

By HRM Technical Editor, Ray Brock

nontiac had the hottest item in the stock 122-inch wheelbase. A wide selection of car market last year and sold a lot of automobiles because of that very fact but a lot more sales were missed because the '57 Pontiacs were not in the modern groove when it came to styling. It takes a little time to move from the sedate family type sedan to a sport sedan though and although the transformation was started in '55 with a new V8 engine, the really NEW Pontiac is just now ready for the public to try on for size.

The '58 Pontiac is new in frame, suspension and body with the only major engine change limited to an additional 23 cubic inches. GM's 1958 "A" series body, the same one used by Chevrolet, has been stretched out to fit two wheelbase lengths. The "thrift" model is the Chieftain on a 122-inch wheelbase, the more expensive Super Chief and Star Chief models have 124-inch wheelbases, while the plush Bonneville models swing back to a of horsepower ratings, use the same dis-

engines is available for these four models with the weakest of the bunch, a 240 horsepower V8, standard equipment for in-line 255 horsepower V8 is standard for the Star Chief and Bonneville. If you don't feel that you'd be happy with the horsepower offered as standard equipment (and a large share of the buyers won't be), Pontiac just happens to have a few other engines for you to choose from with a 310 horsepower V8 on top of the list.

347-inch V8 for '57 and made only token changes to meet the annual requirement for additional horsepower as the new models were introduced. Enlarging the cylinder bore 1/8-inch to 4.06 inches while leaving the stroke at 3.56 inches raised the displacement from 347 in '57 to 370 cubic inches for '58. All engines, regardless

placement with only compression differences, a different camshaft and types of carburetion used for the variations.

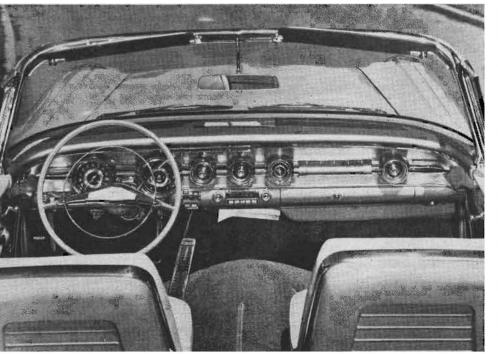
The 240 hp V8 with 354 pounds/ the Chieftain and Super Chief. The next-feet of torque has 8.6 to 1 compression ratio and a single two-barrel carburetor. The 255 hp engine with 360 lbs/ft. of torque also has 8.6 to 1 compression but uses a single four-barrel carburetor. A dished top piston is used in both of these engines to get the lower compression since they use the same cylinder heads as the engines with 10 to Pontiac had a good thing with their 1 compression. The head used for 101/2 to I compression is the same casting but has been milled an additional .025 inch. In order of horsepower rating, the next engine has 10 to 1 c.r., 270 hp, 388 lbs/ft. of torque, a single two-barrel carburetor and uses the high lift cam. When the engine just mentioned is equipped with a single four-barrel carburetor instead of the dual, the horse-



Quad headlights, parking lights and a pair of small bumper guards are tastefully placed on Bonneville. Grille is cast aluminum

STRONG AND STYLISH

Pontiac packages proven power in a sleek, low body with a new frame and suspension for '58



Instrument panel of Pontiac has oil, gas, temperature and ammeter gauges in large cluster at the right of steering column while other large instrument is speedometer. Padded bar between two circles at right side of panel gives passenger an assist rail,

power rating jumps to 285 hp with 395 lbs/ft. of torque. The two remaining engines have 101/2 to 1 compression and the high lift cam with three two-barrel carburetors used for 300 hp and 400 lbs/ft. of torque or fuel-injection used for 310 hp and 400 lbs/ft. of torque.

Quite a selection of power: 240, 255, 270, 285, 300 and 310. The big horsepower optional engines are available in all models, too.

