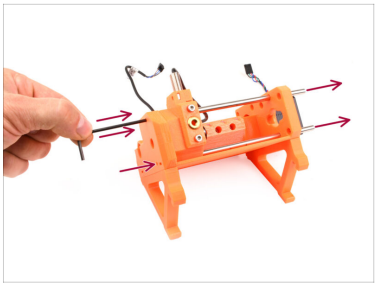
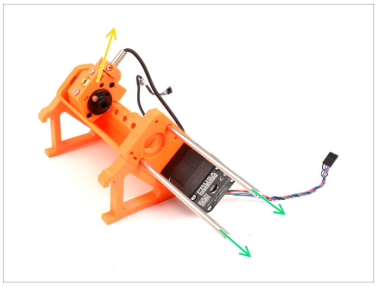
PASO 13 Selector motor removal

- Girando el eje del motor del selector, desplaza el selector completamente hacia el lado izquierdo.
- Con la llave Allen de 2.5 mm, retire los **cinco M3x10 tornillos** sujetando los motores.
- Gira un poco más el eje del motor para desengancharlo del selector.
- Tira del motor selector para extraerlo de la unidad.

Save the motor for later use.

PASO 14 Selector removal

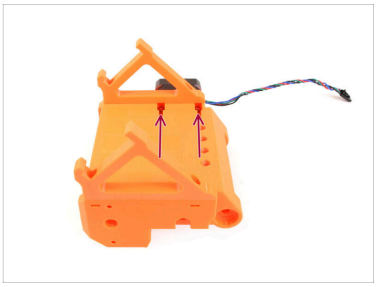
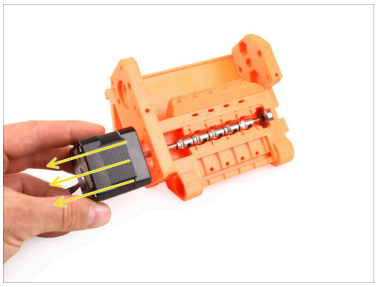
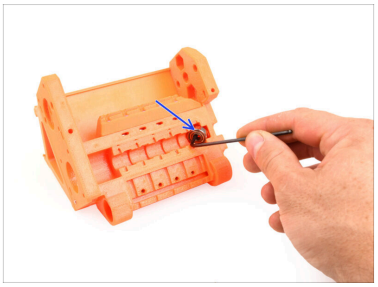




- Hay dos aberturas en el lateral de la unidad. A través de ellas se ven los extremos del eje selector.
- Inserte la llave Allen en las aberturas para empujar ambos ejes hasta el fondo.
- Pull out both the **5x120sh shafts** and **save them for later use.**

  ⚠ Si optas por utilizar los alicates de punta fina para extraer los ejes, tira de ellos mientras realizas un movimiento giratorio. **¡Ten cuidado de no arañarlos!**
- Levanta el **selector** y extráelo de la unidad. Déjalo a un lado por ahora, ya que seguiremos desmontándolo.

  ⚠ En la parte posterior del selector hay una cuchilla afilada. Procede con cuidado para evitar lesiones.

PASO 15 Pulley motor removal

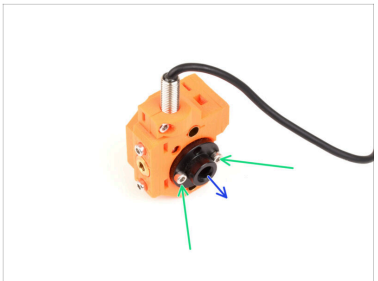
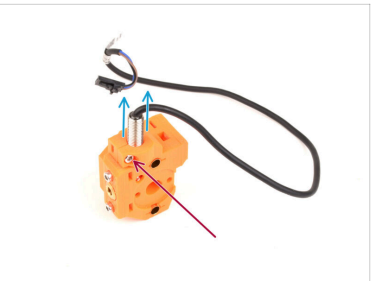




- Dale la vuelta a la unidad.
- En la parte inferior, retira los tornillos M3x10 restantes que sujetan el motor de la polea.
- Retira el **motor de polea** de la unidad.

