

Bar Code Symbol Placement Guidelines

Importance of Correctly Locating Bar Code Symbols

Productivity and scanning accuracy improve considerably when the bar code symbol position is predictable. Consistency in the location of the bar code symbol achieves maximum productivity in any scanning environment.

Information in this section is provided as a guide for correctly locating the bar code symbol when developing packaging for new products and should be adopted when changing the graphics of existing products.

This guideline replaces previous recommendations, but it is not intended that manufacturers should scrap packaging printed according to previous guidelines. When packaging is redesigned, these recommendations should be observed.

Basic Principles

There are four main categories within this section:

- location of the bar code symbol on retail trade items
- location of the bar code symbol on non-retail trade items (outer cases)
- pallet label location
- attribute data bar code symbol location

🔗 Follow the guidelines in this section for the type of trade item you are placing the bar code symbol on.

General Guidelines for Retail Trade Items

The bar code symbol, including the human readable digits underneath, must be visible and clear.

If the trade item carrying the bar code symbol is very small and will accommodate only a truncated bar code symbol, as a last resort, it may be necessary to place the human readable digits either “rolled over” the top or bottom, or to the left of the bar code symbol. This ensures that the height of the bars is extended as much as the packaging allows.

Never allow two or more bar code symbols with different GTINs to be visible on a package.

This is particularly relevant to multipacks, especially those with clear wrapping. Multipacks must carry a separate unique number, with all other bar code symbols obscured.

Scanning is most successful when the bar code symbol is printed on a reasonably smooth surface. Avoid printing around corners or on folds, creases, seams, and any other uneven packaging area.

Whenever possible, do not place the bar code symbol on the lid or neck of a trade item. This helps ensure that contents do not spill or leak when the trade item is passed over the scanner.

If the trade item is random wrapped, it is acceptable to print two or more of the same bar code symbols on the wrapping. This ensures that one complete bar code symbol is always visible.

When determining which orientation to print the bar code symbol, take into account the print process involved. For example, when using a flexographic process, it is essential to print the bar code symbol in the print direction because of the ink 'spread' associated with this printing process. When using a lithography process, spread is usually insignificant. The printer should be consulted in all cases.

On cylindrical products, where the printing direction allows, it is generally desirable that the bars are horizontal (ladder style) when the trade item is stood on its natural base. This caters for the problems associated with curves on trade items such as cans and bottles. The ladder orientation is imperative for curved surfaces with a small radius. See "Cylindrical surfaces".

For general retail trade items, the positioning of the bar code symbol is in the lower right quadrant of the back opposite the promotional panel, respecting the proper light margin areas around the bar code symbol and the edge rule.

The alternative is in the lower right quadrant of another side of the container.

EDGE RULE: The bar code symbol may not be closer than 8 mm or further than 102 mm from any edge of the package / container.

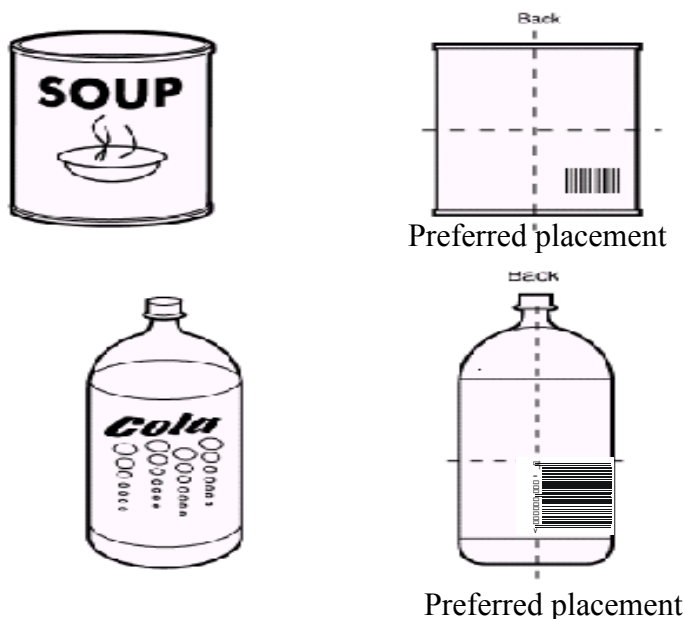
Identifying the Back of the Trade Item

The front of the trade item is the primary "promotional area" which typically displays the product name and the company's logo. The back of the trade item is directly opposite the front and is the preferred location of the bar code symbol for most trade items.

Cylindrical Surfaces

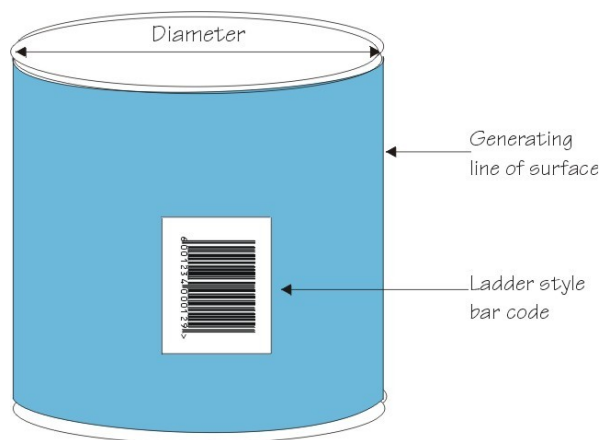
On cylindrical and curved surfaces the preferred bar code symbol location is towards the lower right quadrant of the back of the trade item. Determine what part of the trade item is the back from the graphic design.

