

APPROVED

By Order No. V1-194 of the Director of
Lietuvos Inžinerijos Kolegija HEI
of November 28, 2024

HEALTH AND SAFETY INSTRUCTION NO. 6 FOR EMPLOYEES OPERATING GRINDING MACHINES

I. GENERAL PROVISIONS

1. Only persons 18 years or older who have passed a medical examination as required by the applicable procedures and have completed introductory and on-the-job occupational health and safety training are permitted to work with grinding machines.
2. Employees operating grinding machines must periodically undergo medical examinations in accordance with the established procedures.
3. Employees must comply with the workplace regulations and follow the requirements of the regulatory documents of Lietuvos Inžinerijos Kolegija HEI concerning occupational health and safety.
4. Employees must use work equipment in accordance with the safety requirements specified in the equipment's documentation.
5. Employees must observe the prescribed work and rest schedule.
6. Employees must perform only the work assigned to them and not allow unauthorized persons to perform any tasks.
7. The electric motor housing, start device, and other metal parts of the grinding machine that may become live must be grounded (connected to the neutral conductor).
8. All electrical wires and devices must be in good technical condition and the connection contacts must be covered.
9. A movable work rest must be installed to hold the workpiece being ground; after each adjustment, it must be securely fixed. The gap between the wheel and the work rest must be no less than half the thickness of the workpiece being ground and no greater than 3 mm.
10. The work rest must be positioned so that the workpiece being ground touches the wheel above the horizontal line passing through the center of the wheel, but no more than 10 mm higher.
11. A protective screen must be installed on the grinding machine.
12. Employees must not work with faulty equipment and must report any such defects to the supervisor.
13. Employees must inform the department head about any situation in the workplace or other areas of the institution that, in their opinion, may pose a risk to employee safety or health.
14. Employees must take measures within their capability and knowledge to eliminate causes of possible injuries, acute poisoning, or accidents, and immediately inform the department head.
15. Any employee injured in a work accident, suffering an acute occupational illness, or any person who witnesses such an event or its consequences, must immediately report it to the department head or employer if capable of doing so.
16. In case of an accident, first aid must be provided to the injured person. If necessary, emergency medical services must be called.
17. Employees who violate these instructions are subject to liability under the laws of the Republic of Lithuania.

II. OCCUPATIONAL RISK FACTORS AND PROTECTIVE MEASURES

18. The following occupational hazards may be present in the employee's work environment and pose immediate health risks:
 - 18.1. exposure to electric current due to faulty or ungrounded machinery or defective electrical installation. Electric shock can cause loss of consciousness, heart and respiratory failure, and sometimes sudden death;
 - 18.2. improper wheel balancing may cause excessive vibration or run-out, which can result in the workpiece being pulled from the operator's hands and causing injury;
 - 18.3. incorrect fastening of the grinding wheel may lead to wheel run-out or imbalance;
 - 18.4. insufficient protection of the wheel may cause injuries;
 - 18.5. excessive gap between the wheel and the work rest may result in the workpiece being drawn under the wheel;
 - 18.6. cracked grinding wheels may cause serious or fatal injuries;
 - 18.7. fragments that have detached from the workpiece or tool may injure the worker;
 - 18.8. untidy work areas or slippery floors may cause slips, trips, or falls;
 - 18.9. poor lighting may cause vision problems and injuries;
 - 18.10. failure to follow safe work methods may lead to accidents;
 - 18.11. failure to use necessary personal protective equipment (safety glasses, respirator, etc.);
 - 18.12. failure to comply with permissible lifting limits may lead to muscle strains. The mass of a single load lifted or carried must not exceed 30 kg for men and 10 kg for women.
19. The following occupational hazards that may pose long-term health risks:
 - 19.1. Dust in the work area affects the respiratory system. When grinding dry, the machine must be equipped with a dust collector (local exhaust ventilation).
 - 19.2. Noise and vibration adversely affect the peripheral nervous system. The noise level at the workplace must not exceed 85 dBA.
20. Operators must be provided with natural-fibre workwear, a head covering, safety glasses, gloves, and a respirator.
21. Employees must properly maintain and use personal protective equipment as intended and promptly report any wear, damage, or unsuitability to the department head.
22. Grinding wheels must be tested by the manufacturer and retested before installation on the machine.
23. Grinding wheels must be stored and transported in a way that prevents damage.
24. When mounting a wheel on the spindle, it must be clamped between two flanges of equal diameter. The flange diameter must be at least one-third of the wheel diameter.
25. Between the flanges and the wheel, elastic gaskets (0.5–1.0 mm thick) must be inserted. The gasket diameter must be greater than the flange diameter.
26. An abrasive wheel, mounted between flanges, must be balanced together with the flanges and tested for mechanical strength.
27. Tests for mechanical strength must be conducted on a special test stand that allows smooth adjustment of rotational speed. During testing, the test chamber must remain closed and must be free of damage.
28. Every abrasive wheel mounted on a grinding machine must be enclosed with a steel guard. The use of cast-iron guards is prohibited.
29. After installing a newly assembled wheel, the machine must be run at no load for at least 2 minutes when the wheel diameter is up to 400 mm; at least 5 minutes when the wheel diameter exceeds 400 mm.
30. While the machine is running idle, the operator must stand clear to the side, away from the plane of the rotating wheel.

