Tyre Databook 2011-12

Car • Van

SEMPERIT

This Technical Data Book contains comprehensive information on SEMPERIT Car and Van Tyres. The technical data and other details on tyres and accessories have been compiled to reflect as exactly and completely as possible the current state of development and are based on **ETRTO**[1], **ISO**[2] and **WdK/DIN**[3] standards.

Most of the Semperit tyres comply with **DOT**[4] regulations and are marked accordingly. They are homologated in accordance with the relevant **ECE**[5] regulation (ZR tyres without operational code in accordance with EU guideline 92/23) and are hence also homologated in accordance with current **EU**[6] tyre regulation.

This databook is intended for information and instruction only. No liability whatsoever will be accepted for damage, regardless of its nature and its legal basis, arising from advice given in this book.

1) ETRTO – The European Tyre and Rim Technical Organisation, Brussels

2) ISO – International Organisation for Standardisation

3) DIN – German Institute for Standardisation, Berlin
WdK – German Rubber Manufacturers' Association, Frankfurt/M.

4) DOT – Department of Transportation (USA)

5) ECE – Economic Commission for Europe (UNO-Institution, Geneva)

6) EU – European Union, formerly EEC

Tyre safety tips

We recommend that the **inflation pressure** of every tyre is **checked** at least **every 14 days**. Avoid driving over sharp-edged or pointed objects.

Lower inflation pressures, greater loads or higher speeds than specified by the vehicle and/or tyre manufacturer all shorten the **service life** of tyres and can result in structural damages.

We recommend that **new tyres** are **run in** at moderate speeds for the first 120 to 190 miles (200 to 300 km) to roughen the tread surface. The tyre does not achieve its best performance until after this running-in period.

We recommend all wheel positions of a passenger car are fitted with tyres of the **same tread design**.

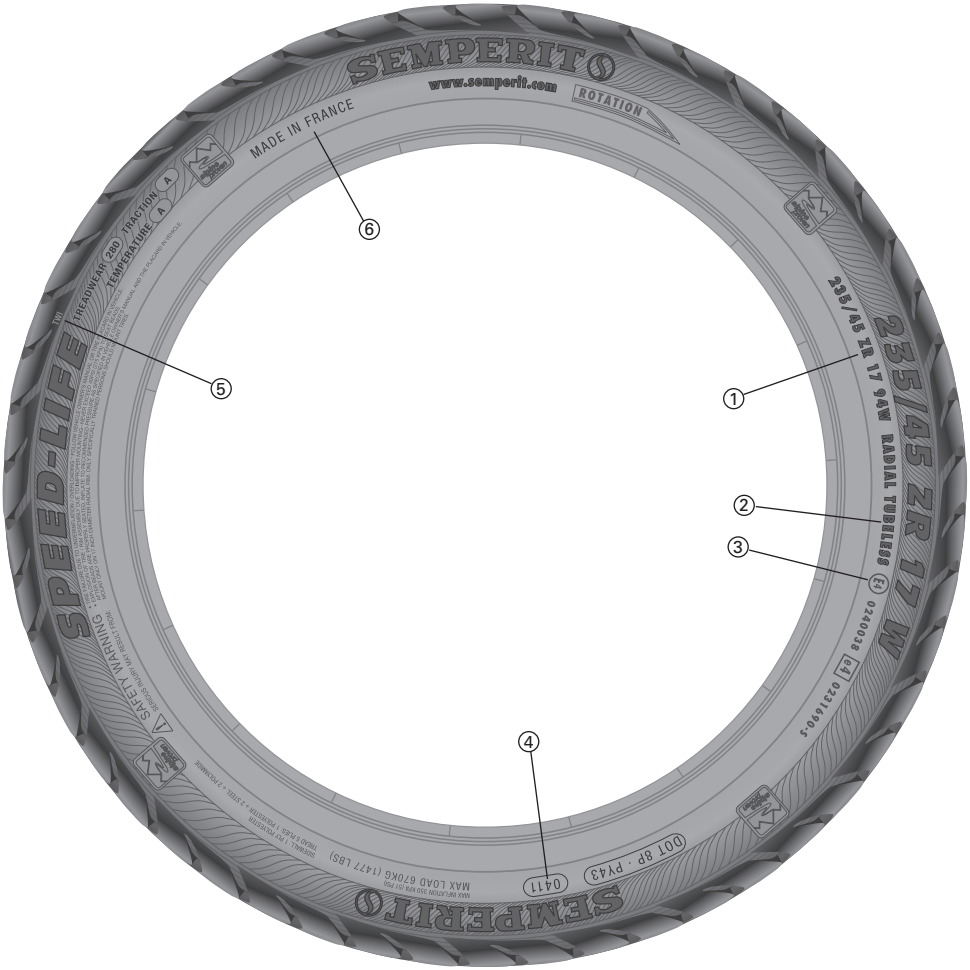
Please observe the detailed operating instructions on page 36 ff.

SAFETY WARNING!

The instructions given in this databook must be observed to ensure vehicle safety at all times. This applies especially with respect to tyre inflation pressure recommendations.

Non-compliance with these instructions means risking tyre damage which, if serious enough, may result in a tyre bursting. It is hazards like these that can cause traffic accidents involving vehicle damage and/or serious personal injury.

Contents


SEMPERIT
www.semperit.com
ROTATION
MADE IN FRANCE
6
5
1
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4
235/45 ZR 17 W
235/45 ZR 17 94W RADIAL TUBELESS
SPEED-LIFE
TREADWEAR 280 TRACTION A
TEMPERATURE A
SAFETY WARNING
0411
DOT 8P - PY43
MAX LOAD 670KG (1477 LBS)
SEMPERIT

① **235/45 ZR17 94W**

235 Nominal Section width in mm.

45 Nominal Aspect ratio
(Tyre height is 45% of tyre width).

R Symbol for radial tyre.
(„ZR“ see page 6)

17 Rim diameter Code (in inches).

94 Load Index “94” = max. load of this tyre
is 670 kg (see table page 6)

W Speed Index, indicating max. speed
W=270 km/h/169 mph (see table page 6)

Other information may be added after the size marking:

“REINFORCED” or “**EXTRA LOAD (XL)”** for reinforced tyres with higher load capacity. **“M+S”** for winter tyres.

Snowflake designation (in USA and Canada):
This additional marking on an M+S tyre shows that the tyre meets prescribed test criteria and ensures good winter properties.

② **TUBELESS**

tubeless.
TUBE TYPE tyres must be mounted with tubes.

③ **E 4**

Marking indicating accordance with ECE regulations. The number after the E in the circle indicates the country of homologation.
E4 (4=Netherlands) *

④ **0411**

Production code (“04” means 4th week, “11” means 2011).

⑤ **TWI**

TWI =Tread Wear Indicator.
Cross ribs evenly spaced around the circumference of the tyre in the longitudinal tread grooves and becoming exposed when the remaining tread depth is down to 1.6 mm.

⑥ **Made in…**

Marking showing the country of origin.

*) This sign may also be e4,
if the tyre was homologated in accordance with the EU guideline 92/23.

Including Load Index and Speed Index

Load Index (LI)

The Load Index is a numerical code associated with the maximum load a tyre can carry (see also page 39).

LI	kg	LI	kg	LI	kg	LI	kg	LI	kg
50	190	65	290	80	450	95	690	110	1060
51	195	66	300	81	462	96	710	111	1090
52	200	67	307	82	475	97	730	112	1120
53	206	68	315	83	487	98	750	113	1150
54	212	69	325	84	500	99	775	114	1180
55	218	70	335	85	515	100	800	115	1215
56	224	71	345	86	530	101	825	116	1250
57	230	72	355	87	545	102	850	117	1285
58	236	73	365	88	560	103	875	118	1320
59	243	74	375	89	580	104	900	119	1360
60	250	75	387	90	600	105	925	120	1400
61	257	76	400	91	615	106	950	121	1450
62	265	77	412	92	630	107	975	122	1500
63	272	78	425	93	650	108	1000	123	1550
64	280	79	437	94	670	109	1030	124	1600

Speed Index (SI)

The Speed Index indicates the maximum speed at which the tyre can carry a load corresponding to its Load Index.

SI	Max. speed for **passenger car tyres**	
M	81 mph[1)]	130 km/h[1)]
P	93 mph	150 km/h
Q	100 mph	160 km/h
R	106 mph	170 km/h
S	112 mph	180 km/h
T	118 mph	190 km/h
H	130 mph	210 km/h
V	150 mph	240 km/h
W	169 mph	270 km/h
Y	187 mph	300 km/h
ZR	over 150 mph	over 240 km/h

SI	Reference speed for **commercial vehicle tyres**	
K	69 mph	110 km/h
L	75 mph	120 km/h
M	81 mph	130 km/h
N	87 mph	140 km/h
P	93 mph	150 km/h
Q	99 mph	160 km/h
R	106 mph	170 km/h
S	112 mph	180 km/h
T	118 mph	190 km/h
H	130 mph	210 km/h

1) As a rule only used for special spare tyres if they qualify according to ECE Regulation 30. In accordance with ECE Regulation 64 governing the use of special spare tyres, even these more highly rated tyres may only be used up to a maximum speed of 50 mph/80 km/h.

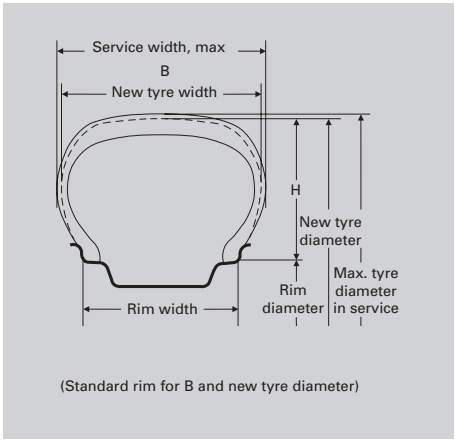
The technical data in the tables comply generally with international standards.

All **dimensions** in the tables of this databook are given in millimetres (mm), if not indicated in a different way.

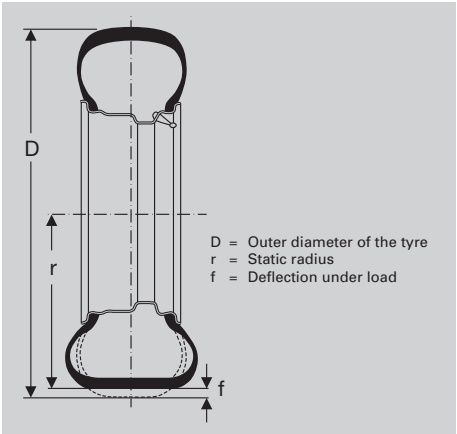
The **rim diameter** is given in inch code. Tyre ranges on new rim types may also be marked in mm.

Construction measurements are theoretical values for the design of the tyre: The **width** is relative to the smooth sidewall, the **outer diameter** to the tread centre.

Maximum measurements are actual **operating measurements** of the inflated tyre (operating pressure) in the unloaded state. They include growth but exclude dynamic distortions. The **width** is the max. permitted tyre width, including sidewall decorative markings, when the tyre is mounted on the correct rim.



(Standard rim for B and new tyre diameter)



The **outer diameter** is the max. permitted diameter. The max. measurements are binding for **vehicle designers**.

The **static radius** is the distance between the wheel centre and the ground contact patch under max. load at the recommended tyre pressure.

The **rolling circumference** is the distance covered by a point on the circumference when the tyre revolves once at 60 km/h (37 mph).

The **load capacity** in kilograms (kg) is weight in the sense of a mass.

Tyre pressure (inflation pressure) is given in bar as an overpressure (cold tyre), for driving speeds **up to 160 km/h (100 mph)**.

Vehicle designers should bear in mind the **maximum values** for tyre outer diameter and width when planning the **wheel space of a vehicle**, if all standard approved tyres are to fit without any restrictions.
Should this by way of exception not be possible, the safety risk must be eliminated by taking appropriate measures.

