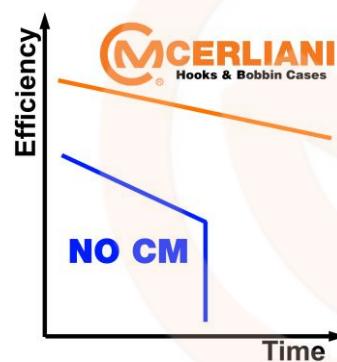


The hook is the heart of the sewing machine: every technician knows that! The quality of the stitching and the efficiency of the sewing machine depends on the hook. Even the best sewing machine of the best brand equipped with a poor quality hook will produce bad stitching and stop often. Conversely, a sewing machine of poor quality or an old one, but featuring a first class hook will substantially improve its performances.

This because of a very simple principle, understood even by those who are not sewing machines experts: the stitching's most delicate factor are not the steel parts of the sewing machine, but the thread itself that can break or become damaged easily, especially when increasing the sewing speed. Just a slight restraint or impediment to the flow of the thread immediately causes sewing defects, such as nesting, looping, skipped or uneven stitches, wrinkling of the fabric and shredding of the thread or, at worst, thread breakage resulting in downtime. The thread is the most delicate element of sewing operation and for this reason utmost care and attention has to be devoted to the components where the thread flows through. Basically the thread passes through two critical components: the needle and the hook. On these two components and their correct tuning depends the stitching quality and the efficiency of the whole sewing unit.

The finishing of the needle eye determines the abrasion of the thread that passes through it and the shape of the needle establishes the quality of the hole in the material to be sewn, but the hook is responsible for the formation of the stitch and its proper and stable locking! For this reason, no doubt, the engineers consider **the hook to be the heart of sewing machines**.

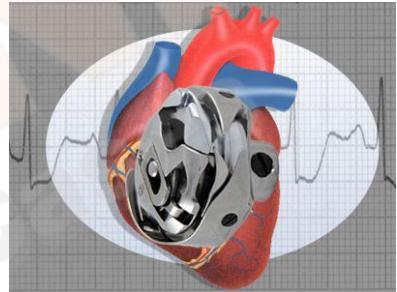
The user can not underestimate the importance of the quality of the heart of his sewing machines. In choosing a hook it is necessary to take into account, of course, the cost of the same. It should however be considered that the cost is quite different from the simple purchase price. Undoubtedly, the purchase price is an important issue, but, contrary to what someone may still believe, it is not the most influential on the final cost of the hook.



A hook of quality increases the efficiency of the sewing machine and of the whole production line, as it reduces both, operator interventions for smaller sewing problems (such as thread breakage or the continuous adjustments of the thread tension in order to adapt to the irregular performance of the hook, and to resume the work from the point where the seam was interrupted), and interventions of a technician for more serious problems (needle breakage, damage to the hook point, frequent replacements of the hook due to its shorter service life). All of these various interventions cause downtime and force to waste a lot of time in operations without added value that could be avoided with a top quality hook.

Furthermore, it also happens that, in order to achieve a barely acceptable stitching quality and/or to reduce downtime, it is necessary to reduce the sewing speed, so increasing the processing times and once again reducing the efficiency. Moreover, a non-reliable and non-stable stitching quality obliges to more frequent and carefully visual controls on the finished products and further repairs or wastes.

Actually there are almost never true scraps or wastes (except for faulty seams on high quality leather garments), and almost all items can be repaired. However, the cost of repair is very high, because the bad stitching part has to be unstitched and then completely redone with great care. Usually the same sewing machine operator performs this operation, but the loss of time and production risks to create a bottleneck for the whole production if working in a linear assembling line and not in batches. To express a timing and cost rate for repairs caused by a poor quality hook is very difficult, because it depends very much on the product: from shirts to shoes the timing and lengths of the seams are in fact very different.



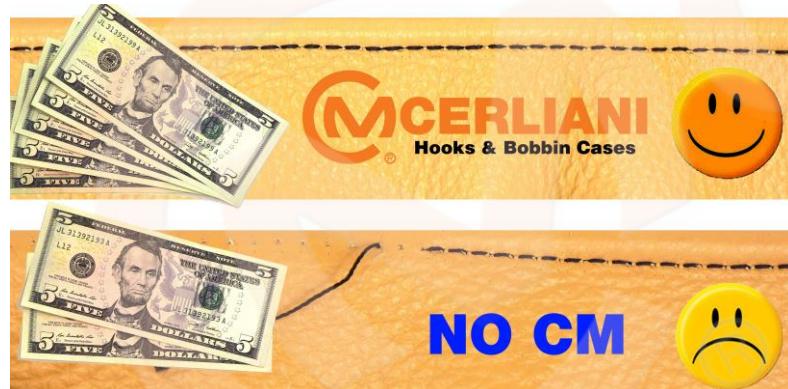
Especially in systems where production is organized in lines and the stop of one machine has an impact on the productivity of the whole production line, but, more generally, everywhere efficiency is important, all these causes of loss of time and loss of production weigh significantly on cost of the product, because time is money!

