

**AMENDMENT NO. 2**  
**TO**  
**AIS – 044 (Part 2)**  
**Automotive Vehicles – Pneumatic Tyres for Passenger Car Vehicles**

**1.0** Page No. 8 and 9, cl. 6.1 Dimension of Tyres:

Substitute following text for the existing text of entire clause 6.1:

“

**6.1 TYRE DIMENSIONS**

6.1.1 Tyre dimensions and profiles shall be compatible with the appropriate rims. The tyre dimensions namely section width and outer diameter shall meet the requirements given in Annexure A, and method of measurement given in Annexure D.

6.1.1.1 **Section Width of Tyre:** - Tyre size designation shall be as per tables given in Annexure A, the section width shall be deemed to be that opposite the tyre size designation in those tables.

NOTE -

Adjustment to tyre section width/overall width –Within the parameters of specified permissibility of a wider or narrower rim than the recommended rim size, the guidelines for the necessary adjustment are – Sectional width or overall width: 5mm increase or reduction (as applicable) for every 0.50 difference in nominal rim width.

6.1.1.2 **Tyre outer diameter** - Tyre size designation shall be as per tables given in Annexure A. The outer diameter shall not exceed the minimum and maximum diameter values specified in Annexure A.

6.1.2 For the sizes listed in Annexure A, but tolerance are not given and the tyre sizes which are not listed in Annexure A, the section width and outer diameter shall be calculated by using following formulae:

**6.1.2.1 Section width of tyre**

6.1.2.1.1 The section width shall be calculated by using following formula

$$S = S1 + K (A - A1),$$

Where,

S = “Section width” expressed in millimeters measured on measuring rim

S1 = “Nominal section width” in millimeters, as set out on the tyre sidewall in the tyre size designation

A = Width of the measuring rim in millimeters, as shown by the manufacturer in the technical specification

A1 = Theoretical rim width expressed in millimeters

A1 shall be taken to equal S1 multiplied by the factor X as specified by the manufacturer, and K shall be taken to equal 0.4.

- 6.1.2.1.2 For the existing types of tyres whose designation is given in the first column of the table in Annexure A to this standard, the section width shall be deemed to be that given opposite the tyre designation in those tables.
- 6.1.2.1.3 The actual measured overall width of the tyre may be less than the section width determined as detailed in para 6.1.2.1.1 and 6.1.2.1.2.
- 6.1.2.1.4 The measured overall width may exceed by value of 4% in case of radial ply tyre and by 6% in case of diagonal (bias-ply) tyres.

**6.1.2.2 Outer diameter of the tyre**

6.1.2.2.1 The outer diameter of the tyre shall be calculated by using following formula:

$$D = d + 2H,$$

Where,

D = outer diameter expressed in mm

d = nominal rim diameter expressed in mm

H = nominal tyre height =  $S_1 \times 0.01 Ra$ ,

$S_1$  = nominal section width

Ra = nominal aspect ratio as set out in the description on the tyre sidewall.

6.1.2.2.2 For the existing types of tyres whose designation is given in the first column of the table in Annexure-A to this standard, the outer diameter shall be deemed to be that given opposite the tyre designation in those tables.

6.1.2.2.3 The outer tyre diameter shall not be outside the minimum and maximum diameter values obtained from the following formulae:

$$D_{min} = d + (2H \times a)$$

$$D_{max} = d + (2H \times b),$$

Where,

(a) For the sizes listed in Annexure-A

$$H = 0.5 (D-d) \text{ for references see paragraph 6.1.2.2.1}$$

(b) For other sizes which are not listed in Annexure-A

'H' and 'd' are as defined in paragraph 6.1.2.2.1

(c) Coefficients 'a' and 'b' are respectively

$$\text{Coefficient 'a'} = 0.97$$

$$\text{Coefficient 'b'} =$$

		Radial	Diagonal
Coefficient 'b' for ordinary (road type) tyres	For normal use ty	1.04	1.08

(d) For snow tyres the overall diameter (Dmax) established in conformity with the above may be exceeded by 1%

**2.0** Page No. 11, cl. 6.7, Tyre Uniformity Test

Delete entire clause 6.7 and Annexure K

**3.0** Page No. 11, cl. 6.8, Tyre Stiffness Test

Delete entire clause 6.8 and Annexure L

**4.0** Page No. 14 to 19 **Annexure : A**

Substitute following text and tables for existing text and tables:

**ANNEXURE A  
GENERAL DATA AND ROAD INFLATION PRESSURES**

**Passenger Car Tyres (Diagonal Ply)  
'95' Super Balloon Series 13 and Smaller Rim Diameter Codes  
General Dimension Data**

Sr. No.	Tyre Size Designation	PR	Rim Rec Alt	NEW TYRE- INFLATED							
				Section Width in mm			Overall Dimeter in mm			Max. Load (kg)	Max Cold I. P. <sup>(1)</sup> (kpa)
				Design Width	Min. Width	Max. Width	Design Dia.	Min. Dia.	Max. Dia.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	5.20-10	6	$\frac{3}{2}$ J 4J	$\frac{132}{137}$	$\frac{127}{132}$	$\frac{140}{145}$	508	500	526	275	210
ii)	4.50-12	6	$\frac{3}{2}$ J 4J	$\frac{122}{127}$	$\frac{117}{122}$	$\frac{130}{135}$	529	522	545	255	210
iii)	5.20-12	6	$\frac{3}{2}$ J 4J	$\frac{132}{137}$	$\frac{127}{132}$	$\frac{140}{145}$	558	550	576	310	210
iv)	5.20-13	6	$\frac{3}{2}$ J 4J	$\frac{132}{137}$	$\frac{127}{132}$	$\frac{140}{145}$	582	574	600	335	210
v)	5.60-13	6	4J 4½J	$\frac{145}{150}$	$\frac{139}{144}$	$\frac{154}{159}$	600	592	619	385	210
vi)	5.90-13	6	4J 4½J	$\frac{150}{155}$	$\frac{144}{149}$	$\frac{159}{164}$	616	607	636	425	210
vii)	6.40-13	6	4½J 5Kor J	$\frac{163}{168}$	$\frac{156}{161}$	$\frac{173}{178}$	642	633	664	465	210

<sup>(1)</sup> Inflation pressure

**Passenger Car Tyres (Diagonal Ply)**  
**‘95’ Super Balloon Series 14 and 15 Rim Diameter Codes**  
**General Dimension Data**

Sr. No.	Tyre Size Designation	PR	Rim Rec Alt	NEW TYRE- INFLATED							
				Section Width in mm			Overall Diameter in mm			Max. Load (kg)	Max Cold I. P. <sup>(1)</sup> (kpa)
				Design Width	Min. Width	Max. Width	Design Dia.	Min. Dia.	Max. Dia.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	5.20-14	6	$\frac{3}{2}J$ 4J	$\frac{132}{137}$	$\frac{127}{132}$	$\frac{140}{145}$	612	604	630	375	210
ii)	5.60-14	6	$\frac{4}{2}J$ $\frac{4}{2}J$	$\frac{145}{150}$	$\frac{139}{144}$	$\frac{154}{159}$	626	618	645	405	210
iii)	5.90-14	6	$\frac{4}{2}J$ $\frac{4}{2}J$	$\frac{150}{155}$	$\frac{144}{149}$	$\frac{159}{164}$	642	633	662	440	210
iv)	5.60-15	6	$\frac{4}{2}J$ $\frac{4}{2}J$	$\frac{145}{150}$	$\frac{139}{144}$	$\frac{154}{159}$	650	642	669	425	210
v)	5.90-15	6	$\frac{4}{2}J$ $\frac{4}{2}J$	$\frac{150}{155}$	$\frac{144}{149}$	$\frac{159}{164}$	668	659	688	460	210
vi)	6.40-15	6	$\frac{4}{2}J$ 5J	$\frac{163}{168}$	$\frac{156}{161}$	$\frac{173}{178}$	692	683	714	520	210
vii)	6.70-15	6	$\frac{4}{2}J$ 5J	$\frac{170}{175}$	$\frac{163}{168}$	$\frac{180}{185}$	710	700	733	560	210

<sup>(1)</sup> Inflation pressure

**Passenger Car Tyres (Diagonal Ply)**  
**‘88’ Low Section Series**  
**General Dimension Data**

Sr. No.	Tyre Size Designation	PR	Rim Rec Alt	NEW TYRE- INFLATED							
				Section Width in mm			Overall Diameter in mm			Max. Load (kg)	Max Cold I. P. (kpa)
				Design Width	Min. Width	Max. Width	Design Dia.	Min. Dia.	Max. Dia.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	7.25-13	6	$\frac{5}{2}J$ $\frac{5}{2}J$	$\frac{184}{189}$	$\frac{177}{182}$	$\frac{195}{200}$	654	644	677	545	210
ii)	7.00-14	6	$\frac{5}{2}J$ $\frac{5}{2}J$	$\frac{178}{183}$	$\frac{171}{176}$	$\frac{189}{194}$	668	659	690	545	210
iii)	7.50-14	6	$\frac{5}{2}J$ 6J	$\frac{190}{195}$	$\frac{182}{187}$	$\frac{201}{206}$	688	678	711	600	210

<sup>(1)</sup> Inflation pressure

**Passenger Car Tyres (Diagonal Ply)  
‘82’ Super Low Section Series  
General Dimension Data**

Sr. No.	Tyre Size Designation	PR	Rim Rec Alt	NEW TYRE- INFLATED							
				Section Width in mm			Overall Diameter in mm			Max. Load (kg)	Max Cold I. P. <sup>(1)</sup> (kpa)
				Design Width	Min. Width	Max. Width	Design Dia.	Min. Dia.	Max. Dia.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	5.65-12	4	4J	131	126	139	522	515	537	250	165
		6								275	210
ii)	6.15-13	4	4½J	157	151	166	582	574	600	340	165
		6								385	210
iii)	6.95-14	6	5J	178	171	189	638	630	658	515	210
			5½J	183	176	194					
iv)	8.25-14	6	6J	208	200	220	690	680	713	660	210
			6K 5½J	203	195	215					

<sup>(1)</sup> Inflation pressure

**Passenger Car Tyres (Diagonal Ply)  
Alpha-numeric ‘78’ Series  
General Dimension Data**

Sr. No.	Tyre Size Designation	PR	Rim Rec	NEW TYRE- INFLATED							
				Section Width in mm			Overall Diameter in mm			Max. Load (kg)	Max Cold I. P. <sup>(1)</sup> (kpa)
				Design Width	Min. Width	Max. Width	Design Dia.	Min. Dia.	Max. Dia.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	F78-15	4	5½J	196	188	206	697	688	706	565	180
		6								620	210

