

GS1 Data Source

Most common international measurement rules for packaging in do-it-yourself

Release 6.5, Ratified, 18 July 2023



Document Summary

Document Item	Current Value
Document Name	GS1 Data Source
Document Date	7 July 2021
Document Version	6.4
Document Status	Ratified
Document Description	Measurement rules for common packaging in do-it-yourself

Log of Changes

Release	Date of Change	Changed By	Summary of Change
1.0	26 July 2012	Stef Spaan	First publication of the document.
2.0	26 November 2012	Stef Spaan	<ul style="list-style-type: none"> - Section 3.2: added text about variable packaging 10 measurements - Section 3.4.1: Added text how to measure peg hole distances - Added Section 3.5 'Trade Items Packed in Several Physical Units' - Added Section 4.1.2. Measuring Trade units - Appendix A: text at 2a, 2b, 2c, 2d improved
3.0	20 May 2013	Stef Spaan	<ul style="list-style-type: none"> - Section 3.6: Added - Section 4.1.1: Added at Flexible outer packaging example of shower curtain rings - App. B: Added example of dispenser (for i.e. soap)
3.1	1 September 2013	Stef Spaan	<ul style="list-style-type: none"> - Pictures replaced in Chapter 2 figure 1 and in section 3.4.1 - Section 3.7 added
4.0	1 February 2014	Stef Spaan	<ul style="list-style-type: none"> - Section 3.9 to 3.21 added
5.0	1 May 2014	Stef Spaan	<ul style="list-style-type: none"> - Chapter 3 split up: Measurement rules specific products in chapter 4 - Section 3.8 (Measurement rules products for promotional proposes) added - Section 5.2: Title changed and product type carton packaged items added - Section 5.3: Title and content changed - Section 5.4: added

Release	Date of Change	Changed By	Summary of Change
6.0	1 September 2015	Stef Spaan	<ul style="list-style-type: none"> - Document made consistent with similar documents in other industry sectors i.e. food, health and beauty → chapters and paragraphs changed - Section 3.5: '...and shower curtain rings.' Deleted - Section 3.5: definition of packed/unpacked added - Chapter 5: changed - Appendix A: buckets added - Appendix A: articles deleted who are not relevant to DIY - Appendix B with examples added
6.1	27 January 2016	Reinier Prenger	<p>Because of changes in the International Measurement Rules the following adjustments have been made:</p> <ul style="list-style-type: none"> - Chapter 5: a note on variable products is added. - Table 5.1: improvement on the definition and tolerances of small, inflexible trade items.
6.2	12 August 2016	Reinier Prenger	<p>Because of changes in the international measurement rules the following adjustments have been made:</p> <ul style="list-style-type: none"> - Chapter 2: a note about determination of a consumer unit is added. - Section 2.2: note added about a trade item with two like front sides. - Section 2.2: note added about determination of the largest surface at cylindrical trade items. - Section h 5.4. added. - Chapter 6, section A1: codes and definitions changed to be compliant to the major release.
6.3	20 March 2017	Frederieke Vlieg	<p>Change request 17-005:</p> <ul style="list-style-type: none"> - Section 3.1.3: adjusted the measurement rules for bags with gusset seams. Current rule replaced by rule from international measurement rules document. - Section 3.2.1: adjusted the measurement rules for hanging product in a flexible packaging. Current rule replaced by rule from international measurement rules document.

Release	Date of Change	Changed By	Summary of Change
6.4	7 July 2021	Frederieke Vlieg	<p>Change request 889:</p> <ul style="list-style-type: none"> - In paragraph 2.1 point 2 'product name' changed in 'brand name'. The orientation is determined by the orientation of the brand name. <p>Change request 1075:</p> <ul style="list-style-type: none"> - In paragraph 2.2 net content added as an example of product information to determine the front of a product. <p>Change request 753:</p> <ul style="list-style-type: none"> - Some errors removed in the text (3.1 and appendix A.2), so that text matches international measurement rules again. <p>Work request 21-039:</p> <ul style="list-style-type: none"> - Adjustment of tolerances for measurements of soft-paper products in flexible plastic packaging from 13 mm to 20 mm for consumer units. <p>Change request 111:</p> <ul style="list-style-type: none"> - Adjustment of text of paragraph 5.4, for very small consumer units. Textual adjustment in line with international measurement rules. - Chapter 6, Appendix A.2: text added to clarify the goal of the appendix. <p>Change request 17-065:</p> <ul style="list-style-type: none"> - Two new codes added to appendix A.2: cartridge (CQ), roll (RO). <p>Change request 17-077:</p> <ul style="list-style-type: none"> - In appendix A.2 examples for pouches (PO) the sentence 'There are no gusset seams on the package' for the column features changed in 'There are no gusset seams at the bottom of the package.' - Improved references to chapters in international measurement rules in appendix A.1.
6.5	18 July 2023	Petra Geerdink	<ul style="list-style-type: none"> - Removal of sentence that only data of consumer units are exchanged via GS1 Data Source and removal of diagram.

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Introduction

This document is a short version of the document 'GDSN package measurement rules' for establishing clear nominal product packaging sizes, worldwide. It contains an overview of the measurement rules for establishing the dimensions of the most common consumer and trading units and the permitted tolerance of deviation from standard measuring practices.

The rules are intended to create a consistent and repeatable process for determining the dimensions of any given product packaging. If every trading partner applies the package measurement rules correctly, a consistent and repeatable process will be created for determining the dimensions of product packages. The trade item data should be exchanged via GS1 Data Source.

The measurement rules do not necessarily correspond to how the product is presented on the shelves or in promotional material. Any, more restrictive, local regulations governing the measurement of weights or dimensions take precedence over the specifications in this document.

For a complete overview of the measurement rules, please read the '[GDSN Package Measurement Rules](#)'.

Reading guide

To help you find the correct package measurement rule for your product we added section A.2. This section lists the most common forms of package, with a reference to the package measurement rule that applies to your particular package. Section A.1 contains a list of special trade items, for which a separate section is included in the international package measurement rules on how you should measure these trade items.

Important: this document uses the term 'depth', rather than 'length'. This is a deliberate choice, as the term 'length' is susceptible to multiple interpretations.

The package measurement rules are intended to create a consistent and repeatable process for determining the dimensions of given product packages and may not always correspond to the shelf orientation or promotion material of the product.

1 General information

This document is about measuring. To measure reliably, the right tools are essential.

1.1 Measuring tools

Use a digital caliper and weighing instrument of a format that is suitable for your products. Calculate the data in millimetres and grams (preferably) and always round upwards.

1.2 The same packaging, different format

For flexible packages in particular, and for the same rigid packages that can vary in format, we advise that you measure different units of the same product. This will reduce the number of errors caused by anomalies, equipment, or inconsistent techniques. The sizes and weights to be given are therefore the average of the various measurements and weights. You decide yourself the number of measurements that are needed (at least three) to obtain a reliable average.

GDSN allows up to three decimal places for dimensions and weights, but the level of precision is determined by the supplier and the relevant local regulations. The following rounding off rules guarantee the minimum required level of precision.

1.2.1 Linear dimensions

Linear dimensions are rounded upwards. Always round millimetres off to whole millimetres. For example, 99.3 mm becomes 100 mm.

1.2.2 Weights

If you need to round off weights, always round them upwards until the desired degree of precision has been reached.

1.3 Types of product packaging

There are two types of product packaging – the consumer trade item (consumer unit) and the non-consumer trade item (trading unit).

Consumer trade items are purchased by customers or end-users, are barcoded, and marked so that they can pass through point-of-sale systems. See chapter 2.

Non-consumer trade items are **not** purchased by customers or end-users. However, they are barcoded and intended for general distribution.

Companies (suppliers and buyers) who are active in the do-it-yourself sector have agreed to exchange article data about consumer and trading units.

2 Consumer units

Before the height, width, and depth can be established, the default front of a consumer unit and its orientation must be determined.

Important: the supplier determines whether a trade item is a consumer unit.

2.1 Basic rules for measuring consumer units

The basic rules for determining the measuring position are:

1. Determine the default front by selecting the largest surface area used by the manufacturer or supplier to 'sell' the product (in the eyes of the marketing manager, the side that is used to promote sales (see section 2.2)).

Important: there are two exceptions to this, which are also discussed elsewhere (see exceptions in section 2.2).

2. Then, determine the orientation (whether the product is measured vertically or horizontally), by establishing the position of the product in which the brand name can be read horizontally (see section 2.3).

Important: separate rules apply if the orientation is vertical or partly vertical (see exceptions in section 2.3).

3. Now measure the product as follows (see section 2.5):
 - **Height:** from the lowest to the highest point.
 - **Width:** from the most leftward to the most rightward point.
 - **Depth:** from the foremost to the rearmost point.

Important: it is important that you measure consumer trade items **separately, unimpeded by any other objects** – in other words, not while stacked, and in good condition (not damaged, damp, or torn).

