

Short Shots

Most Likely Cause

- Feed/ shot weight too small
- Injection Speed too low
- Injection Pressure too Low
- Inadequate Mould Venting
- Switch-over position too early
- Wrong Material Type
- Screw Check-ring broken
- Injection time too short
- Holding time too short
- Leaking from Nozzle
- Leaking from the hot runner
- Granules not feeding consistently
- Machine's "Throat" temperature too high

Action

- Increase Gradually
- Increase
- Increase
- Clean Vents
- Move the switch-over position more toward nozzle
- Check the Material specification
- Consult Technician
- Increase timer
- Pull Back Barrel & inspect
- Stop production & call technician
- Stop production & call technician
- Check Regrind addition
- Check coolant flow



Distortion/Warping

Most Likely Cause

- Air Ejector Programs causing distortion
- Stacker/Packing causing distortion
- Wrong grade of material
- Coolant not circulating
- Melt temperature too low or too high
- Cooling time too short
- Holding pressure too low (mould under-packed)
- Holding time too short (mould under-packed)
- Mould being over-packed

Action

- Identify air-blast & adjust
- Re-set stacker
- Check the material specification
- Check coolant flow & valves
- Check against the setting sheet
- Increase cooling time
- Increase holding pressure
- Increase hold time
- Adjust the following 1 at a time
 - Reduce Holding pressure
 - Increase switch-over position
(move away from nozzle end)
 - Reduce Injection Speed



Jetting

Most Likely Cause

- Injection speed too fast
- Gate position incorrect (Design Issue)
- Gate too small
- Wrong type of gate

Action

- Reduce Injection speed or profile a slower speed when polymer reaches the gate: Profile Injection.
- *This is a mould/product design issue which will require consultation with designer and Toolmaker.*
- Increase gate size: *mould modification.*
- Change Gate Geometry: *mould modification*



Drooling

Most Likely Cause

- Hot runner Tip /nozzle temperature too high
- Sprue bush coolant not circulating
- Too Little or NO decompression (suck-back)
- Mould's hot runner tips too high
- Carriage-retract (sprue-Break) turned off
- No Relief-time set
- Shut-off nozzle not working

Action

- Reduce Temperature
- Check for coolant flow
- Switch on or increase
- Reduce tip temperatures carefully
- Switch on if the appropriate nozzle installed
- Set some time
- Investigate & inform maintenance



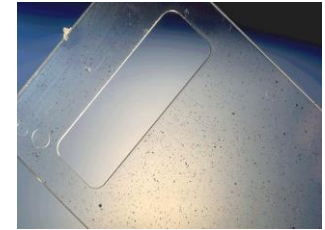
Contamination

Most Likely Cause

- Foreign bodies in raw material (lower pic)
- Contamination from feed lines & hopper
- Burnt material in the hopper
- Degraded plastic in barrel after standing
- Contamination around the nozzle tip
- Incompatible plastics mixed
- Poor storage of material

Action

- Inspect raw material & change if necessary
- Inspect & clean
- Purge thoroughly
- Purge thoroughly
- Clean the nozzle
- Remove & discard
- Investigate & rearrange



Degraded material from granulation process at polymer supplier (rare)

Pip in Gate Area also Most Likely Cause

- Gate temperature too low
- Hot runner tip temperature too low
- Hot tip probe broken
- Holding time too long
- Holding pressure too high
- Screw relief time too short (drooling)
- Not enough or NO decompression (suck-back)
- Sprue bush cooling too strong (too cold)

Stringing Action

- Increase gate temperature Gradually
- Increase probe temperature
- Contact tool-room
- Reduce in small steps
- Reduce in small steps
- Increase Slightly
- Switch on or increase decompression
- Reduce flow to this area



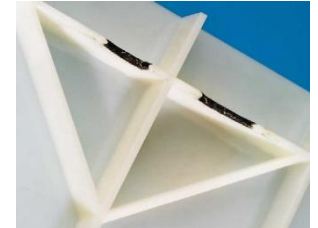
Burn Marks “Dieselling”*

Most Likely Cause

- Mould Vents Blocked
- Plastic flowing too fast
 - Plastic too hot
 - Injection speed too fast
 - Mould too hot
- Vent Pins blocked
- Mould clamp force too high
- Regular vent cleaning not carried out

Action

- Inspect & clean vents
- Slow down plastic flow (profile Injection speeds)
 - Check barrel temperatures
 - Reduce Injection Speeds
 - Check mould temperature & coolant flow
- Consult too-room
- Reduce clamp force gradually
- Keep to scheduled cleaning routines.



**Dieselling is also known by a number of other names:
Burn-Marks Burning, Gassing, Gas Trap.*

Undercut Tearing

Most Likely Cause

- Cooling time too short (*plastic not solid enough*)
- Cooling time too long (*plastic not flexible enough*)
- Mould too hot
- Holding time too short (*underpacking*)
- Holding time too long (*overpacking*)
- Holding pressure too high (*overpacking*)
- Switch-over too late (*overpacking*)
- Part sticking in wrong mould half
- Core air blast too high pressure or speed
- Gate “holding” the part during opening

Action

- Increase gradually
- Decrease gradually
- Check for flow. Adjust coolant flow
- Increase timer setting (*check against standard*)
- Reduce gradually
- Decrease to suit
- increase setting position (*move away from nozzle*)
- Inspect mould for damage
- Identify valve & Reduce pressure & speed
- Inspect part for tearing damage: increase nozzle temperature / tip temperature

Sinking & Voids Bubbles”*



Most Likely Cause

- Barrel Temps too high
- Injection speed too low
- Shot weight (feed) too small
- No cushion of material
- Wrong grade of plastic
- Mould too hot
- Holding time too short
- **Holding pressure too low**
- Switch-over too early
- Injection speed too low
- Injection pressure too low
- Back pressure too low
- Check ring not working

**Voids: this “Bubble” is not an air bubble! it’s an internal sink mark! Air in the melt shows as “silver streaks” on the surface, similar to Moisture / damp marks from undried polymers*

Action

- Decrease / check against setting sheet
- Increase
- Increase gradually
- Increase switch-over & shot weight positions
- Check Material specification & grade being used
- Check coolant flow & adjust if needed
- Increase
- Increase
- Move switch-over position toward nozzle
- Increase gradually
- Increase
- Increase
- Consult technician

Make sure there is a CUSHION of material left after the Holding pressure: without a cushion you can never get rid of the sink/void.

FLASH

Most Likely Cause

- Plastic temperature too high (*flowing too easily*)
- Plastic temperature too low (*solidifies too soon*)
- Shot weight (feed) too big
- Gate blocked on multi cavity mould
- Incorrect plastic being used (*flowing too easily*)
- Mould too hot
- Vents blocked
- Holding pressure too high
- Clamp force too low
- Mould height incorrectly set
- Mould faces damaged
- Switch-over too late
- Injection speed too fast
- Back pressure too high
- Machine not purged after standing

Action

- Decrease & check against the setting sheet
- Increase & check against the setting sheet
- Decrease shot volume
- Inspect **carefully** (ensure barrel is retracted)
- Check Material specification
- Check coolant is flowing & adjust
- Check & clean vents
- Reduce
- Re-set
- Re-set / increase
- Inspect & call tool-room
- Increase switch-over position
- Reduce speed (profile injection speeds)
- Reduce
- Purge thoroughly.