When deciding which way to orientate the bar code symbol, always give first consideration to the print direction.



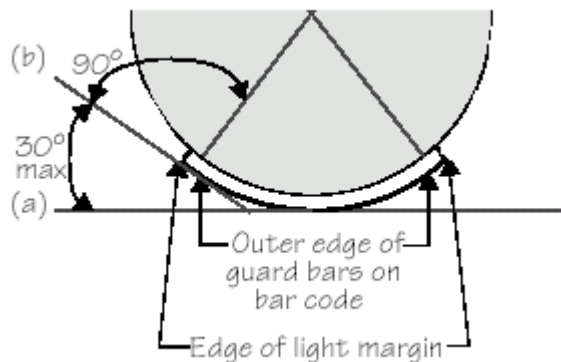
Example of Bar code symbol Location on Cans and Cylinders

When printing on a curved surface, whenever possible, place the bars perpendicular (at right angles) to the 'generating line' of the trade item's surface. The human readable characters should be read from the top down. This orientation is called ladder style.



Curved trade item bar code symbol orientation

The ladder style orientation is mandatory for a curve with a small diameter. A small diameter is when the angle between the line touching the centre of the curved bar code symbol (a) and the line touching the outer edge of the guard bars (b) exceeds 30 degrees, as shown below.



Minimum angles for a curved bar code symbol

To facilitate interpretation of this constraint the following table reflects the maximum magnification factors for different curve diameters and the minimum curve diameters for bar code symbols with different magnification factors.

A simple and quick method to ascertain whether or not a symbol may be oriented picket fence on a cylindrical container is to measure the width of the symbol from leftmost bar to rightmost bar. If this is less than the radius of the cylindrical container, the symbol may be oriented picket fence. If not, it must be oriented ladder fashion.

Curve diameter of container (cm)	Maximum magnification factor		Magnification factor	Minimum curve diameter of container (cm)	
	EAN-13 & UPC-A bar codes	EAN-8 bar code symbol		EAN-13 & UPC-A bar code symbols	EAN-8 bar code symbol
3 cm and under	*	*	0.80	4.8	3.4
3.5	*	0.83	0.90	5.4	3.8
4.0	*	0.95	1.00	6.0	4.2
4.5	*	1.07	1.10	6.6	4.7
5.0	0.83	1.18	1.20	7.2	5.1
5.5	0.92	1.30	1.30	7.8	5.5
6.0	1.00	1.42	1.40	8.4	5.9
6.5	1.08	1.54	1.50	9.0	6.4
7.0	1.17	1.66	1.60	9.6	6.8
7.5	1.25	1.78	1.70	10.2	7.2
8.0	1.34	1.90	1.80	10.8	7.6
8.5	1.42	2.00	1.90	11.4	8.0
9.0	1.50	2.00	2.00	12.0	8.5
9.5	1.59	2.00			
10.0	1.67	2.00			
10.5	1.75	2.00			
11.0	1.84	2.00			
11.5	1.92	2.00			
12.0 and over	2.00	2.00			

Magnification factors for different curve diameters

Note:* The magnification factor necessary for the 30° constraint to be respected is smaller than the acceptable standards permit (less than 0.8). Hence, the bar code symbol will have to be pivoted through an angle of 90° or be printed in another location.

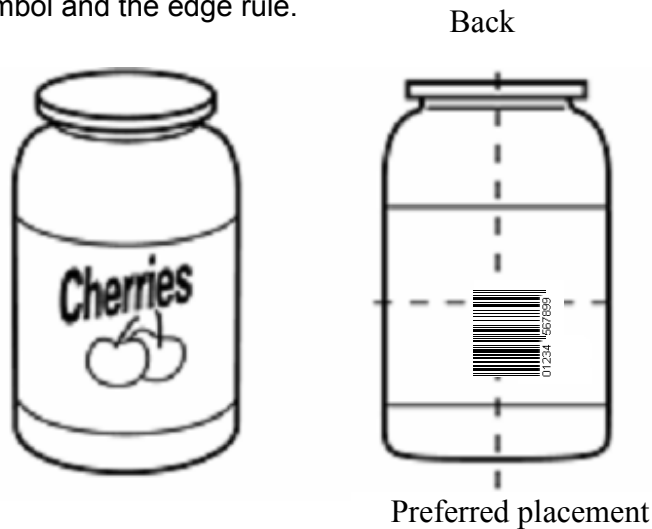
Specific Retail Trade Items

Bottles and Jars

Application of the bar code symbol to the neck of a bottle is not recommended. Bar code symbol location on the neck of the bottle necessitates additional handling at the point-of-sale and space limitations on this area of the bottle usually result in bar code symbol truncation.

Preferred Location

On the lower right quadrant of the back, near the edge, respecting the proper light margin (quiet zone) areas around the bar code symbol and the edge rule.



Example of Bar code symbol Location on Bottles and Jars

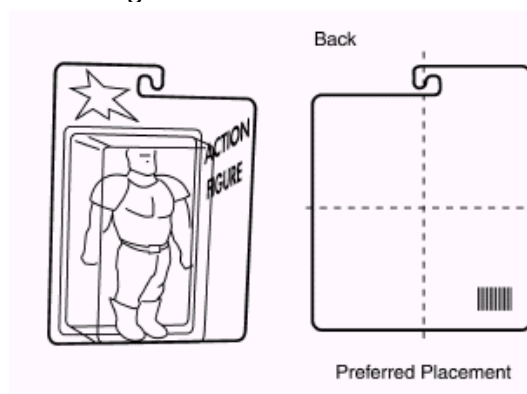
Blister Pack

Blister packs are pre-formed clear bubbles, or blisters, containing product and backed or topped with cardboard stock.

