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Adaptive Utensil Handles for IKEA IDENTITET
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Overview

This document contains the necessary information to build the Adaptive Utensils, a set of adjustable and interchangeable 3D printed adaptive utensil handles.

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Maker Checklist

This list provides an overview of the steps required to build and deliver the 3D Printed Adaptive Utensils.

Maker To Do List

- ☐ Read through the Maker Guide to become familiar with required components, tools, supplies, safety gear, and overall assembly steps.
- ☐ Talk to the User about customization options
    - Handle type, size, and quantity (Ellipse, Finger Grip, Finger Support-Large/Small, Rounded Grip, Sphere-Large/Small, Straight-Large/Small)
    - Number and types of core assemblies (Spoon or Fork Core)
    - Print color
    - How they would like to receive the “User Guide” (PDF or physical copy)
- ☐ Order hardware components
- ☐ Gather tools, supplies, and safety equipment.
- ☐ Assemble the device
- ☐ Test the 3D Printed Adaptive Utensils
- ☐ Print “User Guide” (if the User would like a physical copy)

Items to Give to User

- ☐ The desired handle types in the correct size and quantity (Ellipse, Finger Grip, Finger Support-Large/Small, Rounded Grip, Sphere-Large/Small, Straight-Large/Small)
- ☐ Spoon and fork core assemblies (each assembly consists of 1 core and 1 shell part)
- ☐ IKEA IDENTITET large spoon and fork utensils
- ☐ Note: All cores and handles should be tested for assembly and adjustability before giving to user, however they may be disassembled for easier transportation
- ☐ “User Guide”

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Tool List

Tools / Equipment

Tool ID	Description	Required / Recommended	Notes
T01	3D printer	Required	To manufacture the 3D Printed Adaptive Utensils
T02	Putty knife or similar scraper	Recommended	To remove small or thin parts from the build plate
T03	Flush cutters or pliers	Recommended	To remove support

Supplies

Supplies ID	Description	Quantity	Notes
S01	PLA Filament	326.53g	For 3D printing the handles
S02	PETg Filament	25.21g	For 3D printing the spoon/fork cores and the core shells

Personal Protective Equipment (PPE)

PPE ID	Description	Notes
P01	Safety Glasses	To protect eyes against occasional flying filament when removing supports

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Customization Guide

There are separate STL files for different size options of certain handle types. The handles and cores may be printed in the user's desired color.

3D Printing Guide

The device was originally printed on a BambuLab X1-Carbon using Bambu Studio.

Used default settings with 0.2mm layer height and a 0.4mm nozzle for both PLA and PETG filament on a textured PEI build plate. Enabled tree supports for relevant files.

3D Printing Summary

To print a full set of handles and cores (one copy of each handle file, both types of cores, and two shells)

Metrics	Single Unit
Total Print Time (hour min)	17h29
Total Number of Components	13
Typical Total Mass (g)	351.74g
Typical Number of Print Setups	5

3D Printing Settings

Note that the 3D printing material should be assumed to be PLA unless otherwise noted in the table below.

Print File Name	Qty	Total Print Time (hr:min)	Mass (g)	Infill (%)	Support (Y/N)	Layer Height/ Nozzle Diameter(mm)	Notes
Adaptive_Utensils_IKEA_Core-Fork	1	1:10	9.06	15	Y	0.2mm Layer Height, 0.4mm Nozzle Diameter	PETg
Adaptive_Utensils_IKEA_Core-Spoon	1	1:10	8.99	15	Y	0.2mm Layer Height, 0.4mm Nozzle Diameter	PETg
Adaptive_Utensils_IKEA_Shell	2	0:52	7.16	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_Ellipse	1	1:32	32.78	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_FingerGrip	1	1:34	25.65	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA

Adaptive_Utensils_IKEA_FingerSupport-Large	1	2:01	50.84	15	Y	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_FingerSupport-Small	1	2:00	50.19	15	Y	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_RoundedGrip	1	1:36	30.29	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_Sphere-Large	1	1:19	45.38	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_Sphere-Small	1	0:42	20.85	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_Straight-Large	1	1:51	48.98	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA
Adaptive_Utensils_IKEA_Straight-Small	1	1:42	25.15	15	N	0.2mm Layer Height, 0.4mm Nozzle Diameter	PLA

Post-Processing

Use flush cutters (T02) to remove tree supports from the spoon and fork cores as well as the small and large finger support handles. Inspect the 3D printed parts for any printing defects, sharp edges, or burrs. Sharp edges and burrs can be removed with sanding or deburring tools.

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Examples of Quality Prints

Compare your 3D prints to the images here. If there are significant differences, you may need to reprint the part.

