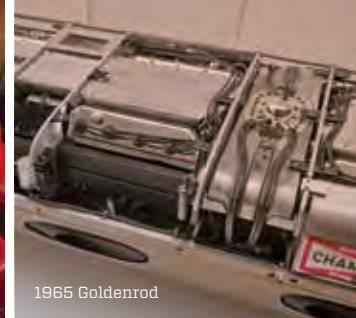




1963 Buick Riviera



1965 Goldenrod



1926 Rolls-Royce
New Phantom Limousine



1933 Willys Drag Racer

We've popped the hoods on the incredible stories of grit and imagination that drive us forward. Dozens of our most fascinating models share the inside story of this evolving technology. Discover the thinking behind our most advanced cars that started over a century ago. Dive into the surprising and daring history of the automobile on a deeper level.

Daily Programming

Exploring Automotive Innovations

Join us for a 20-minute conversation about our world-class car collection. Topics change daily and may include everything from the basics to a deep dive on one or two cars. Check on-site signage for today's offerings.

Mon.-Fri. 11:30, 12:30 and 3:00

Sat.-Sun. 10:30, 12:30 and 3:00

Meet outside *Drive-In Theater*.

Curator Close-Up

Curious what Matt Anderson, curator of transportation at The Henry Ford, has to say about engine innovations? Listen and view innovations and some exceptional engines using our digitized collection.

Jan. 21 and Feb. 18. 3:30 PM.

Drive-In Theater

Corliss Steam Engine

How does that engine work, and what does it have to do with engines today? We can help! See the mighty Corliss Steam Engine power up, and experience firsthand the science behind its power, efficiency and precision.

Mon.-Fri. 10:30

Sat.-Sun. 1:30

Made in America: Power

Fun Kiosk Activities

Want to explore our engine collection on your own? Get up close with some great engine photography and more? Discover "Power Option" activities on one of our 18 digital kiosks throughout *Driving America*.

Add an EcoBoost Today!

Modern engines combine power and efficiency to power even the biggest, baddest trucks, including the 3.5L EcoBoost-powered F-150 Raptor. Visit the **Ford Rouge Factory Tour** to see where they're born.

Last tour departs 3:00.

Saturday Programming

Make Something: Saturdays

January 14-February 26 10:00-3:00
Museum Gallery Plaza (near *Your Place in Time*)

January

We'll bring in 2017 by highlighting the best projects of 2016. Tinker with flight, learn to solder with a simple LED badge*, make a tinkering journal and build a bot.*

February

Explore the evolution of vehicle power sources including electrical generation, an internal combustion explosion, a solar car model and a hydrogen fuel cell model. Tinker with battery-powered model cars and make piston action characters.

*Supply fees required for some projects. Must be 12 and up to solder. Build a bot recommended for 5 and up.

National Engineers Week Celebration

February 18-25

Engineers transform dreams into reality. The Henry Ford celebrates these dreamers and doers with daily hands-on learning opportunities, guest experts and the *Dream Big: Engineering Our World* film opening February 18 in the Giant Screen Experience.

STEM Careers Open to All

February 24, 10:00
Museum Gallery Plaza

Robert Scott, director of diversity initiatives for the University of Michigan College of Engineering

the Henry Ford

Into Autos?

Keep pace with the latest content, collections and expert insights for collectors, gearheads, race fans and restorers.

Cruise into thehenryford.org/onwheels or subscribe to *OnWheels* at thehenryford.org/enews.

Mark Your Calendar For These Popular Car Shows



Great Father's Day Outing!

Motor Muster

Greenfield Village • June 17-18, 2017
Open Saturday 'til 9!

FREE with membership

From glamorous classics of the 1930s to brawny muscle cars of the 1970s, Greenfield Village hosts hundreds of gleaming examples.

thehenryford.org/motormuster



67th Annual

Old Car Festival

Greenfield Village • Sept. 9-10, 2017
Open Saturday 'til 9!