To ensure quality scanning the bar code symbol must be clear of the edges of the blister. Avoid placing the bar code symbol under the blister pack or placing the bar code symbol over any perforations on the back of the package.

Preferred Location

On the lower right quadrant of the back, near the edge, respecting the proper light margin (quiet zone) areas around the bar code symbol and the edge rule.



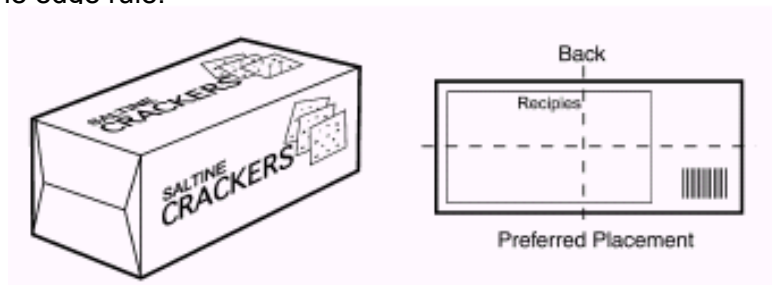
Example of Bar Code Symbol Location on Blister Pack

Cartons

This package type includes cuboid or cylindrical cardboard or plastic cartons, as well as rectangular sleeves (used for such products as light bulbs). These packages might contain anything from crackers or cereal to detergents.

Preferred Location

On the lower right quadrant of the back, near the edge, respecting the light margin (quiet zone) areas around the bar code symbol and the edge rule.



Example of Bar Code Symbol Location on Cartons

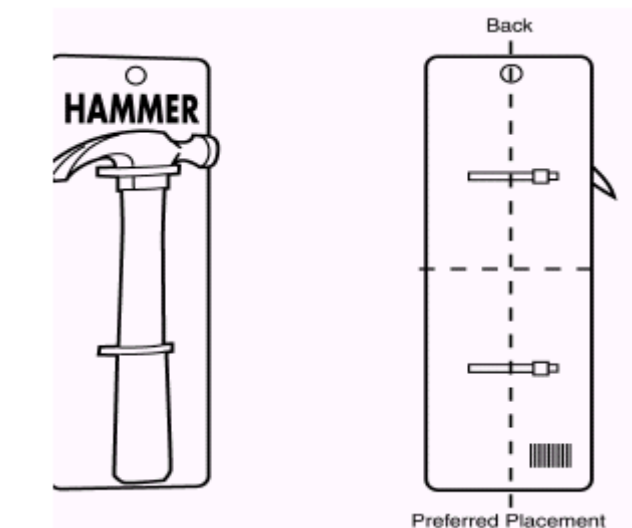
Carded Trade Items

Small, loose, or non-packaged trade items that are difficult to label are placed on cards that are marked with a bar code symbol. Examples include hammers, toys, and kitchen utensils.

When placing the bar code symbol on carded trade items, it is important to take into consideration the proximity of the bar code symbol to the product. Be sure to allow adequate space for the bar code symbol, avoiding any obstructions that might be caused by placing the bar code symbol too close to the product. In addition, do not place the bar code symbol over any perforations or other obstructions on the package.

Preferred Location

On the lower right quadrant of the back, near the edge (although observing the edge rule) and respecting the proper light margin (quiet zone) areas around the bar code symbol.



Example of Bar Code Symbol Location on Carded Trade Items

Egg Cartons

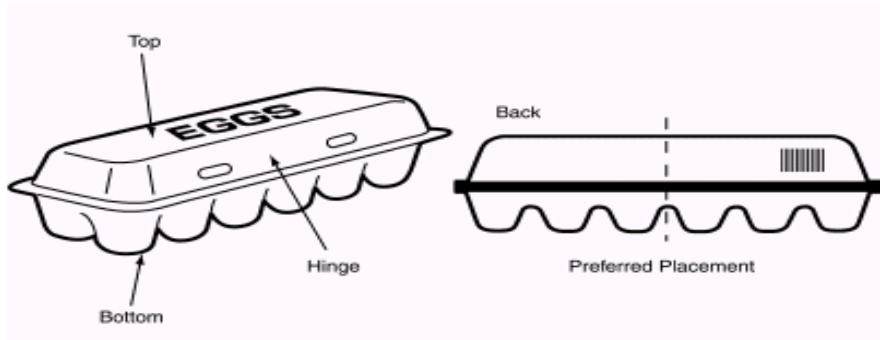
Moulded pulp, foam, or plastic egg cartons come in sizes according to the count of the eggs contained.

If printed directly on to the pulp, the recommended bar code symbol location is on the side of the lid portion of the egg carton that opens and closes to cover the eggs. The uneven surface of the moulded bottom of an egg carton prevents bar code symbol location in this area.

If printed on to a label, the label is placed on the top of the carton.

Preferred Location

Near the edge, on the right half of the back, above the hinge on the lid, respecting the proper light margin (quiet zone) areas around the bar code symbol and the edge rule.



