

PCN

Pacific Citroën News
Number 066 May - June 2016

The Publication Of: Northwest Citroën Owner's Club - Citroën Autoclub Canada - 2CVBC - Citroën Car Club

Electronic Edition



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Dates(s)		Location	2016 Event Information
June 16 - 19*	NY	Saratoga Springs	Drive She Said 40th Anniversary. http://driveshesaid.ticketleap.com/drive-she-said/
June 18 Sat	CA	San Fernando	San Fernando Mission , 11 AM. 15151 San Fernando Mission Blvd. San Fernando, CA 91345. Say your prayers, do a communion, or just plain genuflect if you need to keep your car running. If not come and enjoy one of California's finest missions and relish in the rich history left behind by the brave, the bold and the noble. There will be no inquisition but there will be pious dining at The Bear Pit BBQ afterward -10825 Sepulveda Blvd. Mission Hills, CA 91345 http://missiontour.org/wp/sanfernando/mission-san-fernando-rey-de-espana.html
June 19 Sun	BC	N. Vancouver	BC Italian-French Car Show 2016 Western Canada's largest gathering of Citroëns, French and Italian vehicles set upon a spectacular location overlooking downtown Vancouver! We return to our favorite location of Waterfront Park near Lonsdale Quay in North Vancouver where we celebrate our love of French cars. 10 AM to 3 PM on Father's Day Sunday. Our goal this year is 50 French vehicles. If you can only attend one event this year this is the one.
June 19 Sun*	OR	Forest Grove	Great Pacific NW Micro-Minicar Extravaganza. McMenamin's Grand Lodge. mark@microcar.org
July 14 Thurs*	BC	Vancouver	Bastille Day. Join Franck Point of Faubourg as we orchestrate a Tour de Ville through downtown Vancouver before being one of the featured things to do at Granville Island. Music, entertainment, and of course crêpes and French food. Details TBA.
July 10 Sun	WA	Seattle	Cit-Chat BBQ and Potluck at 2cvsRus. For 2016, this event moves to July. Intriguing food and Silent Auction items, good company and conversation all afternoon. One of our most popular events.
Aug 1 Mon*	BC	Tsawwassen	Tsawwassen Sun Fest Car Show 2016, BC Day weekend. Friendly and fun mixed make car show in sunny Tsawwassen BC. Karoline and Gary Cullen as well as Pat and Janet Gannon will be part of the fun. This show and shine is part of the Sun Fest weekend. \$CDN 20 Registration and Info on the website: http://www.sunfestival.ca/classic-car-show-shine/
Aug 11 - 14*	NL	Rheden	16th ICCC R. Landgoed Middachten, Rheden, Netherlands. www.ICCR2016.nl
Aug 12 - 14	CA	Santa Maria	Rendezvous - Santa Maria. More info to follow.
Aug 21 Sun	CA	Los Angeles	The Hollyhock House / L.A. Municipal Art Gallery, Barnsdall Park. 11 AM. 4800 Hollywood Bl. L.A. CA 90027. Art, architecture, and design - ever inseparable once again collide atop Olive Hill at the eastern edge of Hollywood. Frank Lloyd Wright's first California building project designed to "float" on the substrate - sound familiar? Come see how he did it. A tour of the lovely Hollyhock House is available as well as free admission to the L.A. Municipal Art Gallery, ample parking and generous picnic areas as well as abundant eateries all within a short walk. Truly a gem of Los Angeles! http://barnsdallartpark.com/
Sep 11 Sun*	WA	Tacoma	Pacific Northwest Concours d'Élégance, LeMay Museum, 2702 East D Street, Tacoma, WA 98421. www.americascarmuseum.org/event/pnw-concours-delegance/
Sep 17 Sat	CA	Burbank	Autobooks/Aerobooks Annual Shoplifting Spree 10 AM. 2900 W. Magnolia Blvd. Burbank CA, 91505. Brush up on your automotive literature as you sally through the stacks of printed matter. A great place to meet and greet other car enthusiasts. Elevate your spirits on fine coffee while pawing the pages with jelly donut-smeared fingers! Purchases are not mandatory - but they sure help! This is also a ripe opportunity to sign up for the Best of France and Italy car show in November! Lunch will be at: Monte Carlo Deli, 3103 W. Magnolia Blvd. Burbank, CA 91505. (a mere 2 block walk from the bookstore.) http://www.autobooks-aerobooks.com/
Oct 16 Sun	CA	Agoura Hills	Tony's CX Graveyard 12 Noon. Back to school or back on the pavement. Tony has amassed the largest collection of non-running Citroën CXs in all of Agoura and is opening his doors for all to see! Bring your tired, your poor, your huddled old parts to share, swap, trade and sell as there is ample room for a jumble swap meet as well. Lunch will be BYOB. For the wily - sell, swap or trade your lunch for parts or vice versa... it's all fair commerce at this point! 28345 Foothill Dr. Agoura Hills, CA 91301
Nov 6 Sun	CA	Van Nuys	Best of France and Italy Car Show 9 AM to 4 PM. Woodley Park, Van Nuys, CA. This is our big Tour de Force folks! Bring out your Citroën and fluff up your feather dusters. Pick the grass from your tire treads with tweezers and look your best! Classically our Citroën display is one of the largest and liveliest at this show. We dare not to disappoint! Sign up early and save! http://www.franceanditaly.com/
Nov 27 Sun	BC	N. Vancouver	Denouement Dejeuner 2016 Come enjoy a wonderful tasty lunch and social visit with Citroën friends you saw or met over the year in this quaint modern enjoyable restaurant. Tour de Feast, 319 Mountain Hwy, N. Vancouver, BC. This event fills up quickly so don't delay. RSVP before November 24 to John MacGregor. johnnymac4bc@telus.net . Menu at: www.tourdefeast.com

Dec 3 Sat	CA	Sylmar	Hacienda de Hammondez 11 AM til ? Steve's House, another year, another hydraulic Santa on the lawn. Christmas is upon us and yes, we do celebrate with all the fixin's. BYOB food and cheer to share as Santa Hammond will be sliding down the chimney in his XM pulled by eight tiny reindeer (he finally found a way to get better gas mileage!) Come and join us. All are welcome and there's even a spare tin shed out back in case you've had too much fun. 13301 Hubbard St. Sylmar, CA 91342	
Dates(s)		Location	2017 Event Information	
Jul 26 - 31*	EU	Portugal	22nd Worldmeeting of 2 CV Friends. Ericeira, Portugal. www.facebook.com/2cvPortugal2017	
Aug 21	OR	Various	Raid Soleil Noire. Tour to observe an eclipse of the sun through central Oregon. More info TBA.	
			* Indicates event not sponsored by CCC-NWCOC-CAC	

ENGINEERED FOR ENGINEERS
CITROËN

In 1934, Citroen of France, introduced an entirely new automobile. "The car 20 years ahead." The first front-wheel drive Citroen, with unit frame and torsion bar suspension all around. The accuracy of the slogan is shown by the fact that this model was continued relatively unchanged, until 1955.

