Universal ball and socked arm

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VIEW IN BROWSER

updated 12. 4. 2022 | published 11. 3. 2020

Summary

WORK IN PROGRESS UPDATES AND ADDITIONAL PARTS COMING This is a universal ball and socked arm design that aims to be...

Hobby & Makers > Mechanical Parts

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WORK IN PROGRESS
UPDATES AND ADDITIONAL PARTS COMING

This is a universal ball and socked arm design that aims to be versatile, customizable easy to adapt/ print and sturdy.
The idea is that me and everyone who needs it can easily build a arm and use accessories from either my library other users or simply design new ones. Therefore, I tried to make the entire design with commonly available parts and an easy interface between all parts so everyone can design new accessories.

To connect the parts, you will need Bolts M3 ~20 - ~40

M3 nuts OR square nuts OR hotmelt inserts (M3xD4.6xL5)
https://www.aliexpress.com/item/4000232858343.html?spm=a2g0s.9042311.0.0.27424c4dELIdSE

To interface with existing parts:

Extrusion: 10x10x10mm with 4mm hole and D6mm x h4mm countersink for the head.
1mm chamfers on all edges

Hole: 10.5x10.5x10mm with 4mm hole at the back and facility to insert nut

Assembly

Insert the nuts or hotmelt inserts in the parts. Hotmelt inserts should be pushed in ~0.5mm deeper than the surface and then a bolt is quickly threaded through to ensure no plastic is blocking the insert.

For the knobs simply thread a M3x25 bolt directly into the plastic. Be careful not to overtighten or you will strip the plastic!

I recommend printing the ball and socked parts in PETG. they flex more before breaking and slide better. For best results use a little oil or grease and print the balls with supports. (All other parts are designed to be printed without supports!)

Tighten all screws really well as they are designed to provide mechanical support. Otherwise the printed parts WILL break!

Only use the sockets with cutout where necessary as they have less gripping force due to a smaller surface area. To increase gripping force on all sockets you can tighten the M3 bolt in addition to the handwheel.

Print instructions Category: DIY Print Settings

Printer Brand: Creality

Printer: CR-10S

Rafts: No

Supports: No

Resolution: 0.2

Infill: 5%

Filament: Hobbyking PLA/PETG
Notes:

3-4 shells, no supports (only balls need support). Print ball and socked in PETG.

Model files

universarm_arm_100mm_25300.stl

universarm_arm_100mm.3mf

universalarm_socket_v2.stl

universalarm_90_ad0001.stl

universalarm_ball_reinforced.stl

universalarm_90deg_genderchange.3mf

universarm_arm_250mm.stl

universalarm_socket_v2_w_cutout.3mf

universalarm_knob.3mf

universalarm_90_ad0001.3mf

universalarm_socket_v2_w_cutout.stl

universarm_arm_150mm.stl

universalarm_socket_v2.3mf

universalarm_ball_reinforced.3mf

universarm_arm_150mm.3mf

universalarm_knob.stl

universarm_arm_200mm.stl

universarm_arm_250mm.3mf

universarm_arm_100mm.stl

universalarm_90deg_genderchange.stl

universarm_arm_200mm.3mf

Find source .stl files on Thingiverse.com

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