

Thread Break Investigation

One question that is often posed in embroidery is: "Why is my thread breaking so often?" Here we will try to give you some tips on evaluating the problem and consequently finding a solution



At Your Embroidery Services Ltd we like to think that users of our SWF embroidery machines are getting maximum output and we go to great lengths to ensure that the quality of our machines guarantee this. All too often though something else gets in the way and creates a problem that, on the surface, may look like the fault of the machine but a lot of the time is not. One of the more common problems is thread breaks. Ironically the machine is frequently NOT the cause of the problem but, unfortunately, it does seem to end up as the usual suspect. Let's look at some of the possibilities.

The Thread

Whether it is rayon, polyester or metallic there is always a chance that the thread could be causing the problem, although with today's exacting standards it is less likely than a few years ago. FALC embroidery threads, supplied in the UK and Irish markets by 'YES Ltd', are made to very high standards from the best materials available; but once these threads have left the factory the manufacturer has no control over them. Rayon, for instance, if stored in damp or cold conditions can permanently or temporarily deteriorate which will cause the thread to under-perform. But how can you ascertain whether it is actually the thread that is at fault? Firstly you need to isolate the problem. What seems to be a general thread break difficulty invariably is more focused, but because embroidery machines have numerous needles and/or heads then this becomes blurred. An easy way of achieving clarity is to create a chart with the number of needles across the top and the number of heads down the side. Monitor the embroidery runs and each time a thread break occurs put a mark in the appropriate position in the grid, this will soon show whether or not the problem centres on a particular needle.

Needle/ Head	1	2	3	4
1	X			
2				
3			X	
4				
5	XX	X	X	XX
6				
7				
8				
9				X
10				
11				
12		X		
13	X			
14				
15				

The chart above (15 needle 4 head machine) shows that the thread on needle 5 is consistently breaking on all heads. This would indicate that either the thread or that part of the design is at fault.

If it does, this still does not mean that the thread is automatically to blame and one way of finding out is to exchange that thread with one that is not suffering thread breaks. In other words, needle 5 on head 2 is breaking threads on a regular basis so swap that thread with one that is not breaking. If the problem moves with the thread then that is the cause of the problem, but if the difficulty stays with the needle then we need to look elsewhere for a solution. This little test will mean you lose a production run but at least you are closer to solving the problem and limiting your downtime.



The Pattern

It is a sad fact that there are many digitisers out there today that do not understand embroidery. At 'YES Ltd' you have to understand the concept and the practicality of embroidery before you produce designs. Having this knowledge reduces the risk of making what should be obvious mistakes and creating problems for the embroiderer. When you try the test mentioned above (swapping threads) and the problem stays with the needle then that may be the time to start looking at the design. Your worst enemies are short and blank stitches which can reduce production not only by thread breaks but also by increasing run time. Too many designs still leave studios with one or both of these unnecessary additions which, in truth, are so easy to remove that it makes you wonder why they are still there. Maybe a short explanation will help you understand why these cause problems. A short stitch is one that is 0.4mm or less and a blank is one that stitches in exactly the same place as the previous stitch, but how do you get rid of them? Quite easily actually: by filtering the designs. All SWF embroidery machines have this facility and it is a quick and easy operation to run, but, let's be fair, you shouldn't have to do it. If the stitches are not necessary then they should not be there in the first place, especially as many studios charge by the number of stitches in the design. The more stitches, the higher the cost and, most importantly from your point of view, the longer it takes to run. Even if these extra stitches are not causing you a thread break problem, they are still reducing your production by taking longer to sew. If this is the cause of your thread breaks then you need to have a serious word with your



digitiser. A good indication that there is a problem with a pattern is when a particular part of the design gives problems across the whole machine even if you change the needle number (see chart on previous page).

The Needle

This is one of the lowest cost items on an embroidery machine yet it is something that attracts little investment or investigation. As a rule of thumb always use the best needle you can buy which, as far as 'YES Ltd' is concerned, means either Schmetz or Groz Beckett. The needle is an extremely important part of the thread path and represents the final route of the thread. On a lockstitch machine, which is what an embroidery machine is, a piece of thread will pass through the eye of the needle 40 to 60 times before it is made into a stitch. Any problems in this area will almost certainly damage the thread and cause a thread break. For what they cost it is not an extravagance to make changing the needle the first stop when a thread break problem occurs. By doing this you can instantly eliminate one of the possible causes. If in doubt, change the needle, they cost pennies.



The Machine

As already mentioned the machine is very often 'the usual suspect,' but only because it is an easy target. Look at other areas before concentrating on the machine as it is more likely that the cause of the problem lies elsewhere, but, if your investigations lead you to believe the machine deserves consideration, then what are the starting points? The thread travels a long way on the machine before it reaches the needle and any roughness or burrs along this path will damage the thread. Good housekeeping dictates that you should check this regularly to ensure that no damage has occurred. But it is not just the route the thread takes that can be a problem. The final act before the thread becomes a stitch is for it to be guided around the hook, an act which involves the thread sliding across the surface of the hook and any burrs here can break the thread. Check your hook(s) on a regular basis and, if necessary, clean and polish them with the appropriate abrasive cloth.

A badly maintained machine will not run smoothly and this again can cause problems with the thread. Make sure that you follow the manufacturers or distributors advice on lubrication etc. SWF machines have automatic lubrication but you still have to make sure that the reservoir is filled and, even with this system, you still have to lubricate the hook race. A smooth running machine will always perform better in all aspects of work and will generate increased income. A few years ago it was not unusual for

factories to designate half a day per week to clean and service the machines. They did not see this as downtime, but more as preventative maintenance that would reduce downtime. Remember that prevention is always better than cure.

Conclusion

There can be other reasons for thread breaks but these are the most common and give you a good starting point. When investigating a problem like this it is important to be methodical. Look at one thing at a time and make any changes you think necessary. If the problem persists then move on to the next stage and make relevant changes there. If you want to solve the problem quickly and efficiently only change one thing at a time because, although you may think that this will take longer, it does in fact speed up the process. When you discover the cause, make sure that you take steps to ensure that there is no reoccurrence, whether it involves you or a third party. At the end of the day the cause may belong to someone else but the resulting loss of production is definitely yours.

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