General Information and Contents

The standards that follow have been approved and published by the E&C Design Team.

Contents

REVISION RECORD

| DATE	REVISION	DESCRIPTION
01AP03	00	Initial Publication
15OC03	01	Paragraph 3 added, page 3.0
22FE05	02	Page 2.2 added Pages 2.0-2.2 updated for specification values

1. **Quality/Customer Interface Characteristic Symbol and Drawing Block**

    1.1   The approved symbol to be used on engineering drawings and specifications to identify QCI's is available in Unigraphics among the Custom Symbols for Delphi E&C.

    1.1.1   An alternate method that should be used <u>only</u> for placing symbols in text and general notes is to place a Unigraphics User Defined Symbol from the Utility Directory. For the Windows environment, the symbol file is *delphi_win.sbf*. For the Unix environment, the symbol file is *significant_symbols.sbf*.

    1.2   The QCI block is accessed through the Delphi Corporate Drawing Format program. The block is automatically placed in the lower left quadrant of the drawing format.

    1.3   The QCI designation symbol is defined as shown below.
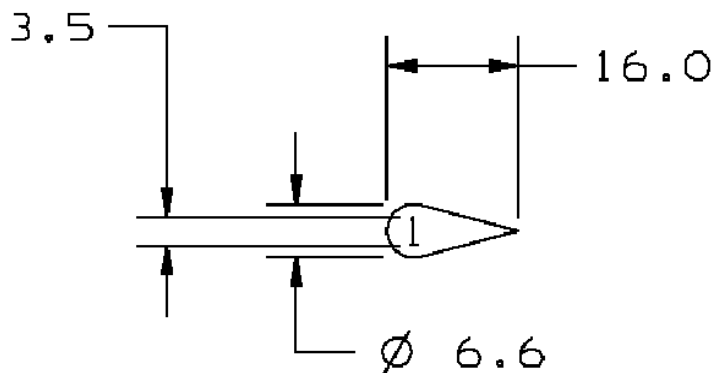
2. Target Dimensions and Functional Specifications on Engineering Documents

2.1 This standard addresses the use and application of target dimensions and specification values on engineering documents (e.g. product and process drawings, material, performance and test specifications, and customer technical specifications where possible). By using target dimensions and specification values, Delphi E&C should be able to reduce costs incurred due to product/process variation. As a product/process deviates from the target additional costs may be incurred.

2.2 Effective April 1, 2003, all new and in-process designs shall utilize bilateral tolerances (dimension with a target value and a tolerance) rather than limit dimensions (goal post dimensions).

2.2.1 Unacceptable

3.85
3.35

2.2.2 Acceptable

3.6 ±0.25

2.3 Any designs revised after April 1, 2005 shall be reviewed for the use of bilateral tolerances (target dimensions and specification values) rather than limit (goal post) dimensions or max/min dimensions and specification values. The Dimension and Specification Review Checklist (Paragraph 2.7) should be completed at the time of the review to help determine if updating the dimension/value and tolerance scheme is justified.

2.3.1 Target dimensions and specification values will be reviewed and revised as necessary by the Design Responsible Engineer and the engineering document owner. Revisions will be accomplished through authorized Engineering Changes, as applicable. If targets are not defined, existing designs and specifications will not change due to potential impacts to various functions and processes. Potential impacts include, but are not limited to, tools, gages, DFMEA's, PFMEA's, process sheets, test specifications, PPAP, quoted purchased part and/or tooling prices, and service manuals.

2.4. Exceptions to this standard shall be:

2.4.1. Targets requiring unequal bilateral and unilateral tolerances (e.g. 3.6 +0.3/-0.1, 3.6 0/-0.2, 3.6 +0.2/0) when an engineering requirement is documented in an Engineering Change and/or Design Review documents.

2.4.2. Parts produced to industry standard sizes will not change (e.g. sheet stock sizes, and screw and thread designations).

2.4.3. Specification values, where different tolerancing schemes are consistent with the industry's standard practices. (e.g. strength limit at a minimum allowable value).

2.4.4. Customer outline drawings, when a different tolerancing scheme is defined and required by the customer.

2.5. General title block tolerances shall continue to apply where applicable.

2.6. For solid models to meet the requirements of this standard, they will be modeled to the target value.

2.7. Dimension and Specification Review Checklist

Yes **No**

☐   ☐   1. Is the dimension or specification value a QCI or KPC?

☐   ☐   2. Is the dimension or specification value critical to the function of the part?

☐   ☐   3. If the drawing is an assembly, was the dimension or specification value carried forward from a component drawing? If No, go to question 4.

☐   ☐   3a. If yes, was a target dimension or specification value used on the component drawing?

☐   ☐   4. Does the dimension or specification value represent an industry standard ?

☐   ☐   5. Is the document a customer specification or outline drawing with a customer required tolerancing scheme?

If **Yes** to question 1, or to 3 and 3a, the dimension or specification value should be changed to a target value.

If **Yes** to question 2, consideration should be taken to change the dimension or specification value to a target value.

If **Yes** to question 4, the dimension or specification value does not require a target value.

If **Yes** to question 5, follow the tolerancing scheme required by the customer.

3. Revision Level of Parts Shown on Charts

3.1   The revision level of each part or assembly represented by a chart drawing will be given in a row or column, as appropriate, in the grid or table portion of the drawing. (Note: Not applicable to Delphi Diesel Systems feature-based drawings.)