



SEWING GUIDE

HOOK AND LOOP FASTENERS FROM THE VELCRO COMPANIES

The purpose of this technical manual is to assist you with sewing attachment techniques used with hook and loop fasteners from Velcro USA Inc.

For information about other attachment techniques, including adhesives (solvent activated, pressure sensitive, etc.), heat sealing, ultrasonic, dielectric, nails or staples please call Velcro USA Inc., National Sales and Marketing Headquarters at the toll-free number listed on the back panel of this brochure.

PRODUCT SELECTION AND PERFORMANCE

The Velcro companies offer a wide range of hook and loop products, each offering different performance characteristics. These result from various hook configurations, mating loop materials, the construction as well as the materials from which both fastener components are made.

The amount of fastener needed for each application (as well as adjustability factors) can be approximated by simulating the actual application:

- engage hook and loop fasteners
- apply pressures as required in the application

For specific performance information, please refer to individual Product Information Guides available through your account manager. Technical design assistance may also be available through the Company's product and application development staff.

SLITTING (LENGTHWISE CUT)

Hook and loop fasteners of woven and knit construction are subject to raveling if slit or cut in a lengthwise direction. A 1/16" selvedge is woven along both edges to prevent raveling.

PLACEMENT OF FASTENER

Generally, hook and loop fasteners from the Velcro companies are not limited by directional forces and can be used in any alignment.

The hook component of the fastener is harshest to the touch and is typically used facing away from sensitive surfaces such as human skin. The loop component should face textured fabrics so as to avoid unwanted engagement, or damage to the weave.

THREAD SELECTION

Thread selection (size and fiber content) can not be generalized since it is dependent upon the specific application. If practical, a synthetic or synthetic core thread is recommended. However, in most applications, the thread used in the fabrication of the item is adequate. Special machine adjustments are not required.

Seam strength values of hook and loop fasteners from the Velcro companies are comparable to those of any seam in the product.

Where practical, please consult a major thread manufacturer for specific recommendations.

STITCH TYPE

Seam strength values are directly related to thread size, fiber content, stitches per inch and stitch type. Depending on the specific application, hook and loop fasteners from the Velcro companies can be attached to achieve required seam strengths by using a wide range of stitch types.

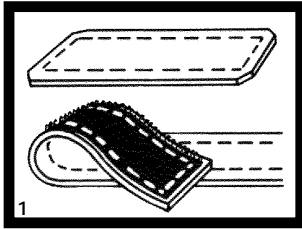
- **Single Needle Lock Stitch Type 301** - appropriate for most apparel applications. 300 series zig-zag also appropriate for certain applications
- **Stitch Type 400 Series Multi-Thread Chain Stitch** - comparable to 300 series.

Where practical, please consult a major thread manufacturer for specific recommendations.

PRE-POSITIONING

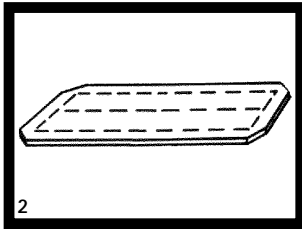
Hook and loop fasteners from the Velcro companies can be purchased with a special pressure sensitive adhesive that can simplify pre-positioning of the fastener in certain types of production sewing.

Sewing Guide for VELCRO^{BRAND} Touch Fasteners



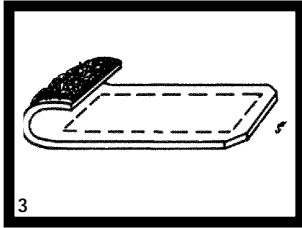
1 STANDARD ATTACHMENT - ALL EDGES

Stitch along all four edges of fastener tape to form a box stitch. Two edge only stitching may result in seam failure.



2 TRIPLE STITCH ATTACHMENT

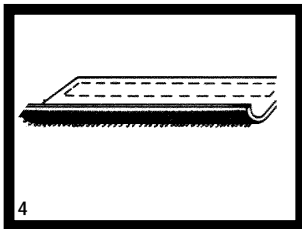
Wide hook and/or loop tape widths that must endure folding should be stitched down the center, in addition to the box stitch.



3 ANTI-PEEL TAB

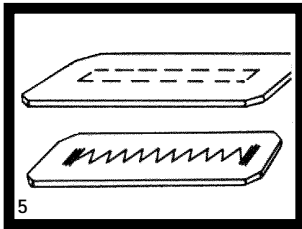
Anti-peel tabs resist unwanted peel forces which occur because of motion, severe wind, bulky applications or component interference found in some product designs and uses.

An anti-peel tab can be fabricated by offsetting the four-sided box stitch on either or both ends of hook and loop components.