FREE with membership

Celebrate the triumphs of the earliest innovators of the automobile industry at America's longest-running antique car show.

thehenryford.org/oldcarfestival

the Henry Ford

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CBS
Dream Team

LTC 09:02:24:16

Tune in to this weekly TV show featuring fascinating stories behind historic innovators and today's change makers.

Watch the all-new Season 3 on CBS Saturday mornings, or tune in anytime at thehenryford.org/innovationnation.

the Henry Ford

Take it forward.™

Engines Exposed

January 14-February 28, 2017

Henry Ford Museum® • Dearborn, Michigan

thehenryford.org/engines

▶ PROGRAM GUIDE

Curator's Choice: Top 15 Engines Exposed

There are more than 60 on view, but here Matt Anderson, curator of transportation at The Henry Ford, describes some of his favorites.

1 1909 Ford Model T

Inline 4-cylinder engine, L-head valves, 177 cubic inches displacement, 22 horsepower

Early Model T engines circulated cooling water with a gear-driven pump, visible just behind this engine's fan. After 2,500 units, Ford switched to a simpler — and less expensive — thermosiphon system dependent on natural convection. The Model T never used an oil pump. The flywheel, spinning in an oil bath, simply splashed the lubricant around. The engine and transmission efficiently shared the same oil supply.

2 1943 Willys-Overland Jeep

Inline 4-cylinder engine, L-head valves, 134 cubic inches displacement, 54 horsepower

Simplicity and ease of maintenance were important requirements when the Army put out the request to manufacturers that ultimately produced the Jeep. Willys-Overland's 4-cylinder engine — nicknamed "Go Devil" — offered sufficient horsepower and an impressive 104 pound-feet of torque in a compact, reliable package. It was easy to service, too. The fuel filter, carburetor and air cleaner are all within easy reach under the hood.

3 1949 Volkswagen

Horizontally opposed 4-cylinder engine, overhead valves, 69 cubic inches displacement, 30 horsepower

By American standards, almost everything about the Volkswagen was unconventional. That included the rear-mounted engine. Instead of a V-8 or an inline-6, VW used a flat-4 "boxer" engine with horizontally opposed pistons and rods that looked a bit like prizefighters going at each other. The air-cooled motor was simple, efficient and highly adaptable, eventually powering everything from dune buggies to light airplanes.

4 1989 Honda Accord

Inline 4-cylinder engine, overhead camshaft, 119 cubic inches displacement, 98 horsepower

Using a front-wheel-drive layout in a front-engine car allows for a compact design, but it requires some clever packaging under the hood. The Accord's automatic transmission is combined with a differential into a single unit called a transaxle, mounted on the passenger side of the engine. The transverse-mounted engine has three valves per cylinder — two intake and one exhaust.

5 1930 Ford Model A

Inline 4-cylinder engine, L-head valves, 201 cubic inches displacement, 40 horsepower

Painting engine blocks is a long-standing tradition among automakers. In the 1960s, Ford favored blue while Chevrolet preferred orange. But green was Ford's color of choice when this Model A came off the

line. The black enameled pipe, running diagonally along the block just below the carburetor, returns surplus oil from the valve chamber back to the crankcase.

6 1926 Rolls-Royce New Phantom Limousine

Inline 6-cylinder engine, overhead valves, 468 cubic inches displacement, 108 horsepower

Rolls-Royce's New Phantom engine, introduced in 1925, featured twin ignition with two spark plugs in each of its six cylinders. Those cylinders were cast in two sets of three, coupled by a one-piece cylinder head. Great Britain taxed automobiles based on cylinder bore. To reduce its tax penalty, the New Phantom engine was "undersquare" with its 4¼-inch bore smaller than its 5½-inch stroke.

7 1931 Duesenberg Model J

Inline 8-cylinder engine, double overhead cams, 420 cubic inches displacement, 265 horsepower

The Duesenberg is a beautiful automobile, and under the hood there's plenty of go to match the show. The straight-8's four valves per cylinder and duplex carburetor helped it pump out an enormous amount of horsepower for the time. (Later supercharged versions produced an astounding 320 horsepower!) The Model J could break 100 miles per hour without breaking a sweat.

