

Consultation concerning a draft amendment to Regulation No. 13

Note: The text reproduced below was prepared by the experts from Sweden in order to make the new technology needed in Fully Automated Coupling Systems fully compatible with the Regulation No.13.

Sweden would like to invite the members of GRRF in a discussion about the possibilities to issue a special amendment to Regulation No. 13 regarding an exemption from the use of the required ABS connector (ISO 7638-1) in a FACS (Fully Automated Coupling System).

If the members find it possible/interesting, a proposal for amendment to the regulation will be presented at the next meeting.

BACKGROUND

Over the last couple of years there has been a development of fully automatic coupling systems (FACS) for truck and trailer. The driving forces for this development have been safety, efficiency and comfort. A major complicating factor to this development is the requirement for a dedicated ABS connector according to ISO7638. This connector is not possible to include in a FACS in an economical way.

INCOMPATIBILITY WITH REGULATION No.13 REQUIREMENTS

The VBG MFC is an example of a Fully Automatic Coupling System that handles the coupling and uncoupling of mechanics, pneumatics and electrics in an automatic mode. This automation is not possible to achieve with the required ISO7638 connector. This fact is recognised by all actors in the trailer coupling market. Accordingly a standardization work has been started to design alternative contact suitable for Fully Automatic Couplings Systems, FACS.

The VBG MFC is since June 2008 available in the market. This availability is subject to exemption issued by the authorities in Sweden, Denmark, UK, Norway and Finland. This exemption puts from administrative perspective restrictions to the spread of this new technology.

MORE INFORMATION:

SAFETY

The VBG MFC is a FACS that enables the coupling and uncoupling procedures to be started and completed without the driver having to leave the cab. However with the current arrangement of the requirements for the parking brake, the driver has to leave the cab to set or release the parking brake. As the coupling processes are completed with nobody entering the hazardous zone between the truck and the trailer, all hazards and accidents directly related to the coupling procedures are eliminated.

Further hazards with the driver repeatedly leaving the cab entering into the busy traffic of neighbouring lanes in connection with e.g. road paving operations are minimized.

Contrary from traditional drawbar or fifth wheel couplings, the VBG MFC has a continuous surveillance of among other things the electrical contact being connected. Hence, it is not possible to get a “green” coupling indication (according to R55) without the ABS signals being connected. Thus driving away “forgetting” to connect the ABS signals is no longer possible without being alerted by a “red” coupling.

ENVIRONMENT

The typical application for the VBG MFC is an application where you have frequent (say 10 to 15) coupling uncoupling processes per shift. From our field tests we know that on average you save 2 minutes process time per coupling or uncoupling operation. That is 40 to 60 minutes reduced idling engines, corresponding to up to 1.7 tonnes of CO₂ emissions per year. In coming versions, even hydraulics will be coupled automatically. We know from field tests that this minimizes the amount of oil leaked into the soil.

WORK ENVIRONMENT

The minimized number of times the driver has to leave and re-enter the cab takes to a minimum the work related illness, such as worn out hip joints and knees typical for truck drivers. Of course the items concerning drivers brought up under safety are also work environmental issues. (A secondary effect from the VBG MFC not directly related to the integrated electrical contact is the massively improved comfort due to the coupling being mechanically slack free. This makes the driver less tired and hence a safer driver.)

EFFICIENCY

The time saving brought up under “environment” obviously also documents it self as improved efficiency.

MISCELLANEOUS

The VBG MFC coupling is a unique coupling with a unique geometry that rules out all mismatching of drawbar and coupling. Hence from the confirmed correct installation on the a incorrect connection of the ABS signals is not possible. I.e. the VBG MFC system is truly unique and eliminates any risk with a special amendment for the coupling.

TESTS PERFORMED.

The VBG MFC has been tested in accordance with Directive 94/20/EC and the UNECE Regulation No. 55 for the mechanical requirements. Certificate of performance according to Directive 94/20/EC has been issued by NSAI.

With respect to electrical performance the coupling has been assessed with respect to annex 18 of the UNECE Regulation No. 13 and according to Directives 72/245/EC and 2009/19/EC with respect to EMC performance. The TÜV-SÜD has issued an assessment report declaring the MFC to comply with the UNECE Regulation No. 13, Annex 18. Further NSAI has issued a certificate of the fulfilment of the EMC directive.