Comfort-Life 2

The reliable tyre

For compact and medium range cars

- **Excellent braking** in the wet through improved tread pattern design with more gripping edges
- **High aquaplaning safety** thanks to optimisation of groove shape and efficient dispersion of water
- **Optimised handling characteristics** ensured by improved transmission of lateral and longitudinal forces

Size range

80 series				
135/80 R 13		70	T	
145/80 R 13		75	T	
155/80 R 13		79	T	
	XL	83	T	
165/80 R 13		83	T	
	XL	87	T	1)
175/80 R 14		88	T	
		88	H	
70 series				
145/70 R 13		71	T	
155/70 R 13		75	T	
165/70 R 13		79	T	
	XL	83	T	
175/70 R 13		82	T	
165/70 R 14		81	T	
	XL	85	T	
175/70 R 14		84	T	
	XL	88	T	
185/70 R 14		88	T	
		88	H	
205/70 R 14	XL	98	T	
65 series				
155/65 R 13		73	T	
165/65 R 13		77	T	
175/65 R 13		80	T	
155/65 R 14		75	T	
165/65 R 14		79	T	

65 series (continued)				
175/65 R 14		82	T	
		82	H	
	XL	86	T	
185/65 R 14		86	T	
		86	H	
195/65 R 14		89	H	1)
145/65 R 15		72	T	
175/65 R 15		84	T	
		84	H	
185/65 R 15		88	T	
		88	H	
	XL	92	T	
195/65 R 15		91	T	
	XL	95	T	
60 series				
175/60 R 13		77	T	
185/60 R 13		80	H	2)
165/60 R 14		75	T	
		75	H	
185/60 R 14		82	T	
		82	H	
195/60 R 14		86	H	1)
185/60 R 15		84	H	
	XL	88	H	
55 series				
195/55 R 13		80	T	3)
185/55 R 14		80	T	
		80	H	
175/55 R 15		77	T	

1) Pattern Comfort-Life
2) Pattern Speed Comfort
3) Pattern Sport Life M 811

Speed-Life

The dynamic tyre

For powerful medium range and luxury vehicles

- **Excellent performance in the wet** through wide circumferential grooves and latest generation full silica compound
- **Perfect cornering** by innovative tread pattern design and high lateral stability

Size range

65 series				
195/65 R 15		91	H	
		91	V	
	XL	95	H	
205/65 R 15		94	H	
		94	V	
215/65 R 15		96	H	
60 series				
195/60 R 15		88	H	
		88	V	
205/60 R 15		91	H	
		91	V	
	XL	95	H	
205/60 R 16		92	H	
		92	V	
		92	W	
	XL	96	H	
225/60 R 16		98	W	1)
235/60 R 18	XL	107	V SUV	FR →
55 series				
185/55 R 15		82	H	
		82	V	
195/55 R 15		85	H	
		85	V	
205/55 R 15		88	V	
195/55 R 16		87	V	
205/55 R 16		91	H	
		91	V	
		91	W (ZR)	
	XL	94	V	
215/55 R 16		93	V	
		93	W (ZR)	
	XL	97	H	
		97	Y (ZR)	
225/55 R 16		95	V	
		95	W (ZR)	
215/55 R 17		94	W	
225/55 R 17	XL	101	W (ZR)	
50 series				
195/50 R 15		82	H	
		82	V	

1) Pattern Direction Sport
→ in preparation

50 series (continued)				
205/50 R 15		86	V	
195/50 R 16	XL	88	V	
205/50 R 16		87	W (ZR)	
225/50 R 16		92	W (ZR)	
205/50 R 17	XL	93	W (ZR)	FR
215/50 R 17		91	W (ZR)	FR
	XL	95	Y (ZR)	FR
225/50 R 17		94	W (ZR)	
	XL	98	Y	FR
255/50 R 19	XL	107	W SUV	FR →
45 series				
195/45 R 15		78	V	FR
195/45 R 16		80	V	FR
	XL	84	V	FR
205/45 R 16		83	V	FR
		83	W (ZR)	FR
215/45 R 17		87	W (ZR)	FR
	XL	91	W (ZR)	FR
225/45 R 17		91	W (ZR)	FR
	XL	94	V	FR
		94	W (ZR)	FR
235/45 R 17		94	W (ZR)	FR
	XL	97	Y	FR →
245/45 R 17		95	W (ZR)	FR
40 series				
205/40 R 17	XL	84	W (ZR)	FR
215/40 R 17	XL	87	W (ZR)	FR
245/40 R 17		91	W (ZR)	FR
205/40 R 18	XL	86	W (ZR)	FR
225/40 R 18	XL	92	W (ZR)	FR
235/40 R 18	XL	95	W (ZR)	FR
245/40 R 18	XL	97	Y (ZR)	FR
35 series				
225/35 R 18	XL	87	W (ZR)	FR
225/35 R 19	XL	88	W (ZR)	FR
235/35 R 19	XL	91	W (ZR)	FR

Master-Grip

The superior one

For compact class vehicles

- **Even wear and high mileage** through optimised stiffness
- **Excellent traction** due to numerous grips (grid sipes technology)
- **Consistently high grip on snow and ice** through anti-frost rubber combination

Size range

80 series				
135/80 R 13		70	T	
145/80 R 13		75	T	
155/80 R 13		79	T	
165/80 R 13		83	T	
175/80 R 14		88	T	
195/80 R 15		96	T	1)
205/80 R 16	rf.	104	S	1)
70 series				
145/70 R 13		71	T	
155/70 R 13		75	T	
165/70 R 13		79	T	
175/70 R 13		82	T	
165/70 R 14		81	T	
	XL	85	T	
175/70 R 14		84	T	
	XL	88	T	
185/70 R 14		88	T	
205/70 R 15		96	T	1)
65 series				
155/65 R 13		73	T	
165/65 R 13		77	T	
175/65 R 13		80	T	
155/65 R 14		75	T	
165/65 R 14		79	T	
175/65 R 14		82	T	
	XL	86	T	
185/65 R 14		86	T	
195/65 R 14		89	T	
145/65 R 15		72	T	
155/65 R 15		77	T	
165/65 R 15		81	T	
195/65 R 15		91	T	

60 series				
165/60 R 14	XL	79	T	
185/60 R 14		82	T	
195/60 R 14		86	T	
155/60 R 15		74	T	FR
175/60 R 15		81	T	
55 series				
185/55 R 14		80	T	
175/55 R 15		77	T	FR

1) Pattern Top-Grip SLG M729

Speed-Grip 2

The winter athlete

For fast and sporty cars

- **Improved performance on snow** due to additional gripping edges
- **Very good braking on ice** through straight sipes design
- **Good dry handling** through interwoven block structure in the tread

Size range

65 series				
175/65 R 15		84	T	→
185/65 R 15		88	T	→
195/65 R 15		91	T	→
		91	H	→
	XL	95	T	→
205/65 R 15		94	T	→
		94	H	→
215/65 R 15		96	H	→
215/65 R 16		98	H	→
60 series				
185/60 R 15		84	T	→
	XL	88	T	→
195/60 R 15		88	T	→
		88	H	→
205/60 R 15		91	H	→
225/60 R 15		96	H	→
205/60 R 16		92	H	→
	XL	96	H	→
215/60 R 16	XL	99	H	→
225/60 R 16		98	H	→
235/60 R 16		100	H	→
55 series				
185/55 R 15		82	T	→
	XL	86	H	→
195/55 R 15		85	H	→
205/55 R 15		88	H	→
195/55 R 16		87	T	→
		87	H	→
205/55 R 16		91	T	→
		91	H	→
	XL	94	H	→
		94	V	→

55 series (continued)				
215/55 R 16		93	H	→
	XL	97	H	→
225/55 R 16		95	H	→
	XL	99	H	→
215/55 R 17	XL	98	V	→
225/55 R 17		97	H	→
	XL	101	V	→
50 series				
195/50 R 15		82	H	→
205/50 R 15		86	H	→
205/50 R 16		87	H	→
225/50 R 16		92	H	→
205/50 R 17	XL	93	H	FR →
		93	V	FR →
225/50 R 17	XL	98	H	FR →
		98	V	FR →
45 series				
225/45 R 17		91	H	FR →
	XL	94	V	FR →
235/45 R 17		94	H	FR →
245/45 R 17		95	H	FR →
40 series				
225/40 R 18	XL	92	V	FR →

Speed-Grip 2 4x4

70 series				
215/70 R 16		100	T	→
65 series				
235/65 R 17	XL	108	H	→

→ in preparation

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted **rims** [1] **(measuring rim bold)**	**Tyre dimension** Max. standard value in operation [2] Width	Outer-Ø	**Rolling circum-ference** [3] +1.5% -2.5%
82 series						
185 R 14	90	600	4½ J	186		
			5 J	191		
			5½ J	**196**	662	1983
			6 J	201		
205 R 16 rf.	104	900	5 J			
			5½ J			
			6 J	**216**	750	2245
			6½ J			
			7 J			
			7½ J			
80 series						
135/80 R 13	70	335	**3.50 B** [4]	**138**	554	1665
			4.00 B [4]	143		
			4.50 B [4]	148		
145/80 R 13	75	387	3.50 B [4]	146		
			4.00 B [4]	**151**	572	1714
			4.50 B [4]	156		
			5 J	161		
155/80 R 13	79	437	4.00 B [4]	158		
155/80 R 13 rf.	83	487	**4.50 B** [4]	**163**	588	1763
			5.00B [4]	168		
165/80 R 13	83	487	4.00 B	167		
165/80 R 13 XL	87	545	**4.50 B**	**172**	604	1812
			5.00 B	177		
			5.50 B	182		
175/80 R 14	88	560	4½ J	179		
			5 J	**184**	648	1940
			5½ J	189		
			6 J	194		
195/80 R 15	96	710	5 J	199		
			5½ J	**204**	705	2114
			6 J	209		
			6½ J	214		
205/80 R 16 rf.	104	900	5 J	206		
			5½ J	**211**	748	2239
			6 J	216		
			6½ J	221		
			7 J	226		
70 series						
145/70 R 13	71	345	3.50 B [4]	146		
			4.00 B [4]	151		
			4.50 B [4]	**156**	542	1629
			5.00 B [4]	161		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Current size ranges see pages 8 - 11

Tyre Size	Load-Index LI	Load capacity (kg)	Permitted rims 1) (measuring rim bold)	Tyre dimension Max. standard value in operation 2) Width	Outer-Ø	Rolling circumference 3) +1.5% -2.5%
70 series						
155/70 R 13	75	387	4.00 B 4)	158		
			4.50 B 4)	**163**	556	1671
			5.00 B 4)	168		
165/70 R 13	79	437	4.00 B 4)	167		
165/70 R 13 XL	83	487	4.50 B 4)	172		
			5.00 B 4)	**177**	572	1714
			5.50 B 4)	182		
175/70 R 13	82	475	4.50 B 4)	179		
			5.00 B 4)	**184**	586	1757
			5.50 B 4)	189		
			6.00 B 4)	194		
185/70 R 13	86	530	4.50 B 4)	187		
			5.00 B 4)	192		
			5.50 B 4)	**197**	600	1800
			6.00 B 4)	202		
165/70 R 14	81	462	4 J	167		
165/70 R 14 XL	85	515	4.50 B 4)	172		
			5.00 B 4)	**177**	598	1793
			5.50 B 4)	182		
175/70 R 14	84	500	4½ J	179		
175/70 R 14 XL	88	560	**5.00 B** 4)	**184**	612	1836
			5.50 B 4)	189		
			6 J	194		
185/70 R14	88	560	4½ J	187		
			5 J	192		
			5½ J	**197**	626	1879
			6 J	202		
195/70 R 14	91	615	5 J	199		
			5½ J	204		
			6 J	**209**	640	1922
			6½ J	214		
205/70 R 14 rf.	97	730	5 J	207		
205/70 R 14 XL	98	750	5½ J	212		
			6 J	**217**	656	1964
			6½ J	222		
			7 J	227		
195/70 R 15 rf.	97	730	5 J	199		
			5½ J	204		
			6 J	**209**	665	1998
			6½ J	214		
205/70 R 15	95	690	5 J	207		
	96	710	5½ J	212		
			6 J	**217**	681	2040
			6½ J	222		
			7 J	227		
215/70 R 16	100	800	5½ J	220		
			6 J	225		
			6½ J	**230**	720	2159
			7 J	235		

dark-grey background = standard values for tyre size (ETRTO)

See cover foldout for footnotes

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted **rims** [1] **(measuring rim bold)**	Tyre dimension Max. standard value in operation [2] Width	Outer-Ø	**Rolling circum-ference** [3] +1.5% -2.5%
65 series						
155/65 R 13	73	365	**4.50 B** [4]	**163**	540	1623
			5.00 B [4]	168		
			5.50 B [4]	173		
165/65 R 13	77	412	4.50 B [4]	172		
			5.00 B [4]	**177**	552	1659
			5.50 B [4]	182		
			6.00 B [4]	187		
175/65 R 13	80	450	**5.00 B** [4]	**184**	568	1702
			5.50 B [4]	189		
			6.00 B [4]	194		
155/65 R 14	75	387	**4.50 B** [4]	**163**	566	1702
			5.00 B [4]	168		
			5.50 B [4]	173		
165/65 R 14	79	437	4.50 B [4]	172		
			5.00 B [4]	**177**	578	1739
			5.50 B [4]	182		
			6 J	187		
175/65 R 14	82	475	**5.00 B** [4]	**184**	594	1781
175/65 R 14 XL	86	530	5.50 B [4]	189		
			6 J	194		
185/65 R 14	86	530	5 J	192		
			5½ J	**197**	606	1818
			6 J	202		
			6½ J	207		
195/65 R 14	89	600	5½ J	204		
			6 J	**209**	620	1861
			6½ J	214		
			7 J	219		
145/65 R 15	72	355	4 J	151		
			4½ J	**156**	577	1735
			5 J	161		
155/65 R 15	77	412	**4½ J**	**163**	591	1778
			5 J	168		
			5½ J	173		
165/65 R 15	81	462	4½ J	172		
			5 J	**177**	603	1815
			5½ J	182		
			6 J	187		
175/65 R 15	84	500	**5 J**	**184**	619	1857
			5½ J	189		
			6 J	194		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Current size ranges see pages 8 - 11