2.2 Determining which side of an article is the front

The default front of the product is the side with the largest surface area used by the manufacturer to sell or promote the product to consumers. In other words, this is the side on which at least the brand and the product information (like net content) are shown and which, compared to the other surfaces, is intended to promote sales.

It is possible that there are two alike surfaces that could be a default front, for instance: one containing standard text elements such as consumer declaration (e.g., net content) and the other without. The default front is the surface containing the standard text elements such as consumer declaration (e.g., 'Net Content').

Important: in this document, the word 'Brand' in the illustrations shows the default front of the product.



Figure 2.1: determining which side of an article is the front

Important: determine the largest surface for non-rectangular trade items (for example, products with a cylindrical or irregular form) as follows: place a virtual cube around the trade item and calculate the surface by multiplying the height and the width of the different sides.

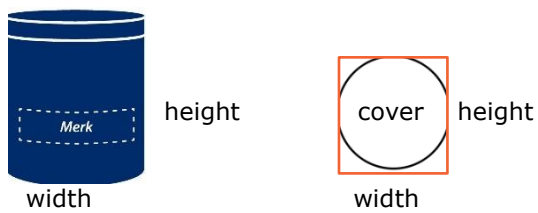


Figure 2.2: determining the surface of a cylindrical or irregular form

Important: this may not correspond to how the product is displayed on shelves or portrayed in advertisements.

Exceptions:

1. Products with two or more sides of the same size, both or all of which meet the definition of default front: the highest side (side B) is regarded as the default front. The 'portrait before landscape' rule applies here – in other words, 'standing outranks lying'.
2. Soft paper products with a paperboard core or a vertical centre but without the paperboard core: the default front is determined with the roll in a vertical position (see appendix A.1).



Figure 2.3: example of exceptions

2.3 Determining product orientation

The orientation of a product is normally determined by the location of the brand name. The orientation is where the brand name is displayed horizontally and can be read in the usual manner.



Figure 2.4: examples determining product orientation

Exceptions:

1. If the brand name and other text are not horizontal, causing you to turn the product in order read the brand horizontally:
You turn the product so that all text items are readable horizontally for the correct orientation.
2. If, in the 'natural' orientation of the product, at least one text item or logo on the default can be read horizontally:
You measure the product in the 'natural' orientation, regardless of the orientation of the brand name.
3. If the trade item has no or no clear default front:
You determine the default front from where you start measuring. Determine the orientation and start measuring from there.



The brand name is slanting, but the remaining text can be read in 'natural' orientation, so the product can be kept upright for measuring.

For measuring purposes, the product has to be turned on its side because all the text, including the brand name, is shown vertically.

Figure 2.5: examples of brand names in an unusual orientation

Another example:

Two products of the same type are shown below: an underlay (with the same dimensions). The packaging is different.

In figure 2.6 the orientation is horizontal and in figure 2.7 the orientation is vertical. The product in photo 2.6 is measured lying flat. The product in photo 2.7 is measured upright.



Figure 2.6: horizontal orientation



Figure 2.7: vertical orientation

2.4 Front not immediately clear

These steps will help you identify the front of an article (to begin measuring from there)

Step 1: Is the article a consumer unit?

A consumer unit always has a GS1 article code (GTIN) and must pass a point of sale (POS).

Step 2: Does the article fall under a specific rule?

Appendix A contains a list of exceptions for which there are specific measuring methods. If the article appears here, then it is an exception and the specific measuring method is described in the '[GDSN Package Measurement Rules](#)'. If the article is not listed here, proceed to step 3.

Step 3: Is the article packaged?

Many articles are packaged to:

- Protect the article during transport and storage.
- Make the article more attractive.
- Help with use, pouring or scooping.

Step 4: Is the packaging mentioned in the international measurement rules?

There are a number of articles, based on product features (shape/packaging), for which special instructions appear in the '[GDSN Package Measurement Rules](#)'. These include hanging articles and flexible packaging. For these two types the rules are summarised in chapter 3 of this document. Other articles are: cylindrical articles and multipacks. The rules for these appear in the '[GDSN Package Measurement Rules](#)'.

If there are no special instructions for your article in the International Measurement Rules, proceed to Step 5.

Step 5: Does the article have a clear front?

A clear front is the side intended to make the article attractive to consumers or convey information.



Figure 2.9: examples of consumer units with a clear front

Step 6: Does the article have a 'logical' front?

The logical front is the side which 'is clearly and without doubt the correct front of an article'. If there are doubts as to the logical front of an article, then the article has no logical front (logical fronts are always immediately clearly identifiable). A very limited number of articles have no logical front and they are often unpackaged.



Figure 2.10: examples of consumer units with a logical front

Step 7: Is the article in a 'natural' state?

The natural state is the state in which an article is found when it leaves the production line. It is the basic or initial form of an article. It is an unpackaged article.

Two examples:



Natural state



Unnatural state



Natural state



Unnatural state

Figure 2.11: two examples of consumer units in natural and unnatural state

Step 8: Identify the largest surface

After working through the flow chart, you have concluded that the article has no clear front.

No clear front: identify the side with the largest surface area and take the longest side as the height ('portrait before landscape'). Begin measuring here.

Appendix A.3 gives a number of examples of articles without a clear front and shows how these should be measured.

2.5 Determining the height, width, and depth

After the front and the orientation have been established, the height, width and depth of an article can be measured.

With the front facing you in the orientation set out under 2.3:

- **Height:** from the lowest point to the highest point.
- **Width:** from the point furthest to the left to the point furthest to the right.
- **Depth:** from the front to the back.

Always measure the greatest dimensions and include parts that jut out, caps, covers and free products (such as extra packaging, collection articles or samples) in the dimensions.

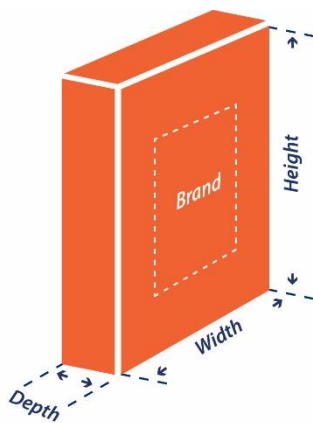


Figure 2.12: height, width and depth of an article

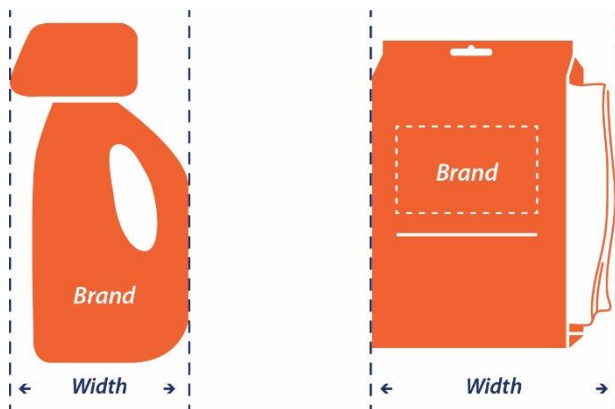


Figure 2.13: always measure between the extremes of each dimension

3 Rules for specific packaging

Some consumer trade items are covered by specific agreements in international package measurement rules due to their packaging. These are:

- Flexible packaging (see section 3.1).
- Hanging products (see section 3.2).
- Cylindrical packaging (see section 3.3).
- Trade Items Packed in Several Physical Units (see section 3.4).
- Packed/unpacked consumer units (see section 3.5).
- Measurement rules products for promotional purposes (see section 3.6).

3.1 Flexible packaging

Flexible packaging is defined as any package or part of a package the shape of which can be readily changed. To ensure that any potential differences in measurements are kept as small as possible, you should carry out multiple measurements (see section 1.2).

There are different types of flexible packaging. The sections below (3.1.1 to 3.1.6) describe how these are measured.

Types of flexible packaging:

These specific guidelines and areas for attention are divided as follows:

- Flexible packaging with 'loose' or 'solid' contents. This packaging is covered by a specific package measurement rule (see section 3.1.1 or 3.1.2).
- Flexible packaging with triangular (gusset) seams. This packaging is covered by a specific package measurement rule (see section 3.1.3).
- Large flexible packaging (> 6.8 kg). This packaging is covered by a specific package measurement rule (see section 3.1.4).
- Flexible packaging such as pouches (see section 3.1.5). There is no specific package measurement rule for this packaging. You measure according to the standard package measurement rule for consumer trade items (see 2.1). They are mentioned in this document solely for the sake of completeness.
- Flexible packaging, such as block bottom (flat bottom) bags (see section 3.1.6). There is no specific package measurement rule for this packaging. You measure according to the standard package measurement rule for consumer trade items (see 2.1). They are mentioned in this document solely for the sake of completeness.
- Triangular packaging. There is no specific package measurement rule for this packaging.

