Mold Design Checklist
UPMOLD TECHNOLOGY LIMITED

Date

Project No. ________________ Mold No. ________________ Customer’s No. ________________
Mold Designer ________________

Refer to these lists while formulating preliminary concept and after the design is checked and updated, but BEFORE multiple sets of copies are run for Manufacturing. Review all sources of pertinent design criteria such as but not limited to: Customer mold spec’s, work order, phone minutes, minutes from meetings, faxes, mailings, applicable reference designs, memos, etc., Make use of these lists to quickly verify that applicable procedures have been followed and desired requirements are satisfied for this mold design. Place a check mark for “Y” this issue is satisfied or leave "empty" for "not applicable," in the boxes provided next to each question.

PRODUCT RELATED

☐ 1. Is there a "parts to customer" promised date?
☐ 2. Has the mold completion date been established?
☐ 3. Has the mold cost quote been completed?
☐ 4. Has the cavity level been established?
☐ 5. Has the cycle time been established?
☐ 6. Has the material to be molded been determined?
☐ 7. Is existing product available?
☐ 8. If 7 is yes, should the existing gate location be used?
☐ 9. If 7 is yes, is the product symmetrical in design?
☐ 10. Are maintenance costs built into the price?
☐ 11. If there is existing product running, is it running under deviation?
☐ 12. Are there gages available for this product line?
☐ 13. If there are no gages available, will they be available when the construction is completed?
☐ 14. Given the proposed cavity level, will the product fit into one of the three standard size modules?
☐ 15. Is the shrinkage data available at this time?
☐ 16. Is there an existing or similar product for which reliable shrink data is available?
☐ 17. Should the tool be designed for "steel safe?"
☐ 18. Has a product polarization feature been identified?
☐ 19. Are Pro E models available?
☐ 20. What level of tooling supports the business?
☐ 21. Can the part date code (clock code), if applicable, be changed without removing the mold from the press?

Notes:
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CAVITY

☐ 1. Are slender inserts protected from molding pressure?
☐ 2. Are sliding areas made of dissimilar steel, hardenings or coatings?
☐ 3. Is stationary-half ejection necessary?
☐ 4. Is cavity construction strong enough to prevent deformation due to clamp pressure?
☐ 5. Should core pins be piloted?
☐ 6. Is mismatch needed to maintain critical dimensions?
☐ 7. Do cavity blocks have benching pins?
☐ 8. Are fragile areas of cavity inserted?
☐ 9. Are cavity inserts backed up by hardened steel?
☐ 10. Proper steel type specified for various components?
☐ 11. Proper plating(s) specified?
☐ 12. Proper polish(es) and draw polish specified on tool drawings?
☐ 13. Is gate area inserted?
☐ 14. Has cavity been properly vented?
☐ 15. Do vents reach atmosphere or vacuum?
☐ 16. Has cavity been evaluated for ease of maintenance?
☐ 17. Has gate puller been provided for a gate in moveable half?
☐ 18. Is draft present for telescoping tooling?
☐ 19. Is sufficient draft present for a side release and part ejection?
☐ 20. Is cavity sequence definition necessary?
☐ 21. Has computer analysis been done for runner sizes?
☐ 22. Is any steel telescoping less than 3 degrees?
☐ 23. If steel is telescoping less than 3 degrees, can this be increased?
☐ 24. Is strip action required on A side?
☐ 25. Is strip action required on B side?
☐ 26. Do internal détentes require either half core to float out prior to ejection?
☐ 27. Have "key features" been identified?
☐ 28. Does the "key feature" dimension correlate with the area of the product most functionally critical and that will be most affected by process changes?
☐ 29. Are ejector pins located at intersection of runners?
☐ 30. Have runner cold-slug wells been vented?
☐ 31. Will the runner stay on the ejector side of the mold frame?
☐ 32. Is the sprue bushing retained in the mold frame?
☐ 33. Will the nozzle area of sprue bushing trap material?
☐ 34. Is an ejector pin properly located to eject the gate?
☐ 35. Has sprue length and diameter been minimized?
☐ 36. Does cavity need alignment feature to protect steel (for cavities without frames)?
☐ 37. Have complete parts lists been drawn?
☐ 38. Are all drawings properly numbered?
☐ 39. Are set-up sheets prepared for multiple part numbers?
☐ 40. Are interchangeable inserts polarized?
☐ 41. Was any texture requested?
☐ 42. Any special requests made by Manufacturing Department?
☐ 43. Was vacuum requested for vents (end of fill or full vacuum depending on product)?
☐ 44. Are enough ejector pins present for short shots?
☐ 45. Were "pull grooves" requested or needed?
☐ 46. Cavity identification called out on the tool drawings?
☐ 47. Circuit identification called out on the tool drawings (per drawing #17319)?
☐ 48. Proper company logo called out on the tool drawings?
☐ 49. Broken corners to be shown only to aid in handling/shut off clearance.
☐ 50. Is the polymer material code engraved in the cavity?
☐ 51. Are the runners vented?
☐ 52. Do units stand proud from frame for shut-off?
☐ 53. Has a hot sprue been considered?
☐ 54. Are there separate jack screw holes for face-mounted units?
☐ 55. Has product been reviewed for max core out of material?
☐ 56. Are wedge locks installed?
Mold Design Checklist