SEMPERIT

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted rims 1) (measuring rim bold)	Tyre dimension Max. standard value in operation 2) Width	Outer-Ø	Rolling circum-ference 3) +1.5% -2.5%
65 series (continued)						
185/65 R 15	88	560	5 J	192		
			5½ J	**197**	631	1894
			6 J	202		
			6½ J	207		
195/65 R 15	91	615	5½ J	204		
195/65 R 15 XL/rf.	95	690	**6 J**	**209**	645	1937
			6½ J	214		
			7 J	219		
205/65 R 15	94	670	5½ J	212		
205/65 R 15 rf.	99	775	**6 J**	**217**	657	1973
			6½ J	222		
			7 J	227		
			7½ J	232		
215/65 R 15	96	710	6 J	225		
			6½ J	**230**	673	2016
			7 J	235		
			7½ J	240		
215/65 R 16	98	750	6 J	225		
			6½ J	**230**	698	2092
			7 J	235		
			7½ J	240		
235/65 R 17	104	900	6½ J	245		
			7 J	**250**	750	2251
			7½ J	255		
			8 J	260		
			8½ J	265		
60 series						
175/60 R 13	77	412	**5.00 B** 4)	**184**	548	1647
	76	400	5.50 B 4)	189		
			6.00 B 4)	194		
185/60 R 13	80	450	5.00 B 4)	192		
			5.50 B 4)	**197**	560	1684
			6.00 B 4)	202		
			6½ J	207		
165/60 R 14	75	387	4½ J	172		
165/60 R 14 XL	79	437	**5 J** 5)	**177**	562	1690
			5½ J	182		
			6 J	187		
185/60 R 14	82	475	5 J	192		
			5½ J	**197**	586	1763
			6 J	202		
			6½ J	207		
195/60 R 14	86	530	5½ J	204		
			6 J	**209**	600	1800
			6½ J	214		
			7 J	219		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Tyre Size	Load-Index LI	Load capacity (kg)	Permitted rims [1] (measuring rim bold)	Tyre dimension Max. standard value in operation [2] Width	Outer-Ø	Rolling circumference [3] +1.5% -2.5%
60 series						
155/60 R 15	74	375	**4½ J**	**163**	575	1729
			5 J	168		
			5½ J	174		
175/60 R 15	81	462	**5 J**	**184**	599	1803
			5½ J	189		
			6 J	194		
185/60 R 15	84	500	5 J	192		
185/60 R 15 XL	88	560	**5½ J**	**197**	611	1839
			6 J	202		
			6½ J	207		
195/60 R 15	88	560	5½ J	204		
			6 J	**209**	625	1876
			6½ J	214		
			7 J	219		
205/60 R 15	91	615	5½ J	212		
205/60 R 15 XL	95	690	**6 J**	**217**	637	1912
			6½ J	222		
			7 J	227		
			7½ J	232		
215/60 R 15	95	690	6 J	225		
			6½ J	**230**	649	1949
			7 J	235		
			7½ J	240		
225/60 R 15	96	710	6 J	232		
			6½ J	**237**	661	1986
			7 J	242		
			7½ J	247		
			8 J	252		
205/60 R 16	92	630	5½ J	212		
205/60 R 16 XL	96	710	**6 J**	**217**	662	1989
			6½ J	222		
			7 J	227		
			7½ J	232		
215/60 R 16 XL	99	775	6 J	225		
			6½ J	**230**	674	2025
			7 J	235		
			7½ J	240		
225/60 R 16	98	750	6 J	232		
			6½ J	**237**	686	2062
			7 J	242		
			7½ J	247		
			8 J	252		
235/60 R 16	100	800	6½ J	245		
			7 J	**250**	700	2098
			7½ J	255		
			8 J	260		
			8½ J	265		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Current size ranges see pages 8 - 11

Tyre Size	Load-Index LI	Load capacity (kg)	Permitted rims 1) (measuring rim bold)	Tyre dimension Max. standard value in operation 2) Width	Outer-Ø	Rolling circumference 3) +1.5% -2.5%
60 series (continued)						
235/60 R 18 XL	107	975	6½ J	245		
			7 J	**250**	751	2254
			7½ J	255		
			8 J	260		
			8½ J	265		
55 series						
195/55 R 13	80	450	5.50 B 4)	204		
			6.00 B 4)	**209**	552	1659
			6½ J	214		
			7 J	219		
185/55 R 14	79	437	5 J	192		
	80	450	5½ J	197		
			6 J	**202**	568	1708
			6½ J	207		
175/55 R 15	77	412	5 J	184		
			5½ J	**189**	581	1748
			6 J	194		
185/55 R 15	82	475	5 J	192		
185/55 R 15 XL	86	530	5½ J	197		
			6 J	**202**	593	1784
			6½ J	207		
195/55 R 15	85	515	5½ J	204		
			6 J	**209**	603	1815
			6½ J	214		
			7 J	219		
205/55 R 15	88	560	5½ J	213		
			6 J	218		
			6½ J	**223**	617	1851
			7 J	228		
			7½ J	233		
195/55 R 16	87	545	5½ J	204		
			6 J	**209**	628	1891
			6½ J	214		
			7 J	219		
205/55 R 16	91	615	5½ J	213		
205/55 R 16 XL	94	670	6 J	218		
			6½ J	**223**	642	1928
			7 J	228		
			7½ J	233		
215/55 R 16	93	650	6 J	225		
215/55 R 16 XL	97	730	6½ J	230		
			7 J	**235**	652	1958
			7½ J	240		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted **rims** [1] **(measuring rim bold)**	**Tyre dimension** Max. standard value in operation [2] Width	Outer-Ø	**Rolling circum-ference** [3] +1.5% -2.5%
55 series (continued)						
225/55 R 16	95	690	6 J	232		
225/55 R 16 XL	99	775	6½ J	237		
			7 J	**242**	664	1995
			7½ J	247		
			8 J	252		
215/55 R 17 XL	98	750	6 J	225		
			6½ J	230		
			7 J	235	678	2037
			7½ J	240		
225/55 R 17	97	730	6 J	232		
225/55 R 17 XL	101	825	6½ J	237		
			7 J	**242**	690	2074
			7½ J	247		
			8 J	252		
50 series						
195/50 R 15	82	475	5½ J	204		
			6 J	**209**	585	1760
			6½ J	214		
			7 J	219		
205/50 R 15	86	530	5½ J	213		
			6 J	218		
			6½ J	**223**	595	1790
			7 J	228		
			7½ J	233		
195/50 R 16	84	500	5½ J	204		
			6 J	**209**	610	1836
			6½ J	214		
			7 J	219		
205/50 R 16	87	545	5½ J	213		
			6 J	218		
			6½ J	**223**	620	1867
			7 J	228		
			7½ J	233		
225/50 R 16	92	630	6 J	232		
			6½ J	237		
			7 J	**242**	642	1928
			7½ J	247		
			8 J	252		
205/50 R 17 XL	93	650	5½ J	213		
			6 J	218		
			6½ J	**223**	646	1946
			7 J	228		
			7½ J	233		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Current size ranges see pages 8 - 11

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted rims 1) (measuring rim bold)	Tyre dimension Max. standard value in operation 2) Width	Outer-Ø	Rolling circum-ference 3) +1.5% -2.5%
50 series (continued)						
215/50 R 17	91	615	6 J	225		
215/50 R 17 XL	95	690	6½ J	230		
			7 J	**235**	656	1976
			7½ J	240		
225/50 R 17	94	670	6 J	232		
225/50 R 17 XL	98	750	6½ J	237		
			7 J	**242**	668	2007
			7½ J	247		
			8 J	252		
255/50 R 19 XL	107	975	7 J	266		
			7½ J	271		
			8 J	**276**	749	2254
			8½ J	281		
			9 J	286		
45 series						
195/45 R 15	78	425	6 J	198		
			6½ J	**203**	565	1699
			7 J	208		
			7½ J	213		
195/45 R 16	80	450	6 J	198		
			6½ J	**203**	590	1775
			7 J	208		
			7½ J	213		
205/45 R 16	83	487	6½ J	209		
			7 J	**214**	598	1800
			7½ J	219		
225/45 R 16	89	580	7 J	229		
			7½ J	**234**	616	1854
			8 J	239		
			8½	244		
205/45 R 17 XL	88	560	6½ J	209		
			7 J	**214**	624	1879
			7½ J	219		
215/45 R 17	87	545	**7 J**	**222**	634	1909
215/45 R 17 XL	91	615	7½ J	227		
			8 J	232		
225/45 R 17	91	615	7 J	229		
225/45 R 17 XL	94	670	**7½ J**	**234**	642	1934
			8 J	239		
			8½ J	244		
235/45 R 17	94	670	7½ J	240		
			8 J	**245**	652	1964
			8½ J	250		
			9 J	255		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted **rims** [1] **(measuring rim bold)**	**Tyre dimension** Max. standard value in operation [2] Width	Outer-Ø	**Rolling circum-ference** [3] +1.5% -2.5%
45 series (continued)						
245/45 R 17	95	690	7½ J	248		
			8 J	**253**	660	1989
			8½ J	258		
			9 J	263		
245/45 R 18	96	710	7½ J	248		
			8 J	**253**	685	2065
			8½ J	258		
			9 J	263		
40 series						
215/40 R 16 XL	86	530	7 J	222		
			7½ J	**227**	584	1763
			8 J	232		
			8½ J	237		
205/40 R 17 XL	84	500	7 J	215		
			7½ J	**220**	602	1818
			8 J	225		
215/40 R 17 XL	87	545	7 J	222		
			7½ J	**227**	610	1842
			8 J	232		
			8½ J	237		
235/40 R 17	90	600	8 J	246		
			8½ J	**251**	628	1891
			9 J	256		
			9½ J	261		
245/40 R 17	91	615	8 J	253		
			8½ J	**258**	636	1915
			9 J	263		
			9½ J	268		
255/40 R 17	94	670	8½ J	265		
			9 J	**270**	644	1940
			9½ J	275		
			10 J	280		
225/40 R 18 XL	92	630	7½ J	234		
			8 J	**239**	645	1943
			8½ J	244		
			9 J	249		
235/40 R 18	91	615	8 J	246		
235/40 R 18 XL	95	690	**8½ J**	**251**	653	1967
			9 J	256		
			9½ J	261		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Current size ranges see pages 8 - 11

Tyre Size	Load-Index LI	Load capac-ity (kg)	Permitted **rims** [1] **(measuring rim bold)**	Tyre dimension Max. standard value in operation [2] Width	Outer-Ø	**Rolling circum-ference** [3] +1.5% -2.5%
40 series (continued)						
245/40 R 18	93	650	8 J	253		
			8½ J	**258**	661	1992
			9 J	263		
			9½ J	268		
35 series						
215/35 R 18	80	450	7 J	222		
			7½ J	**227**	613	1851
			8 J	232		
			8½ J	237		
225/35 R 18 XL	87	545	7½ J	234		
			8 J	**239**	621	1876
			8½ J	244		
			9 J	249		
255/35 R 18 XL	94	670	8½ J	265		
			9 J	**270**	643	1937
			9½ J	275		
			10 J	280		
265/35 R 18	93	650	9 J	277		
			9½ J	**282**	651	1961
			10 J	287		
			10½ J	292		
225/35 R 19 XL	88	560	7½ J	234		
			8 J	**239**	647	1955
			8½ J	244		
			9 J	249		
235/35 R 19 XL	91	615	8 J	246		
			8½ J	**251**	653	1973
			9 J	256		
			9½ J	261		
245/35 R 19 XL	93	650	8 J	253		
			8½ J	**258**	661	1998
			9 J	263		
			9½ J	268		
30 series						
265/30 R 19 XL	93	650	9 J	277		
			9½ J	**282**	649	1961
			10 J	287		
275/30 R 19 XL	96	710	9 J	284		
			9½ J	**289**	655	1979
			10 J	294		

See cover foldout for footnotes

dark-grey background = standard values for tyre size (ETRTO)

Van-Life

The load bearer

For MPVs, minibuses and light vans

- **Great economy** through high resistance and durability as well as extensive load reserves
- **Driving performance similar to that of a car** through optimum steering response, short braking distances and low rolling noise

