

SB030

Piston Weight Tolerances

Variation in piston weights in an engine can lead to abnormal engine vibrations, reduced torque and horsepower, engine wear and even engine component failure. While traditionally a science for performance gasoline vehicles, checking and adjusting of piston (and sometimes conrod) weights in diesel engines is also recommended - especially when not replacing the full set. The manufacturer's designed piston weight, conrod weight, crankshaft counterbalance and harmonic balancer design take into account the expected maximum engine speed. With a continual increase in the maximum engine speed of new diesel engines, more attention must be given to piston weights when reconditioning or rebuilding them. The allowable weight variation between pistons in a given engine has decreased significantly over the years, with some manufacturers specifying less than ± 10 grams variation for 1800 gram pistons.

The table below is a guideline for the maximum expected piston weight variation in a given engine or engine set of pistons. Where a manufacturer specifies piston (or conrod) weight tolerances different to those listed here, they should be followed. These values are applicable for in-line engines only and will not necessarily apply to V-style engines.

Piston Weight (grams)	Max Variation (%)	Max Variation (grams)
250	0.8	2
500	0.6	3
750	0.5	4
1000	0.5	5
1750	0.6	10
2500	0.6	15
3500	0.6	20