

SIZE AND TYPE OF TYRES

APPLICATION

This inspection applies to all tyres, apart from spare tyres.

PROCEDURE AND STANDARDS

Check that sizes, ply ratings, load indices, speed ratings and use markings of tyres are appropriate, bearing in mind

- published data on tyre capacities.
- the load on each axle when the vehicle is fully laden (Legal weight).
- the type of axle and vehicle to which the tyre is fitted.

Note:

The use markings most likely to be encountered are "FRT" which indicates that the tyre is not suitable for use on a driven axle or front steered axle. Tyres marked for "TRAILER USE ONLY" are only suitable for use on trailers. Tyres marked with a direction arrow pointing in the wrong direction should not be failed.

(A definition of front steered axle(s) can be found in terms & condition dvt890)

Tyres are usually identified by their nominal section size followed by the rim diameter e.g. 10.00-20, 750-16, etc (the majority of modern tyres carry millimetric markings e.g. 205-16 etc). (For identification of sidewall markings refer to the diagram at the end of this section.) All tyres on an axle must be of the same nominal size. If a tyre is dual marked one of the markings must be the same as the markings on the other tyres on the axle.

There are still a number of high load capacity tyres in use which are marked with a code to indicate the tyre size and capacity e.g. a 10.00-20 16 ply tyre maybe marked D20 or 4-20 (a full list of these tyres is given at Table 1).

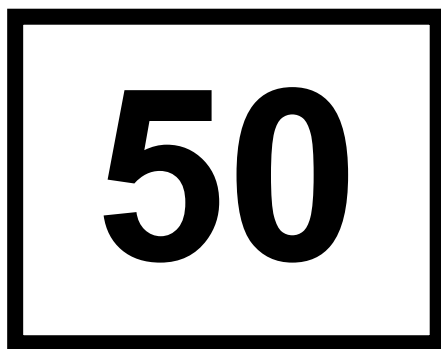
If tyres marked with a load capacity index are fitted the maximum permissible axle load for normal use can be found in Table 2 at the end of this section. The Load Index (LI) may consist of one or two numbers e.g. 154 or 146/143. Where two numbers are displayed the first refers to the use of the tyre in single formation and the second in twin formation. Reference to the table shows that the maximum loads for this tyre are 6000 kg in single formation and 10900 in twin formation.

If a load index is not shown the carrying capacity of a tyre can be determined from the Ply Rating. The load capacity of ply rated tyres is shown at Table 3. If no ply rating can be found on the tyre it should be assumed to have the lowest load capacity listed for that size

of tyre. If the load index branded onto a tyre has the speed symbol missing (not scrubbed off), the load index is not valid and must be ignored.

The 'Motor Vehicle (Construction and Use) Regulations (Northern Ireland) 1999' permits a variation of load capacity of tyres when fitted to certain vehicles and trailers with speed restrictions applied. These are:-

- 'Restricted speed vehicles' - a vehicle displaying at its rear a plate in a prominent position accordance with the following:-
 - (a) the plate must be in the form shown in the diagram below;
 - (b) the plate must be at least 150mm wide and at least 120mm high;
 - (c) the figures "5" and "0" must be at least 100mm high and 50mm wide with a stroke width of at least 12mm, the figures being black on a white background; and
 - (d) the border must be black and between 3mm and 5mm wide.



In the unlikely event of any of these vehicles being presented for test with tyres bearing a load index less than the vehicle's plated (Legal weight in UK) axle weight, contact the regional manager's office for guidance.

SPEED SYMBOLS

The speed capability is represented by a letter which is displayed adjacent to the LI marking e.g. 146/143J. This indicates the speed at which the tyre can carry the load(s) indicated by the LI marking(s). In the above example the tyres carry a load of 6000/10900kg at 62 mph. The minimum required speed ratings are:

CLASS OF VEHICLE	PERMITTED SPEED (MPH)	MINIMUM SPEED SYMBOL REQUIRED
• Rigid bus not exceeding 12 meters (irrespective of weight).	70	L
• Bus exceeding 12 meters (irrespective of weight).	60	J
• *Restricted speed vehicles.	50	F

* It is important that a vehicle presented for test fully complies with the definition of these classes before applying the minimum speed symbol. (Class definition given above).

