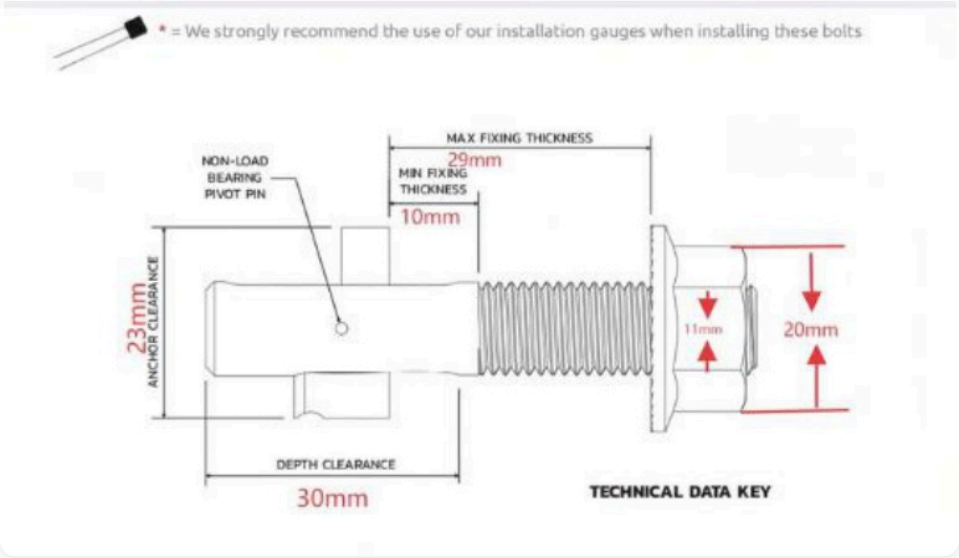
Assembly Failures in Conveyor OEM Projects – Preventable Design Mistakes & Pro Pre-Check List

Why minor fastener oversights can cause major rework — and how to avoid them.

Why This Matters

Even small oversights in clearance, deformation, or mating tolerances can delay entire automation projects. These failures often occur during final assembly, when design teams are no longer in control — and every hour lost means higher cost, missed deadlines, and unhappy customers.

Case 1 – Misjudged Clearance → 6–8 Hours Rework



Component: Anchor bolt with positioning pin

What went wrong:

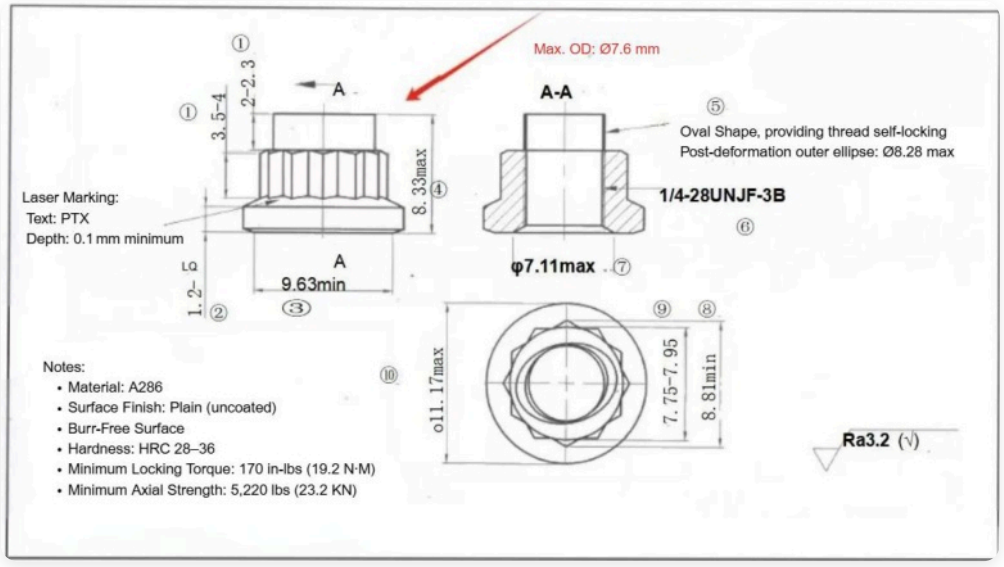
- Anchor required 23 mm cavity depth.
- Mounting slot allowed only ~21.5 mm due to overlooked anchor head length.
- Bolt could not fully seat.

Impact:

- Assembly halted, field team had to enlarge cavity manually.
- Risk of thread damage from misaligned torque.
- Caused 6–8 hours of rework on site.

> ### Engineering Note:
>
> Always include anchor head + pin clearance in CAD checks. Add callout: `“Min. Cavity Depth = Head Height + Fit Gap”` to drawing.

Case 2 – Crimp Zone Expansion Ignored



Component: 12-point crimp lock nut (1/4-28 UNJF)

What went wrong:

- Assembly hole was machined to 7.6 mm diameter.
- Post-crimp outer diameter reached 8.28 mm.
- Nut could not fit → re-machining required.

Impact:

- Field rejection.

- Emergency rework under tight deadline.
- Design blamed by QA for lack of tolerance callout.

> **Engineering Note:**
>
> Crimp/self-locking features must include post-deformation envelope. Add note: `"Max OD after crimp: X mm"` in drawing. Consider simulating crimp in final CAD assembly.

✅ Pre-Assembly Fastener Fit Checklist

For Design Engineers Working on Conveyor / Sortation Systems

✅ Checkpoint	Why It Matters	Typical Miss
☐ Crimped OD final size	Prevents fit rejections	Crimp nuts
☐ Bolt head cavity space	Allows flush fit, no torque misalign	Anchors, sleeves
☐ Thread runout space	Avoid bottom-out torque	Short-thread bolts
☐ Burr + radius allowance	Avoid wire damage or push-fit jams	Hole edges
☐ Assembly stack-up sim	Ensure full mechanical clearance	Washer – bolt – nut chains
☐ Coating thickness	Electroplating adds size	Zinc/nickel coatings
☐ Tool access room	Prevent wrench interference	12-pt / hex heads
☐ Tapped hole depth	Tap deeper than fastener tip	Avoid blocked threads

> ### Bonus: Want a Design Review?

We support OEMs by reviewing:

- Pre-assembly risks in fastener zones
- Cumulative fit tolerances
- Drawing notes / callouts for approval

Send us your drawing or 3D model, we’ll return comments + a sample fit report within 48h.
Email: info@gorgeofasteners.com