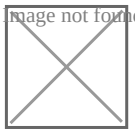
ATV Maintenance

- **ATV Maintenance Schedules and Service Intervals**
  ATV Maintenance Schedules and Service Intervals How to plan regular service for your ATV Key steps for creating a seasonal ATV maintenance plan Essential fluids to change in your ATV and when to change them How often to replace filters on different types of ATVs Checklist for pre-ride inspections to avoid mechanical issues Signs that your ATV is due for professional servicing Understanding the difference between hours and mileage intervals How to prepare your ATV for long term storage Tips for keeping an accurate ATV maintenance log Why seasonal tune ups improve ATV reliability How to schedule preventative maintenance before major trips Common maintenance tasks to extend the life of your ATV
- **Diagnosing and Troubleshooting Common ATV Issues**
  Diagnosing and Troubleshooting Common ATV Issues How to identify the cause of engine stalling in an ATV Steps to troubleshoot electrical problems in your ATV Why your ATV may lose power under load and how to fix it Simple checks to find the cause of poor ATV acceleration What to do when your ATV struggles to start in cold weather Understanding common overheating problems in ATVs How to track down unusual noises in your ATV drivetrain Signs of brake system issues in your ATV How to tell if your ATV has a slipping CVT belt Techniques for testing fuel delivery problems in ATVs How to spot early signs of bearing or bushing wear Finding the source of vibration while riding an ATV
- **About Us**

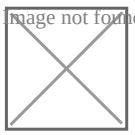
If youre an ATV enthusiast, you know that the thrill of riding through rugged terrains or speeding across open fields is unmatched. Cooling system service protects against overheating **atv push mower** Winston-Salem. However, to keep that excitement alive, its crucial to maintain your vehicle properly. One common issue that can dampen your riding experience is a slipping CVT belt. Here's a detailed guide on how to tell if your ATV has a slipping CVT belt.

First off, lets understand what a CVT belt is. The Continuously Variable Transmission (CVT) belt is an essential component of your ATV's transmission system. It works by transferring power from the engine to the wheels through a series of pulleys. When this belt starts to slip, it can significantly affect the performance of your vehicle.

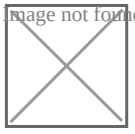


One of the most obvious signs of a slipping CVT belt is a noticeable loss in power. If you find yourself struggling to reach higher speeds or if your ATV seems less responsive when you accelerate, it might be time to check the belt. You'll feel like the engine is revving higher than usual, but the speed isn't matching up with those revs.

Another indicator is unusual noises coming from the transmission area. A healthy CVT system operates smoothly and quietly. If you hear whining, squealing, or grinding sounds while riding, especially during acceleration or when climbing hills, these could be warning signs that the CVT belt is slipping.



Pay attention to how your ATV handles under load as well. When towing heavy loads or navigating steep inclines, a slipping belt will struggle more noticeably. You might feel jerky movements or hesitation as if the vehicle can't maintain consistent power delivery.



It's also worth checking for physical signs of wear on the belt itself. If you have access to the CVT system (which often requires removing some panels), look at the condition of the belt. A worn-out or damaged belt will show cracks, fraying edges, or glazing-a shiny appearance due to excessive heat and friction.

Lastly, consider any changes in fuel efficiency. A slipping CVT belt means that more energy is wasted as heat rather than being used efficiently for propulsion. If you notice that you're filling up more frequently despite similar riding habits, this could be another clue pointing towards a slipping belt.

To confirm whether your suspicions are correct, it's always best to consult with a professional mechanic who specializes in ATVs. They can perform diagnostic tests and inspect the internals of your CVT system thoroughly.

In conclusion, staying vigilant about these symptoms-loss of power, unusual noises, poor performance under load, visible wear on the belt itself-and changes in fuel efficiency can help you catch a slipping CVT belt early on before it leads to more severe issues down the trail! Keep enjoying those exhilarating rides by keeping an eye out for these telltale signs and addressing them promptly!

About Polaris Slingshot

Polaris Slingshot	
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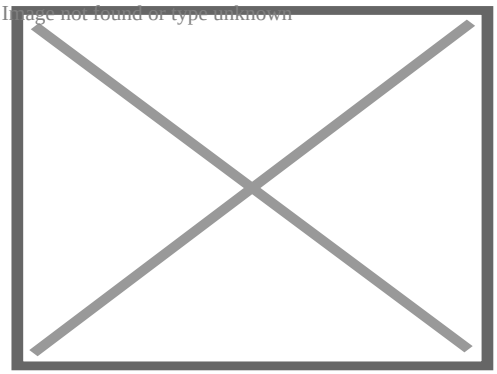
Overview	
Manufacturer	Polaris Industries
Production	2014–present
Model years	2015-Present
Body and chassis	

Layout	FR layout
Powertrain	
Engine	2.4 liter (2,384 cc) GM Ecotec *LE9* I4 (2015–2019 model years), Polaris ProStar 2.0 Liter (1997cc) DOHC I4 (2020 - present model years)
Transmission	○ 5-speed Aisin *AR5* manual (all model years) ○ 5-speed *AutoDrive* AMT (2020–present model years)
Dimensions	
Wheelbase	105 in (2,667 mm)
Length	149.6 in (3,800 mm)
Width	77.6 in (1,971 mm)
Height	51.9 in (1,320 mm)
Curb weight	1,651 lb (749 kg)

The **Polaris Slingshot** is a three-wheeler. The first edition of the model was introduced in 2014 as a 2015 model.

Specifications

[edit]

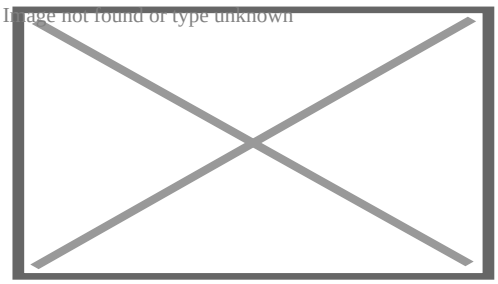


The Slingshot has a waterproof interior.

The Slingshot has a tilt-adjustable steering wheel, side-by-side bucket seats,[1] and does not lean. It has no roof, doors, or side windows. The open interior is waterproof and can be hosed down and drained because it has drain holes in the floor.[2]

The S and SL models include a 20x9-inch back wheel fitted with a 255mm width tire, and 18x7.5-inch front wheels with 225mm wide tires. The SLR and R models have the same front wheels and tires, but feature an upgraded 20x11-inch rear wheel fitted with a 305mm wide tire. All models have a front double wishbone suspension with an anti-roll bar. An optional five-speed automatic transmission became available in 2020 with the release of the generation two models. A small windshield is an optional extra on the base model, and fitted as standard on the SL model.[3] There is also an optional fiberglass wind and sun cover, which Polaris calls a "Slingshade", that

features inset polycarbonate windows and snaps onto the Slingshot's tube frame, acting somewhat like a hardtop roof.[4] The steering wheel, gear stick, and brake, clutch, and throttle pedals have a conventional automobile layout.



