



# **SLiK**

Est. 1936

## **ZIPPER CARE AND USAGE GUIDE**

2018 Edition

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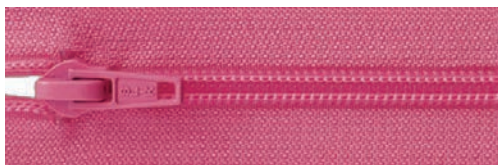
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## Introduction to Zippers

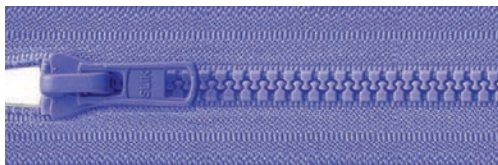
Zippers are generally comprised of tapes, teeth, slider, puller, top stops, bottom stop and separating parts. There are three main types of zippers and are categorised by the types of material used to form the teeth elements.



Metal zippers have teeth elements formed from either brass, copper or aluminium wire and are attached by cutting and compressing the wire to the tapes. Brass and copper teeth can be plated and/or polished to give different appearances.



Coil zippers (also referred to as spiral, nylon) have teeth elements formed from polyester or polyamide monofilament wire and are stitched to the zipper tapes. They can be dyed in a wide variety of colours.



Plastic zippers have teeth elements formed by injecting Polyoxymethylene (POM) directly onto the tapes. They can be made in a wide variety of colours and the teeth can also be formed in different shapes.

Depending on the end use and required function, zippers can be used in a wide variety of applications.

## Selecting the Correct Zip

It's important to choose a zip that is fit-for-purpose and can function properly within the environment that it is going to be used in. In the British Standard BS EN 16732 (which superseded BS3084), a table illustrates different performance levels required for a particular application.

These are referred to as Performance Codes and are important because they affect the gauge (or width) of the teeth elements. Wider teeth result in stronger lateral strengths but also increase the bulkiness and weight of the zipper and thus increase the cost.

It is necessary to have a balance between cost and performance whilst retaining overall quality and functionality of the application that the zip will be used in.

## ZIPPER USAGE MANUAL

End Uses	Performance Code				
	A	B	C	D	E
Dresses	X	X			
Knitwear	X	X	X		
Light Leather Goods		X	X		
Skirts, Trousers, Jeans		X	X		
Upholstery		X	X		
Foundation Garments			X		
Coats and Jackets			X	X	
Overalls			X		
Luggage			X	X	X
Sleeping Bags			X	X	
Lightweight and Inner Tents			X		
Footwear			X	X	
Leather Garments			X	X	
Ski Clothes			X	X	
Wetsuits					X
Awnings and Frame Tents					X
Mattresses			X	X	
Pillows			X		
Children's Sleeping Bags			X		
Children's Clothes			X		

*BS EN 16732:2015 End Use and Performance Code Table*

Some end-use categories given in the table above overlap several Performance Codes because certain items such as knitwear are manufactured in various weights and thus are designed for a variety of end uses. Considering extreme conditions of use, careful judgement must be used when selecting a performance code.

As an example, a common error is using #3 gauge (4mm teeth width) invisible zippers to be used on skirts made from heavy fabric with bulky seams. The selection is made because #3 weight invisible zippers are typically cheaper than #4 (5mm teeth width) and #5 gauge (6.3mm teeth width).

Whilst the initial cost may be cheaper, there is a much higher risk of the zipper breaking down in the consumers hands because it was not strong enough for the purpose intended, resulting in potentially higher garment return rates and/or potential recall of the entire style.

## ZIPPER USAGE MANUAL

As a general rule of thumb, the following table can be used as a guideline in selecting the correct gauge of zipper for a particular performance code.

Zipper Type	Performance Code				
	A	B	C	D	E
Metal	#3	#3/#4	#4/#5	#5/#8	#8/#10
Coil	#3	#3/#4	#5	#8	#8/#10
Plastic	#3	#3	#5	#8	#8/#10
Invisible	#3	#3/#4	#5	-	-
















### BS EN 16732:2015 Performance Requirements of Slide Fasteners According to End Use

The following table sets out the basic minimum requirements for zipper performance according to end use.

Annex		Performance Code					
		Unit	A	B	C	D	E
B	Strength of puller attachment (min.)	N	70	80	200	250	300
C	Strength of closed-end (min.)	N	35	60	80	100	140
D	Strength of top stop (min.)	N	50	70	90	110	130
E	Strength of open-end slide fastener box (min.)	N	40	70	90	120	150
F	Resistance to reciprocation: Minimum cycles without failure	Cycles	500	500	500	500	500
G	Lateral strength of slide fastener (min.)	N	150	200	250	370	470
H	Lateral strength of open-end attachment (min.)	N	50	70	90	120	160
I	Strength of slider locking device (min.)	N	10	15	25	40	60

### Zipper Care

Once the correct zipper has been selected, there are several considerations to be observed. The following table highlights upper limits for care labels for each zipper type.

Zipper Type	Care Label				
	Wash	Bleach	Drying	Ironing	Dry Cleaning
Metal					
Coil & Invisible					
Plastic					

## Other Considerations

In addition to following the end use tables, here are a few more questions that should be considered when selecting the zipper :-

- Will the zip be used on functional or non-functional styles?
- Does the zip need to have any special coating such as waterproof / TPU?
- Will the zipper be used in an industrial environment?
- Does the zipper need to comply with any special safety regulations, i.e. fire retardant?
- Is the zipper suitable for the type of garment, i.e. shouldn't use a plastic zip for fly opening?
- Is the puller suitable for the end user, i.e. pullers with linkages shouldn't be used for baby garments due to torque requirements?
- Is the weight of the zipper compatible with the fabric on the garment?
- Will the zipper need to be bonded to the fabric instead of sewing?
- If care label is hot iron, have you selected a zipper that is able to tolerate the heat?

## Industrial Washing and Treatments

There are various types of processes to give fabric a distressed look and feel. These processes can inadvertently affect the appearance of zippers as well. Denim is one of the most common fabrics to be treated and as such zippers used on denim tend to react more frequently.

