# XMAS SHOPPER'S ISSUE

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# Bullet-Proofing The Turbo 350

*John Saltsman, craftsman and transmission expert, carefully prepares our Turbo 350 for assembly with all of the good Advanced Racing Transmission parts. Production is limited by choice at Advanced, so each transmission sold is given the utmost care and attention to quality.*

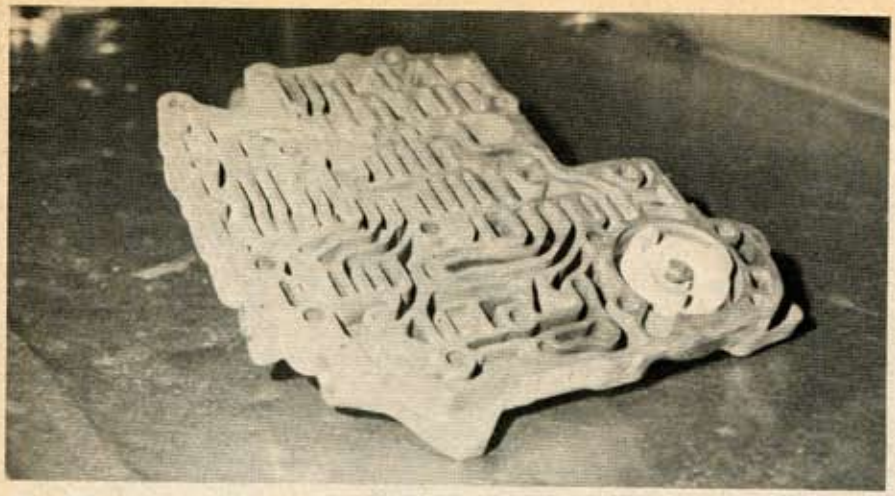
## Why search for a 400 when the 350 will do the job?

Story & photos by Phil Carpenter

Chevrolet, along with most other GM companies, has just about phased out the Turbo 400 automatic transmission, evidently due to production cost versus customer interest. In other words, if the customers don't care or don't know enough about transmissions to insist on the heavier-but-beefier 400, then why spend the extra money to build them? The 350 is a serviceable transmission that usually lasts fairly well under normal driving conditions and saves a few valuable pounds that aid the manufacturer in his ongoing battle to meet federal EPA mileage standards. While the 400 has been available as an option in the past on heavy service vehicles, the 350 is the king in production numbers and is likely to be the one you'll get in almost any late-model new or used Chevy you purchase. Therefore, we will show you what can be done to the 350 to make it suitable for abuse up to and including 650-horsepower 454 engine applications.

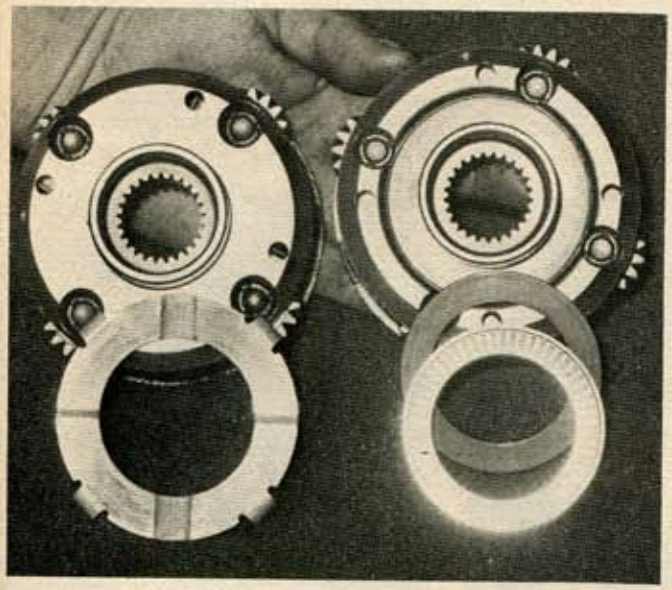
We have worked with Jim Galatioto of Advanced Racing Transmissions, 1156 West Holt in Ontario, California for several years. One of the main reasons is that Jim specializes in 350s and TorqueFlites. Another reason is that he purposely keeps his output of transmissions rather small, preferring personal quality control over each unit rather than mass-production of units that may not be up to his exacting standards. We have used several of his units in race cars and off-road machines and found them to perform flawlessly, year after year.

