

# Customized 3D printed pipe supports with Roboze Carbon PA PRO

Roboze ARGO 500

Carbon PA PRO

Manufacturing Processes Product Development

## What are multi-purpose holders for?

The role of **multi-purpose holders** is basically to grip and support mechanical or structural parts. They are used in a variety of applications, for example when installing fluid transportation systems composed of **tubes, pipes, and hoses**. They can also function as supports for structural parts such as in the construction of shelving systems or as fixtures for tooling, electronics, and other components.

**Pipe supports** are made with a variety of materials including injection molded polymers such as polypropylene and polyamide; they are also commonly made of cold pressed metals such as aluminium and stainless steel. They can have rubber or other materials added to act as padding. Often **pipe holders** are modular in nature, allowing the combination of various units together to create the desired configuration to **attach several pipes together**.

## The limitations of traditional multi-purpose holders

Although there are many options on the market, it can be difficult to find an appropriate solution when the **industrial holder** needs to operate in atypical conditions, such as when corrosive chemicals are involved and when the tubes held have unusual shapes or a variety of different sizes.

Finding holders with the right shape can take time since those manufactured by different suppliers are often not compatible with each other. The difficulty is increased particularly if, for example, **square tubes and pipes of different shapes need to be attached together**.

Once the **tube holders** have been found and ordered, they must be delivered, which increases the lead time. Finding spare parts can also be problematic, particularly if the supplier of the pipes has stopped making them: this means that extra holders must be ordered and stored.

Modifications to existing fluid transportation systems also often necessitate the acquisition of new holders because the old ones are not compatible with the new configurations, again slowing the process and leading to potential loss of revenue.

## The Roboze solution: production of multi-purpose holders with 3D printing

**Roboze** has developed an ecosystem that allows the easy and fast production of highly customized parts such as **3D printed multi-purpose holders for piping and tubes**. Using a combination of advanced, high-performance materials and the most repeatable and accurate industrial printers on the market, the parts produced have outstanding properties and can be tailored to any configuration needed.

The **ARGO 500** is an industrial grade 3D printer with dual extruder for the manufacturing of parts for use in a huge variety of applications, from the depths of space to the depths of the sea to the racetrack to a simple factory floor.

## The exceptional properties of Roboze Carbon PA

But a printer without materials is not very useful, which is why **Roboze** offers a wide range of high-performance thermo-polymers for every application. Composed of a polyamide matrix infused with short carbon fibres, **Carbon PA**:

- is mechanically very strong and stiff (tensile strength of 93 MPa, Young's modulus of 4.9 GPa);
- possesses a high thermal resistance (heat deflection temperature of 88°C at 1.82 MPa);
- has the wide chemical compatibility typical of polyamide, for example with regards to machining oils and lubricants.

These properties make it uniquely suited for shop-floor applications and manufacturing of tooling, holders, jigs, and fixtures.

Always striving to create more value for its customers, **Roboze** has developed soluble supports for a variety of its materials, including **Carbon PA**. This greatly increases the design freedom that **3D printing** brings and trivializes the process of support removal, allowing the easy manufacturing of complex geometries with minimal post-processing time. This allows parts to be made in record times, thus minimising downtime and keeping the production line moving.

## Application example: 3D printed pipe supports for manufacturing plant

**Pipes and tubes in manufacturing plants** pass in specific locations which have been designated for this purpose. This helps to keep the plant in order and to prevent accidental damage, as well as facilitating maintenance operations.

In these systems, it is common for pipes and tubes from various systems to cross each other in numerous locations. This can be a problem if the tubes are from different systems because they can have different shapes, sizes, and directions. Thus, **finding the right types of pipe holders** to combine becomes tricky, limiting the efficiency of the layout due to restricted design freedom.

By leveraging the freedom guaranteed by **3D printing** and combining it with Carbon PA, several **modular multi-purpose holders** were printed that could **hold square tubes and small pipes in the same unit**. The unit was designed to be as modular as possible, allowing various combinations of each unit in the CAD phase. The example shown below is one possible configuration, but several others were also made.

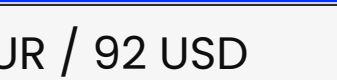


The configuration above allows **two square tubes to be held together** with up to three smaller ones. The various sections are held together using standard M5 nuts and bolts. Pipes and tubes can cross each other at right angles, but it is possible to modify the angle to any value by moving the bolt holes during the CAD phase.

At the same time, the **tube size and shapes can be easily modified**. The complex geometry of the components is effortlessly post-manufacturing with Carbon PA and soluble supports, vastly simplifying post-processing, and allowing unparalleled design freedom. The result is **highly customized holders made of lightweight and resistant high-performance 3D plastic**.

Material	Aluminium, CNC	Carbon PA, 3D printing
Cost	548 EUR / 532 USD	95 EUR / 92 USD
Weight	286 g	155 g
Manufacturing time	3 days	3.5 hours
Stock material wasted	47%	3%

Share on



newsletter

## If not now, when?

Subscribe to our newsletter and keep up with all the latest news




**PRINT STRONG LIKE METAL**



RobozeSpA  
Company certified according to  
ISO9001:2015 / certificate  
No. 50 100 16883

**BARI, APULIA, IT**

**HEADQUARTERS EMEA**

**Roboze**

Via Vincenzo Aulisio n. 31/33  
70124 Bari, Apulia, Italy

(+39) 080 505 7559

Facebook Instagram LinkedIn Youtube

Home

3D Printers

Materials

Technology

Software

Industries

Resources

Contact us

Roboze Distributed Manufacturing

About us

Careers

Press

News

Webinar

Investors and Advisory Board