<sup>(1)</sup> Inflation pressure

## Millimetric Sizes Of Passenger Car Tyres (Radial Ply) General Dimension

Sr. No.  (1)	Tyre Size Designation  (2)	Rec Rim Sizes Measuring Rim is underscored  (3)	New Tyre Inflated						Max. Load (kg)  (10)	Max Cold I. P. <sup>(1)</sup> (kpa)  (11)
			Section Width (mm)			Overall Diameter (mm)				
			Design Width  (4)	Min Width  (5)	Max Width  (6)	Design Dia  (7)	Min Dia  (8)	Max Dia  (9)		
<b>'80' Series</b>										
i)	145/80 R10	<u>4J</u> 4½J	<u>145</u> 150	<u>139</u> 144	<u>152</u> 157	486	479	493	325	240
ii)	135/80 R12	<u>3½J</u> 4J	<u>133</u> 138	<u>128</u> 132	<u>140</u> 145	521	515	527	315	240
iii)	145/80 R12	<u>4J</u> 4½J	<u>145</u> 150	<u>139</u> 144	<u>152</u> 157	537	530	544	375	240
iv)	155/80 R12	<u>4½J</u> 4J	<u>157</u> 152	<u>151</u> 146	<u>165</u> 160	553	546	560	412	240
v)	145/80 R13	<u>4J</u> 4½J	<u>145</u> 150	<u>139</u> 144	<u>152</u> 157	562	555	569	387	240
vi)	155/80 R13	<u>4½J</u>	<u>157</u> 162	<u>151</u> 156	<u>165</u> 170	578	571	585	437	240
vii)	165/80 R13	<u>4½J</u> 5J	<u>165</u> 170	<u>158</u> 163	<u>173</u> 178	594	586	602	487	240
viii)	175/80 R13	<u>5J</u> 5½J	<u>177</u> 182	<u>170</u> 175	<u>186</u> 191	610	602	618	530	240
ix)	145/80 R14	<u>4J</u> 4½J	<u>145</u> 150	<u>139</u> 144	<u>152</u> 157	588	581	595	412	230
x)	155/80 R14	<u>4½J</u> 5J	<u>157</u> 162	<u>151</u> 156	<u>165</u> 170	604	597	611	450	230
xi)	165/80 R14	<u>4½J</u> 5J	<u>165</u> 170	<u>158</u> 163	<u>173</u> 178	620	612	628	515	240
xii)	175/80 R14	<u>5J</u> 5½J	<u>177</u> 182	<u>170</u> 175	<u>186</u> 191	636	628	644	560	240
xiii)	165/80 R15	<u>4½J</u> 5J	<u>165</u> 170	<u>158</u> 163	<u>173</u> 178	645	637	653	530	230
xiv)	195/80 R15	<u>5½J</u> 6J	<u>196</u> 201	<u>188</u> 193	<u>206</u> 211	693	684	702	710	240
<b>'75' Series</b>										
xv)	215/75 R15	<u>6J</u> 5½J	<u>216</u> 211	<u>208</u> 203	<u>227</u> 222	703	693	713	800	240
xvi)	235/75 R15	<u>6½J</u> 7J	<u>235</u> 240	<u>226</u> 231	<u>244</u> 249	733	722	744	925	240
xvii)	225/75 R16	<u>6J</u> 6½J	<u>223</u> 228	<u>214</u> 219	<u>234</u> 239	744	733	754	900	240
<b>'70' Series</b>										
xviii)	145/70 R12	<u>4J</u> 4½J	<u>145</u> 150	<u>139</u> 144	<u>151</u> 156	509	503	515	325	240
xix)	155/70 R12	<u>4½J</u> 5J	<u>157</u> 162	<u>151</u> 156	<u>163</u> 168	523	516	530	365	240
xx)	145/70 R13	<u>4½J</u> 4J	<u>150</u> 145	<u>144</u> 139	<u>156</u> 151	534	528	540	345	240
xxi)	155/70 R13	<u>4½J</u> 4J	<u>157</u> 152	<u>151</u> 146	<u>163</u> 158	548	541	555	387	240
xxii)	165/70 R13	<u>5J</u> 4½J	<u>170</u> 165	<u>163</u> 158	<u>177</u> 172	562	555	569	437	240
xxiii)	175/70 R13	<u>5J</u> 5½J	<u>177</u> 182	<u>170</u> 175	<u>184</u> 189	576	569	583	475	240
xxiv)	175/70 R14	<u>5J</u> 5½J	<u>177</u> 182	<u>170</u> 165	<u>184</u> 179	602	595	609	500	240

Sr. No.	Tyre Size Designation	Rec Rim Sizes Measuring Rim is underscored	New Tyre Inflated							
			Section Width (mm)			Overall Diameter (mm)			Max. Load (kg)	Max Cold I. P. <sup>(1)</sup> (kpa)
			Design Width	Min Width	Max Width	Design Dia	Min Dia	Max Dia		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
xxv)	185/70 R14	<u>5½J</u> 6J	<u>189</u> 194	<u>181</u> 186	<u>197</u> 202	616	608	624	560	240
xxvi)	195/70R14	<u>6J</u> <u>5½J</u>	<u>201</u> 196	<u>193</u> 188	<u>209</u> 204	630	622	638	615	240
xxvii)	195/70 R15	<u>6J</u> <u>5½J</u>	<u>201</u> 196	<u>193</u> 188	<u>209</u> 204	655	647	663	630	240
xxviii)	225/70 R15	<u>6½J</u> 7J	<u>228</u> 233	<u>219</u> 224	<u>237</u> 241	697	688	706	800	240
xxix)	265/70 R15	<u>8J</u> 7½J	<u>272</u> 267	<u>261</u> 256	<u>283</u> 278	753	742	764	1060	240
xxx)	235/70 R16	<u>7J</u> 6½J	<u>240</u> 235	<u>230</u> 225	<u>250</u> 245	736	726	746	925	240
xxxi)	265/70 R16	<u>8J</u> 7½J	<u>272</u> 267	<u>261</u> 256	<u>283</u> 278	778	767	789	1120	240
	<b>'65' Series</b>									
xxxii)	155/65 R13	<u>4½J</u> 5J	<u>157</u> 162	<u>151</u> 156	<u>163</u> 168	532	526	538	365	240
xxxiii)	165/65 R13	<u>5J</u> 4½J	<u>170</u> 165	<u>163</u> 158	<u>177</u> 172	544	538	550	412	240
xxxiv)	185/65 R13	<u>5½J</u> 6J	<u>189</u> 194	<u>181</u> 186	<u>197</u> 202	570	563	577	515	240
xxxv)	165/65 R14	<u>5J</u> 4½J	<u>170</u> 165	<u>163</u> 158	<u>177</u> 172	570	564	576	437	240
xxxvi)	175/65 R14	<u>5J</u> 5½J	<u>177</u> 182	<u>170</u> 175	<u>184</u> 189	584	577	591	475	240
xxxvii)	185/65 R14	<u>5½J</u> 5J	<u>189</u> 184	<u>181</u> 176	<u>197</u> 192	596	589	603	530	240
xxxviii)	195/65 R15	<u>6J</u> 5½J	<u>201</u> 196	<u>193</u> 188	<u>209</u> 204	635	627	643	615	240
xxxix)	205/65 R15	<u>6J</u> 5½J	<u>209</u> 204	<u>201</u> 196	<u>217</u> 212	647	639	655	670	240
	<b>'60' Series</b>									
xl)	185/60 R13	<u>5½J</u> 6J	<u>189</u> 194	<u>181</u> 186	<u>197</u> 202	552	545	559	450	240
xli)	185/60 R14	<u>5 ½J</u> 6J	<u>189</u> 194	<u>181</u> 186	<u>197</u> 202	578	571	585	475	240
xl ii)	195/60 R15	<u>6J</u> 5½J	<u>201</u> 196	<u>193</u> 188	<u>209</u> 204	615	608	622	560	240
xl iii)	205/60 R15	<u>6J</u> 5½J	<u>209</u> 204	<u>201</u> 196	<u>217</u> 212	627	620	634	615	240
xl iv)	205/60 R16	<u>6J</u> 5½J	<u>209</u> 204	<u>201</u> 196	<u>217</u> 212	652	645	659	630	240
xl v)	215/60 R16	<u>6½J</u> 6J	<u>221</u> 216	<u>212</u> 207	<u>230</u> 225	664	656	672	690	240
xl vi)	225/60 R16	<u>6 ½J</u> 6J	<u>228</u> 223	<u>219</u> 214	<u>237</u> 232	676	668	684	750	240
xl vii)	255/60 R17	<u>7½J</u> 7J	<u>260</u> 255	<u>250</u> 245	<u>270</u> 265	738	729	747	925	240
	<b>'55' Series</b>									
xl viii)	205/55 R16	<u>6 ½J</u> 6J	<u>214</u> 209	<u>205</u> 200	<u>223</u> 218	632	625	639	580	240
xl ix)	215/55 R16	<u>7J</u> 6½J	<u>226</u> 221	<u>217</u> 212	<u>244</u> 239	642	635	649	615	240
l)	225/55 R16	<u>7J</u> 6½J	<u>233</u> 228	<u>224</u> 219	<u>242</u> 237	654	647	639	670	240

Sr. No.	Tyre Size Designation	Rec Rim Sizes Measuring Rim is underscored	New Tyre Inflated							
			Section Width (mm)			Overall Diameter (mm)			Max. Load (kg)	Max Cold I. P. <sup>(1)</sup> (kpa)
			Design Width	Min Width	Max Width	Design Dia	Min Dia	Max Dia		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>'50' Series</b>										
li)	225/50 R16	<u>7J</u> 6½J	<u>233</u> 228	<u>224</u> 219	<u>242</u> 237	632	625	639	630	240
<b>'45' Series</b>										
lii)	255/45 R17	<u>8 ½J</u> 8J	<u>255</u> 250	<u>245</u> 240	<u>265</u> 260	662	655	671	750	240

<sup>(1)</sup>Inflation pressure

PRINTED BY  
 THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA  
 P.B. NO. 832, PUNE 412 004  
 ON BEHALF OF  
 AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE  
 UNDER  
 CENTRAL MOTOR VEHICLE RULES - TECHNICAL STANDING COMMITTEE  
 SET-UP BY  
 MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS  
 ( DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS )  
 GOVERNMENT OF INDIA  
 September 2005



**AMENDMENT NO. 1**  
**TO**  
**AIS – 044 (Part 2)**  
**Automotive Vehicles – Pneumatic Tyres for Passenger Car Vehicles**

1. Page no. 8:

Add new clause 4.3.1 as follows:

**4.3.1 Family of Tyre**

The understanding of “ Family / Range of Tyres ” would mean tyres which do not differ in the following parameters :

- a) Registered name of the company
- b) Manufacturing country
- c) Manufacturing plant
- d) Application category ( ordinary or snow )
- e) Construction type ( Standard or reinforced )
- f) Construction cord material ( Nylon / Polyester / Polyamide – one type and any other material different family )
- g) Structure ( Diagonal / Radial / Bias belted )
- h) Tyre size designation
- i) Speed category
- j) Tube / Tubeless ( worst case is tubeless )
- k) Load index or Load capacity
- l) Ply rating of tyres

but having different brand names / trade names and trade descriptions or trade marks.

