

Seam Defect Diagnostics

Read the seam before you name the cause.

1 KNOW

I know what the thirteen defect patterns are.

2 UNDERSTAND

I understand why a defect happens and how the method works.

3 RECOGNISE

I recognise the pattern in a customer situation.

4 APPLY

I use the knowledge in my daily work and in customer conversations.

For AMANN employees who meet customers, products, applications or technical questions · 15 minutes · Prerequisite LN 025

The call is never about thread. It is about a stopped line.

What happens in the first ten minutes decides whether the case can be closed technically — or becomes a commercial argument.



Without the method

- 1 A cause is named from experience, in the first minute.
- 2 The machine is re-adjusted, re-threaded, re-neededled.
- 3 The defect disappears. Everyone is satisfied.
- 4 No sample, no record — and no explanation.

The same defect returns at the next lot, at the next site. Nothing was learned, and the case has a history nobody can reconstruct.



With the method

- 1 Two minutes of documentation before anything is touched.
- 2 The evidence is read in a fixed order, under magnification.
- 3 One parameter is changed, then verified on a test seam.
- 4 Every change is recorded — including the ones that did not help.

The cause is named and demonstrated. If it lies elsewhere, that is said with evidence — which is what makes the next assessment believable.

The difference is not skill. Both advisors may name the same cause. The difference is whether the finding can still be shown to anyone three weeks later.

Four things you can do afterwards

All four are demonstrable at a machine or in a customer call — none of them is a definition to memorise.

1



Secure the evidence

Complete a Seam Defect Record at a customer machine and take samples that are still usable weeks later.

2



Read the seam

Identify the defect pattern by sight and under a linen tester, and state what each observation excludes.

3



Ask the right questions

Narrow the cause with four questions, before any tool is picked up — mostly on the telephone.

4



Say what is true

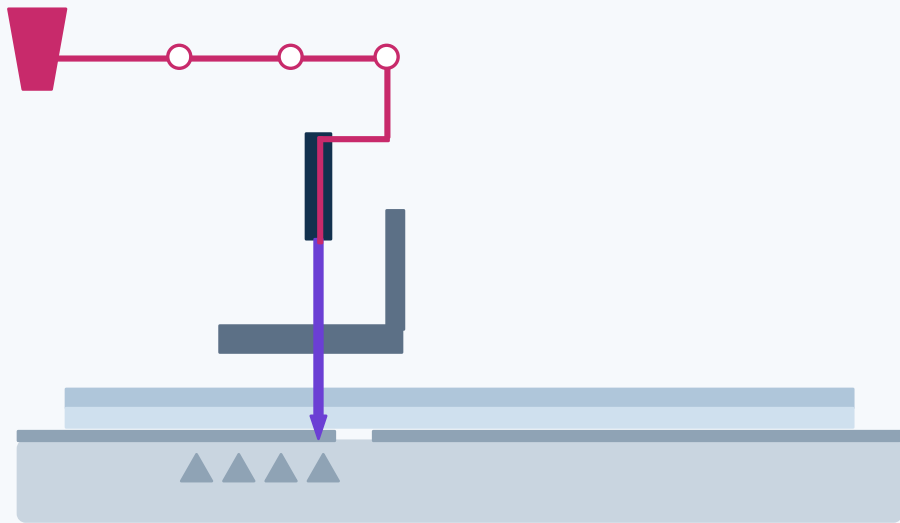
State clearly whether the defect is thread-related, with the evidence visible — including when it is not.

And one judgement the module does not avoid

In eleven of the thirteen defect patterns the thread is at most a contributing factor, and in two it plays no normal role at all. Being able to demonstrate that is what makes an AMANN recommendation credible on the day the thread genuinely is the answer.

A seam defect is evidence, and it has five possible origins

Naming the group before naming the cause is what turns an opinion into a diagnosis.



Simplified stitch-forming zone: cone, thread path, needle bar and needle, presser foot, fabric plies, throat plate and feed dog.