Adaptive Utensil Handles		
Adaptive_Utensils_IKEA_Core-Fork	Adaptive_Utensils_IKEA_Core-Spoon	Adaptive_Utensils_IKEA_Shell
		
Adaptive_Utensils_IKEA_Ellipse	Adaptive_Utensils_IKEA_FingerGrip	Adaptive_Utensils_IKEA_FingerSupport-Large
		

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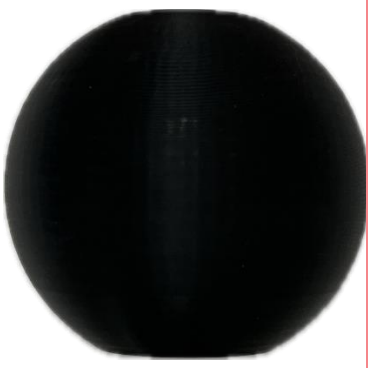
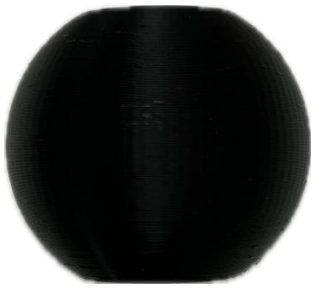
Adaptive Utensil Handles		
Adaptive_Utensils_IKEA_FingerSupport-Small	Adaptive_Utensils_IKEA_RoundedGrip	Adaptive_Utensils_IKEA_Sphere-Large
		
Adaptive_Utensils_IKEA_Sphere-Small	Adaptive_Utensils_IKEA_Straight-Large	Adaptive_Utensils_IKEA_Straight-Small
		

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Maker Component List

Adaptive Utensil Handles								
A01	Fork Core	QTY: 1	A02	Spoon Core	QTY: 1	A03	Shell	QTY: 2
								
A04	Ellipse	QTY: 1	A05	Finger Grip	QTY: 1	A06	Finger Support-Large	QTY: 1
								
A07	Finger Support-Small	QTY: 1	A08	Rounded Grip	QTY: 1	A09	Sphere-Large	QTY: 1
								
A10	Sphere-Small	QTY: 1	A11	Straight-Large	QTY: 1	A12	Straight-Small	QTY: 1

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A13	**IKEA IDENTITET FORK**	QTY: 1	A14	**IKEA IDENTITET SPOON**	QTY: 1			
								

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Assembly Guide

Assembly Section			
3D Printed Adaptive Utensil Assembly			

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Part A: 3D Printed Adaptive Utensils

Part A: Required Components

3D Printed Adaptive Utensils								
A01	Fork Core	QTY: 1	A02	Spoon Core	QTY: 1	A03	Shell	QTY: 2
								
A01	Ellipse	QTY: 1	A02	Finger Grip	QTY: 1	A03	Finger Support-Large	QTY: 1
								
A01	Finger Support-Small	QTY: 1	A02	Rounded Grip	QTY: 1	A03	Sphere-Large	QTY: 1
								
A01	Sphere-Small	QTY: 1	A02	Straight-Large	QTY: 1	A03	Straight-Small	QTY: 1
								

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Part A: Required Tools and Supplies

- 3D Printer (T01)
- Scraper Tool (T02)
- Flush Cutters (T03)
- PLA Filament (S01)
- PETg Filament (S02)

Part A: Required Personal Protective Equipment (PPE)

- Safety Glasses (P01)

Part A: 3D Printed Adaptive Utensils Assembly Steps

Step A-01: Utensil Alignment

Press the utensil base into the profile cutout of the corresponding core.

Step A-02: Utensil Fit

Close the core halves around the utensil base.

Step A-03: Core Assembly

Slide the shell around the core to lock it closed.

Step A-04: Handle Fit

Insert the core assembly into the 3D printed handle. Push and twist the utensil until the ball sockets press into the hemisphere cutouts inside the handle.

Step A-05: Adjustment

There are 3 levels of depth adjustment in increments of 20 mm and 8 levels of rotation adjustment in increments of 45° turns. To change depth and rotation, push, pull, and twist to lock the utensil in the desired position.

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Assembly Complete

Testing

Bend the cores open and closed for at least 3 cycles to break in/loosen the print-in-place hinges.

Once the core assembly is put together, test all depth and rotation configurations in each handle.

Troubleshooting

If the core assembly does not lock inside the handle and slides during regular usage, that means the ball sockets did not properly align with the hemisphere cutouts. Continue to push, pull, and twist the core to find a locking position for the utensil. It may be easier to remove the core assembly, align the ball sockets, then insert the core straight into the handle.

The core assembly may become stuck inside a handle. First, try to pull out the core while rotating it with the utensil. If the core remains stuck, try pressing a thin and long object through the bottom hole of the handle to push it out.

When removing the core assembly, the shell may be left behind inside the handle. To remove the shell from the handle, use a finger or other thin and long object (like a pen) to dislodge it.