

What is TJA?

Traffic Jam Assist is a system designed to assist drivers navigate on approved highways at low speeds (>40mph). It operates very similarly to Adaptive Cruise Control, except TJA works at low speeds and assists the driver during traffic jams. TJA is ultimately an addition to existing ACC present in most modern vehicles and therefore uses the same hardware as ACC. It uses a forward looking radar to identify a target vehicle and calculate closing rate. The closing rate is useful to calculate how close/far you are from the target vehicle, Ideally it should be zero, if it is negative the vehicle is too close to the target and needs to slow down. If the vehicle has a front facing camera, TJA can also provide lane centering.

TJA is a level 2 driver assistance system, this means the driver needs to be alert and maintain hands on the steering wheel at all times.

TJA sensor integration and dependencies.

The system utilizes Front mounting radar and sensor for target and lane recognition."Front-mounted radar sensors help the vehicle's computer determine the speed and distance of the vehicle ahead, whereas camera sensors can identify objects, road signs, and lane markings. Some manufacturers may use side-equipped infrared sensors that can identify lane markings." [2]

Industry and Market Trends

- The TJA market is expected to grow to a global market size of \$7.17 billion by 2028.
- Most manufacturers design TJA for speeds lower than 40mph, Honda however works up to 45mph.
- Different manufacturers require more or less attention from the driver. For example Fords Blue cruise offers more of a hands off experience and on the other hand Chevrolet SuperCruise detects head and eye positioning.
- Some of the manufacturers that have implemented TJA technologies are:
 - Mazda
 - Audi
 - Acura
- Tesla and Mercedes are working towards fully autonomous TJA

Possible warnings

- TJA is not an automated driving system and the system has limitations.
- The vehicle set by the driver needs to be within the speed limit according to road and weather conditions.
- TJA might not be able to detect the vehicle ahead depending on the vehicle type, weather and road conditions.

- The system might not be able to brake completely if the vehicle in front suddenly stops or if the vehicle changes lanes.

Limitations

- Don't use it on roads with sharp curves.
- Don't use it when entering or exiting interchanges, service areas and parking areas of expressways.
- Don't use it when two-wheeled vehicles such as motorcycles are ahead.
- Don't use it when tires of different sizes are being used (ie. spare tire)

Video of vehicle with working TJA

-  Traffic Jam Assist (TJA) | Lexus

References

- <https://www.jdpower.com/cars/shopping-guides/what-is-traffic-jam-assist>
- <https://www.revvhq.com/blog/traffic-jam-assist-tja-adas-feature-calibration>
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