

Technical Procedures

APOLLO

WAXING AND SPRUING

Direct Spruing

610055 Rev F

The direct technique may be used for spruing single units. Use a 10 gauge (2.6mm Ø) sprue.

Indirect Spruing

The indirect technique is always preferred for spruing bridges, multiple units, and single units. With bridges use 10 gauge (2.6mm Ø) feed sprues 1/16 inch (1.6mm) long. For multiple units use the same size feed sprue. Attach the feed sprues along the length of a 8 gauge (3.3mm Ø) runner bar and connect the runner bar by two 6 gauge (4.1mm Ø) indirect sprues to the crucible former.

INVESTING AND BURNOUT

Technique: Invest the pattern in normal crown and bridge investment such as cristobalite. Follow the investment manufacturer's instructions.

Place the ring in a cold furnace, run it directly to 1300°F (704°C), and heat soak for one hour. Or, place the ring in a preheated 800°F (427°C) furnace for 15 minutes. Raise the temperature of the furnace to 1300°F (704°C) and let it heat soak at this temperature for approximately one hour.

If there is any plastic in the mold, a two-stage burnout is required. Place the ring in a cold furnace and raise the temperature at a rate of 10°F (6°C)/minute to 600°F (315°C). Heat soak at this temperature for 30 minutes. Raise the temperature to the normal burnout temperature at a normal rate and heat soak.

Allow additional burnout time for large rings, multiple rings and for very thin patterns, 1300°F (704°C) should be the maximum burnout temperature.

CASTING

Technique: Use oxygen, at approximately 10 psi, combined with natural gas. If you use propane or butane, set the oxygen at about 5 psi. The use of air and natural gas can be successful, but will require a longer melting time.

Use a 1:1 ratio of old alloy to new alloy. Preheat the crucible. Melt the button and add a borax type flux. Then add the new metal ingots to the melt. Seat the ring in the casting machine. Continue heating the alloy until it spins...then cast.

Let the button cool until it is dark (approximately 5 minutes), then plunge into water and devest.

PICKLING

Technique: Use warm 50% sulfuric or 50% hydrochloric acid.

SOLDERING

Technique: Use borax paste flux or a fluoride flux, such as Sigma Lo Flux, on both the solder and the cast units. The highest temperature solder appropriate for this alloy is shown on the back of this card. Lower temperature solders can also be used. Keep in mind that using other than the recommended solder may not match the alloy color as well as the listed combinations. If color is not a consideration, the low fusing Stern Chrome 2 white solder may be used.

HEAT TREATING

Technique: To anneal (soften) the alloy, place the casting in a furnace at 1300°F (704°C) and hold it here for 15 minutes. Then quench the casting in water.

To harden the alloy, first anneal it as described above. After quenching, place the casting in a furnace at 660°F (350°C) for 15 minutes. Then remove the casting and allow it to bench cool.