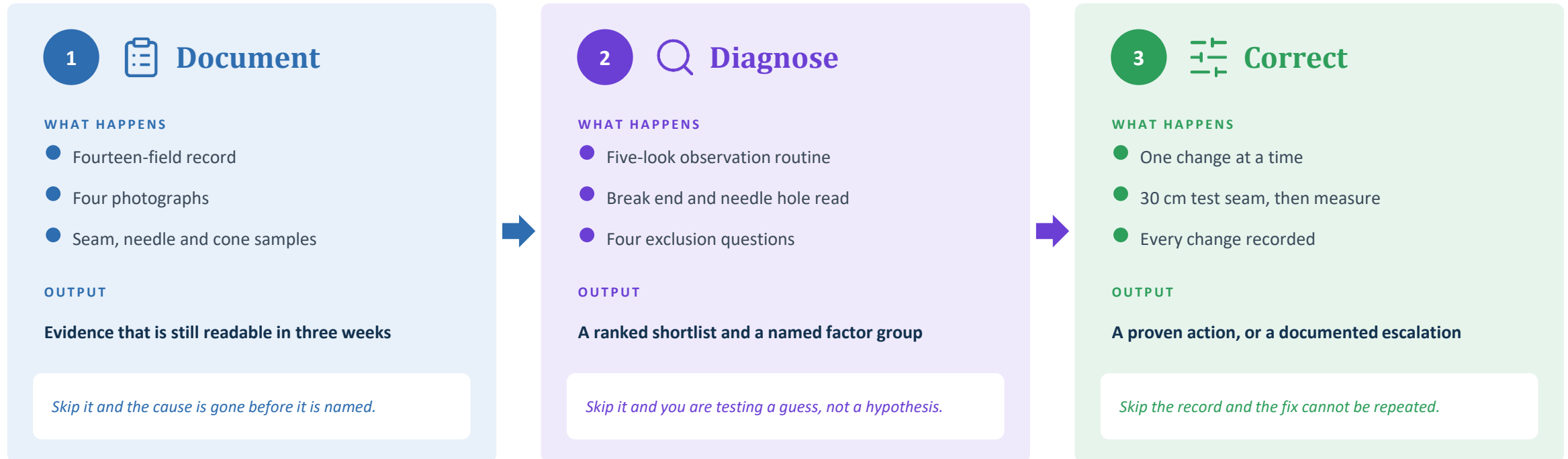
- 1 Machine**
 Timing and clearance, take-up and check spring, tensions, feed, presser foot, throat plate, speed, and every burr in the thread path.
- 2 Needle**
 System, size Nm, point style, blade stiffness, groove and scarf, coating — and condition. The cheapest group to correct.
- 3 Thread**
 Raw material, construction, ticket size, finish, bonding, condition on delivery, and the match to needle and stitch type.
- 4 Material**
 Fibre and blend, construction and density, finish or coating, elasticity, plies, conditioning and storage.
- 5 Method and operator**
 Seam and stitch specification, stitch density, seam allowance, guiding, setting discipline, needle-change interval.

The customer names the group they can see — the thread, because the thread is ours. The advisor checks the other four first.

The module quotes no percentages for the relative weight of the five groups: no published distribution exists.

Document. Diagnose. Correct.

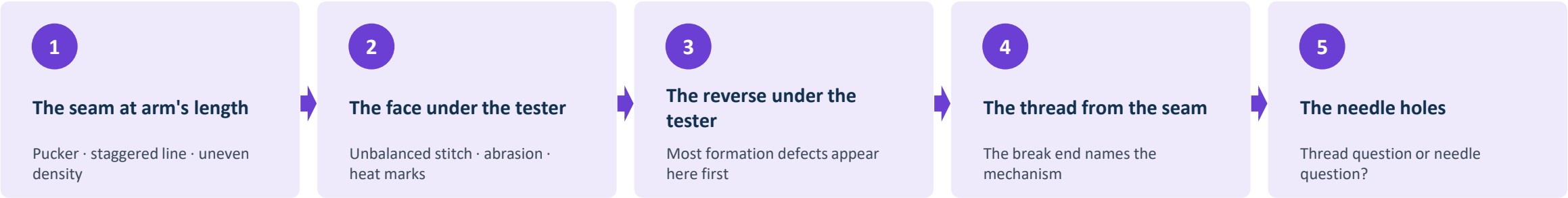
Three steps, always in this order — because reversing it destroys the evidence the diagnosis depends on.



