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# Is 22 ALWAYS Better Than 21?

**READER'S QUESTION:** I HAVE A 1966 L-72 (427/425HP) COUPE WITH AN M-21 CLOSE-RATIO FOUR-SPEED AND A 4.11 AXLE. I'M CONSIDERING SWAPPING OUT THE M-21 FOR AN M-22 "ROCK CRUSHER," AND SEE THEM ADVERTISED OCCASIONALLY ONLINE AND IN THE "TRADER" MAGAZINES. WHAT ARE THE KEY DIFFERENCES BETWEEN THE M-21 AND M-22, HOW CAN I TELL THEM APART EXTERNALLY, AND WOULD THE SWAP BE WORTH THE PREMIUM PRICE THE M-22'S SEEM TO BRING?

**RESPONSE:** There are four unique differences between 1966-1970 M-20/M-21 and M-22 transmissions used in Corvettes. The M-22 gears are made from a stronger steel alloy. The helix angle of the M-22 gear teeth is much shallower (about 20 degrees) than the angle of the M-20/21 gear teeth (about 40 degrees); this reduced the thrust loads on the case. Also, M-22 main cases incorporated a drain plug; all Muncies got a drain plug beginning in 1970. There were no identifying grooves in the input splines on an

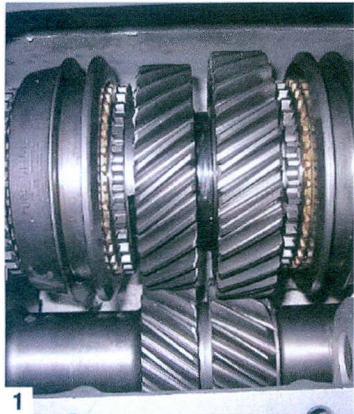
M-22; M-20 input splines had two grooves, and the M-21 had one.

In terms of external identification, an untouched original M-22 would have no grooves in the input shaft splines and would have a drain plug, but the presence of a drain plug isn't a reliable indicator as many M-20/21 cases have been drilled and tapped for drain plugs during rebuild as a convenience—the casting boss for the plug was present in all Muncie cases. Many aftermarket replacement M-20 and M-21 input shafts also have no grooves, so that's

not a reliable indicator either.

The only true test to identify an M-22 is to remove the sidecover and observe the helix angle of the gear teeth; the difference is very obvious, as shown in the photos. Very few M-22s were factory-installed in Corvettes—only about 216 total from 1966 through 1969, although many times that number have been created by rebuilders. Auto Gear now produces a retooled stronger case and very high-quality gearsets are produced by an Italian firm.

Whether the swap to an M-22 is worth the premium dollars is a matter of personal preference. The ratios are the same as the M-21, the gears are slightly stronger, and you'll have to learn to live with the distinctive rock-crusher howl and gear whine in 1st, 2nd, and 3rd gears. Your call! ■



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1 The typical 40-degree helix angle of the teeth in an M-20 or M-21 gearset.



2

2 The M-22 gearset with its distinctive 20-degree helix angle on the teeth.



3

3 An M-22 case with the drain plug in the boss at the bottom; many M-20/21 cases have had this feature added during rebuilds.