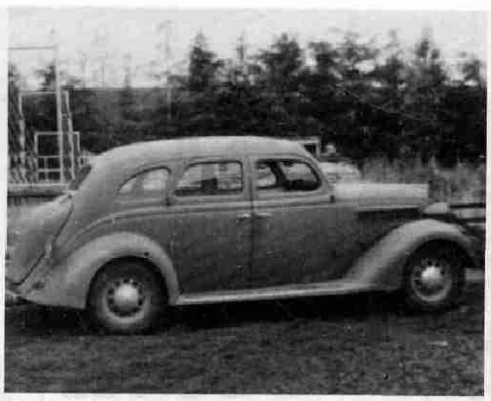
The Nash 400 is a seldom heard of car considering the fanfare in 1935 when it was released as a much heralded new car. John Cope of New Zealand prepared this story on this unfamiliar car.



Side view of Nash 400.

Rear view. Non-original tail lights and Nash badge in centre of boot lid.

The Rise and Fall of the Nash 400

by John Cope

It would be reasonable to suppose that a car manufacturer about to introduce new and sometimes radical features would choose to introduce such features on their top-of-the-line models. Not so Nash Motors. On at least three occasions they bought in notable advances and changes on their lower priced models, with the more prestigous cars being updated later.

The first occasion was in 1926, when Nash first offered four-wheel brakes and seven main bearing crankshafts on their low priced Ajax, with the senior cars not receiving these innovations until the following year. Later, in 1941, they introduced unit body construction and all-coil suspension on the 600 series, while the more expensive Ambassador models waited until 1949 for these refinements.

During 1935, came the Nash 400. It should be mentioned at this point, to avoid confusion, that Nash had used the designation "400" before, in 1929-30. However, these earlier cars had the term "400" applied to the whole model range while the later "400' was a distinct model *within* a range.

Before taking a closer look at the 1935 Nash 400, it may be as well to review its general background and to see how it evolved.

During his time at General Motors, Charles Nash spent a period as head of Buick. As is well known, Buicks mainstay engine until 1930 was the overhead valve, in-line six. It seems likely that when Nash began producing his own cars in 1918 he was influenced by Buick principles, as all Nashes had overhead valves until 1926—not a common practice in those early years.

The afore-mentioned Ajax introduced side valves to the Nash line in 1926, and for the next 30 years the company produced overhead and side valve power plants concurrently, again an unusual practice as most makes used one or the other valve layout exclusively.

In the years 1931-32-33, the overhead valve 6 was discontinued, its place being taken by a series of small, side-valve straight eights. During this period, overhead valves were restricted to the two largest 8 cylinder engines (series 80 and 90) and the only six available was a side valve. By 1933, this engine had evolved into a 217.8 cubic inch, 3-1/4" x 4-3/8" bore and stroke power plant termed the Big Six.

1934 ushered in more changes. The 8 cylinder range was reduced to the overhead valve 80 and 90 series (last year for the 90) and the overhead valve six was re-introduced. This engine, with a bore and stroke of 3-3/8" x 4-3/8" and displacement of 234.8 cubic inches was to be retained, with modifications until 1952 when its bore was increased to 3-1/2".

New for 1934 was the low-priced La Fayette, using the 217.8 cubic inch engine of the 1933 Big Six.

The power plant of the soon-to-be-created Nash 400 was based on the new 234.8 overhead valve 6, and the car itself was introduced in mid-1935 to fill a supposed price gap in the Nash range-more on this later.

The 400's main area of interest lies in its engines design. Nash engineering combined product rationalisation with unconventionality in this power plant. In effect, it was a side valve version of the 1934 Big Six. Bore, stroke, and capacity were identical, as were many components. In fact, only the block, head, valve gear and cmashaft differed from the Big Six. All other components (carburetor and distributor excepted) would freely interchange between the two engines.

