

THE MAIN BRAZING DEFECTS

RECOGNIZE THEM TO IMPROVE RESULTS

Quality brazing comes from controlling every detail of the process.



1. POOR WETTING

The filler metal does not wet the surface.

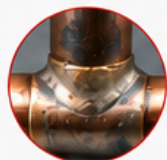
Causes: dirty surfaces, oxidation, insufficient temperature, unsuitable flux.



2. INCOMPLETE JOINT FILLING

Incomplete filling of the joint.

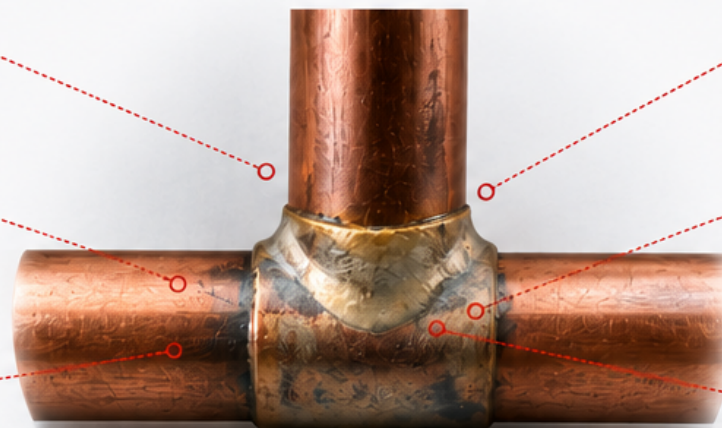
Causes: incorrect clearance, insufficient filler metal, non-uniform temperature.



3. EXCESSIVE OXIDATION

Excessive oxidation of the surfaces.

Causes: overheating, prolonged heating, insufficient protection.



4. EXCESS FILLER METAL

Excess filler metal outside the joint.

Causes: too much filler metal, poor capillary action.



5. POROSITY

Porosity in the joint.

Causes: contamination, moisture, unsuitable flux, excessive or insufficient temperature.



6. JOINT MISALIGNMENT

Misalignment or movement of the components.

Causes: inadequate fixturing, movement during solidification.

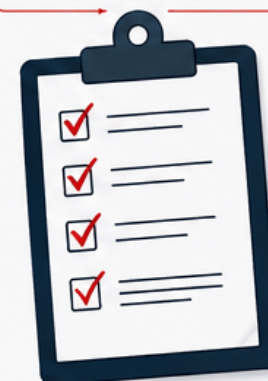


BRAZING TROUBLESHOOTING GUIDE

PROBLEM → CAUSE → SOLUTION

	OBSERVED PROBLEM	POSSIBLE CAUSES	WHAT TO CHECK / HOW TO ACT
	The filler metal does not wet the surface	- Contaminated surfaces - Oxidation - Insufficient temperature - Unsuitable flux	→ Check surface cleaning and preparation, heating temperature and flux selection.
	The filler metal melts but does not penetrate the joint	- Incorrect clearance - Non-uniform heating - Contaminated surfaces	→ Check joint clearance, heat distribution and surface cleaning.
	Heavy oxidation	- Temperature too high - Prolonged heating - Insufficient protection (flux or atmosphere)	→ Reduce temperature and time at temperature, check the flux used.
	Incomplete joint	- Insufficient filler metal - Insufficient capillarity - Non-uniform temperature	→ Check the amount of filler metal, joint clearance and uniform heating of the components.
	Excessive filler metal buildup	- Too much filler metal - Poor capillary action (excessive clearance)	→ Reduce filler metal amount and check joint geometry and clearance.
	Weak or low strength joint	- Unsuitable filler metal - Incorrect joint design - Overheating - Movement during solidification	→ Check filler metal selection, thermal cycle, fixturing and joint design.
	Non-repeatable results	Variable process parameters (temperature, time, filler metal or flux amount, positioning, etc.)	→ Standardize the process and monitor key parameters to ensure repeatability and quality.

The same defect can have multiple causes: always analyze the entire process.



Prevention, control and standardization are key to achieving reliable brazed joints, reducing scrap and increasing productivity.



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