Besides denim products, zippers can be used in real leather and imitation leather jackets, bags and shoes. Those types of fabric have treatments applied to them either during the tanning process of real leather, or the bonding of imitation leather materials. If the chemicals used in those processes are not correctly rinsed away, a residual trace will remain leaving the material either too acidic or too alkaline. If those residual chemicals encounter the zipper teeth, slider or puller, they may tarnish or become corroded.

## Common Issues Encountered

Here are some examples of typical problems that may be encountered along with suggestions on how to best avoid them: -



### Transfer of Plating to PU Leather Fabric

Stain migration is caused by interaction between acid and alkaline chemicals which can leech the metal from the zipper teeth. Please use tissue paper between the teeth and fabric and ensure PU material is washed thoroughly.



### Broken Element on Plastic Zipper

Slider can get stuck in the fabric on either side of the opening. Wearer forces the sides apart which can break the tooth off if too much force is used. Please use better seam allowance and the use of a higher gauge zipper will help too.



### Broken Slider Cap

High pH alkaline washing solution at high temperature can cause corrosion of the zinc material over time. This eventually weakens the structure of the slider and eventually the cap will become detached. Always follow details on the care label and don't overuse heavy duty cleaning agents when washing the garment.



### Insertion Pin Detached from Tapes

When unfastening a press stud, if there is insufficient clearance between the bottom of the zipper and the press stud, there will be a sudden force excessively applied laterally across the separating parts. Over repeated exposure to such forces, eventually the insertion pin may weaken and become detached from the zipper tape. 6cm – 7cm is not enough clearance. Please allow enough clearance of at least 12cm to allow the jacket to open in a safer manner.

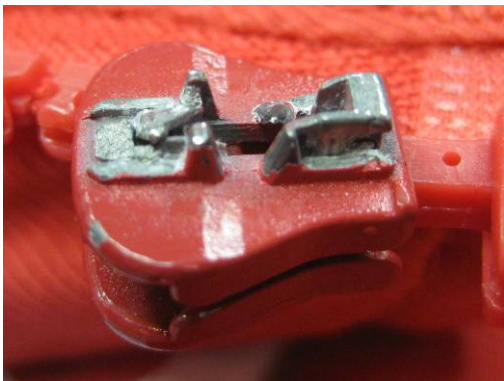


# ZIPPER USAGE MANUAL



## Deformed Linkage on Puller

Some pullers have linkages to attach them to the slider and are made from brass or zinc. In the case of brass linkages, if too much torque is applied to the puller or if they become trapped and forced free, they can bend. When recovering a trapped puller, gently ease back into position.



## Broken Slider

Zinc sliders are made to withstand a wide range of durable environments, however they are not indestructible. When washing a garment, ensure that item is fully loaded into the washing machine before closing the door. If the slider is lodged near the hinge of the door, it can get crushed and break apart when the door is closed.



## Corrosion on Puller

Some garment styles may use imitation PU leather piping for decorative purposes. In this example after extensive investigation, high levels of acidic residue were found in the PU. During storage over time at the garment factory warehouse, the acid had eaten through the protective coating on the puller causing severe discolouration. Always make sure all fabrics are thoroughly washed beforehand.

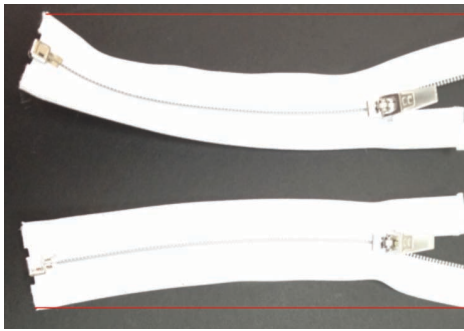


## Broken Teeth on Footwear

Zipper used on footwear must withstand regular exposure to high tensile conditions. When ordering zippers for footwear, merchandisers must disclose the end use so that zip factory can use the correct product. Zips for footwear will use stronger yarns for the teeth and for the tapes.



# **ZIPPER USAGE MANUAL**



## **Curved Zippers (Scrambling)**

Sometimes the garment factory will separate the two sides of the zippers to reduce the time taken to sew the zips into the garment. For coil zippers, if the original two sides are not reunited, curvature will occur. This is referred to as “scrambling”. Please ensure each stringer is correctly paired with the original side.



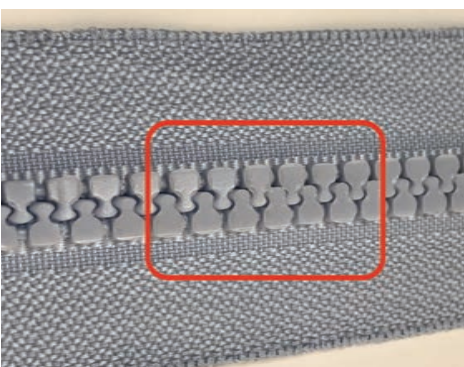
## **Migration of Plating**

Garments that have a piped concealed effect on the centre front zip should allow sufficient clearance so that the slider and/or puller can move freely. Insufficient clearance will cause the slider to ingest the fabric, causing damage. On real leather garments, the friction between slider, puller and fabric may also cause the plating colour to migrate to the fabric over repeated contact.



## **Damaged Thread on Coil Teeth**

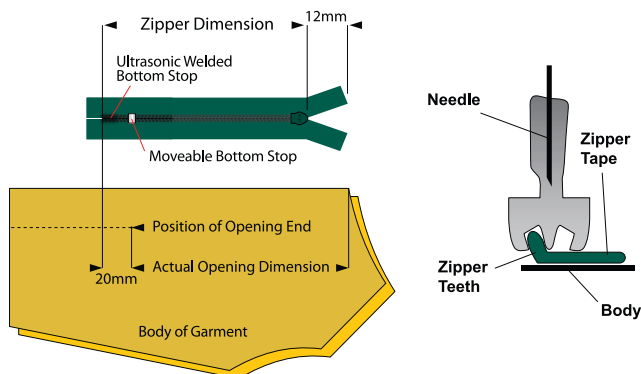
The sewing thread used to fix the teeth to the tapes can be damaged by the sewing needle if the worker does not position and sew the zipper correctly into the garment. Care should be taken when inserting the zipper into the garment and correct sewing foot and pressure should be used.