Judging from appearances, the main cylinder block casting may have been based on the 217.8 cubic inch La Fayette engine, but there the similarity ends. The new 400 engine block was the first Nash engine to have all its oil galleries cast integrally. A long oil gallery ran the length of the engine, on the right hand side, covered by a bolt-on plate. Oil passages ran from this gallery, down through the webs supporting the main bearings, to provide pressure feed to both mains and big ends. Previous practice had been to use an oil "manifold" of copper tubing to convey oil from the pump to the bearings.

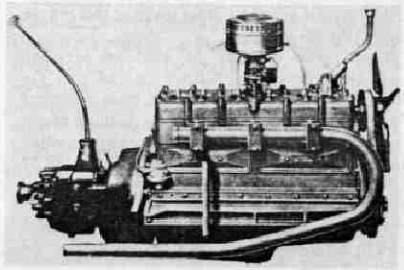
This oil pressure tubing found in conventional cars is eliminated by the advanced design of the Nash "400."

INSTRUMENT PANEL OIL GAUGE Nash "400" drivers may know at any time how much oil is in the crankcase by simply pressing a button on the instrument panel. (See illustration on page 51.) This button makes an electric contact with the float in the oil pan and the dash gauge marked "fuel" registers the amount of oil. Unless the button is pressed the dash gauge registers the amount of gasoline in the tank.

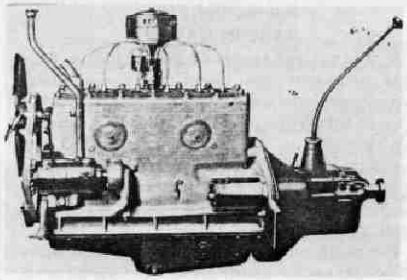
The Nash "400" electric oil gauge is a great convenience and makes it unnecessary for gasoline station attendants to lift the hood to "check your oil."

FAN LUBRICATION The fan is lubricated from a reservoir which holds several months' supply of oil. As the fan revolves, a groove in the reservoir has a self-pumping action which keeps the fan bushing lubricated.

But these tricks of the foundry trade didn't stop at oil galleries. The new engine also had its inlet manifold cast integrally. What this means is that the manifold became a long gallery in the top of the block, covered by the cylinder head and with side galleries running to the valve parts. The carburetor bolted directly onto the cylinder head, and in place of an exhaust manifold was an extension of the exhaust pipe clamped to the block in a similar fashion to the well-known Ford Zephyr Sixes of later years—maybe Ford borrowed the idea from Nash!

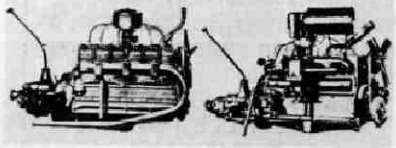


Right side of Nash "400" Monitor-Sealed Motor. Note its simplicity.



Left side of Nash "400" Monitor-Sealed Motor. Note absence of "gadgets."

What are the advantages of such an unorthodox system? To begin with, the engine was less expensive to build, as separate inlet and exhaust manifolds were eliminated. Along with this, a whole assortment of gaskets, nuts, bolts and washers also became unnecessary. This in turn meant easier servicing and less leak-prone joints. It also made valve access much easier, with no bulky and obstructing manifold to work



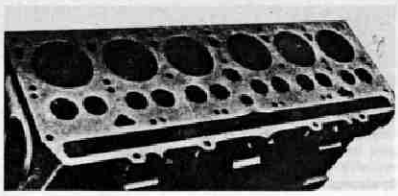
Note the greater simplicity of the "400" motor at left in contrast to the conventional motor at right.

ISO-THERMAL FUEL SYSTEM

Iso-thermal means Uniform Temperature under all conditions. Nash engineers selected it as a name which best explains the temperature control of the fuel system of the new *Monitor-Sealed Motor.* In the new "400" motor, it is possible to keep the heat of the entire fuel intake system fixed at uniform and most efficient temperature, because:

1. The entire intake manifold is built inside the cylinder block as an integral part of the block itself.
2. The entire length of the intake manifold is heated by water jackets and the exhaust passages.
3. The temperature around the Nash "400" intake manifold is not affected by outside conditions.

