Section 2: Precautions on Wash/Wet Processing <<<<<<<<<

2-1 Why YZiP® products are recommended for Stone / Enzyme Washes?

To avoid damages of elements due to harsh treatments

The dimensions of the elements (zipper chain) as well as the zipper tape specifications of YZiP® products are reinforced which is comparatively stronger than the standard metal zippers under the forceful or harsh treatments during stone / enzyme washes.

Higher corrosion resistance and less slider lock malfunction problem

The basic material of GS/GA type slider is brass, whereas the DA type is made from zinc alloy. It is generally known that brass has higher resistance to corrosion and abrasion than the zinc alloy. Therefore, the GS/GA type slider would be recommended for stone / enzyme washes in which the zippers would have higher probability in suffering from strong chemicals and physical damages during the garment wet processing.
Also, regarding the stainless steel nature of the slider lock pin, in addition of the special designed structure of the locking mechanism, GS/GA type slider has the stronger locking strength than the normal automatic-lock sliders which would be less affected under the harsh washing conditions.

YZiP® + GS/GA slider is recommended for stone / enzyme wash instead of standard MF + DA slider, because the slider cover may become loose and come off due to the dissolving / corrosion of the metals.

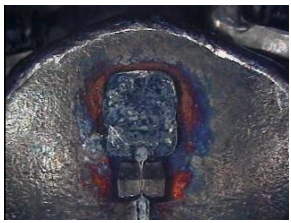
Possible problems of YZiP® products occur under Stone / Enzyme Washes

Color Change of Zipper

Copper elements of brass would react with the chemicals in stone / enzyme washes and result in the color change problem of zipper.

Staining Migration problem

The physical abrasion on the metal surface of the zippers would cause the come-off of metal dust. When such metal dust is mixed with the stone particles or dirt washed off from the garment, stain migration may occur on the garment fabrics.



Slider damage due to the dissolving of zinc alloy slider under strong chemical treatments in garment processing.

Corrosion took place on zinc die-cast slider pull under the strong chemical treatments.

>>>>>>>> Section 2: Precautions on Wash/Wet Processing

Change in Metal Zipper Color by Garment Dye Treatment 2-2

During the garment dye processes, different kinds of dyestuff and auxiliaries would be used depending on the nature of the garment fabrics. For example, for the cotton fabrics, sulfur dye, reactive dye or direct dye may be used while acid dye is usually used for the dyeing of the nylon products…etc. Moreover, the usage of various chemicals such as reducing agents, oxidizing agents, acids and alkalis is rather common.
When these dyestuff and chemicals are abundant in process, color change of the metal components of the zipper may occur and occasionally, the stain migration on the garment fabrics would take place.

Chemical reaction may take place when the metal components (including elements, slider, top tops, bottom stop and open parts) of the zipper are in contact with different kinds of chemicals and the color change or staining problem would probably be resulted. Also chemicals in the dyestuff could react with those metal components and may cause decoloration (bleaching) or discoloration of the fabrics. The appearance of the color change may vary from time to time depending on (but not limited to) the following factors:

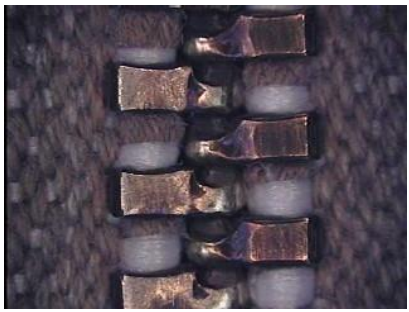
- Nature and concentration of dyestuff / chemicals used;
- Processing temperature during the garment dye treatment;
- Length of the processing time;
- Stain resistance of the garment fabrics

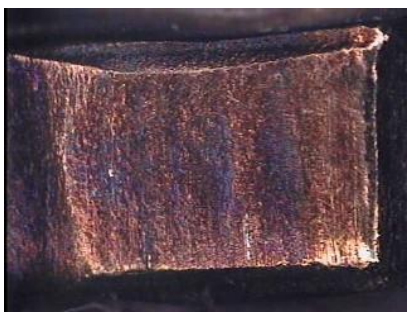
Very often, the color change / staining problem would further be accelerated when the zippers are kept / pressed against the garment fabrics under the wet state (or in high humid environment) for long time.