2. Page no. 9 and 10, Clause 6.4.2 ,

Delete alphabet “ B) ” in front of sentence “ For tyres-----”.

Add alphabet “ B) ” in front of sentence “ In the case of the tyres-----”.

3. Page no. 10, Clause 6.6.1,

In the sentence after “-----Annex H ” add “ and tyre shall comply with the requirement specified below. ”

4. Page no. 10, Clause 6.6.2,

Delete entire clause 6.6.2

PRINTED BY:

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA  
P. B. NO. 832. PUNE 411 004

ON BEHALF OF :  
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER  
CENTRAL MOTOR VEHICLE RULES - TECHNICAL STANDING COMMITTEE

SET-UP BY  
MINISTRY OF ROAD TRANSPORT & HIGHWAYS  
GOVERNMENT OF INDIA

October 2004

**AIS-044 (Part 2)**

AUTOMOTIVE INDUSTRY STANDARD

**Automotive Vehicles – Pneumatic  
Tyres for Passenger Car Vehicles**

PRINTED BY:

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA  
P.B.NO.832, PUNE 411 004

ON BEHALF OF:  
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER  
CENTRAL MOTOR VEHICLES RULES – TECHNICAL STANDING COMMITTEE

SET-UP BY  
MINISTRY OF ROAD TRANSPORT & HIGHWAYS  
GOVERNMENT OF INDIA

March 2004

Status chart of the Standard to be used by the purchaser for updating the record

Sr. No.	Corri-genda	Amend-ment	Revision	Date	Remark	Misc.

**General remarks:**

## **Introduction**

The Government of India felt the need for a permanent agency to expedite the publication of standards and development of test facilities in parallel when the work on the preparation of the standards is going on, as the development of improved safety critical parts can be undertaken only after the publication of the standard and commissioning of test facilities. To this end, the Ministry of Surface Transport (MoST) has constituted a permanent Automotive Industry Standards Committee (AISC) vide order No. RT-11028/11/97-MVL dated September 15, 1997. The standards prepared by AISC will be approved by the permanent CMVR Technical Standing Committee (CTSC). After approval, the Automotive Research Association of India, (ARAI), Pune, being the secretariat of the AIS Committee, has published this standard. For better dissemination of this information ARAI may publish this document on their Web site.

The tyre is an important safety critical item. With the new generation vehicles and development in road infrastructure facilities the vehicle speeds are increasing day by day. To ensure safety of operation of tyres and vehicles, there was a need for a standard specifying the performance requirements of the pneumatic tyres.

Considerable assistance has been taken from ECE R-30 “Uniform provisions concerning the approval of pneumatic tyres for motor vehicles and their trailers” and National and International tyre standards.

The Automotive Industry Standards Committee (AISC) responsible for preparation of this standard is given in Annexure:N.

## **Automotive Vehicles- Pneumatic Tyres for Passenger Car Vehicles**

### **1.0 SCOPE**

- 1.1 This standard prescribes the general, dimensional and performance requirements of new pneumatic tyres designed for vehicles in categories M1, T1 and T2.

### **2.0 DEFINITIONS**

- 2.1 "Type of Pneumatic Tyre"** means a category of pneumatic tyres which do not differ in such essential respects as:

2.1 The manufacturer's name and brand name;

2.1.1 Tyre size designation;

2.1.2 Category of use; Ordinary (road tyre) Snow tyre

2.1.3 Structure (diagonal (bias-ply), bias-belted, radial-ply);

2.1.3 Speed category symbol;

2.1.3 Load-capacity index or maximum load

2.1.4 Ply Rating

2.1.5 The Tyre cross-section; Dimension when fitted to a specified rim

- 2.2 "Snow Tyre"** means a tyre whose tread pattern and whose structure are primarily designed to ensure in mud and fresh or melting snow a performance better than of an ordinary (road-type) tyre. The tread pattern of a snow tyre generally consists of groove (rib) and /or solid block elements more widely spaced than on an ordinary (road type) tyre.

- 2.3 "Structure"** of a pneumatic tyre means the technical characteristics of the tyre's carcass. The following structures are distinguished in particular:

2.3.1 "**Diagonal or "bias-ply"** describes a pneumatic-tyre structure in which the ply cords extend to the beads and are laid at alternate angles of substantially less than 90° to the center line of the tread;

2.3.2 "**Bias-belted"** describes a pneumatic-tyre structure of diagonal (bias-ply) type in which the carcass is restricted by a belt comprising two or more layers of substantially inextensible cord material laid at alternate angles close to those of the carcass;

- 2.3.3 "**Radial**" describes a pneumatic-tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centerline of the tread, the carcass being stabilised by an essentially inextensible circumferential belt;
- 2.3.4 "**Reinforced**" or "**Extra Load**" describes a pneumatic tyre structure in which the carcass is more resistant than that of the corresponding standard tyre;
- 2.4 "**Bead**" means the part of a pneumatic tyre which is of such shape and structure as to fit the rim and hold the tyre on it. See Figure 1.
- 2.5 "**Cord**" means the strands forming the fabric of the plies in pneumatic tyre; See Figure 1.
- 2.6 i) "**Ply**" means a layer of rubber-coated parallel cords; See Figure 1.
- ii) "**Ply Rating**" means to identify a given tyre with its maximum recommended load when used in a specific type of service. It is an index of tyre strength and does not necessarily represent the number of cord plies in the tyre.
- 2.7 "**Carcass**" means that part of a pneumatic tyre other than the tread and the rubber side walls which, when inflated, bears the load; See Figure 1.
- 2.8 "**Tread**" means that part of a pneumatic tyre which comes into contact with the ground; See Figure 1.
- 2.9 "**Side Wall**" means the part of a pneumatic tyre between the tread and the bead; See Figure 1.
- 2.10 "**Lower area of Tyre**" means the area included between the point of maximum section width of a tyre and area designed to be covered by the edge of rim. See Figure 1.
- 2.11 "**Tread Groove**" means the space between two adjacent ribs or blocks in the tread pattern; See Figure 1.
- 2.12 "**Section width**" means the linear distance between the outsides of the side walls of an inflated pneumatic tyre, excluding elevations due to labelling (marking), decoration or protective bands or ribs; See Figure 1.
- 2.13 "**Overall width**" means the linear distance between the outsides of the sidewalls of an inflated pneumatic tyre, including labelling (marking), decoration and protective bands or ribs. See Figure 1.
- 2.14 "**Section height**" means a distance equal to half the difference between the outer diameter of the tyre and the nominal rim diameter. See Figure 1.

- 2.15 "Nominal aspect ratio (Ra)"** means the centuple of the number obtained by the dividing the number expressing the section height in mm by the number expressing the nominal section width in mm;
- 2.16 "Outer Diameter"** means the overall diameter of an inflated new pneumatic tyre. See Figure 1
- 2.17 "Tyre-size designation"** is
- 2.17.1 a designation showing:
- 2.17.1.1 The nominal tyre section width code - means a tyre section width indicated in the tyre size –designation (Refer Annexure C).
- 2.17.1.2 The nominal aspect ratio
- 2.17.1.3 The nominal rim diameter code
- 2.18 "Nominal Rim Diameter"** means the diameter of the rim on which a tyre is designed to be mounted;
- 2.19 "Rim"** means the support for a tyre-and-tube assembly, or for a tubeless tyre, on which the tyre beads are seated; See Figure 1.
- 2.20 "Theoretical Rim"** means the notional rim whose width would be equal to x times the nominal section width of a tyre. The value of x shall be specified by the manufacturers of that tyre.
- 2.21 "Measuring Rim "** means the rim on which a tyre is required to be fitted for size measurements.
- 2.22 "Test Rim"** means the rim on which a tyre is required to be fitted for testing.
- 2.23 "Chunking"** means the breaking away of pieces of rubber from the tread;
- 2.24 "Cord separation"** means the parting of the cords from their rubber coating;
- 2.25 "Ply separation"** means the parting of adjacent plies;
- 2.26 "Tread separation"** means the pulling away of the tread from the carcass.
- 2.27 "Tread-wear indicators"** means the projections within the tread grooves designed to give a visual indication of the degree of wear of the tread;
- 2.28 Load -Capacity index"** means a number associated to the reference mass a tyre can carry when operated in conformity with requirements governing utilisation specified by the manufacturer.
- 2.29 "Speed Category"** means the maximum speed, which the tyre can sustain, expressed by speed category symbol (see table below).



Speed Category symbol	Maximum speed (km/h)
L	120
M	130
N	140
P	150
Q	160
R	170
S	180
T	190
U	200
H	210
V	240
W	270
Y	300

### 2.30 Tread Pattern Grooves

**2.30.1 "Principal Grooves"** means the wide grooves positioned in the central zone of the tyre tread, which have the tread-wear indicators (see para. 2.27) located inside them.

**2.30.2 "Secondary Grooves"** means the supplementary grooves of the tread pattern which may disappear in the course of the tyre's life.

**2.31 "Maximum Load rating"** means the maximum mass the tyre is rated to carry.

**2.31.1** For speed not exceeding 210 km/h the maximum load rating shall not exceed the value associated with the load capacity index of the tyre.

**2.31.2** For speed higher than 210km/h, but not exceeding 240 km/h (tyres classified with Speed Category Symbol "V") the maximum load rating shall not exceed the percentage of the value associated with the load capacity index of the tyre, indicated in the table below, with reference to the speed capability of the car to which the tyre is fitted.

Maximum speed (km/h)	Maximum Load Rating (%)
215	98.5
220	97
225	95.5
230	94
235	92.5
240	91

For intermediate maximum speeds linear interpolations of the maximum load rating are allowed.

- 2.31.3** For speed higher than 240 km/h (tyres classified with Speed Category Symbol 'W') the maximum load rating shall not exceed the percentage of the value associated with the load capacity index of the tyre, indicated in the table below, with reference to the speed capability of the car to which the tyre is fitted.

