AMENDMENT NO. 2 JULY 2024

TO

IS 15986 : 2015 AUTOMOTIVE VEHICLES — UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES OF CATEGORY M1 AND N1 WITH REGARD TO BRAKING

(First Revision)

(*Page* 10, *clause* **7.1**) **—** Substitute the following for the existing:

'**7.1** Extension may be granted based on guidelines given in Table 1 for the changes to thetechnical specifications of an already type approved vehicle.

Table 1 Guidelines for Deciding Test Vehicle/Extension Criteria

(*Clause* 7.1)

Sl No.	Parameter and Changes	Test to be Conducted
(1)	(2)	(3)
i)	Change in vehicle category:	
	a) Change of category M1 to N1, vice versa.	Only the additional tests prescribed for the changed category.
ii)	Change in vehicle mass:	
	a) Increase in GVW exceeding 10 percent.	All dynamic tests in laden condition and parking brake.
	b) Increase in GVW up to 10 percent.	If the stopping distance calculated from the previous type approval corrected for new GVW by formula[1)] is not within limits, Type 0 test engine disconnected. If within limits, no test.
	c) Any decrease in GVW exceeding 10 percent.	Secondary brake test (Type 0) laden to be done if laden F/R ratio is increased in excess by 10 percent.
	d) Any decrease in GVW up to 10 percent.	No test.
	e) Change in unladen weight.	All dynamic test in the unladen condition, if F/R ratio in unladen condition is increased in excess by 10 percent.
iii)	Change in vehicle speed:	
	a) Decrease in maximum speed or increase in maximum speed which does not cause the initial speed for Type 0 test to be increased by more than 8 percent of the initial speed used in the testing.	No test.
	b) Increase in maximum speed which causes the initial speed for Type 0 test to be increased by more than 8 percent of the initial speed used in the testing.	Type 0 and Type I to be performed.
	c) A change in drive line ratio that increases engine rpm corresponding to gear and the initial speed for 0 type test.	No test.

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Table 1 (*Continued*)

Sl No.	Parameter and Changes	Test to be Conducted
(1)	(2)	(3)
	d) A change in drive line ratio that decreases engine rpm corresponding to gear and the initial speed for 0 type test in excess of 8 percent.	Engine connected type 0 and type I test need to be conducted .
iv)	Change in braking effect:	
	a) Changes in engine which increase or do not reduce the engine braking effect. Changes such as increase in swept volume, increase in compression ratio, 2 strokes to 4 strokes, SI to CI etc are considered to increase the engine braking effect.	No test.
	b) Changes which reduces the engine braking effect. Changes such as decrease in swept volume, decrease in compression ratio, 4 stroke to 2 stroke, CI to SI, etc are considered to decrease the engine braking effect.	Engine-connected brake Type 0 and Type I test to be conducted.
	c) Increase in the brake lining area.	No test.
	d) Decrease in the brake lining area.	Type I and Type 0 test to be performed.
	e) Changes in foundation brakes which causes an increase in brake torque.	Type 0 test in unladen condition to be done. If the braking torque is increased by 15 percent then carry out laden test also.
	f) Setting of load sensing valves.	All dynamic tests (Type 0, Type I) in unladen condition if F/R ratio in unladen condition is increased in excess by 10 percent.
v)	Change in wheelbase	
	a) Decrease in wheel base in excess of 10 percent.	All type 0 dynamic tests including ABS tests to be conducted.
	b) Decrease in wheel base less than 10 percent.	No test.
vi)	Change in brake system:	
	a) Change in the manufacture of brake liner/brake lining material.	Either all applicable dynamic tests (Type 0, Type I) on vehicle or verification of inertia dynamometer (as given in Annex F) if the performance of brake system, for which the type approval is to be extended, established on inertia dynamometer is within ± 15 percent of the performance of the lining already type approved, established on inertia dynamometer, no tests need to be conducted on vehicles.
	b) Increase in brake booster size/ magnification ratio.	No test.
	c) Decrease in brake booster size/ magnification ratio.	Type 0 test except booster disconnection test.
	d) Addition of load sensing valve in the circuit	Dynamic tests (Type 0, Type I) in unladen condition and response time test.

Table 1 (*Concluded*)

Sl No.	Parameter and Changes	Test to be Conducted
(1)	(2)	(3)
		If the load-sensing valve does not reduce the pressure in the laden condition then no test in laden condition.
	e) Addition of supplementary brake	No test.
	f) Drum to disc or vice versa	All dynamic tests to be done.
vii)	Change in tyre:	
	a) Tyre: Increase in rolling radius in excess of 10 percent	All dynamic test Type 0, Type I and parking brake to be done.
	b) Changes affecting adhesion such as change from radial ply to cross ply or higher tyre width to lower tyre width	Type 0 and Type I test to be done.
viii)	Other's:	
	a) Any change of type of transmission [manual (MT) to automatic (AT)/AMT or automatic (AT)/AMT to manual (MT)].	MT to AT and vice versa — Engine connected only; MT to AMT and vice versa — No test.
	b) Change of manufacturer of brake.	Type 0 and Type I tests to be done if the specifications are changed. Only to be tested for foundation brakes.
	c) Change in brake ECU with relevant changes in software.	ABS relevant test needs to be performed.

[1)] The stopping distance or the mean fully developed deceleration shall be calculated to the condition of new specified mass by following formulae:

$$S_{ext} = \{(S_{ta} - 0.1\ V_s) \times (M_{ext}/M_{ta})\} + 0.1V_s$$

$$d_{ext} = d_{ta} \times M_{ta}/M_{ext}$$

where

S_{ext} = stopping distance calculated for the new GVW for which extension is sought;
S_{ta} = stopping distance reported in the earlier type approval test;
M_{ext} = Mass, in kg, for which extension is sought;
M_{ta} = Mass, in kg, specified for the earlier type approval test;
V_s = test speed applicable to the vehicle under consideration.
d_{ext} = mean fully developed deceleration, in m/s^2, calculated for the new GVW for whichextension is sought; and
d_{ta} = mean fully developed deceleration, in m/s^2, reported in earlier type approval test.'

(*Page* 13, *clause* **B-1.4.3.1**) **—** Substitute the following for the existing:

'**B-1.4.3.1** The test shall be carried out with the engine connected, from the speed prescribed in **B-2.1.1(B)**. The minimum performance prescribed shall be attained. This test is not run if the maximum speed of the vehicle is ≤ 125 km/h.'

(TED 04)

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