



How nut torquing and back-off are used to set wheel bearings

How do we adjust wheel bearings to meet the correct end-play specifications? Following is a simple, five-step procedure:

1. Torque the adjusting nut to 200 lbf-ft to seat the bearing components. Always rotate or oscillate the wheel while torquing the adjusting nut to ensure that the rollers are fully seated against the cone large rib.
2. Back off the adjusting nut one full turn or until it's loose.
3. This is where you actually establish end play. Torque the adjusting nut to 50 lbf-ft while rotating the wheel hub assembly.
4. Back off the inner (adjusting) nut the appropriate amount as indicated by the chart at right; e.g., 1/6 of a turn for a 12-threads-per-inch front steer axle. See chart at right for the exact back-off amount. **WARNING:** Failure to back off the inner nut as described may cause the bearing to run hot and be damaged. If this happens during operation, the wheel also may lock or come off, causing a risk of serious bodily harm.
5. On a single-nut system, install a cotter pin. On a double-nut system install a jam nut and torque it to the proper specification, which varies depending on the size of the nut.

Generally, jam nuts less than 2-5/8" should be torqued to 200-300 lbf-ft; nuts 2-5/8" and over should be torqued to 250-400 lbf-ft. See chart for exact torque specification.

The final step is to use a dial indicator to verify the end play or free movement of the tire and wheel assembly along the spindle axis. We will discuss dial indicators in Part 7 of this series on bearing adjustment.

Adjusting Nut Back Off			Jam Nut Torque	
Axle Type	Threads Per Inch	Final Back Off	Nut Size	Torque Specifications
Steer (Front) Non-Drive	12	1/6 Turn	Install Cotter Pin to Lock Axle Nut in Position	
	18	1/4 Turn		
	14	1/2 Turn	Less Than 2-5/8" (66.7 mm)	200-300 lbf-ft (271-407 N-m)
	18			
Drive	12	1/4 Turn	Dowel Type Washer	300-400 lbf-ft (407-542 N-m)
	16		Tang Type Washer	200-275 lbf-ft (271-373 N-m)
Trailer	12	1/4 Turn	2-5/8" (66.7 mm and over)	300-400 lbf-ft (407-542 N-m)