As we mentioned earlier, engine changes from '57 are few. The bore is 1/8-inch larger so new aluminum alloy slipper skirt pistons are used and they are just slightly over an ounce heavier than last years buckets. Rods are the same, forged steel and 6.625 inches between pin centers. The crankshaft is new for '58 but only in material. Pontiac used a cast pearlitic malleable iron crankshaft part of '56 and in '57 and to our knowledge had no failures due to this material but for some reason they went back to the forged steel crank that was used in the earlier Pontiac V8's. Journal diameters are the same as for '57, 2.62 inches for mains and 2.25 inches for rod journals. A wider bearing is used on the number four thrust main.

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HOT ROD MAGAZINE FEBRUARY 1958



The '58 Bonneville on the salt beds for which it is named. Small grille above rear window is blank but could be used as part of the ventilation system in future models of the Bonneville. Pontiac's powerful V8 should make this car capable of very high speeds.

Heads for all '58 engines are the same. A fully machined combustion chamber is used to keep detonation problems at a minimum and to control compression between cylinders. The exhaust ports have been redesigned slightly to give better gas flow but the valve sizes are the same as those used in '57. Intakes are 1.88 inches in diameter with 30° seats and use dual valve springs. Exhaust valves are 1.60 inches in diameter, have a 45° seat and also use dual springs. The lower horsepower engines with the milder of the two camshafts use outer springs with 60 pounds seat pressure, 109 pounds open and inners with 26 pounds seat pressure, 60 pounds open for both intake and exhaust valves. The high lift cam uses outer springs with 62 pounds seat pressure, 131 pounds open and inners with 32 pounds seat pressure, 96 pounds open.

Both of these camshafts are hydraulic with no heavy duty mechanical lifter cams offered as optional equipment. The mild cam intake opens at 22° before TDC, closes 67° ABC. The exhaust opens 63° BBC and closes 27° ATC. Intake duration is 269° and lift for both intake and exhaust is .370 inch. Intake for the high lift cam starts at 30° BTC, closes at 63° ABC. The exhaust opens 77° BBC and closes 25° ATC. Duration is 273° and lift for both intake and exhaust is .400 inch. The lift stated is at the valve with 1.5:1 rocker arms used.

Cast iron exhaust manifolds have been

enlarged slightly to give more cross-sectional area and better flow for the burned gases. The standard exhaust system is single with a cross over pipe and a single reverse-flow muffler. The optional dual exhaust system used with all of the higher horsepower optional engines has a muffler and a resonator on each side for a total of four muffling units to keep the noise level very low even under full throttle conditions.

In the carburetion department, you can take your choice of a single two-barrel, a single four-barrel, three two-barrels or fuel injection. The single two-barrel is a Rochester carburetor with 1.688 inch venturii. The four-barrel is made by Carter and has 1.438 primary and 1.688 inch secondary venturii. Pontiac's Tri-Power carburetion, three two-barrel Rochesters with 1.438 inch venturii in all three carburetors, is operated by the same method used in '57. The center carburetor is used for normal driving with a vacuum switch tripped at about 60° opening to activate a vacuum diaphragm which throws both end carburetors wide open for high power demands. The remaining option in the fuel department is a Rochester fuel injection unit. This unit is basically the same as Chevrolet's Rochester injector with only metering changes and different castings to match the Pontiac engine. The fuel injection unit is superior to carburetion in smoothness of induction at low speeds, but the cost of this unit (somewhere

around \$500) will prevent it from becoming a fast selling option. Our limited personal experience with GM's injection has not revealed any fantastic increase in fuel economy and the extra 10 horse rating over the Tri-Power (310 versus 300) seems to indicate that carburetion is almost on a par at higher engine speeds.

Two different models of Delco-Remy distributors are used on the '58 engines. The only points of difference in the two is in the amount of centrifugal advance with all other parts and specifications identical. For engines with 8.6:1 compression, a total of 30° crankshaft advance at 4600 rpm is used while the higher compression engines have only 24° advance. Maximum vacuum advance for both engines is 15¼° and recommended initial advance at hot idle is 6° crankshaft timing. The timing marks are located on the front crankshaft pulley.

