

Apparel Online

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Shirt Manufacturing In Bangladesh

A wide expanse from basics to value-added casuals to high-end formal shirts

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Technology for Belt Loop Attachment in Trousers

Belt loop attachment in jeans is one of the final operations to be done. Therefore, it is of special significance, because making mistakes at this level is certainly not acceptable when already a lot of investments in terms of time and money has been put into the garment. If we look at a typical description of the operation, it's making a long belt out of which small length strips are cut and attached by a bartack machine. Quality issues like wrong alignment or unacceptable finish are different issues to be dealt with. Doing this operation manually results in lesser output than targeted so that investment in automated machinery should be considered. *Pravesh Kaushik and Prof. Prabir Jana, NIFT, Delhi* gives us the benefits of their study of this topic.

In this article, we will discuss the levels of technology, solutions available for an operation, makes and models of machinery and equipment available in the market and return-on-investment comparison for basic and highest level of technology for belt loop attachment

in jeans. The description given below could eventually make one understand and decide a course of action to adopt for dealing with the operation. The level of micro work of proper alignment and attaching can be simplified by a semi-automatic machine.

Apart from cost-effectiveness, quality is an added advantage which we will not take into account for tangible profit analysis.



Duerkopp Adler 512-211 Electronic lockstitch belt loop bartacker



VIBEMAC 4650 EV9R Automatic Belt Loop Attaching Workstation

Basic Level of Technology

The basic level of technology uses electronic lockstitch belt loop bartackers. The operator first positions the pre-cut loop in the clamp and then picks up and positions the waistband of the trouser below the clamp and then presses the pedal to start the machine. The operator then repositions and tacks the other end

of the same loop. The operation cycle is repeated for the next loop.

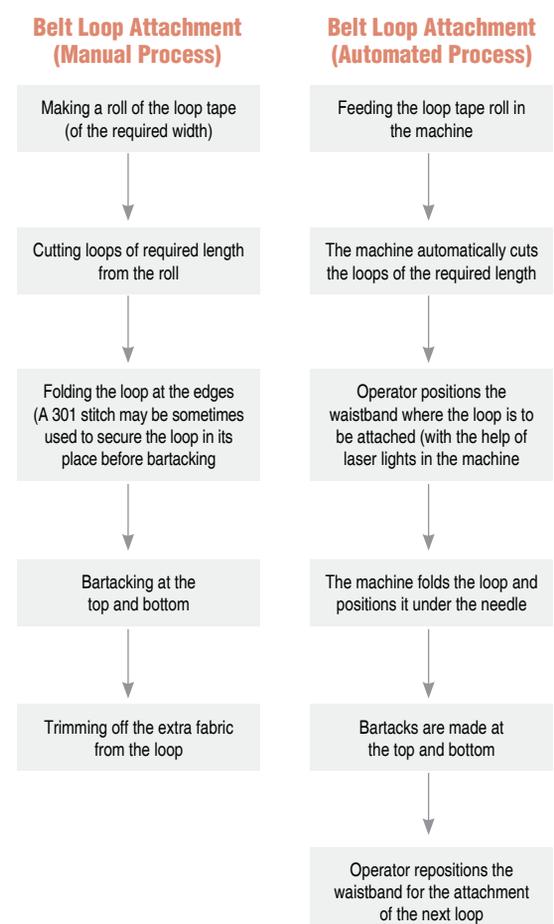
Advanced Level of Technology

In the advanced level of technology, a roll of pre-formed loops is loaded onto the machine. The loop is automatically fed to the machine clamp with both ends trimmed and folded. The operator only positions the trouser waistband below the clamp and the machine sews both the ends of the loop in one operation cycle.

The entrants in this segment have machine heads that come with a computer-controlled X-Y linear feeding system which enables programming the number of stitches and size of bartacking. The

Makes and Models	Features and Specifications of Machinery Required for Basic Level of Technology
Kansai Special BLX2202CW/PC*	Continuous Belt Loop Maker Two Needle, Flatbed, Bottom Covering Stitch for ready belt loop width of 9 to 20 mm, with front trimmer and puller. Comes with an optional automatic belt loops cutting device, BK-20.
Duerkopp Adler 512-211	Electronic Lockstitch Belt Loop Bartacker Single needle lockstitcher with sewing speed of 3000 SPM, maximum work area of 40 X 30 mm and memory capacity of 50 standard patterns which can be modified in length and/or width ranging from 0.1 to 10.0 mm. Cycle time is reduced by step-motor controlled clamp lift of 17 mm. Neat seam beginning is ensured with the help of a thread wiper, while no compressed air is required.