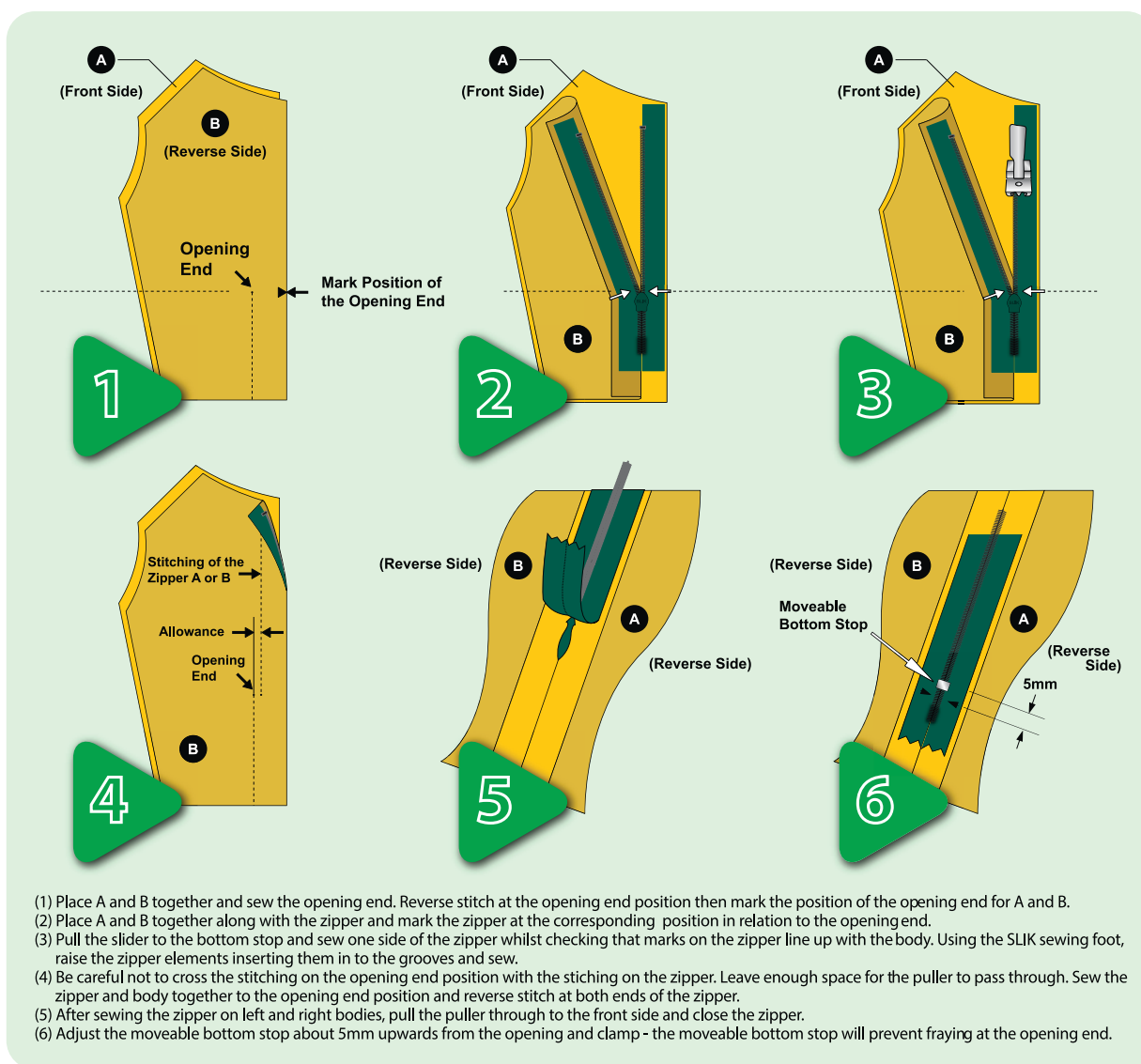
## **Melted Elements**

When ironing zippers with plastic elements, the ironing temperature must be set to low. The material that the teeth are made of will start to deform if the temperature exceeds 140c. If the care label for the garment requires hot iron, a different zipper should be selected instead to avoid the elements from getting damaged.

