



SAFE-PARK E.P.S.[®] manoeuvring- and parking-aid with antenna-sensor

CE 0682 ⓘ

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European Type-Approval
by German Kraftfahrt-Bundesamt

invisible

inside the plastic bumper

signalizes approach of or to obstacles,
from 50 cm distance up to the bumper's brim,

with 3-grade acoustical warning-sequence,
and with RISK-ALARM in case of too high speed

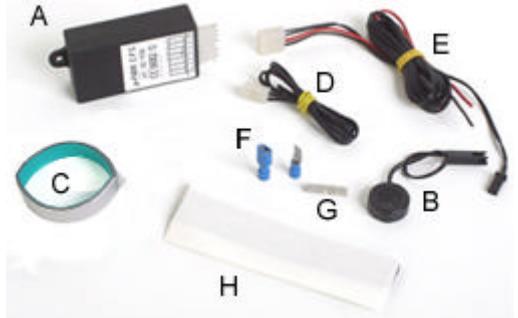
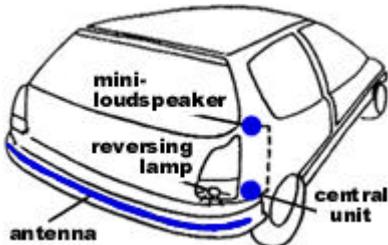
USER AND INSTALLATION MANUAL

WORKING PRINCIPLE

SAFE-PARK EPS[®] is a unique parking aid enabling close-to-bumper manoeuvring.

By its antenna-sensor, which covers the whole bumper, EPS[®] emits electromagnetic waves of low intensity - thus generating all around this bumper an unbroken (electrostatic) zone of protection.

As long as the distance between antenna and obstacle is just decreasing, EPS[®] signalizes by its 3-grade warning sequence such obstacles, which enter into this unbroken zone and absorb its field energy.



EASY AND FAST FITTING

Electrically, just connect EPS[®] to a switchable power supply of the vehicle. (In case of back bumper: to the reversing lamp. In case of front bumper: by a luminous switch to ignition-plus.)

AND FITTING-COMPONENTS (supplied)

- **Central unit:**(A): To be fixed inside the car in a dry place, close to the antenna connection.
- **Loudspeaker** (B): Ø 25mm, in driver's cab.
- **Antenna** (C): The **self-adhesive tape** shall be tightly fitted onto the inside-surface of the exterior plastic bumper sheath - covering the whole width of the car as well as its corners.
- **Wiring** (E). **Antenna-flex** (D). **Mastic** (H). **Flat-connectors** (F). **Pinch-connector** (G).

BEFORE USE, READ AND OBSERVE ALL INSTRUCTIONS

EPS® FUNCTION

Since EPS® assists to use the very last centimetres, **slow and wary manoeuvring has to be implied !**

Switched on by engaging the reverse gear, or by (luminous) switch in case of front bumper, EPS® tries to calibrate itself and reports its status by a special signal:-

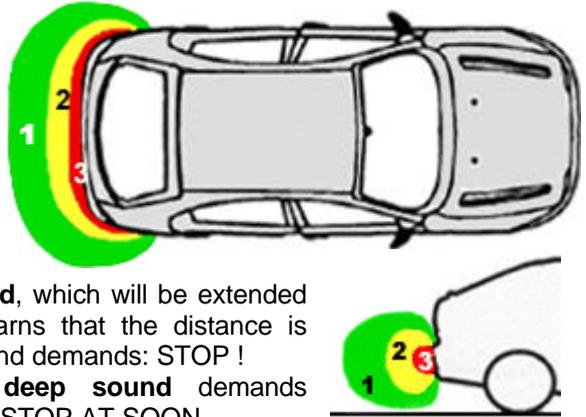
- **Wait-signal:** If a single beep sounds, you must briefly wait for the next signal.
- **Defect-signal:** With a sequence of alternating high and deep tones EPS® informs that it cannot operate, and its installation must be checked and repaired.
- **OK-signal:** 3 different tones indicate that EPS® is ready for operation now !

Only after OK-signal EPS® is ready to signalize obstacles. All kind of shapes and nearly all materials (NOTE: except "insulators" like plastics, dry wood, glass...) are signalized, as long as their small distance to the antenna is going on to be reduced. Material characteristics and approach speed determine, how and at which distance the obstacle will be signalized. Only very slow approach allows to make use of the very last centimetres.