Size range

Size	PR	Service description
14 inch		
185 R 14 C	8	102/100 Q
195 R 14 C	8	106/104 Q
205 R 14 C	8	109/107 P [1)]
215 R 14 C	8	112/110 P [1)]
165/70 R 14 C	6	89/87 R
175/65 R 14 C	6	90/88 T
15 inch		
195/70 R 15 C	8	104/102 S
205/70 R 15 C	8	106/104 R
215/70 R 15 C	8	109/107 R
225/70 R 15 C	8	112/110 R
205/65 R 15 C	6	102/100 T
16 inch		
175/75 R 16 C	8	101/99 R [1)]
185/75 R 16 C	8	104/102 R
195/75 R 16 C	8	107/105 R
205/75 R 16 C	8	110/108 R
215/75 R 16 C	8	113/111 R
225/75 R 16 C	10	121/120 R
195/65 R 16 C	8	104/102 T (100 T)
205/65 R 16 C	8	107/105 T (103 T)
215/65 R 16 C	8	109/107 R (106 T)
225/65 R 16 C	8	112/110 R
235/65 R 16 C	8	115/113 R
195/60 R 16 C	6	99/97 H
215/60 R 16 C	6	103/101 T

Reinforced	
195/70 R 15 rf.	97 T
205/65 R 15 rf.	99 T

1) Pattern TRANS-SPEED 2 M 833

Van-Grip

The sustainable one

For vans, minibuses and transporters

- **High aquaplaning protection** through wide circumferential grooves
- **Excellent traction** on snow and ice

Size range

Size	PR	Service description
14 inch		
185 R 14 C	8	102/100 Q
195 R 14 C	8	106/104 Q
165/70 R 14 C	6	89/87 R
175/65 R 14 C	6	90/88 T
15 inch		
185 R 15 C	8	103/102 R [1]
195/70 R 15 C	8	104/102 R
205/70 R 15 C	8	106/104 R
215/70 R 15 C	8	109/107 R
225/70 R 15 C	8	112/110 R
205/65 R 15 C	6	102/100 T
16 inch		
195/75 R 16 C	8	107/105 R
205/75 R 16 C	8	110/108 R
215/75 R 16 C	8	113/111 R
225/75 R 16 C	10	121/120 R
195/65 R 16 C	8	104/102 T (100 T)
205/65 R 16 C	8	107/105 T (103 T)
215/65 R 16 C	8	109/107 R (106 T)
225/65 R 16 C	8	112/110 R
235/65 R 16 C	8	115/113 R
195/60 R 16 C	6	99/97 T

Reinforced	
205/80 R 16 rf.	104 S [1]
195/70 R 15 rf.	97 T

1) Pattern TOP-GRIP SLG M 729

Car • Van
Tyre Databook 2011-12

Technical Data
Van Tyres

Tyre Size	PR	Service description 6)	Rim 7) (measuring rim bold)	TL-valve (Tube and valve)*	Tyre dimensions Max. standard value in operation 8) Width Standard	Width Special	Outer-Ø Standard	Outer-Ø Special	Tyre dimensions new Width	Outer-Ø	Radius stat. +/- 2%	Rolling circumference +1,5% -2,5%	PR	Load Index LI	Wheel position 9)	Load capacity (kg) per axle at a tyre pressure (bar) 3.0	3.25	3.5	3.75	4.0	4.25	4.5	4.75	Speed Index and reference speed (km/h)
14 inch																								
185 R 14 C	8	102/100 Q	5 J **5½ J** 6 J	43 GS 11.5	189 194 199	198 203 208	659	665	183 188 193	650	296	1970	8	102 100	S T	1230 2315	1310 2465	1390 2620	1470 2765	1545 2915	1625 3060	1700 3200		Q 160
195 R 14 C	8	106/104 Q	5 J **5½ J** 6 J	43 GS 11.5	199 204 209	209 214 219	675	682	193 198 203	666	303	2018	8	106 104	S T	1375 2605	1465 2775	1555 2945	1645 3110	1730 3275	1815 3440	1900 3600		Q 160
205 R 14 C	8	109/107 P	5½ J **6 J** 6½ J	43 GS 11.5	209 214 219		696		203 208 213	686	309	2079	8	109 107	S T	1490 2820	1590 3005	1685 3190	1780 3370	1875 3550	1970 3725	2060 3900		P 150
215 R 14 C	8	112/110 P	5½ J **6 J** 6½ J	43 GS 11.5	220 225 230		710		213 218 223	700	315	2121	8	112 110	S T	1620 3065	1725 3270	1830 3470	1935 3665	2040 3860	2140 4050	2240 4240		P 150
165/70 R14 C	6	89/87 R	4½ J **5 J**		172 177		598	602	165 170	588	270	1782	6	89 87	S T	970 1825	1035 1945	1100 2065	1160 2180					R 170
175/65 R 14 C	6	90/88 T	**5 J** 5½ J	43 GS 11.5	186 191		594	598	177 182	584	269	1770	6	90 88	S T	1005 1875	1070 2000	1135 2120	1200 2240					T 190
15 inch																								
185 R 15 C	8	103/102 R	5 J **5½ J** 6 J	43 GS 11.5	189 194 199	198 203 208	685	691	183 188 193	674	312	2042	8	103 102	S T	1265 2460	1350 2620	1435 2780	1515 2940	1595 3095	1675 3250	1750 3400		R 170
195/70 R 15 C	8	104/102 S 104/102 R	5 J 5½ J **6 J**	43 GS 11.5	199 204 209		665	671	191 196 201	655	300	1985	8	104 102	S T	1300 2460	1385 2620	1470 2780	1555 2940	1640 3095	1720 3250	1800 3400		S 180 R 170
205/70 R 15 C	8	106/104 R	5½ J **6 J** 6½ J	43 GS 11.5	212 217 222		681	687	204 209 214	669	305	2027	8	106 104	S T	1375 2605	1465 2775	1555 2945	1640 3110	1730 3275	1815 3440	1900 3600		R 170
215/70 R 15 C	8	109/107 R	5½ J 6 J **6½ J**	43 GS 11.5	220 225 230		695	701	211 216 221	683	311	2069	8	109 107	S T	1490 2820	1590 3005	1685 3190	1780 3370	1875 3550	1970 3725	2060 3900		R 170
225/70 R 15 C	8	112/110 R	6 J **6½ J** 7 J	43 GS 11.5	232 237 242		709	715	223 228 233	697	317	2112	8	112 110	S T	1620 3065	1725 3270	1830 3470	1935 3665	2040 3860	2140 4050	2240 4240		R 170
205/65 R 15 C	6	102/100 T	5½ J **6 J** 6½ J	43 GS 11.5	212 217 222		657	663	204 209 214	647	297	1960	6	102 100	S T	1420 2675	1515 2855	1605 3030	1700 3200					T 190

* 43 GS 11.5 are snap-in valves approved for up to 4.5 bar
38 G 11.5 is a valve for the hose
TR 600 XHP and TR 602 HP (ETRTO V3.23.1+2) are reinforced snap-in valves approved for up to 5.5 bar
40 MS (ETRTO V2.04.1, V2.05.1) are metal valves approved for pressures up to 6 bar and higher.
See cover foldout for footnotes

Current size ranges see pages 22 and 23

SEMPERIT

Car • Van
Tyre Databook 2011-12

Technical Data
Van Tyres

Tyre Size	PR	Service description 6)	Rim 7) (measuring rim bold)	TL-valve (Tube and valve)*	Tyre dimensions Max. standard value in operation 8) Width Standard	Width Special	Outer-Ø Standard	Outer-Ø Special	Tyre dimensions new Width	Outer-Ø	Radius stat. +/- 2%	Rolling circumference +1,5% -2,5%	PR	Load Index LI	Wheel position 9)	Load capacity (kg) per axle at a tyre pressure (bar) 3.0	3.25	3.5	3.75	4.0	4.25	4.5	4.75	Speed Index and reference speed (km/h)
16 inch																								
175/75 R 16 C	8	101/99 R	4½ J **5 J** 5½ J	TR 600 XHP, TR 602 HP	179 184 189		678		172 177 182	668	308	2024	8	101 99	S T	1140 2145	1215 2290	1290 2430	1360 2565	1435 2700	1505 2835	1575 2970	1650 3100	R 170
185/75 R 16 C	8	104/102 R	**5 J** 5½ J 6 J	TR 600 XHP, TR 602 HP	191 196 201		696		184 189 194	684	314	2073	8	104 102	S T	1245 2355	1330 2510	1410 2665	1490 2815	1570 2965	1645 3110	1725 3255	1800 3400	R 170
195/75 R 16 C	8	107/105 R	5 J **5½ J** 6 J	TR 600 XHP, TR 602 HP	199 204 209		710	716	191 196 201	698	320	2115	8	107 105	S T	1350 2560	1440 2730	1525 2900	1615 3060	1700 3225	1785 3385	1865 3545	1950 3700	R 170
205/75 R 16 C	8	110/108 R	**5½ J** 6 J 6½ J	TR 600 XHP, TR 602 HP	211 216 221		726	732	203 208 213	714	326	2163	8	110 108	S T	1470 2770	1565 2955	1660 3135	1755 3310	1850 3485	1940 3660	2030 3830	2120 4000	R 170
215/75 R 16 C	8	113/111 R	5½ J **6 J** 6½ J 7 J	TR 600 XHP, TR 602 HP	220 225 230 235		740	748	211 216 221 226	728	332	2206	8	113 111	S T	1590 3020	1700 3220	1800 3415	1905 3610	2005 3800	2105 3990	2205 4175	2300 4360	R 170
225/75 R 16 C	10	121/120 R	**6 J** 6½ J 7 J	40 MS	232 237 242		758	764	223 228 233	744	338	2254	10	121 120	S T	1725 3330	1835 3550	1950 3765	2060 3980	2170 4190	2275 4395	2385 4605	2490 4805	
195/65 R 16 C	8	104/102 T (100 T)	5 J 5½ J **6 J**	TR 600 XHP, TR 602 HP	199 204 209		670	676	191 196 201	660	305	2000	8	104 102 100	S T S	1245 2355 1340	1330 2510 1425	1410 2665 1515	1490 2815 1600	1570 2965	1645 3110	1725 3255	1800 3400	T 190
205/65 R 16 C	8	107/105 T (103 T)	5½ J **6 J** 6½ J	TR 600 XHP, TR 602 HP	212 217 222		682	686	204 209 214	672	310	2036	8	107 105 103	S T S	1350 2560 1465	1440 2730 1560	1525 2900 1655	1615 3060 1750	1700 3225	1785 3385	1865 3545	1950 3700	T 190
215/65 R 16 C	8	109/107 R (106 T)	6 J **6½ J** 7 J	TR 600 XHP, TR 602 HP	225 230 235		698	702	216 221 226	686	315	2079	8	109 107 106	S T S	1425 2700 1590	1520 2880 1695	1615 3055 1800	1705 3230 1900	1795 3400	1885 3570	1975 3735	2060 3900	R 170 T 190
225/65 R 16 C	8	112/110 R	6 J **6½ J** 7 J	TR 600 XHP, TR 602 HP	232 237 242		710	716	223 228 233	698	320	2115	8	112 110	S T	1550 2935	1655 3130	1755 3320	1855 3510	1950 3695	2050 3880	2145 4060	2240 4240	R 170
235/65 R 16 C	8	115/113 R	6½ J **7 J** 7½ J	TR 600 XHP, TR 602 HP 40 MS	245 250 255		724	730	235 240 245	712	325	2157	8	115 113	S T	1530 2900	1660 3140	1790 3380	1920 3640	2050 3880	2170 4120	2300 4360	2430 4600	R 170
195/60 R 16 C	6	99/97 H 99/97 T	5½ J **6 J** 6½ J	43 GS 11.5	204 209 214		650	654	196 201 206	640	297	1939	6	99 97	S T	1295 2445	1380 2605	1465 2765	1550 2920					T 190 H 210
215/60 R 16 C	6	103/101 T	6 J **6½ J** 7 J	43 GS 11.5	225 230 235		674	-	216 221 226	664	306	2012	6	103 101	S T	1460 2760	1560 2940	1655 3120	1750 3300					T 190

* 43 GS 11.5 are snap-in valves approved for up to 4.5 bar
38 G 11.5 is a valve for the hose
TR 600 XHP and TR 602 HP (ETRTO V3.23.1+2) are reinforced snap-in valves approved for up to 5.5 bar
40 MS (ETRTO V2.04.1, V2.05.1) are metal valves approved for pressures up to 6 bar and higher.
See cover foldout for footnotes

Current size ranges see pages 22 and 23

continued

	5.0	5.25	5.5	5.75	(km/h)
225/75 R 16 C	2595 5010	2695 5205	2800 5405	2900 5600	R 170

Increased load capacity of tyres on caravans and lightweight trailers (only applies to trailers with a max. speed of 100 km/h / 62 mph entered in the car registration documents).