In Manhattan, New York City

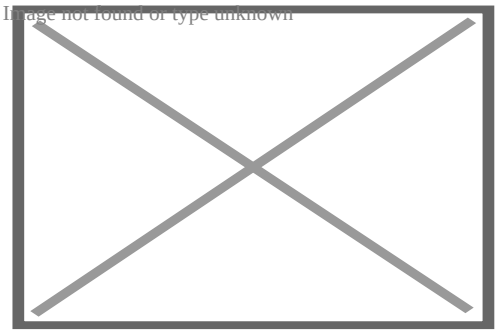
Classification

[edit]

In the United States, depending on the jurisdiction, the Slingshot may be registered as a motorcycle or autocycle. It is classified as an autocycle in 49 states (with one state, Massachusetts, requiring a motorcycle license) as of January 2024.[5] Three-point seat belts are fitted; however, it has no airbags or crumple zone, and in certain jurisdictions, the driver and passenger must wear motorcycle helmets.[6]

Performance

[edit]



Polaris Slingshot on Live Oak Road, Orange County, CA

Beginning with the 2020 model year, the Slingshot is powered by a 2.0 L inline four-cylinder gasoline-powered Polaris ProStar Engine rated at 203 hp (151 kW; 206 PS) at 8250 rpm and 144 pound force-feet (195 N?m) of torque at 6500 rpm.

It can be fitted to either a conventional five-speed manual or an AutoDrive five-speed automated manual transmission the first time an automatic transmission has been made available on the Slingshot. This transmission is essentially the same standard five-speed synchromesh-equipped manual gearbox, but the clutch and shifting are hydraulically actuated and computer-controlled. The interior was also redesigned, and the exterior was updated. For the 2015 through 2019 model

years, the Slingshot was powered by a GM-sourced 2.4 L Ecotec I4 that is rated at 173 hp (129 kW; 175 PS) at 6200 rpm and 166 pound force-feet (225 N?m) of torque at 4700 rpm.

See also

[edit]

- Campagna T-Rex, another 3-wheeled vehicle
- List of motorized trikes
- Microlino
- Nobe GT100
- Elio Motors
- Three-wheeler

References

[edit]

1. **^** The Polaris Slingshot Is Your Amazing New Three-Wheeled Track Machine
2. **^** *"2015 Polaris Slingshot Top Speed and Specs". motorcyclecruiser.com. Retrieved 2018-04-19.*
3. **^** *"Polaris Slingshot: First Drive". autoblog.com. 9 December 2014. Retrieved 20 Jan 2015. "this is most certainly not a car, and it's also not a motorcycle by any stretch of the imagination"*
4. **^** *Fogelson, Jason. "2018 Polaris Slingshot SL Test Ride And Review: Exchanging Sneers For Grins". Forbes. Retrieved 2018-04-17.*
5. **^** *"License Requirements". polaris.com. Retrieved 2024-07-02.*
6. **^** *Brandt, Eric (February 2018). "Polaris Slingshot Grand Touring LE Adds Luxury to the Three-Wheeler". thedrive.com. Retrieved 2018-04-18.*

External links

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Wikimedia Commons has media related to ***Polaris Slingshot***.

- Polaris Slingshot

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Polaris Inc.

Divisions	○ Polaris Commercial ○ Polaris Defense

Subsidiaries	○ GEM
	○ Indian
	○ Victory Motorcycles
	○ Taylor-Dunn
	○ Polaris Europe
	  ○ Aixam
	  ○ Goupil Industrie
	○ Polaris India

Polaris products	**UTVs**	○ Ace
		○ Dagor
		○ Ranger
		○ RZR
		  ○ M RZR
		○ Sportsman
		  ○ MV 850
		○ Taylor-Dunn
		  ○ G-100
		  ○ ET-150-72

	NEVs	○ GEM
		  ○ e2/e4/e6
		  ○ eLXD
		  ○ eM1400
		○ Taylor-Dunn
		  ○ BT-280
		  ○ FT-240
		  ○ FT-280
		  ○ T-941
		  ○ T-942

	Snowmobiles	○ 550-Series ○ 600-Series ○ 800-Series ○ Indy ○ RMK ○ Rush ○ Switchback
	Motorcycles	○ Indian ○ Slingshot

	Commercial trucks	○ Brutus
		○ M14000
		○ Multix
		○ Ranger XP
		○ Taylor-Dunn
		  ○ Bigfoot XL
		  ○ BF-3000

About Three-wheeler

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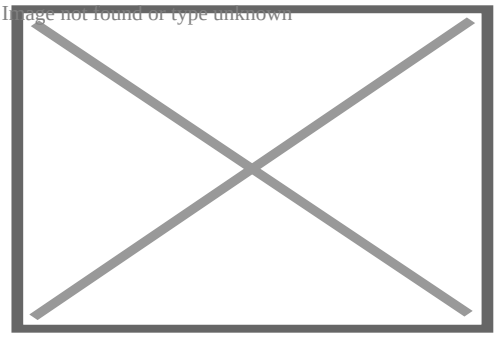
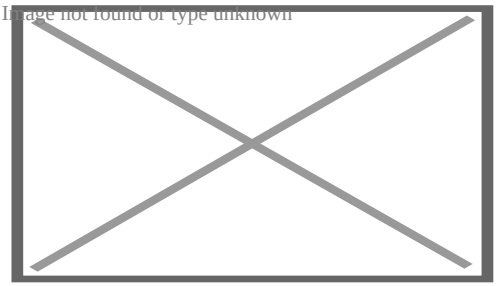
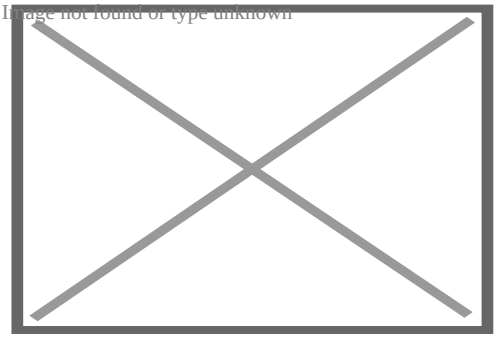


Campagna T-Rex



1932 Morgan Aero 2-Seater Sports



Fuldamobil three-wheeler (Postwar-era Germany)

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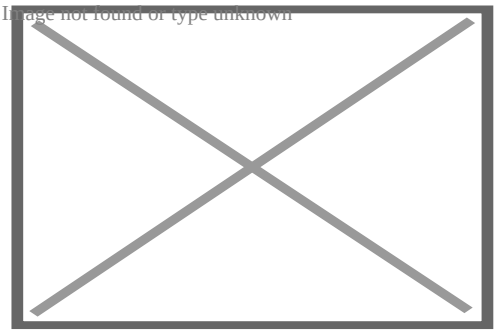

Tricycle truck in Poland (Gorzów Wlkp)

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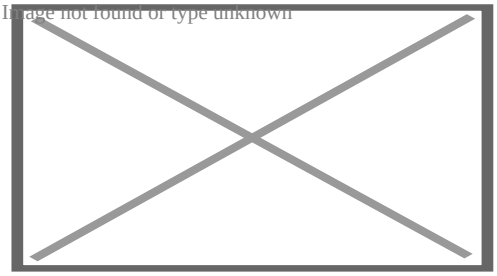


Trihawk, a tadpole-type trike manufactured in California, United States during the 1980s

A **three-wheeler** is a vehicle with three wheels. Some are motorized tricycles, which may be legally classed as motorcycles, while others are tricycles without a motor, some of which are human-powered vehicles and animal-powered vehicles.

