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**Onboard diagnostics (OBD)**

Most people know that today's cars and trucks utilize multiple onboard computer systems. But many drivers are less aware that all cars built after 1996 have a 16-pin data port under the steering column that accesses the vehicle’s computer network. Think of it as something like a hidden USB connection for cars.

For decades, only auto service technicians had a way to plug into the so-called onboard diagnostics (OBD) port, so they could read and interpret the fault codes that trigger dashboard (mērinstrumentu panelis)warning lights. Early versions of OBD would simply illuminate a malfunction indicator light or "[idiot light](http://en.wikipedia.org/wiki/Idiot_light)" if a problem was detected but would not provide any information as to the nature of the problem. Modern OBD implementations use a standardized digital communications port to provide real-time data in addition to a standardized series of [diagnostic trouble codes](http://en.wikipedia.org/wiki/Table_of_OBD-II_Codes), or DTCs, which allow one to rapidly identify and remedy malfunctions within the vehicle. A **tell-tale** (or **idiot light**)-(signalizators) is an indicator of the status or malfunction of a system within a motor vehicle. A tell-tale consists of a [light bulb](http://en.wikipedia.org/wiki/Light_bulb)(gaismas lampiņa) or an [LED](http://en.wikipedia.org/wiki/LED) which lights up a symbol or text legend. The "[idiot](http://en.wikipedia.org/wiki/Idiot_%28usage%29) light" terminology arises from popular frustration with automakers' use of tell-tales for crucial functions which could previously be monitored by [gauges](http://en.wikipedia.org/wiki/Measuring_instrument)(mērītājs), so a troublesome condition could be detected and corrected early. Such early detection of problems with, for example, engine temperature or oil pressure or [charging system](http://en.wikipedia.org/wiki/Alternator) (uzlādes sistēma)operation is not possible via a tell-tale, which usually illuminates only once a fault has already occurred – thus providing no advance warnings or details of the malfunction's extent. The [Hudson](http://en.wikipedia.org/wiki/Hudson_Motor_Car_Company) automobile company was the first to use lights instead of gauges for oil pressure and the voltmeter, starting in the mid-1930s.

It was only a matter of time before enterprising technologists would figure out how to tap into the OBD port and beam the data via Bluetooth to smart phones carried by drivers. Shouldn't you, as the owner of your car, have ownership of—and access to—the data stored onboard?

The answer is a resounding “Yes,” for the creators of a wave of hardware-software car-based telematics aftermarket products—including Automatic, Mojio, Dash and Truvulo. The first of these products to hit the market is [Automatic](http://www.automatic.com/). I’ve had it running on our 2006 Toyota Prius for the past few weeks.

The two basic components are a dongle that snaps into the port and a mobile app. Remarkably, all of these competitors offer strikingly similar features to drivers, including interpretation of engine warning signals, crash alert notifications, route tracking, eco-driving feedback and a way to locate a parked .

High-performance processors allow car companies to design virtual vehicle prototypes on screen, and then run precise aerodynamic simulations in virtual wind tunnels or accurate ersatz road testing of traction control systems or crash events. Now, the technology is being used to interpret and integrate an ever-widening stream of data from sensors.

The list of critical components on today’s cars now includes cameras, radar, sonar(hidrolokators), and laser sensors, or lidar.

 “A CPU [central processing unit], GPU, image processor, audio processor, and video processor are all baked into tiny thing,” .

Different tell-tales can convey different kinds of information. One type lights or blinks to indicate a failure (as of oil pressure, engine temperature control, charging current, etc.); lighting and blinking indicate progression from warning to failure indication. Another type lights to alert the need for specific service after a certain amount of time or distance has elapsed (e.g., to change the oil). Another type lights to indicate a condition of readiness. A "closed-circuit tell-tale" lights to indicate a device or system that has been switched on, while an "operating tell-tale" lights to indicate a device or system which is operating correctly.

**Vehicle running condition(transporta kustības apstākļi)**

Some tell-tales indicate whether critical vehicle systems are running and operating properly. To test the lamps, many tell-tales can illuminate when the vehicle ignition is turned on, but before the engine is started, in order to prove that they are working.

**Oil pressure(eļās spiediens)**

The oil pressure tell-tale lights when [engine oil](http://en.wikipedia.org/wiki/Engine_oil) pressure(eļļas spiediens) drops below a predetermined level. The light normally appears when the vehicle ignition is turned on, but the engine is not running, as it detects no oil pressure due to the [oil pump](http://en.wikipedia.org/wiki/Oil_pump_%28internal_combustion_engine%29)(eļļas padeve) not operating (the oil pump is powered off the crankshaft, so only operates when the engine is running). It normally turns off a few seconds after engine start as the oil pump starts working and building up oil pressure. This tell-tale can bear the legend oil or a pictogram of an oil can. Some cars illuminate the light red or yellow, depending on the action needed to be taken.

**Engine temperature(motora temperatūra)**

The engine temperature tell-tale is usually installed singly, but has less commonly been installed in pairs. A pair of lights indicate insufficient (cold) and excessive (hot) engine temperature.A single light usually indicates only an overheat condition in engine.

Malfunction indicator (check engine) (traucējumu rādītājs):



A malfunction indicator lamp

A "malfunction indicator lamp" (MIL) or "check engine light" (CEL) illuminates, usually in red, amber, or yellow, to indicate malfunction or service required(nepieciešama apkope) in the [computerized](http://en.wikipedia.org/wiki/Engine_control_unit) [engine management system](http://en.wikipedia.org/wiki/Fuel_injection)(datorizēta dzinēja pārvaldes sistēma). It is found on the instrument console of most automobiles.