## How to Sew Invisible Zippers

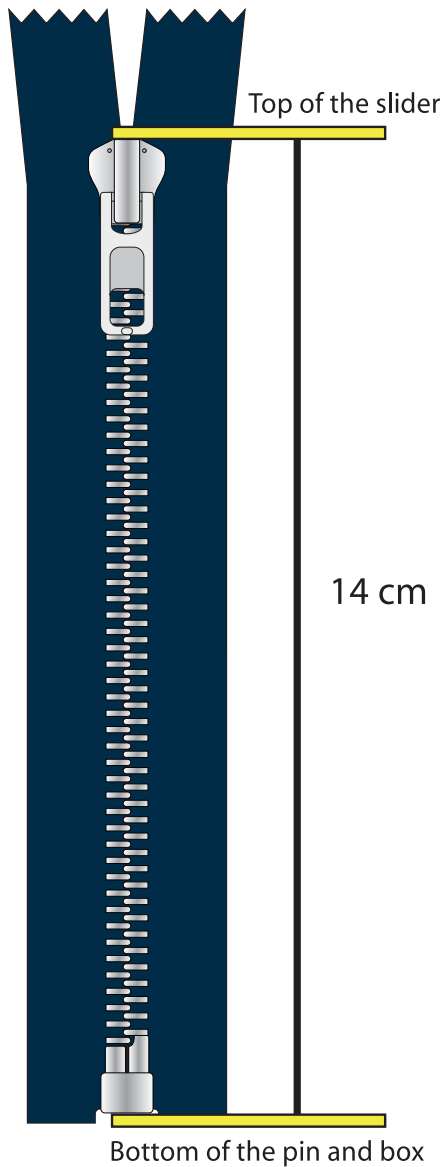


Use a zipper that is 2cm longer than the actual opening length of the garment



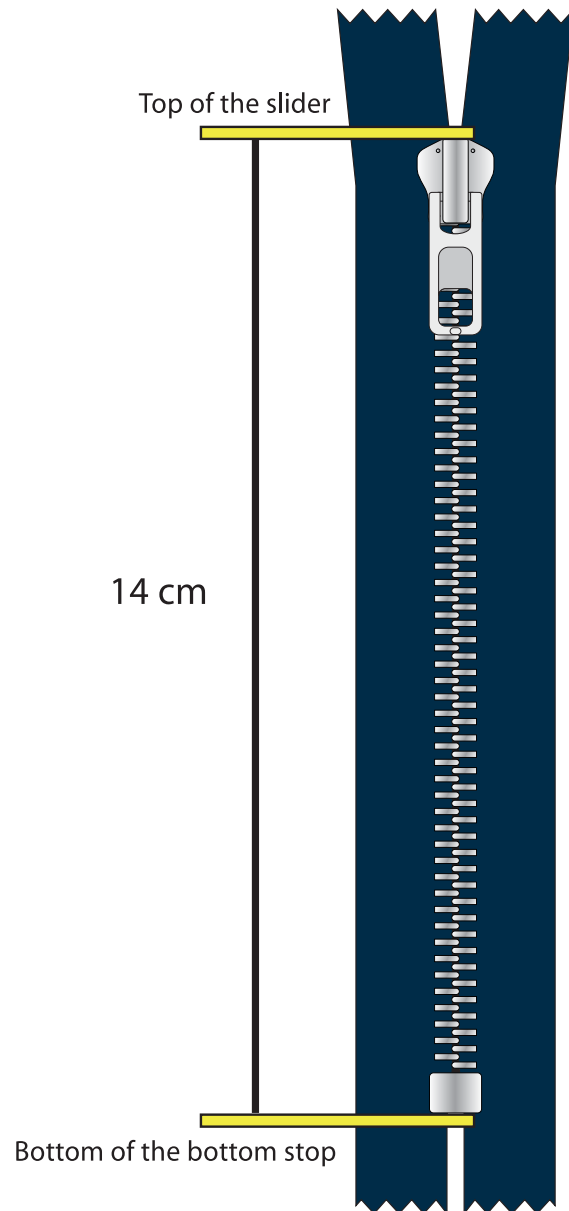
## How to Measure a Zipper

OPEN END



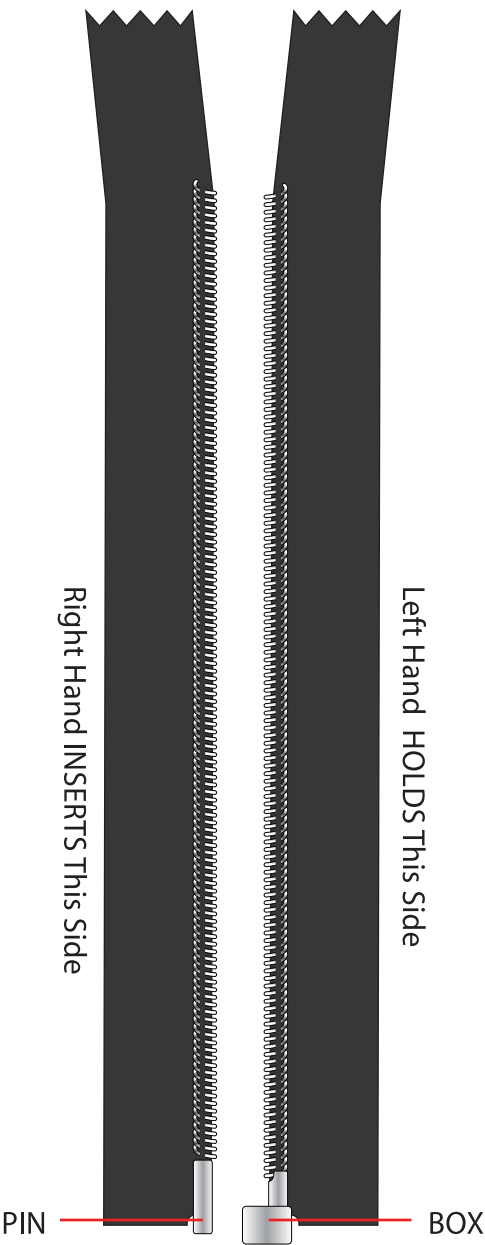
To Measure an open end zipper, fasten the zip so that the slider is touching the top stops. Take a measuring tape and measure from the top of the slider to the bottom of the pin and box.

CLOSED END

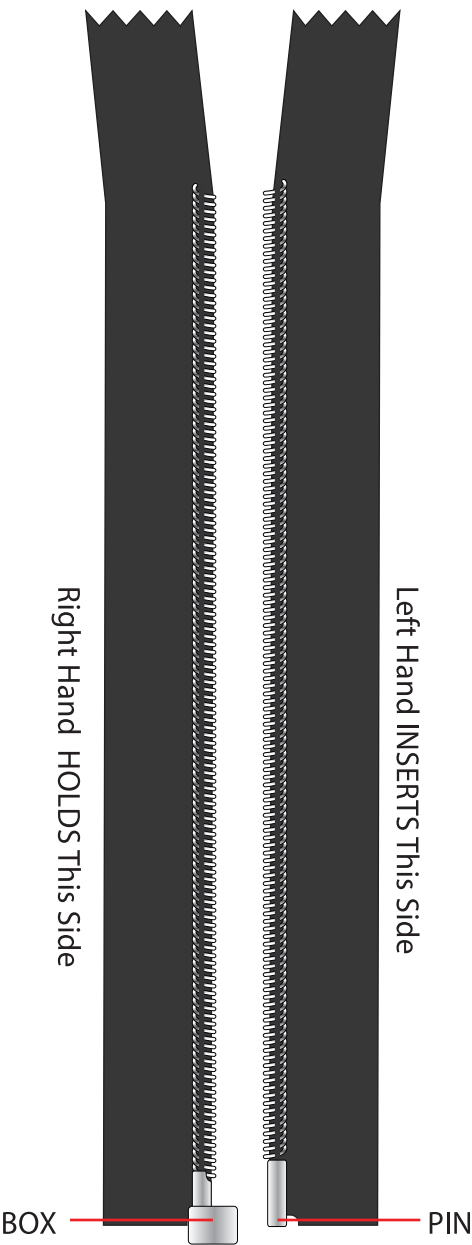


To Measure a closed end zipper, fasten the zip so that the slider is touching the top stops. Take a measuring tape and measure from the top of the slider to the bottom of the bottom stop.

