



EN 12642-XL

A Layman's guide to the  
European load containment  
standard

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\*Accurate at time of publication.

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# Introduction

This document is a diluted interpretation of the 28 page BS EN 12642:2006 (L & XL) standard, designed to enable a quicker and easier understanding of the content and its implications. The suitability of the standard or compliance with law or regulation is not covered here.

Where direct references are taken from the original document, they are highlighted in blue italics and surrounded by inverted commas - "e.g. *this content*".

Whilst the standard covers both the **L** (section 5.2) and **XL** (section 5.3) ratings within the EN 12642 documentation, this guide only serves to cover the more demanding and higher rated XL version.

# What is EN 12642-XL?

EN 12642-XL is a whole-body, European load containment standard. Under strict conditions, a reinforced vehicle body (either trailer or rigid bodywork over 3,500kgs GVW) is tested by an accredited body such as the German TUV or the UK VCA. If the bodywork passes the tests, a certificate will be issued together with the right to apply a compliance mark to the bodywork to indicate that the vehicle complies with the standard.

EN 12642-XL is not necessarily a legal requirement in any EU member state. In the UK, for example, EN 12642-XL is recognised as a *contributory standard* but is not, in itself, a legal requirement\*. All individuals (consignor, operator or driver) responsible for load restraint are advised to seek further advice to determine the suitability and legal compliance of any load containment or load restraint system.

EN 12642-XL can be applied to both box van and curtainsided bodywork.

Manufactured by: DON-BUR (Bodies & Trailers) Ltd,  
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THIS VEHICLE BODY COMPLIES WITH THE STANDARD

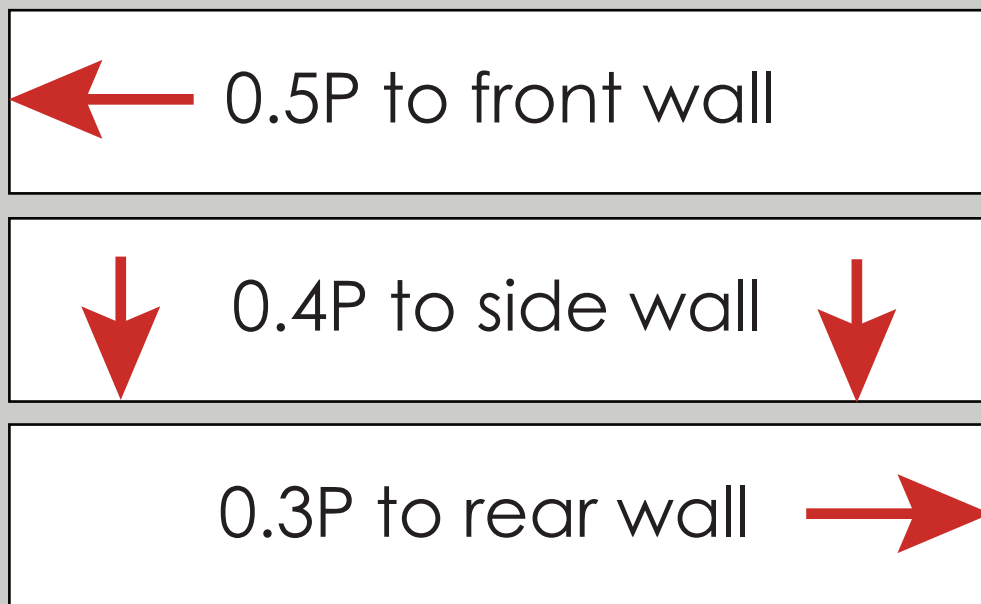
# EN 12642-XL

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## Static Test (Annex A)

The static test, as the name suggests, is carried out while the vehicle is stationary. A framework, referred to as a reaction frame, is installed within the vehicle body and deflated air bags are positioned in the 50mm space between the reaction frame and the outer bodywork (front bulkhead, sides and rear). The air bags are then inflated by a compressor to a precalculated pressure threshold for a minimum of 5 minutes.

