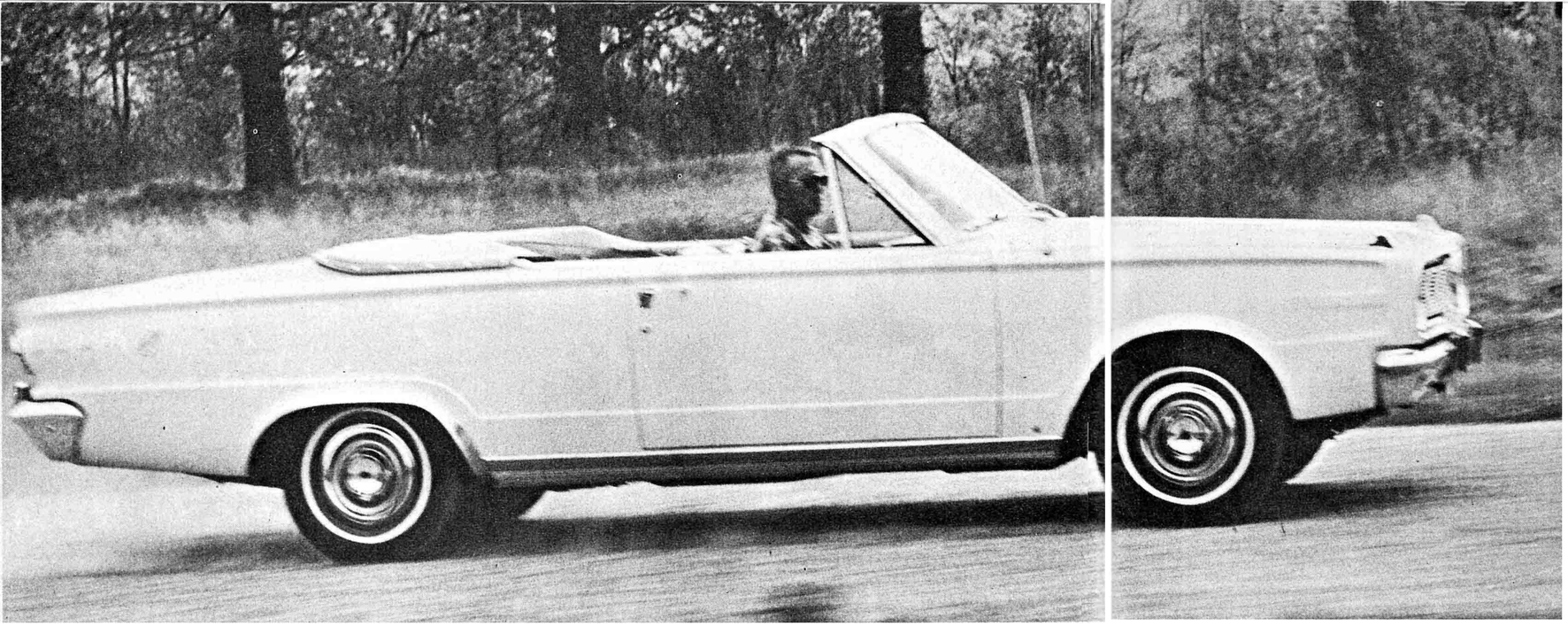
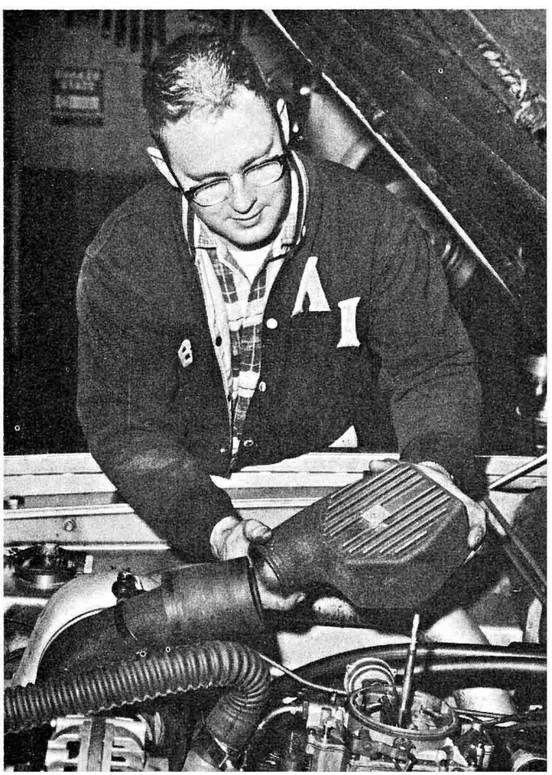