ⓘ **Save the motor for later use.**

- Using the Allen key, tilt the pulley **bearing** in order to remove it. **Save it for later use too.**

PASO 16 Selector disassembly

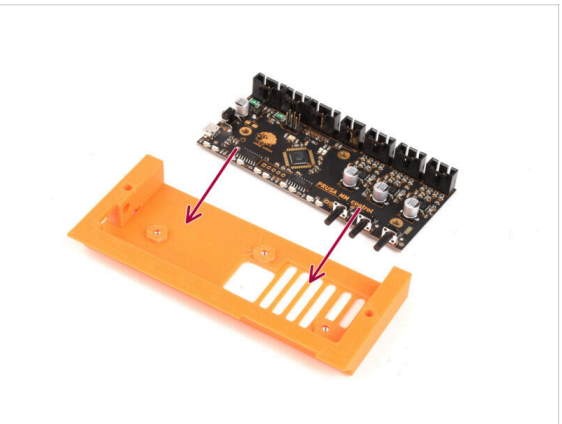



- Remove the two M3x10 screws holding the trapezoid nut.
- Remove the trapezoid nut and **save it for later use.**
- Retira el tornillo M3x10 del lateral del selector.
- Remove the **FINDA / SuperFINDA sensor** and **save it for later use.**
- Una bola de acero caerá del selector.

  ⚠ La bola no es magnética y **no se reutilizará.** Utilizaremos una magnética más adelante. Apartala a un lado para no confundirla con la nueva.

- You don't need the other parts in the selector anymore, but you can keep them as spares.

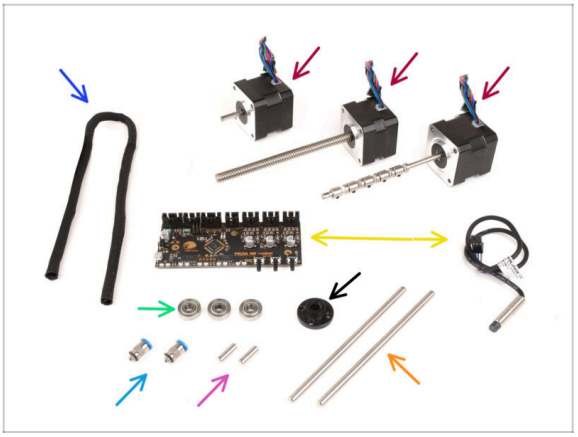
PASO 17 Control board disassembly



- Prepare the electronics board assembly.
- Retira con cuidado los tres tornillos M3x6 que sujetan la placa electrónica.
- Afloja suavemente la placa electrónica del conjunto, pero no la saques del todo todavía. **Mantén la placa de control dentro de la pieza de plástico** para salvaguardarla de cualquier daño, por ahora.

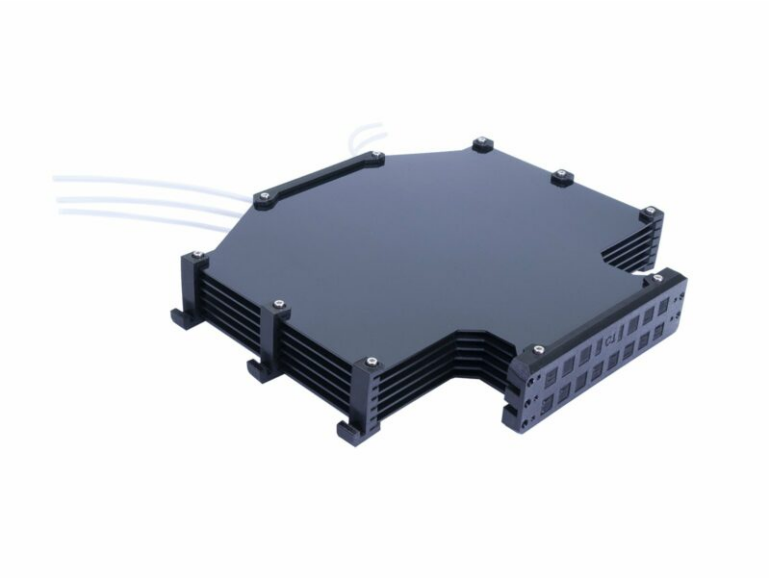
⚠ Handle the board by its sides to avoid damage. Be careful around the electronics, do not touch the individual components on the board. Remember that the board is sensitive to electrostatic discharge (ESD).