ALTERNATIVE SPEED RATING

Certain vehicles can be fitted with tyres (excluding retreaded tyres) showing a lower speed rating than those shown above but the maximum axle loads will be reduced as shown below. This does not apply to any additional load index and speed symbol marked on the tyre, known as 'Unique Point'.

CLASS OF VEHICLE	NORMAL SPEED RATING	ALTERNATIVE SPEED RATING	CALCULATED LOAD INDEX WEGIHT
<ul style="list-style-type: none"> Motor vehicles with maximum laden weight not exceeding 7.5 tonnes, Rigid bus not exceeding 12 meters 	L	J	-7%
		K	-3%
<ul style="list-style-type: none"> Restricted speed vehicles. 	F	J or higher	+10%
<ul style="list-style-type: none"> Bus first used on or after 29 October 2011, and; <ul style="list-style-type: none"> (i) constructed to carry more than 22 passengers, with areas for standees to allow frequent passenger movement (e.g. low-floor bus); or (ii) constructed to carry not more than 22 passengers, with seats and an area for standees <p>NOTE: excludes a bus constructed to carry more than 22 passengers, that is principally constructed for seated passengers, but is capable of carrying standees in the gangway and/or in an area not exceeding the space for two double seats</p>	F	J or higher	+15%

Details of the reduced axle loads which tyres can carry are shown in Table 4.

Speed Category	Corresponding Speed	
	km/h	mph
D	65	41
E	70	44
F	80	50
G	90	56
J	100	62
K	110	68
L	120	75
M	130	81
N	140	87
P	150	93

Q	160	99
R	170	106
S	180	112
T	190	118
U	200	124
H	210	130
V	240	149
W	270	168
Y	300	186

STRUCTURE

- Examine all the tyres fitted and note the type of structure (radial, cross-ply or bias-belted) and the nominal size of tyres.
- All tyres on an axle must be of the same structure and nominal size.
- Tyres on an axle may be of different structures and nominal sizes to those on another axle with the following exceptions.
- All tyres on all steered axles must have the same structure.
- All tyres on all driven axles must have the same structure.
- On two axle motor vehicles where each axle is fitted with single wheels, if all the tyres are not of the same structure, the type of structure which is allowed to be fitted to each axle is shown in the table.

AXLE 1	AXLE 2
Cross-ply	Bias-belted
Cross-ply	Radial
Bias-belted	Radial

This does not apply to an axle on which wide single tyres with a road contact width of more than 300 mm are fitted.

REASONS FOR FAILURE

	Deficiency Category
1. A tyre:	
a. of which the nominal size, ply rating, load index or speed rating of any tyre is below that appropriate for the plated axle weight (Legal weight),	MAJOR
b. of which the nominal size, ply rating, load index or speed rating of any tyre is below that appropriate for the plated axle weight (Legal weight), and is loaded at least 10% in excess of the tyre load index/ply rating,	DANGEROUS
c. which has a tyre use marking inappropriate for the type of	MAJOR

- axle or vehicle to which it is fitted,
- d. of a different nominal size to another on the same axle, MAJOR
 - e. of a different structure to another on the same axle, DANGEROUS
 - f. on a steerable axle which is not of the same structure as any other tyre on any steerable axle, DANGEROUS
 - g. on a driven axle which is not of the same structure as any other tyre on any driven axle. DANGEROUS
2. On a two axle motor fitted with single tyres on both axles a combination of tyres with structures which are not shown as acceptable in the table DANGEROUS

TABLE 1

CODE	TYRE SIZE
A16 or 1-16	750-16-12PR
B16 OR 2-16	925-16-14PR
C16 or 3-16	900-16-15PR
B17 or 2-17	825-17-14PR
A20 or 1-20	750-20-12PR
B20 or 2-20	825-20-14PR
C20 or 3-20	900-20-14PR
D20 or 4-20	1000-20-16PR
E20 or 5-20	1100-20-16PR

F20	1200-20-18PR
G20	1400-20-22PR
E22 or 5-22	1100-22-16PR
B22.5 or 2-22.5	9-22.5-14PR
C22.5 or 3-22.5	10-22.5-14PR
D22.5 or 4-22.5	11-22.5-16PR
E22.5	12-22.5-16PR
C24 or 3-24	900-24-14PR
E24	1100-24-16PR

