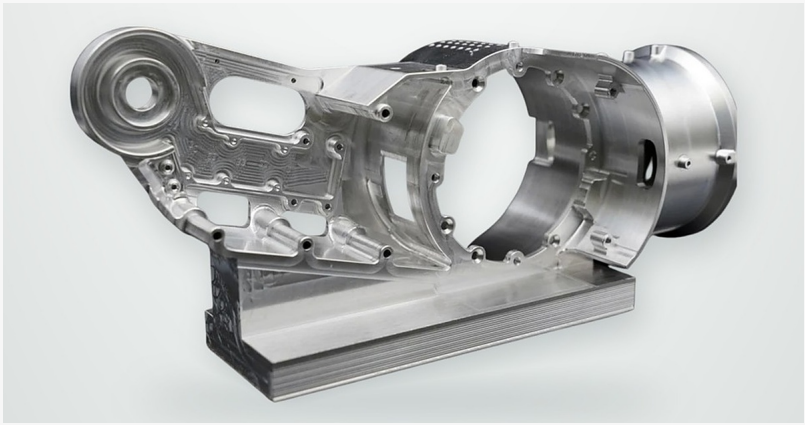
TOVILON Precision Publishes Guide to Machining SLM Metal 3D Printed Parts

How to plan supports, stock and datums before a metal part is printed, so the features that need a cutter end up where the drawing puts them.



CNC machined aluminum joint housing, TOVILON Precision

SHENZHEN, CHINA, November 11, 2026 /EINPresswire.com/ -- TOVILON Precision (Shenzhen TOVILON Hardware Co., Ltd.), a CNC machining supplier of custom parts for robotics, automation and industrial equipment, has published a guide on machining metal parts made by selective laser melting (SLM).

Selective laser melting builds thin curved walls, internal channels and lattice infill that a machine tool would struggle to cut. It does not build a reamed bearing bore, a dowel hole or a keyway that a mating part slides into. Those still come from a cutting tool. According to the guide, the trouble on most hybrid parts begins before printing, when the model is prepared for the printer and nobody has yet marked which faces will be machined.

> If the machined faces are agreed before the build, the stock, the supports and the datums can be planned around them."
>
> *Martin Ji, Business Development Manager, TOVILON Precision*

The guide starts with that marking step. Faces that will be cut get extra material, commonly 0.3 to 0.5 mm on small parts, and holes that will be reamed are printed undersize. Everything else stays at nominal size. Build orientation is chosen with the same faces in mind, since a sealing face printed facing down sits on supports and comes out rough.

Small printed parts with curved outsides are hard to clamp. The guide describes machining them while they are still attached to the build plate, with the plate mounted on the machine table and the supports acting as the fixture. That only works when the supports under the machined faces are denser and shorter than a printing-only layout, because thin lattice supports can flex or

break once an end mill engages. Parts are stress relieved on the plate before machining, so that the finished features do not move when the parts are cut free.

The printer and the machining center each use their own coordinate system. The guide recommends printing small reference blocks next to the parts, probing them on the machine and taking a light trial cut before any finishing pass. On plates with many small parts in rows, each part or a sample across the plate is probed as well, because the recoater blade can tilt a slender part slightly during the build.

The guide also states where the hybrid route does not pay off. A bracket that is mostly a block with pockets and holes is usually cheaper machined from bar stock, and at higher quantities investment casting or metal injection molding often costs less per part.



Anodized aluminum parts machined to drawing by TOVILON Precision

TOVILON Precision

"Most printed parts that reach us were modeled for the printer only," said Martin Ji, Business Development Manager at TOVILON Precision. "If the machined faces are agreed before the build, the stock, the supports and the datums can be planned around them. If they are left until afterwards, the machining has to work around whatever the printer produced."

The full guide, Machining SLM Printed Metal Parts: Supports, Datums and Which Features to Finish, is available on the TOVILON website.

About TOVILON Precision

TOVILON Precision is a CNC machining supplier in Shenzhen, China. The company machines custom parts to drawing on 3-axis and 5-axis machining centers, CNC lathes and turn-mill centers, using grinding and wire EDM for precision features. Common materials include aluminum, stainless steel, alloy steel, titanium, brass, POM and PEEK, and orders start from one piece. Mold making, injection molding and metal or polymer 3D printing can be arranged together with machined parts. TOVILON works under ISO 9001, and an engineer reviews each

drawing before it is quoted.

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