In the clutch and transmission department, a few changes have been made for '58. The Borg & Beck clutch has been increased ½-inch in diameter from '57 to an 11-inch outside diameter and 7-inch inside diameter. Spring pressure has been boosted from 1935 to 2030 and total clutch lining area is 99.5 square inches. Transmissions available for all Pontiacs are the standard shift transmission with no overdrive and the Strato-Flight Hydra-Matic transmission. The standard transmission is new for '58 but smaller in size instead of larger as you might expect.

Ratios are 2.21 in low, 1.32 in second, direct in high and 2.51 in reverse. The Hydra-Matic has ratios of 3.97 in first, 2.55 in second, 1.55 in third, direct in fourth and 3.74 in reverse. Third gear for passing can be used as high as 65 mph by full throttle "kickdown" with an automatic upshift into direct drive at 70 mph. A "Park" position on the shift quadrant locks the transmission to give a positive braking device for hillside parking.

An X-shaped frame similar to that introduced by Cadillac in 1957 and also to the one being used by Chevrolet for '58, is used on all 1958 Pontiacs. A narrow tubular shaped center section of the frame joins together the boxed frame rails which branch out to the front and rear to support the engine, suspension and body. A sturdy front crossmember supports the engine and front suspension parts while a removable crossmember passes beneath the front of the transmission to support the rear of the engine. An outrigger crossmember ahead of the rear wheels is used to anchor the front of the new 58 trailing arm suspension while another short crossmember between the frame rails and ahead of the rear axle supports the "A" shaped control arm that is also part of the rear suspension. A final light channel crossmember is welded across the

back of the frame. This X-shaped frame is designed so that the sturdy tubular center section absorbs the twisting forces transmitted to it from all of the four ends of the X and is much sturdier than previous parallel rail type frame with X-member used by Pontiac.

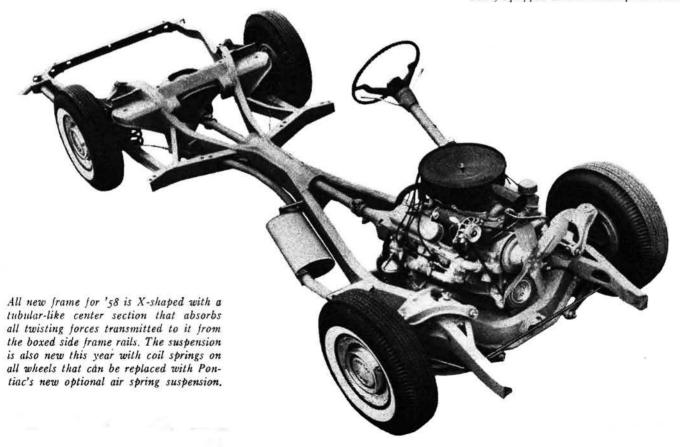
Pontiac's front suspension for '58 is new in design but not in theory. Unequal length stamped steel A-arms are used with threaded bushings on their inner pivots for wheel alignment. Ball joints are used on the outer ends of the Pontiac Aarms for the first time this year to support the one piece spindle and spindle support. Standard suspension for all '58 models is coil spring on all four wheels with air suspension optional. The front steel coils deflect one inch for 290 pounds of load with 89.5 pounds required to raise the wheel one inch. A link type front stabilizing bar is used on all models with a .750 inch diameter bar used on coil spring models and a .812 inch bar used on air spring cars.

The rear suspension is all new for '58 too, with steel coil springs replacing the leaf springs and a unique arrangement of control arms used to locate the rear axle. A pair of stamped steel lower control arms are bracketed to the outrigger cross-

(Continued on following page)



The Bonneville is very much at home over all types of roads and should manage snow or mud covered country roads especially well if equipped with limited slip rear axle.





The new all coil spring suspension is very good on corners and makes the Pontiac handle well although there's lots of body roll.