In fact, all these factors generate costs, often hidden and difficult to quantify in terms of time and money, but that would be amply rewarded by a hook of high quality, even if at a higher purchase price

Finally, products showing perfect stitching qualities and careful finishing allow their manufacturers to position themselves in higher demanding market segments, which however are also more profitable and with higher turnover, such as just those of fashion brands, in the automotive sector and of international markets.

Another major factor in the assessment of the total cost is the service life of the hook: it is clear that if a quality hook lasts 2 or 3 times longer than a hook of low quality, the price of the quality hook should be compared, just for this reason, to 2 or 3 times the price of a low quality hook!

In addition to the service life as itself of the hook, due to wear during normal use, and which in fact, under equal conditions, can be easily verified to be 2 or 3 times longer in a high quality hook compared to a cheap hook, it is necessary to bear in mind that these cheap hooks present sometimes manufacturing defects, which cannot be detected by eye, but that emerge when one of them is mounted onto the sewing machine and continuously breaks the thread. In this case the hook is immediately replaced, but it anyway represents a deadweight loss to the company, both for the lost time, and for the cost of the hook, which is never or almost never replaced under warranty, especially if it was for a long time in stock (at the customer or even at the dealer).



Conversely, **MCERLIANI** hooks feature a constant and repetitive quality without the risk to lose unnecessary time mounting a defective product onto the machine.

Furthermore, **MCERLIANI** products are always covered by the manufacturer's warranty and if a manufacturing defect should ever result present on a new product (regardless of how much time it was left in stock), **MCERLIANI** will replace it for free. Still referencing the hook's service life, the high hardness obtained thanks to special high quality steel (such as the German used by **MCERLIANI**) and heat treatments of high technology deserve a particular consideration in comparison to those of hooks of poor quality. Not only the mayor wear generated during the normal use (as analyzed previously) but also the minor service life caused by accidents, i.e. collisions with the needle, should be taken into account.

In fact, during the stitching, the operator can force the movement of the sewing material and cause a bending of the needle. If the hook is not of high quality and high precision as regards the relationship between hook point and needle guard plane on the basket (in the case of horizontal axis rotary hooks), or if the hook is without the possibility of a fine needle guard adjustment for vertical axis hooks (as patented by

MCERLIANI), or further, if the hook was not fitted well onto the sewing machine, or if simply, because of small manufacturing quantities, it occurs to change continuously type of production, for example passing from a 100 to a 120 size needle without previously adjusting machine and hook, then it can happen that the above mentioned needle deflection causes a collision between needle and hook.



STANDARD

DC10

If the hook is not hard and the steel not tough enough, then not only the needle will break, but it will easily damage also the hook point. In this case, the technician must remove the hook, grind it and redo the shape of the point and remount it onto the machine. If the technician is competent, the operation will take him at least 30 minutes, otherwise he must scrap the damaged hook and replace it with a new one. However, the repairing of a hook is only possible with high quality hooks that have a sufficient thickness of the case-hardening depth (i.e. the harder surface layer). In conclusion, steel quality and heat treatment are essential in determining the service life of the hooks for different reasons and not only because of the less wear and tear!

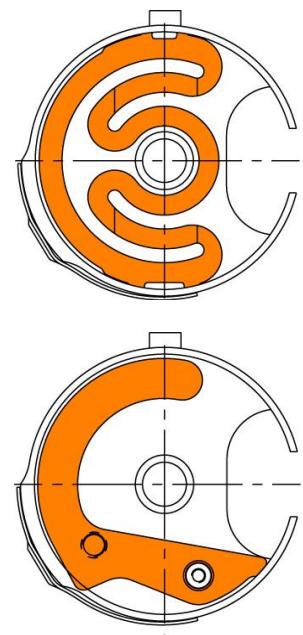
Unfortunately for end users it is not so easy to determine the quality of a hook, both in terms of performance and of life, as great experience and a lot of time is required for such a judgment. In fact it needs time, months and years, to be able to judge the difference in service life of a hook and the decay of its performance. Only large corporations can afford to keep registered and analyzed all data regarding the service life and performance of the hooks. Small and medium-sized companies can only rely upon the "feeling" of its mechanics. Unfortunately, the feeling is not foolproof, because it is not a scientific method, but it is affected by various factors (not least the pressure of purchasing managers to reduce the immediate purchase cost, forgetting that the company's interest is to reduce the total production cost).

The reason why large companies and multinational corporations just want top quality hook is due to the fact that they are able to verify the total cost generated by the quality of the hook and do not stop at just considering the purchase price!

Not only for hooks but also for the bobbin cases the quality assumes fundamental importance! A first class bobbin case features an easily adjustable tension spring that allows to obtain a constant and reliable thread tension for a repetitive and perfect lockstitch. Moreover, the presence of the NBL spring prevents accidental unwinding of the thread from the bobbin, and so thread breakage and sewing defects. MCERLIANI's additional MF version allows also to adjust the braking effect of the bobbin, and fixing the NBL spring on the bobbin case through a screw prevents its accidental disassembly and loss.