Size	LI	Max. Load capacity (kg)	Inflation pressure (bar)
PASSENGER TYRES			
82 series			
185 R 14	90	660	2.4
205 R 16 rf.	104	990	2.8
80 series			
135/80 R 13	70	370	2.6
145/80 R 13	75	425	2.6
155/80 R 13	79	480	2.6
155/80 R 13 rf.	83	535	3.0
165/80 R 13	83	535	2.6
165/80 R 13 XL	87	600	3.0
175/80 R 14	88	615	2.6
195/80 R 15	96	780	2.6
205/80 R 16 rf.	104	990	3.0
70 series			
145/70 R 13	71	380	2.7
155/70 R 13	75	425	2.7
165/70 R 13	79	480	2.7
165/70 R 13 XL	83	535	3.1
175/70 R 13	82	525	2.7
185/70 R 13	86	585	2.7
165/70 R 14	81	510	2.7
165/70 R 14 XL	85	565	3.1
175/70 R 14	84	550	2.7
175/70 R 14 XL	88	615	3.1
185/70 R 14	88	615	2.7
195/70 R 14	91	675	2.7
205/70 R 14 rf.	97	805	3.1
205/70 R 14 XL	98	825	3.1
195/70 R 15 rf.	97	805	3.1
205/70 R 15	95	760	2.7
	96	780	2.7
215/70 R 16	100	880	2.7
65 series			
155/65 R 13	73	400	2.7
165/65 R 13	77	455	2.7
175/65 R 13	80	495	2.7
155/65 R 14	75	425	2.7
165/65 R 14	79	480	2.7
175/65 R 14	82	525	2.7
175/65 R 14 XL	86	585	3.1
185/65 R 14	86	585	2.7
195/65 R 14	89	640	2.7

Size	LI	Max. Load capacity (kg)	Inflation pressure (bar)
PASSENGER TYRES			
65 series (continued)			
145/65 R 15	72	390	2.7
155/65 R 15	77	455	2.7
165/65 R 15	81	510	2.7
175/65 R 15	84	550	2.7
185/65 R 15	88	615	2.7
195/65 R 15	91	675	2.7
195/65 R 15 XL	95	760	3.1
195/65 R 15 rf.	95	760	3.1
205/65 R 15	94	735	2.7
205/65 R 15 rf.	99	855	3.1
215/65 R 15	96	780	2.7
215/65 R 16	98	825	2.7
235/65 R 17	104	990	2.7
60 series			
175/60 R 13	76	440	2.7
	77	455	2.7
185/60 R 13	80	495	2.7
165/60 R 14	75	425	2.7
165/60 R 14 XL	79	480	3.1
185/60 R 14	82	525	2.7
195/60 R 14	86	585	2.7
175/60 R 15	81	510	2.7
185/60 R 15	84	550	2.7
185/60 R 15 XL	88	615	3.1
195/60 R 15	88	615	2.7
205/60 R 15	91	675	2.7
205/60 R 15 XL	95	760	3.1
215/60 R 15	95	760	2.7
225/60 R 15	96	780	2.7
205/60 R 16	92	695	2.7
205/60 R 16 XL	96	780	3.1
215/60 R 16 XL	99	855	3.1
225/60 R 16	98	825	2.7
235/60 R 16	100	880	2.7
235/60 R 18 XL	107	1070	3.1
55 series			
195/55 R 13	80	495	2.7
185/55 R 14	79	480	2.7
	80	495	2.7
175/55 R 15	77	455	2.7
185/55 R 15	82	525	2.7

Increased load capacity of tyres on caravans and lightweight trailers (only applies to trailers with a max. speed of 100 km/h / 62 mph entered in the car registration documents).

Size	LI	Max. Load capacity (kg)	Inflation pressure (bar)
PASSENGER TYRES			
55 series (continued)			
185/55 R 15 XL	86	585	3.1
195/55 R 15	85	565	2.7
205/55 R 15	88	615	2.7
195/55 R 16	87	600	2.7
205/55 R 16	91	675	2.7
205/55 R 16 XL	94	735	3.1
215/55 R 16	93	715	2.7
215/55 R 16 XL	97	805	3.1
225/55 R 16	95	760	2.7
225/55 R 16 XL	99	855	3.1
215/55 R 17 XL	98	825	3.1
225/55 R 17	97	805	2.7
225/55 R 17 XL	101	910	3.1
50 series			
195/50 R 15	82	525	2.7
205/50 R 15	86	585	2.7
195/50 R 16	84	550	2.7
205/50 R 16	87	600	2.7
225/50 R 16	92	695	2.7
205/50 R 17 XL	93	715	3.1
215/50 R 17	91	675	2.7
215/50 R 17 XL	95	760	3.1
225/50 R 17	94	735	2.7
225/50 R 17 XL	98	825	3.1
255/50 R 19 XL	107	1070	3.1
45 series			
195/45 R 15	78	470	2.7
195/45 R 16	80	495	2.7
205/45 R 16	83	535	2.7
225/45 R 16	89	640	2.7
205/45 R 17 XL	88	615	3.1
215/45 R 17	87	600	2.7
215/45 R 17 XL	91	675	3.1
225/45 R 17	91	675	2.7
225/45 R 17 XL	94	735	3.1
235/45 R 17	94	735	2.7
245/45 R 17	95	760	2.7
245/45 R 18	96	780	2.7

Size	LI	Max. Load capacity (kg)	Inflation pressure (bar)
PASSENGER TYRES			
40 series			
215/40 R 16 XL	86	585	3.1
205/40 R 17 XL	84	550	3.1
215/40 R 17 XL	87	600	3.1
235/40 R 17	90	660	2.7
245/40 R 17	91	675	2.7
255/40 R 17	94	735	2.7
225/40 R 18 XL	92	695	3.1
235/40 R 18	91	675	2.7
235/40 R 18 XL	95	760	3.1
245/40 R 18	93	715	2.7
35 series			
215/35 R 18	80	495	2.7
225/35 R 18 XL	87	60 0	3.1
255/35 R 18 XL	94	735	3.1
265/35 R 18	93	715	2.7
225/35 R 19 XL	88	615	3.1
235/35 R 19 XL	91	675	3.1
245/35 R 19 XL	93	715	3.1
30 series			
265/30 R 19 XL	93	715	3.1
275/30 R 19 XL	96	780	3.1

Conditions of use

An increase of 10% over the load capacity quoted in the tables on page 39 and 40 is permitted when tyres are fitted to caravans and light trailers with a maximum operating speed up to 100 km/h / 62 mph. The basic inflation pressure should be increased by 0.2 bar.

Increased load capacity of tyres on caravans and lightweight trailers (only applies to trailers with a max. speed of 100 km/h / 62 mph entered in the car registration documents).

Size		PR	LI	Max. Load capacity (kg)**	Inflation pressure (bar)
COMMERCIAL C-TYRES*					
14 inch					
185	R 14 C	8	102	895	4.5
195	R 14 C	8	106	1000	4.5
205	R 14 C	8	109	1080	4.5
215	R 14 C	8	112	1175	4.5
165/70	R 14 C	6	89	610	3.75
175/65	R 14 C	6	90	630	3.75
15 inch					
185	R 15 C	8	103	920	4.5
195/70	R 15 C	8	104	945	4.5
205/70	R 15 C	8	106	1000	4.5
215/70	R 15 C	8	109	1080	4.5
225/70	R 15 C	8	112	1175	4.5
205/65	R 15 C	6	102	895	3.75
16 inch					
175/75	R 16 C	8	101	865	4.75
185/75	R 16 C	8	104	945	4.75
195/75	R 16 C	8	107	1025	4.75
205/75	R 16 C	8	110	1115	4.75
215/75	R 16 C	8	113	1210	4.75
225/75	R 16 C	10	121	1525	5.75
195/65	R 16 C	8	104	945	4.75
205/65	R 16 C	8	107	1025	4.75
215/65	R 16 C	8	109	1080	4.75
225/65	R 16 C	8	112	1175	4.75
235/65	R 16 C	8	115	1275	4.75
195/60	R 16 C	6	99	815	3.75
215/60	R 16 C	6	103	920	3.75

*) 14, 15 and small 16 inch C tyres with treads like pass. car tyres for service on delivery vans. For other C tyres, see Technical Databook for truck tyres.

) also for C tyres: Load capacity **per tyre (single fitment)

Inner tube group	Tyre sizes (radial tyres)	
1020	145; 165/70	R 10 R 10
1210	125; 145/70	R 12 R 12
1220	135–150 155/70	R 12 R 12
1230	155; 165 165/70; 175/70	R 12 R 12
1320	135–150 145/70; 155/70	R 13 R 13
1330	155–165 165/70; 175/70	R 13 R 13
1340	175–185 185/70; 195/70	R 13 R 13

Tubes may not be fitted in tyres of 65 series and below.

Inner tube group	Tyre sizes (radial tyres)	
1420	135–150 155/70	R 14 R 14
1430	155–165 165/70; 175/70	R 14 R 14
1440	170–185 185/70; 195/70	R 14 R 14
1460	195–205 205/70; 215/70	R 14 R 14
1510	125	R 15
1520	135–150 155/70	R 15 R 15
1530	155–165 165/70; 175/70	R 15 R 15
1540	170–185 185/70; 195/70	R 15 R 15
1550	6.70–7.60	R 15
1560	195; 205 205/70; 215/70; 225/70	R 15 R 15

The rim is the part of the wheel which supports the tyre.

1. Important elements of the rim

Rim flange = lateral support for the tyre bead

Flange distance = clear rim width

Bead seat = base on which the tyre bead is seated

Well = inner side of the rim

Diameter = specified diameter flange/bead seat

Hump = continuous raised section of the rim bead seat which enables a better fitting of tubeless tyre beads at **low pressure.*)**

2. Types of rims

The well-base rim is virtually the only type of rim used on cars, caravans and other car trailers:

Well-base rims = one-piece rims, deepened well for easier tyre fitting, 5° tapered bead seat,"x" in the wheel size designation.

Virtually only J and B versions of the wellbase rim are used and these are explained here in more detail.

If rubber valves (snap-in type) are used on rims for higher speeds, these must be fitted with **valve supports** where necessary. Also refer to the section "Fitting the tyre".

3. Wheel disc (nave)

The wheel disc is the linking element between the rim and the axle hub. Of all the measurements for wheel linking elements – centre bore and bore diameter, bolt hole type and **offset depth** – the latter is a particularly important factor for the free movement of the tyre in any wheel position.

(Offset depth = 0, when the rim centre and hub contact area of the wheel disc are in line).

4. Wheel strength

The wheel manufacturer must confirm that the wheel strength is adequate for each particular application.

5. Lateral and true running of the wheels (without tyres)

On cars which are virtually all able to considerably exceed 100 km/h (62 mph), it is particularly important that the wheels of the vehicle are **well-centred**.

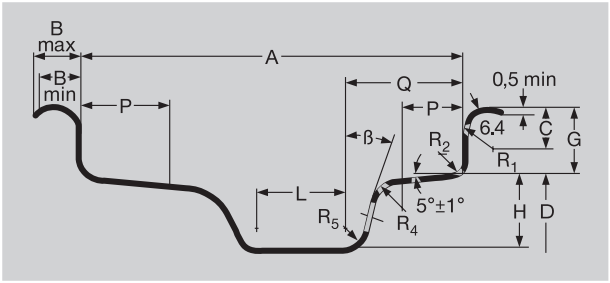
On these vehicles there should be as little radial and lateral run-out as possible on both bead seat/flange sides of the rim, in order to achieve **good smooth running**.

The standard shows max. tolerances of 1.20 mm. This dimension is for the centre of the tyre seat area or the centre of the flange height. All measurements, particularly the **uniformity**, should be well within these tolerances.

*) Safety shoulders (e.g. hump) are prescribed for tubeless radial car tyres. They should also be used for tubeless truck C tyres with a 14, 15 and 16 inch code for the rim diameter.

R_4 und R_5: between 4 and 10 mm
R_5: not larger than 10 mm

Valve Hole-Ø:
11.5 mm ($11.3_{-0}^{+0.4}$)
centrally in the side of the rim well.
16.0 mm ($15.7\ mm_{-0}^{+0.4}$)
only with Ø-Code 15.



Rim-Contour	Dimensions (mm)												
	A		B Min	B Max 1)	G ± 0.6	P Min	H Min 2)	L Min	Q Max	R_1 Min	R_2 Max	ß Min
3.00 B	76	± 1	10	13	14.1	13	15	16	28	7.5	4.5	10°
3.50 B	89					15		19	34			13°
4.00 B	101.5								45			
4.50 B	114.5					19.5		22				
5.00 B	127											
5.50 B	139.5											
6.00 B	152.5											
3 J	76		11	15	17.3	13	17.3	16	28	9.5	6.5	10°
3 1/2 J	89					15		19	34			20°
4 J	101.5								45			
4 1/2 J	114.5					19.5		22				
5 J	127											
5 1/2 J	139.5											
6 J	152.5											
6 1/2 J	165	± 1.5										
7 J	178											
7 1/2 J	190.5											
8 J	203											
8 1/2 J	216											
9 J	228.5											
9 1/2 J	241.5											
10 J	254											
10 1/2 J	266.5											
11 J	279.5											

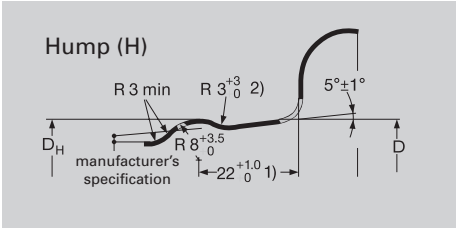
1) B max. values may be exceeded on rims for light commercial vehicles
2) Minimum dimensions for well depth (H) and well angle are required for tyre mounting

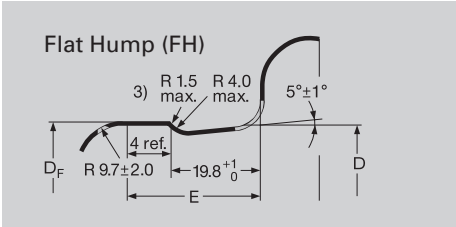
Rim diameter

Code (ins)	12	13	14	15	16	17	18	19
D (mm)	304.0	329.4	354.8	380.2	405.6	436.6	462.0	487.4

Special rim executions for passenger cars

In many countries safety rims must be used for tubeless radial tyres.