4 ANTI-PEEL EDGE

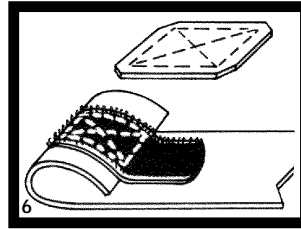
To prevent unwanted peel length-wise, offset the double needle box stitch to one side of the tape. The anti-peel tab effect (see section 3) can also be incorporated by moving the offset box stitch toward one end of the fastener tape.



5 DOUBLE ANTI-PEEL EDGES AND/OR TABS

Peel movement occurring on both sides of the closure can be resisted by sewing a double stitch through the middle of the tape. A zig-zag stitch may also be used.

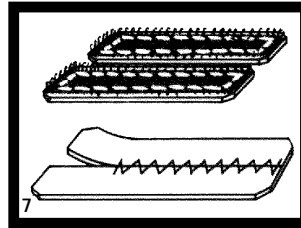
Space seams approximately 1/4 inch apart on 1 inch width tape; proportion accordingly on wider fasteners.



6 EXTENDING TAPES

Tab extension is an effective economy measure when combined with lengths of strap or to provide tab adjustability to elastic materials.

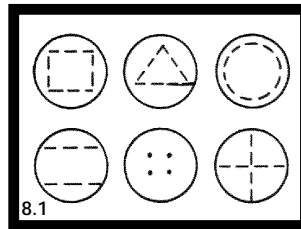
Applications which specify hook and loop fastener tapes to extend beyond the substrate material should be overlapped by approximately 1/2 inch and sewn securely with a box X stitch. A double stitch may be substituted if only a small piece of fastener tape extends over a strong substrate.



7 EXTRA WIDE TAPE

Heavy duty fastening which requires greater tape widths can be achieved by sewing hook and/or loop tapes side by side on the substrate. Use standard box stitch.

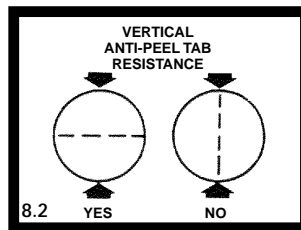
Velcro USA can fabricate wider sewn widths of woven and knit hook and loop on special order. For extra wide hook fasteners, inquire about ULTRA-MATE[®] brand molded hook fasteners which are available in widths up to 12 inches.



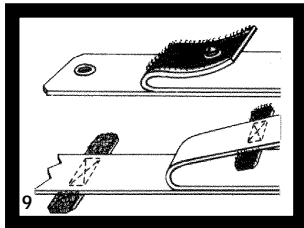
8 ROUND SHAPES (VELCOIN[®])

The diagram 8.1 illustrates the many ways round/die cut hook and loop fasteners from Velcro USA can be stitched.

When an anti peel tab design is required, the stitch location must be across the direction of the peel - see illustration 8.2.



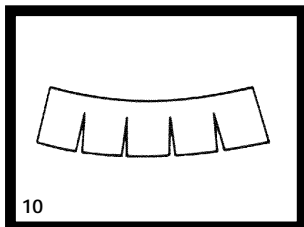
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9 LENGTH ALIGNMENT FOR LONG CLOSURES - SNAPS OR TABS

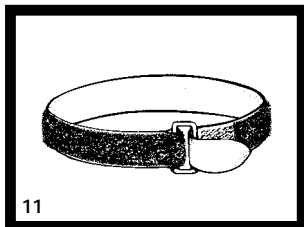
To ensure proper alignment when attaching long lengths of hook and loop fastening tape, use either of the following methods.

- Use snap fasteners positioned within the hook and loop tape components at each end. Very long lengths may require an additional snap in the middle of the length.
- Sew hook and loop tabs across the tapes at the measured halfway point of each tape. Press the tabs together to mate tapes without misalignment.



10 SCORING

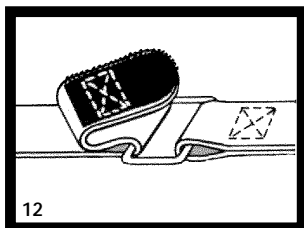
Hook and loop fasteners from Velcro USA can be ordered in a pre-scored format that allows fastener to lie flat in the form of an arch or in many non-standard configurations. NOTE: hook and loop fastener tapes may be subject to raveling if slit lengthwise by the user - factory scoring is recommended.



