

Dr. Die Cast



Hot Topic: “Cast-Over”

Who, What, When, Where, How and Why?

Who: Die cast operators and Trimmers.

“Cast-over” occurs when, first a piece of a casting sticks in the die cavity. Then on the next or possibly even several shots later the stuck piece adheres to a casting and is ejected normally. Often there will be little or no visible crack or seam line where the piece adhered. It will appear normal and complete in every way. There may be a slight discoloration at the seam line but there is no guarantee that it will be visible. There are cases where the piece adhered so tightly that it stayed together during trimming, vibratory packing, machining, painting and sub assembly before breaking.

Can “Cast-over” be anticipated? Yes, it usually occurs on features that already have a history of sticking. Frequent causes are “Die Fatigue/Heat Check”, inadequate draft or even undercut, misaligned spray, short shots, plugged cooling lines (hot break), broken or seized ejector pins, etc.

“Cast-over” can occur on any part of any casting where sticking can happen.

How? See above.

Why? See above.

Don’t overlook that sometimes we intentionally use “Cast-over” as a method to remove a stuck piece.

What are the risks in making “Cast-overs”?

Safety: If the stuck piece is large enough it will cause the biscuit to be longer than normal. Since the “dwell/freeze” time is based on “normal” biscuit lengths the biscuit could blow during die opening and splatter the operator or nearby personnel with molten metal.

Tooling damage: The second risk is to the die parting line as it may extend between cores or slides andpeen the edges of the die or damage slide cores.

Loss of respect and/or trust of our customers: The last and most important is that of the casting making its way through the final assembly and failing at the final customer. If it is a “safety critical” part someone could be injured.

Added costs: If caught at assembly you as a supplier will have to deal with containment expenses and rerunning the lot. If in the field, the costs increase exponentially.

In conclusion, “Cast-over” is relatively easy to identify at the machine.

1. If the castings are extracted manually, then the operators are the only ones who will have seen the incomplete castings when the piece stuck the first time. With proper training, they are your first line of defense against a “cast-over” going to the next customer.

2. If the castings are extracted robotically, then strategically located sensors can reliably detect the missing section and immediately stop production.

In short, if there are design features that are more difficult to eject and stick frequently. Once we identify this type of characteristic we need to work to improve the tool and casting design reliability. Zero defects can only be accomplished in an environment where continuous improvement is a way of life.

Who’s Dr. Die Cast?

Robert P. McClintic
Die Casting Consultant

Bob McClintic & Associates
4411 W. Grand Blvd. NW
Walker, MI 49534

rmcclintic@ameritech.net
www.drdiecast.com
616.292.0454