Say it on arrival, in one sentence: "Before we change anything, I need two minutes to document the current state — otherwise we lose the cause."

Look in a fixed order — then read the broken end

Each look answers one question and rules something out before the next begins.



A sixth look on knitted and elastic material: stretch the seam against a light source. Needle cutting damage is often invisible relaxed and unmistakable under tension.

DESCRIBED IN THE LITERATURE		
Break end	Mechanism	Where to look first
Frayed, brush-like	Abrasion, or a breakdown of ply security	Thread path: guides, tension discs, take-up, needle eye, throat plate, hook
Clean, cut appearance	A sharp edge, a damaged point, or a weak place	Hook or looper point, burred throat plate hole, chipped needle groove
FIELD INDICATIONS		
Break end	Mechanism	Where to look first
Melted into a hard bead	Thermal — needle heat or friction heat	Speed, blunt needle, dense or coated material, missing cooling
Drawn out and thinned	Overload — a tension peak exceeded the breaking force	Tension, take-up and check spring, jamming at the cone, ticket too fine

Collect three to five break ends before interpreting. A single end can mislead; a consistent pattern is a finding. Two further field indications — untwisted plies and a needle imprint — are covered in the reference document.

Four questions you can ask on the telephone

They eliminate the majority of wrong hypotheses before anyone travels.

1 Does it occur on all machines running this article?	YES Thread, material, article specification or method	NO That machine: needle, timing, thread path, wear
2 Does it occur with all thread lots and colours?	YES The lot is not the variable	NO Record both lots and escalate with samples of each
3 Does it occur from the first stitch of a run?	YES Setting, needle, threading, timing	NO Something builds up: heat, thread accumulation, lubrication
4 Whole seam, or only at defined positions?	YES A continuous parameter: tension, needle, thread, speed	NO Cross-seams and curves: thickness change, feed, deflection

A defect that appears on one machine of twelve, with the same article and the same thread lot, is not a thread defect. Knowing that before setting off changes the whole visit.

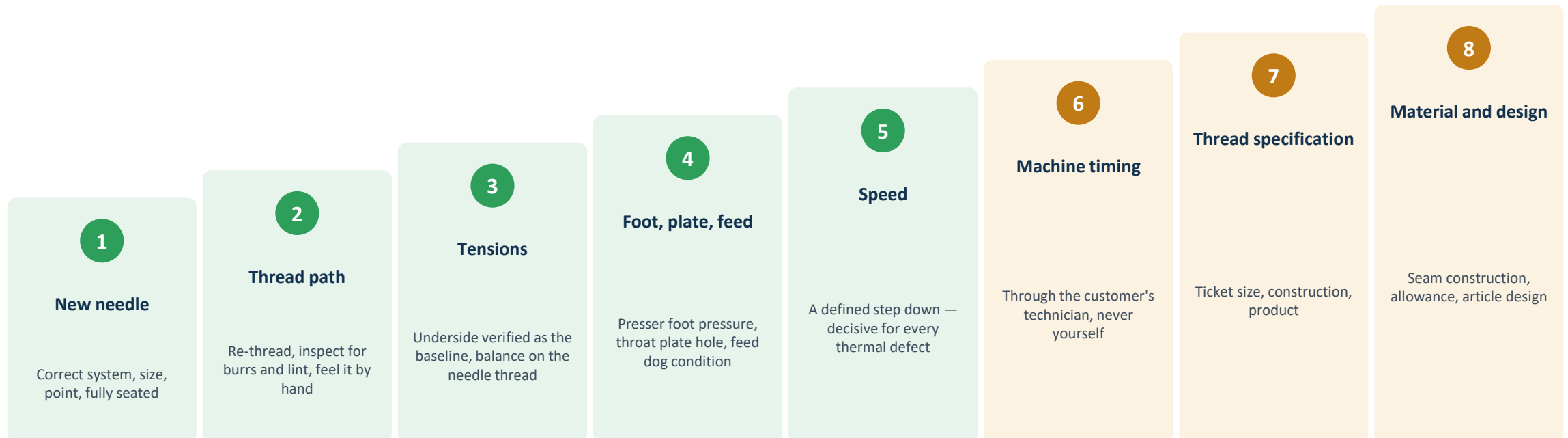
Correct in order of cost and reversibility