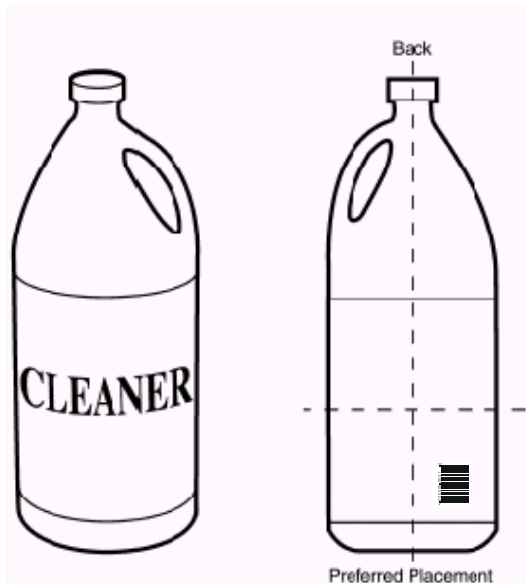
Example of Bar code symbol Location on Egg Cartons

Jugs

Jugs are glass or plastic containers with built-in handle(s) that aid in pouring of contents.

Preferred Location

On the lower right quadrant of the back, near the edge (observing the edge rule) and respecting the proper light margin (quiet zone) areas around the bar code symbol.



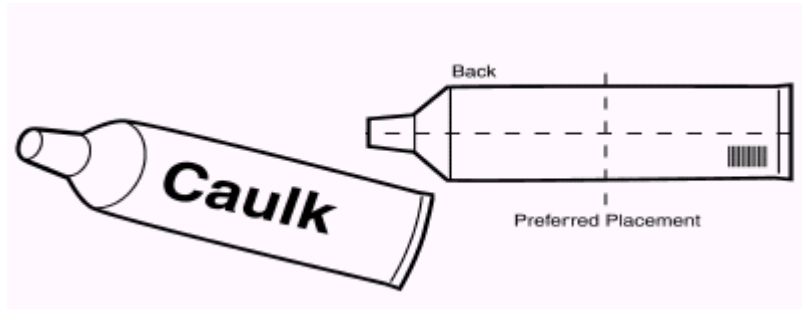
Example of Bar Code Symbol Location on Jugs

Tubes

Tubes are cylindrical shaped trade items or containers that are either sealed at both ends, such as sausage or refrigerated dough; or that are sealed at one end and have a cap or valve on the other end, such as tooth paste.

Preferred Location

On the lower right quadrant of the back, near the edge (observing the edge rule), respecting the proper light margin (quiet zone) areas around the bar code symbol.



Example of Bar Code Symbol Location on Tubes

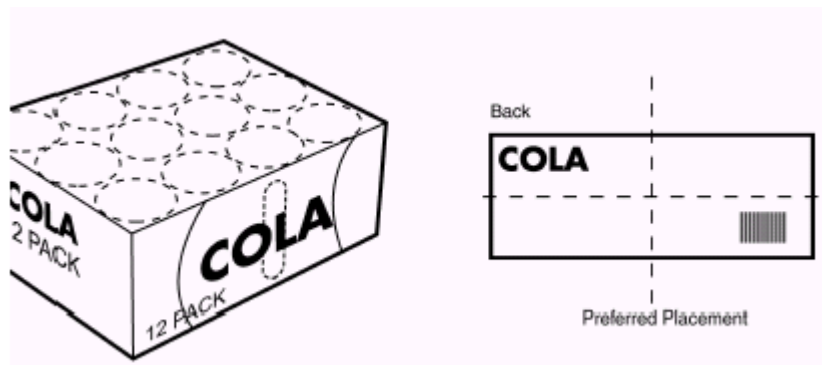
Multipack - Cartons

Single trade items are sometimes packaged together as one unit or trade item. This is referred to as a multipack. Typical multipacks contain bottles, cans, jars and tubs.

As a general rule, a bar code symbol should be placed on every consumer package traded through the supply chain. Consequently, trade items sold in multipacks as well as those sold individually must carry a unique bar code symbol for each consumer package variation or aggregation. To avoid confusion at the point-of-sale, the multipack bar code symbol should be the only visible bar code symbol when both the multipack and individual trade items are bar coded. The wrapping of the multipack should act as a screen to obscure the bar code symbols on the individual trade items.

Preferred Location

On the lower right quadrant of the back, near the edge (though observing the edge rule) and respecting the proper light margin (quiet zone) areas around the bar code symbol.



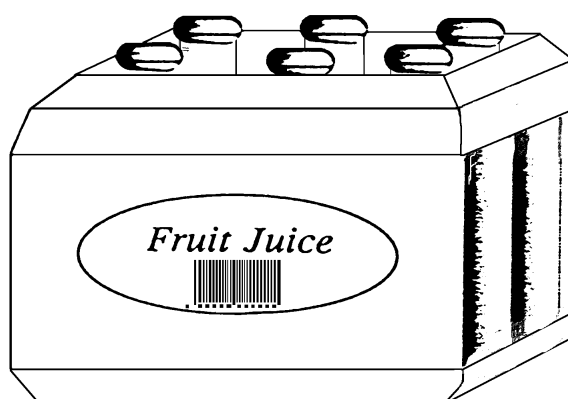
Example of Bar Code Symbol Location on Multipacks

Multipack - Shrink-wraps

Typical shrink-wrapped trade items are small cereal boxes and drinks. Package shrink-wrap can create three distinct problems:

- It is possible for the individual bar code symbol on a single unit inside the multipack to be scanned instead of the multipack bar code symbol.
- Over-wrapping with such materials as cellophane causes diffraction of the light beam of the scanner and can reduce contrast which may cause scanning inefficiencies.
- The seam created by the sealing process may obscure part of the bar code.

To determine proper bar code symbol location for over-wrapped packaging, follow the guidelines specific to the applicable package type/shape.



