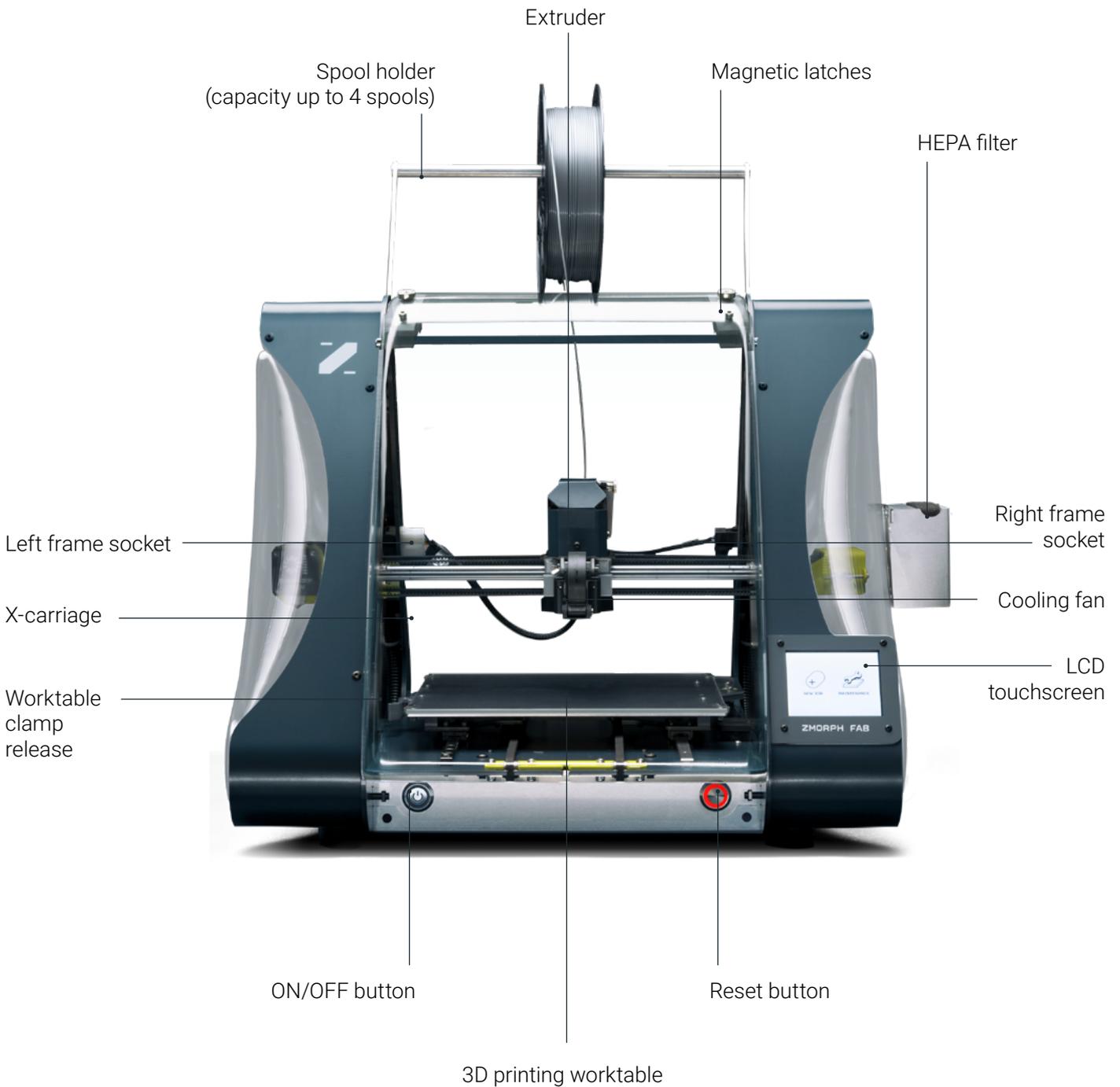


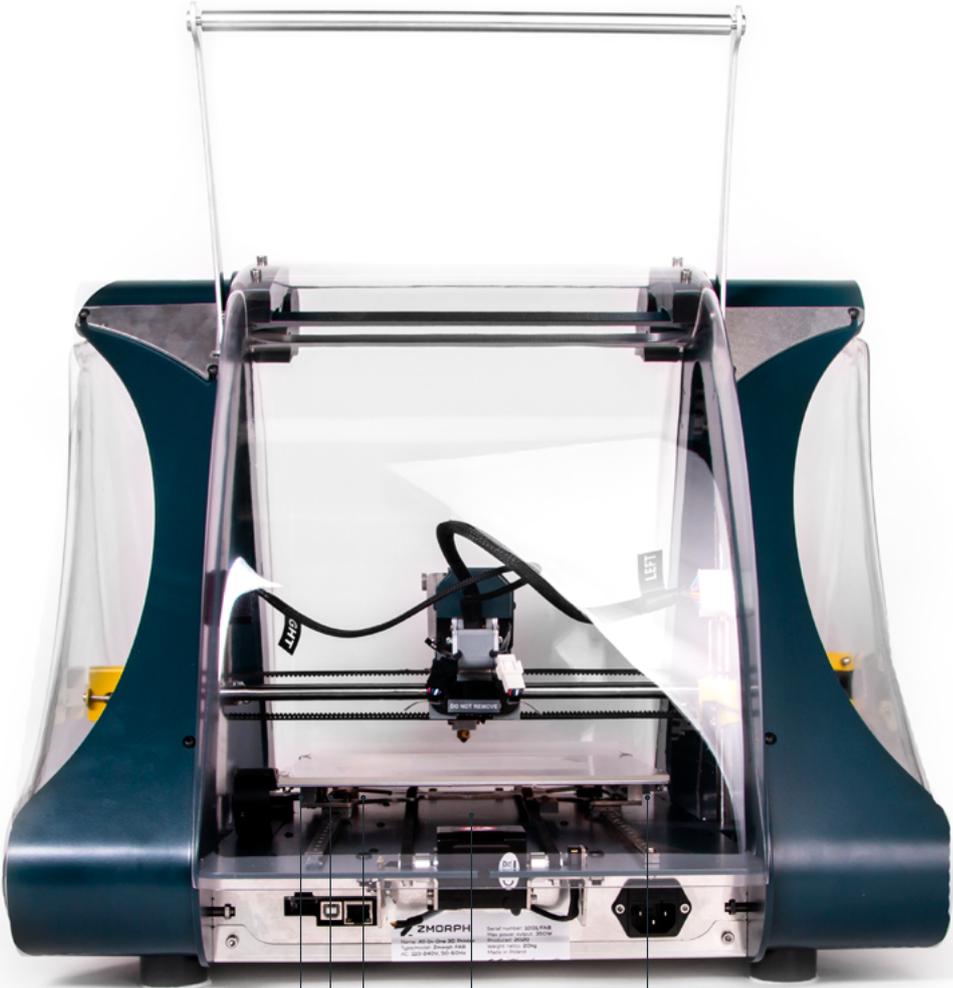
Machine specification

Machine specification

Overview



Machine specification



Internal memory card

USB socket

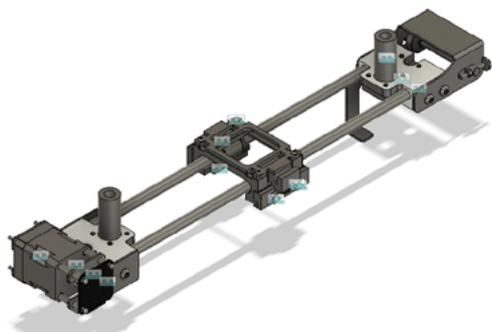
Ethernet socket

Zmorph Fab Nameplate

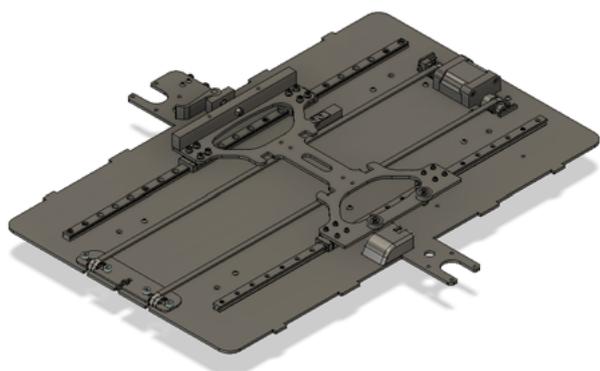
Power cord socket

Machine specification

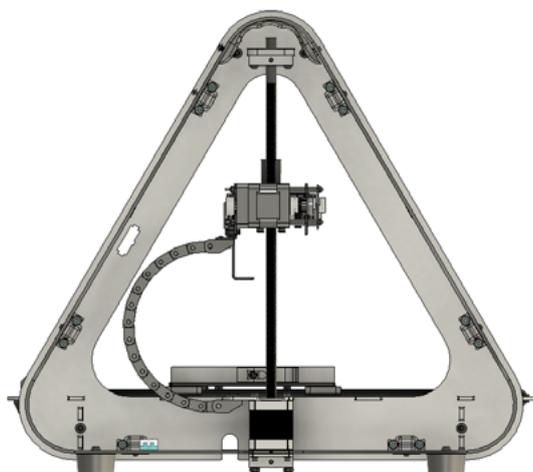
Components



X-axis - double-toothed belt system driven by a stepper motor and stainless steel rods as guiding elements. Used for movement of the Zmorph Fab toolhead. Must be periodically lubricated to ensure a long life of the machine.