Cheapest and most reversible intervention first. One parameter at a time.

CHEAPEST · MOST REVERSIBLE · SECONDS



MOST EXPENSIVE · LEAST REVERSIBLE · INVOLVES OTHER PARTIES



Three parameters changed at once will very often fix the defect — and will never explain it. Sew a 30 cm test seam after every single change, and record the changes that did not help: a change with no effect excludes a cause.

Thirteen patterns in four families

The matrix narrows the search. The observation at the machine decides.

Defect pattern	Machine	Needle	Thread	Material	Method / op.
A1 Skipped stitches	●	●	○	○	○
A2 Unbalanced stitch	●		○		○
A3 Staggered stitch line	○	●		●	○
A4 Irregular stitch density	●			○	●
A5 Unravelling / run-back	○				●
B1 Needle thread breakage	●	●	○	○	○
B2 Looper / bobbin breakage	●		○		○
B3 Fraying and abrasion	●	●	○	○	
B4 Melting / needle heat	○	●	○	●	●
C1 Needle cutting damage		●		●	●
C2 Seam slippage				●	●
D1 Seam pucker	●	○	○	●	●
D2 Seam grin	○		○	○	●

● primary cause group ○ contributing blank not normally involved

A

Stitch formation

The stitch is not formed as specified. Machine, needle or method — rarely the thread.

B

Thread behaviour

The thread is loaded beyond what the process allows. The break end records how.

C

Material damage

The fabric is failing, not the seam. Both patterns arrive as thread complaints.

D

Geometry and appearance

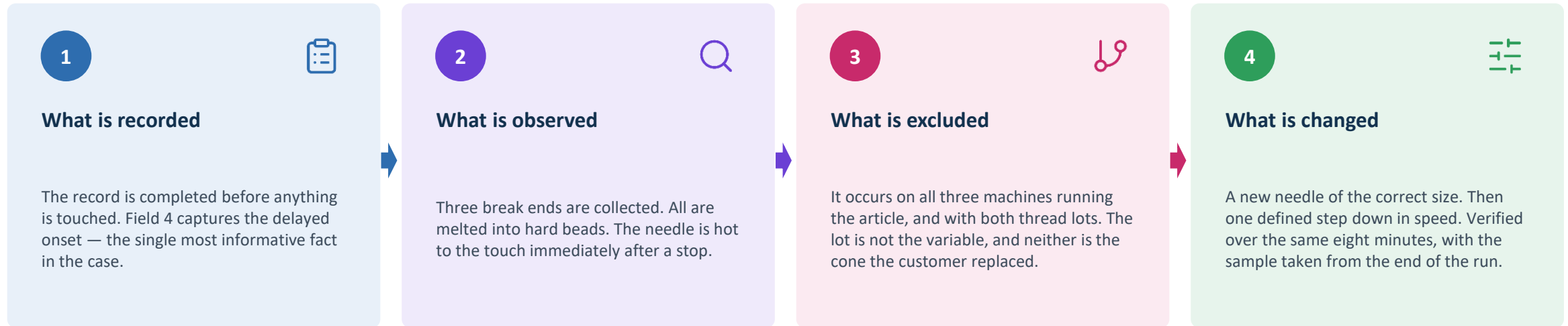
The seam holds but does not look or behave as specified.