Maximum speed (km/h)	Maximum Load Rating (%)
240	100
250	95
260	90
270	85

For intermediate maximum speeds linear interpolations of the maximum load rating are allowed.

- 2.31.4** For speeds higher than 270 km/h (tyres classified with Speed Category Symbol 'Y') the maximum load rating shall not exceed the percentage of the value associated with the load capacity index of the tyre, indicated in the table below, with reference to the speed capability of the car to which the tyre is fitted.

Maximum speed (km/h)	Maximum Load Rating (%)
270	100
280	95
290	90
300	85

For intermediate maximum speeds linear interpolations of maximum load rating are allowed.

- 2.31.5** For speeds lower or equal to 60 km/h the maximum load rating must not exceed the percentage of mass, associated with the load capacity index of the tyre indicated in the table below with reference to the maximum design speed of the vehicle to which the tyre is to be fitted.

Maximum speed (km/h)	Maximum Load Rating (%)
25	142
30	135
40	125
50	115
60	110

**2.31.6** For speeds in excess of 300 km/h, the maximum load rating must not exceed the mass specified by the tyre manufacturer with reference to the speed capacity of the tyre. For intermediate speeds between 300 km/h and the maximum speed permitted by the tyre manufacturer, a linear interpolation of the maximum load rating applies.

**2.32** “**International Tyre Standard**” means any one of the following standard documents:

- a) The European Tyre and Rim Technical Organisation (ETRTO): ‘Standard Manual’
- b) The Tire and Rim Association Inc. (TRA): ‘Year Book’
- c) The Japanese Automobile Tire Manufacturers Association (JATMA): ‘Year Book’
- d) Economic Commission of Europe Regulation (ECE R-30):

### **3.0 MARKINGS**

**3.1** Pneumatic tyres submitted for approval shall display on both sidewall in the case of symmetrical tyres and at least on the outer sidewall in the case of asymmetrical tyres following markings:

3.1.1 The manufacturer’s name or trade name (May be placed on one side wall only).

3.1.2 The tyre size designation as defined in para. 2.17.

3.1.3 An indication of the structure as follows:

3.1.3.1 On diagonal (bias-ply) tyres: No marking or the letter “ – “, or the letter “D” placed in front of the rim-diameter marking.

3.1.3.2 On radial-ply tyres: the letter “R” placed in front of the rim-diameter marking and, optionally, the word “RADIAL”.

3.1.3.3 On bias – belted tyres, the Letter “B” placed in front of the rim-diameter marking, and in addition the word “BIAS-BELTED”.

3.1.3.4 On radial – ply tyres suitable for speeds higher than 240 Km/hr the Letter ‘R’, placed in front of the rim diameter marking, may be replaced with ‘ZR’.

3.1.4 The speed-category symbol.

- 3.1.4.1 An indication of the tyre's nominal speed category in the form of the symbol prescribed in para. 2.29 above.
- 3.1.4.2 Tyres suitable for speeds in excess of 300 km/h must be marked with the service description (load index & speed symbol) corresponding to the performance up to 300 km/h.
- 3.1.5 The inscription M+S or M.S or M&S in the case of a snow tyre.
- 3.1.6 The load-capacity indices as defined in para.2.28 of this Regulation or maximum permissible load and ply rating.
- 3.1.7 Maximum permissible tyre pressure in kPa or bar or kg/cm<sup>2</sup> or any combination of this units.
- 3.1.8 The word "TUBELESS" if the tyre is designed for use without an inner tube.
- 3.1.9 Manufacture's Code (may be placed on one side wall only).
- 3.1.10 Week and year code or Month and Year code of Manufacture (may be placed on One side wall only).
- 3.1.11 In the case of tyres which can be regrooved , symbol "U" at least 20 mm in diameter, or the word "REGROOVABLE", moulded into or on to each sidewall.
- 3.1.12 Tread wear indicators mark shall be provided at minimum six/four(as applicable) places along the circumference to give indication to the user for location of tread wear indicator.
- 3.2** Examples of Tyre size designation are given in Annexure 'J'.
- 3.3** The markings referred to in para. 3.1 and the approval mark prescribed in AIS-037 shall be moulded into or onto the tyres. They 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 at para 3.1.1.
- 3.4** Tyres shall provide adequate space for the approval mark
- 3.5** Annexure 'C' provides layout for tyre markings
- 4.0 APPLICATION FOR TYPE APPROVAL**
- 4.1 The manufacturer shall submit the details as specified in Annexure M.

- 4.2 Number of tyre to be provided shall be minimum “ 3 ” numbers in case of tube tyre and “4 ” numbers in the case of tube less tyres or at the discretion of test agency.
- 4.3 For Type Approval of tyre belonging to one family of tyre , brand of the tyre to be selected for type approval shall be left to test agency. Worst-case selection may be made at the discretion of the test agency.
- 4.4.1 Type approval procedure shall be as decided by Central Motor Vehicles Rules - Technical Standing Committee (CMVR-TSC) and Ministry of Road Transport and Highways (MoRT&H).

## **5.0 TYPE APPROVAL**

- 5.1 If the type of pneumatic tyre submitted for approval in pursuance of this standard meets the requirements of para. 3.1 above and para. 6.0 below, approval of that type of tyre shall be granted. However, uniformity test mentioned at para 6.7 shall be carried out, when test facility is established by test agency.
- 5.2 Approval number shall be as decided by CMVR-TSC and MoRT&H.

## **6.0 REQUIREMENTS RELATING TO TYRES**

### **6.1 Dimensions of tyres**

- 6.1.1 Section width of a tyre.
  - 6.1.1.1 For the existing type of tyre whose size designation shall be as per the table in Annexure A, the section width shall be that given opposite the tyre size designation in these tables.
- 6.1.2 Tyre outer diameter
  - 6.1.2.1 For the existing type of tyre whose size designation shall be as per the table in Annexure A, the outer diameter shall be that given opposite the tyre size designation in these tables.
- 6.1.3 Tyre section width specification
  - 6.1.3.1 The overall width of a tyre shall conform to dimensions mentioned in Annexure A.
- 6.1.4 Tyre outer-diameter specifications
  - 6.1.4.1 The outer diameter of the tyre shall conform to dimensions mentioned in Annexure A
- 6.1.5 Tyre measuring method - Tyre dimensions shall be measured as specified in Annexure D.

- 6.1.6 Tyre sizes covered in other International tyre standard (ECE, JATMA, ETRTO and T&RA) shall meet the dimensional requirements of respective standards. Further, if same size of tyre with different dimensions appears in more than one standard. It shall meet the dimension requirement of any one standard as per priority ITTAC, JATMA, ECE, T&RA, ETRTO.

## **6.2 Load / Speed Performance Test**

- 6.2.1 The pneumatic tyre shall undergo a load/speed performance test carried out by the procedure described in Annexure E to this Standard.

- 6.2.1.1 Where application is made for tyres identified by means of letter code “ZR” within the size designation and suitable for speed over 300 km/h, the above speed test is carried out on one tyre at the load and speed conditions marked on the tyre. Another speed test must 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.

The second test may be carried out on the same type sample if the tyre manufacturer agrees.

- 6.2.2 A tyre which after undergoing the speed test does not exhibit any tread separation, ply separation, cord separation, chunking or broken cords shall be deemed to have passed the test.

- 6.2.2.1 However, a tyre marked with speed category symbol ‘Y’ which, after undergoing the relevant test, does exhibit partial chunking due to the specific test conditions is deemed to have passed the test.

- 6.2.3 The outer diameter of the tyre, measured six hours after the speed performance test, must not differ by more than  $\pm 3.5\%$  from the outer diameter as measured before the test.

## **6.3 Endurance Performance Test**

- 6.3.1 The pneumatic tyre shall undergo a endurance performance test carried out by the procedure described in Annexure F to this Standard.

- 6.3.2 A tyre which after undergoing the endurance performance test does not exhibit any tread separation, ply separation, cord separation, chunking or broken cords shall be deemed to have passed the test.

## **6.4 Bead Unseating Resistance Test for Tubeless Tyre**

- 6.4.1 The tubeless pneumatic tyre shall undergo bead-unseating test carried out by procedure described in Annexure G to this Standard.

- 6.4.2 The minimum bead unseating resistance value at any measuring point shall not be less than the value mentioned in below Table.

**Table 1**

A) Minimum Bead Unseating Resistance Value (Tubeless Tyres)

<b>Nominal Section Width under 160</b>	<b>Nominal Section Width 160 to 205 exclusive</b>	<b>Nominal Section Width 205 or more</b>
6670 N (680 kgf)	8890 N (905 kgf)	11120 N (1135 kgf)

B) For tyres where Load index is marked

In the case of the tyre of which the load capability index is not marked, it shall be classified according to the maximum load capability corresponding to load capability index.

<b>Load Capability Index 75 or less</b>	<b>Load Capability Index 76 to 92</b>	<b>Load Capability Index 93 or more</b>
6670 N (680 kgf)	8890 N (905 kgf)	11120 N (1135 kgf)

## **6.5 Tread-wear Indicators**

- 6.5.1 The pneumatic tyre shall include not less than six transverse rows of wear indicators, approximately equally spaced and situated in the principal grooves of the tread. The tread-wear indicators shall be such that they cannot be confused with the rubber ridges between the ribs or blocks of the tread.
- 6.5.2 However, in the case of tyres of dimensions appropriate for mounting on rims of a nominal diameter of 12 or less, minimum 4 no of tread-wear indicators shall be accepted.
- 6.5.3 The tread-wear indicators must provide a means of indicating with a tolerance of + 0.60/-0.00 mm, when the tread grooves are no longer more than 1.6 mm deep.
- 6.5.4 The height of tread-wear indicators is determined by measuring the difference between the depth, from the tread's surface, to the top of the tread-wear indicator and to the bottom of the tread groove close to the slope at the base of the tread-wear indicator.

## **6.6 Tyre Strength Test**

- 6.6.1 The tyre strength test (Plunger test) shall be carried out on a tyre in accordance with method set out in Annexure H.
- 6.6.2 The minimum breaking energy value at any measuring point shall not be less than the value mentioned in below table.

**STATIC BREAKING ENERGY FOR PASSENGER CAR TYRES  
(Diagonal Ply)**

Tyre Size	Ply Rating	Plunger Diameter (mm.)	Inflation Pressure (kPa)	Breaking Energy	
				Rayon J (kg-cm) Minimum	Nylon J (kg-cm) Minimum
Upto 6.00 (nominal section)	4	19 ± 0.2	165	113 (1152)	181 (1845)
	6	19 ± 0.2	195	169 (1723)	271 (2763)
Above 6.00 (nominal section) Including F78-15	4	19 ± 0.2	195	186 (1896)	294 (2998)
	6	19 ± 0.2	195	280 (2852)	441 (4497)
	8	19 ± 0.2	220	373 (3802)	588 (5996)

**NOTES:**

- 1 Recommended rim sizes shall be used for the breaking energy test.
- 2 For F78-15 4PR breaking energy test, inflation pressure will be 170 kPa.

