



Hygienic Design Failures

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Points to Consider During Hygienic Design Review

Are there hygienic design failures?

Are the surfaces PCS or NPCS?

How are the surfaces cleaned?

What are potential corrective actions?

Were the risks eliminated?



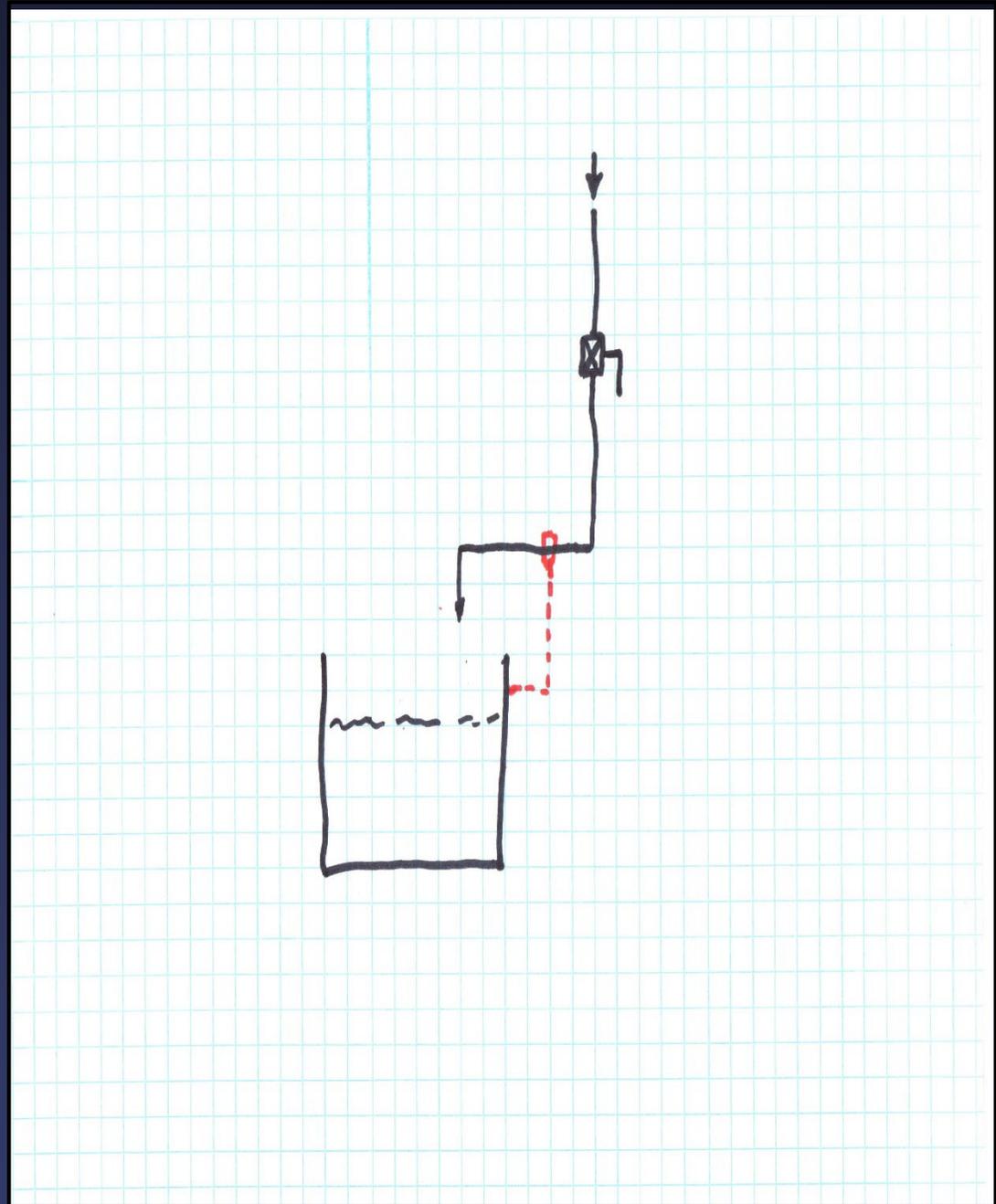
Find the hygienic risks





Design Alternatives

- Move vertical pipe and valve outside PCS drip line
- Move pipe clamp and bracket outside PCS drip line



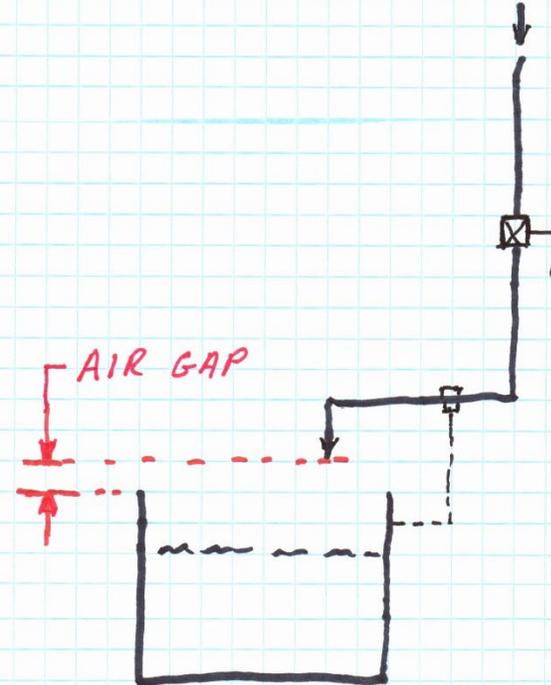


Air-Gap?



Design Alternatives

- Provide air-gap to meet local plumbing code
- Reference 3-A HTST Practice



Balance Tank with Cover Design Alternatives



60 GAL. S/S HTST BALANCE TANK For Sale | International ...



130-gallon-ss-pmo-approved-htst-bala...



100 Gallon HTST Balance - 323717 For Sale Used N/A



100 Gallon HTST Balance - 323717 For Sale Used N/A



100 Gallon HTST Balance - 323717 For Sale Used N/A



90 gal PMO style rectangular HTST balanc...



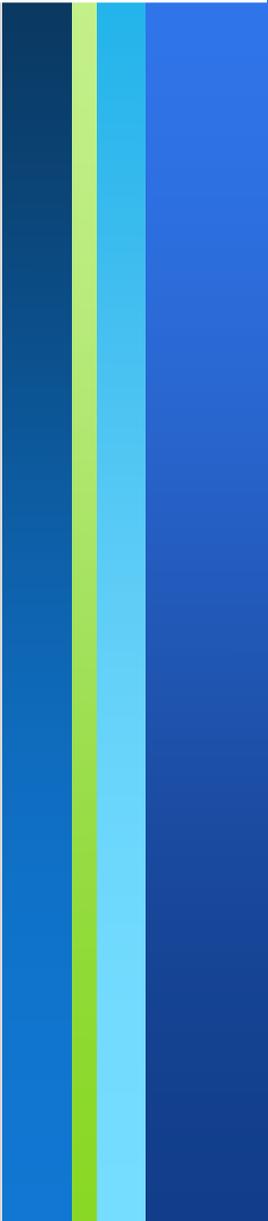
100 Gallon HTST Balance - 323717 For Sale Used N/A



70 GAL SS HTST BALANCE TANK ...



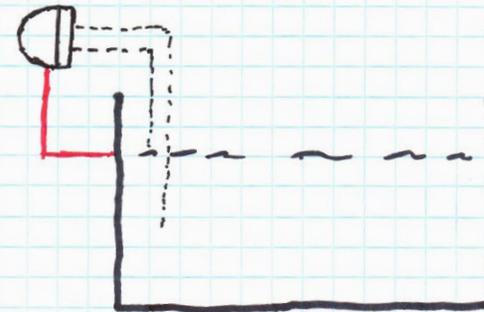
110 GAL. S/S HTS Sale | International





Design Alternatives

- Move the level control mounting bracket outside the PCS drip line
- Provide a more hygienic designed level controller