The new "400" Monitor-Sealed Motor is not "just another motor." Far from



Featuring the intake manifold which is cast inside the block as an integral part of the block itself.

OUTSIDE MANIFOLDS ABOLISHED Also important is the fact that exhaust and intake manifolds and heating chambers, long a familiar part of the conventional motor have been removed from the outside. Fewer gaskets are required by the new "400" motor; thus, many places where leaks and other trouble might occur have been eliminated.

around while setting tappets, or to remove when grinding valves.

The main advantage, however, is improved fuel/air mixture distribution. Enclosed in the block and surrounded by water jackets, the inlet manifold is not subject to external temperature fluctuations. A conventional manifold tends to be cooler at the front than at the back, due to the air blast from the fan. Then, too, the fuel reaches the cylinders more quickly and directly than is the case with a conventional manifold. There is no need for a heat riser to warm the carburetor. Bolted to the cylinder head, it warms at the same rate as the head.

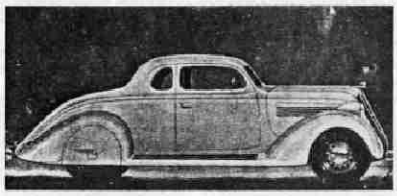
Few systems, however, are without some negative features, and the Iso-Thermal fuel system (as it is known) was no exception. Its major drawback was that inlet and exhaust passages tend to be rather cramped, which can affect volumetric efficiency to some degree. Other, less critical drawbacks are:-

1. The gasket-less joints of the exhaust pipe to exhaust parts must be kept clean and coated with a good exhaust sealing compound to prevent leakage. Over tightening of the clamps can also cause leakage by distorting the pipe.
2. There is no way for performance freaks to mount multiple carbs!

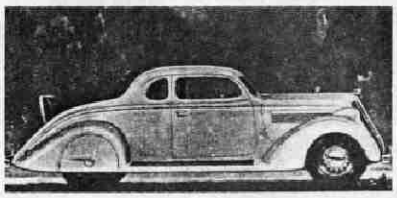
Interestingly, Nash named the new manifold system "Monitor Sealed", the reference being to America's first steel battleship of civil War fame, the "Monitor".

The new 400 engine had other noteworthy features shared by its brethren in the Nash line. The water pump, mounted midway along the engine on the left hand side, provided uniform cooling for both back and front of the cylinder block without need for a water distribution tube. Engine blocks were chrome nickel alloy iron; pistons were aluminium with Invar struts to minimise expansion and contraction with temperature changes. Gudgeon pins and cylinder walls were lubricated under pressure. Crankshafts ran in 7 main bearings—even the low priced La Fayette had this feature, at a time when Chevrolet and Hudson Sixes rumbled along on three mains, and most others made do with four. These Nash sixes had more main bearing area than other sixes of their day; in fact, more than any 8 (Packard and Studebaker excepted). All 8 cylinder Nash crankshafts ran in 9 main bearings.

