

ELECTRONIC MATH MODEL AND DRAWING DATA CREATION STANDARD DRAWING DATA - CGS

C2

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1 DRAWING COMPOSITION.

1.1 DRAWING REQUIREMENTS. For each type of drawing defined in the GM Drafting Standard, and as required, an appropriate CGS format/drawing file type must be created. Any reference to definitions of content requirements regarding any of the different drawing types generated with General Motors Product Design will herein be limited to the application of the convention to CGS files.

1.2 FILES AS CONTRIBUTORS TO TWO DIMENSIONAL DRAWINGS. In most cases, to generate a drawing dataset, (two dimensional drawing) two or more CGS files must be accessed. One is the format type file, the other(s) (e.g. MLDES, MLREF, MLELEC & CRITIA part files), contains the part geometry data and contribute to a drawing format. By exception, Isometric details may optionally contain format and geometric data disassociated from corresponding part files.

1.3 PART FILE DATA AS CONTRIBUTORS TO TWO DIMENSIONAL DRAWINGS. Two dimensional drawings compiled and generated from three dimensional CGS data must use as their source MLDES, MLREF, MLELEC, and CRITIA part files. Part files contribute three dimensional data to as many two dimensional drawings as required. This contribution is accomplished via the organization, or assignment of data to View collectors. All Views are then assigned to corresponding Drawing collectors.

2 FORMAT/DRAWING COLLECTORS - GENERAL INFORMATION.

2.1 DRAWING COLLECTORS.

2.1.1 For each drawing type defined in the GM Drafting Standard, where required, a separate Drawing collector must be created and stored in the MLDES part file.

2.1.2 Drawing collectors must collect at least one appropriate View.

2.1.3 Drawing collectors must collect all Views necessary to generate formatted two dimensional representations of three dimensional math models.

2.1.4 Drawing collector names in format files must contain the full drawing number of the drawing represented.

2.2 VIEW COLLECTORS.

2.2.1 View collectors must collect some appropriate data.

2.2.2 View collectors must collect all data necessary to generate formatted two dimensional representations of three dimensional math models.

2.2.3 View collectors must not collect Blocks.

2.2.4 Each View collector must be collected by a Drawing collector with the exception of log views.

2.2.5 View collectors must contain the last four digits of the drawing number for the drawing that they support.

2.2.6 All names of view collectors must begin with characters corresponding with the Drawing collectors to which they are assigned.

3 FORMAT/DRAWING TYPE FILES.

3.1 FILE STRUCTURE. Figure 3.1 is a cursory example of the structure of a format type file used to create two dimensional formats/drawings.

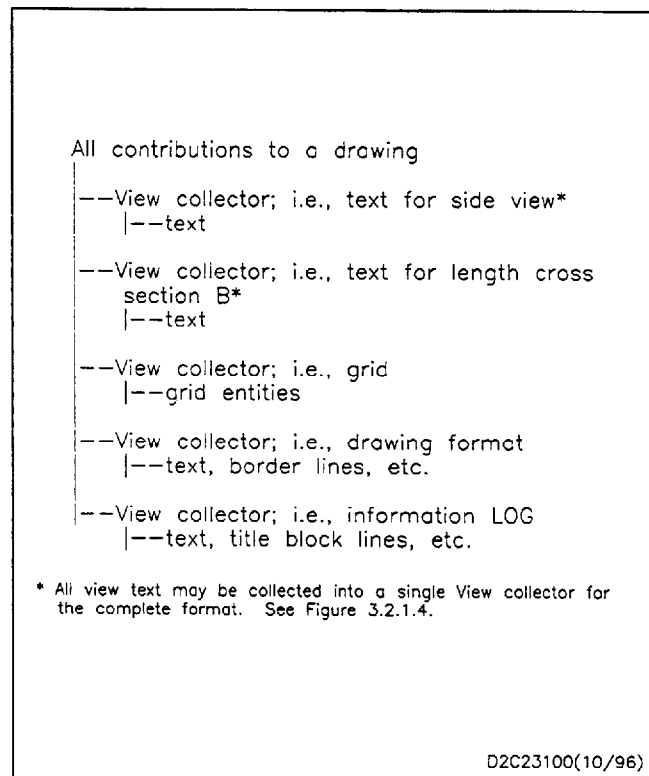


FIGURE 3.1 - FILE STRUCTURE - FORMAT/DRAWING FILE

3.2 INFORMATION LOG VIEWS. Format/drawing type files shall contain a log view providing information about the composition of a two dimensional drawing. This log includes the title block, part iteration and files to build drawing information.

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3.3 COLLECTOR NAMING. In all examples shown, lower case "n" represents a digit. Refer to 4.2.2.6 for applicable characters in positions six through ten for view collectors.

3.3.1 Layouts.

3.3.1.1 Layout Format/Drawing. Layouts function in part to coordinate the relationship of components to adjoining components or to the vehicle. Layouts also function to monitor the evolution and Release of specific parts. To these specific parts, the layout is referred to as the *principal layout*. Other parts may also be referenced as background on layouts. The relationship of layouts to these parts is that of a *reference layout*. Therefore, relative to each layout, there may be both specific principal parts, as well as specific reference parts. Conversely, each MLDES part file contributes to only one *principal layout*, but may contribute to one or more *non-principal layouts*. A CGS LYTFMT file must be created to contain supporting information, such as, view matrices, borders, title block, text, grids, and standard part data (fasteners, etc.), but not master part geometry for these formats/drawings. The geometric data contributing to layouts must be derived from MLDES and MLREF part files via the organization of Drawing and View collectors therein.