Identifying Insert Types

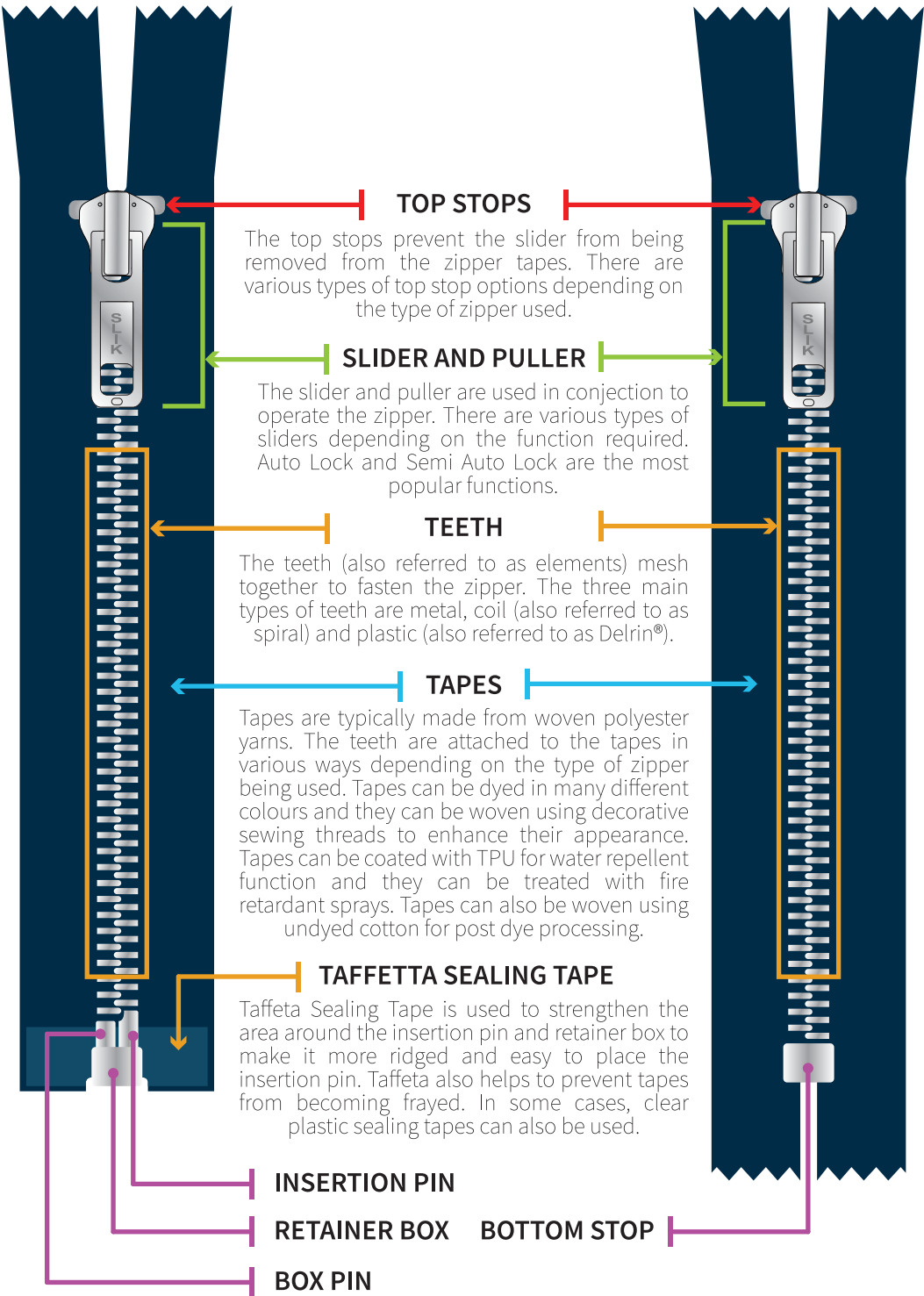


Right Hand Insert

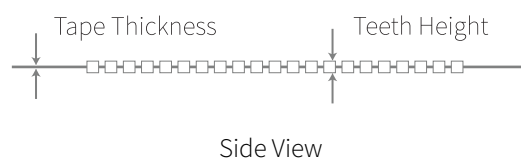
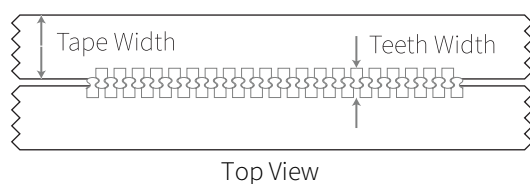