Let's examine a Citroen, transportation that's "year's ahead for years to come," from stem to stern, a functional automobile.

FRONT BUMPERS . . . are stainless steel, built in a half circle . . . reason, your security. Engineers know that this design is better than a flat surface bumper.

WIND TUNNEL STREAMLINED STYLING . . . Jet nosed aerodynamic design plus full belly pan insures minimum drag . . . results — performance, economy and distinction.

NO FRONT GRILL . . . Reason — air-scoops cool engine, and inboard disc brakes, also ventilate car as desired. No smashed grills!

SPARE TIRE . . . Mounted flat under hood, between bumper and radiator. Reason . . . added safety, convenience and permits more useable space in trunk.

TIRES . . . Michelin X, steel reinforced safety tires are standard equipment. Reason . . . again your security plus handling and comfort.

FRONT WHEEL DRIVE . . . What happened to pusher type aircraft? Over a quarter of a century ago, Citroen changed from push to pull propulsion. Reasons . . . logical and practical. All running gear is in front of the firewall. No long drive shaft with floor tunnel. More trunk room. Weight distribution gives inherent stability and understeer. With Citroen's front wheel drive, application of power increases understeer whereas in rear wheel drive it promotes oversteer. No change in steering wheel rim pull between power-on and power-off in either slow or fast bends.

STEERING . . . No spoke, curved column wheel. Rack and pinion, worlds most positive. Vertical kingpin with no offset (true center point steering) and constant velocity universal joints. Overall steering ratio is 12 to 1, giving 3.1 steering, lock to lock. Turning circle is only 36 feet.

WINDSHIELD . . . Full vision, safety pop-out permits maximum visibility and security.

SUSPENSION . . . Hydro-pneumatic on each wheel, exclusively Citroen's. Consists of a long-skirted piston with a bore of 1.375 inch. This cylinder communicates with a sphere having an inside diameter of 3.9 inches, divided in the middle with a rubber diaphragm. The hydraulic side retains the fluid, the trapped side is sealed with nitrogen gas. A two-way restrictor valve, provides the damping action for jounce and rebound. Pressures are, front 830 psi and rear, 370 psi.

REASONS . . . Permits Citroen to be the worlds easiest riding car. Greatly enhances handling and roadability. Self-leveling regardless of passengers or luggage weight distribution. Enables ground clearances of from 3 to 13 inches. Quick, effortless, tire changing . . . merely raise car hydraulically to 13 inch clearance, place prop stand under appropriate side and the pressure is lowered. Suspended side then raises its wheels off the ground by virtue of the torsion anti-roll bars.

CITROËN CARS CORPORATION
8423 Wilshire Blvd., Beverly Hills, Calif. OLIVE 3-8330

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BADER MOTORS
3135 Market Street
Riverside, California
Phone OV 6-2162

Citroën E-Mehari : A Free Spirit

from Citroën Presse

The E-Mehari is a vehicle connected to the history of the brand but with its sights set squarely on the future. It is a wink to an iconic vehicle, the 1968 Méhari, but also far more than that: it is a cheery, all- electric 4-seater cabriolet with modern, fun styling. Through this new stage of its partnership with the Bolloré Group, Citroën is confirming its ambition to bring to market cheery, optimistic vehicles that are different from the rest.

Stylish, confident, offbeat, and even sassy..... we could use so many words to describe the new model by Citroën. The E-Mehari is a bold, vibrant vehicle, very much in tune with the Citroën spirit. The E-Mehari is an "it car", designed to appeal to customers looking for an alternative vehicle with a positive outlook on life, attentive to trends and to the environment. Incomparable, silent and stress-free, the E-Mehari stands apart as a free spirit in the automotive market.

A Unique Personality

The exterior design of E-Mehari reflects Citroën's positioning. All the brand styling cues are visible, including:

- an expressive gaze with dual headlights, the signature of the Citroën brand;
- a unique, optimistic design featuring full, warm contours, smooth lines and a smiling front end; clean styling, symbolising true, simple pleasures, another way of talking about driveability.

This charismatic personality is accompanied by radical choices in colour. The E-Mehari offers a wide range of possibilities for personalisation with:

- four body colours: blue, as an invitation to get away from it all, orange to convey a sense of energy and optimism, an invigorating yellow and an elegant beige.
- two roof colours: black and orange-red.
- Two interior trim colours: a natural-looking beige and a high-tech orange-red with a central pattern inspired by water sports. Both are made of plastic-coated fabric and are completely waterproof. This makes the wildest associations possible for all those looking for a colourful, expressive and fun car.

The E-Mehari features a raised body, with touches of black provided by the wing extenders, lower valance and bumper. A clear nod to the world of leisure and fun. As a result, the E-Mehari is a vehicle of fresh, expressive styling that will appeal to buyers looking for a distinctive, attractive car.



An Original Mindset

The mindset of E-Mehari reflects that of an iconic Citroën vehicle, the Méhari, through its looks and character as well as its practical, leisure-orientated side. Like the Méhari, launched in 1968, the E-Mehari is:

- convertible, with a removable top closed at the side by a foldaway system with large windows. Users can cover the front, the rear, the side or the whole vehicle;
- fitted with four real seats, including a folding rear bench ;
- equipped with a raised chassis for all-terrain driving;
- easy to use: it can be hosed all over, both inside and out.

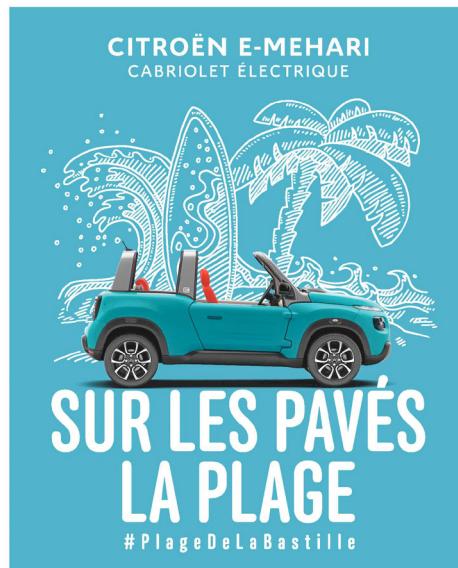
The ribbed door pattern is a nod to the designers of the original Méhari and the undulating lines of the bodywork. Similarly, the exterior colours reflect those present on the launch of the Méhari.

