Mold Disassembly & Assembly

The following is a good checklist for disassembly and assembly of a plastic injection mold. Some of our customers do not have trained mold makers on staff to perform this kind of assembly and disassembly. We have listed a procedure to help give your tooling room staff a good start, **HOWEVER**, this must be done at your own risk! We **HIGHLY** recommend that every molding facility should have skilled mold making professionals on staff to perform assemblies, disassemblies, maintenance, and repairs.

Disassembly:

- ☐ Place Mold on two rails on a clean table with sufficient space. Tools used must be in good condition and should include allen wrenches, aluminum pry bars, rubber mallet, duct tape, and some containers.
- ☐ Separate mold at parting line carefully and look for any visible damage. If mold is damaged, report it at once. Check for rust in core and cavity and report it at once if found.
- ☐ Put all the parts in a container and identify with the proper job number.
- ☐ Check for core pins in Ejector Housing (at the bottom clamp plate) and remove the core pins first.
- ☐ Remove all necessary screws in the Ejector Housing.
- ☐ Remove screws from the Ejector Plate.
- ☐ **Check if all pins are marked, if not mark as necessary.**
- ☐ **Check if lift cores are marked, if not mark as necessary.**
- ☐ Remove all pins and parts from Ejector Housing. Protect all fragile parts and critical areas with duct tape.
- ☐ Remove all water line jiffy-plugs
- ☐ Remove all slides assemblies and protect all critical areas with tape or carefully store in container.
- ☐ Remove the Sprue bushing, hot sprue, or any hot runner system.
- ☐ Remove all screws from cavity and core inserts and install two or four **longer** screws in cavity and core. Then, knock out cavity and core inserts from mold base by hitting screws with a rubber, aluminum, or copper mallet. **BE CAREFUL NOT** to knock insert out onto the bench or floor and damage it. If you can't bump the insert out into your own hand, **GET HELP!**
- ☐ Once the primary inserts are removed, remove all sub-inserts, gate inserts, core pins, etc. and protect all critical edges with tape or carefully store in container.
- ☐ **Carefully** clean all details with a **clean**, mild solvent and **clean** towels being careful NOT to damage sharp edges, parting surfaces, shutoffs, or the cavity finish.
- ☐ Finally, store all inserts in such a way that the molding surfaces are protected and cannot be accidentally damaged.

Assembly:

- ☐ Have all the mold plates, inserts, and components in one place ready for assembly. Have a clean table and two rails to slide plates on. Tools used must be in good condition and should include allen wrenches, aluminum pry bars, and rubber/copper/aluminum mallets.
- ☐ Cleanliness is critical in mold assembly. Make sure all plates, inserts, and components are clean and free from grit, debris, and chips. After you have carefully cleaned all details with a clean, mild solvent and clean towels, THEN wipe everything again with your clean, bare hand to remove small grit (**Careful** NOT to damage sharp edges, parting surfaces, shutoffs, or the cavity finish)
- ☐ Install all sub-inserts, gate inserts, core pins, etc. into the primary inserts. Check that all inserts and pins are marked and that they are installed in the correct location and position.

- ☐ Mount the B-Plate to the Support Plate
- ☐ Install the B-Half insert set, any slide assemblies, and any other B-plate components. Check that all parts are marked and that they are installed in the correct location and position.
- ☐ Insert and grease all ejector pins, ejector sleeves, and ejector blades through the pin retainer plate, support plate, and core inserts. Install all return pins and springs. Install and grease any Lifter mechanisms. Bolt on the Ejector plate.
- ☐ Assemble the ejector housing, with support pillars, guided ejection pins, etc. Guide this assembly through the ejector & other plates and bolt it to the support plate. Insert any core pins that mount in the bottom clamp plate and fasten their backup plates. Lubricate the entire assembly.
- ☐ Verify that the Slide assembly moves freely, is greased, and that the slide retainer is functioning properly.
- ☐ Move the Ejector assembly forward and check if all pins, sleeves, lift cores and all other moving components spin freely. Wiggle to verify correct clearance and that all components move freely.
- ☐ Ensure the ejector plate can use the full length of travel. Check if runner & part will clear the core when ejected.
- ☐ Mount the A-Plate to the top clamp plate.
- ☐ Install A-Half insert set, heel blocks, angle pins, and any other A-plate components. Check that all parts are marked and that they are installed in the correct location and position.
- ☐ Install the locating ring & sprue bushing. Check that the sprue radius and orifice are the correct size and verify that the sprue bushing is rotation locked and retained.
- ☐ If the mold features a 3-plate or hot runner system, install them at this stage.
- ☐ For 3-Plate molds, verify that all latches function properly, that they latch and release in assembly, and that plate separation is sufficient to let both the part AND the runner drop through. Also, check that all latch dowel pins are secured so as not to come loose during operation. Lubricate the whole assembly and verify that it moves freely.
- ☐ For Hot Runner molds check that all wiring is in a channel, free from damage, and free from possible "pinches" during assembly. Check continuity of all circuits.
- ☐ Install all jiffy-connectors with teflon tape or suitable thread sealant and water test.
- ☐ Check all limit switches.
- ☐ Spray with WD-40 or approved rust preventative and close the assembly.
- ☐ Verify that the mold has a mold strap and that it is fastened correctly.

