Work Instruction

015 - PLM

Unification of CAD Standards

W_015_007

1 Purpose

This work instruction is intended to optimise the management and quality of the drawings prepared by means of CAD within the GRAMMER company. Due to a uniform procedure and structure regarding the preparation of drawings, an increased efficiency shall be achieved for the generation of CAD data. Moreover, data shall be created by means of this uniform procedure and shall be structured and managed in such a way that their usability within the process chain is ensured. The subsequent processes shall draw the maximum benefit from the data provided.

2 Scope

This work instruction shall be binding for GRAMMER development worldwide (SEAT COMPONENTS, CONSOLES, SUSPENDED SEATS) as well as for external partners that are part of GRAMMER's design/development process and create data for GRAMMER in this context or provide GRAMMER with such data.

This work instruction is also binding for the GRAMMER-Joint Venture in India. The contents are conveyed according to the product areas and analogous to usual training practices at GRAMMER locations such as Shanghai or Bursa.

Because the joint venture will be active in both product areas Commercial Vehicles and Automotive, therefore, exceptions listed here (see from point 5.3) will be trained and discussed in detail.

This work instruction contains specifications for working with the CAD system used in GRAMMER's design department as well as in cooperation with external design and engineering partners that generate data for GRAMMER.
This work instruction as well as the methods and procedures described in it shall also apply to customer projects unless replaced completely or in part by separate agreements.

- For projects and associated drawings created before this W_015_007 entered into force, the rules specifically defined for that project shall apply. If such rules are missing completely or in part, this work instruction shall apply where necessary.
- If there are definition gaps, in case of doubt the rules applicable until this W_015_007 entered into force as well as the so far implemented methods shall apply in these situations.

3 Terminology

CAD drawing
Design drawing prepared with a computer program which can be printed by means of a plotter or printer or which can be displayed on a screen

CATIA V5
The current CAD system in the version applicable for GRAMMER development worldwide

GRAMMER standard (CEG_GAG_V1_0)
Drawing standard for the preparation of all drawing types.

Excepted:

- *Offer drawings*
- *Assembly drawings*
- *Homolgation drawings*

GRAMMER OD AD standard (AZ_MZ_GAG_V1_0)
Drawing standard for the preparation of

- *Offer drawings*
- *Assembly drawings*
- *Homolgation drawings*

4 Responsibilities

The implementation of and compliance with this work instruction are the responsibility of the vice president R&D.

5 Description

5.1 General information

This work instruction serves as template or reference book with regard to the preparation of drawings.

With regard to certification and quality, all relevant legal requirements and laws have to be complied with. In addition, the relevant requirements stipulated by GRAMMER shall apply.

With regard to the contents of drawings, materials, process technology, components and systems have to meet all applicable regulatory requirements.

According to DIN EN ISO 3098, the fonts for drawings prepared by means of a CAD system are based on the Latin alphabet. The necessary mutated vowels ("umlauts": ä, Ä, ö, Ö, ü, Ü) of the Latin alphabet have to be written out as ae, Ae, oe, Oe, ue, Ue. The special character "ß" has to be written as "ss" or "sz".

5.2 Fonts for drawings prepared by means of CAD within the GRAMMER group

Table 1: Fonts of the CAD system CATIA V5

Font	**Application**
MONOSPAC 821 BT	Basic font for new drawings as of 03/2012
Swiss BT 821	Basic font for all drawings already existing. If these drawings are modified, the basic font MONOSPAC 821 BT does not have to be used.
SSS4	Chinese characters

5.3 Information on the language used in drawings

5.3.1 GRAMMER WORLDWIDE company language

- **The leading language used for drawings in the GRAMMER Group is GERMAN.**

- Drawings always have to be prepared in bilingual versions, i.e. German/English.
- Additional languages other than German/English are admissible as well, if obligatory.

5.3.2 Exception for SUSPENDED SEATS product area in China

- **The leading language for drawings in the product area SUSPENDED SEATS China is ENGLISH.**

- Chinese characters are also permitted. A translation into German is not necessarily required.
- It is essential that an English translation is given for all information in the local language (Chinese) included in the drawing.
- All information in the drawing title block should be given in German/English as before. This also applies to the SUSPENDED SEATS China product area.

5.3.3 Exception for SEAT COMPONENTS, CONSOLES product area

Texts from customer databases/customer catalogues (OEMs) are permitted in GRAMMER drawings. These texts do not need to be revised to GRAMMER specifications (font, text size).

