WASP
CLAY KIT

Getting started
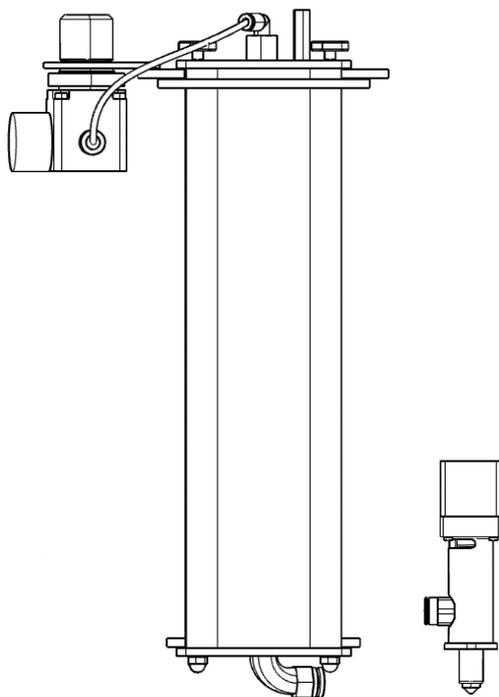
CLAY LINE

wasp

Dear Customer,

thank you for choosing WASP.

We experiment, develop and manifacture 3D printers with passion since 2012, working hard for making each product a real innovation for our customers.

We believe that 3D printing can have a real social impact and have a key role in the brand new challenges of our world.
For this reason the support for all of our customers and collaborators like you is fundamental.

Don't miss any news or update on WASP projects by visiting www.3dwasp.com/en/

Enjoy your printer!

WASP Team

CLAY KIT

UNBOXING

The printer must be unboxed with maximum care, following the instructions on the packaging.
Always handle the machine in at least two people and wearing the necessary PPE as shown in the manual.
Please keep the original box for it may be needed in case of a future shipping.

Inside the box you'll find all you need to start printing:

- Printing mixture 10 Kg
- 3 l aluminum tank
- Nylon tank support with pressure controller
- 1.2 mm and 2 mm diameter nozzle
- Nylon piston
- SD card
- LDM WASP Extruder
- 4 mm diameter nylon air pipe
- 12 mm diameter teflon pipe (cut the pipe at 660 mm for model Delta WASP 2040, Delta WASP 2040 Turbo, Delta WASP 2040 Turbo 2, Delta WASP 2040 PRO)
- Grease

INSTALLATION

ATTENTION:

LDM WASP extruder is a professional instrument for the deposition of dense fluid material as clay mixture, silicons and experimental materials.
It is equipped with a screw system capable of regulating the output flow of the material, allowing a rapid flow interruction and a good retraction control. At the same time it has the function of a deaerator. Any material that is to be used requires a specific research.
There are some important factors related to the density, granulometry and the flowability of the material that must be analyzed in order to have an easy extrusion and resistance to collapse.

The Manufacturer declines all liability for injury to persons and damage to components due to an incorrect use of the product.

WASP certifies the use of the LDM extruder with ceramic material, so the use of other kind of mixtures or materials has to be considered as not covered by the technical support and warranty.

INFORMATION
Max tank pressure: 40 bar
Overpressure valve calibrated to 8 bar

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⚠️ **WARNING:**
Carefully read the instruction before the use

• Be sure that the two tank caps are tight before the pressurization of the tank until the thread is not visible anymore

• Ensure periodically the tank and top thread and check any consume or damage

• Always keep clean the threads, a wrong closure could be dangerous

• Periodically grease the threads

• Don't pressurize the tank if there is some old or dry material inside the 12mm nylon hose

• Check the video tutorial at the address: https://www.youtube.com/watch?v=1DjVC5MxJr4

• Keep away from children

• Do not exceed the maximum pressure of 8 bar

• After every use unload the material from the extruder and from the 12mm nylon hose

• Do not point the tank to things or people when it's pressurized and without cap

• Be sure that the 8mm teflon and the 12mm nylon hose are inserted correctly

• Be sure that the extruder cooling fan is functioning

• Be sure that the extruder is empty, clean and without obstruction before the use

• Do not put fingers inside the extruder

• Do not ingest the extruded material

• Be sure that the hose do not present narrowings or bottlenecks

• Check periodically the consumption of the hose in the connection points

• Do not replace parts not supplied by the manufacturer

• The kit can be used only by trained staff

Getting Started

PREPARING MATERIAL

NOTE:
WASP provides a mixture to be fixed with water. The amount of water depends on the kind of extruder, nozzle and environmental conditions. Normally it is possible to use the following recipe: porcelaine 95%, water 5%. With the provided machine it is possible to print the majority of the mixtures.