3.3.1.2 Drawing Collector. Applicable characters for the Drawing collector in format/drawing files contributing to Layouts.

D L c a n n n n _ _ = Drawing collector of all Views (cannnnn = layout number) contributing to the Layout format.

3.3.1.3 View Collectors. Applicable characters for the View collectors in format/drawing files contributing to Layouts.

L n n n n _ _ _ _ _ = View (last four digits of drawing number = nnnn) contributing to a Layout.

L O G D R A W = This log includes the "parts shown on drawing" block, "files to build drawing", block, and title block.

3.3.1.4 Example. Figure 3.2.1.4 is a cursory example of the Drawing and View collector naming convention within LYTFMT type files used to create two dimensional formats/drawings. See Figure 3.1 for corresponding structure.

```
DL3L123245
|--L2345ST  --optional-- L2345T*
|   |--text
|
|--L2345LBT
|   |--text
|
|--L2345G
|   |--grid entities
|
|--L2345M
|   |--text, border lines, etc.
|
|--LOGDRAW
|   |--text, title block, files to build drawing,
|       parts shown on drawing
|
* All view text may be collected into a single
  View collector for the complete format.
```

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FIGURE 3.2.1.4 - DRAWING AND VIEW NAMING - LAYOUT IN A LYTFMT FILE

3.3.2 Typical Sections.

3.3.2.1 Typical Section Format/Drawing. For each Typical Section format/drawing a number is assigned in accordance with the GM Design Standard. A CGS LYTFMT file must be created to contain supporting information, such as, view matrices, borders, title block, text, grids, and standard part data (fasteners, etc.), but not master part geometry for these formats/drawings. The geometric data contributing to Typical Section formats/drawings must be derived from MLDES, MLREF, MLELEC, and CRITIA part files via the organization of Drawing and View collectors therein. LYTFMT files will be identified in TDMF by a layout number. All LYTFMT files supporting Typical Section drawings that are part of a logical series (i.e., car line) will be administratively cross-referenced in TDMF by an alias. This alias is constructed from the following attributes: Product Year, Typical Identifier and Product Identifier, Example: 94T01A6KD69 represents 19(94) (Typical Section #01A) for vehicle (6KD69). Multiple aliases can be added to LYTFMT files that have multiple product or product year uses.

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3.3.2.2 Drawing Collector. Applicable characters for the Drawing collector in format/drawing files contributing to Typical Section formats/drawings.

D T n a n n n n n _ - Drawing collector of all Views (nnnnnnn = layout number) contributing to the Typical Section format.

3.3.2.3 View Collectors. Applicable characters for the Views in format/drawing files contributing to Typical Section formats/drawings.

T n n n n _ _ _ _ - View (last four digits of Typical Section layout number = nnnn) contributing to a Typical Section.

L O G D R A W - This log includes the "parts shown on drawing" block, "files to build drawing", block, and title block.

3.3.2.4 Example. Figure 3.2.2.4 is a cursory example of the Drawing and View collector naming convention within LYTFMT type files used to create two dimensional formats/drawings. See Figure 3.1 for corresponding structure.

```

DT1L12345
|--T2345T*
  |--text

--T2345G
  |--grid entities

--T2345M
  |--text, border lines, etc.

--LOGDRAW
  |--text, title block lines, etc.

```

* All view text may be collected into a single View collector for the complete format.

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FIGURE 3.2.2.4 - DRAWING AND VIEW NAMING - TYPICAL SECTIONS IN A LYTFMT FILES

3.3.3 Details.

3.3.3.1 Detail Format/Drawing. There are two types of detail formats/drawings, single part or assembly (multiple part). Each of these may be represented as either of two formats/drawings, Orthographic or Isometric. As required, use the following:

3.3.3.2 Orthographic Detail Format. The geometric data for an Orthographic detail format/drawing must be derived from its corresponding MLDES or MLELEC part file, associated via the organization of Drawing and View collectors therein.

3.3.3.3 Isometric Detail Format. The geometric data for an Isometric detail format/drawing must be derived from its corresponding MLDES or MLELEC part file, and may either be copied from that file, thereby disassociating it, or remain only in the MLDES part file, associated via the organization of Drawing and View collectors therein.

3.3.3.4 Single Part Detail Format/Drawing. A CGS DWGFMT file must be created to contain supporting information (as does a LYTFMT file), such as, view matrices, borders, title block, text, grids, KPC's, GD&T, and standard part data (fasteners, etc.). The geometric data for all detail formats/drawings must be derived from corresponding MLDES part files, associated via the organization of Drawing and View collectors therein. DWGFMT files will be identified in TDMF by their detail drawing number.

3.3.3.5 Drawing Collector. Applicable characters for the Drawing collector in format/drawing files contributing to the Part detail format.

D P n n n n n n n n - Drawing collector of all Views (nnnnnnnn = drawing number) contributing to a single Part detail format (orthographic or isometric).

3.3.3.6 View Collectors. Applicable characters for the View collectors in format/drawing files contributing to orthographic Part detail formats.

P n n n n _ _ _ _ - View (last four digits of drawing number = nnnn) contributing to an orthographic Part detail format

L O G D R A W = This log includes the "parts shown on drawing" block, "files to build drawing", block, and title block.