

# Linear Guide Rails and Bearings

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Robotics & Mechatronics

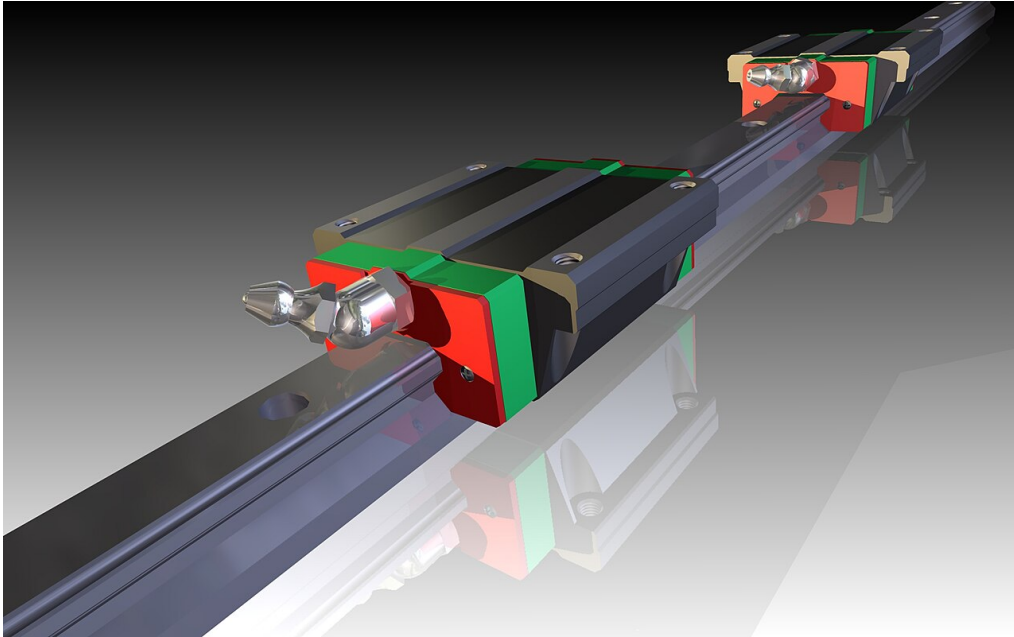


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Linear guide rails with recirculating bearing blocks carry loads along precise straight paths with low friction, the backbone of CNC machines, 3D printers and automated slides. Rails range from small profile rails to round shafts with linear bearings.

## Key Features

- Profile rails and round shaft types
- Recirculating ball carriages
- Carriage lengths for load
- Matching bearing blocks
- Preloaded for precision

## Typical Uses in the Workshop

- Guide CNC and printer axes
- Build z-lifts and slides
- Construct pick-and-place mechanisms
- Replace sloppy drawer and slide systems

## Safe Operation

1. Mount the rail true and parallel
2. Bolt the carriages without preload distortion
3. Lubricate the races lightly
4. Check movement is smooth end to end
5. Keep the rails clean of grit

## SAFETY NOTES

- Keep fingers clear of the carriages
- Do not run the rails dry and grinding
- Check the bolts hold the carriages
- Keep long rails supported during storage
- Wipe swarf off before moving carriages

#### Maintenance & Consumables

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- Wipe and oil the rails regularly
- Check the carriage seals
- Tighten mounting bolts
- Clean the raceways of dust
- Replace worn carriages

#### Specification & Buying Notes

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Choose profile rails for precision, round rails for budget builds. Sizes from 12-25 mm cover school machines. Quality rails roll smoothly; cheap rails bind under load.