# Koyo® Solution Stories

## STEERING PIN SOLUTION

### The Challenge:

A large Tier 1 Automotive customer was developing a new steering column for pickup trucks and SUVS. The new design incorporated a double-cardan constant velocity joint able to transmit turning torque at a tight angle to the rack. The design was proved feasible, but assembling two of the bearing pins was a challenge. The pins did not stay positioned long enough for the drawn cup bearings that would complete the assembly to be installed.

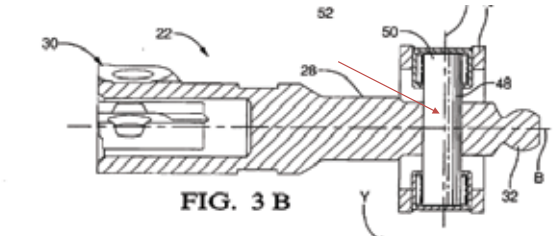


FIG. 3 B

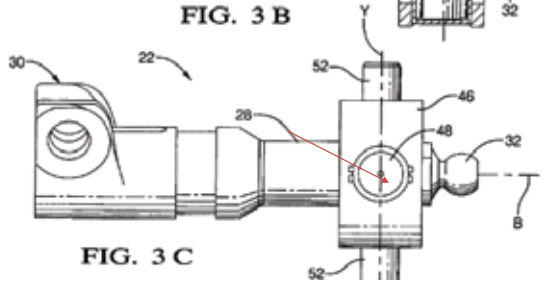
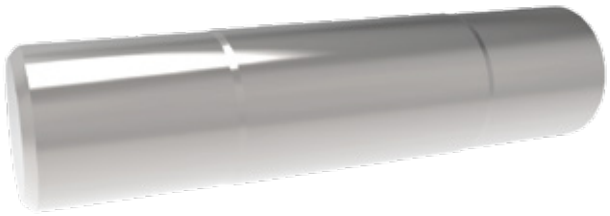


FIG. 3 C

**BEFORE**



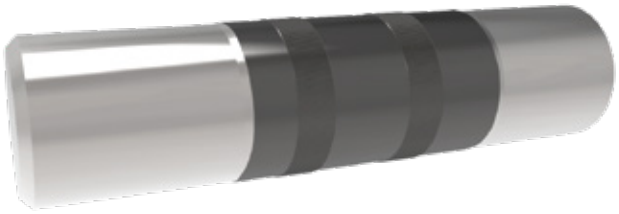
### Analysis:

Koyo Bearings had previously been selected to provide the bearing pins, so the customer called on our technical expertise to propose solutions to solve the assembly challenge. Koyo engineers recommended a minimum interference fit to solve the problem.

### Koyo's Solution:

With our inhouse knurling capability the retention issue could be solved without a complete redesign or adding material for a press fit. A double row of knurls was suggested – allowing a minimum of raised material and preventing a potential orientation issue.

**AFTER**



### Result:

The Koyo designed knurl pattern provided sufficient retention to solve the positioning issue without requiring any changes to the customer's assembly equipment.

Combined with Koyo's machining, carburizing, and infeed grind capability, the customer was provided a ready-to-assemble part.

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