**STATIC BREAKING ENERGY FOR PASSENGER CAR TYRES  
(Radial Ply)**

Tyre Size	Plunger Diameter mm	Inflation Pressure kPa	Breaking Energy
<b>Nominal Section Width</b>			<b>J (kg-cm) Minimum</b>
Under 160	19 ± 1.6	180 ±5	220 (2245)
160 or more	19 ± 1.6	180 ±5	295 (3010)

**6.7 Tyre Uniformity Test**

6.7.1 Each type of pneumatic tyre shall undergo tyre uniformity test carried out by the procedure described in Annexure K to this Standard.

6.7.2 This test shall be for record only.

**6.8 Tyre Stiffness Test**

6.8.1 Each type of pneumatic tyre shall undergo tyre stiffness test carried out by the procedure described in Annexure L to this Standard.

6.8.2 This test shall be for record only.



## **7.0 MODIFICATIONS AND EXTENSION OF APPROVAL OF TYRE TYPE**

7.1 Every modification of the type of pneumatic tyre shall be notified to test agency which approved the type of pneumatic tyre. The test agency may then either.

7.1.1 Consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case, the pneumatic tyre still complies with the requirements; or

7.1.2 Require a further test report from the technical service responsible for conducting the test.

7.2 A modification of the tread pattern of the tyre shall not be considered to necessitate a repetition of the tests prescribed in para 6 of this Regulation.

For considering whether any further verification is required or not, guidelines given in para 7.3 (Criteria for Extension of Approval) may be used.

7.3 Criteria For Extension of Approval

7.3.1 In case of following changes, the verification shall be carried out for establishing compliance of the changed parameters to the requirements specified in this standard:

7.3.1.1 Size designation:

7.3.1.2 If the rim diameter is within, and the section is not more than already type approved sizes, test need not be carried out for approval

7.3.1.3 Material-Fabric Style (e.g. rayon, nylon etc)

7.3.1.4 Tyre Construction (e.g. diagonal / bias ply, radial, reinforced, etc)

7.3.1.5 Increase in Speed category

7.3.1.6 Increase in Load Capacity Index/ Maximum load carrying capacity

7.3.1.7 Colour of side wall if changed to white

## **8.0 CONFORMITY OF PRODUCTION**

8.1 Tyres approved under this regulation shall be so manufactured as to conform to the type approved, by meeting the requirements set forth in paras. 6.1 & 3.0, 6.2, 6.3, 6.4 and 6.6 for the following tests respectively.

8.1.1 Dimensions & marking,

8.1.2 Load / Speed performance test,

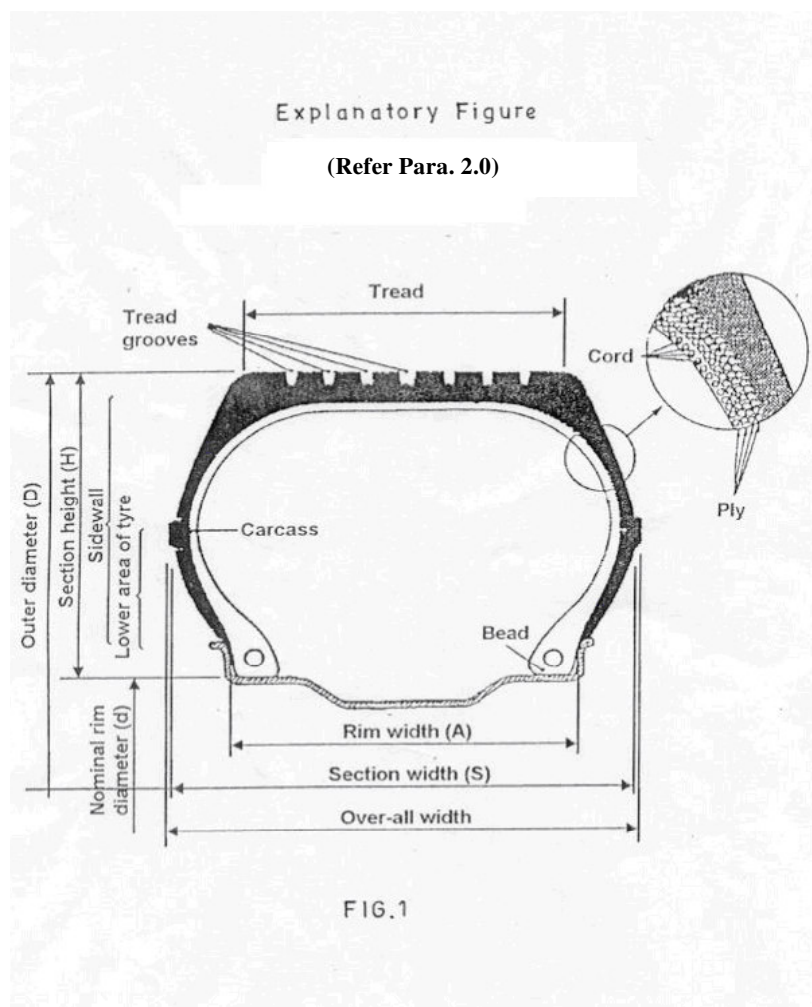
- 8.1.3 Endurance performance test,
- 8.1.4 Bead unseating resistance test for tubeless tyre,
- 8.1.5 Tyre strength test.
- 8.2 The authority, which has granted type approval, may at any time verify the conformity control methods applied in each production facility.
- 8.3 Conformity of production procedure shall be as decided by CMVR-TSC and MoRT&H.

**8.0 PENALTIES FOR NON-CONFORMITY OF PRODUCTION**

- 9.1 As and when decided by CMVR-TSC and MoRT&H.

**10.0 PRODUCTION DEFINETLY DISCONTINUED**

- 10.1 As and when decided by CMVR-TSC and MoRT&H.



**ANNEXURE – A**  
**(Refer Para 6.1)**  
**PASSENGER CAR TYRES (Diagonal Ply)**

“95” Super Balloon Series  
 13 and Smaller Rim Dia Codes  
 General dimension data

Tyre Size Designation	P.R.	RIM Rec. Alt.	NEW TYRE- INFLATED					
			Design Section Width mm	Min. Section Width mm	Max. Overall Width mm	Design Overall Dia. mm	Min. Overall Dia. Mm	Max. Overall Dia. mm
5.20-10	6	<u>3½J</u>	<u>132</u>	<u>127</u>	<u>140</u>	508	500	526
		4J	137	132	145			
4.50-12	6	<u>3½J</u>	<u>122</u>	<u>117</u>	<u>130</u>	529	522	545
		4J	127	122	135			
5.20-12	6	<u>3½J</u>	<u>132</u>	<u>127</u>	<u>140</u>	558	550	576
		4J	137	132	145			
5.20-13	6	<u>3½J</u>	<u>132</u>	<u>127</u>	<u>140</u>	582	574	600
		4J	137	132	145			
5.60-13	6	<u>4J</u>	<u>145</u>	<u>139</u>	<u>154</u>	600	592	619
		4½J	150	144	159			
5.90-13	6	<u>4J</u>	<u>150</u>	<u>144</u>	<u>159</u>	616	607	636
		4½J	155	149	164			
6.40-13	6	<u>4½J</u>	<u>163</u>	<u>156</u>	<u>173</u>	642	633	664
		5Kor J	168	161	178			

**PASSENGER CAR TYRES (Diagonal Ply)**

“95” Super Balloon Series  
 14 and 15 Rim Dia Codes  
 General dimension data

Tyre Size Designation	P.R.	RIM Rec Alt.	NEW TYRE- INFLATED					
			Design Section Width mm	Min. Section Width mm	Max. Overall Width mm	Design Overall Dia mm	Min. Overall Dia Mm	Max. Overall Dia mm
5.20-14	6	<u>3½J</u>	<u>132</u>	<u>127</u>	<u>140</u>	612	604	630
		4J	137	132	145			
5.60-14	6	<u>4J</u>	<u>145</u>	<u>139</u>	<u>154</u>	626	618	645
		4½J	150	144	159			
5.90-14	6	<u>4J</u>	<u>150</u>	<u>144</u>	<u>159</u>	642	633	662
		4½J	155	149	164			
5.60-15	6	<u>4J</u>	<u>145</u>	<u>139</u>	<u>154</u>	650	642	669
		4½J	150	144	159			
5.90-15	6	<u>4J</u>	<u>150</u>	<u>144</u>	<u>159</u>	668	659	688
		4½J	155	149	164			
6.40-15	6	<u>4½J</u>	<u>163</u>	<u>156</u>	<u>173</u>	692	683	714
		5J	168	161	178			
6.70-15	6	<u>4½J</u>	<u>170</u>	<u>163</u>	<u>180</u>	710	700	733
		5J	175	168	185			

**PASSENGER CAR TYRES (Diagonal Ply)**

“88” Low Section Series  
General dimension data

Tyre Size Designation	P.R.	RIM Rec Alt.	NEW TYRE- INFLATED					
			Design Section Width mm	Min. Section Width mm	Max. Overall Width mm	Design Overall Dia mm	Min. Overall Dia mm	Max. Overall Dia mm
7.25-13	6	<u>5J</u>	<u>184</u>	<u>177</u>	<u>195</u>	654	644	677
		5½J	189	182	200			
7.00-14	6	<u>5J</u>	<u>178</u>	<u>171</u>	<u>189</u>	668	659	690
		5½J	183	176	194			
7.50-14	6	<u>5½J</u>	<u>190</u>	<u>182</u>	<u>201</u>	688	678	711
		6J	195	187	206			

**PASSENGER CAR TYRES (Diagonal Ply)**

“82” Super Low Section Series  
General dimension data

Tyre Size Designation	P.R.	RIM Rec Alt.	NEW TYRE- INFLATED					
			Design Section Width mm	Min. Section Width mm	Max. Overall Width mm	Design Overall Dia mm	Min. Overall Dia mm	Max. Overall Dia mm
5.65-12	4	4J	131	126	139	522	515	537
	6							
6.15-13	4	4½J	157	151	166	582	574	600
	6							
6.95-14	6	<u>5J</u>	<u>178</u>	<u>171</u>	<u>189</u>	638	630	658
		5½J	183	176	194			
8.25-14	6	<u>6J</u> <u>6K</u>	<u>208</u>	<u>200</u>	<u>220</u>	690	680	713
		5½J	203	195	215			

