The Construction Of A Folding Carton

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First, how do I determine what is the Length, Width and Height?

This is one of those questions that may be confusing depending on the very different shapes and sizes of cartons out in the world. The answer to this is further complicated by which panel you would call the "top" since some cartons don't open from above. You don't see toothpaste boxes sitting upright on the shelf, do you?

Here are some basic rules of thumb:

▶The hinged point where the top or bottom closure panel pivots is the length

▶Dust flaps are always on the width panels

▶The distance between openings is the height

All folding cartons and sleeves have a glue seam and the length and width dimensions are always perpendicular to that seam. Therefore, the height dimension is always parallel to the seam.

The axis of Entry/Exit is always aligned with the height
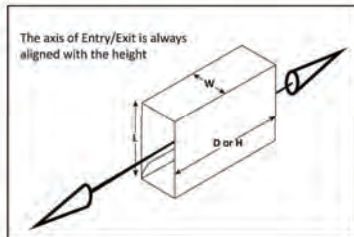
All folding cartons have at least one panel covering the end or ends, usually with a flap that tucks into the piece to keep the lid closed. The point where this top panel pivots is always the length dimension.
In the case of a sleeve, the height is always aligned with the axis of the open end or ends. This also applies to cartons and other packaging like trays too.

The length of a sleeve is generally the wider of the two panels.

Lid Pivot Point AKA "Length"
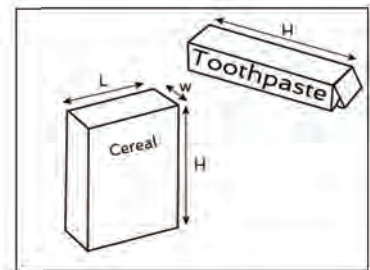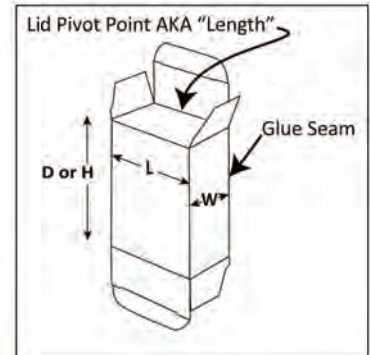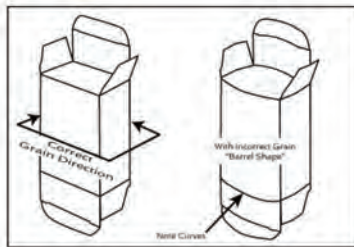
Grain Alignment

Most often the grain direction of a folding carton is aligned perpendicular to the glue seam. If grain alignment is incorrect, the carton can get "barrel shaped".
A simple rule of thumb is to think of the proper grain direction as if it was a belt around a waist, the belt being aligned with the grain.

Glue Seams

The glue seam is where half of the carton blank is folded and glued to the other half meeting at the glue tab. Most cartons are cut out in such a way to align them along the rear panel where they don't interfere with the artwork as much as they would in the front. When artwork has to cross through a glue seam it will often be slightly misaligned, especially with diagonal lines.

Glossary of terms

Blanks– The term for the flat, cut-out and creased piece before it is folded and glued.

Closure Panel– This is another term for the cover that is opened and closed.

Crease– This is an indentation pressed into the paperboard that does two things, first it forces the paper to fold exactly where you want it to and second, to keep the printing from cracking. Often the term score is used interchangeably with crease but either term is essentially the same thing

Dust Flap– These are the small flaps that the closure panels fold over. They are attached to the width panel.

Grain– When paper and paperboard is manufactured, the wood pulp aligns in one direction making the material stronger and stiffer in one way more so than the other. Folding cartons are cut out of sheets in a way that the grain makes them optimally strong and squared.

Paperboard– Thick, stiff wood-pulp based material, thicker than what would be considered just paper. Also known as boxboard.

Pye Lock– Also known as a Slit Lock. This is a clever closure panel locking mechanism. They are are two part system of short slits on the outer ends of the Tuck Flap that are engaged by a tiny bump on the Dust Flap to lock the covers down.

Score– See Crease.

