

Mold Setting, Clamping, and Water Cooling Line Connection SOP

1.0 Maintenance Objective & Frequency

The objective of this procedure is to ensure the mold is correctly positioned, securely clamped, and water cooling lines are properly connected and leak-free. This prevents mold damage, part defects, and coolant leaks that can cause machine downtime or safety hazards. This procedure is performed at every mold change or at the start of a new production run.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect main power to the injection molding machine and apply a personal lock and tag.
- Hydraulic Isolation: Close the hydraulic shut-off valve and bleed residual pressure from the clamp circuit.
- Pneumatic Isolation: Shut off compressed air supply to the machine and vent any trapped air.
- Mandatory PPE: Safety glasses, steel-toed boots, cut-resistant gloves, and hearing protection.

3.0 Required Tools, Parts & Lubricants

- Overhead crane or hoist with appropriate lifting capacity (check mold weight rating)
- Mold clamps (type and size per OEM specification)
- Torque wrench (range 50-200 Nm) with appropriate socket for clamp bolts
- Allen key set (metric, sizes 4mm-12mm)
- Water cooling line hoses with quick-connect fittings (check thread type)
- Pipe thread sealant (e.g., PTFE tape or liquid sealant rated for water)
- Leak detection spray or soapy water in spray bottle
- Clean rags and absorbent pads
- Mold alignment pins (if required)
- Dial indicator with magnetic base (for alignment verification)

4.0 Step-by-Step Maintenance Procedure

1. Verify LOTO is applied: confirm main power disconnect is locked, hydraulic pressure is bled, and pneumatic supply is isolated.
2. Inspect the mold mounting surfaces on both the stationary and moving platens for debris, burrs, or damage. Clean with a rag if necessary.
3. Using the overhead crane, carefully lift the mold and position it between the platens. Align the mold's locating ring with the platen's center hole. Lower the mold gently onto the platen surface.
4. Insert alignment pins (if applicable) to ensure the mold is centered and square to the platen. Check that the mold sits flush against the platen with no gaps.

5. Install the mold clamps on the stationary platen side first. Tighten clamp bolts to the OEM-specified torque (typically 80-120 Nm for standard clamps). Use a torque wrench for accuracy.
6. Move the moving platen forward until it contacts the mold. Verify the mold is fully seated against both platens. Install clamps on the moving platen side and torque bolts to specification.
7. Connect the water cooling lines to the mold's inlet and outlet ports. Apply pipe thread sealant to the fittings to prevent leaks. Hand-tighten then use a wrench for an additional 1/4 turn.
8. Route the cooling lines away from moving parts and pinch points. Secure them with cable ties or clamps to prevent snagging during operation.
9. Slowly open the water supply valve and pressurize the cooling circuit. Inspect all connections for leaks using leak detection spray. Tighten any leaking fittings as needed.
10. Verify mold alignment using a dial indicator on the moving platen. Runout should not exceed 0.05 mm. If out of spec, loosen clamps and re-align the mold.
11. Remove LOTO devices and restore power, hydraulic, and pneumatic supplies to the machine.
12. Perform a dry cycle (no injection) to confirm the mold opens and closes smoothly without binding or unusual noise.

5.0 Verification & Return to Service

1. Run a test shot with the production material and inspect the first part for defects (flash, short shots, warpage).
2. Monitor the cooling line temperature and flow rate for 10 minutes to ensure stable operation.
3. Re-check clamp bolt torque after the first 100 cycles to account for thermal expansion and settling.
4. Document the mold change in ServiceGrid, including mold ID, date, technician name, and any issues encountered.
5. Sign off on the PM work order and return the machine to production.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.