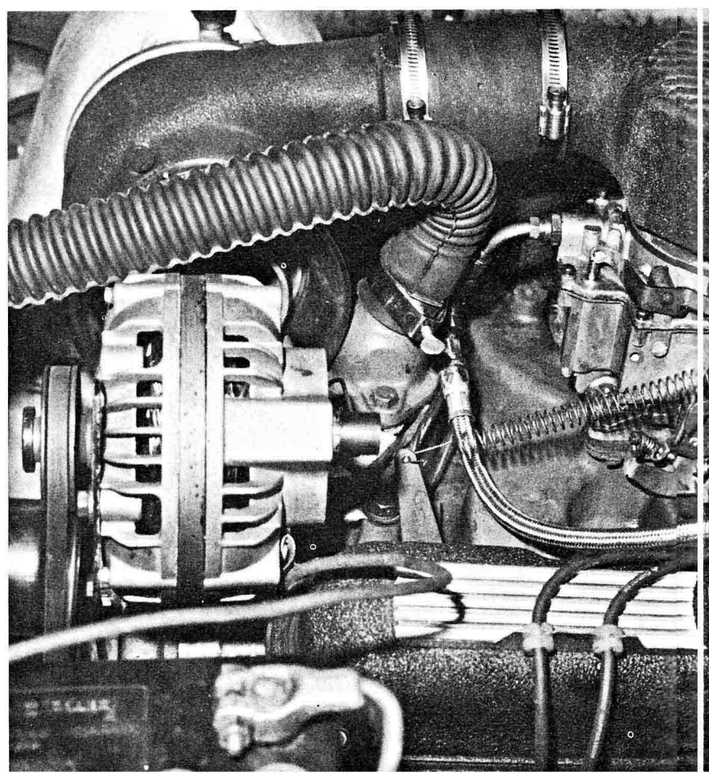
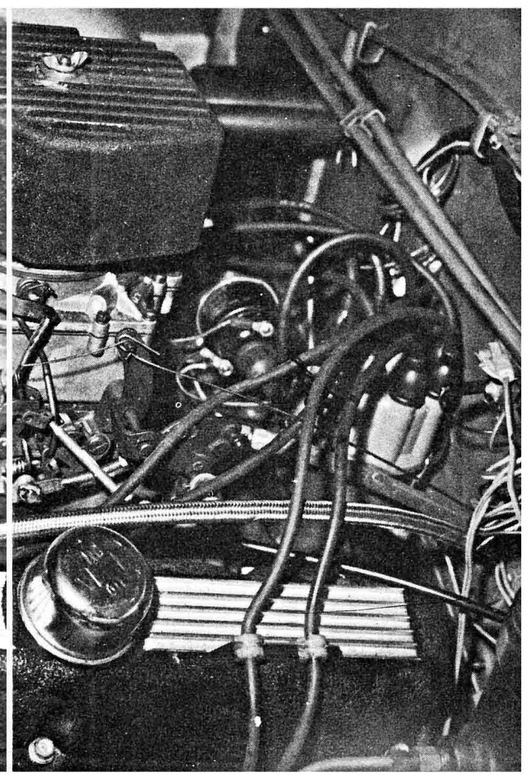