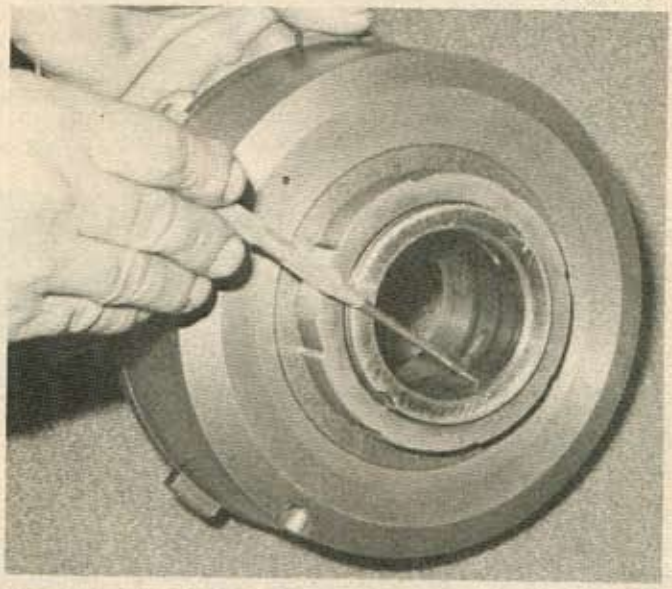
There is no real secret to making the 350 live under extreme stress. Rather, it is a matter of attention to inherent weak spots and close tolerances for the parts that make up what Jim refers to as the "Bulldog 350." The Teflon bushings used in late-model transmissions tend to wear more quickly and allow sloppier tolerances, for one example, and Jim replaces them with his own special metal bushings. In fact, he not only replaces them, but adds extra bushings that are wider, increasing the support area by 65 percent on areas such as the stator support. The ring land area is machined for the new bushings, which eliminate the tendency of the shaft to wobble and in-



We opted for the manual/automatic valve body, which allows downshifting under compression and full control of shift points with the gear lever, yet works normally in Drive when in traffic.

The inner bushing support is a weak area that can eventually begin to wobble and cause extreme wear. Advanced replaces the stock unit with wider bushings on each side, more than doubling the support area and reducing clearances.





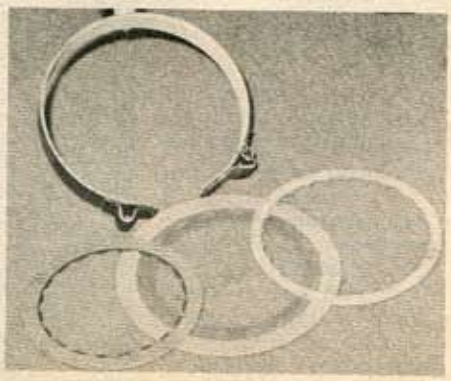
The difference between the stock thrust washer at left and Advanced Racing's new replacement roller-bearing unit at right is phenomenal. Friction and power loss are reduced to almost nothing.

crease wear and friction. The clutch-drum inner bushing support also has wider bushings installed on each side, as does the direct clutch drum. This helps prevent ring seize, which has ruined many transmissions by causing a drop in line pressure.

Other areas that receive Jim's expert attention include the front planetary assembly, which normally has a babbitt thrust washer that causes heat and power loss from friction, not to mention rapid wearing. A new roller-bearing thrust washer does away with the problem and makes the unit almost frictionless, which increases longevity as well as usable horsepower. The second gear sprag is slotted to increase and control the direction of the oil flow, and the outer race is replaced with a new and stronger one. The roller clutch elements are also upgraded, and the clutch plates for the direct clutch and intermediate clutch discs and bands have improved material specially manufactured for Jim that provides longer life and durability.

The sprag in second gear is slotted to increase and control direction of oil flow. In addition, the outer race is replaced along with the roller clutch element with heavier-duty units.

To increase longevity and durability, Advanced has its own clutch plates, intermediate clutch discs and bands made up of superior material.



Efficiency is the name of the game in updating the 350 for longevity and hard usage, so the clutch drum receives extra oiling holes to aid in cooling and lubrication, as do the input and output shafts, which also have new oil-lite bushings that reduce clearances and increase oil pressure. Apply pressure is also increased by modifiying the oil circuits and seal system of the clutch drums to give firmer shifting and do away with