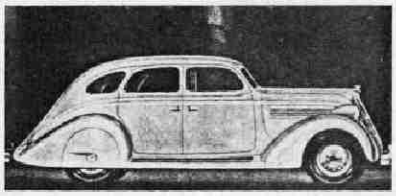
IN NEW NASH "400" LINE



NASH "400" 5-PASSENGER COUPE

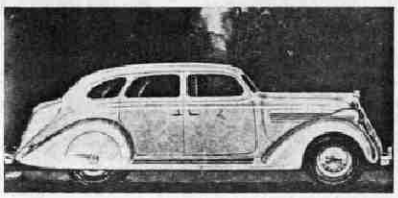


NASH "400" 5-PASSENGER COUPE WITH RUMBLE SEAT

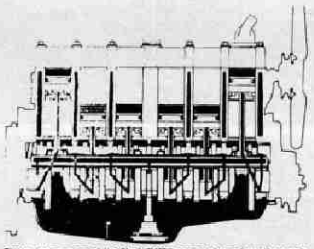


NASH "400" 4-DOOR SEDAN

4 NEW SEDANS . . 2 COUPES



NASH "400" 4-DOOR TOURING SEDAN WITH TRUNK



This cutaway view of the Nash "400" engine shows how the crankcase oil is forced by pressure to lubricate moving parts. Oil passes up through the pump to a hole in the cylinder block which connects with the center crankshaft bearing and oil manifold at the side of the block. This inbuilt oil manifold is also connected to other crankshaft bearings and camshaft bearings by holes drilled in the cylinder block.

CRANKCASE VENTILATION Oil in an engine is diluted by moisture if the crankcase is not properly ventilated. The Nash "400" crankcase ventilation eliminates this condition. The oil filler pipe for the engine, which extends upward and forward to the service door in the top of the hood, has a flat cover held in place by a spring. A notch in the side of the filler pipe at the upper end provides an opening through which air can enter the crankcase. Another pipe extending downward from the side of the crankcase to below the level of the oil pan, creates a suction while the car is in motion, which draws moisture and fumes from the crankcase. Thus oil retains its lubricating quality much longer and bright bearing surfaces are protected against corrosion.

OIL MANIFOLD Replacing the conventional tubing, with its many connections, which has been used for so many years to distribute oil to the bearings of most engines, Nash engineers have built the "400" oil manifold as an integral part of the cylinder block. This advanced practice offers four definite advantages.

1. It eliminates piping.
2. Eliminates chances for breaks and leaks in the oil lines.
3. There are fewer parts.
4. Infinitely easier to clean.

Iso-thermal manifolding remained exclusive to the 400 series until 1938. The La Fayette engine,—discontinued after 1936—never received it, and the overhead valve engines had to wait until 1938 before their cylinder heads were re-designed to accept the new system. A similar delay occurred with the integral oil galleries, the senior Nashes not receiving this feature until the early 1940's.

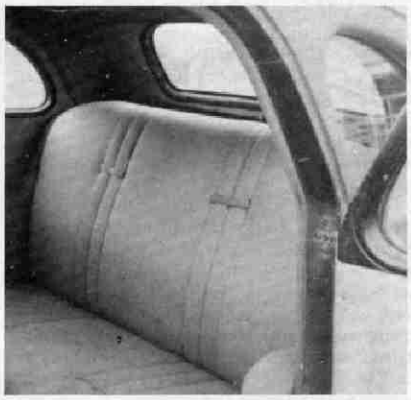
The 1935 model range was as follows

1. **La Fayette** (series 10) 113" wheel base, prices from $590 to $720
2. **Nash 400** (series 40) 117" wheel base Prices NA
3. **Nash Advanced 6** (series 20) 120" wheel base, priced from $825 to $945. This model used the same engines as the 1934 Big Six.
4. **Nash Advanced 8** (series 80) 125" wheel base. prices $1045 to $1165.
5. **Nash Amabssador 8** (series 80) 125" wheel base. Prices $1170 to $1290.

Prices varied with body types. Hydraulic brakes made their first appearance at Nash, available on all series except the La Fayette.

Overdrive also made its debut at Nash in 1935 following Chryslers introduction of this device to the motoring public on their radical Airflow models the previous year.

Airflow influence was obvious in other ways too. The Airflow, and its contempory, the Hupmobile "Aerodynamic", represented drastic breaks with traditional styling. Although often derided by competitors and public, these advanced cars must have had considerable impact in design circles as most American companies came out with new, streamlined bodies for 1935.



The original interior of the New Zealand Nash 400.

The beast with its mouth open! Note the clamps with wing nuts.