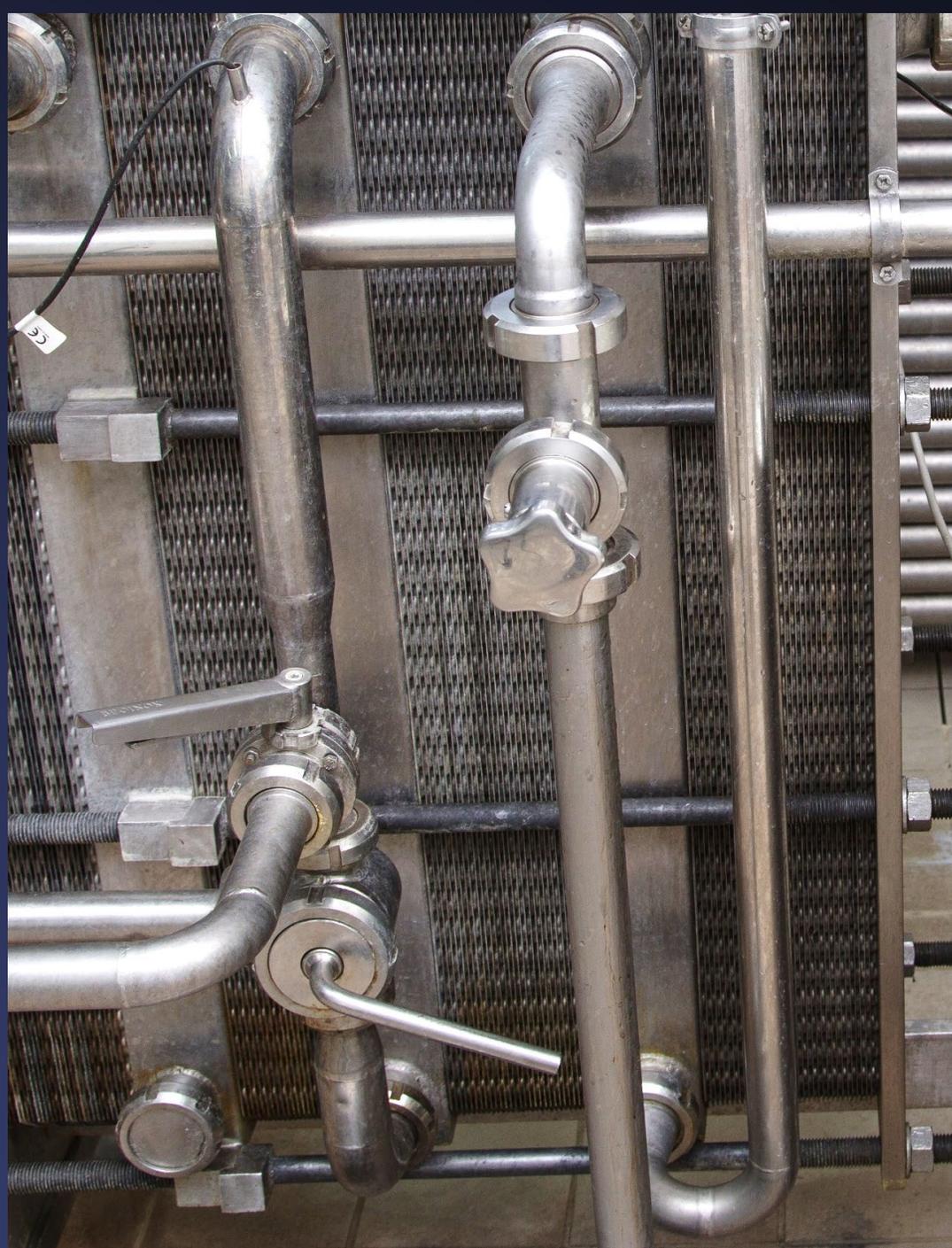
Other Issues

- Bolt and nut missing
- Plastic wire tie – foreign object



Hygienic Valves?

- Manual vs. automatic cleaning

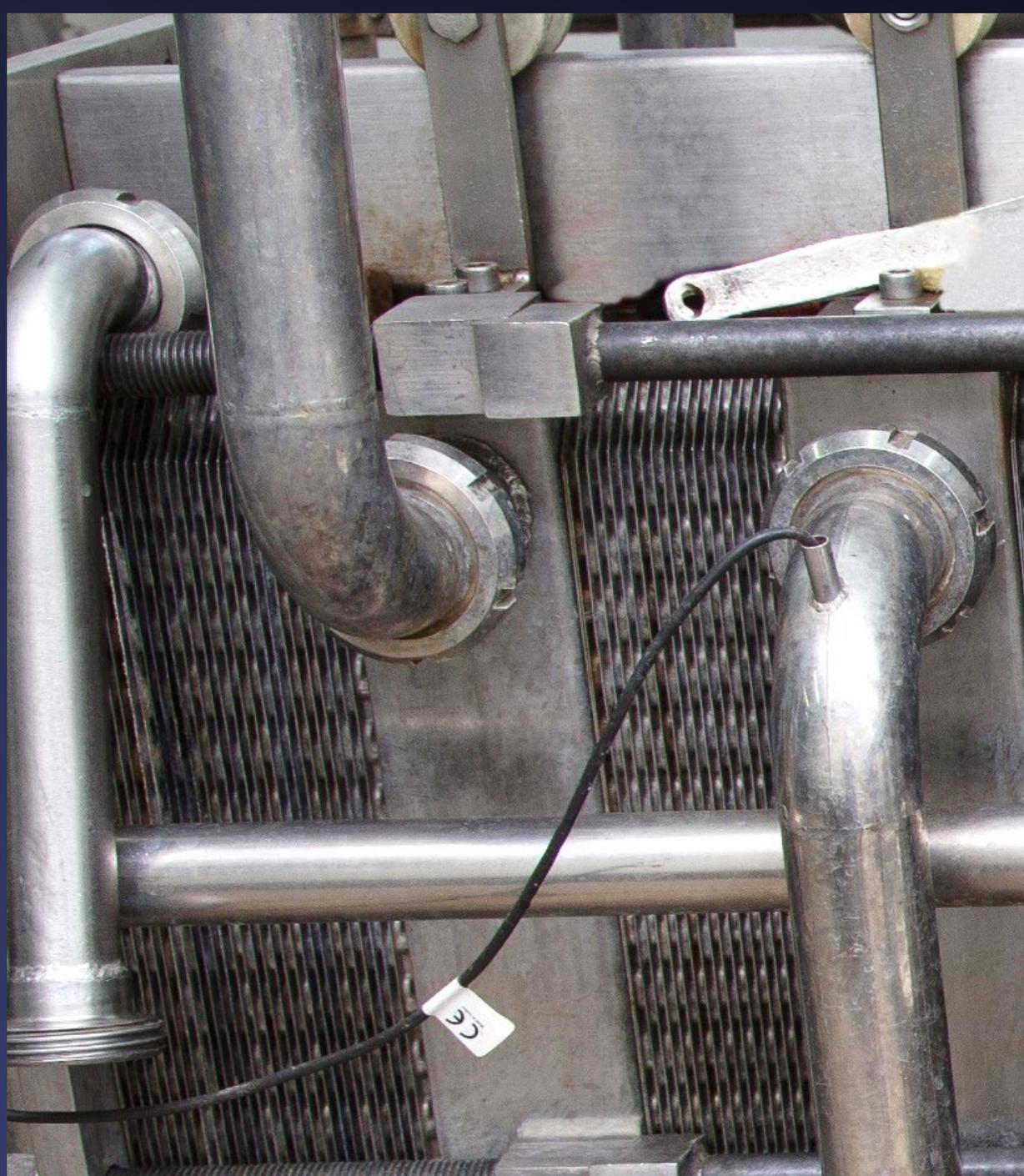


Instrument Connection?