Overview

[edit]

Many three-wheelers which exist in the form of motorcycle-based machines are often called trikes and often have the front single wheel and mechanics similar to that of a motorcycle and the rear axle similar to that of a car. Often such vehicles are owner-constructed using a portion of a rear-engine, rear-drive Volkswagen Beetle in combination with a motorcycle front end. Other trikes include All-terrain vehicles that are specially constructed for off-road use.

Three-wheelers can have either one wheel at the back and two at the front (2F1R), (for example: Morgan Motor Company) or one wheel at the front and two at the back (1F2R) (such as the Reliant Robin). Due to better safety when braking, an increasingly popular form is the front-steering "tadpole" or "reverse trike" sometimes with front drive but usually with rear drive. A variant on the 'one at the front' layout was the Scott Sociable, which resembled a four-wheeler with a front wheel missing.[1]

Three-wheelers, including some cyclecars, bubble cars and microcars, are built for economic and legal reasons: in the UK for tax advantages, or in the US to take advantage of lower safety regulations, being classed as motorcycles. As a result of their light construction and potential better streamlining, three-wheeled cars are usually less expensive to operate.[*citation needed*]

Some inexpensive three-wheelers have been designed specifically to improve mobility for disabled people.[2]

Three-wheeler transport vehicles known as auto rickshaws are a common means of public transportation in many countries in the world, and are an essential form of urban transport in many developing countries such as India and the Philippines.

History

[edit]

Early automotive pioneer Karl Benz developed a number of three-wheeled models.[3] One of these, the Benz Patent Motorwagen,[4] is regarded as the first purpose-built automobile. It was made in 1885.

In 1896, John Henry Knight showed a tri-car at The Great Exhibition.[3]

In 1897, Edward Butler made the Butler Petrol Cycle, another three-wheeled car.

A Conti 6 hp Tri-car competed in (but did not complete) a 1907 Peking to Paris race sponsored by a French newspaper, *Le Matin*.[5]

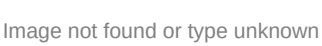
- 1885 Benz Patent Motorwagen

1885 Benz Patent Motorwagen

- Goliath pickup truck at a meeting for vintage cars in the 1990s

Goliath pickup truck at a meeting for vintage cars in the 1990s

Davis D-2 Divan, at the National Automotive and Truck Museum, Auburn, Indiana, United States

- 

Davis D-2 Divan, at the National Automotive and Truck Museum, Auburn, Indiana, United States
Davis 494, at the National Automotive and Truck Museum, Auburn, Indiana, USA

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Davis 494, at the National Automotive and Truck Museum, Auburn, Indiana, USA
Velorex was a manufacturing cooperative in Solnice, Czechoslovakia, formed in 1936 to satisfy dem

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Velorex was a manufacturing cooperative in Solnice, Czechoslovakia, formed in 1936 to satisfy demand for small, inexpensive city cars.
Mazda T2000 truck 1957–1974, length 6.08 m, width 1.84 m, max speed 100 km/h

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Mazda T2000 truck 1957–1974, length 6.08 m, width 1.84 m, max speed 100 km/h

An early Daihatsu Midget, which would serve as the basis for auto rickshaws that proliferate across

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  An early Daihatsu Midget, which would serve as the basis for auto rickshaws that proliferate across South and Southeast Asia
- Reliant Robin 3-wheeler car.

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Reliant Robin 3-wheeler car.
2016 Pembleton Supersports

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  2016 Pembleton Supersports

Configurations

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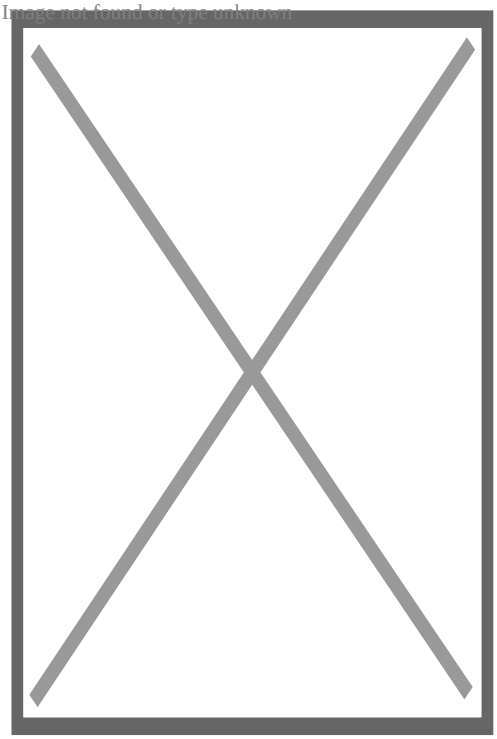

Diagram comparing delta and tadpole layouts

Two front

[edit]

A configuration of two wheels in the front and one wheel at the back presents two advantages: it has improved aerodynamics, and that it readily enables the use of a small lightweight motorcycle powerplant and rear wheel. This approach was used by the Messerschmitt KR200 and BMW Isetta. Alternatively, a more conventional front-engine, front wheel drive layout as is common in four-wheeled cars can be used, with subsequent advantages for transversal stability (the center of mass is further to the front) and traction (two driven wheels instead of one). Some vehicles have a front engine driving the single rear wheel, similar to the rear engine driving the rear wheel. The wheel must support acceleration loads as well as lateral forces when in a turn, and loss of traction can be a challenge.

A new tadpole configuration has been proposed with a rear engine driving the front wheels. This concept (Dragonfly Three Wheeler[6]) claims both stability and traction (two driven wheels), as well as a unique driving experience.

With two wheels in the front (the "tadpole" form or "reverse trike") the vehicle is far more stable in braking turns, but remains more prone to overturning in normal turns compared to an equivalent four-wheeled vehicle, unless the center of mass is lower and/or further forward. Motorcycle-derived designs suffer from most of the weight being toward the rear of the vehicle.[*citation needed*]

For lower wind resistance (which increases fuel efficiency), a teardrop shape is often used.[*citation needed*] A teardrop is wide and round at the front, tapering at the back. The three-wheel configuration

allows the two front wheels to create the wide round surface of the vehicle. The single rear wheel allows the vehicle to taper at the back. Examples include the Aptera (solar electric vehicle) and Myers Motors NmG.

