

The E-Bike Buyer's Cheat Sheet

Motors, batteries, sizing, tire pressure and the red flags to avoid before you buy.

1 Pick the right motor

	Hub motor (in the wheel)	Mid-drive (at the pedals)
Best for	Flat to rolling roads, commuting, budgets	Hills, trails, cargo, long rides
Feel	Pushes you along; simple and quiet	Natural; uses the bike's gears for climbing power
Upkeep	Fewer parts to wear out	Wears chain and gears faster; costs more
Price	Usually lower	Usually higher

2 Know the class and the local rules

Class (US)	How it works	Assist stops at
Class 1	Pedal assist only	20 mph (32 km/h)
Class 2	Pedal assist plus throttle	20 mph (32 km/h)
Class 3	Pedal assist only	28 mph (45 km/h)

In the EU and UK, road-legal e-bikes are limited to 250 W and 25 km/h assist. Rules for paths, trails and helmets differ by city and state, so check yours before you ride.

3 Battery and range maths

Watt-hours (Wh) = Volts × Amp-hours (Ah)

Example: a 48 V, 13 Ah battery is 624 Wh.

Real-world range is roughly Wh ÷ 15 to 30 Wh per mile (about 10 to 19 Wh per km). That puts 624 Wh at around 20 to 40 miles (32 to 65 km).

- **Longer range:** eco assist, firm tires, light load, steady speed, flat routes.
- **Shorter range:** turbo assist, hills, headwind, cold weather, heavy cargo, stop-start riding.
- Compare bikes by **Wh**, not by volts or amp-hours alone.

4 Frame size by rider height

Size	Rider height	Typical fit
S	150–165 cm (4'11" – 5'5")	Shorter riders
M	165–178 cm (5'5" – 5'10")	Most common
L	178–190 cm (5'10" – 6'3")	Taller riders
XL	190 cm+ (6'3"+)	Check the brand's own chart

Brands size differently, so use the maker's chart, then test ride. You should be able to stand over the top tube with your feet flat and reach the bars without stretching.

5 Tire pressure quick reference

Bike type	Typical starting range	Notes
Commuter / road	40–65 psi (2.8–4.5 bar)	Heavier rider or cargo: go higher
Hybrid / city	35–60 psi (2.4–4.1 bar)	Wider tires run lower
Mountain bike (tubeless)	18–30 psi (1.2–2.1 bar)	Lower for grip, higher for rocky or rim-strike terrain
Fat tire	5–12 psi (0.3–0.8 bar)	Use a low-pressure gauge

These are starting points. Always stay inside the minimum and maximum printed on the tire sidewall, and re-check pressure every week or two.

6 Shock pump quick guide (MTB and e-MTB)

Setting	Starting point
Rear shock sag	25–30% of travel
Fork sag	15–25% of travel
First fill	Many brands start near your body weight in lb as psi. Check your brand's chart.

- Use a **shock pump**, never a floor pump. Shocks hold small volumes at high pressure.
- Thread the pump on quickly and straight, pump to the target, then press the bleed button before you unscrew it.
- Never go above the maximum pressure printed on your fork or shock. A digital shock pump makes small changes easier to read.

7 Questions to ask before you buy

- ☐ **Who makes the battery cells and the motor?** Known brands are easier to service.
- ☐ **Is the e-bike tested to a safety standard?** Look for UL 2849 (e-bike system) and UL 2271 (battery) in the US, or EN 15194 in the EU.
- ☐ **What is the warranty on the battery and motor**, and how many years?
- ☐ **Where is the nearest service shop**, and can I get spare parts and a replacement battery?
- ☐ **What is the real weight and Wh of the battery?** Not the "up to" range claim.
- ☐ **What is the return and test-ride policy?**
- ☐ **What does a replacement battery cost?** Most last roughly 3 to 5 years (about 500–1,000 full charges).
- ☐ **Which charger is included**, and does it match the battery?

8 Red flags

- A range claim far above what the Wh figure can support (for example, "100 miles" from a small battery).
- No brand name or spec sheet for the battery, or no safety certification you can verify.
- No manual, no service contact and no spare parts available.
- A price far below similar bikes from established brands.

- A seller who will not let you test ride or return it.

9 Before you pay: 60-second checklist

- ☐ Wh of the battery matches the range I need.
- ☐ Motor type and class suit my hills and local rules.
- ☐ Frame size confirmed against my height and a test ride.
- ☐ Safety certification and warranty are in writing.
- ☐ I know where to get it serviced.
- ☐ I have a helmet, lock and a tire pump with a gauge.

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