**PASSENGER CAR TYRES (Diagonal Ply)**

Alpha-numeric ‘78’ Series  
General dimension data

Tyre Size Designation	P.R.	RIM Rec.	NEW TYRE- INFLATED					
			Design Section Width mm	Min. Section Width mm	Max. Overall Width mm	Design Overall Dia. mm	Min. Overall Dia. mm	Max. Overall Dia. Mm
F78-15	4	5½J	196	188	206	697	688	706
	6							

**MILLIMETRIC SIZES OF PASSENGER CAR TYRES  
(Radial Ply)**

General dimension data

Tyre Size Designation	<u>Rec</u> Rim Sizes Measuring Rim is underscored	New Tyre Inflated					
		Overall section Width (mm)			Overall Diameter (mm)		
		Design	Min	Max	Design	Min	Max
'80' Series 145/80 R10	<u>4J</u>	<u>145</u>	<u>139</u>	<u>152</u>	486	479	493
	4½J	150	144	157			
135/80 R12	<u>3½J</u>	<u>133</u>	<u>128</u>	<u>140</u>	521	515	527
	4J	138	132	145			
145/80 R12	<u>4J</u>	<u>145</u>	<u>139</u>	<u>152</u>	537	530	544
	4½J	150	144	157			
155/80 R12	<u>4½J</u>	<u>157</u>	<u>151</u>	<u>165</u>	553	546	560
	4J	152	146	160			
145/80 R13	<u>4J</u>	<u>145</u>	<u>139</u>	<u>152</u>	562	555	569
	4½J	150	144	157			
155/80 R13	<u>4½J</u>	<u>157</u>	<u>151</u>	<u>165</u>	578	571	585
	5J	162	156	170			
165/80 R13	<u>4½J</u>	<u>165</u>	<u>158</u>	<u>173</u>	594	586	602
	5J	170	163	178			
175/80 R13	<u>5J</u>	<u>177</u>	<u>170</u>	<u>186</u>	610	602	618
	5½J	182	175	191			
145/80 R14	<u>4J</u>	<u>145</u>	<u>139</u>	<u>152</u>	588	581	595
	4½J	150	144	157			
155/80 R14	<u>4½J</u>	<u>157</u>	<u>151</u>	<u>165</u>	604	597	611
	5J	162	156	170			
165/80 R14	<u>4½J</u>	<u>165</u>	<u>158</u>	<u>173</u>	620	612	628
	5J	170	163	178			
175/80 R14	<u>5J</u>	<u>177</u>	<u>170</u>	<u>186</u>	636	628	644
	5½J	182	175	191			
165/80 R15	<u>4½J</u>	<u>165</u>	<u>158</u>	<u>173</u>	645	637	653
	5J	170	163	178			
195/80 R15	<u>5½J</u>	<u>196</u>	<u>188</u>	<u>206</u>	693	684	702
	6J	201	193	211			

Tyre Size Designation	Rec. Rim Sizes Measuring Rim is underscored	New Tyre Inflated					
		Overall section Width (mm)			Overall Diameter (mm)		
		Design	Min	Max	Design	Min	Max
“75” Series 215/75 R15	<u>6J</u>	<u>216</u>	<u>208</u>	<u>227</u>	703	693	713
	5 ½J	211	203	222			
235/75R15	<u>6½J</u>	<u>235</u>	<u>226</u>	<u>244</u>	733	722	744
	7J	240	231	249			
225/75R16	<u>6J</u>	<u>223</u>	<u>214</u>	<u>234</u>	744	733	754
	6½J	228	219	239			
“70”Series 145/70R12	<u>4J</u>	<u>145</u>	<u>139</u>	<u>151</u>	509	503	515
	4½J	150	144	156			
155/70 R12	<u>4 ½J</u>	<u>157</u>	<u>151</u>	<u>163</u>	523	516	530
	5J	162	156	168			
145/70 R13	<u>4 ½J</u>	<u>150</u>	<u>144</u>	<u>156</u>	534	528	540
	4J	145	139	151			
155/70R13	<u>4½J</u>	<u>157</u>	<u>151</u>	<u>163</u>	548	541	555
	4J	152	146	158			
165/70 R13	<u>5J</u>	<u>170</u>	<u>163</u>	<u>177</u>	562	555	569
	4½J	165	158	172			
175/70 R13	<u>5J</u>	<u>177</u>	<u>170</u>	<u>184</u>	576	569	583
	5 ½J	182	175	189			
175/70 R14	<u>5J</u>	<u>177</u>	<u>170</u>	<u>184</u>	602	595	609
	5½J	182	165	179			
185/70 R14	<u>5½J</u>	<u>189</u>	<u>181</u>	<u>197</u>	616	608	624
	6J	194	186	202			
195/70R14	<u>6J</u>	<u>201</u>	<u>193</u>	<u>209</u>	630	622	638
	5½J	196	188	204			
195/70 R15	<u>6J</u>	<u>201</u>	<u>193</u>	<u>209</u>	655	647	663
	5½J	196	188	204			
225/70 R15	<u>6½J</u>	<u>228</u>	<u>219</u>	<u>237</u>	697	688	706
	7J	233	224	241			
265/70 R16	<u>8J</u>	<u>272</u>	<u>261</u>	<u>283</u>	778	767	789
	7½J	267	256	278			

Tyre Size Designation	Rec. Rim Sizes Measuring Rim is underscored	New Tyre Inflated					
		Overall section Width (mm)			Overall Diameter (mm)		
		Design	Min	Max	Design	Min	Max
<u>“65” Series</u> 165/65 R13	<u>5J</u>	<u>170</u>	<u>163</u>	<u>177</u>	544	538	550
	<u>4½J</u>	165	158	172			
185/65 R13	<u>5½J</u>	<u>189</u>	<u>181</u>	<u>197</u>	570	563	577
	6J	194	186	202			
175/65 R14	<u>5J</u>	<u>177</u>	<u>170</u>	<u>184</u>	584	577	591
	<u>5½J</u>	182	175	189			
195/65 R15	<u>6J</u>	<u>201</u>	<u>193</u>	<u>209</u>	635	627	643
	<u>5½J</u>	196	188	204			
<u>“60” Series</u> 185/60 R13	<u>5½J</u>	<u>189</u>	<u>181</u>	<u>197</u>	552	545	559
	6J	194	186	202			
185/60 R14	<u>5 ½J</u>	<u>189</u>	<u>181</u>	<u>197</u>	578	571	585
	6J	194	186	202			
195/60 R15	<u>6J</u>	<u>201</u>	<u>193</u>	<u>209</u>	615	608	622
	<u>5½J</u>	196	188	204			
205/60 R15	<u>6J</u>	<u>209</u>	<u>201</u>	<u>217</u>	627	620	634
	<u>5½J</u>	204	196	212			
215/60 R16	<u>6½J</u>	<u>221</u>	<u>212</u>	<u>230</u>	664	656	672
	6J	216	207	225			
225/60 R16	<u>6 ½J</u>	<u>228</u>	<u>219</u>	<u>237</u>	676	668	684
	6J	223	214	232			
255/60 R17	<u>7½J</u>	<u>260</u>	<u>250</u>	<u>270</u>	738	729	747
	7J	255	245	265			
<u>“55” Series</u> 205/55 R16	<u>6½J</u>	<u>214</u>	<u>205</u>	<u>223</u>	632	625	639
	6J	209	200	218			
215/55 R16	<u>7J</u>	<u>226</u>	<u>217</u>	<u>244</u>	642	635	649
	<u>6½J</u>	221	212	239			
<u>“50” Series</u> 225/50 R16	<u>7J</u>	<u>233</u>	<u>224</u>	<u>242</u>	632	625	639
	<u>6½J</u>	228	219	237			



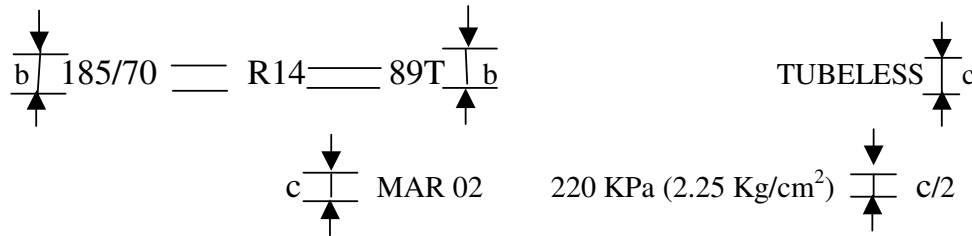
**ANNEXURE B**  
**LOAD CAPACITY INDICES**

Li = Load-capacity index

Kg = Corresponding mass of the vehicle which is to be carried

<b>Li</b>	<b>Kg</b>	<b>Li</b>	<b>Kg</b>	<b>Li</b>	<b>Kg</b>	<b>Li</b>	<b>Kg</b>
0	45	31	109	62	265	93	650
1	46.2	32	112	63	272	94	670
2	47.5	33	115	64	280	95	690
3	48.7	34	118	65	290	96	710
4	50	35	121	66	300	97	730
5	51.5	36	125	67	307	98	750
6	53	37	128	68	315	99	775
7	54.5	38	132	69	325	100	800
8	56	39	136	70	335	101	825
9	58	40	140	71	345	102	850
10	60	41	145	72	355	103	875
11	61.5	42	150	73	365	104	900
12	63	43	155	74	375	105	925
13	65	44	160	75	387	106	950
14	67	45	165	76	400	107	975
15	69	46	170	77	412	108	1000
16	71	47	175	78	425	109	1030
17	73	48	180	79	437	110	1060
18	75	49	185	80	450	111	1090
19	77.5	50	190	81	462	112	1120
20	80	51	195	82	475	113	1150
21	82.5	52	200	83	487	114	1180
22	85	53	206	84	500	115	1215
23	87.5	54	212	85	515	116	1250
24	90	55	218	86	530	117	1285
25	92.5	56	224	87	545	118	1320
26	95	57	230	88	560	119	1360
27	97.5	58	236	89	580	120	1400
28	100	59	243	90	600		
29	103	60	250	91	615		
30	106	61	257	92	630		

**ANNEXURE C**  
**(Refer Para. 3.5)**  
**ARRANGEMENT OF TYRE MARKINGS**



b = 6 mm (min.)

c = 4 mm (min.)