In every case, determining the default front and the orientation of the product are subject to the main rules in sections 2.2 and 2.3. This means:

- Determine the default front of the product in accordance with section 2.2.
- Determine the orientation of the product in accordance with section 2.3.

The following applies to consumer trade items in flexible packaging as standard (unless stated differently in the instruction for that specific packaging):

- Measure the trade item while it is lying flat on a firm surface.
- Spread the contents evenly.

3.1.1 Flexible packaging with 'loose' content

Features:

- Packaging, the shape of which can be changed readily.
- Packaging, the contents of which can move freely around in the packaging and is not in any particular sequence.
- Packaging that is usually closed using straight seams.

You measure as follows:

- Lay the trade item down flat and spread the contents evenly.
- Place the default front of the trade item facing upwards, so that you are able to look down at the default front of the trade item from above.
- Pull out the seams and then release them.
- Measure, including the seams (from edge to edge).
- Determine the orientation.
- The following then applies:
 - **Height:** lowermost to uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** from the flat surface the trade item is lying on to the highest point.



Figure 3.2: example of flexible packaging with 'loose' content

3.1.2 Flexible packaging with 'solid' content

Features:

- Packaging, the contents of which determine the size and/or shape of the packaging.
- Packaging, the contents of which can **NOT** move freely inside the packaging (because of its size and/or shape); the sequence is set.

You measure as follows:

- Lay the consumer trade item down flat with the default front facing upwards – in other words, so that you are able to look down on the default front from above – in such a way that the product assumes its natural shape inside the product or inner packaging.
- Fold any excess flexible packaging material tightly around the product.
- Determine the orientation.
- The following then applies:
 - **Height:** lowermost to uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** from the flat surface the trade item is lying on to the highest point.

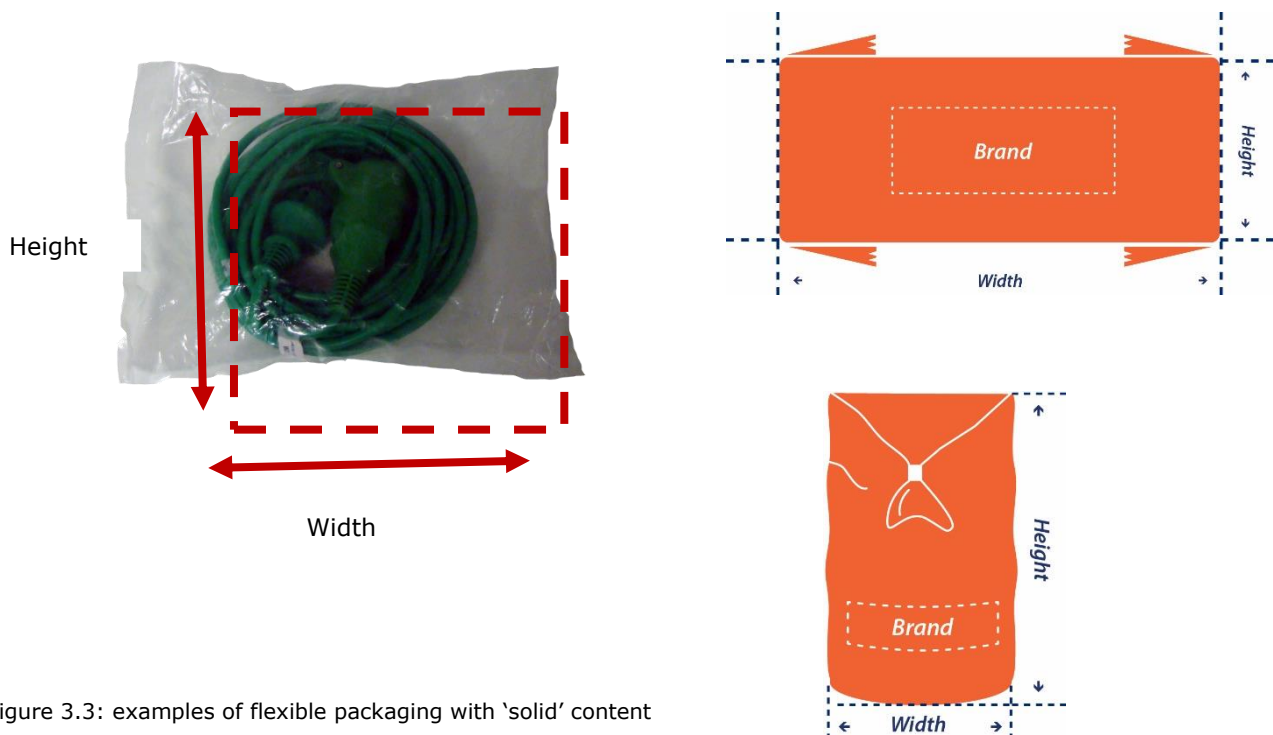


Figure 3.3: examples of flexible packaging with 'solid' content

3.1.3 Gusseted bags

Features:

- Bags with triangular seams for creating corners. These seams may be located at one or both ends of the trade item.
- The seam underneath forms a bottom, allowing the trade item to stand.

You measure as follows:

- Place the packaging with the bottom on a flat surface, with the default front facing you.
- Do not fold the package head-space, with the exception that if the material is not rigid enough to stand by itself the package head/flap is folded over. This rule applies only to gusseted bags. If the net contents are greater than 6.8 kg (15 pounds), then the package measurement rules in section 3.1.4. applies.
- The following then applies:
 - **Height:** base on which trade item is placed to its uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** the foremost to the rearmost point.



Figure 3.4: example of bag with gusset seams

3.1.4 Large flexible packaging (> 6.8 kg)

Large flexible packages are covered by the specific package measurement rule that applies to packages with 'loose' contents (see section 3.1.1). They are mentioned separately because of their irregular shape.

Features:

- Packages, the net contents of which are greater than 6.8 kg (15 pounds).

You measure as follows:

- Lay the package down on a flat surface and spread the contents evenly.
- Place the default front of the trade item facing upwards.
- Pull out the seams and then release them.
- Determine the orientation.
- The following then applies:
 - **Height:** lowermost to uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** from the flat surface the trade item is lying on to the highest point.

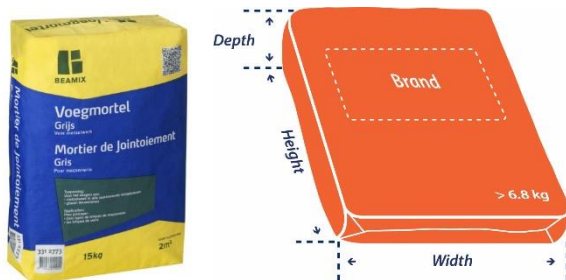


Figure 3.5: example of large flexible packaging

3.1.5 Pouches

Features:

- Packages that stand upright, whose seal or seam serves as a base.

You measure as follows:

- Place the package upright on a flat surface, with the default front facing towards you.
- The following then applies:
 - **Height:** lowermost to uppermost point, including the seams (from edge to edge).
 - **Width:** most leftward to the most rightward point.
 - **Depth:** foremost to the rearmost point.

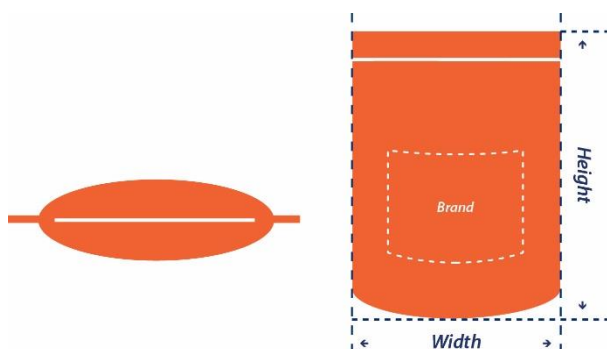


Figure 3.6: pouches

3.1.6 Bags with a flat base

Features:

- Packages with a block bottom or flat bottom. This is a sealed base, tucked inwards, which allows the filled and sealed bag to stand upright on its base.

You measure as follows:

Bags with a block bottom are flexible packages without a specific package measurement rule. They are measured according to the standard rules for consumer trade items; the following therefore applies:

- Determine the default front (see section 2.2).
- Place the bottom of the package on a flat surface, with the default front facing towards you.
- The following then applies:
 - **Height:** the flat surface on which the package is lying to the uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** from the foremost to the rearmost point.



Figure 3.7: example of bag with flat bases

3.2 Hanging articles

If the packaging of the article contains a peg hole, we always speak of a hanging article. Based on the package there are two variants of hanging articles.

3.2.1 Hanging in flexible packaging

By flexible, we mean that the shape of the packaging or part of the packaging can change easily. To measure hanging products in a flexible packaging follow the measurement rules in paragraph 3.1 of this document.

Important: The peg hole or hanging orientation is not used to determine the Default Front.

