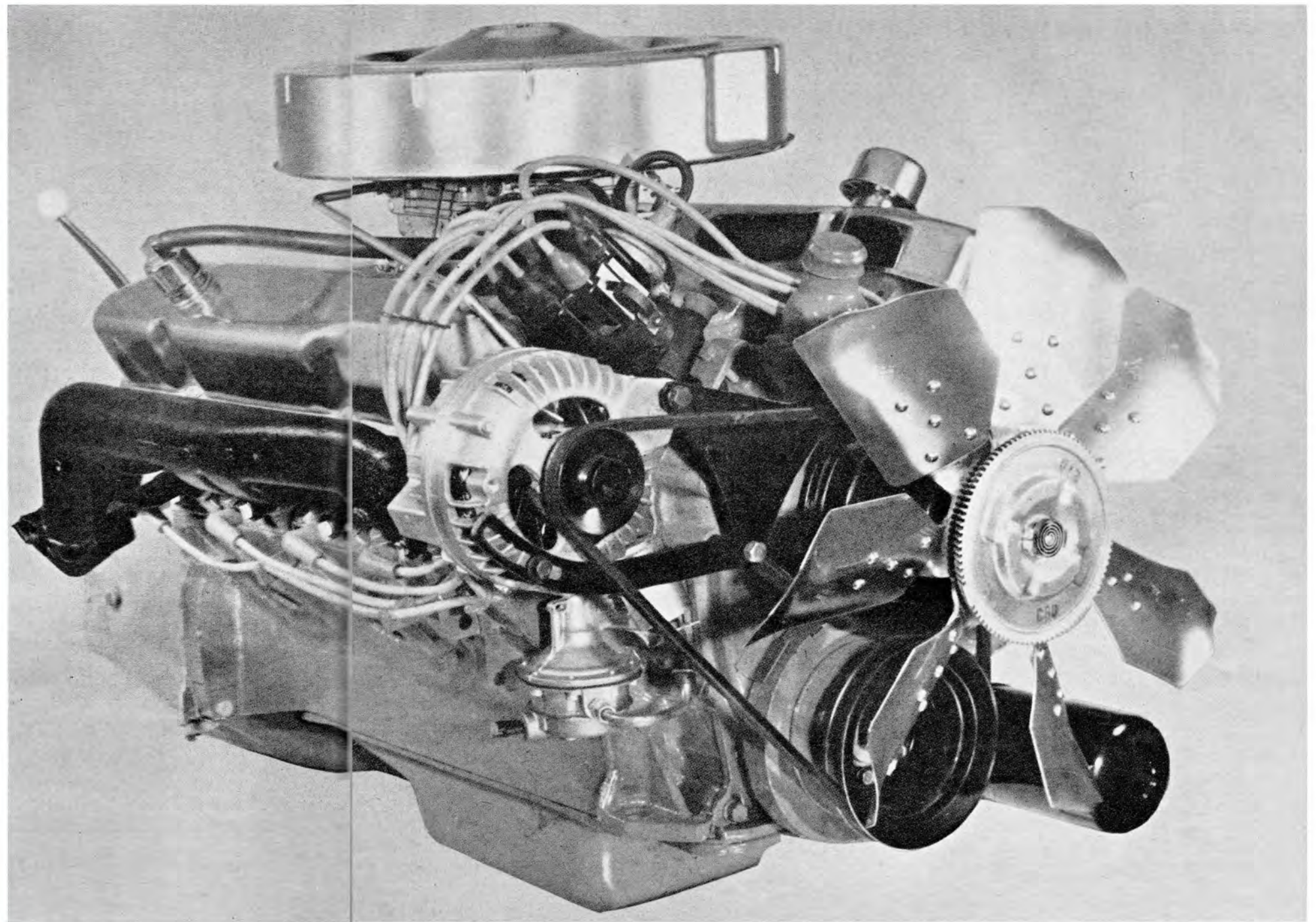


engineering the '64 Chrysler products

A REALLY BIG NEW ENGINE & A TRANSMISSION TO MATCH

BY DENNIS SHATTUCK



HUSKY NEW engine for '64 is the 426 street variation. It will be optional in Dodge, Plymouth, Chrysler 300.

DODGE NEWS PHOTOS

TWO OF THE MOST interesting features in the 1964 model line-up from the Chrysler Corporation won't be standard equipment—rather, they will be offered as options in all three major lines: Chrysler, Dodge and Plymouth.

