A new prototype to perform the fork method of the International Dysphagia Diet Standardisation Initiative (IDDSI) in a texturometer

João Parlatore Lancha[1], Jaqueline Souza Guedes[2], Bruna Sousa Bitencourt[2], Bruna de Oliveira Gomes[2], Pedro Esteves Duarte Augusto[1]*

[1]Université Paris-Saclay, CentraleSupélec, Laboratoire de Génie des Procédés et Matériaux, SFR Condorcet FR CNRS 3417, Centre Européen de Biotechnologie et de Bioéconomie (CEBB), 3 rue des Rouges Terres 51110 Pomacle, France.

[2]Department of Agri-food Industry, Food and Nutrition (LAN), "Luiz de Queiroz" College of Agriculture (ESALQ), University of São Paulo (USP), Piracicaba, SP, Brazil.

**Corresponding author: pedro.augusto@centralesupelec.fr*

APPENDIX 1: PROJECT

Description of files and manufacturing processes

General description of annexed drawings

Design sheets 1,2 and 3 contain all the necessary dimensions for the custom parts designed at the Chair of Biotechnology of CentraleSupélec (Université Paris-Saclay) to be reproduced in a CAD software. Additionally, design sheets 4 and 5 give a general overview of how to assemble the prototype.

On design sheet 4, two tables are given. Firstly the "Custom Parts List" indicates how many custom pieces of each model are needed to assemble the prototype. Secondly, the table named "Third party sourced parts - not present in schematic" indicate what were the components that we did not manufacture ourselves, but bought from suppliers instead.

Moreover, this second table contains what is called a "Reference example". Inputting this number into the search field of RS composant's website will give you an example of the parts we bought, so that it can be easy for anyone to source for parts that are similar, in there local hardware store.

The detailed process to get further information on any of the third-party sourced parts is described below:

THIRD PARTY SOURCED PARTS - NOT PRESENT IN SCHEMATIC			
DESCRIPTION	KEY DIMENSION	QUANTITY	REFERENCE EXAMPLE (RS COMPONENTS)
30X30MM ALUMINUM EXTRUSION PROFILE	LENGTH - 100MM	1	761-3293
M6X12 BUTTON HEAD BOLT		8	232-8271
M5X40 FLAT HEAD BOLT		4	130-678
M3X20 HEX. HEAD BOLT		4	467-9824
M5 NUT		4	189-585
M3 NUT		4	560-293
M6 T-NUT (compatible with extrusion profile)		8	767-5531

Step 1 – Get reference number from table

Step 2 – Go to RS composant's website and search the desired reference

Step 3 – Click on the data sheet for more information, such as technical drawings and detailed dimensions

On design sheet 5, some complementary views of the prototype are shown, for better visualization. Lastly, design sheet 6 presents where to place the hardware for fixation, such as screws and nuts, to hold all the parts together.

General description of annexed files

Besides the annexed technical drawings, you may find other types of files. Firstly, an .avi file, that contains an animation of the prototype being dismantled. This is intended to provide an easier comprehension of how to assemble it.

Furthermore, we provided STL files of all the custom parts that we manufactured. These files can be imported into a CAM software for anyone to generate G-codes or .NC files for the parts to be manufactured in any CNC milling machine.

Carriage manufacturing specificities

Finally, it is important to know that, to manufacture the part we called “Carriage” an additional step was taken, after cutting the aluminum panel in the CNC milling machine. Since this piece needed to have its sides folded to fit into the prototype. The cut shape was placed in a vise, as shown in the image below. With the vise’s jaws tightly gripping the piece, the indicated parts were heated using a thermal blower, and then the sides where folded with the help of pliers, so that the centerlines of the holes could be parallel to the base.

Figure 1 - Detail of carriage folding process

Figure 2- Intended final shape of the carriage