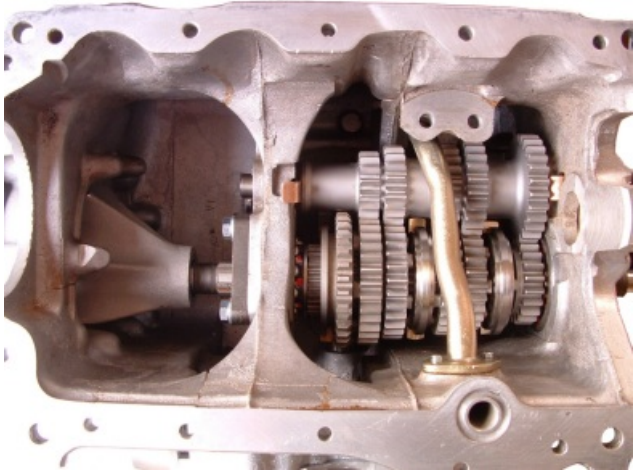




KAD Drive Train Components

KAD 5 Speed Racing Gearbox



When KAD decided to produce their own 5 speed race gearbox there were two main criteria which had to be met by the design.

Firstly it should fit a standard gear casing without expensive modifications. Race engines can have blowups and replacing an expensive casing just adds to the misery. Secondly it should be direct drive in fifth, we figured that this would offer the maximum torque output at the point where aerodynamic drag was at its greatest: high speed. The other 5 speed boxes on offer were all of the over driven fifth type which meant torque would be lost when engaging fifth.

The end result is a no compromise race gearbox that is easy to use with gear ratios ideally suited to today's race tracks with their frequent slow to medium speed corners.

The compact gear train fits into a standard A+ rod change gear casing and has straight cut gears with face dogs, typical of conventional racing gearboxes. The gears are manufactured from a vacuum arc remelted steel (VAR), this is a very high specification material which has higher strength and greater purity than commercially produced steels giving stronger gears and allowing a narrower gear width and lower frictional losses.

The selector forks are made from aluminium bronze which has good wearing properties and high bending resistance. The selector mechanism has been designed to offer a fast reliable change and the shift pattern has been arranged with first on a dog leg, to the left and back. This puts 2nd, 3rd, 4th and 5th in an H pattern, a great benefit when making high speed down changes from fifth to fourth. Quickshift gear levers are not required as the forwards-backwards change is faster than standard whilst the side to side movement is the same. This makes gear selection easy, precise and fast.

Input and output shaft splines are the same as standard Mini allowing the same transfer and final drive gears to be used.

The KAD pinion bearing support housing is used with the 5 speed to reinforce the free end of the mainshaft, this gives better pinion gear life as it prevents the pinion from trying to climb the crown wheel under hard acceleration (available separately for four speed boxes). A centre oil pick up pipe is also supplied as the laygear layout requires a different path for the pipe. Gear ratios have been chosen with competition in mind. What has resulted is a 5 speed that behaves like a four speed with two second gears; the high and low second gears mean that the old frustration of gearing four speeds for modern circuits is gone, the engine is always in its correct rev range to pull out of corners. Gear ratios are 2.616:1 first, 1.989:1 second, 1.671:1 third, 1.294:1 fourth and 1:1 in fifth. The KAD 5 speed race gearbox is available as a self assembly kit or built into a gear casing for the addition of your existing gear train components.



KAD Alloy Flywheel and Backplate



KAD's alloy flywheels and backplates are an essential fitment for any tuned engine. Most of the time, steel flywheels will friction weld themselves to the steel crank resulting in expensive damage to the crank taper, this is especially true with high revving engines. KAD's flywheel uses a replaceable dissimilar metal for the centre which avoids this problem. The flywheel and backplate are CNC machined from 2014A aluminium alloy which gives them the strength to handle big power whilst remaining light enough to allow fast engine acceleration. New for 2004, the flywheels and backplates use bolt in friction linings which allow user replacement if wear occurs. Both organic and sintered clutch plates can be used with orange or grey diaphragm clutch covers. The flywheel is supplied with ring gears to suit either later pre-engaged or early Bendix type starter motors. Weight: flywheel with ring gear 3.7kg, back plate 1.14kg



KAD keyed flywheel washer and flywheel bolt

High output engines can shear the keys off of the standard keyed flywheel washers, they are too soft and whilst fine for 60 horsepower, powerful 16 valve, 1460 and turbo engines need strength here. KAD make the washers and the flywheel bolts in heat treated EN24 steel, these do not fail under competition conditions.