1) In most car rims 19.8 mm.

2) For B-Rims R = 8.5 mm max. resp. R = 4±1 mm.

3) Deburred

These **full-drop centre rims with safety shoulders** for cars, estate cars and light trucks are marked with the following **codes** shown after rim size designation:

H = one-sided round hump on outer shoulder (formerly: H 1)

H 2 = double round hump

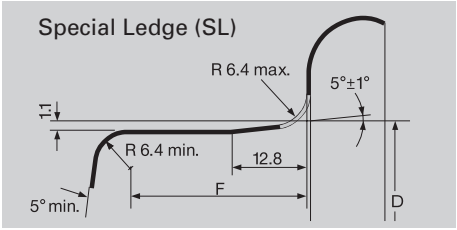
FH = flat hump on outer shoulder (formerly: FHA 1)

FH 2 = double flat hump (formerly: FHA 2)

CH = combination hump = flat hump on outer shoulder, round hump on inner shoulder (formerly: FHA-H)

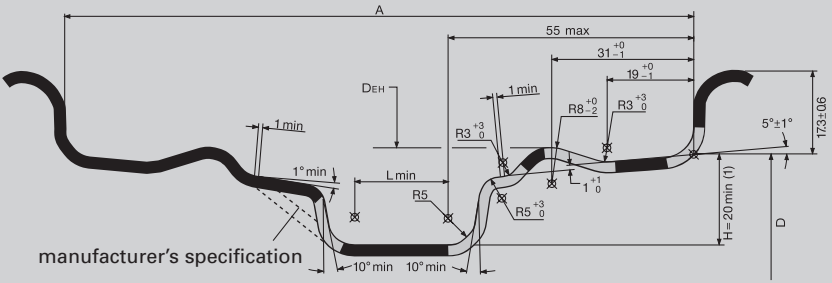
SL = special ledge

EH 2 = Extended hump on both sides (see next page)



Ledge	Rim diameter Code (ins)	Dimensions (mm) H Circumference $\pi \cdot D_H$ (+0/-3)	FH Circumference $\pi \cdot D_F$ (+0/-3)	FH E Max.
B	12	957.6	–	–
	13	1037	1034.8	24.5
	14	1116.8	1114.6	
J	13	1037	1034.8	28.5
	14	1116.8	1114.6	
	15	1196.6	1194.6	
	16	1276.4	1274.2	
	17	1373.8	1371.6	
	18	1453.6	1451.4	
	19	1533.4	1531.2	

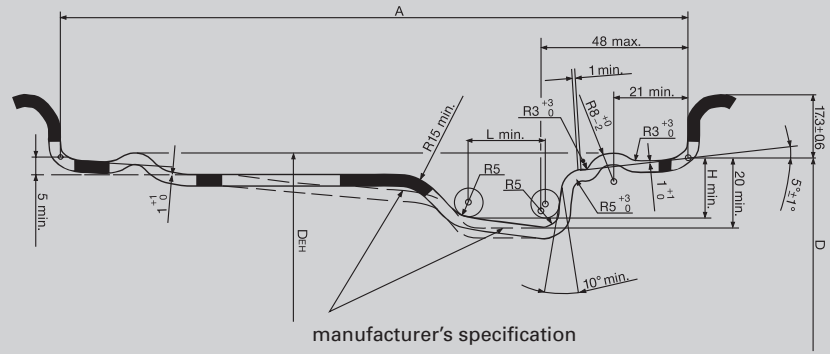
Extended Hump – with extended hump on both sides (EH2)



This contour is valid for rim sizes from 5½ J up to 13½ J

(1): H ≥ 22 necessary for automatic fitting two beads at once

Extended Hump – with extended hump on both sides (EH2+)



Extended Hump circumference

Rim diameter Code (ins)	Extended Hump circumference (mm) π · DEH + 0/–3.0
15	1204.2
16	1284
17	1381.2
18	1461
19	1540.8
20	1620.6

SAFETY WARNING!

The following instructions must be observed to ensure vehicle safety at all times. Disregarding the fitting instructions could endanger the safety of the tyre fitter or driver. This applies in particular to inflation pressure. Non-compliance with these instructions means risking tyre damage which, if serious enough, may result in a tyre bursting. It is a hazard like this that can cause traffic accidents involving vehicle damage and/or serious personal injury.

Correct choice of tyre and wheel

Tyres can be properly maintained only if they are chosen in accordance with vehicle documents and recommendations of the tyre manufacturer.

The use of **higher grade tyres** of the same size is permitted: Higher speed categories, i.e. "H" instead of "T". Greater load capacity, i.e. Load Index 82 instead of 80. Both factors may be combined, i.e. greater load and speed.

If tyres are changed to a different size, all legal requirements and regulations, as well as the recommendations of the vehicle, wheel and tyre manufacturers must be complied with. In any event, the freedom of motion of the wheel and adequate load capacity of the tyre must be observed.

Tyre sizes and rims not entered in the vehicle registration document may only be fitted if the vehicle and tyre manufacturer issue a **certificate of non-objection** or if a public authority issues fitting approval after an inspection by an officially authorised expert*).

80 and 82 series passenger car tyres of the same size can be interchanged without new approval and without any new entry in the vehicle documents if LI and SI of the interchanging size are of an equivalent or higher-grade quality.

Example: 155/80 R 13 79T replaces 155 R 13 79T.

Mixed tyre constructions for cars, caravans and other car trailers are not permitted: Tyres fitted on any one vehicle must all be either radial or cross-ply. (Exception: Use of the spare tyre in an emergency).

The same applies to the choice of **wheels (rims):** The standard wheels approved by the vehicle manufacturer must be used as recommended.

The **tyre widths** given in the tables on pages **12-21** and **24-27** refer to the **measuring rim** (bold print). In the event of a change in the rim width by +½ inch, the tyre width changes by approx. +5 mm.

Winter tyres

Winter tyres are clearly superior in the cold months of the year; they offer a wider margin of safety and better economy when the temperature drops below 7° C.

Winter tyres approved for a max. speed lower than that of the vehicle may only be fitted if the max. speed of these tyres is displayed in full view of the driver, e. g. on a clearly visible sticker on the dashboard*).
This maximum tyre speed must not be exceeded.

A combination of summer and winter tyres on passenger cars is not recommended. In most European countries either summer or winter (M+S) tyres are specified for any one axle; in some countries**) this applies to all four wheel positions.

Winter tyres have to meet special requirements, meaning that the legal minimum tread depth of 1.6 mm is inadequate. **The suitability limit for winter use is a tread depth of 4 mm.** In the interest of safety, Semperit recommends replacing winter tyres before the tread depth drops below 4 mm for winter service.

*) Exception: This does not apply to the UK.

**) Exception: In Austria, passenger car winter tyres with less than 4 mm remaining tread depth are no longer legally considered to be winter tyres.

Top safety in winter can be provided only by true winter tyres on all axle positions (4 tyres).


Snowflake designation (in USA and Canada): This additional marking on an M+S tyre shows that the tyre meets prescribed test criteria and ensures good winter properties.

Brittleness temperature of rubber compounds - passenger tyres

Several performance aspects of tyres are influenced by temperature. For example traction (wet and dry), rolling resistance, mileage and ride comfort.

To achieve optimum performance, Semperit therefore recommends that winter tyres be used at temperatures below +7°C and summer tyres at temperatures above +7°C.

All-season tyres with M+S marking, although a compromise in certain performance aspects, are suitable for use in hot and cold temperatures.

The tread patterns and rubber compounds used in the above mentioned tyres are specifically designed and developed to offer optimum performance within the temperature range for which they are intended.

Summer tyres – especially Ultra High Performance tyres

The highly developed, specialized tread compounds used in such tyres are designed to provide the highest possible levels of grip at ambient temperatures above +7°C.

Such tread compounds are however very sensitive to temperature.

Permanent damage may occur to the tread compounds of such tyres if they are used at temperatures below - 20°C.

At this temperature, the tread compounds of UHP summer tyres may lose their elasticity and become brittle (the so-called brittleness point). When this occurs and the tyre is flexed, the tread compound may crack.

Therefore, **UHP summer tyres should not be used at temperatures below - 20°C.**

Semperit tyres with an M+S marking on the sidewall are suitable for use down to - 45°C.

SAFETY WARNING! Fitting the tyre

If a tyre is not properly fitted it may burst. The energy released in a blow-out can cause fatal injuries so tyres must be fitted by an expert. Only approved fitting tools and lubricants may be used. Observe all fitting instructions.

Before the old tyre is taken off, the valve insert must be unscrewed and removed to ensure all air has escaped.

The new tyre and rim must have matching diameters and be approved as a combination suitable for the vehicle model concerned. Only rims of the correct size in perfect condition and free of rust should be used. They must not be damaged, out of shape or worn.

When fitting new tube-type tyres, always use **new tubes**. As tubes stretch in service, there is a risk of folds forming in old tubes, so re-used tubes could suddenly tear.

For safety reasons, tubeless tyres should always be fitted with **new valves**.

If rubber valves (snap-in types) are used for tubeless tyres, the vehicle manufacturer's instructions must be complied with in all cases. A **valve support** (i.e. a stopper on the rim itself or the hubcap) should be fitted, if H, V, W, Y or ZR tyres are specified for the vehicle. This ensures that valves are not forced off at high speeds.

Always coat the tyre beads and the rim with a **fitting lubricant** recommended by the tyre manufacturer. This applies in particular to low section tyres. Never use greases or other hydrocarbons for this purpose.

While the tyre is being inflated, the wheel must remain firmly secured on the mounting machine. **Never inflate an unsecured tyre**. If a loose tyre bursts, the wheel could be thrown around, causing damage.

Keep a reasonable distance from any tyre that is being inflated. Make use of a sufficiently long and secured extension hose with an integrated pressure gauge. **Never bend over a tyre while it is being inflated!**

When fitting tubeless car tyres, care should be taken to ensure that the tyre beads coming from the well-base first clear the hump in the rim shoulder. To avoid cracks in the bead core, the **"pop" pressure** necessary should not exceed 3.3 bar. If the tyre does not pop into place even at this pressure, the pressure must be lowered, and the cause identified and eliminated. Then the procedure can be repeated.

Only when the tyre beads are seated correctly on the rim shoulder may the pressure be increased to achieve the required press-fit and firm grip on the rim flanges. However, this **"fitting pressure"** should not exceed the max. pressure given in the tables by more than 50% or be more than 4.0 bar. After this, adjust the pressure to the **operating pressure** specified by the vehicle manufacturer (also see Semperit tyre pressure table).

Car tyres should be **dynamically balanced** to achieve smooth running.

Fitting the wheel to the vehicle

Vehicle axle data such as toe-in, camber angle and wheel castor as well as axle alignment must be checked and, if necessary, be adjusted to within tolerances. Only then should new tyres be fitted.

When fitting a tyre, make sure that the wheel is centred on the axle hub. If necessary, re-balance the wheel electronically once it is fitted on the vehicle.

Valves should be fitted with **valve caps** – preferably with a sealing ring – as they protect the delicate **valve inserts** and the inside of the tyre.

When mounting **wheel caps and wheel trim rings**, sufficient clearance to the tyre sidewall must be maintained. The wheel cap or wheel trim ring may not come in contact with the tyre under any operating conditions (e. g. brutal braking maneuvers, fast cornering). The diameter of the wheel cap and the wheel trim ring may not extend beyond the rim flange edge. This applies in particular to tyres with rim protection (flange rib).

Directional tyres must be fitted so that they roll in the direction of the arrow on the sidewall as the vehicle moves forward.

Exception: For a short-term use as a temporary fitment spare; but revert to specified fitted position at the earliest possible opportunity!

Modern **asymmetrical tyres** are frequently non-directional. These tyres must be fitted with the sidewall 'Outside' on the outside of the vehicle so that their asymmetrical treads can be used to best effect.