This link with the Méhari, a legendary vehicle that left its mark on its times, gives the E-Mehari a strong identity. Its distinctive approach will appeal all those looking for authenticity and fun.

A Liberating Driving Experience

Although the E-Mehari is a vehicle of simple, relaxed design, it nevertheless features advanced technology. It is an all-electric vehicle with battery technology based on the expertise of France's Bolloré Group. With its LMP® (Lithium Metal Polymer) batteries, the E-Mehari combines a long range with performance, reliability and security.

LMP batteries are recognised for their energy density and safety in use. They are dry batteries (it means "fully solid") giving them many advan-



tages such as not being weather-sensitive. They give the E-Mehari a top speed of 110 kph with a range of 200 km in the city.

These functional batteries can be fully recharged in eight hours on a 16A socket, domestic station or public stations such as Autolib in France. Or, in 13 hours on a 10A domestic socket.

As a result, the E-Mehari conveys a new sense of freedom and relaxation, allying the joys of open-top driving with the acceleration, ease, and silence of an electric vehicle.

Built at the PSA PEUGEOT Citroën plant in Rennes, the E-Mehari will launch in France in spring 2016.

Technical Characteristics

Dimensions

Length: 3.81m

Width: 1.87m

Height: 1.65 m

Boot capacity: 200 dm3 - 800 dm3 (seats folded)

Motor And Battery

Maximum power : 50 kW

Rated power : 35 kW

Lithium Metal Polymer battery: 30 kWh

Performance:

Top speed: 110 kph

Range:

Urban cycle: 200 km Extra-urban cycle: 100 km



New Citroën C4 Picasso

from Citroën Presse

The second-generation Citroën C4 Picasso launched in 2013 has proved immensely successful, appealing to over 300,000 customers with their remarkable design and comfort. The New C4 Picasso is entering a new era in summer 2016, boasting even more dynamism and distinction, with a new front end, a two-tone roof and more customization possibilities, including a choice of four distinct interior design schemes. And to ensure that traveling in the New C4 Picasso is always a unique experience, it features new intuitive and useful technologies such as the Hands-Free Tailgate, a new connectivity offering with Citroën Connect Nav and a new engine, the PureTech 130 S&S EAT6. The New Citroën C4 Picasso brings motorists a global experience of well-being of body and mind just like the Citroën Advanced Comfort® program.

WELL-BEING FOR ALL, through spaciousness, modular design and superior on-road performance, further strengthened by a choice of four customizable interior design schemes for creating a cabin in one's own image and adapted to the lifestyle of each one. Technologies that make life easier, with the new 3D Citroën Connect Nav connected navigation system combined with a new 7-inch touchscreen, providing greater responsiveness and new connected services. The new system also optimizes the use of the 12-inch HD screen for more flexibility and clarity.

Another new technology for simplified everyday use is the Hands-Free Tailgate, whereby drivers open the boot with a simple movement of the foot. Technologies are meant to simplify driving and improve safety, such as Speed Limit Sign Recognition and Recommendation, Adaptive Cruise Control with a Stop Function, the Lane Departure Warning System, the Active Safety Brake, Driver Attention Alert, and the Active Blind Spot Monitoring System. A new engine, with the introduction of the PureTech 130 S&S EAT6, extending the broad range of Euro 6 PureTech and BlueHDi engines with their impressive blend of performance and low fuel consumption.

The New Citroën C4 Picasso features: unrivaled suspension comfort striking an ideal balance between driving pleasure and road holding through vertically fit dampers and an axle attachment located below the wheel centre. Cocoon-like acoustic and vibration comfort, provided through electric power steering for optimized road feedback filtering in the steering column, controlled rolling noise with filtering via the front subframe, benchmark suspension in terms of road feel, and a new dual-material acoustic shim in the rear axle. Intelligent traction control improves traction on low-grip surfaces.

The New Citroën C4 Picasso is available with a range of petrol and Diesel engines that perfectly match the expectations of consumers and provide top-level driving pleasure while proving economical and respectful of the environment.



The C4 Picasso is a benchmark on fuel consumption and CO2 emissions for petrol and Diesel models with the best-in-class PureTech and BlueHDi engines (C4 Picasso PureTech 130 S&S 6-sp manual 115 g/km of CO2; C4 Picasso BlueHDi 120 S&S 6-sp manual 94 g/km; C4 Picasso BlueHDi 120 S&S EAT6 102 g/km; C4 Picasso BlueHDi 150 S&S 6-sp manual 107 g/km).

It is available with a broad range of petrol engines (PureTech 110 S&S 6-sp manual; PureTech 130 S&S 6-sp manual; THP 165 S&S EAT6) and Diesel engines (BlueHDi 100 S&S manual; BlueHDi 120 S&S 6-sp manual or EAT6; BlueHDi 150 S&S 6-sp manual or EAT6).

In 2016, the range is being extended with a new engine, the PureTech 130 S&S EAT6. The New Citroën C4 Picasso combines the excellent PureTech 130 S&S engine with the EAT6 automatic gearbox for total peace of mind at the wheel. The latest-generation EAT6 gearbox provides consummate driving pleasure and can be controlled directly from the steering wheel.

The PureTech 130 S&S engine complies with the new Euro6 pollution standard. With its fuel consumption limited to 5,11/km (46 MPG) and its CO2 emissions reduced to 115 g/km, the new PureTech 130 S&S turbocharged 3-cylinder engine is conclusive proof that downsizing serves to enhance performance and driving sensations.

Equipped with direct high-pressure injection and a new-generation high-yield turbo (operating at 240,000 rpm), it offers a remarkable driving experience right from the lowest engine speeds with maximum torque of 230 Nm coming at 1,750 rpm. It boasts the best-possible compromise between low-speed torque and power on the market, with 95% of torque available from 1,500 rpm through to 3,500 rpm, making it an exceptional performer in all circumstances. Thus equipped, the C4 Picasso and Grand C4 Picasso reach a top speed of 201 km/h.

Designed in France and produced in Spain at the Vigo plant, the Citroën C4 Picasso and Grand C4 Picasso 2016 will be launched from June 2016.