Care should be taken to avoid the duplication of text (specifications, standards etc.).

5.3.4 Exception for SEAT COMPONENTS, CONSOLES DETROIT product area

- **The leading language for drawings within the product area SEAT COMPONENTS, CONSOLES DETROIT is ENGLISH.**

- Additional languages, such as Spanish, are permitted. A translation into German is not necessarily required if the entire project is completed within NAR (North America) (customer, supplier, development and production).
- It is essential that an English translation is given for all information in the local language (e.g. Spanish) included in the drawing.
- In the SEAT COMPONENTS, CONSOLES DETROIT product area too, all information in the drawing title block should be presented in German/English as before.

5.3.5 Exception for SUSPENDED SEATS (AG/CE, MH/TURF) product area worldwide

- In the SUSPENDED SEATS (AG/CE, MH/TURF) product area it is required to create drawings exclusively in English for quotation purposes.
- In the SUSPENDED SEATS (AG/CE, MH/TURF) worldwide product area too, all the information in the drawing title block should be presented in German/English as before.

5.3.6 Exception for location BRAZIL, all DIVISIONS

- **The leading language for drawings location BRAZIL, all DIVISIONS, is ENGLISH**

- Additional languages, such as **Portuguese**, are permitted. A translation into German is not necessarily required.
- It is essential that an English translation is given for all information in the local language (e.g. Portuguese) included in the drawing.
- In the location BRAZIL, all DIVISIONS, all information in the drawing title block should be presented in German/English as before.
- It is existing a separate drawing catalog in CatiaV5 with details in Portuguese/English language.

ALL EXCEPTIONS NOT INCLUDED IN THIS LIST ARE SUBJECT TO WRITTEN APPROVAL BY GLOBAL ENGINEERING SERVICES BEFORE A DRAWING CAN BE CREATED!

5.4 Hiding/showing note to authoritative text

Hiding text "Massgebend ist der deutsche Text/ONLY THE GERMAN LANGUAGE VERSION OF THIS TEXT SHALL BE BINDING"
This text must be hidden if there is no german text in the drawing.(Excepting texts in the title block)
As of 27/04/2016, this text can be hidden from drawings (from drawing catalogue version 10.2.0).
If drawings are NEW created (from 27/04/2016) as DESIGN COPIES of drawings that were created BEFORE 27/04/2016, proceed like this:

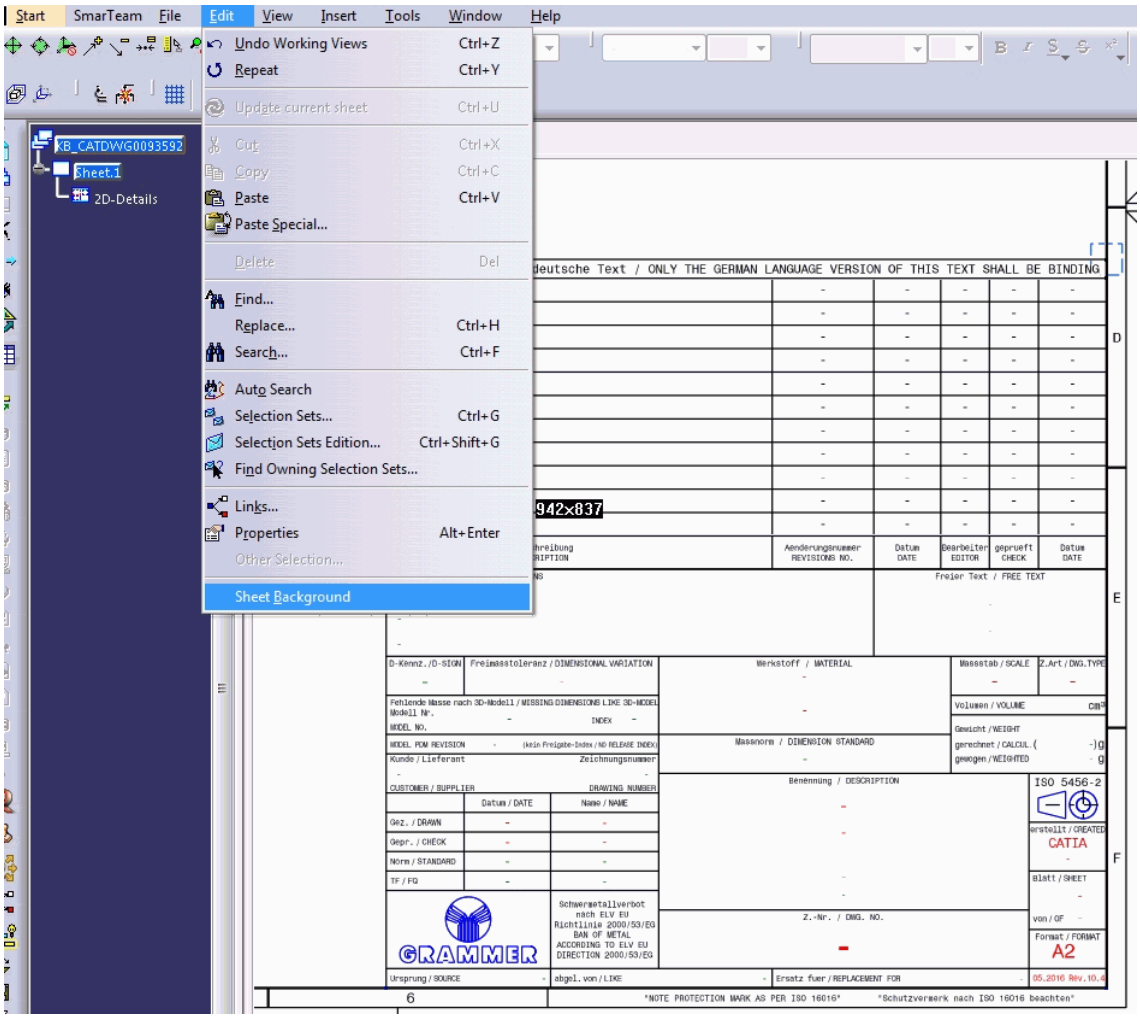
FILE > PAGE SETUP > change STANDARD and SHEET STYLE in which format is needed > ChangeBackground.CATScript > carry out Script 01.