**These markings define a pneumatic tyre:**

- Having a nominal section width of 185;
- Having a nominal aspect ratio of 70;
- Of radial-ply structure R
- Having a nominal rim diameter of 14;
- Having a load capacity of 580 kg, corresponding to load index 89 in Annexure B to this Regulation;
- Of Speed category T (maximum speed 190 km/h);
- For fitting without an inner tube (“tubeless”);
- Manufactured during the month MARCH of the year 2002.
- Max pressure of 220 KPa or 2.25kg/cm<sup>2</sup>

The positioning and order of the markings constituting the tyre designation shall be the following:

- a) The size designation, comprising the nominal section width, the nominal aspect ratio, the type-of-structure symbol (where applicable) and the nominal rim diameter shall be grouped as shown in the above example: 185/70 R 14;
- b) The load index and the speed category symbol shall be placed together near the size designation. They may either precede or follow it or be placed above or below it.
- c) The symbol “tubeless”, “reinforced”, and “M+S” may be at a distance from the size – designation.

**Note:** Arrangement of tyre marking relates to the tyre size designation. Other markings location will be left to the discretion of the tyre manufacturer.

**ANNEXURE D**  
**(Refer Para. 6.1.5)**  
**METHOD OF MEASURING PNEUMATIC TYRES**

- D 1.0 Mount the tyre on the measuring rim specified by the manufacturer pursuant to para.4.1 of this Standard and inflate it to a pressure of 3 to 3.5 bar.
- D 1.1 Adjust the pressure as follows (for tyres mentioned in Annexure A):
- D1.1.1 In standard bias-belted tyres: to 1.7 bar;
- D1.1.2 In diagonal (bias-ply) tyres to: Maximum Inflation pressure for that tyre size.
- D1.1.3 In standard radial tyres: to 1.8 bar;
- D1.1.4 In reinforced tyres: to 2.3 bar;
- D2.0 Condition the tyre, mounted on its rim, at the ambient room temperature for not less than 24 hours.
- D3.0 Readjust the pressure to the level specified in para. D 1.1 above.
- D4.0 Measure the overall width by calliper at six equally spaced points, taking the thickness of the protective ribs or bands into account. The highest measurement so obtained is taken as the overall width.
- D5.0 Determine the outer diameter by measuring the maximum circumference and dividing the figure so obtained by  $\Pi$  (3.1416).

**ANNEXURE E**  
**(Refer Para. 6.2.1)**  
**PROCEDURE FOR LOAD / SPEED PERFORMANCE TEST**

**E 1.0 PREPARING THE TYRE**

- E 1.1 Mount a new tyre on the test rim specified by the manufacturer pursuant to para. 4.1 of this Standard.
- E 1.2 Inflate it to the appropriate pressure as given (in bar) in the table below:

Speed Category	Diagonal (bias-ply) Tyres			Radial Tyres		Bias-belted Tyres
	Ply-rating			Standard	Reinforced	Standard
	4	6	8			
L,M,N	2.3	2.7	3.0	-	-	-
P,Q,R,S	2.6	3.0	3.3	2.6	3.0	2.6
T,U,H	2.8	3.2	3.5	2.8	3.2	2.8
V	3.0	3.4	3.7	3.0	3.4	-
W	-	-	-	3.2	3.6	-
Y	-	-	-	-	3.6	-

- E 1.3 The manufacturer may request, giving reasons, the use of a test-inflation pressure differing from those given under para. E 1.2 above. In such a case the tyre shall be inflated to that pressure.
- E 1.4 Condition the tyre-and-wheel assembly at test-room temperature for not less than three hours.
- E 1.5 Readjust the tyre pressure to that specified in para. E 1.2 or E 1.3 above.

**E 2 CARRYING OUT THE TEST**

- E 2.1 Mount the tyre-and-wheel assembly on a test axle and press it against the outer face of a smooth wheel  $1.70\text{m} \pm 1\%$  in diameter.
- E 2.2 Apply to the test axle a load equal to 80% of:
- E2.2.1 The maximum load rating equated to the Load Capacity Index for tyres with Speed Symbols L to H inclusive.
- E 2.2.2 The maximum load rating associated with a maximum speed of 240 km/h for tyres Speed Symbol "V" (see para. 2.31.2 of this Standard).
- E 2.2.3 The maximum load rating associated with a maximum speed of 270 km/h for tyres with Speed Symbol "W" (see para. 2.31.3 of this Standard).

- E 2.2.4 The maximum load rating associated with a maximum speed of 300 km/h for tyres with Speed Symbol `Y' (see para. 2.31.4 of this Standard).
- E 2.3 Throughout the test the tyre pressure must not be corrected and the test load must be kept constant.
- E 2.4 During the test the temperature in the test-room must be maintained at between 20 °C and 40 °C or at a higher temperature if the manufacturer agrees.
- E 2.5 Carry the test through, without interruption in conformity with the following particulars:
  - E 2.5.1 Time taken to pass from zero speed to initial test speed: 10 minutes.
  - E 2.5.2 Initial test speed: prescribed maximum speed for the type of tyre (see para.2.28.1 of this Standard), less 40 km/h in the case of the smooth wheel having 1.70 m  $\pm$  1% in diameter or less 30 km/h in the case of the smooth wheel having 2 m  $\pm$  1% in diameter;
  - E 2.5.3 Successive speed increments: 10 km/h.
  - E 2.5.4 Duration of test at each speed step except the last: 10 minutes;
  - E 2.5.5 Duration of test at last speed step: 20 minutes;
  - E 2.5.6 Maximum test speed: prescribed maximum speed for the type of tyre, less 10 km/h in the case of the smooth wheel having 1.7 m  $\pm$  1% in diameter or equal to the prescribed maximum speed in the case of the smooth wheel having 2 m  $\pm$  1% in diameter.
  - E 2.5.7 However, for tyres suitable for maximum speed of 300 km/h (Speed Symbol `Y'), the duration for the test is 20 minutes at the initial test speed step and 10 minutes at the last speed step.
- E 2.6 However, in case of a second test is performed to assess the top performances of a tyre type suitable for speed above 300 km/h, the procedure shall be following
  - E 2.6.1 Apply to the test axle a load equal to 80% of the maximum load rating associated with the maximum speed specified by the tyre manufacture
  - E 2.6.2 The test shall be run without interruptions in accordance with the following:
    - E2.6.2.1 Ten minutes to build up from zero to the maximum speed specified by the tyre manufacturer.
    - E2.6.2.2 Five minutes at the maximum test speed.

**ANNEXURE F**  
**(Refer Para. 6.3.1)**  
**ENDURANCE PERFORMANCE TEST**

**F 1.1 APPARATUS**

The test wheel shall be a flat-smooth-faced wheel having diameter of  $1.7 \text{ m} \pm 1 \%$ . The surface width of the wheel shall be more than the loaded tyre tread width. The air surrounding the tyre during the test shall be at a temperature of 20 to 40 °C, or at a higher temperature if acceptable to the tyre manufacturer.

**F 1.2 PREPARATION OF TYRE FOR THE TEST**

Condition the inflated tyre/rim-wheel assembly in an ambient atmosphere 20 to 40°C or higher if acceptable to the tyre manufacturer for a minimum period of 3 h. Readjust if necessary, the tyre pressure to the original inflation pressure immediately before the test.

**F 1.3 TEST PROCEDURE**

Mount the conditioned tyre/rim-wheel assembly on a test machine axle and press the tyre tread against the face of the test drum at the initial (Stage-1) Test Load, followed by the Test Loads stage 2 and 3, as those specified in the following table.

**Table – Endurance Test Parameters**

**Test Inflation Pressure 180 kPa**

<b>Test Load Kg</b>		<b>Maximum Load capability x Percentage of Maximum Load</b>
<b>Test speed km/h</b>		<b>81</b>
<b>Test Stage</b>	<b>Test Period Hrs.</b>	<b>Percentage of Maximum Rated Load</b>
1	4	85
2	6	90
3	24	100

**ANNEXURE G**  
**(Refer Para. 6.4.1)**  
**BEAD UNSEATING RESISTANCE TEST**

**G 1.1 PREPARATION OF TYRE:**

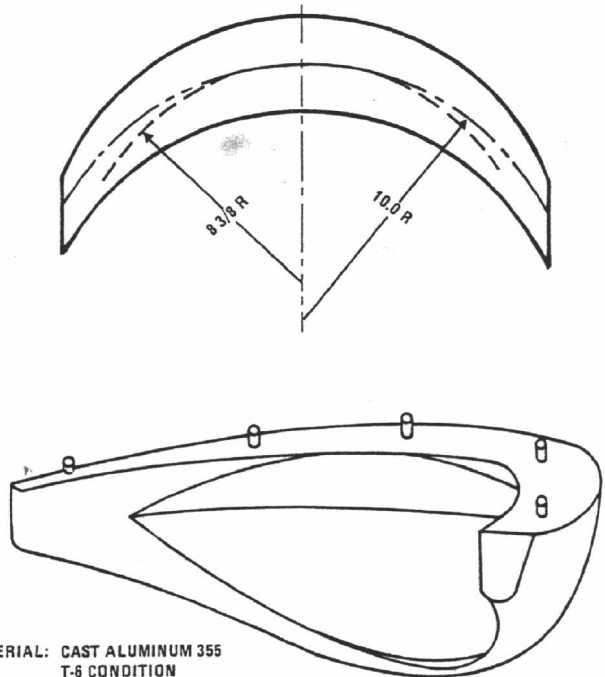
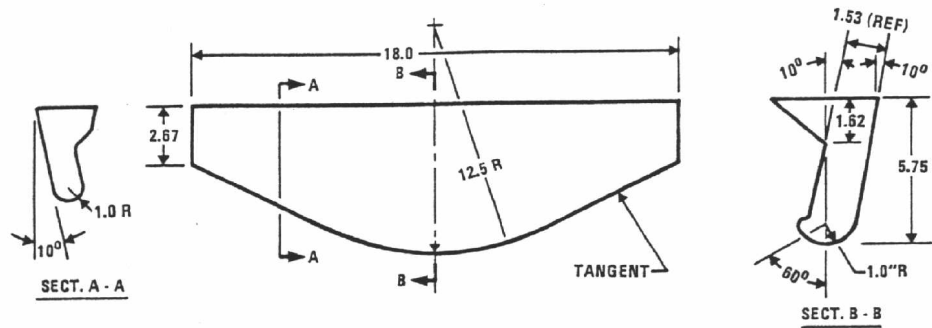
Wash the tubeless test tyre for passenger car at the beads, and mount it, as a rule, on a recommended painted rim as specified in applicable specifications without the use of lubricant or adhesive. Inflate the tyre to inflation pressure of 180 kPa. Allow it to stand at the room temperature for at least 3 hours and then readjust its pressure to the original inflation pressure.

**G 1.2 TEST DEVICE**

The test device is a standard block as shown in Fig. 2 shall be used and is forced against tyre sidewall.