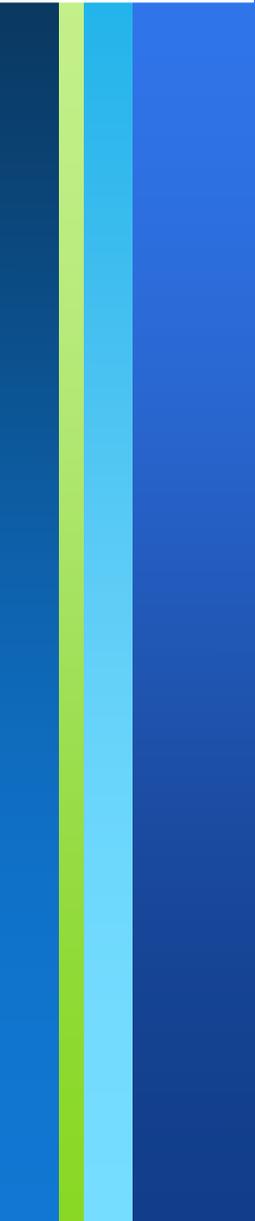
- Verify seal design
- Verify weld quality
- Hollow trap

Hygienic Weld Quality?

- Narrow Weld Bead
- Inconsistent Bead



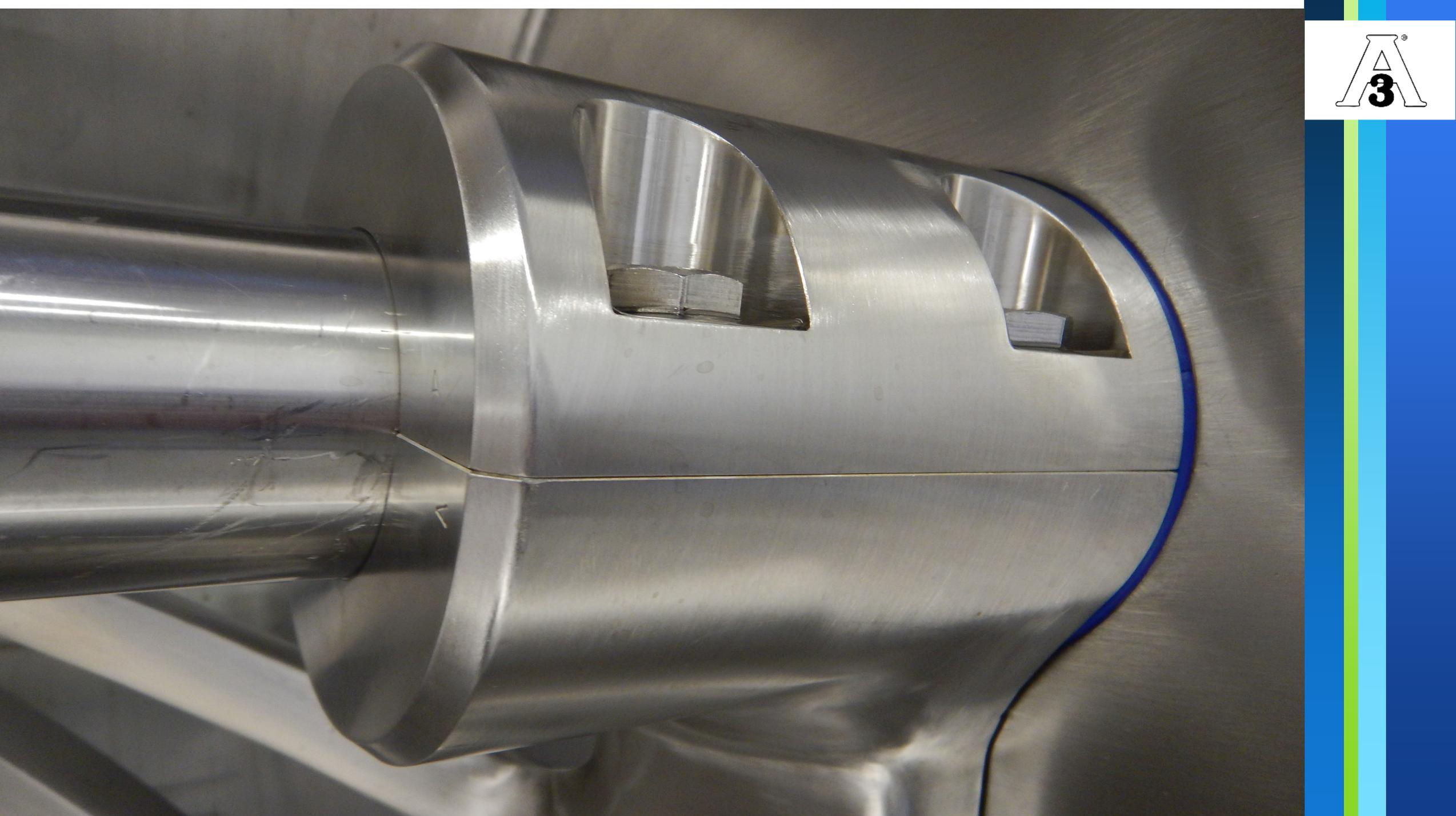
















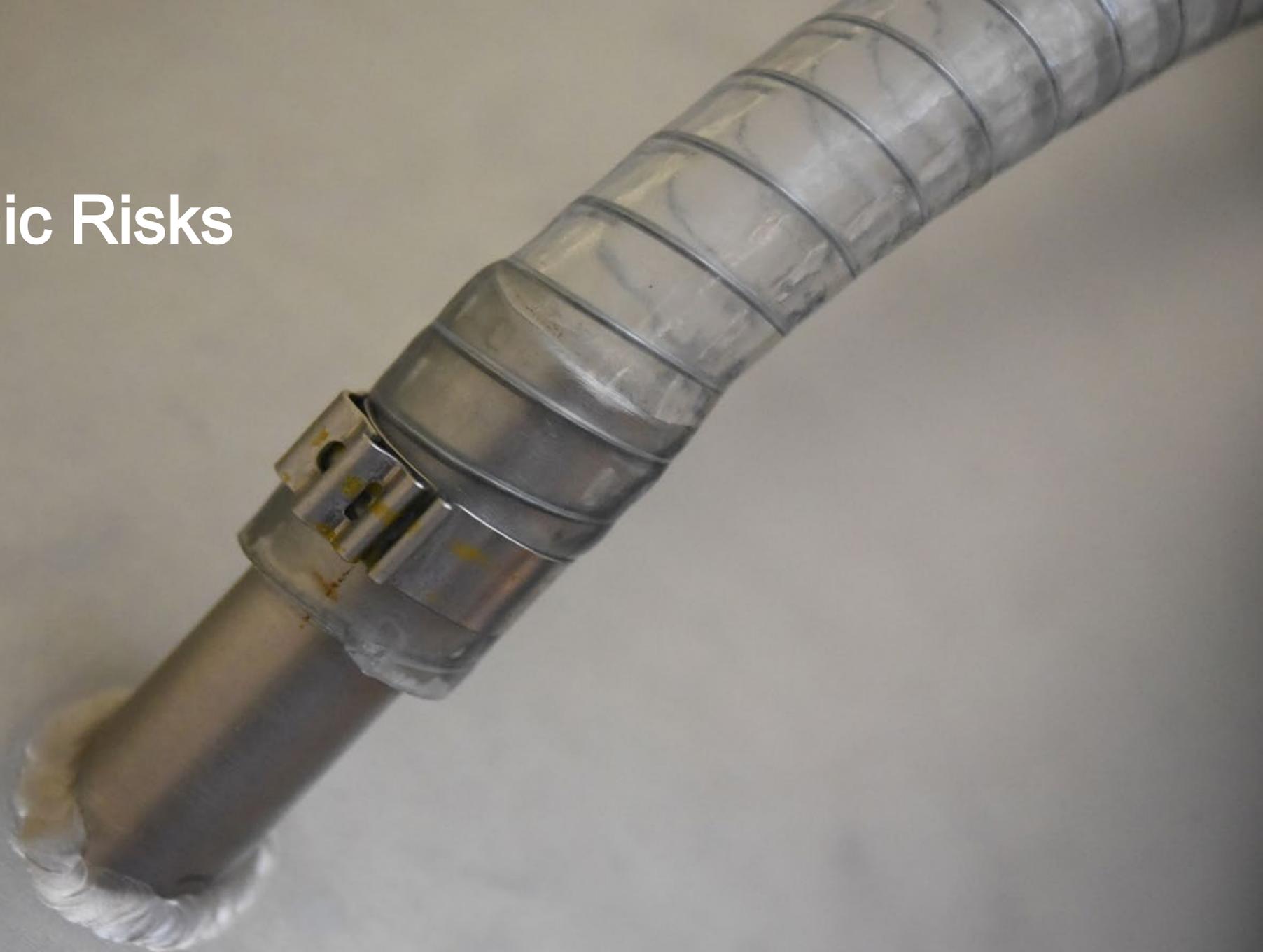


Vacuum Tumbler





Hygienic Risks





