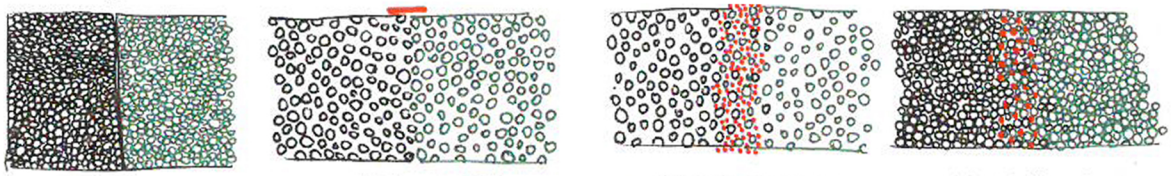
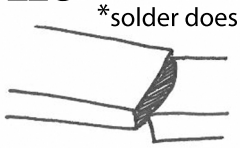
SOLDERING TECHNIQUES & TIPS

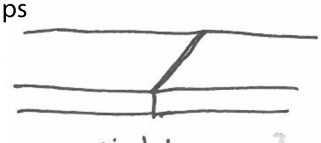


tight fit — *crystals expand* — *solder (red) enters by capillary action* — *solder diffused into the structure*

#1 fit

piece must be light tight
*solder does not fill gaps





#2 cleaning

the join & solder must be clean
NO-finger oils, tape, pickle,
buffing compound, or pencil marks

#3 flux

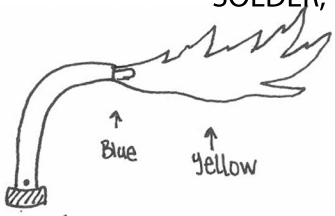
use flux to protect metal from oxidation
reflux for each reheating

#4 solder placement

carefully place solder on the join
*use just enough solder to fill the join, it takes less time to cut the right sized piece than to remove excess later

#5 heat

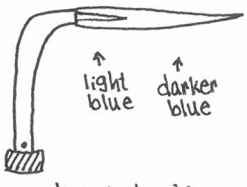
THE HEAT OF THE METAL WILL MELT & FLOW THE SOLDER, NOT THE FLAME OF THE TORCH



too much gas

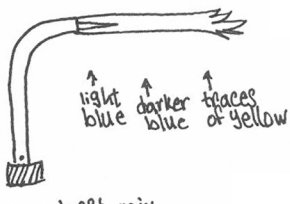
too soft for concentrated heat

can deposit soot particles on work



too much air

causes heavy deposits of cuprous & cupric oxides — this prevents all solder flow
*risk overheating sections



best mix

last inch should touch metal surfaces

Common Soldering Problems

PROBLEM	REASON	SOLUTION
Incomplete or unsoldered joint	Not enough heat; metal was dirty; no flux; prolonged heating	Avoid playing the flame directly on the solder.
Solder balls up	Metal or solder may be dirty	Reflux and try again.
Solder jumps to one side of joint	One side is hotter than the other	Keep the torch moving so all parts heat equally.
Solder spills out into a large puddle	Too much solder; too high a heat	Use smaller pieces of solder; level the heat as you approach the flow temperature.