CAD specifications for production tooling and fixtures (Part of Request for Quotation)

In order for the assembly technology to centrally plan for all the plants, it is necessary to have standardized and up to date geometric documentation of the production tooling and fixtures. For this reason, the following information documents the specifications and regulations that are to be followed in all tool and fixture design projects.

The current versions of these regulations, as well as additional links, can be found in the BMW Partner Portal (https://b2b.bmw.com → public area → Departments → Technologies → Assembly → Production tooling and fixtures). The data exchange and access to other relevant information are only available for approved suppliers. Suppliers are to request permission for this information (https://b2b.bmw.com → Do you want to register?). The permission process can take up to two weeks.

The **CAD Documentation Specification** (https://b2b.bmw.com → public area → Departments → Technologies → Assembly) regulate the geometric construction and documentation for production tools. The extensiveness can differ in order to keep the cost-benefit ratio in an appropriate proportion.

In regard to the quality of delivery, two factors are to be considered: **layout** and **production tools**. There is further differentiation between **construction quality** and **DMU quality** (Digital Mock-Up) for production tools. In this document, the specifications and regulations of the latter two factors are described in detail. The requirements regarding **geometric data exchange** for suppliers are also specified.

Construction Quality

The CAD Documentation Specification requires the delivery of production tools to be in CATIA V5 with the most recent version used by BMW. Information regarding which version is in use at BMW can be found in BMW Partner Portal (https://b2b.bmw.com → Departments → Development → Applications → CATIA V5 → BMW Standards and Applications). Data that has been developed using other systems and converted into CATIA data will not be accepted. Data provided as intermediate results are to be delivered as 3D models. Prior to a design approval of the data by BMW, all 2D drawings associated with the 3D model are to be delivered, as well as the CARISMA part list in xml format. Only after the design approval by BMW can the production of the tools or fixtures be started, or hardware costs be expended.

The following specifications, regulations and CARISMA Software can be found in the BMW Partner Portal (https://b2b.bmw.com → public area → Departments → Technologies → Assembly → Production tooling and fixtures). These are to be used for production tools and fixtures:

- The current BMW Production Equipment Specifications (BV General, BV Documentation).
- The current OEM-Guideline for the design of production tooling with CATIA V5.
- The Guideline for Design of production tooling and the use of the software CARISMA. CARISMA is to be downloaded and installed from the BMW Partner Portal. Only the version that is currently in use at BMW is to be used. Additional tools (Ex. Macros) and other information is also available.

DMU Quality

Production tools to be delivered according to the **CAD Documentation Specification** regarding DMU quality can be created in the CAD system of the supplier's choice. The supplier is to ensure that the complete and correct 3D data is delivered on the dates agreed upon with BMW for the project. The 3D data must be provided to BMW in either "CATProduct" or "CATPart" (CATIA V5) format. The supplier is responsible for the conversion process as well as the data quality.

Intermediate results are to be delivered as 3D models. For the official acceptance by BMW on the agreed upon date, the 2D drawings associated with the 3D model as well as the replacement and wear parts in .pdf format are to be delivered. For the replacement and wear parts the bill of materials must also be delivered in xlsx format. The format of the file is provided in a template in the BMW Partner Portal.

Only after BMW has officially accepted the work, may the tools or fixtures be produced or money spent on hardware.

The specifications for the delivery of production tools in DMU quality can be found in the (https://b2b.bmw.com → public area → Departments → Technologies → Assembly → Production tooling and fixtures).

Geometric Data Exchange

Every supplier of production tools and fixtures is required to keep all non-disclosure requirements regarding vehicle geometric data. This obligates a supplier to initiate and set up a data connection to BMW. In order to do this the supplier must have access to the BMW Partner Portal (https://b2b.bmw.com → Do you want to register?) and must apply for a data connection (https://b2b.bmw.com → public area → Departments → Technologies → Assembly → Production tooling and fixtures → Data Exchange → Connection Process for CA/PDM Data Exchange → External Employee).

If a supplier does not have the appropriate OFTP-Software and/or infrastructure, the data exchange can proceed via a web connection using the BMW Partner Portal. This application process can take up to two weeks.

BMW will provide the vehicle part data necessary for the construction of production tools in CATIA V5 format (CATProduct, CATPart, cgr) or in some cases in CATIA V4 format (model) via Open DXM. The intermediate as well as the final design results are all to be sent via data connection from the supplier to BMW.

The data transfer is to be done using OFTP-Data exchange (ODETTE File Transfer Protokol) as a zip compressed archive.