The new options, of course, are a new 426-cu. in. V-8 "street" engine and Chrysler's own robust, 4-speed, all-synchromesh, floor-shift transmission. The 426 is a progressive development from the highly successful 426-cu. in. racing V-8, which currently dominates the nation's drag strips. The transmission, obviously designed

for service with today's, and tomorrow's, heavy-duty/racing engines, is the first U.S.-produced 4-speed since Chevrolet moved reverse gear into the tailshaft housing to modify a 3-speed Borg-Warner gearbox into a 4-speed suitable for the Corvette in 1957.

These two new items should greatly enhance the Chrysler Corporation's burgeoning performance image in '64—while a host of detail improvements will back it up with even better durability and reliability. Although styling changes in general have been quite modest for '64, mechanical progress should offer plenty of sales promo-

tion potential for the dealer.

The 5-year warranty on drive-train components has already had a remarkable effect on Chrysler automotive products. The engineering goal seems to be complete elimination of all service problems or warranty claims, and many of the mechanical changes in the '64 line reflect this desire. Improvements in electrical/ignition reliability, easier starting, protection from splashing water, transmission durability, better performance, easier operation, quieter and more comfortable riding qualities are not startling in themselves alone, but when totted up in the com-

plete automobile make a pretty convincing argument that Chrysler has the cards to back up its 5-year bet.

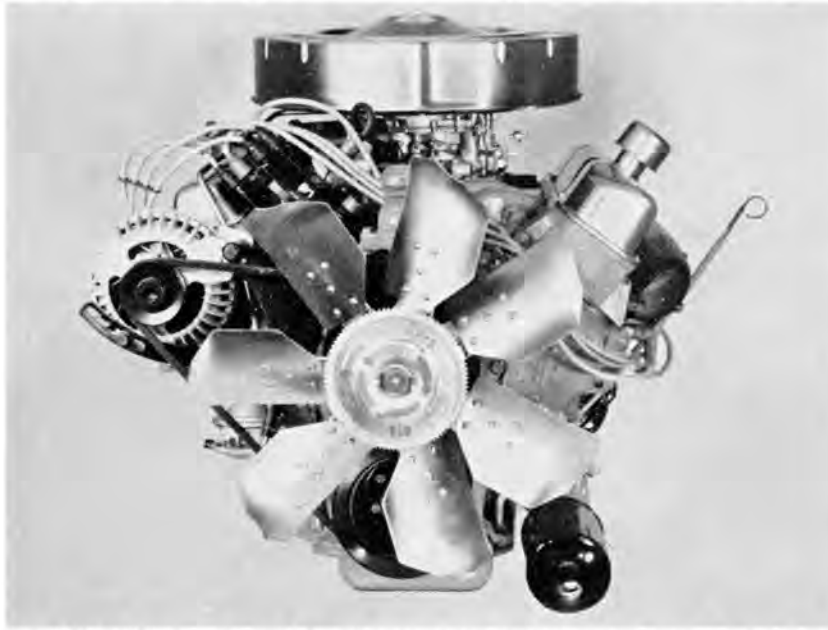
Some improvement in handling has been achieved for the Dodge and Plymouth series by widening the rear track 2.1 in. and by lengthening the rear springs 1 in. This will give the Dodge a track/wheelbase relationship of 50%, the Plymouth 51.3%, which should manifest itself in quicker response to steering, slightly improved stability and, according to the stylists, a better appearance. The widening was accomplished with a completely new rear axle housing and shafts.