**Inside of Vacuum
Tube & Hose**



Tumbler Keyway & Socket Head Setscrew





Meat Grinder



**Note corrosion
stains at grinder
plates interface**

What are the Hygienic Issues?





Inspection Methods







Stuffing Machine

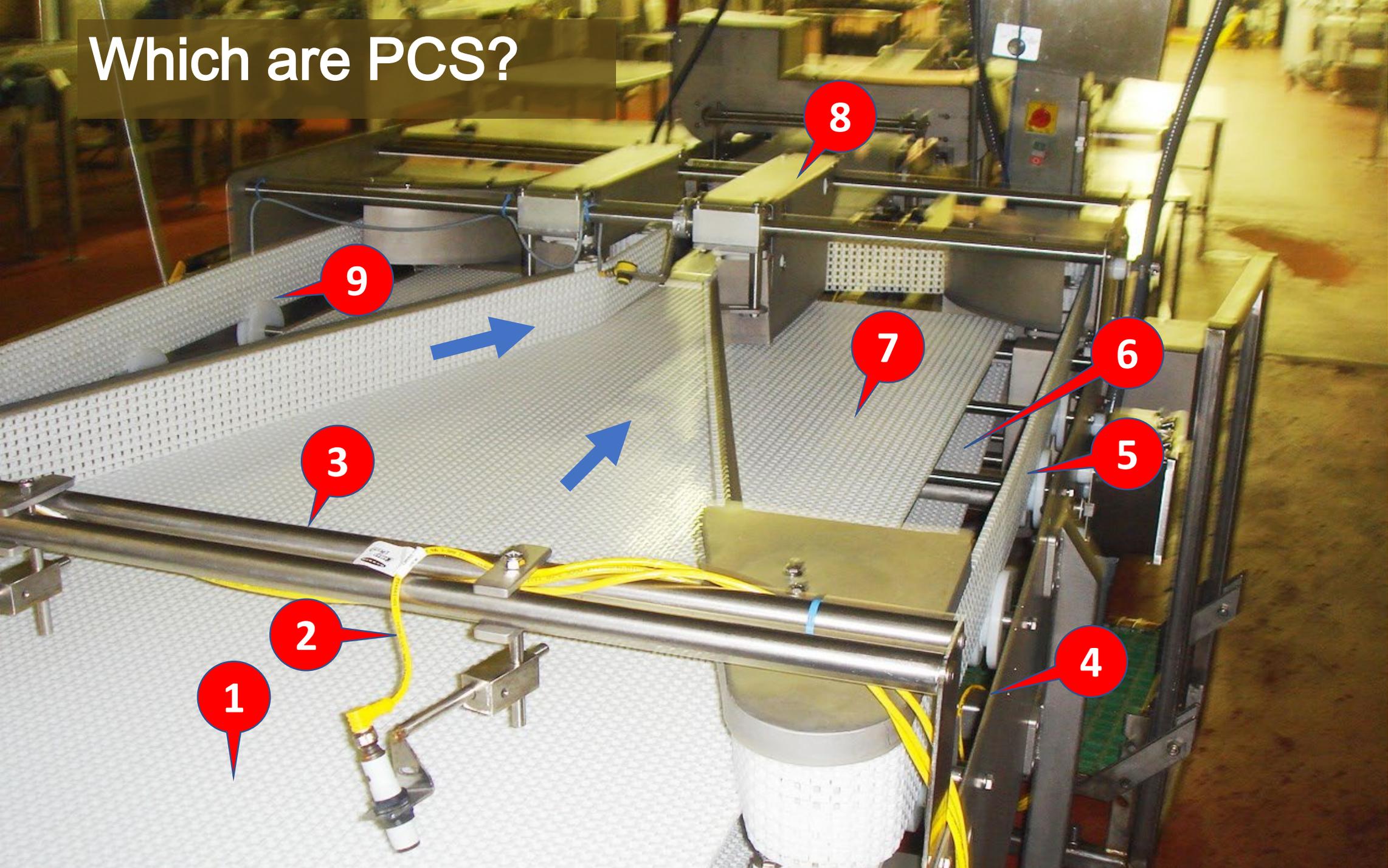






Can You See the Issue?

Which are PCS?