NWCOC Whidbey Island Tour 2016

PCN Editorial Staff, images by Bibliopticus Alanskii

Corraling French car enthusiasts is a bit like herding cats, it is possible in theory, but the reward has to be more than a fish-flavored treat and a warm lap. A full day was on the schedule organized by Dave and Scherry Cherrick and Al Johnson. This ambitious day of touring was cause for some thought, knowing that as a group we were committed to a head-count and a set departure time for a boat tour of Deception Pass. The boat tour had been heavily discounted for our benefit so there was no question of missing it.

We convened at 9:30 AM at Dave and Scherry Cherrick's charming farmhouse in Mount Vernon. Puget Sound graciously provided us with crystalline blue skies and summer-worthy sun, this set the tone for the entire day. Participants came from as far as Portland, Oregon, and Vancouver, BC, Canada. Dave handed out tour directions with time-distance points leading us to Mount Erie and Bowman Bay on Fidalgo Island and Cornet Bay and Langley on Whidbey Island proper. Scherry was being a good sport and holding some picnic spots at Bowman Bay.

Fidalgo Island, made so by the Swinomish Channel, held the first several points of interest on the tour. We made a brief stop at "The Corner" for picnic items and Bikini espresso, which presumably includes coconut, tropical fruit, and the benefit of glowing in the dark. Further along the route we passed Lake Campbell, which features a small island in a lake on an island in Puget Sound. Maps show there are several others as well. We began our ascent of Mount Erie from the Lake Erie Grocery. Once at the Erie Mountain Drive parking area, there was a momentary thought of walking up due to limited parking at the top. Turns out the road to the summit is something like a mile. Once at the view point, the south-facing vista of Puget Sound included the Cascades, Mount Rainier, the Olympics and our beloved islands. This serves as a reminder to those who are not regional natives of why the rest of us chose to live here. Our next stop was Bowman Bay.

Our tour was on a Free Day in Washington State Parks, due to National Trails Day. This was somewhat fortuitous because the Discover Pass rules and regulations are byzantine and full of exceptions based on circular logic. Not to mention that Washington state residents voluntarily pay a state park fee with their annual vehicle registration renewals. Those fees must be doing the job because the sanitary facilities in the parks were well maintained and clean, nothing less than a miracle on a busy weekend.

Dave had allowed 2 hours and 20 minutes for our picnic and a hike to see the Maiden of Deception Pass. By the time our day was done, we would experience 360 degrees of Bowman Bay, both the beach and on the water. The Maiden of Deception Pass hike, on the Pacific NW Trail, was just enough work to let you know you had earned your visit to the Kwuh-kwal-uhl-wut sculpture. This pole - not a totem pole - tells the tale of a Samish maiden who is seduced by a young man from within the sea. After much back-and-forth with her family, she agrees to live under the sea with her handsome man. Eventually she takes on the characteristics of sea creatures, such as scales for skin and seaweed for hair. The sculpture is two-sided, each representing her aspects of terrestrial maiden and creature of the sea. Next stop Deception Pass and the two bridges to Whidbey Island proper.

The bridges go from Fidalgo to Pass Island and then to Whidbey. We would experience 360 degrees of the bridges, this time by going under them on the water. Once at Cornet Bay, we filled a tour boat, which con-



Whidbey Island Tour

try to all appearances is not rough-riding or splashy like a whitewater raft. This made photography possible and recommended. We were treated to a basic history of Vancouver's exploration of the passes and islands—he did not believe Whidbey was an island, and the strong tidal action through the passage looked like a river's mouth. Later, apprised of the truth, he named the pass Deception. We would next travel over nearly the whole length of Whidbey.

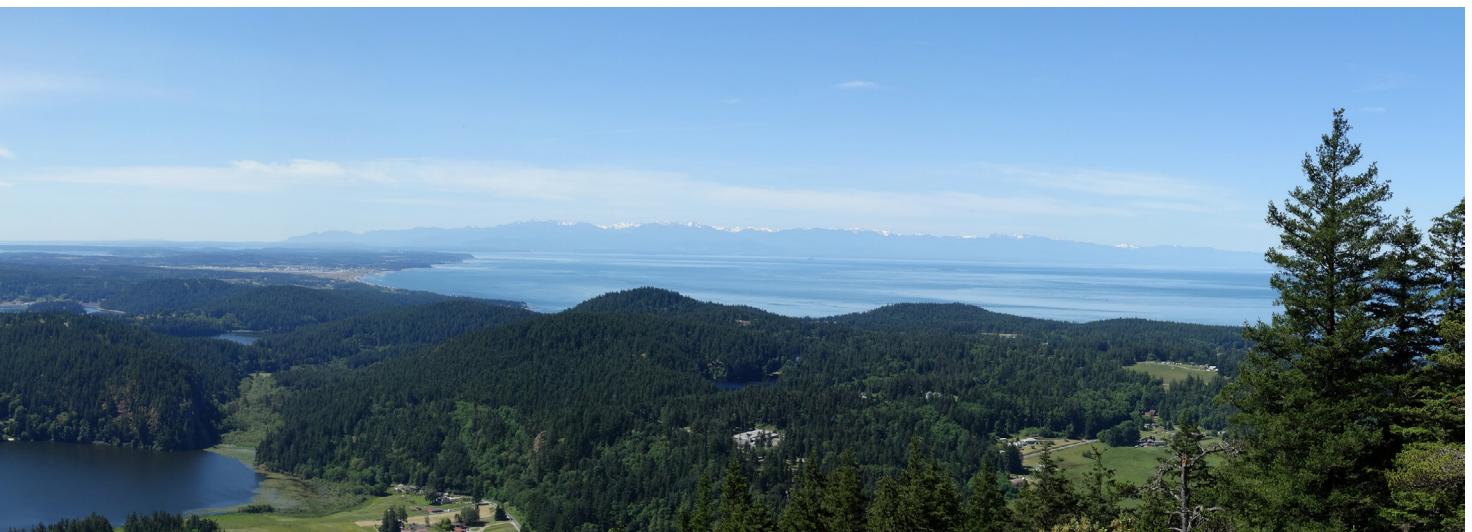
During the transit to south end of Whidbey, we observed that the island is shaped like a cursive capital "E." The top arc contains Naval Air Station Whidbey Island and Oak Harbor, an example of sprawling suburbia. Once south of Penn Cove, past a second airfield, the island's character seems to change. South of Keystone, where Highway 20 turns away and we proceed on 525, things felt positively rural. The Langley Loop treats visitors to street names like Xanadu Lane, Doc Savage Drive, Apollo and Delphi; the developers must have been fans of pulp writing or Greek mythology.

