



ENGINEERING ACCEPTANCE - TECHNICAL NOTE

Subject: Direct Replacement Component Certification

Advice to: CCBs and VABs

Reference: Standard: GM/RT2000 Issue: 3 Clause: 8.3

Applies when: Certificating like-for-like components.

Note's Purpose: To publicise the permissions of Non-Compliance 03/164/NC.

Background: Under the requirements of GM/RT2000 a new certificate of Engineering Acceptance was required for every vehicle on which a direct replacement component or material was to be fitted if the direct replacement component or material was not identical in every respect to the original– even though the alternative may be fully interchangeable, and its installation process and maintenance were identical. Examples of such direct replacement components are: alternative, fully interchangeable brake pads; alternative windscreen assemblies; alternative AWS components. The Non-Compliance permits certification of an alternative component or material that is equal in performance to the original as an accepted direct replacement without the need for the vehicle itself to be re-certificated.

Requirements: The responsibility of the Design and the EA signatories is to ensure that:

- 1) Certification of the component or material is carried out in accordance with the attached appendix, approved under 03/164/NC (CCB and VAB).
- 2) The performance of the alternative component or material has been demonstrated to meet all relevant Railway Group Standards (CCB).
- 3) The performance of the alternative component or material has been demonstrated to be equal in all respects to the original on the vehicles concerned (CCB).
- 4) The component's certificate identifies only those vehicles or vehicle classes for which the equal performance has been validated (CCB).
- 5) The manufacturer or supplier of the alternative component or material is issued with a certificate of the approved format in confirmation of the above (VAB).

Contact: In the event of any queries on this Technical Note, please contact:
Cliff Cork at RSSB on 020 3142 5580, or by e-mail to cliff.cork@rssb.co.uk

TN-020 APPENDIX: PROCEDURE FOR IMPLEMENTING 03/164/NC

LIKE-FOR-LIKE COMPONENTS IN RELATION TO GM/RT2000 ISSUE 3 CLAUSE 8.3

This procedure under Non-Compliance number 03/164/NC permits direct replacement components to be issued with a certificate of design conformance approving their use as an alternative to the original (named) component for all classes of vehicle identified on the certificate, without requiring a new Certificate of Engineering Acceptance for every vehicle to which the alternative component may be fitted.

MODIFICATIONS AND ENGINEERING CHANGE

1 Introduction of alternative components or materials

1.1 Categories of alternative components and materials

Alternative components or materials fall into one of the following categories:

- a) a direct replacement that is identical to the original, being an exact replica in every respect to the original component or material;
- b) a direct replacement that is equal in performance to the original, being similar in construction or composition, fully interchangeable with the original component or material and performs at least as well as the original component or material in respect of the mandatory requirements;
- c) an alternative that is not a direct replacement, requiring modification to the vehicle in order to accommodate the alternative or performing the function of the original in a different manner in respect of the mandatory requirements.

The specific certification requirements for components or materials in the above categories are given below.

1.2 A direct replacement component or material – identical in all respects

A component or material is only considered to be identical if dimensionally identical, identical composition and made to an identical specification.

- An example of an identical component or material is where the original manufacturer is no longer in business and an alternative manufacturer supplies the component or material to the original drawings.

In the case of a direct replacement component or material meeting the above requirements, no certification is required. The original certification remains valid.

THIS IS UNCHANGED FROM THE CURRENT PROCESS

1.3 A direct replacement component or material equal in performance

1.3.1 Qualification as a direct replacement component or material

A direct replacement component or material is only considered to be equal in performance if:

- a) it is of similar composition to the original;
- b) its construction is similar;
- c) it meets all mandatory requirements relevant to the installed component or material;
- d) it performs an identical function;
- e) its performance is as good as, or better than, that of the component for which it is a direct replacement;
- f) its maintenance requirements are identical with those for the original.