With this procedure, a current and thus variable title block is loaded into the drawing.

5.4.1 Step 1

Click on the background of the drawing sheet

Edit > Sheet background



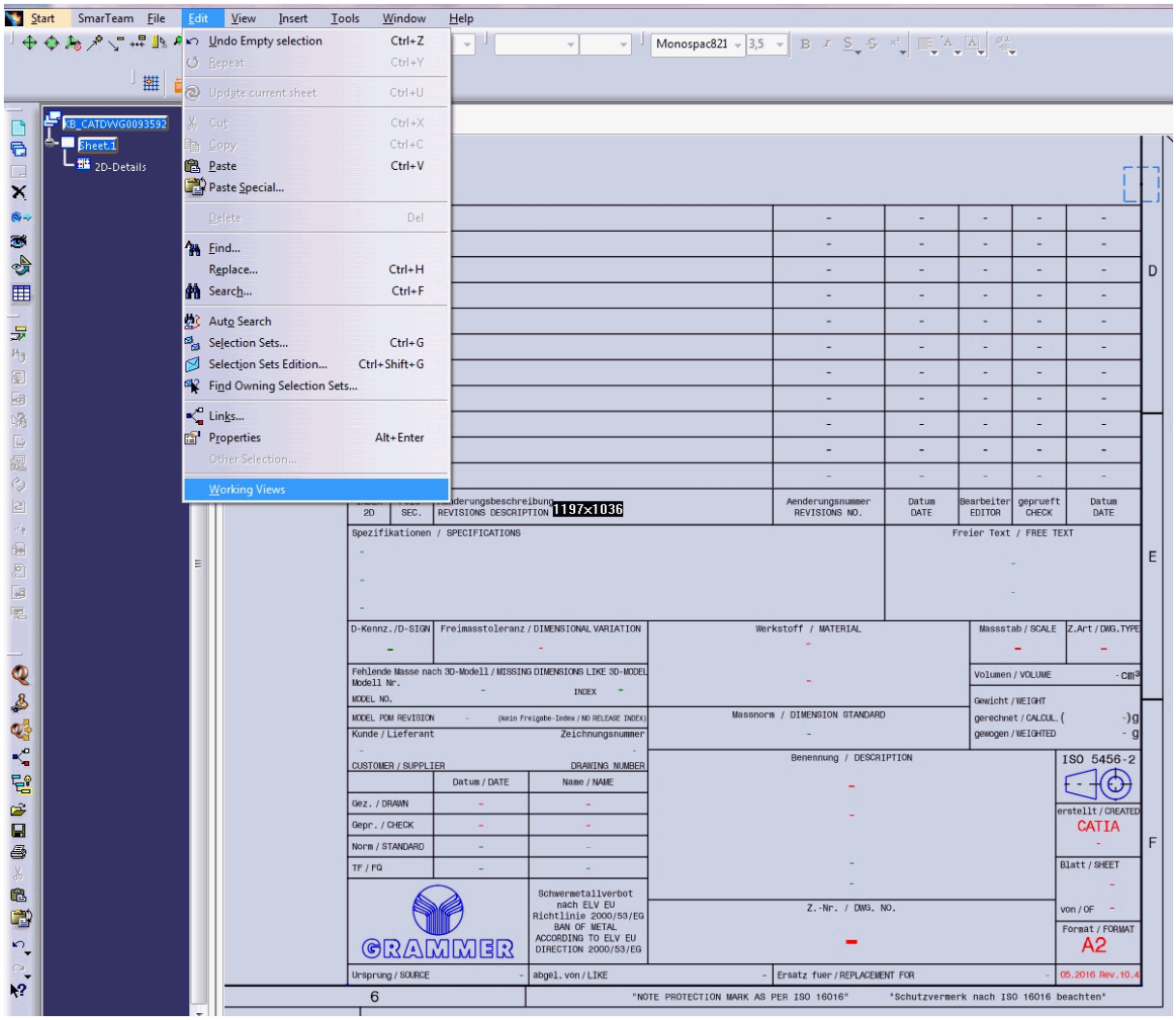