Example of Bar Code Symbol Location on Over-Wrapped Trade Item

Random (Unregistered) Wrap

Some wrappers, like those used on sandpaper, have a repeating design and are neither cut nor placed on the product so that a particular part of the design always appears in the same location. This is referred to as random or unregistered wrapping. As the wrapper is not registered, it is unlikely that the bar code symbol will appear on one face of the package when the wrapper is placed on the product.

Experience has shown that the presence of more than one bar code symbol on a package can have a detrimental effect on scanning productivity and, more importantly, can lead to a double read. For this reason, the use of registered packaging is preferred. If random wrap must be used, the minimum requirement is to print the bar code symbol with sufficient frequency that a full bar code symbol will appear on one package face but still respecting the gap rule.

Double reads are more likely when the gaps between the bar code symbols are larger. Repeating bar code symbols should never be more than 150mm apart.

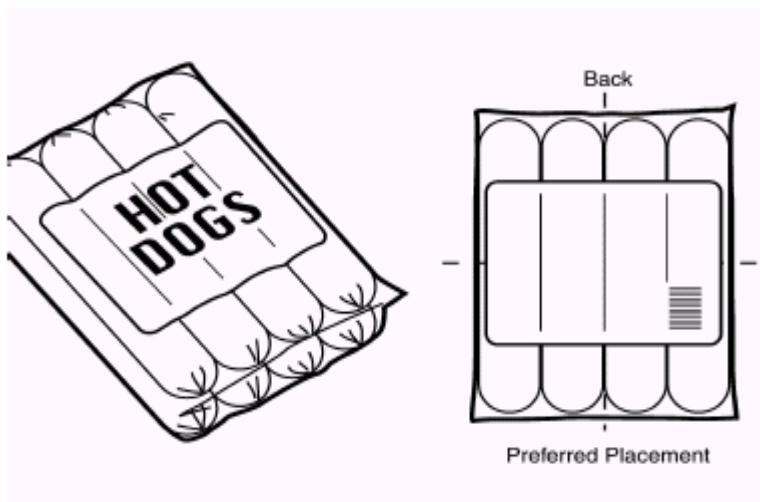
An option is to use a larger magnification of the symbol instead of repeating it.



Example of Bar Code Symbol Location on Random-Wrapped Trade Item

Shrink Film/Vacuum-formed Packages

The bar code symbol on an trade item packaged in shrink film or that is vacuum formed should be located on a flat surface and in an area free of creases, wrinkles, or other types of distortions. Refer to the “Example of Bar code symbol Location on Shrink Film/Vacuum-Formed trade item” in the example below. Due to the curvature of the hot dogs, the “Ladder” orientation was selected.



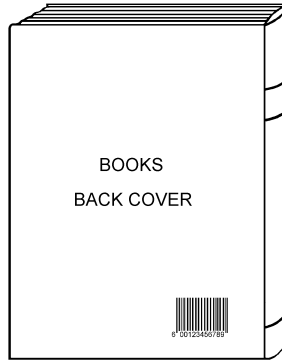
Example of Bar Code Symbol Location on Shrink Film/Vacuum-Formed Trade Item

Books

The preferred location for the bar code symbol on a book is:

- on the outside back cover on the lower right quadrant, near the spine, respecting the proper light margin areas around the bar code symbol. An additional bar code symbol (with the same GTIN) may appear on the inside cover for books which are subject to return.

Edge Rule - The bar code symbol cannot be closer than 8 mm or further than 102 mm from any edge of the package



Bar Code Symbol Location on Books

Magazines

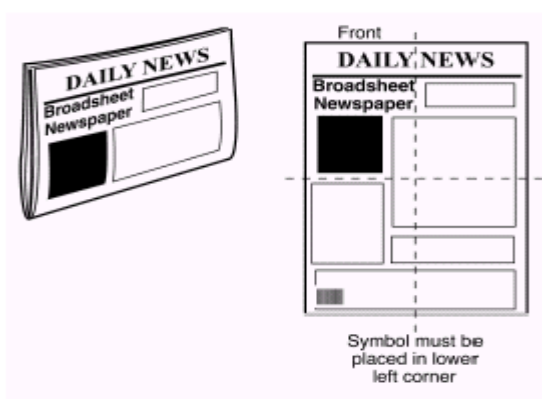
The preferred location for the bar code symbol on a magazine is:

- on the outside front cover (the front cover provides you with greater editorial freedom than the back cover) in the lower left quadrant, near the edge, respecting the proper light margin areas around the bar code symbol. This provides the most protection from damage caused by creases

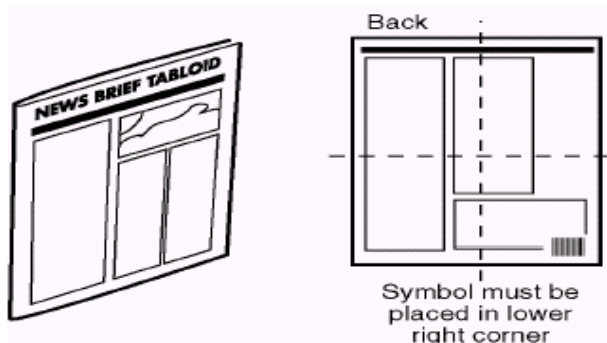
Edge Rule - The bar code symbol cannot be closer than 8 mm or further than 102 mm from any edge of the package

Newspapers

When displayed for sale, as shown on the left in the example below, place the bar code symbol on the lower left quadrant of the front, near the edge, respecting the proper light margins (quiet zone) areas around the bar code symbol. If an add-on bar code symbol is used, it must be located to the right of the regular bar code symbol and parallel to it.



