Checklist for plastic injection molding operators

Section 1: Initial Preparation & Workplace Safety

Objective:

To prepare the work area, ensure safety protocols are in place, and confirm the readiness of both operator and equipment. This step reduces the risk of accidents and ensures smooth production.

Task	Why It's Important	Detailed Steps	Checked (✓)
Review Work Order & Part Specifications	Ensures you fully understand the production requirements, including part dimensions, materials, and quantity.	1. Read the work order carefully. \n2. Verify material type and part number. \n3. Note any special instructions (e.g., cosmetic standards).	
Verify Personal Protective Equipment (PPE)	Protects against high temperatures, sharp edges, and machine noise.	1. Ensure safety glasses, heat-resistant gloves, ear protection, and steel-toe boots are worn. \n2. Check for any damaged PPE and replace if necessary.	
Inspect Emergency Stops & Safety Systems	Functional safety features prevent accidents during operations.	1. Test all emergency stop buttons. \n2. Confirm safety gates and light curtains are operational.	
Inspect Mold for Damage or Residue	Prevents defects and reduces downtime caused by mold failure.	1. Look for cracks, wear, or residue from previous runs. \n2. Clean mold surfaces and apply mold release agent if required.	
Prepare Work Area	Keeps the workspace clean and organized to reduce accidents and part contamination.	1. Clear the workbench and machine area of unused tools and materials. \n2. Ensure	

Task	Why It’s Important	Detailed Steps	Checked (✓)
		floor is dry and free of obstructions.	

Section 2: Machine Setup & Calibration

Objective:

To configure the injection molding machine for optimal performance. A well-prepared machine reduces errors, ensures part consistency, and prevents unnecessary downtime.

Task	Why It’s Important	Detailed Steps	Checked (✓)
Mount and Align Mold	Prevents misalignment, flashing, and damage to the mold or parts.	1. Use a crane to mount the mold onto the platen. \n2. Align mold halves and secure using bolts. \n3. Check alignment with feeler gauges.	
Connect and Test Cooling System	Ensures consistent cooling and prevents part warping.	1. Attach cooling hoses to the mold. \n2. Check for leaks. \n3. Ensure water flow rate matches mold specifications.	
Set Injection Unit Parameters	Ensures proper material flow and part filling without defects.	1. Adjust barrel temperature zones based on the material’s data sheet. \n2. Set injection speed, pressure, and holding time.	
Verify Ejector System Operation	Prevents damage to parts during ejection.	1. Test the ejector pins and confirm smooth operation. \n2. Ensure parts are fully ejected without deformation.	

Task	Why It’s Important	Detailed Steps	Checked (✓)
Calibrate Machine Sensors	Maintains accuracy of pressure, temperature, and cycle time measurements.	1. Check and recalibrate sensors for injection pressure and mold temperature.	

Section 3: Pre-production Trials & Sample Verification

Objective:

To run sample parts, identify potential issues, and adjust parameters before full-scale production begins. This step helps prevent mass production defects.

Task	Why It’s Important	Detailed Steps	Checked (✓)
Purge the Barrel and Nozzle	Removes old material and prevents contamination.	1. Heat the barrel to processing temperature. \n2. Purge the material until clean, consistent flow is achieved.	
Conduct a Trial Shot	Helps verify machine setup and identify defects early.	1. Run a trial shot and allow the part to cool. \n2. Inspect the part for defects such as short shots, warping, and flash.	
Check Part Dimensions & Tolerances	Ensures parts meet customer specifications.	1. Measure critical dimensions using calipers or a coordinate measuring machine (CMM). \n2. Compare results to the technical drawing.	
Adjust Cooling Time and Holding Pressure	Optimizes part quality and prevents shrinkage or voids.	1. Gradually adjust cooling time based on part thickness. \n2. Increase holding pressure if sink marks appear.	

Task	Why It’s Important	Detailed Steps	Checked (✓)
Document Initial Settings	Provides a baseline for maintaining consistent production quality.	1. Record barrel temperatures, cycle time, injection speed, and pressure settings.	

Section 4: Production Monitoring & Quality Control

Objective:

To maintain consistent quality by monitoring key parameters and performing regular inspections during production.

Task	Why It’s Important	Detailed Steps	Checked (✓)
Monitor Cycle Time Consistency	Prevents deviations that may lead to defective parts.	1. Use machine software to track cycle times. \n2. Investigate and correct any irregularities.	
Perform Visual Part Inspections	Identifies cosmetic and structural defects early.	1. Check parts for discoloration, flow lines, and weld lines. \n2. Inspect for physical defects like cracks or warping.	
Check Material Hopper Regularly	Prevents material shortages and air pockets.	1. Refill the hopper when the material level is low. \n2. Ensure no foreign objects are mixed with the material.	
Document Process Adjustments	Helps track and analyze process changes for future improvement.	1. Record all parameter changes in a logbook. \n2. Note the reason for each adjustment.	

Section 5: Post-production & Machine Shutdown

Objective:

To properly shut down the machine and clean the equipment for future use. This step ensures machine longevity and prepares the mold for storage.

Task	Why It's Important	Detailed Steps	Checked (✓)
Cool Down Machine Components	Prevents thermal stress on machine components.	1. Gradually reduce barrel temperatures. \n2. Turn off heaters once temperatures reach a safe level.	
Purge Remaining Material	Prevents clogs and contamination for the next run.	1. Purge the remaining material from the barrel. \n2. Clean the nozzle and barrel with a purging compound if necessary.	
Inspect and Clean the Mold	Reduces buildup and extends mold life.	1. Remove the mold and clean all surfaces. \n2. Apply rust prevention spray before storage.	
Lubricate Machine Components	Ensures smooth operation and reduces wear.	1. Apply lubricant to moving parts like tie bars and ejector pins.	
Document Maintenance Needs	Keeps a record for future servicing.	1. Record any signs of wear, leaks, or unusual noise. \n2. Schedule follow-up maintenance if needed.	