

GEAR RATIO SELECTION GUIDE



WHY GEAR RATIO MATTERS

The correct gear ratio helps your truck accelerate smoothly, stay within the engine's power range, maintain road speed, and operate efficiently. The wrong ratio can cause poor performance, excessive shifting, engine lugging, higher temperatures, and unnecessary driveline stress.

CONSIDER THE TRUCK'S APPLICATION

A race truck, long-haul truck, gravel train, and vocational truck require different gearing. Race applications usually prioritize acceleration, while over-the-road builds focus on pulling ability, cruising RPM, fuel efficiency, and durability.

KNOW THE ENGINE'S OPERATING RANGE

Gear ratios should keep the engine within its most effective RPM range after every shift. Ratios that are spaced too far apart may cause the engine to fall below its power range, while ratios that are too close may require unnecessary shifting.

CHECK THE DIFFERENTIAL RATIO

The rear differential ratio directly affects acceleration and cruising speed. A numerically higher ratio generally provides stronger pulling power but increases engine RPM at highway speed. A numerically lower ratio may reduce cruising RPM but can make starting heavy loads more difficult.

CONFIRM THE TIRE SIZE

Tire diameter changes the truck's effective gearing. Larger tires generally lower engine RPM at a given road speed, while smaller tires increase it. Always use the truck's actual loaded tire diameter when calculating the setup.

CONSIDER LOADED WEIGHT AND TERRAIN

Heavy loads, frequent starts, steep grades, soft surfaces, and changing terrain usually require stronger starting and pulling ratios. Lighter trucks or high-speed applications may benefit from taller gearing.

CHOOSE THE CORRECT TRANSMISSION

A 13-speed transmission can provide a practical balance of pulling power and highway performance. An 18-speed offers additional ratio choices for heavy loads, difficult terrain, and applications requiring better control of engine RPM.

REVIEW THE COMPLETE DRIVETRAIN

Transmission gearing should be selected together with engine power, clutch setup, differential ratio, tire size, driveshaft condition, and intended operating speed. Changing one component can affect the performance of the entire drivetrain.

AVOID GUESSING

There is no single gear ratio that works for every truck. Before selecting a setup, gather the transmission model, engine specifications, tire size, differential ratio, loaded weight, desired road speed, operating RPM, and intended use.