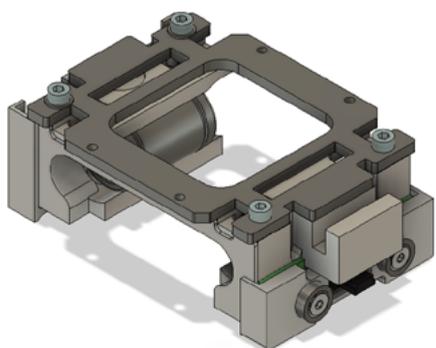


Y-axis - double-toothed belt system driven by a stepper motor and hybrid (linear/sliding) rails as guiding elements. Used for movement of Zmorph Fab worktable. Must be periodically lubricated to ensure a long life of the machine.

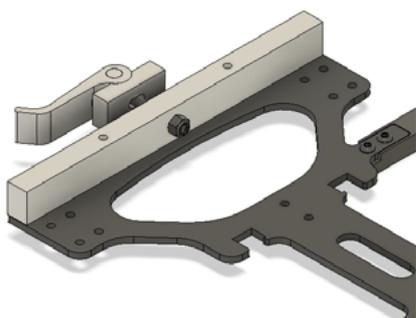


Z-axis - axis driven by double stepper motors with integrated trapezoidal screws and high-quality POM trapezoidal nuts. Guiding elements are stainless steel rods and linear bearings. Used for movement of X-axis of Zmorph Fab machine. Must be periodically lubricated to ensure a long life of the machine.

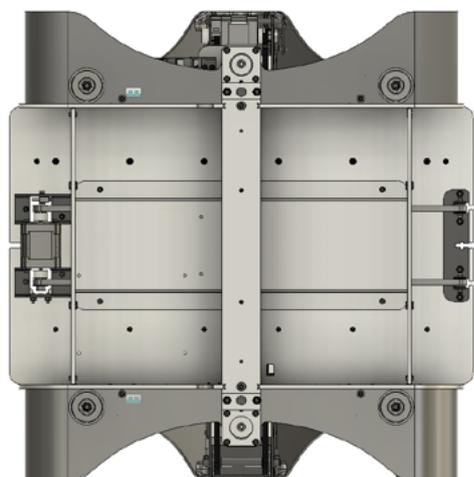
Machine specification



X-carriage/Toolhead mount - element responsible for holding down toolhead, as well as automatic calibration. X-carriage has linear bearings mounted that slide on stainless steel rods and is also a housing for a calibration element - strain gauge.



Y-carriage/Worktable fixation system - specially designed lever and magnets system for quick and effortless changing between additive and subtractive work surfaces.



The bottom cover of the machine - responsible for the protection of the motherboard and power supply from external damage and dirt. Allows air exchange for cooling internal electronics.

Machine specification

Functionalities

- Magnetic detachable covers - fully transparent covers allow for a clear, not obstructed view of Fabrication processes. For easy cleaning and maintenance of the machine, covers can be removed thanks to the magnetic mounting system.
 - External spool holder - designed for reliable filament unwinding during the 3D printing process. Mounted on the back of the machine doesn't obstruct filament path and doesn't take any additional space on your desk.
 - Closed-Loop System - controls the current position of the toolhead in X and Y axes. Whenever detects the difference between the real and theoretical position of the toolhead, applies a correction algorithm to ensure the best quality of Fabrication. It is also used as a protection system in case of severe positioning problems (like blocked tool-head).
 - Toolhead changing system - quick and repeatable method for mounting different Zmorph toolheads. Properly mounted toolhead will ensure high-quality Fabrication whether it is additive or subtractive manufacturing.
 - Platform leveling - to ensure proper first layer adhesion your printing bed must be leveled. Zmorph has developed special software and mechanical solution to make the leveling process easy and reliable. There are both automatic and manual calibration methods available.
 - Filament change - an additional feature that can be performed during printing with both single and Dual Extruder Toolhead. Allows for easy change of material to achieve either multi-colored or even multi-material models.
 - Hibernation - a special software feature that allows to turn off the machine. During hibernation toolhead position is saved and later restored upon booting machine again.
 - Filtration system - HEPA and Carbon filtration system, stops most air pollutants released during machine operation.
 - Material sensor - ensures the continuity of the material flow in the Single Extruder Toolhead 1.75. When material shortage is detected the machine stops and pause the printing process and turns on the filament change mode.
 - Smart toolheads system - whenever the machine detects a change in the toolhead cable connection it will automatically assist the user in the changing process and detects the correct toolhead.
-

