

Tyres and wheels —

Part 1: Tyres —

Section 5: Industrial vehicle tyres —

Subsection 5.1 Specification for code-designated series tyres

Committees responsible for this British Standard

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- Agricultural Engineers' Association
- Automobile Association
- British Industrial Truck Association
- British Pressure Gauge Manufacturers' Association
- British Rubber Manufacturers' Association
- Bus and Coach Council
- Department of Transport
- Freight Transport Association
- Institute of Road Transport Engineers (Inc)
- Motor Cycle Industry's Association of Great Britain Ltd.
- Motor Industry Research Association
- National Tyre Distributors' Association
- Retread Manufacturers' Association
- Road Haulage Association Ltd.
- Society of Motor Manufacturers and Traders Ltd.

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Foreword

This Subsection of BS AU 50 has been prepared under the direction of the Automobile Standards Policy Committee and supersedes BS AU 50-1.5d:1977, which is withdrawn. This Subsection brings up to date the requirements contained in Section 5d which covered code-designated series tyres only. Requirements for metric series tyres are specified in the other Subsections of Section 5.

NOTE 1 Certain components in this standard may be the subject of patents. Users of this standard should satisfy themselves that they are not infringing any such patents in manufacturing to this standard.

Part 1 of this standard is concerned with tyres. Other Parts are:

- *Part 2: Wheels and rims;*
- *Part 3: Valves;*
- *Part 4: Rim profiles and dimensions.*

Other Sections of Part 1 are:

- *Section 0c: General;*
- *Section 1: Car tyres;*
- *Section 2: Commercial vehicle tyres;*
- *Section 3: Off-the-road tyres;*
- *Section 4: Agricultural tractor and machine tyres;*
- *Section 6: Motor cycle tyres;*
- *Section 7: Moped tyres;*
- *Section 8: Code of practice for the storage of tyres, inner tubes and flaps.*

NOTE 2 Tyres of one size designation may be made in more than one design to suit various service applications. These designs may have differing speed capabilities. The tyre user should ascertain that the particular tyre he intends to employ is suitable for the intended use.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Subsection of BS AU 50-1 specifies sizes, loads, inflation pressures and rims for code-designated series tyres used on industrial vehicles. It is expected that the associated wheel rim contours will be specified in BS AU 50-4.5.1.

2 Normative references

This Subsection of BS AU 50-1 incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to, or revisions of, the cited publication apply to this Subsection of BS AU 50-1 only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

3 Definitions

For the purposes of this Subsection of BS AU 50-1 the following definitions apply.

3.1

basic pressure

the inflation pressure related to the load that would, under optimum conditions, produce the most economical tyre life

3.2

dual spacing

the distance between the centre line of tyres in dual fitment

3.3

permitted rim

any rim, in addition to the recommended rim, whose fitment is permitted

3.4

recommended rim

the rim(s) that gives the best fitment of the tyre for all conditions and types of service

4 Industrial vehicle pneumatic tyres

4.1 Tyre markings

4.1.1 All tyre markings shall be permanently and legibly marked on both sidewalls in accordance with BS AU 50-1.0c:1977.

4.1.2 Each tyre shall be marked with its size using one of the following designations.

- a) Nominal section width code Construction code Nominal rim diameter code;
- b) Nominal overall diameter code × Section width code;
- c) Nominal overall diameter code × Section width code Construction code Nominal rim diameter code.

Additionally the tyre may be marked with its service condition characteristics. Where these markings are included they shall be set out in the following order:

load index speed symbol ply rating

NOTE Examples of the use of these designations are given in Annex A.

4.1.3 For diagonal tyres the construction code shall be “—”. For radial tyres the construction code shall be “R”, and/or the word “RADIAL” marked elsewhere on the tyre.

4.1.4 For industrial and fork lift tyres the speed symbols shall be A5 corresponding to a reference speed of 25 km/h.

For commercial vehicle tyres used in industrial applications the speed symbol shall be in accordance with the reference speeds given in BS AU 50-1.2.1.