TABLE 2

**LOAD CAPACITY INDEX TABLE EXTRACT FROM ECE REG 54: "LOAD INDEX"
TABLE AMENDED TO SHOW AXLE LOADS**

LOAD INDEX	SINGLE Kg	DUAL Kg	LOAD INDEX	SINGLE Kg	DUAL Kg	LOAD INDEX	SINGLE Kg	DUAL Kg
70	670	1340	110	2120	4240	150	6700	13400
71	690	1380	111	2180	4360	151	6900	13800
72	710	1420	112	2240	4480	152	7100	14200
73	730	1460	113	2300	4600	153	7300	14600
74	750	1500	114	2360	4720	154	7500	15000
75	774	1548	115	2430	4860	155	7750	15500
76	800	1600	116	2500	5000	156	8000	16000
77	824	1648	117	2570	5140	157	8250	16500
78	850	1700	118	2640	5280	158	8500	17000
79	874	1748	119	2720	5440	159	8750	17500
80	900	1800	120	2800	5600	160	9000	18000
81	924	1848	121	2900	5800	161	9250	18500
82	950	1900	122	3000	6000	162	9500	19000
83	974	1948	123	3100	6200	163	9750	19500
84	1000	2000	124	3200	6400	164	10000	20000
85	1030	2060	125	3300	6600	165	10300	20600
86	1060	2120	126	3400	6800	166	10600	21200

87	1090	2180	127	3500	7000	167	10900	21800
88	1120	2240	128	3600	7200	168	11200	22400
89	1160	2320	129	3700	7400	169	11600	23200
90	1200	2400	130	3800	7600	170	12000	24000
91	1230	2460	131	3900	7800	171	12300	24600
92	1260	2520	132	4000	8000	172	12600	25200
93	1300	2600	133	4120	8240	173	13000	26000
94	1340	2680	134	4240	8480	174	13400	26800
95	1380	2760	135	4360	8720	175	13800	27600
96	1420	2840	136	4480	8960	176	14200	28400
97	1460	2920	137	4600	9200	177	14600	29200
98	1500	3000	138	4720	9440	178	15000	30000
99	1550	3100	139	4860	9720	179	15500	31000
100	1600	3200	140	5000	10000			
101	1650	3300	141	5150	10300			
102	1700	3400	142	5300	10600			
103	1750	3500	143	5450	10900			
104	1800	3600	144	5600	11200			
105	1850	3700	145	5800	11600			
106	1900	3800	146	6000	12000			
107	1950	3900	147	6150	12300			
108	2000	4000	148	6300	12600			
109	2060	4120	149	6500	13000			

TABLE 3

Nominal Tyre Size	Ply Rating	Maximum Axle Load (kg)	
		Single Tyres -----	Twin Tyres -----
145-13C	6	970	1840
145-13C	8	1120	2120
560-13C	6	1020	1940
590-13C	6	1070	2090
640-13C	6	1280	2240
640-13C	8	1430	2750
670-13C	6	1380	2650
670-13C	8	1580	3050
1050-13	12	4320	7880
1050-13	14	4830	8900
155-14C	6	1070	2040
165-14C	6	1300	2460
165-14C	8	1460	2760
175-14C	6	1430	2680
175-14C	8	1550	3000
185-14	Radial	1200	2300
185-14	Reinforced Rad	1340	2560
185-14	4	1340	2560
185-14C	6	1550	2920