In Langley, our group had reservations at neighboring establishments, the Primo Bistro and Garibyan Brothers Mediterranean Grill. While both eateries were across the street from the quaintly-named Boy and Dog Park, actual parking for the cars would have been appreciated. Once seated substantial hunger manifested. Primo Bistro offered an à la carte menu which is totally what each person makes of it, though it runs the risk of adding up quickly. Said menu also had entrée salads, for example a Salade Niçoise for \$16.50. Unexpected fare included roasted wagyu bone marrow, clams and chorizo, wild boar ragout, but also standards like one-half roasted chicken or the bistro burger. The starters took their time getting to the table, as did the entrées, but after a long day in the cars it worked out fine.

The final part of the day, for several people, was the Clinton-Mukilteo ferry ride, then home. The culmination of a day of spectacular views and sightseeing was a huge column of smoke across the water over Everett. What would turn out to be the Everett recycling plant fire was well under way and the black smoke plume drifted south for miles.

Thanks are due to Dave and Scherry Cherrick and Al Johnson who coördinated over a span of months to make this whole day possible.





DS at 60 Part VII: Injection Électronique

PCN Editorial Staff,

Images from Relations Publiques Citroën, Bibliopticus Alanskii

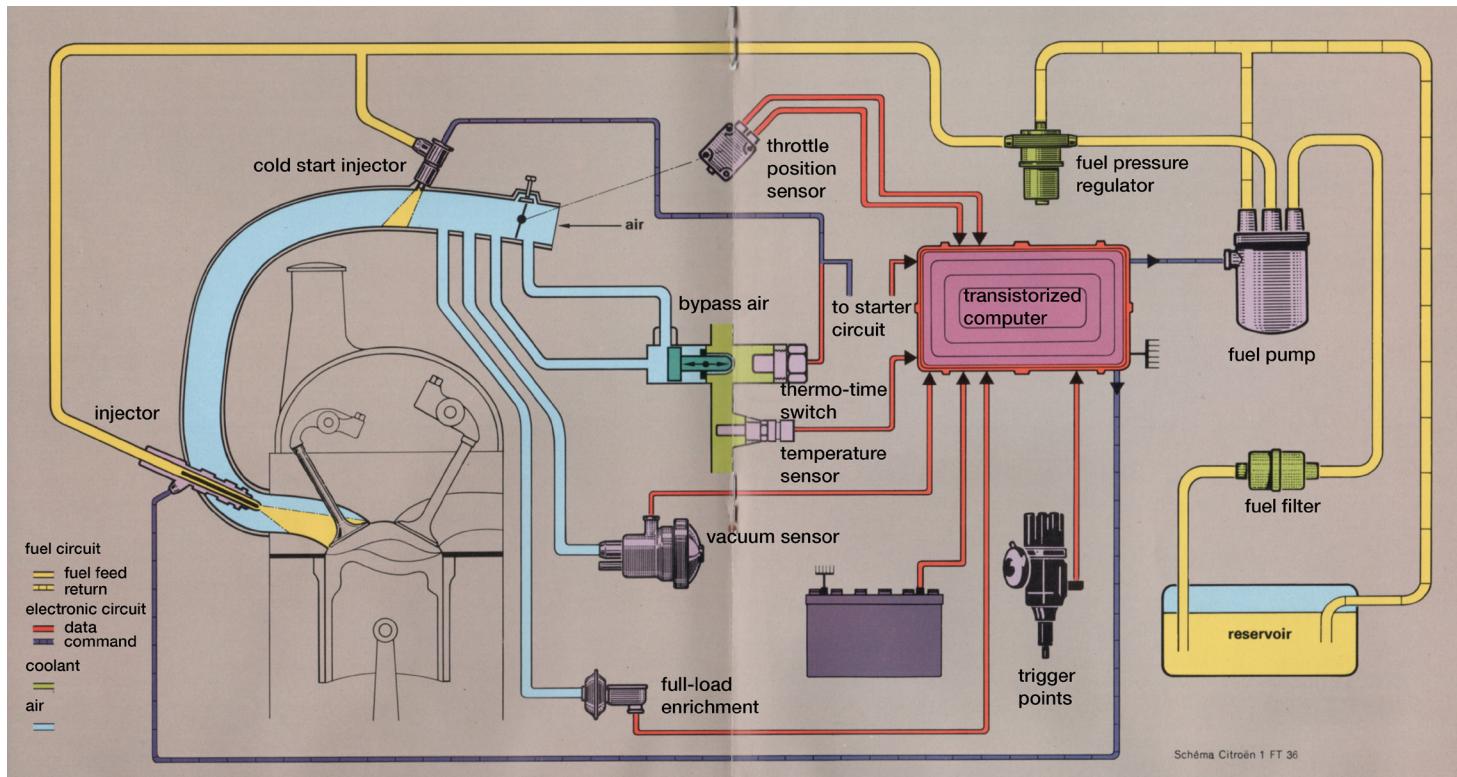
In 1970, the Bosch D-Jetronic electronic fuel injection system installed on Citroën's D model 2175cc engine thrilled reviewers who crowed that Citroën's DS 21 at last had a power plant worthy of the car's stature. Citroën mentioned that injection would help manage emissions issues in nations such as the USA, yet the injection cars were never sold in this market. The D-Jetronic name, rather than being another Citroën pun, referred to the German word "Druck" or "Pressure" which described the barometric vacuum sensor used in the design. The system was adapted for the D models using extant Bosch components; fuel pump, filter, injectors, pressure regulator, throttle position sensor, vacuum sensor, and other parts. The fuel piping, vacuum lines, sensors, and the totally analog transistorized control box were customized for the D engine. The electronic control box, at 13 inches long x 7 1/2 inches wide x 1 3/4 inch thick was larger than a US license plate, mounted awkwardly under the dash on the passenger side. The engine gained an oil cooler, mounted on the side of the crankcase, and taking air from the left hand brake duct.



1970



The benefit, ostensibly, of the electronic injection system was that by using numerous sensors and the electronic control box, the fuel mixture provided to the engine could be optimized instantaneously and continuously under all conditions. The immediate everyday effect was to make cold



starting easier due to complete elimination of the driver-controlled choke, suppression of icing, as well as virtually eliminating running issues such as vapor lock when hot. A modified cylinder head, DX 112-01 E, with Individual intake runners leading to it aided the engine's breathing. When combined with the optimization of the injection system, output figures rose from 106 DIN hp at 5750 rpm to 125 DIN hp at 5250 rpm from 2175cc, and from 123 ft-lb DIN torque at 3500 rpm to 135 ft-lb DIN torque at 4000 rpm.