Regarding the properties of metals, chemical reaction problem can hardly be avoided when the metal zippers are subjected to the garment dye processing. For this reason, it would greatly be advised that the zippers should be applied in the garment after the garment dye processing. Also, in case the reaction with the residue dyestuff or chemicals on the garment fabrics, the garment fabrics should be thoroughly neutralized, rinsed and dried immediately after the garment dye treatments.

In any case that the zippers have to be subjected to the garment dye processing, a pre-production test on the reaction of the zipper would be necessary in order to prevent any undesirable effect of both the zippers & garments.

Chemicals used in the garment dye may cause color change on the metal elements and result in the stain migration problem on the garment fabrics.





Section 2: Precautions on Wash/Wet Processing <<<<<<<<<

2-3 Change in Metal Zipper Color by Bleaching

Strong oxidative bleaching agents such as sodium hypochlorite may be added during the garment bleaching processes. Such oxidative bleaching agent may react with the copper element of the brass zippers or the metal zipper components (e.g. slider, top stops, bottom stops or open parts) and causing the color change problem. The same phenomenon may be observed with the usage of Hydrogen Peroxide and Hydro Sulphite.

Depending on kinds of bleaching agents, temperature and duration, the degree of the color change may vary. In some cases, not only the metal parts, but also the zipper tape may be discolored.

Suggestions

- It is recommended to sew zipper after the bleaching and the bleached fabrics should be sufficiently neutralized / rinsed after the treatments. If the zipper product is subject to bleach with the garments, a test on the reaction of the zippers under the bleaching processes would be highly recommended.
- Do not apply strong and high concentration of bleaching agents on the zipper products.
- Thoroughly and immediately rinse garments / zipper products after bleaching.

Supplementary Information about Color Change of Copper Elements

When the copper elements of the brass zippers come into contact with various chemicals, the color of the metal may possibly change as follows:

Substance Contacted	Inorganic Compound Formed	Color Change into
Oxide	Cu_2O CuO	Reddish Brown Black
Hydroxide	$Cu(OH)_2$	Pale Blue
Chloride	$CuCl_2$ $CuCl_2 \cdot 2H_2O$	Brown Green
Sulphate	$CuSO_4$ $CuSO_4 \cdot 5H_2O$	White Blue
Sulphide	CuS	Black
Nitrate	$Cu(NO_3)_2 \cdot 3H_2O$	Dark Blue
Carbonate	$CuCO_3 \cdot Cu(OH)_2$ $2CuCO_3 \cdot Cu(OH)_2$	Green Blue

>>>>>>>> Section 2: Precautions on Wash/Wet Processing

Stain Migration of Metal Zippers by Stone / Sand Washes 2-4

In order to add used or vintage look to denim, stone or sand washes are often used, and volcanic rocks, pumice stones or sand are added to the garments during washing process. The heavy abrasion on the garments brings the expected color fading of the garment fabrics, but may also damage the zippers to a certain extent.

Those heavy washes may leave obvious scratching, scraping on the metal surfaces of the zipper components (including elements, slider, top stops or bottom stop). The degree of damages may vary depending on the size and ratio of the stones / sand, washing time and load of garment, etc. Due to the physical abrasion on the metal surfaces, metal dust may come off from the zipper components, and when it is mixed with the stone / sand powder or dirt washed off from the garments, it may be accumulated and attached on the metal surfaces of the zipper. When such stains on the zipper chain or zipper parts come in contact with the garment fabrics, it may cause stain migration. Stain may look more obvious on the lighter color garment.

Because those stains are attached on the surface of the garment fabrics instead of resulting from chemical reaction, it can be simply removed by washing by organic solvent or detergent.

In order to prevent the undesirable stain migration on the garment fabrics, zippers should be kept away from any direct striking with hard objects (e.g. stones etc.) during the garment washes. To ensure that the zipper is closed and protected under the garment fabrics throughout the washing processes would help to minimize the stain migration problem.

Regarding the possible damages on zippers due to the harsh treatments in the stone / sand washes, the selection of YZiP® products would be recommended for their higher durability and zipper strength (See P9).

Blackish stain can be observed on the garment fabrics at where the zipper chain was probably attached or pressed on.
The stain migration is particularly obvious on the light color.

