

# T-Handles and Wrenches

T-handles and wrenches are common hand tools used in FRC for installing and removing fasteners. Choosing the right tool improves speed, safety, and prevents damage to hardware.

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## T-Handles

T-handles are used with hex (Allen) fasteners and provide better torque control than standard L-shaped hex keys.

### Advantages:

- Higher torque capability
- Faster repeated fastening
- Better grip and control
- Reduced hand fatigue during long assembly sessions

### Best use in FRC:

- Drivetrain assembly
  - Mechanisms with many hex fasteners
  - Repetitive tightening tasks
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## Wrenches

Wrenches are used on external hex fasteners such as nuts and bolt heads.

### Common types in FRC:

- Combination wrenches (open + box end)
- Ratcheting wrenches (faster operation in tight spaces)

### Advantages:

- Strong torque application
- Works with nuts and bolt heads
- Useful in tight or awkward spaces

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## Proper Use

- Ensure full contact with the fastener before applying force
- Keep tools aligned to avoid rounding edges
- Use steady pressure instead of sudden force
- Match tool size exactly to fastener size

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## Common Mistakes

- Using incorrect wrench size (causes stripping/rounding)
- Applying force at an angle
- Using pliers instead of proper wrenches
- Not fully seating the tool before turning

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## Key Idea

T-handles are best for fast, controlled tightening of hex fasteners, while wrenches are essential for nuts and bolts. Using the correct tool protects hardware and improves build quality.

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