A secondary benefit of the electronic fuel injection was better management of unburned hydrocarbons exiting to the atmosphere, providing that the piston rings, valves, valve guides and compression remained good. Also elimination of a carburetor's throttle shaft wear or warpage of the base, both of which disrupt a stable engine idle. A stable, predictable idle is essential to the proper adjustment of the Citromatic gearbox.

No system could be expected to boost the DS 21 engine output for free. The primary disadvantage of the Bosch D-Jetronic installation was architectural- the D model engine compartment was already full, so the intake runners, remote air filter housing, wiring and dozens of feet of tubing increased difficulty of access. Add to the mix factory-installed air conditioning and underhood work became problematic. The fuel pump was remotely located under the passenger side box section, with high pressure fuel at



DS Injection engine bay, **above**. The cast-alloy intake runners just fit beneath the hood profile, but the oil filler neck had to be extended. Jumble of wires at the far left lead to the vacuum sensor and temperature sensors.



Fuel injection and factory air-conditioning, **above**. Air filter housing displaced, a/c compressor requires another long v-belt in the jumble of pulleys. Typical; underhood components may be visible, but not reachable.

27-29 psi traveling to the front of the car and to each of four injectors with a fifth injector for cold starting. This resulted in at least 20 locations where pressurized fuel could leak, potentially spraying over the hot engine. Similarly, the Bosch fuel injection design is notorious for vacuum leaks, which throw the entire system into chaos, potentially making the car undriveable.

A secondary disadvantage of D-Jetronic on the D engine involved the distributor. Bosch used a second set of "trigger" points built into the distributor body, but totally separate from the ignition points. This meant the distributor was unique to the injected cars, and while the trigger points themselves wear very slowly, they represent another potential failure mode. This is not to mention classic ignition troubles such as moisture inside the cap, carbon tracking and cross-talk, or issues with the advance mechanism, the rotor and carbon pencil or inevitable distributor shaft bushing wear.

Was "Injection Électronique" worth the extra cost and complication of an already complex machine? Injection added pages of parts to the already monumental two-volume, 946-page D model parts manual for 1970. The reviews of the DS 21 IE predicted what seems to have happened; that customers who could afford Injection would be glad to have the special badge on their trunk lid, and let their mechanics deal with the headaches.

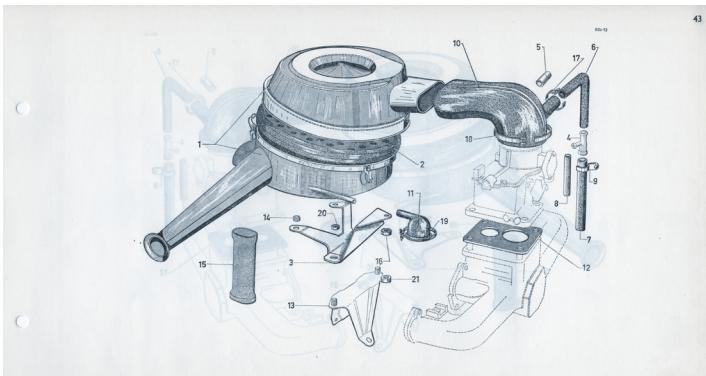


DS 21 carburetor, **above**. Underhood density fairly typical, but the US air injection pump and pipes add clutter. Unique cylinder head for emissions control may have been incompatible with injection.

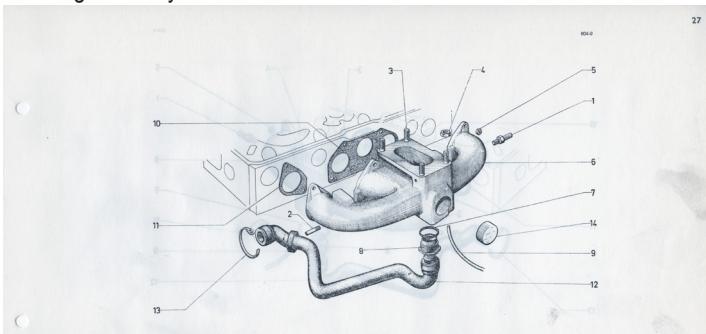


DS 21 carburetor version, **above**. From this side, completely typical of the type. It is possible to directly adjust the clutch clearance or the centrifugal regulator. Right hand sphere is surprisingly easy.

DS Injection Électronique



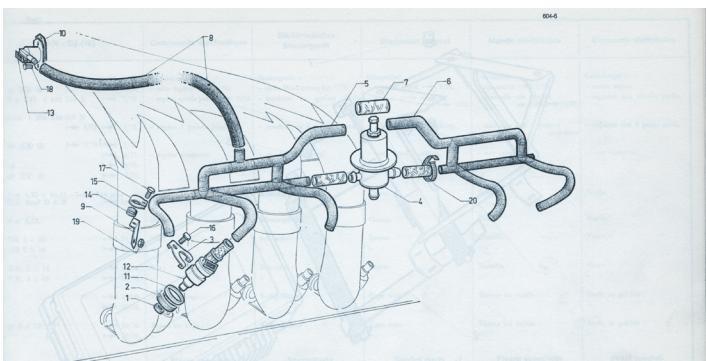
D model carburetor engine air filter assembly, **above**. Cold-weather chimney from the exhaust heat shield, flexible rubber elbow to carburetor. Not much to go wrong. The rubber elbow and crankcase vent pipes can crack, resulting in an oily smell inside the car.



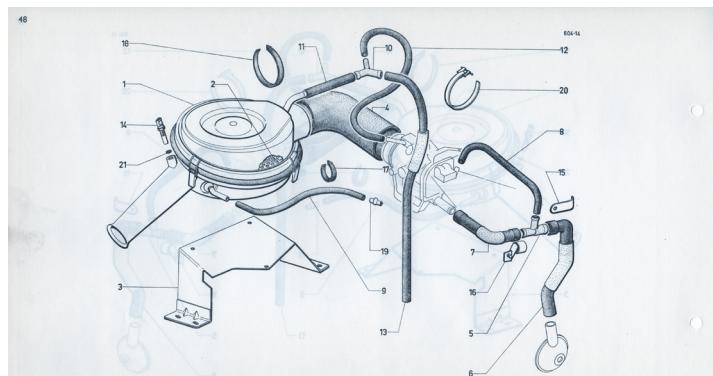
D model's simple carburetor intake manifold, **above**. Other than leaking gaskets or physical damage, the preheat pipe to the water pump may perhaps rupture.

