

Guidelines for the development of drawings for a test tool to be added as an Addendum to UN Mutual Resolution No. 1 (M.R.1) - (ECE/TRANS/WP.29/1101)

I. Introduction

These guidelines shall serve as the basis to prepare a complete set of drawings to describe a test tool to be added as an addendum to M.R.1. These guidelines are also applicable in the event that revised drawings are submitted in association with a change to a tool already listed in M.R.1.

While not necessarily exhaustive, these guidelines set the minimum requirements to be considered before a set of drawings can be added to M.R.1. and shall be followed when developing proposals for consideration by the relevant Expert Group and WP.29

II. Provision of drawings

Ideally the manufacturer's drawings will be made available for review and insertion into M.R.1. However, changes are almost certain to be required to make them compatible with UNECE requirements, e.g. the Title Block (Section VI). These changes can be achieved by:

- the manufacturer revising the drawing set in accordance with the recommendations of the review described in this document,
- the manufacturer providing their drawings in an editable format for amendment by a third party, or,
- the generation of a complete drawing set by a third party.

The UNECE Secretariat does not have the facilities to produce or amend drawings.

Revision of a test tool already existing as addendum in M.R.1

If an existing test tool in M.R.1 is revised, the procedure to identify these changes in the M.R.1 is depending of the influence the change has in relation to the performance of the whole dummy.

Example 1 (EuroSID vs. EuroSID-2): If a test tool is completely revised and updated in line with a new design, the revised test tool shall become a new addendum to the M.R.1. If the test tools share parts, reference to the drawings of the basic test tool can be made (see section IV of this document).

Example 2 (revision of test tool has influence on the performance of the dummy): If the performance of a test tool is influenced by the revision of parts of this test tool, this will have an influence on the regulations in which the test tool is referenced. It is therefore necessary that the changes to a test tool are documented in the M.R.1. The addendum of this test tool shall be extended by a documentation of the revised parts

in Annex 1 **[add example]** of the addendum in M.R.1 accordingly. The documentation shall also include the version of the regulation, for which the updated / revised tool is used.

Example 3 (revision of test tool has no influence of the performance of the dummy): If changes to a test tool are not influencing the performance of the dummy, it is also recommended to document the changes in Annex 1 of the addendum of this test tool.

III. Process to incorporate drawings for a test tool in the M.R.1

To prepare a set of drawings, a step based approach to check completeness, consistency and correctness of the individual drawings is recommended.

- Review of the individual drawings (“review on surface level”) - Section IV.
- Check consistency of drawings with the physical tool (“deep dive”) – Section V.
- Revision of the Title Block of the Drawings – Section VI.
- Prepare draft proposal for the addendum to the M.R.1 – Section VII

The review of the individual drawings shall be performed according to Section IV to VI to prepare the drawings in a uniform standardised form.

IV. Surface Level Review of drawings

Ideally the drawing set required for inclusion in an addendum to the Mutual Resolution will be provided by the manufacturer of the test tool in question. However, in addition to checking for accuracy and completeness, these drawings have to be checked to ensure that they are appropriate for inclusion in M.R.1.

The following list, while not necessarily exhaustive, indicates the type of detail to be reviewed and revised to be considered as “engineering drawings”.

- It is inappropriate for the UN to publish material that gives specific endorsement to a manufacturer or supplier. Manufacturer or brand names/logos shall be removed from the drawing.
- All essential dimensions and tolerances shall be provided on the drawing.
- Parts whose mass and/or centre of gravity can affect the performance of the tool must be identified and the detail provided on the drawing as necessary.
- Sensor measurement locations (for those sensors to be used in regulation) shall be defined within the dummy in the appropriate assembly.

