Application Data

Ram bushings

For steam drop forging hammers.

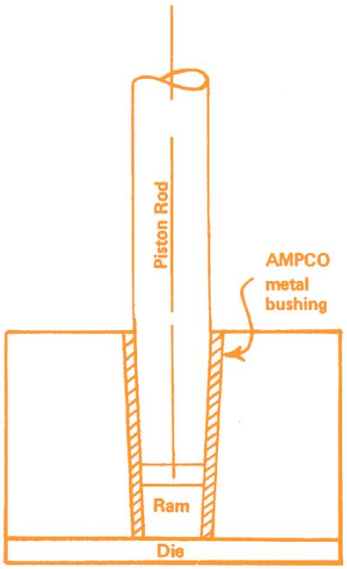
Description

When the hammer of a steam drop forging press strikes there is a tremendous impact where the piston rod joins the ram. This is a serious condition when easy yielding materials such as steel are being forged. The condition is considerably more severe when forging aluminum or other non-ferrous metals which have an elastic or spring-back effect when the ram or hammer strikes. The piston rod hole tends to pound out and sometimes the ram is fractured. To avoid this a ram bushing is placed between the shank of the rod and the bore of the ram. In some instances both the OD and ID of the bushing are tapered while others taper only the ID. Some users employ a l/2"/ft. taper.

Material

AMPCO® 18.23 Centrifugal casting rough bored and faced or finish machined to customer specification.

Advantages

This AMPCO alloy as ram bushings effectively act as a cushion to absorb the terrific shocks caused by the impact of the ram striking the material on the anvil.
When AMPCO 18.23 is used piston rod breakage and the pounding out of the piston rod hole are materially reduced. Hammers are enabled to operate faster and give heavier blows resulting in more pieces forged per hour and longer production runs to reduce the per piece cost.

The replacement cost of an alloy steel piston rod in a forging hammer, the "down time" and other repair expenses when failure occurs are major problems. The importance of AMPCO metal centrifugally cast tapered ram bushings becomes quite evident when these are considered. Copper shims have been utilized. They are not stout enough for this service except in the smallest hammers and then copper is less efficient because it creeps and will not absorb the impact as easily as AMPCO bronze. High tensile manganese bronze has also been tried for ram bushing service. Not having as high a cyclic fatigue in compression or as good an elongation as AMPCO metal, the manganese bronze alloy tends to break in this service.