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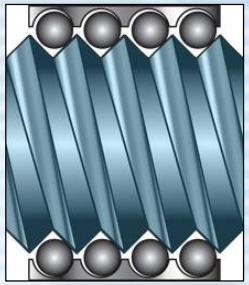
How to Select the Right Lead Screw for Your Linear Actuator

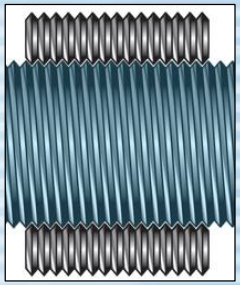
Gary Rosengren – Director of Engineering

Basics

- Terminology
- Screw types
  - Acme
  - Ball
  - Roller



Ball Screw



Roller screw

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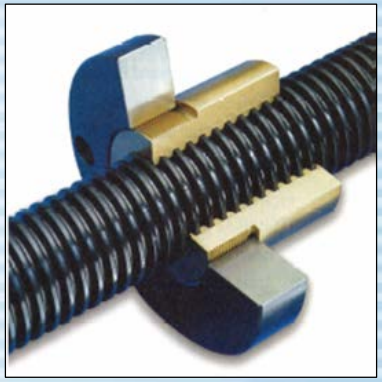
Acme Screws - Advantages

- Low initial cost
- Quiet operation
- Reduced or no back driving



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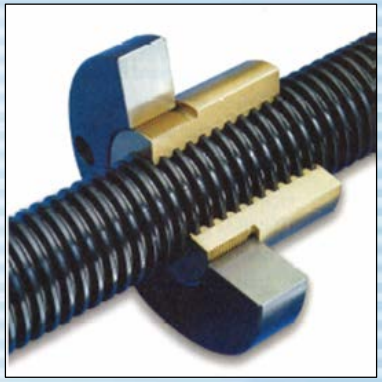
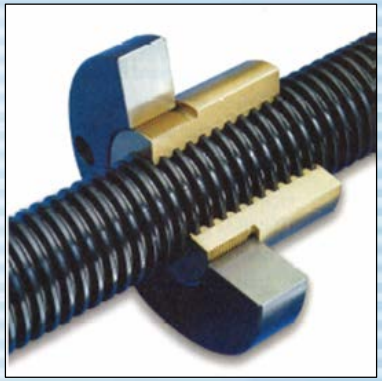
Acme Screws - Limitations

- Low efficiencies
- Service life not predictable
- Solid nuts can wear and affect position



Acme Screws - Applications

- Slow speeds
- Low positioning requirements
- Low duty cycles
- Reduced or no back driving tendencies (for vertical installations)
- Low initial expenditure



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Ball Screws - Advantages

- High thrust
- Long service life
- Predictable service life
- 80-95% efficiency
- Low backlash

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Ball Screws - Limitations

- Easily back driven (depending on lead)
- High initial cost
- Can be noisy

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Ball Screws - Applications

- High duty cycles
- High thrust
- High speeds
- High loads
- Tight positioning requirements

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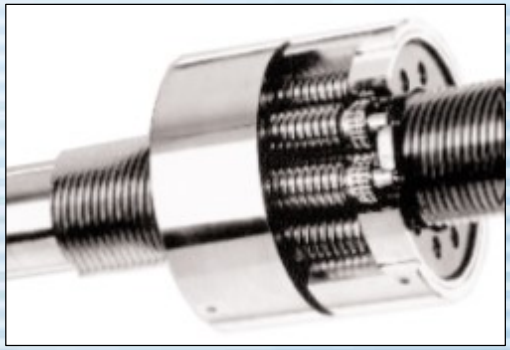
Roller Screws - Advantages

- Very high thrust
- Extremely long life
- Capable of high speeds and rapid acceleration
- Low maintenance
- High efficiency



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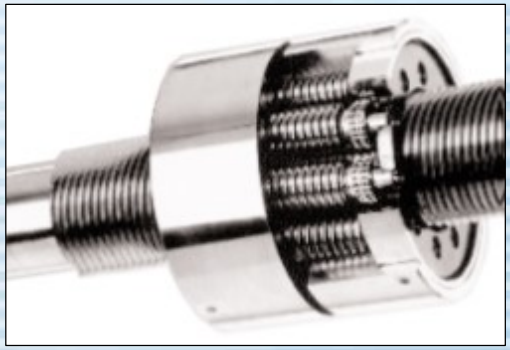
Roller Screws - Limitations

- High cost
- Can be back driven (depending on lead)
- Large nut diameter



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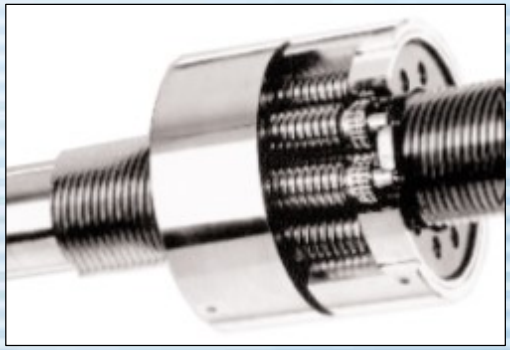
Roller Screws - Applications

- High force
- Long service life outweighs initial cost



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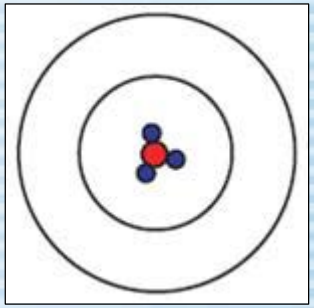
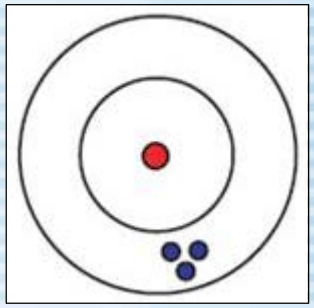
Screw Selection Considerations

- Thrust (peak and continuous)
- Speed
- Accuracy
- Repeatability
- Backlash
- Resolution



Accuracy



Repeatability

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