1. PURPOSE

This standard defines and describes the principles and procedures for interpreting specific items on CNH Product Engineering drawings including drawing tolerances and other items listed within this document.

2. SCOPE

When displayed this standard is to be followed by manufacturers and suppliers when interpreting CNH Product Engineering drawings for the purpose of creating parts and assemblies.

In addition, this standard is to be followed by CNH, its subsidiaries, joint ventures, and associated design services or agencies when creating or revising CNH Product Engineering drawings.

Significant additions and / or revisions to the text have been highlighted in grey.
Figure captions and table titles for new or revised figures or tables will also be highlighted.

ECO	REV	CHANGES	AUTHOR	APPROVED BY	DATE
35396217	H	Updated to reflect the new Title Block and new PLM System; Updated the standard template	R PEREIRA	O VIEIRA	26SEP24
35342490	G	Revised standard title; Added a section for Regulated Substances to apply ENS0605 to all CNH drawings	O VIEIRA	P TUPEK	22DEC21

Contents

3. ACRONYMS/DEFINITIONS

3.1. ACRONYMS

ASME — American Society of Mechanical Engineers
ISO — International Standards Organization

3.2. DEFINITIONS

Broken Edge(s) – the intersection of two surfaces displayed as a chamfer or a radius.

Engineering Drawing – those drawings that communicate the requirements for the manufacture, assembly, or installation of an item.

General Tolerances – tolerances based on a standard or document and applied to those dimensions for which no specifically assigned tolerance is shown on the drawing.

Tolerance – the total amount by which a specific dimension is permitted to vary.

4. RELATED DOCUMENTS

4.1. RELATED STANDARDS

4.1.1. CNH Standards

CNH standards apply at the latest version available.

CNH DWGA100 — Drawing Sheet Sizes and Formats
CNH DWGA115 — Notes on Drawings
CNH DWGA130 — Welding – Symbols and Drawing Practices
CNH DWGA140 — Surface Texture – Roughness, Waviness and Lay
CNH DWGB100 — Dimensioning and Tolerancing
CNH DWGB105 — Specifying General Tolerances
CNH ENS0162 — Hydraulic Connection Torques
CNH ENS0605 — Regulated Substances
CNH ENS7001 — Tightening of Threaded Fasteners

4.1.2. Industry Standards (International and National)

Unless otherwise specified, Industry Standards apply at the version listed below.

ASME B1.1 – 2024 — Unified Inch Screw Threads (un, unr, and unj thread forms)
ASME B1.13M – 2020 — Metric Screw Threads: M Profile
ASME B1.20.1 – 2013 — Pipe Threads, General Purpose (inch)
ASME B1.20.3 – 2023 — Dryseal Pipe Threads (Inch) - Revision and Redesignation of B2.2-1968

4.2. REPLACED STANDARDS

None

4.3. ORDER OF PRECEDENCE

In the event of a conflict between the text of this standard and the references cited herein, the text of this standard will take precedence.

5. CONFORMANCE

This document is not intended to take the place of any information that is required to be displayed on the drawing by other documents. This standard is intended to be referenced in those instances when said items have not been specified on the drawing.

6. REFERENCING THIS STANDARD ON DRAWINGS

This standard is to be displayed on the first line in the Applicable Standards Block on all CNH drawing forms as follows. The STD NO is “DWGB001” and the DESCRIPTION is “DRW INTERPRETATION AND SPECS”. This information is not to be removed from the drawing form or edited in any manner without the approval of Engineering Standards.

DWGB001	DRW INTERPRETATION AND SPECS
STANDARD	DESCRIPTION
APPLICABLE STANDARDS	

7. DRAWING INFORMATION PRIORITY

Drawing information is to be interpreted in the following order with “**A**” being the highest priority and “**G**” being the lowest priority.