The minimum forces required ~



For example, a curtainsided trailer with a maximum payload potential of 29 tonnes (29,000 kgs) will be tested as follows:

Front Wall ~ 14,500 daN, Side Walls ~ 11,600 daN, Rear Wall ~ 8,700 daN

## Approval Criteria

*"After finishing the tests, the body structure shall show neither permanent deformation nor other changes which would impair its intended use."*

- "1) elastic deformation occurring during the test shall not exceed 300 mm.*
- 2) at a test force of 85 % of the 100 % to be used for testing there shall be no permanent deformation.*
- 3) at 100 % of the test force permanent deformation may at maximum be of 20 mm, however, aptitude for the intended function shall not be impaired."*

## The Tests

There are two distinct test methods, either of which can result in a pass certificate. Both test methods are equally demanding although the equipment needed, forces and thresholds are different.

It is also possible to obtain a compliance certificate through calculation although this is not covered in this document.

## What is "P"?

Although "P" is usually recognised as a unit of pressure, this unit is redefined in the standard as "the weight force (in daN) of the vehicle to be tested at the authorised payload".

This may be confusing as the tests are done with pressurised air bags. In reality, the testing agency calculates the required pressure (MPa) over the required curtain test area in order to achieve the required daN force. The original full standard document covers this in more detail.

1 DaN is *similar* in unit quantity to 1 kg.

$$1 \text{ daN} \times 10 = 10\text{N}$$
$$10\text{N} / 9.81 = 1.02 \text{ kgs}$$

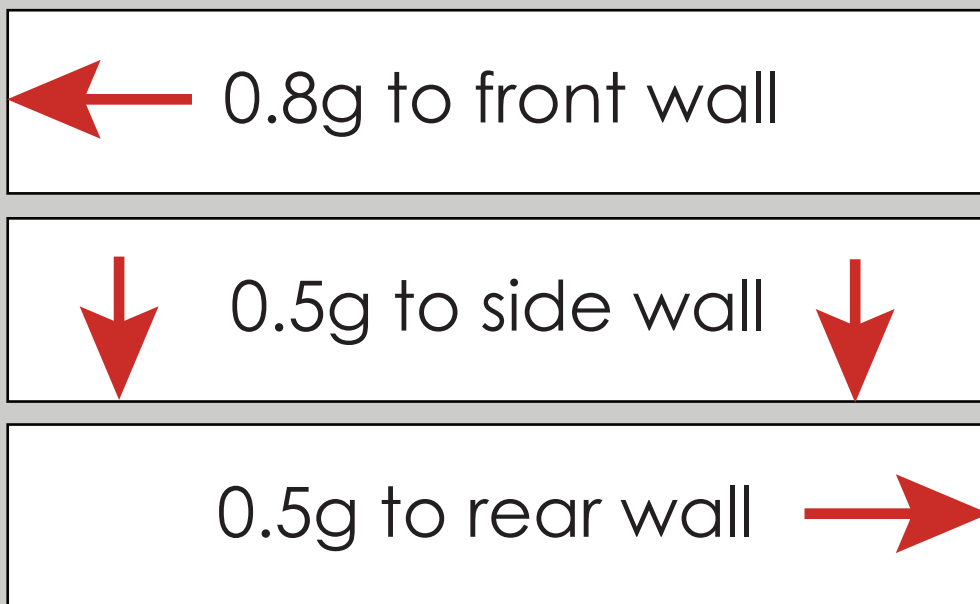
$$1 \text{ daN} = 1.02 \text{ kgs}$$

## Dynamic Test (Annex B)

The dynamic test is usually carried out on a large tarmac asphalt area such as an airfield. A suitable load is placed on the bed of the vehicle and it is then driven through 4 manoeuvre types until the test criteria are achieved.

These manoeuvres impose G-forces on the intended surface.

The minimum forces required ~



A standard 44 tonne combination, for instance, should be loaded with the maximum payload potential (circa 29 tonnes).

## Approval Criteria

The following criteria is specified for each and all of the 4 tests (as illustrated right).

