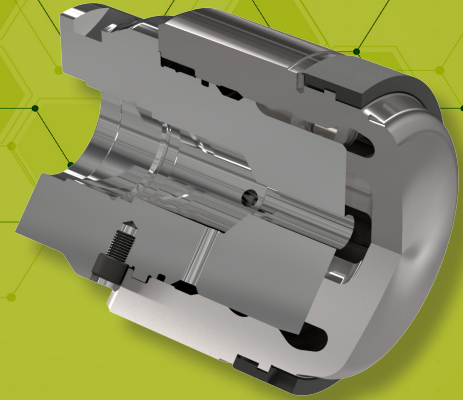


# PLUNGER TIPS

# CRP

## Castool Ring Plunger



### PURPOSE

- ▶ Prevent alloy from penetrating between the shot sleeve and plunger, prolonging tooling life.
- ▶ Move smoothly and consistently, with a minimum of lubrication, through the shot sleeve bore increasing casting properties.
- ▶ Maintain a secure seal with the shot sleeve wall necessary for an effective vacuum to be drawn reducing porosity.
- ▶ Cool the biscuit quickly to reduce cycle times.

### FUNCTION

The function of the plunger tip is the extension of the plunger rod, which pushes the molten alloy into the mould. There are a number of functions that must be satisfied by an effective plunger tip.

- ▶ To repeatedly transmit the force of the plunger rod, at high temperature, to the alloy.
- ▶ To maintain a seal with the shot sleeve wall during the shot, eliminating flash or blow-by and preventing air from being drawn into the alloy when using a vacuum.
- ▶ To remain thermally and therefore dimensionally stable throughout the shot allowing consistent and repeatable shot velocities.
- ▶ Since the tip is dimensionally stable, and the gap controllable, steel wear rings can be attached to the plunger tip body to provide a guarantee that the seal is maintained.

FUNCTION continued on next page

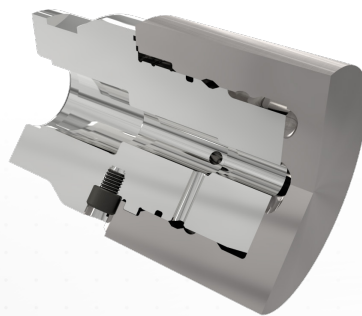
### THE CASTOOL RING PLUNGER (CRP)

The CRP plunger tip design is recommended for tip diameters that range from 40 mm up to 300 mm. The plunger body is made of Con-Duct, a high strength steel alloy. The alloy has a minimum 1000 MPa tensile strength and 42 W/mK thermal conductivity.

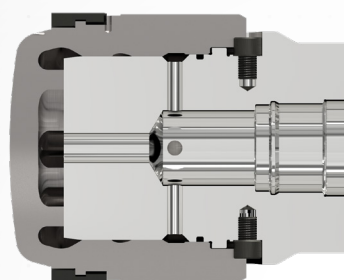
**Con-Duct** is a lower cost alternative to BeCu and hot work tool steels with very good thermal conductivity and toughness. A replaceable steel or copper split wear ring can be mounted to provide a flexible seal. A stainless steel holder with a quick release bayonet coupling allows for quick and easy tip security or removal. The holder also connects a coolant pathway where turbulent flow is generated to maximize heat transfer.

*The CRP tooling package has good thermal stability with high strength resulting in lower cost per casting.*

### ONE-PIECE CON-DUCT



**CRP-A:** A solid Con-Duct tip is fastened to a stainless steel holder with a quick release coupling. Face profiles can be modified to accommodate specific fill patterns.



**CRP-R:** An expanding steel (H-13) or BeCu (A-52 or A-25) wear ring is attached to the Con-Duct plunger tip.

The CRP ring is 40% wider than standard ABP, ARP and AMP ring.

FUNCTION continued..

- ▶ Because the rings is flexible, it makes continuous contact with the inside of the shot sleeve. Flash, which is a major cause of wear, is essentially eliminated. Shot speeds are consistent.
- ▶ Since the expanding wear ring ensures a secure seal between the plunger and the shot sleeve, a better vacuum can be drawn.
- ▶ An additional advantage is that the face of these is considerably cooler than that of other steel plungers. This cools the biscuit much faster, and reduces the cycle time significantly.

## BENEFITS OF THE CASTOOL ALLPER PLUNGER TIP

- ▶ Reduce cost per shot
- ▶ Increase plunger life
- ▶ Increase shot sleeve life
- ▶ Improve vacuum seal
- ▶ Reduce scrap rate
- ▶ Reduce downtime

With the Castool Ring Plunger, We again sets a new standard of excellence in the die casting industry.

Results may vary depending on individual press characteristics and setup.

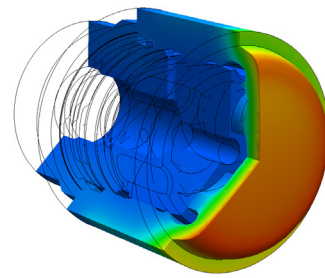
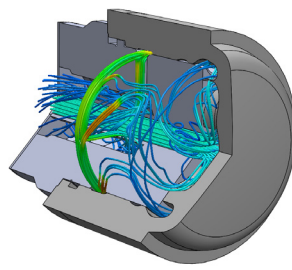


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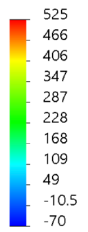
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## SIMULATION



Temp (Celsius)



Plot Step: 14

## TEMPERATURE

The temperature and cooling affect of the plunger tip is important for both longevity and cycle time. The plunger tip must remain relatively thermally and dimensionally stable so that the critical gap between the shot sleeve and plunger tip can be managed. The time taken to solidify the biscuit is also critical to minimize cycle time and maximize productivity.

## COMPONENT PARTS

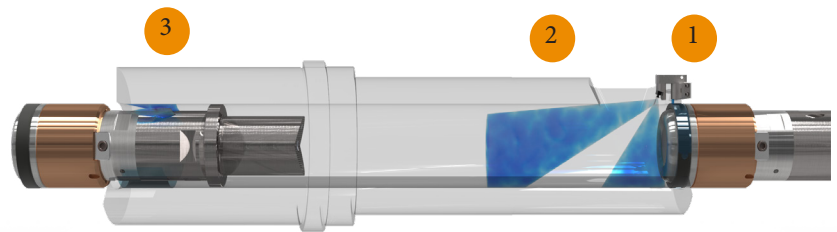


Holder



The plunger system is robust and offers superior cooling compared to other steel plungers. It is economical, environmentally friendly and long lasting.

## LUBRICATION



Lubrication should only be applied where it is needed. Every effort should be made to eliminate the possibility of non-metallic substance getting into the casting.

- 1) For small shot sleeves, the bolt-on Allper Lube Drop (ALD) or a slot and lubrication channel can be machined into the shot sleeve that delivers lube on top of the plunger ring.
- 2) For medium shot sleeves, the bolt-on Allper Combi-Lube (ACL) system delivers a precisely measured amount of lubricant directly on top of the plunger or plunger ring and on shot sleeve bore under the pour spout.
- 3) For long shot sleeves, Castool Rod Lube (CRL) systems delivers a small amount of lube on the die-end bore of the shot sleeve prior to plunger return in addition to ALD or ACL.



CASTOOL MAKES DIE CASTING BETTER