When displayed for sale, as shown in the example below, place the bar code symbol on the lower right quadrant of the back, near the edge, respecting the proper light margin (quiet zone) areas around the bar code symbol. If an add-on bar code symbol is used, it must be located to the right of the regular bar code symbol and parallel to it.

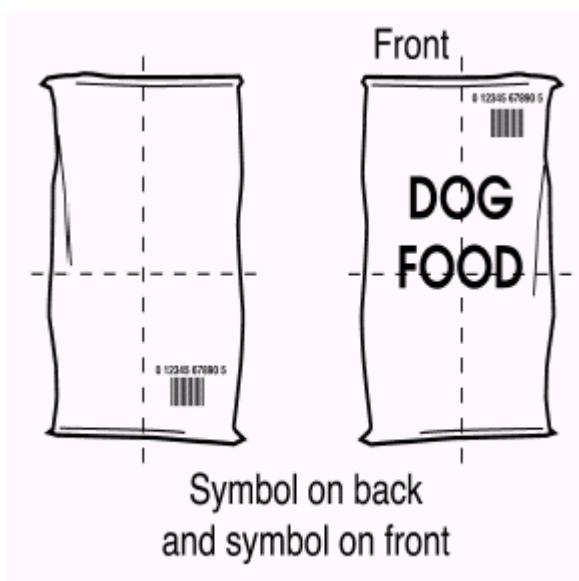


Bar Code Symbol Location on Books

Exceptions to the General Retail Location Guidelines

Large, Heavy, Bulky Trade Items – Bags and other packages

The preferred location is one bar code symbol at the front on the top of the upper right quadrant, near the edge, and the other on the back of the bag, centred in the lower right quadrant.



Example of Bar Code Symbol Location on “Large, Heavy, or Bulky” Bags

Bags

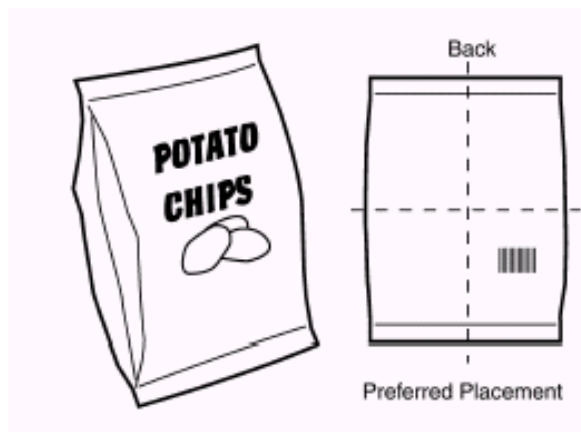
Bags are often called sacks or pouches. This category includes paper or plastic containers that are:

- Fold-sealed on both ends (i.e., flour and sugar)
- Fold-sealed on one end and pinched sealed at the other end (i.e., potato chips)
- Pinch-sealed at both ends (i.e., cough drops)
- Fold-sealed on one end and gathered at the other end (i.e., bread)

Some bags are sealed at both ends and carded for display, such as bags of sweets. These types of trade items are not considered a bag package type, but fall into the category of carded trade items.

Preferred Location

On the centre of the back, about one third up from the bottom and away from the edge, respecting the proper light margin (quiet zone) areas around the bar code symbol and the edge rule, being careful to take the seal (seam) into consideration.



Example of Bar Code Symbol Location on Bags

Apparel

Trade Items in Clear, Flexible Packaging

If the trade item inside the clear package has an attached label, the position of the label is the recommended bar code symbol location for that trade item.

Otherwise, the preferred locations are towards the lower right:

- back of the pack or
- front of the pack.

Swing Tags

Locate the bar code symbol towards the lower right of the swing tag, above any tear off strips or blank pricing area.

When the swing tag is a two-sided label, locate the bar code symbol on the side where other consumer information is printed, for example, size, style, and colour.

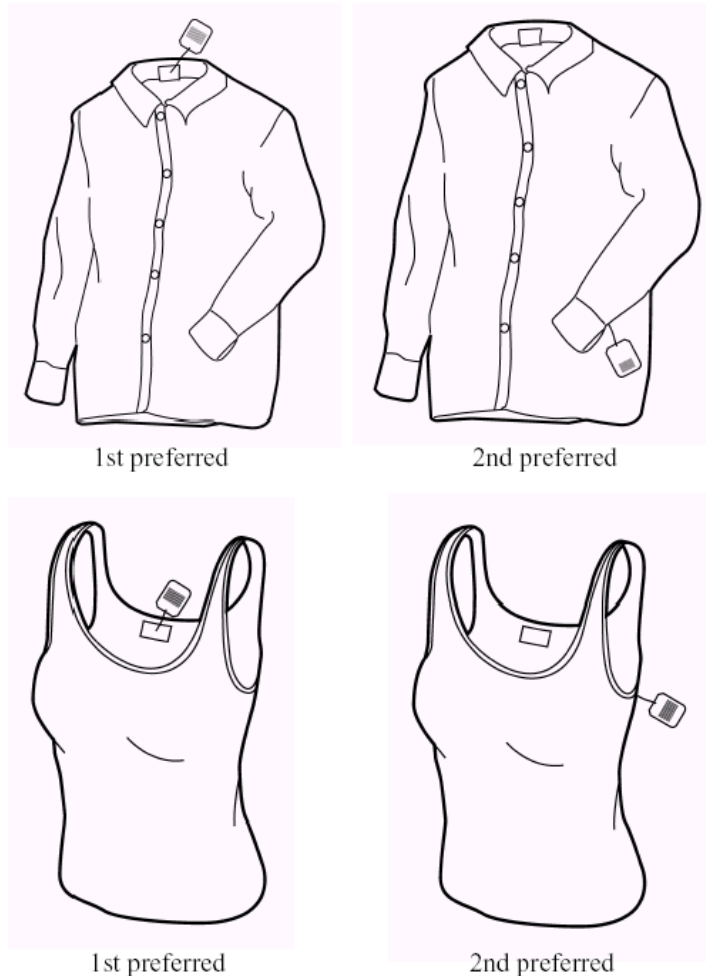
Attach the swing tag to the trade item so that an operator can turn it easily at the point of sale. To best achieve this, make the minimum length of the swing tag or any other form of attachment 7 cm.