Bolt-on turbo test Dart runs as quick as a 340 hp 'Vette with tall gears and peaks out at over 135 mph. Turbonics' Bob Keller shows off his finned aluminum sealed air box for single quad carburetion. Installation is compact.

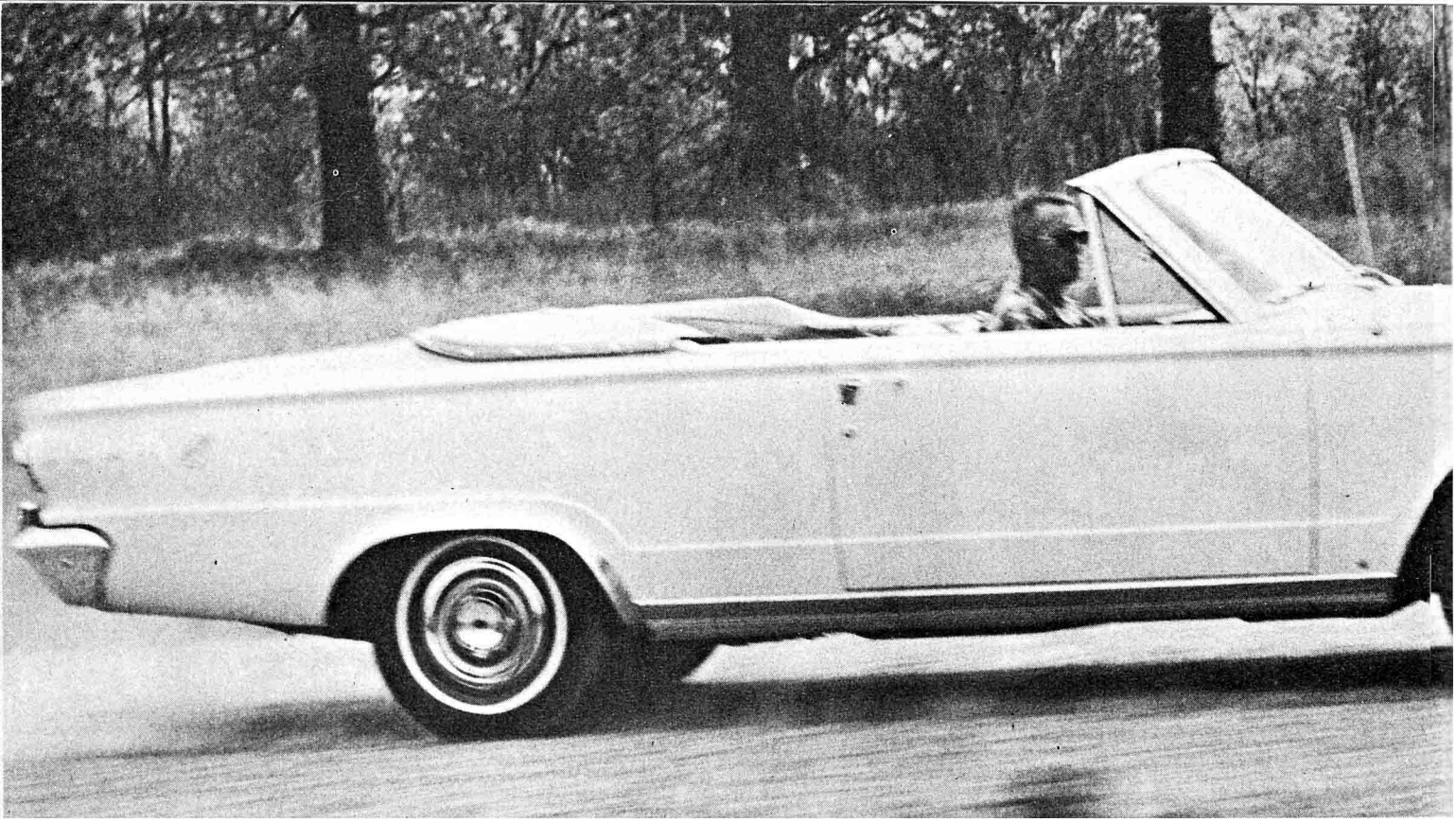
BOLT-ON BLOW FOR THE STREET

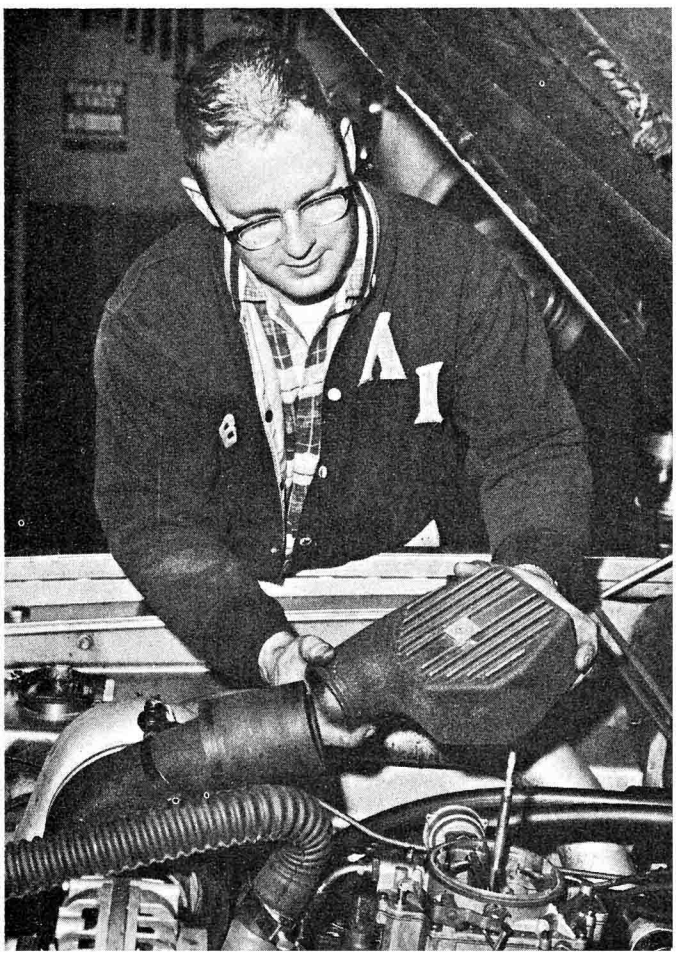
Holy Horsepower! Aircraft engineers perfect a turbocharger kit that will boost an engine's output 50 percent without sacrificing street tractability