Left Hand Insert

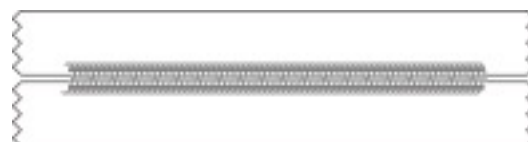
**Identifying Zipper Components**



## Identifying Zipper Gauge



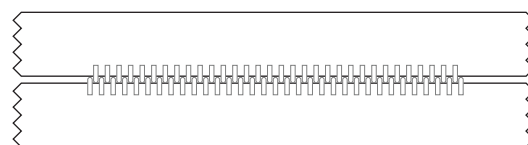
### COIL



Tape Tolerance +/- 1.00 mm Teeth Tolerance +/- 0.50 mm

Gauge	Teeth Height	Teeth Width	Tape Thickness	Tape Width
#3	1.90 mm	4.20 mm	0.50 mm	12.50 mm
#4 (Invisible Woven)	2.10 mm	5.00 mm	0.40 mm	10.00 mm
#4 (Invisible Lace)	2.10 mm	5.00 mm	0.40 mm	10.00 mm
#5 (Invisible)	2.80 mm	6.30 mm	0.50 mm	16.00 mm
#5	2.60 mm	6.50 mm	0.50 mm	15.00 mm
#8	2.80 mm	7.70 mm	0.60 mm	18.00 mm
#10	3.80 mm	10.00 mm	0.55 mm	20.00 mm

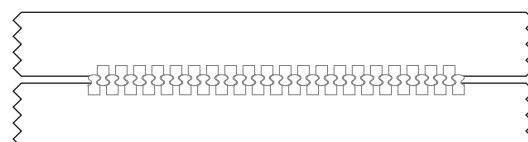
### METAL



Tape Tolerance +/- 1.00 mm Teeth Tolerance +/- 0.50 mm

Gauge	Teeth Height	Teeth Width	Tape Thickness	Tape Width
#3	2.10 mm	4.60 mm	0.50 mm	12.50 mm
#45YG	2.10 mm	4.60 mm	0.60 mm	12.00 mm
#4YG	2.20 mm	5.20 mm	0.60 mm	13.00 mm
#5	2.55 mm	6.00 mm	0.50 mm	14.00 mm
#5YG	2.55 mm	6.00 mm	0.60 mm	15.00 mm
#8	3.00 mm	7.80 mm	0.60 mm	17.00 mm
#10	3.40 mm	9.00 mm	0.70 mm	19.00 mm

### PLASTIC



Tape Tolerance +/- 1.00 mm Teeth Tolerance +/- 0.50 mm

Gauge	Teeth Height	Teeth Width	Tape Thickness	Tape Width
#3	2.40 mm	4.60 mm	0.50 mm	12.50 mm
#5	2.90 mm	6.00 mm	0.50 mm	15.00 mm
#8	4.00 mm	7.50 mm	0.70 mm	17.00 mm
#10	4.20 mm	8.60 mm	0.70 mm	19.00 mm



## Specifying Zippers

Each type of zipper has many different attributes that determine function, performance and appearance. There are seven core areas that make up the spec of a zipper:-

### Gauge

This determines what gauge of teeth will be used and it sometimes referred to as “weight”. Table on page 14 lists the various gauges of zipper teeth. The gauge will also determine the slider as both the teeth and the slider have to match in order for the zipper to function correctly.

Gauge	Coil	Metal	Plastic	Invisible
#3	•			•
#4				•
#5	•	•	•	•
#8	•	•	•	
#10	•	•	•	
#15	•	•	•	
#25			•	

### Composition

This determines the material of the elements or teeth of the zipper. There are three main types of composition: -

- Coil (also referred to as nylon, polyester and spiral)
- Metal
- Plastic (also referred to as Delrin®, Vislon® or moulded. Delrin is a registered trademark of Du Pont Corporation and Vislon is a trademark of YKK Corporation)

### Closure, Top Stops, Bottom Stops and Pin & Box

This determines the fastener closure type and the various types of stoppers and can be broken down into two main categories (one way fasteners and two way fasteners) each having subcategories of their own.

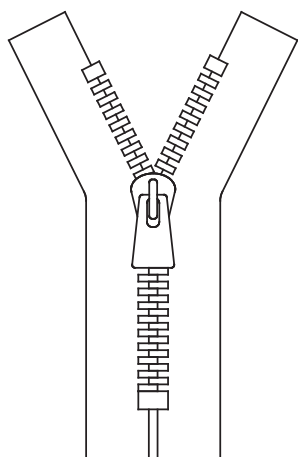
Closure	Coil	Metal	Plastic	Invisible
Closed End	•	•	•	•
Closed End (Alternative)	•	•		
Open End	•	•	•	
Two Way Open End	•	•	•	
X-Type	•	•	•	
O-Type	•	•	•	
R-Type	•	•		

# ZIPPER USAGE MANUAL

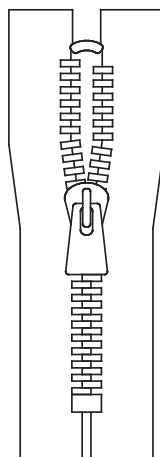
Stoppers (Open End)	Coil	Metal	Plastic	Invisible
Metal Top	•	•		
Plastic Top	•		•	
Clear U Shaped Top	•			•
Ultrasonic Top				•
Metal Pin & Box	•	•		
Plastic Pin & Box	•		•	

Stoppers (Closed End)	Coil	Metal	Plastic	Invisible
Metal Bottom	•	•		
Plastic Bottom	•		•	
Welded Bottom	•			
Ultrasonic Bottom	•			•