3.2.2 Hanging in rigid packaging

With rigid we mean that the package cannot easily change in form.

Features:

- Packaging contains a hole for hanging purposes.
- Packaging is rigid.

You measure as follows:

- Place the trade item as if it is hanging – in other words, with the peg hole at the top.
- Place the default front of the trade item facing towards you.

- Then, the following applies:
 - **Height:** lowest to the highest point (including the peg hole).
 - **Width:** most leftward to the most rightward point.
 - **Depth:** foremost to rearmost point.



Figure 3.0: example of hanging article in rigid packaging

Exception:

Hanging articles in flexible packaging, in which the orientation deviates from the natural hanging position (which means that when it's hanging it does not appear as it should) are not measured hanging. For example:

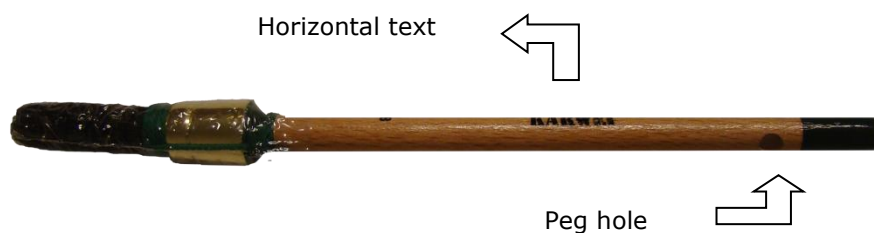


Figure 3.1: example of hanging article in flexible packaging and deviated orientation

In addition to measuring the articles themselves, the vertical and horizontal peg hole distance should be measured. Those distances are measured when the article is in its hanging position.

The horizontal peg hole distance is the distance from the widest part of the article until the middle of the peg hole.

The vertical peg hole distance is the distance from the bottom of the article to the highest top of the peg hole.

If there are several peg holes in one product, it is still possible to report the distances per peg hole. You count the peg holes from the upper left to the lower right (relative to the front of the product).

3.3 Cylindrical products

Features:

- In the case of cylindrical products, two of the dimensions are nominally equal. It will only be clear which of the three dimensions this applies to after the default front and the orientation of the consumer trade items have been determined.

You measure as follows:

- You determine the default front of the package.
- You determine the orientation.
- If the product is lying down, the following applies:
 - **Height:** the surface on which the package is lying to the uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** the height.
- If the product is standing upright, the following applies:
 - **Height:** the surface on which the package is lying to the uppermost point.
 - **Width:** most leftward to the most rightward point.
 - **Depth:** the width.

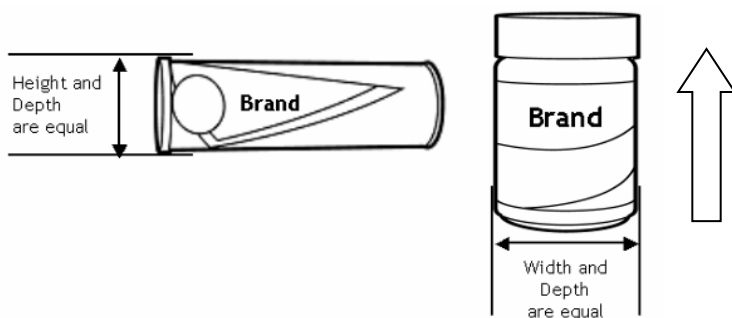


Figure 3.8: examples of such products include bottles, canned drinks, aerosols and tubes

3.4 Trade Items Packed in Several Physical Units

Trade Items Packed in Several Physical Units are, in this context, consumer units which, by their size and/or volume, consist of multiple package units (components). Examples are garden furniture, cabinets and lamps. Only the master data of the main component of an article is entered and stored in the data pool. The main component contains the barcode label with the GS1-article code (GTIN), which is scanned at the checkout. The main component is measured in the same way as a trading unit on the basis of its natural underground (see Chapter 5 in the International measurement rules for more information). For this type of packaging the permitted measurement variations are the same as for trading units (see paragraph 5.2 in this document).

3.5 Packed/unpacked consumer units

Starting point in the International Measurement Rules are:

- The way the product is packaged is leading for the way the product is measured according the International Measurement Rules
- The way the trading partner presents the product on the shelf is not relevant in measuring the product according to the International Measurement Rules

When more of the same consumer units are packaged and protected because of safe transport reasons and the consumer unit is put on the shelf unpacked, the unpacked product is measured.

3.6 Measurement rules products for promotional purposes

Besides the measurement values for consumer units (packed or unpacked, see par. 3.5) it is possible as well to exchange measurement values of trade items for promotional purposes, i.e. out-of-the box on a shelf in a store, web shop or brochure.

In this case you use the same procedure to determine the measurement values as for consumer units described in the previous chapters 1 and 2 within this document.

4 Measurement rules specific products

4.1 Bags with straps/handles

Bags with straps/handles are measured in their Natural State and include stuffing. The Default Front is the largest surface oriented to be facing it as if for use, that is, on a flat surface such as a table sitting on its base—that surface opposite from the opening

Depending on the type of bag, there are different ways to measure:

1. All straps/handles are allowed to fall naturally. Any detachable strap will be assumed to be inside the bag. Height is from the bottom to the top of the bag without the straps/handles.



Figure 4.1: example of bag with handles

2. Bag has rigid straps which cannot be folded or removed. Height is from the bottom to the top of the straps/handles.



Figure 4.2: example of bag has rigid straps which cannot be folded or removed.

Width is the left to right measurement and the Depth is from the front to the back.

4.2 Loose, Unpackaged Clamps

The Default Front of loose, unpackaged clamps is determined by laying the clamp on a flat surface, such as a table. The opening side will be oriented to the right, with the clamp in its most closed position, and the tension bar slid all the way in toward the clamp to provide for the narrowest width.

Height is measured from the flat surface to the top-most point of the clamp, Width is the measurement from the left-most point to the right-most point and Depth is the farthest point in the 6 o'clock position to the farthest point in the 12 o'clock position.

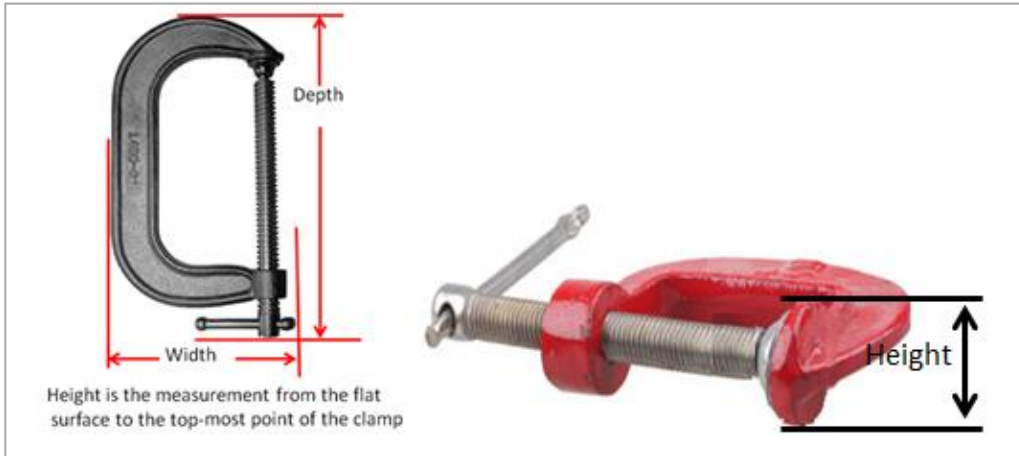


Figure 4.3: examples of loose, unpackaged clamps

4.3 Hand tools

The Default Front of loose, unpackaged hand tools is determined by laying the hand tool on a flat surface, such as a table, oriented with the handle either in the six or twelve o'clock position.

Height is measured from the farthest point in the 6 o'clock position to the farthest point in the 12 o'clock position. Width is measured from the left most point to the right most point of the tool. Depth is measured from the flat surface to the furthest point from the flat surface.

Note that hand tools, which may be open (for instance, wire cutters, wrenches, callipers, etc.) are measured in their natural state or starting position, which is with the tool closed before use and before manual interaction.



Figure 4.4: examples of hand tools

4.4 Hand Saws

The Default Front of loose, unpackaged hand saws is determined by laying the hand saw on a flat surface, such as a table, oriented with the straight edge of the blade parallel to the edge of the flat surface. Measurements are taken while facing the largest left to right surface of the saw.

Height is measured from the farthest point in the 6 o'clock position to the farthest point in the 12 o'clock position. Width is measured from the left most point to the right most point of the tool. Depth is measured from the flat surface to the furthest point from the flat surface.

