# Machine Enclosures

SCHENCK

**Schenck protective enclosures are designed to meet or exceed the following requirements...**

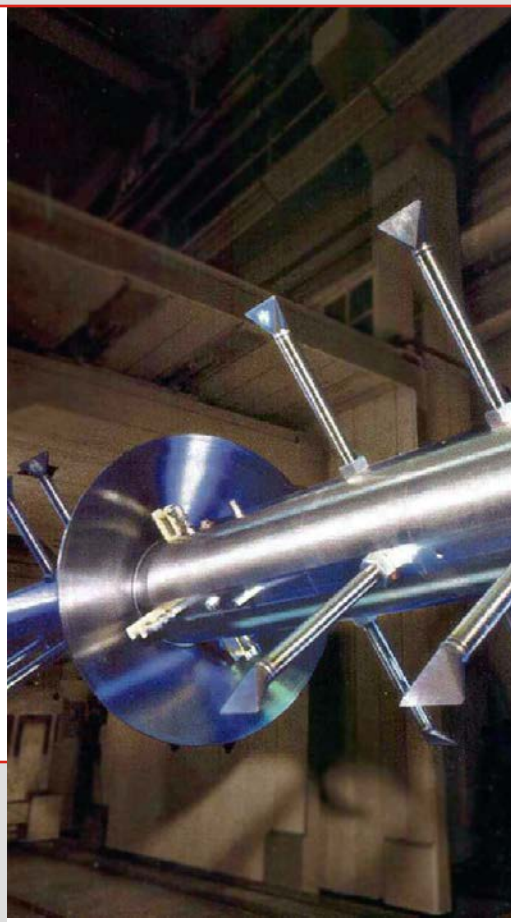
- ISO 21940-23
- OSHA 1910.212

## Safety devices and enclosures for balancing machines help avoid accidents...

...and are even prescribed by law for many applications. While United States Public Law 91-596 and the OSHA Standard does not specifically reference balancing machines, paragraphs 1910.212 "Machine Guarding," do apply. Schenck offers a complete line of enclosures that meet regulations and applicable standards for all machine sizes.

A balancing machine may present a potential hazard to the operator or the surrounding workshop environment and precautions should be taken to address:

- Personnel coming into contact with machine components
- Unbalance correction masses detaching and flying off the rotor
- The rotor lifting off the supports, or disintegrating



Particularly dangerous are protruding rotor components, or those which may become detached during rotation in the balancing machine.

These potential hazards may increase with rotor size and balancing speed.

SAFETY

## ISO 21940-23 Classifications*:

- **Class 0**
  Smooth rotors with no danger of parts coming off, and other criteria.
  *No enclosure needed.*
- **Class A**
  No danger from the rotor, but parts or chips may come off. *Face protection required.*
- **Class B**
  Possibility of contacting rotor or drive system exists.
  *Contact protection such as a safety fence required.*
- **Class C**
  Possibility of parts flying off the rotor is a concern. *Penetration-proof, interlocked safety enclosure is required. Enclosure is specified on size, shape and hardness of object(s).*
- **Class D**
  Possibility of a rotor burst exists during balancing procedure.

*for full details see ISO standards

**Safety is no accident!**

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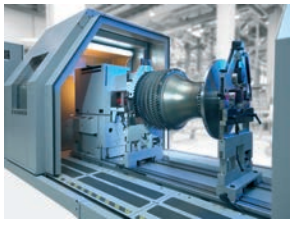
ISO 21940-23 Describes possible safety hazards resulting from the operation of a balancing machine, and classifications of safety barriers and enclosures for different protection classes.

For low speed balancing, it may be sufficient to provide guard rails, fences or barriers with drive interlocks to keep personnel away from the rotating workpiece.

If the possibility exists that a small rotor particle like a welding bead, bolt, key or correction mass is separating from the rotor, safety glass or shielding (or a protective enclosure on larger rotors) is required. A protective enclosure must be fragment-proof, to prevent penetration by fragments that may separate from the rotor.



If a weight should fly off during operation, an equal force will act upon the rotor itself, which might be enough to lift the rotor from its mounting or the supports. All standard horizontal machines are equipped with safety hold-down brackets to restrain the rotor. However, these hold-downs are not designed to withstand separation of major rotor components, or rotor disintegration.

High-speed applications usually require burst-proof enclosures, pits, or bunkers that are designed to contain the complete rotor of major fragments during high-speed balancing or over-speed testing.

**A weight** fastened to the rotor at a 10" radius, spinning at 1500 rpm, will generate a centrifugal force of 640 times its own weight!

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