SAMPLE PRESS INSPECTION REPORT

Company ____

Building ______________________ Department ____________ Press No. ____________

Parts Inspected	✔ OK	Defective Condition	Corrective Action	Date Repaired
1. Frame				
2. Motor				
3. Flywheel				
4. Gears (if applicable)				
5. Crankshaft				
6. Clutch				
7. Brake				
8. Ram and Gibs				
9. Connection (Pitman) and Ram Adjusting Screw				
10. Slide Counterbalance (if furnished)				
11. Air System				
12. Electrical System				
13. Foot Switch				
14. Point-of-Operation Safeguarding				
A) Guard				
B) Presence-Sensing (Light Curtain or Radio Frequency)				
C) Pullback (Pullout)				
D) Type A or B Gate (Movable Barrier)				
E) Restraint (Holdout)				
F) Two-Hand Trip or Control				
15. Miscellaneous				
Inspected by:		**Date**	☐ **Approved for Use**	☐ **Not Approved**

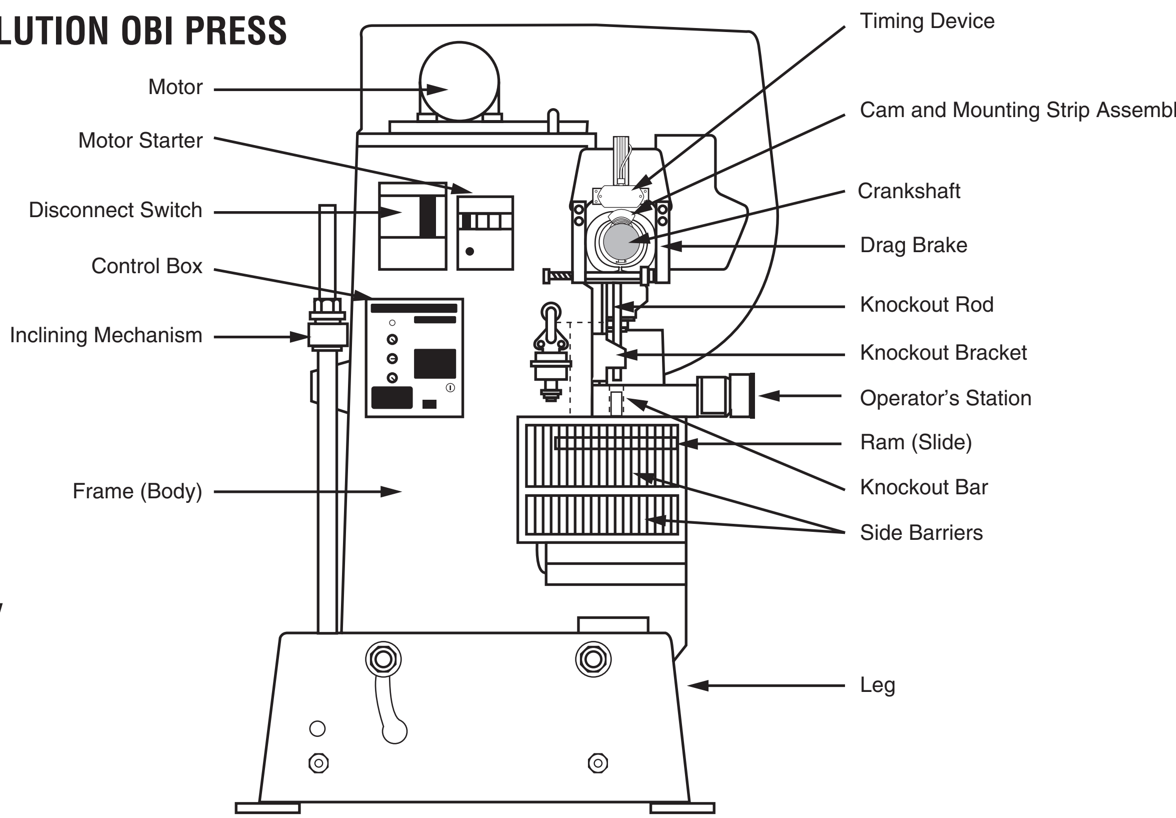
See guide on next page

GUIDE FOR THE INSPECTION OF MECHANICAL POWER PRESSES

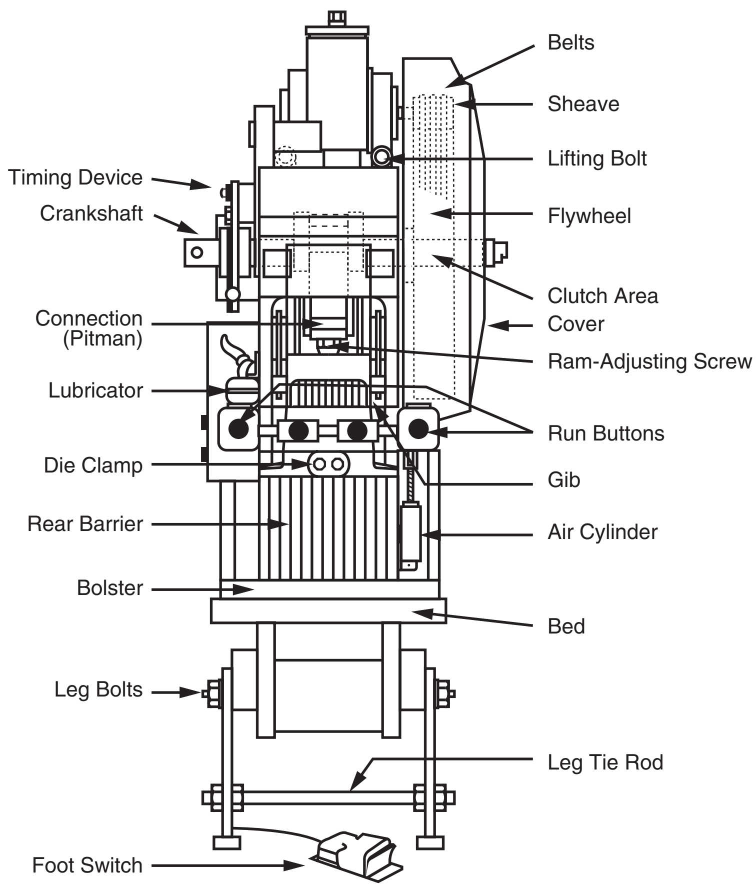
Inspection of	*Inspect for Code Violations, defects, missing parts, malfunctions, maintenance
1. Frame	Cracks? Broken or loose parts? Loose hold down bolts?
2. Motor	Clean? Lubrication? Overheating?
3. Flywheel	Rotates in correct direction? Free running? Covered?
4. Gears	Loose? Broken or cracked teeth? Excess noise? Proper lubrication? Covered?
5. Crankshaft	Cracks? Bent? Proper clearance in bearings?
6. Clutch	Full-revolution: single-stroke capability, loose or worn parts, including linkage? Weak or broken springs? Compression springs operating on rod, or guided within hole or tube? Properly adjusted? Part-revolution: air or oil leaks? Proper alignment? Disengagement? Stopping position? Worn clutch lining? Weak or broken springs? Power or air pressure failure or deactivation? Momentary operation of stop control applies brake and releases clutch? Retripping required? Red stop button?
7. Brake	Brake lining worn? Brake properly adjusted? Does it stop slide quickly? Are friction brakes set with compression springs operating on rod, or guided within a hole or tube?
8. Ram and gibs	Face of ram parallel to bolster? Proper gib clearance? Any scoring?
9. Connection (pitman) & ram adjusting screw	Proper bearing and ball seat clearances? Screw turns freely?