4.2 Load capacities and inflation pressures

4.2.1 The reference loads specified in Table 3, Table 5, and Table 7 shall correspond with the reference speed of 25 km/h.

Maximum tyre load capacities shall be calculated for other speeds in accordance with Table 1. The calculated loads shall be rounded up to the nearest 5 kg.

4.2.2 The inflation pressures specified in Table 3, Table 5, Table 7, Table 8 and Table 9 shall be the basic pressure relating to the specified reference loads or load capacities.

NOTE The pressures used in practice on the vehicles may be fixed by agreement between the tyre manufacturer, the vehicle manufacturer and/or the user. They should take into account, in addition to the load, the operating conditions, the stability requirements and the mechanical characteristics of the vehicles.

4.3 Normal section tyres

Normal section tyres shall be in accordance with Table 2 and Table 3.

4.4 Wide section tyres

Wide section tyres shall be in accordance with Table 4 and Table 5.

4.5 Low section tyres

Low section tyres shall be in accordance with Table 6 and Table 7.

4.6 Commercial vehicle tyres

Commercial vehicle tyres, when used on lift trucks, sideloaders or straddle carriers, shall be in accordance with Table 8 or Table 9.

5 Industrial vehicle solid tyres

5.1 Tyre markings

5.1.1 General

All tyre markings shall be permanently and legibly marked on both sidewalls in accordance with BS AU 50-1.0c:1977.

5.1.2 Band tyres

Each tyre shall be marked with its tyre size using the following designation:

Overall diameter × Tyre width × Internal diameter of tyre band

The tyre designation shall correspond to the design dimensions of the tyre and shall be marked in inches.

NOTE It may additionally be marked in millimetres. An example is given in Annex A.

While the tables for the millimetric design dimensions may show wheel (rim) diameter to one decimal place, the tyre size designation marking shall be rounded off to the nearest millimetre.

5.1.3 Resilient tyres (*i.e. solid tyres for use on pneumatic rims*)

Each tyre shall be marked with its tyre size using one of the following designations.

Nominal section width code – Nominal rim diameter code/Nominal rim width code SOLID

Nominal overall diameter code × Nominal section width code/Nominal rim width code SOLID

Nom. overall dia. code × Nom. section width code – Nom. rim dia./Nom. rim width code SOLID

NOTE 1 Examples of how these designations should appear are given in Annex A.

NOTE 2 The designations for resilient tyres are identical with those for pneumatic tyres with the addition of the nominal rim width code and the word “SOLID”.

5.2 Dimensions and tolerances

5.2.1 Band tyres

5.2.1.1 Dimensions

The tyre dimensions specified in Table 10 and Table 12 shall be the design dimensions of the tyre.

5.2.1.2 Tolerances

Tolerances on dimensions shall be as follows:

- a) the tolerance for overall diameter shall be ± 1.5 % of the specified design diameter;
- b) the maximum overall tyre section width may not exceed the specified design tyre section width by more than 4 %;
- c) the tolerance on the wheel (rim) diameter shall be
 - $+0.13$
 -0 mm for millimetric tyre size designation; and
 - $+0.005$
 -0 in for code tyre size designation.

5.2.2 Resilient tyres

Dimensions and tolerances of resilient tyres shall be as specified in Table 11.

5.3 Rubber solid tyres

Rubber solid tyres shall be in accordance with Table 10 and Table 11.

5.4 High load, non-rubber solid tyres

High load, non-rubber solid tyres shall be in accordance with Table 12.

Table 1 — Rating factors for calculating tyre load capacity

Application	Maximum tyre load capacity (% of reference load)
Counterbalanced lift trucks	
Up to 25 km/h	
load wheel	130
steering wheel	100
Up to 35 km/h	
load wheel	125
steering wheel	92.5
Side-loaders	
Static	151
25 km/h	100
35 km/h	92.5
Other vehicles	
10 km/h	130
25 km/h	100
40 km/h	89
50 km/h	84
NOTE The factors apply for both single and dual fitments.	