11 VELSTRAP® (VST)

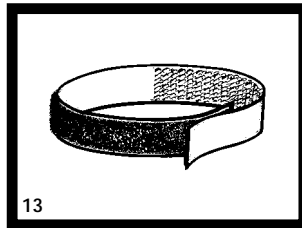
The VELSTRAP® fastener is a cinch strap offering significant holding power and infinite lengthwise adjustability. It is made from a hook tape component which is attached back-to-back with a standard napped loop tape. Includes a D-ring.

See section 6 for proper sewing method.



12 FACESTRAP FASTENER (VFS)

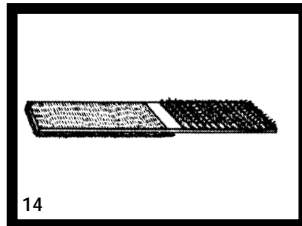
If a ring or elongated opening already exists on the product, a VFS may be used in a manner similar to a VELSTRAP®. A VFS is fabricated from a loop tape which has a hook component stitched at either or both ends. The hook fastener folds back onto the loop to engage.



13 BACKSTRAP (VBS)

A VBS is fabricated by sewing a hook tape to a loop tape with a half inch overlap (hook faces up, loop faces down). Ideal for applications where there is a predetermined circumference to be strapped. When circumference is extra large, webbing may be used in conjunction with hook and loop tape from the Velcro companies to reduce cost.

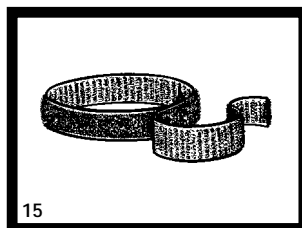
See section 6 for proper sewing method.



14 SIMPLIFIED BACKSTRAP

A simple Backstrap can be fabricated by sewing a limited amount of hook tape to predetermined length of loop tape.

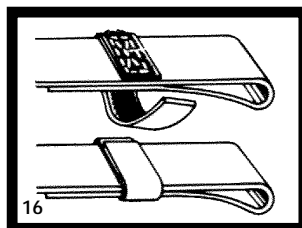
See section 1 for proper sewing method.



15 BACK-TO-BACK STRAP

A Back-to-Back Strap uses equal lengths of hook and loop tape which are laminated one back to the other. Can be purchased as a prefabricated woven VELCRO® brand Back-To-Back Strap or as a ONE-WRAP® strap which is made from an ULTRA-MATE® brand molded hook.

A back-to-back strap can also be fabricated by the user by sewing hook and loop tapes together using sewing method described in section 1.



16 LOCKING CLOSURE

A small fabricated backstrap tab can be sewn across the closure in applications requiring a secure end closure.

See section 6 for proper sewing method.

GENERAL CHARACTERISTICS OF WOVEN NYLON HOOK AND LOOP FASTENER TAPES FROM THE VELCRO COMPANIES

EFFECTS OF LIQUIDS

- Completely washable and dry-cleanable
- Shrinkage: maximum 3% for hook; maximum 4% for loop
- Most oils do not significantly affect closure performance
- Retains minimum 50% closure performance in water; recovers to 100% after drying.

EFFECTS OF HEAT AND COLD

- Cold improves the rated closure strength (may reduce cycle life)
- Can be sterilized or autoclaved
- Melting temperature to 400° F
- Hand ironing - up to 250° F

WEIGHTS - THICKNESS - DIMENSION

- Weight per inch of closure 0.45g without selvages; slightly less with selvages
- 25 yards of 1 inch wide hook tape weighs 6.25 oz. without selvages; 6.0 oz. with selvages
- 25 yards of 1 inch wide loop tape weighs 8.0 oz. without selvages; slightly less with selvages

- Thickness of the closure is approximately 1/8 inch
- Width of tape varies with tape width and whether or not selvages are present; ranges from a low of +/- 1/32 inch to +/- 1/8 inch
- Selvages, when present on woven tape, are a maximum of 3/32 inch each

HELPFUL HINTS

- For best results, mate tapes for laundering or dry cleaning
- For best results, mate tapes when ironing
- VELCRO® brand 100% nylon fasteners should be treated the same as any other nylon fabrics

INTERESTING OBSERVATIONS

- Pressing the closure together will increase the closure's resistance to unintentional separation (opening). Vibration, over time will produce the same effect. Both actions will likewise increase the force required to separate (open) the closure.
- Cutting across the tape will not cause raveling
- Slitting or cutting the tape lengthwise may cause raveling.

IMPORTANT NOTICE TO PURCHASER

All statements, technical advice and recommendations contained herein are based on tests believed to be reliable, but the accuracy there of is not guaranteed, and the following is made in lieu of all warranties, express or implied: Seller's and manufacturer's only obligation shall be to replace the quantity of product proven to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

**FOR SALES AND TECHNICAL INFORMATION,
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