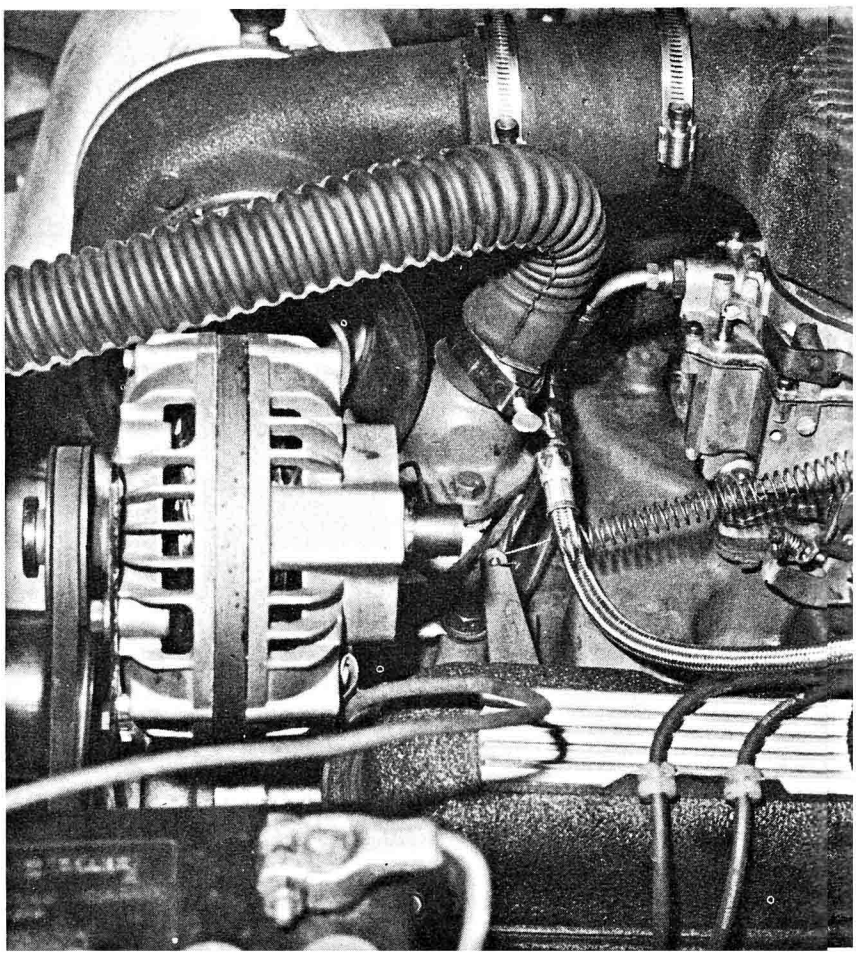
THANKS TO THE combined efforts of hot rodders who managed to pull unreal amounts of horsepower from engines designed for straight passenger car use and Motor City merchandisers who discovered that the so-called youth market was more than just a figment of a Madison Ave. huckster's imagination, it's now possible to purchase a production line hot rod. All manufacturers now offer something in the image or supercar field to suit anyone's fancy. The Detroit movement solved many problems and made it possible for the not so handy to own a genuine performance vehicle. It just about put an end to rod building, engine swapping and even blowing for more go.

However, it didn't take very long for the purchasers of ready-built street rods to try and outdo each other. Hence camming and carbing are back in style. For example, the average GTO owner thinks nothing of installing an Isky cam and locked-up super-rev hydraulic lifters even though the stock tiger camshaft is far more radical than the hot cam of some years back. The same goes for ignition, heads, headers, etc. ▶

BY MARTYN L. SCHORR







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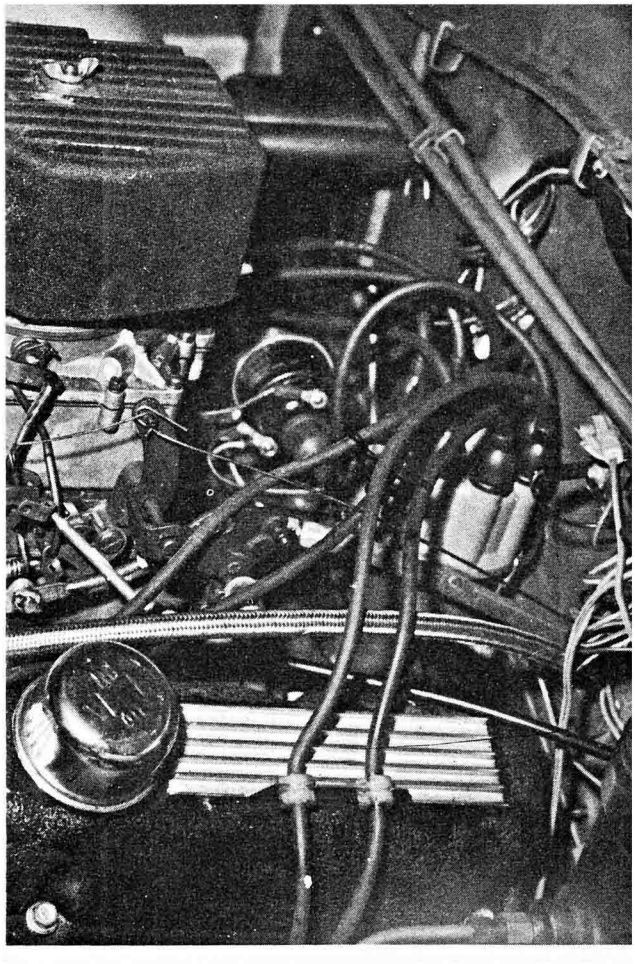

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So even though ready-built hot rods are available on an order blank basis, the modern day supercar jockey is still looking for something a little hotter than the carbon copy he might meet at the Drive-In or traffic light. To meet the needs of this image car breed, a corporation by the name of Turbonics, Inc. was formed by three aircraft engineers by the name of Bob Keller, Bill Schoeneman and Wolf Schlegel. The aim of this unique organization was to come up with an ultimate bolt-on souping package that when properly installed would increase the horsepower output of a stock engine by up to 50 percent and not affect its streetable characteristics. A maximum price tag of $500 was put on the package during the experimental stages, and, believe it or not, the finished product will be available in the very near future for approximately $450!