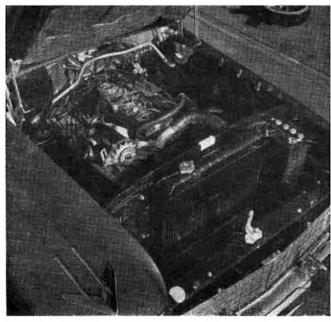
member ahead of the rear wheels through rubber bushings. A spring pad on each control arm just ahead of the rear axle and another bracket welded to the frame rails above this point are used to mount the rear coil spring. The rear of the lower control arms hook to brackets welded near the outer ends of the axle housing by means of rubber bushings. To control side movement of the rear axle and transmit braking and torque forces to the frame, a horseshoe shaped stamped steel control arm is hooked between frame brackets ahead of the rear axle and a single bracket welded on the center section of the rear axle housing. All three connections on the upper control arm are rubber bushed to prevent road vibrations. A link type stabilizing bar is used on the rear of air spring models only.

The rear axle is the same as that used in '57 except for suspension brackets and is the semi-floating Hypoid type with removeable third member. An option for all Pontiac rear axle ratios in '58 is the Safe-T-Track limited slip differential. This item is a must for owners who constantly face the threat of becoming mired in mud or snow when one wheel loses traction. The Safe-T-Track differential gives equal driving force to each rear wheel on all types of surface while still permitting the normal differential action for tight corners. Standard gear ratios are 3.23 for

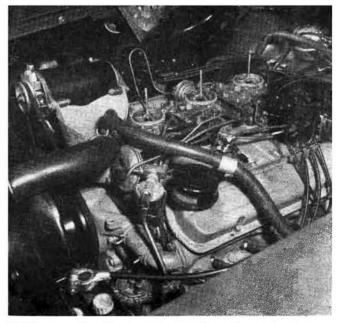
Hydra-Matic and 3.42 for the standard transmission. A 3.08 gear is optional for the automatic transmission and a 3.64 ratio is optional for the standard transmission. Other ratios such as 3.90 and 4.10 are available but not factory installed.

Shock absorbers are tubular and made by Delco. Both front and rear shocks are listed as double acting but no ratio is given. The front shocks mount inside the front coil springs for standard suspension and on brackets between frame and lower control arm on air suspension models. Rear shocks mount between the rear axle and frame brackets.

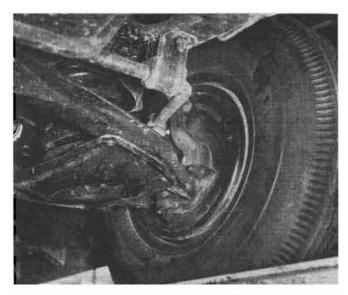
The optional air suspension consists of an air spring to replace each of the



Pontiac engines for '58 have 370 cubic inches and are available with from 240 to 310 horsepower. Battery has been located so it is in cool air supply and not subjected to the engine heat.



Tri-Power carburetion normally supplies engine through center carburetor only. Mileage figures with triple setup were very good with 15 mpg in city and mountains, 18 mpg at highway speeds.



Also new for '58 is ball joint suspension with one piece spindle and support. Twelve-inch front brakes are so well protected within 14-inch wheels that they do not cool properly.



Stamped steel control arms and coil springs are standard on '58's. To install the optional air suspension, the steel coil spring must be taken out and an air unit bolted in its place.

steel springs, a leveling valve hooked to the rear axle near each rear wheel, a single leveling valve to control air in the front wheel air springs, a small air compressor, a series of air lines and a reserve air supply tank. As the name implies, the leveling valves adjust the car to a preset height regardless of load and according to publicity, give a much softer ride. A recent test ride over a specially prepared rough road course in a standard spring Pontiac and then in a Pontiac with air suspension failed to impress us much as to the superiority of the air suspension. Both cars handled the bumps very well and had we not been informed before the ride as to which car had the air suspension, we would have probably missed had we been asked to guess after riding in both. If we were to make a choice, the extra cost of air suspension would be all that we would need to consider before taking the conventional springs although the air does have definite advantages if you carry heavy loads. The air suspension does keep the car level and the headlight beams on the road where they belong instead of in the sky.