In the D-Jetronic fuel injection system, fuel circulates constantly at just under 29 PSI through a series of metal pipes, **below**. The four individual injectors open as needed depending on engine load, and unused fuel returns to the tank from the low-pressure side of the regulator. Of course, the entire pipe runs cannot be made of metal, so small sections of rubber hose connect various parts. Therein lies the number one potential weakness of the system- a two-inch long section of hose can start leaking fuel onto the hot engine, with disastrous results. This is why every DS Injection Électronique driver must remember to shut off the engine *immediately* if there is a strong smell of fuel, coast to the side of the road and check underhood.

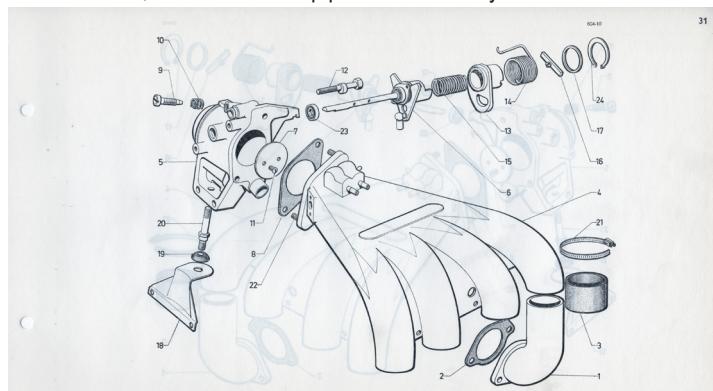
By contrast, the number two weakness of the injection system is the vacuum lines, **below right**. There are many potential sources of vacuum leaks, anything connected between the throttle butterfly and the cylinder head. These leaks only have the effect of making the car barely run, but are frustrating to trace.



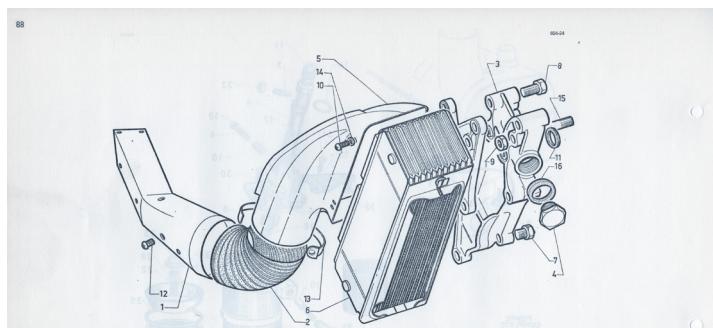
DS at 60 Part VII



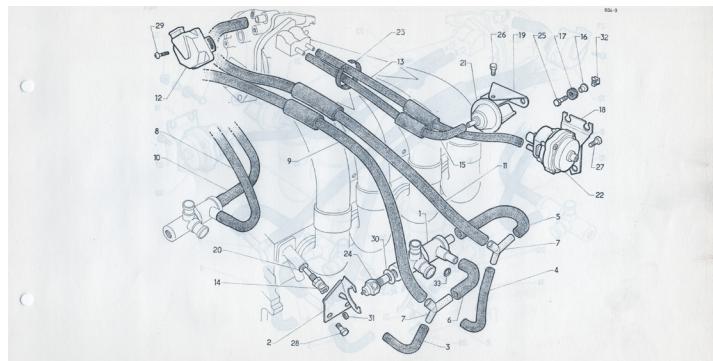
DS Fuel Injection air filter housing and connectors, **above**. The filter housing can have long or short connecting pipes depending on installation of factory air conditioning. Fussy pipes and connectors can crack, causing vacuum leaks, and the molded pipes are not always available.

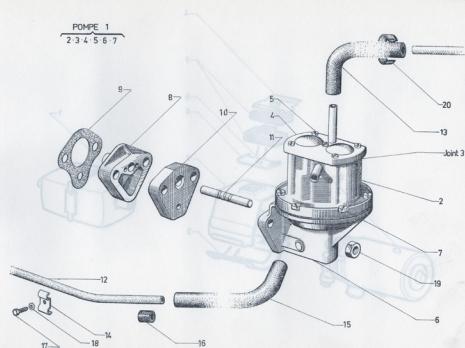


Fuel injection intake runners create quite an underhood edifice, **above**. The overall assembly has 6 parts, including two pairs of elbows for cylinders 1, 3 and 2, 4. Flexible connectors allow the top part to be removed for service, but create 8 spots for vacuum leaks.

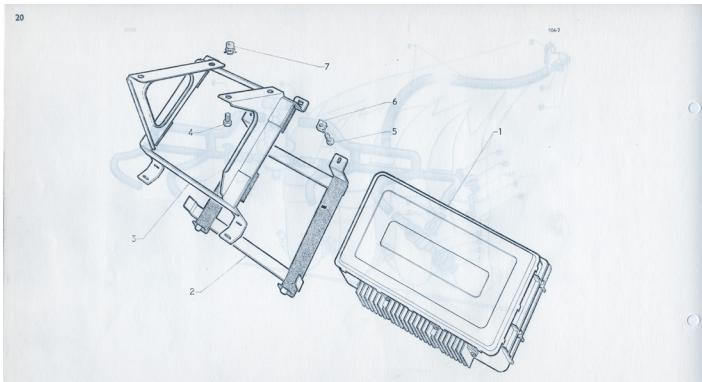


Oil cooler, for the injection engines, **above**. The cooler attaches to a bracket which then connects a unique D crankcase, DX 114-5 B. Air is supplied from the front left-hand brake duct, which is fine as long as the car is moving. Annoyingly, yet a different crankcase is required for fuel injection with a 5-speed gearbox, DJ 114-102 A.