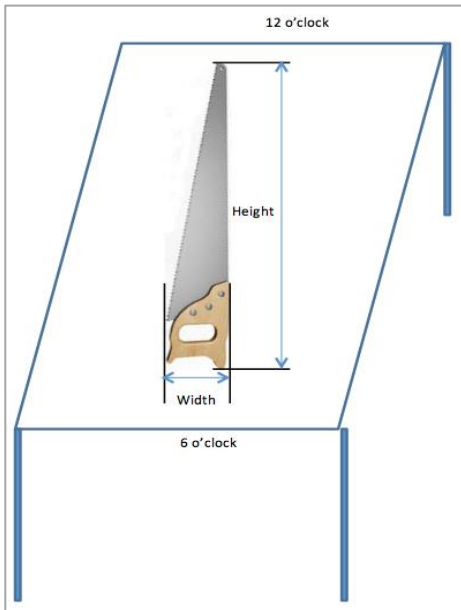


Figure 4.5: examples of hand saws

4.5 Pipes

Measurements of unpackaged pipe are as described below. The open end is the Height and Width. For round pipe, the Height and Width are equal, for pipe that is not round, width defines the largest left to right dimension while facing the Default Front. The Depth dimension for the pipe is the dimension most commonly referred to as the length of the pipe. Loose pipe bundled together as a single GTIN will be measured in the manner shown.

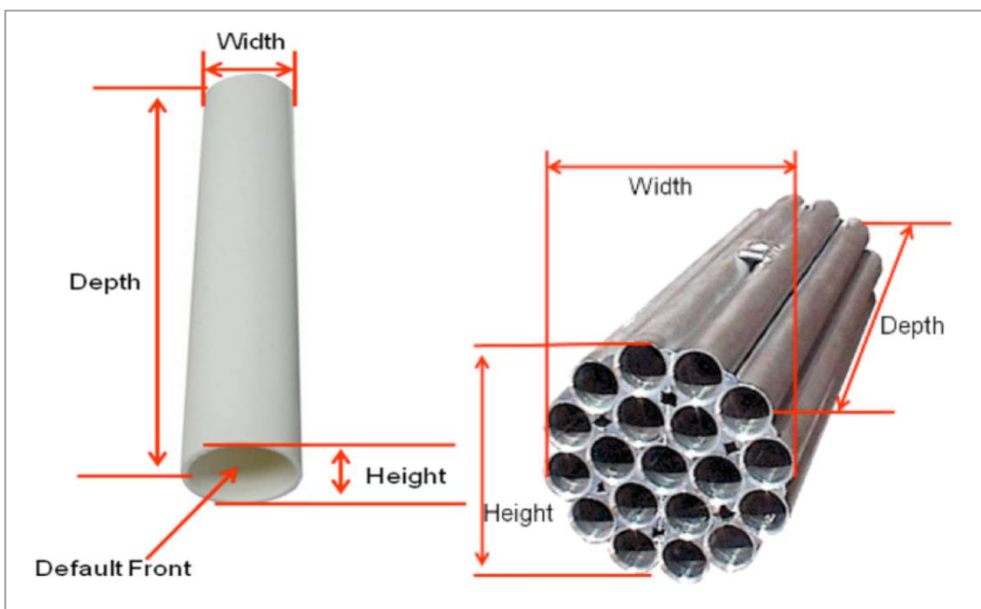


Figure 4.6: examples of pipes

4.6 Coiled Tubing

The Default Front of loose, unpackaged coiled tubing is identified as the diameter. Height and Width are the diameter of the coil; Depth is from the Default Front to the rear most point while sitting on a flat surface.

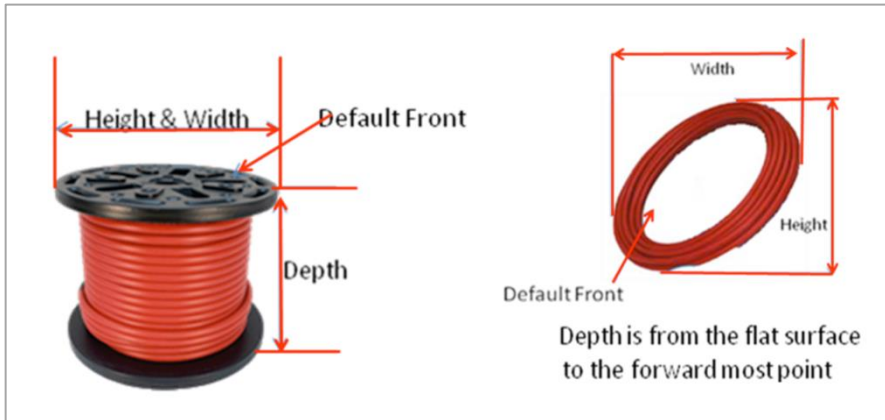


Figure 4.7: examples of coiled tubing

4.7 Pipe and Tube Fittings, Manifolds Miscellaneous Parts

While sitting on a flat surface such as a table with at least one opening side facing 3 o'clock. The surface facing you is the Default Front. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height.

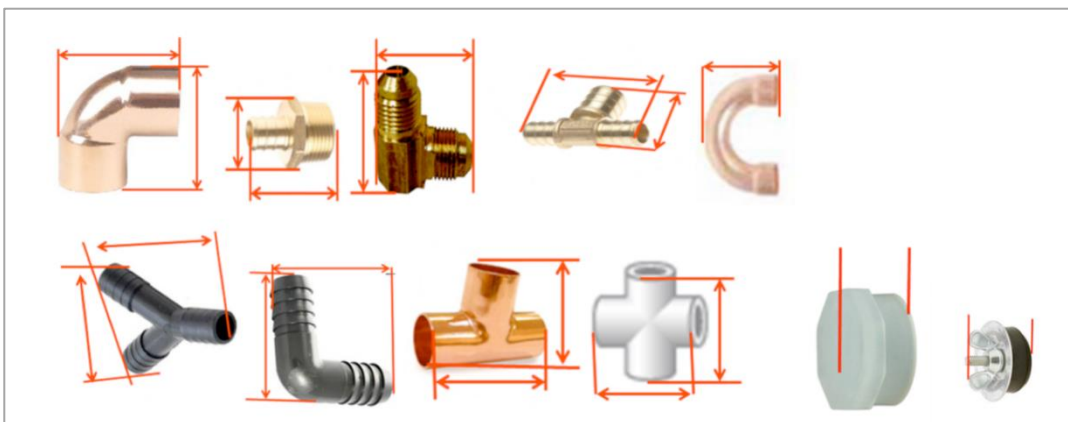


Figure 4.8: examples of pipe and tube fittings, manifolds miscellaneous parts

4.8 Drainage- Traps, Drains, Wyes

These are positioned with the inlet, or one of the inlets in the 3 O'clock position. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: Longest= Depth, Next longest= Width, shortest = Height.



Figure 4.9: examples of drainage- traps, drains, wyes

4.9 Unpackaged Valves

While sitting on a flat surface such as a table with at least one opening side facing 3 o'clock. The surface facing you is the Default Front. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height. If there is a handle it will be in the as shipped orientation.

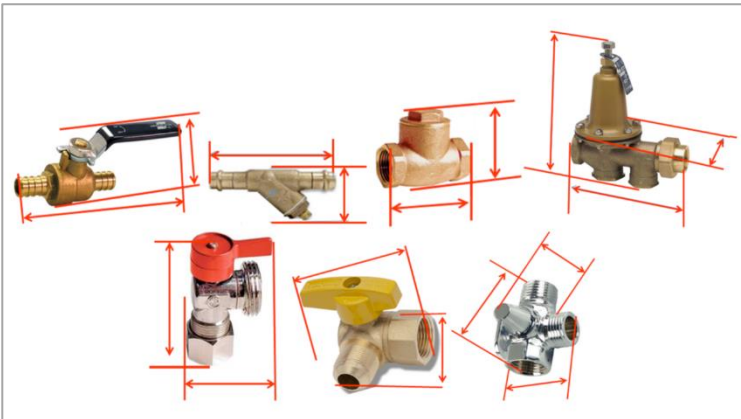


Figure 4.10: examples of unpackaged valves

4.10 Loose Pipe Clamps and Hangers

The Default Front is the surface facing you looking down on the clamp, laying on a flat surface, with the screw oriented to the 3 o'clock position. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height.

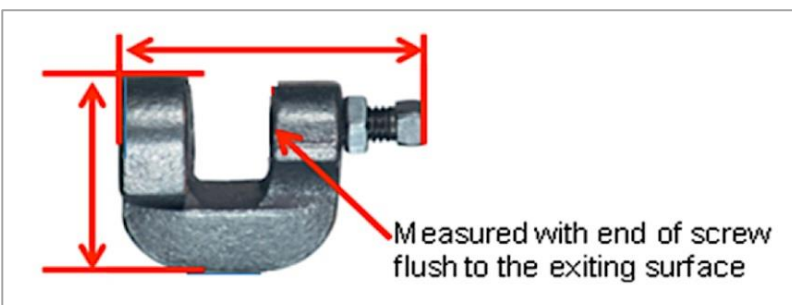


Figure 4.11: examples of loose pipe clamps and hangers

4.11 Loose Pipe Hangers

Pipe hangers with screws or other fasteners are measured placed on a flat surface such as a table with one of the fasteners pointing to the 3 o'clock position. Hangers with open end ("non-clamping") are positioned with open end at 3 o'clock position. The Default Front is the surface facing you looking down on it. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height.