- Where manufacturer/brand names are used to identify particular materials that are necessary for the performance/durability of the tool (e.g. urethane) these references shall be replaced with the material properties.
- National or international norms, e.g. ISO, SAE, ASTM, etc. shall be used wherever appropriate to describe material and/or parts properties, e.g.
 - Threads - Metric ISO 724 M Thread (metric ISO 724 thread) Standard in Europe)
 - ASTM - Aluminium 7075-T6
- Brand names shall be replaced with generic descriptions, e.g.
 - “Loctite 290” → Thread Locking Adhesive, operating temperature, -55°C to +150°C
- Manufacturing processes shall be removed and replaced with objective description of the outcomes required, e.g. hardness, surface finish, etc.

In the case that test tools share parts, section 2 (General provisions) paragraph 2.5 of the M.R.1 applies:

“In the event that a test tool shares parts with another tool registered within this Mutual Resolution, the drawings are not duplicated but reference is made to a master drawing in a “parent” Addendum.”

This means that a reference to the existing specific part(s) of an addendum of a test tool is made in a new addendum to M.R.1 for a new test tool sharing these specific part(s) with a test tool already existing in M.R.1.

While 3D-drawings are not considered to be used for describing and defining a test tool, these drawings can be foreseen on a comprehensive basis to visualise a complete test tool or single parts of a test tool for explanatory purpose.

V. Consistency of the drawing set with the physical test tool.

It is recommended that this check for consistency, completeness and correctness (“deep dive”) is performed by comparing 100% of the parts of the test tool with the drawings in which they are described.

However, with the agreement of the Contracting Parties (in accordance with the voting arrangements of the 1958 and/or 1998 Agreements as appropriate) at the relevant Group of Experts, this check may be performed on a selection of less than 100% of the parts of this tool. If this approach is adopted it is necessary to ensure that the selection is representative of the complete test tool (random sample) and will include the significant parts of the tool (i.e. ignoring basic parts such as fasteners

and other common parts that may be sourced openly in the market) and those parts that are identified as being critical to the tool's performance.

The methodology used for the checks can be either the:

- “Measuring-Approach” - dismantling and measuring the individual assembly parts, or,
- “3D-Approach” - using digitised data, which has been generated based on 3D-measurements of the physical test tool.

VI. Title Block

This section describes certain essential elements of the title block. The example shown is indicative and the general style and content may differ between various drawing sets.

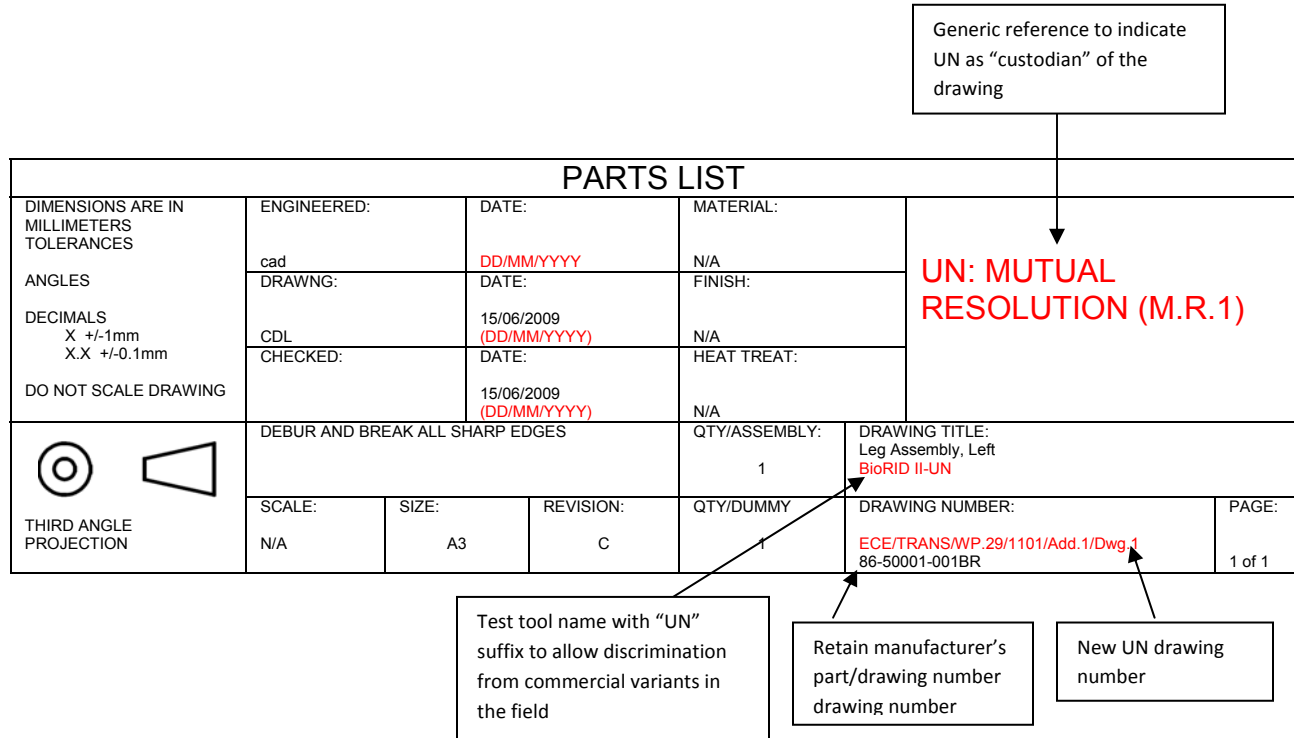
- Main reference to read – “UN: MUTUAL RESOLUTION (M.R.1)”. This generic term identifies the UN as the principal custodian of the drawing.

