AMENDMENT NO. 1 SEPTEMBER 2023

TO

IS 15633 : 2022 AUTOMOTIVE VEHICLES — PNEUMATIC TYRES FOR PASSENGER CAR VEHICLES — DIAGONAL AND RADIAL PLY — SPECIFICATION

(First Revision)

(*Page* 1, *clause* **1**) — Substitute the following for the existing:

‘**1 SCOPE**

1.1 This standard specifies the general, dimensional and performance requirements of new diagonal and radial ply pneumatic tyres designed primarily for vehicles in categories M1, T1 and T2.

1.2 It is also applicable for run flat and extended mobility tyres. However, it does not apply to tyres designed for:

a) the equipment of vintage cars, and
b) competitions (racings).’

(*Page* 1, *clause* **2**) — Substitute the following for the existing:

‘**2 REFERENCES**

The standards given below contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.’

IS No./Other Standards	*Title*
IS 10694 (Part 2) : 2009	Automotive vehicles — Rims — General requirements: Part 2 Passenger car
ISO 4000-1 : 2021	Passenger car tyres and rims — Part 1: Tyres (metric sizes)
ISO 4000-2 : 2021	Passenger car tyres and rims — Part 2: Rims

(*Page* 1, *clause* **3.1.1**) — Substitute the following for the existing:

‘**3.1.1** Type of Pneumatic Tyre — It means a category of pneumatic tyres which do not differ in such essential respects as:

a) Manufacturers name and brand name;
b) Tyre-size designation;
c) Category of use:
    1) Normal — Normal road use tyres;
    2) Special — Special-use tyre, for example, tyre for mixed use (both on and off the road) at restricted speed;
    3) Snow tyre; and
    4) Temporary use spare tyre;
d) Structure [diagonal (bias-ply), bias-belted, radial, run flat, extended mobility];
e) Speed category;
f) Load-capacity index or maximum load and ply rating; and
g) Nominal cross-section — Dimension when fitted to a specified rim.’

Price Group 4

(*Page* 3, *clause* **3.17**) **—** Insert the following after **3.17(c)**:

'd) The letter 'T' in front of the nominal section width for T-type temporary use spare tyres.'

(*Page* 6, *clause* **3**) — Insert the following after **3.32**:

'**3.33 Temporary Use Spare Tyre** — Tyre different from a tyre intended to be fitted to any vehicle for normal driving conditions but intended only for temporary use under restricted driving conditions.

3.33.1 T-type Temporary Use Spare Tyre — A type of temporary use spare tyre designed for use at inflation pressures higher than those established for standard and reinforced tyres.

3.34 Run Flat Tyre (RFT) — Structure provided with any technical solutions (for example, reinforced sidewalls, etc) allowing the tyre, mounted on the appropriate wheel and in the absence of any supplementary component, to supply the vehicle with the basic tyre functions, at least, at a speed of 80 km/h and a distance of 80 km when operating in flat tyre running mode.

3.35 Extended Mobility Tyre (EMT) — Tyre with a radial structure allowing the tyre, mounted on the appropriate wheel and in the absence of any supplementary component, to provide the vehicle with the basic tyre functions at a speed of 80 km/h and a distance of 80 km when operating in flat tyre running mode.

3.36 Flat Tyre Running Mode — State of tyre, essentially maintaining its structural integrity, while operating at an inflation pressure between 0 kPa and 70 kPa.

3.37 Basic Tyre Function — Normal capability of an inflated tyre in supporting a given load up to a given speed and transmitting the driving, the steering and the braking forces to the ground on which it runs.

3.38 Deflected Section Height — Difference between the deflected radius, measured from the centre of the rim to the surface of the drum, and one half the nominal rim diameter (Nominal rim diameter" means the diameter of the rim on which a tyre is designed to be mounted).'

[*Page* 6, *clause* **4.1.3.1(b)**] — Substitute the following for the existing:

'b) The actual measured overall width of the tyre may be less than the section width by a value of less than or equal to 4 per cent as determined as detailed in **4.1.3.1(a)**.'

[*Page* 6, *clause* **4.1.3.1(c)**] — Substitute the following for the existing:

'c) The actual measured overall width may also exceed the section width determined as detailed in **4.1.3.1(a)** up to 4 percent for radial ply and run flat tyres and up to 6 percent for diagonal (bias-ply) and bias belted tyres.'

