

## Upper Suspension Balljoints in early Ford Falcons and Fairlanes

### Ford Falcon balljoint problem discovered:

A Low Volume Vehicle Certifier has discovered a serious problem with aftermarket upper balljoints fitted to front suspensions in Ford Falcons and Fairlanes.

Two types of upper balljoints are fitted:

- The earlier type has 4 attachment bolts, and fits:
  - (i) 1962-65 Fairlane (Compact)
  - (ii) 1964-72 Falcon XM, XP, XR, XT, XW, XY
  - (iii) 1966-72 Fairlane ZA, ZB, ZC, ZD
- The later type has 3 attachment bolts and fits:
  - (i) 1972-88 Falcon XA, XB, XC, XD, XE, XF
  - (ii) 1972-88 Fairlane ZF, ZG, ZH, LTD, ZJ, ZK, ZL

The same problem applies to both types. Some of the aftermarket balljoints do not allow the shaft to have enough angular movement, and the limit of movement is reached before the suspension arm contacts the upper bump-stop. When a vehicle's front wheel hits a bump or a kerb, the suspension travel should be limited by the bump-stop before overloading of any suspension components. The result of movement past the maximum that the balljoint can handle is to cause extreme loading of the balljoint shaft, with a risk of breakage and loss of vehicle control.

The cause of the insufficient angular movement is due to a different method of construction from the Original Equipment (OE) manufacturer (Ford).

### Photographs of examples:



Two of the 4-bolt units are compared, at maximum angularity. The OE version (still with rivets attached) is on the left. The right hand unit is brand 'WJ Automotive'.

The result of the balljoint having insufficient angular movement is that the suspension cannot reach the upper bump-stop without the balljoint components traveling beyond their design limits.



This photo of a 3-bolt 'WJ Automotive' balljoint shows the balljoint having reached its limit of angular movement with about 25mm of suspension travel still remaining before the bump-stop would be reached.

When the balljoint 'binds' like this but is forced to travel further, very high loadings occur. The following photo shows the result, as the edge of the balljoint housing causes damage to the shaft while trying to break it.



The deep groove in the 'Camelot' brand balljoint shaft has been caused by the high loads.



This picture of an XY Falcon with the 4-bolt 'WJ Automotive' balljoint is at the limit of suspension travel due to the balljoint reaching its maximum angular movement. About 25 mm more suspension travel is required to contact the bump-stop.

## Summary of different balljoint brands assessed:

The following table identifies some balljoints that LVVTA believes should be withdrawn from the market by the importers. LTNZ have been advised regarding this issue. There may also be other brands being imported that are not fit for their purpose.

Brand (Supplier)		4-bolt (early model)	3-bolt (late model)
Ford OE (no longer available)	√	OK	OK
Quinton Hazell QH (Ford)	√	OK, has about 2mm shaft clearance when contacting bumpstop	OK, has about 2mm shaft clearance when contacting bumpstop
CTR (Titan Auto Parts)	√	Similar or better than QH	Similar or better than QH
WJ Automotive (AutoStop)	X	Binds while 25mm suspension travel remains before bumpstop is reached	Binds while 25mm suspension travel remains before bumpstop is reached
Silverline (RepcO)	X	Binds while 25mm suspension travel remains before bumpstop is reached	Binds while 25mm suspension travel remains before bumpstop is reached
'Camelot' (George Stock & Co) marked 'TRANS'	X	Binds while 25mm suspension travel remains before bumpstop is reached	Binds while 25mm suspension travel remains before bumpstop is reached
555 (Titan Auto Parts)		Example not found	Example not found

The three aftermarket units currently known to have insufficient angular movement are:

- WJ Automotive (from AutoStop) packaging marked 'Made in Taiwan'
- Silverline (from Repco)
- 'Camelot' brand marked TRANS on the casting (from George Stock & Co), manufactured by Transteering Industry Co Ltd, Taiwan.

Of the two other currently known brands:

- CTR (from Titan Auto Parts) has slightly less angular movement than the original OE balljoint, but is similar to the QH brand and would appear to be fit for its purpose.
- 555 – made in Japan (from Titan Auto Parts and Papakura Automotive Parts) is mainly supplied for Japanese cars, and a Ford replacement part has not so far been found.

## **Actions requested of LVV Certifiers**

LVV Certifiers that are certifying Ford Falcons or Fairlanes for any reason need to check the balljoints to identify the brand and condition. The proper means of assessing whether or not the balljoint is safe is by removal of the springs, and moving the suspension throughout its complete range of travel between the rubber bump stops, checking that the bumpstops are reached before the balljoint binds against its housing. Obviously this takes time, and you should alert any potential owner that this situation may exist, and offer them the opportunity to have you carry out the inspection for them, at an additional charge for your time.

It's also possible that this problem may not be limited to Ford Falcons and Fairlanes.

If you find other examples, have any queries, or require any further clarification relating to this Information Sheet, please feel to contact the technical team at the LVVTA office of (04) 238-4343.