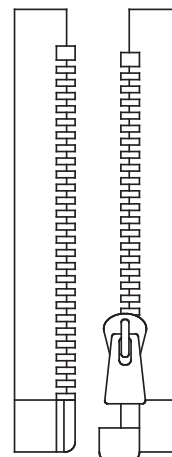
## One Way Fasteners



Closed End - Standard

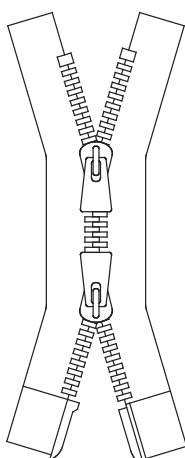


Closed End – Alternative

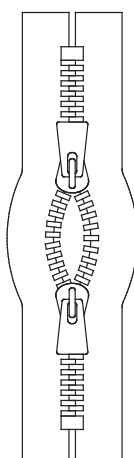


Open End

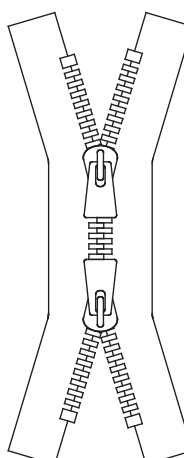
## Two Way Fasteners



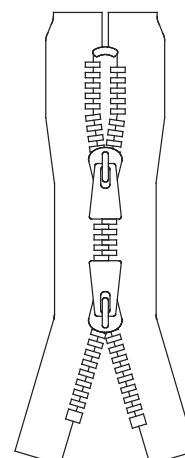
2-Way Open End



"O" Type



"X" Type



"R" Type

## Slider Body

This determines the type of locking function of the slider. There are four main types: Auto-Lock, Semi Auto Lock, Non Lock and YG. Depending on the composition selection, the slider body can have additional subcategory options.

	Auto Lock	Semi Auto Lock	Non Lock	YG
<b>Options for Coil</b>				
Reverse Body	•	•	•	
Reversible	•		•	
Twin Tab	•		•	
<b>Options for Metal</b>				
Reverse Body				
Reversible				
Twin Tab	•		•	
<b>Options for Plastic</b>				
Reverse Body		•	•	
Reversible	•		•	
Twin Tab	•		•	

## Notes:

For sliders used on invisible zipper, only Auto Lock and Non Lock sliders are available.  
YG sliders are only used on metal zippers typically for jeans and fly zips.

Slider Body	Coil	Metal	Plastic	Invisible
Auto Lock	•	•	•	•
Semi Auto Lock	•	•	•	
Non Lock	•	•	•	•
Reverse Body Auto Lock	•			
Reverse Body Semi Auto Lock	•			
Reverse Body Non Lock	•			
Reversible	•	•	•	
Twin Tab Auto Lock	•	•	•	
Twin Tab Non Lock	•	•	•	

## Slider Puller

This defines the type of puller that will connect to the slider body. Pullers can be connected to the slider in various ways:-

- Direct Attached: The puller is connected directly to the slider with no intermediary linkage in between
- Indirect Attached: The puller is connected indirectly to the slider using a stirrup link, clamp link or J-hook.

The size, dimensions and end use will determine which types of pullers can connect to which types of sliders. For example, you cannot connect a direct attached puller designed to fit a #8 slider onto a #3 slider.

Pullers that connect indirectly are not suitable for kidswear because they are easier to twist from the linkage which can cause a choking hazard. Please refer to the SLIK Puller catalogue for more details.

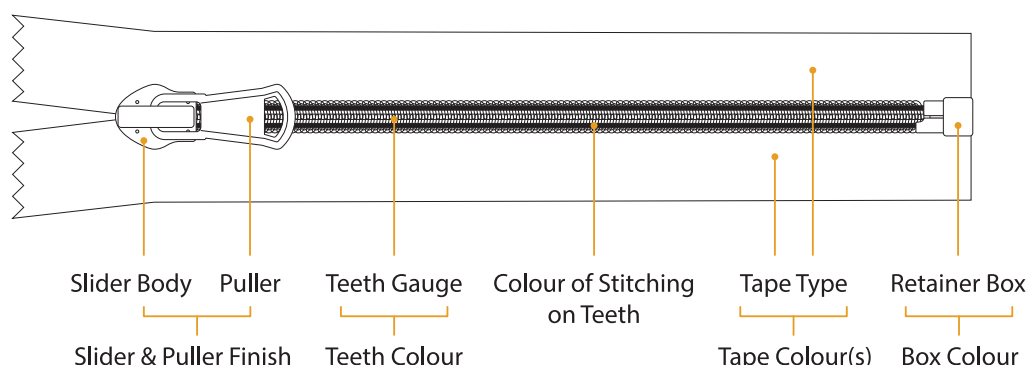
## False-Positive Detection of Ring-Shaped Pullers

Certain shapes of ring pullers can cause false positive readings during metal detection because of the interference caused as they pass through the detection field. This is completely normal and garment factory should check whether or not this is accepted by the buyer.

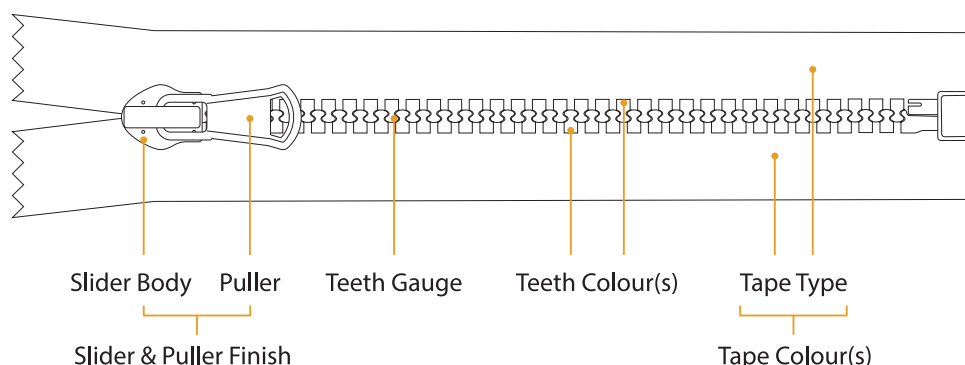
## Special Tapes and Teeth

This category is the most comprehensive as there can be hundreds of combinations defined with each category having many subcategories. Coil zippers have the most combinations, plastic zippers have many combinations and metal zippers have the least number of combinations.

