

# 1989 - 1996 Corvette: Differences between First and Second Generation ZF 6-Speed Transmissions

From ZF regarding ZF transmission noise and differences between the ZF used in early and late ZR-1s - July 12, 2000:

"All S6-40 transmissions installed in the C4 Corvette contain 100% helical gears. In fact, all of the gearboxes ZF produces for passenger car applications contain helical gears, the primary purpose of which is to increase gear contact ratio and thereby minimize gear noise."

"There is one major difference between the model year (1989 - 1992) and (1993 - 1996) C4 Corvettes - the contact ratio for the later years was further increased in order to reduce the gear noise. There, however, was a very slight reduction in torque capacity of the gearbox (from 610 Nm to 540 Nm) when ZF increased the gear contact ration in the later year transmissions."

"The noise you hear in 1st gear is commonly termed "1st gear growl". This noise is inherent to the design of the 610 Nm gearbox and in no way is detrimental to the reliable function of the transmission and your ZR-1. With the increased gear contact ration in the 540 Nm gearbox, ZF also was able to reduce the "1st gear growl"."

In 1993, the part number for the ZF changed from 10186865 to 10255122. In the second generation ZF, the gear ratios stayed the same, but there was an increase in helical pitch of all the drive gear teeth which helped to reduce the whine. The 2nd, 3rd, 5th and 6th speed gears also went to a crimped spline-fit method of fastening the synchronizer clutch body to these speed gears.

Online URL:

<https://www.corvetteactioncenter.com/tech/knowledgebase/article/1989-1996-corvette-differences-between-first-and-second-generation-zf-6-speed-transmissions-605.html>