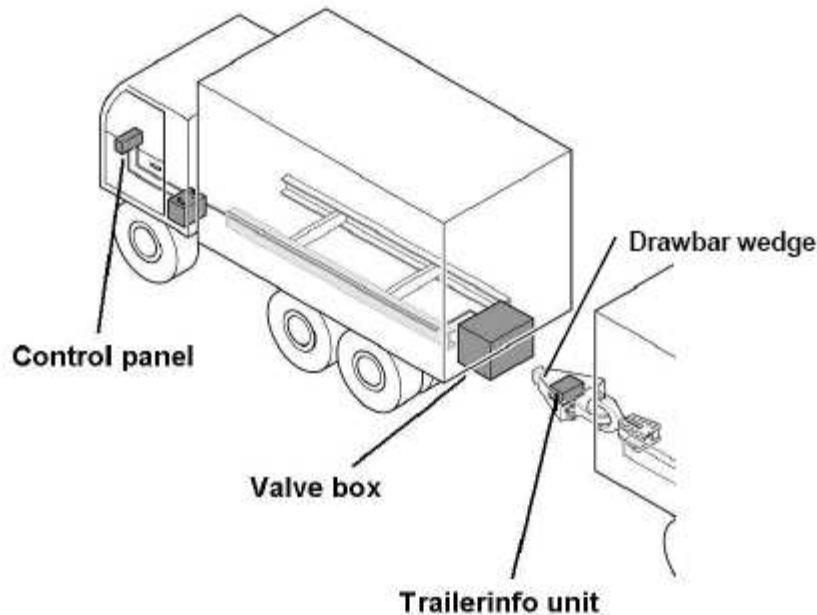
The electrical contact used in the system has been proven in service since more than 20 years. In the Nordic countries the connector has become the preferred connector for anything but the ABS signals where the ISO7638 connector is required. In the current application the most severe application is in a steel mill where you get approximately 70 coupling uncoupling processes each day. When writing this it amounts to close to 20,000 coupling uncoupling cycles in harsh real world operation without any concerns with ABS reported.

In addition to these tests, extensive field tests have been performed. These tests have been run in real applications in different parts of Sweden. There has been timber transport, bulk and tanker transports as well as general cargo and swap body transports. The locations of the tests have been from far north for timber to south to middle of Sweden for swap body. In total the covered distance in field tests up to current time amounts to almost 2 million kilometres. The test time is from 2006 to 2009. During those tests no concerns have been reported with respect to the connector block. The test fleet has varied from three vehicles up to twelve. All vehicles have been surveyed monthly.

PRODUCT SYSTEM DESCRIPTION

Properties

- Improved road safety
- Improved driver work environment
- Reduced environment impact
- Improved efficiency



The product, MFC (Multi Function Coupling), is being used on trucks in order to couple and uncouple the trailer. The MFC couples the trailer mechanically, electrically, pneumatically and sometimes hydraulically to the truck. The coupling is being manoeuvred in a safe way by the driver from the driver's cabin. The system provides the driver with necessary safety- information for a safe use of the product.

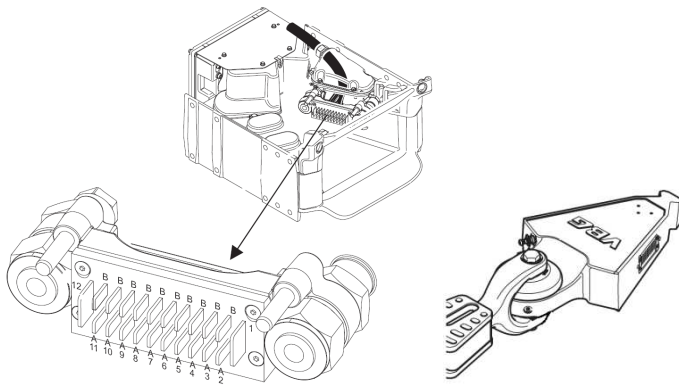
During the coupling sequence the driver is guided when coupling or uncoupling the trailer.

The Control panel is mounted in the driver's cabin and is used for manoeuvring the coupling.

The Valve box is mounted on the coupling. It contains e.g. a PCB and pneumatic valves.

The drawbar wedge contains the Trailerinfo unit which is used for identification of trailer when the truck is coupled to the trailer. The identification messages sent from Trailerinfo unit to the Valve is also a confirmation that the El&Pneu block is correctly connected to the trailer. When the trailer is not connected to the truck the Trailerinfo unit is used for guidance when the driver couples the trailer.

The integrated connector contains not only all the electrical connections but also the pneumatic connectors.



The product can only be used in its normal way when the ignition key of the truck is turned on.

UNCOUPLE SEQUENCE

When the driver wants to uncouple the trailer following actions have to be performed. First, the “on-button” and then the “operate-button” have to be pressed. To be able to press the “operate button”, the truck has to be stopped. The “operate button” has to be pressed for 2 seconds in order to take action. When this is done the green coupling symbol is turned off and the system starts to uncouple the trailer.

When the system is in the uncoupling sequence and the driver is expected to run the truck forward, the driver is informed about this via the LCD-display. When the driver has driven the truck forward, the sequence is continued and when the product reaches the uncoupled state, the green coupling symbol is being turned on if everything is correct.

UNCOUPLED STATE

When in uncoupled state, the coupling on the truck is being covered from dust and water by a cover. Cylinders are in most protected state. The green coupling symbol is on.

COUPLE SEQUENCE

When a driver wants to couple a trailer he first stops the truck. He thereafter pushes the “on-button” and then the “operate-button”. When this is done the green coupling symbol is turned off and the system prepares for coupling of the trailer.

When the system is expecting the driver to run the truck backward, the driver is informed about this via the LCD-display. On the system there is also a guiding assistance in order to help the driver. The system may be operated without guidance.

As the truck has moved backward such that the drawbar wedge comes into position in the coupling, the coupling procedure is continued and when the coupled state is reached the green coupling symbol is being turned on if everything is correct.