When we tested the '57 Pontiac for the June '57 issue of HRM, we liked the car very much and had only one real gripe, the brakes. They were OK for city driving or one fast stop from medium speeds but completely inadequate for high speed driving. They faded after one hard stop and pulled erratically to first one side, then the other. Well, we are sorry to say that there was no helpful change made in the brakes for '58. Wheel cylinders were enlarged 1/16 inch both front and rear to give slightly more pressure on the shoes but this was effectively cancelled out by the fact that line pressure was lowered from 760 pounds to 620 pounds for each 100 pounds of pedal pressure so you just have to stomp on the pedal harder to get

the same mediocre results. Twelve inch drums are used on the front wheels with 21/4 inch wide lining and 11 inch drums are used on the rear with 1.75 inch wide lining. This gives a total of 178 square inches of brake lining but the drums, especially the 12 inch front drums, are so well concealed by 14 inch wheels and wide tires that absolutely no cooling air can reach them. Vacuum boosted power brakes are optional but won't solve the problem of the missing brakes, they'll just help you to press a little harder. Pontiac's service department claims easy break-in and proper anchor adjustment will give better braking results.

Steering for the '58 Pontiac is excellent. The Saginaw recirculating ball unit has a ratio of 22:1 but is slowed down through linkage to a final ratio of 27:1, slightly slower than the 25:1 ratio in '57. When combined with the friction-free ball joints used on the front spindles this year, the steering is very smooth and easy. On this point, Pontiac has almost eliminated the need for a profit making option because the average driver should never need power steering if he carries around 30 pounds of pressure in the front tires. Recommended pressure is from 20 to 22 but this is for the maximum of riding comfort. Thirty to 36 pounds improve steering and cornering but pick-up more road vibrations.

The power steering is also made by Saginaw and provides a power assist to the driver. The gear ratio is 17.5:1 and a final ratio of 22:1 is reached through the linkage. Steering linkage is behind the front wheels as it has been in previous years. The number of turns of the wheel needed to go from lock to lock with power steering are 4.25 while the standard steering requires 5 turns.

The owners of the Suburban Pontiac agency in Bellflower, California, have been

actively engaged in proving the preformance of their product for the past couple of years. They sponsored a '57 Pontiac last season at ¼-mile drags that turned as fast as 103 mph in the super stock class and met stock specifications in several protest teardowns. Suburban was very enthusiastic when they received their first supply of '58's and offered us any cars we might need when we informed them we were planning a test. We borrowed two different cars from them to get material for this test and racked up enough miles to get some pretty definite ideas about the '58 Pontiac.

We needed several sessions behind the wheel to really get the feel of the '58 models. They didn't feel anything like the '57 Pontiac to us and we truthfully didn't think we would like the '58 when we took the first ride. The '58 Pontiac is not a small car and doesn't feel like one. The biggest models are eighteen feet long and the shorter wheelbase jobs are only four or five inches less in overall length. The first day we had the car, a strong desert wind hit Southern California and we had an excellent chance to test the car in gusty crosswinds. These gusts reached better than fifty miles per hour at times so maybe we were expecting too much but a lot of correcting was required to keep the car in a straight line. One of the points that had impressed us about the '57 Pontiac was the stability in gusty crosswinds when we took it out on the desert. The '58 seems to have a rubbery feeling in the rear suspension, probably due to all the rubber bushings between the frame and the suspension members.

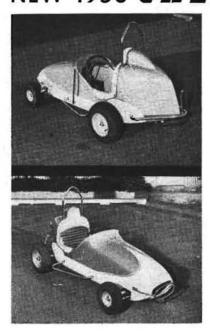
Initial cornering attempts with factory specified tire pressure of 20 pounds resulted in a mushy feeling front end with a fair amount of understeer. By increasing the tire pressure in stages, we found that

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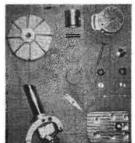




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THE BONNEVILLE

continued from page 21

the car was an entirely different machine with 36 pounds of air in the tires both front and rear. We found the Pontiac to be a very forgiving car. It can be pushed into a tight corner at exceptionally high speeds and will respond to the driver's steering readily although there is plenty of body lean involved. The car was next to impossible to "drift" on mountain curves. Attempts to "break loose" the rear wheels by "throwing" the car as we entered the corners did not help either because the rear wheels picked up traction again as soon as the power was applied and both front and rear wheels followed the same groove through the corners. For the general public, this is fine, but for a race driver, a bit more oversteer would be needed.