Dust Flap, Tuck Flap, Closure Panel, Glue Seam

Pye Lock — Tuck Flap, Dust Flap

Tuck– These are the narrow panels that are attached to the top and/or bottom covers that tuck into the body to keep the covers closed. Usually rounded or tapered on the corners.
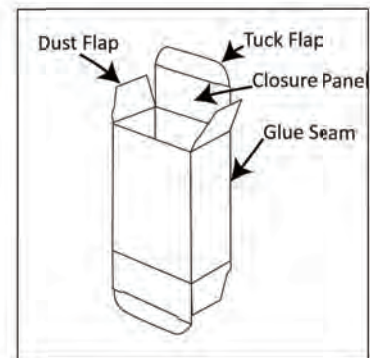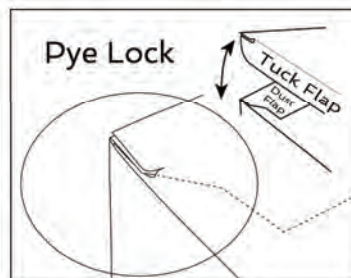
Airplane Style Straight Tuck (AST)

This style features closure panels on both the top and bottom that swing from the rear to tuck in the front. The Airplane Straight Tuck differs from the Standard Straight Tuck in that the top and bottom closure panels tuck from the rear to the front. This container can also be manufactured with friction fit or slit locks for a more secure closure. Straight tuck folding cartons allow products to be loaded on either side of the box, which can reduce manual assembly times. Straight Tuck cartons do tend to cost more than Reverse Tuck because of die tooling and limited nesting options on the press sheet. This folding carton style works best for a window option..

Pros to Straight Tuck End Box Styles

• More luxurious than the RTE because there are no white raw edges visible on the front of the box.

• Standard Straight Tuck Style cartons avoid any impedance between the tuck flap and any front window (see through window to the display of the product) you may choose to utilize. Tuck tabs are on panel three and fold front to back.

• Easy Assembly

• Compact Storing (stores flat) for excess packaging inventory.

• Relatively quick load your product in this packaging.

• Works well for lighter weight products

Cons to Straight Tuck End Box Styles

• More expensive, manufactures less boxes per paperboard sheet.

• Not good for heavy products.

Industries that most commonly use STE

Food, Health & Beauty, Cosmetics, Pharmaceutical, Electronics, Nutraceautical, Retail Products,
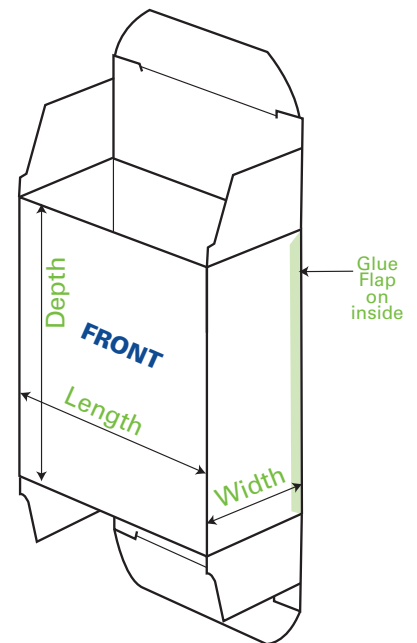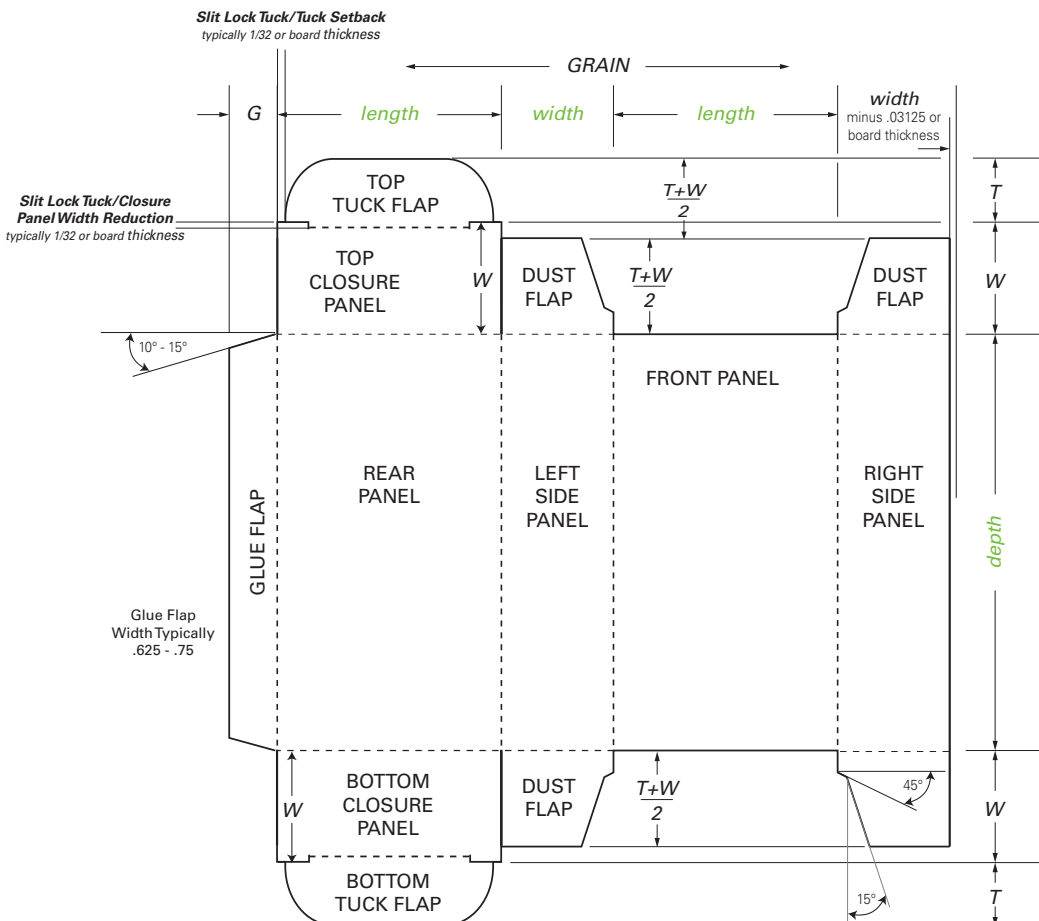
Size measured: L x W x D (Style shown is Airplane Style Straight Tuck)