TABLE A—CHRYSLER ENGINES FOR '64

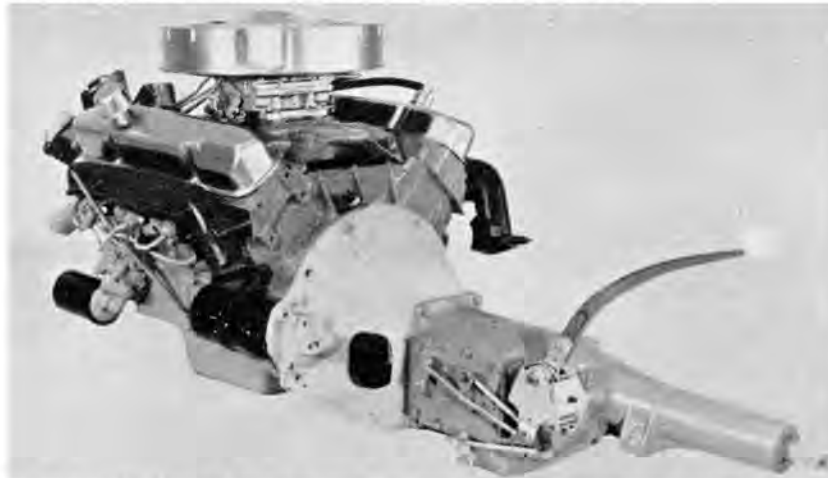
| Cu. in. | Cyl. | Carb. | Valve Comp. system | Bhp/rpm | Torque/rpm | Use |
|---------|------|-------|--------------------|----------|------------|---|
| 170 | IL-6 | 1x1 | 8.5 mech. | 101/4400 | 155/2400 | std. Valiant, Dart |
| 225 | IL-6 | 1x1 | 8.4 mech. | 145/4000 | 215/2400 | std. Dodge, Plymouth; opt. Valiant, Dart |
| 318 | V-8 | 1x2 | 9.0 hydr. | 230/4400 | 340/2400 | opt. Dodge, Plymouth |
| 361 | V-8 | 1x2 | 9.0 hydr. | 265/4400 | 380/2400 | std. Newport, & 880; opt. Dodge, Plymouth |
| 383 | V-8 | 1x2 | 10.0 hydr. | 305/4600 | 410/2400 | opt. Dodge, Plymouth, Chrysler, std. 300 |
| 383 | V-8 | 1x4 | 10.0 hydr. | 330/4600 | 425/2800 | opt. Dodge, Plymouth |
| 413 | V-8 | 1x4 | 10.1 hydr. | 340/4600 | 470/2800 | std. Imperial, New Yorker, 300-K; opt. Chrysler 300 |
| 413 | V-8 | 2x4R | 10.1 mech. | 390/4800 | 485/3600 | opt. 300-K |
| 426 | V-8 | 1x4 | 10.3 hydr. | 365/4800 | 475/3200 | opt. Dodge, Plymouth, Chrysler |
| 426 | V-8 | 2x4 | 11.0 mech. | 415/5600 | 470/4400 | opt. Dodge, Plymouth |
| 426 | V-8 | 2x4 | 13.5 mech. | 425/5600 | 480/4400 | opt. Dodge, Plymouth |

R—ram induction system.

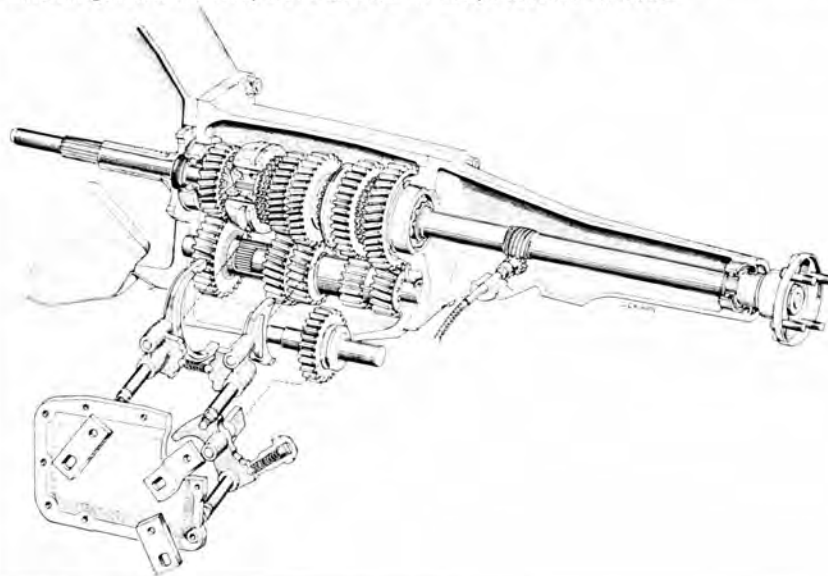
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426 STREET V-8 has 7-bladed fan with viscous-drive hub, chromed covers on air cleaner and heads. Single 4-barrel and 10.3:1 compression produce 365 bhp.