A. Metric units of measurement must be applied in accordance with preprinted Title block text information.
B. Drawing Views and Associated Dimensions, Tolerances, and Flag and Local Notes (See CNH DWGA115).
C. CNH Approved Drawing Symbols (for example Grain Direction, or Induction Hardening Permitted).
D. General Notes and Material Notes (See CNH DWGA115).
E. Title block contents including but not limited to Angle of Projection and Part Description (except for Metric information previously defined as highest priority).
F. Applicable Standards Block contents.
   Note: If two or more standards within the block cause conflicting interpretations, said standards must be relocated and displayed as a drawing note that clearly indicates an order of precedence.
G. CNH Drawing Standard DWGB001 and its contents.

Note: DWGB001 will not impose tolerance, interpretation or requirements over a document or drawing not controlled by CNH being displayed on a CNH drawing form

8. DRAWING INFORMATION INTERPRETATION

If any doubt or confusion exists regarding drawing interpretation, an inquiry must be made to clarify design intent. The inquiry is directed:

1) First to the person who is listed in the BY column of the latest drawing revision shown in the Revision History Block.
2) If the query cannot be resolved at this level, it must then move to the Product Platform Engineer for the product on which the part was first released.

In the case of a material specification or material callout, it must first be directed as above. If still unresolved, the Materials Group should then be contacted.

9. DRAWING DIMENSIONING AND TOLERANCING

9.1. DIMENSIONING AND TOLERANCING

Unless otherwise specified in the drawing, the display, designation and interpretation of dimensioning and tolerancing are to be in accordance with CNH DWGB100.

Unless otherwise specified in the drawing, CNH DWGB100 is applicable to all CNH engineering drawings.

9.2. GENERAL TOLERANCES

Unless otherwise specified in the drawing, the display, designation and interpretation of general tolerances are to be in accordance with CNH DWGB105.

Unless otherwise specified in the drawing, CNH DWGB105 is applicable to all CNH engineering drawings.

When a drawing is being revised the legacy drawing form is replaced with a current drawing form and title block as defined in the current version of CNH DWGA100. This current form does not contain any reference to CNH DWGB105. As previously described, DWGB001 appears by default in the Applicable Standards Block.

With the introduction of the current drawing form, the non-conforming practice of showing trailing zeroes on millimeter dimensions is no longer supported by any CNH CAD system. With the elimination of trailing zeroes on millimeter dimensions, the practice of displaying the General Tolerances (North American Practice) symbol is no longer applicable and is no longer allowed on new or revised drawings.

It should be noted that in some CAD tools trailing zeroes are placed on angular dimensions by default and that this display is difficult to manage. In these instances, trailing zeroes are permitted to be displayed when the angular dimension is a reference dimension.

10. BURRS

When a value for burr height or removal is not specified on the drawing, the following requirements apply. Burrs must not exceed 0.25 mm or 10% of the material thickness in height, whichever is greater.

- Loose or hanging burrs must be removed.
- Burrs that are hazardous or that may affect subsequent processing such as a weld fit-up or location in weld fixture, or weld quality (strength) must be controlled by the manufacturer or supplier.
- This requirement also applies to parts that are manufactured using plasma arc, laser, or flame cutting. Burrs and slag resulting from these processes must be controlled by the manufacturer or supplier.

11. THREADS

In those instances where a thread is displayed the display and designation are to be in accordance with CNH DWGB100.

11.1. UNIFIED INCH SCREW THREADS

Unless otherwise specified, unified inch screw threads are to be in accordance with ASME B1.1.

11.2. METRIC SCREW THREADS – M PROFILE

Unless otherwise specified, Metric M profile threads are to be in accordance with ISO 68 basic profile and ISO 965/1 tolerance practices. Threads produced to these standards are fully interchangeable with those produced to ANSI/ASME B1.13M Threads.

11.3. PIPE THREADS

Unless otherwise specified, general purpose pipe threads (inch) are to be in accordance with ASME B1.20.1 and dryseal pipe threads (inch) are to be in accordance with ASME B1.20.3.

11.4. ALL OTHER SCREW THREADS INCLUDING STUB ACME AND BUTTRESS THREADS

Unless otherwise specified, all other screw threads are to be in accordance with the appropriate ASME B1 series standard for that particular thread type.