PASO 18 Summary

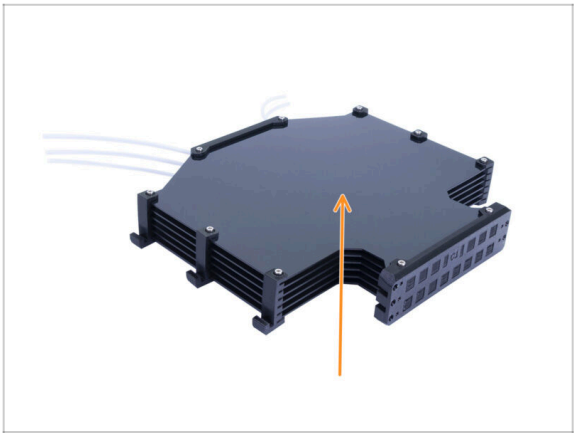


- **Here's a summary of the parts to keep for later use:**
  - Textile sleeve 450x5 (1x)
  - Stepper motor (3x) *Idler, Selector and Pulley motor (with pulleys still attached)*
  - Electronics: the control board (1x) and FINDA/SuperFINDA sensor (1x)
  - 625 bearing (3x)
  - Trapezoid nut (1x)
  - M5-4 Fittings (2x)
    - ⓘ Estos racores solo son necesarios para la versión MK3S+. Si estás montando la versión MK4, ¡utiliza los nuevos racores suministrados!
  - 5x16sh shaft (2x)
  - 5x120sh shaft (2x)

3. Desmontaje Buffer MMU2S (UPG)

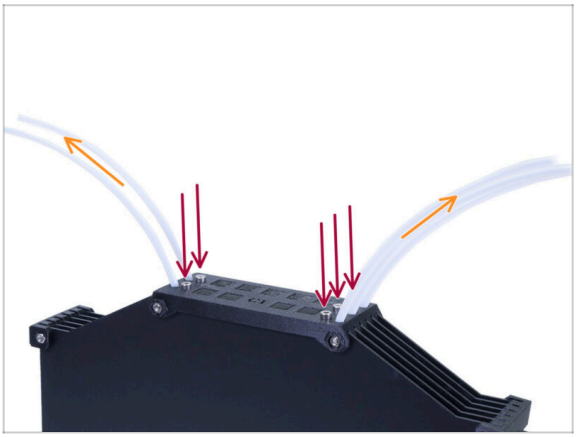


PASO 1 Preparation



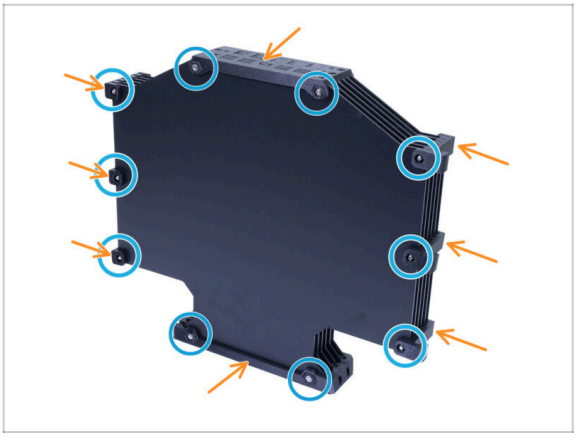
- En caso de que tengas la versión antigua del buffer en estado montado, es necesario desmontarlo primero.
- Reutilizaremos solo las **seis placas grandes de plástico** de la misma.
- Si solo tiene las láminas de plástico, pasa al capítulo siguiente.

PASO 2 Disconnecting the PTFE tubes



- Retira los tornillos **M3x10** que sujetan los tubos de PTFE en el buffer.
- Pull all the PTFE tubes out.
- Desecha los tubos para evitar que se mezclen con los nuevos en el futuro. **Estos tubos no se volverán a utilizar.**

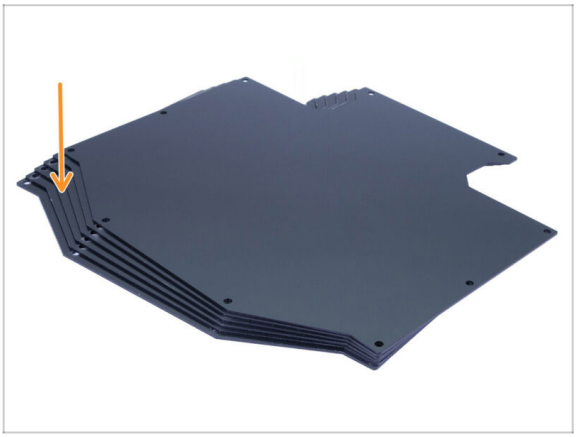
PASO 3 Buffer disassembly



- Retira los diez tornillos M3x40.
- Retira todas las piezas impresas.

⚠ Aparta las piezas impresas para que no se mezclen con las nuevas. Estas piezas no se reutilizarán.

PASO 4 Summary



Eso fue simple, ¿no?

- Del buffer desmontado, guarda los **laterales del buffer** para usarlos más tarde.

Notes:

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