NEW 4-SPEED transmission is optional for most Chrysler products, is strong enough for even Ramcharger and Super Stock use. All four forward gears are synchronized. Two different gearsets are used, with a 2.66 low for V-8s, a 3.09 low for Sixes.



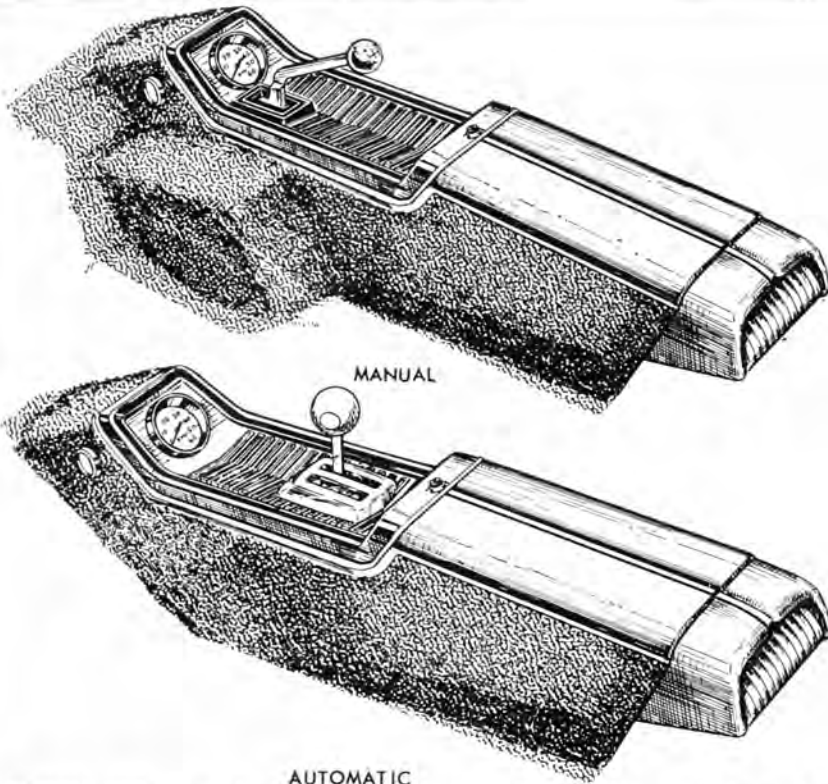
These changes in the rear suspension of the high performance models have improved their directional control under wide-open throttle conditions. These heavy-duty taxi-export versions carry a ride rate of 140 lb.-in. at the rear wheel and 125 lb.-in. at the front. The normal Dodge and Plymouth V-8 have 100 lb.-in. in front, 110 at the rear. This HD suspension also will be available on the Chrysler 300 line, and in the 300-K, which for '64 has lost its "stiffer-but-better" springing in favor of the softer, more salable ride rates.

With the exception of the 426 "Street Version," there's little change in the Chrysler engine line-up for 1964 (see Table A, page 11). Note that the 361 and 383-cu. in. engines are still offered, along with two 413s—a standard one for use in the Chrysler 300-K, New Yorker and Imperial, and the ram-inducted version for the 300-K option. The two 426 racing engines are unchanged since modifications announced in June 1963. The only new engine is the 365-bhp 426-in. variation, which replaces several other 413 options and will be available in every line but the Valiant, Dart and Imperial.

Utilizing the same block, crankshaft, connecting rods, pumps and accessories as does the 426-Racing engine, the 426-S (for Street) necessarily has differences in manifolding, cylinder heads, camshaft timing and carburetion. It does use the same slipper-type steel-strut aluminum pistons and the compression ratio is 10.3:1. The tri-metal, heavy-duty connecting rod bearings from the 426-R are also used, but with less than racing clearance for somewhat quieter operation.

A single, 4-barrel Carter AFB with 1.438-in. primary and 1.563-in. secondary barrels is used on the 426-S, where the racing versions use either dual AFBs or a monstrous, single Holley 4-barrel with $1\frac{1}{16}$ -in. throats. Intake valve duration is 268° , where the 426-R now uses 308° camshafts. Intake valve size is 1.64 in. The 426-S does have extra-strength valve springs and dampers to permit operation at somewhat higher than normal rpm and should prove to be an excellent higher performance option. It develops virtually as much torque as the 13.5:1 CR 426, at 1200 fewer rpm, and the horsepower peak, albeit 60 less, at 800 less rpm, is somewhat more domesticated. No special care is needed to drive the 426-S, while the hottest 426-R has to be limited to 15-sec. bursts at full throttle.