5.4.2 Step 2

Double-click the text field and place in the no-show area of the drawing

5.4.3 Step 3

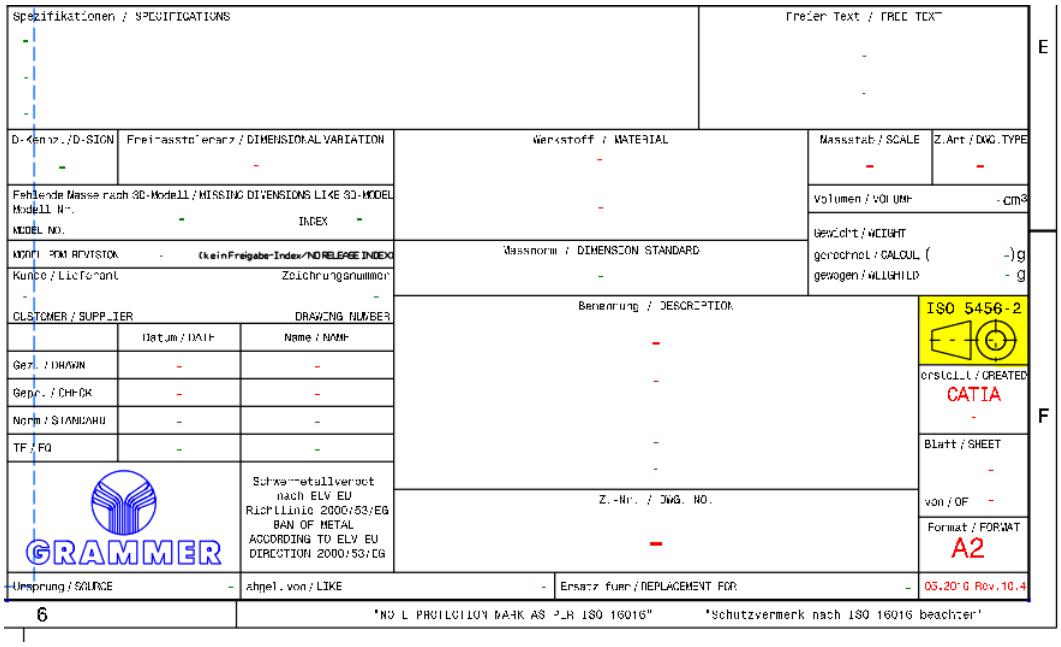
Click on the working views of the drawing