For coil zippers, the diagram below shows typical attributes that can be specified: -

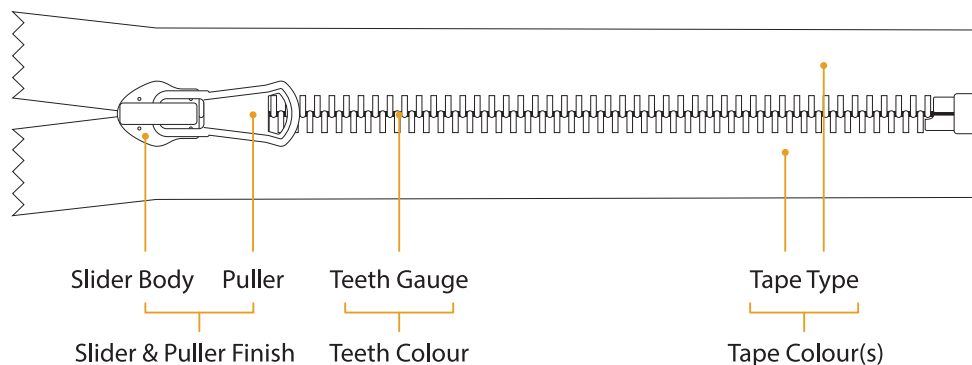


For plastic zippers, the diagram below shows typical attributes that can be specified: -



# ZIPPER USAGE MANUAL

For metal zippers, the diagram below shows typical attributes that can be specified: -



Tape Options	Coil	Metal	Plastic	Invisible
DTM	•	•	•	•
TPU	•		•	
Printed	•	•	•	
Printed TPU	•			
Lace	•			•
Jacquard	•	•	•	
Two Colour Tapes	•	•	•	
Stripes	•	•	•	
Laser Cut Tapes	•	•	•	
Reflective Tapes	•	•	•	
Lurex Tapes	•	•	•	

Teeth Options*	Coil	Metal	Plastic	Invisible
DTM	•	•	•	•
Contrast Stitching on Teeth	•			
Nickel	•			
Dull Nickel		•		
Antique Nickel	•	•	•	
Dark Antique Nickel	•	•	•	
Brass	•	•	•	
Golden Brass		•		
Antique Brass	•	•	•	
Dark Antique Brass	•	•	•	
Black Oxidised		•		
Copper		•		
Antique Copper		•		
Shiny Brass	•		•	
Shiny Nickel	•		•	
Shiny Gold	•		•	•
Shiny Copper	•	•	•	
Shiny Light Gold		•		
Shiny (Other – special)	•		•	
Rainbow	•		•	

\* Please refer to SLIK Teeth Finish Card

## Slider Finish

This determines the type of finish for the slider and there are two main categories: Painted and Plated, each having sub-categories of their own to further define the finishing: -

Painted, Barrel Type: This is the most common type of painting for slider finish. The sliders are placed in a rotational drum whilst paint is sprayed onto the sliders as the drum rotates.

Painted, Enamel Type: This is used when a high shine finished is required on the slider. Each slider is placed on a rack piece by piece and are spray coated evenly. Enamel type painting is more resilient to heavier wash cycles.

Plated, Barrel Type: This is the most common type of plating for slider finish and is applied through an electroplating process. The sliders are placed into a rotational drum and submerged into a chemical solution for a period of time.

Plated, Hanger Type: This is used when a shiny smooth finished is required on the slider. Each slider is placed on a rack piece by piece and submerged into a chemical solution for a period of time. Hanger plating gives the sliders an attractive outlook but are more susceptible to scrapes and scratches if they are used on wash garments.

Puller Finish Options*	Coil	Metal	Plastic	Invisible
DTM	•	•	•	•
Antique Alloy	•	•	•	•
Antique Brass ◇	•	•	•	•
Antique Copper ◇	•	•	•	•
Antique Nickel ◇	•	•	•	•
Black Oxydised ◇	•	•	•	•
Black Tin	•	•	•	•
Brass ◇	•	•	•	•
Brass Tin	•	•	•	•
Brushed Hanger Anti Brass	•	•	•	•
Brushed Hanger Ant Copper	•	•	•	•
Brushed Hanger Gunmetal	•	•	•	•
Brushed Hanger Nickel	•	•	•	•
Coffee Brass	•	•	•	•
Contrast Tin	•	•	•	•
Copper ◇	•	•	•	•
Copper Tin	•	•	•	•
Dark Alloy	•	•	•	•
Dark Antique Brass	•	•	•	•
Dark Antique Copper	•	•	•	•
Dark Antique Nickel ◇	•	•	•	•
Dull Brass	•	•	•	•
Dull Dark Antique Nickel	•	•	•	•
Dull Gold	•	•	•	•
Gold ◇	•	•	•	•
Hanger Black	•		•	•
Hanger Brass	•	•	•	•
Hanger Copper	•	•	•	•
Hanger Enamel Matt Black	•		•	•
Hanger Gold	•	•	•	•



## ZIPPER USAGE MANUAL

Hanger Gunmetal	•	•	•	•
Hanger Matt Black	•	•	•	•
Hanger Matt Gold	•	•	•	•
Hanger Nickel	•	•	•	•
Hanger Pale Gold	•	•	•	•
Hanger Rose Gold	•	•	•	•
Japanese Antique Brass	•	•	•	•
Light Antique Brass	•	•	•	•
Matt Copper	•	•	•	•
Matt Nickel ◇	•	•	•	•
Nickel ◇	•	•	•	•
Oxydised Alloy	•	•	•	•
Oxydised Brass	•	•	•	•
Oxydised Tin	•	•	•	•
Pale Gold	•	•	•	•
Reddish Brass	•	•	•	•
Tin	•	•	•	•
Vintage Silver	•	•	•	•

\* All sliders and pullers except YG - please refer to SLIK Teeth Finish Card for more details.

◇ Finish available on YG Puller.

### Slider Puller Specials

These are items that connect to the puller such as ribbons and other embellishments that enhance the appearance of the puller.

## Additional Requirements

When putting a specification together for a zipper, it's important to have the following information: -

### End Buyer

Helps to identify correct performance standards as well as correct light sourcing when dyeing zipper tapes.

### End Use

Helps to risk assess the zipper to prevent accidents, facial scratches, choking hazards, washing considerations, over stressing the zipper beyond its limits.

### Garment Style & Zip Position

Helps to determine if a zip is suitable and fit-for-purpose for the type of garment that the zipper will be going into.

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# SLIK

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