10. Ram counter-balance	Spring type: proper adjustment? Broken springs or loose nuts? Pneumatic type: air leakage? Proper air pressure? Loose connection to slide?
11. Air system	Proper air pressure? Valve operation? Pressure gauges? Leaks?
12. Electrical system	Can main power switch be locked only in off position? Grounding? Condition of wiring? Relays? Rotary limit switches? Solenoids? Motor starter disconnects from voltage fluctuation or power failure? Retripping required? Is any component bypassed?
13. Foot switch	Nonslip pad on contact area? Shielded from accidental operation?
14. Point-of-operation safeguarding	A) Guard - Barrier that prevents entry of operator's hands or fingers into the point-of-operation area? Adjustment and maintenance? Pinch points remaining in adjacent areas? B) Presence-Sensing (light curtain or radio frequency - part-revolution clutch only) - reliable design and proper electrical tie-in to control? Fixed at proper safety distance from pinch point? Barrier guards for other hazardous point-of-operation areas? C) Pullback (Pullout) - enough or too much pull on cables? Is proper adjustment being made for change in operator, die, shift? Records of inspection/maintenance being kept? D) Type A or B Gate (B gate for part-revolution clutch only) - point of operation enclosed before press cycle can be initiated? Barrier guards for other hazardous point-of-operation areas? E) Restraint (Holdout) - adjusted so that operator's fingers cannot reach into dies? Securely anchored? Adjusted for each operator, die, shift? F) Two-hand Trip or Control (two-hand control for part-revolution clutch only) - shielded against unintended operation? Concurrent, antirepeat? Fixed in place at proper safety distance from pinch point? Interrupted stroke protection and adequate holding time (for two-hand control only)?
15. Miscellaneous	Comment on any other items such as: Protection from falling overhead parts. Lighting. Cleanliness. Lubrication. Pressure vessels. Hydraulic-equipment. Auxiliary equipment. General maintenance. Special types of clutches or brakes. Covering of gears, belts, pulleys. Overloading. All auxiliary equipment.

