



# Ergonomic & Safety Assessment Guide for Machines and Equipment

**Ergonomic & Safety Assessment Guide for Machines and Equipment**

**A. Set-up/Change Activities—Di/tooling**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Personnel trained in use of tools and equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Tools inspected before use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Tools inspected before use by others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

A. Set-up/Change Activities—Di/tooling

B. Machine Operations (Section 7.3)

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**G. Environmental Considerations (Section 8)**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Environmental conditions (temperature, humidity, noise, vibration, etc.) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

G. Environmental Considerations (Section 8)

**Ergonomic & Safety Assessment Guide for Machines and Equipment**

**C. Maintenance/Repair (Section 7.2)**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Maintenance/repair activities considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

C. Maintenance/Repair (Section 7.2)

D. Controls—Actuating devices (Section 5.3)

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**H. Zero Energy State (LOTO)**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Zero Energy State (LOTO) procedures considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

H. Zero Energy State (LOTO)

I. Guarding & Safety Signage

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**E. Display—Dials/Gages/Lights/Auditory (Section 5.4)**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Display devices (dials, gages, lights, auditory) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

E. Display—Dials/Gages/Lights/Auditory (Section 5.4)

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**J. Compliance Safety Standards (Refer to Safety Library)**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Compliance safety standards (refer to safety library) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

J. Compliance Safety Standards (Refer to Safety Library)

K. Other

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**F. Machine Installation (Section 6)**

Item	Yes	No	Not Applicable	Comments, Deficiencies, & Action Items	Date Inspected
1. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Machine installation (section 6) considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

F. Machine Installation (Section 6)

ANSI B11.TR1-1993: *Ergonomic Guidelines for the Design, Installation and Use of Machine Tools* should be consulted further for more details.





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## A. Set-up/Change Activities—Di/tooling (Section 7.1)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. "Excessive" physical exertions not required due to machine design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Reach distances kept to less than 20 inches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Access to machine large enough for any set-up person plus room for any equipment, tools, supplies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

## B. Machine Operations (Section 7.3)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Awkward body postures minimized (i.e. bending, lifting, twisting, etc...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Operator reach distance kept to less than 16 inches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Hand tool height (machine table + die/tooling height) between 38-41 inches (see Section 6 for machine installation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. If material handling devices are needed, does machine design permit them to be used for loading/unloading the machine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Access to controls, tools & materials is unobstructed & minimizes awkward body postures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Visual needs of the operator such as illumination, easily readable controls & displays, glare, color & contrast considered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Operator technical manual provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		





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CHECKLIST

### C. Maintenance/Repair (Section 7.2)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Readily accessible to machine components that need periodic servicing (i.e. component and fluid removal, energy isolation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Material handling aids provided to remove heavy machine components (i.e. molds).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Maintenance / installation manual provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

### D. Controls—Actuating devices (Section 5.3)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Direction of control movement meets user expectations. (See Annex F)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Control movements kept simple and easy to perform.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Controls positioned directly in front of the operator & located between waist & chest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Emergency stop buttons (E-Stops) readily accessible. a. E-Stops located near hazardous areas of machinery where personnel might be working. b. E-Stops located on both feed and take-away sides of the machine.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
5. Normal "stop" control located near "start" control (located either below or to the left of the start control).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Palm button actuating forces kept to 5 pounds or less	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Two-hand palm button controls used in repetitive operations below chest height & preferably at waist height and have anti-tie down design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Jog button located a safe distance from point of operation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		





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### E. Display— Dials/Gages/Lights/Auditory (Section 5.4)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Machine-related auditory signals are distinguishable from background sounds & distinct from other signals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Number of flashing lights minimized & restricted to highest priority warnings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. High priority visual displays mounted between 42-62 inches for standing work & between 22-32 inches above seat height for seated work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Display characters or other features sized for actual viewing distance of operator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Control movement coordinated with its associated display. (i.e. control to right & indicator to right)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Flashing lights or audio signals can be tested with test button.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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### F. Machine Installation (Section 6)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Installation manual covers ergonomic issues ( i.e. work height, reaches, control locations etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Machine pit or platform necessary to maintain proper working height.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. If a pit is used, will machine or its related components (i.e. conveyors) be classified as a non-confined space.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Adequate clearance provided between machine & building, structure or another machine, for maintenance access, conveyors, piping, moving machine components etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Machine fits through existing doorway of the facility.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Contractors or contract machine installers have a contractor's safety program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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### G. Environmental Considerations (Section 8)

<p>1. Airborne contaminants generated from the machine or from related operations such as:</p> <ul style="list-style-type: none"><li>• cleaning/lubricating</li><li>• coolant sprays</li><li>• degreasing</li><li>• grinding, sanding, abrasive blasting</li><li>• painting</li><li>• welding/burning</li></ul>	Notes:
<p>2. Temperature stress (heat &amp; cold) when machine is operated in:</p> <ul style="list-style-type: none"><li>• cold environment</li><li>• increased ambient air temperature</li><li>• increased humidity</li><li>• increased workload effects or heat stress</li><li>• radiant heat source</li></ul>	Notes:
<p>3. Lighting &amp; illumination levels (quality &amp; quantity) required for tasks, such as:</p> <ul style="list-style-type: none"><li>• angle of lighting</li><li>• color</li><li>• direct vs. indirect</li><li>• glare</li><li>• incandescent vs. fluorescent</li><li>• natural vs. artificial</li><li>• refresh rate of built-in video display screens</li></ul>	Notes:
<p>4. Noise &amp; sound that can mask warning signals, cause hearing loss and adversely affect job performance when sound levels are over 80 dBA, such as:</p> <ul style="list-style-type: none"><li>• air exhaust and leaks</li><li>• harmonic vibrations</li><li>• in-process handling (i.e. preforms falling into metal bins)</li><li>• metal-to-metal contact</li><li>• motors and pumps</li><li>• machine in operation</li></ul>	Notes:



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## SAFETY CONSIDERATIONS

### H. Zero Energy State (LOTO)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Zero energy state attainable for all sources of energy (i.e. electrical, hydraulic, pneumatic, gravity, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. All sources of energy can be locked out with hasp, cover and/or padlock?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Other sources of energy which can store energy such as capacitors, accumulators etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Second energy source feeding the machine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Back-up energy source for the machine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

### I. Guarding & Safety Signage

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. All machine/equipment point-of-operation & power transmission (i.e. belts/pulleys, chain & sprockets) hazards such as pinch & in-running nip points, entanglement, rotation, etc. are adequately safeguarded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are proper, product safety signs in place? (Refer to Safety Library)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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### J. Compliance Safety Standards (Refer to Safety Library)

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. Complies with all applicable OSHA requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Complies with all applicable ANSI requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Complies with all applicable NFPA requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Complies with all applicable NEC requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

### K. Other

Item	Yes	No	N/A	Comments, Deficiencies, & Action required	Date Corrected
1. MSDSs provided for liquids, lubricants, greases, gases, etc. used on this machine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Appropriate electrical, hydraulic, pneumatic schematics, prints, etc provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