**G 1.3 TEST PROCEDURE**

With the tyre and wheel mounted in the suitable fixture, the load shall be applied through the standard block to the center of sidewall at a rate of  $50 \pm 1.5$  mm/min with the load arm substantially parallel to the tyre and rim assembly at the time of engagement. Increase the load until the bead unseats or until the applicable loads specified in Table-1 of para. 6.4.2 are met. The measurement of load shall be made at least four points approximately equally spaced around the circumference of the tyre, and the load for each measurement shall be recorded.



MATERIAL: CAST ALUMINUM 355  
 T-6 CONDITION  
 FINISH - 50 MICRO INCH

FIGURE 2. —Diagram of Bead Unseating Block Dimensions in Inches

(Ref. Para. G1.2 of Annexure G)



**ANNEXURE H**  
**(Refer Para. 6.6.1)**  
**TYRE STRENGTH TEST (PLUNGER TEST)**

**H 1.1 APPARATUS**

The equipment consists of a cylindrical steel plunger, having a hemispherical end of a diameter specified in the para. 6.6.2 for type of tyre and a device to force the plunger rod into a tyre at the rate of  $50 \pm 1.5$  mm/min.

**H 1.2 PREPARATION OF TYRE FOR THE TEST**

The tyre with a tube shall be mounted and inflated on a test rim of the recommended size and shall be conditioned at approximately the temperature of the room in which the test is to be conducted for at least 3 hours after which the pressure shall be adjusted, if necessary, to the test inflation pressure specified in para. 7.3.

**H 1.3 TEST PROCEDURE**

The plunger rod shall be forced into the tread of the tyre/wheel assembly mounted as described in para. H1.1. Perpendicularly over a tread element at the centerline of the tread, or as near as possible to avoiding penetration into a tread groove. The rate of travel of the plunger; shall be  $50 \pm 1.5$  mm per minute until the tyre breaks or the plunger is stopped by the rim (bottoming of the plunger against the rim), in which case the tyre shall be deemed to have passed the test regardless of energy value. Measurement of force and penetration at break (or bottoming against the rim) shall be made at 5 points nearly equally spaced around the tyre circumference. The arithmetic mean energy absorbed shall be calculated from the five energy values obtained at the break, using the formula given in para. H 1.3.

**H 1.4** Formula for calculating the breaking energy:

$$W = \frac{F \times P}{2} \times 10^{-3}$$

Where

W = energy at break (or bottoming) in J (Joule)

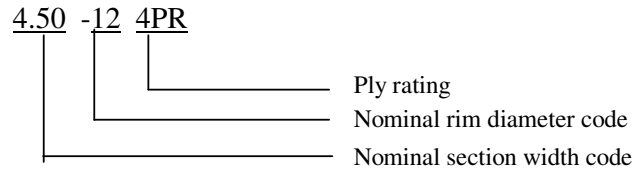
F = Force at break (or bottoming) in N; and

P = Penetration at break (or bottoming) in mm.

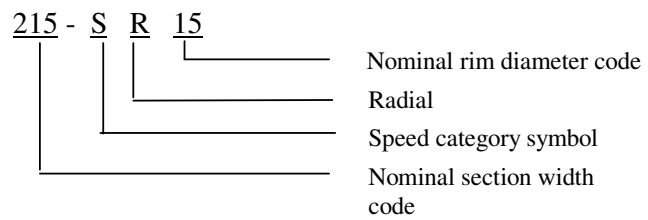
**H 1.5** As an option, for purpose of conformity, if the plunger energy measurements meet or exceed the minimum value specified, it is not necessary to continue penetration of the plunger to break the tyre.

**ANNEXURE J**  
**(Refer Para. 3.2)**  
**TYRE SIZE DESIGNATION**

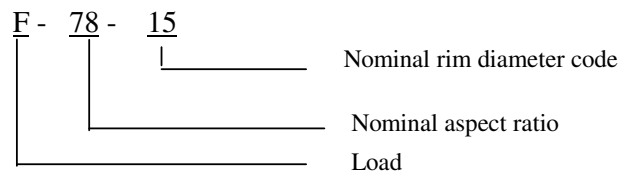
**NUMERIC**



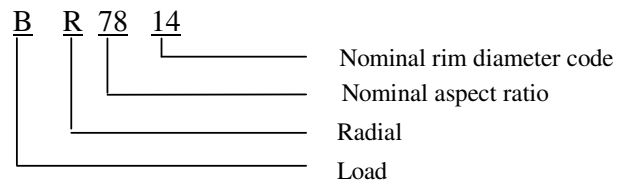
**METRIC**



**ALPHA NUMERIC**  
**(BIAS)**



**ALPHA NUMERIC**  
**(RADIAL)**



**ANNEXURE K**  
**(Refer Para. 6.7.1)**  
**TYRE UNIFORMITY TEST**

**K.1.0 PREPARING THE TYRE**

- K.1.1 Mount a new tyre on the test rim specified by the manufacturer pursuant to para. 4.1 of this standard.
- K.1.2 Use a new inner tube or combination of inner tube, valve and flap (as required) when testing tyres with inner tubes.
- K.1.3 Inflate the tyre to the pressure corresponding to the pressure specified by the manufacturer.
- K.1.4 Condition the tyre-and-wheel assembly at test-room temperature for not less than three hours.

**K.2.0 TEST PROCEDURE**

- K.2.1 Apply a load of 85% of rated load for rim up to 14 inch to the tyre and warm up the tyre for two minutes at 300 - 400 rpm of tyre rotating speed.
- K.2.2 Outer diameter of test drum shall be  $854.1 \pm 2.5$  mm for rim diameter upto 14 inches and  $1600.2 \pm 2.5$  mm for rim diameter above 15 or more and drum surface shall have high friction coarse textured surface
- K.2.3 Adjust the inflation pressure and rotating speed of tyre to 60 rpm.
- K.2.4 The distance between the axis of the tyre and the axis of the drum shall be held constant.
- K.2.5 Rotate the tyre at 60 rpm and measure the components and variations of the following generated force with indicators and recorders;

- Radial force variation
- Lateral force variation
- Tractive force variation
- Conicity and ply steer

If necessary, repeat the measurements after reversing the tyre on the machine, or reversing the direction of the rotation.

**ANNEXURE L**  
**(Refer Para. 6.8.1)**  
**TYRE STIFFNESS TEST**

**L.1.0 PREPARING THE TYRE**

- L1.1 Mount a new tyre on the test rim specified by the manufacturer pursuant to para.4.1 of this standard.
- L1.2 Use a new inner tube or combination of inner tube, valve and flap (as required) when testing tyres with inner tubes.
- L1.3 Inflate the tyre to the pressure corresponding to the pressure specified by the manufacturer.
- L1.4 Condition the tyre-and-wheel assembly at test-room temperature for not less than three hours.

**L2.0 TEST PROCEDURE**

**L2.1 Radial Stiffness**

- L2.1.1 Radial load shall be applied equal to its maximum load capacity. Stiffness shall be reported for the load (difference between 80% and 20% of rated load) divided by corresponding deflection in mm.

**L 2.2 Lateral Stiffness**

- L2.2.1 Radial load shall be applied equal to its maximum load or load index.
- L2.2.2 Tyre or the surface on which radial load is applied shall be pulled laterally at a speed of  $50 \pm 1.5$  mm/min by maintaining constant radial load.
- L2.2.3 Load required to pull tyre/surface shall be monitored and slip is recorded when there is reduction in lateral pull load.
- L2.2.4 Stiffness shall be reported for the load (between 80% & 20% of maximum lateral load) divided by corresponding displacement in mm. (surface finish of surface on which radial load is applied shall be reported in test report).

**L2.3 Tangential Stiffness:**

- L2.3.1 Radial load shall be applied equal to its maximum load or load Index.
- L2.3.2 Tyre or the surface on which radial load is applied shall be pulled in the direction of rotation of tyre at a speed of  $50 \pm 1.5$  mm/min by maintaining constant radial load.

- L2.3.3 Load required to pull tyre/surface shall be monitored and slip is recorded when there is reduction in tangential pull load.
- L2.3.4 Stiffness shall be reported for the load (between 80% & 20% of maximum lateral load) divided by corresponding displacement in mm. (surface finish of surface on which radial load is applied shall be reported in test report).

**ANNEXURE M**  
**( Refer Para 4.1 )**  
**TECHNICAL SPECIFICATIONS TO BE SUBMITTED**  
**BY MANUFACTURER**

- M1. Tyre make (trade name), brand name and type
- M2. Manufacturers name and address
- M3. Tyre-size designation as defined in para. 2.17 of this Regulation;
- M4. The category of use (normal or special or snow);
- M5. The Structure: diagonal (bias ply) or radial;
- M6. The speed category;
- M7. The load-capacity index or Max Permissible load;
- M8. Whether the tyre is intended to be used with or without an inner tube;
- M9. Normal or Reinforced
- M10. Ply-Rating
- M11. The overall dimensions: overall section width and outer diameter;
- M12. The rims on which the tyre can be mounted;
- M13. The measuring rim and test rim;
- M14. The measuring pressure and test pressure ;
- M15. Number and height of tread wear indicators
- M16. Drawing or photographs of sidewall showing marking.
- M17. Drawing or photographs of tread, which can identify tread pattern.
- M18. Dimensional drawing of tyre cross-section.

**ANNEXURE N**  
**(See Introduction)**

**COMMITTEE COMPOSITION**  
**Automotive Industry Standards Committee**

<b>Chairman</b>	
Shri B. Bhanot	Director The Automotive Research Association of India, Pune
<b>Members</b>	<b>Representing</b>
Shri Alok Rawat	Ministry of Road Transport & Highways, New Delhi
Shri Sushil Kumar	Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, New Delhi
Director	Office of the Development Commissioner Small Scale Industries, Ministry of Small Scale Industries, New Delhi
Shri L. R. Singh	Bureau of Indian Standards, New Delhi
Shri A. S. Lakra Shri D. G. Shirke (Alternate)	Central Institute of Road Transport, Pune
Director	Indian Institute of Petroleum, Dehra Dun
Shri R.C. Sethi Shri N. Karuppaiah (Alternate)	Vehicles Research & Development Establishment, Ahmednagar
Shri Rajat Nandi	Society of Indian Automobile Manufacturers
Shri T.C. Gopalan Shri Ramakant Garg (Alternate)	Tractor Manufacturers Association, New Delhi
Shri K.N.D. Nambudiripad	Automotive Components Manufacturers Association, New Delhi
Shri G. P. Banerji	Automotive Components Manufacturers Association, New Delhi

**Member Secretary**  
**Mrs. Rashmi Urdhwareshe**  
**Sr. Assistant Director**  
**The Automotive Research Association of India, Pune**