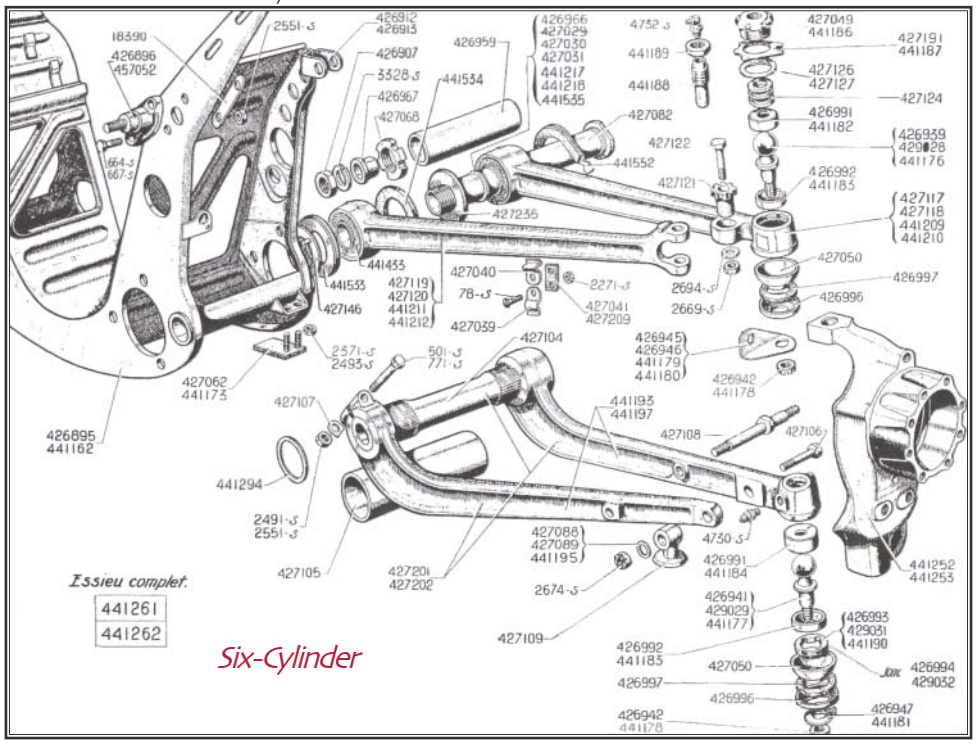
Suspension Matters

A Comparison Between the Front Suspension & Drive of the 4 & 6-Cylinder Cars

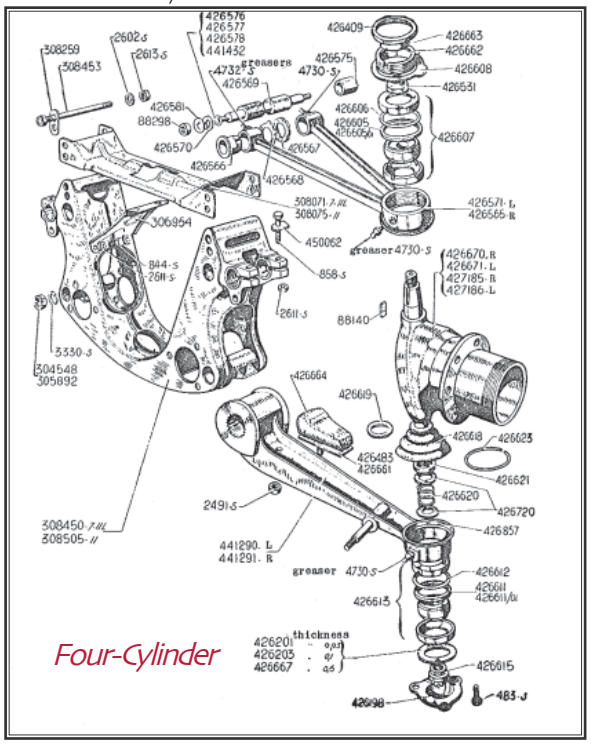
An assertion was made in a previous article of the superiority of the front suspension and drive of the 6-cylinder car over its 4-cylinder sister. This previous article dealt primarily with the potential failure of the stub axle of the driveshaft, and the absolute necessity of ensuring that the seating areas of the drum are tight upon the taper. This minimises the introduction of any flexural stress into the weakest part of the stub axle, namely the area of the Woodruff key. Failure of the shaft in this area will result in the front wheel detaching itself from the car with consequent loss of steering and braking. Clearly this was a problem area which the Citroën engineers thought was worth redesigning, and is superior in every way to the 4-cylinder car. The redesign soldiered on in the H-van front suspension, albeit in slightly modified form. I make the assumption based on the small number of 6-cylinder cars in the Club that the majority of members will be unfamiliar with its details.



Six-Cylinder

The nine significant improvements are listed below, and readers may find it useful to refer to the exploded diagrams.

1] 4-cylinder cars rely primarily on the top wishbones to triangulate the suspension, which transmit the forces of acceleration and deceleration from the wheel to the hull, and vice versa. The top wishbone swings on two bronze bushes which have to withstand these forces. They need constant greasing if they are not to suffer, and of all the suspension components on the 4-cylinder cars are the first to exhibit wear and cause a noisy suspension. 6-cylinder cars have both top and bottom wishbones triangulated which gives a sturdier, and more sure footed suspension. This practice was widely adopted by other manufacturers employing similar suspension layouts.