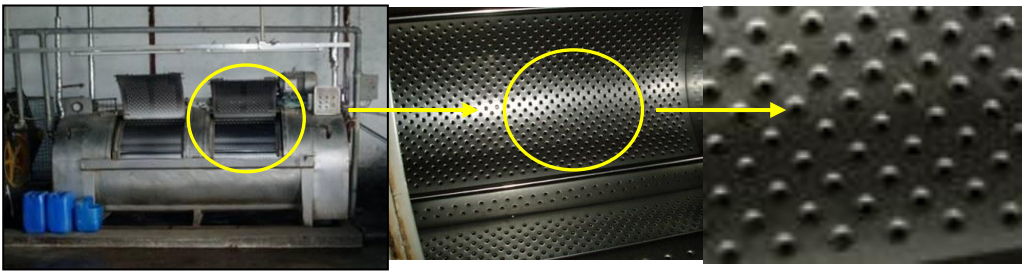
The surface of the metal component e.g. elements are scratched or scraped.
The scraped off metal dust may be mixed with the dirt washed off from the garment and cause the staining problem.

Section 2: Precautions on Wash/Wet Processing <<<<<<<<<

2-5-1 Open Part Breakage

In order to add special effects to the garments, garments are sometimes subjected to post processing. Wet processing (garment wash) is one of the most popular processing techniques.
During this process, while the garments are tumbled in the washing / drying machine, the zippers are repeatedly hit / rubbed against the inner wall of the machine. If zippers aren't protected properly, such small parts as retainer box or pins could get caught in the small holes of the machine, repeatedly pulled / twisted by the garments, and could end up damaged or broken.

Washing Machine & Inner Holes



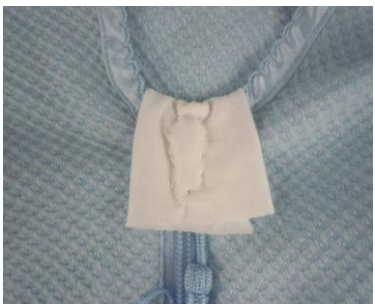
>>>>>>>> Section 2: Precautions on Wash/Wet Processing

Open Part Breakage 2-5-2

Suggestions

- Please close up the zipper with the slider locked at the top end so as to avoid exposing the small parts of the open parts.
- Bigger wash amount increases load. Please minimize the wash amount / garment pieces.

Close up the zipper and lock the slider at the top end.



Wrap the slider with cloth and sew onto the tape / garment.

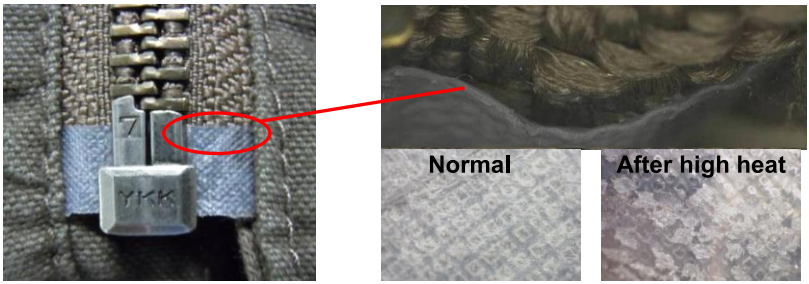
Section 2: Precautions on Wash/Wet Processing <<<<<<<<<

2-6 Whitening of Transparent Film

Transparent film is attached at the top & bottom ends of the open-end zipper tape. Although zipper tape is woven and finished to prevent fraying during normal use, for open-end zippers, tape ends (especially bottom) are always exposed and touched during use. In order to prevent fraying even after repeated use, this film is attached.

Film Whitening Problem

The film is adhered onto the tape by melting the adhesives on the film by heat. Due to its material properties, the adhesive can melt again under high heat.
During the garment washing, garments are tumbled and squeezed in the machine and the filmed tape ends also get squeezed / twisted. The film's adhesion onto the tape is thus weakened, and if these weakened tape ends are subjected to heat (e.g. drying or ironing), the adhesive can melt, and the film could be peeled off the tape and hardened, exhibiting whitish color.



Suggestions

- Zipper should be opened before processing in order to avoid twisting force gathering at the tape ends. Tying up 2 side stringers and wrapping up both side ends (as shown in the pictures) would further prevent elements and/or open parts from getting damaged from the washing.
- Washing / drying temperature of lower than 60 ºC is recommended.