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Auto Bottom Tuck Top (TTAB)

Also called Crash Lock or Inturn Auto Bottom. This profile is used to reduce assembly labor. The Auto Bottom Tuck Top has a glued bottom and is much more secure than Tuck Bottoms and Houghland Bottoms. Tucks may have either friction fit or slit locks for a more secure closure. Tucks can be on panel two (French Tuck) or panel four (Standard Tuck), depending on presentation preference. Gluing costs are higher and the profile does not nest as well as RTE and STE.
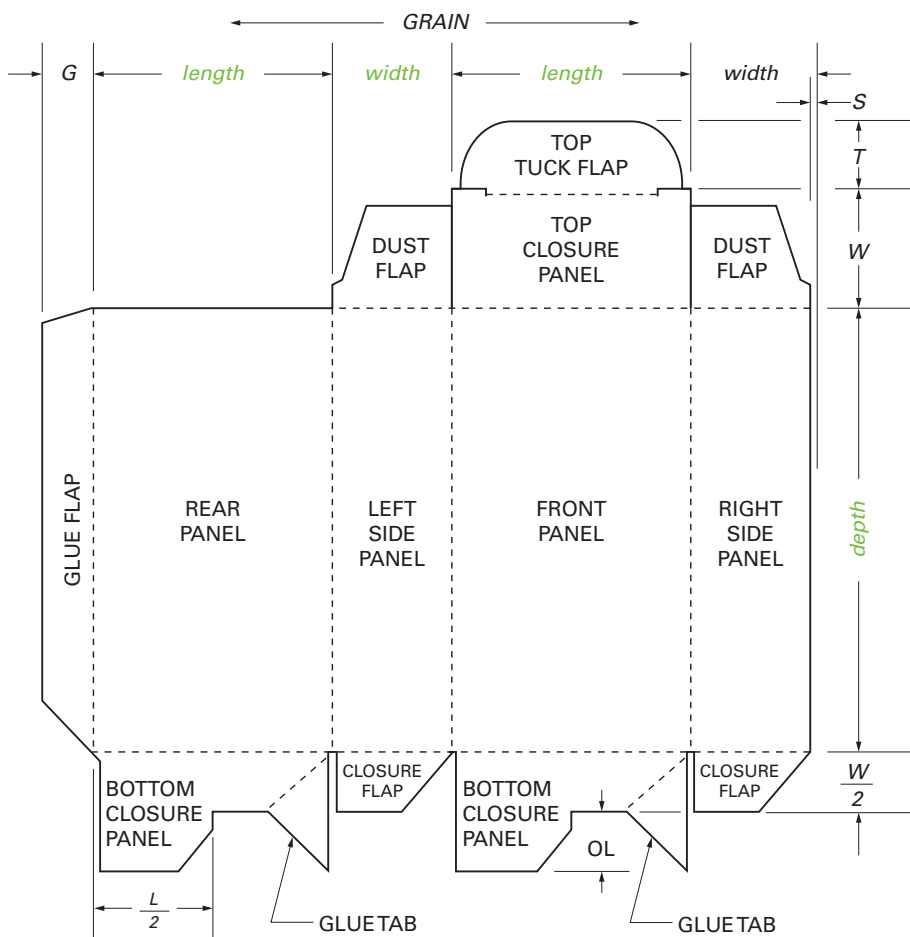
Pros to Standard Reverse Tuck