The Turbonics' bolt-on horsepower package consists of a small Garrett AiResearch turbocharger which is very similar in appearance only to the original turbo used on the not-so-successful Olds F-85 and an assortment of brackets and mounting components. The units undergoing testing at this time by Turbonics are quite small, will fit under most any production hood and are naturals for 273 MoPar, 265-283-327 Chevy, 260-289 Ford and other small and medium displacement engines. It's only a matter of time before successful units will be available for the bigger 392 and 426 hemis and 427 wedges.

We were first introduced to the turbocharging method of increasing horsepower by the Turbonics group when they set out to turn Bud Faubel's '64 Hemi-Honker Dodge into a wild dual blown exhibitionist. We had seen other turbo installations, such as the setup used by the Mallicoat Brothers on their Chevy gasser and various Indy track setups, but never really took any interest in this system until Turbonics attacked Faubels's stocker. Faubels's rig utilized dual turbos, Hilborn injection, complex intercoolers, etc. It was Rube Goldberg all the way, but it worked! The car never really did much, as Bud found it extremely difficult to harness the newly-found horsepower. However, he will be back this year with an up-dated version that should really revolutionize the match car business!

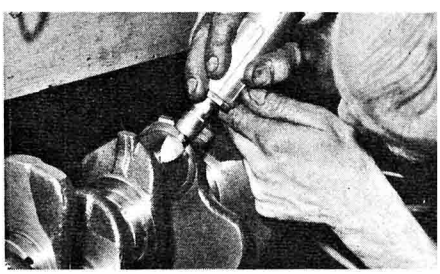
After approximately one year's time running tests, the boys at Turbonics came up with a streetable package that could be bolted on any stock engine and would in turn boost the horsepower output by 50 percent.

One of Turbonics' biggest problems, however, was educating the rodding public so that they would understand and accept turbochargers. Over the years there have been many Mickey Mouse superchargers on the market, one of which turned out to be a rough aluminum casting with a rebuilt Model A starter motor.

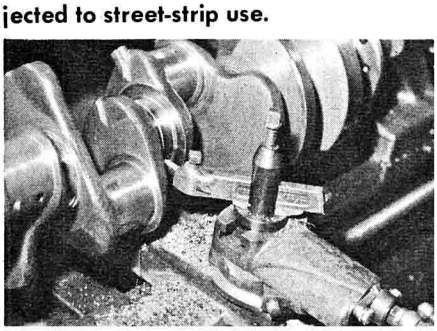
In actual practice the turbo is far simpler to run, install and live with than the accepted methods of souping and supercharging. It does not cause the engine to run rough, idle high or lose low end torque, such as a radical grind cam does. It also does away with the complex drive installations normally associated with supercharging. Installation of one of these units can be accomplished without moving the exhaust manifolds, radiator or front fan drive components. There are no complex gear, chain or belt and ball bearing drives to worry about and absolutely no machining or complex fabricating are necessary for an average installation. Starting to sound interesting?

Now that we have whetted your appetite, here's the full poop on the turbo kit and its installation on a typical street machine. The turboed test rig we checked out was a 1966 Dodge Dart with a 273-cube four-barrel engine tagged at 235 hp and backed up with a four-speed manual

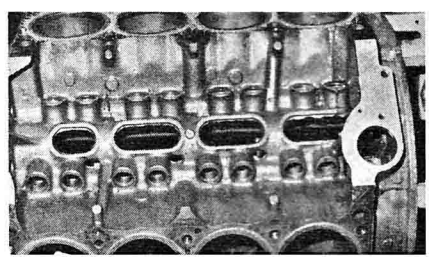
Revolutionary bolt-on soup-up kit adds 50-percent hp, costs $450



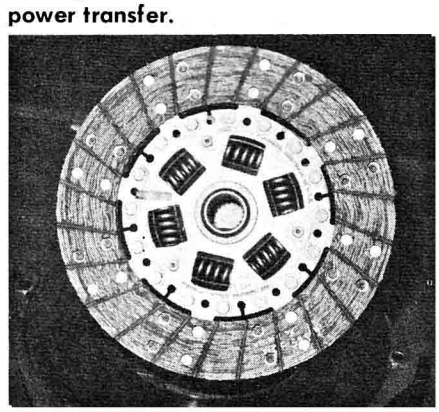
Charlie Dodge grooved the mains, chamfered the oil holes and micro-finished the 273's crankshaft. This is not necessary for an engine subjected to street-strip use.