185-14C	8	1700	3200
195-14	Radial	1300	2490
195-14	Reinforced Rad	1500	2870
195-14C	6	1700	3210
195-14C	8	1900	3600
205-14	Radial	1420	2720
205-14	Reinforced Rad	1650	3160
205-14C	6	1850	3510
205-14C	8	2060	3900
215-14C	8	2240	4240
590-14C	6	1170	2240
600-14C	8	1260	2400
640-14C	6	1330	2550
650-14	4	970	1860
650-14C	6	1300	2460
650-14C	8	1500	2840
670-14C	6	1430	2750
670-14C	8	1680	3160
700-14	4	1070	2050
700-14C	6	1380	2650
750-14	4	1200	2300
750-14C	6	1530	2950
750-14C	8	1730	3360
11-15	6	2240	-
145-15C	8	1230	2320
185-15C	8	1750	3400
590-15C	6	1220	2340
640-15C	6	1380	2650
670-15C	6	1530	2900
670-15C	8	1780	3460
670-15	10	2000	3900
700-15C	6	1750	3400
700-15C	8	1940	3760
700-15	12	2440	4580
750-15C	6	1830	3560
750-15C	8	2060	3970
750-15	10	2340	4370
750-15	12	2750	5340
750-15	14	3150	6100
750-15	16	3660	6860
825-15	12	3050	5590
825-15	14	3360	6360
825-15	18	4680	8540
825-15	20	5000	9440
1000-15	12	3870	7120
1000-15	14	4320	8130
1000-15	16	5020	9580
1000-15	18	5400	10170
175-16C	6	1500	2840

175-16C	8	1650	3100
185-16C	8	1800	3400
195-16C	8	1950	3700
205-16C	6	1900	3610
205-16C	8	2120	4000
215-16C	6	2120	4000
215-16C	8	2300	4360
235-85-16	10	2760	5040
600-16	6	1380	2550
600-16	8	1530	2920
600-16	10	1830	3300
650-16	6	1530	2920
650-16	8	1830	3460
650-16	10	2040	3900
700-16	6	1730	3260
700-16	8	2040	3870
700-16	10	2340	4480
700-16	12	2650	5000
750-16	6	2040	3870
750-16	8	2240	4270
750-16	10	2500	4720
750-16	12	2900	5600
825-16	8	2650	4880
825-16	10	2850	5440
825-16	12	3300	6400
825-16	14	3600	6800
900-16	6	2360	4360
900-16	8	2720	5140
900-16	10	3050	5600
900-16	12	4070	7200
900-16	14	4320	7800
1050-15	12	4580	8130
1400-16	18	7880	-
1400-16	20	8390	-
1400-16	22	9150	-
9.50-16.5	6	2130	3750
825-17	10	3260	5950
825-17	12	3560	6200
825-17	14	3820	7200
8-17.5C	8	2300	4480
8-17.5	10	2570	5000
8.5-17.5	Radial	2900	5600
9.5-17.5	Radial	3400	6400
8-19.5	Radial	3100	6000
9-19.5	Radial	3800	7200
9.5-19.5	Radial	4240	7800
600-20	6	1430	2750
600-20	8	1630	3100
600-20	10	1830	3460

650-20	6	1830	3460
650-20	8	2240	4070
650-20	10	2440	4680
700-20	8	2240	4480
700-20	10	2650	4880
700-20	12	2850	5240
750-20	8	2850	5340
750-20	10	3260	6000
750-20	12	3600	7000
825-20	10	3560	6610
825-20	12	3820	7200
825-20	14	4120	7800
900-20	10	4070	7630
900-20	12	4580	8240
900-20	14	5000	9200
1000-20	12	4830	8640
1000-20	14	5340	9720
1000-20	16	6100	10900
10.5-20	6	2800	-
1100-20	12	5340	9660
1100-20	14	6100	10900
1100-20	16	6610	11600
1200-20	14	6100	10600
1200-20	16	6860	12000
1200-20	18	7630	13010
12.5-20	10	3700	-
1300-20	16	7800	-
1300-20	18	8900	-
1300-20	20	*9300	-
1400-20	18	9150	-
1400-20	29	*9510	-
1400-20	22	*10000	-
14.5-20	10	4000	-
1500-20	20	10600	-
1500-20	22	11600	-
1500-20	24	12600	-
1600-20	14	6100	-
1600-20	20	11400	-
1600-20	22	12500	-
1600-20	24	13600	-
13/80-20	18	7300	13000
14/80-20	18	8250	-
1100-22	12	5590	10170
1100-22	14	6100	10810
1100-22	16	6860	12000
9-22.5	10	3560	6610
9-22.5	12	3820	7200
9-22.5	14	4120	7800
10-22.5	10	4070	7630

