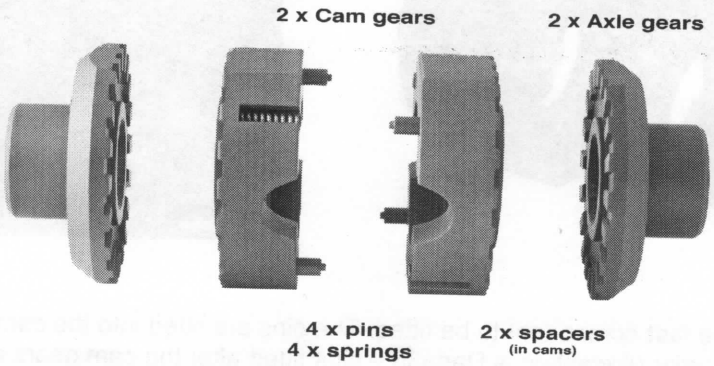
General Principles for fitting Lokka

The LOKKA design is by sight extremely simple - in fact so simple that many people cannot understand how it can operate so well. However this belies the sophistication of its Patented design and it is incumbent on the fitter to ascertain the correct procedure and follow best practices to obtain the highest standard of operation and longevity of the Lokka differential.

Tools
In addition to a general set of hand tools typical of the home mechanic, you will need a set of 'feeler gauges' to fit the Lokka.. Air or electric assist tools will make the process faster.

Lokka Components & their relationship:



Lokka fits into the factory hemisphere and replaces the factory planetary gears. The Lokka models that fit into the Toyota factory LSD hemispheres replace the planetary gears, the LSD plates, springs and washers. Some plates are retained in some applications.

The Fitting Guide provided with the Lokka kit is not intended as a comprehensive Instruction Procedure to remove & replace the factory differential centre. The appropriate Workshop Manual will have this detailed information, however a 'guide' is provided with some Lokka kits.

The carrier bearings are not replaced as a matter of standard procedure and the ring & pinion relationship will not have to be reset if the guide is followed.

The factory thrust washers must be in good condition – if you are unsure – replace them.
The Cross-shaft (in 2 pinion differentials) or Cross-spider (in 4 pinion versions) must be free of wear – 0.002" is unacceptable – this wear will be observed at the point where the factory sun gears rotate on the shaft.
If excessive wear is observed, replace the shaft with a genuine or equivalent to genuine quality shaft. Some Lokka kits are supplied with a replacement shaft.

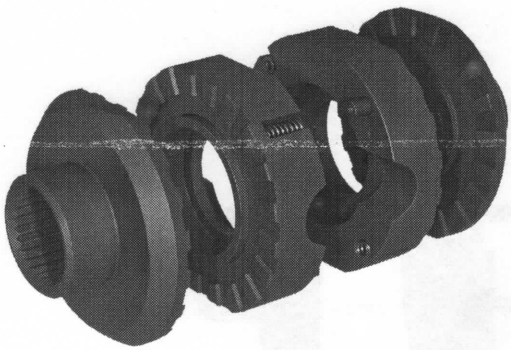
The **Spacer to Cross-shaft**/spider **Clearance** relates to the symmetry of the fitment. The greater the variation of this measurement from one side to the other, the greater the cam gears will be off-set to the shaft. Hence, the shaft will 'load' the closer cam gear sooner, and load the pair of cam gears unevenly during operation. It is recommended the greatest variation for the Spacer Clearance is 0.010".
Greater accuracy and similarity of these clearances will result in improved driving behaviour, particularly on hard surfaces.

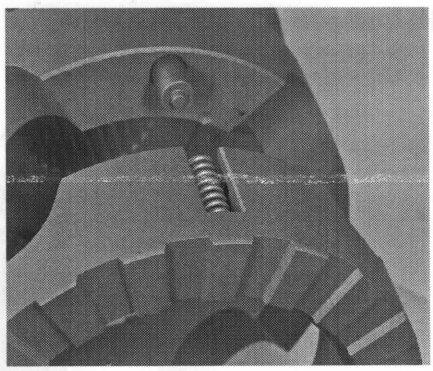
The **Inter-Cam Clearance** is the space between the 2 Cam gears and allows for the disengagement of the cams. This clearance has the greater effect on operation and must take precedence over the Spacer Clearance.
Both clearance types are varied by changing or machining of the thrust washers, not any Lokka component.

Example 1
If the spacer clearance is 0.010" on the LHS and 0.020 on the RHS, and the Inter-cam clearance is 0.160", then the fitter can fit an extra 0.010 thrust washer to the RHS (or replace the thrust washer with one that is 0.010" thicker on the RHS) which will balance the spacer clearances (to 0.010" each) and reduce the Inter-cam clearance to 0.150"

Example 2
If the spacer clearance is 0.010" on the LHS and 0.020" on the RHS, and the Inter-cam clearance is 0.135", then the fitter can reduce the RHS thrust washer by 0.010" (by replacement or machining) to balance the Spacer Clearance and increase the Inter-cam Clearance to 0.145".
Once the Spacer and Inter-cam Clearances are within specification, the fitment can proceed.

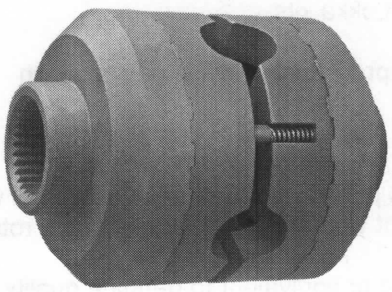
For 2 Pinion Differentials:

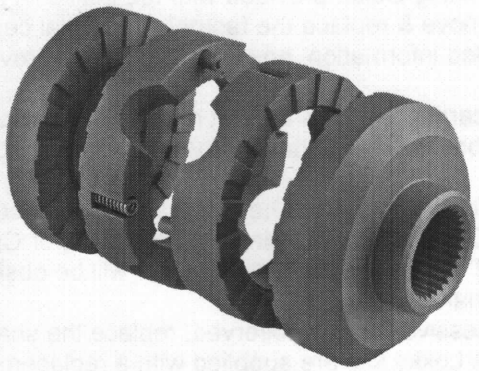




The springs are the **last** component to be fitted. The pins are fitted into the cam gears before they are installed into the carrier (Exception is Dana35 – pins fitted after the cam gears are in position), with the stepped end facing into the base of the slot, and the pins are pushed from this cam gear across the Inter-cam gap into the opposite cam gear (before the springs are fitted). This exposes the stepped end of the pins and the spring coil fits over the stepped end of the pin. The spring is pushed through the side of the slot. Finally, the other end of the spring resides in the retention recess at the bottom of the slot.

For 4 Pinion Differentials:





The springs simply sit in their final positions in the cam gears. The pins (already fitted into the cam gears) with the stepped end exposed, are positioned as the one cam gear is placed onto the second cam gear. The stepped end simply sits into the end coil of the spring and pushes harder onto the spring as the 2 carrier 'half' assemblies are bolted together.

Lubricants
During assembly, grease can be used as a 'glue' to hold components in place.
It is good practice to apply a 'thread retaining' product onto all carrier bearing retainer, ring gear and assembly bolts.
Use the OEM recommended differential oil, including LSD oil. Differential additives such as teflon or other synthetic treatments are also compatible with Lokka.