[*Page* 7, *clause* **4.1.3.2(a)**, *lines* 15 *and* 19] — Substitute 'tyre' *for* 'tye'.

[*Page* 7, *clause* **4.1.3.2(b)**, *Informal table*] — Substitute the following for the existing:

Sl No.	*Tyre Type*	*a*	*b*
(1)	(2)	(3)	(4)
i)	Radial ply and run flat tyres	0.97	1.04
ii)	Diagonal (bias) ply and bias-belted tyres	0.97	1.08

(*Page* 7, *clause* **4.2.1**) **—** Substitute the following for the existing:

'**4.2.1** The sample shall conform to the requirements given in **4.2.3** and **4.2.4** when tested as per the method given in Annex C (Table 13). Run flat and extended mobility tyres, additionally shall conform to the requirement given in **4.2.7** and **4.2.8** respectively.'

(*Page* 7, *clause* **4.2.2**) — Substitute the following for the existing:

'**4.2.2** Where application is made for tyres suitable for speeds in excess of 300 km/h, the load/speed test is carried out as per **4.2.1**, on one tyre at conditions appropriate for the load index marked on the tyre and the speed symbol Y. Another load/speed test following the method specified in **C-2.6**, shall be carried out on a second sample of the same tyre type at the load and speed conditions specified as maximum by the tyre manufacturer.'

(*Page* 7, *clause* **4.2**) — Insert the followings after **4.2.2** and renumber the existing **4.2.3** and **4.2.4** as **4.2.5** and **4.2.6** respectively:

'**4.2.3** Where application is made for the type approval of a run flat tyre the above load speed test is carried out**,** on one tyre at conditions appropriate for the load index or maximum load and speed symbol marked on the tyre. Another load/speed test shall be carried out on a second sample of the same tyre type as specified in **C-3**. The second test may be carried out on the same sample if the manufacturer agrees.

4.2.4 Where application is made for the type approval of an extended mobility tyre, the above load speed test is carried out on one tyre at conditions appropriate for the load index or maximum load and speed symbol marked on the tyre. Another load/speed test must be carried out on a second sample of the same tyre type as specified in **C-4**. The second test may be carried out on the same sample if the manufacturer agrees.'

(*Page* 7, *clause* **4.2**) — Insert the following after **4.2.6**:

'**4.2.7** If a run flat tyre which, after undergoing the test as per **C-3**, does not exhibit a change in the deflected section height, compared to the deflected section height at the start of the test, higher than 20 percent and retains the tread connected to the two sidewalls, it is deemed to have passed the test.

4.2.8 If an EMT which, after undergoing the test as per **C-4**, does not exhibit a change in the deflected section height, compared to the deflected section height at the start of the test, higher than 20 percent and retains the tread connected to the two sidewalls, it is deemed to have passed the test.

NOTE — For RFT and EMT, during the first high speed test, the temperature in the test-room must be maintained at between 20 °C and 30 °C or at a higher temperature if the manufacturer agrees.'

[*Page* 8, *clause* **5.1(c)(4)**] — Substitute the following for the existing:

'4) On radial-ply tyres suitable for speeds higher than 240 km/h but not exceeding 300 km/h (tyres marked with the speed symbol 'W' or 'Y' as part of the service description), the letter 'R', placed in front of the rim diameter marking, may be replaced with 'ZR', on tyres suitable for speeds higher than 300 km/h, the letter 'R' placed in front of the rim diameter marking shall be replaced by 'ZR';'

(*Page* 8, *clause* **5.1**) — Insert the following after **5.1(c)(4)**:

'5) On run flat tyres the letter 'F' placed in front of the rim diameter marking.'