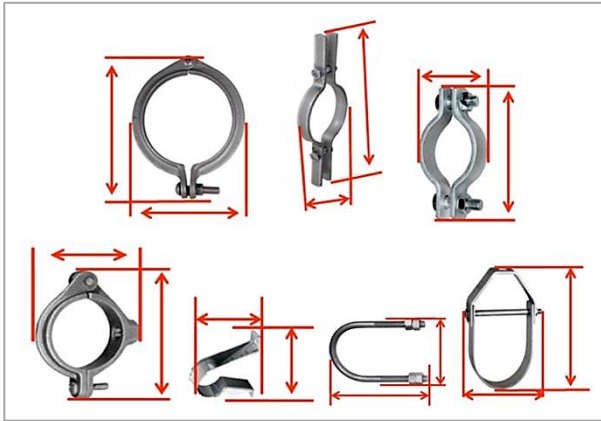


Figure 4.12: examples of loose pipe hangers

4.12 Manifolds

Manifolds are positioned with a branch opening in the 3 o'clock position. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height.

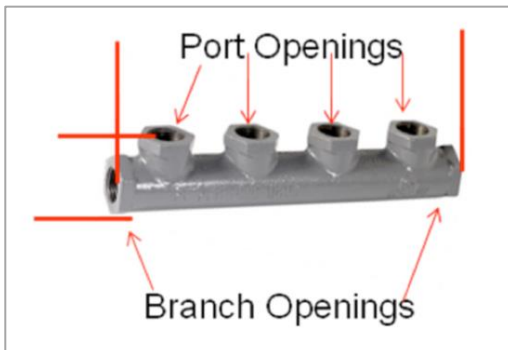


Figure 4.13: examples of manifolds

4.13 Air Gaps, Hammer Arrestors

While sitting on a flat surface such as a table with at least one opening side facing 3 o'clock. The surface facing you is the Default Front. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height.

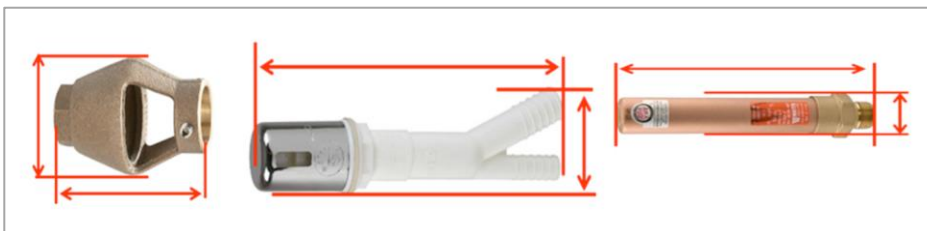


Figure 4.14: examples of air gaps, hammer arrestors

4.14 Connectors and Supply Lines

Connectors and supply lines are positioned with an opening in the 3 o'clock position. Measurements are taken left to right, 12 o'clock position to the 6 o'clock position and from the table surface to the outer most point of the Default Front. Measurements are: longest= Depth, Next longest= Width, shortest = Height.

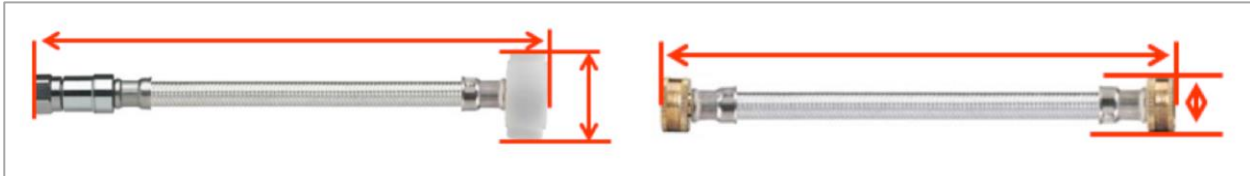


Figure 4.15: examples of connectors and supply lines

5 Permitted tolerances

Trade items with the same GS1 trade item code show some inherent variation in terms of dimension and gross weight. This may be the result of:

- Irregularities during manufacture.
- The way they are processed.
- The environment (such as the level of humidity).
- Other factors.

International package measurement rules state that the variations may not exceed the tolerances shown in the tables below.

Note: Because variable measure items may vary to such an extent as they exceed the allowable tolerances for weight, the gross weight tolerances in these tables do not apply to variable weight trade items.

Tolerances for consumer trade items and non-consumer trade items are defined as allowable variations between the measured (actual) gross weights and dimensions of a trade item, and the gross weights and dimensions stated in GS1 DAS (synchronized).

The approved tolerances for the various packages identified in the tables below are accepted by retailers and regarded as feasible by manufacturers.

5.1 Tolerances for consumer trade items

The following table provides a summary of standard tolerances for consumer trade items:

Type of packaging	Description	Examples	Dimension	Tolerance (+/-)
Every type of packaging except those listed below			Dimensions Weight	7 mm n/a
Small, rigid trade items with one or more dimensions less than or equal to 64 mm, and weighing up to 0.9 kg.	Cans or glass containers, full carton or cardboard boxes, rigid plastic, carded products, clamshells. NOTE: excludes flexible packaging	Nails, screws, bolts, fittings, glue, (small) bicycle parts.	Dimensions Weight	4 mm for each dimension equal or less than 64 mm 7 mm for each dimension greater than 64 mm n/a
Soft-paper products in flexible plastic packaging	Flexible plastic packaging with soft-paper products	Vacuum cleaner bags, paper filters, wallpaper	Dimensions Weight	20 mm n/a

Type of packaging	Description	Examples	Dimension	Tolerance (+/-)
Flexible outer packaging (tight or loose) around a product	Flexible packaging: 1. Shaped, filled and sealed without seams 2. Upright bags 3. Packaging where the size or shape is determined by the contents 4. Bags with seams and flat bases	Seat cushions, foil, paint rollers, laminate, insulation materials, sockets, wires/cables, shower curtain rings	Dimensions Weight	20 mm n/a
Large flexible units	Large flexible packaging with a nominal net weight of more than 6.8 kg	Gravel, masonry sand, cement, plaster	Dimensions Weight	32 mm 4.0 %
Lumber	Products generally associated with construction	Timber, frames, posts and pillars	Height/width/depth Weight	6% with max. 50 mm n/a
Panel shaped products	Sheets, unpackaged, intended for covering large surfaces, without taking into account position of markings.	Plasterboard, triplex, planks and panelling.	Height/width/depth Weight	40 mm n/a
Mats		Bathmat, toilet mat, bidet mat and carpets	Height/width/depth Weight	40 mm n/a

Table 5.1: tolerances for consumer units

5.2 Tolerances for (carton) packed consumer units

A packed consumer unit is defined as a consumer unit of which all packaging materials has to be stripped before the product could be used for its purpose.

The tolerances for the packed consumer units have proved not to be suitable in practice. The new tolerances relate solely to a specific range of dimensions and weights.

The following applies:

- For each dimension of **less or equal than 160 mm**, a fixed tolerance of **7 mm** is applies.
- For each dimension **larger than 160 mm**, a tolerance of **4% applies**.

Example:

A manufacturer produces cases with GTIN 10012345678905, with the following dimensions and gross weight:

- **Height:** 127 mm.
- **Width:** 89 mm.
- **Depth:** 190 mm.

This means:

- Depth is greater than 160 mm, so apply the standard tolerance.
- Tolerance of depth = 4% x 190 mm = 8 mm.

- Width is less than 160 mm, so apply the new tolerance.
 - Tolerance of width = 7 mm.
- Height is less than 160 mm, so apply the new tolerance.
 - Tolerance of height = 7 mm.

5.3 Tolerances for consumer units on pallets in store

The following table provides a summary of standard tolerances for consumer trade items on a pallet:

Type of exterior packaging	Dimension	Tolerance (+/-)
Tiling, firewood, charcoal, soil and cement	Height/width/depth Weight	6% with max. 50 mm n/a

Table 5.2: tolerances for consumer units on pallets in store

5.4 Very small consumer units

For non-flexible consumer trade items with one or more dimensions equal to or less than 64 mm, apply the revised tolerances below. The standard tolerances listed in the table 5.1 may be impractical or potentially unattainable when measuring data accuracy. For other dimension(s) that are greater than 64 mm you apply the standard tolerances.

The following applies:

- For each dimension equal or less than 64 mm apply a revised tolerance of 4 mm.

