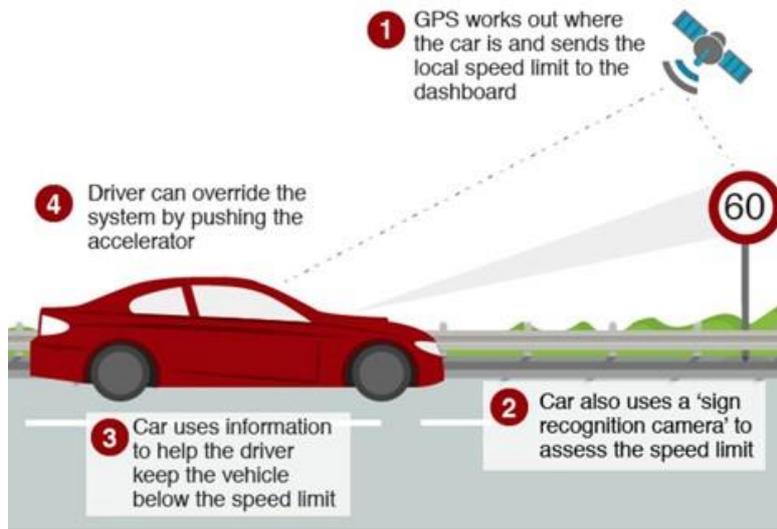


Intelligent Speed Assistance - What it is and how it will affect compliance on speed limits

A briefing by Rod King for the 20mph Task and Finish Group - 30th December 2019

How does speed limiting work?



On the 27th November 2019 the European Parliament approvedⁱ a new set of mandatory vehicle safety standardsⁱⁱ for all vehicles sold in the European Union. This was welcomed by ETSCⁱⁱⁱ (European Transport Safety Council). Intelligent Speed Assistance is one of the technologies that will be fitted on all vehicles. UK government says that it will apply in UK regardless of whether UK leaves the EU. Under the new rules, all new motor vehicle models (including trucks, buses, vans and sport utility vehicles, but not motorcycles) will have to be equipped with the following safety features from mid-2022:

- intelligent speed assistance,
- alcohol interlock installation facilitation,
- driver drowsiness and attention warning systems,
- advanced driver distraction warning systems,
- emergency stop signals,
- reversing detection systems,
- event data recorders,
- accurate tyre pressure monitoring,

Supplementary advanced safety measures will be required for cars and vans. These include :

- advanced emergency braking systems,
- emergency lane-keeping systems,
- enlarged head impact protection zones capable of mitigating injuries in collisions with vulnerable road users, such as pedestrians and cyclists.

This will also apply to all new vehicles sold from 2023.

What is Intelligent Speed Assistance (ISA)?

ISA is a vehicle safety technology already available on several models of new car in EU showrooms. Such a system will limit engine power when necessary to help prevent the driver from exceeding the current speed limit. The system can be overridden, or temporarily switched off. As well as improving road safety, reducing emissions and saving fuel, the system can help drivers avoid speeding fines. The EU directive definition of ISA is :

'intelligent speed assistance' means a system to aid the driver in maintaining the appropriate speed for the road environment by providing dedicated and appropriate feedback

The directive has the following minimum requirements:

- it shall be possible for the driver to be made aware through the accelerator control, or through dedicated, appropriate and effective feedback, that the applicable speed limit is exceeded;*
- it shall be possible to switch off the system; information about the speed limit may still be provided, and intelligent speed assistance shall be in normal operation mode upon each activation of the vehicle master control switch;*

- (c) *the dedicated and appropriate feedback shall be based on speed limit information obtained through the observation of road signs and signals, based on infrastructure signals or electronic map data, or both, made available in-vehicle;*
- (d) *it shall not affect the possibility, for the drivers, of exceeding the system's prompted vehicle speed;*
- (e) *its performance targets shall be set in order to avoid or minimise the error rate under real driving conditions.*

What are the main benefits of ISA?

ISA is probably the single most effective new vehicle safety technology currently available in terms of its life-saving potential. A study for the European Commission found the other main positive impacts include: encouraging walking and cycling due to increased perceived safety of cars vis-à-vis vulnerable road users, a traffic calming effect, reductions in insurance costs, higher fuel efficiency and reduced CO2 emissions.^{iv}

Tackling excessive speed is fundamental to reducing the figure of 26,000 road deaths every year in Europe. With mass adoption and use, ISA is expected to reduce collisions by 30% and deaths by 20%.

Can the system be overridden?

Yes. The directive notes :-

It should be possible to switch off intelligent speed assistance, for instance, when a driver experiences false warnings or inappropriate feedback as a result of inclement weather conditions, temporarily conflicting road markings in construction zones, or misleading, defective or missing road signs. Such a switch-off feature should be under the control of the driver. It should allow for intelligent speed assistance to be switched off for as long as necessary and to be easily switched back on by the driver. When the system is switched off, information about the speed limit may be provided. The system should be always active when switching the ignition on and the driver should always be made aware of whether the system is on or off.