Thorough Pre-Assembly Inspection (for a New or Reworked Mold):

- ☐ Check all shutoff areas with spotting blue. Tryout any pieces to be insert molded in assembly, check fit and shutoff.
- ☐ Ensure that the cavity & core blocks have 0.002 preload per side (above the mold base plates)
- ☐ Check to see if the cavity surface finish is correct to print. As a rule remove all tool and EDM marks, especially deep ribs.
- ☐ **Check for nicks, scratches, damaged edges or corners, chipped or damaged pins and damaged or loose pin holes.**
- ☐ Ensure all cavities have been numbered, and have part numbers (if applicable).
- ☐ Ensure all inserts are numbered to correspond to cavity numbers. Details should be stamped with detail number and material type.
- ☐ Check to make sure mold has pry slots (on back side of "A", both sides of "B", & top of "Ejector" plate) and is chamfered in correct areas.
- ☐ Ensure water line countersink diameter is correct for plug being used. Check plug holes for smoothness, lead in chamfer, & cleanliness. Sealant has been used on all threads. Jiffy plugs, regular plugs, baffles, and bubblers are in place and have been flow and pressure tested.
- ☐ Mold Info has been stamped correctly on the Support plate, all water lines are clearly stamped, and stamp "top of mold" and "operator side" on the appropriate sides
- ☐ Verify that all cavities have gates and the gates are the same size.
- ☐ Ensure all sliding parts must have grease grooves, are lubricated, and move easily.
- ☐ Verify that slides do not interfere with ejector pins or other moving components. Verify that travel is sufficient to clear molded part.

- ☐ Check for proper clearance on angle pins, and slides when entering opposite side. Make sure pins don't bottom out. Check if slides lock properly in slide retainer.
- ☐ Verify that all limit switches must be orientated properly for wiring and function.
- ☐ Check hydraulic cylinders for length of stroke.
- ☐ Check K.O. holes for correct location and correct tapped dimensions (if applicable).
- ☐ Verify that all pins, sleeves and lift cores have the proper hole clearance, head clearance and proper depth clearance. All pins and sleeves must have lead in clearance and lead in chamfer in core insert.
- ☐ Check all return and ejector pins, and support pillars are the correct length, ejector system moves easily, all pins are in place (and should be marked for proper location), and the entire assembly lubricated.
- ☐ **Push ejector plate forward and check if all pins, sleeves, lift cores and all other moving components spin freely. Wiggle to verify correct clearance and that all components move freely.**
- ☐ Check that the ejector plate can use the full length of travel and has spring return, if needed. Check if runner & part will clear the core.
- ☐ Verify that sprue puller design will work as needed.
- ☐ Open and close the mold in assembly to check for any interference. Activate any and all side actions and lifters to check for proper travel and interference of any kind.
- ☐ Ensure core pins are the correct length and all pins are in place. Make sure the necessary pins shutoff.
- ☐ Ensure runner has been benched smooth with rounded corners and transitions. Gate to Runner transition should be blended smooth (**Parting Line edges stay sharp**).
- ☐ Vent runners at every direction change, and part detail is vented directly opposite the gate, at the parts ends & corners, and every 2 inches in between as necessary. Vent all guide pins.
- ☐ Verify that all plates have eyebolt holes on every side.
- ☐ Attach safety straps to mold between A and B halves on the operator side.
- ☐ Ensure locating ring and sprue bushing are in place, and sprue radius and orifice diameter are correct size. Sprue Busing is rotation locked and retained.
- ☐ Verify clamp slots are in place and free from any interference.
- ☐ Check insert fit on surface plate and again in mold assembly.
- ☐ Demagnetize all components.
- ☐ Verify all screws/bolts are in place and tight (Follow a pattern to prevent missing a screw).
- ☐ Verify the cavity, core, slides, mold base and all other applicable parts are clean and clear of chips, debris, and benching grit, and spotting blue, especially deep ribs and bosses.
- ☐ Check all holes for missing pins by looking in every hole of the assembled mold.
- ☐ Verify that parting line locks function properly.
- ☐ Ensure everything is functioning properly by opening and closing the mold on the bench. Check if slides clear ejector pins, lift cores and any other moving parts with sufficient clearance and that mold closes freely.
- ☐ Check if hot sprue bushing is properly installed and assembled. Make sure all components are installed and no wires are broken or damaged. Check that wire channel is in mold base and that clamps are in place to hold wires.
- ☐ Test Pressure on water lines using diversion plugs. Ensure "O" rings and correct jiffy-plugs are installed
- ☐ Grease all slides, core pins, angle pins, cam locks and guide pins.
- ☐ Check the size and fit of every drop diameter for hot runner molds. Check overall lengths and heights to verify heat expansion and proper "crush".
- ☐ For Hot Runner molds check that all wiring is in a channel, free from damage, and free from possible "pinches" during assembly. Check continuity all circuits (*compare all zones to the drawing, note any changes or additions*).
- ☐ Verify all 3-Plate molds latches function properly, that they latch and release in assembly, and that plate separation is sufficient to let both the part and the runner drop through. Also check that all latch dowel pins are secured so as not to come loose during operation.
- ☐ Spray mold with WD-40 or equivalent for shipping