Read the Thread column

In eleven of thirteen patterns the thread is at most a contributing factor. In two it plays no normal role at all.

A case that looks like a thread problem for eight minutes

Repeated needle thread breakage on a coated technical fabric. It runs cleanly, then starts breaking. Two cones already changed.



What the customer takes away

Not "your thread was fine" — but a speed that holds, a needle that was fitted, and a written record showing that the thread lot was excluded early and on evidence. The next site running the same article now has a starting point instead of a rumour.

Delayed onset that resets after a pause is close to conclusive for a thermal cause. The question costs nothing: how many minutes before it starts?

What the customer is actually weighing

They are not evaluating a technical explanation. They are managing a production risk with a clock running.

Line availability

Every minute of the assessment is a minute the machine is not producing.

Say how long documentation takes before starting it. The objection disappears.

The batch already made

The first question behind most claims is not what caused it, but how much is affected.

That is answered by a test, not an estimate — and saying so protects both sides.

The delivery date

A cause correctable at the machine today beats a perfect explanation next week.

This is why the correction sequence starts with a needle.

Their own customer

A defect that reaches the end customer becomes a claim against them.

Helping them document the case is helping with that, not only with the machine.

Specification and audit

Where the article is specified against a standard, the standard settles it.

Name the correct current designation. It is worth more than any adjective.

Whether you are straight with them

The judgement they are really making.

It is decided by what you say on the day our own product is not the cause.

Underneath every technical conversation sits one question nobody says out loud: who pays. That is exactly why observation and interpretation are kept apart, and why a finding is shown rather than asserted.

From what the customer says to what you can do

Five columns, five real openings. Most of this happens on the telephone, before anyone travels.

THE CUSTOMER SAYS	WHAT IT MAY MEAN	WHAT TO ASK OR LOOK AT	AMANN KNOWLEDGE	POSSIBLE NEXT STEP
"Your thread keeps breaking."	Needle thread breakage. The break end classifies the mechanism.	Collect three to five break ends and describe them. Ask the four questions.	The machine side is the largest cause group, not the thread.	Frayed or cut ends: check the thread path and the hook before a visit is arranged.
"It breaks after a while, then it is fine after a break."	A thermal case. Delayed onset is close to conclusive.	How many minutes? What speed, material, plies? Is the needle hot after a stop?	Needle temperature rises with speed and with fabric stiffness.	New needle plus a defined step down in speed, verified over the same running time.
"The seams look wavy on this batch."	Seam pucker — four different mechanisms, one appearance.	Is one ply longer at the seam end? Does it pull straight at lower tension?	Only two of the four mechanisms involve the thread — and the answer is finer.	Separate the mechanism before proposing anything at all.
"We get holes in the knitted panels after washing."	Needle cutting damage. A material case, not a thread case.	Stretch the seam against the light. Inspect the needle point. Ask the real change interval.	Point style, needle size and needle heat drive it. No standard test exists for knits.	No statement on extent before a wash test. Escalate to TAS with samples and the needle.
"It works on eleven machines and not the twelfth."	A machine case. The customer has excluded thread and material themselves.	Needle, timing, thread path, wear. When was it last serviced?	This is not a thread defect — and it can be demonstrated.	Say so plainly, and help find it anyway. This is the conversation that earns the next one.

Three sentences at the machine: what you observed · what it means, with your confidence stated honestly · what happens next, who does it and by when.

Six mistakes experienced people still make

None of these is a knowledge gap. All of them are habits.

Raising the tension first

The fastest way to turn a stitch formation problem into thread breakage — and it masks the cause.

Start at the needle. Tension is the third intervention.

Offering a coarser thread

A coarser thread needs a coarser needle, displaces more fabric yarns, and can create pucker and damage that were not there.

Diagnose first. In pucker and slippage the answer is finer.