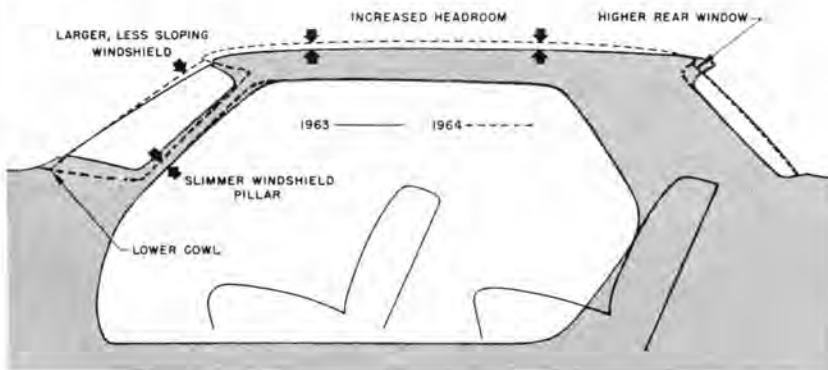
Although not nearly as dramatic as the 426-S, the other Chrysler, Dodge and Plymouth engines have come in for a bit of improvement for '64. A slight increase in the compression ratio



CONSOLE SHIFT levers for both automatic and manual transmissions will be used in Dodge Polara 500 models. Tachometer is optional, and unfortunately placed.



REMOTE CONTROL mirror mounts on driver's door, is controlled by a lever on the inside panel. Both horizontal and vertical movement are controlled mechanically. Diagram below shows how headroom is increased by tilting windshield slightly forward.



of the two 6-cyl. units, the 170 and 225-cu. in. Slant Sixes, has given them just a bit more efficiency, although the bhp ratings are not increased. Interestingly enough, the boost was accomplished by slightly reducing the height of the block; the same cylinder head fits both engines. The former ratio was 8.2:1, the new ratios 8.5 (170) and 8.4 (225). Tighter fitting spark plug cables and covers, an improved automatic choke control and better crank-case ventilation systems have also been added to the Sixes.

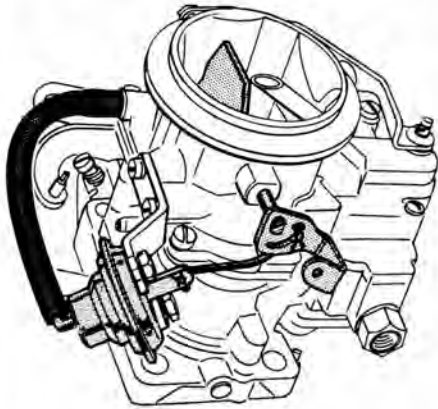
The viscous fan drive introduced by Eaton Manufacturing Co. has been added to the 383, 413 and 426 series engines, to reduce fan noise at high speed, improve fuel economy and provide better engine temperature control. A temperature-sensing device built into the viscous drive housing at the hub of the fan controls its action. When air entering the engine compartment is below 150°, the fan barely turns; but when the air reaches 150–165°, more viscous fluid is admitted to the drive chamber, thus causing the fan to turn faster. At turnpike speeds, for instance, where fan-induced air-flow is hardly needed, the viscous fan uses only a third as much power as a conventional fan.

Detail improvements have been carried out all along the drive-train, as we have pointed out. Transmission engineers are extremely proud of the fact that they have "thrown away" the drain plug for the TorqueFlite 3-speed automatics. Their continued emphasis on product quality has made it possible to completely eliminate oil changes and to extend adjustment intervals on the automatics. A new internal filter has eliminated several possible leak points; increased diameter of the input shaft at the undercut virtually doubles shaft life; double-shear lock pins installed in the pinion shaft improve endurance; induction hardening of the impeller hub in the torque converter protects the bearing surface against undue wear. The goal, of course, is a minimum of five years, or 50,000 miles, of trouble-free service.

