



**AZERBAIJAN BUSINESS UNIT
(AzBU)**

**Procedure for:
Machine Guards**

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1 INTRODUCTION

1.1 DOCUMENT PURPOSE

This document contains information on:

- the conditions and situations where machine guards must be in place and used
- the reasons for installing machine guards and the conditions that must exist before they may be removed
- the type of guards and protective devices available and the considerations governing their choice and design.

1.2 DOCUMENT SCOPE

The guidelines contained in this document apply to:

- all BP Azerbaijan / Georgia sites and installations where machinery is located and operated
- all personnel; both BP employees and contractors.

2 RESPONSIBILITIES

2.1 AREA AUTHORITIES

Area Authorities are responsible for ensuring that:

- all fixed machinery in their area is guarded in accordance with this procedure
- all machine guards and safety devices in their area are routinely checked and maintained in working order.

Note: Guards and safety devices shall be checked following any repairs or modifications.

2.2 PERFORMING AUTHORITIES

Performing Authorities are responsible for ensuring that all portable equipment that is used by the personnel under their control conforms to this procedure.

2.3 ALL PERSONNEL

All personnel are responsible for:

- ensuring that the machinery and equipment they use or maintain has all the necessary guards in place and that all guards are properly fitted
- immediately reporting to their supervisor if they believe a machine is in a dangerous condition or if any guards or protective devices are faulty

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3 RISKS FROM UNGUARDED AND POORLY GUARDED EQUIPMENT

Moving parts of equipment, if not guarded, are extremely dangerous to operating personnel and to any other personnel working in the immediate vicinity.

Warning: Any machine part, function or process that may cause injury must be guarded to prevent contact with personnel.

The risk of accidents involving machinery may be caused by entanglement, shearing, crushing, trapping, and cutting, etc. These accidents may occur due to:

- a lack of guards or poor guards on machines and equipment
- a failure to keep guards and safety devices properly maintained so that machines or equipment become unsafe
- provision of inadequate controls or the wrong type of controls so that equipment cannot be turned off quickly and safely or it may be started accidentally.

4 MACHINE GUARD REQUIREMENTS

4.1 ALL MACHINERY

Guards must be fitted to those parts of a machine wherever:

- cutting, shaping or boring of any material is performed
- there are components that transmit energy, including:
 - flywheels
 - pulleys
 - belts
 - cranks
 - gears etc.
- there are moving parts which can be reciprocating or rotating, including feed mechanisms and other accessories
- debris or products may be emitted / ejected that present a danger to the operator and /or nearby personnel, e.g., deflectors for relief valves, screens for bench grinders and lathes, etc.

In addition, where deemed necessary, guardrails or barricades may be placed around equipment to prevent personnel from getting close to it.

4.2 AUTOMATIC MACHINERY

Guards must be installed on equipment that can start automatically (and / or without warning) such as air compressors, diesel sets, etc.,

In addition, warning signs such as **“Caution - This machine can start automatically!”** shall be posted near all such equipment.

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5 SELECTION AND USE OF GUARDS

Fixed guards such as covers and plates are the most common type of guard and should be used wherever possible. The guards should be properly fastened in place with screws or nuts and bolts which need tools to remove them.

Interlocks, designed to shut down the machine if protective covers are opened or removed, should be used where fixed guards are not reasonably practicable and the equipment user / maintainer needs regular access to parts of the machine. The interlock should ensure that the machine cannot start before the guard is properly replaced / closed and must also ensure that the machine will stop if the guard is opened while the machine is moving.

Two-hand controls are designed to prevent the operator 'reaching in' while the machine is running and should therefore be located at a safe distance from the danger area.

Emergency stop controls should be located within easy reach of the operator, particularly on larger machines so that they can be operated quickly in an emergency.

In some cases, **presence sensing devices**, for example, photoelectric, and **pressure sensing devices** may be used instead of fixed guards or interlocks. However these devices must be regularly checked to ensure their continuing operation and effectiveness.

6 GUARD MATERIALS, CONSTRUCTION AND FITTING

6.1 MATERIALS

The materials from which the guard is manufactured should be carefully chosen for suitability. For example:

- plastic is easy to see through but may be easily scratched, damaged or shattered
- if wire mesh or grating is used, it should not have holes that are large enough to allow access to the danger area or large enough to allow the passage of debris

6.2 DESIGN, CONSTRUCTION AND FITTING

All guards shall be designed, constructed and fitted so that they:

- protect the operator and any other personnel from the equipment (especially its moving parts)
- may not be easily removed or tampered with, e.g., they must be firmly secured to the machine
- can withstand the conditions of normal use
- allow the machine to be cleaned safely
- prevent foreign objects from falling onto moving parts, e.g., small tools, nuts, bolts, etc

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- do not present sharp or jagged edges, i.e., they should be rolled and / or bolted
- do not create interference which would hamper personnel from performing their assigned tasks quickly and comfortably
- do not obstruct lubrication points and feeds in such a way that the guard must be removed before these components can be properly accessed.

6.3 RETRO-FITTING OF EMERGENCY STOP CONTROLS

Note: Before fitting emergency stop controls to machines that have not previously had such controls fitted, it is essential to check that the emergency stop controls do not in themselves present new risks. For example, some machines require the power supply to be on in order to operate the brakes. This power might be lost if the machine is stopped using the emergency stop control.

7 GUARD REMOVAL

Machine guards shall only be removed by competent and experienced personnel for maintenance and repair purposes.

Whenever guards are removed for maintenance or repair:

- the removal shall be carried out under a Permit to Work
- the energy source to the machine must be isolated and the switch, button, lever etc., must be locked out and tagged before the guard can be removed
- all guards must be in place before the lock and tags can be removed.