**Refer to OSHA 29 CFR 1910.212, 1910.217, 1910.219, on pages 264 through 275, ANSI B11.1 & B15.1, and other applicable regulations and standards.*

FULL-REVOLUTION OBI PRESS



Left-Side View



Front View

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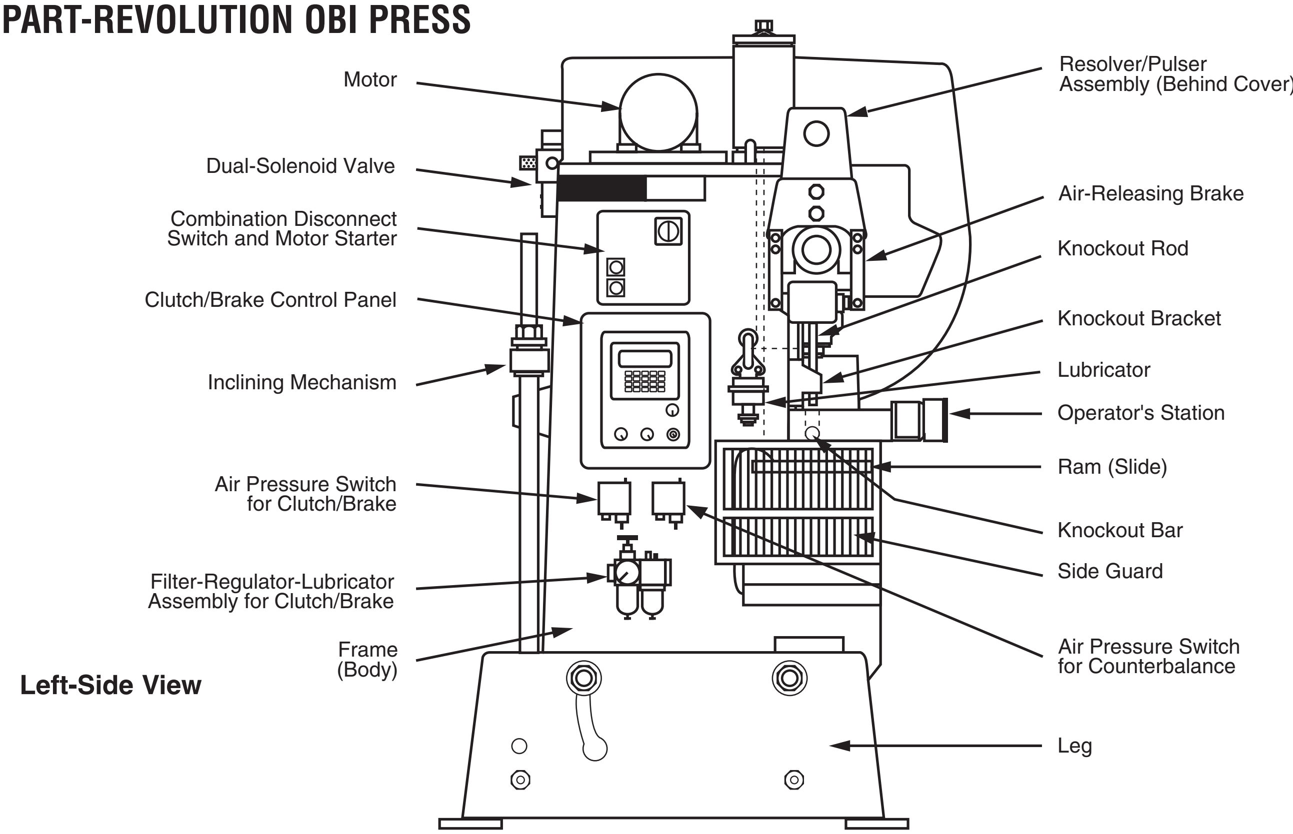
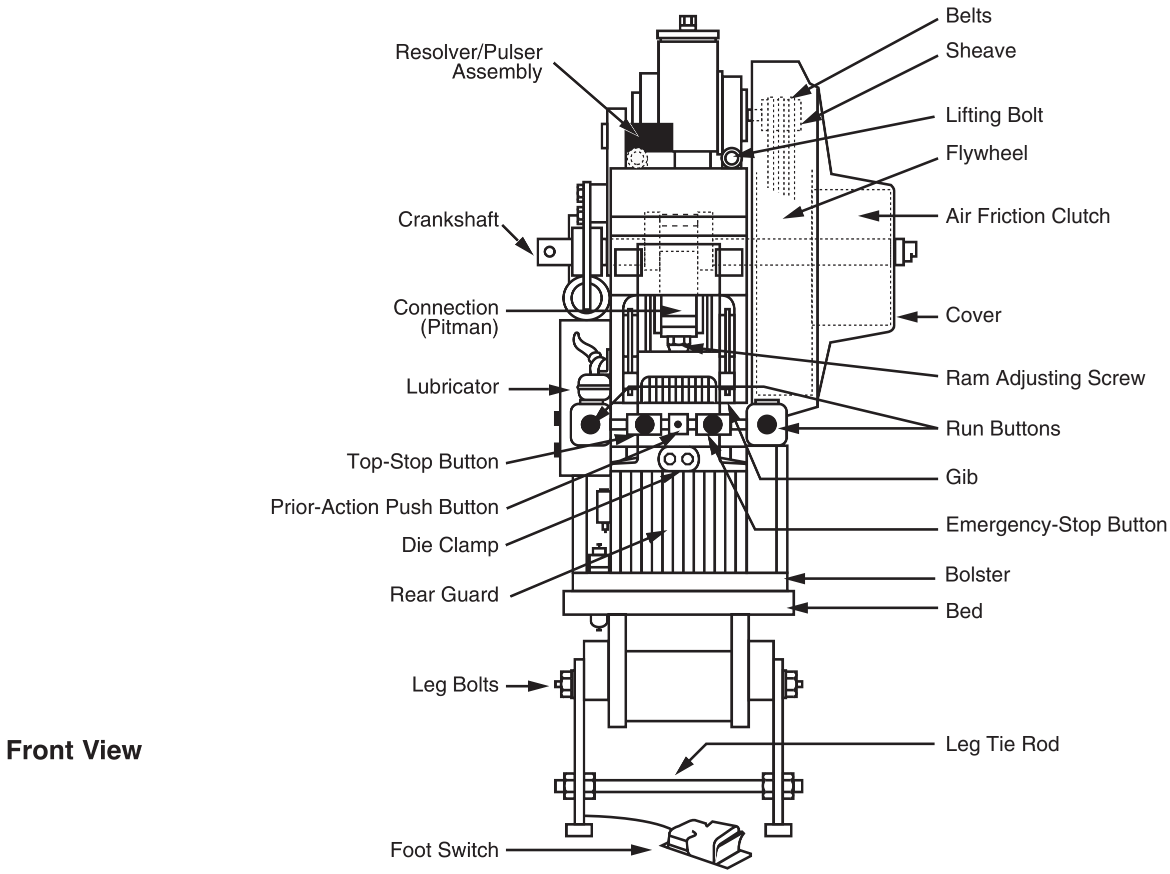
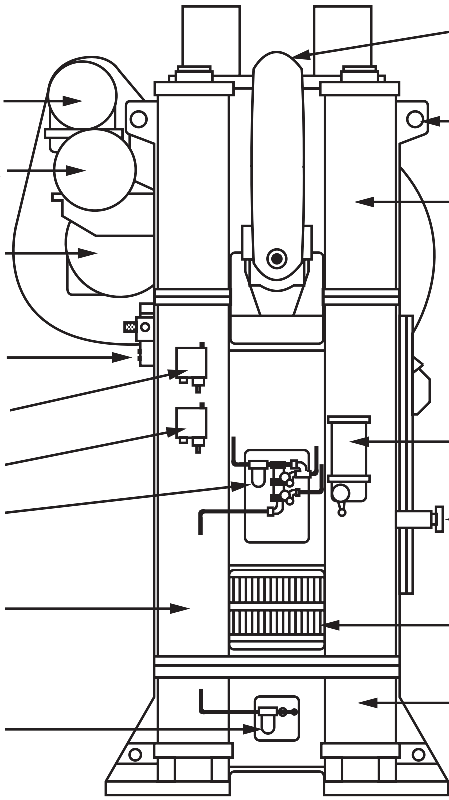
PART-REVOLUTION OBI PRESS