The rubbery feeling in the rear suspension was unnoticed in the snakey mountain curves and the car will get through the mountains as fast as any stock car on the road today with the proper tire pressure. A bit more experimenting with tire pressure, stabilizing bars, springs and shocks would make this car a real threat in a Mexican road race.

When it comes to acceleration and top speed, the '58 Pontiac will take care of itself very well. The Bonneville coupe which we borrowed from Suburban had the 300 horsepower engine with triple carburetion and a Hydra-Matic with a 3.23 rear axle ratio. The car averaged 7.6 seconds from o to a true 60 mph and would turn the 14-mile in 16 seconds flat. Speed at the end of the 1/4-mile was 88 mph. Acceleration would have been slightly better had our test car been equipped with the limited slip differential because there was plenty of wheelspin even though we "feathered" the throttle on takeoff. A stick shift Chieftain coupe with the 3.42 rear axle and 300 hp engine was also tried but was so slow getting started with the high gears that we made no timed acceleration checks.

We made no clocked high speed runs but did ride around Firestone Tire Company's new 7.7 mile test track in Ft. Stockton, Texas, at better than 120 mph in a stock '58 four-door sedan with a four-barrel carburetor. Firestone's test driver. Pat O'Conner, told us that the same car had been timed at 128 mph without being tuned. Our test Bonneville ran the speedometer needle right out of sight and kept accelerating the one time we tried it for a short stretch out on the Nevada desert. Even with the ten per cent error of our speedometer considered. the car easily exceeded 120 mph. We don't recommend that you try a '58 Pontiac for top speed though because most states don't allow such speeds and unless you have plenty of stopping room, you'll run out of brakes. The '58 Pontiac is too fast for its brakes but, of course, this is the sad story of nearly every car built in this country today.

Road noise and shock are very low when the tires are inflated to factory specifications but both increase as the tire pressure is increased. The driver has to make the choice here. If the car is to be used for high speed cross country travel, raise the pressure and to heck with the noise and vibrations. If the car spends most of its time on the city streets, use the lower pressure but raise it before any long trips.

The '58 Pontiac is so sure in the corners that we discovered a flaw in the triple carburetion that we didn't notice in last year's car. The two end carburetors of the Tri-Power setup are like the secondary barrels in a four-barrel carburetor with the center carburetor taking the place of the primary barrels. Under normal operation, the center carburetor does all the fuel metering but when the secondary carburetors are called into operation by the vacuum switch, they open instantly and stay wide open until the vacuum switch is closed at which time they close instantly. This is fine for passing on a straight road but when you try to "feather" the throttle through a tight corner, a bit too much throttle opens the secondary carburetors and the instantaneous power surge can get vou in trouble. The same goes should all three carburetors be open and two of them suddenly close, the difference in power causes a sudden slowdown. A better arrangement might be to equip the end carburetors with idle systems and power systems, then use a mechanical progressive linkage that would permit partial opening instead of the open or shut arrangement now used.

To sum up the impressions of the '53 Pontiac, we would say that the styling has improved, suspension has improved, engine performance has improved and as the weight of the car is increased, the brakes are marching backwards. Perhaps it appears that we are pouring it on Pontiac a little hard especially since we've stated many times in the past that nearly all American cars are guilty of underbraking their cars. However, the full seriousness of outdated brakes really starts to stand out when you drive a car like the Pontiac that goes so fast so quick. If this keeps up, we are going to have to borrow an idea from jet airplanes and equip our sedans with drag parachutes in the deck lid to haul the cars of the future to a stop.

Next Month

Hot Rod Road Tests

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