The culture of quality and efficiency is the one that makes many customers who earn a living on sewing machines worldwide to choose MCERLIANI hooks.

To produce quality hooks requires a great deal of experience in both hooks' geometries and accuracy and repeatability of machine operations, as well in the finishing and cleaning, all requiring large investments to remain at the forefront. MCERLIANI has gained its experience in more than 80 years working closely with manufacturers of sewing machines and end users! For this reason the quality of MCERLIANI hooks is unique and unrivaled! For this MCERLIANI is quality leader on the hook market all over the world and is highly appreciated by the best users, loyal to the MCERLIANI brand and confident to always find the highest level of technology and quality in a MCERLIANI product, strictly Made in Italy !!!!!



COST OF A POOR QUALITY HOOK COMPARED TO A TOP QUALITY ONE AS MADE BY



Evaluation of the total cost of a poor quality hook "B" compared to a high quality hook "A"

The estimates were made deliberately prudential and by defect, considering very low values of inefficiencies for hook "B" compared to hook "A" (i.e. considering a hook "B" of already decent quality) and really low production costs of only 150.00 \$ / month!

Also the purchase price of hook "B" has been set very low (only 5.00 \$), but, as can be seen from the following computations, for the determination of the hook's total cost, the purchase price is very little influential! As a matter of fact, the costs generated by the lack of quality of the hook are the real crucial factors affecting the overall cost!

Initial price of the hook	5.00 \$	Let us assume an initial price of 5.00 \$ for a poor quality hook	
Costs generated by the shorter service life of the hook	X 2	Let us assume that hook B lasts one year, while hook A lasts two years. Hook A lasts at least twice as long, thus two hooks B are needed to reach the same service life as one hook A.	
	= 10.00 \$		
Costs generated by the lower efficiency of the sewing machine due to stops	+ 19.25 \$	Assuming, due to thread breakage or need of adjustment, an average of at least 1 stop more every hour using hook B with respect to hook A, for an average of 21 seconds lost per stop (in reality the loss of time is higher as generally the operator is slower than the technician), for 8 working hours, for 220 days per year, for two years, you get 1232 minutes lost (equal to 2.5 working days). With a cost per minute of 0.016 \$/min (equal to 150.00 \$ per month) you get a cost in two years of 19.25 \$!	
	= 29.25 \$		
Costs generated by more frequent reworks	+ 13.75 \$	Assuming an average of at least 1 rejected item more every day while using hook B with respect to hook A, considering an average reworking cost of 2 minutes of work per day, for 220 days per year, for two years, you get 880 minutes lost (equal to 1.8 working days). With a cost per minute of 0.016 \$ (equal to 150.00 \$ per month) you get a cost in two years equal to 13.75 \$!	
	= 43.00 \$		

COST OF A POOR QUALITY HOOK COMPARED TO A TOP QUALITY ONE AS MADE BY



Costs generated by more frequent interventions by the technician	+ 21.38 \$	Assuming an average intervention by the technician of only 19 minutes more per month while using hook B with respect to hook A, for 12 months per year, for 2 years, you get 456 minutes lost (equal to 1 working day). With a cost of 0.094 \$ per minute (equal to 300.00 \$ per month for the technician and 150.00 \$ per month of lost production by the sewing machine) you get a cost in two years of 21.38 \$!	 NO CM
	= 64.38 \$		
Costs generated by the sewing machine's minor efficiency due to the lower sewing speed	+ 165.00 \$	Assuming an average 10% speed reduction of the sewing machine with the use of hook B instead of hook A, and considering that the machine sews 50% of the operation time, it results in a 5% increase of the production time or, for computing simplification (not knowing the production time per item) an increase of 5% of the cost per minute. With a cost per minute of 0.016 \$ (equal to 150.00 \$ per month), the 5% increase results in 0.0008 \$/min for 8 working hours, per 220 working days, for two years, results in a cost in two years equal to 165.00 \$!	
= 229.38 \$ TOTAL COST OF THE HOOK IN TWO WORKING YEARS			
<p>Consider that, doubling the production cost used for the calculations, also the cost of hook B would double, i.e. with a production cost of 300 \$/month, the final cost of hook B would be of 448.75 \$.! The decision to buy a high quality hook "A", whose price would be even more than 4 times the price of a hook "B" of lower quality, appears in any case well motivated and its benefit is obvious to anyone!!</p> <p>If we want to consider, out of curiosity, also the consequence of the positioning in a less profitable market segment because of the lower quality of the product, here's what happens:</p>			
Positioning in a less profitable market segment because of the lower quality of the product	+ 2,112.00 \$	Assuming an hourly production of 60 items, for 8 hours, for 220 days per year, for two years give 211,200 items totally produced. If, due to the lower sewing quality because of the use of a B hook instead of an A hook, it is necessary to accept a less profitable market segment. may it even be of only 0.01 \$ per item less, the loss of revenue or the cost in two years results to be 2,112.00 \$!	
= 2,341.38 \$ TOTAL LOSSES IN TWO WORKING YEARS			
<p>Who may still have doubts, whether it is appropriate or not to buy a quality hook as</p>			