12. SURFACE TEXTURE – ROUGHNESS, WAVINESS AND LAY

Unless otherwise specified, the display, designation and interpretation of all surface texture symbols are to be in accordance with CNH DWGA140 Surface Texture – Roughness, Waviness and Lay.

Unless otherwise specified, CNH DWGA140 is applicable to all CNH engineering drawings.

13. TORQUE

13.1. HEX HEAD BOLT FASTENERS

Unless otherwise specified, clamping load and torque values to be used in solid bolted joints for both metric and inch hardware are to be in accordance with CNH ENS7001.

Unless otherwise specified, CNH ENS7001 is applicable to all CNH engineering drawings.

13.2. HYDRAULIC CONNECTIONS

Unless otherwise specified, hydraulic connection torques are to be in accordance with CNH ENS0162.

Unless otherwise specified, CNH ENS0162 is applicable to all CNH engineering drawings

13.3. GENERAL

In those instances where CNH ENS7001 or CNH ENS0162 are not applicable, a torque value may be provided by means of a direct value or a drawing note with an appropriate metric unit of measurement or by means of a referenced document.

In those instances where CNH ENS7001 or CNH ENS0162 are not applicable and a torque value is not specified by other means, the minimal requirement is established by manufacturing assembly guidelines.

Manufacturing Engineering may request Product Engineering to review for a potential drawing revision when torque ranges definition differs significantly from industry practices.

14. WELDING - SYMBOLS AND DRAWING PRACTICES

Unless otherwise specified, the display, designation and interpretation of all welding symbols are to be in accordance with CNH DWGA130.

Unless otherwise specified, CNH DWGA130 is applicable to all CNH engineering drawings.

15. REGULATED SUBSTANCES

Unless otherwise specified, Regulated Substances which, by law, regulation, or CNH direction shall be prohibited, restricted or declarable are to be in accordance with CNH ENS0605.

The requirements of CNH ENS0605 must be applied to all materials supplied to CNH for Agricultural and Construction Equipment.

16. COMMUNICATION TO CNH SUPPLIERS

CNH DWGB001 will be made available through CNH Supplier Portal. Unless otherwise specified, all CNH controlled standards or documents listed in CNH DWGB001 that are required to create a part or an assembly will be made available through the CNH Supplier Portal.

CNH Purchasing is tasked with making sure that suppliers are aware of the availability of these standards or documents in CNH Supplier Portal. In those cases where suppliers do not have access to the CNH Supplier Portal, Purchasing will provide copies of DWGB001 and any other relevant CNH controlled standards or documents as needed.

Due to copyright restrictions, CNH as a whole and more specifically CNH Purchasing will not provide any standards or documents that are not under CNH control even when specified on the drawing. The supplier will be responsible for obtaining said standards or documents.

17. LEGACY DRAWINGS AND IMPLEMENTATION

17.1. LEGACY DRAWINGS

17.1.1 All CNH drawings released prior to the publication and adoption of DWGB001 need not be modified but can retain their original views, tables, notes and associated information until modified.

17.1.2 Those CNH drawings that display DWGB001 must be interpreted per the latest published version of DWGB001.

17.1.3 As of Revision Level C, Sections 9.3 thru 9.7 and the associated tolerance value information have been removed. Any legacy drawing that did not display any general tolerance values by any other method and was officially released after the issuance of DWGB001 Revision Level A on 14FEB2014 and before the issuance of the current Revision Level C can apply the general tolerance values listed in Appendix A as needed to complete the interpretation of said drawing.

17.2. IMPLEMENTATION

17.2.1 All CNH drawings *(including those made from cloned parts)* released after the publication and adoption of DWGB001 **must display DWGB001 in the Applicable Standards Block.**

17.2.2 All CNH drawings released prior to the publication and adoption of DWGB001 **must add** this standard when **revised or modified.**

This means that DWGB001 must be added to the Applicable Standards Block of the drawing as part of the revision process.

Typically, this is done by replacing the existing drawing form with the most current drawing form.

