Kerr CASTING CHECK CHART

CASTING DEFECTS	POTENTIAL CAUSES/CORRECTION
"Fins" or flash on castings (Added thin metal extensions).	Incorrect water/powder ratio causing weak investment mold. Investment improperly stored. Investing extended past work time, or flasks disturbed while investment was setting. Flask dropped or otherwise mishandled. Flask placed in furnace with insufficient setting time. (Bench set for a minimum of one hour). Flask heated too rapidly. Flask allowed to dry and not re-moistened before burnout. Flask burned out and allowed to cool before casting. **NOTE:** Cast higher flask temperature pieces first, then lower temperature flasks. Once temperature is reduced do not raise to higher temperature.
"Non-fills" or incomplete castings	Pattern improperly sprued (sprues too thin or too long or too few). Incomplete wax burnout. Mold too cool when cast. Metal too cool when cast. Insufficient metal by weight.
Shiny castings before pickling (Without use of deoxidizing investment).	Incomplete elimination of wax. Carbon residue deoxidizes cast metal.
Darkened rough castings which resist deoxidizing in pickling solution.	Burnout temperature too high, exceeding 1450°F/788°C. Metal overheated.
Porous castings (Dispersion of fine cavities in metal).	Pattern improperly sprued. Incomplete wax burnout. Metal overheated. Mold too hot. Too much "old" metal in cast (never use more than 50%). Metal insufficiently fluxed. Too much flux added to metal.
Foreign particle inclusions in castings.	Sharp corners and bends in sprue system. Flask placed in furnace with insufficient setting time. Flask heated too rapidly. Sprue hole not checked for particles after sprue base is removed. Molten metal contained foreign particles. Flask contained rust or is unclean from prior cast. Crucible old and disintegrating or insufficiently fluxed. **NOTE:** Graphite has a tendency to absorb moisture and break down if not properly dried before melt.
Spauling (Portion of investment moves within the mold.)	Sharp corners and bends in sprue system. Flask placed in furnace with insufficient setting time. Flask heated too rapidly. Investment handled past worktime.
Bubbles or nodules on castings.	Wax patterns not painted with wetting agent. (Wetting agent should dry minimum of 20 minutes.) Investment slurry and/or invested flasks not sufficiently mixed, vibrated or vacuumed. Vacuum not operating at full capacity (check pump oil).
Rough-surfaced castings other than bubbles or nodules.	Roughness on pattern. (Polish original model before vulcanizing.) Pattern improperly sprued. Incorrect water/powder ratio. Flask placed in furnace with insufficient setting time. Flask heated too rapidly. Pattern material trapped in mold and boiled against mold surface. Too much "old" metal in cast (never more than 50%).
Watermarks on casting (Grainy surface).	Investing too rapidly. **NOTE:** Measure water (Temperature should be 70°F/21°C to 75°F/24°C). A colder temperature will extend the work time. A warmer temperature will shorten the work time. For best results, work time should be kept within the specified time of 9 to 10 minutes.

(OVER)

Kerr Division of Sybron Corporation/28200 Wick Road/P.O. Box 455/Romulus, MI 48174

SYBRON