

SSTC-15 Fitment Guide

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OE Size Cast-O-Line Eccentric Bearing Fitment Procedure SSTC-15

Toyota 60/75 Series

The vehicle should firstly be analysed for tyre wear effects, road crown/castor pull condition etc. ensuring no "off-centre stabiliser" or "biasing" of a steer tyre is responsible. A test drive is often beneficial, as well as establishing that the problem has been consistent over a long period.

A set of alignment angles should be taken and recorded with particular thought given to the camber and castor readings. Take note of preferred geometry settings at end of instructions for comparison.

The correct rear axle alignment with respect to chassis centre line is also an important consideration (zero thrust angle) - no unequal wheelbase.

Most vehicles (including 4WD's) pull left due to some degree of "road crown pull". This critical aspect is rarely being addressed by the manufacturer (or some alignment shops for that matter). A spread of castor is required to offset this condition, ensuring a straight steering vehicle and elimination of tyre scrub due to variance of the steer wheels with the thrust angle (driver input).

Incidentally, we read of "castor" not being a tyre wearing angle, however the indirect effects of a castor pull is one of the worst forms of tyre scrub wear particularly in the radial tyre.

The "wavy" shoulder wear experienced on our 4WD "wide floatation" radial, with a prominent aggressive block tread is usually due to "camber" problem, where the tyre tread meets the crowned road surface at some angle of difference. The bigger the difference, the worse the shoulder wear. Too low pressure add to the concern.

These problems should not be confused with a "toe" indifference where a sharp edged "scrub" one way is felt. Of course it is not unusual to find all 3 conditions evident which, when rectified, provides dramatic improvements to tyre life, vehicle handling and owner satisfaction.

Getting on with the job

If the "eccentric bearing ring" is to be fitted, it is more probable that both a camber and castor change will apply so select the side of axle where the changes will rectify the overall misalignment (i.e. generally cast-o-line process is done one side only - attempt to arrive at the preferred settings in this manner). More than ever the left side is mostly chosen due to excess camber. Here castor can generally be corrected to suit the right side untouched spec.

The cast-o-line should not be used to correct a sagged or bent housing. In doing so the CV joint to housing line up is not fixed.

The principal of any efficient and mechanically competent fitment and the end result lies in the simplicity of the process and skills of the technician.

Minimum disassembly of componentry is required. The "knuckle" assembly is almost removed in one piece. Brake calliper etc. remains undisturbed.

Procedure (Work Safely)

1. Chock wheels, jack up and remove wheel. Disconnect tie rod end.
2. Clamp brake hose (supply) and disconnect at fitment
3. Disconnect the axle "ball end" seal/wiper assembly at inner end of the knuckle. Slip out of way along axle tube.
4. Remove the outer end of free wheel hub and then remove the axle retaining "circlip".
5. Remove the next section of free wheel hub containing female splined axle drive gear. (This makes it simpler when refitting the knuckle assembly). Late Nissan 99 on and some Toyota models require further disassembly to remove "backing plate" which allows access to lower knuckle cap.
6. Remove top, then bottom knuckle bearing cap/arm, then supporting the "assembly" with knee/thigh whilst leaning upper body over top within wheel well, withdraw the unit without any further disassembly and place on workshop floor. Carry out any exterior cleaning.
7. Remove the axle/CV joint "assembly" placing on a clean cloth. Leave the grease undisturbed. High klm extreme use vehicles may have CV joint wear worth noting at this time.
8. Clean area around top and bottom bearing rings which are now exposed within the axle "ball end". Tap out the bearing rings (cones). Clean excess grease from the ball end void. Look in the tube, any excess diff oil will surely give rise to a comeback of "seal leakage" in the short term. Drain excess oil.
Fitting the patented eccentric bearing rings
 1. Select the cast-o-line eccentric "bearing ring" for model and desired change of camber/castor required.
 2. "Place" the rings as per clock face table supplied, using a marker pen to establish the index mark position. Slightly tap in bearing to maintain access to index mark flat.
 3. N.B. The bottom ring is a 1800 "roll over" of the top ring. Position of bottom ring can be checked by parallelism of 3 rulers placed on ring index flats, or refer to "Dial in card".
 4. Fitment of the rings is a very important aspect of the process to ensure professional results. Seat "ring" after careful line up in recess using a mild steel flat plate.
 5. At this time prepare the bearing caps (arm) for later fitment by:

Nissan product. "Pull" off original bearing and discard. Fit the new bearing supplied to seat fully.
Pack new bearings with grease as per automotive practice.
Reassembly of Components

1. Replace the axle in housing. Note: On Toyota product and some other brands its wise to install a new inner housing to axle shaft seal at this time. Centralise to mate the internal spline. On some models the CV joint has 2 flats on outer case,

which have to be uppermost and lowermost to enter the ball end in way of bearing area.

2. Now re-position the "knuckle assembly" in place, supporting the weight with the thigh. Locate the top cap (or arm) with shims and new bearing attached into the top knuckle recess. Bolt up loosely.

3. Locate and tighten the lower bearing cap with original shims and new bearing attached. Feel for correct alignment of components (don't force).

4. Tighten the upper bearing cap (or arm) nuts and check for some preload, yet freeness of rotation of the knuckle. (The cast-o-line process has been engineered to maintain original preload) If preload incorrect adjust with shims. If too tight add shims or if too loose remove shims until an approx. 6kg pull of a spring balance is evident.

5. Remainder of re-assembly involves replacement of axle ball wiper seal unit, free wheeling hub componentry tie rod end, brake hose (bleed calliper), refit wheel etc.

Wheel Alignment Adjustments

Carry out final wheel alignment and set "toe"

Preferred settings + or - 1/40

Camber Left: 1/40 neg Right: 1/20 plus

or minus 1/40

Castor More positive on left side 1/20 to 3/40 to offset road crown pull.

Toe Toyota 1mm out

Nissan 2mm out

Other 1-2mm out