• *Works very well for heavier products bottom closure can handle more weight).*

• *Ultra fast assembly*

• *Super speedy loading*

• *Compact storage (stores flat) for excess packaging inventory*

• *Large volumes can off-set the extra expense of the Auto Bottom*

• *Sits well on retail shelves because the bottoms are nice and flat*

Cons to Standard Reverse Tuck

• *More expensive than a bottom tuck or snap-lock bottom, because bottoms have the extra step of gluing*

Industries that most commonly use SRT

Food, Health and Beauty, Cosmetics, Pharmaceutical, Toys

Size measured: L x W x D

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French Reverse Tuck (FRT)

Same as the Standard Reverse Tuck (SRT) except that the tucks are on panel two instead of panel four, depending on presentation preference. An economical choice, sometimes referred to as RNT (Reverse Notch Tucked), RTE nests better than STE (Straight Tuck End). Tucks may have either friction fit or slit locks for a more secure closure. Suited to either automatic or manual product loading, and are easier to open and close.

Pros to French Reverse Tuck

• Cost Effective, you can run more boxes at one time on the same sized paperboard as opposed to the Straight Tuck End, reducing waste and setup fees.

• Easy Assembly

• Compact Storing (stores flat) for excess packaging inventory.

• Relatively quick load your product in this packaging.

• Works well for lighter weight products

Cons to French Reverse Tuck

• Not good for heavy products..

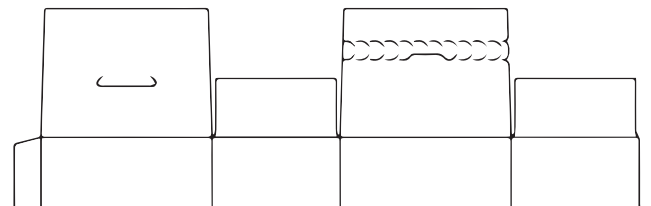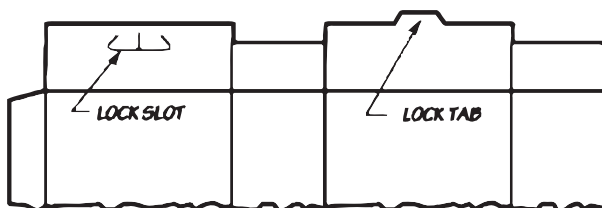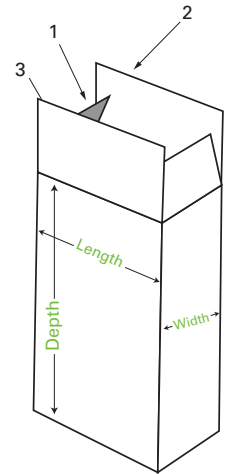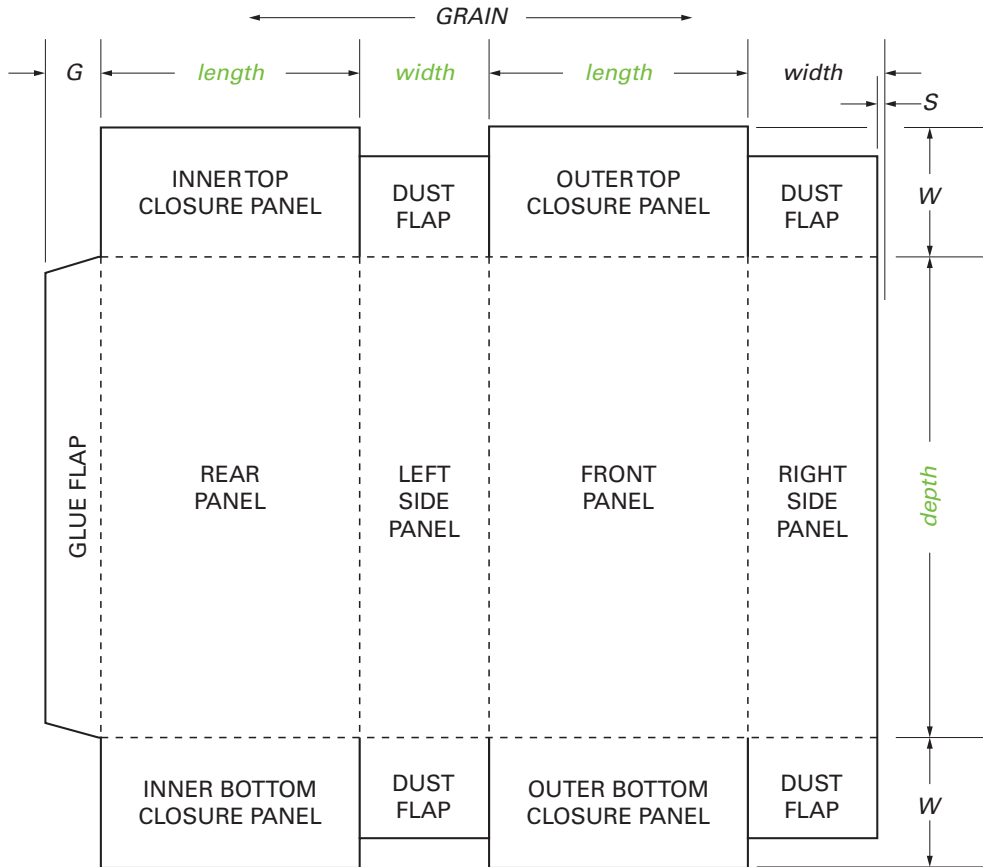## Industries that most commonly use SRT