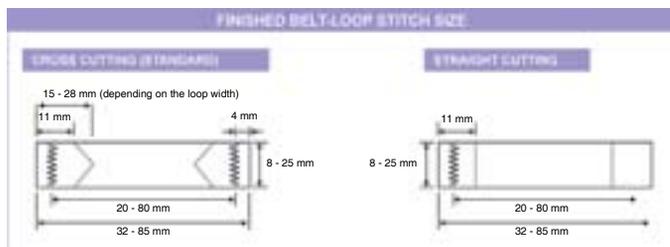
*The same machine is also used in the Advanced Level of Technology



Make and Model	Features and Specification of Machinery Required for Advanced Level of Technology
VIBEMAC 4650 EV9R	<p>Automatic Belt Loop Attaching Workstation</p> <p>Equipped with a completely new 7" coloured touch screen panel, the two needle lockstitch belt loop setter has a sewing speed of 2,800 SPM and loop width of 8 mm to 25 mm, with an optional 30 mm also available. Also equipped with a new thread aligner, presser foot and operating system, the automat has a sewing area of 15 mm X 23 mm. The new loop aligner system avoids the loop mispositioning on the fabric, especially for the folded tails. The Auto-diagnostic system can foresee possible error and even the machine can be operated without the touch-screen panel in case of a breakdown. The machine is equipped with a control key to allow only the supervisor to change the unit parameters, and no one else.</p>



Loops being made and attached to the waistband



Picture Courtesy: Vibemac 4650 EV9R*

*The machine is factory-equipped with a cross-cutting device at the time of delivery

	Basic Level of Technology	Advanced Level of Technology
SAM value for single loop attach (in minutes)	0.32	0.05
Production of loops per day approx. (shift of 8 hours)	1500	9000
No. of Jeans per day (@ 5 loops per jeans)	300	1800
Working days per month	26	26
No. of months per year	12	12
Production of Jeans per annum	93600.00	561600.00
Cost of belt loop attaching in one Jeans (BDT)	6.40	6.40
Cost output per annum (BDT)	599040.00	3594240.00
Production Target (Jeans per day)	1800	1800
No. of machine required	6	1
Cost of one machine (BDT)	400000.00	2800000.00
Cost of total machine (BDT)	2400000.00	2800000.00
Annual Depreciation (%)	0.15	0.15
Depreciated value of machine after one year (Z)	2086956.52	2434782.61
Cost of one operator per month (BDT)	3000	3500
Total operators salary (Y) (BDT)	216000.00	42000.00
CM price from total machine (X)	3594240.00	3594240.00
Cash Inflow I = (X-Y)	3378240.00	3552240.00
ROI for the first year, (X-Y)/Z	161.87%	145.90%
Pay back Period (T/I x 12 months)	9 months approx.	10 months approx.

number of stitches to sew a belt loop can be switched between 28-, 36- and 42-stitches, and the bartacking size can be easily varied.

A few machines have an electric sliding mechanism which electrically shifts the front hook when replacing the bobbin or conducting maintenance on nearby components in order to widen the space between the hooks and facilitate the job of machine cleaning and maintenance. These machines are generally oil lubricated, using wick lubrication.

Most machines in this bracket are equipped with a direct-drive system that improves start up performance and shortens sewing time. They also have a halfway standby capability for subsequent belt loops, and its faster belt loop supply action shortens the time required for supplying belt loops and helps speed up the machine.

The standard machine incorporates a 1.8-fold capacity shuttle hook. There are two horizontal bobbins in the machine and they need to be refilled after 60-70 loops (this may vary from machine to machine). The shuttle hook improves efficiency by reducing the frequency of bobbin thread replacement. The machines may also use aluminium bobbins.

In most machines, (like the Juki MOL-254) belt loops are fed out by the conventional gear-roller feeding mechanism and also drawn out by the new drawing mechanism on the clamp device. Supported by these two mechanisms, the folding fork catches "curled" or "creased" belt loops every time and supplies them to the head. These smart machines have sensors that detect the presence/absence of belt loops on the clamp. Also, if there is a faulty or non-uniform belt loop being fed, the sensors at the clamp device automatically repeat the clamping action. Since the operator does not have to operate the setback switch, time lost is very less.

The machines also check for splices (by detecting changes in

the material thickness) in the belt loops and efficiently dispose them off. This means that even when the machine carries out the splice disposal procedure, the belt loop feeding device can complete its belt loop supply action and supply the next belt loop well before the machine starts to sew. As a result, the operator can perform rhythmical and efficiently sewing work with no delay in cycle time.

To enable computer-controlled belt loop supply performance, the machines have a servo motor driven belt loop feeding device that feeds the belt loops to the sewing position (i.e., under the presser foot), which is automatically adjusted to the belt loop width. Also, when feeding the belt loop under the presser foot, the width wise position of the belt loop can be offset through simple manipulation.

With the view of improving the workability in replacing belt loops, the belt loops insertion opening through which belt loops are supplied to the feeding device is now located on the front side of the main unit in many machines to facilitate operator to visually check how the belt loops are fed during sewing and prevent possible trouble in the belt loop feed due to faulty loop-feeding paths. Also, to facilitate the worker from an ergonomic point of view, the height of the working table can be easily adjusted to match the operator's height. The operator can carry out sewing work in a comfortable posture with less physical strain and fatigue.

This highest level of technology deskills the operation to a large extent; it helps increase productivity and uniformity of the operation by mechanising the whole belt loop attachment process. The machines in this segment complete the attachment procedure with the efficiency of nearly 1.2-2 sec/belt loop, which amounts to approx. 1500-1800 jeans per shift, with a machine speed of about 2,000 to 2,500 RPM. The machines require a semi-skilled but literate labour (who can operate the machine as against 7-8 skilled operators required otherwise).