Two rear

[edit]

Having one wheel in front and two in the rear for power reduces the cost of the steering mechanism but greatly decreases lateral stability when cornering while braking.

When the single wheel is in the front (the "delta" form, as in a child's pedal tricycle), the vehicle is inherently unstable in a braking turn, as the combined tipping forces at the center of mass from turning and braking can rapidly extend beyond the triangle formed by the contact patches of the wheels. This type, if not tipped, also has a greater tendency to spin out ("swap ends") when handled roughly.[*citation needed*]

Lateral stability[7]

[edit]

The disadvantage of a three-wheel configuration is that lateral stability is lower than with a four-wheeled vehicle.

With any vehicle, an imaginary line can be projected from the vehicles centre of mass to the ground, representing the force exerted on the vehicle by its mass. With the vehicle stationary, the line will be vertical. As the vehicle accelerates, that imaginary line tilts backward, remaining anchored to the centre of mass the point at which the line intersects the ground moves backward. As you brake it moves forward, with cornering it moves sideward. Should the point at which this line intersects the ground move outside of the boundary formed by connecting the tyre contact patches together (a rectangle for a four-wheeled car, or a triangle for a trike) then the vehicle will tip and eventually fall over. This is true for any vehicle.

With all vehicles it is critical that the vehicle should be engineered to slide before this point of instability is reached.

This can be achieved in several ways:

- by placing the center of mass closer to the ground
- by placing the center of mass closer to the axle with two wheels (for three wheelers)
- by increasing the track width
- by limiting the grip provided by the tyres, such that the vehicle loses adhesion before it starts to tip.
- By tilting some or all of the vehicle as it corners.

In the case of a three-wheeled ATV, tipping may be avoided by the rider leaning into turns.

Tilting option

[edit]
Main article: Tilting three-wheeler

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Tripendo recumbent tricycle, a tilting three-wheeler

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Vandenbrink Carver

To improve stability some three-wheelers are designed to tilt while cornering like a motorcyclist would do. The tilt may be controlled manually, mechanically or by computer.

A tilting three-wheeler's body or wheels, or both, tilt in the direction of the turn. Such vehicles can corner safely even with a narrow track.

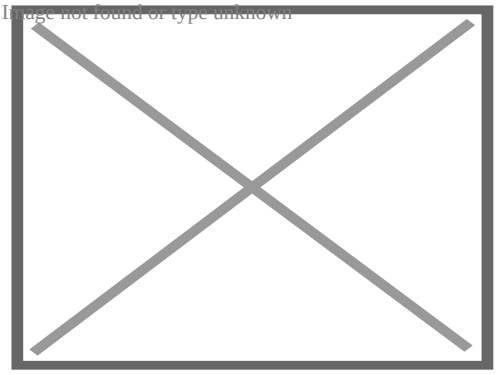
Some tilting three-wheelers could be considered to be forms of feet forward motorcycles or cabin motorcycles or both.

Electric three wheelers

[edit]
Main article: Electric vehicle. See also: Electric tricycle (disambiguation)

Battery-powered three wheelers

[edit]



Toyota i-Road, a three-wheeled battery powered personal mobility vehicle

Main articles: Battery electric vehicle and Electric rickshaw

Three-wheeled battery powered designs include:

- Aptera (solar electric vehicle)
- Arcimoto
- CityEl
- Commuter Cars Tango
- Cree SAM
- ElectraMeccanica SOLO
- Myers Motors NmG (formerly Corbin Sparrow)
- Nobe GT100
- Toyota i-Road
- Triac
- Vanderhall Edison 2
- ZAP Xebra
- EWheels EW 36(mobility scooter)

Solar-powered three wheelers

[edit]
Main article: Solar vehicle

Here are three notable examples of solar-powered three wheelers; two race cars, the Infinium and the Sky Ace TIGA, and a vehicle planned for production, the Aptera.

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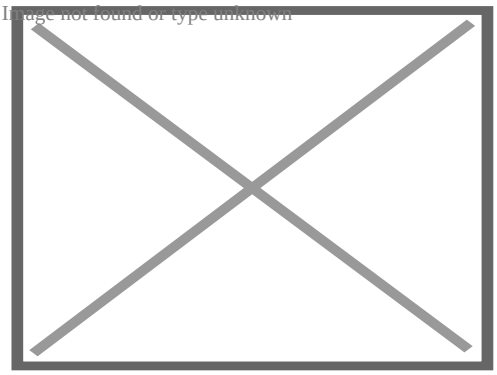

Infinium, winner of 2010 American Solar Challenge

The Infinium, built by the University of Michigan Solar Car Team, came in 3rd place in the 2009 World Solar Challenge held in Australia, and won the 2010 American Solar Challenge.

Ashiya University's Sky Ace TIGA achieved 91.332 kilometres per hour (56.751 mph) at Shimojishima Airport, in Miyakojima, Okinawa, Japan, to win the Guinness World Record, on 20 August 2014.[8] It took the record from another three-wheeler, Sunswift IV, designed and built at the University of New South Wales in Australia,[9] by a margin of almost 3 km/h.

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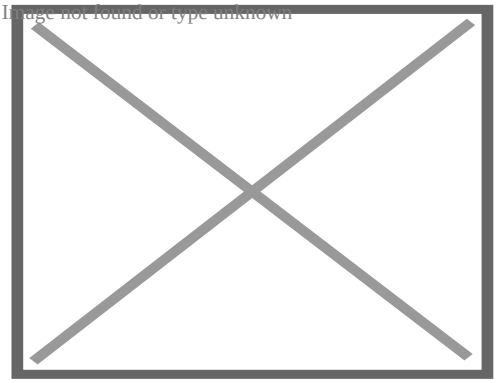

Solar panels on the hood, roof, dashboard and hatch of the Aptera EV

The Aptera solar electric vehicle[10] uses a tadpole layout and is being designed to have a top speed of over 100 mph. The Aptera uses 42 KW in-wheel electric motors[11] and can be ordered with two (front-wheel drive) or three (all-wheel drive) motors. The Aptera's roof and dashboard, and optionally its hood and hatch, are fitted with solar panels, with the full compliment being designed to add a range of up to 40 miles per day and 11,000 miles per year in the sunniest climates. First customer availability is planned for before the end of 2024.[12]

Steam-powered three wheelers

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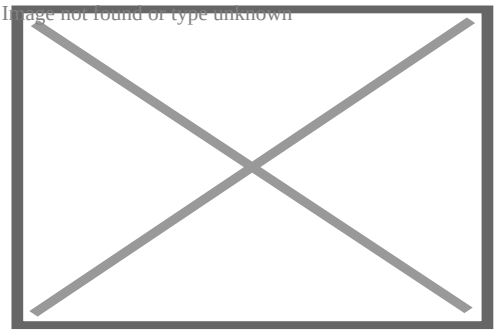

Cugnot's *fardier à vapeur*, as preserved at the Musée des Arts et Métiers, Paris, France

Main articles: Steam tricycle and Steamroller

The world's first full-size self-propelled land vehicle was a three-wheeler. French Army Captain Nicolas-Joseph Cugnot's 1770 *fardier à vapeur* (steam dray), a steam tricycle with a top speed of around 3 km/h (2 mph), was intended for hauling artillery.[13]

Another of the earliest preserved examples is the Long steam tricycle, built by George A. Long around 1880 and patented in 1883,[14][15] now on display at the Smithsonian Institution.