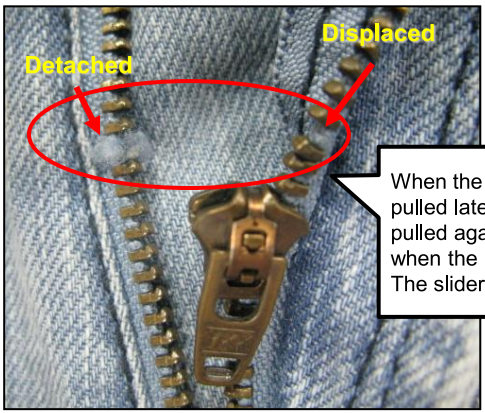
Open up the zipper to prevent twist force gathering at tape ends.

Wrap up both side ends to prevent open part damage.

>>>>>>>> Section 2: Precautions on Wash/Wet Processing

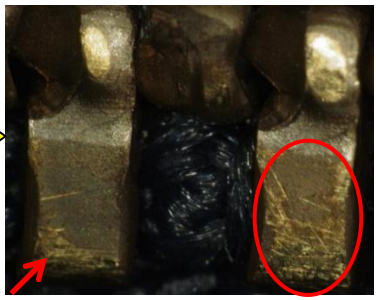
Element Breakage 2-7

Similar to open parts, zipper elements could also be damaged / detached at wet processing, as the zipper is forcefully opened / pulled inside the wash machine.



When the zipper, incompletely closed before washing, was pulled laterally during wash, elements inside the slider were pulled against the slider wall and finally got displaced / detached when the pulling force exceeded their attachment strength. The slider also came off where the element was detached.

In addition, such hard objects as pumice stones are commonly used in wet processing to give the fabric faded / worn appearance. These hard objects could scratch off the surface of zipper components, sometimes even to expose the inner substrate.



Suggestions

- Please completely close up the zipper with the slider locked at the top end before wet processing (see 2-5 Open Part Breakage).
- It is suggested to wrap the zipper if such hard objects as pumice stones are used in wash.

Section 2: Precautions on Wash/Wet Processing <<<<<<<<<

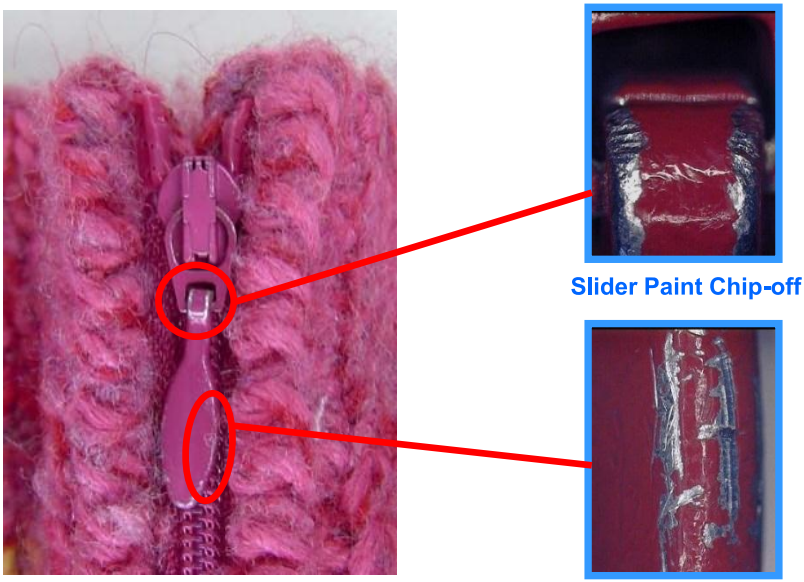
2-8 Slider Paint Chip Off

When a painted slider is subject to dry cleaning or wet processing treatment, including washing treatment but not limited to, the paint may chip off. This is mainly because the surface of the painted slider is being damaged when it hits a tumbler during the processing.

Normally, paint chip off can be found at the protruded part and the edges of the slider. However, the degree of chip off may vary depending on the conditions of the treatment.

Since the painting is a layer of coating, it has the limitation in durability against physical striking. Therefore, painted components of zippers should be avoided from the improper treatment, such as direct striking, scratching or wearing against hard objects etc.

Whenever the paint chip-off problem is in great concern, the selection of the plated sliders would highly be recommended. However, please kindly note that among the plated components, X6 (Black Oxides) and V7 (Matte Black Silver) finishing are comparatively weaker to abrasion or wearing and may possibly exhibit the chip-off problem under direct striking or scraping.



