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## Instructions for Soldering with Kapp GalvRepair™

**Before** - Breaking the oxide coating and removing contaminants by agitation and fluxing is one key to successful soldering, especially for Aluminum, Stainless Steel and Nickel plated parts, as well as porous brass and cast iron parts. It is important to follow these steps in a timely uninterrupted 1-2-3... sequence. Otherwise, the strong oxide coating can reform and hinder the solder bond. So, make sure you have all your tools and supplies staged and ready to go before you begin.

**Pre-Tinning** - For some difficult to solder, porous, and large surface area joints, it may be extremely helpful to pre-tin the joint area on each part with the solder before setting up to join the parts. Simply follow the steps below to coat the joint area of each part with an even coat of solder. Then, after the parts have cooled, follow the steps again to join the parts. The 1-2-3 rule applies here as well. Don't pre-tin one day and solder the next. A fresh oxide-free surface is important to soldering success. Pre-tinning your parts with the right solder can greatly improve joints on difficult to solder metals, dirty old parts, & large surface area parts.

1. Pre-clean the parent metal using a stainless steel (SS) brush, emery cloth, sandblasting, etc. For old porous cast iron surfaces, use Kapp Comet Flux™ to draw out oil and other contaminants, until the cast iron forms a strong bond with the GalvRepair™ solder. **DO NOT OVERHEAT THE FLUX! ONCE THE FLUX BEGINS TO BOIL AND TURN BROWN, REMOVE THE HEAT, LET COOL, AND WIPE AWAY THE RESIDUE.** To ensure a consistent bond, surface preparation should include roughing up and fluxing the entire bond surface area. Breaking the oxide layer by agitation is an important key to successful GalvRepair™ application.
2. If the area to be repaired includes welds, all weld flux residue and weld spatter shall be removed by wire brush, chipping, grinding or power scaling.
3. Use a soft flame, heat gun or soldering iron to heat the parent metal repair area to at least **400°F (204°C)**. **Do not heat the surface over 550°F (288°C)**. If you use a direct flame, please keep it moving. A direct flame held on the repair area is likely to overheat the solder. Either pre-tin the parts, or wire brush the surface during heating. Pre-flux using Kapp Comet™ flux to remove contaminants and oxides. **DO NOT DIRECTLY HEAT THE SOLDERING ROD!**
4. Hold the torch tip 4 to 6 inches away from the parent metal. If it is necessary to apply the flame directly to the rod to get it started, pull the torch tip back even farther from the work surface and keep it moving.
5. Drag the rod over the area to be soldered, until it begins to flow. **ONCE THE ROD FLOWS, STOP APPLYING HEAT!** Deposit the desired thickness of GalvRepair™. The stainless steel brush works well to spread the solder and ensure it is adhering. If additional layers are needed, continue to drag the rod over the area. **Bring back the heat only to keep the Surface, NOT the Rod, hot enough to push the solder around to where you want it.**
6. Observe the solder deposit, it should bond smoothly. **DO NOT OVERHEAT!** The solder rod melts if overheated, but will not bond properly. Spread the solder deposit evenly over the repair area with the rod or SS brush.
7. If you stopped soldering and want to apply more solder or flow out the deposit more, let the area cool below the solid temperature of 350°F (177°C), and reheat. The existing GalvRepair™ will help the bonding process, whether adding more solder or just flowing out the previous deposit. If substantial time has elapsed since the original GalvRepair™ was applied, pre-clean the repair area again to remove any oxide coating that will impair bonding. Again, a Stainless Steel brush works well for this step.
8. Smooth the repair area and remove any excess GalvRepair™ with a wire brush.
9. Repeat these steps to build up additional layers of GalvRepair™.