Tyres with both of these properties, i.e. that are directional and asymmetrical, must in addition be fitted on the correct side of the vehicle, i.e. on the left or on the right to comply with both of the instructions above.

SAFETY WARNING!

Tyre pressure

Incorrect tyre pressure can lead to the inside of the tyre being damaged. This can result in tyre problems or even a blow-out. Hidden tyre problems are not rectified by adjusting the tyre pressure.

Table 1:

Load capacities and tyre pressures – standard tyres (The tyre pressure values shown here apply to speeds up to 160 km/h (100 mph) for camber angles not greater than 2°)

Load Index	Load capacity (kg) at tyre pressure (bar)					
	2.0	2.1	2.2	2.3	2.4	**2.5**
62	220	230	240	250	255	**265**
63	230	235	245	255	265	**272**
64	235	245	255	260	270	**280**
65	245	250	260	270	280	**290**
66	250	260	270	280	290	**300**
67	255	265	275	285	295	**307**
68	265	275	285	295	305	**315**
69	270	285	295	305	315	**325**
70	280	290	300	315	325	**335**
71	290	300	310	325	335	**345**
72	295	310	320	330	345	**355**
73	305	315	330	340	355	**365**
74	315	325	340	350	365	**375**
75	325	335	350	360	375	**387**
76	335	350	360	375	385	**400**
77	345	360	370	385	400	**412**
78	355	370	385	400	410	**425**
79	365	380	395	410	425	**437**
80	375	390	405	420	435	**450**
81	385	400	415	430	445	**462**
82	395	415	430	445	460	**475**
83	405	425	440	455	470	**487**
84	420	435	450	470	485	**500**
85	430	450	465	480	500	**515**
86	445	460	480	495	515	**530**
87	455	475	490	510	525	**545**
88	470	485	505	525	540	**560**
89	485	505	525	545	560	**580**

Continued next page

Table 1 (Continued):

Load capacities and tyre pressures – standard tyres

Load Index	Load capacity (kg) at tyre pressure (bar)					
	2.0	2.1	2.2	2.3	2.4	**2.5**
90	500	520	540	560	580	**600**
91	515	535	555	575	595	**615**
92	525	550	570	590	610	**630**
93	545	565	585	610	630	**650**
94	560	585	605	625	650	**670**
95	575	600	625	645	670	**690**
96	595	620	640	665	685	**710**
97	610	635	660	685	705	**730**
98	625	650	675	700	725	**750**
99	650	675	700	725	750	**775**
100	670	695	720	750	775	**800**

Table 2:

Load capacities and tyre pressures – Reinforced and Extra Load (XL) tyres

Load Index	Load capacity (kg) at tyre pressure (bar)									
	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	**2.9**
78	315	330	340	355	365	375	390	400	415	**425**
79	325	340	350	365	375	390	400	415	425	**437**
83	360	375	390	405	420	430	445	460	475	**487**
84	370	385	400	415	430	445	460	470	485	**500**
85	385	400	415	430	445	455	470	485	500	**515**
86	395	410	425	440	455	470	485	500	515	**530**
87	405	420	435	455	470	485	500	515	530	**545**
88	415	435	450	465	480	495	515	530	545	**560**
91	455	475	495	510	530	545	565	580	600	**615**
92	470	485	505	525	540	560	575	595	615	**630**
93	485	500	520	540	560	575	595	615	630	**650**
94	500	520	535	555	575	595	615	635	650	**670**
95	515	535	555	575	595	615	630	650	670	**690**
96	525	550	570	590	610	630	650	670	690	**710**
97	540	565	585	605	625	650	670	690	710	**730**
98	555	580	600	625	645	665	685	710	730	**750**
99	575	600	620	645	665	690	710	730	755	**775**
101	615	635	660	685	710	735	755	780	800	**825**
104	670	695	720	750	775	800	825	850	875	**900**

The tyre must be inflated to the pressure specified by the vehicle and tyre manufacturer. This varies depending on the load and service conditions.

The pressure always refers to the **cold** tyre and must not be allowed to fall below this value. The pressure inside warm tyres – driving causes heat build-up – is naturally higher. So never reduce the pressure of warm tyres. Once they cool down, their pressure could fall below the specified **minimum tyre pressure**.

Tyre pressure must be checked regularly every 14 days on the cold tyre. The spare tyre may not be forgotten.

Incorrect tyre pressure causes premature and/or uneven tread wear. **Under-inflated** tyres have a higher **rolling resistance**, and this means a higher **fuel consumption**.

The tyre pressure values for car tyres given in table 1 and 2 are **minimum pressures** for speeds up to 160 km/h (100 mph). They may be increased, for example, for reasons of driving stability.

3.2 bar is the **maximum tyre pressure** on standard version car tyres up to and including Speed Index T; 3.5 bar for H-, V-, W-, Y- and ZR-, as well as M+S and XL/Reinforced tyres.

These values may not be exceeded to ensure that the structural performance of the tyres and rims is not impaired.

ZR tyres without service description have from 160 km/h (100 mph) to 190 km/h (118 mph) inclusive the stated pressure of 2.5 bar. Then the inflation pressure must be increased by 0.1 bar for each 10 km/h (6 mph) up to 3.0 bar at 240 km/h (150 mph) under full load and maximum 2° wheel camber.

Table 3:

For **higher speeds** the **tyre pressure** should be **increased** in regard of the load capacity (see table 4, taken from the ETRTO Standards Manual):

Speed capacity of the vehicle (incl. tolerance, about 9 km/h, 6 mph) (km/h)	Speed Indices								
	Q	R	S	T	U	H	V	W	Y
	Tyre pressure * (bar)								
≤ 160	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
170		2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5
180			2.6	2.6	2.6	2.6	2.6	2.5	2.5
190				2.7	2.7	2.7	2.7	2.5	2.5
200					2.7	2.7	2.7	2.6	2.5
210						2.8	2.8	2.7	2.5
220							2.8	2.8	2.5
230							2.8	2.9	2.6
240							2.8	3.0	2.7
250								3.0	2.8
260								3.0	2.9
270								3.0	3.0
280									3.0
290									3.0
300									3.0

* at the maximum load of the tyre, up to 2° wheel camber

Load capacity and speed

When determining the minimum tyre size necessary for a vehicle, the permitted **axle load** and the **maximum design speed** of the vehicle must be used as a basis.

The maximum load capacity of a car tyre is expressed through its **Load Index (LI)**. (see page 6).

Table 4:

Percentage of load capacity versus speed [1)]
(taken from the ETRTO Standards Manual)

Speed capacity of the vehicle (incl. tolerance, about 1% Vmax + 6.5 km/h/4 mph) (km/h)	Speed Index H %	V %	W %	Y %
210	100	100	100	100
220	–	97	100	100
230	–	94	100	100
240	–	91	100	100
250	–	–	95	100
260	–	–	90	100
270	–	–	85	100
280	–	–	–	95
290	–	–	–	90
300[2)]	–	–	–	85

1) For intermediate maximum speeds, linear interpolation of the tyre load capacity is permitted.

2) For speeds over 300 km/h (187 mph), the relevant inflation pressures will be agreed between vehicle and tyre manufacturers (or their national associations), taking into consideration the vehicle characteristics and the type of service.

For ZR tyres without service description the maximum load capacity given in the tables from page 12 onwards applies to speeds up to 240 km/h (150 mph).

For speeds over 240 km/h (150 mph) please refer to us for load capacity and tyre pressure.

If car tyres are to be used on a vehicle **with** a **wheel camber** of over 2°, please check load capacity and tyre pressure with us. In the absence of such information, the following ETRTO recommendation can be used for tyres at speeds over 160 km/h (100 mph):
For a **wheel camber** exceeding **2° and up to and including 4°**, the load capacity is to be reduced linearly **from 100% to 90%.**

Instead of a reduction in tyre load capacity, **inflation pressure** may be **increased** as a function of load.

The tyre pressure calculated for the speed concerned must be multiplied by the following correction factor (f), irrespective of the actual camber angle >2°:

$$f = \frac{1}{[1.0 - 0.01 \times (\text{allowance for the load capacity as a \%})]^{1.25}}$$

The value of f for the following camber angles is shown below:

Camber angle	2°	2.5°	3°	3.5°	4°
f	1.0	1.03	1.07	1.10	1.14

In general, the camber angle of vehicles should not exceed 4°.

On vehicles with speeds in excess of 270 km/h (169 mph), the camber angle should not exceed 3° including any tolerance.

The load capacity of tyres in **twin fitment** is 1.85 times the load capacity of a single tyre.

The **load capacities** in the tables for car tyres can be increased if the tyres are fitted on vehicles with **the following low type-related** max. speeds if the inflation pressure is increased at the same time (taken from the ETRTO Standards Manual).

Max. speed capability	km/h	60	50	40	30	25
Load capacity	%	110	115	125	135	142
Inflation pressure increase	(bar)	0.1	0.2	0.3	0.4	0.5

Tyre damage

Most tyre damage is caused by incorrect tyre pressure, so we recommend a regular tyre pressure check every 2 weeks. When the car has been driven and the tyres are warm, it is normal for the **tyre pressure to increase**. Do not reduce extra pressure caused by a heat build-up.

A balanced, even **style of driving** is beneficial for the tyres and the environment. Harsh acceleration, braking with locked wheels and fast steering movements shorten the **service life** of tyres.

This applies equally to other types of **tyre strain** such as severe scuffing along the kerb, or driving over rough surfaces. This can cause hidden or visible **damage** to tyres.

Sudden **vibrations** of the steering wheel cold point to tyre damage. All the vehicle's tyres should be checked immediately for damage.

Overstressing of tyres (excessive speed or overloading) is to be avoided. This has the same critical effect as **under-inflation** and can cause heat damage to the tyre.

Tyre Rotation on a vehicle

The tyres on a vehicle should be rotated regularly to help ensure even wear and maximum tread life.

Tyres should be rotated as instructed in the vehicle owner's manual, with special attention being given to the **recommended interval for rotating tyres.** Unless otherwise specified by the vehicle manufacturer, tyres should be rotated every 10,000 to 12,000 kilometers – or even earlier if the tread shows signs of uneven wear. In the latter case, the vehicle's wheel alignment and pertinent mechanical components should be checked and corrected, if need be.

Full-size **spare tyres** (not temporary spares) of the same size and design as the tyres in use on the vehicle should be included in the tyre rotation. In conjunction with the rotation, the full-size spare tyre's inflation pressure should be checked and, if need be, corrected.

A tyre's **inflation pressure** must correspond to what is specified in the vehicle owner's manual for the respective tyre position (recommended inflation pressure may differ for the front- and rear-axle tyres).

Tyre rotation may effect the **tyre pressure monitoring system** (TPMS). The vehicle owner's manual or a qualified service professional should be consulted in the event that the TPMS has to be adjusted or recalibrated.

The **rolling direction** of directional tyres should not be reversed when the tyres are rotated.

Mixing tyres should be avoided

Tyre size, Load Index (LI) and Speed Index (SI) at all wheel positions should be in accordance with the vehicle manufacturer's specification. In many countries, this is a legal requirement. Driving with a non-recommended mix of tyre sizes, designs and Speed Indices can be dangerous. In the event that tyres of different sizes, designs, Load or Speed Index are to be fitted on a vehicle, the vehicle manufacturer's recommendations should be heeded and/or the advice of a qualified tyre specialist sought.

Some vehicles leave the factory with different tyre sizes on the front and rear axles. This configuration must not be changed unless approved by the vehicle manufacturer.

No more than one temporary spare should be used on a vehicle at any one time. A tyre of this kind should only be used at a certain speed and for a certain distance, as indicated on the tyre sidewall and/or on a label attached to the tyre or the wheel.

Mounting new tyres on the rear axle

It is recommended that all tyres used on the vehicle be replaced at the same time. If this is not the case, at least all the tyres on the same axle should be replaced at the same time.

If only one axle set of tyres is replaced, it is recommended to fit the newest tyres on the rear axle. This may complicate tyre rotation and caution is advised if the tyres differ in terms of state of wear, size, design and Speed Index, for example. In this case it is strongly recommended that a trained tyre specialist be consulted. The point of the above mounting recommendation is to increase traction on the rear axle. This is important in avoiding oversteer and loss of vehicle stability on slippery surfaces.

Additional important tips regarding tyre position

The **spare tyre's** date of manufacture and condition (e. g. signs of cracking, remaining tread depth) should be checked regularly. The spare tyre may have to be replaced. For 4-wheel drive and AllWheel drive vehicles, any special tyre fitment requirements in the vehicle owner's manual should be heeded – especially if the vehicle is equipped with electronic systems such as antilock brakes, traction control or stability control. Damage to the vehicle or its transmission can result if these requirements are not followed.

Winter tyres should be fitted to all wheel positions. They should not be mixed with allseason or summer tyres. If winter tyres are, nonetheless, mounted on just one axle, this should be the rear axle. This increases rearaxle traction and helps to avoid oversteer and loss of vehicle stability on slippery roads.