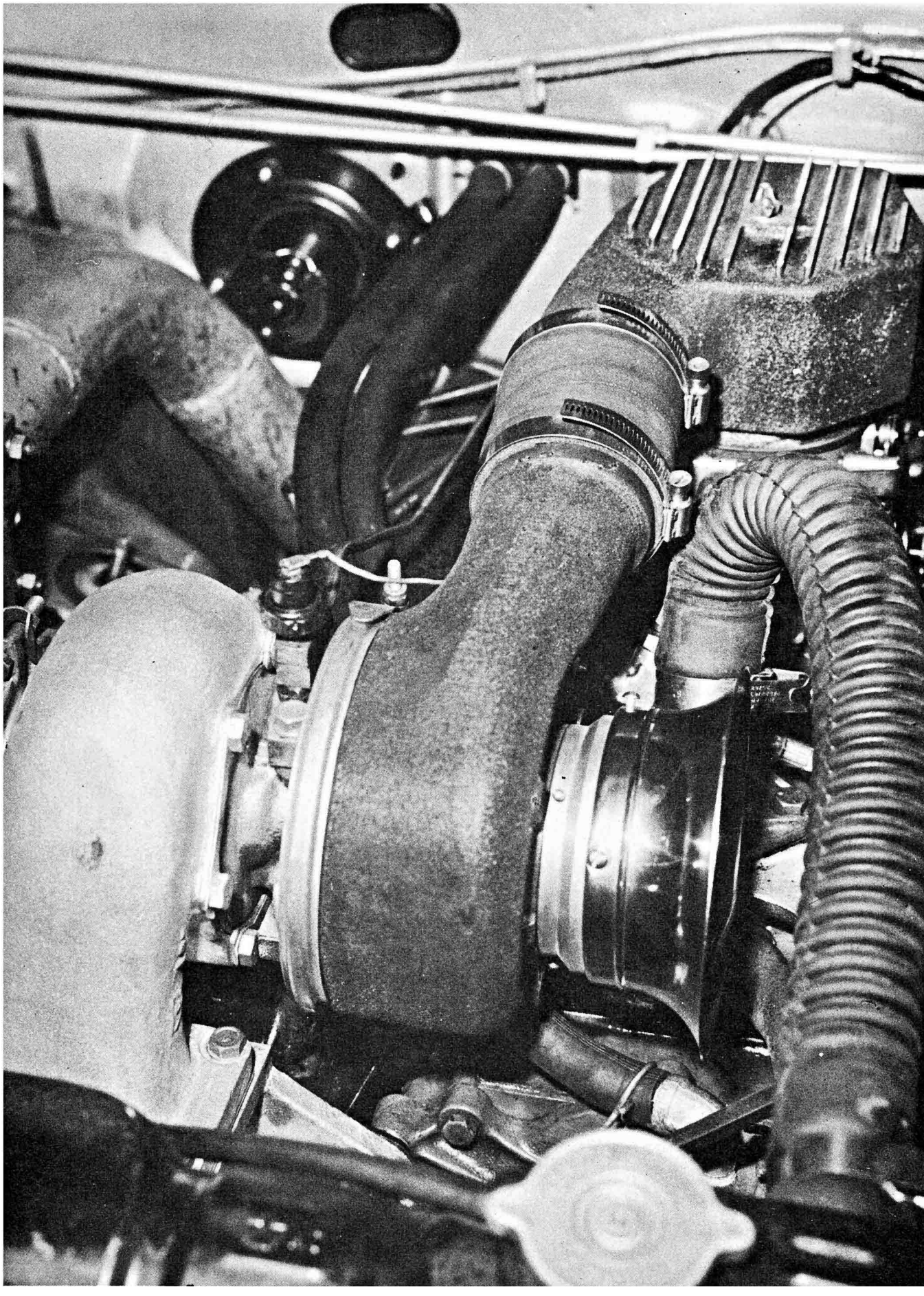


Heads were reworked by Charlie Starter at Pacers for maximum breathing. Chambers were cleaned up and the valves hand fitted. Stock valve train was retained.



Block was O-ringed for maximum sealing. Pacers-beefed clutch aids power transfer.

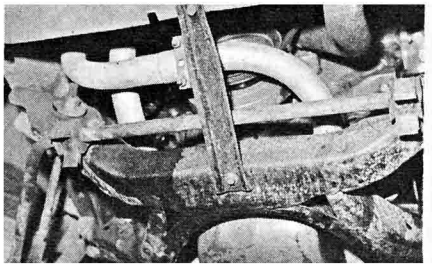




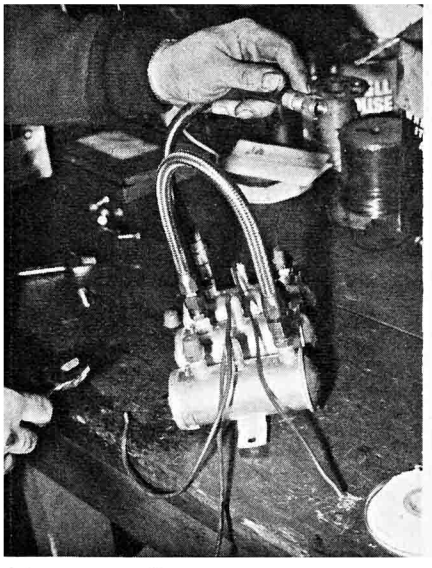
Neat chromed and filtered inlet next to radiator hose draws in fresh air. Turbo is supported at the exhaust flange end.