Table 2 — Industrial and lift truck tyres — Pneumatic tyres: Rims for normal section sizes — Diagonal and radial

Tyre size	Recommended rims		Permitted rims		Recommended minimum dual spacings (mm)	
	Diagonal	Radial	Diagonal	Radial	Lift trucks and other vehicles Up to 35 km/h	Other vehicles 40 km/h and 50 km/h
3.00 – 4	2.10	—	—	—	98	94
4.00 – 4	2.50 C	—	—	—	128	124
4.00 – 8	2.50 C ^a	—	—	—	128	124
4.00 – 8	3.00 D	—	—	—	134	130
4.00 – 8	3 $\frac{3}{4}$ I ^b	—	—	—	144	138
5.00 – 8	3.00 D		—	—	158	152
5.00 – 8	3 $\frac{1}{4}$ I ^b		—	—	162	156
6.00 – 9	4.00 E		—	—	192	184
6.50 – 10	5.00 F		—	—	212	204
6.50 – 10	5.50 F		—	—	218	210
7.00 – 12	5.00 S		—	—	230	222
7.00 – 15	5.0		—	—	230	222
7.00 – 15	5.5		—	—	236	228
7.00 – 15	—	—	4.33 R	—	—	—
7.50 – 10	5.50 F		—	—	248	238
7.50 – 10	—	—	5.00 F ^c	—	—	—
7.50 – 15	6.0		—	—	254	244
7.50 – 15	6.5, B 6.5		—	—	260	250
7.50 – 15	—	—	6.00 S		254	244
7.50 – 15	—	—	5.5	—	—	—
8.25 – 15	6.5, B 6.5		—	—	280	270
8.25 – 14	7.0		—	—	286	276
8.25 – 15	—	—	6.0 ^d	—	—	—
9.00 R 20 ^e	—	6.5	—	B 6.5	304	289
9.00 R 20 ^e	—	7.0	—	B 7.0	310	297
10.00 – 15	7.5		—	—	330	316
10.00 R 20 ^e	—	7.0	—	B 7.0	324	311
10.00 R 20 ^e	—	7.5	—	B 7.5	330	316
11.00 R 20 ^e	—	7.5	—	B 7.5	337	323
11.00 R 20 ^e	—	8.0	—	B 8.0	343	329
12.00 R 20 ^e	—	8.0	—	B 8.0	370	354
12.00 R 20 ^e	—	8.5	—	B 8.5	376	360

Table 2 — Industrial and lift truck tyres — Pneumatic tyres: Rims for normal section sizes — Diagonal and radial

Tyre size	Recommended rims		Permitted rims		Recommended minimum dual spacings (mm)	
	Diagonal	Radial	Diagonal	Radial	Lift trucks and other vehicles Up to 35 km/h	Other vehicles 40 km/h and 50 km/h
21 × 4	3.11 F	—	—	—	146	140
22 × 4 ¹ / ₂	3.11 F	—	—	—	158	152
23 × 5	3.75 P	—	—	—	186	178
25 × 6	3.75 P	—	—	—	204	196
NOTE 1 For radial tyres, replace the dash (—) in the size designation with “R”, and/or mark the word “RADIAL” elsewhere on the tyre. NOTE 2 The recommended tyre/rim fitments given are preferred for use in future vehicle designs. NOTE 3 The recommended minimum dual spacings apply to normal service and the manufacturer should be consulted for special applications. For example additional spacing will be required if chains are used. NOTE 4 Consult the tyre, rim and wheel manufacturers to determine whether any particular tyre/rim combination is suitable, and that the rim and wheel are of sufficient strength for the intended service. ^a 2.50 C rims are only recommended for 4.00 – 8 tyres up to 6 PR. ^b 3¹/₂ I and 3³/₄ I rims may also be marked 3.25I and 3.75I respectively. ^c 5.00 F rims are only permitted for 7.50 – 10 tyres up to 12 PR. ^d 6.00 rims are only permitted for 8.25 – 15 tyres up to 16 PR. ^e These size designations apply only to radial tyres.						