Example:

A manufacturer produces consumer trade items with GTIN 08712345123451 and the following dimensions:

- **Depth/length:** 20 mm.
- **Width:** 190 mm.
- **Height:** 20 mm.

This means:

- Depth/ length is less than 64 mm, so apply revised tolerance.
 - Depth/length tolerance = 4 mm.
- Width is larger than 64 mm, so apply standard tolerance.
 - Width tolerance = 7 mm.
- Height is less than 64 mm, so apply revised tolerance.
 - Height tolerance = 4 mm.

6 Appendix

A.1 Special package measurement rules

The list below, which is not intended specifically for the do-it-yourself sector, contains exceptional trade items that do not have an obvious default front. If the trade item is included in this list, you can find the specific measuring method in the '[GDSN Package Measurement Rules](#)'.




Trade item	Chapter in international package measurement rules
Drying/cooling rack	4.8.8.10
Baseball caps	4.8.2.1
Cutlery containers / baking trays / chopping boards / racks	4.8.8.7
Trees and plants	4.9.2
Decorative curtain packs	4.8.5.2
Elliptical balls	4.8.9.2
Buckets	5.6
Bicycle	4.8.9.9
Gloves	4.8.2.6
Hanging basket / saucepan rack	4.8.8.2
Canoe, boat, other vessel	4.8.9.16
Ready-made ornaments	4.9.3.4
Unpackaged products on a roll	4.9.3.6
Unpackaged stair parts	4.9.3.5
Panel shaped products This includes products mainly associated with construction. Only consumer units are supplied. Panel shaped products: sheets, unpackaged, intended for covering large surfaces, without taking into account position of markings. Typical examples of this sort of product are plasterboard, triplex, planks and panelling. Measurement method: height is the shortest dimension, depth the longest and width the next longest. Height is the thickness of 1 panel.	4.9.3.1
Pots and pans	4.8.8.3
Plain (flat) stair parts	4.9.3.5.1
Rings	4.8.6.2.1
Footwear (unpackaged)	4.8.3.7
Shoebox	4.8.3.1
Decorative cushions	4.8.4.5
Socks	4.8.2.4




Trade item	Chapter in international package measurement rules
<p>Timber, frames, posts and pillars This includes products generally associated with construction. Only consumer units are supplied.</p> <p>Timber, frames, posts and pillars 2a Timber (beams, planks, slats), which can be made to measure, without taking into account the (position of) markings. Examples are unpackaged windowsills, wood panels.</p> <p>2b Onlays in the form of skirting boards and strips, without taking into account (position of) markings. Strips include all kinds of finishing strips, such as steel profiles, aluminium profiles, plastic profiles and wood profiles.</p> <p>2c Posts (thin posts), without taking into account (position of) markings</p> <p>2d Posts (thick posts), without taking into account (position of) markings</p> <p>Measurement method: height is the shortest dimension, depth the longest and width the next longest.</p>	4.9.3.2
Carpets	4.8.4.4
Spiral staircase parts	4.9.3.5.2
Soft paper products (toilet paper, kitchen roll) with a vertical roll as the core	4.10







A.2 Examples






The package measurement rules in relation to packaging have been explained in the previous chapters. The list below contains examples of many common types of packaging, including how they should be measured in accordance with the international package measurement rules, unless stated otherwise.






Note! These examples are only intended to determine which measurement rule you can use for your packaging. To determine the packaging type, please refer to: '*Richtlijn voor het kiezen van de juiste code voor verpakkingstypes*'.





Packaging (code)	Image	Description	How to measure?	Features
Container (CT)		A non-specific term for an open or re-closable container used mostly for perishable foods (e.g. eggs, or fruit).	See 2.1	This package is covered by the basic rule for consumer trade items.
Can (CNG)		A metallic and generally cylindrical container of unspecified size which can be used for items of consumer and institutional sizes.	See 3.3 if cylindrical. See 2.1 otherwise	This package is covered by the basic rule for consumer trade items.
Blister pack (BPG)		A type of packaging in which the item is secured between a preformed (usually transparent plastic) dome or "bubble" and a paperboard surface or "carrier." Attachment may be by stapling, heat sealing, gluing, or other means. In other instances, the blister folds over the product in clam-shell fashion to form an enclosing container. Blisters are most usually thermoformed from polyvinyl chloride; however, almost any thermoplastic can be thermoformed into a blister.	See 3.2 if there is a peg hole. See 2.1 otherwise.	If the product has a peg hole, you should measure it according to the rules for hanging, rigid products. If the product has no peg hole, the basic rule for consumer trade items applies.



Packaging (code)	Image	Description	How to measure?	Features
Box (BX)		A non-specific term used to refer to a rigid, three-dimensional container with closed faces, which completely enclose its contents and may be made out of any material. Even though some boxes might be reused or become resealed they could also be disposable depending on the product hierarchy.	See 2.1	This package is covered by the basic rule for consumer trade items.
Bucket (BJ)		A container, usually cylindrical, can be equipped with a lid and a handle. (e.g., a pail made of metal, plastic, or other appropriate material).	See Appendix A.1. Note: this package measurement rule also applies to consumer trade items.	This product is covered by a separate rule, which is the same for both consumer and non-consumer trade items. If present, handles must be placed downwards, resting against the bucket. Note that handles should be included in the measurements.
Bottle (BO)		A container having a round neck of relatively smaller diameter than the body and an opening capable of holding a closure for retention of the contents. Specifically, a narrow-necked container as compared with a jar or wide-mouth container. The cross section of the bottle may be round, oval, square, oblong, or a combination of these. Bottles generally are made of glass or plastics, but can also be earthenware or metal. Bottle may be disposable, recyclable, returnable, or reusable.	See 3.3 if cylindrical. See 2.1 otherwise.	This package is covered by the basic rule for consumer trade items.

Packaging (code)	Image	Description	How to measure?	Features
Cartridge (CQ)		A container holding an item or substance, designed for insertion into a mechanism. Examples: Ink. Beverage Syrup.	See 2.1	This package is covered by the basic rule for consumer trade items.
Sleeve (SY)		A non-rigid container usually made of paper, cardboard or plastic, that is open-ended and is slid over the contents for protection or presentation.	See 3.1 if flexible package. See 2.1 otherwise	One of the rules for flexible packages applies, depending on the contents.
Card (CM)		A flat package to which the product is hung or attached for display.	See 3.2 if provide with a peg hole. See 2.1 otherwise	If the product has a peg hole, you should measure it according to the rules for hanging, rigid products. If there is no peg hole, the basic rule for consumer trade items applies.
Shrink-wrapped packaging (SW)		In packaging, a plastic film around an item or group of items which is heated causing the film to shrink, securing the unit integrity. The use of shrunken film to tightly wrap a package or a unit load in order to bind, protect and immobilize it for further handling or shipping.	In the case of a consumer trade item, see 2.1	If the product is a consumer trade item, the basic rule for consumer trade items applies. If the product is a non-consumer trade item, the basic rule for non-consumer trade items applies.
Multi-pack (MPG)		A bundle of products held together for ease of carriage by the consumer. A multipack is always a consumer unit.	See 2.1	Multi-packs are covered by the basic rule for consumer trade items.
Non-packed (NE)		The item is provided without packaging.	See 2.1	Non-packed products are covered by the basic rule for consumer trade items.

Packaging (code)	Image	Description	How to measure?	Features
Non-packed (NEP) – Dispenser		A non-specified inner package with a mechanism to spread the content and sold without packaging material.	See Appendix A.3.	The dispenser has no clear front.
Non-packed (NE) – Mats		Intended to be used in the bathroom and includes bathmat, toilet mat, bidet mat and carpets.	See 3.2 if peg hole See 2.1 otherwise	
Non-packed (NE) – Schroeven-bos		Unpacked bundle of screws, hold together by elastic wrap, tie wrap or a string.	See Appendix A.3.	The bundle of screws has no clear front.
Non-packed (NE) – Timber, Panels and Strips		These kind of products includes: <ul style="list-style-type: none"> ■ Panels, unpacked, intended to cover den big shapes ■ Timber (beams, planks, slats) ■ Strips ■ Posts 	See Appendix A.1	These kind of products have no clear front. Marks are not relevant.
Non-packed (NE) – Casters		An undriven, single, double, or compound wheel that is designed to be mounted to the bottom of a larger object (the "vehicle") so as to enable that object to be easily moved.	See Appendix A.3.	The caster has no clear front.