Long sleeve and Sleeveless Garments

The first preferred location for the bar code symbol is on the swing tag attached to the name label in the centre back neck.

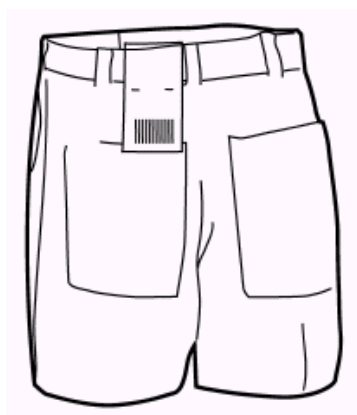
For sleeved garments, the second preferred location is on the end of the left sleeve, attached to the inner seam.

For sleeveless garments, the second preferred location is near the left armhole where the seams come together.



Waisted Garments

On waisted garments, attach the swing tag as close as possible to the left of the waist band or on the belt loops.



1st preferred



2nd preferred

Stick-on and Attached Labels

The preferred location for the bar code symbol is towards the lower right of the label. Avoid any stapling or stitching.

Products Carrying More than One Label

When a trade item carries both a swing tag and a stick on label, it is preferable to have the bar code symbol appear on the swing tag.

Hi-cone Packs

Hi-cones are plastic rings used to attach cans together. When using hi-cone packaging, it is not possible to obscure the bar code symbols on the individual trade items. Each can in the pack should carry an individual bar code symbol. Do not attempt to bar code the multipack separately.

Horticultural Trade Items

Firmly attach the label to the trade item, for example, using a lock-in rigid label. This is also preferable for security reasons.

For lock-in rigid labels, suitable positions for the bar code symbol (in decreasing order of preference) are on the:

- lower part of the front of the label or
- upper part of the back of the label.

The preferred location for the bar code symbol on pre-printed self adhesive labels for punnets is as high as possible on one of the narrow sides of the punnet. For all other trade items, the preferred location for the bar code symbol is towards the lower part of the pot, avoiding any areas of excessive moisture.

The preferred location for the bar code symbol on pre-printed pots or punnets is on the lower part of the punnet.

Trays for carrying punnets or tubs are a separate retail trade item. They must carry a separate bar code symbol.

For pictorial tie-on labels, suitable positions for the bar code symbol (in decreasing order of preference) are on the:

- removable perforated section or
- area left clear on the label for the addition of a bar code symbol

Very small Trade Items

If trade items are too small to permit the printing of a full height bar code symbol, as a last resort, print the bar code symbol at a reduced height. Maintain as much of the bar code symbol height as the package allows. Consider this option only after consultation with GS1 South Africa.

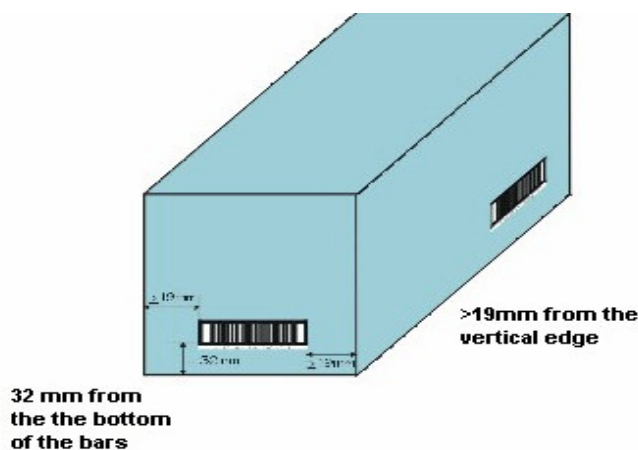
Non-retail Trade Items

Cartons (Outer cases)

For cartons, a minimum of two labels (or printed bar code symbols) should be fixed to adjacent vertical sides, a short side and the long side to the right (in warehouse applications this enables consistent turning to ensure a bar code symbol is visible.)

Ensure that:

- the lower edge of bars is 32 mm from the lower edge of the base of the carton
- no part of the bar code symbol (including light margins & bearer bars) is closer than 19mm to any vertical edge.



Bar Code Symbol Location on Cartons

If the trade item may be scanned in both a retail POS and warehousing environment, then the bar code symbol should be located according to the non-retail bar code symbol location guidelines.