Note that the new data recorders fitted to vehicles would log the over-riding of the ISA system. It is possible that in the event of a crash this information could be available to police and possibly civil lawyers.

Will the vehicle brake when it detects a lower speed limit?

No, the ISA system does not apply the brakes to reduce speed. When the vehicle encounters a lower speed limit it will display a visual warning to the driver. It is then the driver's responsibility to brake to reduce the speed appropriately. If the driver does not apply the brakes, the vehicle would in any case slow down naturally to the new speed limit by reducing engine power. This is the equivalent of the driver lifting his or her foot off the accelerator.

The driver may encounter automatic braking while using ISA if an automated emergency braking (AEB) or adaptive cruise control (ACC) system is also in operation on the vehicle.

What happens if the vehicle limits the speed incorrectly?

ISA is a driver assistance technology: the driver, not the car, is responsible for obeying the current speed limit at all times.

Speed-sign recognition technology is improving rapidly. It should be possible to detect the current speed limit at a high level of accuracy including temporary speed limits, digital signs, overhead signs and the like. Similarly, over-the-air updates of speed limit information stored in the car is possible, especially now that all cars have to have the built-in communications technology required for the eCall system. In the limited number of cases where the car limits the speed incorrectly to a lower speed than is actually permitted, the driver would be able to override. Conversely, if the vehicle sets the limit higher than is actually permitted, then the driver would be responsible for ensuring that he or she does not exceed the speed limit.

The car industry is rapidly developing automated driving functionality where the ability of the car to obey the current speed limit will be essential and the carmaker will be responsible for any error. ISA's rapid adoption will therefore aid development of a robust approach.

Can I already buy a car with ISA fitted?

Yes, most manufacturers already sell cars in Europe with various implementations of ISA including Ford, Mercedes-Benz, Peugeot/Citroen, Renault and Volvo.

Euro NCAP, the consumer safety rating organisation, gives points for vehicles that include ISA.

Is ISA an expensive technology?

No. Most of the technology required for ISA is already becoming standard on new cars anyway. All cars will soon have GPS built-in, a requirement of the mandatory eCall emergency calling system in the EU. Many new cars also come fitted with a forward-facing camera, required for technologies such as lane guidance and automated emergency braking. The majority also already have manually set speed limitation functions, so automating this feature is a natural next step. A recent cost assessment for the European Commission found that a camera-based system, shared between several systems such as Automated Emergency Braking (AEB), Lane Keeping Assistance (LKA) and Intelligent Speed Assistance (ISA), would cost in the range of €47–62 per vehicle. The total cost for components (camera, ECU, brackets, trim, wiring) and OEM design and development, tooling costs, etc. was estimated at €186–249, based on individual costs extracted from NHTSA, 2012.

A report^{iv} for the Commission by consultants TRL (see footnote has found ISA to be ‘feasible in terms of the technology required’, already available on the market and offering a positive benefit-cost ratio.

Retro-fitting of ISA is possible. Currently the market for such systems has been in goods fleet operators where limiting acceleration and top speed can have significant cost savings. Costs of such systems are of the order of £2,000 including fittings and are fully integrated into “fly-by-wire” accelerator control^v. It is likely that stand-alone retrofit ISA accessories will come available at similar prices to dash-cam and satnav systems, ie £100-£150. But these will only have audio/visual alerts to the driver.

Do drivers like ISA?

ISA has been trialled on the road in eleven EU member states and, while drivers take a short time to adjust to the technology, the great majority appreciate it. One obvious benefit, as Ford has pointed out in a recent marketing campaign, is that it helps drivers avoid speeding tickets.^{vi}

Some additional articles

Speed limiters mandatory for new cars: 20mph self enforced	20’s Plenty for Us March 2019	http://www.20splenty.org/speed_limiters
Intelligent speed assistance: everything you need to know	Autocar May 2019	https://www.autocar.co.uk/car-news/features/intelligent-speed-assistance-everything-you-need-know

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ⁱ EU Press Release <https://www.consilium.europa.eu/en/press/press-releases/2019/11/08/safer-cars-in-the-eu/#>

ⁱⁱ Regulation of the European Parliament <https://data.consilium.europa.eu/doc/document/PE-82-2019-INIT/en/pdf>

ⁱⁱⁱ ETSC Press Release <https://etsc.eu/eu-member-states-rubber-stamp-new-vehicle-safety-requirements/>

^{iv} TRL Report for EU <https://publications.europa.eu/en/publication-detail/-/publication/77990533-9144-11e7-b92d-01aa75ed71a1>

^v Sturdy VMS and SpeedIQ system <https://sturdyeurope.com/en/>

^{vi} Ford Press Release <http://social.ford.co.uk/could-this-spell-the-end-for-speeding-tickets/>