Wind-powered three wheelers

[edit]

The Whike is a recumbent tricycle with a sail, made in the Netherlands.

All-terrain vehicles

[edit]
Further information: All-terrain vehicle § Three-wheeled ATVs

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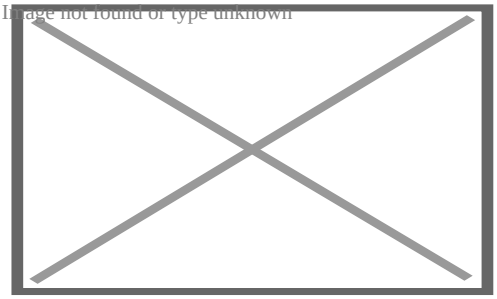


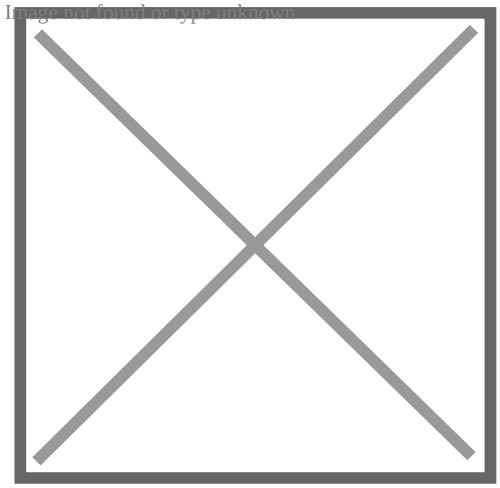
Honda, Suzuki and Yamaha all-terrain vehicles

Due to the incidence of injuries and deaths related to their use, a 10-year ban, entirely voluntary for manufacturers, was placed on the sale of new three-wheeled all-terrain vehicles in the United States in January 1988.[*citation needed*] More injuries were sustained by riders by not applying a proper riding technique, and lack of wearing proper safety gear such as helmets and riding boots.

In a search conducted by the Consumer Product Safety Commission, it was determined that "no inherent flaw was found in the three wheel design".[*citation needed*]

Registration

[edit]



Bond Bug at Silverstone

The examples and perspective in this section **may not represent a worldwide view of the subject**. You may improve this section, discuss the issue on the talk page, or create a new section, as appropriate. *(October 2015) (Learn how and when to remove this message)*

In the U.S, the National Highway Traffic Safety Administration defines and regulates three-wheeled vehicles as motorcycles.[16] However, in 2015 a bill was introduced in Congress that would prevent some three wheeled vehicles from being classified as motorcycles in the United States, instead creating a new classification for "autocycles".[17][18]

Driver's license and registration requirements vary on a state-by-state basis. Some states require drivers of three wheeled vehicles to have a motorcycle license and register the vehicle as a motorcycle. Some states, including Virginia, Kansas, and Indiana, classify some three wheeled vehicles as autocycles. Virginia defines an autocycle as "a three-wheeled motor vehicle that has a steering wheel and seating that does not require the operator to straddle or sit astride and is manufactured to comply with federal safety requirements for motorcycles."[19] Indiana defines it as "a three (3) wheeled motor vehicle in which the operator and passenger ride in a completely or partially enclosed seating area that is equipped with:(1) a rollcage or roll hoops; (2) safety belts for each occupant; and (3) antilock brakes;and is designed to be controlled with a steering wheel and pedals."[20] In other jurisdictions, such as British Columbia, Canada, and Connecticut, a three-wheeled vehicle with an enclosed passenger compartment or partially enclosed seat is considered an automobile.[*citation needed*]

Examples

[edit]

Two front wheels

[edit]

Name	Country	Years manufactured	Comments
Léon Bollée Voiturette	France	1895–?	
TriPodCars[21] Tripod 1	Australia	2012–?	400 kg Reverse Trike, Bandit 1250, ZX14R (200+ hp) and EV
Berkeley Cars Berkeley T60	England	1959	
Egg	Switzerland	1896–99	
Advance 6 hp air-cooled Tri Car and 9 hp water-cooled Tri Car[22]	England	1902–12	
Humber Tricar[23][24]	England	1904	
Riley Olympia Tricar[25]	England	1904	[26]
Mars Carette[27]	England	1904–05	Mars Motors Co existed in Finchley, London, White and Poppe water-cooled engine, Single-cylinder, 3.3 kW
Lagonda Tricar[28]	England	1904–07	total production: 69 cars
Anglian	England	1905–07	
Armadale	England	1906–07	
Ranger Cub	England	1970–1980	Reverse Trike/Tadpole, A-Series engine 848-1275cc
Morgan V-Twin and F-Series	England	1911–39, 1932–52	Morgan Super Sports 2-Seater 1937
American Tri-Car	United States	1912	
Birmingham Small Arms Company Three Wheeler	England	1929–36	1100cc engine[29]
Zaschka	Germany	1929	Folding three-wheeler: Zaschka Three-wheeler 1929
Dymaxion car	United States	1933	Concept car designed by Buckminster Fuller

Mathis VEL 333	France	1946	3 seats, flat-twin front engine, aluminium body, production less than 10 units
Fend Flitzer	Germany	1948 - 1951	1 seat, Messerschmitt kabinenroller precursor, production about 250 units
1951 Hoffmann	Germany	1951	2 seats, aluminium body, engine mounted on the rear wheel steering pivot
Velorex Oskar and other models	Czechoslovakia	1951–71	Originally with leather bodies
Isetta	UK	1957–62	Three-wheeled version of the Isetta built in the UK to take advantage of tax and licensing regulations
Scootacar	UK	1957–64	
Messerschmitt KR175	Germany	1953–55	
Messerschmitt KR200	Germany	1955–64	
Peel P50	Isle of Man	1963–64	Smallest production car ever built
HM Vehicles Free-way	United States	1979–82	
Campagna T-Rex	Canada	1996–present	
Malone Car Company F1000|Skunk SS|TAZR	United Kingdom	1999–present	High-power internal combustion and pure electric versions released November 2010
Cree SAM	Switzerland	2001	Electric, only 80 produced
Myers Motors NmG ("No more Gas")	United States	2006–present	Single-occupant all-electric plug-in
BRP Can-Am Spyder RoadsterCan-Am Spyder Roadster	Canada	2007–present	The Can-Am Spyder is a three-wheeled motorcycle manufactured by Bombardier Recreational Products.
Brudeli 645L	Norway	2008–	
Moonbeam	United States	2008–present	100 mpg DIY, fabric-covered car based on parts from two Honda 150cc motorscooters[30]
Triac	United States	2009–2011	Electric, never entered production
XR-3 Hybrid	United States	Plans–2008, Kit–2009	Front 3-cylinder diesel (125 mpg), rear electric 40 mile range (220 mpg when used as a hybrid)[31]
Aptera (solar electric vehicle)	United States	2022 planned	Solar-powered Electric