10-22.5	12	4580	8240
10-22.5	14	5000	9200
11-22.5	12	4830	8640
11-22.5	14	5340	9720
11-22.5	16	6100	10900
13-22.5	18	7500	13000
10/70-22.5	14	5000	9200
11/70-22.5	12	5300	9720
11/70-22.5	14	5600	10300
11/70-22.5	16	6100	10900
12/70-22.5	16	6610	11600
13/70-22.5	18	7630	13010
275/70-22.5	Radial	5000	9200
275/70-22.5	16	6100	-
315/70-22.5	16	6610	11600
900-24	12	5090	9150
900-24	14	5240	10170
1000-24	14	6100	10500
1100-24	12	5850	10300
1100-24	14	6610	11200
1100-24	16	7120	12300
1200-24	14	6610	-
1200-24	16	7370	-
1200-24	18	8130	-
1200-24	20	9000	-
1400-24	18		-
1400-24	22		-
11-24.5	14		10800

TABLE 4

Tyre load Index	Trailers permitted to exceed 50mph (up to 60mph)				Motor vehicles permitted to exceed 60mph (up to 70mph)			
	Speed Symbol F (-15%)		Speed Symbol G (-5%)		Speed Symbol J (-7%)		Speed Symbol K (-3%)	
	Single Kg	Dual Kg	Single Kg	Dual Kg	Single Kg	Dual Kg	Single Kg	Dual Kg
70	570	1140	640	1280	630	1250	650	1300
71	590	1180	660	1320	650	1290	670	1340
72	610	1210	680	1350	660	1330	690	1380
73	630	1250	700	1390	680	1360	710	1420
74	640	1280	720	1430	700	1400	730	1460
75	660	1320	740	1480	720	1440	760	1510
76	680	1360	760	1520	750	1490	780	1560
77	700	1410	790	1570	770	1540	800	1600
78	730	1450	810	1620	800	1590	830	1650
79	750	1490	830	1670	820	1630	850	1700
80	770	1530	860	1710	840	1680	880	1750
81	790	1580	880	1760	860	1720	900	1800
82	810	1620	910	1810	890	1770	930	1850

83	830	1660	930	1860	910	1820	950	1890
84	850	1700	950	1900	930	1860	970	1940
85	880	1760	980	1960	960	1920	1000	2000
86	910	1810	1010	2020	990	1980	1030	2060
87	930	1860	1040	2080	1020	2030	1060	2120
88	960	1910	1070	2130	1050	2090	1090	2180
89	990	1980	1110	2210	1080	2160	1130	2250
90	1020	2040	1140	2280	1120	2240	1170	2330
91	1050	2100	1170	2340	1150	2290	1200	2390
92	1080	2150	1200	2400	1180	2350	1230	2450
93	1110	2210	1240	2470	1210	2420	1270	2530
94	1140	2280	1280	2550	1250	2500	1300	2600
95	1180	2350	1320	2630	1290	2570	1340	2680
96	1210	2420	1350	2700	1330	2650	1380	2760
97	1250	2490	1390	2780	1360	2720	1420	2840
98	1280	2550	1430	2850	1400	2790	1460	2910
99	1320	2640	1480	2950	1450	2890	1510	3010
100	1360	2720	1520	3040	1490	2980	1560	3110
101	1410	2810	1570	3140	1540	3070	1610	3210
102	1450	2890	1620	3230	1590	3170	1650	3300
103	1490	2980	1670	3330	1630	3260	1700	3400
104	1530	3060	1710	3420	1680	3350	1750	3500
105	1580	3150	1760	3520	1730	3450	1800	3590
106	1620	3230	1810	3610	1770	3540	1850	3690
107	1660	3320	1860	3710	1820	3630	1900	3790
108	1700	3400	1900	3800	1860	3720	1940	3880
109	1760	3510	1960	3920	1920	3840	2000	4000
110	1810	3610	2020	4030	1980	3950	2060	4120
111	1860	3710	2080	4150	2030	4060	2120	4230
112	1910	3810	2130	4260	2090	4170	2180	4350
113	1960	3910	2190	4370	2140	4280	2240	4470
114	2010	4020	2250	4580	2200	4390	2290	4580
115	2070	4140	2310	4620	2260	4520	2360	4720
116	2130	4250	2380	4750	2330	4650	2430	4850
117	2190	4370	2450	4890	2390	4780	2500	4990
118	2250	4490	2510	5020	2460	4910	2570	5130
119	2320	4630	2590	5170	2530	5060	2640	5280
120	2380	4760	2660	5320	2610	5210	2720	5440
121	2470	4930	2760	5510	2700	5400	2820	5626
122	2550	5100	2850	5700	2790	5580	2910	5820
123	2640	5270	2950	5890	2890	5770	3010	6020
124	2720	5440	3040	6080	2980	5960	3110	6210
125	2810	5610	3140	6270	3070	6140	3210	6410
126	2890	5780	3230	6460	3170	6330	3300	6600
127	2980	5950	3330	6650	3260	6510	3400	6790
128	3060	6120	3420	6840	3350	6700	3500	6990
129	3150	6290	3520	7030	3450	6890	3590	7180
130	3230	6460	3610	7220	3540	7070	3690	7380
131	3320	6630	3710	7410	3630	7260	3790	7570
132	3400	6800	3800	7600	3720	7440	3880	7760
133	3510	7010	3920	7830	3840	7670	4000	8000
134	3610	7210	4030	8060	3950	7890	4120	8230
135	3710	7420	4150	8290	4060	8110	4230	8460
136	3810	7620	4260	8520	4170	8340	4350	8700
137	3910	7820	4370	8740	4280	8560	4470	8930
138	4020	8030	4490	8970	4390	8780	4580	9160
139	4140	8270	4620	9240	4520	9040	4720	9430
140	4250	8500	4750	9500	4650	9300	4850	9700