Nash was no exception. They named their new style "Aeroform" and made it available on all but the La Fayette. Although less radical than Chrysler airflows, their general shape and design was very similar.

The 400 was the most "Airflow" of Nashes' 1935 Aeroform offerings. It copied the Airflows system of integral grille and bonnet which lifted as a unit to give access to the engine. The unit was hinged at the rear and was supported by a prop rod when raised. Closed, it was secured by two spring loaded clips at the rear and two clamps with wing nuts at the front.

As this arrangement could not be opened in a jiffy, it gave rise to a couple of other unusual innovations. A small hatch under the bonnet mascot flipped up to give quick access to the radiator and oil filler caps. The latter was on the end of a long tube and was positioned directly behind, and on the same level, as the radiator cap.

Checking the oil level was accomplished by simply pressing a button on the instrument panel, which made the fuel guage register the oil level via a float and gauge unit in the sump (a similar device was later used by Rover). For those who didn't trust this newfangled gadgetry, a conventional dipstick was also provided. This fuel and oil gauge combination later found its way into senior Nash models.

The 400 was not introduced until midway through the 1935 model year. Perhaps as a consequence, (extra time to refine body design) it had an all steel, one piece roof, whereas the senior cars continued to use an insert panel in their roofs until 1937.

This mid-year introduction also probably accounts for the fact that many publications do not list the 1935 Nash 400 at all. Even American Motors Official Specification book does not mention it, listing the first 400 as a 1936 model. There is no doubt, however, that these cars were serialled as 1935 models. The car depicted in the accompanying photographs carries a 1935 model number.

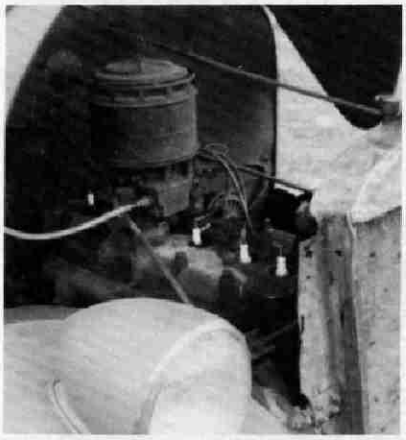
It's also interesting to note that during this period, Nash Motors had no separate styling department. Interior and exterior body designs were handled by the engineering department. It has been said that some of the early Aeroform Nash and La Fayette bodies look rather dumpy in comparison with some of their professionally styled competitors. While there is an element of truth in this statement, the cars nevertheless still possess a certain visual appeal.

It appears from Nash literature that the 1935 400's were continued into 1936 practically unchanged. During 1936, however, a re-designed 400 appeared, known as the "De Luxe". The model numbers of these later cars were suffixed by the letter A. Whether the De Luxe series superceded the earlier cars or whether both were produced concurrently as Standard and De Luxe models is not known for certain by this writer.

The new "400 De Luxe" sported a cast alloy, chrome plated radiator grille very similar (although not identical) to that of 1936 Ambassador Sixes and Eights. The grille/bonnet setup reverted to the conventional again; the bonnet louvres being teardrop shaped alloy castings, identical (and interchangeable) with those of the Ambassadors.

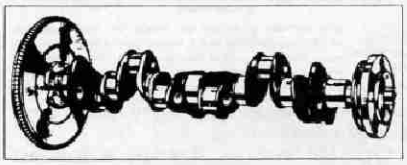
The 400 was only produced as a Model in its own right during 1935 and 1936. For 1937, the 400 and La Fayette lines were merged to form a single model known as the "La Fayette 400". This new line used the 400's monitor sealed motor and 117" wheel base, and shared the same basic body as the higher priced Ambassadors. These cars were sold in the US as La Fayettes, but for export were equipped with Nash hub caps, radiator badges, and (in 1937 at least) Ambassador 6 bonnet mascots and were sold as Nash 400's. In 1941 they were replaced by the new 600 series.

