

SAFETY MEMO

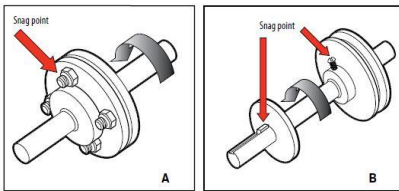
December 5th, 2022 – Identification of mechanical hazards



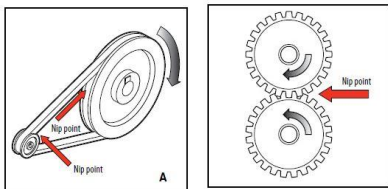
Did you know?

When designing or working with machines, it is crucial for your safety and that of others to identify the hazards present. There are three main mechanical movements associated with hazards: rotational motion, transverse motion, and reciprocating motion. Each movement can potentially generate danger. Below are some mechanical hazards associated with moving parts to watch out for when assessing the hazards that may be present. When assessing hazards, be sure to observe the machine running, as some hazards or movements may not be easily distinguishable when the unit is not in operation.

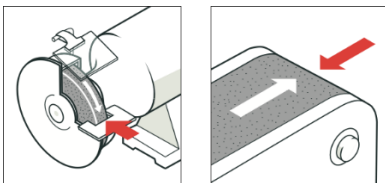
Entanglement: Usually seen with protruding rotating parts, entanglement can occur in the couplings and ends of drive shafts.



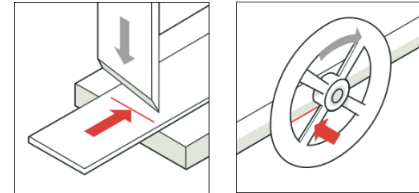
Reentrant angle or convergence zones: two rotating components coming together that can form a shrinkage and create a risk of drive.



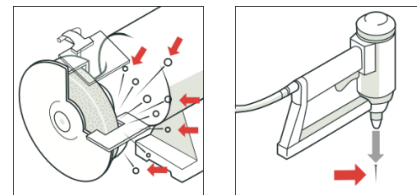
Friction & Abrasion: friction against a surface caused by rotation or transverse movement. This is not always a hazard unless associated with dangers of carrying or entanglement, or in the case of an abrasive surface such as with grinding wheels, sanding belts, etc.



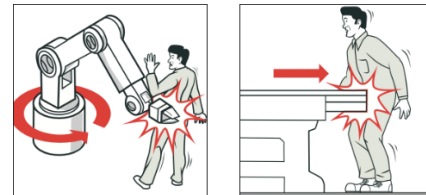
Shear/cutting: a movement similar to a pair of scissors where one component moves beyond another. This is most common at the point of operation of the machine but can happen anywhere.



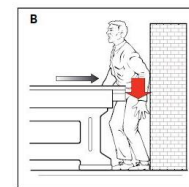
Punching/perforation: Penetration by alternative components or flying objects.



Shock / impact: striking projection or moving components. The level of danger is affected by the speed and shape of the projection. An example of this is robot arms or sliding tables.



Crushing: occurs when a part of the body is caught between an alternative component and a stationary object. This is common in machines like presses or robot arms near safety enclosures.



References:

- CSA Standard Z432-16 Safeguarding of Machinery
- Lucid Engineering. (2019). *Machine Guarding Risk Assessment Course*. Toronto, Ontario.
- Worksafe New Zealand. (2014). *Safe Use of Machinery: Best Practice Guidelines*. Wellington; WorkSafe New Zealand.