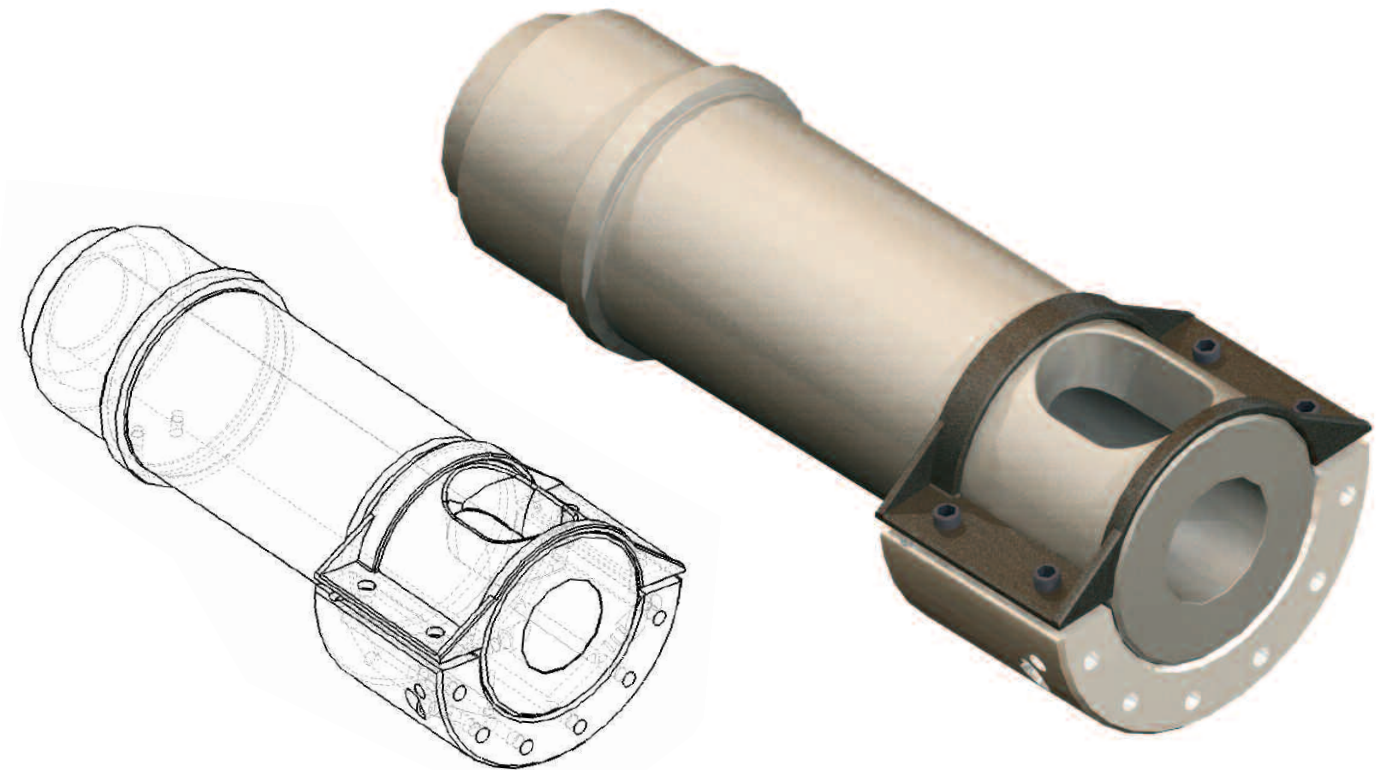


SHOT SLEEVE POUR END COOLING JACKET



Uneven Temperatures Distort Shot Sleeves

For maximum productivity, and also maximum operating life for both shot sleeve and plunger tip, the plunger must consistently move smoothly, and at a steady speed through a perfectly round, straight, shot sleeve. This does not always happen, however, because when heated, metal expands. If partially filled with hot molten alloy, the shot sleeve will become slightly distorted.