Changing three things at once

It will fix the defect and never explain it, so the case recurs at the next lot.

One parameter, one 30 cm test seam, one recorded result.

Accepting "it is the thread"

The customer names the group they can see, because the thread is ours.

Check the other four groups first. Two questions usually settle it.

Ruling out the thread out of loyalty

The mirror image of the same mistake, and it destroys the same credibility.

Follow the evidence both ways. Confirm with a cone sample and a lot number.

Throwing the needle away

It is a sample, and it is frequently the answer.

Bag it and label it with the machine number.

And one that is not on this list because it is not a habit but a rule: never adjust the customer's machine timing. It is their machine, their technician and their liability.

KNOW

UNDERSTAND

RECOGNISE

APPLY

KEY TAKEAWAYS

Six things to remember if nothing else

- 1 A seam defect is not an opinion. It is physical evidence — and evidence has to be secured before it is interpreted.
- 2 Document before you diagnose. Diagnose before you correct. The order is the method.
- 3 Five factor groups: machine, needle, thread, material, method and operator. Name the group before the cause.
- 4 Two questions resolve most cases: all machines? all lots?
- 5 One parameter at a time, verified on a 30 cm test seam. A change with no effect is a finding.
- 6 In eleven of thirteen patterns the thread is at most a contributing factor — and saying so is what makes us credible when it is.

Four situations. What do you do first?

None of these tests recall of a number. Each one tests whether you would reach the right first check.

1 SITUATION

A customer says the thread breaks on one of their twelve machines, same article, same lot.

YOUR ANSWER

What have you already excluded — and what do you look at first?

2 SITUATION

Break ends are melted into hard beads and the defect starts after roughly six minutes of running.

YOUR ANSWER

Name the mechanism and the first two interventions, in order.

3 SITUATION

A seam opens when pulled across its width. The stitches are intact and the fabric yarns have moved.

YOUR ANSWER

What is the defect, and why is a heavier thread the wrong answer?

4 SITUATION

A customer asks you to confirm in writing how much of a washed batch is affected by needle damage.

YOUR ANSWER

What can you state today, and what has to happen before you state an extent?

Answers in the reference document: 1 · thread and material are excluded, it is a machine case — needle, timing, thread path, wear. 2 · thermal — new needle, then a defined step down in speed. 3 · seam slippage — a heavier thread perforates more fabric yarns and can make it worse. 4 · you can state the observation and the mechanism; the extent needs a wash or steam test.

These four are the platform knowledge check. Section 7 of the reference document works two of them through in full.

WHAT CAN I DO DIFFERENTLY TOMORROW?

Four things, none of which needs a budget.

1



Ask the four questions on the next technical call

All machines? All lots? From the first stitch? Whole seam or defined positions? It costs two minutes and it changes what you pack.

2



Say the documentation sentence before anything is touched

"Before we change anything, I need two minutes to document the current state — otherwise we lose the cause."

3



Keep the needle

Bag it, label it with the machine number. It is a sample, and it is frequently the answer.

4



Bring one documented case back within six weeks

On the Seam Defect Record, to your next team session. That is where the method becomes a habit.

Sources: pucker taxonomy — Coats and American & Efird. Needle temperature and coatings — Mazari & Novosad, JEFF 20 (2025); Mazari & Mazari, Coatings 15 (2025) 485; Muralidhar, JEAS 16 (2021). Needle systems — Groz-Beckert and Schmetz. Instruments per LN 016. Standard designations reflect September 2026. Full references in document 01.

Method note: source research, literature analysis and data evaluation were carried out with the support of AI systems, among them Claude (Anthropic), ChatGPT (OpenAI), Perplexity and comparable tools; technical statements, standard designations and measured values were reviewed by the authors against the primary sources. Not a product specification and not a product recommendation; binding technical statements on AMANN products are made by the AMANN Group. Trademarks are the property of their respective owners. © Loo / Fieberg · Gherzi Germany for AMANN Group.