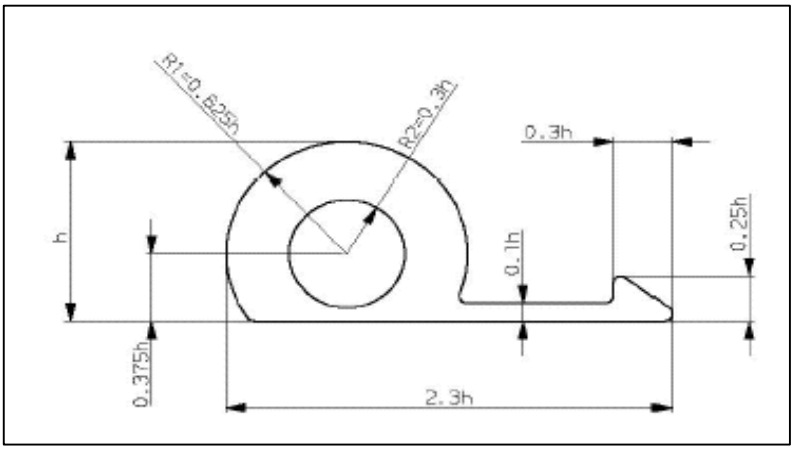
[*Page* 8, *clause* **5.1(d)(2)**] — Substitute the following for the existing:

'2) Tyres suitable for speeds in excess of 300 km/h shall be marked with the service description (load index and speed symbol) corresponding to the performance up to 300 km/h within brackets, for example, (95Y).'

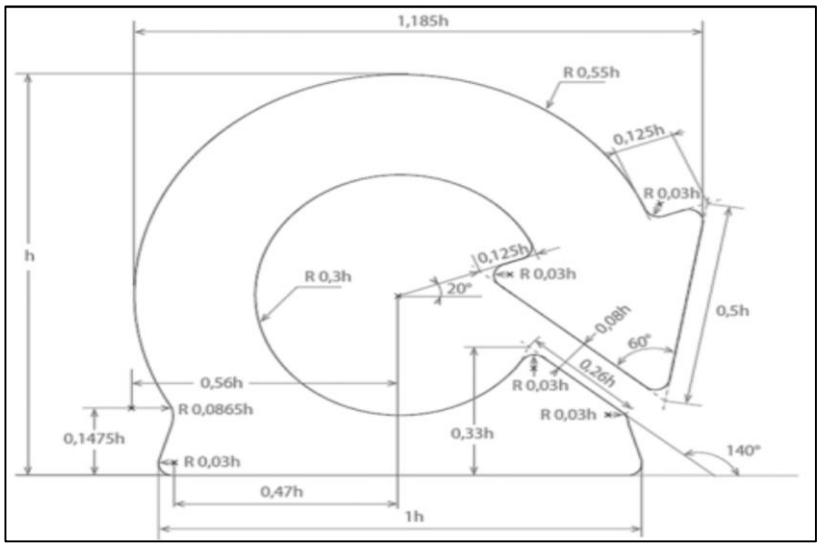
(*Page* 8, *clause* **5.1**) **—** Insert the following after **5.1(n)**:

'p) For EMT and RFT, following additional markings shall be done:

1) On run flat tyres, following symbol shall be marked (at least 12 mm high); and



2) On extended mobility tyres, following symbol shall be marked (at least 12 mm high).'



(*Page* 9, *clause* **5.4**) — Substitute the following for the existing:

'**5.4** Markings given in **5.1** shall be permanently moulded into or permanently engraved/etched on the tyres. These shall be clearly legible and situated in the lower area of the tyre on at least one of its sidewalls, except for the inscription mentioned in **5.1(a)**.

Engraving/etching shall be done during the manufacturing process of the tyre and not later than 24 h after the removal of the tyre from the mould. The layout for tyre markings is given in Annex H.'

[*Page* 9, *clause* **6.2.5.2(f)**] — Substitute the following for the existing:

'f) Structure (diagonal or radial or bias belted or run flat or extended mobility);'

[*Page* 19, *Table* 14, 55 *series*, *row* (xi)] — Substitute the following for the existing:

Sl No.	**Tyre Size Designation**	**Rim Rec Alt**	**New Tyre-Inflated**								
			Section Width, mm			Overall Diameter, mm			Load Index	Maximum Load kg	Cold I. P.[1)] (Corresponding to Maximum Load) kPa
			Design Width	Minimum Width	Maximum Width	Design Diameter	Minimum Diameter	Maximum Diameter			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
xi)	215/55R18	7J 6½ J	233 228	224 219	242 237	705	697	713	Std. 95 Reinf. 99	690 775	250 290

[*Page* 19, *Table* 14, 55 *series*, *row* (xi), col (10)] — Substitute '95' and '99' *for* '98' and '102' respectively.