In case of slow approach the 3-grade warnings are emitted:-
PRE-ALARM (1): single beeps of medium pitch warn that the distance is already below circa 50 - 60 cm. If the distance goes on decreasing, these beeps are emitted a little bit more rapidly.

STOP-ALARM (2): a high sound, which will be extended in case of further approach, warns that the distance is already below circa 10 - 20 cm, and demands: STOP !

CONTACT-ALARM (3): the deep sound demands implicitly to BRAKE INSTANTLY, STOP AT SOON.



In case of fast approach a **sequence of high beeps (= RISK-ALARM)** calls to **brake at soon** (only rare, after brief pause, slow manoeuvring can go on with utmost care), or calls to increase caution, since water flows close to the antenna.- NOTE:-

- Each time after being switched on, EPS® can emit the **RISK-ALARM** only once.
- EPS® thereby re-adjusts itself. Now **PRE-ALARM** warnings are not emitted any more, but the ranges of **STOP-** and **CONTACT-ALARM** are enlarged a bit.
- **RISK-ALARM** can be emitted at any time, even instead of **CONTACT-ALARM**.
- In presence of (rain-) water on the bumper, the **RISK-ALARM** can be emitted once too, in order to minimize emission of further signals caused by water.

- IMPORTANT:**
- At the arrest of approach, any sound stops immediately.
 - Only very slow manoeuvring (the last centimetres in "snail's pace") enables EPS® to signalize an approach up to the final centimetres of the bumper's brim.
 - Without causing warning signals, you can manoeuvre with (trailer) hook haul or in parallel to a side wall, since their distances to the antenna do not decrease.
 - Shock absorbers' dumping (when road's unevenness, braking, high speed or... let the street coat approach to the antenna) or water can cause warning signals.
 - When manoeuvring, even if assisted by EPS®, drivers are still obliged to inspect carefully the surroundings, in order to prevent and not to cause any damages.

INSTALLATION

- **EPS® can duly operate only, if the antenna-sensor is (1.) an in optimum position on well (2.) prepared and (3.) cleaned surface, and is really (4.) tightly fastened !**
- **EPS® only suits for plastic bumpers (back or front).**
- **Metal close to antenna can (strongly) reduce the EPS® detection range !**
- **Magnetic or electro-magnetic fields can disturb the operation of EPS®.**

1. **First, fix outside** on the bumper a wire (~ 2m) by adhesive tape, connect it as antenna. (Connect loudspeaker and 12V, too.) Now **test** EPS® by approaching the hands. If you verify proper detection ranges (about 50 cm), the antenna can be installed on the inside-surface corresponding to the position ascertained. (Otherwise test in another position.) Mark the proper course of the antenna.

NOTE-> Antenna must **cover car's whole width**, and car's corners, too.

- ➔ Antenna must be minimum 40 cm, better **50 cm above road level**.
- ➔ Antenna must be min. 20 cm, better **30 cm away from the wheels**.
- ➔ Antenna must be **minimum 3 cm far from car's metal parts**.
- ➔ Antenna must be on the **outermost exterior line of the car**.

2. Disassemble the exterior sheath of the plastic bumper, and uncover its inside surface. Temporarily, core multi-layer or remove shock-relief materials.

Find an opening to thread through the **antenna-flex** (with plug inside the car).

Close by, mark on the inside surface a connecting point, where to connect later central unit and antenna by means of the flex **on the shortest way possible**.

If possible, shorten flex. Skin both ends of its leads, and **twist them together** !

3. Before fitting the antenna in the position ascertained (1.), **clean and degrease thoroughly the bumper's inside surface by using non-aggressive solvent (like alcohol)**. NOTE: Avoid aggressive solvent (like brake cleaner).

4. **Tightly glue antenna-tape onto the cleaned inside of the exterior bumper sheath, in the position ascertained (1.), and observing (➔) the conditions.**

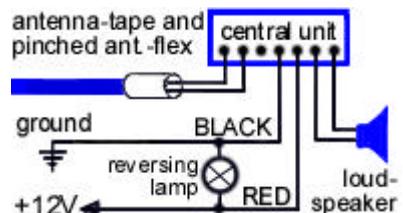
Start sticking at a tape's end. At the connecting point (see 2) twist tape's end or an installed 'loop' (to connect antenna-flex by flat or pinch connector). Cut off tape's needless rest. Reinforce fastening by mastic or melt adhesive, especially at connecting point (needs waterproofing), tape's ends and bendings.

➔ The whole antenna (tape, flex, and central unit) must be perfectly fixed.

5. Fasten **central unit** inside the car in a dry place, **close to the antenna connection**. Keep its plugs accessible.

