

Torquing and Gapping Spark Plugs

Gap

- Check gap on every plug prior to installation; plugs are NOT always pre-gapped at the factory.
- Specific to engine...always use factory recommendations for gap size, unless engine is modified.
- When checking gap, use only wire gauges; flat feeler or dial gauges do not accurately measure true width of spark-gap.
- When increasing gap size for high-performance ignition systems (MSD box, etc) never go plus/minus more than .008" in order to retain parallel surfaces between ground and center electrode.
- When gapping, never use porcelain insulator as a fulcrum/leverage point...cracked center insulators can result.
- Higher compression or boosted engines require smaller gaps and high powered ignition systems.

Spark Plug Torque

- Torque is the most critical part of installation...directly influences spark plug temperatures.
- A spark plug can **only** transfer heat effectively when it is fully seated on the cylinder head. Under-torqued spark plugs can allow combustion gas leakage, or will not allow the plug to remove heat effectively...spark plug and cylinder temperatures rise dramatically, eventually leading to detonation, plug/engine damage.
- Over-torquing can cause distortion (warping) of spark plug's internal seals, causing poor heat transfer...plug temperatures increase, eventually leading to detonation, plug/engine damage.
- Before installation, clean threads to prevent encountering resistance from carbon build-up. If using anti-seize compounds, use sparingly.
- When re-installing spark plugs, spark plug threads should be clean and particle-free to ensure proper seating.
- Iron and aluminum heads have different torque specs.

Recommended Torque Specifications

SPARK PLUG THREAD SIZE	CAST IRON HEADS		ALUMINUM HEADS	
	WITH TORQUE WRENCH	WITHOUT TORQUE WRENCH	WITH TORQUE WRENCH	WITHOUT TORQUE WRENCH
FLAT SEAT w / GASKET				
18mm	3.5 kg-m ~ 4.5 kg-m 25.3 lb-ft ~ 32.5 lb-ft	1/2-2/3 turn 180°-240°	3.5 kg-m ~ 4.0 kg-m 25.3 lb-ft ~ 28.9 lb-ft	1/2-2/3 turn 180°-240°
14mm	2.5 kg-m ~ 3.5 kg-m 18.0 lb-ft ~ 25.3 lb-ft	1/2-2/3 turn 180°-240°	2.5 kg-m ~ 3.0 kg-m 18.0 lb-ft ~ 21.6 lb-ft	1/2-2/3 turn 180°-240°
12mm	1.5 kg-m ~ 2.5 kg-m 10.8 lb-ft ~ 18.0 lb-ft	1/2-2/3 turn 180°-240°	1.5 kg-m ~ 2.0 kg-m 10.8 lb-ft ~ 14.5 lb-ft	1/2-2/3 turn 180°-240°
10mm	1.0 kg-m ~ 1.5 kg-m 7.2 lb-ft ~ 10.8 lb-ft	1/2-2/3 turn 180°-240°	1.0 kg-m ~ 1.2 kg-m 7.2 lb-ft ~ 8.7 lb-ft	1/2-2/3 turn 180°-240°
TAPERED SEAT				
18mm	2.0 kg-m ~ 3.0 kg-m 14.5 lb-ft ~ 21.6 lb-ft	1/12-1/8 turn 30°-45°	2.0 kg-m ~ 3.0 kg-m 14.5 lb-ft ~ 21.6 lb-ft	1/12-1/8 turn 30°-45°
14mm	1.5 kg-m ~ 2.5 kg-m 10.8 lb-ft ~ 18.0 lb-ft	1/12-1/8 turn 30°-45°	1.0 kg-m ~ 2.0 kg-m 7.2 lb-ft ~ 14.4 lb-ft	1/12-1/8 turn 30°-45°

All engine manufacturers have recommended torque specifications for spark plug installation, and most are represented in the chart above. Install the spark plug finger tight until the gasket or taper seat contacts the cylinder head. Then give it the recommended turn or angle. (From NGK 2004 Spark Plug catalog.)