BRAKE CABLE DETECTION FOR SAFE TRAILER OPERATION

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Technical task:
If you forget to lay the brake cable over the trailer coupling, this cable cannot be pulled if the trailer is unintentionally disconnected while driving and therefore does not release the brakes on the trailer. The trailer can continue to roll after this manoeuvre and therefore represents a massive risk potential for other road users.

Initial situation:
When coupling a trailer to the towing vehicle, various steps must be observed, including, in the case of braked trailers, overhanging the trailer-side brake cable to the coupling of the towing vehicle. Unlike the electrical connection from trailer to towing vehicle (for the light/direction indicator on the trailer, with a note in the instrument cluster indicating that the multi-pin electrical plug has not been coupled), there is currently no device on the vehicle/trailer indicating that the brake cable has not been applied.

Solution:
If a rear view camera is available, the software recognizes whether the brake cable has been laid over the trailer coupling. If this is the case, this can be shown visually in the combination display (see picture in the appendix). If no brake cable is detected, the driver is shown a message on the display.
If, for example, an unbraked trailer is used, the driver can ignore/depress/confirm the message.

Optional:
It is conceivable that this is a learning system that can be preassembled by the driver. In this case the driver could, for example, manually display reference positions of the brake cable in the system settings (attached, not attached...). The system has then learned to recognize the reference positions even more reliably. The query/system can be deactivated in the settings. This makes sense, for example, if only unbraked trailers are used.

Advantages:
- You can no longer forget to attach the brake cable.
- More safety for drivers and all other road users!

Figure 1: Trailer with brake cable (arrow)  Figure 2: Representation that system has recognized that the brake cable has been laid over the trailer coupling on the vehicle.