1.3.2 Examples of a direct replacement component

- an alternative manufacturer supplies a windscreen and frame assembly which is identical in its interfaces with the vehicle, but the thickness of the individual panes of glass or the form of the screen heating element varies in minor respects whilst achieving a performance which is at least as good as the original windscreen assembly against the mandatory requirements.
- An electronic 'black box' is obtained from an alternative supplier, the circuitry and/or software inside the 'black box' is not identical, but the inputs and outputs are fully validated to give identical performance in all respects and there are no compatibility issues affecting the vehicle type certification.
- A brake pad having a different friction material, where the brake pad material has been demonstrated via the mandatory validation processes (including full validation testing on a vehicle of the intended type) to give at least as good a performance under all operating conditions as the original.

1.3.3 The Process for Certification

1.3.3.1 A Design CCB, authorised by RSSB to act as a design signatory for the class(es) of vehicles concerned, shall be satisfied that the evidence presented for scrutiny, including appropriate validation of hardware and software, demonstrates that the alternative component or material:

- a) is of similar composition to the original;
- b) is of similar construction;
- c) meets all mandatory requirements relevant to the installed component or material;
- d) performs an identical function to the component for which it is a direct replacement;
- e) performs the function as well as, or better than, that component;
- f) has no special limitations that are not applicable to that component;

1.3.3.2 The Design CCB shall verify that the vehicle certification is unaffected by the fitment or installation of the direct replacement. A Component Design Conformance Certificate shall be obtained from the Design CCB.

The Design CCB shall provide a Certificate of the form indicated below and, in common with existing certification, the certificate numbering shall follow the convention set out in GM/RT2000 issue 3 except that the certificate type shall be designated **CD** (for Component Design) as indicated.

1.3.3.3 A VAB, authorised by RSSB to act as an Engineering Acceptance signatory for the class(es) of vehicles concerned, shall ensure that:

- a) the component or material has maintenance requirements that are identical with those for that component or material for which it is a direct replacement;
- b) the proposed supplier is competent to supply the component and ensure suitable evidence has been presented confirming that manufacturer has in place appropriate quality controls to ensure on-going supply of the component or material will meet the required standard.
- c) the Engineering Acceptance Certificate for the vehicle is unaffected by the Component Design Conformance certification.

1.3.3.4 The VAB shall:

- a) countersign the Component Design Conformance Certificate in confirmation that the component or material is acceptable for use as a direct replacement for the original component or material;
- b) issue the Component Design Conformance Certificate to the supplier of the component as evidence to Train Operators or owners that the component is a certified alternative (Direct Replacement) component for the applications stated.

Certificate (Indicative)

RAIL SAFETY & STANDARDS BOARD

CERTIFICATE OF DESIGN CONFORMANCE FOR DIRECT REPLACEMENT RAIL VEHICLE COMPONENT

This certificate formally records that the design of the following rail vehicle component(s) has been scrutinised in comparison with the identified component as a direct replacement and conforms with the appropriate Mandatory Requirements as set out in Railway Group Standards.

NAME OF CERTIFICATION BODY

ACCREDITATION CODE

.....

.....

Component/Material Identification.....

Component/Material Manufacturer.....

Component for which it is a Direct Replacement.....

Vehicle Type & Class(es) for which approved.....

Issue Date

Authorised By.....

See overleaf for Mandatory Requirements
against which compliance has been confirmed

Name

Countersigned By.....

Name

Name of Certification Body and
OFFICIAL STAMP

The above identified component has been demonstrated to meet all the requirements as a direct replacement component for use on the identified vehicles and is equivalent in performance to the component it is an alternative for.

The method of its installation and the maintenance requirements are identical to those for the component it may be used instead of and has **no impact on the current Certificate of Engineering Acceptance for the vehicles indicated.**

Certificate No : **XX/CD/0000/01**

Customer Copy

Form EA/2a August 2003

Certificate of Conformance - Reverse (Indicative)

This Certificate of Design Conformance for the Direct Replacement Component indicated overleaf has been issued on the basis of confirmation of conformance with the Mandatory Requirements.

Component/Material Manufacturer.....

Full Component/Material Identification.....

Component/Material version identifications:

Software Version identification(where applicable):

Component for which it is a Direct Replacement.....

**Mandatory Requirements (Railway Group Standard No., issue and date)
against which conformance has been confirmed
(including effect on other existing certification)**

Form EA/2a August 2003

Certificate No : **XX/YY/0000/01**
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