Edit > Working views

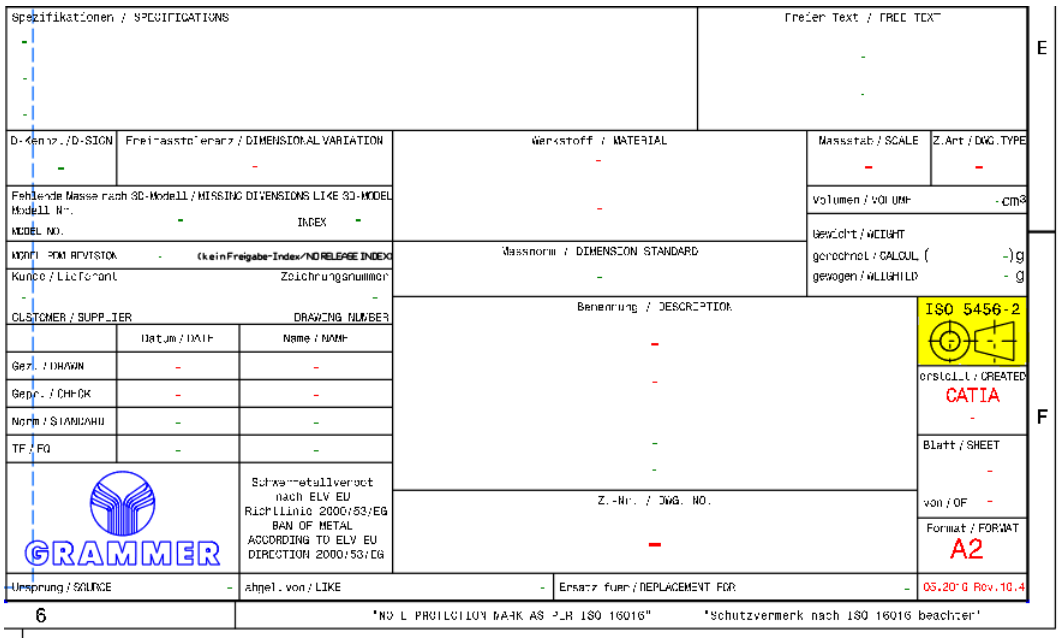


5.5 Change the ISO-Standard ISO 5456-2 to American system

If necessary, the ISO-Standard ISO 5456-2 can be converted as follows to the American representation:
Edit > Sheet Background > Noshow (Ctrl + Shift + H) > select lines and hide with the spacebar > Show (Ctrl + Shift + H) > now hide unnecessary lines (with the spacebar) > Edit > Working Views



European ISO-Standard



American ISO-Standard

5.6 Font sizes/text heights

Font sizes/text heights of labelling specifications in CAD drawings

Labelling specifications in CAD drawings are entries concerning the following:
Inventory numbers, piece numbers, designations, dimensioning, specifications for surfaces, geometrical tolerances, comments, technology blocks, indices, scales, reference numbers, section respectively view specifications and other necessary texts

Table 2: Font sizes used in CAD drawings

<table>
<tr><td>Labelling specifications in leading language (see 5.3)</td><td>Font sizes used in the GRAMMER standard (CEG_GAG_V1_0)</td><td>Font sizes used in the GRAMMER OD AD standard (AZ_MZ_GAG_V1_0) for offer drawings and assembly drawings</td></tr>
<tr><td></td><td colspan="2">CAD font (mm)</td></tr>
<tr><td></td><td colspan="2">Drawing format
DIN A3, A2, A1, A0,
special formats</td></tr>
<tr><td rowspan="2">• view specifications
• details
• sections
• reference numbers
• scales</td><td colspan="2">7</td></tr>
<tr><td colspan="2">5
Admissible for
SEAT COMPONENTS, CONSOLES division</td></tr>
<tr><td>• inventory numbers in drawings</td><td colspan="2">5</td></tr>
<tr><td>Entry in table:
• geometrical tolerances
• notes/comments
• dimensioning, dimensional tolerances
• surface specifications
• text declarations
• indices</td><td>3.5</td><td>5</td></tr>
<tr><td>Labelling specifications for additional languages in capital letters (see 5.3)</td><td>2.5</td><td>3.5</td></tr>
</table>

6 Applicable documents

DIN EN ISO 3098	
Checklist for data quality	Intranet

7 Changes

03/2012
The following GRAMMER CATIA V5 drawing standards shall be inapplicable:

- GAG_LG0,5_R16
- GAG_LG0,7_R16
- GAG_LG0,5_R19
- GAG_LG0,7_R19

09/2012
Item 3
Item 5.1
Item 5.1.2
Item 5.1.3

12/2014
Item 2
Item 5.1.1
Item 5.1.2
Item 5.1.3
Item 6

06/2016
Point 5.2 to 5.5

09/2018
Point 2
Point 3
Point 5.3.2