Tyre Storage Recommendations

These recommendations are intended for consumers. For commercial applications of new and waste tyres (tyre dealers and fleets), there may be more stringent and legal restrictions. Please check local regulations.

Tyres are compounded to resist normal deterioration caused e.g. by sunlight, humidity and ozone. Nevertheless, stored tyres should be protected against these and other potentially damaging conditions.

The longer the storage period, the more exposure there is to potential damage.

After dismounting from a vehicle the tyres should be thoroughly cleaned and inspected for damage. Remove all stones and debris from the grooves. Chalk marking the tyres with their wheel positions (FL for Front Left, RR for Rear Right, etc.) will help to find the correct positions according the rotational plan.

General:

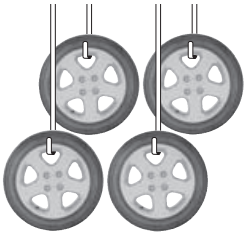
- DO STORE TYRES where it is clean, dark, dry and moderately ventilated.
- **Moist conditions** should be avoided. Tyres destined for retreading/repairing should be thoroughly cleaned and dried out before such operations are performed.
- DO STORE TYRES at **temperatures** not exceeding 35°C (95F), preferable below 25°C (77F). Direct contact with hot pipes and radiators must be avoided.
- Also deeply cold temperatures, those well below the freezing point, might lead to brittleness and tyres should be carefully warmed up before use.
- DO STORE TYRES, **if outdoors**, protected by an opaque waterproof covering, but avoid creating a heat box or steam bath. Ensure proper ventilation.
- DO STORE TYRES, if outdoors, where tyres are raised off the storage surface.
- **AVOID** STORING TYRES on piers, ship decks, or other unprotected areas
- **AVOID** STORING TYRES, where they can be damaged by passing objects - lawn mower, bicycle, or garden tools.
- **AVOID** STORING TYRES where the area is wet, oily, and/or greasy such as with gasoline or petroleum-based products. Also, do not store on or against sensitive surfaces where staining can take place.
- **AVOID** STORING TYRES in the proximity of chemical agents like solvents, fuels, oils, hydrocarbons, paint, acids, disinfectants, etc.
- **AVOID** STORING TYRES where subject to extreme temperatures, direct sunlight or artificial light with a high ultra-violet content. Room lighting with ordinary incandescent lamps is preferable to fluorescent tubes.
  Never store them near battery chargers, ovens, or open fires.
- **AVOID** STORING TYRES on black asphalt or other heat absorbent surfaces and on highly reflective surfaces (i.e., sand or snow covered ground)
- **AVOID** STORING TYRES in the same area as an electric motor or other ozone generating source. If there is a question, check ozone levels to be sure they do not exceed 0.08 ppm.
- **Do not** use tyres as a workbench or tool stand. Soldering irons, power drill and tools can damage a tyre. **Never** put a burning cigarette on a pile of tyres.
- **Do not** store other items on top of a tyre, especially where staining of the surface would be a concern.

Loose tyres or tyres mounted on rims,
but not installed on a vehicle:

- DO STORE TYRES so that tyres retain their shape.
- Mounted tyres should preferable be inflated to only 100 kPa (15 psi / 1 bar).
- **Be sure to adjust the tyres to the recommended inflation pressure before mounting on the vehicle.**

Tyres with rims

Inflated 1 bar

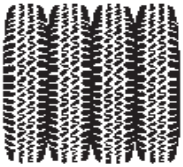


Do not stand them upright

hang them

or pile them (restack every four weeks)

Tyres without rims



Do not pile them, or hang them

stand them upright and rotate them every four weeks
(on racks clear of floor)

Tyres installed on a vehicle in long term storage:

• If possible, store the vehicle on blocks to remove all weight from the tyres and cover the tyres to protect them from environmental exposure.

• If the vehicle cannot be blocked up from the storage surface, completely unload the vehicle, so minimum weight will rest on the tyres. The storage surface should be firm, reasonably level, well drained, and clean.

• In cases where the tyres will be supporting the vehicle, it is permissible to inflate the tyres to the maximum pressure listed on the sidewall. Be sure to return the inflation pressure to recommended usage pressure before operating the vehicle.

• In cases where the tyres will be supporting the vehicle, it is recommended that the vehicle be moved every month to minimize ozone cracking in the bulge area and also to minimize a „flat spot" from developing. If the tyres do develop „flat spots," this will usually disappear in a short period of service.

Before Returning Tyres (including full-size spares) to Service

• Inspect tyres to be sure they are clean and free from foreign objects.

• Remove any water that has collected in an unmounted tyre.

• When using a spare tyre, have it checked for proper inflation pressure and condition such as cracking in the tread or sidewalls, weather checking, and other signs of prolonged storage by a full-service tyre dealer, before placing it in service on the vehicle.

Full-Size Spare Tyres

Full size spares, of the same size and type as the road tyre, require special maintenance considerations.

The spare tyre position on the vehicle is frequently not suitable for long term storage for full size spare tyres that are not properly maintained /rotated as recommended. Tyres contain special ingredients such as waxes, etc. to protect the rubber. These special tyre ingredients normally migrate throughout the tyre when in service and protect the tyre against deterioration caused e.g. by sunlight, humidity and ozone.

Therefore, full size spares that are left for prolonged periods of time in the spare tyre position should be inspected, properly inflated just like road tyres, and included in the regular tyre rotation.

Tyre repair

SAFETY WARNING:

Serious injury or death may result from a tyre disablement that is caused by failing to observe the following safety and maintenance information.

During its service life, a tyre undergoes a variety of different usage conditions and can be damaged in many different ways. This damage can result from punctures, impacts, cuts, etc. Tyre damage can reduce a tyre's structural integrity by, for example:

- Air loss resulting in underinflated service conditions which lead to internal structural damage;
- Direct damage to tyre components such as rubber and plies;

- Exposure of internal materials to the outside environment and resulting degradation; and/or
- Exposure of internal materials to pressurized air (Intra-carcass pressurization).

For these reasons, tyres should be regularly inspected by the consumer. An inspection of the tyres should also be incorporated during routine vehicle maintenance procedures. If tyre damage is suspected or found, it should be carefully assessed by a trained specialist immediately.

A consumer should never repair a damaged tyre. Only a trained tyre specialist who can base his assessment on a thorough and comprehensive inspection of the specific tyre can determine whether an individual tyre is suitable for repair or should be removed from service. This assessment should also take into account the complete service life history of the tyre including inflation, load, operating conditions, etc. If the tyre specialist decides to repair the tyre, then he should strictly follow all appropriate national tyre industry repair standards regarding the inspection process and repair procedures. Semperit is not responsible for the specialist's decisions or the repaired tyre. Semperit advises if a tyre is returned under complaint and reason for the product's disablement is in any way associated with a repair or the reason for repair the manufacturer's warranty is invalidated

It is forbidden by law to regroove car tyres.

Tyre service life for passenger car and light truck

The tyre industry has long recognized the consumers' role in the regular care and maintenance of their tyres. The point at which a tyre is replaced is a decision for which the owner of the tyre is responsible. The tyre owner should consider factors to include service conditions, maintenance history, storage conditions, visual inspections, and dynamic performance. The consumer should consult a tyre service professional with any questions about tyre service life.

The following information and recommendations are made to aid in assessing the point of maximum service life.

Tyres are designed and built to provide many thousands of miles of excellent service. For maximum benefit, tyres must be maintained properly to avoid tyre damage and abuse that may result in tyre disablement. The service life of a tyre is a cumulative function of the storage, stowing, rotation and service conditions, which a tyre is subjected to throughout its life (load, speed, inflation pressure, road hazard injury, etc.). Since service conditions vary widely, **accurately predicting the service life** of any specific tyre in chronological time **is not possible**.

The consumer plays an important role in tyre maintenance.

Tyres should be removed from service for numerous reasons, including tread worn down to minimum depth, damage or abuse (punctures, cuts, impacts, cracks, bulges, underinflation, overloading, etc). For these reasons tyres, including spares, must be inspected routinely, i.e., at least once a month. Regular inspection becomes particularly important the longer a tyre is kept in service. If tyre damage is suspected or found, Semperit recommends that the consumer have the tyre inspected by a tyre service professional. Consumers should use this consultation to determine if the tyres can continue in service. It is recommended that spare tyres be inspected at the same time. This routine inspection should occur whether or not the vehicle is equipped with a tyre pressure monitoring system (TPMS).

Consumers are strongly encouraged to be aware of their tyres' visual condition. Also, they should be alert for any change in dynamic performance such as increased air loss, noise or vibration.

Such changes could be an indicator that one or more of the tyres should be immediately removed from service to prevent a tyre disablement. Also, the consumer should be the first to recognize a severe in-service impact to a tyre and to ensure that the tyre is inspected immediately thereafter.

Tyre storage, stowage and rotation are also important to the service life of the tyre. More information regarding proper storage, stowage and rotation is located in other Semperit publications, which are available upon request and through its websites.

Tyre service life recommendation

Semperit is unaware of any technical data that supports a specific tyre age for removal from service. However, as with other members of the tyre and automotive industries, Semperit recommends that all tyres (including spare tyres) that were manufactured more than ten (10) years previous[1)]) be replaced with new tyres, even when tyres appear to be usable from their external appearance and if the tread depth may have not reached the minimum wear out depth. Vehicle manufacturers may recommend a different chronological age at which a tyre should be replaced based on their understanding of the specific vehicle application; Semperit recommends that any such instruction be followed. Consumers should note that most tyres would have to be removed for tread wear-out or other causes before any proscribed removal period. A stated removal period in no way reduces the consumer's responsibility to replace tyres as needed.

1) Production code of tyres see page 5.

Minimum removal tread depth for passenger and light truck tyres

1.6 mm is the most widely accepted minimum tread depth standard at which tyres should be removed from service.

This standard has been adopted as a regulation by many of the world's national transportation authorities. As an indication to the consumer, there are tread wear indicator bars in the main grooves of the tyre that become level with the tread surface at approximately 1.6 mm of remaining tread.

In addition to acknowledging the above, **Semperit recommends** that all passenger and light truck tyres in highway motor vehicle application be removed from service at the following tread depths:

- **summer/high performance tyres = 3 mm**
- **winter tyres = 4 mm**

These recommendations are based upon Semperit's testing as well as real world experience which shows that drivers can maintain the performance potential (e.g. wet grip) of their tyres by replacing them before they reach the **regulatory minimum tread depth of 1.6 mm**.

This applies especially to winter tyres for which winter driving properties such as snow traction are significantly reduced at tread depths below 4 mm.

Guidelines on tyre safety for drivers and vehicle operators

(recommended for vehicle handbooks).

Tyres need to be properly handled if they are to keep you and other road users safe. So please note the following:

1. The **tyre pressure** must be as indicated in the operating instructions for your vehicle or as marked on the vehicle itself. The pressure applies to cold tyres; it must not be any lower. Tyres that have become warm, e.g. through driving, will increase in pressure. Never release air from warm tyres, or the pressure could fall below the minimum.

   The pressure must be checked **every 14 days** when the tyres are cold. Don't forget to check the spare.

   If the pressure is too low, heat may build up in the tyre and lead to internal damage. **At high speeds the tread may even come off and the tyre may have a blowout**. Tyre damage that cannot be seen is not put right simply by raising the pressure afterwards!

2. Drive over **kerbstones** slowly and, if possible, at right angles. Don't drive up or against any steep or sharp-edged kerbstones or other objects (e.g. stones); this can lead to non-visible tyre damage which can cause problems later – **the tyre may fail when running at high speeds**.

3. Check tyres regularly for **damage**, such as stones, nails etc. that have penetrated the tyre, as well as any cuts, tears or bulges (in the sidewall). Foreign objects can also damage the inside of the tyre. Let your tyre dealer or specialist check to see if the tyre can be repaired. If a repair is not possible or doubtful, replace the tyre. **Damaged tyres can burst**.

4. Never fit used tyres whose 'life story' you don't know. And remember that **tyres age** even when they are little used or not used at all. If your spare tyre remains unused for years, you should only use it in emergencies and drive carefully.

5. Check the **tread depth** of your tyres regularly. The lower the depth, the greater the **risk of aquaplaning**. Ensure that your tyres comply with the legally required tread depth.

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Footnotes for technical data

1) Instead of J-rims the same size JK- and JJ-rims may be used.
2) Winter tyres can be max. 1% greater in outer diameter than standard on-road tread patterns.
3) According to DIN 70020 at 37 mph/60 km/h.
4) Instead of B-rims, J- and JK-rims may also be used.
5) The respective B-rims are permitted.
6) Load Index single / twin fitment and Speed Index.
7) Dual spacing for twin tyre fitments: See Technical Data Book for Truck Tyres.
8) Standard = on road tread pattern, Special = M+S or off road tread pattern.
9) S=single / T=twin tyre fitment.

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XL Extra Load

For tyre pressures see “Operating instructions”, p. 41 ff.