LOADING MATERIAL:
1. Lay the mixture on a clean surface.
2. Add water (5% water 95% mixture) and mix until total absorption.
If the material feels too dry add some water.
3. Subdivide the mixture in balls to be loaded inside the internal of the aluminum tank.
4. Untighten the handles on the cap of the aluminum tank (fig.1),
then remove the base with the 4 bars
(the side without valve)(fig.2).
5. Bring the nylon piston to the bottom to load the material.
6. Insert and compress the various parts of material (fig.3).
7. Place and tighter the base using the handles (fig.4).

fig.1	fig.2	fig.3	fig.4
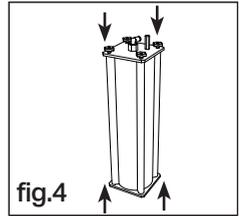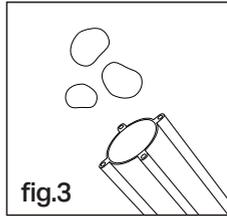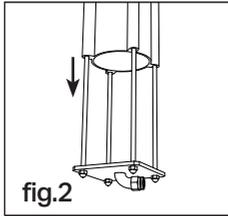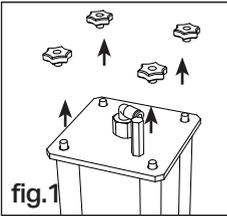
ATTENTION:
Make sure before putting in pressure that the two caps are perfectly touching and fitting on the tank in order to avoid air losses and failures.
Make sure that the four handles are tighten well.
Lubricate periodically the threaded bars and the internal of the handles.

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EXTRUDER CHANGE:

• Whith the printer OFF unplug the "A" connector (fig.1) of the filament puller system, the rj45 "B" connector from the extruder unit (fig.2) and unscrew the 2 screws "C" e "D" placed under the extruder plate (fig.3).

Fig.1

Fig.2

Fig.3
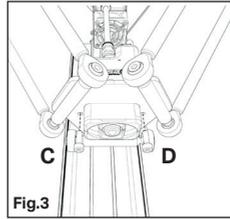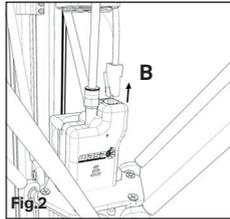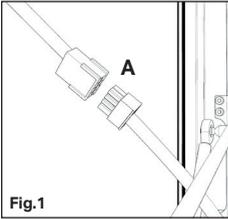
• Remove the three rubber bends from the sliding parts (fig.4) and remove the entire extruder block (fig.5), insert the LDM extruder on the extruder plate and secure it with two screws placed under the plate (fig.6). Plug now the "A" connector (fig.1) to the motor and turn ON the printer.

Fig.4

Fig.5

Fig.6
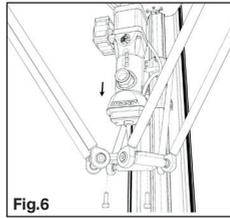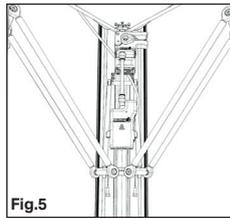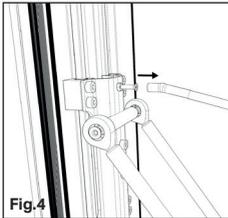
• Insert the compressor hose into the "C" connector (fig.7) placed before the pressure gauge and connect the "D" connector with the "E" joint of the tank with the 4 mm hose (fig.8). Connect the 12mm hose from the "F" joint of the tank to the "G" joint of the extruder (fig.8).

Fig.7

Fig.8

Fig.9

Getting Started
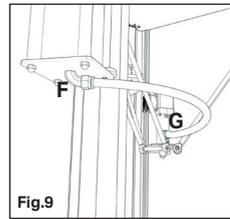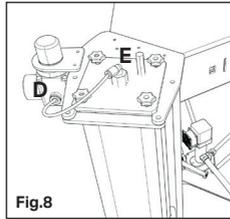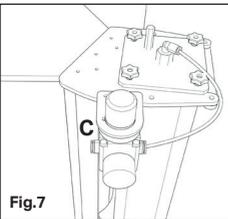
TANK HOLDER

ASSEMBLING PROCEDURE
Unscrew the screws "A" above the leg (fig. 1) and then tighten the screws after aligning the kit "B" (Fig. 2)