On vehicles equipped with [OBD-II](http://en.wikipedia.org/wiki/On-Board_Diagnostics), the light has two stages: it illuminates steadily to indicate a minor fault such as a loose gas cap or malfunction with the vehicle's emissions controls, and it flashes repeatedly when a severe misfire is detected to alert the driver the potential of severe engines or catalyst damages. The MIL can present a legend, such as check engine, power limited, engine, or service engine soon; or it also can present a pictogram of an engine.

**Service interval**

Some vehicles have a MIL illuminating predetermined ( distance intervals, without regard to actual condition or status of any system or device. [Volvo](http://en.wikipedia.org/wiki/Volvo), for example, used a light labeled lambda or Λ, "Lambda Sond" being another name for [oxygen sensor](http://en.wikipedia.org/wiki/Oxygen_sensor)(skābekļa sensors). This was done to remind the driver to change the oxygen sensor.

Some vehicles were built by [Chrysler](http://en.wikipedia.org/wiki/Chrysler_Corporation) between 1973 and 1990 and some [Toyota](http://en.wikipedia.org/wiki/Toyota)-built vehicles have a similar mileage-indicator(nobraukuma rādītājs) light presenting various legends ; once the indicated inspection or service is completed, the light can be reset(atgriezt atpakaļ) and come on again after the next pre-determined distance has passed.

**Charging system**

A tell-tale can be installed to indicate that the vehicle's [alternator or generator](http://en.wikipedia.org/wiki/Alternator#Automotive_alternators) is not properly charging the battery, which would eventually under this condition and become discharged. The light normally appears when the vehicle ignition is turned on, but the engine is not running, as it detects that no power is coming from the alternator (the alternator is powered off the engine so only generates when the engine is running). It subsequently extinguishes as soon as the engine starts and the alternator (ģenerators)starts generating electricity. This light presents a pictogram of a battery, or it presents the legend amp or batt or gen.

**Trouble indicator**

Some vehicleshad a single indicator labeled trouble or engine; this was not a Check Engine Light, but a catch-all warning light to indicate trouble that was serious enough to portend an imminent breakdown. Early 1980s [Fords](http://en.wikipedia.org/wiki/Ford), such as the LTD Crown Victoria, without the instrument option, had only this light, which indicated low oil pressure, overheating and carburetion problems without distinguishing among them. This usage of the "engine" light was discontinued in the mid-1980s to prevent confusion with the MIL.

**Equipment status**

Many tell-tales indicate that a device or system has been switched on, or is operating.

**Lighting equipment**

US, Canadian, and international European regulations require tell-tales to indicate to the driver that various vehicle lighting functions are operating. Such functions include the high beam [headlamps](http://en.wikipedia.org/wiki/Headlamp), the [turn signals](http://en.wikipedia.org/wiki/Automotive_lighting#Turn_signals), the [daytime running lights](http://en.wikipedia.org/wiki/Daytime_running_lamp), the [front fog lamps](http://en.wikipedia.org/wiki/Automotive_lighting#Front_fog_lamps), and the [rear fog lamps](http://en.wikipedia.org/wiki/Automotive_lighting#Rear_fog_lamps). Also, in the case of a malfunction of turn signals, it is required for the driver to be notified by either clicking faster when turning on the malfunctioned turn signal, or not lighting up the tell-tale for the corresponding turn signal [citation needed].

**Defogger**

Vehicles equipped with a backglass [defogger](http://en.wikipedia.org/wiki/Defogger) have a tell-tale to indicate when the system is switched on and operating.

**Brake**

All vehicles have a red tell-tale to indicate that the [parking brake](http://en.wikipedia.org/wiki/Parking_brake) is engaged or that there is a fault with the vehicle's [braking system](http://en.wikipedia.org/wiki/Brake).This tell-tale in most cases bears the ISO symbols for a parking brake and for a braking system emergency. In the past, US regulations required this tell-tale to bear the legend brake.

Vehicles with [anti-lock braking system](http://en.wikipedia.org/wiki/Anti-lock_braking_system) (ABS) have a lamp to indicate a detected failure.

**Other systems**

As automobiles became increasingly complex, more dashboard indicator lights have been added for the status of safety and convenience systems. Lights can indicate many conditions including:

* **Low fuel** – Appears when vehicle's fuel tank is nearing empty. Usually shaped like a [fuel pump](http://en.wikipedia.org/wiki/Fuel_dispenser), or a light next to the "E" on the fuel gauge.
* [**Glowplugs**](http://en.wikipedia.org/wiki/Glowplug) **operating – wait to start** (diesel engines) – Appears when the engine is switched on to indicate the engine glowplugs are operating, and the driver should wait for the light to extinguish before starting the engine. Usually shaped like a coiled wire.
* **Driver or passenger seat-belt not buckled** (somtetimes with a buzzer- svilpe)– Appears when the engine is switched and the driver's and/or passenger's seat belt is not buckled. A pressure sensor in the passenger seat prevents the passenger warning light from activating if the seat is unoccupied. Usually shaped like a person wearing a seat belt.
* Traction control anti-skid(pretslīde) system operative
* Low windshield (logu tīrītāji)washer fluid
* Air-bag system malfunction(traucējums) detected(atklāts)
* Water in fuel (diesel engines)
* Door open, or trunk lid open
* Anti-theft alarm/engine immoblizer active
* Speed radar detected
* Automatic transmission fault
* Low tire pressure(zems spiediens riepā)
* Modes of the heating/air conditioning system (defrost, recirculation, and others)
* Cruise control on.

Izziņu avots: automašīnu rokasgrāmatas,

 J.E.Duffy, “Modern automotive technology”,publisher- The Goodheart-willcox company, Inc.