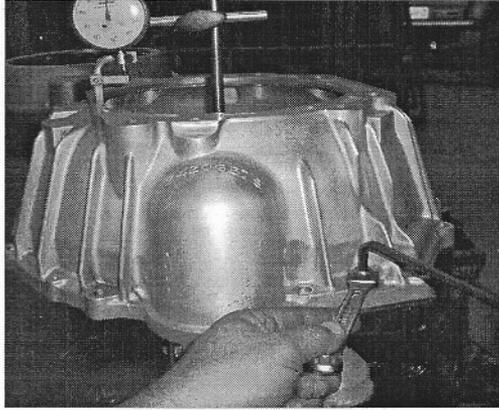


WILCAP COMPANY

ENGINE TO TRANSMISSION ALIGNMENT PINS



Importance of proper engine to transmission alignment

Balancing of the engines rotating components receives a lot of attention. In fact it's almost the standard operating procedure now to balance when building even a mild street motor. While that is as it should be, its rare to find anyone in the hobby who will go through the trouble of aligning the engine to the transmission. This is not due to being sloppy but rather to a lack of knowledge of the importance of the procedure and how it can dramatically affect the quality of the engine/transmission assembly.

Like balancing, aligning the engine to the transmission was primarily done in racing where they realized how important it is to the life of the rotating components and particularly to bearing life (engine main bearings and transmission input shaft bearings).

Why align? Depending on who you ask transmission to engine alignment should be within .008" to .005".

This may seem easy enough to meet with just the bolts but keep in mind that the bolt holes are typically drilled to a minimum of +.015" over the size of the bolt. Therefore the OEM's put "dowel" or alignment pins in the engine to transmission assembly to ensure alignment. Over the course of the life of an engine block and a transmission the location of the centerline of the crankshaft and the input shaft of the transmission may move during rebuilds and assembly to the point that the alignment is no longer within tolerance. Add to that the "stacking" of tolerances, aftermarket items, adapters, etc. and you can see that it becomes important to check alignment. While factory engine/transmission assemblies should be within tolerance, every one has at least one story of the mystery clutch/transmission/rear seal/vibration problem that couldn't be fixed. Don't assume that because it came like that from the factory that it's right.

Problems associated with misalignment of the engine to the transmission can range from a slight vibration at a certain RPM to dramatic and dangerous failures of rotating parts. Typical symptoms may be failure of the transmission input shaft bearing/seal, vibration, rear main bearing/seal failure, broken clutch hub, pulsing clutch pedal, throwout bearing failure, broken torque converter nose, cracked or broken flex plate, pilot bearing failure, front pump failure, cracked bellhousing, etc.

Checking and correcting: The easiest of the combinations is the manual transmission with separate bellhousing. Automatics can be checked with an empty transmission case. Wilcap manufactures a complete line of replacement alignment pins in addition to stepped pins, eccentric pins, oversized pins, and our new fully adjustable alignment pins that allow for correction of a misalignment of up to .040" with a single pin.

Adjustable Alignment Pins; Adjustable from .000" to .040". Available for all domestic applications. Kit includes 5 pages of instructions!

In addition to our adjustable Alignment Pin Kit, Wilcap Manufactures a full line of alignment pins. Made from the correct material for the job, these pins are CNC machined and centerless ground. Offset pins, special lengths and special sizes are no problem. Call us first for any alignment pin.