141	4380	8760	4900	9790	4790	9580	5000	10000
142	4510	9010	5040	10070	4930	9860	5150	10290
143	4640	9270	5180	10360	5070	10140	5290	10580
144	4760	9520	5320	10640	5210	10420	5420	10870
145	4930	9860	5510	11020	5400	10790	5630	11260
146	5100	10200	5700	11400	5580	11160	5820	11640
147	5230	10460	5850	11690	5720	11440	5970	11940
148	5360	10710	5990	11970	5860	11720	6120	12230
149	5530	11050	6180	12350	6050	12090	6310	12610
150	5700	11390	6370	12730	6240	12470	6500	13000
151	5870	11730	6560	13110	6420	12840	6700	13390
152	6040	12070	6750	13490	6610	13210	6890	13780
153	6210	12140	6940	13870	6790	13580	7090	14170
154	6380	12750	7130	14250	6980	13950	7280	14550
155	6590	13180	7370	14730	7210	14420	7520	15040
156	6800	13600	7600	15200	7440	14880	7760	15520
157	7020	14030	7840	15680	7680	15350	8010	16010
158	7230	14450	8080	16150	7910	15810	8250	16490
159	7440	14880	8320	16630	8140	16280	8490	16980
160	7650	15300	8550	17100	8370	16740	8730	17460
161	7870	15730	8790	17580	8610	17210	8980	17950
162	8080	16150	9030	18050	8840	17670	9220	17430
163	8290	16580	9270	18530	9070	18140	9460	18920
164	8500	17000	9500	19000	9300	18600	9700	19400
165	8760	17510	9790	19570	9580	19160	10000	19990
166	9010	18020	10070	20140	9860	19720	10290	20570
167	9270	18530	70360	20710	10140	20280	10580	21150
168	9520	19040	10640	21280	10420	20840	10870	21730
169	9860	19720	11020	22040	10790	21580	11260	22510
170	10200	20400	11400	22800	11160	22320	11640	23280
171	10460	20910	11690	23370	11440	22880	11940	23870
172	10710	21420	11970	23940	11720	23440	12230	24450
173	11050	22100	12350	24700	12090	24180	12610	25220
174	11390	22780	12730	25460	12470	24930	13000	26000
175	11730	23460	13110	26220	12840	25670	13390	26780
176	12070	24140	13490	26980	13210	26420	13780	27550
177	12410	24820	13870	27740	13580	27160	14170	28330
178	12750	25500	14250	28500	13950	27900	14550	29100
179	13180	26350	14730	29450	14420	28830	15040	30070