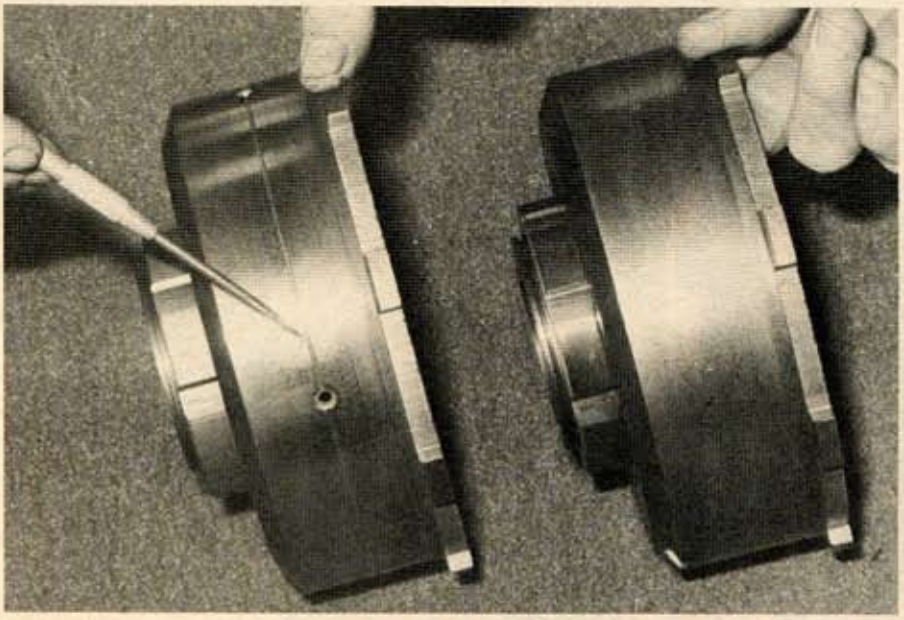
# Bullet-proofing The Turbo 350

slop and slippage.

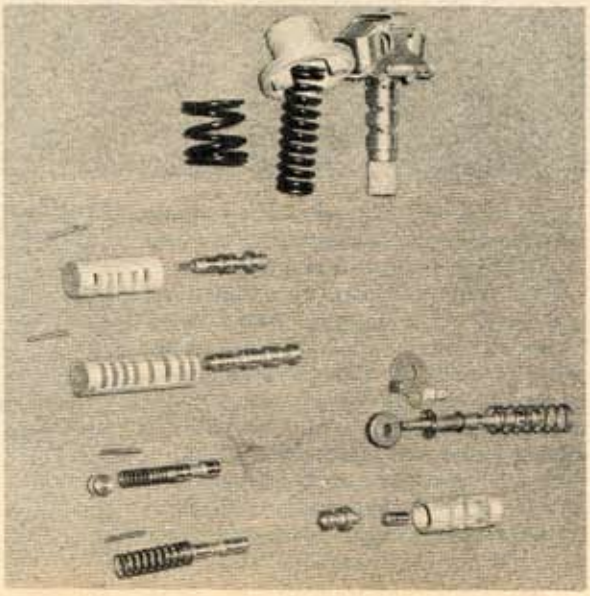
The valve body receives some modification as well, and you can opt for manual control if you desire. We have a unit that gives both manual and automatic control, which is very nice for occasional downshifts to use the engine compression to aid braking power or controlling rpm under hard runs. The shifts are firm and crisp, but under normal driving you don't feel your neck snapping.

Aside from the fact that most of us are stuck with the 350 when we purchase an automatic car from Chevrolet, there are other reasons for reworking this transmission rather than trying to find a 400 to replace it. For one thing, as we mentioned, you save about 35 pounds with the 350, which as you know is a big hunk of weight in a performance car. Another advantage of the 350 is the gear ratio, with a 2.52 first gear as opposed to a 2.50 in the 400, and a second gear ratio of 1.52 rather than a 1.50. This gives you a wider choice of rear gearing and obviously takes less power to launch off the line. The 350 also bolts right up to either the big- or small-block engine and has several different output shafts and housings that interchange, giving you a lot of flexibility in swapping your running gear around. For example, older Chevys with Powerglides can receive a 350 with almost no hassle, updating the car tremendously.

The extra feature that Advanced Racing Transmissions offers, aside from the complete transmission or the manual valve-body assemblies, is the special converters. We chose one of Jim's 3000-stall-speed converters, which will give a terrific launch off the line yet still run efficiently in traffic. The variety of converters available for racing, off-road or stock performance in a street machine is large, and the price is right. ●



*Even the clutch drums receive attention with additional oiling holes. The increased flow aids in cooling, and apply pressure is increased for firmer shifting by modifying the oil circuit and seal system.*



*You wouldn't need most of these parts if you chose a full-manual valve body, but we opted for the manual/automatic body, which allows normal operation in Drive but full control with manual. These items—springs, governor and pistons with related parts—are all changed for increased efficiency.*

*About 65 percent better support to the stator hub is achieved by special machining of the ring land area for two improved bushings. New oil holes are also added.*

*The wider bushing added to the direct clutch drum by Advanced gives the sealing rings and lands increased longevity and also prevents the drum from acquiring a wobble from wear. Some 350s have been known to suffer ring seizure, causing line pressure to drop and the ultimate loss of the transmission.*