TROUBLESHOOTING BASICS:
□ Have **ALL the prerequisites** for operation been satisfied? For example, is it plugged in?
□ Is the problem clearly **defined**?
□ Can the problem be **reproduced**?
□ What makes the problem **worse**? Better?
□ What’s **changed** or **new**?
□ Have I done a full **inspection** (eg, a walk-around)?
□ Is the system operating beyond its known **limits**?
□ Can I perform **routine (or neglected) maintenance**?
□ Can I **reduce complexity** by: 1) restoring defaults, 2) restarting/power cycling, or 3) turning off unneeded features or subsystems?
□ Has someone else **already solved** this problem?
□ Do I have the right **tools**?
□ Should I **document** my work? Notes, pictures, etc.
□ How is it **supposed to work**? What is **normal operation**?
□ Does the machine know what's wrong? Are there **error messages, diagnostics, or logs** I can examine?
□ Is troubleshooting the best use of my **resources**? Is there a **workaround** that's better? Can I **swap** or **replace**?

BEFORE I MAKE A **REPAIR** I ASK:
□ Will this repair cause **downtime**? Who is affected and needs to be notified?
□ **How long** will this repair take? What happens if it's not finished on time (or ever)?
□ What are the **risks** of this repair? Can it be **reversed** and what are the steps to get back to where I started?

CHANGE JUST **ONE** THING AT A TIME
The Right Questions, A Universal Troubleshooting Guide (v8)
by Jason Maxham (http://artoftroubleshooting.com/)

MORE STRATEGY QUESTIONS:
☐ Have I kept presuppositions about causes out of the problem description? What are the facts?
☐ Can I change the order of the startup or workflow?
☐ Is everyone who might know the answer aware of the issue? Should I clarify or add detail to problem reports?
☐ Can I come back to this later, or work on a different aspect of the problem? Can I follow the flow, from beginning to end, to find the problem?
☐ Is the system a Black Box? Can it be opened up so I can examine its inner workings?
☐ What other types of failures could produce these same symptoms?
☐ Are environmental conditions (noise, temperature, weather, etc.) impeding my ability to work?
☐ Can I copy one that works?
☐ Have I made a logical leap that isn’t justified? Have I chosen the simplest explanation possible?
☐ Can I deploy dedicated resources, limiters, or governors to lessen negative interactions between components and bring usage in line with capacity?
☐ What’s the extent of the problem? Are symptoms repeated across systems? Conversely, what’s NOT affected?
☐ How can I narrow down the problem space? Can I use half-splitting (aka, binary search)?
☐ Can I get another perspective on the problem? Can I troubleshoot with a partner? A team?
☐ Is there a bottleneck? If so, where?
☐ Is this my problem to solve? Is a co-worker, business partner, manufacturer, or vendor avoiding responsibility?
☐ Am I in over my head? Should I call in someone more experienced, like a professional, to help?

CLEANING UP:
☐ How do I know that I’ve fixed the problem?
☐ Should I add redundancy or capacity?
☐ Can I collect data to better understand the problem and detect it in the future?
☐ Would a routine maintenance program prevent recurrence? If already in place, can I perform maintenance more often (or better)?
☐ Is this problem the "tip of the iceberg"? Does it foreshadow something worse?
☐ Can I analyze the problem using Root Cause Analysis (like 5 Whys)?
☐ Will I use this situation to make changes that would have been difficult before?
☐ Was the failure intentional (sabotage, fraud, etc.)?
☐ Is it possible to devise a detector that automatically alerts me to this type of failure?
☐ Could the problem be avoided with stress testing or a break-in period?
☐ When will I communicate what was learned so that others can benefit? Can I create documentation like an incident report, service bulletin, or troubleshooting tree?
☐ Can I prevent recurrence with a checklist?

CHANGE JUST ONE THING AT A TIME