Machine specification

Technical specification

Weight and Physical Dimensions

Machine dimensions without the spool holder	520 x 500 x 450 [mm]
Machine dimensions with the spool holder	520 x 500 x 570 [mm]
Machine dimensions with the spool holder and HEPA filter	570 x 500 x 570 [mm]
Package dimensions	600 x 600 x 570 [mm]
Full Set weight	28.70 [kg]
Machine weight	14.45 [kg]
Single Extruder Toolhead 1.75 weight	0.70 [kg]
Dual Extruder Toolhead weight*	1.00 [kg]
CNC Milling Toolhead weight	0.90 [kg]
Laser Toolhead weight	0.32 [kg]
Thick Paste Extruder Toolhead weight*	0.60 [kg]

3D printing specifications

Printing technology	FFF - (ang. Fused Filament Fabrication)
Printing head	Single Extruder Toolhead 1.75 Dual Extruder Toolhead
Layer resolution	0.05 - 0.4 [mm] **
Minimum wall thickness	0.4 [mm] **
Dimensional accuracy of the Fabricated model	+/- 0.2 [mm]
Platform calibration	Automatic, Manual
Printing volume	235 x 250 x 165 [mm]
Filament diameter	1.75, 3.00 [mm]
Nozzle diameter	0.3, 0.4, 0.6 [mm]
Support structures	Mechanically and chemically removable - depends on used material
Connectivity	USB, Ethernet, karta SD
Printable materials	PLA, ABS, PET, Nylon, PVA, HIPS, ASA, TPE, PP, PC, PMMA, PC/ABS
Third party filaments	Applicable
Printing speed	40 [mm/s]
Travel speed	120 [mm/s]

Machine specification

Laser cutting and engraving specifications

Toolhead	Laser Toolhead
Laser spot size for 50mm	0.1 x 0.1 [mm]
Laser spot size for 80 mm	0.1 x 0.18 [mm]
Wavelength	450 [nm]
Laser class	4
Laser power	2.8 [W]
Operating sound	40 [dB] (55 [dB] with HEPA filter)
Platform calibration	Manual
Cutting/engraving volume	235 x 250 x 85 [mm]
Cutting/engraving speed	15 [mm/s]
Travel speed	120 [mm/s]
Cutting/engraving materials	Wood, Wood-like, Leather, Paper, Cartoon, Felt, Foil, EPP, EVA foam, CCL FR4***

Milling specifications

Toolhead	CNC Milling Toolhead
Spindle power	300 [W]
Operating sound	<70 [dB]
Platform calibration	Manual
Cutting volume	235 x 250 x 85 [mm] ***
Cutting speed	0.1 ~ 20 [mm/s]
Travel speed	120 [mm/s]
Milling materials	ABS, nylon, HDPE, PTFE, PC, PP, POM, PMMA, PVC, HIPS, LDPE, PET, carbon fiber, ccl fr4, dibond, tcf, wood, ply-wood, wood fiber boards, aluminum, brass, copper, cardboard, machining wax, modeling board, styrodur
Tool holding	ER-11 collet

Temperature specifications

Nozzle temperature	max. 250 [°C]
Build plate temperature	max. 115 [°C]
Operating ambient temperature	15 - 30 [°C]
Storage temperature	-10 ~ 40 [°C]

Machine specification

Electrical specifications

Power supply	100 [VAC] ~ 4 [A] 50/60 [Hz] 240 [VAC] ~ 2 [A] 50/60 [Hz]
Power consumption	max. 350 [W]
Single Extruder Toolhead 1.75 power consumption	max. 220 [W]
Dual Extruder Toolhead power consumption	max. 230 [W]
CNC Milling Toolhead power consumption	max. 330 [W]
Laser Toolhead power consumption	max. 82 [W]

Software specifications

Supplied software	Voxelizer
Supported file types	.stl, .obj, .step, .dxf, .png, .bmp
Minimum system requirements	Windows 7/10 (64 bit) Mac OS (10.13 or higher) Linux (experimental)

HEPA filter specification

Type of filter	HEPA/Carbon
Fan power	1.54 [W]
Filter lifespan	1000 h or 6 months
Filter dimensions	80 x 80 x 25 [mm]
Filter Cover dimensions	85 x 85 x 50 [mm]
Filter control	Temperature based