Packaging (code)	Image	Description	How to measure?	Features
Reel (RL)		A spool on which thread, wire, film, etc, is wound. Any device on which a material may be wound. Usually has flanged ends and is used for shipping or processing purposes.	See 2.1	This package is covered by the basic rule for consumer trade items.
Roll (RO)		A flexible, cylindrical package with straight sides and circular ends of the same size. The ends are not provided with flanges (as with a reel). A roll can consist of one or more layers of packaging (as with rusk).	See 3.3	This package is covered by the basic rule for consumer trade items.
Aerosol (AE)		A gas-tight, pressure-resistant container with a valve and propellant. When the valve is opened, propellant forces the product from the container in a fine or coarse spray pattern or stream. (e.g., a spray can dispensing paint, furniture polish, etc, under pressure). It does not include atomizers, because atomizers do not rely on a pressurised container to propel product from the container.	See 3.3 if cylindrical products See 2.1 otherwise	This package is covered by the basic rule for consumer trade items.
Pouch (PO)		A preformed, flexible container, generally enclosed with a gusset seal at the bottom of the pack can be shaped/arranged to allow the pack to stand on shelf.	See 3.1.5 pouches	The packaging is flexible to relatively hard, and has a flat base (without seams). The product can stand stably on its flat base. There are no gusset seams at the bottom of the package. There is a narrowing of the depth at the top of the product.
Tube (TU)		A cylindrical container sealed on one end that could be closed with a cap or dispenser on the other end.	See 2.1	The package is no longer cylindrical on the seam side. It is covered by the basic rule for consumer trade items.

Packaging (code)	Image	Description	How to measure?	Features
Packaged, no specification (PUG)		The product packaging is Packaging of the product (or products) is currently not on the list. Use this code when no suitable options are available and only while a Change Request is approved for the proper packaging type.	In the case of a consumer trade item, see 2.1	If the product is a consumer trade item, the basic rule for consumer trade items applies.
Bag, with 'loose' contents (BG)		A preformed, flexible container, generally enclosed on all but one side, which forms an opening that may or may not be sealed after filling.	See 3.1.1, Flexible packages with 'loose' contents	The contents of the package have no particular shape and can be moved around 'loosely' inside the package. There are no gusset seams.
Bag, with 'solid' contents (BG)		A preformed, flexible container, generally enclosed on all but one side, which forms an opening that may or may not be sealed after filling.	See 3.1.2, Flexible packages with 'solid' contents	The contents of the package have no particular shape and can be moved around 'solid' inside the package. There are no gusset seams.
Bag, with gusset seams (BG)		A preformed, flexible container, generally enclosed on all but one side, which forms an opening that may or may not be sealed after filling.	See 3.1.3, Flexible packages with triangular gusset seams	The package has gussets. There is a narrowing of the depth at the top of the product. The seams on the bottom can be folded to make a stable base.
Bag, with block bottom (BG)		A preformed, flexible container, generally enclosed on all but one side, which forms an opening that may or may not be sealed after filling.	See 3.1.6, Flexible packages with block bottom	The package has gussets. The gusset seams are folded in, on both the top and bottom.

Packaging (code)	Image	Description	How to measure?	Features
Bag, heavier than 6.8 kg (BG)		A preformed, flexible container, generally enclosed on all but one side, which forms an opening that may or may not be sealed after filling.	See 3.1.4, Large flexible packages	The product is packed in a flexible package and weighs more than 6.8 kg. The contents of the package have no particular shape and can be moved around 'loosely' inside the package. There are no gusset seams.
Envelope (EN)		A predominantly flat container of flexible material having only two faces, and joined at three edges to form an enclosure. The non-joined edge provides a filling opening, which may later be closed by a gummed or adhesive flap, heat seal, tie string, metal clasp, or other methods.	See 3.1.1, flexible products with 'loose' content	Note that the mouthpiece or valve should be included in the measurements.

A.3 Products without a clear front

After working through the flow chart, you have concluded that the article has no clear front. In this case you identify the front to measure from. Identify the largest and tallest surface and begin measuring from here.

- **Height:** the total distance between the top and the bottom.
- **Width:** the total distance from left to right.
- **Depth:** the distance between the front and back.

Below you will find a number of examples of articles without a clear front and how these should be measured.

Dispenser

Step 1: is the article a consumer unit?

→ Yes, go to step 2

Step 2: is the article listed as an exception?

→ No, go to step 3

Step 3: Is the article packaged?

→ No, go to step 5

Step 4: Is it a common type of packaging?

→ n.a.

Step 5: Does the article have a clear front?

→ No, go to step 6

Step 6: Does the article have a 'logical' front?

→ No, go to step 7

Step 7: Is the article in its 'natural state'?

→ Yes, go to step 8

Step 8: Take the largest, tallest surface as the front. Turn the dispenser head to the left or right side and measure from here. See the example below.



Casters

Step 1: is the article a consumer unit?

→ Yes, go to step 2

Step 2: is the article listed as an exception?

→ No, go to step 3

Step 3: Is the article packaged?

→ No, go to step 5

Step 4: *Is it a common type of packaging?*

→ *N.a.*

Step 5: Does the article have a clear front?

→ No, go to step 6

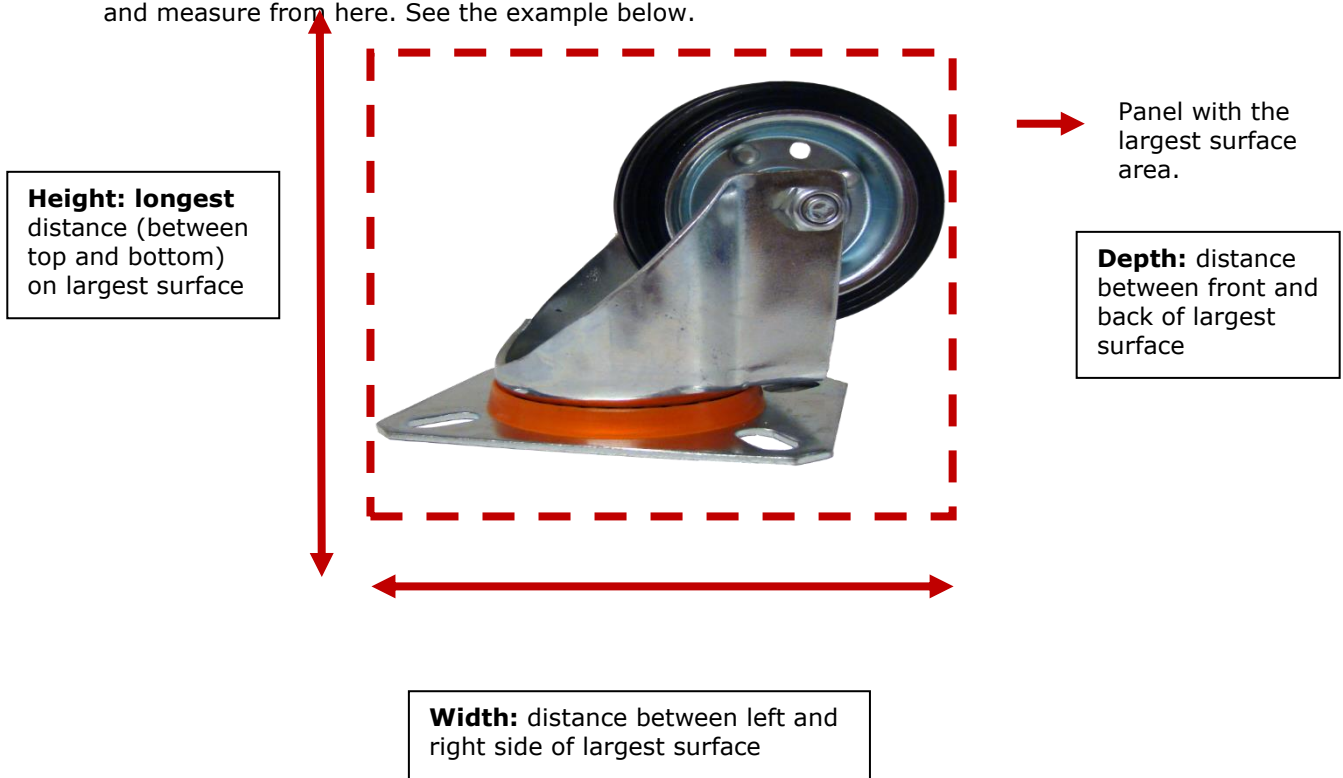
Step 6: Does the article have a 'logical' front?

→ No, go to step 7

Step 7: Is the article in its 'natural state'?

→ Yes, go to step 8

Step 8: Take the largest, tallest surface as the front and measure from here. See the example below.



Bundle of screws

Step 1: is the article a consumer unit?

→ Yes, go to step 2

Step 2: is the article listed as an exception?

→ No, go to step 3

Step 3: Is the article packaged?

→ No, go to step 5

Step 4: *Is it a common type of packaging?*

→ *N.a.*

Step 5: Does the article have a clear front?

→ No, go to step 6

Step 6: Does the article have a 'logical' front?

→ No, go to step 7

Step 7: Is the article in its 'natural state'?

→ Yes, go to step 8

Step 8: Take the largest, tallest surface as the front and measure from there. See the example below.

In order to measure this product, we must use the panel with the largest surface area and then take the longest side of that panel as the height.