1

2

3

9

4

5

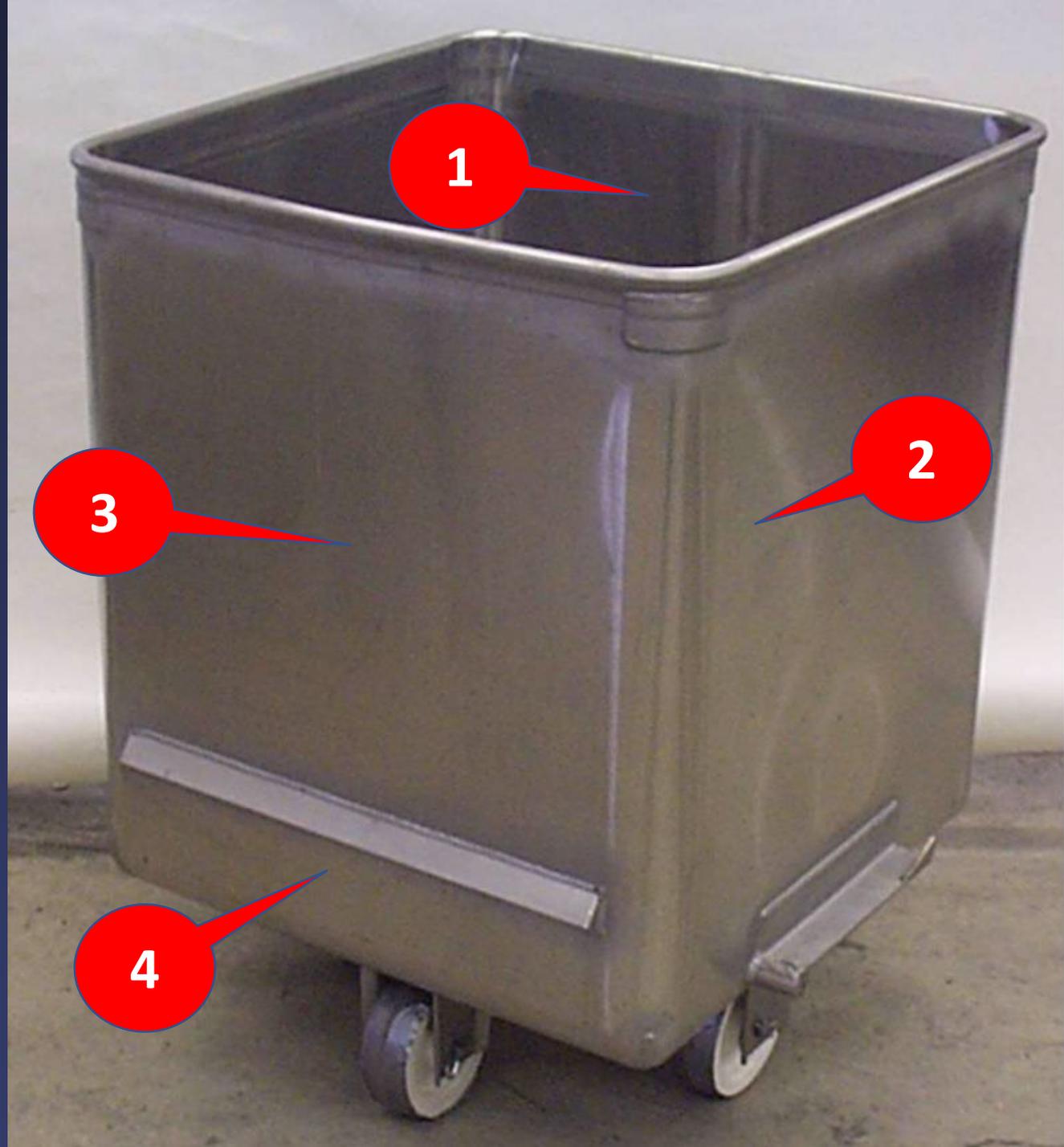
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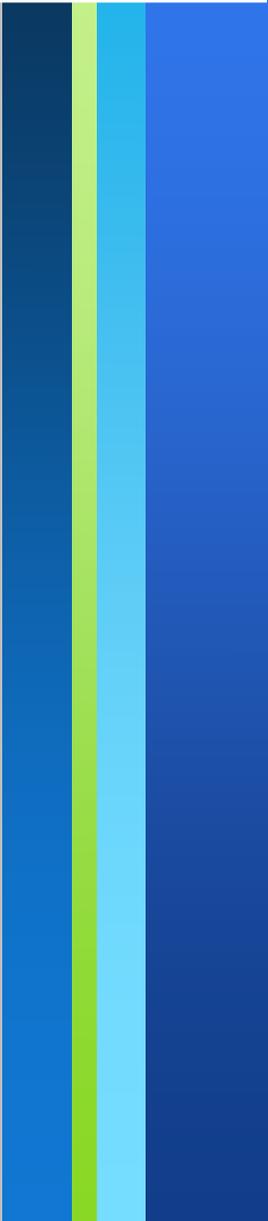
7

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Lift-Dump Tote

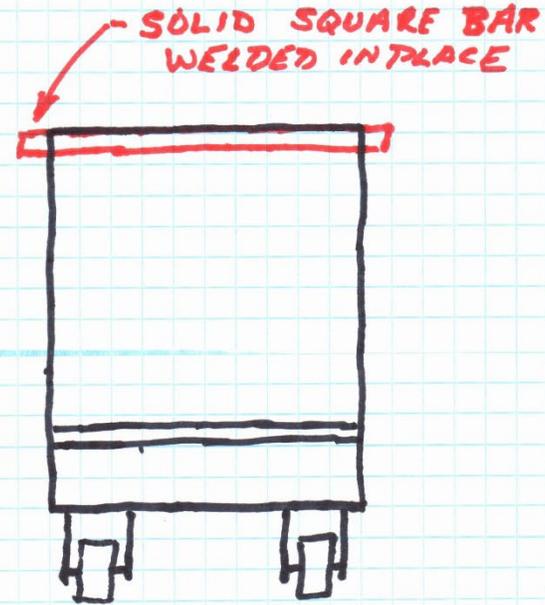
Which Surfaces are PCS?





Alternative Design for Tubs

- Solid square bar
- Continuous weld around tub
- Finish to 32 Ra

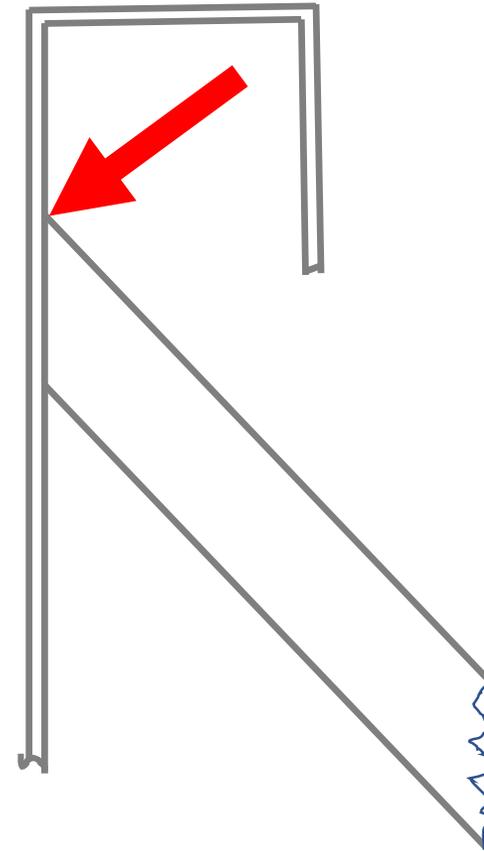
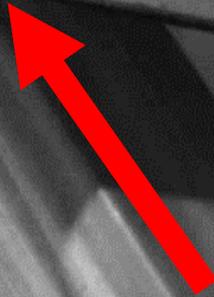