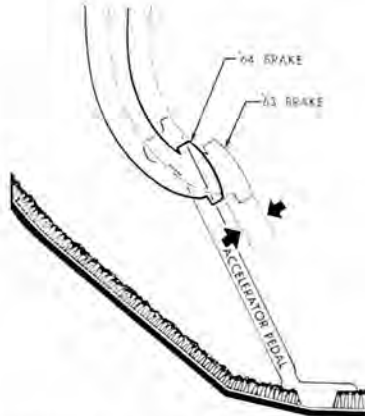
Manual transmissions have also been up-dated with minor-but-important changes. Stainless steel synchronizer springs replace the bronze type formerly used—because the steel retains its resiliency far longer. The 6-cyl. transmissions have an anti-backlash device and a larger, tougher, better-sealed, better-protected clutch release bearing is used with all manual transmissions.

The gem in the transmission display for 1964, however, is Chrysler's new 4-speed, all-synchro gearbox. Big and beefy, it should be equal to any chore put to it. The engineers involved were so happy about its outcome that the

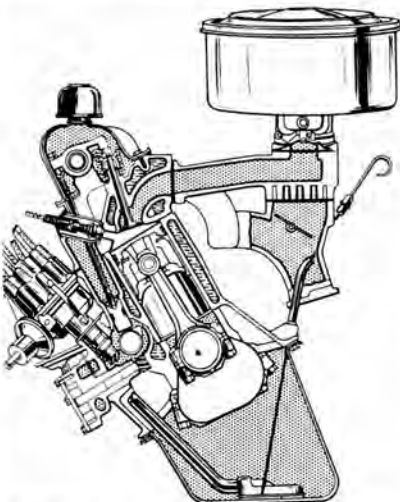
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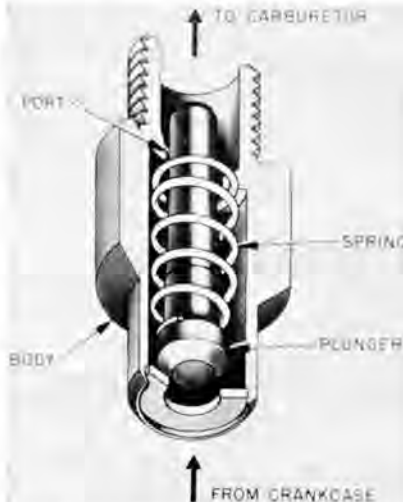
NEW AUTOMATIC choke eliminates parts that became troublesome with older unit.



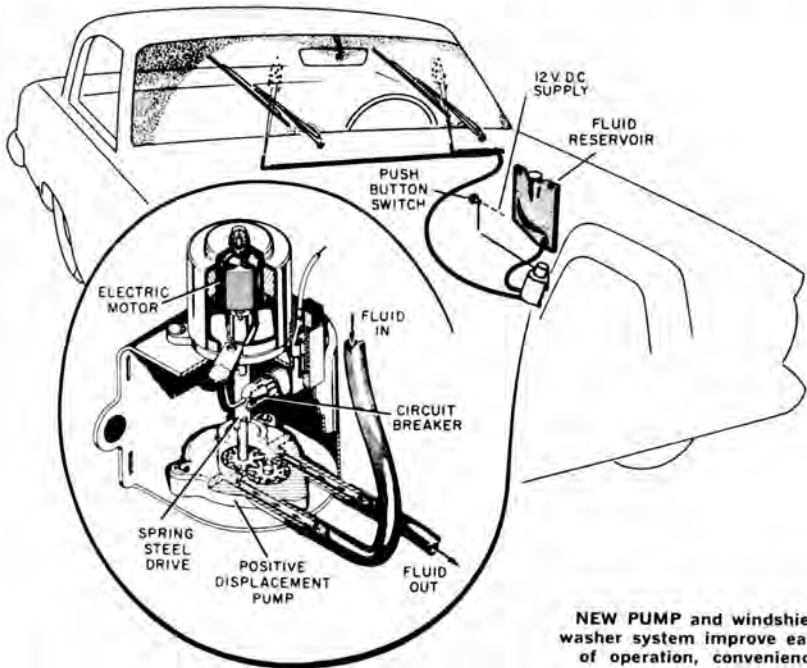
BRAKE PEDAL is closer to floor and level of accelerator pedal.



SLANT SIX engines received slight boost in compression for better efficiency.



VENT VALVE cleans itself with a scouring action, needs less care.



NEW PUMP and windshield washer system improve ease of operation, convenience.

transmission probably will be used in numerous trucks along with all the Plymouth, Dodge and Chrysler high-performance models.

