

TT041 – Safe Use of Angle Grinders

January 2025

Of all the tools used in residential construction, the hand-held angle grinder is potentially one of the most dangerous.

VERSATILE BUT DEADLY.

Angle grinders are versatile hand-held tools. Their ability to perform a variety of tasks is due to the different accessories that can be attached to them. The type of attachment fitted to an angle grinder depends on the task being performed and the materials being used. The most common uses for angle grinders include grinding (with abrasive discs) and cutting (with cut-off discs) – however attachments will vary depending on whether the operator is working with metal, stone, tiles, etc.



In the US, 20% of kickback injuries from grinders & saws resulted in fatalities (OSHA 2010).

Kickback and Projectile Hazards

The most common causes of injury from angle grinders are:

1. Lacerations from attachments that break apart and become projectiles, striking the operator or others in the work area.
2. Lacerations from angle grinder kickbacks. Kickback happens when the angle grinder suddenly thrusts back towards the operator because of it grabbing or jamming on the materials being worked on.



An unsafe angle grinder – note the missing guard, the "always-on" switch and exposed electrics.

Common Causes

- **Wrong Attachment for the Task:** Using the wrong attachment for the task (e.g. using an abrasive disc for cutting) or using attachments that are not designed for angle grinders (e.g. using circular sawblades for cutting).
- **Wrong Attachment for the Material:** Using an attachment that is not appropriate for the material being worked on (e.g. using a masonry cut-off disc on metal).
- **Wrong Size Attachment:** Using an attachment with a maximum diameter which is either too large or too small for the angle grinder.
- **Mis-Matched Speed Rating:** Using an attachment with a speed rating (RPM) which is lower than the maximum speed of the angle grinder.
- **Missing or Wrongly Positioned Guard:** Never use an angle grinder without a guard. Not only does the guard help protect from flying debris, but it ensures that a larger attachment can't be fitted.
- **Worn or Damaged Components:** Using attachments which are excessively worn or damaged or using a grinder on which the flanges and nuts are worn or damaged.

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OTHER HAZARDS:

Other angle grinder hazards include: vibration, noise, respirable dusts, electrocution, carrying a grinder while it is running, and sparks igniting flammable substances.

Angle Grinders on ALL Fletcher Living Sites Must Have:

1. **Deadman / Paddle Switch:** A switch which requires constant pressure for the grinder to operate and which de-energizes the tool when released.
2. **Kickback Protection:** An electronic feature which detects an impending kickback situation and switches the tool off.
3. **Restart Protection:** An electronic feature which prevents the grinder from restarting unintentionally after power is lost.
4. **Multi-Position Locking Guard:** Able to be adjusted to suit the requirements of the work being done and protect the operator.
5. **Auxiliary Handle:** To allow safe two-handed use.

Common Causes

- **No Auxiliary Handle:** Without a handle operator have reduced control of the angle grinder and may be unable to stop the angle grinder making contact with them during kickback.
- **No Cut-off Switch:** Operators are unable to stop the angle grinder in an emergency.
- **Not Powering-Down:** Angle grinders placed on the ground while still running can travel along a surface propelled by their rotating attachments and cause serious lacerations.
- **Applying Pressure:** Applying pressure during an operation can cause attachments to break. Excessive pressure can also increase the likelihood of kickback.
- **Unsupported Work Piece:** An unsupported work piece that moves around can increase the likelihood of kickback and can itself become a projectile.

Other Recommended Safety Features:

- Anti-vibration handles
- Soft start-up
- Multi-position handles
- Electronic overload protection

Angle Grinder Operators Must:

- Have been adequately trained and deemed competent in their use
- Wear appropriate PPE including face shield, hearing protection and gloves.
- Check for other people in the vicinity who could be struck by flying projectiles.
- Check the appropriate disc is fitted and in good condition.

Mandatory angle grinder safety features:



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Discussion Points and Q & A

Q. What are the two most common causes of angle grinder injuries?

A. *Kickback and attachments breaking apart and becoming projectiles.*

Q. What minimum safety features are required of angle grinders on Fletcher Living sites?

A. *Deadman switch; kickback protection; restart protection; locking guard and auxiliary handle.*

Q. What personal protective equipment must be worn when using angle grinders?

A. *Safety glasses / face shield; hearing protection; gloves; safety boots and hi-viz vest.*

Q. What action should be taken upon discovery of a worn attachment?

A. *It must be disposed of, and not kept for use on a smaller grinder.*