Triton Trike	United States	2000–present	Gas-powered, 42+ mpg, front-wheel drive, custom builds and kits available
Nobe GT100	Estonia & United States	2021 planned	Electric, powered at all 3 wheels
Polaris Slingshot	United States	2015–present	
Vanderhall Laguna Roadster	United States	2016–2018	Exotic Auto-cycle, mono-aluminum chassis, carbon fiber body, 200 HP, 1550 pounds dry weight, side-by-side seating, fwd. 1.4 liter turbo GM power plant. 6 speed Automatic with paddle shift option. Manufactured by Vanderhall Motor Works in Provo, Utah U.S.A
Vanderhall Venice	United States	2017–present	The mainstay of the Vanderhall line up, the Venice brings the soul of roadster motoring while extending effortless performance in kind.[32]
Vanderhall Carmel	United States	2020–present	The Vanderhall Carmel brings more luxury and convenience to the Carmel lineup. With provisions to accommodate a removable capshade, the Carmel promises additional class and comfort for your journey.[33]
Vanderhall Edison	United States	2020–present	The Edison2: A fully electric roadster that combines refined and eye-catching design while maintaining classic, elegant lines. Unplug and play has been redefined [34]
Elio Motors	Shreveport, LA, United States	Awaiting funding	Two passenger fully enclosed cockpit with car controls
Girfalco Azkarra	Canada	2017	All-electric two-passenger three-wheeled vehicle, possibly the quickest three-wheeler
Go3Wheeler	United States	2014	single person three wheeler
Corbin Sparrow			
Piaggio MP3			
Tri-Magnum	United States		Tilting 3-wheeler capable of seating two people.[35]
Volkswagen GX3			
Morgan 3-Wheeler	England	2012–present	The power train is a 1983cc ‘V-twin’ fuel injected engine mated to a Mazda 5 speed (and reverse) gearbox
Fuel Vapours Alé	Canada	2005–present	Prototype. Gets 92 mpg.

Arcimoto FUV	United States	2019–present	Two passenger all-electric, 102 mile range City
Fiberfab Scarab STM	United States	1976	Kit car with canopy door manufactured by Fiberfab
Bricklin 3EV	United States	Planned	Two passenger electric vehicle from Malcolm Bricklin.[36]

Two rear wheels

[edit]

Name	Country	Years manufactured	Comments
Apino	Brazil	unknown	Mini Truck
Benz Patent Motorwagen	Germany	1886–93	
Eco-Fueler	USA	2009–2011	2 seater built in Oregon.[37]
La Va Bon Train	France	1904–10	50–100 believed built
Davis D-2 Divan	United States	1947–48	about 13–17 built, including the 494, a Jeep-like military vehicle[38]
Scammell Scarab	England	1948–67	
Autoette	United States	1948–70	
Daihatsu Bee	Japan	1951–1952	
Daihatsu Midget	Japan	1957–72	
Mazda T-2000	Japan	1957–74	
Mazda K360	Japan	1959–69	
Mazda T600	Japan	1959–71	
Kia K-360	South Korea	1962–1973	Kia's first truck (OEM Mazda K-360)
Kia T-1500	South Korea	1963–?	1484 cc, 60 hp, four cylinder and a maximum load of 1.5 tons. (OEM Mazda T-1500)
Kia T-600	South Korea	1969–1974	577cc, 20 HP and 500 kg load. Top speed of 75 km/h. 7726 produced (OEM Mazda T-600)
Kia T-2000	South Korea	1967–1981	1985 cc, 81 hp, four cylinder and a maximum load of 2 tons. 15952 produced (OEM Mazda T-2000)
Piaggio Ape	Italy	1948–present	
Electra-King	United States	1964?–1980s?	Two-seater electric car[39]
Bond 875	England	1965–70	

Bond Bug	England	1970–74	
Reliant Robin	England	1973–81, 1989–2002	
Reliant Regal	England	1953–1973	An example of this vehicle is the iconic van belonging to Del Boy and Rodney Trotter in the long-running BBC sitcom Only Fools and Horses, though it is often incorrectly referred to as a Reliant Robin.
GM Lean Machine[40][41]	United States	1980s	Tilt, concept car[42]
TriVette	United States	1974–1976	
Twike	Germany	1995–present	Electric-human-power hybrid, developed in Switzerland
ZAP Xebra	United States	2006–2009	electric power
eTuk	United States	2014–	re-designed tuk tuk for the US Market, including an all-electric motor[43]
Snyder ST600-c	United States	2011–2012	Imported by Snyder Technologies / Wildfire Motors, this is a rebrand of the Fulu Motors ?????, Fulu Jinjunma in English. Referred to as the 09 golden horse internally.
Carver	Netherlands	2007–2009	Tilt
CityEl	Denmark		Mini-El, City-El
CLEVER			
Harley-Davidson Servi-Car	United States	1932-1973[44]	
Harley-Davidson Tri Glide	United States	since 2009	

See also

[edit]

- Four-wheeler

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[edit]

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External links

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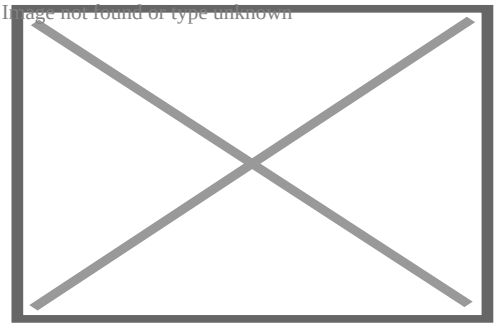
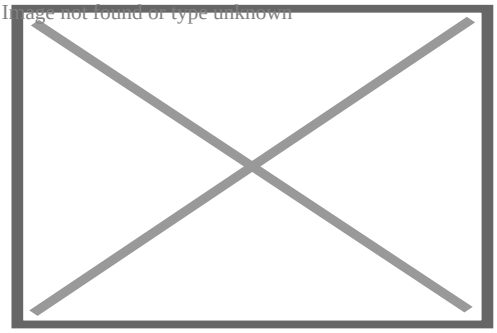
- Complete A-Z list of three-wheelers since 1940