Health and Beauty, Cosmetics, Pharmaceutical, Electronics, Nutraceautical

Size measured: L x W x D

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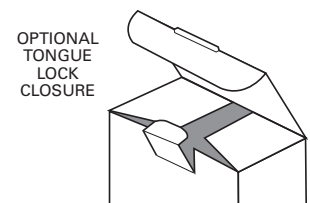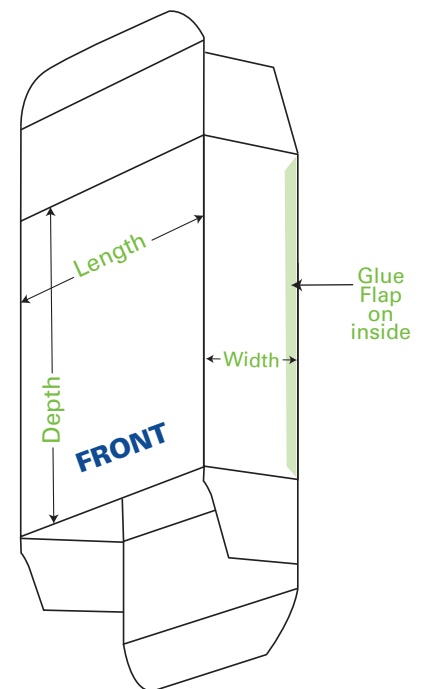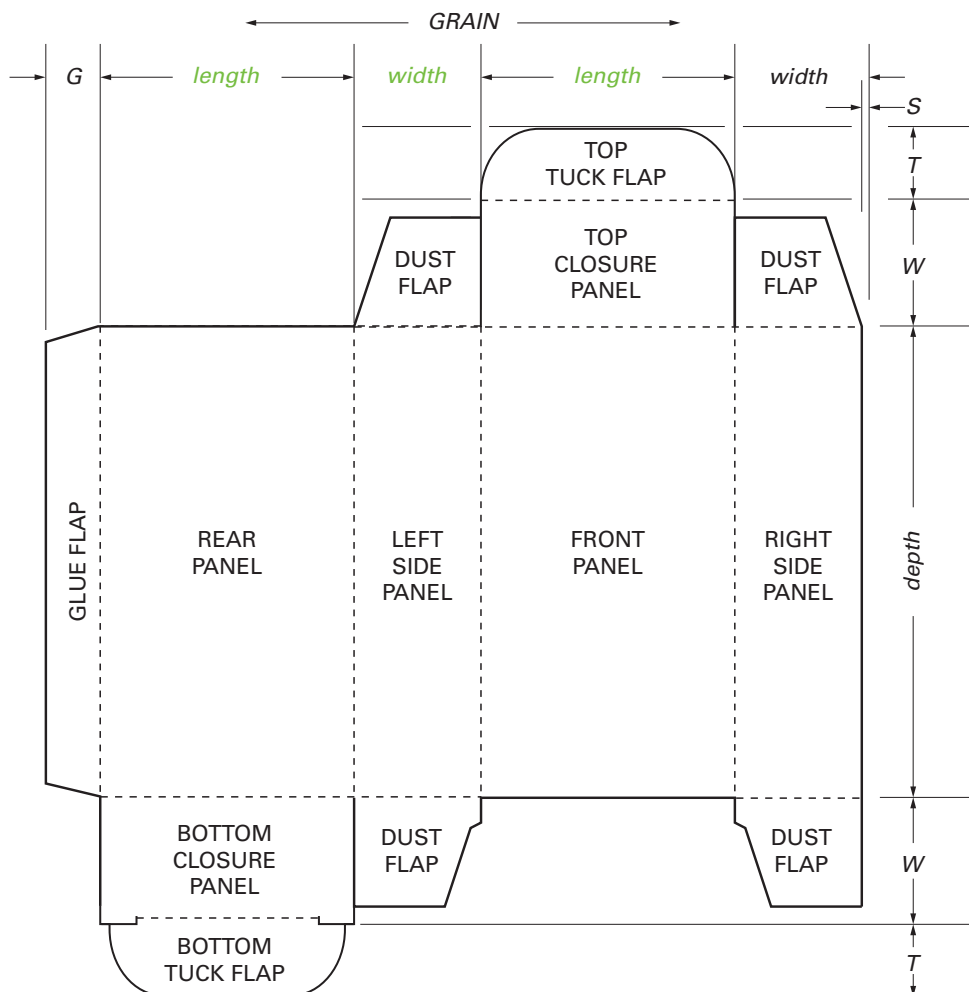
Full Overlap Seal End (FOSE)

