

What Is a Crash Gearbox?

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Crash gearboxes are simple mechanisms but require special techniques to operate. *(old gearbox dumped in a rest area on the side of the road image by Undy from Fotolia.com)*

Crash gearboxes use straight-cut gears and are found in vintage cars, large trucks and racing cars. The speed of the engine must be matched to that of the gearbox before a gear is engaged.

Operation

When changing gears, the clutch disengages the gearbox from the engine then selects a new gear before re-engaging. With straight-cut gears, if the engine speed does not match that of the gearbox, the gears will grind together and cause potential damage to the clutch and gears themselves; thus the speeds must be matched before a gear is engaged.

Double Declutching

The clutch is used twice for every gear change. First the clutch is depressed, and neutral is selected; the engine is then revved to the appropriate speed before the clutch is depressed once more and a new gear selected. This is a complex technique that requires an experienced driver.

Advantages

Crash gearboxes produce less friction and loss of power. In racing, this is a great advantage, and with the ability to rebuild the gearbox after each race, the damage caused by incorrect gear changes is not considered a major problem. Crash gearboxes are also very robust and able to deal with much more power and torque than helical gears.