

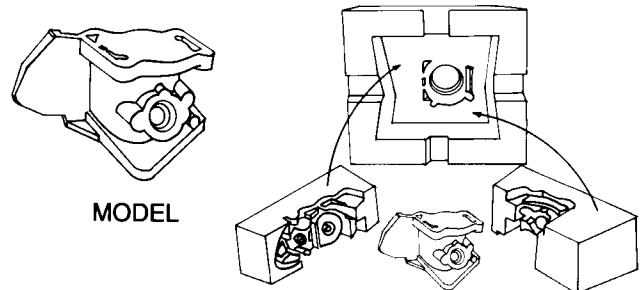
## The Plaster Mold Process

### What is it?

**Briefly stated this is a method of producing aluminum or zinc castings by pouring liquid metal into plaster (gypsum) molds.**

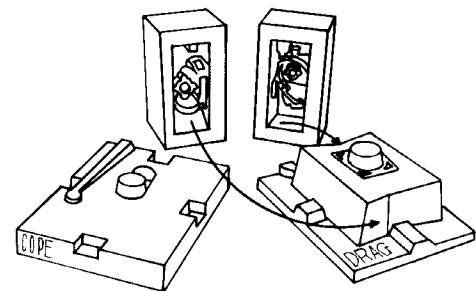
#### **Step 1 Model or Master Pattern**

- 1) This is made from customer drawing or CAD file
- 2) Stereolithography, traditional hand crafted or machined
- 3) Model is engineered to include:
  - A) Metal shrinkage
  - B) Mold taper-if required
  - C) Machine stock-if required
- 4) We can "clone" or adapt customer supplied model if requested



#### **Step 2 Foundry Pattern Equipment**

- 1) Negative molds are made from model
- 2) Core plugs are made from negative molds
- 3) A positive resin cope and drag pattern is now made from the negative molds
- 4) Core boxes are made from the core plugs
- 5) Gating, runner system and flasks are added as necessary
- 6) Duplicate sets of tooling can be made from the master negative



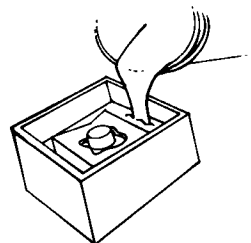
#### **Step 3 Plaster Mold**

- 1) A liquid plaster slurry is poured around the cope and drag pattern and into the core boxes
- 2) The plaster mold is next removed from the cope and drag patterns
- 3) The plaster mold and cores are then baked to remove moisture

FOUNDRY PATTERN EQUIPMENT

#### **Step 4 Pour Casting**

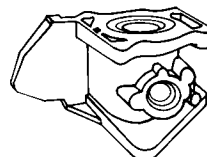
- 1) Molten metal is prepared by degassing and a spectrographic sample is taken to check the chemical analysis
- 2) The molten metal is then poured into the assembled plaster mold
- 3) The plaster is removed by mechanical knock-out and high pressure waterjet
- 4) When the casting has cooled, the gates and risers are then removed



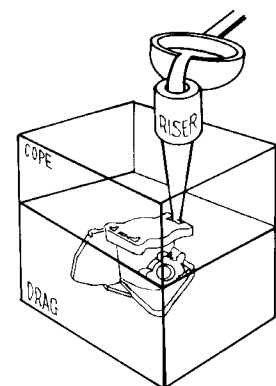
POURING PLASTER MOLD

#### **Step 5 Secondary Operations**

- 1) The raw castings are inspected and serialized
- 2) Flash and excess metal is removed (snagged)
- 3) Castings may then require (per customer specifications):
  - A) Heat Treatment
  - B) X-Ray
  - C) Penetrant Inspection
- 4) After finish inspection, casting is ready for:
  - A) Machining
  - B) Chemical film, chromate conversion, paint or special finishes
  - C) Assembly
  - D) Form in place gasketing



FINISHED CASTING



POURING METAL CASTING