(*Page* 19, *Table* 14, 55 *series*) — Insert the following after row (xiv):

Sl No.	**Tyre Size Designation**	**Rim Rec Alt**	**New Tyre-Inflated**								
			Section Width, mm			Overall Diameter, mm			Load Index	Maximum Load kg	Cold I. P.[1)] (Corresponding to Maximum Load) kPa
			Design Width	Minimum Width	Maximum Width	Design Diameter	Minimum Diameter	Maximum Diameter			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
xv)	245/55 R19	7.5J 7.0J	253 248	243 238	263 258	753	745	761	103	875	250

(*Page* 23, *clause* **B-1**) — Substitute the following for the existing clause:

'**B-1** Mount the tyre on the measuring rim specified by the manufacturer and inflate it to a pressure of 3 bar to 3.5 bar.

B-1.1 Adjust the pressure as follows:

B-1.1.1 Inflate standard bias-belted tyres to 1.7 bar (170 kPa).

B-1.1.2 Inflate diagonal (bias-ply) tyres to maximum inflation pressure for that tyre size.

Ply Rating	**Pressure (bar)**		
	Speed Category		
	L, M, N	P, Q, R, S	T, U, HV
4	1.7	2.0	---
6	2.1	2.4	2.6
8	2.5	2.8	3.0

B-1.1.3 Inflate standard radial, extended mobility and run flat tyres to 1.8 bar (180 kPa).

B-1.1.4 Inflate reinforced radial, extended mobility and run flat tyres to 2.2 bar (220 kPa).

B.1.1.5 Inflate T-type temporary spare tyre to 4.2 bar (420 kPa).'

[*Page* 21, *Table* 14, '40' *series, row* (vii), *col* (9)] — Substitute '685' *for* '675'.

(*Page* 24, *Annex C*) — Insert the following after **C-2.6**:

'**C-3 PROCEDURE TO ASSESS THE FLAT TYRE RUNNING MODE OF RUN FLAT TYRES**

C-3.1 Mount a new tyre on a test rim corresponding to the following specifications:

C-3.1.1 Measuring rim width as per ISO 4000-1:

Measuring rim width, R_{mc} is rounded to the nearest 0.5 rim width code.

$$R_{mc} = \frac{K_2 \times S_N}{25.4}$$

where, K_2 = the measuring rim/section width ratio coefficient.

For tyres mounted on 5° drop-centre rims with a nominal diameter expressed by a two-figure code:

K_2 = 0.7 for nominal aspect ratios 95 to 75;
K_2 = 0.75 for nominal aspect ratios 70 to 60;
K_2 = 0.8 for nominal aspect ratios 55 and 50;
K_2 = 0.85 for nominal aspect ratio 45;
K_2 = 0.9 for nominal aspect ratios 40 to 30; and
K_2 = 0.92 for nominal aspect ratios 20 and 25.

NOTE — Other values of K_2 for other tyre and rim types will be defined in a future revision.

C-3.1.2 Contour with hump (round or flat) on both rim sides, according to ISO 4000-2.

C-3.2 Inflate the tyre to an inflation pressure of 2.5 bar and condition the tyre-and-wheel assembly at a test room temperature of (38 ± 3) °C for not less than three hours.

C-3.3 Remove the valve insert and wait until the tyre deflates completely.

C-3.4 Mount the tyre-and-wheel assembly to a test axle and press it against the outer surface of a smooth wheel 1.70 m ± 1 percent or 2.0 m ± 1 percent in diameter.

C-3.5 Apply to the test axle a load equal to 65 percent of the maximum load rating corresponding to the load capacity index of the tyre.

C-3.6 At the start of the test, measure the deflected section height (Z1).

C-3.7 During the test the temperature of the test room must be maintained at (38 ± 3) °C. The temperature sensor shall be at a distance not less than 0.15 m and not more than 1.00 m from the tyre sidewall.

C-3.8 Carry the test through, without interruption in conformity with the following particulars:

C-3.8.1 Time taken to pass from zero speed to constant test speed: 5 min.

C-3.8.2 Test speed: 80 km/h in case of 2.0 m ± 1 percent drum diameter, or 75 km/h in case of 1.7 m ± 1 percent drum diameter.