This carton is generally assembled, filled and sealed on automatic, horizontal or vertical packaging equipment. This style is also beneficial for larger volume orders as it's not packed by hand. Additionally, each style seal end can feature a zipper-style tear strip on the top panel if chosen Full flap style cannot reclose once the end consumer opens it from the top panel. Partial flap style allows carton to be reclosed by the end consumer. (Ex. cereal boxes)

GRAIN

| G | length | width | length | width | S |

| INNER TOP CLOSURE PANEL | DUST FLAP | OUTER TOP CLOSURE PANEL | DUST FLAP | W |

GLUE FLAP

| REAR PANEL | LEFT SIDE PANEL | FRONT PANEL | RIGHT SIDE PANEL | depth |

| INNER BOTTOM CLOSURE PANEL | DUST FLAP | OUTER BOTTOM CLOSURE PANEL | DUST FLAP | W |

1 2 3

Length Depth Width

LOCK SLOT   LOCK TAB

Size measured: L x W x D

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Standard Reverse Tuck (SRT) or Reverse Tuck End (RTE)

An economical choice, sometimes referred to as RNT (Reverse Notch Tucked), RTE nests better than STE (Straight Tuck End). Tucks may have either friction fit or slit locks for a more secure closure. Tucks can be on panel two (French Tuck, FRT) or panel four (Standard Tuck), depending on presentation preference. Suited to either automatic or manual product loading, and are easier to open and close.

Pros to Standard Reverse Tuck

• Cost Effective, you can run more boxes at one time on the same sized paperboard as opposed to the Straight Tuck End, reducing waste and setup fees.

• Easy Assembly

• Compact Storing (stores flat) for excess packaging inventory.

• Relatively quick load your product in this packaging.

• Works well for lighter weight products

Cons to Standard Reverse Tuck

• Not good for heavy products.

