STANDARD OPERATING PROCEDURE

Assembly Line SOP

Document no.	SOP-MFG-006
Revision	1.0
Owner	Production Manager
Effective date	September 15, 2026
Review cycle	Every 12 months

1. Purpose

To make sure every assembly station is built to the same standard work instruction, defects are caught at the station where they occur, and the line runs at a steady, predictable pace.

2. Scope

Applies to manual and semi-automated assembly line stations building a product from staged components. Machine changeover and standalone equipment cleaning are covered by separate SOPs.

Definitions

Standard work instruction	The documented sequence of motions and checks an operator follows to build a station's assigned content the same way every time.
Poka-yoke	A mistake-proofing device or check built into a station that prevents or immediately catches an assembly error.
Bill of materials (BOM)	The list of components and quantities required to build a unit at a given station.
Line clearance	The end-of-shift check confirming no parts, tools or documents from one build remain at a station before the next shift or job starts.

3. Responsibilities

Assembly Operator	Builds each unit to the standard work instruction, performs in-station checks, and reports defects immediately.
Line Lead	Monitors line pace, responds to stoppage calls, and manages station rotation.
Quality Inspector	Audits in-station quality checks and investigates recurring station defects.
Production Supervisor	Tracks production count and scrap, and oversees end-of-shift line clearance.

RACI matrix

Activity	Assembly Operator	Line Lead	Quality Inspector	Production Supervisor
Verify components against the bill of materials	R/A	I	I	-
Perform the assembly and in-station check	R/A	I	C	-
Respond to a line stoppage call	R	R/A	C	I

Activity	Assembly Operator	Line Lead	Quality Inspector	Production Supervisor
Track production count and scrap	R	R	I	A
Perform end-of-shift line clearance	R	R	I	A

R = Responsible, A = Accountable, C = Consulted, I = Informed

4. Materials and PPE

Materials, tools and systems

- Standard work instruction per station
- Bill of materials for the build
- Torque tools and fixtures calibrated to specification
- Poka-yoke or in-station check gauges
- Kanban or supermarket replenishment cards
- Production count and scrap tracking sheet

Personal protective equipment

- Safety glasses
- Cut-resistant gloves where required
- Static-control wrist strap for electronics stations
- Hearing protection near powered tools

5. Procedure

Step	Task	Owner	Done
5.1	**Review the build schedule and work instruction** Operator reviews the day's build schedule and the current standard work instruction posted at the station before starting the shift.	Assembly Operator	☐
5.2	**Perform station safety check and don PPE** Operator checks that guards, light curtains and tool safety features at the station are in place and puts on the PPE required for that station.	Assembly Operator	☐
5.3	**Verify components against the bill of materials** Operator confirms the components staged at the station match the bill of materials for the unit being built, checking part numbers on new or changed builds. **Checkpoint:** Staged components match the bill of materials before the first unit of a new build is started.	Assembly Operator	☐
5.4	**Perform the assembly operation** Operator builds the assigned content at the station following the sequence and technique specified in the standard work instruction.	Assembly Operator	☐
5.5	**Apply torque to specification** Operator uses the calibrated torque tool set to the specified value for each fastener called out in the work instruction, rather than tightening by feel. **Warning:** Never substitute a non-calibrated tool or tighten fasteners by feel where a torque specification is called out.	Assembly Operator	☐
5.6	**Perform the in-station quality check** Operator performs the poka-yoke or visual check assigned to the station before releasing the unit, confirming the specific feature the check is designed to catch.	Assembly Operator	☐

Step	Task	Owner	Done
5.7	**Pass the unit to the next station** Operator places the completed unit on the conveyor or in the buffer for the next station, following the line's takt time.	Assembly Operator	☐
5.8	**Report defects and stoppages immediately** Operator calls the line lead immediately using the andon signal or call system if a defect, missing component or equipment issue is found, rather than working around it. **Checkpoint:** Line lead responds to a stoppage call within the target response time.	Line Lead	☐
5.9	**Rotate stations per the job rotation plan** Line lead rotates operators between stations at the scheduled interval per the job rotation plan to reduce repetitive strain and cross-train the team.	Line Lead	☐
5.10	**Replenish component bins** Operator or material handler replenishes component bins from the supermarket using the kanban card system when a bin reaches its trigger level.	Assembly Operator	☐
5.11	**Track production count and scrap** Operator logs completed units and any scrapped parts on the tracking sheet or system throughout the shift.	Production Supervisor	☐
5.12	**Perform end-of-shift line clearance** Operator and line lead clear the station of parts, tools and documents from the completed build before the next shift or a different job starts.	Line Lead	☐

6. Quality checks

- In-station quality checks are performed on every unit, not sampled.
- Torque tools used on the line are within their current calibration date.
- Line stoppage calls are responded to within the target response time.
- End-of-shift line clearance confirms no parts or documents from the completed build remain at the station.

7. Records

- Standard work instructions per station
- Production count and scrap tracking sheet
- Line stoppage and response log
- Line clearance checklist

8. KPIs

- First-pass yield at final assembly
- Line stoppage response time
- Units per hour against takt time target
- Scrap rate per shift

9. Common mistakes

- Skipping the in-station check when the line is running behind schedule.
- Tightening fasteners by feel instead of using the calibrated torque tool.
- Working around a missing component instead of calling a line stoppage.
- Leaving parts or documents from the previous build at the station during line clearance.
- Not verifying components against the bill of materials on a new build.

10. Revision history

Revision	Date	Description	Reviewed by
1.0	September 15, 2026	Initial release	Ilia Pirozhenko

Approval

Prepared by	Approved by	Date

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