C-3.8.3 Duration of test at the test speed: 60 min.

C-3.9 At the end of the test, measure the deflected section height (Z_2).

C-3.10 Calculate the change in per cent of the deflected section height compared to the deflected section height at the start of the test as $[(Z_1 - Z_2)/Z_1] \times 100$.

C-4 PROCEDURE TO ASSESS THE FLAT TYRE RUNNING MODE OF EXTENDED MOBILITY TYRES

C-4.1 Mount a new tyre on a test rim corresponding to the following specifications:

C-4.1.1 Measuring rim width, as per ISO 4000-1:

Measuring rim width, R_{mc} is rounded to the nearest 0.5 rim width code.

$$R_{mc} = \frac{K_2 \times S_N}{25.4}$$

where, K_2 = the measuring rim/section width ratio coefficient.

For tyres mounted on 5° drop-centre rims with a nominal diameter expressed by a two-figure code:

K_2 = 0.7 for nominal aspect ratios 95 to 75;

K_2 = 0.75 for nominal aspect ratios 70 to 60;

K_2 = 0.8 for nominal aspect ratios 55 and 50;

K_2 = 0.85 for nominal aspect ratio 45;

K_2 = 0.9 for nominal aspect ratios 40 to 30; and

K_2 = 0.92 for nominal aspect ratios 20 and 25.

NOTE — Other values of K_2 for other tyre and rim types will be defined in a future revision.

C-4.1.2 Contour with hump (round or flat) on both rim sides, according to ISO 4000-2.

C-4.2 Inflate it to an inflation pressure of 2.5 bar and condition the tyre-and-wheel assembly at a test room temperature of (25 ± 3) °C for not less than three hours.

C-4.3 Remove the valve insert and wait until the tyre deflates completely.

C-4.4 Mount the tyre-and-wheel assembly to a test axle and press it against the outer surface of a smooth wheel 1.70 m ± 1 percent or 2.0 m ± 1 percent in diameter.

C-4.5 Apply to the test axle a load equal to 60 percent of the maximum load rating corresponding to the load capacity index of the tyre.

C-4.6 At the start of the test, measure the deflected section height (Z_1).

C-4.7 During the test the temperature of the test room must be maintained at (25 ± 3) °C.

C-4.8 Carry the test through, without interruption in conformity with the following particulars:

C-4.8.1 Time taken to pass from zero speed to constant test speed: 5 min.

C-4.8.2 Test speed: 80 km/h in case of 2.0 m ± 1 percent drum diameter, or 75 km/h in case of 1.7 m ± 1 percent drum diameter.

C-4.8.3 Duration of test at the test speed: 60 min.

C-4.9 At the end of the test, measure the deflected section height (Z_2).

C-4.10 Calculate the change in per cent of the deflected section height compared to the deflected section height at the start of the test as $((Z_1 – Z_2)/Z_1) \times 100$.'

(*Page* 24, *Annex* C, *Table* 17) — Substitute 'radial and run flat tyres' *for* 'radial tyres'.

(*Page* 25, *clause* **D-1.2**, *line* 5) — Substitute 'Table 18' *for* 'Table 20'.

(*Page* 33, *Annex* J, *Sl No.* 8) — Substitute the following for the existing:

'8. Category of use (normal/special/snow/temporary)'.

(Page 33, Annex J, *Sl No.* 9) — Substitute the following for the existing:

'9. Structure: [diagonal (bias-ply), bias-belted, radial, run flat, extended mobility];'

(*Page* 33, *Annex* J, *Sl No.* 19) — Substitute the following for the existing:

'19. Inflation pressure (kPa)'.

(*Page* 33, *Annex* J, *Sl No.* 23.1) — Substitute 'Tables 9 to 16' *for* 'Table 7 to 12'.

(*Page* 33, *Annex* J, *Sl No.* 22.2) — Renumber Sl No. '22.2' as '23.2'.

(*Page* 33, *Annex* J, *Sl No.* 25) — Substitute the following for the existing:

'25. Type of tread pattern (Lug or rib)

26. Drawing or photograph in triplicate identifying tyre tread pattern, side wall marking and relevant dimensions of inflated tyre mounted on the measuring rim.'

(TED 07)

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