The car shown in the photos is an original, unrestored, and well kept example of the rare 1935 400. It is owned by Mr Ian Dempsey, a farmer from Hook, South Canterbury, New Zealand and was purchased new by his father. It is something of a family heirloom, still in regular use, and definitely not for sale. At the time the pictures were taken, the Nash had not long passed the magic 100,000 mile mark and was running well. Its only major repairs had been exhaust system replacements; the head and sump had never been off. Regular and careful maintenance plus the easy cruising afforded by overdrive have no doubt been factors contributing to its long and trouble free career. The only non-original items are an electric fuel pump and larger, more modern tail lights. It has been repainted once, and a join in the centre of the front bumper and a missing radiator grille badge are the only reminders of the time it demolished a Vauxhall whose driver foolishly U-turned in front of the Nash.

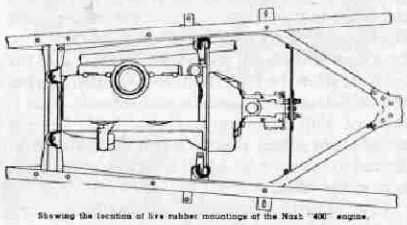


Engine, right hand side. "Hockey stick" exhaust and carb bolted directly onto cylinder head. Coil in firewall, also accessory oil can and non-standard electric fuel pump. Oil filter can be seen behind radiator cap. The plate with four bolts visible between headlight and radiator in part of the radiator and mudguard bracing system.

Dashboard layout. The small button at the lower centre registers oil level on fuel guage when pressed. Overdrive control is barely visible below the two left hand white knobs. Unusual feature is glove box on right hand side. Hand brake lever on extreme right is a traditional Nash feature. Engine is started by depressing clutch to floor. The access hatch for oil and water fillers: closed and open.



The Nash "400" crankshaft uses 7 bearings. The overseas six motor uses 3 or 4.



Showing the location of the rubber mountings of the Nash "400" engine.

PISTONS AND CONNECTING RODS

ALUMINUM PISTONS WITH INVAR STRUTS — Nash engines use aluminum alloy pistons with Invar Struts because of their many advantages over cast iron pistons and common split-skirt aluminum pistons.

LIGHTER THAN CAST IRON — Comparing them with cast iron pistons, we find (1) lighter weight that greatly reduces crankshaft load. (They're about one pound lighter per piston). This lightness cuts down engine inertia, speeds acceleration and gives faster response to the throttle. (2) Aluminum dissipates heat three times faster than cast iron—for maximum efficiency on "regular" gas.

Upholstery has survived 45 years of use extremely well except for a few stains and some wear on the front door panels. The simulated woodgrain finish on instrument panel and window mouldings is also in nearly mint condition.

Mr Dempsey says he has no plans to replace the 400 with a more modern car (why change a good thing?) so AI 689 will be cruising the roads of Canterbury for many years yet.

BODY TYPES & EQUIPMENT NASH 400 MODELS

3545—Nash "400" Victoria.
3543—Nash "400" Touring Victoria with Trunk.
3540—Nash "400" 4-Door Sedan.
3848—Nash "400" 4-Door Touring Sedan with Trunk.
3542—Nash "400" 3-Passenger Coupe.
3542R—Nash "400" 5-Passenger Coupe with Rumble Seat.

EQUIPMENT

Standard Equipment At No Extra Cost

Upholstery: Cloth is standard. Mohair optional on special order. Front door arm rests. Assist straps. Roller shade on rear window. Rear seat foot rests. Rear compartment ash tray with cover. Sun visor. Rear view mirror. Windshield wiper. Instrument panel package compartment. Two tail lights. Two parking lights in headlights.

Optional Accessory Equipment At Extra Cost

Rear wheel shields. Special tires. Radio. Hot water heater. Extra windshield wiper. Extra horn. Extra sun visor. Instrument panel cigar lighter. Safety glass throughout.