31. Only specialised personnel, who have completed the necessary training, may mount grinding wheels on the machine.

III. EMPLOYEE ACTIONS BEFORE STARTING WORK

32. Before starting work, the employee must ensure the grinding machine is in good working order and properly grounded.
33. It must be verified that the grinding wheel is securely mounted and undamaged. The machine must not be started if the wheel has any cracks or chips; in such cases, it must be replaced with a tested, new wheel.
34. The distance between the work rest and the wheel must be checked. If the work rest is set too far from or too close to the wheel, it must be readjusted and firmly secured.
35. The machine must be run at no load for 3–5 minutes to ensure that there is no radial or axial run-out of the wheel. During the test, the operator must stand clear to the side and wear safety glasses.
36. Work must not be started, and the department head must be informed immediately if any of the following are observed:
 - 36.1. wheel run-out;
 - 36.2. bearing overheating;
 - 36.3. defective wheel or drive guard;
 - 36.4. faulty work rest or start device;
 - 36.5. damaged or disconnected grounding wire.
37. It is prohibited to alter or remove any installed health or safety protection devices on the equipment or other machinery.
38. The workplace must be kept clean, tidy, free of unnecessary materials or parts, and properly illuminated.
39. The grinding machine must be used only for its intended purpose.

IV. EMPLOYEE ACTIONS DURING WORK

40. During operation of the grinding machine, the operator must stand to the side of the grinding wheel's plane and wear safety glasses.
41. The workpiece must be pressed gently against the wheel; it is prohibited to strike or impact the wheel with the workpiece.
42. The side surface of the wheel may only be used for grinding if the wheel is specifically designed for that purpose.
43. When sharpening a cutting tool, it must be securely fixed in a fixture according to technological requirements or supported on the work rest. Holding the tool in a raised position is prohibited.
44. The tool being sharpened must be held firmly to prevent it from being caught between the work rest and the wheel.
45. When sharpening a cutting tool using a coolant, it must be ensured that the coolant wets the entire surface of the wheel.
46. After switching off the machine, the coolant flow must be directed away from the surface of the wheel.
47. If the grinding machine is designed for operation with coolant but has been used without it for some time, the wheel must be allowed to cool before resuming work with coolant.
48. When the wheel becomes worn, the work rest must be moved closer and securely fixed. The work rest may only be adjusted after the wheel has come to a complete stop.
49. Dressing and cleaning of the wheel must be carried out only in accordance with the established procedure.

- 50. Protective guards of the machine must not be removed during operation.
- 51. Dust can be removed with a brush only after the wheel has completely stopped.
- 52. Before switching off the machine, the workpiece must be withdrawn from the wheel.
- 53. The wheel must not be stopped by pressing a workpiece or any other object against it.
- 54. It must be remembered that even a slight touch of a rotating abrasive wheel may cause an accident.
- 55. The grinding machine must not be left running without supervision.
- 56. Electrical safety requirements:
 - 56.1. The condition of protective covers and other safety devices must be regularly monitored;
 - 56.2. It is prohibited to use faulty electrical installation equipment when operating the grinding machine;
 - 56.3. The grinding machine must not be left operating without supervision;
 - 56.4. For local lighting, only portable lamps with a voltage not exceeding 50 V may be used;
 - 56.5. It is prohibited to operate the grinding machine with protective guards or covers removed or open;
 - 56.6. The operator must not attempt to repair a faulty grinding machine. Repairs may only be performed by personnel with the required electrical qualification;
 - 56.7. It is prohibited to adjust or modify the machine's parameters while its protective covers are open;
 - 56.8. The operator must not simultaneously touch grounded objects (such as central heating radiators or pipes) and metal parts of electrical equipment as damaged insulation and live parts may create a current path through the human body.

V. EMPLOYEE ACTIONS IN EMERGENCY SITUATIONS

- 57. The machine must be switched off in the following emergency situations:
 - 57.1. in the event of an accident or incident;
 - 57.2. in case of fire;
 - 57.3. in the event of a power outage;
 - 57.4. if vibration of the machine starts;
 - 57.5. if the abrasive wheel breaks or cracks;
 - 57.6. if electric shock is experienced. In such cases, the department head must be notified. Until an investigation begins, the scene of the incident must be preserved as it was at the time of the accident, provided this does not endanger human life.
- 58. In the event of an accident, the machine must be switched off immediately and the department head notified.
- 59. In the event of fire, firefighting must be initiated using available equipment, and the department head must be notified immediately.
- 60. The operator must be trained in the use of primary firefighting equipment.

VI. EMPLOYEE ACTIONS AFTER WORK

- 61. The grinding machine must be disconnected from the power supply.
 - 62. Workpieces, materials and components must be placed in designated storage areas.
 - 63. The machine must be cleaned and the workplace tidied.
 - 64. Hands and face must be washed and, if possible, a full shower taken.
 - 65. Any deficiencies or faults observed during work must be reported to the department head.
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