Slider Paint Chip-off

>>>>>>>> Section 2: Precautions on Wash/Wet Processing

Caution of Cotton Tape Zippers 2-9

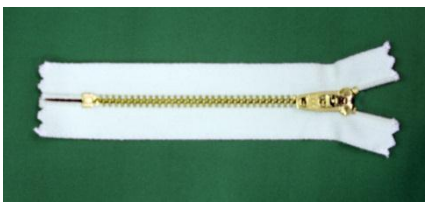
For the cotton tape zippers, yarns of the zipper tape are made from 100% natural cotton. Therefore the products may not possibly withstand or resist the harsh and unsteady chemical treatment such as strong bleaching or garment dye processing in which different chemicals would be used. To avoid any undesirable damages or effects on the cotton tape zippers, please be aware of the characteristics of the cotton material and pay particular attention to the following aspects.

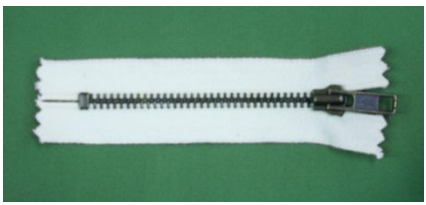
- **Zipper tape strength** - The use of strong acids or chemicals, such as hydrogen peroxide or sodium hypochlorite, for such treatment as garment bleaching, washing and/or dyeing, can weaken cotton fabrics and cause damage to zipper tape.
- **Shrinkage -** In comparison with polyester, cotton is known to be subject to greater shrinkage when processed. This may result in puckering, especially when the match between the zipper tape and the garment fabric is not sufficient.

  <Information for Reference>
  Under JIS L1096 Laundering Test, the shrinkage of cotton tape products is approx. 6.5%, while that of the polyester tape products is approx. 2.0%. (Testing conditions: Washing at 60 ºC for 30 mins.; Rinse twice at 38-40 ºC for 2 mins.; Drying at 60 ºC for 30 mins.)

  Note: The shrinkage rate of the zippers may vary depending on the processing conditions such as temperature, duration and applications of chemicals…etc.
  Customers are advised to conduct the pre-production test to avoid any undesirable shrinkage problems occur after the treatments.
- **Color fastness performance** - The color fastness of cotton tape is often weaker than that of polyester zipper tape. Discoloration or stain migration may occur when cotton tape is subjected to any dying process;
- **Color change of metal components** - When cotton tape products on a garment are subject to any dying process, there is a high probability that metal components of the zipper would be subject to color changes and unexpected effects arising from any of a number of chemical reactions;
- **Zipper strength** - Chain strength performance of cotton tape products is weaker than that of polyester tape products.

Considering that different treatment conditions may affect the performance of the cotton tape zipper products at different extent and all the possible factors cannot be listed out in details, test on the garment sample with the specific treatments before placing the bulk order is highly recommended.



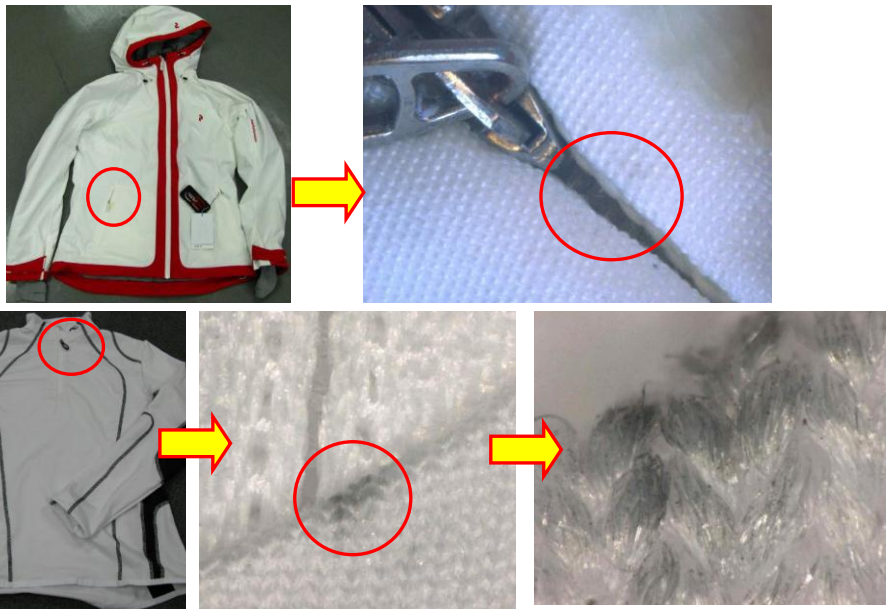


Section 2: Precautions on Wash/Wet Processing <<<<<<<<<

2-10-1 Staining onto Fabric

Garment fabric, especially of light colors, could be stained by sliders after washing or daily use.
This problem is more frequently reported with sliders having a clamper.
Sliders with a clamper have more free movement of the pull, and during this movement the pull metal surface is rubbed against the connecting parts and some particles could chip off.