Plug **antenna-flex** into central unit. Pinch its twisted leads to **antenna-tape** (by pinch or flat connector), and arrest it on its way.

Fix **loudspeaker** in driver cabin, and plug it.



Car electrics: EPS® must be switchable ON/OFF either by +12V or by earth:

RED wire to +12V (e.g. reversing lamp, resp. +15). **BLACK to a valid ground.**

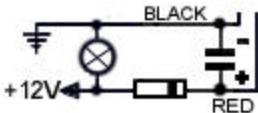
SPECIAL: If the reversing lamp's +12V-feeding is pulsed, a capacitor (e.g. 470µF /16V), whose dumping towards car's electrics must be inhibited by diode (e.g. 1N4148), can be connected between the BLACK (-) and RED (+) wires.

6. Put together and remount the bumper. Do the final test procedure.

FINAL TEST PROCEDURE

TROUBLE-SHOOTING

- 1.) Switch on ignition, engage reverse gear. (Resp. in case of antenna installed in the front bumper: Power device by the recommended luminous switch.)
- 2.) If EPS[®] can calibrate and adjust itself, the **OK-signal** (= 3 tones with different pitch each) indicates that **EPS[®] is ready for operation**. - **Otherwise:-**
 1. The **DEFECT-signal** (=alternating high and deep tones) informs that EPS[®] cannot operate, and e.g. antenna's connection must be checked and repaired.
 2. If the loudspeaker does not emit any sound at all, check it itself, its wires and its connections (as well as the feeding connections to +12V and ground).
- 3.) **Then, while the car is not moving, verify** the 3 detection ranges. **Slowly** and continuously approach towards antenna. At 50 cm distance single **PRE-ALARM** beeps (medium) should start, succeeding faster then, around 20 cm proceeding in the high (extending) **STOP-ALARM**, and finally in the deep **CONTACT-ALARM**.
NOTE: If, in case of fast approach, **RISK-ALARM** (fast sequence of high beeps) sounds, **PRE-ALARM**-beeps are not emitted any more. (Switch on EPS[®] anew.)
 - 3.a If range of **PRE-ALARM** is much smaller than 50 cm, check and enlarge - if possible - the distance between antenna and car's metal, - and if need be...
 - 3.b fix (provisionally first) and connect in parallel a 2nd antenna (wire, alu-tape).
If the range remains too small, vary the distance between both antennas.
- 4.) If operation of EPS[®] is correct in case of non-moving vehicle, **now verify by driving carefully and slowly** that in moving vehicle EPS[®] duly operates, too.
 4. If there is no acoustic signal at all, fix ground connection directly to car's body.
 5. If slow driving generates 'senseless' beeps, secure that the antenna-sensor (incl. antenna-wire, central-unit) is fastened tightly and far enough from road and wheels, and that nothing is moving within its reach. (NOTE: If need be, reduce antenna's range by coupling it to ground by resistor of about 50kOhm.)
 6. If loudspeaker buzzes as long as the engine runs, feed +12V directly from the



gearbox' reversing lamp switch; - or connect a capacity (220 or 470µF/16V) between ground and +12V feeding of EPS[®], and inhibit by diode (e.g. 1N4148 or 1N4007) that the capacity may dump towards the car's +12V-electrics.

TECHNICAL DATA	operation temperatures: -40°C up to +85°C
	power supply: 10.5V up to 18 V
	consumption: 40 mA up to 150 mA (deep sound)

GENERAL SECURITY DIRECTIONS FOR THE INSTALLATION:

- Observe the security directions and injunctions prescribed by car's producer and handicraft.
- When working on the car's electrics, first - if possible - disconnect battery's minus-pole (negative) to prevent short circuit risks. NOTE: On account of disconnecting car's battery all transitory memories may loose their programmed data, and may require a re-programming or new input or adaptation (car- and engine-management, clocks, radios, heaters....).
- Verify electrical voltages and polarities only by diode-volt-tester or voltmeter. Other test-lamps may damage or unintentionally trigger elect(ron)ical components of the car.
- When drilling, take care of existing wires, tubes... and sufficient space for drill's leaving.
- If not well versed in car electrics, it is commendable to let an expert workshop install EPS[®].

RECYCLING DIRECTIONS: Ensure to deposit recyclable or environmental harmful components of electronics according to the regulations. In case of doubt, contact the supplier.

★ SafePark EPS[®] (with antenna-tape) (04/2004) ★ TOBÉ GmbH, D-52068 Aachen ★