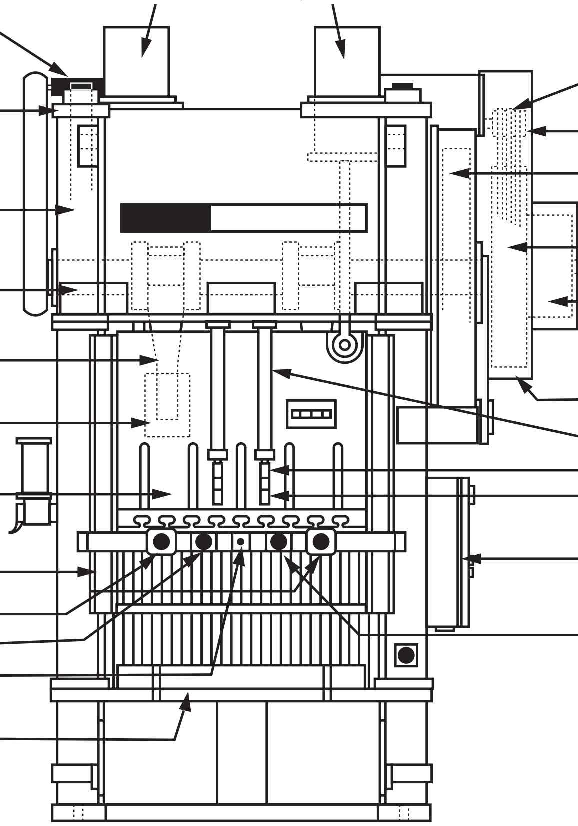




PART-REVOLUTION STRAIGHT-SIDE PRESS



Left-Side View



Front View

CONTROL RELIABILITY

Control reliability is a term used in OSHA standard 29 CFR 1910.217 for mechanical power presses and in the ANSI B11 series of standards for safety of machine tools. A new term coming out in the ANSI standards that equates to control reliability is performance of safety-related functions. These terms deal with the part of the system that controls hazardous motion of a machine.