Fig.1

Fig.2
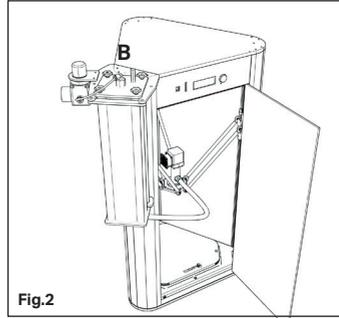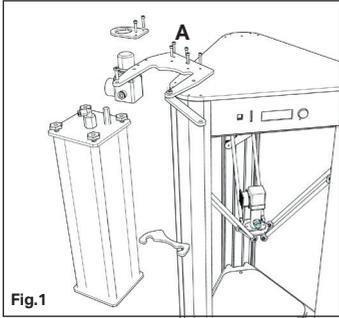
This support is adaptable to 4070 by adding two 270 mm "F" tubes and two M6 "G" set screws contained in the kit. (Fig. 3). In the holder "H" it is possible to attach the pressure gauge (fig. 4)

Fig.3

Fig.4

CLAY KIT
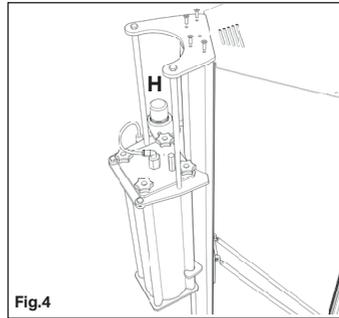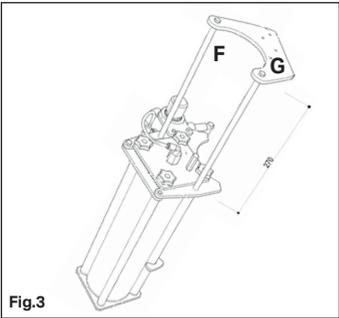
FIRST PRINT

LDM MODE:

FFF and LDM mode switching.
This operation allows the printer to automatically change some features such as E-step of the material feeder motor and disables the temperatures controllers.
Follow this procedure:
• menu/advanced settings /LDM mode ON.
• reboot the printer
• menu/prepare/modify Z max (set Z max to new value)

The value coincide to the distance between the nozzle and the plane of print. In case you would use a different printer plate from the steel ones, it need to recalibrate the value of Zmax.

FIRST PRINT:

• Turn on the compressor until it reaches a pression of 8/10 bar.
• Rotate the pressure gauge clockwise in order to reach 4 bar (the pressure may vary depending on the composition of the mixture).
• Level the printing bed: menu/prepare/manual levelling
• Start printing the gcode from menu/print from sd/.gcode

MAINTENANCE

TANK CLEANING
• bring the tank pressure to zero, unscrewing the knoll
• remove the two caps unscrewing the black knolls
• place the tank vertically
• push with your fist (or for example with a stick) the piston outside the tank
• clean the piston and the tank with water
• to remove the dry material inside the 12 mm teflon hose, slightly hit the hose itself

EXTRUDER CLEANING
At the end of one print close the terminal part of the nozzle with some tape in order to prevent the drying of the material inside the nozzle.
After about one week of non use, a complete cleaning of the sistem will be necessary.
Follow this process:
• remove the LDM extruder from the printer
• unscrew the pneumatic joint "A" with a 19 mm wrench and wash it under running water
• unscrew the black part "B" from the motor support (with the motor attached) "C"
• unscrew the nozzle "D" and clean it under running water
• in order to remove the "E" plate unscrew the three M3 screws (not necessary)
• re-build the extruder followind the process backwards

9
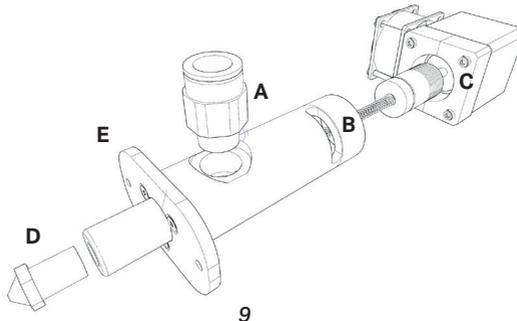
ASSEMBLY ON OTHER PRINTERS

HARDWARE MODIFICATIONS
I'ts possible to modify and assembly the LDM WASP extruder system on other kind of printers.
On our website it's possible to download a folder containing the extruding system and the fixing plate technical drawing and the 3D models (V1), it's possible to modify these models in order to mout the system on other printers.

FIRMWARE MODIFICATIONS
In order to make the LDM WASP extruder working properly, it will be necessary to adapt and modify the firmware of the used printer. The following modifications will be needed:
• disable the extruder temperature sensor (if present)
• enable the Cold Extrusion
• modify the E-Step per mm, LDM extruder value "400"
• modify the printing area dimensions, based on the new extruder dimensions
• modify the Z min endstop height (if present)
The use of the LDM WASP extruder has been tested and guaranteed only on WASP printers, warranty and assistance will be made at discretion of the manufacturer (WASP) in case the system is used on other printers.
The Manufacturer declines all liability for injury to persons and damage to components due to an incorrect use of the product or assembled on other company products.

Getting Started

wasp

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