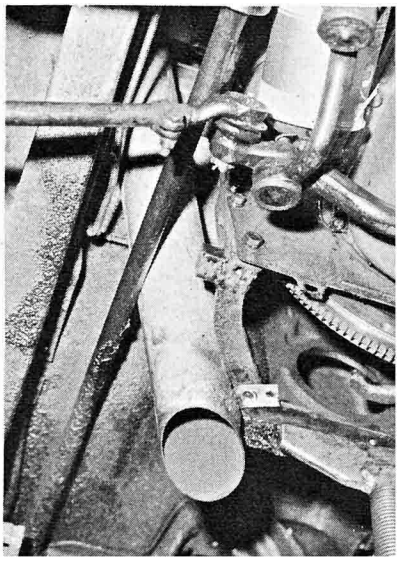
Turbos are in, – cams, carbs and Jimmys are out!

Crossover exhaust tubing leads to mufflerless dump. Stock manifolds are used with this setup. Turbos are supplied by Airesearch.

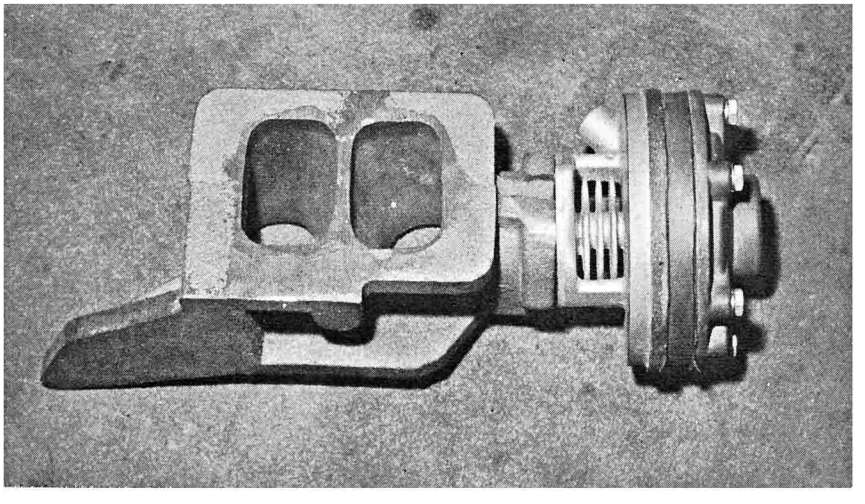


Battery of three Bendix electric pumps fitted with aircraft fuel lines ready to be mounted at the tank. Straight through exhaust exits at bellhousing.





A huge pop-off valve is incorporated to prevent excessive boost pressure.



transmission and production line street gears. Since the car was to be used for extensive testing, Turbonics employed the services of Pacers Auto in Oceanside, New York. They O-ringed the block for additional sealing, cleaned up the ports and chambers, micro-finished and reworked the crankshaft and balanced the works. Stock manifolding, cam, valve train, and pistons were retained to prove that exotic goodies are not that necessary for the maximum street performance with a Turbo.

With street gears, tires and the factory suspension, the turboed Dart proved to be as quick as a good running 340 hp Corvette with 3.90 gears and a four-speed. When the suspension was beefed this very same car loafed effortlessly around the Daytona 500 course at 135-plus mph. Just for the record the car was driven from the Pacers to Daytona, then put out on the track. We plan on putting tall gears, cheater slicks and a few other goodies on in the very near future for some quarter-mile bashing. Performance on the street was unreal, as the car was as docile as a stocker until the R's were brought up to the boost point. Then all hell broke loose and the speedo climbed rapidly towards the big top end marker.

The bolt-on turbocharger consists of a small cast compressor driven by an exhaust-boosted turbine. There are no other forms of drive controls. By simply swapping parts a turbo can be modified to put out more boost pressure than any stock engine can possibly handle. Basic installation parts are a light cast alternator bracket which swings the *charger* away from the turbo, 1.75-inch pipes which go from the stock exhaust manifolds to the inlets on the turbo, and some 3-inch pipes which carry the exhaust to a point near the bellhousing. That's it!

The actual turbo is supported by a cast bracket secured to the front of the engine. At the exhaust manifold turbo flange the unit is mounted rigidly for maximum efficiency. Except for adapting the pipes from the engine manifolds to the inlet on the turbo, no other modifications must be made to the manifolds. The noise level of the mufferless system was not objectionable and it rivaled that of the original Dart and Formula S Barracuda straight through "sound sys- *(Continued on page 78)*

shaft are cracked; and this is a source of clutch problems and also causes jumping out of high gear. The bell housing can be shimmed out to remedy this. A bell housing can also be repositioned and the dowel holes redrilled and re-reamed. It doesn't happen often but when it does, that's what to do.

TURBO-DART continued

tem"! The Turbonics' turbo features a well shaped (for maximum air flow) tuned inlet section which brings fresh air into the compressor. The compressor in turn dumps the air (under pressure) through a rubber composition hose to a finned aluminum box mounted atop the carburetor. The air box is a rather well finished item and is finned and finished in black crackle. This setup is very similar to the one used on the now defunct Stude-powered Avanti and the new Granatelli-modified blown GT-350 Mustangs.