Under “Drawing Title”, a specific UN name for the test tool, common with its description within UN GTR's or UN ECE regulations should be used for the principal description, e.g. “BioRID II-UN”. This descriptor will differentiate the tool from, e.g., R&D variants.

- The manufacturer's drawing number should be retained but an official UN drawing number shall be placed in the same box of the title block immediately preceding the manufacture's number. In accordance with the Mutual Resolution, the UN drawing number will use the official number of M.R.1, followed by the reference to the specific Addendum (Add.*). Due to the number of parallel developments at the time of adoption of M.R.1, the first Addenda have been reserved as follows:

Addendum 1 - BioRID	ECE/TRANS/WP.29/1101/Add.1
Addendum 2 - WorldSID	ECE/TRANS/WP.29/1101/Add.2
Addendum 3 - FlexPLI	ECE/TRANS/WP.29/1101/Add.3
Addendum 4 - Q-Dummy	ECE/TRANS/WP.29/1101/Add.4

Each drawing will then be defined by a unique number for the test tool in question. The full sequence will then read as:
ECE/TRANS/WP.29/1101/Add.1/Dwg.1



Title Block: Example

VII. Prepare draft proposal for the addendum to the M.R.1

- For efficiency, it is recommended that the preparation of an addendum, and in particular the drawing review, be conducted firstly by a small group with specific experience and expertise with the test tool under consideration. Nevertheless, the proposal should be subject to wider review prior to its presentation to the Group of Experts.
- While a drawing set is expected for each test tool, the structure of an addendum will necessarily vary in response to the complexity of test tool under consideration. The drafting group should ensure that the proposed text includes all that is necessary to ensure the correct assembly, **disassembly**, maintenance and calibration of the tool.
- When working on the basis of the manufacturer's manual, the guidelines in Section IV (regarding appropriate content) should be followed. Care should be taken not to duplicate text in the associated regulation(s) and in the addendum – it

should be considered whether information specific only to the use of the tool as an assessment device should be placed within the regulatory text.

- There may be certain parts or equipment that are integral to the test tool but whose performance characteristics require specific reference within the regulatory text, e.g. instrumentation, data acquisition, etc. In such cases consideration should be given to any physical characteristics of these parts or equipment that may influence the overall performance of the test tool, e.g. physical dimensions, centre of mass, etc. If appropriate, these characteristics shall be detailed in the addendum.