8 1913 Scripps-Booth Rocket

V-2 cylinder engine, air-cooled, 35 cubic inches displacement, 10 horsepower

Inexpensive cyclecars, as the name suggests, often used motorcycle engines like the V-2 in this Scripps-Booth prototype. The air-cooled motor meant there was no need for water or a radiator, while the splash lubrication system eliminated the necessity for an oil pump. The prototype's engine is mounted with its crankshaft parallel to the rear axle, simplifying the belt connections between transmission and wheels.

9 1963 Buick Riviera

V-8 cylinder engine, overhead valves, 401 cubic inches displacement, 325 horsepower

The Wildcat V-8 belonged to Buick's celebrated family of "nailhead" engines, so named for their thin, nail-like intake and exhaust valves. Those small valves restricted the engine's breathing and high-performance abilities, but the tighter combustion chambers produced lots of torque, ideal for smooth starts with Buick's Dynaflow automatic transmission. That "445" on the air cleaner refers to the pound-feet of torque produced by the engine.

10 1960 Buck & Thompson Slingshot Dragster

V-8 cylinder engine, L-head valves, 320 cubic inches displacement, 220 horsepower

Sam Buck and Bob Thompson souped up the Ford V-8 in their dragster using all the time-honored tricks. They increased the engine's displacement by boring out the cylinders. To improve its breathing, they enlarged the intake and exhaust ports and "relieved" the passages between valves and cylinder bores by grinding away excess metal. They also installed an Iskenderian racing camshaft and Edelbrock cylinder heads.

11 1967 Ford Mark IV

V-8 cylinder engine, overhead valves, 427 cubic inches displacement, 500 horsepower

Fifty years after the Mark IV won Le Mans, it's hard to believe that anyone questioned using the big-block 427 engine. But some thought Ford's 289 V-8, used in earlier GT40s, was powerful enough. Besides, the heavier 427 also required a heavier gearbox, heavier brakes and a stronger cooling system. That 1967 win, plus the earlier one in 1966, suggests the trade-off was worth it.

12 1902 Ford "999"

Inline 4-cylinder engine, atmospheric intake valves and mechanical exhaust valves, 1,156 cubic inches displacement, 80 horsepower

Henry Ford's "999" has no crankcase, leaving the crankshaft exposed. There's no tailpipe, as exhaust gases are vented directly from the cylinders into the air. Lubricating oil drips from the four sight glasses into the cylinders and then out to the ground — with more than a little splashing onto the driver. The water pump, visible on the proper right front side, feeds water into the radiator from a tank under the driver's seat.

13 1949 Mercury Custom

V-8 cylinder engine, L-head valves, 276 cubic inches displacement, 280 horsepower

Much of the joy in custom cars is found through their superb craftsmanship, whether in doing the work as a builder or owner, or enjoying it as a spectator. The skill in this custom Merc extends under the hood. Among the engine modifications are twin Stromberg 97 carburetors with louvered air cleaners, Eddie Edmunds aluminum cylinder heads and a generous application of chrome.