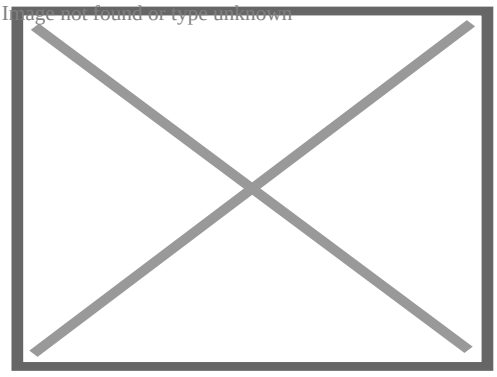
About Car dealership



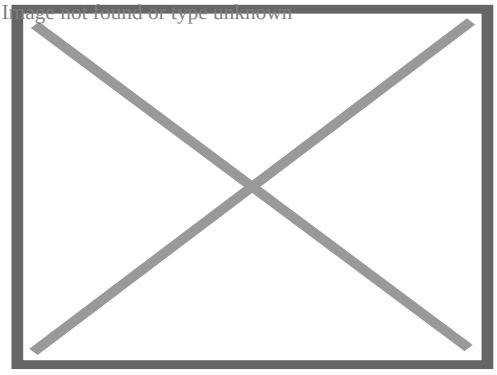
Typical car dealership (in this case a Jeep dealer) in the U.S. selling used cars outside, new cars in the showroom, as well as a vehicle entrance to the parts and service area in the back of the building



An aerial view of auto dealer's service in Kuopio, Finland



Service and repair entrance



Auto dealer's service and repair facility

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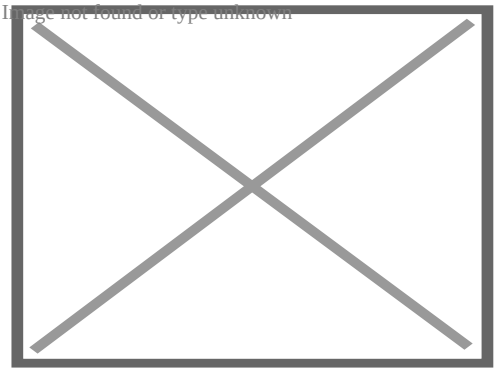

Dealer for vintage cars

A **car dealership**, or **car dealer**, is a business that sells new or used cars, at the retail level, based on a dealership contract with an automaker or its sales subsidiary. Car dealerships also often sell spare parts and automotive maintenance services.

In the United States, car dealerships have historically been an important source of state and local sales taxes. They have considerable political influence and have lobbied for regulations that guarantee their survival and profitability. By 2010, all US states had laws that prohibited manufacturers from side-stepping independent car dealerships and selling cars directly to consumers. By 2009, most states imposed restrictions on the creation of new dealerships to compete with incumbent dealerships.

Economists have characterized these regulations as a form of rent-seeking that extracts rents from manufacturers of cars, increases costs for consumers, and limits entry of new car dealerships while raising profits for incumbent car dealers. Research shows that as a result of these laws, retail prices for cars are higher than they otherwise would be.[1][2]

Car dealerships in the United States

[edit]
Main article: Car dealerships in the United States

The early cars were sold by automakers to customers directly or through a variety of channels, including mail order, department stores, and traveling representatives.[1] For example, Sears made its first attempt at selling a gasoline-engined chain-drive high-wheeler in 1908 through its mail-order catalog and starting in 1951 the Allstate through select its stores and the catalog.[3][4]

The first car dealership was opened in 1889 by Fred Koller in Reading, Pennsylvania and sold cars manufactured in Cleveland, Ohio. This would have been the first dealership solely dedicated to automobiles, as opposed to horse-drawn carriages. [5]

Today, direct sales by an automaker to consumers are limited by most states in the U.S. through franchise laws that require new cars to be sold only by licensed and bonded, independently owned dealerships.[6] The first woman car dealer in the United States was Rachel "Mommy"

Krouse who in 1903 opened her business, Krouse Motor Car Company, in Philadelphia, Pennsylvania.[7]

The number of car dealerships in the US peaked in 1927 at 53,125 and steadily decreased over the next decades. By 1960, there were 33, 658 dealerships; by 1980, 23,379; and by 2001, 22,007.[1]

Car dealerships are usually franchised to sell and service vehicles by specific companies. They are often located on properties offering enough room to have buildings housing a showroom, mechanical service, and body repair facilities, as well as to provide storage for used and new vehicles. Many dealerships are located out of town or on the edge of town centers. An example of a traditional single proprietorship car dealership was Collier Motors in North Carolina.[8] Many modern dealerships are now part of corporate-owned chains with hundreds of locations.[9] Dealership profits in the US mainly come from servicing, some from used cars, and little from new cars.[10]

Most automotive manufacturers have shifted the focus of their franchised retailers to branding and technology. New or refurbished facilities are required to have a standard look for their dealerships and have product experts to liaise with customers.[11][12] Audi has experimented with a hi-tech showroom that allows customers to configure and experience cars on 1:1 scale digital screens.[13][14] In markets where it is permitted, Mercedes-Benz opened city centre brand stores.[15]

Tesla Motors has rejected the dealership sales model based on the idea that dealerships do not properly explain the advantages of their cars, and they could not rely on third-party dealerships to handle their sales.[16] However, in the United States, direct manufacturer auto sales are prohibited in almost every state by franchise laws requiring that new cars be sold only by dealers.[17] In response, Tesla has opened city centre galleries where prospective customers can view cars that can only be ordered online.[18][19] These stores were inspired by the Apple Stores.[20] Tesla's model was the first of its kind, and has given them unique advantages as a new car company.[21]

Economic theory

[edit]

In economic theory, car dealerships can be characterized as franchisees and automobile manufacturers as franchisors. A franchise relationship can be beneficial to both parties, as the franchisee can sell a well-made and attractive product while the franchisor can rely on the franchisee to incur downstream costs and use its local relationships to sell more products and services.[1]

The franchisor can act opportunistically by imposing constraints and burden on the franchisee after the latter has incurred sunk costs, such as investing in physical assets and building up a reputation with customers. The franchisor could for example require that cars be sold at low prices, and services be performed for little compensation. The franchisee could on the other hand act opportunistically by using its local monopoly to perform poor customer service, charge

customers more, and pass those unnecessarily high costs to the franchisor.[1][22]

Regulations that protect car dealers

[edit]

Car dealerships have lobbied for regulations that increase the survival and profitability of car dealerships:[1]

- By 2010, all US states had laws that prohibited manufacturers from side-stepping independent car dealers and selling cars to customers directly.
- By 2009, most states imposed restrictions on the creation of new dealerships to compete with incumbent dealerships.
- All states impose severe limits on the ability of a manufacturer to terminate a franchise relationship.
- Most states prevent manufacturers from engaging in "quantity forcing" whereby manufacturers require that dealers purchase vehicles that they had not ordered.
- Most states limit the ability of manufacturers to discriminate between car dealers (for example, by providing better terms to large car dealers with economies of scale or dealers that provide better customer service).
- Many state laws impose upon manufacturers the precise terms under which they must compensate dealers for the costs associated with warranty repairs (these can incentivize dealers to increase the price of repairs to customers).
- Most state laws require upon the termination of a dealership that manufacturers buy back the inventory, and special equipment and in some cases pay the rent of the dealer's facilities.