This chipped-off particles can adhere the adjacent fabric and cause a stain.
This stain, however, can be removed and cleaned by general detergents.

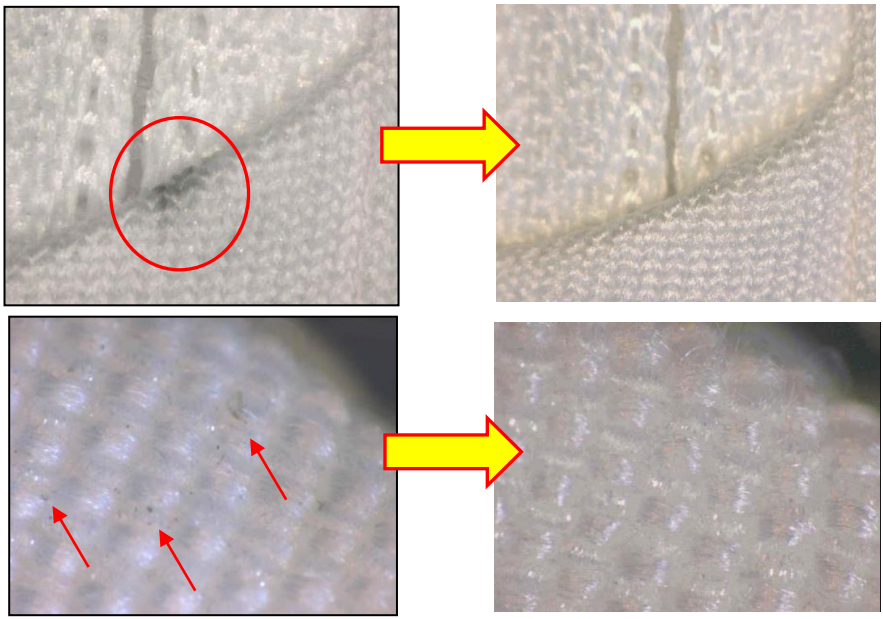


Magnification of a clamper --- surface is scratched and some parts are chipped off.

>>>>>>>> Section 2: Precautions on Wash/Wet Processing

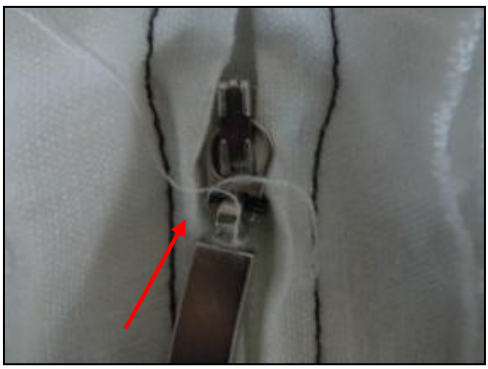
Staining onto Fabric 2-10-2

The stain can be removed using general detergent / cleaning agent.

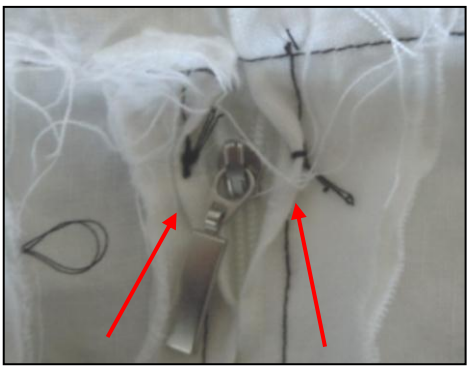


Suggestions

- Fixing the slider puller before garment washing to limit the puller movement is recommended.
- The garment fabric away from contact with the slider is also suggested.



Slider puller is fixed with sewing thread.



The garment fabric is sewn down
to keep away from contact with the slider.