Although pretty much a "clean sheet of paper" approach to the problem of reliably transmitting tremendous amounts of torque and horsepower, the new Chrysler 4-speed is nonetheless pretty conventional. It invites comparison to the widely-used Borg-Warner T-10 transmission, and the Chrysler unit suffers not a whit (see Table B). About the only place the T-10 might have an advantage is in weight, and perhaps in a wider variety of gearsets available for it. But then, the Chrysler unit is still brand-new and there's no telling what will develop. An aluminum case, which would save a few pounds, is a definite possibility.

TABLE B—TRANSMISSION COMPARISON

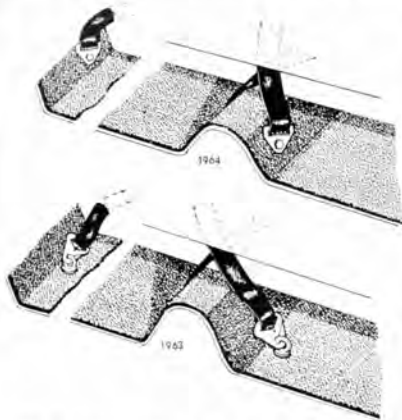
| | Chrysler 4-speed | Borg-Warner T-10 | | | | |
|-------------------------|------------------|------------------|-------|-------|-------|-------|
| Weight, lb. | 120 | 75 (alum.) | | | | |
| Case material | cast iron | c.i. or aluminum | | | | |
| Gear ctr. distance, in. | 3.5 | 3.25 | | | | |
| Gear width, in. | 0.85 | 0.66 | | | | |
| 3rd | 0.77 | 0.63 | | | | |
| 2nd | 0.85 | 0.70 | | | | |
| 1st | 0.87 | 0.77 | | | | |
| Reverse | 0.52 | 0.50 | | | | |
| Synchronizers, type | blocker | blocker | | | | |
| Gear ratios | | | | | | |
| 4th | 1.00a | 1.00b | 1.00c | 1.00d | 1.00e | 1.00f |
| 3rd | 1.39 | 1.40 | 1.31 | 1.41 | 1.51 | 1.51 |
| 2nd | 1.91 | 1.92 | 1.64 | 1.78 | 1.92 | 2.07 |
| 1st | 2.66 | 3.09 | 2.20 | 2.36 | 2.54 | 2.73 |
| Reverse | 2.58 | 3.00 | 2.26 | 2.42 | 2.61 | 2.81 |

(a, used with all Chrysler Corp. V-8s; b, all Chrysler Sixes; c, Chevrolet, Pontiac; d, Ford, Mercury; e, Pontiac, Buick, Studebaker, Chevrolet; f, Fairlane, Falcon V-8.)

Chrysler engineers believe that their ratio selection is the best possible compromise between flexibility and top performance. They point out that for drag racing, for instance, the 2.66-1st gear plus a 3.90 axle gives a starting multiplication of 10.37:1, where the Borg-Warner 2.20-1st requires a 4.56 axle to achieve a 10.32 multiplication, thus permitting the owner to drive his car on the streets without the penalty of listening to a lot of rpm in 4th gear. They visualize 4-speed owners using the first three gears for competition, and the fourth as a sort of overdrive. If it works out that way, it certainly will be a boon to the keen competition types, who now mostly park the cars in the garage after a weekend of dragging.