The issuance of new dealership licenses can be subject to geographical restriction; if there is already a dealership for a company in an area, no one else can open one. This has led to dealerships becoming in essence hereditary, with families running dealerships in an area since the original issuance of their license with no fear of competition or any need to prove qualification or consumer benefit (beyond proving they meet minimum legal standards), as franchises in most jurisdictions can only be withdrawn for illegal activity and no other reason.[23]

Criticism

[edit]

Economists have characterized these laws as a form of rent-seeking that extracts rents from manufacturers of cars and increases costs for consumers of cars while raising profits for car dealers.[1][24][25][26] Multiple studies have shown that regulations that protect car dealerships increase car costs for consumers and limit the profitability of manufacturers.[27]

This has led to consumer campaigns for establishment or reform, which have been met by huge lobbying efforts by franchise holders. New companies trying to enter the market, such as Tesla,

have been restricted by this model and have either been forced out or been forced to work around the franchise model, facing constant legal pressure.[28]

Electric vehicles

[edit]

According to a 2023 survey by the Sierra Club, two-thirds of US car dealerships did not have electric or hybrid vehicles for sale.[29] Reasons for this include supply chain difficulties,[29][30] as well as a need for car dealers to make substantial investments in new employee training and infrastructure to be able to sell, service and maintain electric vehicles.[31]

Car dealerships in the European Union

[edit]

[icon] This section **needs expansion**. You can help by adding to it. *(May 2023)*

In the European Union, car manufacturers were permitted from 1985 to 2006 to enter into contracts with car dealerships that restricted what kinds of cars dealers were permitted to sell.[32][33] Car manufacturers were able "to impose qualitative, quantitative and geographical restrictions on supply by selling their cars only through a limited number of dealers bound by strict franchise agreements."[32] In 2006, the European Commission determined that it was anti-competitive for car manufacturers to prohibit dealers from carrying multiple car brands.[33]

Car manufacturers in the European Union are increasingly shifting towards selling cars directly to customers without reliance on independent dealers. Volvo has announced plans to sell all vehicles directly to customers by 2030.[34][35]

Multibrand car dealers

[edit]

Multibrand and multi-maker car dealers sell cars from different and independent carmakers.[36] Some are specialized in electric vehicles.[37]

Auto transport

[edit]

Auto transport is used to move vehicles from the factory to the dealerships. This includes international and domestic shipping. It was largely a commercial activity conducted by manufacturers, dealers, and brokers. Internet use has encouraged this niche service to expand and reach the general consumer marketplace.

See also

[edit]

- Auto auction
- Auto row
- Automaker
- Car broker
- Car rental
- List of auto dealership and repair shop buildings
- Showroom
- Used car

Organizations

[edit]

- Carfax
- Kelley Blue Book
- Federation of Automobile Dealers Associations of India (FADA)
- National Automobile Dealers Association
- Presidential Task Force on the Auto Industry

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[edit]

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Further reading

[edit]

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External links

[edit]

Wikimedia Commons has media related to ***Automobile dealerships***.

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Retail

Key concepts

- Counter display unit
- Display stand
- Endcap
- Facing
- Free standing display unit
- Gondola
- History of retail
- Merchandising
  - Visual merchandising
- Point of sale display
- Retail design
- Retail merchandising unit
- Self-service
- Shelf-ready packaging

By product

- Agricultural supplies
- Alcohol
- Antiques
- Automotive fuel
- Automotive parts
- Beauty products
- Books
- Cannabis
- Catering
  - Mobile
- Chocolate
- Clothes
- Comics
- Confectionery
- Consumer electronics
- Cycles
- *Doujin shop*
- Dry goods
- Equestrian supplies
- Eyewear
- Fish
- Flowers
- Food
- Foodservice
- Fruit stand
- Furniture
- Garden centre
- Gardening supplies
- General merchandise
- Gold
- Greengrocer
- Grocery
  - Public grocery
- Guns
- Hardware
- Health food
- Herbal tea
- Hobby supplies
- Home decor
- Home improvement products
- Ironmongery
- Jewellery
- Lingerie
- Lumber
- Magic supplies
- Meat
- Medications
- Medicinal plants
- Music

- Anchor tenant
- Automat
- Automated retail
- Big-box store
- Boot fair
- Boutique
- Brick and mortar
- Bring and buy sale
- Butcher shop
- Car boot sale
- Cash and carry
- Cashierless store
- Category killer
- Chain store
- Charity shop
- Closeout store
- Company store
- Consignment shop
- Consignment store (East Asia)
- Convenience store
  - Automated convenience store
  - Corner store
  - Mini-mart
  - Mini market
  - Superette
- Dark store
- Department store
  - Junior department store
  - Public department store
- Discount store
- E-commerce
- Estate sale
- Experiential commerce
- Experiential retail
- Factory outlet
- Factory store
- Flash retailing
- Free box
- Freeshop
- Free store
- Garage sale
- General store
- Give-away shop
- Haberdasher
- Head shop
- High Street
- Honesty box
- Hospice shop
- Hyperstore

By type	○ Arabber ○ Boutique ○ Braderie ○ Butcher shop ○ Concession stand ○ Cooked food centre ○ Costermonger ○ Direct sellers ○ Duty-free shop ○ Food booth ○ Food cart ○ Food court ○ Food hall ○ Food kiosk ○ Food stall ○ Food stand ○ Food truck ○ Gift shop ○ Hawker ○ Hawker centre ○ Ice cream truck ○ Ice cream van ○ Museum shop ○ Pawn shop ○ Peddler ○ Pharmacies ○ Refreshment stand ○ Snack bar ○ Snack kiosk ○ Souvenir shop ○ Surplus store ○ Tack shop ○ Tax-free shopping ○ Tuck shop

About Shorewood Home & Auto (Formerly Circle Tractor)

Driving Directions in Will County

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Destination
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used atv mowers for sale

41.606342917118, -87.909382977642
Starting Point
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Destination
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atv for sale illinois

41.61894596793, -87.9730747233
Starting Point
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41.588263444146, -87.97398929193
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atv push mower

41.619926653045, -87.892455610928
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41.661417333599, -87.915319377447
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ATV Repair

41.608363577474, -87.913026040309
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41.651026502851, -87.947342550038
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