A much older term previously used for control reliability was fail-safe. Fail-safe was often considered the safe state or condition a machine went to when any and all possible component failure combinations occurred, including multiple and simultaneous failures. This is not possible; therefore, the term fail-safe should not be used to describe control reliability of performance of safety-related functions.

Control reliability should be present to ensure that a failure of the control system or device would not result in the loss of the safety-related functions. Control reliability is not just redundancy of components or a system; it must also include monitoring (checking). The components or systems used to provide safety-related functions require proper design and application. These components or systems include electrical, electronic, pneumatic, or hydraulic systems or devices. They frequently consist of monitored multiple, independent, parallel, or series components, subassemblies, or modules. The reliability of the mechanical portions of the machine relied upon for safety must depend on design, maintenance, proper lubrication, and proper use.

The main purpose of control reliability is to make sure the machine will stop when required in the event of a single component failure within the system. In the event of a component failure, machine actuation must be prevented, a stop command must be given, and reactuation of the machine must be prevented until the failure is corrected or the system or device is manually reset.

Two possible ways, among others, for achieving control reliability of the machine control systems or devices are by the use of:

1. Diverse redundancy with monitoring—two or more dissimilar components, subassemblies, or modules are used and the proper operation of each is verified (monitored) by the other(s) to ensure the performance of the safety functions.
2. Homogeneous redundancy with monitoring—two or more identical components, subassemblies, or modules are used and the proper operation of each is verified (monitored) by the other(s) to ensure the performance of the safety functions.

The selection and integration of the components (relays, valves, etc.), subassemblies, and modules that are designed for safety-related functions must be used when building a machine or integrating equipment to an existing machine.

Numerous details about the safety-related functions must be kept in mind to accomplish control reliability of the machine's control system. The main concern is that the machine's hazardous motion stops when a stop command is given.

Rockford Systems offers control reliable systems in this catalog for mechanically, hydraulically, and pneumatically operated machines.

RISK ASSESSMENT

Every day in industrial plants, machine operators, and set-up and maintenance personnel are exposed to potential hazardous situations when running production, changing tools, and repairing machines. They sometimes assume a certain amount of risk around machines, knowingly or unknowingly.

We all take risks in our everyday lives during our normal, daily routines. Obviously, most of us are willing to take these risks to live a normal life. In our litigious society, some people believe the manufacturer of machinery, equipment, and products should be liable for any accidents and personal injuries that occur on machines with the machine's operator(s) assuming no risk. In a perfectly planned and executed environment, this should hold true. However, we know machine safeguards and controls are sometimes bypassed, circumvented, misadjusted, or removed, thus creating additional risks. Machine operators can also make mistakes which can increase risks and cause injury.

For years, several European countries have been conducting risk assessments on industrial machines using the EN-1050 European Normative Standard. Most of these European countries place the safeguarding responsibility on the OEM (original equipment manufacturer). In the United States however, the responsibility for safety is placed upon the user or employer by OSHA. ANSI is trying to distribute this responsibility. They have finalized the B11.TR3:2000 Technical Report entitled *Risk Assessment and Risk Reduction—a guideline to estimate, evaluate and reduce risks associated with machine tools*. All other ANSI B11 series machine tool safety standards, as revised, will likely refer to this technical report.

To comply with the intent of the ANSI B11.TR3 Technical Report, the OEM, modifier (machine rebuilder, safeguard manufacturer), and the user will be required to work together more closely to determine how to properly protect or safeguard machine operators, and set-up and maintenance personnel. They will need to conduct a risk/task hazard analysis and risk assessment of each machine to determine the type of safeguard to apply. A risk assessment will take into consideration several factors including the severity of harm (catastrophic, serious, moderate, or minor), and the probability of occurrence (very likely, likely, unlikely, or remote). A risk cannot be totally eliminated, so the ultimate goal is to lessen the risk until it reaches a tolerable risk level.