Industries that most commonly use SRT

Food, Health & Beauty, Cosmetics, Pharmaceutical, Electronics, Nutraceautical, Retail Products
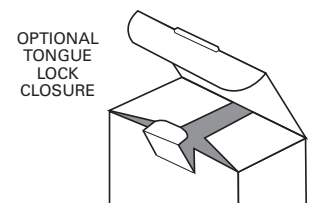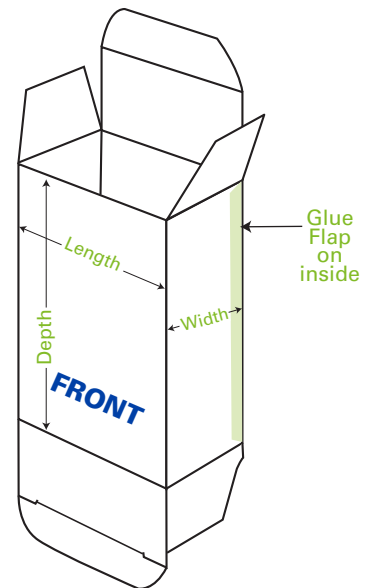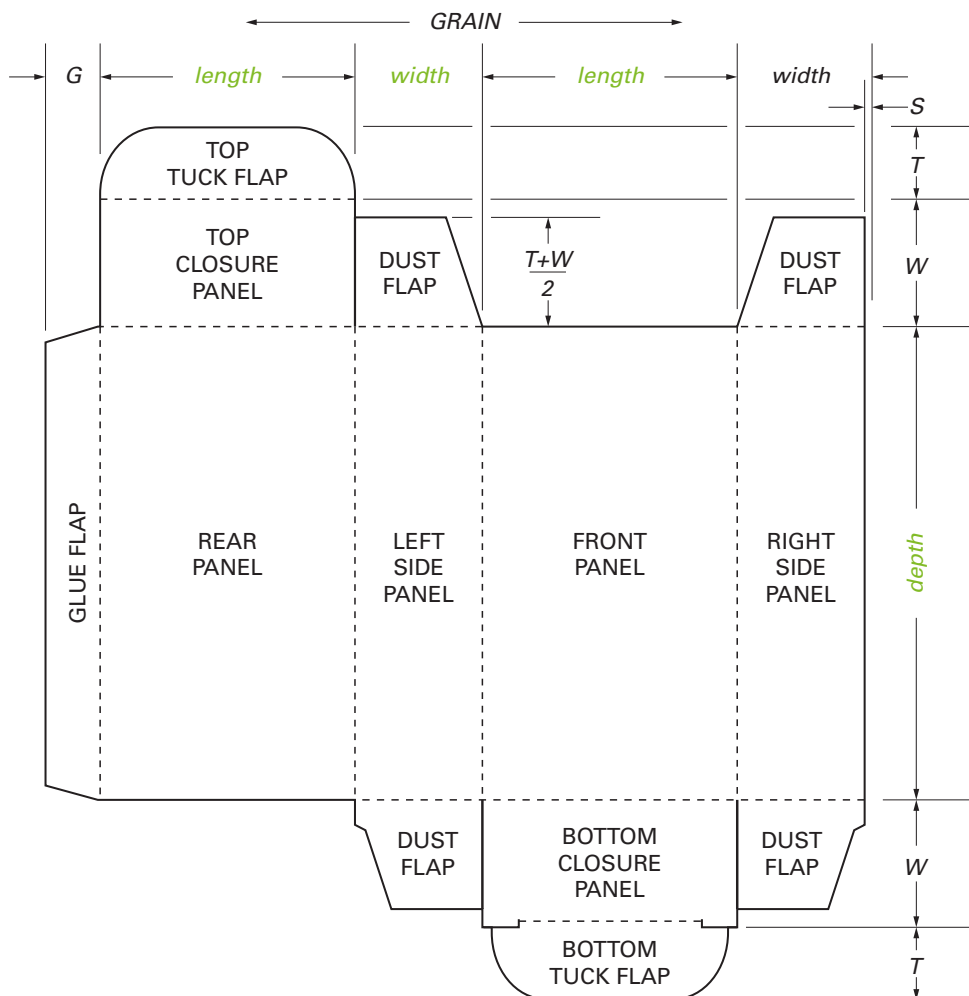
Size measured: L x W x D

Stripper Lock Tray with Hinged Cover

Rigid or semi-rigid containers of polygonal cross-section, e.g. boxes, cartons or trays, formed by folding or erecting one or more blanks made of paper by folding-up portions connected to a central panel from all sides to form a container body, e.g. of tray-like form with tongue-and-slot or like connections between sides and extensions of other sides the tongue being a part of a lateral extension of a side wall combined with a slot provided in an adjacent side wall.