The latest version of this standard supersedes any and all previously published versions.

Appendix A – Tolerance Values for previously released drawings that display DWGB001 in the title block but did not display any general tolerance values.

The following tolerance values will be applied to those drawings that display DWGB001 in the title block but 1) did not display any general tolerance values by any other method and 2) were officially released after the release of DWGB001 Rev Level A on 14Feb2014 thru the release for Rev Level C 4Aug2014.

A broken edge is the intersection of two surfaces that are displayed as a chamfer or a radius.

Permissible deviation for linear dimensions, except for broken edges, for class c

Permissible deviations for basic size range	Tolerance class	
	Designation	Description
	c	coarse
0.5 up to 3 mm	+/- 0.2 mm	
Over 3 up to 6 mm	+/- 0.3 mm	
Over 6 up to 30 mm	+/- 0.5 mm	
Over 30 up to 120 mm	+/- 0.8 mm	
Over 120 up to 400 mm	+/- 1.2 mm	
Over 400 up to 1000 mm	+/- 2 mm	
Over 1000 up to 2000 mm	+/- 3 mm	
Over 2000 up to 4000 mm	+/- 4 mm	

Note: For those size ranges above 4000 mm the following tolerance values will be applied.

Permissible deviations for basic size range	Tolerance Value
Over 4000 up to 8000 mm	+/- 5 mm
Over 8000 up to 12000 mm	+/- 6 mm
Over 12000 up to 16000 mm	+/- 7 mm
Over 16000 mm	+/- 8 mm

Permissible deviation for broken edges, for class c

Permissible deviations for basic size range	Tolerance class	
	Designation	Description
	c	coarse
0.5 up to 3 mm	+/- 0.4 mm	
Over 3 up to 6 mm	+/- 1 mm	
Over 6 mm	+/- 2 mm	

Permissible deviation of angular dimensions, for class c

Permissible deviations for ranges of lengths, in mm, of the shorter side of the angle concerned	Tolerance class	
	Designation	Description
	c	coarse
up to 10	+/- 1 degree 30 minutes	
Over 10 up to 50	+/- 1 degree 0 minutes	
Over 50 up to 120	+/- 0 degrees 30 minutes	
Over 120 up to 400	+/- 0 degrees 15 minutes	
Over 400	+/- 0 degrees 10 minutes	

The values for tolerance class L, as listed in ISO 2768-2 General Tolerances – Part 2: Geometrical tolerances for features without individual tolerance indications will be applied on those drawings that display DWGB105 in the title block but do not display any general tolerance values.

General tolerance on straightness and flatness, for class L

Straightness and flatness tolerances for ranges of nominal lengths	Tolerance Class L
up to 10 mm	0.1 mm
Over 10 up to 30 mm	0.2 mm
Over 30 up to 100 mm	0.4 mm
Over 100 up to 300 mm	0.8 mm
Over 300 up to 1000 mm	1.2 mm
Over 1000 up to 3000 mm	1.6 mm

General tolerance for circularity is equal to the numerical value of the diameter tolerance, but in no case shall it be greater than the respective tolerance value for circular radial run-out.

General tolerance on cylindricity is not specified.

General tolerance on parallelism is equal to the numerical value of the size tolerance or the flatness/straightness tolerance, whichever is the greater.

General tolerance on perpendicularity, for class L

Perpendicularity tolerances for ranges of nominal lengths of the shorter side
up to 100 mm
Over 100 up to 300 mm
Over 300 up to 1000 mm
Over 1000 up to 3000 mm

General tolerance on symmetry, for class L

Symmetry tolerances for ranges of nominal lengths	Tolerance Class L
up to 100 mm	0.6 mm
Over 100 up to 300 mm	1 mm
Over 300 up to 1000 mm	1.5 mm
Over 1000 up to 3000 mm	2 mm

General tolerance on coaxiality is not specified.

General tolerance on circular run-out (radial, axial and any surface of revolution), for class L

Tolerance Class	Circular run-out tolerances
L	0.5 mm