(Continued on next page.)

RISK ASSESSMENT (continued)

As an example, a risk assessment may determine the need for a safeguard across the full length of a press brake's die area to safeguard the point of operation. A light curtain may be chosen as the safeguarding device. If the risk level is significant, the light curtain would need to be mounted properly so an operator could not reach over, under, around, or through it to get into the point of operation. Additional guards or barriers may be required on the sides of the press brake. A simple electrically interlocked cable with a warning sign could be applied to the rear of the press brake. In this example, three point-of-operation risk decisions—front, sides and rear of the press brake—have been made. Different risk decisions would have to be made for additional operators.

In industry, tolerable risk level decisions must be made in order to produce a product. Risk assessments and decisions for the methods of safeguarding used on machines are made every day, and continue to be part of every machine requirement for all production, and set-up and maintenance tasks. The ANSI B11.TR 3 serves to provide a voluntary methodology for the risk assessment activity and has been described as "the greatest stride forward in the field of safety in the past 20 years."

MACHINE SAFEGUARDING CHOICES

I. Point-of-operation safeguarding/metal fabricating machines
- A. Guards
  1. Die enclosure
  2. Fixed
  3. Interlocked
  4. Adjustable
- B. Devices
  1. Presence-sensing (light curtains or radio frequency)
  2. Two-hand control
  3. Two-hand trip
  4. Pullback
  5. Restraint
  6. Gates
  7. Drop probes
- C. Other methods
  1. Distance—safe holding (last resort)
  2. Location
  3. Hostage (see ANSI B11.19)
  4. Safe opening (adjustable stroke, sequential operation, adjustable restrictor)
  5. Part-in-place
- D. Auxiliary safety equipment
  1. Guards or barriers
  2. Mats
  3. Presence-sensing
     - a. Multiple beam with larger MOS
     - b. Single beam
     - c. Radio frequency
  4. Emergency stop (red)
     - a. Push button (multiple)
     - b. Cable
     - c. Trip bar
     - d. Kick plate
  5. Awareness devices
     - a. Barrier
     - b. Visual
     - c. Audible
  6. Hand-feeding tools

II. Point-of-operation safeguarding of metal turning machines
- A. Shields (barrier)—protects employees from rotating machine components, chips & coolant
  1. Metal
  2. Plastic
- B. Guards
- C. Devices
  1. Presence-sensing
  2. Two-hand control
  3. Gates

III. Perimeter safeguarding (for work stations, see point of operation)
- A. Guards and barriers (latch-out/reset)
- B. Presence-sensing (latch-out/reset)
  1. Light curtains
  2. Single beams
- C. Mats (latch-out/reset)
- D. Distance—safe holding (last resort)
- E. Location

IV. Supplemental
- A. Personal protective equipment
- B. Color-coding
- C. Warning signs
- D. Deadman—hold-to-run
- E. Training (documented)
- F. Supervision
- G. Proper lighting
- H. Inspecting
- I. Lockout/tagout (disconnects and valves)
- J. Safety blocks
- K. Spring-loaded turnover bars
- L. Covers for mechanical power-transmission apparatuses

V. Control of hazardous motion
Control reliability
- A. Electrical or electronic
- B. Pneumatic
- C. Hydraulic

VI. Motor stop

VII. Motor brake (electronic)

VIII. Mechanical condition—inspection procedures
- A. Weekly with tests
- B. Periodic/regular

IX. Safeguarding during machine setup
- A. Procedure
- B. Two-hand
- C. Lockout/tagout

X. Safeguarding during minor repair of die or tooling
- A. Procedure
- B. Die-safety block interlocked

XI. Safeguarding during maintenance of machine
- A. Procedure
- B. Lockout/tagout

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