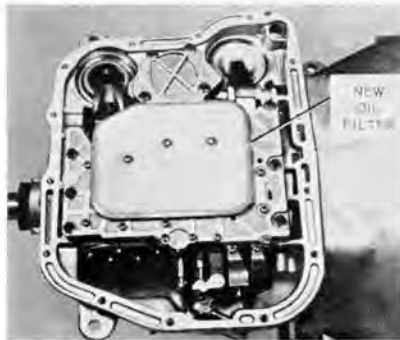
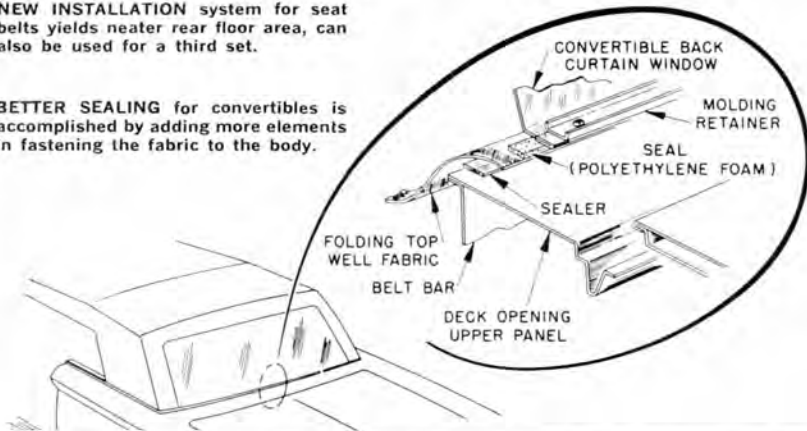
The Chrysler transmission will come with two sets of gears, one calibrated for V-8 performance, the other tailored more to the needs of the Slant Sixes. Although the complete "in-nards" are interchangeable, it would seem unlikely, nor is it recommended, that the 3.09-1st set be swapped for the 2.66 set behind a V-8. The 2.66, however, could prove a popular exchange for 6-cyl. cars being used for competition.

Shift levers on both versions of the 4-speed are floor-mounted and utilize Hurst linkage and levers. With a gen-



NEW INSTALLATION system for seat belts yields neater rear floor area, can also be used for a third set.

BETTER SEALING for convertibles is accomplished by adding more elements in fastening the fabric to the body.



INTERNAL FILTER in automatic transmission is made of Dacron-felt, improves reliability.

erous-sized knob atop a sturdy, chromed staff, this system imparts a feel of precision and strength not found in the pigeon-egg-on-a-coat-hanger-wire devices of its competitors.

For those who don't want to pay the fare for a ride with the 4-speed, Chrysler will continue to offer three variations of the 3-speed TorqueFlite (6-cyl., 8-cyl. and a Heavy Duty 8-cyl.) plus several 3-speed transmissions. The optional Borg-Warner T-85 manual transmission remains available for heavy-duty applications, while Chrysler's own 3-speed, with pin-type synchronizers on 2nd and 3rd gears, will be used to fill virtually all other 3-speed orders. Their ratios are:

| 3-SPEED GEAR RATIOS | | | |
|----------------------|------|-------|------|
| Engines | 1st | 2nd | 3rd |
| 170-6..... | 3.22 | 1.82 | 1.00 |
| 225-6..... | 2.95 | 1.83 | 1.00 |
| 318-V-8..... | 3.02 | 1.76 | 1.00 |
| 361, 383 V-8..... | 2.55 | 1.40 | 1.00 |
| 413, 426-V-8 HD..... | 2.10 | 1.445 | 1.00 |

Also in the ratio department, Dodge and Plymouth rear axle ratios have been dropped slightly for '64, in an effort to achieve better fuel economy. Where the standard ratio was 3.23:1 with manual transmission V-8s, a 2.93 ratio is specified. The automatic transmission ratio remains at 2.76:1. A 3.23:1 is listed for standard use with the new 4-speed.

Body styling has not changed significantly (except for the Imperial, which has a dramatic new shape), although certain detail improvements probably will make the cars even more acceptable to the general public. There are new roofs and windshields on the Dodge and Plymouth lines, along with a restyled 2-door hardtop.

Roof changes are most noticeable from the inside, where the driver and other front-seat passengers have gained in headroom. This was accomplished by tilting the windshield slightly more toward a vertical plane, thus moving the upper header farther away from the driver's head and raising the roof slightly.

The hardtop has a roofline somewhat resembling the Ford fastbacks, but utilizes a compound-shaped rear window instead of the Ford's single-plane type. In view of certain track-wise criticisms of Dodge/Plymouth entries, this, no doubt, will be next year's NASCAR model. If "improved air flow" over the fastback roof can help Ford, there's no reason it couldn't help the Chrysler products, too.

The Dodge people, in particular, like to tell about the "rub-off" benefits of racing into product development. They say it has accelerated refinement of existing equipment while inspiring the search for new or better components. They say the improved rear suspension of the '64 Dodges is a direct result of track-gained experience. ■

426 HIGH-PERFORMANCE OPTION



MAXIMUM PERFORMANCE is guaranteed with the Ramcharger 426 engine, Dodge's drag-strip stormer. Modifications announced in June will carry through '64; included are new headers, bigger carburetors, higher-lift camshaft, modified heads, rods and crank.