At the bottom of a shot sleeve with no cooling, the temperature beneath the pour hole can reach 650°F (345°C). Typically, the temperature differential between the top and bottom of the shot sleeve at this point may be about 270°F (150°C). If this pour end temperature in a shot sleeve is uncontrolled, the vertical temperature variance will cause unequal thermal expansion. This will not only result in a considerable amount of ovality, but also some end to end bowing. The inevitable wear will shorten the life of both shot sleeve and plunger tip, but perhaps more importantly, can interfere with the smooth and regular movement of the plunger. If this occurs, scrap will follow.

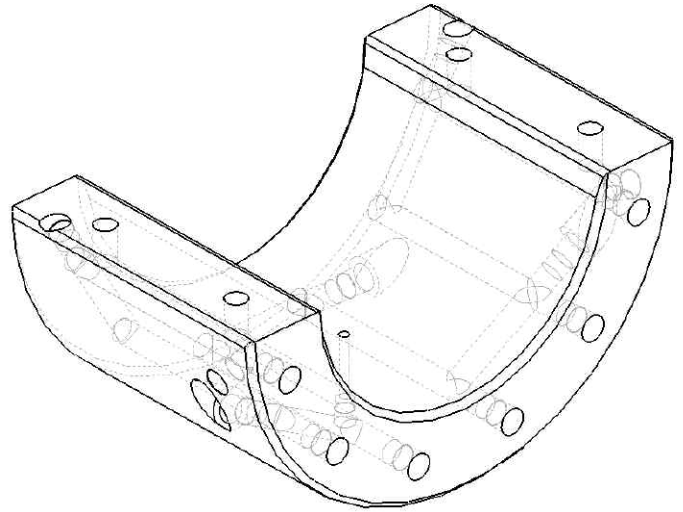
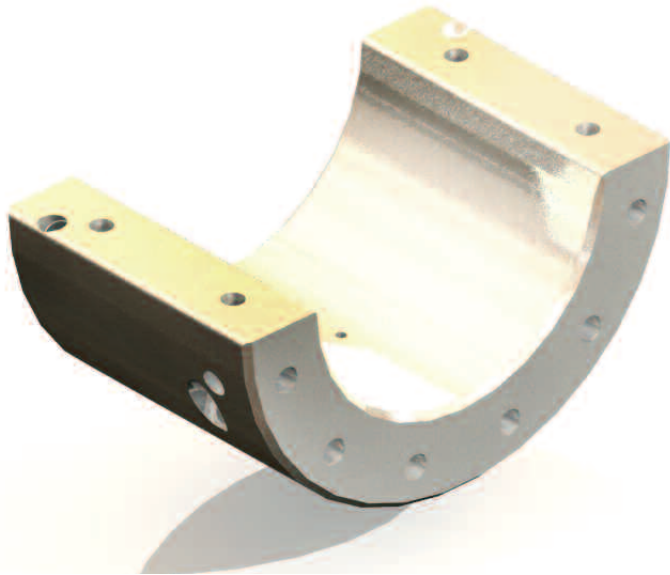
In addition to the distortion caused by vertical temperature variance within the shot sleeve, another danger is the possibility of the overall thermal expansion at the pour end causing the clearance between the shot sleeve and the plunger to increase enough to allow the alloy to penetrate. Whether the sleeve is small or large, the maximum allowable gap remains the same, about 0.004" (0.10mm).

If this critical gap becomes larger, blow-by will likely occur. The pour end is where the sleeve temperature is highest, and the temperature of the entering plunger lowest. This is obviously where cooling is most necessary.

Cooling the Pour End

The most common method of water cooling shot sleeves, is with a pattern of cooling ducts which are an integral part of the sleeve. With its unique pour end cooling jacket, Castool has introduced an effective and economical device which can be re-used when the sleeve is

(over)



replaced. The Castool Pour End Cooling Jacket puts maximum shot sleeve cooling where it is needed most – beneath the pour spout.

This is the most efficient and cost effective basic shot sleeve cooling method yet available.

Automatic Temperature Control

Depending on the operating temperature of the alloy being used, the die caster can preset the Castool Cooling Jacket. A thermocouple then activates a controller which increases or reduces the flow of cooling water through the jacket as required.

FACTS about the Pour End Cooling Jacket

- Reduces scrap
- Aids consistent shot cycle
- Extends life of shot sleeve
- Extends life of plunger tip
- Cooling automatically controlled
- Can be re-used on replacement shot sleeves

