2 November 2018

Agreement

Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations*

(Revision 3, including the amendments which entered into force on 14 September 2017)

Addendum 89 – UN Regulation No. 90

Revision 3 - Amendment 4

Supplement 4 to the 02 series of amendments – Date of entry into force: 16 October 2018

Uniform provisions concerning the approval of replacement brake lining assemblies, drum-brake linings and discs and drums for power-driven vehicles and their trailers

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2018/12 (as amended by paragraph 91 of the report ECE/TRANS/WP.29/1137).

UNITED NATIONS

* Former titles of the Agreement:
Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version);
Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

Add a new paragraph 3.3.1.3., to read:

"3.3.1.3. In the case of brake lining assemblies for vehicles of category L, the list of brake lining assemblies belonging to the same group defined according to Annex 7a. This list shall indicate for each brake lining assembly: name of brake lining assembly manufacturer, the brake lining assembly manufacturer's code, the friction material area (cm^2)."

Add a new paragraph 4.2.4., to read:

"4.2.4. In the case of brake lining assemblies for vehicles of category L, brake lining assemblies belonging to the same group defined according to the criteria of Annex 7a, shall be assigned the same approval number of the one assigned to the representative brake lining assembly."

Amend paragraph 5.2.1.5., to read (footnote remain unchanged):

"5.2.1.5. Replacement brake lining assemblies for vehicles of category L

It is allowed the verification of a brake lining assembly deemed to be representative of a group of brake lining assemblies, grouped according to the criteria defined in Annex 7a.

The representative brake lining assembly is deemed to identify the most severe application.

Results obtained with that representative brake lining assembly are considered valid for all the brake lining assemblies belonging to the same group defined according to the grouping criteria as from Annex 7a.

At least one set of the chosen replacement brake lining assemblies, representing the type of lining to be approved, shall be installed and tested in at least one vehicle which is representative of the vehicle type for which approval is sought, according to the prescriptions of Annex 7 and shall satisfy the requirements stated in this annex. The representative vehicle(s) shall be selected from among the application range using a worst case analysis.[4]"

Insert a new Annex 7a, as follows:

"Annex 7a

Criteria to define groups of brake lining assembly for vehicles of category L

1. Grouping criteria

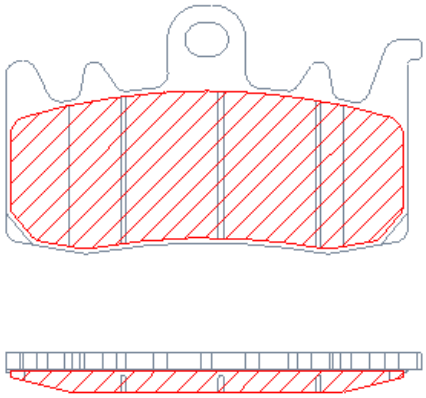
The grouping is made according to the following approach:

(a) According to the individual friction material of the brake lining;

(b) Depending on the area of the friction material area of the brake lining assembly operated by the piston/pistons of only one side of the brake caliper.

Friction material area means all the area enclosed within the perimeter of the brake lining (see the red cross-hatched area, Figure 1), thus excluding the presence of any grooves and/or chamfers:

Figure 1



3 area groups are foreseen, as in Table 1:

Table 1

Group	*Brake lining area [cm²]*
A	⩽15
B	> 15 ⩽ 22
C	> 22

2. Procedure for selection of the brake lining assembly representative of the group to be approved

The brake lining assembly to be approved is defined, according to the following criteria:

(a) Choice of friction material to be approved;

(b) Verification of the applications where the chosen friction material is applied;

(c) Definition of the area of the selected brake lining assemblies according to Table 1, and classification into groups A – B – C;

(d) For each group, selection of the most severe application, according to the highest value of the index Ep (kinetic energy by brake lining area), as follows:

$$E_p = ½*M*p*(V*c)^2 / (S*q_p)$$

where:

Ep = kinetic energy index [kJ/cm2]

M = gross vehicle weight of the vehicle [kg]

p = allocation percentage of the vehicle weight:

(a) for front braking system:

(i) 75 per cent in case of 1 brake disc

(ii) 37.5 per cent in case of 2 brake discs

(b) for rear braking system:

(i) 50%

V = vehicle maximum speed [m/s]

c = correction coefficient of speed:

(c) for front braking system = 0.8

(d) for rear braking system: variable according to the brake disc diameter:

(i) 0.5 for Ø $\leqslant$ 245 [mm]

(ii) 0.6 per Ø > 245 < 280 [mm]

(iii) 0.75 per Ø $\geqslant$ 280 [mm]

S = brake lining area as defined in Table 1 [cm^2].

q_p = number of pads in 1 caliper

3. Extension of the homologation for new application

For new application that will be included into an existing group, an increase of 10 per cent MAX kinetic energy index (Ep = kinetic energy [kJ/cm2]) is allowed with reference to the value used for the approval of the brake lining assembly of the reference group."