
Ergonomic Assessment For Repetitive Assembly Stations

1.0 Objective & Intent

The objective of this Ergonomic Assessment SOP is to systematically identify, evaluate, and mitigate ergonomic risk factors at repetitive assembly stations within the cabinet and millwork manufacturing facility. This procedure is designed to prevent work-related musculoskeletal disorders (WMSDs), including tendonitis, carpal tunnel syndrome, and chronic back strain, which are common in high-frequency assembly tasks. Compliance with this SOP ensures adherence to WorkSafeBC's Ergonomics (MSI) Requirements under the Occupational Health and Safety Regulation (OHSR), Part 4, Section 4.46, which mandates that employers identify and control risk factors for musculoskeletal injury. The specific risk mitigated is the cumulative trauma from repetitive motions, awkward postures, and forceful exertions inherent in assembly operations such as drawer assembly, hinge installation, and panel joining.

2.0 Operational Scope

This procedure applies to all repetitive assembly stations in the cabinet and millwork manufacturing facility, including but not limited to: drawer assembly stations, door assembly stations, hinge and hardware installation stations, panel joining stations, and any other workstation where an operator performs the same or similar tasks for more than two hours per shift. This SOP is mandatory for all production personnel, team leads, supervisors, and health and safety committee members involved in the setup, operation, or modification of these stations. It also applies to temporary workers, contractors, and visitors who may be assigned to or observe assembly tasks. The scope covers initial workstation setup, periodic reassessments (annually or upon process change), and post-incident evaluations following any reported discomfort or injury.

3.0 Hazard Identification & Mandatory PPE

- Repetitive Motion: High-frequency hand and wrist movements (e.g., screw driving, part insertion) leading to tendonitis or carpal tunnel syndrome.
- Awkward Postures: Sustained bending, twisting, or reaching beyond comfortable range (e.g., assembling at waist height while seated, overhead work) causing back and shoulder strain.
- Forceful Exertions: Pushing, pulling, or lifting heavy components (e.g., solid wood doors, hardware kits) without mechanical assistance, risking acute muscle strain.
- Contact Stress: Pressure from sharp edges of work surfaces or tools (e.g., table edges, screwdriver handles) on forearms, wrists, or hands.
- Vibration: Use of powered hand tools (e.g., impact drivers, pneumatic screwdrivers) contributing to hand-arm vibration syndrome (HAVS).
- CSA-Approved Steel Toed Boots: Required to protect feet from dropped components or tools.
- Safety Glasses with Side Shields: Mandatory to protect eyes from flying debris or fastener fragments.
- Anti-Fatigue Mat: Must be provided and used at standing stations to reduce lower limb fatigue.
- Ergonomic Gloves (optional but recommended): Padded gloves to reduce contact stress and improve grip, especially for high-force tasks.

4.0 Required Safety Equipment & Tools

- Ergonomic Assessment Checklist (company-approved template, based on WorkSafeBC MSI Risk Assessment Tool)
- Tape Measure or Laser Distance Measurer (for measuring reach distances, work surface heights)
- Goniometer or Inclinator (for measuring joint angles, e.g., wrist flexion, elbow angle)
- Force Gauge (for measuring push/pull forces required for assembly tasks)
- Stopwatch or Timer (for timing cycle durations and rest breaks)
- Camera or Smartphone (for documenting workstation setup and operator postures, with operator consent)
- Adjustable Workstation Components (e.g., height-adjustable table, articulating arm for tools, footrest, anti-fatigue mat)
- Personal Lockout/Tagout (LOTO) Kit (if adjustments require power tool or conveyor isolation)

5.0 Step-by-Step Safety Procedure

1. Notify the operator and supervisor of the upcoming assessment. Explain the purpose and obtain verbal consent to observe and photograph the workstation. Ensure the operator understands this is a proactive safety measure, not a performance evaluation.
2. Perform a pre-assessment walkthrough of the workstation. Identify all tools, materials, and components used in the assembly cycle. Note any obvious hazards such as sharp edges, cluttered work surfaces, or obstructed access. Verify that the operator is wearing all required PPE as listed in Section 3.0.
3. Measure and record the workstation dimensions: work surface height (from floor to tabletop), seat height (if seated), and reach distances to frequently used tools and parts. Use the tape measure or laser measurer. Compare these measurements to the operator's anthropometric data (e.g., elbow height when seated or standing) to identify mismatches.
4. Observe the operator performing at least three complete assembly cycles. Using the stopwatch, time the duration of each cycle and note the frequency of repetitive motions (e.g., number of screw insertions per minute). Use the goniometer to measure joint angles during key tasks (e.g., wrist extension, shoulder abduction). Record all observations on the Ergonomic Assessment Checklist.
5. Assess force requirements using the force gauge. Measure the force needed to insert a screw, press a component into place, or lift a subassembly. Compare these values to WorkSafeBC's recommended force limits (e.g., < 4.5 kg for pinch grip tasks). If forces exceed limits, note the need for mechanical assistance or tool redesign.
6. Evaluate the work-rest cycle. Determine if the operator has adequate micro-breaks (e.g., 5-10 seconds every 10 minutes) or scheduled rest breaks to allow muscle recovery. Check if job rotation is implemented to vary tasks. If not, recommend a rotation schedule to reduce cumulative exposure.
7. Document all findings on the Ergonomic Assessment Checklist. Take photographs of the workstation and operator postures (with consent) to support the report. Identify each risk factor as low, medium, or high priority based on frequency, duration, and severity. For any high-priority risk, immediately stop the task and implement a temporary control (e.g., provide a height-adjustable table, reposition tools).
8. Develop and document corrective actions for each identified risk. For example: adjust work surface height to elbow height, provide a footrest, install a tool balancer to reduce static loading, or replace manual screwdrivers with torque-controlled tools. Assign responsibility and a target completion date for each action. Review with the supervisor and operator.
9. Implement the corrective actions. For adjustments requiring power tool or conveyor lockout, follow the facility's LOTO procedure: isolate energy sources, apply personal lock and tag, verify zero energy state, then make adjustments. After adjustments, remove LOTO and test the workstation with the operator to ensure comfort and efficiency.
10. Conduct a follow-up assessment within 30 days of implementing corrective actions. Re-measure joint angles, forces, and cycle times. Confirm that risk factors have been reduced to acceptable levels. Update the Ergonomic Assessment Checklist and file the completed report in the SafeDesk system. Schedule the next periodic assessment for one year from the date of this assessment, or sooner if the process changes.

Regulatory Disclaimer: This document is a generic safety template provided for educational and informational purposes only. It does not constitute professional engineering, legal, or regulatory compliance advice. The end-user assumes all liability for validating all safety protocols against specific machinery manufacturer manuals and local occupational health and safety regulations (e.g., WorkSafeBC, CSA standards) before deployment.