Pros to Stripper Lock Trays

• *Assembled and sealed by machine*

• *Typically shipped flat to customer, who will insert product (usually in line), convert to carton and ship to retail outlets.*

• *Sometimes referred to "cake box" style*

• *Locking dust flaps*

Industries that most commonly use stripper lock trays with hinged covers

Food, Electronics, Retail Products,

INNER FLAP

INNER FLAP

D

BOTTOM OF CARTON

L

W

OUTER FLAP

OUTER FLAP

TOP OF CARTON
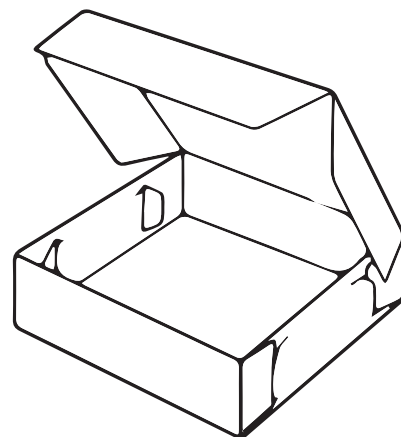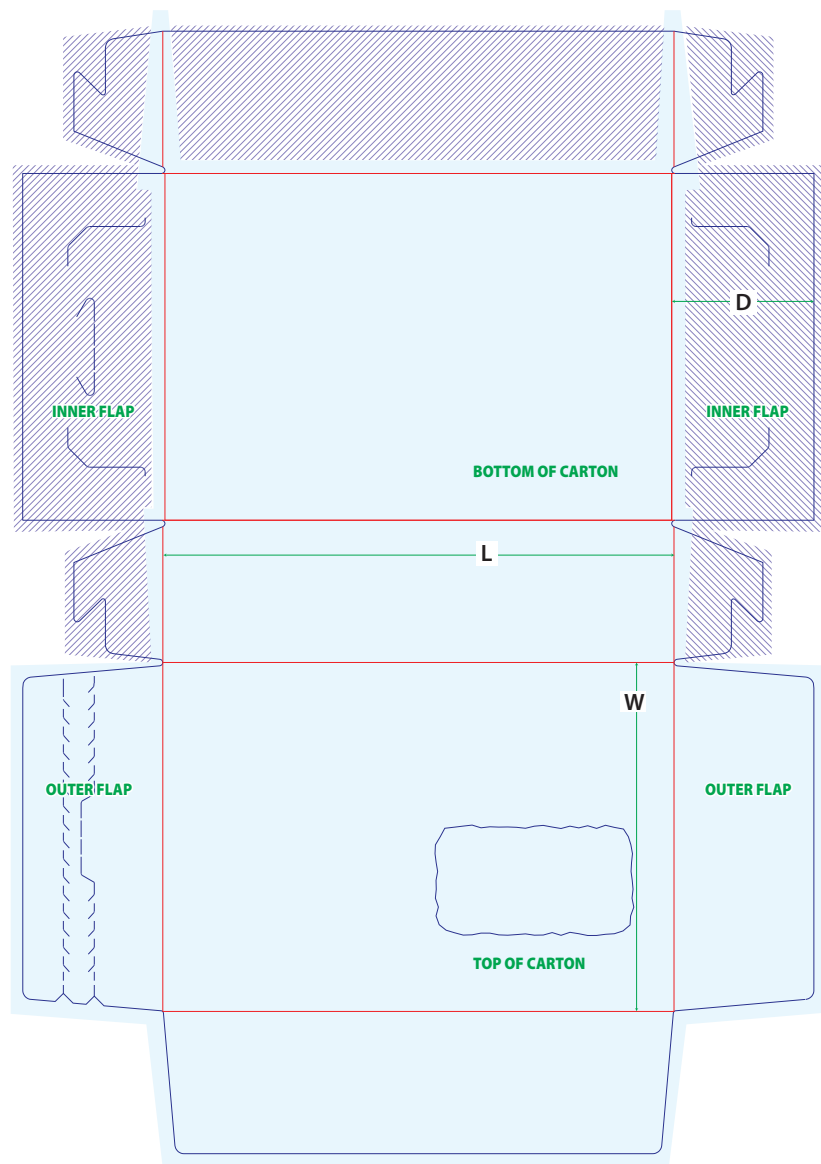
Size measured: L x W x D (options shown lock tabs, combination zipper and window

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Rectangular Sleeve

The preglued Rectangular Sleeve, shown here, has a simple construction. While the Rectangular Sleeve is considered a style in itself, it is also the underlying structure of most tube-style cartons. It commonly functions as the slip-on cover in the combination of a tray and sleeve. Additionally, this style is used as the basic structure for many high-end multi-packaging systems. Rectangular Sleeve cartons may feature either locked-side or glued seams.

Sleeves come in a variety of sizes and shapes.

Glue Flap   Width   Length   Width   Length

Depth

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