When we drove the car it was equipped with a Rochester 4GC quad that was sealed and installed by Pacers Auto. As Dodge uses a very universal cable throttle linkage it was no problem to adapt the *foreign* Rochester quad. Turbonics, however, is still running carburetion experiments on its street setups and may switch to sealed Carter AFB quads that were originally made up for the Avanti.

Delivering an adequate amount of fuel to a carburetor which has been pressurized and fitted with a blower has always been a problem. Instead of boosting the pressure on the stock vacuum pump, Turbonics removed the stocker, installed a block-off plate and added a battery of three Bendix electric fuel pumps at the tank to insure against against performance-robbing fuel starvation.

For maximum durability and efficiency Turbonics makes sure that their turbos are well lubricated during operation Lube in the form of engine oil is tapped from the engine's oil supply at a point between the engine and the stock psi sending unit and directed to the center section via a 1/4-inch line. A larger 5/8-inch line is used to return the oil to the engine through the fuel pump block-off plate.

Once you realize the actual potential of a turbocharger, such as the one marketed by Turbonics (Post Office Box 452-Z, Smithtown, Long Island, New York) you have to admit it's senseless to go any other souping route. The Turbonics unit on the Dart we tested was redlined at 7-8 psi boost which is maximum for a production line engine. The units can be adjusted to put out up to 25 psi without running into any turbo problems. A pop-off valve is built into the unit for added protection. Once the boost is greated than the pre-set redline, the valve opens up and lets out the excess. There's no need to go to radical cams, multi carbs or even high compression (forged blower pistons are recommended for big boosts and dragging) to make more horsepower. The turbo takes care of all that for you!

Just knowing that the more boost delivered to the cylinders means that more exhaust gases will be available to drive the turbine makes turbocharging the only sane way to obtain total performance. Turbo boost must actually be limited as it can always produce more power than is required to drive the blower. It's our guess that it's only a matter of time before all-out competition cars and Super Stockers go to the turbocharger's So hop on the bandwagon and be a leader not a follower. 'Nuff said!

EDITOR'S CORNER

four-barrel engine option as the ideal option for the street is the 440 four-barrel Polara-Fury-Chrysler powerplant. This will put the Belvedeer and Coronet into the supercar race, as the street hemi proved to be too much for the average high performance street car buyer. Watch out for those 440 middle-weights in B and C/Stock next year.

Our own Charlie Dodge, George Snizek and the Cars Magazine Racing Team crew have done it again! They went out with the old (and we do mean old) Tasmanian Devil roadster (AA/Altered NHRA record holder) powered by a fuel version of the record holding Chrysler hemi gas engine and broke the new "Funnycar" CC/Fuel Dragster record wide open. This was at Island Dragway Great Meadows, New Jersey. Five weeks later at Sanford, Maine, George busted his own record, and won the Super Eliminator bash. It looks like the "funny car" boys are being knocked out of their own class by a roadster that has been on the strip for the past six years. It's also running a rather antique '57 Chrysler mill on small doses of nitro. Just wait until Nationals time when the big load goes into the tank!

OLDS-RIVIERA continued

Turbo Hydro and then to a spiral bevel gearset. The gearset in turn transfers power to an all-spur geared differential. Axle movement is insured by ball-splined inboard joints. All this adds to up pull not push, a flat floor and a rather unique handling automobile.

The Riviera is not as fortunate as its new brother. It can't boast of such engineering innovations as front wheel drive, just superb handling, super superb braking and one of the finest compromise rides on the market. It makes you sort of wonder if all that engineering is really necessary!

Backing up the Toro's unique front boiler room is a rather utilitarian rear end which looks as though it belongs on the front of an early Ford product! Supporting the rear tires is a I-bean straight steel axle, two standard slightly sea-legged shocks and two extra shocks mounted parallel to the single leaf springs. These shocks are insurance against braking windup because of the front wheel drive location.

On the flat open road or when negotiating Hollywood Boulevard it's almost impossible to detect the Toro's front wheel drive. It's smooth, quiet and not unlike the ride of most 5000-pound luxury cars. On mountain roads or when winding a series of bends you notice immediately that the Toro handles like no other 5000-pound plushmobile, except, of course, for the Riviera GS. Since 60 percent of the Toro's weight rests forward of the cowling, there's an obvious understeering quality about the car. Cornering at high speed requires a complete re-education in handling and steering control. The car tends to pull itself through the wildest of bends and corners by simply getting off the go-pedal when the sleek ferocious front end starts to make tracks for the outermost arc of the bend and then back on it when the car falls back into your plotted course. The rear end, which comes along just for the ride, follows orders from the front drive. Thus you can't rely on the tried and true technique of powering the rear wheels around the corner, as those rear wheels just don't think for themselves. Super accurate steering control is a must when pushing the Toro over the ragged edge.

The Riviera GS is nowhere near as romantic as the Toro, suspensionwise but it gets the job done. At the rear of the GS is a typical live axle Salisbury-type rear axle with four locating links and coil springs. The GS option indicates that stiffer shocks replace the boulevard jobs and the coil springs are much beefier than the stockers. Stock ride rates are 130/110 lb./in. while GS rates are 180/160 lb. in. In the GS's favor is an ultra-study, rigid, self-supporting frame which is used in *(Continued on page 80)*