Food Product Wire Belt Drive



**Unwelded
Joint
Inaccessible
for Welding
Torch**





Check-weight inspection frame
for exposed food product

**Explain
the
issue?**



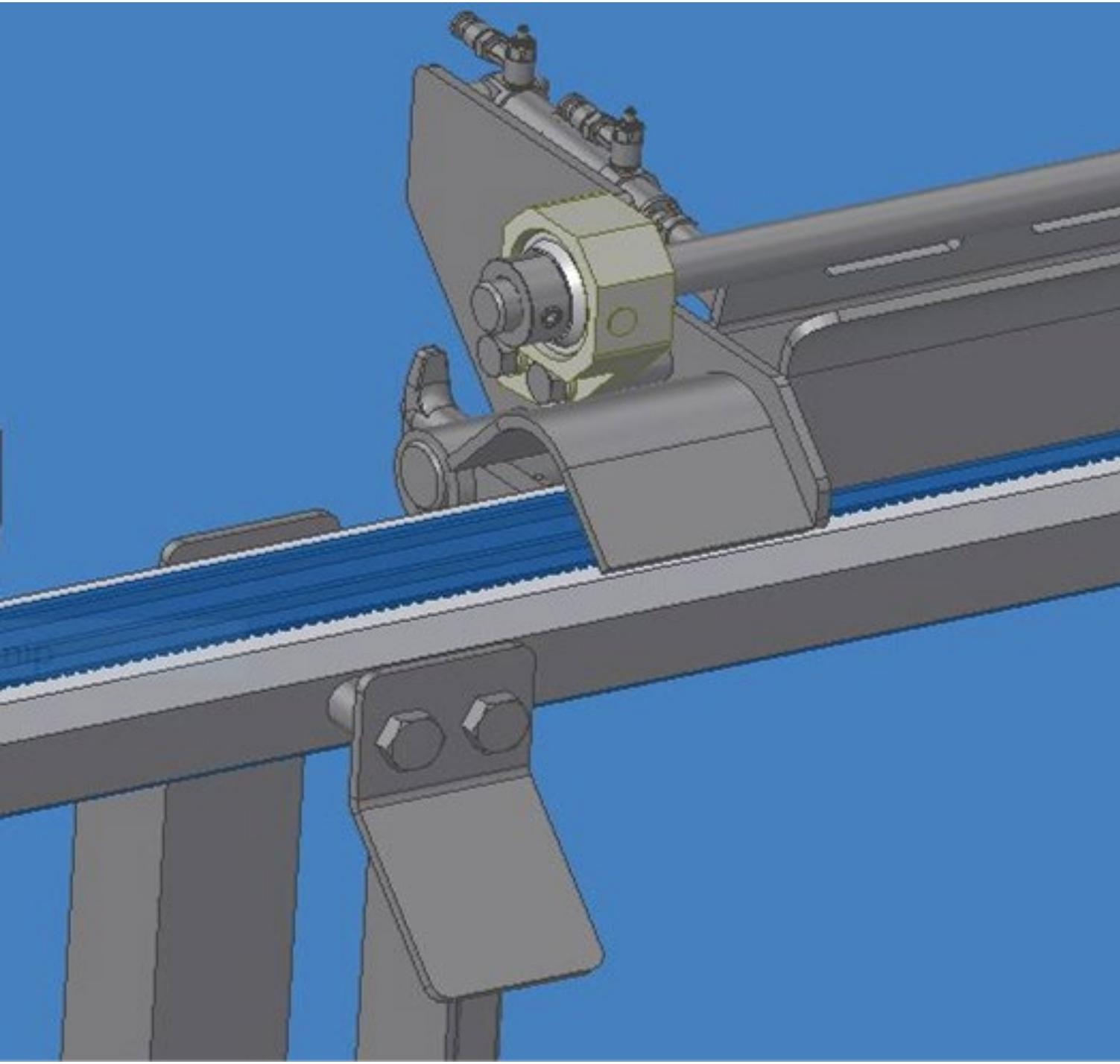


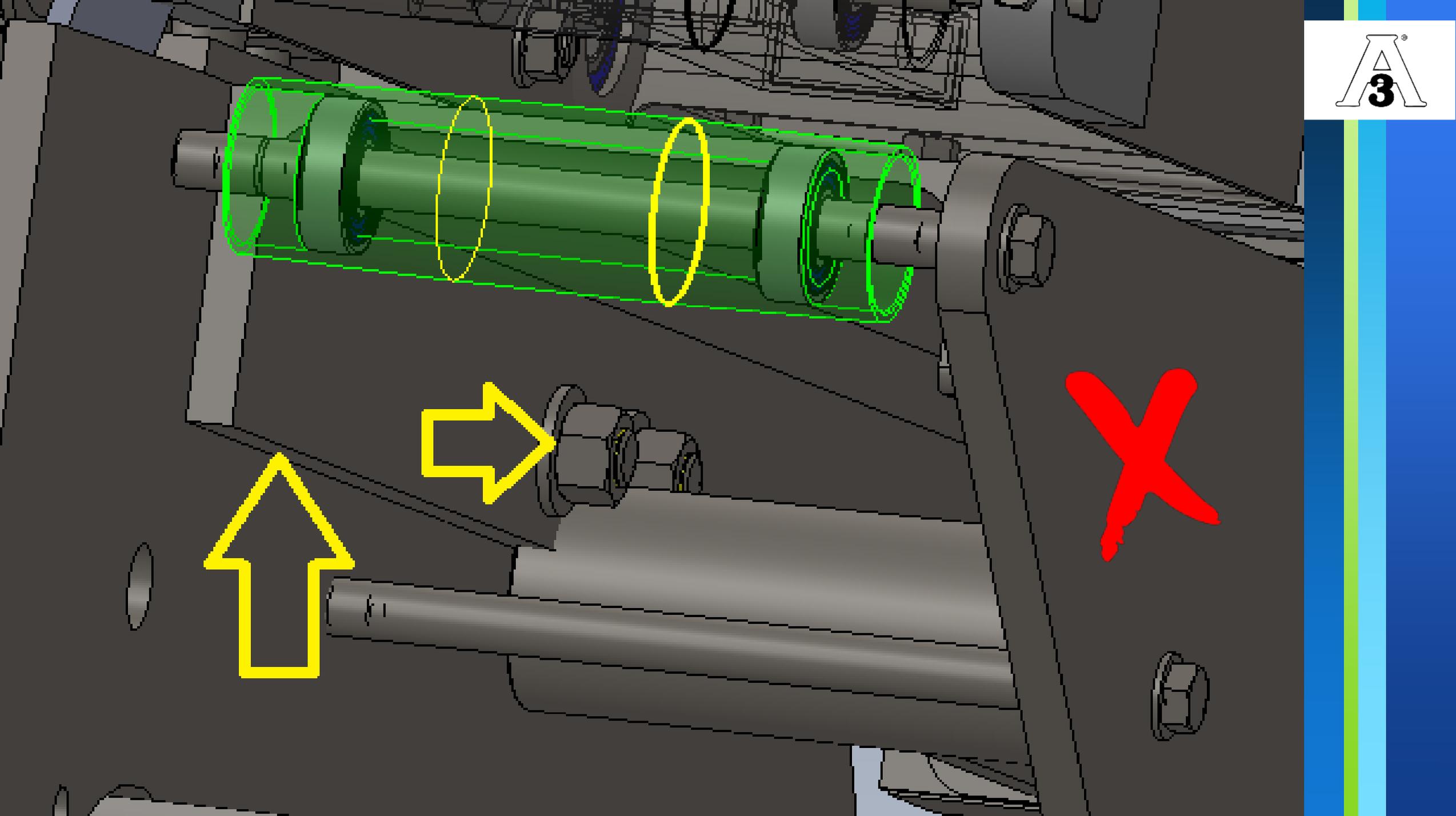
Hygienic Considerations of This Bearing Design