14 1997 General Motors EV1

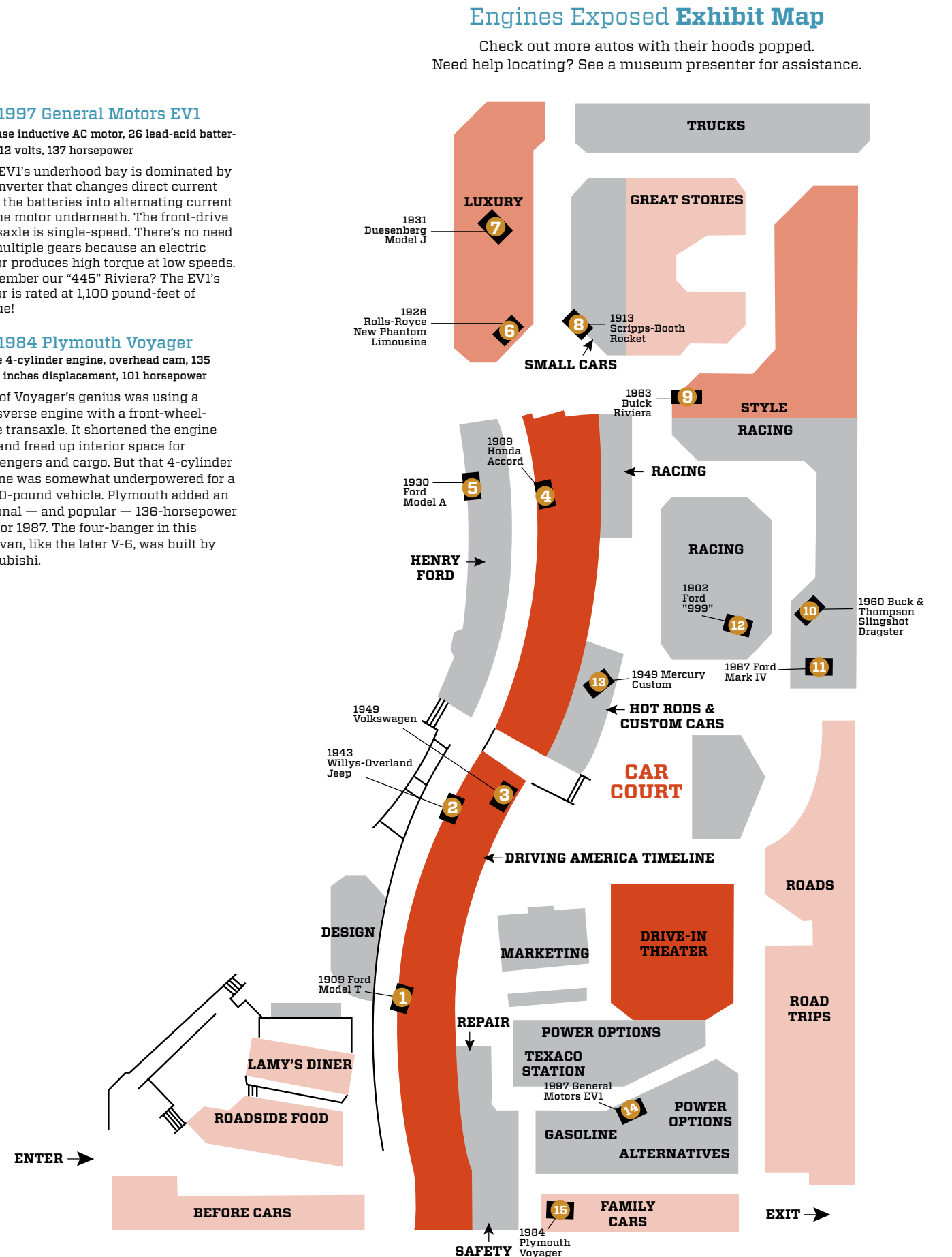
3-phase inductive AC motor, 26 lead-acid batteries, 312 volts, 137 horsepower

The EV1's underhood bay is dominated by the inverter that changes direct current from the batteries into alternating current for the motor underneath. The front-drive transaxle is single-speed. There's no need for multiple gears because an electric motor produces high torque at low speeds. Remember our "445" Riviera? The EV1's motor is rated at 1,100 pound-feet of torque!

15 1984 Plymouth Voyager

Inline 4-cylinder engine, overhead cam, 135 cubic inches displacement, 101 horsepower

Part of Voyager's genius was using a transverse engine with a front-wheel-drive transaxle. It shortened the engine bay and freed up interior space for passengers and cargo. But that 4-cylinder engine was somewhat underpowered for a 2,900-pound vehicle. Plymouth added an optional — and popular — 136-horsepower V-6 for 1987. The four-banger in this minivan, like the later V-6, was built by Mitsubishi.



Engines Exposed Exhibit Map

Check out more autos with their hoods popped. Need help locating? See a museum presenter for assistance.