

PRESS RELEASE

Safim presents three new hydraulic braking systems for towed vehicles that comply with the new RVBR standard (EU 2015/68)

Safim has developed new solutions to comply with the requirements contained in the new RVBR regulation (EU 2015/68), which also guarantee safety, simplicity and convenience. Three new hydraulic braking systems for towed vehicles are at Agritechnica 2019: AS (Accumulator System), ECS (Equal Chamber System), CTS (Cylinder & Tank System).

Modena, October 2019 - The new RVBR (EU 2015/68) standard for braking systems of agricultural machines in the European territory requires them to be equipped with double line braking systems. The first line, the Control Line (CL), supplies the pressure and the quantity of oil necessary to actuate the trailer braking system. The second line, the Supplementary Line (SL), permanently supplies a set pressure between 15 and 35 bar, which keeps the automatic emergency brake inoperative. If the pressure in the SL pipe drops below a minimum value (which means a failure of the tractor or, in the worst cases, a disconnection of the pipes caused by a crash), the braking system automatically applies the emergency brake of the trailer to stop it.

As it is already active in the development of hydraulic systems for tractors and trailers, Safim has now designed new solutions to complying with the new rule's requirements, while ensuring safety, ease of use and convenience at the same time.

Safim's product range already includes efficient tractor trailer brake valves for double line trailers. With many tractors (almost 100.000 units) already working in the field using its hydraulic braking system, Safim has effectively anticipated the introduction of the new RVBR standard.

A common European deadline for the compulsory introduction of the RVBR rule for trailers does not exist yet, but Safim is ready to supply pilot and series applications which are safe and easy to use.

Safim has developed three new hydraulic systems for trailers:

- **AS (Accumulator System):** Pressurized oil stored in an accumulator is used for automatic braking in emergency situations. The benefit of this system is the compactness of the brake actuators which can be fitted on trailers with limited space. It can also be used with hydraulic brakes integrated on the hub.
- **ECS (Equal Chamber System):** Brake actuators are combined cylinders made up of two sections, one for service brake function, the other for automatic and parking brake function. The second section contains compressed springs which provide the necessary output force to fulfil the requirements of the new regulation regarding emergency and parking brake. ECS is a simple



and effective system but, as for pneumatic spring brakes, the dimension of the actuators might limit the application on certain trailers. The oil used for releasing the spring brakes is discharged inside the spring cylinder itself.

- **CTS (Cylinder & Tank System):** similar to the ECS system, there are also combined cylinders in the CTS solution. The main difference from the ECS system is that once the emergency braking is applied (in case of disconnection of the trailer from the tractor), the oil used to release the spring brakes is discharged into a separated tank. This system is very easy to fit and is also a cost-effective solution.

The ECS and CTS systems are intrinsically safe because they use a simple mechanic energy source (i.e. the compressed springs in one of the two cylinder sections of a combined cylinder), that actuates the automatic emergency brake. Moreover, these systems are connected to the tractor only by pipes with no need for an electrical connection, which is necessary on the AS system.

All three systems for trailers described above are hydraulically connected to the tractor by means of a coupling device named DLC (dual line coupling). This name identifies a mechanical assembly including CL and SL connections, properly designed to enable the coupling with the tractor in an easy and safe way.

The DLC ensures the hydraulic lines disconnects if the mechanical coupling of the trailer disconnects while moving. A safety cable shorter than the hydraulic hoses allows the coupling system of the trailer to be disconnected without the pipes leaking oil on the street, and automatically applies the emergency brake.

In an AS system, the accumulator pressure can decrease only due to an emergency braking application. The AVA block (Automatic Valve Accumulator) designed by Safim is leak-free. The pressure stored in the accumulators lasts for a very long time with no need to be frequently recharged.

To conform to the new regulations, the automatic braking application works if the tractor turns off, if the parking brake is applied, or if the trailer is disconnected. If the pressure decreases under the safety level during automatic braking, an electric signal turns on the yellow light alarm on the dashboard to inform the driver to charge the accumulator through a high pressure service brake.

The AS system needs an electric cable connecting the trailer to the tractor through the ISO 7638 socket (connection ABS/EBS). This is available as an optional device for all tractors with a hydraulic braking system.

Every braking system manufactured by Safim complies with the requirements of the RVBR regulation. Safim introduced further safety improvements to its braking systems to avoid the release of the automatic braking function if the accumulator does not reach the prescribed pressure.

A red indicator light and an acoustic alarm have been added to the trailer just in case it is difficult to see the indicator on the dashboard due to the bright daylight. If the low pressure indicator for the accumulator turns on during the movement (this may happen if the vehicle starts moving with the safety pressure level of the accumulator almost at minimum) the braking system will not apply the automatic emergency brake. In this case, no dangerous situation is detected because the accumulator is still provided with a sufficient pressure to ensure the automatic braking application. At the same time, the driver would be notified of the



necessity to recharge the accumulator by applying the brakes at the first possible opportunity. If the driver ignores the warning, the driver would be forced to recharge the accumulator during the first release of the parking brake, or during the moment the engine turns off and then on again.

All systems are provided with a manual pump and an automatic/manual selector, which temporarily releases the automatic brake in case a suitable tractor is not available. With this operation the certified braking system of the trailer is not tampered. The manual/automatic selector is restored on “automatic” mode just when the trailer is once again reconnected to the tractor and complying with RVBR Rules. If the trailer should be towed by a tractor with a single line braking system, Safim offers an adapting joint standing to make the hydraulic connection possible. In this case it is necessary to position the selector in “manual” mode to free the automatic braking. In such a configuration, the tractor actuates the service brake of the trailer. Automatic braking activates only in case of mechanical disconnection of the DLC coupling. Do not forget that in each European country it is necessary to ask for authorization from the relevant authorities in order to travel on public roads.

	EMERGENCY BRAKE	SPRING-BASED SOLUTION	ACCUMULATOR BASED SOLUTION	AUTOMATIC PARKING BRAKE
AS	Y		Y	
ECS	Y	Y		Y
CTS	Y	Y		Y

	SYSTEM DIMENSIONS	ELECTRIC CONNECTION NEEDED	RVBR REGULATION COMPL.
AS	*	Y	Y
ECS	**	N/D	Y
CTS	***	N/D	Y

For more information:

Silvia Sala

Marketing & Communication

Ph: +39 059 894 411

Email: silvia.sala@safim.it