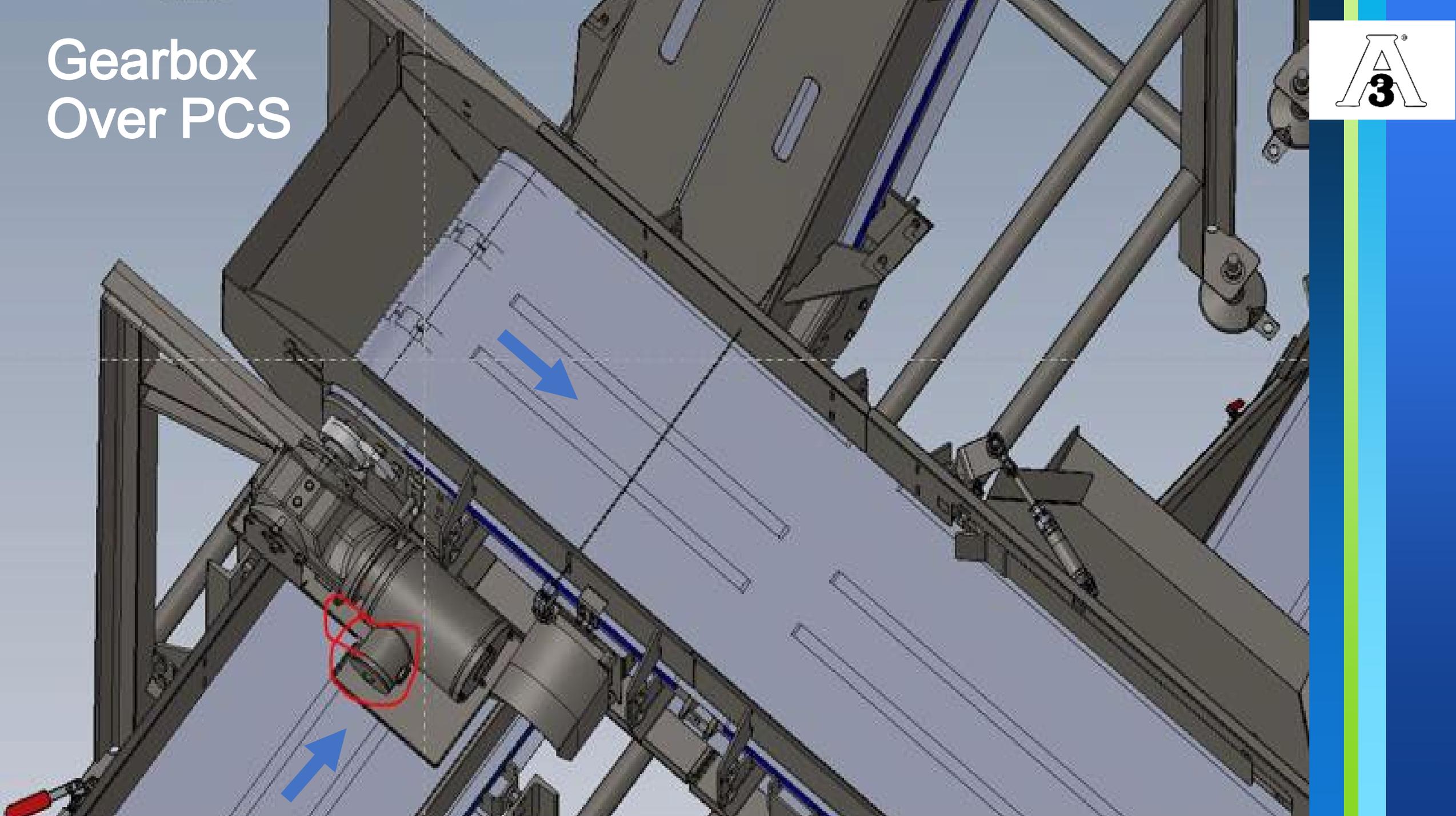


Post Design & Pre- Fabrication Design Review





Gearbox Over PCS





Hygienic Workmanship Failures



Weld inspection

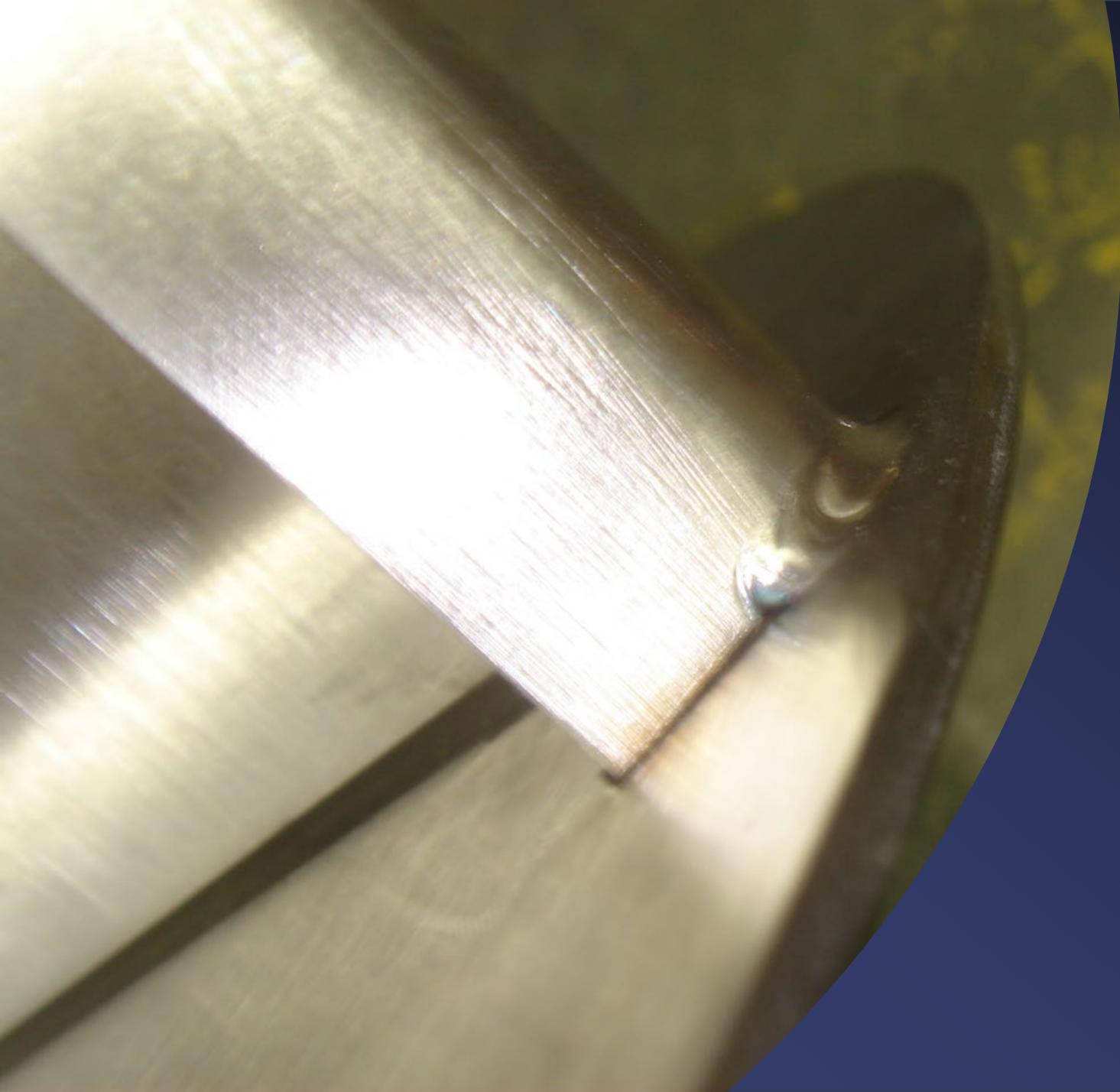




Unwelded Joint in PCS



Incomplete Weld Joint





Skip weld on PCS



Wrong Welding Method or Poor Welding Skills





Wrong Welding Method & Skills



Iron Contamination

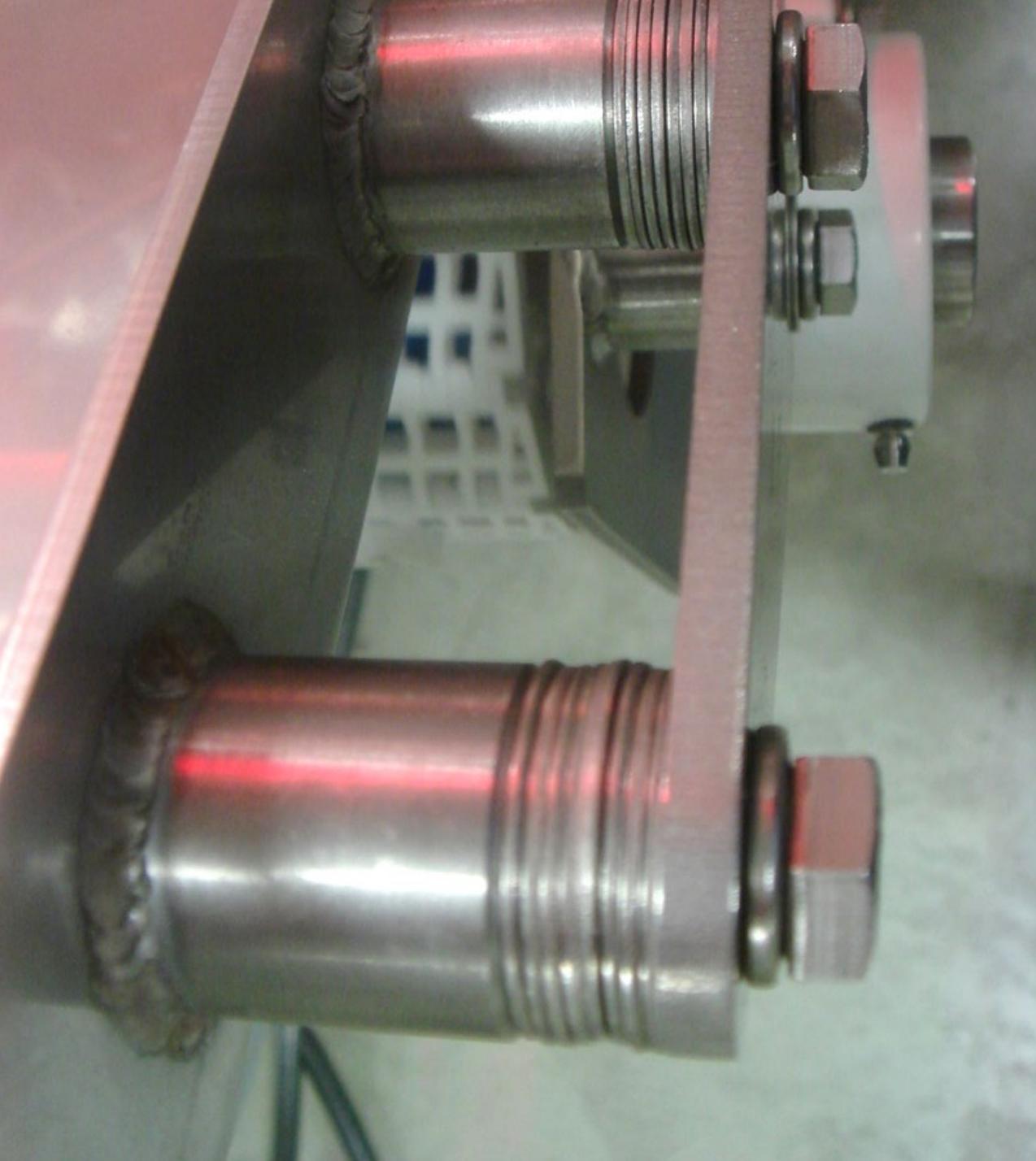
08/20/2006



Iron Contamination



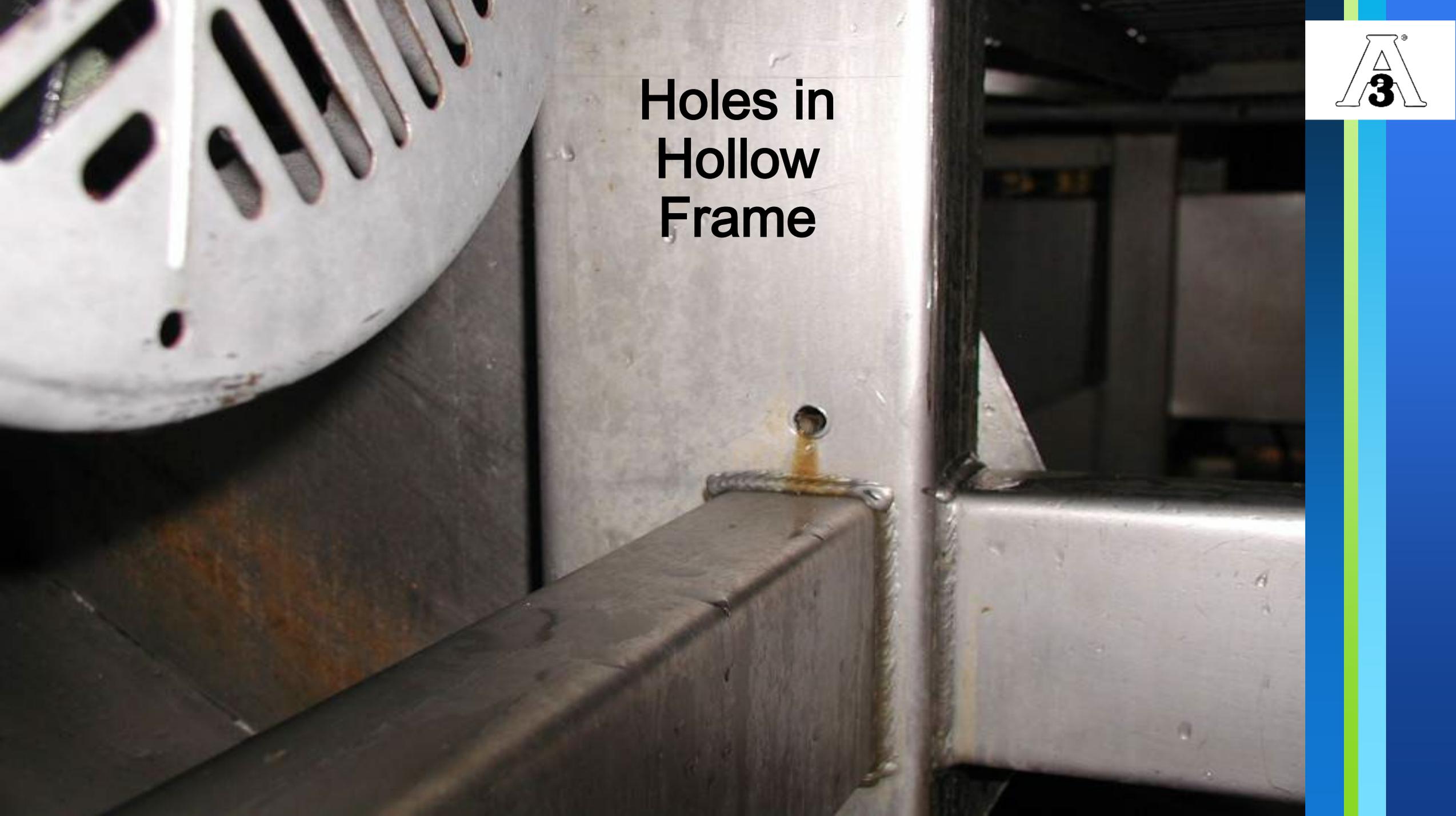
Poor Corrective Action





**Field Modification
After Commissioning**

Holes in Hollow Frame





Crevice in PCS



Un-Bonded Joint in High-Risk NPCS

HYDRAULIC PUMP 2
OFF ON

SYSTEM STOP



In Closing

Spend to time to understand PCS and NPCCS

Do design reviews

- **Post Design, Prefabrication**
- **Post Fabrication**
- **Post Installation**

Consider Alternative Design Options

Finally, was the risk eliminated?



Take the
Time
to do a
Hygienic
Design
Review



Thank YOU