*"The cargo securing equipment shall perform its function in three consecutive tests. If the cargo is secured by the vehicle body structure this means that there may be no permanent deformations or tears in the walls of the body or in their connections to the frames. If the cargo is secured by lashing equipment such equipment shall not display any damage."*

## What is a suitable load?

The standard describes the load as *"cargo units which lose their stability under the effect of a transverse acceleration of 0,25g."*

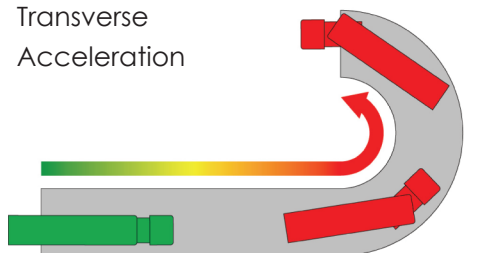
*"Suitable cargo units shall be loaded uniformly over the entire length and width of the cargo area of the vehicle to be tested; the height of loading shall be > 1/2 x loading height and loading shall be up to the permitted total weight."*

## The Tests

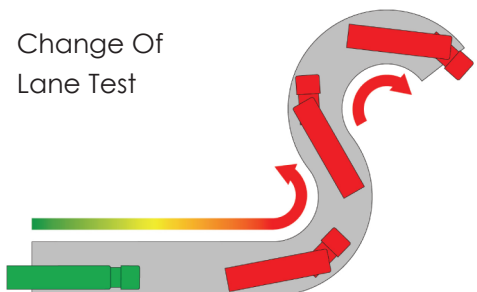
Braking



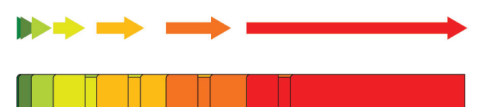
Transverse Acceleration



Change Of Lane Test



Reverse Braking



## Double Decks (Section 5.4)

Special provisions are laid out for double decks as the stresses imposed on the bodywork differ from single deck trailer or rigid bodywork.

The minimum forces for both front bulkhead and rear wall are described on page 3. The minimum forces required for the side wall are as follows ~

### Box Van Construction



### Curtainsided Construction



Where the supporting cross beams are of a telescopic design (sometimes used in Europe with side pillars and cabbage board supports), an additional 0.1P should be added to the side force requirement.

Dynamic testing can also be carried out to achieve similar results.

*"On the top loading level at half the height of the body it is permitted to carry  $\leq 50\%$  of the total payload. Where cargo loads on the upper deck depart from this or where the height position of the second cargo level differs, the percentage portion changes accordingly."*



## Marking

Compliant bodywork should be marked as follows:

- "a) confirmation that the vehicle body structure complies with this standard;*
- b) reference to this European Standard, i.e. EN 12642;*
- c) indication of the pertinent requirement profile -Codes, L (5.2) or XL (5.3);*
- d) name of manufacturer;*
- e) year of production."*

*"Marking shall be by means of an independent sign. However, it shall also be integrated into the vehicle identification plate. In the latter case, points d) and e) need not be repeated. The information under point a) shall be provided in the local language and in English (bilingual marking may be omitted if the manufacturer comes from an English speaking country)."*

The positioning of any external sticker is not specified.

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## The Use Of Additional Load Restraint

It is possible to acquire an EN 12642-XL rating on a vehicle that uses a supplementary load restraint solution; however, this caveat will be stated on the issued certificate and the bodywork alone may not be capable of achieving the same standard without the addition of a load restraint solution.

## Retrofitting EN 12642-XL Components

It is not admissible to retrofit single individual components that are claimed to carry an EN 12642-XL rating (such as curtains or rear doors) without carrying out a whole vehicle test.

*"A calculation or test for the complete system consisting of front, rear and side walls, roof and floor is necessary for the entire structure even if individual components have been taken from sample structures which have, before, been calculated or tested with positive results."*

## Interchanging EN 12642-XL Components

Under certain conditions, it is possible to interchange certain components for other EN 12642-XL components (such as exchanging a tail-lift with a shutter).

*"... it is admissible to replace individual components which have successfully been tested within a complete system with others that have yielded the same results in testing."*

## EN 12642-XL For Your Fleet

Once a vehicle type has been tested and certified, it is permitted that the same accreditation can be assigned to other vehicles of the same type *"structures of the same design"*.



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This document has been produced for guidance only and Don-Bur accepts no liability for any loss incurred (in whole or in part) as a result of any interpretation (or actions taken thereof) of this guide.

For further information, please refer to the full BS EN 12642:2006 document or consult an accredited testing agency.