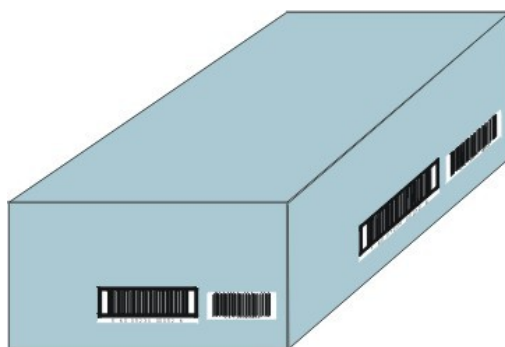
Positioning Human Readable Interpretation on Non-retail Items

The human readable digits of the bar code symbol are normally located beneath the bars. For shallow trade units, or other non-retail items where the full height of the bar code symbol cannot be accommodated, the digits may be placed to the left of the bar code symbol.

Attribute Data

The preferred location for attribute data is aligned with and to the right or left of the main bar code symbol. It should be as close as possible to the main bar code symbol whilst respecting the light margins & ensuring that it does not obscure the pre-existing bar code symbol. If data can be concatenated and one bar code symbol produced, this option should be pursued.

Bar code symbols containing data essential for complete item identification (trade measurements for example), should be aligned with and to the right of the bar code symbol containing the GTIN (the main bar code symbol).



Location of Attribute Data

Shallow Trays

If the height of the non-retail unit is less than the height of the bar code symbol in the magnification required, or if the construction of the unit is such that the full height bar code symbol cannot be accommodated, print the bar code symbol (in order of preference):

- at full height, with the top of the bars touching the top of the tray and the human readable digits to the left of the bar code symbol.
- truncated (as a last resort only), with the top of the bars touching the top of the tray and the human readable digits to the left of the bar code symbol.
- If placing a bar code symbol on the side of the package is not possible, due to insufficient package height, the bar code symbol may be placed on the top of the package. In this case, the bar code symbol should be placed with the bars perpendicular to the shortest side, no closer than 32 mm from any edge.

Film-wrapped Trade Items

If individual trade items in a film-wrapped (shrink-wrapped or stretch-wrapped) package all have bar code symbols, and the film-wrapped package also has a bar code symbol, the danger exists of a scanner reading the bar code symbols on the trade items within the non-retail package.

Every possible effort must be made to obscure the bar code symbols on the trade items inside the film-wrapped package. In lipped trays, place the retail trade item bar code symbols close to the base of the item, in ladder orientation. This allows tray sides to obscure whole bar code symbols, or sufficient of the bar code symbol to render it non-scannable.

If possible, place all retail trade items in the film-wrapped non-retail package with the bar code symbols facing inwards. Film-wrap that has obscuring patterns may also be used to hide the bar code symbols on the inside of the wrapper.

Obscuring Patterns

For more details on obscuring patterns, refer to the Alliance Partner Programme Printers Technical Information Sheet.

Pallets/Logistics Units

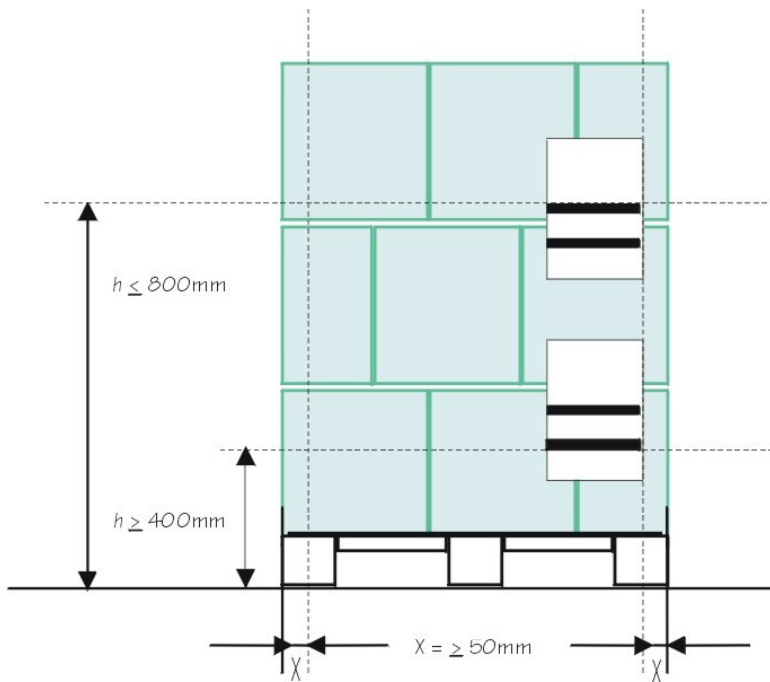
For Pallets less than 1 Metre in Height

For pallets less than 1 metre in height, bar code symbols should be placed as high as possible but not more than 800 mm from the base of the unit.

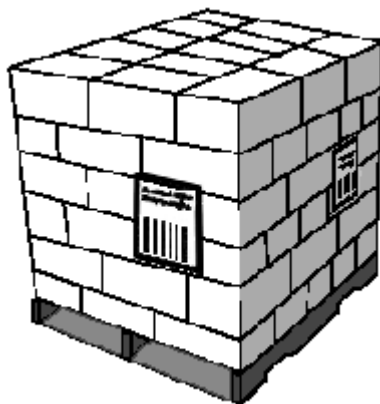
Units Greater than 1 Metre in Height

For pallets and other units greater than 1 metre in height, bar code symbols should be placed so that all the bar code symbols are at a height between 400 mm and 800 mm from the base of the unit. Including light margins, the bar code symbol should be no closer than 50 mm to the vertical edge.

For pallets/logistics units two labels should be fixed to adjacent vertical sides, a short side and the long side to the right.



Location of the EAN.UCC Logistics Label



Location of the EAN.UCC Logistics Label