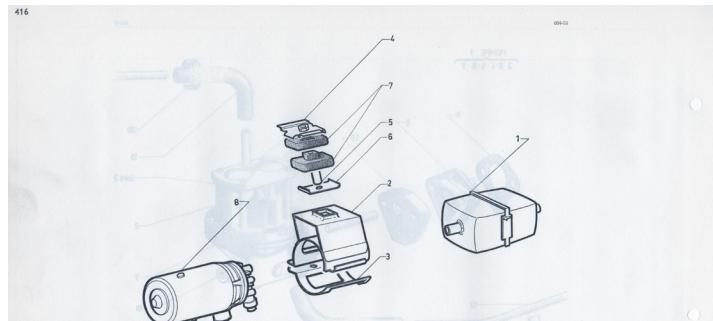
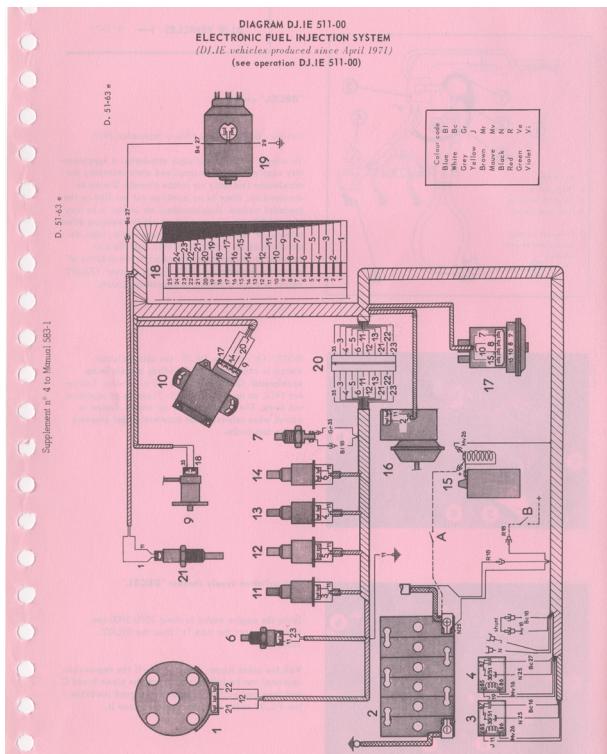




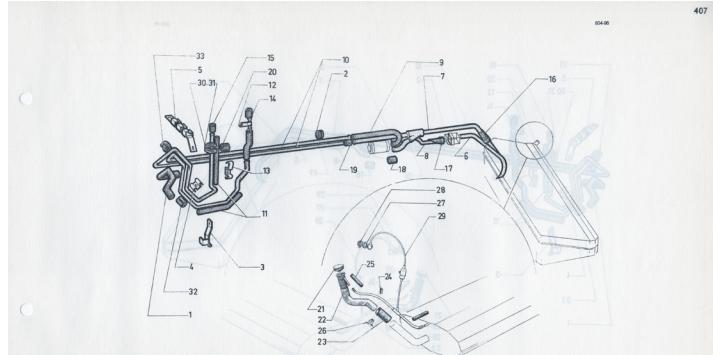
D model fuel pump for carburetion, **above**. Straightforward mechanical pump with a flexible diaphragm. Susceptible to dirt and water in the fuel. When the diaphragm leaks, the pump can be removed after unburying it.



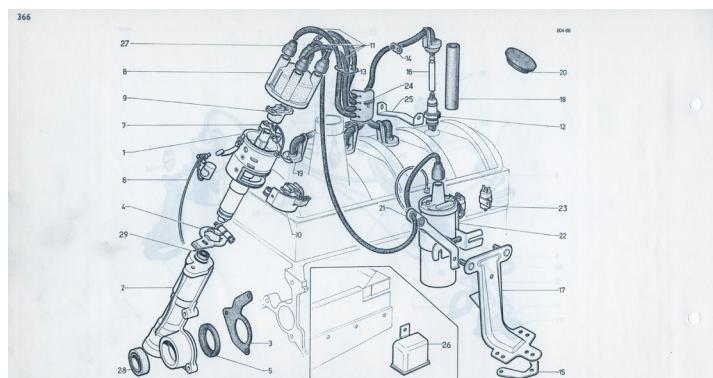
Bosch D-Jetronic electronic control box, **above**. Completely analog unit full of transistors, resistors and capacitors, not a microchip to be found. The control unit communicates to the rest of the fuel injection components through a 25-contact connector and a totally separate wiring harness, **below**. Thin, delicate wires are arranged differently for each iteration of controller. The control units are carefully coded, and must be used with the exact wiring and fuel injection equipment they were designed for.



Fuel Injection pump and filter assembly, **above**. Pump mounts under the right hand box section towards the rear. 1970s Bosch fuel pumps make an unmistakable buzzing sound on every car, in spite of silentbloc mounts. Dozens of feet of tubing, **below**, supply constantly circulating fuel, which returns to the tank. Generally tanks have internal baffles, but the Bosch system will supply fuel to the engine until the tank is literally dry.



Fuel Injection distributor with trigger points, number 10 in diagram, **below**. Trigger points operate separately from the rest of the ignition system.



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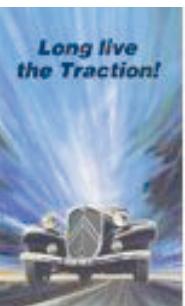
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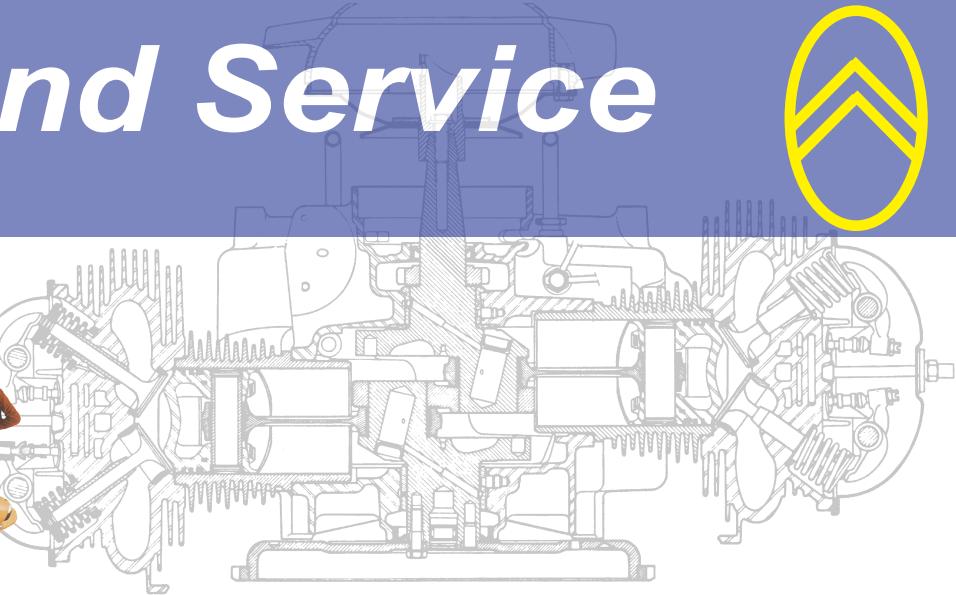
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Pacific Citroën News (ISSN 1542 - 8303)

PCN Editor Allan G. Y. Meyer pcn.editor@gmail.com

Info on Citroën, DS brand, Panhard and PSA Group cars (Peugeot, Simca, Talbot) created for and published by the participating organizations.

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