FRAME/PRESS DATA

1. Will mold frame fit the press it was intended for?
2. Were specs provided for intended press(es)?
3. Are eyebolt holes provided in both halves of die cast?
4. Are eyebolt holes provided in both halves of mold?
5. Are locations of cavities balanced for:
   A. Mold clamp?
   B. Material flow?
   C. Cooling?
6. Is "shut height" within limits of press?
7. Are eyebolt holes on four sides of large plates?
8. Is one return pin offset?
9. Is one guided ejection leader pin offset?
10. Is a sufficient amount of support pillars used?
11. Are the "O" and "R" dimensions spec'd for sprue bushing?
12. Are runners and gate dimensions specified?
13. Are provisions needed for "picker" or "robot?"
14. Will support plate provide adequate support?
15. Are pry bar slots specified on drawings?
16. Are grease fittings needed for moving components?
17. Are stamping requirements specified on drawings?
18. Are P/L alignment devices on the drawings?
19. Do frame plates have corners broken?
20. Are runner shut-offs required?
21. Is frame plating specified on drawings?
22. Are sealing gaskets required for vacuum?
23. Do frame leader pins engage before interlocks which engage before cavity steel?
24. Are leader pins long enough for floating plates?
25. Do shoulder bolts allow for enough travel?
26. Were mold actions reviewed for proper timing?
27. Are leader pins vented under bushings?
28. Are screws and voids on parting line minimized?
29. For a hot sprue bushing, has the voltage and length been specified on a detail drawing or material list?
30. If hydraulic cylinders are required and project beyond the mold, are they protected?
31. Is the press knock-out pattern shown for each press?
32. Are platen mounting holes provided in each half?
33. Will an insulator plate be required?
34. Are water lines located so they do not interfere with tie bars, mold clamps, operator, falling product, runner and auxiliary equipment?
35. Will cross hatched clamp plates for required?
36. Are wedge blocks required?

EJECTOR SYSTEM

1. Is ejector travel greater than length required for part and runner ejection?
2. Are stop pins provided to limit ejector travel?
3. Is frame travel limited to less than cavity travel on face mounted cavity units?
4. Are ejector pins, support pillars or ejector sleeves not interfering with knockout holes?
5. Is strength of ejector plate compromised by use of support pillars?
6. Will hand-loaded inserts stay on their locator pins at top of full ejection stroke?
7. Is ejector system guided on class 1 and precision molds?
8. Can the ejector plates be pulsed to flick plastic parts off of the ejector pins?
9. Is an "early return" system required?
10. Do compression springs use an operating range (25-35% of free length)?
11. Are "cushioned" return pins required when ejector pins are on a clamping parting-line surface of cavity?
12. Are stripper plates of adequate thickness?
13. Have additional screws and stop buttons been added to ejector plate sets on larger die casts?
14. Is a hydraulic return required?
15. Are safety limit switches installed on die cast having ejector devices inside of slide paths?
16. Are springs required to return ejector plates?
17. Can ejector plates be tied in to the press?
18. Are cold slugs 2 times the runner diameters?
19. On sub-gated parts, is the ejector pin located for proper gate ejection/runner flex?
20. Do all runner intersections have a radius?
1. Has mold-cooling analysis been done?
2. Are frame and cavity designed for pulse cooling?
3. Are cooling line connectors recessed?
4. Will fitting locations interfere with tie-bars or clamps?
5. Are fittings that extend beyond exterior of mold frame protected from damage?
6. Is there a 3/16" min. wall surrounding cooling lines?
7. Are there sufficient cooling lines in the following areas: "A" plate?
   "B" plate?
   Stripper plate?
   Three-plate runner plate?
   Back-up plate?
   Sprue and runner area?
8. Are all water connections marked "In" or "Out"?
9. Are all air cooling connections marked "In" or "Out"?
10. Are all vacuum connections marked "Vacuum"?
11. Are cooling lines needed in cavity?
12. Should "In" or "Out" locations be staggered from die cast plate to die cast plate?
13. Are the mold plates slotted for quick-change cavity cooling connections?
14. Should waterlines be electroless nickel plated?
15. Was a Staubli water connector requested?
16. Would air cooling benefit any cavity areas?
17. Is mold to be heated or cooled?

SLIDES

1. Is slide travel adequate to clear part?
2. Is a positive slide lock designed in the tool?
3. Are there wear plates under the slide?
4. Are there wear plates in the lock blocks?
5. Are limit switches present in case of "slide rebound"?
6. On slides wrapping around cores, is there adequate clearance between ejector devices and slide steel?
7. Are there early return pins (.25" minimum diameter) provided when ejector devices are under slide steel?