Four-Cylinder

2] The 6-cylinder cars have the bronze bushes of the top wishbone replaced by Silent Blocs. These are both maintenance free and quieter. A conversion kit is now made for the 4-cylinder car to do the same thing, and owners who have fitted them confirm both these advantages.

3] The hub unit of the 6-cylinder car has been completely redesigned such that the bottom ball joint is placed under the compressive weight of the car, as opposed to suspending the weight of the car in the 4-cylinder set up. Though I have not heard of a 4-cylinder bottom ball joint failing, I do know of an instance where the nut securing the ball to the taper was not done up tightly, allowing the ball to rotate on the taper.

4] The 6-cylinder cars have twin leading brake shoes on the front which give more efficient braking.

5] The 6-cylinder car carries the brake drum on bearings located in the hub unit. It is

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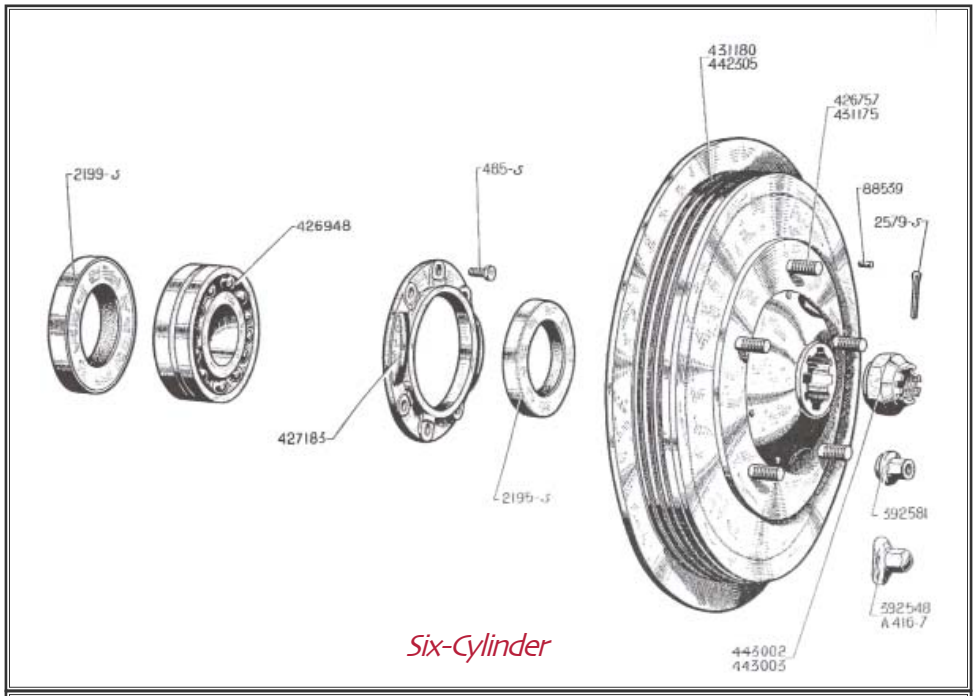

therefore proof against any problem with the driveshaft. The drum can easily be removed with its bearings by the removal of six bolts [7mm dia] which secure the bearing retaining flange to the hub ~ a 2 minute job. This in my view is by far the most significant of the design changes, doing away with the front road wheel being cantilevered on the end of the driveshaft.

6] The 6-cylinder car transmits the engine power to the road wheels via a driveshaft splined to the drum. This obviates the need for the castellated securing nut having to be done up brain tight as with the 4-cylinder design. Those familiar with the front wheel drive train of a Mini will recognise similarities between the two designs.

7] The drive shafts of the 6-cylinder are cushioned with a Bibax joint which eliminates the vibration and snatch in the drive train ~ the clutch disc centre place is unsprung, and the engine and gearbox are firmly affixed to the hull. This gives a very smooth transmission, further enhanced by very large diameter splines offering a much greater area for the transmission of power, and thus reducing wear and backlash.

8] The design of the 6-cylinder driveshaft allows it to be split in half by removing the six bolts on the flange to the Bibax joint, thus enabling its removal from the car, once the end castellated nut is undone. This is a ten minute job requiring no special tools ~ compare this with the palaver required on the 4-cylinder and the special tools, viz drum puller, outer bearing puller, castellated nut spanner for inner bearing, bottom ball joint breaker, ditto for top ball joint, track rod end breaker, etc.

9] The design of the 6-cylinder front suspension and drive train allows maintenance by a competent amateur, without the use of special tools, and avoids the 'lump hammer' mentality which believes that taper joints and their like will yield given sufficient battery.

All the foregoing points add up to a superior design which requires less maintenance is inherently safer, quieter, with less greasing points, and greater longevity. Before you all rush out to buy a 6-cylinder car, however, read the forthcoming article on the engine and gearbox design, which hopefully will cool your ardour.

This article was written by Chris Ryle and first appeared in 'Floating Power' the magazine of the Traction Owners Club Ltd [UK] and is reprinted here with their approval.

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